

FRONT AXLE

CONTENTS

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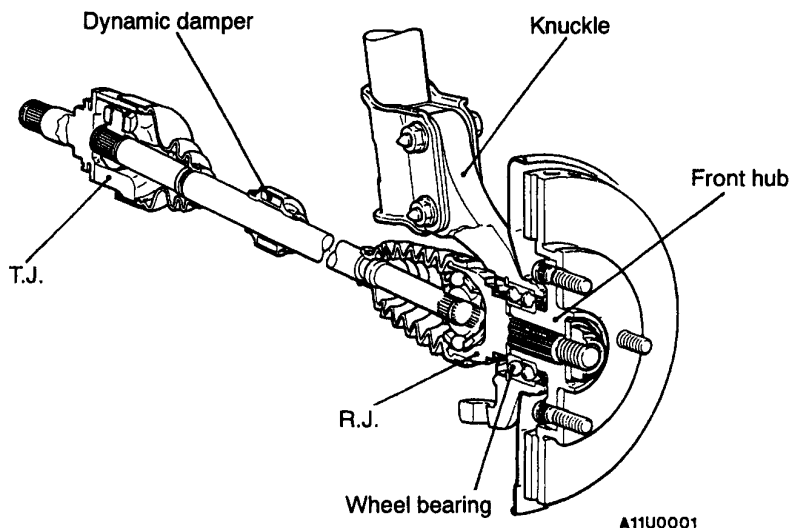
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GENERAL INFORMATION

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The wheel bearing and front hub are press-fitted in the axle housing portion of the knuckle to support the drive shaft. In addition, the drive shaft uses

R.J. – T.J.-type constant velocity joints to improve power transmission efficiency and to reduce vibration or noise.



NOTE

R.J.: Rzeppa Joint

T.J.: Tripod Joint

SERVICE SPECIFICATIONS

26100030100

Items		Standard value	Limit
Hub axial play mm		—	0.05
Wheel bearing starting torque Nm		—	1.8 or less
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 (large) is crimped	3.2	—
Crimped width of the R.J. boot band mm		2.4 – 2.8	—
Clearance between the R.J. boot (large diameter side) and the stepped phase of the R.J. housing mm		0.1 – 1.55	—

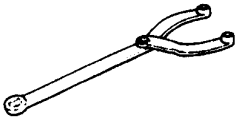
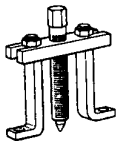
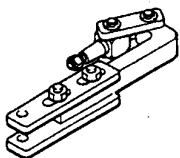
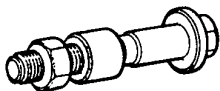
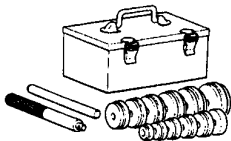
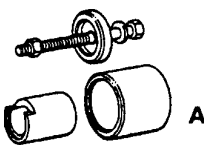
LUBRICANTS

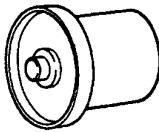
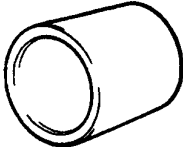
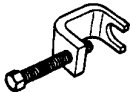
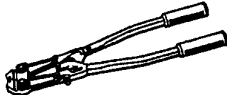
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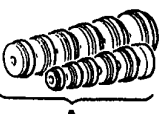
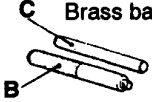
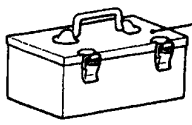
Items	Specified lubricant	Quantity g
T.J. boot grease	Repair kit grease	100
R.J. boot grease	Repair kit grease	125

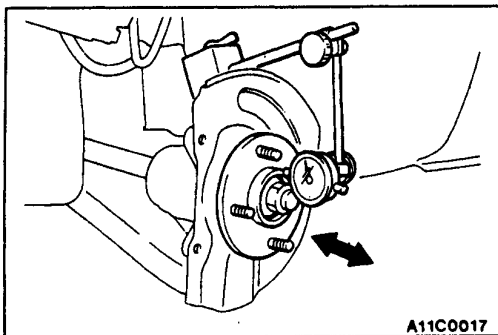
SPECIAL TOOLS

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Tool	Number	Name	Use
	MB990767	End yoke holder	Fixing of the hub
	MB991113 or MB990635	Steering linkage puller	- Removal of the lower arm ball joint and knuckle - Removal of the knuckle and tie rod end ball joint
	MB990241	Axle shaft puller	Removal of the drive shaft
	MB991056 or MB991355	Knuckle arm bridge	Removal of the hub
	MB990998	Front hub remover and installer	- Removal of or pressing-in the hub - Provisional holding of the wheel bearing
	MB990810	Side bearing puller	Removal of the wheel bearing inner race (outside)
	MB990925	Bearing and oil seal installer set	Removal of wheel bearing MB990932 MB990938
	MB990883	Rear suspension arbor	Press-fitting of wheel bearing
	MB991045 A: MB991050	Bushing remover and installer	Press-fitting of wheel bearing Use together with MB990883

Tool	Number	Name	Use
	MB991387	Bushing remover and installer	Press-fitting of the outer oil seal
	MB990685	Torque wrench	Measurement of the wheel bearing starting torque
	MB990326	Preload socket	Measurement of the wheel bearing starting torque
	MB991389	Bushing remover base	Press-fitting of the inner oil seal
 11H0072	MB991618	Hub bolt remover	Removal of the hub bolt
	MB991561	Boot band clipping tool	Resin boot band installation

 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

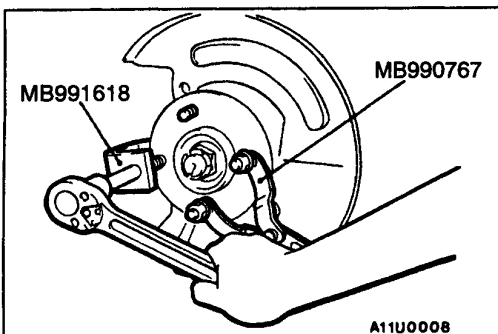
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HUB AXIAL PLAY CHECK

