8

CLUTCH AND DRIVELINE

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1 General information

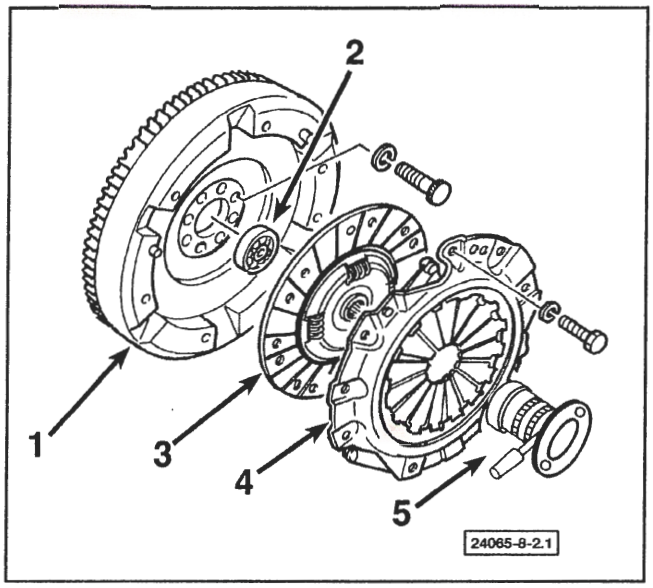
The information in this Chapter deals with the components from the rear of the engine to the rear wheels, except for the transmission (and transfer case, if equipped), which is dealt with in the previous Chapter. For the purposes of this Chapter, these components are grouped into three categories: clutch, driveshaft and axles. Separate Sections within this Chapter offer general descriptions and checking procedures for components in each of the three groups.

Since nearly all the procedures covered in this Chapter involve working under the vehicle, make sure it's securely supported on sturdy jackstands or on a hoist where the vehicle can be easily raised and lowered.

2 Clutch - description and check

Refer to illustration 2.1

1 All models with a manual transmission use a single dry plate, diaphragm spring type clutch (see illustration). The clutch disc has a splined hub which allows it to slide along the splines of the transmission input shaft. The clutch and pressure plate are held in contact by spring pressure exerted by the diaphragm in the pressure plate.



2.1 Exploded view of the clutch components

1 *Flywheel*
2 *Pilot bearing*
3 *Clutch disc*
4 *Pressure plate*
5 *Concentric release cylinder/release bearing assembly*

2 The clutch release system is operated by hydraulic pressure. The hydraulic release system consists of the clutch pedal, a master cylinder and fluid reservoir, the hydraulic line, and a concentric release cylinder/release bearing assembly.

3 When pressure is applied to the clutch pedal to release the clutch, hydraulic pressure is generated in the master cylinder and causes the release cylinder/bearing assembly to extend. The release bearing then pushes against the fingers of the diaphragm spring of the pressure plate assembly, which in turn releases the clutch plate.

4 Terminology can be a problem when discussing the clutch components because common names are in some cases different from those used by the manufacturer. For example, the driven plate is also called the clutch plate or disc, the clutch release bearing is sometimes called a throwout bearing, the release cylinder is sometimes called the operating or slave cylinder.

5 Other than to replace components with obvious damage, some preliminary checks should be performed to diagnose clutch problems.

a) The first check should be of the fluid level in the clutch master cylinder. If the fluid level is low, add fluid as necessary and inspect the hydraulic system for leaks.

b) To check "clutch spin down time," run the engine at normal idle speed with the transmission in Neutral (clutch pedal up - engaged). Disengage the clutch (pedal down), wait several seconds and shift the transmission into Reverse. No grinding noise should be heard. A grinding noise would most likely indicate a problem in the pressure plate or the clutch disc.

c) To check for complete clutch release, run the engine (with the parking brake applied to prevent movement) and hold the clutch pedal approximately 1/2-inch from the floor. Shift the transmission between First gear and Reverse several times. If the shift is hard or the transmission grinds, component failure is indicated.

d) Visually inspect the pivot bushing at the top of the clutch pedal to make sure there is no binding or excessive play.

3 Clutch master cylinder - removal and installation

Refer to illustration 3.4

WARNING:

Wear eye protection when bleeding the brake system. If the fluid comes in contact with your eyes, immediately rinse them with water and seek medical attention.

CAUTION:

Brake fluid will damage paint. Cover all body parts and be careful not to spill fluid during this procedure.

1 Disconnect the cable from the negative terminal of the battery.

CAUTION:

On models equipped with the "Theftlock" audio system, be sure the lockout feature is turned off before performing any procedure which requires disconnecting the battery (see the information at the front of this manual).

2 Remove the left-side under-dash panel (see Chapter 11) and the heater/air conditioning duct behind it.

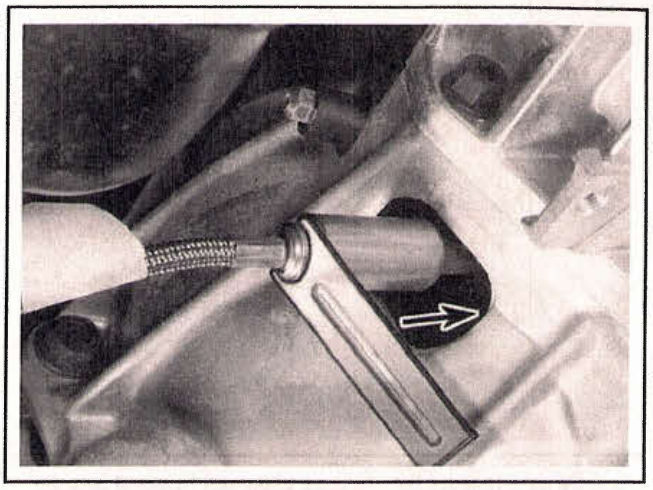
3 Disconnect the electrical connector from the clutch pedal position switch. Detach the pushrod from the pedal by pushing the pedal down fully and squeezing the plastic tabs on the bushing to release it.

4 Raise the front of the vehicle and support it securely on jackstands. Disconnect the hydraulic line from the clutch release cylinder where it enters the transmission (see illustration). A special tool, available at most auto parts stores, is required to separate the line fitting.

5 Open the hood and find the clutch master cylinder - it's located on the firewall, to the left of the brake master cylinder. Grasp the body of the master cylinder and twist it 45-degrees counterclockwise to unlock it from the firewall.

6 Detach the hydraulic line from any clips which may be securing it, then remove the master cylinder and line from the vehicle.

7 Installation is the reverse of removal. Check the fluid level in the reservoir, adding as necessary to bring it to the appropriate level. Bleed the system as described in Section 5.



3.4 To disconnect the hydraulic line from the clutch release cylinder, place the special tool against the shoulder of the quick-connect fitting, push in on the fitting and pull the line out

4 Clutch release cylinder and bearing - removal and installation

1 Detach the hydraulic line from the release cylinder (see illustration 3.4).

2 Remove the transmission (see Chapter 7A).

3 Remove the two release cylinder retaining bolts.

4 Slide the release cylinder off the transmission input shaft. Check the operation of the bearing by turning it while applying pressure; if it is rough or noisy, replace it (it can be removed from the release cylinder).

5 While the transmission is removed, inspect the clutch disc and pressure plate assembly (see Section 6) and replace as necessary.

6 Clean off the transmission input shaft and apply a light film of high-temperature grease to it. Slide the new release cylinder into place, install the retaining bolts and tighten them to the torque listed in this Chapter's Specifications.

7 Install the transmission (see Chapter 7A).

8 Connect the hydraulic line to the release cylinder.

9 Fill the clutch fluid reservoir with the recommended fluid (see Chapter 1).

10 Bleed the clutch hydraulic system (see Section 5).

5 Clutch hydraulic system - bleeding

1 The hydraulic system should be bled to remove all air whenever any part of the system has been removed or if the fluid level has been allowed to fall so low that air has been drawn into the master cylinder. The procedure is very similar to bleeding a brake system.

2 Fill the master cylinder with new brake fluid conforming to DOT 3 specifications.

***** CAUTION:**

Do not re-use any of the fluid coming from the system during the bleeding operation or use fluid which has been inside an open container for an extended period of time.

3 Raise the vehicle and place it securely on jackstands to gain access to the release cylinder bleeder valve, which is located on the left side of the clutch housing.

4 Remove the dust cap which fits over the bleeder valve and push a length of plastic hose over the valve. Place the other end of the hose into a clear container partially filled with clean brake fluid. The hose end must be submerged in the fluid.

5 Have an assistant depress the clutch pedal and hold it. Open the bleeder valve on the release cylinder, allowing fluid to flow through the hose. Close the bleeder valve when the flow of fluid stops. Once closed, have your assistant release the pedal.

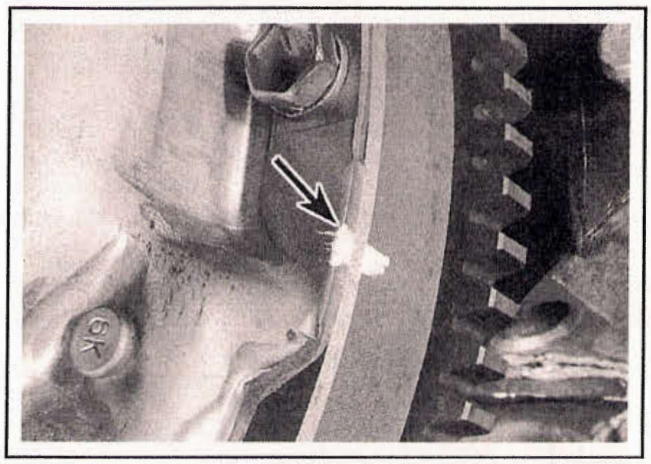
6 Continue this process until all air is evacuated from the system, indicated by a solid stream of fluid being ejected from the bleeder valve each time with no air bubbles in the hose or container. Keep a close watch on the fluid level inside the clutch master cylinder reservoir - if the level drops too low, air will be sucked back into the system and the process will have to be started all over again.

7 Install the dust cap and lower the vehicle. Check carefully for proper operation before placing the vehicle in normal service.

6 Clutch components - removal, inspection and installation

***** WARNING:**

Dust produced by clutch wear and deposited on clutch components is hazardous to your health. DO NOT blow it out with compressed air and DO NOT inhale it. DO NOT use gasoline or petroleum-based solvents to remove the dust. Brake system cleaner should be used to flush the dust into a drain pan. After the clutch components are wiped clean with a rag, dispose of the contaminated rags and cleaner in a covered, marked container.



6.5 Be sure to mark the pressure plate and flywheel in order to insure proper alignment during installation (this won't be necessary if a new pressure plate is to be installed)

REMOVAL

Refer to illustration 6.5

1 Access to the clutch components is normally accomplished by removing the transmission, leaving the engine in the vehicle. If, of course, the engine is being removed, then check the clutch for wear and replace worn components as necessary. However, the relatively low cost of the clutch components compared to the time and trouble spent gaining access to them warrants their replacement anytime the engine or transmission is removed, unless they are new or in near perfect condition. The following procedures are based on the assumption the engine will stay in place.

2 Referring to Chapter 7 Part A, remove the transmission from the vehicle. Support the engine while the transmission is out. Preferably, an engine hoist or support fixture should be used to support it from above. However, if a jack is used underneath the engine, make sure a piece of wood is positioned between the jack and oil pan to spread the load.

CAUTION:

The pickup for the oil pump is very close to the bottom of the oil pan. If the pan is bent or distorted in any way, engine oil starvation could occur.

3 The clutch release bearing assembly can remain attached to the transmission for the time being.

4 To support the clutch disc during removal, install a clutch alignment tool through the clutch disc hub.

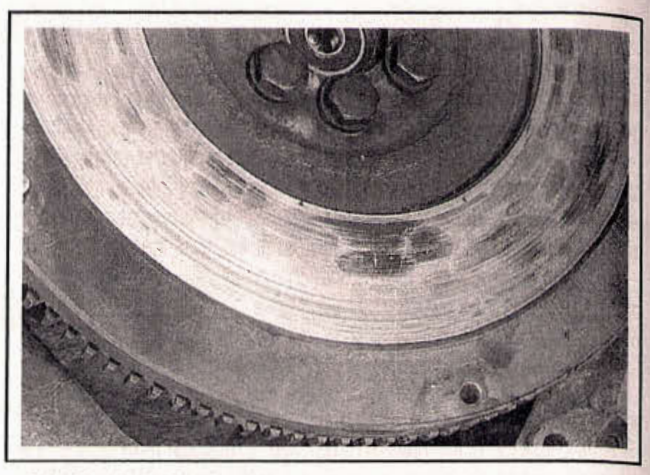
5 Carefully inspect the flywheel and pressure plate for indexing marks. The marks are usually an X, an O or a white letter. If they cannot be found, scribe marks yourself so the pressure plate and the flywheel will be in the same alignment during installation (see illustration).

6 Turning each bolt only 1/4-turn at a time, loosen the pressure plate-to-flywheel bolts. Work in a criss-cross pattern until all spring pressure is relieved. Then hold the pressure plate securely and completely remove the bolts, followed by the pressure plate and clutch disc.

INSPECTION

Refer to illustrations 6.8, 6.10, 6.12a and 6.12b

7 Ordinarily, when a problem occurs in the clutch, it can be attributed to wear of the clutch driven plate assembly (clutch disc). However, all components should be inspected at this time.



6.8 Check the flywheel for cracks, hot spots and other obvious defects (slight imperfections can be removed by a machine shop)

8 Inspect the flywheel for cracks, heat checking, grooves and other obvious defects (see illustration). If the imperfections are slight, a machine shop can machine the surface flat and smooth, which is highly recommended regardless of the surface appearance. Refer to Chapter 2 for the flywheel removal and installation procedure.

9 Inspect the pilot bearing (see Section 7).

10 Inspect the lining on the clutch disc. There should be at least 1/16-inch of lining above the rivet heads. Check for loose rivets, distortion, cracks, broken springs and other obvious damage (see illustration). As mentioned above, ordinarily the clutch disc is routinely replaced, so if in doubt about the condition, replace it with a new one.

11 The release bearing should also be replaced along with the clutch disc (see Section 4).

12 Check the machined surfaces and the diaphragm spring fingers of the pressure plate (see illustrations). If the surface is grooved or otherwise damaged, replace the pressure plate. Also check for obvious damage, distortion, cracking, etc. Light glazing can be removed with sandpaper or emery cloth. If a new pressure plate is required, new and factory-rebuilt units are available.

PRESSURE PLATE PRE-ADJUSTING PROCEDURE FOR 6.0L MODELS

Refer to illustration 6.15

Note: If installing the original pressure plate on 6.0L engines, before installation, the self adjusting pressure plate must be pre-adjusted. To do so requires a hydraulic press. If you do not have a press, take the flywheel and pressure plate to an automotive machine shop for adjustment.

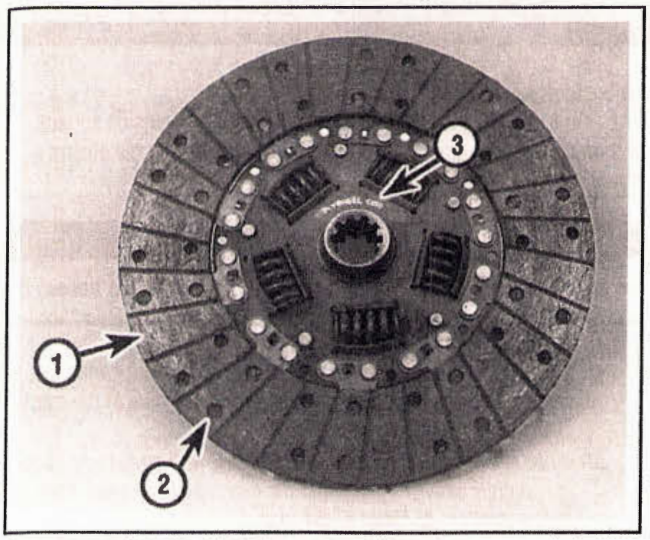
13 Place the clutch pressure plate and disc (new) on the hydraulic press with the flange side down.

14 Compress the pressure plate diaphragm spring until the tension is released from the stepped adjusting ring.

15 Using two screwdrivers, place them against two (three total) of the adjusting ring tension spring stops directly in front of the springs (see illustration).

