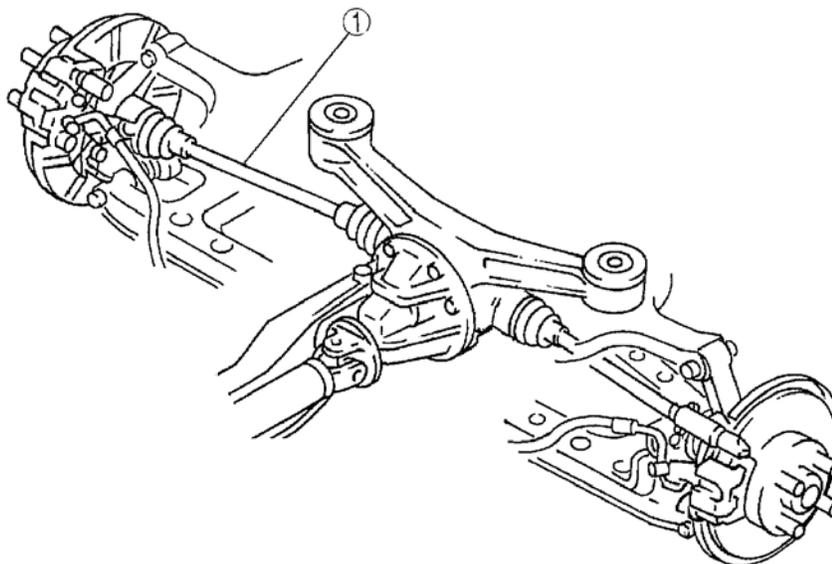


2005 DRIVELINE/AXLE

Drive Shaft - MX-5 Miata

DRIVE SHAFT LOCATION INDEX



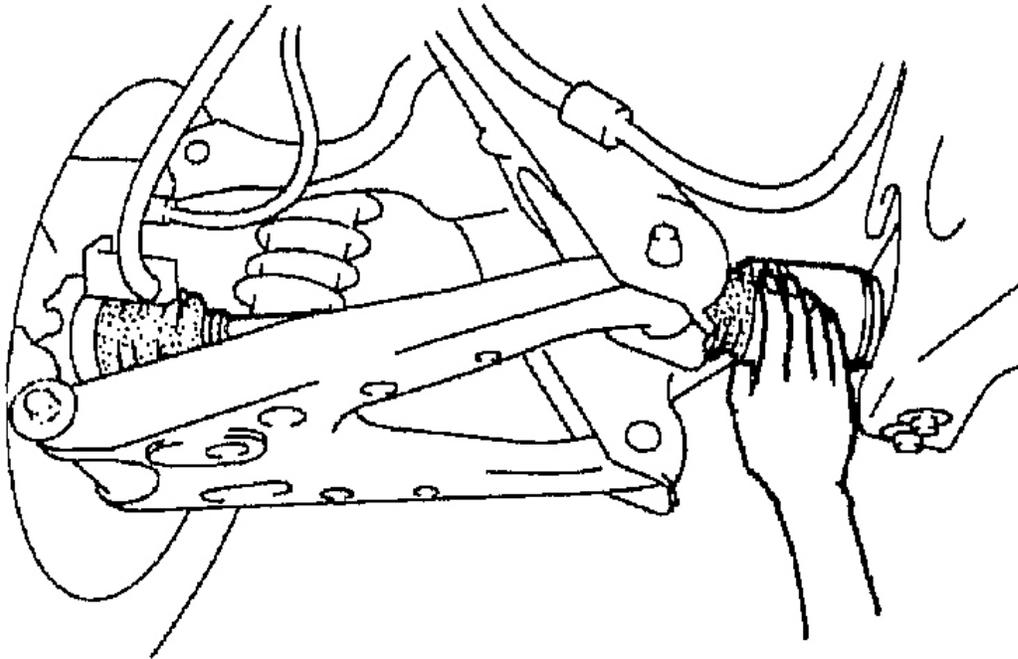
1	Drive shaft (See DRIVE SHAFT PRE-INSPECTION) (See DRIVE SHAFT REMOVAL/ INSTALLATION) (See DRIVE SHAFT DISASSEMBLY/ ASSEMBLY [BP]) (See DRIVE SHAFT DISASSEMBLY/ ASSEMBLY [BP WITH TC])
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G03638114

Fig. 1: Identifying Drive Shaft Location
Courtesy of MAZDA MOTORS CORP.

DRIVE SHAFT PRE-INSPECTION

1. Inspect the dust boot on the drive shaft for cracks, damage, leaking grease, and looseness in boot band.



G03638115

Fig. 2: Inspecting Dust Boot On Drive Shaft
Courtesy of MAZDA MOTORS CORP.

2. Inspect the drive shaft for bending, cracks, and wear of the joint and splines.
 - Repair or replace the drive shaft as necessary.

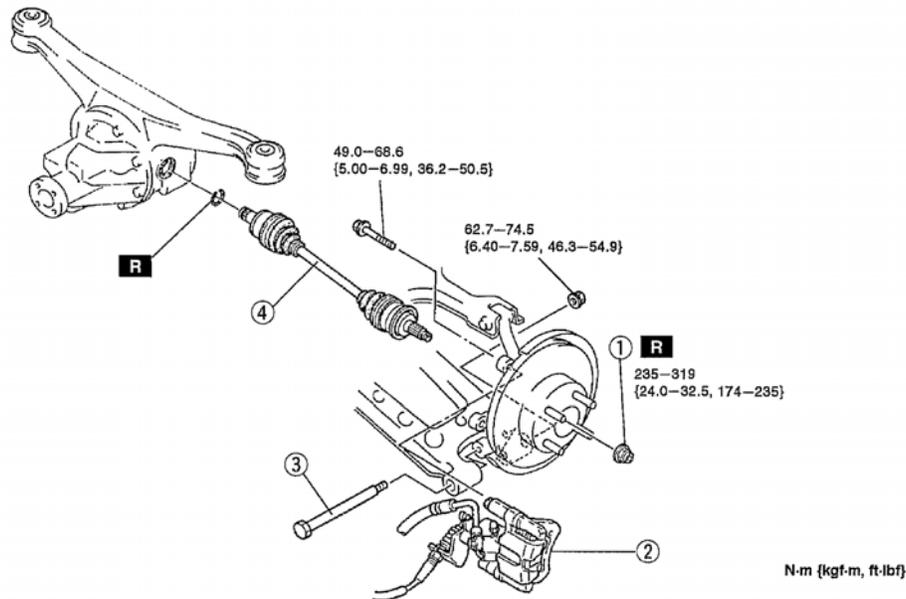
DRIVE SHAFT REMOVAL/INSTALLATION

- 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 servicing the vehicle.

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

2005 Mazda MX-5 Miata

2005 DRIVELINE/AXLE Drive Shaft - MX-5 Miata



1	Locknut (See Locknut Installation Note)
2	Brake caliper component

3	Bolt
4	Drive shaft (See Drive Shaft Removal Note) (See Drive Shaft Installation Note)

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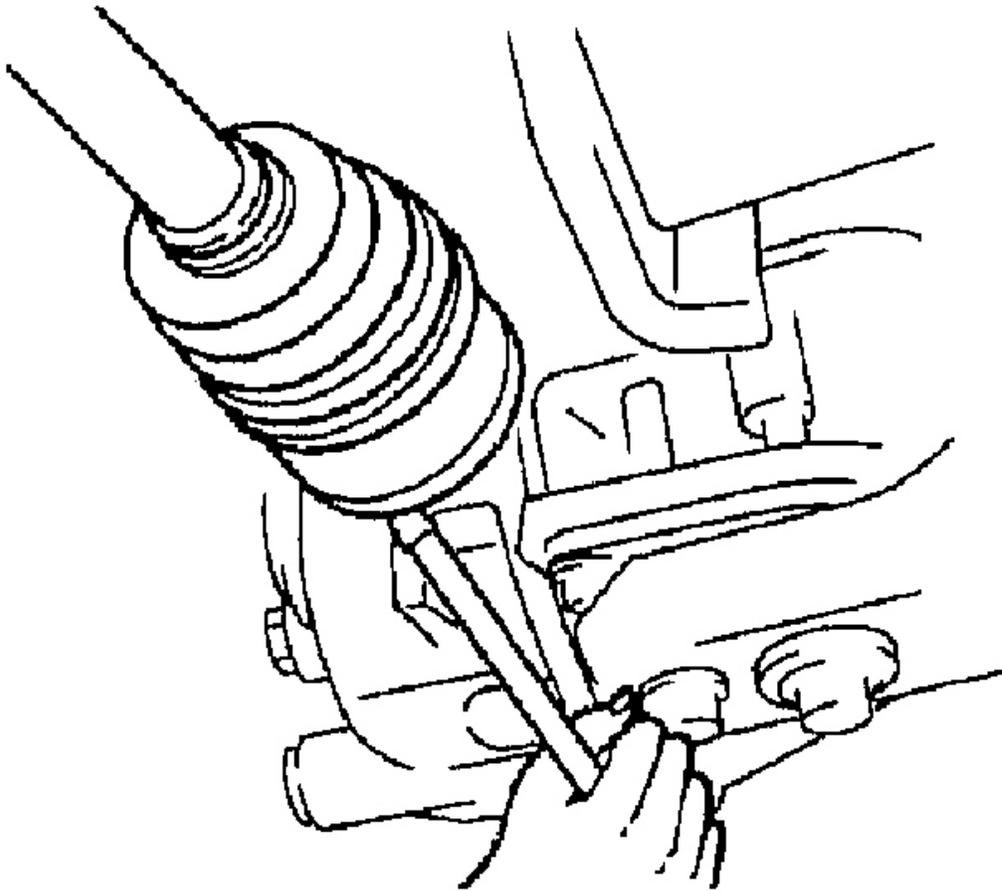
Fig. 3: Exploded View Of Drive Shaft & Torque Specifications
 Courtesy of MAZDA MOTORS CORP.

DRIVE SHAFT REMOVAL NOTE

NOTE:

- If the drive shaft will not come out of the rear hub support easily, install a discarded nut onto the drive shaft so that the nut is flush with the end of the drive shaft. Tap the nut with a copper hammer to loosen the drive shaft from the wheel hub.