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

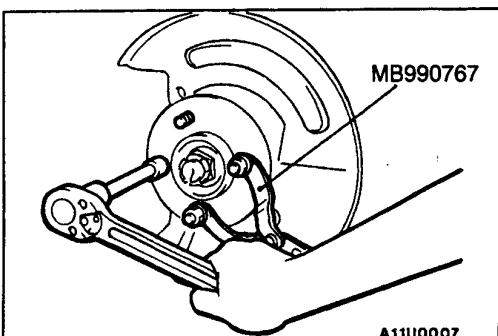
4. If axial play exceeds the limit, disassemble and check parts.



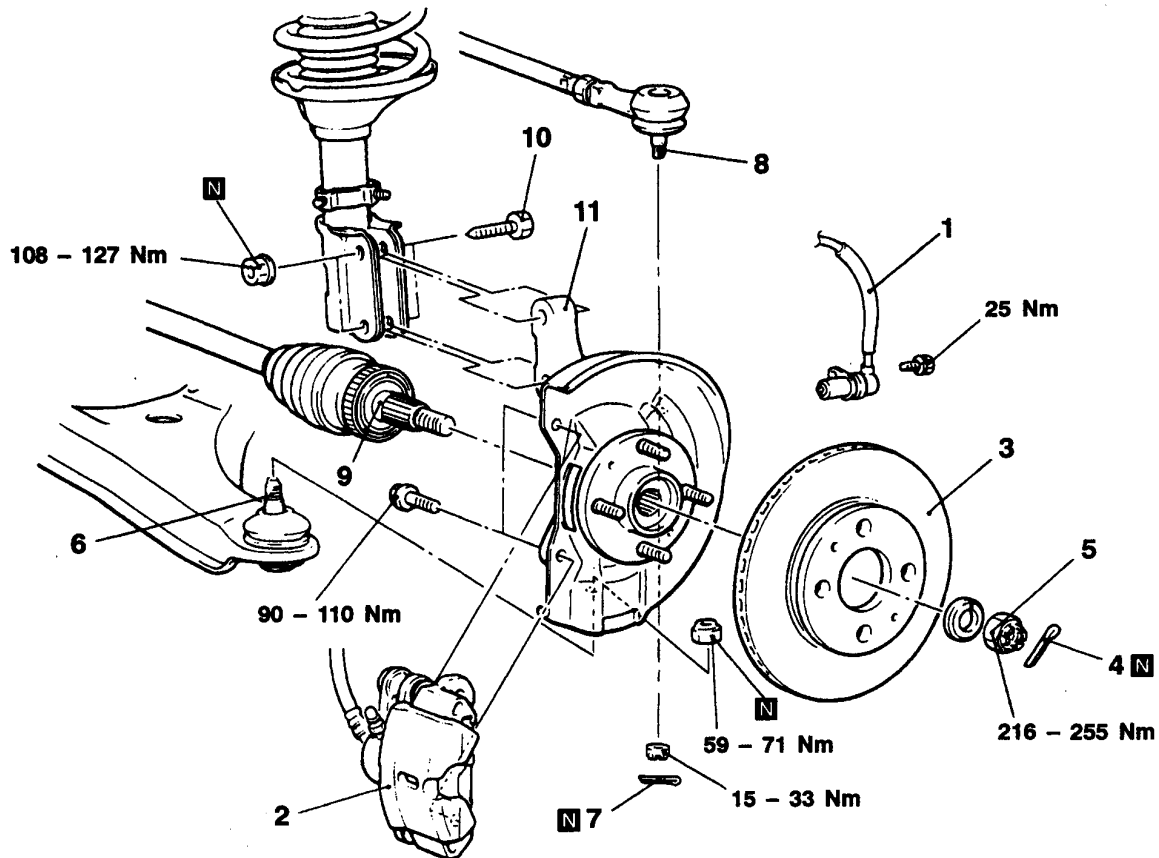
HUB BOLT REPLACEMENT

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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. Use the wheel nuts to securely install the new hub bolts, while being careful of the serrations of the hub bolts and hub.

AXLE HUB**REMOVAL AND INSTALLATION**

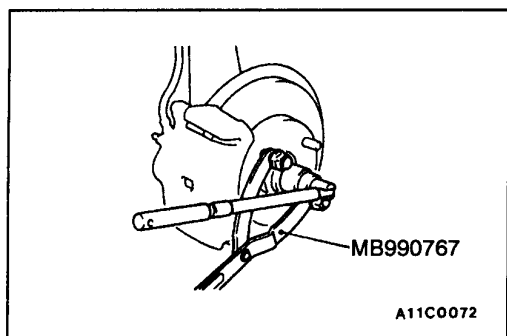
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Removal steps

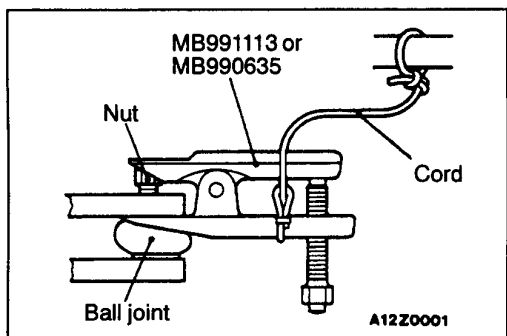
- ◀A▶
- ◀B▶ ▶A▶
- ◀C▶
- ◀C▶
1. Front speed sensor
<Vehicles with ABS>
 2. Caliper assembly
 3. Brake disc
 4. Split pin
 5. Drive shaft nut
 - Lower arm and stabilizer bar connection (Refer to GROUP 33A – Stabilizer Bar.)
 6. Connection for lower arm ball joint
 7. Split pin
 8. Connection for tie rod end
 9. Drive shaft
 10. Front strut mounting bolt and nut
 11. Hub and knuckle

