轴承的装配
Bushing fixing

装配时压入力 F 的计算公式
Formula for calculation the pressing-in force when fix the bushing

$$F=0.9\cdot t\cdot b\cdot \triangle\cdot\frac{б}{D}Б\ (N)$$

t: 除去复合层后基本的厚度 (mm^2)

b: 轴承高度 (mm^2)

△ : 应力系数 =1.9 × 105（ N/mm^2)B

б max: 过盈量 (mm^2)

D: 轴承外径 (mm^2)

< 注 >：此时轴承外圆与座孔内圆之间的摩擦系数通常在 0.15 左右。

举例说明：

KDB100 2015(标准产品) 压入 ϕ 23 +0.021 0 的座孔，求此时的压入力 F 大小。

计算：

知壁厚 SB=1.5mm^2，复合层厚 0.3mm^2，基体厚度 t=1.5-0.3=1.2mm^2；轴承高度 b=15；轴承外径 D=23mm^2; 过盈量 б min=0.014mm^2，过盈量 б max=0.075mm^2。

t: Thickness of the bushing after polymer laymers had removed(mm^2)

b: Height of the bushing(mm^2)

△ : Stress coefficient=1.9 × 105（ N/mm^2)B

б max: interference(mm^2)

D: OD of the bushing (mm^2)

Note: In this case, value of friction coefficient between the bushing backing and the Housing is around 0.15.

Case illustrtion

Calculating the pressing-in force F used to press KDB100 2015(standard)the housing ϕ 23+0.021 0

Calculation:

Pre-known: Wall thickness S=1.5mm2, thickness of the polymer layer=0.3mm^2, thickness of the base plate t=1.5-0.3=1.2mm^2; height of the bushing b=15; OD of the bushing D=23mm^2, surplus=0.014mm^2, surplus=0.075mm^2

$$Fmin=0.9\cdot t\cdot b\cdot \triangle\cdot\frac{б\ max}{D}=0.9\times 1.2\times 15\times 1.9\times 105\times\frac{0.014}{23}(N)\approx 1880(N)$$

$$Fmax=0.9\cdot t\cdot b\cdot \triangle\cdot\frac{б\ max}{D}=0.9\times 1.2\times 15\times 1.9\times 105\times\frac{0.075}{23}(N)\approx 10040(N)$$

所以，安装时压入力 F=1880 ~ 10040 N。

Therefore, the pressing in force for fixing F=1880 ~ 10040 N

装配方法 Fixing methods

1）直轴承的装配方法 Fixing methods for cylindrical bushings

芯轴引导棒的直径比安装后的轴承直径小 0.1 ~ 0.3mm^2。芯轴最好进行热处理。为便于压装，可在轴承外径面上图一点油，请勿以铁锤直接敲打衬套的端面等冲击方法压入；安装大直径 d>55mm^2 轴承时，必须采取措施，校准轴承接缝。

Diameter of the pressing-in arbor is 0.1 ~ 0.3mm^2 smaller than the diameter of the bushing. It's better to have the core axis heat-treated. For easier fixing, we can add a light coating of oil on the bushing backing. Make sure not to fix the bushing into the housing by hammering its end surface. When the diameter of the bushing is more than 55mm^2, necessary measures must be taken to calibrate the seam position of bushing.