

## Solution for excessive bearing temperature during motor operation



### First, the concept of bearing overheating

In general, bearing overheating means that the rolling temperature rise exceeds  $55^{\circ}\text{C}$  and the sliding bearing temperature rise exceeds  $40^{\circ}\text{C}$ .

### Second, the cause of motor bearing overheating and treatment:



#### 1. Reason: The rolling bearing is not installed correctly, the tolerance is too tight or too loose.

Treatment method: The working performance of the rolling bearing depends not only on the manufacturing precision of the bearing itself, but also on the dimensional accuracy, shape tolerance and surface roughness of the shaft and hole to be matched with it, the matching of the selection and the correct installation. Generally, in a horizontal motor, [a well-assembled rolling bearing](#) is only subjected to radial stress, but if the inner ring of the bearing is too tightly fitted with the shaft, or the outer ring of the bearing is too tightly fitted with the end cap, that is, if the public surplus is too large, then after assembly This will make the bearing clearance too small, sometimes even close to zero. This rotation is not flexible and will generate heat during operation. If the inner ring of the bearing and the shaft are loosely fitted, or the outer ring of the bearing and the end cover are loosely fitted, the inner ring of the bearing and the shaft, or the outer ring of the bearing and the end cover, will rotate

relative to each other, causing frictional heating and causing the bearing to overheat. Usually, in the standard, the bearing inner ring inner diameter tolerance band of the reference part is moved below the zero line, and the tolerance band of the same shaft and the inner ring of the bearing are much tighter than the cooperation with the common reference hole. .



**2, the reason: the grease is not properly selected or improperly used, the quality of the grease is not good or has deteriorated, or mixed with dust and impurities can cause the bearing to heat.**

Treatment method: too much or too little grease will cause the bearing to heat up. Because there is too much grease, there will be a lot of friction between the rotating part of the bearing and the grease. When the grease is too little, the dryness may occur. [Rubbing and getting hot](#). Therefore, the amount of grease must be adjusted to be approximately 1/2-2/3 of the volume of the bearing chamber. Unsuitable or deteriorated grease should be cleaned and replaced with a suitable clean grease.

**3. Reason: The axial clearance between the outer bearing cap of the motor and the outer circumference of the rolling bearing is too small.**

Treatment: Large and medium-sized motors generally use ball bearings at the non-shaft end. The shaft end uses a roller bearing so that the rotor can freely expand when it is thermally expanded. For small motors, ball bearings are used at both ends, and there should be a proper gap between the outer bearing cap and the outer ring of the bearing. Otherwise, [the bearing may be heated](#) due to excessive thermal elongation in the axial direction. When this happens, the front or rear bearing cover should be removed a little, or a thin paper pad should be placed between the bearing cap and the end cap to form a sufficient gap between the outer bearing cap and the outer ring of the bearing. Clearance.

**4. Reason: The end caps or bearing caps on both sides of the motor are not installed.**

Treatment method: If the end caps or bearing caps on both sides of the motor are not parallel or the nozzles are not tight, [the balls will rotate out of the orbit and heat up](#). The end caps or bearing caps on both sides must be re-flattened and tightened evenly with bolts.

**5. Reason: The balls, rollers, inner and outer rings, and ball cages are seriously worn or metal peeling.**

Treatment method: The bearing should be updated at this time.

**6. Cause: Poor connection to the load machine. Including: the coupling is poorly assembled, the belt tension is too large, and the shaft of the load machine is inconsistent. The diameter of the pulley is too small, the pulley is too far away from the bearing, and the axial or radial load is too large.**

Treatment: Correct the incorrect connection and avoid the bearing from bearing abnormal force.

**7. Reason: The shaft has been bent.**

Treatment method: At this time, the bearing force is no longer a pure radial force, thus causing the bearing to heat up. Try to straighten the bent shaft or replace it with a new one.