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## SECTION 3B

# MANUAL TRANSAXLE DRIVE AXLE

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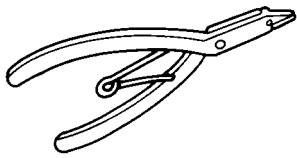
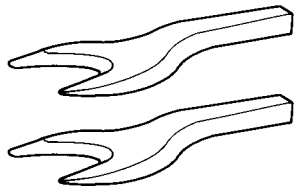
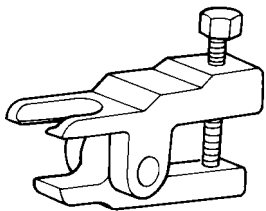
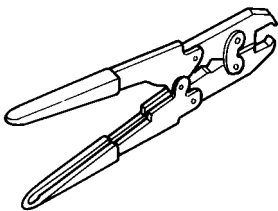
### SPECIFICATIONS

#### FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Axle Shaft Castle Nut Initial Torque	100	74	-
Axle Shaft Castle Nut Final Torque	20 + 90°	15 + 90°	-
Axle Shaft Caulking Nut Initial Torque	180	134	-
Axle Shaft Caulking Nut Final Torque	50 + 60°	37 + 60°	-
Lower Ball Joint Nut	70	52	-
Tie Rod Nut	60	44	-
Wheel Bolts	90	66	-

