

## GROUP 27B

**REAR AXLE <4WD>**

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## GENERAL INFORMATION

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The rear axle has the following features.

- The wheel bearing is a double-row angular contact ball bearing which incorporates the oil seals and is highly resistant to a thrust load.
- The drive shaft has BJ-TJ constant velocity joints.
- A smaller BJ side boot is used.

- ABS rotor for detecting the wheel speed are press-fitted to the BJ outer wheel.

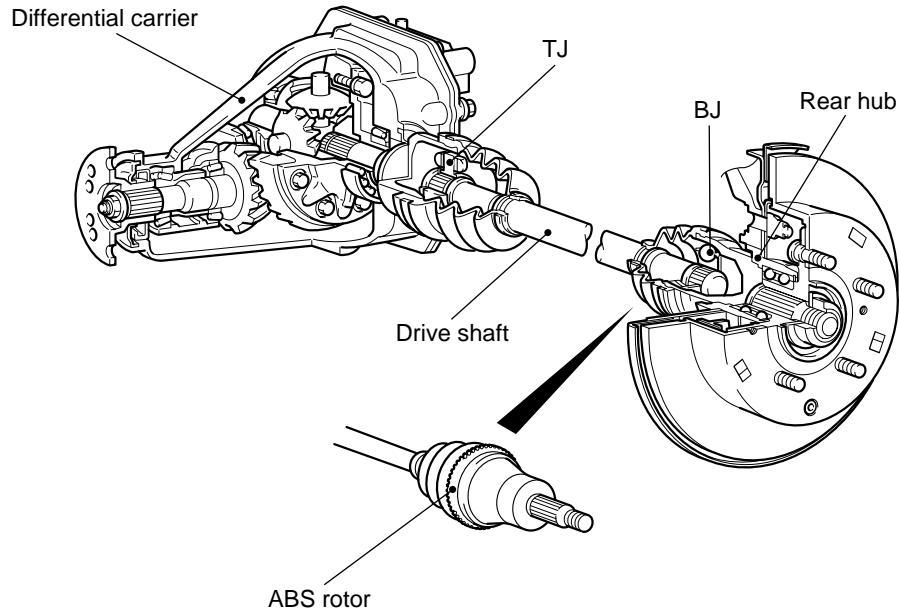
## NOTE:

- TJ: Tripod Joint
- BJ: Birfield Joint

## SPECIFICATIONS

Item		Specification	
Wheel bearing	Type	Double-row angular contact ball bearing	
	Bearing (OD x ID) mm		70 x 40
Drive shaft	Type	Outer	BJ
		Inner	TJ
	Length (joint to joint) x outer diameter mm	LH	481 x 22
		RH	571 x 22

## CONSTRUCTION DIAGRAM



AC300622 AB

## SERVICE SPECIFICATIONS

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Item	Standard value		Limit
Rear axle total backlash mm	-		5
Wheel bearing rotation starting torque N·m	-		1.0
Wheel bearing axial play mm	-		0.05
TJ boot assembly dimension mm	80 ± 3		-
Drive gear backlash mm	0.11 – 0.16		-
Drive gear runout mm	-		0.05
Differential gear backlash mm	0 – 0.076		0.2
Drive pinion turning torque N·m	Without oil seal		0.9 – 1.2
	With oil seal	Companion flange (oil seal contacting area) with anti-rust agent	1.0 – 1.3
		Companion flange (oil seal contacting area) with gear oil applied	0.5 – 0.6

## LUBRICANTS

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Item	Specified lubricant	Quantity
Rear differential gear oil	Hypoid gear oil API classification GL-5 or higher Above 10°C: SAE 90 Below 10°C: SAE 80W	0.55 L
Drive shaft BJ joint	Repair kit grease	75 ± 10 g
Drive shaft TJ joint	Repair kit grease	110 ± 10 g

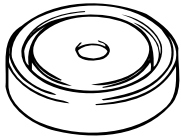
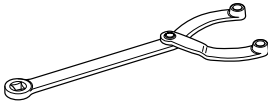
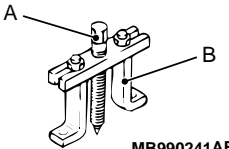

