
FRONT AXLE

CONTENTS

26109000096

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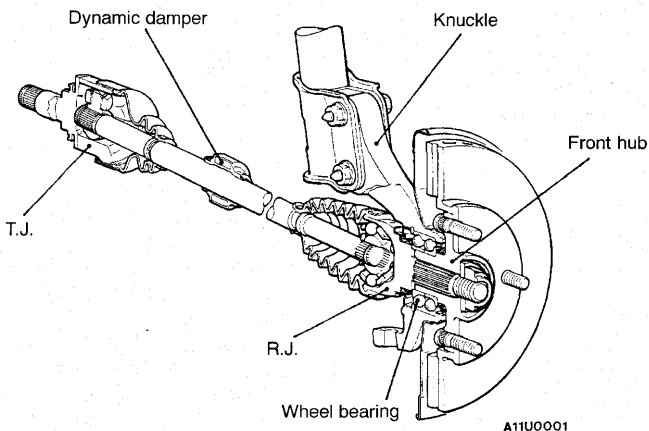
GENERAL INFORMATION

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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.

CONSTRUCTION DIAGRAM



NOTE

R.J.: Rzeppa Joint

T.J.: Tripod Joint

SERVICE SPECIFICATIONS

26100030124

Items		Standard value	Limit
Hub end play mm (in.)		-	0.05 (.0020)
Wheel bearing breakaway torque Nm (in. lbs.)		-	1.8 (15.62) or less
Setting of T.J. boot length mm (in.)		85±3 (3.35 ± .12)	-
Opening dimension of the special tool (MB991561) mm (in.)	When the R.J. boot band (small) is crimped	1.6 (.063)	-
	When the R.J. boot band (large) is crimped	3.2 (.126)	-
Crimped width of the R.J. boot band mm (in.)		1.0 - 1.5 (.039 - .059)	-
Clearance between the R.J. boot (large diameter side) and the stepped phase of the R.J. housing mm (in.)		0.1 - 1.55 (.004 - .061)	-

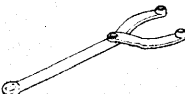
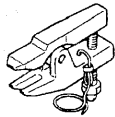
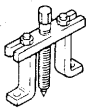
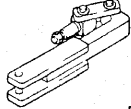
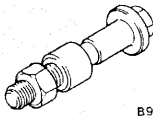

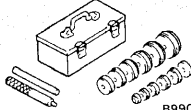
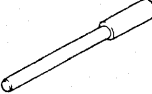
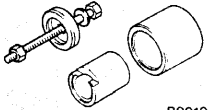
LUBRICANTS


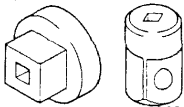
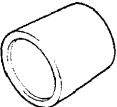
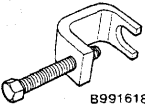
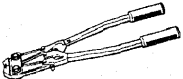
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Items	Quantity g (oz.)	Specified lubricant
T.J. boot grease	125 ± 10 (4.41 ± 0.35)	Repair kit grease
R.J. boot grease	110 ± 10 (3.88 ± 0.35)	Repair kit grease

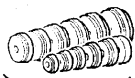
SPECIAL TOOLS

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Tool	Tool number and name	Supersession	Application
	MB990767 End yoke holder	MB990767-01	Hub fixing
 B991113	MB991113 or MB990635 Steering linkage puller	MB991113-01	<ul style="list-style-type: none"> • Lower arm ball joint and knuckle removal • Knuckle and tie rod end ball joint removal
 B990241	MB990241 Axle shaft puller	MB990241-01 or General service tool	Drive shaft removal
 B991056	MB991056 or MB991355 Knuckle arm bridge	MB991056-01	Hub removal
 B990998	MB990998 Front hub remover and installer	MB990998-01	<ul style="list-style-type: none"> • Removal of or pressing-in the hub • Provisional holding of the wheel bearing
 B990810	MB990810 Side bearing puller	General service tool	Wheel bearing inner race (outside) removal
 B990925	MB990925 Bearing and oil seal installer set	MB990925-01 or General service tool	Wheel bearing removal MB990932 MB990938
 B990883	MB990938 Rear suspension arbor	MB990883-01	Press-fitting of wheel bearing
 B991045	MB9901045 A: MB991050 Bushing remover and installer	Tool nut available	Press-fitting of wheel bearing Use together with MB990883