16 Using the screwdrivers, rotate the stepped adjusting rings counterclockwise until the adjusting ring steps are fully adjusted OUT. Do not release the screwdrivers yet.

17 Carefully release the tension on the hydraulic press while holding the ring stops.



6.10 The clutch plate

1 ***Lining*** *- This will wear down in use*
2 ***Rivets*** *- These secure the lining and will damage the flywheel or pressure plate if allowed to contact the surfaces*
3 ***Markings*** *- "Flywheel side" or something similar*

18 Remove the screwdrivers after the press has been completely released.

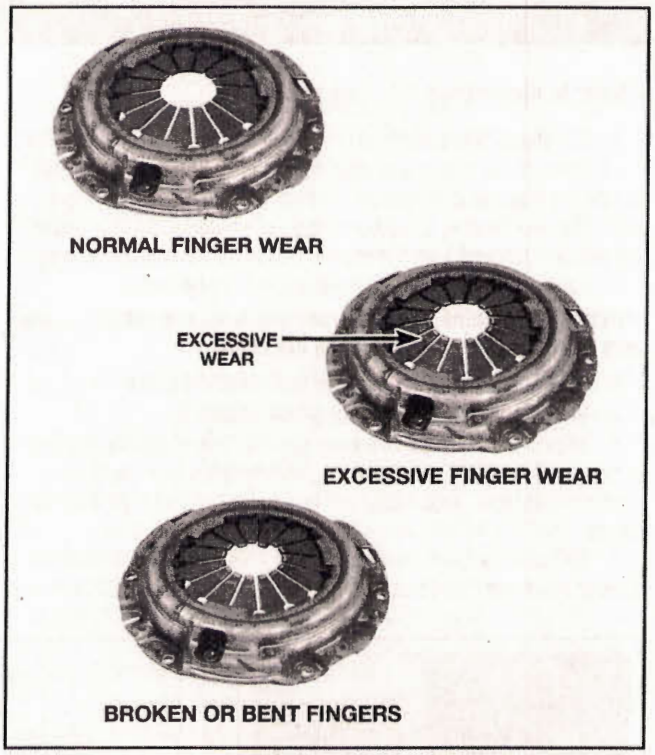
INSTALLATION

Refer to illustration 6.20

19 Before installation, clean the flywheel and pressure plate machined surfaces with brake system cleaner. It's important that no oil or grease is on these surfaces or the lining of the clutch disc. Handle the parts only with clean hands.

20 Position the clutch disc and pressure plate against the flywheel with the clutch held in place with an alignment tool (see illustration). Make sure it's installed properly (most replacement clutch plates will be marked "flywheel side" or something similar - if not marked, install the clutch disc with the damper springs toward the transmission).

21 Tighten the pressure plate-to-flywheel bolts only finger tight, working around the pressure plate.



6.12a Replace the pressure plate if excessive wear is noted

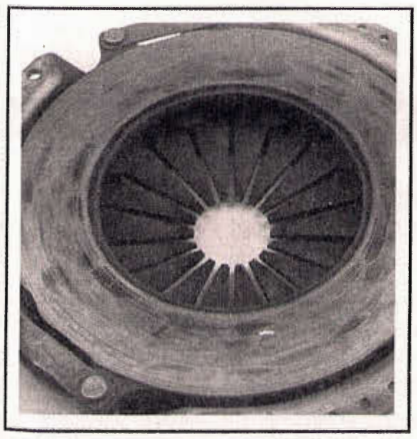
22 Center the clutch disc by ensuring the alignment tool extends through the splined hub and into the pilot bearing in the crankshaft. Wiggle the tool up, down or side-to-side as needed to bottom the tool in the pilot bearing. Tighten the pressure plate-to-flywheel bolts a little at a time, working in a criss-cross pattern to prevent distorting the cover. After all of the bolts are snug, tighten them to the torque listed in this Chapter's Specifications. Remove the alignment tool.

23 Using high-temperature grease, lubricate the inner groove of the release bearing. Also place grease on the transmission input shaft bearing retainer.

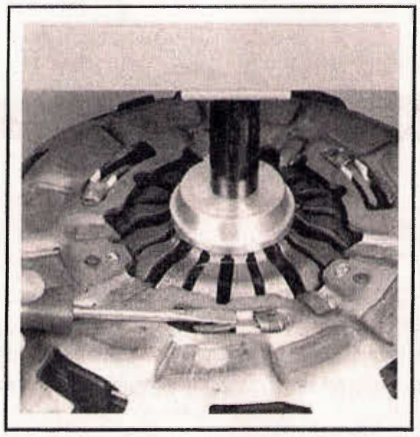
24 Install the clutch release bearing as described in Section 4.

25 Install the transmission and all components removed previously. Tighten all fasteners to the proper torque specifications.

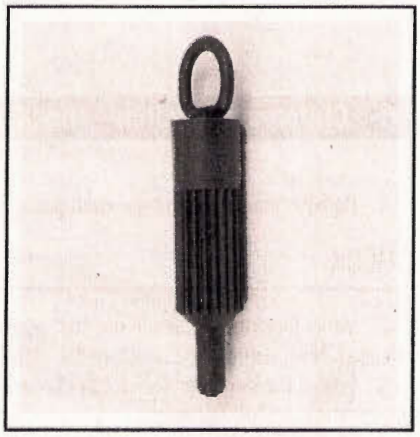
26 Bleed the clutch hydraulic system (see Section 5).



6.12b Examine the pressure plate friction surface for score marks, cracks and evidence of overheating



6.15 After compressing the diaphragm spring, turn the adjusting ring counterclockwise, then release the press



6.20 Center the clutch disc using a clutch alignment tool

7 Pilot bearing - replacement

Refer to illustrations 7.5, 7.6a and 7.6b

1 The clutch pilot bearing is pressed into the rear of the crankshaft. It is greased at the factory and does not require additional lubrication. Its primary purpose is to support the front of the transmission input shaft. The pilot bearing should be inspected whenever the clutch components are removed from the engine. Due to its inaccessibility, if you are in doubt as to its condition, replace it with a new one.

Note: If the engine has been removed from the vehicle, disregard the following steps which do not apply.

2 Remove the transmission (refer to Chapter 7 Part A).

3 Remove the clutch components (see Section 6).

4 Inspect for any excessive wear, scoring, lack of grease, dryness or obvious damage. If any of these conditions are noted, the bearing should be replaced. A flashlight will be helpful to direct light into the recess.

5 Removal can be accomplished with a slide hammer fitted with a puller attachment (see illustration), which are available at most auto parts stores or equipment rental yards.

6 To install the new bearing, lightly lubricate the outside surface with multi-purpose grease, then drive it into the recess (see illustrations).

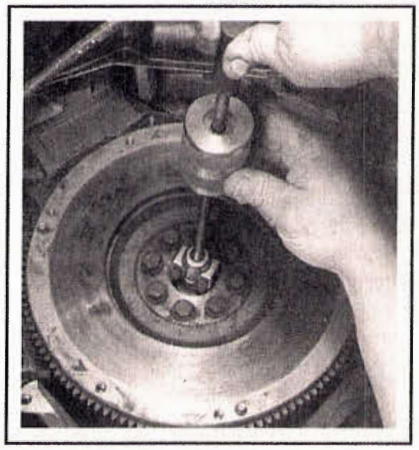
CAUTION:

Be careful not to let the bearing become cocked in the bore.

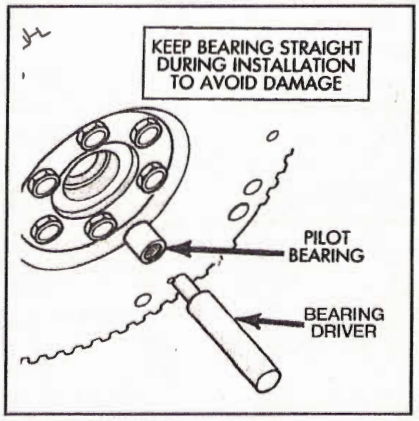
a) If you're working on a V8 engine, drive it in with a hammer and bearing/bushing driver until it is flush with the hole in the crankshaft.

b) If you're working on a V6 engine, a socket with an outside diameter slightly smaller than that of the bearing can be used. Drive it in to a depth of 45/64 to 47/64-inch.

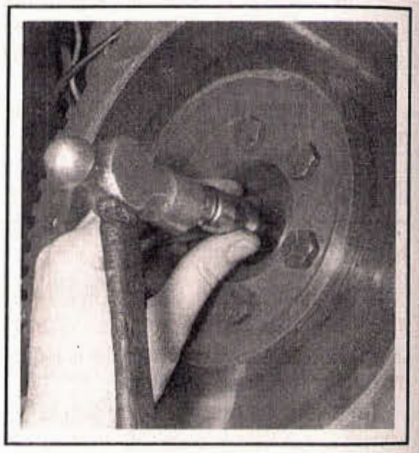
7 Install the clutch components, transmission and all other components removed previously, tightening all fasteners properly.



7.5 A small slide-hammer puller is handy for removing the pilot bearing



7.6a When installing a pilot bearing into the crankshaft of a V8 engine, use a bearing driver (drive it in until the end of the bearing is flush with the end of the crankshaft)



7.6b When installing a pilot bearing into the crankshaft of a V6 engine, a socket can be used (drive it in to the depth listed in the text)

8 Clutch start switch - check and replacement

1 Remove the left side under-dash panel.

CHECK

2 Verify that the engine will not start when the clutch pedal is released. Now, depress the clutch pedal - the engine should start.

3 Locate the switch on the clutch master cylinder pushrod and unplug the electrical connector.

4 Using an ohmmeter, verify that there is continuity between the proper terminals of the clutch start switch when the pedal is depressed (refer to the wiring diagrams at the back of this manual). There should be no continuity when the pedal is released.

5 If the switch does not work as described, replace it.

REPLACEMENT

6 Unplug the electrical connector from the switch.

7 Pry up the tabs on the plastic retainer that secures the switch to the pushrod, then remove the switch.

8 Installation is the reverse of removal. The switch is self-adjusting, so there's no need for adjustment.

9 Verify that the engine doesn't start when the clutch pedal is released, and does start when the pedal is depressed.

9 Driveshaft and universal joints - general information and inspection

Refer to illustration 9.1

GENERAL INFORMATION

1 A driveshaft is a tube, or a pair of tubes, that transmits power between the transmission (or transfer case on 4WD models) and the differential. Universal joints are located at either end of the driveshaft and in the center on two-piece driveshafts (see illustration).

2 Single piece driveshafts employ a splined yoke at the front, which slips into the extension housing of the transmission. This arrangement allows the driveshaft to slide back-and-forth within the transmission during vehicle operation to compensate for changes in length due to suspension movement. An oil seal prevents leakage of fluid at this point and keeps dirt from entering the transmission. If leakage is evident at the front of the driveshaft, replace the oil seal (see Chapter 7, Part B).

3 If a two-piece driveshafts is used, a slip joint is employed on the front of the rear driveshaft section.

4 Two-piece driveshafts also have a center support bearing. The center bearing is a ball-type bearing mounted in a rubber cushion attached to a frame crossmember. The bearing is pre-lubricated and sealed at the factory.

5 On all models, the driveshaft assembly requires very little service. The universal joints are lubricated for life and must be replaced if problems develop. The driveshaft must be removed from the vehicle for this procedure.

6 Since the driveshaft is a balanced unit, it's important that no undercoating, mud, etc. be allowed to stay on it. When the vehicle is raised for service it's a good idea to clean the driveshaft and inspect it for any obvious damage. Also, make sure the small weights used to originally balance the driveshaft are in place and securely attached. Whenever the driveshaft is removed it must be reinstalled in the same relative position to preserve the balance.

7 Problems with the driveshaft are usually indicated by a noise or vibration while driving the vehicle. A road test should verify if the problem is the driveshaft or another vehicle component. Refer to the *Troubleshooting* section at the front of this manual. If you suspect trouble, inspect the driveline.

INSPECTION

8 Raise the rear of the vehicle and support it securely on jackstands. Block the front wheels to keep the vehicle from rolling off the stands.

9 Crawl under the vehicle and visually inspect the driveshaft. Look for any dents or cracks in the tubing. If any are found, the driveshaft must be replaced.

10 Check for oil leakage at the front and rear of the driveshaft. Leakage where the driveshaft enters the transmission or transfer case indicates a defective transmission/transfer case seal (see Chapter 7). Leakage where the driveshaft enters the differential indicates a defective pinion seal (see Section 18).

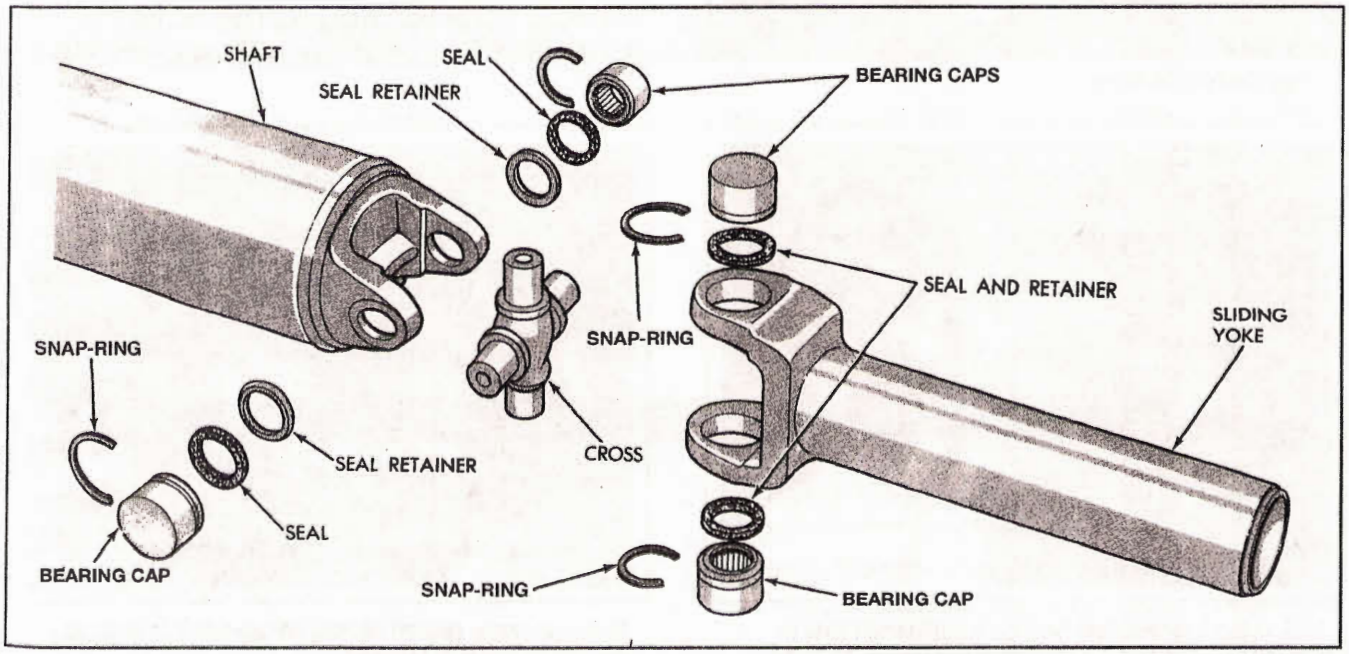
11 While under the vehicle, have an assistant rotate a rear wheel so the driveshaft will rotate. As it does, make sure the universal joints are operating properly without binding, noise or looseness. Listen for any noise from the center bearing (if equipped), indicating it's worn or damaged. Also check the rubber portion of the center bearing for cracking or separation, which will necessitate replacement.

12 The universal joint can also be checked with the driveshaft motionless, by gripping your hands on either side of the joint and attempting to twist the joint. Any movement at all in the joint is a sign of considerable wear. Lifting up on the shaft will also indicate movement in the universal joints.

13 Finally, check the driveshaft mounting bolts at the ends to make sure they're tight.

14 On 4WD models, the above driveshaft checks should be repeated on the front driveshaft, as well. In addition, check for leakage around the sleeve yoke, indicating failure of the yoke seal.

15 Check for leakage where the driveshafts connect to the transfer



9.1 An exploded view of a typical U-joint

case and front differential. Leakage indicates worn oil seals.

