SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN	No.: ESB-98E26-001	
	Date: 1998-02-15	<Model> <M/Y>
Subject: ADDITION OF DRIVE SHAFT DISASSEMBLY/REASSEMBLY PROCEDURES		(EC,EXP) CARISMA 96-10
Group: FRONT AXLE		
INFORMATION	O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

The drive shaft disassembly/reassembly procedures have been added do be included in the GROUP 26 FRONT AXLE of the Carisma Workshop Manual.

2. Applicable Manuals:

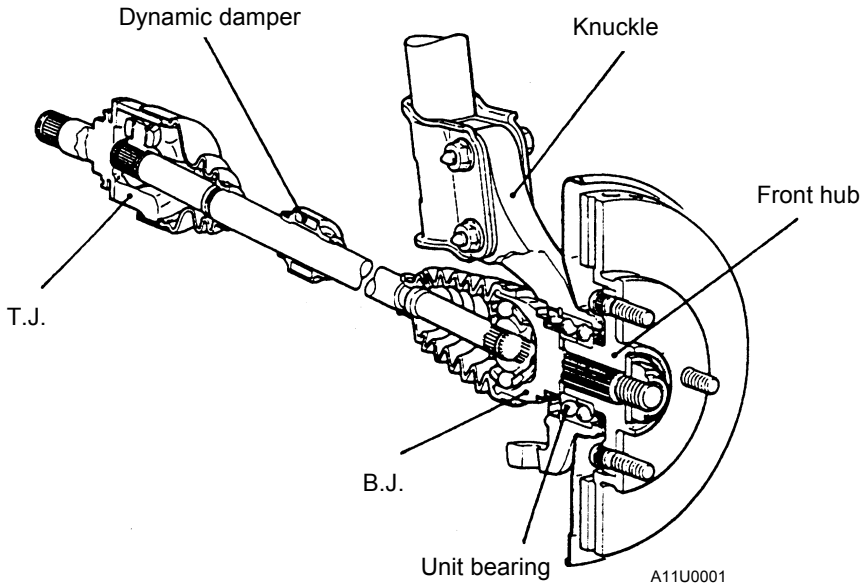
Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual Chassis Basic	PWDE9502	(English)	26-2, 4, 13
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'96 CARISMA GDI Workshop Manual Chassis SUPPLEMENT	PWDE9502-C	(English)	23-7
	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
	PWDI96E1-C	(Italian)	

3. Details:

GENERAL INFORMATION

26100010036

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



SERVICE SPECIFICATIONS

26100030032

Items	Standard value	Limit
Hub axial play mm	-	0.05
Wheel bearing starting torque Nm	-	1.8 or less

SEALANT

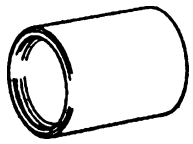
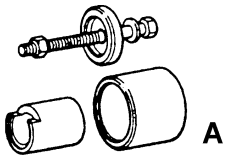
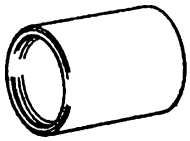
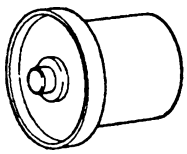
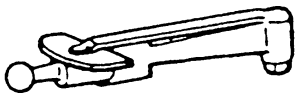
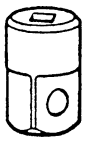
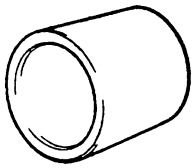
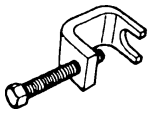
26100050014

Items	Specified sealant	Remarks
Drive shaft lock pin	MITSUBISHI GENUINE PART MD997110 or equivalent	Semi drying sealant

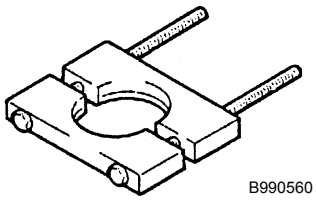
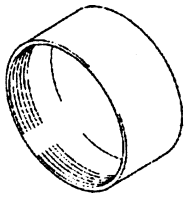
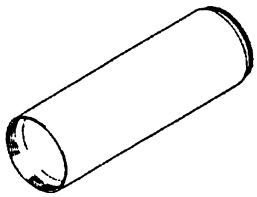
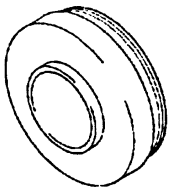
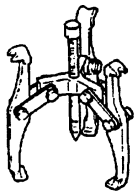
LUBRICANTS

Items	Specified lubricant	Quantity g
T.J. boot grease	Repair kit grease	200
B.J. boot grease	Repair kit grease	200