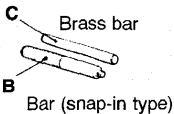
Tool	Tool number and name	Supersession	Application
 B991387	MB991387 Bushing remover and installer	Tool nut available	Press-fitting of the outer oil seal
 B990326	MB990326 Preload socket	General service tool	Wheel bearing breakaway torque measurement
 B991389	MB991389 Bushing remover base	MB991389-01	Press-fitting of the inner oil seal
 B991618	MB991618 Hub bolt remover		Hub bolt removal
	MB991561 Boot band crimping tool		Resin boot band installation

MB990925



A

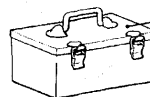
Installation adapter



C Brass bar

B

Bar (snap-in type)



Tool box

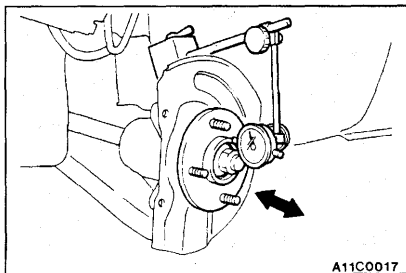
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Type	Tool number	O. D. mm (in.)	Type	Tool number	O.D. mm (in.)
A	MB990926	39.0 (1.54)	A	MB990933	63.5 (2.50)
	MB990927	45.0 (1.77)		MB990934	67.5 (2.66)
	MB990928	49.5 (1.95)		MB990935	71.5 (2.81)
	MB990929	51.0 (2.00)		MB990936	75.5 (2.97)
	MB990930	54.0 (2.13)		MB990937	79.0 (3.11)
	MB990931	57.0 (2.24)	B	MB990938	-
	MB990932	61.0 (2.40)	C	MB990939	-

TROUBLESHOOTING

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Symptom	Probable cause	Remedy
Vehicle pulls to one side	Seizure of drive shaft ball joint	Replace
	Abnormal wear, play or seizure of wheel bearing	Replace
	Malfunction of front suspension or steering	Adjust or replace
Vibration	Bend, damage or abnormal wear of drive shaft	Replace
	Play in drive shaft and hub serration	Replace
	Abnormal wear, play or seizure of wheel bearing	Replace
Shimmy	Improper wheel alignment	Adjust or replace
	Malfunction of front suspension or steering	Adjust or replace
Excessive noise	Broken boot, grease leakage	Replace, repack grease
	Bend, damage or abnormal wear of drive shaft	Replace
	Play of drive shaft and hub serration	Replace
	Abnormal wear, play or seizure of wheel bearing	Replace
	Loose wheel nut	Retighten
	Malfunction of front suspension and steering	Adjust or replace



ON-VEHICLE SERVICE

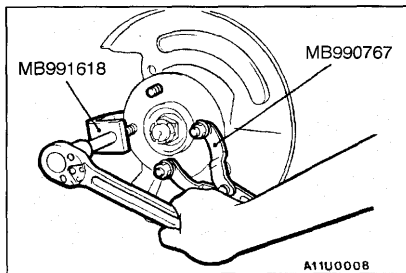
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HUB END PLAY CHECK

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 end play while moving the hub in the axial direction.

Limit: 0.05 mm (.0020 in.)

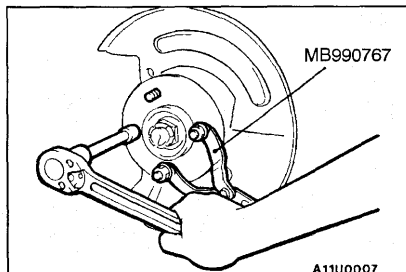
4. If end play exceeds the limit, disassemble and check parts.



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 bolt.



