

Differentials for Forklifts

Forklift Differential - A differential is a mechanical device which is capable of transmitting rotation and torque through three shafts, frequently but not all the time employing gears. It usually operates in two ways; in cars, it receives one input and provides two outputs. The other way a differential functions is to combine two inputs to generate an output that is the average, difference or sum of the inputs. In wheeled vehicles, the differential enables each of the tires to rotate at different speeds while providing equal torque to each of them.

The differential is designed to drive a set of wheels with equal torque while enabling them to rotate at various speeds. While driving around corners, a car's wheels rotate at various speeds. Some vehicles like for instance karts function without a differential and use an axle as a substitute. Whenever these vehicles are turning corners, both driving wheels are forced to spin at the same speed, typically on a common axle which is driven by a simple chain-drive mechanism. The inner wheel should travel a shorter distance than the outer wheel while cornering. Without using a differential, the result is the outer wheel dragging and or the inner wheel spinning. This puts strain on drive train, resulting in unpredictable handling, difficult driving and deterioration to the tires and the roads.

The amount of traction needed in order to move the car at whichever given moment depends on the load at that moment. How much drag or friction there is, the vehicle's momentum, the gradient of the road and how heavy the vehicle is are all contributing factors. Amongst the less desirable side effects of a conventional differential is that it could limit grip under less than perfect conditions.

The torque provided to each and every wheel is a product of the transmission, drive axles and engine applying a twisting force against the resistance of the traction at that specific wheel. The drive train could usually supply as much torque as necessary except if the load is exceptionally high. The limiting factor is commonly the traction under each wheel. Traction could be interpreted as the amount of torque which can be generated between the road surface and the tire, before the wheel begins to slip. The car will be propelled in the intended direction if the torque utilized to the drive wheels does not exceed the threshold of traction. If the torque utilized to every wheel does go over the traction limit then the wheels will spin continuously.