

## TECH TIPS

DATE 5-2011

### Manual Wheel Bearing Adjustment Procedures

The goal of this recommended procedure is to achieve a verifiable wheel bearing end play of 0.001" to 0.005" (.025mm to .127 mm). This procedure applies to steer, drive and trailer axle assemblies using conventional double nut or single nut systems on Class 6, 7 and 8 trucks. This refers only to torque specifications and bearing adjustments. Please refer to the original equipment manufacturer's recommended procedures for complete installation details.

NOTE: For single nut self-locking systems, consult manufacturers' instructions. If you have a system that differs from what is indicated in this procedure, consult the vehicle manufacturer's recommended procedure.

### Tapered Roller Bearing Adjustment Procedure RP-618

**Step 1:** Lubricate the tapered roller bearing with clean axle lubricant of the same type used in the axle sump or hub assembly.  
NOTE: Never use an impact wrench when tightening or loosening lug nuts or bolts during the procedure.

Initial Adjusting Nut Torque	Initial Back Off	Final Adjusting Nut Torque	Axle Type	Threads Per Inch	Final Back Off	Nut Size	Torque Specifications	Acceptable End Play	
Step 2	Step 3	Step 4	Step 5		Step 6	Step 7		Step 8	
200 lb•ft (271N•m) While Rotating Wheel	One Full Turn	50 lb•ft (68 N•m) While Rotating Wheels	Steer (Front) Non-Drive	12	1/6 Turn*	Install Cotter Pin to Lock Axle Nut in Position		0.001" - 0.005" (.025 - .127 mm)	
				18	1/4 Turn*				
				14	1/2 Turn*				
				18					
			Drive	12	1/4 Turn*	Less Than 2 5/8" (66.7 mm)	200-300 lb•ft (271-407 N•m)		
				16		Dowel Type Washer	300-400 lb•ft (407-542 N•m)		
				Trailer	12	1/4 Turn*	Tang Type Washer**		200-275 lb•ft (271-373 N•m)
					16		Less Than 2 5/8" (66.7 mm)		300-400 lb•ft (407-542 N•m)

\* If dowel pin and washer (or washer tang and nut flat) are not aligned, remove the washer, turn it over and reinstall. If required, loosen the inner (adjusting) nut just enough for alignment.

\*\* Bendable type washer lock only. Secure nuts by bending one wheel nut washer tang over the inner and outer nut. Bend the tangs over the closest flat perpendicular to the tang.

Verify end play with a dial indicator. Wheel end play is the free movement of the tire and wheel assembly along the spindle axis.

- Make sure the brake drum-to-hub fasteners are tightened to the manufacturers' specifications.
- Attach the dial indicator with its magnetic base to the hub or brake drum.
- Adjust the dial indicator so that its plunger or pointer is against the end of the spindle with its line of action approximately parallel to the axis of the spindle.
- Grasp the wheel assembly at the 3 o'clock and 9 o'clock positions. Push the wheel assembly in and out while oscillating it to seat the bearings. Read the bearing end play as the total indicator movement.

NOTE: If end play is not within specification, readjustment is required.

### Common Wheel End Sets

Timken Set Number	Timken Part Number	Common Application Description
SET401	580, 572	Industry Standard R Drive Axle: Outer Bearing
SET403	594A, 592A	Industry Standard R Drive Axle: Inner Bearing
SET406	3782, 3720	Industry Standard FF Steer Axle: Outer Bearing
SET413	HM212049, HM212011	Industry Standard FF Steer Axle: Inner Bearing / Industry Standard N Trailer Axle Outer Bearing
SET414	HM218248, HM218210	Industry Standard N Trailer Axle: Inner Bearing
SET415	HMS18445, HMS18410	Industry Standard P Trailer Axle Inner and Outer Bearing
SET423	6461A, 6420	Industry Standard FL Steer Axle: Inner Bearing
SET424	555-S, 552A	Industry Standard FL Steer Axle: Outer Bearing



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## Pre-Adjusted Wheel Bearing Adjustment Procedures

This refers only to torque specifications and bearing adjustment. Please refer to the original equipment manufacturer's recommended procedures for complete installation details.

