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# FRONT AXLE

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26109000201

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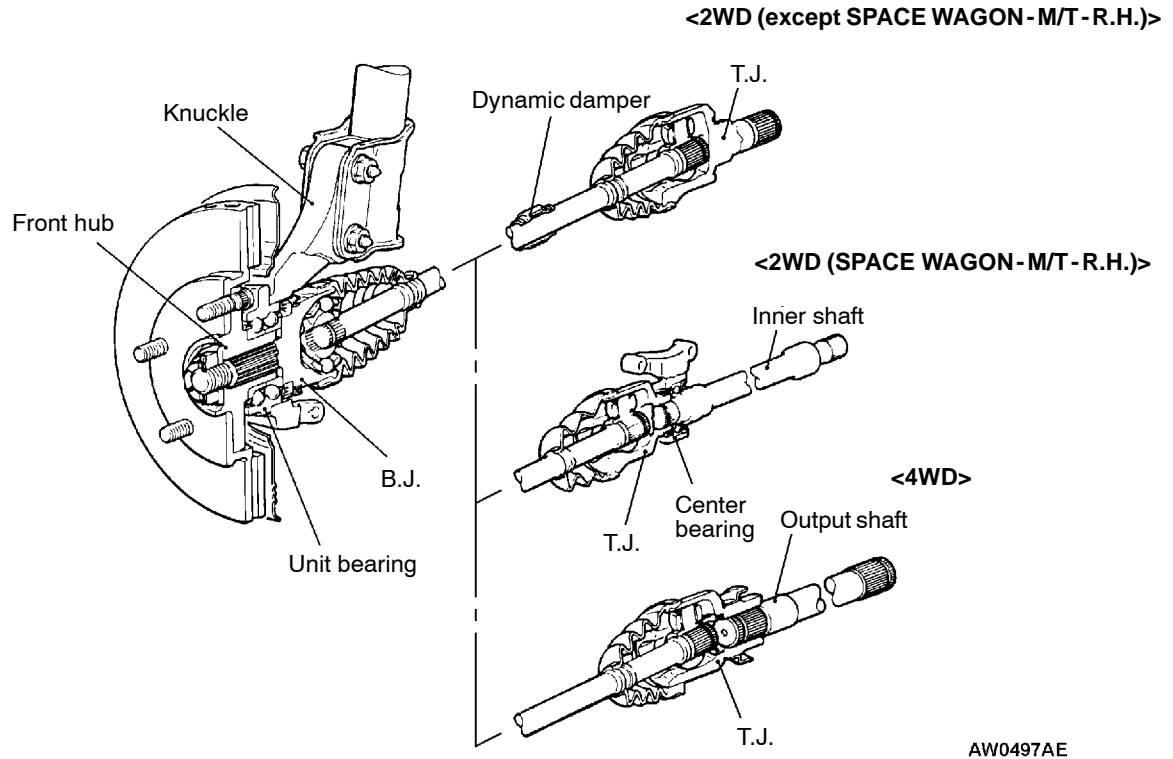


## GENERAL INFORMATION

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The front axle consists of a knuckle, front hub, unit bearing and drive shaft. The unit bearing is press-fitted to the front hub and bolted to the knuckle. Also, the unit bearing utilizes a double

row angular contact ball bearing. The drive shaft has a Tripod joint (T.J.) on the transmission side and a Birfield joint (B.J.) on the wheel side.



## SERVICE SPECIFICATIONS

26100030254

Items		Standard value	Limit
Wheel bearing axial play mm		-	0.05
Wheel bearing rotation starting torque Nm		-	1.0 or less
Setting of T.J. boot length mm	SPACE RUNNER	82	-
	SPACE WAGON - 2WD	81	-
	SPACE WAGON - 4WD	90	-
Opening dimension of the special tool (MB991561) mm	When the B.J. boot band (small) is crimped	2.9	-
	When the B.J. boot band (large) is crimped	3.2	-
Crimped width of the B.J. boot band mm		2.4 - 2.8	-
Clearance between the B.J. boot (large diameter side) and the stepped phase of the B.J. housing mm <4WD>		0.1 - 1.5	-

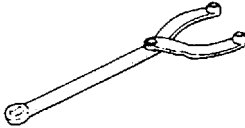
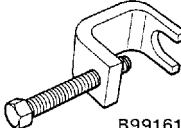
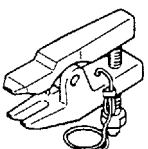
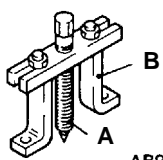

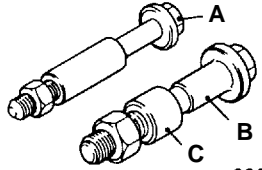
LUBRICANTS

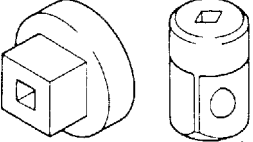
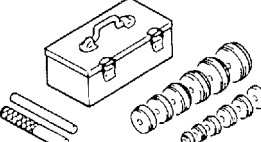

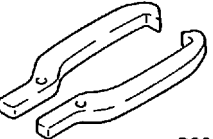
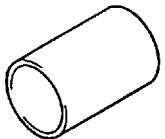
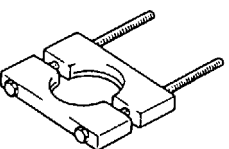
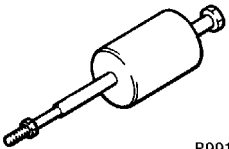
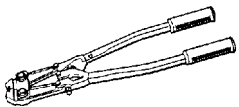
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Items		Specified lubricant	Quantity g
T.J.	SPACE RUNNER	Repair kit grease	110
	SPACE WAGON - 2WD	Repair kit grease	140
	SPACE WAGON - 4WD	Repair kit grease	105
Dust seal inner		Multipurpose grease	14 - 20
Dust seal outer		Multipurpose grease	8 - 12
B.J.	2WD	Repair kit grease	125
	4WD	Repair kit grease	95

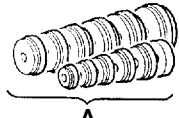
SPECIAL TOOLS

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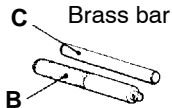
Tool	Number	Name	Use
 B990767	MB990767	End yoke holder	Hub fixing
 B991618	MB991618	Hub bolt remover	Hub bolt removal
 B991113	MB991406, MB990635 or MB991113	Steering linkage puller	Ball joint disconnection
 AB990241	MB990241 A: MB990242 B: MB990244	Axle shaft puller A: Puller shaft B: Puller bar	<ul style="list-style-type: none"> <li>• Front hub assembly removal</li> <li>• Drive shaft removal</li> </ul>
 B991354	MB991354	Puller body	
 00005697	A: MB991017 B: MB990998 C: MB991000	A, B: Front hub remover and installer C: Spacer	Wheel bearing provisional holding MB991000, which belongs to MB990998, should be used as a spacer.

Tool	Number	Name	Use
 <p>B990326</p>	MB990326	Preload socket	Wheel bearing rotation starting torque measurement
 <p>B990925</p>	MB990925	Bearing and oil seal installer set	<ul style="list-style-type: none"> <li>● Center bearing press-out</li> <li>● Center bearing press-fitting</li> <li>● Dust seal press-fitting</li> </ul>
 <p>B990197</p>	MB990197	Puller body	Inner shaft press-out
 <p>B990302</p>	MB990302	Hook	
 <p>B991172</p>	MB991172	Inner shaft installer base	Inner shaft press-fitting
 <p>B991248</p>	MB991248	Inner shaft remover	Inner shaft press-out
 <p>B991721</p>	MB991721	Slide hammer	Output shaft removal <4WD>
	MB991561	Boot band clipping tool	Resin boot band installation

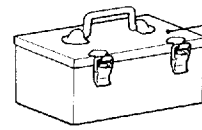
MB990925



A  
Installer adapter



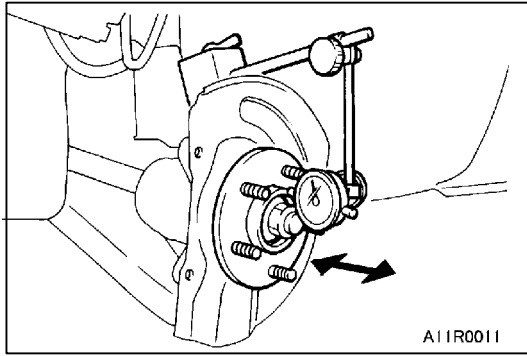
C Brass bar  
B Bar (snap-in type)



