

Chapter 8 Clutch and drivetrain

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Specifications

Clutch

Type	Single plate, diaphragm spring with hydraulic actuation
Fluid type	Dot 3 brake fluid
Pedal	
height	195 to 205 mm (7.68 to 8.07 in)
free play	1 to 3 mm (0.04 to 0.12 in)
Wear limit of clutch surface to rivet head	0.3 mm (0.012 in)

Driveaxles

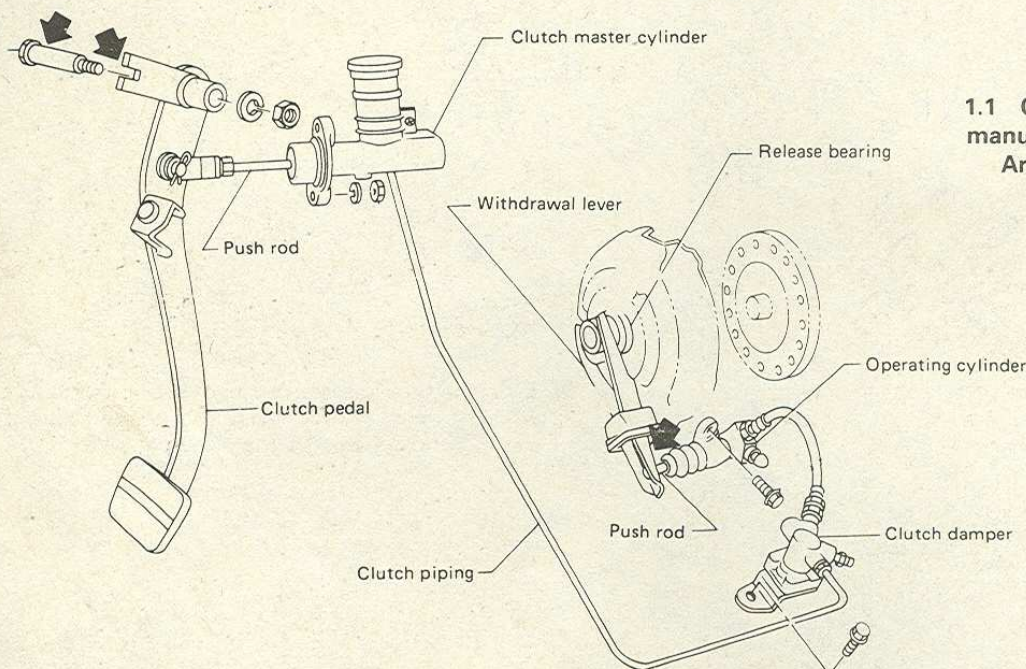
Tripod-Tripod type	
boot length — wheel side	111.5 mm (4.39 in)
boot length — carrier side	92.5 mm (3.642 in)
grease capacity	
wheel side	185 to 195 gm (6.52 to 6.88 oz)
differential carrier side	155 to 165 gm (5.47 to 5.82 oz)
Double Offset-Birfield type	
boot length — wheel side	94 mm (3.70 in)
boot length — carrier side	91 mm (3.58 in)
grease capacity	115 to 155 gm (4.06 to 5.47 oz)

Torque specifications

	Kg-m	Ft-lbs
Pressure plate bolts		
1987 and later turbo models	3.5 to 4.5	2.5 to 3.3
all others	2.2 to 3.0	16 to 22
Clutch hose to operating cylinder and clutch damper securing nut	1.7 to 2.0	12 to 14
Clutch tube flare nut	1.5 to 1.8	11 to 13
Damper cover to cylinder		
1984 thru 1986	0.3 to 0.6	2.2 to 4.3
1987 on	0.4 to 0.5	2.7 to 3.7
Clutch damper bolt	0.8 to 1.2	5.8 to 8.7
Bleeder screw	0.7 to 0.9	5.1 to 6.5
Operating cylinder bolt	3.1 to 4.1	22 to 30
Supply valve stopper	0.15 to 0.3	1.1 to 2.2
Master cylinder nut	0.8 to 1.2	5.8 to 8.7
Master cylinder push rod lock nut	0.8 to 1.2	5.8 to 8.7
Fulcrum pin nut	1.6 to 2.2	12 to 16
Clutch switch lock nut	1.2 to 1.5	9 to 11
Pedal stopper lock nut	0.8 to 1.2	5.8 to 8.7
Differential carrier to mounting insulator	10 to 12	72 to 87
Carrier mounting bracket to body		
bolt	3 to 4	22 to 29
nut	6 to 8	43 to 58
Carrier to suspension member	6 to 8	43 to 58
Rear stabilizer bar to suspension arm	1.6 to 2.1	12 to 15
Stabilizer bar clamp to suspension member	3.2 to 4.3	23 to 31

Torque specifications (continued)**Driveshaft to companion flange**

	Kg-m	Ft-lbs
turbo		
1984 thru 1987	6.0 to 7.0	43 to 51
1988 on	7.0 to 8.0	51 to 58
non-turbo	4.0 to 5.0	29 to 36
Wheel bearing lock nut	30 to 40	217 to 289



1.1 Clutch components used with the manual transmission equipped 300ZX. Arrows show lubrication points.

1 Clutch — general information*Refer to illustration 1.1*

The clutch is located between the engine and the transmission and its main components are the clutch disc, the pressure plate assembly and the release bearing. Other components which make up the hydraulically operated clutch system (see illustration) are the clutch pedal, clutch master cylinder, operating cylinder, and release lever.

The clutch pedal is connected to the clutch master cylinder by a short pushrod. The master cylinder and hydraulic reservoir are mounted on the engine side of the bulkhead in front of the driver.

Depressing the clutch pedal moves the piston in the master cylinder forward and forces hydraulic fluid through the clutch hydraulic pipe to the operating cylinder.

The piston in the operating cylinder actuates the clutch release lever by means of a short pushrod.

The other end of the release lever, located inside the clutch housing, is fork-shaped. This fork engages the clutch release bearing and forces the bearing against the pressure plate release fingers. Because access to the clutch components is difficult, any time either the engine or the transmission is removed, the clutch disc pressure plate assembly and release bearing should be carefully inspected and, if necessary, replaced. Since the clutch disc is the highest wear item, it should be replaced as a matter of course if there is any question as to its condition.

2 Clutch assembly — diagnosis

1 Due to the slow-wearing qualities of the clutch, it is not easy to decide when remove the transmission in order to check the wear on the friction lining. The only positive indication that something needs attention is when it starts to slip or when squealing noises on engagement indicate that the friction lining has worn down to the rivets.

2 A clutch will wear according to the way in which it is used. Intentional slipping of the clutch while driving — rather than the correct selection of gears — will accelerate wear. It is best to assume, however, that the friction disc will need renewal at about 40,000 miles (64,000 km).

3 The clutch cannot be worked on without removing either the engine or transmission. If repairs which would require removal of the engine are not needed, the quickest way to gain access to the clutch is by removing the transmission (Chapter 7A).

3 Clutch assembly — removal and installation*Refer to illustrations 3.3a, 3.3b, 3.4, 3.9 and 3.10*

1 With the transmission removed (Chapter 7), but before removing the pressure plate assembly from the flywheel, check that none of the metal fingers on the pressure plate are distorted or bent. If any damage is evident the pressure plate will need to be replaced.

2 The pressure plate need not be marked in relation to the flywheel as it can only be fitted one way due to the positioning dowels.

3 Loosen the attaching bolts in a diagonal pattern a little at a time until the spring pressure is relieved to keep from distorting the pressure plate (see illustration). If the flywheel begins to turn, insert a screwdriver through the starter motor opening (see illustration) and engage it in the teeth of the flywheel.

4 While supporting the pressure plate assembly, remove the bolts, then remove the pressure plate and clutch disc (see illustration).

5 Clean the pressure plate, flywheel mating surfaces and the bearing retainer outer surfaces of any oil and grease.

6 Inspect clutch assembly components (Section 4).

7 While servicing the clutch components, it is recommended that the release bearing be replaced.

8 Prior to clutch installation, apply a light coat of grease to the splines of the transmission input shaft.

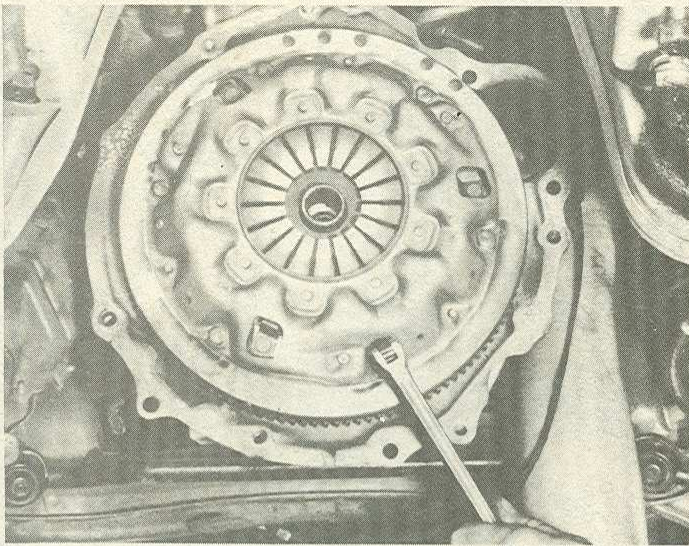
9 The clutch disc must be installed with the damper springs offset toward the transmission (see illustration). The flywheel side should be identified as such by stamped letters in the disc.

10 To install, hold the clutch disc against the flywheel and insert centering tool ST20600000 or an equivalent through the center (see illustration).

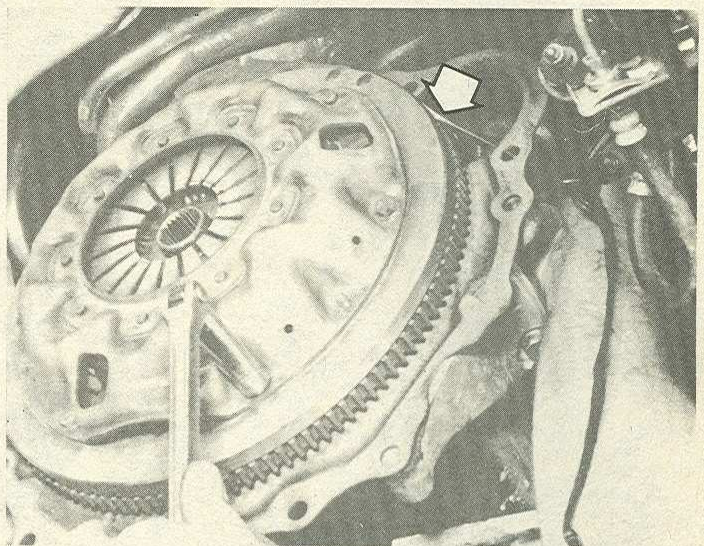
11 Locate the clutch pressure plate so that the cover engages with the dowels and install the mounting bolts.

12 Tighten the the mounting bolts in steps and in a diagonal pattern until they are tightened to specifications.

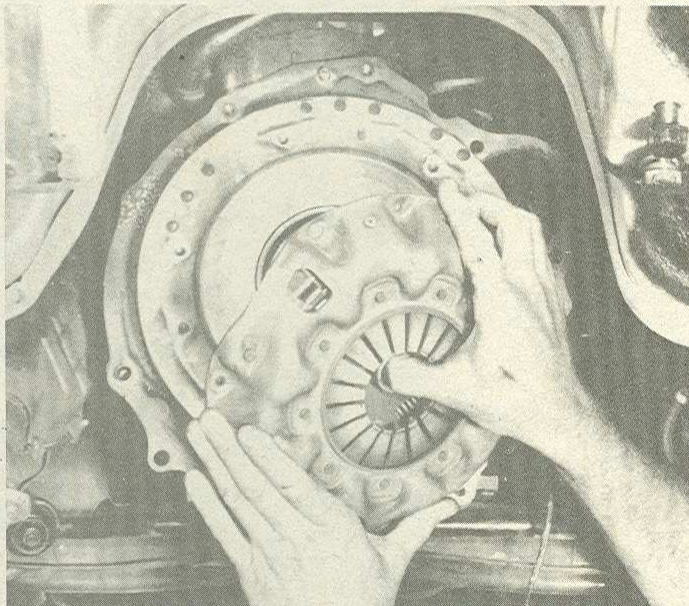
13 Install the transmission (Chapter 7A).



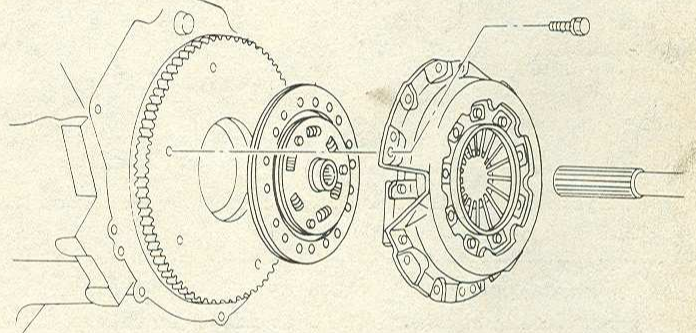
3.3a Loosen the clutch pressure plate attaching bolts a little at a time in a diagonal pattern so not to distort the pressure plate



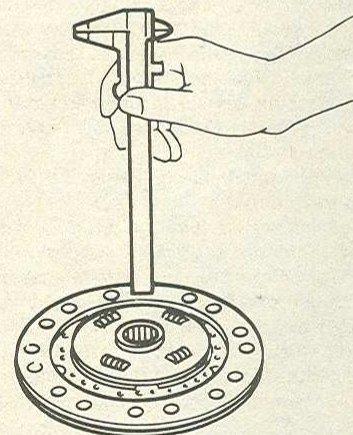
3.3b If the flywheel turns while removing the pressure plate, insert a screwdriver through the starter opening to wedge against the flywheel teeth



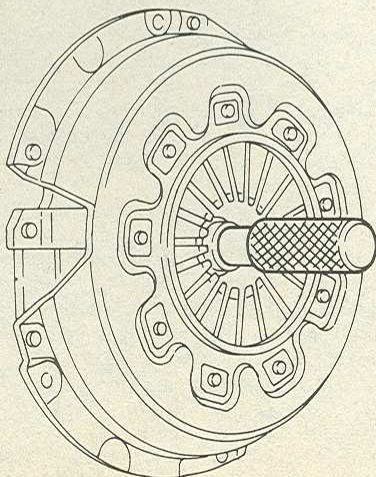
3.4 After removing the bolts, remove the pressure plate and clutch disc



3.9 Install the clutch disc with the damper spring offset toward the transmission



4.2 Measure the rivet to friction surface height and replace the disc if the lining is close to the wear limit

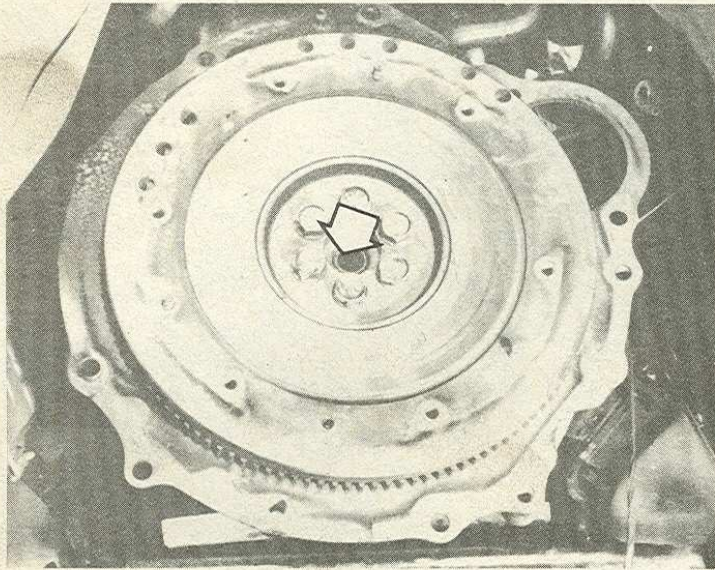


3.10 Align the clutch using an alignment tool

4 Clutch — inspection

Refer to illustration 4.2

- 1 Examine the pressure plate surface where it contacts the clutch disc. This surface should be smooth, with no scoring, gouging or warping. Check the pressure plate cover and fingers for damage. If any fault is found with the pressure plate assembly it must be replaced as a unit.
- 2 Inspect the clutch disc for lining wear. Check for loose or broken rivets or springs. Measure the lining wear limit above the rivets (see illustration) and compare to the specifications. If the lining material



5.3 Paint or scribe an alignment mark (arrow) to indicate the relationship of the flywheel and crankshaft

shows signs of breaking up or black areas where oil contamination has occurred, it should also be replaced.

