

# FZ

## 钢球保持架 BALL RETAINER BEARING

### 优点与用途

### Advantages and Application

传统的具有相对运动的孔与轴是有一定间隙的，并孔与轴之间运动摩擦系数较大，使用钢球保持圈后，使轴与孔不直接接触，而是通过中间微量过盈的钢球，因而运动精度高，滚动摩擦代替滑动摩擦，滚动灵活，摩擦系数小，使用寿命长，在既有转动、又有移动的场合，用无油或加油的轴套与轴相配合，虽然能满足，但运动精度较低，用滚动轴承，只能满足轴相对转动的场合，而钢球保持圈，则上述二个条件均得到满足，目前已广泛应用于冷冲模滚动模架、高精度机床、机床附件以及要求高精度轴向或轴径向同时运动场合。

### 产品简介 Intruduction

FZH（铜基）、FZL（铝基）、FZP（树脂基）钢球保持圈，分别以铜合金、硬铝合金、POM树脂为基体，并在其外圆表面上，加工出排列有序、大小适当，形状特殊的孔穴，在其孔穴中镶入滚动轴承钢球。口采用最新的沟槽圆周锁球工艺，有效地解决了传统式锁球和压痕式锁球不能完全防止钢球脱落的难题。孔底加工出90°止口使钢球在孔内自由转动而不脱落。由于钢球的直径大于保持圈的壁厚，所以在使用时钢球高出保持圈内、外圆表面，直接与相配的孔与轴接触，使基体（保持圈）浮于中间，并且相配的孔与轴半径之差小于钢球直径，即钢球与之配合为过盈配合，配合精度高，轴与孔相对运动灵活。是保持圈的更新换代产品。

FZH, FZL, FZP, ball retaining solid are made with respectively, a copper, aluminum, POM base. In its peripheral surface, they are processed orderly, with proper size, shape, and special cavities which have inserted rolling balls. Using the latest trench mouth circumference lock ball technology, it effectively solves the traditional lock balls, but ball indentation-type lock cannot completely prevent the ball off problems. Bottom of the hole machined rabbet 90° free rotation of the ball in the hole without falling off. As the ball retainer is greater than the diameter of the wall thickness of the ball up when in use to maintain the circle, the outer peripheral surface, direct contact with the shaft hole match, the base member (retaining ring) floating in the middle, and a hole matching the shaft radius is less than the ball diameter, namely coordinated with the ball for the interference fit, with high accuracy, flexible shaft and hole relative motion. It is ideal replacements for retaining rings.

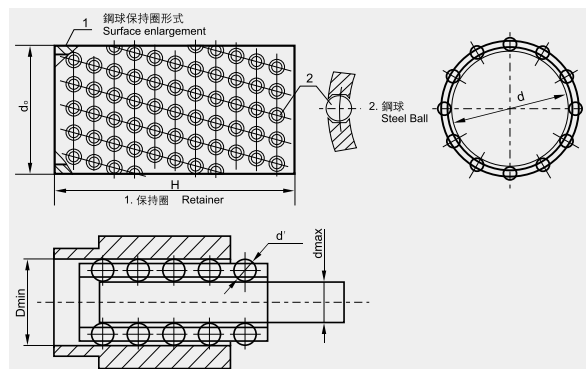
As the traditional work-craft has some grudge between bushing with posts, and the coefficient of friction is larger. now we have changed the work-ways to steel-ball directly face to face guide bushing, so the precision is improved. it composes of both active roll and lower friction coefficient, now they have been widely used in punching machine, die machine, high precision machine which need rotation and vertical motion.

### 相配零件的要求

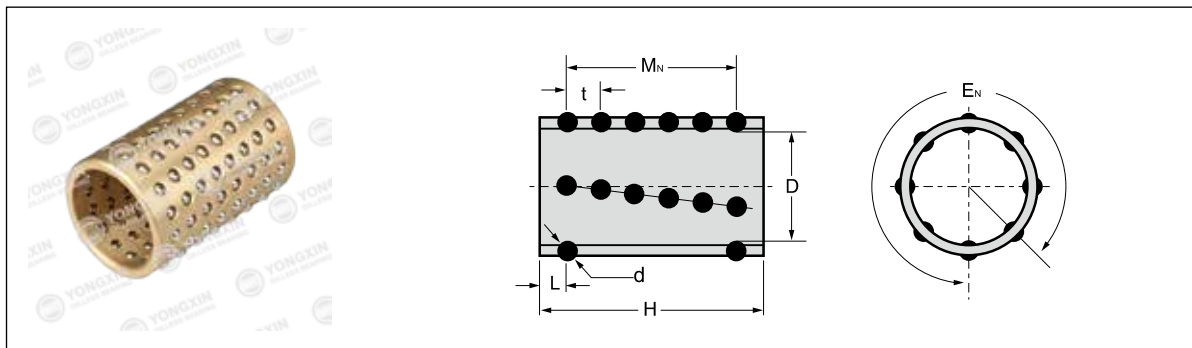
### Requirements for Installed Components

