

SUSPENSION

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WHEEL ALIGNMENT

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GENERAL INFORMATION

WHEEL ALIGNMENT

Proper vehicle wheel alignment is the proper adjustment of all interrelated front and rear suspension angles (Fig. 1). These angles are what affects the handling and steering of the vehicle when it is in motion.

The method of checking a vehicle's front and rear wheel alignment will vary depending on the type and manufacturer of the equipment being used. Instructions furnished by the manufacturer of the equipment being used should always be followed to ensure accuracy of the alignment, except when alignment

specifications recommended by Chrysler Corporation differ.

**CAUTION:** Do not attempt to modify any suspension or steering components by heating or bending of the component.

When performing a four wheel alignment always check and adjust the rear wheel alignment first.

**Camber** is the number of degrees the top of the tire and wheel are tilted either inward or outward. Camber is a tire wearing angle. Excessive negative

## GENERAL INFORMATION (Continued)

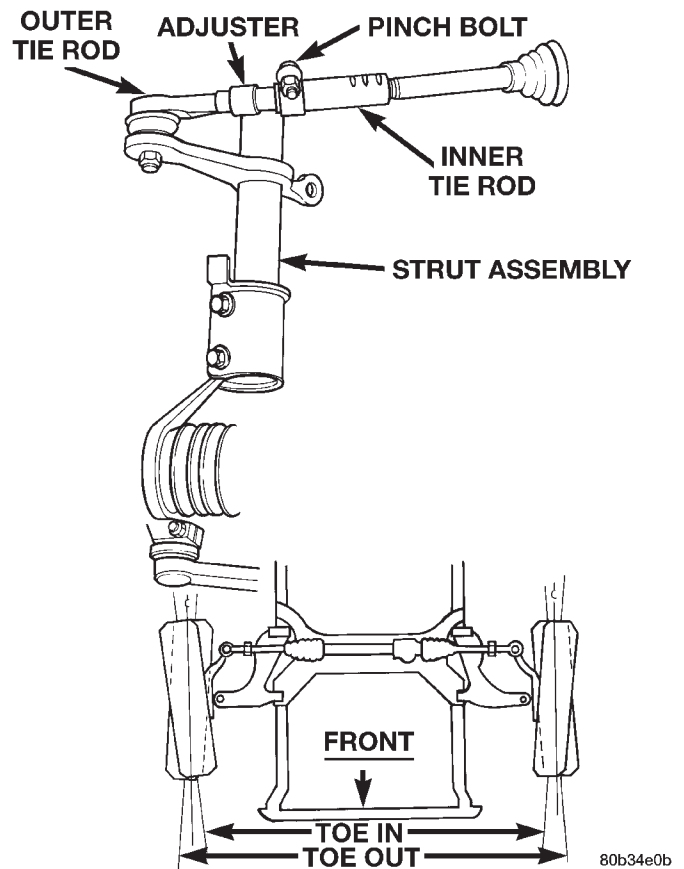
camber will cause tread wear at the inside of the tire, while excessive positive camber will cause outside tire wear.

**Caster** is the number of degrees of forward or rearward tilt of the steering knuckle. Forward tilt provides a negative caster angle, while rearward tilt provides a positive caster angle. Caster is not adjustable on this vehicle.

**Cross Camber** is the difference between left and right camber. The right side camber is to be subtracted from the left, resulting in the cross camber reading. For example, if the left camber is  $+0.3^\circ$  and the right camber is  $0.0^\circ$ , the cross camber would be  $+0.3^\circ$ .

**Toe** is measured in degrees or inches and is the difference in width between the centered leading and trailing edges of the tires on the same axle (Fig. 1). Toe-in means that the front width is more narrow than the rear. Toe-out means that the front width is wider than the rear.

**Thrust Angle** is defined as the average of the toe settings on each rear wheel. If this measurement is out of specification, re-adjust rear wheel toe so that each wheel has  $1/2$  of the total Toe measurement. When re-adjusting, do not exceed the total toe specification.



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**Fig. 1 Wheel Toe Adjustment**

## DIAGNOSIS AND TESTING

## SUSPENSION AND STEERING DIAGNOSIS

| CONDITION                                                                   | POSSIBLE CAUSES                                                                                                                                                                                                                                                                                                                                   | CORRECTION                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Front End Whine On Turns                                                    | <ol style="list-style-type: none"> <li>1. Defective wheel bearing</li> <li>2. Incorrect wheel alignment</li> <li>3. Worn tires</li> </ol>                                                                                                                                                                                                         | <ol style="list-style-type: none"> <li>1. Replace wheel bearing</li> <li>2. Check and reset wheel alignment</li> <li>3. Replace tires</li> </ol>                                                                                                                                                                                                                                                                      |
| Front End Growl Or Grinding On Turns                                        | <ol style="list-style-type: none"> <li>1. Defective wheel bearing</li> <li>2. Engine mount grounding</li> <li>3. Worn or broken C/V joint</li> <li>4. Loose wheel lug nuts</li> <li>5. Incorrect wheel alignment</li> <li>6. Worn tires</li> <li>7. Front strut pin in upper strut mount</li> </ol>                                               | <ol style="list-style-type: none"> <li>1. Replace wheel bearing</li> <li>2. Check for motor mount hitting frame rail and reposition engine as required</li> <li>3. Replace C/V joint</li> <li>4. Verify wheel lug nut torque</li> <li>5. Check and reset wheel alignment</li> <li>6. Replace tires</li> <li>7. Replace the front strut upper mount and bearing</li> </ol>                                             |
| Front End Clunk Or Snap On Turns                                            | <ol style="list-style-type: none"> <li>1. Loose lug nuts</li> <li>2. Worn or broken C/V joint</li> <li>3. Worn or loose tie rod</li> <li>4. Worn or loose ball joint</li> <li>5. Worn/loose control arm bushing</li> <li>6. Loose stabilizer bar.</li> <li>7. Loose strut mount to body attachment</li> <li>8. Loose crossmember bolts</li> </ol> | <ol style="list-style-type: none"> <li>1. Verify wheel lug nut torque</li> <li>2. Replace C/V joint</li> <li>3. Tighten or replace tie rod end</li> <li>4. Tighten or replace ball joint</li> <li>5. Replace control arm bushing</li> <li>6. Tighten stabilizer bar to specified torque</li> <li>7. Tighten strut attachment to specified torque</li> <li>8. Tighten crossmember bolts to specified torque</li> </ol> |
| Front End Whine With Vehicle Going Straight At A Constant Speed             | <ol style="list-style-type: none"> <li>1. Defective wheel bearing</li> <li>2. Incorrect wheel alignment</li> <li>3. Worn tires</li> <li>4. Worn or defective transaxle gears or bearings</li> </ol>                                                                                                                                               | <ol style="list-style-type: none"> <li>1. Replace wheel bearing</li> <li>2. Check and reset wheel alignment</li> <li>3. Replace tires</li> <li>4. Replace transaxle gears or bearings</li> </ol>                                                                                                                                                                                                                      |
| Front End Growl Or Grinding With Vehicle Going Straight At A Constant Speed | <ol style="list-style-type: none"> <li>1. Engine mount grounding</li> <li>2. Worn or broken C/V joint</li> </ol>                                                                                                                                                                                                                                  | <ol style="list-style-type: none"> <li>1. Reposition engine as required</li> <li>2. Replace C/V joint</li> </ol>                                                                                                                                                                                                                                                                                                      |

## DIAGNOSIS AND TESTING (Continued)

| CONDITION                                         | POSSIBLE CAUSES                                                                                                                                                                                                                                                            | CORRECTION                                                                                                                                                                                                                                                                      |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Front End Whine When Accelerating Or Decelerating | 1. Worn or defective transaxle gears or bearings                                                                                                                                                                                                                           | 1. Replace transaxle gears or bearings                                                                                                                                                                                                                                          |
| Front End Clunk When Accelerating Or Decelerating | 1. Worn or broken engine mount<br>2. Worn or defective transaxle gears or bearings<br>3. Loose lug nuts<br>4. Worn or broken C/V joint<br>5. Worn or loose ball joint<br>6. Worn or loose control arm bushing<br>7. Loose crossmember bolts<br>8. Worn tie rod end         | 1. Replace engine mount<br>2. Replace transaxle gears or bearings<br>3. Verify wheel lug nut torque<br>4. Replace C/V joint<br>5. Tighten or replace ball joint<br>6. Replace control arm bushing<br>7. Tighten crossmember bolts to specified torque<br>8. Replace tie rod end |
| Road Wander                                       | 1. Incorrect tire pressure<br>2. Incorrect front or rear wheel toe<br>3. Worn wheel bearings<br>4. Worn control arm bushings<br>5. Excessive friction in steering gear<br>6. Excessive friction in steering shaft coupling<br>7. Excessive friction in strut upper bearing | 1. Inflate tires to recommended pressure<br>2. Check and reset wheel toe<br>3. Replace wheel bearing<br>4. Replace control arm bushing<br>5. Replace steering gear<br>6. Replace steering coupler<br>7. Replace strut bearing                                                   |
| Lateral Pull                                      | 1. Unequal tire pressure<br>2. Radial tire lead<br>3. Incorrect front wheel camber<br>4. Power steering gear imbalance<br>5. Wheel braking                                                                                                                                 | 1. Inflate all tires to recommended pressure<br>2. Perform lead correction procedure<br>3. Check and reset front wheel camber<br>4. Replace power steering gear<br>5. Correct braking condition causing lateral pull                                                            |
| Excessive Steering Free Play                      | 1. Worn or loose tie rod ends<br>2. Loose steering gear mounting bolts<br>3. Worn steering gear<br>4. Loose or worn steering shaft coupler                                                                                                                                 | 1. Replace or tighten tie rod ends<br>2. Tighten steering gear bolts to specified torque<br>3. Replace Steering Gear<br>4. Replace steering shaft coupler                                                                                                                       |
| Excessive Steering Effort                         | 1. Low tire pressure<br>2. Low power steering fluid level<br>3. Loose power steering pump drive belt<br>4. Lack of lubricant in ball joints<br>5. Steering gear malfunction<br>6. Lack of lubricant in steering coupler                                                    | 1. Inflate all tires to recommended pressure<br>2. Fill power steering fluid reservoir to correct level<br>3. Correctly adjust power steering pump drive belt<br>4. Lubricate or replace ball joints<br>5. Replace steering gear<br>6. Replace steering coupler                 |

## DIAGNOSIS AND TESTING (Continued)

**PRE-WHEEL ALIGNMENT INSPECTION**

Before any attempt is made to change or correct the wheel alignment factors. The following part inspection and the necessary corrections should be made to those parts which influence the steering of the vehicle.

(1) Check and inflate all tires to recommended pressure. All tires should be the same size and in good condition and have approximately the same wear. Note the type of tread wear which will aid in diagnosing, see Wheels and Tires, Group 22.

(2) Check front wheel and tire assembly for radial runout.

(3) Inspect lower ball joints and all steering linkage for looseness.

(4) Check for broken or sagged front and rear springs.

(5) Check vehicle ride height to verify it is within specifications.

(6) Alignment **MUST** only be checked after the vehicle has the following areas inspected and or adjusted. Recommended tire pressures, full tank of fuel, no passenger or luggage compartment load and is on a level floor or a properly calibrated alignment rack.

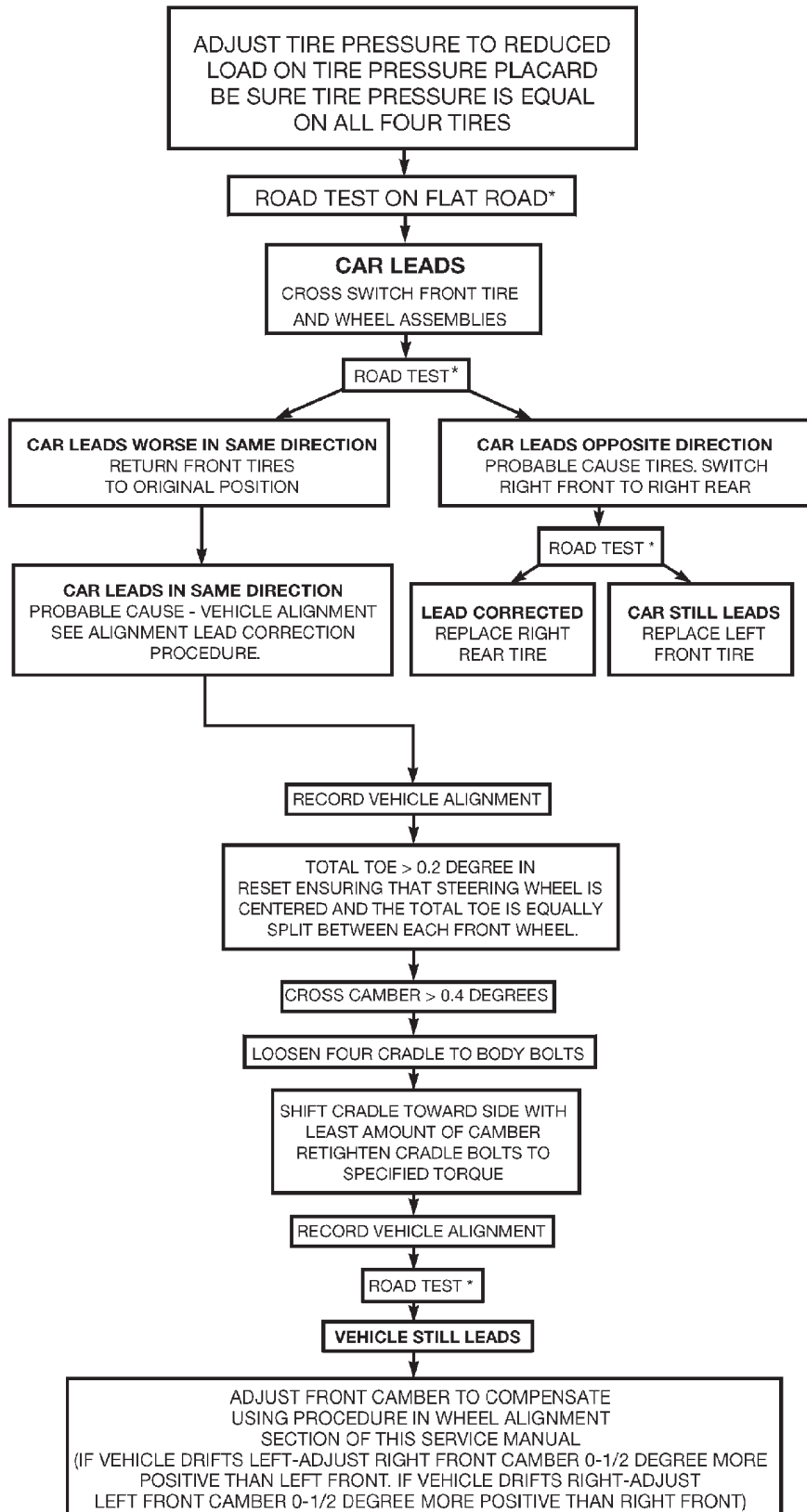
**VEHICLE LEAD CORRECTION CHART**

Use the following chart to diagnose a vehicle that has a complaint of a drift or lead condition. The use of the chart will help to determine if the lead condition is the result of a bad tire or is caused by the front wheel alignment.

## DIAGNOSIS AND TESTING (Continued)

## VEHICLE LEAD DIAGNOSIS

### LEAD DIAGNOSIS AND CORRECTION PROCEDURE



\* VERIFY LEAD/PULL IS NOT INCLUDED BY ROAD CROWN OR CROSS WINDS

## SERVICE PROCEDURES

### CURB HEIGHT MEASUREMENT

The wheel alignment is to be checked and all alignment adjustments made with the vehicle at its required curb height specification.

Vehicle height is to be checked with the vehicle on a flat, level surface, preferably a vehicle alignment rack. The tires are to be inflated to the recommended pressure. All tires are to be the same size as standard equipment. Vehicle height is checked with the fuel tank full of fuel, and no passenger or luggage compartment load.

Vehicle height is not adjustable. If measurement is not within specifications, inspect vehicle for bent or weak suspension components. Compare parts tag on suspect coil spring(s) to parts book and vehicle sales code, checking for a match. Once removed from vehicle, compare coil spring height to a correct new or known good coil spring. The heights should vary if the suspect spring is weak.

(1) Measure from the inboard edge of the wheel opening fender lip directly above the wheel center (spindle), to the floor or alignment rack surface.

(2) When measuring, maximum left-to-right differential is not to exceed 20 mm (0.79 in.).

(3) Compare measurements to specifications listed in the following chart.

### WHEEL ALIGNMENT CHECK AND ADJUSTMENT PROCEDURE

(1) Position the vehicle on an alignment rack.

(2) Perform a pre-wheel alignment inspection.

(3) Install all required alignment equipment on the vehicle, per the alignment equipment manufacturer's instructions.

**NOTE:** Prior to reading the vehicle's alignment readouts, the front and rear of vehicle should be jounced. Induce jounce (rear first, then front) by grasping the center of the bumper and jouncing each end of vehicle an equal number of times. The bumper should always be released when vehicle is at the bottom of the jounce cycle.

(4) Read the vehicle's current front and rear alignment settings. Compare the vehicle's current alignment settings to the vehicle specifications for camber, caster and toe-in. See Alignment Specifications in this group of the service manual for the required specifications.

(5) If the rear alignment is out of specification, adjust it first, before proceeding to the front. Rear camber and caster are not adjustable. If rear camber is out of specification, check for damaged or bent rear suspension components.

### REAR WHEEL TOE ADJUSTMENT

(1) Loosen lateral link, adjustment link jam nuts (Fig. 2). Rotate adjustment links as required to set rear wheel Toe to specifications. **Do not exceed the maximum length dimensions of the lateral links shown in (Fig. 3). Both dimensions must be checked to ensure they do not exceed maximums allowed.**

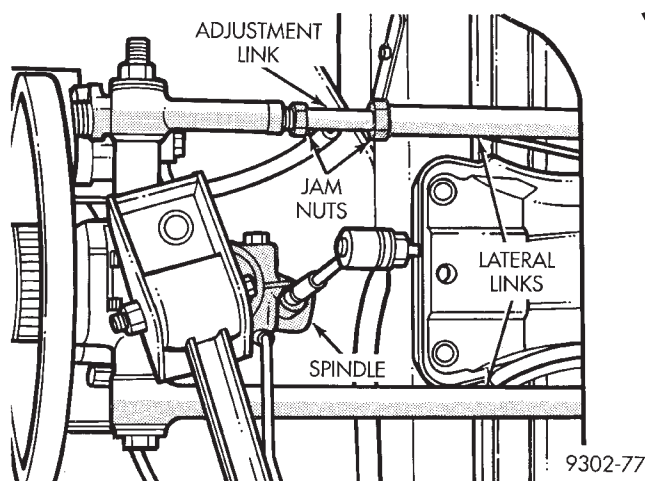


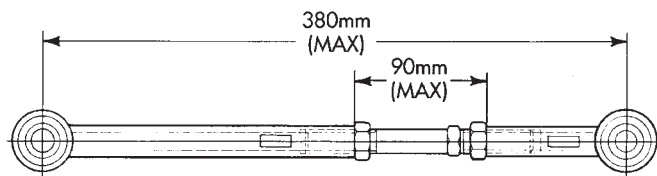
**Fig. 2 Rear Wheel Toe Adjustment**

**CAUTION:** When setting rear toe-in on vehicle, the maximum lengths of the adjustable lateral link at the locations shown in (Fig. 3) must not be exceeded. If these maximum lengths are exceeded, inadequate retention of adjustment link to the inner and outer link may result. Ensure that the adjustment sleeve jam nuts are torqued to the required specifications when the Toe setting procedure is completed.

### CURB HEIGHT SPECIFICATIONS

| VEHICLE           | FRONT                    | REAR                     |
|-------------------|--------------------------|--------------------------|
| CONCORDE/LHS/300M | 739 mm $\pm$ 20 mm       | 754 mm $\pm$ 20 mm       |
|                   | 29.09 in. $\pm$ 0.79 in. | 29.68 in. $\pm$ 0.79 in. |
| INTREPID          | 729 mm $\pm$ 20 mm       | 735 mm $\pm$ 20 mm       |
|                   | 28.70 in. $\pm$ 0.79 in. | 28.93 in. $\pm$ 0.79 in. |

## SERVICE PROCEDURES (Continued)



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**Fig. 3 Lateral Link Maximum Length Dimensions**

(2) Tighten lateral link, adjustment link lock-nuts to 88 N·m (65 ft. lbs.) torque.

(3) Proceed to set the front wheel alignment. If front camber and caster readings are within required specifications, proceed to Front Wheel Toe Adjustment. If not, refer to the following procedure to correct camber.

**CAMBER AND CASTER**

Front wheel Camber and Caster settings on this vehicle are determined at the time the vehicle is designed. This is done by determining the precise mounting location of the vehicle's suspension components throughout the design and assembly processes of the vehicle. This is called a Net-Build vehicle and results in no normal requirement for adjustment of the Camber and Caster after a vehicle is built, or when servicing the suspension components. Thus, Camber and Caster are not normally considered an adjustable specification when performing an alignment on this vehicle. Though Camber and Caster are not adjustable, they should be checked during the alignment procedure to ensure they meet the manufacturers specifications.

If camber and caster do not meet required specifications, the vehicles suspension components should be inspected for any signs of damage or bending. **This inspection must be done before performing the camber setting procedure.**

If a vehicle has a drift or lead condition, and it is determined that the drift or lead is not caused by road conditions, the front camber can be adjusted using the following camber adjustment procedure.

**CAUTION: Do not attempt to adjust the vehicles Caster or Camber by heating, bending or by performing any other modification to the vehicle's front suspension components.**

**FRONT CAMBER ADJUSTMENT PROCEDURE**

There are camber adjustment bolts and nuts available to allow front suspension camber adjustment in the event the vehicle pulls even though the camber is

within specifications. This procedure involves replacing the original strut clevis to knuckle attachment bolts with special undersized bolts.

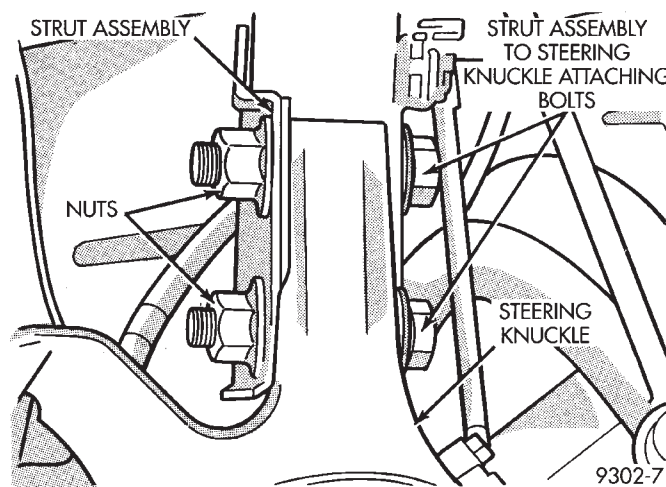
(1) Raise the front of vehicle by the frame until the tires are not supporting the weight of the vehicle.

(2) Remove the tire and wheel assembly from the location on the vehicle requiring camber adjustment.

**CAUTION: When removing the strut to knuckle bolts from the strut clevis bracket, do not allow knuckle to pull away, putting a strain on the brake flex hose.**

**CAUTION: The bolts attaching the strut to the steering knuckle are serrated in the area where they go through the steering knuckle and strut. When removing, do not turn the bolts in the steering knuckle. If bolts are turned in the steering knuckle, damage to the steering knuckle will result.**

(3) Remove the nuts from the bolts attaching the strut to the knuckle (Fig. 4). Tap the bolts out of the knuckle.



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**Fig. 4 Strut To Steering Knuckle Attaching Bolts**

(4) Loosely install the camber adjustment bolts and nuts attaching the strut to the steering knuckle. The bolts should be installed so the nuts are towards the front of the vehicle.

(5) Install the tire and wheel assembly.

(6) If necessary, repeat steps 2 through 5 to the other side of the vehicle.

(7) Lower the vehicle.

(8) Jounce the front and rear of vehicle.

(9) Adjust the front camber to the preferred setting by pushing in or pulling outward on the top of the wheel and tire as required. When camber is correct, tighten the upper and lower strut to knuckle camber adjustment bolts to a torque of 170 N·m (125 ft. lbs.).

## SERVICE PROCEDURES (Continued)

(10) Proceed to Front Wheel Toe Adjustment in this section and adjust front wheel toe as necessary.

### FRONT WHEEL TOE ADJUSTMENT

(1) Center steering wheel and hold it in place using a steering wheel clamp.

(2) Loosen the tie rod adjustment pinch bolt. Rotate the adjustment sleeve to align toe to specifications (Fig. 5).

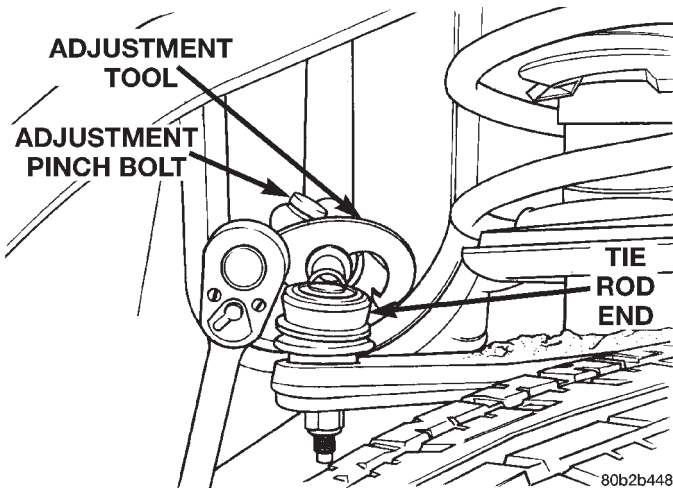
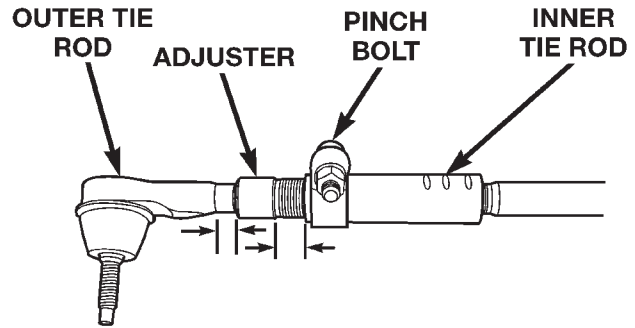


**Fig. 5 Front Wheel Toe Adjustment Location**

**CAUTION:** When setting toe on vehicle, the maximum dimension of exposed threads allowed on inner and outer tie rod cannot exceed the distance shown (Fig. 6). If the maximum distance is exceeded, inadequate retention of either inner or outer tie rod may result. Ensure that adjustment pinch bolt is torqued to required specification when Toe setting procedure is completed.

**CAUTION:** When torquing adjustment pinch bolt, the following procedure must be followed to ensure adequate retention of the adjustment sleeve. Not



**ALLOWABLE THREADS EXPOSED ON OUTER TIE ROD AND ADJUSTER IS A MAXIMUM OF 20 MILLIMETERS. REFER TO AREA INDICATED ABOVE ON THE OUTER TIE ROD AND ADJUSTER.**

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**Fig. 6 Tie Rod Thread Engagement Requirements**

following this procedure, could result in the Toe Setting Adjustment changing and/or loosening of the inner or outer tie rod ends.

**NOTE:** Use an appropriate tool on neck area of outer tie rod to maintain the correct perpendicular orientation of the tie rod end stud within the tie rod end.

(3) After completion of toe adjustment procedure, tighten tie rod pinch bolt (Fig. 6) to a torque of 34 N·m (25 ft. lbs.).

(4) Road test the vehicle after the initial wheel alignment has been performed. If vehicle still drifts or leads, repeat the front wheel alignment procedure and adjust the camber to bias the cross camber setting opposite of the direction in which the vehicle has the tendency to lead. For example, if the vehicle leads left, compensate by setting left front camber to 0.0° and right front camber up to +0.6°, allowing both sides to remain within camber specifications. The cross camber is still at 0.6° which is within the allowed alignment specification.

## SPECIFICATIONS

## ALIGNMENT SPECIFICATIONS AT VEHICLE CURB HEIGHT

| FRONT WHEEL ALIGNMENT                                                                                                                                                                                                                                                                       | ACCEPTABLE ALIGNMENT RANGE AT CURB HEIGHT | PREFERRED SETTING |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------|
| CAMBER.....                                                                                                                                                                                                                                                                                 | -0.6° to +0.6°                            | +0.0°             |
| Cross Camber                                                                                                                                                                                                                                                                                | 0.7 degrees or less                       | 0.0               |
| TOTAL TOE .....<br>Specified In Degrees (See Note)                                                                                                                                                                                                                                          | 0.3°in to 0.1°out                         | 0.1° in           |
| CASTER* (Reference Angle).....                                                                                                                                                                                                                                                              | +2.0° to +4.0°                            | +3.0°             |
| *Side To Side Caster Maximum Difference                                                                                                                                                                                                                                                     | 1.0° or less                              | 0.0°              |
| REAR WHEEL ALIGNMENT                                                                                                                                                                                                                                                                        | ACCEPTABLE ALIGNMENT RANGE AT CURB HEIGHT | PREFERRED SETTING |
| CAMBER.....                                                                                                                                                                                                                                                                                 | -0.7° to +0.3°                            | -0.2°             |
| TOTAL TOE .....<br>Specified In Degrees (See Note)<br>TOE OUT: When Backed On Alignment Rack Is<br>TOE In When Driving                                                                                                                                                                      | 0.2° Out to 0.4° In                       | 0.1° in           |
| THRUST ANGLE.....                                                                                                                                                                                                                                                                           | -0.15° to +0.15°                          |                   |
| Note: Total Toe is the sum of the left and right wheel Toe settings. Positive is Toe-in, negative is Toe-out. Total Toe must be equally split between each front wheel to ensure the steering wheel is centered after setting Toe. Left and Right Toe must be equal to within 0.02 degrees. |                                           |                   |

## FRONT SUSPENSION

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### GENERAL INFORMATION

#### SUSPENSION CAUTIONS

**CAUTION:** ONLY FRAME CONTACT HOISTING EQUIPMENT CAN BE USED ON THIS VEHICLE.

All vehicles have a fully independent rear suspension. The vehicles can not be hoisted using equipment designed to lift a vehicle by the rear axle. If this type of hoisting equipment is used, damage to rear suspension components will occur.

**CAUTION:** At no time when servicing a vehicle, can a sheet metal screw, bolt or other metal fastener be installed in the shock tower to take the place of an original plastic clip. Also, NO holes can be drilled into the front shock tower in the area shown in (Fig. 1), for the installation of any metal fasteners into the shock tower.

Because of the minimum clearance in this area (Fig. 1) installation of metal fasteners could damage the coil spring coating and lead to a corrosion failure of the spring. If a plastic clip is missing, or is lost or broken during servicing a vehicle, replace only with the equivalent part listed in the Mopar parts catalog.

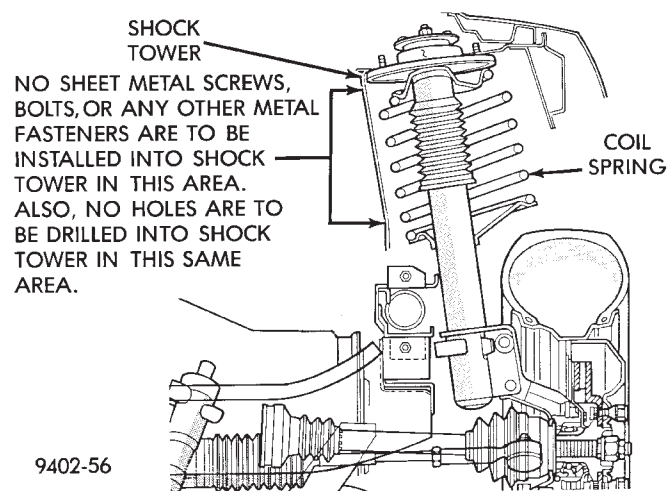


**Fig. 1 Strut Tower To Coil Spring Minimum Clearance Area (Typical)**

### DESCRIPTION AND OPERATION

#### FRONT SUSPENSION SYSTEM

This vehicle uses a MacPherson strut front suspension design. The MacPherson strut assembly includes the following components. A rubber isolated strut upper mount and bearing assembly, spring seat, coil spring and coil spring lower insulator. The MacPherson strut assembly is attached to the vehicle at the

## DESCRIPTION AND OPERATION (Continued)

shock tower using 4 studs which are part of the isolated top mount. The lower end of the MacPherson strut assembly is attached to the upper leg of the steering knuckle. Attachment of the MacPherson strut assembly to the steering knuckle is by 2 serrated bolts. A forged lower control arm assembly is attached to the front cradle and steering knuckle. A tension strut connects the lower control arm assembly to the front cradle. A sealed for life front hub and bearing assembly is attached to the front steering knuckle. The outer C/V joint assembly is splined to the front hub and bearing assembly and is retained by a prevailing torque nut.

**MacPHERSON STRUT**

The front strut and suspension of the vehicle is supported by coil springs positioned around the struts. The springs are contained between an upper seat, located just below the top strut mount assembly and a lower spring seat on the strut lower housing.

The top of each strut assembly is bolted to the upper fender reinforcement (shock tower) through a rubber isolated mount.

The bottom of the strut assembly attaches to the top of the steering knuckle with two serrated through bolts and prevailing torque nuts. Caster is a fixed setting (net build) on all vehicles and is not adjustable.

**COIL SPRING**

Coil springs are rated separately for each corner or side of the vehicle depending on optional equipment and type of vehicle service. During service procedures when both springs are removed, mark springs to ensure installation in original position. Each coil spring comes with a plastic sleeve on the second coil of the spring. This plastic sleeve is a noise insulator for the coil spring.

**NOTE:** If coil springs require replacement, be sure that the springs needing replacement, are replaced with springs meeting the correct load rating for the vehicle and its specific options.

**STEERING KNUCKLE**

The front suspension knuckle provides for steering control of the vehicle. Supports the brake caliper and absorbs the loads exerted during vehicle braking. It also supports the front (driving) hub and bearing and stub axle assembly.

The front suspension knuckle also provides the ability to align the front wheels of the vehicle. This is done by allowing for front wheel Toe adjustment.

The steering knuckle is a single casting with legs machined for attachment to the front strut assembly and lower control arm ball joint. The steering knuckle also has machined abutments on the casting

to support and align the front brake caliper assembly. The knuckle also holds the front drive shaft outer C/V joint hub and bearing assembly. The hub is positioned through the bearing and knuckle, with the constant velocity stub shaft splined through the hub. The outer C/V joint is retained to the hub and bearing assembly using a prevailing torque nut.

**HUB AND BEARING**

The hub and bearing unit is serviced only as a complete assembly. It is mounted to the steering knuckle by 3 mounting bolts that are removed from the rear of the steering knuckle.