Tool box

A11W0113

Type	Tool number	O.D. mm	Type	Tool number	O.D. mm
A	MB990926	39	A	MB990933	63.5
	MB990927	45		MB990934	67.5
	MB990928	49.5		MB990935	71.5
	MB990929	51		MB990936	75.5
	MB990930	54		MB990937	79
	MB990931	57	B	MB990938	-
	MB990932	61	C	MB990939	-



## ON-VEHICLE SERVICE

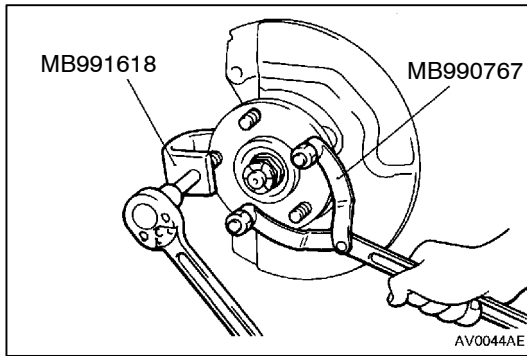
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### WHEEL BEARING AXIAL PLAY CHECK

1. Remove the disc brake caliper and suspend it with a wire.
2. Remove the brake disc from the front hub.
3. Attach a dial gauge as shown in the illustration, and then measure the axial play while moving the hub in the axial direction.

**Limit: 0.05 mm**

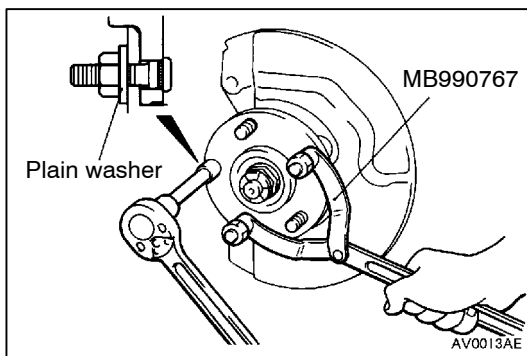
4. If axial play exceeds the limit, replace the front hub assembly.



### HUB BOLT REPLACEMENT

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1. Remove the caliper assembly and secure it with wire so that it does not fall.
2. Remove the brake disc.
3. Use the special tools to remove the hub bolts.



4. Install the plain washer to the new hub bolt, and install the bolt with a nut.

# FRONT HUB ASSEMBLY

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## REMOVAL AND INSTALLATION

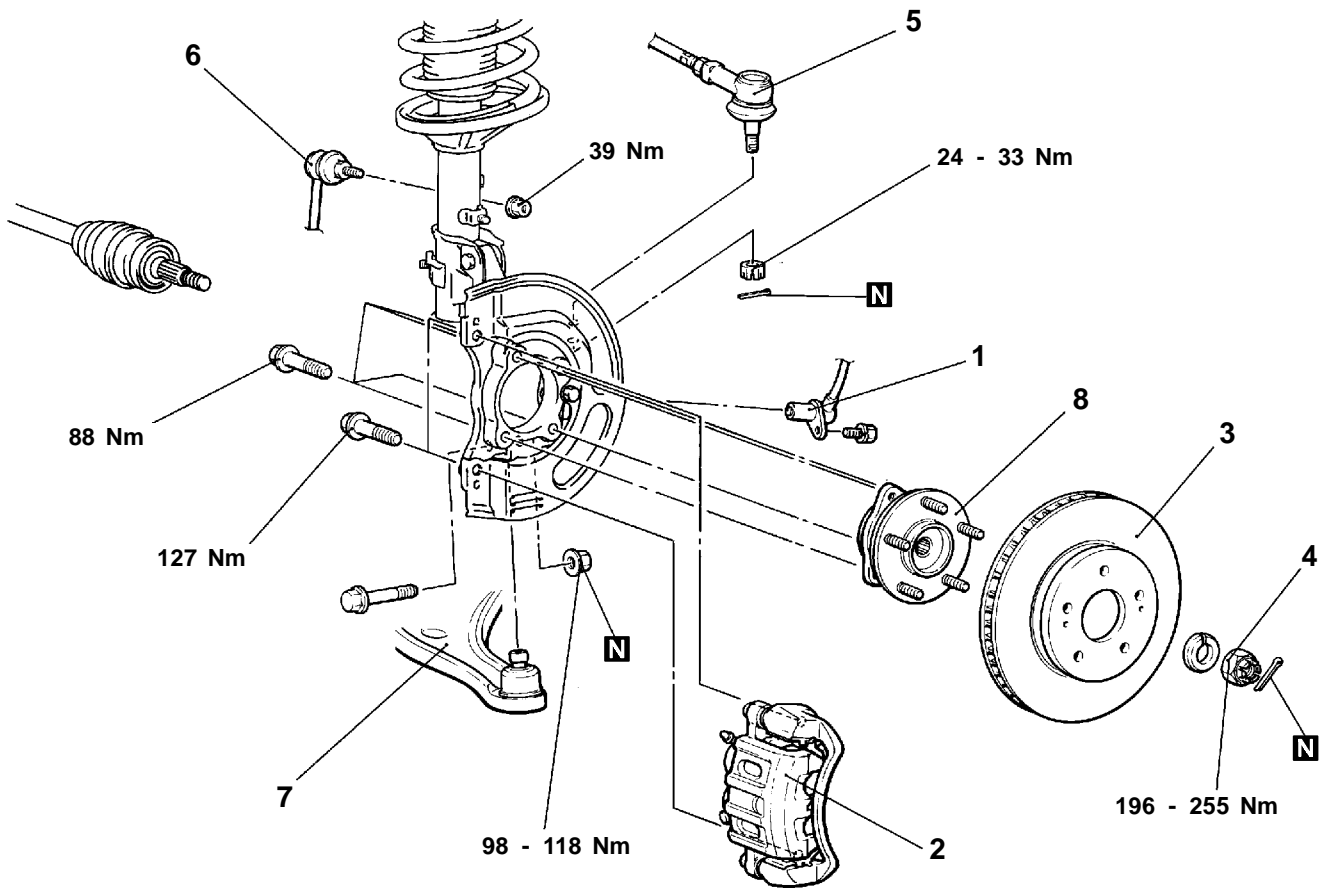
### Caution

The front hub assembly should not be disassembled.

When removing the front hub assembly, the wheel bearing inner race may be left at the spindle side. In this case, always replace the front hub assembly, otherwise the hub will damage the oil seal, causing oil leaks or excessive play.

### Post-installation Operation

Check the Dust Cover for Cracks or Damage by Pushing it with Finger.



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### Removal steps

1. Front wheel speed sensor  
<Vehicles with ABS>  
(Refer to GROUP 35B.)
2. Caliper assembly
3. Brake disc

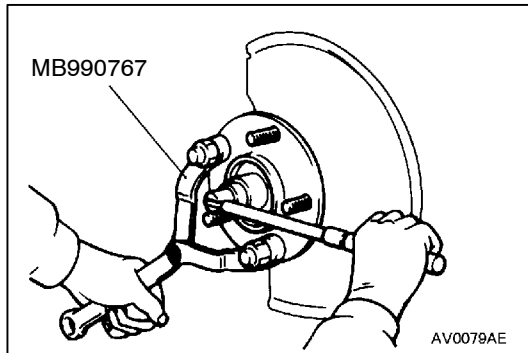


4. Drive shaft nut
5. Tie rod end connection
6. Stabilizer link connection
7. Lower arm assembly connection
8. Front hub assembly

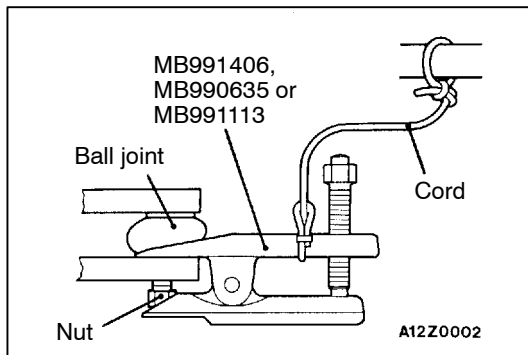


**REMOVAL SERVICE POINTS****◀A▶ CALIPER ASSEMBLY REMOVAL**

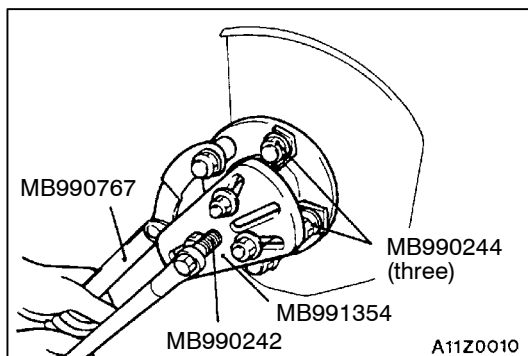
Secure the removed caliper assembly with wire, so that it does not fall.

