



Chassis Products

Dana offers a variety of chassis products – from individual drivetrain, steering, suspension, structural, and fluid-transfer products to fully integrated “single part number” chassis modules that can be presented for direct integration into vehicle assembly. Backed by a global network of technical centers and manufacturing options, Dana has the resources for both product development and program management wherever customers demand.



POWER STEERING OIL COOLERS Dana's innovative oil coolers are designed to minimize leakage and loss of assist by ensuring that fluid temperatures never exceed the specifications of hoses and seals in the pump – the primary cause of failure. Thermal valves, turbulators, and various oil-side enhancements all improve drivability and durability.

Steering and Suspension Products

Dana's steering and suspension portfolio represents a range of products of interest to both vehicle manufacturers and major system integrators. Ball joints and tie rod components are complemented by a range of fluid-transfer and

actuation products, including high- and low-pressure hoses, pumps, and power packs for conventional, EHPS, and EPS steering applications. All offer class-leading performance and can be tailored to individual customer needs.



STABILIZER BAR LINK Dana's stabilizer bar link contributes to the optimized shape of the suspension system. Its design – which includes a ball joint, control arm, and torque rod – reduces weight significantly. The environmentally friendly design is flexible, accommodating custom configurations.



FLUID TRANSFER TUBING Dana engineers employ materials in innovative ways for chassis fluid-transfer tubing. Rubber, plastic, and metal are used separately or in combination to reduce weight with no compromise in performance or durability. Where applicable, tubing lines are engineered to reduce evaporative emissions or fluid-borne noise.

Chassis Fluid Transfer

Fluid transfer throughout the entire vehicle is a core Dana expertise, and chassis functions such as power steering, brake, fluid transfer, and fuel delivery are key examples where knowledge of the entire system brings value to individual components. Dana engineers work closely with customers to develop complete fluid-system solutions. They can assist in eliminating fluid-borne noise and thermal-management issues by drawing on an extensive global network of technical expertise. Furthermore, new materials, such as high-performance, low-permeability plastics, are available to meet today's aggressive cost- and weight-reduction targets.



Emerging Technologies

Modern vehicles are being specified with an increasing requirement for safety features, such as traction, stability, and roll control. In support of this, Dana is applying its expertise in microprocessor-controlled, brushless DC motors – originally developed for steering applications – into other areas of the vehicle. This technology is particularly relevant where a high-response-speed, controllable actuator is required.

In fluid transfer, Dana continues to innovate with new plastic, multi-layer hose solutions for fuel, HVAC, and other low-pressure applications. These can include multi-function fluid “bundles,” incorporating pumps and heat exchangers as required to suit the application.



POWER PACK Dana power packs provide a wide range of solutions for electric hydraulic steering applications. Dana has extensive experience with DC brushless motors, high-efficiency pumps, and hydraulic systems. Power packs range from 500 to 5,000 watts with streamlined packaging that includes motor, control, and pump reservoir.



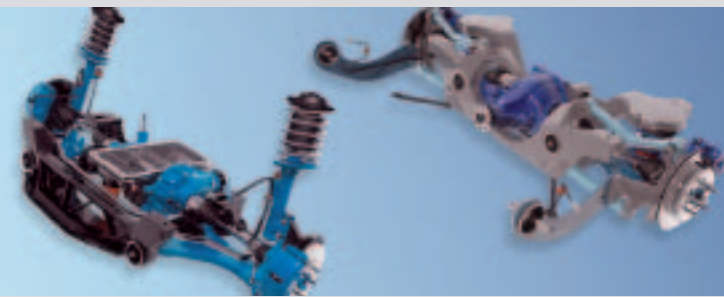
ELECTRIC POWER STEERING (EPS) EPS motors deliver an efficient, high-torque solution for rack- and column-assist steering architectures. Designed for low-cost manufacturing, the motor delivers low-torque ripple output (down to 1 percent) to ensure the smooth operation necessary for EPS steering applications.

Modular Solutions

Dana's extensive knowledge of vehicle dynamics, coupled with a world-class supply-chain management capability, has resulted in an ability to offer complete modular solutions. Dana chassis components and sub-systems can be combined with other customer-specified products to produce modular configurations to exact customer requirements. These include both independent front and rear modules for passenger cars and complete Rolling Chassis™ modules for light-truck applications.



ROLLING CHASSIS™ Dana's fully integrated Rolling Chassis™ modules meet customer needs by combining drivetrain, chassis, and structural products with full service support, from initial concept through the vehicle's entire life cycle.



FRONT AND REAR SUSPENSION MODULES Dana produces chassis modules on behalf of a number of major vehicle manufacturers. They comprise a combination of Dana products and other customer-specified components to offer single-part-number flexibility.

CHASSIS MODULES

STEERING

SUSPENSION

FLUID TRANSFER

CHASSIS PRODUCTS

ENGINE CRADLES

FULL-PERIMETER FRAMES

SIDE RAILS

SPACEFRAMES

STRUCTURAL PRODUCTS



DRIVETRAIN PRODUCTS

TRANSMISSIONS

DRIVESHAFTS / PROPSHAFTS

AXLES / DIFFERENTIALS

THERMAL MANAGEMENT

ENGINE PRODUCTS

SEALING SYSTEMS

THERMAL MANAGEMENT

FLUID TRANSFER

POWER PRODUCTS

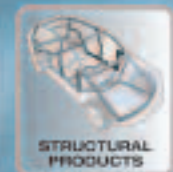
About Dana Corporation

The people of Dana Corporation design and manufacture products for virtually every major vehicle and engine producer in the world. Dana is focused on being an essential partner to automotive, commercial, and off-highway vehicle customers, which collectively produce more than 60 million vehicles every year. A leading supplier of engine, drivetrain, chassis, and structural technologies, Dana employs 46,000 people in 28 countries. The company is based in Toledo, Ohio. Dana's Internet address is www.dana.com.

What Can Dana Do For You?

Dana Corporation provides high-quality automotive product solutions in four core areas of the vehicle – engine, drivetrain, chassis, and structural systems. This lineup of technologies from one source is designed to offer total flexibility to vehicle manufacturers around the world – whether in automotive centers or emerging markets – and ensures that customers have access to the latest state-of-the-art technologies, as well as products adjusted for specific local markets. With 45 technology centers strategically located throughout the world, Dana engineers have the superior resources to develop, design, test, and manufacture to suit your individual needs. This close collaboration with customers allows Dana to create everything from advanced single components to fully integrated modular systems.

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