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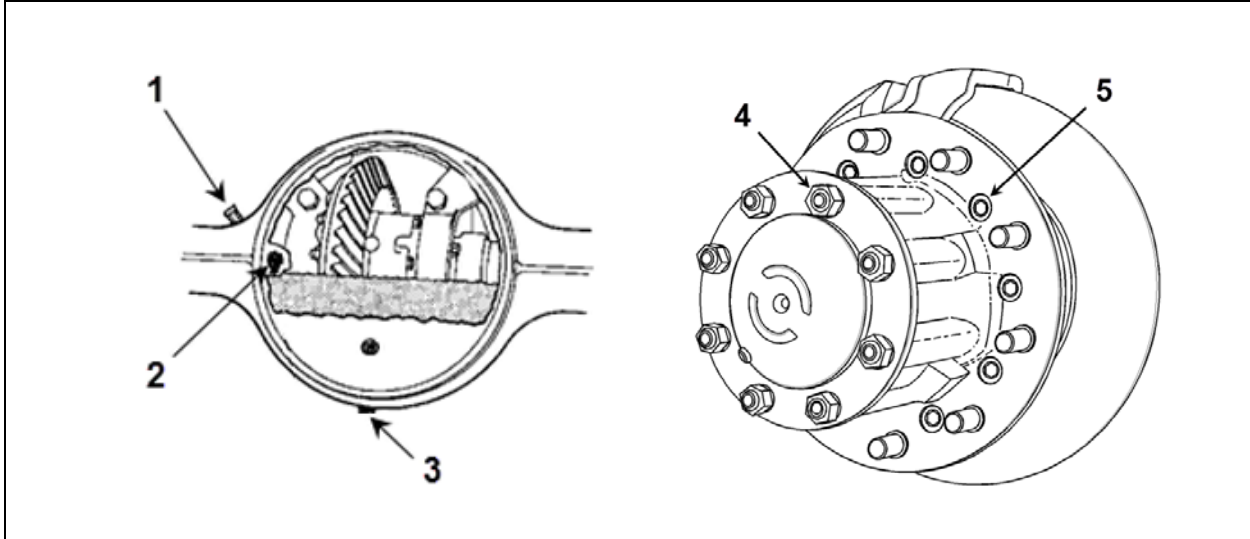
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1. TORQUE TABLES

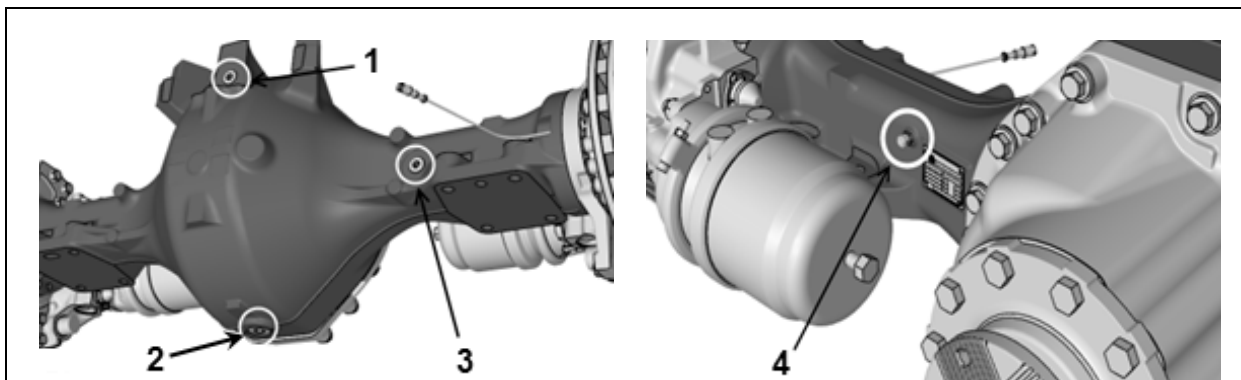
1.1 MERITOR DRIVE AXLE



MERITOR DRIVE AXLE		
No	DESCRIPTION	TORQUE
1	Breather	12-18 lb-ft (16-24 Nm)
2	Fill / Level check plug	35 lb-ft (47 Nm) minimum *
3	Drain plug	35-50 lb-ft (47-68 Nm)
4	Drive shaft flange nuts 5/8-18	150-230 lb-ft (203-312 Nm)
5	Hub to disc cap screws 9/16-18	110-165 lb-ft (149-224 Nm)

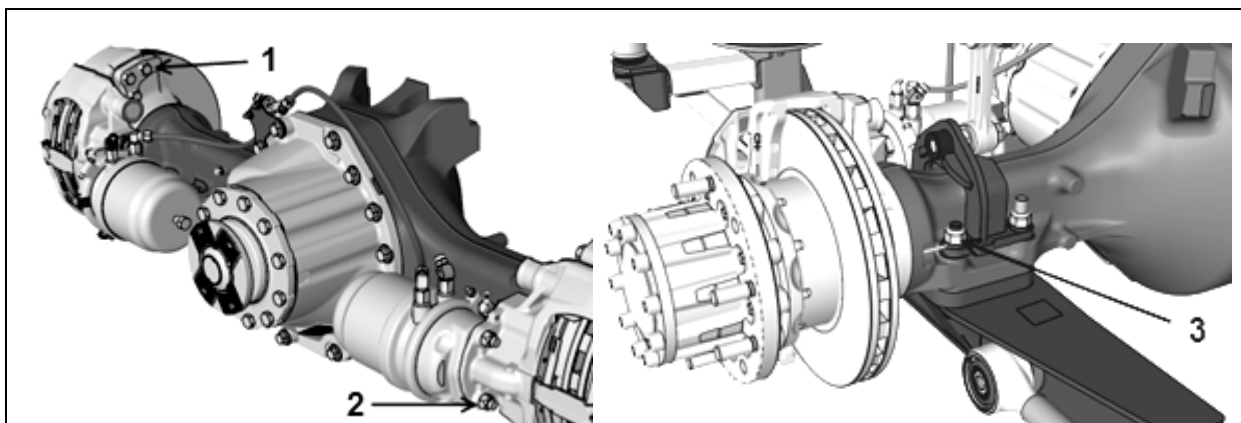
\* Minimum value, tighten until only one full plug thread is visible.

