SUSPENSION

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WHEEL ALIGNMENT

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DESCRIPTION AND OPERATION

GENERAL INFORMATION

Wheel alignment is the proper adjustment of all the interrelated suspension angles affecting the running and steering of the front and rear wheels of the vehicle.

The method of checking front and rear wheel alignment will vary depending on the type of equipment being used. The instructions furnished by the manufacturer of the equipment should always be followed. With the exception that the wheel alignment specifications recommended by Chrysler Corporation should always be used. The Chrysler Corporation recommended alignment specifications, are listed in Specifications at the end of this group in the service manual section.

There are six basic factors which are the foundation to front wheel alignment. These are vehicle height, caster, camber, toe-in, steering axis inclination and toe-out on turns. Of the six basic factors only toe-in is normally mechanically adjustable on this vehicle (Fig. 1).

DESCRIPTION AND OPERATION (Continued)

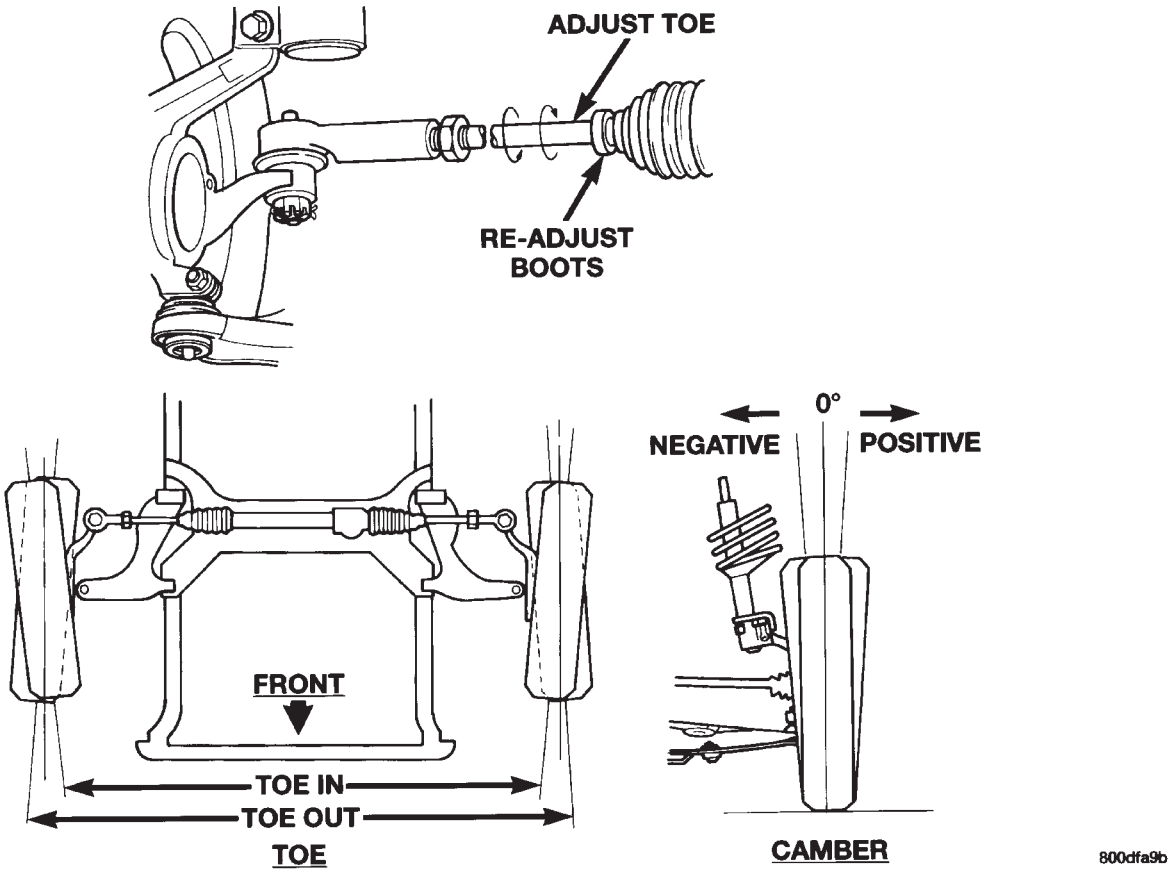

Fig. 1 Front Suspension Alignment Angles

Camber adjustment is allowed in the event that a vehicle is involved in an accident and after repairs are made meeting manufacturers tolerance specifications, the camber setting will not meet manufacturers specifications. If camber adjustment is required, refer to the following Service Camber Adjustment Procedure for the required steps to be followed.

CAUTION: Do not attempt to modify any suspension or steering components to meet vehicle alignment specifications, by heating and or bending.

Alignment checks and adjustments should be made in the following sequence.

(1) Camber
(2) Toe

Camber is the number of degrees the top of the wheel and tire assembly is tilted inboard or outboard from a true vertical line. Inboard tilt is negative camber. Outboard tilt is positive camber (Fig. 1).

Excessive camber is a tire wear factor: negative camber causes wear on the inside of the tires tread surface, while positive camber causes wear to the outside of the tires tread surface. See Front Wheel Drive Specifications for **Camber.** settings.

Toe is measured in degrees or inches and is the distance the front edges of the tires are closer (or farther apart) than the rear edges. See Front Wheel Drive Specifications for **Toe.** settings.

DIAGNOSIS AND TESTING

SUSPENSION AND STEERING DIAGNOSIS

CONDITION	POSSIBLE CAUSES	CORRECTION
Front End Whine On Turns	1. Defective wheel bearing 2. Incorrect wheel alignment 3. Worn tires	1. Replace wheel bearing 2. Check and reset wheel alignment 3. Replace tires
Front End Growl Or Grinding On Turns	1. Defective wheel bearing 2. Engine mount grounding 3. Worn or broken C/V joint 4. Loose wheel lug nuts 5. Incorrect wheel alignment 6. Worn tires 7. Front strut pin in upper strut mount	1. Replace wheel bearing 2. Check for motor mount hitting frame rail and reposition engine as required 3. Replace C/V joint 4. Verify wheel lug nut torque 5. Check and reset wheel alignment 6. Replace tires 7. Replace the front strut upper mount and bearing
Front End Clunk Or Snap On Turns	1. Loose lug nuts 2. Worn or broken C/V joint 3. Worn or loose tie rod 4. Worn or loose ball joint 5. Worn/loose control arm bushing 6. Loose stabilizer bar. 7. Loose strut mount to body attachment 8. Loose crossmember bolts	1. Verify wheel lug nut torque 2. Replace C/V joint 3. Tighten or replace tie rod end 4. Tighten or replace ball joint 5. Replace control arm bushing 6. Tighten stabilizer bar to specified torque 7. Tighten strut attachment to specified torque 8. Tighten crossmember bolts to specified torque
Front End Whine With Vehicle Going Straight At A Constant Speed	1. Defective wheel bearing 2. Incorrect wheel alignment 3. Worn tires 4. Worn or defective transaxle gears or bearings	1. Replace wheel bearing 2. Check and reset wheel alignment 3. Replace tires 4. Replace transaxle gears or bearings
Front End Growl Or Grinding With Vehicle Going Straight At A Constant Speed	1. Engine mount grounding 2. Worn or broken C/V joint	1. Reposition engine as required 2. Replace C/V joint
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 2. Worn or defective transaxle gears or bearings 3. Loose lug nuts 4. Worn or broken C/V joint 5. Worn or loose ball joint 6. Worn or loose control arm bushing 7. Loose crossmember bolts 8. Worn tie rod end	1. Replace engine mount 2. Replace transaxle gears or bearings 3. Verify wheel lug nut torque 4. Replace C/V joint 5. Tighten or replace ball joint 6. Replace control arm bushing 7. Tighten crossmember bolts to specified torque 8. Replace tie rod end

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
Road Wander	1. Incorrect tire pressure	1. Inflate tires to recommended pressure
	2. Incorrect front or rear wheel toe	2. Check and reset wheel toe
	3. Worn wheel bearings	3. Replace wheel bearing
	4. Worn control arm bushings	4. Replace control arm bushing
	5. Excessive friction in steering gear	5. Replace steering gear
	6. Excessive friction in steering shaft coupling	6. Replace steering coupler
	7. Excessive friction in strut upper bearing	7. Replace strut bearing
Lateral Pull	1. Unequal tire pressure	1. Inflate all tires to recommended pressure
	2. Radial tire lead	2. Perform lead correction procedure
	3. Incorrect front wheel camber	3. Check and reset front wheel camber
	4. Power steering gear imbalance	4. Replace power steering gear
	5. Wheel braking	5. Correct braking condition causing lateral pull
Excessive Steering Free Play	1. Incorrect Steering Gear Adjustment	1. Adjust Or Replace Steering Gear
	2. Worn or loose tie rod ends	2. Replace or tighten tie rod ends
	3. Loose steering gear mounting bolts	3. Tighten steering gear bolts to specified torque
	4. Loose or worn steering shaft coupler	4. Replace steering shaft coupler
Excessive Steering Effort	1. Low tire pressure	1. Inflate all tires to recommended pressure
	2. Lack of lubricant in steering gear	2. Replace steering gear
	3. Low power steering fluid level	3. Fill power steering fluid reservoir to correct level
	4. Loose power steering pump drive belt	4. Correctly adjust power steering pump drive belt
	5. Lack of lubricant in ball joints	5. Lubricate or replace ball joints
	6. Steering gear malfunction	6. Replace steering gear
	7. Lack of lubricant in steering coupler	7. Replace steering coupler

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.

SERVICE PROCEDURES

WHEEL ALIGNMENT CHECK AND ADJUSTMENT PROCEDURE

CASTER AND CAMBER

Front suspension Caster and Camber settings on this vehicle are determined at the time the vehicle is designed. This is done by determining the precise

SERVICE PROCEDURES (Continued)

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 to adjustment the Caster and Camber after a vehicle is built or when servicing the suspension components. Thus Caster and Camber are not normally considered an adjustable specification when performing an alignment on this vehicle. Though Caster and Camber are not adjustable they should be checked during the alignment procedure to ensure they meet the manufacturers specifications.

If front camber does not meet the vehicle alignment specifications, it can be adjusted using a Mopar Service Kit developed to allow for camber adjustment. If a vehicle's front camber does not meet required specifications, the vehicles suspension components should be inspected for any signs of damage or bending and the vehicle ride height should be checked to verify it is within required specification. **This inspection must be done before using the Mopar Service Kit for setting camber to the vehicle specification.**

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.

(1) Correctly position the vehicle on the alignment rack. Then install all required alignment equipment on the vehicle, per the alignment equipment manufacturers specifications.

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

(2) Correctly jounce vehicle and then 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. **If front and rear camber readings are within required specifications proceed to step Step 3 for the Toe-in adjustment procedure if required. If Camber readings are not within specifications refer to step Step 1 in the front camber adjustment cam bolt adjustment procedure.**

CAMBER ADJUSTMENT CAM BOLT PACKAGE INSTALLATION PROCEDURE

(1) If the front camber readings obtained are not within the vehicle's specifications, use the following procedure and the Mopar Clevis Bolt Service Kit to provide camber adjustment. The kit contains 2 flange bolts, 2 cam bolts, and 2 dog bone washers. These components of the service kit are necessary to assemble the strut to the steering knuckle, after modification of the strut clevis bracket.

(2) Verify that the strut and steering knuckle are not bent or otherwise damaged. If either component is bent or show other signs of damage, replace required component(s) and check the camber setting again. Refer to Strut Damper Assembly Service in this group of the service manual for the required strut replacement procedure.

(3) If no component is bent or damaged, use the following procedure for modifying the strut clevis bracket and adjusting the camber setting.

(4) Raise front of vehicle until tires are not supporting the weight of the vehicle. Then remove wheel and tire assembly from the location on the vehicle requiring the strut to be modified.

CAUTION: When removing the steering knuckle from the strut clevis bracket, do not put a strain on the brake flex hose. Also, do not let the weight of the steering knuckle assembly be supported by the brake flex hose when removed from the strut assembly. If necessary use a wire hanger to support the steering knuckle assembly or if required remove the brake flex hose from the caliper assembly.

CAUTION: The steering knuckle strut assembly attaching bolts are serrated and must not be turned during removal. Remove nuts while holding bolts stationary in the steering knuckles.

(5) Remove the top and bottom, strut clevis bracket to steering knuckle attaching bolts (Fig. 2) and discard. Separate the steering knuckle from the strut clevis bracket and position steering knuckle so it is out of the way of the strut.

CAUTION: When slotting the bottom mounting hole on the strut clevis bracket, do not enlarge the hole beyond the indentations (Fig. 3) on the sides of the strut clevis bracket.

SERVICE PROCEDURES (Continued)

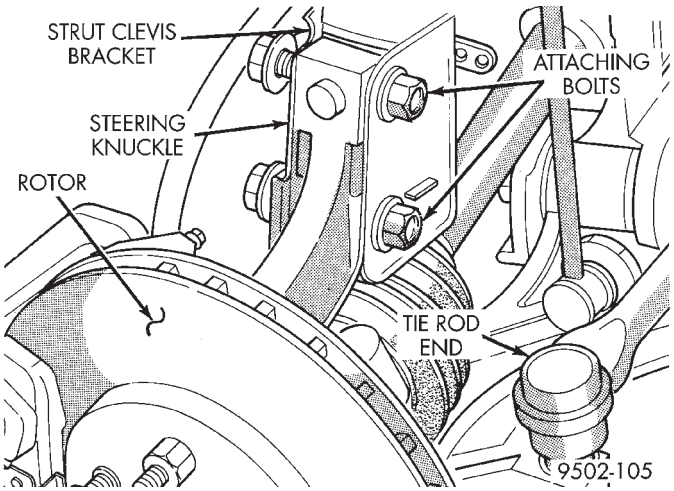

Fig. 2 Clevis Bracket To Steering Knuckle Attaching Bolts

(6) Using an appropriate grinder and grinding wheel slot the bottom hole (Fig. 3) in both sides of the strut clevis bracket. **When grinding slot do not go beyond the indentation area on the sides of the clevis bracket (Fig. 3).**

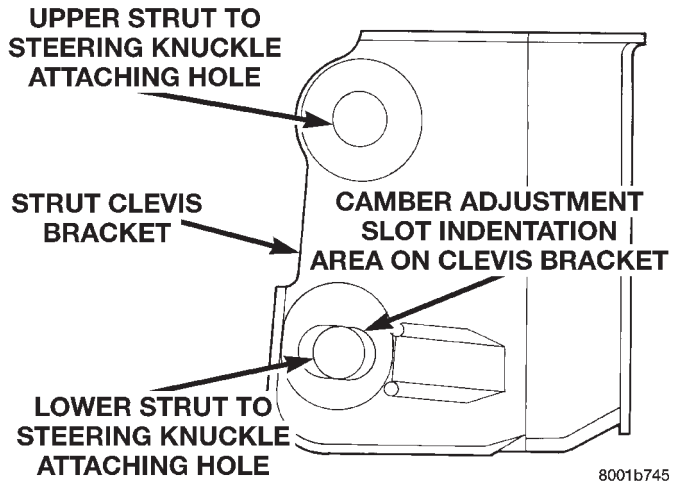

Fig. 3 Strut Clevis Bracket Bolt Hole Grinding Area

CAUTION: After slotting the strut clevis bracket hole, do not install the original attaching bolts when assembling the steering knuckle to the strut assembly. Only the flange bolts, cam bolts, and dog bone washers from the Mopar Clevis Bolt Service Kit, can be used to attach the steering knuckle to the strut after the mounting hole is slotted.

(7) Install the flanged bolt (Fig. 4) from the Mopar Clevis Bolt Service Kit, into the top clevis bracket to steering knuckle mounting hole. Install the cam bolt (Fig. 4) into the bottom clevis bracket to steering knuckle mounting hole.

(8) Install the dog bone washer (Fig. 5) on the steering knuckle to strut clevis bracket attaching

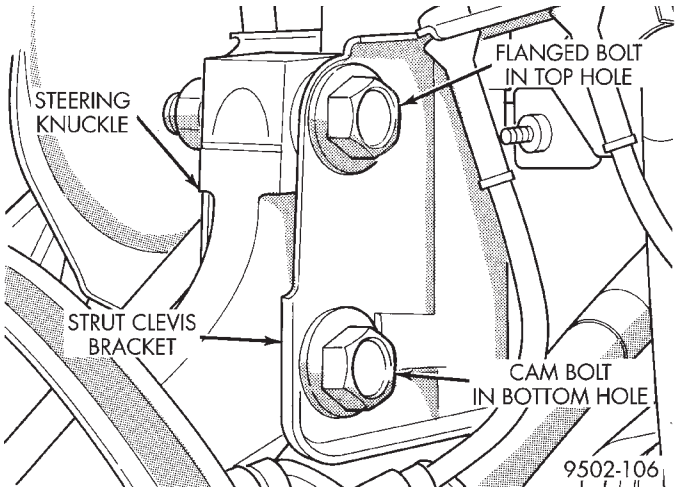

Fig. 4 Mopar Service Kit Bolts Correctly Installed

bolts. Then install the nuts from the original attaching bolts onto the replacement bolts from the service kit. Tighten the bolts just enough to hold the steering knuckle in position when adjusting camber, while still allowing the steering knuckle to move in clevis bracket.

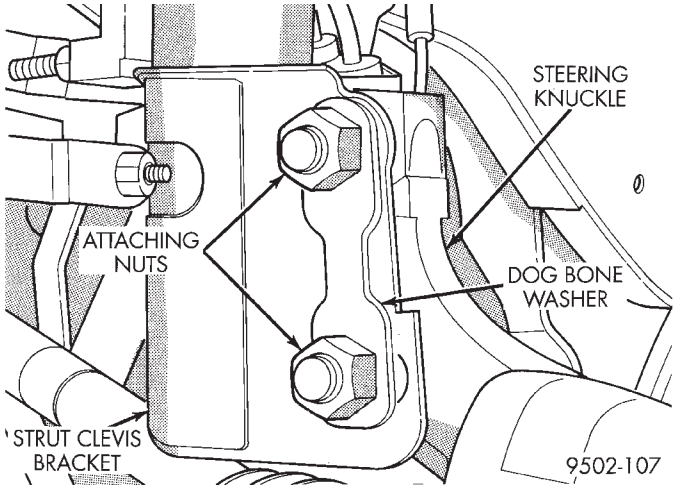

Fig. 5 Dog Bone Washer And Nuts Installed On Attaching Bolts

(9) Lower vehicle until the full weight of the vehicle is supported by the vehicles' suspension. Then correctly jounce the front and rear of vehicle an equal amount of times.

(10) Adjust the front camber to the preferred setting by rotating the lower eccentric cam bolt (Fig. 6) against the cam stop areas on the strut clevis bracket. When camber is correctly set, tighten the upper strut clevis bracket bolt and lower cam bolt. Again jounce front and rear of vehicle an equal amount of times and verify front camber setting. See Alignment Specifications in this group of the service manual for required specifications.

SERVICE PROCEDURES (Continued)

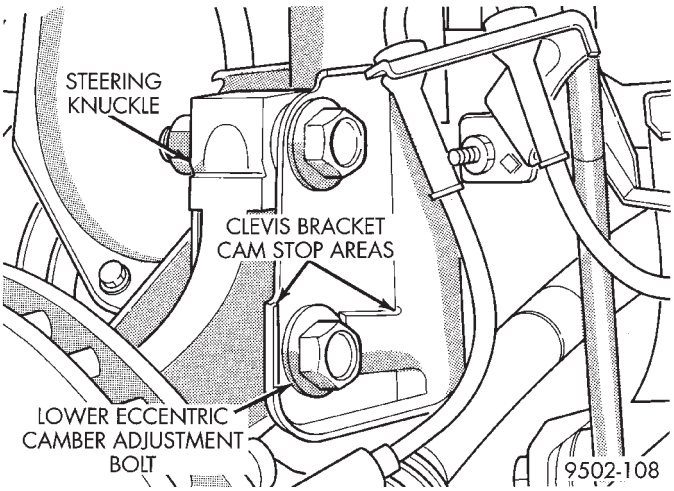

Fig. 6 Camber Adjustment Cam Bolt

(11) When vehicle is at correct camber setting torque both front strut to steering knuckle attaching bolts to 90 N·m (65 ft. lbs.) plus an additional 1/4 turn after required torque is met.

(12) If Toe readings obtained are not within the required specification range, adjust Toe to meet the preferred specification setting. Toe is adjustable using the following Toe setting procedure.

FRONT TOE SETTING PROCEDURE

(1) Prepare vehicle as described in the Pre-Alignment Vehicle Inspection procedure.

(2) Center steering wheel and lock in place using a steering wheel clamp.

CAUTION: Do not twist front inner tie rod to steering gear rubber boots during front wheel Toe adjustment.

(3) Loosen front inner to outer tie rod end jam nuts (Fig. 7). Grasp inner tie rods at serrations and rotate inner tie rods of steering gear (Fig. 7) to set front Toe to the preferred Toe specification. See Alignment Specifications in this group of the service manual for preferred specification.

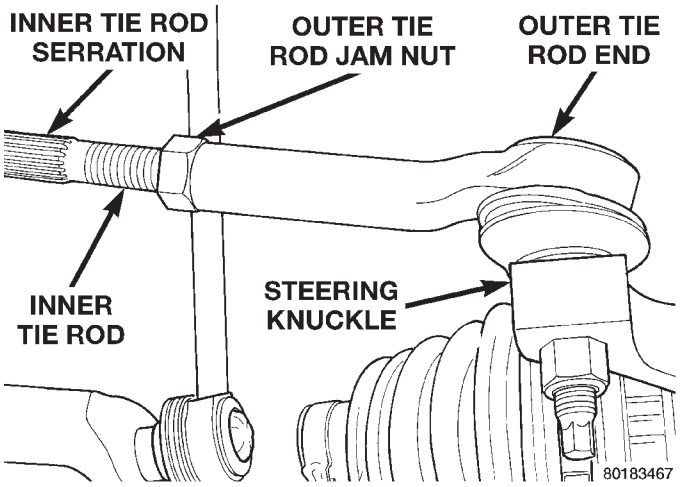

Fig. 7 Front Wheel Toe Adjustment

(4) Tighten tie rod jam nuts (Fig. 7) to 75 N·m (55 ft.lbs.) torque.

(5) Adjust steering gear to tie rod boots at tie rod.

(6) Remove steering wheel clamp.

SPECIFICATIONS

ALIGNMENT SPECIFICATIONS

All alignment specifications are to be checked and adjusted with the vehicle at its correct ride height. Refer to the ride height specifications listed in the following alignment specifications chart.

SPECIFICATIONS (Continued)

ALIGNMENT ANGLE	TIRE SIZES	TIRE SIZES	ALTERNATIVE FUELS
	P205/75/R14 P215/65/R15	P205/75/R15 P215/65/R16	C.N.G. ELECTRIC
* FRONT INDIVIDUAL CAMBER IN DEGREES.....	+0.15° +or- 0.40°	+0.05° +or- 0.40°	+0.15° +or- 0.40°
Front Side To Side Camber Difference Not To Exceed.....	0.00° - 0.50° MAX	0.00° - 0.50° MAX	0.00° - 0.50° MAX
** FRONT INDIVIDUAL CASTER IN DEGREES.....	+1.40° + or - 1.00°	+1.40° + or - 1.00°	+1.40° +or- 1.00°
Front Side To Side Caster Difference Not To Exceed.....	0.00° - 1.00° MAX	0.00° - 1.00° MAX	0.00° - 1.00° MAX
*** FRONT INDIVIDUAL TOE RIGHT/ LEFT.....	+0.05°+or- 0.10°	+0.05° +or- 0.10°	+0.05° +or- 0.10°
FRONT TOTAL TOE..... Specified In Degrees	+0.10° +or- 0.20°	+0.10° +or- 0.20°	+0.10° +or- 0.20°
FRONT SIDE TO SIDE TOE DIFFERENTIAL.....	0.00° - 0.06° MAX	0.00° - 0.06° MAX	0.00° - 0.06° MAX
****REAR INDIVIDUAL CAMBER IN DEGREES.....	+0.00° +or- 0.25°	+0.00° +or- 0.25°	-0.10° +or- 0.25
REAR INDIVIDUAL TOE RIGHT/ LEFT.....	0.00° +or- 0.40°	0.00° +or- 0.40°	0.00° +or- 0.40°
**** REAR TOTAL TOE..... Specified In Degrees TOE OUT: When Backed On Alignment Rack Is TOE In When Driving	0.00° +or- 0.40°	0.00° +or- 0.40°	0.00° +or- 0.40°
****REAR THRUST ANGLE.....	0.00° +or- 0.30°	0.00° +or- 0.30°	0.00° +or- 0.30°
STEERING WHEEL ANGLE.....	0.00° +or- 2.50°	0.00° +or- 2.50°	0.00° +or- 2.50°
FRONT RIDE HEIGHT (MEASURED AT TOP OF FENDER WHEEL OPENING).....	747.5 mm +or-10.0mm	753.5 mm +or-10.0mm	783.5 mm +or-10.0mm
FRONT RIDE HEIGHT SIDE TO SIDE DIFFERENTIAL.....	0.0 mm 12.5 mm MAX	0.0 mm 12.5 mm MAX	0.0 mm 12.5 mm MAX
*****REAR RIDE HEIGHT (MEASURED AT TOP OF FENDER WHEEL OPENING).....	766.0 mm +or-10.0mm	772.0 mm +or-10.0mm	802.5 mm +or-10.0mm
*****REAR RIDE HEIGHT SIDE TO SIDE DIFFERENTIAL.....	0.0 mm 12.5 mm MAX	0.0 mm 12.5 mm MAX	0.0 mm 12.5 mm MAX

*** Camber is adjustable using the Mopar Camber Adjustment Service Kit. Refer to the Mopar Parts Catalog for the required service kit part number.**

**** Caster is not adjustable. If found to be out of specification check for proper ride heights and damaged/worn out suspension components and replace as necessary.**

***** Toe-In is positive.**

****** Toe, Camber and thrust angle are not adjustable. If found to be out of specification check for proper ride heights and damaged/worn out suspension components and replace as necessary.**

******* When Measuring ride heights: 1) Ensure that the tire pressures are correct. 2) Jounce the vehicle at the bumper several times and release at the bottom of the stroke. 3) Measure from the ground to the outboard, lower, center section of the fender wheel well opening. Ride heights are not adjustable. If found to be out of specification check for damaged and/or worn out suspension components and replace as necessary.**

FRONT SUSPENSION

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DESCRIPTION AND OPERATION

FRONT SUSPENSION DESCRIPTION

An independent Mc Pherson Strut type front suspension is used on these vehicles. Vertical shock absorbing Mc Pherson Struts attach to the top of the steering knuckle and to the front strut tower. This interconnection between the steering knuckle and the body of the vehicle, provides for the correct steering knuckle position. This steering knuckle position provides for the correct front Caster and Camber settings for the vehicle, at the time the vehicle is designed.

Lower control arms are attached inboard to the cast aluminum front suspension cradle and outboard to the bottom of the steering knuckle. Attachment of the lower control arm to the steering knuckle is done through a ball joint in the lower control arm.

During steering maneuvers, the strut and the steering knuckle (through the ball joint and a pivot bearing in the strut's upper retainer) turn as an assembly.

SUSPENSION CRADLE (CROSSMEMBER)

This vehicle uses a one piece cast aluminum cradle for the front suspension. The cradle is used as the attaching points for the lower control arms, stabilizer bar and steering gear. The cradle also has the power steering hoses and the chassis brake tubes attached to it.

The cradle is mounted to the front frame rails at four points, two on each side of the vehicle. The cradle is isolated from the body of the vehicle using four isolators, one located at each mounting bolt location.

WARNING: If a threaded hole in the suspension cradle needs to be repaired, only use the type of thread insert and installation procedure specified for this application.

The threaded holes in the cradle that are used for attachment of the lower control arm rear bushing retainer, power steering hose and chassis brake tubes can be repaired. The repair is done by the installation of a Heli-Coil® thread insert which has been specifically developed for this application. Refer to the Mopar Parts Catalog for the specified Heli-Coil thread insert to be used for this application. The procedure for installing the Heli-Coil® thread insert is detailed in the Service Procedures section in this group of the service manual.

DESCRIPTION AND OPERATION (Continued)

Mc PHERSON STRUT ASSEMBLY

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

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

The bottom of the strut assembly attaches to the steering knuckle with two through bolts. Caster is a fixed setting on all vehicles and is not adjustable when an alignment is performed. In the event the camber setting on a vehicle requires adjustment, a service strut is available which will provide a method by which the camber can be adjusted.

The strut assemblies on this vehicle are inter-connected by the front stabilizer bar through 2 link assemblies attaching the struts to the stabilizer bar.

STEERING KNUCKLE

The steering knuckle (Fig. 1) is a single casting with legs machined for attachment of the strut damper, steering linkage, disc brake caliper, and lower control arm ball joint. The steering knuckle also has the front hub/bearing assembly mounted to it. The hub is positioned through the bearing and knuckle, with the constant velocity stub shaft splined through the hub.