<Added>

Tool	Number	Name	Use
	MB990890	Rear suspension bushing base	Press-fitting of wheel bearing Use together with MB990883 <1800>
	MB991045 A: MB991050	Bushing remover and installer	Press-fitting of wheel bearing Use together with MB990883 <1600>
	MB990847	Rear suspension bushing remover and installer base	Press-fitting of the outer oil seal <1800>
	MB990947	Lower arm bushing arbor	
	MB991387	Bushing remover and installer	Press-fitting of the outer oil seal <1600>
	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 <1600>
	MB991618	Hub bolt remover	Removal of the hub bolt

<Followed by next page.>

Tool	Number	Name	Use
 B990560	MB990560	Rear axle shaft bearing remover	• Removal of the TJ boot • Removal of the dynamic damper
	MD998812	Installer cap	Press-fitting the TJ boot
	MD998814	Installer 200	
	MD998817	Installer adapter	
	MH062469	Gear puller	Removal of the spider assembly

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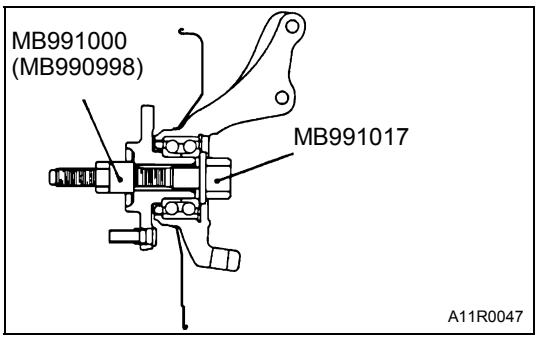


Caution
Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut. If, however, the vehicle weight must be applied to the bearing (because of moving the vehicle), temporarily secure the wheel bearing by using the special tool.

INSTALLATION SERVICE POINTS

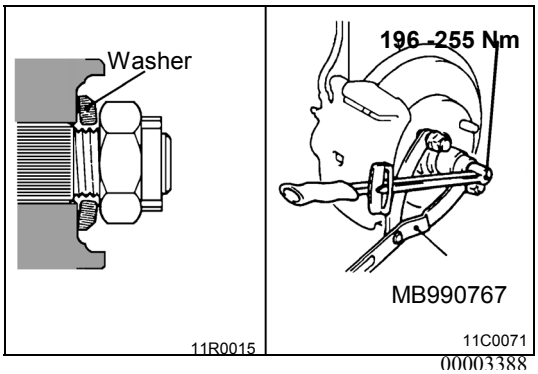
▶A◀ DRIVE SHAFT R.H./SPRING PIN INSTALLATION

(1) Install the drive shaft to the hub and the transmission. When installing the drive shaft to the transmission, apply multipurpose grease to the transmission-side spline and make sure that the spring pin hole at the end of the drive shaft is aligned with the spring pin hole at the end of the shaft at the transmission side. If the spring pin hole is slightly off-line, turn the drive shaft 180° and then install it again.

NOTE
Because there are an odd number of splines on the drive shaft, the pin hole will be off line by half the width of the hole if the drive shaft is turned 180°.

(2) Apply specified sealant to the spring pin and then insert it into the drive shaft. After inserting the pin, apply sealant to both ends of the pin hole to fully seal the hole.

Specified sealant:
MITSUBISHI GENUINE PART
MD970389 or equivalent



▶B◀ DRIVE SHAFT R.H./SPRING PIN 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.

