About Dana Holding Corporation
Dana is a world leader in the supply of axles; driveshafts; and structural, sealing, and thermal-management products, as well as genuine service parts. The company’s customer base includes virtually every major vehicle manufacturer in the global automotive, commercial vehicle, and off-highway markets, which collectively produce more than 70 million vehicles annually. Founded in 1904 and based in Toledo, Ohio, USA, the company employs approximately 35,000 people in 26 countries. In 2007, Dana reported sales of $8.7 billion.

About the Dana Off-Highway Products Group
The Dana Off-Highway Products Group includes research and development, manufacturing, and assembly operations in Belgium, Brazil, China, Hungary, India, Italy, Mexico, the United Kingdom, and the United States. It designs, manufactures, assembles, and markets Spicer axles and transaxles, driveshafts and end-fittings, transmissions, torque converters, electronic controls, and brakes. The group also provides genuine replacement parts and service.

The Dana Off-Highway Products Group serves more than 1,000 vehicle assembly and manufacturing facilities in 30 countries. It also has two global distribution centers and more than 50 authorized service centers supporting customers in more than 100 countries. Construction, agriculture, forestry, underground mining, material handling, outdoor power, leisure/utility vehicles, and industrial equipment are just some of the markets that demand the quality found in Spicer products and genuine service parts.
Dana provides custom, high-quality drivetrain solutions for manufacturers of outdoor power equipment and leisure/utility vehicles across a wide range of applications. Dana offers Spicer® transmissions, transaxles, axles, driveshafts, and brake assemblies as complete systems that come with the flexibility, quality, and value Dana is known for globally.

Customization
Dana supplies components to more than 60 manufacturers of outdoor power equipment and leisure/utility vehicles worldwide, and no two drivetrain systems are ever alike. To achieve this, Dana partners with manufacturers to supply axles and system configurations to meet customers' exact specifications.

At Dana, there are no "off-the-shelf" systems. Dana designs application-specific customization in any area of the assembly, including wheel-to-wheel mounting dimensions, bracketry, angle of the carrier assembly, and left- and right-hand axle shaft and tube lengths.

Dana can help its outdoor power equipment and leisure/utility vehicle customers quickly adjust to market demand by offering a short lead time for drawings, materials, and testing. Dana is able to make use of its vast parts resources and advanced testing facilities around the globe to provide customers with a customized, fully functional sample that can be tested in prototype or existing applications.

Product Performance
Outdoor power equipment and leisure/utility vehicles work for extended periods of time under demanding conditions, and their components must be built to last while requiring little or no maintenance. For a quarter of a century, Dana has supplied these markets with high-quality, proven drivetrain solutions that will always work the right way for the life of the equipment.

Dana stands behind its components by offering warranties, parts and service, and professional maintenance.

Manufacturers of outdoor power equipment and leisure/utility vehicles rely on Dana for custom drivetrain solutions across a variety of applications, including:
- All-terrain vehicles (ATVs)
- Utility vehicles
- Light-duty haulers
- Commercial mowers
- Golf cars
- Flush- and rear-engine riding mowers
- Neighborhood electric vehicles (NEVs)
- Small utility vehicles
- Personal carriers
- Garden tractors
- Walk-behind mowers

Dana developed the Spicer® Model 26 drivetrain assembly as a complex, unique system designed for a new high-performance, side-by-side ATV.

Dana began the process with an application data sheet from the customer that included specifications of the entire vehicle, from engine and transmission to tire sizes and desired final speed requirements.

The customer’s packaging was central to the design because of the rugged features required on this ATV. The axle had to be integrated with multiple durable attachment points for the engine, transmission, and frame mounts. To achieve this, Dana engineers used advanced computer-aided engineering software to model axle and frame positions, working with the customer to choose the best option.

Finite element analysis was used to eliminate any possible equipment failures and to evaluate projected axle performance over more than 1,000 hours of operation. The final step in the process allowed Dana and the manufacturer to test a working prototype vehicle extensively for durability and performance. Fine-tuning for details like bearing fit finalized the vehicle for production.