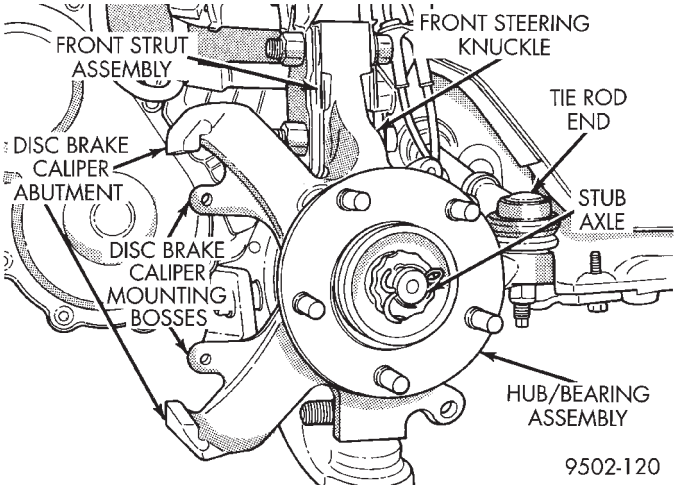


Fig. 1 Front Steering Knuckle

LOWER CONTROL ARM

The lower control arm is an iron casting. The lower control arm is mounted to and isolated from the body of the vehicle using 2 types of rubber bushings. The front lower control arm bushing is the spool type and is pressed into the lower control arm, while the rear uses a bushing that is pushed over a stem on the lower control arm. The front and rear of the lower control arm is mounted to the cast crossmember using a pivot bolt through the center of the front pivot bushing, and a retainer which traps the rear bushing in the crossmember.

The ball joint is pressed into 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 is lubricated for the life of the vehicle and does not require any periodic lubrication.

STABILIZER BAR

The stabilizer bar interconnects both Mc Pherson strut assemblies of the vehicle and is attached through rubber isolator bushings to the front suspension cradle

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

Attachment of the stabilizer bar to the front suspension cradle is through 2 rubber-isolator bushings and bushing retainers. The stabilizer bar to Mc Pherson strut assembly attachment is done utilizing a sway bar attaching link. All parts of the stabilizer bar are serviceable, and the stabilizer bar to crossmember bushings are split for easy removal and installation. The split in the stabilizer bar to crossmember bushing should be positioned toward the rear of the vehicle, with the square corner down toward the ground, when the stabilizer bar is installed in the vehicle.

STABILIZER BAR ATTACHING LINK

The stabilizer bar attaching links are used to attach each end of the stabilizer bar to the front strut assemblies. This reduces the fore-and-aft rate of the stabilizer bar from the rest of the vehicle's front suspension.

HUB AND BEARING ASSEMBLY

The Unit III Front Hub and Bearing Assembly is used on all front wheel drive vans.

All hub and bearing assemblies mount to the steering knuckle the same way, but very by the wheel size on the vehicle. Vehicles equipped with 14 inch wheels have a 4 inch wheel mounting stud pattern. Vehicles equipped with 15 inch wheels have a 4 1/2 inch wheel mounting stud pattern. If a hub and bearing assembly needs to be replaced, be sure that the replacement assembly has the same size wheel mounting stud pattern as the original part.

This unit is serviced only as a complete assembly. It is mounted to the steering knuckle by four mounting bolts that are removed from the rear of the steering knuckle.

DESCRIPTION AND OPERATION (Continued)

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.

BALL JOINT

The ball joint (Fig. 2) is pressed into the lower control arm. The ball joint has a non-tapered stud with a notch (Fig. 2) to provide clearance for the steering knuckle clamp bolt and to provide retention of the ball stud in the steering knuckle. The ball joint stud is clamped and locked into the steering knuckle leg using a pinch bolt. The ball joint used on this vehicle is replaceable and if found defective can be serviced as a separate component of the lower control arm assembly.

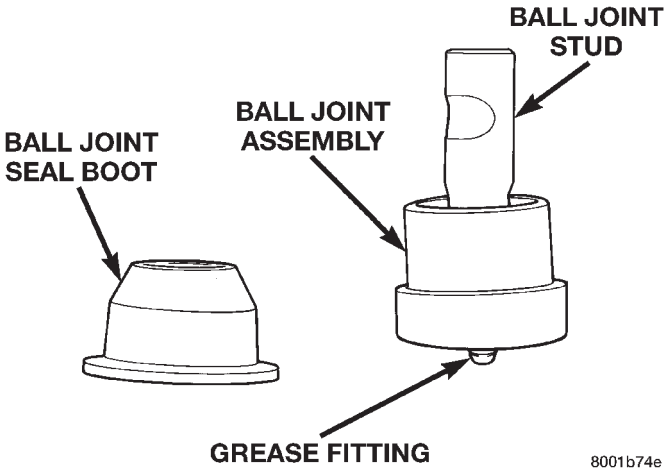


Fig. 2 Ball Joint Assembly

WHEEL MOUNTING STUDS

If wheel attaching studs need to be replaced in the hub and bearing assembly the studs **CAN NOT** 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.

Use the procedure and special tools shown in the service procedures section for the wheel mounting studs when replacing the wheel attaching studs.

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

DIAGNOSIS AND TESTING

Mc PHERSON STRUT

(1) Inspect for damaged or broken coil springs (Fig. 3).

(2) Inspect for torn or damaged strut assembly dust boots (Fig. 3).

(3) Inspect the coil spring isolator on the lower spring seat, (Fig. 3) for any signs of damage or deterioration.

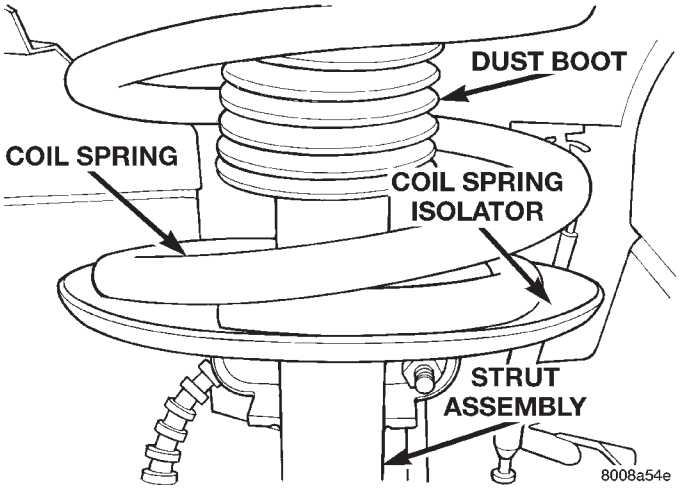


Fig. 3 Mc Pherson Strut Assembly Inspection

(4) Lift dust boot (Fig. 4) 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 (Fig. 4). Also inspect jounce bumpers for signs of damage or deterioration.

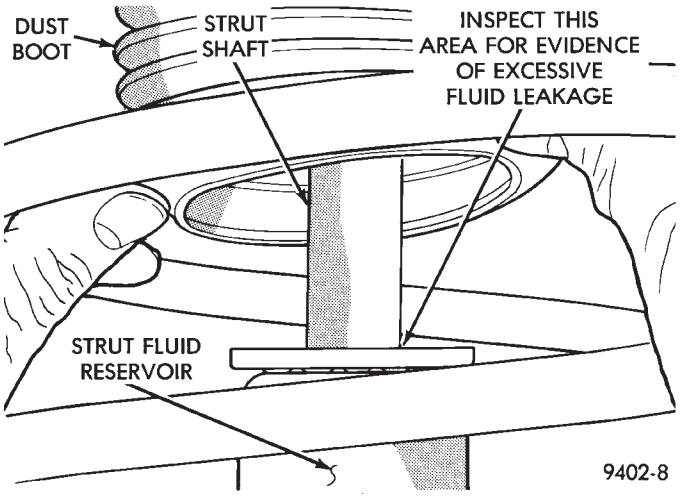


Fig. 4 Strut Assembly Leakage Inspection

DIAGNOSIS AND TESTING (Continued)

STEERING KNUCKLE

The front suspension knuckle is not a repairable component of the vehicles front suspension **IT MUST BE REPLACED.** If bent, broken or damaged in any way, do not attempt to straighten or repair the steering knuckle.

Service replacement of the front hub/bearing assembly can be done with the front steering knuckle remaining on the vehicle.

LOWER CONTROL ARM

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

The serviceable components of the lower control arm are: the ball joint assembly, ball joint assembly grease seal and control arm bushings. Inspect both control arm bushings for severe deterioration, and replace if required. Inspect ball joint per inspection procedure in this section of the service manual and replace if required. Service procedures to replace these components are detailed in the specific component removal and installation sections in this group of the service manual.

BALL JOINT (LOWER)

With the weight of the vehicle resting on the road wheels, grasp the grease fitting as shown in (Fig. 5) and with no mechanical assistance or added force attempt to rotate the grease fitting.

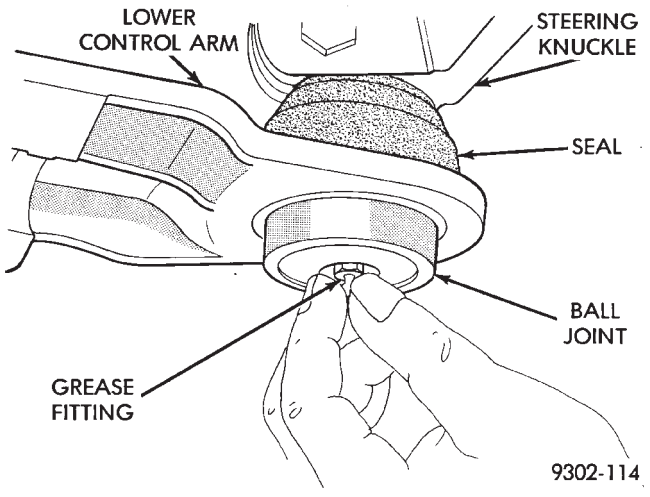


Fig. 5 Checking Ball Joint Wear

If the ball joint is worn the grease fitting will rotate easily. If movement is noted, replacement of the ball joint is recommended.

STABILIZER BAR

Inspect for broken or distorted sway bar bushings, bushing retainers, and worn or damaged sway bar to strut attaching links. If sway bar to front suspension cradle bushing replacement is required, bushing can be removed from sway bar by opening slit and peeling bushing off sway bar.

HUB AND BEARING ASSEMBLY

The condition of the front hub and bearing assembly is diagnosed using the inspection and testing procedure detailed below.

The bearing contained in the Unit III front hub/bearing assembly will produce noise and vibration when worn or damaged. The noise will generally change when the bearings are loaded. A road test of the vehicle is normally required to determine the location of a worn or damaged bearing.

Find a smooth level road surface and bring the vehicle up to a constant speed. When vehicle is at a constant speed, swerve the vehicle back and forth from the left and to the right. This will load and unload the bearings and change the noise level. Where axle bearing damage is slight, the noise is usually not noticeable at speeds above 30 m.p.h..

SERVICE PROCEDURES

SUSPENSION CRADLE THREAD REPAIR PROCEDURE

WARNING: When performing this procedure use only the thread inserts which are specified in the Mopar Parts Catalog for this repair procedure. These thread inserts have been specifically developed for this application and use of other types of thread inserts can result in an inferior long term repair.

The threaded holes in the front suspension cradle, if damaged, can repaired by installing a Heli-Coil® thread insert.

The threaded holes that are repairable using the thread insert, are the lower control arm rear bushing retainer mounting bolt holes, routing bracket attaching locations for the power steering hoses, and brake hose attachment holes.

This repair procedure now allows the threaded holes in the suspension crossmember to be repaired, eliminating the need to replace the crossmember if damage occurs to one of the threaded holes.

The thread inserts for this application are specified by part number in the Mopar Parts Catalog. **Do not use a substitute thread insert.**

The specific tools and equipment required to install the thread insert are listed below. Refer to the

SERVICE PROCEDURES (Continued)

instructions included with the thread insert for the detailed procedure used for the installation of the thread insert.

NOTE: The thread inserts for this application are for the repair of M8x1.25 and M10x1.5 threads. Be sure the correct tools are used for the required thread insert size.

TOOL REQUIREMENT FOR M8x1.25 Thread

- 8.3mm (5/16 in.) Drill Bit
- 120° Countersink
- Heli-Coil® Tap #4863-8
- Heli-Coil® Gage #4624-8
- Heli-Coil® Hand Inserting Tool 7751-8
- Needle Nose Pliers – For Removal Of Thread Insert Driving Tang

TOOL REQUIREMENT FOR M10x1.5 Thread

- 10.5mm (25/64 in.) Drill Bit
- 120° Countersink
- Heli-Coil® Tap #4863-10
- Heli-Coil® Gage #4624-10
- Heli-Coil® Hand Inserting Tool 7751-10
- Needle Nose Pliers – For Removal Of Thread Insert Driving Tang

REMOVAL AND INSTALLATION

Mc PHERSON STRUT

REMOVAL

WARNING: DO NOT REMOVE THE NUT FROM THE STRUT ROD WHILE STRUT ASSEMBLY IS INSTALLED IN VEHICLE, OR BEFORE STRUT ASSEMBLY SPRING IS COMPRESSED.

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

(2) Remove the wheel and tire assembly from location on front of vehicle requiring strut removal.

(3) If both strut assemblies are to be removed, mark the strut assemblies right or left according to which side of the vehicle they were removed from.

(4) Remove the hydraulic brake hose routing bracket and the speed sensor cable routing bracket from the strut damper brackets (Fig. 6).

NOTE: When removing nut from stud of stabilizer bar attaching link, do not allow stud to rotate. Hold stud from rotating by inserting a Torx Plus 40IP bit in the end of the stud as shown in (Fig. 7).

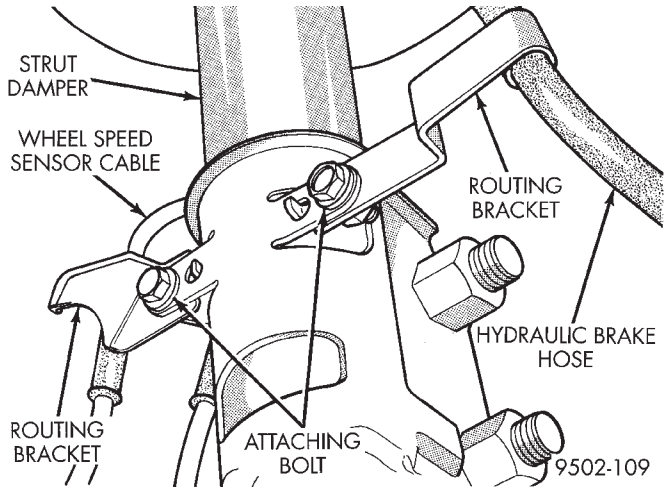


Fig. 6 Brake Hose And Speed Sensor Cable Routing

(5) Remove the stabilizer bar attaching link (Fig. 7) from the bracket on the strut assembly.

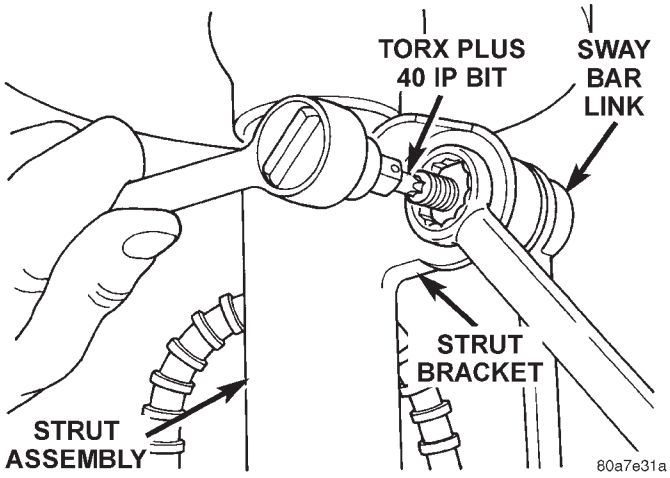


Fig. 7 Stabilizer Bar Link To Strut Attachment

CAUTION: The steering knuckle to strut assembly attaching bolts are serrated and must not be turned during removal. Remove nuts while holding bolts stationary in the steering knuckles.

(6) Remove the 2 strut assembly clevis bracket to steering knuckle attaching bolts (Fig. 8).

(7) Remove the 3 nuts attaching the strut assembly upper mount to the strut tower (Fig. 9).

INSTALLATION

(1) Install strut assembly into strut tower, aligning and installing the 3 studs on the upper strut mount into the holes in shock tower. Install the 3 upper strut mount attaching nut/washer assemblies (Fig. 9). Then using a crow foot. tighten the 3 attaching nuts to a torque of 28 N·m (250 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

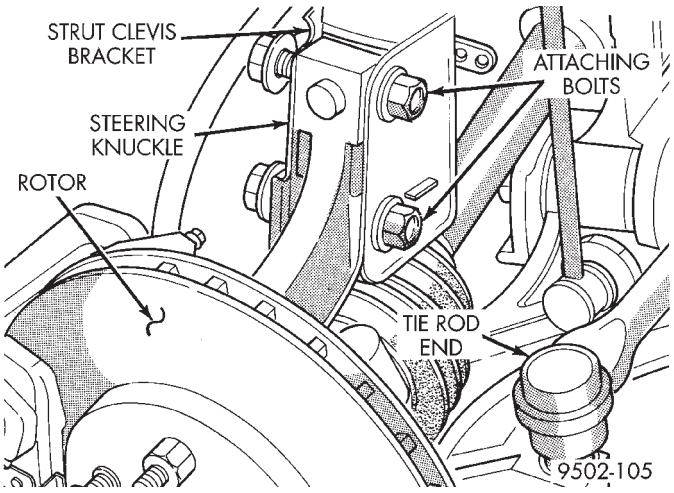


Fig. 8 Strut Damper Attachment To Steering Knuckle

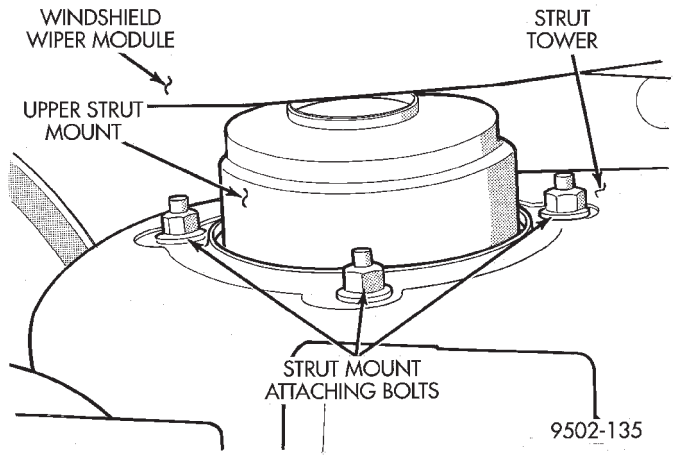


Fig. 9 Strut Assembly To Strut Tower Attaching Nuts

CAUTION: The steering knuckle to strut assembly attaching bolts are serrated and must not be turned during installation. Install nuts while holding bolts stationary in the steering knuckles.

(2) Align strut assembly with steering knuckle. Position arm of steering knuckle into strut assembly clevis bracket. Align the strut assembly clevis bracket mounting holes with the steering knuckle mounting holes. Install the 2 strut assembly to steering knuckle attaching bolts (Fig. 8). **If strut assembly is attached to steering knuckle using a cam bolt, the cam bolt must be installed in the lower slotted hole on strut clevis bracket. Also, attaching bolts should be installed with the nuts facing the front of the vehicle (Fig. 8). Tighten the strut assembly to steering knuckle attaching bolts to a torque of 88 N·m (65 ft. lbs.) plus an additional 1/4 turn after specified torque is met.**

(3) Install stabilizer bar attaching link (Fig. 7) on bracket of strut assembly. Install stabilizer bar attaching link to strut bracket attaching nut.

NOTE: When torquing nut on stud of stabilizer bar attaching link, do not allow stud to rotate. Hold stud from rotating by inserting a Torx Plus 40IP bit in the end of the stud as shown in (Fig. 10).

(4) Tighten the stabilizer bar link to strut attaching nut using a Torx Plus 40IP bit and crowfoot as shown in (Fig. 10) to a torque of 88 N·m (65 ft. lbs.).

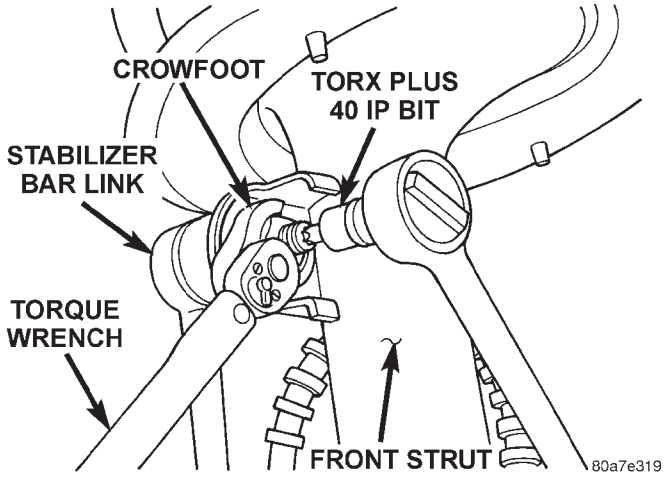


Fig. 10 Torquing Stabilizer Bar Link To Strut Attaching Nut

(5) Install hydraulic brake hose and speed sensor cable routing brackets on the strut assembly brackets (Fig. 6). Tighten the routing bracket attaching bolts to a torque of 13 N·m (10 ft. lbs.).

(6) Install the wheel/tire assembly on the vehicle.

(7) Install and 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 135 N·m (100 ft. lbs.).

STEERING KNUCKLE

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 cotter pin and nut lock (Fig. 11) from the end of the stub axle.

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

(4) Remove the wave washer (Fig. 12) from the end of the stub axle

REMOVAL AND INSTALLATION (Continued)

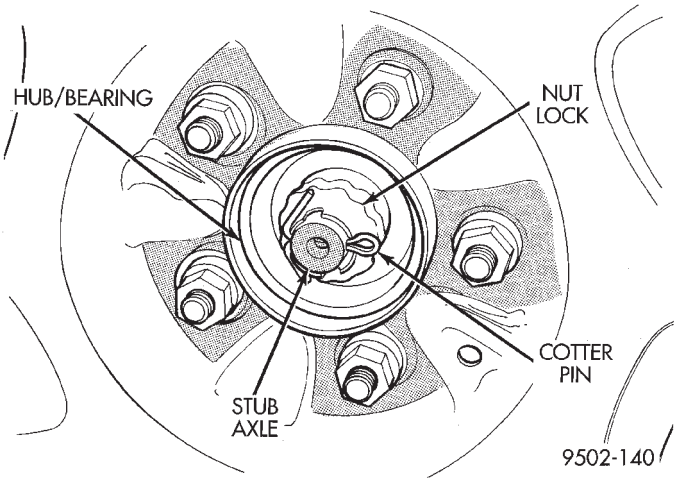


Fig. 11 Hub/Bearing To Stub Axle Retaining Nut

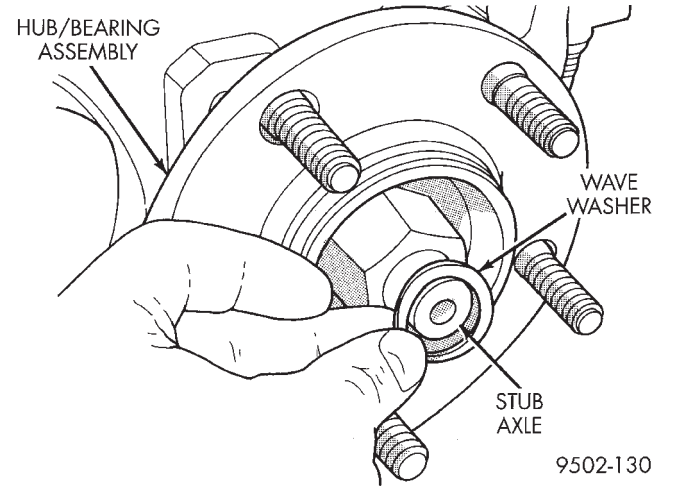


Fig. 12 Wave Washer

CAUTION: Wheel bearing damage will result if after loosening hub nut, vehicle is rolled on the ground or the weight of the vehicle is allowed to be supported by the tires.

(5) With the vehicle's brakes applied to keep hub from turning, **loosen and remove** the stub axle to hub nut.

(6) Remove the 2 front disc brake caliper to steering knuckle attaching bolts (Fig. 13).

(7) Remove the disc brake caliper from the steering knuckle. Caliper is removed by first rotating top of caliper away from steering knuckle and then removing bottom of caliper out from under machined abutment on steering knuckle (Fig. 14).

(8) Support disc brake caliper assembly by using a wire hook and suspending it from the strut assembly (Fig. 15). **Do not allow the brake caliper assembly to hang by the brake flex hose.**

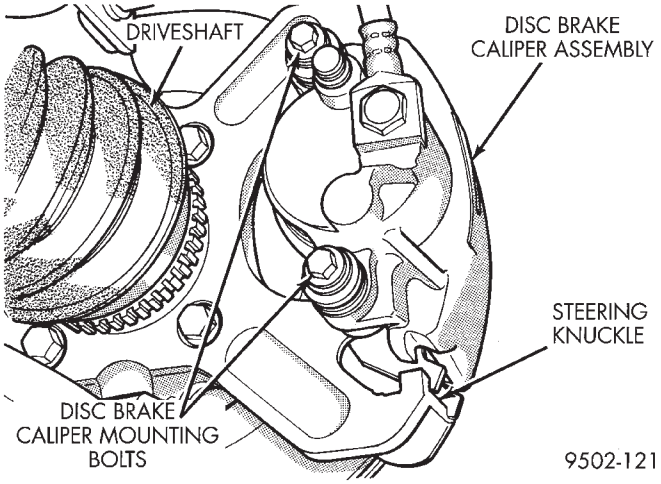


Fig. 13 Front Disc Brake Caliper Attaching Bolts

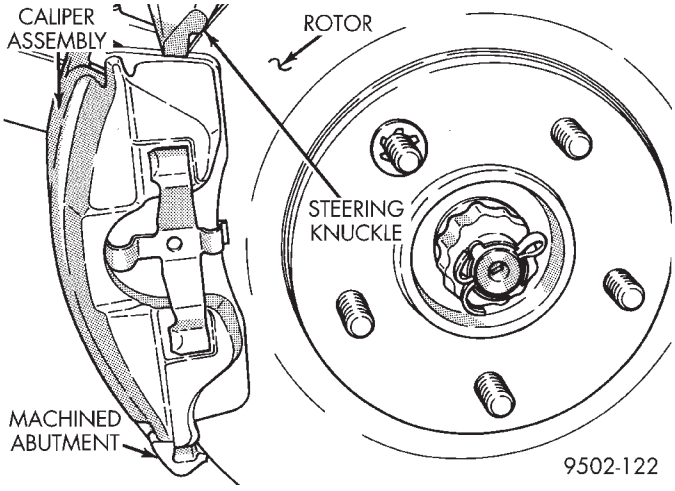


Fig. 14 Brake Caliper Mounting To Steering Knuckle

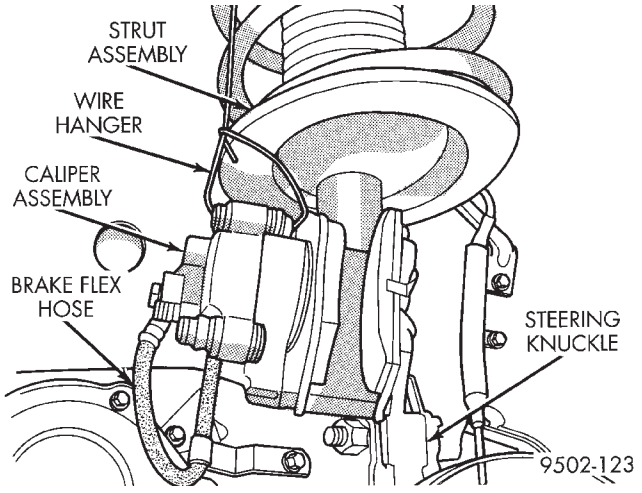


Fig. 15 Correctly Supported Disc Brake Caliper

REMOVAL AND INSTALLATION (Continued)

(9) Remove the brake rotor from the hub and bearing assembly (Fig. 16).

