

Pinion

The king pin, typically made out of metal, is the major axis in the steering mechanism of a motor vehicle. The original design was actually a steel pin wherein the movable steerable wheel was mounted to the suspension. Able to freely turn on a single axis, it limited the degrees of freedom of movement of the remainder of the front suspension. During the nineteen fifties, when its bearings were replaced by ball joints, more detailed suspension designs became available to designers. King pin suspensions are nonetheless utilized on some heavy trucks in view of the fact that they have the advantage of being capable of lifting a lot heavier load.

The newer designs of the king pin no longer limit to moving similar to a pin. These days, the term may not even refer to a real pin but the axis where the steered wheels pivot.

The KPI or also known as kingpin inclination may also be known as the steering axis inclination or SAI. These terms describe the kingpin if it is positioned at an angle relative to the true vertical line as viewed from the front or back of the lift truck. This has a major impact on the steering, making it tend to return to the straight ahead or center position. The centre position is where the wheel is at its uppermost point relative to the suspended body of the lift truck. The motor vehicles weight has the tendency to turn the king pin to this position.

Another impact of the kingpin inclination is to set the scrub radius of the steered wheel. The scrub radius is the offset between the tire's contact point with the road surface and the projected axis of the steering down through the king pin. If these items coincide, the scrub radius is defined as zero. Though a zero scrub radius is possible without an inclined king pin, it requires a deeply dished wheel so as to maintain that the king pin is at the centerline of the wheel. It is a lot more sensible to incline the king pin and utilize a less dished wheel. This likewise offers the self-centering effect.