<The following four pages added.>

DISASSEMBLY AND REASSEMBLY

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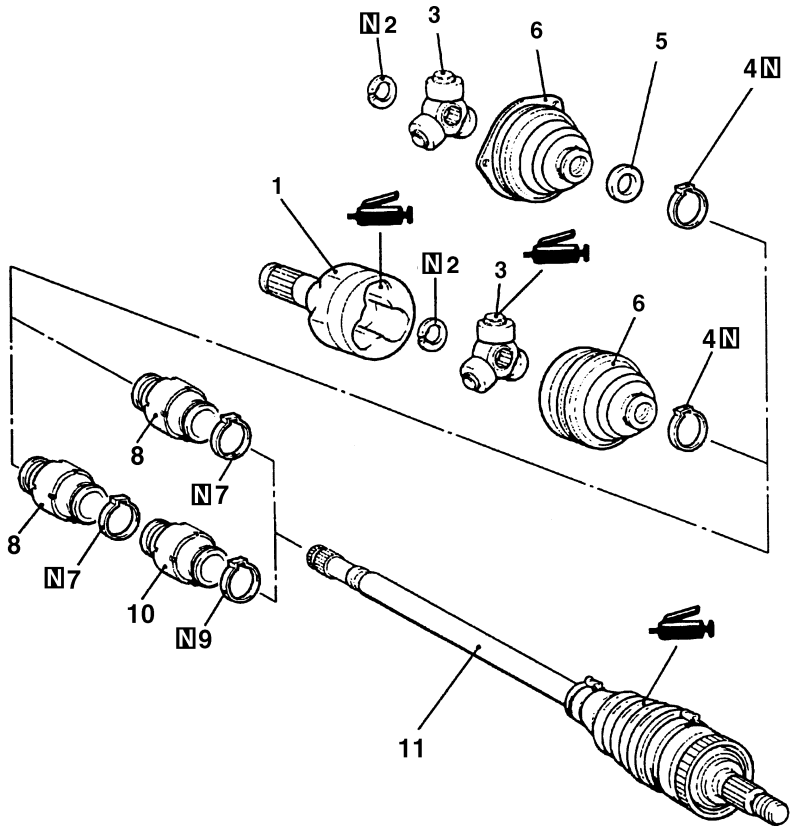

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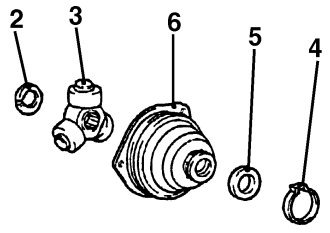	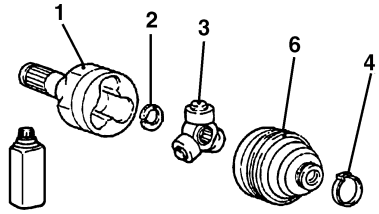	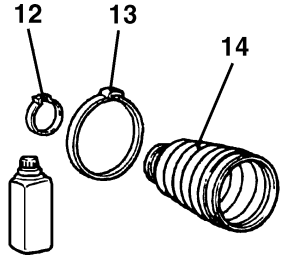
T.J. boot repair kit <L.H.>	T.J. boot repair kit <R.H.>	B.J. boot repair kit

Disassembly steps

◀A▶	▶E◀	1. T.J. case
		2. Snap ring
◀A▶	▶D◀	3. Spider assembly
	▶C◀	4. T.J. boot band
		5. Dust cover
◀B▶	▶B◀	6. T.J. boot
	▶A◀	7. Damper band
◀C▶	▶A◀	8. Dynamic damper
	▶A◀	9. Damper band
◀C▶	▶A◀	10. Dynamic damper
		11. B.J. assembly
		12. B.J. boot band (small)
		13. B.J. boot band (large)
		14. B.J. boot

Caution

1. **Never disassemble the B.J. assembly except when replacing the B.J. boot.**
2. **On vehicle with ABS, be sure not to damage the rotor attached to the B.J. outer race.**

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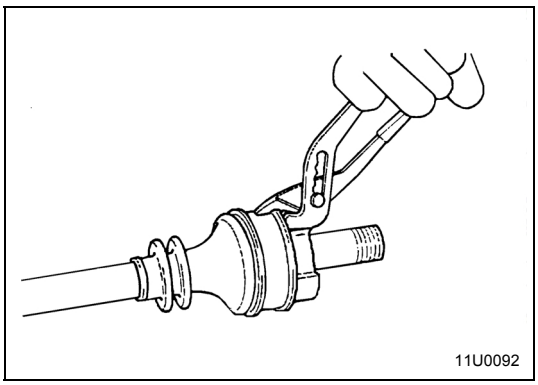
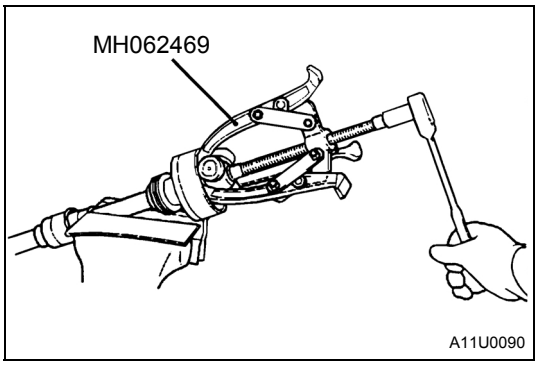


