



## Availability

- Chrysler, Dana, Ford and GM
- Used in Hummer, Kia, Land Rover, Nissan, Toyota vehicles
- Can be developed for other applications

## Benefits

- Improved traction relative to other rear wheel and four wheel drive vehicles
- Maintenance free - requires no special lubrication or friction modifiers
- Lifetime torque bias retention
- Simple, proven design
- Smooth and quiet operation
- Limits wheel spin-out and improves handling
- Performs open, until needed

## Principle of Operation

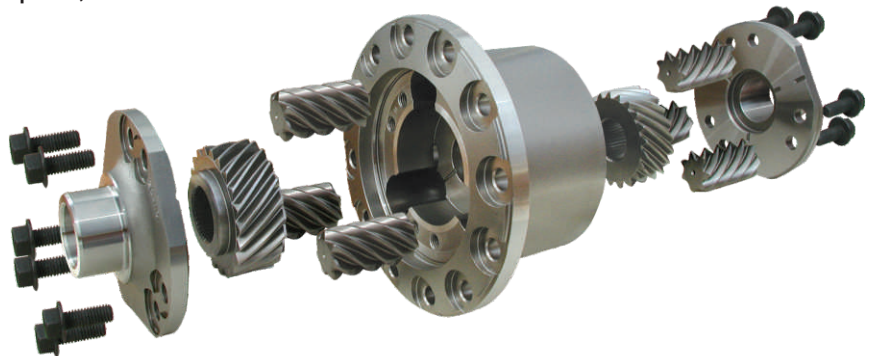
- Patented design of parallel axis, planetary helical gears, provides a smooth and quiet, automatic division of torque

## Technical Specifications

- Unit can transfer up to 3.5 times more torque to high traction wheel
- Truetrac available in 2,3 and 4 pinion designs
- Front, rear and transfer case applications

## Applications

- Emergency Vehicles
- Landscape Trucks
- Delivery Vehicles
- Armored Trucks
- Walk-in Vans
- Dump Trucks
- Stake Trucks
- Utility Vehicles
- Motor Homes
- Buses
- SUVs



## Truetrac® Differential

The Truetrac is the leading helical gear-type limited slip differential in the industry. Eaton has a proven track record of producing the most effective and dependable traction differentials in the world.

Truetrac's patented design of parallel axis, planetary helical gears, provides a smooth and quiet, automatic division of torque. Power transfer is so smooth, it literally goes unnoticed by the driver - even in front wheel drive axles. Because of Truetrac's smooth operation there is no affect on braking characteristics or fuel consumption. Under normal driving conditions, Truetrac performs like an open differential.

### Traction Control

The Truetrac performs like an open differential under normal conditions, and automatically transfers torque to the wheel with the highest traction when required. The Truetrac can transfer up to 3.5 times more torque to the high traction wheel. This torque transfer ratio (called the bias ratio) is accomplished by using helical side gears and pinions. The bias ratio is the result of pressure exerted by the side gears and pinions against the surface of the differential case. In certain applications, this normal gear engagement may produce temporary driver feedback.

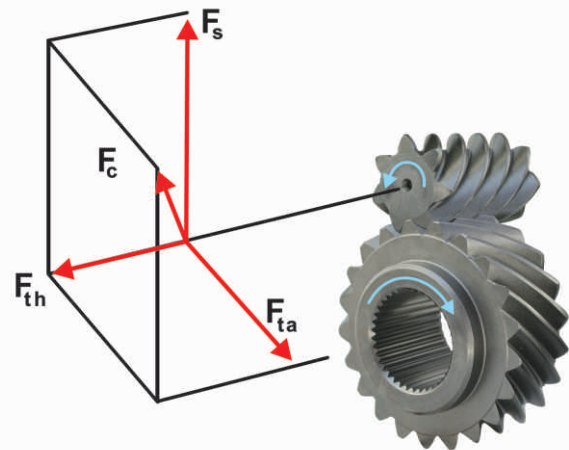
The Truetrac designs have been produced within a maximum continuous torque range from 2,500 Lb-Ft to 25,000 Lb-Ft. Increased capacity can be accomplished by larger gears and more pinion sets.

On wet, muddy, icy or loose terrain, imbalanced gear forces automatically transfer power to the wheel with the highest traction. The Truetrac limited slip differential responds instantly to torque feedback providing needed traction, anytime, at any speed.

Engineered to work efficiently in front and rear axles, semi-floating (C-clip axles) and transfer cases. Proven design, low cost and effective performance, all make the Truetrac limited slip differential the ideal choice for a wide variety of vehicle applications, including emergency vehicles, walk-in vans, motor homes, SUVs, landscape and delivery trucks.

### Traction Control

#### Force Diagram



- $F_c$  Combined force tending to wedge the pinion in the pocket equals
- $F_s$  Separating force due to pressure angle plus
- $F_{th}$  Thrust force due to helix angle plus
- $F_{ta}$  Tangential force between side gear and pinion