

# NEWMAR CORPORATION

## WARRANTY DEPARTMENT

### TECHNICAL SERVICE BULLETIN

Date Issued  
12/21/99

Model Year(s) Affected  
2000

Model(s) Affected  
DP & DB Spartan

TSB #  
187

B r a n d				T y p e		
ALL <input type="radio"/>	American Star <input type="radio"/>	Kountry Star <input checked="" type="radio"/>	Dutch Star <input checked="" type="radio"/>	All <input type="radio"/>	T T <input type="radio"/>	F W <input type="radio"/>
	Mountain Aire <input checked="" type="radio"/>	Kountry Aire <input type="radio"/>	London Aire <input checked="" type="radio"/>	C A <input type="radio"/>	D P <input checked="" type="radio"/>	D B <input checked="" type="radio"/>

- ☐ Air Conditioning & Heating
- ☐ Appliances & Accessories
- ☐ Cabinets & Furniture
- ☒ Chassis Components
- ☐ Construction Components

- ☐ Electrical Components
- ☐ Exterior Components
- ☐ Interior Components
- ☐ Plumbing & Bath Components
- ☐ Windows, Awnings, Vents & Doors

#### Description of Problem

IFS Suspension

#### Recommended Solution

See attached information. Tuthill TSB #990609-01



## **Technical Service Bulletin**

**SUBJECTS:** 1) Front wheel hub seal deflector ring.  
2) Front wheel bearing endplay.  
3) Front wheel bearing lubrication.  
4) Front hubcap drain plug.

**APPLIES TO:** All Spartan chassis equipped with suspension models IFS1200, IFS1200-HP, IFS1200-SP, IFS1200LP, IFS1320-HP, and IFS1320-SP, IFS1370-HP, IFS1370-SP manufactured between October 1, 1998 and June 1, 1999.

**CONDITIONS:** 1) The deflector ring of the hub seal may not be fully seated on the wheel spindle preventing inner bearing from seating properly onto the wheel spindle. This condition may result in increased wheel bearing endplay and can be detected by increased wheel vibration.

2) The wheel bearing endplay may be mis-adjusted below specified amount. This condition can result in overheated outer wheel bearings when driving the vehicle at moderate to high speeds for a short period of time and can be detected by bearing noise, increased wheel vibration, and/or abnormal steering response like the brake is applied to the affected wheel. Continued operation of the wheel bearings with this condition can result in catastrophic bearing failure and separation of the wheel from vehicle. The overheated outer wheel bearing condition usually occurs within the first 500 miles of vehicle operation.

3) The initial amount of lubrication placed in the wheel hub was below the required level. Inspecting fluid level indicator on wheel hubcap can check proper lubrication level.

4) Lubrication may be leaking from hubcap at the drain plug or a crack(s) in hubcap at the drain plug. The leak may be detected by inspecting area around drain plug for evidence of lubrication on the outside of the hubcap.

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- CAUSE:**
- 1) The deflector ring was insufficiently driven onto the wheel spindle due to worn tooling.
  - 2) Wheel bearing endplay set below the specified amount can result in a pre-load on the wheel bearings that causes the outer bearing to operate at elevated temperatures and prematurely fail.
  - 3) The amount of lubrication dispensed into the hub cavity was incorrectly set and the fluid level indicator was read incorrectly.
  - 4) The drain plug was over tightened causing cracks in the hubcap at the drain plug threads.

**CORRECTION: Applicable to both driver and passenger sides.**

- 1) Remove wheel hub assembly and inspect that deflector ring is fully seated onto wheel spindle and re-seat as needed.
- 2) Inspect wheel bearing endplay and adjust as needed.
- 3) Check wheel bearing lubrication level and fill as needed.
- 4) Check for leaking lubrication and replace hubcap with new hubcap if it is fractured at drain plug threads.

**SERVICE PROCEDURE:**

Please read this procedure carefully and completely before servicing. The procedure is written for a single wheel end and must be repeated for the other wheel end. The allowable labor charges for 1) inspecting deflector ring and re-seating; 2) adjusting the wheel bearings; 3) adding lubrication 4) replacing the hubcap is not to exceed 2-1/2 hours @ \$50.00/hr per suspension. Reasonable miscellaneous material expenses such as hub oil will also be covered. If you have questions or require additional labor or material expense, contact Tuthill Transport Technologies Customer Service at (800) 255-7824.

