

GENERAL INFORMATION

The front axle consists of front hubs, knuckles, wheel bearings and drive shafts, and it 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 incorporates R.J.-T.J. type constant velocity joints with high transmission efficiency and low vibration and noise.

- The dynamic dampers have been mounted on the right and left drive shafts to reduce vibration.
- ABS rotors for detecting the wheel speeds are press-fitted to the R.J. outer wheels in vehicles with ABS.

NOTE

1. R.J.: Rzeppa Joint
2. T.J.: Tripod Joint

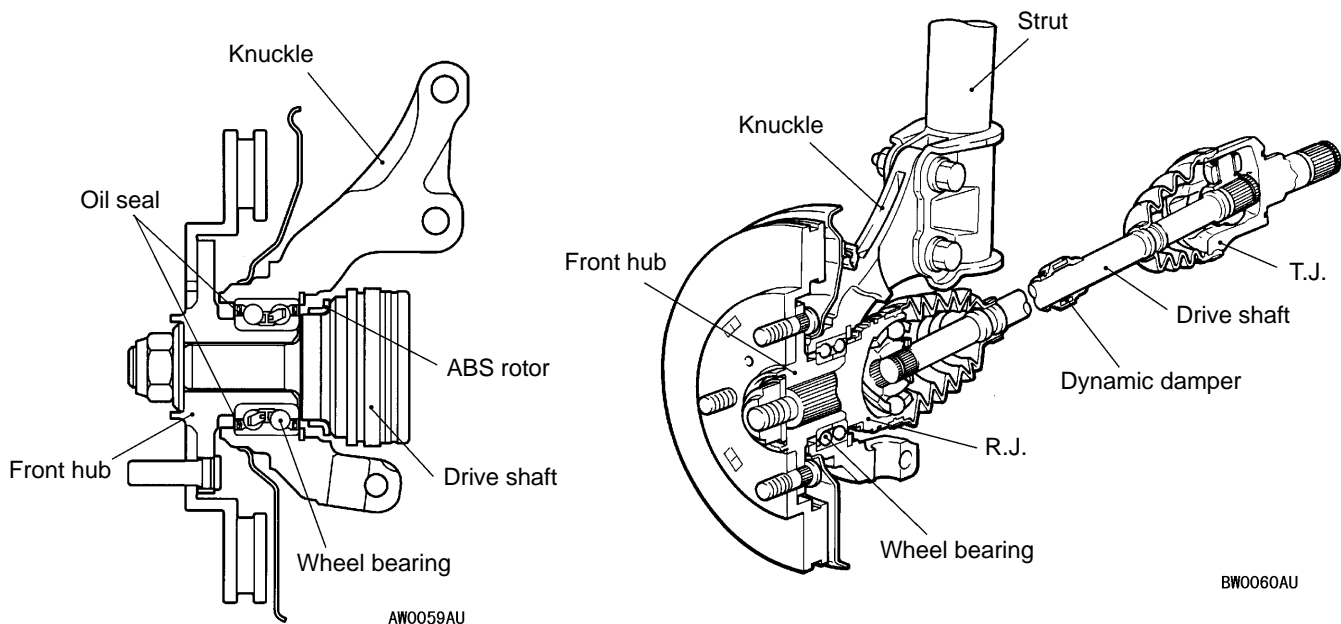
SPECIFICATIONS

Item			Specification
Wheel bearings	Wheel bearing type		Double-row angular contact ball bearing
	Bearing (outside diameter × inside diameter) mm		74 × 40
Drive shaft	Joint type	Outside	R.J.
		Inside	T.J.
	Shaft length*1 × Shaft diameter mm	Left	379 × 26
		Right	700 × 26

NOTE

*1: The shaft length indicates the length between the center points of each joint.

STRUCTURAL DIAGRAM



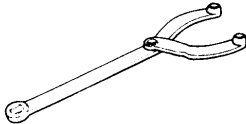
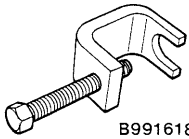
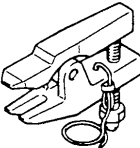
SERVICE SPECIFICATIONS

Item		Standard value	Limit
Wheel bearing axial play mm		–	0.05
Wheel bearing rotation starting torque N·m		–	1.8
Protruding length of stabilizer bar mounting bolt mm		20.5 – 23.5	–
Setting of T.J. boot length mm		85 ± 3	–
Opening dimension of the special tool (MB991561) mm	When the R.J.boot band (small) is crimped.	2.9	–
	When the R.J.boot band (big) is crimped.	3.2	–
Crimped width of the R.J.boot band mm		1.0 – 1.5	–
Clearance between the R.J. boot (large diameter side) and the stepped phase of the R.J. housing mm		0.10 – 1.55	–

LUBRICANTS

Items	Specified lubricants	Quantity g
T.J. boot grease	Repair kit grease	125 ± 10
R.J.boot grease	Repair kit grease	110 ± 10

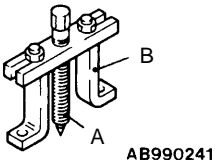
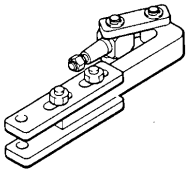

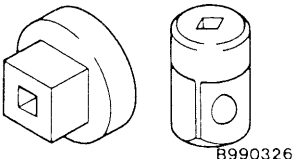
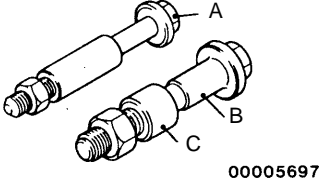
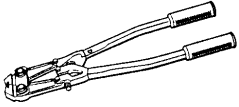
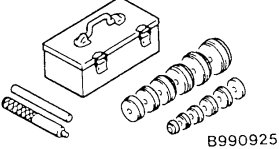

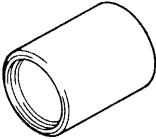
SPECIAL TOOLS

Tool	Number	Name	Use
	MB990767	End yoke holder	Fixing of the hub
 B991618	MB991618	Hub bolt remover	Removal of the hub bolt
 B991113	MB991113 or MB990635	Steering linkage puller	Disconnection of ball joint