1. 导套：材料GCr15、YB9，热处理，硬度HRC62~66，技术条件按GB/T12446与轴配合应具有0.01-0.02径向过盈量，表面粗糙度为 $R_{0.05}$
2. 轴：材料GCr15、YB9，热处理，硬度HRC62~66，技术条件按GB/T12446，轴的公差采用h5，表面粗糙度为 $R_{0.05}$
3. 测量：用通用的测量手段（气动量仪、外径千分尺、内径千分表等）测量轴导套和钢球的尺寸偏差值，即可求出配合后的过盈量，即 $Y_{max}=d_{max}+2d'-D_{min}$ ，要求过盈量为0.01-0.02mm

1. Guide bushing: material GCr15, YB9, heat treatment HRC62-66, technique condition according to GB/T12446. Request 0.01-0.02Mm the surface roughness is  $R_{0.05}$
2. Guidie posts: matrial GR15, TB9, heat treatment HRC62-66, the tolerance of shaft is h5, the surface roughness is  $R_{0.05}$
3. Size test: it is tested by outside micrometer & dial gauge as usual. The ymax ( $y_{max}+2d'-d_{min}$ ) request 0.01-0.02Mm



## FZ 钢球保持架 FZ Ball Retainer Bearing



| Model           | D  | H   | d | $E_N$ | $M_N$ | Balls | t    | L    |
|-----------------|----|-----|---|-------|-------|-------|------|------|
| BKL-FZ(X)-1950  | 19 | 50  | 3 | 12    | 8     | 96    | 5.5  | 5.75 |
| BKL-FZ(X)-1960  | 19 | 60  | 3 | 12    | 10    | 120   | 5.5  | 5.25 |
| BKL-FZ(X)-2050  | 20 | 50  | 3 | 12    | 8     | 96    | 5.5  | 5.75 |
| BKL-FZ(X)-2060  | 20 | 60  | 3 | 12    | 10    | 120   | 5.5  | 5.25 |
| BKL-FZ(X)-2250  | 22 | 50  | 3 | 14    | 8     | 112   | 5.5  | 5.75 |
| BKL-FZ(X)-2260  | 22 | 60  | 3 | 14    | 10    | 140   | 5.5  | 5.25 |
| BKL-FZ(X)-2360  | 23 | 60  | 3 | 14    | 10    | 140   | 5.5  | 5.25 |
| BKL-FZ(X)-2475  | 24 | 75  | 3 | 16    | 13    | 208   | 5.45 | 4.8  |
| BKL-FZ(X)-2550  | 25 | 50  | 3 | 16    | 8     | 128   | 5.5  | 5.75 |
| BKL-FZ(X)-2560  | 25 | 60  | 3 | 16    | 10    | 160   | 5.5  | 5.25 |
| BKL-FZ(X)-2575  | 25 | 75  | 3 | 16    | 13    | 208   | 5.45 | 4.8  |
| BKL-FZ(X)-2775  | 27 | 75  | 3 | 16    | 13    | 208   | 5.45 | 4.8  |
| BKL-FZ(X)-2860  | 28 | 60  | 4 | 14    | 8     | 112   | 6.5  | 7.25 |
| BKL-FZ(X)-2875  | 28 | 75  | 4 | 14    | 11    | 154   | 6.5  | 5.0  |
| BKL-FZ(X)-3060  | 30 | 60  | 4 | 14    | 8     | 112   | 6.5  | 7.25 |
| BKL-FZ(X)-3075  | 30 | 75  | 4 | 14    | 11    | 154   | 6.5  | 5.0  |
| BKL-FZ(X)-3260  | 32 | 60  | 4 | 16    | 8     | 128   | 6.5  | 7.25 |
| BKL-FZ(X)-3275  | 32 | 75  | 4 | 16    | 11    | 176   | 6.5  | 5.0  |
| BKL-FZ(X)-3290  | 32 | 90  | 4 | 16    | 13    | 208   | 6.5  | 6.0  |
| BKL-FZ(X)-3685  | 36 | 85  | 4 | 16    | 12    | 192   | 6.5  | 6.75 |
| BKL-FZ(X)-3690  | 36 | 90  | 4 | 16    | 13    | 208   | 6.5  | 6.0  |
| BKL-FZ(X)-3870  | 38 | 70  | 5 | 16    | 8     | 128   | 8.0  | 7.0  |
| BKL-FZ(X)-3890  | 38 | 90  | 5 | 16    | 11    | 176   | 7.9  | 5.5  |
| BKL-FZ(X)-4090  | 40 | 90  | 5 | 16    | 11    | 176   | 7.9  | 5.5  |
| BKL-FZ(X)-4590  | 45 | 90  | 5 | 18    | 11    | 198   | 7.9  | 5.5  |
| BKL-FZ(X)-45110 | 45 | 110 | 5 | 18    | 13    | 234   | 8.0  | 7.0  |
| BKL-FZ(X)-5090  | 50 | 90  | 5 | 20    | 11    | 220   | 7.9  | 5.5  |
| BKL-FZ(X)-50110 | 50 | 110 | 5 | 20    | 13    | 260   | 8.0  | 7.0  |
| BKL-FZ(X)-6090  | 60 | 90  | 5 | 22    | 11    | 242   | 7.9  | 5.5  |
| BKL-FZ(X)-60110 | 60 | 110 | 5 | 22    | 13    | 286   | 8.0  | 7.0  |
| BKL-FZ(X)-80130 | 80 | 130 | 5 | 28    | 15    | 420   | 8.0  | 9.0  |