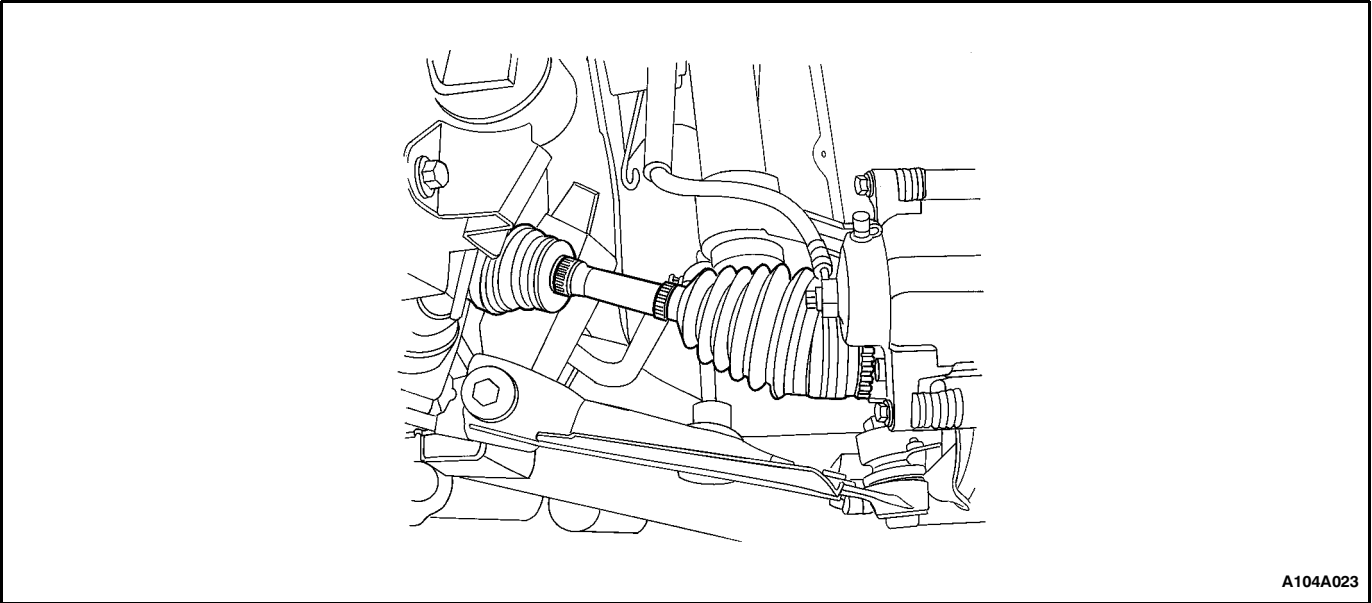
SPECIAL TOOLS

SPECIAL TOOLS TABLE

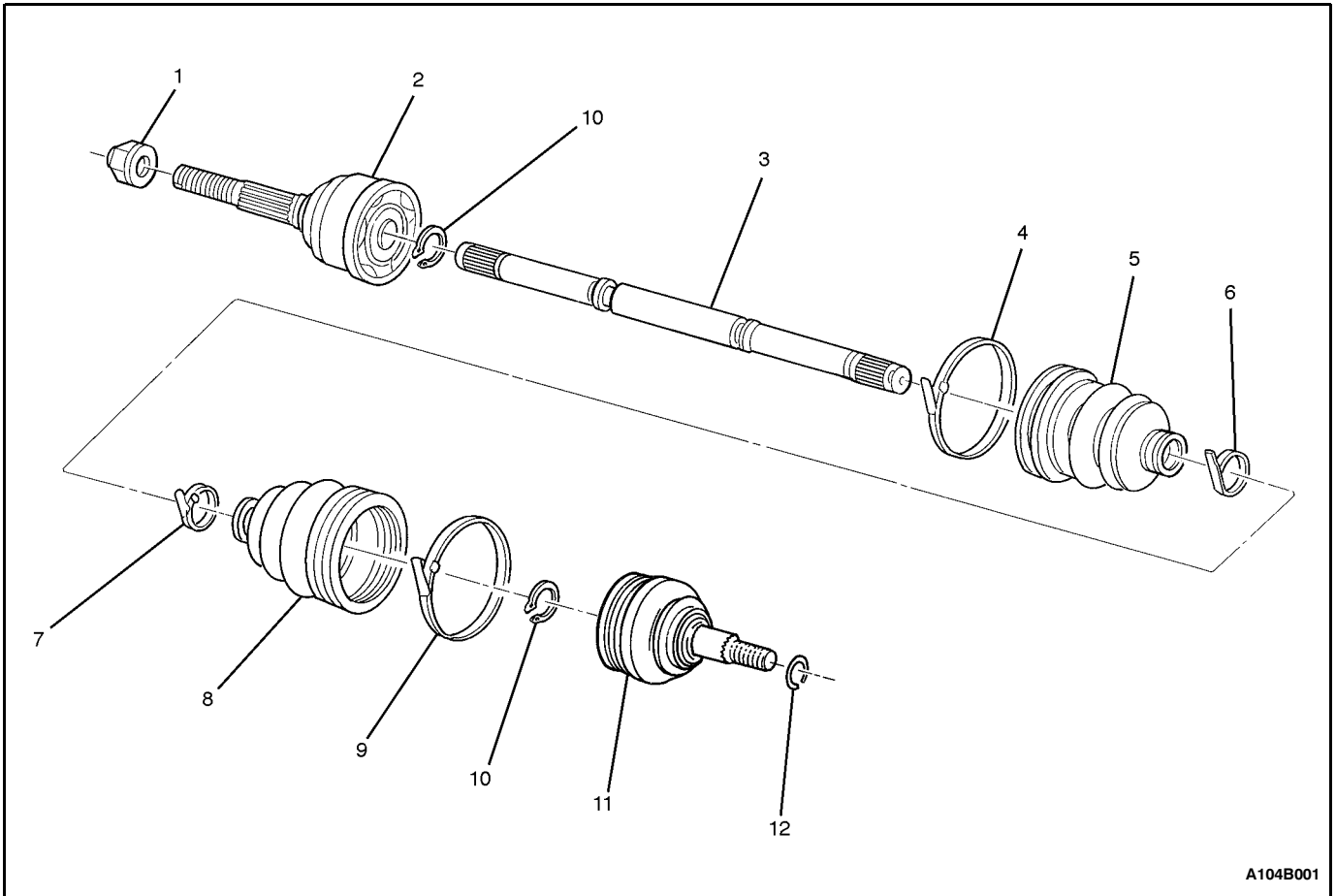
  A104A001	<b>J-8059 Snap Ring Pliers</b>	  A106C032	<b>KM-460-A Axle Shaft Remover</b>
  A106C034	<b>KM-507-B Ball Joint Remover</b>	  A104A008	<b>J-35566 Seal Clamp Pliers</b>

COMPONENT LOCATOR

FRONT DRIVE AXLE



A104A023



**1** Caulking Nut

**2** C/V Joint

**3** Axle Shaft

**4** Seal Retaining Clamp

**5** Drive Axle Outboard Seal

**6** Seal Retaining Clamp

**7** Seal Retaining Clamp

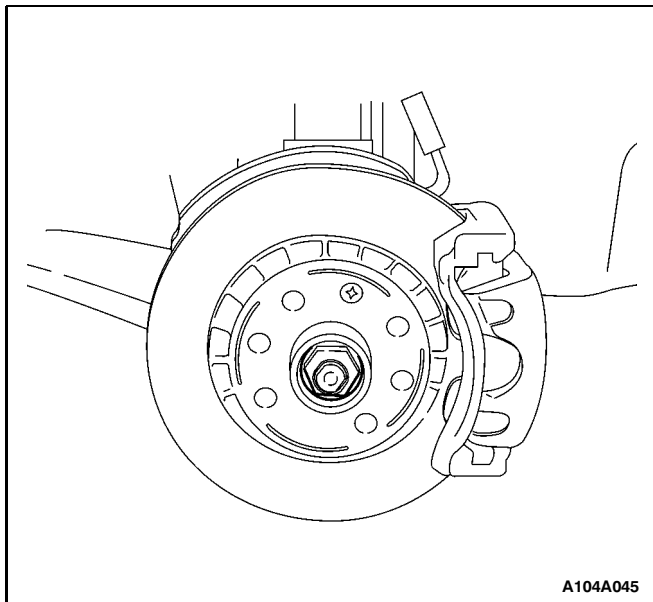
**8** Drive Axle Inboard Seal

**9** Seal Retaining Clamp

**10** Race Retaining Ring

**11** Cross Groove Joint

**12** Retaining Ring



## **MAINTENANCE AND REPAIR ON-VEHICLE SERVICE**

### **DRIVE AXLE ASSEMBLY**

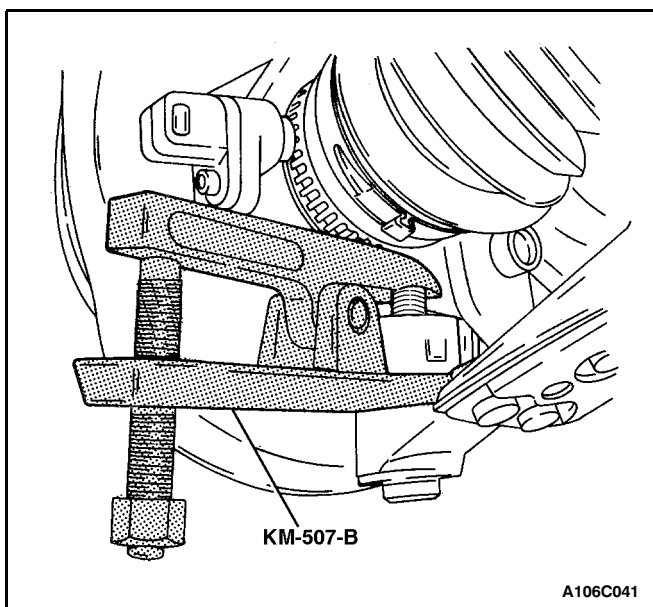
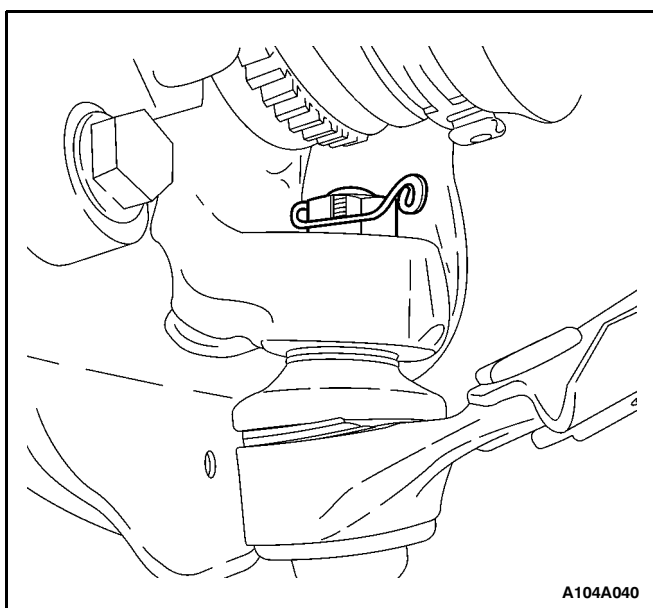
#### **Tools Required**