3 Inspect the surface of the flywheel for rivet grooves, burned areas or scoring. If the damage is slight, the flywheel can be removed (Section 5) and reconditioned by a machine shop. If the damage is extensive, the flywheel should be replaced. Check that the ring gear teeth are not broken, cracked or seriously burned.

4 If any traces of oil are detected on the clutch components the source should be found and corrected. If oil is coming from the center of the flywheel, this indicates a failure of the rear oil seal (Chapter 2). Oil at the rear of the clutch assembly may indicate the need to replace the transmission input shaft seal (Chapter 7A).

5 Flywheel — removal, inspection and installation

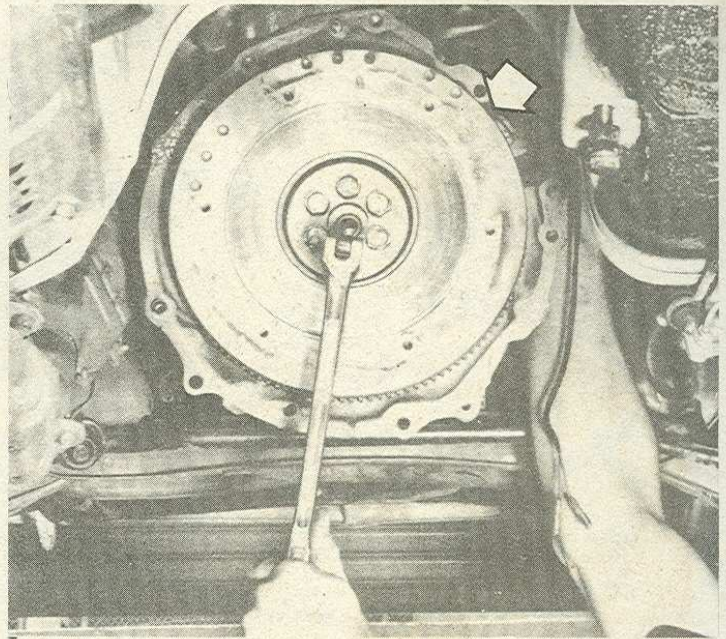
Refer to illustrations 5.3 and 5.4

- 1 Raise the vehicle and support it securely on jackstands.
- 2 Remove the pressure plate assembly and clutch disc (Section 3).
- 3 Use paint to make an alignment mark from the flywheel to the end of the crankshaft for reinstallation purposes (see illustration).
- 4 Remove the bolts which secure the flywheel to the crankshaft rear flange. If some difficulty is experienced in removing the bolts due to the movement of the crankshaft, wedge a screwdriver through the starter assembly opening to keep the flywheel from turning (see illustration).
- 5 Remove the flywheel from the crankshaft flange.
- 6 Clean any grease or oil from the flywheel. Inspect the surface of the flywheel for rivet grooves, burned areas or scoring. Light scoring may be corrected using emery cloth. Check for any cracked or broken teeth. Lay the flywheel on a flat surface and use a straightedge to check for warpage.
- 7 Clean the mating surface surfaces of the flywheel and the crankshaft.
- 8 Position the flywheel against the crankshaft, matching the alignment marks made during removal. Before installing the retaining bolts, put a dab of sealing agent on the threads of the bolts and tighten the bolts finger tight.
- 9 Wedge a screwdriver through the starter motor opening to keep the flywheel from turning as you tighten the bolts.
- 10 The remainder of the installation is the reverse of the removal procedures.

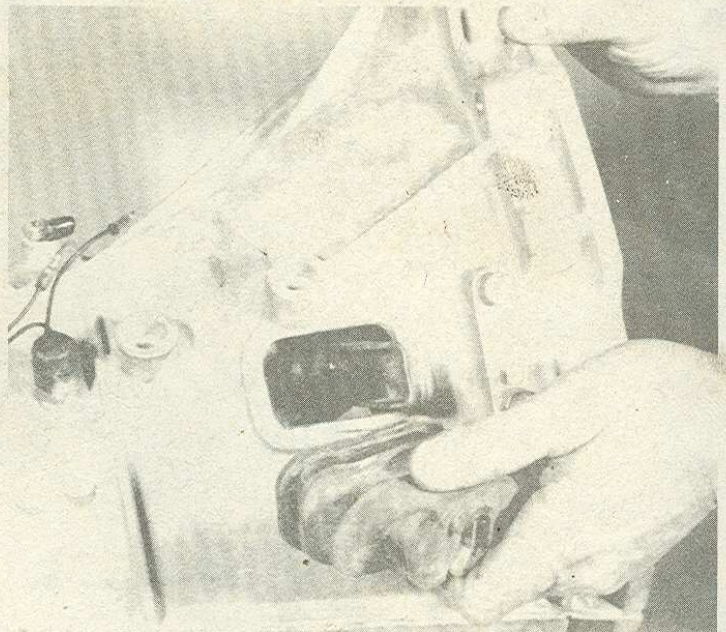
6 Clutch throw out bearing — replacement

Refer to illustrations 6.3, 6.4, 6.5, 6.6, 6.7, 6.8 and 6.9

- 1 The sealed release bearing, although designed for long life, is worth



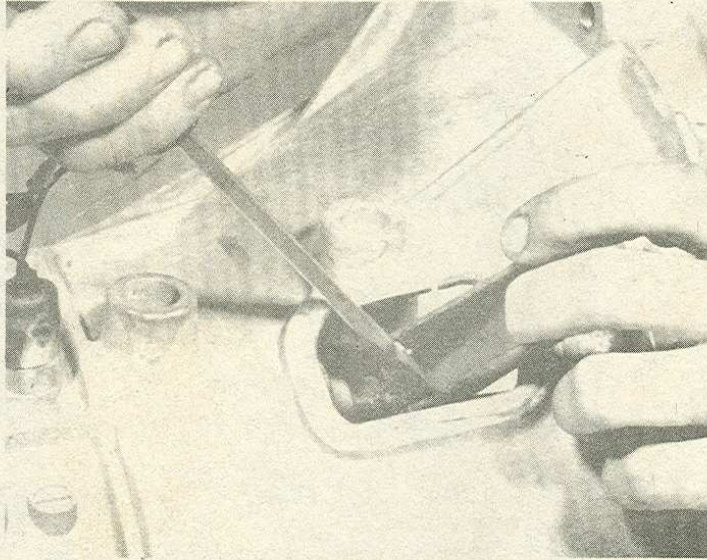
5.4 Wedge a screwdriver (arrow) into a tooth of the flywheel to keep it from turning



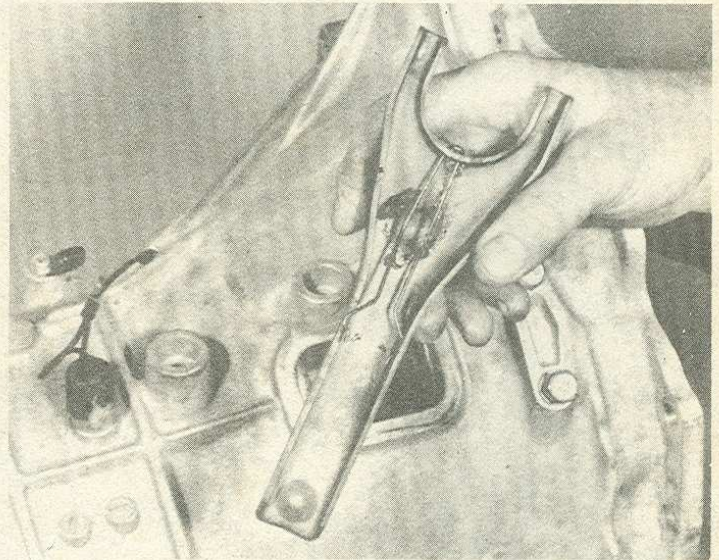
6.3 Remove the rubber dust boot from the transmission housing

replacing at the same time the other clutch components are being replaced or serviced.

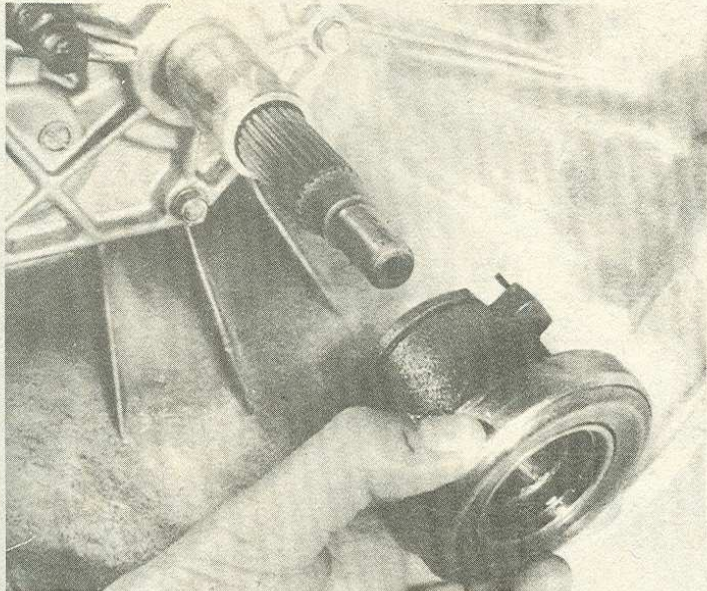
- 2 Deterioration of the release bearing should be suspected when there are signs of grease leakage or if the unit is noisy when spun with the fingers.
- 3 With the transmission removed (Chapter 7) remove the rubber dust boot which surrounds the release lever at the bellhousing opening (see illustration).
- 4 Using a screwdriver, detach the retainer spring from the ball-pin in the front transmission cover (see illustration).
- 5 Remove the release lever (see illustration).
- 6 The clutch release bearing and sleeve assembly can now be removed (see illustration).
- 7 If necessary, remove the release bearing from its sleeve using a puller (see illustration).
- 8 Press on the new bearing, but apply pressure only to the center track (see illustration).
- 9 Apply multi-purpose grease to the internal recess of the release bearing sleeve (see illustration).



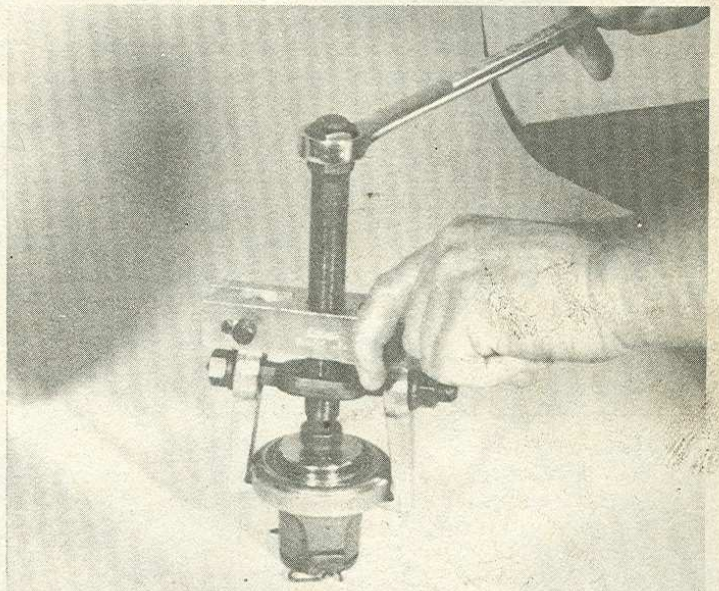
6.4 Use a screwdriver to unhook the spring from the ball-pin in the front of the transmission



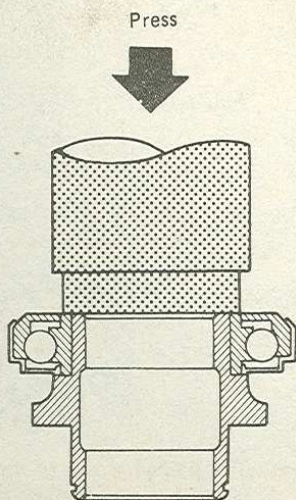
6.5 Lift the release lever from the transmission housing after unhooking the retaining spring



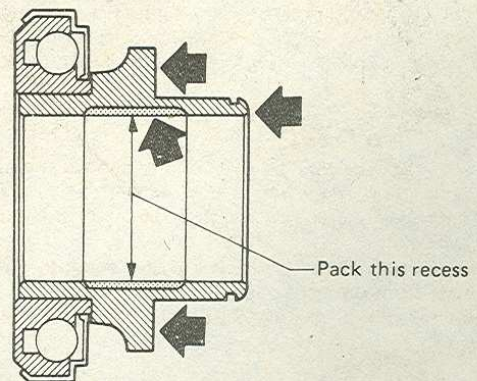
6.6 Remove the release bearing and sleeve by pulling it off the input shaft



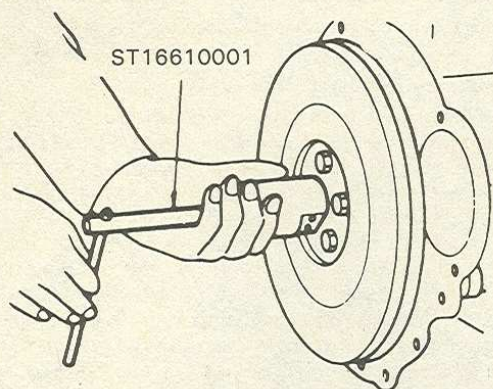
6.7 Separate the release bearing from the sleeve using a puller



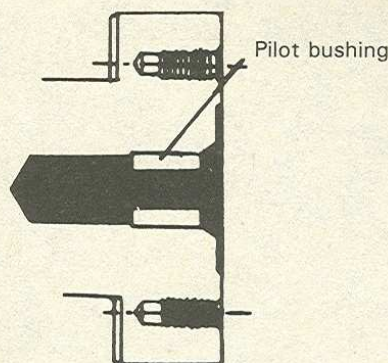
6.8 Press on the new bearing, making sure you apply pressure only to the center track



6.9 Pack the release bearing with grease and apply a thin coat of grease to the points indicated by arrows



7.2a A pilot bushing puller, such as the Nissan tool shown, is recommended to remove the pilot bushing



7.2b Pack the area behind the bushing with grease to force the bushing out of the crankshaft

10 Apply grease to the pivot points of the clutch release lever, the sliding surface of the bearing sleeve and the splines on the transmission input shaft. **Note:** Apply only a thin coat of grease to these points, as too much grease will run onto the friction plates when hot, causing damage to the clutch disc surfaces.