**◀B▶ DRIVE SHAFT NUT REMOVAL****Caution**

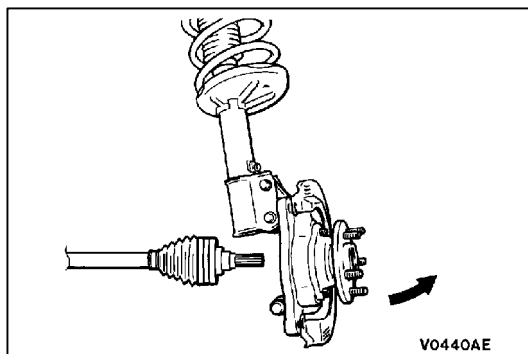
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut, or the ball bearing will be damaged.

**◀C▶ TIE ROD END DISCONNECTION****Caution**

1. Loosen the nut of the special tool, but do not remove it. If it is removed, the ball joint thread may be damaged.
2. Tie the special tool with a cord not to let it fall off.

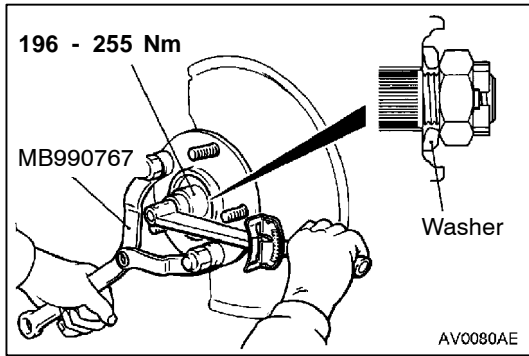
**◀D▶ FRONT HUB ASSEMBLY REMOVAL**

1. Use the special tool to push out the drive shafts from the hub.



2. Withdraw the drive shaft from the hub by pulling the bottom of the brake disc towards you, and then remove the hub retaining bolts.





**INSTALLATION SERVICE POINT**

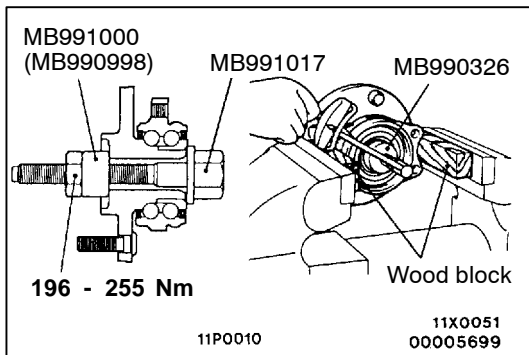
**▶A◀ DRIVE SHAFT NUT INSTALLATION**

1. Install the drive shaft washer in the specified direction.
2. Using the special tool, tighten the drive shaft nut.

**Caution**

**Before securely tightening the drive shaft nuts, make sure there is no load on the wheel bearings. Otherwise the wheel bearing will be damaged.**

3. If the position of the split pin holes does not match, tighten the nut up to 255 Nm in maximum.
4. Install the split pin in the first matching holes and bend it securely.



**INSPECTION**

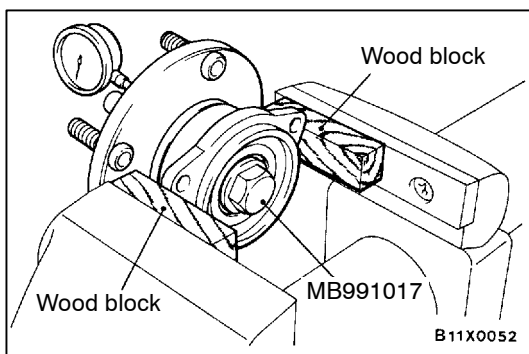
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**WHEEL BEARING ROTATION STARTING TORQUE CHECK**

1. Install the special tool to the front hub assembly and tighten the nut to the specified torque.
2. Use the special tool to measure the wheel bearing starting torque.

**Limit: 1.0 Nm or less**

3. The wheel bearing starting torque should be within the limit value range, and there should be no engagement or feeling of roughness.



**WHEEL BEARING AXIAL PLAY CHECK**

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1. Install the special tool to the front hub assembly and tighten the nut to the specified torque 196 - 255 Nm.
2. Measure the play in the hub axial direction.

**Limit: 0.05 mm**

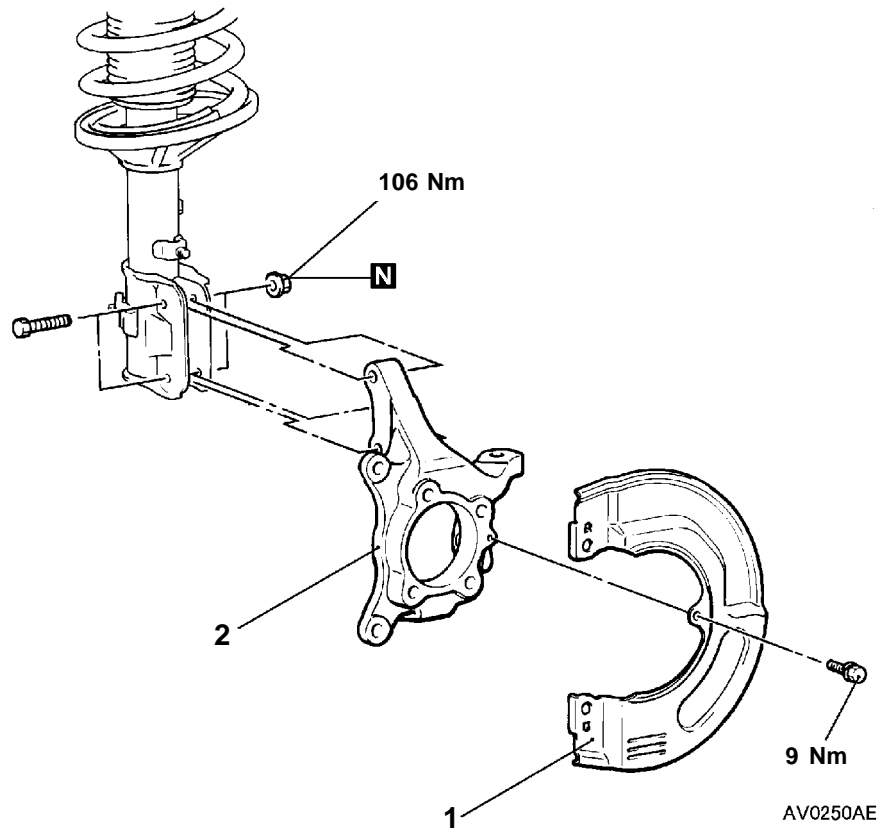
3. If the limit value of hub axial play cannot be obtained, replace the front hub assembly.