**KM-507-B Ball Joint Separator**

**KM-460-A Axle Shaft Remover**

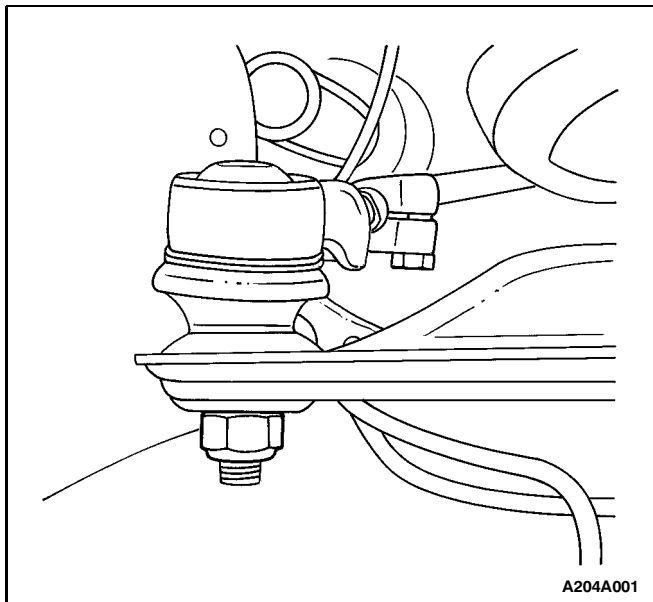
#### **Removal Procedure**

1. Raise and suitably support the vehicle.
2. Remove the wheels. Refer to Section 2E, Tires and Wheels.
3. Remove the engine under covers. Refer to Section 9N, Frame and Underbody.
4. Remove the axle shaft caulking nut. Discard the nut.
5. Remove the lower ball joint retaining clip and the nut.

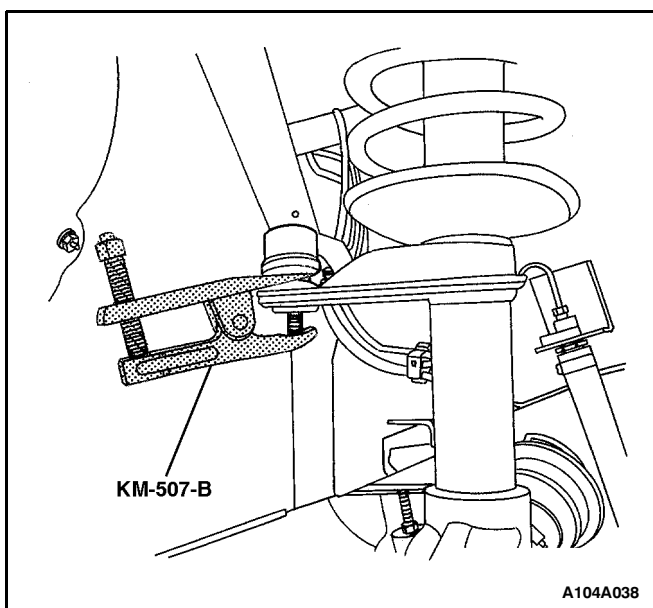


**Notice:** Use only the recommended tool for separating the lower ball joint. Failure to use the recommended tool may damage the ball joint and the seal.

6. Separate the steering knuckle from the lower ball joint using the ball joint separator KM-507-B.

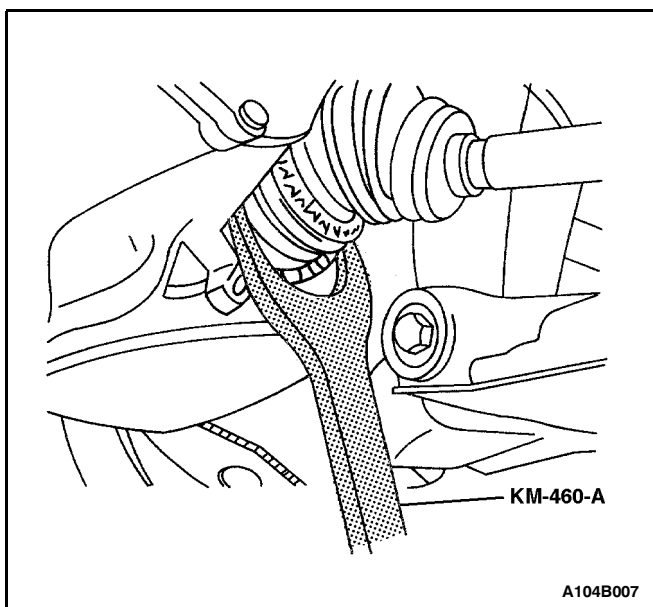


7. Remove the tie rod nut.



**Notice:** Use only the recommended tool for separating the tie rod from the knuckle/strut assembly. Failure to use the recommended tool may damage the knuckle/strut assembly.

