AUTOMATIC TRANSAXLE

Identification

Four automatic transaxle units are available. The ATX (automatic transaxle) model which is used with the 2.5L engine, and the AXOD (automatic transaxle overdrive) which is used with the 3.0L and 3.8L engine. Beginning in 1991 some vehicles were equipped with the AXOD-E transaxle which is basically the same as the AXOD with the addition of electronic transaxle controls. Beginning in 1993, some vehicles came equipped with the AX4S (automatic transaxle four-speed) or AX4N (automatic transaxle four-speed non-synchronized) transaxle. The AX4S was formerly the AXOD and is basically the same as the AXOD-E. And the AX4N which is also very similar, but is non-synchronized, hence the N in the name.

The ATX automatic transaxle is a 3-speed unit. A unique feature is a patented split path torque converter. The engine torque in second and third gears is divided, so that part of the engine torque is transmitted hydrokinetically through the torque converter, and part is transmitted mechanically by direct connection of the engine and transaxle. In the third gear, 93% of the torque is transmitted mechanically, making the ATX highly efficient. Torque splitting is accomplished through a splitter gear set. A conventional compound gear set is also used.

Only one band is used in the ATX. In service fluid additions, or fluid changes may be made with **Motorcraft Type H** automatic transmission fluid.

The AXOD, AXOD-E, AX4S and AX4N automatic transaxles are 4-speed units. They all have two planetary gear sets and a combination planetary/differential gear set. Four multiple plate clutches, two band assemblies, and two one-way clutches act together for proper operation of the planetary gear sets.

A lock-up torque converter is coupled to the engine crankshaft and transmits engine power to the gear train by means of a drive link assembly (chain) that connects the drive and the driven sprockets. The application of the converter clutch is controlled through an electronic control integrated in the on-board EEC-IV system computer. These controls, along with the hydraulic controls in the valve body, operate a piston plate clutch in the torque converter to provide improved fuel economy by eliminating converter slip when applied.

In-service fluid additions, or fluid changes, may be made with **Motorcraft Type H** automatic transmission fluid.

The AXOD-E uses a turbine speed sensor in conjunction with a vehicle electronic control system. These components send operational signals to the EEC-IV microprocessor.

Fluid Pan

REMOVAL & INSTALLATION

In normal service it should not be necessary or required to drain and refill the

automatic transaxle. However, under severe operation or dusty conditions the fluid should be changed every 20 months or 20,000 miles (32,206 km).

1. **Raise and safely support the vehicle on jack stands.**
2. **If the pan is equipped with a drain plug, drain the fluid into a suitable container.**
3. **If the pan does not have a drain plug, place a suitable drain pan underneath the transaxle oil pan. Loosen the oil pan mounting bolts and allow the fluid to drain until it reaches the level of the pan flange. Remove the attaching bolts, leaving one end attached so that the pan will tip and the rest of the fluid will drain.**
4. **Remove the oil pan. Thoroughly clean the pan. Remove the old gasket. Make sure that the gasket mounting surfaces are clean.**
5. **Remove the transaxle filter screen retaining bolt. Remove the screen.**

To install:

6. **Install a new filter screen and O-ring. Place a new gasket on the pan and install the pan to the transaxle. Tighten the transaxle pan to 15-19 ft. lbs. (20-26 Nm).**
7. **Fill the transaxle to the correct level. Remove the jackstands and lower the car to the ground.**

Adjustments

SHIFT LINKAGE

AXOD and AXOD-E Transaxle

1. **Position the selector lever in the OD position against the rearward stop. The shift lever must be held in the rearward position using a constant force of 3 lbs. (1.4 Kg) while the linkage is being adjusted.**
2. **Loosen the manual lever-to-control cable retaining nut.**
3. **Move the transaxle manual lever to the OD position, second detent from the most rearward position.**
4. **Tighten the retaining nut to 11-19 ft. lbs. (15-26 Nm).**
5. **Check the operation of the transaxle in each selector lever position. Make sure the park and neutral start switch are functioning properly.**

ATX Transaxle

1. **Position the selector lever in the D position against the drive stop. The shift lever must be held in the D position while the linkage is being adjusted.**
2. **Loosen the transaxle manual lever-to-control cable adjustment trunnion bolt.**
3. **Move the transaxle manual lever to the D position, second detent from the most rearward position.**
4. **Tighten the adjustment trunnion bolt to 12-20 ft. lbs. (16-27 Nm).**
5. **Check the operation of the transaxle in each selector lever position. Make sure the neutral start switch functions properly in P and N and the back-up lights are on in R.**

THROTTLE CABLE

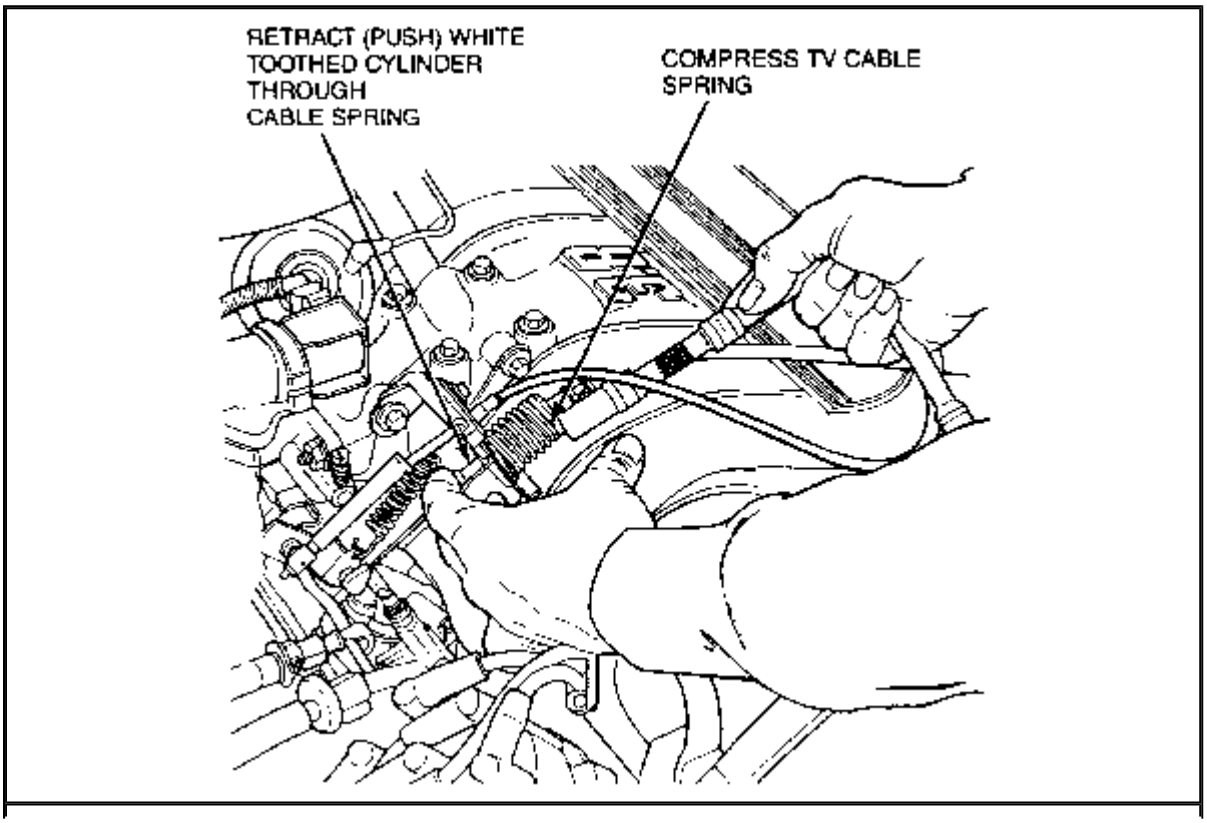
Transaxle downshift control is controlled through the throttle position switch on 1991-95 vehicles equipped with the electronic automatic overdrive transaxle.

1986-90 3.0L and 3.8L Engines

The Throttle Valve (TV) cable normally does not need adjustment. The cable should be adjusted only if one of the following components is removed for service or replacement:

- **Main control assembly**
- **Throttle valve cable**
- **Throttle valve cable engine mounting bracket**
- **Throttle control lever link or lever assembly**
- **Engine throttle body**
- **Transaxle assembly**

1. **Connect the TV cable eye to the transaxle throttle control lever link, then attach the cable boot to the chain cover.**
2. **If equipped with the 3.0L engine, with the TV cable mounted in the engine bracket, make sure the threaded shank is fully retracted. To retract the shank, pull up on the spring rest with the index fingers and wiggle the top of the thread shank while pressing the shank through the spring with the thumbs.**
3. **If equipped with the 3.8L engine, the TV cable must be unclipped from the right intake manifold clip. To retract the shank, span the crack between the two 180 degree segments of the adjuster spring rest with a suitable tool. Compress the spring by pushing the rod toward the throttle body with the right hand. While the spring is compressed, push the threaded shank toward the spring with the index and middle fingers of the left hand. Do not pull on the cable sheath.**

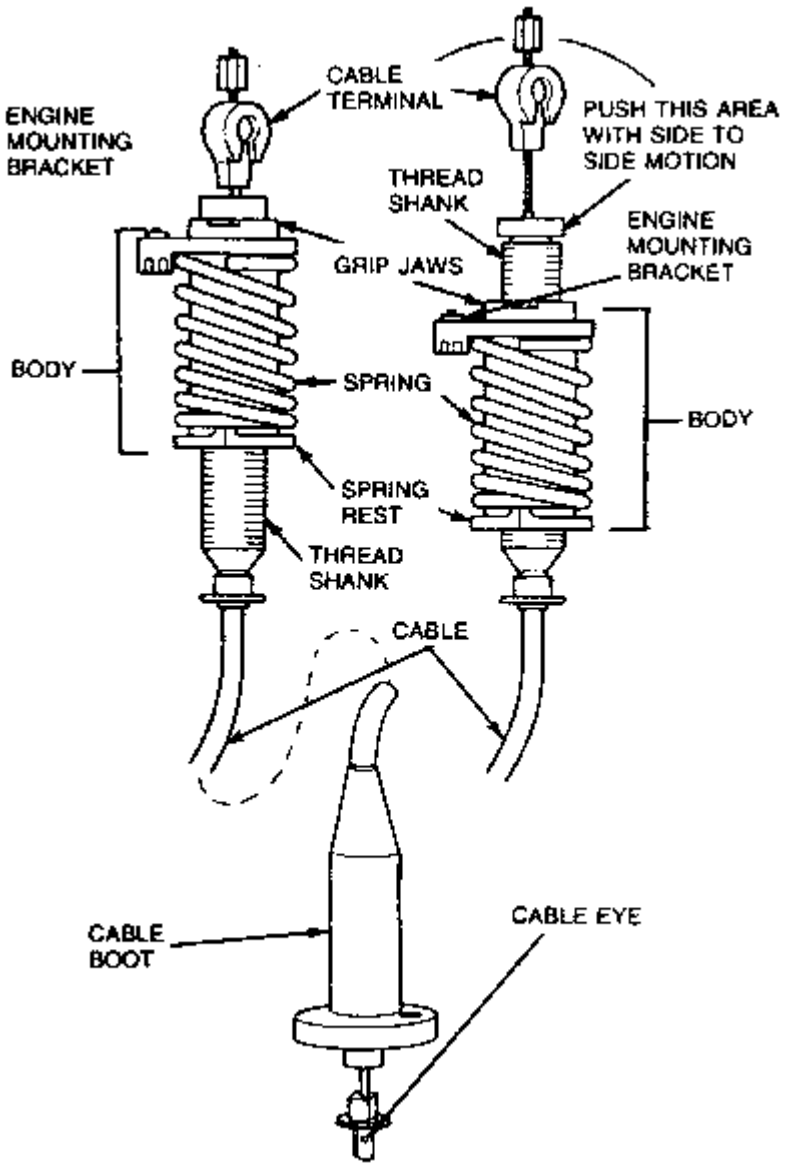


While the spring is compressed, push the threaded shank toward the spring with the index and middle fingers of the left hand. Do not pull on the cable sheath

Click to enlarge

4. **Attach the end of the TV cable to the throttle body.**
5. **If equipped with the 3.8L engine, rotate the throttle body primary lever by hand, the lever to which the TV-driving nailhead is attached, to the wide-open-throttle position. The white adjuster shank must be seen to advance. If not, look for cable sheath/foam hang-up on engine/body components. Attach the TV cable into the top position of the right intake manifold clip.**

The threaded shank must show movement or "ratchet'' out of the grip jaws. If there is no movement, inspect the TV cable system for broken or disconnected components, then repeat the procedure.



The threaded shank must show movement or "ratchet'' out of the grip jaws. If there is no movement, inspect the TV cable system for broken or disconnected components, then repeat the procedure

Click to enlarge

THROTTLE VALVE CONTROL LINKAGE

ATX Transaxle

The Throttle Valve (TV) Control Linkage System consists of a lever on the throttle body of the injection unit, linkage shaft assembly, mounting bracket assembly, control rod assembly, a control lever on the transaxle and a lever return spring.

The coupling lever follows the movement of throttle lever and has an adjustment screw that is used for setting TV linkage adjustment when a line pressure gauge is used. If a pressure gauge is not available, a manual adjustment can be made.

A number of shift troubles can occur if the throttle valve linkage is not in adjustment. Some are:

- **Symptom: Excessively early and/or soft upshift with or without slip-bump feel. No forced downshift (kickdown) function at appropriate speeds.**
- **Cause: TV control linkage is set too short.**
- **Remedy: Adjust linkage.**
- **Symptom: Extremely delayed or harsh upshifts and harsh idle engagement.**
- **Cause: TV control linkage is set too long.**
- **Remedy: Adjust linkage.**
- **Symptom: Harsh idle engagement after the engine is warmed up. Shift clunk when throttle is backed off after full or heavy throttle acceleration. Harsh coasting downshifts (automatic 3-2, 2-1 shift in D range). Delayed upshift at light acceleration.**
- **Cause: Interference due to hoses, wires, etc. prevents return of TV control rod or TV linkage shaft. Excessive friction caused by binding grommets prevents the TV control linkage to return to its proper location.**
- **Remedy: Correct the interference area, check for bent or twisted rods, levers. or damaged grommets. Repair or replace whatever is necessary. Check and adjust linkage is necessary.**
- **Symptom: Erratic/delayed upshifts, possibly no kickdown, harsh engagement.**
- **Cause: Clamping bolt on trunnion at the upper end of the TV control rod is loose.**
- **Remedy: Reset TV control linkage.**
- **Symptom: No upshift and harsh engagements.**
- **Cause: TV control rod is disconnected or the linkage return spring is broken or disconnected.**
- **Remedy: Reconnect TV control rod, check and replace the connecting grommet if necessary, reconnect or replace the TV return spring.**

The TV control linkage is adjusted at the sliding trunnion block.

1. **Operate the engine until normal operating temperature is reached. Adjust the curb idle speed to specification.**
2. **After the curb idle speed has been set, shut off the engine. Make sure the choke is completely opened. Check the throttle lever to make sure it is against the hot engine curb idle stop.**

3. **Set the coupling lever adjustment screw at its approximate midrange. Make sure the TV linkage shaft assembly is fully seated upward into the coupling lever.**

> **CAUTION**
>
> If adjustment of the linkage is necessary, allow the EGR valve to cool so you won't get burned.

4. **To adjust, loosen the bolt on the sliding block on the TV control rod a minimum of one turn. Clean any dirt or corrosion from the control rod, free-up the trunnion block so that it will slide freely on the control rod.**
5. **Rotate the transaxle TV control lever up using a finger and light force, to insure that the TV control lever is against its internal stop. With reducing the pressure on the control lever, tighten the bolt on the trunnion block.**
6. **Check the throttle lever to be sure it is still against the hot idle stop. If not, repeat the adjustment steps.**

TRANSAXLE CONTROL LEVER

ATX Transaxle

1. **Position the selector lever in DRIVE against the rear stop.**
2. **Raise the car and support it safely on jackstands. Loosen the manual lever to control lever nut.**
3. **Move the transaxle lever to the Drive position, second detent from the rear most position. Tighten the attaching nut. Check the operation of the transaxle in each selector position. Readjust if necessary. Lower the car.**

AXOD and AXOD-E Transaxles

1. **Position the selector lever in the OVERDRIVE position against the rearward stop.**
2. **If the vehicle is equipped with a floor shift selector the shift lever must be held in the rearward position using a constant force of about 3 lbs. as the linkage is being adjusted.**
3. **Loosen the manual lever to control cable retaining nut. Be sure that the transaxle lever is in the OVERDRIVE position. Tighten the retaining nut to 11-19 ft. lbs. (15-26 Nm).**
4. **Check operation of the transaxle in each range. Be sure that the park switch and neutral safety switch are working properly.**

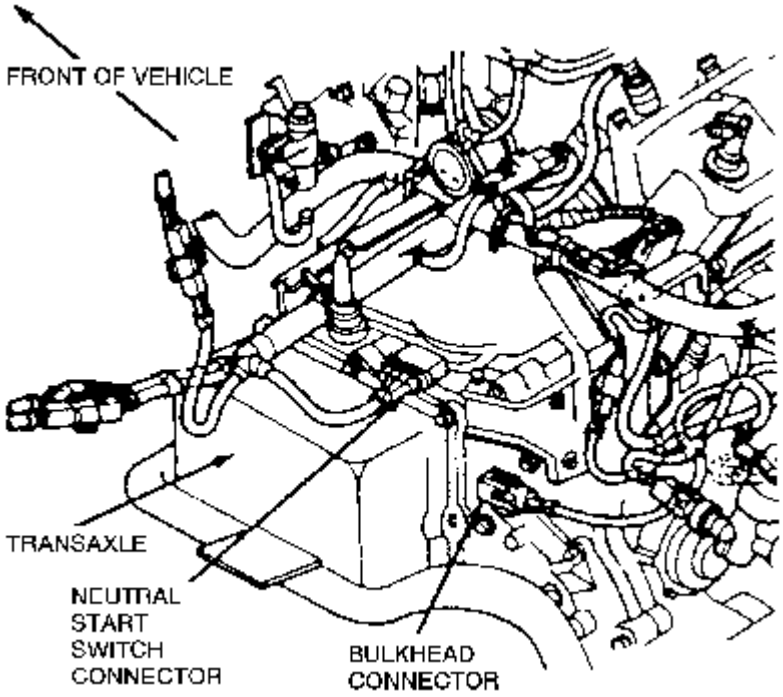
Neutral Safety Switch/Back-Up Light Switch

The neutral start and backup switch are one unit mounted on the top left end of the transaxle. The neutral start portion of the switch allows electrical current to travel to the ignition system when the shift selector is in park or neutral only. The vehicle will not start when the selector is in any other gear. The backup portion operates the rear backup lamps when selector is in the reverse gear.

REMOVAL & INSTALLATION

1. **Make sure the shift selector in the Park position, then apply the emergency brake.**

2. **Disconnect the negative battery cable.**
3. **Disengage the neutral start switch electrical connector, then remove the shift control lever on top of the switch.**
4. **Remove the two neutral switch attaching bolts, then remove the switch.**



Neutral safety switch location-vehicles equipped with automatic transaxle

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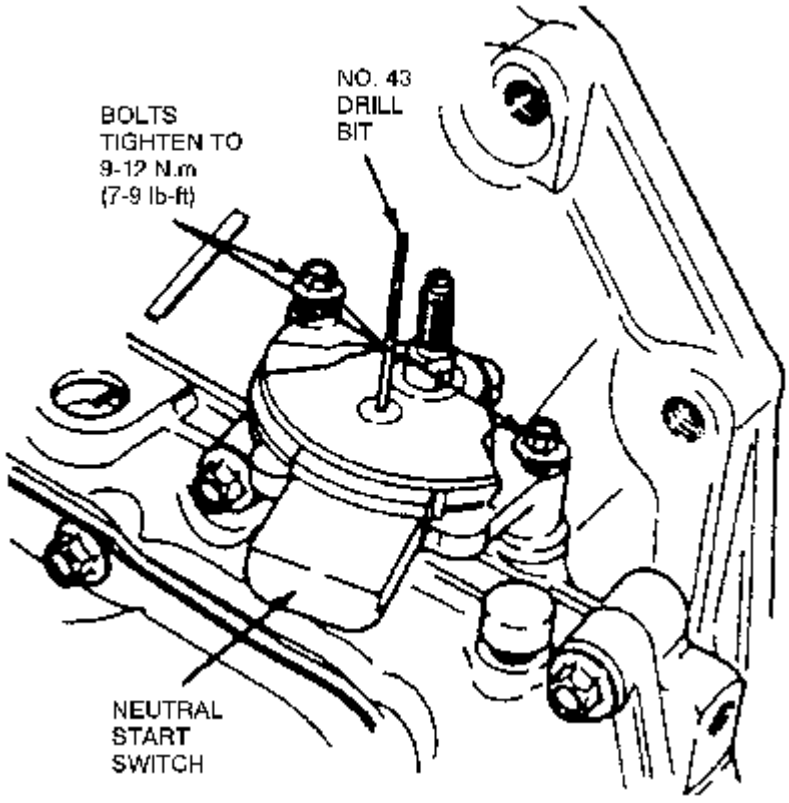


Adjusting the neutral safety switch

Click to enlarge

To install:

5. Install the switch on the manual shaft.
6. Loosely install the two attaching bolts and washers.
7. Insert a No. 43 drill (0.089 in.) through the hole.
8. Tighten the attaching bolts to 7-9 ft. lbs. (9-12 Nm), then remove the drill.
9. Engage the switch electrical connector, then connect the negative battery cable.

Shift Lever Cable

REMOVAL AND INSTALLATION

1. Remove the shift knob, locknut, console, bezel assembly, control cable clip and cable retaining pin.
2. Disengage the rubber grommet from the floor pan by pushing it into the engine compartment.
3. Raise the car and safely support it on jackstands.
4. Remove the retaining nut and control cable assembly from the transaxle lever.
5. Remove the control cable bracket bolts. Pull the cable through the floor.

To install:

6. To install the cable, feed the round end through the floor board. Press the rubber grommet into its mounting hole.
7. Position the control cable assembly in the selector lever housing and install the spring clip.
8. Install the bushing and control cable assembly on the selector lever and housing assembly shaft and secure it with the retaining pin.
9. Install the bezel assembly, console, locknut and shift knob.
10. Position the selector lever in the Drive position. The selector lever must be held in this position while attaching the other end of the control cable.
11. Position the control cable bracket on the retainer bracket and secure the two mounting bolts.
12. Shift the control lever into the second detent from full rearward (Drive position).
13. Place the cable end on the transaxle lever stud. Align the flats on the stud with the slot in the cable. Make sure the transaxle selector lever has not moved from the second detent position and tighten the retaining nut.
14. Lower the car to the ground. Check the operation of the transaxle selector in all positions. Make sure the neutral safety switch is operating properly. The engine should start only in the Park or Neutral position.

Transaxle

REMOVAL & INSTALLATION

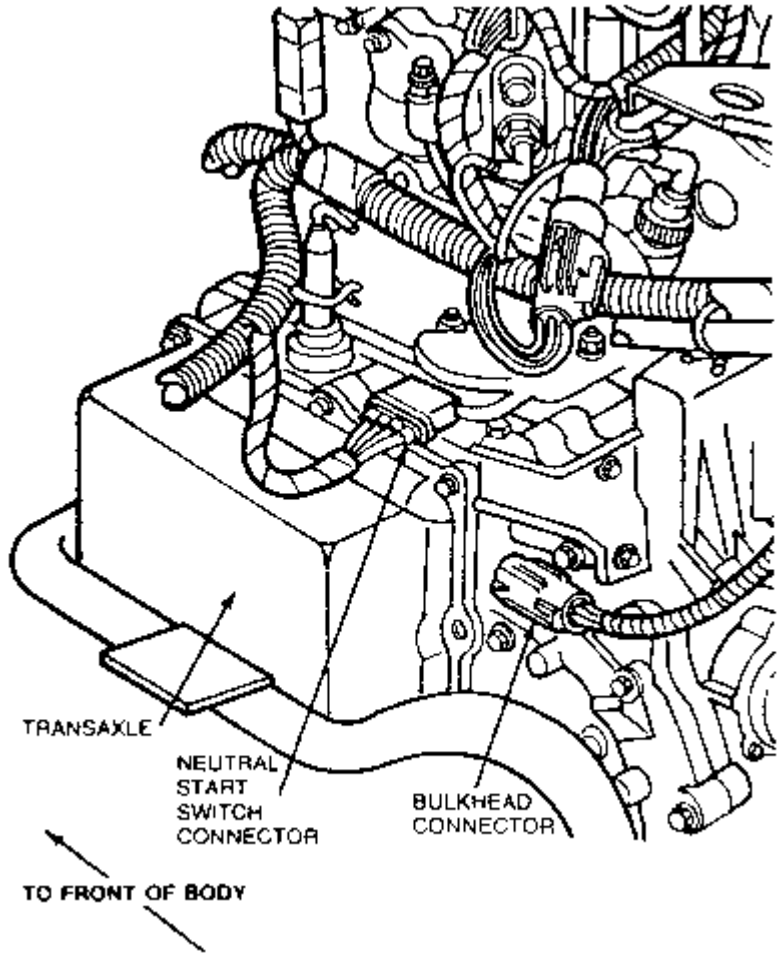
1986-90 Vehicles

EXCEPT TAURUS WITH 2.5L ENGINE

1. **Disconnect the negative battery cable.**
2. **Remove the air cleaner assembly.**
3. **Remove the bolt retaining the shift cable and bracket assembly to the transaxle.**

Hold the bracket with a prybar in the slot to prevent the bracket from moving.

4. **Remove the shift cable bracket bolts and bracket from the transaxle.**
5. **Disengage the electrical connector from the neutral safety switch.**
6. **Detach the electrical bulkhead connector from the rear of the transaxle.**



Detach the connectors from the neutral safety switch and the bulkhead connector

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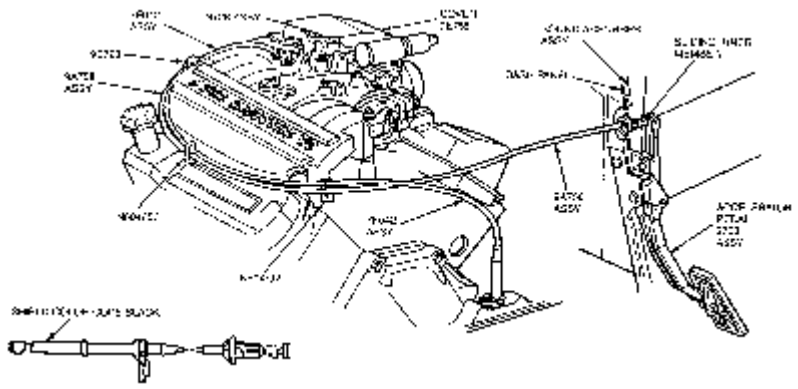
7. **Remove the oil dipstick.**
8. **For 3.8L engines, remove the throttle valve cable cover. Unsnap the throttle valve cable from the throttle body lever. Remove the throttle valve cable from the transaxle case.**



Location of the throttle valve cable cover-3.8L engines only

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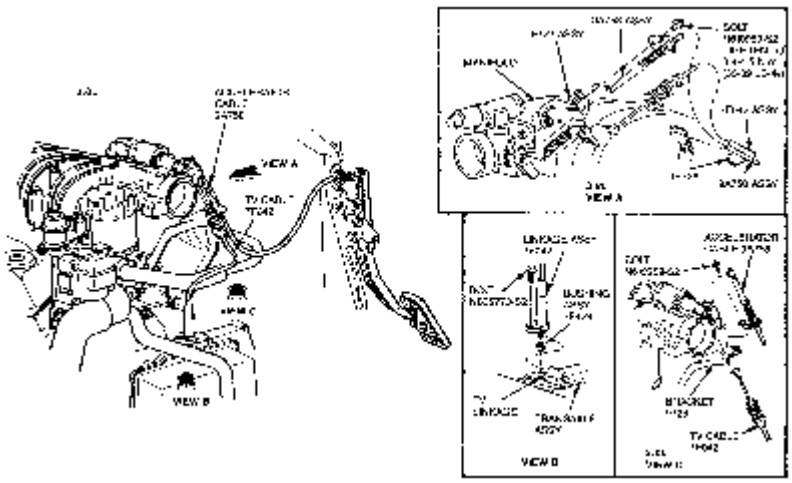
9. **Carefully pull up on the throttle valve cable and disconnect the throttle valve cable from the TV link.**

Pulling too hard on the throttle valve may bend the internal TV bracket.