**LOWER CONTROL ARM**

The lower control arm is a steel forging with 2 rubber bushings isolating the lower control arm from the front cradle assembly. The isolator bushings consist of a metal encased pivot bushing and a solid rubber tension strut bushing. The lower control arm is bolted to the cradle assembly using a pivot bolt through the center of the rubber pivot bushing and at the tension strut isolator bushing.

The ball joint is an integral part of the control arm and has a non-tapered stud with a notch for clamp bolt clearance. The stud is clamped and locked into the steering knuckle leg with a clamp bolt. The ball joint used on this vehicle is non-serviceable and if defective must be serviced as part of the lower control arm.

**TENSION STRUT**

This vehicle uses a tension strut on each side of the vehicles front suspension, between the lower control and front suspension cradle. The tension strut controls longitudinal (for-and-aft) movement of the front wheels of the vehicles. Controlling the longitudinal movement of the wheels reduces harshness when wheels hit sudden irregularities in the road surface.

**BALL JOINT**

The front suspension lower control arm ball joints operate with no free play. See Inspection Ball Joint Wear in the Diagnosis And Testing Section in this group of the service manual to determine if the ball joint is worn and requires replacement.

The ball joints are not replaceable as a separate component of the lower control arm assembly. If a ball joint is found to be defective, the entire lower control arm will need to be replaced. Do not attempt any type of repair on the ball joint assembly.

## DESCRIPTION AND OPERATION (Continued)

**STABILIZER BAR**

The stabilizer bar interconnects the front MacPherson struts and is attached to the front suspension cradle.

Jounce and rebound movements affecting one wheel are partially transmitted to the opposite wheel of the vehicle through the stabilizer bar, this helps to minimize the body roll of the vehicle during suspension movement.

Attachment of the stabilizer bar to the front suspension cradle is through 2 rubber-isolator bushings and bushing retainers. The stabilizer bar to strut attachment is done utilizing double ball jointed stabilizer bar links. All parts of the stabilizer bar are serviceable, and the stabilizer bar to front suspension cradle bushings are split for easy removal and installation. The split in the stabilizer bar to front suspension cradle bushings must be positioned toward the front of the vehicle, when the stabilizer bar is installed.

**STABILIZER BAR LINK**

The stabilizer bar link assembly is used to attach the stabilizer bar to the front strut assemblies. This reduces the fore-and-aft rate of the stabilizer bar from the rest of the suspension.

**DIAGNOSIS AND TESTING****MacPHERSON STRUT ASSEMBLY**

- (1) Inspect for damaged or broken coil springs.
- (2) Inspect for torn or damaged strut assembly dust boots.
- (3) Lift dust boot and inspect strut assembly for evidence of fluid running from the upper end of fluid reservoir. (Actual leakage will be a stream of fluid running down the side and dripping off lower end of unit.) A slight amount of seepage between the strut rod and strut shaft seal is not unusual and does not affect performance of the strut assembly. Also inspect jounce bumpers for signs of damage or deterioration.
- (4) Inspect the upper strut mount assembly. Make sure the correct mount is on the correct side of the vehicle. Looking down at the top of the upper mount, 2 tabs can be seen, (Fig. 2) and (Fig. 3), down inside the mount center well. The positioning of these tabs is critical to vehicle ride and sound. **DO NOT install a right mount on the left front strut or a left mount on a right front strut.**
- (4) If the strut is off the vehicle, a rectangular hole can be seen on the edge of the mount mounting surface (Fig. 2) and (Fig. 3). This is always in the 10 o'clock position when observing rubber tab positioning, whether a left or right mount is being observed.

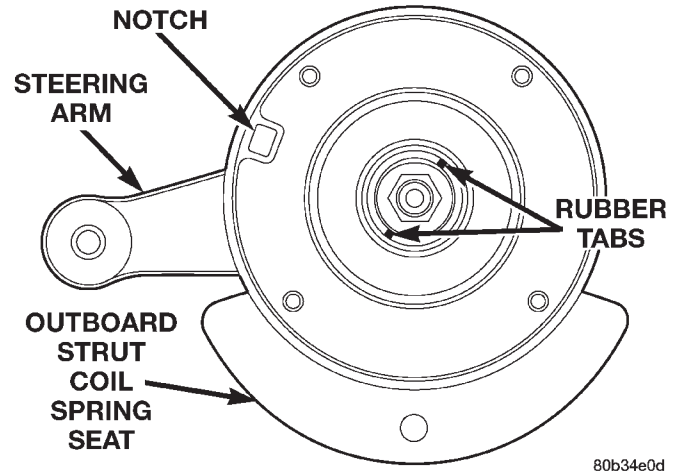


*Fig. 2 Left Front Strut Upper Mount*

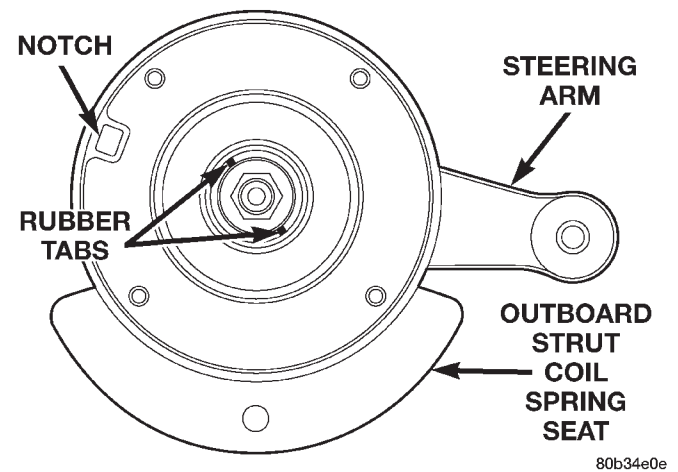


*Fig. 3 Right Front Strut Upper Mount*

**STEERING KNUCKLE**

The front suspension knuckle (Fig. 4) is not a serviceable component. Do not attempt to straighten or repair the front suspension knuckle in any way.

Service repair or replacement of the front (drive) hub and bearing, (Fig. 4) can be done with the front suspension knuckle remaining on the vehicle.

**HUB AND BEARING**

The front hub bearing is designed for the life of the vehicle and requires no type of periodic maintenance. The following procedure may be used for diagnosing the condition of the front hub bearing.

With the wheel, disc brake caliper, and brake rotor removed, rotate the wheel hub. Any roughness or resistance to rotation may indicate dirt intrusion or a failed hub bearing. If the hub bearing exhibits any of these conditions during diagnosis, the hub bearing will require replacement, the bearing is not serviceable.

## DIAGNOSIS AND TESTING (Continued)

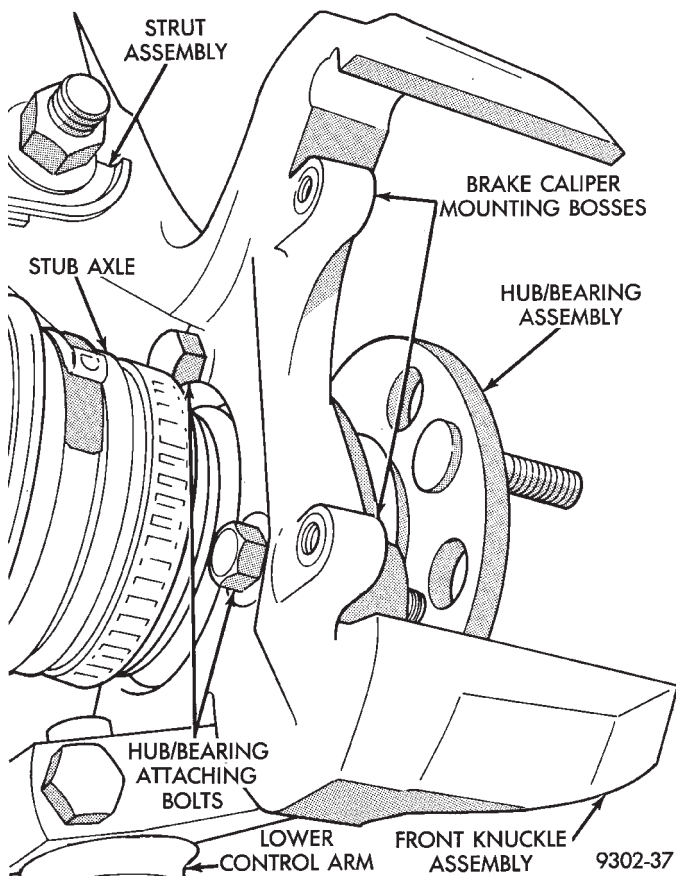


Fig. 4 Steering Knuckle

Damaged bearing seals and the resulting excessive grease loss may also require bearing replacement. Moderate grease weepage from the hub bearing is considered normal and should not require replacement of the hub bearing.

**LOWER CONTROL ARM**

The lower control arm if damaged, is serviced only as a complete component. **Do not attempt to repair or straighten a broken or bent lower control arm.** Inspect the lower control arm for signs of damage from contact with the ground or road debris. If the lower control arm shows any sign of damage, inspect the lower control arm to see if it is bent.

The only serviceable components of the lower control arm are, the pivot bushing, and the tension strut bushing. The service procedure to replace these components is detailed in the specific component Service Procedures Sections in this group of the service manual.

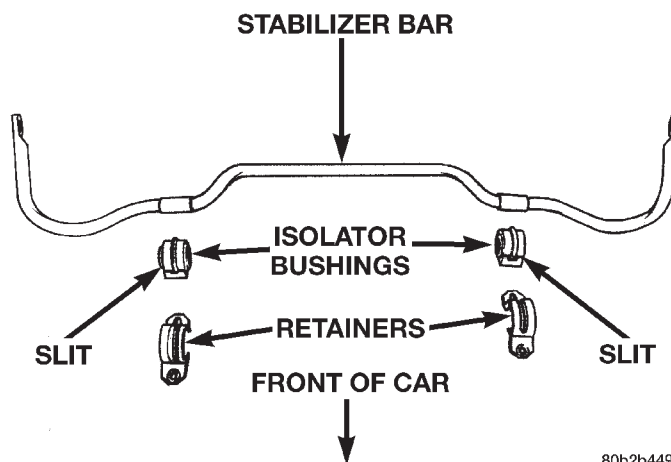
**BALL JOINT**

Raise front of vehicle using jack stands or a frame contact type hoist, until front suspension is in full rebound and tires are not in contact with the ground. Grasp tire at top and bottom, and apply an in and out on the wheel and tire. While applying force to the tire, look for any movement between the lower ball

joint and lower control arm. If any movement is evident the lower ball joint is worn and the lower control arm requires replacement.

**STABILIZER BAR**

Inspect for broken or distorted retainers and bushings. If bushing replacement is required, bushing can be removed by opening slit in bushing and removing bushing from around stabilizer bar. The stabilizer bar to cradle assembly bushings, should be positioned on stabilizer bar, so slit in bushing is positioned toward the front of the vehicle when the stabilizer bar is installed (Fig. 5).



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Fig. 5 Stabilizer Bar And Isolator Bushings

**SERVICE PROCEDURES****STABILIZER BAR ISOLATOR BUSHING**

If only the stabilizer bar isolator bushings require service without any service to the stabilizer bar. The stabilizer bar isolator bushings can be removed from the stabilizer bar without requiring the stabilizer bar to be removed from the vehicle.

**REMOVE**

(1) Raise vehicle on jack stands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.

(2) Remove the 2 bolts attaching each of the 2 stabilizer bushing retainers and bushings to the cradle assembly (Fig. 6).

(3) Remove the stabilizer bar isolator bushing retainers from the isolator bushings.

(4) Inspect for broken or distorted retainers and bushings. If bushing replacement is required, the bushing can be removed by opening the slit in the bushing and removing the bushing from around stabilizer bar. **The stabilizer bar to cradle assembly bushings must be positioned on the stabilizer**

## SERVICE PROCEDURES (Continued)

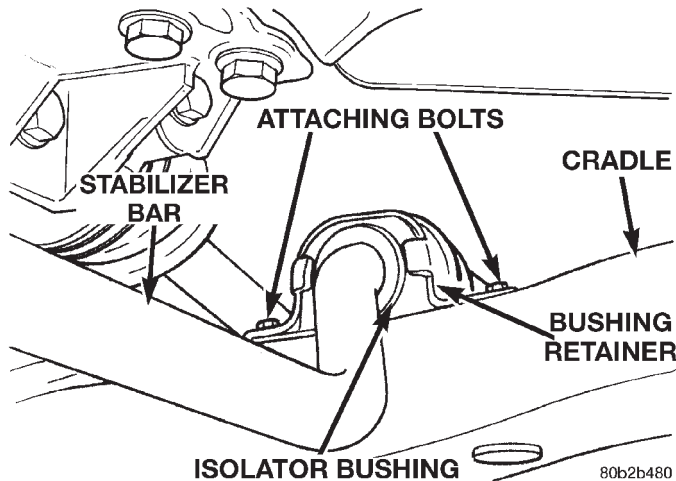


**Fig. 6 Stabilizer Bar Isolator Bushing Attachment To Cradle**

bar so the slit in the bushing is positioned toward front of vehicle (Fig. 7).

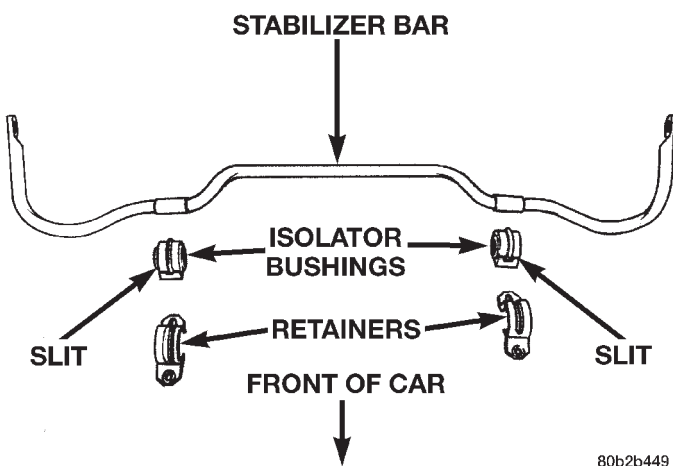


**Fig. 7 Isolator Bushing Install Position**

#### INSTALL

(1) Install bushings onto stabilizer bar with slits facing forward and flat side facing downward. **The stabilizer bar to cradle assembly bushings must be positioned on the stabilizer bar so the slit in the bushing is positioned toward front of vehicle (Fig. 8).**

(2) Install the isolator bushing retainers back onto the stabilizer bar isolator bushings.

**CAUTION:** When stabilizer bar is installed. Position stabilizer bar, so lower part of stabilizer bar is centered in the middle of the cradle assembly. Failure to do this may cause stabilizer bar to come in contact with other suspension components.

(3) Align the stabilizer bar bushing retainers with the mounting holes in the cradle assembly (Fig. 6).

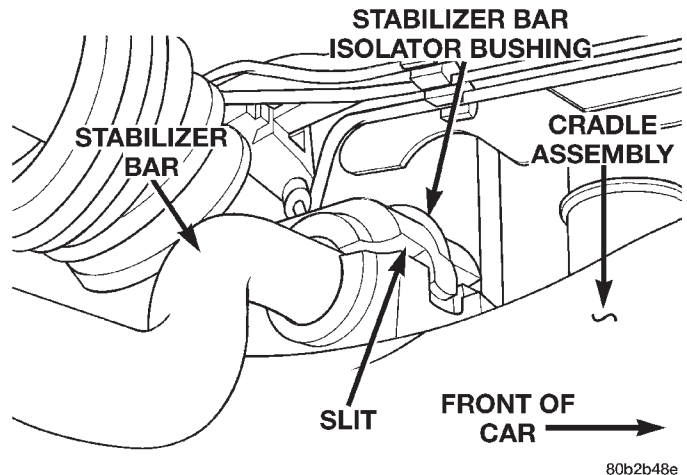


**Fig. 8 Stabilizer Bar Isolator Bushing**

(4) Install and torque the 4 stabilizer bar bushing retainer to cradle assembly attaching bolts (2 each retainer) to 61 N·m (45 ft. lbs.).

(5) Lower vehicle to the ground.

## REMOVAL AND INSTALLATION

### MacPHERSON STRUT

#### REMOVE

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.

(2) Remove front tire and wheel assembly from the vehicle.

(3) Remove the stabilizer bar attaching link nut at the strut assembly. Remove the attaching link from the strut assembly (Fig. 9).

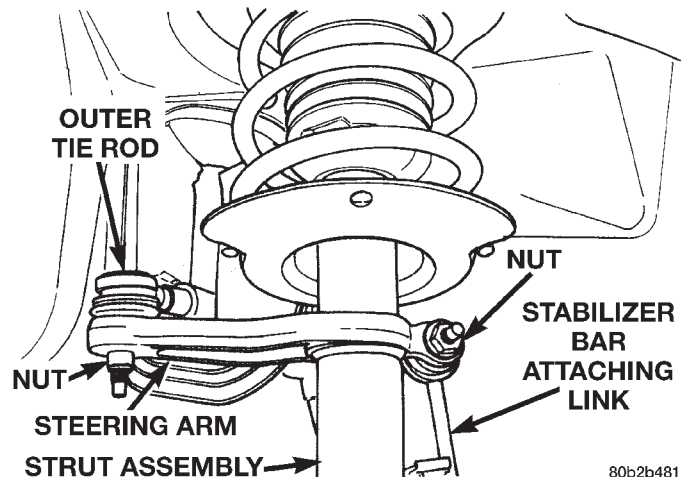
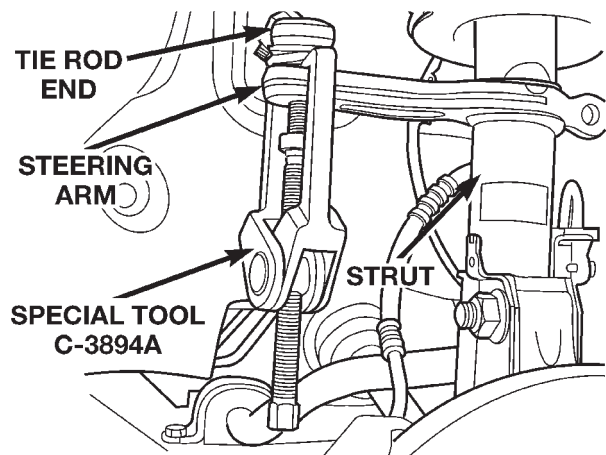


**Fig. 9 Stabilizer Bar Link At Strut**

## REMOVAL AND INSTALLATION (Continued)

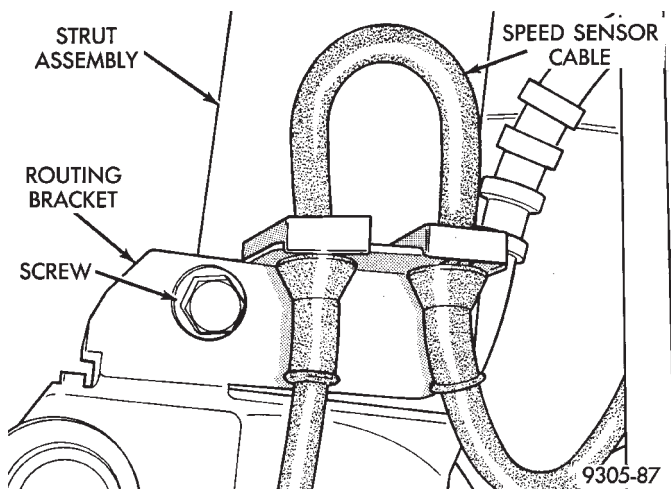
(4) Loosen, but do not remove, the outer tie rod end to strut arm attaching nut (Fig. 10). Release outer tie rod end from steering arm using Puller, Special Tool C-3894A (Fig. 10), then remove nut and tie rod from the steering arm.



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**Fig. 10 Removing Outer Tie Rod From Steering Arm**

(5) If vehicle is equipped with antilock brakes, remove the speed sensor cable routing bracket from the strut assembly (Fig. 11).

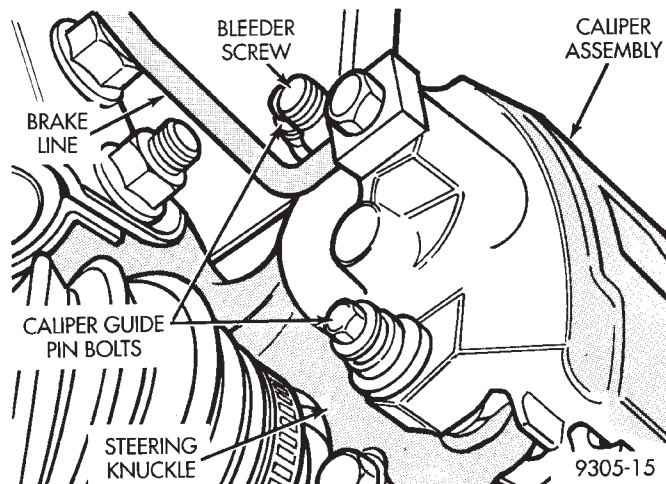


9305-87

**Fig. 11 Speed Sensor Cable Routing Bracket**

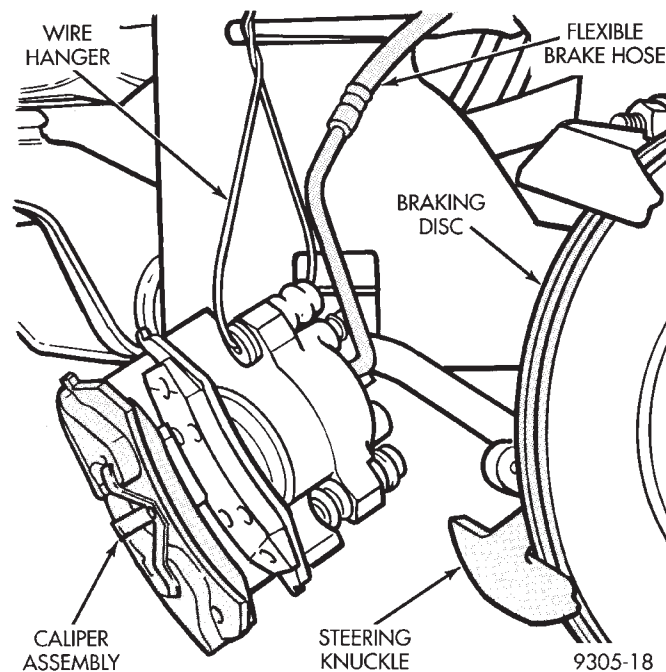
(6) Remove the 2 guide pin bolts mounting the caliper assembly to the steering knuckle (Fig. 12).

(7) Remove brake caliper assembly from steering knuckle and braking disc. Refer to the Brake Section in this service manual for the required caliper removal procedure. Support caliper assembly by hanging it from frame of vehicle with wire or some other method (Fig. 13), do not let caliper assembly hang by brake hose. Remove front braking disc from hub.



9305-15

**Fig. 12 Caliper Guide Pin Bolts**



9305-18

**Fig. 13 Removal And Storage Of Front Caliper**

**CAUTION:** The strut assembly to steering knuckle bolts are serrated were they go through strut assembly and steering knuckle. When removing bolts, turn nuts off bolts **DO NOT TURN BOLTS IN STEERING KNUCKLE**. If bolts are turned damage to steering knuckle will result.

(8) Remove the 2 strut assembly to steering knuckle attaching bolts (Fig. 14).

(9) Remove the 4 strut assembly upper mount to strut tower mounting nut and washer assemblies (Fig. 15).

(10) Remove the strut assembly from the vehicle for inspection and or disassembly.

## REMOVAL AND INSTALLATION (Continued)

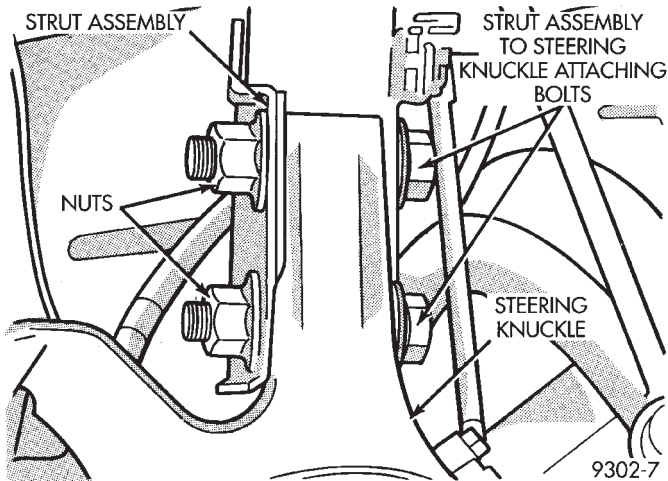


**Fig. 14 Strut Assembly To Steering Knuckle Attaching Bolts**

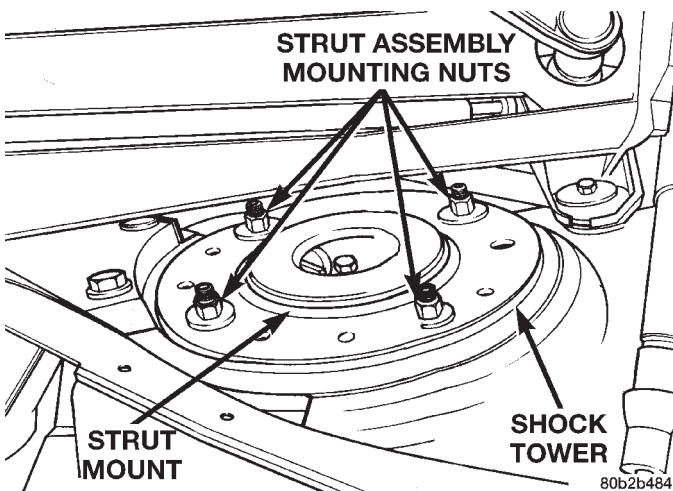


**Fig. 15 Strut Assembly Mounting**

**INSTALL**

(1) Install front strut assembly into shock tower. Install the 4 strut assembly upper mount to shock tower attaching nuts (Fig. 15). Tighten the 4 strut mount to strut tower attaching nuts to a torque of 37 N·m (28 ft. lbs.) torque.

(2) Position steering knuckle into strut assembly.

**CAUTION:** The strut assembly to steering knuckle bolts are serrated were they go through strut assembly and steering knuckle. When installing bolts, turn nuts onto bolts **DO NOT TURN BOLTS IN STEERING KNUCKLE**. If bolts are turned damage to steering knuckle will result.

(3) Install the strut assembly to steering knuckle attaching bolts (Fig. 14). Install nuts on attaching bolts. Tighten the strut assembly clevis to steering knuckle attaching bolt nuts to a torque of 203 N·m (150 ft. lbs.).

(4) Install braking disc back on front hub and bearing assembly. Install front brake caliper assem-

bly on steering knuckle. Install the 2 caliper assembly to steering knuckle attaching bolts (Fig. 12). Tighten the caliper assembly guide pin bolts to a torque of 19 N·m (192 in. lbs.).

(5) If the vehicle is equipped with antilock brakes. Install the front speed sensor cable routing bracket onto the front strut assembly (Fig. 11).

(6) Install outer tie rod on strut assembly. Install tie rod attaching nut. Tighten the tie rod attaching nut to a torque of 37 N·m (27 ft. lbs.).

(7) Install stabilizer bar link on strut (Fig. 9). Tighten the stabilizer link attaching nut to a torque of 95 N·m (70 ft. lbs.).

(8) Install the wheel and tire assembly.

(9) Tighten the wheel mounting nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(10) Lower vehicle.

**STEERING KNUCKLE****REMOVE**

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove the front wheel and tire assembly from the vehicle.

(3) Remove the front caliper assembly from the front steering knuckle assembly (Fig. 16). Refer to Front Disc Brake Service in the Brake Section of this service manual for caliper removal procedure.

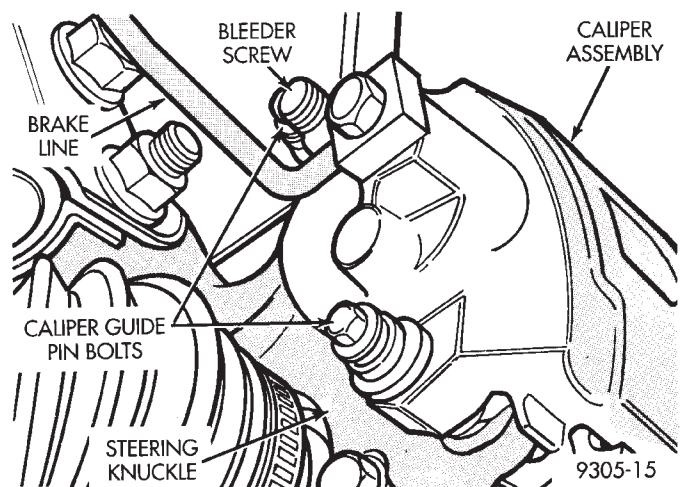
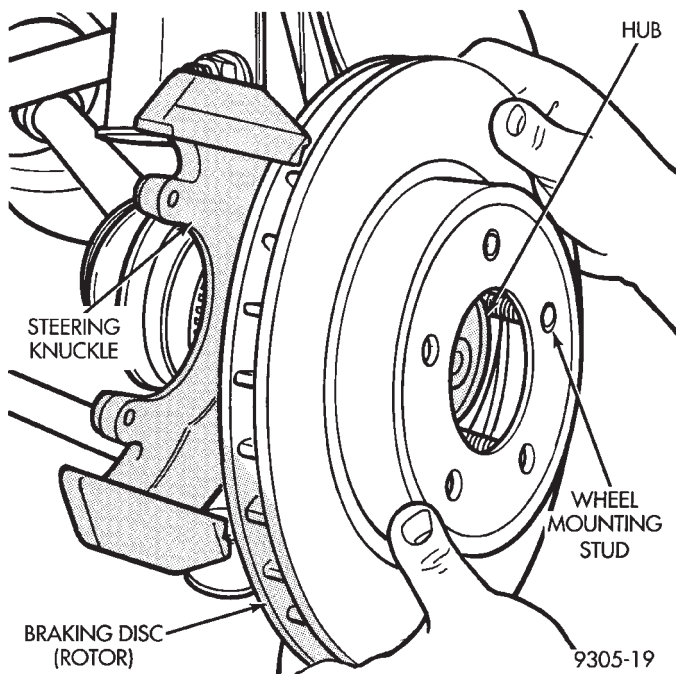


**Fig. 16 Disc Brake Caliper Mounting**

(4) Remove front rotor from hub (Fig. 17).

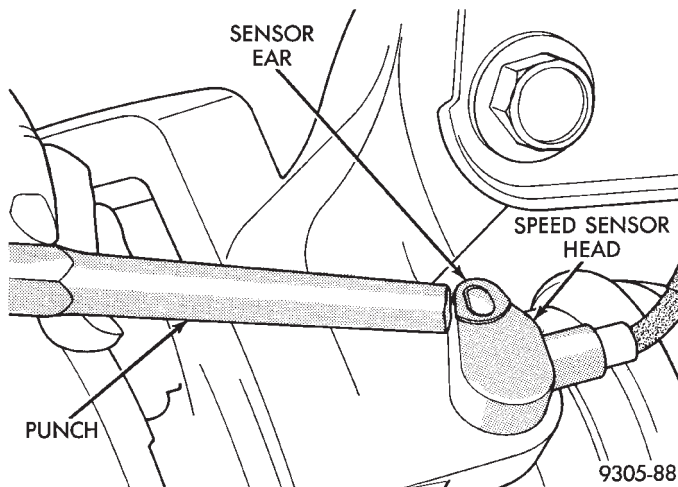
(5) Remove screw attaching wheel speed sensor head to steering knuckle. **Speed sensor head should be removed from steering knuckle, to**

## REMOVAL AND INSTALLATION (Continued)

**Fig. 17 Brake Rotor**

avoid damage to speed sensor by outer C/V joint when hub and bearing is removed.

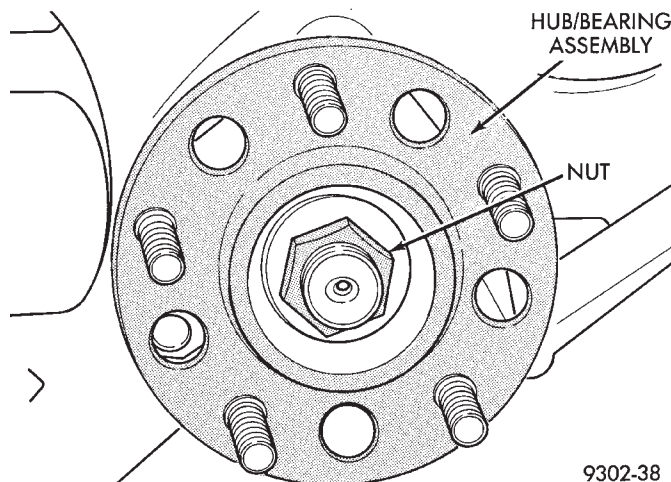
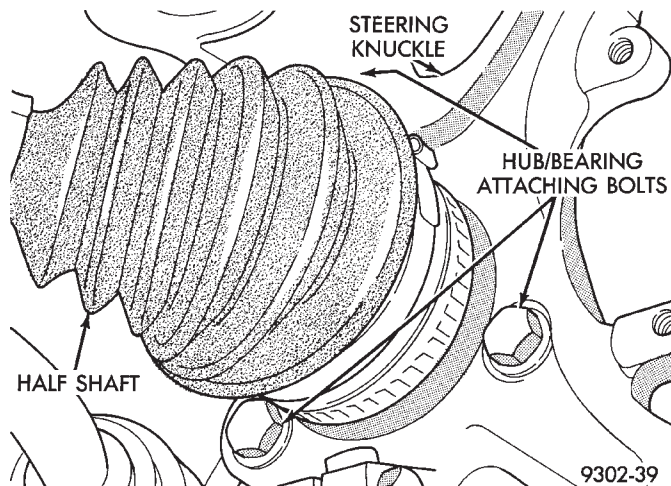
(6) Carefully, remove sensor head from steering knuckle. If the sensor has seized, due to corrosion, **DO NOT USE PLIERS ON SENSOR HEAD**. Use a hammer and punch (Fig. 18) to tap edge of sensor ear, rocking sensor side to side until free.

**Fig. 18 Speed Sensor Head Removal**

(7) Remove the hub and bearing to stub axle retaining nut (Fig. 19).

(8) Remove the 3 steering knuckle to hub and bearing assembly attaching bolts (Fig. 20).