8. Separate the tie rod end using the ball joint separator KM-507-B.

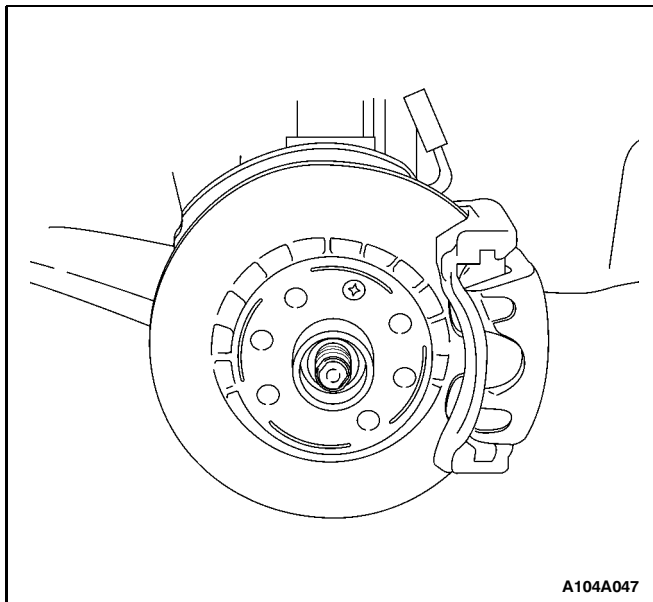


9. Push the drive axle shaft from the wheel hub.

**Important:** Support the unfastened end of the drive axle. Do not allow the drive axle to dangle freely from the transaxle for any length of time after it has been removed from the wheel hub.

**Important:** Place a drain pan below the transaxle to catch the escaping fluid. Cap the transaxle drive opening after the drive axle has been removed to keep the fluid in and any contamination out.

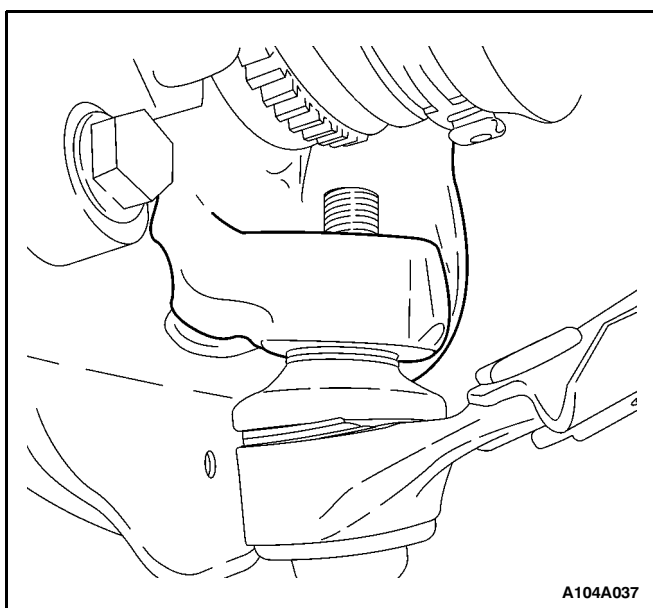
10. Remove the drive axle from the transaxle using the axle shaft remover KM-460-A.



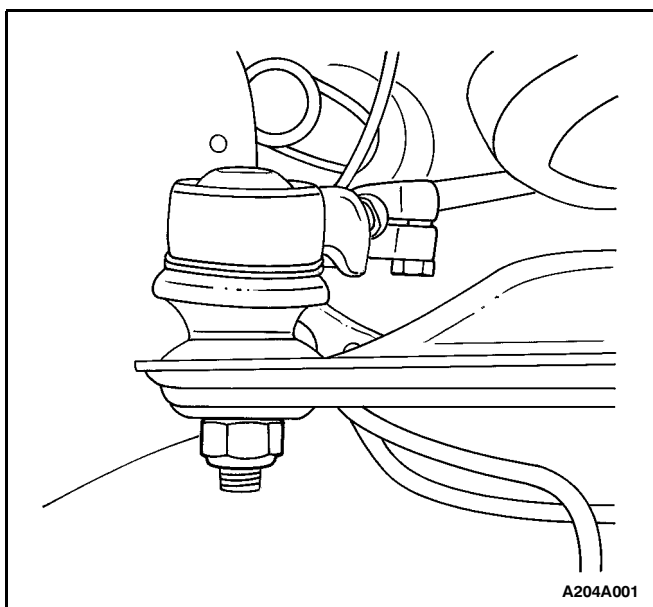
### Installation Procedure

**Notice:** Do not damage the seal.

1. Clean the hub seal and the transaxle seal.
2. Install the drive axle into the transaxle.
3. Install the wheel hub onto the drive axle shaft.



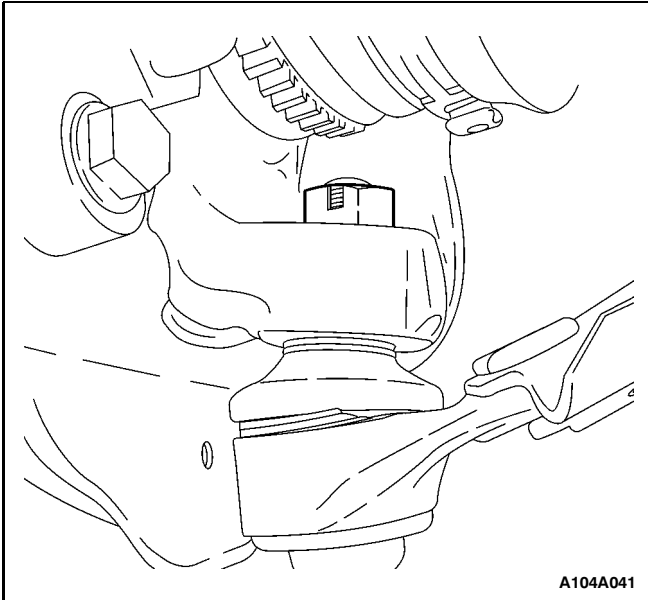
4. Mount the steering knuckle onto the lower ball joint.



