VOLVO
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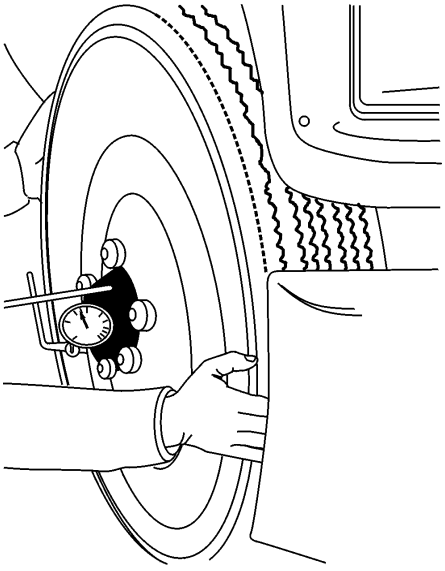
Greensboro, NC USA

Service Bulletin Trucks

This TSI Service Bulletin replaces TSI Service Bulletin 773–001, “Wheel Bearing Adjustment, Front and Rear Axles”, publication number PV776–TSP145672, dated 09.2000.

Wheel Bearing Adjustment
Front and Rear Axles
VN, VHD

Wheel Bearing Adjustment



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(Effective from February 2001)

This information provides the correct procedure for front and rear wheel bearing adjustments. This is required to achieve a verifiable wheel bearing end play of 0.025 – 0.127 mm (0.001 – 0.005 in.).

Carefully following this procedure can prevent premature wheel end component wear, and can increase seal and bearing life.

This information applies to:

- Meritor steering axles with non-unitized wheel bearings;
- Dana and Meritor drive axles with non-unitized wheel bearings;
- Hendrickson trailing axles; and
- Volvo axles.

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Specifications

Nut Adjustment Torque Table

(See also “Wheel Bearing Adjustment” page 1.)

WHEEL BEARING ADJUSTMENT PROCEDURE

STEP 1: Lubricate the wheel bearing with the 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	BACK OFF			JAM NUT TORQUE		ACCEPTABLE END PLAY
			AXLE TYPE	THREADS PER INCH	FINAL BACK OFF	NUT SIZE	TORQUE SPECIFICATIONS	
STEP 2	STEP 3	STEP 4		STEP 5	STEP 6	STEP 7		STEP 8
271 Nm (200 lb-ft) While Rotating Wheel	One Full Turn	68 Nm (50 lb-ft) While Rotating Wheels	Steer (Front) Non-Drive	12	1/6 Turn *	Install Cotter Pin to Lock Axle Nut In Position		0.025-0.127 mm (0.001"-0.005") As Measured Per Procedure with Dial Indicator
				18	1/4 Turn*			
				14	1/2 Turn	Less Than 66.7 mm (2-5/8")	271-407 Nm (200-300 lb-ft)	
				18				
			Drive	12	1/4 Turn	Dowel Type Washer	407-542 Nm (300-400 lb-ft)	
			Trailer	16		Tang Type Washer**	271-373 Nm (200-275 lb-ft)	
				12	1/4 Turn	66.7 mm (2-5/8") and over	407-542 Nm (300-400 lb-ft)	
				16				

* 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.

Design and Function

Adjusting Nuts

(See also “Wheel Bearing Adjustment” page 1.)

