

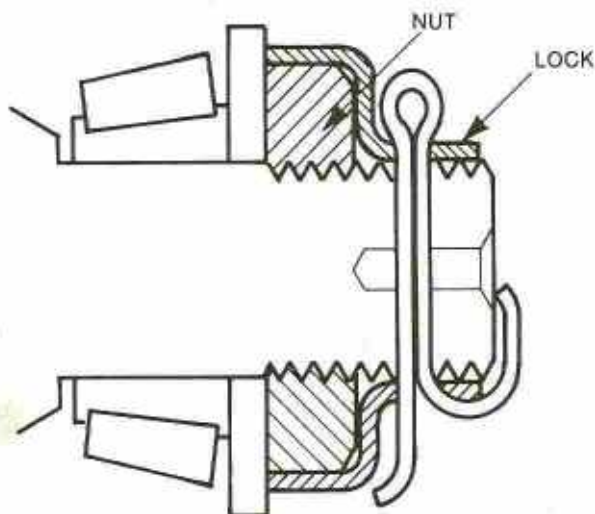
# Wheel Bearing Adjustment

**NOTE:** Wheel bearings are to be adjusted following maintenance schedule on page 9, or any unscheduled maintenance that requires disturbing proper adjustment of the wheel bearings.

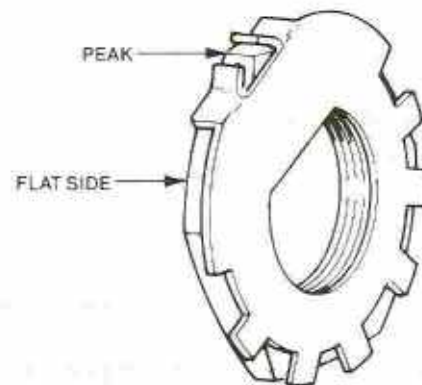
1. Lock parking brake to insure vehicle will not roll.
2. Raise wheel to be adjusted off the ground. Place a jack stand or suitable block under axle. Make certain wheel rotates freely.
3. Drain oil on models so equipped.
4. Remove hub cap.
5. Remove outer nut and lock (I-90 thru I-132), or cotter pin and lock (I-50 thru I-80). Replace lock if tabs are broken or cracked.
6. When repacking or replacing wheel bearings, bearings must be re-seated to insure maximum service reliability. To do this, after the hub and bearings are assembled in place on the spindle, install the adjusting nut. Tighten the wheel bearing adjusting nut to 120-140 ft. lbs. (163-190 N-m), while rotating the hub to seat the bearings. Back off the adjusting nut  $\frac{1}{2}$  turn.

Re-torque adjusting nut to 50 ft. lbs. (68 N-m) while rotating wheel in one direction, then the other direction. Back off inner wheel nut  $\frac{1}{4}$  turn. This establishes .003 to .009 inch (.076 to .228 mm) end play in wheel bearings.

**CAUTION:** Do not adjust wheel bearings with preload, or premature failure of bearings could occur.

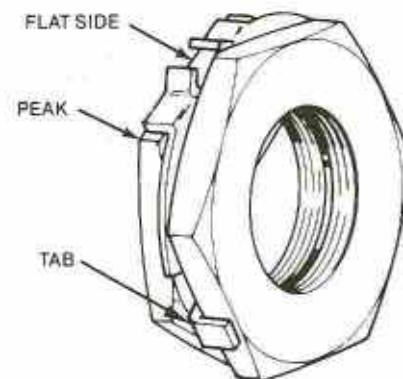


7a. On medium duty (I-50 thru I-80) axles, install lock over adjusting nut, aligning a slot in the lock with the hole in spindle for cotter pin. If slots will not align with hole, tighten nut to first position of alignment and install lock. Install cotter pin as shown.



7b. On heavy (I-90 thru I-132) axles,

(1.) Install lock against adjusting nut, with locking portion positioned on either the flat side of adjusting nut or peak of adjusting nut, as shown. If lock does not align with adjusting nut, tighten nut to first position of alignment and install lock.



(2.) Install outer nut and torque to 125-150 ft. lbs. (169-203 N-m). Rotate wheel in both directions. Wheel must rotate freely without binding. Bend locking tab out against flat side of locking nut, as shown above.

