

Mazda 3 Workshop Manual - DRIVELINE/AXLE

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Wheel and Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.

Tightening torque

88.2-117.6 N·m {9.00-11.99 kgf·m, 65.06-86.73 ft·lbf}

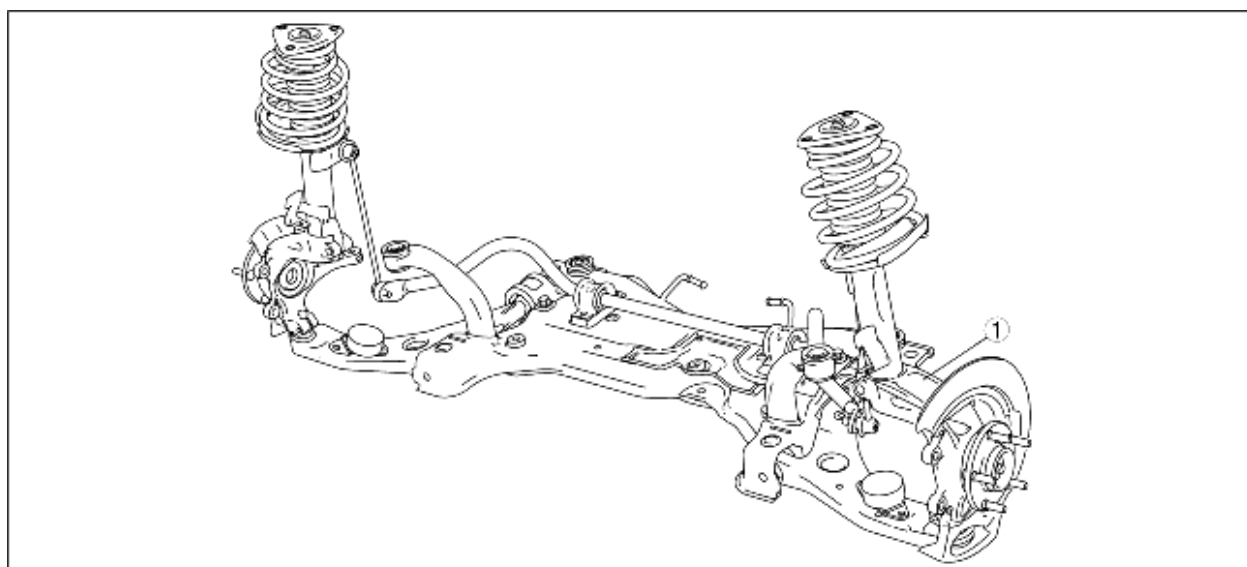
Connector Disconnection

1. Disconnect the negative battery cable before performing any work that requires handling of connectors.
(See [BATTERY REMOVAL/INSTALLATION \[Z6\]](#).) (See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)

Suspension Links Removal/Installation

1. For the joint sections with rubber bushings, raise the vehicle using a lift, and then temporarily tighten the installation bolts and nuts. Lower the vehicle to the ground and tighten them completely with the specified torque.

FRONT AXLE LOCATION INDEX



Wheel hub, steering knuckle

- 1 (See [WHEEL HUB, STEERING KNUCKLE INSPECTION](#).)
(See [WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION](#).)

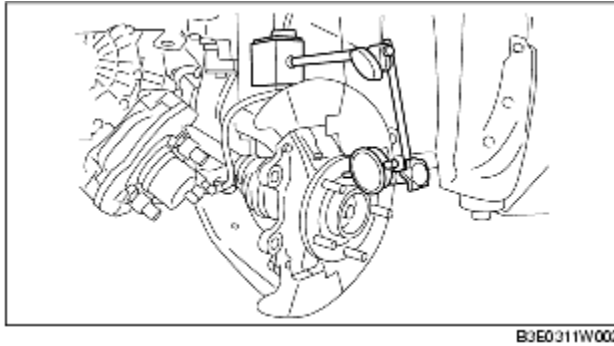
WHEEL HUB, STEERING KNUCKLE INSPECTION



B3E031104060W01

Wheel Bearing Excessive Play Inspection

1. Install the magnetic base and dial gauge as shown in the figure and measure the wheel bearing axial excessive play.



B3E0311W002

- If it exceeds the maximum specification, replace the wheel hub bearing.

Maximum wheel bearing play

0.05 mm {0.002 in}

WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION

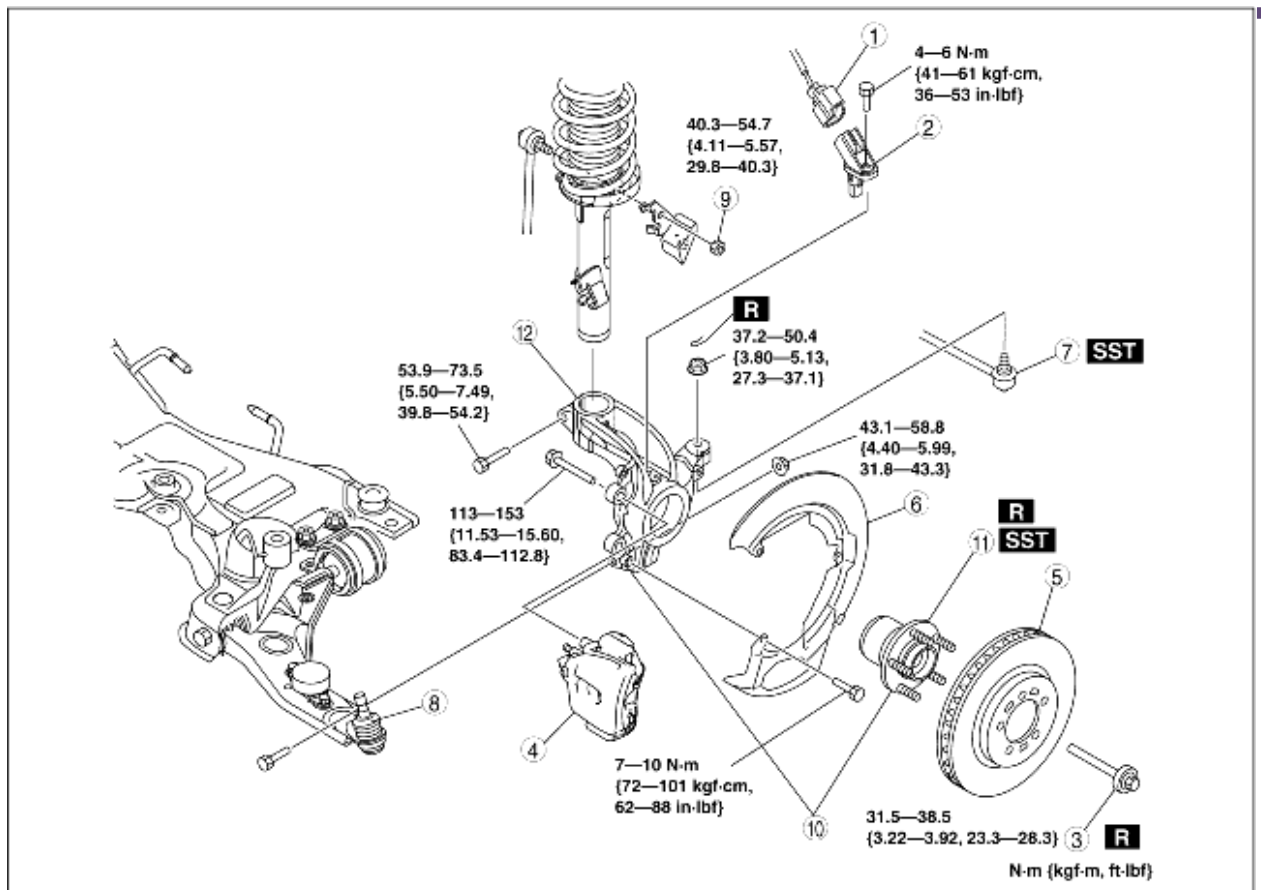
B3E031104060W02

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, inspect the front wheel alignment and adjust it if necessary.

(See [FRONT WHEEL ALIGNMENT](#).)