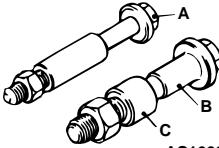
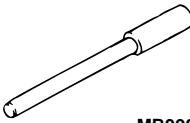
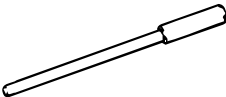
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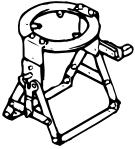
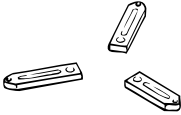

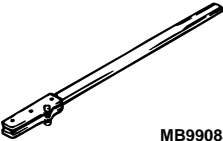

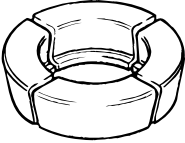
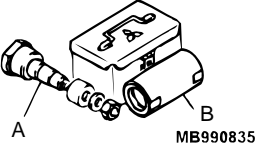
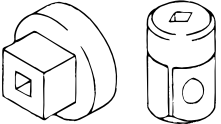

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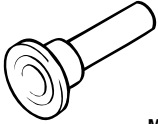
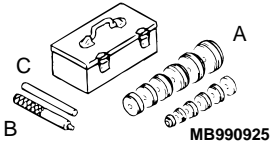
Item	Specified sealant and adhesive	Remark
Differential cover	3M ATD Part No. 8661 or equivalent	Semi-drying sealant
Drive gear and differential case mounting part	3M Stud Locking 4170 or equivalent	Anaerobic sealant

## SPECIAL TOOLS

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Tool	Number	Name	Use
	MB991115	Oil seal installer	Press-fitting of the differential carrier oil seal (Use together with MB990938)
 B990767	MB990767	End yoke holder	Rear axle hub fixing
 A B MB990241AB	MB990241 A: MB990242 B: MB990244	Axle shaft puller A: Puller shaft B: Puller bar	Removal of the drive shaft
 MB991354	MB991354	Puller body	
 A B C AC100320AB	A: MB991017 B: MB990998 C: MB991000	A, B: Front hub remover and installer C: Spacer	<ul style="list-style-type: none"> <li>• Provisional holding of the wheel bearing</li> <li>• Measurement of wheel bearing rotation starting torque</li> <li>• Measurement of wheel bearing end play</li> </ul> <p><i>NOTE: MB991000, which belongs to MB990998, should be used as a spacer.</i></p>
 MB990883	MB990883	Rear suspension bushing arbor	Removal and installation of the differential support member bushing
	MB990884	Mount bushing arbor	

Tool	Number	Name	Use
 <p>MB990909</p>	MB990909	Working base	Supporting of the differential carrier
	MB991116	Working base adapter	
 <p>MB990810</p>	MB990810	Side bearing puller	<ul style="list-style-type: none"> <li>• Removal of the side bearing inner race</li> <li>• Removal of the companion flange</li> </ul>
 <p>MB990850</p>	MB990850	End yoke holder	Companion flange fixing
 <p>MB990339</p>	MB990339	Bearing puller	Removal of drive pinion rear bearing inner race
	MB990374	Pinion bearing remover	
 <p>MB990835</p>	MB990835 A: MB990836 B: MB990392	Drive pinion setting gauge set A: Drive pinion gauge assembly B: Cylinder gauge	Adjustment of the drive pinion height
 <p>MB990326</p>	MB990326	Preload socket	<ul style="list-style-type: none"> <li>• Measurement of the wheel bearing rotation starting torque</li> <li>• Measurement of the drive pinion turning torque</li> </ul>
	MB990685	Torque wrench	

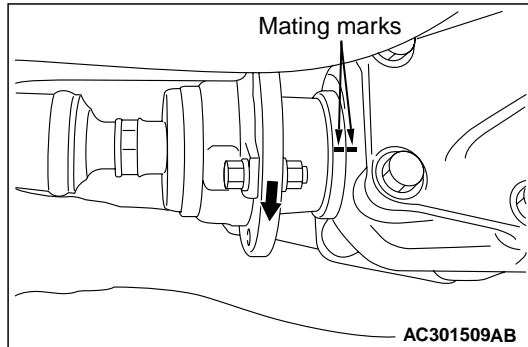
Tool	Number	Name	Use
 <p>MB990728</p>	MB990728	Bearing installer	Press-fitting of the drive pinion rear bearing inner race
 <p>MB990031</p>	MB990031 or MB990699	Oil seal installer	Press-fitting of the drive pinion oil seal
 <p>MB990925</p>	MB990925 A: MB990926 – MB990937 B: MB990938 C: MB990939	Bearing and oil seal installer set A: Installer adapter B: Bar C: Brass bar	<ul style="list-style-type: none"> <li>• Press-fitting of differential carrier oil seal (Use together with MB991115)</li> <li>• Inspection of final drive gear tooth contact</li> <li>• Removal and installation of drive pinion front/rear bearing outer race</li> </ul> For details of each installer, refer to GROUP 26 – Special Tools P.26-4.

