Ameridrives

Bauer Gear Motor

Bibby Turboflex

Boston Gear

Delevan

Delroyd Worm Gear

Formsprag Clutch

Guardian Couplings

Huco

Jacobs Vehicle Systems

Kilian

Kollmorgen

Lamiflex Couplings

Marland Clutch

Matrix

Nuttall Gear

Portescap

Stieber

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Svendborg Brakes

TB Wood's

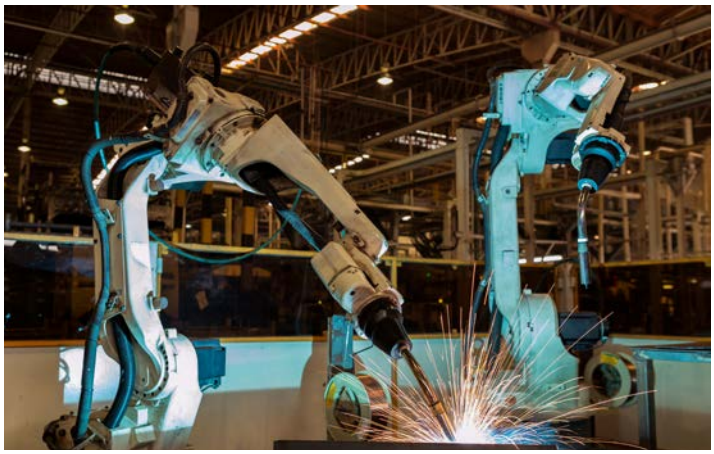
Thomson

Twiflex

Warner Electric

Wichita Clutch

Warner Electric XS & WR Brakes Reduce Six-Axis Robot Footprint



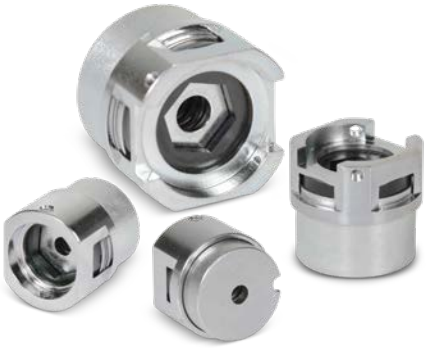
Warner Electric®
Altra Industrial Motion

Warner Electric XS & WR Brakes Reduce Six-Axis Robot Footprint

Six-axis robots have become the standard solution for automated assembly tasks due to their ability to carry out complex maneuvers. As they have grown in popularity, robot OEMs have strived to reduce the size and mass of their six-axis designs to promote space efficiency and productivity. When a German manufacturer of stepper motors was approached by a robot OEM to downsize its assemblies for a six-axis robot, they turned to Warner Electric to deliver highly compact X-Small (XS) and WR Series brakes.

Able to approach a work piece from any angle, six-axis robots are now a common sight on manufacturing lines. However, floorspace is still at a premium, so there is a continuing design trend towards decreasing the size and mass of robots. Reducing size improves space efficiency, allowing for the addition of more robots or other equipment on the line. Minimizing mass allows for six-axis robots to enhance speed and acceleration without compromising payload – which results in increased productivity.

The end goal is a production line with a high density of robots, working within reduced space, delivering high output. Therefore, any advantage that can be gained from reducing the size and mass of components and assemblies must be seized by robot OEMs.



Warner Electric's range of XS brakes is specifically designed for applications where weight saving and space efficiency are paramount.

Specifying an optimal robot brake

This has been exemplified by a robot OEM, which asked its German supplier of stepper motors to assess downsizing opportunities for an updated six-axis robot design optimized for small component assembly. The German manufacturer quickly identified the brakes mounted on the back of each stepper motor as an area for optimization. The brakes provide static holding in precise positions, ensuring the accuracy of the assembly process. Particularly, the stepper motor controlling the sixth axis of movement, which holds and turns the tooling at the end of the robot arm, required a specialized braking solution.

The manufacturer contacted Warner Electric, a leading brand of Altra Industrial Motion Corp., due to its exceptional expertise regarding advanced braking technologies. After collaboration with the customer's engineering team, Warner Electric experts recommended a XS electrically-released, spring-set brake to fit the stepper motor on the sixth axis.

Warner Electric's range of XS brakes is specifically designed for applications where weight saving and space efficiency are paramount. Each model offers reliable braking to an optimized torque level. Consequently, XS brakes are often specified for applications in aeronautics and robotics. It is a highly versatile range featuring six standard sizes, with Warner Electric able to customize designs to exactly match application requirements.

The XSB33S supplied to the German motor manufacturer offered a torque rating of 35 Ncm and a weight of only 90 g. Its design ensured a significant size and mass advantage compared to the previously utilized brake. A customised adaptor flange was also included to allow for customer-specific mounting.

Delivering tangible improvement

For the higher braking torques required on the other five axes of the robot, Warner Electric supplied highly compact Model WR220 and WR225 spring-applied, electrically-released brakes. These are specifically designed as statically engaged/disengaged holding brakes, ensuring reliable positioning of the robot arm in operation.

With the new brakes now installed, the German motor manufacturer could approach the robot OEM with a highly optimized design that reduced footprint without compromising productivity. This delivered increased space efficiency for end users, improving available floorspace and enhancing production capacity.

Warner Electric provides a global design, development, manufacturing and supply service to its customers – offering standard and custom braking solutions tailored to specific application requirements. Experts worldwide work closely with customers' engineering teams to provide products that deliver tangible operational improvements. This ensures that the special requirements of advanced industries such as robotics can be met with exact solutions.

Warner Electric's model WR220 and WR225 spring-applied, electrically-released brakes are specifically designed as statically engaged/disengaged holding brakes, ensuring reliable positioning of the robot arm in operation.

About Altra Motion

Altra is a leading global designer and producer of a wide range of electromechanical power transmission and motion control components and systems. Providing the essential control of equipment speed, torque, positioning, and other functions, Altra products can be used in nearly any machine, process or application involving motion. From engine braking systems for heavy duty trucks to precision motors embedded in medical robots to brakes used on offshore wind turbines, Altra has been serving customers around the world for decades.

Altra's leading brands include Ameridrives, Bauer Gear Motor, Bibby Turboflex, Boston Gear, Delevan, Delroyd Worm Gear, Formsprag Clutch, Guardian Couplings, Huco, Jacobs Vehicle Systems, Industrial, Kilian, Kollmorgen, Lamiflex Couplings, Marland Clutch, Matrix, Nuttall Gear, Portescap, Stieber, Stromag, Svendborg Brakes, TB Wood's, Thomson, Twiflex, Warner Electric, and Wichita Clutch.

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