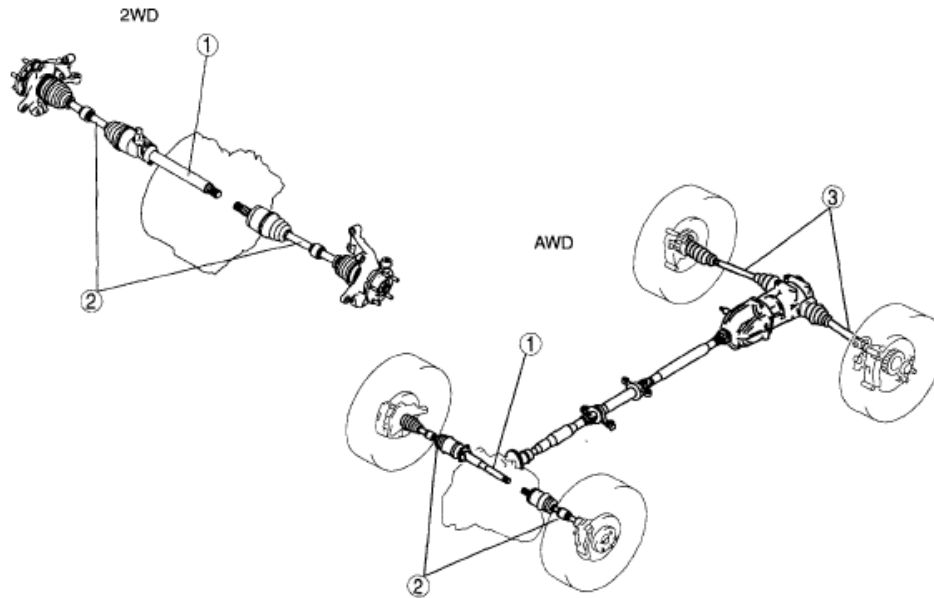


2008 DRIVELINE/AXLES

Drive Shaft - Mazda CX-9

DRIVE SHAFT LOCATION INDEX



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1	Joint shaft (See 03-13-10 JOINT SHAFT PRE-INSPECTION) (See 03-13-11 JOINT SHAFT REMOVAL/ INSTALLATION [2WD]) (See 03-13-12 JOINT SHAFT REMOVAL/ INSTALLATION [AWD]) (See 03-13-14 JOINT SHAFT DISASSEMBLY [2WD]) (See 03-13-16 JOINT SHAFT DISASSEMBLY [AWD]) (See 03-13-17 JOINT SHAFT ASSEMBLY [2WD]) (See 03-13-19 JOINT SHAFT ASSEMBLY [AWD])
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2	Front drive shaft (See 03-13-2 FRONT DRIVE SHAFT PRE- INSPECTION) (See 03-13-3 FRONT DRIVE SHAFT REMOVAL/ INSTALLATION) (See 03-13-6 FRONT DRIVE SHAFT DISASSEMBLY/ASSEMBLY)
3	Rear drive shaft (AWD) (See 03-13-20 REAR DRIVE SHAFT PRE- INSPECTION) (See 03-13-21 REAR DRIVE SHAFT REMOVAL/ INSTALLATION) (See 03-13-22 REAR DRIVE SHAFT DISASSEMBLY/ASSEMBLY)

Fig. 1: Identifying Drive Shaft Component Location

Courtesy of MAZDA MOTORS CORP.

FRONT DRIVE SHAFT PRE-INSPECTION

1. Inspect the dust boot on the drive shaft for cracks, damage, leaking grease, and looseness in the boot band.
2. Inspect the drive shaft for bends, cracks, and wear in the joint or splines.
 - Repair or replace the drive shaft or boot/band as necessary.

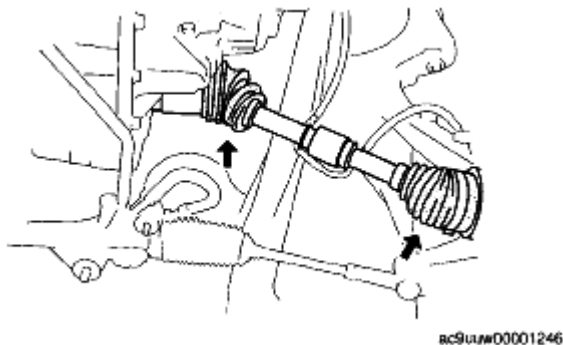


Fig. 2: Locating Dust Boot
Courtesy of MAZDA MOTORS CORP.

FRONT DRIVE SHAFT REMOVAL/INSTALLATION

- CAUTION:**
- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the 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 will not be pulled by mistake while the vehicle is being serviced.

1. Remove the side cover.
2. Remove the front ABS wheel-speed sensor. (See **FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION** .)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.

2008 Mazda CX-9 Grand Touring

2008 DRIVELINE/AXLES Drive Shaft - Mazda CX-9

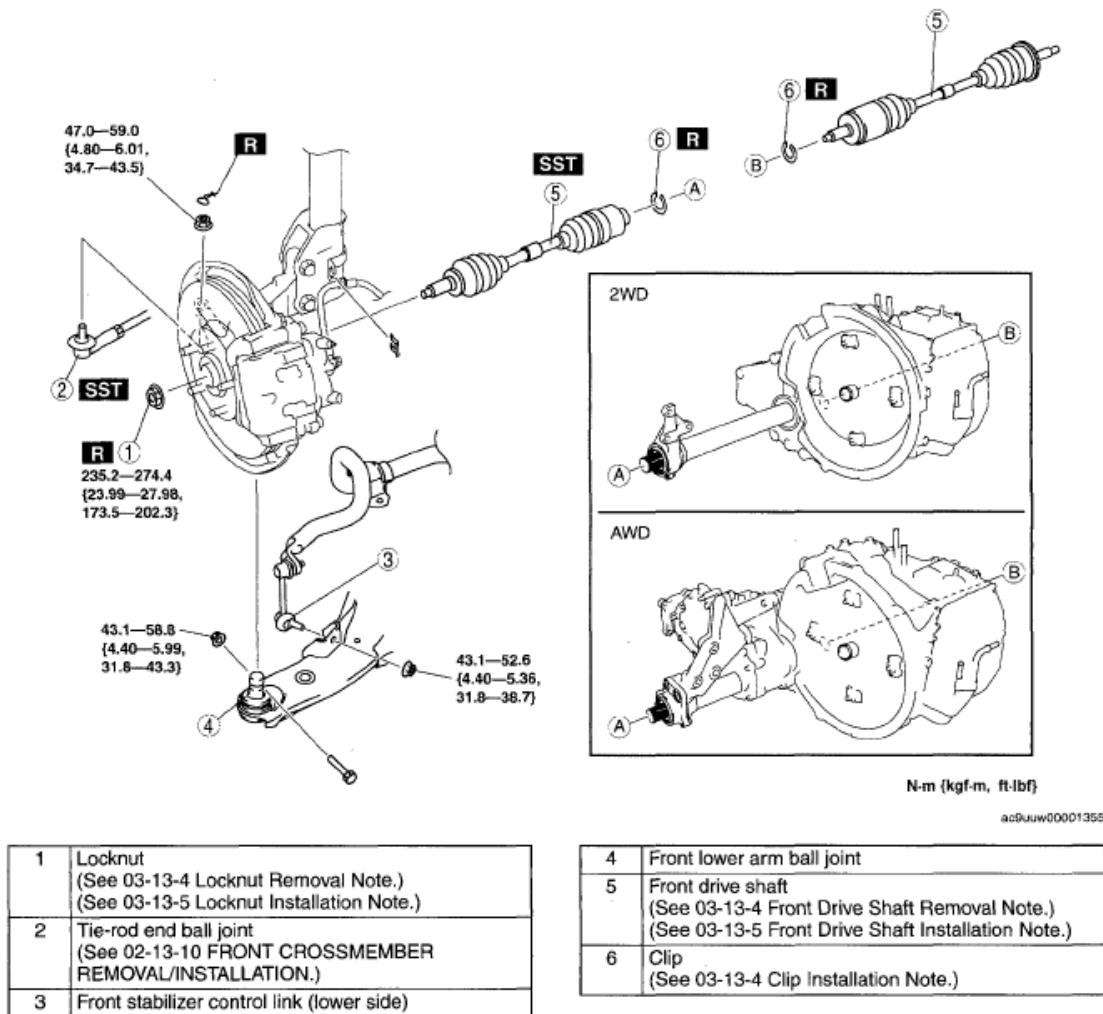
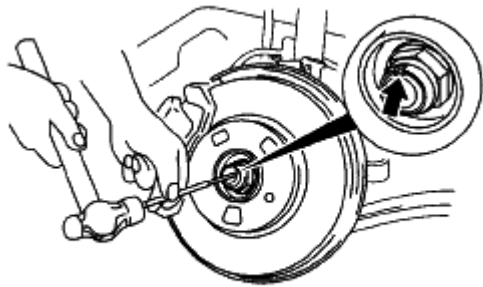


Fig. 3: Identifying Front Drive Shaft Components & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

LOCKNUT REMOVAL NOTE

1. Lock the hub by applying the brakes.
2. Knock the crimped portion of the locknut outward using a small chisel and a hammer.
3. Remove the locknut.



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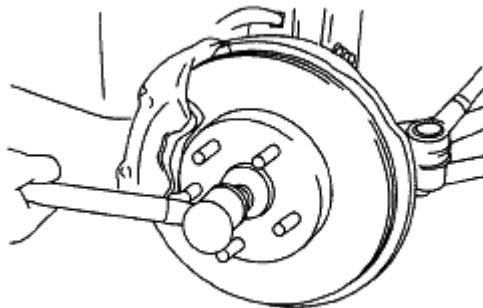
Fig. 4: Tapping Locknut
Courtesy of MAZDA MOTORS CORP.

FRONT DRIVE SHAFT REMOVAL NOTE

1. Install a spare nut onto the drive shaft so that the nut is flush with the end of the drive shaft.
2. Tap the nut with a copper hammer to loosen the drive shaft from the front wheel hub.
3. Separate the drive shaft from the wheel hub.

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.



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Fig. 5: Tapping Drive Shaft
Courtesy of MAZDA MOTORS CORP.

4. Separate the left side drive shaft from the transaxle by prying with a bar inserted between the outer ring and the transaxle, as shown in the figure.

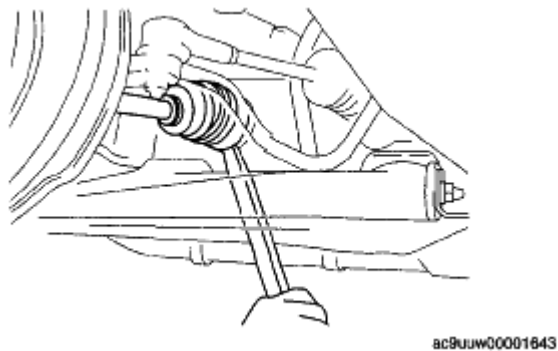


Fig. 6: Prying Dust Boot
Courtesy of MAZDA MOTORS CORP.