11 Install the transmission.

7 Pilot bearing — replacement

Refer to illustrations 7.2a and 7.2b

1 With the transmission removed (Chapter 7) remove the clutch disc and pressure plate assembly as described in Section 3.

2 A special tool is recommended to remove the pilot bushing (see illustration). This tool can be obtained from a Nissan dealer or from an auto parts store. If the tool is not available, pack the recess behind the bushing with grease (see illustration). Insert a rod the same diameter

the bushing inside diameter. Strike the rod with a hammer the grease will force the bushing from the recess.

3 Before installing the new bushing, thoroughly clean the bushing recess.

4 Using an appropriate sized socket or piece of tubing, insert the new bushing into the recess.

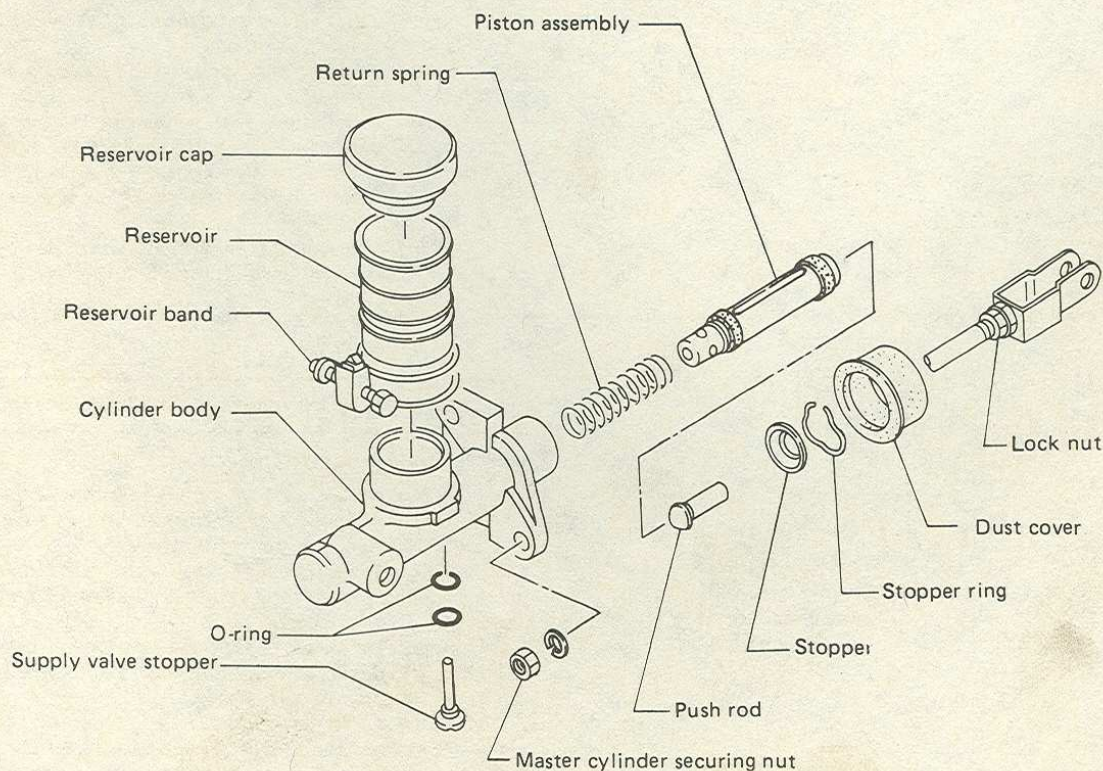
5 Reinstall the clutch assembly and transmission.

8 Clutch master cylinder — removal and installation

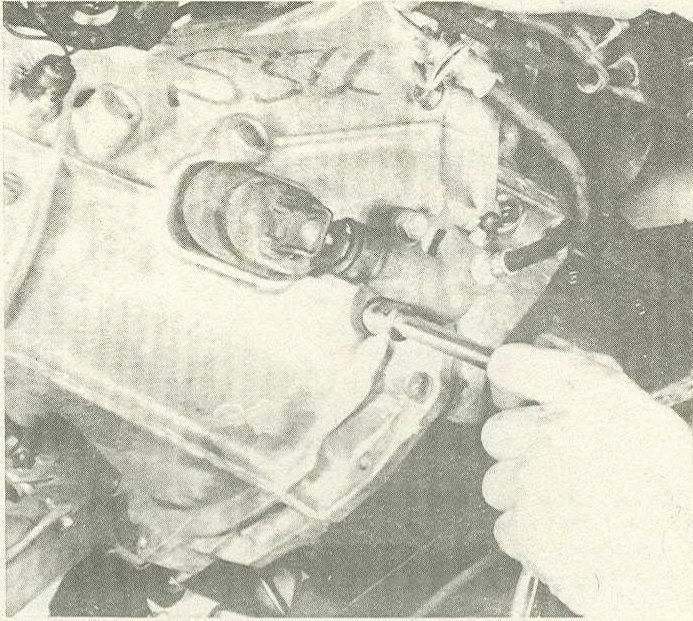
Refer to illustration 8.1

Caution: Hydraulic fluid can damage paint, so take care not to spill any on the painted surfaces of the car.

1 From inside the vehicle disconnect the master cylinder pushrod from the pedal arm (see illustration).

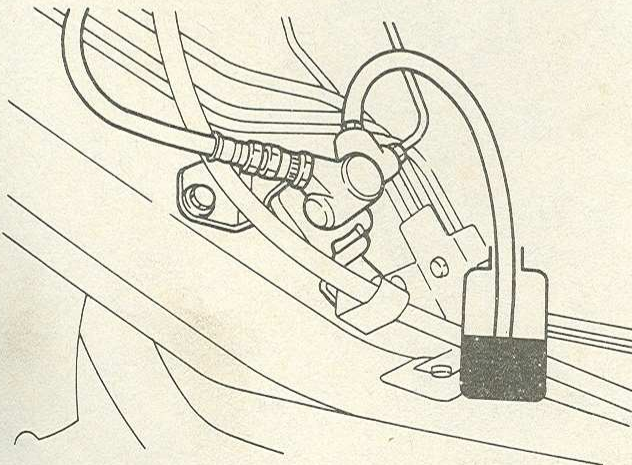


8.1 Exploded view of the clutch master cylinder



9.6 The clutch operating cylinder is attached to the transmission housing by two bolts

- 2 Place newspapers or rags under the master cylinder to catch any spilled hydraulic fluid.
- 3 Siphon the reservoir or disconnect the fluid line from the master cylinder and drain the fluid.
- 4 For clearance, remove the windshield washer tank by lifting it straight up from its retaining bracket, then position it so it will not interfere with the removal of the master cylinder.
- 5 Remove the master cylinder flange mounting bolts and withdraw the unit from the engine compartment.
- 6 To reinstall place the master cylinder flange onto the bulkhead mounting bolts and install the nuts.
- 7 From inside the vehicle attach the master cylinder pushrod to the pedal arm.
- 8 Fill the master cylinder reservoir with hydraulic fluid (Chapter 1).
- 9 Adjust the clutch pedal (Section 12).
- 10 Bleed the clutch hydraulic system (Section 11).
- 11 Remove the newspapers or rags from under the master cylinder. Be careful not to drip any fluid onto the paint.
- 12 Replace the windshield washer fluid reservoir by sliding it into its retaining bracket.



11.4 Bleed the clutch damper by attaching a hose to the damper bleed valve and inserting the hose into a bottle containing a few inches of clean brake fluid. The fluid will keep air from re-entering the system

9 Clutch operating cylinder — removal and installation

Refer to illustration 9.6

- 1 In order to prevent excessive loss of hydraulic fluid when the operating cylinder hose is disconnected, remove the clutch master cylinder reservoir cap and place a piece of polyethylene sheeting over the open reservoir. Screw on the cap and thus create a vacuum which will stop the fluid from running out of the open hose.
- 2 Raise the vehicle and support it securely on jackstands.
- 3 Loosen the clutch line flare nut at the bracket mounted on the body sidemember.
- 4 Remove the locking clip from the bracket and disengage the hose.
- 5 Remove the clutch hose from the operating cylinder.
- 6 Remove the two bolts which secure the operating cylinder to the clutch housing (see illustration). The operating cylinder can now be removed.
- 7 Lubricate the operating cylinder push rod at the point where it contacts the operating arm.
- 8 Install the operating cylinder onto the transmission housing and tighten the bolts.
- 9 Install the clutch hose on the operating cylinder.
- 10 Slide the hose into its retaining bracket and tighten the connection. Secure the hose to the bracket with the locking clip.
- 11 Remove the polyethylene sheeting from the clutch reservoir and replace the cap.
- 12 Bleed the hydraulic system (Section 11).
- 13 Remove the jackstands and lower the vehicle.

10 Clutch damper — removal and installation

- 1 Raise the vehicle and support it securely on jackstands.
- 2 In order to prevent excessive loss of hydraulic fluid when the clutch damper hose is disconnected, remove the clutch master cylinder reservoir cap and place a piece of polyethylene sheeting over the open reservoir. Screw on the cap and thus create a vacuum which will stop the fluid from running out of the open hose.
- 3 Using a flare nut wrench, disconnect the hydraulic hose from the reservoir at the clutch damper.
- 4 Disconnect the hydraulic hose to the clutch operating cylinder at the clutch damper.
- 5 Remove the bolts and lift the damper from the body.
- 6 Install the damper to the body and tighten the bolts.
- 7 Install the hoses to the damper and tighten with a flare nut wrench.
- 8 Remove the polyethylene sheeting from the clutch reservoir and replace the cap.
- 9 Bleed the hydraulic clutch system (Section 11).
- 10 Remove the jackstands and lower the vehicle.

11 Clutch hydraulic system — bleeding procedure

Refer to illustrations 11.4 and 11.7

- 1 Raise the vehicle and support it securely on jackstands.
- 2 Bleeding will be required whenever the hydraulic system has been opened allowing air to enter the system.
- 3 Fill the fluid reservoir with clean brake fluid. Never use fluid which has been drained from the system or has been bled out on a previous occasion.
- 4 Fit a rubber or plastic tube to the bleed screw on the clutch damper (see illustration) and immerse the open end of the tube in a glass jar containing an inch or two of fluid.
- 5 Open the bleed screw about half a turn and have an assistant depress the clutch pedal fully. Tighten the bleed screw and then have the clutch pedal slowly released. Repeat this sequence of operations until air bubbles are no longer ejected from the open end of the tube beneath the fluid in the jar.
- 6 After two or three strokes of the pedal, check that the fluid level in the reservoir has not fallen too low. Keep it topped-up with fresh fluid.

- 7 Repeat Steps 4 through 6 on the clutch operating cylinder (see illustration).
- 8 Remove the jackstands and lower the vehicle.

12 Clutch pedal — removal, installation and adjustment

Refer to illustration 12.10

- 1 Remove the lower instrument trim piece (Chapter 11), located directly below the steering column.
- 2 Disconnect the master cylinder pushrod from the pedal by prying off the snap-ring and withdrawing the clevis pin.
- 3 Pry off the E-ring from the adjusting rod and disengage the rod from the pedal.
- 4 Remove the fulcrum bolt.
- 5 Disengage and remove the return spring and assist return spring.
- 6 Remove the assist spring clutch lever.
- 7 Clean the parts in solvent and replace any that are damaged or excessively worn.
- 8 Installation is the reverse of the removal procedure. **Note:** During installation, apply multi-purpose grease to all friction surfaces.
- 9 Following installation, check the height and free play of the clutch pedal.

Adjustment

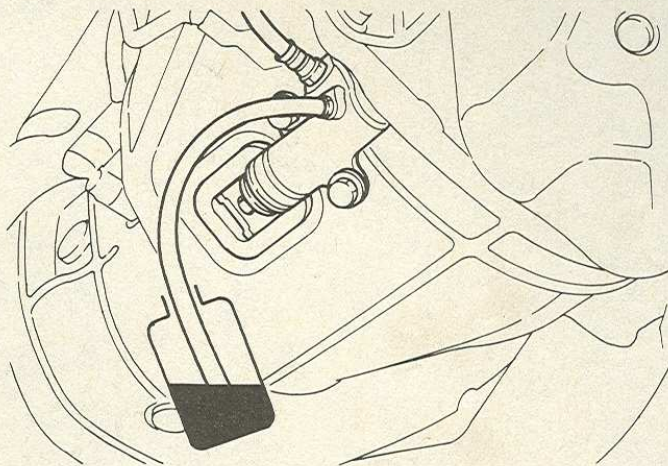
- 10 It is important to have the clutch pedal height and free play correctly adjusted (see illustration). The height of the pedal is the distance it stands away from the floor (distance H in illustration 12.10) and the free play is the pedal slack or the distance the pedal can be depressed before it begins to have any effect on the clutch (measurement A in illustration 12.10). Both of these measurements can be found in the Specifications of this Chapter. If these measurements are not as specified, the clutch pedal should be adjusted.
- 11 Ensure that the pedal height is correct. If this distance is not correct, loosen the locknut on the pedal stopper or clutch switch. Turn the pedal stopper or clutch switch in toward the pedal until the distance between the top center of the pedal pad and the floor panel is within specifications, then retighten the pedal stopper/clutch switch locknut. **Note:** When making this adjustment, be sure that the pedal is not depressed and that the pushrod is not pushed beyond its free play.
- 12 Check the pedal free play and correct if not within specifications. To correct free play, loosen the push rod lock nut and turn the push rod until free play of the pedal is within specifications. Tighten the push rod locknut.
- 13 Following all adjustments, fully depress and release the pedal several times to ensure that the clutch linkage is operating smoothly and that there is no binding or squeaks.
- 14 Install the lower trim panel.