# KNUCKLE

26100240183

## REMOVAL AND INSTALLATION

**Pre-removal and Post-installation Operation**  
Front Hub Assembly Removal and Installation  
(Refer to P.26-7.)



### Removal steps

1. Dust shield
2. Knuckle

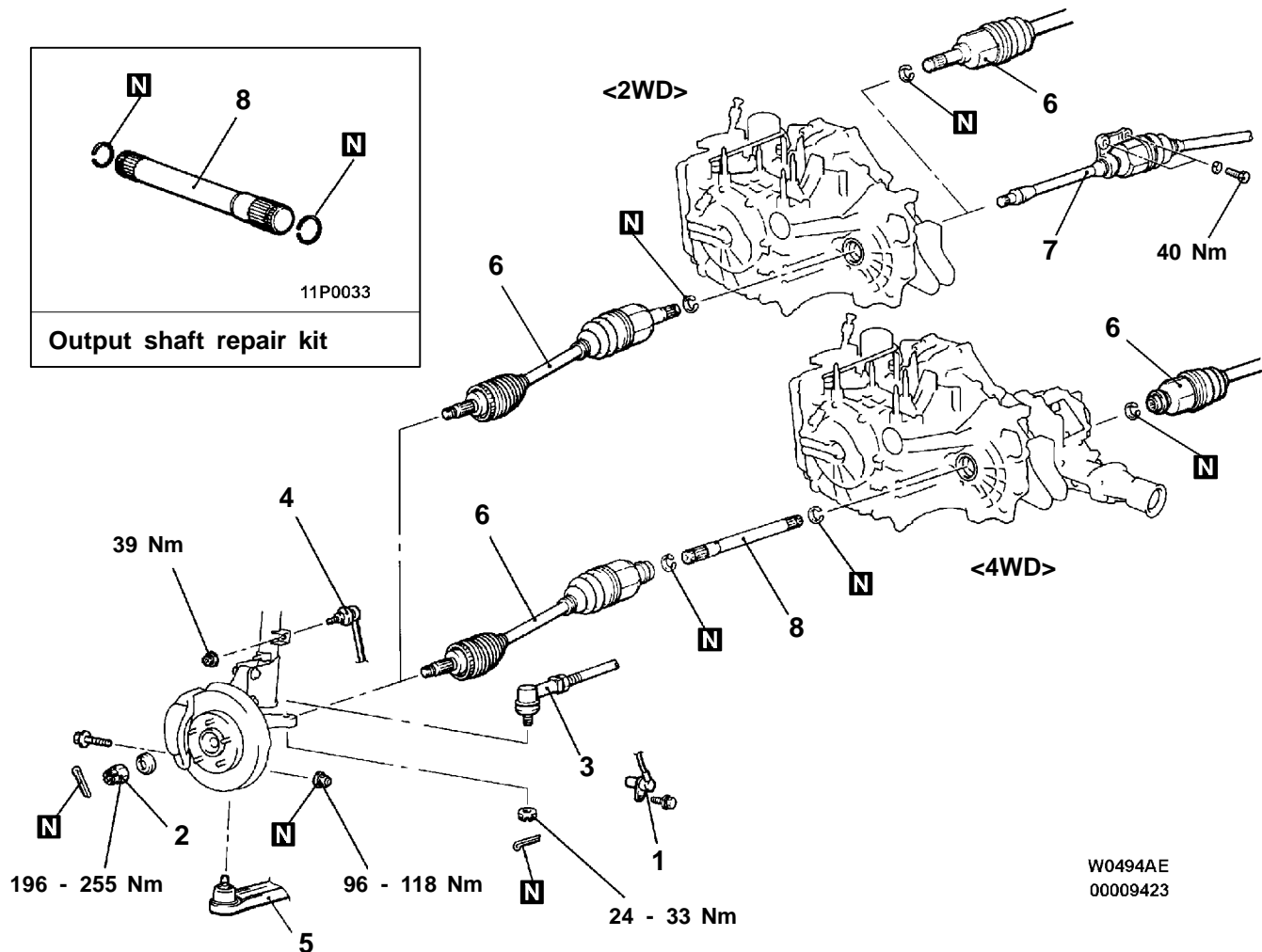
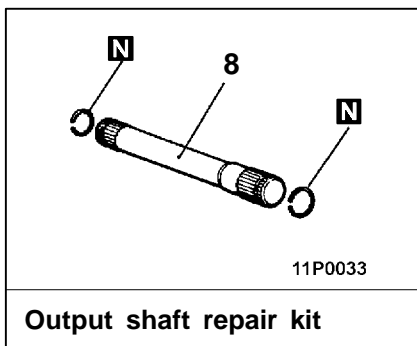
# DRIVE SHAFT

## REMOVAL AND INSTALLATION

### Caution

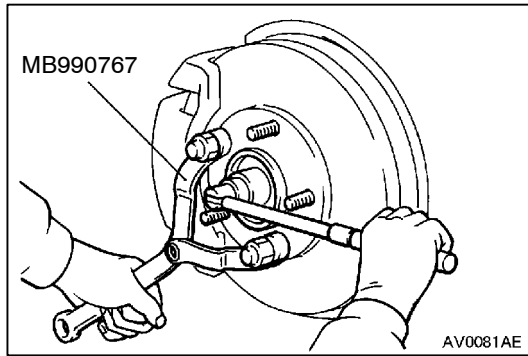
On the vehicles with ABS, when the drive shaft is removed or installed, be careful not to interfere with the ABS rotor installed to the B.J. outer race to prevent the rotor from damage.

**Post-installation Operation**  
 Check the Dust Cover for Cracks or Damage by Pushing it with Finger.

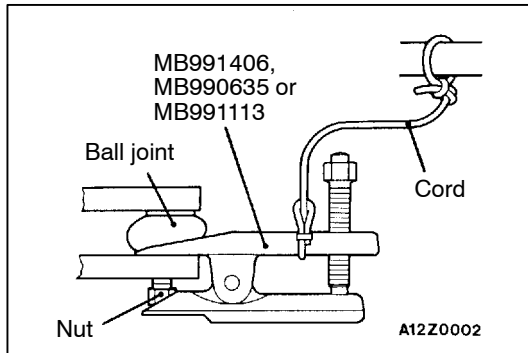


### Removal steps

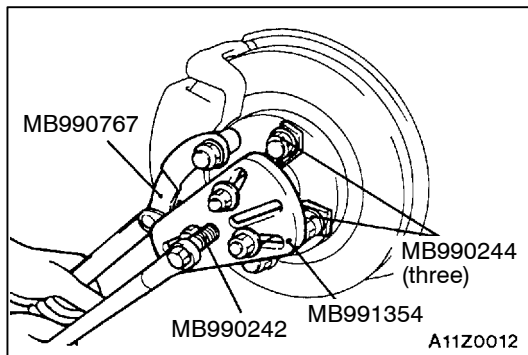
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| <p>1. Front wheel speed sensor<br/>                 &lt;Vehicles with ABS&gt;<br/>                 (Refer to GROUP 35B.)</p> <p>2. Drive shaft nut</p> <p>3. Tie rod end connection</p> <p>4. Stabilizer link connection</p> <p>5. Lower arm assembly connection</p> | <p>6. Drive shaft &lt;2WD(except SPACE WAGON-M/T-R.H.), 4WD&gt;</p> <p>7. Drive shaft and inner shaft assembly &lt;2WD(SPACE WAGON-M/T-R.H.)&gt;</p> <p>8. Output shaft &lt;4WD&gt;</p> |
|--|---|

**REMOVAL SERVICE POINTS****◀A▶ DRIVE SHAFT NUT REMOVAL****Caution**

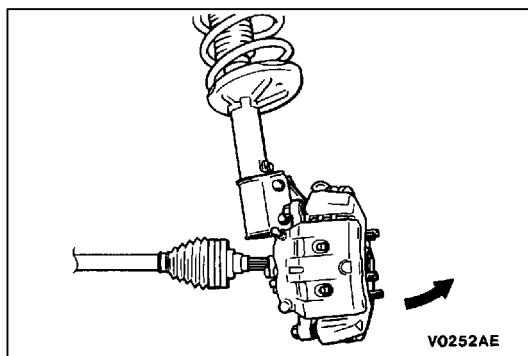
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut, or the ball bearing will be damaged.

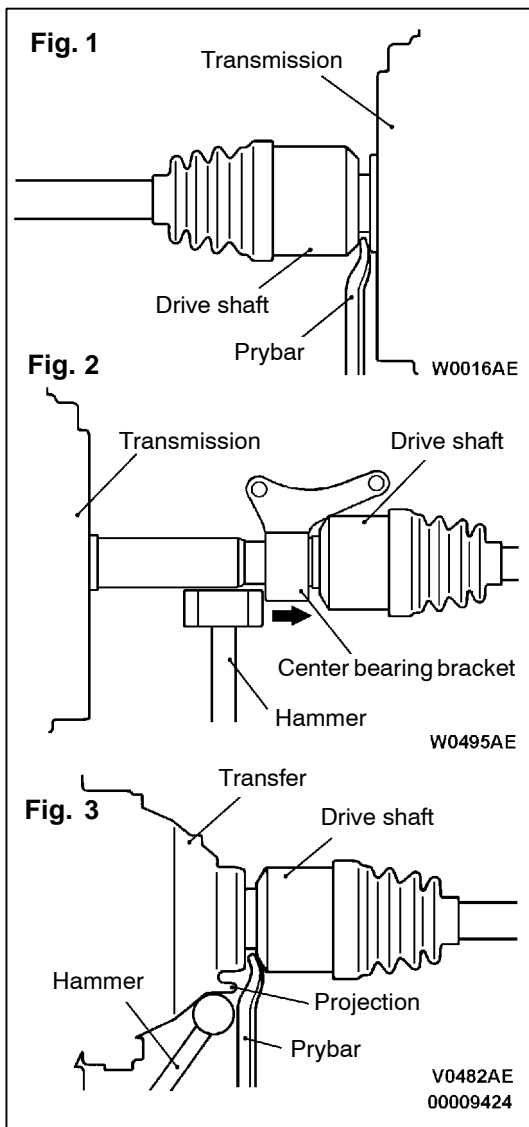
**◀B▶ TIE ROD END DISCONNECTION****Caution**

1. Loosen the nut of the special tool, but do not remove it. If it is removed, the ball joint thread will be damaged.
2. Tie the special tool with a cord not to let it fall off.

