

Forklift Pinion

Forklift Pinion - The main axis, known as the king pin, is found in the steering machinery of a lift truck. The first design was a steel pin which the movable steerable wheel was mounted to the suspension. Able to freely rotate on a single axis, it limited the degrees of freedom of motion of the rest of the front suspension. During the nineteen fifties, when its bearings were substituted by ball joints, more detailed suspension designs became accessible to designers. King pin suspensions are still utilized on several heavy trucks as they can carry much heavier cargo.

New designs no longer restrict this machine to moving similar to a pin and today, the term may not be used for a real pin but for the axis in the vicinity of which the steered wheels turn.

The kingpin inclination or likewise called KPI is also known as the steering axis inclination or otherwise known as SAI. This is the description of having the kingpin placed at an angle relative to the true vertical line on most modern designs, as viewed from the back or front of the forklift. 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 highest point relative to the suspended body of the forklift. The vehicles' weight tends to turn the king pin to this position.

Another effect of the kingpin inclination is to arrange the scrub radius of the steered wheel. The scrub radius is the offset between the projected axis of the steering down through the kingpin and the tire's contact point with the road surface. If these items 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 a lot more sensible to tilt the king pin and use a less dished wheel. This also provides the self-centering effect.