

Differentials for Forklifts

Forklift Differential - A differential is a mechanical machine that is capable of transmitting torque and rotation via three shafts, often but not at all times using gears. It usually functions in two ways; in cars, it receives one input and provides two outputs. The other way a differential operates is to combine two inputs to create 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 intended to drive a pair of wheels with equal torque while enabling them to rotate at different speeds. While driving round corners, an automobile's wheels rotate at various speeds. Some vehicles like for instance karts work without using a differential and make use of an axle instead. Whenever these vehicles are turning corners, both driving wheels are forced to rotate at the same speed, normally on a common axle that is powered by a simple chain-drive apparatus. The inner wheel should travel a shorter distance compared to the outer wheel when cornering. Without a differential, the effect is the outer wheel dragging and or the inner wheel spinning. This puts strain on drive train, resulting in unpredictable handling, difficult driving and damage to the tires and the roads.

The amount of traction necessary to move whatever car will depend upon the load at that moment. Other contributing factors comprise momentum, gradient of the road and drag. Among the less desirable side effects of a conventional differential is that it could limit traction under less than perfect conditions.

The torque supplied 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 particular wheel. The drive train could typically supply as much torque as needed except if the load is very high. The limiting element is usually the traction under each and every wheel. Traction can be defined as the amount of torque that could be generated between the road surface and the tire, before the wheel starts to slip. The car would be propelled in the intended direction if the torque used to the drive wheels does not exceed the threshold of traction. If the torque used to every wheel does go over the traction threshold then the wheels would spin constantly.