Leisure/Utility Vehicle Transaxles

Model H-12 Electric
- High-efficiency model features quiet helical gear design
- Nominal load rating is 1,500 lbs. (heavy-duty version is available)
- Designed to accept electric motors
- Available ratios range from 8.91 up to 14.76
- Input torque ratings: 12 ft.-lbs. continuous; 48 ft.-lbs. maximum intermittent
- Brake options include 160mm (mechanical or hydraulic) or 7" (mechanical or hydraulic)
- Wheel mounting options: 4 on 4" B.C. or 5 on 4.5" B.C.
- Optional independent suspension design

Model H-12 FNR
- High-efficiency model features quiet helical gear design
- Nominal load rating is 1,500 lbs. (heavy-duty version is available)
- Mechanical "rotary actuating" ground speed governor (optional)
- Mechanical "rotary" shift forward to reverse
- Available ratios: Forward 10.15:1 12.58:1 13.25:1
- Reverse 11.16:1 13.64:1 14.38:1
- Standard input torque ratings: 24 ft.-lbs. continuous; 96 ft.-lbs. maximum intermittent
- Brake options include 160mm (mechanical or hydraulic) or 7" (mechanical or hydraulic)
- Wheel mounting options: 4 on 4" B.C. or 5 on 4.5" B.C.
- Optional independent suspension design
- Bolt-on module provides manual operation to lock/unlock the differential
- Rotary actuator with lever is available in four different locations

Model GT-20 Axles
- In-line hydrostatic transaxle design
- Nominal load capacity is 1,800 lbs. (heavy-duty version is available)
- Available ratios: 15.17:1, 20.9:1, 30.0:1
- Brake options include 160mm (mechanical or hydraulic) or 7" (mechanical or hydraulic)
- Wheel mounting options: 4 on 4" B.C. or 5 on 4.5" B.C.
- Optional limited-slip differential
- Optional independent suspension design

Model 18 Axles
- Features conventional driveshaft design
- Nominal load capacity is 1,800 lbs. (heavy-duty version is available)
- Designed and rated for 12- to 18-hp engines
- Available ratios: 5.17:1, 12.25:1
- Brake options include 160mm (mechanical or hydraulic) or 7" (mechanical or hydraulic)
- Wheel mounting options: 4 on 4" B.C. or 5 on 4.5" B.C.
- Optional limited-slip differential
- Optional independent suspension design
Leisure/Utility Vehicle Transaxles – Independent Suspension

Model H-12 Electric – Independent Suspension
- Designed for electric golf cars, utility vehicles, low-speed vehicles (LSVs)
- High efficiency, featuring constant mesh helical gears
- Housing designed to accept electric motors
- Available ratios: 10.35:1, 12.44:1, 14.76:1, and 16.99:1
- Nominal input torque rating: 12 ft.-lbs. continuous; 48 ft.-lbs. intermittent
- Flanges to accept independent axle mounting
- Standard two pinion differential with optional limited-slip TRAC LOK™ differential
- Lube capacity 12-24 ounces; contact Dana Engineering for specific lube recommendation

Model H-12 FNR – Independent Suspension
- High-efficiency model features quiet helical gear design
- Nominal load rating is 1,500 lbs. (heavy-duty version is available)
- Mechanical “rotary actuating” ground speed governor (optional)
- Mechanical “rotary” shift forward to reverse
- Available ratios:
  - Forward: 10.15:1, 12.58:1, 13.25:1
  - Reverse: 11.15:1, 13.64:1, 14.36:1
- Standard input torque ratings: 24 ft.-lbs. continuous; 96 ft.-lbs. maximum intermittent
- Brake options include 160mm (mechanical or hydraulic) or 7” (mechanical or hydraulic)
- Wheel mounting options: 4 on 4” B.C. or 5 on 4.5” B.C.
- Standard input rotation: clockwise
- Optional input rotation: counter-clockwise

Model 18 Axes – Independent Suspension
- Features conventional driveshaft design
- Nominal load capacity is 1,800 lbs. (heavy-duty version is available)
- Designed and rated for 12- to 18-hp engines
- Available ratios: 5.17:1, 12:25:1
- Brake options include 160mm (mechanical or hydraulic) or 7” (mechanical or hydraulic)
- Wheel mounting options: 4 on 4” B.C. or 5 on 4.5” B.C.
- Optional limited-slip differential
- Optional independent suspension design