13 Clutch safety switch — checking and replacement

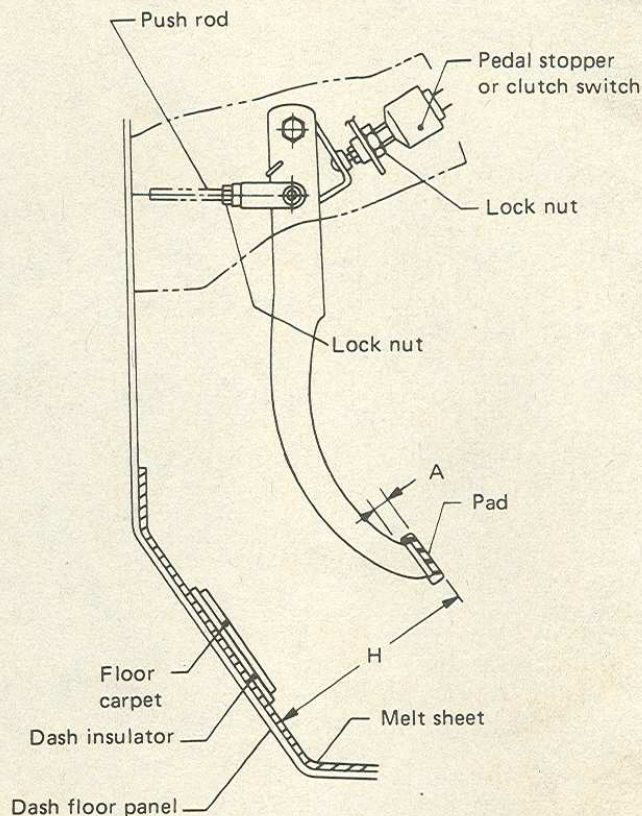
- 1 Remove the dash lower trim panel (Chapter 11).
- 2 Locate the clutch switch on the top of the clutch pedal and disconnect the electrical connector.
- 3 Use a voltmeter to test for continuity. There should be no continuity if the pedal is up, but it should show continuity when the pedal is depressed.
- 4 Check clutch pedal height and free play (Section 12). If the height and free play are correct and the switch does not pass the continuity test, replace the switch.
- 5 Replace the switch by loosening the switch locking nut and turning the switch until the switch is released from its retaining bracket.
- 6 Install the switch and tighten the switch locking nut.
- 7 Connect the switch electrical connector.
- 8 Adjust pedal height and free play.
- 9 Replace the lower trim panel.

14 Drivetrain — general information

A single-piece driveshaft is installed on all models. The driveshaft is supported at the rear by the pinion flange of the differential and at



11.7 Bleed the clutch operating cylinder using the same method as described for the damper



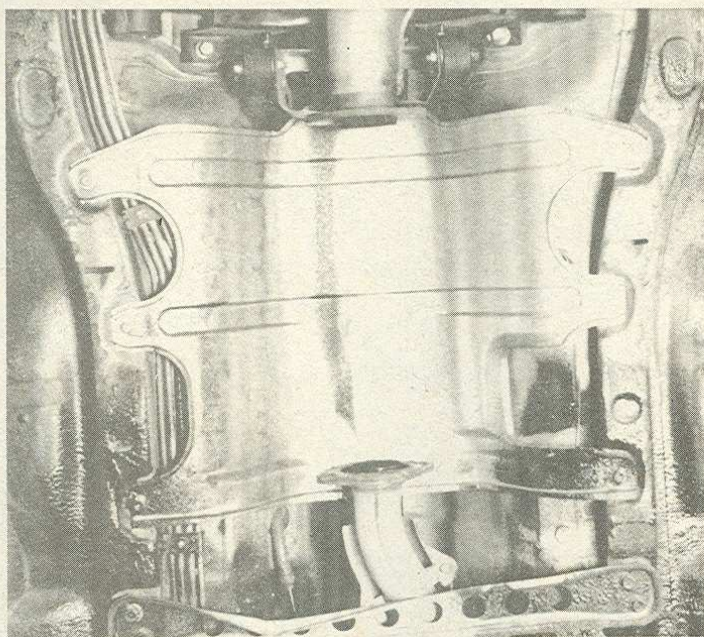
12.10 The adjustment heights of the clutch pedal components

A 0.04 to 0.12 in
H 7.68 to 8.07 in

the front by the transmission rear extension housing. It incorporates two universal joints, one at either end of the shaft.

The driveshaft is balanced during manufacture and, in the case of worn universal joints, a replacement driveshaft will have to be purchased. When removing the driveshaft for other than replacement reasons, the yoke-to-companion flange relationship must be marked so the driveshaft can be reinstalled in the exact position it was prior to removal.

The main rear axle component is the hypoid final drive and differential unit, which is fixed to the body at the rear using a cross-bracket located in rubber mountings. The front of the differential is mounted to the



15.3 Remove the heat shield and the rear cross bar

suspension crossmember.

Because of the complexity and critical nature of the differential adjustments, as well as the special equipment needed to perform the operations, we recommend any disassembly of the differential be done by a Nissan dealer or other qualified mechanic.

The power is transferred from the differential to the rear wheels by the driveaxles, which rotate through two universal joints, one attached to the differential and the other to the rear hub. The type of driveaxle used on Turbo ZX models is of the constant velocity Double offset-Birfield universal joint type, while the axle used on non-Turbo models is of the Tripod-Tripod universal joint type.

The rear hub/axle stub assemblies incorporate two rear wheel bearings, and are mounted on the trailing ends of the suspension arms.

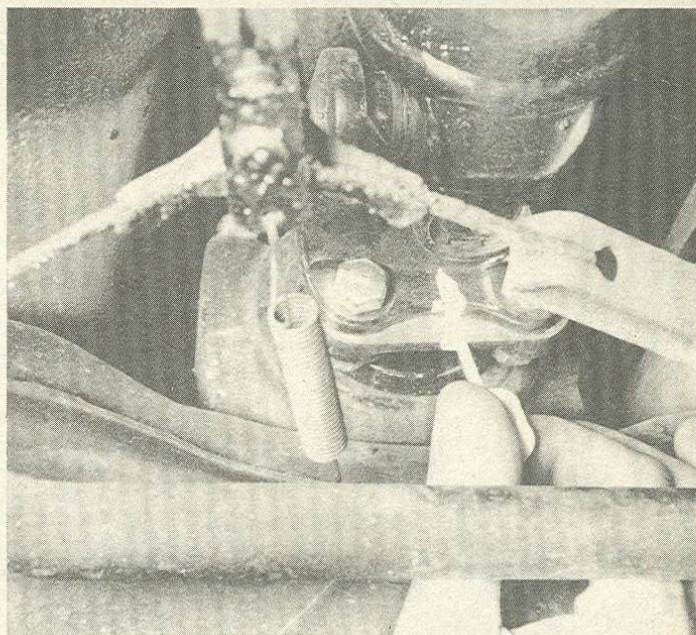
15 Driveshaft — removal, installation and balancing

Refer to illustrations 15.3, 15.7 and 15.8

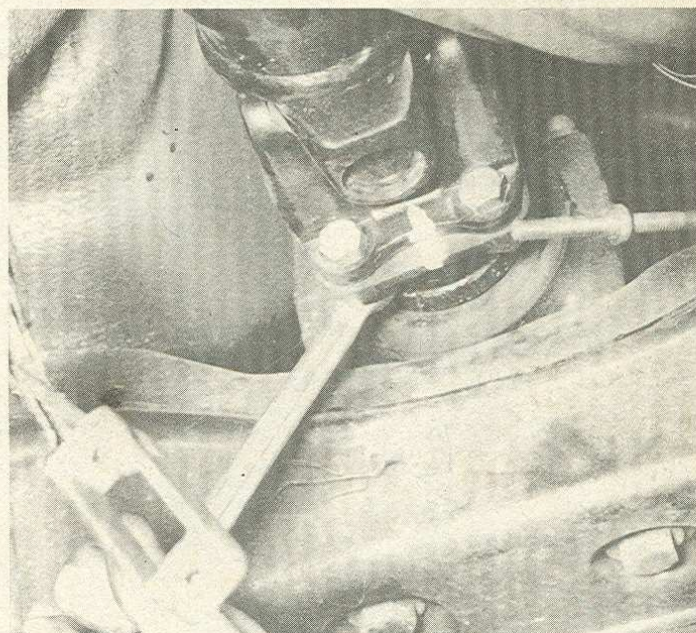
- 1 Raise the vehicle and support it securely on jackstands.
- 2 Remove the catalytic converter (Chapter 4).
- 3 Remove the heat shield above the catalytic converter (see illustration) and remove the rear cross bar.
- 4 Loosen the emergency brake cable adjuster and remove the adjuster from the cable (Chapter 9).
- 5 Disconnect the emergency brake cable spring from the rear crossmember.
- 6 Remove the rear sway bar-to-frame hold down nuts and let the sway bar hang down (Chapter 10).
- 7 Mark the driveshaft and pinion flanges with paint (see illustration) so the shaft will be installed in its original position. **Note:** *The driveshaft and companion flange are balanced at the factory and must be installed in their original alignment.*
- 8 Loosen the rear flange nuts. It is not necessary to hold the bolt heads since they are held by the flange casting (see illustration). Remove the bolts and lower the driveshaft down while sliding it rearward from the transmission extension housing.
- 9 Installation is the reverse of the removal procedures. Be sure to match up the aligning marks on the flanges.

Correcting unbalanced shaft

- 10 Remove the driveshaft from the vehicle following the procedure



15.7 The driveshaft is balanced so mark its relation to the carrier flange so it can be reinstalled in its original location



15.8 The flange head bolts wedge against the flange, making removal a one wrench operation

above and remove any undercoating or foreign material which could affect driveshaft balance.

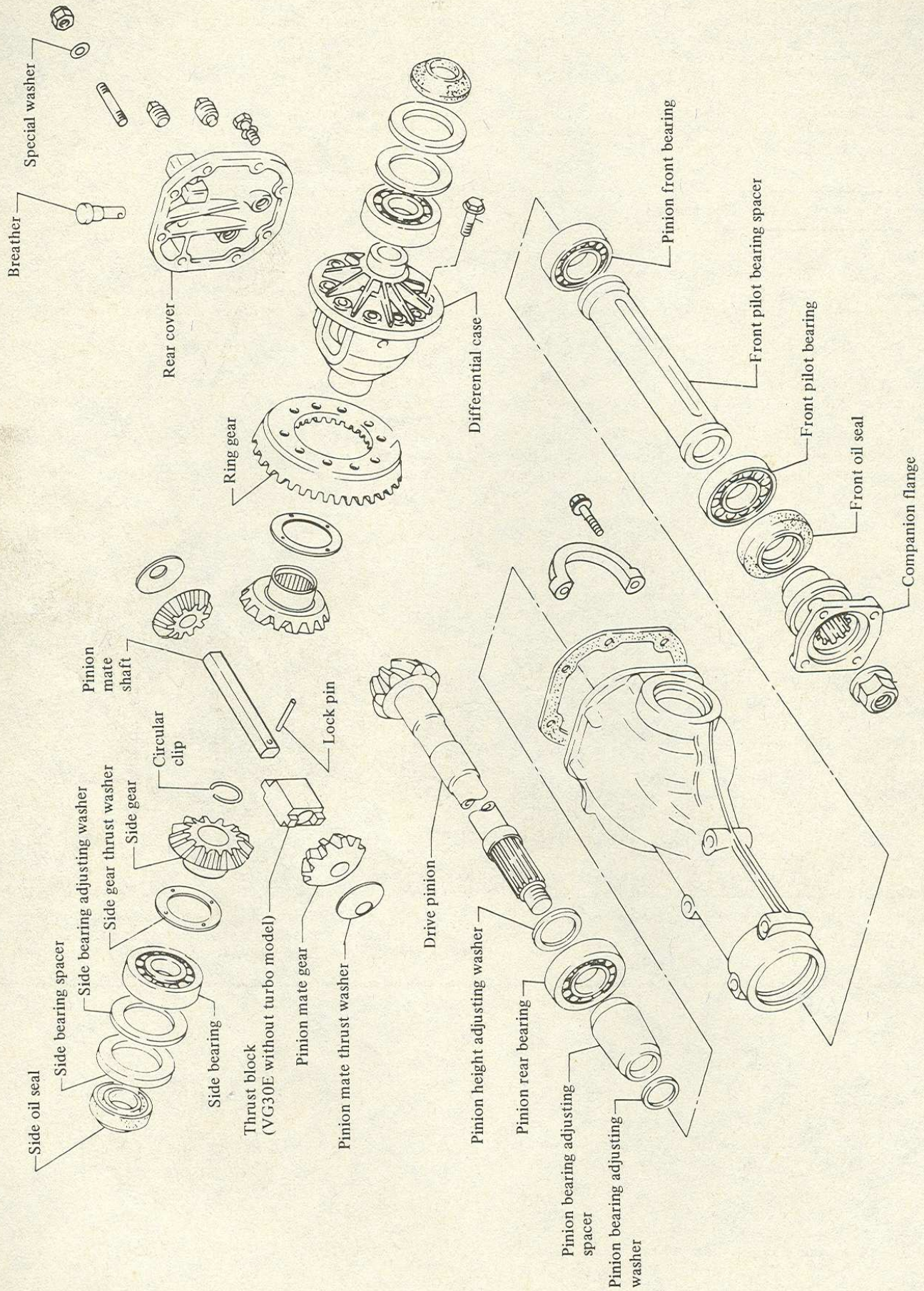
- 11 Reinstall the driveshaft and road test. If the vibration still occurs, disconnect the driveshaft at the differential carrier companion flange and rotate the flange 180° and reinstall the driveshaft.

- 12 Install the driveshaft and road test the vehicle. If the vibration still exists, replace the driveshaft assembly.

16 Differential carrier — general information

Refer to illustration 16.1

The main rear axle component is the hypoid final drive and differential unit (see illustration), which is fixed to the body at the rear using a



16.1 Exploded view of the differential carrier

cross-bracket located in rubber mountings. The front of the differential is mounted to the suspension crossmember.