Caution

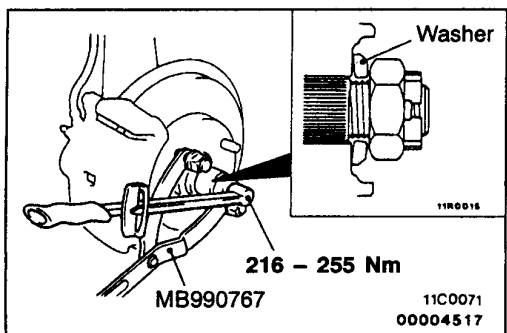
1. For vehicles with ABS, be careful when handling the pole piece at the tip of the speed sensor so as not to damage it by striking against other parts.
2. For vehicles with ABS, be careful not to damage the rotors installed to the R.J. outer race during removal and installation of the drive shaft.

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

Secure the removed caliper assembly with wire, etc.

◀B▶ DRIVE SHAFT NUT REMOVAL**◀C▶ LOWER ARM BALL JOINT/TIE ROD END DISCONNECTION****Caution**

1. Using the special tool, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.
2. Support the special tool with a cord, etc. to prevent it from coming off.

**INSTALLATION SERVICE POINT****▶A◀ 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.

INSPECTION

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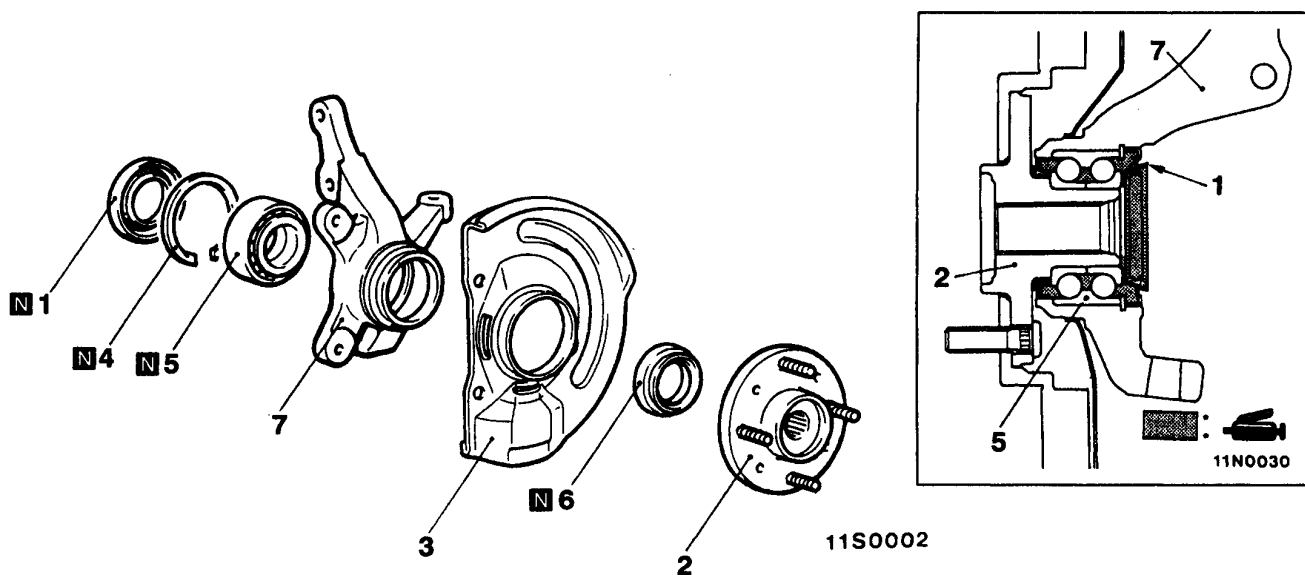
- Check the front hub and brake disc mounting surfaces for galling and contamination.
- Check the hub for cracks and spline for wear.
- Check the oil seal for damage.
- Check the knuckle for cracks.
- Check for defective bearing.

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

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Disassembly steps

◀A▶

1. Inner oil seal
2. Hub

◀B▶

3. Dust cover
4. Snap ring
5. Wheel bearing
6. Outer oil seal
7. Knuckle

Reassembly steps

▶A▶

7. Knuckle
5. Wheel bearing
4. Snap ring

▶B▶

6. Outer oil seal
3. Dust cover

▶C▶

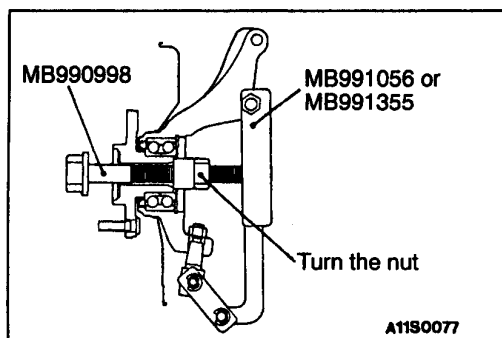
2. Hub

▶C▶

- Wheel bearing starting torque check
- Hub axial play check

▶D▶

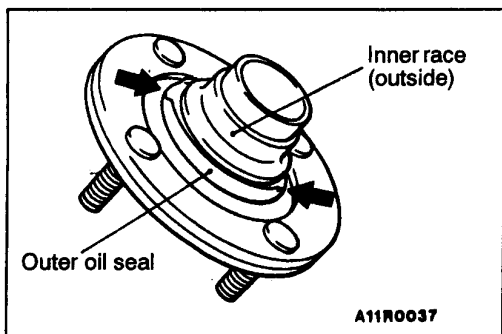
1. Inner oil seal

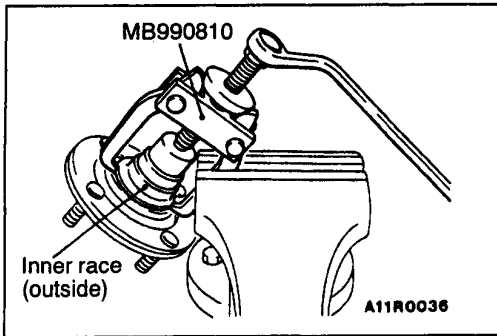
**DISASSEMBLY SERVICE POINTS****◀A▶ HUB REMOVAL****Caution**

When removing the hub, always replace the wheel bearing with a new part.