26 FRONT AXLE BASE – Special Tools

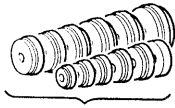
MAIN

Group
26

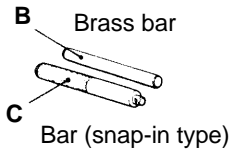
Tool	Number	Name	Use
	MB990241 A: MB990242 B: MB990244	Axle shaft puller A: Puller shaft B: Puller bar	<ul style="list-style-type: none"> Removal of the drive shaft Removal of the hub
	MB991056 or MB991355	Knuckle arm bridge	
	MB990685	Torque wrench	Measurement of wheel bearing rotation starting torque
	MB990326	Preload socket	Measurement of wheel bearing rotation starting torque
	A: MB991017 B: MB990998 C: MB991000	A,B: Front hub remover and installer C: Spacer	<ul style="list-style-type: none"> Provisional holding of the wheel bearing Measurement of wheel bearing rotation starting torque Measurement of wheel bearing axial play MB991000, which belongs to MB990998, should be used as a spacer.
	MB991561	Boot band clipping tool	Resin boot band installation
	MB990925	Bearing and oil seal installer set	Removal of wheel bearing
	MB990810	Side bearing puller	Removal of the wheel bearing inner race (outside)
	MB991050	Rear suspension bush remover & installer base	Installation of wheel bearing

26 FRONT AXLE BASE – Special Tools

MB990925

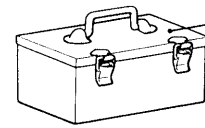


A
Installer adapter



B Brass bar

C 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	—

MAIN

Group
26

ON-VEHICLE SERVICE

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.

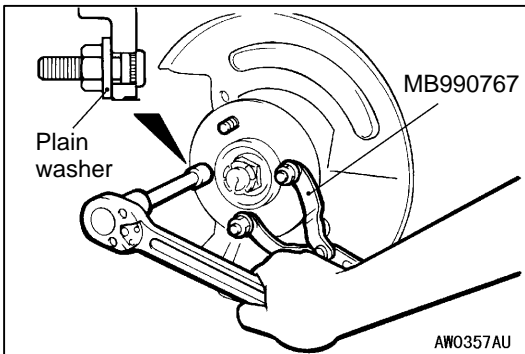
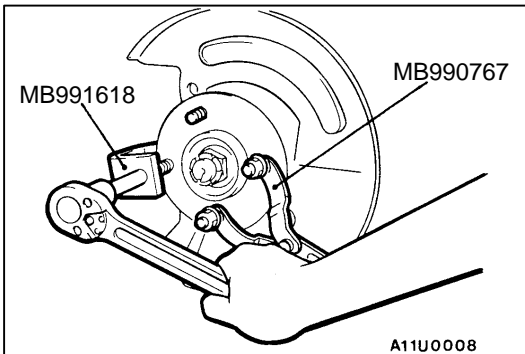
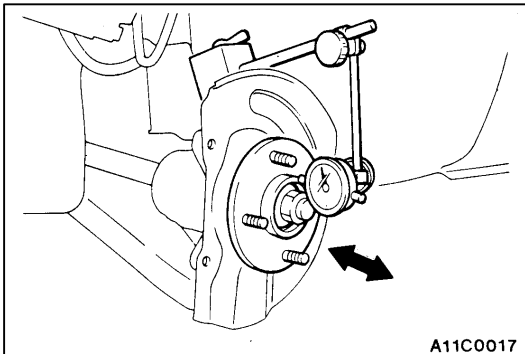
Limit: 0.05 mm

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

HUB BOLT REPLACEMENT

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.

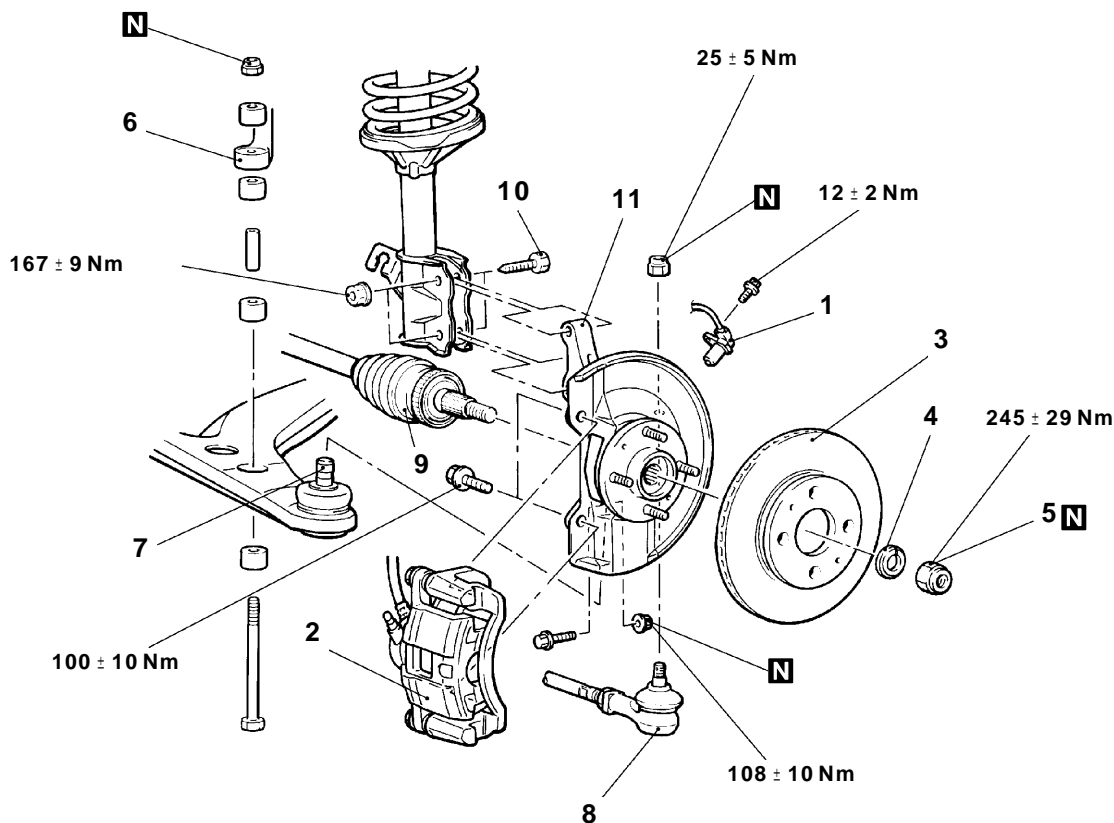


FRONT HUB ASSEMBLY

REMOVAL AND INSTALLATION

Post-installation Operation

Check the Dust Cover for cracks or damage by pushing it with finger.



