



TIMKEN-TAPERED

ROLLER BEARING CAGES

1. STAMPED-STEEL CAGES

The most common type of cage used for tapered roller bearings is the stamped-steel cage. These cages are mass produced from low-carbon sheet steel using a series of cutting, forming and punching operations. These cages can be used in high temperature and harsh lubricant environments.

2. POLYMER CAGES

Cages for tapered roller bearings made of polymer material are used primarily for pre-greased and sealed package designs. The most common polymer materials used are Nylon thermoplastics with glass reinforcement. Polymer cages can be mass produced in large quantities and offer more design flexibility than stamped steel types. Polymer cages are lightweight and easy to assemble. In some instances, increased bearing rating can be achieved by allowing one or two extra rollers in the bearing complement. Care should be exercised when using aggressive lubricants with EP (extreme-pressure) additives in combination with elevated temperatures greater than 107° C (225° F).

3. MACHINED CAGES

Machined cages for tapered roller bearings are robust in design and are suited for high-speed and high-load applications. Machined cages use alloy steels and are produced through milling and broaching operations. Assembly does not require a close-in operation and rollers can be retained using nibs or staking. Oil holes also can be easily added for extra lubrication for demanding applications. Some designs are silver plated for special applications.

4. PIN-TYPE CAGES

Tapered roller bearing pin-type cages retain the rolling elements by the use of a pin located through an axial hole in the center of the roller. Pin-type cages for tapered roller bearings consist of two rings with roller pins attached by screw threads at one end and welding at the other end. These types of cages are primarily used for larger tapered roller bearing designs (greater than 400 mm [15.7480 in.] O.D.). Pin-type cages are machined out of steel and typically allow for an increased number of rolling elements. Pin-type cages are restricted to low-speed applications (less than 20 m/sec [4000 ft/min] rib speed).