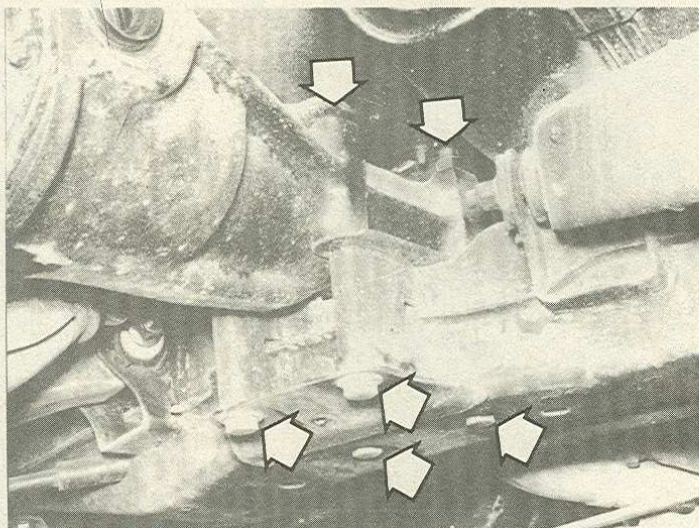
Because of the complexity and critical nature of the differential adjustments, as well as the special equipment needed to perform the operations, we recommend any disassembly of the differential be done by a Nissan dealer or other qualified mechanic.

The power is transferred from the differential to the rear wheels by the driveaxles, which rotate through two universal joints, one attached to the differential and the other to the rear hub.

17 Carrier assembly — removal and installation

Refer to illustration 17.8

- 1 Raise the rear of the vehicle, support it securely on jackstands and drain the differential oil (Chapter 1).
- 3 Disconnect the driveshaft from the differential pinion flange (Section 15).
- 4 Disconnect the driveaxles and remove them from the vehicle (Section 19).
- 5 Remove the catalytic converter heat shield.
- 6 Position a jack under the differential carrier and raise it just enough to support it.
- 7 Remove the carrier mount.
- 8 Remove the bolts securing the front of the differential unit to the suspension crossmember (see illustration). The differential unit can now be carefully lowered and removed from the vehicle.



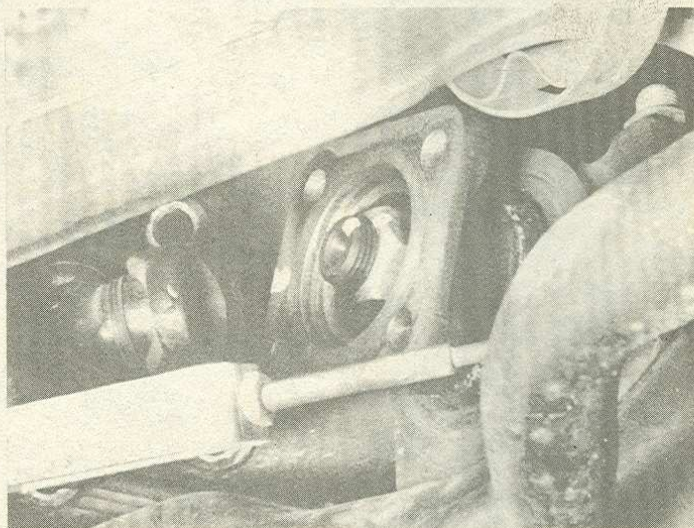
17.8 Remove the through bolts securing the carrier to the suspension crossmember (arrows)

- 9 Install the carrier using a floor jack to raise it into place.
- 10 Install the through bolts and attach the carrier to the suspension crossmember. Tighten all fasteners to specifications.
- 11 Install the carrier mount.
- 12 Install the catalytic converter heat shield.
- 13 Install the driveaxles.
- 14 Install the driveshaft.
- 15 Remove the jackstands and lower the vehicle.

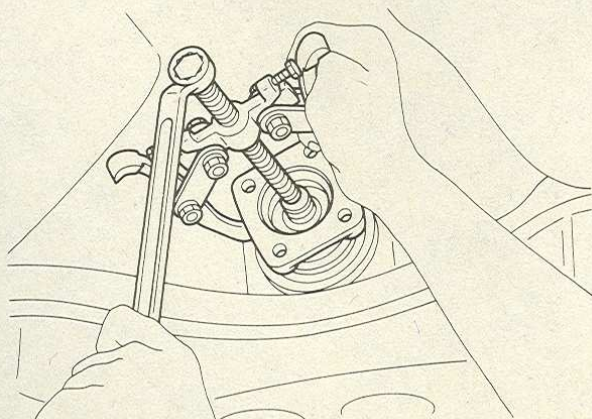
18 Carrier front oil seal — replacement

Refer to illustrations 18.4, 18.6, 18.7 and 18.8

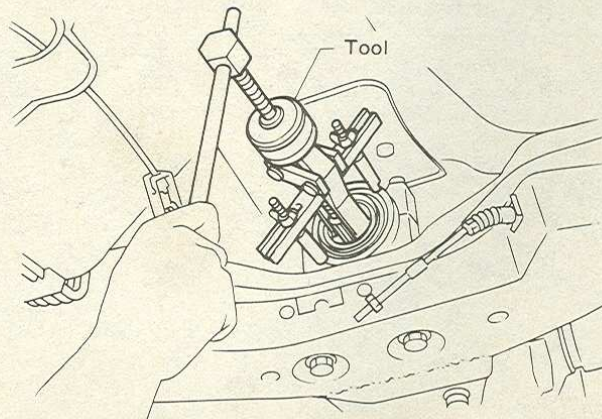
- 1 Raise the vehicle and support it securely on jackstands.
- 2 Place a container beneath the differential, then remove the drain plug and allow the oil to drain from the unit. Install the drain plug.
- 3 Disconnect the rear of the driveshaft and wire the shaft to the body out of the way (Section 15).
- 4 Mark the relation of the pinion flange retaining nut to the carrier with paint (see illustration).
- 5 Use a large adjustable wrench to hold the flange while you loosen the pinion nut. Count the number of turns it takes to remove the nut and record it for installation.
- 6 Using a puller, withdraw the pinion flange from the differential unit (see illustration).
- 7 Remove the oil seal by driving in one side of the seal and levering it out or use a seal puller tool ST33290001 (see illustration).



18.4 Mark the relation of the pinion nut to the carrier input shaft and count the number of turns it takes to remove the nut. Record the number of turns for installation



18.6 Use a puller to remove the carrier pinion flange



18.7 Using a seal removal tool to remove the differential carrier front seal

- 8 Install the new oil seal. The lips of the oil seal must face inwards. Using a suitable socket or Nissan Tool KV38100500 (see illustration), carefully drive the new oil seal into the axle housing recess until the face of the seal is flush with the housing.
- 9 Install the pinion flange and thrust washer onto the drive pinion and thread on the pinion nut. Count the turns of the nut while tightening it. Turn the nut the exact number of turns it took to remove it, then turn the nut one-quarter turn more to insure proper tightness.
- 10 Connect the driveshaft to the carrier companion flange.
- 11 Refill the differential with the proper grade and quantity of lubricant.
- 12 Remove the jackstands and lower the vehicle.

19 Carrier side oil seal — replacement

Refer to illustrations 19.4 and 19.5

- 1 Raise the rear of the vehicle and support it securely on jackstands. Place the jackstands under the suspension arms to compress the suspension system when the vehicle is lowered onto the jackstands.
- 2 Remove the driveaxle from the differential (Section 19).
- 3 Use a pry bar or large screwdriver to pry the side flange out of the differential. While prying, keep one hand on the flange to keep it from dropping out and possibly being damaged.
- 4 Pry the oil seal out with a screwdriver (see illustration), being careful not to scratch or damage the surface of the bore.
- 5 Drive in a new seal using Nissan Tool KV38100200 or a suitable socket (see illustration).
- 6 Apply grease to the cavity between the oil seal lips.
- 7 Install the side flange.
- 8 Reinstall the driveaxle.
- 9 Open the filler plug on the carrier housing and check the fluid level (Chapter 1).
- 10 Remove the jackstands and lower the car.

20 Driveaxle — general information

Refer to illustration 20.1

The differential transfers power to the rear wheels by driveaxles which rotate through two universal joints (see illustration).

Two types of constant velocity (CV) joints are employed, and the type used on your vehicle depends on whether it is a Turbo model or not. The Double offset-Birfield type is used on Turbo models and consists of caged ball bearings placed between the inner race and the cage. This assembly is then housed in a slide joint housing and capped off with a plug and covered with a rubber boot. The non-Turbo models are equipped with a "Tripod-Tripod" type of bearing. This type employs needle bearings which are part of a spider assembly, splined onto the shaft and housed inside a slide joint housing. The bearing is held in place by a spring and end cap. The shaft end is covered with a rubber boot filled with lubricant.

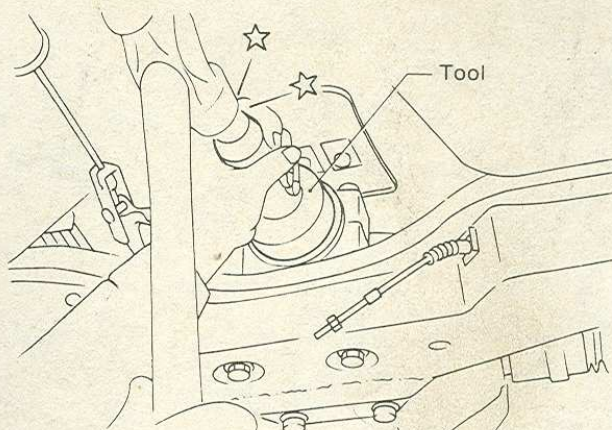
21 Driveaxle boot replacement

As of the writing of this manual no boot replacement parts could be obtained. It was necessary to buy the complete driveaxle from a Nissan dealer. Check with your local parts store for replacement parts availability.

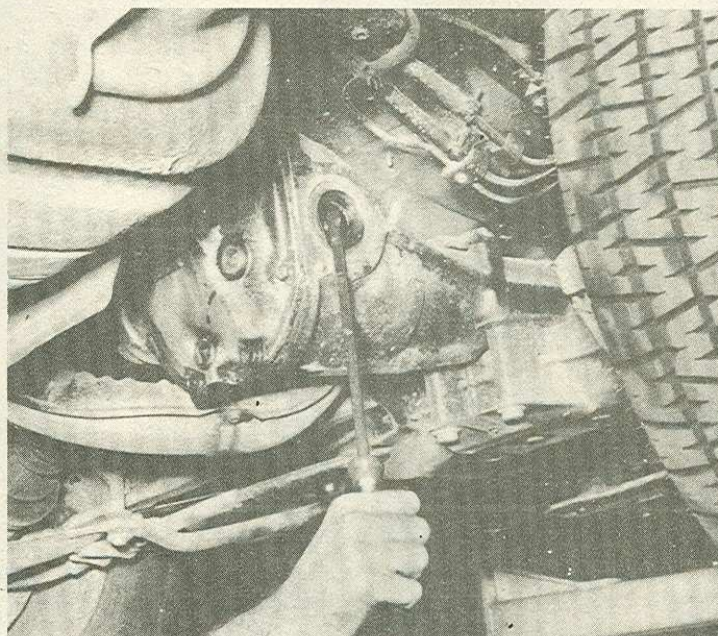
22 Driveaxle — removal and installation

Refer to illustrations 22.2a, 22.2b, 22.3a, 22.3b, 22.4 and 22.5

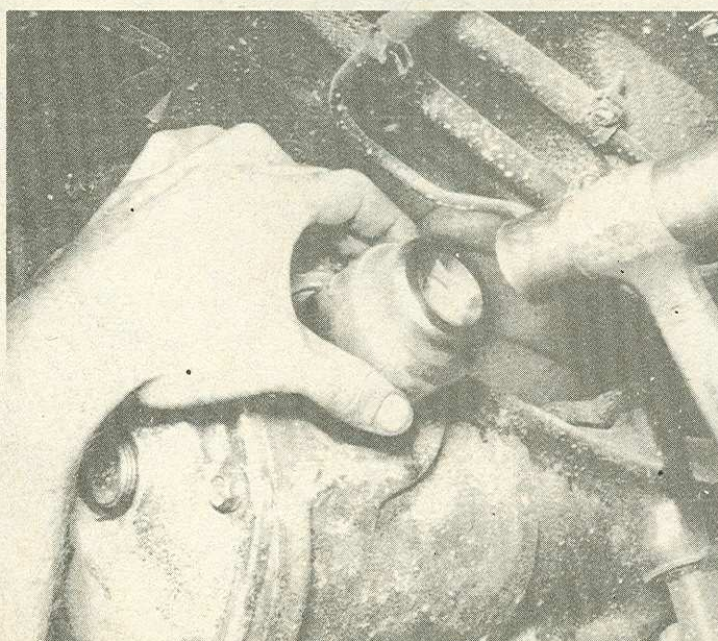
- 1 Raise the vehicle and secure it on jackstands. Place the jackstands under the suspension arms so the suspension will be compressed.
- 2 Remove the bolts securing the driveaxle to the companion flange (see illustration). A back up wrench will be necessary to hold the bolts (see illustration).
- 3 Place a jack under the spring seat stay, remove the spring seat stay bolts (see illustration) and lower the jack (see illustration). **Caution:** Use a screwdriver to pry the parking brake cable over the spring seat stay.