DISASSEMBLY SERVICE POINTS

◀A▶T.J. CASE/SPIDER ASSEMBLY REMOVAL

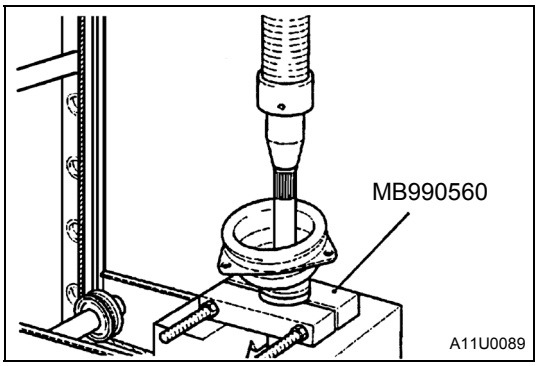
(1) Using the water pump pliers, etc., unstake the flange area of T.J. case and T.J. boot (at 3 places).
(2) Remove the T.J. case.



(3) Using the special tool, remove the spider assembly.
(4) Wipe off grease from the spider assembly and the inside of the T.J. case.
(5) Always clean the spider assembly when the grease contains water or foreign material.

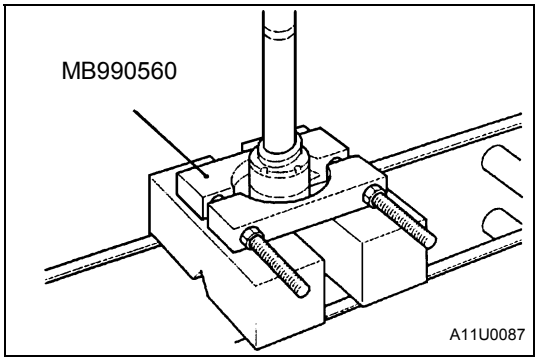
Caution

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



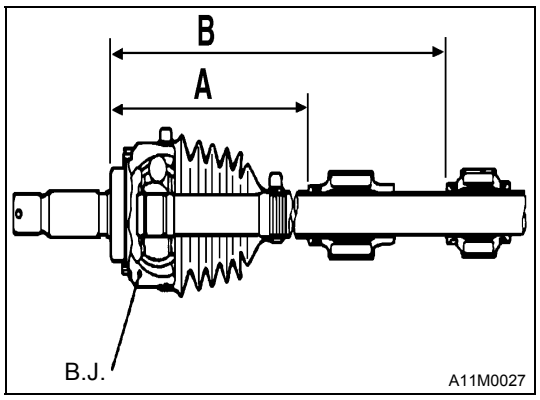
◀B▶T.J. BOOT REMOVAL

(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.
(3) Using the special tool, remove the T.J. boot.



◀C▶DYNAMIC DAMPER REMOVAL

<Added>



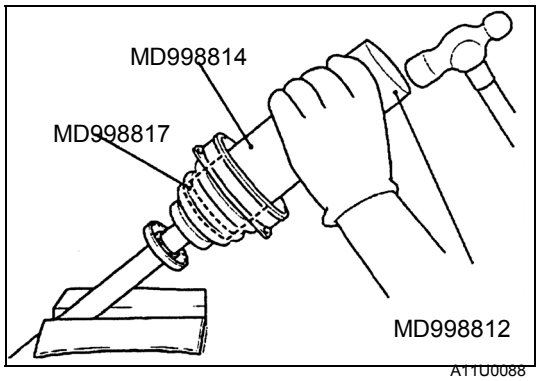
REASSEMBLY SERVICE POINTS

▶A◀ DYNAMIC DAMPER/DAMPER BAND INSTALLATION

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

Items	A	B
1600-A/T (L.H.), 1800-A/T (L.H.)	240±3 mm	-
1600 (R.H.), 1800-A/T (R.H.)	369±3 mm	-
1800-M/T (L.H.)	264±3 mm	-
1800-M/T (R.H.)	264±3 mm	369±3 mm

(2) Using the end pliers, tighten the boot band.



▶B◀ T.J. BOOT <L.H.> INSTALLATION

Using the special tool, install the T.J. boot <L.H.>.

▶C◀ T.J. BOOT BAND INSTALLATION

Using the end pliers, tighten the boot band.

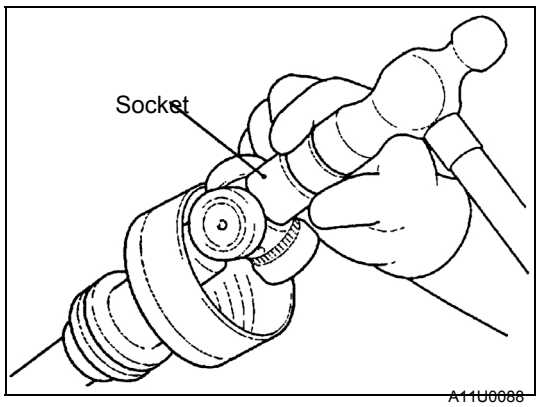
▶D◀ SPIDER ASSEMBLY INSTALLATION

(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) Using the socket of 24 mm width across flats, install the spider assembly.

