GROUP 26

FRONT AXLE

CONTENTS

GENERAL INFORMATION

M1261000101179

The front axle has the following features:
- The wheel bearing is a unit ball bearing (double-row angular contact ball bearing) which incorporates the oil seals and is highly resistant to thrust loads.
- Lead-free grease for the constant velocity joint is adopted.
- Hexavalent chromium is eliminated from the dust cover material.
- The number of parts is reduced by integrating the magnetic encoder for ABS wheel speed detection into the wheel bearing.

<FWD>
- The driveshaft incorporates lightweight and compact EBJ-ETJ type constant velocity joints.
- Dynamic damper is mounted on driveshaft (RH) to reduce differential gear noise.

<AWD>
- The driveshaft incorporates lightweight and compact EBJ-ETJ type constant velocity joints.
- Due to the use of the output shaft, the right and left driveshafts have been approximately the same in length, reducing noise, vibration, and torque steer.

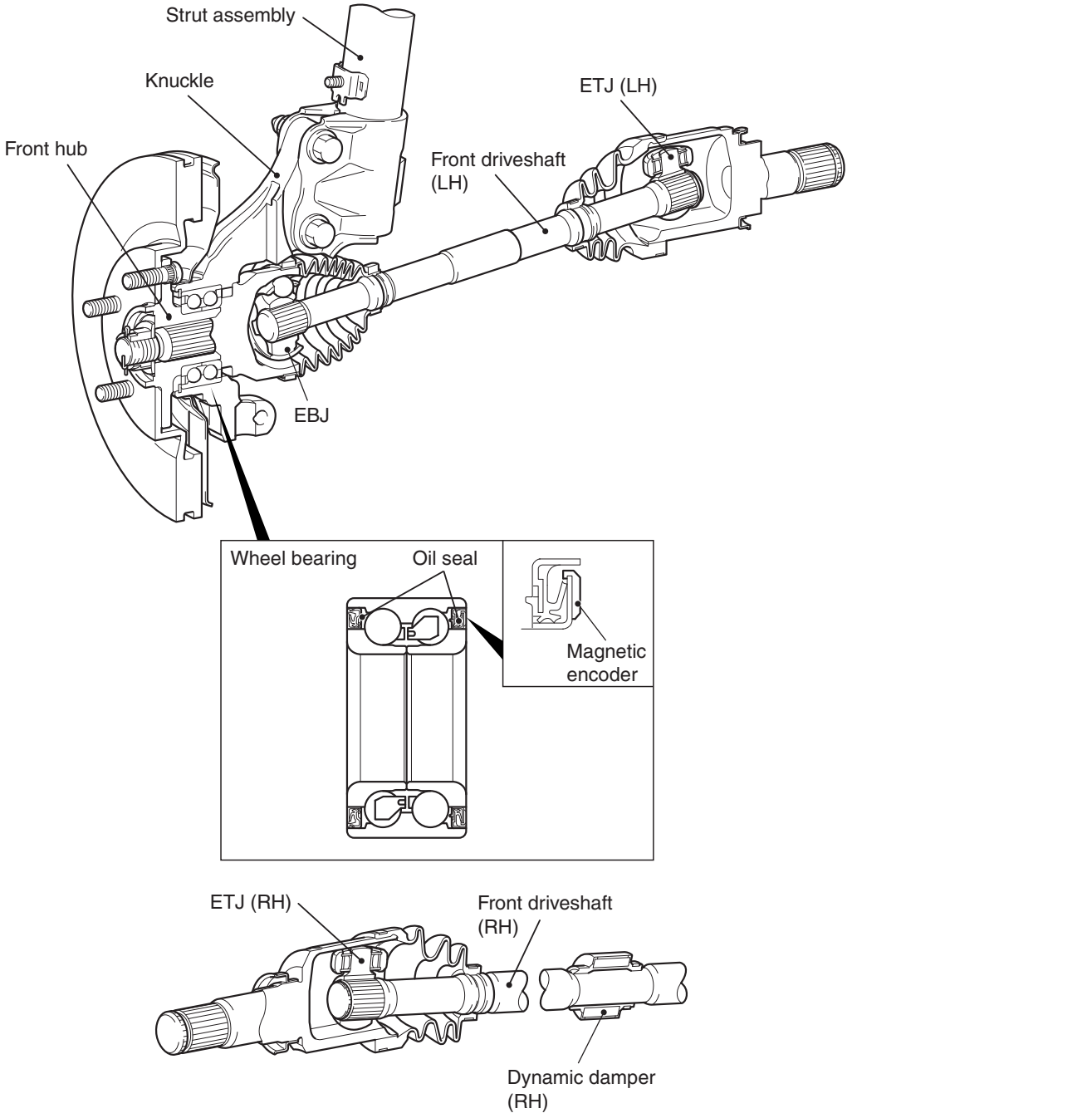
NOTE:

ETJ (High Efficiency Compact Tripod Joint): the lighter and smaller constant velocity joint compared with the conventional TJ has been installed.

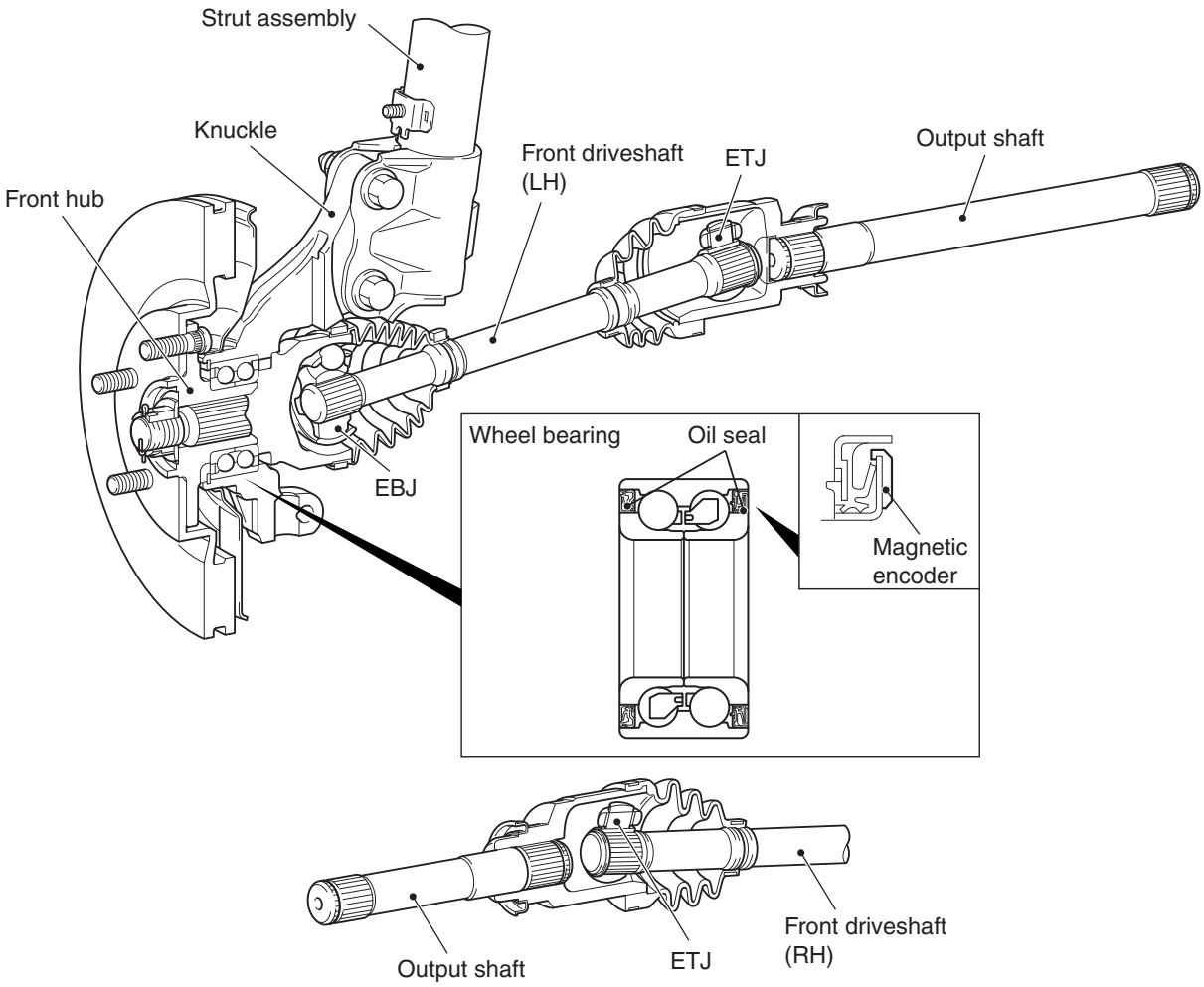
EBJ (High Efficiency Compact Birfield Joint): the lighter and smaller constant velocity joint compared with the conventional BJ has been achieved by adopting the eight small balls.

CONSTRUCTION DIAGRAM

<FWD>



<AWD>



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GENERAL SPECIFICATIONS

M1261000200399

Item			Specification
Wheel bearing	Bearing type		Unit ball bearing (double-row angular contact ball bearing)
Driveshaft	Joint type	Outer	EBJ
		Inner	ETJ

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SERVICE SPECIFICATIONS

M1261000300879

Item		Standard value	Limit
Wheel bearing end play mm (in)		–	0.05 (0.002)
Wheel bearing rotation starting torque N· m (in-lb)		–	1.5 (13)
ETJ boot assembly dimension mm (in)		80 ± 3 (3.15 ± 0.12)	–
Opening dimension of the special tool (MB991561) mm (in)	EBJ boot band (small) crimping	2.9 (0.11)	–
	EBJ boot band (large) crimping	3.2 (0.13)	–
EBJ boot band crimping size mm (in)		2.4 –2.8 (0.10 –0.11)	–

LUBRICANTS

M1261000400939

Item	Specified lubricant			Quantity
Inside of knuckle bore	Dowcorning/Molykote BR2 Plus or equivalent			As required {1.0 –1.5 g (0.03 –0.05 oz)}
ETJ boot grease	Repair kit grease	FWD	M/T-LH	120 ± 10 g (4.2 ± 0.3 oz)
			M/T-RH	130 ± 10 g (4.6 ± 0.3 oz)
			CVT	120 ± 10 g (4.2 ± 0.3 oz)
		AWD		120 ± 10 g (4.2 ± 0.3 oz)
EBJ boot grease	Repair kit grease	FWD		110 ± 10 g (3.9 ± 0.3 oz)
		AWD		105 ± 10 g (3.7 ± 0.3 oz)

FRONT AXLE DIAGNOSIS

TROUBLESHOOTING STRATEGY

M1261005600187

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a front axle fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify malfunction is eliminated.

SYMPTOM CHART

M1261005700300

Symptom		Inspection procedure	Reference page
Driveshaft	Noise during wheel rotation	1	P.26-6
	Noise due to excessive play of wheel in turning direction	2	P.26-7

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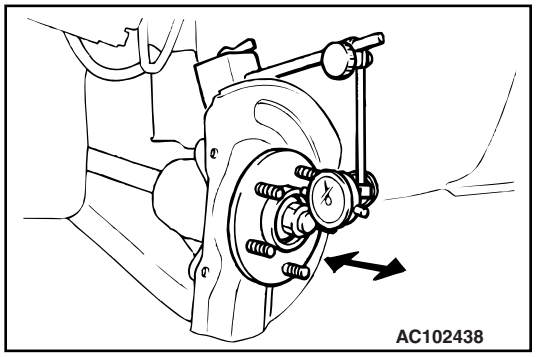
SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Noise during Wheel Rotation



DIAGNOSIS

STEP 1. Check the wheel bearing end play.

(1) Remove the caliper assembly 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 (0.002 inch)

Q: Is the wheel bearing end play within the limit?

YES : Go to step 2.
NO : Replace the part, then go to Step 5.

STEP 2. Check the driveshaft and inner shaft for bending.

Q: Is the driveshaft and inner shaft bent?

YES : Go to step 3.
NO : Replace the part. Then go to Step 5.

STEP 3. Check the center bearing for wear.

Q: Is the center bearing worn?

YES : Replace the bearing. Then go to Step 5.
NO : Go to step 4.

STEP4. Check the driveshaft assembly for wear or damage.

Q: Is the driveshaft assembly worn or damaged?

YES : Replace the driveshaft assembly. Then go to Step 5.
NO : There is no action to be taken.

STEP 5. Retest the system.

Q: Is the abnormal noise eliminated?

YES : The procedure is complete.
NO : Repeat from Step 1.

INSPECTION PROCEDURE 2: Noise Due to Excessive Play of Wheel in Turning Direction

DIAGNOSIS

STEP 1. Check for play in the inner shaft and side gear serration, the driveshaft and side gear serration, or the driveshaft and front hub serration.