## ON-VEHICLE SERVICE

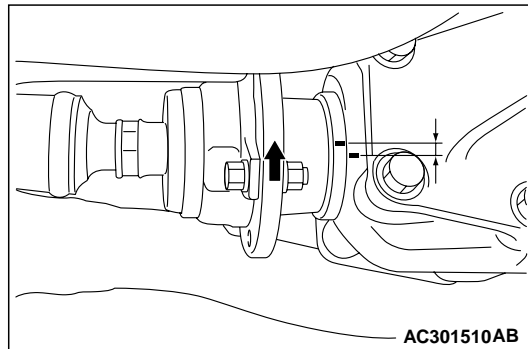
### REAR AXLE TOTAL BACKLASH CHECK

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1. Park the vehicle on a flat, level surface.
2. Move the transmission gearshift lever to the neutral position. Apply the parking brake and jack up the vehicle.



3. Turn the propeller shaft clockwise as far as it will go. Make the mating marks on the companion flange and on the differential carrier.



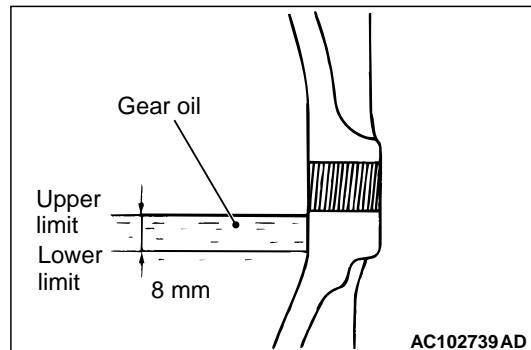
4. Turn the propeller shaft counterclockwise as far as it will go, and measure the amount of distance between the mating marks.

**Limit: 5 mm**

5. If the backlash exceeds the limit value, remove the differential carrier assembly and check the following.
  - Final drive gear backlash (Refer to [P.27B-19.](#))
  - Differential gear backlash (Refer to [P.27B-19.](#))

### GEAR OIL LEVEL CHECK

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Check that gear oil level is not 8 mm below the bottom of filler plug hole.

**Specified gear oil:**

**Hypoid gear oil API classification GL-5 or higher**

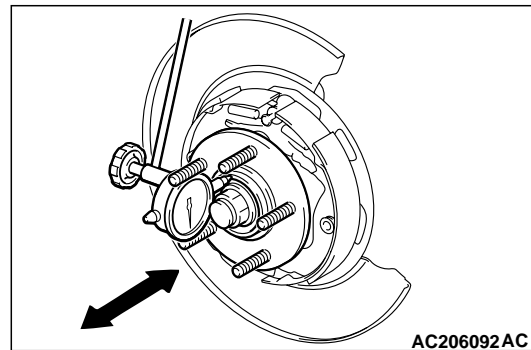
**Above 10°C: SAE 90**

**Below 10°C: SAE 80W**

### WHEEL BEARING AXIAL PLAY CHECK

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1. Remove the caliper assembly, and suspend the caliper assembly with a wire and remove the brake disc.



2. Fit the dial gauge as shown in the diagram and move the hub in the axial direction to measure the play.

**Limit: 0.05 mm**

3. If the play exceeds the limit, the drive shaft nut should be tightened to the specified torque and check the axial play again.

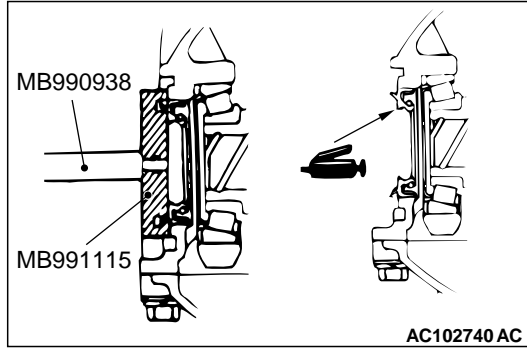
**Tightening torque: 245 ± 29 N·m**

4. Replace the wheel bearing if adjustment cannot be made to within the limit. (Refer to GROUP 34–Trailing Arm [P.34-13.](#))

## DIFFERENTIAL CARRIER OIL SEAL REPLACEMENT

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1. Remove the drive shaft from the differential carrier. (Refer to [P.27B-10](#)).
2. Remove the differential carrier oil seal.