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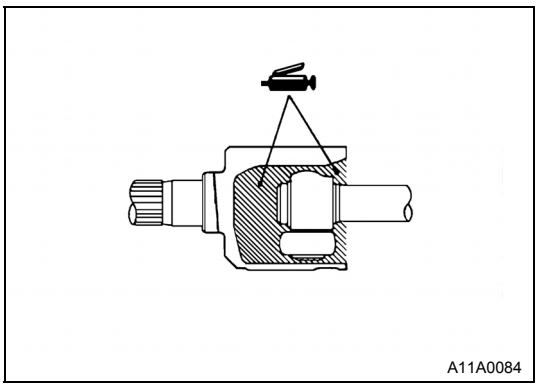


E T.J. CASE INSTALLATION

(1) 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

NOTE

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

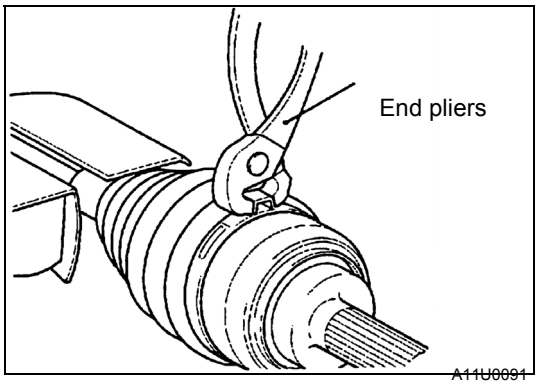
Caution

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

(2) Using a punch or water pump pliers, stake the flange area of T.J. case and T.J. boot (at 3 places).

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.



B.J. BOOT REPLACEMENT

(1) Cut the B.J. boot bands (large and small).
(2) Replace the B.J. boot.
(3) Using the end pliers, tighten the boot band.

<Added>

SERVICE DATA REFERENCE TABLE

The following items have been added to correspond to the addition of vehicles with 4G93-GDI engine. Moreover, item No.57 (engine volumetric efficiency) is not included for vehicles with 4G93-GDI engine.

Item No.	Check item	Check requirement	Normal value
73	Target engine effective pressure	N range with accelerator pedal fully closed → depressed	Data changes

CHECK AT THE A/T-ECU TERMINALS

Inspection procedures are basically the same as those for ’97 and prior vehicle models, except that the input terminal No. for the vehicle speed sensor has been changed from terminal No.46 to terminal No.69.

Terminal No.	Check item	Check requirement	Normal value
69	Vehicle speed sensor	When stopped	0 V
		Move forward slowly	0 → 5 V alternating

<The following seven pages added.>

GROUP 26

FRONT AXLE

GENERAL

OUTLINE OF CHANGES

With adoption of the drive shaft of Mitsubishi make as a drive shaft on the manual transmission car, the service procedures have been established as follows:

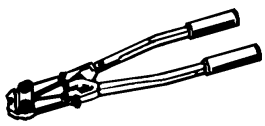
SERVICE SPECIFICATIONS

Items		Standard value
Setting of T.J. boot length mm		82
Opening dimension of the special tool (MB991561) mm	When the B.J. boot band (small) is crimped	2.9
	When the B.J. boot band (large) is crimped	3.2
Crimped width of the B.J. boot band mm		2.4 - 2.8
Clearance between the B.J. boot (large diameter side) and the stepped phase of the B.J. housing mm		0.1 - 1.5

LUBRICANTS

Items	Specified lubricant	Quantity g
T.J.	Repair kit grease	120
B.J.	Repair kit grease	120

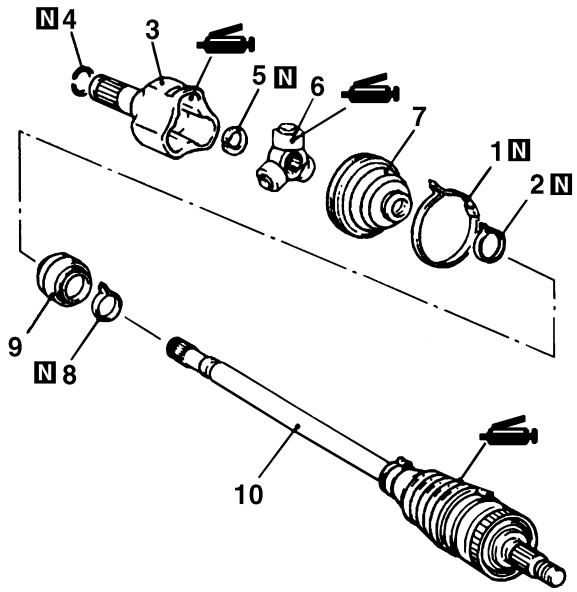
SPECIAL TOOLS

Tool	Number	Name	Use
	MB991561	Boot band crimping tool	B.J. boot band installation