16 At the same time, check for looseness in the joints of the front driveaxles. Also check for grease or oil leakage from around the driveaxles by inspecting the rubber boots and both ends of each axle. Oil leakage around the axle flanges indicates a defective axleshaft oil seal. Grease leakage at the CV joint boots means a damaged rubber boot. For servicing of these components, see the appropriate Sections.

10 Driveshaft(s) - removal and installation

REAR DRIVESHAFT

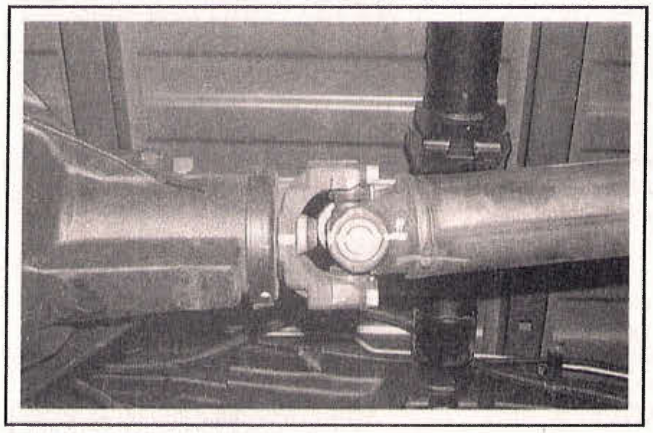
Refer to illustrations 10.2, 10.3 and 10.5

Removal

1 Raise the vehicle and support it securely on jackstands. Place the transmission in Neutral with the parking brake off. Block the front wheels to prevent the vehicle from rolling.

2 Make reference marks on the driveshaft and the pinion flange in line with each other (see illustration). This is to make sure the driveshaft is reinstalled in the same position to preserve the balance.

3 Remove the rear universal joint bolts and straps. Turn the driveshaft (or wheels) as necessary to bring the bolts into the most accessible position. To prevent the driveshaft from turning when you loosen the bolts, insert a large screwdriver through the driveshaft yoke (see illustration).



10.2 Mark the relationship of the rear driveshaft to the differential pinion flange

4 If the vehicle is a 4WD model and has a companion flange where the driveshaft connects to the transfer case, mark the relationship of the U-joint yoke to the companion flange, then remove the four bolts, nuts and washers from the flange.

5 On vehicles with a two-piece driveshaft, remove the nuts from the center support bearing (see illustration).

6 On all models, tape the bearing caps to the spider to prevent the caps from coming off during removal.

7 Lower the rear of the driveshaft. Slide the front of the driveshaft out of the transmission or transfer case.

8 Wrap a plastic bag over the transmission or transfer case housing and hold it in place with a rubber band. This will prevent loss of fluid and protect against contamination while the driveshaft is out.

Installation

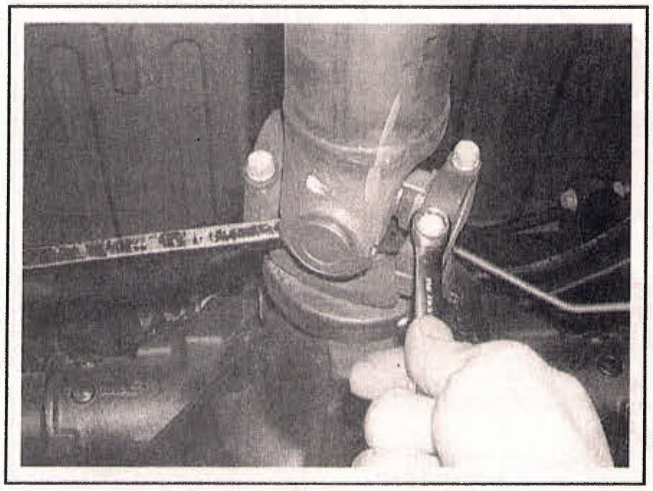
9 Remove the plastic bag from the transmission or transfer case and wipe the area clean. Inspect the oil seal carefully. Procedures for replacement of this seal can be found in Chapter 7.

10 Slide the front of the driveshaft into the transmission or transfer case or connect the companion flange, installing the fasteners finger-tight.

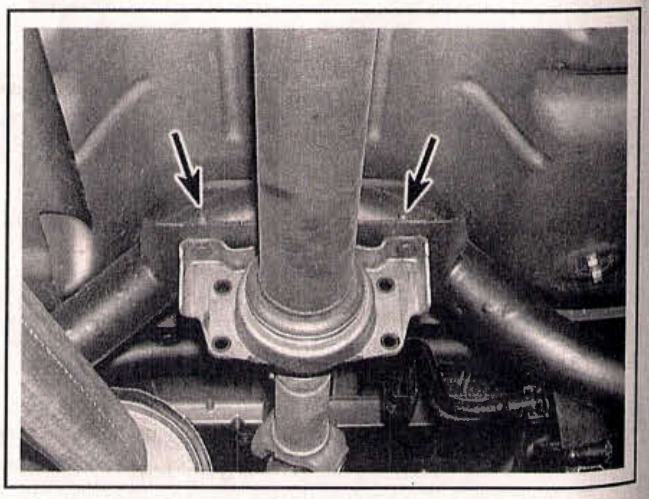
11 On models with a two-piece driveshaft, raise the center support bearing into position, install the nuts and tighten them to the torque listed in this Chapter's Specifications.

12 Raise the rear of the driveshaft into position, checking to be sure the marks are in alignment. If not, turn the rear wheels to match the pinion flange and the driveshaft.

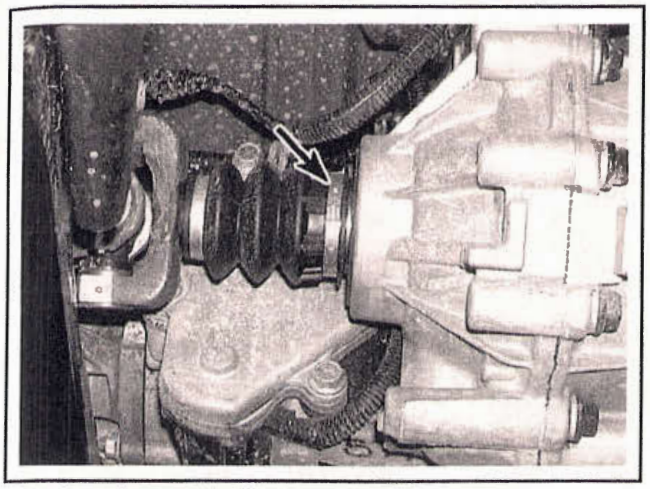
13 Remove the tape securing the bearing caps and install the straps and bolts. Tighten all bolts to the torque listed in this Chapter's Specifications.



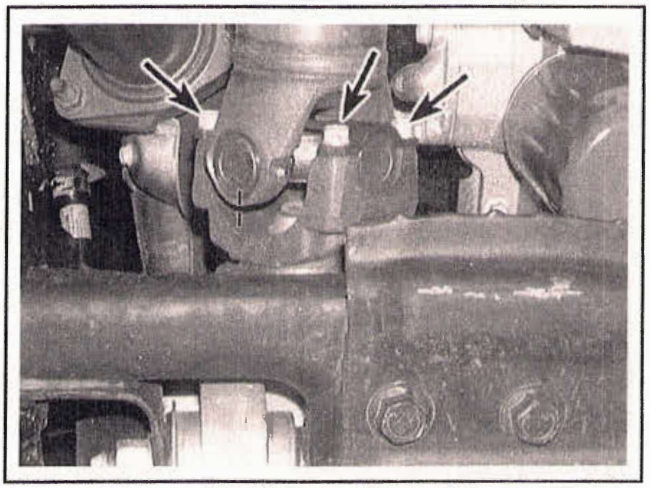
10.3 Insert a screwdriver through the driveshaft yoke to prevent the shaft from turning when you loosen the bolts



10.5 The center support bearing on two-piece driveshafts is secured by two nuts (arrows)



10.15 Pry up the end of the boot clamp and dislodge the boot from the transfer case output shaft



10.17 Mark the relationship of the front driveshaft to the front differential companion flange, then remove the bolts and straps

FRONT DRIVESHAFT (4WD MODELS)

Removal

Refer to illustrations 10.15 and 10.17

14 Raise the front of the vehicle and place it securely on jackstands. Remove the skid plate, if equipped.

15 Pry open the clamp securing the boot at the transfer case output shaft (see illustration). Disengage the boot from the shaft and slide it forward.

16 Mark the relationship of the driveshaft to the front differential companion flange.

17 Remove the bolts and straps from the differential flange (see illustration).

18 Push the driveshaft to the rear far enough to separate it from the differential flange, then lower it and pull the shaft out of the transfer case.

Installation

19 Slide the rear of the driveshaft into the splines in the transfer case output shaft.

20 Attach the front end of the shaft to the differential companion flange (be sure to line up the marks), install the straps and bolts and tighten all of the bolts to the torque listed in this Chapter's Specifications.

21 At the rear end of the shaft, push the boot up over the transfer case output shaft and seat it into its groove. Insert a small screwdriver between the boot and the shaft to equalize pressure inside the boot, then install a new clamp and crimp it into place with a pair of clamp-crimping pliers.

22 Install the skid plate (if equipped).

11 Driveshaft center support bearing - replacement

1 Remove the driveshaft (see Section 10).

2 Mark the relationship of the front portion of the driveshaft to the rear portion of the driveshaft (it's best to make the mark on the slip yoke). Slide the rear shaft off the front shaft.

3 If you have access to a hydraulic press (one tall enough to accommodate the shaft) and the necessary fixtures, press the shaft out of the center support bearing. Reverse this operation to install the new bearing.

4 If you do not have the necessary equipment, take the shaft to an automotive machine shop or other qualified repair facility to have the old bearing pressed off and the new one pressed on.

12 Universal joints - replacement

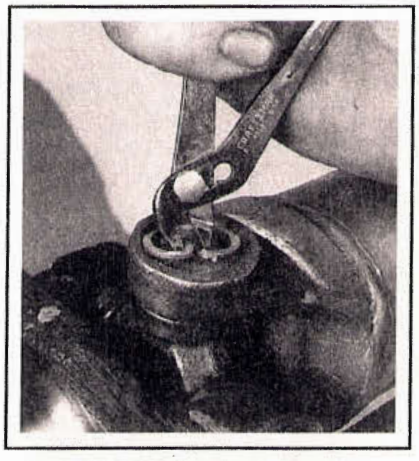
➡Note: Always purchase a universal joint service kit for your model vehicle before beginning this procedure. Also, read through the entire procedure before beginning work.

1 Remove the driveshaft (Section 10).

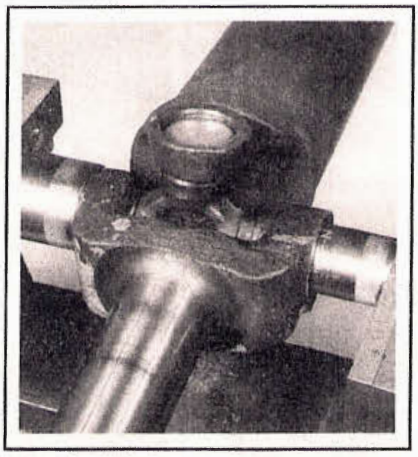
OUTER SNAP-RING TYPE

Refer to illustrations 12.3, 12.4, 12.5 and 12.6

2 Place the driveshaft on a bench equipped with a vise.



12.3 Use a small pair of pliers to remove the snap-rings from the ends of the universal joint yokes



12.4 To remove the U-joint from the driveshaft, use a vise as a press - the small socket will push the cross and bearing cap into the large socket

12.5 Locking pliers can be used to remove the bearing caps from the yoke

3 Remove the snap-rings with a small pair of pliers (see illustration).

4 Support the cross (also called a spider) on a short piece of pipe or a large socket and use another socket to press out the cross by closing the vise (see illustration).

5 Press the cross through as far as possible, then grip the bearing cap with pliers and remove it (see illustration).

6 A universal joint repair kit will contain a new cross, seals, bearings, caps and snap-rings (see illustration).

7 Inspect the bearing cap bores in the yokes for wear and damage.

8 If the bearing cap bores in the yoke are so worn that the caps are a loose fit, the driveshaft will have to be replaced with a new one.

9 Make sure the dust seals are properly located on the cross.

10 Using a vise, press one bearing cap into the yoke approximately 1/4-inch.

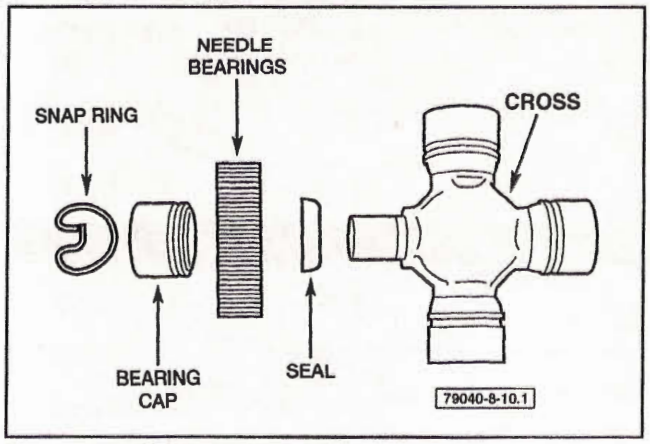
11 Use chassis grease to hold the needle rollers in place in the caps.

12 Insert the cross into the partially installed bearing cap, taking care not to dislodge the needle rollers.

13 Hold the cross in correct alignment and press both caps into place by slowly and carefully closing the jaws of the vise.

14 Use a socket slightly smaller in diameter than the caps to press them into the yoke. Press in one side, install the snap-ring, then press the other side to shift the cross assembly tight against the installed snap-ring and install the other snap-ring.

15 Repeat the operations for the remaining two bearing caps. Proceed to Step 22.



12.6 Outer snap-ring type U-joint

INJECTED PLASTIC (INNER SNAP-RING) TYPE

➧ Refer to illustrations 12.16, 12.20 and 12.21

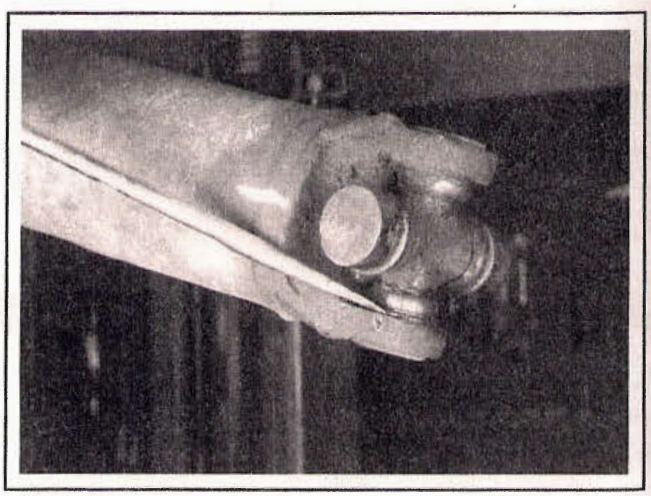
16 If the joint has been previously rebuilt, remove the snap-rings (bearing retainers) located on the inner part of each bearing cap (see illustration).

17 If this is the first time the joint is being rebuilt it will not be necessary to remove the snap-rings, since there aren't any; the pressing operation will shear the molded plastic retaining material.

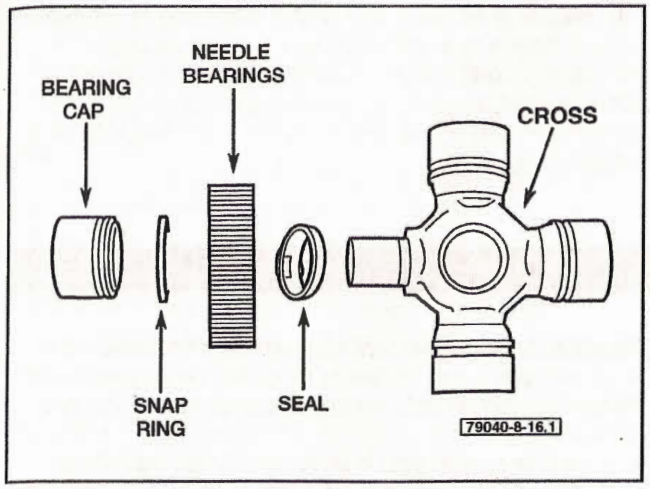
➡Note: It may be necessary to heat the U-joint over 500-degrees (melting the plastic retaining material) before pressing the U-joint apart.

