Forklift Pinions

Forklift Pinion - The king pin, normally made out of metal, is the main axis in the steering mechanism of a motor vehicle. The original design was actually a steel pin on which the movable steerable wheel was mounted to the suspension. Since it can freely turn on a single axis, it limited the levels of freedom of movement of the rest of the front suspension. In the 1950s, when its bearings were substituted by ball joints, more comprehensive suspension designs became obtainable to designers. King pin suspensions are nonetheless featured on some heavy trucks since they could lift much heavier load.

The new designs of the king pin no longer restrict to moving like a pin. Today, the term may not even refer to a real pin but the axis wherein the steered wheels turn.

The kingpin inclination or KPI is also called the steering axis inclination or SAI. This is the description of having the kingpin set at an angle relative to the true vertical line on most modern designs, as looked at from the front or back of the lift truck. This has a major impact on the steering, making it tend to go back to the centre or straight ahead position. The centre position is where the wheel is at its peak position relative to the suspended body of the forklift. The vehicles' weight tends to turn the king pin to this position.

The kingpin inclination likewise sets the scrub radius of the steered wheel, which is the offset among projected axis of the tire's contact point with the road surface and the steering down through the king pin. If these points coincide, the scrub radius is defined as zero. Although 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 much more practical to slant the king pin and use a less dished wheel. This also provides the self-centering effect.