<Added>

DRIVE SHAFT

DISASSEMBLY AND REASSEMBLY



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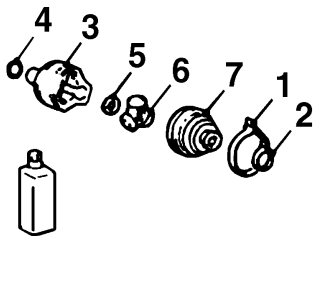
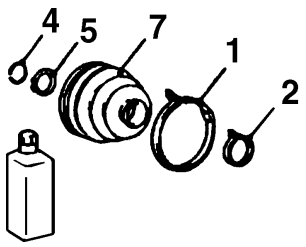
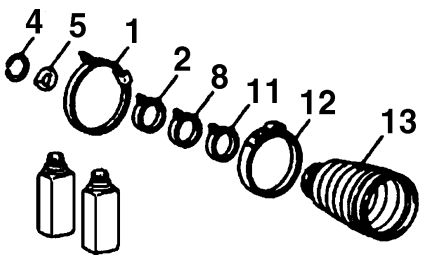
 11I0100	 11I0101	 11I0070
T.J. repair kit <L.H.>	**T.J. boot repair kit**	**B.J. boot repair kit**

Disassembly steps

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

Caution

1. **Never disassemble the B.J. assembly except when replacing the B.J. boot.**
2. **On vehicle with ABS, be sure not to damage the rotor attached to the B.J. outer race.**

<Added>

DISASSEMBLY SERVICE POINTS

◀A▶ T.J. CASE/SPIDER ASSEMBLY REMOVAL

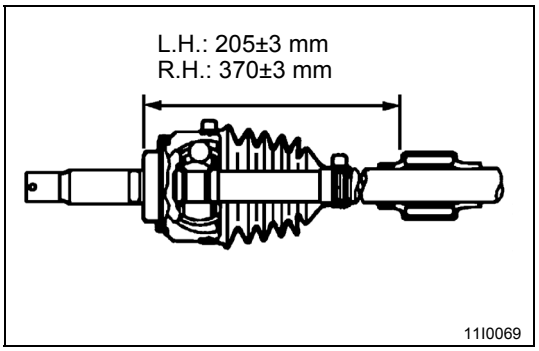
(1) Wipe off grease from the spider assembly and the inside of the T.J. case.
(2) Always clean the spider assembly when the grease contains water or foreign material.

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) Straighten the B.J. assembly, and secure the dynamic damper with the damper band as shown in the figure

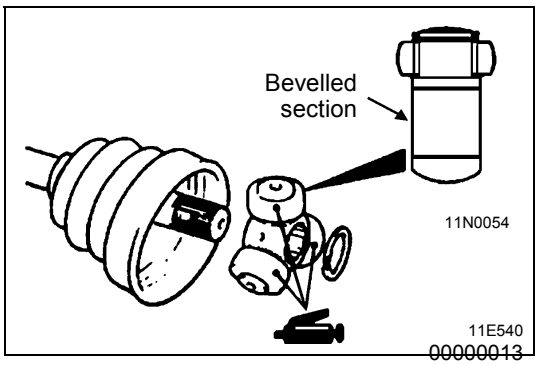
Caution

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

NOTE

The damper band and the T.J. boot band (small) are the same parts.

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

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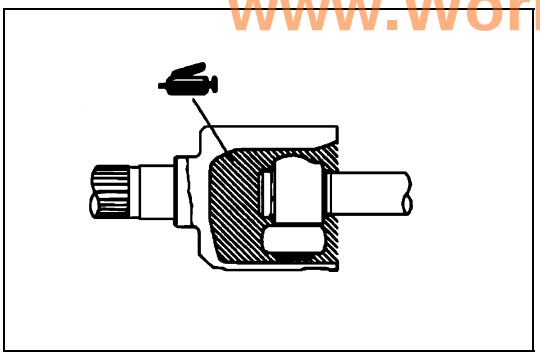