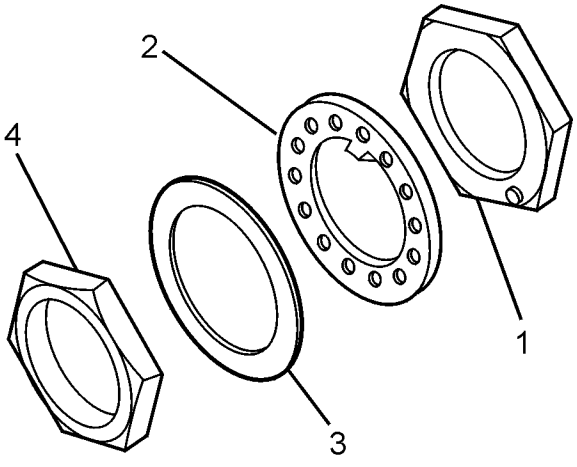

Fig. 1: Spindle washer-type lock adjusting nut

1 Wheel bearing adjusting nut (inner)
2 Locking Washer
3 Washer
4 Outer nut

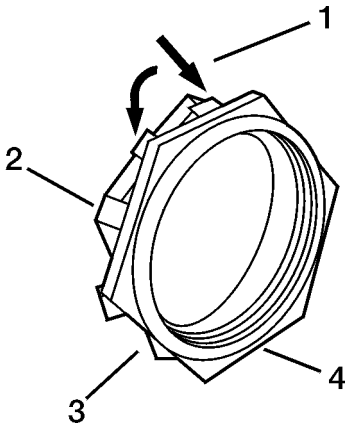

Fig. 3: Tang-type lock adjusting nut

1 Bend tangs perpendicular to closest flat
2 Nut lock
3 Outer nut
4 Wheel bearing adjusting nut (inner)

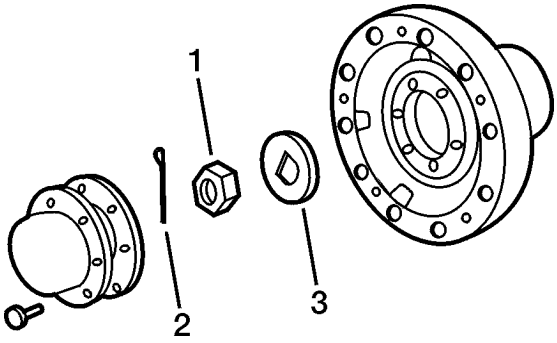

Fig. 2: Single nut adjustment, with cotter pin and D-type washer

Service Procedures

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Wheel Bearing, Adjustment

(See also “Wheel Bearing Adjustment” page 1.)

DANGER

Before working on a vehicle, set the parking brakes, place the transmission in neutral, and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

DANGER

Never work under or around a vehicle unless it is supported on jack stands of adequate rating. Failure to use adequate jack stands can result in the vehicle falling, which can cause serious injury or death to anyone under the vehicle.

This procedure applies to the following wheel bearing fastening systems:

- 4–piece system (adjusting nut, lock ring, lock washer, outer or jam nut)
- Single nut with cotter pin
- Tang type lock adjusting nut

Special tools: 3093472 Wheel End Play Gauge

1
Pack the wheel bearings with grease. Use the same type (petroleum or synthetic) as requested for filling the drive axle and front hub assembly.

CAUTION

Do not mix petroleum and synthetic lubricants when lubricating the wheel bearings. This practice reduces bearing life.

2
Assemble the wheel bearings, hub, and drum on the spindle. Install the nut on the spindle and torque. Refer to “Nut Adjustment Torque Table” page 2.

Note: If using the 4–piece system, install only the adjusting (inner) nut at this time. Rotate the hub and drum assembly while tightening the inner nut.

Note: For further information on Wheel Bearing Adjustment refer to vendor literature covering the front and rear axles. Refer to “Wheel Bearing Adjustment” page 1 for vendor lists.

3
Back off the nut one full turn.

4
Turn the hub and drum one turn. Retorque the nut while turning. Refer to “Nut Adjustment Torque Table” page 2.

5
Determine Axle type and threads per inch of the spindle.

6
Back off the nut according to “Nut Adjustment Torque Table” page 2.

Jam Nut Torque

7
Install the locking components as necessary.

- **4–piece system**
  Install the lock ring, lock washer, and outer nut (see Fig. 1: Spindle washer-type lock adjusting nut, page 3). If dowel pin and washer are not aligned, remove the washer, turn it over, and reinstall. If dowel pin and washer still do not align, loosen the adjusting nut just enough for alignment. Torque the outer nut according to manufacturer’s specifications for steering or drive axles.
- **Single nut with cotter pin**
  Turn the nut in either direction to line up the nut slot with the pin hole in the spindle (see Fig. 2: Single nut adjustment, with cotter pin and D-type washer, page 3). Install a new cotter pin in the nut.

