

## 5. Bearing Tolerances

Bearing “tolerances” or dimensional accuracy and running accuracy, are regulated by ISO and JIS B 1514 standards (rolling bearing tolerances). For dimensional accuracy, these standards prescribe the tolerances necessary when installing bearings on shafts or in housings. Running accuracy is defined as the allowable limits for bearing runout during operation.

Dimensional accuracy constitutes the acceptable values for bore diameter, outer diameter, assembled bearing width, and bore diameter uniformity as seen in chamfer dimensions. Running accuracy constitutes the acceptable values for inner and outer ring radial runout and axial runout, inner ring side runout, and outer ring outer diameter runout.

**Table 5.1 Rotation tolerance measurement methods**

Characteristic tolerance	Measurement method	Explanation
Inner ring radial runout ( $K_{ia}$ )		For inner ring radial runout, record the total indicator reading (TIR)
Outer ring radial runout ( $K_{ea}$ )		For outer ring radial runout, record the total indicator reading (TIR) after one revolution.
Inner ring axial runout ( $S_{ia}$ )		For inner ring axial runout, record the total indicator reading (TIR) after rotating the inner ring one revolution.
Outer ring axial runout ( $S_{ea}$ )		For outer ring axial runout, record the total indicator reading (TIR) after rotating the inner ring one revolution.
Inner ring side runout with bore ( $S_i$ )		For inner ring side runout with bore, record the total indicator reading (TIR) after rotating the inner ring one revolution with a tapered mandrel.
Outer ring outside ( $S_D$ )		For outer ring outside surface inclination, record the total indicator reading (TIR) after aligning the ring with the reinforcing plate and rotating it one revolution.