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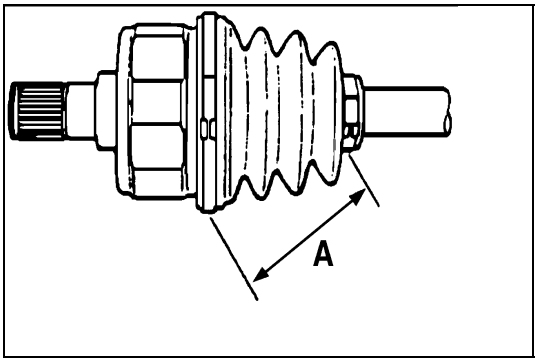
(2) Install the spider assembly to the shaft from the direction of the spline bevelled section.
(3) After applying the specified grease to the T.J. case, insert the drive shaft and apply grease one more time.

Specified grease: Repair kit grease

Amount to use: 120 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.



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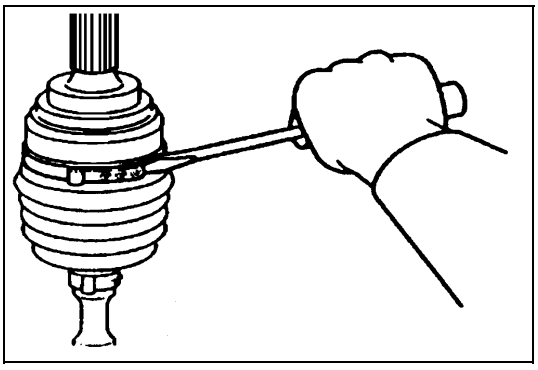
▶C◀ T.J. BOOT BAND (SMALL)/T.J. BOOT BAND (LARGE) INSTALLATION

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 sercurely.

Standard value (A): 82 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.



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B.J. BOOT (RESIN BOOT) REPLACEMENT

(1) Remove the B.J. boot bands (large and small).
NOTE
The B.J. boot bands cannot be re-used.
(2) Remove the B.J. boot.
(3) Wrap a plastic tape around the shaft spline, and assemble the B.J. boot band and B.J. boot.

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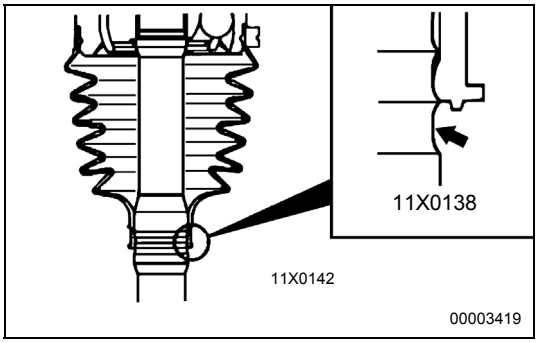
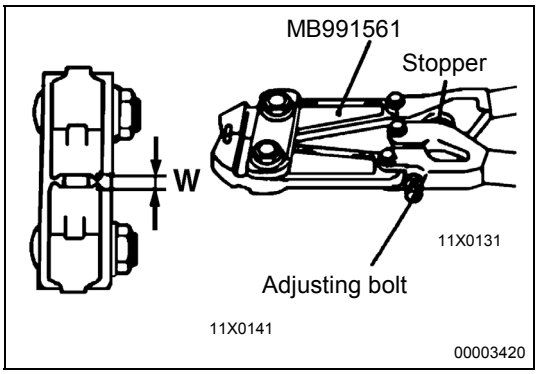


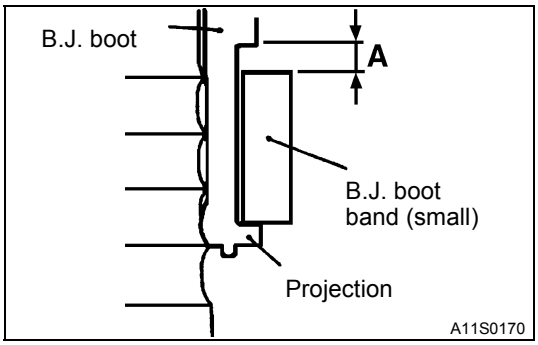
(4) Install the B.J. boot with the part with the smallest diameter in a position such that the shaft groove can be seen.



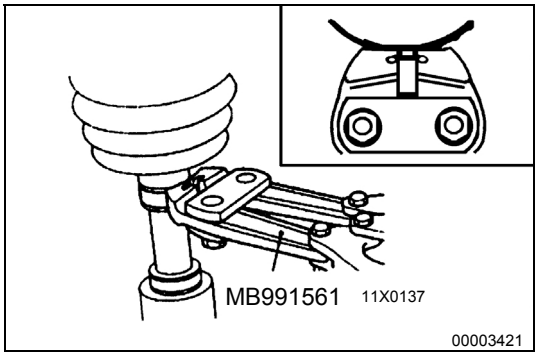
(5) Turn the adjusting bolt on the special tool so that the size of the opening (W) is at the standard value.

