

# VariGlide® Planetary Variator

Introducing the next evolution in continuously variable transmission (CVT) technology



Bringing greater fuel economy, durability, and performance to a wide variety of beltless CVTs



## The promise of CVT technology – realized.

Representing a breakthrough in CVT technology, Dana's VariGlide® planetary variator provides enhancements relative to dual-clutch transmissions, multi-speed automatics, and conventional belt CVTs. Unlike the limited efficiency gains of existing belt CVT technologies, VariGlide technology offers a highly adaptable, robust alternative for front-wheel drive (FWD), rear-wheel drive (RWD), all-wheel drive (AWD), and hybrid configurations, and its unique modular design and ratio control responsiveness help engineers develop custom transmission architectures and calibrations.

### High-Performing CVT Technology

VariGlide CVT technology is fully adaptable to high performance/high torque FWD and RWD applications (including towing applications). Unlike traditional 6- to 10-speed transmissions that exhibit shift busyness while optimizing fuel economy, the VariGlide planetary variator enables wide ratio paths. This allows vehicles to rapidly respond to the same operating demands at lower, more consistent engine speeds for improved fuel efficiency.

The absence of a belt improves durability while the passive mechanical clamping mechanism eliminates key parasitic losses and associated complex control systems.

### Flexible and Scalable

The bolt-in VariGlide module offers powerpath flexibility which allows simple integration into conventional drivetrain systems. This helps OEMs meet strict packaging requirements, while the numerous ratio ranges support conventional and downsized powertrain solutions.

The coaxial design enables complete scalability in passenger cars, SUVs, CUVs, and pickup trucks without compromising towing capability.

### The VariGlide DIFFERENCE

#### EFFICIENCY

Depending on powerpath selection, VariGlide technology has been shown to improve fuel economy by as much as 10 percent relative to belt CVTs.

#### DURABILITY

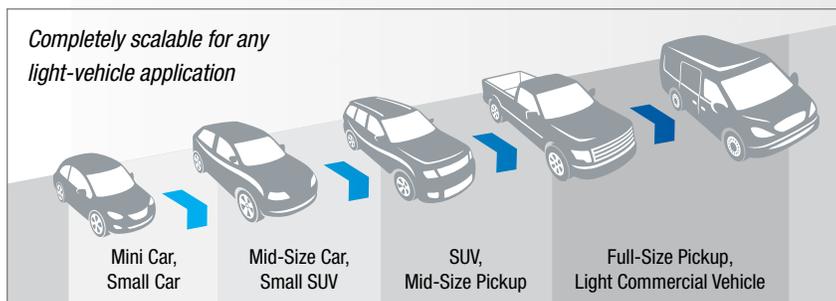
The beltless design and mechanical clamping system represent a paradigm shift in CVT robustness. Similar to proven ball bearing technology, the VariGlide planetary variator demonstrates equivalent durability characteristics, and eliminates damage associated with belt slip in conventional belt CVTs.

#### DRIVABILITY

The VariGlide planetary variator achieves high fuel economy, exceptional drivability, and smooth operation through synchronous mode shifts. The ability to rapidly ratio shift enables calibration engineers to develop a variety of driving modes depending on application requirements.

#### FLEXIBLE APPLICATION

FWD, RWD, and AWD applications are scalable and adaptable through this fully configurable solution.

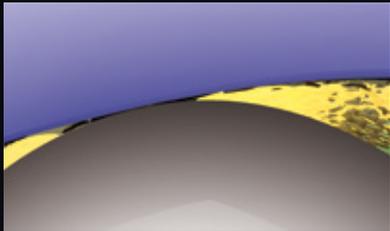




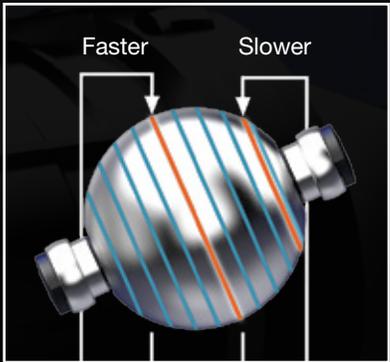
### Inside VariGlide®



A set of spinning planets is fitted between an input ring, driven by the engine, and an output ring, which transfers power from the variator to the downstream drivetrain elements.



During elastohydrodynamic (EHL) conditions, a special traction fluid transfers torque between the ball and ring without perceptible slipping. Metal-to-metal contact is eliminated.



As power enters the input disc, the planets tilt on their axes and adjust contact diameters, which changes ratio to allow smooth, fast, and tightly controlled shifting.

## Game-changing technology. World-class resources.

Dana's world-class technology center in Cedar Park, Texas, is dedicated to engineering and manufacturing process development for the VariGlide variator. Over 70,000 hours of variator durability testing and 6,000 hours of transmission testing have been accumulated using the latest, state-of-the-art dynamometer test equipment.

At our 100 percent vertically integrated facility, VariGlide variators are designed, analyzed, manufactured, and tested, with an emphasis on speed and customer support. The facility houses an AWD/four-wheel drive (4WD) chassis dynamometer to support vehicle mechanical and controls development, allowing full driveline system integration and optimization.



Learn more today about this breakthrough CVT technology at [dana.com/variglide](http://dana.com/variglide).

### About Dana Holding Corporation

Dana is an integral partner for virtually every major vehicle and engine manufacturer worldwide. We are a leading supplier of driveline, sealing, and thermal technologies to the global automotive, commercial-vehicle, and off-highway markets. Founded in 1904, we employ more than 23,000 people across 130 countries on six continents.

### About Dana Automotive Product Solutions

Dana provides high-quality automotive product solutions in three core areas of the vehicle – driveline, sealing, and thermal systems. This lineup of technologies from one source is designed to offer flexibility to vehicle manufacturers around the world – whether in automotive centers or emerging markets – and ensures that customers get the latest state-of-the-art technologies, as well as products adjusted for specific local markets. With more than a dozen technology centers strategically located throughout the world, Dana engineers have the superior resources to develop, design, test, and manufacture to suit individual customer needs. This close collaboration allows Dana to create everything from advanced single components to fully integrated modular systems.

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#### 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.