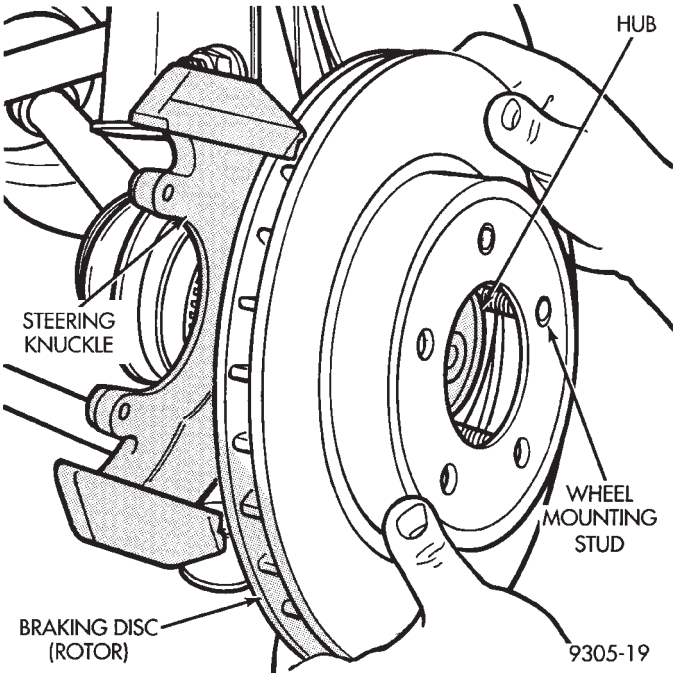


Fig. 16 Remove/Install Brake Rotor

(10) Remove nut attaching outer tie rod end to steering knuckle (Fig. 17). **Nut is to be removed from tie rod end using the following procedure, hold tie rod end stud with a 11/32 socket while loosening and removing nut with a wrench.**

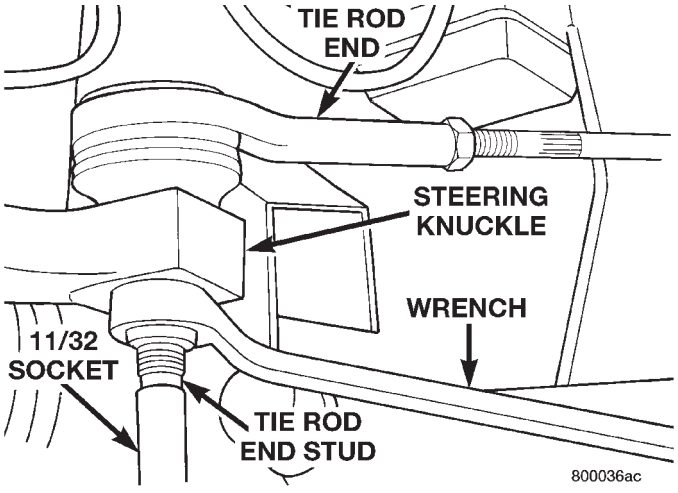


Fig. 17 Removing Tie Rod End Attaching Nut

(11) Remove tie rod end from steering knuckle using Remover, Special Tool MB-991113 (Fig. 18).

(12) Remove the front wheel speed sensor (Fig. 19) from the steering knuckle.

(13) If equipped, remove the wheel stop (Fig. 20) from the steering knuckle. **When installing the pinch bolt when assembling the steering knuckle to the ball joint, the pinch bolt must be installed from the rear facing the front on the vehicle.**

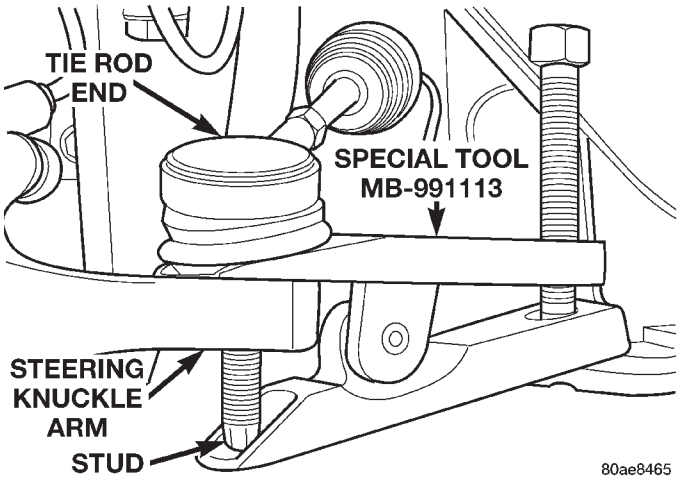


Fig. 18 Tie Rod End Removal From Steering Knuckle Arm

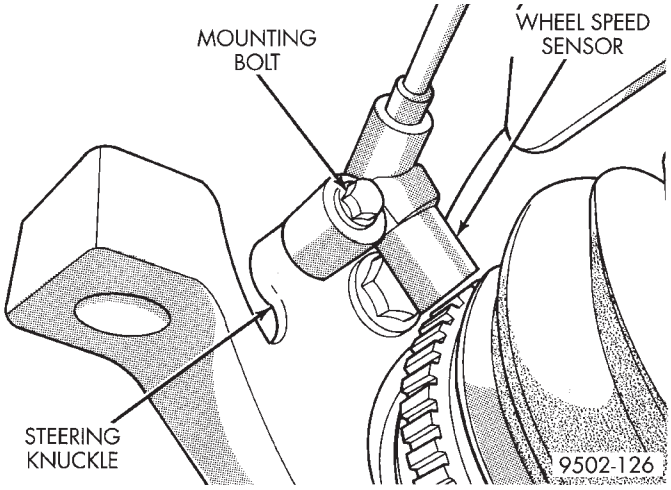


Fig. 19 Front Wheel Speed Sensor

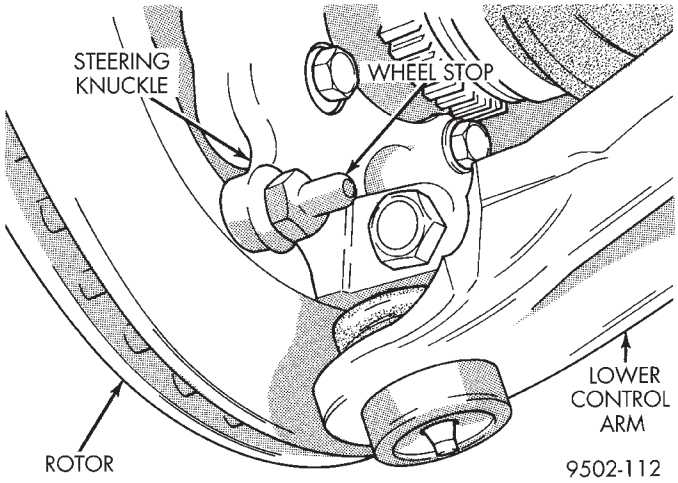


Fig. 20 Wheel Stop Location On Steering Knuckle

REMOVAL AND INSTALLATION (Continued)

(14) Remove the steering knuckle to ball joint stud, clamping nut and bolt (Fig. 21) from the steering knuckle.

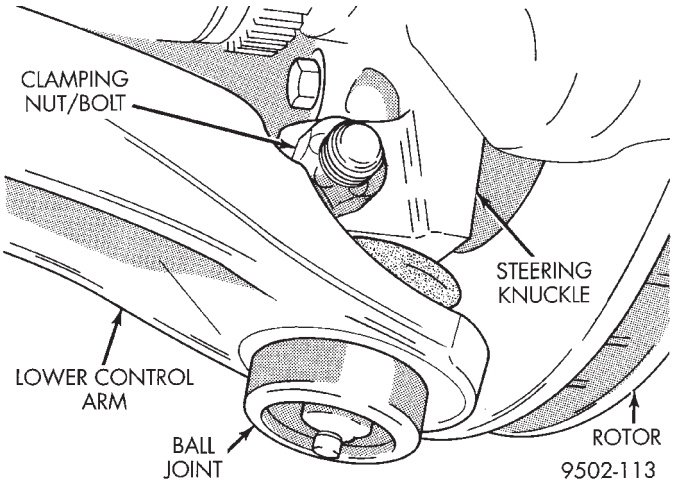


Fig. 21 Control Arm To Steering Knuckle Attachment

(15) Using a pry bar, separate steering knuckle from ball joint stud (Fig. 22). **Note: Use caution when separating ball joint stud from steering knuckle, so ball joint seal does not get cut.**

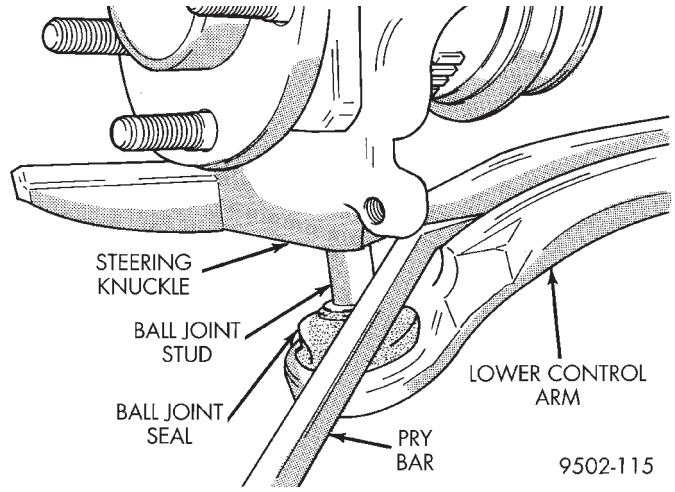


Fig. 22 Separating Ball Joint Stud From Steering Knuckle

NOTE: Care must be taken not to separate the inner C/V joint during this operation. Do not allow driveshaft to hang by inner C/V joint after removing outer C/V Joint from the hub/bearing assembly in steering knuckle, end of driveshaft must be supported.

(16) Pull steering knuckle assembly out and away from the outer C/V joint of the driveshaft assembly (Fig. 23).

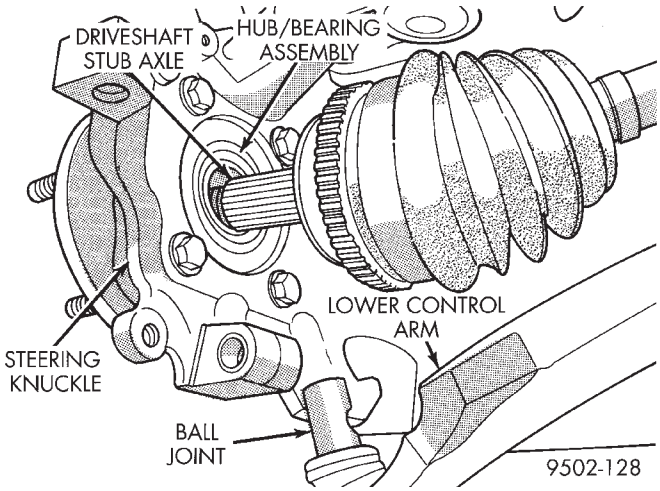


Fig. 23 Steering Knuckle Separation From Driveshaft

CAUTION: The steering knuckle to strut assembly attaching bolts are serrated and must not be turned during removal. Remove nuts while holding bolts stationary in the steering knuckles.

(17) Remove the 2 steering knuckle to strut damper clevis bracket attaching bolts (Fig. 24).

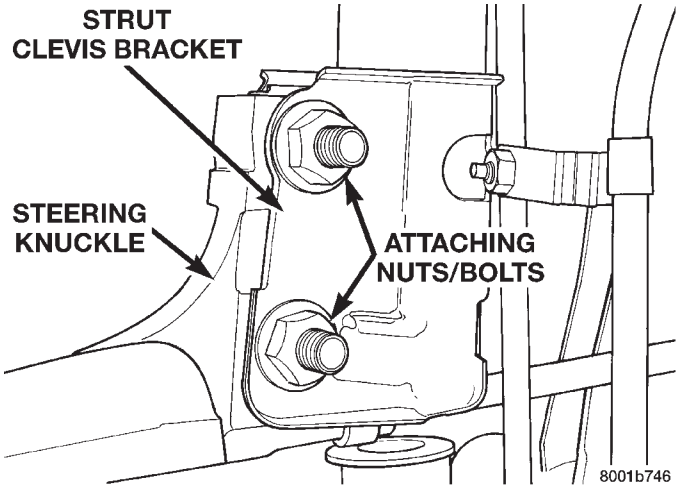


Fig. 24 Strut To Steering Knuckle Attaching Bolts

(18) Remove the steering knuckle from the strut.

INSTALL

(1) Transfer, or install if necessary, a new hub/bearing assembly into the steering knuckle. Refer to Hub And Bearing Assembly Service in this section of the service manual for the required removal and installation procedure for the front hub/bearing assembly.

CAUTION: The steering knuckle to strut assembly attaching bolts are serrated and must not be turned during installation. Install nuts while holding bolts stationary in the steering knuckles.

REMOVAL AND INSTALLATION (Continued)

CAUTION: If the vehicle being serviced is equipped with eccentric strut assembly attaching bolts, the eccentric bolt must be installed in the bottom (slotted) hole on the strut clevis bracket (Fig. 25).

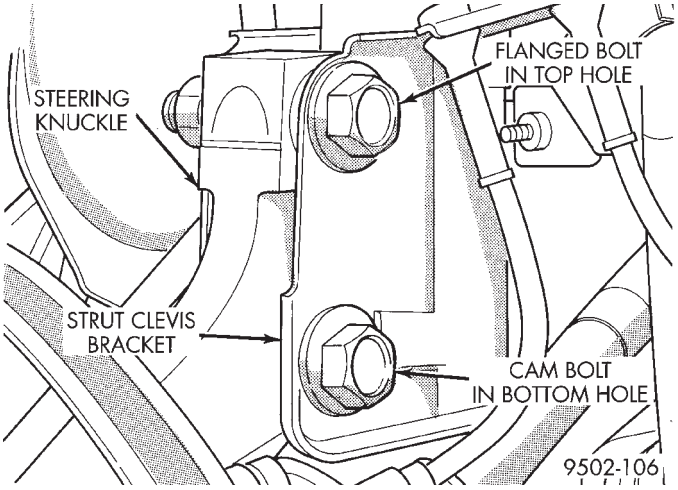


Fig. 25 Correctly Installed Eccentric Attaching Bolt

(2) Install steering knuckle back in clevis bracket of strut damper assembly (Fig. 24). Install the strut damper to steering knuckle attaching bolts. Tighten both attaching bolts to a torque of 90 N·m (65 ft. lbs.) plus an additional 1/4 turn.

(3) Slide drive shaft back into front hub and bearing assembly. Then install steering knuckle onto the stud of the ball joint assembly (Fig. 23).

(4) Install a **NEW** steering knuckle to ball joint stud, clamping bolt and nut (Fig. 21). Tighten the clamping bolt and nut to a torque of 145 N·m (105 ft. lbs.).

(5) Install tie rod end into steering knuckle. Start attaching nut onto stud of tie rod end. While holding stud of tie rod end stationary using a 11/32 socket, (Fig. 17) tighten tie rod end to steering knuckle attaching nut. Then using a crowfoot and 11/32 socket (Fig. 26), tighten the tie rod end attaching nut to a torque of 54 N·m (40 ft. lbs.).

(6) Install braking disc on hub and bearing assembly (Fig. 16).

(7) Install disc brake caliper assembly on steering knuckle. Caliper is installed by first sliding bottom of caliper under abutment on steering knuckle, and then rotating top of caliper against top abutment (Fig. 14).

(8) Install disc brake caliper assembly to steering knuckle attaching bolts (Fig. 13). Tighten the disc brake caliper assembly attaching bolts to a torque of 35 N·m (30 ft. lbs.).

(9) Clean all foreign matter from the threads of the outer C/V joint stub axle. Install the washer and stub axle to hub/bearing assembly nut on stub axle and securely tighten nut.

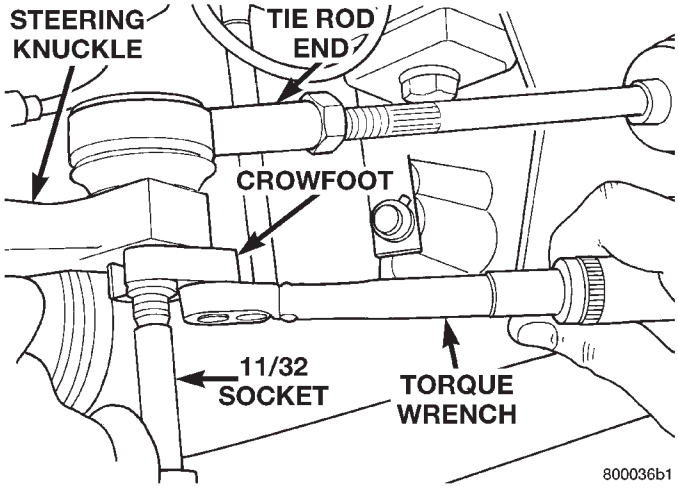


Fig. 26 Torquing Tie Rod End Attaching Nut

(10) Install wheel speed sensor and mounting bolt (Fig. 19) on steering knuckle. Tighten the speed sensor attaching bolt to a torque of 7 N·m (60 in. lbs.).

(11) Install front wheel and tire assembly. Install and tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half the required specification. Then repeat the tightening sequence to the full specified torque of 135 N·m (100 ft. lbs.).

(12) Lower vehicle.

(13) With the vehicle's brakes applied to keep hub from turning, tighten the hub nut to a torque of 203 N·m (150 ft. lbs.) (Fig. 27).

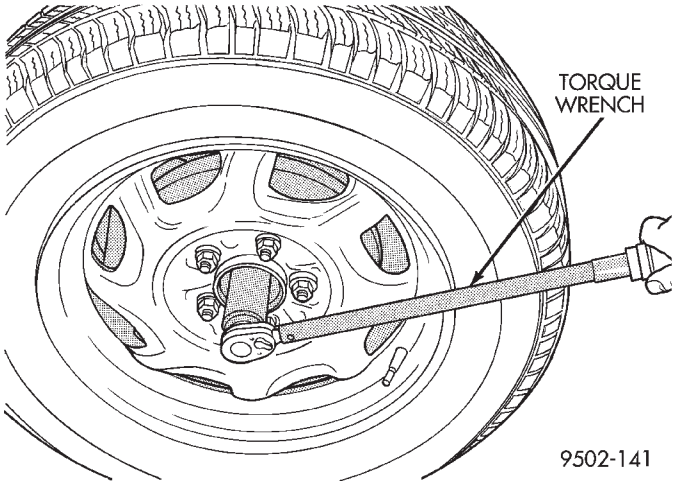


Fig. 27 Torquing Front Stub Axle To Hub Nut

(14) Install the spring wave washer on the end of the stub axle.

(15) Install the hub nut lock, and a **new** cotter pin (Fig. 11). Wrap cotter pin prongs tightly around the hub nut lock as shown in (Fig. 11).

(16) Set front Toe on vehicle to required specification. Use procedure listed under Wheel Alignment, in the Front Suspension Service Procedures section of this service manual.

REMOVAL AND INSTALLATION (Continued)

LOWER CONTROL ARM

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 wheel and tire assembly from the side of vehicle requiring service to the lower control arm.

(3) Remove the wheel stop (Fig. 28) from the steering knuckle. **When installing the pinch bolt when assembling the steering knuckle to the ball joint, the pinch bolt must be installed from the rear facing the front on the vehicle (Fig. 28).**

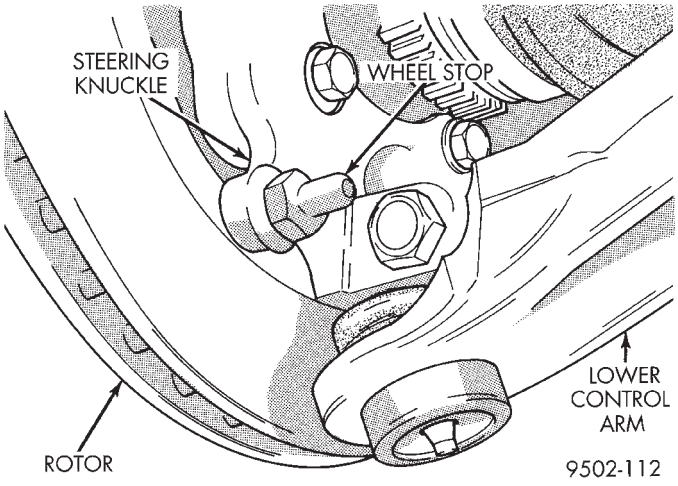


Fig. 28 Wheel Stop Location On Steering Knuckle

(4) Remove the nut and bolt clamping the steering knuckle to the ball joint stud. (Fig. 29)

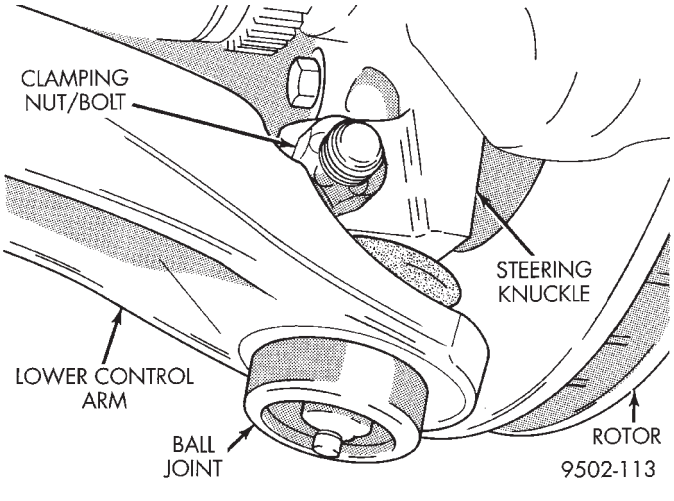


Fig. 29 Control Arm To Steering Knuckle Attachment

NOTE: The attaching bolts for the cradle plate are of two different thread sizes. Nine of the bolts are a M-14 thread and one of the bolts is a M-12 thread. Refer to (Fig. 30) for the cradle plate attaching bolt locations.

(5) Remove the 10 bolts (Fig. 30) attaching the cradle plate to the front suspension cradle. Then remove the cradle plate from the cradle.

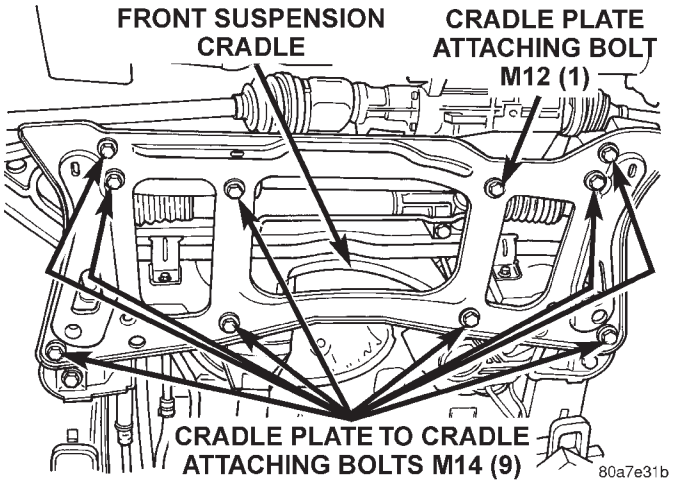


Fig. 30 Front Suspension Cradle Plate And Mounting Bolts

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

(6) Using a pry bar, separate steering knuckle from ball joint stud (Fig. 31). **Use caution when separating ball joint stud from steering knuckle, so ball joint seal does not get cut.**

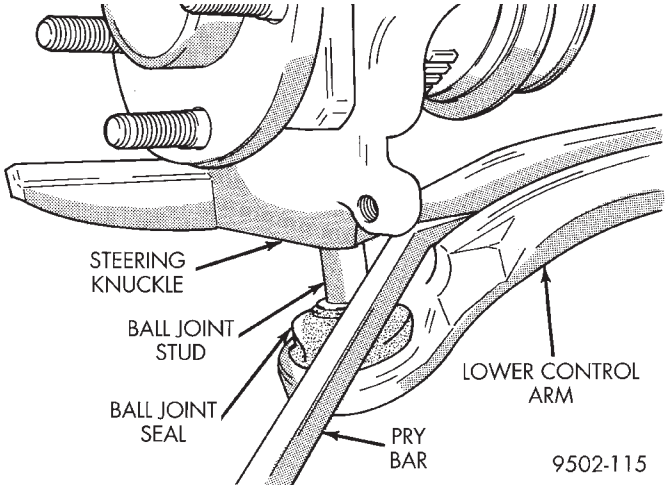


Fig. 31 Separating Ball Joint Stud From Steering Knuckle

REMOVAL AND INSTALLATION (Continued)

(7) Loosen but do not remove the pivot bolt (Fig. 32) attaching the front bushing of the lower control arm to the front suspension cradle.

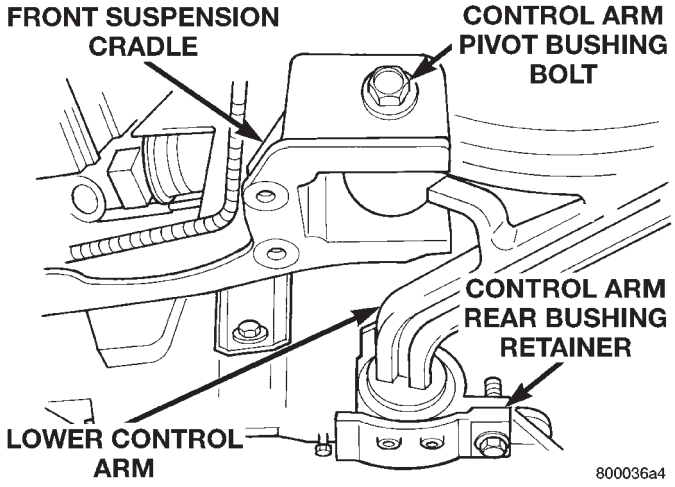


Fig. 32 Lower Control Arm Bushing To Cradle Pivot Bolt

(8) Remove retainer (Fig. 33) attaching rear bushing of lower control arm to front suspension cradle.

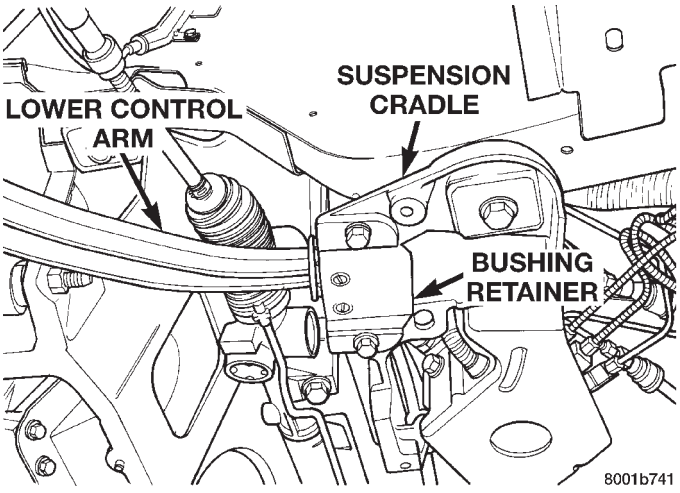


Fig. 33 Control Arm Bushing To Suspension Cradle Retainer

CAUTION: Make location reference marks where the front suspension cradle is mounted against the front frame rails before loosening and lowering the cradle. This is required so the cradle can be re-installed in the design location to achieve proper front suspension alignment.

(9) Loosen but not fully removing the 2 left side suspension cradle to frame rail attaching bolts (Fig. 34).

NOTE: When removing the left lower control arm from the vehicle, the front suspension cradle needs to be lowered for the pivot bolt to clear the transaxle.

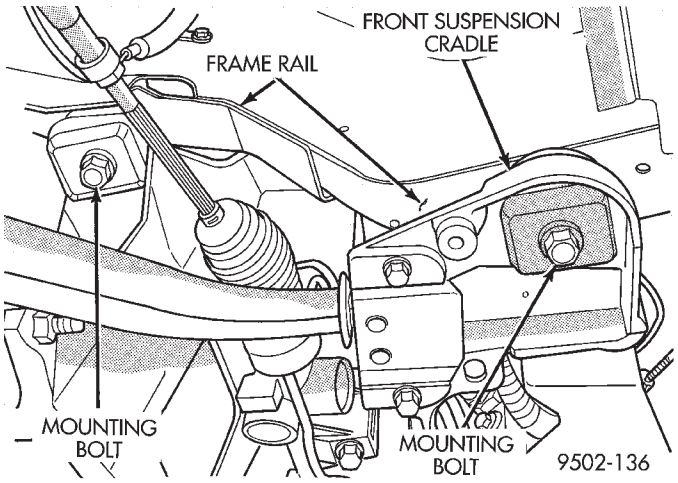


Fig. 34 Suspension Cradle To Frame Rail Mounting Bolts

(10) Lower the left front corner of the suspension cradle until pivot bolt will clear end of transaxle (Fig. 35). Remove the pivot bolt and the lower control arm from the cradle.

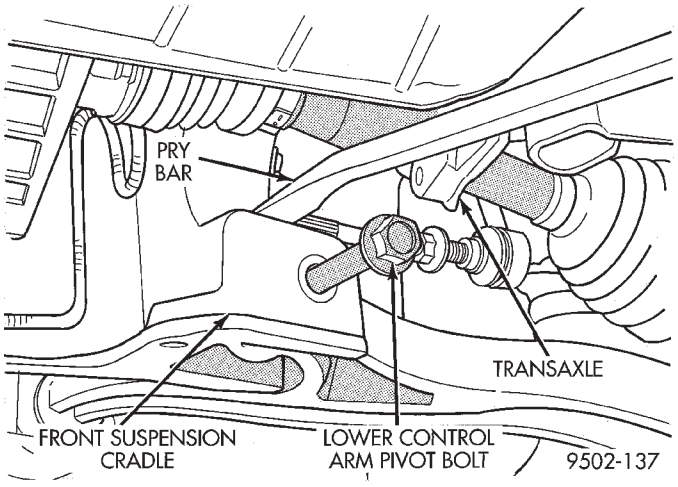


Fig. 35 Lowering Front Suspension Cradle

INSTALL

NOTE: If the left lower control arm is being installed on the vehicle the front suspension cradle needs to be lowered for the pivot bolt to clear the transaxle.

(1) Position lower control arm assembly into front suspension cradle. **If installing the left lower control arm, pry down on the left front corner of the suspension cradle until the pivot bolt clears the end of the transaxle (Fig. 35).** Install pivot bolt attaching front bushing of lower control arm to front

REMOVAL AND INSTALLATION (Continued)

suspension cradle (Fig. 36). **Do not tighten or torque pivot bolt at this time**.