1. Pull the rear hub support from the drive shaft.
2. Remove the drive shaft from the differential using a pry bar.

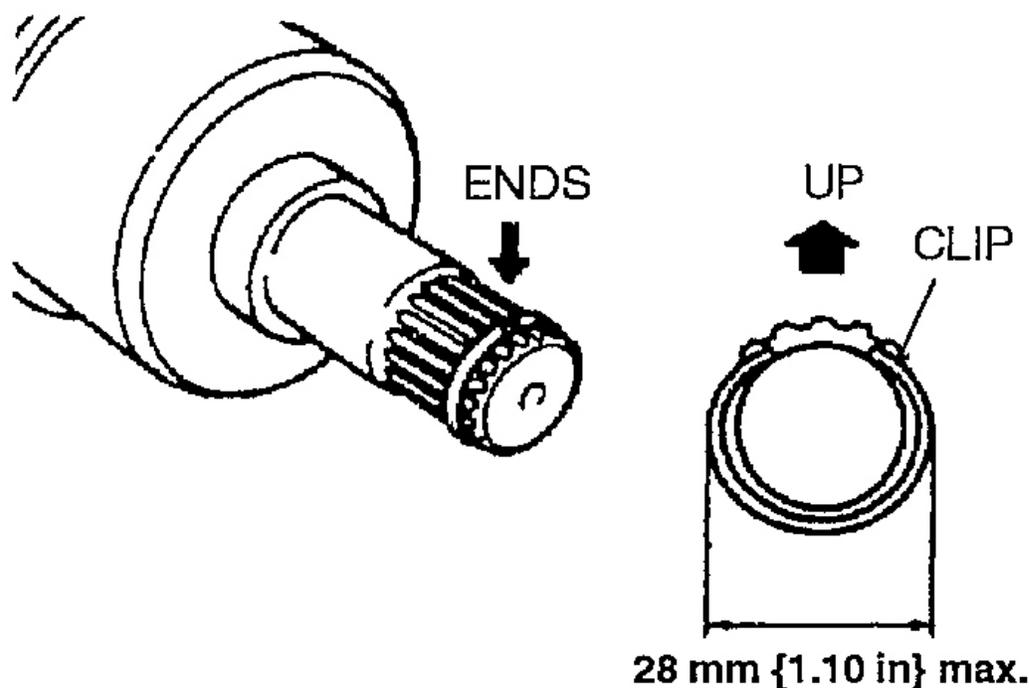


G03638117

Fig. 4: Removing Drive Shaft From Differential
Courtesy of MAZDA MOTORS CORP.

DRIVE SHAFT INSTALLATION NOTE

1. Install a new clip onto the drive shaft.
2. Measure the outer diameter of the clip after installing.



G03638118

Fig. 5: Measuring Outer Diameter Of Clip After Installing
 Courtesy of MAZDA MOTORS CORP.

- Replace the clip.
- If it exceeds the specification.

CAUTION:

- The sharp edges of the drive shaft snap ring can slice or puncture the oil seal. Be careful when installing the drive shaft to the transmission.

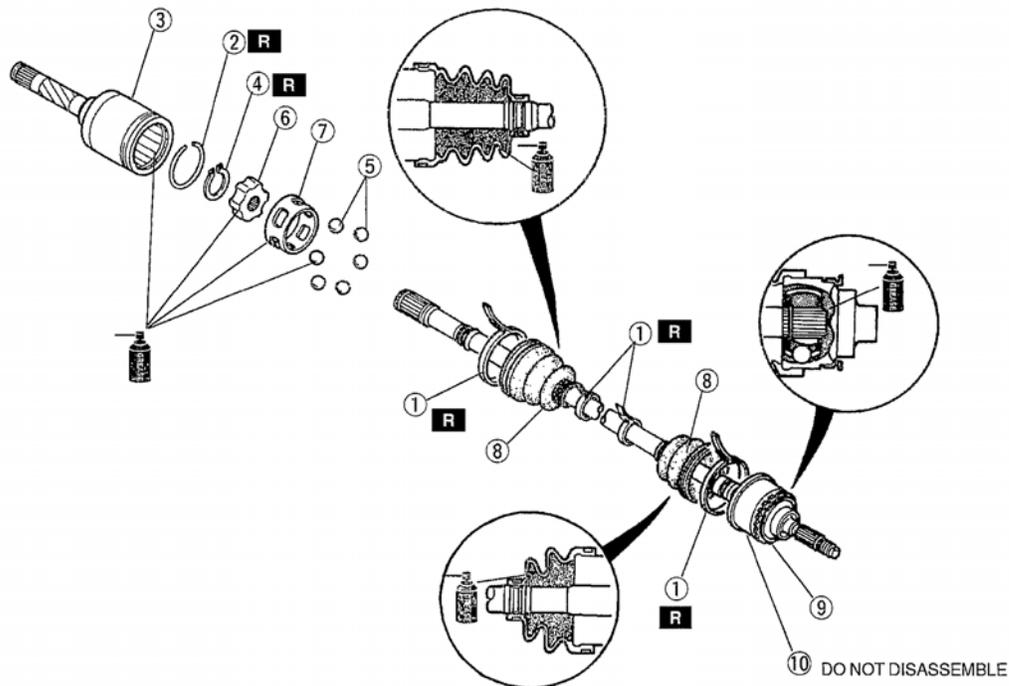
3. With the ends of the clip facing upward, push the drive shaft into the differential.
4. After installation, pull outward on the double offset joint outer ring and verify that the drive shaft is securely held by the clip.

DRIVE SHAFT DISASSEMBLY/ASSEMBLY (BP)

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

2005 Mazda MX-5 Miata

2005 DRIVELINE/AXLE Drive Shaft - MX-5 Miata



1	Boot bands (See Boot Bands Disassembly Note) (See Boot Bands Assembly Note)
2	Clip (See Clip Disassembly Note)
3	Outer ring
4	Snap ring (See Snap Ring Disassembly Note)
5	Balls (See Balls, Inner Ring, Cage Disassembly Note) (See Cage, Inner Ring, Balls Assembly Note)
6	Inner ring (See Balls, Inner Ring, Cage Disassembly Note) (See Cage, Inner Ring, Balls Assembly Note)

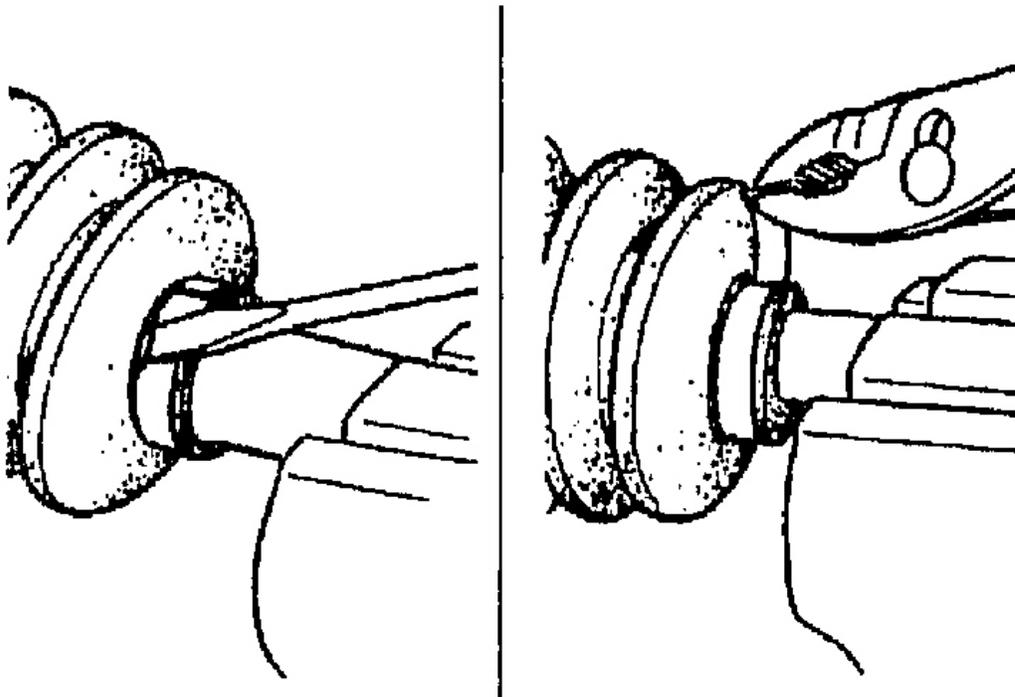
7	Cage (See Balls, Inner Ring, Cage Disassembly Note) (See Cage, Inner Ring, Balls Assembly Note)
8	Boots (See Boots Disassembly Note) (See Boots Assembly Note)
9	ABS sensor rotor (See ABS Sensor Rotor (With ABS) Disassembly Note) (See ABS Sensor Rotor (With ABS) Assembly Note)
10	Shaft and bell joint component

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Fig. 6: Disassembled View Of Drive Shaft
Courtesy of MAZDA MOTORS CORP.

BOOT BANDS DISASSEMBLY NOTE

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

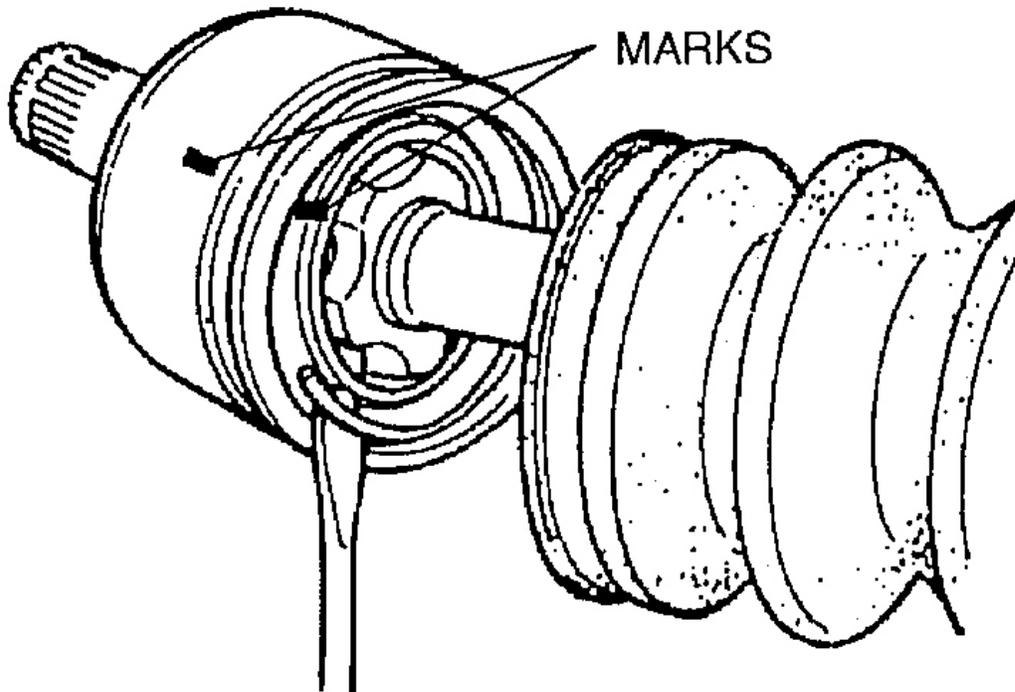


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Fig. 7: Disassembling Boot Bands
Courtesy of MAZDA MOTORS CORP.