**◀C▶ DRIVE SHAFT/DRIVE SHAFT AND INNER SHAFT ASSEMBLY REMOVAL**

1. Use the special tool to push out the drive shafts from the hub.
2. Withdraw the drive shaft from the hub by pulling the bottom of the brake disc towards you.





3. Remove the drive shaft or the drive shaft and inner shaft assembly from the transmission by the following procedure:

2WD (except SPACE WAGON-M/T-R.H.), 4WD (L.H.)	Fig. 1
2WD (SPACE WAGON-M/T-R.H.)	Fig. 2
4WD (R.H.)	Fig. 3

<Fig. 1>

Insert a pry bar between the drive shaft and the transmission case, and then pry off the drive shaft.

<Fig. 2>

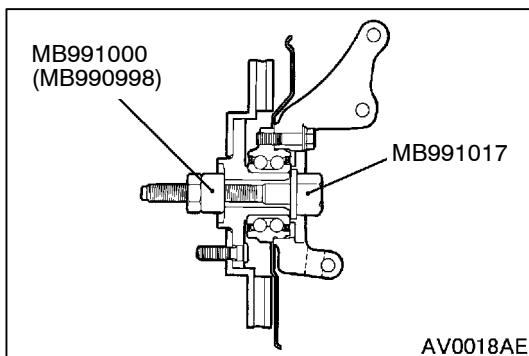
Tap the center bearing bracket with a hammer to remove the drive shaft.

<Fig. 3>

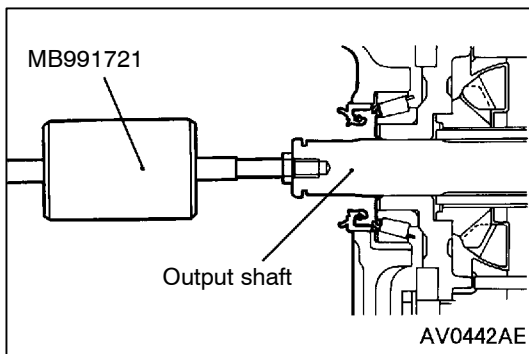
Place a hammer on the projection at the transfer and insert a pry bar between the drive shaft and the transfer, and then pry off the drive shaft.

**Caution**

- (1) Above-mentioned procedure must be observed. Pulling the B.J. assembly to remove the drive shaft or drive shaft and inner shaft assembly will damage the T.J. assembly.
- (2) Take care that the transmission oil seal will not be damaged by the drive shaft spline.



- (3) Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut, as the wheel bearing will be damaged. If, however, the vehicle weight must be applied to the bearing (because of moving the vehicle), temporarily secure the wheel bearing by using the special tools.



**◀D▶ OUTPUT SHAFT REMOVAL**

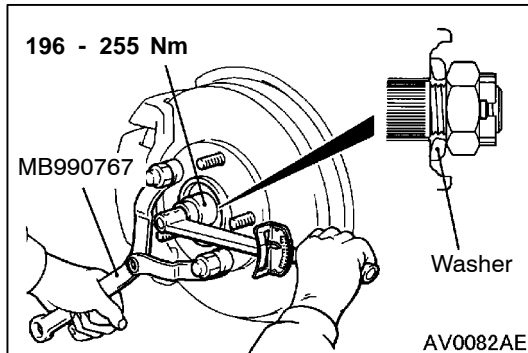
Use the special tool to withdraw the output shaft.

**Caution**

Be careful not to damage the oil seal of the transmission by the spline of the output shaft.

**INSTALLATION SERVICE POINTS****►A◄ OUTPUT SHAFT/DRIVE SHAFT AND INNER SHAFT ASSEMBLY/DRIVE SHAFT INSTALLATION****Caution**

Be careful not to damage the oil seal of the transmission or transfer by the spline of the shaft.

**►B◄ DRIVE SHAFT NUT INSTALLATION**

1. Install the drive shaft washer in the specified direction.
2. Using the special tool, tighten the drive shaft nut.

**Caution**

**Before securely tightening the drive shaft nuts, make sure there is no load on the wheel bearings. Otherwise, the wheel bearing will be damaged.**

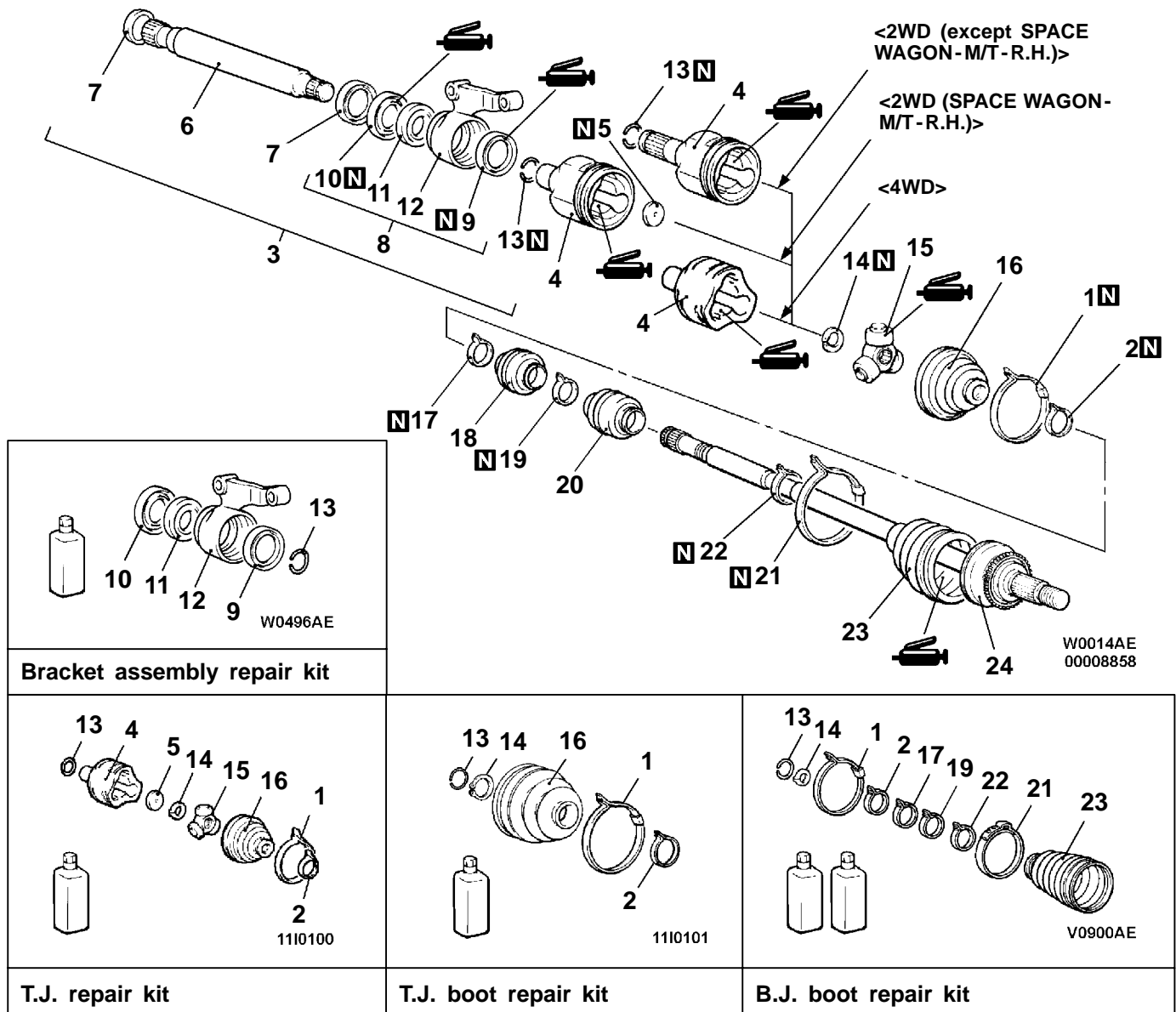
3. If the position of the split pin holes does not match, tighten the nut up to 255 Nm in maximum.
4. Install the split pin in the first matching holes and bend it securely.