◀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).

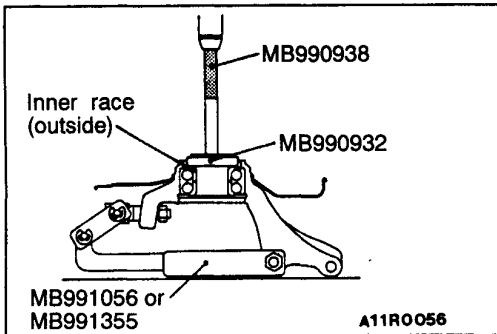




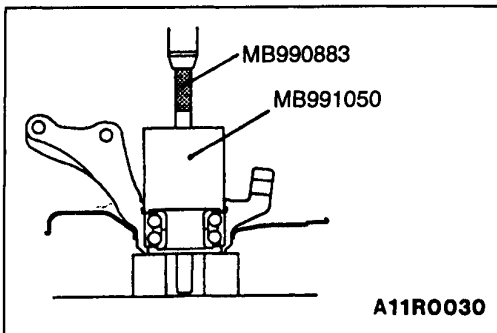
- (2) Remove the wheel bearing inner race (outside) from the front hub by using the special tool.

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.



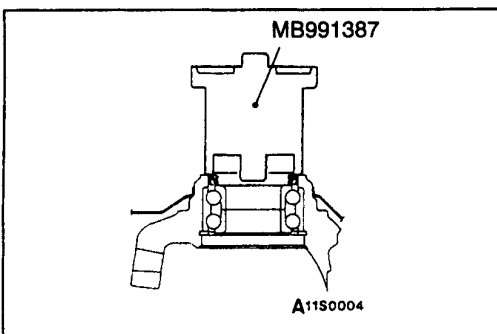
REASSEMBLY SERVICE POINTS

►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.

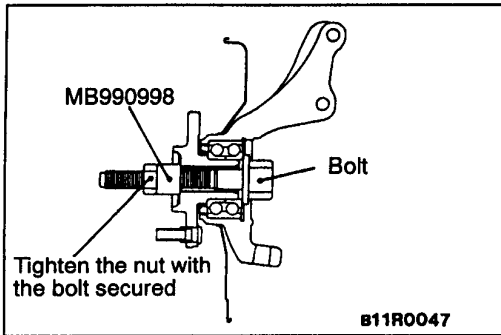
Caution

Press the outer race when pressing-in the wheel bearing.



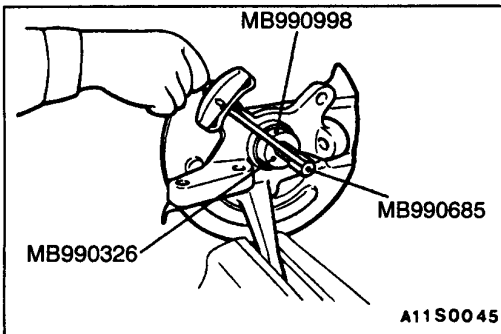
►B◄ OUTER OIL SEAL INSTALLATION

- (1) Drive the oil seal (hub side) into the knuckle by using the special tools until it is flush with the knuckle end surface.
- (2) Apply multipurpose grease to the lip of the oil seal and to the surfaces of the oil seal which contact the front hub.



►C◄ WHEEL BEARING STARTING TORQUE CHECK/HUB AXIAL PLAY CHECK

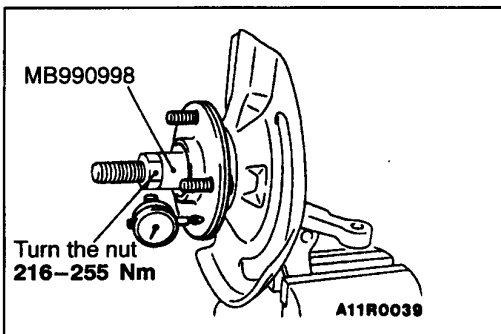
- (1) Use the special tool to mount the hub onto the knuckle.
- (2) Tighten the nut of the special tool to 216–255 Nm.
- (3) Rotate the hub in order to seat the bearing.



- (4) Measure the wheel bearing starting torque (hub starting torque) by using the special tools.

Limit: 1.8 Nm or less

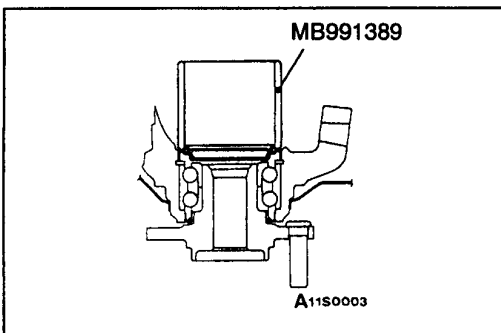
- (5) The starting torque must be within the limit and, in addition, the bearing must not feel rough when rotated.



- (6) Measure to determine whether the axial play of the hub is within the specified limit or not.

Limit: 0.05 mm

- (7) If the starting torque and hub axial play are not within the limit range while the nut is tightened to 216–255 Nm, the bearing, hub and/or knuckle have probably not been installed correctly. Replace the bearing and re-install.