5. Separate the right side drive shaft from the joint shaft by using the SSTs.

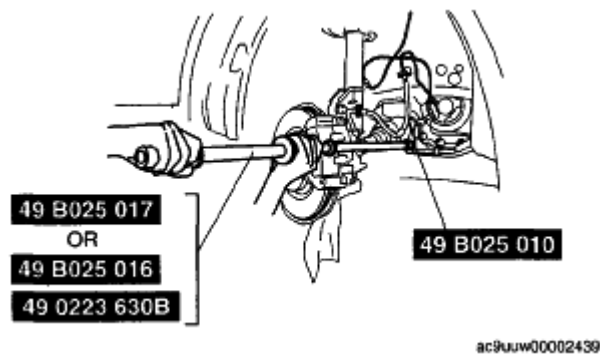


Fig. 7: Separating Right Side Drive Shaft
Courtesy of MAZDA MOTORS CORP.

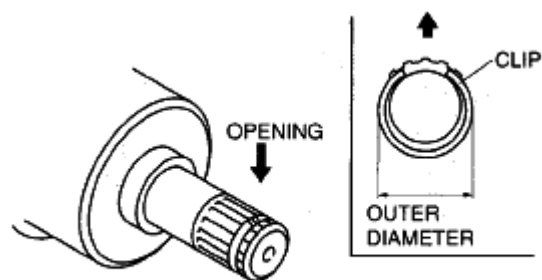
CLIP INSTALLATION NOTE

1. Install a new clip onto the drive shaft with the opening facing upward. Ensure that the diameter of the clip does not exceed the specification on installation.
2. After installation, measure the outer diameter. If it exceeds the specification, repeat Steps 1-2 using a new clip.

Clip outer diameter specification

LH: 34.0 mm {1.34 in}

RH (joint shaft): 34.0 mm {1.34 in}



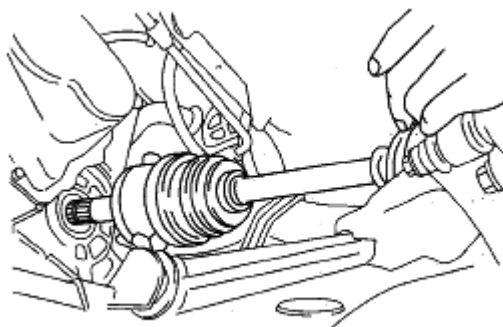
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Fig. 8: Identifying Outer Diameter Clip
Courtesy of MAZDA MOTORS CORP.

FRONT DRIVE SHAFT INSTALLATION NOTE

CAUTION:

- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful when installing the drive shaft to the transaxle.
- The oil seals are damaged easily if this procedure is not done correctly.



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Fig. 9: Identifying Front Drive Shaft Installation Position
Courtesy of MAZDA MOTORS CORP.

Left side

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

2. Insert the drive shaft into the joint shaft.
3. After installation, pull the transaxle side outer ring forward to confirm that the drive shaft is securely held by the clip.

LOCKNUT INSTALLATION NOTE

1. Install a new locknut and stake it as shown.

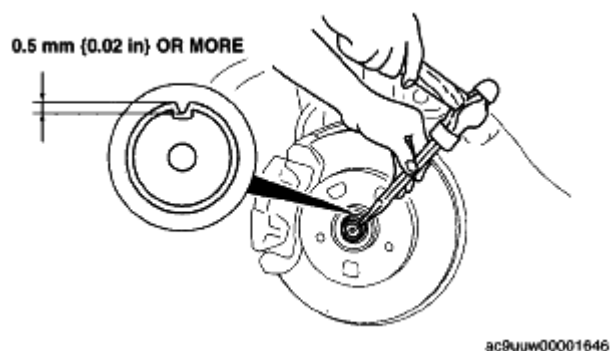


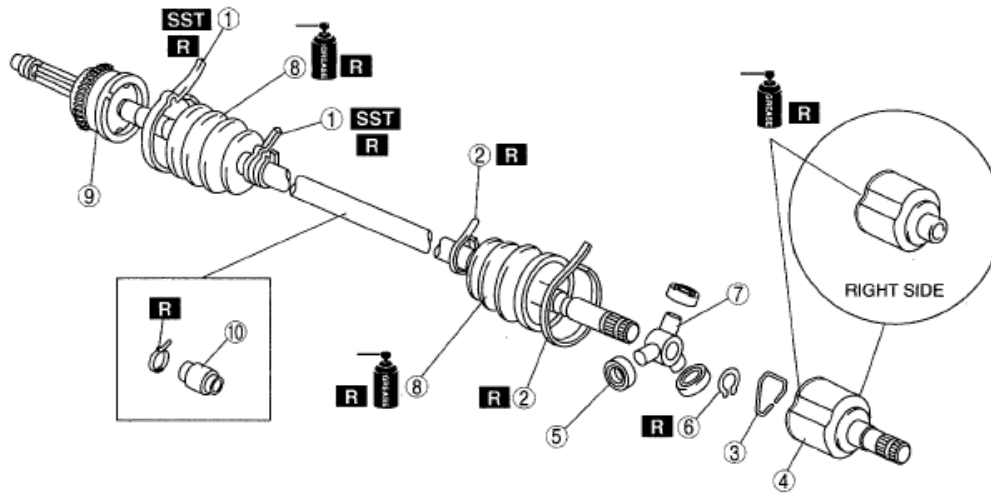
Fig. 10: Tapping Locknut
Courtesy of MAZDA MOTORS CORP.

FRONT DRIVE SHAFT DISASSEMBLY/ASSEMBLY

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

2008 Mazda CX-9 Grand Touring

2008 DRIVELINE/AXLES Drive Shaft - Mazda CX-9



1	Boot band (wheel side) (See 03-13-6 Boot Band (Wheel Side) Disassembly Note.) (See 03-13-9 Boot Band (Wheel Side) Assembly Note.)
2	Boot band (transaxle side) (See 03-13-7 Boot Band (Transaxle Side) Disassembly Note.) (See 03-13-9 Boot Band (Transaxle Side) Assembly Note.)
3	Clip
4	Outer ring (See 03-13-7 Outer Ring Disassembly Note.) (See 03-13-9 Outer Ring Assembly Note.)
5	Roller cassette

6	Snap ring (See 03-13-7 Snap Ring, Tripod Joint Disassembly Note.) (See 03-13-8 Tripod Joint, Snap Ring Assembly Note.)
7	Tripod joint (See 03-13-7 Snap Ring, Tripod Joint Disassembly Note.) (See 03-13-8 Tripod Joint, Snap Ring Assembly Note.)
8	Boot (See 03-13-8 Boot Disassembly Note.) (See 03-13-8 Boot Assembly Note.)
9	Shaft and ball joint component
10	Dynamic damper (See 03-13-8 Dynamic Damper Assembly Note.)

Fig. 11: Identifying Front Drive Shaft Components
Courtesy of MAZDA MOTORS CORP.

BOOT BAND (WHEEL SIDE) DISASSEMBLY NOTE

NOTE:

- The boot band does not need to be removed unless it is being replaced.

1. Remove the boot clamp with end clamp pliers as shown and discard the clamp.

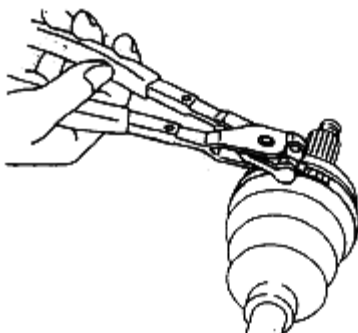


Fig. 12: Removing Boot Clamp With Clamp Pliers
Courtesy of MAZDA MOTORS CORP.

BOOT BAND (TRANSAXLE SIDE) DISASSEMBLY NOTE

1. Pry up the locking clips using a screwdriver.
2. Pull back the end of the band.

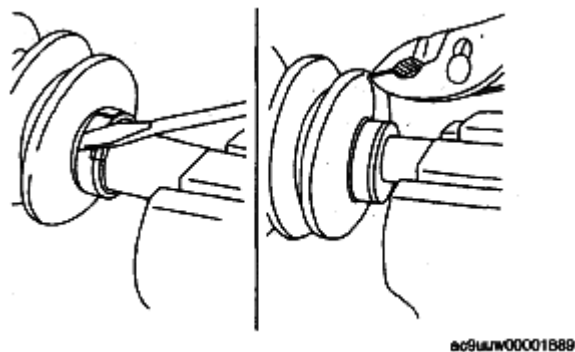


Fig. 13: Prying Locking Clips
Courtesy of MAZDA MOTORS CORP.

OUTER RING DISASSEMBLY NOTE

1. Mark the outer ring and the shaft for proper assembly.

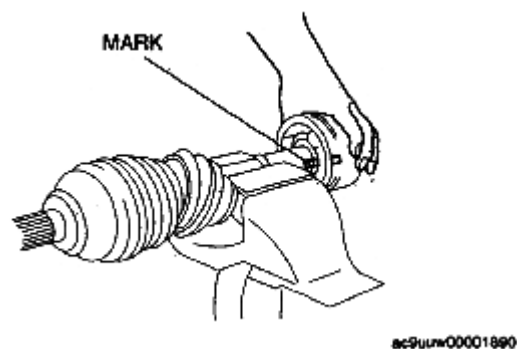
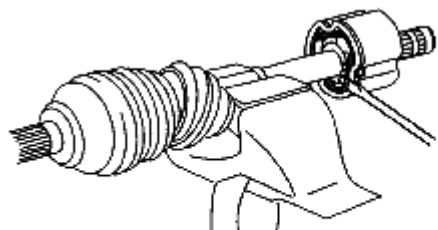


Fig. 14: Aligning Mark Outer Ring And Shaft
Courtesy of MAZDA MOTORS CORP.

2. Remove the clip.
3. Remove the outer ring.



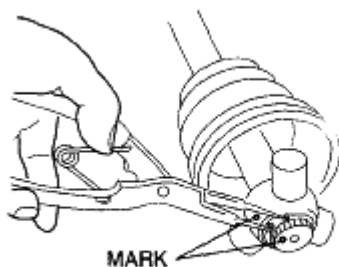
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Fig. 15: Prying Outer Ring
Courtesy of MAZDA MOTORS CORP.

SNAP RING, TRIPOD JOINT DISASSEMBLY NOTE

1. Mark the shaft and tripod joint for proper assembly.
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.



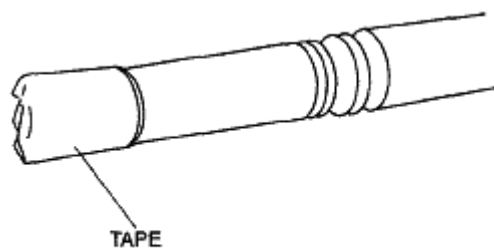
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Fig. 16: Removing Snap Ring With Snap-Ring Pliers
Courtesy of MAZDA MOTORS CORP.