**1.2 ZF A132 DRIVE AXLE**



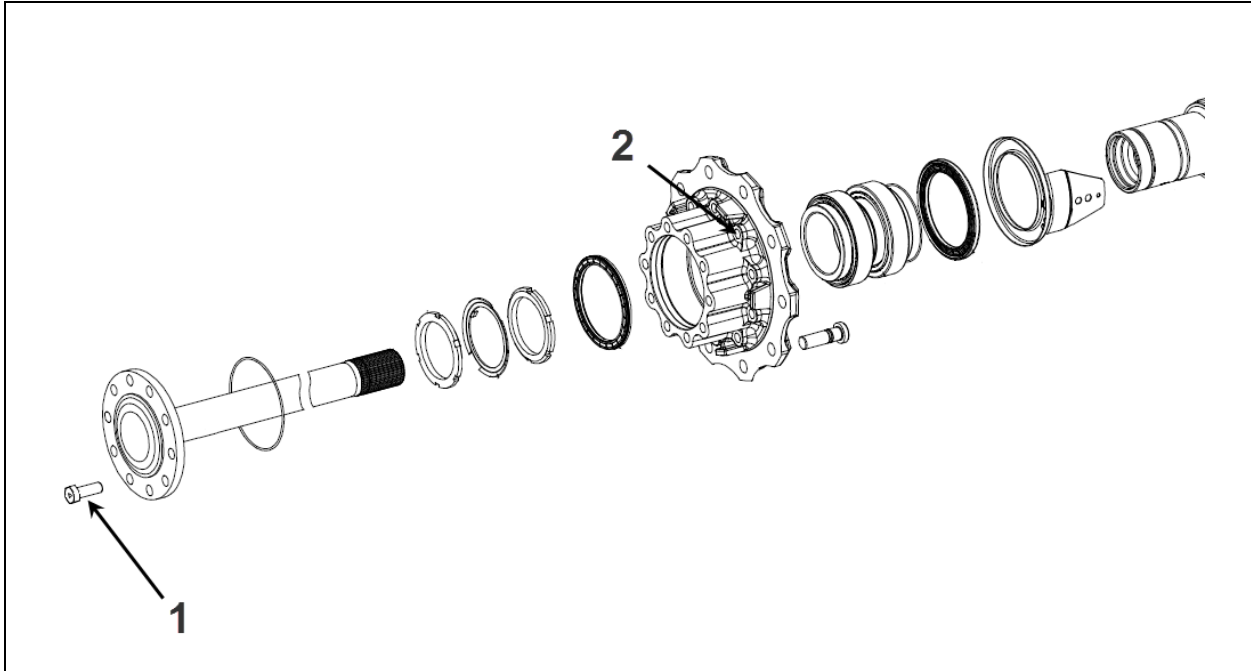
**ZF A132 DRIVE AXLE**

No	DESCRIPTION	TORQUE
1	Filler plug	52 lb-ft (71 Nm)
2	Drain plug	96 lb-ft (130 Nm)
3	Level check plug	52 lb-ft (71 Nm)
4	Breather	4 lb-ft (5 Nm)



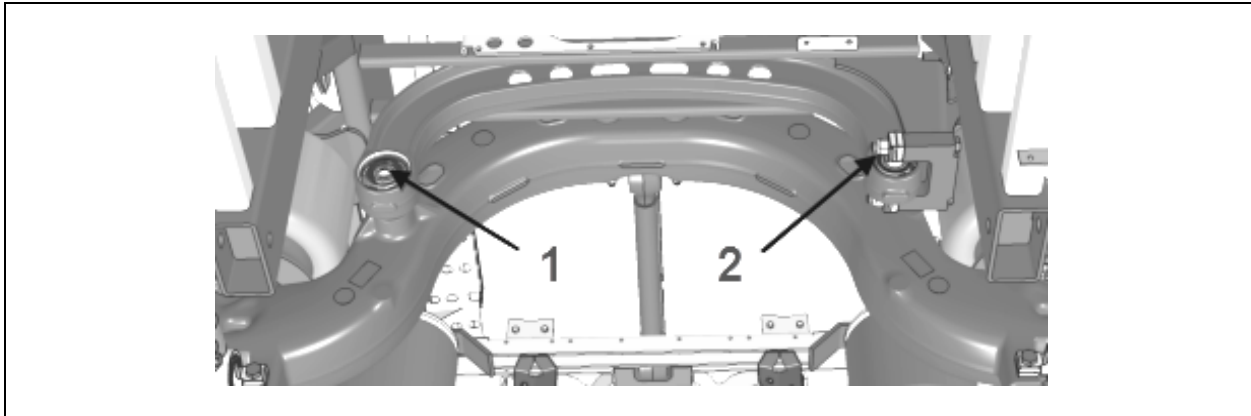
**ZF A132 DRIVE AXLE**

No	DESCRIPTION	TORQUE
1	Caliper mounting bolts	200 lb-ft (271 Nm)
2	Brake air chamber mounting bolts	120-150 lb-ft (163-203 Nm)
3	Axle to frame mounting bolts	405-495 lb-ft (549-671 Nm)



ZF A132 DRIVE AXLE		
No	DESCRIPTION	TORQUE
1	Drive shaft flange bolts cap screw M18x1.5x50mm G10.9	325 lb-ft (441 Nm)
2	Hub cap screw Torx M16x1.5x60	221 lb-ft (300 Nm)

1.3 TAG AXLE



TAG AXLE		
No	DESCRIPTION	TORQUE
1	Tag axle transversal radius rod (stud) retaining bolt	198 lb-ft (268 Nm)
2	Tag axle radius rods nut	228-252 lb-ft (309-342 Nm)

## 2. MERITOR DRIVE AXLE

### 2.1 DESCRIPTION

The Meritor drive axle is equipped with a single reduction standard carrier mounted in front of the axle housing. The carrier consists of a hypoid drive pinion, a ring gear set and gears in the differential assembly.

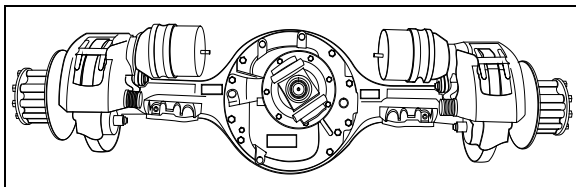


FIGURE 1: DRIVE AXLE

11019

A straight roller bearing (spigot) is mounted on the head of the drive pinion. All other bearings in the carrier are tapered roller bearings. When the carrier operates, there is a normal differential action between the wheels all the time.

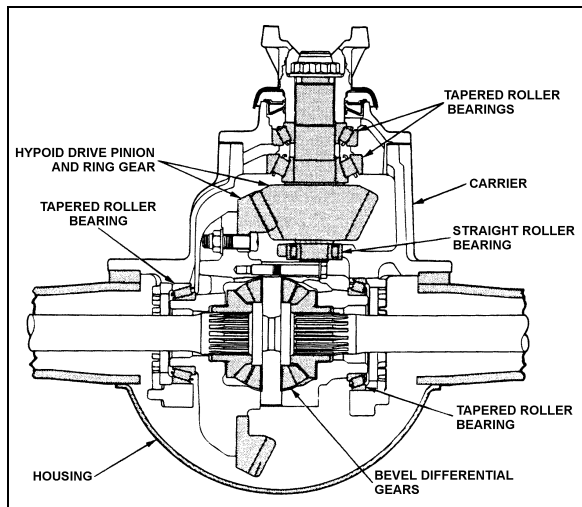


FIGURE 2: DIFFERENTIAL ASSEMBLY

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Several speed ratios are available for the drive axle. These ratios depend upon the motor and transmission. Also, special applications may suggest slightly different gear ratios.

Additional information is found in the following manuals, included on your vehicle Technical Publications USB flash drive:

- ***Meritor Maintenance Manual 5A – single reduction differential carriers***
- ***Meritor Maintenance Manual 23A – Bus and Coach Rear Drive Axles***
- ***Meritor Technical Bulletin TP-9539 Approved Rear Drive Axle Lubricants***

### 2.2 DCDL (DRIVER-CONTROLLED MAIN DIFFERENTIAL LOCK)

Meritor Single-reduction carriers with driver-controlled main differential lock (DCDL) have the same type of gears and bearings as the standard-type carriers. The differential lock is operated by an air actuated shift assembly that is mounted on the carrier.

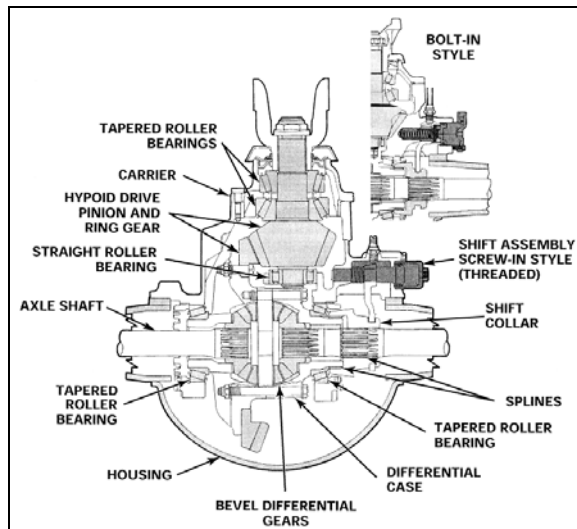


FIGURE 3: DRIVER-CONTROLLED DIFFERENTIAL LOCK

### 2.3 MAINTENANCE

Proper vehicle operation begins with preventive maintenance, such as good differential use. The most common types of drive axle carrier failures are spinout, shock, fatigue, overheating and lubrication. Avoid neglecting these points since they would be the first steps to improper maintenance, expensive repairs, and excessive downtime.