►D◄ INNER OIL SEAL INSTALLATION

- (1) Apply multipurpose grease to the reverse side of the inner oil seal.
- (2) Drive the inner oil seal into the knuckle until it contacts the snap ring.
- (3) Apply multipurpose grease to the lip of the inner oil seal.

INSPECTION

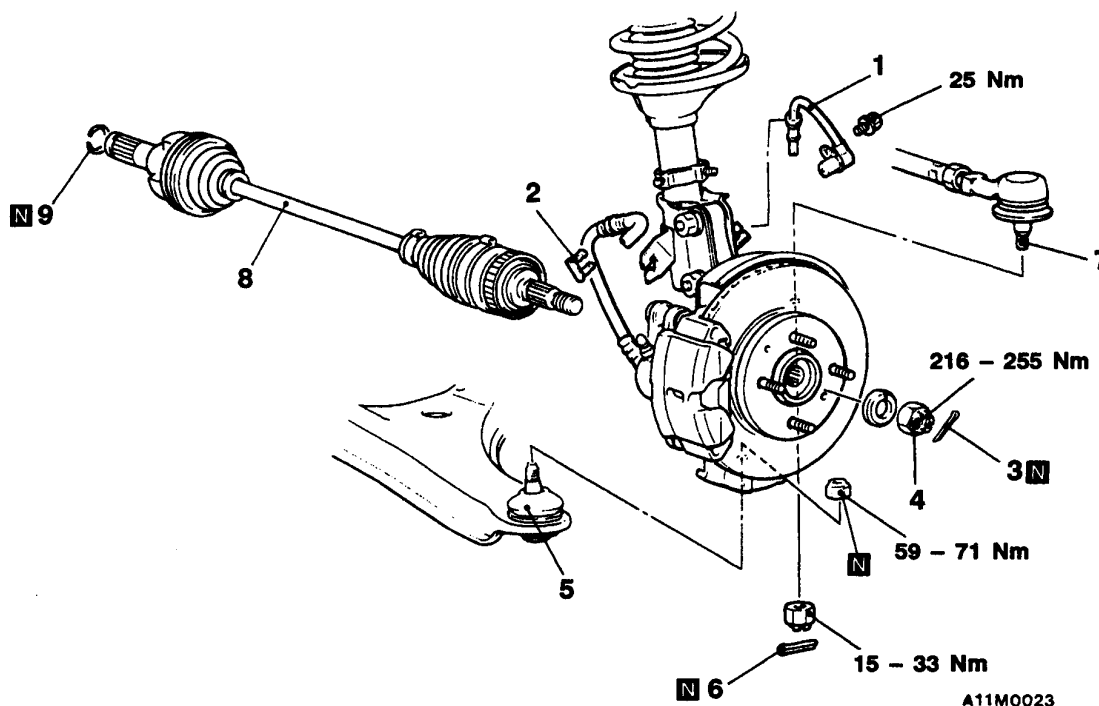
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Check the knuckle inner surface for galling and cracks.

DRIVE SHAFT

26100350121

REMOVAL AND INSTALLATION



Removal steps

1. Speed sensor cable connection
<vehicles with ABS>
2. Brake hose clip
3. Split pin
4. Drive shaft nut
 - Lower arm and stabilizer bar connection (Refer to GROUP 33A – Stabilizer Bar.)
5. Connection for lower arm ball joint
6. Split pin
7. Connection for tie rod end
8. Drive shaft
9. Circlip

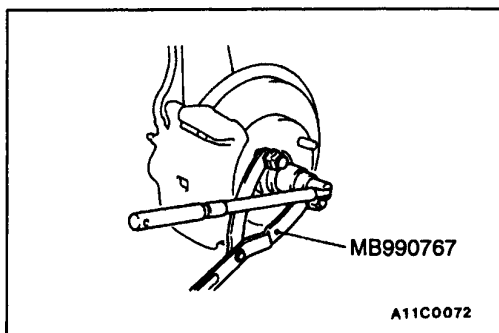
◀A▶ ▶A▶

◀B▶

◀B▶
◀C▶

Caution

1. For vehicles with ABS, be careful when handling the pole piece at the tip of the speed sensor so as not to damage it by striking against other parts.
2. For vehicles with ABS, be careful not to damage the rotors installed to the R.J. outer race during removal and installation of the drive shaft.

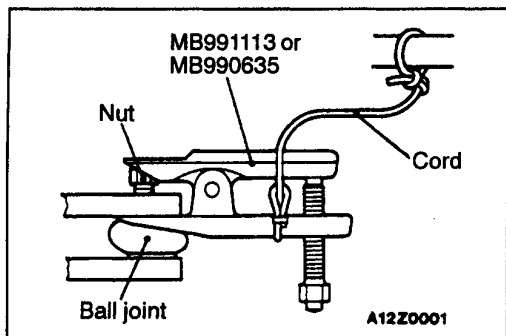


REMOVAL SERVICE POINTS

◀A▶ DRIVE SHAFT NUT REMOVAL

Caution

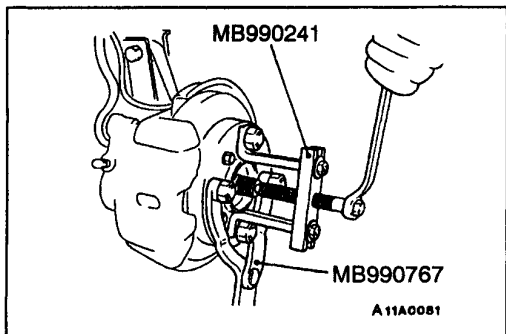
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut.



