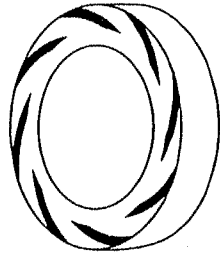


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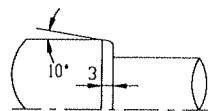
## 机 械 密 封

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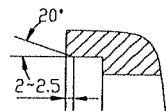
**Installation and Operation Instructions for Mechanical Seal**

1. 安装前的注意事项 (Precautions before installation):

- 1.1 安装前请仔细阅读本说明书, 若有疑问请致电我公司。Please read the instruction carefully before installation. If there are any questions, please call us.
- 1.2 检查被安装的机械密封是否适用你的使用工况范围。当输送介质温度偏高、过低或含有杂质的颗粒、易燃、易爆、有毒时, 必须采取相应的阻封、冲洗、冷却、过滤等措施。具体措施参照 JB/T6629《机械密封循环保护系统》执行。Check the mechanical seal to be installed whether is suitable for your use. When the temperature of the transmission medium is too high, too low or containing impurities of the particles, flammable, explosive, toxic, measures must be taken, such as blocking, flushing, cooling, and filtering. Specific measures refer to JB/T6629 "mechanical seal circulation protection system" implementation.
- 1.3 检查零件数量是否齐全; 检查机械密封安装尺寸是否与装配图或样本尺寸一致; 检查密封工作面、密封圈和垫片的外表是否清洁完好无损。如属集装式密封, 不必拆开检查。Check the number of parts is complete; Check the installation size of the mechanical seal is in accord with the assembly drawing or sample size; Check the working surface of the seal, sealing ring and gasket is clean and in good condition. There is no need for the cartridge mechanical seal to disassemble and check.
- 1.4 与密封圈接触部位表面粗糙度 Ra 应不大于  $1.6\ \mu\text{m}$ , 尺寸公差轴不大于 h7, 孔不大于 H8。密封圈通过的部位应有光滑的过渡倒角, 轴肩倒角为  $3\times 10^\circ$ , 端盖倒角为  $2\sim 2.5\times 20^\circ$ 。The surface roughness contacted with auxiliary seal ring (Ra) is less than  $1.6\ \mu\text{m}$ . Dimension tolerance axis is not more than h7; the hole is not more than H8. The position of the sealing ring should be a smooth transition chamfer. The shaft shoulder chamfer is  $3\times 10^\circ$ ; the end cover chamfer is  $2\sim 2.5\times 20^\circ$ .

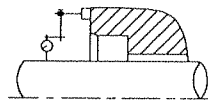


轴肩倒角

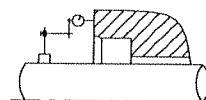


端盖倒角

- 1.5 安装机械密封的泵或其它类似的旋转式机械在工作时, 转子轴向窜动量不超过  $0.1\text{mm}$ ; 轴或轴套的径向跳动为轴或轴套的外径小于  $50\text{mm}$  时公差为不大于  $0.04\text{mm}$ , 外径大于  $50\text{mm}$  时公差为不大于  $0.06\text{mm}$ ; 密封腔体和密封端盖结合的定位端面对轴或轴套表面的跳动公差为每  $30\text{mm}$  孔径不大于  $0.015\text{mm}$ 。When the pump of installing mechanical seal or other similar rotating machinery is at work, the rotor axial movement is not more than  $0.1\text{mm}$ . External diameter of shaft (or shaft sleeve) is less than  $50\text{mm}$ , the radial runout tolerance is not more than  $0.04\text{mm}$ ; External diameter is more than  $50\text{mm}$ , the radial runout tolerance is less than  $0.06\text{mm}$ . The position face, with which the seal cavity and the seal end cover combined to runout tolerance of shaft (or shaft sleeve) is not more than  $0.015\text{mm}$  (every  $30\text{mm}$  aperture).



径向跳动检测



端面跳动检测

- 1.6 装入前必须将轴或轴套、密封腔体、密封端盖及机械密封本身清洗干净, 防止任何杂质进入密封部位。Before installation, shaft (or shaft sleeve), seal cavity, seal end cover and mechanical seal itself must be clean, and prevent any impurities from entering the seal part.
2. 安装注意事项 (Installation precautions)
- 2.1 为减少摩擦阻力, 轴上安装机械密封的轴或轴套区域要涂上薄薄的一层油, 但须注意, 当选用乙丙、丁基等橡胶密封元件时, 不能与矿物油和脂类相接触, 这种情况推荐使用洗涤剂或肥皂液润滑。In order to reduce the friction resistance, shaft or shaft sleeve area of mechanical seal should be coated with a thin layer of oil. But pay more attentions: when the selection of EPDM, butyl rubber sealing element, do not contact with mineral oils and lipids. This condition is recommended for a detergent or soap solution.
  - 2.2 安装机械密封紧固螺钉应分几次均匀拧紧。Set screws of installing mechanical seal should be divided into several times to be tightened uniformly.
  - 2.3 在未固定压盖之前应检查是否有异物粘附在摩擦副的端面上, 用手推补偿环作轴向压缩, 松开后补偿环能自动弹回无卡滞现象, 然后将压盖螺钉均匀锁紧。Before fixing the gland, we must check whether there is some foreign body to adhere the end face of friction pairs. Push the compensation ring as axial compression; after loosening the compensation ring, they can bounce automatically and no clamping stagnation. And then fasten the gland screws evenly.
  - 2.4 安装包覆 PTFE 的密封圈时, 外层接缝必须背离安装方向, 剧烈弯曲 PTFE 会导致失效。安装纯四氟的密封圈时, 需要足够的时间和微力, 避免擦伤, 否则会造成失效; 安装四氟 V 形圈时, 其 V 形口必须面对高压侧; 安装楔形密封圈时, 若弹簧座上有安装卡子, 应在机械密封装上轴或轴套后将其取掉。When installing the coated PTFE seal ring, the outer layer seam must deviate from the direction of installation. Severe bending PTFE will lead to failure. When installing the PTFE seal ring, there needs enough time and micro force to avoid scratches, otherwise it will cause failure. When installing PTFE V-shaped seal ring, V-shaped mouth must face the high pressure side. When installing the wedge-shaped seal ring, if there is a mounting clip on