18 Press out the bearing caps as described in Steps 4 and 5.

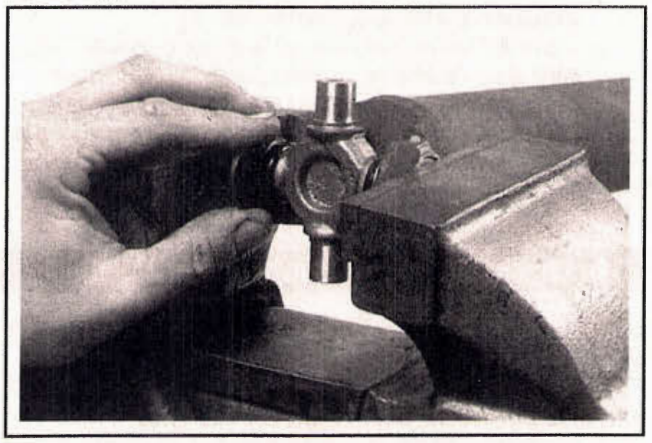
19 Remove the cross and clean all plastic material from the yoke. Use a small punch to remove the plastic from the injection holes.



12.16 Remove the inner snap-rings from the U-joint by tapping them off with a screwdriver and hammer



12.20 Inner snap-ring type U-joint



12.21 Installing a snap-ring on an inner snap-ring type U-joint

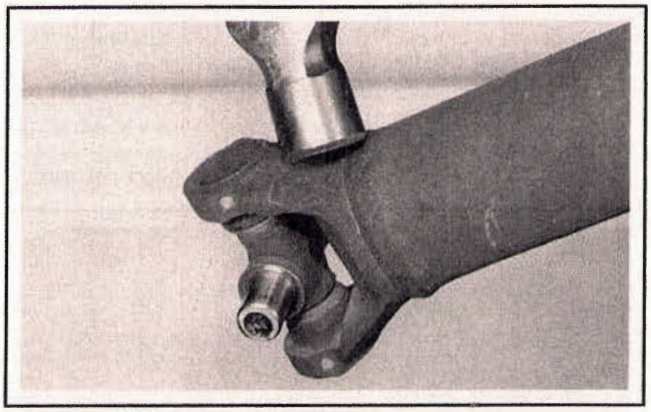
20 Reassembly is the same as for the outer snap-ring joint described in Steps 9 through 15, except the snap-rings are on the inner part of each bearing cap (see illustration).

21 When installing the bearing cap, press it in until the snap-ring can be installed (see illustration).

ALL MODELS

Refer to illustration 12.22

22 If the joint is stiff after assembly, strike the yoke sharply with a hammer (see illustration). This will spring the yoke ears slightly and free up the joint.



12.22 Strike the yoke sharply with a hammer to "spring" the yoke ears, which will free-up the joint

13 Axles - description and check

DESCRIPTION

1 The rear axle assembly is a hypoid (the centerline of the pinion gear is below the centerline of the ring gear), semi-floating type. When the vehicle goes around a corner, the differential allows the outer rear wheel to turn at a higher speed than the inner tire. The axleshafts are splined to the differential side gears, so when the vehicle goes around a corner, the inner wheel, which turns more slowly than the outer wheel, turns its side gear more slowly than the outer wheel turns its side gear. The differential pinion gears roll around the slower side gear, driving the outer side gear - and tire - more quickly.

2 An optional locking limited-slip rear axle is also available. This differential allows for normal operation until one wheel loses traction. A limited-slip unit is similar in design to a conventional differential, except for the addition of a pair of multi-disc clutch packs which slow the rotation of the differential case when one wheel is on a firm surface and the other on a slippery one. The difference in wheel rotational speed produced by this condition applies additional force to the pinion gears and through the cone, which is splined to the axleshafts, equalizes the rotation speed of the axleshaft driving the wheel with traction.

3 On 4WD models, a fully independent front axle assembly is used. This consists of a differential and a pair of driveaxles. Each driveaxle has an inner and outer constant velocity (CV) joint. Because the differential - like the transfer case - is offset to the left, the distance between the differential and the right front wheel is greater than the distance from the differential to the left wheel. In order to use two equal-length driveaxles, an extension axleshaft is employed on the right side to make up the difference.

CHECK

4 Often, a suspected "axle" problem lies elsewhere. Do a thorough check of other possible causes before assuming the axle is the problem.

5 The following noises are those commonly associated with axle diagnosis procedures:

a) Road noise is often mistaken for mechanical faults. Driving the vehicle on different surfaces will show whether or not the road surface is the cause of the noise. Road noise will remain the same if the vehicle is under power or coasting.

b) Tire noise is sometimes mistaken for mechanical problems. Tires which are worn or low on pressure are particularly susceptible to emitting vibrations and noises. Tire noise will remain about the same during varying driving situations, where axle noise will

change during coasting, acceleration, etc.

c) Engine and transmission noise can be deceiving because it will travel along the driveline. To isolate engine and transmission noises, make a note of the engine speed at which the noise is most pronounced. Stop the vehicle and place the transmission in Neutral and run the engine to the same speed. If the noise is the same, the axle is not at fault.

6 Because of the special tools needed, overhauling the differential isn't cost effective for a do-it-yourselfer. The procedures included in this Chapter describe axleshaft removal and installation, axleshaft oil seal replacement, axleshaft bearing replacement and removal of the entire unit for repair or replacement. Any further work should be left to a qualified repair shop.

14 Axleshaft (rear) - removal and installation

SEMI-FLOATING AXLESHAFT

Refer to illustrations 14.3, 14.4, 14.5a and 14.5b

Removal

1 Loosen the rear wheel lug nuts. Raise the rear of the vehicle, support it securely on jackstands and block the front wheels. Remove the wheel and brake disc (see Chapter 9).

2 Remove the differential cover and allow the lubricant to drain into a container (see Chapter 1).

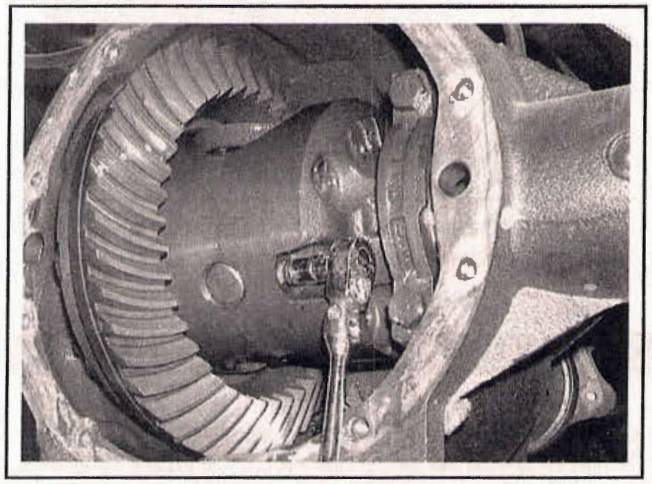
3 Remove the lock screw (see illustration).

4 On models with a conventional differential (non-locking), remove the pinion shaft. On models with a locking differential, withdraw the pinion shaft part way, then rotate the differential until the shaft touches the case, providing enough clearance for access to the C-locks (see illustration).

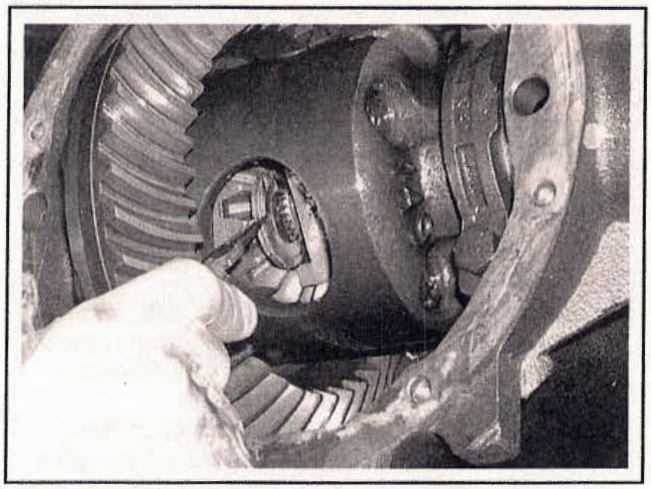
5 Have an assistant push in on the outer flanged end of the axleshaft while you remove the C-lock from the groove in the inner end of the shaft (see illustration).

Note: On models with a locking differential, use a screwdriver to rotate the C-lock until the open end points in (see illustration).

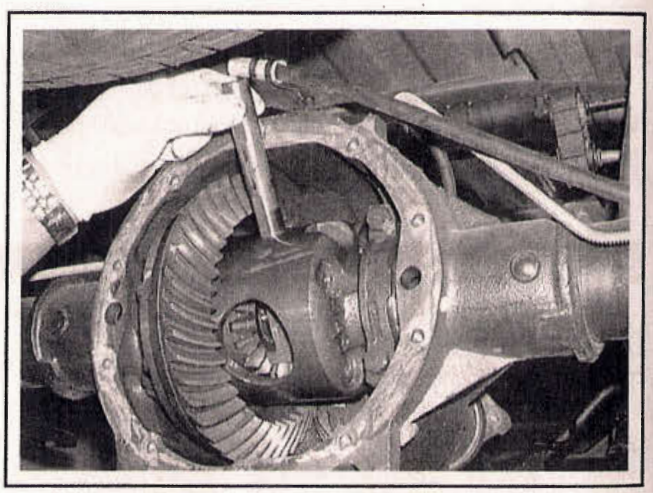
6 With the C-lock removed, withdraw the axleshaft, taking care not to damage the oil seal (but note that it is a good idea to replace the seal whenever the axleshaft is removed - see Section 15). Some models have a thrust washer in the differential; make sure it doesn't fall out when the axleshaft is removed.



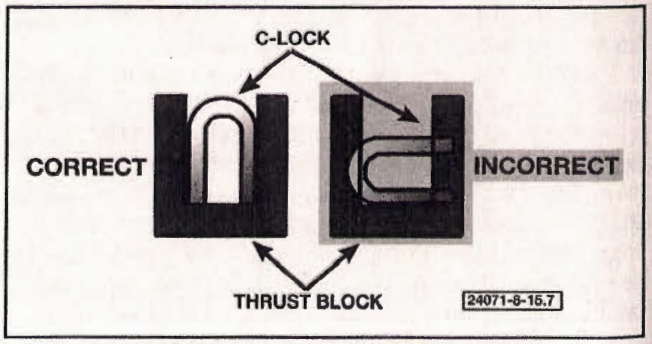
14.3 Remove the pinion shaft lock bolt



14.5a Push the axle flange in, then remove the C-lock from the inner end of the axleshaft



14.4 Withdraw the pinion shaft for access to the C-locks (don't turn the axleshafts after the shaft has been pulled out, or the spider gears may become mispositioned)



14.5b On models with a locking differential, the C-lock must be positioned as shown before it can be removed

Installation

7 To install, carefully insert the axleshaft into the housing and seat it securely in the differential.

8 Install the C-lock in the axleshaft groove and pull out on the flange to lock it.

9 Insert the pinion shaft, align the hole in the shaft with the lock screw hole and install the lock screw.

➡Note: Apply a non-hardening, thread-locking compound to the threads of the lock screw before installing it. Tighten the lock screw to the torque listed in this Chapter's Specifications.

10 Install the cover and fill the differential with the lubricant specified in Chapter 1.

11 Install the brake disc, caliper mounting bracket and caliper, tightening the fasteners to the torque listed in the Chapter 9 Specifications. Install the wheel and lug nuts, then lower the vehicle. Tighten the lug nuts to the torque listed in the Chapter 1 Specifications.

FULL-FLOATING AXLESHAFT

12 Remove the bolts that attach the axleshaft flange to the hub.

13 Tap the flange with a soft-face hammer to loosen the shaft, then grip the rib in the face of the flange with a pair of locking pliers. Twist the shaft slightly in both directions and withdraw it from the housing. Place a drip pan under the outer end of the axle to catch any lubricant which might leak out while the axle is removed.

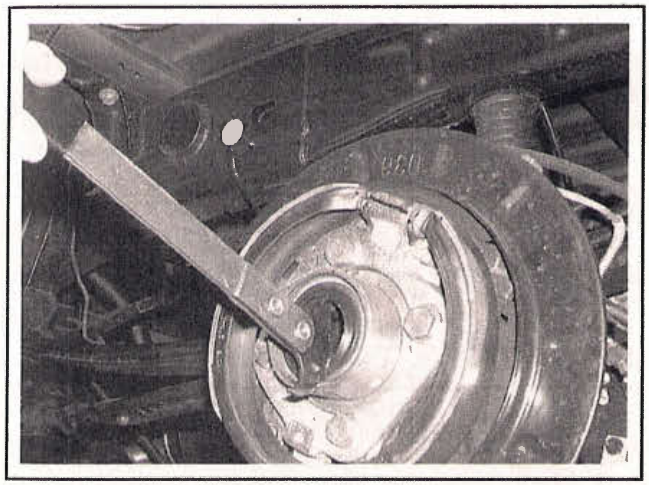
14 Installation is the reverse of removal. Be sure to hold the axleshaft level to engage the splines at the inner end with those in the differential side gear. Always use a new gasket on the flange and keep both the flange and hub mating surface free of grease and oil.

15 Axleshaft oil seal (rear, semi-floating axle) - replacement

◗ Refer to illustrations 15.2 and 15.3

1 Remove the axleshaft (see Section 14).

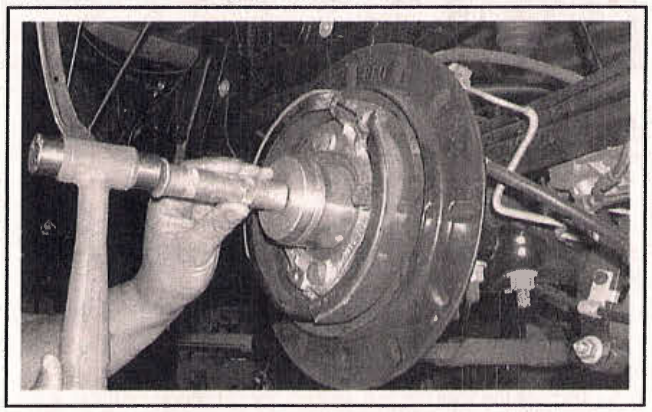
2 Pry the oil seal out of the end of the axle housing (see illustration).



15.2 Prying out the axleshaft oil seal with a seal removal tool

3 Apply a film of multi-purpose grease to the oil seal recess and tap the new seal evenly into place with a hammer and seal installation tool (see illustration), large socket or piece of pipe so the lips are facing in and the metal face is visible from the end of the axle housing. When correctly installed, the face of the oil seal should be flush with the end of the axle housing.