BOOT DISASSEMBLY NOTE

- NOTE:**
- The wheel side boot does not need to be removed unless replacing it or the ball joint and shaft component.
 - Do not strip the tape until the boot is assembled.

1. Wrap the shaft splines with tape.
2. Remove the boot.



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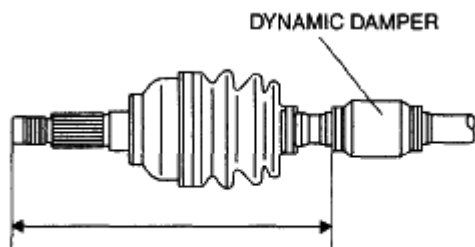
Fig. 17: Identifying Shaft Splines With Tape
Courtesy of MAZDA MOTORS CORP.

DYNAMIC DAMPER ASSEMBLY NOTE

1. Install the dynamic damper as shown in the figure.

Standard length 290.7-298.7 mm {11.45-11.75 in}

2. Install the new boot band onto the dynamic damper.



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Fig. 18: Identifying Dynamic Damper Assembly Length
Courtesy of MAZDA MOTORS CORP.

BOOT ASSEMBLY NOTE

NOTE:

- The wheel side and transaxle side boots are different.

1. Fill the boot (wheel side) with the specified grease.

CAUTION:

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

Grease amount 110-130 g {3.89-4.58 oz}

2. With the splines of the shaft still wrapped in tape from disassembly, install the boot.

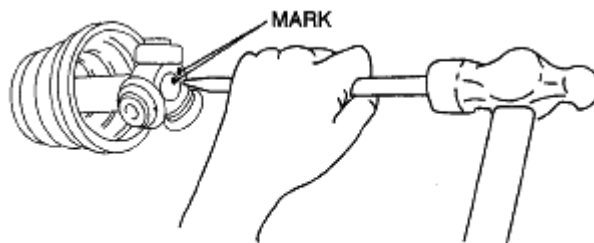
3. Remove the tape.

TRIPOD JOINT, SNAP RING ASSEMBLY NOTE

1. Align the marks and install the tripod joint using a bar and a hammer.
2. Install the new snap ring using snap-ring pliers.

CAUTION:

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



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Fig. 19: Identifying Mark Location
Courtesy of MAZDA MOTORS CORP.

OUTER RING ASSEMBLY NOTE

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

CAUTION:

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

Grease amount 240-260 g {8.48-9.17 oz}

2. Install the roller cassettes.
3. Align the marks, and install the outer ring on to the shaft.
4. Install a new clip.
5. Install the boot.
6. Set the drive shaft to the standard length.

Front drive shaft standard length

LH: 658.7-668.7 mm {25.92-26.30 in}

RH: 630.7-640.7 mm {24.82-25.20 in}

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

- CAUTION:**
- Do not let grease leak.
 - Do not damage the boot.

8. Verify that the drive shaft length is within the standard.

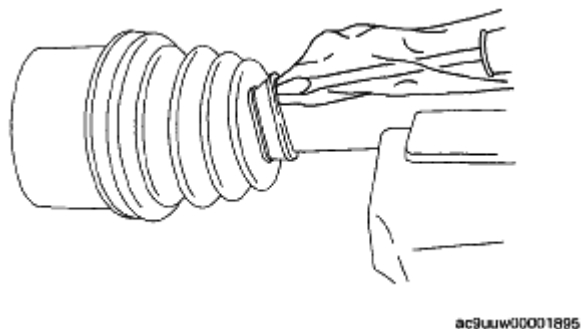


Fig. 20: Lifting Boot With Cloth
Courtesy of MAZDA MOTORS CORP.

BOOT BAND (TRANSAXLE SIDE) ASSEMBLY NOTE

1. Fold the band in the direction opposite to the forward revolving direction of the drive shaft and use pliers to pull it tight.
2. Lock the end of the band by bending the locking clips.

- CAUTION:**
- Install the band into the groove securely.

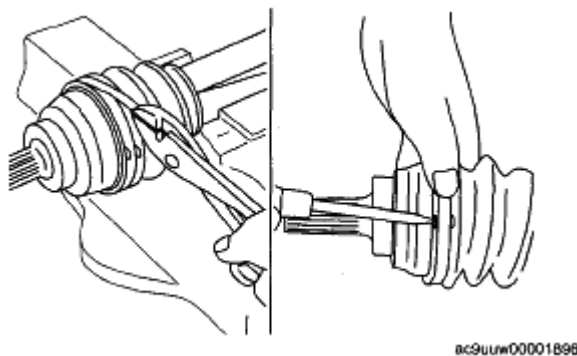


Fig. 21: Bending Locking Clips
Courtesy of MAZDA MOTORS CORP.

BOOT BAND (WHEEL SIDE) ASSEMBLY NOTE

1. Adjust clearance A by turning the adjusting bolt of the SST.

Clearance A 2.9 mm {0.11 in}

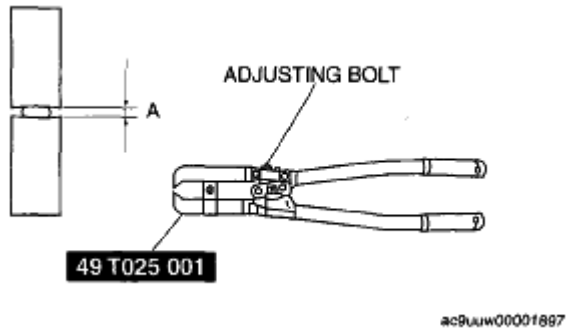


Fig. 22: Adjusting Clearance
 Courtesy of MAZDA MOTORS CORP.

2. Crimp the wheel side small boot band using the SST. Verify that clearance B is within the specification.
 - If clearance B is more than the specification, reduce clearance A of the SST and crimp the boot again.
 - If clearance B is less than the specification, replace the boot band, increase clearance A of the SST, and crimp the new boot.

Clearance B 2.4-2.8 mm {0.095-0.110 in}

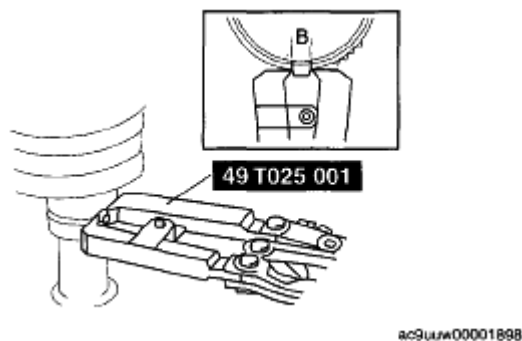


Fig. 23: Crimping Wheel Boot Band
 Courtesy of MAZDA MOTORS CORP.

3. Verify that the boot band does not protrude from the boot band installation area.
 - If it does, replace the boot band and repeat Steps 2 and 3.
4. Fill the boot with the repair kit grease.
5. Adjust clearance A by turning the adjusting bolt of the SST.

Clearance A 3.2 mm {0.13 in}

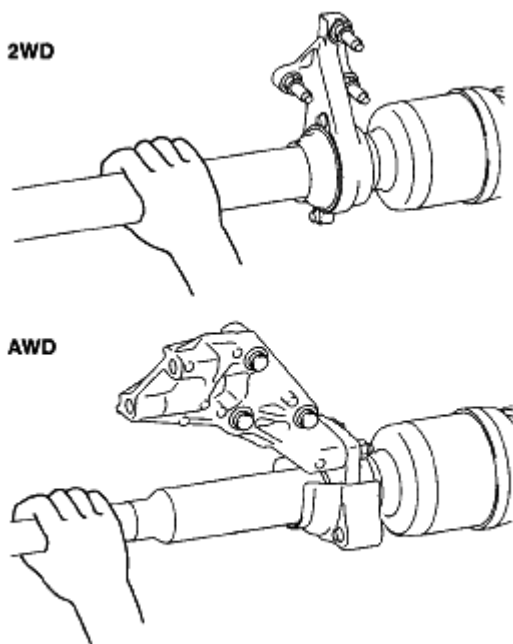
6. Crimp the wheel side big boot band using the SST.
7. Verify that clearance B is within the specification.
 - If clearance B is more than the specification, reduce clearance A of the SST and crimp the boot again.
 - If clearance B is less than the specification, replace the boot band, increase clearance A of the SST and crimp the new boot.

Clearance B 2.4-2.8 mm {0.095-0.110 in}

8. Verify that the boot band does not protrude from the boot band installation area.
 - If it does, replace the boot band and repeat Steps 7 and 8.

JOINT SHAFT PRE-INSPECTION

1. Verify that the joint shaft is not twisted or cracked.
 - Replace it as necessary.
2. Turn the joint shaft by hand and verify that the bearing rotates smoothly and freely.
 - Replace it as necessary.



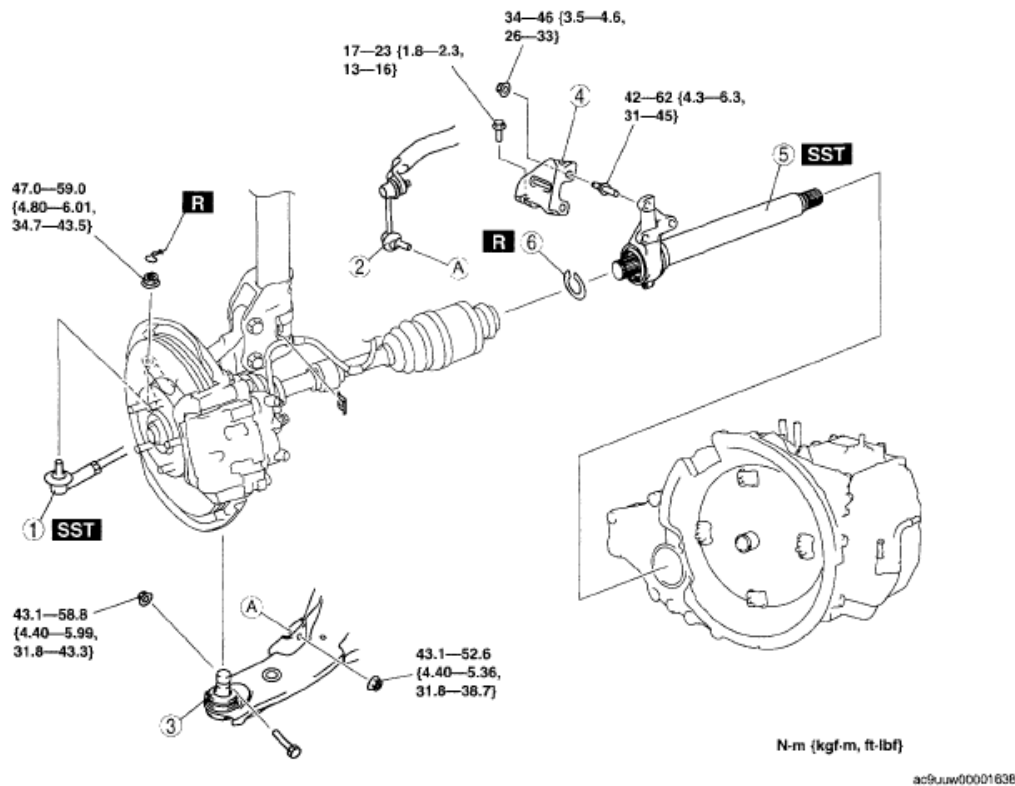
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Fig. 24: Turning Joint Shaft
Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT REMOVAL/INSTALLATION [2WD]

CAUTION: • Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the 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 will not be pulled by mistake while the vehicle is being serviced.