DISASSEMBLY AND REASSEMBLY

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Caution

On the vehicles with ABS, when the drive shaft is disassembled or reassembled, be careful not to interfere with the ABS rotor installed to the B.J. outer race to prevent the rotor from damage.



Disassembly steps

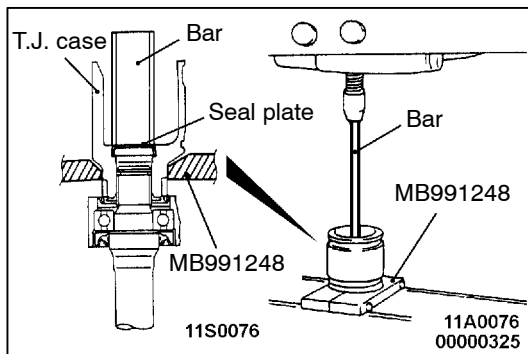
- |   |  |
|---|--|
| <p>▶G◀ 1. T.J. boot band (large)</p> <p>▶G◀ 2. T.J. boot band (small)</p> <p>▶F◀ 3. T.J. case and inner shaft assembly</p> <p>◀A▶ ▶B▶ 4. T.J. case</p> <p>◀B▶ ▶E▶ 5. Seal plate</p> <p>6. Inner shaft</p> <p>7. Dust cover</p> <p>8. Bracket assembly</p> <p>▶D▶ 9. Dust seal outer</p> <p>▶D▶ 10. Dust seal inner</p> <p>◀C▶ ▶C▶ 11. Center bearing</p> <p>12. Center bearing bracket</p> <p>13. Circlip</p> | <p>▶B▶ 14. Snap ring</p> <p>▶A▶ 15. Spider assembly</p> <p>▶A▶ 16. T.J. boot</p> <p>▶A▶ 17. Damper band &lt;some models&gt;</p> <p>▶A▶ 18. Dynamic damper &lt;some models&gt;</p> <p>▶A▶ 19. Damper band &lt;some models&gt;</p> <p>▶A▶ 20. Dynamic damper &lt;some models&gt;</p> <p>21. B.J. boot band (large)<br/>(Refer to P.26-20.)</p> <p>22. B.J. boot band (small)<br/>(Refer to P.26-20.)</p> <p>23. B.J. boot (Refer to P.26-20.)</p> <p>24. B.J. assembly (Refer to P.26-20.)</p> |
|---|--|

**DISASSEMBLY SERVICE POINTS****◀A▶ T.J. CASE/SPIDER ASSEMBLY REMOVAL**

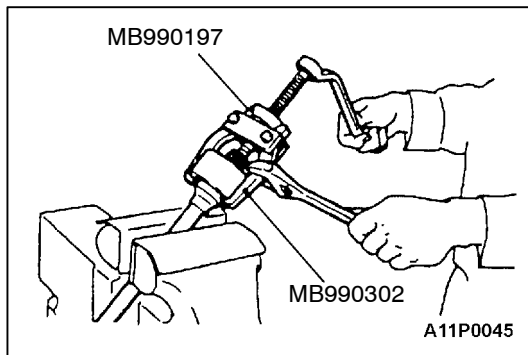
1. Wipe off grease from the spider assembly and the inside of the T.J. case.
2. Always clean the spider assembly when the grease contains water or foreign material.

**Caution**

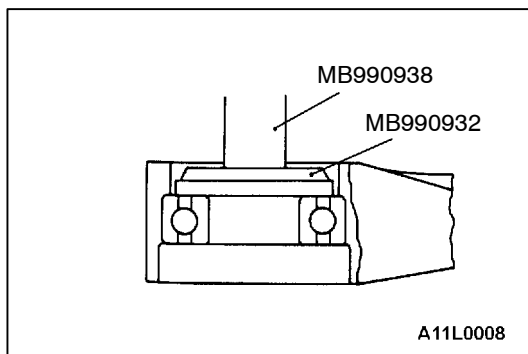
**Do not disassemble the spider assembly.**

**◀B▶ INNER SHAFT REMOVAL**

1. Use the special tool to remove the inner shaft assembly, together with the seal plate, from the T.J. case.

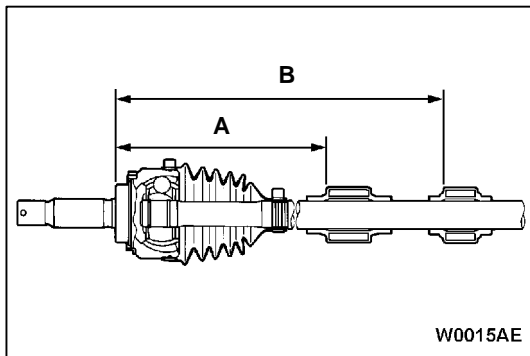


2. Use the special tools to remove the inner shaft from the bracket.

**◀C▶ CENTER BEARING REMOVAL****◀D▶ T.J. BOOT REMOVAL**

1. Wipe off grease from the shaft spline.
2. When reusing the T.J. boot, wrap plastic tape around the shaft spline to avoid damaging the boot.





**REASSEMBLY SERVICE POINTS**

**►A◄ DYNAMIC DAMPER/DAMPER BAND/T.J. BOOT INSTALLATION**

1. Install the dynamic damper in the position shown in the illustration.

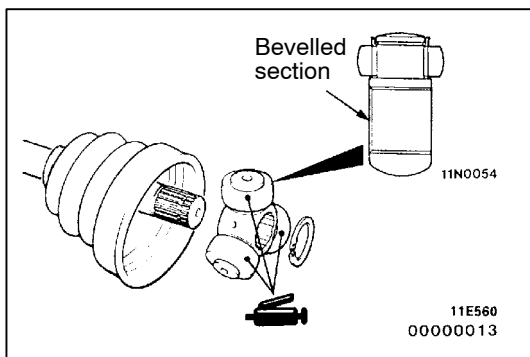
Items		A (large)	B (small)
SPACE RUNNER	L.H.	-	215 mm
	R.H.	395 mm	-
SPACE WAGON	L.H.	-	215 mm
	R.H.	405 mm	585 mm

2. Secure the damper bands.

**Caution**

**There should be no grease adhered to the rubber part of the dynamic damper.**

3. Wrap plastic tape around the shaft spline, and then install the T.J. boot band (small) and T.J. boot.



**►B◄ SPIDER ASSEMBLY/T.J. CASE INSTALLATION**

1. Apply the specified grease furnished in the repair kit to the spider assembly between the spider axle and the roller.

**Specified grease: Repair kit grease**

**Caution**

- (1) **The drive shaft joint uses special grease. Do not mix old and new or different types of grease.**
- (2) **If the spider assembly has been cleaned, take special care to apply the specified grease.**

2. Install the spider assembly to the shaft from the direction of the spline bevelled section.
3. After applying the specified grease to the T.J. case, insert the drive shaft and apply grease one more time.

**Specified grease: Repair kit grease**

**Amount to use:**

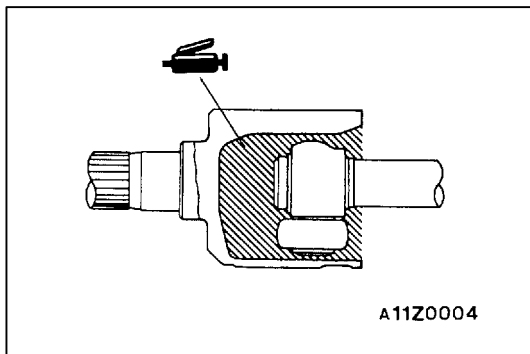
- <SPACE RUNNER> 110 g
- <SPACE WAGON - 2WD> 140 g
- <SPACE WAGON - 4WD> 105 g

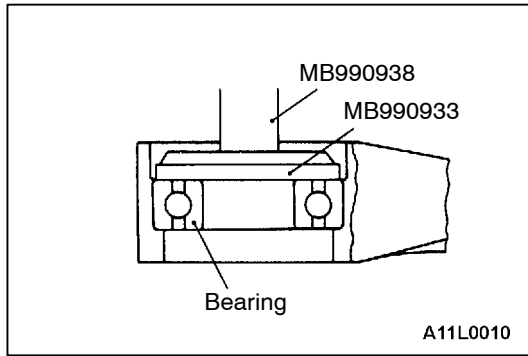
**NOTE**

The grease in the repair kit should be divided in half for use, respectively, at the joint and inside the boot.

