

SUSPENSION

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WHEEL ALIGNMENT

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DESCRIPTION AND OPERATION

WHEEL ALIGNMENT

DESCRIPTION

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

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

Typical wheel alignment angles and measurements are camber, caster, toe, and thrust angle.

- Camber is the number of degrees the top of the tire and wheel are tilted either inward or outward (Fig. 1). Camber is a tire wearing angle. Excessive negative camber will cause tread wear at the inside of the tire, while excessive positive camber will cause outside tire wear.

- Caster is the number of degrees of forward or rearward tilt of the steering knuckle (Fig. 2). Forward tilt provides a negative caster angle, while rear-

ward tilt provides a positive caster angle. Caster is not adjustable on this vehicle.

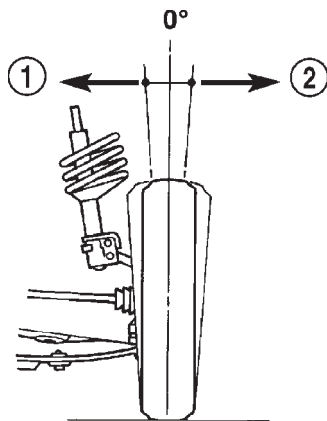
- Cross Camber is the difference between left and right camber. To achieve the cross camber reading, subtract the right side camber reading from the left. For example, if the left camber is +0.3° and the right camber is 0.0°, the cross camber would be +0.3°.

- Toe is measured in degrees or inches and is the difference in width between the centered leading and trailing edges of the tires on the same axle (Fig. 3). Toe-in means that the front width is more narrow than the rear. Toe-out means that the front width is wider than the rear.

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

Wheel alignment on this vehicle is to be checked and all alignment adjustments are to be made with the vehicle standing at its curb height specification. Curb height is the riding height of the vehicle measured from a certain point on the vehicle to the ground while the vehicle is setting on a flat, level surface.

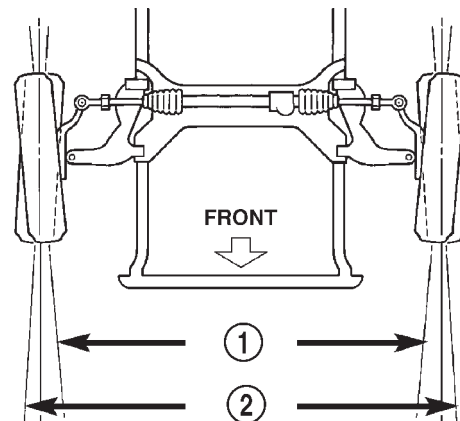
DIAGNOSIS AND TESTING (Continued)



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Fig. 1 Camber

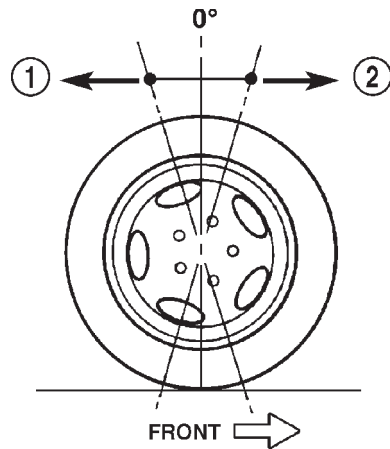
- 1 - NEGATIVE
2 - POSITIVE



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Fig. 3 Toe

- 1 - TOE-IN
2 - TOE-OUT



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Fig. 2 Caster

- 1 - POSITIVE
2 - NEGATIVE

DIAGNOSIS AND TESTING

SUSPENSION AND STEERING DIAGNOSIS

CONDITION	POSSIBLE CAUSES	POTENTIAL CORRECTIONS
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 Against Frame Or Body Of Vehicle. 3. Worn Or Broken C/V Joint 4. Loose Wheel Lug Nuts 5. Incorrect Wheel Alignment 6. Worn Tires	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
Front End Clunk Or Snap On Turns	1. Loose Wheel Lug Nuts 2. Worn Or Broken C/V Joint 3. Worn Or Loose Tie Rod Or Ball Joint 4. Worn Control Arm Bushing 5. Loose Sway Bar Or Upper Strut Attachment	1. Verify Wheel Lug Nut Torque 2. Replace C/V Joint 3. Tighten Or Replace Tie Rod End Or Ball Joint 4. Replace Control Arm Bushing 5. Tighten Sway Bar Or Upper Strut Attachment 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	1. Replace Wheel Bearing 2. Check And Reset Wheel Alignment 3. Replace Tires
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 Wheel Lug Nuts 4. Worn Or Broken C/V Joint 5. Worn Or Loose Ball Joint	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

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	POTENTIAL CORRECTIONS
	6. Worn Or Loose Control Arm Bushing 7. Loose Crossmember Bolts	6. Tighten To Specified Torque Or Replace Control Arm Bushing 7. Tighten Crossmember Bolts To Specified Torque
Road Wander	1. Incorrect Tire Pressure 2. Incorrect Front Or Rear Wheel Toe 3. Worn Wheel Bearings 4. Worn Control Arm Bushings 5. Excessive Friction In Steering Gear 6. Excessive Friction In Steering Shaft Coupling 7. Excessive Friction In Strut Upper Bearing	1. Inflate Tires To Recommended Pressure 2. Check And Reset Front Wheel Toe 3. Replace Wheel Bearing 4. Replace Control Arm Bushing 5. Replace Steering Gear 6. Replace Steering Coupler 7. Replace Strut Bearing
Lateral Pull	1. Unequal Tire Pressure 2. Radial Tire Lead 3. Incorrect Front Wheel Camber 4. Power Steering Gear Imbalance 5. Wheel Braking	1. Inflate All Tires To Recommended Pressure 2. Perform Lead Correction Procedure 3. Check And Reset Front Wheel Camber 4. Replace Power Steering Gear 5. Correct Braking Condition Causing Lateral Pull
Excessive Steering Free Play	1. Incorrect Steering Gear Adjustment 2. Worn Or Loose Tie Rod Ends 3. Loose Steering Gear Mounting Bolts 4. Loose Or Worn Steering Shaft Coupler	1. Adjust Or Replace Steering Gear 2. Replace Or Tighten Tie Rod Ends 3. Tighten Steering Gear Bolts To The Specified Torque 5. Replace Steering Shaft Coupler
Excessive Steering Effort	1. Low Tire Pressure 2. Lack Of Lubricant In Steering Gear 3. Low Power Steering Fluid Level 4. Loose Power Steering Pump Belt 5. Lack Of Lubricant In Steering Ball Joints 6. Steering Gear Malfunction 7. Lack Of Lubricant In Steering Coupler	1. Inflate All Tires To Recommended Pressure 2. Replace Steering Gear 3. Fill Power Steering Fluid Reservoir To Correct Level 4. Check and replace automatic belt tensioner as necessary. If drive belt is worn or glazed, replace belt. 5. Lubricate Or Replace Steering Ball Joints 6. Replace Steering Gear 7. Replace Steering Coupler

SERVICE PROCEDURES

PRE-WHEEL ALIGNMENT INSPECTION

Before any attempt is made to change or correct the wheel alignment, the following inspection and necessary corrections must be made to the vehicle to ensure proper alignment.

- (1) Be sure the fuel tank is full of fuel. If the fuel tank is not full, the reduction in weight will affect the curb height of the vehicle and the alignment specifications.
- (2) The passenger and luggage compartments of the vehicle should be free of any load that is not factory equipment.
- (3) Check the tires on the vehicle. The tires are to be inflated to the recommended air pressure. All tires must be the same size and in good condition with approximately the same tread wear.
- (4) Check the front tire and wheel assemblies for excessive radial runout.
- (5) Inspect all suspension component fasteners for looseness and torque.
- (6) Inspect the lower front ball joints and all steering linkage for looseness and any sign of wear or damage.
- (7) Inspect the rubber bushings on all the suspension components for signs of wear or deterioration. If any bushings show signs of wear or deterioration, they should be replaced prior to aligning the vehicle.
- (8) Check vehicle curb height to verify it is within specifications. Refer to CURB HEIGHT MEASURE-

MENT in this section. If curb height is out of specifications, check for broken or sagged springs.

CURB HEIGHT MEASUREMENT

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

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

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

- (1) Measure from the inboard edge of the wheel opening fender lip directly above the wheel center (spindle), to the floor or alignment rack surface.
- (2) When measuring, maximum left-to-right differential is not to exceed 20 mm (0.79 in.).
- (3) Compare the measurements to specifications listed in the following CURB HEIGHT SPECIFICATIONS chart.

CURB HEIGHT SPECIFICATIONS

VEHICLE	FRONT	REAR
ALL	711 mm ± 19 mm 28.0 in. ± 0.75 in.	711 mm ± 19 mm 28.0 in. ± 0.75 in.

WHEEL ALIGNMENT

- (1) Position the vehicle on an alignment rack.
- (2) Perform the PRE-WHEEL ALIGNMENT INSPECTION. It can be found elsewhere in this section.
- (3) Install all required alignment equipment on the vehicle per the alignment equipment manufacturer's instructions. On this vehicle, a four-wheel alignment is recommended.

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

- (4) Read the vehicle's current front and rear alignment settings. Compare the vehicle's current alignment settings to the vehicle specifications for camber, caster and toe-in. Refer to WHEEL ALIGNMENT SPECIFICATIONS in this section of this service manual group.

NOTE: Set the rear wheel alignment first before proceeding to the front to set the front wheel alignment.

- (5) If rear camber or toe is not within specifications, proceed to REAR CAMBER AND TOE below. If rear camber and toe are within specifications, but front camber and caster are not, proceed to FRONT CAMBER AND CASTER which can be found following REAR CAMBER AND TOE. If rear camber and

SERVICE PROCEDURES (Continued)

toe, and front camber and caster are within specifications, proceed to FRONT TOE.

Rear Caster on this vehicle is not adjustable and is not shown as an alignment specification.

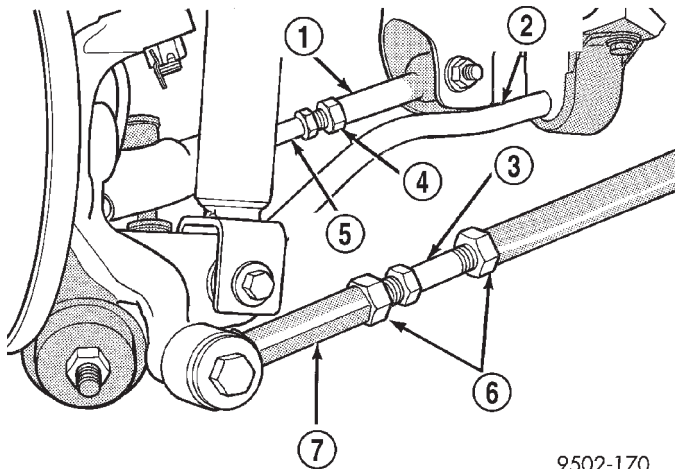
CAUTION: Do not attempt to adjust the vehicle's wheel alignment by heating, bending or modifying any component of the suspension.

REAR CAMBER AND TOE

Rear Camber on this vehicle is adjustable. The rear camber on this vehicle is adjusted using the adjusting screw located in the forward and rear lateral links of the vehicles rear suspension (Fig. 4).

CAUTION: When checking the rear alignment on this vehicle, the alignment rack must be equipped with rear skid plates.

(1) For either rear wheel needing alignment, loosen the adjusting screw jam nuts (Fig. 4) on both the front and the rear lateral links.



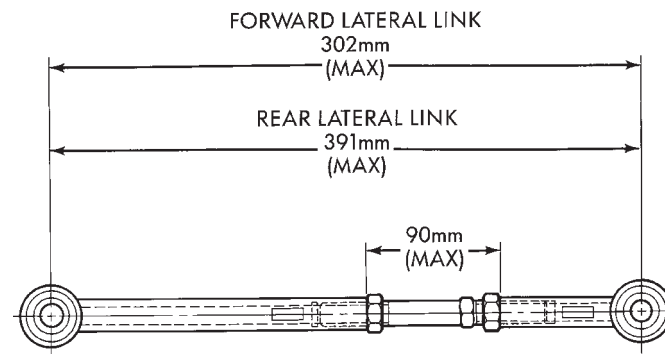
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Fig. 4 Lateral Link Adjusting Screw Jam Nuts

- 1 - FORWARD LATERAL ARM
- 2 - STABILIZER BAR
- 3 - ADJUSTING SCREW
- 4 - JAM NUT
- 5 - ADJUSTING SCREW
- 6 - JAM NUTS
- 7 - REAR LATERAL LINK

CAUTION: Do not attempt to move the adjusting screws without properly loosening the jam nuts. Note that each adjusting screw has one right-handed nut and one left-handed nut.

CAUTION: When setting rear camber and toe on the vehicle, the maximum lengths of the adjustable lateral link at the locations shown (Fig. 5) must not be exceeded. If these maximum lengths are exceeded, inadequate retention of adjustment link to the inner and outer link may result.



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Fig. 5 Rear Lateral Link Maximum Length Dimensions

(2) Rough-in the rear camber setting as close as possible to the preferred specification by mainly adjusting the rear lateral link adjusting screw (Fig. 4). Some adjustment of the forward lateral link adjusting screw will also be required to get the rear camber setting to the preferred specification. Refer to WHEEL ALIGNMENT SPECIFICATIONS in this group for the specification.

(3) Adjust the forward lateral link adjusting screw (Fig. 4) to set rear toe to the preferred specification. Refer to WHEEL ALIGNMENT SPECIFICATIONS in this group for the specification.

NOTE: Adjusting toe will cause a slight change in the camber setting. If during the setting of toe, camber is no longer at the preferred specification, continue to adjust camber and toe until both are at their preferred specifications.

(4) While holding adjustment screws from turning, use a crow foot and torque wrench, and tighten all lateral link adjusting screw jam nuts to a torque of 92 N·m (68 ft. lbs.). This will securely hold the adjusting screws from turning.

(5) Proceed to FRONT CASTER AND CAMBER, or FRONT TOE if front caster and camber are within specifications.

SERVICE PROCEDURES (Continued)

FRONT CAMBER AND CASTER

Camber and caster settings on this vehicle are determined at the time the vehicle is designed, by the location of the vehicle's suspension components. This is referred to as NET BUILD. The result is no required adjustment of camber and caster after the vehicle is built or when servicing the suspension components. Thus, when performing a wheel alignment, caster and camber are not normally considered adjustable angles. Camber and caster should be checked to ensure they meet vehicle specifications. Refer to WHEEL ALIGNMENT SPECIFICATIONS in this group of the service manual for the specifications.

If front camber is found not to meet alignment specifications, it can be adjusted using a procedure listed here. Before performing the camber adjustment procedure, inspect the suspension components for any signs of damage or bending.

CAMBER ADJUSTMENT PROCEDURE

(1) Open the hood and mark the position of all four shock assembly mounting bolts on the shock tower (Fig. 6) on the side of the vehicle requiring front camber adjustment.

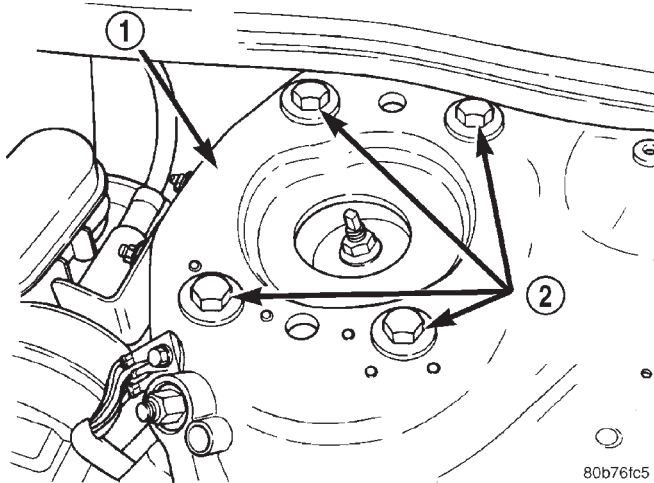


Fig. 6 Shock Assembly Mounting Bolts

- 1 - SHOCK TOWER
2 - MOUNTING BOLTS

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

(3) Loosen the shock assembly mounting bolts on the side marked in step 1. Loosen the bolts enough to allow adequate space for removal of the plastic locating pins that align the upper mounting bracket with the shock tower.

(4) Remove and discard both plastic locating pins from the shock assembly upper mounting bracket using a punch or pliers.

NOTE: Do not leave the plastic locating pins in the cavity of the shock tower or mount. Objectionable noise may result.

(5) Position the shock assembly inboard or outboard as required to adjust the camber. Make sure the fore and aft position is in the same as indicated by the marks made prior to adjustment, and also the forward and rearward bolts are moved equal amounts inward or outward.

NOTE: Do not attempt to enlarge any existing holes to increase adjustment range.

(6) Torque the upper shock assembly mounting bolts to 90 N·m (68 ft. lbs.).

(7) Lower the vehicle. Jounce the front and rear of vehicle an equal amount of times.

(8) Check and adjust the front camber as necessary. Refer to WHEEL ALIGNMENT SPECIFICATIONS in this group of the service manual for preferred specification.

(9) 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 procedure.

FRONT TOE

(1) Center the 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.

(2) 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 to set front toe to the preferred toe specification. Refer to WHEEL ALIGNMENT SPECIFICATIONS in this group of the service manual for preferred specification.

(3) Tighten tie rod jam nuts (Fig. 7) to 61 N·m (45 ft. lbs.) torque.

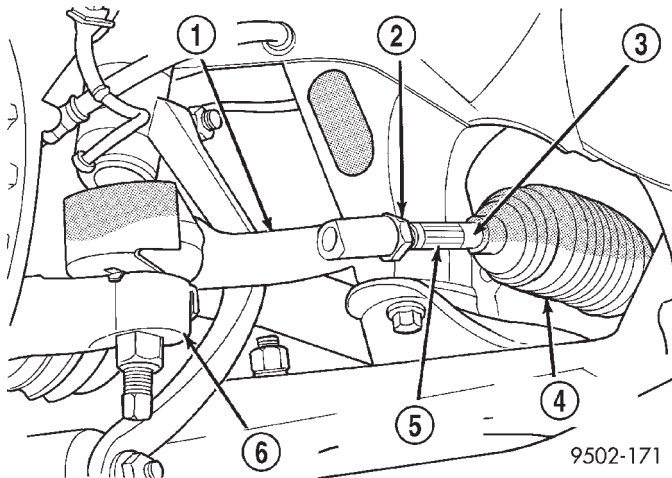
(4) Adjust steering gear to tie rod boots at the inner tie rod.

(5) Remove steering wheel clamp.

(6) Remove the alignment equipment.

(7) Road test the vehicle to verify the steering wheel is straight and the vehicle does not wander or pull.

SPECIFICATIONS (Continued)

**Fig. 7 Front Wheel Toe Adjustment**

- 1 - OUTER TIE ROD
- 2 - JAM NUT
- 3 - INNER TIE ROD
- 4 - STEERING GEAR BOOTS
- 5 - ADJUSTMENT SERRATIONS
- 6 - STEERING KNUCKLE

SPECIFICATIONS

WHEEL ALIGNMENT SPECIFICATIONS

NOTE: All wheel alignments are to be set with the vehicle at its proper curb height. Refer to CURB HEIGHT MEASUREMENT in SERVICE PROCEDURES.

NOTE: All specifications are given in degrees.

FRONT WHEEL ALIGNMENT	PREFERRED SETTING	ACCEPTABLE RANGE
CAMBER	+0.1°	-0.5° to +0.7°
Cross Camber (Maximum side-to-side difference)	0.0°	0.7°
CASTER	+3.1°	+2.1° to +4.1°
Cross Caster (Maximum side-to-side difference)	0.0°	1.0°
TOE* - RIGHT OR LEFT	+0.05°	-0.05° to +0.15°
TOTAL TOE* **	+0.1°	-0.1° to +0.3°
REAR WHEEL ALIGNMENT	PREFERRED SETTING	ACCEPTABLE RANGE
CAMBER	-0.1°	-0.5° to +0.3°
TOE* - RIGHT OR LEFT	+0.05°	-0.05° to +0.15°
TOTAL TOE* **	+0.1°	-0.1° to +0.3°
THRUST ANGLE	0.0°	0.0 ± 0.15°
*Positive (+) toe is toe-in, negative (-) toe is toe-out. **Total toe is the arithmetic sum of the left and right wheel toe settings. Total Toe must be equally split between each front wheel to ensure the steering wheel is centered after setting Toe. Left and right toe must be equal to within 0.02 degrees.		

FRONT SUSPENSION

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DESCRIPTION AND OPERATION

FRONT SUSPENSION SYSTEM

DESCRIPTION

This vehicle's front suspension is a short long arm design used in conjunction with a gas pressurized shock absorber and coil spring assembly (Fig. 1).

The upper control arm of the vehicle is mounted using rubber isolation bushings to an aluminum casting which is attached to the shock tower using 4 mounting bolts. This aluminum casting is also used as the upper mount for the front shock/coil spring assembly. The shock absorber assembly is also isolated from the aluminum bracket using a 2 piece rubber bushing design. The lower control arm is mounted to the vehicle's front suspension crossmember using 2 through bolts per control arm. The lower control arm is also isolated from the vehicle using 2 rubber bushings of unique design for the front and rear mounting location. The bottom of the shock absorber is mounted to the lower control arm by a clevis bracket which is part of the shock absorber

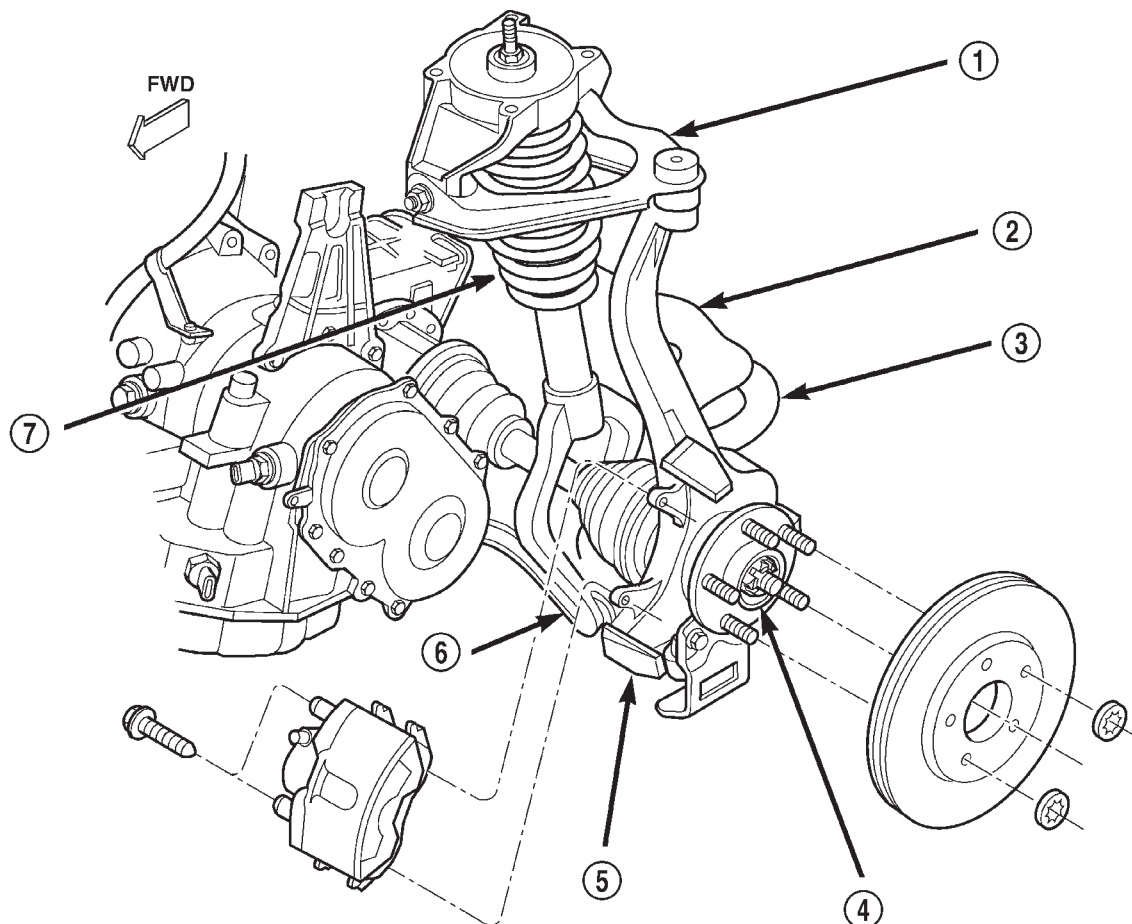
assembly. The clevis bracket is mounted to and isolated from the lower control arm using a rubber isolation bushing and a through-bolt. The front steering knuckle is mounted to the vehicle by a ball joint located in the upper and lower control arms.

A sealed for life front hub and bearing assembly is attached to the front steering knuckle. The outer C/V joint assembly is splined to the front hub and bearing assembly and is retained by a nut, nut retainer and cotter pin.

OPERATION

The front suspension allows each front wheel on vehicle to adapt to different road surfaces and conditions without affecting the control of the vehicle. Each side of the front suspension is allowed to move independently from the other. Both sides of the front suspension are allowed to pivot so the vehicle can be steered in the direction preferred. Steering of the vehicle is provided by a rack and pinion steering gear which is connected directly to each steering knuckle by an outer tie rod.

DESCRIPTION AND OPERATION (Continued)



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Fig. 1 Front Suspension Components

- | | |
|----------------------------------|-----------------------|
| 1 – UPPER CONTROL ARM | 5 – STEERING KNUCKLE |
| 2 – FRONT SUSPENSION CROSSMEMBER | 6 – LOWER CONTROL ARM |
| 3 – STABILIZER BAR | 7 – STRUT ASSEMBLY |
| 4 – HUB AND BEARING | |

SHOCK ASSEMBLY (FRONT)**DESCRIPTION**

The front shock assembly and suspension of the vehicle is supported by coil springs positioned around shock absorbers. The springs are contained between an upper seat located in the upper mounting bracket and a lower spring seat on the shock absorber.

The top of each shock absorber is bolted to a cast shock absorber/upper control arm bracket which is bolted to the shock tower of the vehicle using 4 mounting bolts.

The bottom of the shock absorber attaches to a clevis bracket using a pinch bolt. The clevis bracket attaches to the lower control arm of the vehicle using a through-bolt and prevailing torque nut.

A coil spring is housed within each shock assembly. Coil springs are rated separately for each corner or side of the vehicle depending on optional equipment

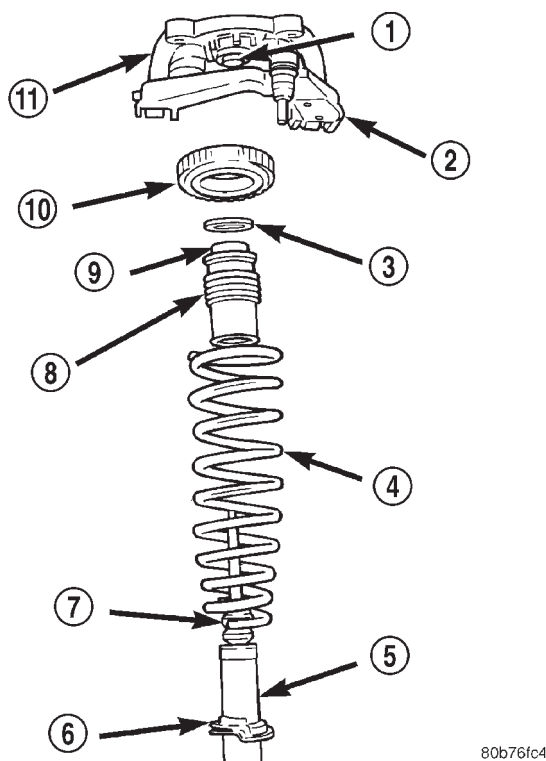
and type of vehicle service. If the coil springs require replacement, be sure that the springs needing replacement, are replaced with springs meeting the correct load rating and spring rate for the vehicle and its specific options.

The components of the shock assembly listed below are serviceable if found to be defective (Fig. 2) :

- Upper mounting bracket
- Upper spring isolator
- Dust shield
- Cup
- Jounce bumper
- Coil spring
- Shock absorber
- Lower spring isolator

The shock absorber/upper control arm mounting bracket also provides a pivotal mounting point for the upper control arm.

DESCRIPTION AND OPERATION (Continued)

**Fig. 2 Shock Assembly Components**

- 1 – SHOCK ABSORBER ROD BUSHING
- 2 – UPPER CONTROL ARM
- 3 – RETAINER WASHER
- 4 – COIL SPRING
- 5 – SHOCK ABSORBER
- 6 – LOWER SPRING ISOLATOR
- 7 – JOUNCE BUMPER
- 8 – DUST SHIELD
- 9 – CUP
- 10 – UPPER SPRING ISOLATOR
- 11 – UPPER MOUNTING BRACKET

OPERATION

The shock absorber assembly cushions the ride of the vehicle, controlling vibration, and jounce and rebound of the suspension.

The coil spring controls ride quality and maintains proper ride height.

The spring isolators isolate the coil spring at the top and bottom from coming into metal-to-metal contact with the upper mounting bracket and shock absorber.

The jounce bumper limits suspension travel and metal-to-metal contact under full jounce condition.

The shock absorber dampens jounce and rebound motions of the coil spring and suspension.

STEERING KNUCKLE**DESCRIPTION**

The steering knuckle is a single casting with legs machined for attachment to the vehicle's upper and lower control arm ball joints. The steering knuckle also has machined abutments on the casting to support and align the front brake caliper assembly. The knuckle also holds the front drive shaft outer C/V joint hub and bearing assembly. The hub is positioned through the bearing and knuckle, with the constant velocity stub shaft splined through the hub. The outer C/V joint is retained to the hub and bearing assembly using a nut, nut lock and cotter pin.

OPERATION

The steering knuckle pivots between the upper and lower ball joints. The steering gear outer tie rod end connects to the trailing end of each knuckle, allowing the vehicle to be steered.

The center of the knuckle supports the hub and bearing and axle shaft.

HUB AND BEARING (FRONT)**DESCRIPTION**

The bearing used on the front hub of this vehicle is the combined hub and bearing unit type assembly. This unit combines the front wheel mounting hub (flange) and the front wheel bearing into a one piece unit. The hub and bearing assembly is mounted to the steering knuckle and is retained by three mounting bolts accessible from the back of the steering knuckle. The hub and bearing unit is not serviceable and must be replaced as an assembly if the bearing or the hub is determined to be defective. The wheel mounting studs used to mount the tire and wheel to the vehicle are the only replaceable components of the hub and bearing assembly.

OPERATION

The hub and bearing has internal bearings that allow the hub to rotate with the driveshaft and tire and wheel.

UPPER CONTROL ARM (FRONT)**DESCRIPTION**

The upper control arm is a high strength steel stamping. The upper control arm uses the 2 rubber bushings of the upper control arm/shock absorber mounting bracket to isolate it from the mounting bracket and the body of the vehicle. The upper control arm is bolted to the top of the steering knuckle through the upper ball joint.

DESCRIPTION AND OPERATION (Continued)

OPERATION

The upper control arm supports the upper end of the steering knuckle and allows for the up and down movement of the suspension during the jounce and rebound travel.

BALL JOINT (FRONT UPPER)**DESCRIPTION**

The ball joint is pressed into the upper control arm and has a tapered stud for attachment to the steering knuckle. The ball joint stud is attached and locked into the steering knuckle using a castle nut and cotter pin. The ball joint is not serviceable as a separate component of the upper control arm. If the ball joint is defective it will require replacement of the entire upper control arm.

OPERATION

The ball joint is a pivotal joint that allows the knuckle to move up and down and turn with ease.

LOWER CONTROL ARM**DESCRIPTION**

The lower control arm is a ductile iron casting using 2 rubber bushings to isolate it from the front suspension crossmember and body of the vehicle. The isolator bushings consist of 2 metal encased rubber isolated pivot bushings. The front of the lower control arm is bolted to the front crossmember using a bolt through the center of the rubber pivot bushing. The rear of the lower control arm is mounted to the front suspension crossmember using a through-bolt. The lower control arms are inter-connected through a linked rubber isolated sway bar.

OPERATION

The lower control arm supports the lower end of the steering knuckle and allows for the up and down movement of the suspension during the jounce and rebound travel. It also provides a lower mounting point for the shock assembly.

BALL JOINT (LOWER)**DESCRIPTION**

The ball joint used in the lower control arm of this vehicle is a sealed for life ball joint. The ball joint can not be replaced as a separate component of the lower control arm assembly. If the ball joint is determined to be defective it will require replacement of the complete lower control arm assembly.

The lower ball joint connection to the steering knuckle is achieved by an interference fit created by the tapered stud of the ball joint and a tapered hole

in the steering knuckle. The ball joint stud is retained in the steering knuckle using a castle nut and a cotter pin. The cotter pin is used for positive retention of the castle nut.

The lower ball joint is lubricated for life at the time it is assembled in the lower control arm.

NOTE: The ball joint does not require any type of additional lubrication for the life of the vehicle. No attempt should be made to ever add any lubrication to the lower ball joint.

OPERATION

The ball joint is a pivotal joint that allows the knuckle to move up and down, and turn with ease.

STABILIZER BAR (FRONT)**DESCRIPTION**

The stabilizer bar interconnects both front lower control arms of the vehicle and is attached to the front suspension cradle and the underbody of the vehicle.

Attachment of the stabilizer bar to the front suspension cradle is through 2 rubber-isolator bushings and bushing retainers. The stabilizer bar to lower control arm attachment is done utilizing a ball joint type, stabilizer bar attaching link. All parts of the stabilizer bar are replaceable as individual components, and the bushings attaching the stabilizer bar to crossmember are split for easy removal and installation.

OPERATION

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

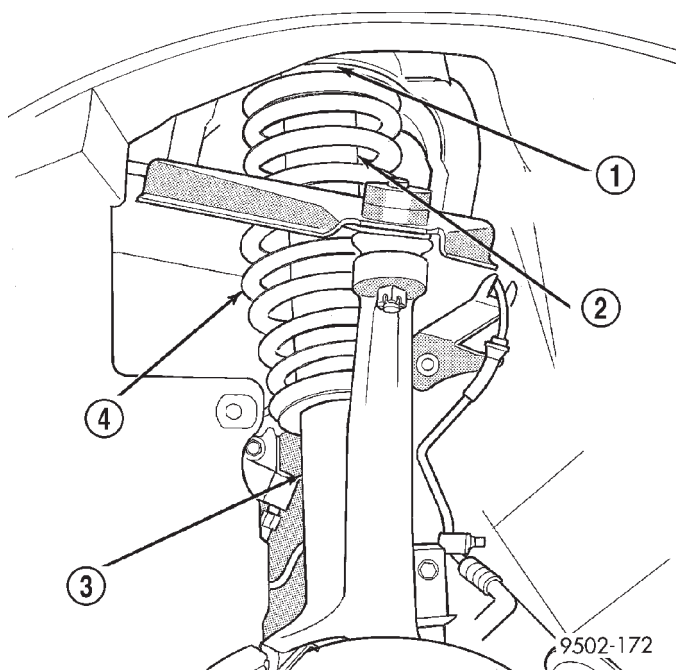
DIAGNOSIS AND TESTING**SHOCK ASSEMBLY (FRONT)**

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

(2) Inspect for torn or damaged shock absorber dust boots (Fig. 3).

(3) Lift the dust boot and inspect the shock absorber 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 the lower end of the shock absorber). A slight amount of seepage between the shock absorber rod and the seal is not unusual and does not affect performance of the shock absorber. Also inspect jounce bumpers for signs of damage or deterioration (Fig. 3).

DIAGNOSIS AND TESTING (Continued)

**Fig. 3 On Vehicle Inspection**

- 1 - UPPER SPRING SEAT
- 2 - DUST BOOT
- 3 - SHOCK ABSORBER
- 4 - COIL SPRING

STEERING KNUCKLE

The front suspension steering knuckle is not a repairable component of the front suspension. It must be replaced if found to be damaged in any way. If it is determined that the steering knuckle is bent when servicing the vehicle, no attempt is to be made to straighten the steering knuckle.

HUB AND BEARING (FRONT)

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

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

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

To diagnose a bent hub, refer to BRAKE ROTOR in the DIAGNOSIS AND TESTING section in the

BRAKES service manual group for the procedure on measuring hub runout.

UPPER CONTROL ARM (FRONT)

If damaged, the upper control arm is serviced only as a complete component. Inspect the upper control arm for any signs of damage. If control arm shows any sign of damage the upper control arm must be replaced. Do not attempt to repair or straighten a broken or bent upper control arm.

The only serviceable component of the upper control arm is the ball joint grease seal. No other repair or replacement procedure should be attempted on any component of the upper control arm. Service procedures to replace the serviceable components are detailed in the specific component sections of this group.

BALL JOINT (FRONT UPPER)

With the weight of the vehicle resting on the road wheels, grasp the grease fitting and with no mechanical assistance or added force, attempt to move the grease fitting.

If the ball joint is worn the grease fitting will move easily. If movement is noted, replacement of the upper control arm is required.

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 replaceable components of the lower control arm are: the ball joint grease seal and the control arm bushings. Inspect both control arm bushings for severe deterioration, and replace if required.