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.



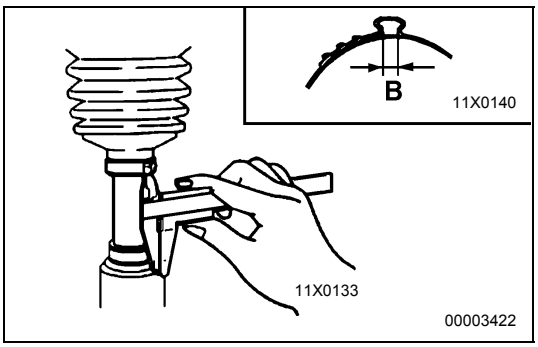
(6) Place the B.J. boot band (small against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (A) in the illustration.



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

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

<Added>



(8) Check that the crimping amount (B) of the B.J. boot band is at the standard value.
Standard value (B): 2.4 - 2.8 mm
<If the crimping amount is larger than 2.8 mm>
Read just the value of (W) in step (5) according to the following formula, and then repeat the operation in step (7).
W = 5.5 mm - B
Example: If B = 2.9, then W = 2.6 mm.

<If the crimping amount is larger than 2.4 mm>
Remove the B.J. boot band, read just 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 B.J. boot band.
W = 5.5 mm - B
Example: If B = 2.3, then W = 3.2 mm.

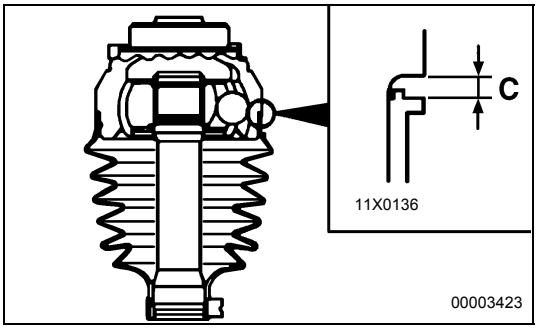
(9) Check that the B.J. boot band is not sticking out past the place where it has been installed. If the B.J. boot band is sticking out, remove it and then repeat the operations in steps (6) to (8) using a new B.J. boot band.

(10) Fill the inside of the B.J. boot with the specified amount of the specified grease.

Specified grease: Repair kit grease

Amount to use: 120 g

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

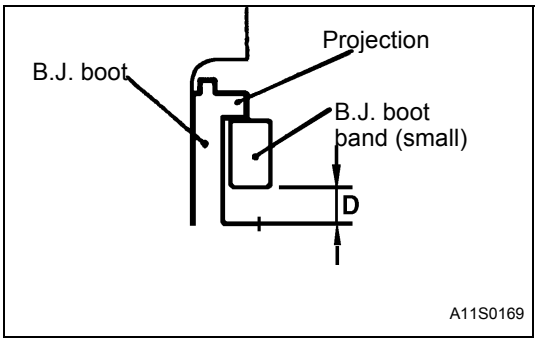


(11) Install the B.J. boot band (large) so that there is the clearance (C) between it and the B.J. housing is at the standard value.

Standard value (C): 0.1 - 1.5 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 B.J. boot band (large) against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (D) in the illustration.

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

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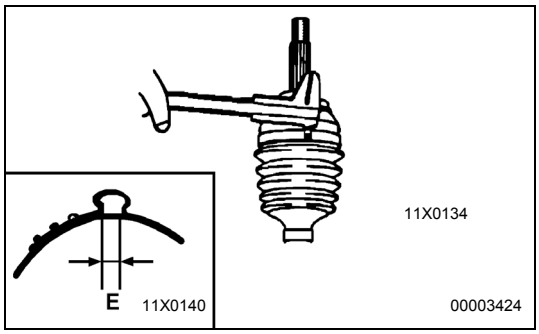

(15)Check that the crimping amount (E) of the B.J. boot band is at the standard value.
Standard value (E): 2.4 - 2.8 mm
<If the crimping amount is larger than 2.8 mm>
Read just the value of (W) in step (12) according to the following formula, and then repeat the operation in step (14).
W = 5.8 mm - E
Example: If E = 2.9, then W = 2.6 mm.
<If the crimping amount is larger than 2.4 mm>
Remove the B.J. boot band, read just 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 mm - E
Example: If E = 2.3, then W = 3.5 mm.

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

<Added>