

Application of linear guide rail in super large load mobile platform

With the continuous development of modern science and technology and modern manufacturing level, many mechanical functional components are designed and manufactured. One of them is the rolling linear guide pair, which is widely used in various heavy machinery. [The rolling linear guide pair](#) can carry a large load, but when the working force is greater than the rated load of the guide rail, the rolling linear guide pair will have lower precision, shortened service life, and even direct damage.

The mobile platform (sliding table) is the most common moving unit in mechanical equipment. The mobile platform of some equipments has a special working condition. The carrying capacity is not large during the moving process, and does not exceed the rated load of the rolling linear guide. However, the working platform does not reach the working position. When moving, it will carry more than or several times the force of the rolling linear guide pair rated load, such as punching machine, hydraulic press, forging press and other equipment.

The mobile platform for these devices cannot use the rolling linear guide pair.

For the mobile platform with the above features, the direct use of the rolling [linear guide](#) pair will inevitably lead to shortened service life of the guide rail pair and even direct damage.

In the mobile platform that is subjected to the heavy load at the working position, the rolling linear guide pair is used, and it is necessary to solve the problem that the rolling linear guide pair does not bear the impact force or the excessive load in the working position.

Based on this design concept, we consider designing a platform load bearing block on the mobile platform working position to ensure that the moving platform rolling linear guide pair is protected from impact or excessive load at the working position.

Suspension rolling linear guide pair mobile platform working principle:

The linear guide 1 and the linear guide slider 2 are used for guiding and carrying the weight of the moving platform 3 and the components on the platform; the slider mounting plate 8 connects the sliders on the same linear guide to make the force of each slider uniform; The pre-tightening bolt 7 pre-tensions the suspension spring 6 with a pre-tightening force greater than the weight of the moving platform 3 and the components on the platform to suspend the moving platform; the floating guiding seat 9 is mounted on the slider mounting plate 8 for securing the mobile platform 3. When moving up and down, there is no movement in the longitudinal direction; when the working platform 3 is subjected to impact force in the working position or the excessive load is greater than the preloading force of the suspension spring 7, the moving platform is displaced downward, and the moving support block 4 mounted on the moving platform is supported on the fixed supporting plate. 5, to ensure that the linear guide pair does not withstand impact or excessive load.

Suspension rolling linear guide pair moving platform features: suspension spring design to suspend the mobile platform, the moving support block does not touch the fixed support plate when the platform moves, does not wear the moving support block and the fixed support plate, has long service life; the platform is subjected to impact load. When the suspension spring buffers the linear guide slider, the force is applied to effectively protect the rolling linear guide

pair. The disadvantage is that the platform floats up and down with a gap of 0.3 to 0.5 mm, which affects the accuracy of the vertical direction of the platform.

[The molding sand](#) is injected into the mold cavity by air pressure, and is heated and formed into a casting mold shell. Among them, the positioning accuracy of the mold moving platform is high, the mold moving platform is first clamped at the working position, and the sanding head is pressed on the mold with a pressure of 30 t under the push of the cylinder, and the molding sand is injected into the cavity under the action of air pressure.

The weight of the mold and table is only 4 t, and the working position is subject to 30 t pressure, and the rolling linear guide pair cannot be used directly. When designing this equipment, the fixed rolling linear guide pair mobile platform is used to solve this problem. After nearly two years of use, the rolling linear guide pair work is normal.

In actual design and production, it often encounters the need to move the load with a large load. The equipment of the platform adopts the floating rolling linear guide pair mobile platform and the fixed rolling

The linear linear guide pair mobile platform design structure can effectively solve the platform mobile fine

Degree and manufacturing cost issues.