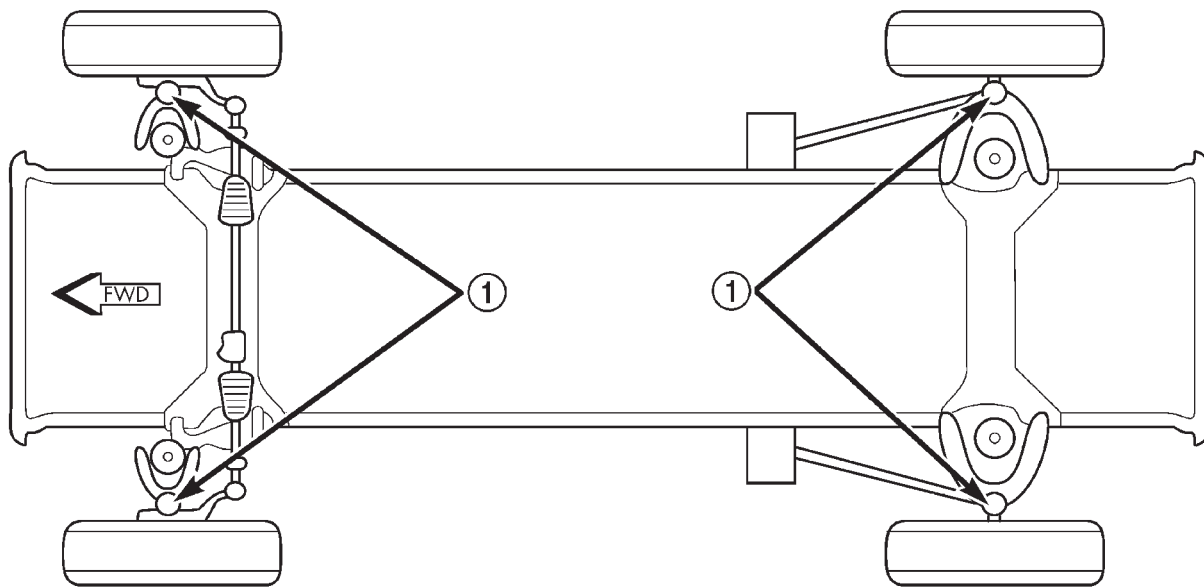
Inspect the lower ball joint for wear. Use the wear inspection procedure in the diagnosis and testing section in this group of service manual to determine if the wear is excessive and ball joint (lower control arm) replacement is required.

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)

(1) Raise the 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.

DIAGNOSIS AND TESTING (Continued)



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Fig. 4 Lubrication Points

1 – UPPER BALL JOINTS

(2) Install a dial indicator on the vehicle so it is contacting the top surface of the steering knuckle near the lower ball joint stud castle nut.

(3) Grab wheel and tire assembly and push it up and down firmly.

(4) Record the amount of up and down movement of the steering knuckle recorded on the dial indicator.

(5) Replace lower control arm if the movement in the lower control arm exceeds 1.5 mm (.059 in.).

STABILIZER BAR (FRONT)

Inspect for broken or distorted stabilizer bar bushings, bushing retainers, and worn or damaged stabilizer bar to control arm attaching links.

SERVICE PROCEDURES**LUBRICATION**

The only serviceable lubrication points on the suspension are the upper ball joints (Fig. 4). All other joints are sealed for life. Lubricate the upper ball joints until a slight swelling is noticed in the ball joint seal boots. Do not overfill the seal boots. Follow the vehicles maintenance schedule.

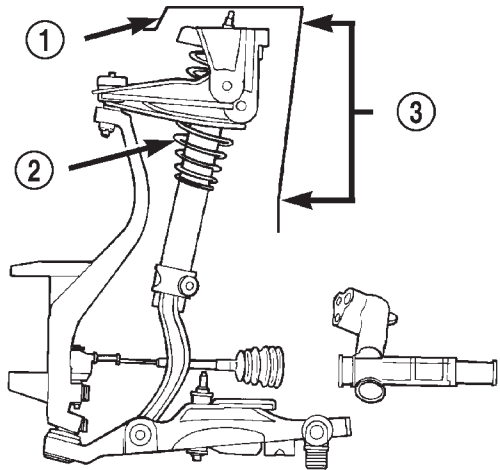
REMOVAL AND INSTALLATION**SERVICE WARNINGS AND CAUTIONS**

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

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

CAUTION: At no time when servicing a vehicle, can a sheet metal screw, bolt or other metal fastener be installed in the shock tower to take the place of an original plastic clip. Also, NO holes can be drilled into the front shock tower in the area shown in (Fig. 5), for the installation of any metal fasteners into the shock tower. Because of the minimum clearance in this area installation of metal fasteners could damage the coil spring coating and lead to a corrosion failure of the spring.

REMOVAL AND INSTALLATION (Continued)



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Fig. 5 Shock Tower To Spring Minimum Clearance Area

- 1 - SHOCK TOWER
- 2 - COIL SPRING
- 3 - NO SHEET METAL SCREWS, BOLTS, OR ANY OTHER METAL FASTENERS ARE TO BE INSTALLED IN SHOCK TOWER AREA. ALSO, NO HOLES ARE TO BE DRILLED INTO SHOCK TOWER IN THIS SAME AREA.

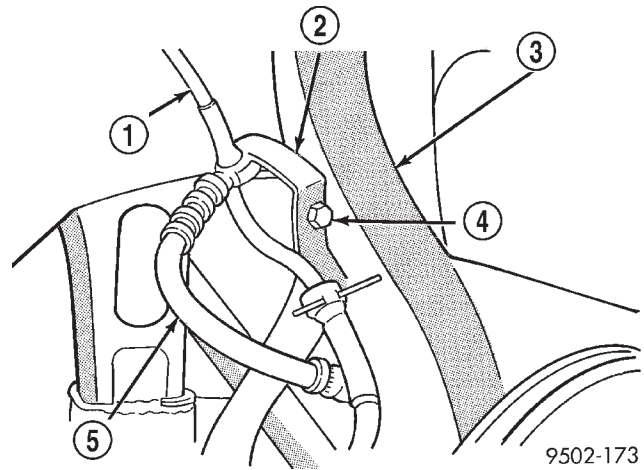
NOTE: If a suspension component becomes bent, damaged or fails, no attempt should be made to straighten or repair it. Always replace it with a new component.

SHOCK ASSEMBLY (FRONT)

NOTE: Before proceeding, review SERVICE WARNINGS AND CAUTIONS in this section.

REMOVAL

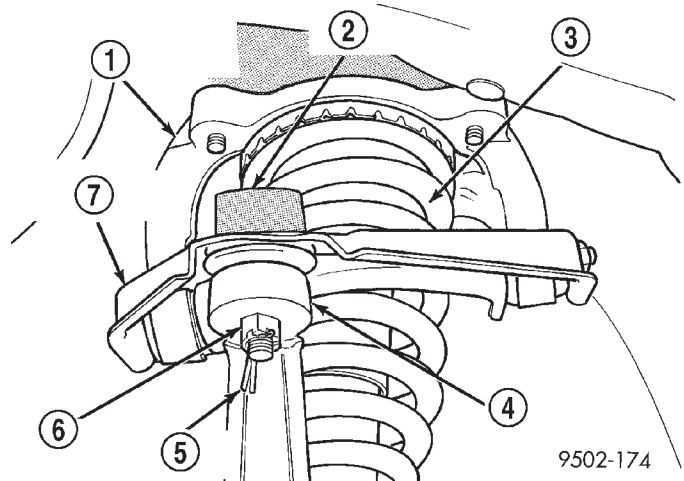
- (1) Loosen wheel nuts.
- (2) Raise vehicle on jack stands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.
- (3) Remove the wheel and tire from the location on front of vehicle requiring shock removal.
- (4) If both shock assemblies are removed, mark the shock assemblies right and left according to which side of the vehicle they were removed from.
- (5) Remove the wheel speed sensor cable routing bracket (Fig. 6) from the steering knuckle.
- (6) Remove the cotter pin and castle nut (Fig. 7) from the upper ball joint stud.
- (7) Remove the upper ball joint stud from the steering knuckle using Puller, Special Tool, C-3894-A (Fig. 8). Pull steering knuckle outward and position toward the rear of the front wheel opening.



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Fig. 6 Wheel Speed Sensor Cable Routing Bracket

- 1 - WHEEL SPEED SENSOR CABLE
- 2 - SPEED SENSOR CABLE ROUTING BRACKET
- 3 - STEERING KNUCKLE
- 4 - ATTACHING BOLT
- 5 - BRAKE CALIPER FLEX HOSE



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Fig. 7 Ball Joint Attachment To Steering Knuckle

- 1 - UPPER CONTROL ARM SHOCK ABSORBER MOUNTING BRACKET
- 2 - BALL JOINT
- 3 - SHOCK ABSORBER ASSEMBLY
- 4 - STEERING KNUCKLE
- 5 - COTTER PIN
- 6 - CASTLE NUT
- 7 - UPPER CONTROL ARM

(8) Remove pinch bolt attaching shock absorber clevis to shock absorber (Fig. 9).

(9) Remove the nut and thru-bolt (Fig. 10) attaching the shock absorber clevis to the lower control arm.

(10) Remove the clevis from the shock absorber by carefully tapping the clevis off the shock absorber using a soft (brass) drift.

REMOVAL AND INSTALLATION (Continued)

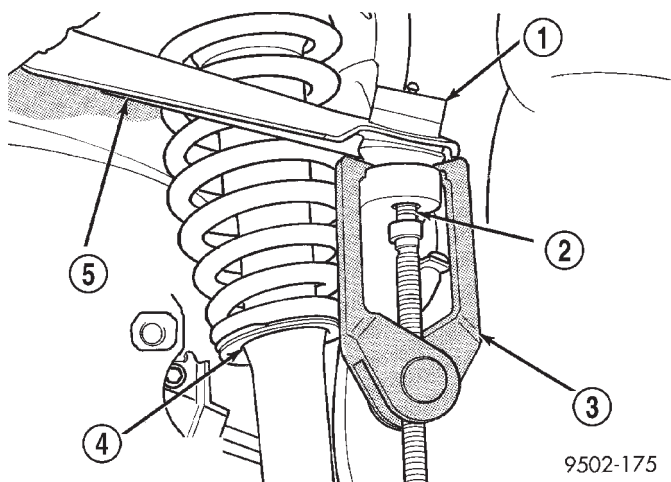


Fig. 8 Ball Joint Stud Removal From Steering Knuckle

- 1 - BALL JOINT
- 2 - BALL JOINT STUD
- 3 - SPECIAL TOOL C3894-A
- 4 - SHOCK ABSORBER ASSEMBLY
- 5 - UPPER CONTROL ARM

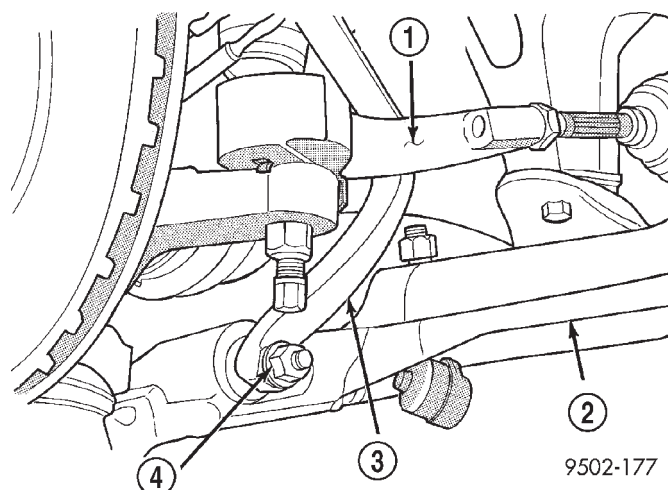


Fig. 10 Clevis To Lower Control Arm Attaching Bolt

- 1 - TIE ROD END
- 2 - LOWER CONTROL ARM
- 3 - SHOCK ABSORBER CLEVIS
- 4 - THRU-BOLT

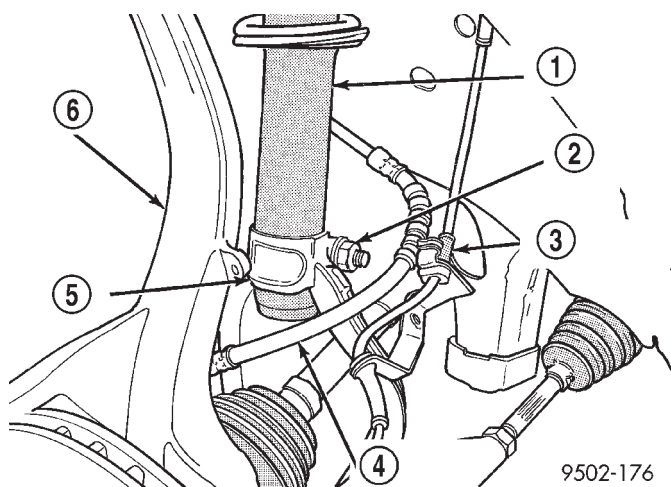


Fig. 9 Shock Absorber Clevis Bracket Pinch Bolt

- 1 - SHOCK ABSORBER ASSEMBLY
- 2 - PINCH BOLT AND NUT
- 3 - WHEEL SPEED SENSOR CABLE
- 4 - BRAKE FLEX HOSE
- 5 - CLEVIS BRACKET
- 6 - STEERING KNUCKLE

(11) Remove the 4 bolts (Fig. 11) attaching the shock absorber/upper control arm mounting bracket to the shock tower of the vehicle.

(12) Remove the shock assembly from the vehicle. The shock assembly is removed out through the front area of the front wheel well.

(13) For disassembly and assembly of the shock assembly, refer to DISASSEMBLY AND ASSEMBLY in this section of this group.

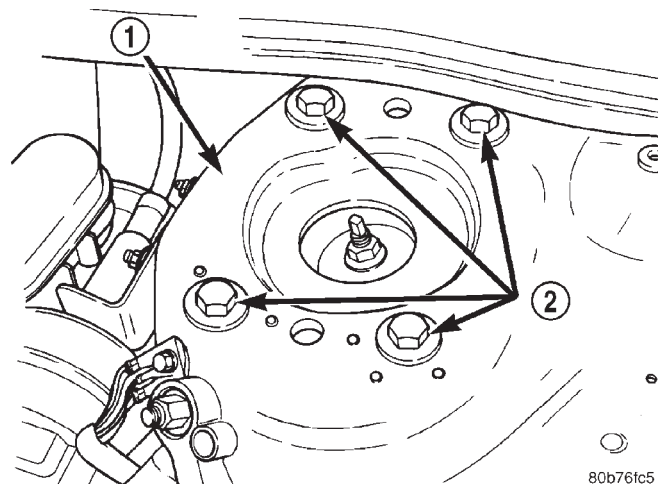


Fig. 11 Shock Assembly Attachment To Shock Tower

- 1 - SHOCK TOWER
- 2 - MOUNTING BOLTS

INSTALLATION

(1) Install the shock assembly, with the clevis removed, into shock tower. Aligning the 2 locating pins and the 4 mounting holes on the upper control arm shock absorber mount with the 4 holes in shock tower. Install the 4 upper control arm mount to shock tower mounting bolts (Fig. 11). Tighten the 4 bolts to a torque of 95 N·m (70 ft. lbs.).

(2) Install the clevis on the shock absorber. Clevis is installed by tapping it onto the fluid reservoir of the shock absorber using a soft (brass) drift until fully seated against locating tab on shock absorber

REMOVAL AND INSTALLATION (Continued)

(Fig. 12). Orientation tab on locating tab must be positioned in the split of the clevis (Fig. 12).

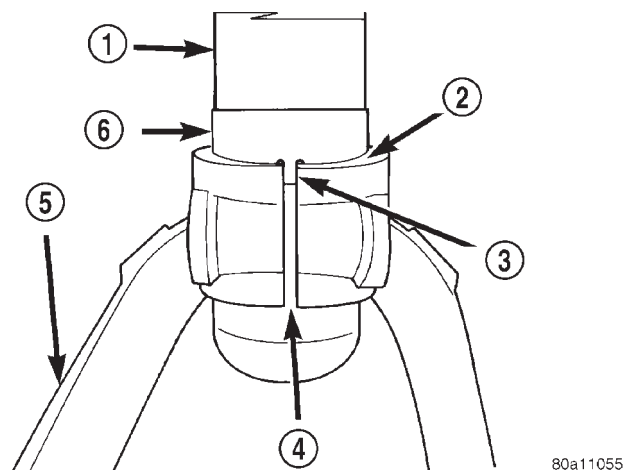


Fig. 12 Clevis Correctly Installed On Shock Absorber

- 1 – SHOCK ABSORBER
- 2 – SHOCK CLEVIS MUST BE INSTALLED FLUSH AGAINST LOCATING TAB HERE
- 3 – ORIENTATION TAB
- 4 – CLEVIS SPLIT
- 5 – SHOCK CLEVIS
- 6 – LOCATING TAB

(3) Install the pinch bolt retaining the shock clevis to the shock absorber (Fig. 9). Tighten the pinch bolt to a torque of 88 N·m (65 ft. lbs.)

(4) Install the clevis bracket to lower control arm thru-bolt (Fig. 10). Do not tighten or torque the thru-bolt at this time.

(5) Install upper ball joint into steering knuckle. Install castle nut on ball joint stud. Tighten castle nut to a torque of 54 N·m (40 ft. lbs.). Install cotter pin in stud of ball joint (Fig. 7).

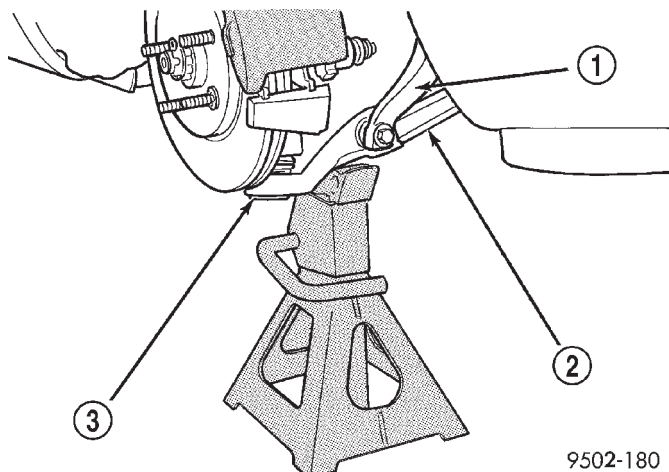
(6) Install the routing bracket for the speed control cable (Fig. 6) on the steering knuckle. Install and securely tighten the routing bracket attaching bolt (Fig. 6).

CAUTION: When supporting lower control arm with jack stand, do not position jack stand under the ball joint cap on the lower control arm. Position in area of lower control arm shown in (Fig. 13).

(7) Lower vehicle to the ground with a jack stand positioned under the lower control arm (Fig. 13). Continue to lower vehicle so the total weight of the vehicle is supported by the jack stand and lower control arm.

(8) Tighten the shock absorber clevis to lower control arm bushing thru-bolt nut to a torque of 88 N·m (65 ft. lbs.).

(9) Raise the vehicle, then remove the jack stand.



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Fig. 13 Lower Control Arm Correctly Supported By Jack Stand

- 1 – SHOCK ABSORBER CLEVIS
- 2 – LOWER CONTROL ARM
- 3 – BALL JOINT CAP

(10) Install the tire and wheel assembly. 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) Lower the vehicle.

STEERING KNUCKLE

REMOVAL

(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 front tire and wheel assembly from the hub.

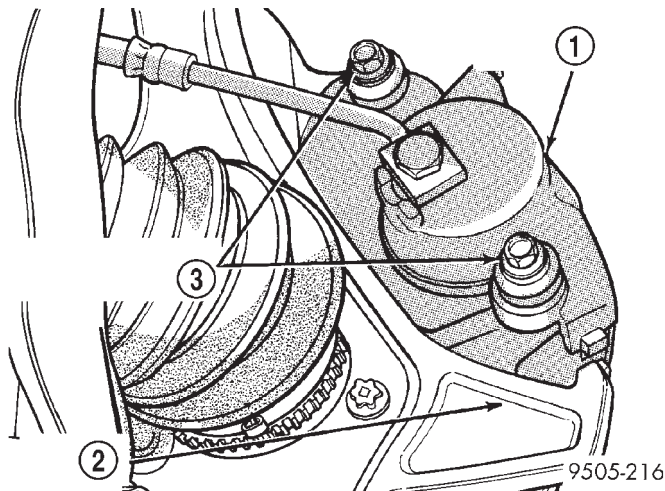
CAUTION: Wheel bearing damage will result if hub nut is loosened, then vehicle is rolled on the ground or the weight of the vehicle is allowed to be supported by the tires.

(3) Loosen hub nut with the brakes applied. **The hub and driveshaft are splined together through the knuckle (bearing) and retained by the hub nut.**

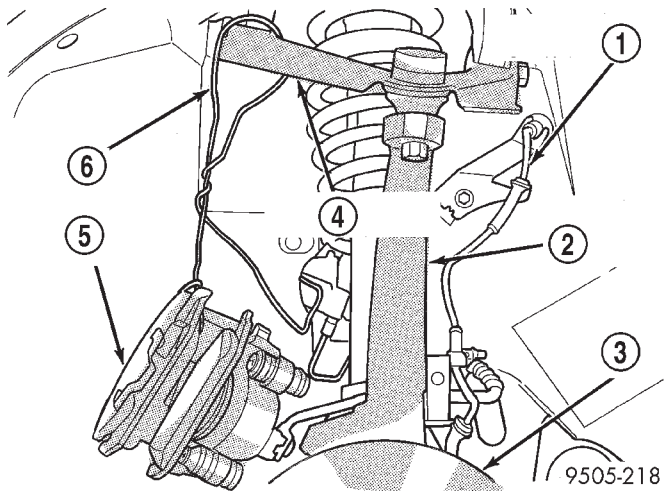
(4) Remove front disc brake caliper to steering knuckle guide pin attaching bolts (Fig. 14).

(5) Remove disc brake caliper assembly from steering knuckle. Caliper is removed by first lifting bottom of caliper away from steering knuckle, and then removing top of caliper out from under steering knuckle (Fig. 15).

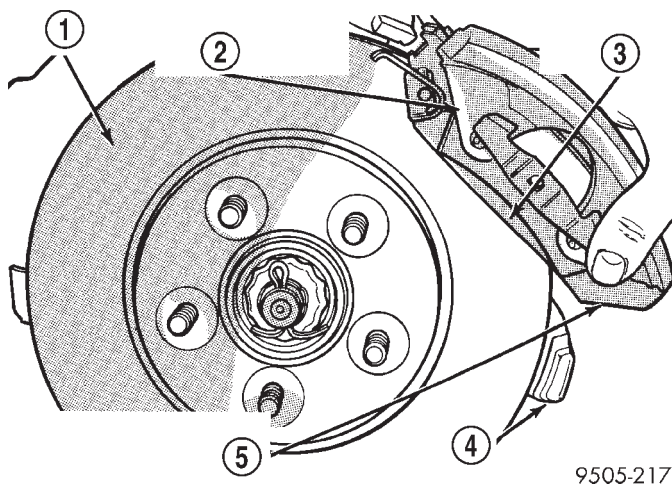
REMOVAL AND INSTALLATION (Continued)

**Fig. 14 Front Disc Brake Caliper Mounting**

- 1 - DISC BRAKE CALIPER ASSEMBLY
- 2 - STEERING KNUCKLE
- 3 - CALIPER ASSEMBLY GUIDE PIN BOLTS

**Fig. 16 Correctly Supported Front Disc Brake Caliper**

- 1 - ABS SPEED SENSOR CABLE
- 2 - STEERING KNUCKLE
- 3 - ROTOR
- 4 - UPPER CONTROL ARM
- 5 - DISC BRAKE CALIPER ASSEMBLY
- 6 - WIRE HANGER

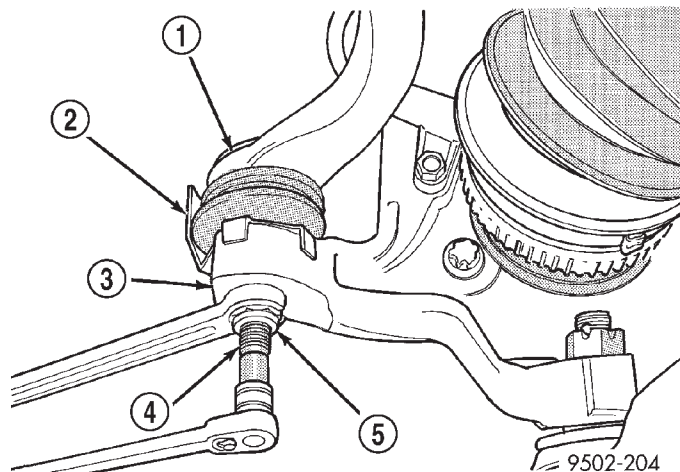
**Fig. 15 Disc Brake Caliper Removal**

- 1 - ROTOR
- 2 - DISC BRAKE CALIPER ASSEMBLY
- 3 - OUTBOARD BRAKE SHOE
- 4 - STEERING KNUCKLE
- 5 - LIFT THIS END OF CALIPER AWAY FROM STEERING KNUCKLE FIRST

(6) Support brake caliper/adaptor assembly using a wire hook (Fig. 16) and not by hydraulic hose.

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

(8) Remove nut attaching outer tie rod end to the 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 wrench (Fig. 17).**

**Fig. 17 Tie Rod End Attaching Nut**

- 1 - TIE ROD END
- 2 - HEAT SHIELD
- 3 - STEERING KNUCKLE
- 4 - TIE ROD END STUD
- 5 - NUT

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

(10) Remove the speed sensor cable routing bracket (Fig. 19) from the steering knuckle.

(11) Remove cotter pin and castle nut (Fig. 20) from the stud of the lower ball joint.

REMOVAL AND INSTALLATION (Continued)

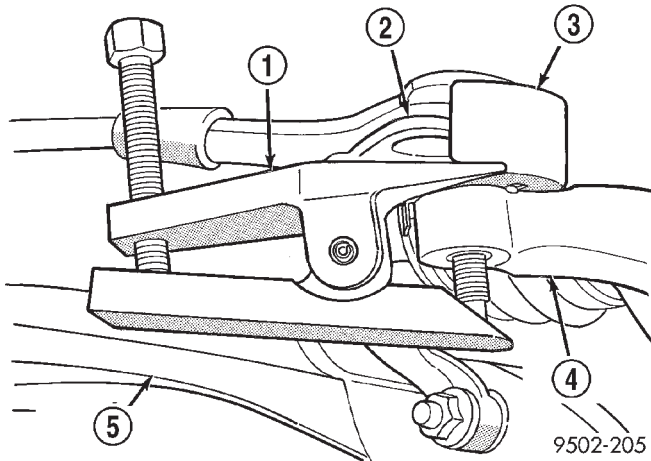


Fig. 18 Tie Rod End Removal From Steering Knuckle

- 1 - SPECIAL TOOL MB-991113
- 2 - TIE ROD END
- 3 - HEAT SHIELD
- 4 - STEERING KNUCKLE
- 5 - LOWER CONTROL ARM

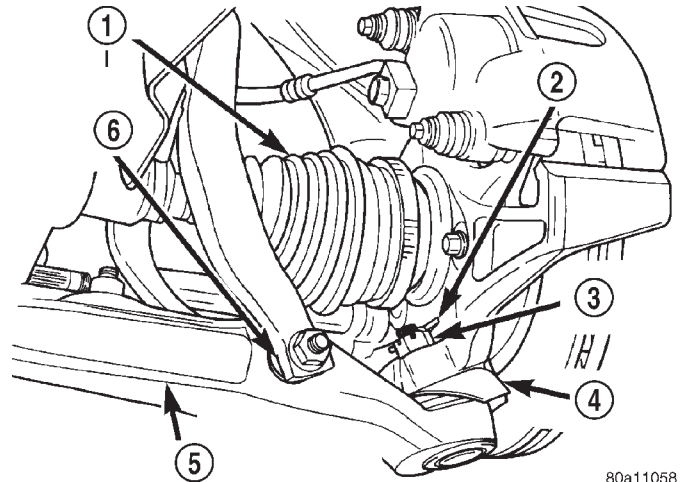


Fig. 20 Lower Ball Joint Attachment To Steering Knuckle

- 1 - DRIVESHAFT
- 2 - COTTER PIN
- 3 - CASTLE NUT
- 4 - HEAT SHIELD
- 5 - LOWER CONTROL ARM
- 6 - SHOCK ABSORBER CLEVIS

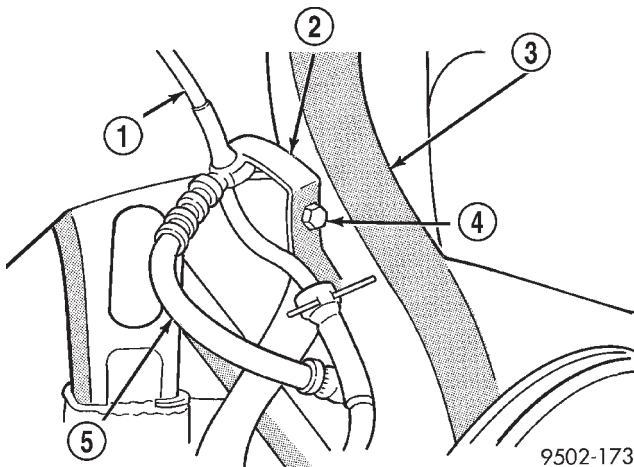


Fig. 19 Speed Sensor Cable Routing Bracket

- 1 - WHEEL SPEED SENSOR CABLE
- 2 - SPEED SENSOR CABLE ROUTING BRACKET
- 3 - STEERING KNUCKLE
- 4 - ATTACHING BOLT
- 5 - BRAKE CALIPER FLEX HOSE

CAUTION: No tool is to be inserted between the steering knuckle and the lower ball joint to separate stud of lower ball joint from the steering knuckle. The steering knuckle is to be separated from the stud of the ball joint only using the procedure as described in step Step 12 below.

CAUTION: When striking the steering knuckle, do not hit the heat shield covering the ball joint grease seal. Bending the heat shield against the ball joint grease seal will cause the grease seal to fail.

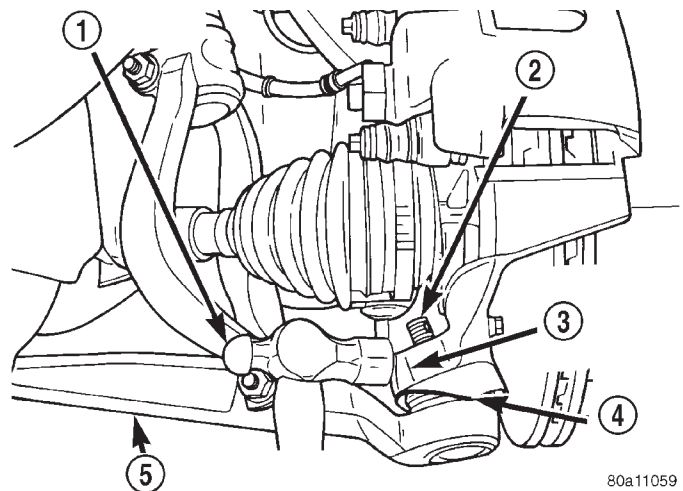


Fig. 21 Separating Ball Joint Stud From Steering Knuckle

- 1 - HAMMER
- 2 - BALL JOINT STUD
- 3 - STEERING KNUCKLE BOSS
- 4 - HEAT SHIELD
- 5 - LOWER CONTROL ARM

REMOVAL AND INSTALLATION (Continued)

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

(13) Lift up on steering knuckle separating it from the lower ball joint stud. **Use caution when separating ball joint stud from steering knuckle, so ball joint seal does not get cut.**

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, driveshaft must be supported.

(14) Separate the steering knuckle from the outer C/V joint. Separate steering knuckle from outer C/V joint, by supporting the driveshaft while pulling steering knuckle away from the outer C/V joint (Fig. 22).

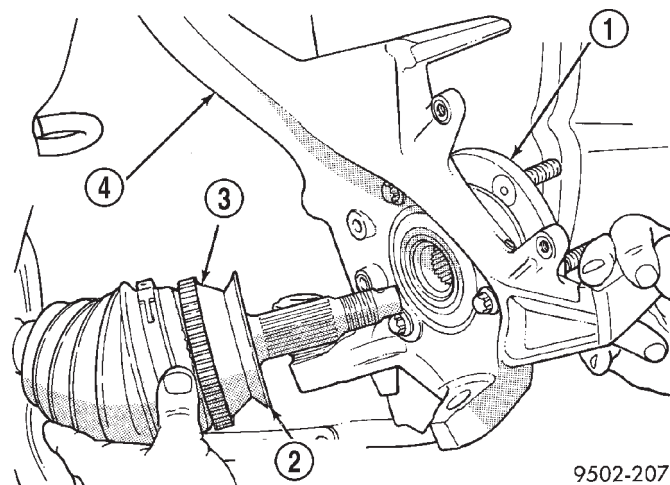


Fig. 22 Separating Steering Knuckle From Outer C/V Joint

- 1 - HUB/BEARING
- 2 - BEARING SHIELD
- 3 - OUTER C/V JOINT
- 4 - STEERING KNUCKLE

(15) Remove the cotter pin and nut (Fig. 23) from the upper ball joint stud to steering knuckle attachment.

(16) Remove the upper ball joint stud from the steering knuckle using Puller, Special Tool, C-3894-A (Fig. 24).

(17) Remove steering knuckle from vehicle.

(18) **The bolt in type front wheel bearing used on the vehicle is transferable to the replacement steering knuckle if bearing is found to be in usable condition.** Refer to Hub And Bearing Service in this section of the service manual for proper wheel bearing removal and installation procedure.

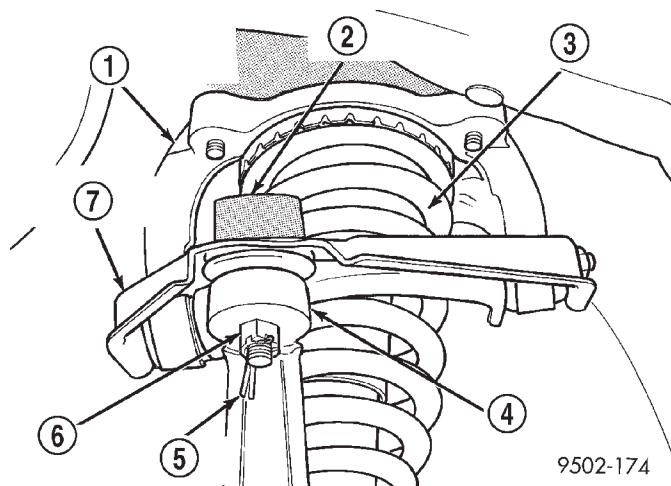


Fig. 23 Upper Ball Joint Attachment To Steering Knuckle

- 1 - UPPER CONTROL ARM SHOCK ABSORBER MOUNTING BRACKET
- 2 - BALL JOINT
- 3 - SHOCK ABSORBER ASSEMBLY
- 4 - STEERING KNUCKLE
- 5 - COTTER PIN
- 6 - CASTLE NUT
- 7 - UPPER CONTROL ARM

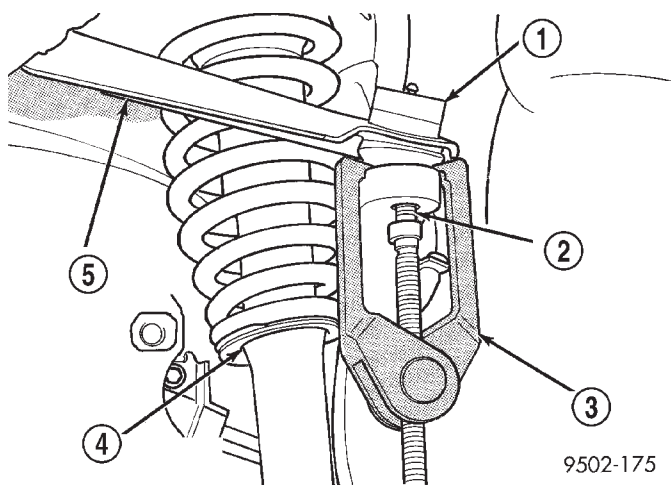


Fig. 24 Ball Joint Stud Removal From Steering Knuckle

- 1 - BALL JOINT
- 2 - BALL JOINT STUD
- 3 - SPECIAL TOOL C3894-A
- 4 - SHOCK ABSORBER ASSEMBLY
- 5 - UPPER CONTROL ARM

INSTALLATION

(1) If required install a hub/bearing assembly into the steering knuckle before installing steering knuckle on vehicle. Refer to Hub And Bearing Service in this section of the service manual for proper wheel bearing removal and installation procedure.

REMOVAL AND INSTALLATION (Continued)

(2) Install the heat shield for the lower control arm ball joint grease seal before beginning the installation of the steering knuckle on the vehicle.

(3) Slide drive shaft back into front hub/bearing assembly. Then install steering knuckle onto the ball joint stud in lower control arm.

(4) Install the steering knuckle to lower ball joint stud castle nut.