CLIP DISASSEMBLY NOTE

1. Mark the drive shaft and outer ring.
2. Remove the clip.



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Fig. 8: Removing Clip
Courtesy of MAZDA MOTORS CORP.

SNAP RING DISASSEMBLY NOTE

1. Mark the drive shaft end and inner ring.
2. Remove the snap ring using snap-ring pliers.

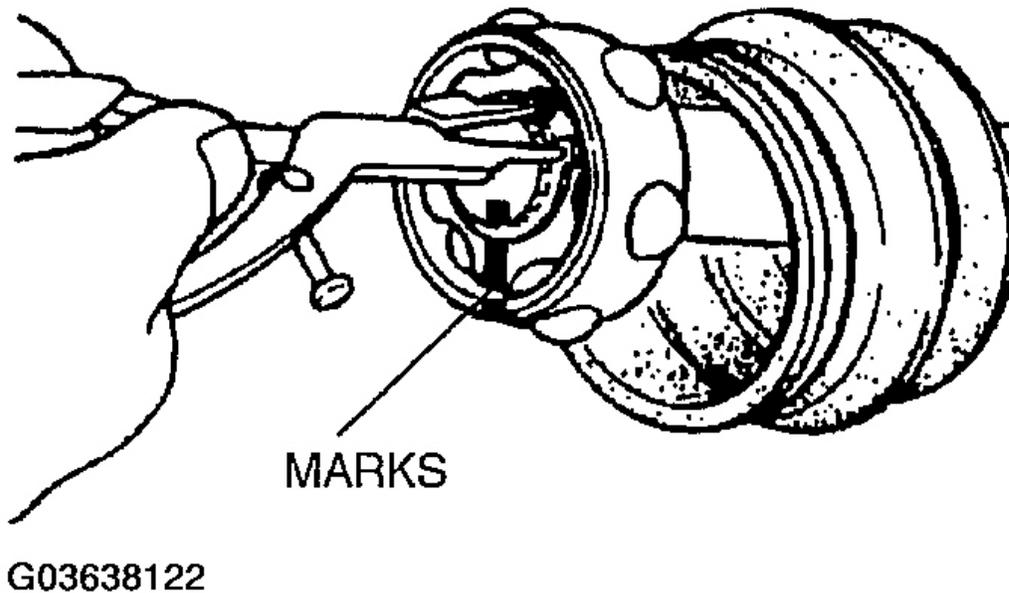
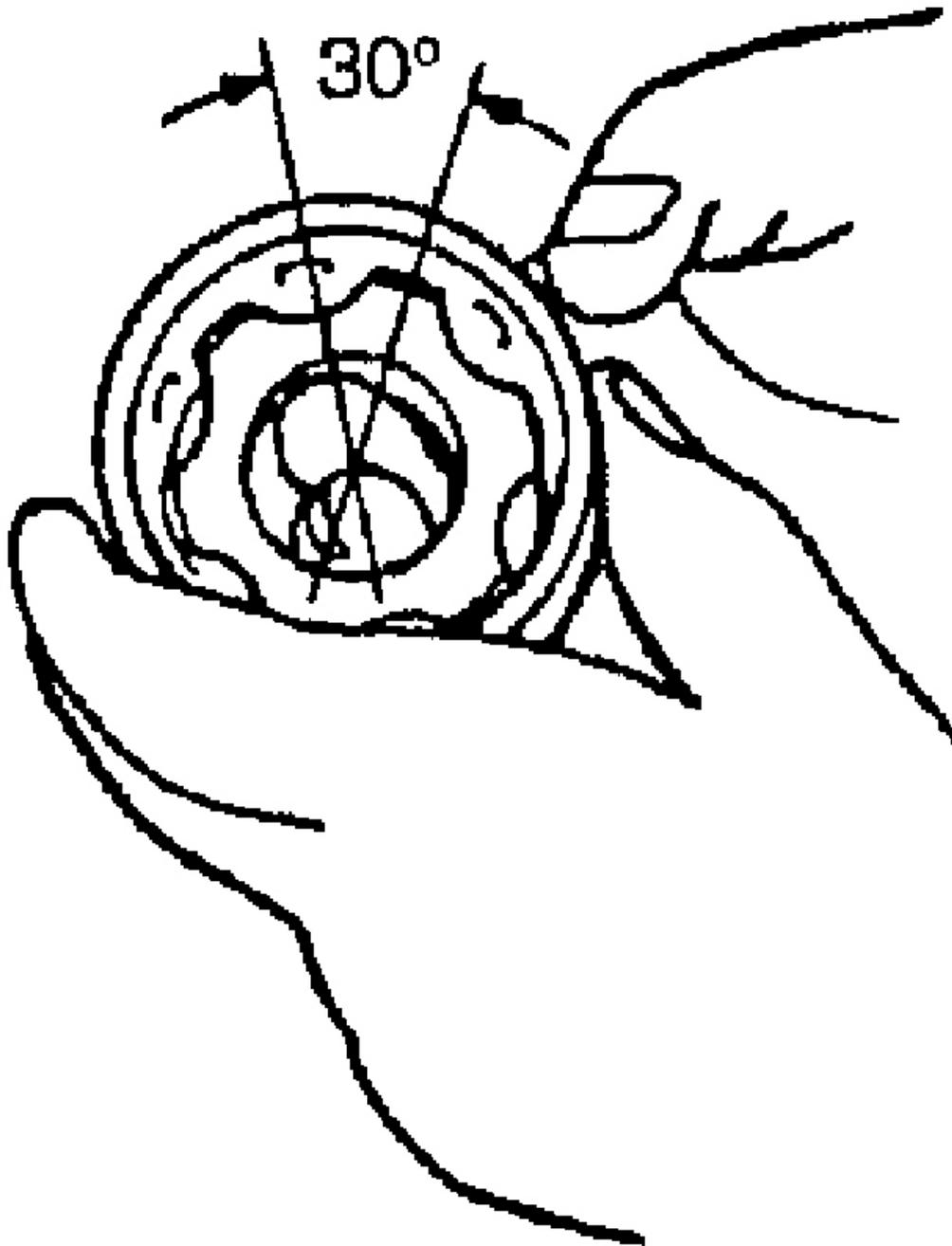


Fig. 9: Removing Snap Ring Using Snap-Ring Pliers
Courtesy of MAZDA MOTORS CORP.

BALLS, INNER RING, CAGE DISASSEMBLY NOTE

1. Insert a screwdriver between the inner ring and cage to remove the balls.
2. Mark the inner ring and cage.
3. Turn the cage **approx.30°** , then pull it away from the inner ring.

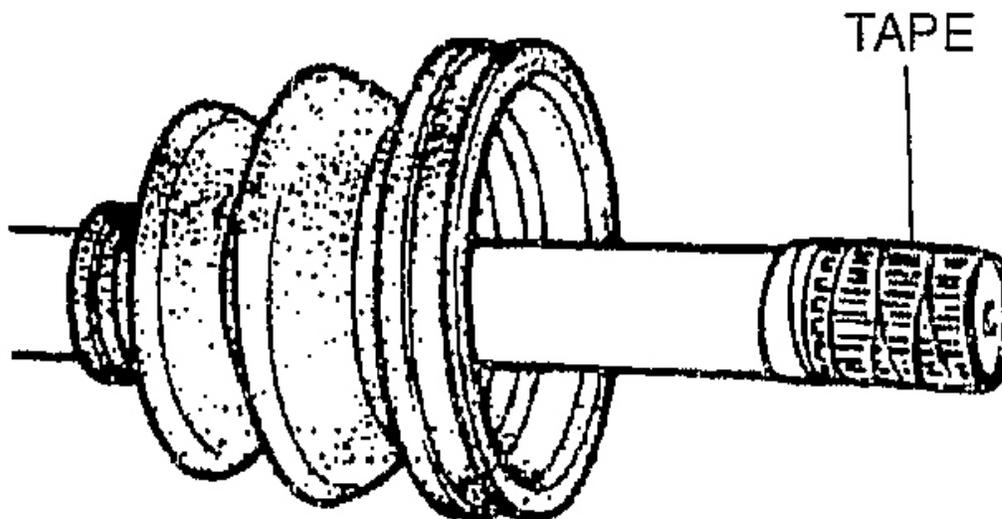


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Fig. 10: Turning Cage Approx. 30 Degrees
Courtesy of MAZDA MOTORS CORP.

BOOTS DISASSEMBLY NOTE

1. Wrap the shaft splines with tape.



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Fig. 11: Wrapping Shaft Splines With Tape
Courtesy of MAZDA MOTORS CORP.

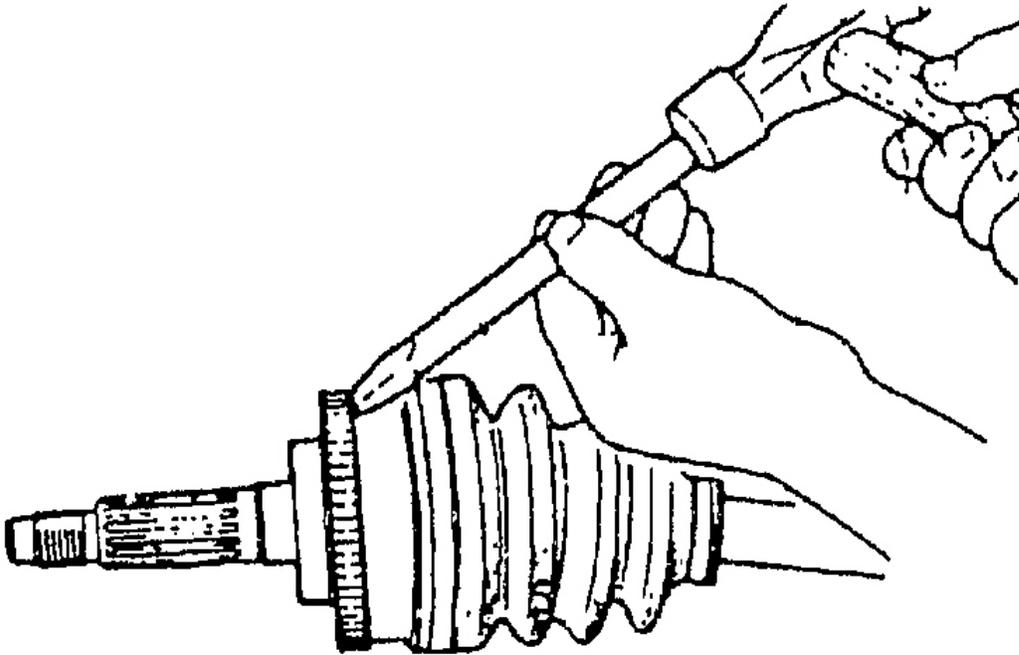
2. Remove the boot.

