What are ABEC precision grades?

by Mike Mortensen - Director of Engineering RBI-USA

Various grades of precision bearings have been established by the American Bearing Manufacturers Association (ABMA), previously known as the Anti-Friction Bearing Manufacturers Association (AFBMA). The Annular Bearing Engineers Committee (ABEC) committee established several classifications of increasing precision levels similar to the class or grades used by the International Standards Organization (ISO).

ABEC classes ISO classes

ABEC 1 ISO class 0/Normal

ABEC 3 ISO class 6

ABEC 5 ISO class 5

ABEC 7 ISO class 4

ABEC 9 ISO class 2

As the ABEC number increases so does the precision of the bearing and its cost. Although ABEC grades bearings will be precision ground, as you increase in precision, super finishing and remarkable grinding precision are required. The main difference between the precision classes is the tolerances on the bearing bore diameter and outer diameter and the radial and axial run out of the inner and outer rings. Higher precision classes allow for higher speeds and extreme accuracy.

Typically, bearings made to higher precision grades such as ABEC 7 or 9 are used in specialized applications such as high precision machine tool spindles, superchargers, jet engines, etc.

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