(5) Install upper ball joint in steering knuckle. Install the steering knuckle to upper ball joint nut. Tighten the upper ball joint castle nut (Fig. 23) to a torque of 54 N·m (40 ft. lbs.). Then, using a crowfoot and torque wrench, tighten the lower ball joint nut (Fig. 20) to a torque of 75 N·m (55 ft. lbs.). Install cotter pins in upper and lower ball joint studs.

(6) Install the speed sensor cable routing bracket on the steering knuckle (Fig. 19) and securely tighten the attaching bolt.

CAUTION: When installing tie rod on steering knuckle the heat shield (Fig. 25) must be installed. If heat shield is not installed, tie rod seal boot can fail due to excessive heat from brake rotor.

(7) Install tie rod end into the steering knuckle. Start tie rod end to steering knuckle attaching nut onto stud of tie rod end. While holding stud of tie rod end stationary, tighten tie rod end to steering knuckle attaching nut (Fig. 17). Then using a crowfoot and 11/32 socket tighten the attaching nut to a torque of 61 N·m (45 ft. lbs.) (Fig. 25).

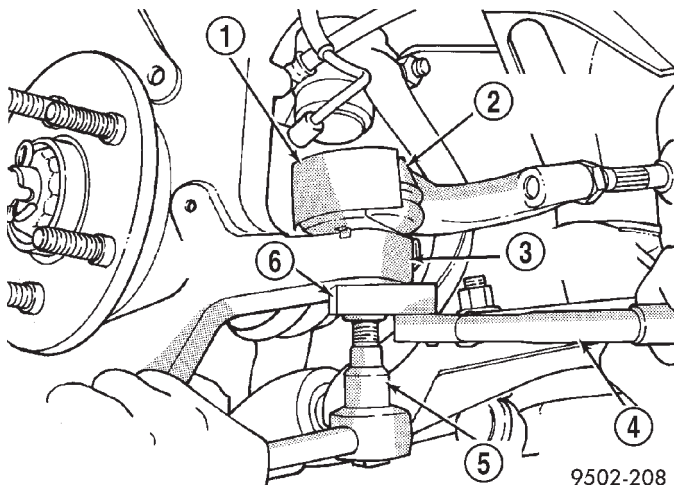


Fig. 25 Torquing Tie Rod End Attaching Nut

- 1 - HEAT SHIELD
- 2 - TIE ROD END
- 3 - STEERING KNUCKLE
- 4 - TORQUE WRENCH
- 5 - 11/32 SOCKET
- 6 - CROWFOOT

(8) Install braking disc back on hub and bearing assembly.

(9) Install disc brake caliper assembly on steering knuckle. Caliper is installed by first sliding top of caliper under top abutment on steering knuckle. Then installing bottom of caliper against bottom abutment of steering knuckle (Fig. 26).

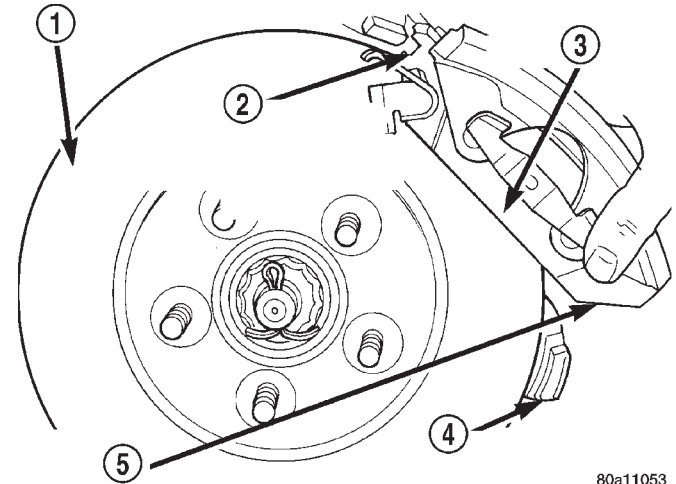


Fig. 26 Installing Brake Caliper

- 1 - ROTOR
- 2 - INSTALL THIS END OF CALIPER UNDER STEERING KNUCKLE FIRST
- 3 - OUTBOARD BRAKE SHOE
- 4 - STEERING KNUCKLE
- 5 - DISC BRAKE CALIPER

(10) Install the disc brake caliper guide pin bolts (Fig. 14). Tighten caliper assembly guide pin bolts to a torque of 31 N·m (23 ft. lbs.).

(11) Clean all foreign matter from the threads of the outer C/V joint stub axle. Install hub nut onto driveshaft stub axle.

(12) With vehicle brakes applied to keep braking disc from turning, tighten hub nut to 142 N·m (105 ft. lbs.) of torque.

(13) Install front wheel and tire assembly. Install front wheel lug nuts and tighten in correct sequence. Then tighten to a torque of 135 N·m (100 ft. lbs.).

(14) Lower vehicle.

(15) Set front Toe on vehicle to required specification. Use procedure listed under Wheel Alignment in this service manual group.

HUB AND BEARING (FRONT)

REMOVAL

(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 front tire and wheel assembly from the hub.

REMOVAL AND INSTALLATION (Continued)

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

(3) Loosen hub nut with the brakes applied. **The hub and driveshaft are splined together through the knuckle (bearing) and retained by the hub nut.**

(4) Remove front disc brake caliper to steering knuckle guide pin attaching bolts (Fig. 27).

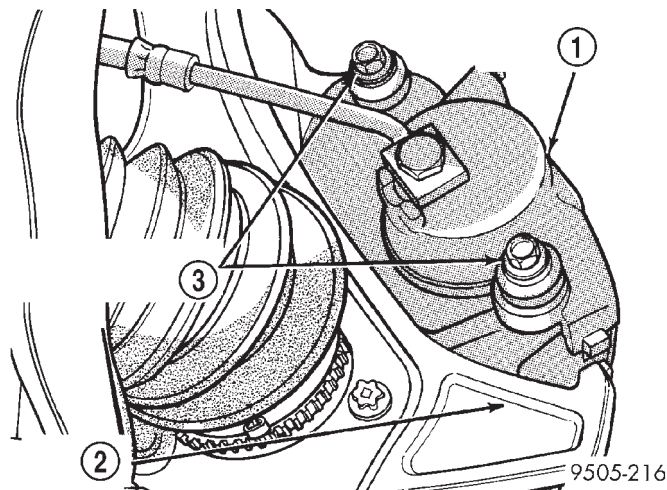


Fig. 27 Front Disc Brake Caliper Mounting

- 1 - DISC BRAKE CALIPER ASSEMBLY
- 2 - STEERING KNUCKLE
- 3 - CALIPER ASSEMBLY GUIDE PIN BOLTS

(5) Remove disc brake caliper assembly from steering knuckle. Caliper is removed by first lifting bottom of caliper away from steering knuckle, and then removing top of caliper out from under steering knuckle (Fig. 28).

(6) Support brake caliper/adaptor assembly using a wire hook (Fig. 29) and not by hydraulic hose.

(7) Remove the braking disc from the front hub/bearing assembly (Fig. 30).

(8) Remove nut attaching the outer tie rod end to the steering knuckle (Fig. 31). **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 wrench (Fig. 31).**

(9) Remove the tie rod end from the steering knuckle arm, using Remover, Special Tool MB-991113 (Fig. 32).

(10) If equipped with antilock brakes remove the speed sensor cable routing bracket (Fig. 33) from the steering knuckle.

(11) Remove cotter pin and castle nut (Fig. 34) from the stud of the lower ball joint.

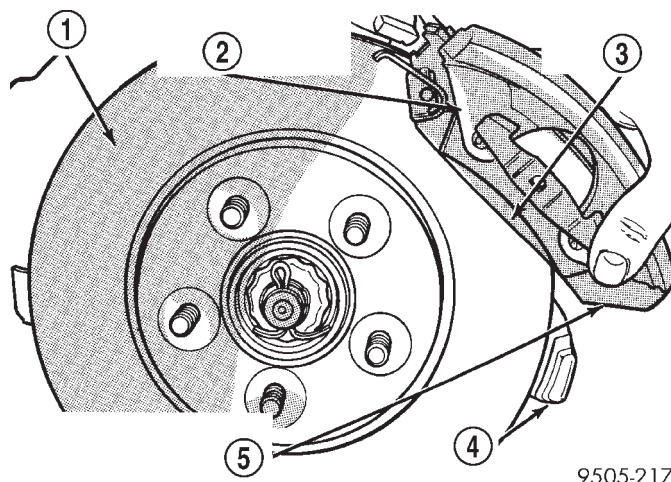


Fig. 28 Caliper Removal From Steering Knuckle

- 1 - ROTOR
- 2 - DISC BRAKE CALIPER ASSEMBLY
- 3 - OUTBOARD BRAKE SHOE
- 4 - STEERING KNUCKLE
- 5 - LIFT THIS END OF CALIPER AWAY FROM STEERING KNUCKLE FIRST

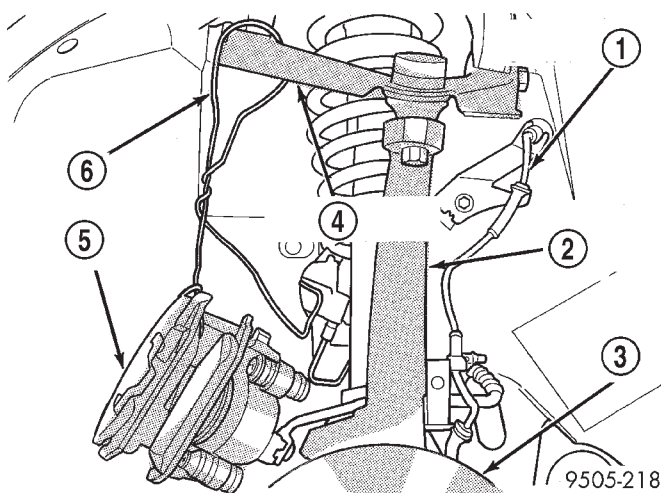
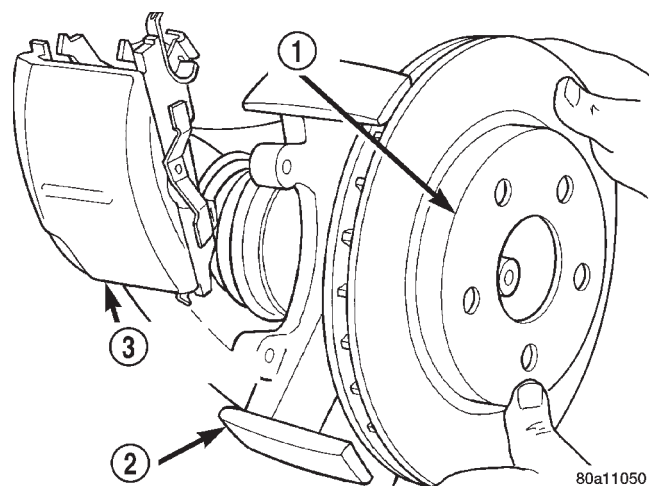


Fig. 29 Correctly Supported Front Disc Brake Caliper

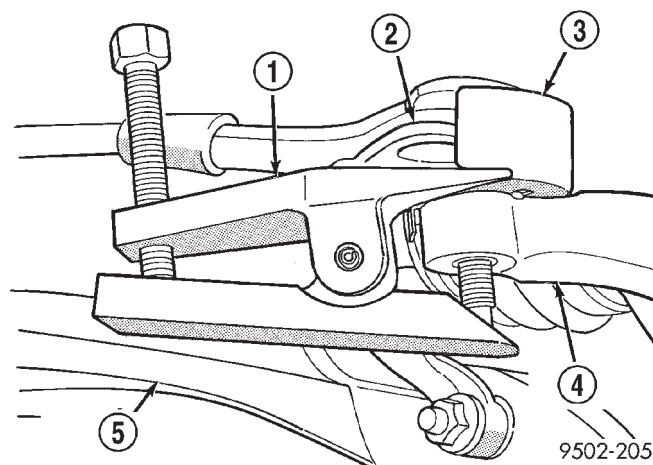
- 1 - ABS SPEED SENSOR CABLE
- 2 - STEERING KNUCKLE
- 3 - ROTOR
- 4 - UPPER CONTROL ARM
- 5 - DISC BRAKE CALIPER ASSEMBLY
- 6 - WIRE HANGER

CAUTION: No tool is to be inserted between the steering knuckle and the lower ball joint to separate stud of lower ball joint from the steering knuckle. The steering knuckle is to be separated from the stud of the ball joint only using the procedure as described in step Step 12 below.

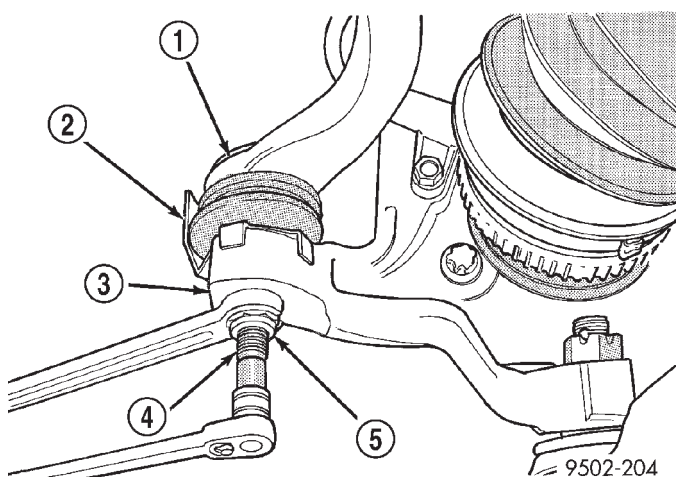
REMOVAL AND INSTALLATION (Continued)

**Fig. 30 Removing/Installing Front Braking Disc**

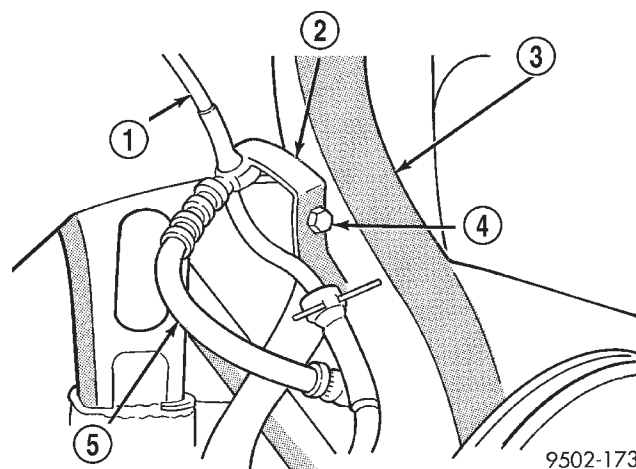
- 1 - BRAKING DISC
- 2 - STEERING KNUCKLE
- 3 - DISC BRAKE CALIPER ASSEMBLY (STORED)

**Fig. 32 Tie Rod End Removal From Steering Knuckle**

- 1 - SPECIAL TOOL MB-991113
- 2 - TIE ROD END
- 3 - HEAT SHIELD
- 4 - STEERING KNUCKLE
- 5 - LOWER CONTROL ARM

**Fig. 31 Tie Rod End Attaching Nut Removal/Installation**

- 1 - TIE ROD END
- 2 - HEAT SHIELD
- 3 - STEERING KNUCKLE
- 4 - TIE ROD END STUD
- 5 - NUT

**Fig. 33 Speed Sensor Cable Routing Bracket**

- 1 - WHEEL SPEED SENSOR CABLE
- 2 - SPEED SENSOR CABLE ROUTING BRACKET
- 3 - STEERING KNUCKLE
- 4 - ATTACHING BOLT
- 5 - BRAKE CALIPER FLEX HOSE

(12) Turn steering knuckle so the front of the steering knuckle is facing as far outboard in the wheel well as possible. Using a hammer strike the boss on the steering knuckle, (Fig. 35) until steering knuckle separates from stud of lower ball joint. **When striking steering knuckle, care MUST be taken not to hit lower control arm or ball joint grease seal.**

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

(13) Lift up on steering knuckle separating it from the lower ball joint stud. **Use caution when separating ball joint stud from steering knuckle, so ball joint seal does not get cut.**

REMOVAL AND INSTALLATION (Continued)

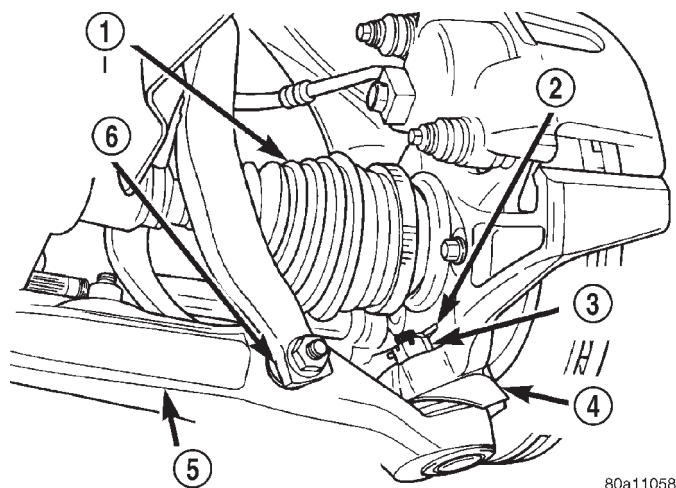


Fig. 34 Lower Ball Joint Attachment To Steering Knuckle

- 1 - DRIVESHAFT
- 2 - COTTER PIN
- 3 - CASTLE NUT
- 4 - HEAT SHIELD
- 5 - LOWER CONTROL ARM
- 6 - SHOCK ABSORBER CLEVIS

steering knuckle away from the outer C/V joint (Fig. 36).

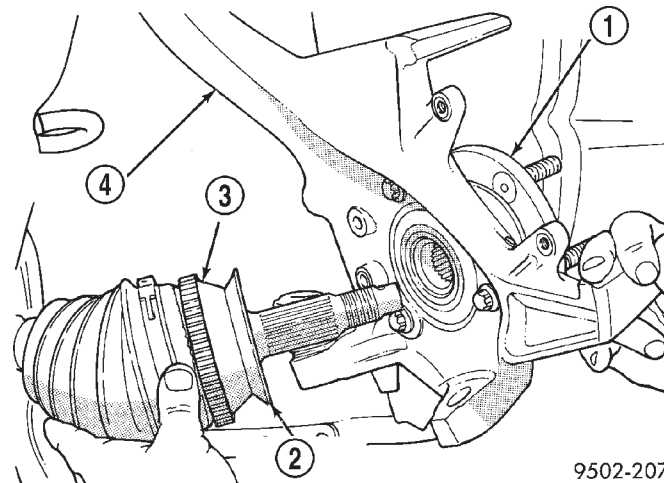


Fig. 36 Separating Steering Knuckle From Outer C/V Joint

- 1 - HUB/BEARING
- 2 - BEARING SHIELD
- 3 - OUTER C/V JOINT
- 4 - STEERING KNUCKLE

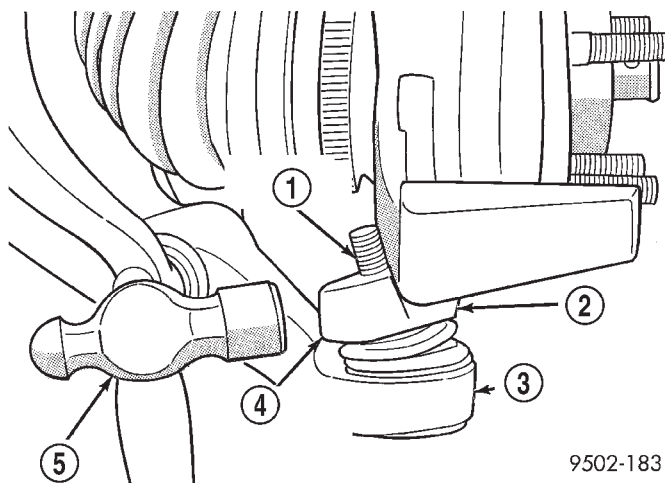


Fig. 35 Separating Ball Joint Stud From Steering Knuckle

- 1 - BALL JOINT STUD
- 2 - STEERING KNUCKLE
- 3 - LOWER CONTROL ARM
- 4 - STEERING KNUCKLE BOSS
- 5 - HAMMER

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, driveshaft must be supported.

(14) Separate the steering knuckle from the outer C/V joint. Separate steering knuckle from outer C/V joint, by supporting the driveshaft while pulling

(15) Remove the cotter pin and nut (Fig. 37) from the upper ball joint stud to steering knuckle attachment.

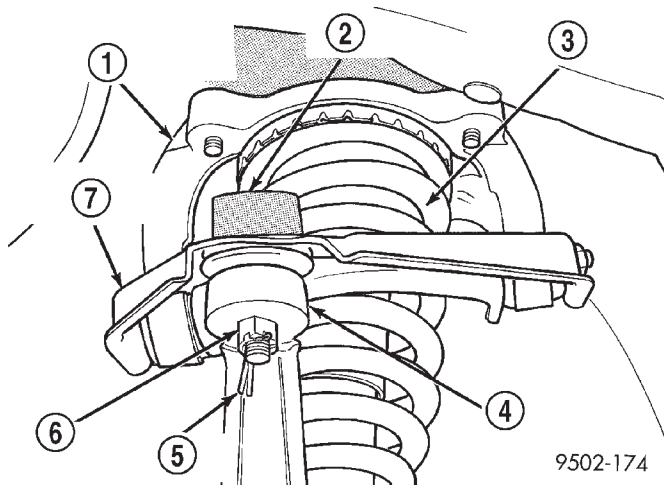


Fig. 37 Upper Ball Joint Attachment To Steering Knuckle

- 1 - UPPER CONTROL ARM SHOCK ABSORBER MOUNTING BRACKET
- 2 - BALL JOINT
- 3 - SHOCK ABSORBER ASSEMBLY
- 4 - STEERING KNUCKLE
- 5 - COTTER PIN
- 6 - CASTLE NUT
- 7 - UPPER CONTROL ARM

REMOVAL AND INSTALLATION (Continued)

(16) Remove the upper ball joint stud from the steering knuckle using Puller, Special Tool, C3894-A (Fig. 38).

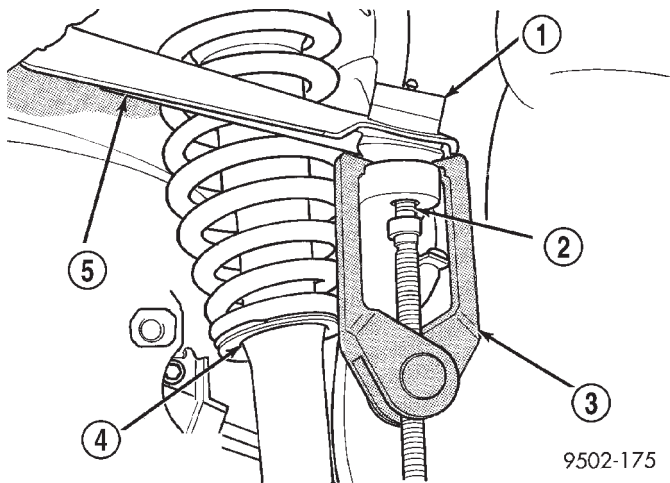


Fig. 38 Ball Joint Stud Removal From Steering Knuckle

- 1 - BALL JOINT
- 2 - BALL JOINT STUD
- 3 - SPECIAL TOOL C3894-A
- 4 - SHOCK ABSORBER ASSEMBLY
- 5 - UPPER CONTROL ARM

(17) Remove steering knuckle from vehicle.
 (18) Mount steering knuckle securely in a vise.
 (19) Remove the 3 bolts (Fig. 39) attaching the hub/bearing assembly to the steering knuckle.

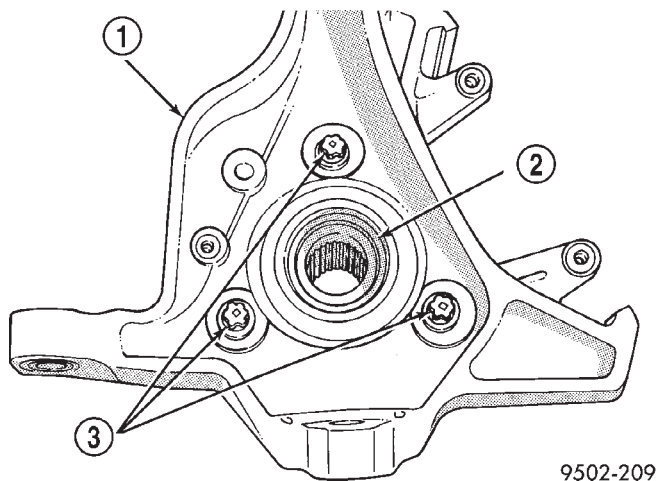


Fig. 39 Hub/Bearing Attaching Bolts

- 1 - STEERING KNUCKLE
- 2 - HUB/BEARING ASSEMBLY
- 3 - HUB/BEARING ATTACHING BOLTS

(20) Remove the hub and bearing assembly out from the front of the steering knuckle.

NOTE: If bearing will not come out of steering knuckle, it can be tapped out using a soft faced hammer.

INSTALLATION

(1) Thoroughly clean all hub and bearing assembly mounting surfaces on steering knuckle.

(2) Install the replacement hub and bearing assembly in steering knuckle aligning bolt holes in bearing flange with holes in steering knuckle.

(3) Install the 3 mounting bolts (Fig. 39) and tighten evenly to ensure bearing is square to face of steering knuckle. The tighten the 3 mounting bolts (Fig. 39) to a torque of 110 N·m (80 ft. lbs.).

(4) Slide drive shaft back into front hub and bearing assembly.

(5) Install the steering knuckle on the lower control arm ball joint.

(6) Install the steering knuckle to lower ball joint castle nut.

(7) Install upper ball joint stud in steering knuckle.

(8) Install the steering knuckle to upper ball joint stud castle nut.

(9) Using a crow foot and torque wrench, tighten the upper and lower ball joint castle nuts to the following torque specifications.

- Lower ball joint castle nut 74 N·m (55 ft. lbs.).
- Upper ball joint castle nut 62 N·m (45 ft. lbs.).

(10) If equipped with antilock brakes install the speed sensor cable routing bracket on the steering knuckle (Fig. 33) and securely tighten attaching bolt.

CAUTION: When installing tie rod on steering knuckle the heat shield (Fig. 40) must be installed. If heat shield is not installed, tie rod seal boot can fail due to excessive heat from brake rotor.

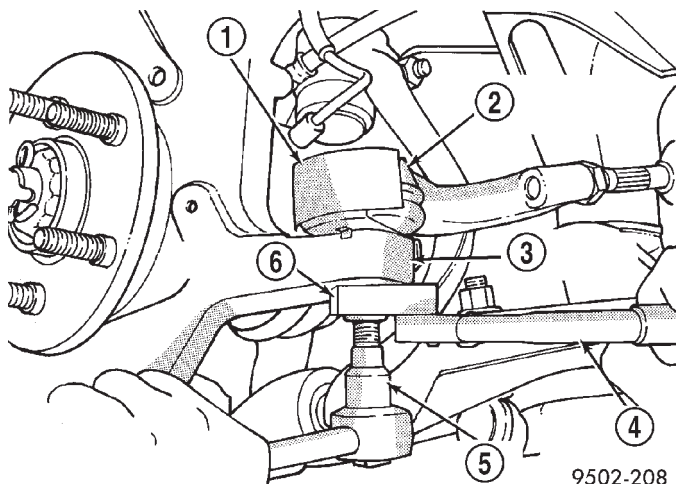
(11) Install tie rod end into the steering knuckle. Start tie rod end to steering knuckle attaching nut onto stud of tie rod end. While holding the stud of the tie rod end stationary, tighten tie rod end to steering knuckle attaching nut (Fig. 31). Then using a crowfoot and 11/32 socket tighten the attaching nut to a torque of 61 N·m (45 ft. lbs.) (Fig. 40).

(12) Install rotor on hub and bearing.

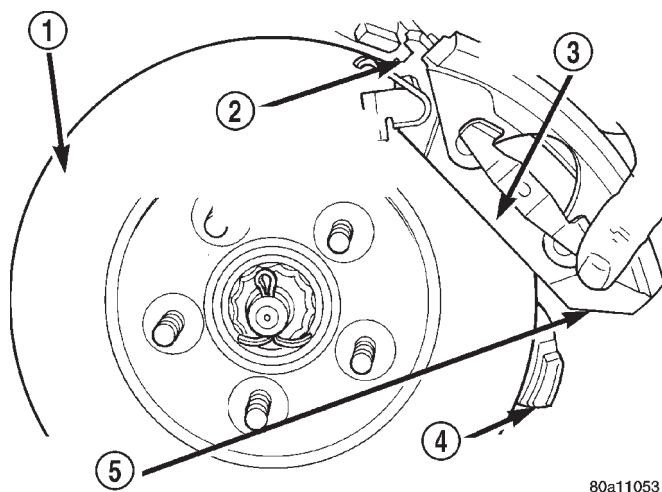
(13) Install disc brake caliper assembly on steering knuckle. Caliper is installed by first sliding top of caliper under top abutment on steering knuckle. Then installing bottom of caliper against bottom abutment of steering knuckle (Fig. 41).

(14) Install disc brake caliper assembly to steering knuckle guide pin bolts (Fig. 27). Tighten caliper assembly guide pin bolts to a torque of 31 N·m (23 ft. lbs.).

REMOVAL AND INSTALLATION (Continued)

**Fig. 40 Torquing Tie Rod End Attaching Nut**

- 1 - HEAT SHIELD
- 2 - TIE ROD END
- 3 - STEERING KNUCKLE
- 4 - TORQUE WRENCH
- 5 - 11/32 SOCKET
- 6 - CROWFOOT

**Fig. 41 Installing Brake Caliper**

- 1 - ROTOR
- 2 - INSTALL THIS END OF CALIPER UNDER STEERING KNUCKLE FIRST
- 3 - OUTBOARD BRAKE SHOE
- 4 - STEERING KNUCKLE
- 5 - DISC BRAKE CALIPER

(15) Clean all foreign matter from the threads of the outer C/V joint stub axle. Install hub nut onto the driveshaft stub axle.

(16) With vehicle brakes applied to keep stub axle from turning, tighten hub nut to a torque of 142 N·m (105 ft. lbs.) of torque.

(17) Install front wheel and tire assembly. Install front wheel lug nuts and tighten in correct sequence. Tighten nuts to a torque of 135 N·m (100 ft.lbs.).

(18) Lower vehicle.

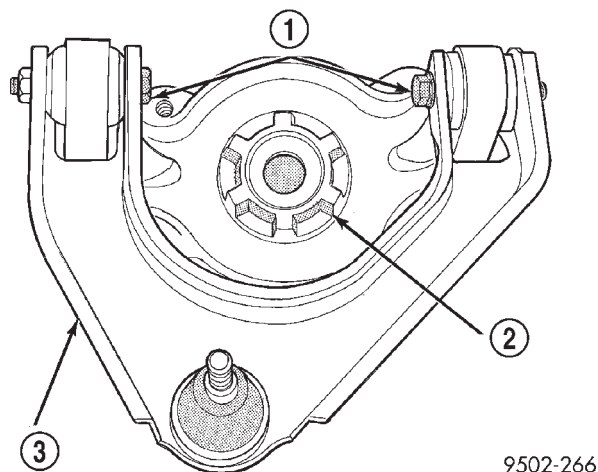
(19) Set front toe on vehicle to required specification. Use procedure listed under WHEEL ALIGNMENT, in the SUSPENSION group of this service manual.

UPPER CONTROL ARM (FRONT)**REMOVAL**

(1) Remove the front shock assembly from the vehicle. Refer to SHOCK ASSEMBLY (FRONT) in this section for the required procedure.

(2) Disassemble the shock assembly until the upper (shock absorber/upper control arm) mounting bracket is removed from the coil spring. Refer to SHOCK ASSEMBLY (FRONT) in the DISASSEMBLY AND ASSEMBLY section of this group for the required procedure.

(3) Remove the 2 bolts attaching the upper control arm to the bushings in the upper mounting bracket (Fig. 42).

**Fig. 42 Upper Control Arm To Mounting Bracket Attachment**

- 1 - CONTROL ARM MOUNTING BOLTS
- 2 - UPPER CONTROL ARM MOUNTING BRACKET
- 3 - UPPER CONTROL ARM

(4) Remove the upper control arm from the mounting bracket.

INSTALLATION

(1) Install the upper control arm on the upper (shock absorber/upper control arm) mounting bracket.

(2) Install the 2 bolts attaching the upper control arm to the bushings in the mounting bracket (Fig. 42). The bolts must be installed from center, so the heads are toward the coil spring when it is installed. **The bolts MUST be installed so the head of the bolt will be toward the coil spring when the**

REMOVAL AND INSTALLATION (Continued)

mounting bracket is installed on shock absorber (Fig. 42).

CAUTION: For clearance reasons the control arm mounting bolts must be installed from center, so the heads are toward the coil spring when it is installed. Otherwise the bolts may rub the coil spring, damaging it.

(3) Install the control arm mounting bolt nuts. Position the control arm at a 90 degree angle to the mounting bracket and tighten the bolts to a torque of 90 N·m (66 ft. lbs.).

(4) Reinstall the upper mounting bracket and control arm on the coil spring. Reassemble the front shock assembly. Refer to SHOCK ASSEMBLY (FRONT) in the DISASSEMBLY AND ASSEMBLY section of this group for the required procedure.

(5) Reinstall the front shock assembly on the vehicle. Refer to SHOCK ASSEMBLY (FRONT) in this section for the required installation procedure.

LOWER CONTROL ARM

REMOVAL

(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 tire and wheel from the vehicle.

NOTE: Removing the tie rod end from the steering knuckle allows the steering knuckle to be turned further. This allows better access to the steering knuckle when striking it to remove the ball joint stud from the steering knuckle.

(3) Remove nut attaching the outer tie rod end to the steering knuckle (Fig. 43). **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 wrench (Fig. 43).**

(4) Remove the tie rod end from the steering knuckle using Remover, Special Tool MB-991113 (Fig. 44).

(5) Remove cotter pin and castle nut (Fig. 45) from stud of lower ball joint.

CAUTION: No tool is to be inserted between the steering knuckle and the lower ball joint to separate the lower ball joint from the steering knuckle. The steering knuckle is to be separated from the ball joint only using the procedure as described in step Step 6 below.

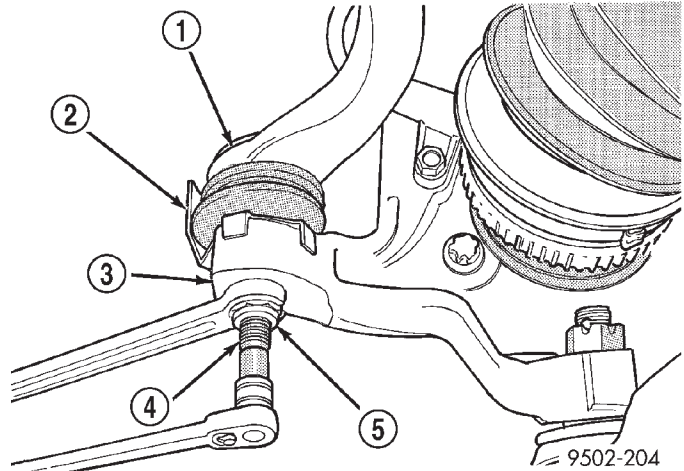


Fig. 43 Tie Rod End Attaching Nut

- 1 - TIE ROD END
- 2 - HEAT SHIELD
- 3 - STEERING KNUCKLE
- 4 - TIE ROD END STUD
- 5 - NUT

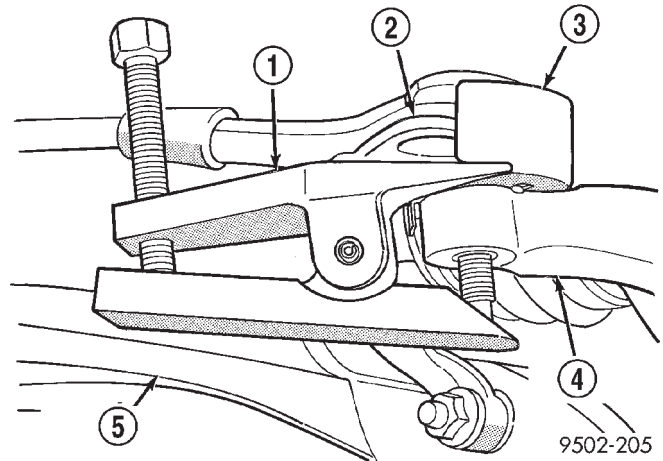


Fig. 44 Tie Rod End Removal From Steering Knuckle

- 1 - SPECIAL TOOL MB-991113
- 2 - TIE ROD END
- 3 - HEAT SHIELD
- 4 - STEERING KNUCKLE
- 5 - LOWER CONTROL ARM

CAUTION: When striking the steering knuckle, do not hit the heat shield covering the ball joint grease seal. Bending the heat shield against the ball joint grease seal will cause the grease seal to fail.

