

Medical Devices

The medical market is a market in motion – both literally and figuratively. With the Baby Boomers reaching retirement age and technology advancing almost exponentially, this is an exciting market for companies that supply components and assemblies into medical applications. The marketplace is vast with products ranging from simple syringes and disposables to complex diagnostic machinery such as CT scanner and MRI equipment. Embedded in the overall market are many niche markets that require motion components.

| Medical Applications | Motion Solutions |
|--|-------------------------------|
| Medical Centrifuges | Motors, Slip Rings |
| CT Scanner, MRI and Diagnostic Equipment | Slip Rings, Motors, Actuators |
| Airway Clearance Therapy | Motors |
| Patient Lifts, Patient Beds and Mobility Equipment | Motors, Actuators, Air Moving |
| Operating Room and Patient Diagnostic Lighting | Slip Rings |
| Oxygen Concentration and Generation Equipment | Motors, Air Moving |
| Medical Pumps, Blowers and Compressors | Motors, Air Moving |
| Surgical Instruments – Saws and Drills | Motors |

Although not an exhaustive list, these applications give a flavor for the myriad of potential applications within the overall medical market.

Motor Advantages

Motors for typical medical applications, particularly portable ones, are required to be:

- Efficient
- Quiet (low acoustical noise footprint)
- Reliable - long life
- Arcless - produces no sparks or arcing in normal operation
- High power density - high torque dollar ratio
- Well balanced
- High speed (centrifuge, saw and drill applications)

Silencer® series brushless DC motors offer these advantages and more. With a broad array of offerings (six base frame sizes, high speed and high power versions, motors with integral drive electronics, inside and outside rotor versions, drive electronics, optional gearheads, brakes, encoders), Moog Components Group is well positioned to provide solutions to various medical applications by combining our expertise in air moving solutions with our innovative motor technology.



Centrifuge



CT Scanner
(Philips Medical Systems, Inc.)



Medical Device

Slip Ring Advantages

Slip rings in medical applications feature the following:

- Fiber brush technology with long maintenance-free life and minimal wear debris
- Low audible noise for overall quieter mechanical system operation
- Optical channels for high-speed data communications (Fiber Optic Rotary Joints)
- High circuit density and compact design
- Large bore designs with an inside diameter up to 50 inches




As a world leader in slip ring design and manufacturing, Moog Components Group is well positioned to work closely with medical device manufacturers to integrate slip rings into their designs.



Actuator Advantages


Moog Components Group has an extensive heritage in providing actuators for aerospace applications. Now, this expertise has been applied to developing a line of linear actuators that are well suited for the reliability and precision demanded for medical applications and are cost effective.

- Innovative modular design allows a broad range of configurations and flexibility
- High efficiency and low audible noise

Motion Solutions for Medical Applications

| Motors | Size | Volts (VDC) | Rated Torque | Speed | Power |
|---|----------------------------------|--------------------|---------------------|---------------|--------------|
| BMS09  | 2.29 inches - 2.79 inches L x | 12/24 | To 5 oz-in | To 40,000 RPM | To 118 watts |
| BN23  | 1.14 inches - 2.91 inches L x | 24/36/48 | To 50 oz-in | To 9,000 RPM | To 200 watts |
| BN34 High Speed  | 2.5 inches - 3.5 inches L x | 24/50/100 | To 78 oz-in | To 14,000 RPM | To 591 watts |

| Slip Rings | Circuits | Through Bore | Current | Voltage | Operational Speed |
|--|-----------------|---------------------|----------------|----------------|--------------------------|
| AC4598  | 6, 12, 18, 24 | 1.5 inches | 10 amps | 600 VAC | 250 RPM or higher |
| AC6373  | 6 and 12 | None | 2 amps | 120 VAC | 100 RPM |

| Actuators | Linear Axial Thrust | Volts (VDC) | Stroke | Temperature Range | Speed |
|---|----------------------------|--------------------|---------------------|--------------------------|-----------------------|
| 89001  | 100 to 2,000 lbs | 22 to 32 | < 1 up to 12 inches | -40°C to 70°C Ambient | 0.046 to 0.187 in/sec |

Air Moving Solutions



Blowers, Controllers, Fan Trays and Impellers

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For more information, please visit our web site at www.moog.com/components or email us at: mcg@moog.com

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