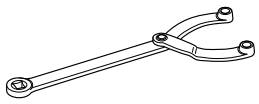
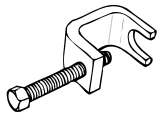
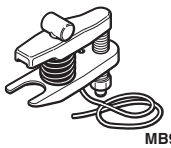
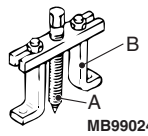
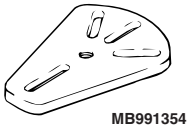
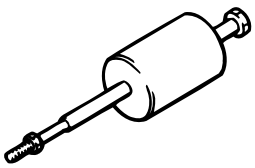
Q: Is the play found?
YES : Replace the part. Then go to Step 2.
NO : The procedure is complete.

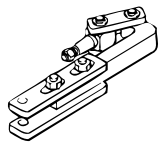
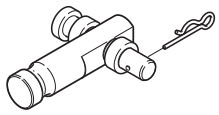
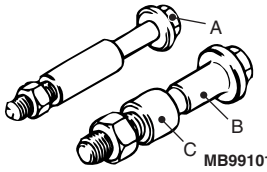
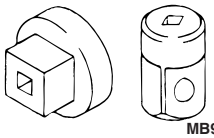
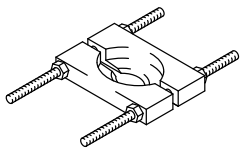
STEP 2. Retest the system.

Q: Is the abnormal noise eliminated?
YES : The procedure is complete.
NO : Repeat from Step 1.

SPECIAL TOOLS

M1261000601055

Tool	Tool number and name	Supersession	Application
 B990767	MB990767 Front hub and flange yoke holder	MB990767-01	Fixing of the hub
 MB991618	MB991618 Hub bolt remover	General service tool	Removal of the hub bolt
 MB991897	MB991897 or MB992011 Ball joint remover	MB991113-01, MB990635-01 or General service tool	Knuckle and tie-rod end ball joint disconnection *NOTE: Steering linkage puller (MB990635 or MB991113)is also used to disconnect knuckle and tie-rod end ball joint.*
 MB990241AD	MB990241 Axle shaft puller A: MB990242 Puller shaft B: MB990244 Puller bar	MB990241-01 or General service tool	Removal of the driveshaft
 MB991354	MB991354 Puller body	General service tool	
	MB991721 Slide hammer	–	Removal of the output shaft

Tool	Tool number and name	Supersession	Application
	MB991056 or MB991355 Knuckle arm bridge	MB991056-01	• Removal of the hub • Removal of the wheel bearing
 B992250	MB992250 Knuckle arm bridge attachment	–	Removal of the hub *NOTE: Replace this attachment with a guide of MB991355 and use them.*
 MB991017	A: MB991017 B: MB990998 C: MB991000 A, B: Front hub remover and installer C: Spacer	MB990998-01	• Removal of the hub • Provisional holding of the wheel bearing • Measurement of hub starting torque • Measurement of wheel bearing end play *NOTE: MB991000, which belongs to MB990998, should be used as a spacer.* • Removal of the wheel bearing inner race (outside) (Use MB991000 with MD998801.)
 MB991099	MB991099 Oil seal installer guide	–	Measurement of hub starting torque
 MB990326	MB990326 Preload socket	General service tool	
	MB990685 Torque wrench	General service tool	
	MD998801 Remover	–	Removal of the wheel bearing inner race (outside)

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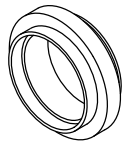
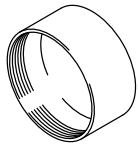
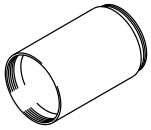
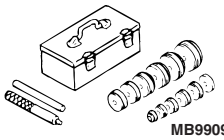
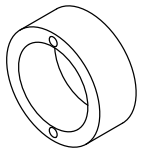
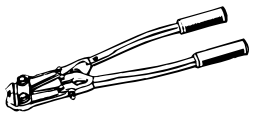
Tool	Tool number and name	Supersession	Application
	MB992150 Oil seal installer	–	Installation of the wheel bearing inner race (outside)
	MD998812 Installer cap	–	
	MD998813 Installer	–	
 MB990925	MB990925 Bearing and oil seal installer set	MB990925-01 or General service tool	Removal of the wheel bearing
 MB991388	MB991388 Bush remover base	–	Press-fitting of the dust cover
 MB991576	MB991576 Base	–	
 MB990890	MB990890 Rear suspension bushing base	MB990890-01	Installation of the wheel bearing
	MD999528 Adapter	–	
 MB991561	MB991561 Boot band crimping tool	MB991561	EBJ boot (resin boot) band installation

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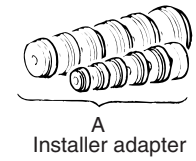
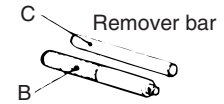
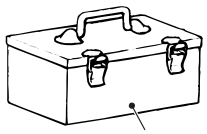
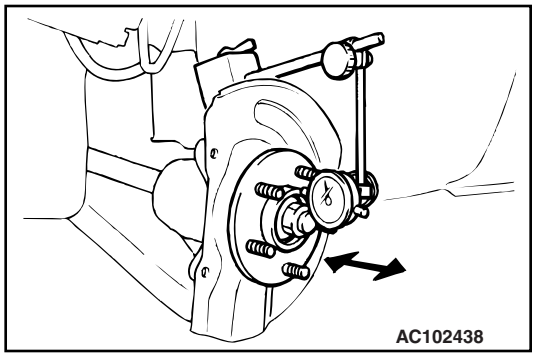
MB990925 BEARING AND OIL SEAL INSTALLER SET

Tool	Type	Tool number	O D mm (in)
   ACX02372AE	A	MB990926	39.0 (1.54)
		MB990927	45.0 (1.77)
		MB990928	49.5 (1.95)
		MB990929	51.0 (2.00)
		MB990930	54.0 (2.13)
		MB990931	57.0 (2.24)
		MB990932	61.0 (2.40)
		MB990933	63.5 (2.50)
		MB990934	67.5 (2.66)
		MB990935	71.5 (2.81)
		MB990936	75.5 (2.97)
		MB990937	79.0 (3.11)
	B	MB990938	–
	C	MB990939	–

ON-VEHICLE SERVICE

WHEEL BEARING END PLAY CHECK

M1261001100470



1. Remove the caliper assembly and brake disc, and retain the caliper assembly with a wire and the like to prevent from falling (Refer to P.26-12).
2. Set a dial gauge as shown in the figure. Move the hub in the axial direction and measure the end play.
   Limit : 0.05 mm (0.002 inch)
3. If the play exceeds the limit, disassemble hub knuckle assembly to check each component. If the wheel bearing is faulty, replace it (Refer to P.26-16).
4. After checking, install the brake disc and the caliper assembly (Refer to P.26-12).

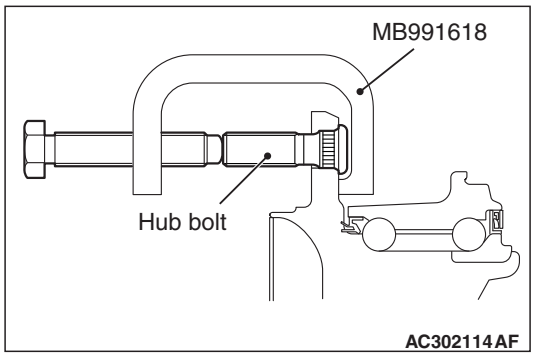
HUB BOLT REPLACEMENT

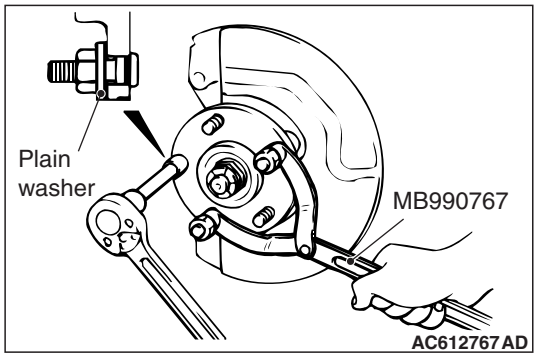
M1261001000655

Required Special Tools:

- MB990767: Front Hub and Flange Yoke Holder
- MB991618: Hub Bolt Remover

1. Remove the caliper assembly and brake disc, and retain the caliper assembly with a wire and the like to prevent from falling (Refer to P.26-12).
2. Use special tool MB991618 to remove the hub bolts.





3. Install the plain washer to the new hub bolt, and install the bolt with a nut while holding the hub with special tool MB990767.
4. Install the brake disc and the caliper assembly (Refer to P.26-12).

FRONT AXLE HUB ASSEMBLY

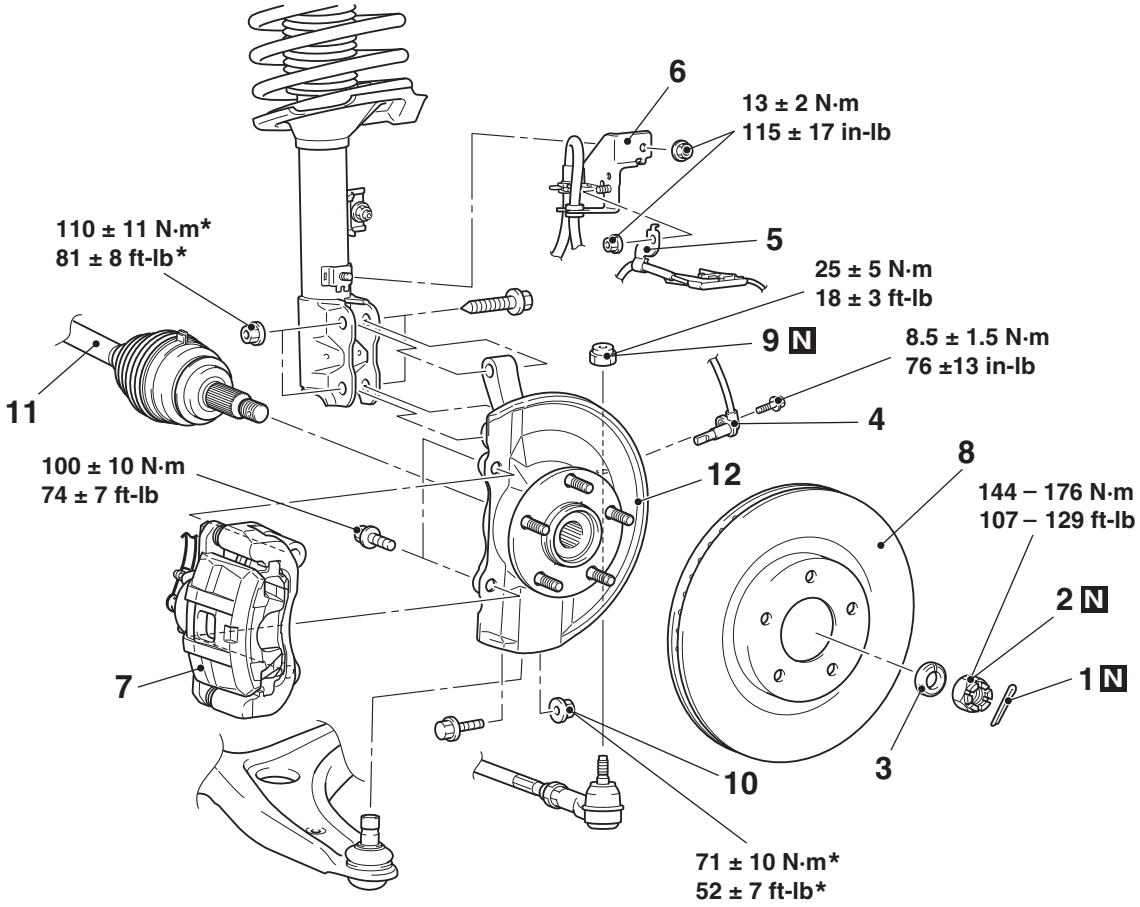
REMOVAL AND INSTALLATION

M1261001701613

⚠ CAUTION

- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder should not collect metallic particles. Check that there is not any trouble prior to reassembling it.**
- **When removing and installing the front wheel hub assembly, make sure that the magnetic encoder for wheel speed detection (integrated with the inner oil seal) does not contact with surrounding parts to avoid damage.**
- **When removing and installing the front wheel speed sensor, make sure that the pole piece at the end does not contact with surrounding parts to avoid damage.**
- **The parts indicated by * are the nuts with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.**

Post-installation operation
- Using your fingers, press the Ball Joint Dust Cover to check for a crack or damage.



