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轴承的尺寸设计

Design of the bushing's dimension

轴承内径 Inside diameter of the bushing

轴承内径，一般由配合轴的轴径所决定。

Generally, the inside diameter of the bushing depends on the diameter of its mating axis.

轴承长度 Length of the bushing

轴承的长度由轴承面压决定。长度越长，其所承受的面压相对减少，轴承负载较轻，但此时可能造成偏位接触，或冷却效果降低，导致轴承寿命减短，故对此情况特别注意；相反的，轴承长度太短时，润滑油很快从轴承面流出，因此很难形成油膜，轴承性能即降低。一般地，轴承长度 / 轴承内径 $L/d=0.5 \sim 3$ ，但须特别注意在高负荷重时，易引起偏位接触，高速时易引起的发热情形，此种条件宜取 $L/d < 1.0$ 较适当。

The length of the bushing depends on the size of the pressure-shouldering surface. The longer the bushing, the less pressure at the surface, for the longer bushing, the load on the bushing is relatively lessened. But simultaneously, it may result in deviation contact or lower cooling efficiency and thus shorten the service life of the bushing. On the contrary, if the length of the bushing is too short, lubricating grease may quickly flow out of the bushing. Therefore, it hardly forms a grease film and capability of the bushing is accordingly debased.

(L/d 对轴承影响的比较表，特别是含油轴承)

A comparison of L/d's effect on the bushings, especially oil lubricating bushings

短轴承 (d>L) Short bushing (d>L)	比较条件 Comparison items	长轴承 (d<L) Long bushing (d<L)
小 Small	油膜压力 Force on the oil film	大 Great
多 Strong	冷却能力 Cooling ability	少 Weak
不能太大 Can not be too high	面压 Surface pressure	可取大值 Can be high
高 High	轴承偏位负荷的安全性 Safety against beating deviation	低 Low
小 Weak	轴承的刚性 Bushing rigidity	大 Strong
小 Weak	吸振能力 Shock absorbing ability	大 Strong
小 Small	空间 Space	大 Large

轴承壁厚 Bushing thickness

标准自润滑复合轴承，壁厚小为其主要优点之一，标准壁厚为 0.5mm, 0.75mm, 1.0mm, 1.5mm, 2.0mm, 2.5mm。

非标准滑动轴承，在设计轴承厚度时，主要参考数据厚径比：SB/D。

A) 薄壁金属滑动轴承，厚径比 $SB/D=0.03 \sim 0.06$

B) 厚壁金属滑动轴承，厚径比 $SB/D=0.08 \sim 0.12$

C) 塑料树脂滑动轴承，厚径比 $SB/D=0.1 \sim 0.15$

The main advantage of standard composite self-lubricating bushings rest with their thin wall thickness. Standard thickness can be 0.5mm, 0.75mm, 1.0mm, 1.5mm, 2.0mm, 2.5mm.

In thickness design of the non-standard gliding bushing, the designer could consult the following proportion of SB and D.

A) For thin wall thickness gliding metallic bushing, proportion between SB and D equals to 0.03 ~ 0.06.

B) For thin wall thickness gliding metallic bushing, proportion between SB and D equals to 0.08 ~ 0.12

C) For plastic gliding bushing, proportion between SB and D equals to 0.1 ~ 0.12