1. Remove the side cover.
2. Remove the front ABS wheel-speed sensor. (See **FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION** .)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



1	Tie-rod end ball joint (See 02-13-10 FRONT CROSSMEMBER REMOVAL/INSTALLATION)
2	Stabilizer control link (lower side)
3	Lower arm ball joint

4	Bracket
5	Joint shaft (See 03-13-12 Joint Shaft Removal Note)
6	Clip (See 03-13-12 Clip Installation Note)

Fig. 25: Identifying Joint Shaft Components (2WD) & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT REMOVAL NOTE

1. Separate the right side drive shaft from the joint shaft by using the SSTs.

2. Remove the bolts.
3. Pull the joint shaft straight out.

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.

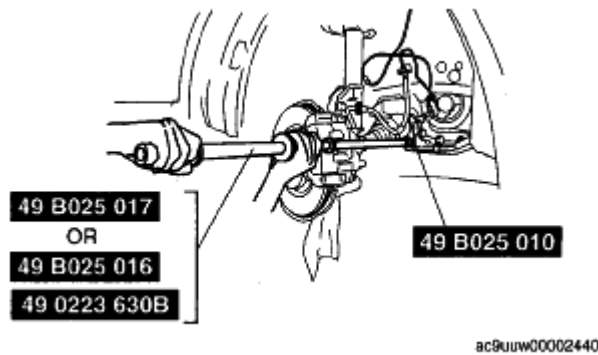
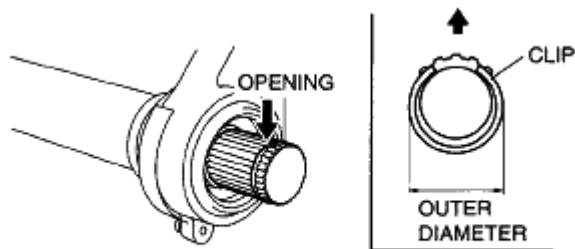


Fig. 26: Separating Right Side Drive Shaft
Courtesy of MAZDA MOTORS CORP.

CLIP INSTALLATION NOTE

1. Install a new clip onto the joint shaft with the opening facing upward. Ensure that the diameter of the clip does not exceed the specification on installation.
2. After installation, measure the outer diameter. If it exceeds the specification, repeat Step 1 using a new clip.

Clip outer diameter specification 34.0 mm {1.34 in} max.



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Fig. 27: Identifying Clip Outer Diameter
Courtesy of MAZDA MOTORS CORP.

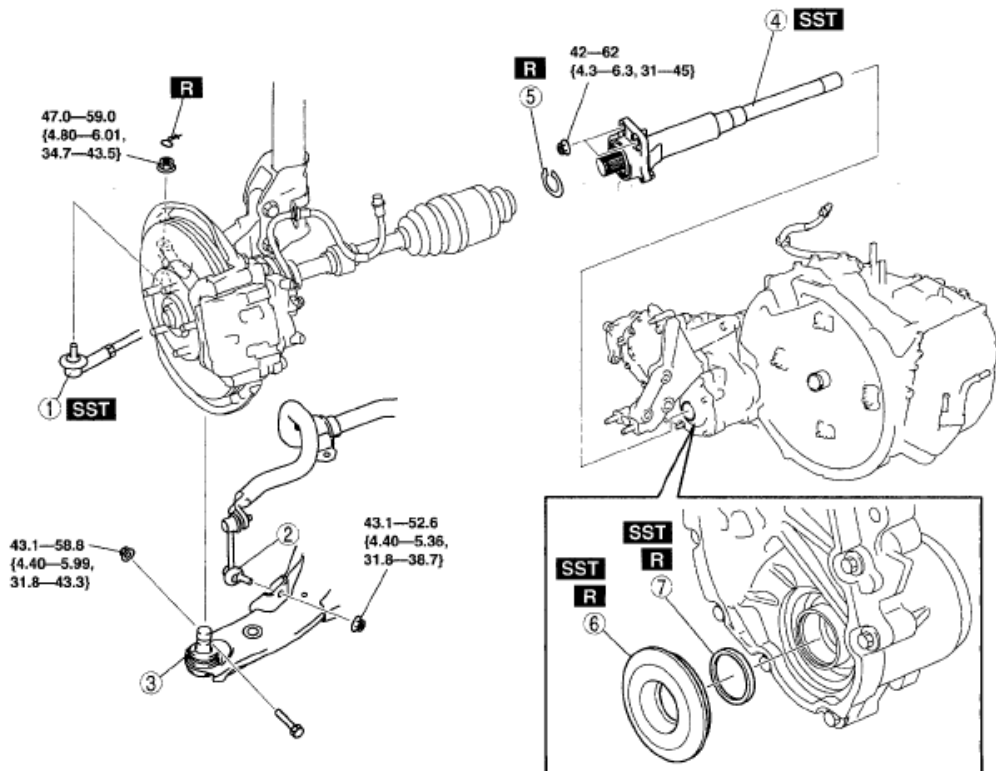
JOINT SHAFT REMOVAL/INSTALLATION [AWD]

2008 Mazda CX-9 Grand Touring

2008 DRIVELINE/AXLES Drive Shaft - Mazda CX-9

- CAUTION:**
- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the 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 will not be pulled by mistake while the vehicle is being serviced.

- Remove the side cover.
- Remove the front ABS wheel-speed sensor. (See **FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION** .)
- Remove the middle pipe. (See **EXHAUST SYSTEM REMOVAL/INSTALLATION [MZI-3.7]** .)
- Remove the front pipe. (See **EXHAUST SYSTEM REMOVAL/INSTALLATION [MZI-3.7]** .)
- Remove in the order indicated in the table.
- Install in the reverse order of removal.



N·m (kgf·m, ft·lbf)

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1	Tie-rod end ball joint (See 02-13-10 FRONT CROSSMEMBER REMOVAL/INSTALLATION)
2	Stabilizer control link (lower side)
3	Lower arm ball joint
4	Joint shaft (See 03-13-13 Joint Shaft Removal Note)

5	Clip (See 03-13-14 Clip Installation Note)
6	Deflector (See 03-16-1 TRANSFER OIL SEAL REPLACEMENT)
7	Oil seal (See 03-16-1 TRANSFER OIL SEAL REPLACEMENT)

Fig. 28: Identifying Joint Shaft Components (AWD) & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT REMOVAL NOTE

1. Separate the right side drive shaft from the joint shaft by using the SSTs.
2. Remove the nuts.
3. Pull the joint shaft straight out.

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.

NOTE:

- If the joint shaft is removed, always replace the deflector and oil seal of the transfer with new ones.

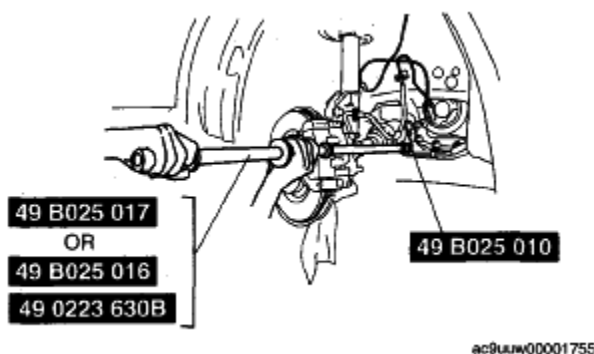


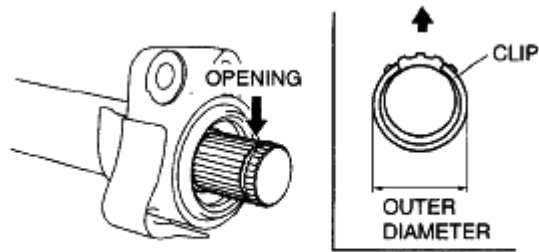
Fig. 29: Separating Right Side Drive Shaft
Courtesy of MAZDA MOTORS CORP.

4. Replace the deflector and oil seal. (See TRANSFER OIL SEAL REPLACEMENT .)

CLIP INSTALLATION NOTE

1. Install a new clip onto the joint shaft with the opening facing upward. Ensure that the diameter of the clip does not exceed the specification on installation.
2. After installation, measure the outer diameter. If it exceeds the specification, repeat Step 1 using a new clip.

Outer diameter specification 34.0 mm {1.34 in} max.

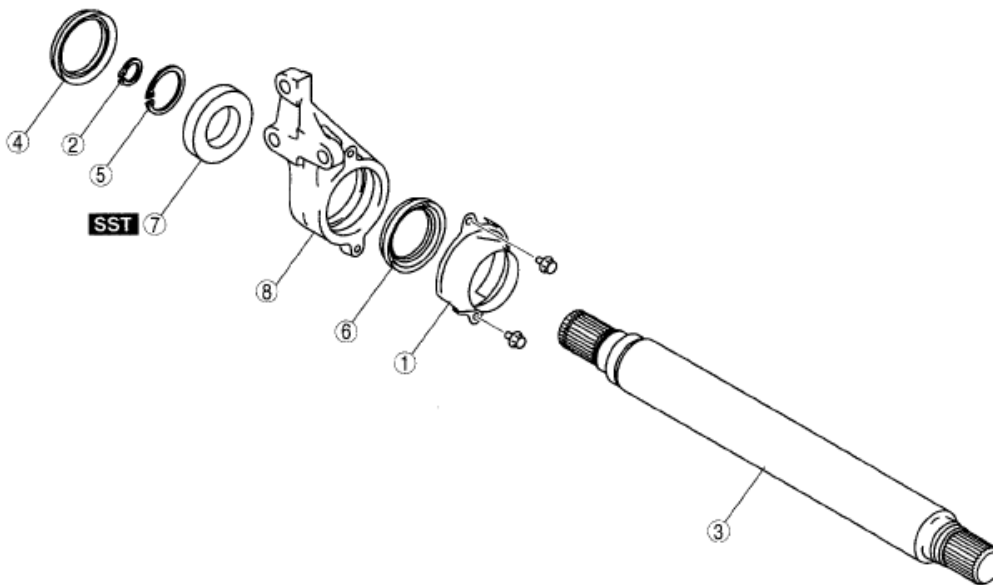


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Fig. 30: Identifying Clip Outer Diameter
 Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT DISASSEMBLY [2WD]

1. Disassemble in the order indicated in the table.



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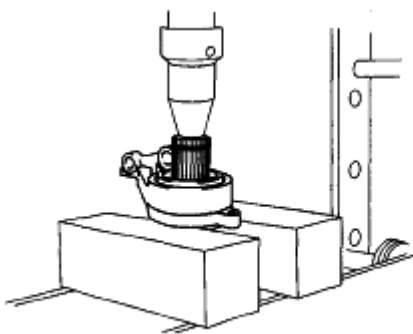
1	Cover
2	Snap ring
3	Joint shaft (See 03-13-15 Joint Shaft Disassembly Note)
4	Dust seal (axle side) (See 03-13-15 Dust Seal (Axle Side) Disassembly Note)

5	Snap ring
6	Dust seal (differential side) (See 03-13-15 Dust Seal (Differential Side) Disassembly Note)
7	Bearing (See 03-13-15 Bearing Disassembly Note)
8	Bearing housing

Fig. 31: Identifying Joint Shaft Components (2WD)
 Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT DISASSEMBLY NOTE

1. Remove the joint shaft using a press.



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Fig. 32: Pressing Joint Shaft
Courtesy of MAZDA MOTORS CORP.