**CAUTION:** If metal seal (Fig. 21) on hub and bearing assembly is seized to steering knuckle and becomes dislodged on hub and bearing assembly

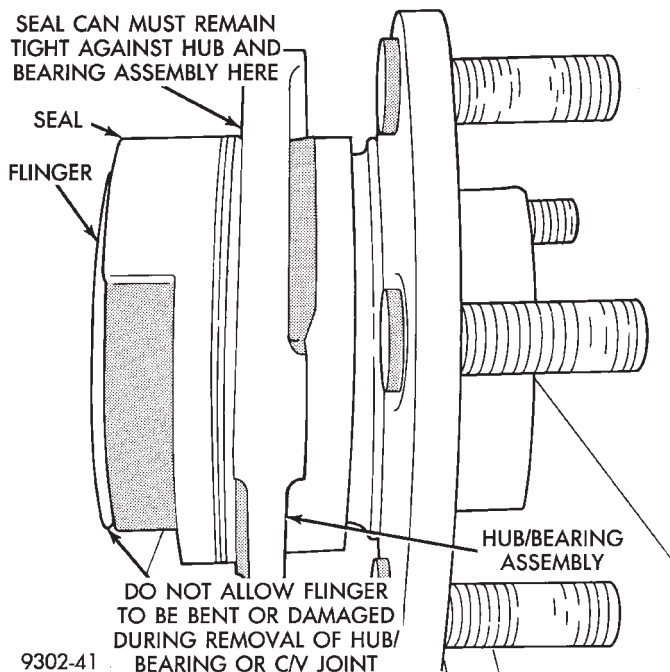
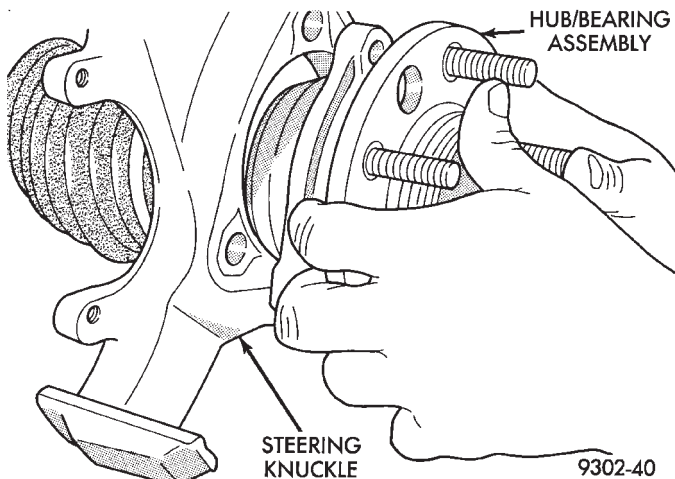
**Fig. 19 Hub And Bearing Retaining Nut****Fig. 20 Hub And Bearing Retaining Bolts**

during bearing removal the hub and bearing assembly **MUST** not be reused and **MUST** be replaced with a new hub and bearing assembly. Also if flinger disc (Fig. 21) becomes damaged (bent or dented) during removal, hub and bearing assembly must be replaced with a new hub and bearing assembly.

(9) Remove hub and bearing assembly from steering knuckle. It is removed by sliding it straight out of steering knuckle and off end of stub axle (Fig. 22). If hub and bearing assembly will not slide out of knuckle, insert a pry bar between hub and bearing assembly and steering knuckle (Fig. 23) and gently pry hub and bearing from knuckle. If stub shaft is frozen to hub and bearing assembly tap end of stub shaft with soft face hammer to free it from hub and bearing spline.

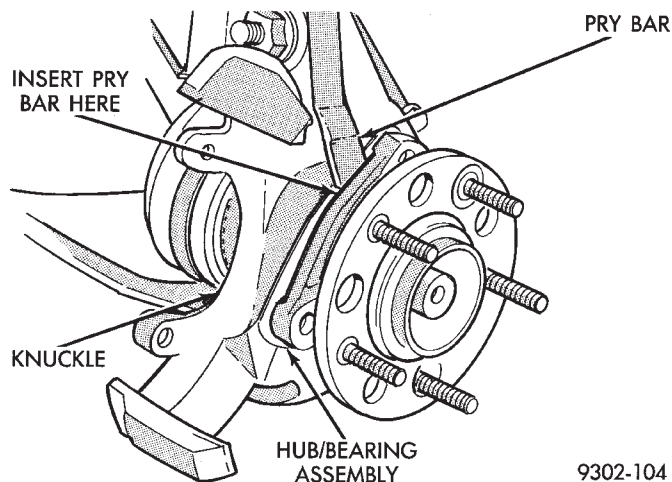
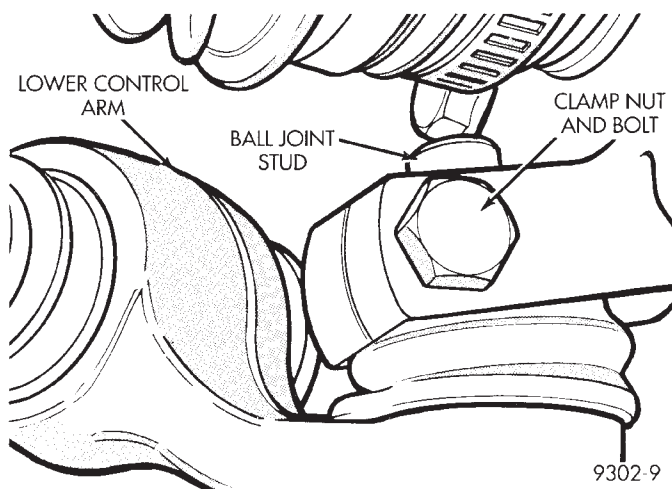
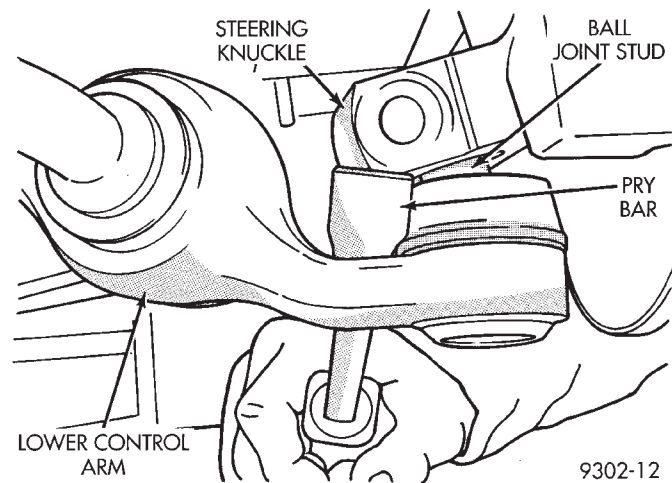
(10) Remove the ball joint stud to steering knuckle attaching nut and bolt (Fig. 24).

## REMOVAL AND INSTALLATION (Continued)

**Fig. 21 Hub And Bearing Assembly Seal****Fig. 22 Hub And Bearing Assembly Removal And Installation**

**CAUTION:** When lower control arm is separated from steering knuckle, do not let ball joint seal hit up against steering knuckle. If ball joint seal hits steering knuckle, seal damage may occur. If ball joint seal becomes torn, replace seal before assembling lower control arm to knuckle.

(11) Carefully insert a pry bar between lower control arm and steering knuckle (Fig. 25). Push down on pry bar to separate ball joint stud from steering knuckle (Fig. 25).

**Fig. 23 Prying Hub And Bearing Assembly From Steering Knuckle****Fig. 24 Control Arm To Steering Knuckle Attachment****Fig. 25 Separating Ball Joint From Steering Knuckle**

## REMOVAL AND INSTALLATION (Continued)

**CAUTION:** The strut assembly to steering knuckle bolts are serrated where they go through strut assembly and steering knuckle. When removing bolts, turn nuts off bolts **DO NOT TURN BOLTS IN STEERING KNUCKLE**. If bolts are turned damage to steering knuckle will result.

(12) Remove the strut assembly to steering knuckle attaching bolts (Fig. 26).

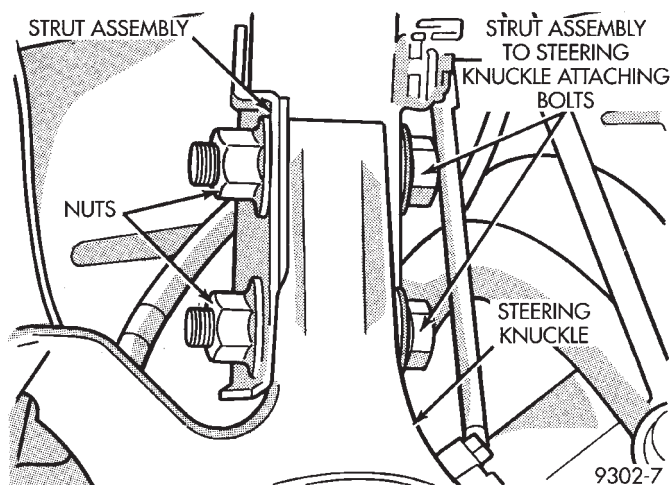


**Fig. 26 Strut To Steering Knuckle Attaching Bolts**

(13) Remove the steering knuckle from the vehicle.

**INSTALL**

(1) Install steering knuckle on ball joint stud. Install steering knuckle to lower ball joint attaching bolt and nut into steering knuckle (Fig. 24). Tighten the attaching bolt to a torque of 55 N·m (40 ft. lbs.).

(2) Position steering knuckle into strut assembly.

**CAUTION:** The strut assembly to steering knuckle bolts are serrated where they go through strut assembly and steering knuckle. When installing bolts, turn nuts onto bolts **DO NOT TURN BOLTS IN STEERING KNUCKLE**. If bolts are turned damage to steering knuckle will result.

(3) Install the strut assembly to steering knuckle attaching bolts (Fig. 26). Install nuts on attaching bolts (Fig. 26). Tighten the strut clevis to steering knuckle attaching bolt nuts to a torque of 203 N·m (150 ft. lbs.).

**CAUTION:** Hub and bearing assembly mounting surfaces on steering knuckle and halfshaft (Fig. 27) must be smooth and completely free of foreign material or nicks.

**CAUTION:** When installing hub and bearing assembly into steering knuckle, be careful not to damage the flinger disc (Fig. 21) on hub and bearing assembly. If flinger disc becomes damaged, hub

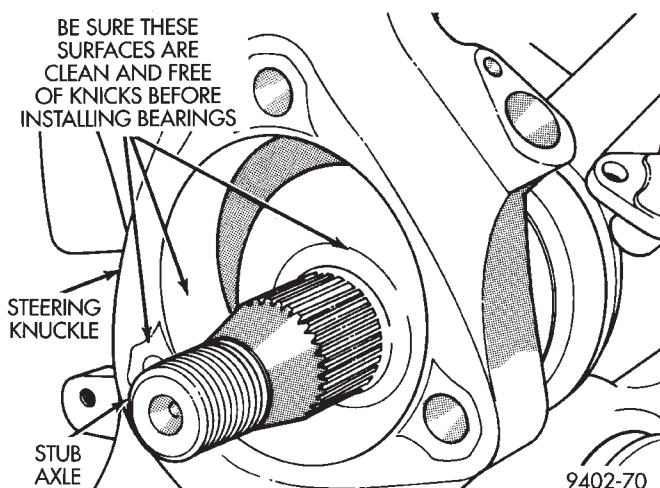


**Fig. 27 Hub And Bearing Assembly Mounting Surfaces**  
and bearing assembly **MUST not be used and MUST be replaced with a new hub and bearing assembly.**

(4) Install hub and bearing assembly onto stub shaft and into steering knuckle until squarely seated on face of steering knuckle.

(5) Install the 3 steering knuckle to hub and bearing assembly attaching bolts (Fig. 20). Equally tighten all 3 mounting bolts until hub and bearing assembly is squarely seated against front of steering knuckle. Then tighten all 3 hub and bearing assembly mounting bolts to a torque of 110 N·m (80 ft. lbs.).

**CAUTION:** The hub and bearing assembly to stub shaft retaining nut (Fig. 19) is a prevailing torque nut and can not be reused. A **NEW** retaining nut **MUST** be used when assembled.

(6) Install a **NEW** hub and bearing assembly to stub shaft retaining nut (Fig. 19). **Tighten, but do not torque the hub nut at this time.**

(7) Coat speed sensor head with High Temperature Multipurpose E.P. Grease before installing into the steering knuckle. Install speed sensor head into steering knuckle. Install screw and tighten to a torque of 7 N·m (60 in. lbs.).

(8) Install the braking disk back on the hub and bearing assembly (Fig. 17).

(9) Install front brake caliper on steering knuckle. Refer to Front Disc Brake Service in the Brake Section of this service manual for caliper installation procedure. Install the caliper to steering knuckle attaching bolts (Fig. 16) and tighten them to a torque of 19 N·m (168 in. lbs.).

(10) Install wheel and tire assembly on vehicle. Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(11) Lower vehicle to the ground.

## REMOVAL AND INSTALLATION (Continued)

**CAUTION:** When torquing hub and bearing assembly to stub shaft retaining nut, do not exceed the maximum torque of  $163 \text{ N}\cdot\text{m} \pm 14 \text{ N}\cdot\text{m}$  (120 ft. lbs.  $\pm 10$  ft. lbs.). If the maximum torque is exceeded this may result in a failure of the drive shaft.

(12) Apply the brakes to keep the vehicle from moving, then tighten the **NEW** stub axle retaining nut to a torque of  $163 \text{ N}\cdot\text{m} \pm 14 \text{ N}\cdot\text{m}$  (120 ft. lbs.  $\pm 10$  ft. lbs.) (Fig. 28).

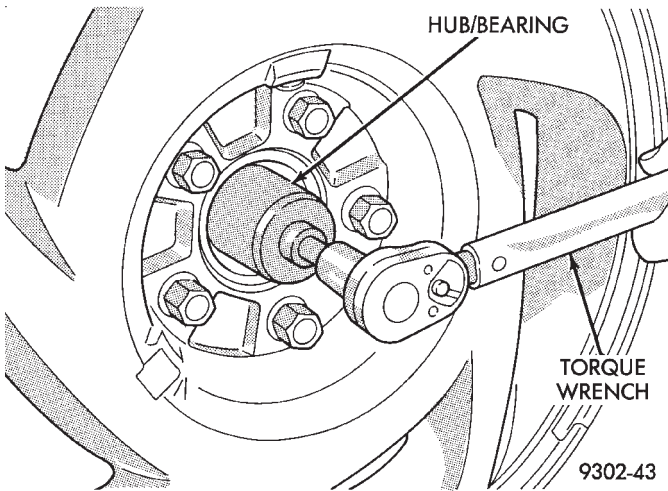


**Fig. 28 Torquing Hub And Bearing Retaining Nut**  
**HUB AND BEARING**

**REMOVE**

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove the front wheel and tire assembly from the vehicle.

(3) Remove the 2 guide pin bolts mounting the caliper assembly to the steering knuckle (Fig. 29). Remove the caliper from the front steering knuckle. Refer to Disc Brake Caliper in the Removal And Installation Section in the Brake Group of this service manual for the caliper removal procedure.

(4) Remove rotor from hub by pulling it straight off wheel mounting studs (Fig. 30).

(5) Remove the hub and bearing retaining nut (Fig. 31).

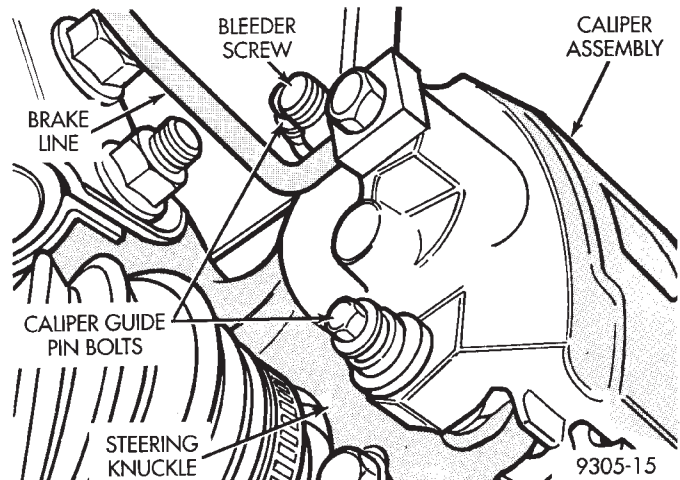


**Fig. 29 Disc Brake Caliper Mounting**

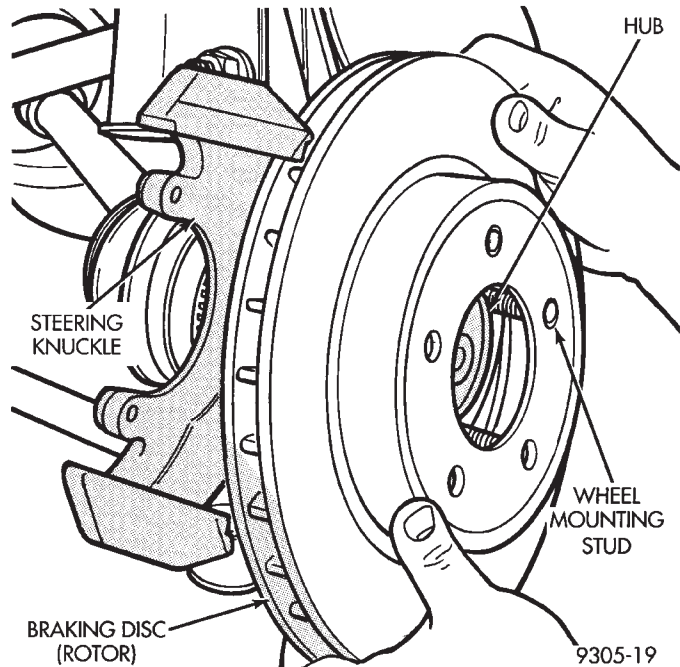


**Fig. 30 Removing Rotor**

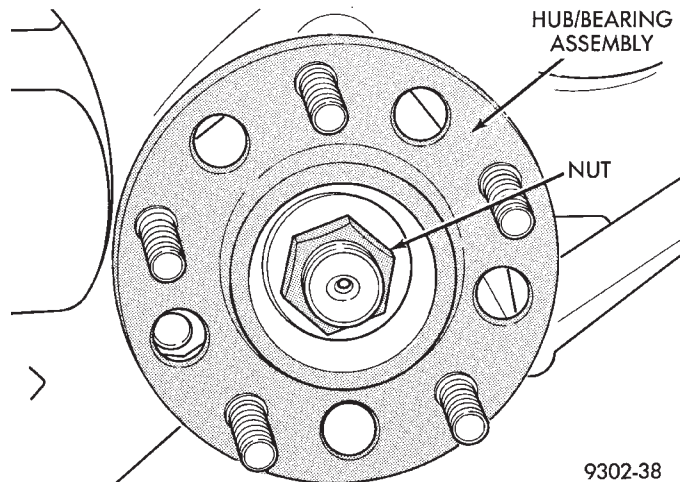


**Fig. 31 Hub And Bearing Retaining Nut**

## REMOVAL AND INSTALLATION (Continued)

(6) Remove the 3 hub and bearing assembly to steering knuckle attaching bolts (Fig. 32).

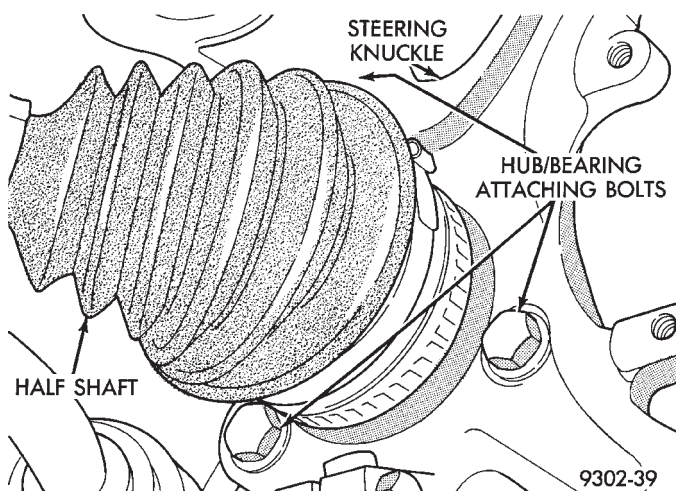


**Fig. 32 Hub And Bearing Assembly Retaining Bolts**

**CAUTION:** When removing hub and bearing assembly from steering knuckle, be careful not to damage the flinger disc (Fig. 35) on hub and bearing assembly. If flinger disc becomes damaged, hub and bearing assembly **MUST** not be used and **MUST** be replaced with a new hub and bearing assembly.

(7) Remove hub and bearing assembly from steering knuckle, by sliding it straight out of steering knuckle and off end of stub axle (Fig. 33). If hub and bearing assembly will not slide out of knuckle. Insert a pry bar between hub and bearing assembly and steering knuckle (Fig. 34) and gently pry hub and bearing from knuckle. If stub shaft is frozen to hub and bearing assembly tap end of stub shaft with soft face hammer to free it from hub and bearing spline.

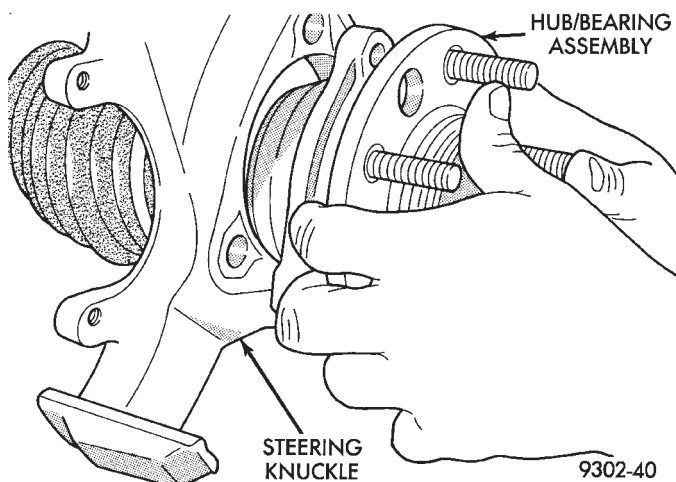


**Fig. 33 Hub And Bearing Removal And Installation**

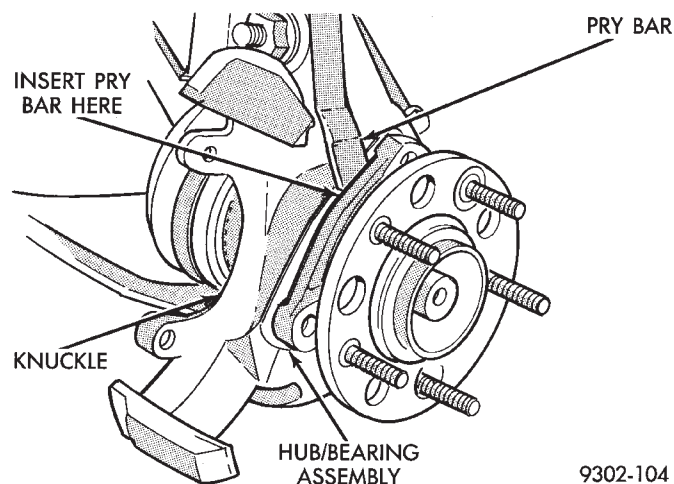


**Fig. 34 Prying Hub And Bearing Assembly From Steering Knuckle**

**CAUTION:** If metal seal (Fig. 35) on hub and bearing assembly is seized to steering knuckle and becomes dislodged on hub and bearing assembly during bearing removal. The hub and bearing assembly **MUST** not be reused and **MUST** be replaced with a new hub and bearing assembly.

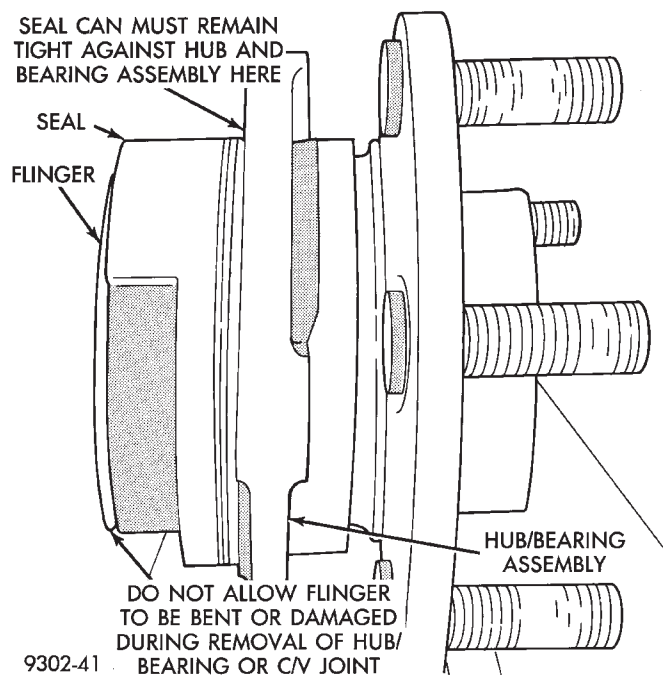


**Fig. 35 Hub And Bearing Assembly Seal**

## REMOVAL AND INSTALLATION (Continued)

## INSTALL

**CAUTION:** Hub and bearing assembly mounting surfaces on steering knuckle and driveshaft (Fig. 36) must be smooth and completely free of foreign material or nicks.

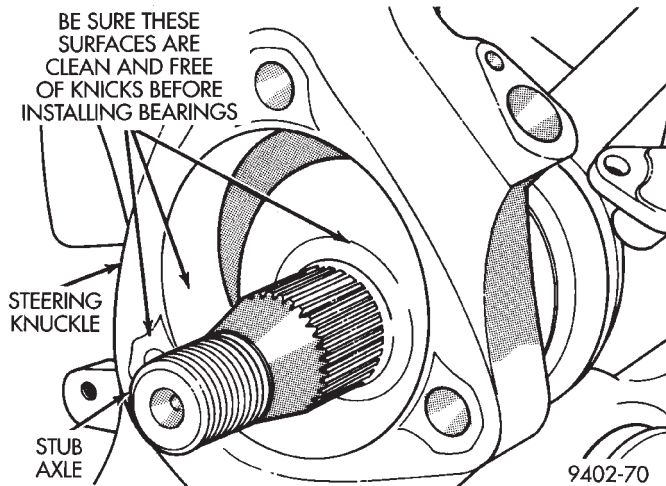


**Fig. 36 Hub And Bearing Mounting Surfaces**

**CAUTION:** When installing hub and bearing assembly into steering knuckle, be careful not to damage the flinger disc (Fig. 35) on hub and bearing assembly. If flinger disc becomes damaged, hub and bearing assembly **MUST** not be used and **MUST** be replaced with a new hub and bearing assembly.

(1) Install hub and bearing assembly onto stub shaft and into steering knuckle until squarely seated on face of steering knuckle

(2) Install the 3 hub and bearing assembly to steering knuckle attaching bolts (Fig. 32). Equally tighten all 3 mounting bolts until hub and bearing assembly is squarely seated against front of steering knuckle. Then tighten the 3 hub and bearing assembly mounting bolts to a torque of 110 N·m (80 ft. lbs.)

**CAUTION:** The hub and bearing assembly to stub shaft retaining nut (Fig. 31) is a prevailing torque nut and can not be re-used. A **NEW** retaining nut **MUST** be used when assembled.

(3) Install a **NEW** hub and bearing assembly to stub shaft retaining nut (Fig. 31). **Tighten, but do not torque the hub nut at this time.**

(4) Install the rotor on the hub and bearing assembly (Fig. 30).

(5) Install front brake caliper back over braking disc and align with caliper mounting holes on steering knuckle. Refer to Disc Brake Caliper in the Removal And Installation Section in the Brake Group of this service manual for the caliper installation procedure. Install the caliper to steering knuckle guide

pin bolts (Fig. 29) and tighten to a torque of 19 N·m (168 in. lbs.).

(6) Install wheel and tire assembly on vehicle. Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(7) Lower the vehicle to the ground.

**CAUTION:** When torquing hub and bearing assembly to stub shaft retaining nut, do not exceed the maximum torque of 163 N·m  $\pm$  14 N·m (120 ft. lbs.  $\pm$  10 ft. lbs.). If the maximum torque is exceeded this may result in a failure of the drive shaft.

(8) With vehicle brakes applied to keep vehicle from moving, tighten the **NEW** stub shaft to hub and bearing assembly retaining nut to 163 N·m  $\pm$  14 N·m (120 ft. lbs.  $\pm$  10 ft. lbs.) (Fig. 37).

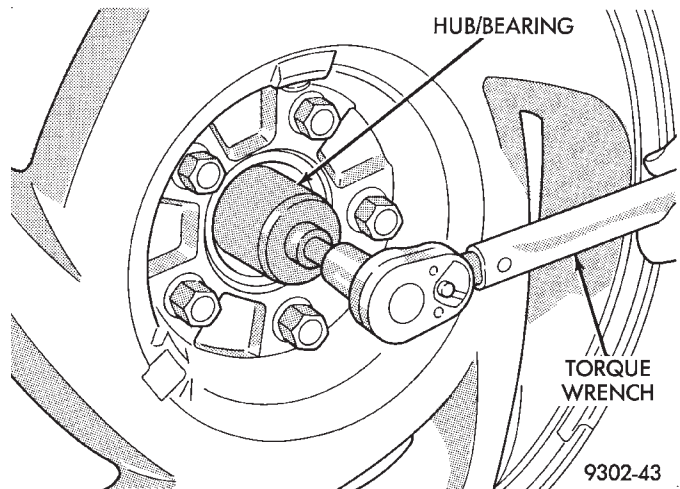


**Fig. 37 Torquing Hub And Bearing Retaining Nut**

(9) Check the Toe setting on the vehicle and reset if not within specifications.

## LOWER CONTROL ARM

### REMOVE

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove the wheel and tire assembly from the vehicle.

(3) Remove the ball joint stud to steering knuckle attaching nut and bolt (Fig. 38).

**CAUTION:** Pulling steering knuckle out from vehicle after releasing from ball joint can separate inner C/V joint. See Driveshafts.

## REMOVAL AND INSTALLATION (Continued)

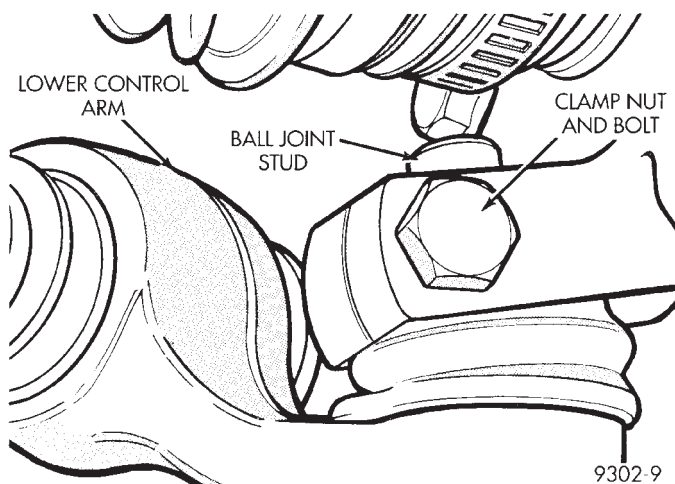


**Fig. 38 Control Arm To Steering Knuckle Attachment**

**CAUTION:** When lower control arm is separated from steering knuckle, do not let ball joint seal hit up against steering knuckle. If ball joint seal hits steering knuckle, seal damage may occur. If ball joint seal becomes torn, replace seal before assembling lower control arm to knuckle.

(4) Carefully insert a pry bar between lower control arm and steering knuckle (Fig. 39). Push down on pry bar to separate ball joint stud from steering knuckle (Fig. 39).

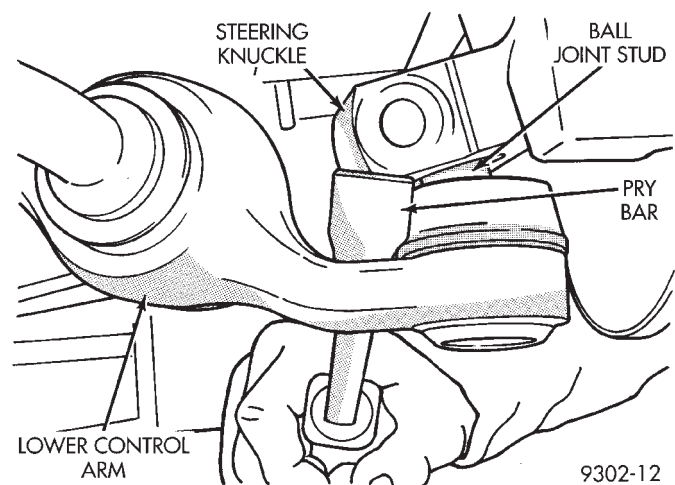


**Fig. 39 Separating Ball Joint From Steering Knuckle**

(5) Remove tension strut to cradle attaching nut and washer from end of tension strut (Fig. 40). When removing tension strut nut, keep strut from turning by holding tension strut at flat using open end wrench (Fig. 40). **Discard tension strut to cradle retaining nut. A NEW tension strut to cradle nut must be used when installing tension strut.**

(6) Loosen and remove lower control arm pivot bushing to cradle assembly pivot bolt (Fig. 41).

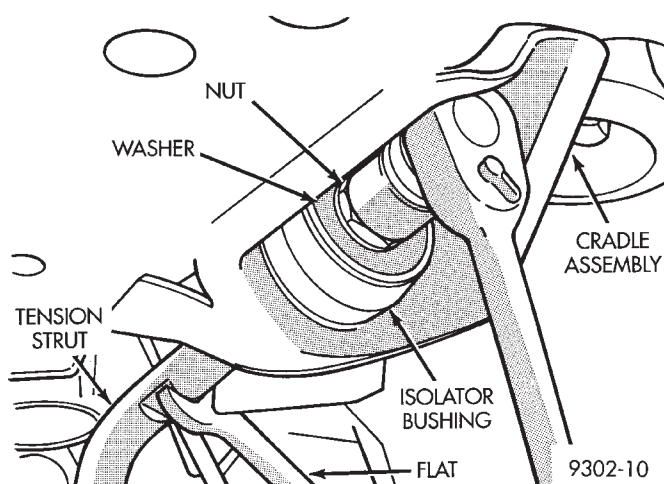


**Fig. 40 Tension Strut To Cradle Mounting**

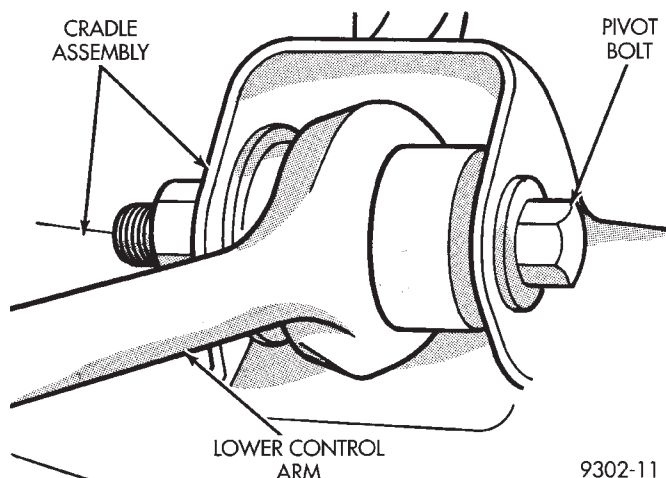


**Fig. 41 Lower Control Arm Pivot Bolt**

(7) Separate lower control arm and tension strut from the cradle as an assembly. Lower control arm is removed from cradle, by first removing pivot bushing from cradle and then sliding tension strut out of isolator bushing (Fig. 42).

