Bulk Material and Mining

Off-Highway Drive and Motion Technologies

Market-leading Spicer® drivetrain systems and Brevini® motion systems from Dana optimize machine performance while maximizing yields.
Founded in 1904, Dana Incorporated is a world leader in highly engineered solutions for improving the efficiency, performance, and sustainability of powered vehicles and machinery. Dana supports the passenger vehicle, commercial truck and off-highway markets, as well as industrial and stationary equipment applications.

We maintain a competitive advantage in the marketplace with a commitment to delivering on the five dimensions of our enterprise strategy – leveraging the core, strengthening customer centricity, expanding global markets, commercializing new technology, and accelerating hybridization and electrification.

Each day, in both large and small ways, Dana is defined as People Finding A Better Way.

Corporate Business Units
Dana serves global light vehicle, medium/heavy vehicle, and off-highway markets through four business units – Light Vehicle Driveline Technologies (Light Vehicle), Commercial Vehicle Driveline Technologies (Commercial Vehicle), Off-Highway Drive and Motion Technologies (Off-Highway) and Power Technologies, which is the center of excellence for sealing and thermal management technologies that span all customers in our on-highway and off-highway markets.

Off-Highway Brands

Off-Highway Sectors

MOBILE

Agricultural
Our products are engineered to support increased crop yields, optimized harvesting operations, lower emissions, improved operator safety and comfort, and reduced total cost of ownership while complying with evolving emissions standards.

Construction
Integrated drive and motion systems from Dana enhance construction equipment performance, efficiency, and productivity. We offer a range of solutions for vehicles ranging from 4 to 50 tonnes (4 to 55 tons). Spicer® axles, wheel drives, transmissions, driveshafts, and Brevini® motion products are integrated with the most advanced technologies for improved machine operation on any job site, in any condition.

Mining and Forestry
Dana designs complete drive and motion systems to meet increasing industry demands for automation and productivity, coupled with high safety standards. Our solutions are specifically engineered to maximize vehicle performance in extremely harsh environments.

Material Handling
Our custom drive and motion systems enhance material-handing vehicle performance, productivity, and reliability. Spicer® transmissions, axles, and driveshafts are designed to work seamlessly in any vehicle to allow operators to engage, lift, and transport heavy loads with more precision.

INDUSTRIAL
Dana’s portfolio of advanced motion technologies has been engineered to support increased productivity and reliability, lower emissions, improved operator safety and comfort, and reduced total cost of ownership.
Bulk Material Applications

Meeting the needs of clients in mining and bulk material industries around the world, Dana offers a wide range of Brevini® products for industrial applications and self-propelled machines – from planetary gearboxes to helical and bevel helical gearboxes to winches. Whether a customer requires standard products or individual solutions engineered specifically for their needs – Dana can deliver a customized solution.

In applications that require low-speed power transmission, the gearbox plays an essential role in power conveyance. Brevini® products offer advanced, innovative solutions for these critical power needs.

With satisfied customers at leading bulk material and mining companies across all continents, we deliver proven, reliable technology driven by a talented team of engineers who are continuously focused on innovation.

Bulk Material Handling equipment is typically composed of stationary or mobile machinery such as bucket wheel excavators, conveyors, stackers, reclaimers, wagon tipplers, ship loaders, combined with storage facilities such as stockpiles and silos.

Excavation, transportation, sizing, stockyard storing, homogenization and reclamation are all part of the mining processes we support.

Our offering includes consulting, systems design, engineering, procurement, erection and support, for turn-key projects, individual new equipment or upgrades and modernizations.
Stacker Reclaimers

These versatile machines operate as both stacker and reclaimer, stacking material in stockpiles and reclaiming loads with a bucket wheel at the tip of the boom. Often less costly than maintaining a dozer fleet, stacker reclaimers can move in three directions: horizontally along the rail, vertically by lifting its boom, and rotationally by slewing its boom.

Applications include stacking and reclaiming in ports, wharfs, steel plants, coking plants, coal storage plants, power plants, metallurgical plants, cement plants, and other bulk material storage yards.

Brevini® Helical Gearboxes – Compact Drives
- Light, compact solution
- Spheroidal graphite cast iron housing
- Supports torque range up to 40 kNm
- High efficiency
- Easy to assemble/disassemble

Brevini® Helical Bevel Helical Gearboxes – Posired 2 Series
- Extensive ratio range
- Supports torque range up to 1300 kNm
- Increased thermal capacity
- Spheroidal graphite cast iron housing available
- High efficiency
- Diverse low-speed shaft options
- Premium sealing
- Reliable operation
- Low noise

Brevini® Helical Gearboxes – High Power Series
- Extensive ratio range
- Supports torque range up to 2200 kNm
- Increased thermal capacity due to shared oil chamber
- Spheroidal graphite cast iron housing
- Diverse low-speed shaft options
- Premium sealing
- Low noise