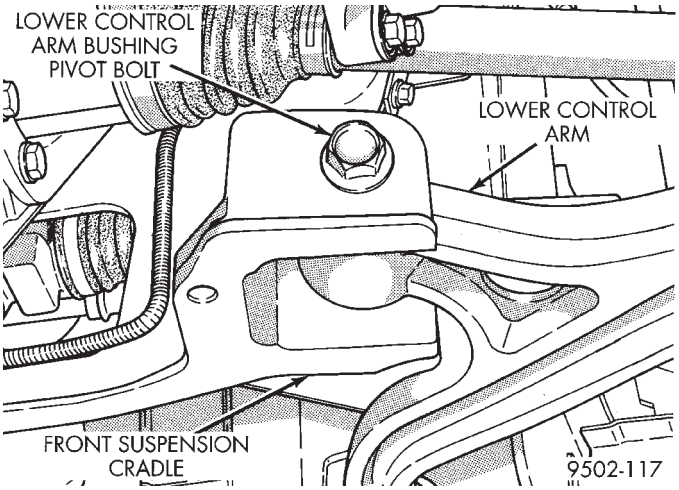


Fig. 36 Lower Control Arm Bushing Pivot Bolt Correctly Installed

(2) Install retainer (Fig. 37) attaching rear bushing of lower control arm to front suspension cradle. **When installing retainer, be sure raised rib on rear bushing (Fig. 37) is positioned in the groove on the retainer. Do not torque attaching bolts at this time.**

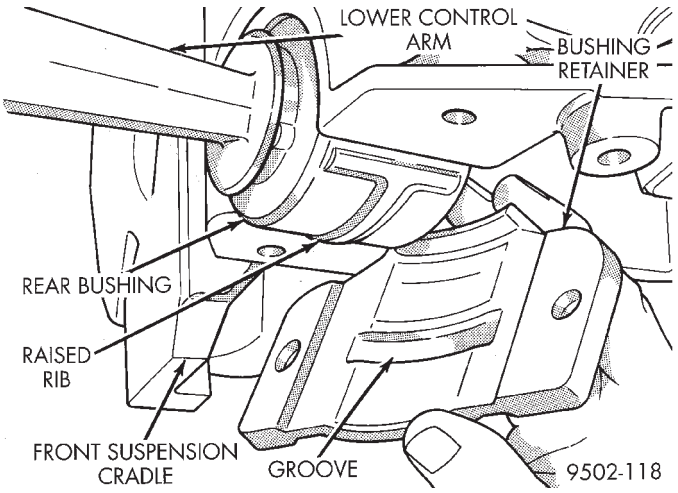


Fig. 37 Installing Lower Control Arm Rear Bushing Retainer

NOTE: If reference marks were not put on the frame rails prior to lowering the suspension cradle, Refer to group 13 Frame And Bumpers for the cradle positioning procedure.

(3) Raise the front suspension cradle against the front frame rails. Align the cradle with the reference marks on the frame rails.

(4) Tighten the 4 mounting bolts for the front suspension cradle to a torque of 163 N·m (120 ft. lbs.).

(5) Install lower control arm ball joint stud into steering knuckle. Then install the bolt and nut, clamping the steering knuckle to the ball joint stud (Fig. 29). Tighten the clamping bolt to a torque of 145 N·m (105 ft. lbs.).

(6) Install the cradle plate on front suspension cradle and then install the 10 cradle plate to cradle attaching bolts (Fig. 30). Tighten the 9 M-14 attaching bolts (Fig. 30) to a torque of 165 N·m (123 ft. lbs.). Tighten the 1 M-12 attaching bolt (Fig. 30) to a torque of 108 N·m (80 ft. lbs.).

CAUTION: When locating jack stands under lower control arm, do not place the jack stands under the ball joints (Fig. 38).

(7) Position jack stands under the lower control arms as close to the ball joints as possible (Fig. 38). Lower the vehicle onto the jack stands, until the jack stands are supporting the total weight of the vehicle (Fig. 38).

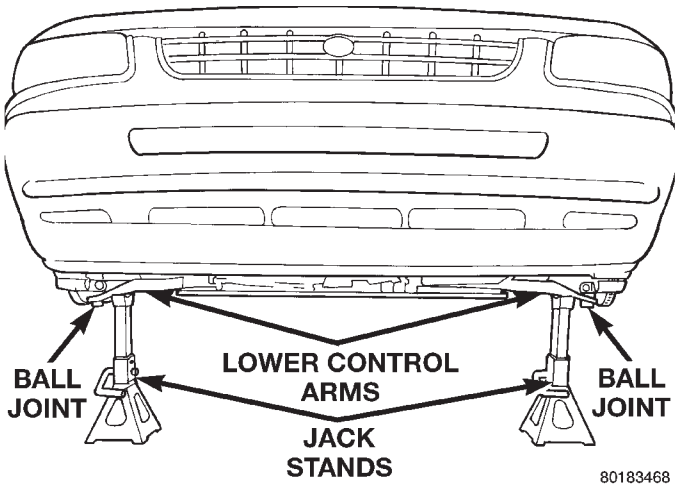


Fig. 38 Jack Stands Supporting Vehicle Weight

(8) Tighten front lower control arm pivot bolt (Fig. 36) to a torque of 183 N·m (135 ft. lbs.) first, then tighten rear lower control arm bushing retainer attaching bolts (Fig. 33) to a torque of 68 N·m (50 ft. lbs.).

(9) Install the wheel/tire assembly on the vehicle.

(10) Install and 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 135 N·m (100 ft. lbs.).

(11) Remove jack stands and lower vehicle to the ground.

REMOVAL AND INSTALLATION (Continued)

BALL JOINT

REMOVE

(1) Using a screw driver or other suitable tool, pry the seal boot off of the ball joint assembly (Fig. 39)

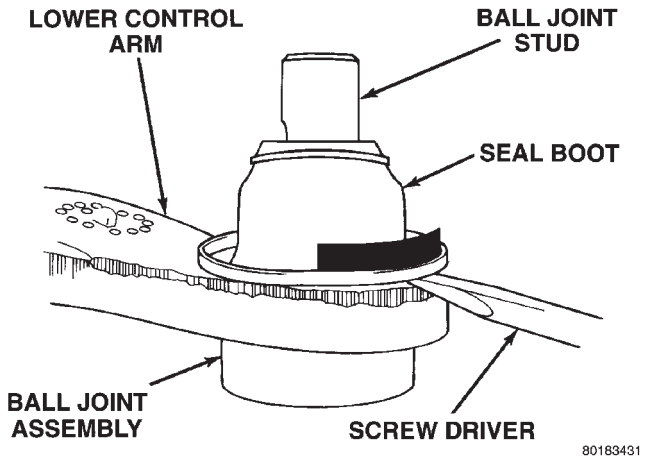


Fig. 39 Ball Joint Seal Boot Removal

(2) Position receiving cup, Special Tool 6758 to support lower control arm when removing ball joint assembly (Fig. 40). Install Remover, Special Tool 6919 on top of the ball joint assembly (Fig. 40).

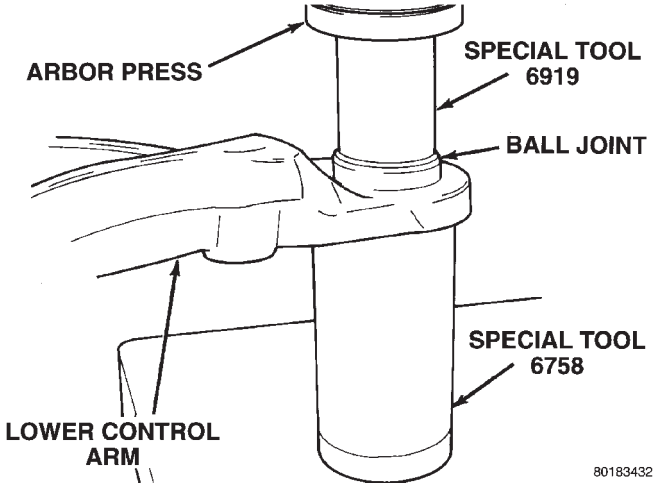


Fig. 40 Ball Joint Removal From Lower Control Arm

(3) Using the arbor press, press the ball joint assembly completely out of the lower control arm.

INSTALL

NOTE: When installing ball joint in lower control arm, position the ball joint in control arm so notch in ball joint stud is in the direction shown (Fig. 41). This will ease assembly of the ball joint to the steering when installing pinch bolt.

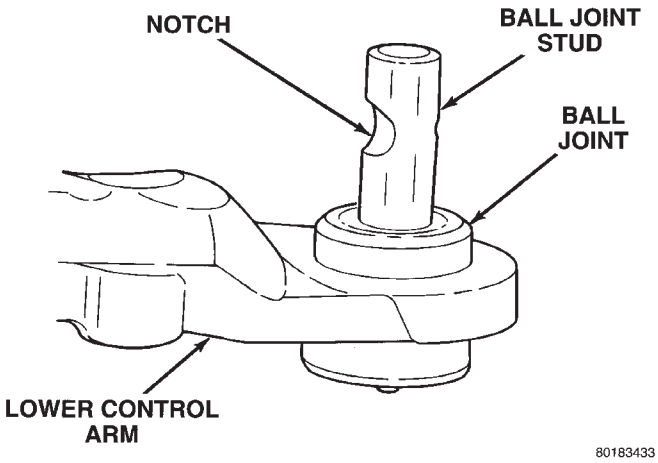


Fig. 41 Installation Position Of Ball Joint In Control Arm

(1) By hand, position ball joint into ball joint bore of lower control arm. **Be sure ball joint is not cocked in the bore of the control arm, this will cause the ball joint to bind when being pressed into control arm.**

(2) Position control arm with installed ball joint, in an arbor press with Receiving Cup, Special Tool 6758 supporting the lower control arm (Fig. 42). Then center Installer, Special Tool 6908–4 on the bottom of the ball joint (Fig. 42)

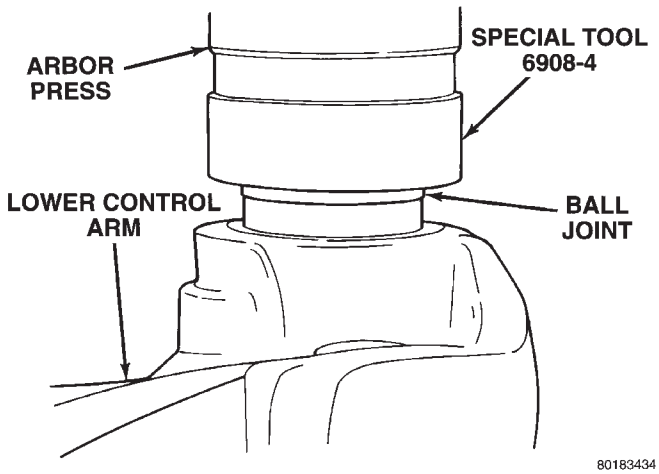


Fig. 42 Installing Ball Joint In Control Arm

(3) Carefully align all pieces. Then press the ball joint into the lower control arm until it is completely seated against surface of lower control arm. The ball joint is correctly installed when there is no gap between the ball joint and the lower control arm (Fig. 43). **Do not apply excessive force against the ball joint or the lower control arm.**

REMOVAL AND INSTALLATION (Continued)

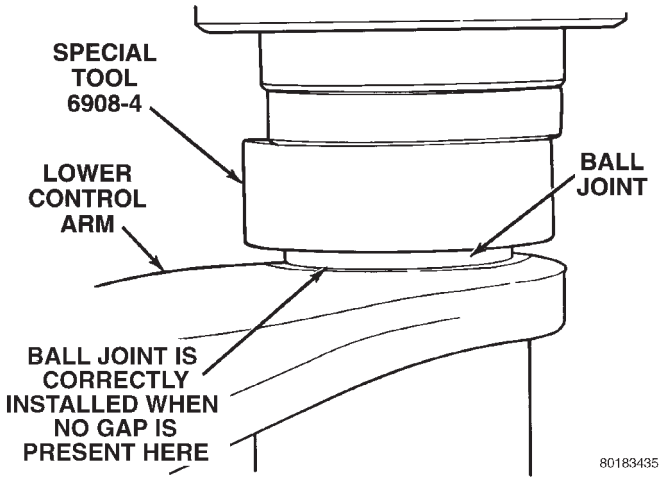


Fig. 43 Correctly Installed Lower Ball Joint

CAUTION: When installing the ball joint seal on the ball joint/lower control arm, the shield (Fig. 44) on the ball joint seal must be positioned as shown.

(4) Install a **NEW** seal boot by hand as far as possible on the ball joint. Installation of the seal boot is to be with the shield positioned as shown (Fig. 44).

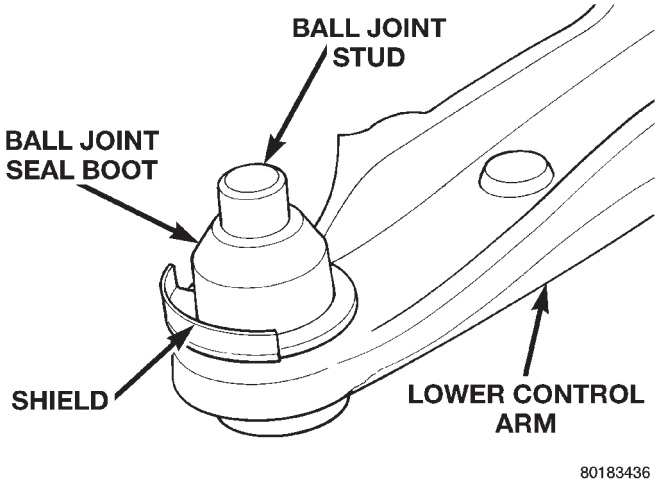


Fig. 44 Ball Joint Seal Boot Installed Position

CAUTION: Do not use an arbor press to install the sealing boot on the ball joint. Damage to the sealing boot will occur if excessive pressure is applied to the sealing boot when it is being installed.

(5) Place Installer, Special Tool 6758 over seal boot and squarely align it with bottom edge of seal boot (Fig. 45). Apply hand pressure to Special Tool 6758 until seal boot is pressed squarely against top surface of lower control arm.

CAUTION: A replacement ball joint is not prelubricated. Properly lubricate the replacement ball joint using Mopar Multi–Mile grease or an equivalent. Lubricate ball joint after seal boot is installed but prior to top of seal boot being pushed down below notch in ball joint stud (Fig. 41). Air must vent out of the seal boot at notch when grease is pumped into ball joint, failure to do so will balloon and damage seal boot. Do not over grease the ball joint, this will prevent the seal boot from pushing down on the stud of the ball joint.

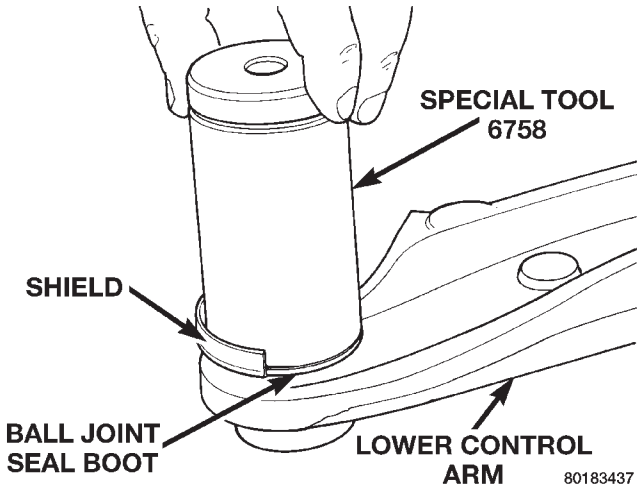


Fig. 45 Installing Ball Joint Seal Boot

CAUTION: After the ball joint is properly greased, clip the end of the grease fitting off below the hex. The ball joint seal boot is non-purgeable and further greasing is not required and can result in damage to the seal boot.

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.

NOTE: The attaching bolts for the cradle plate are of two different thread sizes. Nine of the bolts are a M-14 thread and one of the bolts is a M-12 thread. Refer to (Fig. 46) for the cradle plate attaching bolt locations.

(2) Remove the 10 bolts (Fig. 46) attaching the cradle plate to the front suspension cradle. Then remove the cradle plate from the cradle.

NOTE: When removing nut from stud of stabilizer bar attaching link, do not allow the stud to rotate. Hold stud from rotating by inserting a Torx Plus 40 IP bit in the end of the stud (Fig. 47).

REMOVAL AND INSTALLATION (Continued)

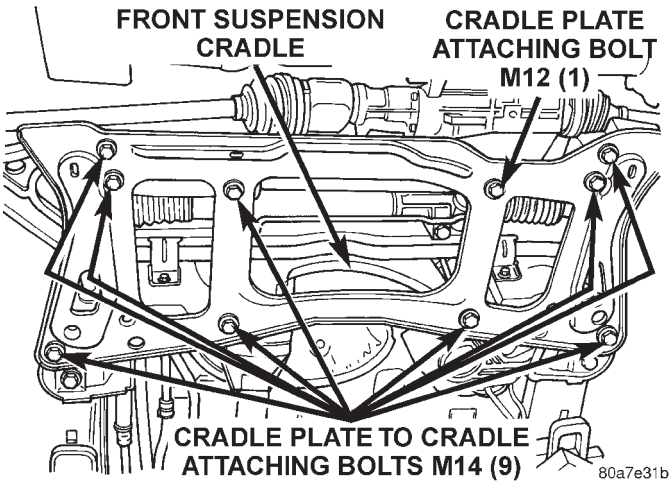


Fig. 46 Cradle Plate And Mounting Bolts

(3) Remove the nuts (Fig. 47) attaching the stabilizer bar attaching links to the stabilizer bar. Then remove the attaching links from the stabilizer bar.

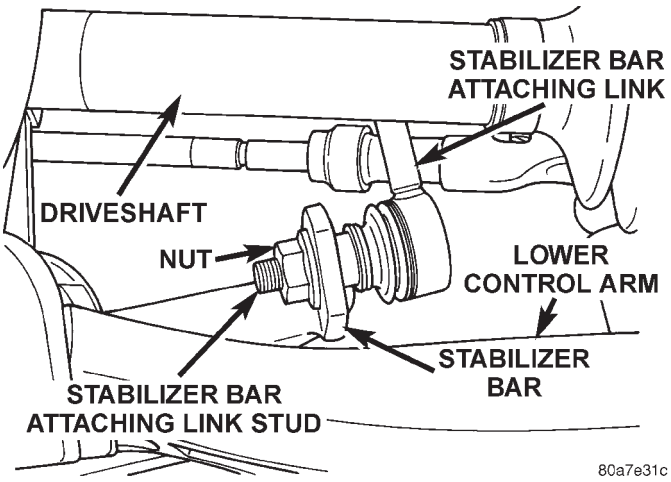


Fig. 47 Stabilizer Bar Link Attachment To Stabilizer Bar

(4) Remove the stabilizer bar bushing retainers from the front suspension cradle (Fig. 48).

(5) Remove the stabilizer bar and bushings as an assembly from the front suspension cradle.

INSTALL

(1) If the stabilizer bar to front suspension cradle bushings require replacement at time of inspection, install new bushings before installing stabilizer bar. Bushings are replaced by opening slit on bushings and peeling them off stabilizer bar. Install new bushings on stabilizer bar by spreading bushing at slit and forcing them on the stabilizer bar. **Bushings must be installed on stabilizer bar so slit in bushing will be facing toward the rear of vehicle with the square corner toward the ground, when the stabilizer bar is installed on the vehicle (Fig. 49).**

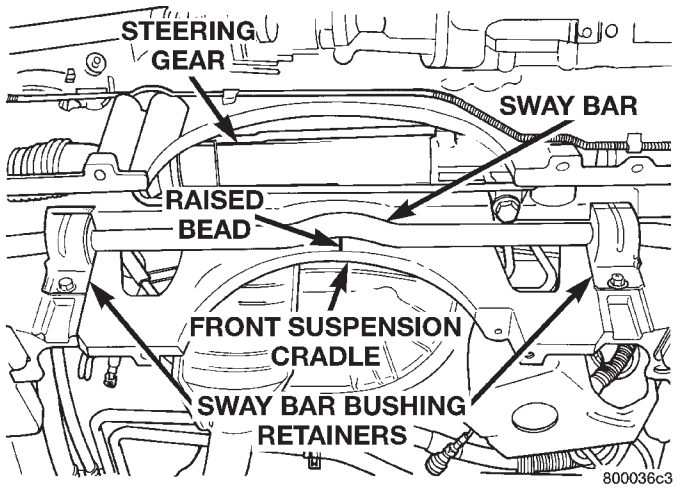


Fig. 48 Front Stabilizer Bar Bushing Retainers

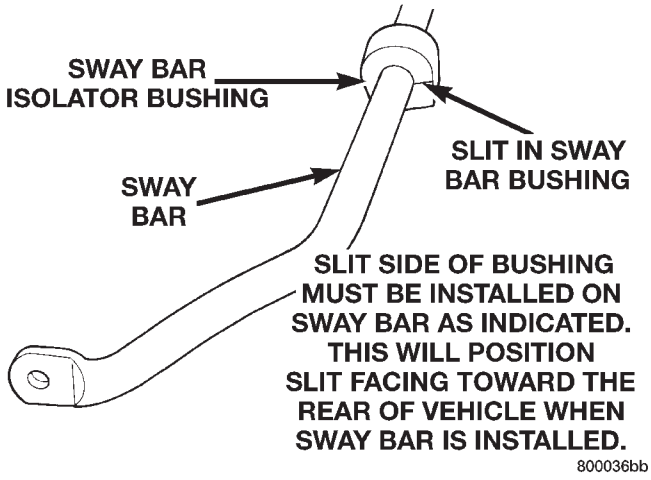


Fig. 49 Correctly Installed Stabilizer Bar To Cradle Bushing

(2) Position stabilizer bar into front suspension cradle so stabilizer bar bushings are aligned with depressions in cradle. Install stabilizer bar bushing retainers onto crossmember aligning raised bead on retainer with cutouts in bushings (Fig. 50). **Do not tighten Stabilizer bar bushing retainers at this time.**

(3) Check position of the stabilizer bar in the front suspension cradle. The center of the curved section of the stabilizer bar must be aligned with the raised line in the center of the front suspension cradle (Fig. 51).

(4) Align holes in stabilizer bar with attaching link assemblies. Install the stabilizer bar attaching links into the stabilizer bar and install the attaching nuts (Fig. 47).

REMOVAL AND INSTALLATION (Continued)

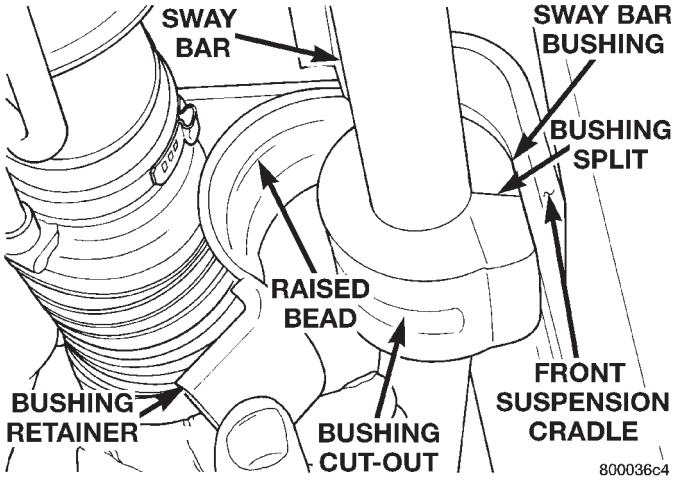


Fig. 50 Stabilizer Bar Bushing Retainer Installation

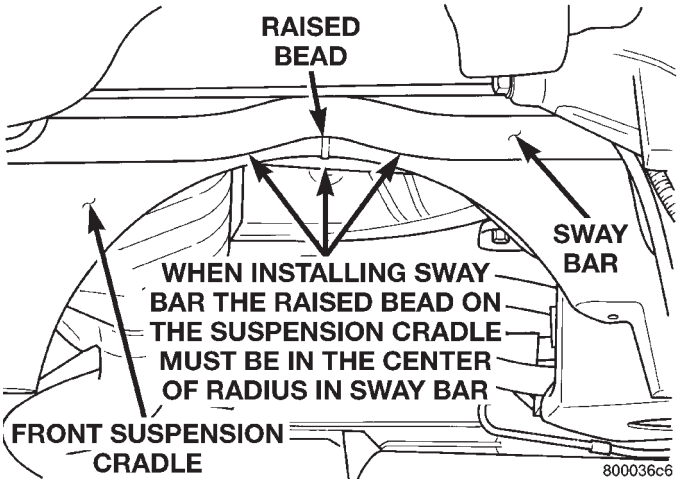


Fig. 51 Stabilizer Bar Correctly Positioned In Cradle

NOTE: When torquing nut on stud of stabilizer bar attaching link, do not allow the stud to rotate. Hold stud from rotating by inserting a Torx Plus 40 IP bit in the end of the the stud (Fig. 47).

(5) Tighten the stabilizer bar attaching link nuts (Fig. 47) to a torque of 88 N·m (65 ft. lbs.).

(6) Tighten the stabilizer bar bushing retainer to cradle attaching bolts (Fig. 48) to 68 N·m (50 ft. lbs.) torque.

(7) Install the cradle plate on front suspension cradle and then install the 10 cradle plate to cradle attaching bolts (Fig. 46). Tighten the 9 M-14 attaching bolts (Fig. 46) to a torque of 165 N·m (123 ft. lbs.). Tighten the 1 M-12 attaching bolt (Fig. 46) to a torque of 108 N·m (80 ft. lbs.).

(8) Lower vehicle.

HUB AND BEARING ASSEMBLY

REMOVE

NOTE: Replacement of the Unit III front hub/bearing assembly can be normally done without having to remove the steering knuckle from the vehicle. In the event that the hub/bearing is frozen in the steering knuckle and cannot be removed by hand it will have to be pressed out of the steering knuckle. The steering knuckle will require removal from the vehicle to allow the hub/bearing assembly to be pressed out of the steering knuckle. Refer to Front Steering Knuckle in this section of the service manual for the required removal and installation procedure.

(1) Remove the cotter pin, and nut lock from the stub axle (Fig. 52).

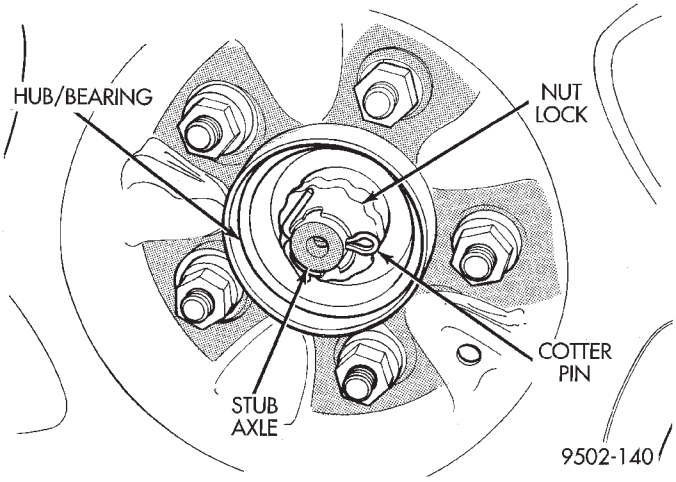


Fig. 52 Cotter Pin And Nut Lock

(2) Remove the spring wave washer (Fig. 53) from the end of the stub axle.

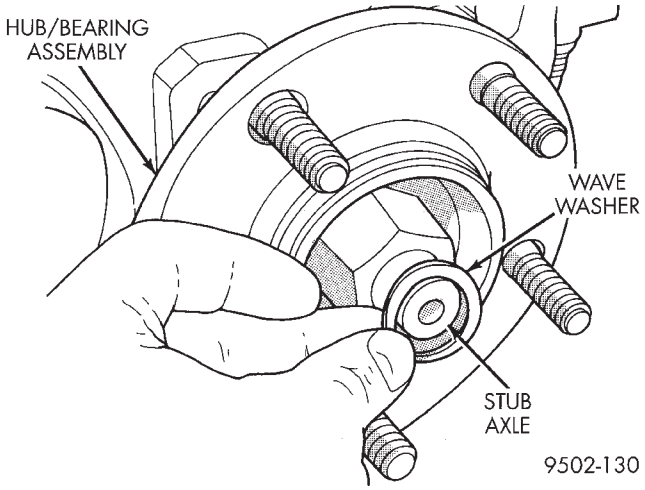


Fig. 53 Nut Lock Wave Washer

REMOVAL AND INSTALLATION (Continued)

CAUTION: Wheel bearing damage will result if after loosening hub nut, vehicle is rolled on the ground or the weight of the vehicle is allowed to be supported by the tires.

(3) With the aid of a helper applying the brakes to keep the front hub from turning, **loosen but do not remove** the hub nut. **The hub and driveshaft are splined together through the knuckle (bearing) and retained by the hub nut.**

(4) 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.

(5) Remove wheel lug nuts, and front tire and wheel assembly.

(6) Remove front disc brake caliper to steering knuckle attaching bolts. (Fig. 54).