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Removal steps

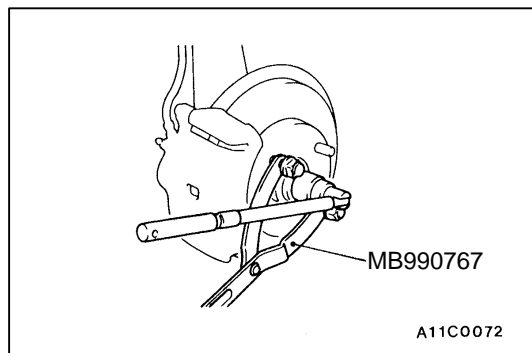
1. Front speed sensor
<Vehicles with ABS>
2. Caliper assembly
3. Brake disc
4. Washer
5. Drive shaft nut
6. Connection for stabilizer bar

7. Connection for lower arm ball joint
8. Connection for tie rod end
9. Drive shaft
10. Front strut to hub and knuckle mounting bolt and nut
11. Hub and knuckle

REMOVAL SERVICE POINTS

◀A▶ CALIPER ASSEMBLY REMOVAL

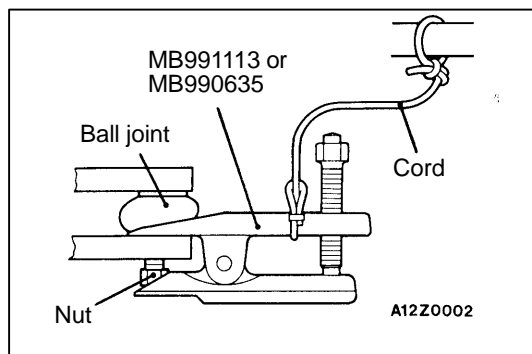
Secure the removed caliper assembly with wire, etc.



◀B▶ DRIVE SHAFT NUT REMOVAL

Caution

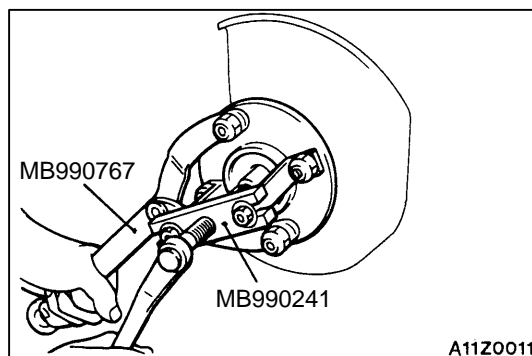
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut. Otherwise wheel bearing will be damaged.



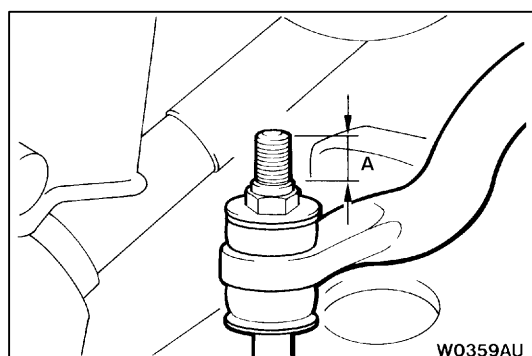
◀C▶ TIE ROD END DISCONNECTION

Caution

1. Loosen the nut only; do not remove it from the ball joint. Otherwise ball joint thread will be damaged.
2. The special tool should be suspended by a cord to prevent it from coming off.



◀D▶ DRIVE SHAFT REMOVAL

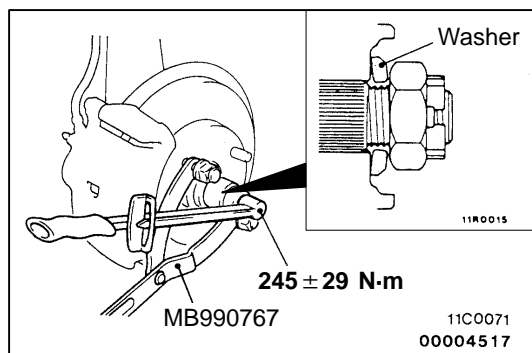


INSTALLATION SERVICE POINT

▶A◀ STABILIZER BAR INSTALLATION

Install the stabilizer bar so that the protruding length of the stabilizer bar mounting bolt meets its standard value (A).

Standard value (A) : 20.5 – 23.5 mm



▶B◀ DRIVE SHAFT NUT INSTALLATION

1. Be sure to 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 wheel bearing will be damaged.

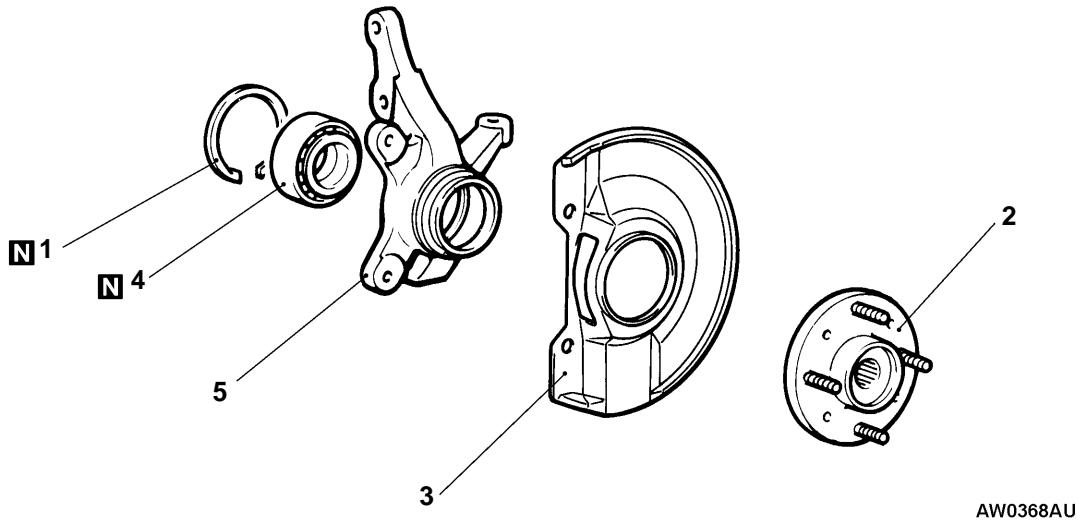
INSPECTION

- Check the hub for cracks and spline for wear.
- Check the oil seal for damage.
- Check the knuckle for cracks.
- Check for defective bearing.

