

轴向柱塞泵平面配流副润滑特征参数实时测量 Real-time Measurement on Lubrication Characteristic Parameters of Plane Port Pair in Axial Piston Pumps

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关键词: 轴向柱塞泵 配流副 润滑特性

摘要: 为研究轴向柱塞泵配流副的摩擦学特性,建立了模拟配流机构的润滑特性试验系统,以实测润滑特征参数,对工况进行实时调节与控制,寻求良好的润滑状态。论述了配流副润滑特性试验研究的优点,根据润滑理论模型分析了供油压力和油膜厚度等主要特征参数,提出了膜厚反馈的电液控制配流副油膜动态试验装置的结构及关键技术。通过平面配流密封带多点实测膜厚、泄漏流量、摩擦转矩的试验数据表明,供油压力对密封带润滑油膜厚度、形态等的影响较大。局部油膜破坏是导致缸体面磨损的主因,试验测得的膜厚分布与其磨损分布有直接关系。 To study the tribological properties of port pairs in axial piston pump, the model test system was built to measure the lubrication characteristic parameters. And the operation condition was regulated and controlled to find port pairs in good condition. Advantages of model tests for lubrication properties of port pairs were presented, and according to the theoretical lubricating model, the main tested items such as supply pressure and film height were listed. In addition, the structure and key technological problems for the dynamic test device, with the film height feedback by electrohydraulic control, were introduced. Test results of film height at several points on sealing area of plane pairs, leakage flow, and frictional torque and so on, show that supply pressure greatly affects lubricating the height and its figuration of film, and that the cylinder block surface wear mainly resulted from destruction of film.

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