(6) Turn steering knuckle so the front of the steering knuckle is facing as far outboard in the wheel opening as possible (Fig. 46). Using a hammer, strike steering knuckle boss (Fig. 46) until steering knuckle separates from the lower ball joint. **When striking**

REMOVAL AND INSTALLATION (Continued)

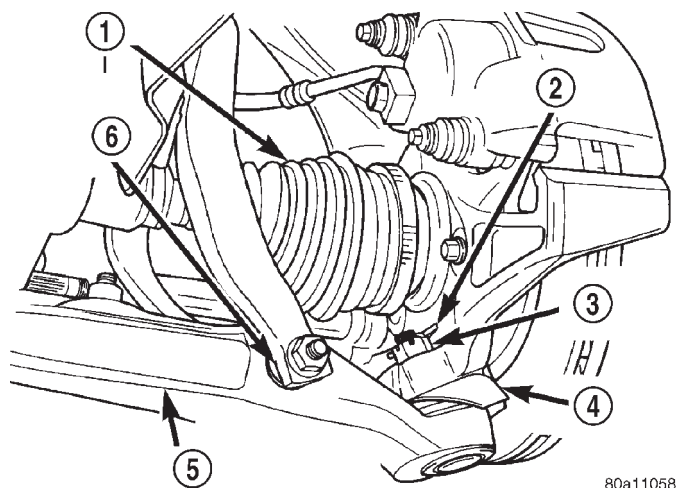


Fig. 45 Lower Ball Joint Attachment To Steering Knuckle

- 1 - DRIVESHAFT
- 2 - COTTER PIN
- 3 - CASTLE NUT
- 4 - HEAT SHIELD
- 5 - LOWER CONTROL ARM
- 6 - SHOCK ABSORBER CLEVIS

steering knuckle care MUST be taken not to hit lower control arm or ball joint grease seal.

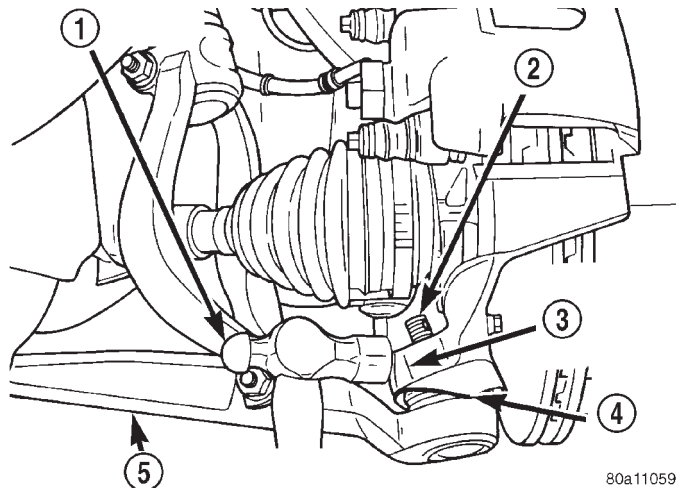


Fig. 46 Separating Lower Ball Joint Stud From Steering Knuckle

- 1 - HAMMER
- 2 - BALL JOINT STUD
- 3 - STEERING KNUCKLE BOSS
- 4 - HEAT SHIELD
- 5 - LOWER CONTROL ARM

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

(7) Remove the shock absorber clevis to lower control arm bushing, nut and thru-bolt. Separate the clevis from lower control arm (Fig. 47).

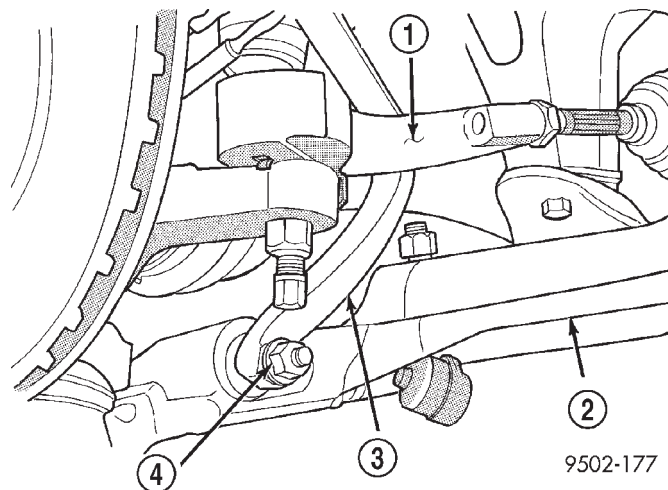


Fig. 47 Clevis To Lower Control Arm Attachment

- 1 - TIE ROD END
- 2 - LOWER CONTROL ARM
- 3 - SHOCK ABSORBER CLEVIS
- 4 - THRU-BOLT

(8) Remove nut attaching the stabilizer bar link to the lower control arm (Fig. 48). When removing nut, hold stud of stabilizer bar link from turning by inserting an allen wrench in the end of the stud (Fig. 48).

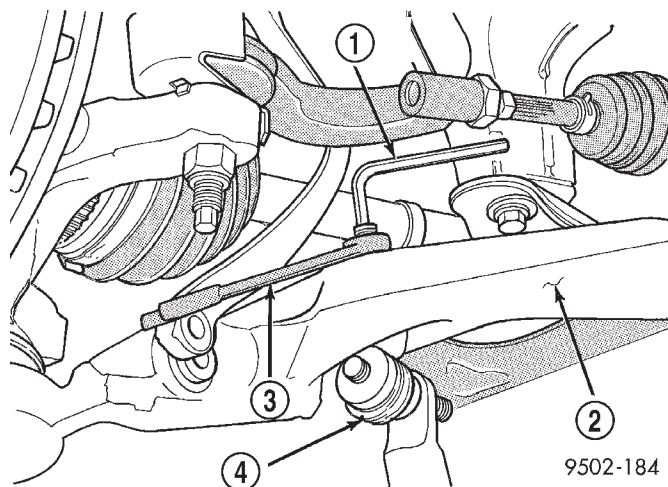


Fig. 48 Removing/ Installing Nut From Stud Of Stabilizer Link

- 1 - ALLEN WRENCH
- 2 - LOWER CONTROL ARM
- 3 - WRENCH
- 4 - STABILIZER BAR LINK ASSEMBLY

REMOVAL AND INSTALLATION (Continued)

(9) Remove the bolts (Fig. 49) attaching the one stabilizer bar bushing clamp to the front suspension crossmember and the body of the vehicle.

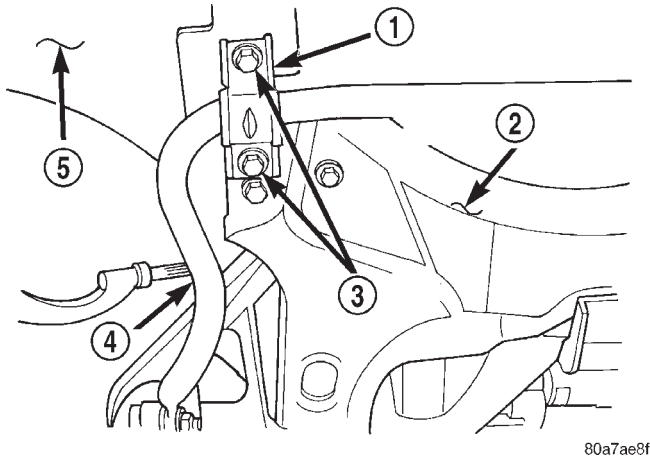


Fig. 49 Stabilizer Bar Bushing Clamp Attachment To Vehicle

- 1 - STABILIZER BAR BUSHING CLAMP
- 2 - FRONT SUSPENSION CROSSMEMBER
- 3 - ATTACHING BOLTS
- 4 - STABILIZER BAR
- 5 - VEHICLE BODY

(10) Lower the one side of the stabilizer bar away from the lower control arm and body of vehicle.

(11) Remove the nut and bolt (Fig. 50) attaching the rear of the lower control arm to the front suspension crossmember.

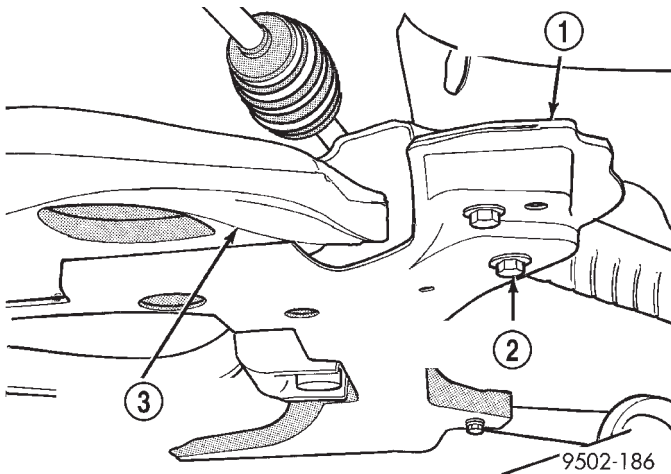


Fig. 50 Lower Control Arm Attachment To Front Suspension Crossmember

- 1 - FRONT SUSPENSION CROSSMEMBER
- 2 - LOWER CONTROL ARM ATTACHING BOLT AND NUT
- 3 - LOWER CONTROL ARM

(12) Remove nut and bolt attaching the front of the lower control arm to the front suspension crossmember (Fig. 51).

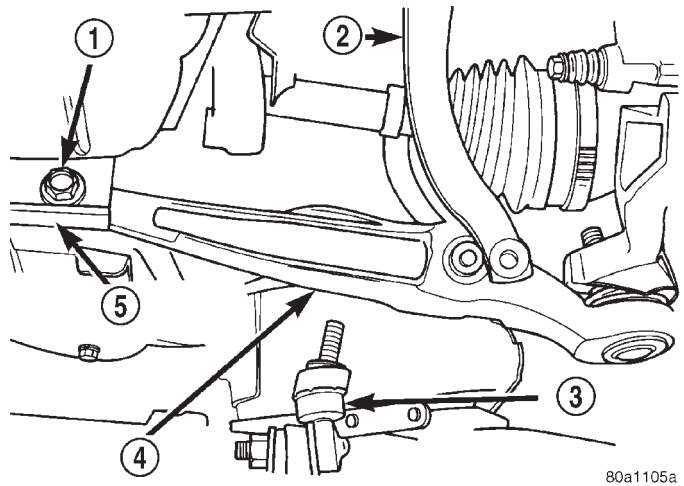


Fig. 51 Attaching Front Of Lower Control Arm To Suspension Crossmember

- 1 - ATTACHING BOLT AND NUT
- 2 - SHOCK CLEVIS
- 3 - STABILIZER BAR
- 4 - LOWER CONTROL ARM
- 5 - FRONT SUSPENSION CROSSMEMBER

CAUTION: When removing lower control arm from crossmember care must be taken to prevent hitting lower ball joint seal against steering knuckle, causing damage to the ball joint seal.

(13) Remove the front of the lower control arm from the front suspension crossmember first.

(14) Then, remove the rear of the lower control arm from the front suspension crossmember. When removing rear of lower control arm from crossmember, keep control arm as level as possible. This will keep rear bushing from binding on crossmember making it easier to remove control arm from crossmember.

INSTALLATION

(1) Position rear of lower control arm into front suspension crossmember first. Then install front of lower control arm in front suspension crossmember. Install bolts and nuts (Fig. 51) and (Fig. 50) attaching the front and rear of lower control arm to front suspension crossmember. **Do not tighten front attaching bolt at this time.**

(2) Tighten lower control arm rear attaching nut and bolt (Fig. 50) to a torque of 95 N·m (70 ft. lbs.).

(3) Install the lower control arm ball joint stud into the steering knuckle. Install the steering knuckle to ball joint stud castle nut (Fig. 45).

(4) Install the tie rod end into the steering knuckle. Start the tie rod end to steering knuckle attaching nut onto stud of tie rod end. While holding stud of tie rod end stationary, tighten tie rod end to steering knuckle attaching nut (Fig. 43). Then using

REMOVAL AND INSTALLATION (Continued)

a crowfoot and 11/32 socket tighten the attaching nut to a torque of 61 N·m (45 ft. lbs.) (Fig. 52).

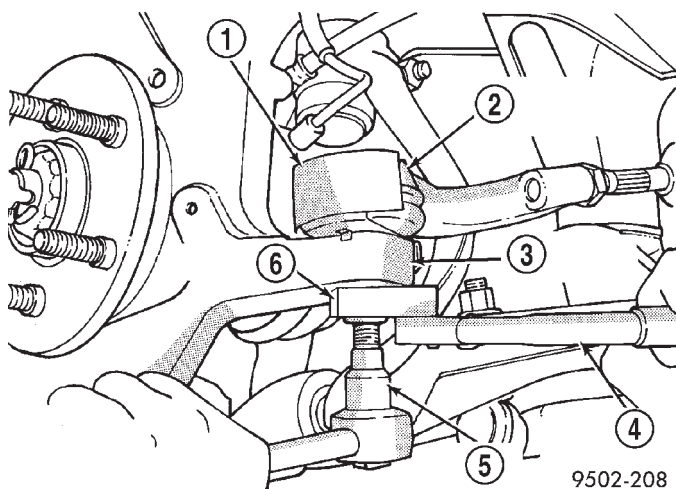


Fig. 52 Torquing Tie Rod End Attaching Nut

- 1 - HEAT SHIELD
- 2 - TIE ROD END
- 3 - STEERING KNUCKLE
- 4 - TORQUE WRENCH
- 5 - 11/32 SOCKET
- 6 - CROWFOOT

(5) Tighten the lower control arm ball joint stud castle nut (Fig. 45) to a torque of 74 N·m (55 ft. lbs.). Install the cotter pin (Fig. 45) in the ball joint stud.

(6) Position sway bar link into its lower control arm mounting hole.

(7) Align sway bar bushing clamp with mounting holes in front suspension crossmember and body of vehicle. Then install and securely tighten the bushing clamp mounting bolts (Fig. 49) to a torque of 61 N·m (45 ft. lbs.).

(8) Install and securely tighten the stabilizer bar link to lower control arm attaching nut to a torque of 102 N·m (75 ft. lbs.). When tightening and torquing attaching nut, hold stud of attaching link from turning with an allen wrench (Fig. 48).

(9) Install the clevis on the lower control arm. Loosely install the clevis to bushing thru-bolt (Fig. 47).

CAUTION: When supporting lower control arm with jack stand, do not position jack stand under the ball joint cap on the lower control arm. Position in area of lower control arm shown in (Fig. 53).

(10) Lower vehicle to the ground with a jack stand positioned under the lower control arm (Fig. 53). Continue to lower vehicle so the total weight of the vehicle is supported by the jack stand and lower control arm.

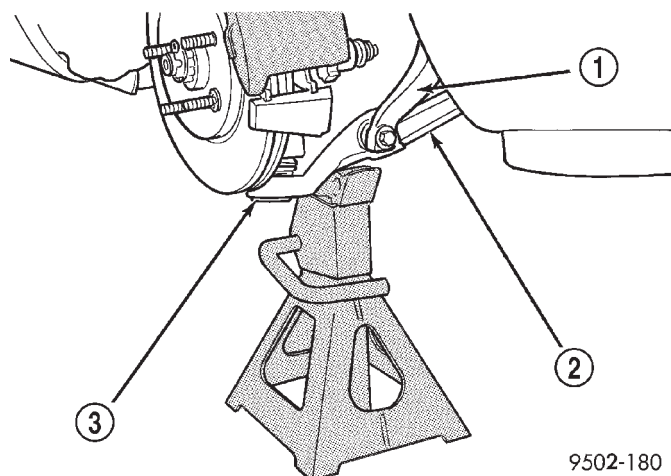


Fig. 53 Supporting Lower Control Arm With Jack Stand

- 1 - SHOCK ABSORBER CLEVIS
- 2 - LOWER CONTROL ARM
- 3 - BALL JOINT CAP

CAUTION: When tightening the thru-bolt do not turn the bolt in the clevis. The serrations on the bolt and the hole in the clevis will be damaged.

(11) **With the vehicle's suspension at curb height**, tighten the clevis to lower control arm bushing thru-bolt nut (Fig. 47) to a torque of 88 N·m (65 ft. lbs.).

(12) Tighten front lower control arm nut and bolt (Fig. 51) to a torque of 182 N·m (135 ft. lbs.).

(13) Install wheel and tire assembly.

(14) 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.).

(15) Remove jack stand from under lower control arm and lower vehicle to the ground.

(16) Check the vehicles alignment specifications and set front Toe to preferred specifications.

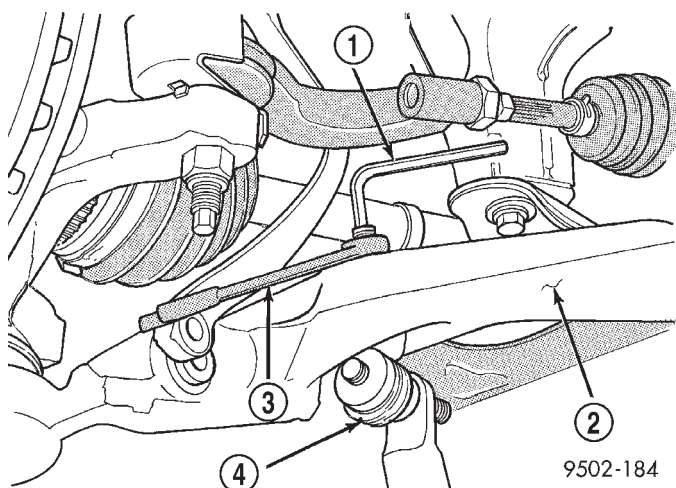
STABILIZER BAR (FRONT)

REMOVAL

(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.

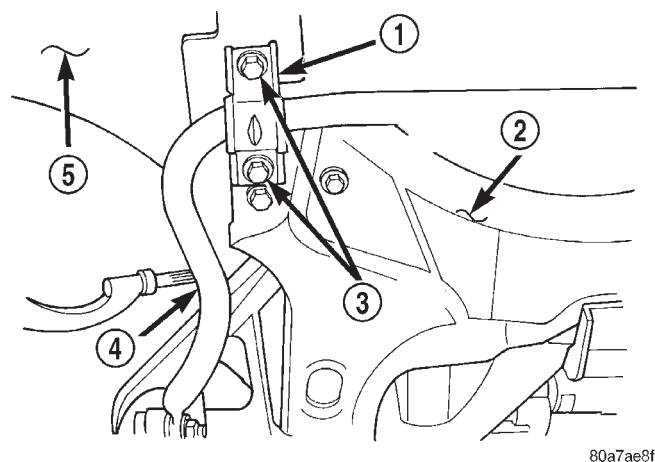
(2) Remove nuts and stabilizer bar attaching link assemblies from the front lower control arms (Fig. 54). When removing attaching link nut, keep stud from turning by installing an allen wrench in the end of the stud (Fig. 54).

REMOVAL AND INSTALLATION (Continued)

**Fig. 54 Stabilizer Bar Attaching Link Nut Removal**

- 1 - ALLEN WRENCH
- 2 - LOWER CONTROL ARM
- 3 - WRENCH
- 4 - STABILIZER BAR LINK ASSEMBLY

(3) Remove the 4 bolts attaching the stabilizer bar bushing retainers to the front suspension crossmember and body (Fig. 55). Then remove the stabilizer bar assembly from the vehicle.

**Fig. 55 Stabilizer Bar Bushing Retainer Attaching Bolts**

- 1 - STABILIZER BAR BUSHING CLAMP
- 2 - FRONT SUSPENSION CROSSMEMBER
- 3 - ATTACHING BOLTS
- 4 - STABILIZER BAR
- 5 - VEHICLE BODY

STABILIZER BAR INSPECTION

Inspect for broken or distorted stabilizer bar bushings, clamps and attaching links. If stabilizer bar to front crossmember bushing replacement is required, bushing can be removed using the stabilizer bar

bushing removal procedure in the Disassembly And Assembly section in this group of the service manual.

If inspection determines that replacement of a stabilizer bar to lower control arm attachment link is required, replace the link before installing stabilizer bar.

INSTALLATION

(1) Position stabilizer bar and bushings as an assembly into front crossmember. Install the stabilizer bar bushing retainer to crossmember and body attaching bolts (Fig. 55).

(2) Tighten the bushing retainer attaching bolts to a torque of 61 N·m (45 ft. lbs.).

(3) Align stabilizer bar attaching link assemblies with attaching link mounting holes in the lower control arms. Install stabilizer bar attaching links into both lower control arms. Install the attaching link to lower control arm retaining nuts. Torque the stabilizer bar attaching link nuts to 101 N·m (75 ft. lbs.).

WHEEL MOUNTING STUDS (FRONT)

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

REMOVAL

(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 front disc brake caliper to steering knuckle attaching bolts (Fig. 56).

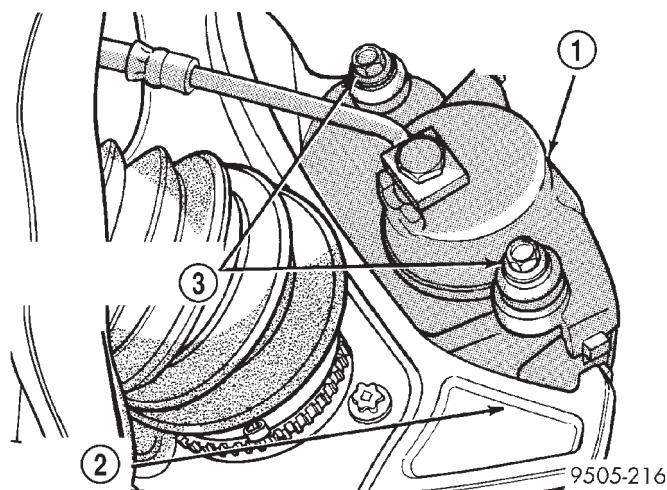
(4) Remove disc brake caliper assembly from steering knuckle. Caliper is removed by first lifting bottom of caliper away from steering knuckle, and then removing top of caliper out from under steering knuckle (Fig. 57).

(5) Support brake caliper/adaptor assembly using a wire hook and not by hydraulic hose (Fig. 58).

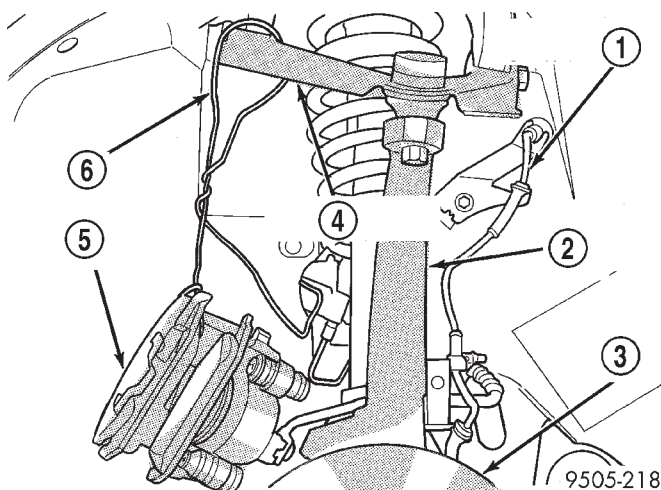
(6) Remove braking disc from front hub (Fig. 59).

(7) Install a lug nut on wheel stud to be removed from hub and bearing assembly, (Fig. 60) so threads on stud are even with end of lug nut. Rotate hub so stud requiring removal is aligned with notch cast into front of steering knuckle. Install Remover, Special Tool C-4150 on hub and bearing assembly flange and wheel stud (Fig. 60).

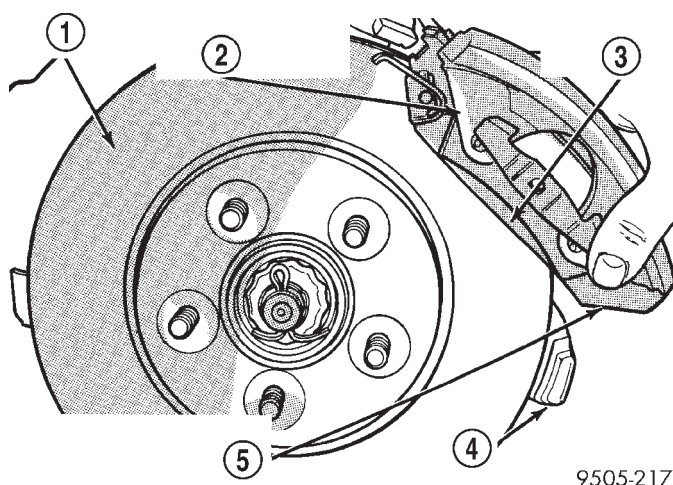
REMOVAL AND INSTALLATION (Continued)

**Fig. 56 Brake Caliper Attaching Bolts**

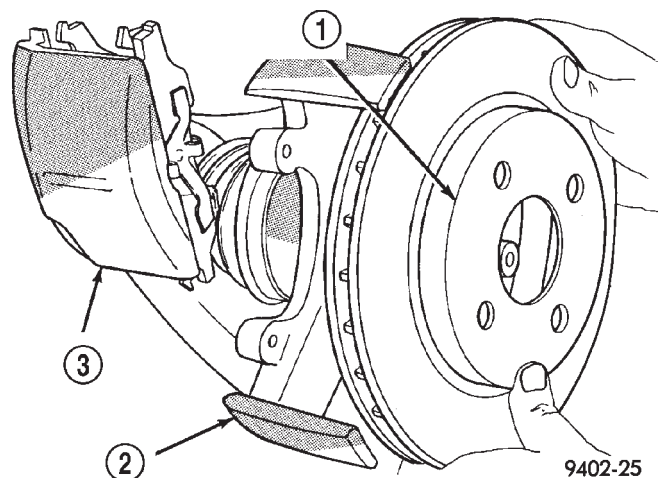
- 1 - DISC BRAKE CALIPER ASSEMBLY
- 2 - STEERING KNUCKLE
- 3 - CALIPER ASSEMBLY GUIDE PIN BOLTS

**Fig. 58 Supporting Brake Caliper**

- 1 - ABS SPEED SENSOR CABLE
- 2 - STEERING KNUCKLE
- 3 - ROTOR
- 4 - UPPER CONTROL ARM
- 5 - DISC BRAKE CALIPER ASSEMBLY
- 6 - WIRE HANGER

**Fig. 57 Brake Caliper Assembly Removal And Installation**

- 1 - ROTOR
- 2 - DISC BRAKE CALIPER ASSEMBLY
- 3 - OUTBOARD BRAKE SHOE
- 4 - STEERING KNUCKLE
- 5 - LIFT THIS END OF CALIPER AWAY FROM STEERING KNUCKLE FIRST

**Fig. 59 Removing/Installing Front Braking Disc**

- 1 - BRAKING DISC
- 2 - STEERING KNUCKLE
- 3 - DISC BRAKE CALIPER ASSEMBLY (STORED)

(8) Tighten down on special tool, this will push the wheel stud out of the hub and bearing flange.

INSTALLATION

(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. 61).

(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 braking disk back on front hub (Fig. 59).

(4) Install disc brake caliper assembly on steering knuckle. Caliper is installed by first sliding top of caliper under top abutment on steering knuckle. Then installing bottom of caliper against bottom abutment of steering knuckle (Fig. 57).

REMOVAL AND INSTALLATION (Continued)

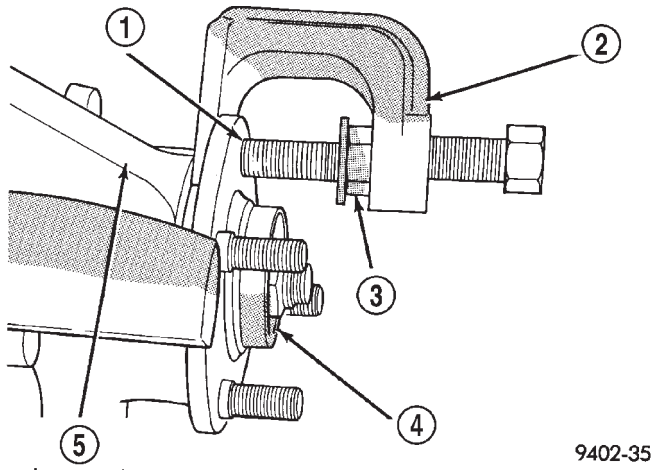


Fig. 60 Removing Wheel Stud From Hub And Bearing

- 1 - WHEEL STUD
- 2 - SPECIAL TOOL C-4150A
- 3 - LUG NUT
- 4 - FRONT HUB
- 5 - STEERING KNUCKLE

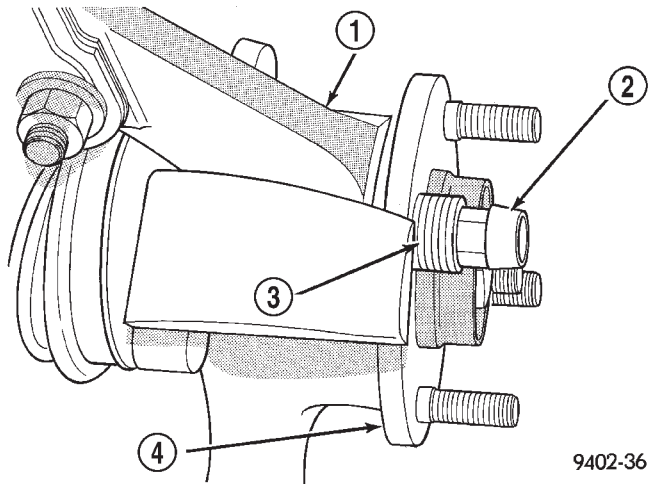


Fig. 61 Installing Wheel Stud Into Hub

- 1 - STEERING KNUCKLE
- 2 - WHEEL LUG NUT
- 3 - WASHERS
- 4 - FRONT HUB

(5) Install disc brake caliper assembly to steering knuckle attaching bolts (Fig. 56) and torque to 31 N·m (23 ft. lbs.).

(6) Install front wheel and tire assembly. Install front wheel lug nuts and torque to 129 N·m (95 ft.lbs.).

(7) Lower vehicle.

DISASSEMBLY AND ASSEMBLY

SHOCK ASSEMBLY (FRONT)

The shock assembly must be removed from the vehicle for it to be disassembled and assembled. Refer to REMOVAL AND INSTALLATION in this section for the required procedure.

For the disassembly and assembly of the shock assembly, use strut spring compressor Pentastar Service Equipment (PSE) tool W-7200, or the equivalent, to compress the coil spring. Follow the manufacturer's instructions closely.

DISASSEMBLY

(1) If both shocks are being serviced at the same time, mark the coil spring and shock assembly according to which side of the vehicle the shock was removed from, and which shock the coil spring was removed from.

(2) Position the shock assembly in the strut coil spring compressor following the manufacturer's instructions. Set the lower hooks and install the clamp on the lower end of the coil spring, so the shock is held in place once the shock shaft nut is removed (Fig. 62). Rotate the shock assembly so the upper control arm ball joint sits directly below the front upper hook as shown (Fig. 63). Position the upper hooks on top of the upper mounting bracket (Fig. 63).

WARNING: DO NOT REMOVE THE SHOCK ROD NUT BEFORE THE COIL SPRING IS COMPRESSED. THE COIL SPRING IS HELD UNDER PRESSURE AND MUST BE COMPRESSED, REMOVING SPRING TENSION FROM THE UPPER MOUNTING BRACKET BEFORE THE ROD NUT IS REMOVED.

(3) Compress the coil spring until all coil spring tension is removed from the upper mounting bracket.

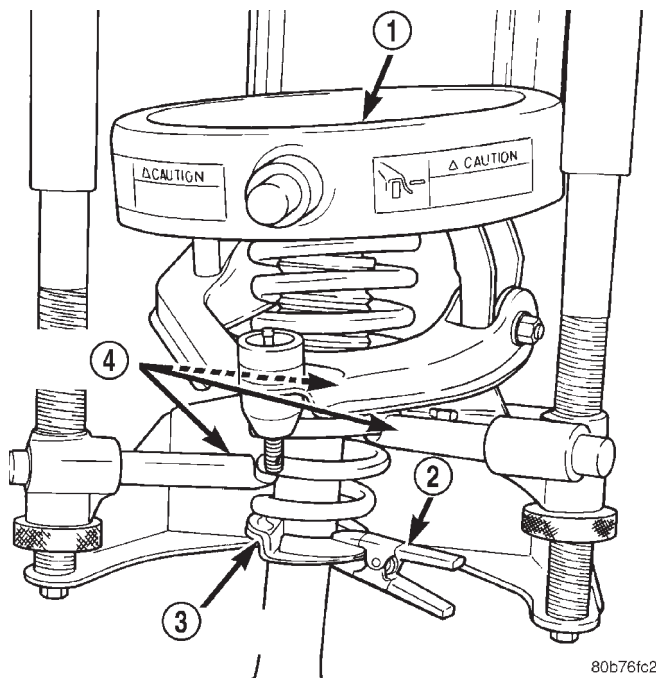
(4) Hold the shock rod from rotating using special socket Snap-On A136, or an equivalent, and remove the retainer nut (Fig. 64).

(5) Remove the upper bushing retainer washer (Fig. 65) from the shock absorber rod.

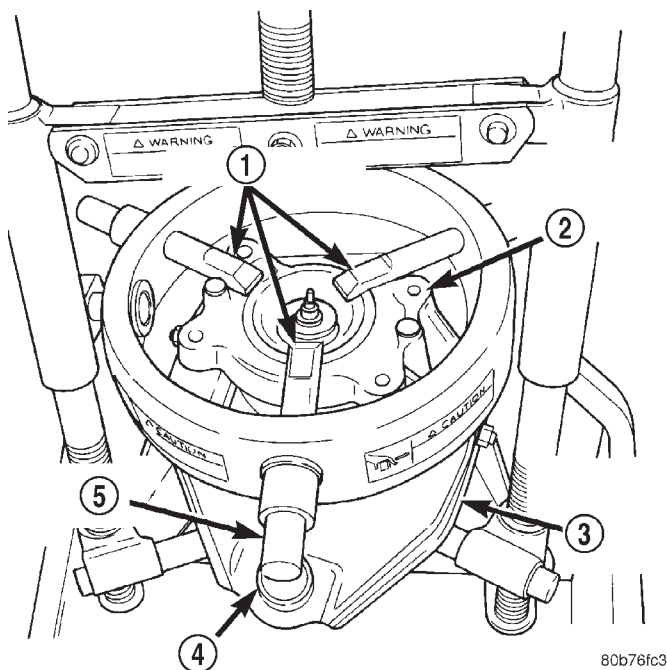
(6) Remove the clamp from the bottom of the coil spring and remove the shock absorber, lower spring isolator, jounce bumper, cup, dust boot, and lower bushing retainer washer out through the bottom of the coil spring.

NOTE: If the coil spring, upper mounting bracket, rod bushings, upper coil spring isolator, or upper control arm need to be serviced, proceed with the next step, otherwise, proceed with step 11.

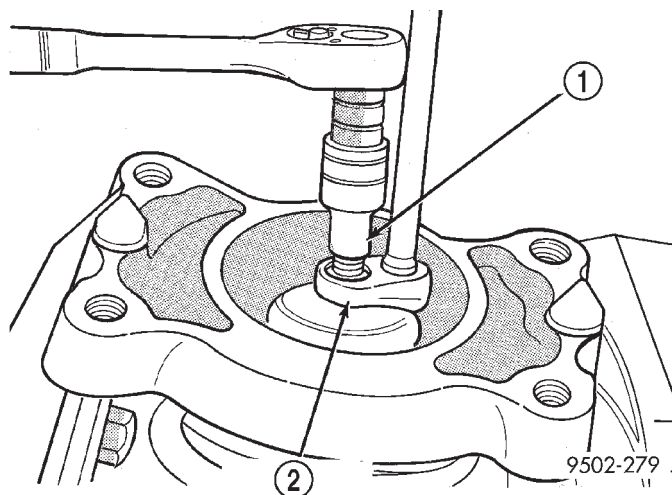
DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 62 Lower Hooks And Clamp**

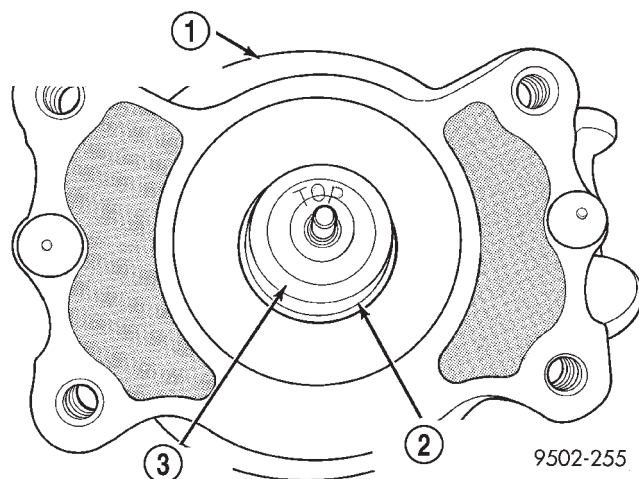
- 1 - COMPRESSOR
- 2 - CLAMP
- 3 - COIL SPRING
- 4 - LOWER HOOKS

**Fig. 63 Upper Hooks Positioned**

- 1 - UPPER HOOKS
- 2 - UPPER MOUNTING BRACKET
- 3 - UPPER CONTROL ARM
- 4 - UPPER BALL JOINT
- 5 - FRONT HOOK

**Fig. 64 Retainer Nut Removal/Installation**

- 1 - SHOCK ABSORBER SOCKET SNAP-ON A136
- 2 - CROW FOOT

**Fig. 65 Washer**

- 1 - SHOCK ABSORBER/UPPER CONTROL ARM MOUNTING BRACKET
- 2 - ISOLATOR BUSHING
- 3 - WASHER

NOTE: Before removing the coil spring from the spring compressor, note the position of the lower coil spring end to the spring compressor. The coil spring will need to be in this position on reassembly for proper coil spring-to-shock absorber and upper mounting bracket orientation.