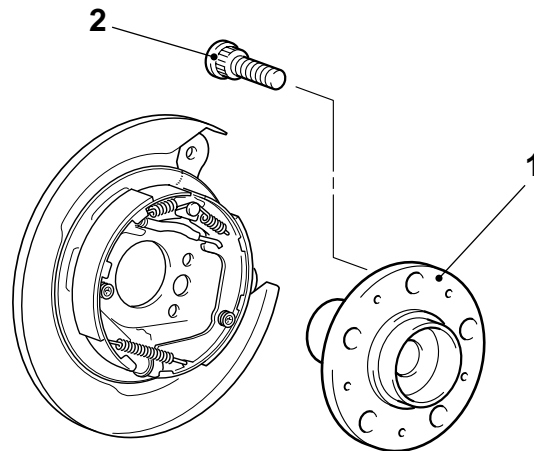


3. Use the following special tools to press-fit a new oil seal.
  - Installer bar (MB990938)
  - Oil seal installer (MB991115)
4. Apply multi-purpose grease to the oil seal lip and drive shaft oil seal seating area.
5. Replace the drive shaft circlip with a new one, and install the drive shaft to the differential carrier. (Refer to [P.27B-10](#)).

## REAR AXLE HUB ASSEMBLY

### REMOVAL AND INSTALLATION

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#### Removal steps

1. Rear hub assembly (Refer to GROUP 34, Trailing arm assembly [P.34-13](#)).
2. Hub bolt

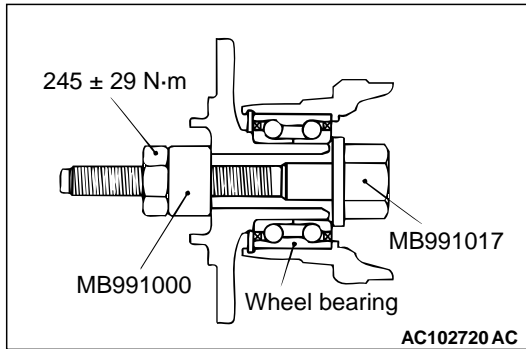
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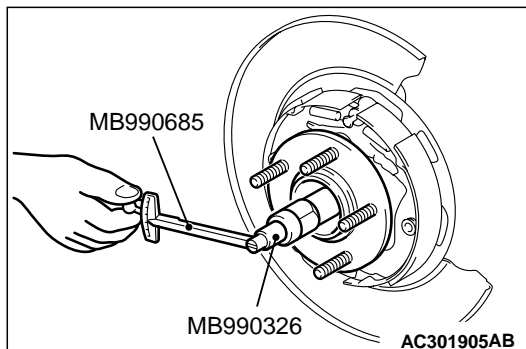
## INSPECTION

### WHEEL BEARING ROTATION STARTING TORQUE AND AXIAL PLAY CHECK

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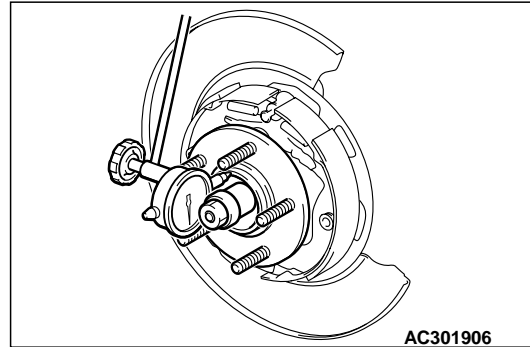
1. Tighten the following special tools to the specified torque.
  - Spacer (MB991000)
  - Front hub remover and installer (MB991017)
2. Rotate the rear hub in order to seat the bearing.



