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Boston Gear

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Formsprag Clutch

Guardian Couplings

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Inertia Dynamics

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Lamiflex Couplings

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Matrix

Nuttall Gear

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TB Wood's

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# Carbon Fiber Shaft Couplings Simplify Design and Cut Lifecycle Costs



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An Altra Industrial Motion Company

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## in Demanding Power Transmission Applications



Carbon fiber shaft couplings can allow very long shaft spans without the need for intermediate bearings or supports.



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High performance carbon fiber shaft couplings from Bibby Turboflex, part of the Altra Industrial Motion Group, can dramatically simplify the design, installation and maintenance of power transmission systems requiring long horizontal or vertical shafts, while also improving dynamic performance.

The company's floating shaft couplings are a favored solution for power transmission applications requiring the connection of widely separated shafts. The design compensates for angular, parallel and axial misalignment using two metal disc couplings separated by a fabricated spacer shaft, which can be anything from a few hundred millimeters to several meters in length. Standard models in the range use a hollow steel spacer shaft, but a significant number of applications benefit from the use of a spacer shaft constructed from carbon fiber reinforced composite.

Those advantages stem from the low mass and high stiffness of the carbon fiber spacers, which can weigh up to 80% less than their steel counterparts. The maximum operating speed of a shaft coupling of a given length and diameter is determined by the critical speed of the spacer shaft: the speed at which centripetal forces cause the shaft to bow at the center. Carbon fiber spacer shafts have a higher critical speed, allowing faster rotation and longer unsupported spans.

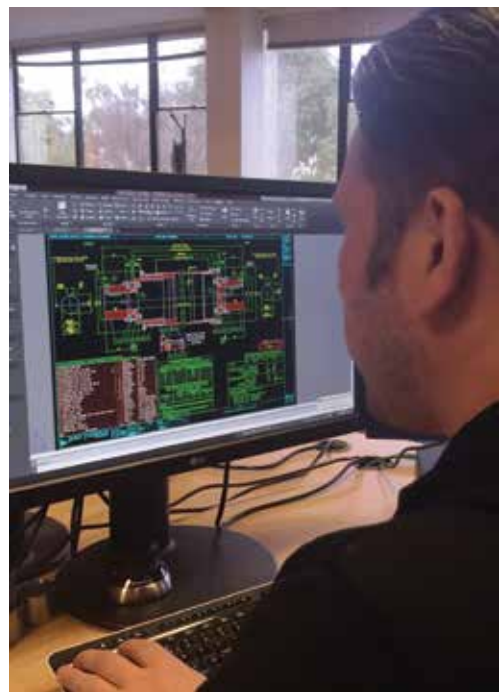
Carbon fiber shaft couplings are used in two main application categories, the first is high speed test equipment, like motorsport engine dynamometers. Here the couplings can cope with very high rotating speeds, while their low mass also allows them to accommodate high accelerations.

In industrial applications, carbon fiber shaft couplings can allow very long shaft spans without the need for intermediate bearings or supports. They can be made with spans of more than 10m (32.8 ft.), making them ideal for applications like cooling tower fans and deep well pumps which require a motor and load to be installed a considerable distance apart.

For users, replacing an arrangement of multiple shafts and/or intermediate support bearings with a single carbon fiber shaft coupling simplifies design and installation. Moreover, by eliminating the need to monitor, maintain and periodically replace intermediate bearings, the design offers significant maintenance cost savings over the lifecycle of the equipment, especially where couplings are installed in hazardous or inaccessible areas.

Bibby high performance shaft couplings are manufactured to suit the particular requirements of the end application, with the composite shaft spacers produced at a dedicated filament-winding facility at Altra's factory in San Marcos Texas, or sourced from specialized suppliers. The disc coupling units are bonded to the composite in tightly controlled conditions using specialized engineering adhesive.

The couplings are available in a wide range of sizes and configurations, with shaft diameters ranging from 60mm to 150mm (2.3 in. to 5.9 in.) and rated torque capacities of 250Nm to 3800Nm (184 lb.ft. to 2,802 lb.ft.). The couplings are suitable for use in horizontal or vertical applications, with the shaft characteristics, disc coupling design and flange configuration selected to suit the precise needs of the application. The typical lead time is 12 weeks from initial specification to delivery.



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## About Altra Industrial Motion

Altra Industrial Motion (NASDAQ:AIMC) is a leading multi-national designer, producer and marketer of a wide range of electromechanical power transmission products. The company brings together strong brands covering over 40 product lines with production facilities in nine countries.

Altra's leading brands include Ameridrives Couplings, Bauer Gear Motor, Bibby Turboflex, Boston Gear, Delroyd Worm Gear, Formsprag Clutch, Guardian Couplings, Huco, Industrial Clutch, Inertia Dynamics, Kilian, Lamiflex Couplings, Marland Clutch, Matrix, Nuttall Gear, Stieber Clutch, Stromag, Svendborg Brakes, TB Wood's, Twiflex Limited, Warner Electric, Warner Linear and Wichita Clutch. For information on any of these technology leaders, visit [www.AltraMotion.com](http://www.AltraMotion.com) or call 815-389-3771.



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