Differential for Forklifts

Forklift Differential - A differential is a mechanical machine that is capable of transmitting rotation and torque through three shafts, often but not all the time using gears. It often works 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 allows each of the tires to rotate at different speeds while supplying equal torque to each of them.

The differential is designed to drive a pair of wheels with equal torque while enabling them to rotate at different speeds. While driving around corners, a car's wheels rotate at different speeds. Some vehicles like for instance karts operate without using a differential and make use of an axle as an alternative. Whenever these vehicles are turning corners, both driving wheels are forced to spin at the same speed, usually on a common axle that is driven by a simple chain-drive mechanism. The inner wheel needs to travel a shorter distance as opposed to the outer wheel when cornering. Without a differential, the consequence 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 roads and tires.

The amount of traction required in order to move any vehicle will depend upon the load at that moment. Other contributing elements include drag, momentum and gradient of the road. One of the less desirable side effects of a conventional differential is that it could limit traction under less than perfect conditions.

The effect of torque being provided to each and every wheel comes from the drive axles, transmission and engine making use of force against the resistance of that grip on a wheel. Normally, the drive train would supply as much torque as needed except if the load is exceptionally high. The limiting element is usually the traction under each wheel. Traction could be defined as the amount of torque that can be produced between the road exterior and the tire, before the wheel starts to slip. The car will be propelled in the intended direction if the torque used to the drive wheels does not go over the threshold of traction. If the torque used to every wheel does go over the traction threshold then the wheels will spin incessantly.