



Rotary Drilling Machines

Off-Highway Drive and Motion Technologies

Market-leading Spicer® drive systems and Brevini® motion systems from Dana

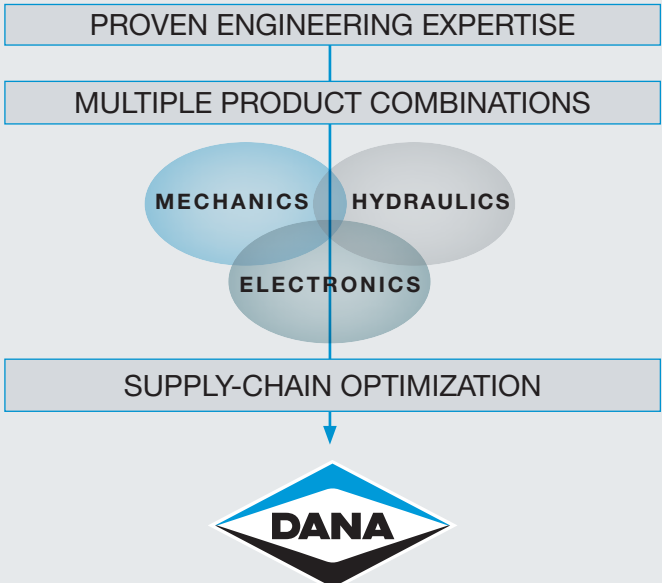


Your Single Source for **Drive and Motion Systems** to Support Drilling Applications

Dana is a single-source supplier with a complete system solution for both the mobility and working functions of rotary drilling machines. Our product portfolio includes a wide range of track drives, slewing drives, winches, hydraulic motors and pumps, flow control systems, and electronic devices. With in-depth application knowledge and strong engineering support, along with local pre- and post-sale service, we can help customers become technology and market leaders.

A Trusted Partner

Dana's engineering capabilities, broad product range, and focus on collaboration with customers allow us to deliver optimal solutions with the performance required to support high levels of efficiency. As a single supplier with a unique portfolio of Brevini® motion systems and Spicer® drivetrain systems, we can also help to optimize supply chains.



Market-Driven **Innovations**

We deliver innovative technologies to meet worldwide customer demands. By anticipating market trends, Dana uses industry expertise to deliver product solutions to help customers achieve their goals.



Low Cost of Ownership



Efficiency



Productivity



Reliability



Global Support

Full-System Solutions for Rotary Drilling Machines

In the construction segment, both vertical and horizontal drilling applications are utilized. Vertical drilling machines include piling rigs, rotary drilling machines, and mini drills. Horizontal applications include horizontal directional drilling (HDD). All machines vary in weight, power, and size in order to meet market requirements.

Drilling machines have become more efficient in terms of productivity and cost of ownership. The introduction of smart technology has also increased efficiency, with sensor and electronic controls to improve operability and driver comfort, enhance safety, and better jobsite.



Spicer® Track Drives

Product range suitable for all customer requirements

Wide range of ratios in combination with Dana Brevini® hydraulic motor and motion control valves

Compact design solution

Manual disengagement device for towing

Hub and spindle made of high strength material

Dedicated sealing system designed for severe environmental conditions

Electric motor version available



Brevini® Pump Drives

Input Power up to 480 kW

Suitable for internal combustion engine or electric motor as input

Output connection for 2, 3 or 4 hydraulic pumps

Wide Range of ratios available to reduce or increase pump speed

Modular concept

Different pump pad available, to connect the majority of pump model

Additional pump for lubrication or cooling system available on request.



Brevini® Planetary Gearboxes – Slewing Drives

Improved thermal capacity

Robust design

Reliable operation, engineered for harsh conditions

Spheroidal graphite cast iron housing for low temperature applications

Custom-made output support and pinions



Brevini® Proportional Directional Valves

Oil Flow Up to 1000 l/min

High modularity

ATEX certification

Remote control, electronic operation

Smooth control to improve operation functionality and accuracy



Brevini® Axial Piston Pumps

Displacement up to 226 cc

Medium and high pressure

Fixed and variable displacement available

Open or closed loop circuit



Brevini® Industrial Series

Wide range of sizes and ratios

Output torque up to 95,000 Nm

Modular concept

High efficiency

Hydraulic or electric motor



Brevini® Winches

Winches for auxiliary hoist system

Line pull up to 30 tons

Wide range of safety controls

Equipped with Brevini® high speed axial piston motor



Brevini® On-Off and Proportional (Not Compensated)