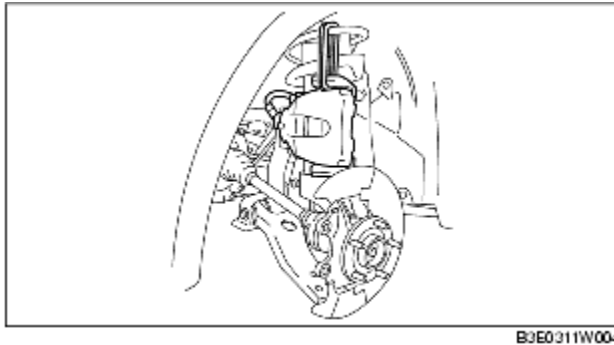
B3E0311W003

1	ABS wheel-speed sensor connector
2	ABS wheel-speed sensor
3	Lockbolt (See Lockbolt Installation Note.)
4	Brake caliper component (See Brake Caliper Removal Note.)
5	Disc plate (See FRONT BRAKE (DISC) REMOVAL/INSTALLATION.)
6	Dust cover
7	Tie-rod end (See STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)
8	Front lower arm ball joint
9	Stabilizer control link upper nut
10	Wheel hub, steering knuckle component (See Wheel Hub, Steering Knuckle Component Removal Note.)

	Wheel hub component
11	(See Wheel Hub Component Removal Note.) (See Wheel Hub Component Installation Note.)
12	Steering knuckle

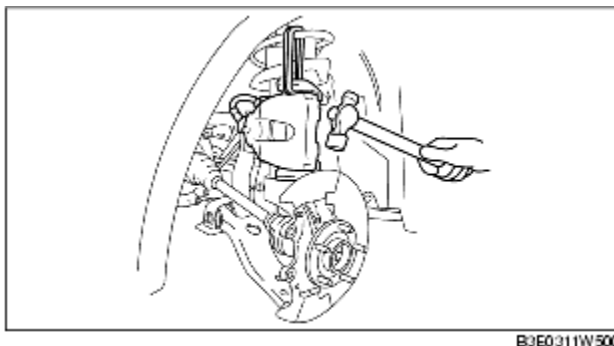
Brake Caliper Removal Note

1. Remove the brake caliper component from the steering knuckle and suspend it out of the way using a cable.



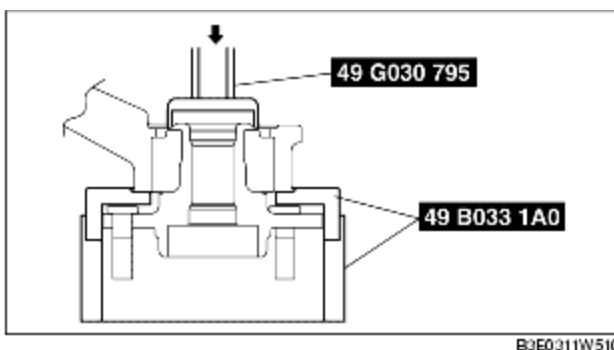
Wheel Hub, Steering Knuckle Component Removal Note

1. Separate the shock absorber from the wheel hub, steering knuckle component by tapping the upper part of the steering knuckle with a hammer.



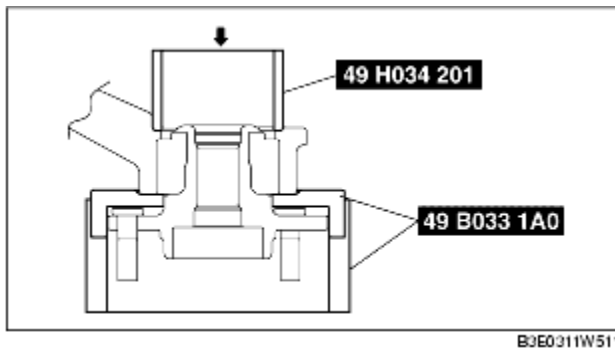
Wheel Hub Component Removal Note

1. Remove the wheel hub component using the SSTs.



Wheel Hub Component Installation Note

1. Install the wheel hub component using the SSTs.



Caution

- To prevent damage to the wheel hub component, install the SST to the bearing outer race firmly.

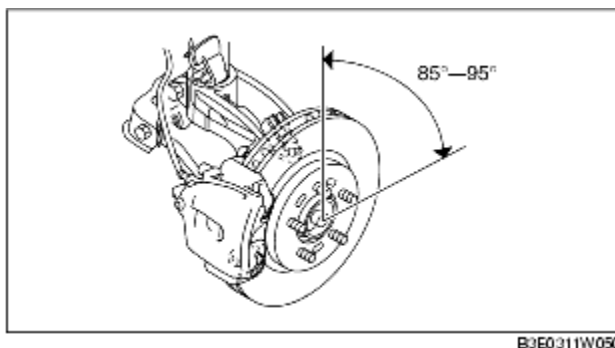
Lockbolt Installation Note

1. Install a new lockbolt and tighten it.

Tightening torque

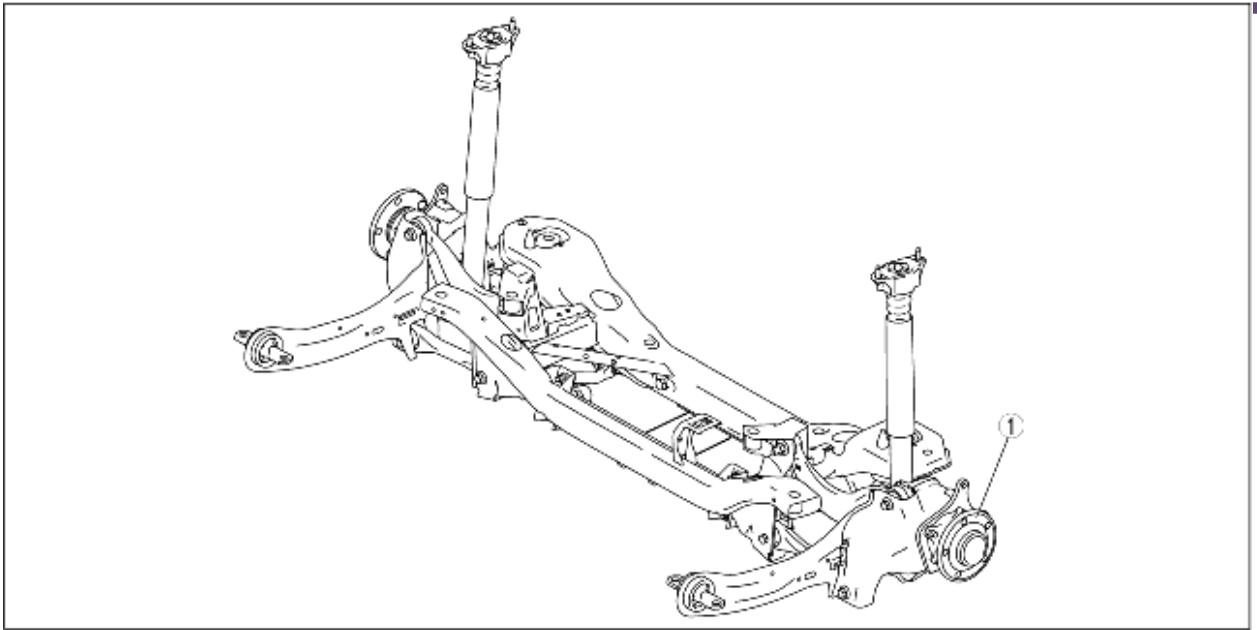
31.5-38.5 N·m {3.22-3.92 kgf·m, 23.3-28.3 ft·lbf}

2. Mark the lockbolt at one point and tighten it further until the marking has moved 85°-95°.



REAR AXLE LOCATION INDEX

B3E031205000W01



B3E0312W001

Wheel hub component

1 (See [WHEEL HUB COMPONENT INSPECTION.](#))

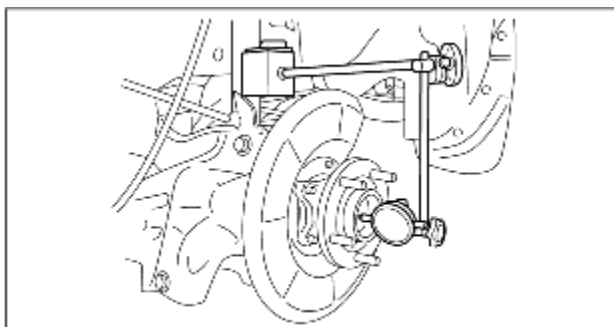
(See [WHEEL HUB COMPONENT REMOVAL/INSTALLATION.](#))

WHEEL HUB COMPONENT INSPECTION

B3E031205060W01

Wheel Bearing Excessive Play Inspection

1. Install the magnetic base and dial gauge as shown in the figure and measure the wheel bearing axial excessive play.



B3E0312W002

- If it exceeds the maximum specification, replace the wheel hub component.

