

Large Pump guide bearing applications

In large pumps, the radial force and the periodic rotation of the balancing impeller are the main parts of large pumps. The large water pump is equipped with 1 guide bearings, which are located in the hub of the guide vane body, and are usually vertical. There are two such large pumps, namely Babbitt bearing and non-metallic bearing. If the guide bearing wears very seriously or is seriously damaged, it will not only cause the swing amplitude of the unit axis to increase, but also cause severe vibration. Research shows that when the pump is running, many faults are caused by the malfunction of the guide bearing. In view of this, the reliability of the pump, the running time and the maintenance time are all related to the guide bearing. Under the general non practical condition, the force acting on the radial direction of the vertical pump unit is the balance force, that is, the resultant force is zero, and the load of the guide bearing of the vertical pump is also zero [1]. However, due to the errors caused by design, manufacture and installation, or the unforeseen structural problems, the guide bearings will be affected by the corresponding radial forces. The horizontal or oblique pump units bear the radial force and the weight of the moving parts themselves. Bearings are often placed under pressure under water, and the guide bearings are lubricated with lubricating oil or pure water. The guide bearings must be bearing good wear resistance, and can be equipped with corresponding sealing water and draining parts when they are able to lubricate. This device can prevent the mixed water in the pump from flowing into the bearing. The mixed water contains sediment, which enters the bearings of the lubricating oil, the lubrication condition fails, the shaft is damaged, and the bearing has no proper effect in a short time.

The metal oil sliding guide bearing units usually include horizontal pumps, inclined pumps and tubular pumps. The guide bearing must be controlled by a reliable water seal. When the selected units are not used for a long time, pure water lubricated elastic metal guide bearings can be used. The impeller diameter of small and medium sized pumps is less than 2.1m, preferably with non-metallic water lubricated guide bearings. If the water purity is relatively high, the water in the pump can be selected. Instead of having more impurities in the water, it is necessary to choose the structure of the protective pipeline type, so as to ensure that the impurities can not enter the bearing. If the impeller diameter of the pump is greater than or equal to 3.1m, the metal oil lubricated bearing must be used; and the sealing ability of the water sealing device must be ensured. The pump guide bearing must have good reliability and durability. If the performance of the guide bearing changes, in most cases, it is related to the radial force of the rotating parts of the pump is not zero, the bearing structure changes, the material is not selected and the lubrication conditions are destroyed. Under the conditions of operation and within the running time, the bearing will not happen accidental damage or because of the nature of the stop work due to failure. This is called the reliability of the guide bearing, and the reliability also requires that the bearing has a reasonable ability to bear the load and a reliable leak discharging device with good reliability. Bearing material and journal will wear out with the operation of guide bearing, and some non-metallic materials will gradually harden, crack and other aging phenomena.