3. Measure the wheel bearing rotation starting torque by using the following special tools.
  - Preload socket (MB990326)
  - Torque wrench (MB990685)

**Limit: 1.0 N·m**

4. The rotation starting torque must be within the limit and wheel bearing must rotate smoothly.



5. Measure to determine whether the wheel bearing axial play is within the specified limit or not.

**Limit: 0.05 mm**

6. If the play is not within the limit range while the nut is tightened to 245 ± 29 N·m, the bearing, trailing arm and/or rear hub have probably not been installed correctly. Replace the bearing and re-install.

# DRIVE SHAFT ASSEMBLY

## REMOVAL AND INSTALLATION

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### CAUTION

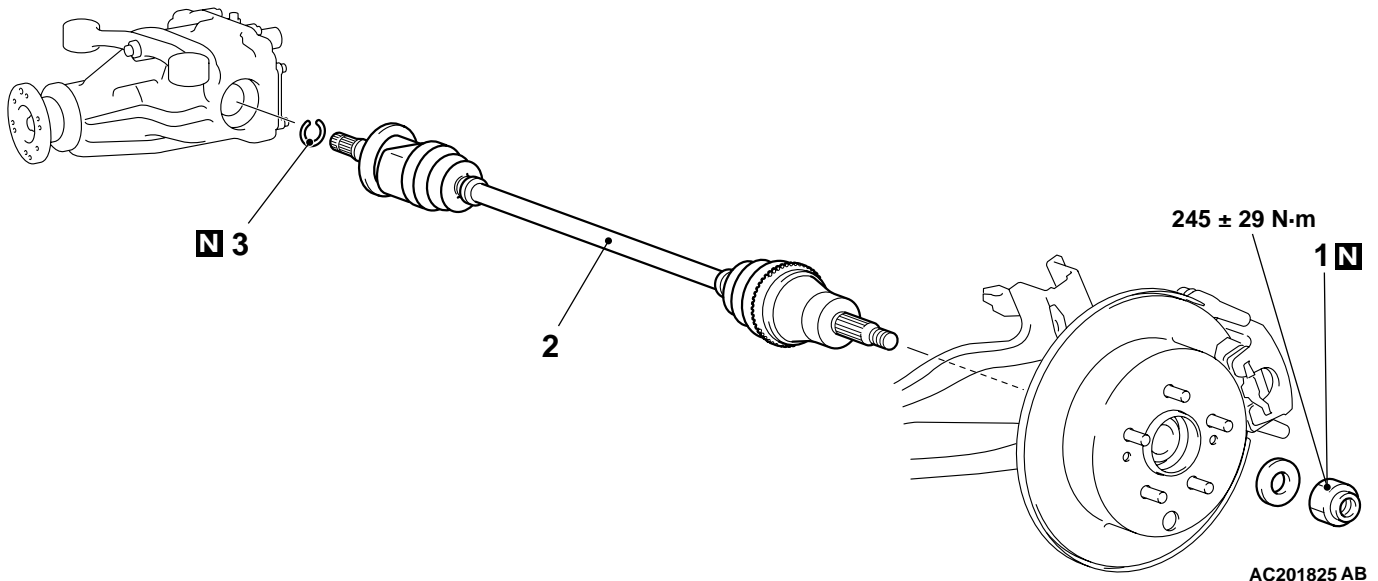
- Do not strike the ABS rotors installed to the BJ outer race of drive shaft against other parts when removing or installing the drive shaft. Otherwise the ABS rotors will be damaged.
- Be careful not to strike the pole piece at the tip of the rear ABS sensor with tools during servicing work.

#### Pre-installation Operation

- Differential Gear Oil Draining (Refer to [P.27B-7](#)).

#### Post-installation Operation

- Differential Gear Oil Filling (Refer to [P.27B-7](#)).
- Rear Wheel Alignment Check and Adjustment (Refer to GROUP 34, On-vehicle Service – Rear Wheel Alignment Check and Adjustment [P.34-7](#)).



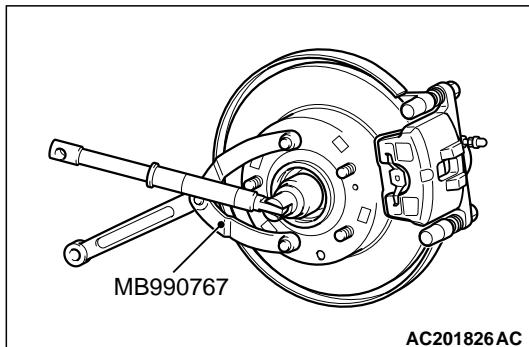
- <<A>> >>B<<
- #### Removal steps
1. Drive shaft nut
    - Rear ABS sensor (Refer to GROUP 35B, Wheel Speed Sensor [P.35B-67](#)).
    - Lower arm and trailing arm connection (Refer to Group 34, Trailing arm assembly [P.34-13](#)).

