DSC/RCV High Performance CV Axles for Specialized Commercial & Industrial Applications
Dallas Smith Corp. / Rockford Acromatic Products CV Axles

Through its exclusive partnership and alliance with the Rockford Acromatic Products, Dallas Smith Corp. offers a specialized product line of high performance, CV Axles that are designed specifically to meet extreme operating conditions presented by many commercial and industrial vehicle applications.

The DSC and Rockford Team provides a full line of customer services that include; CV axle concept design, engineering, testing/validation, pre-production prototypes, and production.

DSC also utilizes third party contractors to perform specialized engineering and testing services; i.e., Roush Engineering, DOT’s Altoona Testing Center, and Transportation Research Center.

Dallas Smith Corp. utilizes the DSC/RCV CV axles in its internal production of full time front wheel drive vehicles; with GVWR’s of 9,500 lbs to 19,500 lbs, and Ford F-450 and Ford F-550 chassis. Typically, the vehicles incorporate a modified Dana Super 60 with a GAWR of 7,000 lbs. The vehicles are used as transit shuttle buses, commercial delivery trucks, bookmobiles, et al.

About Dallas Smith Corp.

Always an innovator, in 1954, Earl Dallas Smith founded Dallas Smith Corp®. In 1960, Smith formed a trucking division in Phoenix, Arizona to transport new General Motors vehicles to auto dealers located in Colorado, Nevada, New Mexico, Mexico, and Arizona. This transport company prospered for 25 years until Ryder acquired the successful trucking business in 1984.

Driven from his earlier successes, Dallas Smith looked to reinvent the transportation industry through innovation and new product development. With over 20 years of research and development, as well as 25 patents supporting the exclusive Axleless® Suspension System, Dallas Smith Corporation® has continued to set its sights on providing the transportation industry with safer, smarter and easier trucks and trailers.

By offering over 30% more cargo area, Dallas Smith Corp® was quickly noticed by the industry’s top trailer manufacturers. After working with companies like Ford Motor Company, Roush, and BAE Systems, Dallas Smith Corp® has since made low floor an option on the Ford F-Series Super Duty platform. The technology has been opened to a wide range of front-wheel drive applications; such as buses, bookmobiles, emergency response vehicles, cargo trucks, delivery trucks, beverage trucks, utility trucks, and much more.

About Rockford Acromatic Products

Rockford Acromatic Products is a family owned business conglomeration that has been providing vehicle driveline solutions for over 60 years. Implementing their solutions in diverse industries; including automotive, industrial, military, fleet, and recreation has provided them with depth and perspective that is unmatched in the industry.
Dallas Smith Corp.
DSC/RCV Ultimate CV Axles

DSC/RCV Ultimate CV Axles easily replace universal jointed front axle shafts, and turn a stock axle into an animal. The CV joint design eliminates u-joint binding, so power can be smoothly put to the ground during technical maneuvers. It eliminates steering wheel shimmy as well. The axles are just as tough at a straight angle as they are at extreme angles; where u-jointed axles are at their weakest. Keeping all this strength and smoothness protected, is patented Spherical Sealing Technology, which provides much greater resistance to punctures and tears than a rubber CV boot.
The Limitations of Universal Jointed Axle Shafts; Catastrophic U-Joint and Axle Failure

Experience has shown us that in extreme conditions, the universal jointed front axle shafts, used in many vehicles, are prone to breakage and compromise traction.

Universal Joint Failure

Upon analysis, we found major points of weakness with the U-joint axle shaft design. The first is the universal joint U-joint), which often breaks because it is not engineered to handle extreme-stress off road use. Also, the c-clips that hold the U-joint place can come off while under load, causing failure. Problems are compounded as broken or unfastened U-joints can catastrophically damage the axle shaft yoke ears to which they are attached.

Axle Shaft Yoke Failure

Another point of weakness is the axle yoke. Space constraints make it necessary for the design of the yoke to be compact. Therefore, the yokes are thin and often breaks, as it cannot handle the stress imposed by extreme non-standard use. While some manufacturers have developed heavy-duty U-joints that are strong enough to withstand extreme usage, the axle yoke still limits the strength of the overall assembly.

U-Joint Binding

When operating at an angle, the geometry of a U-joint is such that the speed of the axle shaft alternately increases and decreases four times every revolution. As the steering wheel is turned, the operating angle of the joint becomes tighter and the speed variation of the shaft increases. This creates binding in the yoke/U-joint assembly.
CV Joints Overcome the Strength Limitations of U-joints

Constant Velocity (CV) joints are the solution for failing U-joints.

With the DSC/RCV Rzeppa-type CV joint, engine torque is spread over six bearings, rather than the four bearing cups of a U-joint. This distributes force over a larger surface area, thus making the CV joint intrinsically stronger.

The CV joint is just as strong straight as it is in a turn; where a U-joint is at its weakest.

The design of the CV joint allows it to always assume a position that makes equal angles with the input and output shafts. So, when the joint is operating at an angle, the shaft speeds remain constant. Hence the term Constant Velocity Joint. The CV joint allows smooth application of power while the steering wheel is turned, which maximizes traction between the tire and the ground. There is no oscillation felt through the steering wheel, and the resultant smoothness is easy on driveline components.
DSC/RCV Ultimate Constant Velocity Axles are the Ultimate Solution

In order to provide a strong solution, we took what we learned and engineered the DSC/RCV Ultimate CV Axle for Jeep. The result is an extreme-duty CV axle that eliminates the issues of universal jointed Jeep axle shafts, as well as the limitations of traditional CV joints.

Design allows tight steering angles up to 45 degrees, and provides high strength throughout range of motion.

Spherical Sealing Technology (SST) utilizes a cast polyurethane cap to provide far greater resistance to punctures and tears than a rubber CV boot. SST is rock-proof, and will not bunch or balloon. This is a patented RCV technology.

Low maintenance - Unlike U-joints that must be greased almost every time you go out, Ultimate CV Axles only need grease a couple times a year, and are easily serviced via a zerk fitting.

Housing, bearing cage, inner-race, and axle shaft are manufactured with aircraft quality high alloy steel, and proprietary construction techniques to make them highly resistant to bursting and fracture.
DSC/RCV Ultimate CV Axles are twice as strong as OEM Axle Shafts.

Test results show that the DSC/RCV CV axles for Dana 44 and Dana 60, to be twice as strong as OEM axle shafts. They are just as tough at a straight angle as they are at extreme angles; where u-joint axle shafts are most vulnerable.
Military Vehicle Applications

The military vehicle market encompasses manufacturers of vehicles used by the military. The products produced by these companies often perform critical functions. As lives are at stake, the vehicles must deliver high levels of performance, while being exceptionally durable and reliable.

Why this market is exciting to us: DSC/RCV product solutions are very applicable to military vehicles, as they are often used in the same type of environment.

What we bring: Expertise in engineering and manufacturing durable driveline solutions for off-road use.

DSC/RCV Performance Offers Solutions for the Military Vehicle Market

**Problem:** Rubber CV boots used on the SupaCat Intruder, a High Mobility Transporter designed for high off road capability, had a very short service life and frequently failed prematurely (often within the first minutes of vehicle operation). Thereby allowing debris to enter and damage CV joints.

**Cause:** Planetary reduction hubs create heat that damages rubber CV boots.

**Solution:** DSC/RCV engineered and manufactured CV Axle design with Spherical Sealing Technology (SST). Rather than using a rubber CV boot on the outer CV joint, a cast polyurethane cap (SST) is implemented. SST has proven to be impervious to heat generated by the planetary reduction hubs.