◀B▶ LOWER ARM BALL JOINT/TIE ROD END DISCONNECTION

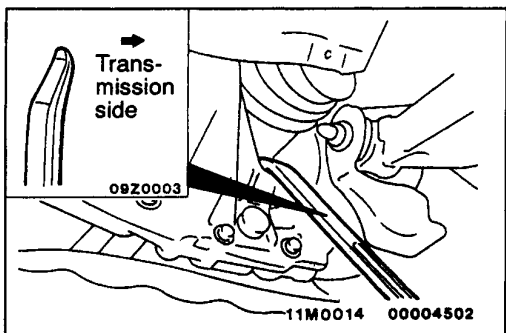
Caution

1. Using the special tool, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.
2. Support the special tool with a cord, etc. to prevent it from coming off.



◀C▶ DRIVE SHAFT REMOVAL

- (1) Use the special tools to push out the drive shaft from the hub.

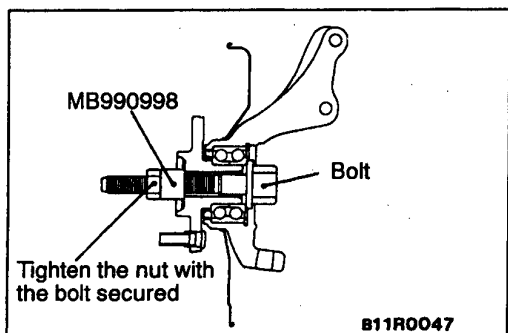


- (2) Insert a pry bar between the transmission case and the drive shaft as shown to remove the drive shaft.

Caution

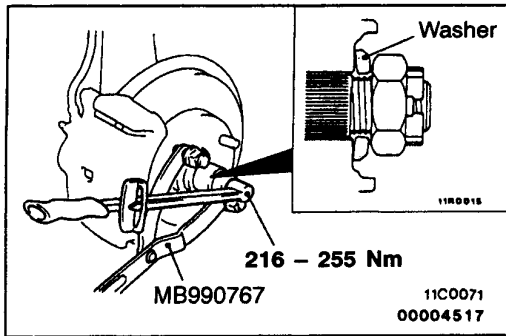
1. Do not pull on the drive shaft; doing so will damage the T.J.; be sure to use the pry bar.
2. Do not insert the pry bar so deep as to damage the oil seal.

- (3) Use a shop towel to cover the transmission case not to let foreign material get into it.



Caution

Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut. 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 tool.

**INSTALLATION SERVICE POINTS****►A◄ 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.

- (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.

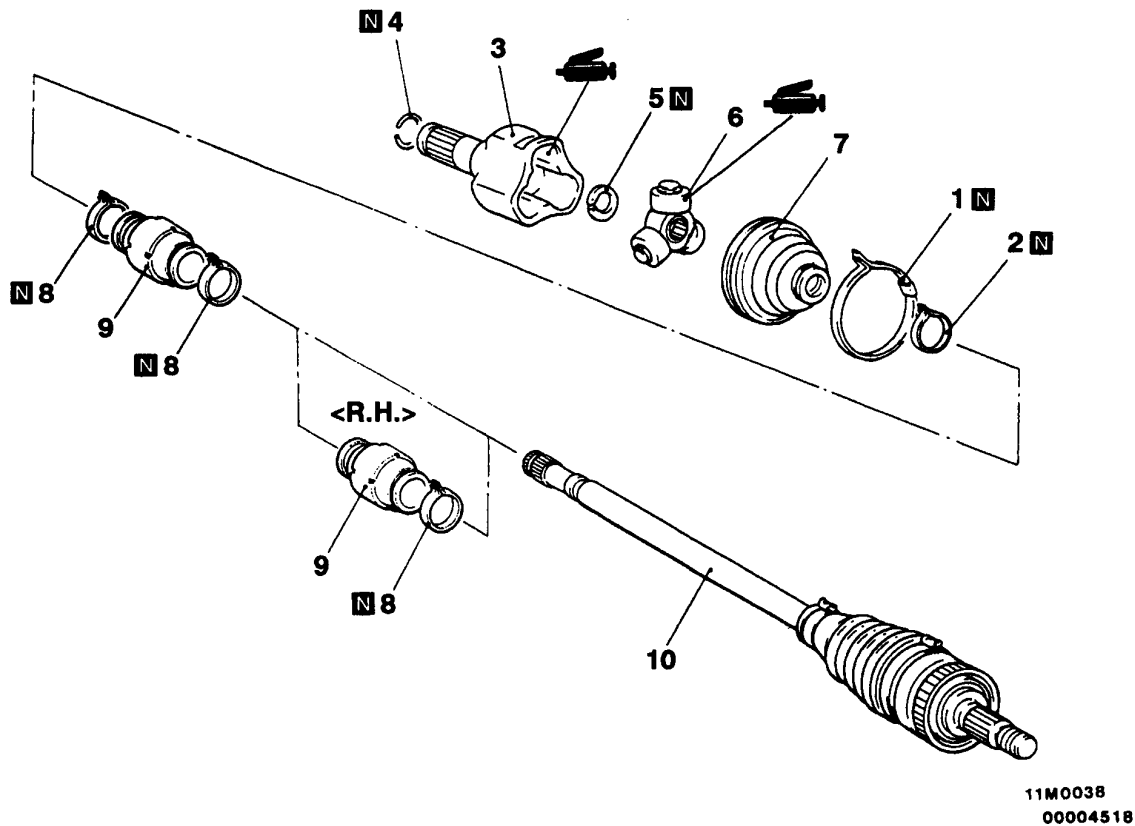
INSPECTION

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- Check the drive shaft boot for damage or deterioration.
- Check the ball joints for excessive play or operating condition.
- Check the spline part for wear or damage.