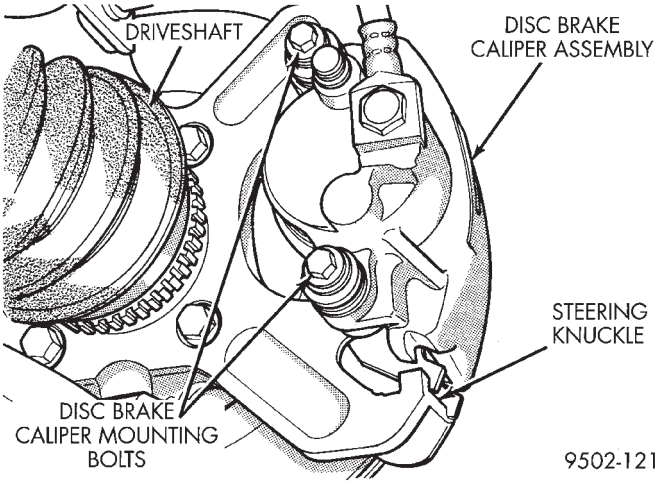


Fig. 54 Front Disc Brake Caliper Mounting Bolts

(7) Remove disc brake caliper assembly from steering knuckle. Caliper is removed by first rotating top of caliper away from steering knuckle, and then removing bottom of caliper out from under machined abutment. (Fig. 55)

(8) Support disc brake caliper assembly using a wire hook, (Fig. 56) **do not hang caliper assembly by hydraulic hose.**

(9) Remove the braking disc from the front hub/bearing assembly.

(10) Remove the retaining nut and the washer (Fig. 57) from the end of the stub axle.

(11) Remove the four hub and bearing assembly mounting bolts from the rear of steering knuckle (Fig. 58).

(12) Remove the hub and bearing assembly from the steering knuckle (Fig. 59).

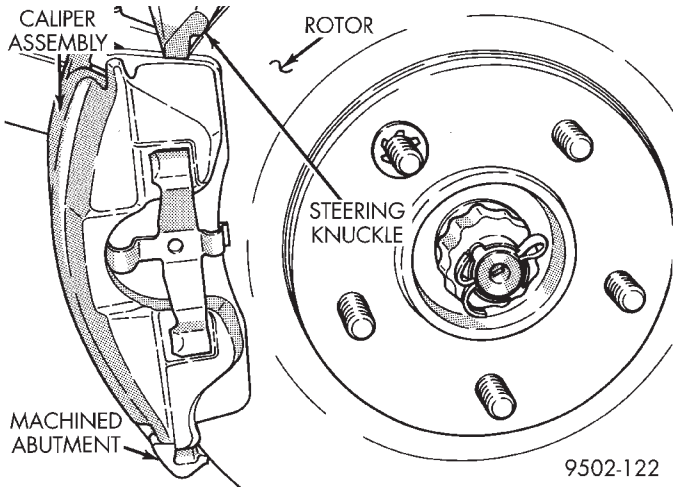


Fig. 55 Brake Caliper Assembly Removal/Installation

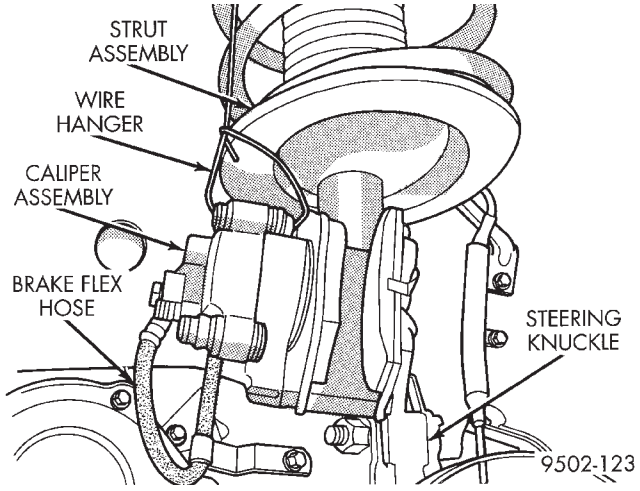


Fig. 56 Supporting Brake Caliper

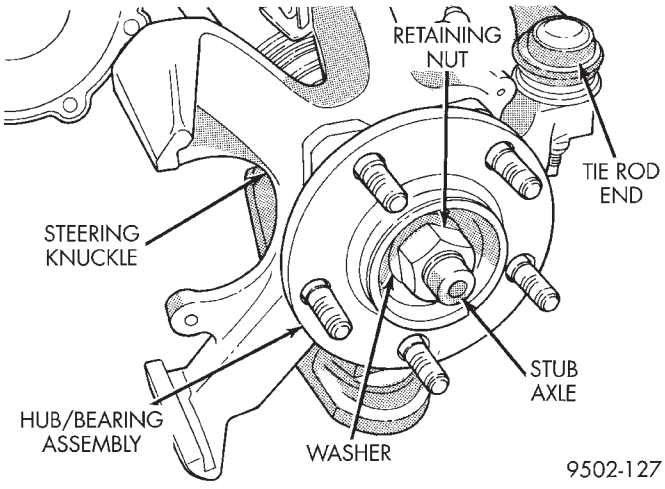


Fig. 57 Hub/Bearing To Stub Axle Retaining Nut And Washer

REMOVAL AND INSTALLATION (Continued)

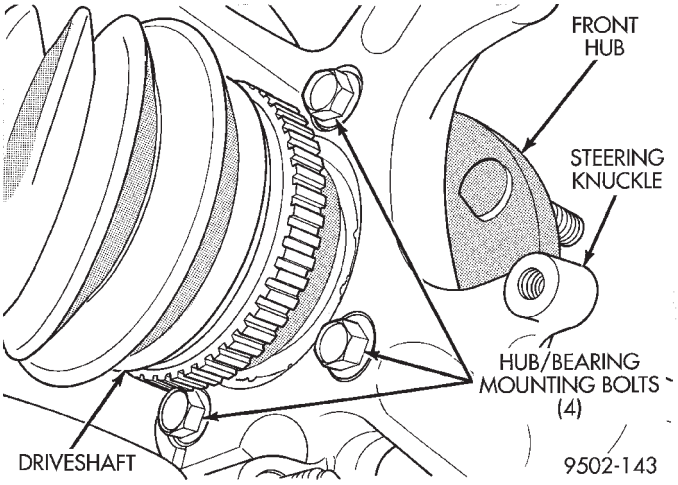


Fig. 58 Hub/Bearing Assembly Mounting Bolts

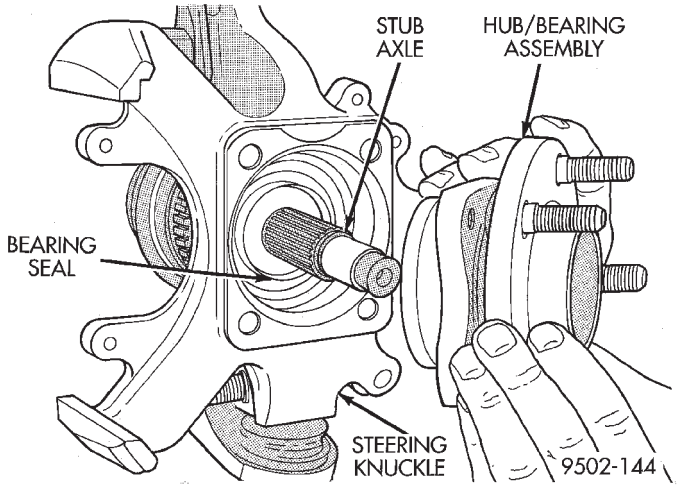


Fig. 59 Hub and Bearing Assembly Removal From Steering Knuckle

INSTALL

CAUTION: Hub and bearing assembly mounting surfaces on the steering knuckle and halfshaft (Fig. 60) must be smooth and completely free of foreign material or nicks prior to installing hub and bearing assembly.

CAUTION: When installing hub and bearing assembly into steering knuckle, be careful not to damage the bearing seal (Fig. 60) on the outer C/V joint.

(1) Install hub/bearing assembly onto stub axle and into steering knuckle until squarely seated on the face of the steering knuckle.

(2) Install the 4 hub/bearing assembly to steering knuckle attaching bolts (Fig. 58). Equally tighten all 4 mounting bolts in a criss-cross pattern until hub/bearing assembly is squarely seated against front of

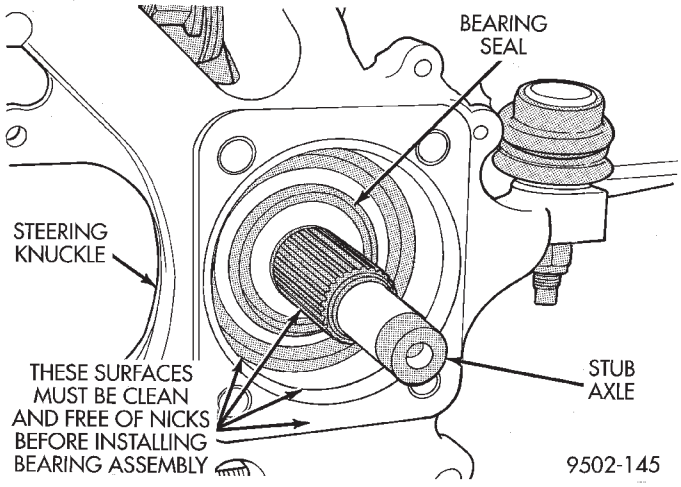


Fig. 60 Hub And Bearing Assembly Mounting Surfaces

steering knuckle. Then tighten the 4 hub and bearing assembly mounting bolts to a torque of 65 N·m (45 ft.lbs.)

(3) Install the hub/bearing assembly to stub shaft washer and retaining nut (Fig. 61).**Tighten, but do not torque the hub nut at this time.**

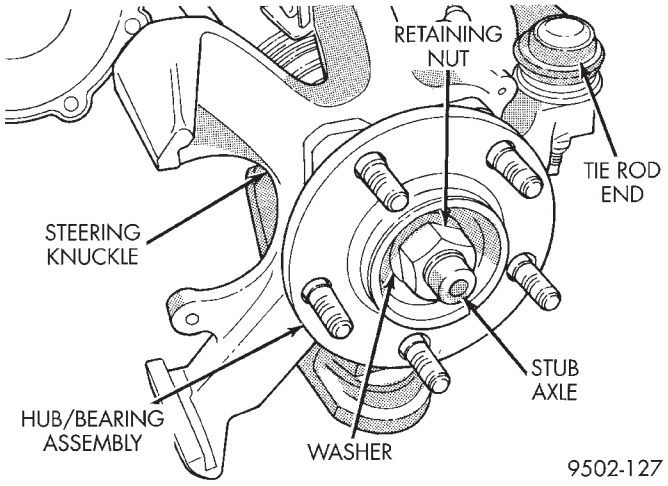


Fig. 61 Hub/Bearing To Stub Axle Washer And Retaining Nut

(4) Install the braking disk on the hub and bearing assembly.

(5) Install front brake caliper back over braking disc and align with caliper mounting holes on steering knuckle (Fig. 55). Caliper is installed by first installing bottom of caliper under machined abutment on bottom of steering knuckle and then rotating top of caliper toward steering knuckle. Install the disc brake caliper to steering knuckle attaching bolts (Fig. 54) 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

REMOVAL AND INSTALLATION (Continued)

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 to the ground.

CAUTION: When tightening hub/bearing assembly to stub shaft retaining nut, do not exceed the maximum torque of 244 N·m (180 ft. lbs.).

(8) With vehicle brakes applied to keep vehicle from moving, torque stub shaft to hub/bearing assembly retaining nut to 244 N·m (180 ft. lbs.).

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

FRONT WHEEL MOUNTING STUDS

REMOVE

CAUTION: If a wheel attaching stud needs to be replaced in the hub and bearing assembly the studs CAN NOT 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.

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

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

(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. 62) Refer to Front Disc Brake Service in the Brake Section of this service manual for caliper removal procedure.

(4) Remove front rotor from hub, by pulling it straight off wheel mounting studs. (Fig. 63)

(5) Install a lug nut on the wheel stud to be removed from the hub and bearing assembly, so the threads on the stud are even with end of lug nut. Install Remover, Special Tool C-4150A on hub and bearing assembly flange and wheel stud (Fig. 64).

(6) Tightening down on special tool will push wheel stud out of the hub and bearing assembly flange. 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.

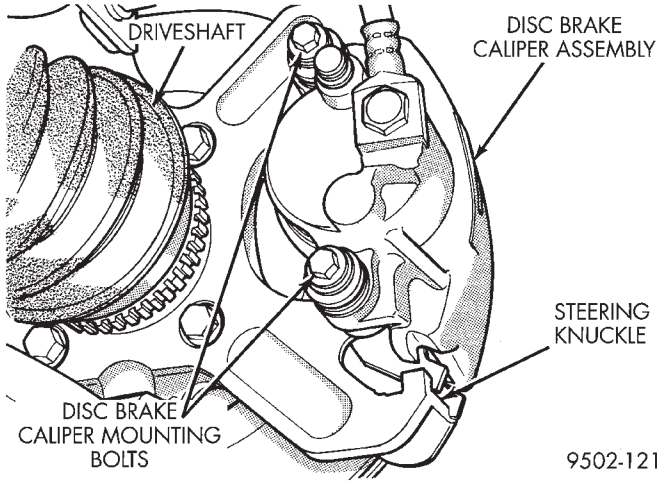


Fig. 62 Disc Brake Caliper Mounting

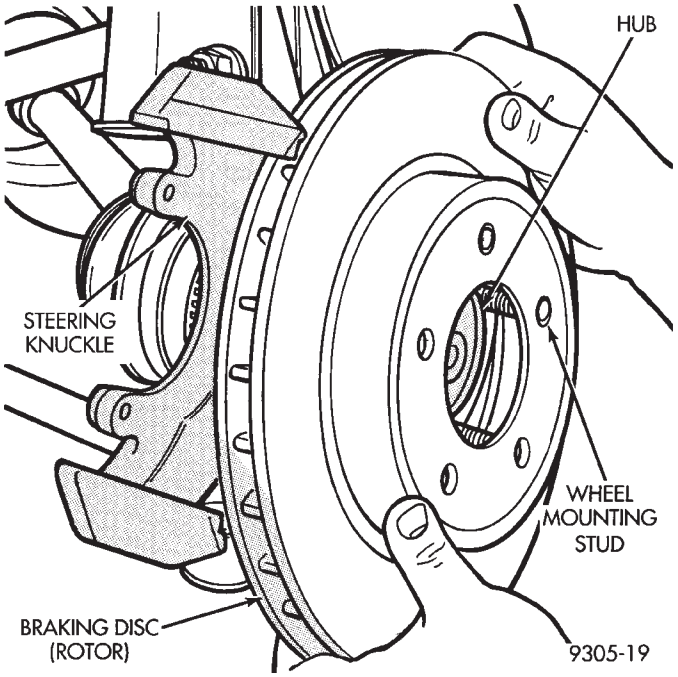


Fig. 63 Removing Braking Disc

INSTALL

(1) Install replacement wheel stud into flange 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. 65).

(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 braking disk back on the hub and bearing assembly. (Fig. 63)

REMOVAL AND INSTALLATION (Continued)

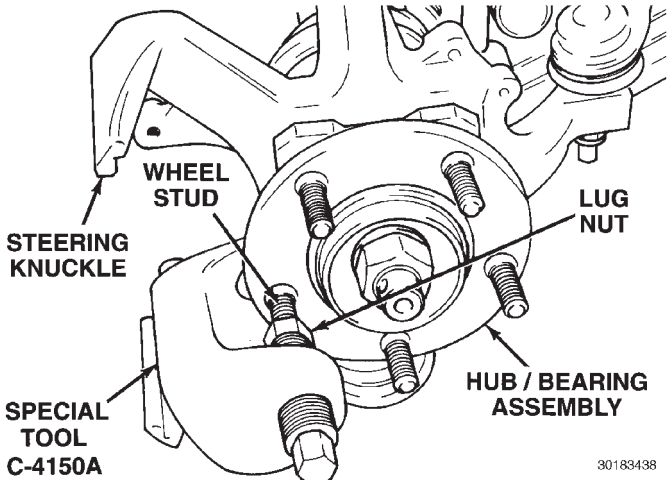


Fig. 64 Wheel Stud Removal From Hub/Bearing Assembly

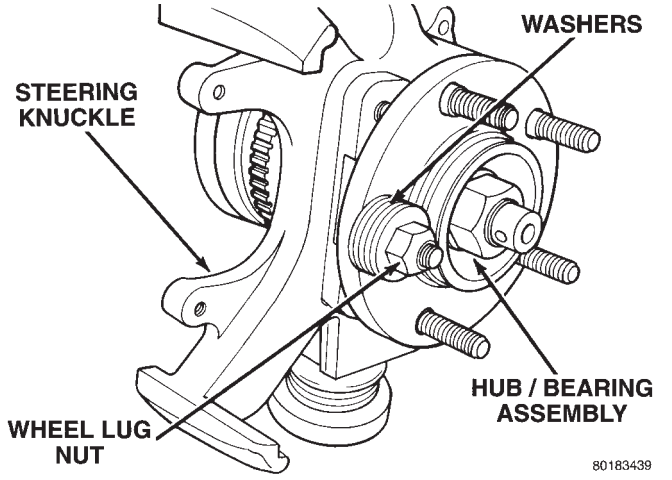


Fig. 65 Installing Wheel Stud Into Hub And Bearing

(4) Install front brake caliper back over braking disc and align with caliper mounting holes on steering knuckle (Fig. 62). Refer to Front Disc Brake Service in the Brake Section of this service manual for caliper installation procedure. Install the caliper adapter to steering knuckle attaching bolts and torque to 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 vehicle to the ground.

REAR WHEEL MOUNTING STUDS

REMOVE

CAUTION: If a wheel attaching stud needs to be replaced in the hub and bearing assembly the studs CAN NOT 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 hub and bearing failure.

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

The hub and bearing assembly does not require removal from the rear axle for replacement of the wheel attaching studs.

(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.

(3) Remove the rear brake drum.

(4) Install a lug nut on the wheel stud to be removed from the hub and bearing assembly (Fig. 66) so the threads on stud are even with end of lug nut. Install Remover, Special Tool C-4150A on hub and bearing assembly flange and wheel stud (Fig. 66).

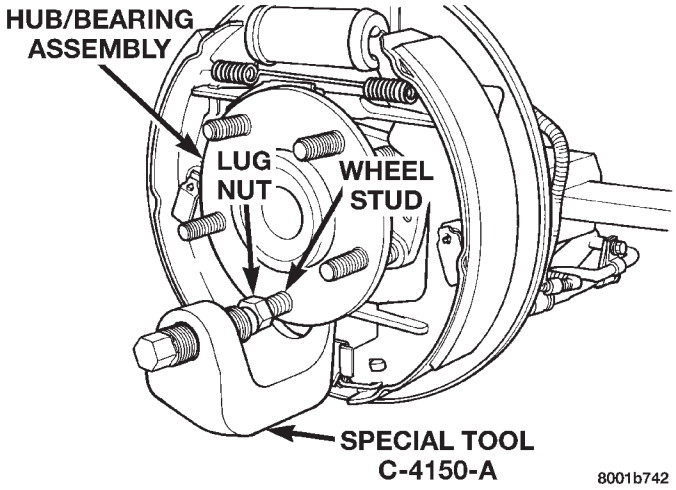


Fig. 66 Removing Wheel Stud From Hub And Bearing

(5) Tightening down on special tool will push wheel stud out of the hub and bearing assembly flange. Remove lug nut from stud and remove wheel stud from flange.

INSTALL

(1) Install replacement wheel stud into flange 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. 67).

(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.

REMOVAL AND INSTALLATION (Continued)

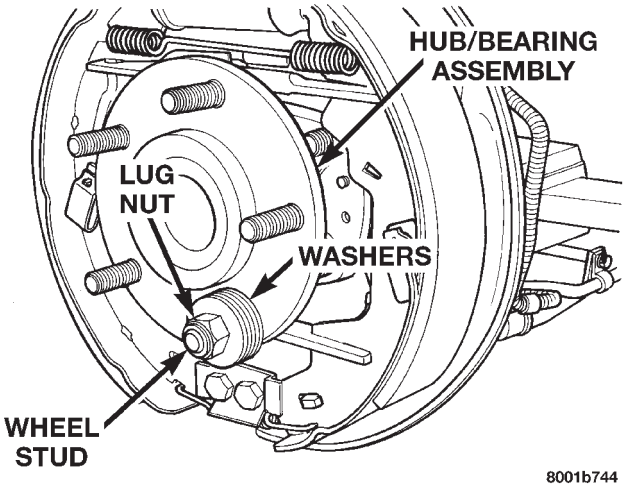


Fig. 67 Installing Wheel Stud Into Hub And Bearing

(3) Install the rear brake drum on the hub and bearing assembly.

(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.

DISASSEMBLY AND ASSEMBLY

Mc PHERSON STRUT

DISASSEMBLY

The Mc Pherson Strut must be remove from the vehicle for it to be disassembled and assembled. Refer to Mc Pherson Strut in the Removal And Installation Section in this group of the service manual for the required procedure to remove and install the Mc Pherson Strut.

(1) Clamp strut assembly in vise, with strut in a vertical position. **Do not clamp reservoir of strut assembly in vise, only clamp strut assembly using strut clevis bracket (Fig. 68).**

(2) Mark coil spring and strut assembly right or left, according to which side of vehicle strut was removed from, and which strut coil spring was removed from.

WARNING: DO NOT REMOVE STRUT ROD NUT, BEFORE STRUT ASSEMBLY COIL SPRING IS COMPRESSED, REMOVING SPRING TENSION FROM UPPER SPRING SEAT AND BEARING ASSEMBLY.

WARNING: WHEN COMPRESSING COIL SPRING FOR REMOVAL FROM STRUT ASSEMBLY, THE UPPER SPRING SEAT AND SECOND COIL OF THE COIL SPRING MUST BE CAPTURED BY THE JAWS OF THE COIL SPRING COMPRESSOR (Fig. 69).

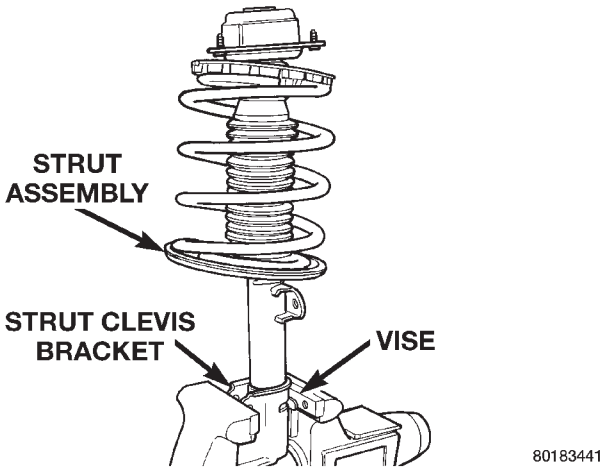


Fig. 68 Strut Assembly Correctly Installed In Vise

(3) Compress strut coil spring, using Pentastar Service Equipment Spring Compressor, 7522A (Fig. 69). Be sure the top and bottom attachment shoe selected, (Fig. 69) properly fit the coil spring.

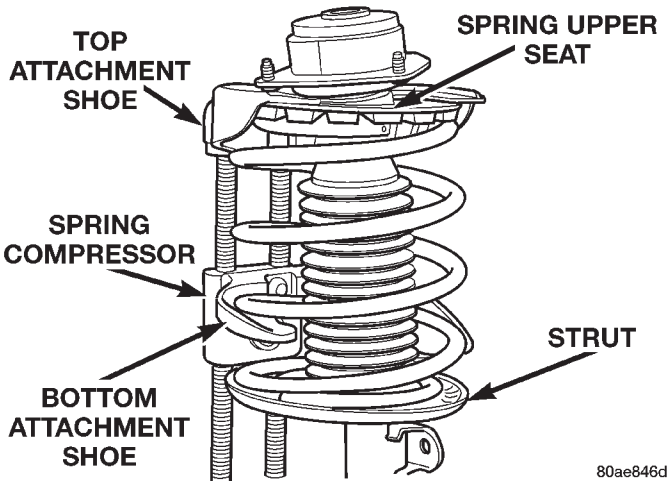


Fig. 69 Compressing Strut Assembly Coil Spring

(4) Install Socket, Strut Nut, Special Tool 6864 on the strut shaft retaining nut (Fig. 70). Then install a 10 mm socket on the hex of the strut shaft (Fig. 70). While holding strut shaft from turning, remove nut from strut shaft.

(5) Remove the upper mount (Fig. 71) from the strut shaft and coil spring upper seat.

(6) Release the coil spring from the spring compressor. Remove spring compressor from coil spring (Fig. 72).

(7) Remove the coil spring upper seat and pivot bearing (Fig. 72) as an assembly from the coil spring. Remove the coil spring from the strut. **Mark left**

DISASSEMBLY AND ASSEMBLY (Continued)

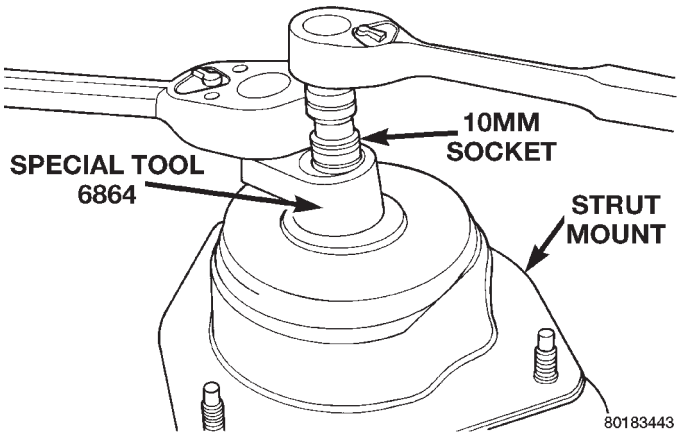


Fig. 70 Strut Shaft Retaining Nut Removal Tools

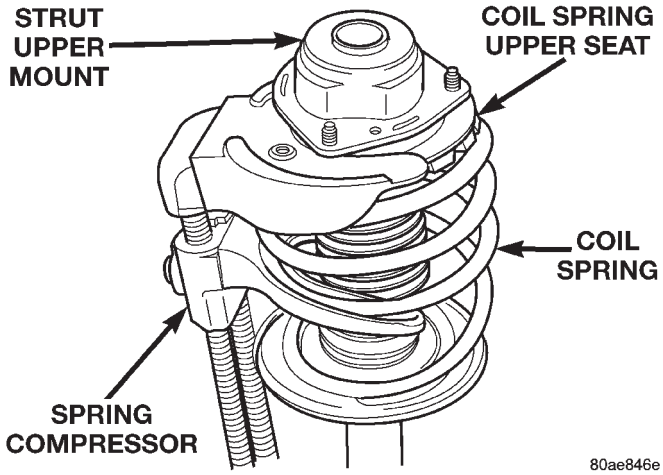


Fig. 71 Strut Assembly Upper Mount

and right springs for installation back on correct side of vehicle.

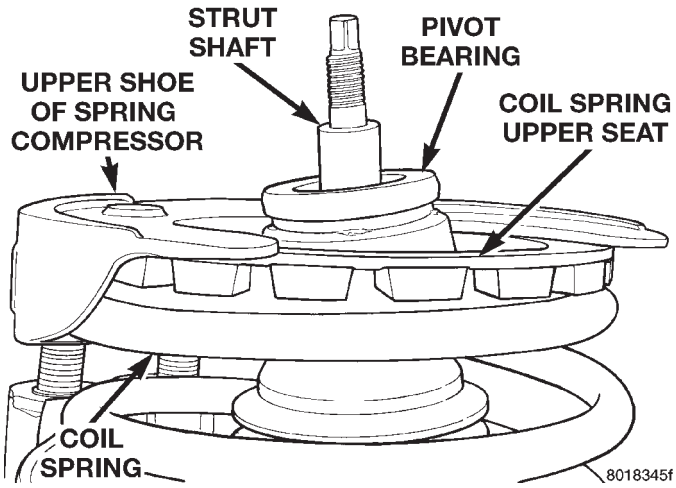


Fig. 72 Strut Assembly Pivot Bearing And Spring Seat

(8) Remove the dust shield and jounce bumper (Fig. 73) as an assembly from the strut shaft. The dust shield can not be removed from the jounce bumper until after it is removed from strut shaft.

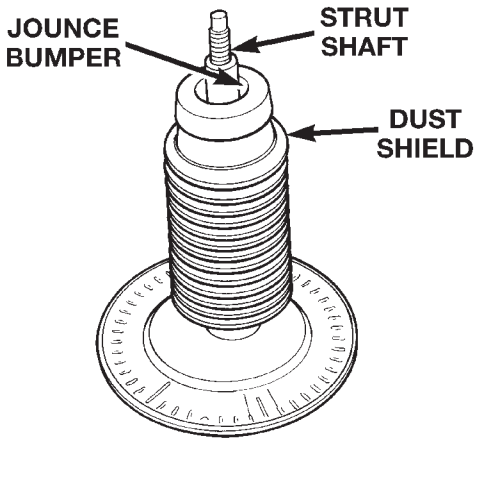


Fig. 73 Dust Shield Jounce Bumper

(9) Remove the jounce bumper from the dust shield. Jounce bumper is removed from dust shield by collapsing dust shield until jounce bumper can be grabbed and pulled out of the dust boot.

(10) Remove the spring isolator from the lower spring seat on the strut (Fig. 74).