Maximum wheel bearing play

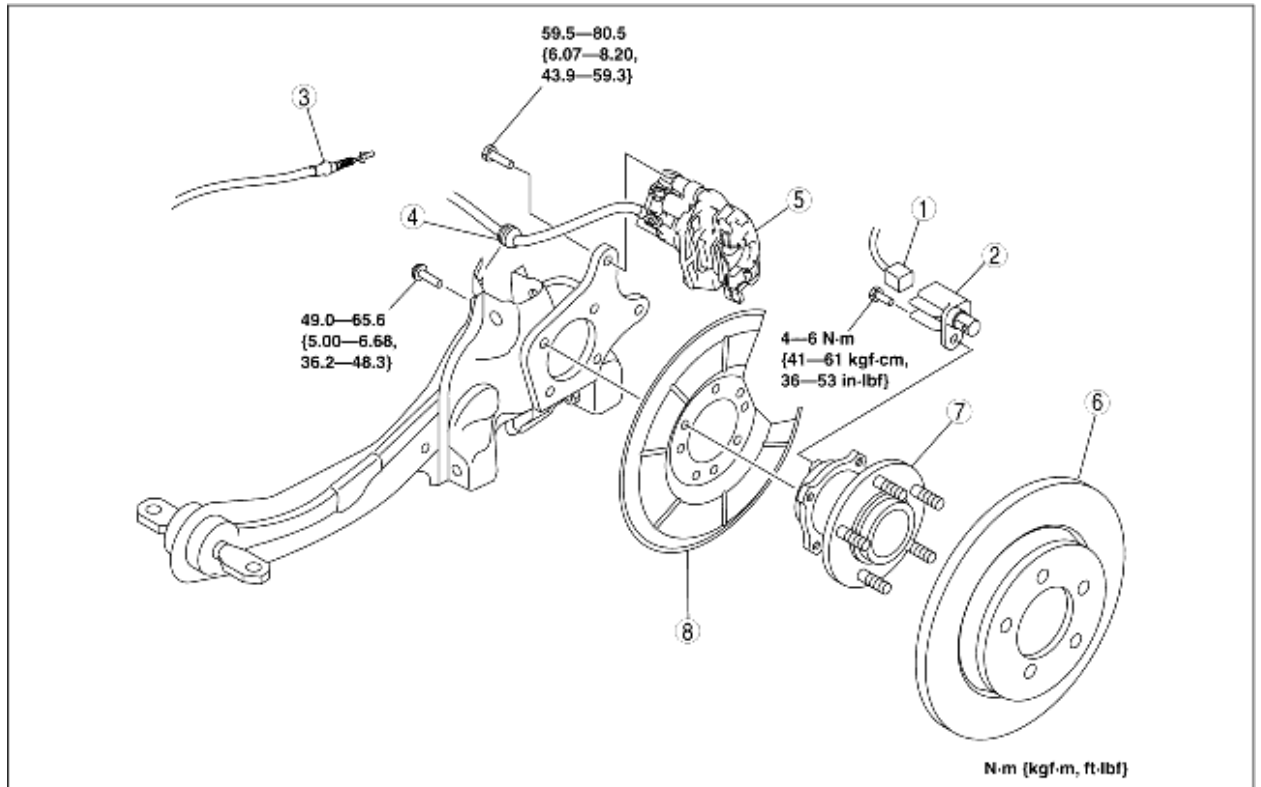
0.05 mm {0.002 in}

WHEEL HUB COMPONENT REMOVAL/INSTALLATION

Caution

• Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor connector (body side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.



B3E0312W003

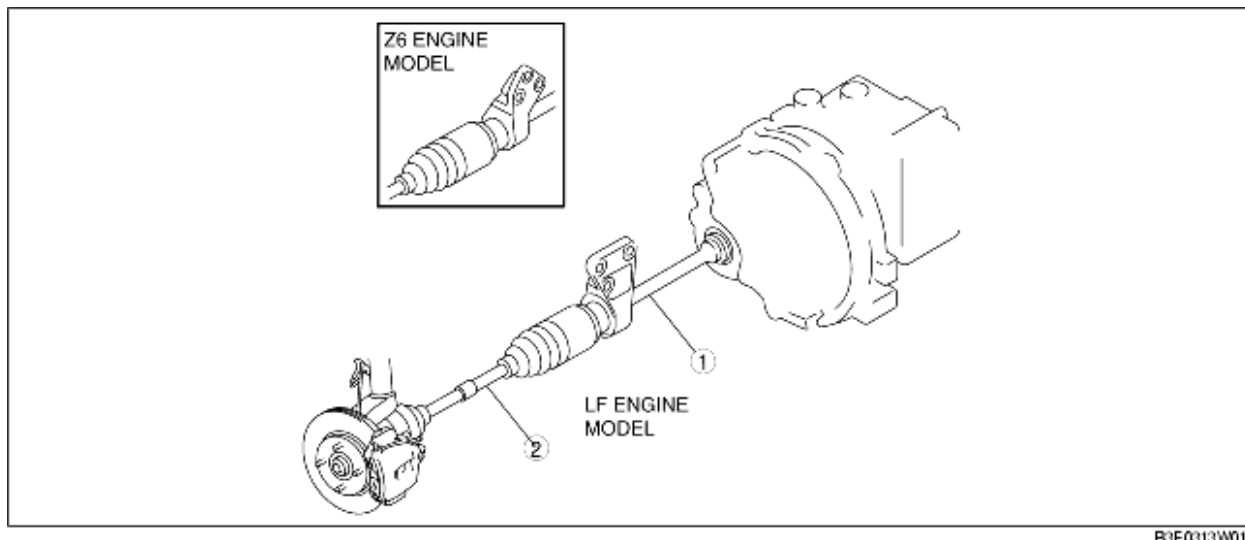
1	ABS wheel-speed sensor connector
2	ABS wheel-speed sensor
3	Parking brake cable
4	Brake hose
5	Brake caliper component (See Brake Caliper Component Removal Note.)
6	Disc plate
7	Wheel hub component
8	Dust cover

Brake Caliper Component Removal Note

1. Remove the brake caliper component from the trailing link and suspend it out of the way using a cable.

DRIVE SHAFT LOCATION INDEX

B3E031325500W01



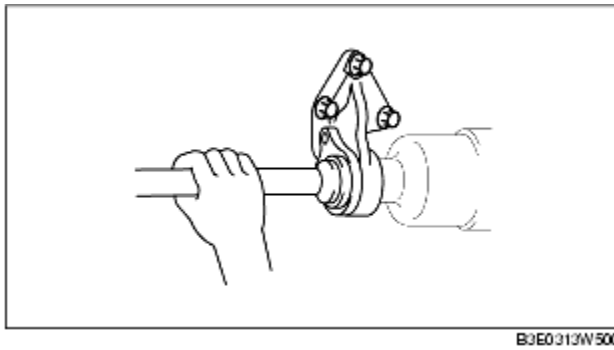
B3E0313W017

1	Joint shaft
	(See JOINT SHAFT INSPECTION)
	(See JOINT SHAFT REMOVAL/INSTALLATION)
	(See JOINT SHAFT DISASSEMBLY/ASSEMBLY)
2	Drive shaft
	(See DRIVE SHAFT INSPECTION)
	(See DRIVE SHAFT REMOVAL/INSTALLATION)
	(See DRIVE SHAFT DISASSEMBLY/ASSEMBLY)

JOINT SHAFT INSPECTION

B3E031325700W01

1. Verify that there is no torsion or cracks on the joint shaft.
 - If there is any malfunction, replace the joint shaft.
2. Turn the joint shaft by hand and verify that the bearing rotates smoothly.



- If there is any malfunction, replace the joint shaft.