**PART LIST: Service Kit P/N K700016**

QTY	Part Number	Description
2	6969	Spindle Washer
2	7977	Hub Seal Assy.

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## Identification

Record vehicle and suspension information on the Claim Form before beginning service work.

The suspension model and serial number are stamped on an aluminum tag (See Figure 1) that is riveted to the driver side steering arm mount on the subframe assembly. (See Figure 2).

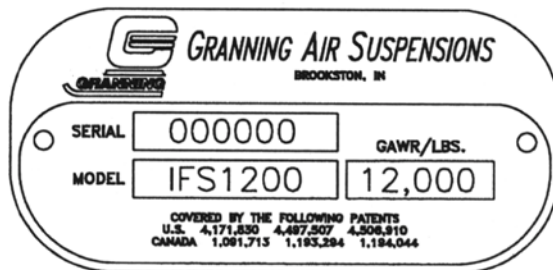


Figure 1: Suspension Identification

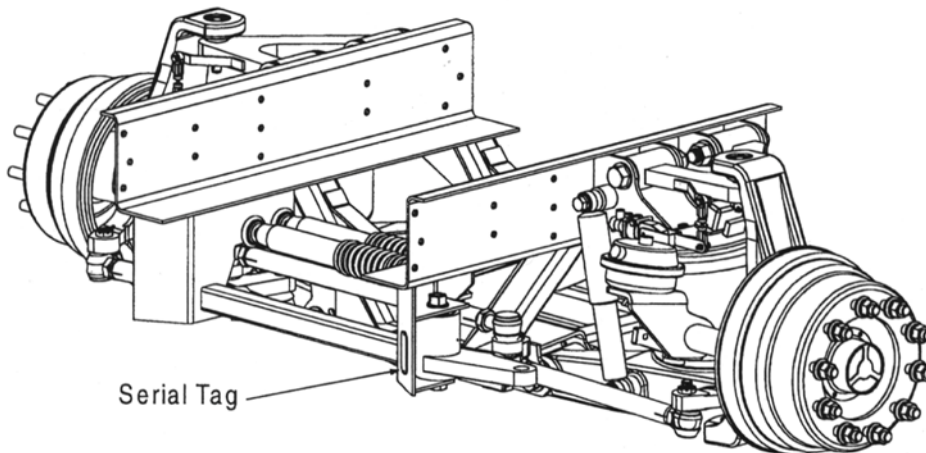


Figure 2: Suspension Identification Location

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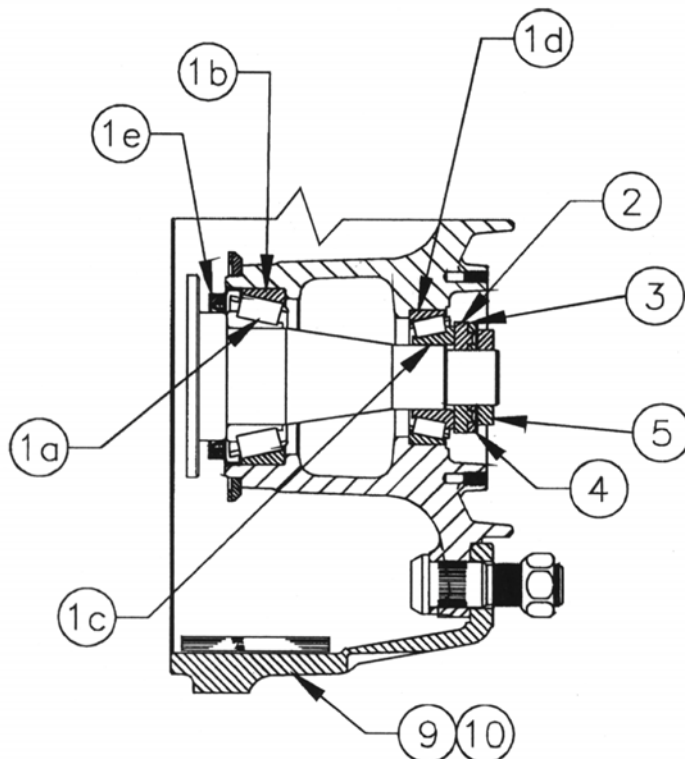
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## Wheel End Components