## MAINTENANCE


Inspect the pinion oil seal, axle shaft flange and carrier housing gaskets for evidence of lubricant leakage. Tighten the bolts and nuts, or replace the gaskets and seals to correct leaks. Maintenance of the axle mountings consists primarily in a regular and systematic inspection of the air suspension units and radius rods, as directed in Section 16, "Suspension".

#### 2.3.1 Drive Axle Lubrication

Use multigrade gear oil meeting API specification GL-5. Petroleum based gear oil may be used for standard drains interval. Fully


synthetic gear oil must be used for extended drains interval. In extreme conditions, or for better performance, fill with synthetic gear oil.

Fill Meritor axle with approved lubricants. Refer to Meritor technical bulletin **TP-9539 Approved Rear Drive Axle Lubricants** for oil selection.

 **MAINTENANCE**

**Differential oil**

Check oil level (add if necessary) at the intervals specified by the Lubrication And Servicing Schedule in Section 24: LUBRICATION & SERVICING.

 **MAINTENANCE**

**Extended Drains**

If using full synthetic gear oil, change differential oil and clean the breathers, magnetic fill and drain plugs, at the intervals specified by the Lubrication And Servicing Schedule in Section 24: LUBRICATION & SERVICING.

**Regular Drains**

If using petroleum based oil, change differential oil and clean the breathers, magnetic fill and drain plugs, at the intervals specified by the Lubrication And Servicing Schedule in Section 24: LUBRICATION & SERVICING.

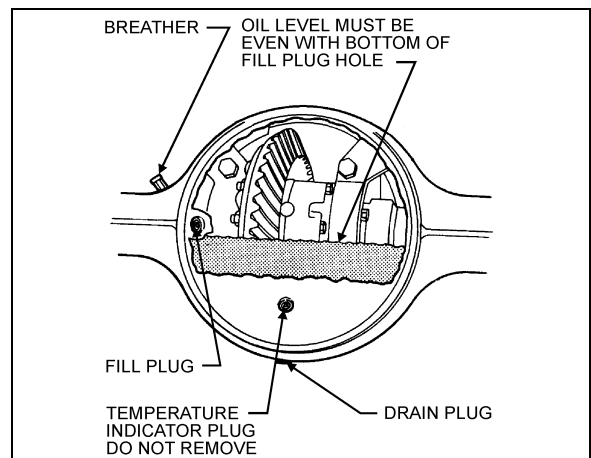




FIGURE 4: DIFFERENTIAL HOUSING BOWL 11007

2.3.2 Checking and Adjusting the Oil Level

 **DANGER**

Before servicing, park safely over a repair pit; apply parking brake, stop engine and set battery master switch to the "OFF" position.

1. Make sure the vehicle is parked on a level surface.

 **WARNING**


Check the oil level when the axle is at room temperature. When hot, the oil temperature may be 190°F (88°C) or more and can cause burns. Also, a correct reading is not obtained when the axle is warm or hot.

2. Make sure the axle is "cold" or at room temperature.
3. Clean the area around the fill plug. Remove the fill plug from the differential axle housing bowl (Figure 4).
4. The oil level must be even with the bottom of the hole of the fill plug.
  - a. If oil flows from the hole when the plug is loosened, the oil level is high. Drain the oil to the correct level.
  - b. If the oil level is below the bottom of the hole of the fill plug, add the specified oil.
5. Install and tighten the fill plug.

**TORQUE: 35 lb-ft (47 Nm)**

**(Tighten until only one full plug thread is visible)**

2.3.3 Draining and Replacing the Oil

 **DANGER**

Before servicing, park safely over a repair pit; apply parking brake, stop engine and set battery master switch to the "OFF" position.

1. Make sure the vehicle is parked on a level surface. Put a large container under the axle's drain plug.

**NOTE**

*Drain the oil when the axle is warm.*

## SECTION 11: REAR AXLES

2. Remove the drain plug from the bottom of the axle. Drain and discard the oil in an environment friendly manner.

3. Install and tighten the drain plug.

**TORQUE: 35-50 lb-ft (47-68 Nm)**

4. Clean the area around the fill plug. Remove the fill plug from the differential housing bowl.
5. Add the specified oil until the oil level is even with the bottom of the hole of the fill plug. Allow the oil to flow through the axle and check the oil level again (lube capacity 41 pints [13.3 liters]).



### CAUTION

The differential overheats when the oil temperature rises above 250°F (120°C).

6. Install and tighten the fill plug.

**TORQUE: 35 lb-ft (47 Nm)**

**(Tighten until only one full plug thread is visible)**

### Speed Sensors (Anti-Lock Brake system, ABS)

For removing and installing the drive axle speed sensors (for anti-lock brake systems, ABS), refer to Section 12: "Brake and Air System" and to Rockwell WABCO Maintenance Manual: "Anti-Lock Brake Systems For Trucks, Tractors and Buses", annexed at the end of section 12.

### 2.4 REMOVAL AND REINSTALLATION

The following procedure deals with the removal of the drive axle assembly and its attachments as a unit. The method used to support the axle during removal and disassembly depends upon local conditions and available equipment.

1. Raise vehicle by its jacking points on the body (Figure 5 or see Section 18, "Body" under heading "Vehicle Jacking Points"). Place jack stands under frame. Remove drive axle wheels (if required, refer to Section 13, "Wheels, Hubs And Tires".

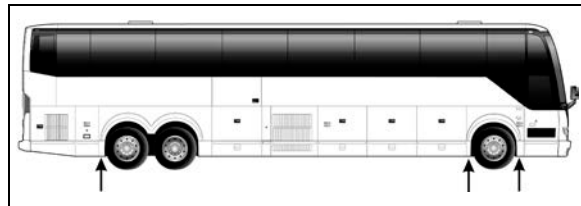
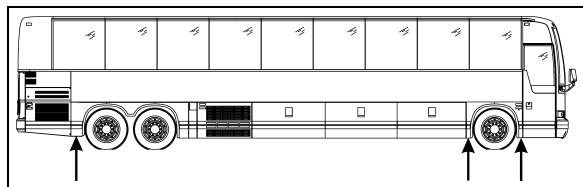


FIGURE 5: JACKING POINTS ON FRAME

18524

2. Exhaust compressed air from the air supply system by opening the drain cock on each air reservoir.
3. Disconnect the propeller shaft as directed in Section 9, "Propeller Shaft", in this manual.
4. On both sides of the vehicle, unscrew fasteners retaining front wheel housing plastic guards, and remove them from vehicle.
5. Disconnect both height control valve links from air spring mounting plate brackets then move the arm down to exhaust the air suspension.
6. Remove cable ties securing the ABS cables (if vehicle is so equipped) to service brake chamber hoses. Disconnect the ABS cable plugs from the drive axle wheel hubs.

### NOTE

When removing drive axle, if unfastening cable ties is necessary for ease of operation, remember to replace them afterwards.

7. Disconnect the brake chamber hoses.

### NOTE

Position the hoses so they will not be damaged when removing the axle.

8. Install jacks under the axle jacking points to support the axle weight (refer to Figure 6).

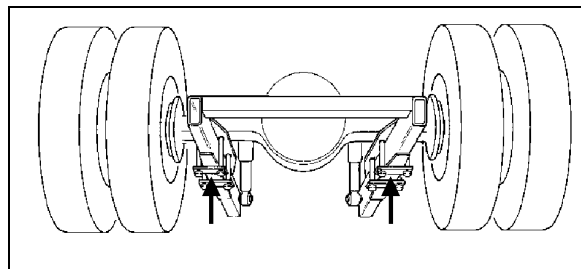


FIGURE 6: JACKING POINTS ON DRIVE AXLE

H3B762

9. Remove the four shock absorbers as outlined in Section 16: Suspension under heading Shock Absorber Removal.
10. Remove the sway bar.