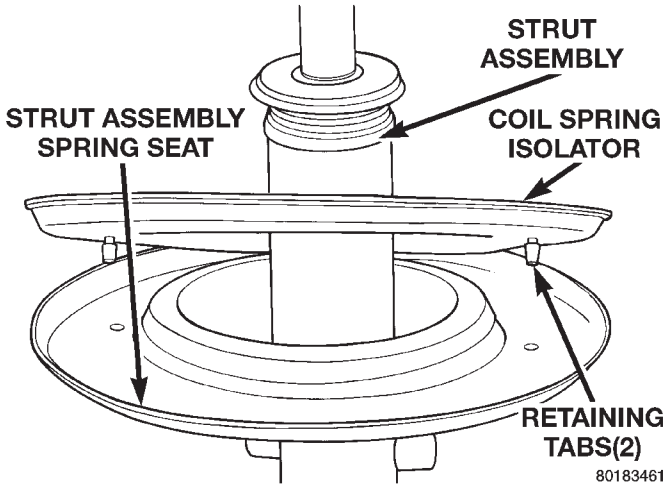


Fig. 74 Strut Lower Spring Seat Isolator

(11) Inspect strut damper for any condition of shaft binding over full stroke of the shaft.

(12) Inspect the strut mount and the upper spring seat assembly for the following:

- Mount for cracks and distortion and retaining studs for any sign of damage.
- Severe deterioration of rubber isolator,
- Binding strut assembly pivot bearing. If pivot bearing is replaced it is to be installed with the larger diameter end of bearing facing up.
- Inspect dust shield for rips and/or deterioration.

DISASSEMBLY AND ASSEMBLY (Continued)

• Inspect jounce bumper for cracks and signs of deterioration.

(13) Replace any components of the strut assembly found to be worn or defective during the inspection, before re-assembling the strut.

ASSEMBLY

(1) Clamp strut in vise, with strut in vertical position. **Do not clamp strut in vise by body of strut, only by the clevis bracket (Fig. 68).**

(2) Install the spring isolator on the strut lower spring seat (Fig. 74). When installing the spring isolator, be sure the 2 retaining tabs on the spring isolator (Fig. 74) are installed in the 2 holes in the spring seat. When properly installed, the oversize holes in the spring seat should line up with the holes in the spring isolator.

(3) Install the jounce bumper (Fig. 75) on the strut shaft. Jounce bumper is to be installed with the small end of the jounce bumper pointing down (Fig. 75).

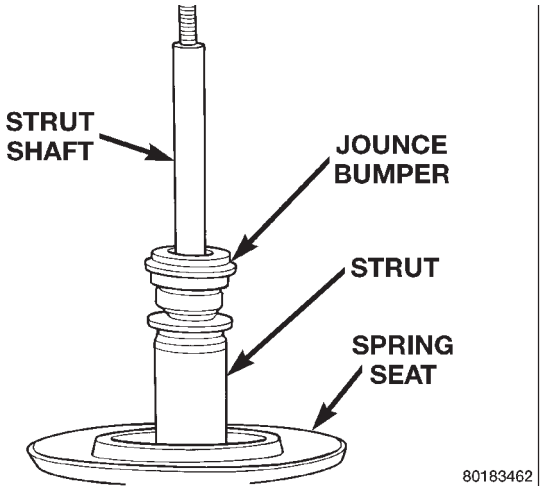


Fig. 75 Correctly Installed Jounce Bumper

(4) Install dust shield (Fig. 76) on the strut. **After dust shield is installed on strut, collapse dust shield down on top of jounce bumper until jounce bumper snaps into dust shield. Then return the dust shield to its fully extended length.**

(5) Install coil spring on strut. Spring is to be installed with the end of the bottom coil aligned with the clevis bracket on the strut assembly (Fig. 77).

(6) Install the upper spring seat on the coil spring (Fig. 77). Spring seat must be installed with the notch in the spring seat (Fig. 77) aligned with the clevis bracket on the strut.

WARNING: WHEN COMPRESSING THE COIL SPRING, THE COIL SPRING UPPER SEAT AND THE BOTTOM COIL OF THE SPRING MUST BE CAPTURED BY THE JAWS OF THE COIL SPRING COMPRESSOR.

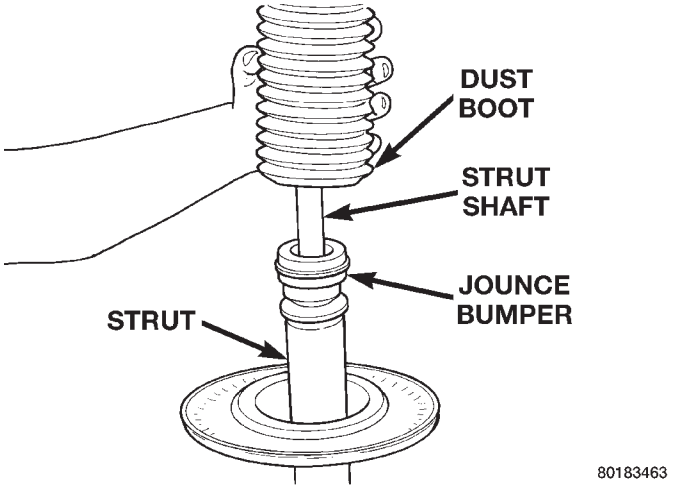


Fig. 76 Installing Dust Boot

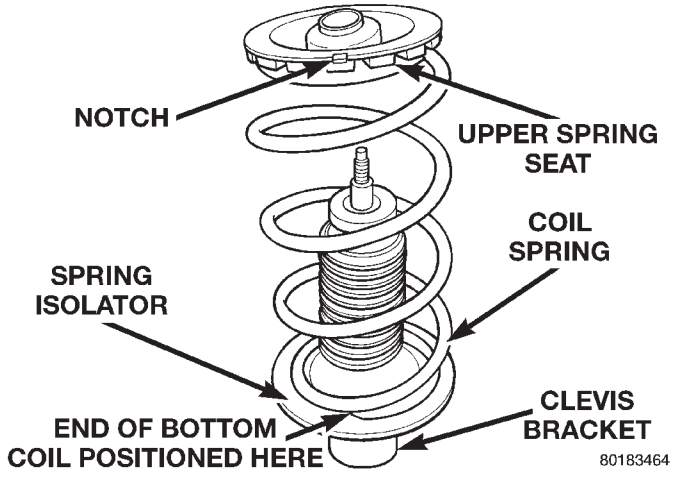


Fig. 77 Coil Spring And Spring Seat Correctly Installed

(7) Compress strut coil spring using Pentastar Service Equipment Spring Compressor, 7522A (Fig. 69). Be sure the top and bottom attachment shoe selected, (Fig. 69) properly fit the coil spring.

(8) Install the pivot bearing on the top of the upper spring seat (Fig. 78). **Bearing must be installed on spring seat with the smaller diameter side of the pivot bearing toward the spring seat (Fig. 78). Also, be sure the pivot bearing is sitting flat on the spring seat.**

(9) Install the strut mount on the upper spring seat of the strut. Loosely install the nut on strut shaft.

WARNING: THE FOLLOWING 2 STEPS MUST BE COMPLETELY DONE BEFORE SPRING COMPRESSOR IS RELEASED FROM THE COIL SPRING.

DISASSEMBLY AND ASSEMBLY (Continued)

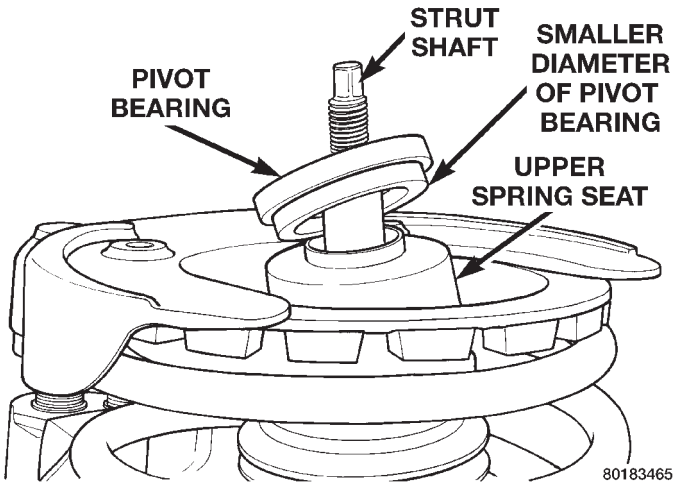


Fig. 78 Installing Pivot Bearing On Upper Spring Seat

(10) Install Socket, Strut Nut, Special Tool 6864 on the strut shaft retaining nut (Fig. 70). Then install a 10 mm socket on the hex of the strut damper shaft (Fig. 70). While holding strut shaft from turning, torque strut shaft retaining nut to 94 N·m (70 ft. lbs.).

(11) Loosen spring compressor until top coil of spring is fully seated against upper spring seat. Then relieve all tension from spring compressor and remove spring compressor from strut spring.

(12) Install strut back in vehicle. Refer to Mc Pherson Strut in the Removal And Installation Section in this group of the service manual for the required procedure to install the Mc Pherson Strut.

BALL JOINT SEAL BOOT

REMOVE

(1) Using a screw driver or other suitable tool, pry the seal boot off of the ball joint assembly (Fig. 79)

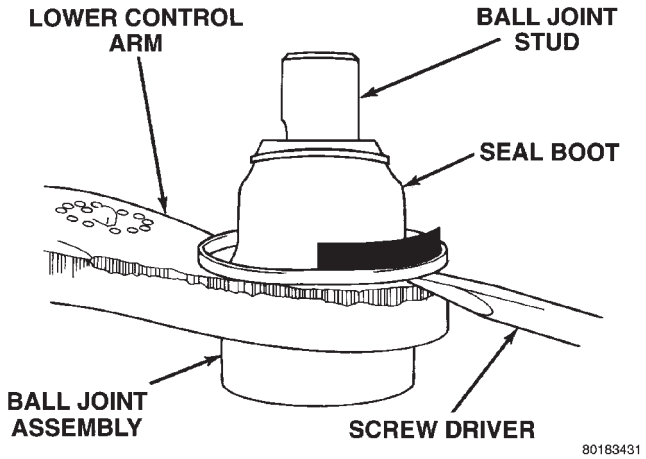


Fig. 79 Ball Joint Seal Boot Removal

INSTALL

CAUTION: When installing the ball joint seal on the ball joint/lower control arm, the shield (Fig. 80) on the ball joint seal must be positioned as shown.

(1) Install a **NEW** seal boot by hand as far as possible on the ball joint. Installation of the seal boot is to be with the shield positioned as shown (Fig. 80).

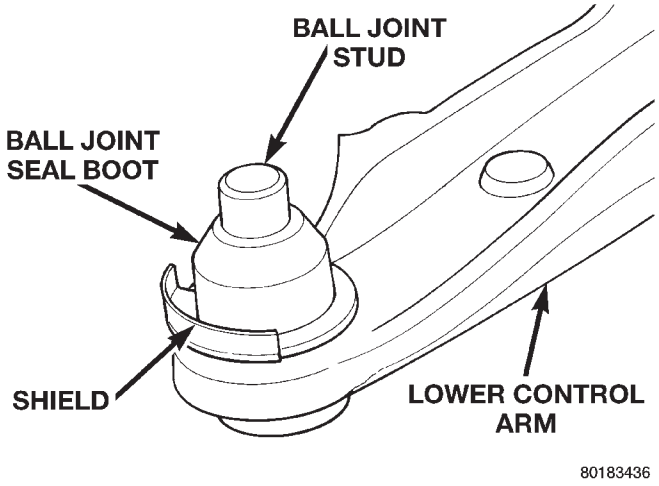


Fig. 80 Ball Joint Seal Boot Installed Position

CAUTION: Do not use an arbor press to install the sealing boot on the ball joint. Damage to the sealing boot will occur if excessive pressure is applied to the sealing boot when it is being installed.

(2) Place Installer, Special Tool 6758 over seal boot and squarely align it with bottom edge of seal boot (Fig. 81). Apply hand pressure to Special Tool 6758 until seal boot is pressed squarely against top surface of lower control arm.

CAUTION: A replacement ball joint is not prelubricated. Properly lubricate the replacement ball joint using Mopar Multi–Mile grease or an equivalent. Lubricate ball joint after seal boot is installed but prior to top of seal boot being pushed down below notch in ball joint stud. Air must vent out of the seal boot at notch when grease is pumped into ball joint, failure to do so will balloon and damage seal boot. Do not over grease the ball joint, this will prevent the seal boot from pushing down on the stud of the ball joint.

CAUTION: After the ball joint is properly greased, clip the end of the grease fitting off below the hex. The ball joint seal boot is non-purgeable and further greasing is not required and can result in damage to the seal boot.

DISASSEMBLY AND ASSEMBLY (Continued)

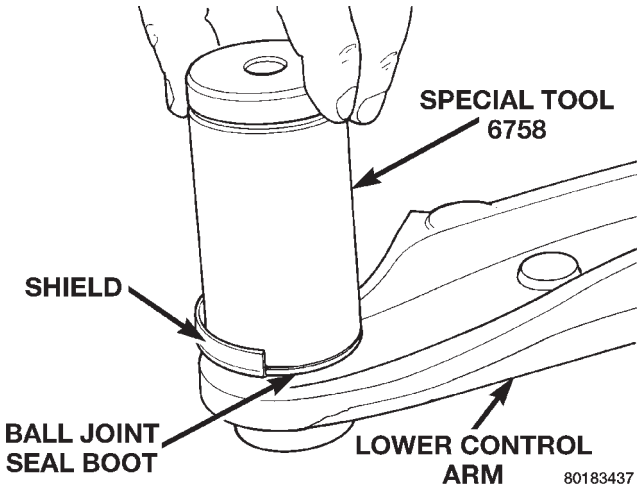


Fig. 81 Installing Ball Joint Seal Boot

LOWER CONTROL ARM FRONT BUSHING

REMOVE

(1) Remove the lower control arm from the front suspension cradle. Refer to Lower Control Arm in the Removal And Installation Section in this section of the service manual for the required procedure.

(2) Securely mount the lower control arm in a vise.

(3) Assemble for removal of the front bushing, the Bushing Receiver, Special Tool 6908–2, Bushing Remover, Special Tool 6908–1, Nut, Special Tool 6908–3 thrust washer, threaded rod and small nut, as shown in (Fig. 82) on the lower control arm and front bushing.

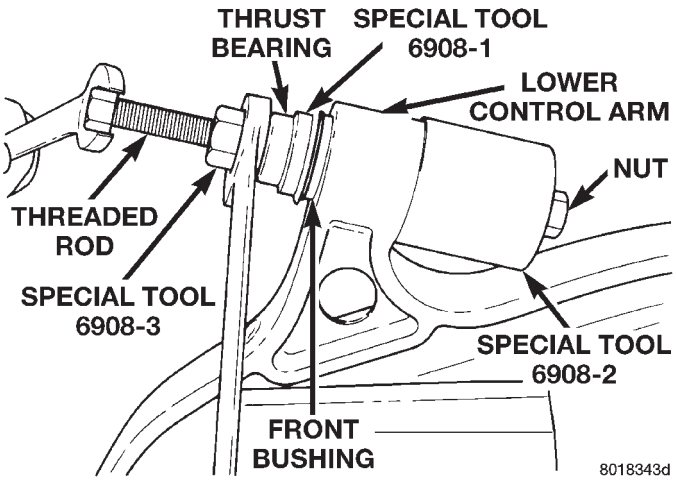


Fig. 82 Tools Assembled For Removal Of Front Bushing

(4) To remove front bushing from lower control arm, hold the threaded rod stationary and tighten the Nut, Special Tool 6908–3 (Fig. 82). This will force the front bushing out of the lower control arm and into Bushing Receiver, Special Tool 6908–2 (Fig. 82).

INSTALL

(1) Securely mount the lower control arm in a vise.

NOTE: The lower control arm front bushing is a directional bushing. It must be installed in the lower control arm positioned as shown in (Fig. 83).

(2) Position the front bushing in the lower control arm so that the 2 rubber blocks on the bushing are positioned horizontally as shown in (Fig. 83).

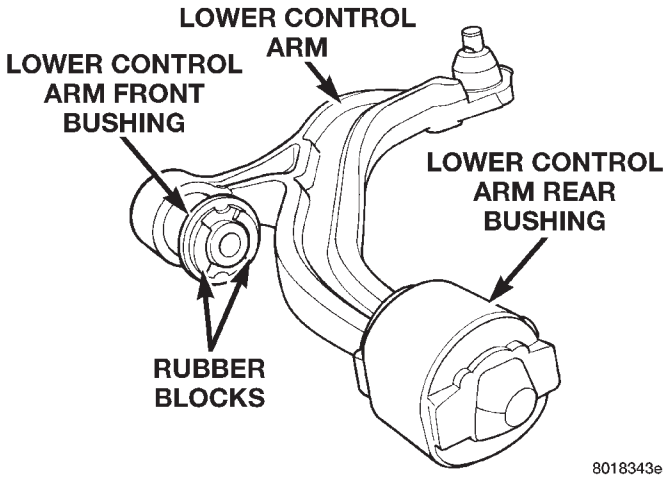


Fig. 83 Installation Position Of Lower Control Arm Front Bushing

(3) Assemble for installation of the front bushing, the Bushing Receiver, Special Tool 6908–5, Bushing Installer, Special Tool 6908–4, Nut, Special Tool 6908–3 thrust washer, threaded rod and small nut, as shown in (Fig. 84) on the lower control arm and front bushing.

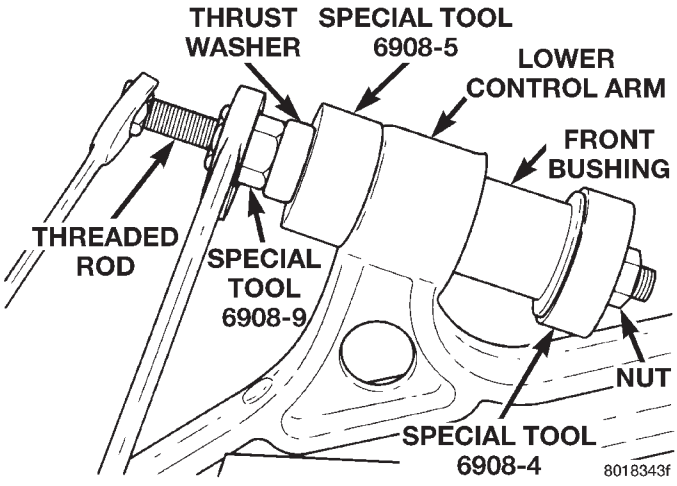


Fig. 84 Tools Assembled For Installation Of Front Bushing

(4) To install the front bushing in lower control arm, hold the threaded rod stationary and tighten

DISASSEMBLY AND ASSEMBLY (Continued)

the Nut, Special Tool 6908–3 (Fig. 84). This will pull the front bushing into the lower control arm.

(5) Continue pulling the bushing into the lower control arm until bushing is seated squarely against the lower control arm and there is no gap between the bushing and the lower control arm (Fig. 85).

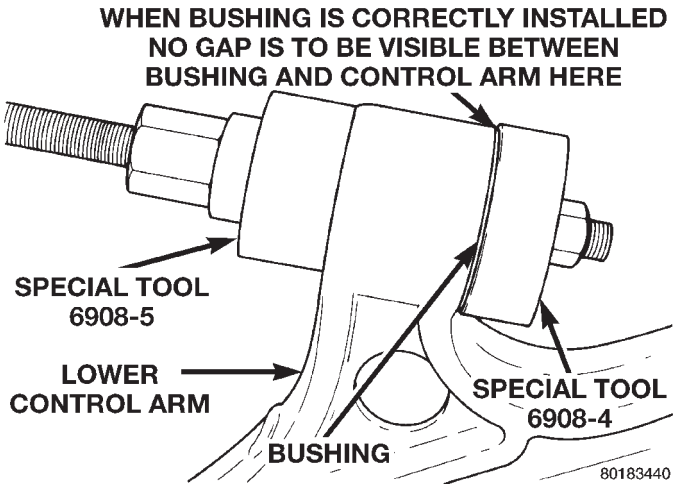


Fig. 85 Correctly Installed Lower Control Arm Bushing

(6) Install the lower control arm on the front suspension cradle. Refer to Lower Control Arm in the Removal And Installation Section in this group of the service manual for the required procedure.

LOWER CONTROL ARM REAR BUSHING

REMOVE

(1) Remove the lower control arm from the front suspension cradle. Refer to Lower Control Arm in the Removal And Installation Section in this group of the service manual for the required procedure.

(2) Mount the lower control arm in a vise **without** using excessive clamping force.

(3) Using a sharp knife, (such as a razor) slit the bushing lengthwise (Fig. 86) to allow its removal from the lower control arm (Fig. 86).

(4) Remove the bushing from the lower control arm.

INSTALL

CAUTION: Do not apply grease or any other type of lubricant other than the silicone lubricant specified below to the control arm bushing.

(1) Apply Mopar Silicone Spray Lube or an equivalent, to the hole in lower control arm rear bushing. This will aid in the installation of the bushing on the lower control arm.

(2) With the lower control arm held securely in a vise, install bushing on lower control arm. Install

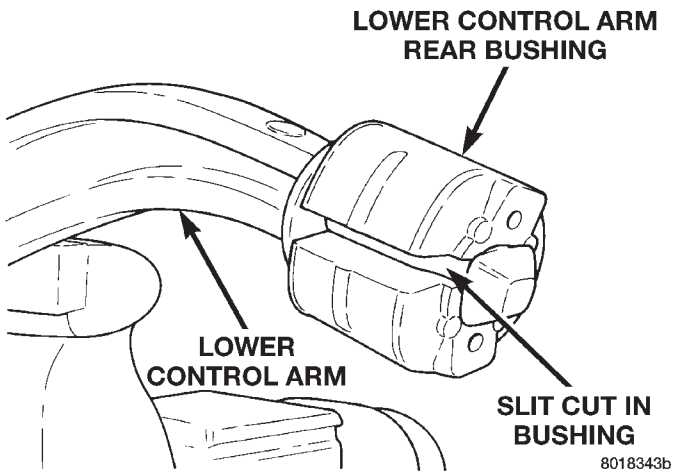


Fig. 86 Slit Lower Control Arm Rear Bushing

bushing by pushing and rocking the bushing until it is fully installed on lower control arm. Be sure when bushing is installed it is past the upset on the end of the lower control arm (Fig. 87).

(3) The rear bushing of the lower control arm, when correctly installed, is to be positioned on the lower control arm as shown in (Fig. 87).

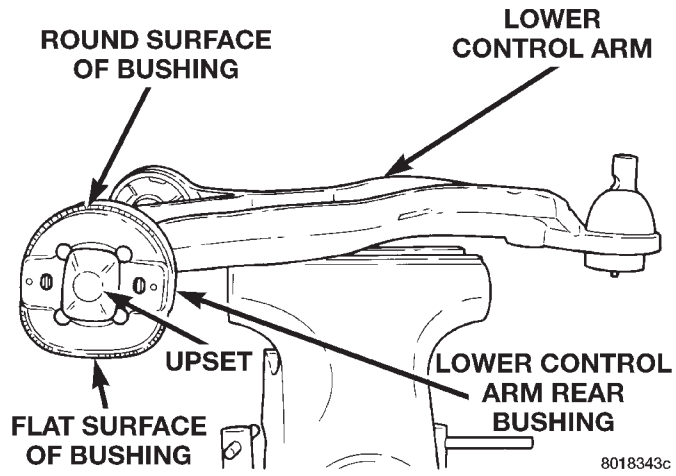


Fig. 87 Correctly Installed Lower Control Arm Bushing

STABILIZER BAR BUSHING

Disassembly/Assembly

(1) If stabilizer bar to front suspension cradle bushings require replacement at time of inspection, install new bushings before installing stabilizer bar. Stabilizer bar bushings are replaced by opening the slit on the bushings and peeling them off the stabilizer bar. Install new bushings on stabilizer bar, by spreading bushing at slit and forcing them on stabilizer bar.

DISASSEMBLY AND ASSEMBLY (Continued)

NOTE: Bushings must be installed on stabilizer bar so the square corner of the bushing will be down and slit in bushing will be facing the rear of the vehicle when the stabilizer is installed (Fig. 88).

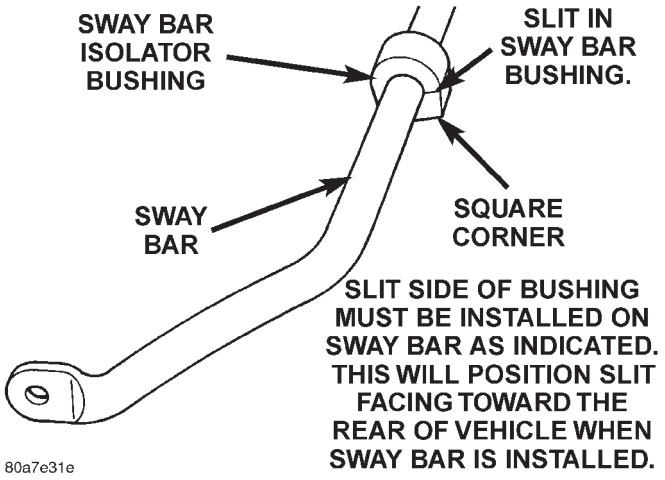


Fig. 88 Correctly Installed Stabilizer Bar To Cradle Bushing

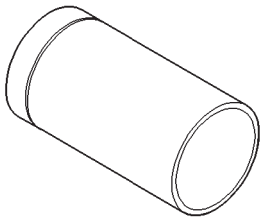
SPECIFICATIONS

FRONT SUSPENSION FASTENER TORQUES

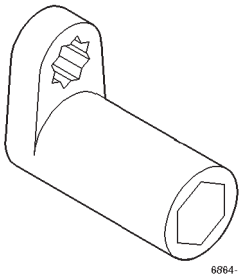
DESCRIPTION	TORQUE
McPHERSON STRUT:	
To Strut Tower	
Attaching Nuts	28 N·m (250 in. lbs.)
Clevis Bracket To Steering	
Knuckle	88 N·m (65 ft. lbs.) Plus 1/4 Additional Turn
Strut Shaft Nut	100 N·m (75 ft. lbs.)
STEERING KNUCKLE:	
Ball Joint Stud To Steering	
Knuckle Nut/Bolt	136 N·m (100 ft. lbs.)
Disc Brake Caliper Bolts	22 N·m (16 ft. lbs.)
Wheel Stop	95 N·m (70 ft. lbs.)
STEERING GEAR:	
To Suspension Cradle	
Attaching Bolts	183 N·m (135 ft. lbs.)
Tie Rod End Adjusting	
Sleeve Nut	75 N·m (55 ft. lbs.)
Tie Rod End To Steering	
Knuckle Nut	61 N·m (45 ft. lbs.)
FRONT SUSPENSION CRADLE:	
To Body Attaching Bolts	163 N·m (120 ft. lbs.)
Lower Control Arm	
Pivot Bolt	185 N·m (137 ft. lbs.)
Lower Control Arm Rear	
Bushing Retainer Bolt	68 N·m (50 ft. lbs.)
Reinforcement Plate	
Attaching Bolts M-12	108 N·m (80 ft. lbs.)
Reinforcement Plate	
Attaching Bolts M-14	166 N·m (123 ft. lbs.)
STABILIZER BAR:	
Bushing Retainer ToSuspension	
Cradle Attaching Bolts	70 N·m (50 ft. lbs.)
Attaching Link Nuts	88 N·m (65 ft. lbs.)
HUB AND BEARING:	
To Steering Knuckle Bolts	110 N·m (80 ft. lbs.)
Front Stub Axle To Hub	
Bearing Nut	183 N·m (135 ft. lbs.)
Wheel Mounting	
Lug Nut	110-135 N·m (85-115 ft. lbs.)

SPECIAL TOOLS

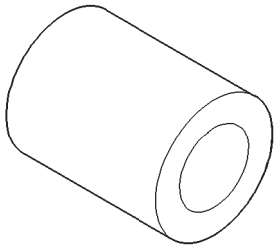
FRONT SUSPENSION



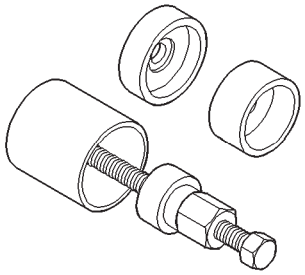
Installer Ball Joint 6758



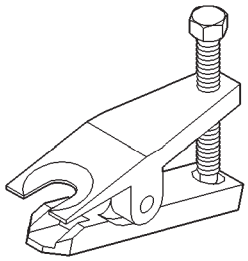
Wrench Strut Rod Nut 6864



Remover Ball Joint 6919



Remover/Installer Control Arm Bushing 6908



Remover Tie Rod End MB–991113

REAR SUSPENSION

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GENERAL INFORMATION

REAR SUSPENSION

The rear suspension design on this vehicle uses leaf springs and a tube and casting axle (Fig. 1) and (Fig. 2). It is designed to handle the various load requirements of the vehicle. The leaf springs used on the rear suspension of this vehicle are of either a mono-leaf or multi-leaf design.

The rear axle used on front wheel drive applications of this vehicle is mounted to the rear leaf springs using isolator bushings at the axle mounting brackets.

The rear axle used on all wheel drive applications of this vehicle is also mounted to the rear leaf springs but does not use isolator bushings between the rear axle and the leaf springs.