Item	Part No.	Description	Item	Part No.	Description
1a	1784	Inner Bearing Cone (Timkin HM212049)	9	6942	Hub and Drum Assembly, LH, Stud Piloted, 15x4 Brakes (IFS1200, -SP)
1b	N/A	Inner Bearing Cup (Timkin HM212011)		7784	Hub and Drum Assembly, Hub Piloted, 15x4 Brakes (IFS1200LP; IFS1200-HP)
1c	6972	Outer Bearing Cone (Timkin 3782)		8494	Hub and Drum Assembly, LH, Stud Piloted, 16.5x5 Brakes (IFS1320-SP; IFS1370-SP)
1d	N/A	Outer Bearing Cup (Timkin 3720)		8456	Hub and Drum Assembly, Hub Piloted, 16.5x5 Brakes (IFS1320-HP; IFS1370-HP)
1e*	7977	Hub Seal & Deflector Ring Assy. (Stemco 308-0836)	10	6943	Hub and Drum Assembly, RH, Stud Piloted, 15x4 Brakes (IFS1200, -SP)
2	6967	Inner Spindle Nut (Meritor 1227-L-194)		8493	Hub and Drum Assembly, RH, Stud Piloted, 16.5x5 Brakes (IFS1320-SP; IFS1370-SP)
3	6968	Spindle Lock Washer (Meritor 1229-G-475)		7328	ABS Sensor (Wabco 441 032 576 0)
4*	6969	Spindle Washer (Meritor 1229-F-474)		7329	ABS Bushing (Midland 101328-AB)
5	6970	Outer Spindle Nut (Meritor 1227-B-106)	11	7328	ABS Sensor (Wabco 441 032 576 0)
6	7324	Hub Cap - IFS1200, -SP; IFS1320-SP; IFS1370-SP (Stemco 343-4024)	12	7329	ABS Bushing (Midland 101328-AB)
6a	8377	Hub Cap Gasket - IFS1200, -SP; IFS1320-SP; IFS1370-SP (Stemco 330-3122)	13	6946	ABS Spring Retainer (Wabco 899 760 510 4)
6	7483	Hub Cap & Gasket - IFS1200-LP, -HP; IFS1320-HP; IFS1370-HP (Stemco 330-3024)	14	N/A	Lug Nut (refer to Hub and Drum)
6a	N/A	Hub Cap Gasket - IFS1200-HP; IFS1320-HP; IFS1370-HP (Stemco 330-3024)			
7	266	Hub Cap Bolt 5/16-18x3/4, Gr. 5			

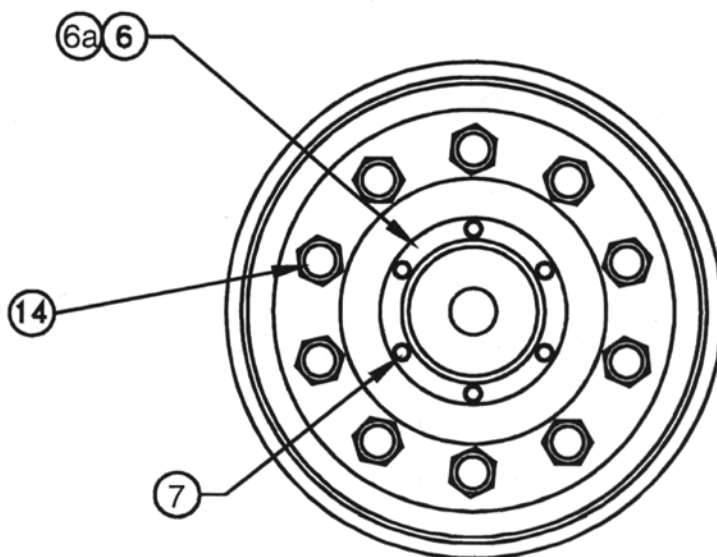
\* Quantities of 2 pieces of these components are included in kit P/N K700016.