11. Remove the lower and upper longitudinal radius rod supports from vehicle sub-frame as outlined in *Section 16: Suspension*, under heading *"Radius Rod Removal"*.
12. Remove the transversal radius rod support from the vehicle sub-frame.
13. Remove the two retaining nuts from each of the four air bellows lower mounting supports.
14. Use the jacks to lower axle. Carefully pull away the jacks axle assembly from underneath vehicle.
15. Reverse removal procedure to reinstall drive axle.

<b>NOTE</b>
<i>Refer to Section 16: Suspension for suspension components' proper tightening torques.</i>

<b>NOTE</b>
<i>Refer to section 13 "Wheels, Hubs And Tires" for correct wheel bearing adjustment procedure.</i>

**2.5 DISASSEMBLY AND REASSEMBLY**

Disassembly and re-assembly procedures are covered under applicable headings in Meritor's *"MAINTENANCE MANUAL, NO. 5A"*, annexed to this section.

**2.6 GEAR SET IDENTIFICATION**

Gear set identification is covered under applicable heading in Meritor's *"MAINTENANCE MANUAL NO. 5A"*.

**2.7 ADJUSTMENTS**

Adjustments are covered under applicable headings in Meritor's *"MAINTENANCE MANUAL NO. 5A"*, annexed to this section.

**2.8 FASTENER TORQUE CHART**

A differential fastener torque chart is provided in Meritor's *"MAINTENANCE MANUAL NO. 5"*, annexed to this section.

**2.9 TIRE MATCHING**

Drive axle tire matching is covered under the applicable heading in Section 13, *"Wheels, Hubs And Tires"* in this manual.

**2.10 DRIVE AXLE ALIGNMENT**

<b>NOTE</b>
<i>For drive axle alignment specifications, refer to paragraph 3: "Specifications" in this section.</i>

The drive axle alignment consists in aligning the axle according to the frame. The axle must be perpendicular to the frame. The alignment is achieved with the use of shims inserted between the lower longitudinal radius rod supports and the frame.

Drive axle alignment is factory set and is not subject to any change, except if the vehicle has been damaged by an accident or if there are requirements for replacement.

If the axle has been removed for repairs or servicing and if all the parts are reinstalled exactly in the same place, the axle alignment is not necessary. However, if the suspension supports have been replaced or altered, proceed with the following instructions to verify or adjust the drive axle alignment.

<b>NOTE</b>
<i>When drive axle alignment is modified, tag axle alignment must be re-verified.</i>

**2.10.1 Procedure**

1. Park vehicle on a level surface, then chock front vehicle wheels.
2. Using two jacking points (which are at least 30 inches [76 cm] apart) on drive axle, raise the vehicle sufficiently so that wheels can turn freely at about ½ inch from ground. Secure in this position with safety stands, and release parking brake.
3. Install wheel mount sensors on front and drive axles (Figure 7).

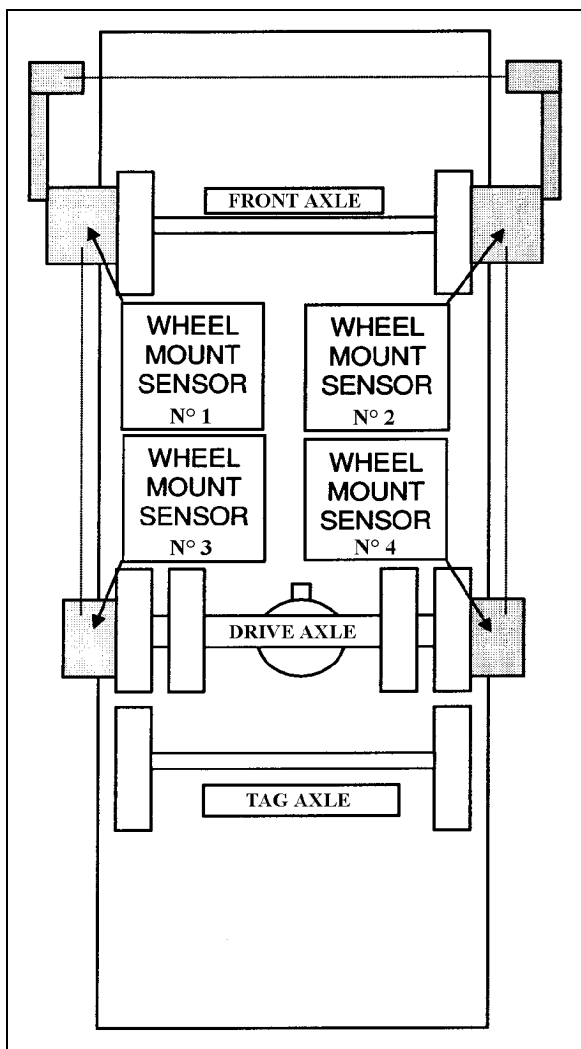
<b>NOTE</b>
<i>See reference numbers on wheel mount sensors (Figure 7).</i>

<b>NOTE</b>
<i>Select axle specifications in the appropriate chart.</i>

**2.10.2 Drive Axle Alignment Specifications**

With the system installed as for front axle alignment (Figure 7), adjust drive axle according to specifications chart below. Use static wheel alignment systems which work with angle measurements only, such as Josam or Hunter systems. Static alignment specifications are listed in the following tables:

<b>DRIVE AXLE ALL VEHICLES</b>			
Alignment / value	Minimum value	Nominal value	Maximum value
Thrust angle (deg.)	±0.11°		
Total Toe (deg.)	0.18 Toe-in	0	0.18 Toe-in



**FIGURE 7: FRONT & DRIVE AXLE ALIGNMENT** 11025

**NOTE**

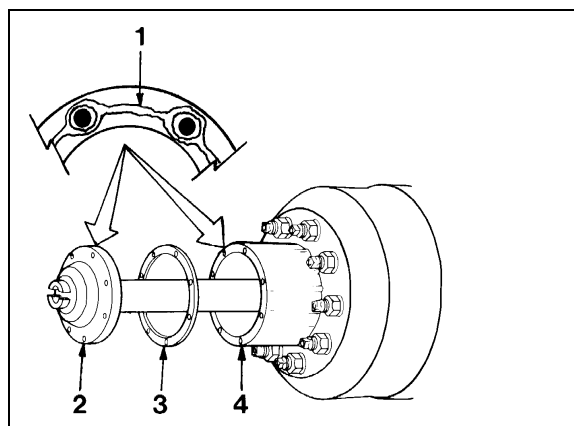
Refer to Section 16, "Suspension", for proper torque tightening of the longitudinal radius rod support nuts.

**NOTE**

When the drive alignment is changed, the tag alignment must also be adjusted.

**2.11 AXLE SHAFT SEALING METHOD**

The following method is to be used to ensure that axle shaft installation is fluid-tight:



**FIGURE 8: AXLE SHAFT INSTALLATION**

11003

- 1.....Silicone sealant\*
- 2.....Axle shaft
- 3.....Gasket
- 4.....Wheel hub

1. Clean the mounting surfaces of both the axle shaft flange and wheel hub where silicone sealant will be applied. Remove all old silicone sealant, oil, grease, dirt and moisture. Dry both surfaces.
2. Apply a continuous thin bead of silicone sealant\* (Prevost P/N 680053) on the mounting surfaces and around the edge of all fastener holes of both the axle shaft flange and wheel hub.

\* GENERAL ELECTRIC Silicone Rubber Adhesive Sealant RTV 103 Black.



**WARNING**

Carefully read cautions and instructions on the tube of silicone sealant and its packing.