(7) Release the tension from the coil spring by backing off the compressor drive fully. Push back the compressor upper hooks and remove the upper mounting bracket and upper control arm from the coil spring.

(8) Note the position of the coil spring in the spring compressor as listed in the above note before

DISASSEMBLY AND ASSEMBLY (Continued)

removal. This is necessary for proper alignment of the shock assembly components when reassembly is made. Remove the coil spring from the spring compressor.

(9) Remove the shock absorber rod upper isolator bushing from the upper (shock absorber/upper control arm) mounting bracket (Fig. 66).

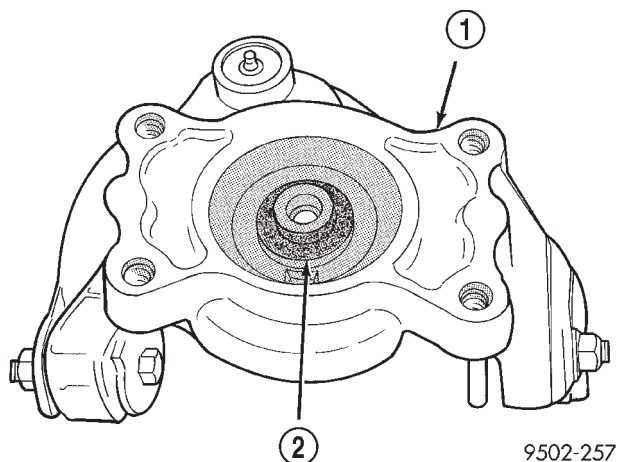


Fig. 66 Shock Absorber Rod Upper Isolator Bushing

- 1 - SHOCK ABSORBER/CONTROL ARM MOUNTING BRACKET
2 - SHOCK ABSORBER ROD UPPER ISOLATOR BUSHING

(10) Remove the shock absorber rod lower isolator bushing and sleeve from the upper (shock absorber/upper control arm) mounting bracket (Fig. 67). Remove upper coil spring isolator from mounting bracket.

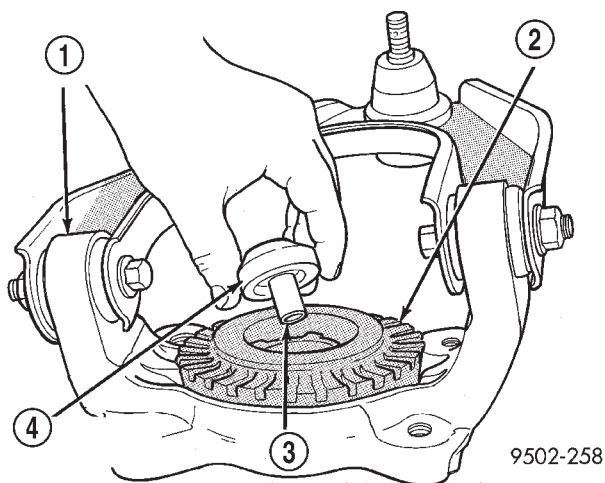


Fig. 67 Shock Absorber Rod Lower Isolator Bushing

- 1 - SHOCK ABSORBER/CONTROL ARM MOUNTING BRACKET
2 - UPPER SPRING ISOLATOR
3 - SLEEVE
4 - LOWER ISOLATOR BUSHING

NOTE: If removal of the upper control arm is necessary, refer to UPPER CONTROL ARM in the REMOVAL AND INSTALLATION section of this group.

(11) Remove the lower shock rod bushing retainer washer from the shock absorber rod (Fig. 68).

(12) Remove the dust shield and cup as an assembly from the shock absorber rod by pulling both straight up and off the shock rod (Fig. 68). The jounce bumper may come off at the same time. Remove the jounce bumper and metal collar.

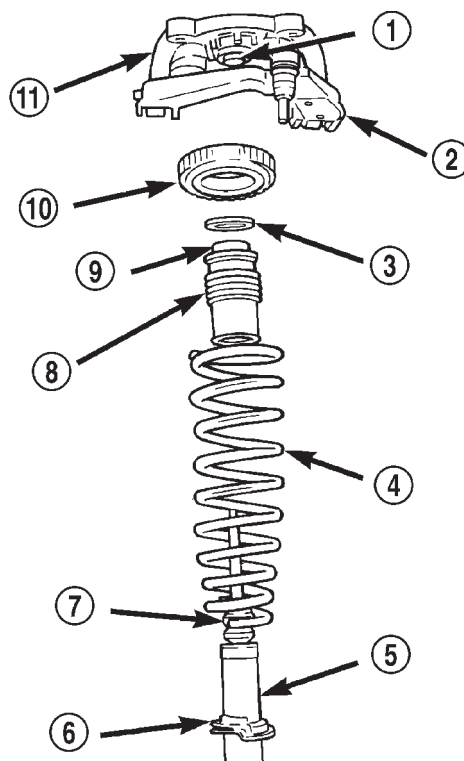


Fig. 68 Shock Assembly Components

- 1 - SHOCK ABSORBER ROD BUSHING
2 - UPPER CONTROL ARM
3 - RETAINER WASHER
4 - COIL SPRING
5 - SHOCK ABSORBER
6 - LOWER SPRING ISOLATOR
7 - JOUNCE BUMPER
8 - DUST SHIELD
9 - CUP
10 - UPPER SPRING ISOLATOR
11 - UPPER MOUNTING BRACKET

(13) Remove the lower spring isolator (Fig. 68) from the lower spring seat on the shock absorber.

(14) Inspect the shock assembly components for the following and replace as necessary:

- Inspect the shock for any condition of rod binding over the full stroke of the shaft.

DISASSEMBLY AND ASSEMBLY (Continued)

- Check the upper mounting bracket for cracks, distortion and any sign of damage.
- Inspect the upper mounting bracket-upper control bushings for deterioration of the rubber.
- Check the upper and lower shock rod isolator bushings for severe deterioration of the rubber.
- Check the upper and lower spring isolators for severe deterioration of the rubber.
- Inspect the dust shield for rips and deterioration.
- Inspect the jounce bumper for cracks and signs of deterioration.
- Inspect the coil spring for any sign of damage to the coating.

ASSEMBLY

NOTE: If the coil spring, upper mounting bracket, rod bushings, upper coil spring isolator, and upper control arm have been removed from the spring compressor, proceed with the next step, otherwise, proceed with step 7.

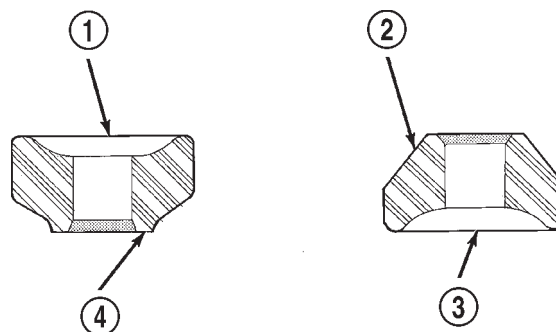
NOTE: If installation of the upper control arm on the upper mounting bracket is necessary, refer to UPPER CONTROL ARM in the REMOVAL AND INSTALLATION section of this group to reinstall the upper control arm on the upper mounting bracket before proceeding.

(1) Install the upper coil spring isolator on the upper (shock absorber/upper control arm) mounting bracket (Fig. 67).

CAUTION: The top and bottom shock absorber rod isolator bushings are unique to the position which they are installed on the rod. When installing the bushings on the rod, attention must be paid to their location so they are installed correctly (Fig. 69).

(2) Install the sleeve into the lower shock absorber rod isolator bushing (Fig. 67). Install the shock absorber rod lower isolator bushing and sleeve in the bottom of the upper (shock absorber/upper control arm) mounting bracket as shown (Fig. 67). From the top, install the shock absorber rod upper isolator bushing into the center of the upper mounting bracket over the sleeve protruding from the lower isolator bushing (Fig. 66). The smaller end of each bushing is to face away from the upper mounting bracket once installed.

(3) Place the lower end (smaller diameter) of the coil spring in the spring compressor supported by the lower hooks, following the manufacturer's instructions. Position the coil spring lower end tip at the position it was at before coil spring removal from the



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Fig. 69 Upper And Lower Shock Absorber Rod Bushing Identification

- 1 – INSTALL ON SHOCK ABSORBER ROD IN THIS DIRECTION
- 2 – SHOCK ABSORBER ROD UPPER ISOLATOR BUSHING
- 3 – INSTALL ON SHOCK ABSORBER ROD IN THIS DIRECTION
- 4 – SHOCK ABSORBER ROD LOWER ISOLATOR BUSHING

compressor as noted in step of DISASSEMBLY. Proper orientation of the spring in the compressor is necessary for proper alignment of all shock assembly components.

(4) Install the upper (shock absorber/upper control arm) mounting bracket on top of the coil spring matching the coil spring to its isolator on the upper mounting bracket. Position the upper control arm ball joint so it lies directly below the front upper hook as shown (Fig. 63).

(5) Position the upper hooks on top of the upper mounting bracket as shown (Fig. 63).

(6) Compress the coil spring.

(7) Install the lower spring isolator on the lower spring seat of the shock absorber (Fig. 68). When installing the spring isolator, be sure the isolator sets in the notch made for the lower coil spring end.

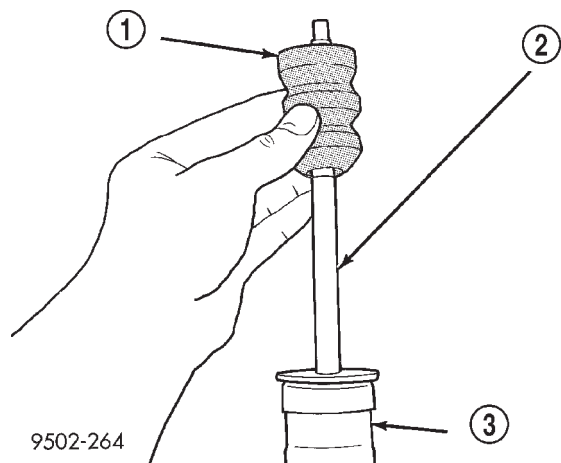
(8) Install the jounce bumper on the shock rod (Fig. 70). Install the jounce bumper with the pointed end pointing downward.

(9) Install the collar, undercut side facing down, on the rod of the shock absorber (Fig. 71). Be sure the collar is positioned squarely on the step of the shock absorber rod.

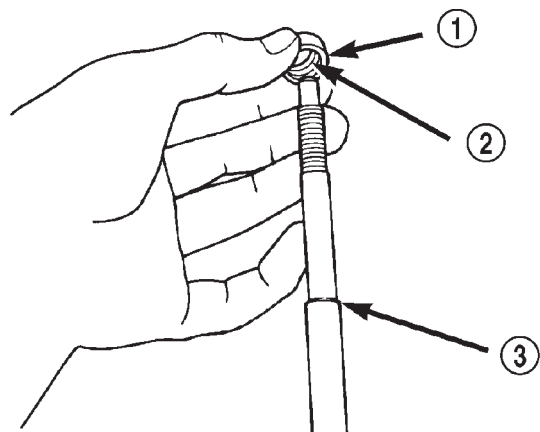
(10) Install the dust shield and cup (Fig. 68) onto the shock rod until the cup contacts the collar just installed. The dust boot will snap over the jounce bumper. Install the lower shock rod bushing retainer washer.

(11) Install the shock through the bottom of the coil spring until the lower spring seat contacts the lower end of the coil spring. The lower coil spring end should set into the notch of the shock absorber lower seat and isolator. Install the clamp temporarily securing the shock absorber to the coil spring (Fig. 62).

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 70 Jounce Bumper Installation**

- 1 - JOUNCE BUMPER
2 - SHOCK ABSORBER ROD
3 - SHOCK ABSORBER

**Fig. 71 Shock Absorber Rod Collar Installation**

- 1 - COLLAR
2 - UNDERCUT
3 - SHOCK ABSORBER ROD STEP

(12) Install the upper shock rod bushing retainer washer. Make sure the concave side is facing up.

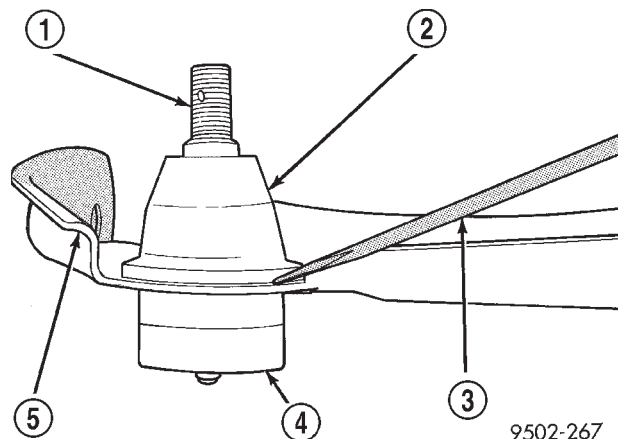
(13) Install the shock assembly retainer nut. Hold the shock rod from rotating using special socket Snap-On A136, or an equivalent, and tighten the retainer nut using a crow foot wrench (on the end of a torque wrench and extension) to a torque of 55 N·m (40 ft. lbs.) (Fig. 64).

(14) Slowly release the tension from the coil spring by backing off the compressor drive fully. As the tension is relieved, make sure the upper mounting bracket, isolator, and coil spring align properly. Remove the clamp from the lower end of the coil spring and shock. Push back the spring compressor upper and lower hooks, then remove the shock assembly from the spring compressor.

(15) Install shock assembly on the vehicle. Refer to REMOVAL AND INSTALLATION in this section for the required procedure.

BALL JOINT SEAL BOOT (FRONT UPPER)

(1) Using a screw driver or other suitable tool, pry seal boot off of the ball joint assembly (Fig. 72).

**Fig. 72 Seal Boot Removal From Ball Joint**

- 1 - BALL JOINT STUD
2 - BALL JOINT SEAL BOOT
3 - SCREWDRIVER
4 - BALL JOINT
5 - CONTROL ARM

(2) Install a **NEW** ball joint assembly sealing boot on ball joint assembly. Install sealing boot as far as possible on ball joint assembly.

CAUTION: Do not use an arbor press to install the sealing boot on the upper control arm ball joint assembly. Damage to the sealing boot can occur due to excessive pressure applied to sealing boot when being installed.

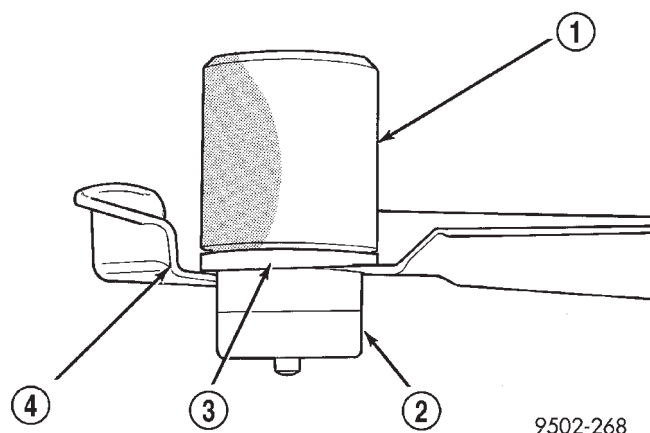
(3) Position Receiving Cup, Special Tool 6758 over sealing boot so it is aligned properly with bottom edge of sealing boot (Fig. 73). Apply pressure **BY HAND** to special tool 6758, until sealing boot is pressed squarely against surface of upper control arm.

(4) Properly lubricate the upper ball joint assembly using only Mopar Multi-Mileage Lube or an equivalent.

BALL JOINT SEAL BOOT (LOWER)

CAUTION: The replacement of the lower ball joint seal boot can only be done in the event that the seal boot is damaged while performing a service procedure on the vehicle.

DISASSEMBLY AND ASSEMBLY (Continued)



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Fig. 73 Seal Boot Installation On Ball Joint

- 1 - SPECIAL TOOL 6758
- 2 - BALL JOINT
- 3 - SEAL BOOT
- 4 - CONTROL ARM

CAUTION: Under no circumstances can a lower ball joint seal boot be replaced if it is determined that the vehicle had been driven with the seal boot damaged. If the vehicle has been driven with a damaged seal boot contamination of the ball joint has occurred. When contamination of the ball joint has occurred the lower control arm must be replaced. This is to ensure excessive wear of the ball joint does not occur from the contamination present in the ball joint.

CAUTION: Excessive wear in the ball joint can lead to a separation of the ball joint from the lower control arm.

CAUTION: The procedure below must be carefully followed when replacing the ball joint seal in the event it is damaged while servicing a vehicle.

CAUTION: The ball joint used in the lower control arm of this vehicle is a lubricated for life ball joint. This ball joint does not require any additional lubrication for the life of the vehicle. Do not alter the lower control arm or ball joint in an attempt to lubricate the lower control arm ball joint. If it is determined that the ball joint is lacking proper lubrication, the lower control arm will need to be replaced.

DISASSEMBLE

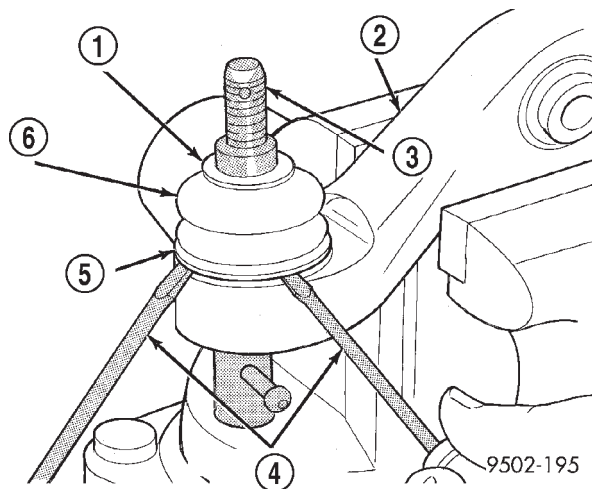
(1) Remove lower control arm assembly from vehicle. See Lower Control Arm Removal in this section

of the service manual for the required removal procedure.

(2) Wrap a shop towel around the ball joint and seal boot. This is to prevent dirt and cleaning solvent to enter ball joint when cleaning area around ball joint.

(3) Using **ONLY** a solvent such as Mopar Foamy Engine Degreaser or an equivalent, thoroughly clean lower control arm in area around ball joint and seal. Then using a shop towel saturated with the engine degreaser, carefully wipe off the ball joint seal boot.

(4) Using 2 screwdrivers (Fig. 74) remove the ball joint seal retaining ring from the bottom of the ball joint seal.



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Fig. 74 Removing Ball Joint Seal Retaining Ring

- 1 - UPPER SEALING RING
- 2 - LOWER CONTROL ARM
- 3 - BALL JOINT
- 4 - SCREWDRIVERS
- 5 - BALL JOINT SEAL RETAINING RING
- 6 - BALL JOINT SEAL

(5) Remove ball joint seal from ball joint.

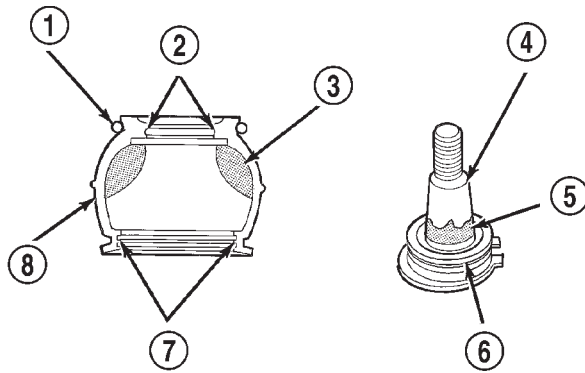
ASSEMBLE

CAUTION: When replacing ball joint seal, do not use any other type of grease to lubricate ball joint other than the lubricant provided in the Mopar Ball Joint Seal service kit.

(1) Apply grease from the ball joint seal kit, to the specified areas of the ball joint stud and seal (Fig. 75). Be sure no grease is present on the seal boot installation section of the seal boot or lower control arm (Fig. 75).

(2) Slide ball joint seal boot with upper seal ring installed, (Fig. 75) down tapered section of ball joint stud (Fig. 75). Seal boot is to be installed on stud of

DISASSEMBLY AND ASSEMBLY (Continued)



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Fig. 75 Grease Correctly Applied To Ball Joint Stud And Seal Boot

- 1 - UPPER SEALING RING
- 2 - LIP
- 3 - GREASE
- 4 - BALL JOINT STUD TAPERED SECTION
- 5 - GREASE
- 6 - BOOT INSTALLATION SECTION
Wipe off the grease.
- 7 - BOOT INSTALLATION SECTION
Wipe off the grease.
- 8 - BALL JOINT SEAL BOOT

ball joint until seal boot is sitting on seal groove in lower control arm.

(3) Carefully position ball joint seal boot in seal retaining groove on lower control arm. After installing seal boot in retaining groove, carefully bleed air out of sealing boot without getting grease pushed into seal boot retaining groove in lower control arm.

(4) Place Retaining Ring Installer, Special Tool, 6875-1 over ball joint seal boot (Fig. 76). Using adjusting knob, adjust tool so bottom edge of tool is even with top of retaining ring groove in seal boot (Fig. 76).

(5) Place seal boot retaining ring on Installer, Special Tool, 6875-1 (Fig. 77). Then place expandable collar from Installer, Special Tool, 6875 over tapered cone of the special tool (Fig. 77).

(6) Using the expandable collar of Installer, Special Tool, 6875 (Fig. 78) push the seal boot retaining ring down the cone of Installer, Special Tool, 6875.

(7) Continue pushing retaining ring down Installer, Special Tool, 6875, until it is installed in the retaining ring groove of the seal boot (Fig. 79)

(8) Remove Installer, Special Tool, 6875 from the ball joint seal boot. **When removing tool from seal boot be careful not to damage the seal boot with the tool.**

(9) Check retaining ring installation on seal boot to ensure it is fully seated in seal boot groove and the ends are not twisted (Fig. 80). Also, make sure upper sealing ring is on seal boot and correctly

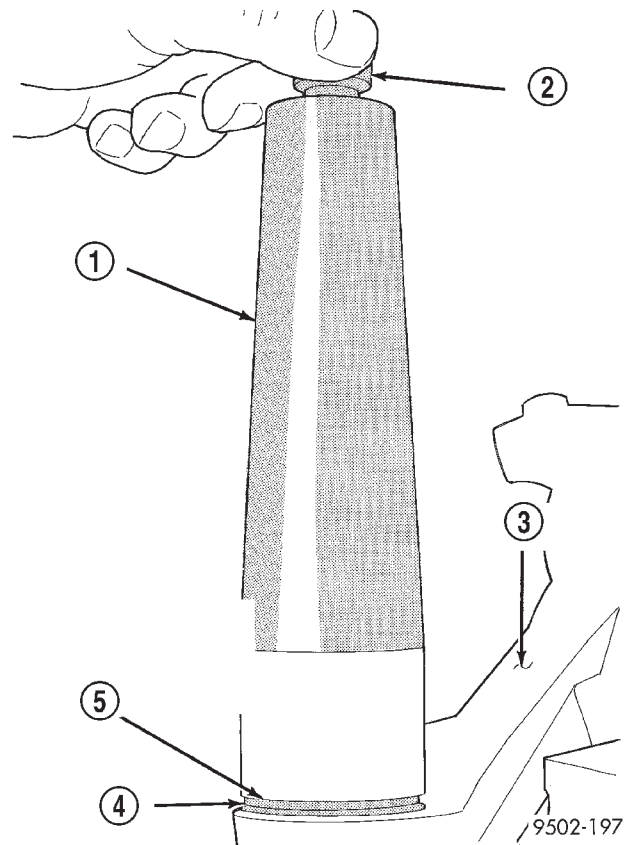


Fig. 76 Correctly Installed Ball Joint Seal Retaining Ring Tool

- 1 - SPECIAL TOOL 6875-1
- 2 - ADJUSTING KNOB
- 3 - LOWER CONTROL ARM
- 4 - SEAL BOOT RETAINING RING GROOVE
- 5 - BOTTOM EDGE OF TOOL MUST BE EVEN WITH TOP OF RETAINING RING GROOVE IN SEAL BOOT AS SHOWN

installed (Fig. 80). Check seal boot for damage before installing back on car.

(10) Install lower control arm assembly back on vehicle. See Lower Control Arm Installation in this section of the service manual for the required installation procedure.

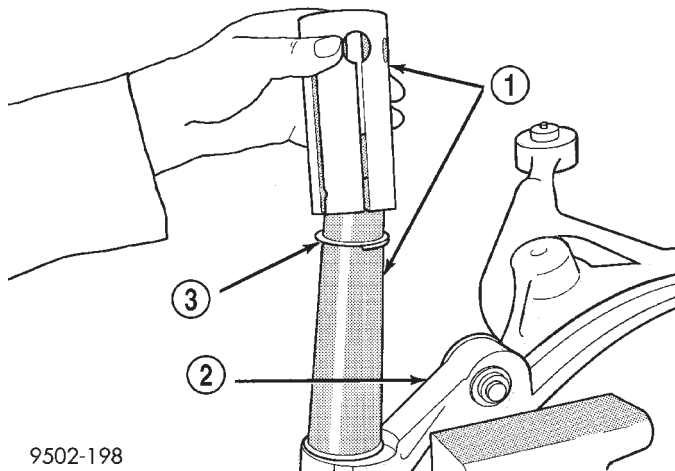
LOWER CONTROL ARM FRONT ISOLATOR BUSHING

To perform removal and replacement of the lower control arm isolator bushings, the lower control arm must be removed from the vehicle.

DISASSEMBLY

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

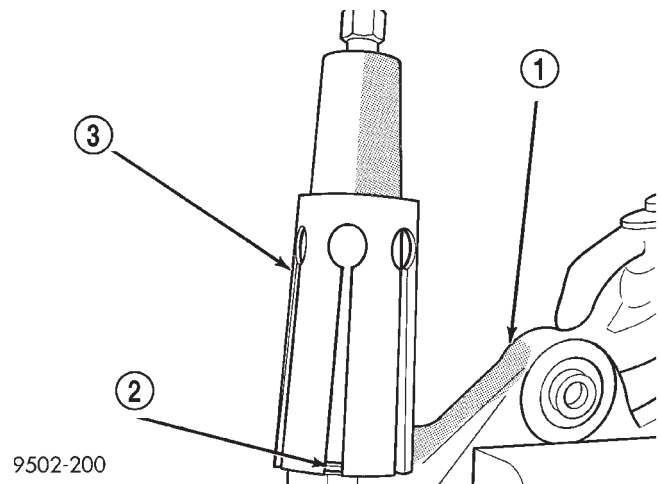
DISASSEMBLY AND ASSEMBLY (Continued)



9502-198

Fig. 77 Retaining Ring And Expandable Collar Installed On Tool

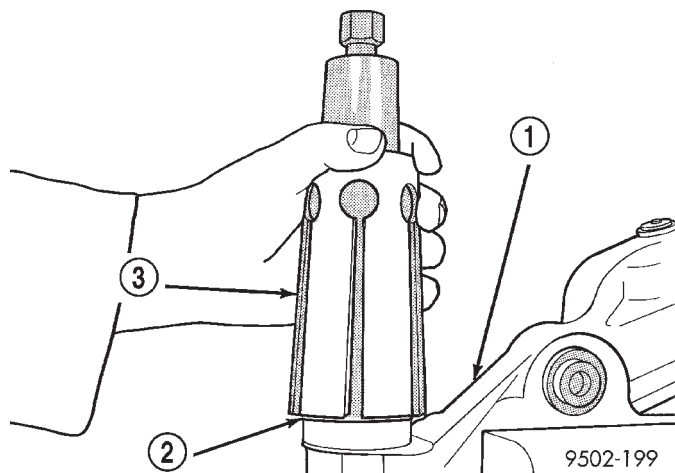
- 1 - SPECIAL TOOL 6875
- 2 - LOWER CONTROL ARM
- 3 - SEAL BOOT RETAINING RING



9502-200

Fig. 79 Retaining Ring Installed In Ball Joint Seal Boot

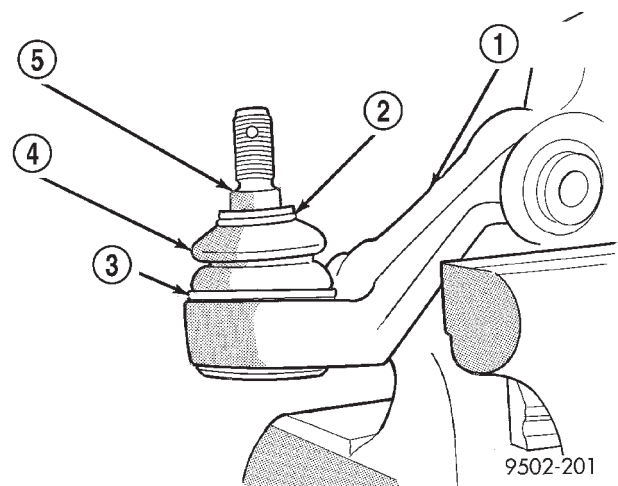
- 1 - LOWER CONTROL ARM
- 2 - SEAL BOOT RETAINING RING
- 3 - SPECIAL TOOL 6875



9502-199

Fig. 78 Installing Seal Boot Retaining Ring

- 1 - LOWER CONTROL ARM
- 2 - RETAINING RING
- 3 - SPECIAL TOOL 6875



9502-201

Fig. 80 Properly Installed Ball Joint Seal Boot

- 1 - LOWER CONTROL ARM
- 2 - UPPER SEALING RING
- 3 - SEAL BOOT RETAINING RING
- 4 - SEAL BOOT
- 5 - BALL JOINT STUD

(2) Install Bushing Remover, Special Tool 6602-5 and Bushing Receiver, Special Tool MB-990799 on Special Tool C-4212-F.

(3) Install lower control arm on Special Tools assembled for removal of the front isolator bushing. Be sure Special Tool MB-990799 is square on lower control arm and Special Tool 6602-5 is positioned correctly on isolator bushing (Fig. 81).

(4) Tighten screw on Remover/Installer Special Tool C-4212-F to press front bushing out of lower control arm.

ASSEMBLY

(1) Mount Bushing Installer, Special Tool 6876 on screw portion of Remover/Installer Special Tool C-4212-F (Fig. 82).

(2) Start front bushing into lower control arm **by hand, making sure it is square with its mounting hole in the lower control arm**. Bushing is to be installed in lower control arm from the machined surface side of lower control arm bushing hole.

(3) Install lower control arm on Special Tools assembled for installation of front isolator bushing

DISASSEMBLY AND ASSEMBLY (Continued)

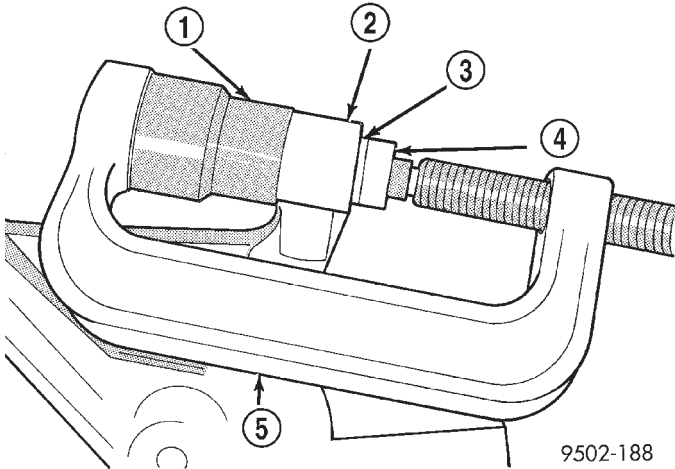


Fig. 81 Removing Front Bushing From Lower Control Arm

- 1 - SPECIAL TOOL MB-990799
- 2 - LOWER CONTROL ARM
- 3 - FRONT ISOLATOR BUSHING
- 4 - SPECIAL TOOL 6602-5
- 5 - SPECIAL TOOL C-4212-F

into lower control arm (Fig. 82). Be sure Special Tool 6758 is square on lower control arm and Special Tool 6876 is positioned correctly on isolator bushing.

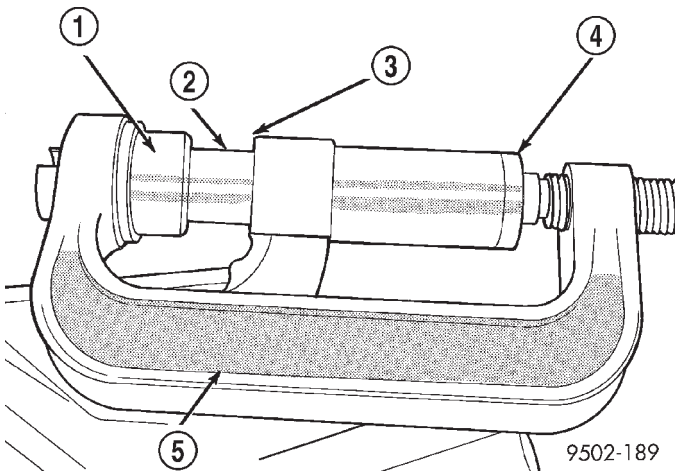


Fig. 82 Installing Front Bushing In Lower Control Arm

- 1 - SPECIAL TOOL 6876
- 2 - ISOLATOR BUSHING
- 3 - MACHINED SURFACE SIDE OF LOWER CONTROL ARM
- 4 - SPECIAL TOOL 6758
- 5 - SPECIAL TOOL C-4212-F

(4) Tighten screw on Remover/Installer Special Tool C-4212-F pressing front bushing into lower control arm. Continue pressing front bushing into lower control arm until bushing is sitting flush on the machined surface of the lower control arm. This will correctly position front bushing in lower control arm.

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

LOWER CONTROL ARM REAR ISOLATOR BUSHING

To perform removal and replacement of the lower control arm isolator bushings, the lower control arm must be removed from the vehicle.

DISASSEMBLY

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

(2) Install Bushing Remover, Special Tool 6756 and Bushing Receiver, Special Tool C-4366-2 on Special Tool C-4212-F (Fig. 83).

(3) Install Special Tools assembled for removal of the rear isolator bushing on the lower control arm. Be sure Special Tool C-4366-2 is square on lower control arm and Special Tool 6756 is positioned correctly on isolator bushing (Fig. 83).

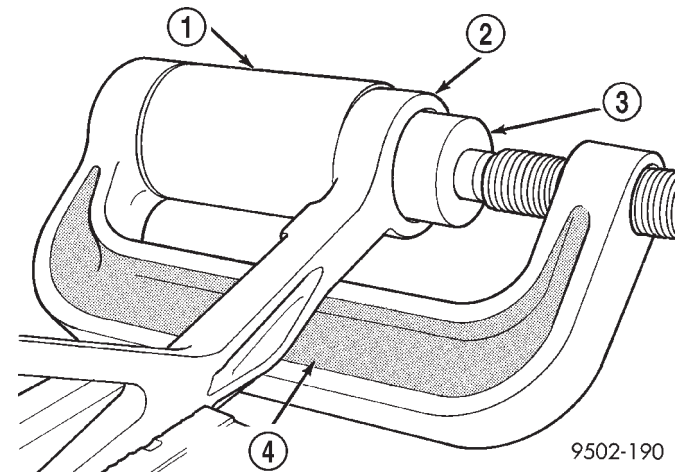


Fig. 83 Removing Lower Control Arm Rear Bushing

- 1 - SPECIAL TOOL C-4366-2
- 2 - LOWER CONTROL ARM
- 3 - SPECIAL TOOL 6756
- 4 - SPECIAL TOOL C-4212-F

(4) Tighten screw on Remover/Installer Special Tool C-4212-F to press rear bushing out of lower control arm.

ASSEMBLY

(1) Start rear bushing into lower control arm **by hand, making sure it is square with its mounting hole in the lower control arm.** Bushing is to be installed from the machined surface side of lower control arm bushing hole, with the void in rubber

DISASSEMBLY AND ASSEMBLY (Continued)

portion of bushing facing away from ball joint (Fig. 84).

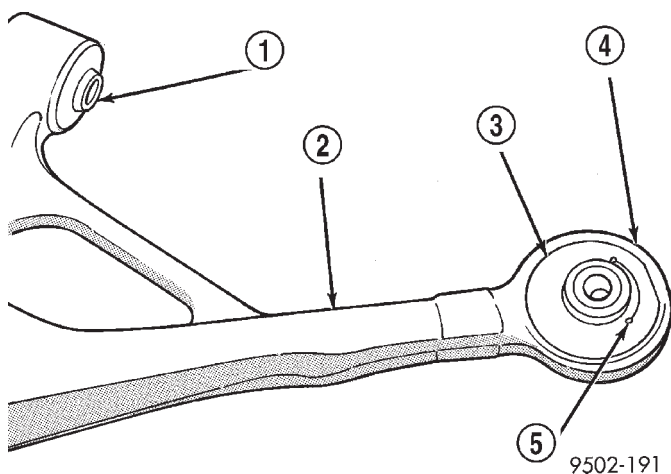


Fig. 84 Correctly Positioned Rear Isolator Bushing In Control Arm

- 1 - FRONT ISOLATOR BUSHING
- 2 - LOWER CONTROL ARM
- 3 - REAR ISOLATOR BUSHING
- 4 - MACHINED SURFACE
- 5 - VOID IN BUSHING IN THIS DIRECTION

(2) Mount Bushing Installer, Special Tool 6760 on screw portion of Remover/Installer Special Tool C-4212-F (Fig. 85).