NOTE

If the meshing of the wheel bearing outer race and the knuckle, or of the wheel bearing inner race and the hub, is loose, replace the bearing or damaged parts.

DISASSEMBLY AND REASSEMBLY



Disassembly steps

◀A▶

◀B▶

1. Snap ring
2. Hub
3. Dust cover
4. Wheel bearing
5. Knuckle

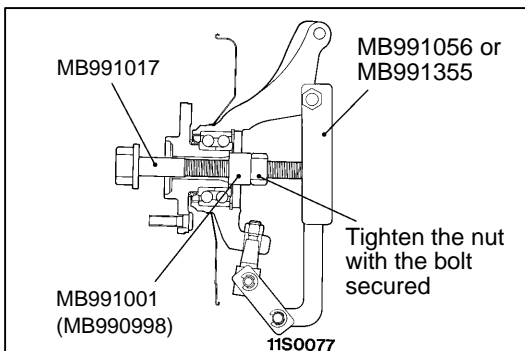
Reassembly steps

▶A▶

▶B▶

▶C▶

5. Knuckle
 4. Wheel bearing
 1. Snap ring
 2. Hub
 3. Dust cover
- Hub starting torque check
 - Hub axial play check

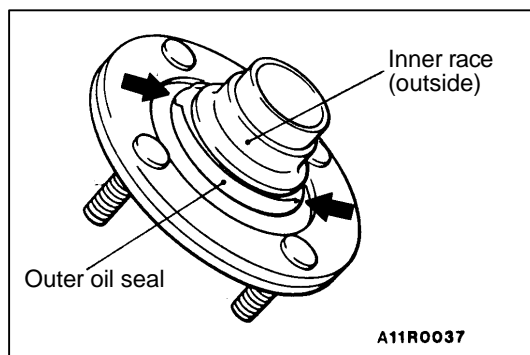


DISASSEMBLY SERVICE POINTS

◀A▶ HUB REMOVAL

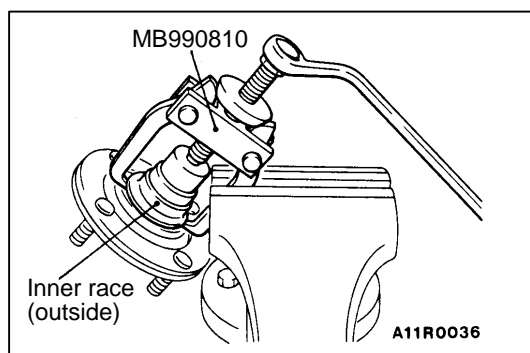
Caution

When the hub has been removed, always replace the wheel bearing with a new part because wheel bearing frictional surface will be damaged when removing the hub.



◀B▶ WHEEL BEARING REMOVAL

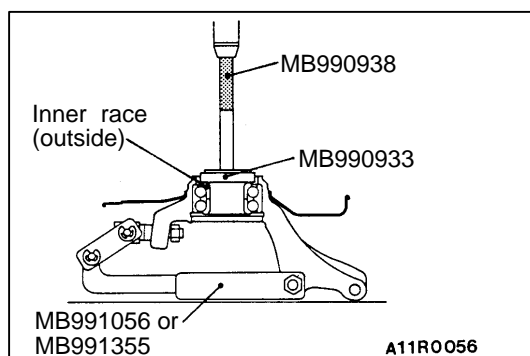
1. Crush the oil seal in two places so that the tabs of the special tool will be caught on the wheel bearing inner race (outside).



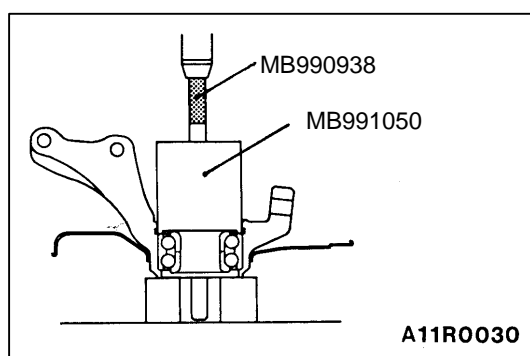
2. Remove the wheel bearing inner race (outside) from the front hub by using the special tool.

Caution

When removing the inner race (outside) from the hub, be careful not to let the hub drop.



3. Install the inner race (outside) that was removed from the hub to the wheel bearing, and then use the special tool to remove the wheel bearing.



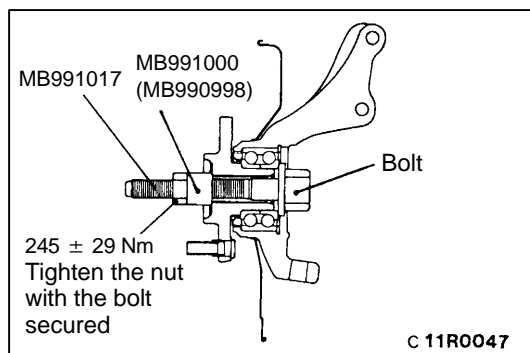
REASSEMBLY SERVICE POINTS

▶A◀ WHEEL BEARING INSTALLATION

1. Fill the wheel bearing with multipurpose grease.
2. Apply a thin coating of multipurpose grease to the knuckle and bearing contact surfaces.
3. Press-in the bearing by using the special tools.

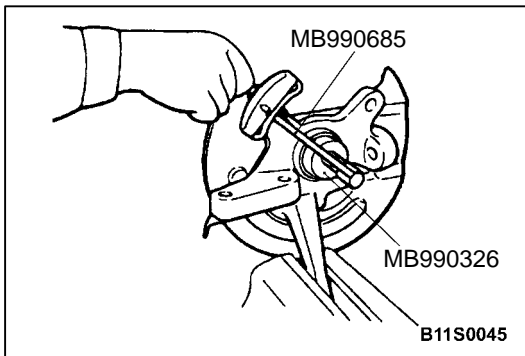
Caution

Press the outer race when pressing-in the wheel bearing. Otherwise wheel bearing will be damaged.



▶B◀ HUB STARTING TORQUE CHECK

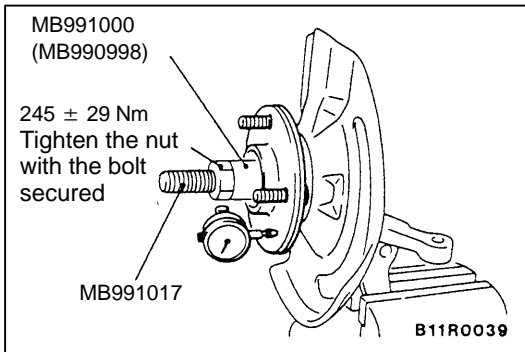
1. Tighten the special tool to the specified torque, and then press the hub into the knuckle.
2. Rotate the hub in order to seat the bearing.



