

Differentials for Forklifts

Forklift Differential - A mechanical machine which can transmit rotation and torque via three shafts is known as a differential. At times but not always the differential will employ gears and would work in two ways: in vehicles, it receives one input and provides two outputs. The other way a differential operates is to combine 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 be able to rotate at various speeds while supplying equal torque to all of them.

The differential is designed to drive a pair of wheels with equivalent torque while allowing them to rotate at various speeds. While driving round corners, an automobile's wheels rotate at various speeds. Some vehicles such as karts operate without a differential and make use of an axle as an alternative. When these vehicles are turning corners, both driving wheels are forced to spin at the same speed, typically on a common axle which is driven 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 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 tires and the roads.

The amount of traction required to be able to move the car at whatever given moment is dependent on the load at that moment. How much friction or drag there is, the car's momentum, the gradient of the road and how heavy the automobile is are all contributing elements. Amongst the less desirable side effects of a traditional differential is that it could limit grip under less than ideal conditions.

The torque supplied to each and every 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 could typically provide as much torque as required unless the load is exceptionally high. The limiting factor is normally the traction under each wheel. Traction can be interpreted as the amount of torque which can be generated between the road exterior and the tire, before the wheel starts to slip. The automobile would 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 used to every wheel does exceed the traction limit then the wheels will spin constantly.