Removing the accelerator cable

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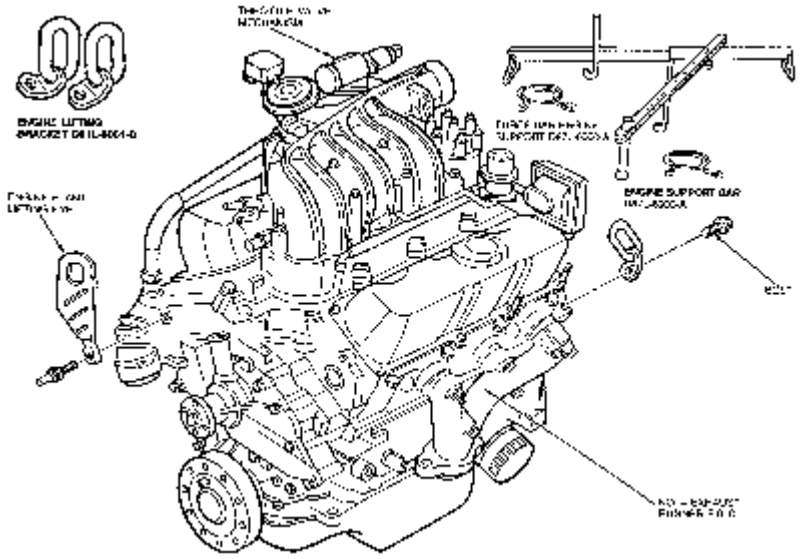
10. **Install engine lifting brackets.**



Installing engine lifting brackets

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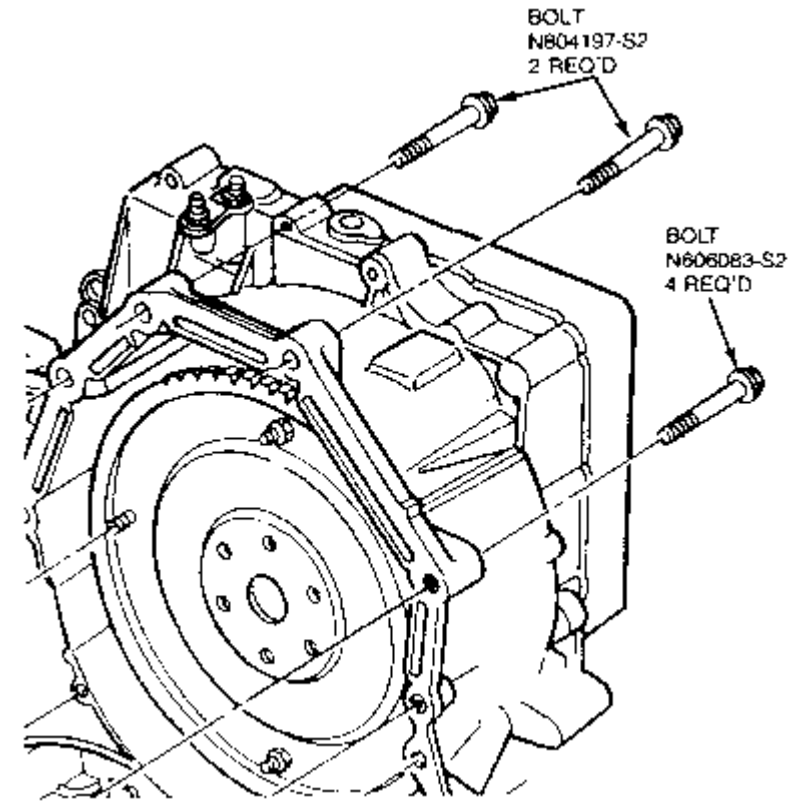
11. **Disconnect the power steering pump pressure and return line bracket.**
12. **Remove the converter housing bolts from the top of the transaxle.**



Remove the four torque converter housing bolts from the top of the transaxle

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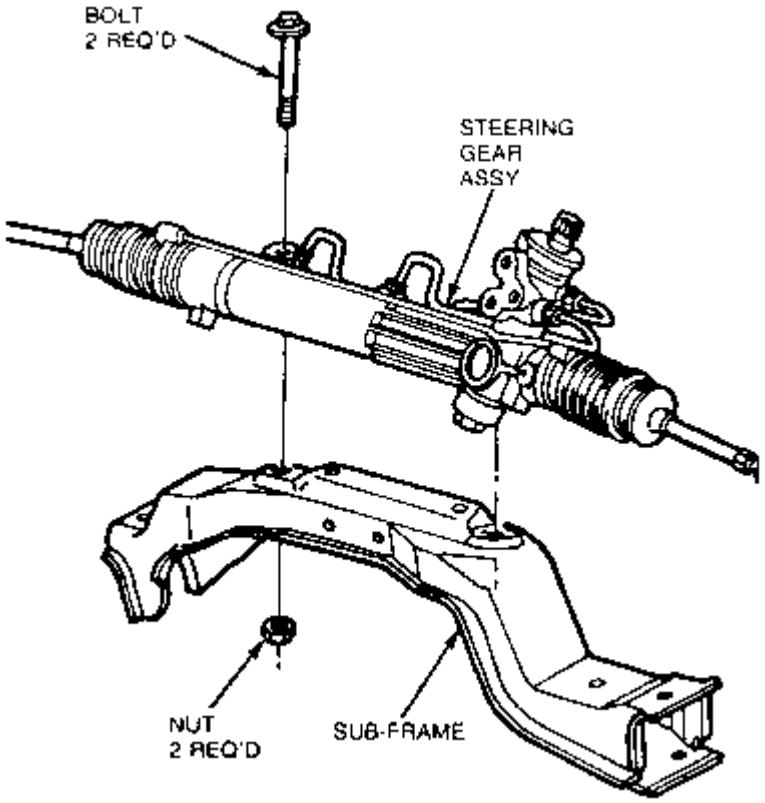
13. **Install a suitable engine support fixture.**
14. **Raise the and safely support the vehicle.**
15. **Remove both front wheels. Remove the left-side outer tie rod end.**

16. **Remove the lower ball joint attaching nuts and bolts. Remove the lower ball joints and remove the lower control arms from each spindle. Remove stabilizer bar bolts.**

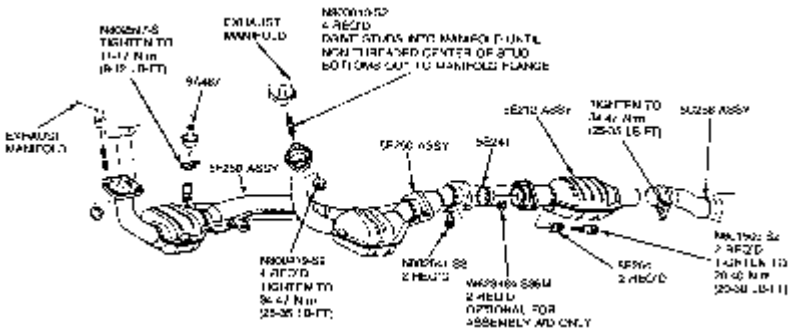
17. **Remove the nuts securing the steering rack to the subframe.**



Remove the nut securing the steering rack to the subframe

Click to enlarge

18. **For 3.8L engines, disengage the oxygen sensor electrical connection, then remove the exhaust pipe, converter assembly and mounting bracket.**



On the 3.8L engine, remove the front exhaust pipe, converter assembly and mounting bracket

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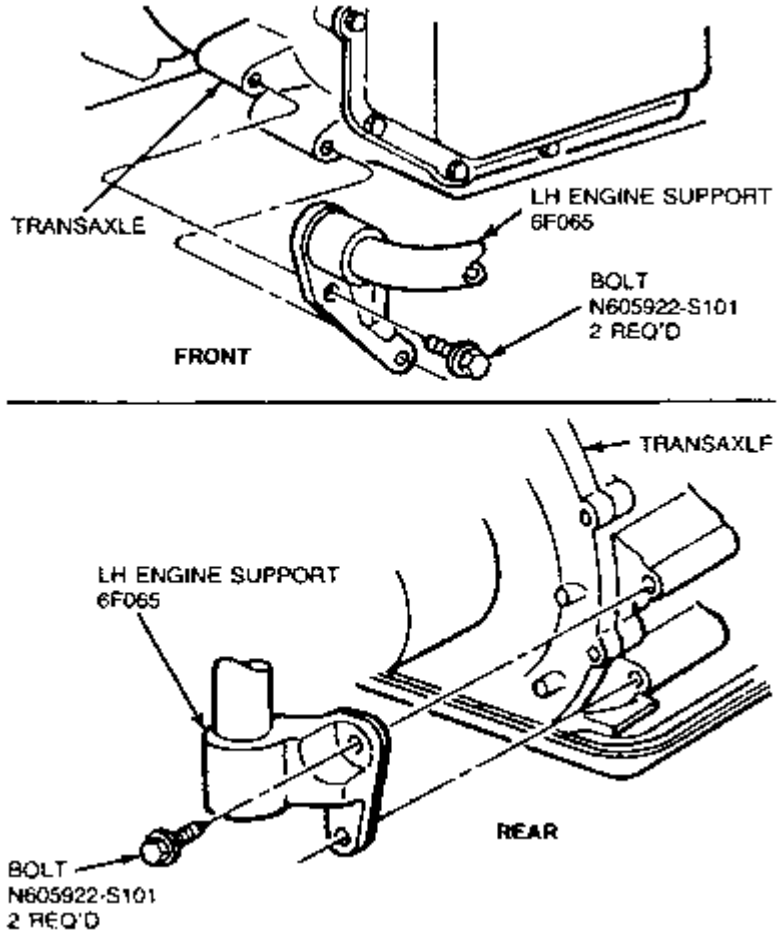
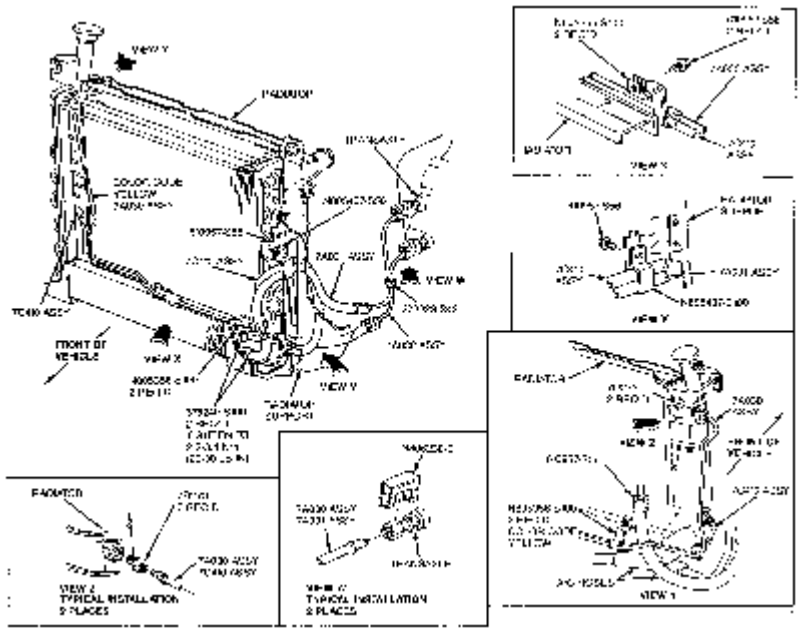
19. **Remove the two 15mm bolts from the transaxle mount. Remove the four 15mm bolts from the left engine support, then remove the bracket.**



Remove the bolts from the left engine support, then remove the support

Click to enlarge

20. **Position a suitable subframe removal tool.**
21. **Remove the steering gear from the subframe and secure to the rear of the engine compartment. Remove the subframe-to-body retaining bolts, then remove the subframe.**
22. **Remove the dust cover retaining bolt and the starter retaining bolts then position the starter out of the way. Remove the dust cover.**
23. **Rotate the engine by the crankshaft pulley bolt to align the torque converter bolts with the starter drive hole. Remove the torque converter-to-flywheel retaining nuts.**
24. **Remove the transaxle cooler line fitting retaining clips. Using Cooler Line Disconnect Tool T86P-77265-AH or equivalent, disconnect the transaxle cooler lines.**

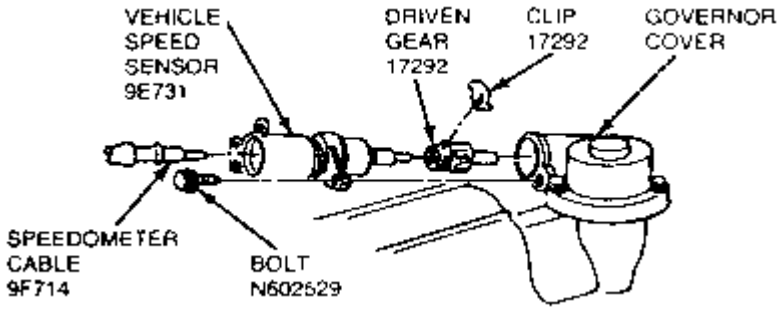


Transaxle cooler line locations

Click to enlarge

25. **Remove the engine-to-transaxle retaining bolts.**
26. **Remove the speedometer sensor heat shield.**
27. **Remove the vehicle speed sensor from the transaxle.**

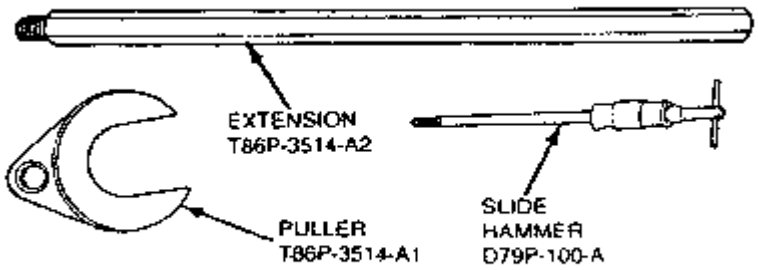
Vehicles with electronic instrument clusters do not use a speedometer cable.



Remove the vehicle speed sensor from the transaxle

Click to enlarge

28. **Position a suitable transaxle jack.**
29. **Remove the halfshafts as follows:**
    1. **Screw Extension T86P-3514-A2 into CV Joint Puller T86P-3514-A1, and insert Slide Hammer D79P-100-A or equivalent into the extension.**
    2. **Position the puller behind the CV joint, then remove the joint.**
    3. **Install shipping plugs.**



Tools necessary to remove the halfshafts

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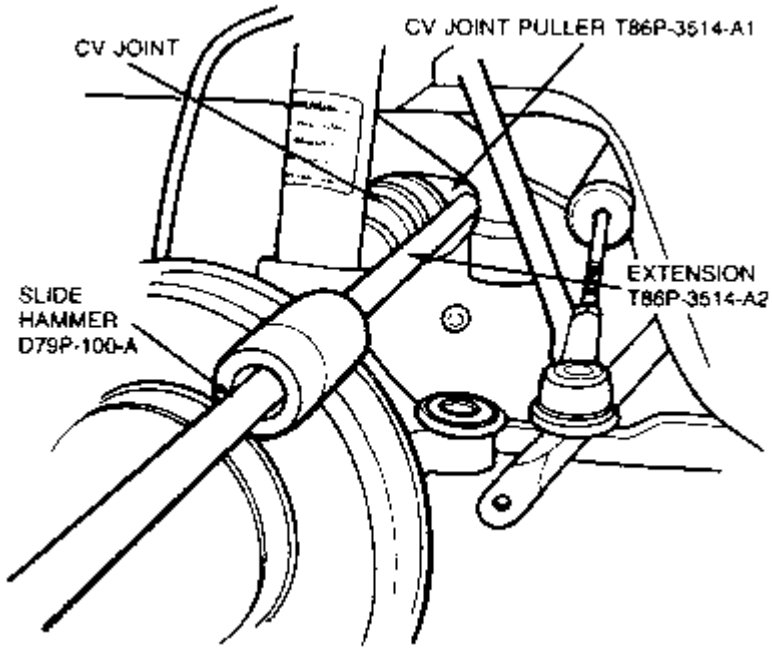


Position the puller behind the CV-joint, then remove the joint

Click to enlarge

30. **Remove the two remaining torque converter housing bolts.**

31. **Separate the transaxle from the engine, then carefully lower the transaxle from the vehicle.**

To install:

32. **Installation is the reverse of the removal procedure. During installation be sure to observe the following:**
    1. **Clean the transaxle oil cooler lines.**
    2. **Install new circlips on the CV-joint seals.**
    3. **Carefully install the halfshafts in the transaxle by aligning the splines of the CV-joint with the splines of the differential.**
    4. **Attach the lower ball joint to the steering knuckle**

with a new nut and bolt. Tighten the nut to 37-44 ft. lbs.

5. When installing the transaxle to the engine, verify that the converter-to-transaxle engagement is maintained. Prevent the converter from moving forward and disengaging during installation.
6. Adjust the TV and manual linkages. Check the transaxle fluid level.
7. Tighten the following bolts to the torque specifications listed:
   - Transaxle-to-engine bolts: 41-50 ft. lbs. (55-68 Nm)
   - Control arm-to-knuckle bolts: 36-44 ft. lbs. (49-60 Nm)
   - Stabilizer U-clamp-to-bracket bolts: 60-70 ft. lbs. (81-95 Nm)
   - Tie rod-to-knuckle nut: 23-35 ft. lbs. (31-47 Nm)
   - Starter-to-transaxle bolts: 30-40 ft. lbs. (41-54 Nm)
   - Converter-to-flywheel bolts: 23-39 ft. lbs. (31-53 Nm)
   - Insulator-to-bracket bolts: 55-70 ft. lbs. (75-95 Nm)

TAURUS WITH 2.5L ENGINE

1. Disconnect the negative battery cable.
2. Remove the air cleaner assembly.
3. Position the engine control wiring harness away from the transaxle converter housing area.
4. Disconnect the TV linkage and manual lever cable at the respective levers. Failure to disconnect the linkage during transaxle removal and allowing the transaxle to hang will fracture the throttle valve cam shaft joint (located under the transaxle cover).
5. Remove the power steering hose brackets.
6. Remove the upper transaxle-to-engine attaching bolts.
7. Install suitable engine lifting brackets to the right and left areas of the cylinder head and attach with bolts. Install two suitable engine support bars.

An engine support bar may be made from a length of 4x4 wood cut to about 57 in. (1.45m).

8. Place one of the engine support bars across the vehicle in front of each engine

shock tower. Place another support bar across the vehicle approximately between the alternator and valve cover. Attach chains to the lifting brackets.

9. Raise and safely support the vehicle. Remove the wheel and tire assemblies.
10. Remove the catalytic converter inlet pipe and disconnect the exhaust air hose assembly.
11. Remove each tie rod end from it's spindle. Separate the lower ball joints from the struts, then remove the lower control arm from each spindle.
12. Disconnect the stabilizer bar by removing the retaining nuts.
13. Disconnect and remove the rack and pinion and auxiliary cooler from the subframe. Position the rack and pinion away from the subframe and secure with wire.
14. Remove the right front axle support and bearing assembly retaining bolts, then remove the assembly.
15. Remove the halfshaft and link shaft assembly out of the right side of the transaxle.
16. Disengage the left halfshaft from the differential side gear. Pull the halfshaft from the transaxle.

Support and secure the halfshaft from an underbody component with a length of wire. Do not allow the halfshafts to hang unsupported.

17. Plug the seal holes, by installing Shipping Plugs T81P-1177-B or equivalent.
18. Remove the front support insulator and position the left front splash shield aside.
19. Position a workbench or shop table to support the subframe after it is disconnected. Lower the vehicle to the bench table surface. Position blocks or support for the subframe, as required. Remove the subframe retaining bolts, then remove the subframe. Disconnect the neutral start switch wire assembly.
20. Raise the vehicle after the subframe is removed. Disconnect the speedometer cable.
21. Disconnect and remove the shift cable from the transaxle.
22. Disconnect the oil cooler lines using Cooler Line Disconnect Tool T86P-77265-AH or equivalent.
23. Disconnect the starter mounting bolts, then remove the starter.
24. Remove the dust cover from the torque converter housing and remove the torque converter-to-flywheel housing nuts.
25. Position a suitable transaxle jack under the transaxle.
26. Remove the remaining transaxle-to-engine retaining bolts.

Before the transaxle can be lowered from the vehicle, the torque converter studs must be clear of the flywheel. Insert a suitable tool between the flywheel and converter, then carefully guide the transaxle and converter away from the engine.

27. Lower the transaxle from the engine.

To install:

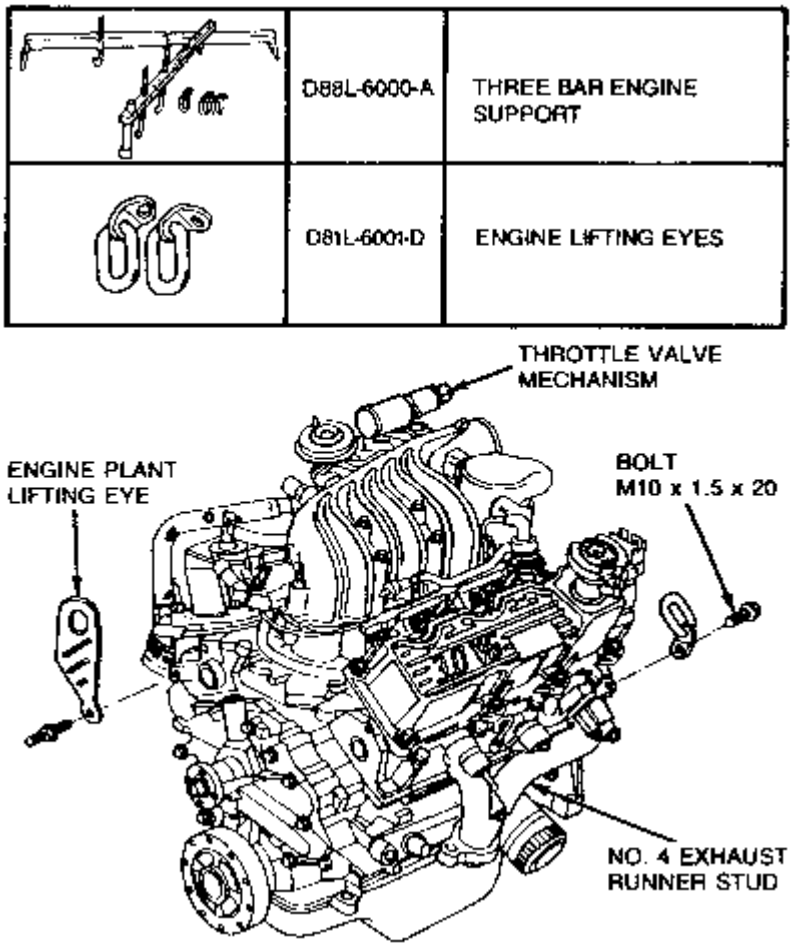
28. Installation is the reverse of the removal procedure. During installation be sure to observe the following:

1. **Clean the transaxle oil cooler lines using Rotunda Torque Converter Cleaner 014-00028 or equivalent.**
2. **Install new circlips on the CV-joint seals.**
3. **Carefully install the halfshafts in the transaxle by aligning the splines of the CV-joint with the splines of the differential.**
4. **Attach the lower ball joint to the steering knuckle with a new nut and bolt. Tighten the nut to 37-44 ft. lbs. (50-60 Nm). DO NOT tighten the bolt!**
5. **When installing the transaxle to the engine, make sure that the converter-to-transaxle engagement is maintained. Prevent the converter from moving forward and disengaging during installation.**
6. **Adjust the TV and manual linkages. Check the transaxle fluid level.**
7. **Tighten the following bolts to the torque specifications listed:**
   - **Transaxle-to-engine bolts: 25-33 ft. lbs. (34-45 Nm)**
   - **Control arm-to-knuckle bolts: 36-44 ft. lbs. (50-60 Nm)**
   - **Stabilizer U-clamp-to-bracket bolts: 60-70 ft. lbs. (81-95 Nm)**
   - **Tie rod-to-knuckle nut: 23-35 ft. lbs. (31-47 Nm)**
   - **Starter-to-transaxle bolts: 30-40 ft. lbs. (41-54 Nm)**
   - **Converter-to-flywheel bolts: 23-39 ft. lbs. (31-53 Nm)**
   - **Insulator-to-bracket bolts: 55-70 ft. lbs. (75-90 Nm)**

1991-95 Vehicles

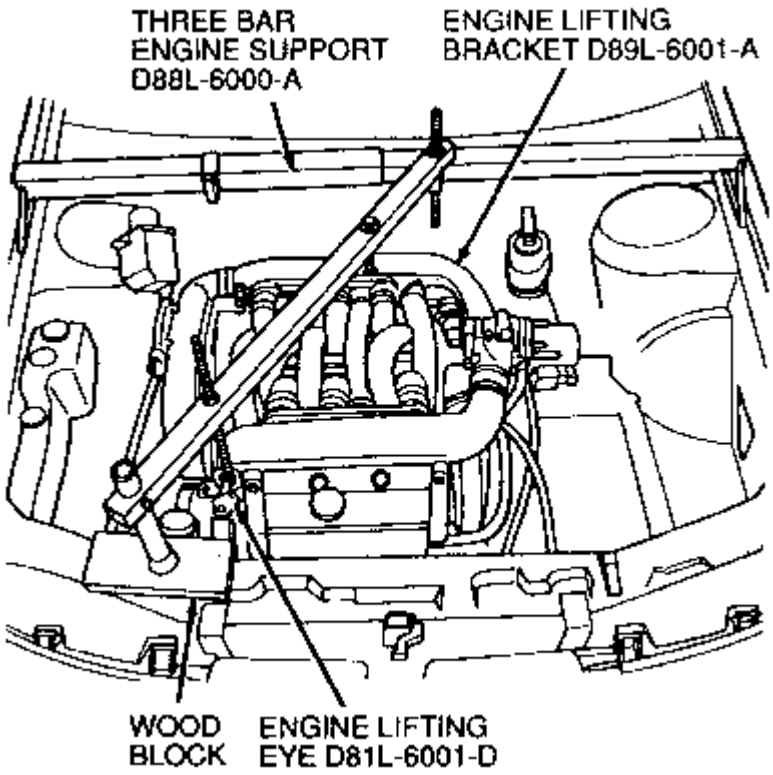
1. **Disconnect the battery cables, then remove the battery and battery tray.**
2. **Place a drain pan under the transaxle, then properly drain the fluid into a suitable container.**
3. **Remove the air cleaner assembly, hoses and tubes.**
4. **Disengage the electrical connectors from the engine, then remove the bolt retaining the main wiring harness bracket.**
5. **Remove the shift lever.**
6. **Remove the EGR bracket and throttle body bracket retaining bolts.**

7. **On the 3.0L engine, install engine lifting eyes D81L-6001-D to the left rear cylinder with a bolt. The engine plant lifting eye should still be on the right front cylinder. If not, install second lifting eye. On the 3.2L SHO, remove the bracket on the back of the engine that retains the wiring harness and coolant line and attach Engine Lifting Eyes to the alternator bracket. On the 3.8L engine, install engine lifting eyes to the left front exhaust manifold stud and right rear exhaust manifold stud.**