ABS SENSOR ROTOR (WITH ABS) DISASSEMBLY NOTE

NOTE:

- The sensor rotor does not need to be removed unless it is being replaced.

1. Tap the ABS sensor rotor off the bell joint outer race using a chisel.

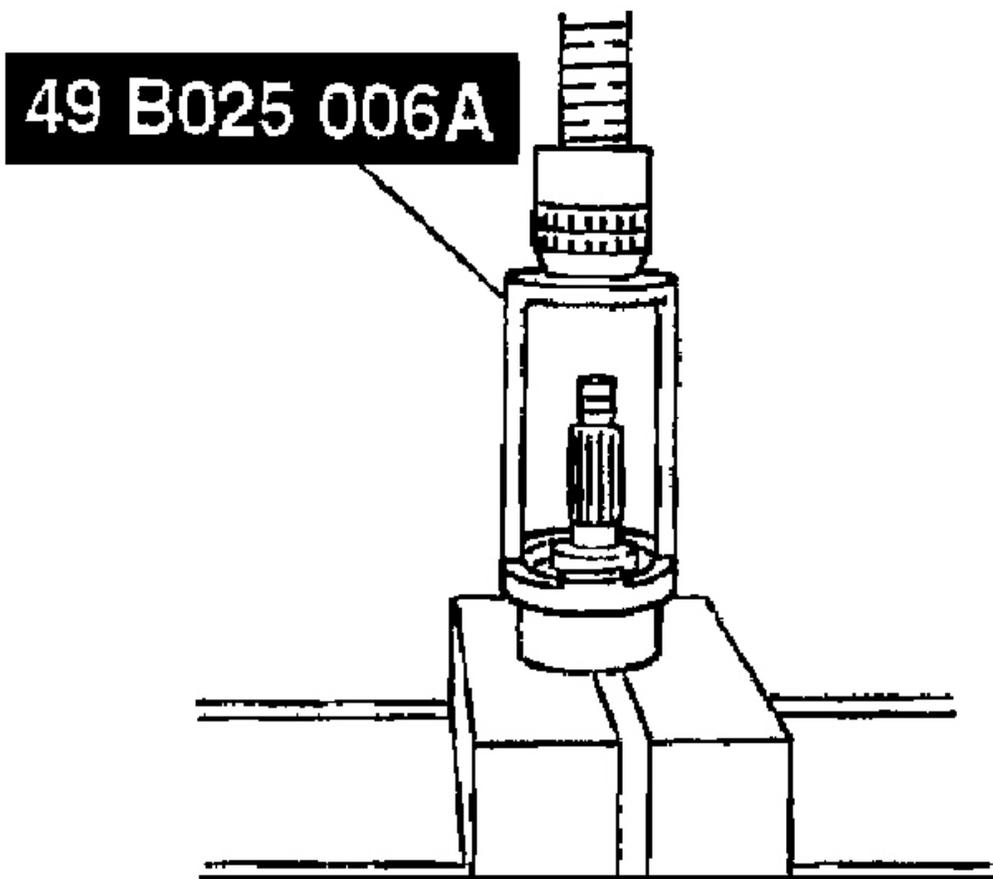


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Fig. 12: Taping ABS Sensor Rotor Off Bell Joint Outer Race
Courtesy of MAZDA MOTORS CORP.

ABS SENSOR ROTOR (WITH ABS) ASSEMBLY NOTE

1. Press in the ABS sensor rotor using the SST .



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Fig. 13: Pressing ABS Sensor Rotor
Courtesy of MAZDA MOTORS CORP.

BOOTS ASSEMBLY NOTE

1. Before putting the boot onto the shaft, wrap the shaft splines with tape.

NOTE:

- The initials DOJ and BJ are stamped on the wheel side and differential side boots respectively.

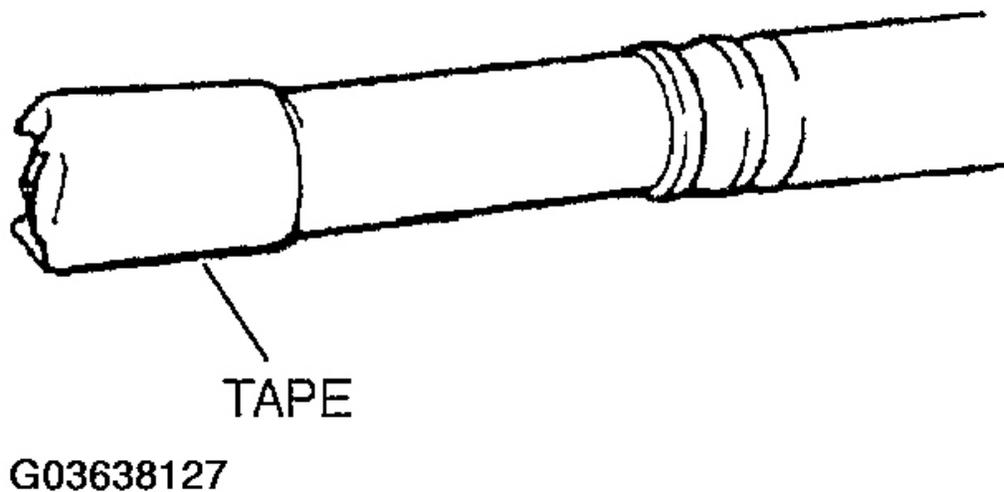


Fig. 14: Wrapping The Shaft Splines With Tape
Courtesy of MAZDA MOTORS CORP.

2. Install the wheel side and differential side boots, noting the shape and size of each one in the figure.

Outer diameter of large boot end

Differential side:87.4 mm {3.44 in}

Wheel side:90.8 mm {3.57 in}

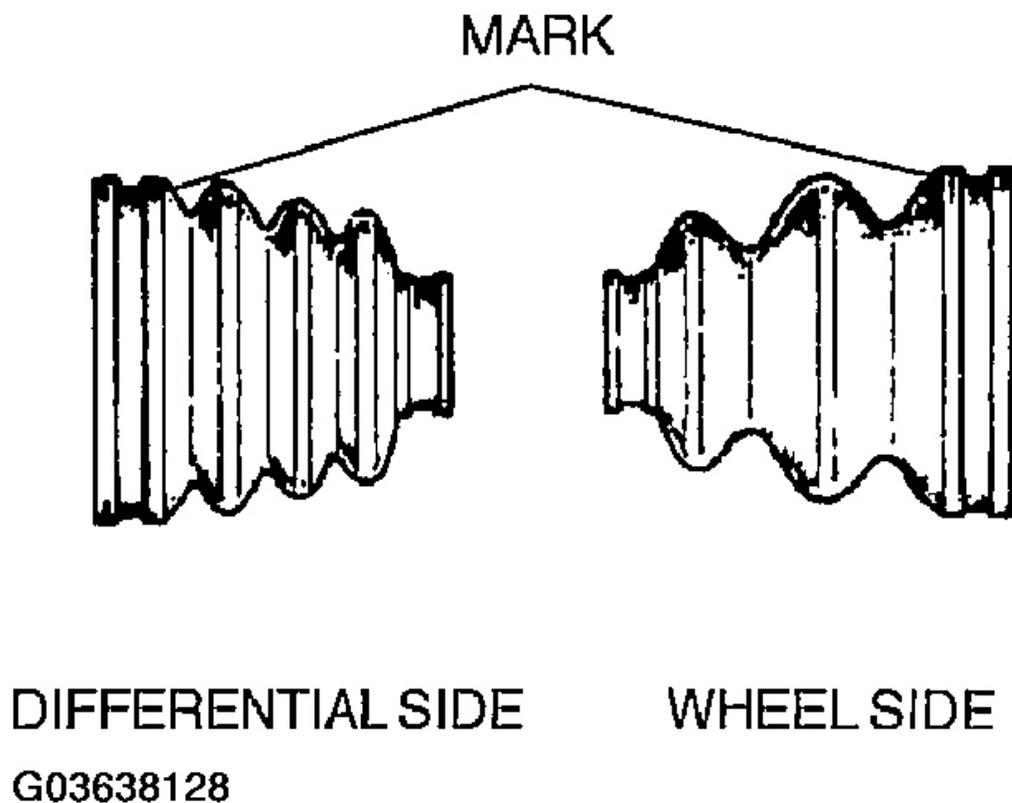
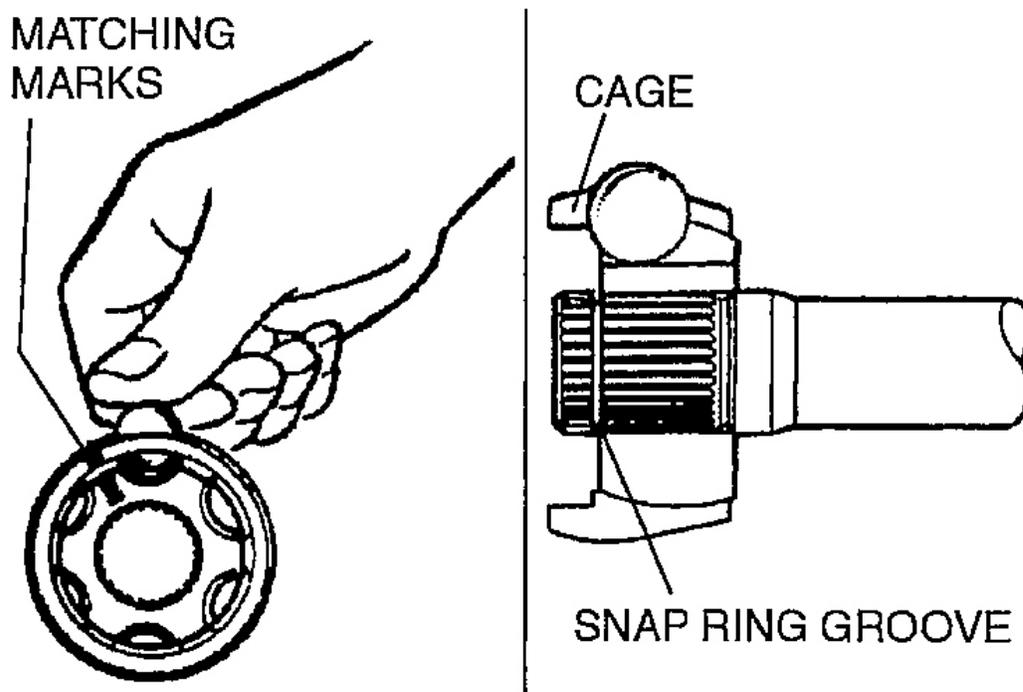


Fig. 15: Installing Wheel Side And Differential Side Boots
Courtesy of MAZDA MOTORS CORP.

