What is a Basic Dynamic Load Rating?

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A Basic Dynamic Load Rating is a theoretical, statistically based value of load that a bearing can carry for 1,000,000 revolutions with 90% reliability. For a radial bearing, this rating was based on the amount of pure radial load that a rotating inner ring could tolerate for 500 hours at a 33-1/3 RPM.

Bearing manufacturers typically display these values in their catalogs as “Cr” for radial bearings and “Ca” for thrust bearings.

Most bearing companies base their Basic Dynamic Load Ratings using this method. In the US, you may sometimes encounter bearings using a C90 designation for their dynamic load rating. This load rating method is based on a 90 million revolution statistical model. A C90 rating for a bearing has a value about ¼ of the ABMA or ISO rating. It is possible to convert ratings based on the 1 million or 90 million revolution method to the other using the following formula.

$C1 = C90 \times 3.857$

For further information on how Basic Dynamic Load Ratings are determined please refer to ABMA Standards 9 and 11 or ISO 281:1990.

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