Brevini® Planetary Gearboxes – Slewing Drives
- Modular design, coaxial or right angle
- Customized short or long output support
- Supports torque range up to 370 kNm
- Light, compact solution
- Output pin variation to meet a range of customer needs
- Premium sealing
- Spheroidal graphite cast iron housing

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- Premium sealing
- Spheroidal graphite cast iron housing

GWB® Cardan Shaft
- Complete product range featuring flange/swing diameter from 120 to 1300 mm
- Superior bearing life
- High torque capacity
- Designed for ease of maintenance with service-free option
- Engineered to withstand harsh conditions, proven with a 70-year history on the market
- Minimized total cost of ownership

Dana offers customized solutions to meet a range of customer needs, including modular designs and add-on accessories.
Conveyors and Apron Feeders

Conveyors and apron feeders are widely used in the process of handling bulk material. Conveyors are the workhorses of mineral handling, often used in dry processing plants where they play a key role in stabilizing process flow. Typically used for small lump sizes with long-distance paths, conveyors are generally selected based on four factors: tonnage, size and type of material to be processed, incline, and distance.

Apron feeders are necessary whenever the application requires a uniform flow of dry or moist fractions of rock or minerals. They are generally categorized by the size of material to be fed through the machine, and are typically used for short distances to extract bulk material from dump hoppers, bins, and stockpiles.

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Ship-Loaders and Unloader

These large pieces of equipment are used in shipyards to load and unload solid, bulk material such as iron ore, coal, fertilizer, grain, and others. Generally mounted on rails or sometimes tyres, ship-loaders and unloaders can move to access the length of the ship. Using separate drives, their booms can also move from front to back or up and down in order to fill the breadth of the cargo hold, and adapt to the ship’s fluctuating draught while it is being loaded or unloaded. While unloading, even and complete filling of the cargo holds are facilitated by a special telescoping chute with a rotating, pivoting spoon.

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Roller Presses

In order to crush ore, roller presses, or high-pressure grinding rolls (HPGR), utilize two counter-rotating rolls – one fixed and one movable. Compared to traditional systems, this design is more stable and efficient.

Roller presses can be used for grinding as well as compacting. The drive power is transferred to the grinding rollers via multi-stage Brevini® planetary gearboxes, which are mounted on the drive end of the roller shaft using shrink disc coupling or a low-speed flange.

Traditional drives above 400 kW are equipped with fluid- or torque-limiter coupling and a cardan shaft. Bulk material is fed through the gap between two rollers, then through a feeding device on top of the machine, which can vary depending on feeding method.

Brevini® Industrial Planetary Gearboxes – S Series

- Modular concept, can be customized to customer needs
- Supports torque range up to 2200 kNm
- Spherical graphite cast iron housing
- High efficiency
- Diverse low-speed shaft options
- Premium sealing
- Reliable operation, engineered for harsh conditions
- Low noise
- Sealed torque arm systems

GWB® Industrial Driveshaft

- Complete product range featuring flange/swing diameter from 120 to 1300 mm
- Superior bearing life
- High torque capacity
- Maintenance: friendly design with service free option
- Engineered to withstand harsh conditions, proven with a 70-year history on the market
- Designed to minimize total cost of ownership

Brevini® Helical Bevel Helical – Gearmotors

- Extensive torque range
- High efficiency
- Diverse low-speed shaft options
- Low noise
- Robust housing made in cast iron GG20-22

Accessories

- Mechanical torque limiter or Safeset
- GWB® cardan shaft
- VFDs
- Vibrational and temperature sensors
- Fluid coupling

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Wagon Tipplers and Positioners

Wagon tipplers are used to unload bulk material from wagons, including materials such as coal, coke, lignite, iron ore, limestone, dolomite, and others. A complete wagon tippler system includes the positioning system, car dumper, and underground hopper along with feeders below the hopper to release bulk material.

The wagon is positioned in the tippler with special positioner drives, VFD controlled using a rack-and-pinion system. Alternatively, a wire rope cable and drum arrangement can be used. The wagon is dumped using a specific heavy-duty rack-and-pinion drive to position it downward in the machine pit.

Depending on the application, this machine can be designed with a single, tandem, triple, or quadruple dumper frame. Every wagon tippler system is engineered to meet customer needs based on the type of bulk material that will be unloaded.

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Mining Applications

Meeting the growing demand for safety, serviceability, and reliability throughout the mining industry, Dana’s complete Spicer® drivetrain and Brevini® motion systems are specially designed for mining vehicles, including mining trucks, load haul dumpers, mini drill carriers, surface drilling rigs, dump trucks, wheel loaders, mobile crushers, shovels, stacker reclaimers, ship loaders and unloaders, and wagon tipplers.