3. Measure the hub starting torque by using the special tools.

Limit: 1.8 N·m

4. The starting torque must be within the limit and, in addition, the hub must not feel rough when rotated.



►C◄ HUB AXIAL PLAY CHECK

1. Measure to determine whether the axial play of the hub is within the specified limit or not.

Limit: 0.05 mm

2. If the starting torque and hub axial play are not within the limit range while the nut is tightened to 245 ± 29 N·m, the bearing, hub and/or knuckle have probably not been installed correctly. Replace the bearing and re-install.

INSPECTION

- Check the front hub and brake disc mounting surfaces for galling and contamination.
- Check the knuckle inner surface for galling and cracks.
- Check for defective bearing.

DRIVE SHAFT

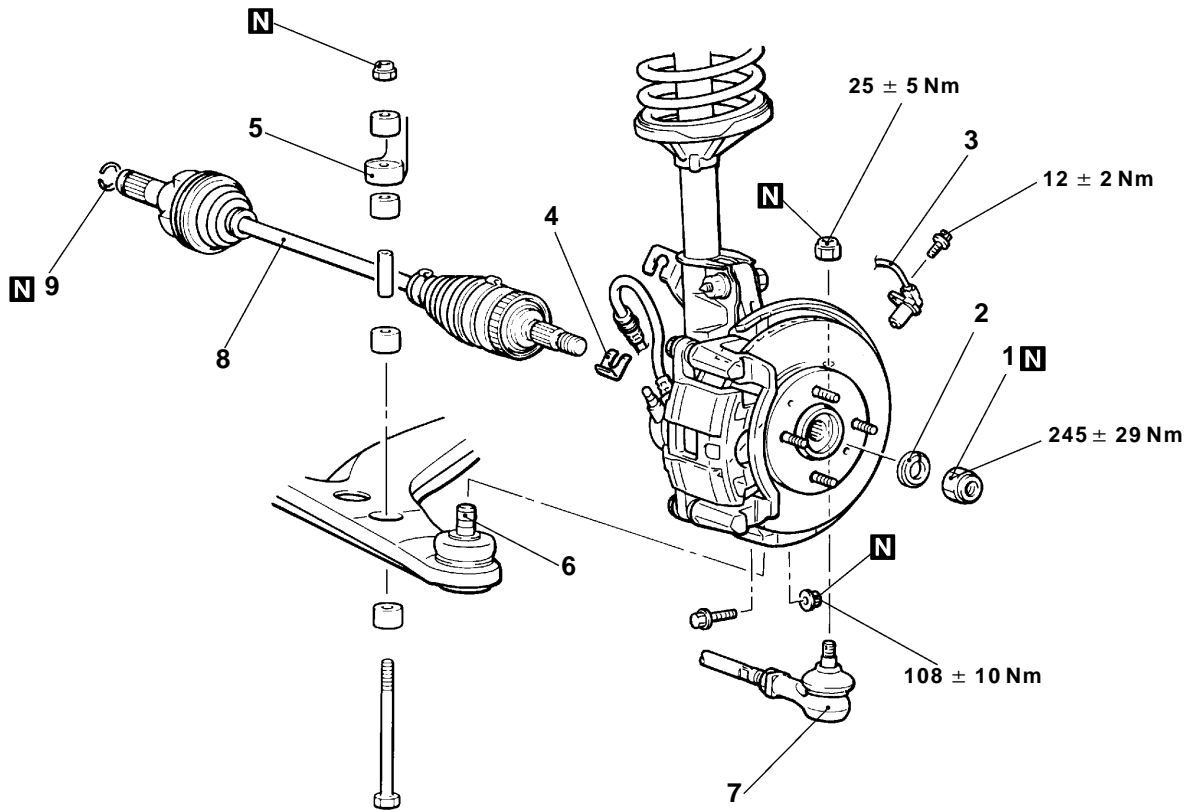
REMOVAL AND INSTALLATION

Caution

For vehicles with ABS, do not strike the ABS rotors installed to the R.J. outer race of drive shaft against other parts when removing or installing the drive shaft. Otherwise the ABS rotors will be damaged.

Post-installation Operation

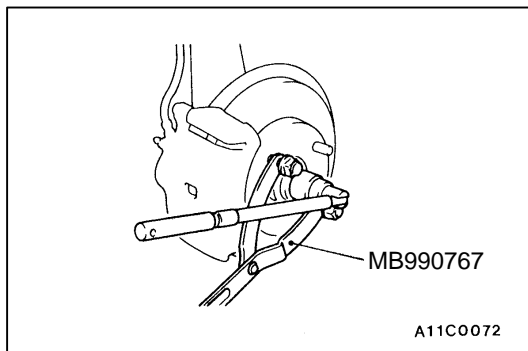
Check the Dust Cover for cracks or damage by pushing it with finger.



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Removal steps

- | | | | |
|---------|--|---------|------------------------------------|
| ◀A▶ ▶C▶ | 1. Drive shaft nut | ▶B▶ | 5. Stabilizer bar connection |
| | 2. Washer | ◀B▶ | 6. Lower arm ball joint connection |
| | 3. Front speed sensor
<Vehicles with ABS> | ◀C▶ ▶A▶ | 7. Tie rod end connection |
| | 4. Brake hose clamp | | 8. Drive shaft |
| | | | 9. Circlip |

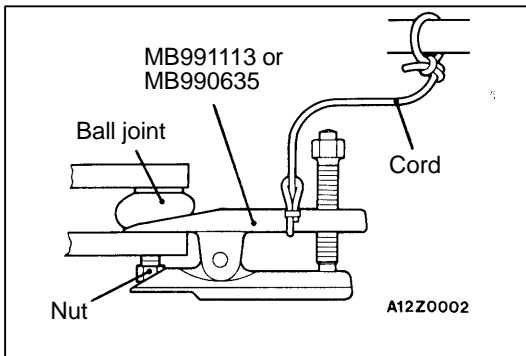


REMOVAL SERVICE POINTS

◀A▶ DRIVE SHAFT NUT REMOVAL

Caution

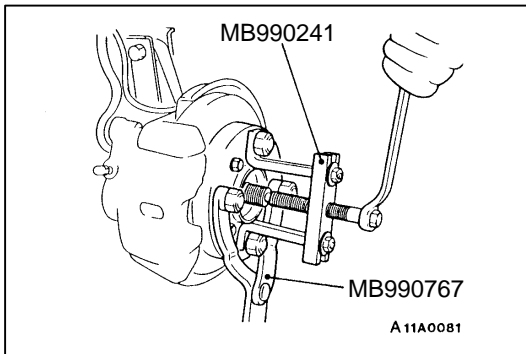
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut. Otherwise wheel bearing will be damaged.