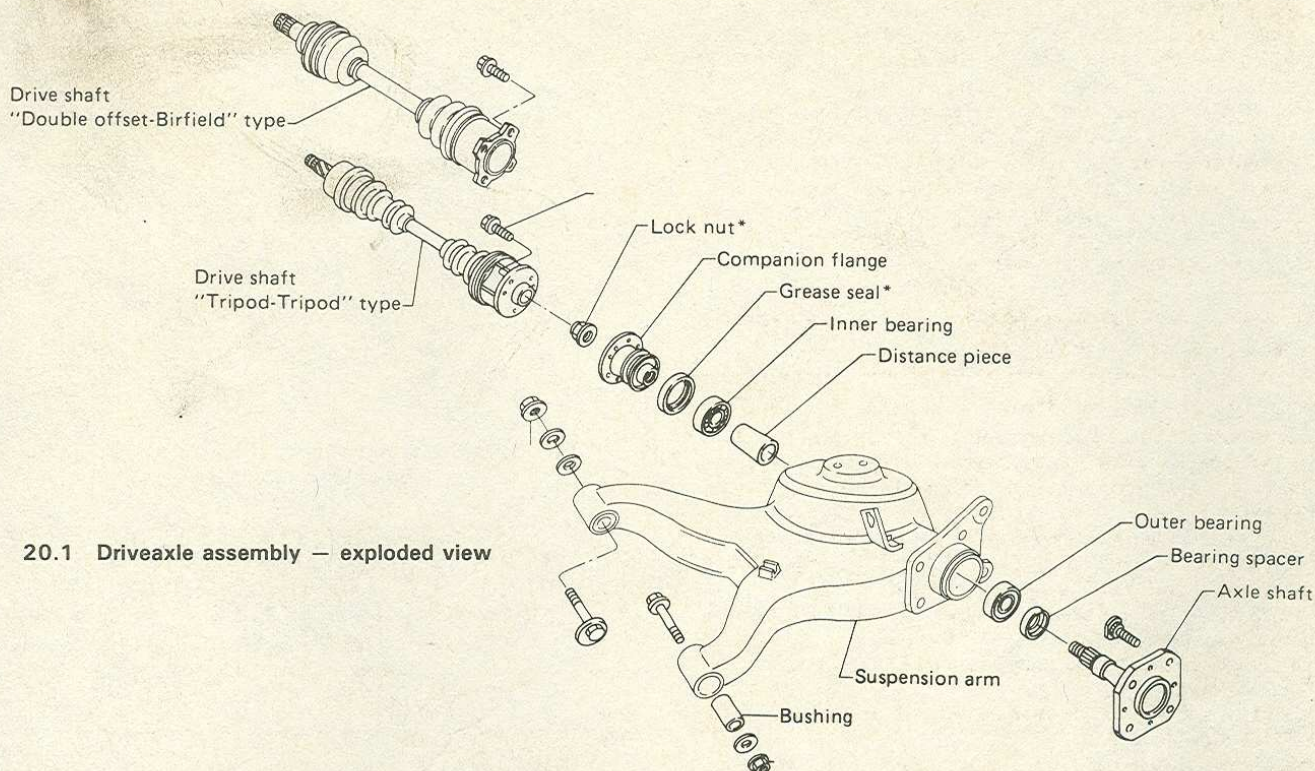
18.8 Special seal replacing tool being used to drive in the differential carrier front seal



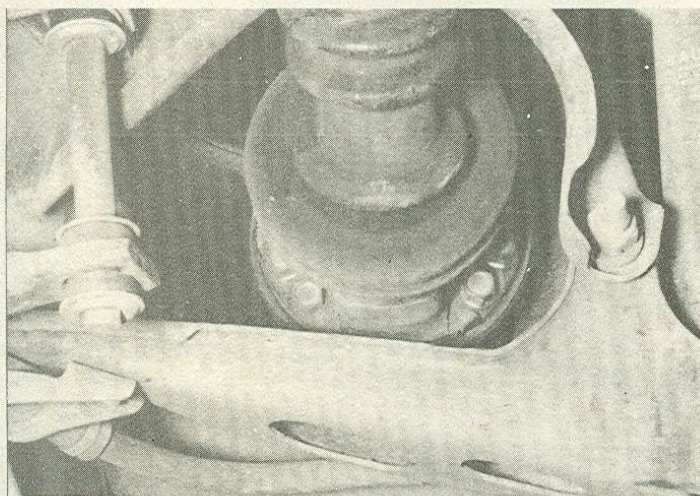
19.4 Insert a screwdriver into the seal and pry the seal from the housing



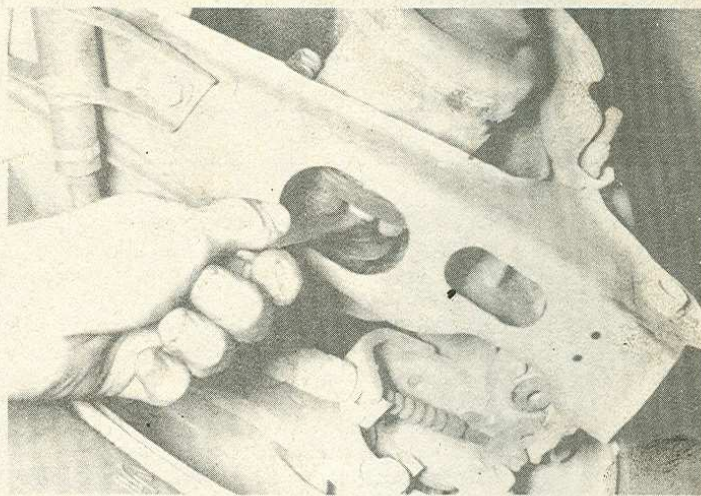
19.5 Use a socket to drive the seal evenly into the carrier recess



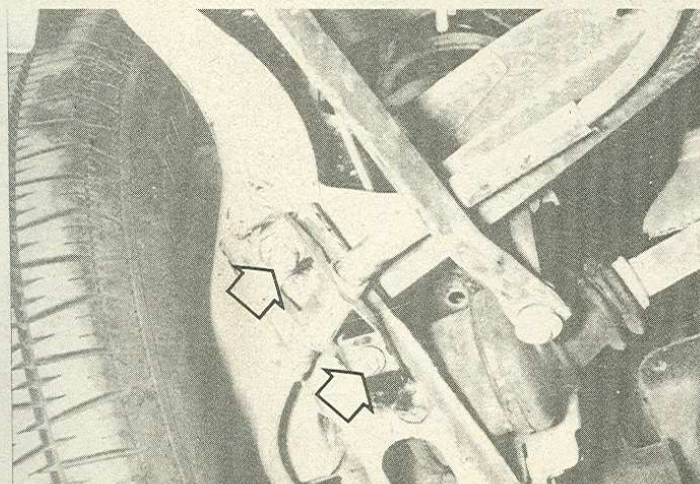
20.1 Driveaxle assembly — exploded view



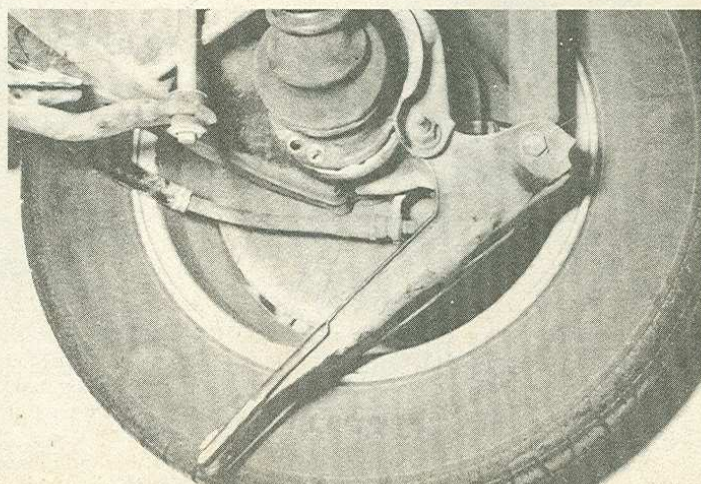
22.2a Remove the bolts securing the driveaxle (Double offset-Birfield type shown) to the wheel companion flange



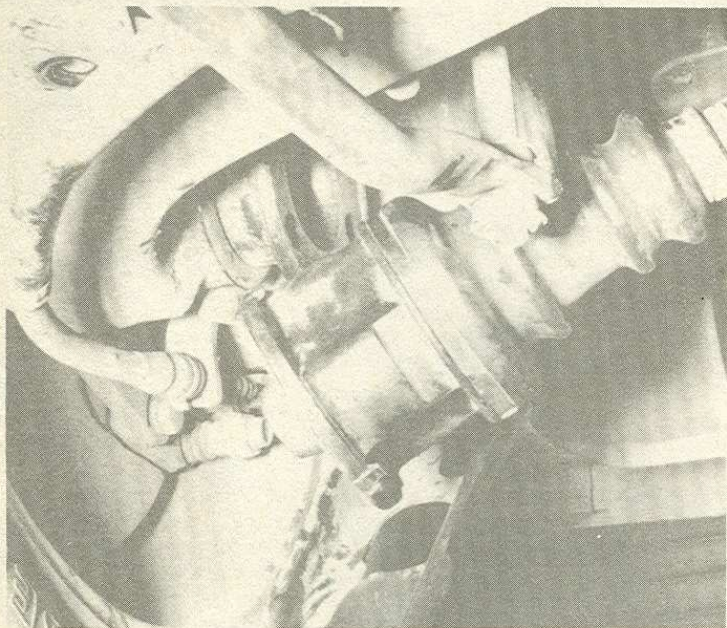
22.2b Use a back up wrench to remove the driveaxle-to-wheel bolts



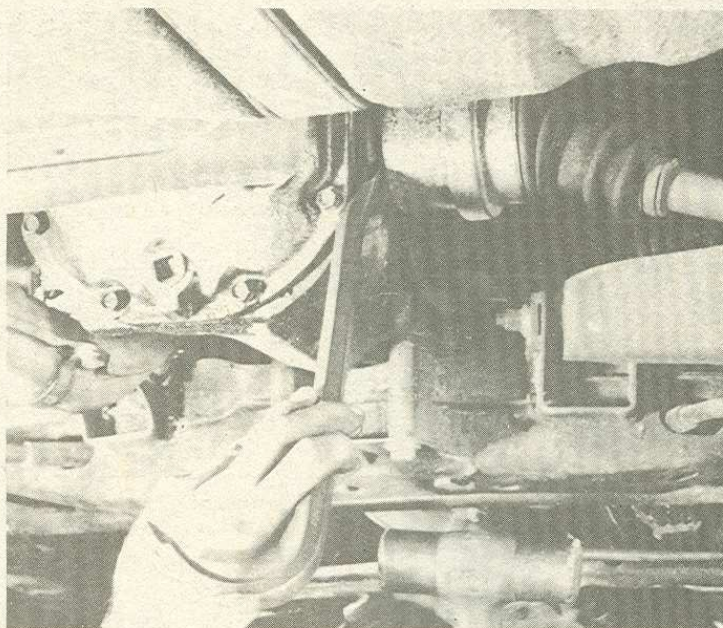
22.3a With a jack under the spring seat stay, remove the spring seat stay attaching bolts



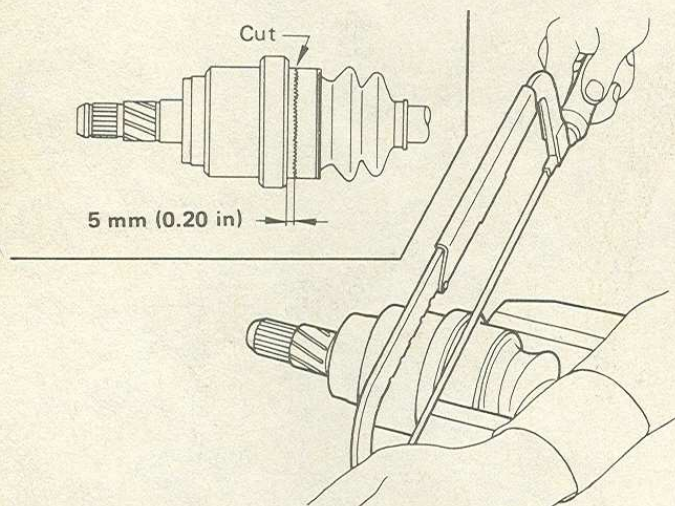
22.3b Lower the spring seat stay to allow the removal of the rear axle



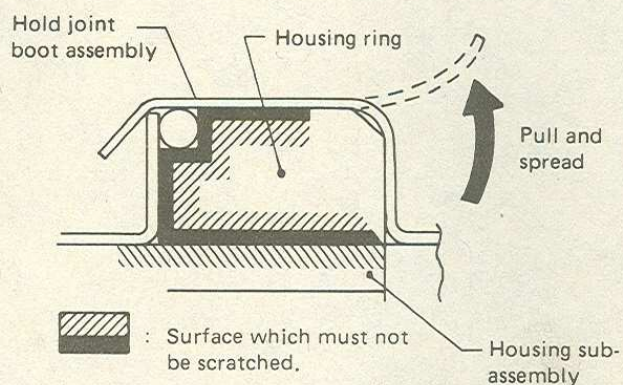
22.4 Push the driveaxle towards the differential carrier and pull down to remove it from the wheel flange



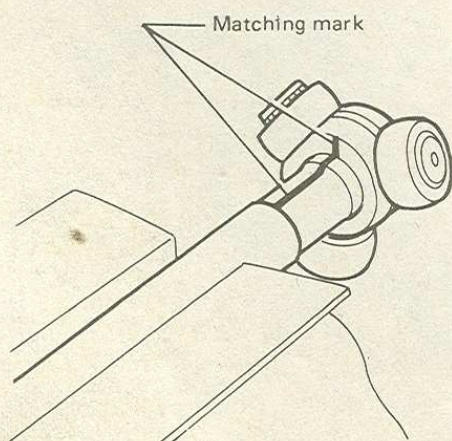
22.5 Give the pry bar a quick rap with a hammer to release the driveaxle from the carrier housing



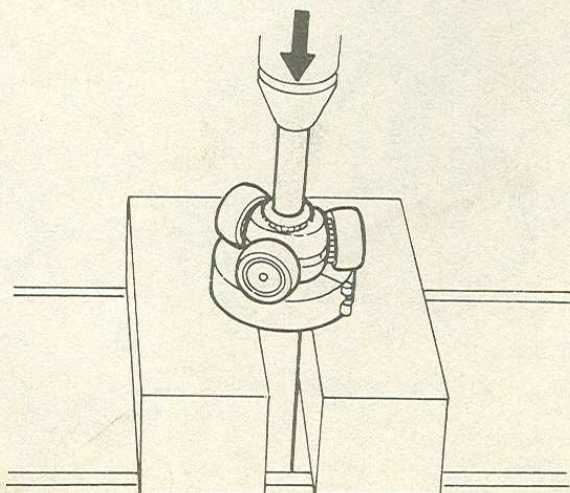
23.3 Use a hacksaw to cut the boot assembly as indicated



23.4 Carefully pry the boot assembly back from the axle. Be careful not to scratch the housing sub-assembly



23.5 Make an alignment mark to note the relation of the spider gear assembly to the shaft



23.6 Press off the spider assembly

- 4 Carefully pry the driveaxle towards the differential carrier to get enough clearance to remove it from the wheel side flange. With the driveaxle pushed back gently force it down from the wheel flange (see illustration). **Caution:** Keep the slide joint housing grease cap located next to the wheel companion flange in place to prevent grease spillage.
- 5 Remove the driveaxle from the differential carrier by placing a small pry bar between the driveaxle and carrier and giving the bar a quick rap with a hammer (see illustration).
- 6 Install the driveaxle by inserting the splined shaft into the differential carrier.
- 7 Work the wheel side of the driveaxle into its companion flange.
- 8 Place a jack under the spring seat stay and raise it up to install the retaining bolts. **Caution:** Carefully pry the brake cable over the end of the spring seat stay when jacking it up.
- 9 Install the driveaxle to wheel companion flange bolts and tighten.
- 10 Remove the jack from under the spring seat stay.
- 11 Remove the safety jackstands and lower the vehicle.

23 Driveaxle (Tripod-Tripod type) — disassembly and assembly

Refer to illustrations 23.3, 23.4, 23.5, 23.6, 23.9, 23.10, 23.11, 23.13, 23.14, 23.15, 23.20, 23.21 and 23.22

Note: A press is required to remove the spider gear assembly from the shaft. Refer to steps 6 and 17.

- 1 Remove the driveaxle (Section 22).
- 2 Place the driveaxle assembly in a vise.

3 Use a hacksaw to cut the boot assembly (see illustration) near the joint housing. **Caution:** Before cutting, ensure that the shaft is pushed into the housing sub-assembly to prevent the spider gear assembly from being scratched.