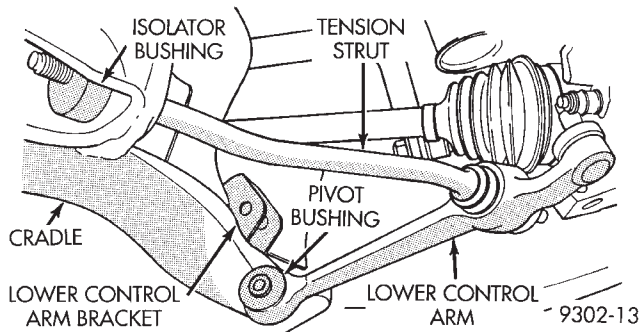


**Fig. 42 Lower Control Arm Remove/Install**

(8) Inspect lower control arm and tension strut (Fig. 43) for distortion. Check all bushings for signs of severe deterioration. Replace any bushings that show signs of severe deterioration.

## REMOVAL AND INSTALLATION (Continued)

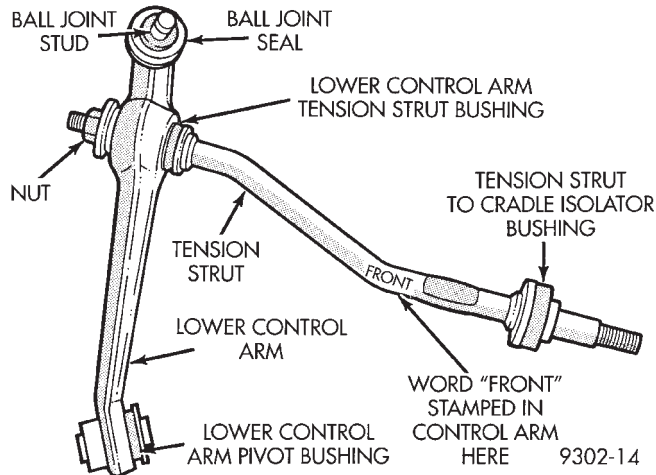


Fig. 43 Lower Control Arm And Tension Strut

## INSTALL

(1) Install the lower control arm on the cradle using the following sequence. Install tension strut and isolator bushing into cradle first, then install lower control arm pivot bushing into bracket on cradle (Fig. 42).

(2) Install the lower control arm to cradle bracket attaching pivot bolt and nut (Fig. 41). **Do not tighten the lower control arm to cradle bracket attaching bolt at this time.**

(3) Install washer on end of tension strut (Fig. 40). Install a **NEW** tension strut to cradle bracket nut, on tension strut (Fig. 40). Tighten the tension strut to cradle bracket retaining nut to a torque of 130 N·m (95 ft. lbs.). When torquing tension strut nut, keep tension strut from turning by holding tension strut at flat using an open end wrench (Fig. 40).

**CAUTION:** Pulling steering knuckle out from vehicle after releasing from ball joint can separate inner C/V joint. See Driveshafts.

**CAUTION:** When ball joint stud is installed into steering knuckle, do not let ball joint seal hit up against steering knuckle. If ball joint seal hits steering knuckle, seal damage may occur. If ball joint seal becomes torn, replace seal before assembling lower control arm to knuckle.

(4) Install lower ball joint stud into steering knuckle. Install steering knuckle to lower ball joint stud, clamp bolt and nut into steering knuckle (Fig. 38). Tighten the clamping bolt to a torque of 55 N·m (40 ft. lbs.).

(5) Install the wheel and tire assembly.

(6) Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(7) Lower vehicle so the suspension is supporting vehicle's weight (control arm at design height). Tighten the lower control arm pivot bushing to cradle bracket attaching bolt (Fig. 41) to a torque of 142 N·m (105 ft. lbs.).

## TENSION STRUT TO CRADLE BUSHING

To remove tension strut to cradle bushings from vehicle for replacement, the tension strut and lower control arm first **MUST** be removed as an assembly from the vehicle.

## REMOVE

(1) Remove lower control arm and tension strut as an assembly from the vehicle. See Lower Control Arm in the Removal and Installation section of this service manual for the required removal procedure.

(2) Remove the tension strut to cradle isolator bushing from the tension strut. Install replacement isolator bushing on tension strut until it is seated against retaining washer (Fig. 44).

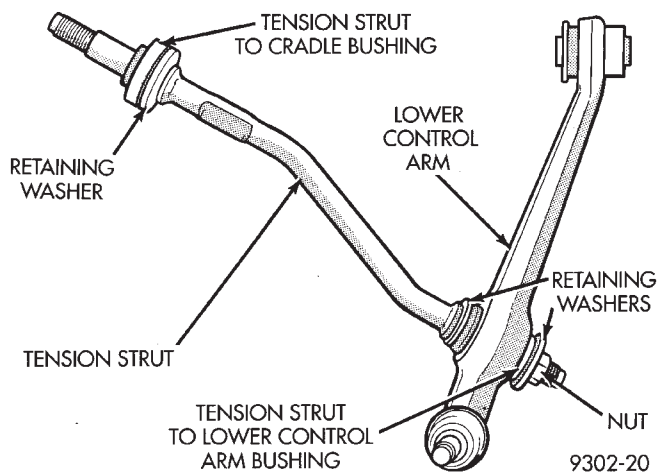


Fig. 44 Tension Strut Bushing Installation On Tension Strut

(3) Remove the tension strut to cradle isolator bushing from the cradle assembly. Install replacement tension strut to cradle isolator bushing into cradle, until squarely seated against cradle assembly (Fig. 45).

## INSTALL

(1) Install lower control arm and tension strut as an assembly back on the vehicle. See Lower Control Arm in the Removal and Installation section of this service manual for the required installation procedure.

(2) Install washer on end of tension strut (Fig. 46). Install a **NEW** tension strut to cradle bracket nut, on tension strut (Fig. 46).

(3) Tighten the tension strut to cradle bracket retaining nut to a torque of 130 N·m (95 ft. lbs.).

## REMOVAL AND INSTALLATION (Continued)

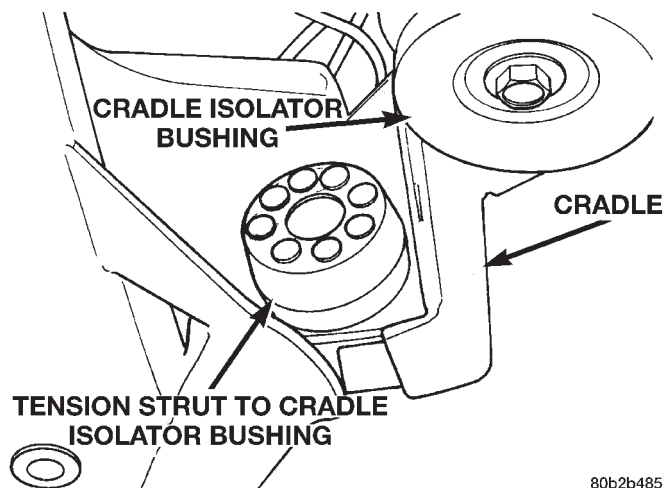


**Fig. 45 Tension Strut Bushing Installed In Cradle**

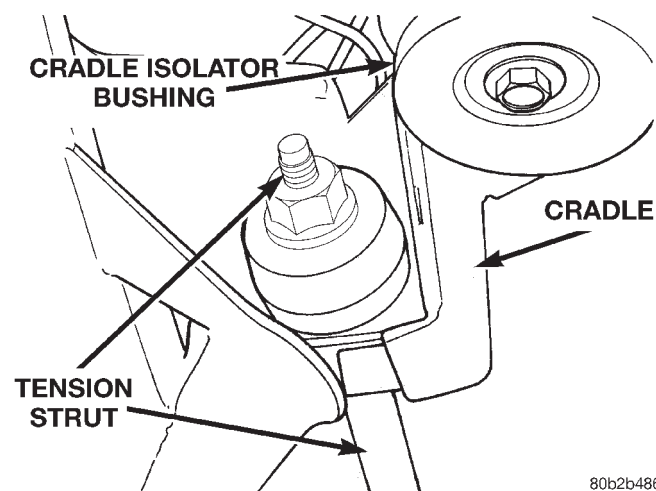


**Fig. 46 Tension Strut To Cradle Mounting**

When torquing tension strut nut, keep tension strut from turning by holding tension strut at flat using an open end wrench (Fig. 47).

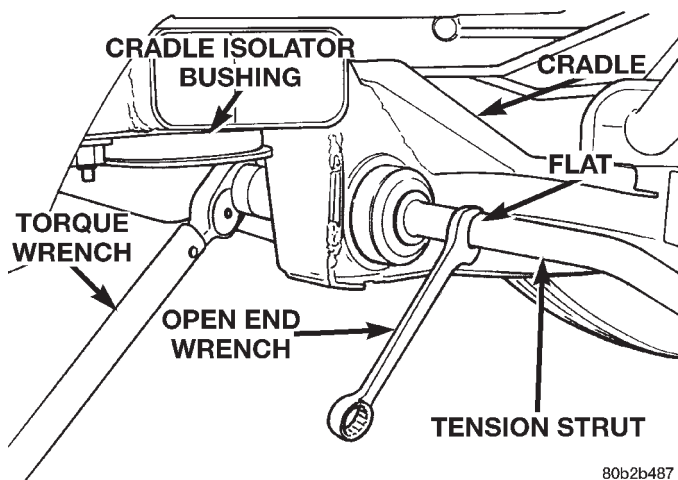


**Fig. 47 Proper Nut Torquing Procedure**

(4) Install the wheel and tire assembly.

(5) Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(6) Lower the vehicle to the ground so the suspension is supporting the full weight of the vehicle (control arm at design height). Tighten the lower control arm pivot bushing attaching bolt (Fig. 48) to a torque of 142 N·m (105 ft. lbs.).

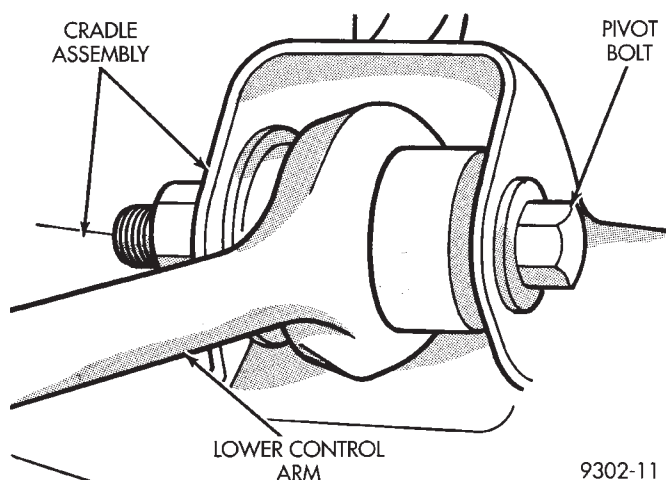


**Fig. 48 Lower Control Arm Pivot Bushing Bolt**

## REMOVE

(1) Remove the 4 strut assembly upper mount to strut tower mounting nut and washer assemblies securing the right front strut in place (Fig. 49).

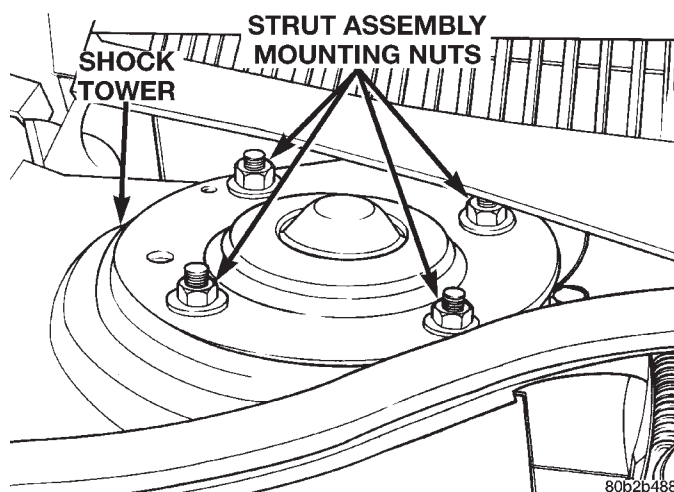


**Fig. 49 Strut Assembly Upper Mounting**

(2) Raise vehicle on jack stands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(3) Remove right front wheel and tire assembly from the vehicle.

## REMOVAL AND INSTALLATION (Continued)

(4) Remove the right stabilizer bar attaching link nut at the strut assembly. Remove the attaching link from the strut assembly (Fig. 50).

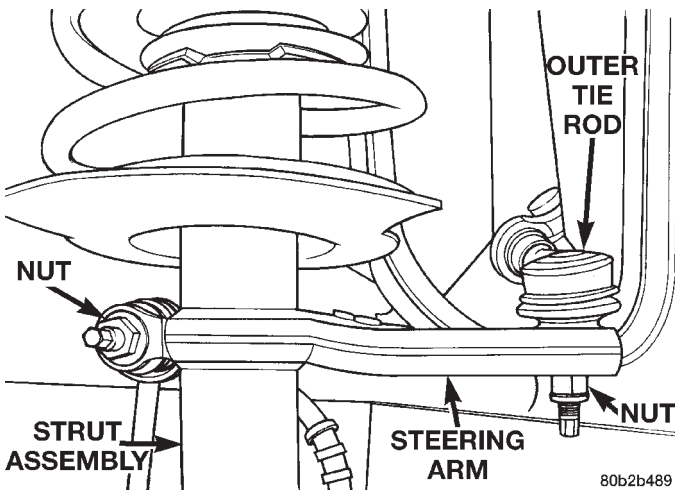


**Fig. 50 Stabilizer Bar Link At Strut**

(5) Remove the left stabilizer bar attaching link nut at the stabilizer bar (Fig. 51). Remove the attaching link from the stabilizer bar.

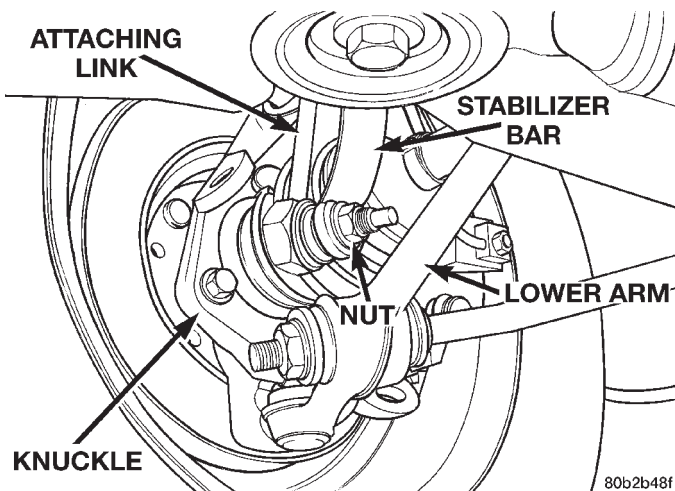


**Fig. 51 Stabilizer Bar At Left Attaching Link**

(6) Loosen, but do not remove, the right outer tie rod end to strut arm attaching nut. Release right outer tie rod end from right strut steering arm using Puller, Special Tool C-3894A (Fig. 52), then remove nut and tie rod from the steering arm.

(7) If vehicle is equipped with antilock brakes, remove the speed sensor cable routing bracket from the strut assembly (Fig. 53).

**CAUTION:** The strut assembly to steering knuckle bolts are serrated were they go through strut assembly and steering knuckle. When removing bolts, turn nuts off bolts **DO NOT TURN BOLTS IN STEERING KNUCKLE**. If bolts are turned damage to steering knuckle will result.

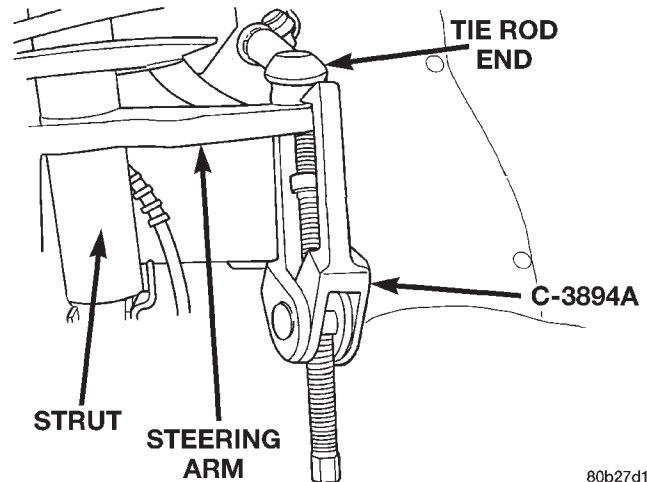


**Fig. 52 Removing Outer Tie Rod From Steering Arm**

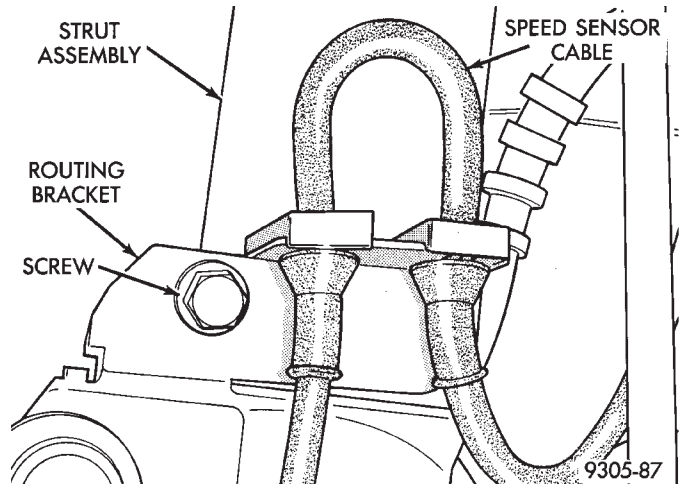


**Fig. 53 Speed Sensor Cable Routing Bracket**

(8) Remove the 2 strut assembly to steering knuckle attaching bolts (Fig. 54).

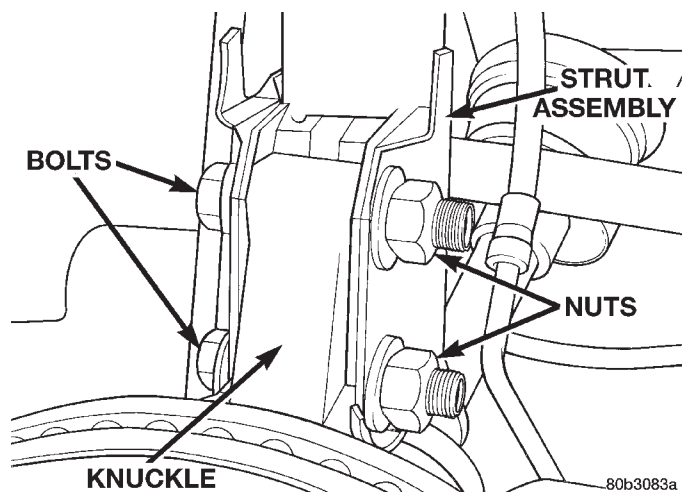


**Fig. 54 Strut Assembly To Steering Knuckle Attaching Bolts**

## REMOVAL AND INSTALLATION (Continued)

(9) Remove right front strut assembly from vehicle.

(10) Remove the nine bolts securing the structural collar to the engine oil pan and transaxle (Fig. 55).

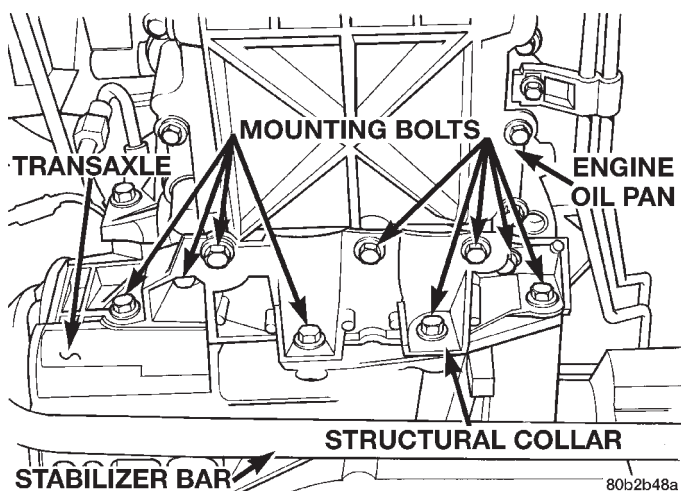


**Fig. 55 Structural Collar**

(11) Remove the 4 nuts attaching the engine motor mounts to the cradle assembly (Fig. 56).

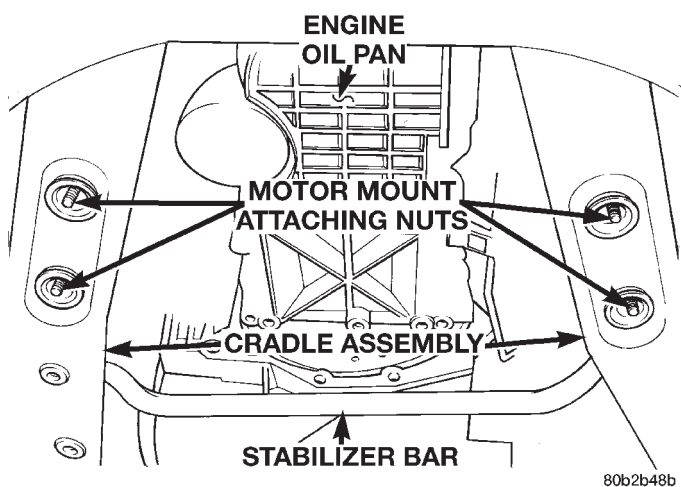


**Fig. 56 Motor Mount To Cradle Assembly Attachment**

(12) Remove the bolts attaching each of the 2 stabilizer bushing retainers to the cradle assembly (Fig. 57).

(13) Remove both stabilizer bar isolator bushing retainers and bushings from stabilizer bar (Fig. 57).

(14) Position a transmission jack under the body of the engine oil pan (Fig. 58). Use a wood block as a buffer between the jack and the engine oil pan in order to avoid damage to the pan (Fig. 58). Carefully raise the jack until the motor mounts clear the cradle assembly. It may be necessary to raise the jack further.

(15) Remove the stabilizer bar out the right side by rotating it, taking advantage of the removed

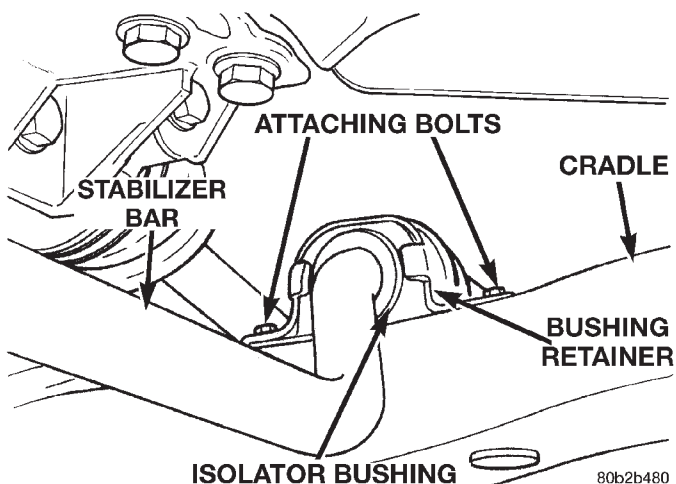


**Fig. 57 Stabilizer Bar Isolator Bushing Attachment To Cradle**

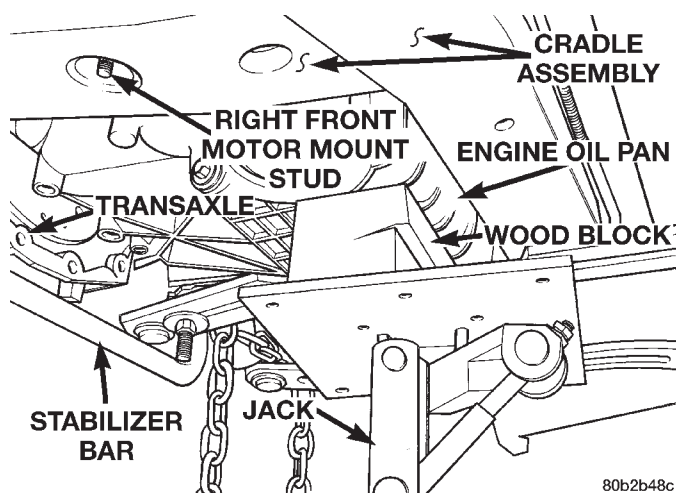


**Fig. 58 Jack Positioning Below Engine Oil Pan**

structural collar area between the engine and transaxle assembly. Remove the stabilizer bar out the right wheel opening by routing it in front of the right halfshaft then behind the right knuckle (Fig. 59).

**CAUTION:** Be careful not to pull knuckle outward, thus stretching halfshaft and possibly separating inner C/V joint. See Driveshafts. Keep knuckle in upright position.

### STABILIZER BAR AND BUSHING INSPECTION

Inspect for broken or distorted retainers and bushings. Inspect the bar where the bushings mount. It should be clear of grease and debris.

### STABILIZER BAR INSTALLATION

(1) Install stabilizer bar by reversing the manner in which it was removed (Fig. 59). Rotate the bar the opposite direction used when removed and move it into mounting position.

## REMOVAL AND INSTALLATION (Continued)

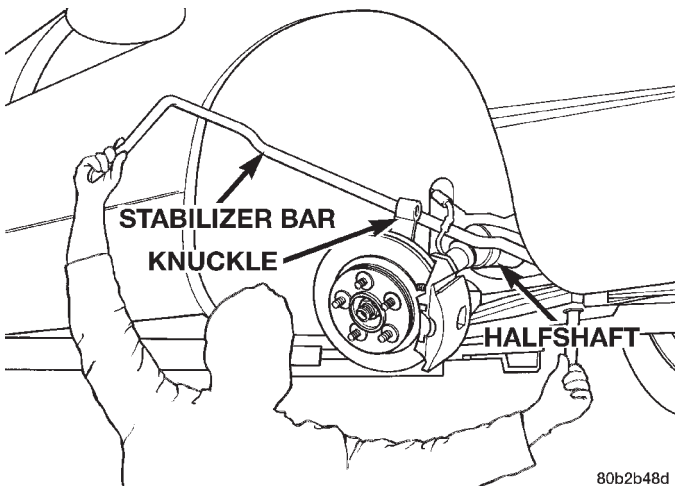


**Fig. 59 Stabilizer Bar Removal and Installation**

**CAUTION:** Be careful not to pull knuckle outward, thus stretching halfshaft and possibly separating inner C/V joint. See Driveshafts. Keep knuckle in upright position.

(2) Lower the jack supporting the engine, guiding the motor mount studs into place in the cradle assembly (Fig. 58).

(3) Install the 4 engine motor mount to cradle assembly attaching nuts (Fig. 56). Tighten the 4 nuts to a torque of 61 N·m (45 ft. lbs.).

(4) Install the structural collar to the engine oil pan and the transaxle. The structural collar should be installed using the following sequence:

- Position collar onto engine oil pan and transaxle (Fig. 55).
- Install the 2 center collar bolts to oil pan bolts. Tighten bolts initially to 3 N·m (30 in. lbs.).
- Install collar to transmission bolts and tighten to 61 N·m (45 ft. lbs.).
- Install the remaining collar to engine oil pan bolts. Starting with the center bolts and working outwards, tighten collar to oil pan bolts to 61 N·m (45 ft. lbs.).

(5) Install stabilizer bar isolator bushings onto stabilizer bar with slits facing forward and flat side facing downward. **The stabilizer bar to cradle assembly bushings must be positioned on the stabilizer bar so the slit in the bushing is positioned toward front of vehicle** (Fig. 60).

(6) Install the isolator bushing retainers onto the stabilizer bar isolator bushings (Fig. 57).

**CAUTION:** When stabilizer bar is installed, position stabilizer bar so lower part of stabilizer bar is centered in the middle of the cradle assembly. Failure to do this may cause stabilizer bar to come in contact with other suspension components.

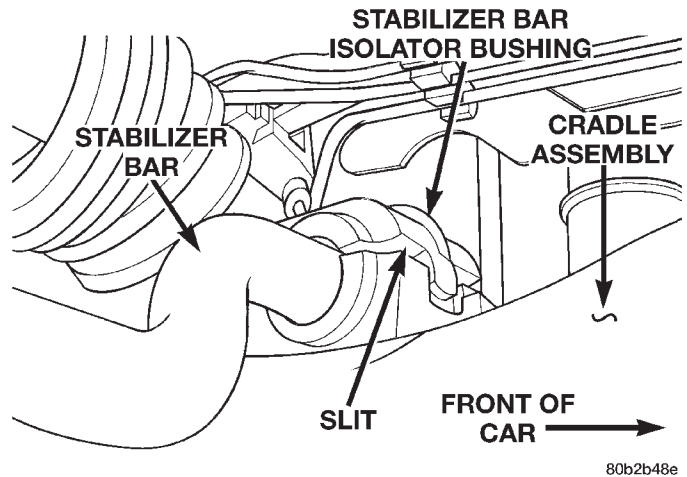


**Fig. 60 Stabilizer Bar Isolator Bushing**

(7) Align the stabilizer bar bushing retainers with the mounting holes in the cradle assembly. Install and tighten the 4 stabilizer bar bushing retainer to cradle assembly attaching bolts to 61 N·m (45 ft. lbs.) (Fig. 57).

(8) Install left side stabilizer bar attaching link to left end of stabilizer bar (Fig. 51). Install attaching nut and tighten to 95 N·m (70 ft. lbs.).

(9) Install right front strut assembly into shock tower. Install the 4 strut assembly upper mount to shock tower attaching nuts (Fig. 49). Tighten the 4 strut mount to strut tower attaching nuts to a torque of 45 N·m (33 ft. lbs.) torque.

(10) Position steering knuckle into strut assembly.

**CAUTION:** The strut assembly to steering knuckle bolts are serrated were they go through strut assembly and steering knuckle. When installing bolts, turn nuts onto bolts **DO NOT TURN BOLTS IN STEERING KNUCKLE**. If bolts are turned damage to steering knuckle will result.

(11) Install the strut assembly to steering knuckle attaching bolts (Fig. 54). Install nuts on attaching bolts. Tighten the strut assembly to steering knuckle attaching bolt nuts to a torque of 203 N·m (150 ft. lbs.).

(12) If the vehicle is equipped with antilock brakes. Install the front speed sensor cable routing bracket onto the front strut assembly (Fig. 53).

(13) Install outer tie rod on strut assembly. Install tie rod attaching nut (Fig. 50). Tighten the tie rod attaching nut to a torque of 37 N·m (27 ft. lbs.).

(14) Install stabilizer bar link on strut (Fig. 50). Tighten the stabilizer link attaching nut to a torque of 95 N·m (70 ft. lbs.).

(15) Install the right front wheel and tire assembly.

## REMOVAL AND INSTALLATION (Continued)

(16) Tighten the wheel mounting nuts in proper sequence until all nuts are torqued to half specification. Repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(17) Lower vehicle to the ground.

## WHEEL MOUNTING STUDS

**CAUTION:** If a wheel attaching stud needs to be replaced in the hub and bearing assembly the studs **CANNOT** be hammered out of the hub flange. If a stud is removed by hammering it out of the bearing flange, damage to the hub and bearing assembly will occur leading to premature bearing failure.

**CAUTION:** The following procedure and special tools shown **MUST** be used when replacing wheel attaching studs.

**NOTE:** The hub and bearing assembly does not require removal from the steering knuckle to replace wheel attaching studs in the hub and bearing assembly.

## REMOVE

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove the 2 guide pin bolts mounting the caliper assembly to the steering knuckle (Fig. 61). Remove the caliper from the front steering knuckle. Refer to Disc Brake Caliper in the Removal And Installation Section in the Brake Group of this service manual for the caliper removal procedure.

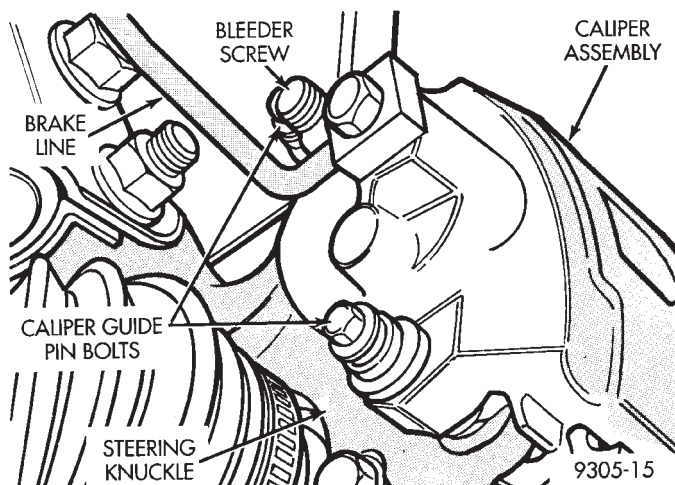


**Fig. 61 Caliper Mounting**

(3) Remove rotor from hub by pulling it straight off wheel mounting studs (Fig. 62).

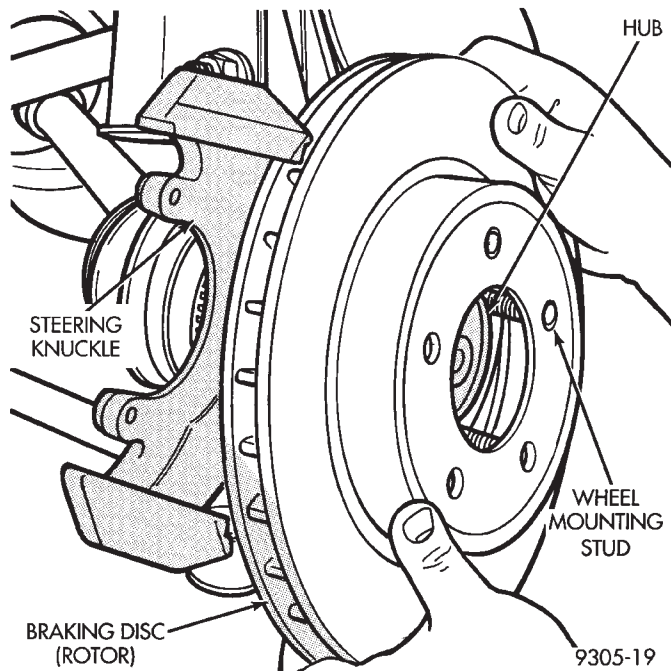


**Fig. 62 Removing Rotor**

(4) Install a lug nut on the wheel stud to be removed from the hub and bearing assembly (Fig. 63) so the threads on stud are even with end of lug nut. Install Remover, Special Tool C-4150 on hub and bearing assembly flange and wheel stud (Fig. 63).

