

Global Frameless Torque Motor for Humanoid Robot Rotating Joint Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Frameless Torque Motor for Humanoid Robot Rotating Joint market size was valued at US\$ 206 million in 2025 and is forecast to a readjusted size of US\$ 954 million by 2032 with a CAGR of 24.4% during review period.

In 2025, global Frameless Torque Motors for Robotic Arm production reached approximately 571.4 k units with an average global market price of around US\$350 per unit. Frameless torque motor is a permanent magnet servo motor specially designed for integrated drive. Its core features are ? without traditional motor shell, bearing and encoder ?. It is only composed of two parts: stator (external steel sheet and copper winding) and rotor (internal permanent magnet steel ring) ?45. By embedding directly into the robot joint structure, the motor can output high torque and precise motion control to meet the requirements of rotating joints for compact space and high dynamic response.

The future industry development trend for the frameless torque motor for humanoid robot rotating joints points to the technological route of integrated joint modules and the stage of scaled mass production. During its third-quarter 2025 earnings call, Kinco Automation disclosed that the main driver of its robotics business growth is the rapid development of humanoid robots and other related directions. Sales of frameless torque motors in the first three quarters increased significantly year-on-year, pushing the revenue share of its robotics business to exceed half of the company's total revenue for the first time. The company has explicitly focused on motion control solutions for both legged and wheeled humanoid robots, with core products including frameless torque motors, hollow shaft drives, and planetary gearboxes. Leadshine Technology explicitly

stated in its 2025 board of directors' work report that its frameless torque motor business has begun explosive growth, with annual deliveries exceeding 120,000 units. The company's core robotics components have entered the supply chains of 80 percent of mainstream domestic humanoid robot manufacturers, and it is currently constructing automated production capacity of two million units per year. Weiguang Holdings revealed during its 2025 earnings call that the robotic joint modules developed by its wholly-owned subsidiary have passed verification by individual complete machine manufacturers and have entered the small-batch delivery stage. These modules integrate frameless torque motors with components such as encoders. The policy front also provides clear support. The Science, Technology and Economy Commission of Shanghai Pudong New Area issued a special application notice, providing support not exceeding a certain percentage of the first batch sales contract value for enterprises undertaking the industrialization of frameless torque motors for humanoid robots. The Beijing Economic-Technological Development Area has also explicitly provided subsidies based on a percentage of supply value to enterprises that supply core components, including servo motors, to robot complete machine manufacturers. In summary, the major trends in the frameless torque motor industry for humanoid robot rotating joints are as follows: the technological route is upgrading from single motor sales to integrated joint modules that incorporate reducers and encoders; the profit focus is shifting from general-purpose products to high-torque-density specialized motors; and a company's revenue growth and profit margins will depend on its progress in industrializing core areas such as magnetic circuit optimization design, process consistency control, and module integration capabilities.

This report is a detailed and comprehensive analysis for global Frameless Torque Motor for Humanoid Robot Rotating Joint market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Frameless Torque Motor for Humanoid Robot Rotating Joint market size and forecasts, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Frameless Torque Motor for Humanoid Robot Rotating Joint market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Frameless Torque Motor for Humanoid Robot Rotating Joint market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Frameless Torque Motor for Humanoid Robot Rotating Joint market shares of main players, shipments in revenue (\$ Million), sales quantity (K Units), and ASP (US\$/Unit), 2021-2026

The Primary Objectives in This Report Are:

- To determine the size of the total market opportunity of global and key countries

- To assess the growth potential for Frameless Torque Motor for Humanoid Robot Rotating Joint

- To forecast future growth in each product and end-use market

- To assess competitive factors affecting the marketplace

This report profiles key players in the global Frameless Torque Motor for Humanoid Robot Rotating Joint market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Kollmorgen, Aerotech, Wittenstein, Parker, Sensata, Maxon Motor, Allied Motion, TQ Robodrive, Magnetic Innovations, Tecnotion, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

Frameless Torque Motor for Humanoid Robot Rotating Joint market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application

in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

High-Torque Frameless Torque Motor

Lightweight Low-Torque Frameless Torque Motor

Market segment by Slot

Slotted

Slotless

Market segment by Peak Torque

Below 100Nm

Above 100Nm

Market segment by Application

Upper Limb Joints

Lower Limb Joints

Hand Joints

Others

Major players covered

Kollmorgen

Aerotech

Wittenstein

Parker

Sensata

Maxon Motor

Allied Motion

TQ Robodrive

Magnetic Innovations

Tecnotion

Moog

Nidec

Akribis

Celera Motion

Shenzhen Mosrac Motor

Kinco Automation (Shanghai)

Guangzhou Haozhi Industrial

Chengdu Weijing Motor

Wolong Electric Group

China Leadshine Technology

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Frameless Torque Motor for Humanoid Robot Rotating Joint product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Frameless Torque Motor for Humanoid Robot Rotating Joint, with price, sales quantity, revenue, and global market share of Frameless Torque Motor for Humanoid Robot Rotating Joint from 2021 to 2026.

Chapter 3, the Frameless Torque Motor for Humanoid Robot Rotating Joint competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Frameless Torque Motor for Humanoid Robot Rotating Joint breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026. and Frameless Torque Motor for Humanoid Robot Rotating Joint market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Frameless Torque Motor for Humanoid Robot Rotating Joint.

Chapter 14 and 15, to describe Frameless Torque Motor for Humanoid Robot Rotating Joint sales channel, distributors, customers, research findings and conclusion.

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