

Forklift Differential

Forklift Differential - A differential is a mechanical device that is capable of transmitting torque and rotation via three shafts, often but not at all times using gears. It normally operates in two ways; in automobiles, it provides two outputs and receives one input. The other way a differential operates is to put together two inputs so as to produce 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 various speeds while providing equal torque to all 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 round corners, a car's wheels rotate at various speeds. Some vehicles such as karts operate without using a differential and utilize an axle as an alternative. When these vehicles are turning corners, both driving wheels are forced to rotate at the same speed, usually on a common axle that is powered by a simple chain-drive mechanism. The inner wheel needs to travel a shorter distance as opposed to the outer wheel when cornering. Without using a differential, the effect is the outer wheel dragging and or the inner wheel spinning. This puts strain on drive train, causing unpredictable handling, difficult driving and damage to the tires and the roads.

The amount of traction considered necessary in order to move the car at whatever given moment is dependent 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 car is are all contributing elements. One of the less desirable side effects of a traditional differential is that it can limit traction under less than perfect circumstances.

The end result of torque being provided to each wheel comes from the drive axles, transmission and engine applying force against the resistance of that traction on a wheel. Usually, the drive train would provide as much torque as needed unless the load is extremely high. The limiting factor is commonly the traction under every wheel. Traction can be defined as the amount of torque which can be produced 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 go over the limit of traction. If the torque utilized to each wheel does exceed the traction limit then the wheels will spin constantly.