

Compact, high-performance motors for next-generation surgical robots

Bring your advanced surgical robot to life with our purpose-built motors and application expertise. Kollmorgen motion is Robot Ready.

DESIGN MORE COMPACT SURGICAL ROBOT JOINTS

- **Maximize the performance of strain wave gearing.** Used with the strain wave (harmonic) gearing ideally suited for surgical robot joints, TBM2G motors are designed for easy integration and maximum performance.
- **Optimize torque while minimizing temperature, size and weight.** TBM2G motors deliver exceptional torque density with low thermal rise in a compact, lightweight package.
- **Build a more versatile robot.** A choice of winding variations optimizes TBM2G motor performance at various bus voltages and speed requirements, including windings that are ideal for battery-operated and mobile robots.

REDUCE ARM JOINT WIDTH

- **Design narrower arm joints.** By taking advantage of the D²L rule, doubling the moment arm diameter allows for a fourfold decrease in stack length with no loss of torque.
- **Give surgeons greater dexterity.** Using TBM2G motors, you can give surgeons the ability to place robotic arms as close to parallel as possible for minimally invasive procedures.

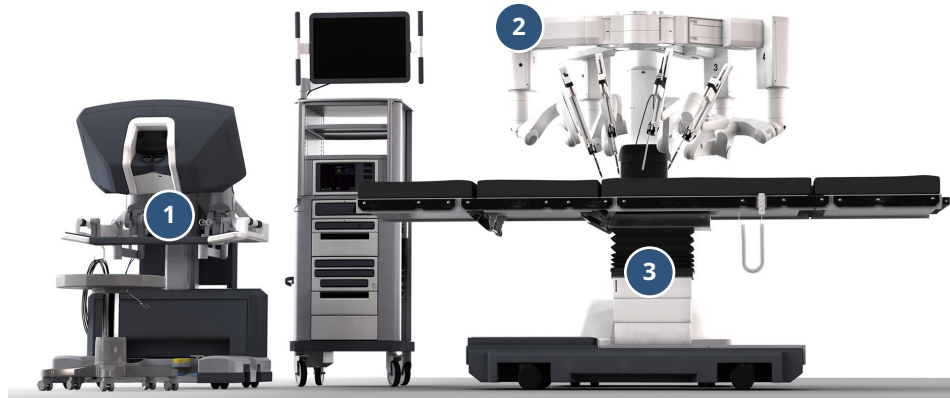
CREATE SMALLER, LIGHTER ROBOT COLUMNS AND PATIENT TABLES

- **Get all the performance you need in a smaller footprint.** Compared to other servo motors in their class, AKM2G motors deliver the same torque in a 20% smaller space.
- **Build a more marketable surgical robot system.** With lighter, more compact AKM2G motors, your new robot system can save space in the operating room, be used in smaller rooms, or even be mobile.



Kollmorgen Motion Solutions for Surgical Robotics

- 1. Surgical Console:** Torque-dense motors minimize console space and weight. Cogging compensation, vibration suppression and noise rejection ensure precise control.
- 2. Robotic Arms:** High-performance frameless motors with minimal stack length enable narrower, lighter arm joints and the highest-definition control.
- 3. Patient Table:** Precise, low-cogging servo motors allow for smooth, quiet operation with infinite positioning in synchronization with surgical instruments.



Kollmorgen Motors in Surgical Applications

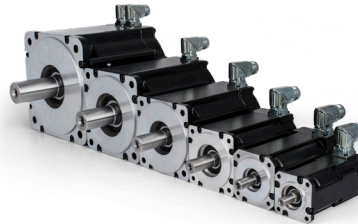
TBM2G Frameless Servo Motors



Minimize the effective width of your robotic joint design while optimizing performance.

- Seven frame sizes, each delivering high torque density in the most axially compact package.
- Consistent smoothness and load-carrying capacity at all speeds and energy demands.
- Low thermal rise to maintain reliable operation of all joint components.
- Available with integrated Hall sensors and embedded thermal sensors that don't increase stack length.

AKM2G Housed Servo Motors



Increase the performance of new designs and existing robots while minimizing size and weight.

- An average of 30% more torque compared to similar size servo motors.
- Winding, mounting, connector, feedback device, thermal sensor, holding brake and other options.
- Available in low-voltage models.

About Kollmorgen

Kollmorgen has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, linear actuators, AGV control solutions and automation platforms. We deliver breakthrough solutions that are unmatched in performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.