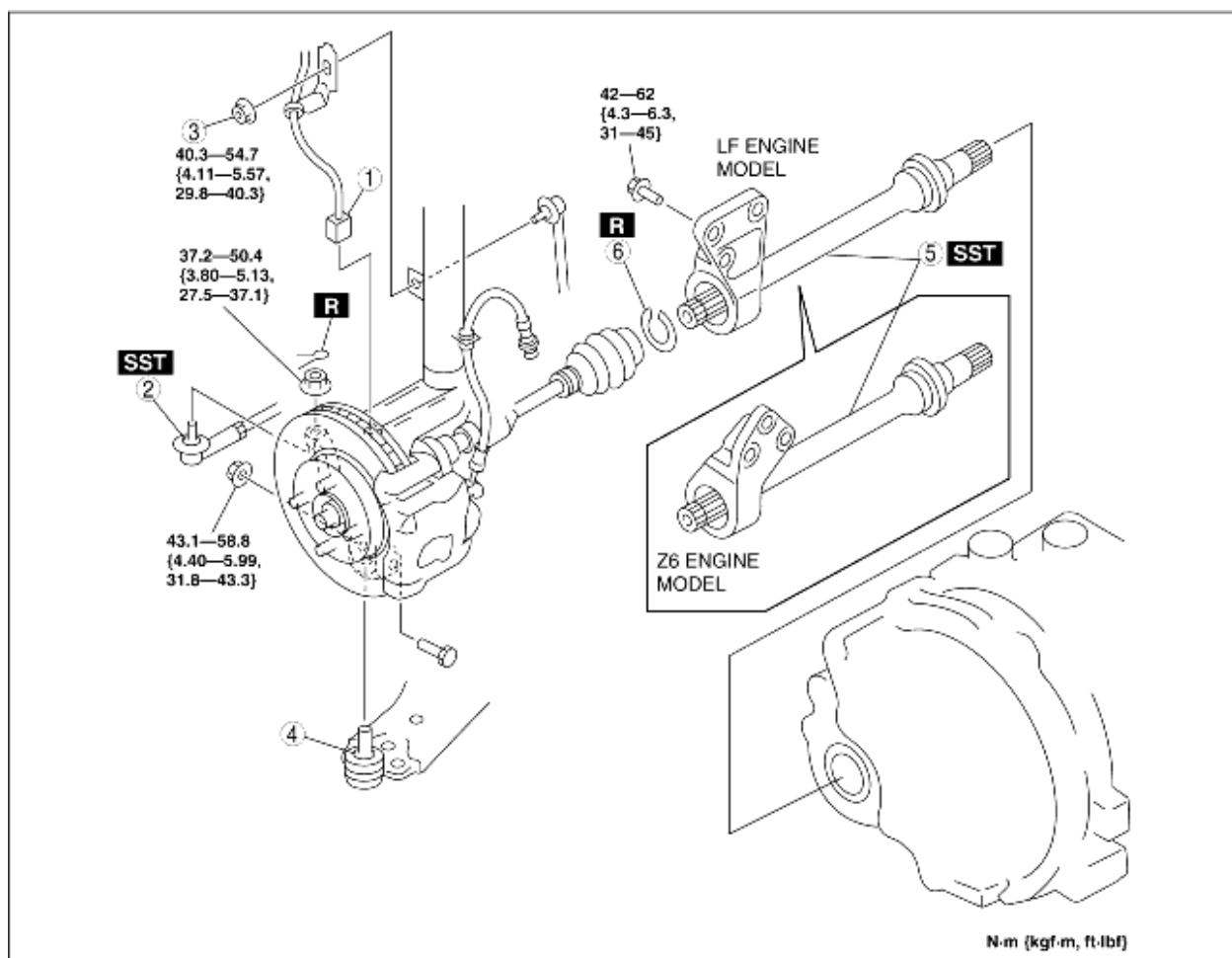
JOINT SHAFT REMOVAL/INSTALLATION

B3E031325700W02

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor wiring harness will not be pulled by mistake while servicing the vehicle.

1. Drain the transaxle oil. (See [TRANSAXLE OIL REPLACEMENT \[F35M-R\]](#).) (See [AUTOMATIC TRANSAXLE FLUID \(ATF\) REPLACEMENT](#).)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.

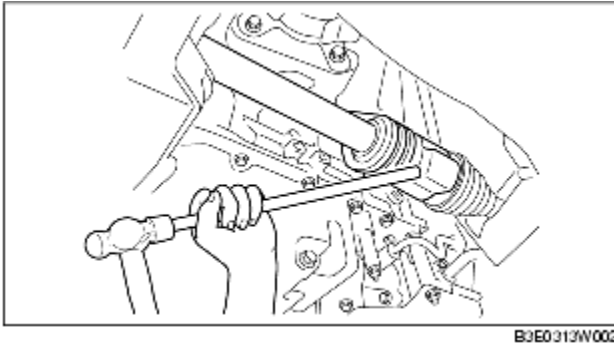


B3E0313W001

1	ABS wheel-speed sensor connector
2	Tie-rod end (See Tie-rod End Removal Note.)
3	Stabilizer control link upper nut
4	Front lower arm ball joint
5	Joint shaft (See Joint Shaft Removal Note.)
6	Clip (See Clip Installation Note.)

Joint Shaft Removal Note

1. Disconnect the drive shaft (RH) from the joint shaft by tapping the transaxle side outer ring with a brass bar and hammer.

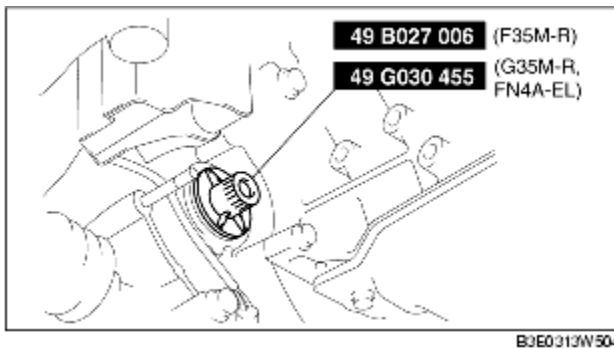


2. Disconnect the joint shaft bracket from the cylinder block and remove the joint shaft.

Caution

- The sharp edges of the joint shaft can slice or puncture the oil seal. Be careful when removing the joint shaft from the transaxle.

3. Install the **SST** to the transaxle after the joint shaft is removed.

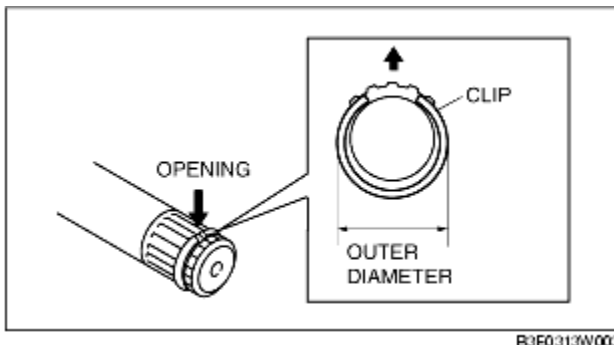


Clip Installation Note

1. Install a new joint shaft clip to the clip groove at the end of the joint shaft with the clip opening facing upward and the clip width within the specification.

2. After installation, measure the outer diameter.

- If it exceeds the specification, repeat installation using a new clip.



