

Quick-Assembly Tapered (QAT) Roller Bearings

Reduced run-in time for faster mounting



New Quick-Assembly Tapered Roller Bearings from NSK reduce run-in time to less than one-fourth that required for conventional bearings.

Why is run-in necessary for tapered roller bearings?

When mounting tapered roller bearings, the cup (outer ring) and the cone assembly (inner ring, cage and rollers) are first installed separately; i.e., the cup in the housing and the cone assembly on the shaft (Figure 1). When the bearing is assembled, there is usually a clearance between the large rib and the rollers (Figure 2). In order for the bearing to function properly, however, the rollers must be positioned tightly against the large rib. To achieve this, run-in, a process in which bearings are rotated or oscillated until the appropriate assembly width is obtained, must be performed.

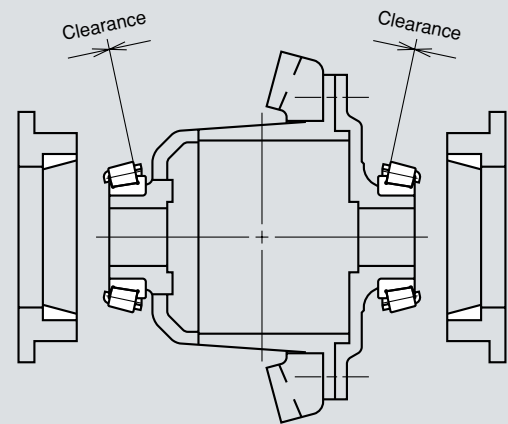


Figure 1 Installation of tapered roller bearings

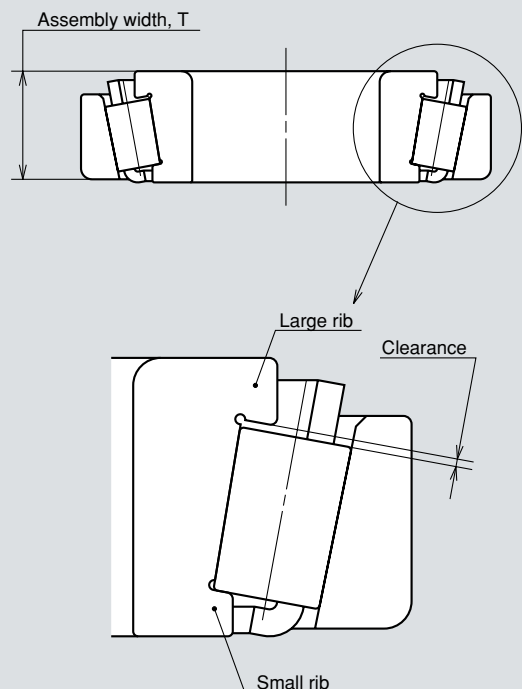


Figure 2 Tapered roller bearing after assembly

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The Key to QAT Roller Bearings

The key to QAT Roller Bearings is an improved machining method developed by NSK that can control tolerances more accurately and thus minimize the clearance that develops between the large rib of the inner ring and the roller heads during assembly. As a result, the roller heads move into contact with the large rib more quickly during run-in.

Performance of QAT Roller Bearings

Figure 3 compares the run-in of QAT Roller Bearings and conventional bearings in a bearing unit. QAT Roller Bearings demonstrated two superior characteristics:

- a reduction in the number of revolutions required until run-in was complete
- a smaller change in assembly width (i.e., clearance between the large rib and rollers)