◀B▶ TIE ROD END DISCONNECTION

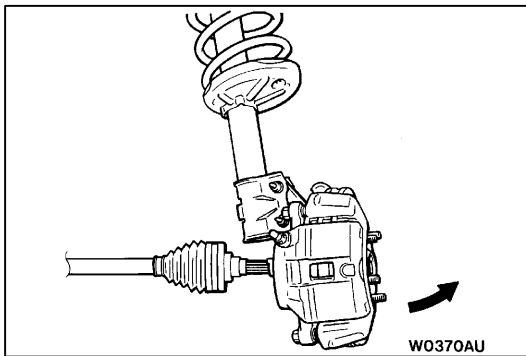
Caution

1. Loosen the nut only; do not remove it from the ball joint. Otherwise ball joint thread will be damaged.
2. The special tool should be suspended by a cord to prevent it from coming off.

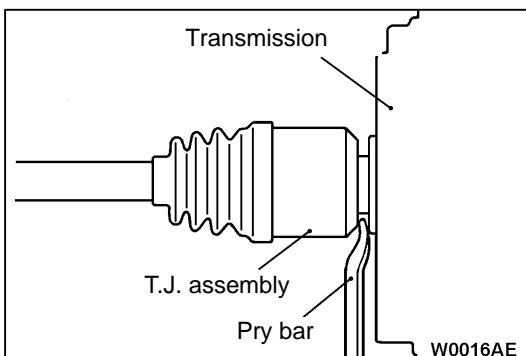


◀C▶ DRIVE SHAFT REMOVAL

1. Use the special tools to push out the drive shaft 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.



3. Remove the drive shaft from the transmission by the following procedure.
Insert a pry bar between the transmission case and the drive shaft, and then pry the drive shaft from the transmission.

Caution

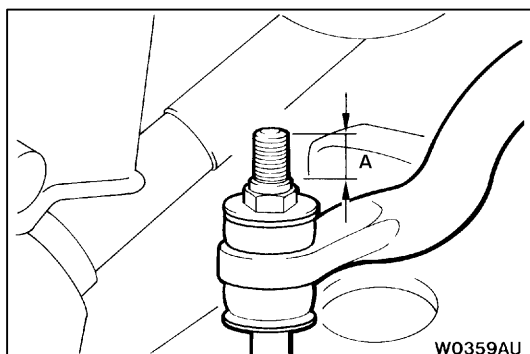
- (1) Do not pull on the drive shaft; doing so will damage the T.J.; be sure to use the pry bar.
- (2) When pulling the drive shaft out from the transmission, be careful that the spline part of the drive shaft does not damage the oil seal.

INSTALLATION SERVICE POINTS

►A◄ DRIVE SHAFT INSTALLATION

Caution

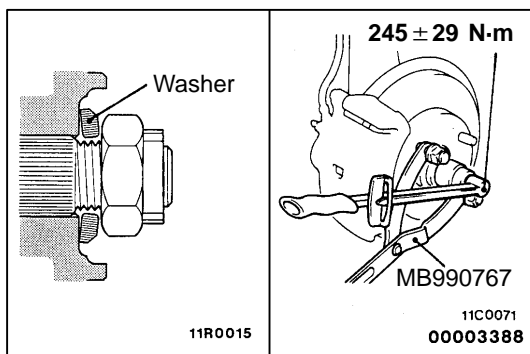
Do not damage the oil seal of the transmission by the drive shaft splines.



►B◄ STABILIZER BAR INSTALLATION

Install the stabilizer bar so that the protruding length of the stabilizer bar mounting bolt meets its standard value (A).

Standard value : 20.5 – 23.5 mm



►C◄ DRIVE SHAFT NUT INSTALLATION

1. Be sure to install the drive shaft washer in the specified direction.
2. Using the special tool, tighten the drive shaft nut.

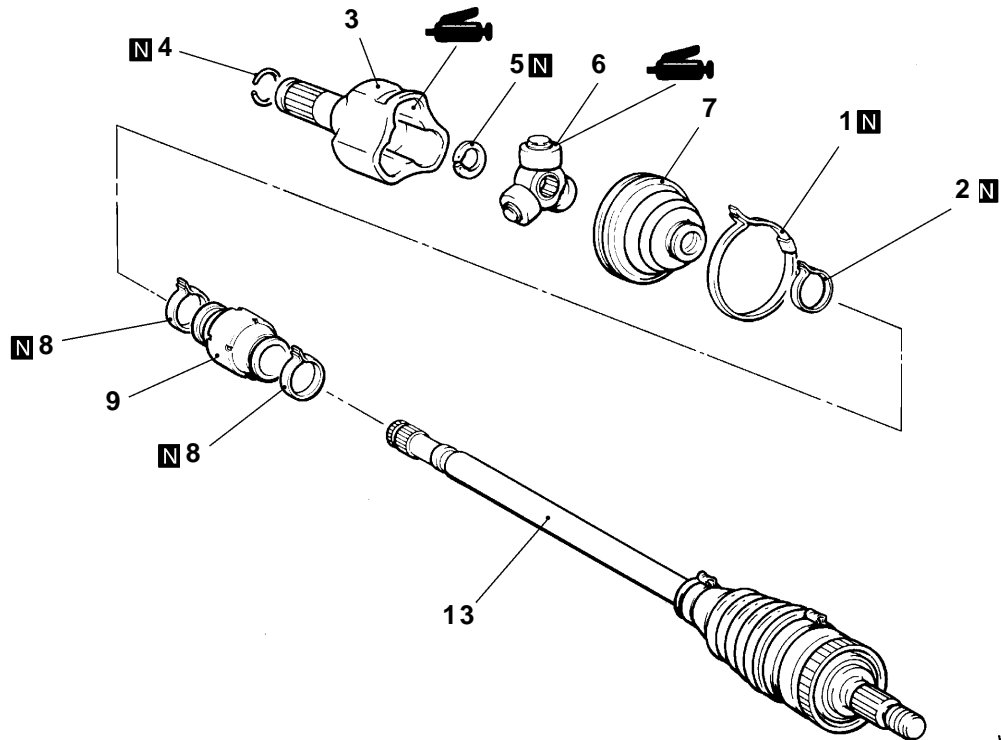
Caution

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

DISASSEMBLY AND REASSEMBLY

Caution

- (1) 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 R.J. outer race to prevent the rotor from damage.
- (2) Never disassemble the R.J. assembly except when replacing the R.J. boot.