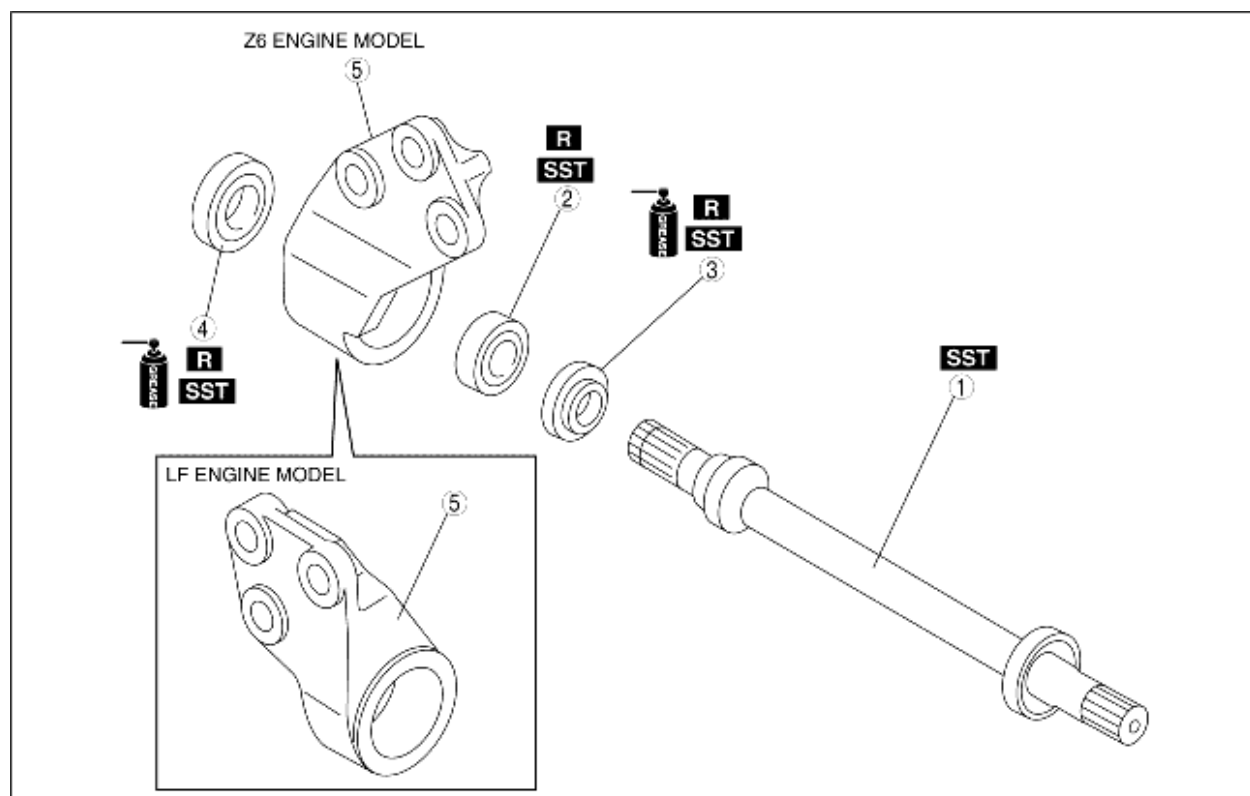
Standard

31.2 mm {1.23 in} or less

JOINT SHAFT DISASSEMBLY/ASSEMBLY

B3E031325700W03

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

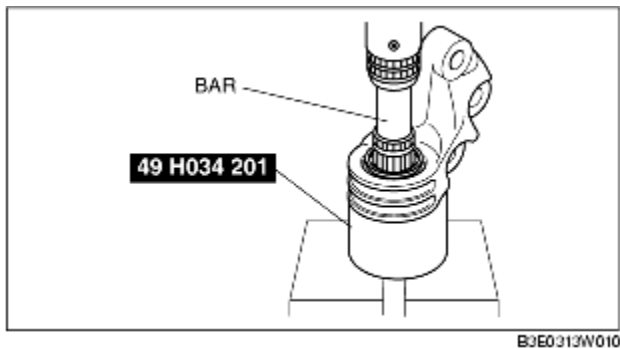


B3E0313W009

	Joint shaft
1	(See Joint Shaft Disassembly Note.) (See Joint Shaft Assembly Note.)
	Bearing
2	(See Bearing Disassembly Note.) (See Bearing Assembly Note.)
	Dust seal (LH)
3	(See Dust Seal (LH) Assembly Note.)
	Dust seal (RH)
4	(See Dust Seal (RH) Assembly Note.)
5	Bracket

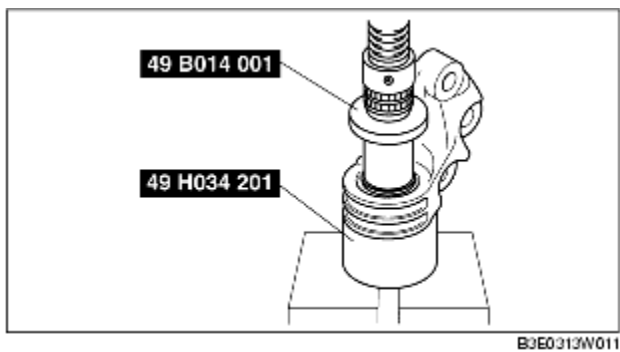
Joint Shaft Disassembly Note

1. Remove the joint shaft using a press.

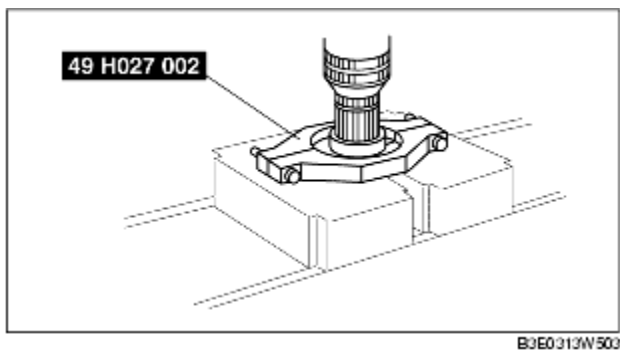


Bearing Disassembly Note

1. Remove the bearing and the dust seal (RH/LH) using the SSTs.

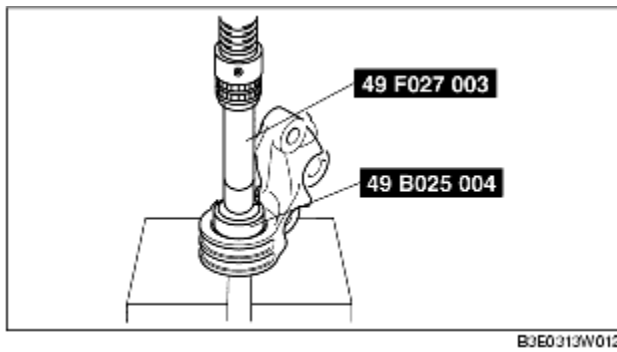


2. If the bearing remains on the joint shaft, set the SST and joint shaft to the press.



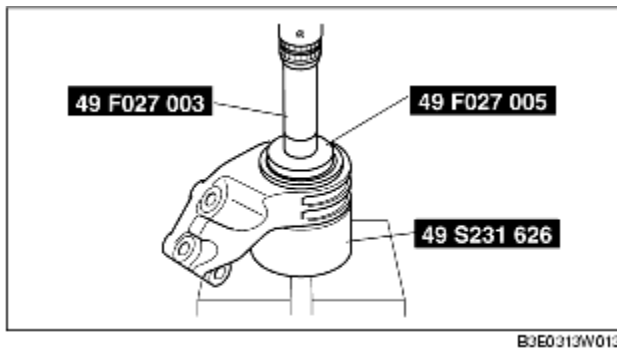
Dust Seal (RH) Assembly Note

1. Apply grease to a new dust seal lip.
2. Install the dust seal (RH) using the SSTs.



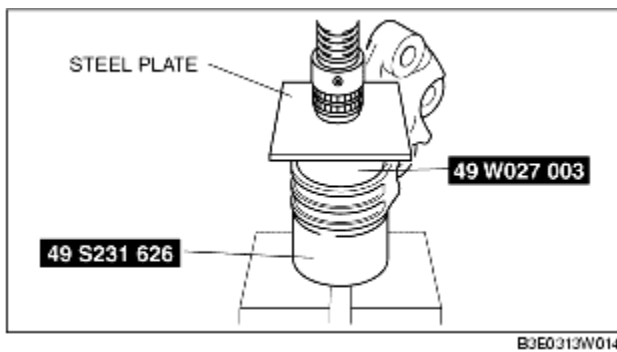
Bearing Assembly Note

1. Install a new bearing using the **SSTs**.



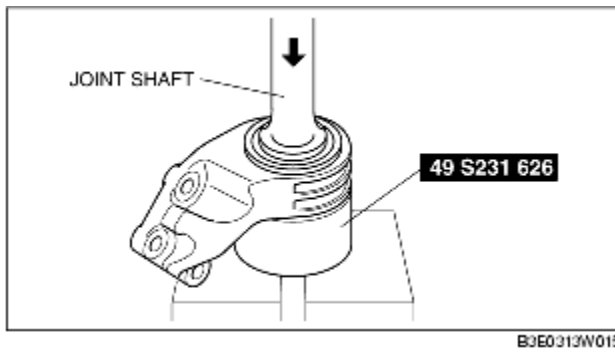
Dust Seal (LH) Assembly Note

1. Apply grease to a new dust seal lip.
2. Install a new dust seal (LH) using the steel plate and the **SSTs**.



Joint Shaft Assembly Note

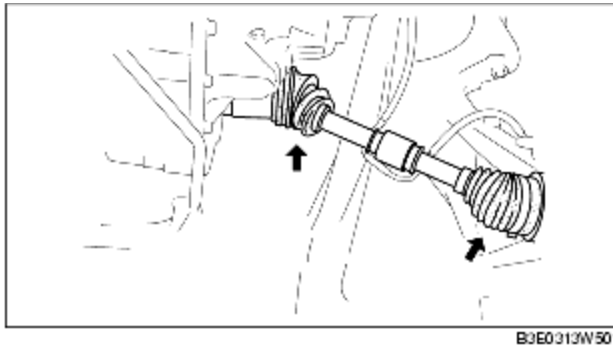
1. Press fit the joint shaft using the **SST** and a press.



DRIVE SHAFT INSPECTION

B3E031325500W02

1. Inspect the connections for any looseness.



- If there is any malfunction, tighten or replace the applicable part.
2. Inspect the dust boot for damage and cracks.
 - If there is any malfunction, replace the applicable part.
 3. Move the spline and joint up and down, left and right by hand and verify that there is no excessive play.
 - If there is any malfunction, replace the applicable part.