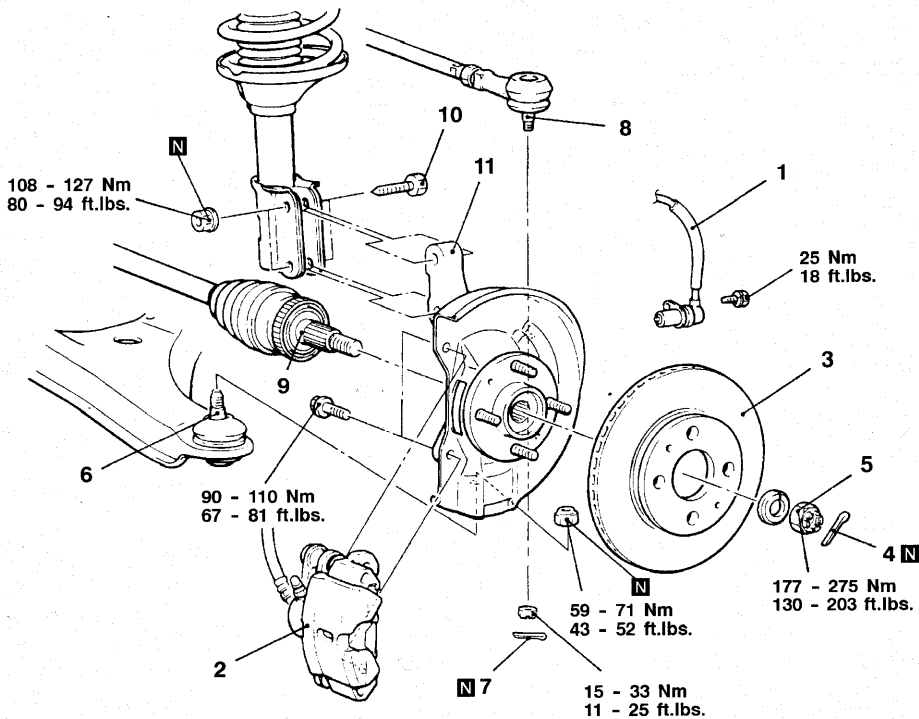
4. Use the wheel nuts to securely install the new hub bolts, while being careful of the serrations of the hub bolts and hub.

AXLE HUB

REMOVAL AND INSTALLATION

Post-installation Operation

- Press the lower arm ball joint and tie rod end ball joint dust covers with a finger to check whether the dust covers are cracked or damaged.



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Removal steps

1. Front speed sensor
<Vehicles with ABS>

2. Caliper assembly

3. Brake disc

4. Cotter pin

5. Drive shaft nut

- Lower arm and stabilizer bar connection (Refer to GROUP 33A - Stabilizer Bar.)

6. Lower arm ball joint connection

7. Cotter pin

8. Tie rod end connection

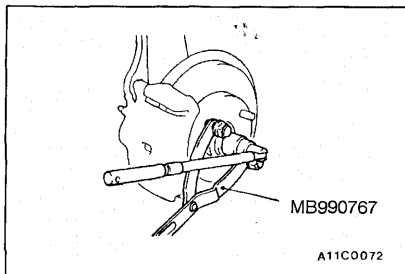
9. Drive shaft

10. Front strut mounting bolt and nut

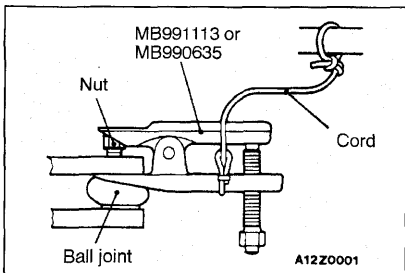
11. Hub and knuckle

Caution

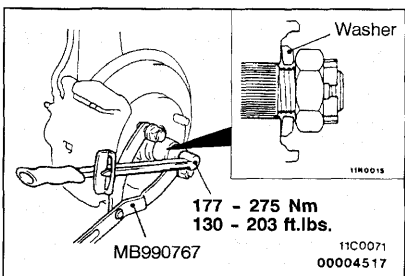
1. For vehicles with ABS, be careful when handling the pole piece at the tip of the speed sensor so as not to damage it by striking against other parts.
2. For vehicles with ABS, be careful not to damage the rotors installed to the R.J. outer race during removal and installation of the drive shaft.

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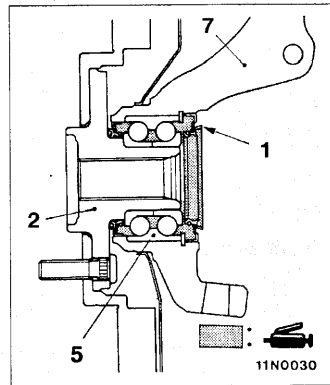
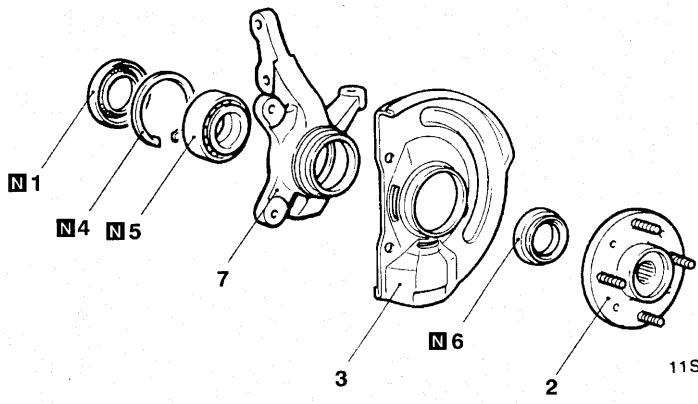
- Check the front hub and brake disc mounting surfaces for galling and contamination.
- Check the hub for cracks and spline for wear.
- Check the oil seal for damage.
- Check the knuckle for cracks.
- Check for defective bearing.