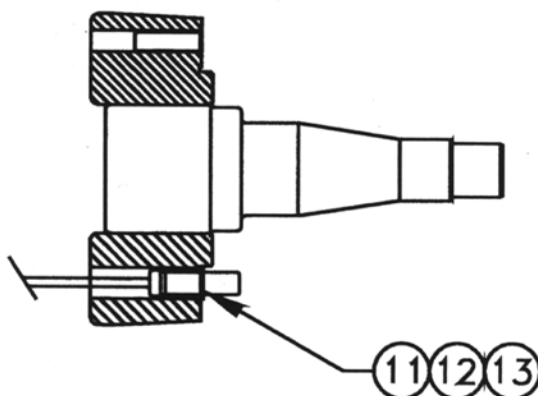
## Wheel End Assembly

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**Wheel End**



**ABS Components**

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## Brake Service Part List

Description	Model	Part No.	Recommended Vendor	Vendor P/N
<b>15x4 Brake Components</b>				
Brake Relining Kit(Shoe & Lining Asy and Spring Kit; 1 Side)	IFS1200; IFS1200-HP, SP, LP	8300	Dana	150KB129X
<b>16.5x5 Brake Components</b>				
Brake Relining (Shoe & Lining Asy; Requires 2 per Side)	IFS1320-HP, SP; IFS1370-HP, SP	8645	Dana	165WN126-4X

## Jack Point Locations

The recommended jack point locations are shown in Figure 3. The jack must have sufficient return stroke to lower the chassis below the suspension ride height to actuate the HCV to inflate the air springs. Placing a jack under the lower control arm or the steering knuckle can result in an unstable condition.

On vehicles equipped with hydraulic jacks, these may be used to raise to the chassis to lift the tire off the ground.

Safety stands should be placed under the chassis frame rail and the chassis should be lowered onto the safety stands prior to servicing the wheel bearings.

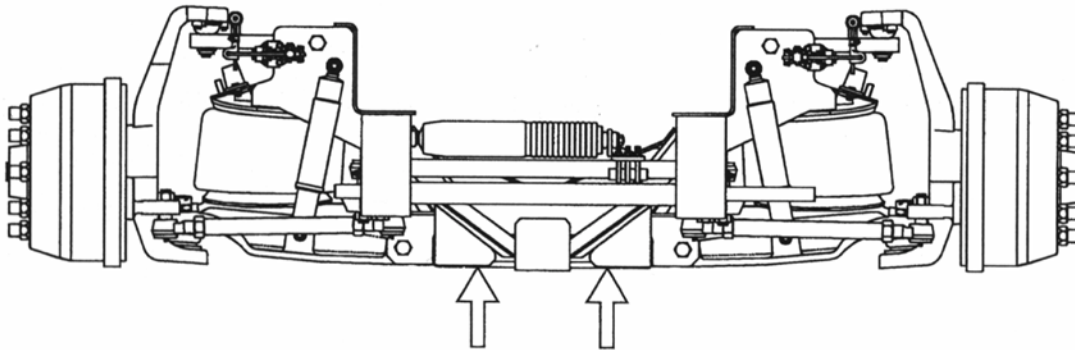


Figure 3: Jack Point Locations

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## Inspecting the Wear Ring Seating and Re- Seating

### Preparation

1. Set the parking brake and block the drive wheels to prevent vehicle movement.
2. Raise the vehicle until the front wheels are off the ground. See jacking instructions. Support raised vehicle with safety stands. Do not place jacks or safety stands under the lower control arms to support the vehicle.



**WARNING:** Never work under a vehicle supported by only a jack. Jacks can slip or fall over and cause serious personal injury. Always use safety stands.

3. If the wheel nuts have chrome covers, remove them with special pliers equipped with plastic non-marring jaws. Place them in a container to prevent damage or loss.
4. On aluminum wheels, place a plastic anti-scuff guard over the wheel nuts and loosen the wheel nuts. On steel wheels, remove the hub cap nuts if present and the hub cap before loosening the wheel nuts. Place the hubcap in safe location to prevent damage. Place the wheel and/or hub cap nuts in a container to prevent contamination or loss.

5. Remove the wheel and tire assembly and place it aside. Mark the tire to ensure it can be identified for installation on same side as removed.
6. Remove the brake drum and place it aside. Mark the brake drum to ensure it can be identified for installation on same side as removed.