DISASSEMBLY AND REASSEMBLY

26100370134



11U0077	11X0068	11R0012
T.J. boot repair kit	T.J. repair kit	R.J. boot repair kit

Disassembly steps

- ◀A▶ ▶C▶ 1. T.J. boot band (large)
 ▶C▶ ▶B▶ 2. T.J. boot band (small)
 ▶B▶ 3. T.J. case
 4. Circldip
 5. Snap ring
 ▶A▶ ▶B▶ 6. Spider assembly
 ▶B▶ ▶A▶ 7. T.J. boot
 ▶A▶ ▶A▶ 8. Damper band
 ▶A▶ 9. Dynamic damper
 10. R.J. assembly

11. R.J. boot band (small)
 12. R.J. boot band (large)
 13. R.J. boot

Caution

- Never disassemble the R.J. assembly except when replacing the R.J. boot.
- On vehicles with ABS, be sure not to damage the rotor attached to the R.J. outer race.

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

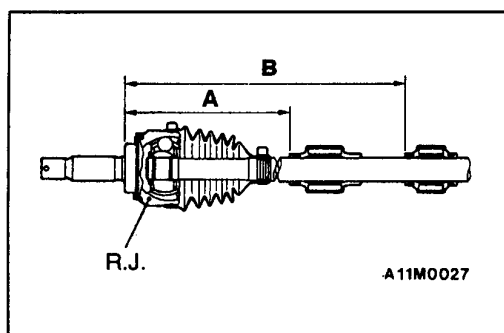
- (1) Wipe off grease from the spider assembly and the inside of the T.J. case.
- (2) Always clean the spider assembly when the grease contains water or foreign material.

Caution

1. Do not disassemble the spider assembly.
2. Use care in handling so as not to damage the drive shaft.

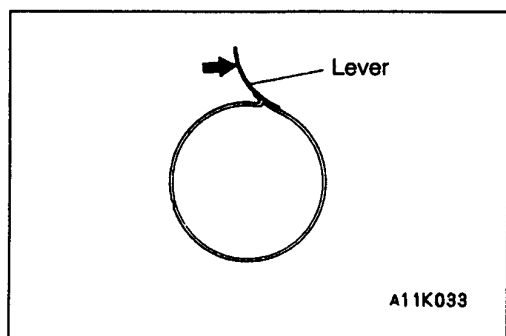
◀B▶ T.J. BOOT REMOVAL

- (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**

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

Items	A	B
1300 (L.H.)	200±3	—
1300 (R.H.)	441±3	536±3
1600 (L.H.)	201.4±3	—
1600 (R.H.)	381±3	481±3



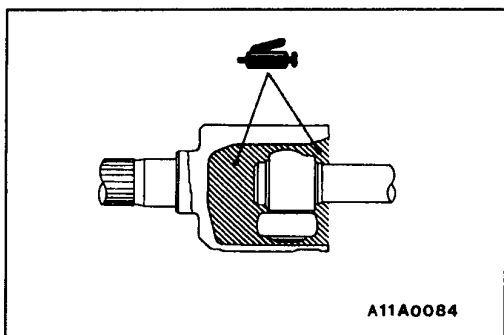
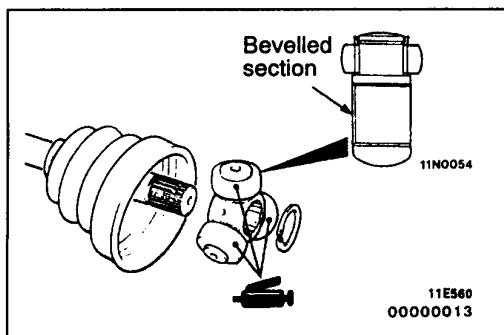
- (2) Secure the damper bands.

Caution

1. There should be no grease adhered to the rubber part of the dynamic damper.
2. The damper band and T.J. boot band are identified by the identification number stamped on the lever. Take good care to install the correct one.

Items	Identification number
Damper band	31.3
T.J. 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

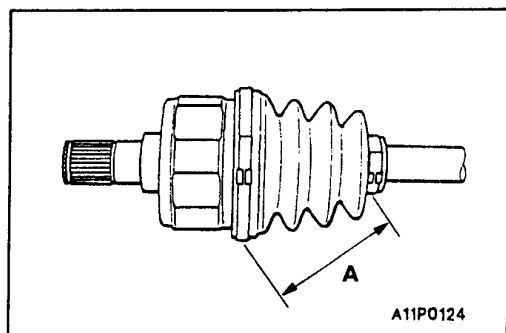
Amount to use: 100 g

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

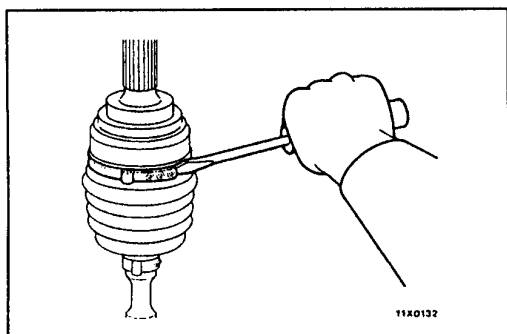
Set the T.J. boot bands at the specified distance in order to adjust the amount of air inside the T.J. boot, and then tighten the T.J. boot bands securely.

Standard value (A): 85 ± 3 mm

INSPECTION

26100380083

- 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.

**R.J. BOOT (RESIN BOOT) REPLACEMENT**

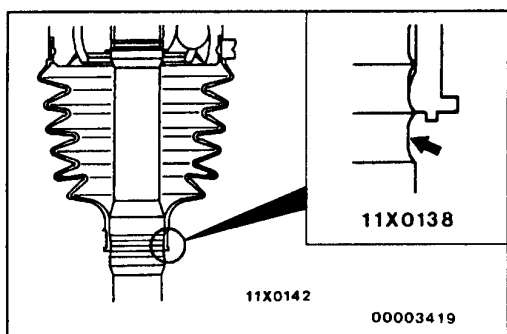
26100520034

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

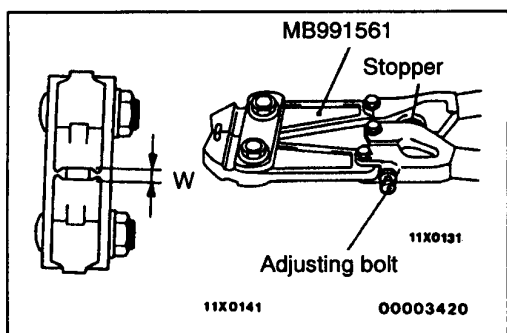
NOTE

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

- (2) Remove the R.J. boot.