DUST SEAL (AXLE SIDE) DISASSEMBLY NOTE

1. Remove the dust seal using a flathead screwdriver.

DUST SEAL (DIFFERENTIAL SIDE) DISASSEMBLY NOTE

1. Remove the dust seal using a flathead screwdriver.

BEARING DISASSEMBLY NOTE

1. Remove the bearing using a press and the SSTs.

Substitution SST

- **49B014 001**

Outer diameter: 47-55 mm {1.9-2.1 in}

- **49W034 301**

Inner diameter: 67.5-72 mm {2.7-2.8 in}

Inner depth: 30 mm {1.2 in} or more

Plate thickness: 1 mm {0.04 in} or more

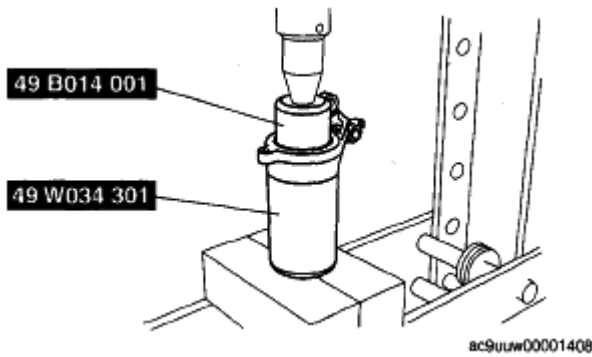
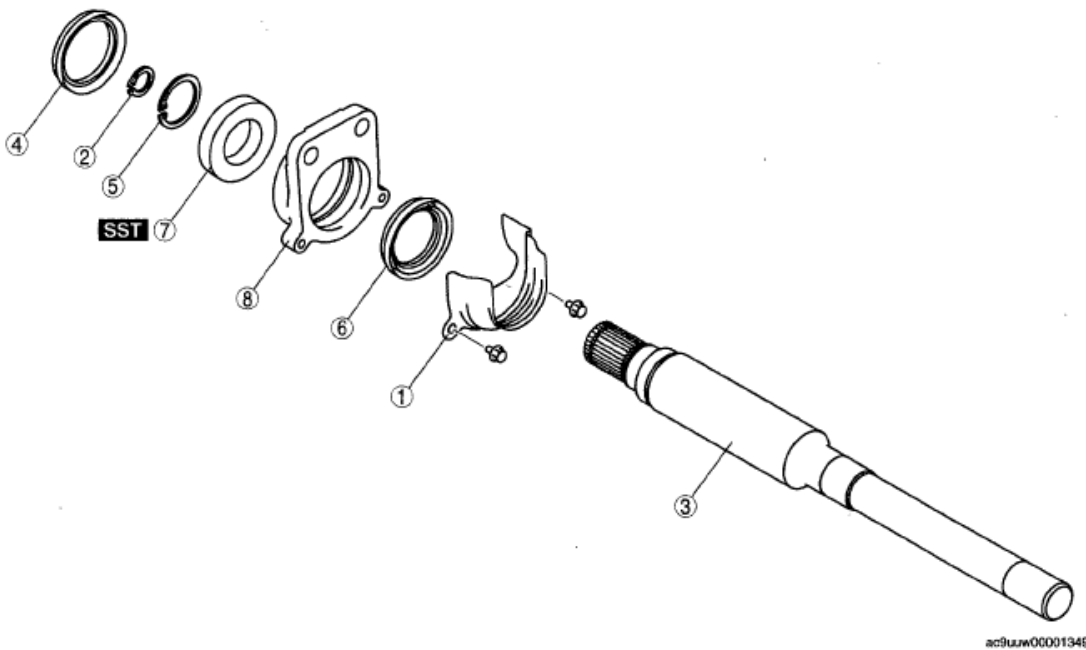


Fig. 33: Pressing Bearing With SST
 Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT DISASSEMBLY [AWD]

1. Disassemble in the order indicated in the table.



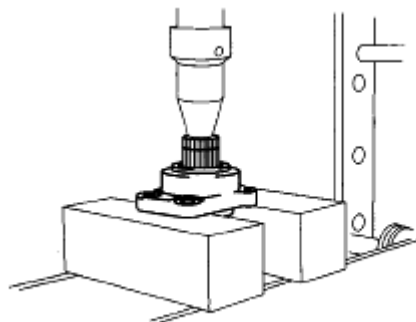
1	Cover
2	Snap ring
3	Joint shaft (See 03-13-16 Joint Shaft Disassembly Note)
4	Dust seal (axle side) (See 03-13-16 Dust Seal (Axle Side) Disassembly Note)

5	Snap ring
6	Dust seal (differential side) (See 03-13-16 Dust Seal (Differential Side) Disassembly Note)
7	Bearing (See 03-13-17 Bearing Disassembly Note)
8	Bearing housing

Fig. 34: Identifying Joint Shaft Components (AWD)
 Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT DISASSEMBLY NOTE

1. Remove the joint shaft using a press.



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Fig. 35: Pressing Joint Shaft

Courtesy of MAZDA MOTORS CORP.

DUST SEAL (AXLE SIDE) DISASSEMBLY NOTE

1. Remove the dust seal using a flathead screwdriver.

DUST SEAL (DIFFERENTIAL SIDE) DISASSEMBLY NOTE

1. Remove the dust seal using a flathead screwdriver.

BEARING DISASSEMBLY NOTE

1. Remove the bearing using a press and the SSTs.

Substitution SST

- **49B014 001**

Outer diameter: 47-55 mm {1.9-2.1 in}

- **49W034 301**

Inner diameter: 67.5-72 mm {2.7-2.8 in}

Inner depth: 30 mm {1.2 in} or more

Plate thickness: 1 mm {0.04 in} or more

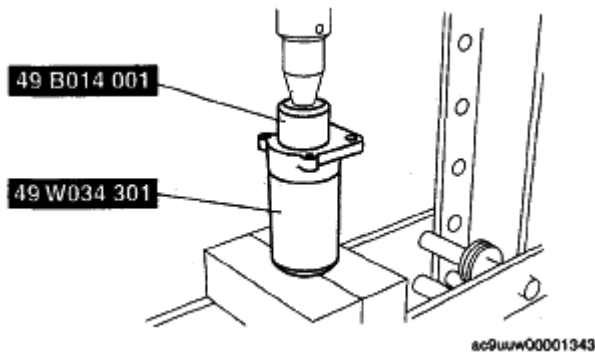
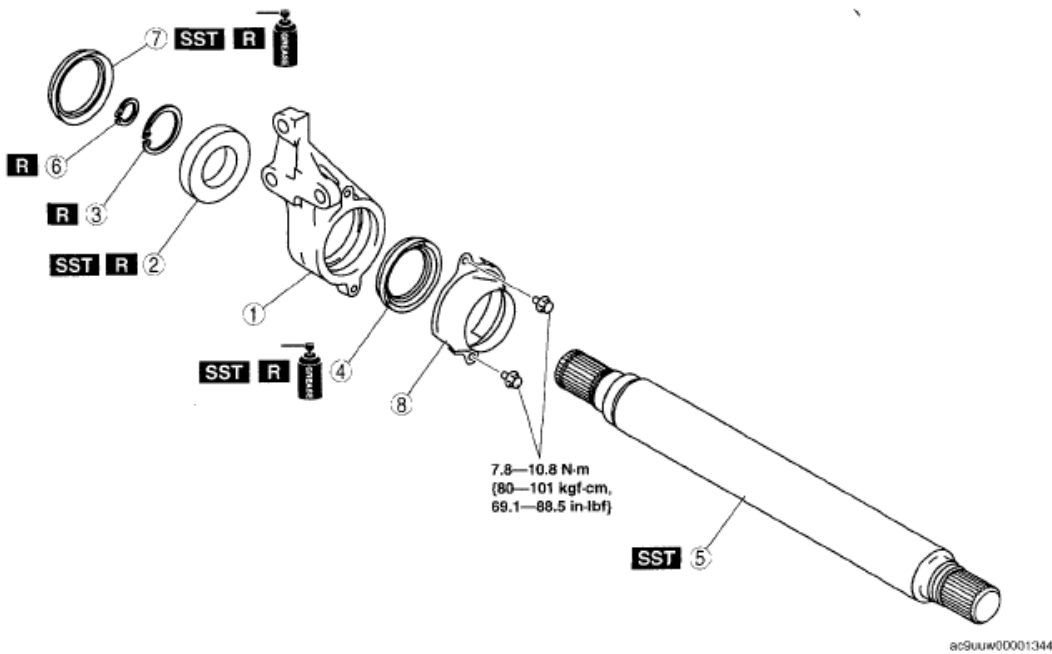


Fig. 36: Pressing Bearing
 Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT ASSEMBLY [2WD]

1. Assemble in the order indicated in the table.



1	Bearing housing
2	Bearing (See 03-13-18 Bearing Assembly Note)
3	Snap ring
4	Dust seal (differential side) (See 03-13-18 Dust Seal (Differential Side) Assembly Note)

5	Joint shaft (See 03-13-18 Joint Shaft Assembly Note)
6	Snap ring
7	Dust seal (axle side) (See 03-13-18 Dust Seal (Axle Side) Assembly Note)
8	Cover

Fig. 37: Identifying Joint Shaft Components (2WD) & Torque Specifications
 Courtesy of MAZDA MOTORS CORP.

BEARING ASSEMBLY NOTE

1. Install the new bearing using a press and the SST.

Substitution SST

- **49B025 004**

Outer diameter: 61 mm {2.4 in} or more

Inner diameter: 46 mm {1.8 in} or more

Plate thickness: 1 mm {0.04 in} or more

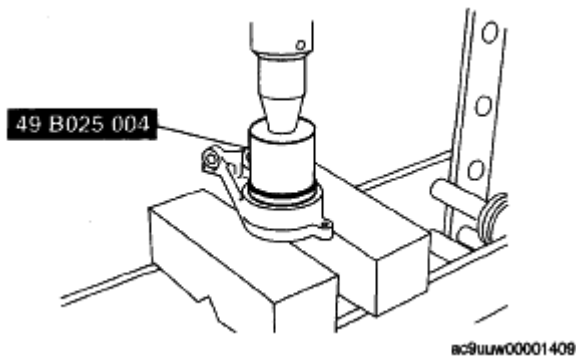


Fig. 38: Pressing Bearing With SST
Courtesy of MAZDA MOTORS CORP.

