

Calculation Method of Joint Bearing

Introduction:

The structure of the joint [bearing](#) is simpler than that of the rolling [bearing](#). It consists mainly of an inner ring with an outer sphere and an outer ring with an inner sphere. Joint [bearing](#) is generally used for swing motion with low speed. Because the sliding surface is spherical, it can also be inclined in a certain angle range, and it can still work normally when the [bearing](#) shaft and the hole of the shaft shell are not concentric.

Computing method:

Joint [bearing](#) has two spherical contact surfaces, which are called coordinated contact. The calculation method of mechanical characteristics of joint bearing plays an important role in structural design and wear analysis of joint [bearing](#).

The calculation of the coordinated surface contact pressure is a very complex problem. The existing Hertz model is limited to the elastic half-space body and can not be used to calculate the coordinated contact pressure distribution on the sphere. At present, there is a unified model of spherical contact, namely Fang model, which can solve the problem of contact pressure distribution of small deformation spherical surface. This model is applicable to both uncoordinated contact and coordinated contact. However, the contact area of the joint [bearing](#) is not a complete spherical surface, and the calculation of the contact pressure distribution needs to be further calculated on the basis of the complete spherical coordinated contact model.

In addition, free boundary effect will also occur during the use of joint [bearings](#), which will have a certain impact on the application of joint [bearings](#). Free boundary effect produces contact pressure concentration and large pressure gradient at the outer ring edge of joint [bearing](#).