CAGE, INNER RING, BALLS ASSEMBLY NOTE

1. Align the marks and install the balls to the inner ring.
2. Install the cage, inner ring, and ball component to the drive shaft in the direction shown in **Fig. 16**. The larger diameter of the cage should be facing the snap ring groove.
3. Install a new snap ring in the drive shaft snap ring groove.



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Fig. 16: Installing New Snap Ring In Drive Shaft Snap Ring Groove
Courtesy of MAZDA MOTORS CORP.

4. Apply the specified grease (supplied in the boot kit) to the joints and boots.

CAUTION:

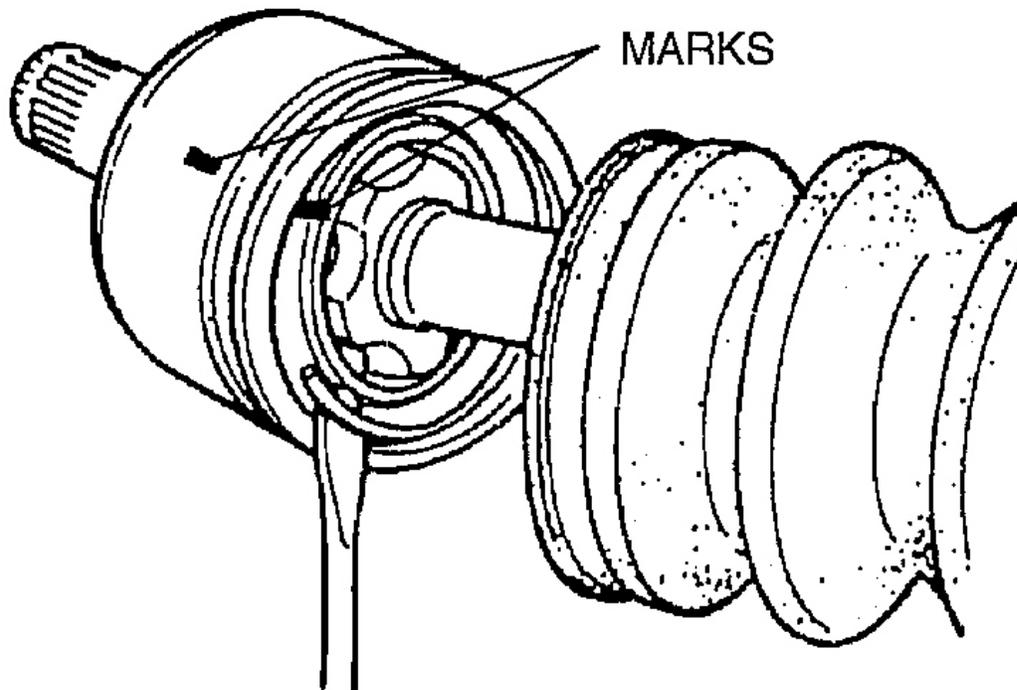
- Do not touch grease with your hand. Apply from the tube to prevent foreign matter entering the boot.

Total quantity

Differential side: 85-105 g {3.01-3.70 oz}

Wheel side: 55-75 g {1.95-2.64 oz}

5. Align the marks, then install a new clip.



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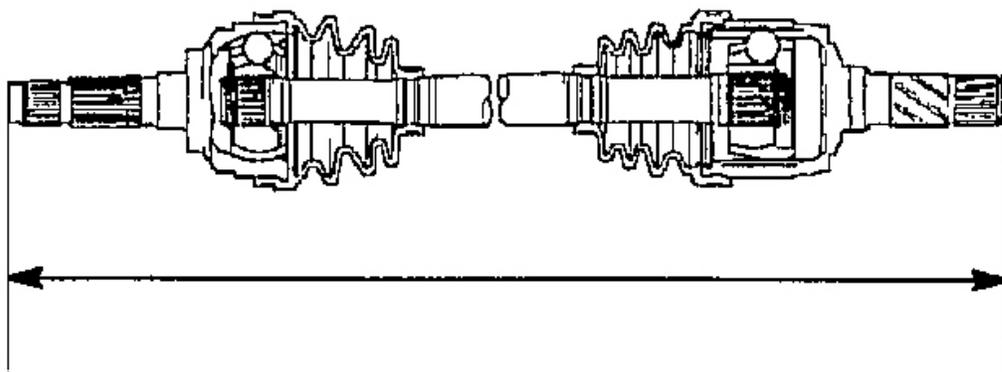
Fig. 17: Installing A New Clip
Courtesy of MAZDA MOTORS CORP.

BOOT BANDS ASSEMBLY NOTE

1. Verify that the boots are not dented or twisted.
2. Set the drive shaft to the standard length.

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G03638131

Fig. 18: Setting Drive Shaft To Standard Length
Courtesy of MAZDA MOTORS CORP.

Standard length

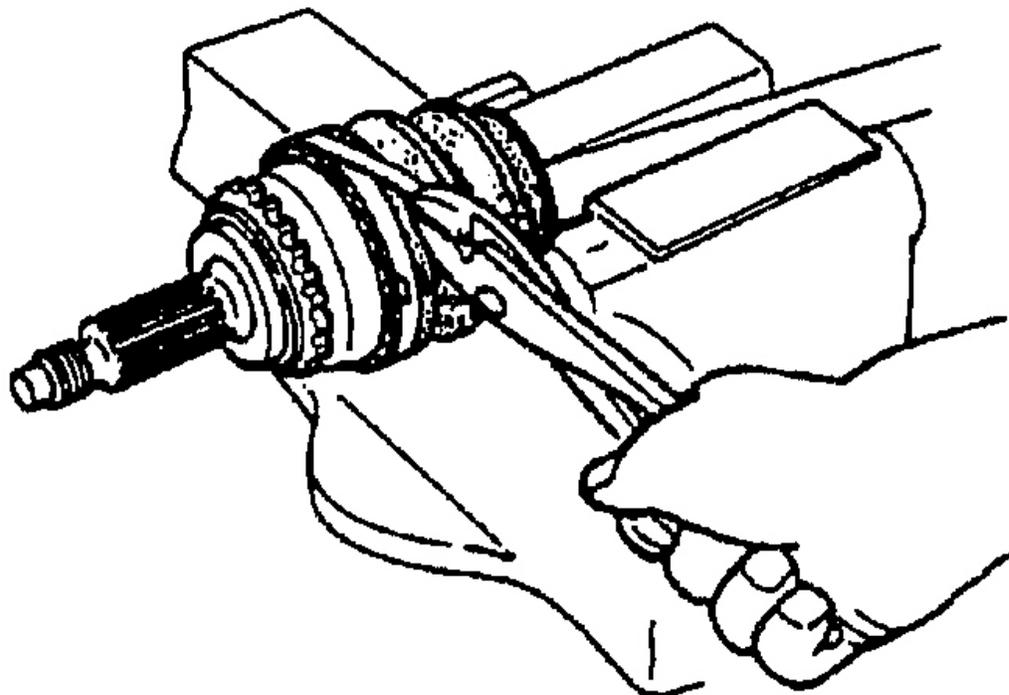
772.6-782.6 mm {30.42-30.81 in}

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

CAUTION:

- Be careful not to allow the grease to leak.
- Do not damage the boot.

4. Verify that the drive shaft length is within the standard.
 - If the drive shaft length is not within the standard, return to step 1.
5. Fold the new band back by pulling on the end of it with pliers. The band should be folded in the direction opposite the forward revolving direction of the drive shaft.



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Fig. 19: Folding New Band Back By Pulling On End Of With Pliers
Courtesy of MAZDA MOTORS CORP.

6. Lock the end of the band by bending the locking clips.

CAUTION:

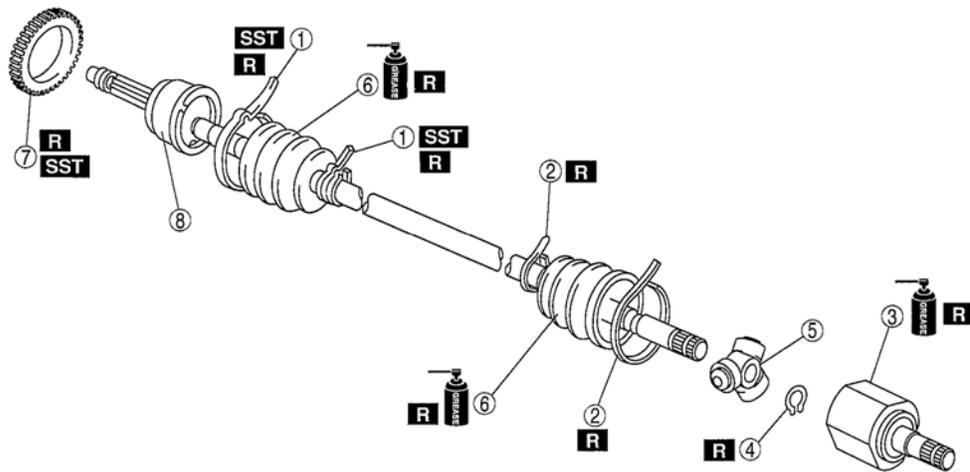
- Verify that the boot band is installed in the boot groove securely.