DUST SEAL (DIFFERENTIAL SIDE) ASSEMBLY NOTE

1. Apply grease to the new dust seal lip.
2. Install the dust seal (differential side) using a press and the SSTs.

Substitution SST

- **49B025 004**

Outer diameter: 58-59.8 mm {2.2-2.3 in} or less

Inner diameter: 53 mm {2.1 in} or more

Inner depth: 7.5 mm {0.30 in} or more

- **49W034 301**

Inner diameter: 67.5-72.0 mm {2.66-2.83 in}

Inner depth: 8.5 mm {0.33 in} or more

Plate thickness: 1 mm {0.04 in} or more

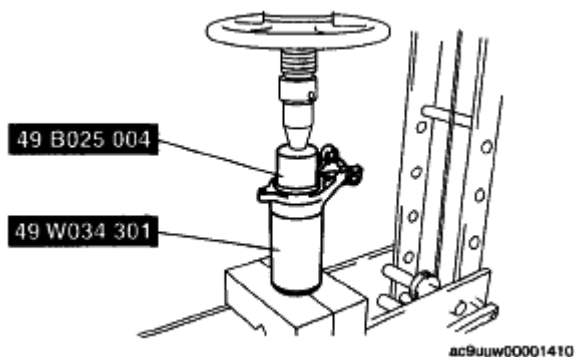


Fig. 39: Pressing Dust Seal (Differential Side) With SST
Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT ASSEMBLY NOTE

1. Install the joint shaft using a press and the SST.

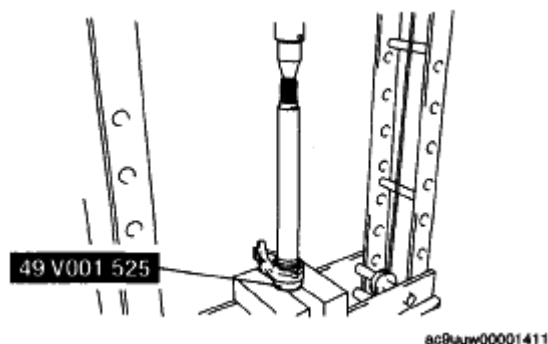


Fig. 40: Pressing Joint Shaft With SST
Courtesy of MAZDA MOTORS CORP.

DUST SEAL (AXLE SIDE) ASSEMBLY NOTE

1. Apply grease to the new dust seal lip.
2. Install the dust seal (axle side) using a press and the SST.

Substitution SST

- **49B025 004**

Outer diameter: 58-59.8 mm {2.2-2.3 in} or more

Inner diameter: 53 mm {2.1 in} or more

Inner depth: 7.5 mm {0.30 in} or more

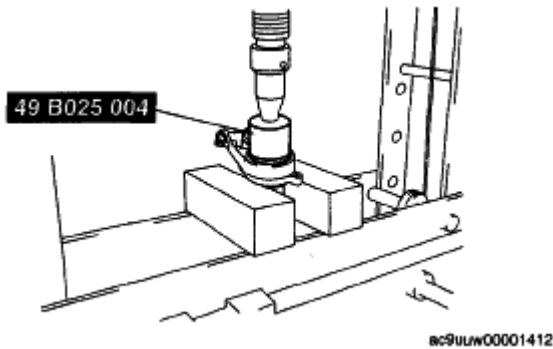
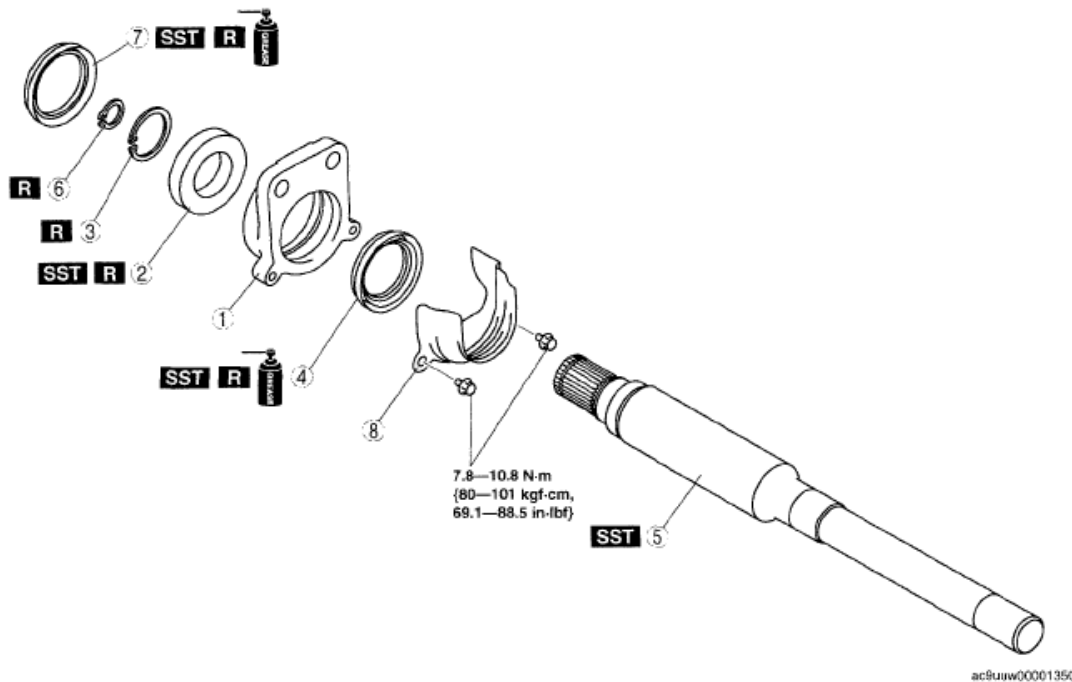


Fig. 41: Pressing Dust Seal (Axle Side) With SST
Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT ASSEMBLY [AWD]

1. Assemble in the order indicated in the table.



1	Bearing housing
2	Bearing (See 03-13-19 Bearing Assembly Note)
3	Snap ring
4	Dust seal (differential side) (See 03-13-20 Dust Seal (Differential Side) Assembly Note)

5	Joint shaft (See 03-13-20 Joint Shaft Assembly Note)
6	Snap ring
7	Dust seal (axle side) (See 03-13-20 Dust Seal (Axle Side) Assembly Note)
8	Cover

Fig. 42: Identifying Joint Shaft Assembly Components (AWD) & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

BEARING ASSEMBLY NOTE

1. Install the new bearing using a press and the SST.

Substitution SST

- **49B025 004**

Outer diameter: 61 mm {2.4 in} or more

Inner diameter: 46 mm {1.8 in} or more

Plate thickness: 1 mm {0.04 in} or more

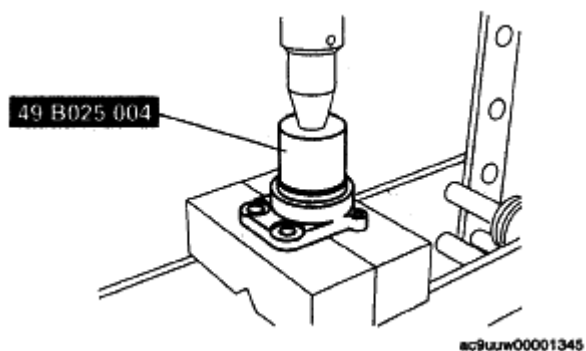


Fig. 43: Pressing Bearing With SST
Courtesy of MAZDA MOTORS CORP.

DUST SEAL (DIFFERENTIAL SIDE) ASSEMBLY NOTE

1. Apply grease to the new dust seal lip.
2. Install the dust seal (differential side) using a press and the SSTs.

Substitution SST

- **49B025 004**

Outer diameter: 58-59.8 mm {2.2-2.3 in} or less

Inner diameter: 53 mm {2.1 in} or more

Inner depth: 7.5 mm {0.30 in} or more

- **49W034 301**

Inner diameter: 67.5-72.0 mm {2.66-2.83 in}

Inner depth: 8.5 mm {0.33 in} or more

Plate thickness: 1 mm {0.04 in} or more

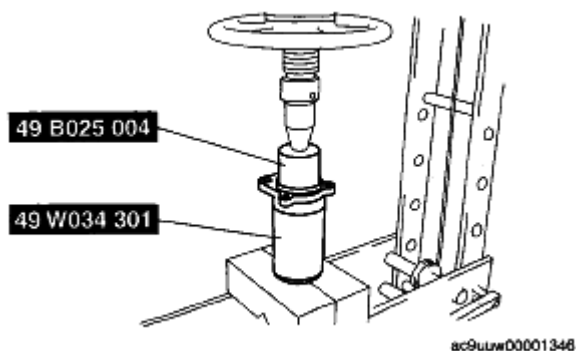


Fig. 44: Pressing Dust Seal (Differential Side) With SST
Courtesy of MAZDA MOTORS CORP.

JOINT SHAFT ASSEMBLY NOTE

1. Install the joint shaft using a press and the SST.

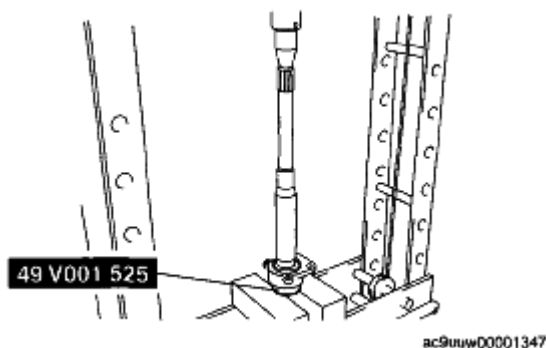


Fig. 45: Pressing Joint Shaft With SST
Courtesy of MAZDA MOTORS CORP.

DUST SEAL (AXLE SIDE) ASSEMBLY NOTE

1. Apply grease to the new dust seal lip.
2. Install the dust seal (axle side) using a press and the SST.

Substitution SST

- 49B025 004

Outer diameter: 58-59.8 mm {2.2-2.3 in} or more

Inner diameter: 53 mm {2.1 in} or more

Inner depth: 7.5 mm {0.30 in} or more

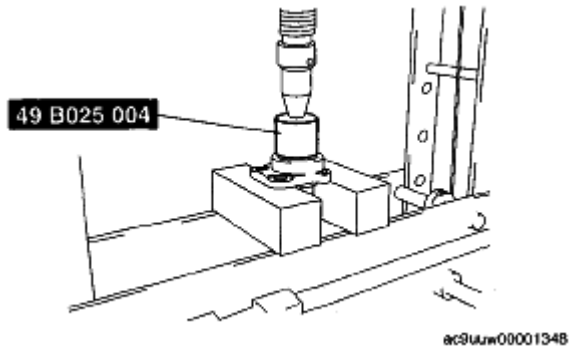


Fig. 46: Pressing Dust Seal (Axle Side) With SST
Courtesy of MAZDA MOTORS CORP.