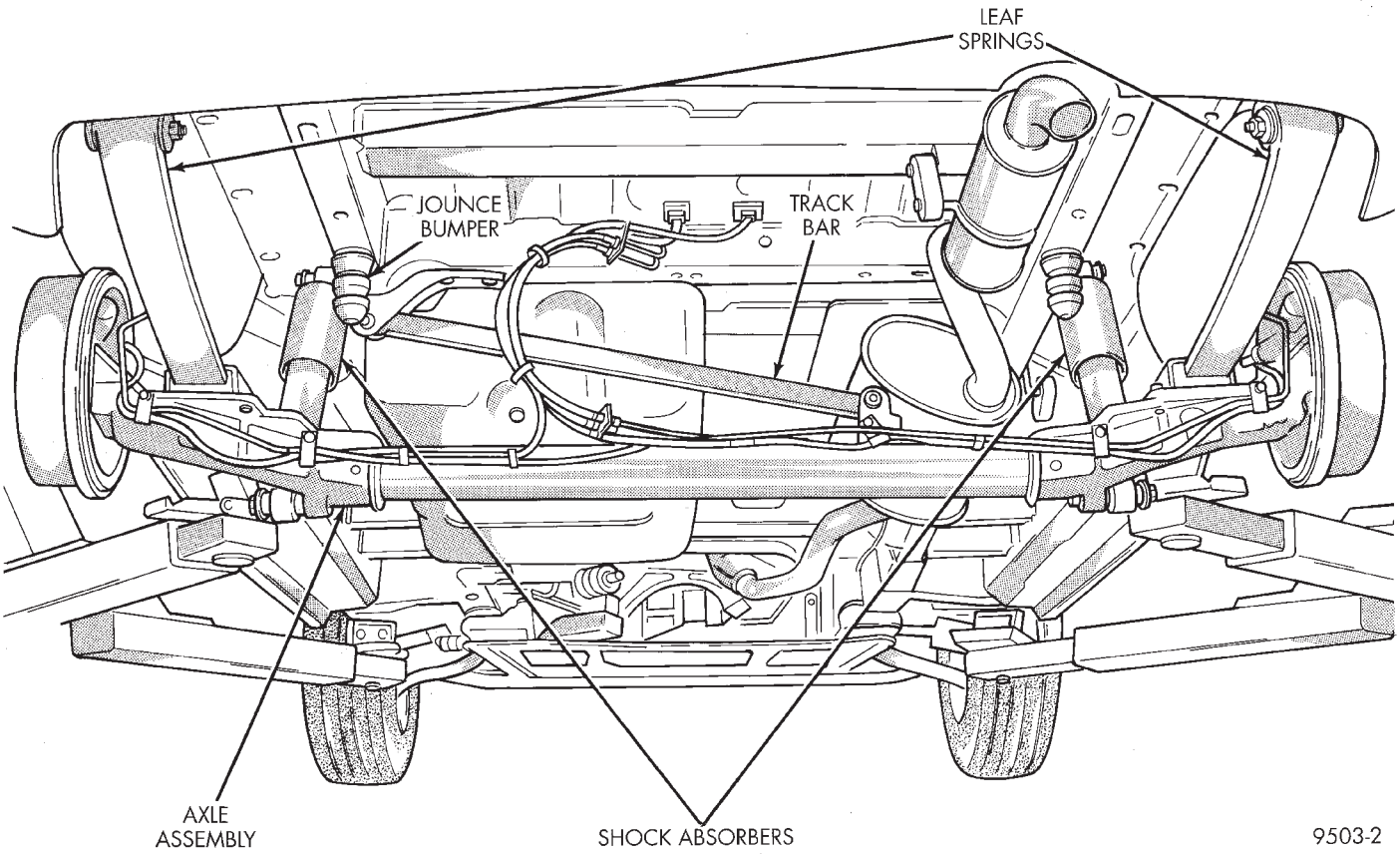

Fig. 1 Front Wheel Drive Rear Suspension

GENERAL INFORMATION (Continued)

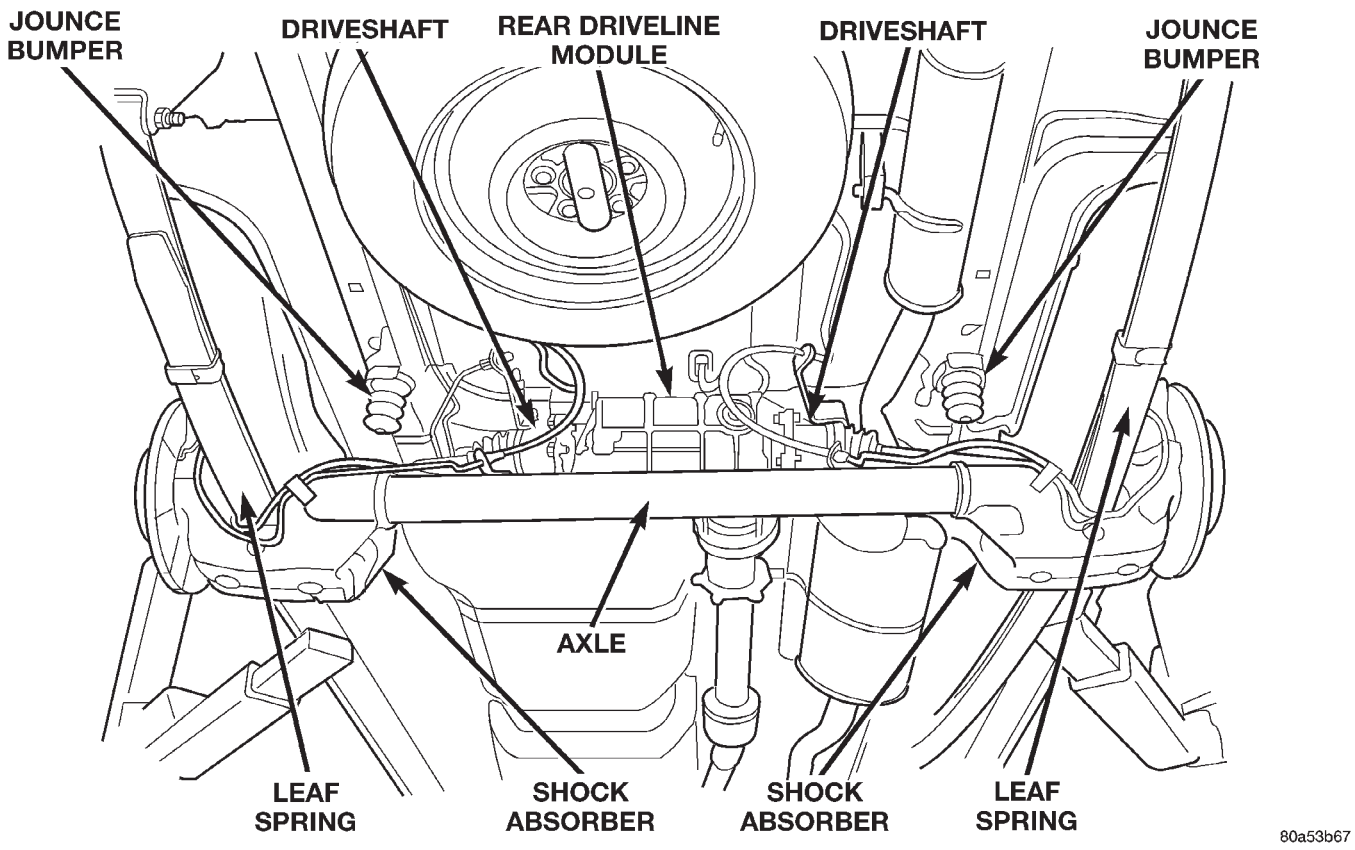

Fig. 2 All Wheel Drive Rear Suspension

The rear suspension used on the front wheel drive commercial version of this vehicle is unique to this application. The rear axle is mounted to the rear leaf springs as on the non-commercial application of this vehicle but does not use any isolators between the spring and the axle. The leaf spring used on the commercial version of this vehicle is a multi-leaf spring but is a unique design for the commercial application.

The rear leaf spring shackle angles provide increasing suspension rates as the vehicle is loaded. This provides a comfortable unloaded ride and also ample rear suspension travel when the vehicle is loaded.

A new type of load-leveling shock is available. The self leveling shock absorbers are a self-contained vehicle leveling system and shock absorber combined. The shock absorbers are mounted at an angle, parallel to the springs and forward at the top. This design provides greater stability in addition to controlling ride motion.

The rear wheel bearings used are similar to the bearings used in the front wheels. The bearings are permanently sealed and require no maintenance. The bearing and hub are serviced as an assembly. For service procedures, refer to Group 5, Brakes.

DESCRIPTION AND OPERATION

REAR WHEEL ALIGNMENT

Alignment adjustment is not required. The rear axle alignment settings are preset at the factory and therefore no alignment is necessary.

REAR TRACK BAR

On front wheel drive applications of this vehicle that are equipped with single leaf rear springs a track bar (Fig. 3) is used on the rear axle.

The track bar connects the rear axle to the frame/body of the vehicle. The track bar is isolated from the body of the vehicle by an isloator bushing located in each end of the track bar.

The track bar (Fig. 3) prevents excessive side to side movement of the rear axle. The track bar is used to keep the location of the axle in the correct position for optimum handling and control of the vehicle.

STABILIZER BAR

The stabilizer bar (Fig. 4) interconnects both sides of the rear axle and attaches to the rear frame rails using 2 rubber isolated link arms.

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

DESCRIPTION AND OPERATION (Continued)

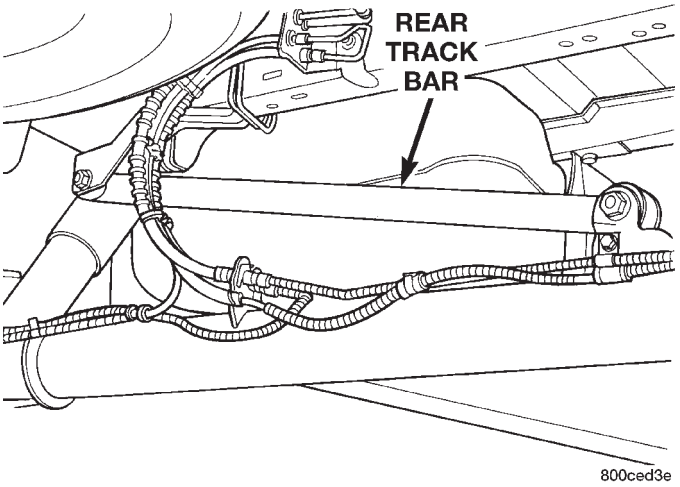

Fig. 3 Rear Track Bar

Attachment to the rear axle tube, and rear frame rails is through rubber-isolated bushings. All parts are serviceable, and the stabilizer bar to axle bushings are split for easy removal and installation. The split in the bushing should be positioned up when the stabilizer bar is installed on the vehicle.

The 2 rubber isolated link arms are connected to the rear frame rails by brackets. These brackets are bolted to the bottom of the frame rails.

SHOCK ABSORBERS (REAR LOAD LEVELING)

A new type of load-leveling shock is available. The self leveling shock absorbers are a self-contained vehicle leveling system and shock absorber combined. It does not require an external compressor, hoses, height leveling sensors, etc. It uses road inputs (bumps, stops, starts, turns, acceleration, deceleration, etc.) to activate pumping, which is just the extension and compression of the shock absorber. On the outside, it looks like a larger than normal shock absorber. Internally, it consists of a hydraulic pump and gas-spring cushion for leveling, as well as the normal shock absorbing mechanism. All the height leveling sensors, pump, etc., are contained inside the shocks. The shocks are mounted at an angle, parallel to the springs and forward at the top. This design provides greater stability in addition to controlling ride motion. These new load-leveling shock absorbers use longer fasteners than the standard shock absorbers, although the fasteners are longer, the torque specifications are the same.

REMOVAL AND INSTALLATION

REAR SPRINGS (FWD)

REMOVAL

(1) Raise vehicle on frame contact hoist to a comfortable working position.

(2) Support axle with a jack stand. Pad should just contact axle.

(3) Begin removal of the shock absorber lower mounting bolt (Fig. 5).

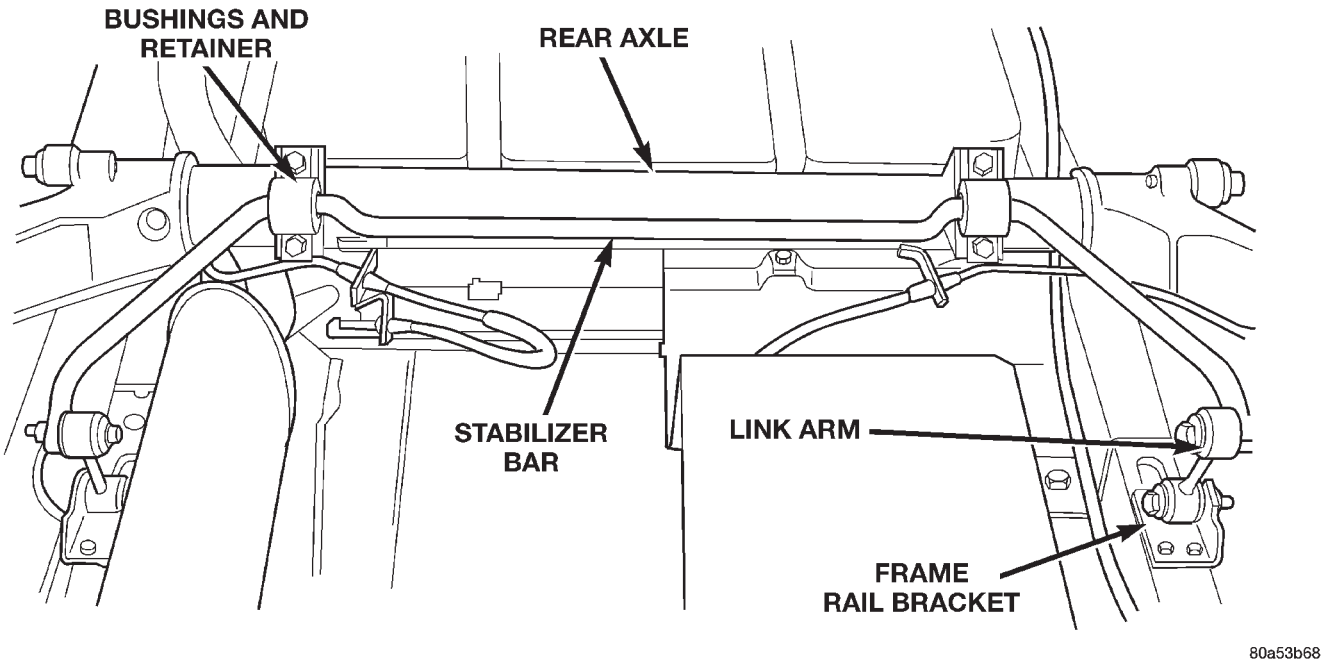

Fig. 4 Stabilizer Bar

REMOVAL AND INSTALLATION (Continued)

NOTE: If shock absorber bolt deflects upward during removal, raise axle by adjusting support jack. If shock absorber bolt deflects downward during removal, lower axle by adjusting support jack (or by pulling on axle).

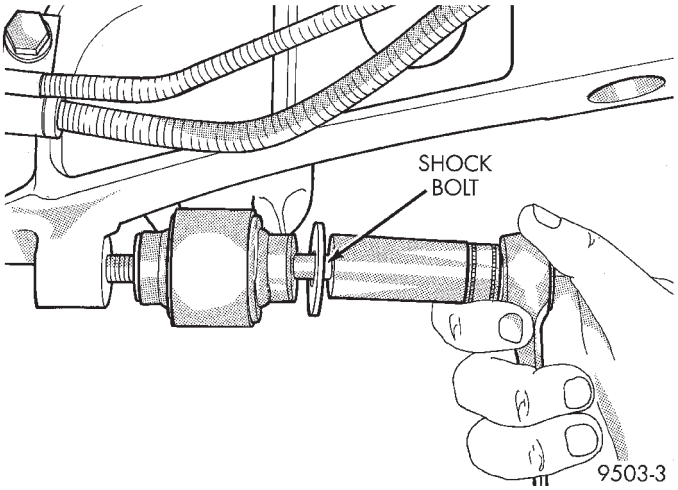

Fig. 5 Rear Shock Mounting Bolt

(4) Using 2 jack stands positioned under the outer ends of the axle, raise the axle enough to remove the weight of the axle from the rear springs.

(5) Loosen and remove the axle plate bolts from the rear axle (Fig. 6).

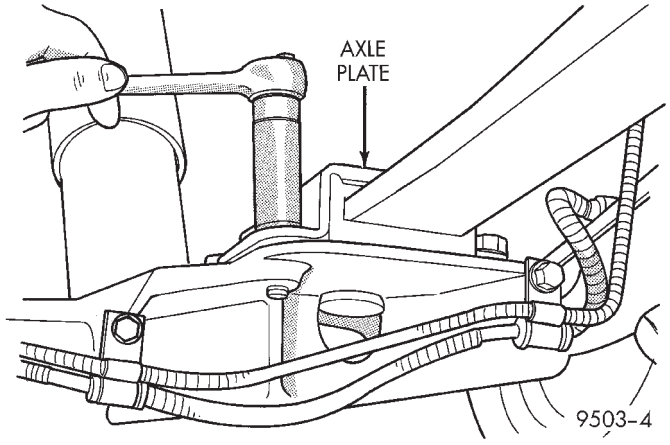

Fig. 6 Axle Plate Bolts

(6) Remove the axle plate from the rear axle and the leaf spring (Fig. 7).

(7) Using the jack stands **slowly** lower the rear axle, permitting the rear springs to hang free.

(8) Loosen and remove the 4 bolts (Fig. 8) from the front mount of the leaf spring.

(9) Loosen and remove the nuts from the spring hanger (Fig. 9) for the rear leaf spring. Then remove the hanger plate from the hanger and remove the spring from the spring hanger (Fig. 9).

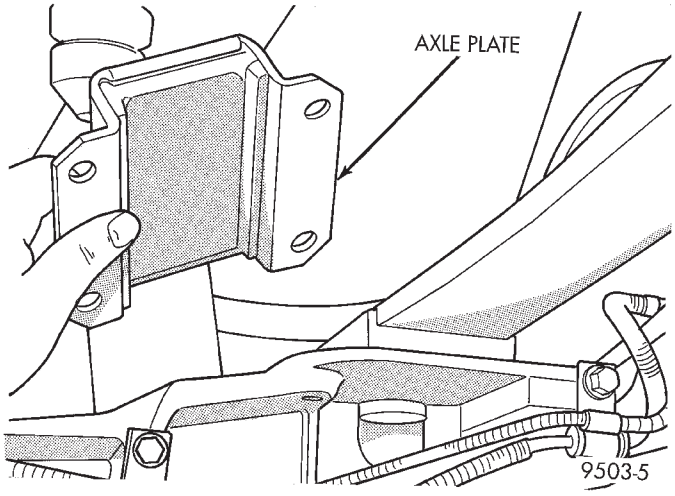

Fig. 7 Axle Plate

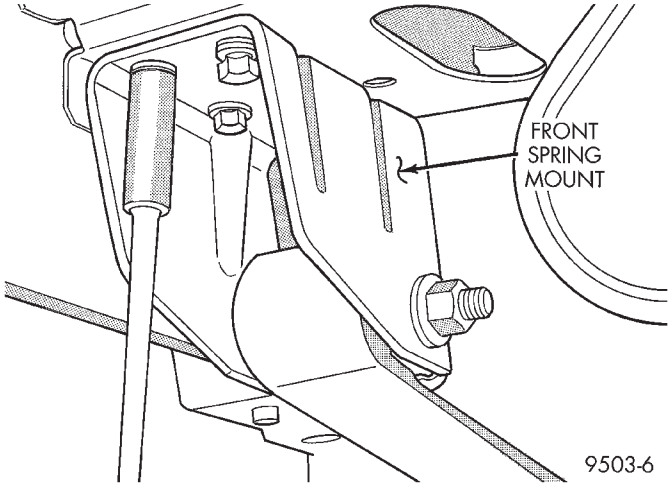

Fig. 8 Leaf Spring Front Mount

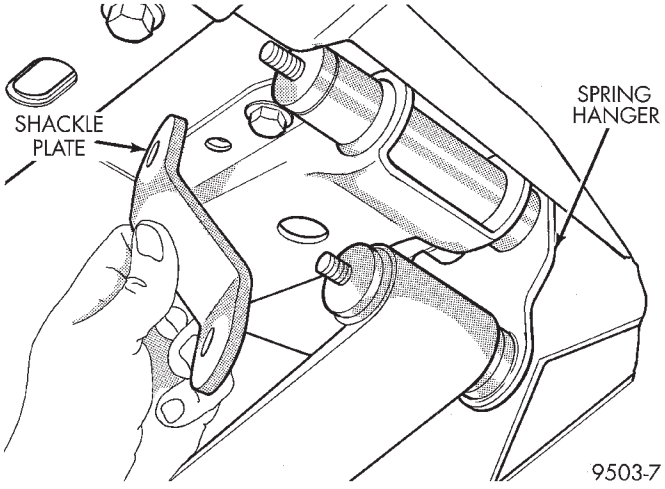

Fig. 9 Rear Spring Hanger

REMOVAL AND INSTALLATION (Continued)

(10) Remove the leaf spring from the vehicle (Fig. 10).

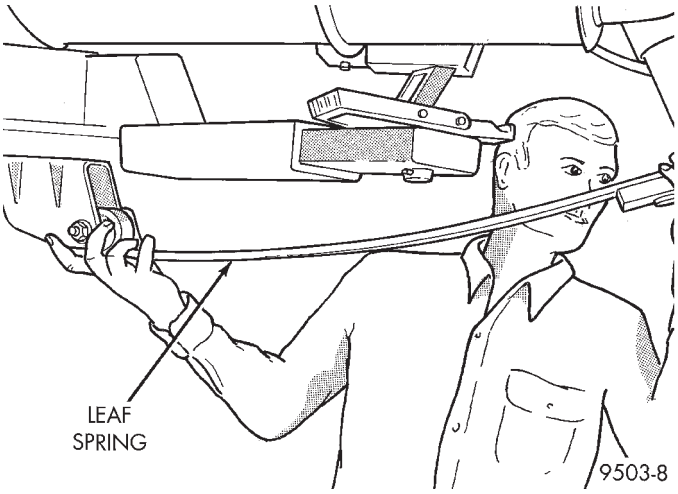

Fig. 10 Leaf Spring Remove/Install

(11) Loosen and remove the pivot bolt from the front mount of the rear leaf spring. (Fig. 11).

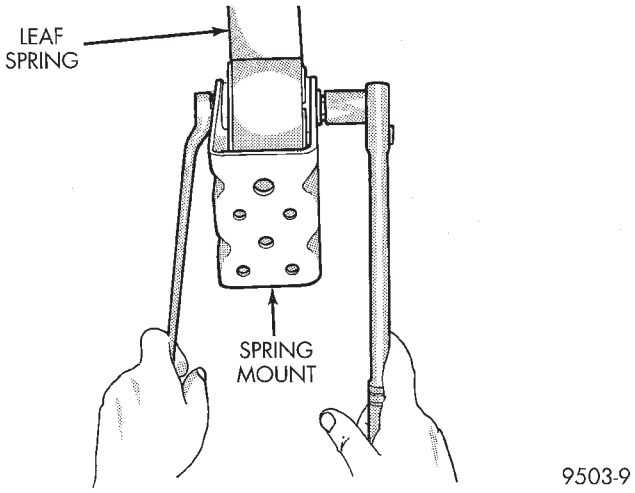

Fig. 11 Leaf Spring Front Mount

FRONT BUSHING REPLACEMENT

(1) Install leaf spring in a proper holding fixture.
(2) Install leaf spring press Special Tool C-4212–F.
(3) Install adapter Special Tool C-4212–3.
(4) Tighten leaf spring press until bushing is extracted from leaf spring.
(5) Remove leaf spring press from leaf spring.
(6) Insert replacement bushing into the leaf spring eye. **Verify that the bushing flange is on the left side of the leaf spring when leaf spring is in the in vehicle installed position.**
(7) Install leaf spring press Special Tool C-4212–F.
(8) Install adapter Special Tool C-4212–4.
(9) Tighten leaf spring press until bushing flange bottoms solidly against leaf spring eye.
(10) Remove leaf spring press and adapter.
(11) Bend the bushing tabs so that they are contacting the leaf spring.

INSTALLATION

(1) Assemble front spring mount to front of spring eye and install pivot bolt and nut. Do not tighten.

CAUTION: Pivot bolt must face inboard to prevent structural damage during installation of spring.

(2) Raise front of spring and install four hanger bolts, tighten to 61 N·m (45 ft. lbs.) torque.
(3) Install rear of spring onto rear spring shackle. Install shackle plate. Do not tighten.
(4) Verify lower leaf spring isolator is in position.
(5) Raise axle into correct position on leaf spring with axle centered under spring locator post (Fig. 12).

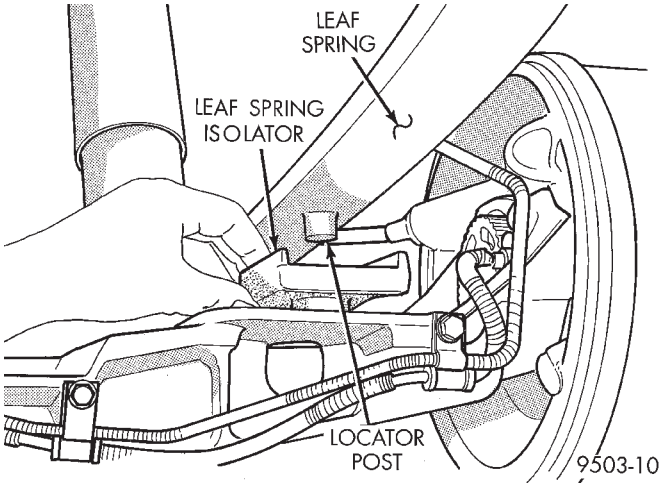

Fig. 12 Leaf Spring Locator Post

(6) Verify that the leaf spring isolator is correctly positioned in the axle plate.
(7) Install axle plate on the spring.
(8) Install axle plate bolts. Tighten bolts to 108 N·m (80 ft. lbs.) torque.
(9) Install shock absorber bolts. Do not tighten.
(10) Lower vehicle to floor so that the full weight of vehicle is supported by the tires.
(11) Tighten component fasteners as follows:
- Front pivot bolt—156 N·m (115 ft. lbs.)
- Shackle nuts—61 N·m (45 ft. lbs.)
- Shock absorber bolts—101 N·m (75 ft. lbs.)

(12) If the vehicle is not equipped with antilock brakes, raise vehicle and the connect the actuator for the height sensing proportioning valve on the rear leaf spring. Adjust the height sensing proportioning valve. Refer to the Adjustment Section in this group of the service manual for the required adjustment procedure.

REMOVAL AND INSTALLATION (Continued)

REAR SPRINGS (AWD)

REMOVE

(1) Raise vehicle on frame contact hoist to a comfortable working position.

(2) Remove the driveshaft from the side of the vehicle that requires the removal of the leaf spring. Refer to Group 3 Driveline in this service manual for the procedure covering the removal of the rear driveshafts.

(3) Support axle with a jack stand. Pad should just contact axle.

NOTE: If shock absorber bolt deflects upward during removal, raise axle by adjusting support jack. If shock absorber bolt deflects downward during removal, lower axle by adjusting support jack (or by pulling on axle).

(4) Begin removal of the shock absorber lower mounting bolt (Fig. 13).

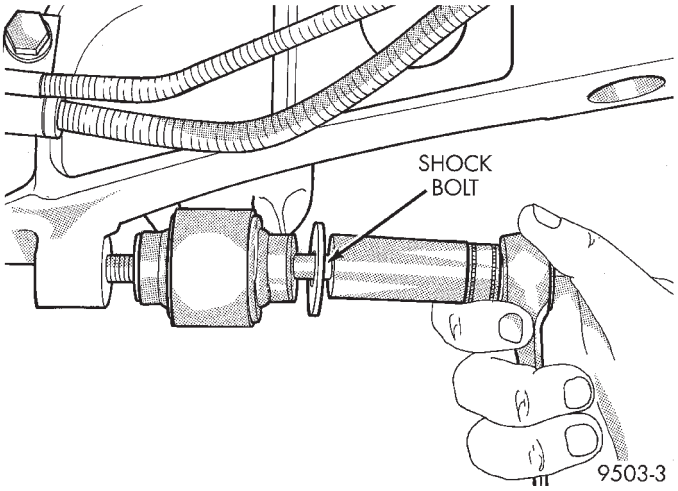

Fig. 13 Rear Shock Absorber Mounting Bolt

(5) Using 2 jack stands positioned under the outer ends of the axle, raise the axle enough to remove the weight of the axle from the rear springs.

(6) Loosen and remove the axle plate bolts from the rear axle (Fig. 14).

(7) Using the jack stands **slowly** lower the rear axle, permitting the rear springs to hang free.

(8) Loosen and remove the 4 bolts (Fig. 15) at the front mount of the rear leaf spring.

(9) Loosen and remove the 2 bolts and the 2 nuts from the spring hanger (Fig. 16) for the rear leaf spring. Then remove the inner half of the spring hanger from the outer half hanger of the spring hanger and the spring. (Fig. 16).