NOTE

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

DISASSEMBLY AND REASSEMBLY

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Disassembly steps

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

Reassembly steps

7. Knuckle
5. Wheel bearing
4. Snap ring
6. Outer oil seal
3. Dust cover
2. Hub
- Wheel bearing starting torque check
- Hub end play check
1. Inner oil seal

◀A▶

◀B▶

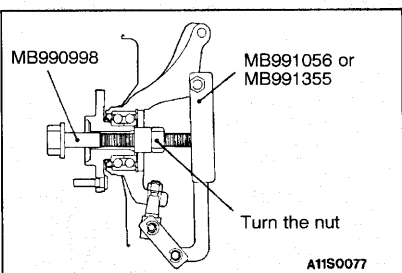
▶A◀

▶B◀

▶C◀

▶C◀

▶D◀



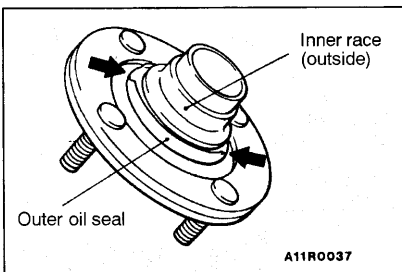
DISASSEMBLY SERVICE POINTS

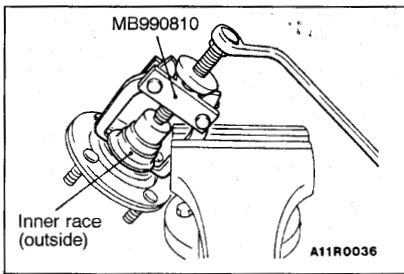
◀A▶ HUB REMOVAL

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).

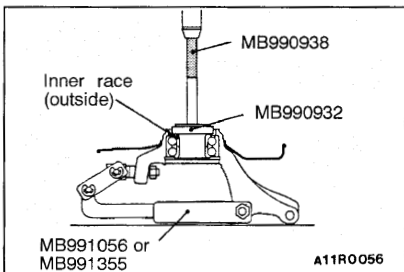




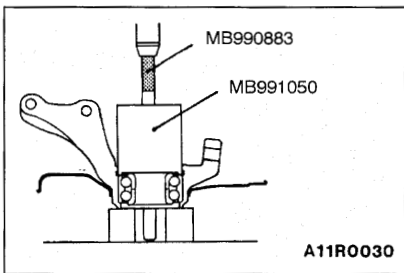
- (2) Remove the wheel bearing inner race (outside) from the front hub by using the special tool.

Caution

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



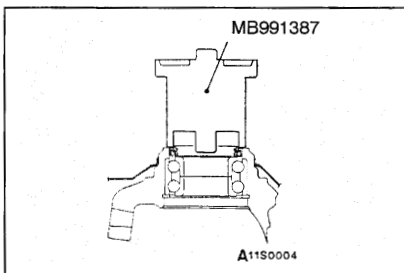
- (3) Install the inner race (outside) that was removed from the hub to the wheel bearing, and then use the special tools to remove the wheel bearing.

**REASSEMBLY SERVICE POINTS****▶A◀ WHEEL BEARING INSTALLATION**

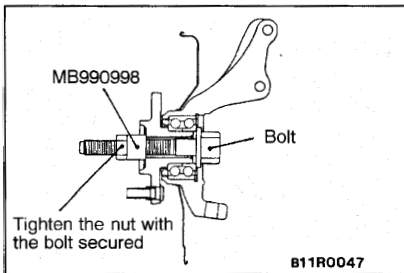
- (1) Fill the wheel bearing with multipurpose grease.
- (2) Apply a thin coating of multipurpose grease to the knuckle and bearing contact surfaces.
- (3) Press-in the bearing by using the special tools.