REAR DRIVE SHAFT PRE-INSPECTION

1. Inspect each connecting part for looseness.
 - Tighten or replace parts if necessary.
2. Inspect the dust boot on the drive shaft for cracks, damage, leaking grease, and looseness in the boot band.
3. Inspect the drive shaft for bends, cracks, and wear in the joints or splines.
 - Repair or replace the drive shaft or boot band if necessary.

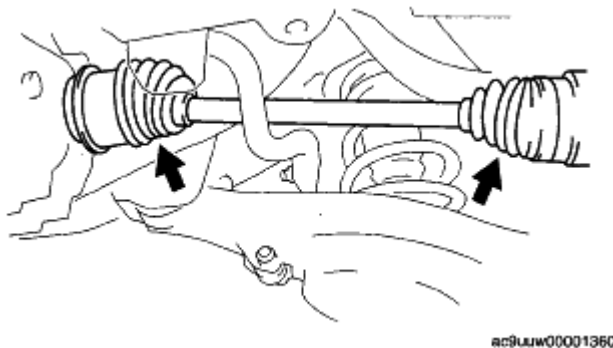


Fig. 47: Locating Dust Boot
Courtesy of MAZDA MOTORS CORP.

REAR DRIVE SHAFT REMOVAL/INSTALLATION

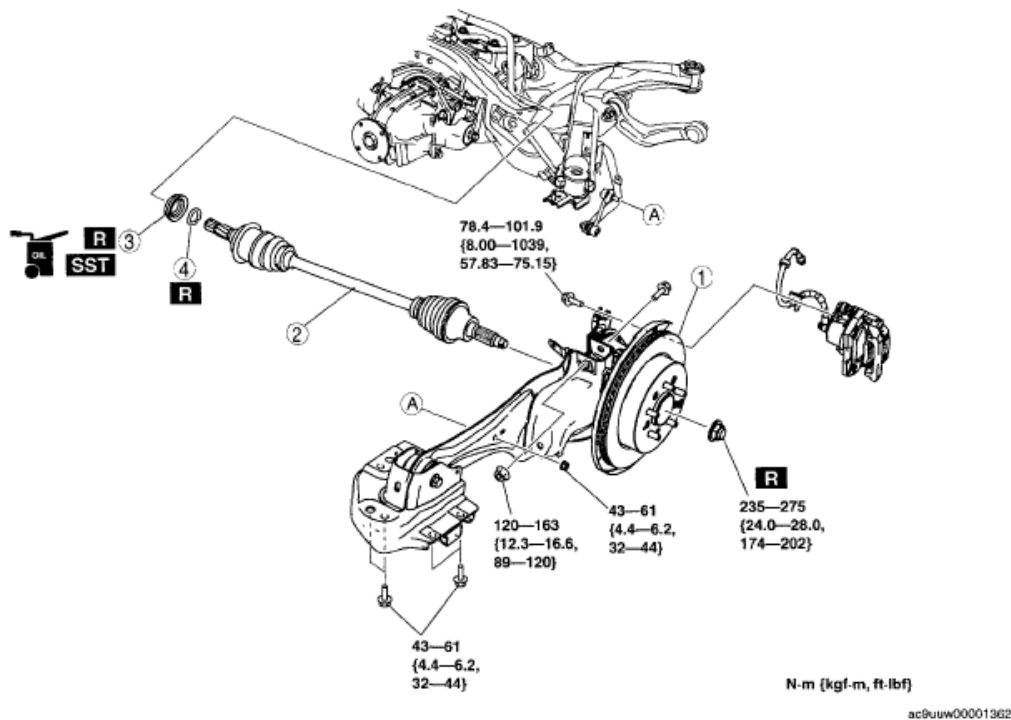
- CAUTION:**
- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the

2008 Mazda CX-9 Grand Touring

2008 DRIVELINE/AXLES Drive Shaft - Mazda CX-9

harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (wheel side) and fix it to an appropriate place where the sensor will not be pulled by mistake while the vehicle is being serviced.

1. Remove the rear ABS wheel-speed sensor. (See **REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION [AWD]** .)
2. Drain the rear differential oil into a container. (See **DIFFERENTIAL OIL REPLACEMENT** .)
3. Remove the rear lateral link. (See **REAR LATERAL LINK REMOVAL/INSTALLATION** .)
4. Remove the rear coil spring. (See **REAR COIL SPRING REMOVAL/INSTALLATION** .)
5. Remove the rear lower arm. (See **REAR LOWER ARM REMOVAL/INSTALLATION** .)
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.
8. After installation, add the specified rear differential oil. (See **DIFFERENTIAL OIL REPLACEMENT** .)
9. Inspect the rear wheel alignment and adjust it if necessary. (See **REAR WHEEL ALIGNMENT [AWD]** .)



1	Rear trailing link and rear wheel hub component (See 03-12-3 WHEEL HUB COMPONENT REMOVAL/INSTALLATION [AWD].)
2	Rear drive shaft (See 03-13-22 Rear Drive Shaft Removal Note.)

3	Oil seal (See 03-14-2 OIL SEAL (SIDE GEAR) REPLACEMENT.)
4	Clip (See 03-13-22 Clip Installation Note.)

Fig. 48: Identifying Rear Drive Shaft Components & Torque Specifications
 Courtesy of MAZDA MOTORS CORP.

REAR DRIVE SHAFT REMOVAL NOTE

1. Disengage the rear drive shaft using the SSTs.

NOTE:

- Be careful not to damage the rear differential oil seal.

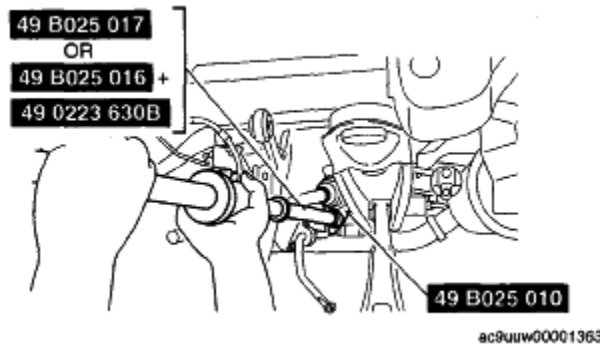


Fig. 49: Disengaging Rear Drive Shaft With SST
 Courtesy of MAZDA MOTORS CORP.

CLIP INSTALLATION NOTE

1. Install a new clip onto the joint shaft with the opening facing upward. Ensure that the diameter of the clip does not exceed the specification on installation.
2. After installation, measure the outer diameter. If it exceeds the specification, repeat Steps 1-2 using a new clip.

Clip outer diameter specification 29.5 mm {1.16 in} max.

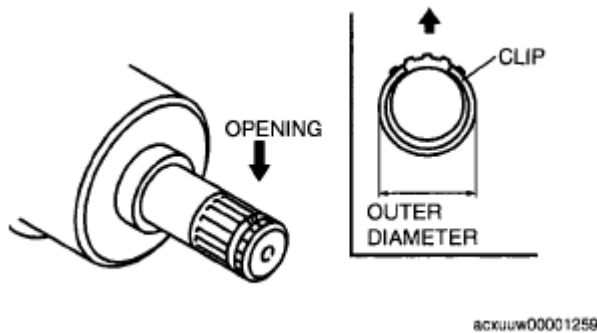


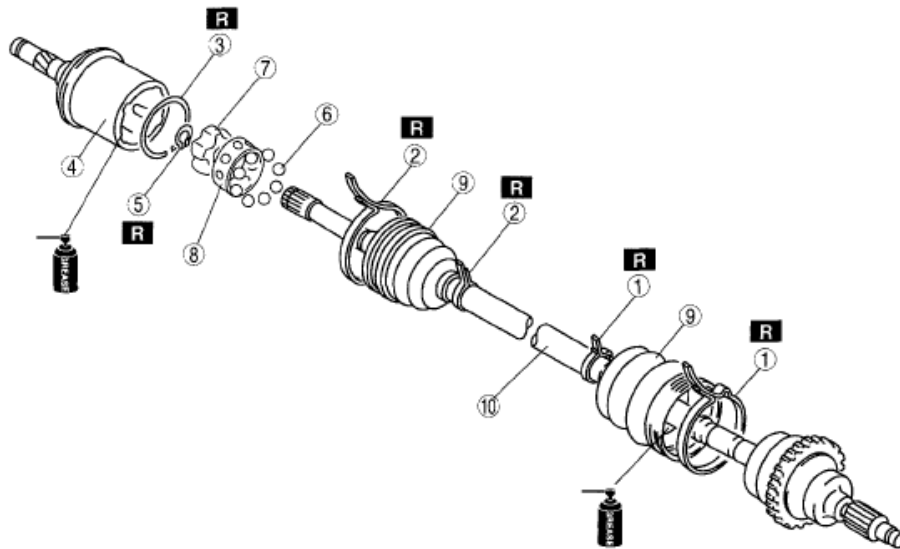
Fig. 50: Identifying Clip Outer Diameter
 Courtesy of MAZDA MOTORS CORP.

REAR DRIVE SHAFT DISASSEMBLY/ASSEMBLY

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

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1	Boot band (wheel side) (See 03-13-23 Boot Band (Wheel Side) Disassembly Note) (See 03-13-26 Boot Band (Wheel Side) Assembly Note)
2	Boot band (differential side) (See 03-13-23 Boot Band (Differential Side) Disassembly Note) (See 03-13-26 Boot Band (Differential Side) Assembly Note)
3	Clip (See 03-13-24 Clip Disassembly Note) (See 03-13-25 Outer Ring, Clip Assembly Note)
4	Outer ring (See 03-13-25 Outer Ring, Clip Assembly Note)
5	Snap ring (See 03-13-24 Snap Ring Disassembly Note) (See 03-13-25 Cage, Inner Ring, Balls, Snap Ring Assembly Note)
6	Balls (See 03-13-24 Balls, Inner Ring, Cage Disassembly Note) (See 03-13-25 Cage, Inner Ring, Balls, Snap Ring Assembly Note)

7	Inner Ring (See 03-13-24 Balls, Inner Ring, Cage Disassembly Note) (See 03-13-25 Cage, Inner Ring, Balls, Snap Ring Assembly Note)
8	Cage (See 03-13-24 Balls, Inner Ring, Cage Disassembly Note) (See 03-13-25 Cage, Inner Ring, Balls, Snap Ring Assembly Note)
9	Boot (See 03-13-24 Boot Assembly Note)
10	Drive shaft, joint component

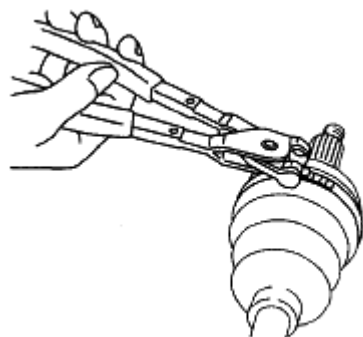
Fig. 51: Identifying Rear Drive Shaft Components
 Courtesy of MAZDA MOTORS CORP.