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Removal steps
1. Cotter pin
<<A>> >>A<< 2. Driveshaft nut
>>A<< 3. Washer
4. Front wheel speed sensor
5. Front wheel speed sensor harness clamp

Removal steps (Continued)
6. Brake hose bracket
<<B>> 7. Caliper assembly
8. Brake disk
<<C>> 9. Self-locking nut (tie-rod end connection)

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Removal steps (Continued)

10. Flange nut (lower arm ball joint connection)
<<D>> 11. Driveshaft and hub knuckle assembly connection
12. Hub knuckle assembly

Required Special Tools:

- MB990242: Puller Shaft
- MB990244: Puller Bar
- MB990767: Front Hub and Flange Yoke Holder
- MB991354: Puller Body
- MB991897 or MB992011: Ball Joint Remover

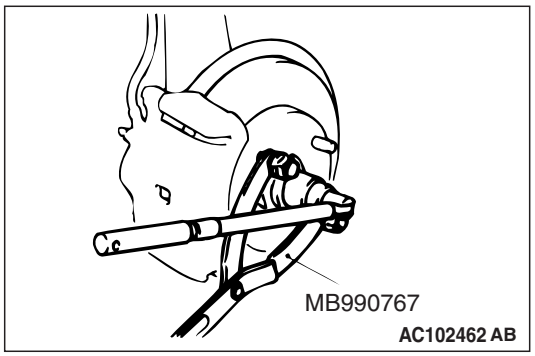
REMOVAL SERVICE POINTS

<<A>> DRIVESHAFT NUT REMOVAL

⚠ CAUTION

Do not apply the vehicle weight on the front wheel hub assembly with the driveshaft nut loosened. Otherwise, the wheel bearing may be broken.

Use special tool MB990767 to counter the hub as shown in the figure to remove the driveshaft nut.



<<B>> CALIPER ASSEMBLY REMOVAL

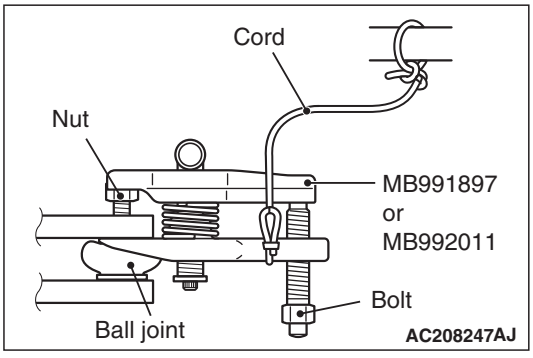
1. Remove the caliper assembly with brake hose.
2. Secure the removed caliper assembly with a wire or other similar material at a position where it will not interfere with the removal and installation of the hub knuckle assembly.

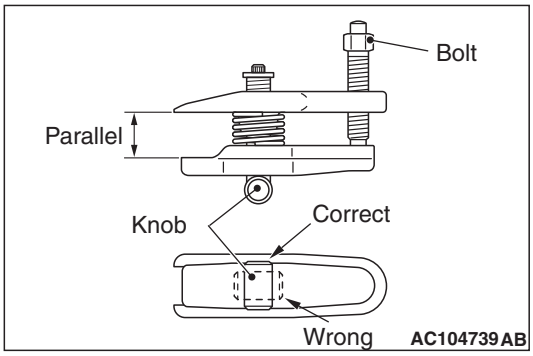
<<C>> SELF-LOCKING NUT (TIE-ROD END CONNECTION) REMOVAL

⚠ CAUTION

- **Loosen the self-locking nut (tie-rod end connection) from the ball joint, but do not remove here. Use the special tool.**
- **To prevent the special tool from dropping off, suspend it with a cord.**

1. Install special tool MB991897 or MB992011 as shown in the figure.





2. Turn the bolt and knob to make the special tool jaws parallel, then hand-tighten the bolt. After tightening, check that the jaws are still parallel.

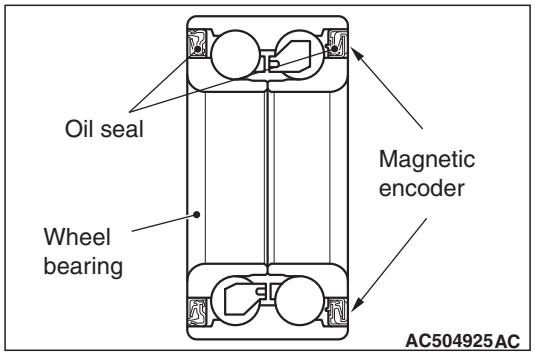
   NOTE: To adjust the special tool jaws to be parallel, set the orientation of the knob as shown in the figure.

3. Unscrew the bolt to disconnect the ball joint.

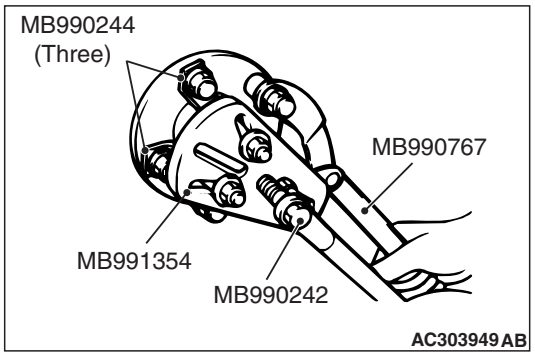
<<D>> DRIVESHAFT AND HUB KNUCKLE ASSEMBLY DISCONNECTION

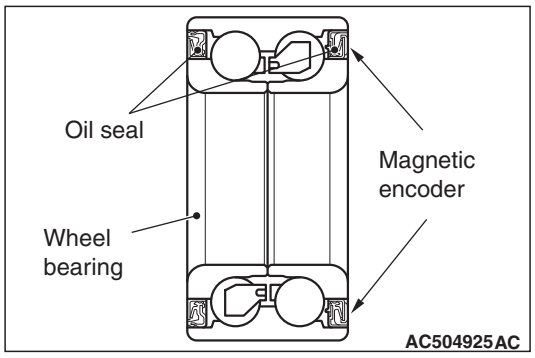
⚠ CAUTION

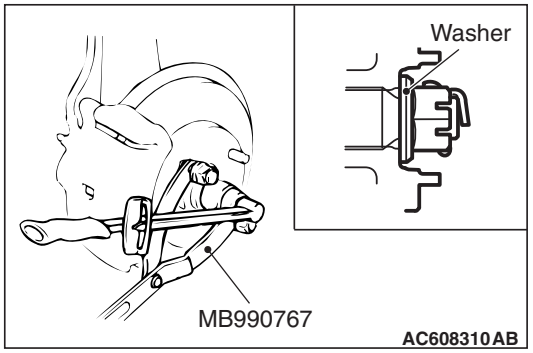
- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder does not collect metallic particles.**
- **When removing the driveshaft, make sure that it does not contact with the magnetic encoder (integrated with the inner oil seal) to avoid damage.**



If the driveshaft is seized, use special tools MB990242 and MB990244, MB991354 and MB990767 to push the driveshaft out from the hub.







INSTALLATION SERVICE POINT

>>A<< WASHER/DRIVESHAFT NUT INSTALLATION

⚠ CAUTION

- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder should not collect metallic particles. Check that there is not any trouble prior to reassembling it.**
- **When installing the driveshaft, make sure that it does not contact with the magnetic encoder (integrated with the inner oil seal) to avoid damage.**
- **Do not apply the vehicle weight on the wheel bearing before fully tightening the driveshaft nut. Otherwise, the wheel bearing may be broken.**

1. Be sure to install the driveshaft washer in the illustrated direction.
2. Using special MB990767, tighten the driveshaft nut. At this time, tighten the nut to the specified lower limit torque so that the pin hole may align with cotter pin.

   Tightening torque: 144 –176 N· m (107 –129 ft-lb)
3. If the pin hole does not align with the pin, tighten the driveshaft nut [less than 176 N· m (129 ft-lb)] and find the nearest hole, then fit the cotter pin.

INSPECTION

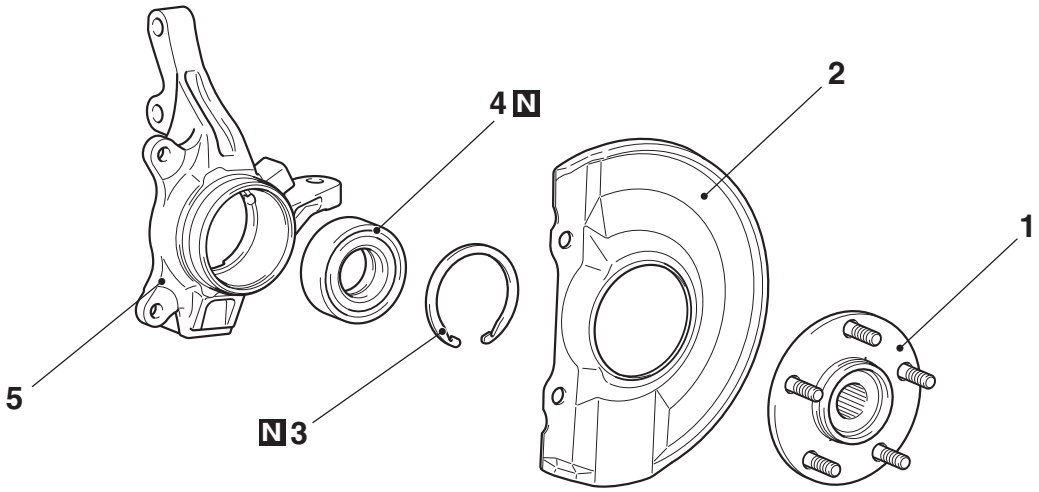
M1261001800178

- Check the hub for cracks and spline for wear.
- 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 ASSEMBLY

M1261001900711



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Disassembly steps

<<**A**>> 1. Hub
2. Dust shield
3. Snap ring
<<**B**>> 4. Wheel bearing
5. Knuckle

Assembly steps

5. Knuckle
>>**A**<< 4. Wheel bearing
3. Snap ring
>>**B**<< 2. Dust shield
1. Hub
>>**C**<< • Hub starting torque check
>>**D**<< • Wheel bearing end play check

Required Special Tools:

- MB990326: Preload Socket
- MB990685: Torque Wrench
- MB990890: Rear Suspension Bushing Base
- MB990935: Installer Adapter
- MB990938: Installer Bar
- MB991000: Spacer
- MB991017: Front Hub Remover and Installer
- MB991355: Knuckle Arm Bridge
- MB991388: Bush Remover Base
- MB991576: Base
- MB992150: Oil Seal Installer
- MB992250: Knuckle Arm Bridge Attachment
- MD999528: Adapter
- MD998801: Remover
- MD998812: Installer Cap
- MD998813: Installer

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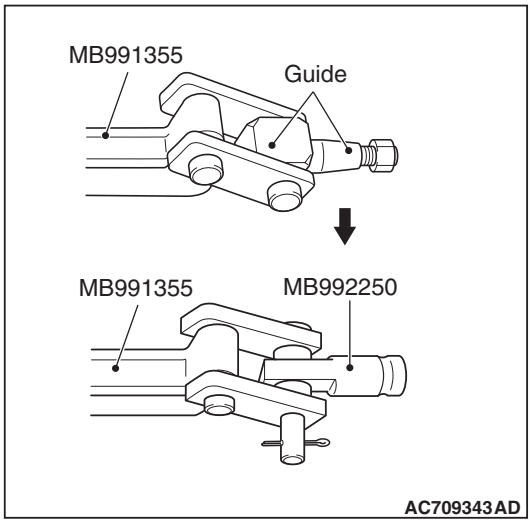
DISASSEMBLY SERVICE POINTS

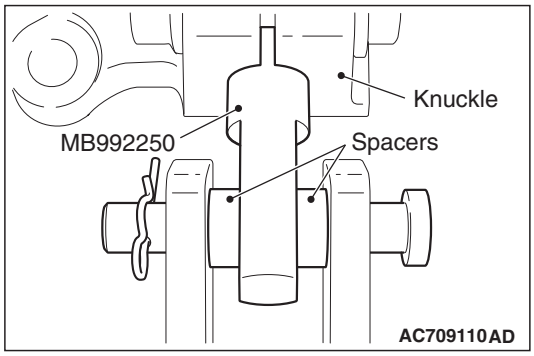
<<A>> HUB REMOVAL

⚠ CAUTION

In the hub removal operation, make sure to replace the wheel bearing with new one.