Caution

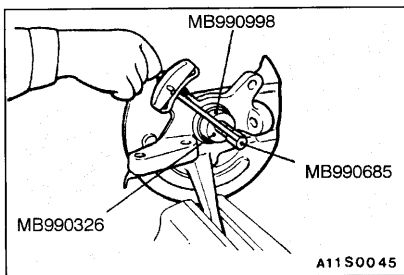
Press the outer race when pressing-in the wheel bearing.

**▶B◀ OUTER OIL SEAL INSTALLATION**

- (1) Drive the oil seal (hub side) into the knuckle by using the special tool 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 BREAKAWAY TORQUE CHECK/HUB END PLAY CHECK**

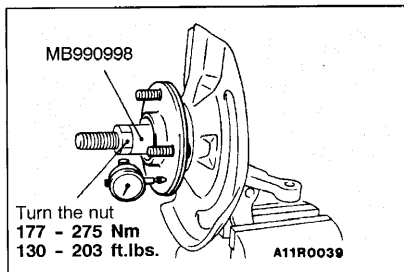
- (1) Use the special tool to mount the hub onto the knuckle.
- (2) Tighten the nut of the special tool to 177 - 275 Nm (130 - 203 ft.lbs.).
- (3) Rotate the hub in order to seat the bearing.



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

Limit: 1.8 Nm (15.62 in. lbs.) or less

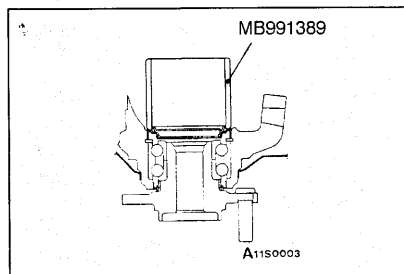
- (5) The breakaway torque must be within the limit and, in addition, the bearing must not feel rough when rotated.



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

Limit: 0.05 mm (.002 in.)

- (7) If the breakaway torque and hub end play are not within the limit range while the nut is tightened to 177 - 275 Nm (130 - 203 ft.lbs.), the bearing, hub and/or knuckle have probably not been installed correctly. Remove 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

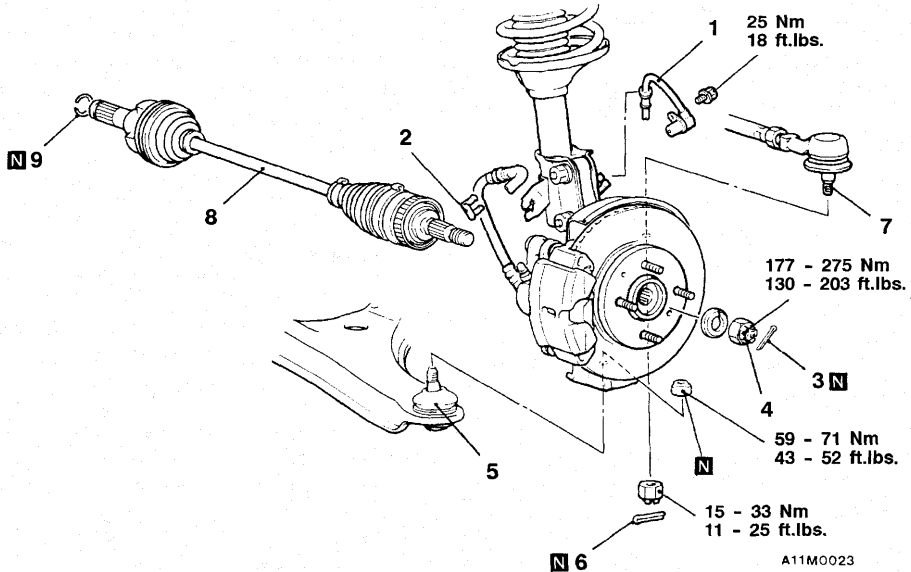
Check the knuckle inner surface for galling and cracks.

DRIVE SHAFT

REMOVAL AND INSTALLATION

Post-installation Operation

- Press the lower arm ball joint and tie rod end ball joint dust covers with a finger to check whether the dust covers are cracked or damaged.



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Removal steps

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

◀A▶ ▶B▶

◀B▶

◀B▶

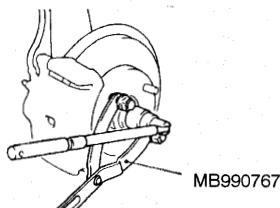
◀C▶ ▶A▶

Caution

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.