On the 3.0L engine, install engine lifting eye to the left rear cylinder

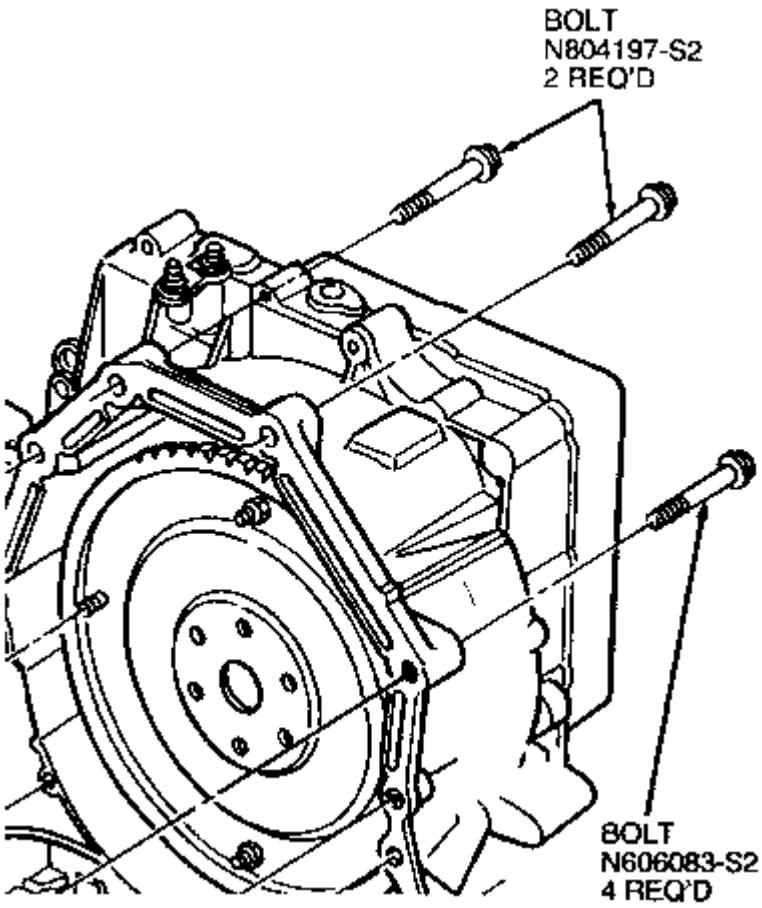
Click to enlarge



Installing lifting equipment on the 3.2L SHO engine

Click to enlarge

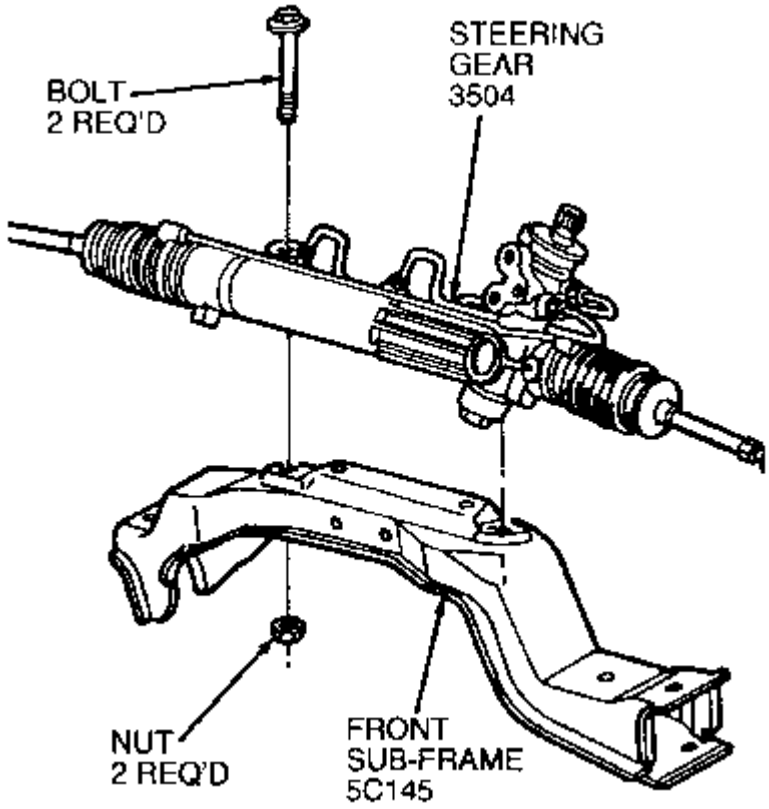
8. **Secure the wiring harness aside and remove the radiator sight shield.**
9. **Position a suitable engine support fixture.**
10. **Position Three Bar Engine Support D88L-6000-A or equivalent.**
11. **If equipped with air suspension, turn the air suspension switch located in the luggage compartment to the OFF position.**
12. **Remove the oil level dipstick and disconnect the power steering pump pressure and return line bracket.**
13. **Remove the four torque converter housing bolts from the top of the transaxle.**



Remove the four torque converter housing bolts from the top of the transaxle

Click to enlarge

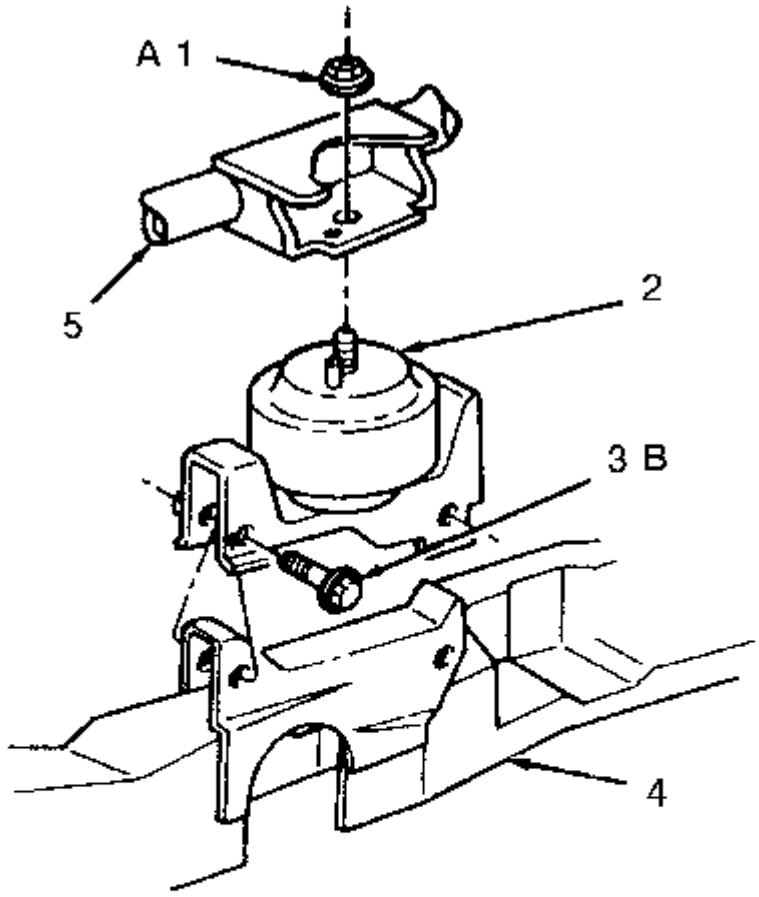
14. **Raise and safely support the vehicle. Remove the front wheel and tire assemblies.**
15. **Disconnect the left outer tie rod end. Remove the suspension height sensor, if equipped. Disconnect the brake line support brackets.**
16. **Remove the retaining bolts from the front stabilizer bar assembly. Disconnect the right and left lower arm assemblies.**
17. **Remove the steering gear retaining nuts from the subframe. Remove the front heated oxygen sensor, exhaust pipe, converter assembly and mounting bracket.**



Remove the steering gear-to-subframe retaining nuts

Click to enlarge

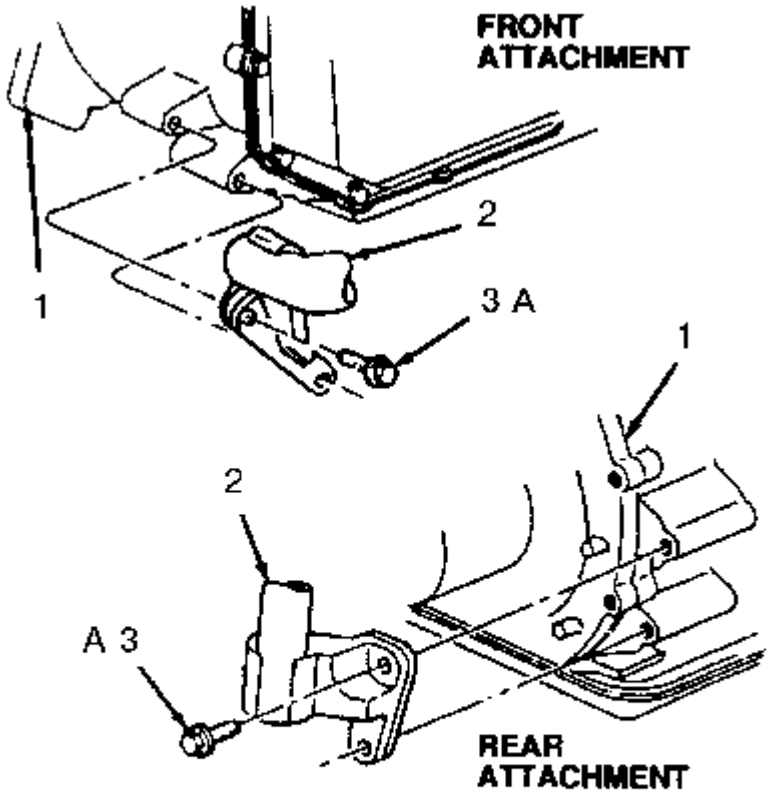
18. **Remove the two bolts from the engine mount and the four bolts from the left engine support, then remove the support.**



1. Nut
2. Engine mount assy
3. Bolt (2 req'd)
4. Inner floor side member
5. Support assy
A. Tighten to 74-102 N.m (55-75 lb-ft)
B. Tighten to 81-116 N.m (60-85 lb-ft)

Remove the two retaining bolts from the engine mount, then remove the mount

Click to enlarge



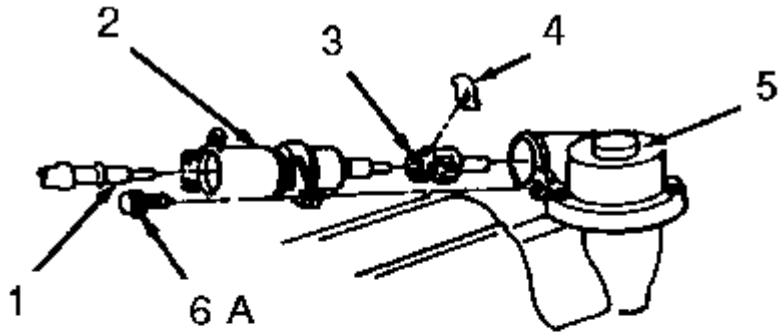
1. Transaxle case
2. Support assy
3. Bolt (2 req'd)
A. Tighten to 54-75 N.m (40-55 lb-ft)

Remove the four bolts from the left engine support, then remove the support

Click to enlarge

19. **Position Rotunda Subframe Removal Kit 014-00751, or equivalent. Remove the steering gear from the subframe and secure it to the rear of the engine compartment. Remove the subframe-to-body bolts, then lower the subframe.**
20. **Remove the two starter retaining bolts, then position the starter out of the way.**
21. **Remove the dust cover.**
22. **Rotate the engine with a $^{1}/_{2}$ in. drive ratchet and $^{7}/_{8}$ in. deep well socket on the crankshaft pulley bolt to align the torque converter bolts with the starter drive hole. Remove the four torque converter-to-flywheel retaining nuts.**
23. **Remove the transaxle cooler line fitting retaining clips. Using Cooler Line Disconnect Tool T86P-77265-AH or equivalent, disconnect the transaxle cooler lines.**
24. **Remove the engine-to-transaxle retaining bolts.**
25. **Remove the speedometer sensor heat shield. Remove the vehicle speed sensor from the transaxle.**

Vehicles with electronic instrument clusters do not use a speedometer cable.



1. Speed control cable and vehicle speed sensor
2. Vehicle speed sensor
3. Speedometer driven gear
4. Speedometer driven gear retainer
5. Speedometer cover
6. Bolt

A. Tighten to 3.4-4.5 N.m (31-39 lb-in)

Remove the vehicle speed sensor from the transaxle

Click to enlarge

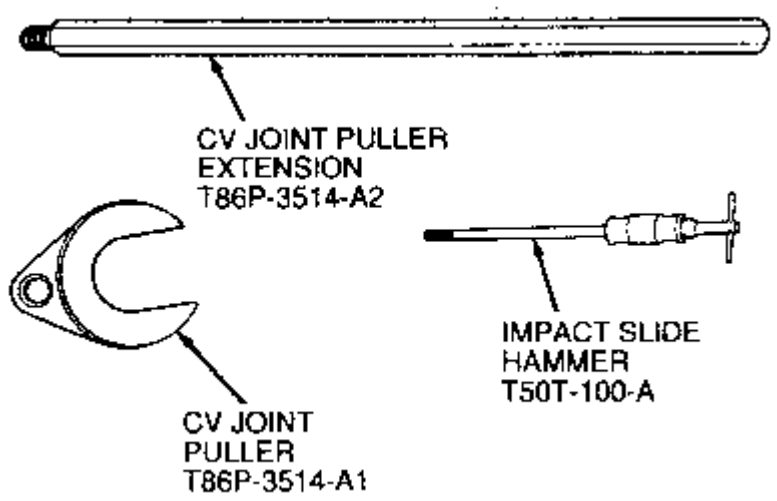
26. Position a suitable transaxle jack.

WARNING

Make sure the puller does not contact the speed sensor or damage will occur. Do NOT pry against the case.

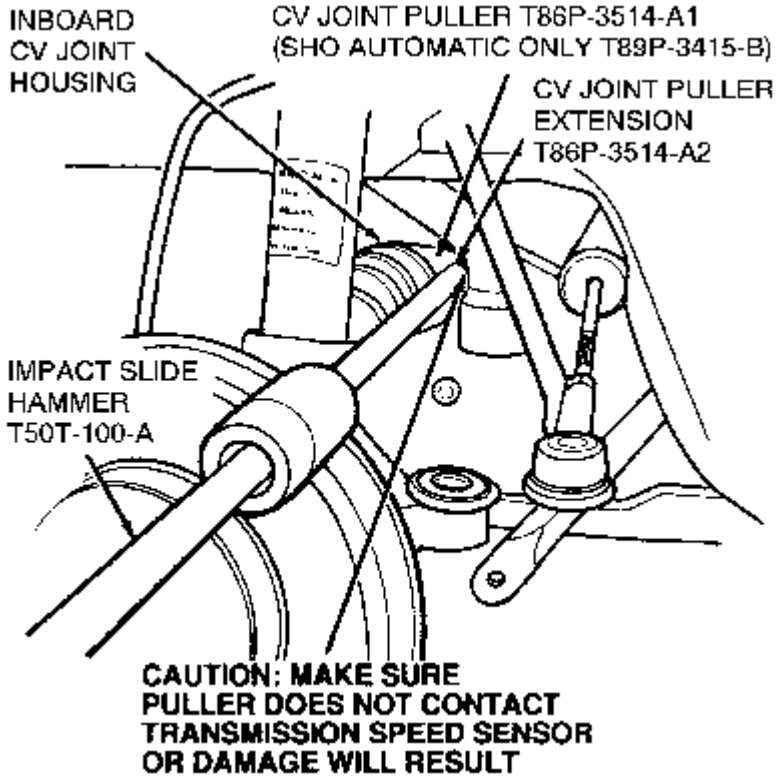
27. Remove the halfshafts as follows:

1. **Screw Extension T86P-35140A2 into the CV-Joint Puller and install Impact Slide Hammer D79P-100-A or equivalent into the extension.**
2. **Position the puller behind the CV-joint, then remove the joint.**
3. **Install shipping plugs.**



Tools required to remove the halfshafts

Click to enlarge



Position the puller behind the CV-joint, then remove the joint

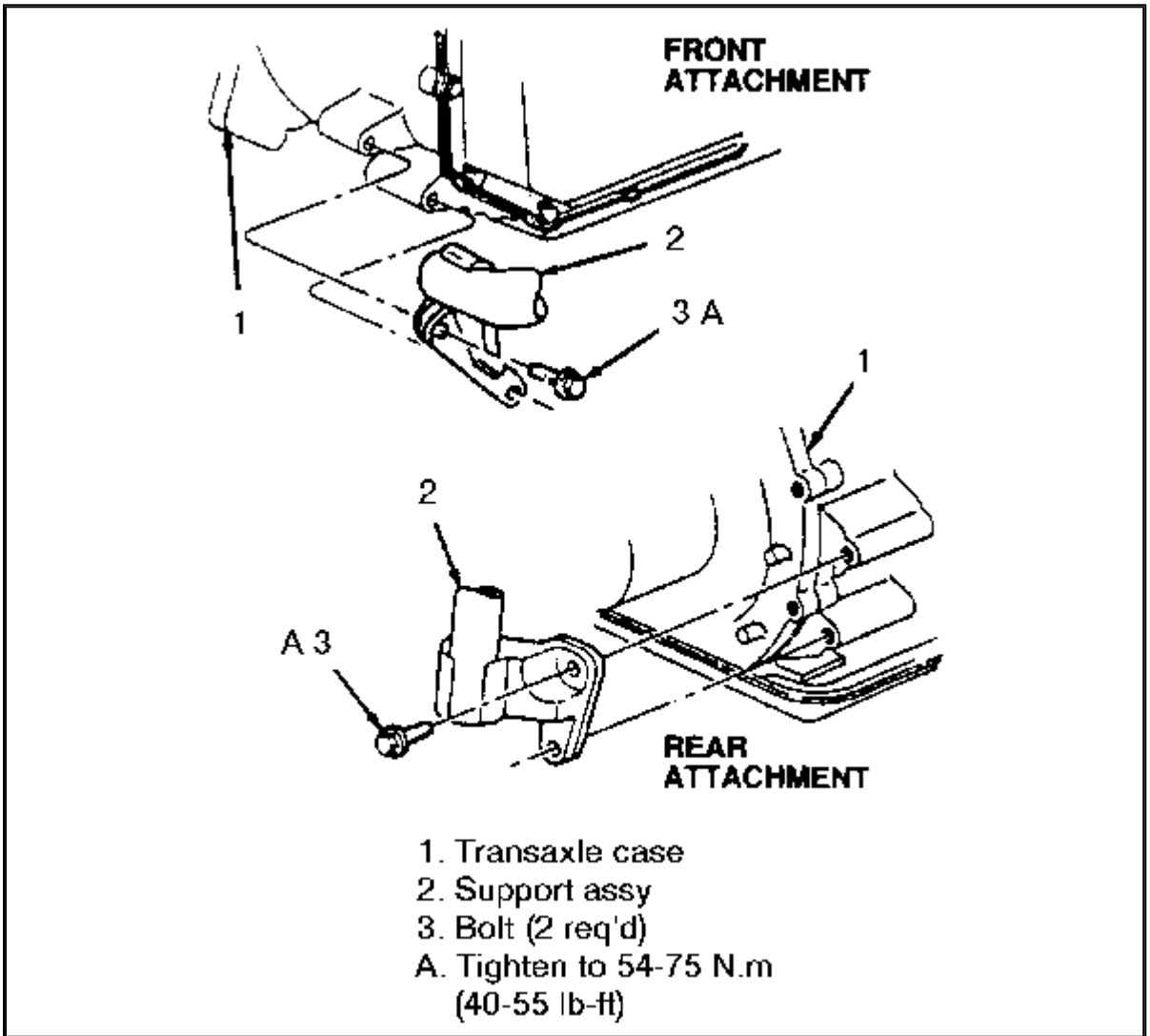
Click to enlarge

28. **Remove the last two torque converter housing bolts, carefully separate the transaxle from the engine and lower out of the vehicle.**

To install:

29. **Place the transaxle assembly on the jack, and raise to the engine.**
30. **Position the transaxle to the engine, then align the torque converter bolts to the flywheel.**

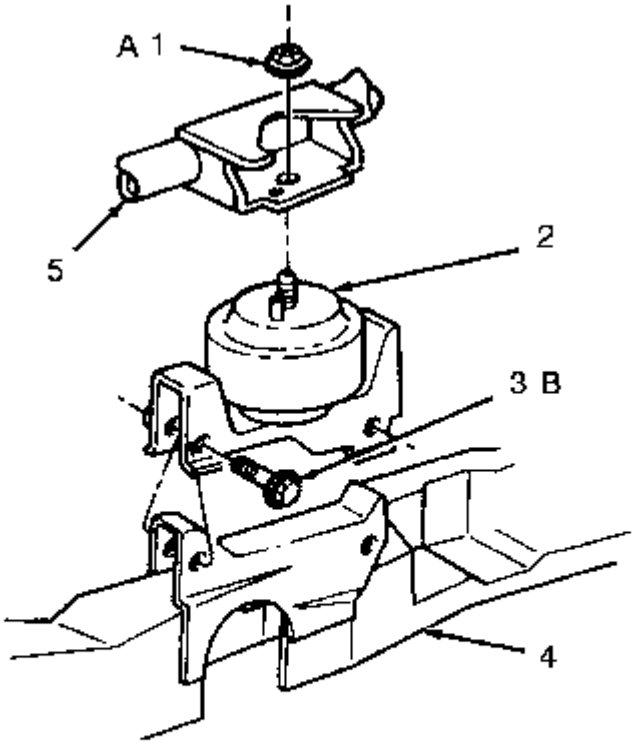
31. **Install the transaxle housing bolts, then tighten to 41-50 ft. lbs. (55-68 Nm).**
32. **Install the four torque converter bolts through the starter drive hole by rotating the engine at the crankshaft pulley bolt with a $^{7}/_{8}$ in. deep well socket and $^{1}/_{2}$ in. drive ratchet. Tighten to 23-39 ft. lbs. (31-53 Nm).**
33. **Remove the transaxle jack.**
34. **Install the halfshaft assemblies.**
35. **Install the vehicle speed sensor, then tighten to 31-39 inch lbs. (3.4-4.5 Nm).**
36. **Install the transaxle cooler lines. At the transaxle, tighten to 18-23 ft. lbs. (24-31 Nm). At the oil cooler, tighten to 8-12 ft. lbs. (11-16 Nm).**
37. **Install the dust cover, then tighten to 7-9 ft. lbs. (9-12 Nm).**
38. **Install the starter, then tighten the mounting bolts to 30-40 ft. lbs. (41-50 Nm).**
39. **Raise the subframe and install the retaining bolts, then tighten the bolts to 55-75 ft. lbs. (75-102 Nm). Remove the subframe removal kit.**
40. **Install the left engine support. Tighten the four bolts to 40-55 ft. lbs. (54-75 Nm).**



Install the left engine support, then secure using the retaining bolts

Click to enlarge

41. **Install the engine mount, then tighten to 60-85 ft. lbs. (81-116 Nm).**



1. Nut
2. Engine mount assy
3. Bolt (2 req'd)
4. Inner floor side member
5. Support assy

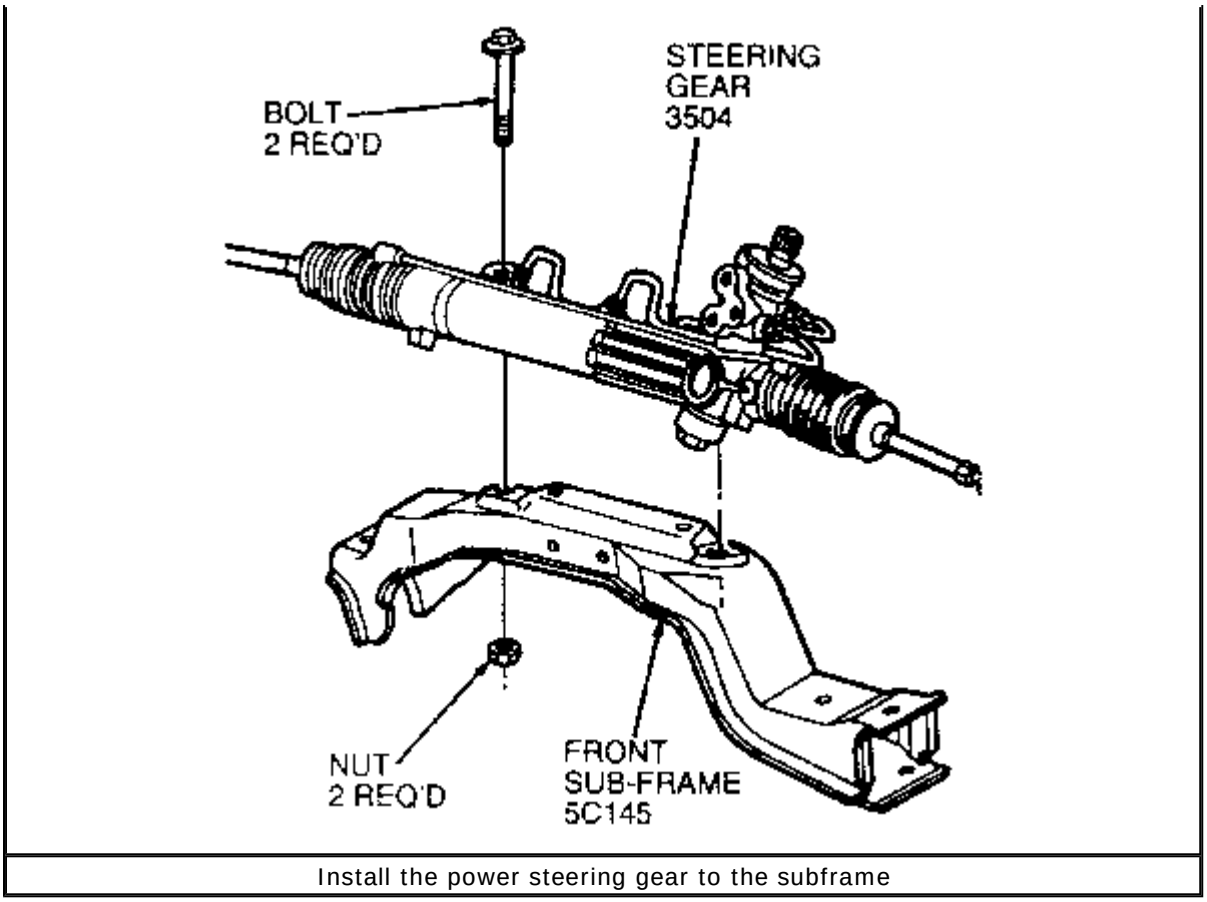
A. Tighten to 74-102 N.m (55-75 lb-ft)
B. Tighten to 81-116 N.m (60-85 lb-ft)

Install the engine mount, then tighten to specification

Click to enlarge

42. **Install the front exhaust pipe, converter assembly and mounting bracket. Connect the heated oxygen sensor.**

43. **Install the power steering gear assembly and retaining nuts, then tighten the nuts to 85-100 ft. lbs. (115-135 Nm).**



Install the power steering gear to the subframe

Click to enlarge

44. **Install the left and right lower arm assembly, Insert a new pinch bolt and nut, then tighten to 40-53 ft. lbs. (53-72 Nm).**
45. **Install the stabilizer retaining bolts, then tighten to 23-29 ft. lbs. (30-40 Nm).**
46. **Install the brake line support brackets, then tighten to 8 ft. lbs. (11 Nm).**
47. **Install the left and right tie rod retaining nuts. Tighten to 23-35 ft. lbs. (31-47 Nm). Tighten to the minimum specified torque, then continue tightening to the nearest cotter pin slot, then install a new cotter pin.**
48. **Install the front wheel and tire assemblies, then tighten the lug nuts to 85-105 ft. lbs. (115-142 Nm). Carefully lower the vehicle.**
49. **Install the power steering pump pressure and return bracket, then tighten to 40-50 inch lbs. (4.5-5.7 Nm).**
50. **Remove the Three Bar Engine Support. Install the radiator sight shield.**
51. **Remove all of the engine support equipment.**
52. **Install the shift lever.**
53. **Fasten the main wiring harness bracket, then engage the electrical connectors to the engine.**
54. **Install the battery tray and battery, then connect the positive and negative battery cables.**
55. **Install the air cleaner assembly, hoses and tubes.**
56. **Fill the transaxle with the specified quantity and type of oil. Start the engine, then move the transaxle selector lever through all of the ranges and check for leaks.**

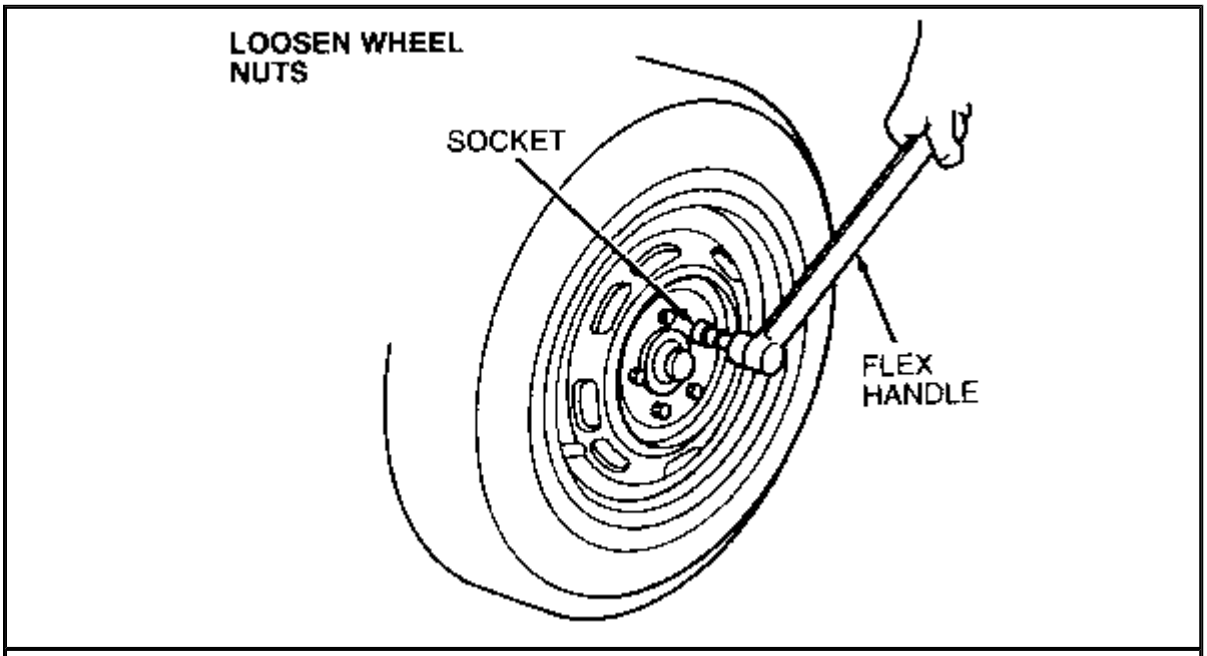
Halfshafts

When removing both the left and right halfshafts, install suitable shipping plugs to prevent dislocation of the differential side gears. Should the gears become misaligned, the differential will have to be removed from the transaxle to re-align the side gears.