Brevini® Bankable Valve and Hydraulic Integrated Circuit HIC

Fully controls all machine movements



Brevini® Tilt Sensor SP / TAC Series and Self Levelling Control

SP Series: Double axis $\pm 20^\circ$ absolute tilt measurement

TAC Series: single axis 360° absolute tilt measurement

Self levelling control: automatic levelling to ground specific tilt setpoint



Brevini® Gear Pumps

Customized solution



Brevini® Winch Drives

Ratio range up to 6,000:1

Max torque up to 850 kNm

Integrated hydraulic failsafe negative brake



Brevini® Safety Controller M92sc Series

Manages general or specific-applied hydraulic work functions

Full range of capabilities

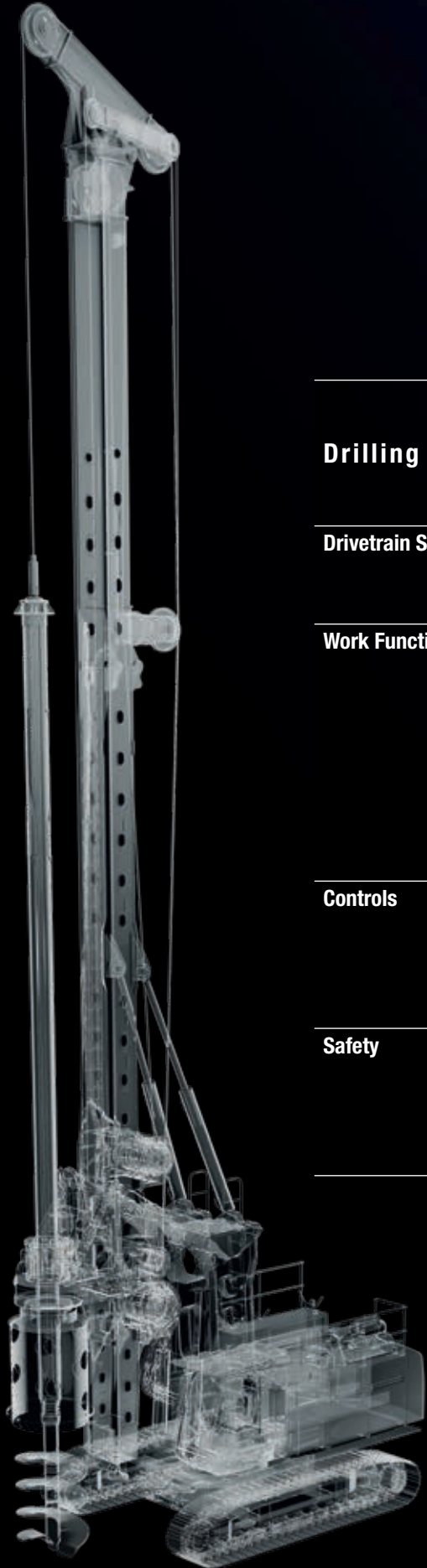
Together, Spicer® drive systems and Brevini® motion systems offer a full range of mechanical, hydraulic, and electronic support to meet the design and development requirements of original-equipment manufacturers.



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



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Market-Driven Innovation





| Drilling Machine | |  Horizontal |  Vertical |
|-------------------|--|---|---|
| Drivetrain System | Travel Drive | • | • |
| | Hydraulic Transmission | • | • |
| Work Functions | Rotary Head Rotation | • | • |
| | Slewing | • | • |
| | Hydraulic System for Functional Controls | • | • |
| | Lifting | • | • |
| | Rotary Head Travel | • | • |
| | | • | • |
| Controls | Hydraulic Electronic Management | • | • |
| | Human Machine Interface (HMI) | • | • |
| | Electronic Control (MAV) | • | • |
| Safety | Tilt Sensor | • | • |
| | Self Levelling Control | • | • |
| | Angle Sensor | • | • |



Global Strength, Local Execution

Global presence is our strength. Dana has the capability to work in proximity with drilling machine manufacturers throughout Italy, Germany, and China with manufacturing plants, engineering centers, and service and assembly centers strategically located to provide local support. We continue to deepen our commitment to our global markets by making investments that optimize our already substantial footprint, extensive market knowledge, and established supply chain.

| | | | |
|---------|----------------------|-------------------|---|
| ITALY | Arco | Montano Lucino |  |
| | Carponeto Piacentino | Parma | |
| | Castel Guglielmo | Reggio Emilia (9) | |
| | Cavenago di Brianza | Rovereto | |
| | Crescentino | Toscanella | |
| GERMANY | Bad Homburg | Mammendorf |  |
| | Essen | Nuremberg | |
| | Magstad | Schkeuditz | |
| | | | |
| CHINA | Chongqing | Shiyan (2) |  |
| | Fujian | Wuxi (3) | |
| | Hubei | Xiamen | |
| | Shanghai | Yancheng (2) | |
| | Shenyang | | |
| | | | |



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 drivetrain and motion systems at
dana.com/offhighway.



SPICER® **BREVINI®**

Application Policy

Capacity ratings, features, and specifications vary depending upon the model and type of service. Application approvals must be obtained from Dana; contact your representative for application approval. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.

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