DRIVE SHAFT DISASSEMBLY/ASSEMBLY (BP WITH TC)

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

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1	Boot band (axle side) (See Boot Band (axle side) Disassembly Note.) (See Boot Band (Axle Side) Assembly Note.)
2	Boot band (differential side) (See Boot Band (Differential Side) Disassembly Note.) (See Boot Band (Differential Side) 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	ABS sensor rotor (See ABS Sensor Rotor Disassembly Note.) (See ABS Sensor Rotor Assembly Note.)
8	Shaft and ball joint component

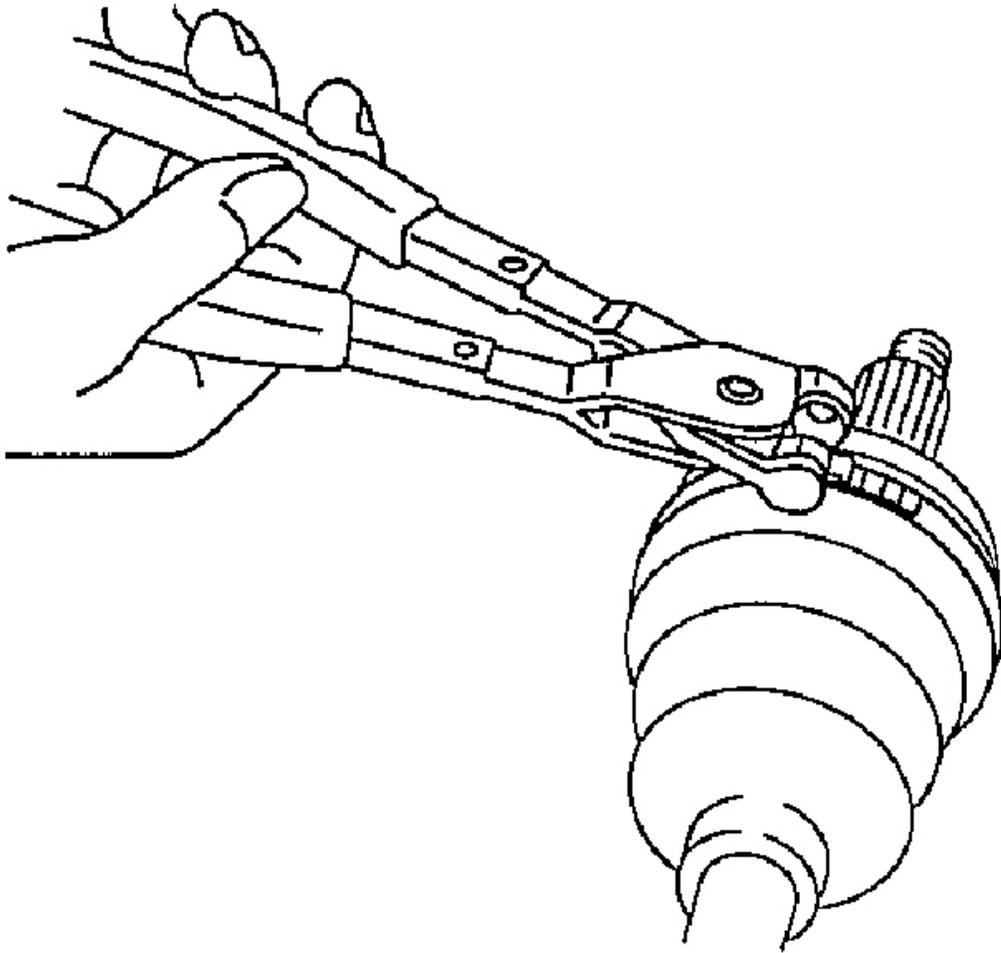
G03638133

Fig. 20: View Of Drive Shaft
 Courtesy of MAZDA MOTORS CORP.

BOOT BAND (AXLE SIDE) DISASSEMBLY NOTE

NOTE: • Remove the boot band only if there is an abnormality.

1. Remove the boot band using end clamp pliers.

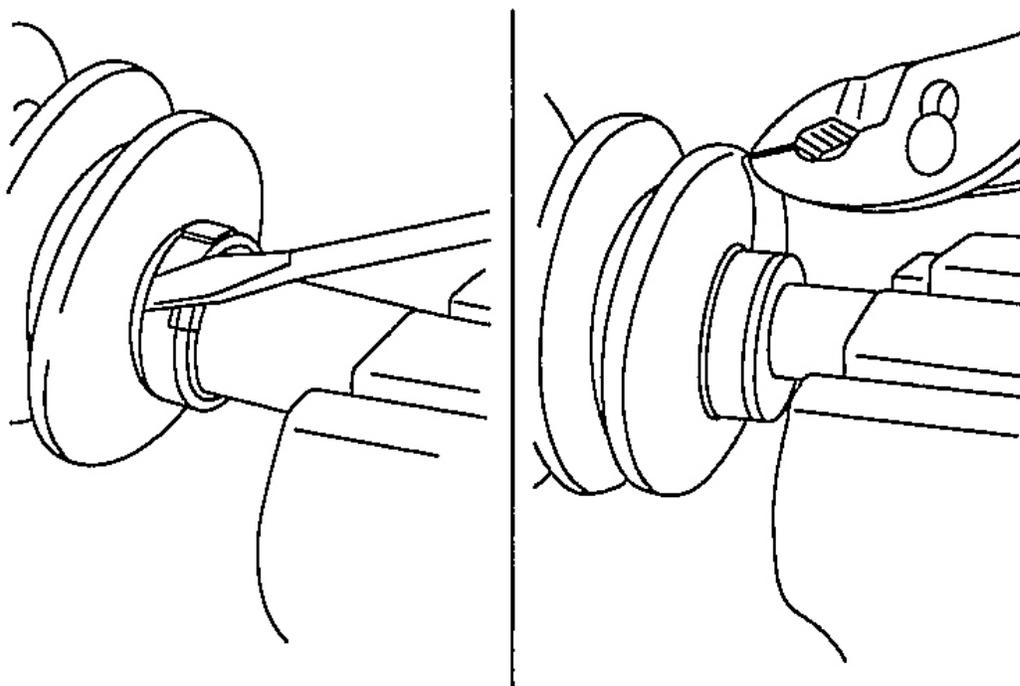


G03638134

Fig. 21: Removing Boot Band Using End Clamp Pliers
Courtesy of MAZDA MOTORS CORP.

BOOT BAND (DIFFERENTIAL SIDE) DISASSEMBLY NOTE

1. Remove the crimp of the clip using a flathead screwdriver.

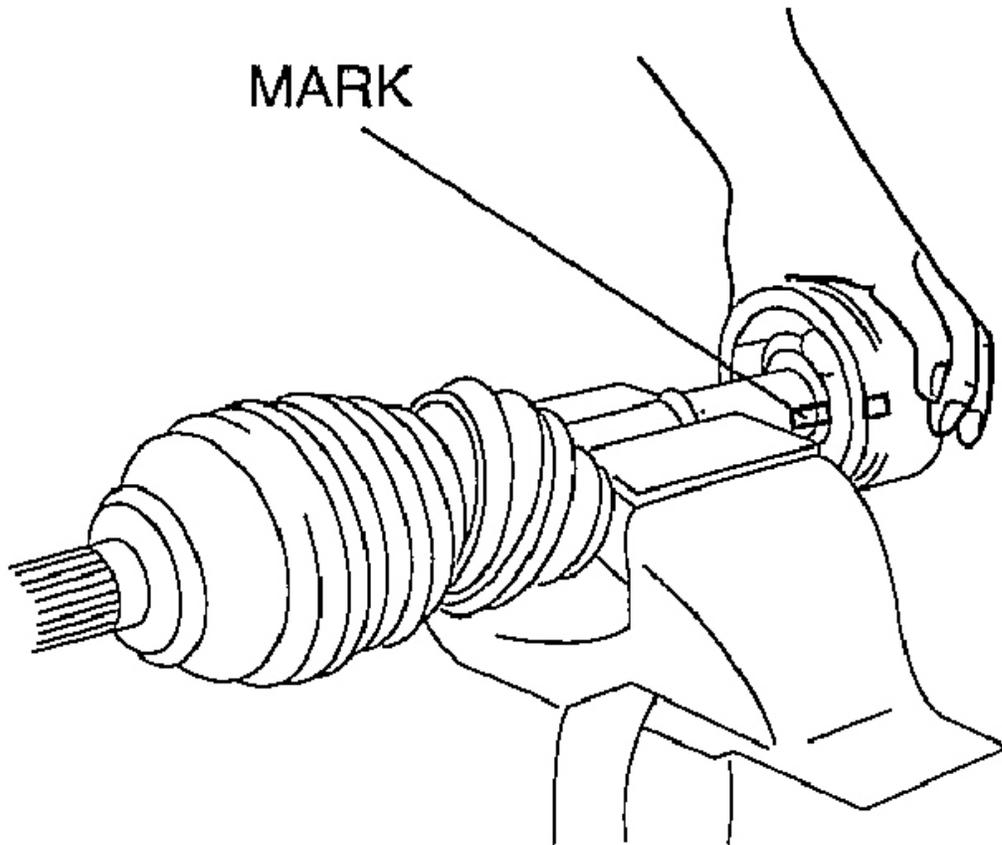


G03638135

Fig. 22: Removing Crimp Of Clip Using A Flathead Screwdriver
Courtesy of MAZDA MOTORS CORP.

OUTER RING DISASSEMBLY NOTE

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

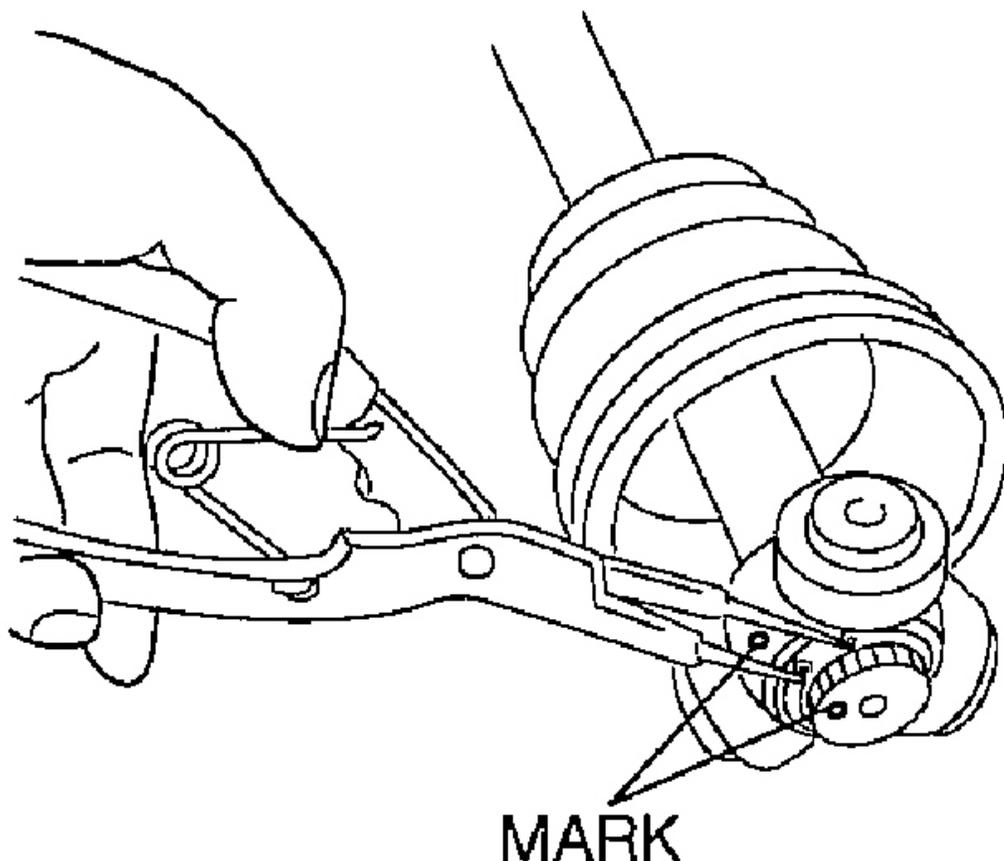


G03638136

Fig. 23: Placing An Alignment Mark On Drive Shaft And Outer Ring
Courtesy of MAZDA MOTORS CORP.

