

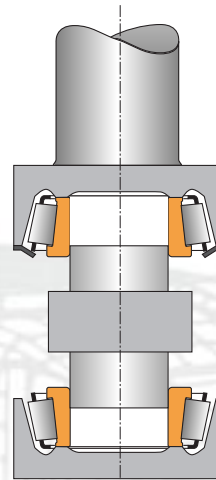
PROPER INSTALLATION OF BEARING COMPONENTS WITH CONE AND CUP DRIVERS

Like other mechanical applications, there is a right way and a wrong way to install bearings. This article describes the right way to install the inner races (cones) on shafts and spindles and the outer races (cups) in housings/hubs to maximize bearing performance.

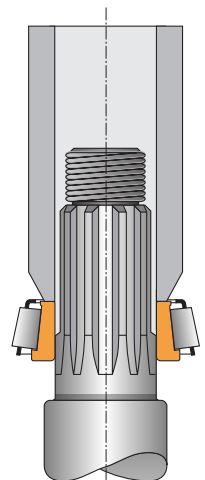
When installing a cone on the shaft, it is important to be aware of the two most frequent problems with handling and installation. These problems occur when the cone becomes cocked out of proper alignment and the cage (retainer) is bent from contact damage. Example A shows the proper method to check for adequate seating of a cone against a shaft shoulder. To check the seating, use a 0.002" (0.05mm) feeler gage.



Example A



Example B



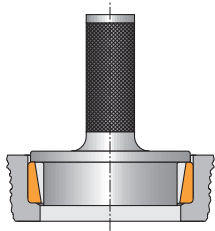
Example C

Any damage to the cage of a bearing may cause problems very early in the service life of the bearing. Cages that show any deviation from their factory shape and roundness should not be used and should be thrown away.

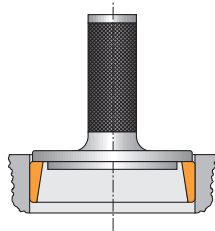
Cones that are mounted with a tight fit on a shaft should be pressed on the shaft using proper drivers. These drivers are commercially available, or can be made easily from mild (soft) steel. It is important to notice how the cone drivers are made so there is no possibility that they will contact the cage. Cone drivers are illustrated above (examples B and C).

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Use these guidelines, to 3-hole punch Tech Tips and store it in a binder.



Example D



Example E

When installing tightly fitted cups into a hub or housing, a simple driver can be used. These drivers are commercially available, or they can be made from mild (soft) steel. Consult your Timken representative for the proper sizes and details of these cup drivers. The cup drivers are designed only to contact the face of the cup, never the race surface. Any contact with the race may cause scratches, dents or raised metal that may eventually lead to premature bearing fatigue. Always remember to check the cup for proper seating against the housing shoulder using feeler gages. Examples D and E show properly designed cup drivers.

When education and proper care are used during the handling and installation process, you could maximize the life of your bearing and reduce your maintenance costs.

WARNING!

Proper maintenance and handling practices are critical. Failure to follow installation instructions and to maintain proper lubrication can result in equipment failure creating a risk of serious bodily harm. Never spin a bearing with compressed air. The rollers may be forcefully expelled creating a risk of serious bodily harm.

LOOKING FOR PAST ISSUES?

If you have access to the World Wide Web, you can find past issues of *Tech Tips*. Volumes I through IV have been posted to The Timken Company Internet site. Log onto the Web site, www.timken.com/bearings/techtips.

To access the issue you want, highlight the topic name. The issue you requested will appear on your computer screen. Print a copy to add it to your *Tech Tips* binder or post it on a bulletin board.

TIMKEN MOTORSPORTS

While you are in the Web site, take a few extra minutes and browse through Timken Motorsports. This section lists the team affiliations, bearing and steel applications and the motorsports merchandise you can order on-line. Teams affiliated with The Timken Company for the 2000 season are:

NASCAR - Winston Cup Series

Richard Childress Racing

Drivers: Dale Earnhardt, #3; Mike Skinner, #31

Robert Yates Racing

Drivers: Ricky Rudd, #28; Dale Jarrett, #88

NASCAR - Busch National Championship Series

Bobby Hillin Racing

Driver: Bobby Hillin, #8

Richard Childress Racing

Drivers: Kevin Harvick, #2; Mike Dillon, #21

Championship Auto Racing Teams (CART)

Team Rahal

Drivers Max Pappis, #7, and Kenny Brack, #8