- the spring seat, they should be removed after installing shaft (or shaft sleeve).
2. 5 装单向旋转且采用并圈弹簧或勾簧传动的机械密封时，尤其要注意弹簧的旋向。从静止环向旋转环看，顺时针旋转的轴需要右旋的弹簧，反之为左旋的弹簧。When mechanical seal is arranged in a single direction and the coil spring, or the hook spring drive, the rotation of the spring is especially to be noted. From the stationary ring to the rotary ring, clockwise rotation of the shaft requires a right-handed spring; otherwise a left-handed spring.
  2. 6 安装柔性石墨时，应在干燥状态下将轴向螺栓按顺序拧紧，以使柔性石墨充分二次变形，切记不能交叉拧紧。The installation of flexible graphite should be in the dry state of tightening the axial bolts sequentially, in order to make the full two deformation of flexible graphite, and remember not to cross tight.
  2. 7 装配过程中不能敲击密封，密封装配完毕，更不能敲击、撞击轴、轴套、密封端盖等，避免密封环损坏。Do not knock the seal in the assembly process. The installation of the seal is finished, shaft, shaft sleeve and seal end cover cannot be knocked and stroke to avoid damage to the seal ring.
3. 运转前的注意事项(Precautions before operation):
3. 1 机械密封安装就绪后，应按轴的旋转方向盘车，观察其转动是否灵活，有无不正常声音。若有异常时，必须检查、调整。After finishing the installation of mechanical seal, turning should be according to the rotation direction of the shaft. Observe the flexibility of its rotation, and any abnormal sounds. If there is any abnormality, it's necessary to check and debug the equipment.
  3. 2 检查联轴器是否对中；轴承部位的润滑油加量是否适当（过多时运转会发热）；配管是否正确。Check whether the coupling is right; the lubrication oil in the bearing part is appropriate (Too much oil will lead to running heat); piping is correct.
  3. 3 必须将密封腔内的气体排尽，尤其是带有封液的双端面密封，更应注意排尽气体，以免干运行损坏密封。The gas in the seal cavity must be exhausted, especially the double seal with the sealing liquid; otherwise it's easy to damage the seal in the state of dry operation.
  3. 4 确认上述事项无误后，进行试运转。试运转前应首先将介质、冷却水、阀门打开，保持密封腔内充满液体介质或封液。若有单独密封循环保护系统，应先期启动，但在停车时密封循环保护系统应滞后关闭。对于双端面机械密封，封液压力应高于介质压力0.1~0.2Mpa。The test runs after confirmation of the above items. Before the test run, medium, cooling water and valve must be opened firstly, in order to keep the seal cavity filled with liquid medium or sealing liquid. If there is a separate sealed circulation protection system, they should be launched in advance. But in the parking, the cycle protection system of the seal should be closed down lingeringly. About the double mechanical seal, the pressure of the sealing liquid should be higher than the medium pressure 0.1~0.2Mpa.
4. 开车后的注意事项(Precautions after operation):
4. 1 仪表工作是否正常稳定，有无因轴转动引起的异常转矩，以及是否有异常声音和过热现象。Whether the operating instrument is normal and stable or not; there is any abnormal torque caused by the rotation of the shaft; and there is any abnormal sound and overheat.
  4. 2 注意密封的初期泄漏，有时开车后稍有泄漏，但经过一段时间的跑合，泄漏会减小或消失。Note that the initial leakage of the seal, and sometimes a little leakage after the operating; but after a period of running, leakage will be reduced or disappeared.
  4. 3 试运转中，应注意振动及声音的变化。由于轴和机壳的热膨胀差异，机器可能出现振动，在这种情况下会诱发密封故障。这时应停机，并对管线、联轴器、地脚螺钉等部分再次加以调整。Pay more attention to the vibration and the change of the sound during the test running. Due to the thermal expansion difference between the shaft and the housing, the machine may appear to vibrate. And in this case it's easy to induce the seal failure. At this moment, stop running and adjust the pipeline, coupling and anchor bolt, etc. again.

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