4 Install the axleshaft (see Section 14).



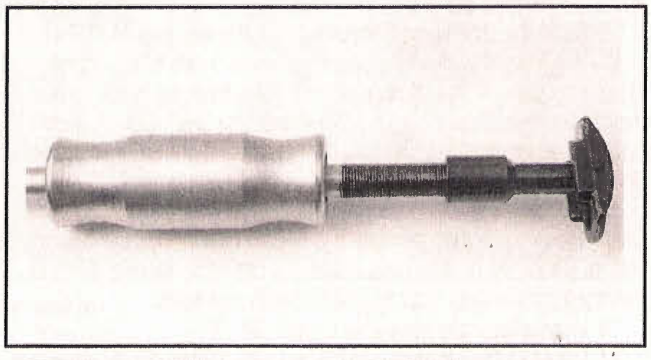
15.3 Using a seal driver to install the axleshaft oil seal - drive the seal in until it's flush with the bore

16 Axleshaft bearing (rear, semi-floating axle) - replacement

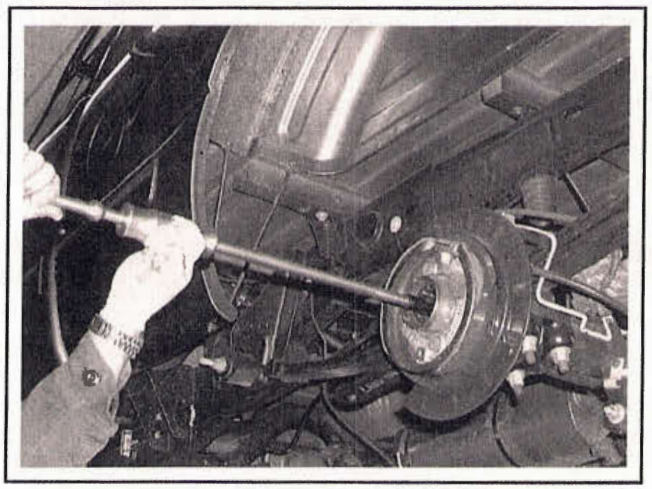
◗ Refer to illustrations 16.2, 16.3 and 16.4

1 Remove the axleshaft (see Section 14) and the oil seal (see Section 15).

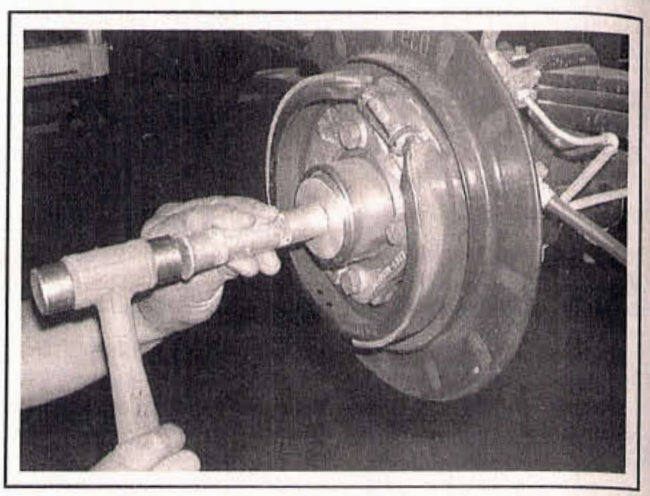
2 A bearing puller which grips the bearing from behind will be required for this job (see illustration).



16.2 A typical slide hammer and axleshaft bearing remover attachment



16.3 Removing the axleshaft bearing with a slide hammer



16.4 Use a bearing driver or a large socket to tap the bearing evenly into the axle housing

3 Attach a slide hammer to the puller and extract the bearing from the axle housing (see illustration).

4 Clean out the bearing recess and drive in the new bearing with a bearing installer or a piece of pipe positioned against the outer bearing race (see illustration). Make sure the bearing is tapped in to the full depth of the recess.

5 Install a new oil seal (see Section 15), then install the axleshaft (see Section 14).

17 Rear hub, wheel bearing and seal (full-floating axle) - removal, bearing/seal replacement and installation

REMOVAL

1 Remove the axleshaft (see Section 14).

2 Loosen the rear wheel lug nuts, raise the rear of the vehicle and support it securely on jackstands. Block the front wheels and remove the rear wheels.

3 Remove the brake disc (see Chapter 9).

4 Remove the retaining ring and key (if equipped) from the end of the axle housing.

5 Remove the adjusting nut, using a special socket available at most auto parts stores.

6 Pull the hub assembly straight off the axle tube.

7 Remove and discard the oil seal from the back of the hub.

8 To further disassemble the hub, use a hammer and a long bar or drift punch to knock out the inner bearing, cup (race) and oil seal.

9 Remove the outer retaining ring, then knock the outer bearing and cup from the hub.

10 Clean the old sealing compound from the seal bore in the hub.

11 Use solvent to clean the bearings, hub and axle tube. A small brush may prove useful; make sure no bristles from the brush embed themselves in the bearing rollers. Now spray the bearings with brake system cleaner, which will remove the solvent and allow the bearings to dry much more rapidly.

12 Carefully inspect the bearings for cracks, wear and damage. Check the axle tube flange, studs and hub splines for damage and corrosion. Check the bearing cups (races) for pitting or scoring. Worn or damaged components must be replaced with new ones.

13 Inspect the brake drum (see Chapter 9).

14 Lubricate the bearings and the axle tube contact areas with wheel bearing grease. Work the grease completely into the bearings, forcing it between the rollers, cone and cage.

15 Reassemble the hub by reversing the disassembly procedure. Use only the proper size bearing driver when installing the new bearing cups (races).

INSTALLATION

16 Make sure the axle housing oil deflector is in position. Place the hub assembly on the axle tube, taking care not to damage the oil seals.

17 Install the adjusting nut and adjust the bearings as described below.

ADJUSTMENT

18 Rotate the hub, making sure it turns freely.

19 While rotating the hub in the normal direction of rotation (forward), tighten the adjusting nut to 50 ft-lbs with a torque wrench. Again, this will require the special socket, which is available at most auto parts stores.

20 Back the nut off 1/4-turn, then tighten the nut hand-tight with the special socket.

21 Turn the nut to align the closest slot in the nut with the keyway in the spindle, then install the key.

22 Install the retaining ring in the end of the spindle.

23 Wiggle the hub assembly; you shouldn't be able to detect any play, but the hub should turn freely (there shouldn't be any preload on the bearings, but there shouldn't be any freeplay, either).

24 Install the axleshaft (see Section 14) and lower the vehicle.

18 Pinion oil seal - replacement

Refer to illustrations 18.3, 18.4, 18.5, 18.8 and 18.9

Note: This procedure applies to the front and rear pinion oil seals.

1 Loosen the wheel lug nuts. Raise the front (for front differential) or rear (for rear differential) of the vehicle and support it securely on jackstands. Block the opposite set of wheels to keep the vehicle from rolling off the stands. Remove the wheels.

2 Disconnect the driveshaft from the differential pinion flange and fasten it out of the way (see Section 10).

3 Rotate the pinion a few times by hand. Use a beam-type or dial-type inch-pound torque wrench to check the torque required to rotate the pinion (see illustration). Record it for use later.

4 Mark the relationship of the pinion flange to the shaft (see illustration), then count and write down the number of exposed threads on the shaft.

5 A special tool, available at most auto parts stores, can be used to keep the companion flange from moving while the self-locking pinion nut is loosened (see illustration). A chain wrench can also be used to immobilize the flange.

6 Remove the pinion nut.

7 Withdraw the flange. It may be necessary to use a two-jaw puller engaged behind the flange to draw it off. Do not attempt to pry or hammer behind the flange or hammer on the end of the pinion shaft.

8 Pry out the old seal and discard it (see illustration).

9 Lubricate the lips of the new seal and fill the space between the seal lips with wheel bearing grease, then tap it evenly into position with a seal installation tool or a large socket (see illustration). Make sure it enters the housing squarely and is tapped in to its full depth.

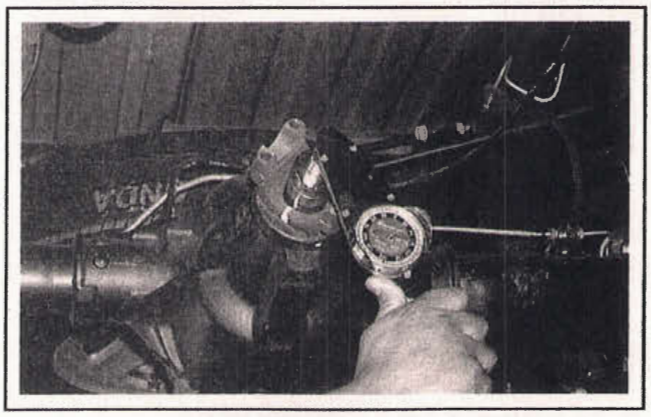
10 Install the pinion flange, lining up the marks made in Step 4. If necessary, tighten the pinion nut to draw the flange into place. Do not try to hammer the flange into position.

11 Apply a bead of RTV sealant to the ends of the splines visible in the center of the flange so oil will be sealed in.

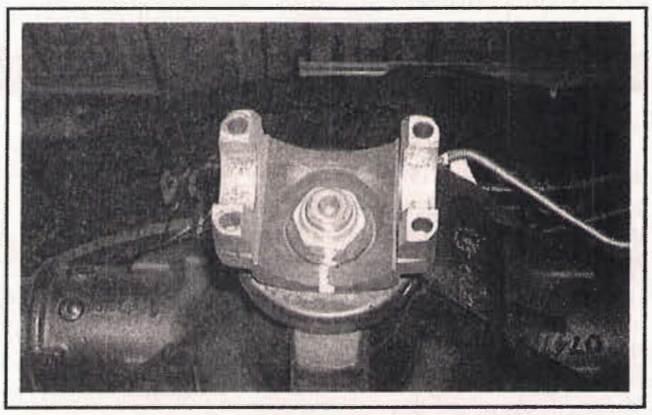
12 Install the washer and a new pinion nut. Tighten the nut until the number of threads recorded in Step 4 are exposed.

13 Measure the torque required to rotate the pinion and tighten the nut in small increments (no more than 5 ft-lbs) until it matches the figure recorded in Step 3. To compensate for the drag of the new oil seal, the nut should be tightened a little more until the rotational torque of the pinion exceeds the earlier recording by 5 in-lbs.

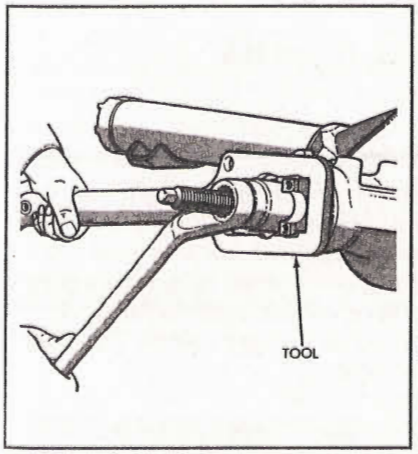
14 Reinstall all components removed previously by reversing the removal Steps, tightening all fasteners to their specified torque values.



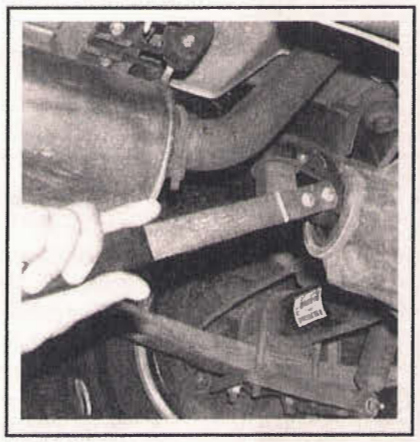
18.3 Use an inch-pound torque wrench to check the torque required to rotate the pinion shaft



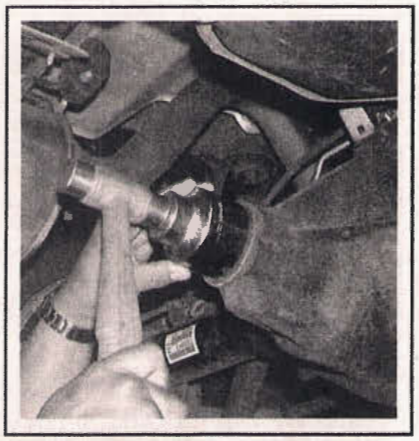
18.4 Before removing the nut, mark the position of the flange to the shaft and count the number of exposed threads



18.5 Hold the pinion flange while removing the nut



18.8 Use a seal removal tool or a large screwdriver to remove the pinion seal (be careful not to disturb the pinion while doing this)



18.9 A large socket with a diameter the same as that of the new pinion seal can be used to drive the seal into the differential housing

19 Axle assembly (rear) - removal and installation

REMOVAL

1 Loosen the rear wheel lug nuts, raise the rear of the vehicle and support it securely on jackstands. Block the front wheels to keep the vehicle from rolling off the stands. Remove the rear wheels.

2 Position a jack under the rear axle differential housing.

3 Disconnect the driveshaft from the rear axle pinion flange (see Section 10). Fasten the driveshaft out of the way with a piece of wire from the underbody.

4 Disconnect the shock absorbers at their lower mounts.

5 Disconnect the vent hose from the fitting on the axle housing and fasten it out of the way.

6 Disconnect the brake hose from the junction block on the axle housing, then plug the hose to prevent fluid leakage.

7 Remove the brake calipers and discs (see Chapter 9).

8 Disconnect the parking brake cables from the actuating levers and the brackets (see Chapter 9).

9 On models with leaf springs, disconnect the spring U-bolts (see Chapter 10). Remove the spring plates.

10 On models with coil springs, remove the stabilizer bar and the coil springs (see Chapter 10).

11 Lower the jack under the differential, then remove the rear axle assembly from under the vehicle.

INSTALLATION

12 Installation is the reverse of removal. Tighten the U-joint strap bolts to the torque listed in this Chapter's Specifications. Tighten all suspension fasteners to the torque values listed in the Chapter 10 Specifications. Tighten the brake fasteners to the torque values listed in the Chapter 9 Specifications.

13 Bleed the brakes (see Chapter 9).

14 Install the wheels and lug nuts to the torque listed in the Chapter 1 Specifications.

20 Driveaxles (4WD models) - general information and inspection

1 Power is transmitted from the front differential/axle to the front wheels through a pair of driveaxles. The inner end of each driveaxle is bolted to an axleshaft connected to the differential side gears; the outer end of each driveaxle has a stub shaft that is splined to the front hub and bearing assembly and locked in place with a large nut.

2 The inner ends of the driveaxles are equipped with sliding constant velocity (CV) joints, which are capable of both angular and axial motion. Each inner CV joint assembly consists of a tripot-type bearing and a housing in which the joint is free to slide in-and-out as the driveaxle moves up-and-down with the wheel.

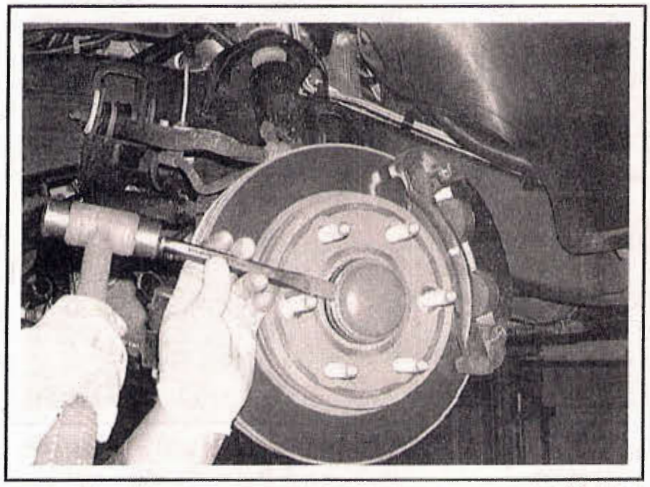
3 The outer ends of the driveaxles are equipped with "ball-and-cage" type CV joints, which are capable of angular but not axial movement. Each outer CV joint consists of six caged ball bearings running between an inner race and the housing.

4 The boots should be inspected periodically for damage and leaking lubricant. Torn CV joint boots must be replaced immediately or the joints will be damaged. If either boot of a driveaxle is damaged, that driveaxle must be removed in order to replace the boot (see Section 21).

5 Should a boot be damaged, the CV joint can be disassembled and cleaned (see Section 22), but if any parts are damaged, the entire driveaxle assembly must be replaced as a unit.

6 The most common symptom of worn or damaged CV joints, besides lubricant leaks, is a clicking noise in turns, a clunk when accelerating after coasting and vibration at highway speeds. To check for wear in the CV joints and driveaxle shafts, grasp each axle (one at a time) and rotate it in both directions while holding the CV joint housings, feeling for play indicating worn splines or sloppy CV joints. Also check the driveaxle shafts for cracks, dents and distortion.

21 Driveaxle (4WD models) - removal and installation



21.2 A hammer and chisel can be used to knock the cover off the hub

Refer to illustrations 21.2, 21.3 and 21.5

REMOVAL

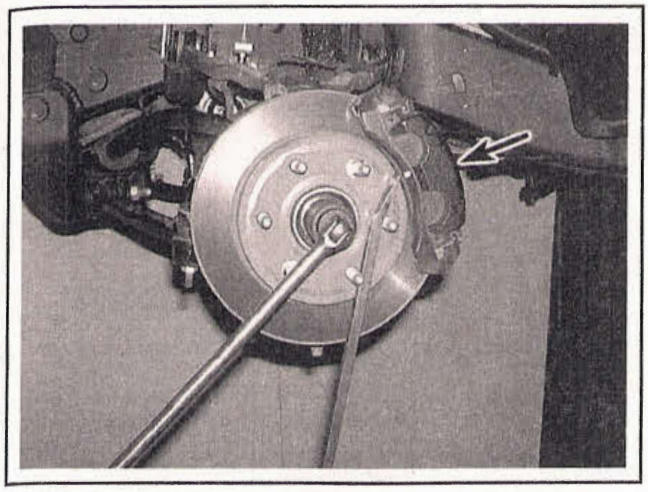
1 Loosen the wheel lug nuts, raise the front of the vehicle and support it securely on jackstands. Remove the wheel.