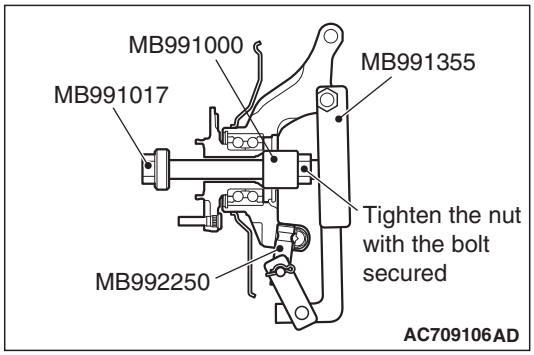


1. Replace special tool MB992250 with a guide of special MB991355 as shown in the figure.



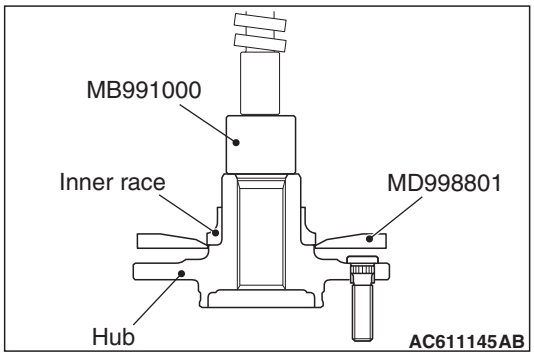
2. Insert special tool MB992250 in the knuckle and tighten it with a bolt and nut.

   NOTE: Set the spacers of special tool MB992250 as shown in the figure.

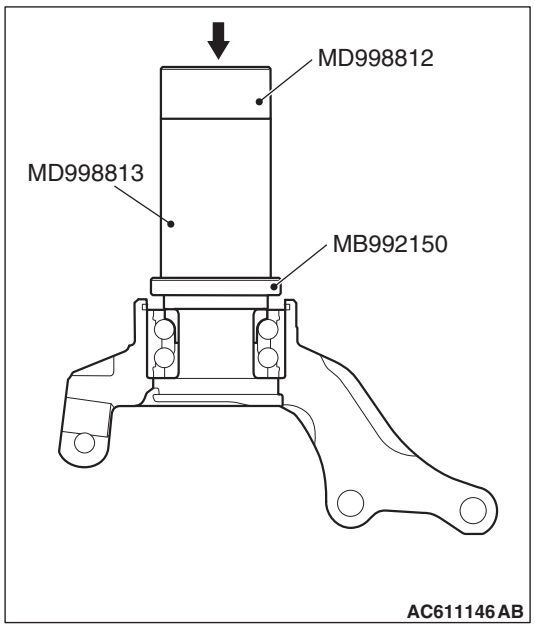


3. Use special tools MB991000, MB991017, MB991355 and MB992250 to remove the hub.

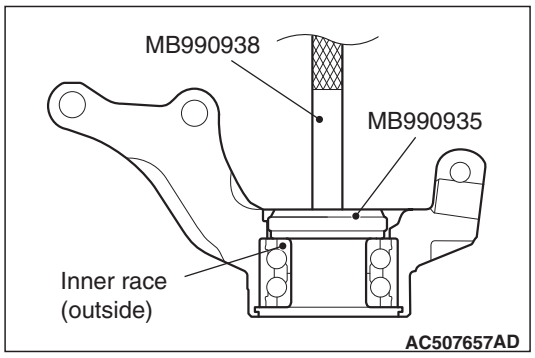
<<B>> WHEEL BEARING REMOVAL



1. Use special tools MD998801 and MB991000 to remove the wheel bearing inner race (outside) from the hub.



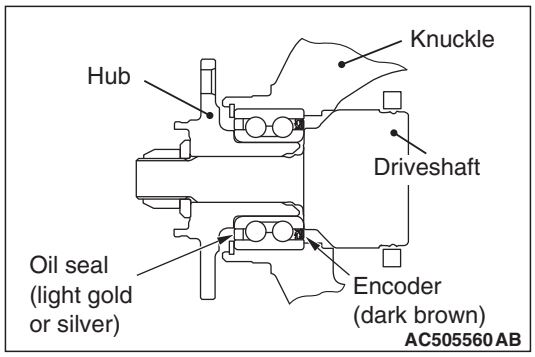
2. Use special tools MB992150, MD998812 and MD998813 to assemble the inner race (outside) removed from the hub to the wheel bearing.



3. Use special tools MB990935 and MB990938 to remove the wheel bearing.

ASSEMBLY SERVICE POINTS

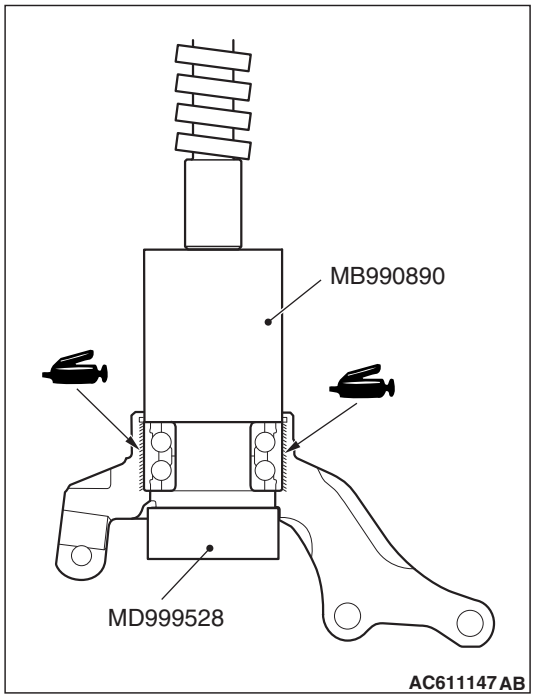
>>A<< WHEEL BEARING INSTALLATION



⚠ CAUTION

- **The magnetic encoder for wheel speed sensor is installed in the wheel bearing. Install the wheel bearing so that the encoder is positioned in the direction shown in the figure.**
- **When press-fit the wheel bearing, push the outer race.**
- **After press-fit the wheel bearing, wipe off the extra grease in order not to remain on the magnetic encoder.**

1. Remove grease and foreign material cleanly from the inside of knuckle bore.

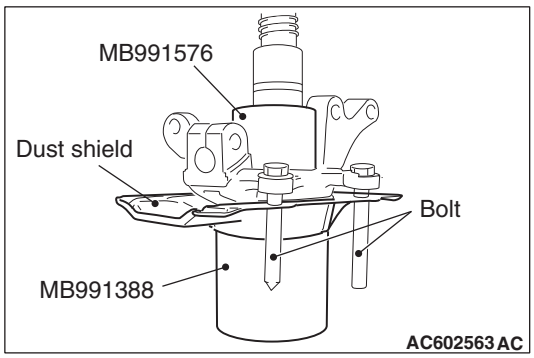


2. Apply the specified grease thinly and evenly to the inside of knuckle as shown in the figure.

   Specified grease: Dowcorning/Molykote BR2 Plus or equivalent
   Amount to use: as required {1.0 –1.5 g (0.03 -0.05 ounce)}

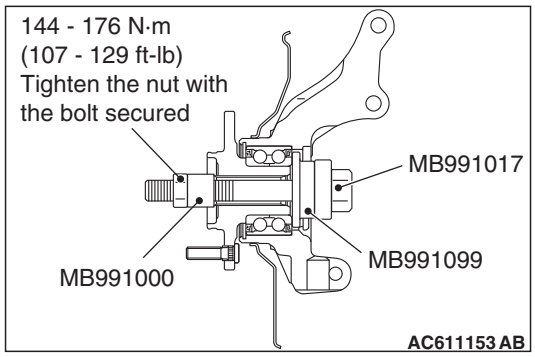
3. Use special tools MB990890 and MD999528 to press-fit the wheel bearing.
4. Remove excessive grease seeped out between knuckle and wheel bearing outer race after press-fitting the wheel bearing.

>>B<< DUST SHIELD INSTALLATION



Use special tools MB991388 and MB991576 to press-fit the knuckle into the dust shield.

NOTE: Use the bolts (M12) to align the caliper mounting holes.

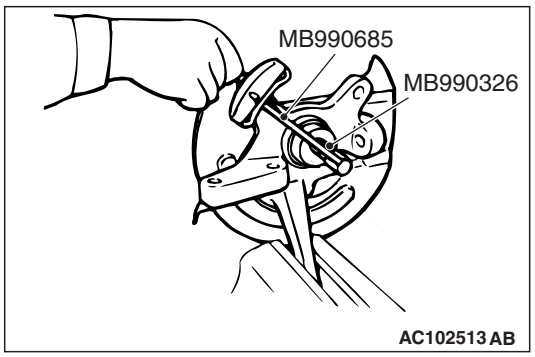


>>C<< HUB ROTATION STARTING TORQUE CHECK

1. Set special tools MB991000, MB991017 and MB991099 as shown in the figure, tighten the nut to the specified torque, and press-fit the hub into the knuckle.

   Tightening torque: 144 –176 N· m (107 –129 ft-lb)

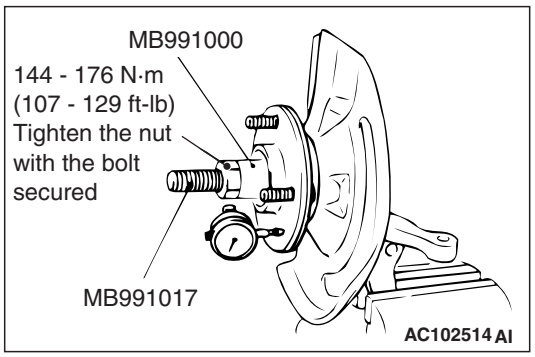
2. Rotate the hub to make the bearing well-greased.



3. Use Special tools MB990326, MB990685 to measure the hub rotation starting torque.

   Limit: 1.5 N· m (13 in-lb)

4. Hub rotation starting torque should be within the limit value, and there should be no roughness and gritty feeling in rotation.



>>D<< WHEEL BEARING END PLAY CHECK

1. Use special tools MB991000 and MB991017 to measure to determine whether the wheel bearing end play is within the specified limit or not.

   Limit: 0.05 mm(0.002 inch)

2. If the end play is not within the limit range while the nut is tightened to the specified torque, the bearing, hub and/or knuckle have probably not been installed correctly. Replace the bearing and re-install.

   Tightening torque: 144 - 176 N· m (107 - 129 ft-lb)

INSPECTION

M1261002000045

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

DRIVESHAFT ASSEMBLY

REMOVAL AND INSTALLATION

M1261003501778

⚠ CAUTION

- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder should not collect metallic particles. Check that there is not any trouble prior to reassembling it.**
- **When removing and installing the driveshaft assembly, make sure that the wheel speed detection magnetic encoder (integrated with the inner oil seal) does not contact with surrounding parts to avoid damage.**
- **When removing and installing the front wheel speed sensor, make sure that the pole piece at the end does not contact with surrounding parts to avoid damage.**
- **The parts indicated by * are the nuts with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.**

Pre-removal operation	Post-installation operation
• Transmission fluid draining (Refer to GROUP 22A, On-vehicle Service, Transmission Oil Change P.22A-8.) <M/T> • CVT fluid draining (Refer to GROUP 23A, On-vehicle Service, CVT Fluid Change P.23A-136.) <CVT>	• Using your fingers, press the Ball Joint Dust Cover to check for a crack or damage. • Transmission fluid refilling (Refer to GROUP 22A, On-vehicle Service, Transmission Oil Change P.22A-8.) <M/T> • CVT fluid refilling (Refer to GROUP 23A, On-vehicle Service, CVT Fluid Change P.23A-136.) <CVT>