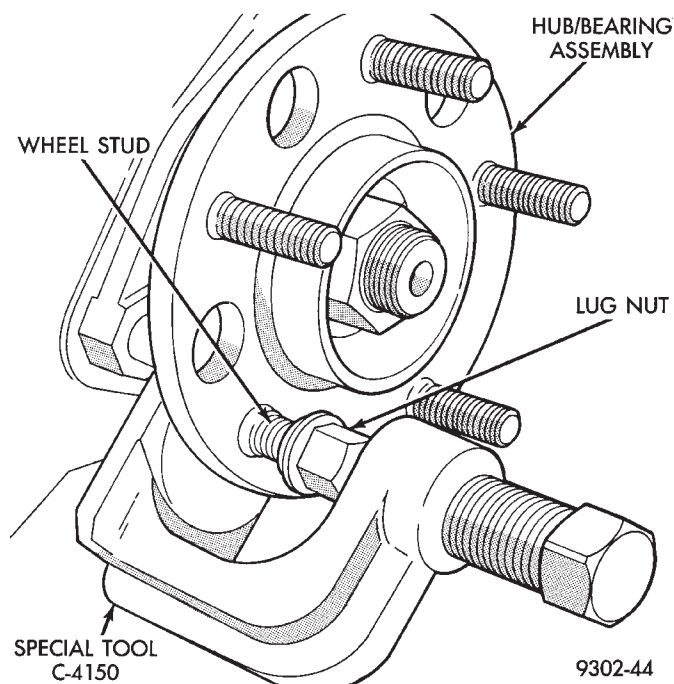


**Fig. 63 Removing Wheel Stud From Hub And Bearing**

## REMOVAL AND INSTALLATION (Continued)

(5) Tighten down on special tool, to push wheel stud out of the hub and bearing assembly. When shoulder of wheel stud is past flange remove special tool from hub and bearing assembly. Remove lug nut from stud and remove wheel stud from flange.

**INSTALL**

(1) Install wheel stud into of hub and bearing assembly. Install washers on wheel stud, then install a wheel lug nut on stud with flat side of lug nut against washers (Fig. 64).

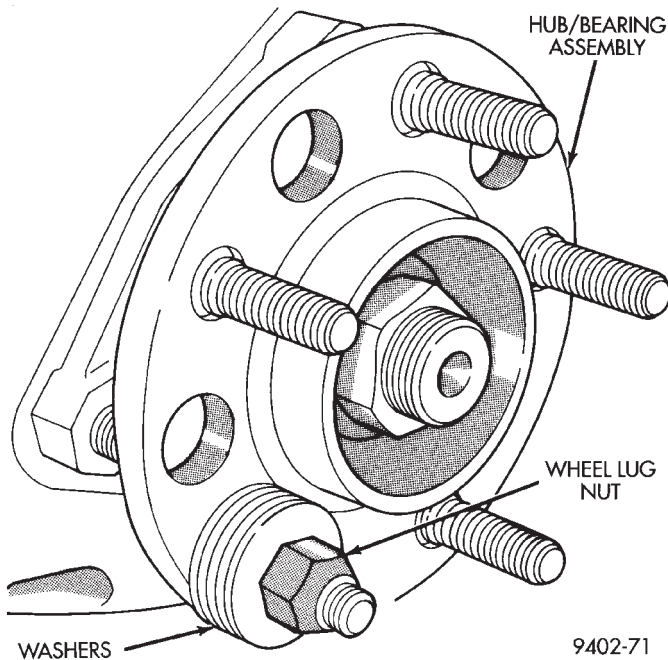


**Fig. 64 Installing Wheel Stud Into Hub And Bearing**

(2) Tighten the wheel lug nut, pulling the wheel stud into the flange of the hub and bearing assembly. When the head of the stud is fully seated against the bearing flange, remove lug nut and washers from wheel stud.

(3) Install the rotor on the hub and bearing assembly (Fig. 62).

(4) Install front brake caliper back over braking disc and align with caliper mounting holes on steering knuckle. Refer to Disc Brake Caliper in the Removal And Installation Section in the Brake Group of this service manual for the caliper installation procedure. Install the caliper to steering knuckle guide pin bolts (Fig. 61) and tighten to a torque of 19 N·m (168 in. lbs.).

(5) Install wheel and tire assembly on vehicle. Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(6) Lower the vehicle to the ground.

## DISASSEMBLY AND ASSEMBLY

**MacPHERSON STRUT**

The front strut is not serviced and must be replaced as an assembly if found to be defective. The strut is available with 2 calibrations, be sure strut is replaced with an assembly of the same calibration.

The components of the strut assembly listed below are replaceable if found to be defective.

- Coil spring
- Dust shield
- Mount assembly
- Seat And Bearing
- Jounce Bumper
- Jounce Bumper Cup
- Upper Spring Isolator
- Lower Spring Isolator
- Shaft Nut

**DISASSEMBLY**

(1) Remove strut assembly requiring service from the vehicle. Refer to MacPherson Strut in the Removal And Installation Section in this group of the service manual for the required procedure.

(2) Position the strut assembly in a vise. Using paint or equivalent, mark the strut unit, lower spring isolator, spring and upper strut mount for indexing of the parts at assembly.

**CAUTION:** When installing spring compressor on coil spring, do not position the spring compressor on the sleeves of the coil spring. Positioning the spring compressor on the sleeves could cause the sleeve to dislodge from the coil spring when it is compressed. This would result in the required replacement of the coil spring.

**WARNING:** DO NOT INSTALL THE SPRING COMPRESSOR ON THE COIL SPRING IN AN AREA OF THE SPRING COVERED BY A SLEEVE. IF THE SLEEVE MOVES WHEN COMPRESSING THE SPRING, THE SPRING COULD COME OUT OF COMPRESSOR RESULTING IN PERSONAL INJURY.

(3) Attach OTC shoe 7526, or the equivalent, on upper end of OTC Spring Compressor 7520, or the equivalent compressor. Attach LH lower adapter tool on lower end of Spring Compressor. Position Spring Compressor on the strut assembly spring. The upper shoe will attach to the top rung of coil spring, while the lower adapter will attach to the lower end of the strut. Compress coil spring until all load is removed from the strut upper mount, where the spring contacts it.

(4) Install Strut Shaft Nut Socket, Special Tool 6864, on strut shaft nut. Using a 10 mm socket on

## DISASSEMBLY AND ASSEMBLY (Continued)

end of strut shaft to keep strut shaft from turning, remove strut shaft nut.

(5) Remove the upper strut mount assembly, bearing and seat, dust shield, and coil spring, from the strut as a unit.

(6) Remove the jounce bumper, and jounce bumper cup, from the strut.

(7) Carefully release the spring compressor tension on the coil spring.

(8) Remove the coil spring from the strut.

(9) Remove the coil spring isolator from the lower spring seat on the strut (Fig. 65).

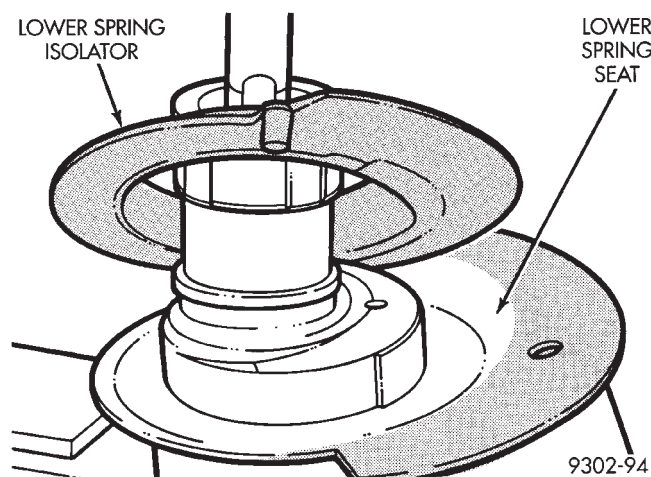


**Fig. 65 Spring Isolator**

(10) Remove the upper spring isolator from the seat and bearing assembly.

(11) Inspect all disassembled components for signs of abnormal wear or failure replacing any components as required. Inspect strut unit for signs of abnormal oil leakage and for loss of gas charge. To check for loss of gas charge in strut unit. Push strut shaft into body of strut and release, strut shaft should return to its fully extended position. If strut shaft does not return to its fully extended position replace strut unit.

## ASSEMBLY

(1) Install the original, or a new if required, lower spring isolator on the strut (Fig. 65). Tabs on the isolator will align it on the strut spring seat.

(2) Install the original, or a new if required, upper spring isolator on the bearing and seat.

(3) Install the coil spring on the strut, setting it into the groove in the lower isolator provided for it.

(4) Compress the spring approximately the same amount it was compressed before removal.

(5) Position the seat and bearing assembly (with dust shield) on the top of the coil spring. The end of the coil spring should fit into the notch molded into the seat and bearing assembly, or align the paint marks made previously (if available).

(6) Install jounce bumper, and jounce bumper cup, onto shaft of strut.

**CAUTION:** Before installing the upper mount, make sure the correct upper mount is being installed on the strut. **DO NOT** install a right mount on a left front strut or a left mount on a right front strut. Incorrect mount installation may cause poor vehicle ride and steering feel, and excessive front end noise. A lead or drift condition may also be the result. Left and Right mounts look similar, but are different from one another. Looking down at the top of the upper mount, 2 tabs can be seen, (Fig. 66) and (Fig. 67), down inside the mount center well. A rectangular hole can be seen on the edge of the mount mounting surface (Fig. 66) and (Fig. 67). This is always in the 10 o'clock position when observing rubber tab positioning, whether a left or right mount is being observed. Once this hole is located in the 10 o'clock position, the tabs should be in the positions as shown (Fig. 66) and (Fig. 67). The right upper mount should also have a white dot painted on its mounting face.

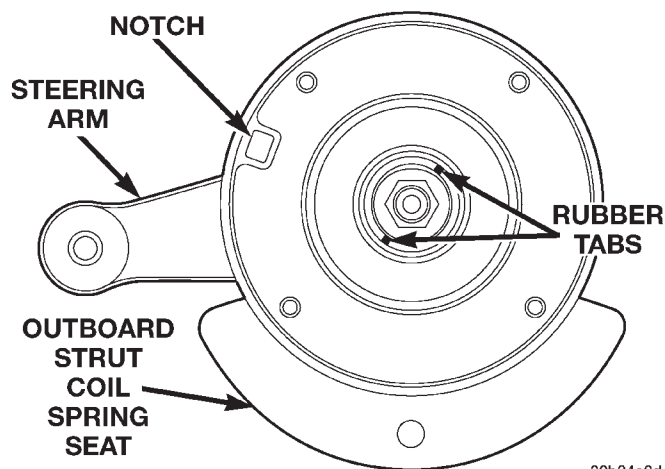


**Fig. 66 Left Front Strut Upper Mount**

(7) Install the upper mount on top of the seat and bearing assembly.

(8) Install the strut shaft nut. Install Strut Shaft Nut Socket, Special Tool 6864, on strut shaft nut. Using a 10 mm socket on end of strut shaft to keep strut shaft from turning, tighten strut shaft nut to a torque of 94 N·m (70 ft. lbs.).

(9) Loosen the spring compressor until the spring is seated and all tension is relieved from the spring compressor.

(10) Verify upper mount does not bind.

(11) Remove the coil spring compressor.

(12) Install the strut assembly on the vehicle. Refer to MacPherson Strut in the Removal And Installation Section in this group of the service manual for the required procedure.

## DISASSEMBLY AND ASSEMBLY (Continued)

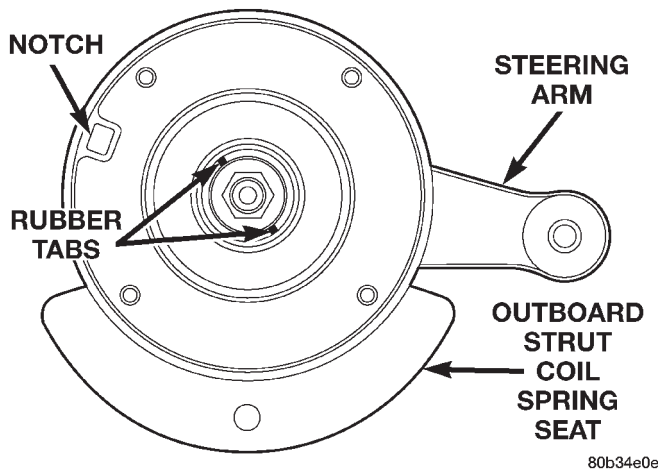


Fig. 67 Right Front Strut Upper Mount

## TENSION STRUT

To replace the tension strut, the tension strut and lower control arm first **MUST** be removed as an assembly from the vehicle.

## DISASSEMBLY

(1) Raise vehicle using a frame contact type hoist or supported as required using jack stands. See Hoisting in the Lubrication and Maintenance group of this service manual for the required hoisting or jacking procedure to be used for this vehicle.

(2) Remove the wheel and tire from the car.

(3) Remove lower control arm and tension strut as an assembly from the vehicle. See Lower Control Arm Removal in this section of the service manual for the required removal procedure.

(4) Separate the tension strut from the lower control arm assembly.

(5) Inspect tension strut bushing in lower control arm for excessive wear or deterioration. If tension strut bushing is found to be defective replace lower control tension strut bushing at this time. Refer to Lower Control Arm Bushing Service in this section of the service for tension strut removal and installation procedure.

## ASSEMBLY

(1) Position tension strut in lower control as shown in (Fig. 68), with word **FRONT** stamped in tension strut positioned away from control arm (Fig. 68). With an open end wrench on flat of tension strut to keep tension strut from turning. Tighten **NEW** tension strut to lower control retaining nut to a torque of 130 N·m (95 ft. lbs.).

(2) Install lower control arm and tension strut as an assembly back on the vehicle. See Lower Control Arm Installation in this section of the service manual for the required installation procedure.

(3) Install washer on end of tension strut (Fig. 69). Install a **NEW** tension strut to cradle bracket

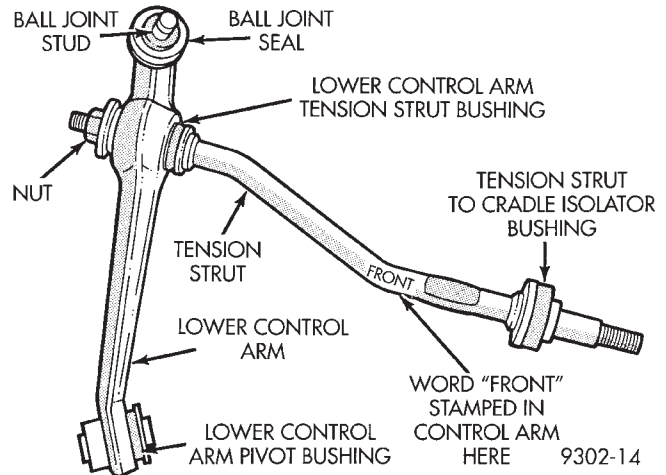


Fig. 68 Tension Strut Installed In Lower Control Arm.

nut, on tension strut (Fig. 69). Tighten the tension strut to cradle bracket retaining nut to a torque of 130 N·m (95 ft. lbs.). When torquing tension strut nut, keep tension strut from turning by holding tension strut at flat using a large open end wrench (Fig. 69).

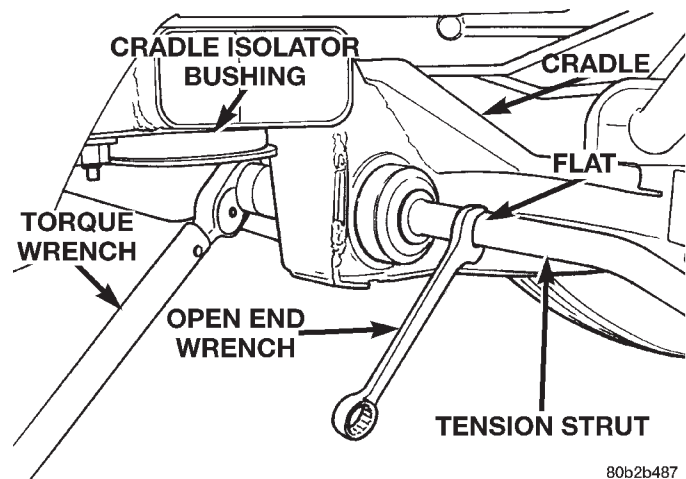


Fig. 69 Tension Strut To Cradle Mounting

(4) Install the wheel and tire assembly.

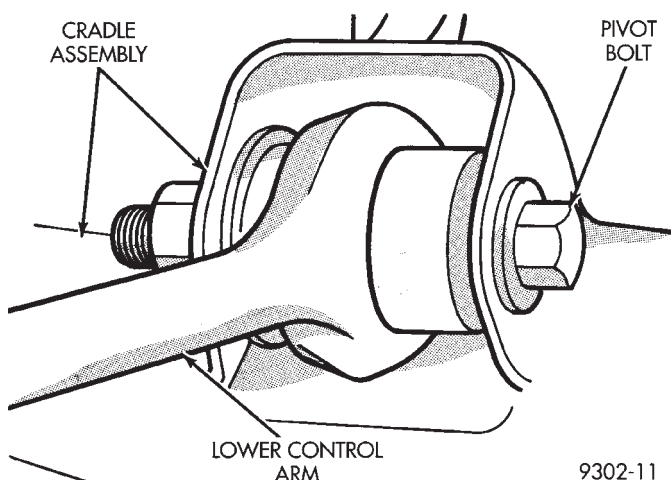
(5) Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(6) Lower the vehicle to the ground so the suspension is supporting the vehicles full weight (control arm at design height). Tighten the lower control arm pivot bushing to cradle bracket attaching bolt (Fig. 70) to a torque of 142 N·m (105 ft. lbs.).

## LOWER CONTROL ARM PIVOT BUSHING

To replacement the lower control arm pivot bushing, the control arm and tension strut assembly must

## DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 70 Lower Control Arm Pivot Bolt**

be removed from the vehicle. The removal and replacement of the lower control arm pivot bushing must be performed using an arbor press.

**DISASSEMBLY**

(1) Raise vehicle using a frame contact type hoist or supported as required using jackstands. See Hoisting in the Lubrication and Maintenance group of this service manual for the required hoisting procedure to be used for this vehicle.

(2) Remove lower control arm and tension strut as an assembly from the vehicle. See Lower Control Arm Removal in this section of the service manual for the required removal procedure.

(3) Separate the tension strut from the lower control arm assembly.

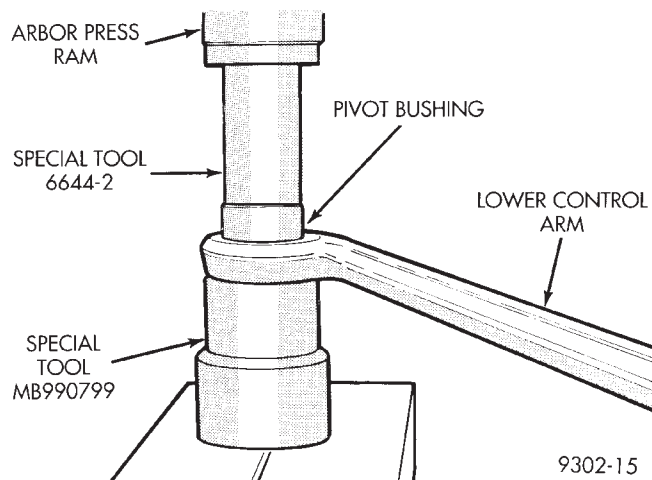
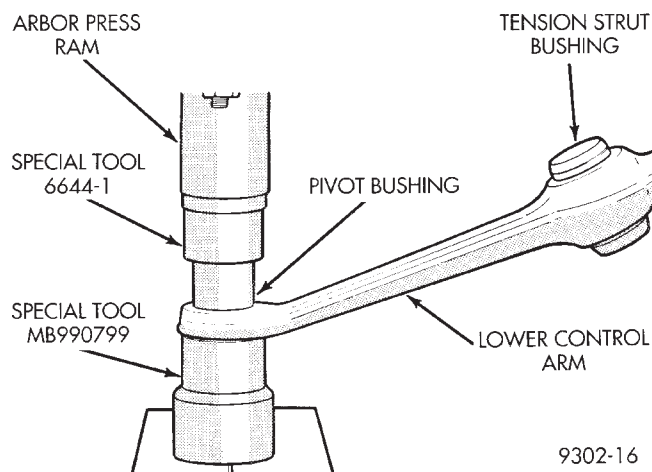
(4) Position lower control arm in arbor press with large end of pivot bushing inside Receiver, Special Tool MB-990799, and special tool supporting lower control arm (Fig. 71). Position Remover, Special Tool, 6644-2 on top of pivot bushing (Fig. 71). Using the arbor press, press the lower control arm pivot bushing out of lower control arm.

(5) Remove the pressed out lower control arm pivot bushing from the Receiver, Special Tool MB-990799 and discard.

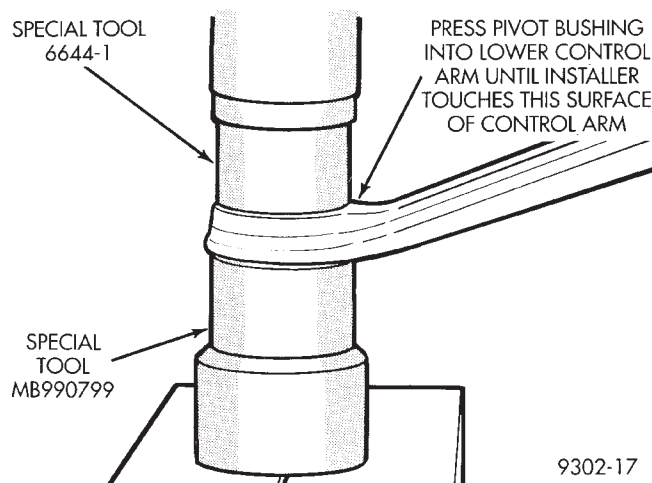
**ASSEMBLY**

(1) Turn the lower control arm over in the arbor press. Position the lower control arm so it is supported by Receiver, Special Tool, MB-990799 as shown in (Fig. 72).

(2) Position new pivot bushing in lower control arm so it is square with the bushing hole. Position Installer, Special Tool 6644-1 on top of pivot bushing, with pivot bushing setting in recessed area of Installer (Fig. 72). Press the pivot bushing into the lower control arm.

**Fig. 71 Lower Control Arm Pivot Bushing Removal****Fig. 72 Installing Lower Control Arm Pivot Bushing**

(3) Press lower control arm pivot bushing into lower control arm until Installer, Special Tool 6644-1 squarely bottoms against surface of lower control arm (Fig. 73). When Installer, Special Tool 6644-1 squarely bottoms on control arm, bushing is installed to the correct position in control arm.

**Fig. 73 Pivot Bushing Installed In Lower Control Arm**

## DISASSEMBLY AND ASSEMBLY (Continued)

(4) Install tension strut into the tension strut bushing in lower control arm. Position tension strut in lower control as shown in (Fig. 74) with word **FRONT** stamped in tension strut positioned away from control arm. With an open end wrench on flat of tension strut to stop tension strut from turning. Tighten the **NEW** tension strut to lower control retaining nut to a torque of 130 N·m (95 ft. lbs.).

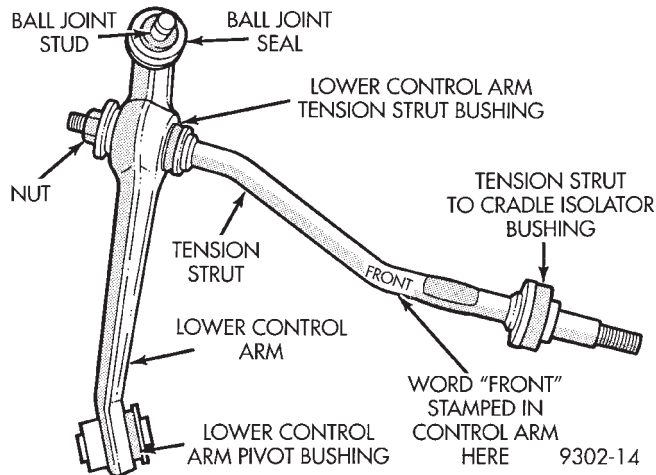


**Fig. 74 Tension Strut Installed In Lower Control Arm**

(5) Install lower control arm and tension strut as an assembly back on the vehicle. See Lower Control Arm Installation in this section of the service manual for the required installation procedure.

### LOWER CONTROL ARM TENSION STRUT BUSHING

To replace the lower control arm tension strut bushing, the control arm and tension strut assembly must be removed from the vehicle. The removal and replacement of the lower control arm tension strut bushing must be performed using an arbor press.

#### DISASSEMBLY

(1) Raise the vehicle using a frame contact type hoist or supported as required using jackstands. See Hoisting in the Lubrication and Maintenance group of this service manual for the required hoisting or jacking procedure to be used for this vehicle.

(2) Remove tire and wheel from vehicle.

(3) Remove lower control arm and tension strut as an assembly from the vehicle. See Lower Control Arm Removal in this section of the service manual for the required removal procedure.

(4) Separate the tension strut from the lower control arm assembly.

(5) Position lower control arm in arbor press with tension strut bushing inside Receiver, Special Tool MB-990799 and special tool supporting lower control arm (Fig. 75). Position Remover, Special Tool, 6644-4 on top of tension strut bushing (Fig. 75). Press Remover, Special Tool, 6644-4 down through the ten-

sion strut bushing until the arbor press can push it no farther. As Remover, Special Tool 6644-4 is pressed down through tension strut bushing it will cut the bushing into two pieces.

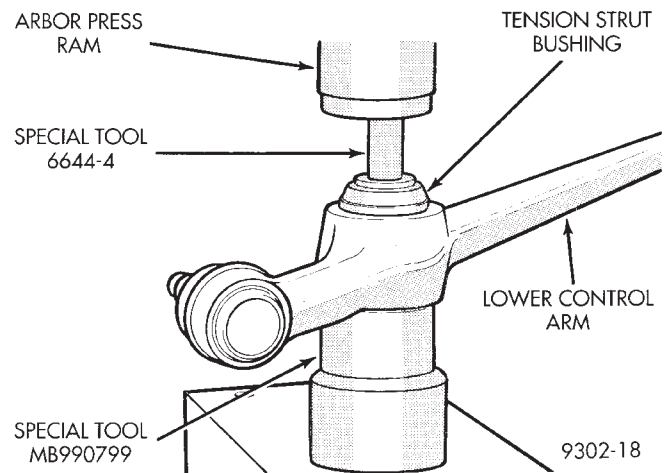


**Fig. 75 Removing Lower Control Arm Tension Strut Bushing**

(6) Remove lower control arm assembly from arbor press. Remove pieces of tension strut and Remover, Special Tool 6644-4, from lower control arm.

#### ASSEMBLY

(1) Thoroughly lubricate the replacement tension strut bushing, lower control arm and Installer, Special Tool 6644-3 using Mopar® Rubber Bushing Installation Lube, or an equivalent.

(2) By hand, install tension strut bushing into large end of Installer, Special Tool 6644-3. Press bushing into installer as far as it will go by hand.

(3) Position lower control arm in arbor press, so tension strut hole in lower control arm is centered on Receiver, Special Tool MB-990799 (Fig. 76). Position Installer, Special Tool 6644-3 with previously installed bushing, inside of tension strut bushing hole in lower control arm (Fig. 76). Position Installer, Special Tool 6644-2 on top of tension strut bushing (Fig. 76). Using the arbor press, press the tension strut bushing into the lower control arm. As the bushing is being pressed into the control arm a pop will be heard. When the pop is heard Installer, Special Tool 6644-3 will slightly move up off the control arm. At this time remove the control arm assembly from the arbor press and pull Special Tool 6644-3 off the tension strut bushing in the control arm. Tension strut bushing is now installed.

(4) Install tension strut into the tension strut bushing in lower control arm. Position tension strut in lower control as shown in (Fig. 77) with word **FRONT** stamped in tension strut positioned away from control arm. With an open end wrench on flat of

## DISASSEMBLY AND ASSEMBLY (Continued)

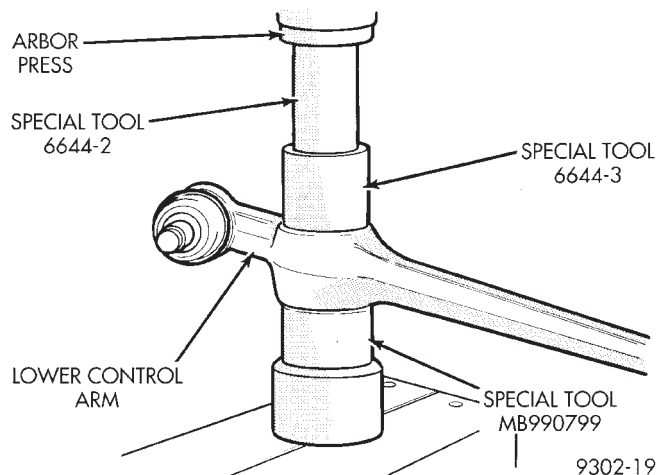


**Fig. 76 Installing Tension Strut Bushing Into Lower Control Arm**

tension strut to stop tension strut from turning. Tighten the **NEW** tension strut to lower control retaining nut to a torque of 130 N·m (95 ft. lbs.).

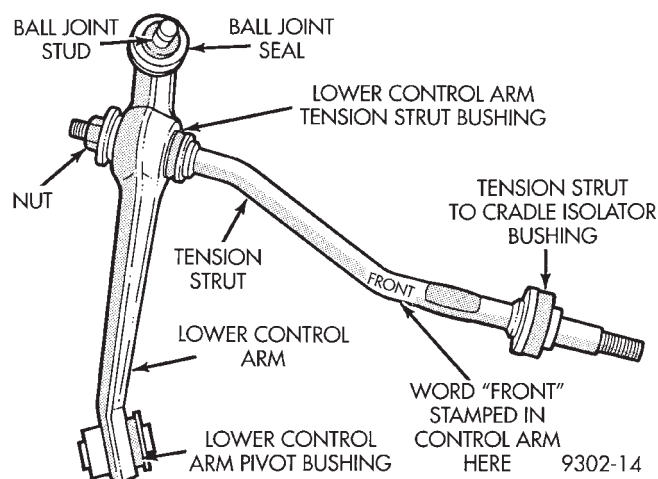


**Fig. 77 Tension Strut Installed In Lower Control Arm**

(5) Install lower control arm and tension strut as an assembly back on the vehicle. See Lower Control Arm Installation in this section of the service manual for the required installation procedure.

## SPECIFICATIONS

## FRONT SUSPENSION FASTENER TORQUES

## DESCRIPTION

## TORQUE

**MacPHERSON STRUT:**

|                               |                        |
|-------------------------------|------------------------|
| Steering Knuckle Nuts . . . . | 203 N·m (150 ft. lbs.) |
| Strut Shaft Nut . . . . .     | 95 N·m (70 ft. lbs.)   |
| Stabilizer Bar Attaching Link |                        |
| Upper Nut . . . . .           | 95 N·m (70 ft. lbs.)   |
| Tower Nuts . . . . .          | 37 N·m (28 ft. lbs.)   |

**STEERING KNUCKLE:**

|                                          |                      |
|------------------------------------------|----------------------|
| Ball Joint Stud Pinch Bolt Nut . . . . . | 55 N·m (40 ft. lbs.) |
| Disc Brake Caliper Bolts . . . . .       | 22 N·m (16 ft. lbs.) |

**STEERING GEAR:**

|                                 |                      |
|---------------------------------|----------------------|
| Crossmember Bolts . . . . .     | 58 N·m (43 ft. lbs.) |
| Tie Rod Adjuster Pinch Bolt . . | 45 N·m (33 ft. lbs.) |
| Tie Rod Steering Arm Nut . . .  | 37 N·m (27 ft. lbs.) |

**FRONT SUSPENSION CRADLE:**

|                                        |                        |
|----------------------------------------|------------------------|
| Body Attaching Bolts . . . . .         | 163 N·m (120 ft. lbs.) |
| Lower Control Arm Pivot Bolt . . . . . | 142 N·m (105 ft. lbs.) |
| Tension Strut Mounting Nut . . . . .   | 130 N·m (95 ft. lbs.)  |

**STABILIZER BAR:**

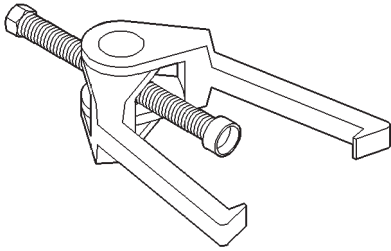
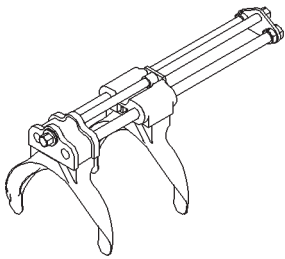
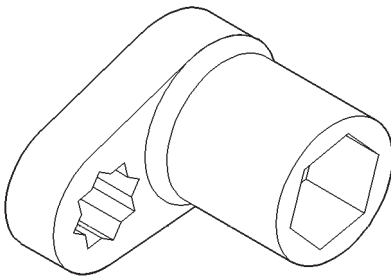
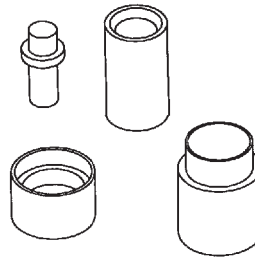
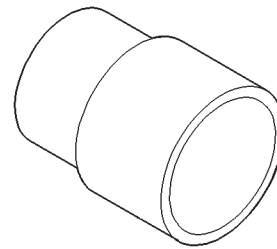
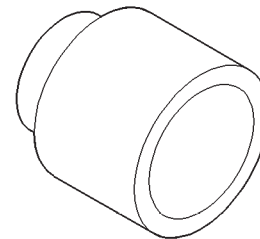
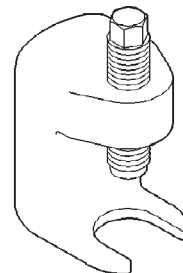
|                                  |                      |
|----------------------------------|----------------------|
| Bushing Retainer Bolts . . . . . | 61 N·m (45 ft. lbs.) |
| Attaching Link Lower Nut . . .   | 88 N·m (65 ft. lbs.) |

**HUB AND BEARING:**

|                                  |                               |
|----------------------------------|-------------------------------|
| Steering Knuckle Bolts . . . . . | 110 N·m (80 ft. lbs.)         |
| Front Stub Axle Nut . . . . .    | 183 N·m (135 ft. lbs.)        |
| Wheel Mounting Nuts . . . . .    | 109-150 N·m (80-110 ft. lbs.) |

## SPECIAL TOOLS

## FRONT SUSPENSION

***Puller C-3894A******Compressor Coil Spring 7520******Socket/Holder Front Strut Nut 6864******Remover/Installer Lower Control Arm Bushings  
6644******Remover Ball Joint MB-990799******Installer, Ball Joint MB-990800******Remover C-4150A***

REAR SUSPENSION

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GENERAL INFORMATION

SUSPENSION CAUTIONS

**CAUTION:** Only frame contact or wheel lift hoisting equipment can be used on vehicles having a fully independent rear suspension. Vehicles with independent rear suspension can not be hoisted using equipment designed to lift a vehicle by the rear axle. If this type of hoisting equipment is used damage to rear suspension components will occur.