DRIVE SHAFT REMOVAL/INSTALLATION

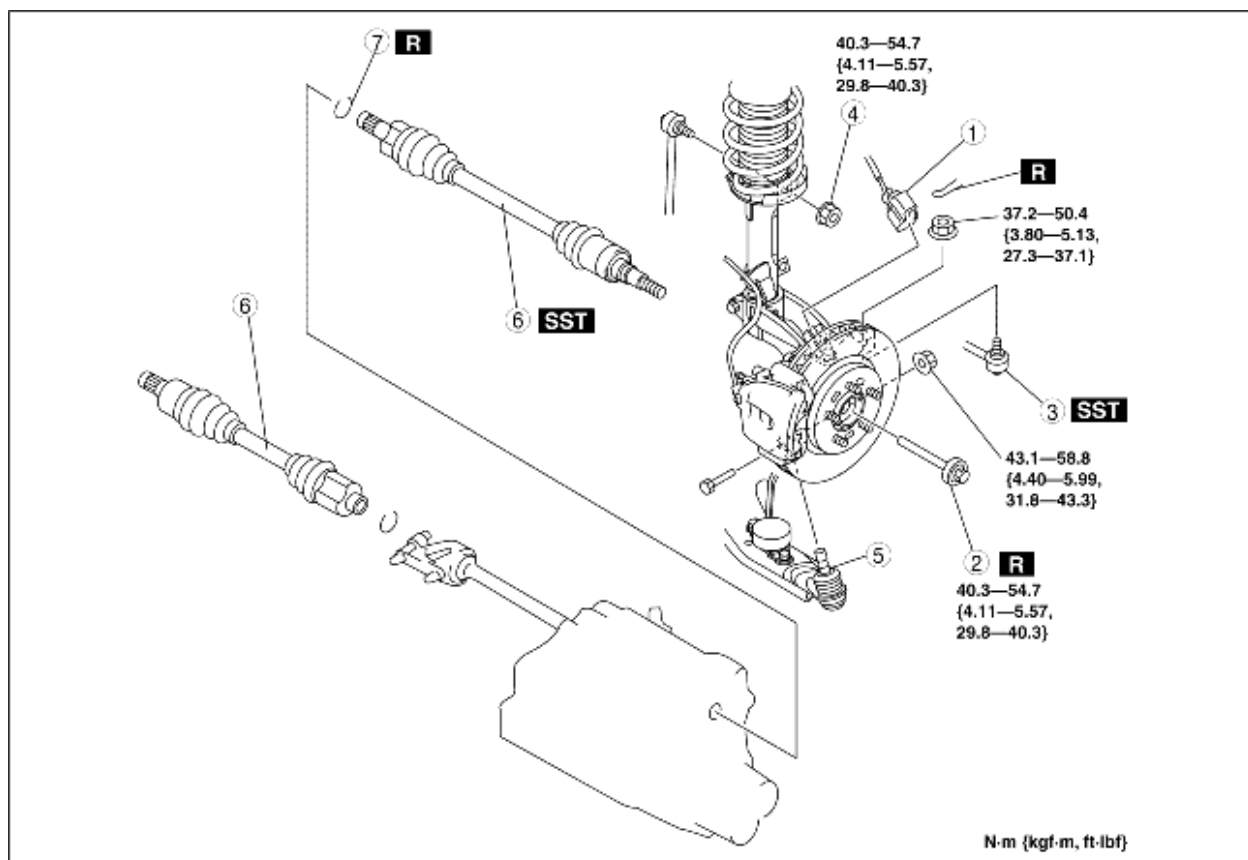
B3E031325500W03

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

1. Drain the transaxle oil. (See [TRANSAXLE OIL INSPECTION \[F35M-R\]](#).) (See [AUTOMATIC TRANSAXLE FLUID \(ATF\) REPLACEMENT](#).)

2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.



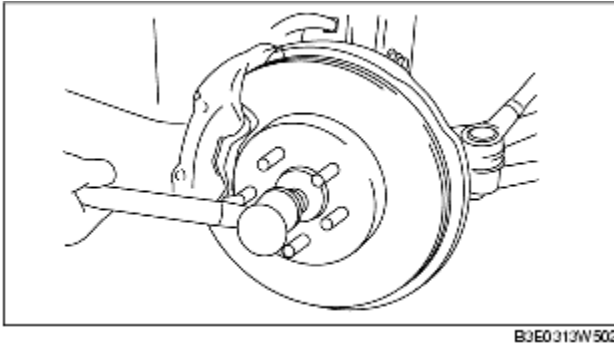
N·m {kgf-m, ft-lbf}

B3E0313W005

1	ABS wheel-speed sensor connector
2	Lockbolt
3	Tie-rod end (See Tie-rod End Removal Note.)
4	Stabilizer control link upper nut
5	Front lower arm ball joint
6	Drive shaft (See Drive Shaft Removal Note.) (See Drive Shaft Installation Note.)
7	Clip (See Clip Installation Note.)

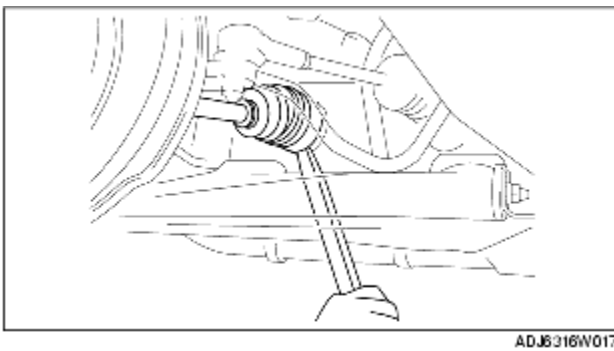
Drive Shaft Removal Note

1. Install a spare bolt onto the drive shaft.
2. Tap the bolt with a copper hammer and separate the drive shaft from the axle.



3. Separate the drive shaft from the wheel hub.

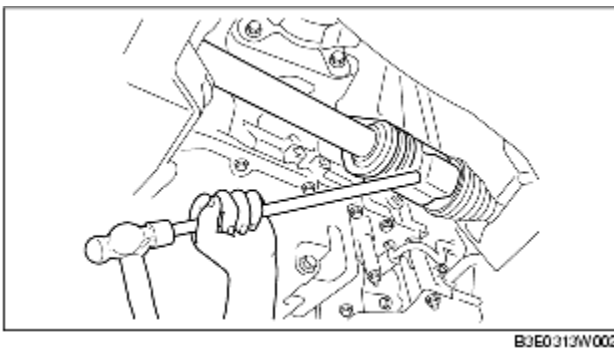
4. Separate the drive shaft (LH) from the transaxle by prying with a bar inserted between the outer ring and the transaxle.



Caution

- Be careful not to damage the transaxle oil seal with the bar.

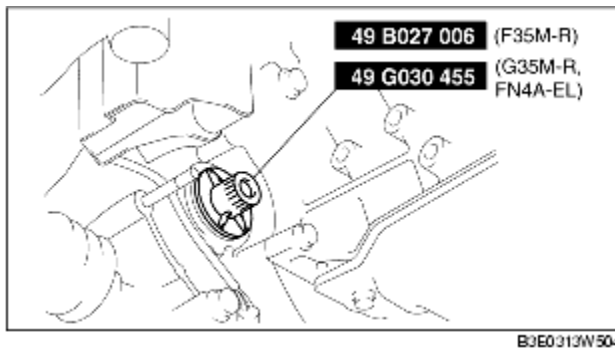
5. Disconnect the drive shaft (RH) from the joint shaft by tapping the transaxle side outer ring with a brass bar and hammer.



Caution

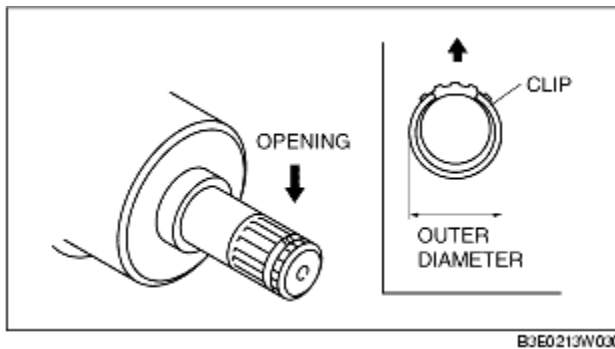
- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful when removing the drive shaft from the transaxle.

6. Install the **SSTs** to the transaxle after the drive shaft is removed.



Clip Installation Note

1. Install a new drive shaft clip to the clip groove at the end of the drive shaft with the clip opening facing upward and the clip width within the specification.



Standard

Z6 (ATX): 29.5 mm {1.16 in}

Z6 (MTX): 27.5 mm {1.08 in}

LF : 31.2 mm {1.23 in}

2. After installation, measure the outer diameter.

- If it exceeds the specification, repeat installation using a new clip.