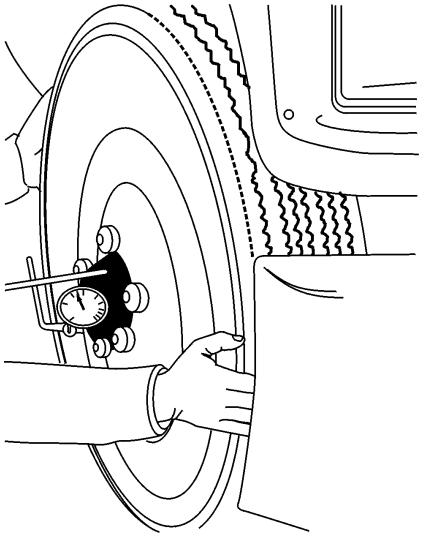

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Fig. 4: Measuring wheel end play with tire assembly

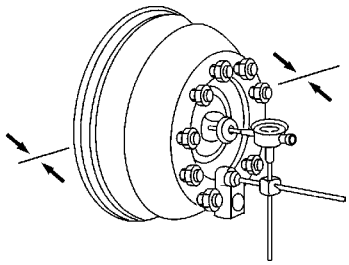

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Fig. 5: Measuring wheel end play without tire assembly

Determining Acceptable End Play Using a Dial Indicator

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Using tool 3093472, measure wheel bearing end play. Wheel end play is the free movement of the hub and drum assembly along the spindle.

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.

Note: Volvo does not recommend magnetic based indicators for use during the wheel adjustment procedure.

Note: The wheel end play measurement is made with the brake drum attached or removed.

Note: Ensure that the brake drum, attached to the hub fasteners, is tightened to original manufacturer's specifications.

Note: The dial indicator stand attaches to the hub of the steer axle by threading into the tapped holes used to attach the hub cap. To attach the dial indicator stand to the hub of the drive axle review the kit instructions.

Note: For information concerning tool 3093472, refer to:

Service Bulletin	PV776–087–003SB *Wheel End Play Gauge*
IMPACT	Function Group 087 Information Type: Bulletins ”3093472, Wheel End Play Gauge”

9
Push and pull the hub and drum assembly. Read bearing end play as the total indicator movement. Bearing end play is required to be in the range:

0.0254 – 0.127 mm (0.001 – 0.005 in.)	Measured with drum removed
0.0254 – 0.1016 mm (0.001 – 0.004 in.)	Measured with drum installed

Measurements less than 0.0254 mm (0.001 in.) are allowed only if end play movement can be detected on the dial indicator. Measurements of zero end play are not allowed unless a customer has specifically requested preloaded bearings.

10
If end play is too loose, readjust:

- **4–piece system**
  Remove the outer (jam) nut and lock washer. Tighten the adjusting nut to the next alignment hold of the lock ring. Flip the lock ring if required. Reassemble the washer and re-torque the outer (jam) nut. Torque the outer nut according to manufacturer’s specifications for steering axles or drive axles. Measure end play.
- **Single nut with cotter pin**
  Turn the nut to the next cotter pin hole. Install cotter pin in the nut. Measure end play.

11
If there is no measurable end play:

- **4–piece system**
  Remove the outer (jam) nut and lock washer. Loosen the adjusting nut to the next alignment hold of the lock ring. Reassemble the washer and re-torque the outer (jam) nut. Torque the outer nut according to manufacturer’s specifications for steering axles or drive axles. Measure end play.
- **Single nut with cotter pin**
  Loosen the nut to the next cotter pin hole. Install cotter pin in the nut. Measure end play.

12
Complete the installation of locking components:

- **4–piece system**
  Bend the lockwasher over the outer (jam) nut. Two bends should be provided, over adjacent flats of the outer nut.
- **Single nut with cotter pin**
  Bend the cotter pin over the spindle and nut.