5. Install the tie rod into the knuckle/strut and install the tie rod nut.

### Tighten

Tighten the tie rod nut to 60 N•m (44 lb-ft).

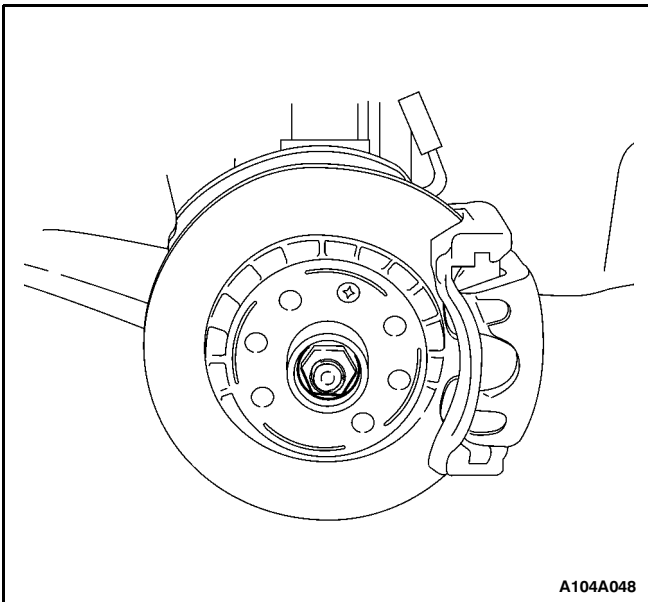


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6. Install the lower ball joint nut.

**Tighten**

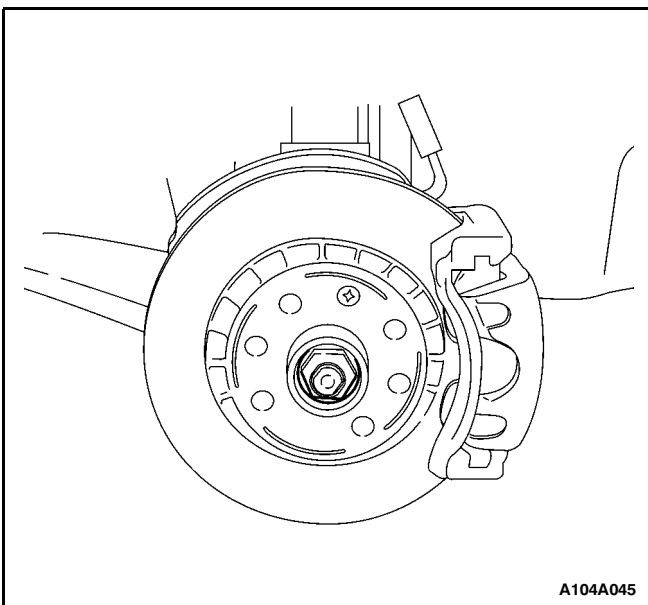
Tighten the lower ball joint nut to 70 N•m (52 lb-ft).



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7. Loosely install a new axle shaft caulking nut. Always use a new nut.

8. Install the wheels. Loosely install the bolts. Refer to Section 2E, Tires and Wheels.



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9. Lower the vehicle to the floor.

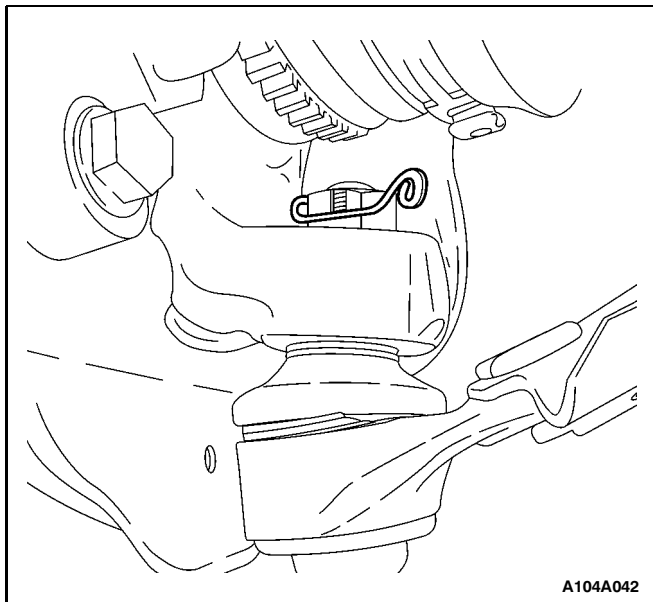
**Tighten**

Tighten the wheel bolts to 90 N•m (66 lb-ft).

**Tighten**

Tighten the axle shaft caulking nut to 180 N•m (134 lb-ft). Loosen the nut and re-tighten the nut to 50 N•m (37 lb-ft). Then tighten the nut further by 60 degrees.

10. Peen the caulking nut with a punch and a hammer until the nut is locked into place on the axle shaft hub.



11. Install the retaining clip to the lower ball joint.
12. Install the engine under covers. Refer to Section 9N, Frame and Underbody.
13. Refill the transaxle fluid to the proper level. Refer to Section 5B, Five-Speed Manual Transaxle.