- Mount the hub assembly onto the axle spindle, while holding the outer cone in place. Make sure the bearing cones, spacer and spindle are aligned to avoid seal damage.

**⚠ WARNING:** Once the hub is on the spindle, do not remove the outer bearing. Removing the outer bearing may cause the seal to become misaligned and can lead to seal failure and loss of a wheel, creating a risk of serious bodily injury.

- Install the inner spindle nut and torque to 300 ft-lbs.

NOTE: Do not back off the spindle nut.

- Engage the locking device that is part of the spindle nut system. If the locking system cannot be engaged when the nut is at 300 ft-lbs, advance the nut until the locking system can be engaged (reference note above). If a double nut or jam nut system is being used, bend the lock tab or install the set screw after the outer nut is torqued to 200 ft-lbs.

For one-piece spindle nut systems, torque the nut to a minimum of 250 ft-lbs. Do not back off the spindle nut. Engage any locking device that is part of the spindle nut system. If the locking device cannot be engaged when the nut is at 250 ft-lbs, advance the nut until engagement takes place and the nut is locked.

## Timken Set-Right® Heavy-Duty Hub Rebuild Kits and Components

FFTC1 - FF Steer Kit			
Kit Contents	MileMate® P/N	Component P/N	General / Hyatt P/N
Inner half-stand NP cone	SET427*	NP899357	HM212049 PS
Inner half-stand NP cup		NP026773	HM212011 PS
Outer half-stand NP cone	SET428*	NP874005	3782 PS
Outer half-stand NP cup		NP435398	3720 PS
RDTC1 - R Drive Kit			
Kit Contents	MileMate® P/N	Component P/N	General / Hyatt P/N
Inner half-stand NP cone	SET429*	NP034946	594A PS
Inner half-stand NP cup		NP363298	592A PS
Outer half-stand NP cone	SET430*	NP840302	580 PS
Outer half-stand NP cup		NP053874	572 PS
TNTC1 - N Trailer Kit			
Kit Contents	MileMate® P/N	Component P/N	General / Hyatt P/N
Inner half-stand NP cone	SET431*	NP965350	HM218248 PS
Inner half-stand NP cup		NP503727	HM218210 PS
Outer half-stand NP cone	SET427*	NP899357	HM212049 PS
Outer half-stand NP cup		NP026773	HM212011 PS
TPTC1 - P Trailer Kit			
Kit Contents	MileMate® P/N	Component P/N	General / Hyatt P/N
Half-stand NP cone	SET432*	NP174964	HM518445 PS
Half-stand NP cup		NP593561	HM518410 PS
FLTC1 - FL Steer Kit			
Kit Contents	MileMate® P/N	Component P/N	
Inner half-stand NP cone	SET445*	NP294109	
Inner half-stand NP cup		NP039695	
Outer half-stand NP cone	SET446*	NP107091	
Outer half-stand NP cup		NP183330	
RDTC2 - 454-Series™ R Drive Kit			
Kit Contents	MileMate® P/N	Component P/N	
Inner half-stand NP cone	SET600*	NP454946	
Inner half-stand NP cup		NP454298	
Outer half-stand NP cone	SET601*	NP454302	
Outer half-stand NP cup		NP454874	
TNTC2 - 454-Series™ N Trailer Kit			
Kit Contents	MileMate® P/N	Component P/N	
Inner half-stand NP cone	SET602*	NP454350	
Inner half-stand NP cup		NP454727	
Outer half-stand NP cone	SET603*	NP454357	
Outer half-stand NP cup		NP454773	
TPTC2 - 454-Series™ P Trailer Kit			
Kit Contents	MileMate® P/N	Component P/N	
Half-stand NP cone	SET604*	NP454964	
Half-stand NP cup		NP454561	

\* Includes proprietary Timken part numbers

**⚠ WARNING** Excessive or inadequate wheel torque can lead to failure of the wheel mounting system and loss of a wheel, creating a risk of serious bodily injury.

**⚠ WARNING** Failure to follow these warnings could create a risk of serious bodily injury.

Proper maintenance and handling practices are critical. Failure to follow installation instructions and to maintain proper lubrication can result in equipment failure.

Never spin a bearing with compressed air. The rolling elements may be forcefully expelled.

Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

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