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

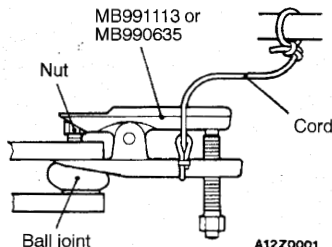
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut.



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

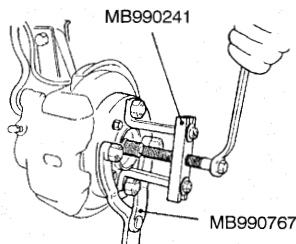
1. Using the special tool, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.
2. Support the special tool with a cord, etc. to prevent it from coming off.



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◀C▶ DRIVE SHAFT REMOVAL

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

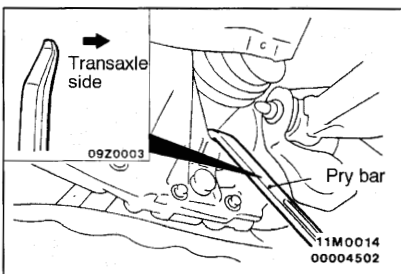


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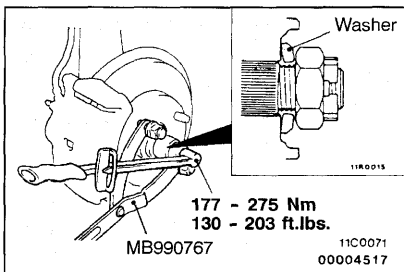
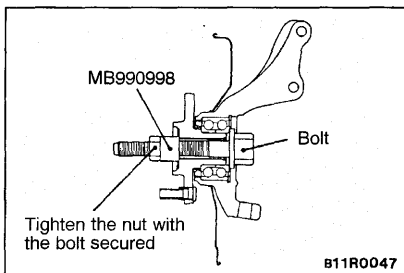
- (2) Insert a pry bar between the transaxle case and the drive shaft as shown to remove the drive shaft.

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. Be careful not to damage the transaxle oil seal by the spline of the drive shaft.
4. Be careful not to damage the ABS rotor attached to the R.J. outer race <Vehicles with ABS>.



- (3) Cover the transaxle case with a shop towel to prevent foreign material from entering 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 (in order to move the vehicle), temporarily secure the wheel bearing by using the special tool.

INSTALLATION SERVICE POINTS**►A◄ DRIVE SHAFT INSTALLATION****Caution**

1. Be careful not to damage the transaxle oil seal by the spline of the drive shaft.
2. Be careful not to damage the ABS rotor attached to the R.J. outer race <Vehicles with ABS>.

►B◄ DRIVE SHAFT NUT INSTALLATION

- (1) Be sure to install the drive shaft washer as shown.
- (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. ⚡

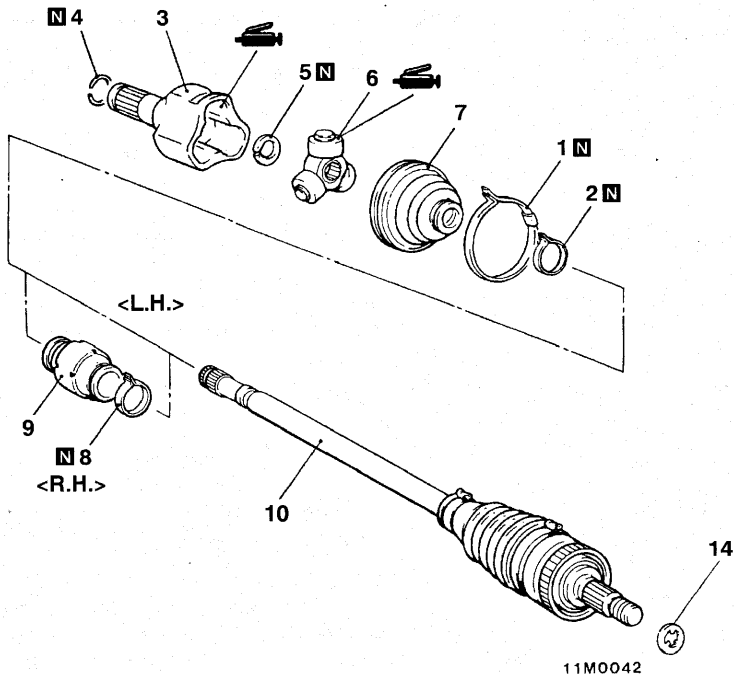
- (3) If the position of the cotter pin holes does not match, tighten the nut up to 275 Nm (203 ft.lbs.) maximum.
- (4) Install the cotter pin in the first matching holes and bend it securely.

