Several problems in the installation and use of rolling bearings

In the daily maintenance of equipment, in addition to a very small number of the use of sliding bearings, the remaining about 97% of the equipment has rolling bearings in use, but in the use of rolling bearings, we often encounter the following problems:

1. No type of bearing model can be found correctly after bearing damage

2. Cylindrical roller bearing N-type, NJ type, NU type bearing mixing

3. Matching installation of angular contact ball bearings using errors

4. Thrust Ball Bearing installation Error

These problems are common in equipment maintenance, but also urgently need to solve the

problem, if the bearing selection, collar, installation direction error, will seriously affect the bearing life, serious will cause equipment damage. So we

To treat these issues correctly, the following is to share the views of individuals on these issues.

First, the bearing model lookup

Because the equipment is in use, the bearing inner and outer ring end wear or the bearing shaft after the destructive disassembly resulting in the bearing model can not be identified, at this time it is necessary to redefine the bearing model to ensure that the installation is correct or

Bearings capable of meeting equipment design requirements. The bearing model lookup steps are as follows:

1.1 First confirm the bearing form: according to the site of the bearing visual inspection of its structure, first measure the bearing installation of the shaft neck, bearing outer ring installation of the housing hole or bearing outer ring size, the site disassembly under the bearing width

These are some of the main styling sizes. Then go through the relevant bearing manual, according to the field visual inspection and bearing manual given the bearing structure, the corresponding query site measurement of the bearing inner diameter, outer diameter, width has no corresponding to one by one

Model, this model is the type of bearing to be found. Although the bearing model is found out, but also pay attention to bearing manufacturers, domestic or imported, domestic old and new models, precision grades, these are different in the model.

1.2 Bearings on the suffix letter on the same bearing of the different places are marked, as is 6210 deep groove ball bearings, the outer ring has a stop groove bearing marking style of 6210N, one side with a dust cover and the outer ring with a stop

The callout style of the slot is 6210ZN, which should be selected according to the actual situation in the field.

1.3 for different manufacturers of bearings, the same structure, but different labeling; As for 6210 deep groove ball bearings and both sides with dust cover each factory labeling are different, the domestic new number labeled 6210-2z,nsk Company marked as

6210-zz,fag Company labeled 6210.2ZR,SKF Company labeled 6210-2z.

1.4 for bearings due to the previous domestic bearings to perform the old label, therefore, encountered the previous old label, we have to compare the field size, re-determine the new bearing model. such as 6210 deep groove ball bearings, the old domestic model

For 210 bearings, 6210 deep groove ball bearings and both sides with dust cover, the domestic new number is 6210-2z, the old model is 250210 bearings.

In short, for the use of bearings, according to the working conditions, precision grade, speed requirements, load direction to find and choose different types of bearings, according to the selection, such as we use in the high-speed pump low speed shaft

The corresponding precision level of the rolling bearing is higher, and the cage should also use non-ferrous metal (copper alloy) or plastic (phenolic resin).

Second, cylindrical roller bearings: N-type, NJ type, NU type bearings

N type, NJ type and NU type bearing all belong to single row centripetal short cylindrical roller bearing. The inner ring of the N-type bearing has a double retaining edge, and the outer ring can be separated from the bearing assembly; the outer ring of the NU bearing has a retaining edge and the inner ring can be separated from the bearing assembly;

The NJ bearing inner ring is a unilateral band retaining ring, which can be separated from the bearing assembly on a single side.

2.1 From the bearing structure, it can be seen that n-type, nu-shaped bearings can only withstand radial loads, can not withstand axial loads, and allow the shaft to have a certain axial displacement, if there is no retaining ring, the assembly can be separated, the shaft has two square

Axial displacement, suitable for free side bearings, if there is a unilateral retaining ring, the bearing assembly can be separated, it can be shifted to the side of the non-retaining ring. such as the NJ type bearing can withstand a certain degree of axial load in one direction, but this with the shaft

The lubrication, operating temperature and the heat dissipation of the bearing are related.

2.2 We support bearings in the previous Y-type oil pump mostly using NJ type bearings, the current pump mostly in the support bearing use NU type bearings, because the current pump axial force is mostly borne by the thrust bearing, do not need to support

Bearings bear the axial force, and the use of NJ bearings on the bearing shaft mounting clearance requirements are high, requiring consideration of the rotor in the elongation when the retaining ring on the bearing ball friction.

2.3 Pairs of n-type bearings and nu-type bearings are not interchangeable during installation, and NU bearings are mounted on shaft or rotor axial moving equipment, while n-type bearings are mounted on rotors or shafts that do not generate movement and bearing box seats move

On the device. This should be noted in the use of bearings.

So to sum up, I think the equipment in the installation, if there is axial force balance device or thrust bearing in the balance of axial forces, then we should try to use NU type bearings, reduce

installation errors, improve the operation of the equipment

Ability.

Third, single-row angle contact ball bearing pairing installation use error

Single row angle contact ball Bearing is what we often say type 7000 bearings, this bearing can withstand both radial load and a directional axial force, generally according to the situation such bearings are paired use, pairing situation for

Back, face and series use.

3.1 From the structure, it can be seen that the rear back (two bearings of the wide end surface relative) installation, the bearing contact angle along the direction of the rotary axis diffusion, can increase its radial and axial support angle rigidity, the maximum anti-deformation ability

The contact angle of the bearing converges toward the direction of the rotary axis when the narrow end surface of two bearing is installed, and its support angle is less rigid; When the series arrangement (the wide end face of two bearing is in one Direction) is installed, the bearing

The contact angle line is identical and parallel, allowing the two bearings to share the working load in the same direction. However, when using this mounting form, in order to ensure the axial stability of the installation, the two pairs of bearings arranged in series must be opposite at both ends of the shaft

Installation.

3.2 In the pairing of the bearings, to note that some of the bearings are universal pairing, some can not be used for pairing. such as NTN bearing Factory has been set to good, two bearing installation in accordance with the direction of the arrow pairing use, not interchangeable

SKF bearings can be used in a universal pairing. This is carried out according to the requirements of each manufacturer, mainly on the bearing rear code. If the universal pairing, the company's rear code UA, UO.

Therefore, in the centrifugal pump maintenance bearing installation, the requirements of the use of back-to-back installation, and no special requirements, the Pump factory specification requirements are thrust bearings and angular contact ball bearings installed using back-to-back installation, with

, it is necessary to carefully check and check whether the new bearing and the original assembly bearing model suffix are consistent.

Iv. installation errors for planar thrust ball bearings

The planar thrust ball bearing mainly bears axial load in the assembly, and its application is widely used.

Although the thrust bearing installation operation is relatively simple, but the actual maintenance is still often wrong, that is, the bearing shaft ring and seat ring installation position is incorrect, the result of the bearing lost its effect, the axle neck quickly worn.

Therefore, the installation of planar thrust ball bearings should pay attention to the following points.

(1) distinguish bearing shaft ring and seat ring (measure bearing inner diameter size judgment).

(2) distinguish the rotating parts and static parts of the equipment, the general shaft is a rotating piece, and the bearing seat is a stationary piece.

(3) In any case, the bearing seat ring should always depend on the end of the stationary piece.

(4) When installing the shaft inner diameter and shaft (rotating parts) for the overflow fit and rotate together, the outer diameter of the seat ring and the housing (static parts) for the gap fit, the seat ring diameter and the shaft should be maintained in a certain gap.