Forklift Differential

Forklift Differential - A differential is a mechanical tool that is capable of transmitting rotation and torque through three shafts, often but not always using gears. It usually works in two ways; in automobiles, it receives one input and provides two outputs. The other way a differential operates is to combine two inputs to be able to produce an output that is the sum, average or difference of the inputs. In wheeled vehicles, the differential allows all tires to be able to rotate at various speeds while providing equal torque to each of them.

The differential is designed to drive a pair of wheels with equal torque while allowing them to rotate at various speeds. While driving around corners, a car's wheels rotate at various speeds. Certain vehicles such as karts work without a differential and utilize an axle instead. When these vehicles are turning corners, both driving wheels are forced to rotate at the same speed, usually on a common axle which is powered by a simple chain-drive apparatus. The inner wheel has to travel a shorter distance than the outer wheel when cornering. Without using a differential, the outcome 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 considered necessary to be able to move whichever vehicle will depend upon the load at that moment. Other contributing factors include gradient of the road, drag and momentum. Among the less desirable side effects of a traditional differential is that it could limit traction under less than ideal situation.

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