

Differentials for Forklifts

Forklift Differential - A mechanical device capable of transmitting rotation and torque via three shafts is referred to as a differential. Sometimes but not always the differential would employ gears and will operate in two ways: in vehicles, it provides two outputs and receives one input. The other way a differential operates is to combine two inputs to be able to generate an output that is the sum, average or difference of the inputs. In wheeled vehicles, the differential enables all tires to rotate at different speeds while providing equal torque to each of them.

The differential is built to drive the wheels with equivalent torque while also allowing them to rotate at different speeds. Whenever traveling around corners, the wheels of the cars will rotate at different speeds. Some vehicles like karts operate without a differential and use 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 mechanism. The inner wheel has to travel a shorter distance as opposed to the outer wheel while cornering. Without using 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 tires and the roads.

The amount of traction considered necessary to be able to move whatever car will depend upon the load at that moment. Other contributing elements include momentum, gradient of the road and drag. Amongst the less desirable side effects of a traditional differential is that it could reduce grip under less than perfect conditions.

The outcome of torque being supplied to every wheel comes from the drive axles, transmission and engine making use of force against the resistance of that traction on a wheel. Usually, the drive train would supply as much torque as needed unless the load is extremely high. The limiting factor is usually the traction under each wheel. Traction could 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 planned direction if the torque utilized to the drive wheels does not go over the threshold of traction. If the torque used to every wheel does go over the traction limit then the wheels would spin continuously.