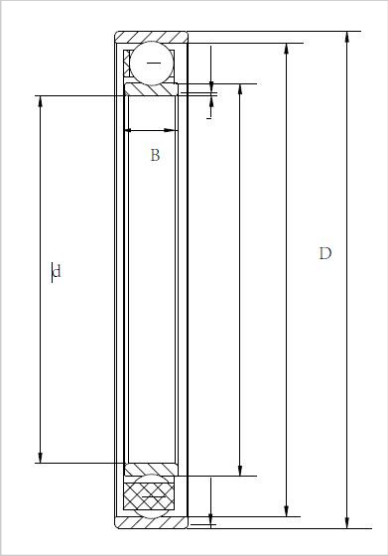
Harmonic Drive Bearing

Flexible Bearings for harmonic drive reducer-3E809KAT2





Bearing NO.	**3E809KAT2**
Outer ring	60
Inner ring	**9**
Dynamic load rating	45
Static load rating	12.89
Radial Deformation	11.55
Input rotate speed	0.4
Output torque N.m	3000

Robots Flexible bearings(harmonic drive strain wave gear bearing)

Flexible bearings for harmonic reducer are mainly used in harmonic reducer. Harmonic transmission includes three basic components: wave generator, flexible wheel, rigid wheel and flexible bearing. Flexible bearings are the core components, and the transmission meets the performance requirements of high deceleration ratio through the elastic deformation of bearings.

In the work of flexible bearing, the inner ring is installed on the elliptical cam, the outer ring is installed on the flexible wheel, and the elastic deformation occurs with the rotation of the cam, which not only bears the cyclic stress load, but also bears the alternating stress load.



These points put forward high requirements for the design and manufacture of bearing inner ring and outer ring and cage, and only a few enterprises such as Japan and the United States can produce it. Luoyang Monton Flexible Bearing has reached the advanced level of design and manufacture of flexible bearings for harmonic transmission. The design of flexible bearing has formed a complete theoretical system, the manufacturing technology of the product is becoming more and more perfect, mature, and the product quality is becoming more and more stable. The 3E series harmonic drive reducer flexible bearing has been successfully applied to the harmonic drive device of "Shenzhou" and series spaceship, which has contributed to my manned spaceflight industry.

Because the inner ring of the flexible rolling bearing is tightly sheathed with the rigid cam of the wave generator. Therefore, it can be regarded as a rigid elliptical ring, the rolling body (generally a ball) is a particle with concentrated mass connected with the inner and outer rings through the spring, and the outer ring is an elastic thin-wall ring, and its original curve is the inner isometric curve of the original curve of the flexible wheel.



Harmonic drive transmission consists of three basic components: wave generator, flex spline, Circular Spline and flexible bearing. Among them, the flexible bearing is the core component, and the transmission achieves the performance requirement of high deceleration ratio through the elastic deformation of the bearing.

When the flexible bearing is in operation, the inner ring is mounted/installed on the elliptical cam, which bears the cyclic stress load during the work; while the outer ring is mounted/installed on the

flexible wheel, and elastically deforms with the rotation of the cam during the work, which not only bears the cyclic stress load, but also withstands the alternating stress load.

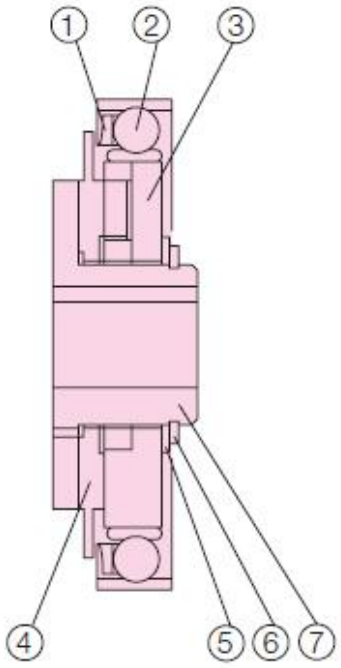
Flexible rolling bearing utilizes controllable elastic deformation of the flexible components to transmit motion and power. It has characteristics of large transmission ratio, wide application range, high precision, small air return, large carrying capacity, high efficiency, small volume/size, light weight, smooth transmission, low noise, and can transfer motion to sealed space.

Robot bearing/harmonic drive bearing is a special kind which easily deforms in a reversible way.

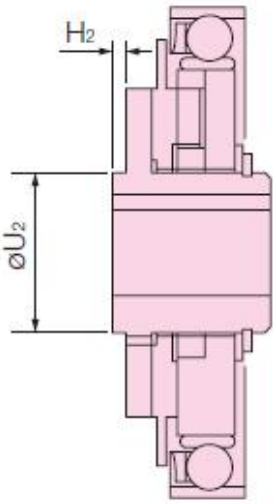
It has a very thin outer ring which varies from round shape to oval interatively during its working time. easily double sealed bearing designed primarily for application of radial load—deep ball grooves also permit application of thrust load in either direction, often used in conjunction with another bearing.

Wave Generator Components

1. Ball Separator
2. Wave Generator Bearing
3. Wave Generator Plug
4. Insert
5. Rub Washer
6. Snap Ring
7. Wave Generator Hub



CSF-14,17,20,25,32,45,58,90



CSF-40,50,65,80,100