## UNIT REPAIR

### OUTER JOINT SEAL

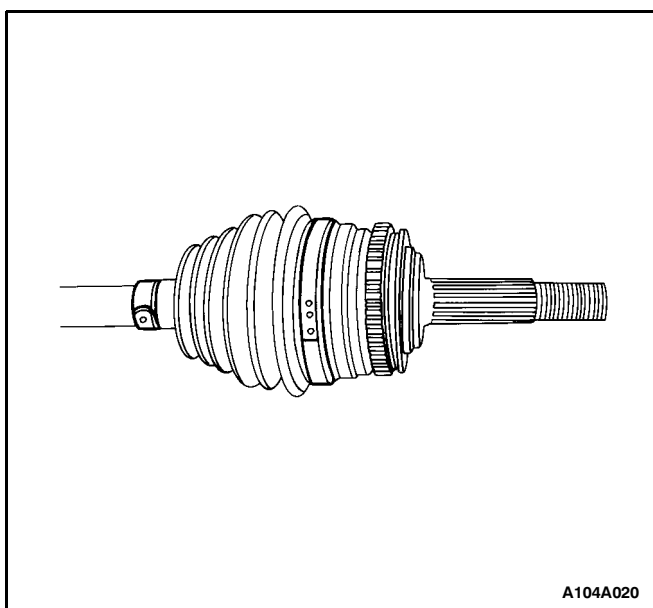
#### Tools Required

J-8059 Snap Ring Pliers

J-35566 Seal Clamp Pliers

#### Removal Procedure

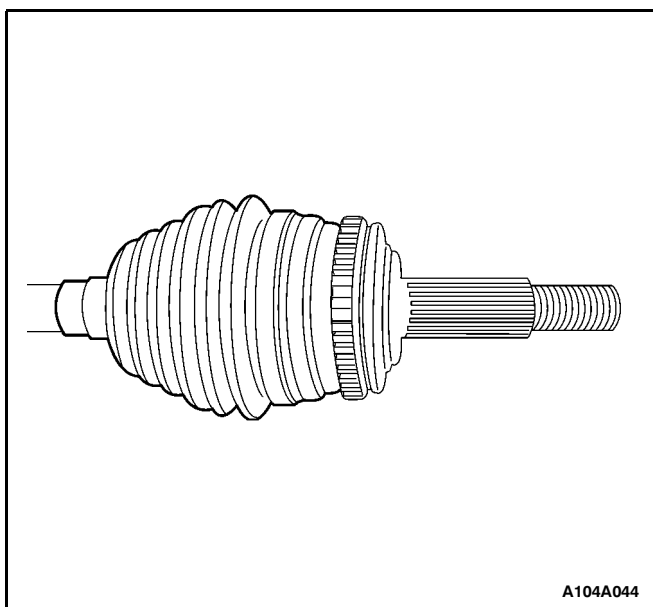
1. Remove the cross groove joint seal assembly. See "Cross Groove Joint Seal" in this section.
2. Remove the large seal retaining clamp. Discard the clamp.
3. Remove the small seal retaining clamp. Discard the clamp.



4. Degrease the joint.

**Caution:** Do not remove the axle shaft from the outer joint assembly or disassemble the outer joint assembly. Parts are match fit and cannot be serviced separately. Improper reassembly will adversely affect both performance and safety.

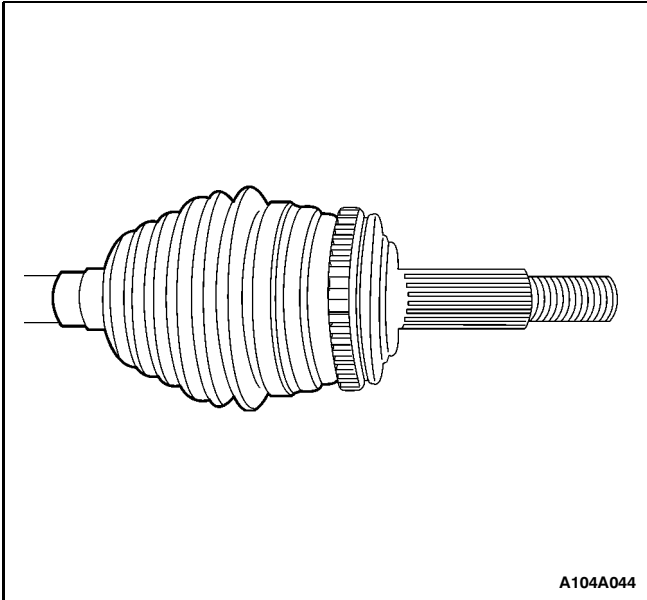
5. Remove the seal from the joint assembly.