BOOT BAND (WHEEL SIDE) DISASSEMBLY NOTE

NOTE:

- The boot band does not need to be removed unless it is being replaced.

1. Remove the boot clamp with end clamp pliers as shown and discard the clamp.

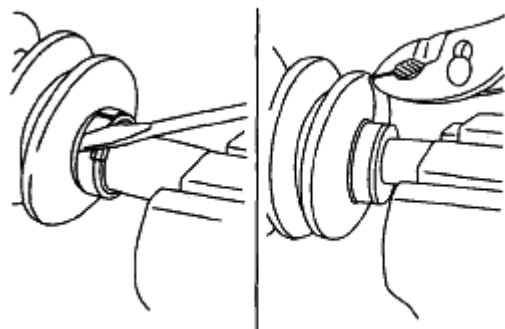


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Fig. 52: Crimping Boot Clamp With Clamp Pliers
Courtesy of MAZDA MOTORS CORP.

BOOT BAND (DIFFERENTIAL SIDE) DISASSEMBLY NOTE

1. Pry up the locking clips using a screwdriver.
2. Pull back the end of the band.



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Fig. 53: Prying Locking Clips
Courtesy of MAZDA MOTORS CORP.

CLIP DISASSEMBLY NOTE

1. Mark the drive shaft and outer ring for proper assembly.

CAUTION: • Mark with paint; do not use a punch.

2. Remove the clip.

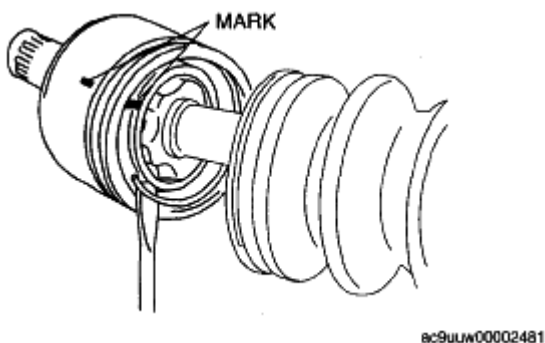


Fig. 54: Prying Clip
Courtesy of MAZDA MOTORS CORP.

SNAP RING DISASSEMBLY NOTE

1. Mark the drive shaft end and inner ring for proper reassembly.

CAUTION: • Mark with paint; do not use a punch.

2. Remove the snap ring using snap-ring pliers.

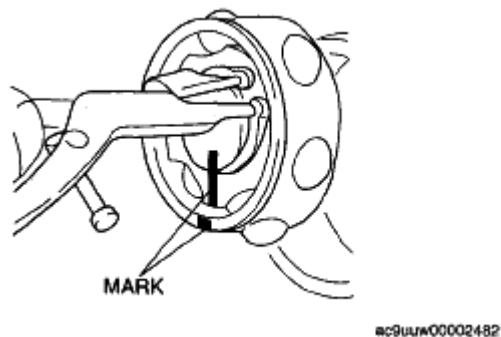


Fig. 55: Removing Snap Ring With Snap-Ring Pliers
Courtesy of MAZDA MOTORS CORP.

BALLS, INNER RING, CAGE DISASSEMBLY NOTE

1. Mark the inner ring and cage for proper reassembly.

CAUTION: • Mark with paint; do not use a punch.

2. Turn the cage **approx. 22.5°** and pull the cage and balls from the inner ring.

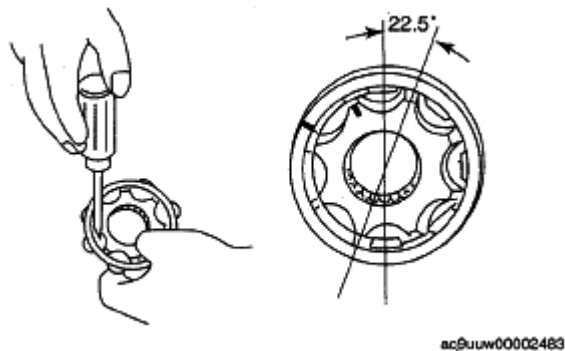


Fig. 56: Pulling Cage & Balls
Courtesy of MAZDA MOTORS CORP.

BOOT ASSEMBLY NOTE

NOTE:

- The wheel side and differential side boots are different.

1. Fill the wheel side boot with the specified grease.

CAUTION:

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

Grease amount 70-90 g {2.48-3.17 oz}

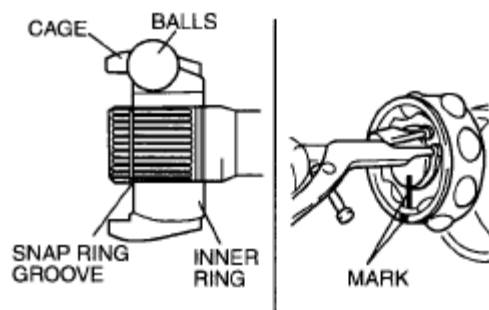
2. With the splines of the shaft wrapped in tape, install the boot.
3. Remove the tape.

CAGE, INNER RING, BALLS, SNAP RING ASSEMBLY NOTE

1. Align the marks and install the balls and cage to the inner ring in the direction shown in the figure.

CAUTION:

- Install the cage so that the major diameter is at the same side as the snap ring groove. If incorrectly installed, the drive shaft may become disengaged.



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Fig. 57: Aligning Marks Balls & Cage To Inner Ring
Courtesy of MAZDA MOTORS CORP.

2. Align the marks and install the inner ring to the shaft.
3. Install a new snap ring.

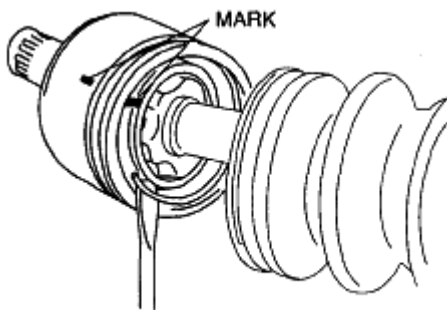
OUTER RING, CLIP ASSEMBLY NOTE

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

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

Grease amount 90-110 g {3.18-3.88 oz}

2. Align the marks, and install the outer ring on to the shaft.
3. Install a new clip to the outer ring clip groove.
4. Install the boot.

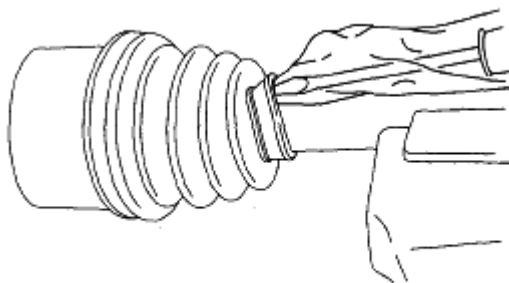


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Fig. 58: Installing Outer Ring Clip
Courtesy of MAZDA MOTORS CORP.

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



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Fig. 59: Lifting Boot With Cloth Wrapped Screwdriver
Courtesy of MAZDA MOTORS CORP.

6. Set the drive shaft to the standard length.

Rear drive shaft standard length

LH: 840.3-850.3 mm {33.09-33.47 in}

RH: 895.3-905.3 mm {35.25-35.64 in}

7. Verify that the drive shaft length is within the standard.
 - If not, repeat from Step 5.

BOOT BAND (DIFFERENTIAL SIDE) ASSEMBLY NOTE

1. Fold the band in the direction opposite to the forward revolving direction of the drive shaft and use pliers to pull it tight.
2. Lock the end of the band by bending the locking clips.

- CAUTION:**
- Install the band into the groove securely.

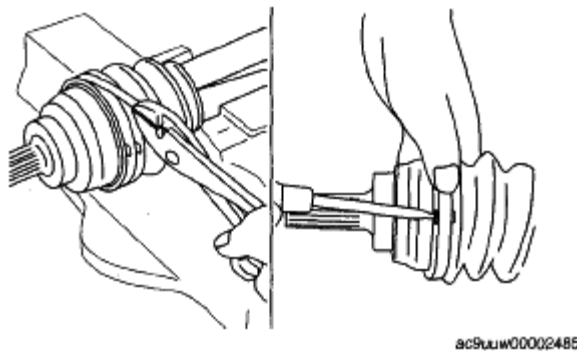


Fig. 60: Bending Locking Clips
Courtesy of MAZDA MOTORS CORP.

BOOT BAND (WHEEL SIDE) ASSEMBLY NOTE

1. Adjust clearance A by turning the adjusting bolt of the SST.

Clearance A 2.9 mm {0.11 in}

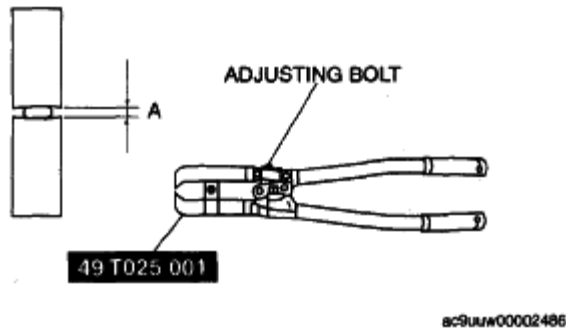


Fig. 61: Adjusting Clearance
Courtesy of MAZDA MOTORS CORP.

2. Crimp the wheel side small boot band using the SST. Verify that clearance B is within the specification.
 - If clearance B is more than the specification, reduce clearance A of the SST and crimp the boot again.
 - If clearance B is less than the specification, replace the boot band, increase clearance A of the SST, and crimp the new boot.

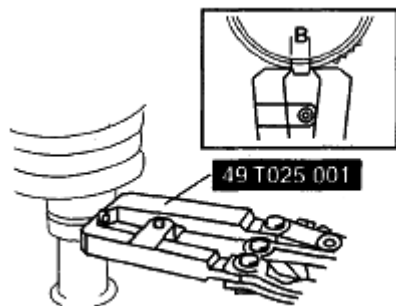


Fig. 62: Crimping Wheel Side Small Boot Band
Courtesy of MAZDA MOTORS CORP.

Clearance B 2.4-2.8 mm {0.095-0.110 in}

3. Verify that the boot band does not protrude from the boot band installation area.
 - If it does, replace the boot band and repeat Steps 2 and 3.
4. Fill the boot with the repair kit grease.
5. Adjust clearance A by turning the adjusting bolt of the **SST**.

Clearance A 3.2 mm {0.13 in}

6. Crimp the wheel side big boot band using the **SST**.
7. Verify that clearance B is within the specification.
 - If clearance B is more than the specification, reduce clearance A of the **SST** and crimp the boot again.
 - If clearance B is less than the specification, replace the boot band, increase clearance A of the **SST** and crimp the new boot.

Clearance B 2.4-2.8 mm {0.095-0.110 in}

8. Verify that the boot band does not protrude from the boot band installation area.
 - If it does, replace the boot band and repeat Steps 7 and 8.