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



<p>T.J. boot repair kit</p>	<p>T.J. repair kit</p>	<p>R.J. boot repair kit</p>

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Disassembly steps

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

- ▶A◀ 11. R.J. boot band (small)
- ▶A◀ 12. R.J. boot band (large)
- ▶A◀ 13. R.J. boot
- ▶A◀ 14. Front axle shim

Caution

1. Never disassemble the R.J. assembly except when replacing the R.J. boot.
2. 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**

- (1) Install the dynamic damper in the position shown in the illustration.

Items	A mm (in.)
1.5L (R.H.)	441 ± 3 (17.36 ± .12)
1.8L (R.H.)	381 ± 3 (15.00 ± .12)

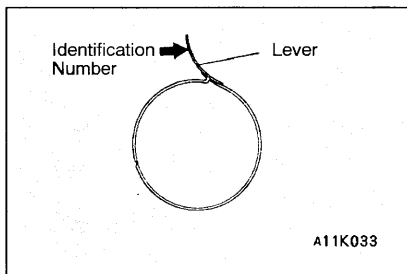
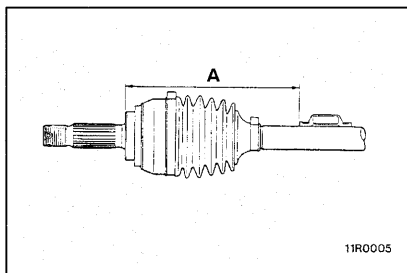
- (2) Secure the damper bands.

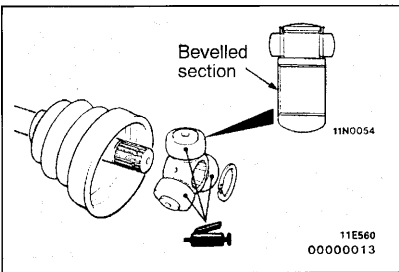
Caution

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





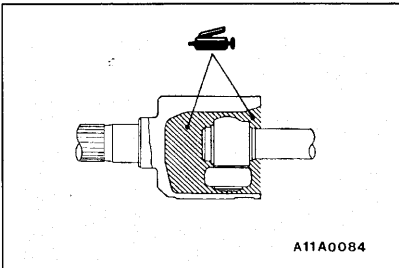
►B◄ SPIDER ASSEMBLY/T.J. CASE INSTALLATION

- (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

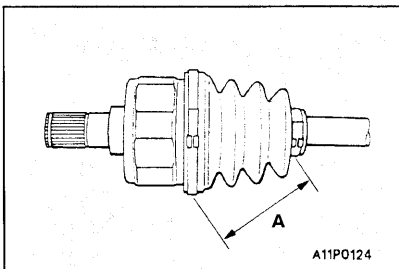
Amount to use: 125 ± 10 g (4.41 ± 0.35 oz.)

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

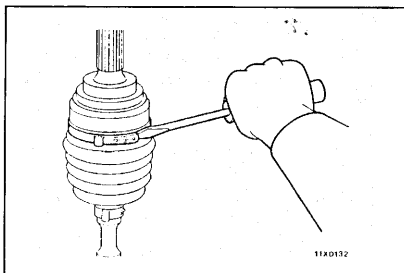
Set the T.J. boot bands at the specified distance in order to adjust the amount of air inside the T.J. boot, and then tighten the T.J. boot bands securely.

Standard value (A): 85 ± 3 mm (3.35 ± .12 in.)

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

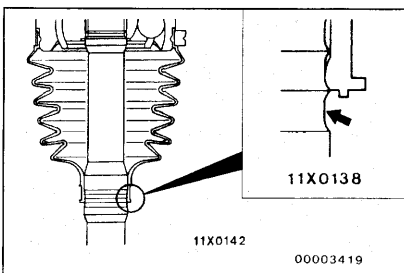
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- (1) Remove the R.J. boot bands (large and small).