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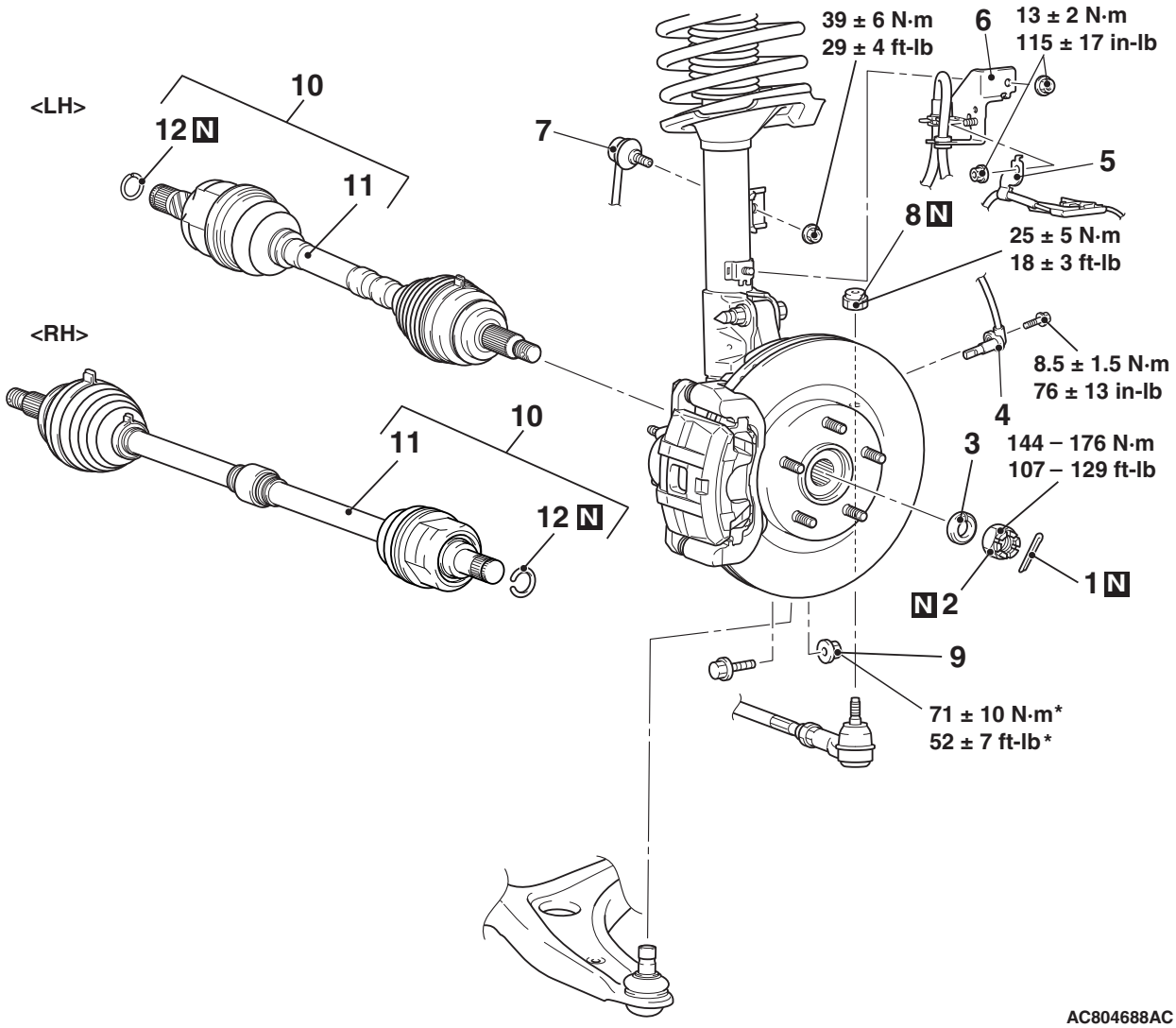
<FWD>



Removal steps

		1.	Cotter pin
<<A>>	>>C<<	2.	Driveshaft nut
	>>C<<	3.	Washer
		4.	Front wheel speed sensor
		5.	Front wheel speed sensor harness clamp
		6.	Brake hose bracket
<<B>>	>>B<<	7.	Stabilizer link connection

Removal steps (Continued)

<<C>>		8.	Self-locking nut (tie-rod end connection)
		9.	Flange nut (lower arm ball joint connection)
<<D>>	>>A<<	10.	Driveshaft assembly
		11.	Driveshaft
		12.	Circlip

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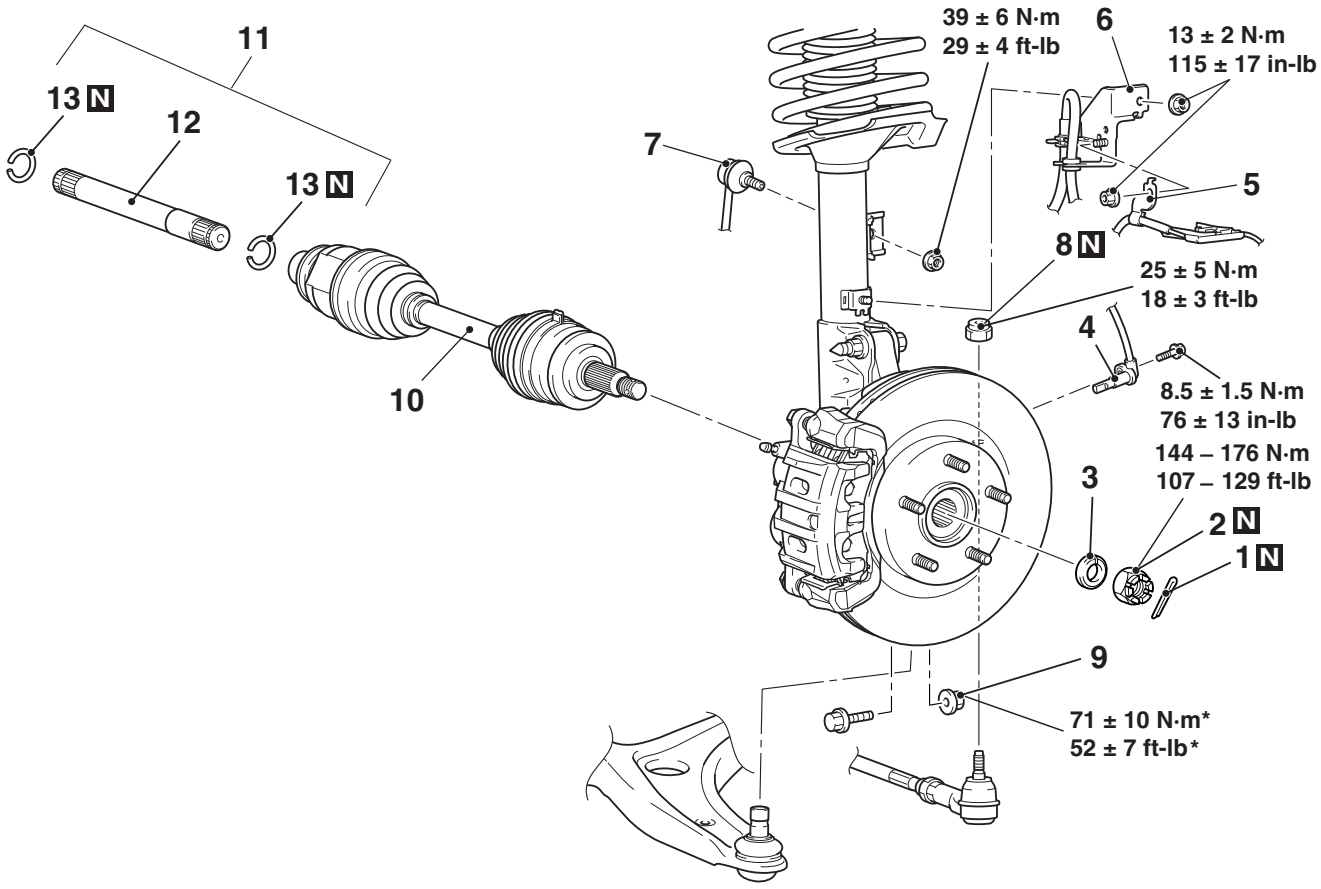

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Removal steps

		1.	Cotter pin
<<A>>	>>C<<	2.	Driveshaft nut
	>>C<<	3.	Washer
		4.	Front wheel speed sensor
		5.	Front wheel speed sensor harness clamp
		6.	Brake hose bracket
<<B>>	>>B<<	7.	Stabilizer link connection
<<C>>		8.	Self-locking nut (tie-rod end connection)
		9.	Flange nut (lower arm ball joint connection)
<<D>>	>>A<<	10.	Driveshaft assembly
<<E>>	>>A<<	11.	Output shaft assembly (RH)

Removal steps (Continued)

12. Output shaft (RH)
13. Circlip

Required Special Tools:

- MB990242: Puller Shaft
- MB990244: Puller Bar
- MB991271: Slide Hammer
- MB990767: Front Hub and Flange Yoke Holder
- MB991000: Spacer
- MB991017: Front Hub Remover and Installer
- MB991354: Puller Body
- MB991897 or MB992011: Ball Joint Remover

TSB Revision

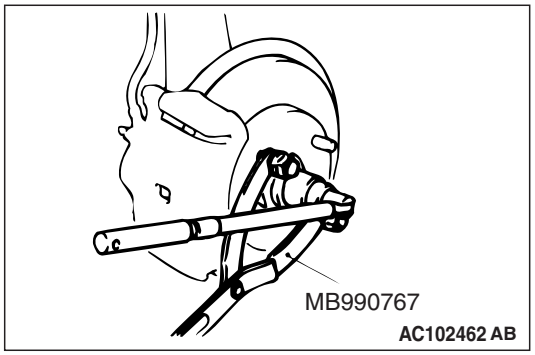
REMOVAL SERVICE POINTS

<<A>> DRIVESHAFT NUT REMOVAL

⚠ CAUTION

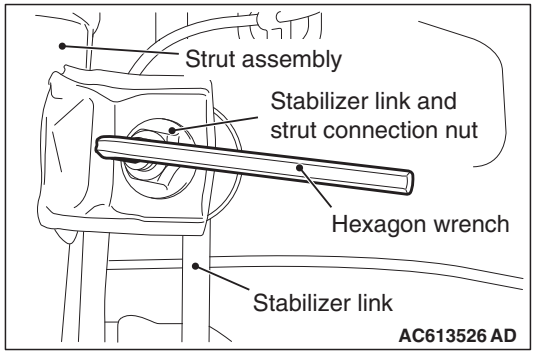
Do not apply the vehicle weight on the wheel bearing with the driveshaft nut loosened. Otherwise, the wheel bearing may be broken.

Use special tool MB990767 to counter the hub as shown in the figure to remove the driveshaft nut.



<<B>> STABILIZER LINK DISCONNECTION

Use a hexagon wrench to remove the stabilizer link and strut connection nut as shown in the figure.

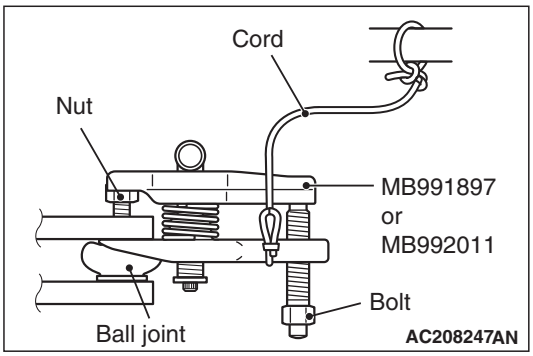


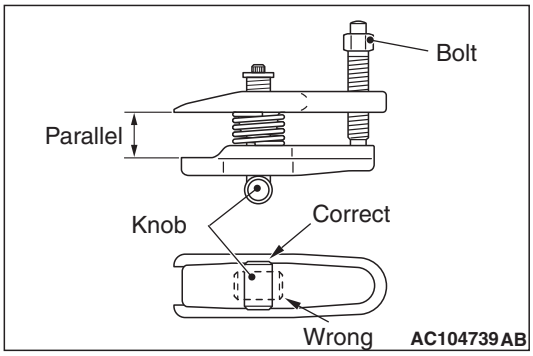
<<C>> SELF-LOCKING NUT (TIE-ROD END CONNECTION) REMOVAL

⚠ CAUTION

- **Loosen the self-locking nut (tie-rod end connection) from the ball joint, but do not remove here. Use the special tool.**
- **To prevent the special tool from dropping off, suspend it with a cord.**

1. Install special tool MB991897 or MB992011, as shown in the figure.





2. Turn the bolt and knob to make the special tool jaws parallel, then hand-tighten the bolt. After tightening, check that the jaws are still parallel.

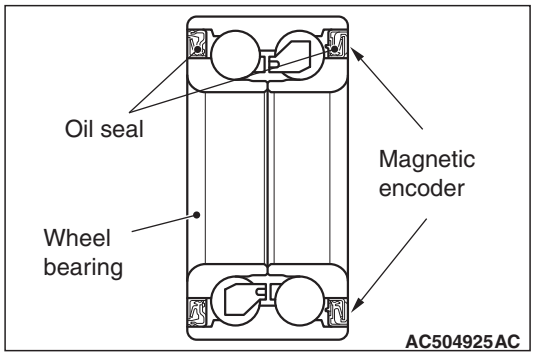
   NOTE: To adjust the special tool jaws to be parallel, set the orientation of the knob as shown in the figure.

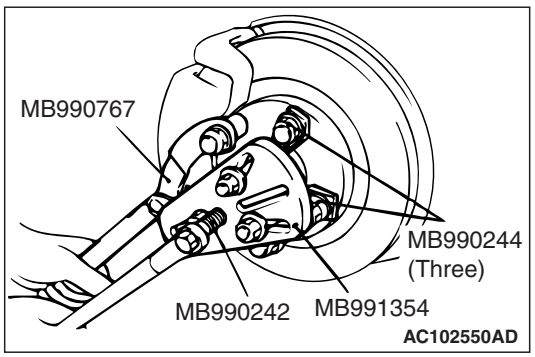
3. Unscrew the bolt to disconnect the ball joint.