(10) Remove the rear leaf spring from the outer half of the spring hanger

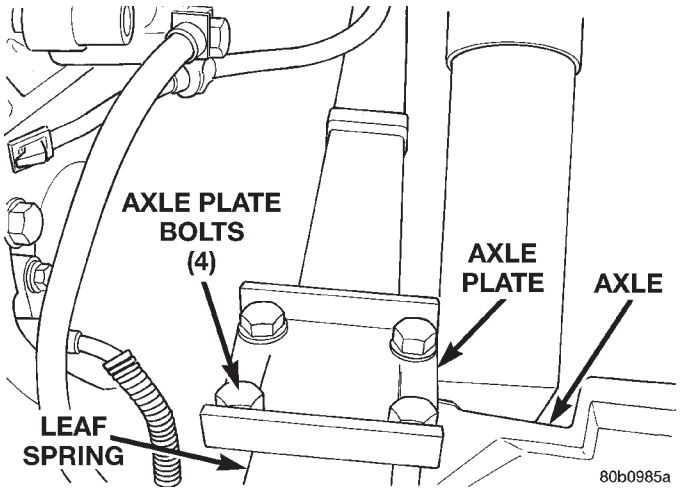

Fig. 14 Axle Plate Bolts

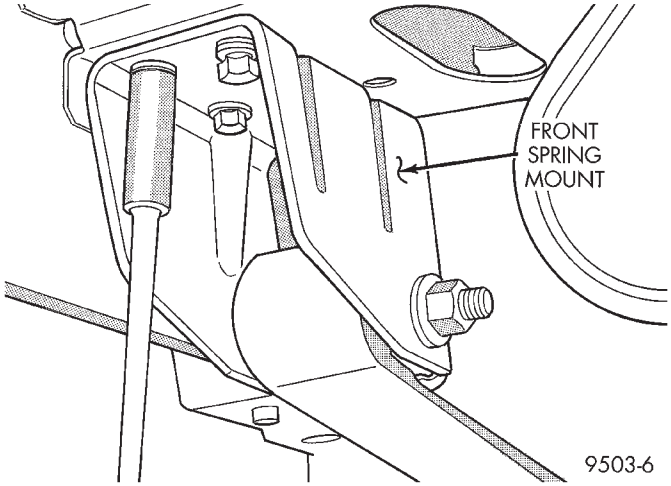

Fig. 15 Leaf Spring Front Mount

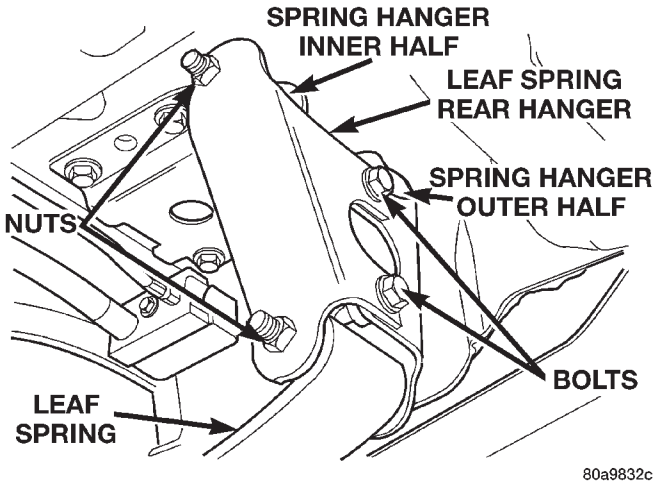

Fig. 16 Rear Spring Hanger

REMOVAL AND INSTALLATION (Continued)

(11) Remove the leaf spring from the vehicle (Fig. 17).

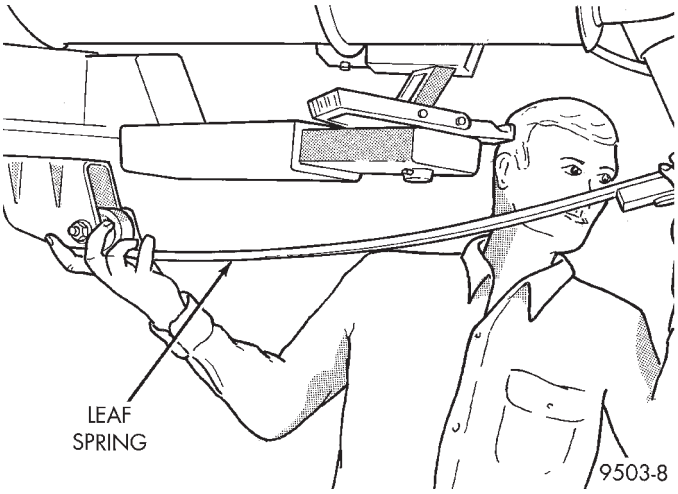

Fig. 17 Leaf Spring Remove/Install

(12) Loosen and remove the pivot bolt from the front mount of the rear leaf spring. (Fig. 18).

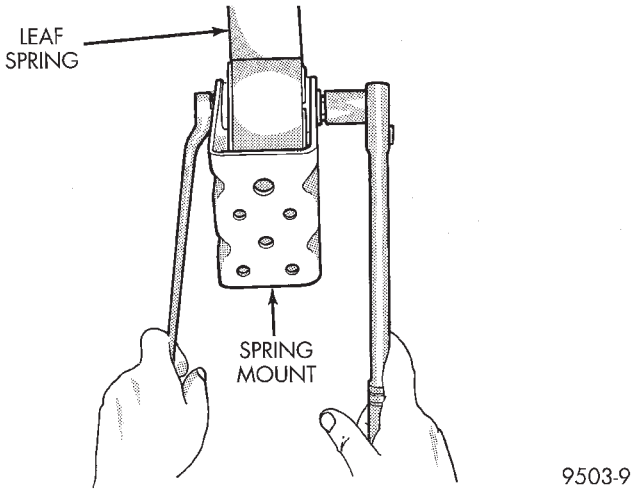

Fig. 18 Leaf Spring Front Mount

FRONT BUSHING REPLACEMENT

(1) Install leaf spring in a proper holding fixture.
(2) Install leaf spring press Special Tool C-4212–F.
(3) Install adapter Special Tool C-4212–3.
(4) Tighten leaf spring press until bushing is extracted from leaf spring.
(5) Remove leaf spring press from leaf spring.
(6) Insert replacement bushing into the leaf spring eye. Verify that the bushing flange is on the outboard side of the leaf spring.
(7) Install leaf spring press Special Tool C-4212–F.
(8) Install adapter Special Tool C-4212–4.
(9) Tighten leaf spring press until bushing flange bottoms solidly against leaf spring eye.
(10) Remove leaf spring press and adapter.
(11) Bend the tabs on the bushing until they are contacting the leaf spring.

INSTALL

CAUTION: Pivot bolt must face inboard to prevent structural damage during installation of spring.

(1) Install the front of the rear leaf spring into the spring mount (Fig. 18). Install the pivot bolt and nut. **Do not tighten the pivot bolt at this time.**
(2) Position the front spring mount for the rear leaf spring against the floor pan of the vehicle. Install the 4 mounting bolts for the spring mount. Tighten the 4 mounting bolts to a torque of 61 N·m (45 ft. lbs.).
(3) Install the rear of the leaf spring onto the outer half of the rear hanger. Install the inner half of the rear hanger. Install the nut and bolts on the rear hanger **but do not tighten at this time.**
(4) Raise axle assembly into correct position with axle centered under spring locator post.
(5) Install axle plate bolts. Tighten bolts to 108 N·m (80 ft. lbs.) torque.
(6) Install shock absorber bolts. Do not tighten.
(7) Lower vehicle to floor and with full weight of vehicle on wheels. Tighten component fasteners as follows:

CAUTION: The following sequence must be followed when tightening the pin nuts on the rear hanger for the rear leaf spring. First the hanger pin nuts must be tightened to the specified torque shown below. Then tighten the retaining bolts for the inner to outer half of the spring hanger to the torque specification listed below. This sequence must be followed to properly seat the bushings into the springs and to avoid bending the spring hanger.

- Front pivot bolt-156 N·m (115 ft. lbs.)
- Rear spring hanger pin nuts-61 N·m (45 ft. lbs.)
- Rear spring hanger inner to outer half retaining bolts-61 N·m (45 ft. lbs.)
- Shock absorber upper mounting bolt-115 N·m (85 ft. lbs.)
- Shock absorber lower mounting bolt-108 N·m (80 ft. lbs.)

(8) If the vehicle is not equipped with antilock brakes, raise vehicle and connect the actuator for the height sensing proportioning valve on the rear leaf spring. Adjust the height sensing proportioning valve. Refer to the Adjustment Section in this group of the service manual for the required adjustment procedure.

REMOVAL AND INSTALLATION (Continued)

SHOCK ABSORBER

REMOVE/INSTALL

(1) Raise vehicle. Vehicle is to be raised and supported on jackstands or on a frame contact type hoist. See Hoisting in the Lubrication And Maintenance section of this service manual.

(2) Support the rear axle of the vehicle using 2 jackstands positioned at the outer ends of the axle.

NOTE: If the shock absorber lower mounting bolt deflects upward during removal, raise axle by adjusting the support jack. If the lower shock absorber bolt deflects downward during removal, lower the axle by adjusting the support jack.

(3) Remove the shock absorber lower mounting bolt.

(4) While holding shock absorber, remove the shock absorber upper mounting bolt.

(5) To install the shock absorber use the reverse sequence of its removal.

(6) Lower the vehicle to the ground so the full weight of the vehicle is supported by the suspension.

(7) Tighten the upper and lower shock absorber mounting bolt to their specified torques.

REAR TRACK BAR

REMOVE

(1) Remove the nut and bolt mounting the track bar to the rear axle (Fig. 19).

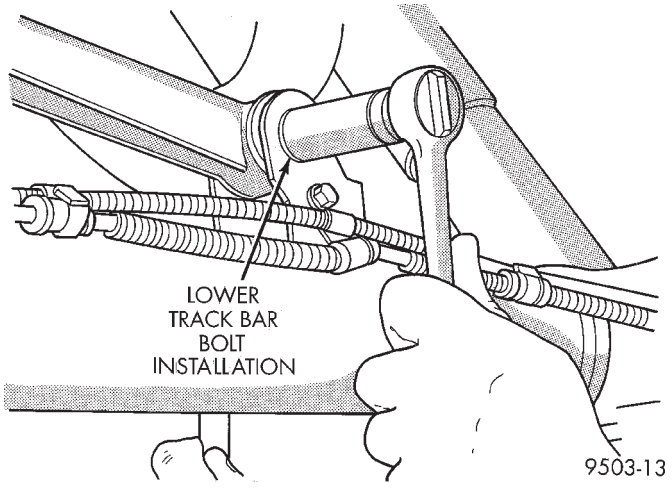

Fig. 19 Track Bar Mounting To Axle

(2) Remove the nut and bolt attaching the track bar to the track bar mount on the body of the vehicle. Remove the track bar from the track bar mount.

INSTALL

(1) Install the track bar first into the body mount for the track bar (Fig. 20). Install the track bar bolt with the head of the bolt facing toward the rear of the vehicle (Fig. 21). Do not tighten.

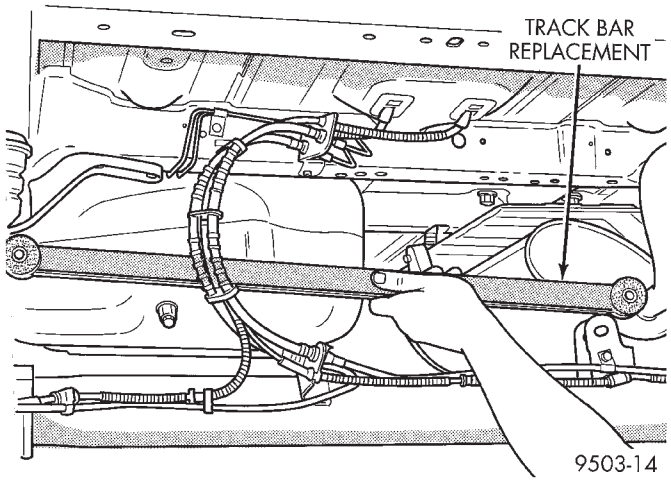

Fig. 20 Track Bar Installation

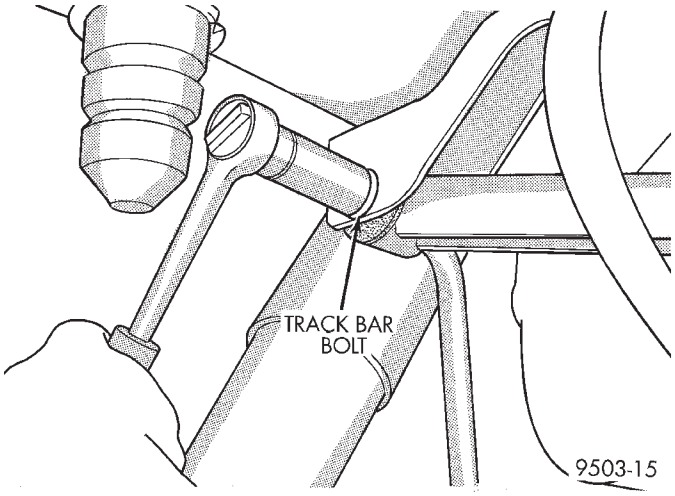

Fig. 21 Track Bar Bolt Installation

(2) Install the track bar into its mounting bracket on the rear axle (Fig. 19). Install the track bar bolt with the head of the bolt facing toward the rear of the vehicle. Do not tighten.

(3) Lower the vehicle to the ground until the full weight of the vehicle is supported by the wheels. Tighten both track bar attaching bolts to a torque of 95 N·m (70 ft. lbs.).

TRACK BAR MOUNT

REMOVE

(1) Remove the track bar from the track bar mount.

(2) Remove the three bolts attaching the track bar mount to the body (Fig. 22).

REMOVAL AND INSTALLATION (Continued)

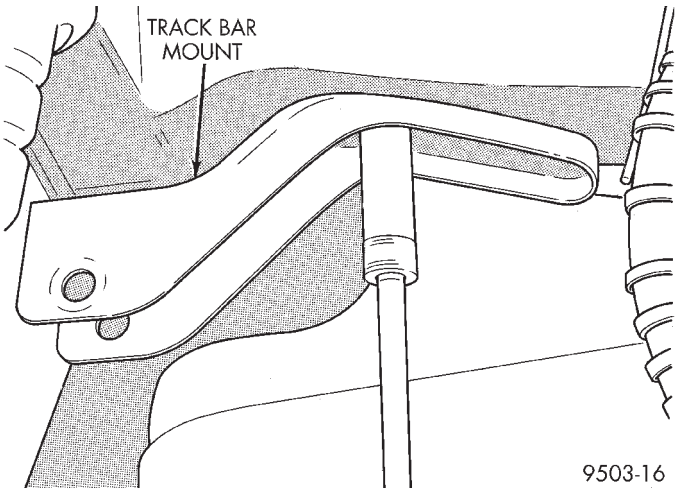

Fig. 22 Track Bar Mount

INSTALLATION

(1) For installation, reverse removal procedure. Tighten bolts to 61 N·m (45 ft. lbs.).

STABILIZER BAR

REMOVAL

(1) Raise vehicle. Vehicle is to be raised and supported on jack stands or on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this service manual.

(2) Remove the 2 lower bolts which hold the stabilizer bar to the link arm on each side of the vehicle.

(3) Loosen but do not fully remove the four bolts that attach the stabilizer bar bushing retainers to the rear axle brackets.

(4) While holding the stabilizer bar in place. Fully remove the 4 bolts loosened in step 3.

(5) Remove the stabilizer bar from the vehicle.

(6) If the link arms need to be serviced, remove the upper link arm to bracket bolt. Then remove link arm from frame rail attaching bracket.

INSPECTION

Inspect for broken or distorted clamps, retainers, and bushings. If bushing replacement is required, the stabilizer bar to axle bushings can be removed from the stabilizer bar by opening the split.

INSTALLATION

(1) Install the link arms onto the frame rail brackets. DO NOT TIGHTEN.

(2) Position the axle to stabilizer bar bushings on the stabilizer bar with the slit in the bushings facing up.

(3) Lift the stabilizer bar onto the rear axle and install the retainers and the four mounting bolts. DO NOT TIGHTEN.

(4) Install the two lower link arm bolts on the stabilizer bar. DO NOT TIGHTEN.

(5) Lower the vehicle so that the full weight of the vehicle is on all four tires. With the vehicle at its curb height, tighten all attaching bolts to the torques listed below.

- Stabilizer bar bushing to axle bracket bolts 61 N·m (45 ft. lbs.)
- Link arm to frame rail bracket 61 N·m (45 ft. lbs.)
- Stabilizer bar to link arm 61 N·m (45 ft. lbs.)
- Frame rail bracket to frame rail 61 N·m (45 ft. lbs.)

JOUNCE BUMPER

There are two types of jounce bumpers available depending on which suspension option the vehicle is equipped with.

REMOVAL-STANDARD

The jounce bumper is serviced as an assembly. The jounce bumper mounts to the frame rail at a weld nut located on the frame rail (Fig. 23).

(1) Using the proper tool, remove the bolt attaching the jounce bumper to frame rail.

(2) Remove the jounce bumper from the frame rail.

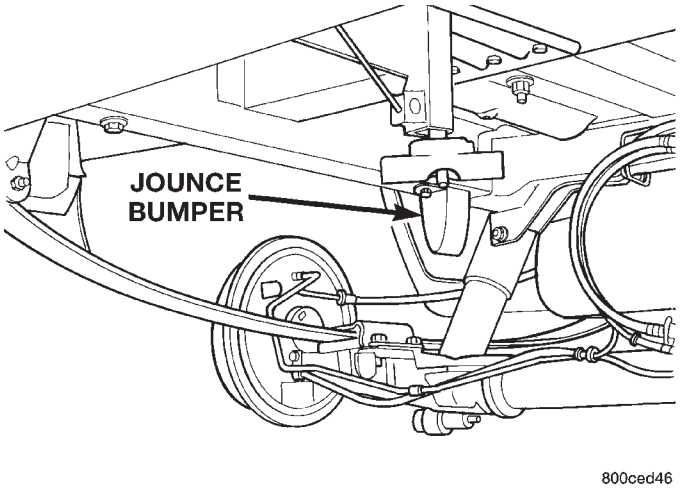

Fig. 23 Jounce Bumper-Standard

INSTALLATION-STANDARD

(1) For installation, reverse the removal procedure. Tighten the jounce bumper mounting bolt to a torque of 33 N·m (290 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

REMOVAL-HEAVY DUTY

The jounce bumpers are serviced as an assembly. The jounce bumpers screw into a weld nut located in the frame rail (Fig. 24).

(1) Using slip-joint pliers grasp the base of the jounce bumper. Turn the base counterclockwise (Fig. 25).

(2) Remove the jounce bumper from the frame rail.

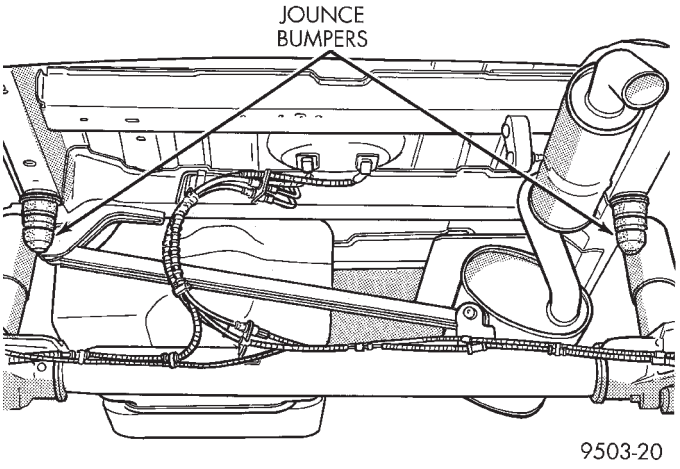

Fig. 24 Jounce Bumper-Heavy Duty

INSTALLATION-HEAVY DUTY

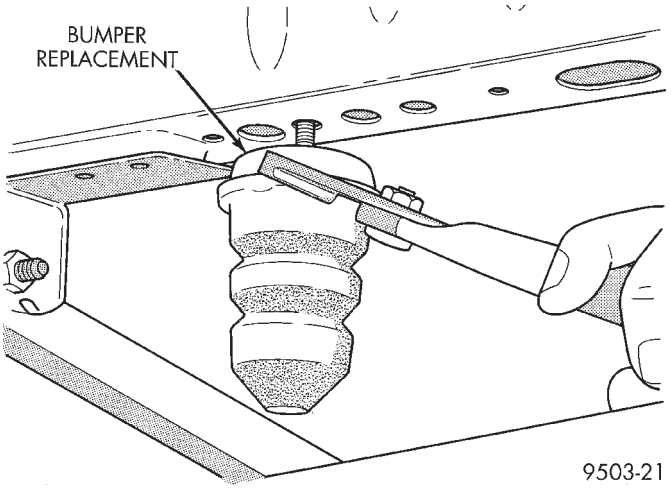

Fig. 25 Bumper Replacement

(1) For installation, reverse the removal procedure. Tighten the jounce bumper to a torque of 33 N·m (290 in. lbs.).

LEAF SPRING FRONT MOUNT

REMOVE

(1) Loosen the pivot bolt attaching the front of the leaf spring to the spring mount (Fig. 26).

(2) Install a jackstand under the side of the axle having the leaf spring mount removed. Using the jackstand support the weight of the axle and leaf spring.

(3) Remove the lower mounting bolt from the shock absorber.

(4) Remove the bolts attaching the leaf spring front mount (Fig. 26) to the body of the vehicle.

(5) Lower the leaf spring and remove the front mount from the spring.

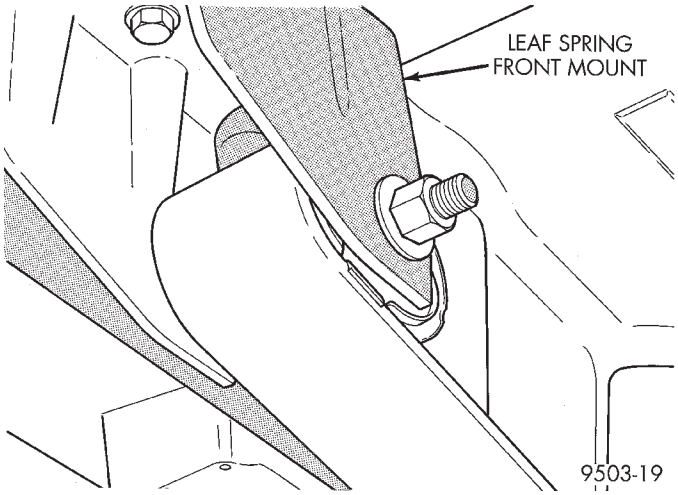

Fig. 26 Leaf Spring Front Mount

INSTALLATION

(1) For installation, reverse removal procedure. Do not tighten front through bolt fully until vehicle is lowered and the full vehicle weight is applied to the rear wheels. Tighten leaf spring front mount bolts to 61 N·m (45 ft. lbs.). Tighten leaf spring front through bolt to 156 N·m (115 ft. lbs.).

LEAF SPRING REAR MOUNT

REMOVE

(1) Remove the attaching nuts and bolts from the leaf spring rear shackle (Fig. 27) and (Fig. 28).

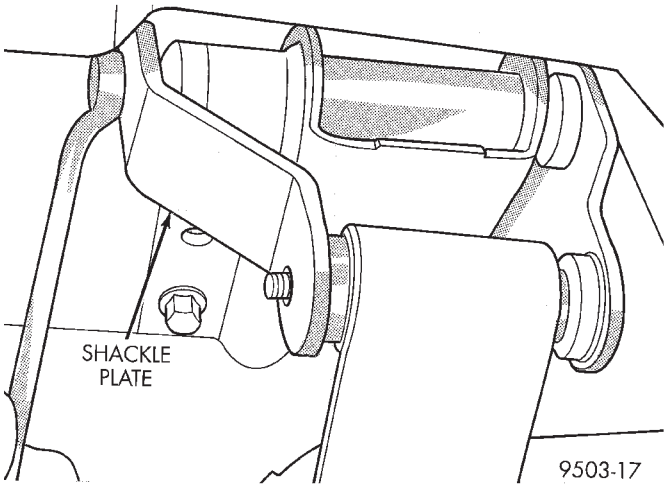

Fig. 27 Leaf Spring Shackle Nuts (FWD)

REMOVAL AND INSTALLATION (Continued)

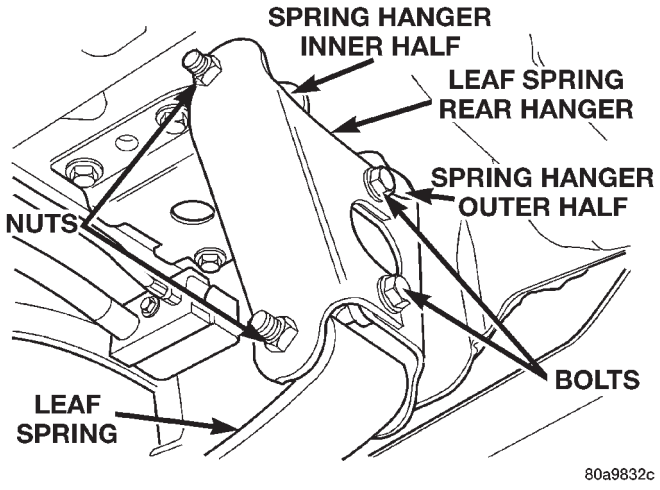

Fig. 28 Leaf Spring Shackle Nuts/Bolts (AWD)

(2) Install a jackstand under the side of the axle having the leaf spring mount removed. Using the jackstand, support the weight of the axle and leaf spring.

(3) Remove the lower mounting bolt from the shock absorber.

(4) Remove the bolts attaching the leaf spring rear mount to the body of the vehicle (Fig. 29).

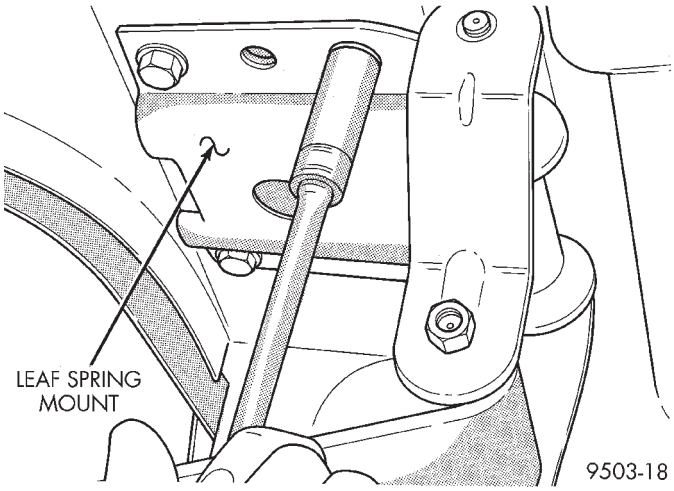

Fig. 29 Rear Spring Mount

(5) Lower the jackstand and the rear of the leaf spring. Remove the shackle from the leaf spring bushing.

INSTALL

CAUTION: The following sequence must be followed when tightening the pin nuts on the rear hanger for the rear leaf spring. First the hanger pin nuts must be tightened to the specified torque. Then tighten the retaining bolts for the inner to outer half of the spring hanger to the specified torque. This sequence must be followed to avoid bending the spring hanger.

(1) For installation, reverse removal procedure. Do not tighten rear spring shackle nuts fully until vehicle is lowered and the full vehicle weight is applied to the rear wheels. Tighten rear spring mount bolts to 61 N·m (45 ft. lbs.). Tighten shackle nuts to 61 N·m (45 ft. lbs.).

SPECIFICATIONS

REAR SUSPENSION FASTENER TORQUES

DESCRIPTION	TORQUE
SHOCK ABSORBER MOUNTING BOLTS:	
Standard Shock Absorber	101 N·m (75 ft. lbs.)
Self Load Leveling Shock Absorber	101 N·m (75 ft. lbs.)
JOUNCE BUMPER:	
To Frame Rail	33 N·m (290 in. lbs.)
TRACK BAR:	
To Axle And Mounting Bracket Pivot Bolt	95 N·m (70 ft. lbs.)
Bracket To Body Attaching	61 N·m (45 ft. lbs.)
LEAF SPRING:	
Spring Plate To Axle Attaching Bolts	108 N·m (80 ft. lbs.)
Rear Mount To Body Bolts	61 N·m (45 ft. lbs.)
Front Mount To Body Bolts	61 N·m (45 ft. lbs.)
To Front Hanger Mounting Nut	156 N·m (115 ft. lbs.)
Shackle Plate Nuts	61 N·m (45 ft. lbs.)
STABILIZER BAR:	
Bushing Retainer To Axle Attaching Bolts	61 N·m (45 ft. lbs.)
Attaching Link Nuts	61 N·m (45 ft. lbs.)
Frame Rail Bracket Mounting Bolts	61 N·m (45 ft. lbs.)
Link Arm To Frame Rail Bracket	61 N·m (45 ft. lbs.)
HUB AND BEARING:	
To Axle Mounting Bolts	129 N·m (95 ft. lbs.)
Stub Axle Nut	224 N·m (180 ft. lbs.)
Wheel Mounting Lug Nut	110-135 N·m (85-115 ft. lbs.)