

06

Cold heading parts



Ball pin connecting rod

01. Definition and function

The ball pin is a key part of the car's steering tie rod, allowing movement in the steering mechanism and suspension. It enables the wheel's up-and-down bounce and steering, ensuring the car's flexibility and stability.

02. Structure and composition

The ball pin assembly generally includes the ball pin, ball seat, ball bowl, baffle cover and sealing cover, etc. These parts work together to ensure that the ball pin can stably and reliably transmit force and torque.

03. How it works

Since the steering wheels of the car have camber and toe angles, and the kingpin has caster and inclination angles, the steering rod generally moves in space when turning and the wheels bounce up and down. The ball pin, as the joint of the transmission mechanism, realizes this movement through articulation to ensure the flexibility and accuracy of the car's steering.

04. Performance requirements

The ball pin should have a wear-resistant surface to endure friction. The core needs strength and toughness to prevent breakage or deformation. It must form a rigid connection with parts like the control arm and steering knuckle to meet strength and stiffness needs. All components must remain intact to ensure car safety.

05. Application Scenario

Ball pins are widely used in the independent suspension system of automobiles. Control arms or thrust rods are often connected to other components through ball pins at the ends. In addition, ball pins are also commonly used in other mechanical structures that require hinged connections.

06. Design points and verification methods

When designing a ball pin, focus on the large end diameter, anti-slip design, and the fit between the tapered hole and surface. Static strength verification is also needed, using tests like bending, axial, and radial displacement to ensure the ball pin meets usage requirements.

07. Maintenance and care

In order to ensure the normal use of the ball pin and extend its life, it is necessary to regularly check the wear, clean and lubricate the ball pin assembly, and replace it in time when it is worn or damaged to ensure driving safety.

In short, the ball pin is an important part of the automobile steering rod connection and is crucial to driving safety and stability. Understanding its relevant knowledge will help ensure vehicle safety.