Due to the automatic transaxle case configuration, the right halfshaftassembly must be removed first. Differential Rotator T81P-4026-A or equivalent,is then inserted into the transaxle to drive the left inboard CV-joint assemblyfrom the transaxle. If only the left halfshaft assembly is to be removed forservice, remove only the right halfshaft assembly from the transaxle. Afterremoval, support it with a length of wire. Then, drive the left halfshaftassembly from the transaxle.

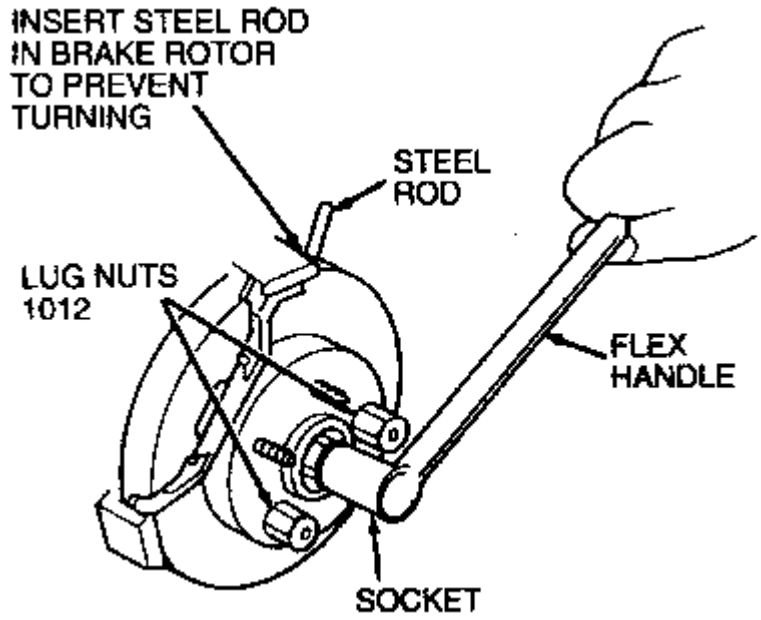
REMOVAL & INSTALLATION

1. **Disconnect the negative battery cable.**
2. **Remove the wheel cover/hub cover from the wheel and tire assembly, then loosen the lug nuts.**

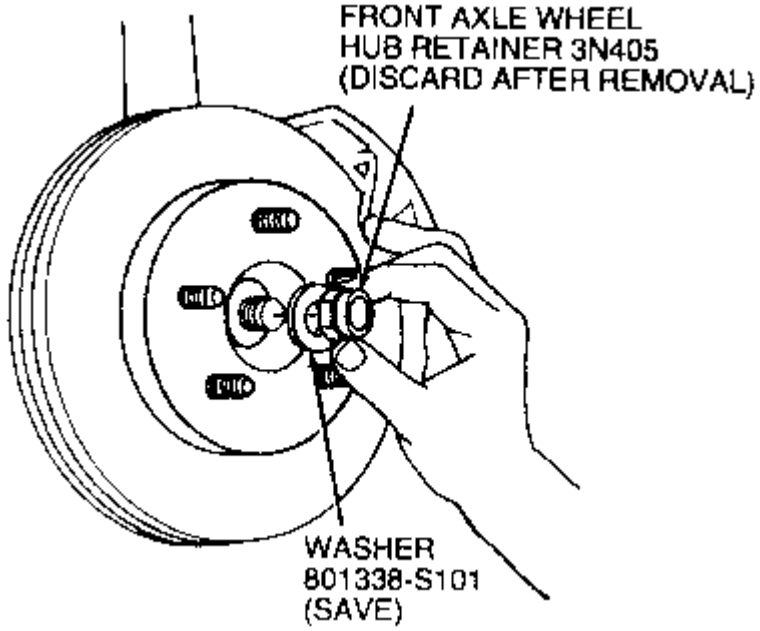


After removing the wheel/hub cover, loosen the lug nuts

3. **Raise and safely support the vehicle, then remove the wheel and tire assembly. Insert a steel rod in the rotor to prevent it from turning, then remove the hub nut and washer. Discard the old hub nut.**

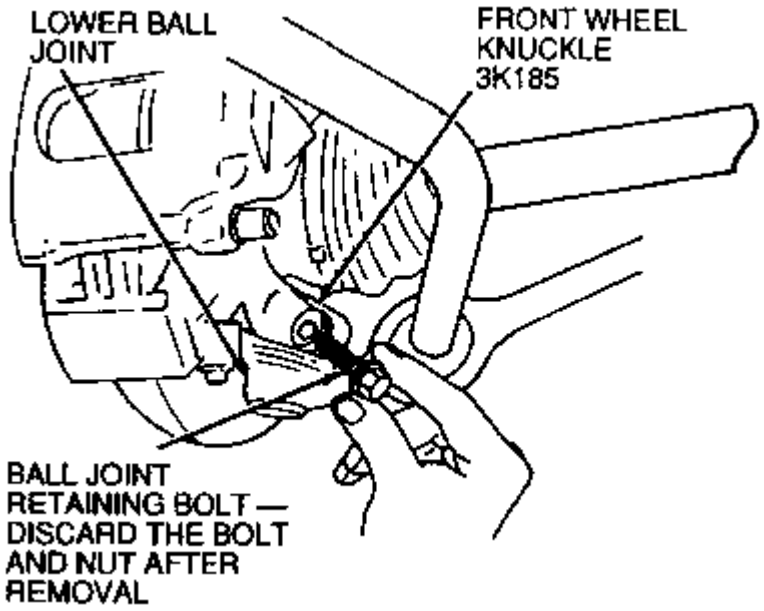


Before removing the hub nut and washer, insert a steel rod in the rotor to prevent it from turning



Remove the hub nut and washer, then discard the nut and replace with a new one during installation

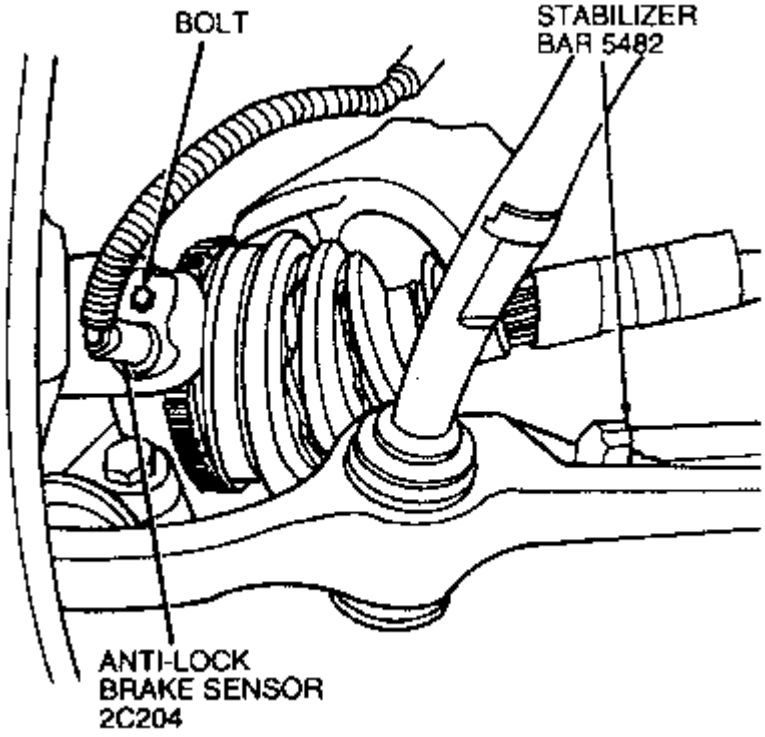
4. **Remove the nut from the ball joint to steering knuckle attaching bolts.**
5. **Drive the bolt out of the steering knuckle using a punch and hammer. Discard this bolt and nut after removal.**



Drive the bolt out of the front wheel knuckle using a punch and hammer, then discard the nut and bolt and replace with new ones during installation

Click to enlarge

6. **If equipped with anti-lock brakes, remove the anti-lock brake sensor and position it aside. If equipped with air suspension, remove the height sensor bracket retaining bolt and wire sensor bracket to inner fender. Position the sensor link aside.**

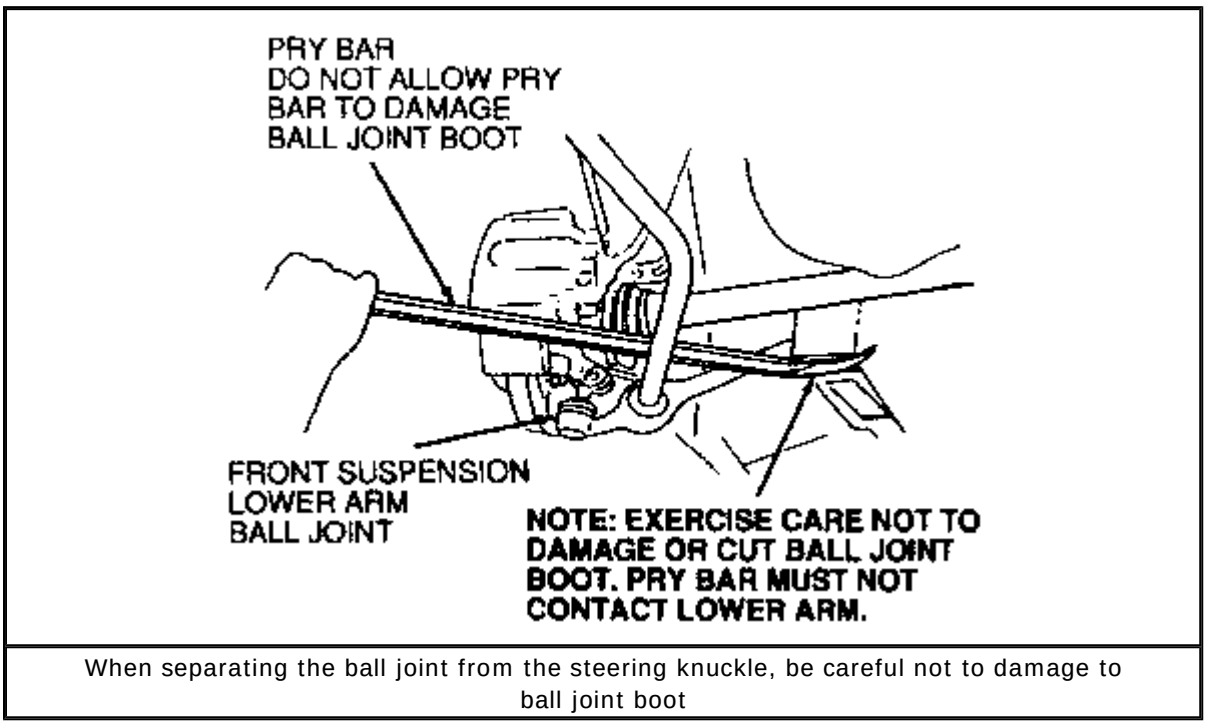


If so equipped, remove the anti-lock brake sensor and position it aside

Click to enlarge

7. **Separate the ball joint from the steering knuckle using a suitable prybar. Position the end of the prybar outside of the bushing pocket to avoid damage to the**

bushing. Use care to prevent damage to the ball joint boot. Remove the stabilizer bar link at the stabilizer bar.



When separating the ball joint from the steering knuckle, be careful not to damage to ball joint boot

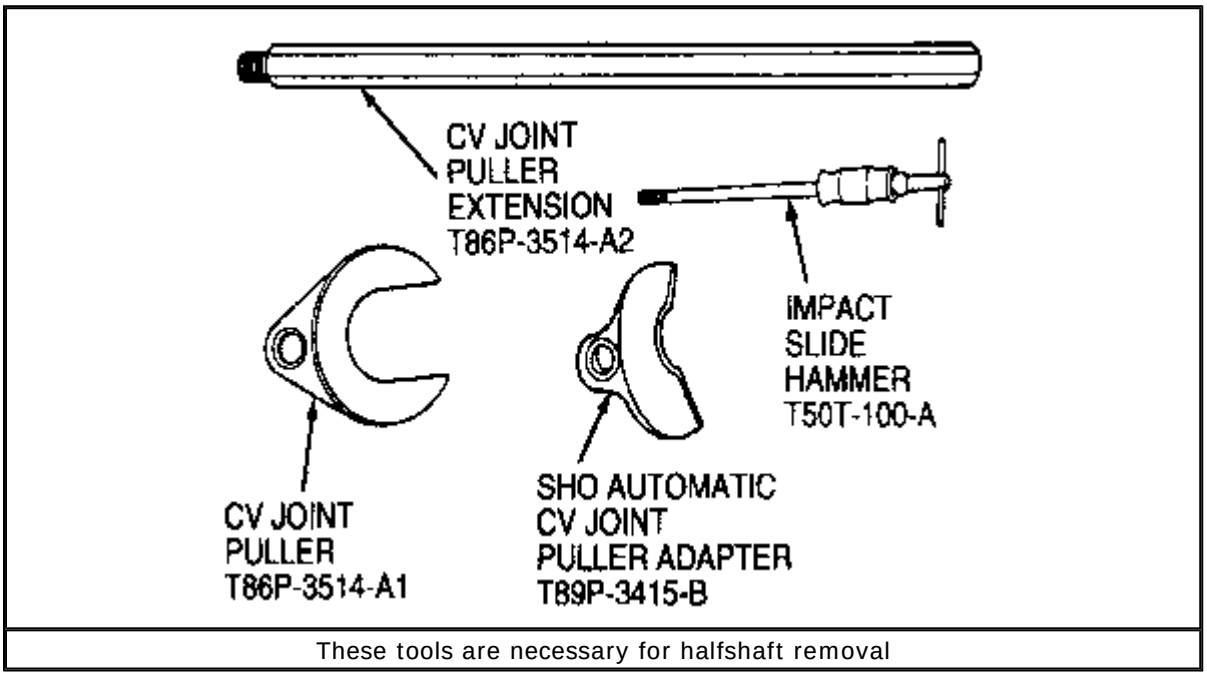
Click to enlarge

8. **The following removal procedure applies to the right-side halfshaft/link shaft for the 1986-90 2.5L engine Taurus. (For all other automatic transaxles, proceed to Step 9):**
    1. **Remove the bolts attaching the bearing support to the bracket. Slide the link shaft out of the transaxle. Support the end of the shaft by suspending it from a convenient underbody component with a piece of wire. Do not allow the shaft to hang unsupported, damage to the outboard CV-joint may occur.**
    2. **Separate the outboard CV-joint from the hub using front hub remover tool T81P-1104-C or equivalent and metric adapter tools T83P-1104-BH, T86P-1104-Al and T81P-1104-A or equivalent.**

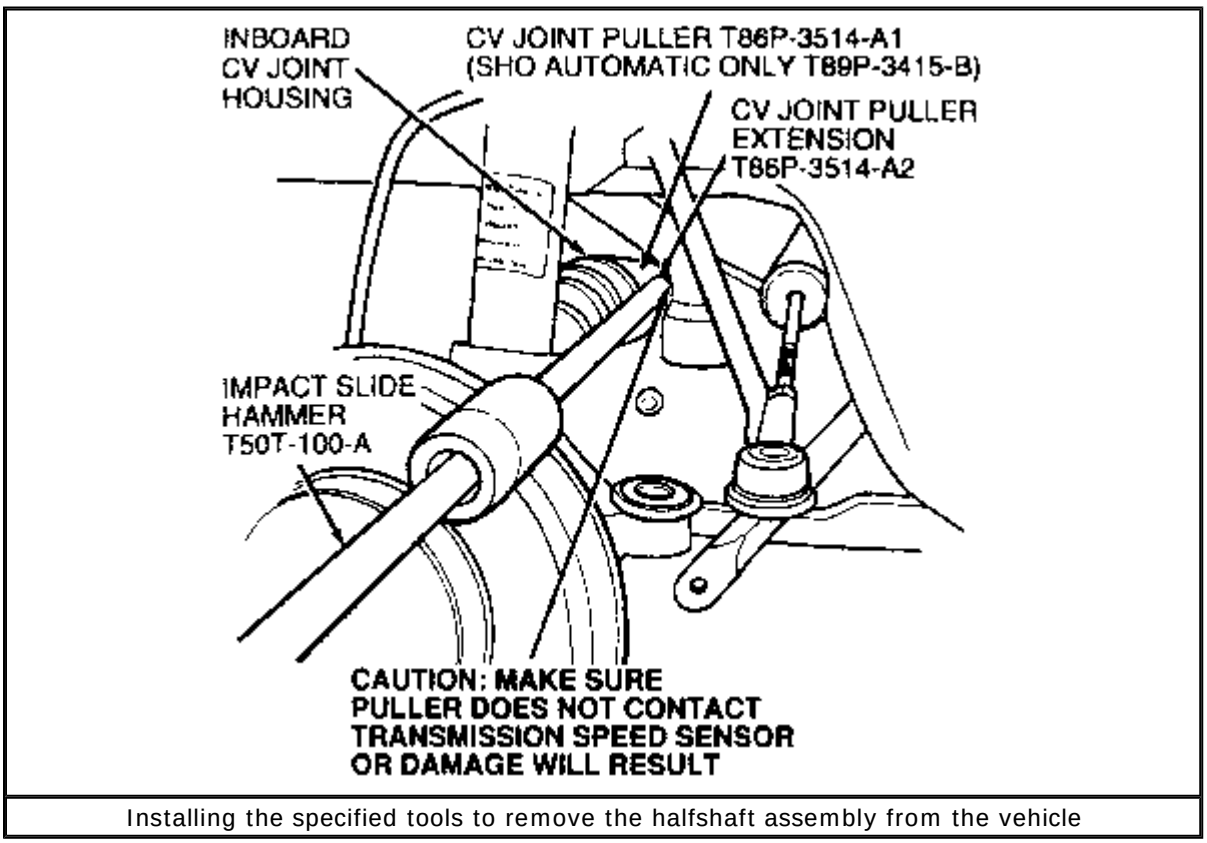
NEVER use a hammer to separate the outboard CV-joint stubshaft from the hub. Damage to the CV-joint threads and internal components mayresult. The right-side link shaft and halfshaft assembly is removed as acomplete unit.

9. **The following removal procedure applies to the right and left-side halfshafts of the automatic transaxle, except for 1986-90 Tauruses with a 2.5L engine.**
    1. **Install the CV-joint puller tool T86P-3514-A1 or equivalent, between CV-joint and transaxle case. Turn the steering hub and/or wire strut assembly aside.**
    2. **Screw extension tool T86P-3514-A2 or equivalent, into the CV-joint puller and hand tighten. Screw an impact slide hammer onto the extension and remove the CV-joint.**

3. **Support the end of the shaft by suspending it from a convenient underbody component with a piece of wire. Do not allow the shaft to hang unsupported, damage to the outboard CV-joint may occur.**
4. **Separate the outboard CV-joint from the hub using front hub remover tool T81P-1104-C or equivalent and metric adapter tools T83P-1104-BH, T86P-1104-Al and T81P-1104-A or equivalent.**
5. **Remove the halfshaft assembly from the vehicle.**

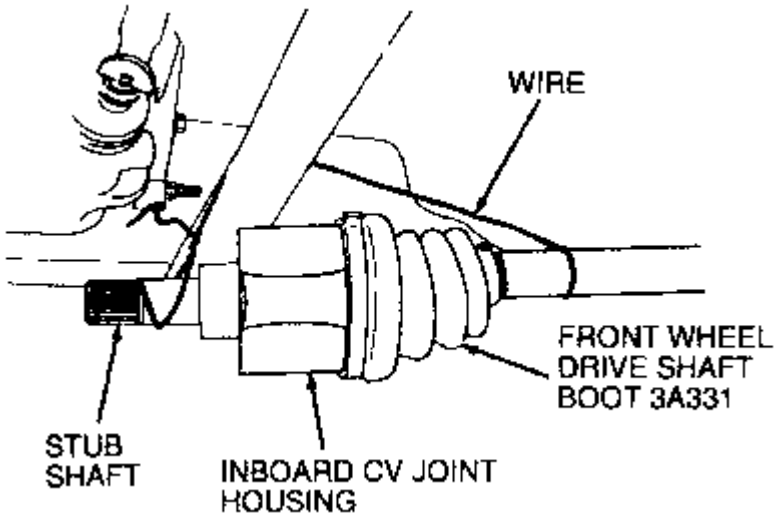


These tools are necessary for halfshaft removal

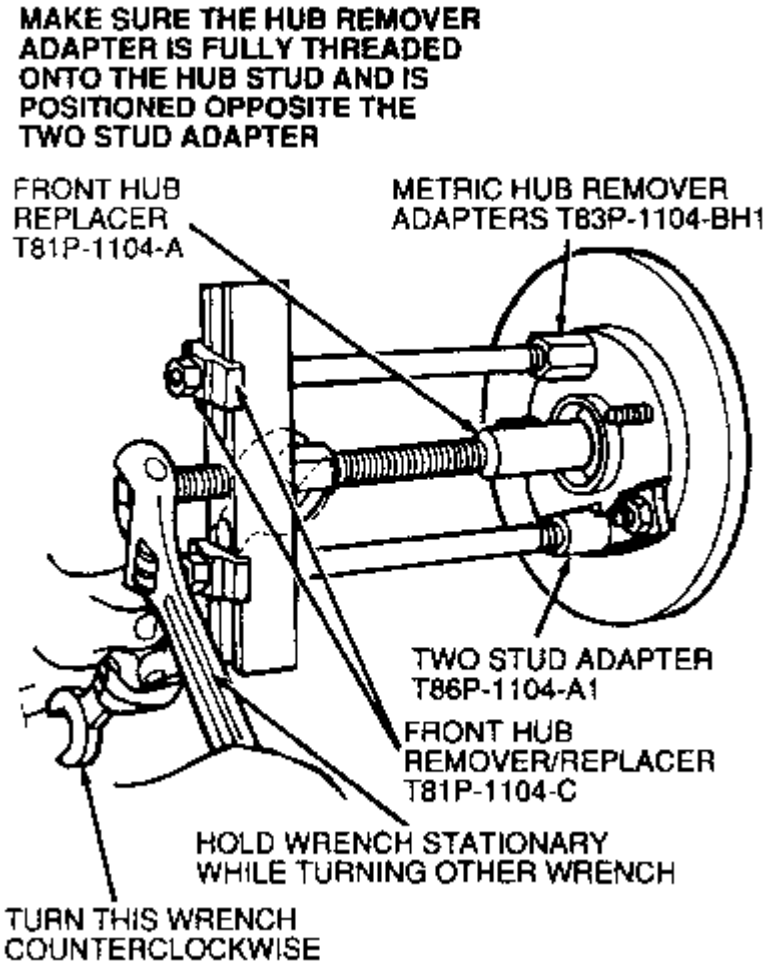


Installing the specified tools to remove the halfshaft assembly from the vehicle

Click to enlarge



Support the end of the shaft by suspending it from a convenient underbody component with a piece of wire. Do not allow the shaft to hang unsupported, since damage to the outboard CV-joint may occur



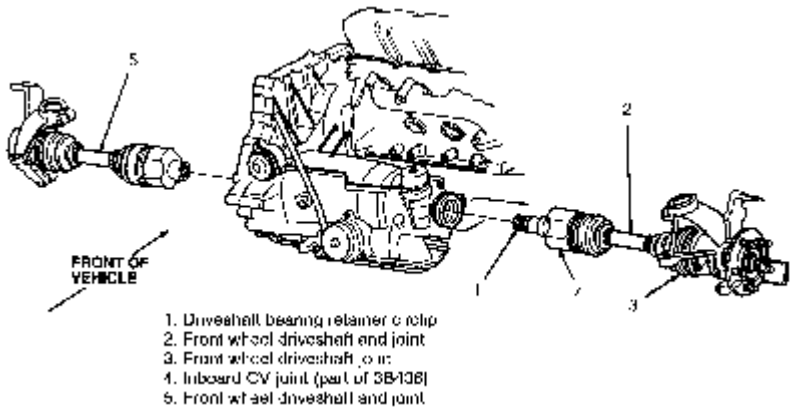
Separate the outboard CV-joint from the hub using front hub remover tool T81P-1104-C or equivalent, and metric adapter tools T83P-1104-BH, T86P-1104-Al and T81P-1104-A or equivalent, then remove the halfshaft assembly from the vehicle

Click to enlarge

10. **The following removal procedure applies to the left-side halfshaft for the 1986-90 Taurus with 2.5L engine automatic transaxle:**

Due to the automatic transaxle case configuration, theright halfshaft assembly must be removed first. Differential rotator toolT81P-4026-A or equivalent, is then inserted into the transaxle to drive theleft inboard CV-joint assembly from the transaxle. If only the left halfshaftassembly is to be removed for service, remove the right halfshaft assembly fromthe transaxle first. After removal, support it with a length of wire. Thendrive the left halfshaft assembly from the transaxle.

1. **Support the end of the shaft by suspending it from a convenient underbody component with a piece of wire. Do not allow the shaft to hang unsupported as damage to the outboard CV-joint may occur.**
2. **Separate the outboard CV-joint from the hub front hub remover tool T81P-1104-C or equivalent and metric adapter tools T83P-1104-BH, T86P-1104-AI and T81P-1104-A or equivalent.**
3. **Remove the halfshaft assembly from the vehicle.**



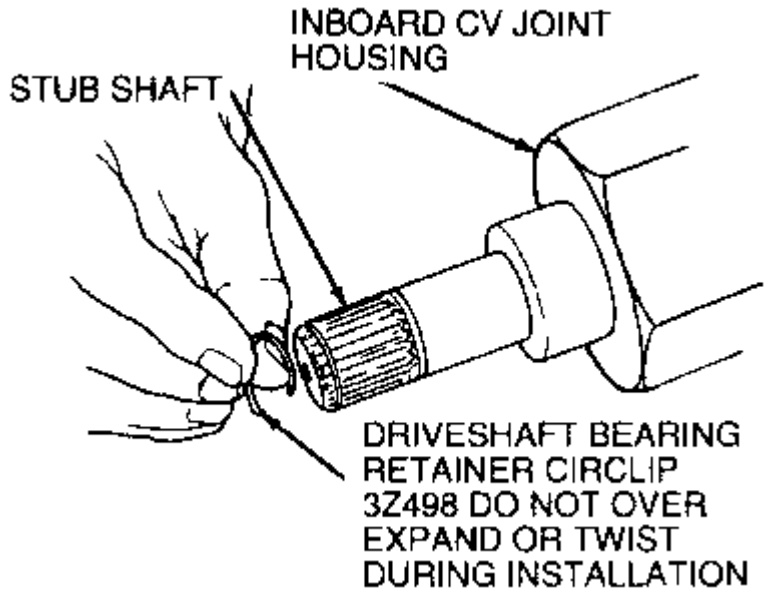
Exploded view of the halfshaft assemblies and related components-automatic transaxle

Click to enlarge

To install:

11. **Install a new circlip on the inboard CV-joint stub shaft and/or link shaft. The outboard CV-joint does not have a circlip. When installing the circlip, start one end in the groove and work the circlip over the stub shaft end into the groove. This will avoid overexpanding the circlip.**

The circlip must not be re-used. A new circlip must beinstalled each time the inboard CV-joint is installed into the transaxledifferential.