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<p>1110100</p>	<p>1110101</p>	<p>V0900AE</p>
T.J. repair kit	T.J. boot repair kit	R.J. boot repair kit

Disassembly steps

1. T.J. boot band (large)
2. T.J. boot band (small)
3. T.J. case
4. Circlip
5. Snap ring
6. Spider assembly
7. T.J. boot

8. Damper band
9. Dynamic damper
10. R.J. boot band (large)
11. R.J. boot band (small)
12. R.J. boot
13. R.J. assembly

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

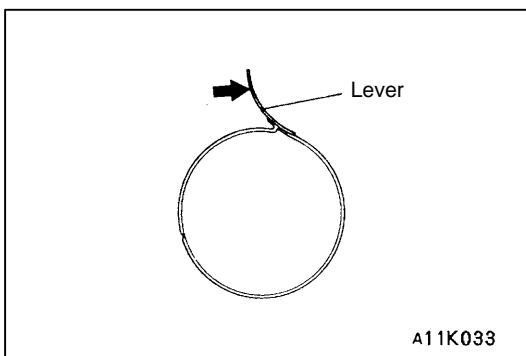
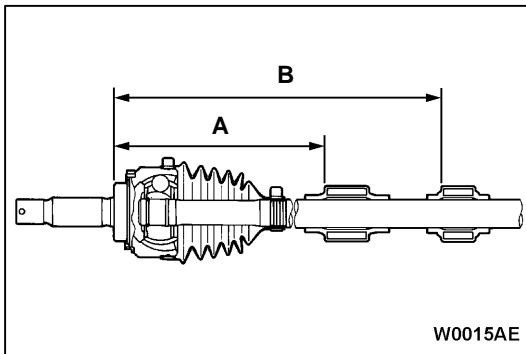
1. Wipe off grease from the spider assembly and the inside of the T.J. case.
2. Always clean the spider assembly when the grease contains water or foreign material.

Caution

Do not disassemble the spider assembly.

◀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.

A(L.H.side)mm	B(R.H.side)mm
252	453

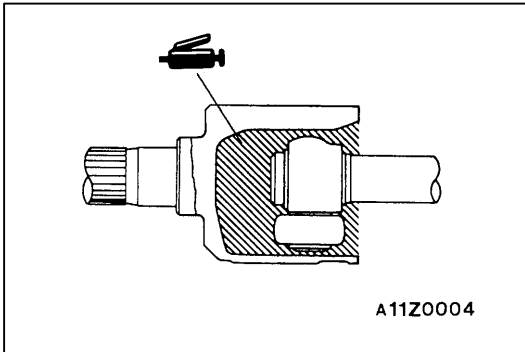
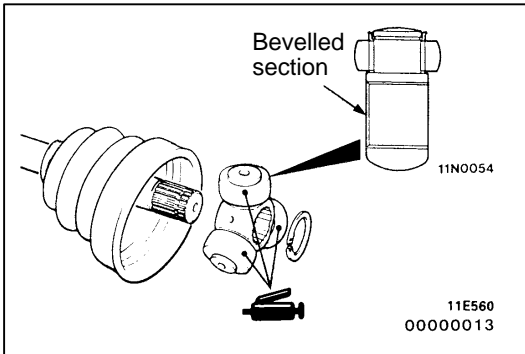
2. Secure the damper bands.

Caution

- (1) There should be no grease adhered to the rubber part of the dynamic damper.
- (2) Damper band and TJ boot band (small) are different in shape. Care should be taken to prevent wrong installation by checking identification numbers and colors indicated on the lever.

Item	Identification No.	Identification colour
Damper band	31.3	Blue
TJ boot band	33	—

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

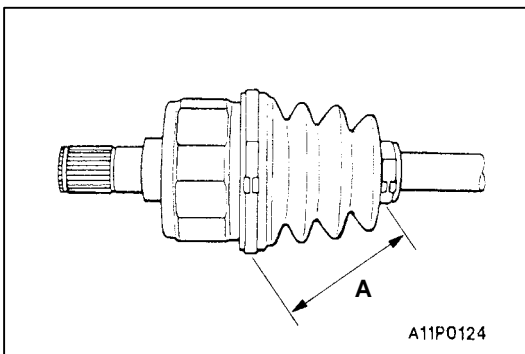
Amount to use: 125 ± 10 g

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◄ 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): 85 ± 3 mm

INSPECTION

- Check the drive shaft for damage, bending or corrosion.
- Check the drive 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 dust cover for damage or deterioration.

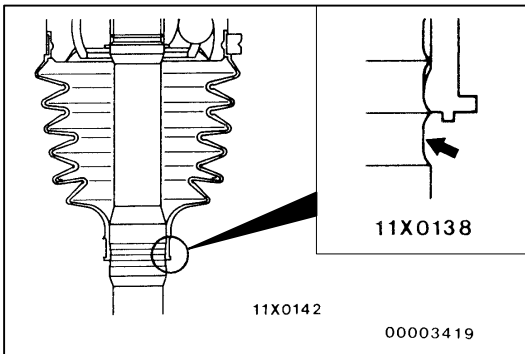
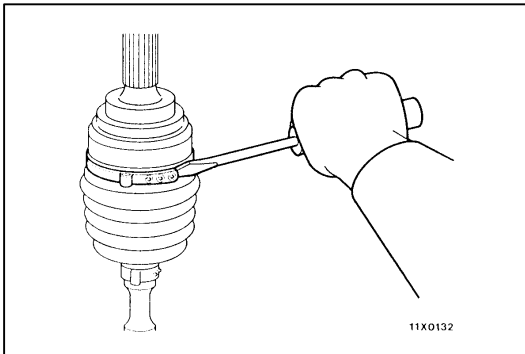
R.J. BOOT (RESIN BOOT) REPLACEMENT