<<D>> DRIVESHAFT ASSEMBLY REMOVAL

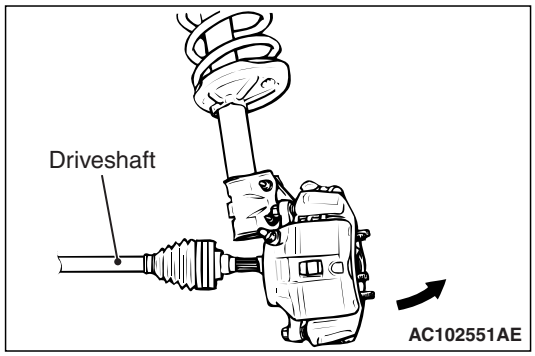
⚠ CAUTION

- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder does not collect metallic particles.**
- **When removing the driveshaft, make sure that it does not contact with the magnetic encoder (integrated with the inner oil seal) to avoid damage.**





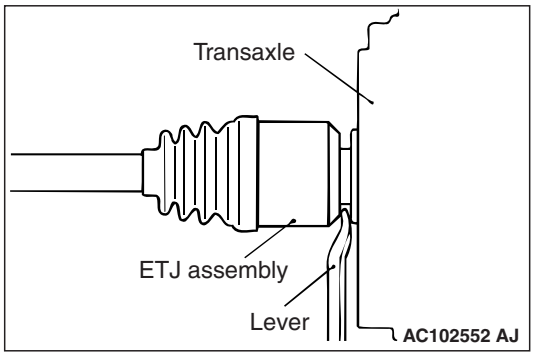
1. If the driveshaft is seized with the hub, use special tools MB990242 and MB990244, MB990767 and MB991354 to push the driveshaft assembly out from the hub.



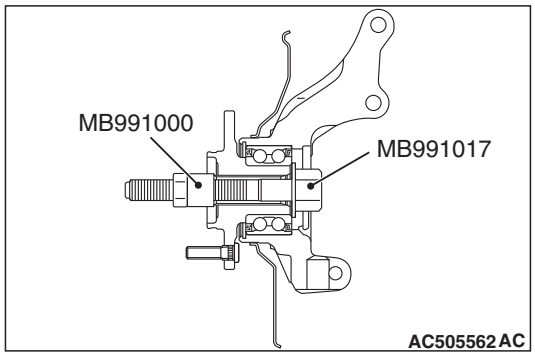
2. While pulling the lower side of the brake disk toward you, remove the driveshaft assembly from the hub.

⚠ CAUTION
- **Never pull out the driveshaft assembly from the EBJ assembly side. Otherwise, the ETJ assembly may be damaged. Always pull out from the ETJ side with a lever.**
- **Care must be taken to ensure that the oil seal of the transaxle is not damaged by the spline part of the driveshaft assembly.**

3. Insert a lever between the transaxle case or transfer and driveshaft assembly, and then pull the driveshaft assembly out from the transaxle.



⚠ CAUTION
Do not apply the vehicle weight to the wheel bearing with the driveshaft assembly removed. If, however, the vehicle weight shall be applied to the bearing (in order to move the vehicle), tighten the special tools MB991000 and MB991017 to the specified torque 144 –176 N· m (107 –129 ft-lb).

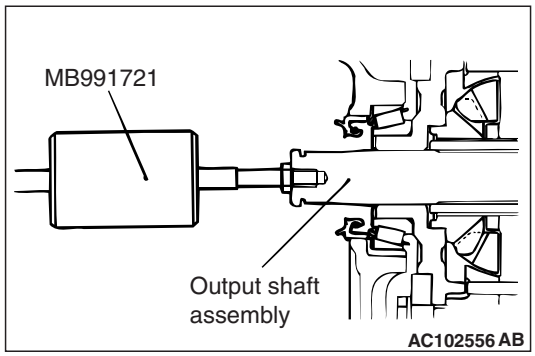


<<E>>OUTPUT SHAFT ASSEMBLY (RH)

REMOVAL

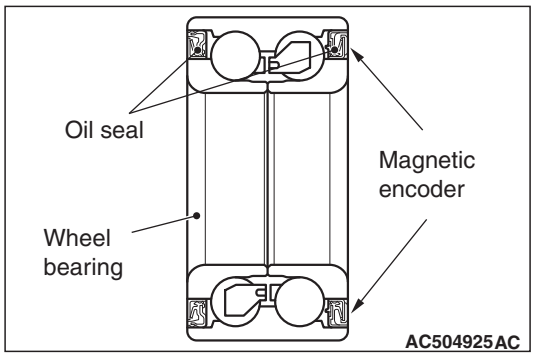
⚠ CAUTION
When pulling the output shaft out from the transaxle, be careful that the spline part of the output shaft does not damage the oil seal.

Use special tool MB991721 to remove the output shaft assembly.



INSTALLATION SERVICE POINTS

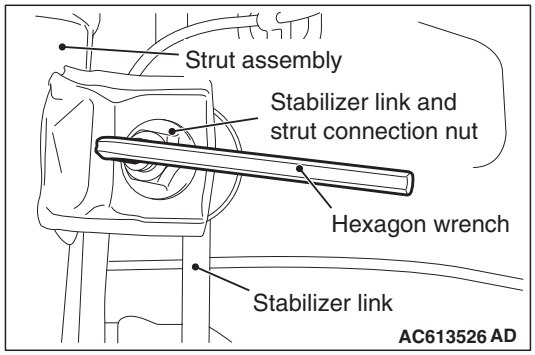
>>A<< OUTPUT SHAFT ASSEMBLY (RH)/DRIVESHAFT ASSEMBLY INSTALLATION



⚠ CAUTION

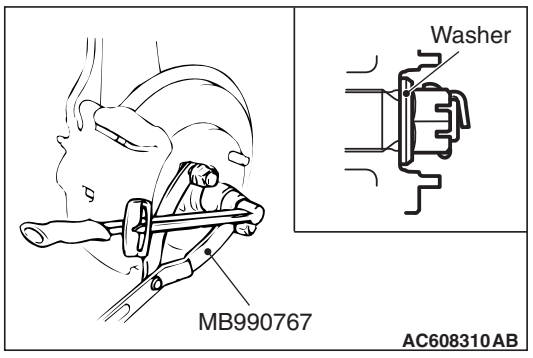
- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder should not collect metallic particles. Check that there is not any trouble prior to reassembling it.**
- **When installing the driveshaft, make sure that it does not contact with the magnetic encoder (integrated with the inner oil seal) to avoid damage.**
- **Care must be taken to ensure that the oil seal of the transaxle is not damaged by the spline part of the driveshaft assembly.**

>>B<< STABILIZER LINK CONNECTION



Use a hexagon wrench to install the stabilizer link and strut connection nut as shown in the figure.

>>C<< WASHER/DRIVESHAFT NUT INSTALLATION



⚠ CAUTION

Do not apply the vehicle weight on the front wheel hub assembly before fully tightening the driveshaft nut. Otherwise, the wheel bearing may be broken.

1. Be sure to install the driveshaft washer in the illustrated direction.
2. Using special MB990767, tighten the driveshaft nut. At this time, tighten the nut to the specified lower limit torque so that the pin hole may align with cotter pin.

   Tightening torque: 144 –176 N· m (107 –129 ft-lb)
3. If the pin hole does not align with the pin, tighten the driveshaft nut [less than 176 N· m (129 ft-lb)] and find the nearest hole, then fit the cotter pin.

DISASSEMBLY AND ASSEMBLY <FWD>

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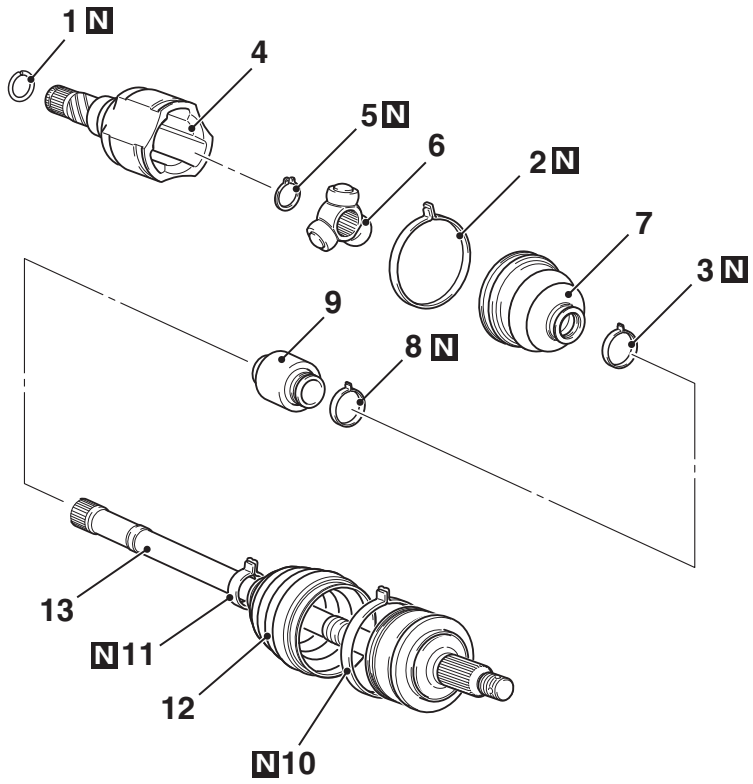
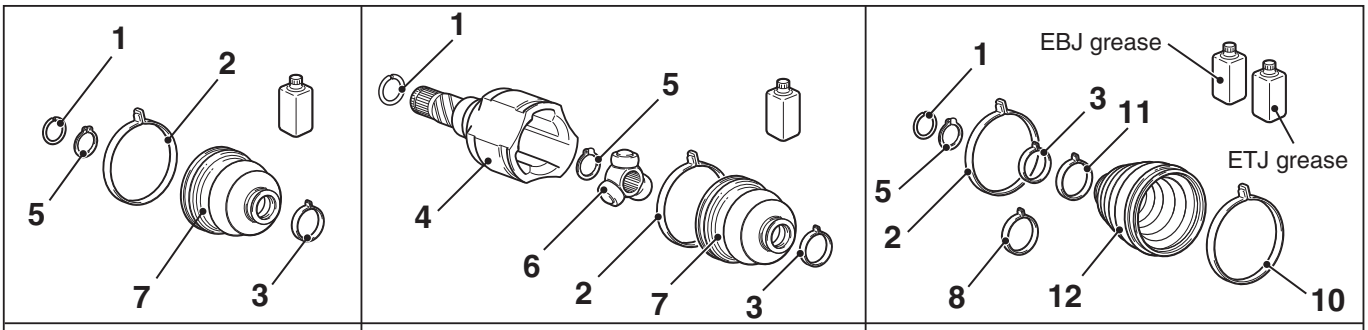
⚠ CAUTION

As for the EBJ assembly, only the EBJ boot can be replaceable, and other parts cannot be disassembled.





ETJ boots repair kit	ETJ repair kit	EBJ boots repair kit

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Disassembly steps

		1.	Circlip
	>>**C**<<	2.	ETJ boot band (large)
	>>**C**<<	3.	ETJ boot band (small)
<<**A**>>	>>**B**<<	4.	ETJ case
		5.	Snap ring
<<**A**>>	>>**B**<<	6.	Spider assembly
<<**B**>>	>>**A**<<	7.	ETJ boot

Disassembly steps (Continued)

>>**A**<<	8.	Damper band (RH)
>>**A**<<	9.	Dynamic damper (RH)
	10.	EBJ boot band (large)
	11.	EBJ boot band (small)
	12.	EBJ boot
	13.	EBJ assembly

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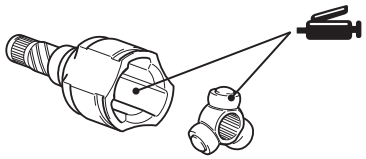
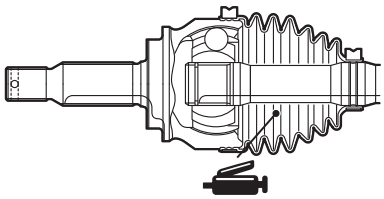
LUBRICATION POINTS



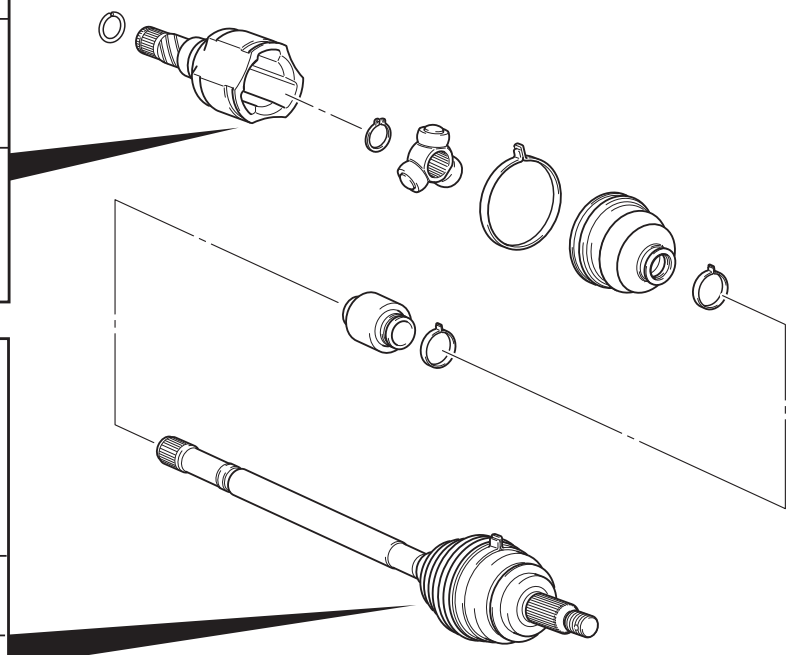
Grease: Repair kit grease
Amount used:
120 ± 10 g (4.2 ± 0.3 oz) <M/T-LH, CVT>,
130 ± 10 g (4.6 ± 0.3 oz) <M/T-RH>

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



Grease: Repair kit grease
Amount used: 110 ± 10 g (3.9 ± 0.3 oz)

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



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DISASSEMBLY SERVICE POINTS

<<A>> ETJ CASE/SPIDER ASSEMBLY REMOVAL

⚠ CAUTION
Do not disassemble the spider assembly.