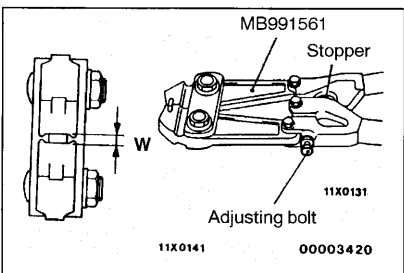
NOTE

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 (.063 in.)

<If it is larger than 1.6 mm (.063 in.)>

Tighten the adjusting bolt.

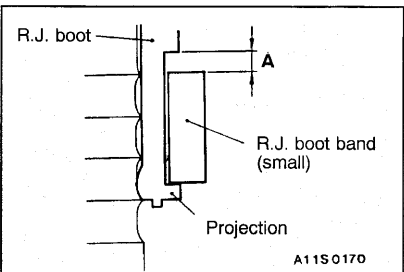
<If it is smaller than 1.6 mm (.063 in.)>

Loosen the adjusting bolt.

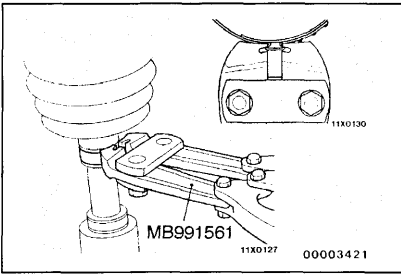
NOTE

- (1) The value of W will change by approximately 0.7 mm (.028 in.) for each turn of the adjusting bolt.

- (2) The adjusting bolt should not be turned more than once.



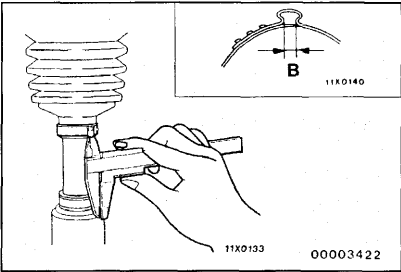
- (5) Place the R.J. boot band (small) against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (A) in the illustration.



- (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 (.039 - .059 in.)
 <If the crimping amount is larger than 1.5 mm (.059 in.)>

Readjust the value of (W) in step (4) according to the following formula, and then repeat the operation in step (6).

$$W = 3.0 \text{ mm (.118 in.)} - B$$

Example: If B = 1.6 mm (.063 in.), then W = 1.4 mm (.055 in.).

<If the crimping amount is smaller than 1.0 mm (.039 in.)>

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.

$$W = 3.0 \text{ mm (.118 in.)} - B$$

Example: If B = 0.9 mm (.035 in.), then W = 2.1 mm (.083 in.).

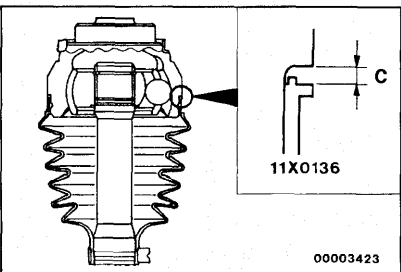
- (8) Check that the R.J. boot band is not sticking out past the place where it has been installed.

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: 110 ± 10 g (3.88 ± 0.35 oz.)

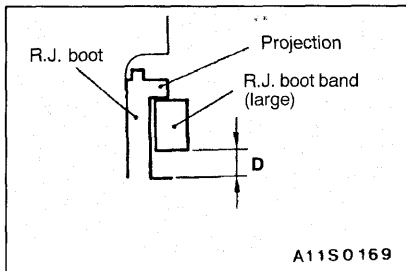


- (10) Install the R.J. boot band (large) so that there is the clearance (C) between it and the R.J. housing is at the standard value.

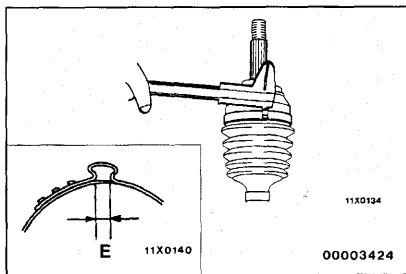
Standard value (C): 0.1 - 1.55 mm (.004 - .061 in.)

- (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 (.126 in.)



- (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 (.039 - .059 in.)

<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).

$$W = 3.7 \text{ mm (.146 in.)} - E$$

Example: If E = 1.6 mm (.063 in.), then W = 2.1 mm (.083 in.).

<If the crimping amount is smaller than 1.0 mm (.039 in.)>

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.

$$W = 3.7 \text{ mm (.146 in.)} - E$$

Example: If E = 0.9 mm (.034 in.), then W = 2.8 mm (.110 in.).

- (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.