**NOTE:** If a rear suspension component becomes bent, damaged or fails, no attempt should be made to straighten or repair it. Always replace with a new component.

DESCRIPTION AND OPERATION

REAR SUSPENSION SYSTEM

The rear suspension used on this vehicle is a fully independent rear suspension.

A forged rear spindle bolts to each rear strut assembly. The movement of the rear spindle is controlled laterally using lateral links going from the front and rear of the spindle to the rear cross member. Fore and aft movement of the spindle is controlled by a trailing arm.

The lateral links and trailing arm have rubber isolator bushings at each end. The lateral links are bolted to the rear crossmember, and the spindle. The trailing arm bolts to the bottom of the spindle, and to a bracket attached to the floor pan of the vehicle.

Lateral links, trailing arms, and spindles, are normally replaced only when the part has been damaged or when the vehicle has been involved in an accident. If a suspension part has been damaged, be sure to check the underbody dimensions of the car. If the underbody dimensions are not correct, the frame of the vehicle must be straightened, before replacement suspension components are installed.

STRUT ASSEMBLY

The rear strut assemblies support the weight of the vehicle using coil springs positioned around the struts. The coil springs are contained between the upper mount of the strut assembly and a lower spring seat on the body of the strut assembly.

The top of each strut assembly is bolted to the top of the inner fender through a rubber isolated mount.

Strut attachment to the rear spindle is accomplished using a split collar on the rear spindle. The collar uses a pinch bolt to retain the spindle to the strut.

COIL SPRING

Rear coil springs are rated separately for each corner or side of the vehicle depending on optional

## DESCRIPTION AND OPERATION (Continued)

equipment and type of vehicle service. During service procedures when both rear coil springs are removed, mark the coil springs to ensure installation of the springs in their original position. **If coil springs require replacement, be sure the springs need-ing replacement, are replaced with springs meeting the correct load rating for the vehicle and its specific options.**

**SPINDLE**

A forged rear spindle bolts to each rear strut assembly. The movement of the rear spindle is controlled laterally using two lateral links attached to the spindle. The outboard ends of the two lateral links are mounted forward and rearward of the spindle centerline, and the inboard ends are mounted to the rear suspension crossmember. Fore and aft movement of the knuckle is controlled by using a trailing arm.

**LATERAL LINKS**

The purpose of the lateral links is to control the lateral movement of the rear spindle. The lateral links have rubber isolator bushings at each end. The lateral links are attached to the rear crossmember, and the spindle, using a bolt and nut assembly at each end of the link. The rear lateral link incorporates a threaded adjustment link to provide a means for rear wheel Toe adjustment.

Lateral links are normally replaced only when the part has been damaged or when the vehicle has been involved in an accident. If a suspension part has been damaged, be sure to check the underbody dimensions of the car. If underbody dimensions of the vehicle are not correct, the frame must be straight-

ened before replacement suspension components are installed.

**TRAILING ARM**

The purpose of the trailing arm is to control the fore and aft movement of the spindle. The trailing arm has rubber isolator bushings at each end. Each trailing arm is attached to the spindle and the body of the vehicle. The trailing arm attaches to the rear spindle through a bracket which is bolted to the bottom of the spindle. The trailing arm attaches to the body using a bracket attached to the frame rail and rear torque box.

Trailing arms are normally replaced only when the part has been damaged or when the vehicle has been involved in an accident. If a suspension part has been damaged, be sure to check the underbody dimensions of the car. If underbody dimensions of the vehicle are not correct, the frame must be straightened before replacement suspension components are installed.

**REAR SUSPENSION CROSSMEMBER**

This vehicle is equipped with an aluminum alloy rear suspension crossmember that spans the distance between the rear frame rails (Fig. 1). It is isolated from the frame rails with the use of rubber isolator bushings. These bushings may be replaced separately.

The purpose of the rear suspension crossmember is to support the lower end of the rear suspension through the use of four lateral links. Two lateral links are mounted on each end of the crossmember (Fig. 1).

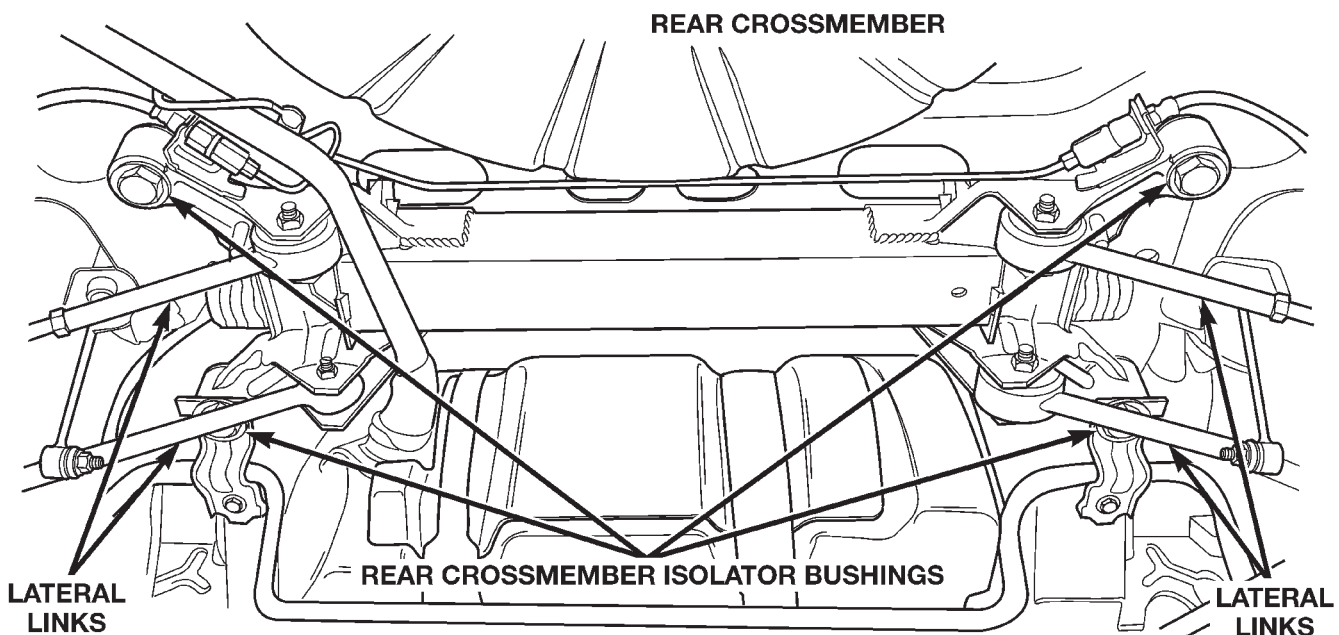


Fig. 1 Rear Suspension Crossmember

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## DESCRIPTION AND OPERATION (Continued)

**STABILIZER BAR**

The stabilizer bar interconnects both rear strut assemblies and is attached to the rear frame rails of the vehicle.

Jounce and rebound movements affecting one wheel are partially transmitted to the opposite wheel of the vehicle to stabilize body roll.

Attachment of the stabilizer bar to the rear frame rails of the vehicle is through 2 rubber-isolator bushings and bushing retainers. The stabilizer bar to strut assembly attachment is done utilizing a rubber isolated stabilizer bar attaching link. All parts of the stabilizer bar are serviceable, and the stabilizer bar to frame rail isolator bushings are split for easy removal and installation. The split in the stabilizer bar to crossmember bushing must be positioned toward the front of the vehicle, when the stabilizer bar is installed on the vehicle.

**DIAGNOSIS AND TESTING****STRUT ASSEMBLY AND COIL SPRING**

(1) Inspect for damaged or broken coil springs (Fig. 2).

(2) Inspect for torn or damaged strut assembly dust boots (Fig. 2).

(3) Inspect for damaged upper and lower spring isolators (Fig. 2).

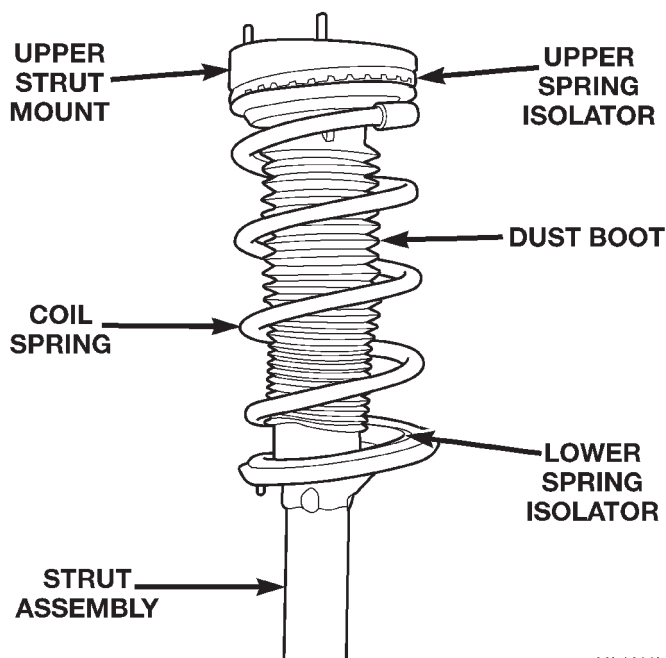


**Fig. 2 Strut Assembly Inspection**

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(4) Lift dust boot and inspect strut assembly for evidence of fluid running from the upper end of fluid reservoir. (Actual leakage will be a stream of fluid running down the side and dripping off lower end of unit). A slight amount of seepage between the strut

rod and strut shaft seal is not unusual and does not affect performance of the strut assembly. Also inspect jounce bumpers inside dust boot for signs of damage or deterioration.

(5) Verify correct struts and coil springs are installed on vehicle.

Coil springs are rated separately for each side of vehicle depending on optional equipment and type of service.

**NOTE: If the coils springs require replacement, be sure that the springs being replaced, are replaced with springs meeting the correct load and spring rate for the vehicle.**

Replacement of the coil spring requires removal and disassembly of the strut assembly. Refer to Strut Assembly in the Removal and Installation section in this group of the service manual for the required removal and replacement procedure. Then, refer to Strut Assembly in the Disassembly and Assembly section in this group of the service manual for the required procedure to disassemble and assemble the shock absorber.

**SPINDLE**

The rear suspension spindle is not a repairable component of the rear suspension, If it is determined that the spindle is broken or bent when servicing the vehicle, no attempt is to be made to repair or to straighten the spindle. **THE SPINDLE MUST BE REPLACED IF FOUND TO BE DAMAGED IN ANY WAY.**

**LATERAL LINKS**

Inspect the lateral link isolator bushings and sleeves for signs of damage or deterioration. If the lateral link isolator bushings or sleeves are damaged or are deteriorated, replacement of the lateral link assembly will be required. The isolator bushings are not serviceable as a separate component of the lateral link assembly.

Inspect the lateral links for signs of contact with the ground or road debris which has bent or caused other damage to the lateral link assembly. If the lateral link is bent or damaged, the lateral link will require replacement. **Do not attempt to repair or straighten a lateral link.**

**TRAILING ARM**

Inspect the trailing arm and trailing arm bushings for signs of deterioration and or damage. If the trailing arm bushings are deteriorated or the trailing arm is damaged in any way, replacement of the trailing arm will be required.

## DIAGNOSIS AND TESTING (Continued)

Inspect the trailing arm for signs of contact with the ground or road debris which has bent or caused other damage to the trailing arm. If the trailing arm is bent or damaged the trailing arm will require replacement. **Do not attempt to repair or straighten a trailing arm.**

## STABILIZER BAR AND BUSHINGS

Inspect the stabilizer bar for damage or bending. Inspect for broken or distorted stabilizer bar bushings, bushing retainers, and worn or damaged stabilizer bar to strut attaching links. If stabilizer bar to rear frame rail bushing replacement is required, bushings can be removed from sway bar by bending back the tabs securing the retainer halves together, removing the metal retainer halves, opening the bushing slit, and peeling the bushing off sway bar. On reassembly, bending the retainer tabs back into place is optional, as long as the attaching bolts to the frame rail are properly tightened.

## STABILIZER BAR ATTACHING LINKS

Inspect the bushings and sleeves on the stabilizer bar attaching links for damage or deterioration. Inspect the lower ball stud for excessive looseness and damage. Inspect the stabilizer bar attaching link to ensure it is not bent or broken. If any of these conditions are present when inspecting the attaching links, replacement of the attaching link is required.

## REMOVAL AND INSTALLATION

## STRUT ASSEMBLY

## REMOVE

**NOTE:** When removing rear strut assembly from vehicle, access for the 3 rear strut assembly to strut tower attaching nuts is through the passenger compartment of the vehicle.

(1) Remove the rear seat cushion from the interior of the car. Refer to Seats in the Body section of this manual for the required procedure to be used for this vehicle.

(2) Remove the rear seat back assembly. Refer to Seats in the Body section of this manual for the required procedure to be used for this vehicle.

(3) Remove both upper quarter trim panels from the rear of the vehicle interior. Refer to Body Components in the Body section of this manual for the required procedure to be used for this vehicle.

(4) Remove both lower quarter trim panels from the rear of the vehicle interior. Refer to Body Components in the Body section of this manual for the required procedure to be used for this vehicle.

(5) Remove the rear parcel shelf trim panel from the vehicle interior. Refer to Body Components in the Body section of this manual for the required procedure to be used for this vehicle.

Remove the 4 screws securing the rear speaker and mounting plate in place for the side of the vehicle requiring repair. **The speaker should be removed from the vehicle with the mounting plate attached.** Unplug the wiring from the speaker, then remove the speaker and mounting plate from the vehicle.

(6) Raise vehicle on jack stands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.

(7) Remove the rear wheel and tire assembly from the vehicle.

(8) Remove the rear caliper assembly from the adapter. Refer to Rear Disc Brakes in Group 5 Brakes of this Service manual for required caliper removal procedure. After removing the caliper assembly, store the caliper by hanging it from the underside of the vehicle (Fig. 3). Do not let the rear caliper assembly hang from flexible brake hose.

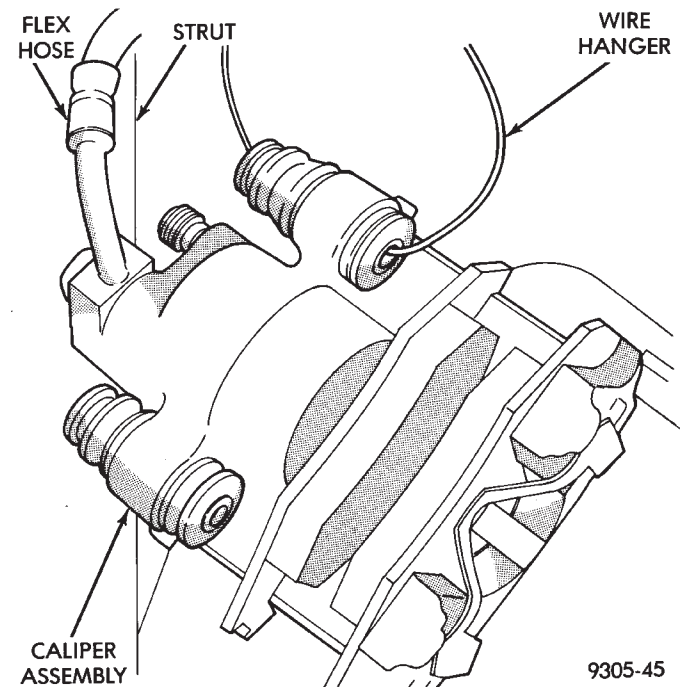
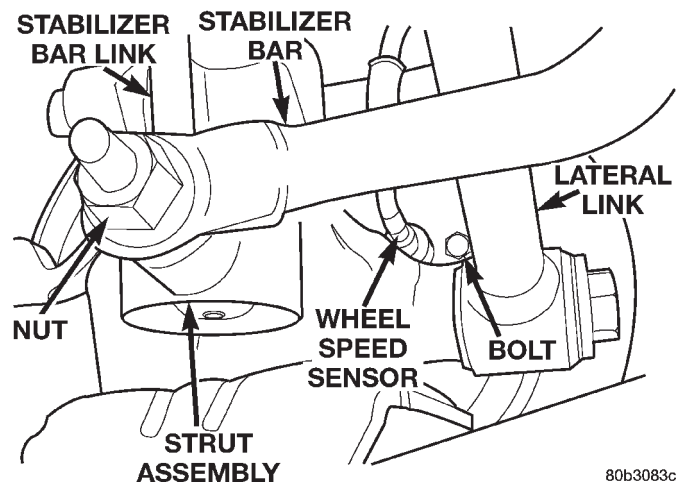


**Fig. 3 Storing Rear Caliper Assembly**

## REMOVAL AND INSTALLATION (Continued)

(9) If loose on wheel mounting studs, remove rear braking disc from hub.

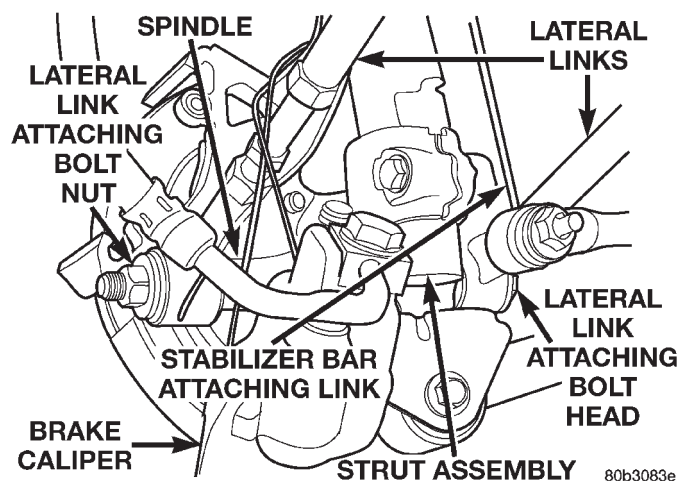
(10) If the vehicle is equipped with antilock brakes, remove the wheel speed sensor from the disc brake caliper adapter by removing the bolt, then the sensor (Fig. 4).



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**Fig. 4 Wheel Speed Sensor At Adapter**

(11) Remove the lateral links from the spindle (Fig. 5). This requires the removal of one long bolt attaching both links to the spindle (Fig. 5).



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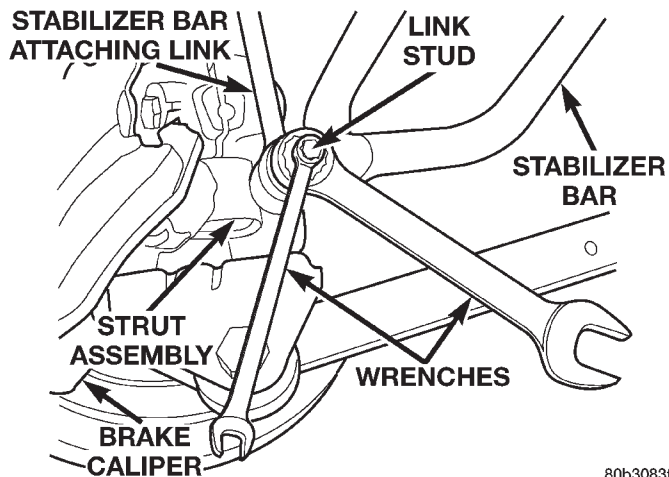
**Fig. 5 Lateral Links To Spindle Attachment**

(12) Install a thin wrench on the hex of the stabilizer bar attaching link stud to keep the stud from turning in the link. Next, remove the nut from the stabilizer bar attaching link stud at the stabilizer bar (Fig. 6). Remove the link from the stabilizer bar.

(13) Loosen and fully remove, the rear spindle to strut assembly pinch bolt (Fig. 7).

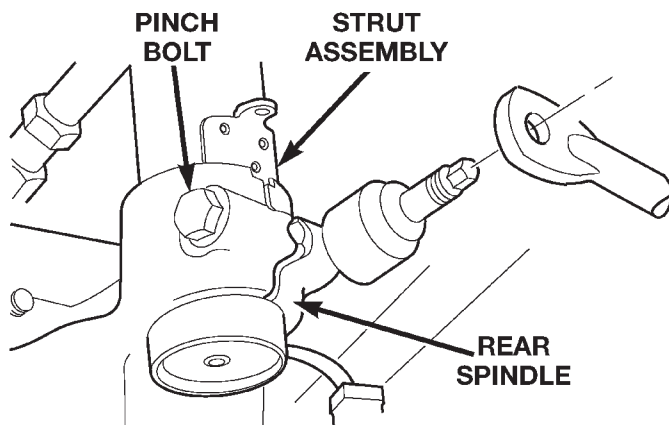
**CAUTION:** When inserting center punch into rear spindle, use care so point of center punch does not puncture strut assembly.

(14) Insert a center punch into the hole on the spindle (Fig. 8). Center punch must be tapped into spindle



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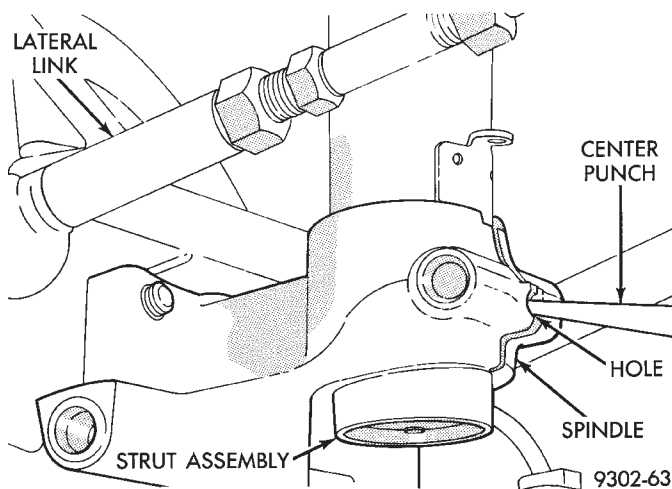
**Fig. 6 Link Attachment To Stabilizer Bar**



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**Fig. 7 Spindle To Strut Assembly Pinch Bolt**

until jammed into hole. This will spread spindle casting allowing it to be removed from strut assembly.



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**Fig. 8 Center Punch Installed In Spindle**

## REMOVAL AND INSTALLATION (Continued)

(15) Using a hammer and a brass drift punch, tap on top surface of spindle driving it down and off the end of the strut assembly (Fig. 9).

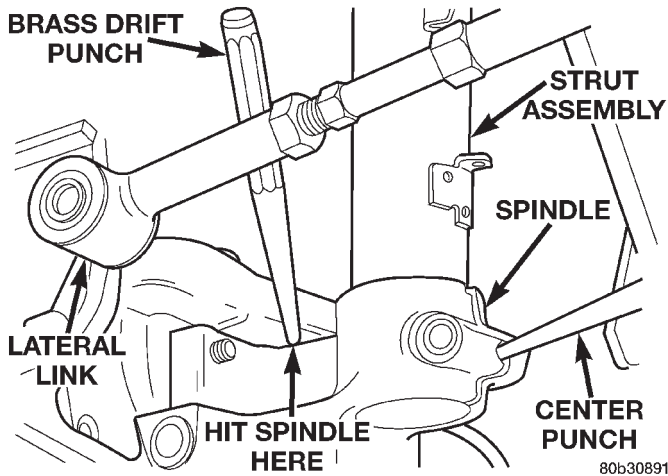


**Fig. 9 Removing Spindle From Strut Assembly**

(16) Let the rear spindle and assembled components hang from the trailing arm while the strut assembly is out of the vehicle.

(17) Lower vehicle enough to access rear passenger compartment.

**NOTE:** When removing rear strut assembly from vehicle, access for the 3 rear strut assembly to strut tower attaching nuts is through the passenger compartment of the vehicle.

(18) Remove the 3 strut assembly to rear strut tower attaching nuts (Fig. 10), then remove strut assembly from vehicle.

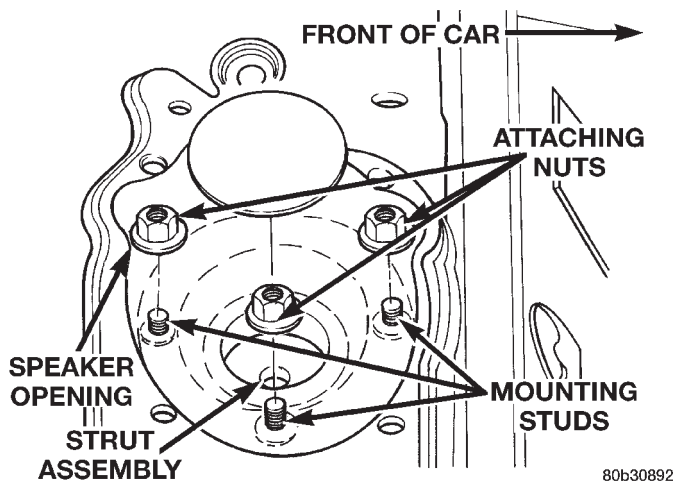


**Fig. 10 Strut Assembly Attaching Nuts**

(19) Remove the nut, washers, and rubber isolators securing the stabilizer bar attaching link to the strut.

## INSPECTION

Inspect for evidence of fluid leakage from upper end of reservoir. (Actual leakage will be a stream of fluid running down and leaking off lower end). Slight seepage is not unusual and will not effect performance.

## INSTALL

(1) Install the nut, washers, and rubber isolators securing the stabilizer bar attaching link to the strut.

(2) Position the strut assembly back in the vehicle with the 3 studs on the strut mount through the holes in the strut tower. Install the 3 strut mount to body attaching nuts onto mounting studs (Fig. 10). Tighten the 3 strut mount attaching nuts to a torque of 25 N·m (19 ft. lbs.).

(3) Raise vehicle back up to working height for reconnecting lower strut.

(4) Install spindle onto bottom of the strut assembly. Push or tap spindle assembly onto lower end of strut, until notch in spindle is tightly seated against locating tab on strut assembly (Fig. 11). Then remove center punch from hole in spindle. Install spindle to strut assembly pinch bolt into spindle (Fig. 11). Tighten spindle to strut assembly pinch bolt to 53 N·m (40 ft. lbs.).

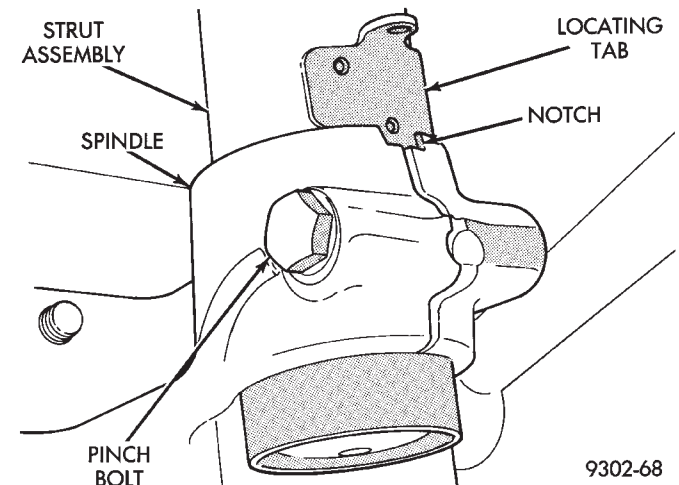


**Fig. 11 Spindle Attachment To Strut**

(5) Install the lateral links on the spindle (Fig. 5). Install, but DO NOT fully tighten lateral links to spindle attaching bolt at this time.

**CAUTION:** Tightening lateral link attaching bolt to spindle at this time will contort the bushing at curb height and lead to bushing failure. This bolt is to be tightened only when the vehicle is at curb riding height.

(6) Install stabilizer bar attaching link onto stabilizer bar (Fig. 6). Install stabilizer link to stabilizer bar attaching nut (Fig. 6). Tighten the stabilizer link to stabilizer bar attaching nut to a torque of 95 N·m

## REMOVAL AND INSTALLATION (Continued)

(70 ft. lbs.) using a crow foot wrench and torque wrench in place of the wrench on the attaching nut. **Be sure to use a wrench to hold the link stud in place while tightening attaching nut.**

(7) Install rear wheel speed sensor into brake caliper adapter. Install head attaching bolt (Fig. 4) and tighten to 7 N·m (60 in. lbs.).

(8) Install rear braking disc on hub. Carefully install rear brake caliper over braking disc and install on adapter. Tighten rear caliper assembly to adapter mounting bolts to 22 N·m (192 in. lbs.).

(9) Install wheel and tire assembly on vehicle. Then torque all wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat tightening sequence to full specified torque of 129 N·m (95 ft. lbs.).

(10) Lower vehicle to the ground.

(11) With the weight of the vehicle on the tires, tighten lateral link to spindle attaching bolt to 135 N·m (100 ft. lbs.).

(12) Reconnect the radio speaker wiring to the rear speaker. Install rear radio speaker and mounting bracket using 4 screws.

(13) Install both lower quarter and upper quarter trim panels Refer to Body Components in the Body section of this manual for the required procedure to be used for this vehicle.

(14) Install the rear seat back, and seat cushion. Refer to Seats in the Body section of this manual for the required procedure to be used for this vehicle.

(15) Check and reset rear wheel TOE to specifications if required.

## REAR SPINDLE

## REMOVE

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove the rear wheel and tire assembly from the vehicle.

(3) Remove the rear caliper assembly from the adapter. Refer to Rear Disc Brakes in Group 5 Brakes of this Service manual for required caliper removal procedure. After removing caliper assembly store caliper by hanging it from frame of vehicle (Fig. 12). Do not let weight of rear caliper assembly hang from flexible brake hose. If vehicle is equipped with rear drum brakes, remove the brake flex hose bracket from the support plate and wheel cylinder.

(4) Remove rear braking disc from hub.

(5) Remove rear hub and bearing assembly cotter pin and nut retainer (Fig. 13). Remove the hub and bearing retaining nut and washer from the spindle (Fig. 13). Then remove hub and bearing assembly from spindle.

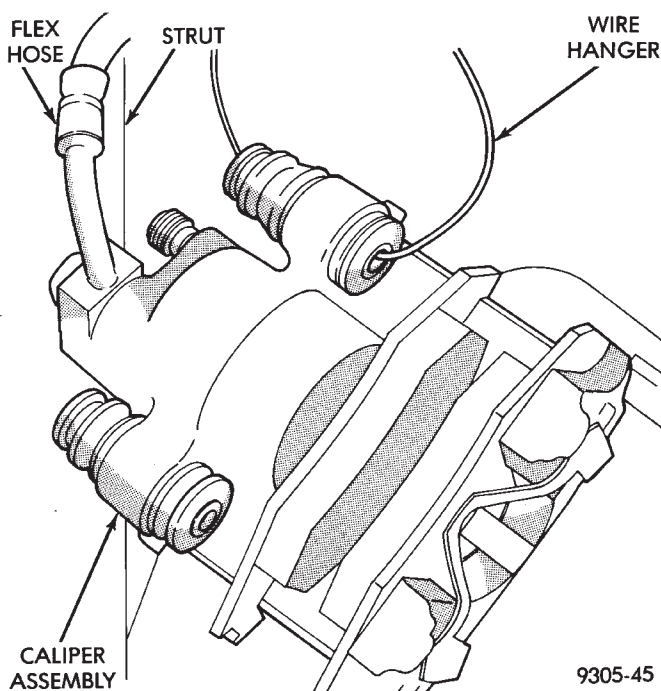


**Fig. 12 Storing Caliper**

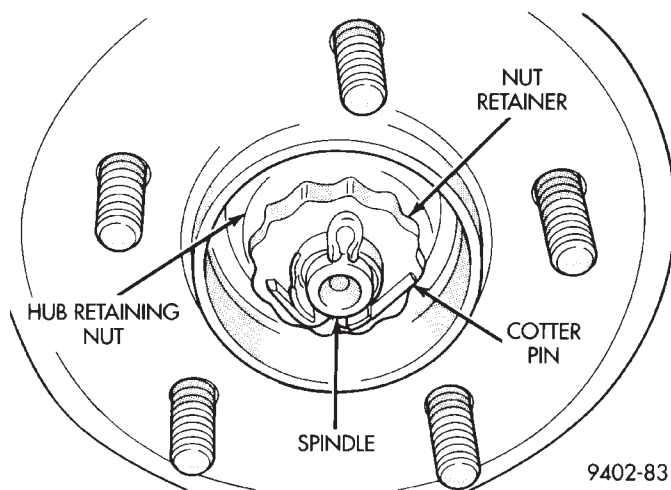


**Fig. 13 Hub And Bearing Retaining Nut and Washer**

(6) If vehicle is equipped with antilock brakes, remove the speed sensor head from the rear disc brake adapter (Fig. 14).

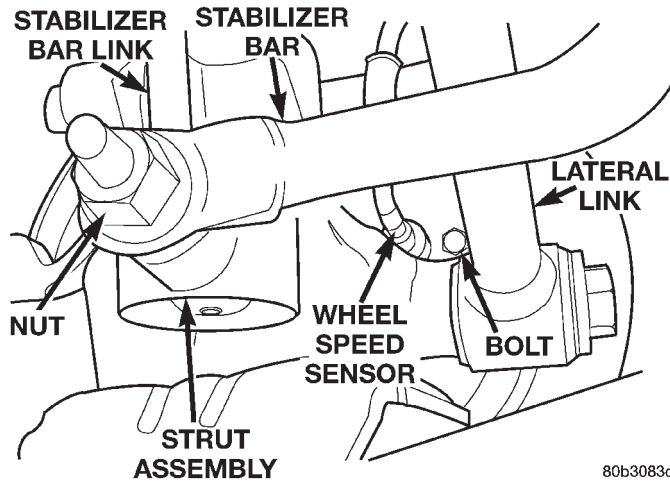
(7) Remove the 4 bolts attaching the disc brake adapter to the rear spindle (Fig. 15). Then remove the adapter, disc shield, park brake shoes and park brake cable as an assembly from the spindle.

(8) Remove the bolt attaching the trailing arm to the bracket on the bottom of the spindle (Fig. 16).