### Hub Removal

1. Place an oil drip tub beneath the hub to catch oil. Rotate the hub such that the hubcap drain plug is facing upwards. Remove the drain plug from the hubcap and place it in a container for re-installation.
2. Rotate the hub such that the drain hole faces downward and drain the oil from hub cavity. Wait a few minutes for most of the oil to drain before continuing to the next step.
3. Remove the hubcap bolts, hubcap, and gasket. Take care not to damage the gasket for re-installation. Place the components in a location to prevent contamination. Note that the hub cap window may be damaged by solvents.

**NOTE:** When removing or installing the inner and outer spindle nuts use the correct wrench sockets to avoid damaging the nuts. Do not use impact driver to tighten inner and outer nuts. Only use a torque wrench to tighten the nuts.

4. Unbend the spindle washer and remove the spindle outer nut, spindle washer, locking "D"

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washer, and the inner spindle nut. Retain all components for re-assembly except discard the spindle washer.

5. Place a shop towel on top of the lower brake shoe to prevent oil from dripping onto the brake lining.
6. Tug sharply on the hub to unseat the outer bearing without completely removing the hub. Wipe up any oil spilled on the brake assembly as quickly and completely as possible. Remove the outer bearing and place it in a container to prevent contamination.
7. Remove the hub from the spindle and place it on the floor with its stud side facing downwards. Protect the wheel studs from damage. Wipe the excess oil off spindle with a clean shop towel to prevent oil dripping onto the brake assembly. If oil saturates or significantly contaminates the brake lining then replace the lining.
8. If hub seal remains in the hub after removal from spindle, remove it from the hub, discard it, and place the inner bearing with outer bearing. Otherwise remove the inner bearing from the spindle, place it with the outer bearing, and remove the hub seal from the wear ring and discard it.
9. Inspect deflector ring for damage or wear and remove it as needed. If removed, place replacement hub seal assembly P/N 7977 in

repair kit onto spindle (note orientation) and skip to step #15.

10. Separate the hub seal from the deflector ring in the replacement hub seal assembly P/N 7977 supplied in repair kit. Discard the new deflector ring.
11. Inspect the seating of the deflector ring by placing a straight edge across the deflector ring edge and the spindle bearing land and check that there is not a gap between the straight edge and the bearing land. See Figure 4. The inspection must be completed on at least 4 equidistant locations around the circumference of the bearing land.
12. If a gap is not detected then seat new hub seal onto the deflector ring and skip to next section "Installing and Adjusting the Wheel Bearing Endplay".

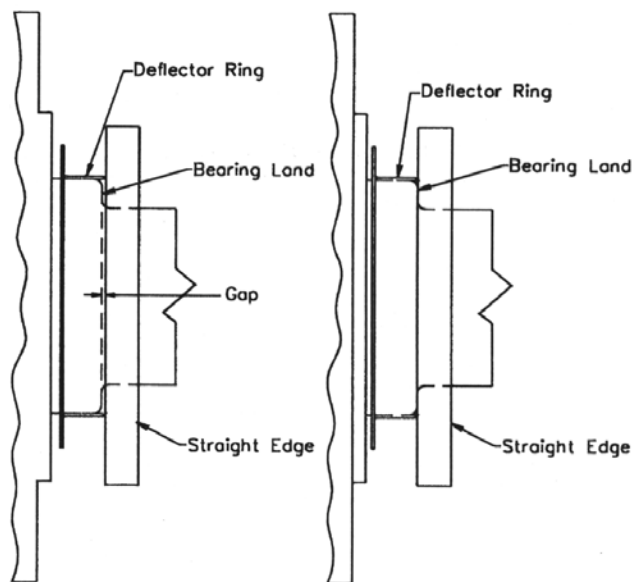


Figure 4 – Deflector Ring Seating

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13. If a gap is detected then the deflector ring must be re-seated by using the proper hub seal installation tool. Reference Stemco P/N 555-5098. The new hub seal must be installed onto the deflector ring before re-seating the deflector ring.
14. Place the replacement hub seal onto the deflector ring with the ribbed rubber side facing the flange of the deflector ring. Seat the hub seal firmly against the deflector ring flange.
15. Place the hub seal installation tool onto the spindle. Using a rubber mallet, drive the hub seal assembly onto the spindle until the deflector ring is properly seated. Repeat inspection in step #11 for proper seating.

## Installing and Adjusting the Wheel Bearing Endplay

### Preparation

1. Inspect the inner and outer bearing cups (outer bearing races), bearing cones, and hub for damage. Replace the bearing components and/or hub if damaged.