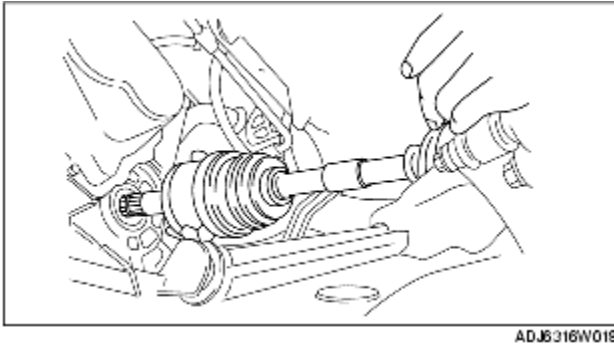
Drive Shaft Installation Note

Left side

Caution

- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful when installing the drive shaft from the transaxle.

1. Insert the drive shaft into the wheel hub.
2. Apply transaxle oil to the oil seal lip.
3. Install the drive shaft to the transaxle.



4. After installation, pull the transaxle side outer ring forward to confirm that the drive shaft is securely held by the clip.

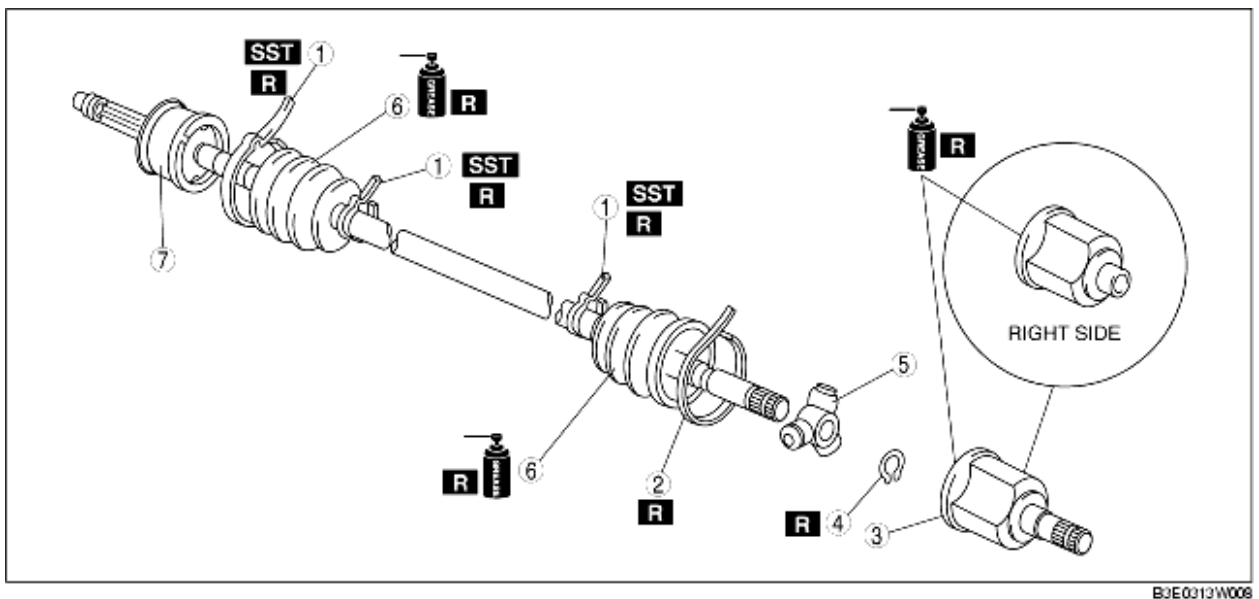
Right side

1. Install a new clip onto the joint shaft. (See [JOINT SHAFT REMOVAL/INSTALLATION.](#))
2. Insert the drive shaft to the wheel hub.
3. Insert the drive shaft to the joint shaft.
4. After installation, pull the transaxle side outer ring forward to confirm that the drive shaft is securely held by the clip.

DRIVE SHAFT DISASSEMBLY/ASSEMBLY

B3E031325500W04

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



1 Boot band (wheel side, transaxle side: smaller diameter)

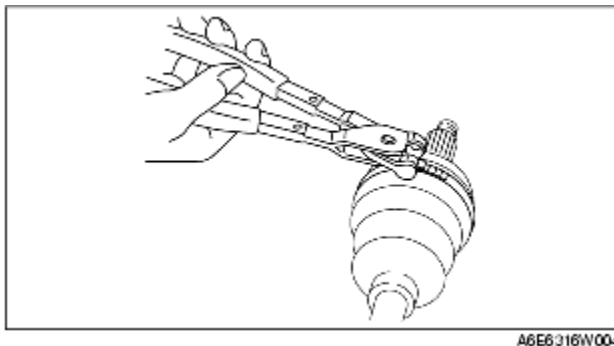
	(See Boot Band (Wheel Side, Transaxle Side: Smaller Diameter) Disassembly Note.) (See Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Assembly Note.)
2	Boot band (transaxle side larger diameter) (See Boot Band (Transaxle Side Larger Diameter) Disassembly Note.) (See Boot Band (Transaxle Side Larger Diameter) Assembly Note.)
3	Outer ring (See Outer Ring Disassembly Note.) (See Outer Ring Assembly Note.)
4	Snap ring (See Snap Ring, Tripod Joint Disassembly Note.) (See Tripod Joint, Snap Ring Assembly Note.)
5	Tripod joint (See Snap Ring, Tripod Joint Disassembly Note.) (See Tripod Joint, Snap Ring Assembly Note.)
6	Boot (See Boot Disassembly Note.) (See Boot Assembly Note.)
7	Shaft and ball joint component

Boot Band (Wheel Side, Transaxle Side: Smaller Diameter) Disassembly Note

Note

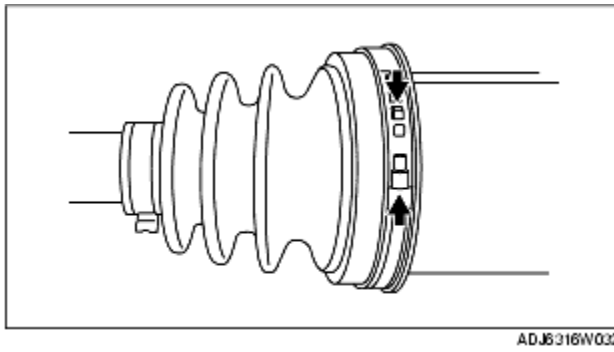
- Remove the boot band only if there is a malfunction.

1. Remove the boot band using end clamp pliers.



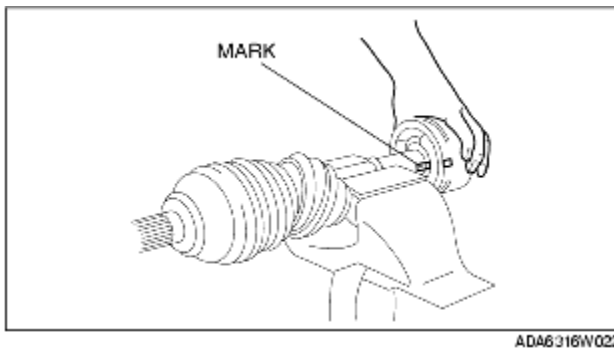
Boot Band (Transaxle Side Larger Diameter) Disassembly Note

1. Pry up the boot band at the points indicated in the figure using pliers and remove the band.



Outer Ring Disassembly Note

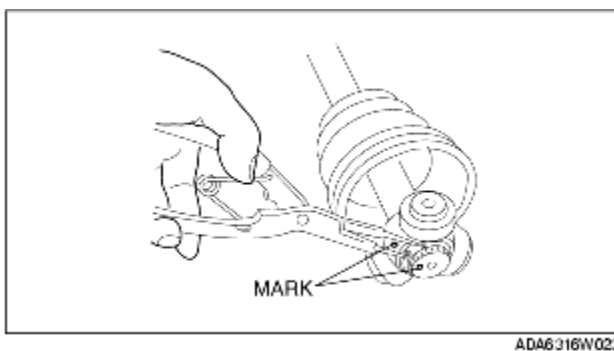
1. Place an alignment mark on the drive shaft and outer ring.