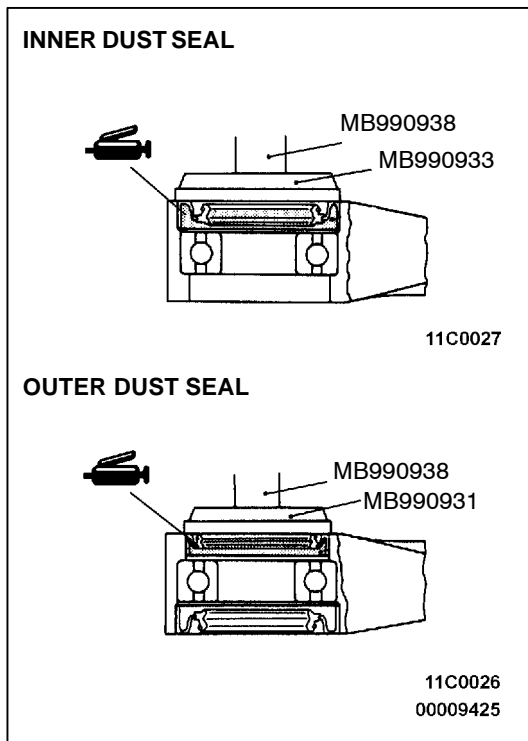
**Caution**

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





### ►C◄ CENTER BEARING INSTALLATION



### ►D◄ DUST SEAL INNER/DUST SEAL OUTER INSTALLATION

1. Apply multi-purpose grease to the rear surfaces of all dust seals.

#### Amount to use:

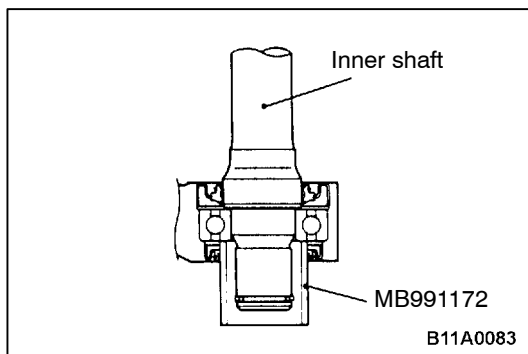
**Dust seal inner 14 - 20 g**

**Dust seal outer 8 - 12 g**

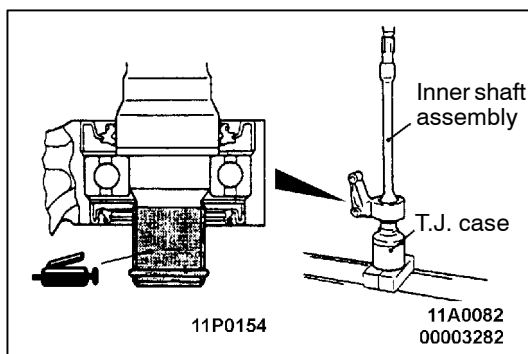
2. Use the special tools to install the dust seal so that its surface runs even with that of the center bearing bracket.
3. Apply multi-purpose grease to the lip of each dust seal.

#### NOTE

When applying grease, make sure that it does not adhere to anything outside the lip.

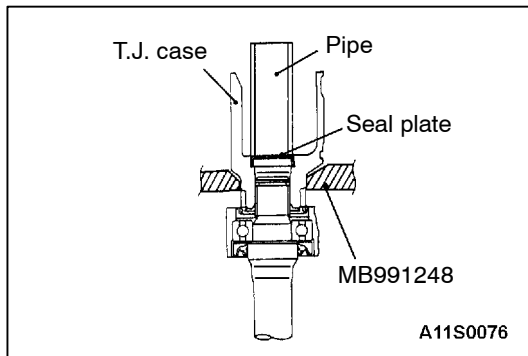


### ►E◄ INNER SHAFT INSTALLATION

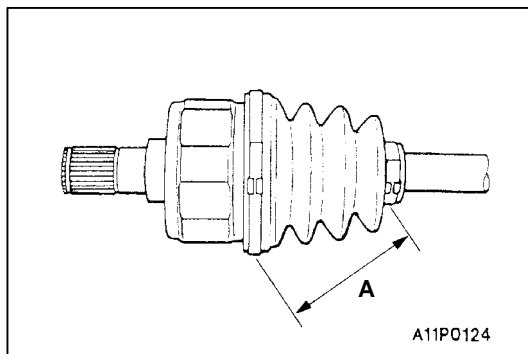


### ►F◄ T.J. CASE AND INNER SHAFT ASSEMBLY INSTALLATION

1. Apply multi-purpose grease to the inner shaft spline, then press fit into the T.J. case.



2. Use the special tools to support the T.J. case.
3. Use a pipe [Ø 30 mm] to press the seal plate into the T.J. case.



### ►◀ T.J. BOOT BAND (SMALL)/T.J. BOOT BAND (LARGE) INSTALLATION

Set the T.J. boot bands at the specified distance in order to adjust the amount of air inside the T.J. boot, and then tighten the T.J. boot bands securely.

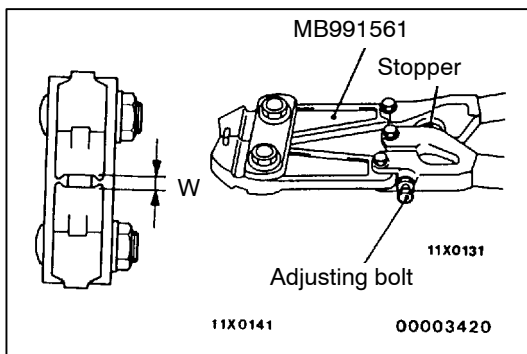
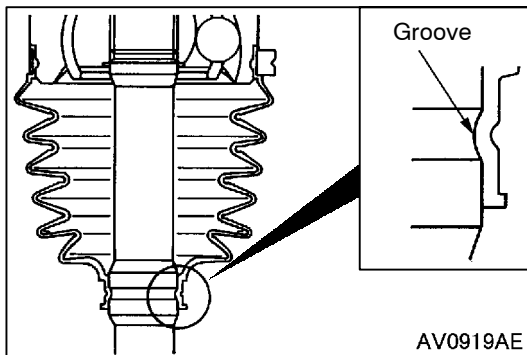
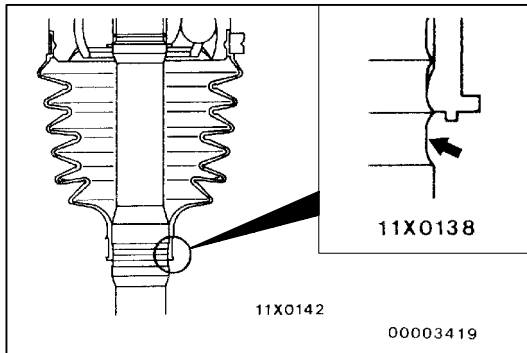
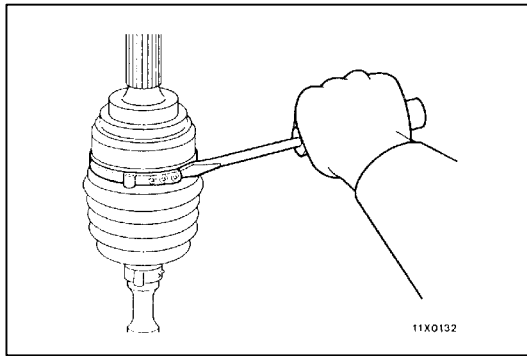
#### Standard value (A):

- <SPACE RUNNER> 82 mm
- <SPACE WAGON - 2WD> 81 mm
- <SPACE WAGON - 4WD> 90 mm

### INSPECTION

26100380083

- Check the drive shaft for damage, bending or corrosion.
- Check the inner shaft for damage, bending or corrosion.
- Check the drive shaft spline part for wear or damage.
- Check the inner shaft spline part for wear or damage.
- Check the spider assembly for roller rotation, wear or corrosion.
- Check the groove inside T.J. case for wear or corrosion.
- Check the dynamic damper for damage or cracking.
- Check the boots for deterioration, damage or cracking.
- Check the center bearing for seizure, discoloration or roughness of rolling surface.
- Check the dust cover for damage or deterioration.