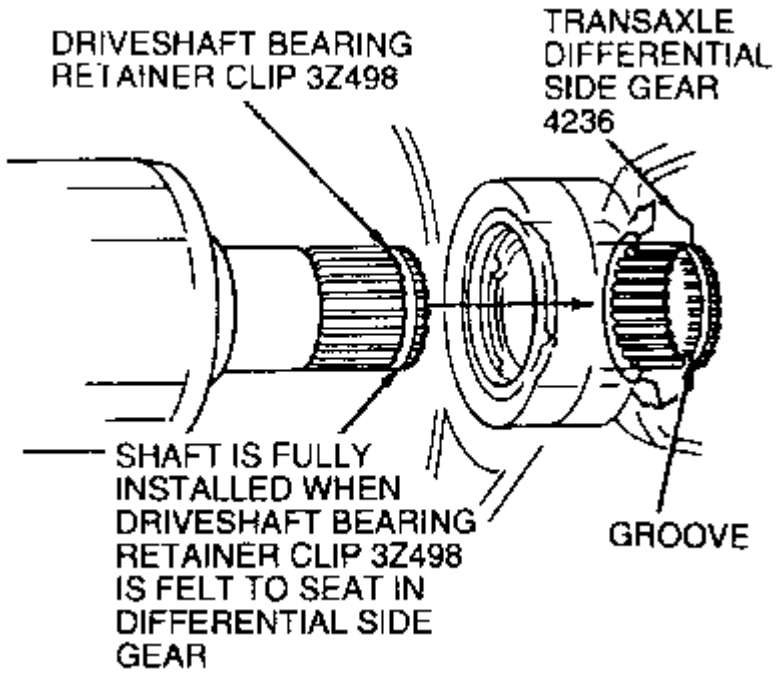


Always use a new circlip on the inboard CV-joint stub shaft and/or link shaft. When installing the new circlip, start one end in the groove and work the circlip over the stub shaft end into the groove. This will avoid overexpanding the circlip

12. **Carefully align the splines of the inboard CV-joint stub shaft with the splines in the differential. Exerting some force, push the CV-joint into the differential until the circlip is felt to seat in the differential side gear. Use care to prevent damage to the differential oil seal. If equipped, tighten the link shaft bearing to 16-23 ft. lbs. (22-31 Nm).**

A non-metallic mallet may be used to aid in seating thecirclip into the differential side gear groove. If a mallet is necessary, taponly on the outboard CV-joint stub shaft.

13. **Carefully align the splines of the outboard CV-joint stub shaft with the splines in the hub and push the shaft into the hub as far as possible.**



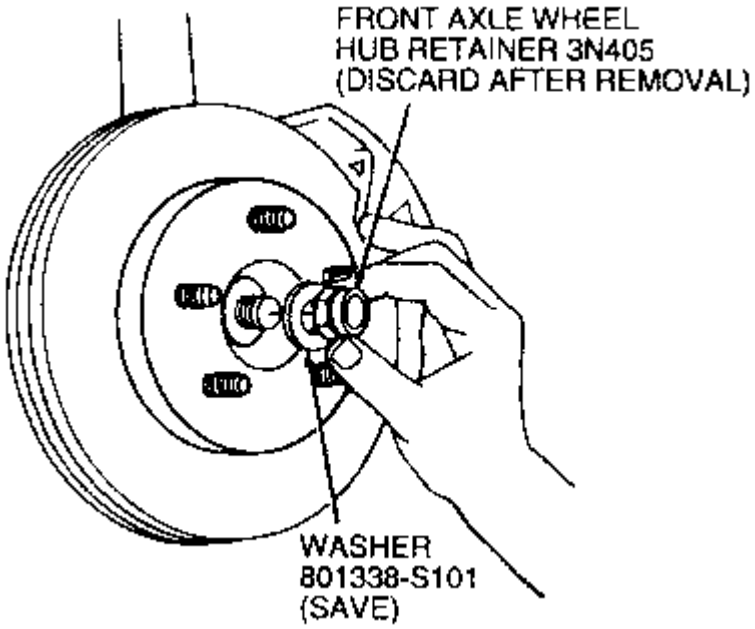
Carefully align the splines of the inboard CV-joint stub shaft with the splines in the

differential

Click to enlarge

14. **Temporarily fasten the rotor to the hub with washers and two wheel lug nuts. Insert a steel rod into the rotor and rotate clockwise to contact the knuckle to prevent the rotor from turning during the CV-joint installation.**

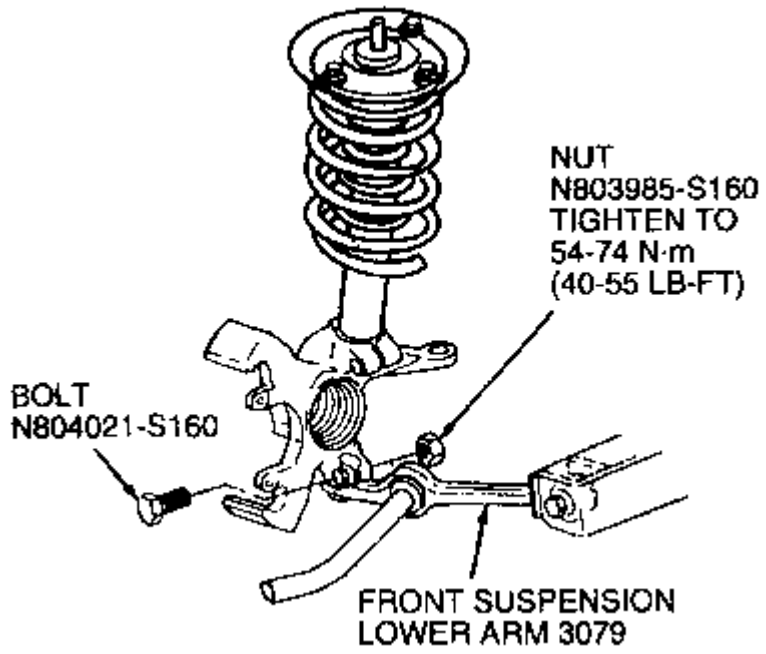
15. **Install the hub nut washer and a new hub nut. Manually thread the retainer onto the CV-joint as far as possible.**



Install the hub washer and a new hub nut, then thread the retainer by hand on the threads as far as possible

Click to enlarge

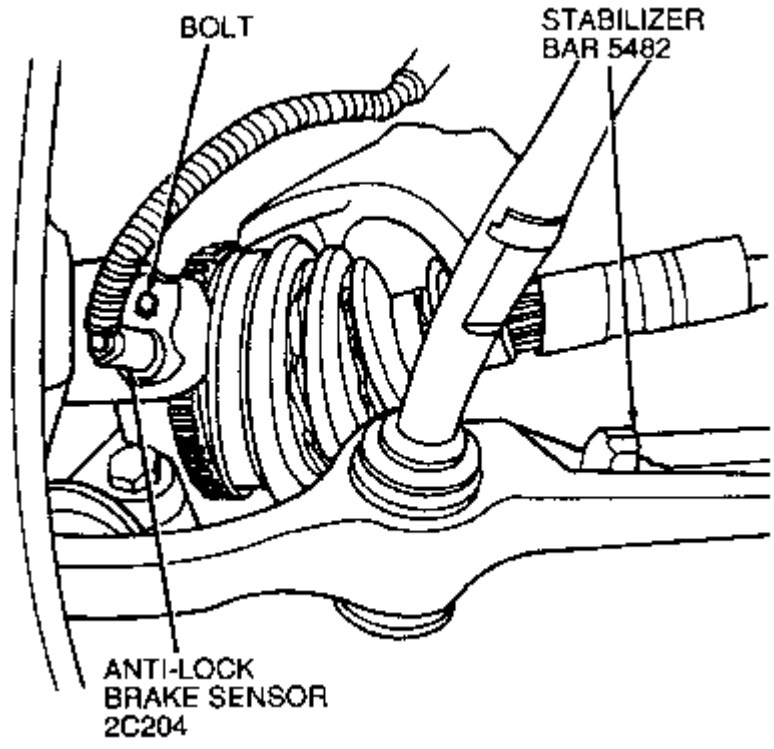
16. **Connect the control arm to the steering knuckle, then install a new nut and bolt. Tighten the nut to 40-55 ft. lbs. (54-74 Nm).**



Connect the control arm to the steering knuckle and install a new nut and bolt. Tighten to 40-55 ft. lbs. (54-74 Nm)

Click to enlarge

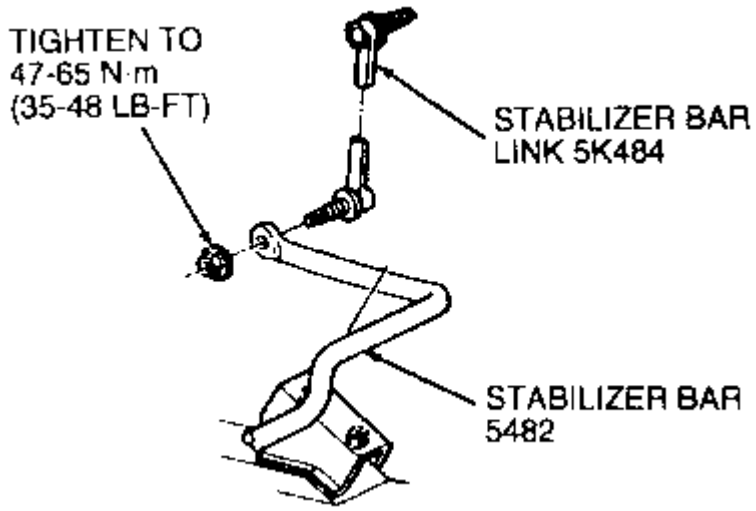
17. **If equipped, install the anti-lock brake sensor and/or the ride height sensor bracket.**



If equipped, install the anti-lock brake sensor

Click to enlarge

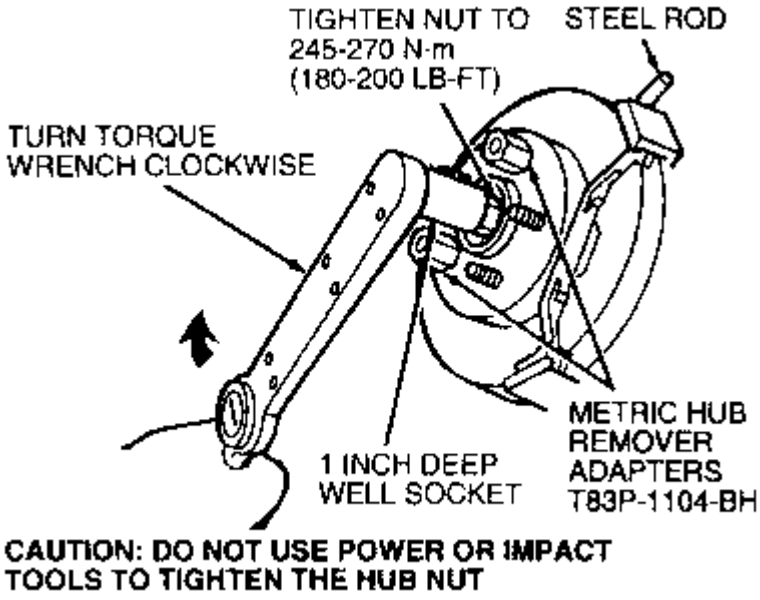
18. **Connect the stabilizer link to the stabilizer bar. Tighten to 35-48 ft. lbs. (47-65 Nm).**



Connect the stabilizer link to the stabilizer bar. Tighten to 35-48 ft. lbs. (47-65 Nm)

Click to enlarge

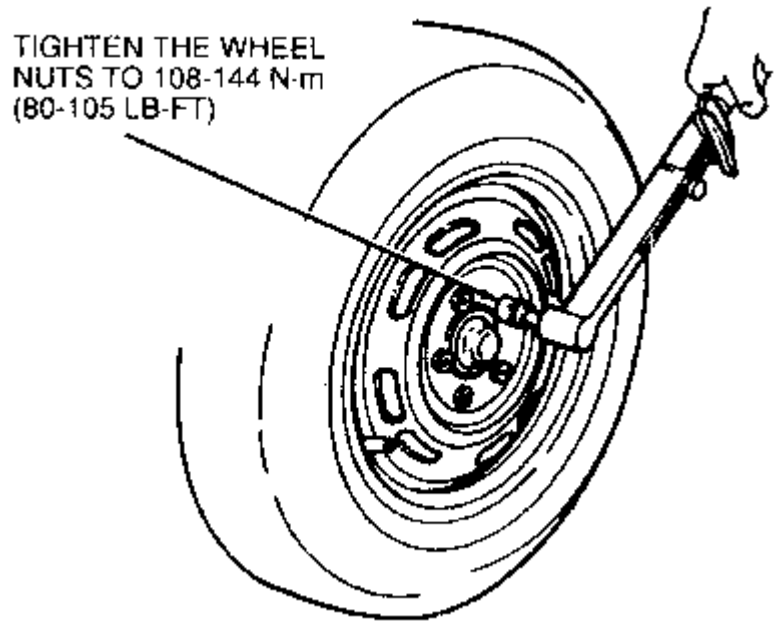
19. **Install a new hub retainer nut, then tighten the nut to 180-200 ft. lbs. (245-270 Nm). Remove the steel rod.**



Install a new hub retainer nut, then tighten to specification using a torque wrench. Do NOT use an air gun or impact tools to tighten the nut

Click to enlarge

20. **Install the wheel and tire assembly, snugging the lug nuts by hand, then lower the vehicle. Tighten the wheel lug nuts to 80-105 ft. lbs. (108-142 Nm). Fill the transaxle to the proper level with the specified fluid.**



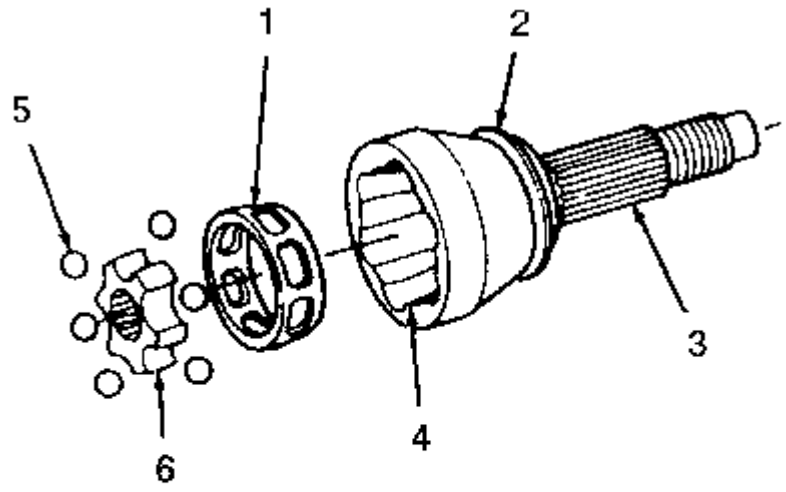
After the vehicle is lowered, tighten the lug nuts to 80-105 ft. lbs. (108-142 Nm)

CV-Joint

REMOVAL & INSTALLATION

Outboard CV-Joint

1. **Disconnect the negative battery cable. Raise and safely support the vehicle.**



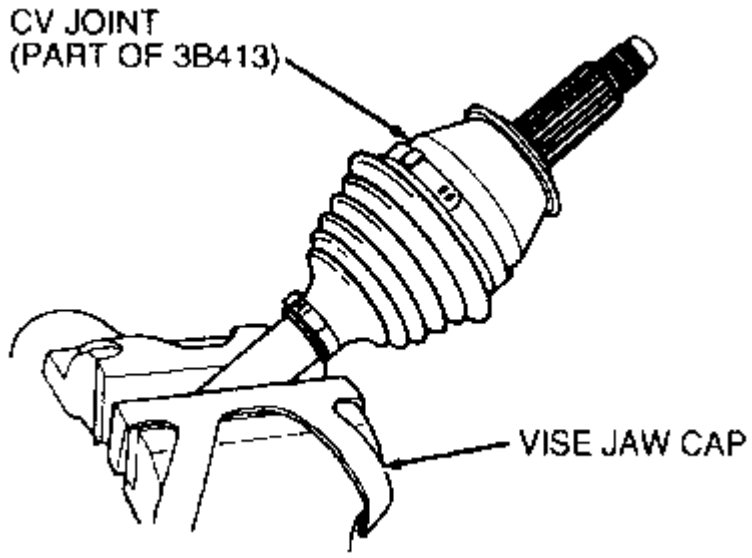
1. Cage (part of 3B413)
2. Front wheel dust shield
3. Front wheel driveshaft joint
4. Outer race (part of 3B413)
5. Balls (6 req'd) (part of 3B413)
6. Inner race (part of 3B413)

Exploded view of the outboard CV-joint assembly

Before removal, check the CV-boot for wear or damage

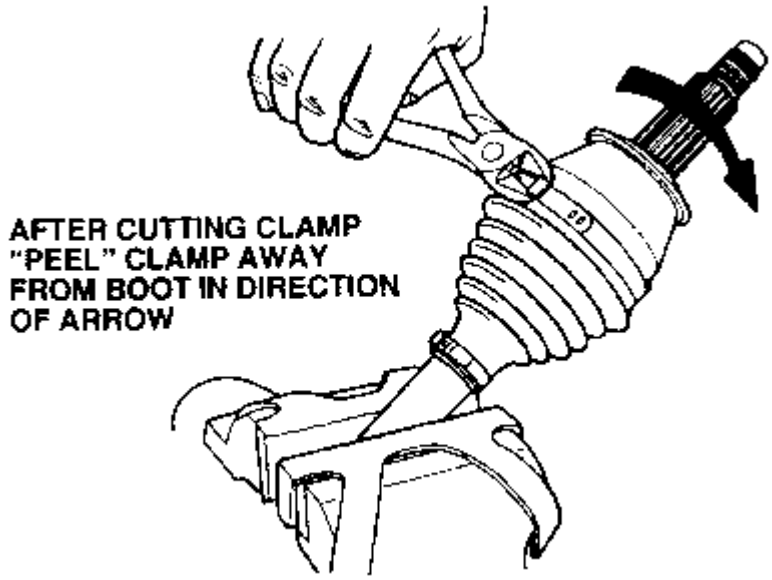
Clean the CV-joint prior to removing the boot, but be careful not to damage anything

2. **Remove the halfshaft assembly from the vehicle. For details, please refer to the procedure located earlier in this section.**
3. **Clamp the halfshaft in a vise that is equipped with soft jaw covers. Do not allow the vise jaws to contact the boot or boot clamp.**



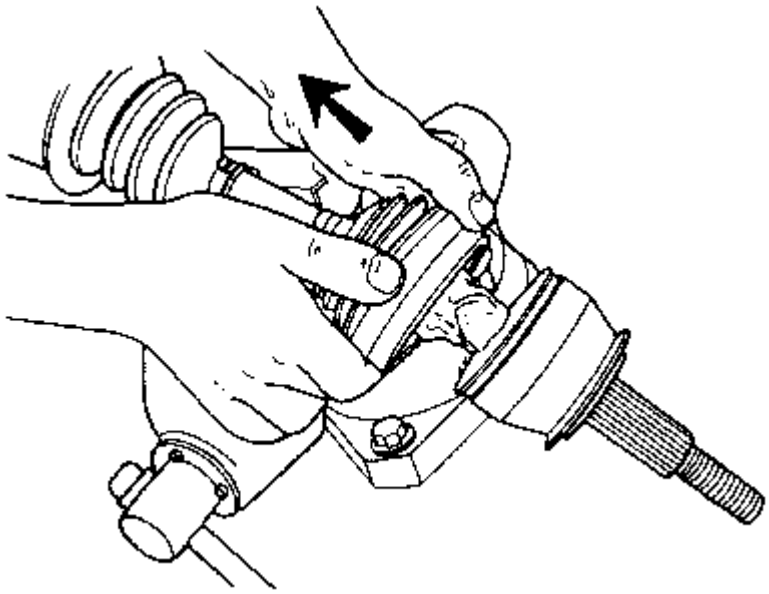
Clamp the halfshaft in a vise with soft jaw covers, but do not allow the vise jaws to contact the boot or boot clamp

4. **Cut the boot clamp with a pair of side cutters, then pull the clamp away from the boot. Slide the boot back over the shaft after the clamp has been removed.**



Cut the boot clamp with a pair of side cutters, then pull the clamp away from the boot

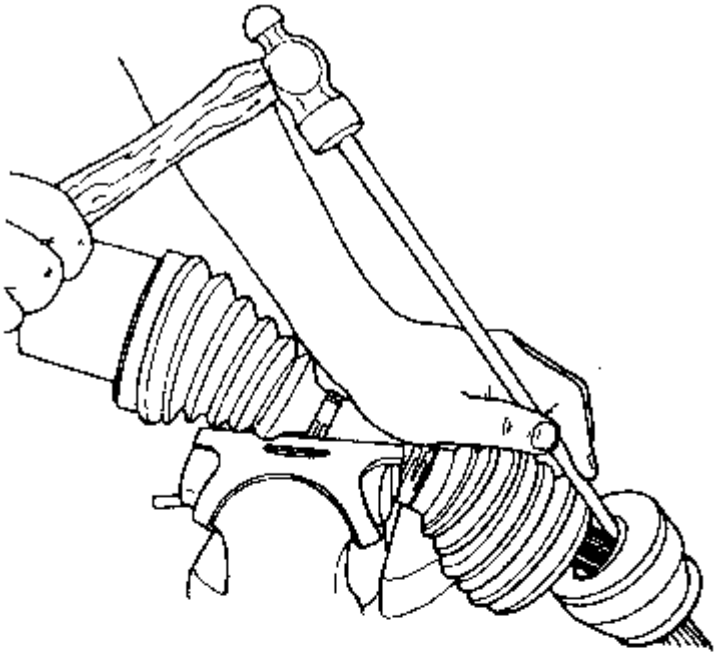
Click to enlarge

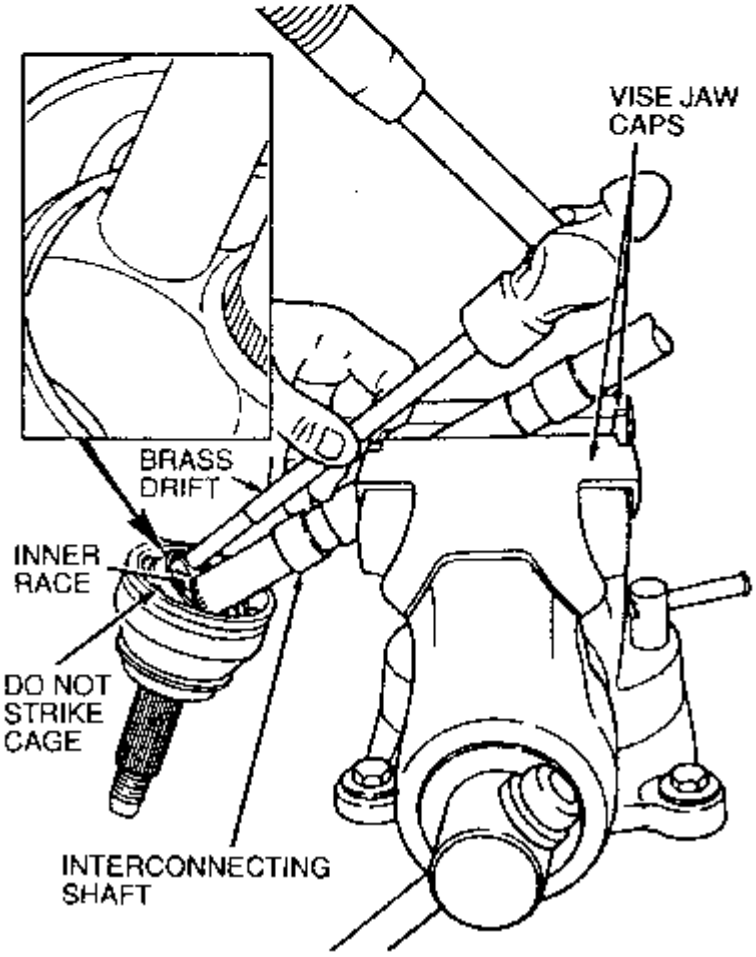


Slide the boot back over the shaft once the clamp has been removed

5. **Support the interconnecting shaft in a soft jawed vise and angle the CV-joint pointing downward so the inner bearing race is exposed.**

6. **Use a brass drift and hammer, give a sharp tap to the inner bearing race to dislodge the internal driveshaft bearing retainer circlip and separate the CV-joint from the interconnecting shaft. Make sure to secure the CV-joint so it does not drop after separation.**



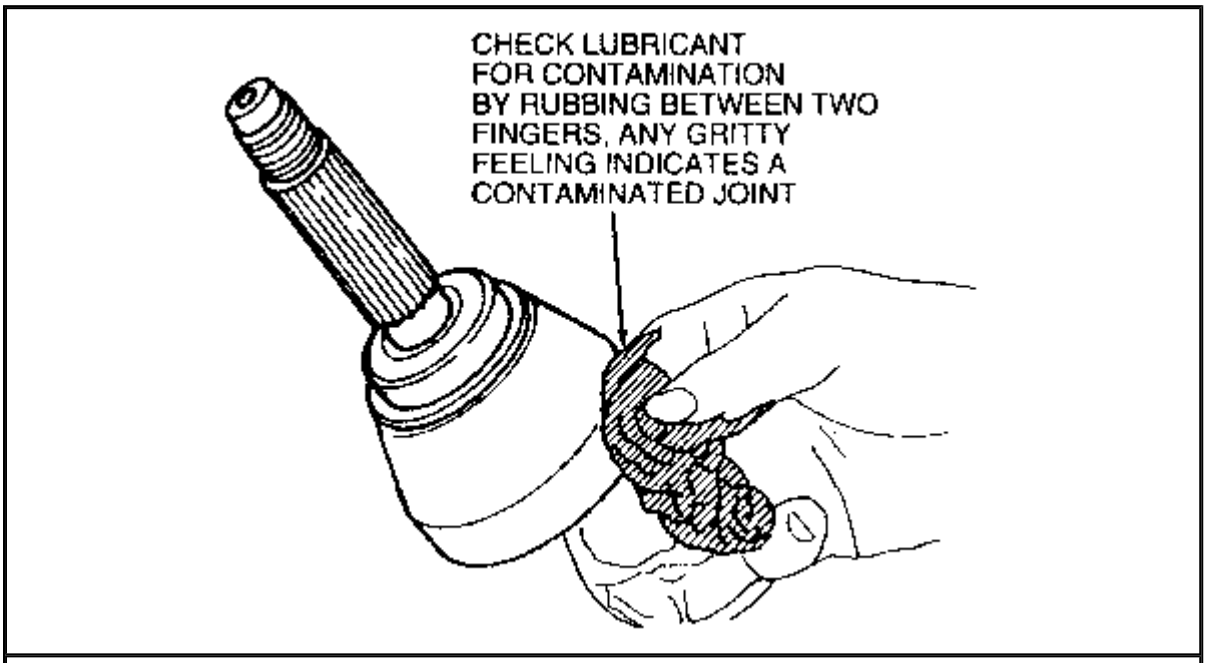


Using a brass drift and hammer, give a sharp tap to the inner bearing race to dislodge the internal driveshaft bearing retainer circlip and separate the CV-joint from the interconnecting shaft. Make sure to secure the CV-joint so it does not drop after separation. The boot cannot be removed from the shaft

Click to enlarge

7. **Remove the boot from the shaft.**

8. **Inspect the CV-joint grease for contamination. If the CV-joints are working correctly, and the grease doesn't seem to be contaminated, add grease, then replace the CV-joint boot.**



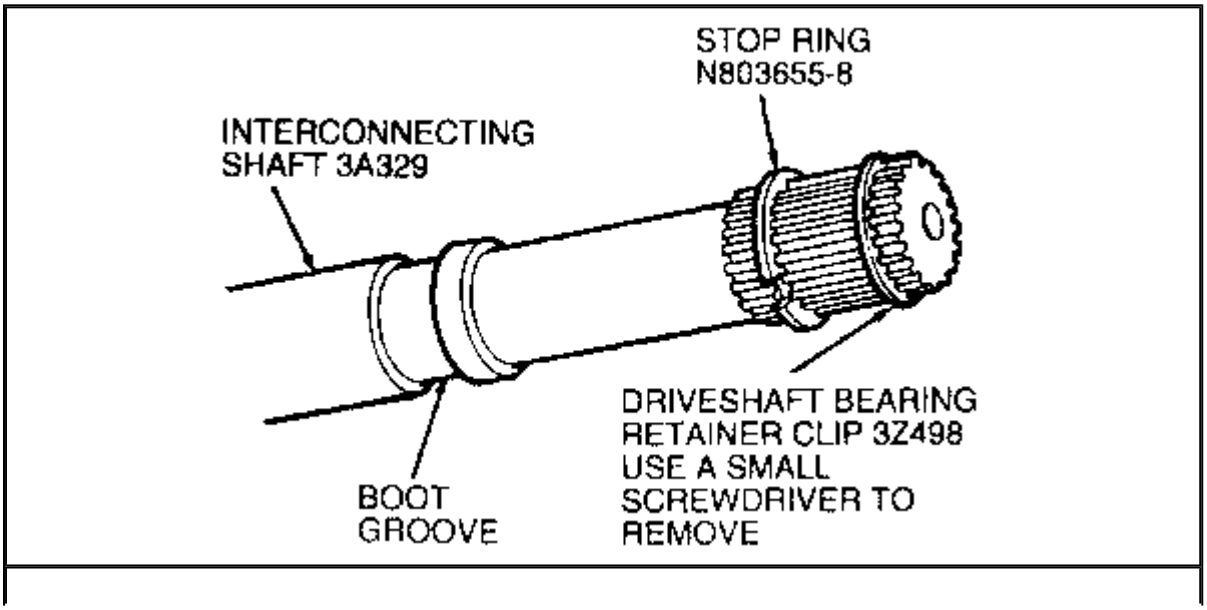
Check the CV-joint grease for contamination or foreign debris by visually inspecting it and rubbing it with fingers. Any grittiness indicates contamination

Click to enlarge

9. **If the lubricant appears to be contaminated, proceed with a complete CV-joint disassembly.**

Do NOT reuse the circlip. Replace the used circlip with a new one before assembly.