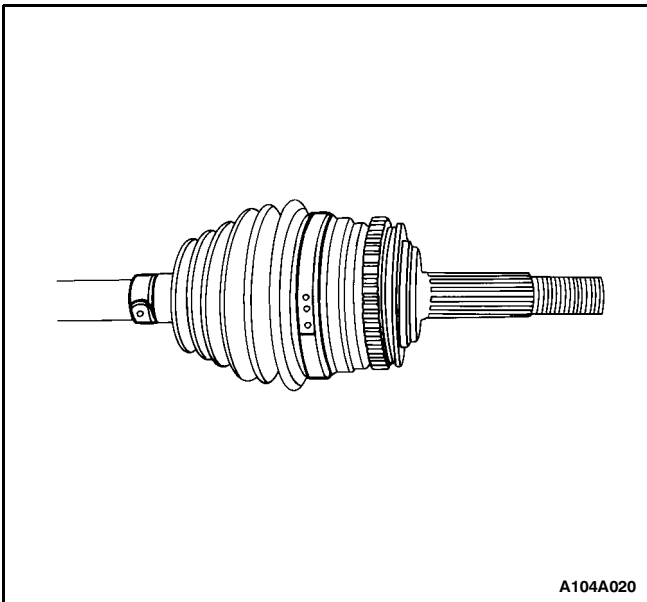


## Installation Procedure

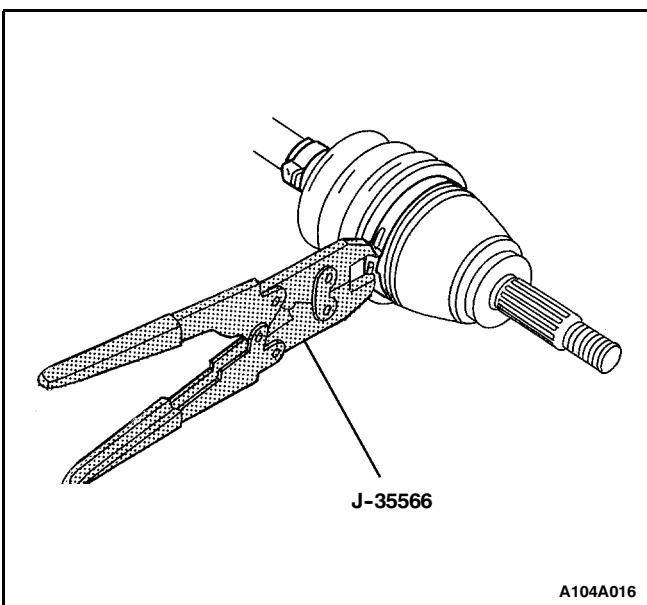
1. Install the seal onto the axle shaft.
2. Fill the joint seal with 175 to 195 g (6.2 to 6.8 ounces) of the recommended grease. Repack the joint with 175 to 195 g (6.2 to 6.8 ounces) of the recommended grease.

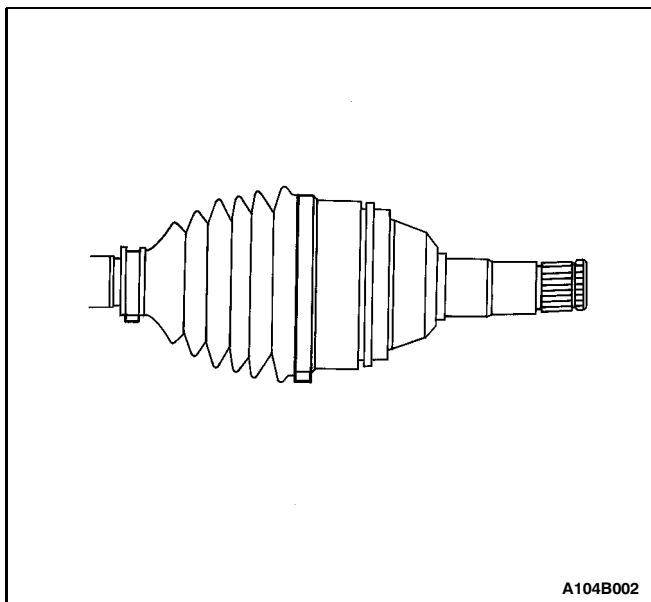


3. Install a new large seal retaining clamp and a new small seal retaining clamp.



4. Crimp the new small seal retaining clamp and the new large seal retaining clamp using the seal clamp pliers J-35566.
5. Install the cross groove joint seal assembly. Refer to the "Cross Groove Joint Seal" in this section.





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## CROSS GROOVE JOINT SEAL

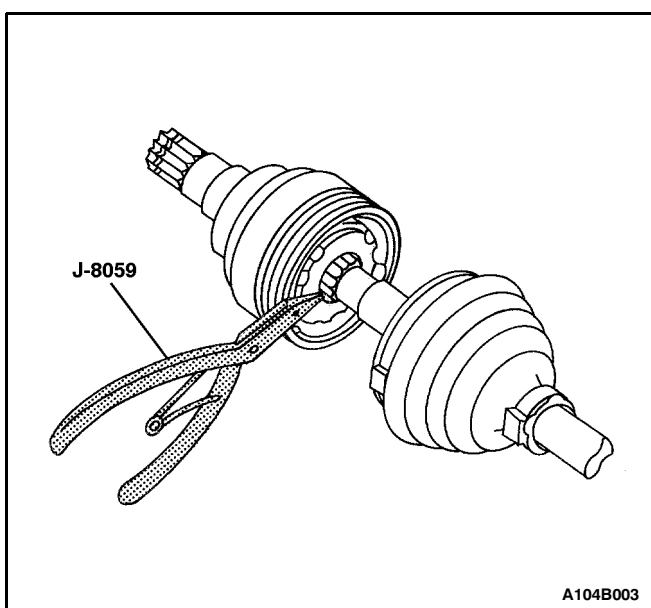
### Tools Required

J-26610 Seal Clamp Pliers

J-8059 Snap Ring Pliers

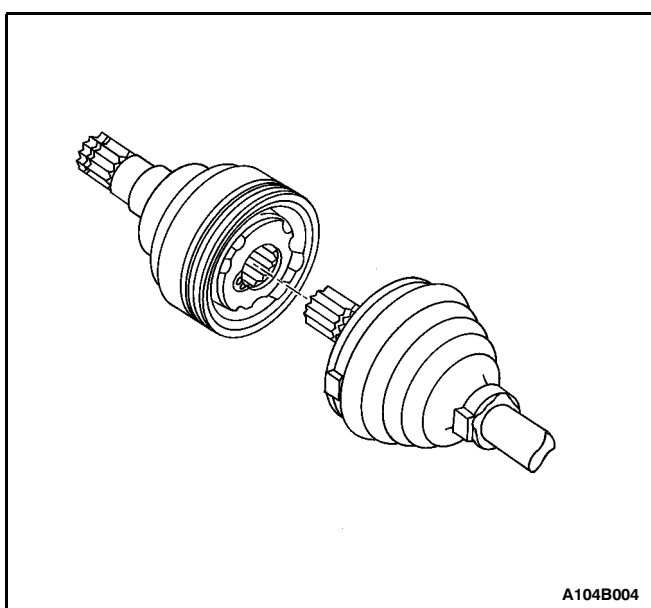
### Removal Procedure

1. Remove the large seal retaining clamp. Discard the clamp.
2. Remove the small seal retaining clamp. Discard the clamp.