(3) Install Special Tools assembled for installation of rear isolator bushing into lower control arm on the lower control arm. Be sure Special Tool 6756 is square on lower control arm and Special Tool 6760 is positioned correctly on isolator bushing (Fig. 85).

(4) Tighten screw on Remover/Installer Special Tool C-4212-F pressing rear bushing into lower control arm. Continue pressing rear bushing into lower control arm until bushing is sitting flush on the machined surface (Fig. 85) of the lower control arm. This will correctly position rear bushing in lower control arm.

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

CONTROL ARM CLEVIS BUSHING

To perform removal and replacement of the lower control arm clevis bushing, the lower control arm must be removed from the vehicle.

DISASSEMBLE

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

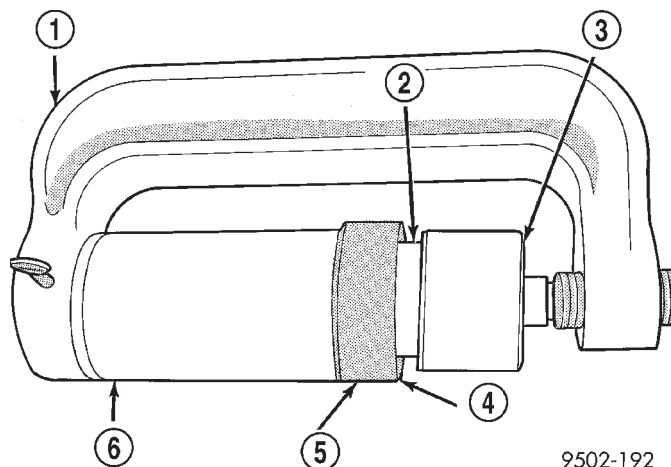


Fig. 85 Installing Rear Bushing In Lower Control Arm

- 1 - SPECIAL TOOL C-4212-F
- 2 - REAR BUSHING
- 3 - SPECIAL TOOL 6760
- 4 - MACHINED SURFACE ON LOWER CONTROL ARM
- 5 - LOWER CONTROL ARM
- 6 - SPECIAL TOOL 6756

(2) Install Bushing Remover, Special Tool 6877 and Bushing Receiver, Special Tool 6876 on Special Tool C-4212-F.

(3) Install lower control arm on Special Tools assembled for removal of the clevis isolator bushing. Be sure Special Tool 6876 is square on lower control arm and Special Tool 6877 is positioned correctly on clevis bushing (Fig. 86).

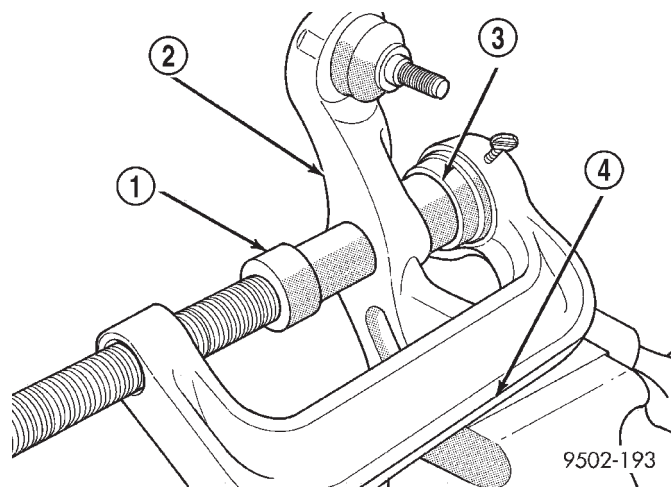


Fig. 86 Removing Clevis Bushing From Lower Control Arm

- 1 - SPECIAL TOOL 6877
- 2 - LOWER CONTROL ARM
- 3 - SPECIAL TOOL 6876
- 4 - SPECIAL TOOL C-4212-F

DISASSEMBLY AND ASSEMBLY (Continued)

(4) Tighten screw on Remover/Installer Special Tool C-4212-F to press clevis bushing out of lower control arm.

ASSEMBLE

(1) Start clevis bushing into lower control arm **by hand, making sure it is square with its mounting hole in the lower control arm.** Bushing is to be installed in lower control arm from the machined surface side of lower control arm bushing hole.

(2) Mount Bushing Installer, Special Tool 6877 on screw portion of Remover/Installer Special Tool C-4212-F as shown in (Fig. 87).

(3) Install the assembled special tools for installing the clevis bushing into the lower control arm, on the lower control arm and clevis bushing (Fig. 87). Be sure Special Tool 6876 is square on lower control arm and Special Tool 6877 is positioned correctly on clevis bushing (Fig. 87).

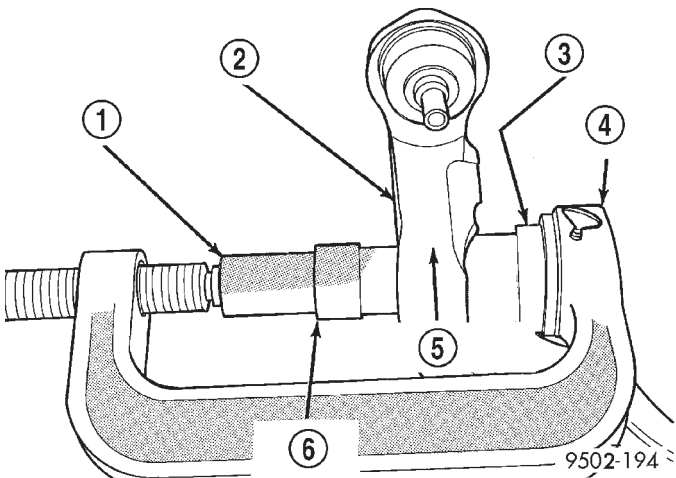


Fig. 87 Installing Clevis Bushing In Lower Control Arm

- 1 – SPECIAL TOOL 6877
- 2 – MACHINED SURFACE SIDE OF LOWER CONTROL ARM
- 3 – SPECIAL TOOL 6876
- 4 – SPECIAL TOOL C-4212-F
- 5 – LOWER CONTROL ARM
- 6 – CLEVIS BUSHING

(4) Tighten screw on Remover/Installer Special Tool C-4212-F pressing clevis bushing into lower control arm. Continue pressing clevis bushing into lower control arm until bushing is sitting flush with the machined surface of the lower control arm. This will correctly position the clevis bushing in the lower control arm.

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

STABILIZER BAR BUSHING (FRONT)

(1) Bend back the 4 crimp locations on the stabilizer bar bushing retainer (Fig. 88).

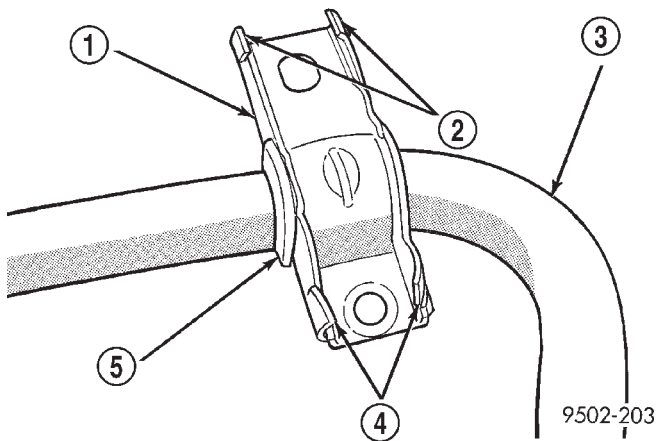


Fig. 88 Stabilizer Bar Bushing Retainer

- 1 – STABILIZER BAR BUSHING RETAINER
- 2 – CRIMPS
- 3 – STABILIZER BAR
- 4 – CRIMPS
- 5 – STABILIZER BAR BUSHING

- (2) Separate the stabilizer bar bushing retainer.
- (3) Stabilizer bar bushings are removed by opening slit and peeling bushing off stabilizer bar.
- (4) Install new stabilizer bar bushings on the stabilizer bar. **Bushings must be installed on sway bar with slit in bushing facing front of vehicle when sway bar is installed.**
- (5) Install bushing retainers back on stabilizer bar bushings.

SPECIFICATIONS

FRONT SUSPENSION FASTENER TORQUE SPECIFICATIONS

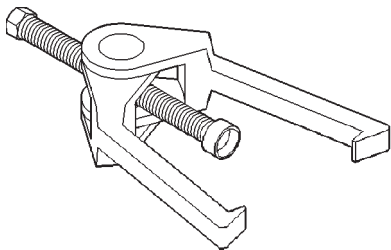
DESCRIPTION	TORQUE
Shock Assembly	
Clevis Pinch Bolt	88 N·m (65 ft. lbs.)
Shock Tower Bolts	101 N·m (75 ft. lbs.)
Clevis To Control Arm Bolt . .	88 N·m (65 ft. lbs.)
Rod To Upper Mount Nut . . .	54 N·m (40 ft. lbs.)
Steering Knuckle	
Disc Brake Caliper Bolts . . .	22 N·m (16 ft. lbs.)
Tie Rod Nut	61 N·m (45 ft. lbs.)
Tie Rod Adjustment Jam Nuts	61 N·m (45 ft. lbs.)

SPECIFICATIONS (Continued)

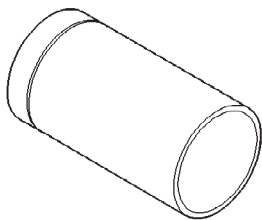
DESCRIPTION	TORQUE
Hub And Bearing	
To Stub Axle Retaining Nut	244 N·m (180 ft. lbs.)
Wheel Stud Lug Nut	109-150 N·m (80-110 ft. lbs.)
Upper Control Arm	
Ball Joint Stud Castle Nut . .	54 N·m (40 ft. lbs.)
Shock Bracket	90 N·m (66 ft. lbs.)
Lower Control Arm	
Ball Joint Stud Castle Nut . .	74 N·m (55 ft. lbs.)
Crossmember Pivot Bolt (Front)	183 N·m (135 ft. lbs.)
Crossmember Rear Bolt	95 N·m (70 ft. lbs.)
Ball Joint Heat Shield Attaching Bolts . .	13 N·m (10 ft. lbs.)
Stabilizer Bar	
Bushing Clamp Bolts	61 N·m (45 ft. lbs.)
Attaching Link Nuts (All) . .	101 N·m (75 ft. lbs.)
Front Suspension Crossmember	
Body Mounting Bolts	108 N·m (80 ft. lbs.)
Steering Gear Mounting Bolts	68 N·m (50 ft. lbs.)

SPECIAL TOOLS

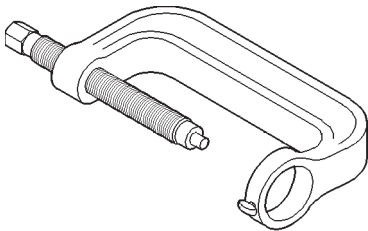
FRONT SUSPENSION



Puller C-3894-A

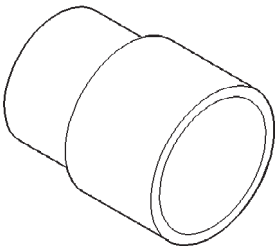


Installer, Ball Joint 6758

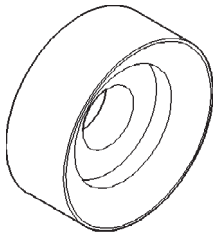


C-4212F-801104af

Press, Ball Joint Remover Installer C-4212F

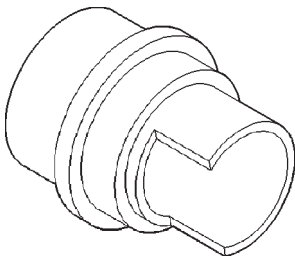


Remover, Ball Joint MB-990799

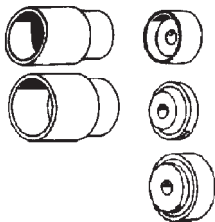


6602-5

Remover/Installer Control Arm Bushing 6602-5 (In Tool Kit 6602)

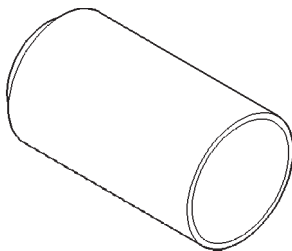


Installer/Receiver, Control Arm Bushing 6876

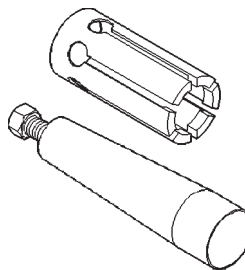


Remover / Installer C-4366-2 (In Tool Kit C-4366)

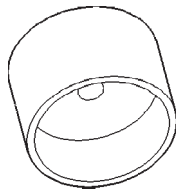
SPECIAL TOOLS (Continued)



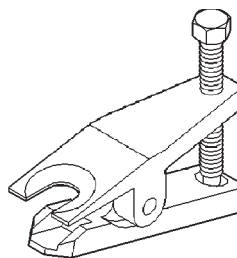
Receiver, Ball Joint 6756



Installer, Ball Joint Seal Boot Retainer 6875

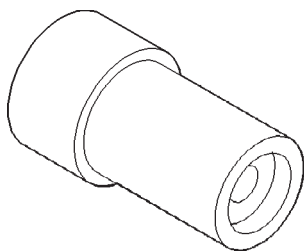


Installer, Bushing 6760



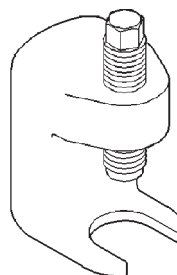
801109eC

Remover, Tie Rod End MB-991113 or MB-990635



6877

Remover/Installer Control Arm Clevis Bushing 6877



Remover, Lower Ball Joint C-4150A

REAR SUSPENSION

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DESCRIPTION AND OPERATION

REAR SUSPENSION SYSTEM

DESCRIPTION

The rear suspension used on this vehicle is a fully independent short and long arm style suspension (Fig. 1).

Each side of the rear suspension consists of these major components:

- a shock assembly
- a knuckle

- an upper control arm
- two lateral links
- a trailing link
- a stabilizer bar

OPERATION

The rear suspension allows each rear wheel on vehicle to adapt to different road surfaces and conditions without affecting the control of the vehicle. Each side of the suspension is allowed to move independently from the other.

DESCRIPTION AND OPERATION (Continued)

9502-2770

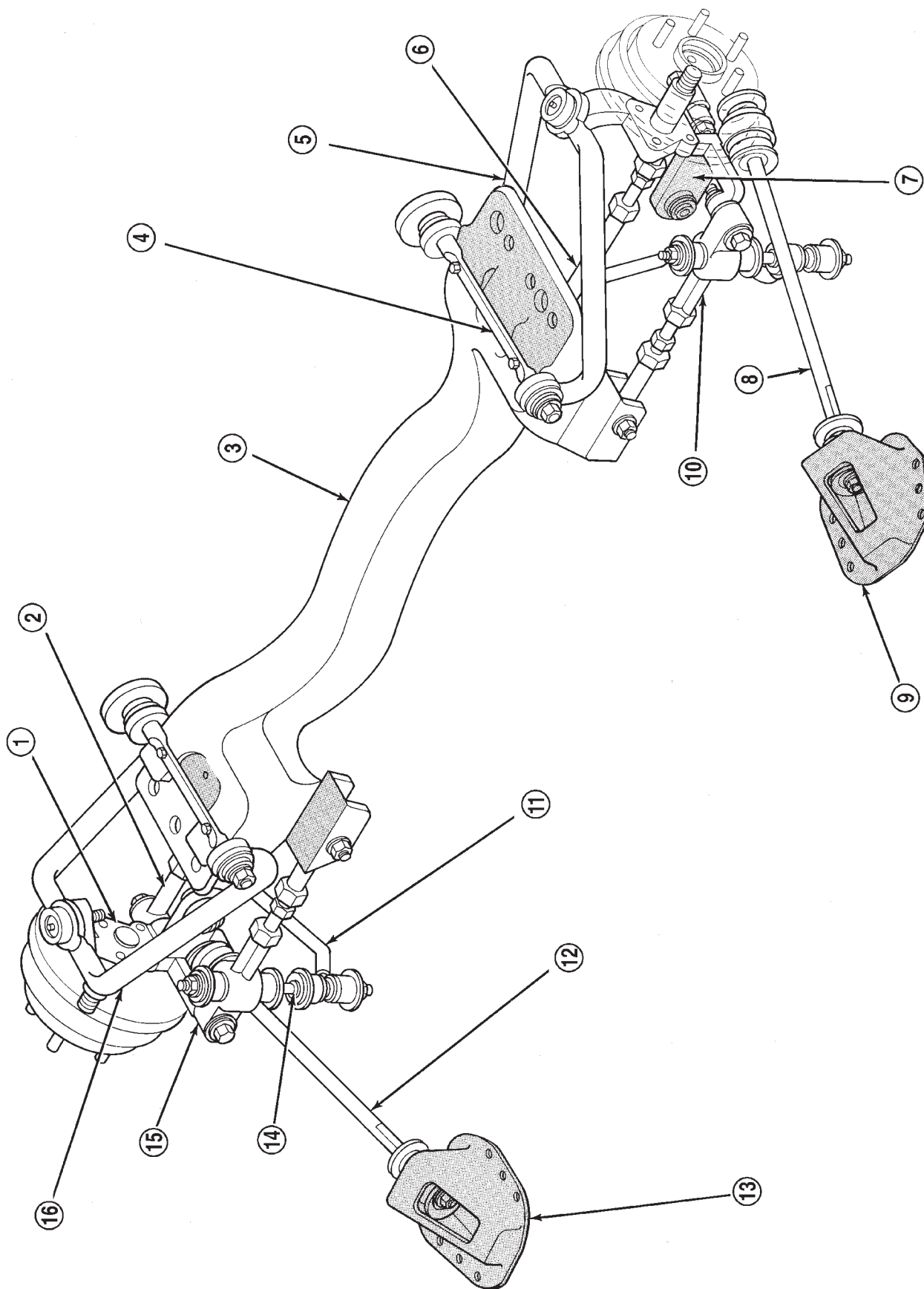


Fig. 1 Fully Independent Rear Suspension

DESCRIPTION AND OPERATION (Continued)

- | | |
|---------------------------------|------------------------------------|
| 1 – KNUCKLE | 9 – TRAILING LINK BRACKET |
| 2 – REAR LATERAL LINK | 10 – FORWARD LATERAL LINK |
| 3 – REAR SUSPENSION CROSSMEMBER | 11 – STABILIZER BAR |
| 4 – UPPER CONTROL ARM PIVOT BAR | 12 – TRAILING LINK |
| 5 – UPPER CONTROL ARM | 13 – TRAILING LINK BRACKET |
| 6 – REAR LATERAL LINK | 14 – STABILIZER BAR ATTACHING LINK |
| 7 – REAR KNUCKLE | 15 – FORWARD LATERAL ARM |
| 8 – TRAILING LINK | 16 – UPPER CONTROL ARM |
-

SHOCK ASSEMBLY (REAR)**DESCRIPTION**

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

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

The bottom of the shock absorber assembly attaches to the rear knuckle using a through-bolt.

The rear coil springs are rated separately for each corner or side of the vehicle depending on optional equipment and type of vehicle service. Coil springs come in a various rates; be sure the correct spring is in use.

The components of the shock assembly listed below are serviceable:

- Shock rod nut
- Shock mount
- Shock rod bushings
- Upper spring isolator
- Dust shield
- Cup
- Jounce bumper
- Lower spring isolator
- Coil spring
- Strut

OPERATION

The shock absorber assembly cushions the ride of the vehicle, controlling vibration, jounce and rebound of the suspension.

The coil spring controls ride quality and maintains ride height.

The jounce bumper limits suspension travel and metal-to-metal contact under full jounce.

The shock absorber dampens jounce and rebound motions of the coil spring and suspension.

KNUCKLE (REAR)**DESCRIPTION**

A cast iron rear knuckle is attached to each side of the vehicle through the upper control arm and ball joint, the rear shock assembly, the lateral links and the trailing link. The knuckle serves as a mounting point for the rear hub and bearing, tire and wheel, and rear brakes.

OPERATION

The knuckle moves up and down with the tire and wheel under jounce and rebound conditions while acting as a mount for the rear hub and bearing, tire and wheel, and rear brakes. The lateral movement of the rear knuckle is controlled using two lateral arms attached to the bottom of the knuckle and by the upper control arm attached to the top of the knuckle.

HUB AND BEARING (REAR)**DESCRIPTION**

The hub and bearing is a combined rear wheel hub and wheel bearing unit. All vehicles are equipped with permanently lubricated and sealed for life rear hub and bearing assemblies. There is no periodic lubrication or maintenance recommended for these units.

The hub and bearing is mounted to the rear knuckle's spindle using a retaining nut. The tire and wheel assembly, and rear brake drum or disc attaches to the studs protruding from the hub flange with wheel mounting studs.

DESCRIPTION AND OPERATION (Continued)**OPERATION**

The hub and bearing has internal bearings that allow it to rotate with the tire and wheel.

UPPER CONTROL ARM (REAR)**DESCRIPTION**

An upper control arm is attached to the top of each rear knuckle, connecting the knuckle to the rear suspension crossmember.

The attachment of the upper control arm to the knuckle is achieved through a ball joint in the upper control arm. The upper control arm is bolted to the rear suspension crossmember using a pivot bar which is rubber isolated from the upper control arm.

OPERATION

The upper control arm supports the upper end of the knuckle and allows for the up and down movement of the suspension under jounce and rebound travel.

LATERAL LINKS**DESCRIPTION**

The lateral links connect the lower front and rear of the knuckle to the rear crossmember. They have rubber isolator bushings at each end to isolate suspension noise from the body of the vehicle. The forward link allows for stabilizer bar attachment through stabilizer bar attachment links.

OPERATION

The lateral movement of the rear knuckle is controlled by the lateral links connecting the front and rear of the knuckle to the rear suspension crossmember. The metal sleeves of the links are adjustable for setting rear wheel alignment.

TRAILING LINK**DESCRIPTION**

The trailing link on each side of the vehicle bolts to the bottom of the knuckle and to a bracket attached to the floor pan of the vehicle. The trailing link is steel and has rubber isolator bushings, retainer washers and nuts at each end to isolate suspension noise from the body of the vehicle.

OPERATION

Fore and aft movement of the knuckle is controlled by a trailing link.

STABILIZER BAR (REAR)**DESCRIPTION**

The stabilizer bar interconnects the forward lateral links of the vehicle's rear suspension and is attached to the rear suspension crossmember of the vehicle.

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

OPERATION

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

DIAGNOSIS AND TESTING**SHOCK ASSEMBLY (REAR)**

- (1) Inspect for damaged or broken coil springs.
- (2) Inspect for torn or damaged shock absorber dust shield.
- (3) Inspect for damaged lower spring isolator.
- (4) Lift dust boot and inspect shock absorber 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 shock absorber rod and shock absorber rod seal is not unusual and does not affect performance of the shock absorber. Also inspect jounce bumpers for signs of damage or deterioration.

KNUCKLE (REAR)

Inspect the knuckle for physical damage. If it is determined that the knuckle is cracked, bent or broken when servicing the vehicle, no attempt is to be made to repair or to straighten the knuckle. The rear knuckle is not a repairable component of the rear suspension and must be replaced if found to be damaged in any way.

HUB AND BEARING (REAR)

The rear hub and bearing assembly is designed for the life of the vehicle and should require no maintenance. The following procedure may be used for evaluation of bearing condition.

DIAGNOSIS AND TESTING (Continued)

With wheel and brake drum removed, rotate flanged outer ring of hub. Excessive roughness, lateral play or resistance to rotation may indicate dirt intrusion or bearing failure. If the rear wheel bearings exhibit these conditions during inspection, the hub and bearing assembly should be replaced.

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

UPPER CONTROL ARM (REAR)

Inspect the control arm for physical damage. If it is determined that the upper control arm is broken or bent, the upper control arm must be replaced. The rear suspension upper control arm is not a repairable component and no attempt is to be made to repair or to straighten it. The upper control arm must be replaced if found to be damaged in any way.

Inspect the control arm pivot bushings for deterioration. If found to need replacement, the upper control arm is to be replaced.

The rear control arm, control arm bushings, and pivot bar are serviced as a complete assembly on this vehicle. Do not attempt to disassemble the control arm from the pivot bar to service the rear control arm bushings.

The only component on the upper control arm that is serviceable is the rear upper ball joint and its seal.

BALL JOINT (REAR UPPER)

With the weight of the vehicle resting on the road wheels, grasp the grease fitting and with no mechanical assistance or added force, attempt to move the grease fitting.

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

LATERAL LINKS

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

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

CAUTION: Do not apply heat to the lateral link adjusting screws or to the jam nuts, when loosening or adjusting the lateral links.

TRAILING LINK

Inspect the trailing link bushings and retainers for signs of deterioration or damage. If the trailing link bushings are deteriorated or the retainers are damaged, replacement of the trailing link bushings and or the retainers will be required. The bushings and retainers are serviceable as separate components of the trailing link.

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

STABILIZER BAR (REAR)

Inspect the stabilizer bar for damage or bending.

Inspect for broken or distorted stabilizer bar bushings, and bushing retainers. When inspecting the stabilizer bar bushings, be sure that the slit in the bushings are positioned so that it is facing toward the front of the vehicle.

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

SERVICE PROCEDURES

LUBRICATION

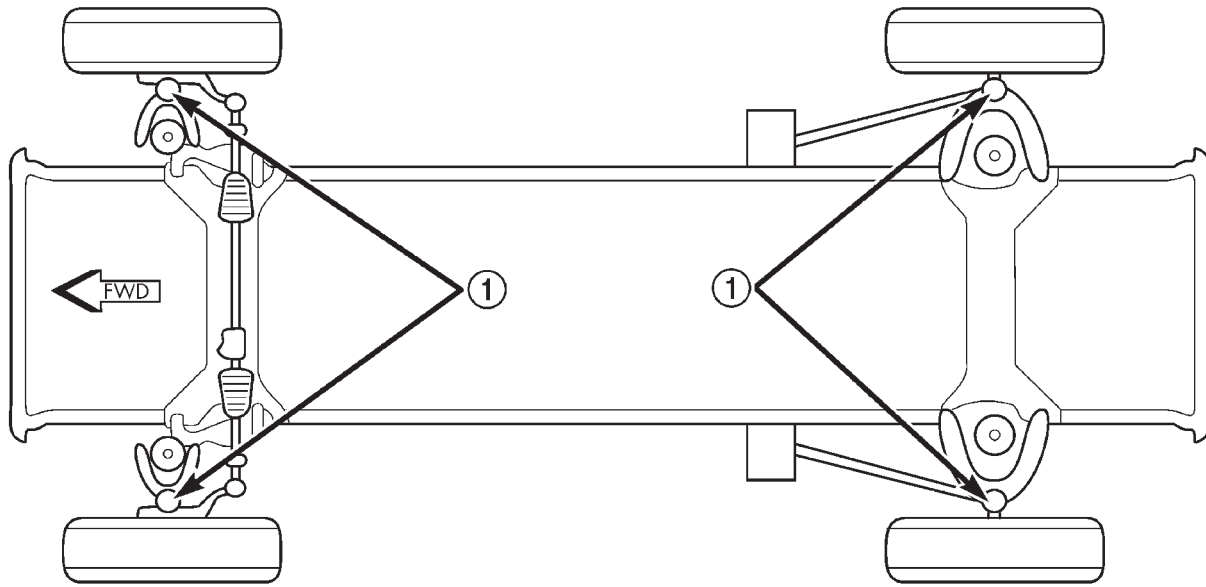
The only serviceable lubrication points on the suspension are the upper ball joints (Fig. 2). All other joints are sealed for life. Lubricate the upper ball joints until a slight swelling is noticed in the ball joint seal boots. Do not overfill the seal boots. Follow the vehicles maintenance schedule.

REMOVAL AND INSTALLATION

SERVICE WARNINGS AND CAUTIONS

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

REMOVAL AND INSTALLATION (Continued)



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Fig. 2 Lubrication Points

1 - UPPER BALL JOINTS

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

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

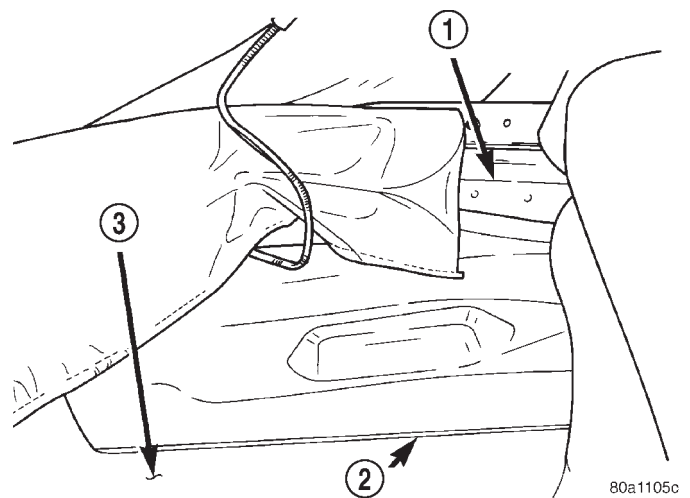
SHOCK ASSEMBLY (REAR)

NOTE: Access for the nuts attaching the rear shock absorber upper mount is from the passenger compartment of the vehicle. The top of the vehicle must be up to access the attaching nuts.

REMOVAL

(1) Remove the plastic access panel (Fig. 3) in the convertible top storage well. Refer to Group 23 Body in this service manual, for the required procedure to remove the access panel.

(2) Roll back the sound matting in the corner of the convertible top storage well to access the shock absorber attaching nuts.



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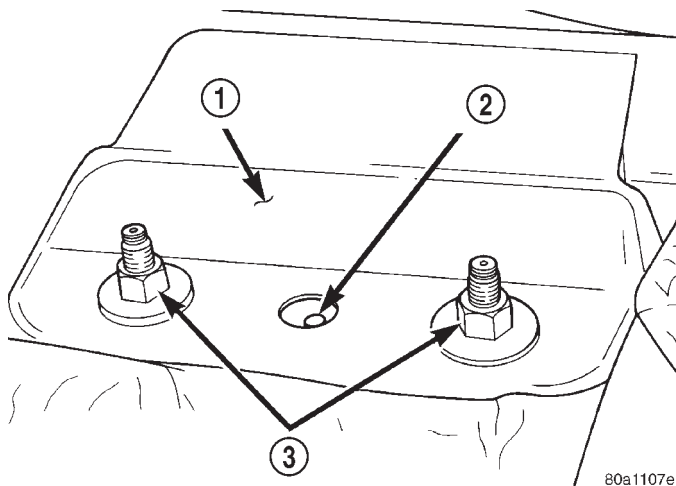
Fig. 3 Access Panel

- 1 - VEHICLE QUARTER PANEL
- 2 - REMOVE THIS PANEL
- 3 - CONVERTIBLE TOP STORAGE WELL

(3) Remove the 2 nuts (Fig. 4) attaching the shock absorber upper mount/spring seat to the body of the vehicle.

(4) 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.

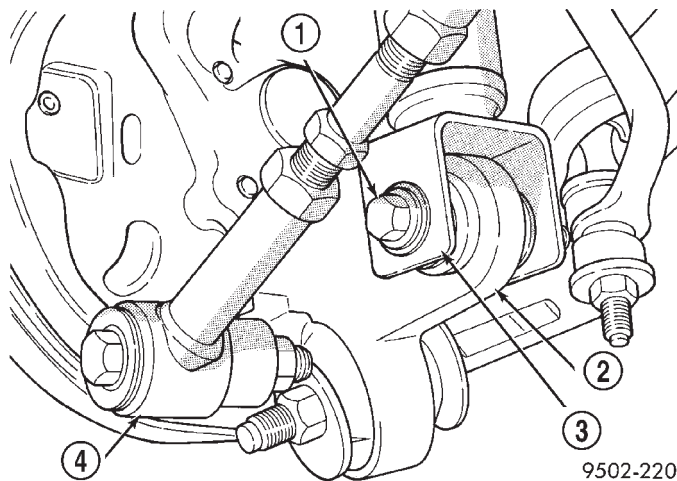
REMOVAL AND INSTALLATION (Continued)

**Fig. 4 Shock Absorber Upper Mount Attaching Nuts**

- 1 - VEHICLE BODY
- 2 - SHOCK ABSORBER
- 3 - SHOCK ABSORBER MOUNTING STUDS

(5) Remove the rear wheel and tire from the vehicle.

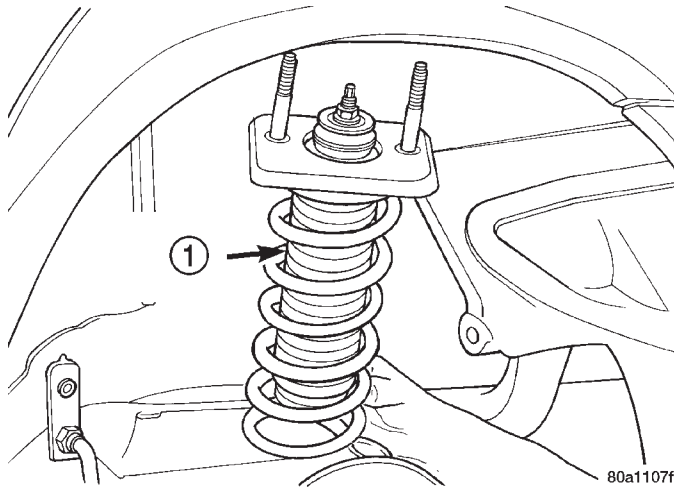
(6) Remove bolt attaching shock absorber to rear knuckle (Fig. 5).

**Fig. 5 Shock Absorber Attachment To Knuckle**

- 1 - ATTACHING BOLT
- 2 - REAR KNUCKLE
- 3 - SHOCK ABSORBER CLEVIS BRACKET
- 4 - LATERAL LINK

(7) Remove the shock absorber from the vehicle using the following procedure: First remove the shock absorber from the rear knuckle. Then remove the shock absorber upper mount from the body of the vehicle. For the required clearance to remove the shock absorber upper mount from the body it may be necessary to push down on the rear suspension.

(8) Move shock absorber downward and tilt top of shock outward. Then remove shock absorber from vehicle through top of wheel opening (Fig. 6).

**Fig. 6 Shock Absorber Removal**

- 1 - SHOCK ABSORBER ASSEMBLY

INSTALLATION

(1) Install shock absorber back in vehicle using the reverse sequence of removal (Fig. 6).

(2) Install upper shock absorber mount into the mounting holes in rear shock tower.

(3) Push down on rear knuckle to obtain clearance and then install shock absorber clevis bracket on rear knuckle.

(4) Align clevis bracket on shock absorber with bushing in knuckle. Install and tighten bolt (Fig. 5) to a torque of 95 N·m (70 ft. lbs.).

(5) Lower vehicle far enough to gain access to the passenger compartment of the vehicle.

(6) Install and tighten the 2 shock absorber mounting bracket attaching nuts (Fig. 4) to a torque of 54 N·m (40 ft. lbs.).

(7) Install the sound matting over the top of the shock absorber attaching nuts.

(8) Install the plastic access panel (Fig. 3) in the convertible top storage well. Refer to Group 23 Body in this service manual, for the required procedure to install the access panel.

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

(10) Lower the vehicle to the ground.

REMOVAL AND INSTALLATION (Continued)

KNUCKLE (REAR)

REMOVAL

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

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

(3) Remove rear brake drum from rear hub and bearing assembly.

(4) If vehicle is equipped with antilock brakes remove the rear wheel speed sensor from the brake support plate and brake flex hose routing bracket (Fig. 7).

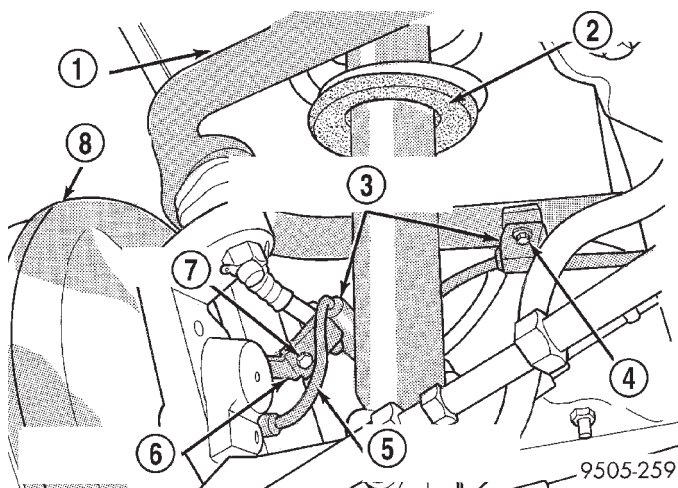


Fig. 7 Rear Wheel Speed Cable Routing And Attachment

- 1 - UPPER CONTROL ARM
- 2 - SHOCK ABSORBER
- 3 - SPEED SENSOR CABLE ROUTING CLIPS
- 4 - BOLT
- 5 - SPEED SENSOR CABLE
- 6 - BRAKE FLEX HOSE BRACKET
- 7 - BOLT
- 8 - BRAKE DRUM

(5) Remove the park brake cable from the park brake actuating lever (Fig. 8). Then remove the park brake cable from the rear brake support plate (Fig. 9). Park brake cable is removed from brake support plate using this procedure. Position a 1/2 inch box end wrench over cable retainer (Fig. 9) to collapse retaining tabs. Then pull rear brake cable from brake support plate.