- <<B>> >>A<<
- #### Removal steps (Continued)
- Control link and trailing arm connection (Refer to GROUP 34, Trailing arm assembly [P.34-13](#)).
  2. Drive shaft
  3. Circlip

## REMOVAL SERVICE POINTS

### <<A>> DRIVE SHAFT NUT REMOVAL

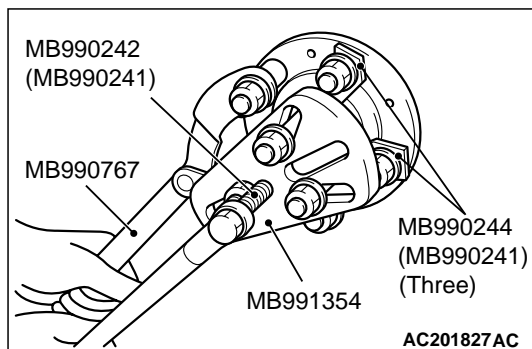
#### ⚠ CAUTION



Do not apply pressure to wheel bearing by the vehicle weight to avoid possible damage to wheel bearing before tightening drive shaft nut fully.

Use special tool end yoke holder (MB990767) to fix the hub and remove the drive shaft nut.

### <<B>> DRIVE SHAFT REMOVAL

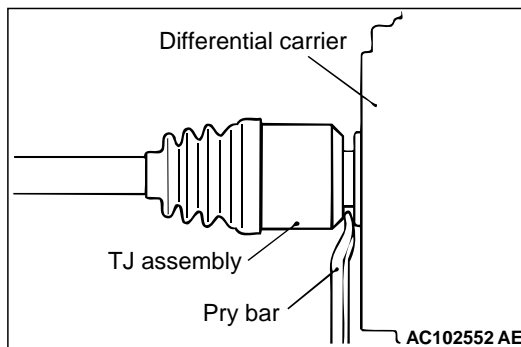


1. Use the following special tools to push out the drive shaft from the hub.

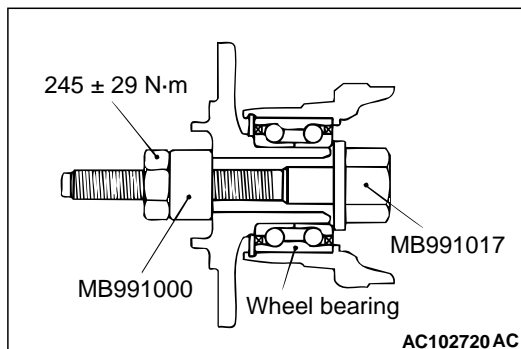
- Puller shaft (MB990242)
- Puller bar (MB990244)
- Puller body (MB991354)
- End yoke holder (MB990767)

#### ⚠ CAUTION

- Do not pull on the drive shaft; doing so will damage the TJ; be sure to use the pry bar.
- When pulling the drive shaft out from the differential carrier, be careful that the spline part of the drive shaft does not damage the oil seal.



2. Remove the drive shaft from the differential carrier by using a pry bar.



#### ⚠ CAUTION

Do not apply pressure to the wheel bearing by the vehicle weight to avoid possible damage when the drive shaft is removed. If, however, vehicle weight must be applied to the bearing in moving the vehicle, temporarily secure the wheel bearing by using the following special tools.

- Front hub remover and installer (MB991017)
- Spacer (MB991000)

## INSTALLATION SERVICE POINTS

## &gt;&gt;A&lt;&lt; DRIVE SHAFT INSTALLATION

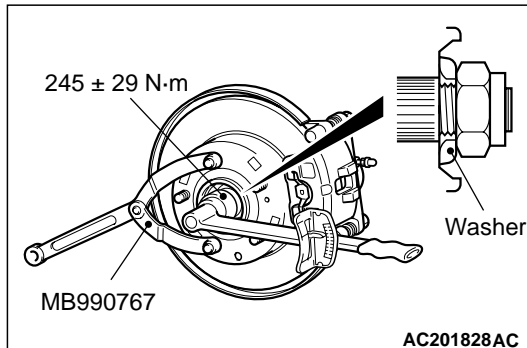
**⚠ CAUTION**

When installing the drive shaft, be careful that the spline part of the drive shaft does not damage the oil seal.