2. Remove the outer ring.

Snap Ring, Tripod Joint Disassembly Note

1. Place an alignment mark on the shaft and tripod joint.
2. Remove the snap ring using snap ring pliers.



3. Remove the tripod joint from the shaft.

Caution

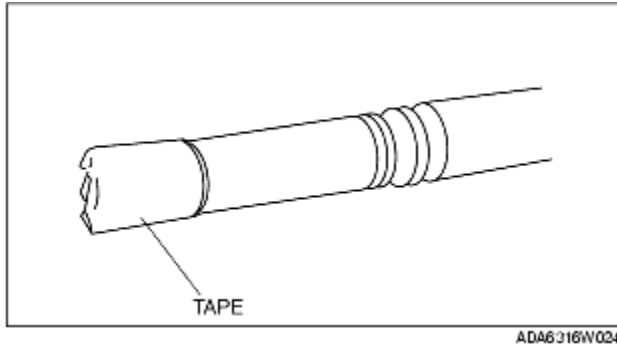
- Do not tap the tripod joint with a hammer.

Boot Disassembly Note

Note

- Remove the wheel side boot only if there is any malfunction.

1. Wrap the shaft splines with tape.



2. Remove the boot.

Boot Assembly Note

Note

- The boot shapes on the wheel side and the differential side are different. Do not install the wrong boot by mistake.

1. Fill the inside of the new dust boot (wheel side) with grease.

Caution

- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

Grease amount

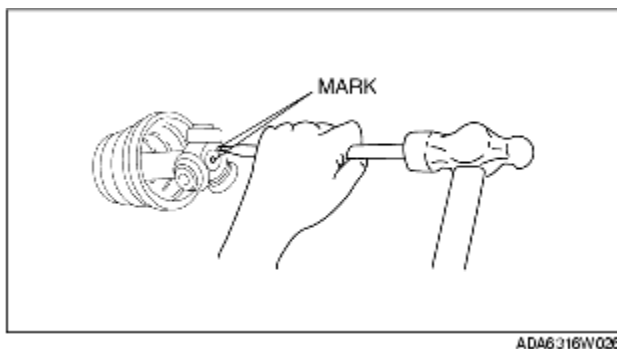
Z6: 93-103 g {3.29-3.63 oz}

LF: 110-120 g {3.89-4.23 oz}

2. Install the boot with the drive shaft spline still wrapped with vinyl tape.
3. Remove the vinyl tape.

Tripod Joint, Snap Ring Assembly Note

1. While aligning the marks on the shaft and the tripod joint, insert the tripod joint using a bar and a hammer.



Caution

- Do not tap the roller with a hammer.

2. Insert a new snap ring using snap ring pliers.

Caution

- Be sure the snap ring engages correctly in the groove of the shaft.

Outer Ring Assembly Note

1. Fill the outer ring and boot (transaxle side) with the specified grease.

Caution

- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

Grease amount

Z6 (MTX/RH) : 101-111 g {3.57-3.91 oz}

Z6 (MTX/LH) : 127-141 g {4.49-4.97 oz}

Z6 (ATX) : 127-141 g {4.49-4.97 oz}

LF (RH) : 140-145 g {4.95-5.11 oz}

LF (LH) : 153-167 g {5.41-5.89 oz}

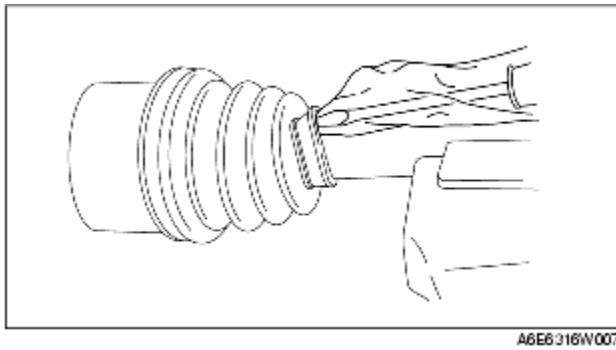
2. Assemble the outer ring.
3. Set the drive shaft to the standard length.

Standard

mm {in}

	Z6		LF
	ATX	MTX	
LH	593.53603.53 {23.368-23.760}	624.25634.25 {24.577-24.970}	606.74616.74 {23.888-24.281}
RH	521.82531.82 {20.545-20.937}	521.35531.35 {20.526-20.919}	557.72567.72 {21.958-22.351}

4. Release any trapped air from the boots by carefully lifting up the small end of each boot with a cloth wrapped screwdriver.



Caution

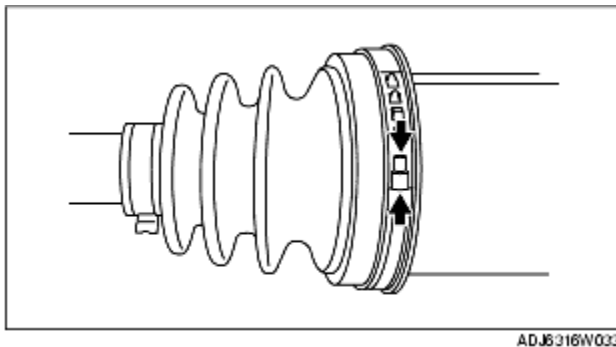
- Do not let the grease leak.
- Do not damage the boot.

5. Verify that the drive shaft length is within the specification under atmospheric pressure inside the boot.

- If not within the specification, repeat from Step 3.

Boot Band (Transaxle Side Larger Diameter) Assembly Note

1. Pry up the boot band at the points indicated in the figure using pliers and tighten the boot band.

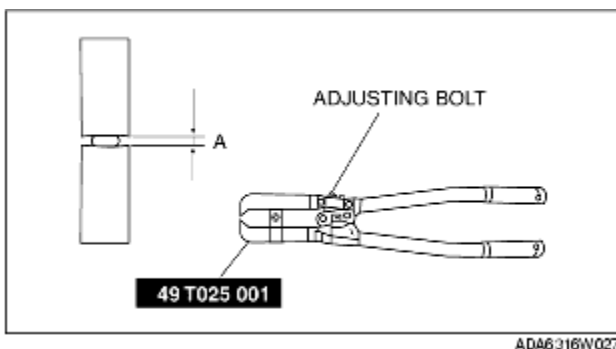


Caution

- Verify that the boot band is installed securely to the boot slot.

Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Assembly Note

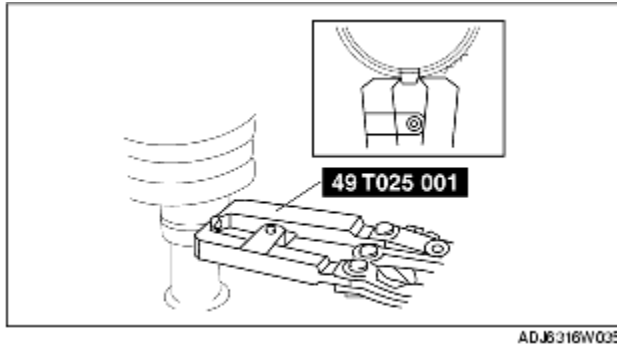
1. Adjust opening width A by turning the adjusting bolt of the SST.



Standard A

1.6 mm {0.063 in}

2. Crimp the wheel side small boot band completely closed so there is no gap using the **SST**.



3. Verify that the boot band does not protrude from the boot band installation area.

- If the boot band protrudes from the boot band installation area, replace the boot band and repeat Step 2.

4. Fill the boot with the repair kit grease.

5. Adjust opening width A of the **SST** to the specification.

Standard A

2.0 mm {0.079 in}

6. Crimp the wheel side large boot band completely closed so there is no gap using the **SST**.

7. Verify that the boot band does not protrude from the boot band installation area.

- If the boot band protrudes from the boot band installation area, replace the boot band and repeat Step 6.

DRIVELINE/AXLES – Technical Data

B3E035025002W01

Item				Specification		
				Z6		LF
				ATX	MTX	
FRONT AND REAR AXLES						
Front axle	Maximum wheel bearing play	(mm {in})	0.05 {0.002}			
Rear axle	Maximum wheel bearing play	(mm {in})	0.05 {0.002}			
Front drive shaft	Length (Air in boot at atmospheric pressure)	LH	(mm {in})	593.53603.53 {23.368-23.760}	624.25634.25 {24.577-24.970}	606.74616.74 {23.888-24.281}
		RH	(mm {in})	521.82531.82 {20.545-20.937}	521.35531.35 {20.526-20.919}	557.72567.72 {21.958-22.351}

DRIVELINE/AXLE SST – Service Tools

B3E036001018W01

49 G030 455 Diff. side gear holder (G35M-R, FN4A-EL)		49 B027 006 Diff. side gear holder (F35M-R)		49 B033 1A0 Support plate set	
49 G030 795 Oil seal installer set		49 H027 002 Bearing remover		49 H034 201 Support block	
49 B014 001 Oil seal installer		49 B025 004 Dust seal installer		49 F027 003 Handle	
49 T025 001 Boot clamp crimper		49 S231 626 Support block		49 W027 003 Bearing installer	
49 F027 005 Attachment ø62		-	-	-	-