8. Install hub cap and gasket and torque mounting bolts to 11-13 ft. lbs. (15-17.5 N-m).

9. On all models lubricated with oil, fill to oil level shown on inspection glass of hub cap with lubricants compatible with APL Service Classification GL5 quality, meeting MIL-L-2105C lubricants. Allow oil to circulate thru bearings, and refill to oil level line.

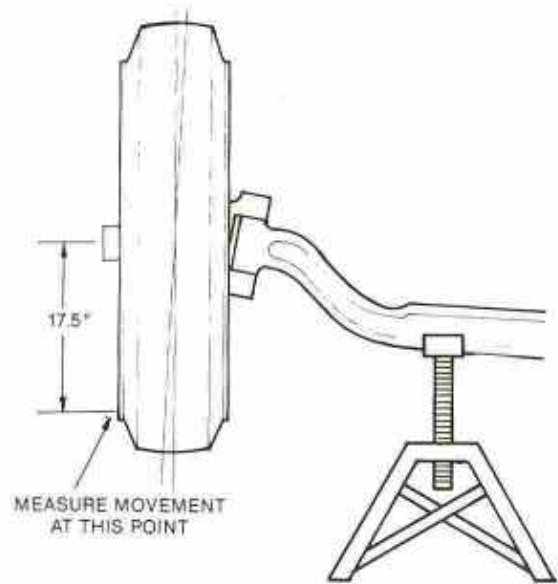
**Wheel bearing adjustment complete.**

# King Pin to Bushing Clearance Check

**NOTE:** Measurements must be taken prior to normal lubrication, or readings will not be accurate.

1. Raise the front axle wheels off the floor and support the axle at outer ends so it cannot rock.
2. Apply brakes. Use pedal jack to hold brakes, locking front wheels.
3. Mark the tire at a 17.5 inch (443 mm) radius from the center of the knuckle. Move the wheel inward at the top, and measure movement at the 17.5 inch (443 mm) radius mark at the bottom.

If more than 3/8 inch (9.5 mm) movement is observed, king pin and bushing kits must be installed.

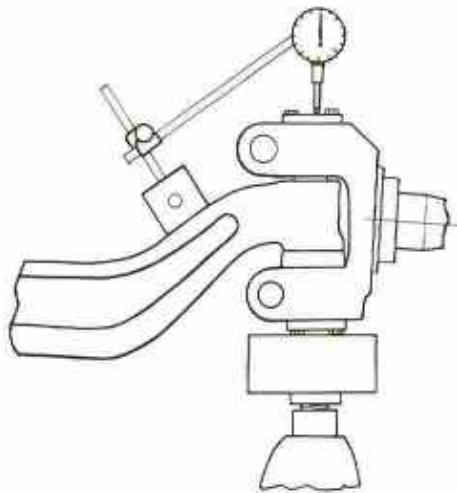


# Knuckle Vertical Movement Check

**NOTE:** Measurements must be taken prior to normal lubrication, or readings will not be accurate.

Knuckle vertical end play is the movement of the knuckle vertically on the king pin. A minimum of .005 inch (.127 mm) end play is required to eliminate possible binding during turns. Too much end play will cause contact between king pin and king pin end caps.

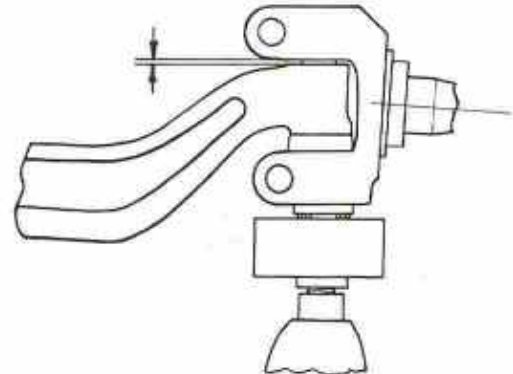
1. While axle is still supported, raise the wheel and tire so all clearance is taken up between knuckle, thrust bearing, and lower king pin boss on the I beam center section. There are two methods of measuring knuckle vertical end play.



## Method A

- (1.) Using a feeler gauge, measure clearance between upper king pin boss on the I-beam and the knuckle. If more than .060 inch (1.5 mm) clearance is observed,

add necessary shims to reduce clearance to .005-.015 inch (.127-.381 mm). Proceed to step 2.