3. Assemble components immediately to permit the silicone sealant to compress evenly between parts.
  - a. Place a new gasket and then install the axle shaft into the wheel hub and differential carrier. The gasket and flange of the axle shaft must fit flat against the wheel hub.
  - b. Install the tapered dowels at each stud and into the flange of the axle shaft. Use a punch or drift and hammer if needed.
  - c. Install the lock washers and nuts on the studs. Tighten nuts to the correct torque value.

**NOTE**  
Torque values are for fasteners that have a light application of oil on the threads (refer to Meritor Maintenance Manual).

**9/16-18 nut**

**TORQUE: 110-165 lb-ft (149-224 Nm)**

**5/8-18 nut**

**TORQUE: 150-230 lb-ft (203-312 Nm)**

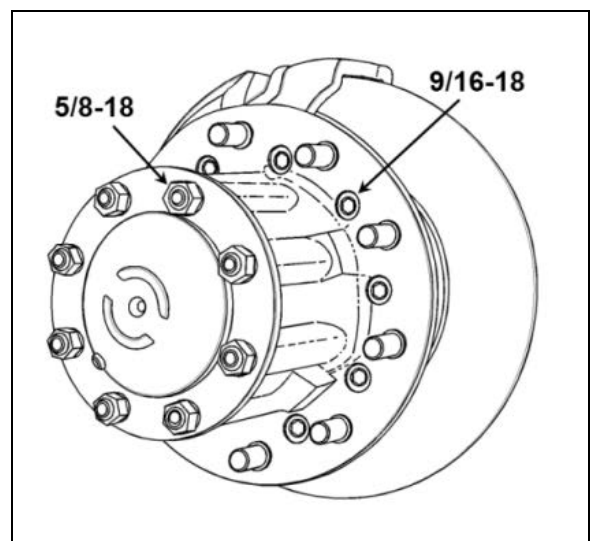


FIGURE 9: FASTENER SIZE IDENTIFICATION

**3. ZF A132 DRIVE AXLE**

This vehicle may be equipped with a ZF model A132 Hypoid Single Reduction drive axle, fitted with two Knorr Bremse brake chambers, Knorr

Bremse SN7 disc brake and companion flange for Dana Spicer SPL250 propeller shaft. Visual wear indicator or potentiometer wear indicator may be installed. The carrier gear ratio is 3.54.

**NOTE**  
Additional information is found in the following manuals, included on your vehicle technical publications CD:

- OPERATING INSTRUCTIONS ZF AXLE A132 (version with US hub) #5871 207 982 EN.
- ZF AXLE A132 REPAIR MANUAL #5871 207 002E

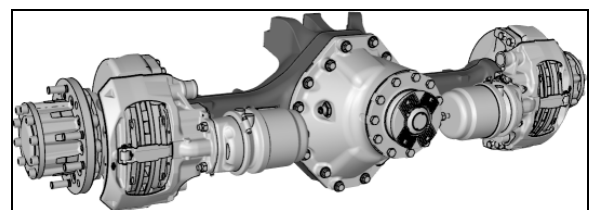


FIGURE 10: ZF A132 DRIVE AXLE 11019

**3.1 MAINTENANCE**

Proper vehicle operation begins with preventive maintenance, such as good differential use. The most common types of drive axle carrier failures are spinout, shock, fatigue, overheating and lubrication. Avoid neglecting these points since they would be the first steps to improper maintenance, expensive repairs, and excessive downtime.

Inspect at the pinion oil seal, axle shaft flange and carrier housing joint for evidence of lubricant leakage. Tighten the bolts and nuts, or replace the gaskets and seals to correct leaks.

Maintenance of the axle mountings consists primarily in a regular and systematic inspection of the radius rods, as directed in Section 16, "Suspension".


**3.1.1 Differential Oil Type**


Use **Chevron Multigear Oil 80W90** (ZF lubricant class 12M). Other approved lubricants may be use. Additional lubrication information is covered in ZF's list of lubricants TE-ML 12.

**3.1.2 Checking and Adjusting the Differential Oil Level**

- Place the vehicle on a level surface.
- Level check plug must be cleaned carefully before opening.

- Check oil level at room temperature only.

	<h2>MAINTENANCE</h2>
<p><b>Oil level check</b></p> <p>Check differential oil level and add if necessary at every engine oil change.</p>	

	<h2>WARNING</h2>
<p>Check the oil level when the axle is at room temperature. When hot, the oil temperature may be 190°F (88°C) or more and can cause burns. Also, a correct reading is not obtained when the axle is warm or hot.</p>	

- Make sure the axle is at room temperature.
- Clean the area around the level check plug. Remove the level check plug from the differential case.
- The oil level must be even with the bottom of the level check bore.

*If oil flows from the hole when the plug is loosened, the oil level is too high. Let drain the oil to the correct level.*


*If the oil level is below the bottom of the level check bore, add the specified oil through the level check bore.*

- Reinstall the level check plug using a new seals (O-ring).

**Tighten to 52 lb-ft (71 Nm)**

### 3.1.3 Differential Oil Change

- Place the vehicle on a level surface.
- Drain, filler and level check plugs must be cleaned carefully before opening.
- Drain oil only at operating temperature, immediately after the vehicle has been operated for an extended period of time.
- Renew seals components (O-rings).

	<h2>MAINTENANCE</h2>
<p><b>Oil change interval – Lubricant class 12M</b></p> <p>Change differential oil and breather, clean the drain plug’s magnetic inserts after 110 000 miles (180 000 km) or 3 years, whichever</p>	

comes first.

**Hot Region Operation.** Change differential oil and breather, clean the drain plug’s magnetic inserts after 80 000 miles (120 000 km) or 2 years, whichever comes first.

*Note: Different oil change intervals may be applicable if not using Lubricant Class 12M oil. Refer to ZF list of lubricants TE-ML 12 for appropriate oil change intervals if not using Lubricant Class 12M .*

*Hot region oil change interval is applicable where:*

*The monthly average temperature exceeds 25°C in more than 2 months within a year or if temperatures rise above 40°C on more than 7 days in a year*

*Possible hot region: USA (South and deserts)*

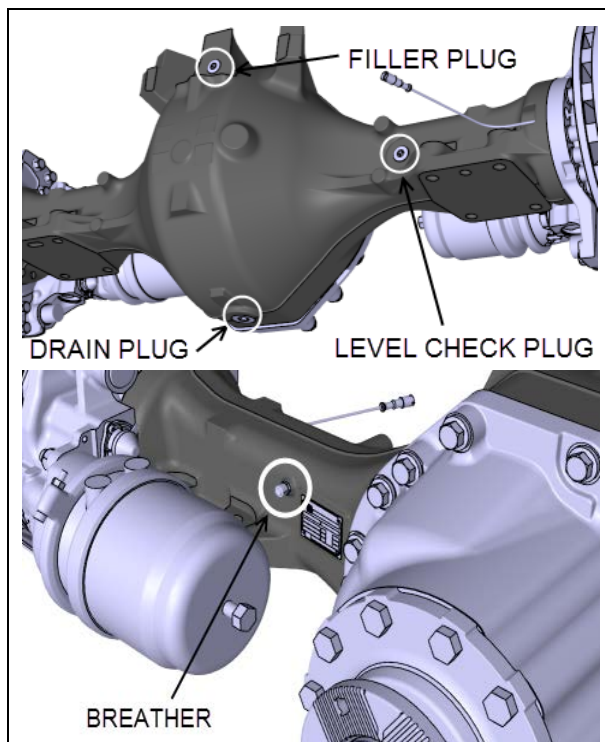



FIGURE 11: ZF A132 DRIVE AXLE

- Put a large container under the differential case drain plug. The differential case contains approximately 19 quarts of oil.
- Remove the drain plug from the bottom of the differential case. Drain all the oil and discard in an environment friendly manner.

- Clean the magnetic insert of the drain plug, fit a new seal (O-ring) and reinstall drain plug.