2 Pry off the hub cover (see illustration).

3 Remove the driveaxle/hub nut. To prevent the hub from rotating, brace a large prybar across two of the wheel studs (see illustration), or insert a long punch or screwdriver through the window in the brake caliper and into the disc cooling vanes.

4 Remove the skid plate, if equipped.

5 Remove the driveaxle-to-axleshaft flange bolts (see illustration). Have an assistant apply the brake as you loosen the bolts to prevent



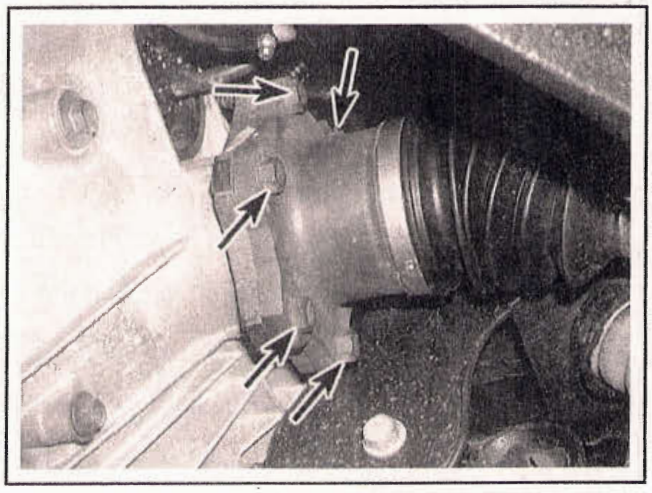
21.3 A large prybar can be used to immobilize the hub while loosening the nut, or a screwdriver can be inserted through the window in the brake caliper (arrow) and into the disc cooling vanes

the driveaxle from turning. Separate the driveaxle from the axleshaft flange.

6 Lower the inner end of the driveaxle, then pull the stub shaft out of the hub. Carefully guide the driveaxle out from under the vehicle.

➡Note 1: It may be necessary to remove the stabilizer bar link to provide clearance for driveaxle removal.

➡Note 2: If the stub shaft sticks in the hub splines, tap on the end of the shaft with a brass punch and a hammer. If that doesn't free the splines, push the driveaxle from the hub with a puller.



21.5 Remove the driveaxle-to-axleshaft flange bolts

INSTALLATION

7 Installation is the reverse of removal. Before installing the driveaxle, lubricate the splines on the stub shaft with multi-purpose grease. Be sure to tighten the driveaxle/hub nut (new) and the flange bolts to the torque values listed in this Chapter's Specifications. Tighten the wheel lug nuts to the torque listed in the Chapter 1 Specifications.

WARNING:

The hub nut should not be reused. Install a new hub nut when installing the shaft.

22 Driveaxle boot (4WD models) - replacement

➡Note: If the CV joint boots must be replaced, explore all options before beginning the job. Complete rebuilt driveaxles are available on an exchange basis, which eliminates much time and work. Whichever route you choose to take, check on the cost and availability of parts before disassembling the vehicle.

1 Remove the driveaxle (see Section 21).

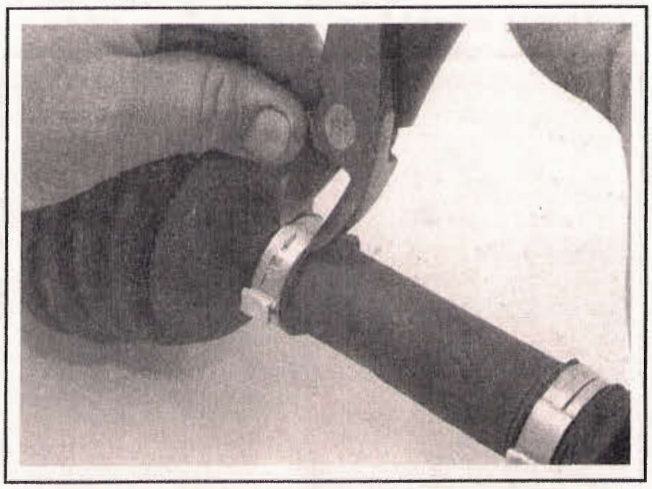
2 Place the driveaxle in a vise lined with rags to avoid damage to the axleshaft. Check the CV joint for excessive play in the radial direction, which indicates worn parts. Check for smooth operation throughout the full range of motion for each CV joint. If a boot is torn, disassemble the joint, clean the components and inspect for damage due to loss of lubrication and possible contamination by foreign matter.

➡Note: Some models are equipped with a protective cover that clamps around the larger diameter of each boot. Use diagonal cutting pliers to remove the clamps, then slide the cover off for access to the boots.

INNER CV JOINT

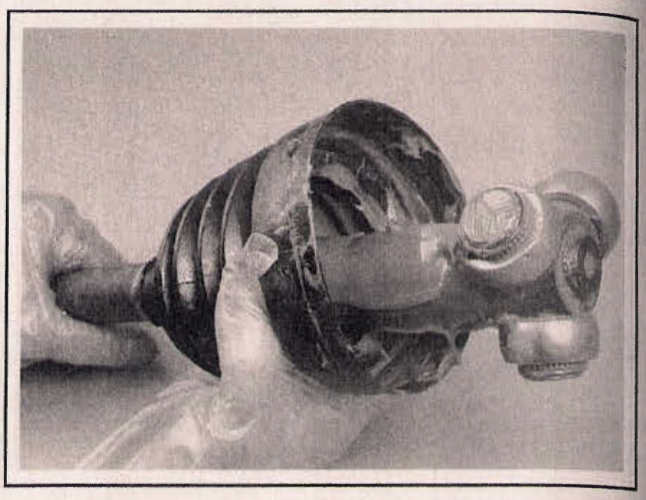
Refer to illustrations 22.3a through 22.3t

3 To replace the inner boot, refer to the accompanying illustrations (see illustrations 22.3a through 22.3t).

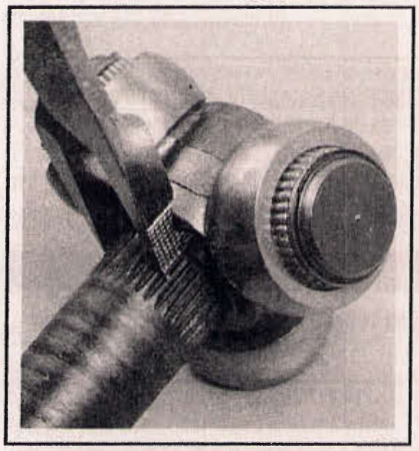


22.3a Cut off the old boot clamps with a pair of diagonal cutting pliers (the larger diameter clamp is actually a "swage ring;" you may have to use a hand-held grinder to cut through it. When reassembling the joint, use a conventional boot clamp, since special tools are required to swage the ring in place)

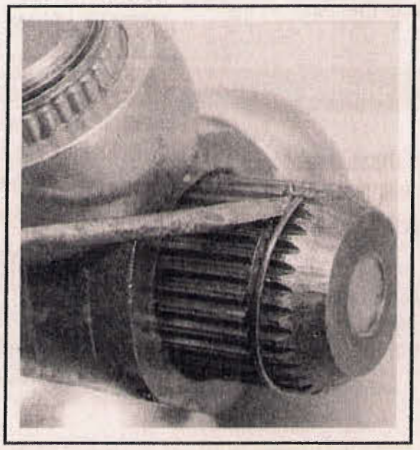
22.3b Slide the housing off the spider assembly



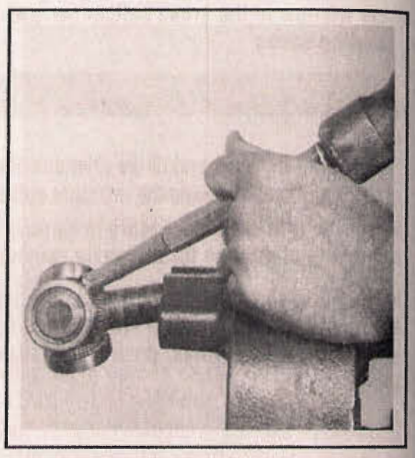
22.3c Slide the boot towards the center of the driveaxle



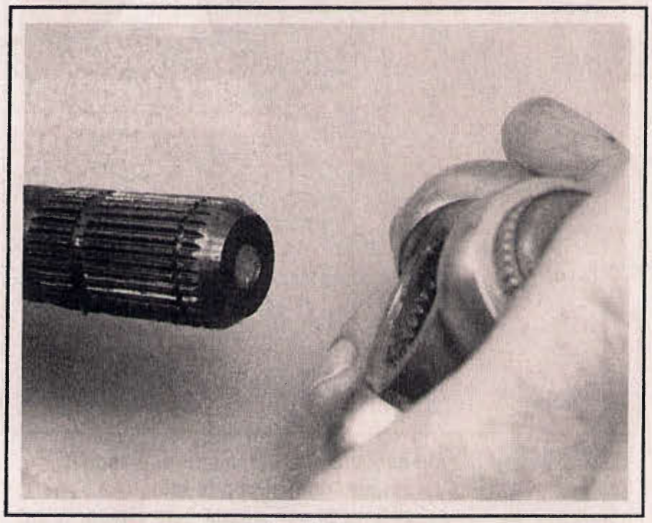
22.3d Spread the ends of the stop ring apart and slide it towards the center of the shaft



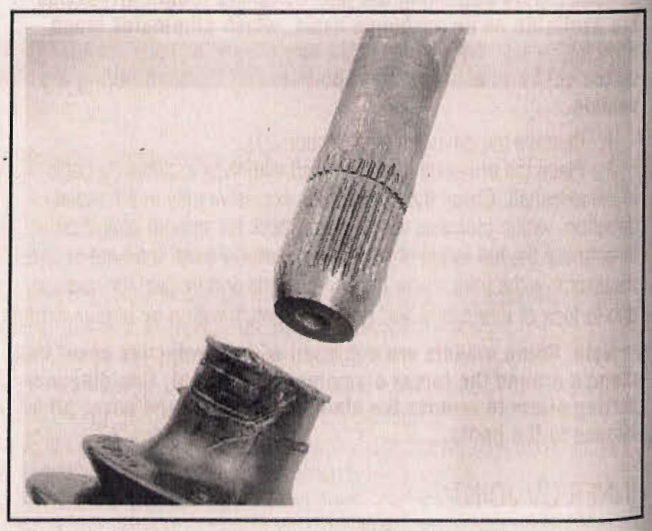
22.3e Slide the spider assembly back to expose the retaining ring and pry off the ring



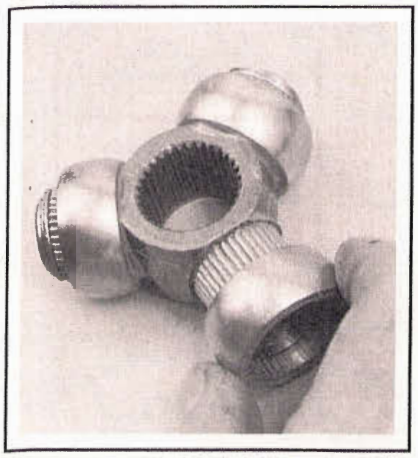
22.3f Carefully tap the spider off the axleshaft with a brass punch (but don't hit it so hard that it flies off, or you'll be picking up needle bearings!)



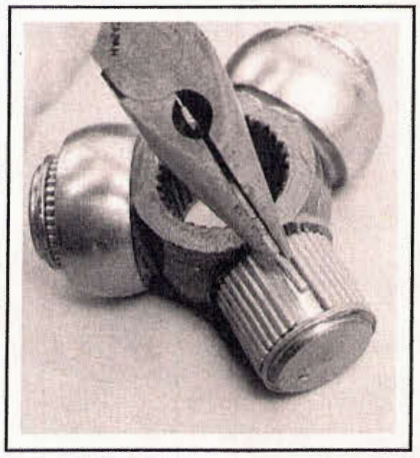
22.3g When you slide the spider off the driveaxle, hold the bearings in place with your hand; even better, use tape or a cloth wrapped around the spider bearing assembly to retain them



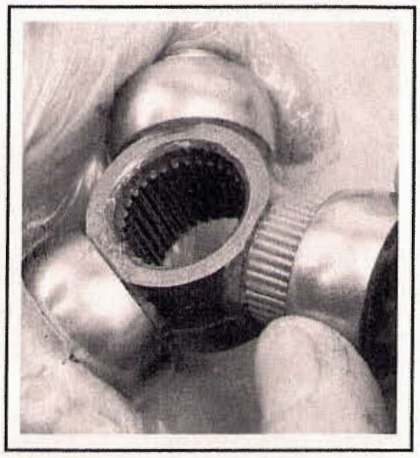
22.3h Slide the boot and the stop ring off the axleshaft



22.3i Clean all of the old grease out of the housing and spider assembly, then remove each bearing, one at time

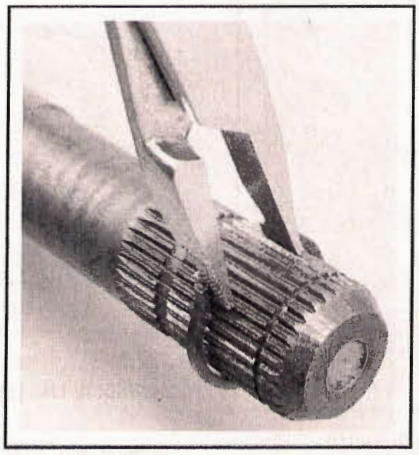


22.3j Carefully disassemble each section of the spider assembly, clean the needle bearings with solvent and inspect the rollers, spider cross, bearings and housing for scoring, pitting and other signs of abnormal wear

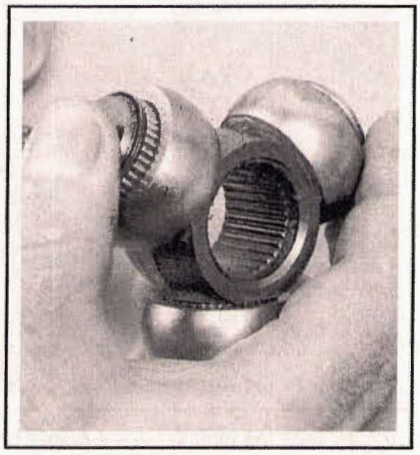


22.3k Apply a coat of CV joint grease to the inner bearing surfaces to hold the needle bearings in place and slide the bearing over them

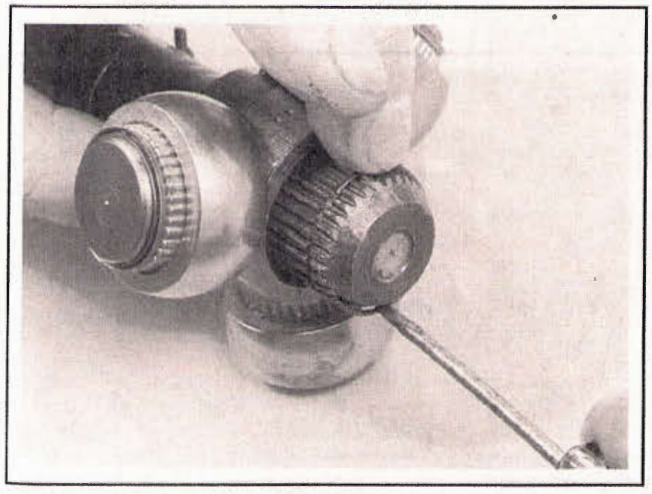
22.3l Wrap the axleshaft splines with tape to avoid damaging the boot, then slide the small clamp and boot onto the axleshaft