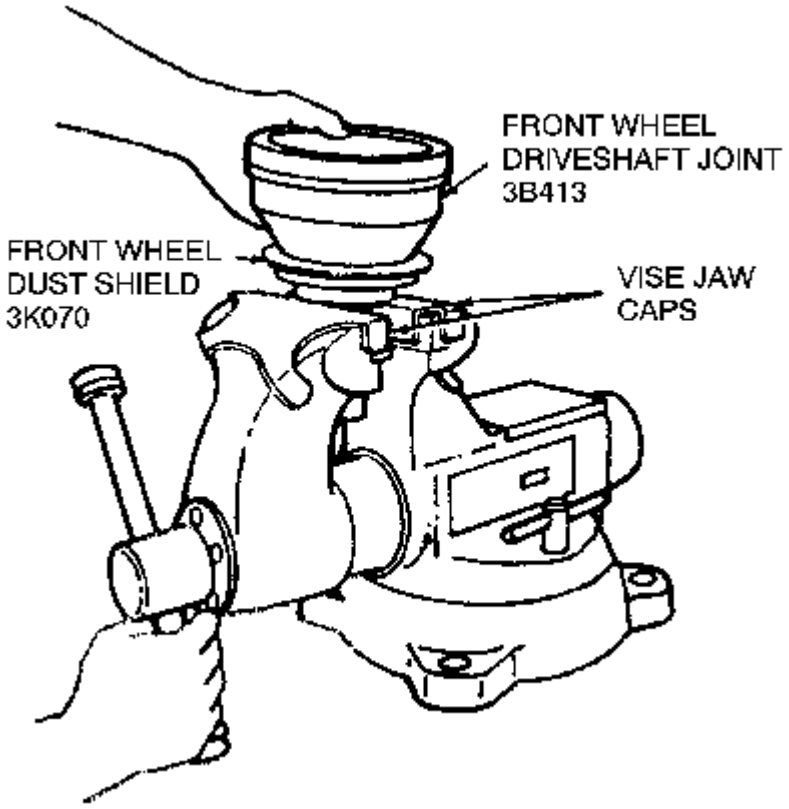
10. **Remove and discard the circlip located near the end of the interconnecting shaft. The stop ring, located just below the circlip should be removed and replaced only if damaged or worn.**



The stop ring, located just below the circlip, should be removed and replaced only if damaged or worn

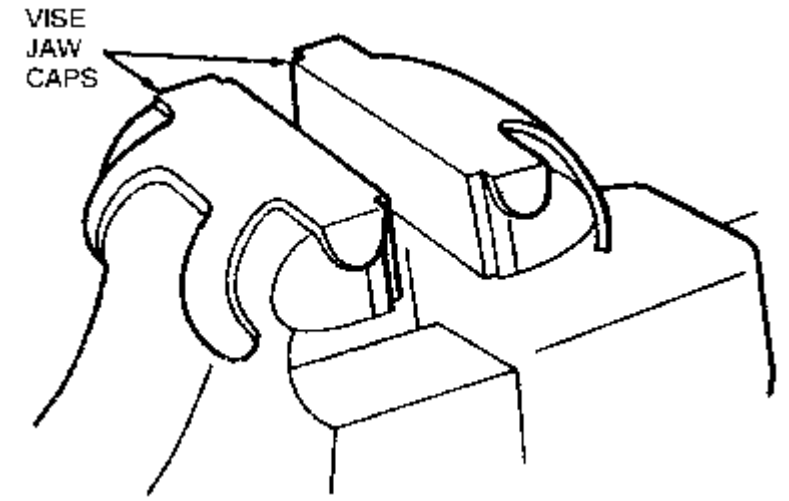
The vise must be equipped with soft jaw covers to avoid damaging the shaft splines.

11. **Clamp the CV-joint in a vise with soft jaw covers, with the outer face pointing upward. Be careful not to damage the dust shield.**



Clamp the CV-joint in a vise with soft jaw covers, with the outer face facing up. Be careful not to damage the dust shield

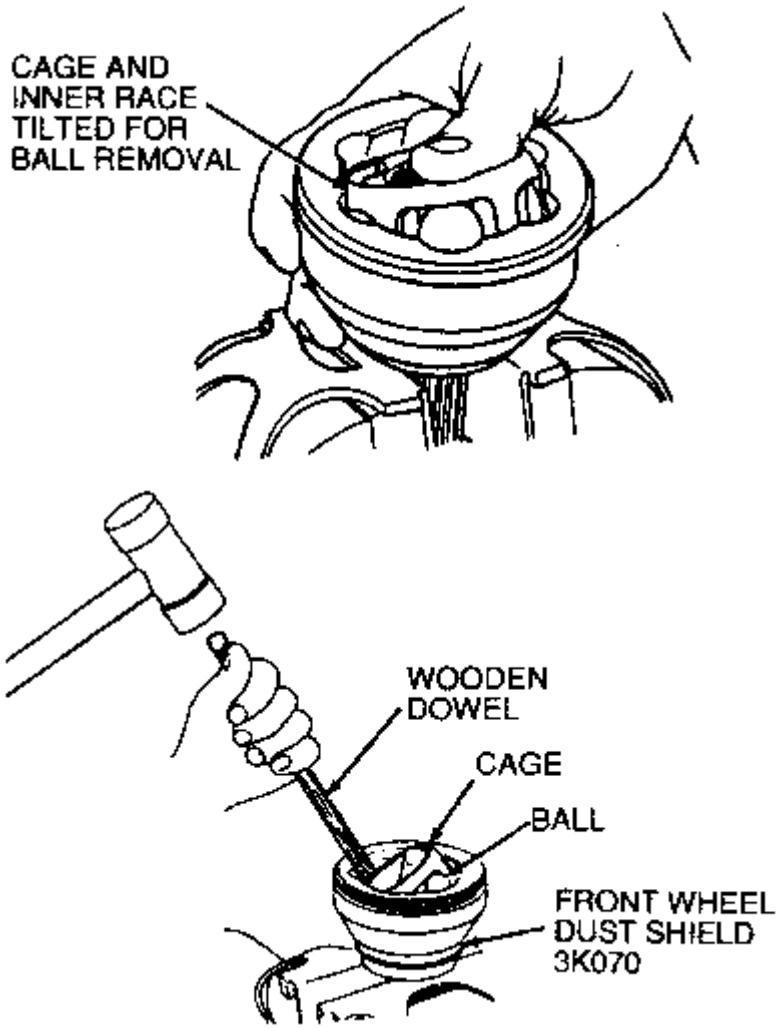
Click to enlarge



Vise jaw caps are made of copper, brass, wood or other soft material. They are slipped over the steel jaws of the vise so the finished surfaces of the component won't get scratched or nicked

Click to enlarge

12. **Press down on the inner race until it tilts enough to permit removal of the ball. A tight assembly can be tilted by tapping the inner race with a wooden dowel and hammer, but do not hit the cage.**



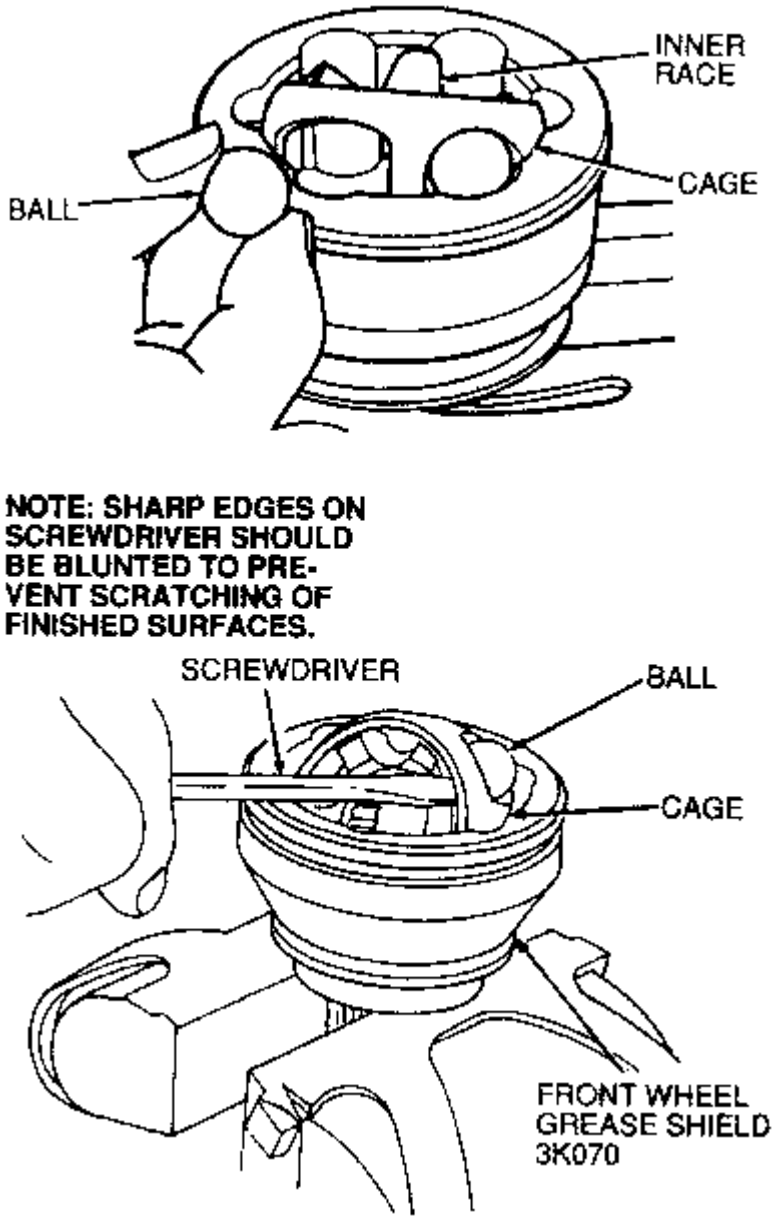
Press down on the inner race until it tilts enough to permit removal of the ball. A tight assembly can be tilted by tapping the inner race with a wooden dowel and hammer, but do not hit the cage

Click to enlarge

WARNING

Be careful not to scratch or damage the inner race or cage spheres.

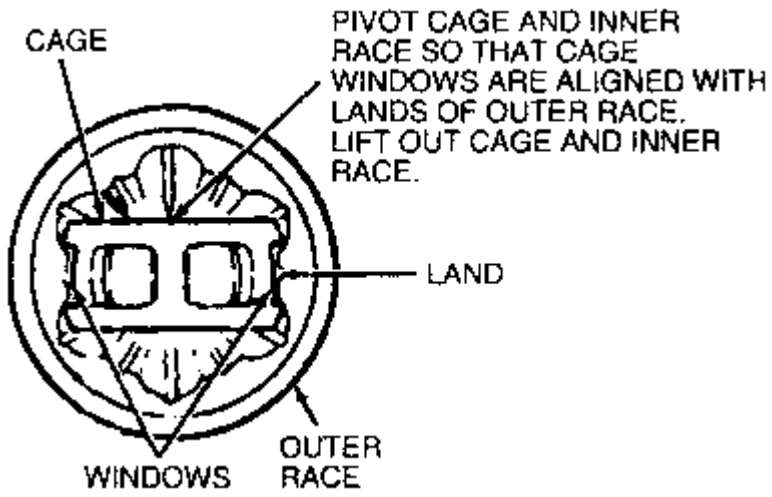
13. **With the cage sufficiently tilted, remove the ball from the cage. Repeat this until all of the balls are removed. If the balls are tight in the cage, use a blunt edged prytool to pry the balls from the cage.**



With the cage sufficiently tilted, remove a ball from the cage. Repeat this until all of the balls are removed. If the balls are tight in the cage, use a blunt edged prytool to pry the balls from the cage

Click to enlarge

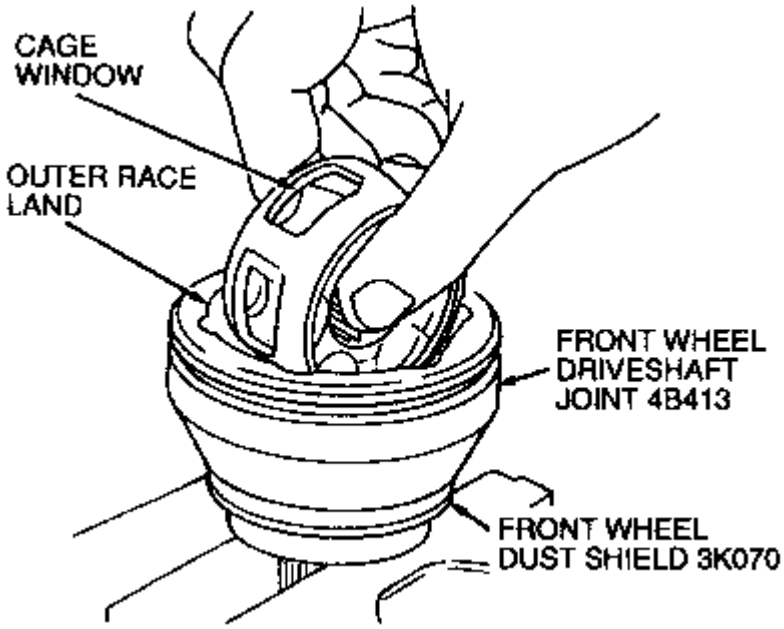
14. **Pivot the cage and inner race assembly until it is straight up and down in the outer race. Align the cage windows with the outer race lands while pivoting the bearing cage.**



Pivot the cage and inner race assembly until it is straight up and down in the outer race. Align the cage windows with the outer race lands while pivoting the bearing cage

Click to enlarge

15. **With the cage pivoted and aligned, lift the assembly from the outer race. Rotate the inner race up and out of the cage.**

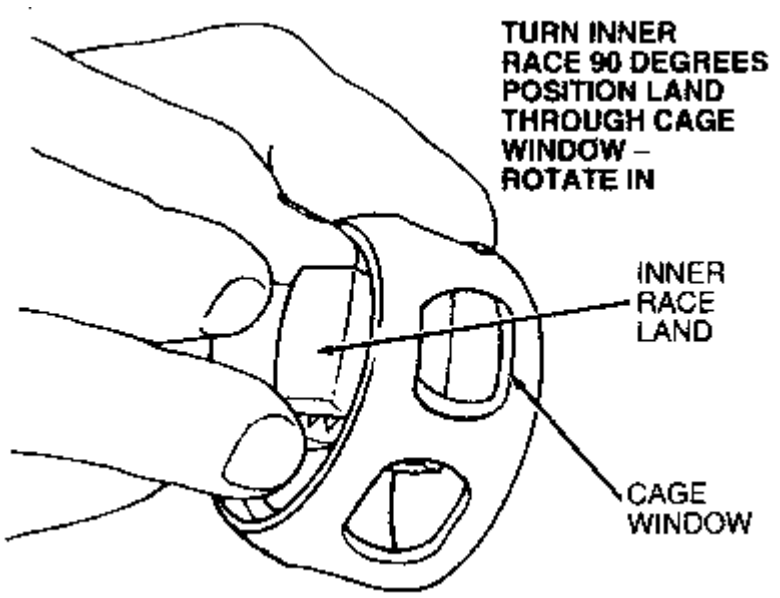


With the cage pivoted and aligned, lift the assembly from the outer race. Rotate the inner race up and out of the cage

Click to enlarge

To install:

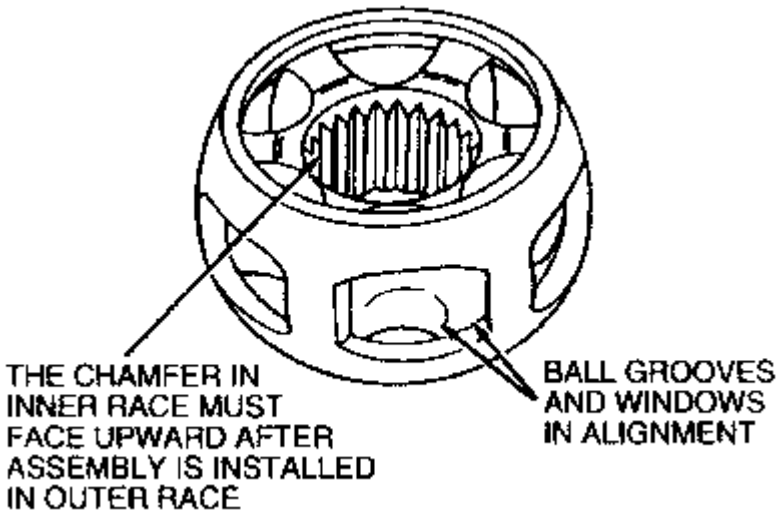
16. **Apply a light coating of Ford High Temperature Constant Velocity Joint Grease E43Z-19590-A or equivalent, on the inner and outer ball races.**
17. **Install the inner race in the bearing cage.**



Install the inner race in the bearing cage

Click to enlarge

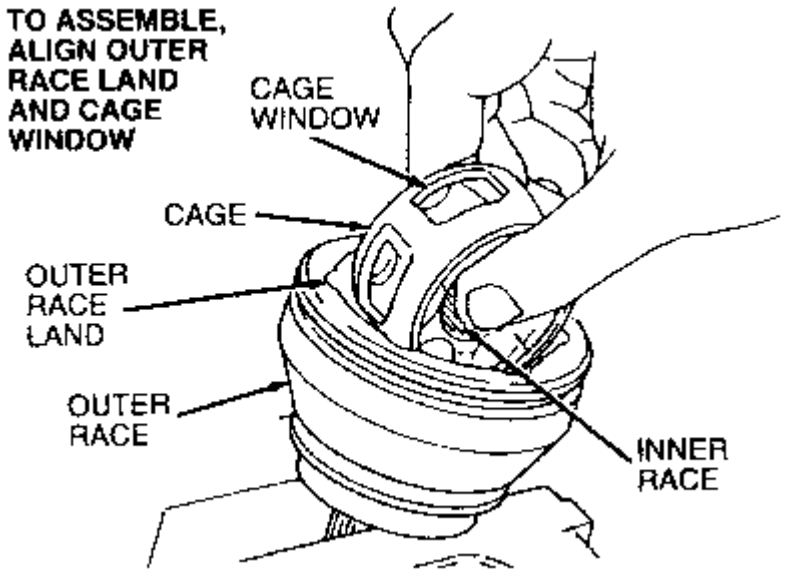
18. **Install the inner race and cage assembly in the outer race. Install the assembly vertically, then pivot 90° into position.**



Install the inner race and cage assembly in the outer race. Install the assembly vertically, then pivot 90° into position

Click to enlarge

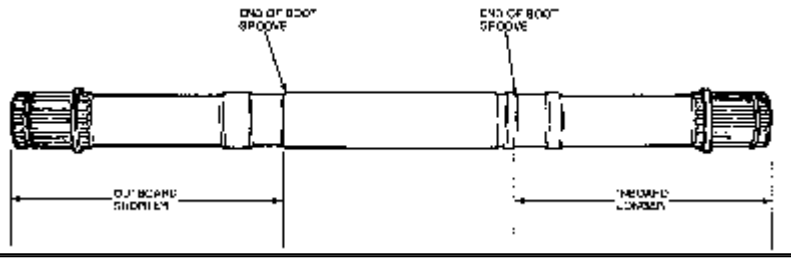
19. **Align the bearing cage and inner race with the outer race. Tilt the inner race and cage, then install a ball. Repeat until all balls are installed.**



Align the bearing cage and inner race with the outer race. Tilt the inner race and cage, then install a ball. Repeat until all balls are installed

Click to enlarge

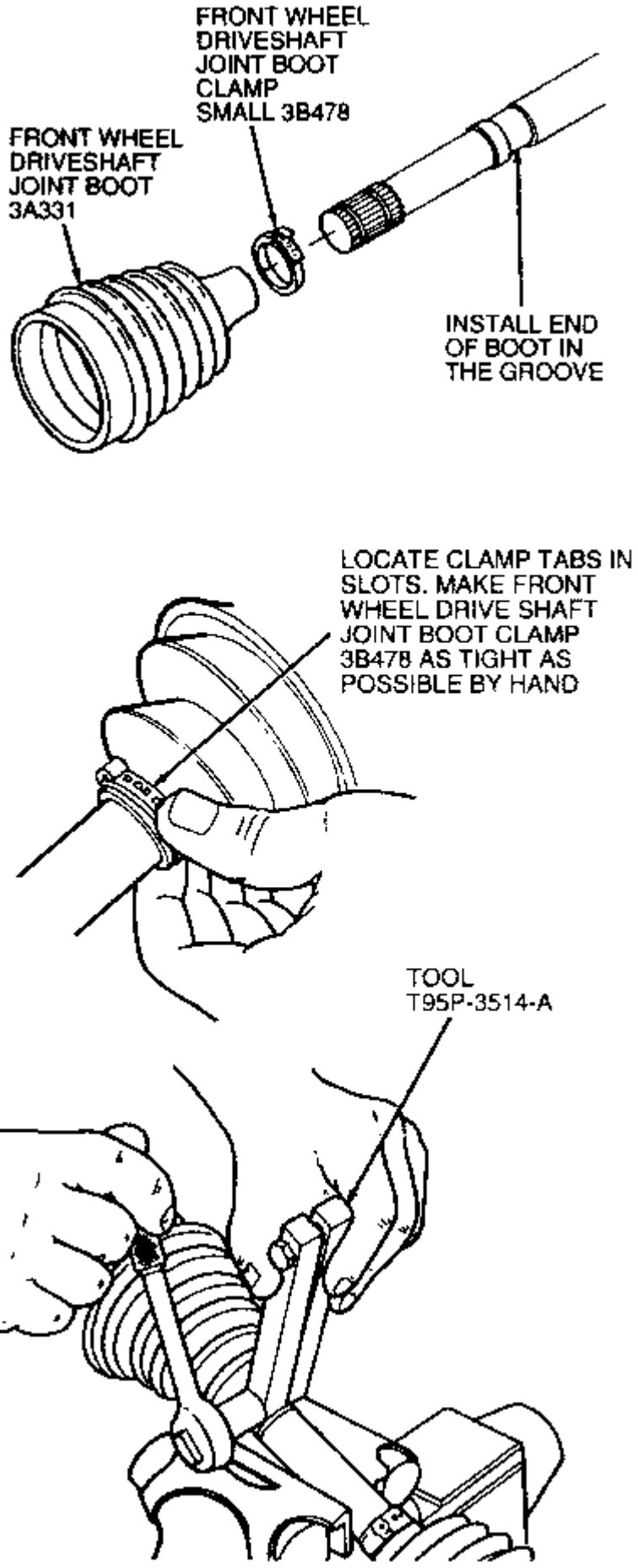
20. **On some vehicles, the left and right interconnecting shafts are different, depending on year and vehicle application. The outboard end of the shaft is shorter from the end of the shaft to the end of the boot groove than the inboard end. Take a measurement to insure correct installation.**



On some vehicles, the left and right interconnecting shafts are different, depending on year and vehicle application. The outboard end of the shaft is shorter from the end of the shaft to the end of the boot groove than the inboard end. Take a measurement to insure correct installation

Click to enlarge

21. **If removed, install the CV-joint boot after removing the stop ring. Make sure the CV boot is seated in its groove and the clamp is in position using Boot Clamp Installer T95P-3514-A or equivalent. Tighten the tool through the bolt until it's in a closed position, then remove the tool.**

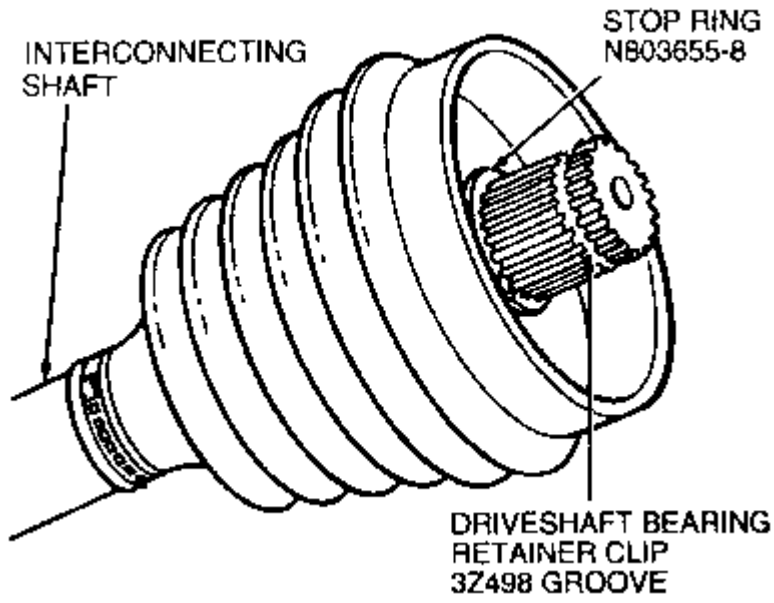


Make sure the CV boot is seated in its groove and the clamp is in position using Boot

Clamp Installer T95P-3514-A or equivalent. Tighten the tool through the bolt until it's in a closed position, then remove the tool

Click to enlarge

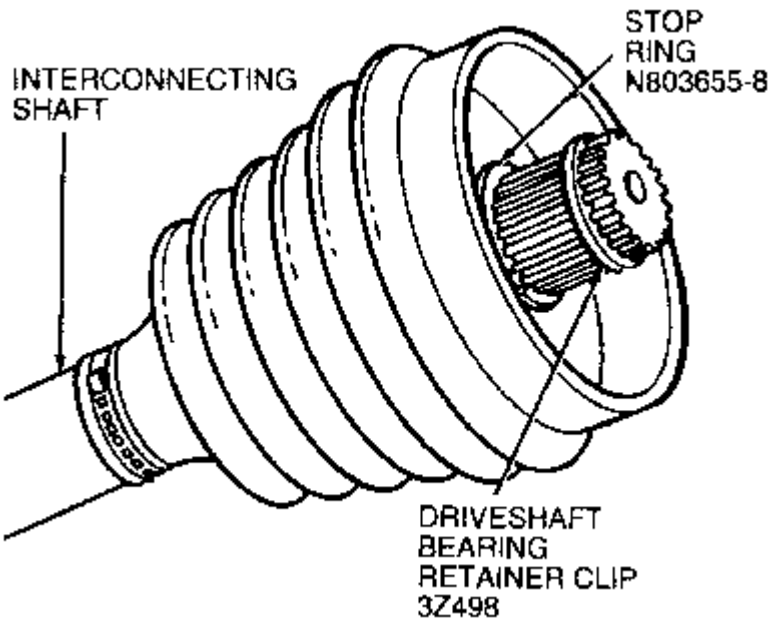
22. **If removed, install the stop ring. If not removed, make sure the ring is properly seated in its groove.**