### Installation

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NOTE: Do not drive bearing onto spindle with a steel hammer or similar instrument. Inner race is a tight slip fit with spindle.

1. Place the inner bearing onto spindle with small end of taper facing outward. Seat the inner race against the bearing land of the spindle.
2. Press the ABS sensor outward about ¼". Do not use a sharp tool on lead wire end of the sensor. See IFS1200 Service Manual for installation and inspection of ABS sensor as needed.
3. Place the hub onto the spindle until it seats on the inner bearing. Do not "ram" the hub onto the seal.
4. Place the outer bearing onto the spindle until it seats on the outer cup in the hub. The inner spindle nut may be used to guide the bearing onto the spindle. The hub should be supported to prevent misalignment and binding.
5. Install the inner spindle nut and tighten hand tight.

### Adjustment

1. Seat the bearings by tightening the inner spindle nut to **180 lbf•ft** while rotating the wheel in both directions several times.
2. Loosen the inner spindle nut completely and then re-tighten the inner nut to **20 lbf•ft** while rotating the wheel in both directions several times.
3. Back off the inner spindle nut ¼ turn.
4. Install the spindle lock washer.

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**NOTE:** If the dowel pin of the inner spindle nut and a hole in the locking washer are not aligned, turn the locking washer over and re-install. If required, loosen the inner spindle nut just enough for alignment.



**CAUTION:** Never tighten the inner spindle nut to align the dowel pin with hole in locking washer. This can pre-load the bearings and cause premature bearing failure.

5. Install the replacement spindle washer P/N 6969 and the outer spindle nut. Tighten the outer spindle nut to **200-300 lbf•ft.**
6. Attach a dial indicator with a magnetic base to the face of the hub. See Figure 5. Note the brake drum is shown for reference only.
7. Place the tip of the dial indicator on the center of the steering knuckle spindle. Set the dial indicator on zero.

**NOTE:** Do not push/pull at the top and the bottom of the hub. Pushing or pulling at the top and the bottom will not yield a true measurement of the endplay.

8. Measure the endplay by simultaneously pushing/pulling on each side of the hub while observing the dial indicator. The endplay is the total travel observed. If the endplay is not within .001-.005 inch re-adjust the wheel bearings per steps 2-5 or by re-indexing inner spindle nut. Otherwise continue to step 9.

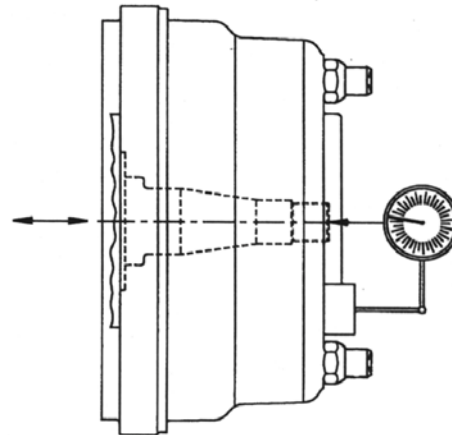


Figure 5 - Wheel Endplay Measurement

9. Bend the spindle washer over one wrench flat of the outer nut.
10. Install the hubcap gasket and hubcap. Tighten the capscrews to **20-30 lbf•ft.** See Torque Table for sequence.

## Filling and Checking Hubcap and Hub Oil Level

### Filling

1. Rotate hub such that hubcap fill hole is oriented at 12 o'clock position. See Figure 6.
2. Fill the hub cavity with the appropriate amount (17oz. for stud pilot and 14oz. For hub pilot) and type of lubricant (SAE 90W-gear oil). Note that hub cavity fill amount is based on a dry hub cavity.

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## Checking Hubcap

1. Inspect hubcap at the drain plug threads for cracks on outside surface. If cracks are found replace the hubcap.

## Checking Oil Level

1. Check that wheel hub is steered straight ahead and wheel spindle is level. The wheel spindle will be level when the suspension is at correct ride height.
2. Hubcap fill hole must be oriented in 12 o'clock position. See Figure 6.
3. Check oil level through the hubcap window. See Figure 5. If level is below the "add" level line, then fill with recommended oil until "full" level is achieved. Add oil slowly since the heavy weight oil will settle slowly in the hub. (Note: The hub cap window can only be cleaned with mild soap and water. Aromatic solvents should not be used, as they will impair the transparency of the window.)