(6) Remove the rear hub/bearing assembly retaining nut (Fig. 10). Then remove the washer and the hub/bearing assembly from the knuckle.

(7) Remove the 4 bolts (Fig. 11) attaching rear brake support plate to knuckle. Then remove brake

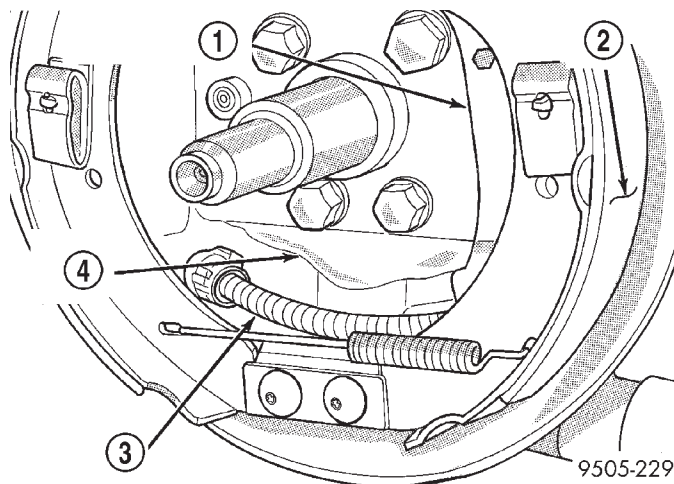


Fig. 8 Park Brake Cable Attachment To Actuating Lever

- 1 - PARK BRAKE ACTUATING LEVER
- 2 - TRAILING BRAKE SHOE
- 3 - PARK BRAKE CABLE
- 4 - BRAKE SUPPORT PLATE

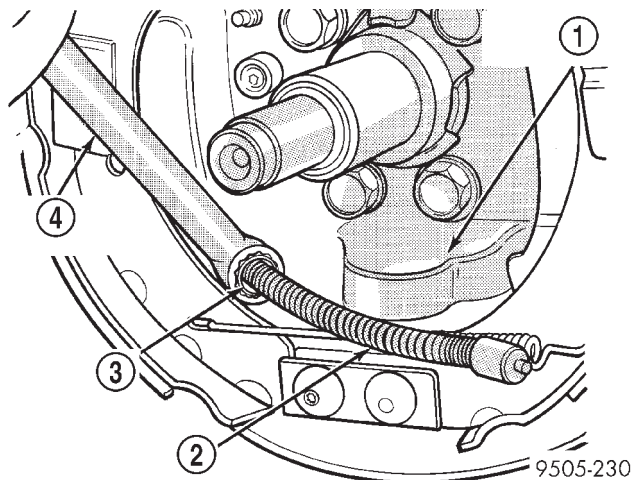


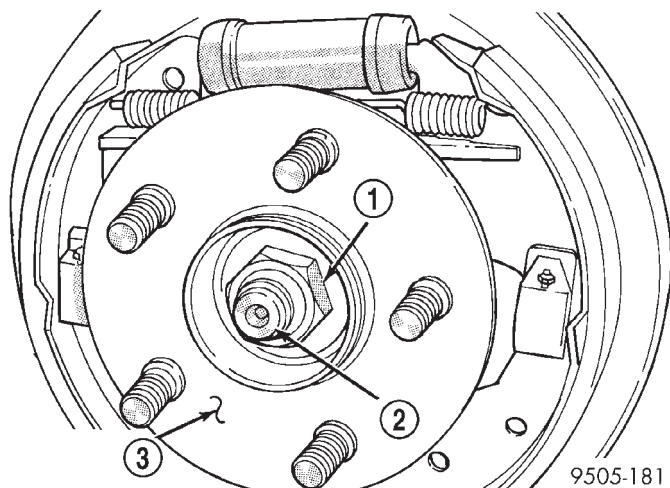
Fig. 9 Park Brake Cable Removal From Brake Support Plate

- 1 - REAR BRAKE SUPPORT PLATE
- 2 - PARK BRAKE CABLE
- 3 - PARK BRAKE CABLE RETAINER
- 4 - 1/2" BOX END WRENCH

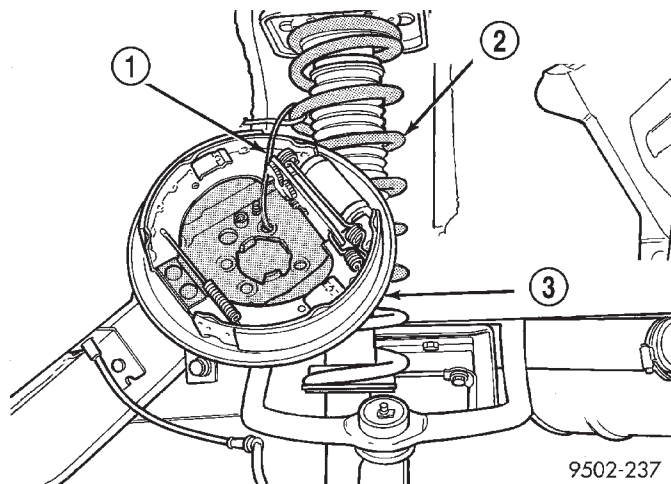
support plate, brake shoes and wheel cylinder as an assembly from rear knuckle. **It is not necessary to remove brake flex hose from wheel cylinder when removing support plate.** Brake support plate when removed, must be supported using mechanics wire as shown in (Fig. 12).

(8) Remove the nuts and bolts attaching the forward and rear lateral links (Fig. 13) to the rear knuckle.

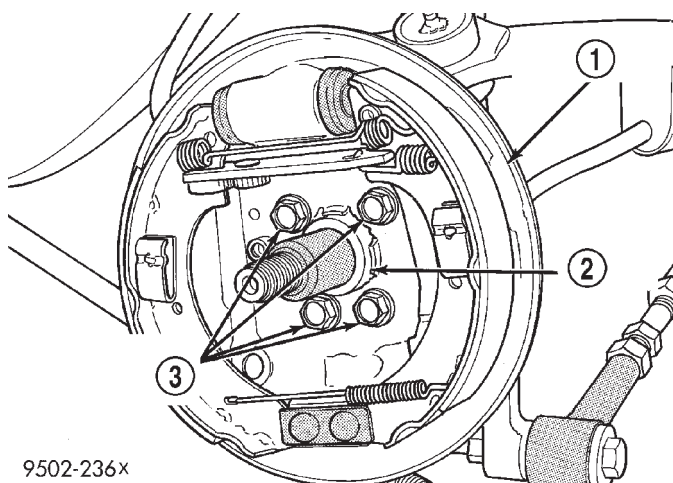
REMOVAL AND INSTALLATION (Continued)

**Fig. 10 Hub/Bearing Assembly Retaining Nut**

- 1 - RETAINING NUT
- 2 - SPINDLE
- 3 - HUB/BEARING ASSEMBLY

**Fig. 12 Correctly Stored Rear Brake Support Plate**

- 1 - WIRE HANGER
- 2 - REAR SHOCK ABSORBER ASSEMBLY
- 3 - REAR BRAKE SUPPORT PLATE

**Fig. 11 Rear Brake Support Plate Mounting Bolts**

- 1 - REAR BRAKE SUPPORT PLATE
- 2 - REAR KNUCKLE
- 3 - BRAKE SUPPORT PLATE ATTACHING BOLTS

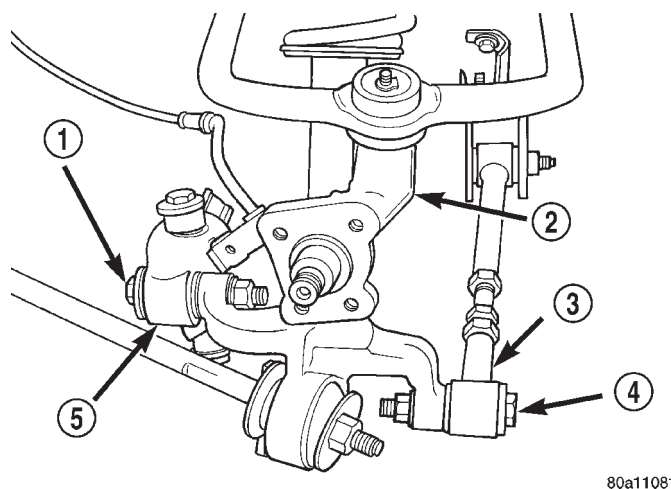
(9) Remove cotter pin and castle nut attaching upper control arm ball joint to knuckle.

(10) Remove ball joint stud from knuckle using Puller, Special Tool, CT-1106 (Fig. 14). When using puller, install castle nut on ball joint stud (Fig. 14) to protect threads from damage.

(11) Remove the nut and washer attaching the trailing link to the rear knuckle. Use a wrench on the flat of the trailing link to keep it from turning when removing nut (Fig. 15).

(12) Remove the shock absorber clevis bracket to knuckle attaching nut and bolt (Fig. 16).

(13) Remove the knuckle assembly from the vehicle.

**Fig. 13 Lateral Link Attachment To Rear Knuckle**

- 1 - BOLT
- 2 - KNUCKLE
- 3 - REAR LATERAL LINK
- 4 - BOLT
- 5 - FORWARD LATERAL LINK

INSTALLATION

(1) Install knuckle on clevis bracket of rear shock absorber. Then install clevis bracket to shock absorber attaching bolt with head of bolt facing rear of vehicle (Fig. 16).

CAUTION: When installing trailing link bushing retainers, retainers must be installed with cupped side of retainer facing away from bushing and knuckle (Fig. 17).

(2) Install knuckle on trailing link. Install the trailing link outer bushing, gold bushing retainer and

REMOVAL AND INSTALLATION (Continued)

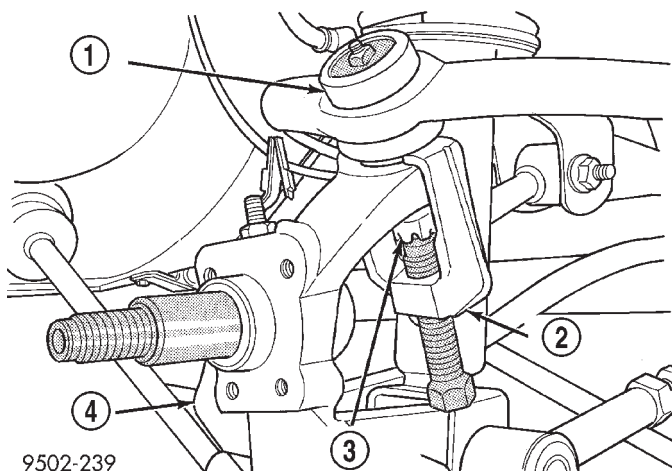


Fig. 14 Removing Ball Joint Stud From Knuckle

- 1 - BALL JOINT
- 2 - SPECIAL TOOL CT1106
- 3 - BALL JOINT STUD
- 4 - KNUCKLE

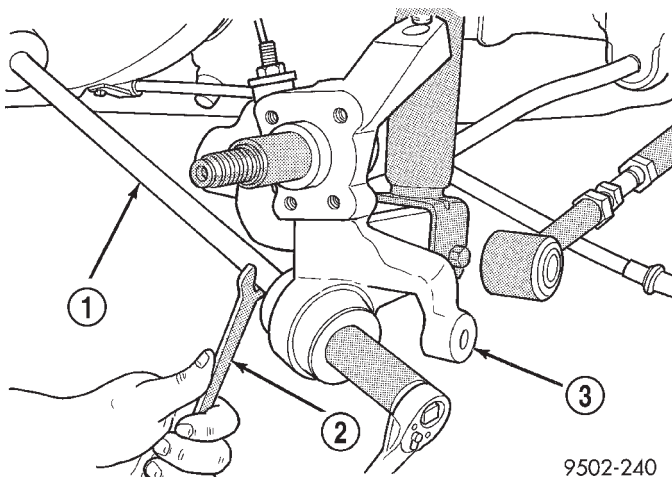


Fig. 15 Trailing Link Attachment To Rear Knuckle

- 1 - TENSION NUT
- 2 - WRENCH
- 3 - KNUCKLE

retaining nut on trailing link (Fig. 17). Using a large adjustable wrench, to keep trailing link from rotating securely tighten the trailing link retaining nut (Fig. 17) to a torque of 99 N·m (73 ft. lbs.).

(3) Install the upper ball joint stud in the knuckle. Install and tighten the ball joint stud castle nut to a torque of 85 N·m (63 ft. lbs.). Install cotter pin in ball joint stud.

(4) Install the front and rear lateral links and attaching nuts and bolts on the knuckle (Fig. 13) Tighten the lateral links to knuckle attaching bolts and nuts to 108 N·m (80 ft. lbs.).

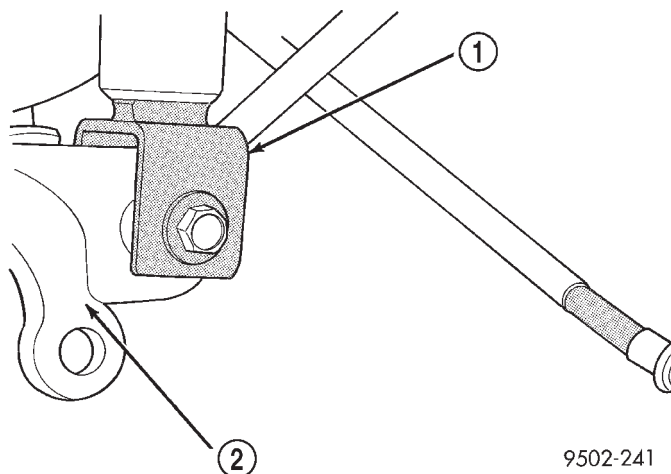


Fig. 16 Shock Absorber Attachment To Knuckle

- 1 - SHOCK ABSORBER CLEVIS BRACKET
- 2 - KNUCKLE

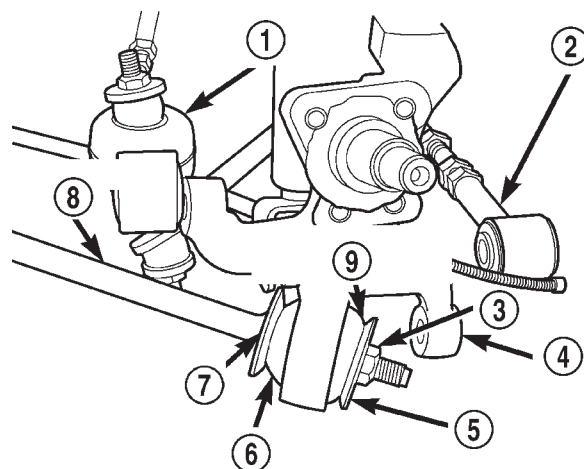


Fig. 17 Trailing Link Bushing And Retainer Installation

- 1 - FORWARD LATERAL ARM
- 2 - REAR LATERAL ARM
- 3 - NUT
- 4 - KNUCKLE
- 5 - OUTER TRAILING LINK RETAINER (GOLD)
- 6 - INNER TRAILING LINK BUSHING
- 7 - INNER TRAILING LINK RETAINER (BLACK)
- 8 - TRAILING LINK
- 9 - OUTER TRAILING LINK BUSHING

(5) Install rear brake support plate assembly onto the knuckle. Install the 4 bolts (Fig. 11) attaching rear brake support plate to rear knuckle. Tighten the attaching bolts to a torque of 61 N·m (45 ft. lbs.).

(6) If vehicle is equipped with ABS brakes, install speed sensor head into rear brake support plate (Fig. 18). Torque speed sensor head mounting bolt to 7 N·m (60 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

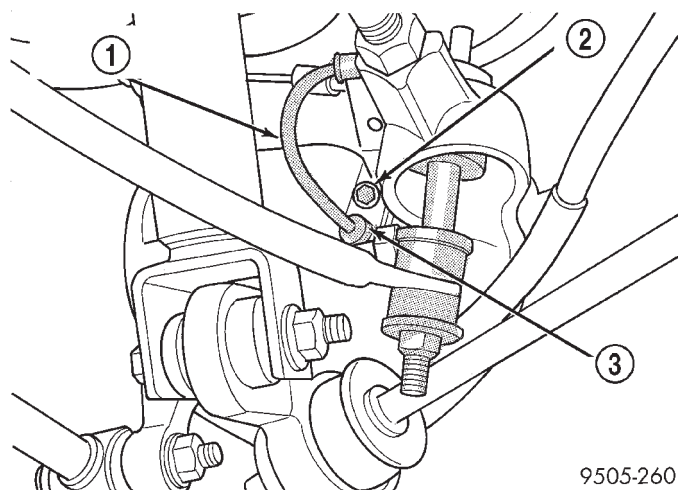


Fig. 18 Speed Sensor Head Attachment To Brake Support Plate

- 1 - SPEED SENSOR CABLE
- 2 - BOLT
- 3 - SPEED SENSOR HEAD

(7) Attach routing bracket for speed sensor cable to brake flex hose bracket and securely tighten attaching bolt (Fig. 7).

(8) Install park brake cable into brake support plate. Ensure cable retainer is securely holding cable to support plate. Then connect park brake cable to park brake lever on brake shoe.

(9) Install rear hub and bearing assembly on knuckle and install hub and bearing assembly retaining nut. Tighten retaining nut to a torque of 250 N·m (185 ft. lbs.).

(10) Install the brake drum on the hub/bearing assembly.

(11) 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 135 N·m (100 ft. lbs.).

(12) Lower vehicle.

(13) Check and reset rear wheel alignment to specifications if required. Refer to Front And Rear Alignment Setting Procedure in the Wheel Alignment Check And Adjustment section in this group of the service manual for the required alignment setting procedure.

HUB AND BEARING (REAR)

REMOVAL

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

(2) Remove rear wheel and tire assembly.

(3) If equipped with rear drum brakes, remove brake drum (Fig. 19) from rear hub and bearing assembly by removing the clips, then pulling the drum straight off the wheel mounting studs. If equipped with rear disc brakes, remove the rear caliper following the procedure found in REMOVAL AND INSTALLATION of the BASE BRAKE SYSTEM section of the group BRAKES. Remove the brake rotor by pulling the rotor straight off the wheel mounting studs.

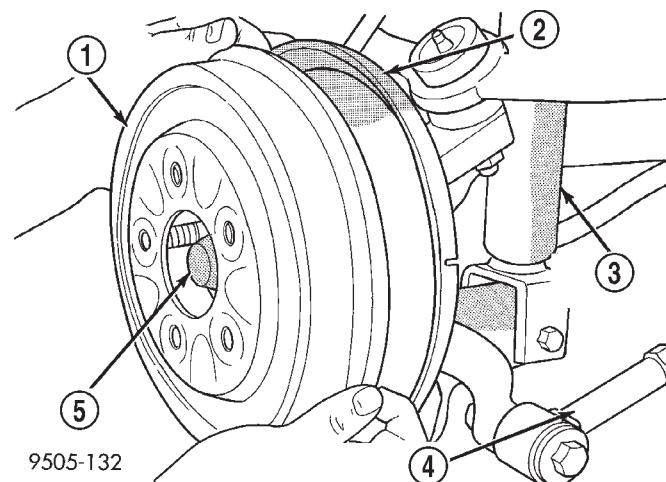


Fig. 19 Rear Brake Drum Removal

- 1 - REAR BRAKE DRUM
- 2 - REAR BRAKE SUPPORT PLATE
- 3 - SHOCK ASSEMBLY
- 4 - REAR LATERAL ARM
- 5 - HUB/BEARING ASSEMBLY

(4) Remove dust cap from rear hub and bearing assembly by prying it off.

(5) Remove hub and bearing assembly to rear spindle retaining nut (Fig. 20).

(6) Remove rear hub and bearing from the spindle by pulling it straight off the spindle by hand.

INSTALLATION

(1) Install the hub and bearing assembly on the knuckle spindle. Install a NEW retaining nut (Fig. 20). Tighten the retaining nut to a torque of 250 N·m (185 ft. lbs.).

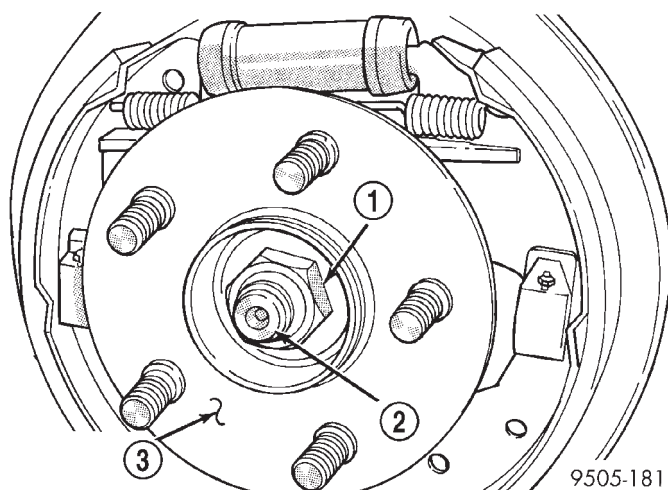
(2) Install the hub and bearing dust cap using a soft faced hammer.

(3) Install the brake drum or brake rotor on the hub and bearing.

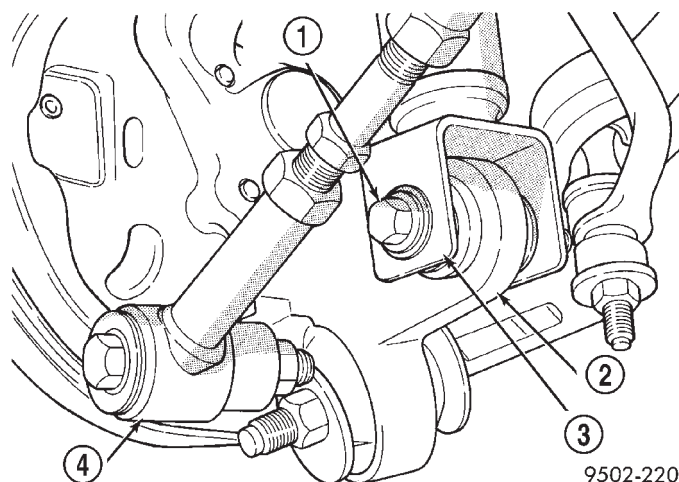
(4) If equipped with rear disc brakes, install the rear caliper following the procedure found in REMOVAL AND INSTALLATION of the BASE BRAKE SYSTEM section of the group BRAKES.

(5) Install the rear tire and wheel assembly on vehicle. Tighten all wheel stud nuts in criss-cross

REMOVAL AND INSTALLATION (Continued)

**Fig. 20 Hub/Bearing Assembly Retaining Nut**

- 1 - RETAINING NUT
- 2 - SPINDLE
- 3 - HUB/BEARING ASSEMBLY

**Fig. 21 Shock Absorber To Knuckle Attaching**

- 1 - ATTACHING BOLT
- 2 - REAR KNUCKLE
- 3 - SHOCK ABSORBER CLEVIS BRACKET
- 4 - LATERAL LINK

pattern to one-half the specified torque. Then repeat pattern, fully tightening the stud nuts to a torque of 129 N·m (95 ft. lbs.).

(6) Lower the vehicle.

UPPER CONTROL ARM (REAR)

NOTE: The rear control arm, control arm bushings, and pivot bar are serviced as a complete assembly on this vehicle. Do not attempt to disassemble the control arm from the pivot bar to service the rear control arm bushings. The ball joint and ball joint seal are to be replaced with the control arm removed from the vehicle.

REMOVAL

(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.

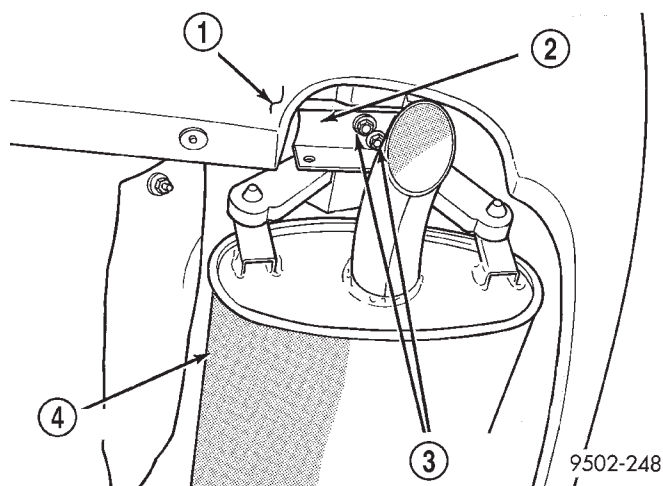
(2) Remove both rear wheel and tire assemblies from the vehicle.

(3) Remove the shock absorber clevis bracket to rear knuckle attaching bolt and nut (Fig. 21) on both sides of the vehicle.

(4) Remove muffler support bracket from rear frame rail (Fig. 22).

(5) Remove the rear exhaust pipe hanger bracket from the rear suspension crossmember (Fig. 23). Let exhaust system drop down as far as possible.

(6) On only the side of the vehicle requiring control arm removal, separate the control arm ball joint from the rear knuckle using following procedure.

**Fig. 22 Muffler Support Bracket**

- 1 - REAR FASCIA
- 2 - MUFFLER SUPPORT BRACKET
- 3 - ATTACHING BOLTS
- 4 - MUFFLER

- Remove cotter pin and castle nut attaching upper control arm ball joint to knuckle.

- Remove ball joint stud from knuckle using Puller, Special Tool, CT- 1106 (Fig. 24). When using puller, install castle nut on ball joint stud to protect threads from damage.

(7) Position a transmission jack and wooden block under the center of the rear suspension crossmember to support and lower crossmember during removal (Fig. 25).

REMOVAL AND INSTALLATION (Continued)

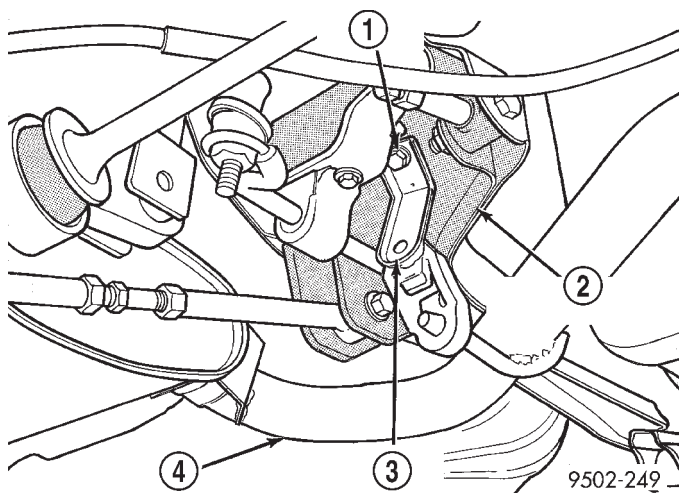


Fig. 23 Exhaust Pipe Hanger At Rear Suspension Crossmember

- 1 - BOLT
- 2 - REAR SUSPENSION CROSSMEMBER
- 3 - HANGER BRACKET
- 4 - EXHAUST PIPE

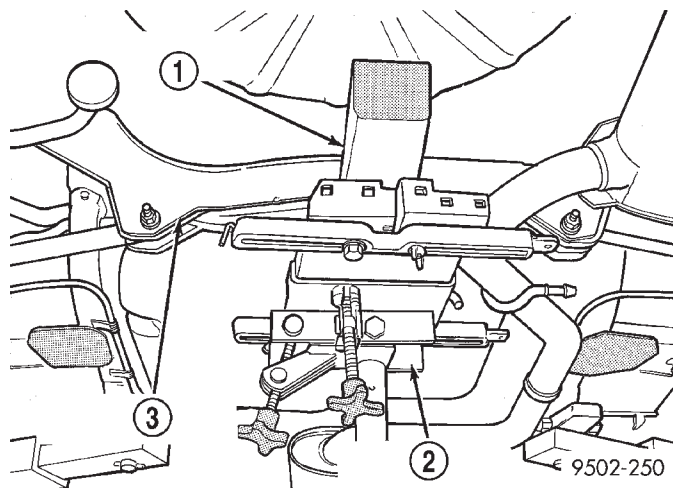


Fig. 25 Lowering And Supporting Rear Suspension Crossmember

- 1 - WOODEN BLOCK
- 2 - TRANSMISSION JACK
- 3 - REAR SUSPENSION CROSSMEMBER

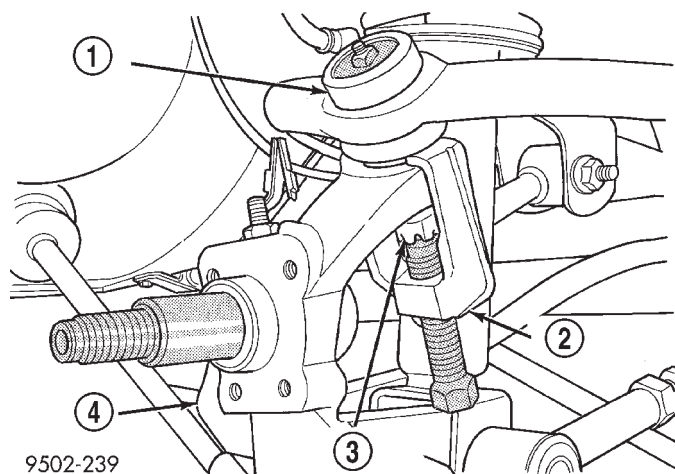


Fig. 24 Ball Joint Stud Removal From Knuckle

- 1 - BALL JOINT
- 2 - SPECIAL TOOL CT1106
- 3 - BALL JOINT STUD
- 4 - KNUCKLE

(8) If vehicle is equipped with antilock brakes, remove routing clips for wheel speed sensor cable from brackets on both upper control arms (Fig. 26).

(9) Remove the 4 bolts (Fig. 27) attaching rear suspension crossmember to rear frame rails.

CAUTION: When lowering rear suspension crossmember do not put a strain on the rear brake flex hoses.

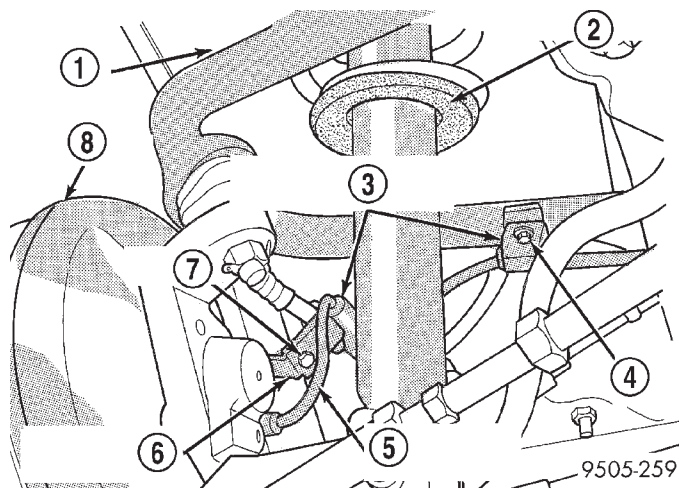


Fig. 26 Speed Sensor Cable Attachment To Control Arm

- 1 - UPPER CONTROL ARM
- 2 - SHOCK ABSORBER
- 3 - SPEED SENSOR CABLE ROUTING CLIPS
- 4 - BOLT
- 5 - SPEED SENSOR CABLE
- 6 - BRAKE FLEX HOSE BRACKET
- 7 - BOLT
- 8 - BRAKE DRUM

(10) Lower the rear suspension crossmember far enough to access the upper control arm pivot bar to crossmember attaching bolts.

REMOVAL AND INSTALLATION (Continued)

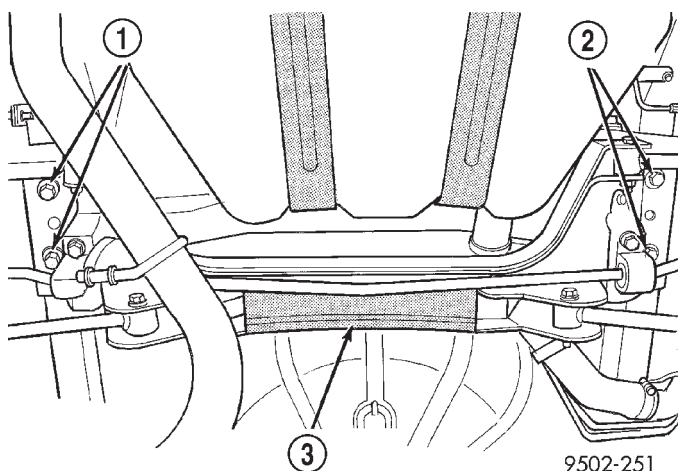


Fig. 27 Crossmember Attachment To Frame Rails

- 1 - ATTACHING BOLTS
- 2 - ATTACHING BOLTS
- 3 - REAR SUSPENSION CROSSMEMBER

NOTE: One flat washer is used at each upper control arm pivot bar attaching bolt. The flat washer is located between the pivot bar and the rear suspension crossmember. Be sure the washers are not lost when removing the pivot bar attaching bolts from the rear suspension crossmember.

(11) Remove the 2 bolts (Fig. 28) attaching the upper control arm to the rear suspension crossmember.

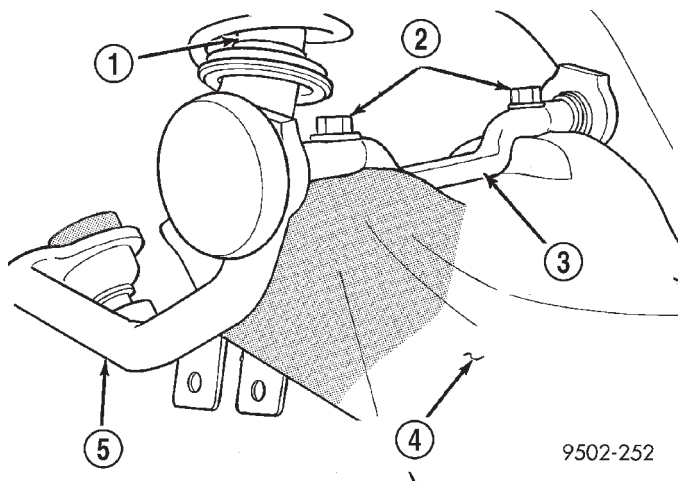


Fig. 28 Upper Control Arm Attachment To Crossmember

- 1 - SHOCK ABSORBER
- 2 - ATTACHING BOLTS
- 3 - UPPER CONTROL ARM PIVOT BAR
- 4 - REAR SUSPENSION CROSSMEMBER
- 5 - UPPER CONTROL ARM

(12) Remove the flat washers and the upper control arm from the rear suspension crossmember.

(13) Transfer any required components to the replacement control arm.

INSTALLATION

NOTE: One flat washer is used at each upper control arm pivot bar attaching bolt. The flat washer is located between the pivot bar and the rear suspension crossmember. Be sure 1 flat washer is used at each bolt attaching the pivot bar to the rear suspension crossmember.

(1) Align the upper control arm pivot bar with the mounting holes in the rear suspension crossmember. Install the pivot bar attaching bolts and washers. Tighten the 2 pivot bar to crossmember attaching bolts (Fig. 28) to a torque of 108 N·m (80 ft. lbs.).

(2) Using transmission jack, raise rear suspension crossmember up to the rear frame rails and loosely install the 4 attaching bolts (Fig. 27).

(3) Position an appropriate size drift into the positioning hole in each side of rear suspension crossmember and crossmember locating holes in frame rails of the vehicle (Fig. 29). This is required to properly position rear suspension crossmember in the body of the vehicle. Then tighten the 4 crossmember to frame rail attaching bolts to 108 N·m (80 ft. lbs.). Remove drifts from rear suspension crossmember.

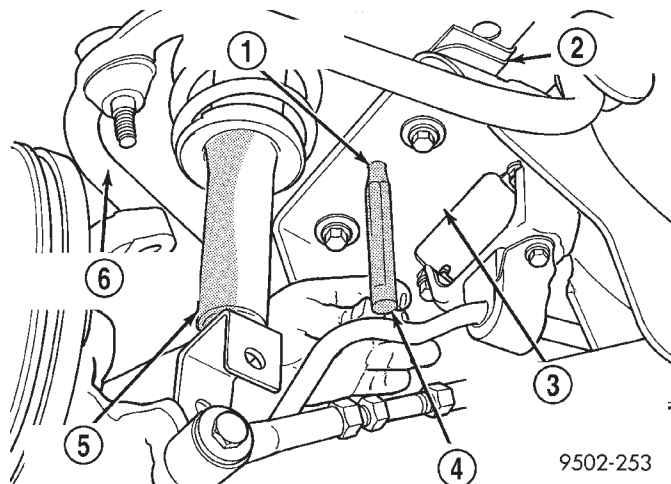


Fig. 29 Locating Rear Suspension Crossmember In Vehicle

- 1 - POSITIONING HOLE
- 2 - FRAME RAIL
- 3 - REAR SUSPENSION CROSSMEMBER
- 4 - DRIFT
- 5 - SHOCK ABSORBER
- 6 - UPPER CONTROL ARM

(4) Install upper ball joint stud in knuckle. Install and tighten the ball joint stud castle nut to a torque of 85 N·m (63 ft. lbs.). Install cotter pin in ball joint stud.