SNAP RING, TRIPOD JOINT DISASSEMBLY NOTE

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



G03638137

Fig. 24: Removing Tripod Joint From Shaft
Courtesy of MAZDA MOTORS CORP.

3. Remove the tripod joint from the shaft.

CAUTION:

- To prevent damage to the component, do not use a hammer when removing it.

BOOT DISASSEMBLY NOTE

NOTE:

- Remove the axle side boot only if there is an abnormality.

1. Wrap the shaft spline with vinyl tape.

2. Remove the boot.

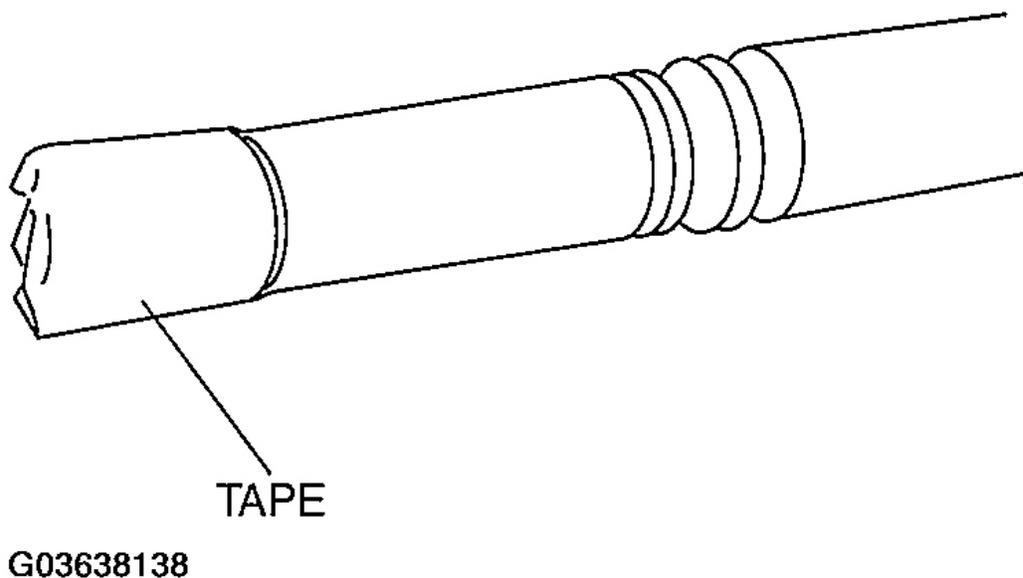


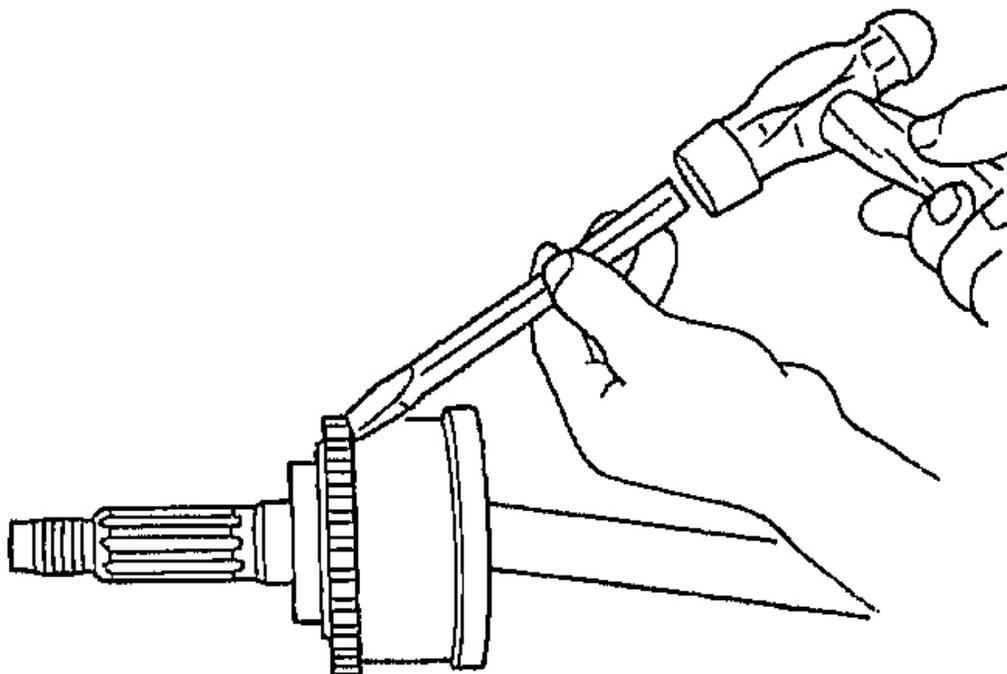
Fig. 25: Wrapping Shaft Spline With Vinyl Tape
Courtesy of MAZDA MOTORS CORP.

ABS SENSOR ROTOR DISASSEMBLY NOTE

CAUTION:

- Do not remove the sensor rotor unless it is necessary.
- Do not reuse the sensor rotor if removed.

1. Tap the ABS sensor rotor off the drive shaft using a chisel.

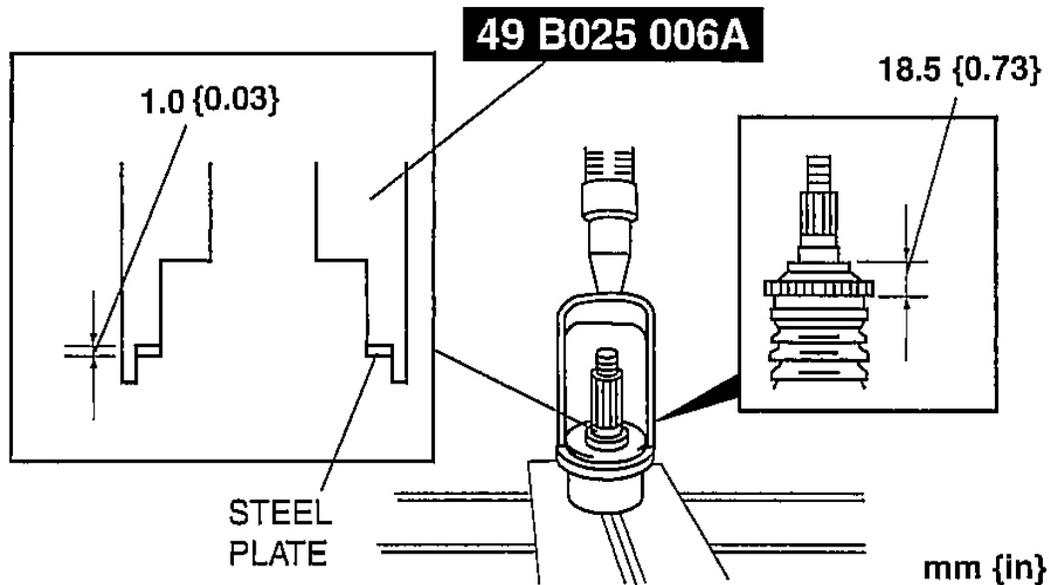


G03638139

Fig. 26: Taping ABS Sensor Rotor Off Drive Shaft Using A Chisel
Courtesy of MAZDA MOTORS CORP.

ABS SENSOR ROTOR ASSEMBLY NOTE

1. Set a new ABS sensor rotor on the drive shaft and press it on using the SSTs .



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Fig. 27: Installing New ABS Sensor Rotor On Drive Shaft
 Courtesy of MAZDA MOTORS CORP.

BOOT ASSEMBLY NOTE

NOTE:

- The boot shapes on the axle side and the differential side are different so do not misinstall them.

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

NOTE:

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

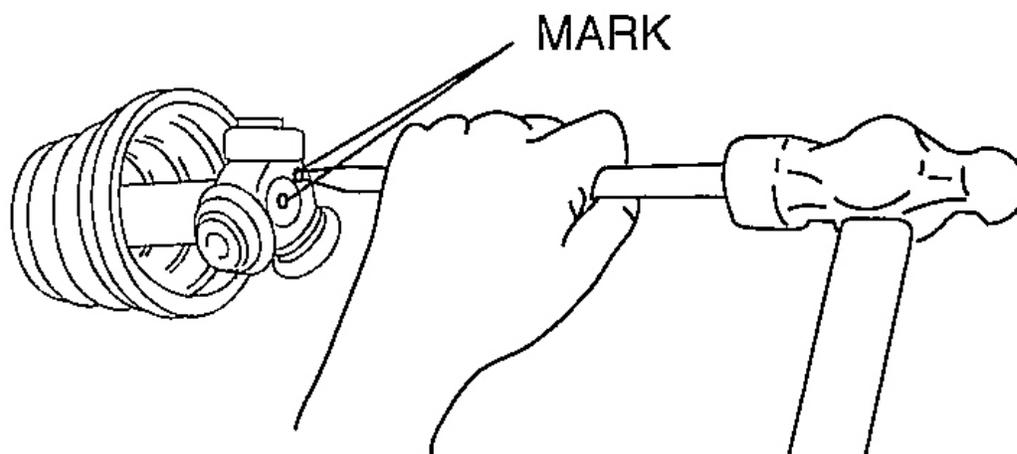
Grease amount

70-90 g {2.47-3.17 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. Align the tripod joint with the shaft mark and insert it using a brass bar.



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Fig. 28: Aligning Tripod Joint With Shaft Mark And Insert It Using A Brass Bar
Courtesy of MAZDA MOTORS CORP.

CAUTION:

- To prevent damage to the component, do not tap the roller part when installing.

