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**BEARING CO., INC.**

## TECHNICAL DATA



*Frictionless Bearings*  
*- No Lubrication - Low hysteresis - Easy Installation - Custom Design*

**THE BEARING SOLUTION**

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## **CONSIDERATIONS FOR THE ENGINEER**

### Torsional Spring Rate/Load Capacity

The torsional spring rate and load capacity of C-Flex bearings is dependent upon length, width, and thickness of the internal flat spring beams. High angles of rotation require thin springs to reduce bending stress and thereby result in low torsional spring rates and correspondingly small load capacities. Bearings with thin spring beams, such as the C-Flex Series 10 bearings, typically allow for rotation angles of up to +/- 15 degrees for indefinite life with light loads. In comparison, series 20 bearings which have a heavier spring and can accommodate heavier loads, are rated for rotation angles of +/- 7.5 degrees at zero load for indefinite life while the series 30, which are heavier still, are rated for +/- 3.7 degrees.

### Geometric Centershift

The rotation of the bearing sleeve segments is facilitated by bending of the flat spring beams which support them. This causes a slight radial shift of the sleeve segments relative to each other. For small angles of rotation, such as 2 degrees, the shift of geometric center of the rotated member will be minimal on the order of .02% of the bearing diameter, however increases to approximately 1% of the bearing diameter at a rotation of 15 degrees.

### Cycle Life

The cycle life of C-Flex bearings is based upon the fatigue limit of the materials utilized for the spring beams. Bending and load stresses are considered in determining performance ratings which will statistically result in an infinite cycle life.

The flexure design is suitable for a variety of materials such as stainless steels of the martinitic or precipitation hardening variety: inconel, hastelloy, and beryllium copper among others.

### Hysteresis

The linearity of the C-Flex bearing, measured as the rotational deflection of the pivot vs. the torque required to induce this deflection, is relatively constant for angles of rotation up to 15 degrees. Hysteresis in the C-Flex bearing is defined as the difference of null positions when the flexure is deflected to a plus angle and then relieved, and then deflected to a negative angle and then relieved. The null position after the plus direction compared with the null position after the minus deflection is the angle of hysteresis.

*For additional questions/comments, please do not hesitate to contact us.*

**GEOMETRIC  
CENTERSHIFT  
(AS A % OF BRG. DIA.)**



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