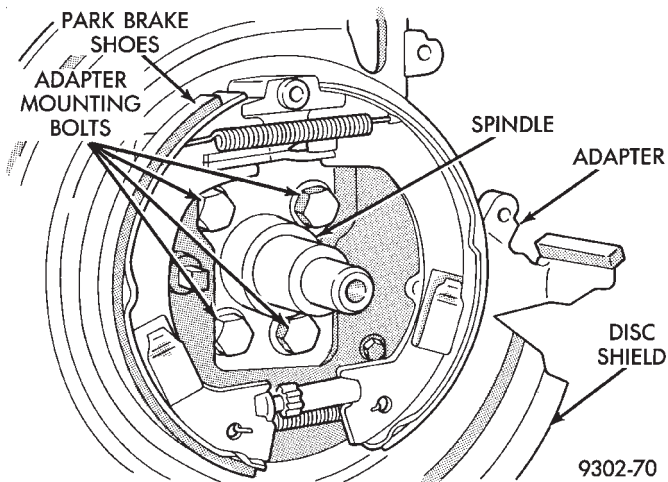
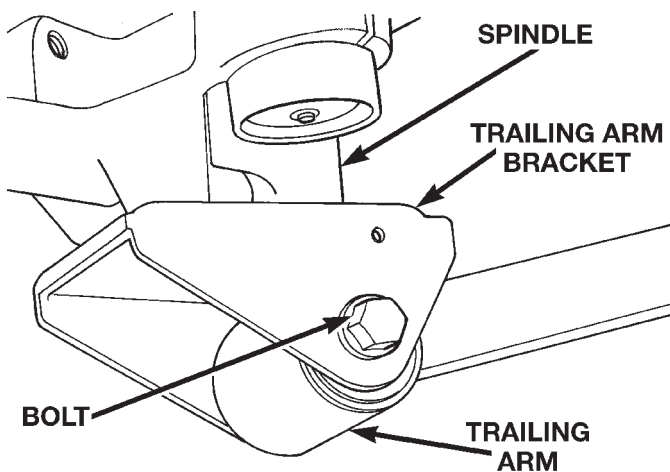
(9) Remove the bolt (Fig. 17) attaching the lateral links to the spindle.

(10) Remove the pinch bolt from the spindle (Fig. 18).

## REMOVAL AND INSTALLATION (Continued)



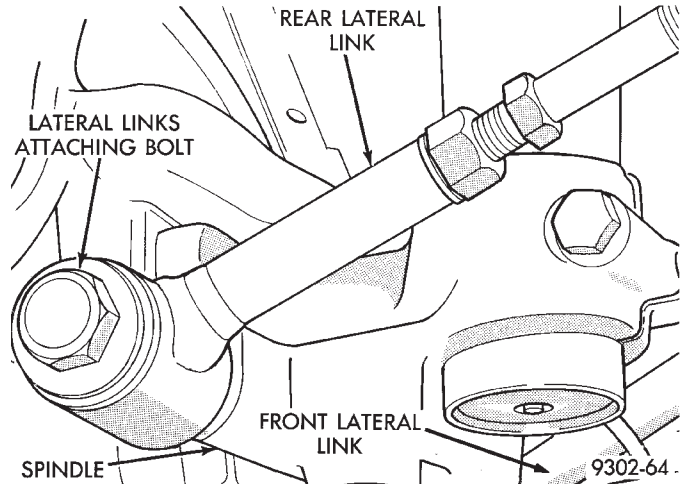
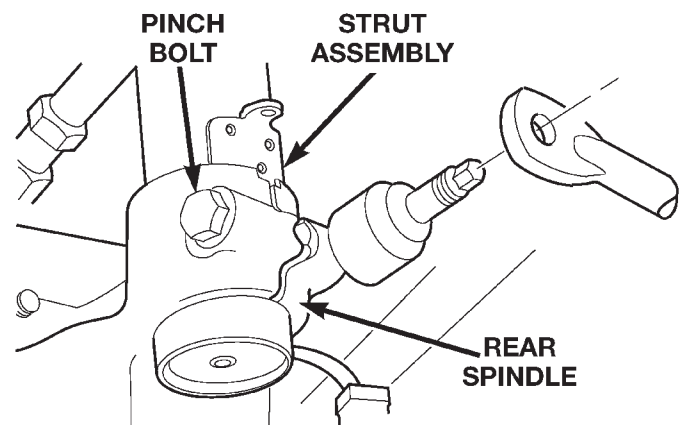
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**Fig. 14 Speed Sensor Head****Fig. 15 Disc Brake Adapter Mounting**

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**Fig. 16 Trailing Arm To Bracket Bolt**

**CAUTION:** When inserting center punch into rear spindle, use care so point of center punch does not puncture strut assembly.

**Fig. 17 Lateral Links To Spindle Attaching Bolt**

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**Fig. 18 Spindle Pinch Bolt**

(11) Insert a center punch into the hole on the spindle (Fig. 19). Center punch must be tapped into the hole in the spindle until jammed into place. This will spread the spindle casting allowing it to be removed from strut assembly.

(12) Using a hammer and a brass drift punch, tap on top surface of spindle, (Fig. 20) driving it off the end of the strut assembly.

**INSTALL**

(1) Install the spindle on the strut assembly. Push and or tap spindle assembly onto strut, until notch in spindle is tightly seated against locating tap on strut assembly (Fig. 18). Then remove center punch from hole in spindle. Install the pinch bolt in the spindle (Fig. 18). Tighten the pinch bolt to a torque of 53 N·m (40 ft. lbs.).

(2) Install the lateral links on the spindle (Fig. 17). Install, but do not fully tighten attaching bolt at this time.

## REMOVAL AND INSTALLATION (Continued)

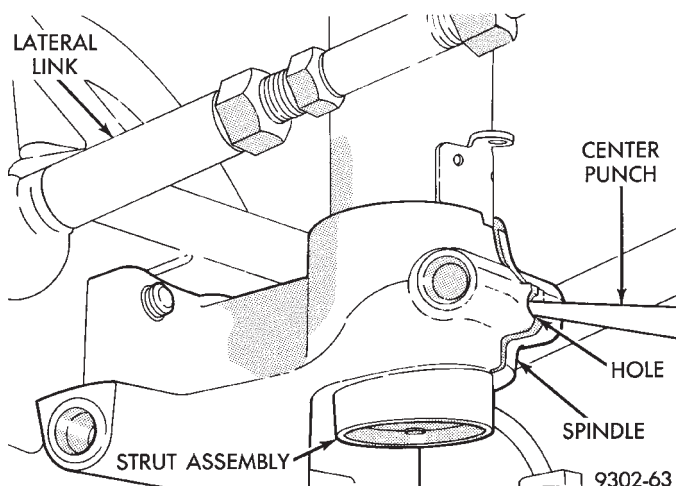


**Fig. 19 Center Punch Inserted In Spindle**

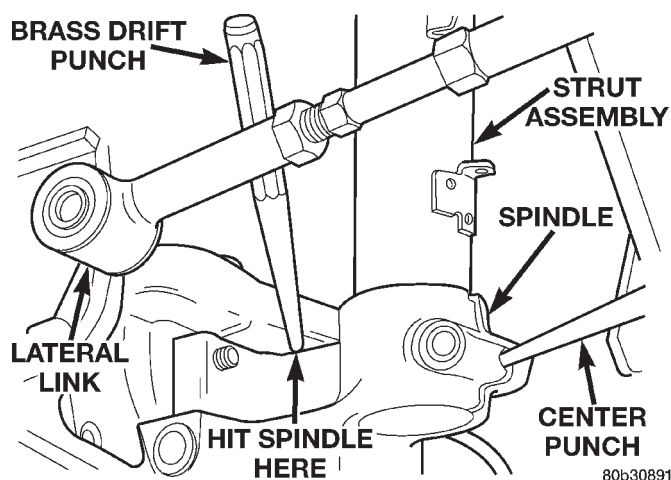


**Fig. 20 Removing Spindle From Strut**

(3) Install bolt attaching trailing arm to trailing arm bracket on bottom of spindle (Fig. 16). Do not fully tighten attaching bolt at this time.

(4) Install the disc brake adapter back on the spindle. Install the 4 bolts attaching the disc brake adapter to the rear spindle (Fig. 15). Tighten the disc brake adapter mounting bolts to a torque of 115 N·m (85 ft. lbs.).

(5) If vehicle is equipped with antilock brakes, install the speed sensor head into the rear disc brake adapter (Fig. 14). Tighten the speed sensor head attaching bolt to a torque of 7 N·m (60 in. lbs.).

(6) Install the rear hub and bearing assembly on the rear spindle. Install hub and bearing assembly retaining washer and nut on spindle (Fig. 13). Tighten the hub and bearing retaining nut to a torque of 168 N·m (124 ft. lbs.).

(7) Install the rear brake disc on the hub.

(8) Carefully place rear brake caliper over rotor and install on adapter. Tighten the caliper assembly to adapter mounting bolts to a torque of 22 N·m (192

in. lbs.). Refer to Rear Disc Brakes in Group 5 Brakes in this service manual for required caliper installation procedure.

(9) Install wheel and tire assembly on vehicle. Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(10) Lower vehicle to the ground.

(11) Tighten the lateral links to spindle attaching bolt to a torque of 135 N·m (100 ft. lbs.).

(12) Tighten the trailing arm to spindle bracket attaching bolt to a torque of 100 N·m (75 ft. lbs.).

(13) Check and reset rear wheel TOE to specifications if required.

## REAR HUB AND BEARING

### REMOVE

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove the rear wheel and tire assembly from the vehicle.

(3) Remove the rear caliper assembly from the adapter. Refer to Rear Disc Brakes in Group 5 Brakes of this Service manual for required caliper removal procedure. After removing caliper assembly store caliper by hanging it from frame of vehicle (Fig. 21). Do not let weight of rear caliper assembly hang from flexible brake hose.

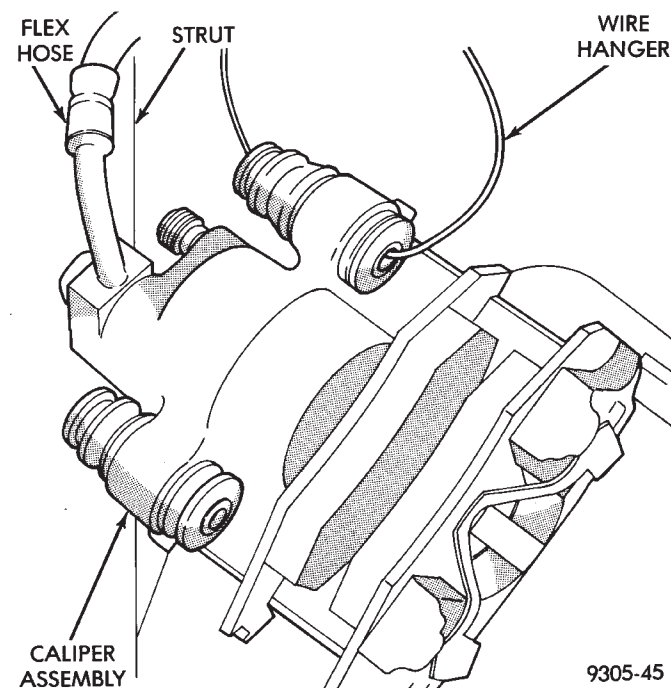


**Fig. 21 Storing Caliper**

(4) Remove rear braking disc from hub.

## REMOVAL AND INSTALLATION (Continued)

(5) Remove rear hub and bearing assembly cotter pin and nut retainer (Fig. 22). Remove the hub and bearing retaining nut and washer from the spindle (Fig. 22). Then remove hub and bearing assembly from spindle.

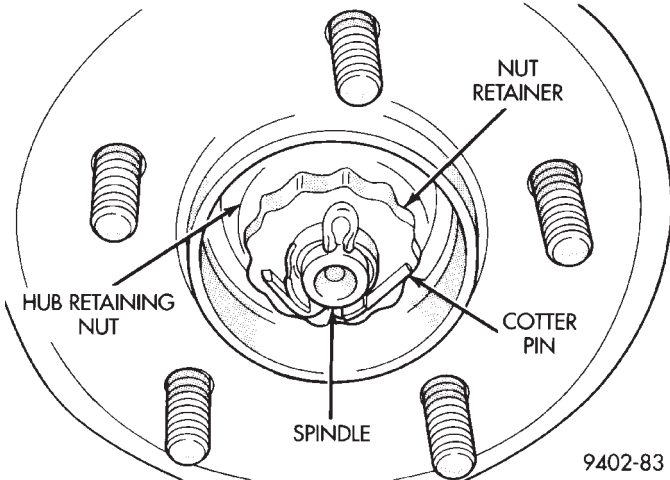


**Fig. 22 Hub And Bearing Retaining Nut and Washer**  
**INSTALL**

(1) Install the rear hub and bearing assembly on the rear spindle. Install hub and bearing assembly retaining washer and nut on spindle (Fig. 22). Tighten the hub and bearing retaining nut to a torque of 168 N·m (124 ft. lbs.). Install the nut retainer and cotter pin (Fig. 22).

(2) Install the rear brake disc on the hub.

(3) Carefully place rear brake caliper over rotor and install on adapter. Tighten the caliper assembly to adapter mounting bolts to a torque of 22 N·m (192 in. lbs.). Refer to Rear Disc Brakes in Group 5 Brakes in this service manual for required caliper installation procedure.

(4) Install wheel and tire assembly on vehicle. Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(5) Lower vehicle to the ground.

**LATERAL LINKS**

The lateral links are only serviced as complete assemblies. The isolator bushings used in the lateral links are not serviced as separate components. The left forward lateral link requires a more involved removal and installation procedure in order to remove the attaching bolt at the crossmember. See procedures below for the proper lateral link service procedure.

**LEFT FORWARD LATERAL LINK****REMOVE**

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrica-

tion and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove left rear wheel and tire assembly from the vehicle.

(3) Remove the nut and bolt attaching the left lateral links to the spindle (Fig. 23).

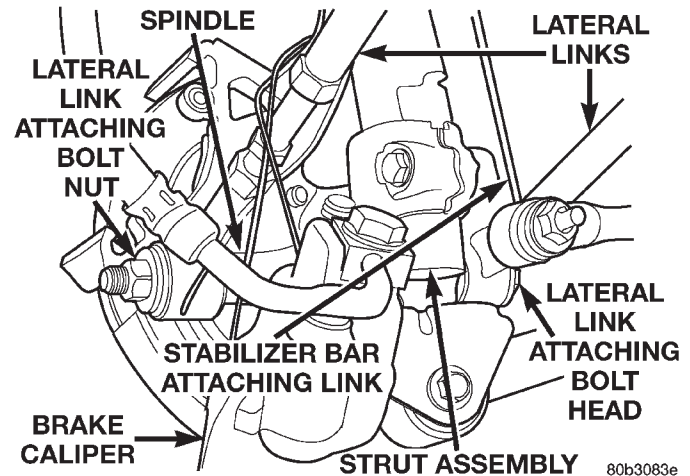


**Fig. 23 Lateral Link Attachment To Spindle**

(4) Remove the nut attaching the left forward lateral link to the rear suspension crossmember. **The bolt for the left front lateral link may not be removed at this time. Remove the nut only. Once the crossmember is lowered, the bolt can be easily removed.** Notice the forward link attaching bolt faces rearward.

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 24) to prevent damage to the fuel tank and or fuel tubes. Also, the left rear lateral arm attaching bolt to the crossmember is to be installed pointing forward to prevent possible damage to the fuel filler tube.

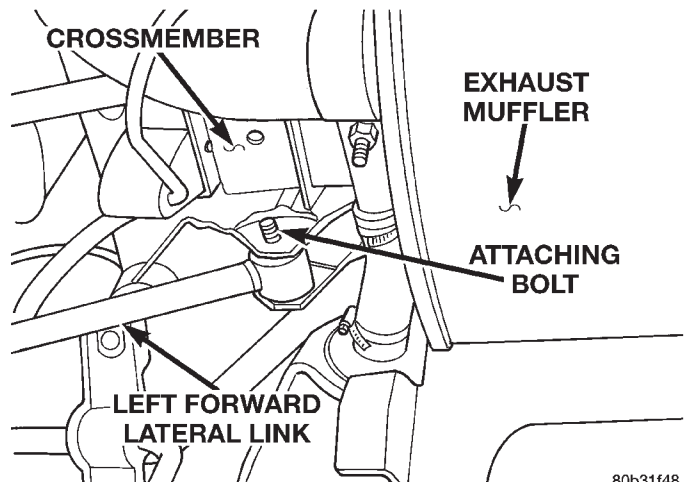


**Fig. 24 Lateral Link Attachment To Crossmember**

## REMOVAL AND INSTALLATION (Continued)

(5) Remove the screw securing the brake tubes to the left stabilizer bar isolator bushing retainer.

(6) Remove the 4 bolts attaching both stabilizer bar isolator bushing retainers to the frame rails (the 2 rearward attaching bolts also attach the front corners of the rear suspension crossmember in place). Allow the stabilizer bar to hang down out of the way.

(7) Remove the screw securing the fuel filler neck to the left frame rail.

(8) Position a transmission jack under the fuel tank.

(9) Remove the attaching bolts securing both fuel tank mounting straps. First, remove the right, then the left attaching bolt. Allow the straps to hang down.

(10) Lower the transmission jack and fuel tank just enough to allow for removal of the lateral link attaching bolt at the crossmember.

(11) Remove the left forward lateral link from the crossmember.

## INSTALL

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 24) to prevent damage to the fuel tank and or fuel tubes. Also, the left rear lateral arm attaching bolt to the crossmember is to be installed pointing forward to prevent possible damage to the fuel filler tube.

(1) Attach the left forward lateral link to crossmember. Install mounting bolt through the front of the crossmember mount towards the rear. Install the lateral link attaching nut, but DO NOT fully tighten at this time.

**CAUTION:** Tightening the lateral link attaching bolt at this point will cause the bushing to contort when the vehicle is at curb riding height, thus contributing to premature failure of the lateral link bushings.

(2) Raise the fuel tank up into mounting position.

(3) Reattach the fuel tank straps, securing the fuel tank in place.

(4) Remove transmission jack supporting the fuel tank.

(5) Reinstall the fuel filler neck attaching screw and secure the fuel filler neck to the left frame rail.

(6) Install the 4 bolts attaching both stabilizer bar isolator bushing retainers to the frame rails (the 2 rearward attaching bolts attach the front corners of the rear suspension crossmember in place). Tighten the forward stabilizer bar isolator bushing retainer attaching bolts to 40 N·m (30 ft. lbs.). Tighten the 2 rearward stabilizer bar isolator bushing retainer attaching bolts (which also serve as the front crossmember attaching bolts) to 100 N·m (75 ft. lbs.).

(7) Install the screw securing the brake tubes to the left stabilizer bar isolator bushing retainer.

(8) Install the lateral links on the spindle. Install, but DO NOT fully tighten the attaching bolt and nut at this time (Fig. 23).

**CAUTION:** Tightening the lateral link attaching bolt at this point will cause the bushing to contort when the vehicle is at curb riding height, thus contributing to premature failure of the lateral link bushings.

(9) Install rear wheel and tire assembly on vehicle.

(10) Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(11) Lower vehicle to the ground.

(12) Tighten lateral arm to crossmember attaching bolt 95 N·m (70 ft. lbs.).

(13) Tighten lateral arm to spindle attaching bolt 135 N·m (100 ft. lbs.).

(14) Check and reset rear wheel TOE to specifications if required.

## LEFT REAR AND BOTH RIGHT LATERAL LINKS

## REMOVE

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove rear wheel and tire assembly from the vehicle.

(3) Remove the nut and bolt attaching the left lateral links to the spindle (Fig. 25).

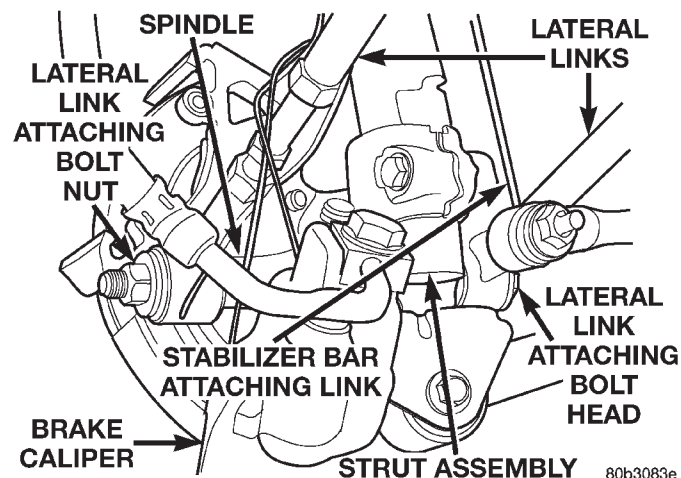


Fig. 25 Lateral Link Attachment To Spindle

(4) Remove the nut and bolt attaching the lateral link to the rear suspension crossmember. Note the direction in which the lateral arm attaching bolt is installed.

## REMOVAL AND INSTALLATION (Continued)

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 26) to prevent damage to the fuel tank and or fuel tubes. Also, the left rear lateral arm attaching bolt to the crossmember is to be installed pointing forward to prevent possible damage to the fuel filler tube.

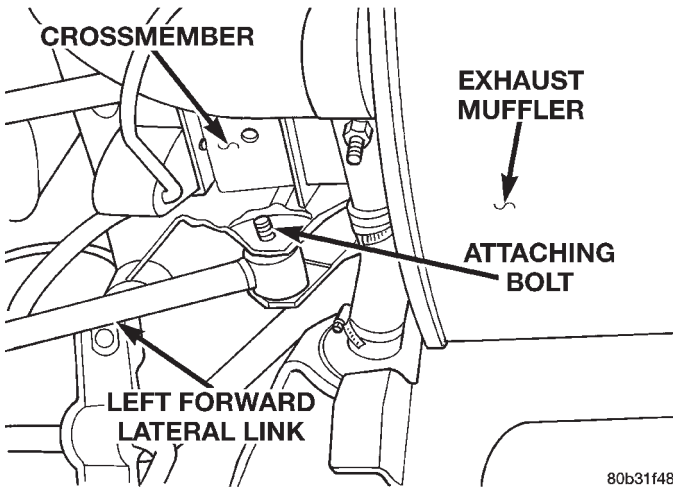


**Fig. 26 Lateral Link Attachment To Crossmember**

(5) Remove the lateral link from the crossmember.

**INSTALL**

(1) Attach the lateral link to crossmember. Rear lateral link attachment bolts should be installed from the rear and point forward. Forward lateral link attachment bolts should be installed from the front and point rearward.

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 26) to prevent damage to the fuel tank and or fuel tubes. Also, the left rear lateral arm attaching bolt to the crossmember is to be installed pointing forward to prevent possible damage to the fuel filler tube.

(2) Install the attaching nut, but DO NOT tighten at this time.

**CAUTION:** Tightening the lateral link attaching bolt at this point will cause the bushing to contort when the vehicle is at curb riding height, thus contributing to premature failure of the lateral link bushings.

(3) Install the lateral links on the spindle. Install, but DO NOT fully tighten the attaching bolt and nut at this time (Fig. 25).

(4) Install rear wheel and tire assembly on vehicle.

(5) Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half

specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(6) Lower vehicle to the ground.

(7) Tighten lateral arm to crossmember attaching bolt and nut to 95 N·m (70 ft. lbs.).

(8) Tighten lateral arm to spindle attaching bolt and nut to 135 N·m (100 ft. lbs.).

(9) Check and reset rear wheel TOE to specifications if required.

**TRAILING ARM****REMOVE**

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(2) Remove the rear wheel and tire assembly from the vehicle.

(3) Remove the bolt attaching the trailing arm to the bracket on the bottom of the spindle (Fig. 27).

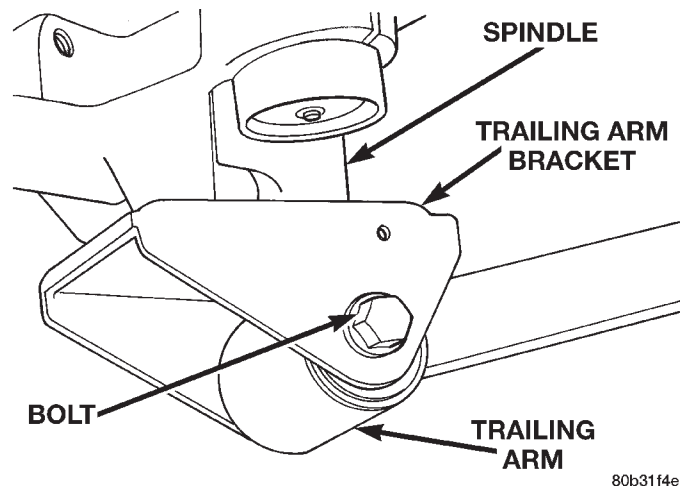


**Fig. 27 Trailing Arm To Bracket Bolt**

(4) Remove the 4 bolts attaching the arm forward mounting bracket to the frame rail and rear torque box (Fig. 28).

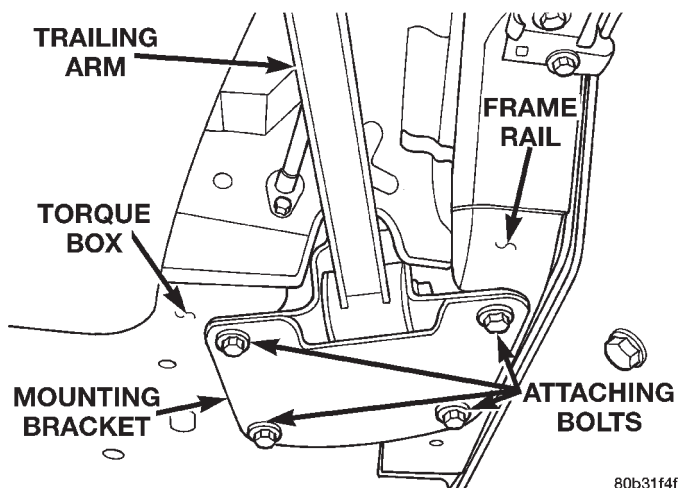
(5) Remove the trailing arm and forward mounting bracket from vehicle.

(6) Remove the bolt attaching the trailing arm to the mounting bracket.

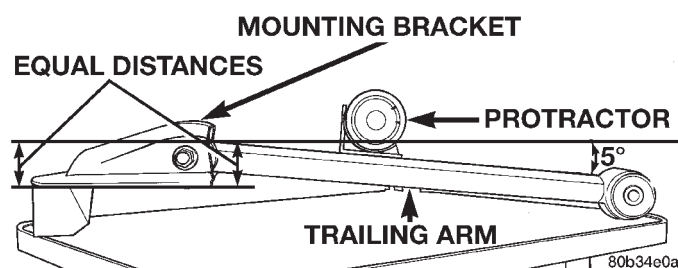
**INSTALL**

**CAUTION:** When the trailing arm is installed to its mounting bracket, it is important to set an offset angle of 5 degrees before tightening the attaching bolt. Otherwise, the bushing will be contorted when the vehicle is at normal riding height. This angle cannot be set once the trailing arm and bracket are installed on the vehicle.

## REMOVAL AND INSTALLATION (Continued)

**Fig. 28 Mounting Bracket Attachment**

(1) Install the trailing arm to the mounting bracket so the length-wise opening in the arm points downward. Align the plane of the arm at a 5 degree angle to the mounting bracket, mounting surface (to the vehicle) (Fig. 29). This can be accomplished by using a simple magnetic base protractor (Fig. 29). Verify the mounting bracket is level, then rotate the trailing arm until 5 degrees is measured (Fig. 29). **This angle is important to set, so the bushing is not contorted when the vehicle is at normal riding height.** Tighten the attaching bolt and nut to a torque of 100 N·m (75 ft. lbs.). **This bolt cannot be tightened once mounted on the vehicle.**

**Fig. 29 Trailing Arm Mounting Angle**

(2) Position the trailing arm and forward mounting bracket into the vehicle. Attach to frame rail and torque box with the 4 attaching bolts (Fig. 28). Tighten the attaching bolts to 60 N·m (45 ft. lbs.).

(3) Install bolt attaching trailing arm to trailing arm bracket on bottom of spindle (Fig. 27). Do not fully tighten attaching bolt at this time.

(4) Install wheel and tire assembly on vehicle. Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(5) Lower vehicle to the ground.

(6) Tighten the trailing arm to spindle bracket attaching bolt to a torque of 100 N·m (75 ft. lbs.).

(7) Check and reset rear wheel TOE to specifications if required.

**REAR SUSPENSION CROSSMEMBER**

This vehicle is equipped with a aluminum alloy rear suspension crossmember that spans the distance between the rear frame rails. It is isolated from the frame rails with the use of rubber isolator bushings. These bushings may be replaced separately.

**REMOVE**

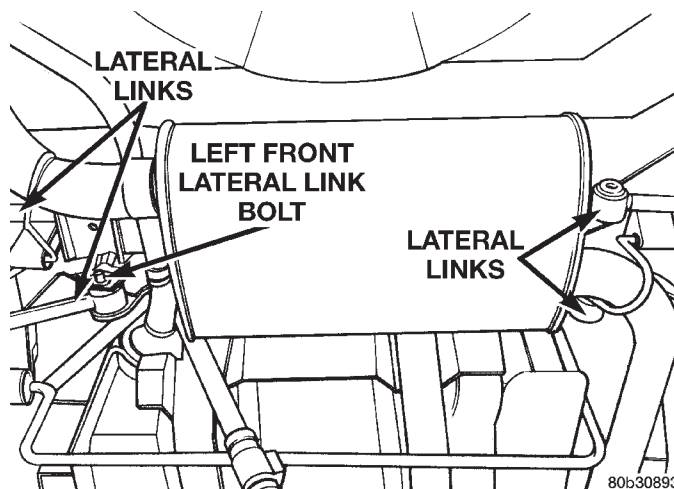
(1) Open the fuel filler door. Remove the 3 fuel filler neck attaching screws. Remove the fuel filler cap.

(2) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.

(3) Remove both rear wheel and tire assemblies from the vehicle.

(4) Remove the nut and bolt attaching each of the 4 lateral links to the crossmember (Fig. 30). **The bolt for the left front lateral link may not be removed at this time. Remove the nut only. Once the crossmember is lowered, the bolt can be easily removed** (Fig. 30). Notice the forward attaching bolts face rearward.

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 30) to prevent damage to the fuel tank and or fuel tubes in case of an accident. The bolt attaching the left rear lateral link must be installed with the bolt pointing forward to prevent damage to the fuel filler tube.

**Fig. 30 Lateral Link Attachment To Crossmember**

## REMOVAL AND INSTALLATION (Continued)

(5) Remove the screw securing the brake tubes to the left stabilizer bar isolator bushing retainer.

(6) Remove the 4 bolts attaching both stabilizer bar isolator bushing retainers to the frame rails (the 2 rearward attaching bolts also attach the front corners of the rear suspension crossmember in place). Allow the stabilizer bar to hang down.

(7) Remove the parking brake cable tensioner from the intermediate parking brake cable. Refer to Base Brake System in Group 5 Brakes in this manual for the required service procedure.

(8) Remove the parking brake cable tensioner from the left rear parking brake cable. Refer to Base Brake System in Group 5 Brakes in this manual for the required service procedure.

(9) Remove the right rear parking brake cable from the intermediate parking brake cable. Refer to Base Brake System in Group 5 Brakes in this manual for the required service procedure.

(10) Remove the retainer clips securing both rear parking brake cables assemblies to the rear suspension crossmember (Fig. 31).

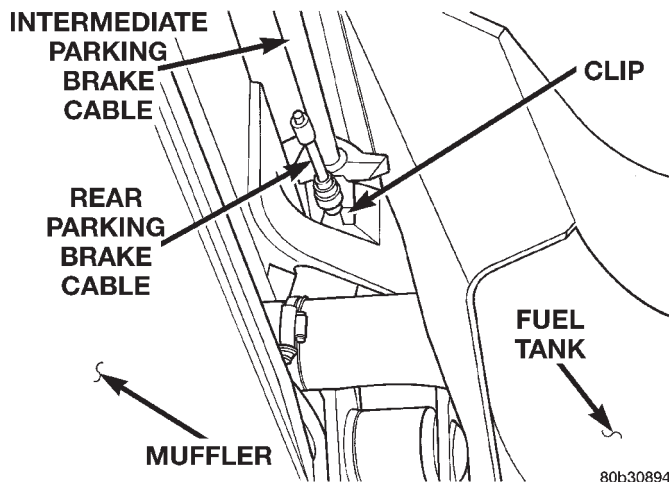


**Fig. 31 Rear Parking Brake And Retainer Clip (left)**

(11) Remove parking brake cables from crossmember.

(12) Remove nuts attaching both brake proportioning valves to the rear corners of the crossmember (Fig. 32).

(13) Position a transmission jack under the muffler.

(14) Disconnect the hanger securing the exhaust resonator to the rear frame rail.

(15) Disconnect the hangers securing the exhaust muffler to the rear suspension crossmember. There is one hanger on each side of the muffler.

(16) Lower the transmission jack and muffler enough to allow for better access to the rear crossmember.

(17) Remove the screw securing the fuel filler neck to the left frame rail.

(18) Remove the final 2 bolts attaching the rear suspension crossmember to the frame rails. These are located at the rear corners of the crossmember (Fig. 32).

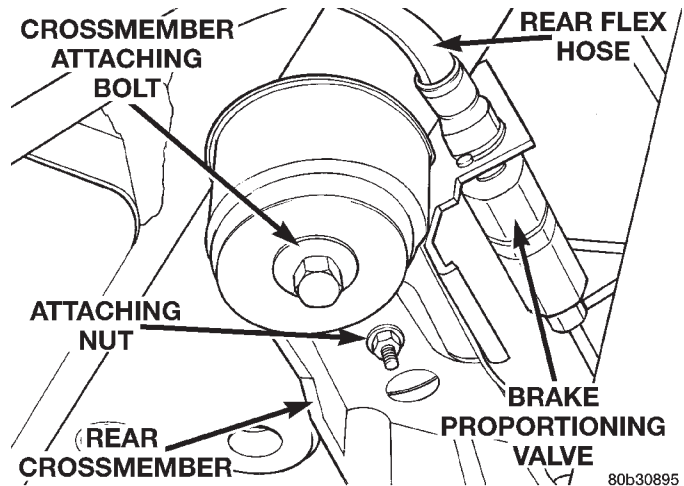


**Fig. 32 Rear Brake Proportioning Valve**

(19) Lower rear suspension crossmember as low as possible to allow for removal of lateral link attaching bolt at left front corner of crossmember.

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 30) to prevent damage to the fuel tank and or fuel tubes. Also, the bolt attaching the left rear lateral link must be installed with the bolt pointing forward to prevent damage to the fuel filler tube.

(20) Remove the link attaching bolt and link from the left front corner of the crossmember.

(21) Remove the rear suspension crossmember from the vehicle.

## INSTALL

(1) Install the rear suspension crossmember back into vehicle above muffler. Make sure that the brake tubes are properly routed above the crossmember as it is installed.

(2) Install the rear proportioning valve mounting brackets into mounting position at the rear corners of the crossmember (Fig. 32). Install the attaching nuts.

(3) Install Intermediate parking brake cable routing clip into place on left front of crossmember (Fig. 31).

(4) Reattach left forward lateral link to crossmember. Install mounting bolt though the front of the crossmember mount towards the rear. Do not install and torque nut at this time.

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 30) to prevent damage to the fuel tank and or fuel tubes. Also, when installing the bolt attaching the left rear lateral link, install the bolt pointing forward to prevent damage to the fuel filler tube.

## REMOVAL AND INSTALLATION (Continued)

(5) Raise the crossmember up against the frame rails. Install, but do not fully tighten, the 2 bolts attaching the rear of the crossmember to the frame rails.

(6) Raise the exhaust into place. Reattach the 3 exhaust hangers previously removed from the muffler and resonator.

(7) Remove transmission jack supporting muffler and exhaust system.

(8) Reinstall the fuel filler neck attaching screw and secure the fuel filler neck to the left frame rail.