If removed, install the stop ring. If not removed, make sure the ring is properly seated in its groove

Click to enlarge

23. **Install a new circlip in the groove nearest the end of the shaft by starting one end in the groove, then work the circlip over the inboard CV joint stub shaft pilot bearing housing end and into the groove. This will avoid overexpanding the circlip.**

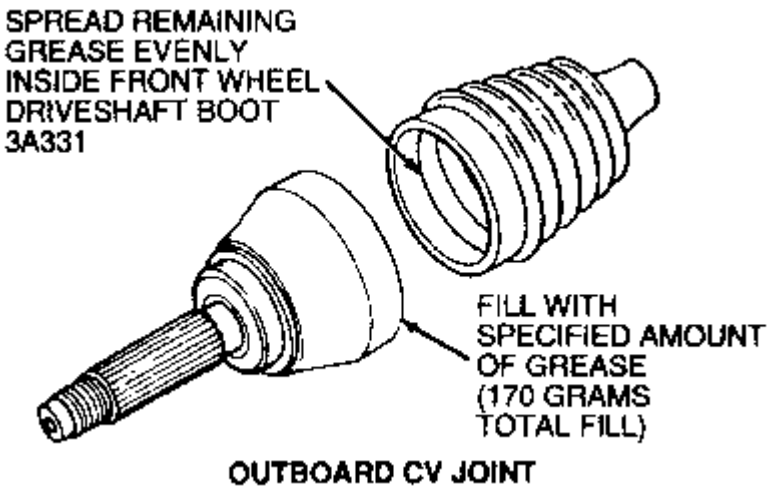


Install a new circlip in the groove nearest the end of the shaft by starting one end in the groove, then work the circlip over the inboard CV joint stub shaft pilot bearing housing

end and into the groove. This will avoid overexpanding the circlip

Click to enlarge

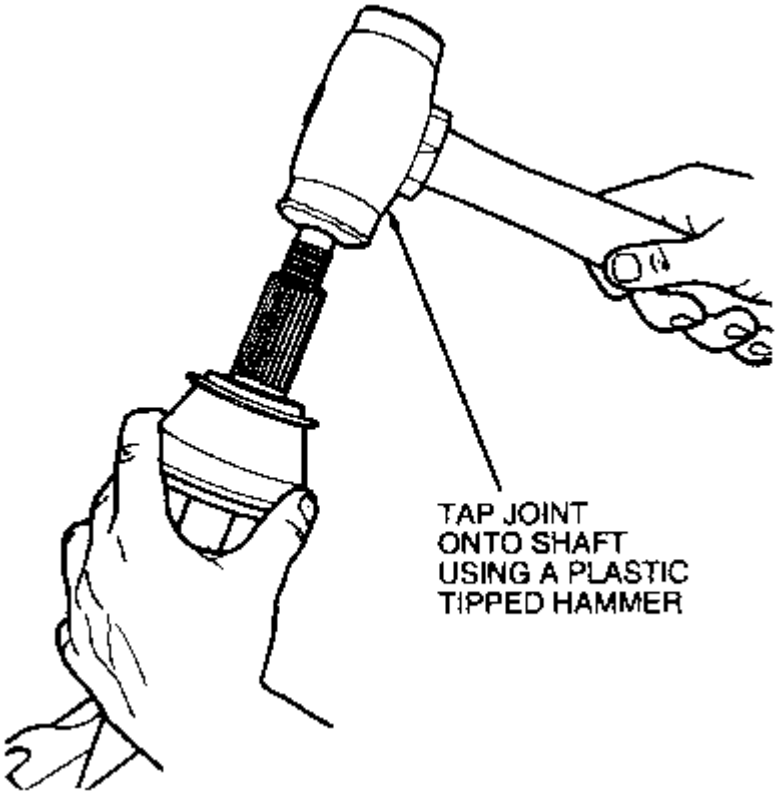
24. **Before positioning the boot over the CV-joint, pack the joint and boot with Ford High Temperature Constant Velocity Joint Grease E43Z-19590-A or equivalent. Pack the joint with grease. Any remaining grease in the tube is to be spread evenly inside of the boot.**



Pack the CV-joint with grease. Any leftover grease in the tube should be spread evenly inside of the boot

Click to enlarge

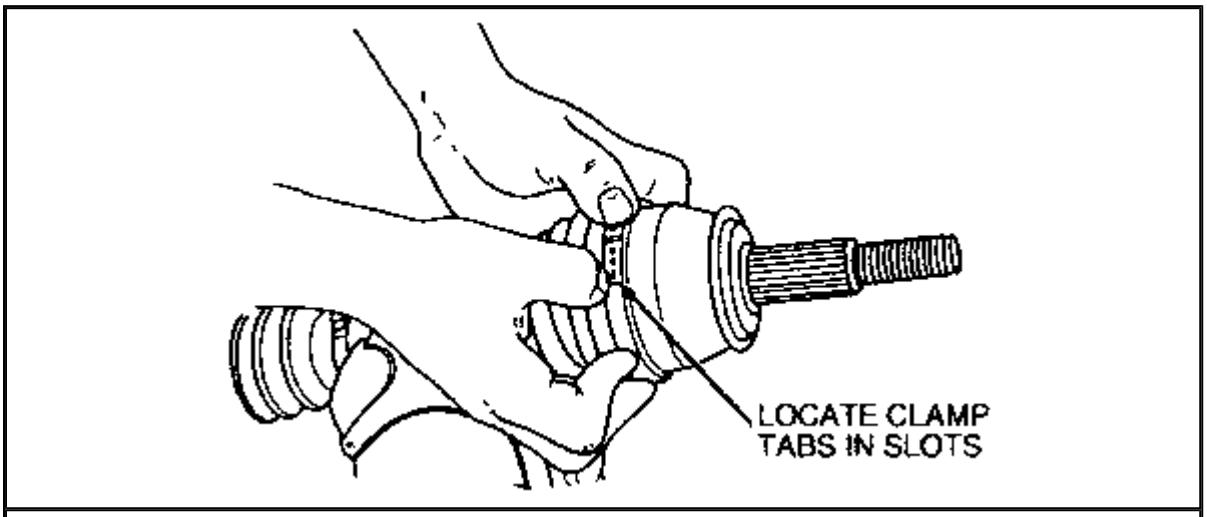
25. **With the front wheel driveshaft joint boot held back, position the CV-joint on the shaft and tap into position using a plastic tipped hammer.**



With the front wheel driveshaft joint boot held back, position the CV-joint on the shaft and tap into position using a plastic tipped hammer

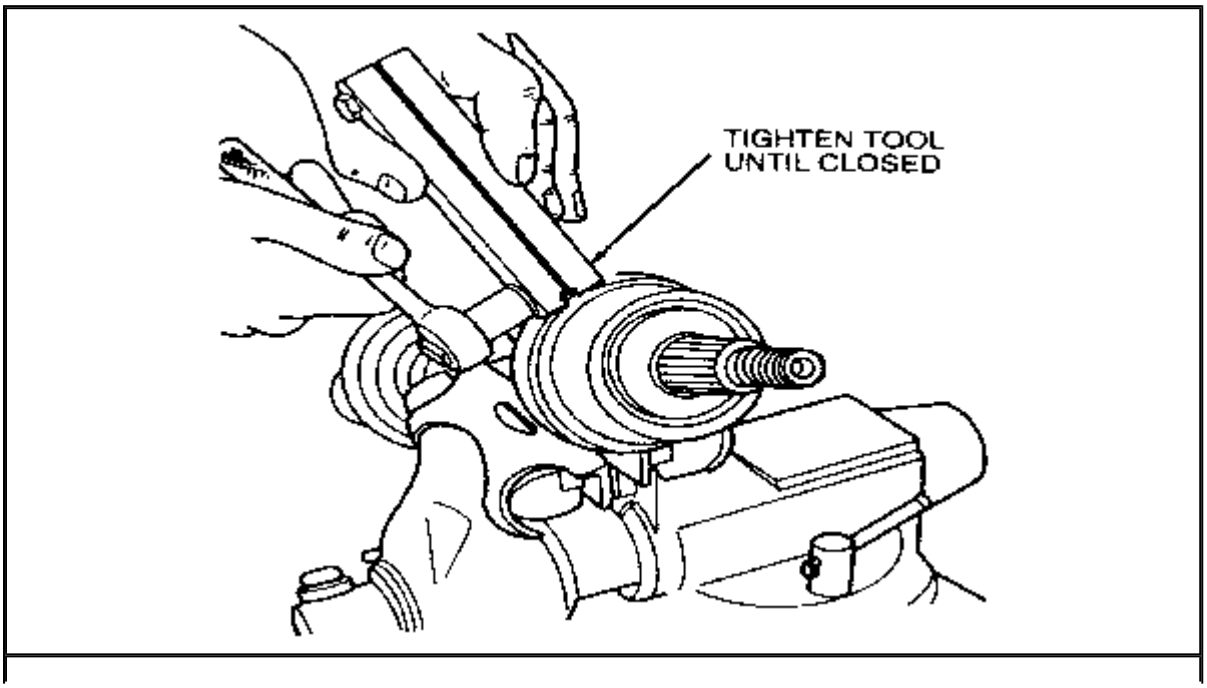
Click to enlarge

26. **The CV-joint is fully seated when the circlip locks in the groove cut into the CV-joint inner race. Check for seating by trying to pull the joint away from the shaft.**
27. **Remove all excess grease from the CV-joint external surfaces and mating boot surface. Position the boot over the joint.**
28. **Before installing the boot clamp, make sure all air pressure that may have built up in the boot is removed. Pry up on the boot lip to allow the air to escape.**
29. **Position the boot over the joint, then make sure the boot is seated in its groove and the clamp is in position using Boot Clamp Installer T95P-3514-A or equivalent. Position the tool on the clamp ear, then tighten the tool through the bolt, until it is in the closed position. Remove the tool.**



Make sure the boot is seated in its groove and the clamp is in position, using Boot Clamp Installer T95P-3514-A or equivalent

Click to enlarge



Position the tool on the clamp ear and tighten the tool through the bolt, until it is in the closed position, then remove the tool

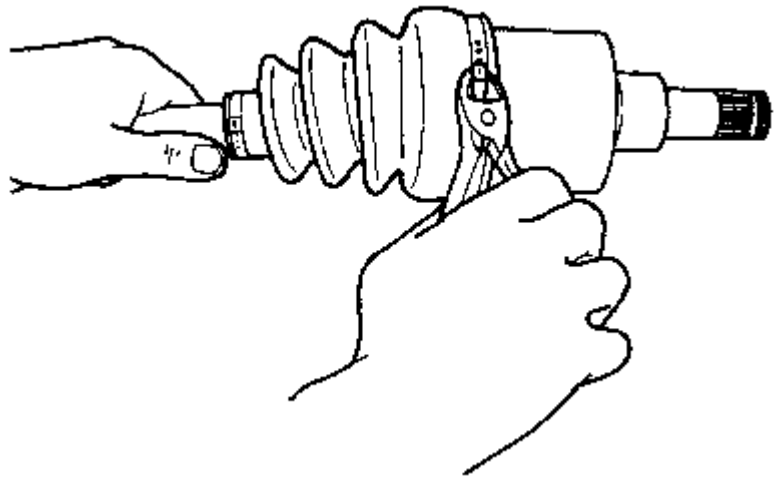
Click to enlarge

30. **Install the halfshaft assembly and lower the vehicle. Connect the negative battery cable.**

Inboard CV-Joint

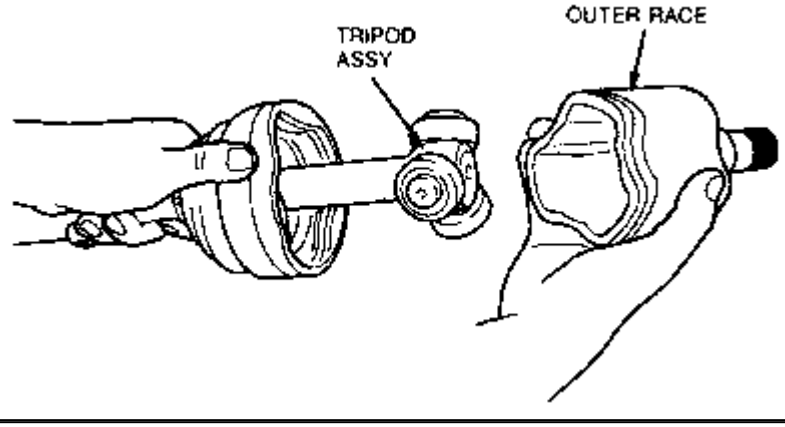
1986-92 VEHICLES

1. **Disconnect the negative battery cable. Raise and safely support the vehicle.**
2. **Remove the halfshaft assembly from the vehicle.**
3. **Clamp the halfshaft in a vise that is equipped with soft jaw covers. Do not allow the vise jaws to contact the boot or boot clamp.**
4. **Cut and remove both boot clamps, then slide the boot back on the shaft. Remove the clamp by engaging the pincer jaws of boot clamp pliers D87P-1090-A or equivalent, in the closing hooks on the clamp and draw together. Disengage the windows and locking hooks, then remove the clamp.**



Cut and remove both boot clamps, then slide the boot back on the shaft

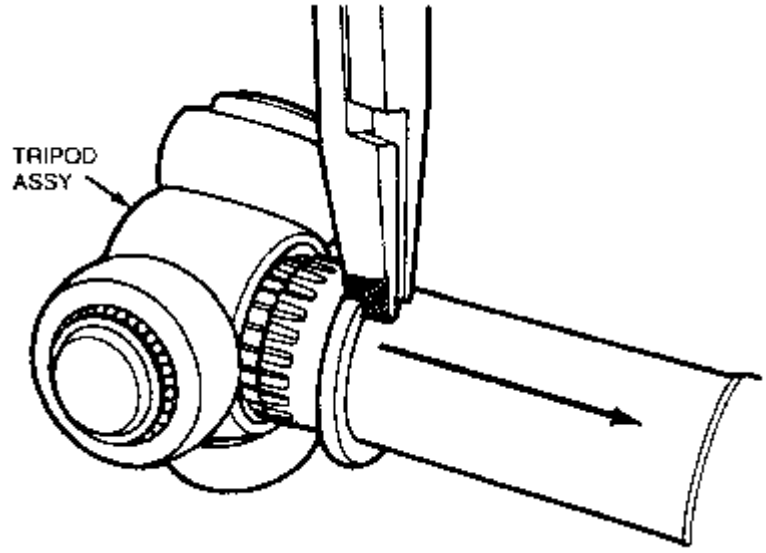
5. **Mark the position of the outer race in relation to the shaft, then remove the outer race from the tripod.**



Slide the outer race off of the tripod

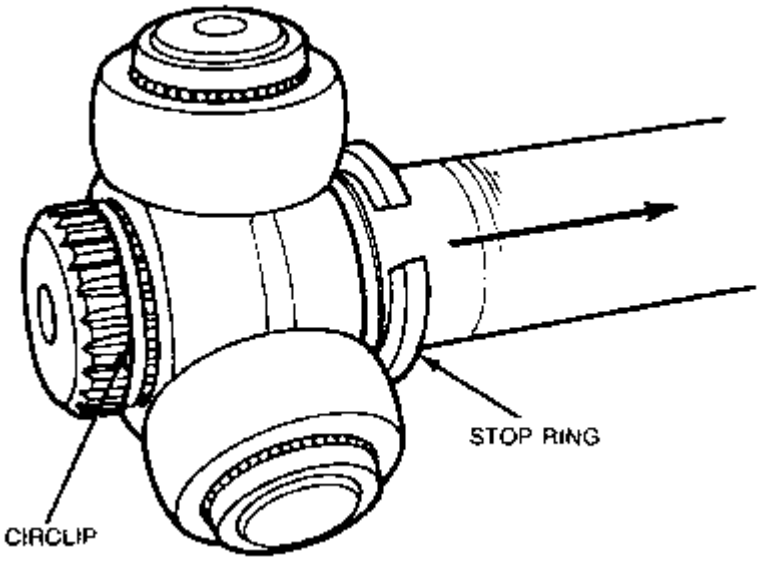
Click to enlarge

6. **Move the stop ring back on the shaft using snapring pliers. Move the tripod assembly back on the shaft to allow access to the circlip.**



Move the stop ring back on the shaft using snapring pliers, then ...

Click to enlarge



... move the tripod assembly back on the shaft to allow access to the circlip

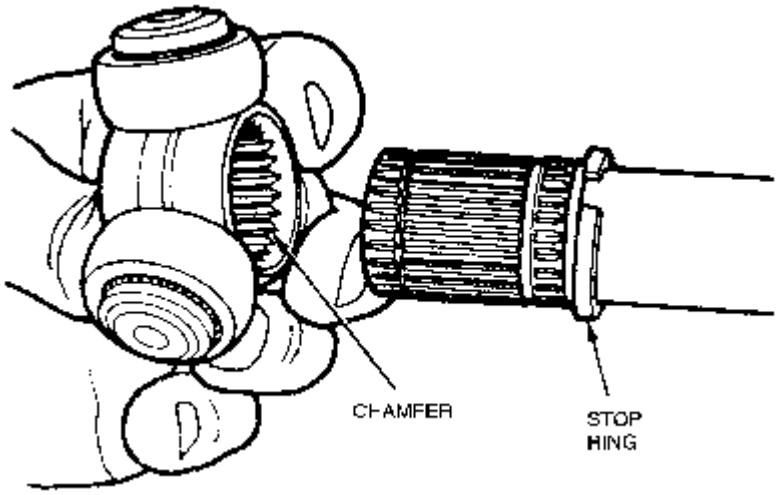
Click to enlarge

7. **Remove and discard the circlip from the shaft, then replace with a new one during installation. Mark the position of the tripod on the shaft and remove the tripod assembly. Remove the boot.**
8. **Check the CV-joint grease for contamination. If the CV-joints are operating properly and the grease is not contaminated, add grease and replace the boot. If the grease appears contaminated, disassemble the CV-joint and clean or replace,**

as necessary.

To install:

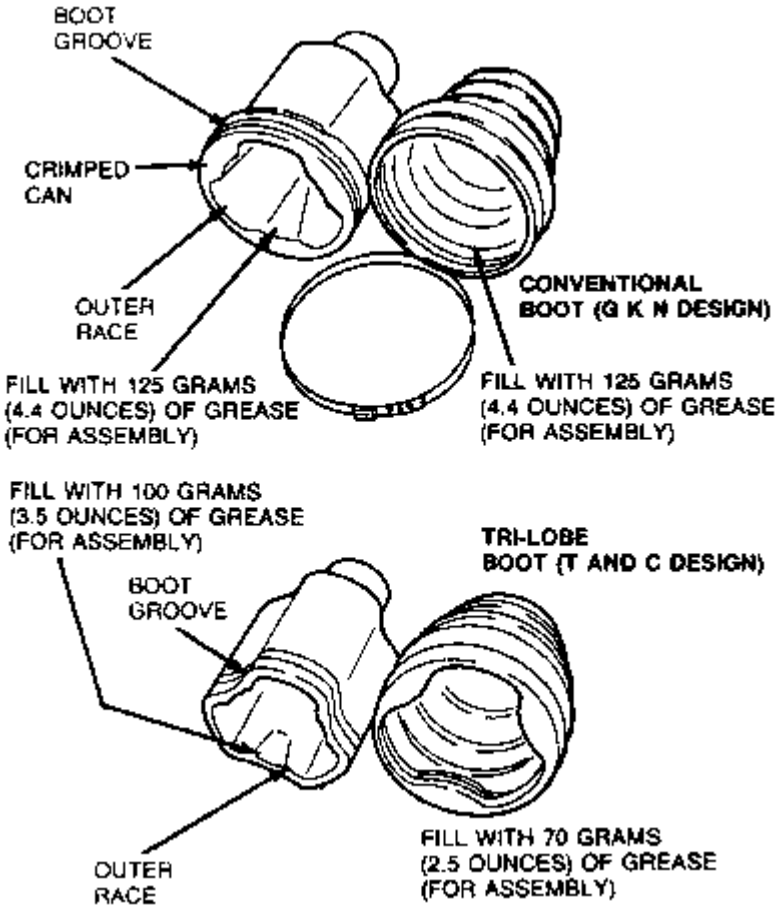
9. Install the CV-joint boot. Make sure the boot is seated in the boot groove on the shaft. Tighten the clamp using crimping pliers, but do not tighten to the point where the clamp bridge is cut or the boot is damaged.
10. Install the tripod assembly with chamfered side toward the stop ring. If the tripod is being reused, align the marks that were made during the removal procedure.



Install the tripod assembly with its chamfered side toward the stop ring

Click to enlarge

11. Install a new circlip. Compress the circlip and slide the tripod assembly forward over the circlip to expose the stop ring groove.
12. Move the stop ring into the groove using snapring pliers, making sure it is fully seated in the groove.
13. Fill the CV-joint outer race and CV-boot with grease. Install the outer race over the tripod assembly, aligning the marks made during the removal procedure.



Fill the CV-joint outer race and CV-boot with grease

Click to enlarge

14. **Remove all excess grease from the CV-joint external surfaces and mating boot surface. Position the boot over the CV-joint making sure the boot is seated in the groove. Move the CV-joint in and out, as necessary, to adjust the length to the following specifications:**
    - **Automatic transaxle left halfshaft, except 1986-90 Taurus with 2.5L engine-18.27 in. (464mm)**
    - **Automatic transaxle right halfshaft, except 1986-90 Taurus with 2.5L engine-23.58 in. (599mm)**
    - **Automatic transaxle left halfshaft, 1986-90 Taurus with 2.5L engine-22.80 in. (579mm)**
    - **Automatic transaxle right halfshaft, 1986-90 Taurus with 2.5L engine-20.09 in. (510mm)**
    - **Manual transaxle left halfshaft-21.24 in. (539.5mm)**
    - **Manual transaxle right halfshaft-21.63 in. (549.5mm)**
15. **Before installing the boot clamp, make sure any air pressure that may have built up in the boot is relieved. Insert a small prybar between the boot and outer race to allow the trapped air to escape. Release the air only after adjusting the length dimension.**
16. **Seat the boot in the groove and clamp in position using crimping pliers D87P-1098-A or equivalent. Install the clamp as follows:**
    1. **With the boot seated in the groove, place the clamp over the boot.**

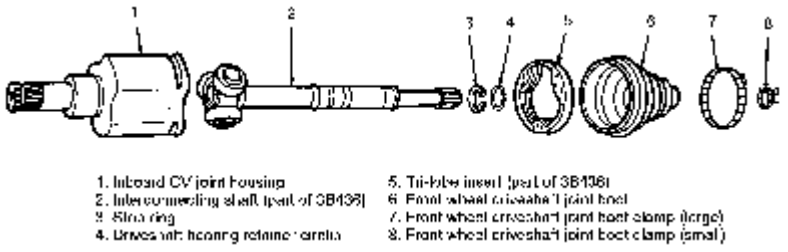
2. **Engage hook C in the window.**
3. **Place the pincer jaws of the crimping pliers in closing hooks A and B.**
4. **Secure the clamp by drawing the closing hooks together. When windows 1 and 2 are above locking hooks D and E, the spring tab will press the windows over the locking hooks and engage the clamp.**

17. **Install the halfshaft and lower the vehicle. Connect the negative battery cable.**

1993-95 VEHICLES EXCEPT 3.2L SHO

On this design, the tripod assembly cannot be removed from the interconnecting shaft. If a tripod assembly, or interconnecting shaft is required, a driveshaft and joint assembly must be used. But if CV-joint boots or boot clamps are needed, they are available separately.

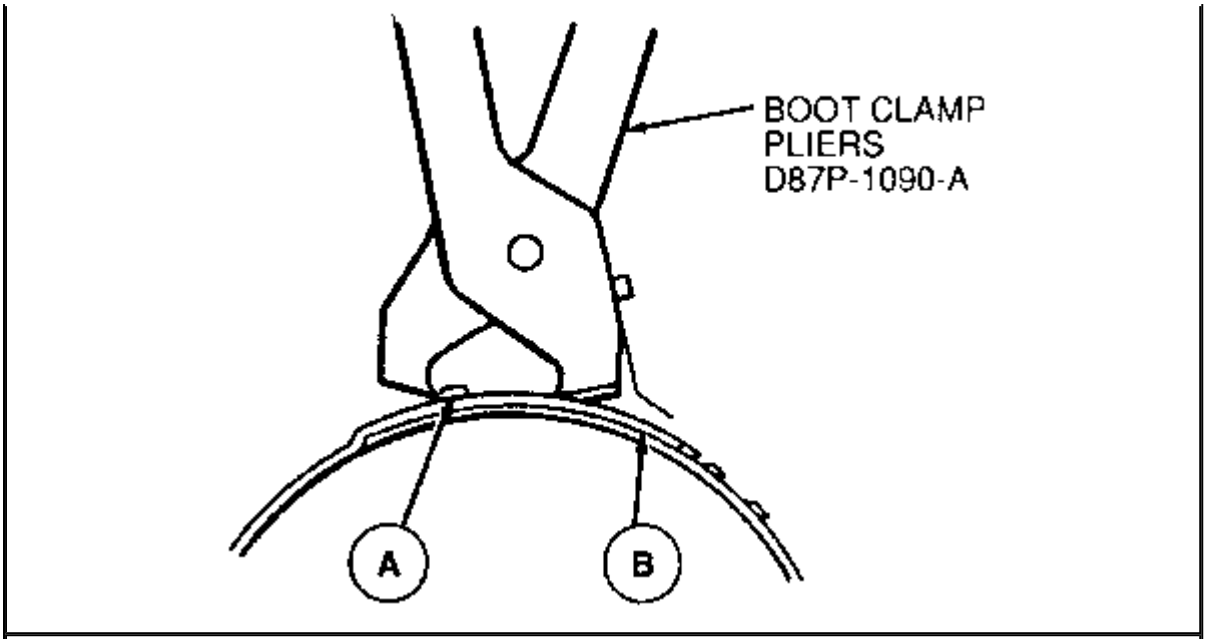
1. **Disconnect the negative battery cable. Raise and safely support the vehicle.**
2. **Remove the halfshaft assembly from the vehicle.**



Exploded view of the driveshaft and CV-joint-1993-95 vehicles except 3.2L SHO

Click to enlarge

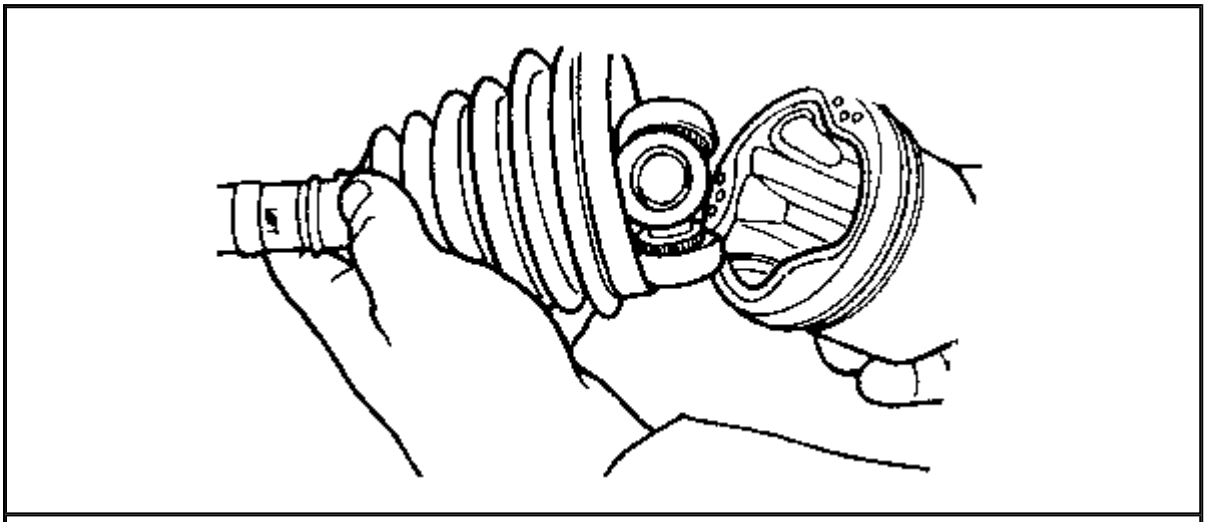
3. **Clamp the halfshaft in a vise that is equipped with soft jaw covers. Do not allow the vise jaws to contact the boot or boot clamp.**
4. **Cut and remove both boot clamps, then slide the boot back on the shaft. Remove the clamp by engaging the pincer jaws of boot clamp pliers D87P-1090-A or equivalent, in the closing hooks on the clamp and draw together. Disengage the windows and locking hooks, then remove the clamp.**