2. Install the new snap ring to the shaft installation slot securely using a snap ring pliers.

OUTER RING ASSEMBLY NOTE

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

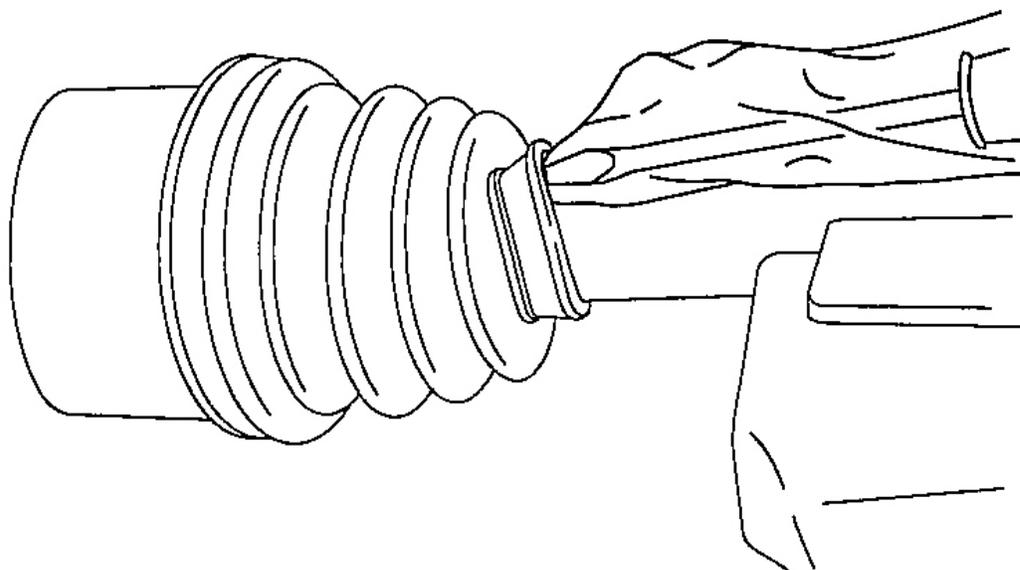
NOTE:

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

Grease amount

135-155 g {4.77-5.46 oz}

2. Assemble the outer ring.
3. Release any trapped air from the boots by carefully lifting up the small end of each boot with a cloth wrapped screwdriver.



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Fig. 29: Releasing Any Trapped Air From Boots
Courtesy of MAZDA MOTORS CORP.

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

4. Set the drive shaft length to the specification when the inside of the boots is at ambient pressure.

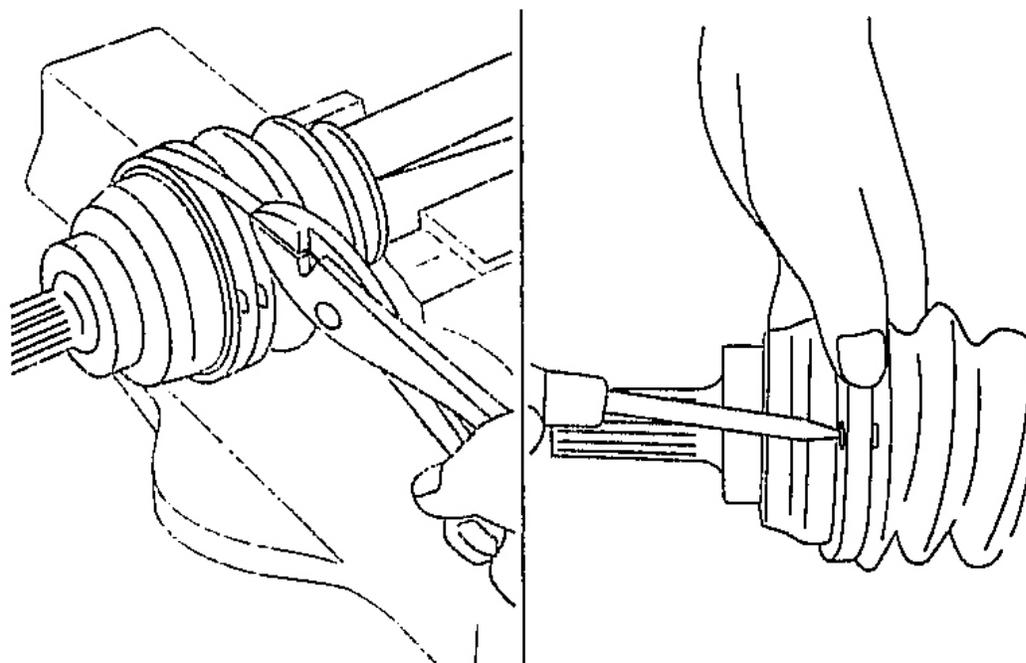
Standard

771.5-781.5 mm {30.38-30.76 in}

5. After installation, verify that there is no boot damage or grease leakage.

BOOT BAND (DIFFERENTIAL SIDE) ASSEMBLY NOTE

1. Using pliers, pull the boot band around the boot slot in opposite direction of drive shaft forward rotation direction and tighten.



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Fig. 30: Pulling Boot Band Around Boot Slot In Opposite Direction Of Drive Shaft Forward Rotation Direction And Tighten
Courtesy of MAZDA MOTORS CORP.

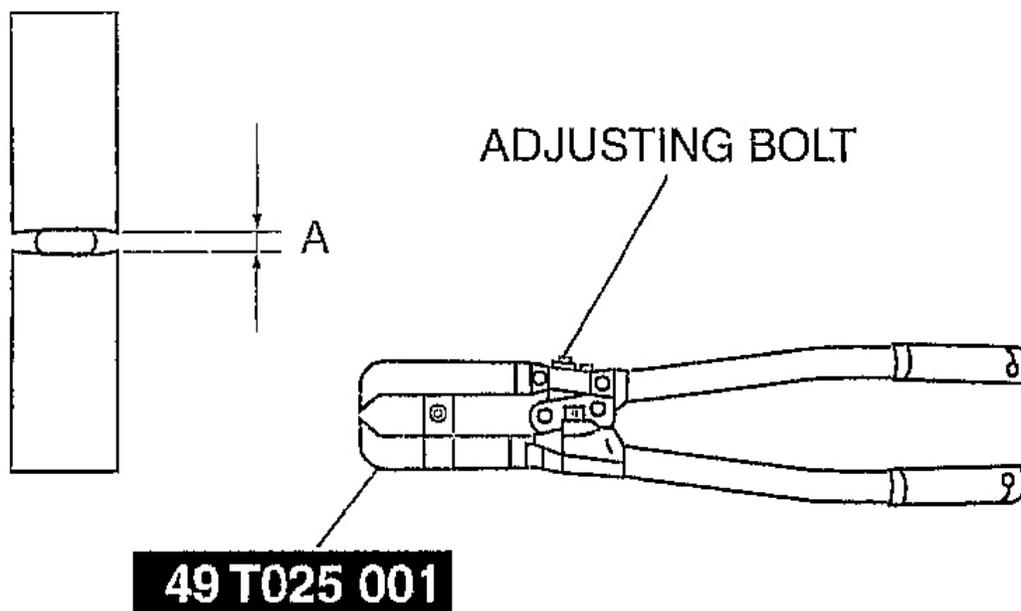
2. Insert the end of the boot band between the boot band clip and fold back the clip tabs using a flathead screwdriver to secure the boot band.
3. Verify that the boot band is installed to the boot slot securely.

BOOT BAND (AXLE SIDE) ASSEMBLY NOTE

1. Turn the adjusting bolt of the SST and adjust the opening size to the specification A.

Specification A

2.9 mm {0.11 in}



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Fig. 31: Adjusting Bolt Of SST
Courtesy of MAZDA MOTORS CORP.

2. Crimp the boot band (small-size) using the SST .
3. Verify that the crimp value B is within the specification.
 - If the crimp value B exceeds the specification, reduce opening length A of the SST and recrimp the boot band.
 - If the crimp value B is less than the specification, increase opening length A of the SST and crimp the new boot band.

Specification B

2.4-2.8 mm {0.095-0.110 in}

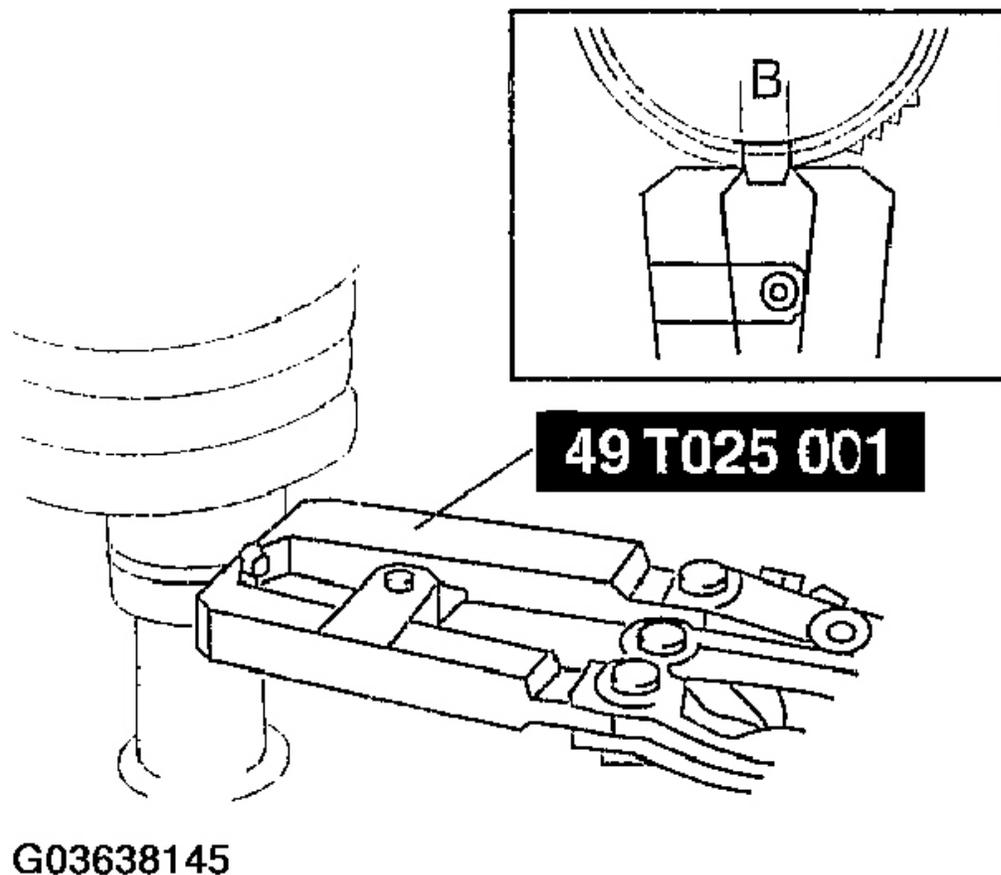


Fig. 32: Crimping Boot Band
Courtesy of MAZDA MOTORS CORP.

4. Verify that the boot band does not protrude from the boot band installation area.
 - If the boot band protrudes from the installation area, replace it with a new band and repeat Step 2 -- 4.
5. Fill the boot with the repair kit grease.
6. Adjust opening length A of the **SST** to the specification.

Specification A

3.2 mm {0.13 in}

7. Crimp the boot band (large-size) using the **SST** .
8. Verify that the boot band crimp value B is within the specification.

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- If crimp value B exceeds the specification, reduce opening length A of the **SST** and recrimp the boot band.
- If the crimp value B is less than the specification, replace the boot band, increase opening length A of the **SST** , and then recrimp the new boot band.

Specification B

2.4-2.8 mm {0.095-0.110 in}

9. Verify that the boot band does not protrude from the boot band installation area.
 - If the boot band protrudes from the installation area, replace it with a new band and repeat Step 7--9.