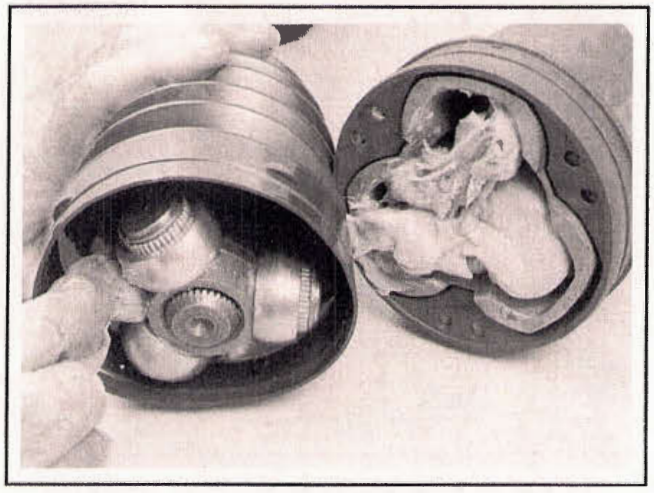
22.3m Slide the spider stop ring onto the axleshaft, past the groove in which it seats



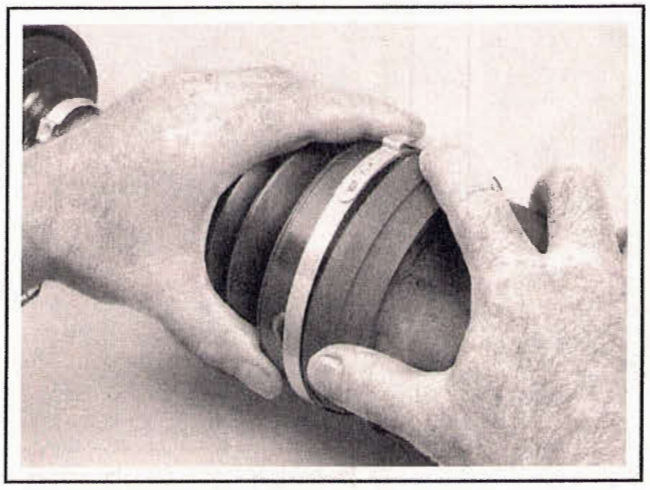
22.3n Install the spider bearing with the recess in the counterbore facing the end of the driveaxle



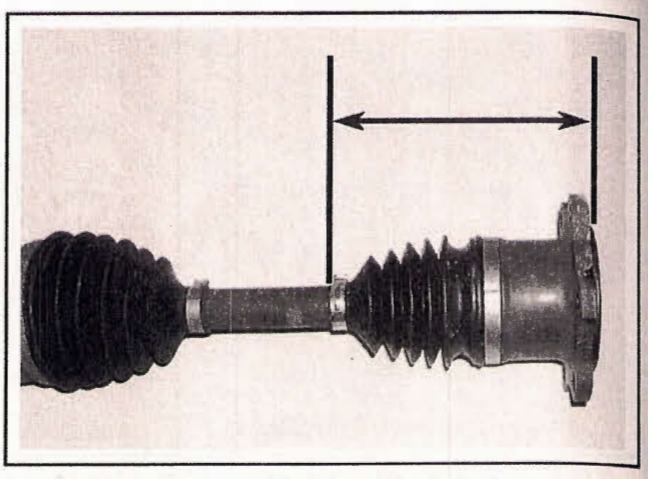
22.3o Install the spider retaining ring, then slide the spider assembly against it and seat the stop ring in its groove



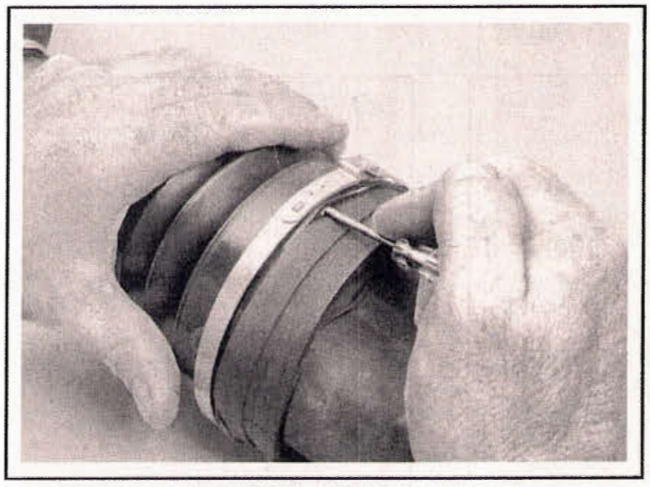
22.3p Pack the housing with half of the grease furnished with the new boot and place the remainder in the boot



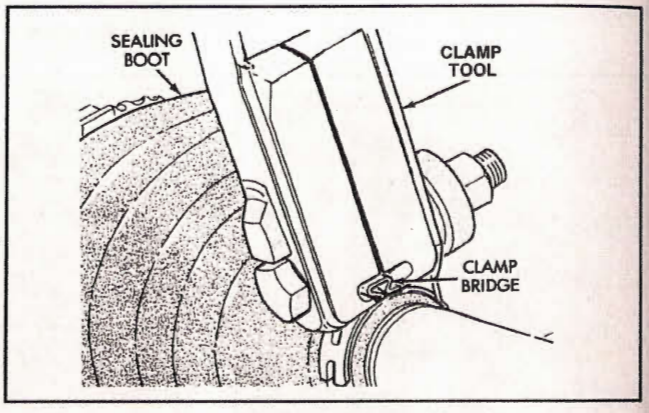
22.3q With the retaining clamps in place (but not tightened), install the tripot housing



22.3r Seat the boot in the housing and axle seal grooves, then adjust the length of the joint to the dimension listed in this Chapter's Specifications



22.3s With the joint set to the proper length, equalize the pressure in the boot by inserting a small screwdriver between the boot and the housing (make sure the boot isn't dimpled, stretched or out of shape) . . .

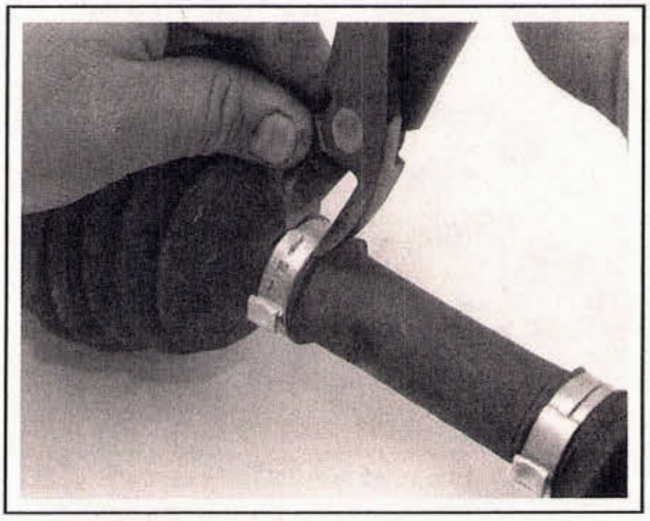


22.3t . . . then secure the boot clamps with a clamp crimping tool (available at auto parts stores)

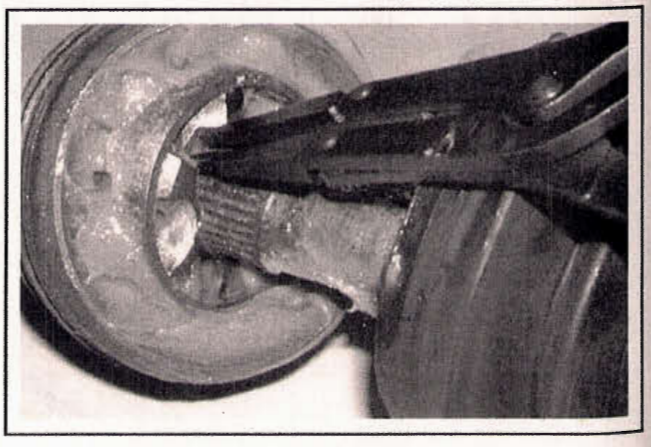
OUTER CV JOINT

Refer to illustrations 22.4a through 22.4r

4 Refer to the accompanying illustrations and perform the outer CV joint boot replacement procedure (see illustrations 22.4a through 22.4r).

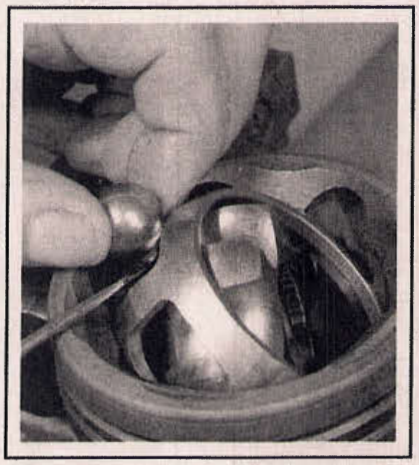


22.4a Cut off the boot retaining clamps with a pair of diagonal cutters

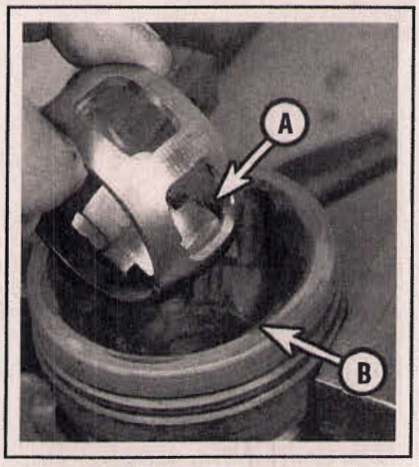


22.4b Spread apart the ends of the internal snap-ring, then slide the CV joint off the shaft

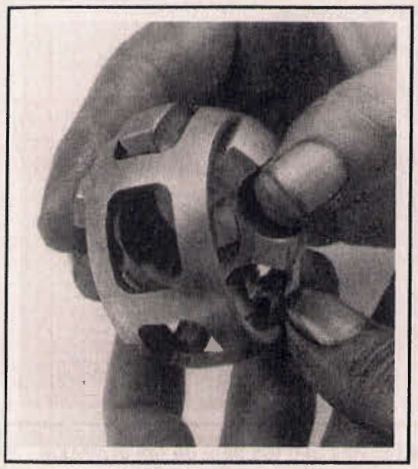
22.4c Press down on the inner race far enough to allow a ball bearing to be removed - if it's difficult to tilt, gently tap the cage and inner race with a brass punch and hammer



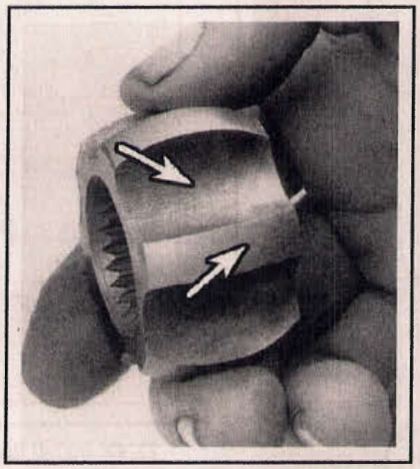
22.4d Pry the balls out of the cage, one at a time



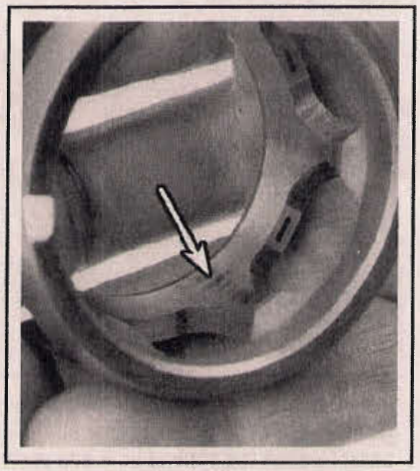
22.4e Tilt the inner race and cage 90-degrees, then align the windows in the cage (A) with the lands of the housing (B) and rotate the inner race and cage up and out of the housing



22.4f Align an inner race land with a cage window and rotate the inner race out of the cage

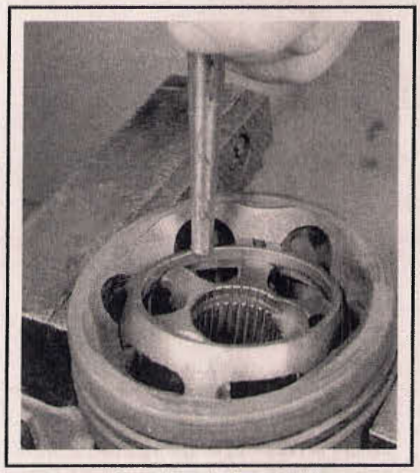


22.4g After cleaning the components with solvent, check the inner race lands and grooves for pitting and score marks



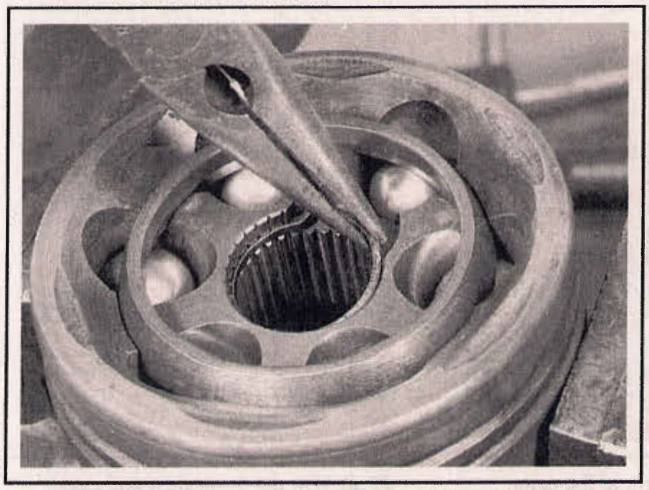
22.4h Check the cage for cracks, pitting and score marks - shiny spots are normal and don't affect operation

22.4i With the race and cage tilted 90-degrees, lower the assembly into the housing

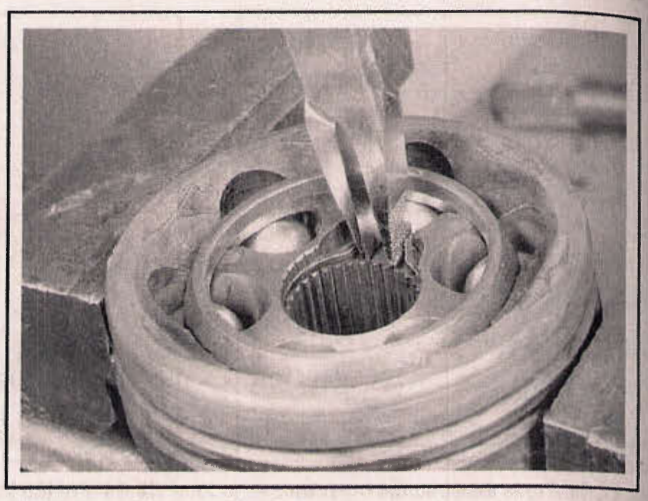


22.4j Rotate the assembly by gently tapping with a hammer and brass punch. . .

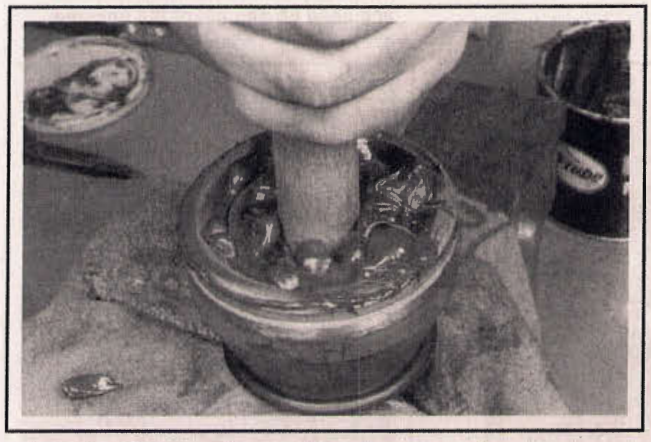
22.4k . . . then press the balls into the cage windows, repeating until all of the balls are installed



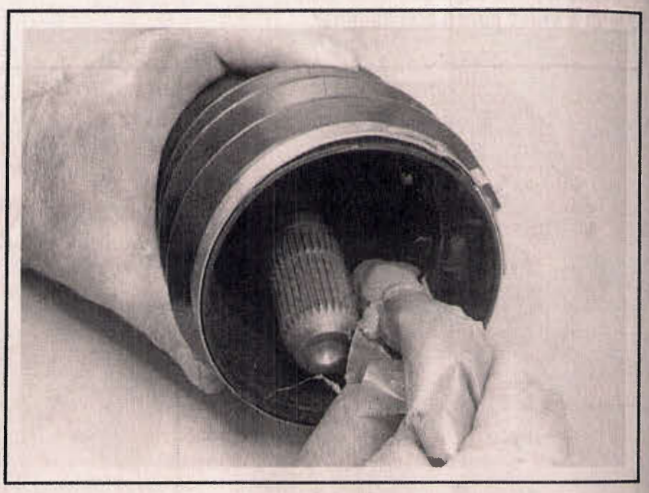
22.4l Use needle-nose pliers to lower a new snap-ring into the groove . . .