Removing the clamp using Boot Clamp Pliers D87P-1090-A

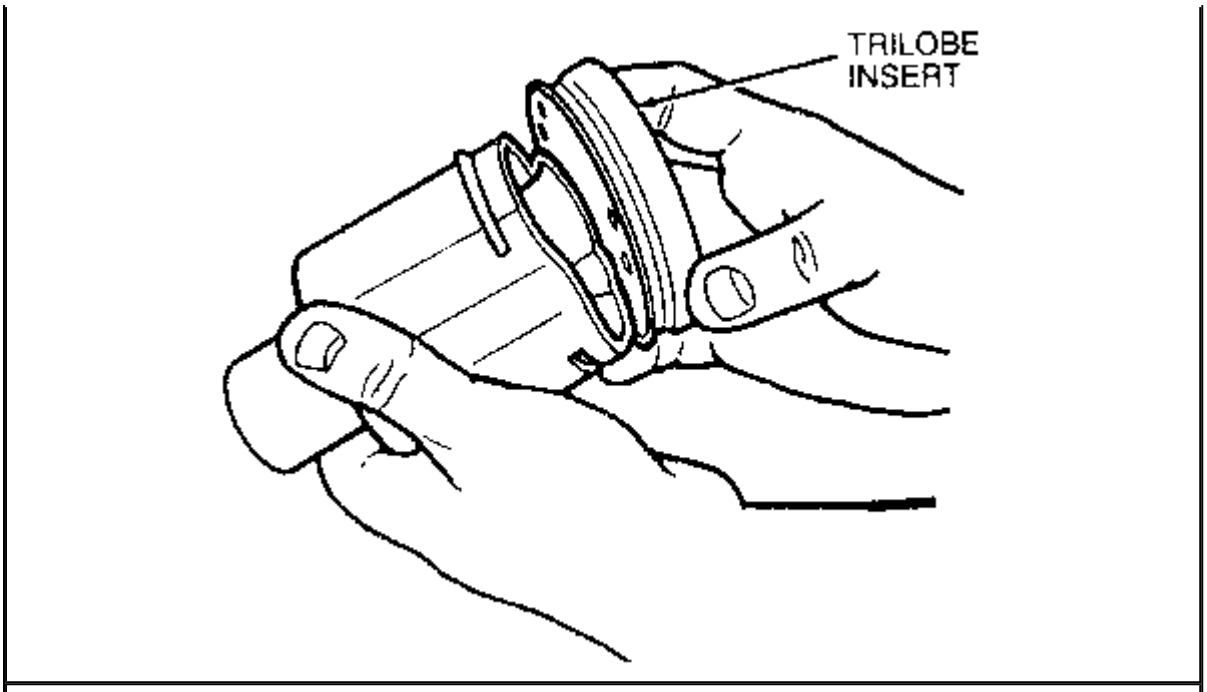
Click to enlarge

5. **Slide the inboard CV-joint housing off of the tripod.**



Slide the inboard CV-joint housing off of the tripod

6. **When replacing damaged boots, the grease should be checked for contamination. If the CV-joints are operating satisfactorily, and the grease does not seem to be contaminated, add grease, then replace the boot. If the grease is contaminated, you will have to proceed with a complete CV-joint disassembly and inspection.**
7. **If further disassembly is required, remove the outboard CV-joint and boot as described earlier in this section.**
8. **Remove the driveshaft joint stop ring and bearing retainer circlip.**
9. **Slide the inboard boot off of the interconnecting shaft.**
10. **Remove the trilobe insert from the CV-joint stub. Remove the grease from the outer race, then inspect the outer race and tripod assembly.**

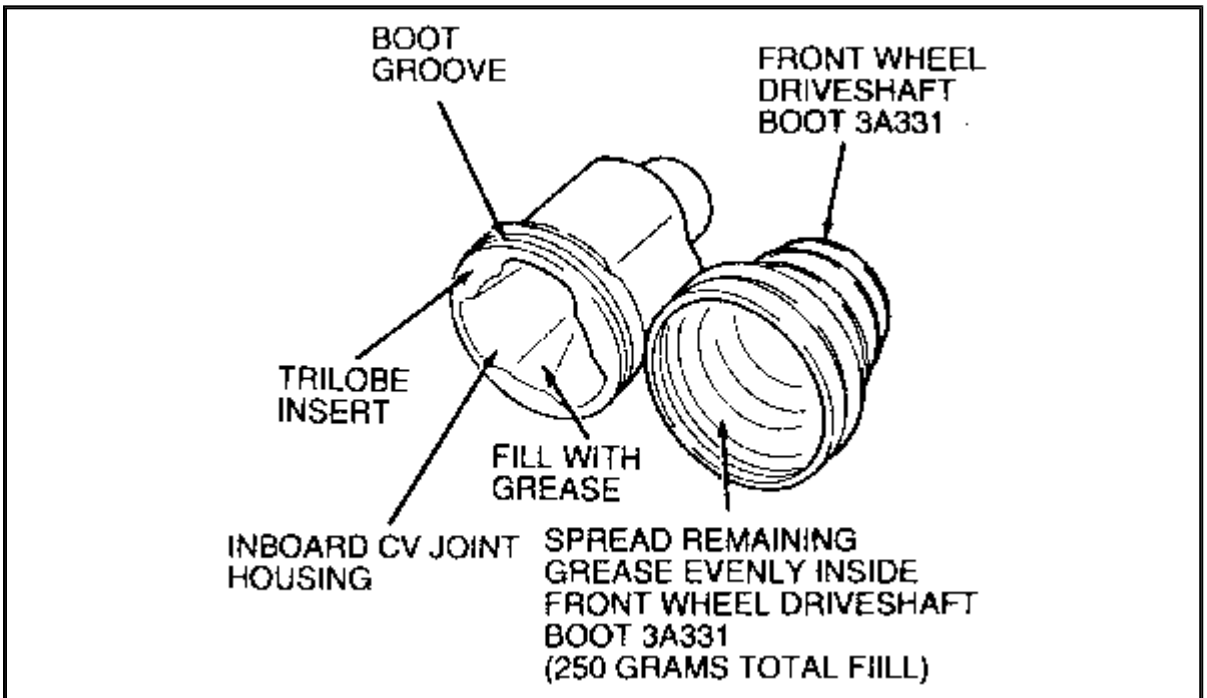


Remove the trilobe insert from the CV-joint stub

Click to enlarge

To install:

11. **Install the boot on the interconnecting halfshaft. Position the boot to allow for the CV-joint housing installation.**
12. **Install the trilobe insert on the CV-joint housing positioning in the groove on the outer race.**
13. **Fill the CV-joint housing with Ford High Temperature Constant Velocity Grease E43Z-19590-A or equivalent, and spread remaining grease evenly inside of the joint boot. The total fill amount is 9 oz. (250 grams).**



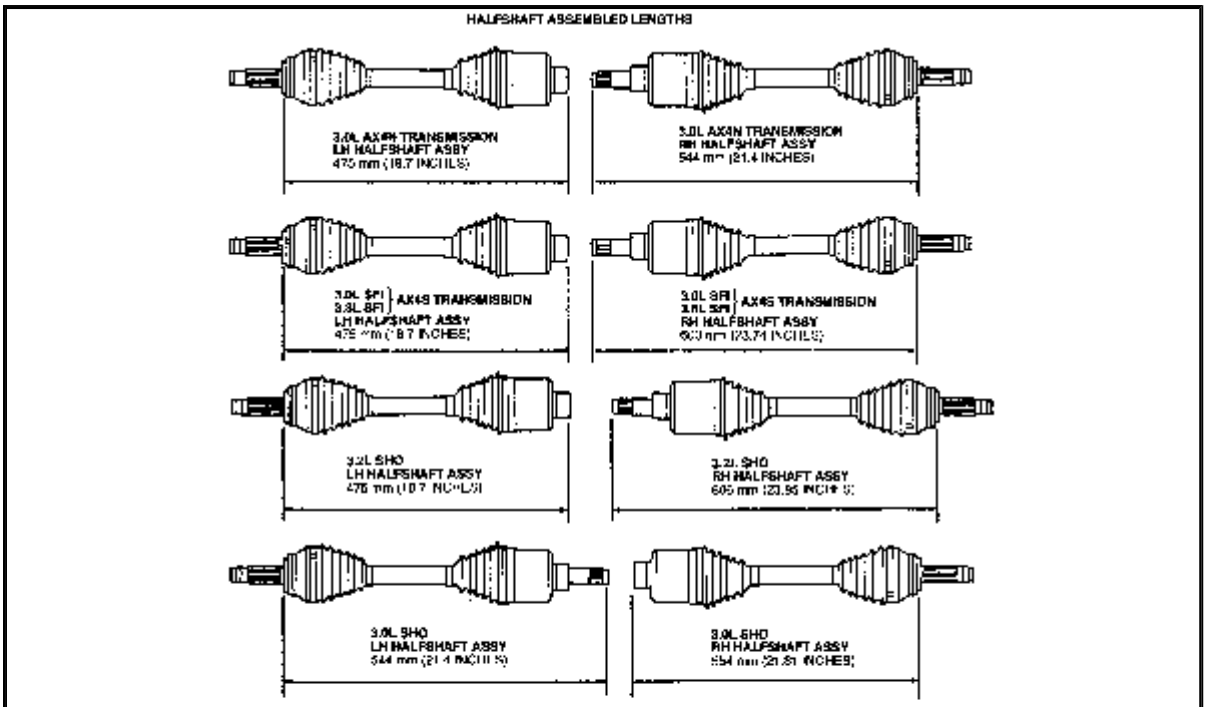
Filling the housing with CV-joint grease

Click to enlarge

14. **Install the CV-joint on the tripod assembly.**

15. **Before installing the boot clamp, make sure any air pressure that may have built up in the boot is relieved. Insert a small prybar between the boot and outer race to allow the trapped air to escape. Release the air only after adjusting the length dimension.**

16. **Remove all excess grease from the CV-joint external surfaces and mating boot surface. Position the boot over the CV-joint making sure the boot is seated in the groove. Move the CV-joint in and out, as necessary, to adjust the length to the specifications in the accompanying figure.**



LUBRICANT SPECIFICATIONS—HALFSHAFT ASSEMBLIES

POWERTRAIN		SPECIFICATION	TOTAL FILL AMOUNT			
			INBOARD CV		OUTBOARD CV	
Engine	Transmission	Lubricant	LH	RH	LH	RH
3.2L						
3.2L						
3.0L (VIN U)						

Installation and lubrication specifications

Click to enlarge

All vehicles, except SHO vehicles, require a reusable low profile large front CV-joint boot clamp on the right-hand side inboard CV-joint.

17. **Seat the boot in the grooves, then clamp in position using Boot Clamp Installer T94P-3514-A or equivalent, on the left CV-joint housing.**

18. **Install the large low profile right-hand boot clamp as follows:**
    1. **With the boot seated in the groove, place the clamp over the boot.**
    2. **Engage hook C in the window.**
    3. **Place the pincer jaws of the crimping pliers in closing hooks A and B.**

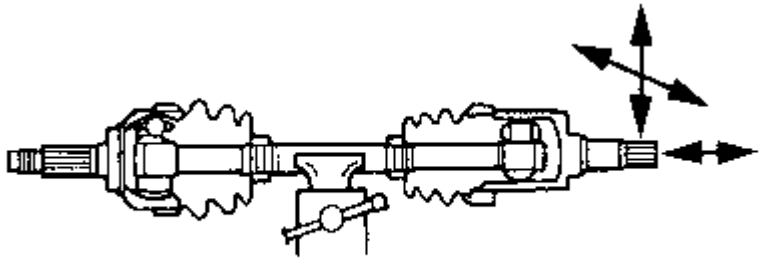
4. **Secure the clamp by drawing the closing hooks together. When windows 1 and 2 are above locking hooks D and E, the spring tab will press the windows over the locking hooks and engage the clamp.**

19. **Position Boot Clamp Installer Tool T95P-3514-A or equivalent, on the clamp ears, then tighten the tool through the bolt until the tool is in the closed position. Remove the tool.**

Do not overexpand or twist the circlip during installation. ALWAYS replace the circlip with a new one during installation.

20. **On the right-hand side inboard CV-joint housing, install a new circlip, in the groove nearest the end of the shaft by starting one end in the groove, then working the circlip over the stub shaft and into the groove.**

21. **Work the CV-joint through its full range of travel at various angles. The joint should flex, extend and compress smoothly.**



Work the CV-joint through its full range of travel at various angles. The joint should flex, extend and compress smoothly

22. **Install the halfshaft assembly, then carefully lower the vehicle.**

23. **Connect the negative battery cable.**

3.2L SHO

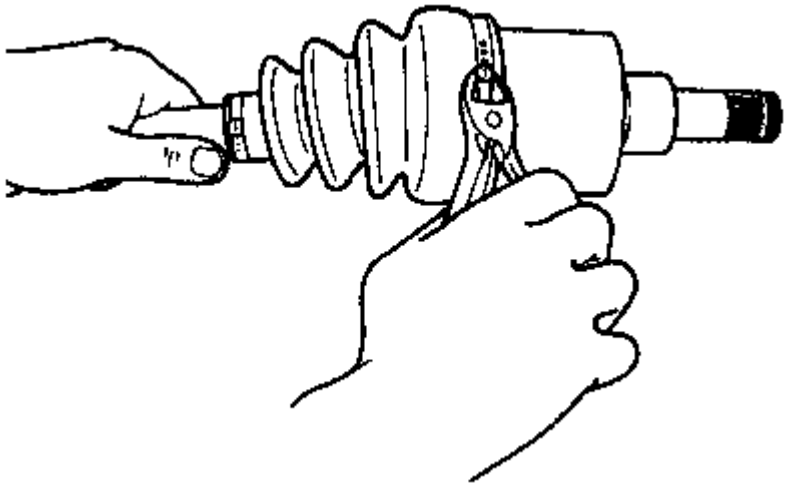
The inboard CV-joint assembly on these vehicles is permanently retained to the interconnecting shaft. The service CV-joint includes the shaft and CV-joint boot. The boot or driveshaft and joint replacement will necessitate removal of the CV-joint and boot.

1. **Disconnect the negative battery cable. Raise and safely support the vehicle.**

2. **Remove the halfshaft assembly from the vehicle.**

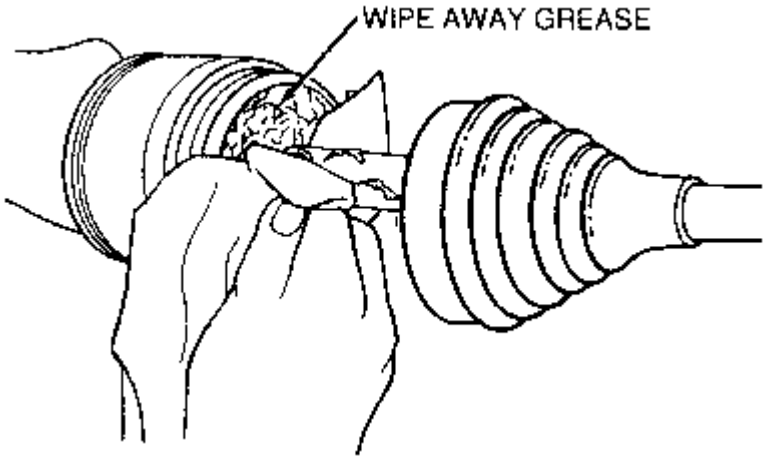
3. **Clamp the halfshaft in a vise that is equipped with soft jaw covers. Do not allow the vise jaws to contact the boot or boot clamp.**

4. **Cut and remove both of the CV-joint boot clamps.**



Removing the boot clamps using pliers

5. **Slide the boot back on the shaft, then wipe the grease away from the CV-joint.**



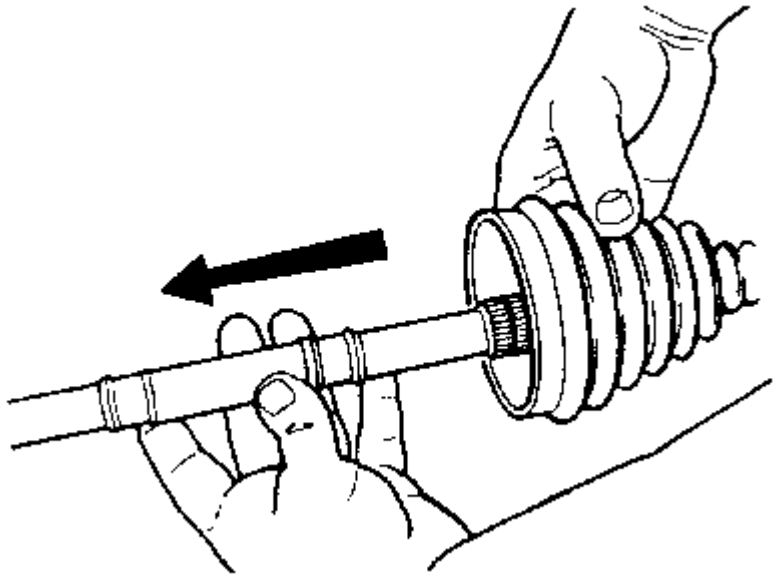
After sliding the boot back on the shaft, wipe away the grease from the CV-joint

Click to enlarge

6. **When replacing damaged boots, the grease should be checked for contamination. If the CV-joints are operating satisfactorily, and the grease does not seem to be contaminated, add grease, then replace the boot. If the grease is contaminated, you will have to proceed with a complete CV-joint disassembly and inspection.**
7. **If further disassembly is required, remove the driveshaft and CV-joint, and the boot.**
8. **Remove the driveshaft stop ring and bearing retainer circlip, the slide the joint boot off of the interconnecting shaft.**

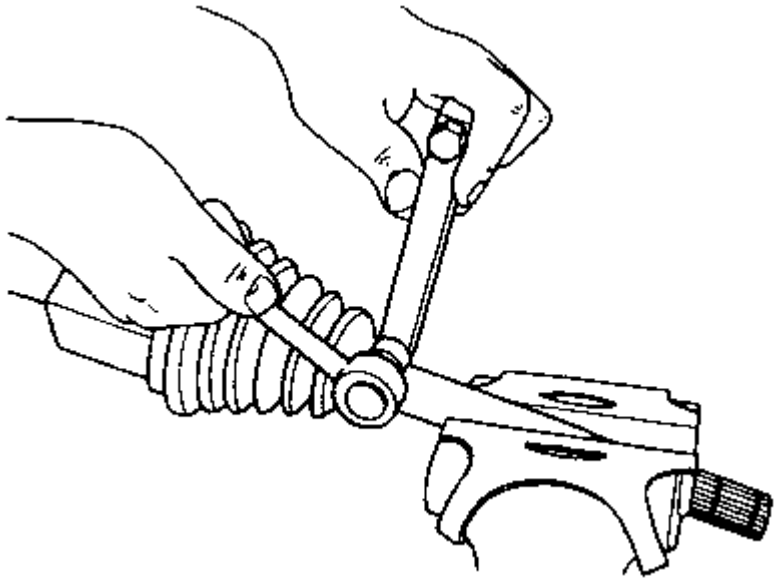
To install:

9. **Install the CV-joint boot on the interconnecting shaft. Position the boot to allow for inboard CV-joint housing installation.**



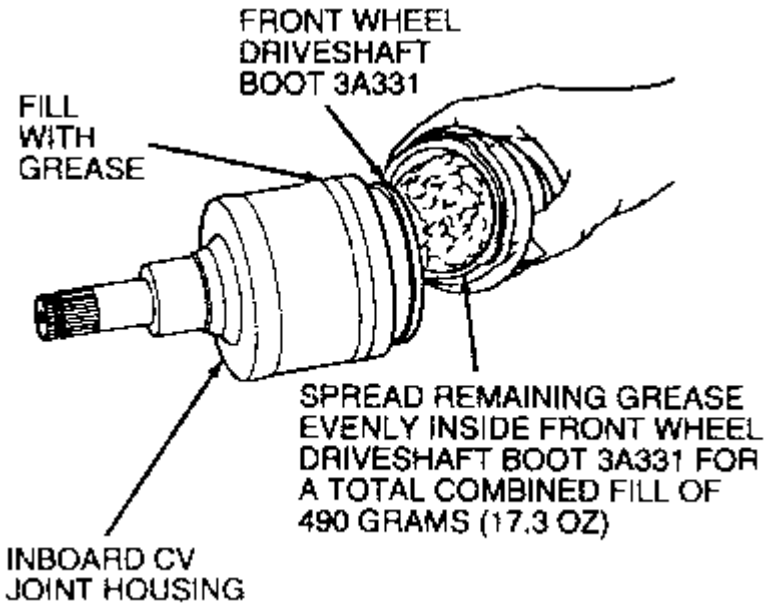
Installing the CV-joint boot on the interconnecting shaft; make sure to position the boot to allow for CV-joint housing installation

10. **Position the CV-joint boot in the small boot groove. Using Boot Clamp Installer T95P-3514-A or equivalent, move the small boot clamp in position. Tighten the tool through the bolt until the tool is in the closed position.**



Using the boot clamp installer to fasten the small boot clamp

11. **Using Ford High Temperature Constant Velocity Grease E43Z-19590-A or equivalent, fill the inboard CV-joint with grease, then spread the remaining grease evenly inside of the boot.**



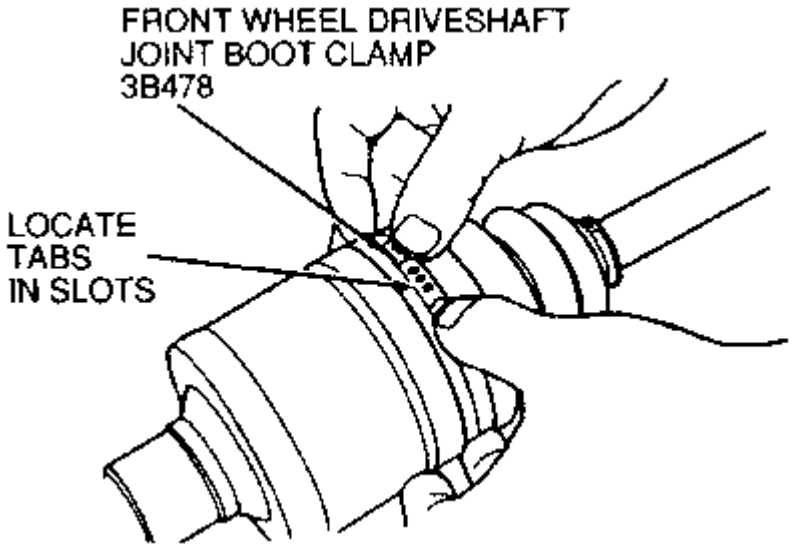
Filling the CV-joint and boot with grease

Click to enlarge

12. **Before installing the boot clamp, make sure any air pressure that may have built up in the boot is relieved. Insert a small prybar between the boot and outer race to allow the trapped air to escape. Release the air only after adjusting the length dimension.**

13. **Remove all excess grease from the external CV-joint surfaces, and boot sealing surfaces. Slide the CV-joint boot into position on the inboard CV-joint housing. Move the CV-joint in and out, as necessary, to adjust to the specified length shown in the accompanying figure.**

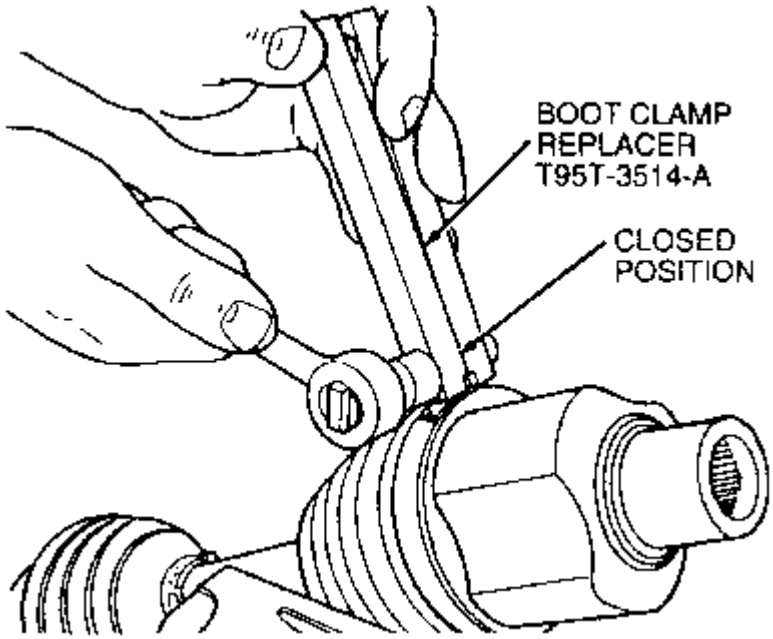
14. **Locate the clamp tabs in the slots, then make the clamps as tight as possible by hand.**



After positioning the clamp tabs in the slots, make the clamps as tight as possible by hand

Click to enlarge

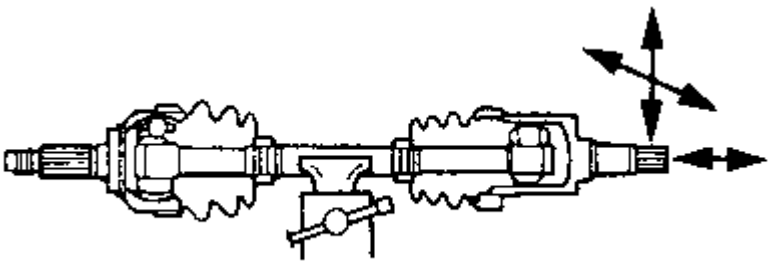
15. **Make sure the boot is seated in its groove and the clamp is in position. Position the Boot Clamp Replacer T95T-3514-A or equivalent on the clamp ear, then tighten the tool through the bolt until the tool is in a closed position.**



Position the Boot Clamp Replacer T95T-3514-A or equivalent, on the clamp ear, then tighten the tool through the bolt until the tool is in a closed position

Click to enlarge

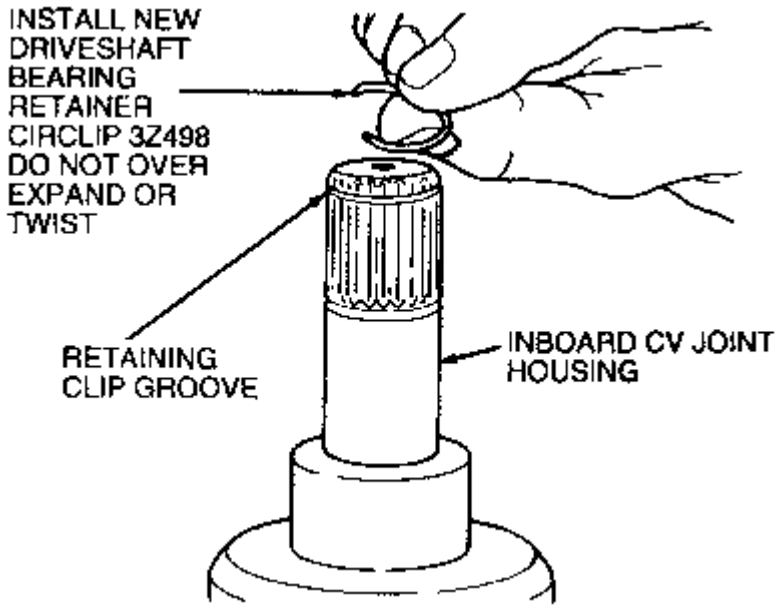
16. **Work the CV-joint through its full range of travel at various angles. The joint should flex, extend and compress smoothly.**



Work the CV-joint through its full range of travel at various angles. The joint should flex, extend and compress smoothly

Do not overexpand or twist the circlip during installation. ALWAYS replace the circlip with a new one during installation.

17. **Install a new circlip, in the groove nearest the end of the shaft by starting one end in the groove, then working the circlip over the stub shaft and into the groove.**



Do not overexpand or twist the circlip during installation. ALWAYS replace the circlip with a new one during installation

Click to enlarge

18. **Install the halfshaft assembly, then carefully lower the vehicle.**
19. **Connect the negative battery cable.**