

Differentials for Forklifts

Forklift Differential - A mechanical tool capable of transmitting torque and rotation through three shafts is called a differential. Every now and then but not at all times the differential will utilize gears and would work in two ways: in vehicles, it receives one input and provides two outputs. The other way a differential functions is to combine two inputs in order to generate an output that is the sum, average or difference of the inputs. In wheeled vehicles, the differential enables each of the tires to rotate at different speeds while supplying equal torque to each of them.

The differential is designed to drive a set of wheels with equivalent torque while allowing them to rotate at various speeds. While driving round corners, a car's wheels rotate at different speeds. Some vehicles such as karts operate without using a differential and utilize an axle in its place. If these vehicles are turning corners, both driving wheels are forced to rotate at the same speed, typically on a common axle which is driven by a simple chain-drive apparatus. The inner wheel must 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 necessary in order to move the car at whichever given moment is dependent on the load at that moment. How much drag or friction there is, the car's momentum, the gradient of the road and how heavy the automobile is are all contributing factors. One of the less desirable side effects of a traditional differential is that it could limit grip under less than ideal situation.

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 specific wheel. The drive train can normally provide as much torque as needed except if the load is very high. The limiting element is commonly the traction under each 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 go beyond the threshold of traction. If the torque utilized to every wheel does exceed the traction limit then the wheels will spin constantly.