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

<<B>> ETJ BOOT REMOVAL

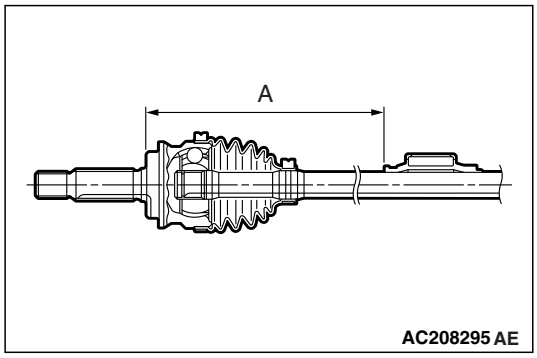
1. Wipe off the grease on the shaft spline.
2. When reusing the ETJ boot, wrap plastic tape around the shaft spline to avoid damaging the boot.

ASSEMBLY SERVICE POINTS

>>A<< DYNAMIC DAMPER (RH)/DAMPER BAND (RH)/ETJ BOOT INSTALLATION

⚠ CAUTION

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



1. Install the dynamic damper in the position (A) shown in the figure .

   A: 426 ±3 mm (16.77 ±0.12 inches)

2. Secure the damper band.
3. Wrap plastic tape around the shaft spline, and then install the ETJ boot band (small) and ETJ boot.

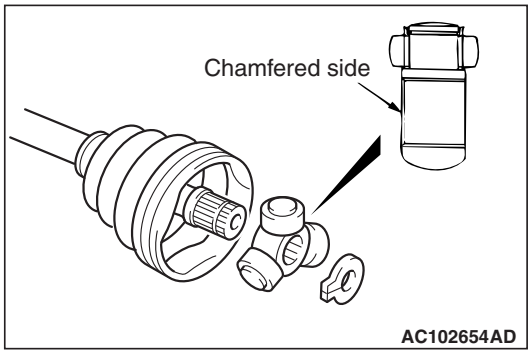
>>B<< SPIDER ASSEMBLY/ETJ CASE INSTALLATION

⚠ CAUTION

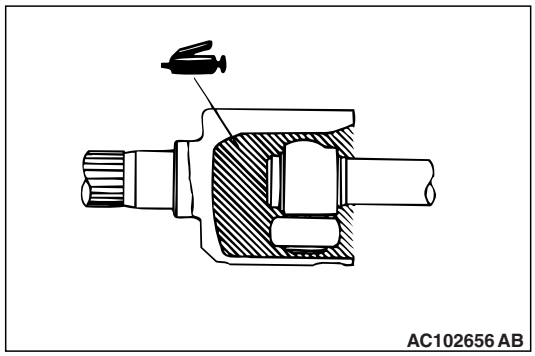
- **The driveshaft joint use special grease. Do not mix old and new or different types of grease.**
- **If the spider assembly has been cleaned, take special care to apply the specified grease.**

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



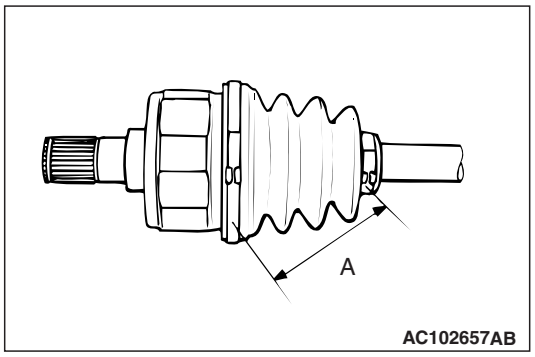
2. Install the spider assembly to the shaft from the direction of the spline chamfered side.



3. After applying the specified grease to the ETJ case, insert the driveshaft and apply grease one more time.

   Specified grease: Repair kit grease
   Amount to use:
   120 ±10 g (4.2 ±0.3 ounce) <M/T-LH, CVT>
   130 ±10 g (4.6 ±0.3 ounce) <M/T-RH>

   NOTE: When using the repair kit grease, put half of the grease into the joint and the other half into the boot as a guideline, and use the grease completely.



>>C<< ETJ BOOT BAND (SMALL)/ETJ BOOT BAND (LARGE) INSTALLATION

Adjust the distance (A shown in the illustration) between the boot bands to the standard value to adjust the air volume inside the ETJ boot to the specified value, then be sure to tighten the ETJ boot band (large) and ETJ boot band (small).

Standard value (A):
80 ±3 mm (3.15 ±0.12 inches)

DISASSEMBLY AND REASSEMBLY <AWD>

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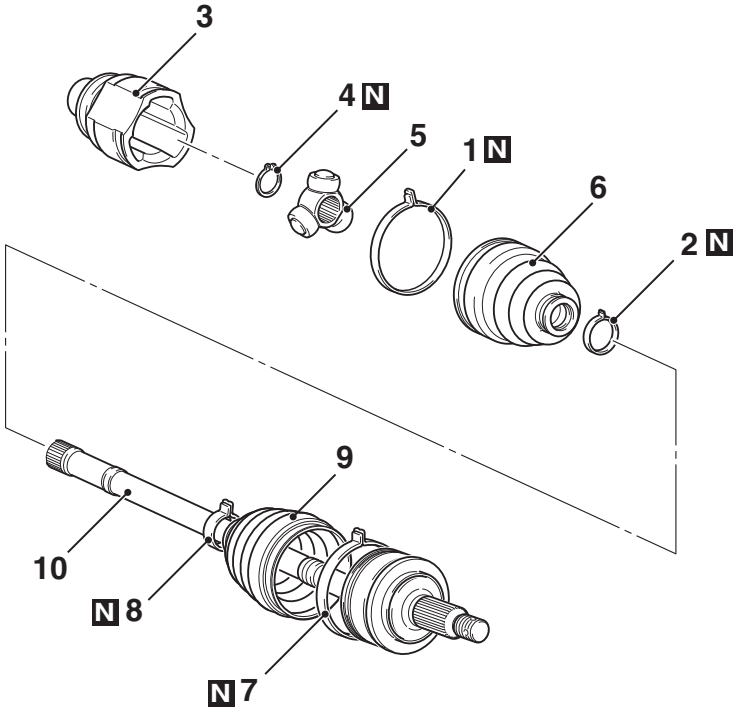
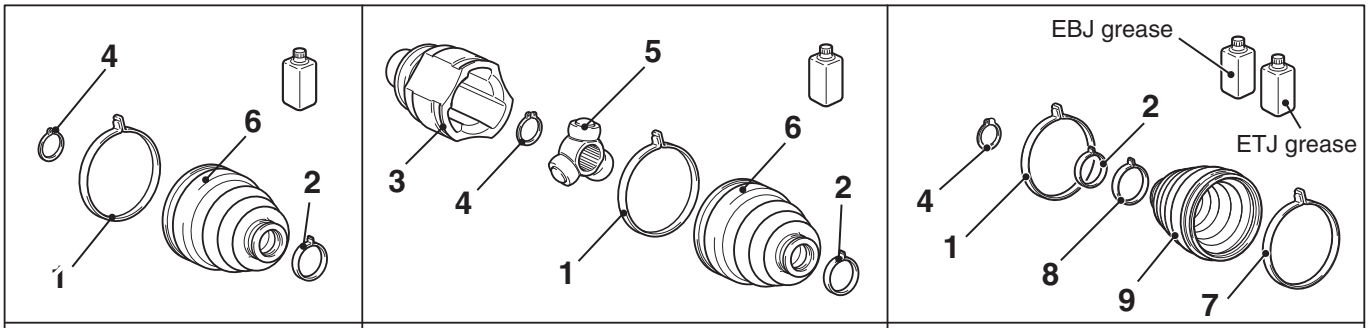
⚠ CAUTION

As for the EBJ assembly, only the EBJ boot can be replaceable, and other parts cannot be disassembled.





ETJ boots repair kit	ETJ repair kit	EBJ boots repair kit

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Disassembly steps

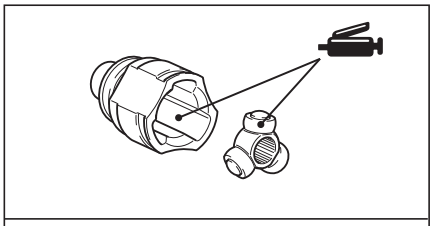
	>>**C**<<	1.	ETJ boot band (large)
	>>**C**<<	2.	ETJ boot band (small)
<<**A**>>	>>**B**<<	3.	ETJ case
		4.	Snap ring
	>>**B**<<	5.	Spider assembly

Disassembly steps (Continued)

<<**B**>>	>>**A**<<	6.	ETJ boot
		7.	EBJ boot band (large)
		8.	EBJ boot band (small)
		9.	EBJ boot
		10.	EBJ assembly

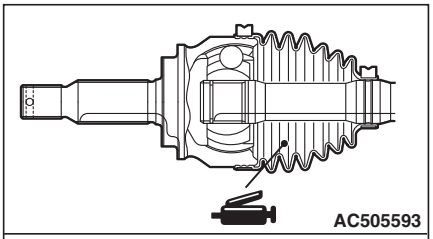
TSB Revision

LUBRICATION POINTS



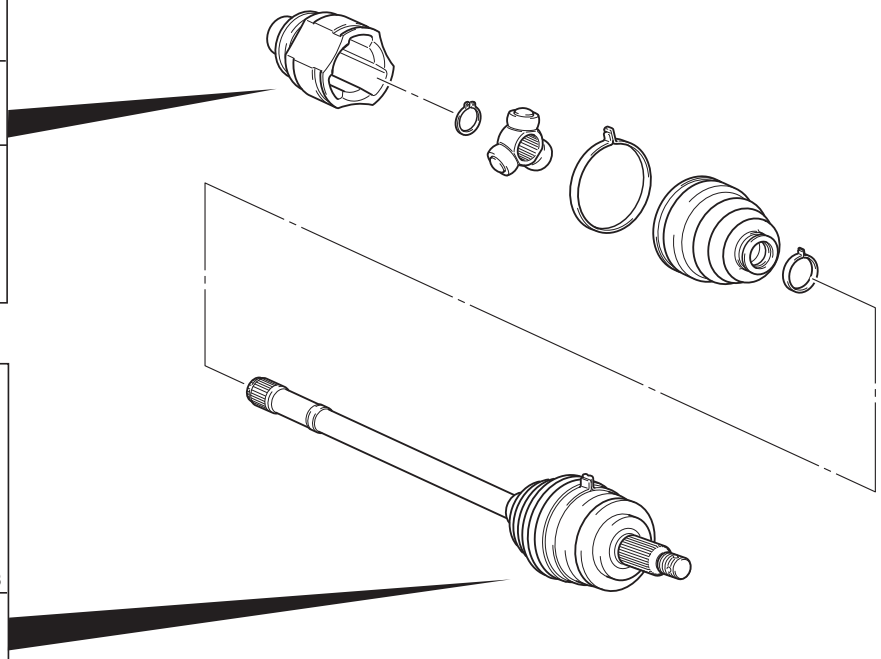
Grease: Repair kit grease
amount: 120 ± 10 g (4.2 ± 0.3 oz)

⚠ CAUTION
The drive shaft joint uses special grease, do not mix old and new or different types of grease.



