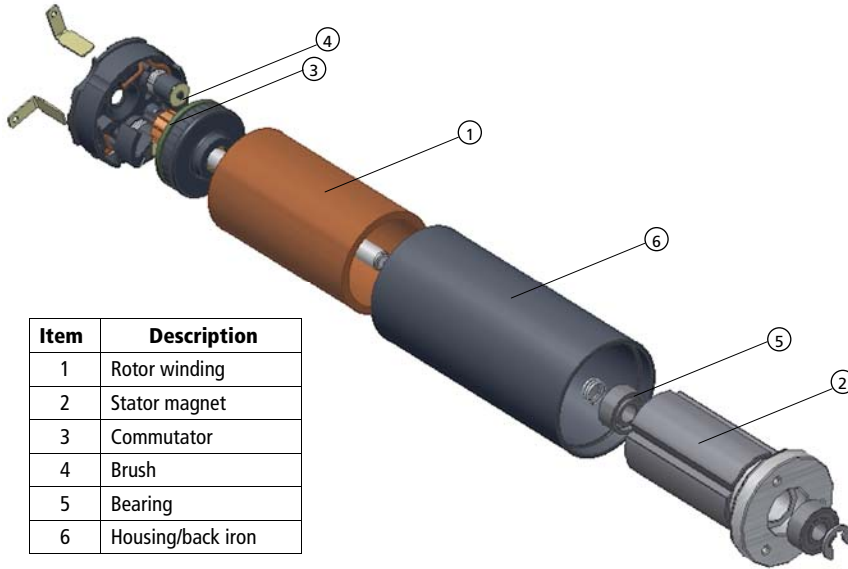
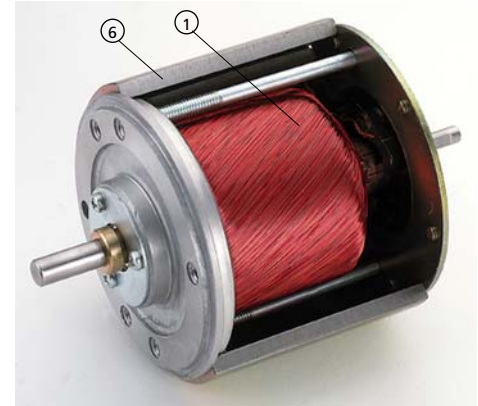


Coreless DC Motors



Item	Description
1	Rotor winding
2	Stator magnet
3	Commutator
4	Brush
5	Bearing
6	Housing/back iron



Cutaway of the CL 66 coreless DC Motor

Coreless DC Motor Technology

Coreless DC motors differ from traditional DC motors in significant ways. The most obvious and important difference is the rotor winding.

Instead of coils wound around a stack of iron laminations, the coil is formed as a thin hollow cylinder (item 1 above).

The stator with its permanent magnets (item 2) supplies the magnetic field flux and fits in the hollow center of the winding. It's rigidly affixed to the outside motor housing (item 6), which completes the magnetic circuit. The rotor is supported by bearings (items 5) and rotates around the magnetic core.

Coreless DC motors are usually small in size, ranging from 6 mm (0.24") to less than 75 mm (3") in diameter. Continuous power is normally limited to 250 Watts or less.

They are a preferred choice for many medical devices, small pumps, and document handling/dispensing equipment.

Advantages of Coreless DC Motors

Allied Motion's Coreless DC motors have desirable attributes that make them an excellent choice for many applications:

- Coreless rotor technology means smooth, cog-free operation
- Low inertia rotor provides fast acceleration compared to ironcore DC motors
- Lighter weight than ironcore DC motors
- No iron loss means higher efficiency (up to 85% versus 50% for ironcore) for lower heat rise and longer battery life
- Zero detent and low ripple torque (<1.5%) for precision speed control
- Low starting voltage (0.3 V) for accurate low speed operation
- Low inductance means extended brush and commutator life
- Low time constant (typically 10 ms) means sharper response capability

Coreless DC Motor Applications

Here are a few applications that benefit from the inherent advantages of coreless DC motors:

Medical Equipment

- Dialysis peristaltic and gear pumps
- Ambulatory infusion pumps
- CPAP centrifugal blowers
- Lab centrifuges, shakers and stirrers
- X-ray shutter positioning drive





Banking and Office Automation:

- Card readers
- ATM machine cash dispensers
- Coin counters / sorters

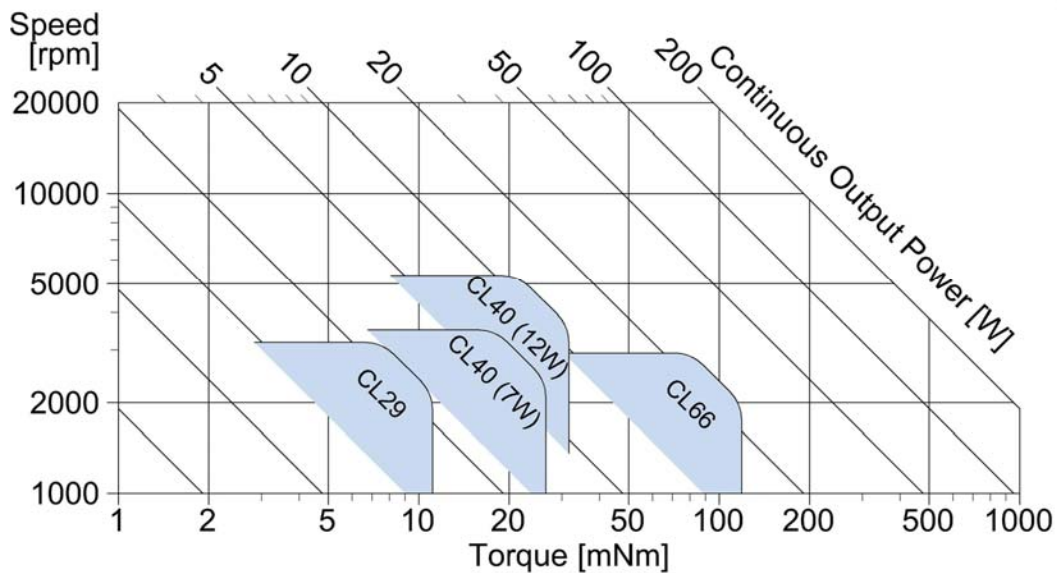
Other

- Airplane entertainment system LCD screen positioners
- High-end audio turntable motors
- Police / emergency tape recorders
- Entrance door, window, and window shade automatic operators
- Ticket printing/dispensing
- Security camera pan and tilt drives
- Laser leveling system drives

Coreless DC Motors

	Size (OD) [mm (in)]	Power ¹ [Watt]	Torque [mNm (oz-in)]	Speed [RPM]	Inertia [kgm ² (oz-in-s ²)]	Voltages (VDC)	Commutation Brush Type	Options
 <p>CL 29</p>	29 (1.14)	3	10 (1.42)	2400 - 2700	0.9E-6 (1.27E-4)	6 - 24	Precious metal	<ul style="list-style-type: none"> Encoder Tachometer Gearhead EMI suppression Ball bearings Custom shaft/winding Connector
 <p>CL 40 (7 W)</p>	40(1.57)	7	22 (3.12)	2600 - 3050	4E-6 (5.67E-4)	6 - 30	Precious metal	<ul style="list-style-type: none"> Encoder Tachometer Gearhead EMI suppression Ball bearings Custom shaft/winding Connector
 <p>CL 40 (12 W)</p>	40 (1.57)	12	26 (3.68)	4100	4E-6 (5.67E-4)	12 - 30	Graphite-copper	<ul style="list-style-type: none"> Encoder Gearhead EMI suppression Ball bearings Custom shaft/winding Connector
 <p>CL 66</p>	66 (2.6)	25	100 (14.2)	1800 - 2540	21E-6 (2.97E-3)	12 - 36	Graphite-copper	<ul style="list-style-type: none"> Encoder Gearhead EMI suppression Custom shaft/winding Connector

1. Continuous ratings



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