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3. Degrease the joint.
4. Remove the shaft retaining ring using the snap ring pliers J-8059.



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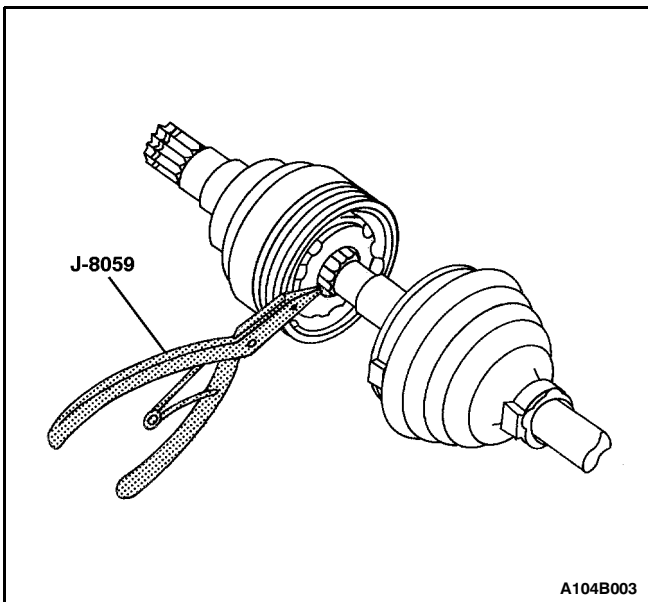
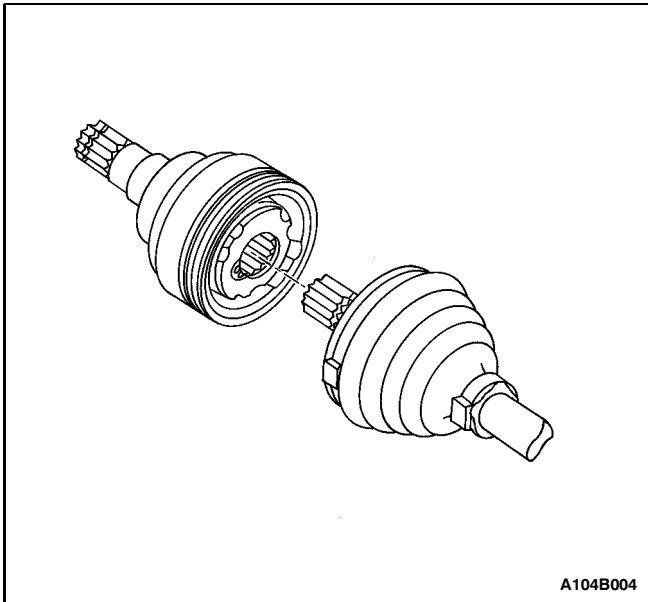
5. Remove the axle shaft from the joint assembly.

**Caution:** The ball retainer is staked in position and must not be disassembled. Cross groove joint internal parts are match fit and cannot be serviced separately. Improper reassembly will adversely affect both performance and safety.

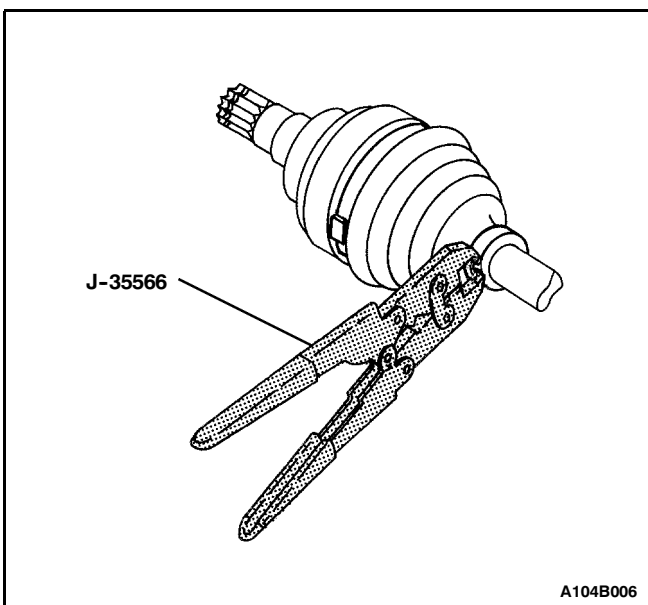
6. Remove the seal from the joint assembly.

### Installation Procedure

1. Install a new small retaining clamp onto the seal. Do not crimp.
2. Install the seal onto the axle shaft.
3. Install the joint assembly onto the axle shaft.



4. Install the shaft retaining ring using the snap ring pliers J-8059.



5. Fill the joint assembly with 120 to 140 g (4.2 to 4.9 ounces) of the recommended grease. Repack the joint seal with 120 to 140 g (4.2 to 4.9 ounces) of the recommended grease.
6. Install a new large seal retaining clamp.
7. Crimp the new large seal retaining clamp using the seal clamp pliers J-35566.
8. Crimp the new small retaining clamp using the seal clamp pliers J-35566.

## **GENERAL DESCRIPTION AND SYSTEM OPERATION**

### **FRONT DRIVE AXLE**

#### **General Description**

Drive axles are flexible shaft assemblies that transmit a rotational force from the transaxle to the front-wheel assemblies. Each axle assembly consists of an inner

constant-velocity joint and an outer constant-velocity joint connected to an axle shaft. The inner joint is completely flexible and has the ability to move in and out. The outer joint is also flexible, but it cannot move in and out.

The drive axles use one type of outboard joint and one type of inboard joint. The inboard ends of both drive axles incorporate a male spline that interlocks with the transaxle gears using snap rings.