Spicer® Transmissions
A variety of options for a complete Spicer® design flexibility
Options with low profile for improved comfort and enhanced seal performance
Offered with basic or electronic controls and with different efficiency packages
Converter and transmission packages available with integral, mid-mount or remote control

Spicer® Driveshafts
Efficiently manages extra input torque and heavy loads
Designed for longer life, minimal maintenance, and lower operating costs

Spicer® Heavy Axles
Simple, single-reduction design minimizes parasitic losses for higher efficiency
Heat-treated spindles for increased life
Integrated mechanical sealing
Case-carburized, tapered bearing for long life in severe working environments
Wet multi-disc brake available in pressure-applied or spring-applied design with forced cooling

Spicer® Axles
Differential lock and mounting options
Inboard and outboard brake solutions
Clearing solution for improved efficiency
Modular concept

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Options with low profile for improved comfort and enhanced seal performance
Offered with basic or electronic controls and with different efficiency packages
Converter and transmission packages available with integral, mid-mount or remote control

Brevini® HIC
Fixed and variable displacement options
On/off or proportional directional flow
Remote, electronic operation
Throttle control to improve work function performance

Brevini® Piston Motors and Pump Systems
Medium and high pressure
Fixed and variable displacement options
From 32 up to 226 cc

Brevini® Orbital Motor
Supports 13 to 500 cc displacement
Fixed and variable displacement options
Rotating and gear type styles available

Brevini® Proportional Directional Valves
Fixed and variable displacement pump options
Remote, electronic operation
Throttle control to improve work function performance

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Global Strength

One of the ways we create value is by positioning our technical and manufacturing resources where customers need us globally. Today, that’s 33 countries on six continents.

To help customers achieve success, top-tier suppliers must have a global perspective that can be adapted to meet local requirements and end-user expectations.

Our strength is being over six continents thanks to our global logistic network.

Dana’s comprehensive strategy for electrification in off-highway markets begins with a foundation of enabling original-equipment manufacturers to accelerate their hybrid and electric vehicle development programs. We offer a series of market-ready modular hybrid- and electric-drive systems that can fit into existing vehicle design envelopes and provide OEMs with effective, low-risk, quick-to-market solutions. These products can be connected to traditional Spicer® wheel drives, track drives, axles, and transmissions to deliver hybrid or electric functionality. A wide selection of Brevini® motion products to support the unique power distribution requirements of hybrid and electric off-highway vehicles is also currently available.

Brevini® for Bulk Material-Handling and Mining Applications

Customers have used Brevini® products to efficiently move bulk material in heavy-duty applications for more than 50 years. With a deep understanding of these markets, Dana adds value by ensuring the right equipment is specified before any project begins. Brevini® products from Dana deliver quality, modularity, robustness, and reliability. We value collaborative partnerships that allow us to develop strong, long-lasting relationships with original-equipment manufacturers and end-users in the mining industry.

The product customization, technical support and service offered by 30 regional Dana Service and Assembly Centers can also prevent unplanned maintenance, repairs, and costly shutdowns – helping to maximize return over a product’s lifecycle.

Global Presence

We have the ability to deliver products that meet specific regional requirements through our vast network of nearly 100 engineering, manufacturing, and distribution facilities covering six continents. This global logistic network ensures maximum flexibility and punctuality in the delivery of the products.

Dana Service and Assembly Centers

Customers can capitalize on the specific market knowledge and engineering expertise of 30 regional former Brevini® subsidiaries - now known as Dana Service and Assembly Centers - to provide product customization and service.

Engineering and Research and Development

We engage in ongoing engineering activities as well as research and development to improve the reliability, performance, and cost-effectiveness of our existing products. We are also focused on the design and development of innovative products that meet customer requirements for new applications. Our objective is to be an essential partner to our customers and we remain highly committed to offering superior product quality, technologically advanced solutions, world-class service, and competitive prices.

Culture of innovation

Since our introduction of the automotive universal joint in 1904, we have been focused on technological innovation.

Every day, Dana employees around the world work together to leverage our shared insight, developing the most innovative technologies that provide more value for our customers and solve their biggest challenges.

Innovation drives growth, and our ever-evolving products and technologies provide customers with cutting-edge solutions, addresses end-user needs, and capitalizes on key market trends. In 2017, Dana engineers achieved a new milestone: the company’s 10,000th patent, granted for a Long®-brand heat exchanger with an integrated thermal bypass valve.

Electrification

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Technologies Customized to Every Part of the Globe

With a global presence in 33 countries, Dana Incorporated boasts more than 100 engineering, manufacturing, and distribution facilities. Our worldwide network of local service centers provides assurance that each customer will benefit from the local proximity and responsiveness that they need.

About Dana Incorporated
Dana is an integral partner for virtually every major vehicle and engine manufacturer worldwide. We are a leading supplier of drivetrain, sealing, and thermal technologies to the global automotive, commercial-vehicle, and off-highway markets. Founded in 1904, we employ thousands of people across six continents.

About Dana Off-Highway Drive and Motion Technologies
Dana delivers fully optimized Spicer® drivetrain systems and individual product solutions to customers in construction, agriculture, material-handling, underground mining, and forestry markets, plus Brevini® motion systems for machine working functions.

Learn more about Dana’s complete range of drive and motion systems for off-highway vehicles and industrial machines at dana.com/offhighway.