Model 26 Independent Axle
- Lightweight aluminum “die-cast” housings
- High-strength alloy steel, automotive-type “hypoid” gear set, engineered quiet
- Differential assembly consists of a heavy-duty case with automotive-type bevel gears, supported on tapered roller bearings
- Electrically actuated differential lock
- Ring gear diameter: 6.50” (165.1 mm)
- Tube diameter: 2.50” (63.5 mm)
- Maximum output torque: 2,200 ft.-lbs. (298 daNm)
- Maximum continuous output torque: 545 ft.-lbs. (74 daNm)
- Typical applications: on-/off-road utility vehicles, all-terrain vehicles, turf maintenance vehicles, etc.

Outdoor Power Equipment Transaxles

Model 6700
- High-performance single-speed transmission for walk-behind mowers
- Reduction ratio is 3.75:1
- Input speeds up to 1,800 RPM
- Housing is constructed of a durable, impact-resistant composite material
- Lubed for life
- Output shaft diameter: 0.5”
- No clutch

Model 6800
- Up to six speeds forward with reverse
- Output torque, continuous: 150 ft.-lbs.
- Gross axle weight rating: 450 lbs.
- Tire diameter (max.): 20 inches
- Brake axle torque (max.): 250 ft.-lbs.
- Lubrication: oil splash
- Axle shaft: 0.75” diameter with 3/16” square keyway
- Standard brake location on the right side of transaxle
- Optional brake location on the left side of transaxle
- Optional neutral position switch
- Optional reverse position switch
- Standard input rotation: clockwise
- Optional input rotation: counter-clockwise

Model 7800-1 GT Transaxle – Heavy-Duty Ground Engaging
- Features conventional driveshaft design
- Nominal load capacity is 1,800 lbs. (heavy-duty version is available)
- Designed and rated for 12- to 18-hp engines
- Available ratios: 5.17:1, 12:25:1
- Brake options include 160mm (mechanical or hydraulic) or 7” (mechanical or hydraulic)
- Wheel mounting options: 4 on 4” B.C. or 5 on 4.5” B.C.
- Optional limited-slip differential
- Optional independent suspension design
Leisure/Utility Vehicle Brake Assemblies

160 x 30mm Hydraulic Brake
- Nominal torque rating: 5,000 in.-lbs.
- Available with or without parking lever
- Automatic adjustment
- Non-servo floating shoe design
- Non-asbestos linings
- Available on Model H-12 and H-12 FNR axles

160 x 30mm Mechanical Brake
- Nominal torque rating: 5,000 in.-lbs.
- Automatic adjustment
- Non-servo floating shoe design
- Non-asbestos linings
- Available on Model H-12 and H-12 FNR axles

7 x 1.75-Inch Hydraulic Brake
- Nominal torque rating: 11,000 in.-lbs.
- Available with or without parking lever
- Manual adjustment
- Duo-servo floating shoe design
- Non-asbestos linings
- Available on Model H-12, H-12 FNR, 18, and GT-20 axles

7 x 1.75-Inch Mechanical Brake
- Nominal torque rating: 11,000 in.-lbs.
- Manual adjustment
- Duo-servo floating shoe design
- Non-asbestos linings
- Available on Model H-12, H-12 FNR, 18, and GT-20 axles

Driveshafts

Spicer® Ayra-Cardan™
The newest addition to the Spicer family of products allows Spicer to target smaller applications such as ATVs and leisure/utility vehicles. With torque capacities ranging from 825 to 2,400 Nm, Spicer Ayra-Cardan has the right driveshaft to fit your smallest application.

Design Features
- Reduced Weight
- Maintenance Free
- Smaller Swing Diameter
- Improved Retention: Circlip and Staked

Available on Request
- Paint
- Special Types
- SAE and DIN Adapters
- Permanent Lubrication for High and Low Temperatures

TORSIONAL RATING

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<thead>
<tr>
<th>Driveshaft Series</th>
<th>Minimum Elastic Limit</th>
<th>Maximum Swing Diameter</th>
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<td>Nm</td>
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For additional configurations, contact Spicer Driveshaft Engineering for specific application information.