22.4m . . . then seat it into the groove with snap-ring pliers



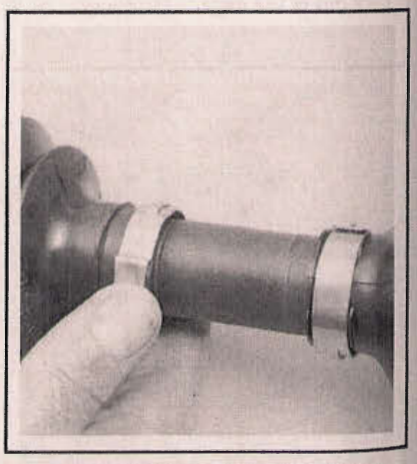
22.4n Apply grease through the splined hole, then insert a wooden dowel (with a diameter slightly less than that of the axle) through the splined hole and push down - the dowel will force the grease into the joint - repeat until the bearing is completely packed



22.4o Install the small clamp and the boot on the driveaxle and apply grease to the inside of the axle boot . . .

22.4p . . . until the level is up to the end of axle

22.4q Position the CV joint assembly on the driveaxle, aligning the splines, then use a soft-face hammer to drive the joint onto the driveaxle until the snap-ring is seated in the groove

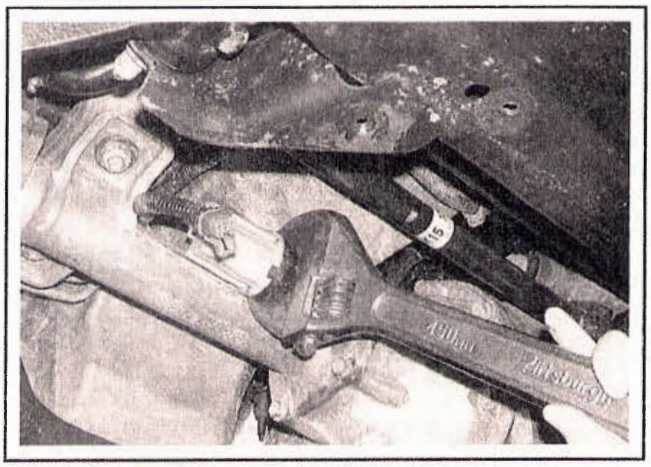


22.4r Seat the inner end of the boot in the groove and install the retaining clamp, then do the same on the other end of the boot - tighten boot clamps with the special tool (see illustration 22.3t)

23 Front axle shift motor (4WD models) - replacement

Refer to illustrations 23.3

1 Raise the front of the vehicle and support it securely on jackstands. Remove the splash shield from under the front axle.
2 Disconnect the electrical connector from the shift motor.
3 Unscrew the motor from the axle tube (see illustration).
4 Before installing the motor, coat the threads with RTV sealant. To install the motor, reverse the removal procedure.



23.3 The front axle shift motor simply unscrews from the axle tube

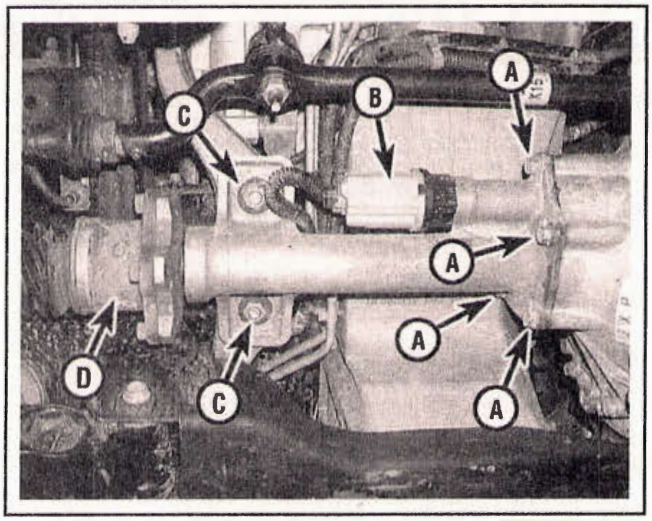
24 Right axleshaft, tube, bearing and shift fork (4WD and AWD models) - removal, component replacement and installation

1 Loosen the wheel lug nuts, raise the vehicle, place it securely on jackstands and remove the right front wheel.
2 Remove the splash shield from under the front axle.
3 Drain the lubricant from the front differential (see Chapter 1).

SELECTABLE 4WD SYSTEMS

Refer to illustration 24.7

4 Unbolt the right driveaxle from the axleshaft flange (see Section 21). Support the driveaxle out of the way with a piece of wire - don't let it hang by the outer CV joint.
5 Remove the front axle shift motor (see Section 23).
6 To prevent the differential carrier from cocking when the axle tube is removed, support it with a floor jack and a block of wood.
7 Remove the bolts securing the axle tube to the differential carrier (see illustration).
8 Remove the nuts that attach the tube to its support bracket.
9 Carefully remove the output shaft tube. Make sure you don't allow any of the components to fall out of the tube. Remove the shift sleeve, thrust washer and seal.
10 Mount the tube in a vise, with the jaws clamping on the flange. Remove the damper spring, clip, fork, sleeve, gear, thrust washer and shift shaft.
11 Remove the output shaft from the tube by striking the inside of the flange with a soft-faced hammer while holding the tube.
12 Using a large screwdriver, pry the deflector and seal from the tube.
13 Measure the installed depth of the axleshaft bearing, then remove the bearing using a slide hammer and bearing remover attachment.
14 Install the bearing, with the square shoulder facing in, to the original depth using a bearing driver or a socket with an outside diameter slightly smaller than that of the bearing.
15 Install a new seal and deflector. Lubricate the lips of the seal with multi-purpose grease.
16 Install the axleshaft, carefully driving it in with a soft-face hammer.



24.7 Right axleshaft tube details

A Tube-to-differential mounting bolts
B Front axle shift motor
C Axle tube-to-frame nuts
D Right inner CV joint

17 Install the thrust washer, gear, sleeve, shaft, shift fork, clip and spring.

18 Apply a bead of RTV sealant to the tube-to-differential housing mating surface.

19 Apply some grease to the thrust washer and install the washer. Install the gear and shift sleeve.

20 Carefully install the output shaft tube assembly and install the bolts. Tighten the bolts to the torque listed in this Chapter's Specifications.

21 Install the two tube-to-chassis nuts and tighten them to the torque listed in this Chapter's Specifications.

22 Install the driveaxle (see Section 21).

23 Install the front axle shift motor.

24 Fill the differential with the proper lubricant (see Chapter 1).

25 Install the splash shield.

26 Lower the vehicle and check for proper operation.

ALL-WHEEL DRIVE (AWD) SYSTEMS

27 Remove the stabilizer bar link (see Chapter 10).

28 Remove the bolts securing the axle shaft flange to the differential carrier.

29 Separate the axle shaft from the outer wheel drive shaft (see Section 21).

30 Use a brass punch and hammer to tap on the axle shaft and separate it from the differential case side gear.

31 Remove the nuts that attach the axle shaft to its support bracket.

32 Remove the inner axle shaft housing bolts from the differential.

33 Remove the inner axle shaft assembly and the axle shaft from the vehicle.

34 Remove the inner seal and bearing. A special tool is required to pull the bearing from the clutch shaft. Install a new bearing and seal.

35 Apply RTV sealant to the differential sealing surface and Install the inner axle shaft housing assembly. Allow the RTV sealant to set-up, install the bolts and tighten the bolts to the torque listed in this Chapter's Specifications.

36 Install the axle shaft to the support bracket, install the nuts and tighten them to the torque listed in this Chapter's Specifications.

37 Align the splines of the inner axle shaft with the splines on the differential side gear by slowly rotating the inner axle shaft. Tap the inner axle shaft with a mallet until the ring (clip) on the axle shaft is aligned with the groove in the differential case side gear.

38 Install the axle shaft to the inner flange. Install the axle shaft flange bolts and tighten them to the torque listed in this Chapter's Specifications.

39 Install the stabilizer link (see Chapter 10).

40 Fill the differential with the proper lubricant (see Chapter 1).

41 Install the splash shield.

42 Lower the vehicle and check for proper operation.

25 Axleshaft oil seals and bearings (front, 4WD models) - replacement

RIGHT SIDE

1 Refer to Section 24 for the right-side axleshaft seal and bearing replacement procedure.

LEFT SIDE

Refer to illustration 25.5

2 Loosen the wheel lug nuts, raise the vehicle, place it securely on jackstands and remove the left front wheel. Remove the splash shield from under the front axle.

3 Remove the left driveaxle (see Section 21).

4 Drain the lubricant from the front differential (see Chapter 1).

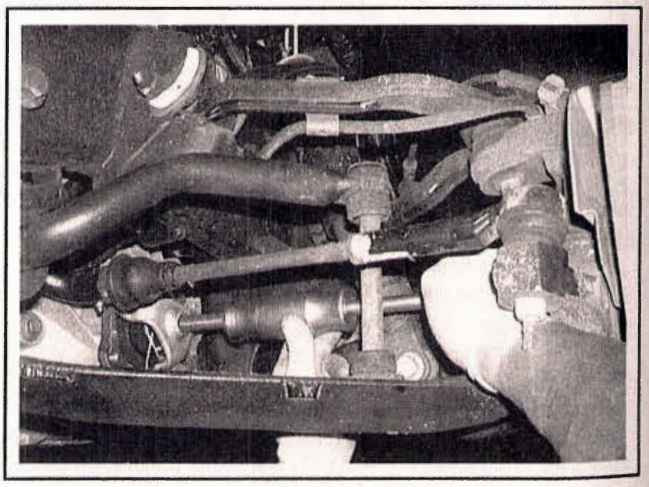
5 Pull the left axleshaft out with a slide hammer and adapter (see illustration).

6 Remove the deflector and seal from the differential.

7 Remove the bearing using a slide hammer and bearing remover attachment (see illustration 16.2).

8 Install the bearing, with the square shoulder facing in, using a bearing driver or a socket with an outside diameter slightly smaller than that of the bearing.

9 Install a new seal and deflector. Lubricate the lips of the seal with multi-purpose grease.



25.5 Removing the left front axleshaft with a slide hammer

10 Install the axleshaft, carefully driving it in with a soft-face hammer.

11 Fill the differential with the proper lubricant (see Chapter 1).

12 Install the driveaxle (see Section 21).

13 Install the splash shield.

14 Lower the vehicle and check for proper operation.

26 Front differential carrier - removal and installation

Refer to illustrations 26.10 and 26.13

1 Disconnect the cable from the negative terminal of the battery.

CAUTION:

On models equipped with the "Theftlock" audio system, be sure the lockout feature is turned off before performing any procedure which requires disconnecting the battery (see the information at the front of this manual).

2 Loosen the front wheel lug nuts, raise the front of the vehicle and support it securely on jackstands placed under the frame rails. Remove the wheels.

3 Remove the splash shield.

4 Drain the lubricant from the front differential (see Chapter 1).

5 Remove the front driveshaft (see Section 10).

6 Detach the inner ends of the driveaxles from the axleshaft flanges (see Section 21). Suspend the driveaxles with lengths of wire - don't let them hang by the outer CV joints.

7 Disconnect the electrical connector from the shift motor (see illustration 24.7).

8 Detach the vent hose from the differential housing.

9 Disconnect the relay rod from the idler arm and the Pitman arm (see Chapter 10). Move the relay rod forward, out of the way.

10 Remove the carrier rear mounting bolt and nut (see illustration).

11 Support the differential carrier with a floor jack. If a transmission jack adapter is available, use it - it will hold the assembly more securely.

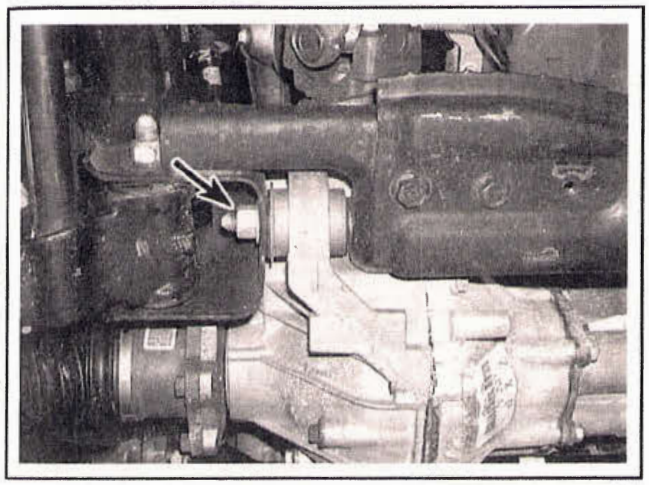
12 Remove the two nuts that attach the axle tube to the chassis (see illustration 24.7).

13 Remove the carrier front mounting bolt and nut (see illustration).

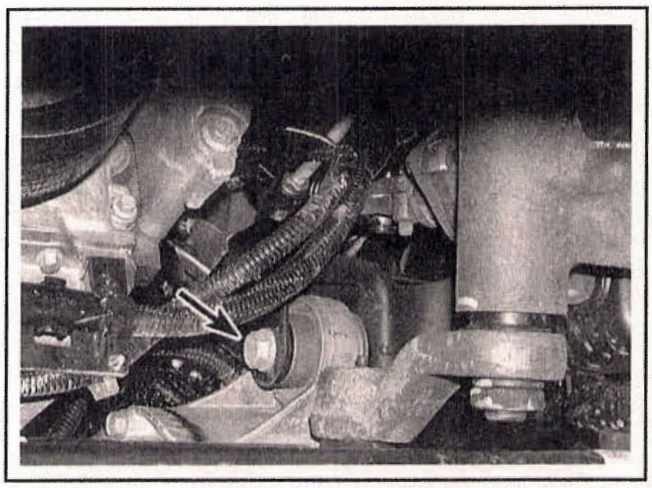
14 Slowly lower the jack and guide the carrier out from under the vehicle.

15 Check the bushings in the front and rear mounting bosses; if they are in need of replacement, take the carrier to an automotive machine shop or other qualified repair facility to have the old bushings pressed out and the new ones pressed in.

16 Installation is the reverse of removal. Tighten all fasteners to the proper torque values. Refill the differential with the proper lubricant (see Chapter 1).



26.10 Remove the nut and bolt (arrow) from the differential carrier rear mount



26.13 Remove the nut and bolt (arrow) from the differential carrier front mount

Specifications

General

Clutch hydraulic fluid type	See Chapter 1
Clutch disc lining thickness	1/16 inch (above rivet)
Inner CV joint length (see illustration 22.3r)	
1500 models	6-11/16 inches
2500 models	7 inches

Torque specifications — Ft-lbs (unless otherwise indicated)

Clutch	
Pressure plate-to-flywheel bolts	
V6	30
V8	52
Clutch release cylinder bolts	71 in-lbs
Driveshaft	
Front driveshaft U-joint strap bolts	19
Rear driveshaft	
U-joint strap bolts	19
Center support bearing bolts	30
Driveaxles (4WD models)	
Driveaxle inner joint-to-axleshaft flange bolts	58
Driveaxle hub nut	177
Rear axle	
Pinion shaft lock bolt	
8.6-inch axle	27
9.5-inch axle	37
Differential cover bolts	30
Front axle (4WD models)	
Right axleshaft tube/shaft-to-chassis nuts	75
Right axleshaft tube/shaft-to differential housing bolts	30
Differential housing-to-chassis bolts/nuts	75
Inner axle housing mounting bracket bolts	67
Shift motor	16