4 Pry the boot assembly back from the axle (see illustration) and be careful not to scratch the housing sub-assembly. Cut the remaining part of the boot from the axle assembly.

5 Make an alignment mark across the shaft and spider gear assembly (see illustration).

6 Place the shaft in a suitable press (see illustration) and press off the spider assembly. **Note:** Do not disassemble the spider gear assembly.

7 Inspect the bearing assembly, joint housing and housing sub-assembly for cracks or other damage and replace either component if necessary.

8 Place the shaft in a vise between two wooden blocks.

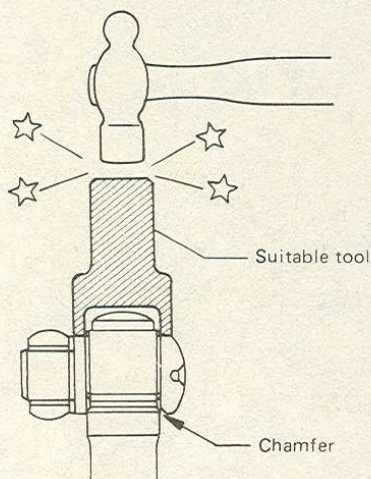
9 Install the spider assembly and match up alignment marks made during removal. Drive the assembly onto the shaft using a suitable tool (see illustration).

10 Stake the serration portion evenly at three places around the assembly (see illustration) and avoid areas that have been previously staked. **Note:** Always stake two or three teeth at each spot.

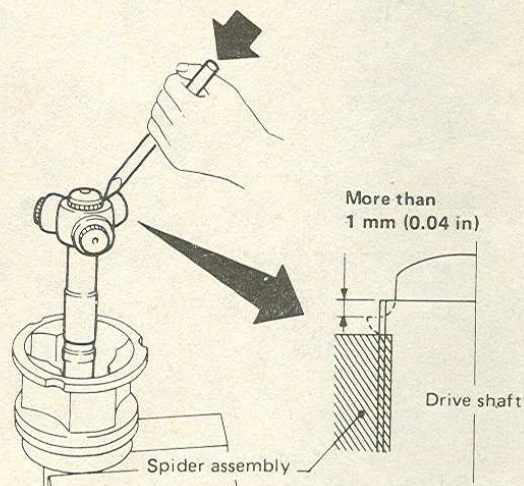
11 Install the boot assembly, fold back the boot band and crimp down the retaining dogs (see illustration).

12 Pack the boot with the specified amount and type of grease.

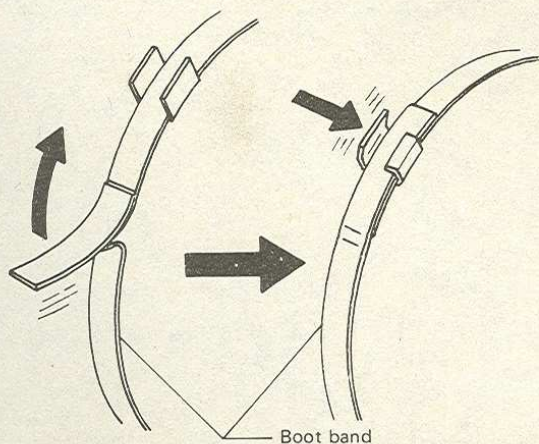
13 Set the boot length by holding the shaft straight out in relation to the joint assembly and crimping down the boot band at the length specified (see illustration).



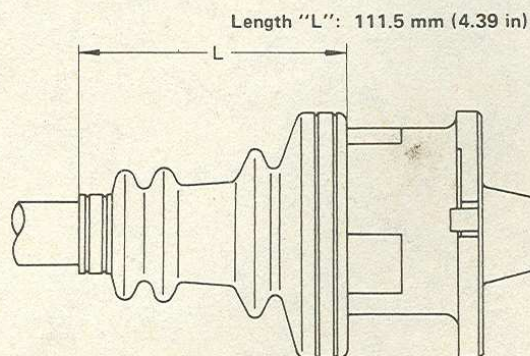
23.9 Drive the spider assembly onto the shaft after matching the alignment marks made during disassembly



23.10 Stake the serration portion evenly at three places around the assembly. Do not stake areas previously staked

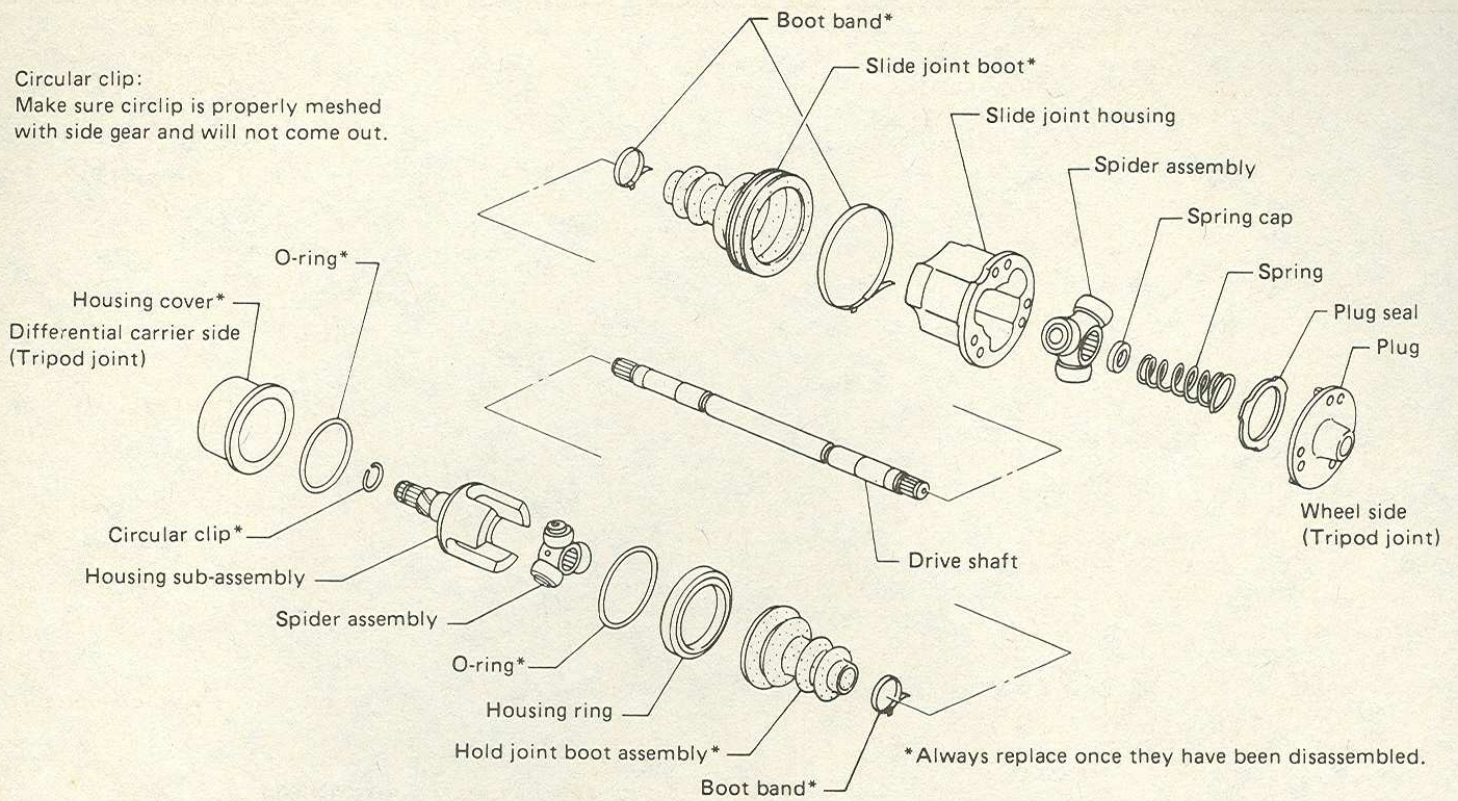


23.11 Install the hold joint assembly and fold back the boot band, then use a small hammer to bend back the dogs

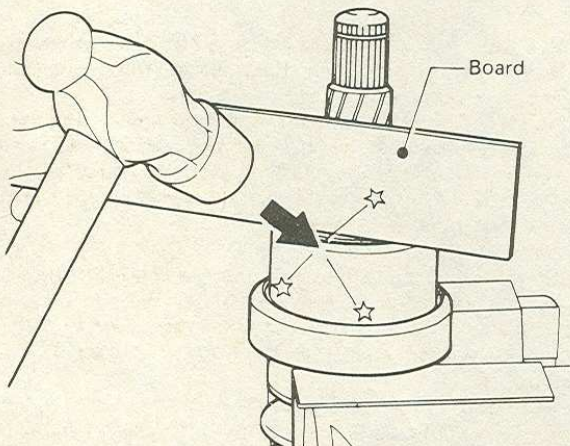


23.13 Hold the boot out straight and set the boot length as specified

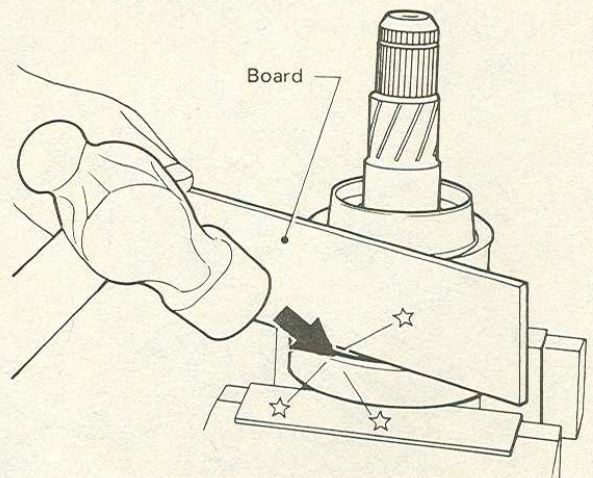
Circular clip:
Make sure circlip is properly meshed
with side gear and will not come out.



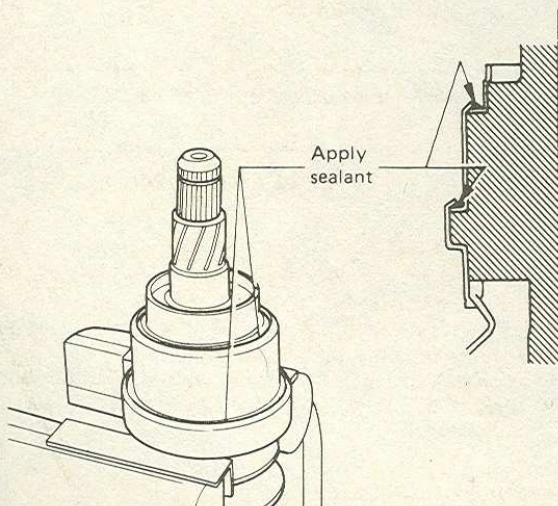
23.14 Exploded view of Tripod-Tripod type axle shaft



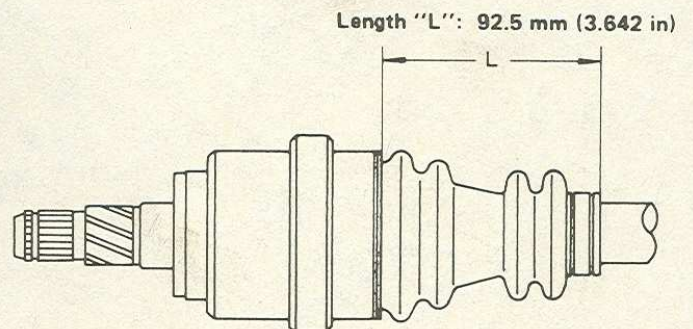
23.15 Use a board to protect the housing cover when crimping the edge of the housing ring



23.20 Use a board to protect the housing sub-assembly when bending the edge of the hold joint assembly



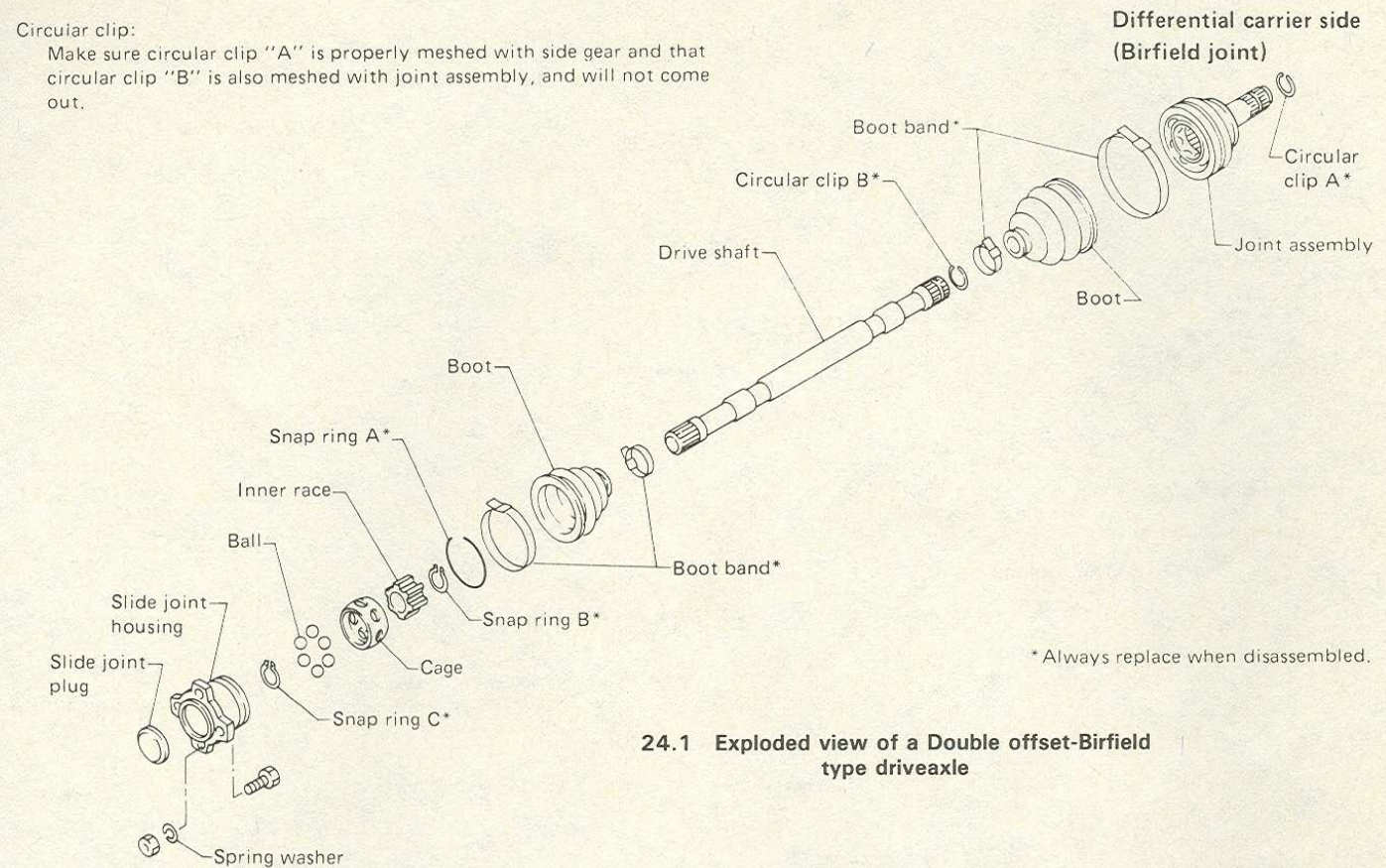
23.21 Apply sealant at the locations noted