## Method B

- (1.) Using a feeler gauge, measure clearance between upper king pin boss on the I-beam and the knuckle. If more than .060 inch (1.5 mm) clearance is observed, add necessary shims to reduce clearance to .005-.015 inch (.127-.381 mm). Proceed to step 2.
2. If shims are required to restore proper vertical end play, remove hub, drum, and backing plate on axles equipped with drum style brakes. This will allow removal of king pin, and inspection of thrust bearing. Disc brake assemblies allow adequate clearance to remove king pin, without disturbing brakes.
3. Remove king pin end caps, and draw keys with hammer and brass drift. Tap king pin down and out of knuckle. Remove thrust bearing and inspect. If thrust bearing is worn, replace it with new bearing, and remeasure vertical end play. Add necessary shims and reassemble following procedures in king pin installation section, page 15.

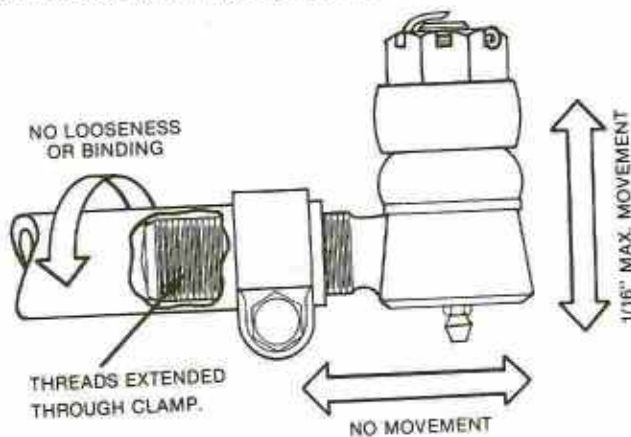
# Tie Rod Condition Check

## TIE RODS

The tie rods are of three-piece construction, consisting of a tie rod and two tie rod end assemblies. The ends are threaded to the rod and locked with clamp bolts. Right and left hand threads are provided for toe-in adjustment. Tension on ball stud in the tie rod ends is self-adjusting and requires no attention in service other than periodic inspection to see that the ball studs are tight in the steering knuckle arms.

Fittings are provided for periodic lubrication on some types of tie rod ends. Where no fittings are used, the tie rods have been lubricated at assembly and no further lubrication is necessary.

If the tie rod taper joint is loose or the cotter pin is missing, remove, inspect, and replace the tie rod arm/tie rod end if the contact surfaces are worn.

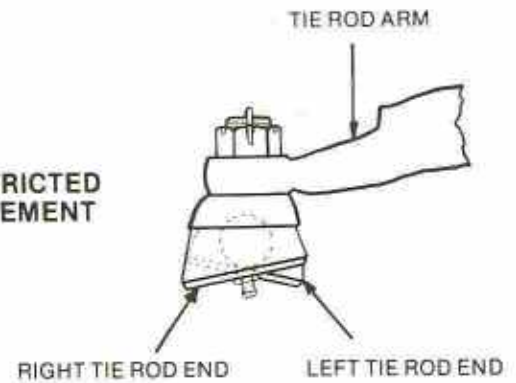


**CAUTION**—When tie rod or drag link ends are replaced, they must be threaded into the tie rod sufficiently so that when the clamp is applied, the clamping action will be directly over the threads on the ball joint end, as shown.

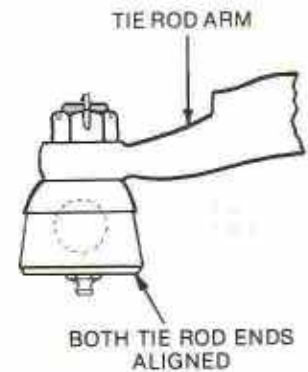
Replace the tie rod end if looseness is found in the ball socket. With the tie rod stud clamped firmly, the socket should move no more than .060 inch (1.52 mm) when the tie rod is grasped and shaken by hand. With the tie rod end removed from the arm, torque to rotate the stud should be 5 in.-lbs. (.56 N-m) or greater.

At assembly, insure that the slotted nut is torqued to the minimum value specified in the torque chart. If cotter pin cannot be installed, tighten nut to next slot. Do not back off once minimum torque is reached.

**RESTRICTED MOVEMENT**



**UNRESTRICTED MOVEMENT**



(Illustration as viewed from right side of vehicle.)

**NOTE:** Proper indexing, or alignment of Tie Rod Ends, (left tie rod end parallel to right tie rod end) will eliminate restricted movement of the tie rod assembly. This restriction could cause premature failure of tie rod end.

Toe in should be checked and adjusted to vehicle specifications if necessary.