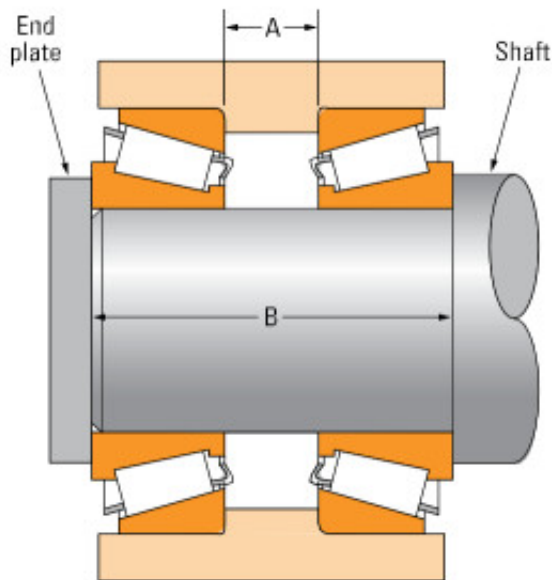


## How are the TIMKEN bearings set up?



**Figure 1. Simplified machine assembly showing a typical tapered roller bearing (indirect) mounting**

With tapered roller bearings, the term "setting" simply indicates the specific amount of end play (axial clearance) or preload (axial interference) within a mounted bearing. The flexibility to easily adjust and optimize setting at enough time of assembly is an inherent advantage of tapered roller bearings.

Unlike other kinds of anti-friction bearings, tapered roller bearings do not require tight control of shaft or housing fits to obtain setting. Because tapered roller bearings are mounted in pairs (Figure 1), their setting is primarily dependent upon the axial location of one bearing row relative to the opposite row.

The three primary conditions of bearing setting are defined as:

- End play-- An axial clearance between rollers and races producing a measurable axial shaft movement when a small axial force is applied, first in one direction so in the other, while oscillating or rotating bearing (the reference bearing load zone lower than 180 degrees).
- Preload-- An axial interference between rollers and races such that there is no discernible axial shaft movement when measured as described above. A rolling resistance to shaft rotation results which may be measured (load zone greater than 180 degrees).
- Line-to-line-- A zero setting condition, the transitional point between end play and preload. Bearing setting obtained during initial assembly and adjustment is the cold or ambient bearing setting and is established before the equipment is subjected to service. Bearing setting during operation is known as the operating bearing setting and is a result of changes in the ambient bearing setting a result of thermal expansion and deflections encountered during service. The ambient bearing setting necessary to produce the optimum operating bearing setting varies with the application. Application experience, or testing, generally permits the determination of optimum settings.

Frequently, however, the exact relationship of ambient to operating bearing settings is unknown and an educated estimate ought to be made. To determine a suggested ambient bearing setting for a specific application, contact a Timken sales engineer or representative.