## &gt;&gt;B&lt;&lt; DRIVE SHAFT NUT INSTALLATION

**⚠ CAUTION**

Do not apply pressure to wheel bearing by the vehicle weight to avoid possible damage to wheel bearing before tightening drive shaft nut fully.



1. Assemble the drive shaft washer in the illustrated direction.
2. Tighten the drive shaft nut to the torque specification with special tool end yoke holder (MB990767).

## INSPECTION

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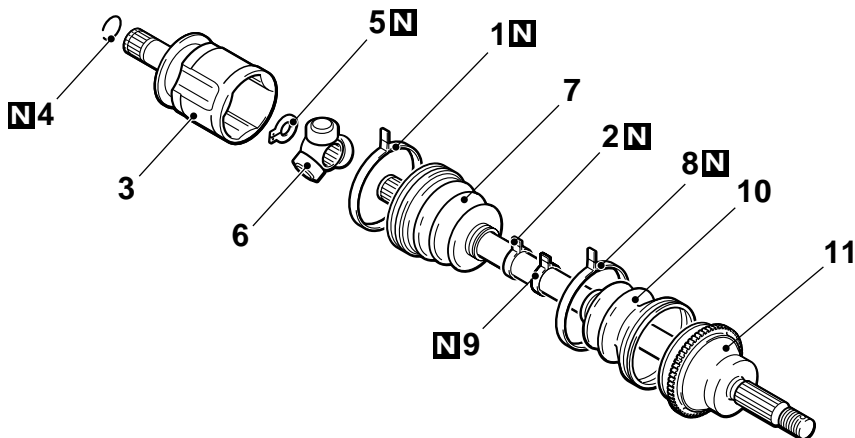
- Check the drive shaft for damage, bending or corrosion.
- Check the drive shaft spline part for wear or damage.
- Check the boots for deterioration, damage or cracking.
- Check the dust cover for damage or deterioration.

DISASSEMBLY AND REASSEMBLY

M1271003500185

**CAUTION**

- Be careful not to damage the ABS rotor, which is attached to the BJ outer race during disassembly and reassembly.
- Never disassemble the BJ assembly except when replacing the BJ boot.



<p>BJ repair kit</p>	<p>TJ repair kit</p>
<p>Grease for TJ    Grease for BJ</p>	
<p>BJ boot repair kit</p>	<p>TJ boot repair kit</p>

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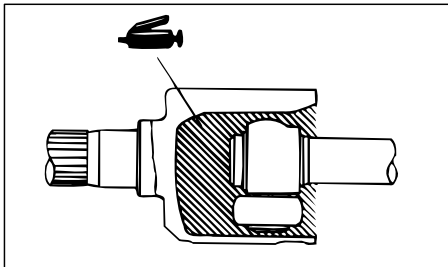
**Disassembly steps**

- >>C<< 1. TJ boot band (large)  
>>C<< 2. TJ boot band (small)  
<<A>> >>B<< 3. TJ case  
4. Circlip  
5. Snap ring  
<<A>> >>B<< 6. Spider assembly

**Disassembly steps (Continued)**

- <<B>> >>A<< 7. TJ boot  
8. BJ boot band (large)  
9. BJ boot band (small)  
<<B>> >>A<< 10. BJ boot  
11. BJ assembly

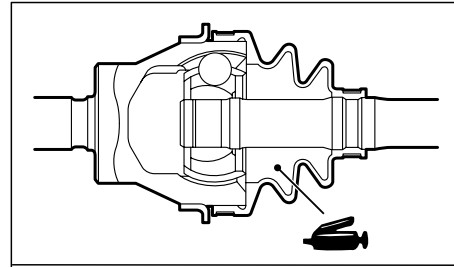
LUIBRICATION POINTS



Grease: repair kit grease  
Amount used: 110 ± 10 g

**CAUTION**

The drive shaft joint uses special grease. Do not mix old and new or different types of grease.



Grease: repair kit grease  
Amount used: 75 ± 10 g

**CAUTION**

The drive shaft joint uses special grease. Do not mix old and new or different types of grease.

