Analysis of bearing bore and size measurement

The measurement and operation of bearing bores and dimensions should not be sloppy, and should be carefully and accurately. Then, from which aspects should the bearing bearing hole and size be specifically analyzed?

The bearing bore can be measured by using the inner diameter gauge to check the reference dimension on the outer diameter micrometer, and also to measure the roundness and cylindricity of the bore.

Burnt bearings often reduce the diameter of the bearing hole at the opening, and the roundness is too poor, which is not conducive to the normal operation of the bearing. If the matching of the positioning surface of the connecting rod bolt is loose, the connecting rod bearing cover will be displaced to make the bearing hole roundness out of tolerance. The roundness error of the bearing bore should be controlled within the dimensional tolerance, while the cylindricity should be strictly controlled.

The measurement of the bearing size includes the bearing thickness, the tightness of the bearing and the bearing hole, the inner diameter of the bearing, and the coaxiality of the inner hole of the main bearing. The specific requirements of various types of measurements are as follows:

The measurement of the bearing thickness refers to the change of the outer diameter micrometer fixed probe from the plane to the spherical surface. The bearing thickness should generally be controlled within the range of 0.005~0.010 mm, otherwise the bearing inner diameter will be out of tolerance. The bearing has a slight thinning at the near opening, so be careful when measuring.

The tightness of the bearing and the bearing hole refers to the tightness of the fit, which is guaranteed by the free elastic opening amount and the remaining surface height of the bearing. The method for measuring the height of the residual surface is to fit the bearing according to the regulations, loosen one of the bolts after the bearing cap bolt is tightened to the specified torque, and measure the gap at the interface of the bearing cap with a feeler gauge. The measured value should be in the range of 0.05~0.15 mm. within.

The bearing inner diameter measurement requirement is to tighten the bearing cap bolt according to the specified torque before the measurement, and use the inner diameter gauge to measure the reference dimension on the outer diameter micrometer, and avoid the thinning zone during the measurement. The difference between the inner diameter of the bearing and the outer diameter of the corresponding journal is the fit clearance.

Coaxiality measurement of the inner bore of the bearing's main bearing. The coaxiality error of the inner hole of the main bearing is mainly caused by the coaxiality error of the bearing hole, and the cause of the coaxiality error of the bearing hole is the deformation of the cylinder. When the radial diameter of the main journal is within the specified tolerance, check the contact marks

of the main journal and the bearing. If the positions of the main bearing and the printed mark are significantly different, it indicates that the coaxiality error is large, and the scraping or boring bearing or the bearing may be used. The method of replacing the cylinder is solved, otherwise the engine cannot be guaranteed to work normally.