## B.J. BOOT (RESIN BOOT) REPLACEMENT

26100520157

1. Remove the B.J. boot bands (large and small).

### NOTE

The B.J. boot bands cannot be re-used.

2. Remove the B.J. boot.
3. Wrap a plastic tape around the shaft spline, and assemble the B.J. boot band and B.J. boot.
4. Install the B.J. boot with the part with the smallest diameter in a position such that the shaft groove can be seen. <2WD>

5. Engage the small diameter side of the plastic boot into the shaft groove <4WD>.

6. Turn the adjusting bolt on the special tool so that the size of the opening (W) is at the standard value.

**Standard value (W): 2.9 mm**

**<If it is larger than 2.9 mm>**

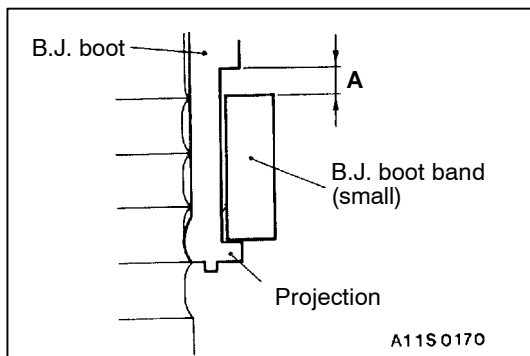
**Tighten the adjusting bolt.**

**<If it is smaller than 2.9 mm>**

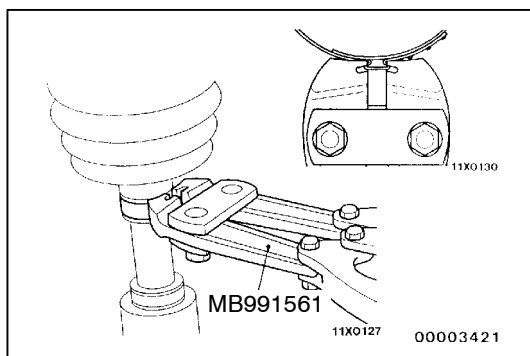
**Loosen the adjusting bolt.**

### NOTE

- (1) The value of W will change by approximately 0.7 mm for each turn of the adjusting bolt.
- (2) The adjusting bolt should not be turned more than once.



7. Place the B.J. boot band (small) against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (A) in the illustration.



8. Use the special tool to crimp the B.J. boot band (small).

**Caution**

- (1) Secure the drive shaft in an upright position and clamp the part of the B.J. boot band to be crimped securely in the jaws of the special tool.
- (2) Crimp the B.J. boot band until the special tool touches the stopper.

9. Check that the crimping amount (B) of the B.J. boot band is at the standard value.

**Standard value (B): 2.4 - 2.8 mm**

<If the crimping amount is larger than 2.8 mm>  
 Readjust the value of (W) in step 6 according to the following formula, and then repeat the operation in step 8.

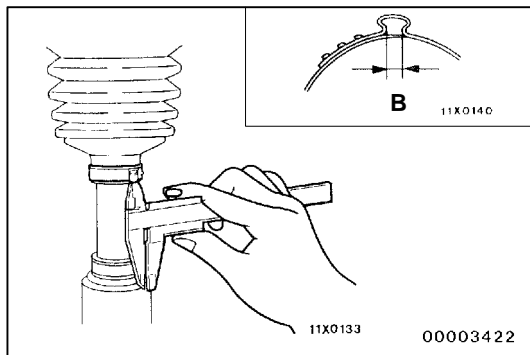
$$W = 5.5 \text{ mm} - B$$

Example: If B = 2.9 mm, then W = 2.6 mm.

<If the crimping amount is smaller than 2.4 mm>  
 Remove the B.J. boot band, readjust the value of (W) in step 6 according to the following formula, and then repeat the operations in steps 7 and 8 using a new B.J. boot band.

$$W = 5.5 \text{ mm} - B$$

Example: If B = 2.3 mm, then W = 3.2 mm.



10. Check that the B.J. boot band is not sticking out past the place where it has been installed.

If the B.J. boot band is sticking out, remove it and then repeat the operations in steps 7 to 9 using a new B.J. boot band.

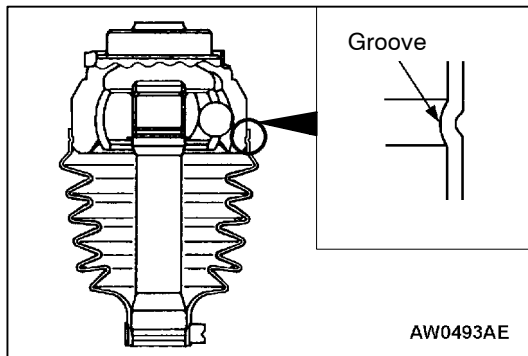
11. Fill the inside of the B.J. boot with the specified amount of the specified grease.

**Specified grease: Repair kit grease**

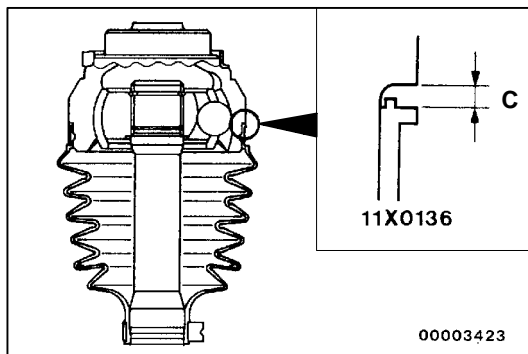
**Amount to use: <2WD> 125 g, <4WD> 95 g**

**Caution**

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



12. Engage the large diameter side of the B.J. boot into the B.J. housing groove. <2WD>

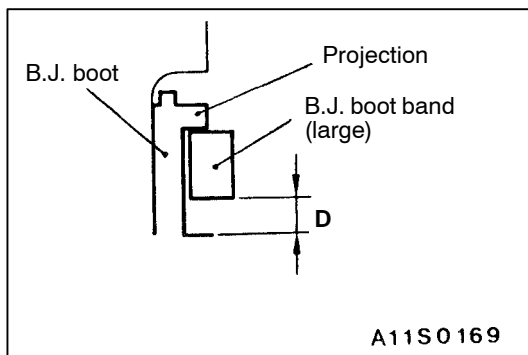


13. Install the B.J. boot band (large) so that there is the clearance (C) between it and the B.J. housing is at the standard value. <4WD>

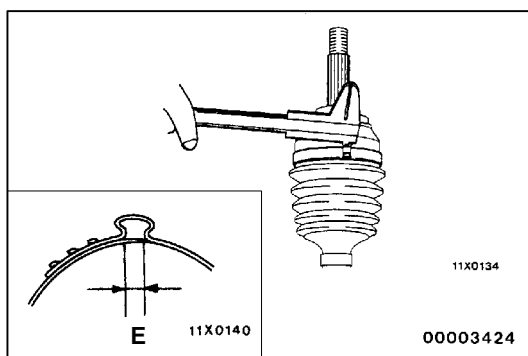
**Standard value (C): 0.1 - 1.5 mm**

14. Follow the same procedure as in step 6 to adjust the size of the opening (W) on the special tool so that it is at the standard value.

**Standard value (W): 3.2 mm**



15. Place the B.J. boot band (large) against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (D) in the illustration.
16. Use the special tool to crimp the B.J. boot band (large) in the same way as in step 8.



17. Check that the crimping amount (E) of the B.J. boot band is at the standard value.

**Standard value (e): 2.4 - 2.8 mm**

<If the crimping amount is larger than 2.8 mm>  
Readjust the value of (W) in step 13 according to the following formula, and then repeat the operation in step 15.

$$W = 5.8 \text{ mm} - E$$

**Example: If E = 2.9 mm, then W = 2.9 mm.**

<If the crimping amount is smaller than 2.4 mm>  
Remove the B.J. boot band, readjust the value of (W) in step 13 according to the following formula, and then repeat the operations in steps 14 and 15 using a new B.J. boot band.

$$W = 5.8 \text{ mm} - E$$

**Example: If E = 2.3 mm, then W = 3.5 mm.**

18. Check that the B.J. boot band is not sticking out past the place where it has been installed.  
If the B.J. boot band is sticking out, remove it and then repeat the operations in steps 14 to 16 using a new B.J. boot band.