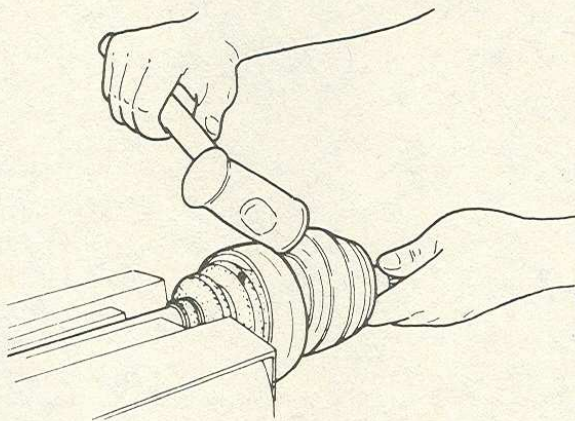
23.22 Hold the shaft out straight and set the boot length before crimping down the boot band

Circular clip:

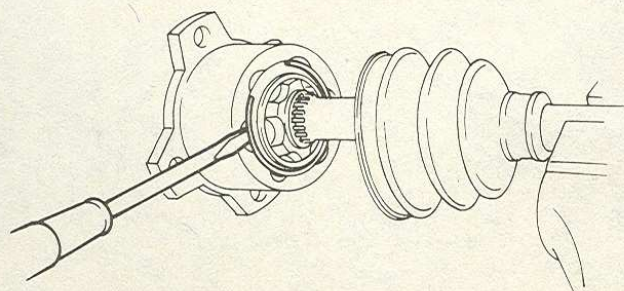
Make sure circular clip "A" is properly meshed with side gear and that circular clip "B" is also meshed with joint assembly, and will not come out.



24.1 Exploded view of a Double offset-Birfield type driveaxle

Wheel side (Double offset joint)

24.3 Carefully tap the joint assembly to separate it from the shaft



24.6 Remove the snap ring and pull the slide joint housing out

14 Install the housing ring and housing sub-assembly onto the carrier side of the shaft (see illustration). **Note:** *Always replace housing ring and sub-assembly as a set.*

15 Bend the edge of the housing ring over along the entire circumference. Start by bending the edge at two positions 180° apart. Place a board on the housing cover (see illustration) so you will not damage it.

16 Install a new boot band and boot assembly onto the driveaxle.

17 Install the spider assembly.

18 Pack the boot with grease.

19 Insert the boot assembly so that only the flange is retained in a vise.

20 Insert the housing sub-assembly into the boot assembly and bend the edge (see illustration) in the manner described in Step 15.

21 Apply sealant to the edges of the hold down joint assemblies (see illustration).

22 Set the boot length by holding the shaft straight out in relation to the joint assembly and crimping down the boot band at the length specified (see illustration).

23 After the shaft has been assembled, be sure that it moves smoothly over the entire range without binding.

24 Install the driveaxle (Section 22).

24 Driveaxle (Double offset-Birfield type) — disassembly and assembly

Refer to illustrations 24.1, 24.3, 24.6, 24.8, 24.14, 24.16, 24.17 and 24.23

Carrier side disassembly

1 Remove the driveaxle (see illustration) from the vehicle (Section 22) and place it in a vise between two boards so not to damage the shaft.

2 Before disassembly, place alignment marks on the shaft and the joint assembly for alignment during installation.

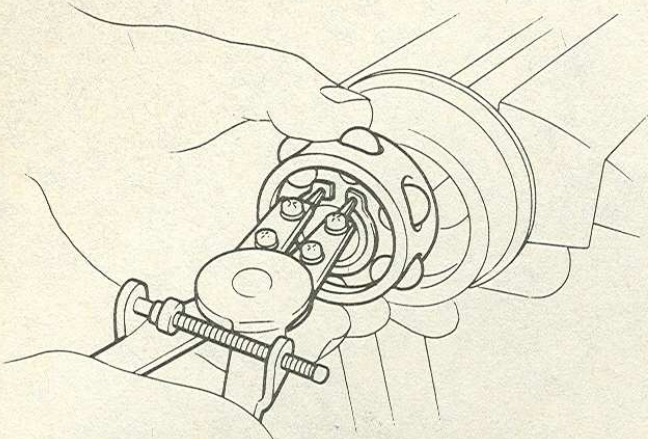
3 Lightly tap on the joint assembly to separate it from the shaft (see illustration). **Note:** *The joint on this side can not be disassembled.*

Wheel side

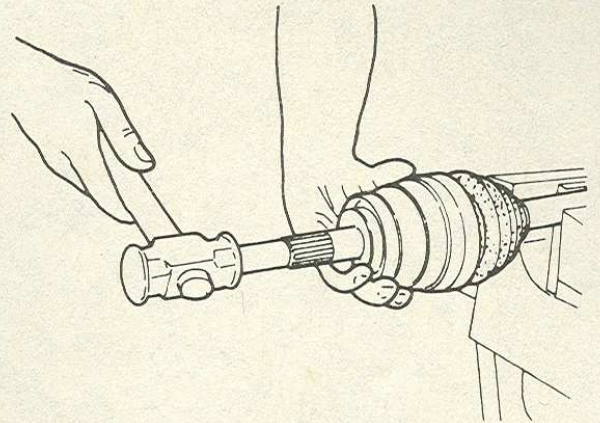
4 Remove the boot bands.

5 Scribe matching marks on the slide joint housing and the inner race.

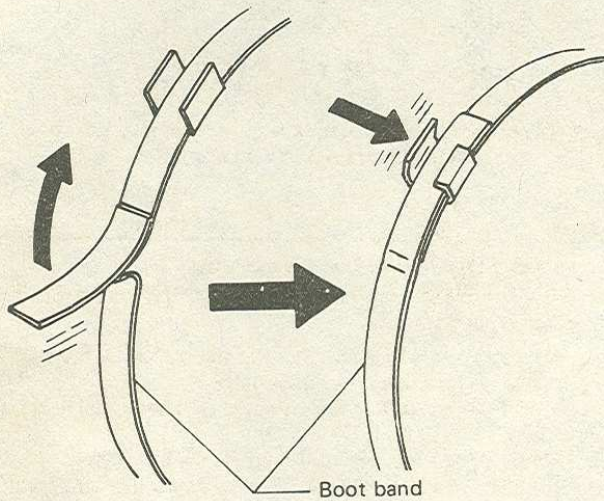
6 Pry off the snap ring (see illustration) with a screwdriver and pull the slide joint housing out.



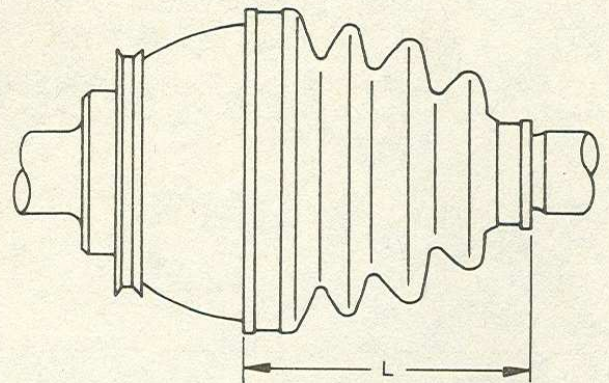
24.8 Remove the snap ring on the front of the ball cage and remove the cage, balls and inner race assembly



24.14 Gently tap the joint assembly onto the shaft



24.16 Install the large boot band and flatten the tabs down against the band



Length "L": 90.8 mm (3.575 in)

24.17 Set the carrier side boot length and crimp down the boot band

- 7 Scribe matching marks on the shaft and the inner race.
- 8 Use snap ring pliers and remove the snap ring (see illustration) on the front of the ball cage. Remove the ball cage, balls and inner race as an assembly.
- 9 Pry off the snap ring and lay the cage assembly in a container.
- 10 Remove the boot from the shaft.

Inspection

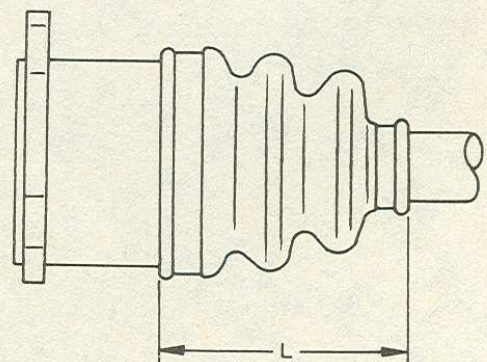
- 11 Inspect the shaft for cracks or distortion. Check the assemblies for burns, rust, wear or excessive play. Check the boots for fatigue or worn spots. Replace any of the components if damaged.

Carrier side assembly

- 12 Install the boot from the wheel side. Be careful not to damage the boot on the edge of the driveshaft.
- 13 Install a new small boot band on the shaft.
- 14 Install shaft in a vise protected with wooden blocks and gently tap the joint assembly onto the shaft (see illustration). Make sure the alignment marks are properly aligned.
- 15 Pack the joint/boot assembly with grease.
- 16 Install the large boot band and secure the retaining tabs by flattening them against the band (see illustration).
- 17 Set the boot length by holding the shaft straight out in relation to the joint assembly and crimping down the boot band at the length specified (see illustration).

Wheel side assembly

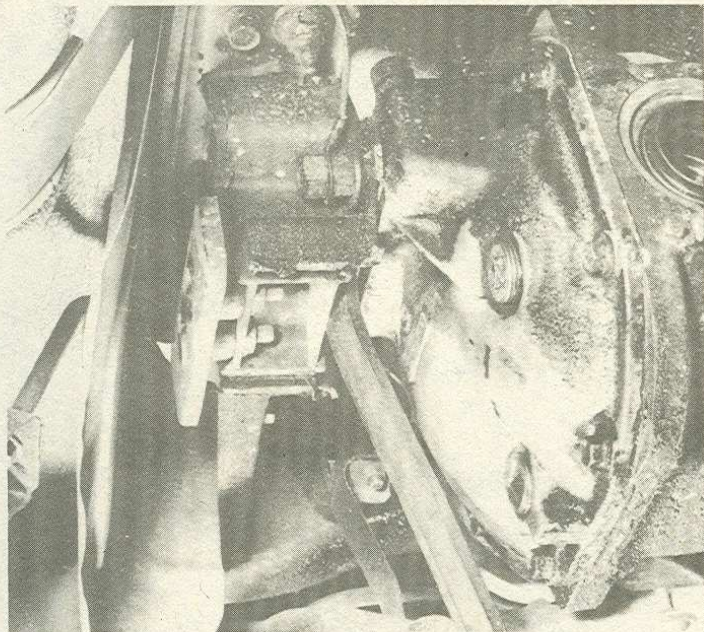
- 18 Install the boot, being careful not to damage the boot on the edge of the shaft.
- 19 Install the large boot band and secure the band retainer by flat-



Length "L": 90.4 mm (3.559 in)

24.23 Set the wheel side boot length and crimp down the boot band

- tening it against the band.
- 20 Install the ball cage assembly and secure with the snap rings.
- 21 Install the ball cage assembly into the slide joint housing and retain with the snap ring.
- 22 Pack the boot/joint assembly with grease.
- 23 Set the boot length by holding the shaft straight out in relation to the joint assembly and crimping down the boot band at the length specified (see illustration).



25.3 Wedge a pry bar between the carrier and its mount and pry it back to see if the rubber has separated from the mount

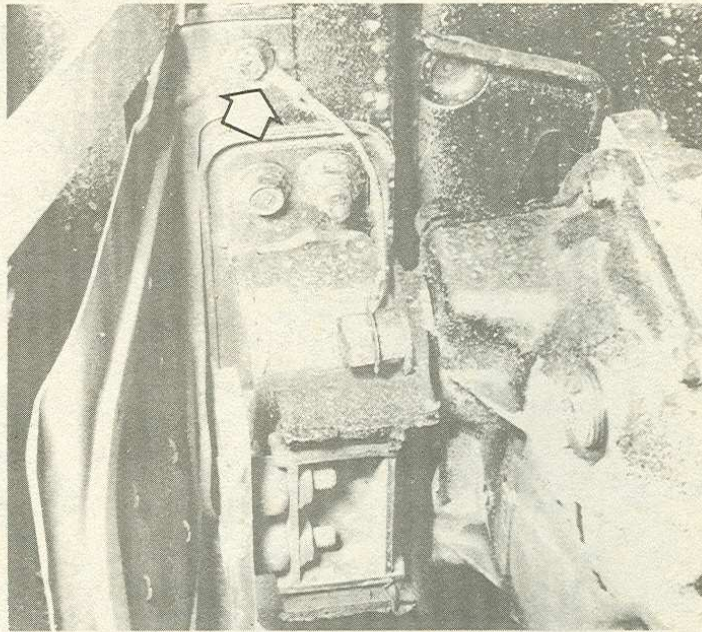
24 After the driveaxle has been assembled, ensure that it moves smoothly over its entire range without binding.

25 Install the driveaxle (Section 22).

25 Carrier mount — inspection

Refer to illustration 25.3

- 1 Raise the vehicle and support it securely on jackstands.
- 2 Visually check the rubber part of the insulator to see if it has torn away from the metal backing.
- 3 Insert a pry bar into the mount (see illustration) and pry back to see if the rubber has separated from the metal backing. If the rubber has parted, replace the mount (Section 26).
- 4 Remove the jackstands and lower the vehicle.



26.3 Remove the heat shield retaining bolts and note ground wire attached to one of them

26 Carrier mount — removal and installation

Refer to illustration 26.3

- 1 Raise the vehicle and support it securely on jackstands.
- 2 Place a jack under the carrier assembly.
- 3 Remove the heat shield and note ground wire attached to the body (see illustration).
- 4 Remove the carrier mount retaining nuts and bolts.
- 5 Lower the jack slightly until the mount clears the studs and pull the mount rearward to remove it from the studs on the carrier.
- 6 Insert the mount onto the carrier studs and raise the jack until the mount can be secured to the body.
- 7 Install and tighten the carrier mount nuts and bolts.
- 8 Replace the heat shield and be sure and install the ground wire.
- 9 Remove the jack from under the carrier.
- 10 Remove the jackstands and lower the vehicle.