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

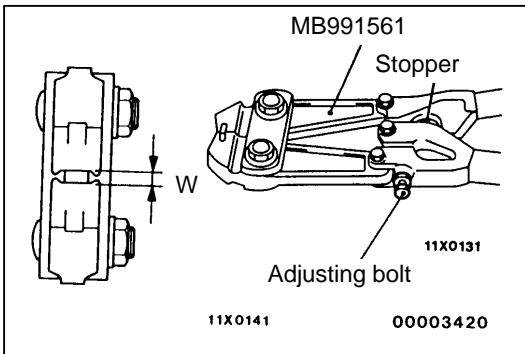
NOTE

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

2. Remove the R.J. boot.
3. Wrap a plastic tape around the shaft spline, and assemble the R.J. boot band and B.J. boot.



4. Install the R.J. boot with the part with the smallest diameter in a position such that the shaft groove can be seen.



5. 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>

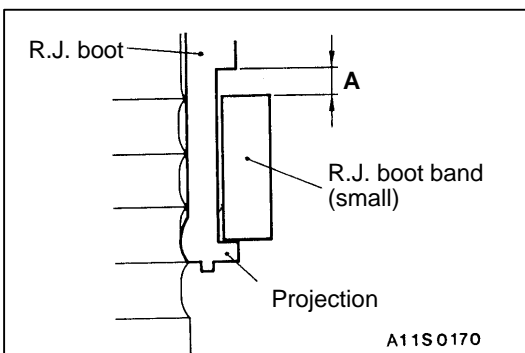
Tighten the adjusting bolt.

<If it is smaller than 2.9 mm>

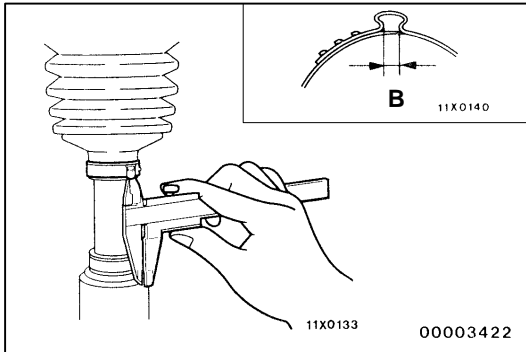
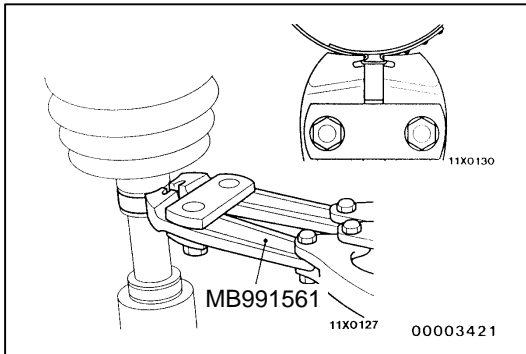
Loosen the adjusting bolt.

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.



6. Place the R.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.



7. Use the special tool to crimp the R.J. boot band (small).

Caution

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

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

Standard value (B): 1.0 – 1.5 mm

<If the crimping amount is larger than 1.5 mm>
Readjust the value of (W) in step 5 according to the following formula, and then repeat the operation in step 7.

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

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

<If the crimping amount is smaller than 1.0 mm>
Remove the R.J. boot band, readjust the value of (W) in step 5 according to the following formula, and then repeat the operations in steps 6 and 7 using a new R.J. boot band.

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

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

9. Check that the R.J. boot band is not sticking out past the place where it has been installed.
If the R.J. boot band is sticking out, remove it and then repeat the operations in steps 6 to 8 using a new R.J. boot band.

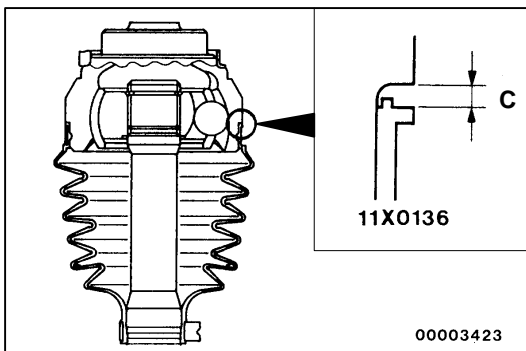
10. Fill the inside of the R.J. boot with the specified amount of the specified grease.

Specified grease: Repair kit grease

Amount to use: 110 ± 10 g

Caution

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

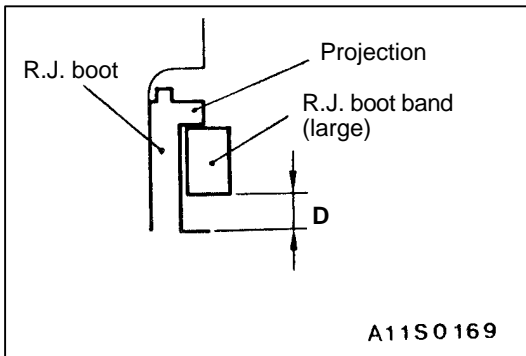


11. Install the R.J. boot band (large) so that there is the clearance (C) between it and the R.J. housing is at the standard value.

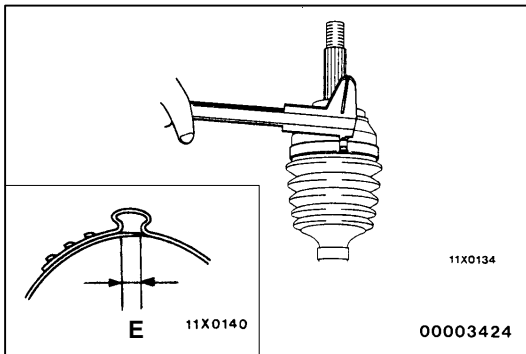
Standard value (C): 0.10 – 1.55 mm

12. Follow the same procedure as in step 5 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



13. Place the R.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.
14. Use the special tool to crimp the R.J. boot band (large) in the same way as in step 7.



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

Standard value (E): 1.0 – 1.5 mm

<If the crimping amount is larger than 1.5 mm>
Readjust the value of (W) in step 12 according to the following formula, and then repeat the operation in step 14.

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

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

<If the crimping amount is smaller than 1.0 mm>
Remove the R.J. boot band, readjust the value of (W) in step 12 according to the following formula, and then repeat the operations in steps 13 and 14 using a new B.J. boot band.

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

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

16. Check that the R.J. boot band is not sticking out past the place where it has been installed.
 If the R.J. boot band is sticking out, remove it and then repeat the operations in steps 13 to 15 using a new R.J. boot band.