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



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

Standard value (W): 1.6 mm

<If it is larger than 1.6 mm>

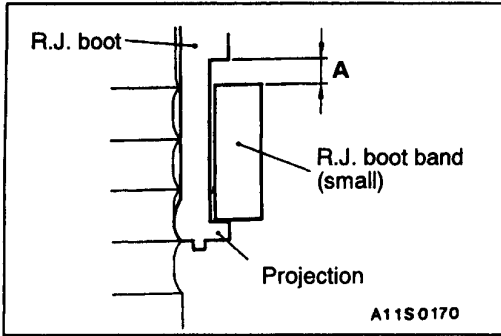
Tighten the adjusting bolt.

<If it is smaller than 1.6 mm>

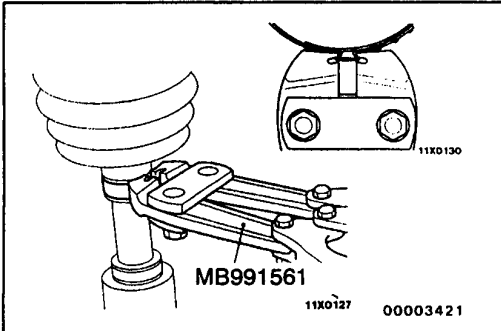
Loosen the adjusting bolt.

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.



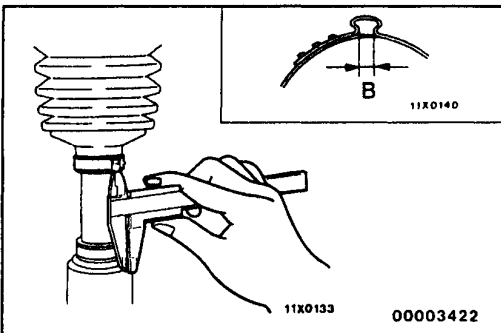
- (5) Place the R.J. boot band (small) against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (A) in the illustration.



- (6) 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.



- (7) 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 (4) according to the following formula, and then repeat the operation in step (6).

$$W = 3.0 \text{ mm} - B$$

Example: If $B = 1.6 \text{ mm}$, then $W = 1.4 \text{ mm}$.

<If the crimping amount is smaller than 1.0 mm>
Remove the R.J. boot band, readjust the value of (W) in step (4) according to the following formula, and then repeat the operations in steps (5) and (6) using a new R.J. boot band.

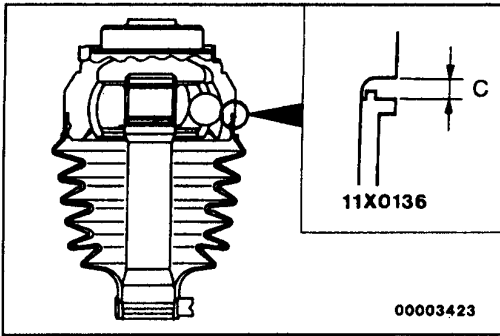
$$W = 3.0 \text{ mm} - B$$

Example: If $B = 0.9 \text{ mm}$, then $W = 2.1 \text{ mm}$.

- (8) 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 (5) to (7) using a new R.J. boot band.
- (9) Fill the inside of the R.J. boot with the specified amount of the specified grease.

Specified grease: Repair kit grease

Amount to use: 125 g

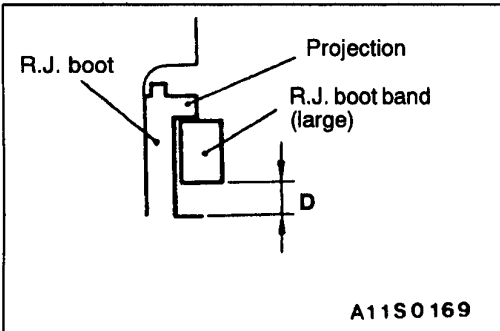


- (10) Install the R.J. boot band (large) so that there is the clearance (C) between it and the R.J. housing is at the standard value.

Standard value (C): 0.1 – 1.55 mm

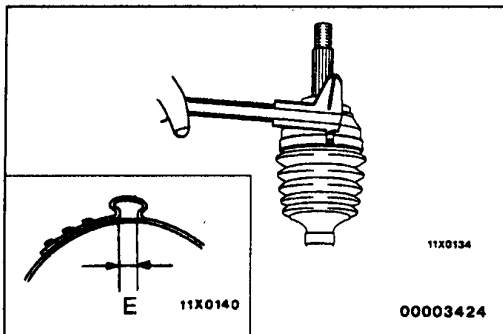
- (11) Follow the same procedure as in step (4) to adjust the size of the opening (W) on the special tool so that it is at the standard value.

Standard value (W): 3.2 mm



- (12) 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.

- (13) Use the special tool to crimp the R.J. boot band (large) in the same way as in step (6).



- (14) 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 (11) according to the following formula, and then repeat the operation in step (13).**

$$W = 3.7 \text{ mm} - E$$

Example: If E = 1.6 mm, then W = 2.1 mm.

**<If the crimping amount is smaller than 1.0 mm>
Remove the R.J. boot band, readjust the value of (W) in step (11) according to the following formula, and then repeat the operations in steps (12) and (13) using a new R.J. boot band.**

$$W = 3.7 \text{ mm} - E$$

Example: If E = 0.9 mm, then W = 2.8 mm.

- (15) 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 (12) to (14) using a new R.J. boot band.