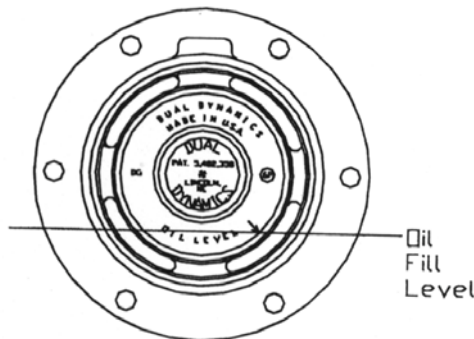


Figure 6 - Wheel Bearing Oil Level

4. Install the hubcap drain plug. Do not overtighten.

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5. Check the hubcap for external oil leakage at the drain plug or gasket. For leaks at the drain plug check for application of thread sealant to threads and tightness. For leaks at the gasket, replace the gasket. The vent plug will normally weep a small amount of oil.

## Installing Brake Drum and Wheel

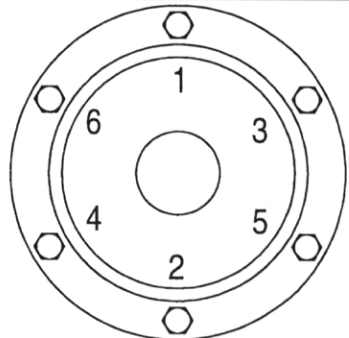
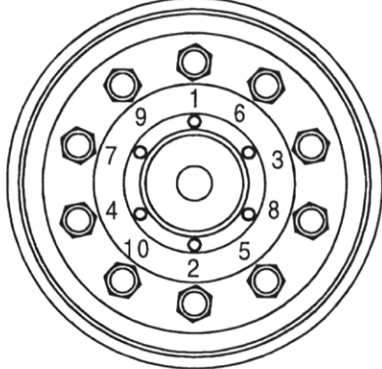
1. Install the brake drum on the hub.
2. Install the wheel and tire assembly and the wheel nuts.
3. On aluminum wheels, use a plastic anti-scuff guard over the wheel nuts. Tighten the wheel nuts to **450-500 lbf•ft**. See Torque Table for sequence.
4. Replace the hubcap nuts and hubcaps if removed.
5. Remove jack stands and jacks.

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## TORQUE TABLE

APPLICATIONS	FASTENER SIZE	TORQUE SPEC. (LBF•FT.) (CLEAN AND DRY)	TORQUE SEQUENCE
Hub Cap Bolt	5/16-18 Grade 5	20-30	
Wheel Nut	1-1/8-16 or M22 x 1.5	450-500	

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## Claim Form

### Vehicle Information

Coach Manufacturer (Check one): • Fleetwood • Gulfstream • Newmar  
• Other \_\_\_\_\_

Chassis VIN (last five digits only): \_\_\_\_\_

Suspension Model (Check one): • IFS1200 • IFS1200-HP • IFS1200-SP  
• IFS1320-HP • IFS1320-SP • IFS1370-HP • IFS1370-SP

Suspension S/N (six digits): \_\_\_\_\_

Mileage: \_\_\_\_\_

### Replacement Information

Date: \_\_\_\_\_ Contact Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Location: \_\_\_\_\_

Address: \_\_\_\_\_

The allowable labor charges for 1) inspecting wear ring seating and re-seating; 2) adjusting the wheel bearings; 3) adding lubrication is not to exceed 2-1/2 hours @ \$50.00/hr per suspension. Prior written approval is required if labor charges will exceed this limit. Tuthill Transport Technologies will also cover the material expense for wheel bearing oil.

Labor Hours: \_\_\_\_\_ (Attach copy of invoice if available)

**\*\* Reimbursement for labor and material will not occur unless this form is completed and returned to Tuthill Transport Technologies .Fax (219) 279-2390; Attn: Customer Service; RE: IFS Bearing Adjustment.**

Call (800) 255-7824 and ask for Customer Service for additional assistance.



**TUTHILL**  
Transport Technologies

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Item	ECN #	Date	Was	Now	By	App'd
--	--	6/9/99	Initial Release	n/a	DFB	DFB

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