 <p><b>WARNING</b></p>
<p>The oil temperature may be extremely high! Risk of burn injuries.</p>

- Remove the filler plug and the level check plug.
- Reinstall the drain plug.

**Tighten to 96 lb-ft (130 Nm)**

- Add the specified oil at the filler plug until the oil level is even with the bottom of the level check bore.

*Filling volume is about 19 quarts (18 liters) at the level check bore*

- Allow the oil to flow through the axle and check the oil level again after some minutes. Refill if necessary until specified level is reached and remains constant.
- Reinstall the filler plug and level check plug using new seals (O-ring).

**Tighten to 52 lb-ft (71 Nm)**


- Replace the breather with every oil change.

**TORQUE: 4 lb-ft (5 Nm)**

**3.1.4 Compact Bearing (Hub Unit) Axial Play Check**


Check the compact bearing (hub unit) axial play every 100 000 miles. Furthermore, the bearing must be checked in case of brake disk change, ABS fault message and rising noise level at increasing speed.

Perform compact bearing (hub unit) axial play check as described in paragraph 6.2 HOW TO CHECK THE AXIAL PLAY of the following manual: OPERATING INSTRUCTIONS ZF AXLE A132 (version with US hub) #5871 207 982 EN.

 <p><b>MAINTENANCE</b></p>
<p><b>Compact bearing (hub unit) axial play</b></p> <p>Check the bearing axial play once a year or every 100 000 miles (160 000 km) whichever occurs first.</p>

**3.1.5 Compact bearing (hub unit) Grease Change**

Perform compact bearing (hub unit) grease change as described in paragraph 7.3 GREASE CHANGE IN THE HUB of the following manual: OPERATING INSTRUCTIONS ZF AXLE A132 (version with US hub) #5871 207 982 EN.

 <p><b>MAINTENANCE</b></p>
<p><b>Compact bearing (hub unit) axial play – ZF Lubricant class 12H</b></p> <p>The compact bearing grease must be change every 6 years or 500 000 miles (800 000 km), whichever comes first.</p> <p>The list of approved Lubricant Class 12H grease types is found in ZF's list of lubricants TE-ML 12.</p>

**3.1.6 Speed Sensors (Anti-Lock Brake system, ABS)**

For removing and installing the drive axle speed sensors (for anti-lock brake systems, ABS), refer to Section 12: Brake and Air System.

**3.2 DRIVE AXLE FLANGE SHAFT REMOVAL/INSTALLATION**

Refer to paragraphs **9-Towing** and **11- Replacement of Axle Insert** in the following manuals, included on your vehicle USB flash drive:

- OPERATING INSTRUCTIONS ZF AXLE A132 (version with US hub) #5871 207 982 EN.

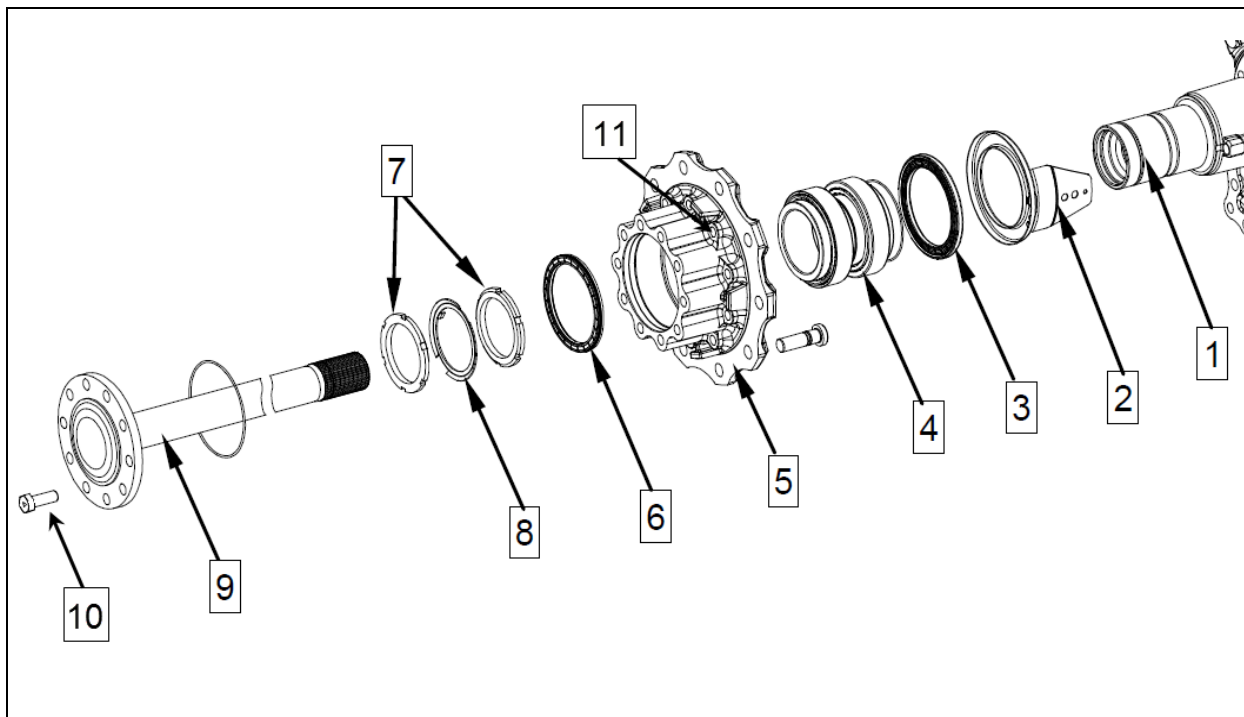


FIGURE 12: ZF A-132 DRIVE AXLE HUB ASSEMBLY

1	Hub carrier	7	Slotted nut
2	Screen sheet	8	Locking plate
3	Shaft seal (with impulse disc)	9	Flange shaft
4	Compact bearing (hub unit)	10	Cap screw M18x1.5x50mm G10.9 (14mm hex socket driver "Allen")
5	Hub	11	Cap screw Torx M16x1.5x60 (E20 Torx socket)
6	Shaft seal		

### 3.3 REMOVAL AND REINSTALLATION

The following procedure deals with the removal of the drive axle assembly and its attachments as a unit. The method used to support the axle during removal and disassembly depends upon local conditions and available equipment.

2. Raise vehicle from the front wheels and drive axle wheels. Place jack stands under the rear chassis hoisting points. Remove drive axle wheels (if required, refer to Section 13, "Wheels, Hubs and Tires".
2. Exhaust compressed air from the air supply system by opening the drain cock on each air reservoir.
3. Disconnect the propeller shaft as directed in Section 9, "Propeller Shaft", in this manual.
5. Disconnect the lower end both height control valve link then move the arm up to exhaust air suspension.
6. Disconnect the ABS speed sensors connector located over the differential housing.

**NOTE**

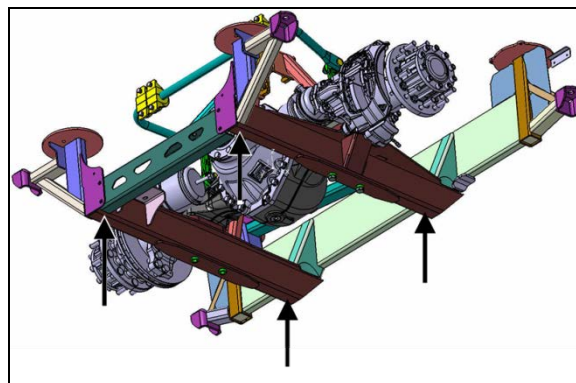
*When removing drive axle, if unfastening cable ties is necessary for ease of operation, remember to replace them afterwards.*

7. Disconnect the air brake supply hoses over the differential carrier.

**NOTE**

*Position the hoses so they will not be damaged when removing the axle.*

8. Install jack stands under the drive axle subframe at the four locations shown on figure 4.



**FIGURE 13: SUPPORT THE DRIVE AXLE SUBFRAME AT THE FOUR LOCATIONS SHOWN**

16. Disconnect the lower ends of the four shock absorbers as outlined in Section 16, "Suspension" under heading "Shock Absorber Removal".
17. Remove the two sway bar links.
18. Remove the lower and upper longitudinal radius rod supports as outlined in Section 16, "Suspension", under heading "Radius Rod Removal".
19. Remove the transversal radius rod (panhard bar).
20. Remove the two retaining nuts from each of the four air springs lower mounting supports.
21. Disconnect the drive axle speed sensor.
22. Use the jacks to lower axle. Carefully pull away the drive axle assembly from underneath vehicle.
23. Reverse removal procedure to reinstall drive axle.