(9) Position the rear parking brake cables into crossmember alignment holes (Fig. 31).

(10) Install the retainer clips securing both rear parking brake cables assemblies to the rear suspension crossmember (Fig. 31).

(11) Reconnect the right rear parking brake cable to the intermediate parking brake cable.

(12) Install the parking brake cable tensioner to the left rear parking brake cable.

(13) Install the parking brake cable tensioner to the intermediate parking brake cable. Refer to Base Brake System in Group 5 Brakes in this manual for the required service procedure to install and properly adjust the parking brakes.

(14) Install the 4 bolts attaching both stabilizer bar isolator bushing retainers to the frame rails (the 2 rearward attaching bolts attach the front corners of the rear suspension crossmember in place). Tighten the forward stabilizer bar isolator bushing retainer attaching bolts to 40 N·m (30 ft. lbs.). Tighten the 2 rearward stabilizer bar isolator bushing retainer attaching bolts (which also serve as the front crossmember attaching bolts) to 100 N·m (75 ft. lbs.).

(15) Tighten the rear suspension crossmember rear attaching bolts to 100 N·m (75 ft. lbs.).

(16) Install the screw securing the brake tubes to the left stabilizer bar isolator bushing retainer.

(17) Install the remaining 3 lateral links to the rear suspension crossmember. The forward lateral arm mounting bolts must point rearward, and the rearward lateral arm mounting bolts must point forward.

**CAUTION:** The bolts attaching the forward lateral links to the crossmember must be installed with the bolts pointing rearward (Fig. 30) to prevent damage to the fuel tank and or fuel tubes. The bolt attaching the left rear lateral link must be installed with the bolt pointing forward to prevent damage to the fuel filler tube.

(18) Install the lateral link attaching nuts, but DO NOT fully tighten at this time.

**CAUTION:** Tightening the lateral link attaching bolts at this time will cause the bushings contort at curb riding height, leading to premature failure of the

bushings. Tighten bolts only when vehicle is at curb riding height.

(19) Install wheel and tire assemblies on vehicle.

(20) Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(21) Lower vehicle to the ground.

(22) Install the 3 fuel filler neck attaching screws. Reinstall the fuel filler cap.

(23) Tighten all 4 lateral arm to crossmember attaching bolt and nut assemblies to 95 N·m (70 ft. lbs.).

(24) Check and reset rear wheel TOE to specifications if required.

## STABILIZER BAR

## REMOVE

(1) Raise vehicle on jack stands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.

(2) Install a thin wrench on the hex of the attaching link stud to keep the stud from turning in the link. Next, remove the nut from the stabilizer bar to strut assembly attaching link stud at the stabilizer bar (Fig. 33). Remove the link from the stabilizer bar. Repeat this procedure on the other side of the vehicle for the other attaching link.

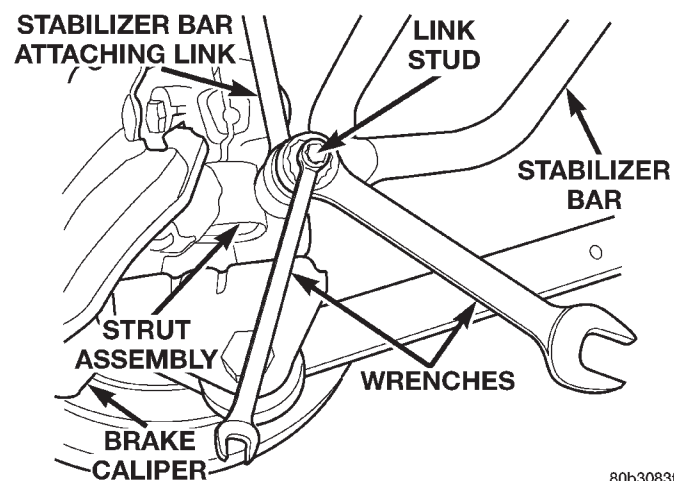


Fig. 33 Link Attachment To Stabilizer Bar

(3) Remove the screw securing the brake tubes to the left stabilizer bar isolator bushing retainer (Fig. 34).

(4) Remove the 2 bolts attaching each of the 2 stabilizer bar isolator bushing retainers to the frame rails (Fig. 34) (the 2 rearward attaching bolts also attach the front corners of the rear suspension cross-

## REMOVAL AND INSTALLATION (Continued)

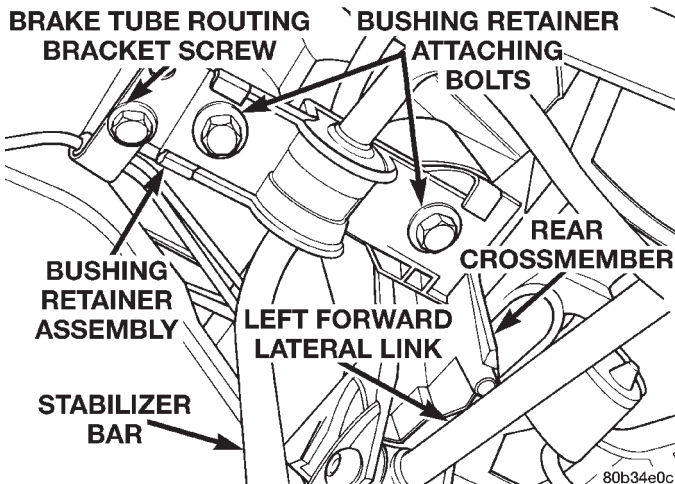


Fig. 34 Bushing Retainer Attachment

member in place). Remove the stabilizer bar from the vehicle.

(5) Mount the stabilizer bar in a soft jawed vise with one of the two bushings mount just above the vise jaws.

(6) Carefully pry back the retainer tabs on the wider end of the upper bushing retainer away from the lower half.

(7) Using a hammer and a brass drift punch, tap the upper half of the bushing retainer assembly forward, off of the lower half and bushing (Fig. 35).

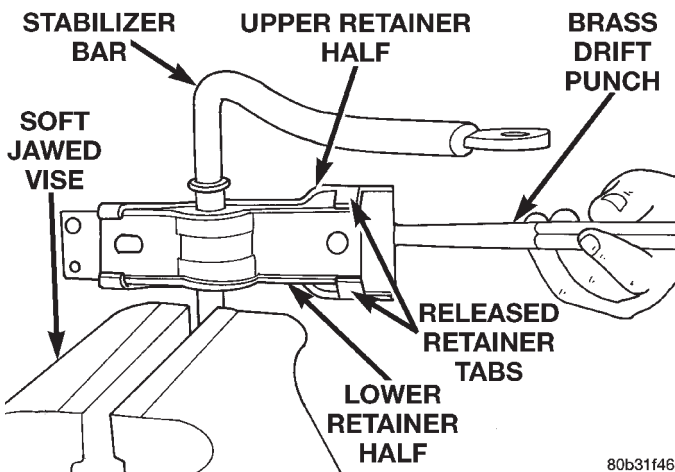


Fig. 35 Bushing Retainer Removal

(8) Remove the lower half of the bushing retainer from the bushing.

(9) Remove the bushing from the stabilizer bar. **Make note that the slit in the bushing points toward the front of the vehicle.**

(10) Remove the stabilizer bar from the vise, and repeat the preceding 5 steps to remove the second bushing from the other side of the stabilizer bar.

## INSPECTION

Inspect the bushings and retainers for cracks and or distortion. If any signs appear, these pieces should be replaced.

## INSTALL

(1) Install the bushings onto the stabilizer bar. **Make sure that the slit in the bushing points toward the front of the vehicle.**

(2) Mount the stabilizer bar in the soft jawed vise with the bushing just above the top of the vise jaws.

(3) Install the lower half of the retainer onto the bushing with the elongated mounting hole towards the front of the vehicle.

(4) Install the upper half of the retainer onto the lower half. This is done by tapping the upper half, starting with the large end, onto the lower half with a hammer and brass drift punch (Fig. 36). Tap the upper retainer half on until the mounting holes line up with the ones in the lower half.

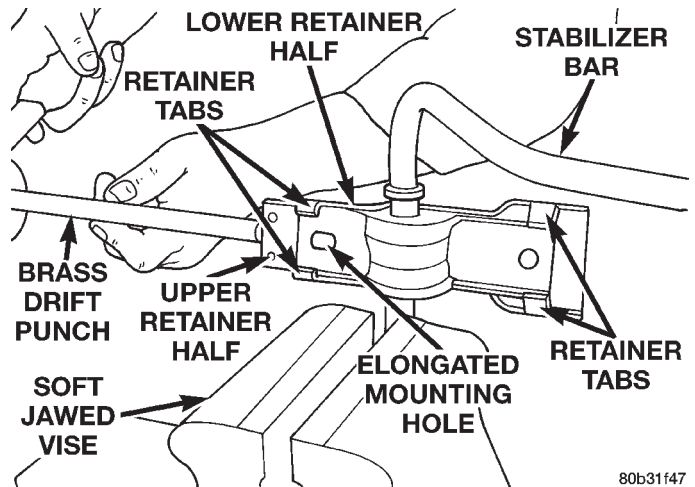


Fig. 36 Bushing Retainer Installation

(5) Using a pair of pliers, bend the retainer tabs on the upper retainer half around the lower retainer half, securing the two halves together.

(6) Remove the stabilizer bar from the vise, and repeat the preceding 5 steps to install the second bushing and retainer on the other side of the stabilizer bar.

(7) Position the rear stabilizer bar in position between the frame rails. Install the 4 bolts attaching both stabilizer bar isolator bushing retainers to the frame rails (Fig. 34) (the 2 rearward attaching bolts attach the front corners of the rear suspension crossmember in place). Tighten the forward stabilizer bar isolator bushing retainer attaching bolts to 40 N·m (30 ft. lbs.). Tighten the 2 rearward stabilizer bar isolator bushing retainer attaching bolts (which also serve as the forward rear crossmember attaching bolts) to 100 N·m (75 ft. lbs.).

## REMOVAL AND INSTALLATION (Continued)

(8) Install the screw securing the brake tubes to the left stabilizer bar isolator bushing retainer (Fig. 34).

(9) Install both stabilizer bar attaching links onto stabilizer bar (Fig. 33). Install both stabilizer link to stabilizer bar attaching nuts (Fig. 33). Tighten the stabilizer link to stabilizer bar attaching nuts to a torque of 95 N·m (70 ft. lbs.) using a crow foot wrench and torque wrench in place of the wrench on the attaching nut. **Be sure to use a wrench to hold the link stud in place while tightening each attaching nut.**

(10) Lower vehicle to the ground.

## REAR WHEEL MOUNTING STUDS

**CAUTION:** If a wheel attaching stud needs to be replaced in the hub and bearing assembly, **DO NOT** hammer studs out of the hub flange. If a stud is removed by hammering it out of the bearing flange, damage to the hub and bearing assembly will occur leading to premature bearing failure.

**CAUTION:** The following procedure must be used when replacing rear wheel attaching studs.

**NOTE:** Rear hub and bearing assembly removal is required, first, before attaching studs can be replaced.

## REMOVE

(1) Position the hub and bearing assembly under a hydraulic press ram, supported by a 21 mm. deep well impact socket under the stud to be replaced (Fig. 37).

**Take care to keep hub and bearing assembly from falling during stud removal. This could damage the assembly.**

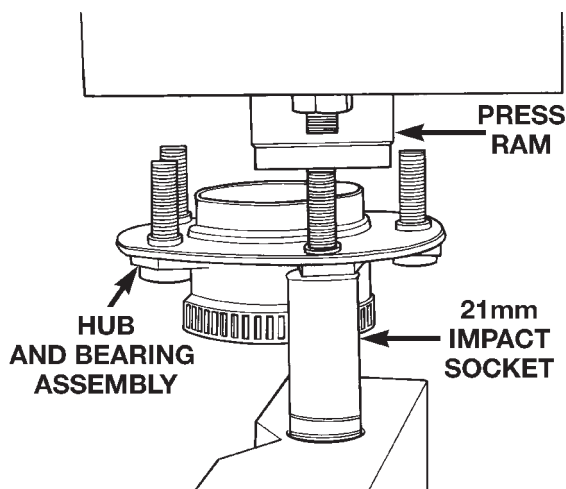


Fig. 37 Wheel Stud Removal

(2) Press the stud out of the hub flange, and into the socket well.

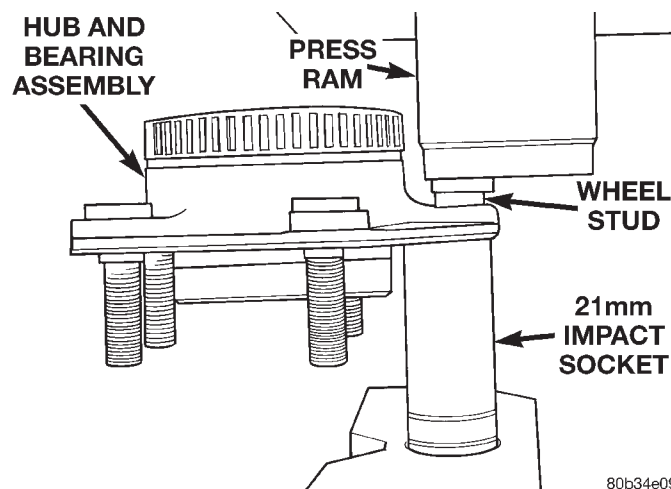
(3) Remove the hub and bearing assembly from the press.

(4) Remove the stud from the socket.

## INSTALL

(1) Install wheel stud into stud hole in hub and bearing assembly.

(2) Position the hub and bearing assembly face down with stud pointing down into the well of the 21 mm. socket. The hydraulic press ram must line up with the stud (Fig. 38).



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Fig. 38 Wheel Stud Installation

(3) Press the stud into the hub flange until it bottoms.

(4) Remove the hub and bearing assembly from the press.

## DISASSEMBLY AND ASSEMBLY

## STRUT ASSEMBLY

The rear strut is not serviced and must be replaced as an assembly if found to be defective. The strut is available with 3 calibrations; be sure strut is replaced with an assembly of the same calibration.

The components of the strut assembly listed below are replaceable if found to be defective.

- Coil spring (Coil springs come in a standard rate, but have different check loads. Be sure spring is replaced with a spring with the correct check load.)

- Dust shield
- Mount assembly
- Jounce Bumper
- Upper Spring Isolator
- Lower Spring Isolator
- Shaft Nut

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## DISASSEMBLY AND ASSEMBLY (Continued)

## DISASSEMBLE

(1) Remove strut assembly requiring service from the vehicle. Refer to Strut Assembly Removal in Servicing Rear Struts, in this section of the service manual.

(2) Position strut assembly in a vise. Using paint or equivalent, mark the strut unit, lower spring isolator, spring and upper strut mount for indexing of the parts at assembly.

**CAUTION:** When installing spring compressor (Fig. 39) on coil spring, do not position the spring compressor on the sleeve of the coil spring. Positioning the spring compressor on the sleeve could cause the sleeve to dislodge from the coil spring when it is compressed. This would result in the required replacement of the coil spring.

**WARNING:** Do not install the spring compressor on the coil spring in an area of the spring covered by a sleeve. If the sleeve moves when compressing the spring, the spring could come out of compressor resulting in personal injury.

(3) Attach OTC shoes 7525, or the equivalent, on OTC Spring Compressor 7520, or the equivalent. Position the compressor on the strut assembly spring (Fig. 39). Compress coil spring until all load is removed from upper strut mount assembly.

(4) Install Strut Shaft Socket, Special Tool, 6864 on strut shaft nut (Fig. 40). Use a deep well socket inserted into the opening of tool 6864 to keep strut shaft from turning (Fig. 40). With the spring compressed, remove the nut from the strut shaft.

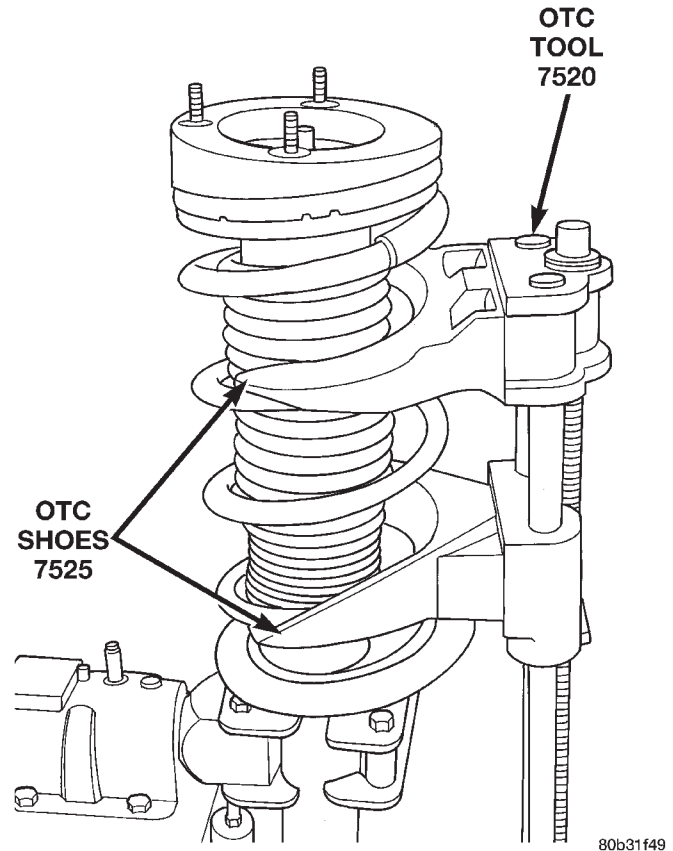
(5) Remove the strut upper mount assembly, upper spring isolator, dust shield, and jounce bumper. **The jounce bumper should come off with the dust shield.** The dust shield and upper spring isolator can be removed from the upper mount if necessary.

(6) Remove the coil spring and the spring compressor from the strut as an assembly.

(7) Remove the lower spring isolator from the strut (Fig. 41).

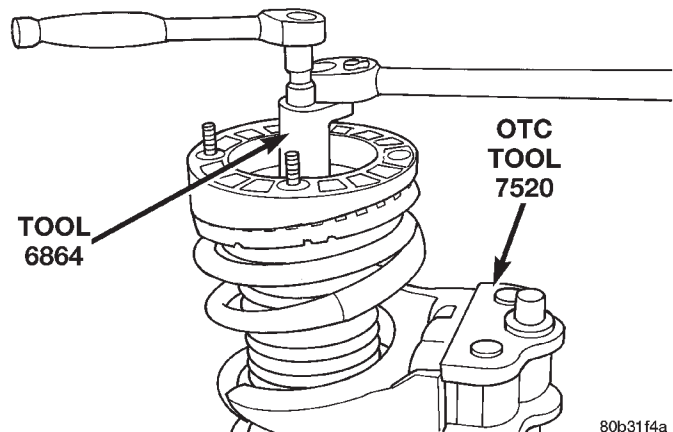
## INSPECTION

(1) Inspect all disassembled components for signs of abnormal wear or failure. Replace components as required. Inspect the strut shaft for any signs of abnormal wear or damage. Inspect strut unit for signs of abnormal oil leakage and for loss of gas charge. To check for loss of gas charge in strut unit. Push strut shaft into body of strut and release, strut shaft should return to its fully extended position. If strut shaft does not return to its fully extended position, replace strut unit.



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**Fig. 39 Compressor on Strut Assembly Coil Spring**



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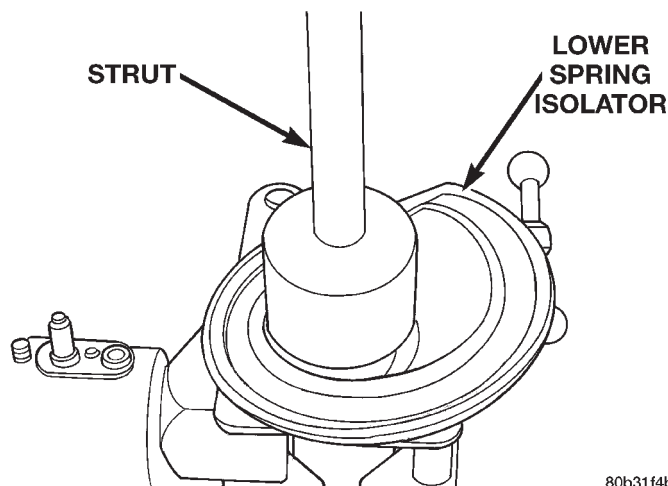
**Fig. 40 Removing Strut Shaft Nut**

## ASSEMBLE

**NOTE:** Make sure all components are free of dirt and debris before assembly, especially around the mounting surfaces.

(1) Install lower spring isolator on strut unit (Fig. 41).

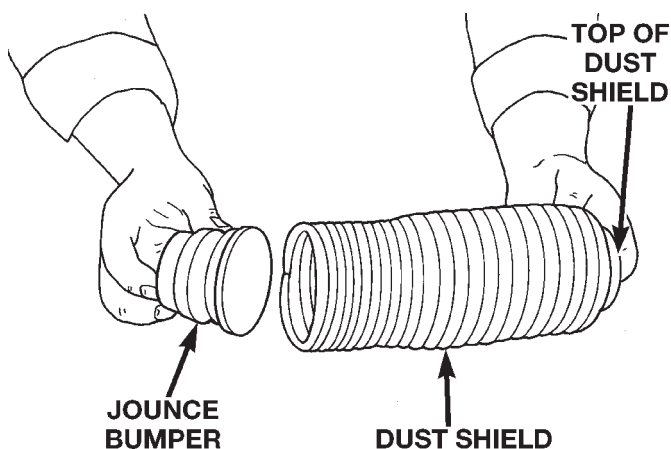
## DISASSEMBLY AND ASSEMBLY (Continued)



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**Fig. 41 Lower Spring Isolator**

(2) Install jounce bumper into dust shield from the bottom (Fig. 42). Jounce bumper should snap into position at top end of dust shield.



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**Fig. 42 Jounce Bumper Installed Into Dust Shield**

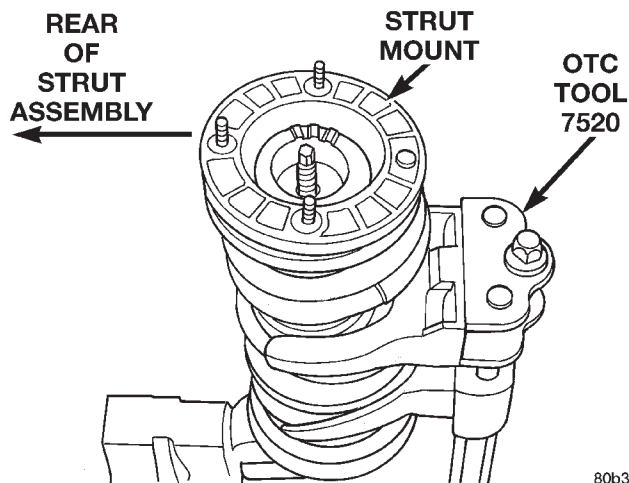
(3) Install the dust shield and jounce bumper into position in bottom of upper strut mount. Dust shield should snap into position. Once correctly installed, the dust boot should be able to be rotated within the mount without coming loose.

**WARNING:** Coil spring must be installed on strut so the sleeve on the spring is towards the upper end of assembly.

(4) Lower the coil spring with compressor onto the strut unit. Set the spring into the form fitting seat of the strut or just align the paint mark on the spring with the paint mark on the strut unit if previously marked.

(5) Install the upper strut mount assembly onto the strut shaft, aligning paint marks (if applicable). Position mount so center mounting stud is aligned

with the stabilizer bar attaching link bracket on the strut assembly (Fig. 43).



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**Fig. 43 Strut Mount Positioning**

(6) Install the upper strut mount to strut shaft nut on the strut shaft. Install Strut Shaft Socket, Special Tool 6864, on strut shaft nut (Fig. 40). Use a deep well socket inserted into the opening of tool 6864 to keep strut shaft from turning (Fig. 40). Tighten the strut shaft nut to a torque of 75 N·m (55 ft. lbs.).

(7) Loosen the Spring Compressor until spring is seated on upper strut mount and all tension is relieved from the spring compressor. Remove Compressor.

(8) Install the strut assembly back into the vehicle. Refer to Strut Assembly Removal in Servicing Rear Struts in this section of the service manual.

(9) Check and reset rear wheel TOE to specifications if required.

**REAR SUSPENSION CROSSMEMBER BUSHINGS**

The rear suspension crossmember has 4 rubber isolator bushings which are replacable. Once the crossmember is removed from the vehicle, the following procedure may be used to remove each of the crossmember bushings.

**REMOVE**

(1) Lay the crossmember right-side-up on a bench with the bushing to be removed hanging over the edge of the bench.

(2) Install cup, Special Tool 8173-1, in in well of press, Special Tool C-4212F.

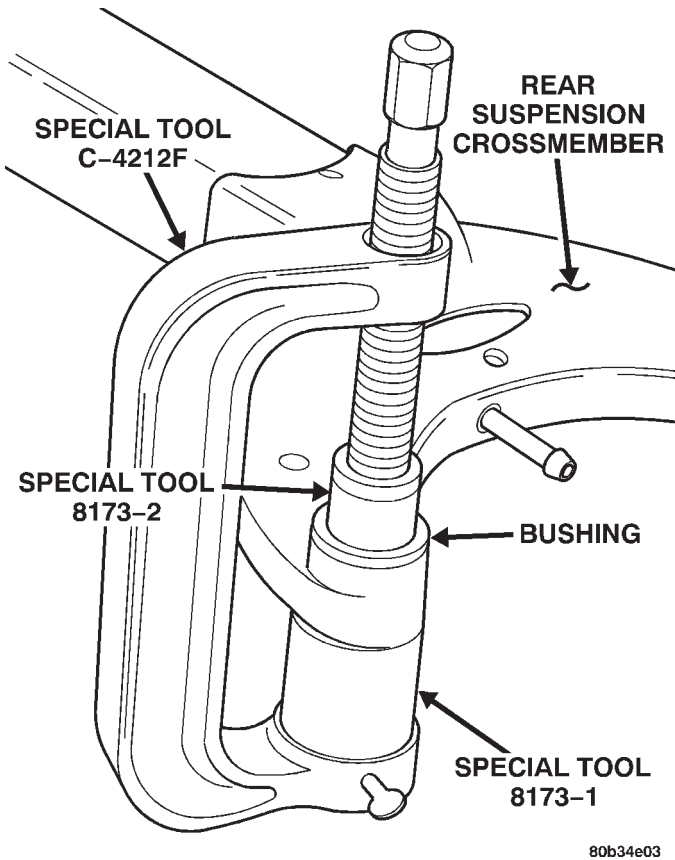
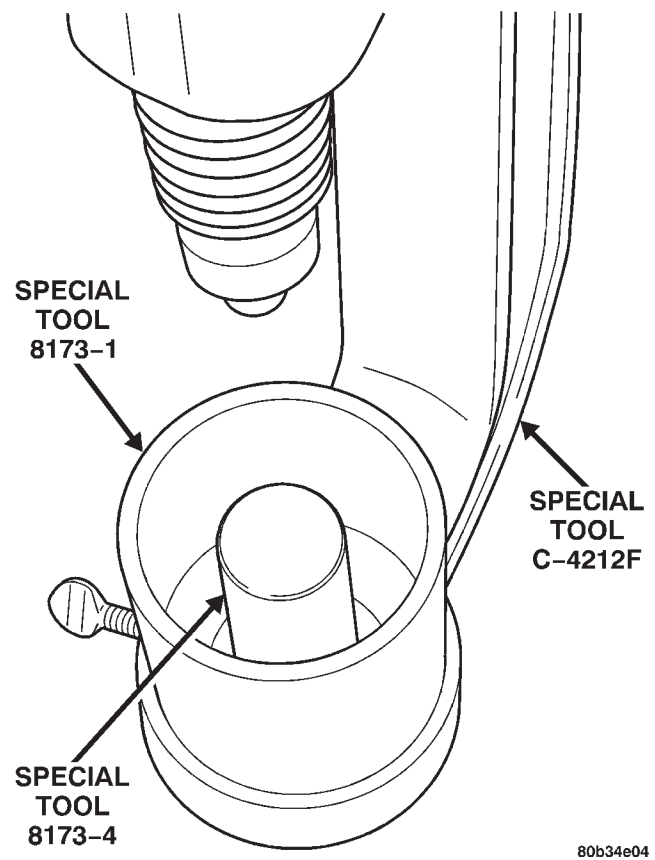
(3) Install Remover/Installer, Special Tool 8173-2, on end of the threaded push rod on Special Tool C-4212F.

(4) Install Special tool C-4212F with Special Tools 8173-1, and 8173-2, on bushing (Fig. 44).

(5) Turn the threaded rod, pushing bushing down through crossmember and into cup 8173-1.

(6) Remove special tools, and bushing.

## DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 44 Bushing Removal****Fig. 45 Special Tools****INSTALL**

(1) Clean bore in crossmember where bushing mounts.

(2) Thoroughly coat new bushing and crossmember bore with Mopar® Rubber Bushing Installation Lube.

(3) Place Installer, Special Tool C-8173-3, on top of crossmember bushing bore with inside taper end facing up. Locator lip on bottom of tool should align the tool with bushing bore.

(4) Coat the tapered bore of Special Tool C-8173-3 with Mopar® Rubber Bushing Installation Lube, then place the bushing in its tapered bore (Fig. 46).

(5) Install Special Tool 8173-4 in the cup, Special Tool 8173-1 (Fig. 45). Install cup, Special Tool 8173-1 into well of press, Special Tool C-4212F (Fig. 45).

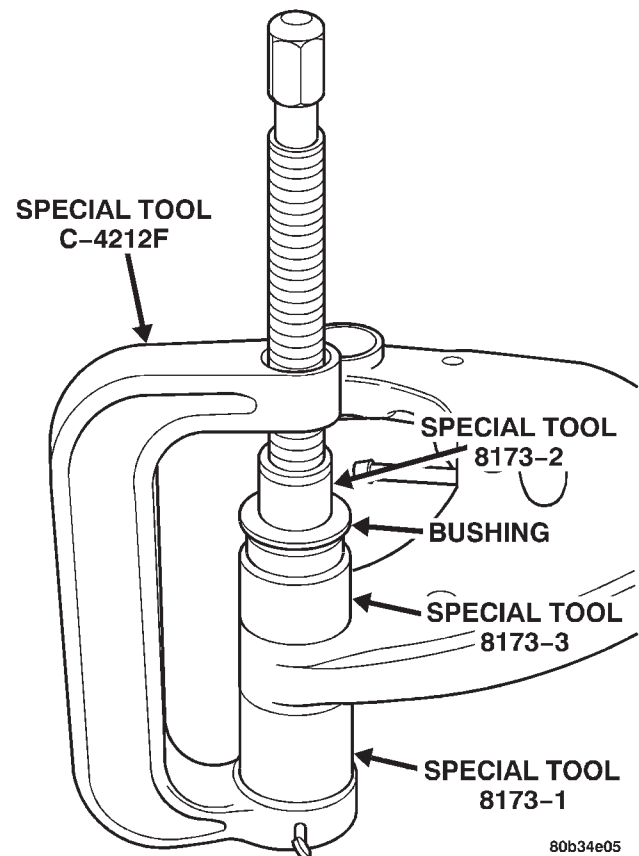
(6) Install Remover/Installer, Special Tool 8173-2, on end of the threaded push rod on Special Tool C-4212F.

(7) Place special tools on crossmember and bushing (Fig. 46).

(8) Turn the threaded rod, pushing bushing down through Special tool 8173-3 and into place in the crossmember. Continue pushing the bushing until bottoms against Special Tool 8173-4.

(9) Remove special tools.

(10) Verify the bushing is properly centered in the crossmember bore and the outer bushing lips are not pinched.

**Fig. 46 Bushing Installation**

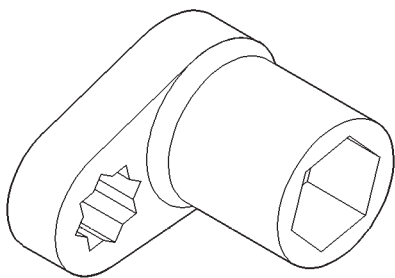
SPECIFICATIONS

REAR SUSPENSION FASTENER TORQUE SPECIFICATIONS

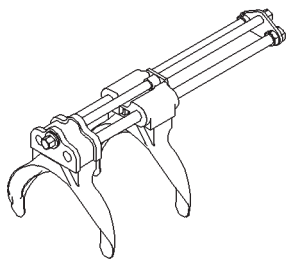
| DESCRIPTION                                       | TORQUE                        |
|---------------------------------------------------|-------------------------------|
| <b>Brakes:</b>                                    |                               |
| Support Plate Mounting Bolts . . . . .            | 109 N·m (80 ft. lbs.)         |
| Brake Hose Mounting Bolt . . .                    | 45 N·m (35 ft. lbs.)          |
| Brake Hose Bracket Bolt . . . .                   | 23 N·m (17 ft. lbs.)          |
| Caliper Adapter Spindle Bolts . . . . .           | 115 N·m (85 ft. lbs.)         |
| Disc Brake Caliper Bolts . . . . .                | 22 N·m (16 ft. lbs.)          |
| <b>Strut:</b>                                     |                               |
| Body Mounting Nuts . . . . .                      | 25 N·m (19 ft. lbs.)          |
| Spindle Pinch Bolt . . . . .                      | 53 N·m (40 ft. lbs.)          |
| Strut Shaft Nut . . . . .                         | 75 N·m (55 ft. lbs.)          |
| Stabilizer Bar Link Upper Attaching Nut . . . . . | 23 N·m (17 ft. lbs.)          |
| <b>Lateral Links:</b>                             |                               |
| Jam Nuts . . . . .                                | 88 N·m (65 ft. lbs.)          |
| Spindle Nut . . . . .                             | 135 N·m (100 ft. lbs.)        |
| Suspension Crossmember Nuts . . . . .             | 95 N·m (70 ft. lbs.)          |
| <b>Trailing Arm:</b>                              |                               |
| Attaching Nuts . . . . .                          | 100 N·m (75 ft. lbs.)         |
| Bracket To Body Bolts . . . . .                   | 60 N·m (45 ft. lbs.)          |
| Bracket To Spindle Bolts . . . .                  | 110 N·m (80 ft. lbs.)         |
| <b>Rear Suspension Crossmember:</b>               |                               |
| Body Attaching Bolts . . . . .                    | 100 N·m (75 ft. lbs.)         |
| <b>Stabilizer Bar:</b>                            |                               |
| Bushing Retainer Bolts . . . . .                  | 40 N·m (30 ft. lbs.)          |
| Strut Attaching Link Lower Nut . . . . .          | 95 N·m (70 ft. lbs.)          |
| <b>Hub And Bearing:</b>                           |                               |
| Spindle Retaining Nut . . . .                     | 168 N·m (124 ft. lbs.)        |
| Wheel Mounting Nuts . . . . .                     | 109-150 N·m (80-110 ft. lbs.) |

SPECIAL TOOLS

REAR SUSPENSION



Socket Strut Shaft Nut 6864



Compressor Coil Spring 7520