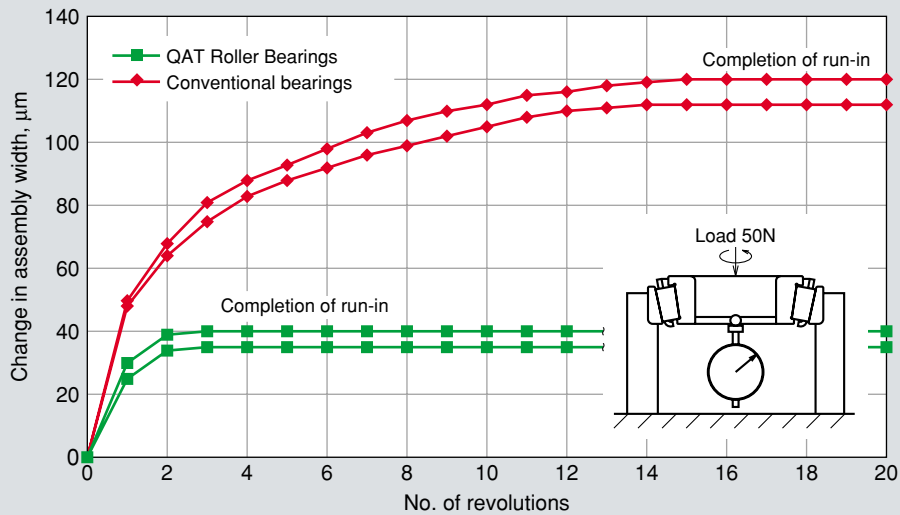


Figure 3 Analysis of bearing run-in

Figure 4 compares the run-in of both QAT Roller Bearings and conventional bearings operating in a typical application, a differential gear. Run-in of QAT Roller Bearings was completed in a shorter time and with less deviation than conventional bearings.

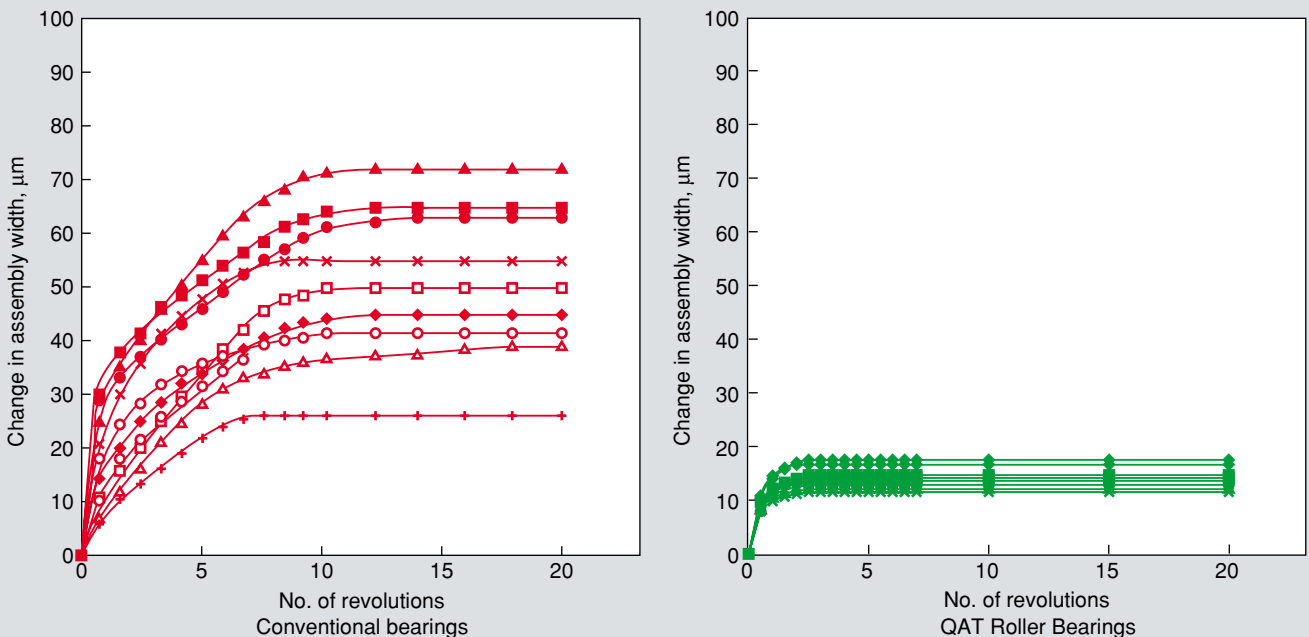


Figure 4 Run-in of bearings in a differential gear