**NOTE**

*Refer to Section 16, "Suspension" for suspension components' proper tightening torques.*

**NOTE**

*Refer to section 13 "Wheels, Hubs And Tires" for correct wheel bearing adjustment procedure.*

### 3.4 DISASSEMBLY, REASSEMBLY, ADJUSTMENT AND TORQUE CHART

Disassembly and re-assembly procedures are covered in the following manual:

- ZF AXLE A132 REPAIR MANUAL #5871 207 002E

### 3.5 ZF A132 DRIVE AXLE ALIGNMENT

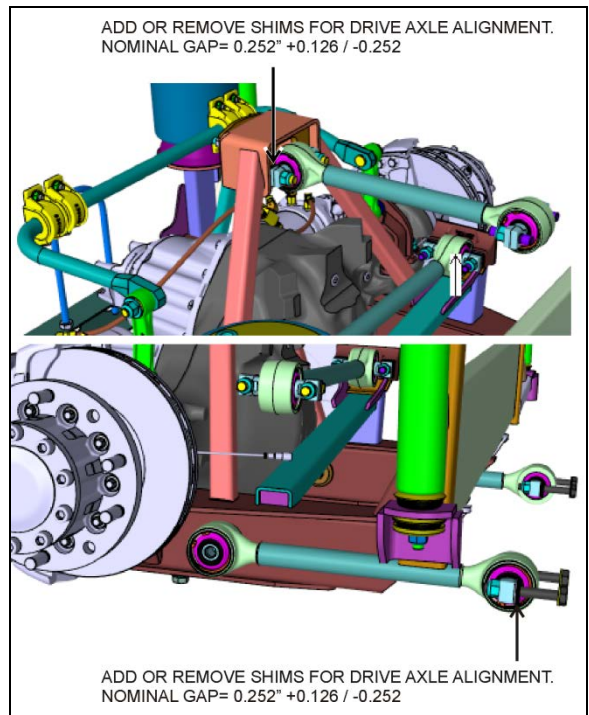
The drive axle alignment consists in aligning the axle according to the frame. The axle must be perpendicular to the frame. The alignment is achieved with the use of shims inserted between the lower longitudinal radius rod supports and the frame.

Drive axle alignment is factory set and is not subject to any change, except if the vehicle has been damaged by an accident or if there are requirements for replacement.

If the axle has been removed for repairs or servicing and if all the parts are reinstalled exactly in the same place, the axle alignment is not necessary. However, if the suspension supports have been replaced or altered, proceed with the following instructions to verify or adjust the drive axle alignment.

**NOTE**

*When drive axle alignment is modified, tag axle alignment must be re-verified.*



#### 3.5.1 Procedure

1. Park vehicle on a level surface, then chock front vehicle wheels.
2. Using two jacking points (which are at least 30 inches [76 cm] apart) on drive axle, raise the vehicle sufficiently so that wheels can turn freely at about 1/2 inch from ground. Secure in this position with safety stands, and release parking brake.
3. Install wheel mount sensors on front end and drive axle wheels (Figure 7).

**NOTE**

*Select axle specifications in the appropriate chart.*

4. With the system installed as in Figure 7, adjust drive axle according to specifications' chart below.

DRIVE AXLE ZF A-132			
	Minimum value	Nominal value	Maximum value
Thrust angle	±0.11°		
Total toe	0.15° toe-in	0°	0.15° toe-out


#### 4. TAG AXLE

The tag axle is located behind the drive axle. It carries a single wheel and tire on each side.

One optional system allows unloading of the tag axle air springs without raising the axle, while the other system enables unloading and raising of the tag axle (refer to the "OPERATOR'S MANUAL" for location of controls). Both of these systems have been designed for the following purposes:

1. Shortening of wheelbase, thus allowing tighter turning in tight maneuvering areas such as parking lots or when making a sharp turn.
2. Transferring extra weight and additional traction to the drive wheels on slippery surfaces.



 **CAUTION**

Do not use tag axle in raised position for an extended period. Raising tag axle increases load on the drive axle, suspension and tires.

Do not drive vehicle with tag axle raised when speed is exceeding 9mph (15 km/h).

In order to prevent damage to the suspension, always raise the tag axle before lifting the coach.


The tag axle service brakes operate only when the axle is in normal driving (loaded) position.

4.1 UNLOADING TAG AXLE (OPTIONAL)

To reduce the turning radius, the air springs pressure will be automatically reduced by 75% when the coach is moving at speed lower than 5 mph (8 km/h) and with more than 1½ turn from the steering.

4.2 RETRACTING TAG AXLE

The standard tag axle retraction system is controlled by a valve located on the right lateral console and enables unloading and raising the tag axle (refer to the "OPERATOR'S MANUAL" for location of controls).


 **MAINTENANCE**

**Tag axle lever pivot**

Grease one fitting on each pivot (2 pivots) at the intervals specified by the Lubrication And Servicing Schedule in Section 24: LUBRICATION & SERVICING.


4.3 RETRACTING TAG AXLE FOR REPAIR PURPOSES

- Connect an external air pressure line to the emergency fill valve in the engine compartment.
- Lift the tag axle by pushing the lever forward.

 **WARNING**

Install a protective cover to prevent unfortunate lever operation while work is being carried out under the vehicle.

- Raise the vehicle using the lifts.


 **WARNING**

Lift manufacturers recommended lowering the vehicle to the ground or installing some safety stands before activating the suspension to prevent the lifts from becoming unstable.

- For added safety, install nylon sling over tag axle shock absorbers to retain tag axle in case of air leak.

4.4 TAG AXLE WHEEL BEARINGS

The unitized hub bearings used on the tag axle are pre-adjusted, lubricated and have seals fitted as part of the manufacturing process. The bearings are greased for life and there is no need or facility for re-lubrication.

 **MAINTENANCE**

Front and tag axle hub bearings need to be checked at the intervals specified by the Lubrication And Servicing Schedule in Section 24: LUBRICATION & SERVICING.

**NOTE**

*For more information on front and tag axle wheel hub, refer to "DANA SPICER Maintenance Manual Model NDS and Maintenance Manual NDS Axles".*

4.5 REMOVAL AND REINSTALLATION

4.5.1 Removing Tag Axle Only

The following procedure deals with the removal of the tag axle while keeping the air springs installed. The method used to support the axle and suspension components during removal and disassembly depends upon local conditions and available equipment.

1. Connect an external air pressure line to the emergency fill valve in the engine compartment.
2. Lift the axle by pushing the lever forward.

**WARNING**

Install a protective cover to prevent unfortunate lever operation while work is being carried out under the vehicle.

3. Disconnect tag axle air springs pneumatic hoses and install valves or plugs.
4. Raise the vehicle using the lifts.
5. Dismount tag axle components.
6. Before reinstalling air spring hoses, make sure there is no pressure left inside by opening the valves or unloading tag axle.

#### 4.5.2 Removing Tag Axle Along With Suspension Components

The following procedure deals with the removal of the tag axle assembly along with the suspension components. The method used to support the axle and suspension components during removal and disassembly depends upon local conditions and available equipment.

