

Differentials for Forklifts

Forklift Differential - A mechanical device which could transmit rotation and torque via three shafts is called a differential. Occasionally but not always the differential would utilize gears and would work 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 difference, sum or average of the inputs. In wheeled vehicles, the differential enables all tires to rotate at different speeds while providing equal torque to all of them.

The differential is intended to drive a set of wheels with equivalent torque while enabling them to rotate at different speeds. While driving round corners, a car's wheels rotate at different speeds. Some vehicles like karts function without using a differential and use an axle in its place. If these vehicles are turning corners, both driving wheels are forced to spin at the identical speed, usually on a common axle which is powered by a simple chain-drive mechanism. The inner wheel has to travel a shorter distance compared to the outer wheel when cornering. Without utilizing a differential, the consequence 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 roads and tires.

The amount of traction considered necessary in order to move whichever vehicle will depend upon the load at that moment. Other contributing factors comprise drag, momentum and gradient of the road. Amongst the less desirable side effects of a traditional differential is that it can reduce grip under less than ideal situation.

The end result of torque being supplied to each wheel comes from the drive axles, transmission and engine making use of force against the resistance of that grip on a wheel. Usually, the drive train will provide as much torque as required except if the load is very high. The limiting factor is commonly the traction under each wheel. Traction can be defined as the amount of torque which can be produced between the road surface and the tire, before the wheel starts to slip. The vehicle would be propelled in the planned direction if the torque used to the drive wheels does not go beyond the limit of traction. If the torque used to every wheel does exceed the traction limit then the wheels will spin constantly.