Grease: Repair kit grease
amount: 105 ± 10 g (3.7 ± 0.3 oz)

⚠ CAUTION
The drive shaft joint uses special grease, do not mix old and new or different types of grease.



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DISASSEMBLY SERVICE POINTS

<<A>> ETJ CASE REMOVAL

⚠ CAUTION
Never disassemble the spider assembly.

<<B>> ETJ BOOT REMOVAL

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

REASSEMBLY SERVICE POINTS

>>A<< ETJ BOOT INSTALLATION

Apply a tape to the shaft spline area. Then incorporate the ETJ boot.

>>B<< SPIDER ASSEMBLY/ETJ CASE INSTALLATION

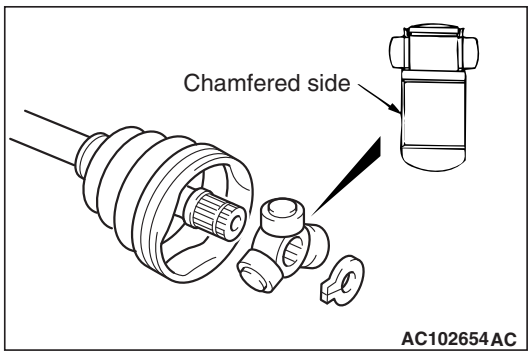
⚠ CAUTION

- **The driveshaft joint use special grease. Do not mix old and new or different types of grease.**
- **If the spider assembly has been cleaned, take special care to apply the specified grease.**

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

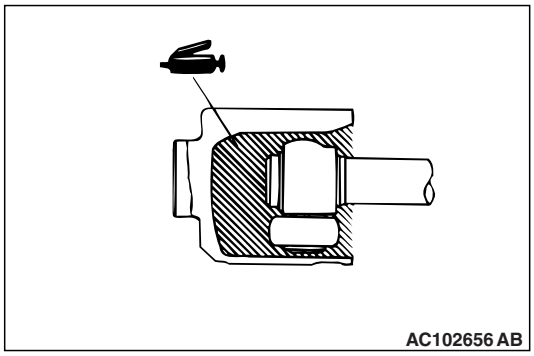
2. Install the spider assembly to the shaft from the direction of the spline chamfered side.



3. After applying the specified grease to the ETJ case, insert the driveshaft and apply grease one more time.

   Specified grease: Repair kit grease
   Amount to use: 120 ±10 g (4.2 ±0.3 ounce)

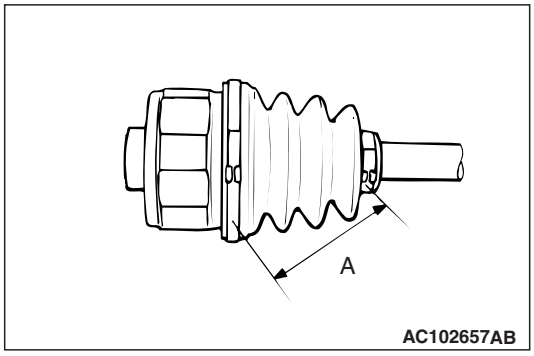
   NOTE: When using the repair kit grease, fill the half of the grease into the joint and the other half into the boot as a guideline, and consume the grease completely.



>>C<< ETJ BOOT BAND (SMALL)/ETJ BOOT BAND (LARGE) INSTALLATION

Adjust the distance (A shown in the illustration) between the boot bands to the standard value to adjust the air volume inside the ETJ boot to the specified value, then be sure to tighten the ETJ boot band (large) and ETJ boot band (small).

Standard value (A): 80 ±3 mm (3.15 ±0.12 inches)



INSPECTION

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- Check the driveshaft for damage, bending or corrosion.
- Check the output shaft for damage, bending or corrosion.
- Check the driveshaft spline part for wear or damage.
- Check the output shaft spline part for wear or damage.
- Check the spider assembly for roller rotation, wear or corrosion.
- Check the groove inside ETJ case for wear or corrosion.
- Check the boots for deterioration, damage or cracking.

EBJ BOOT REPLACEMENT

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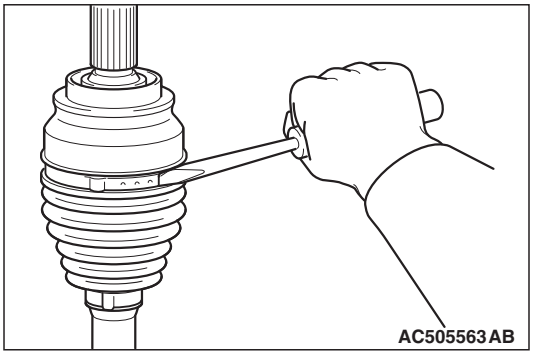
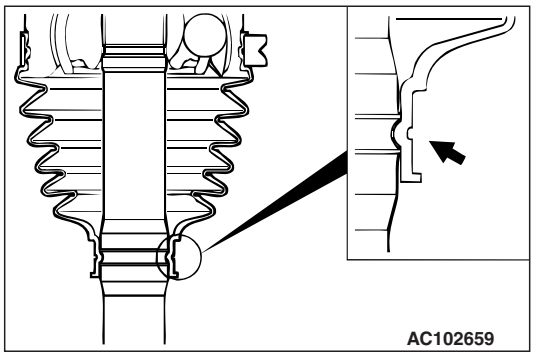
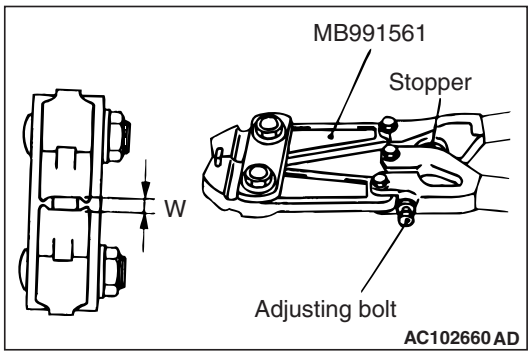
Required Special Tool:
MB991561:Boot Band Crimping Tool



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



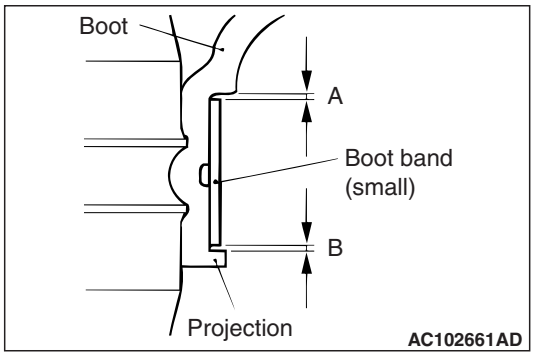
4. Align the center groove on the EBJ boot small end with the shaft groove.



5. Turn the adjusting bolt on special tool MB991561 so that the size of the opening (W) is at the standard value.
   Standard value (W): 2.9 mm (0.11 inch)
   - **<If it is larger than 2.9 mm (0.11 inch)> Tighten the adjusting bolt.**
   - **<If it is smaller than 2.9 mm (0.11 inch)> Loosen the adjusting bolt.**

   NOTE: The value of W will change by approximately 0.7 mm (0.03 inch) for each turn of the adjusting bolt.

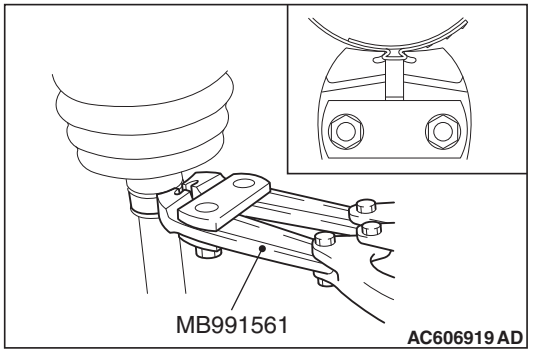
   NOTE: The adjusting bolt should not be turned more than once.



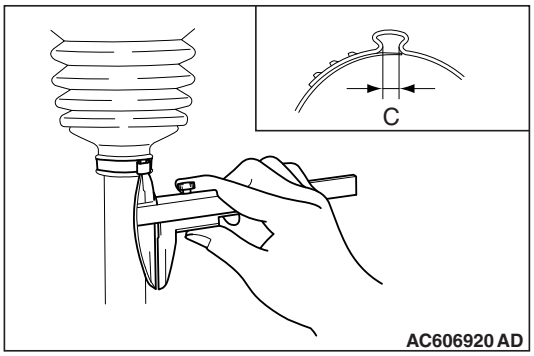
6. Position the EBJ boot band (small) so that there is even clearance at either end (A and B).

⚠ CAUTION

- **Secure the driveshaft in an upright position and clamp part of the boot band to be crimped securely in the jaws of the special tool MB991561.**
- **Crimp the boot band until special tool MB991561 touches the stopper.**



7. Use special tool MB991561 to crimp the boot band (small).



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

Standard value (C): 2.4 –2.8 mm (0.10 –0.11 inch)

<If the crimping amount is larger than 2.8 mm (0.11 inch)>

Readjust the value of (W) in step 5 according to the following formula, and then repeat the operation in step 7.

W = 5.5 mm (0.22 inch) –C

Example: If C = 2.9 mm (0.11 inch), then W = 2.6 mm (0.10 inch)

<If the crimping amount is smaller than 2.4 mm (0.10 inch)>

Remove the EBJ 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 EBJ boot band.

W = 5.5 mm (0.22 inch) –C

Example: If C = 2.3 mm (0.09 inch), then W = 3.2 mm (0.13 inch)

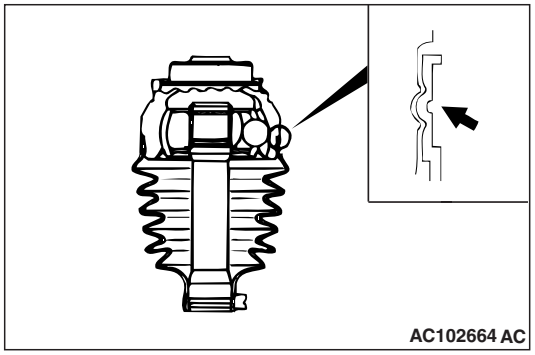
9. Check that the boot band is not sticking out past the place where it has been installed. If the boot band is sticking out, remove it and then repeat steps 6 to 8, using a new boot band.

⚠ CAUTION

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

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

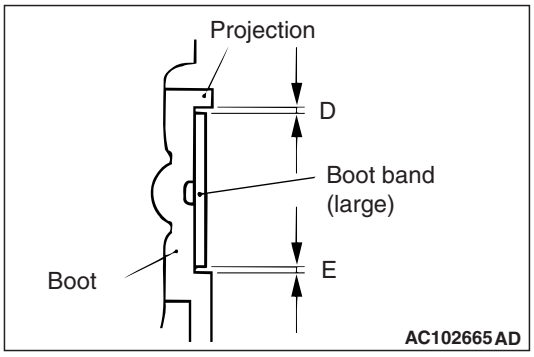
    Specified grease: Repair kit grease
    Amount to use: 110 ± 10 g (3.9 ± 0.3 ounces)



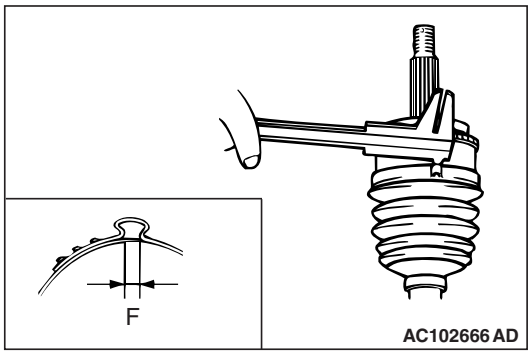
11. Align the center groove on the EBJ boot big end with the EBJ case groove.

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 (0.13 inch)



13. Position the EBJ boot band (large) so that there is even clearance at either end (D and E).



14. Use special tool MB991561 to crimp the EBJ boot band (large) in the same way as in step 7.
15. Check that the crimping amount (F) of the boot band is at the standard value.

Standard value (F): 2.4 –2.8 mm (0.10 –0.11 inch)

<If the crimping amount is larger than 2.8 mm (0.11 inch)>

Readjust the value of (W) in step 12 according to the following formula, and then repeat the operation in step 14.

W = 5.8 mm (0.23 inch) –F

Example: If F = 2.9 mm (0.11 inch), then W = 2.9 mm (0.11 inch)

<If the crimping amount is smaller than 2.4 mm (0.10 inch)>

Remove the EBJ 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 BJ boot band.

W = 5.8 mm (0.23 inch) –F

Example: If F = 2.3 mm (0.09 inch), then W = 3.5 mm (0.14 inch)

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