1. Raise vehicle by its jacking points on the body (Figure 5) or see Section 18, "Body" under heading: "Vehicle Jacking Points". Place jack under frame.
2. Remove drive axle wheels (if required, refer to Section 13, "Wheels, Hubs And Tires").
3. Exhaust compressed air from the air supply system by opening the drain cock on each air reservoir and deplete air bags by moving leveling valve arm down.
4. Install jacks under tag axle jacking points to support the axle weight (Figure 14).

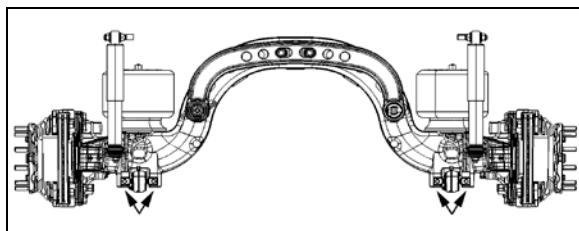


FIGURE 14: JACKING POINTS ON TAG AXLE 11023

5. Disconnect tag axle lifting chain collars from lower longitudinal radius rods.
6. Remove the propeller shaft as directed in Section 9: Propeller Shaft in this manual.

7. Disconnect the tag axle brake chamber hoses.

**CAUTION**

Position the hoses so they will not be damaged when removing axle.

8. Disconnect hose from the air spring upper mounting plate.
9. Remove the two shock absorbers as outlined in Section 16, "Suspension", under "Shock Absorber Removal".
10. Disconnect the lower longitudinal radius rods as outlined in Section 16, "Suspension", under "Radius Rod Removal".
11. Disconnect the transversal radius rod.
12. Disconnect the upper longitudinal radius rod.
13. Remove the air bellows retaining nuts from each of the two upper mounting plates.
14. Use the jacks to move the axle forward to clear the axle off the transmission. Lower the axle.
15. Reverse removal procedure to reinstall.

**CAUTION**

On vehicles equipped with an automatic transmission (with or without the output retarder), move tag assembly very carefully. Pay special attention to the U-shaped section, as the transmission end components may be easily damaged through a false maneuver.

**NOTE**

Refer to Section 16, "Suspension", for proper torque tightening of suspension components.

**NOTE**

Refer to section 13 "Wheels, Hubs And Tires" for correct wheel bearing adjustment procedure.

#### 4.5.3 Removing Transversal radius Rod

1. Unfasten bolts and nuts fixing transversal radius rod ball joint to rear underframe.

2. Remove the air bellows retaining nuts from each of the two upper mounting plates.
3. Install extractor tool g32952 onto transversal rod.
4. Partially unscrew ball joint fixing bolt.
5. Tighten extractor threaded rod.
6. Supporting the transversal radius rod at all times, gradually extract transversal radius rod from tag axle.
7. Reinstall by reversing procedure.

**Torque: 198 lb-ft (268 Nm)**

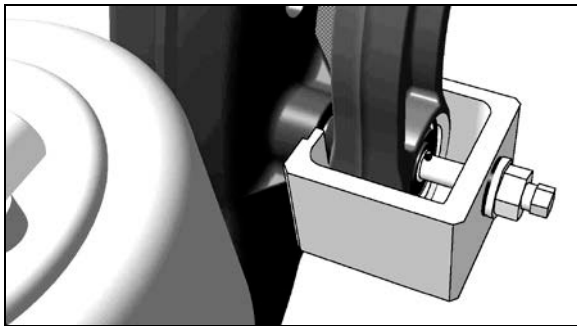


FIGURE 15: INSTALLING EXTRACTOR TOOL

**CAUTION**  
It is strongly suggested to use the extractor tool in order to remove transversal radius rod.

#### 4.6 TAG AXLE ALIGNMENT

The tag axle alignment consists in aligning the tag axle parallel to the drive axle position. Before aligning the tag axle, proceed with the drive axle alignment. Tag axle alignment is achieved with the use of shims inserted between the lower longitudinal radius rod supports and axle. Tag axle alignment is factory set and is not subject to any change, except if vehicle has been damaged by an accident or if there are requirements for parts replacement.

**CAUTION**  
If this setting is altered significantly, it will cause excessive tire wear.

**NOTE**  
*It may be necessary to adjust the axle TOE as well as its alignment. In this case, insert shims (7 min. - P/N 121203 or 15 min. - P/N 121240) in between mounting plate and spindle, as required.*

If axle has been removed for repair or servicing and if all parts are reinstalled exactly in their previous locations, axle alignment is not necessary. However, if the suspension supports have been replaced or have changed position, proceed with the following instructions to verify or adjust the tag axle alignment.

**NOTE**  
*For an accurate alignment, the tag axle must be aligned with the drive axle.*

Adjust tag axle according to specifications' chart below in reference with drive axle. Use static wheel alignment systems which work with angle measurements only, such as Josam or Hunter systems.

TAG AXLE			
Alignment / value	Minimum value	Nominal value	Maximum value
Thrust angle (deg.)	-0.02	0	0.02
Total toe (deg.)	0.08° toe-in	0°	0.02° toe-out

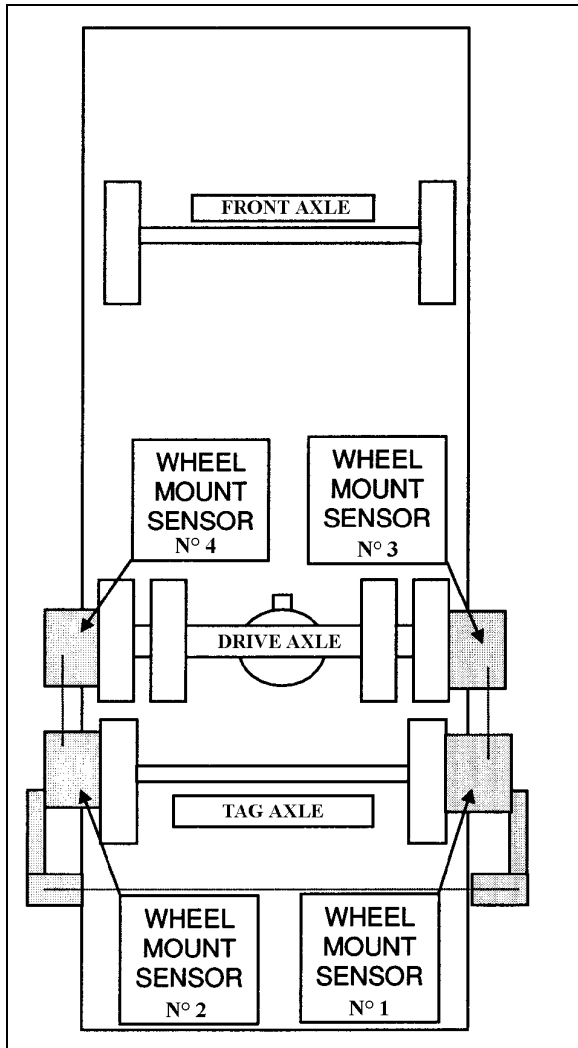


FIGURE 16: TAG AXLE ALIGNMENT

11026

**5. SPECIFICATIONS**

**MERITOR Drive Axle**

Make .....Meritor  
 Drive track..... 76.7 inches (1 949 mm)  
 Gear type .....Hypoid  
 Axle type ..... Full floating  
 Lube capacity .....41 pints (19,3 liters)

**Drive axle ratio**

<u>Allison Transmission</u>	<u>I-Shift transmission</u>
3.58:1 option	2.50:1
3.91:1 standard	

**ZF A132 Drive Axle**

Make and model.....ZF A132  
 Drive track..... 76.7 inches (1 949 mm)  
 Gear type .....Hypoid  
 Axle type ..... Full floating  
 Oil fill quantity ..... 19.5 quarts (39 pints)  
 Ratio.....3.54

**TAG AXLE**

Make .....Prevost  
 Rear track ..... 83.6 inches (2 124 mm)  
 Axle type ..... Forged