REMOVAL AND INSTALLATION (Continued)

(5) Remove transmission jack supporting rear suspension crossmember.

(6) Install muffler support bracket on rear frame rail (Fig. 22). Install rear exhaust pipe hanger on rear suspension crossmember (Fig. 23).

(7) Install the wheel speed sensor cable routing clip on upper control arm mounting bracket. Install and securely tighten attaching bolt (Fig. 26).

(8) Install the shock absorber clevis brackets (Fig. 21) on the rear knuckles. Tighten the shock absorber mounting bolts to a torque of 95 N·m (70 ft. lbs.).

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

(10) Lower vehicle to the ground.

(11) Check and reset if required, rear wheel Camber and Toe to preferred specifications.

LATERAL LINKS

The rear suspension lateral links (Fig. 30) are only serviced as complete assemblies. The isolator bushings used in the lateral links are not serviced as separate components.

CAUTION: Do not attempt to straighten or repair a lateral link. Do not apply heat to the lateral link adjusting screws or to the jam nuts, when loosening or adjusting the lateral links.

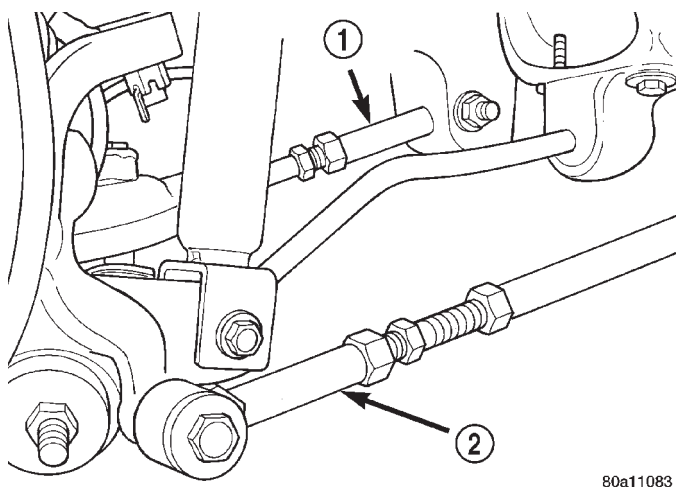


Fig. 30 Rear Suspension Lateral Links

- 1 - FORWARD LATERAL LINK
2 - REAR LATERAL LINK

FORWARD LATERAL LINK

REMOVE

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

the required lifting procedure to be used for this vehicle.

(2) Remove the rear wheel and tire assembly from the side of the vehicle requiring lateral link removal.

(3) Remove the rear stabilizer bar attaching link from the forward lateral link (Fig. 31).

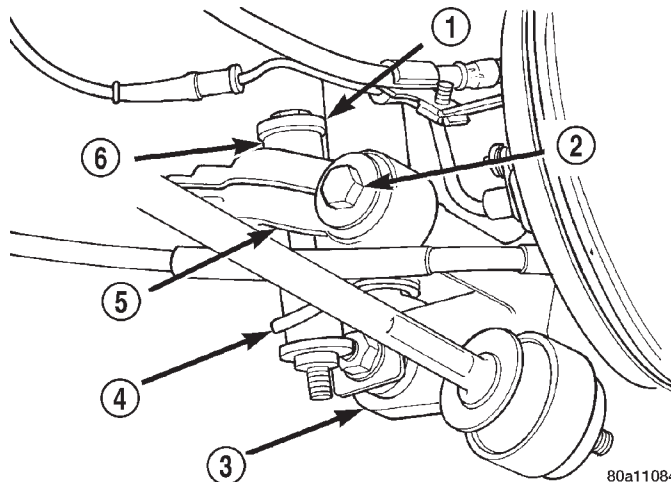


Fig. 31 Stabilizer Bar To Lateral Link Attachment

- 1 - WASHER
2 - BOLT AND WASHER
3 - KNUCKLE
4 - STABILIZER BAR
5 - FORWARD LATERAL LINK
6 - STABILIZER BAR ATTACHING LINK

(4) Remove the nut, bolt and washer (Fig. 31) attaching the forward lateral link to the knuckle.

(5) Remove the nut and bolt attaching the lateral link to the rear suspension crossmember (Fig. 32).

(6) Remove the forward lateral link from the vehicle.

INSTALL

(1) Install the lateral link and the attaching nut and bolt at rear suspension crossmember (Fig. 32). **The forward lateral link is to be installed with the cup in cast portion facing down and toward rear knuckle (Fig. 31).**

(2) Install the lateral link and attaching nut, bolt and washer at rear knuckle (Fig. 31).

(3) Torque both lateral link attaching bolts to 108 N·m (80 ft. lbs.).

(4) Install the rear stabilizer bar attaching link, isolator bushings and attaching nut on the forward lateral link (Fig. 31). Tighten the attaching nut to a torque of 35 N·m (26 ft. 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 135 N·m (100 ft. lbs.).

REMOVAL AND INSTALLATION (Continued)

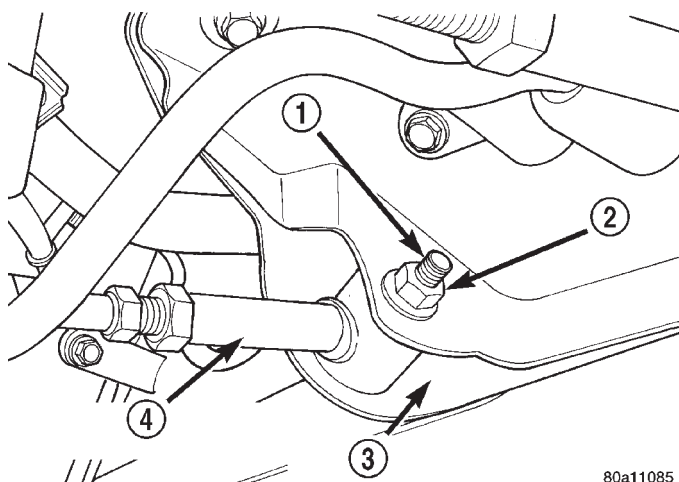


Fig. 32 Lateral Link Attachment To Rear Suspension Crossmember

- 1 - BOLT
- 2 - NUT
- 3 - REAR SUSPENSION CROSSMEMBER
- 4 - FORWARD LATERAL LINK

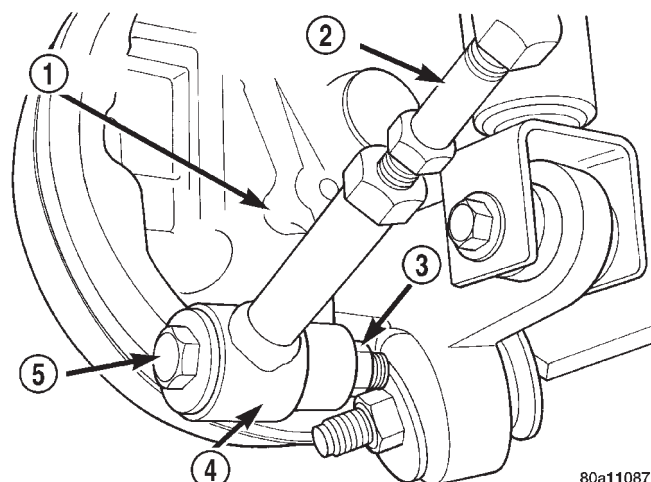


Fig. 33 Rear Lateral Link Attachment To Knuckle

- 1 - KNUCKLE
- 2 - ADJUSTING SCREW
- 3 - NUT
- 4 - REAR LATERAL LINK
- 5 - BOLT

- (6) Lower vehicle to the ground.
- (7) Check and reset rear wheel Camber and Toe to specifications if required. Refer to Front And Rear Alignment Setting Procedure in the Wheel Alignment Check And Adjustment section in this group of the service manual for the required alignment setting procedure.

REAR LATERAL LINK

REMOVE

- (1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual, for the required lifting procedure to be used for this vehicle.
- (2) Remove the rear wheel and tire assembly from the side of the vehicle requiring lateral link removal.
- (3) Remove the nut, bolt and washer attaching the lateral link to the knuckle (Fig. 33).
- (4) Remove the bolt (Fig. 34) and nut attaching the lateral link to the rear suspension crossmember.
- (5) Remove rear lateral link from vehicle.

INSTALL

- (1) Install the lateral link and the attaching nut and bolt at rear suspension crossmember (Fig. 34). **The rear lateral link is to be installed with the adjusting screw toward rear knuckle not rear suspension crossmember (Fig. 33).**
- (2) Install the lateral link and the attaching nut, bolt and washer at rear knuckle (Fig. 33).
- (3) Torque both lateral link attaching bolts to 108 N·m (80 ft. lbs.).

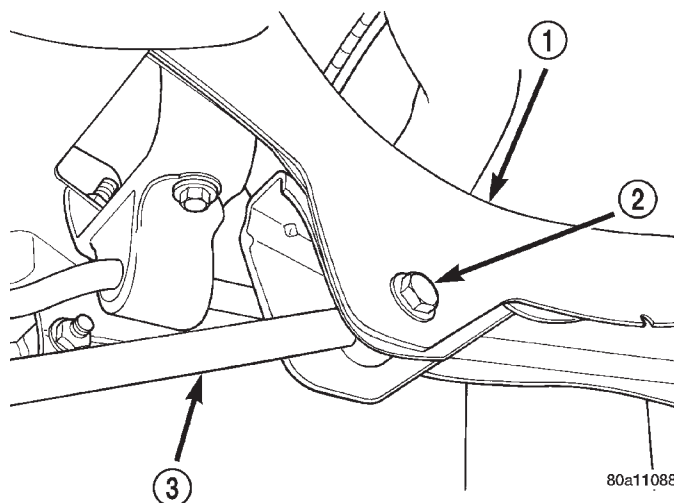


Fig. 34 Lateral Link Attachment To Rear Suspension Crossmember

- 1 - REAR SUSPENSION CROSSMEMBER
- 2 - BOLT
- 3 - REAR LATERAL LINK

- (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 135 N·m (100 ft. lbs.).
- (5) Lower vehicle to the ground.
- (6) Check and reset rear wheel Camber and Toe to specifications if required. Refer to Front And Rear Alignment Setting Procedure in the Wheel Alignment Check And Adjustment section in this group of the service manual for the required alignment setting procedure.

REMOVAL AND INSTALLATION (Continued)

TRAILING LINK

REMOVAL

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

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

(3) At the knuckle, remove the nut, bushing retainer and outer trailing link bushing (Fig. 35) from the trailing link.

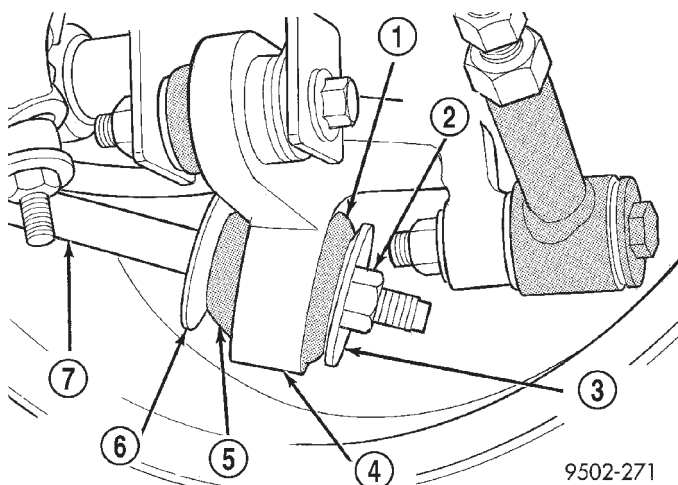


Fig. 35 Trailing Link To Knuckle Attachment

- 1 - BUSHING
- 2 - NUT
- 3 - BUSHING RETAINER
- 4 - KNUCKLE
- 5 - BUSHING
- 6 - BUSHING RETAINER
- 7 - TRAILING LINK

(4) Remove the 4 bolts (Fig. 36) attaching the trailing link hanger bracket to the floor pan and frame rail.

(5) Remove the trailing link and mounting bracket as an assembly from the vehicle.

CAUTION: The installation position of the bushings and retainers on the trailing link is important. When separating the trailing link from the hanger bracket, note the position and orientation on the bushings and retainers to ensure they are re-installed correctly.

(6) Separate the trailing link from the hanger bracket. To separate trailing link from hanger bracket, use a large adjustable wrench on flat of trailing link to turn link while holding nut stationary (Fig. 37).

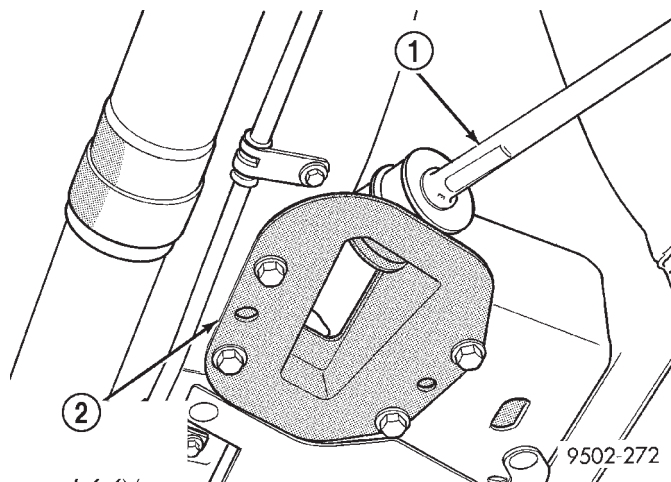


Fig. 36 Trailing Link Hanger Bracket Attachment To Vehicle

- 1 - TRAILING LINK
- 2 - TRAILING LINK HANGER BRACKET

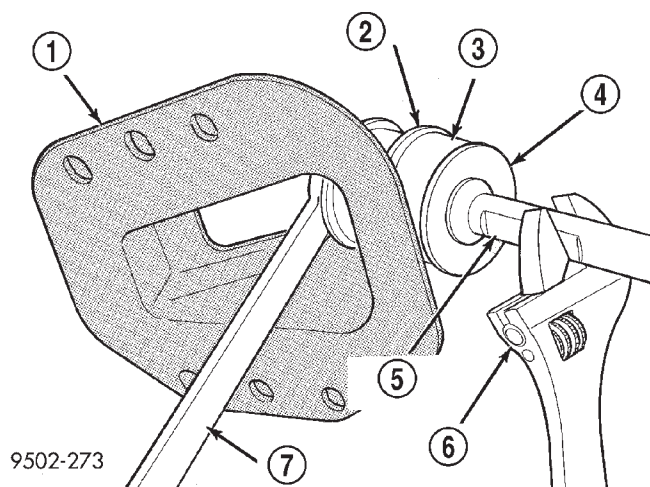


Fig. 37 Separating Trailing Link From Hanger Bracket

- 1 - HANGER BRACKET
- 2 - SPACER
- 3 - BUSHING
- 4 - RETAINER
- 5 - TRAILING LINK
- 6 - ADJUSTABLE WRENCH
- 7 - WRENCH

INSTALLATION

CAUTION: The inner and outer trailing link to hanger bracket bushings and retainers must be installed in their correct position on the trailing link. Do not reverse the position of the inner and outer trailing link bushing or retainers on the trailing link.

REMOVAL AND INSTALLATION (Continued)

NOTE: When installing trailing link into hanger bracket, the flat on the trailing link (Fig. 37) must be positioned at the hanger bracket.

(1) Install the (black) inner bushing retainer, and inner bushing (Fig. 38) on the trailing link. Install the trailing link, retainer and bushing on the hanger bracket (Fig. 38). Then install the outer bushing, (gold) outer bushing retainer and nut (Fig. 38) on the trailing link. Using a large adjustable wrench on flat of trailing link to keep it from rotating, tighten the trailing link retaining nut to a torque of 99 N·m (73 ft. lbs.).

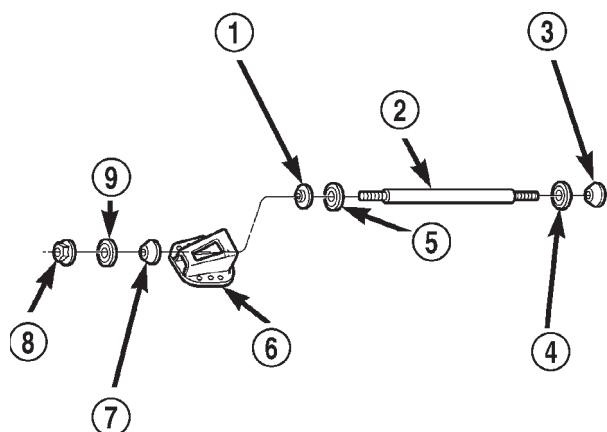


Fig. 38 Trailing Link Bushing Installation

- 1 - INNER TRAILING LINK BUSHING
- 2 - TRAILING LINK
- 3 - INNER TRAILING LINK BUSHING
- 4 - TRAILING LINK INNER BUSHING RETAINER (BLACK)
- 5 - INNER BUSHING RETAINER (BLACK)
- 6 - TRAILING LINK HANGER BRACKET
- 7 - OUTER TRAILING LINK BUSHING
- 8 - NUT
- 9 - OUTER BUSHING RETAINER (GOLD)

(2) Install the (black) inner bushing retainer, and inner bushing (Fig. 38) on the trailing link.

(3) Install knuckle end of trailing link in rear knuckle.

CAUTION: It is important that the following procedure be done when installing the trailing arm hanger bracket to the body of the vehicle. This procedure will ensure that the hanger bracket is installed in the correct position on the vehicle.

(4) Install trailing link hanger bracket on vehicle and loosely install the 4 attaching bolts (Fig. 39). Then install 2 drift pins of appropriate size in positioning holes on hanger bracket and into locating holes in body (Fig. 39). With hanger bracket correctly positioned on vehicle tighten the 4 hanger bracket mounting bolts to a torque of 34 N·m (25 ft. lbs.).

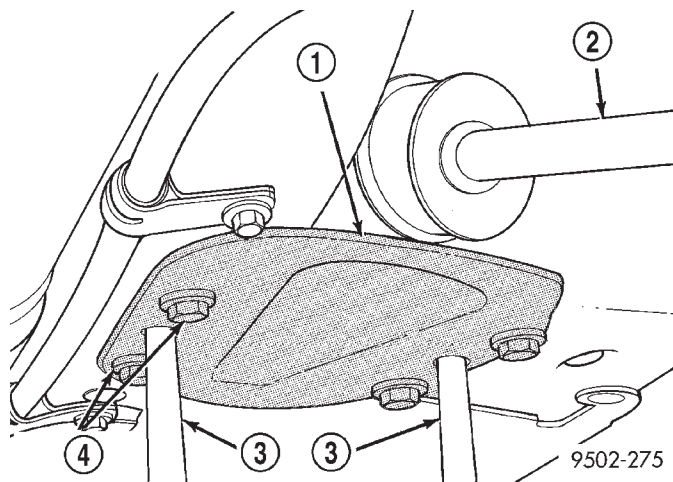


Fig. 39 Trailing Link Hanger Bracket Installation

- 1 - HANGER BRACKET
- 2 - TRAILING LINK
- 3 - LOCATING DRIFT PINS
- 4 - ATTACHING BOLTS 4

CAUTION: When installing trailing link bushing retainers, the retainers must be installed with cupped side of retainer facing away from bushing and knuckle (Fig. 35).

(5) At the knuckle, install the outer trailing link bushing, (gold) outer bushing retainer and retaining nut on trailing link (Fig. 35). Using a large adjustable wrench on flat of trailing link to keep it from rotating tighten the trailing link retaining nut (Fig. 35) to a torque of 99 N·m (73 ft. lbs.).

STABILIZER BAR (REAR)

REMOVAL

(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 both rear wheel and tire assemblies from the vehicle.

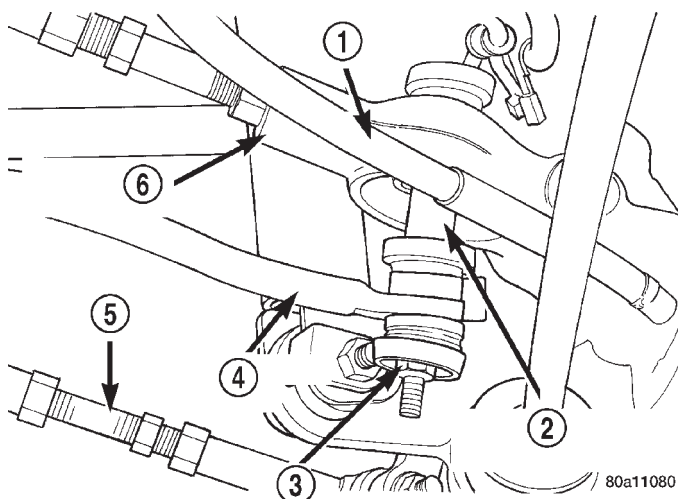
(3) From each side of the vehicle, remove the nut (Fig. 40) attaching the stabilizer bar attaching link/isolator bushings to the stabilizer bar.

(4) Remove the 4 bolts attaching the stabilizer bar bushing clamps to the rear suspension crossmember (Fig. 41).

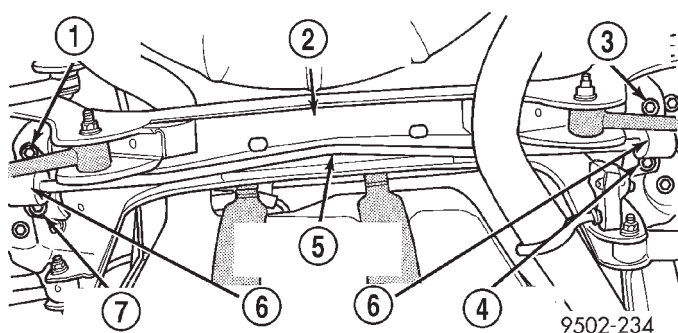
(5) Remove the rear stabilizer bar to crossmember bushing clamps and bushings from the stabilizer bar.

(6) Remove stabilizer bar from vehicle. Stabilizer bar will come out of vehicle between the exhaust pipe and the rear suspension crossmember.

REMOVAL AND INSTALLATION (Continued)

**Fig. 40 Stabilizer Bar Attaching Link**

- 1 - PARK BRAKE CABLE
- 2 - STABILIZER BAR ATTACHING LINK
- 3 - NUT
- 4 - STABILIZER BAR
- 5 - REAR LATERAL LINK
- 6 - FORWARD LATERAL LINK

**Fig. 41 Stabilizer Bar Attachment To Rear Suspension**

- 1 - ATTACHING BOLT
- 2 - REAR SUSPENSION CROSSMEMBER
- 3 - ATTACHING BOLT
- 4 - ATTACHING BOLT
- 5 - REAR STABILIZER BAR
- 6 - STABILIZER BAR ATTACHING BRACKETS
- 7 - ATTACHING BOLT

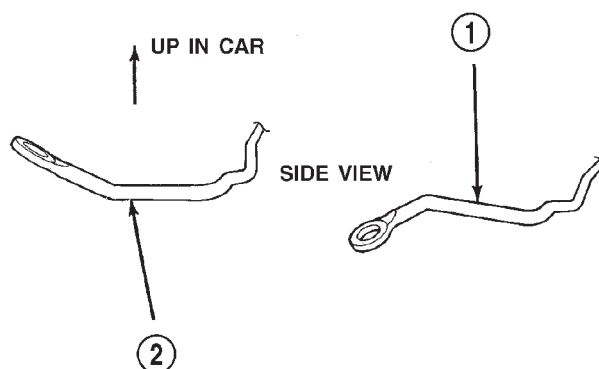
STABILIZER BAR BUSHING INSPECTION

Inspect for broken or distorted retainers and bushings. If bushing replacement is required, bushings can be removed by opening slit in bushing and removing bushing from around stabilizer bar.

INSTALLATION

(1) Install stabilizer bar back in vehicle with the bushings removed using the reverse sequence of removal.

(2) When stabilizer bar is installed in vehicle, it must be installed with the bend in the end of the stabilizer bar positioned up in vehicle when viewed from the side (Fig. 42).



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Fig. 42 Installed Position Of Stabilizer Bar In Vehicle

- 1 - INCORRECTLY INSTALLED POSITION OF STABILIZER BAR
- 2 - CORRECTLY INSTALLED POSITION OF STABILIZER BAR

(3) Install the stabilizer bar onto the stabilizer bar to forward lateral link attaching links (Fig. 40). Install the stabilizer bar to attaching link bushings on attaching links. Tighten the bushing retaining nuts to a torque of 35 N·m (26 ft. lbs.).

(4) Loosely install the stabilizer bar bushing clamps on the rear suspension crossmember

(5) Position the stabilizer bar so it is centered in the vehicle and does not contact other suspension components or vehicle body.

(6) Tighten the bolts attaching the stabilizer bar bushing clamps to the rear crossmember to a torque of 27 N·m (19 ft. lbs.) (Fig. 41).

(7) 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 135 N·m (100 ft. lbs.).

(8) Lower vehicle to the ground.

DISASSEMBLY AND ASSEMBLY**SHOCK ASSEMBLY (REAR)**

The shock assembly must be removed from the vehicle for it to be disassembled and assembled. Refer to REMOVAL AND INSTALLATION in this section for the required procedure.

For the disassembly and assembly of the shock assembly, use strut spring compressor Pentastar Service Equipment (PSE) tool W-7200, or the equivalent, to compress the coil spring. Follow the manufacturer's instructions closely.

DISASSEMBLY AND ASSEMBLY (Continued)

DISASSEMBLY

(1) If both shocks are being serviced at the same time, mark the coil spring and shock assembly according to which side of the vehicle the shock was removed from, and which shock the coil spring was removed from.

(2) Position the shock assembly in the strut coil spring compressor following the manufacturer's instructions. Set the lower hooks and install the clamp on the lower end of the coil spring, so the shock is held in place once the shock shaft nut is removed (Fig. 43). Lower the upper hooks and position them on the coil spring near the top (Fig. 44).

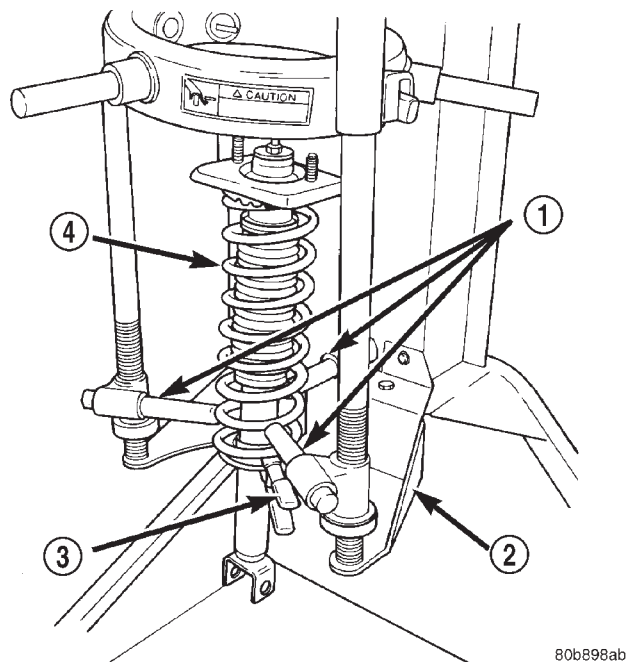


Fig. 43 Lower Hooks And Clamp

- 1 - LOWER HOOKS
- 2 - STRUT SPRING COMPRESSOR
- 3 - CLAMP
- 4 - COIL SPRING

WARNING: DO NOT REMOVE THE SHOCK ROD NUT BEFORE THE COIL SPRING IS COMPRESSED. THE COIL SPRING IS HELD UNDER PRESSURE AND MUST BE COMPRESSED, REMOVING SPRING TENSION FROM THE UPPER MOUNTING BRACKET BEFORE THE ROD NUT IS REMOVED.

(3) Compress the coil spring until all coil spring tension is removed from the upper mounting bracket.

(4) Hold the shock rod from rotating using special socket Snap-On A136, or an equivalent, and remove the retainer nut (Fig. 45).

(5) Remove the upper shock rod bushing retainer washer from the shock rod.

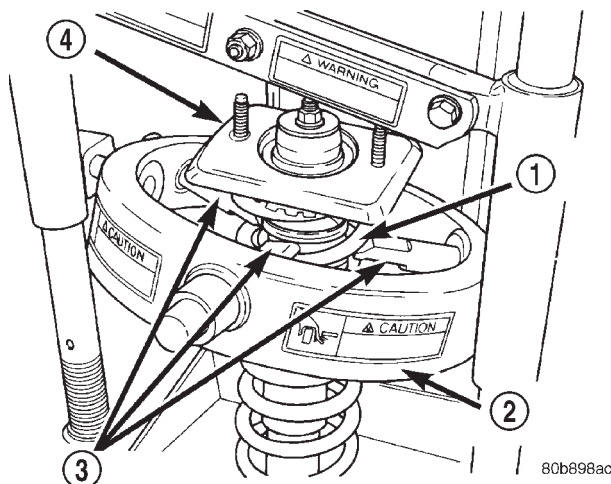


Fig. 44 Upper Hooks Positioned

- 1 - COIL SPRING
- 2 - SPRING COMPRESSOR
- 3 - UPPER HOOKS
- 4 - UPPER MOUNT

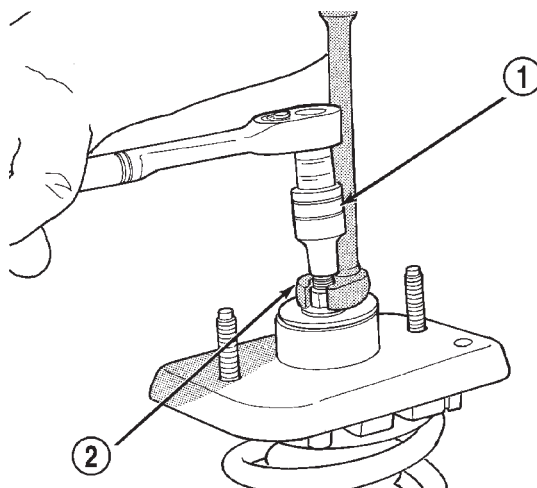


Fig. 45 Retainer Nut Removal/Installation

- 1 - SHOCK ABSORBER SOCKET SNAP-ON A136
- 2 - CROW FOOT

(6) Remove the upper shock mount and the rod isolator bushings as an assembly from the rod of the shock absorber.

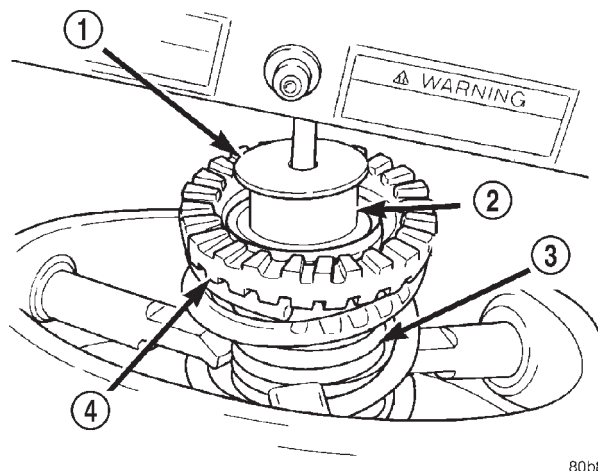
(7) Remove the upper coil spring isolator from the top of the coil spring (Fig. 46).

(8) Remove the lower shock rod bushing washer from the top of the dust boot and shock absorber rod (Fig. 46).

(9) Remove the dust shield and cup as an assembly from the shock absorber rod by pulling both straight up and off the shock rod (Fig. 46).

(10) Remove the clamp from the bottom of the coil spring and remove the shock absorber, lower spring

DISASSEMBLY AND ASSEMBLY (Continued)



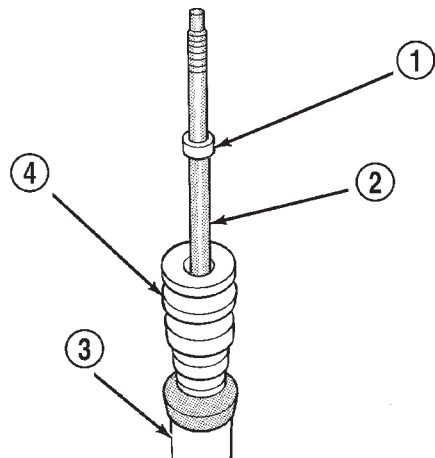
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Fig. 46 Upper Coil Spring Isolator, Washer And Dust Boot

- 1 - WASHER
- 2 - CUP
- 3 - DUST SHIELD
- 4 - UPPER COIL SPRING ISOLATOR

isolator, jounce bumper, and collar out through the bottom of the coil spring.

(11) Remove the jounce bumper and the collar (Fig. 47) from the rod of the shock absorber.



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Fig. 47 Shock Absorber Jounce Bumper And Collar

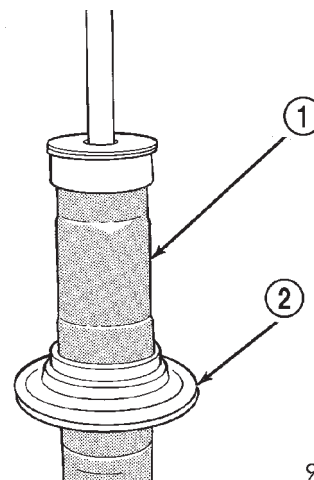
- 1 - COLLAR
- 2 - SHOCK ABSORBER ROD
- 3 - SHOCK ABSORBER
- 4 - JOUNCE BUMPER

(12) Remove the lower coil spring isolator (Fig. 48) from the lower spring seat on the shock absorber.

(13) Remove the upper shock rod isolator bushing and sleeve from the upper shock mount (Fig. 49).

(14) Remove the lower shock rod isolator bushing from the upper shock mount (Fig. 50).

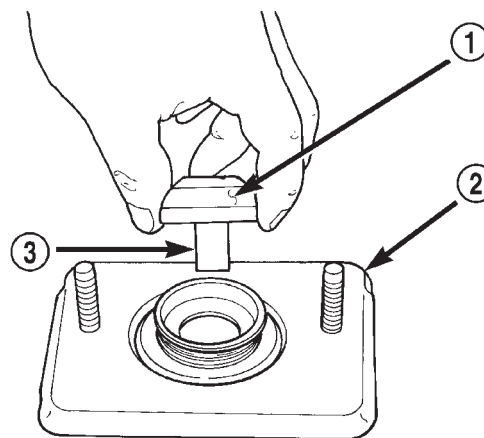
(15) Inspect the shock assembly components for the following and replace as necessary:



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Fig. 48 Lower Coil Spring Isolator

- 1 - SHOCK ABSORBER
- 2 - COIL SPRING ISOLATOR



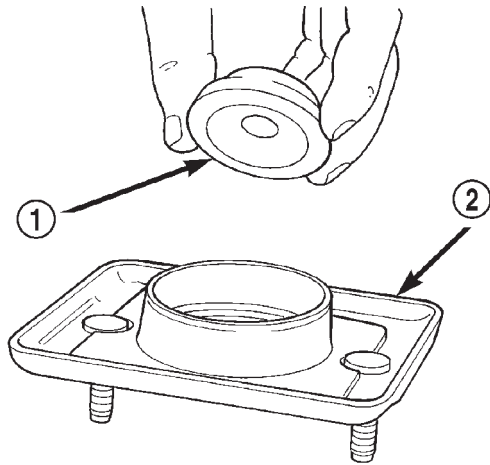
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Fig. 49 Shock Rod Upper Isolator Bushing

- 1 - UPPER BUSHING
- 2 - REAR SHOCK ABSORBER MOUNT
- 3 - SLEEVE

- Inspect the shock for any condition of rod binding over the full stroke of the shaft.
- Check the upper shock mount for cracks and distortion, and locating studs for any sign of damage.
- Check the upper and lower shock rod isolator bushings for severe deterioration of the rubber.
- Check the upper and lower coil spring isolators for severe deterioration of the rubber.
- Inspect the dust shield for rips and deterioration.
- Inspect the jounce bumper for cracks and signs of deterioration.
- Inspect the coil spring for any sign of damage to the coating.

DISASSEMBLY AND ASSEMBLY (Continued)



80a13798

Fig. 50 Shock Rod Lower Isolator Bushing

- 1 - LOWER BUSHING
2 - REAR SHOCK ABSORBER MOUNT

(16) If the coil spring needs to be serviced, release the tension from the coil spring by backing off the compressor drive fully. Push back the compressor upper hooks and remove the coil spring from the compressor.

ASSEMBLY

(1) If the coil spring has been removed from the compressor, place the lower end (smaller diameter) of the coil spring in the spring compressor supported by the lower hooks at the same position as in disassembly (Fig. 43), following the manufacturer's instructions.

(2) Position the upper hooks of the spring compressor on the coil spring near the top as in disassembly (Fig. 44).

(3) Compress the coil spring enough to reinstall the shock absorber and upper mount.

(4) Install the lower shock rod isolator bushing in the bottom of the upper shock mount (Fig. 50). The smaller end is to be pointed away from the mount.

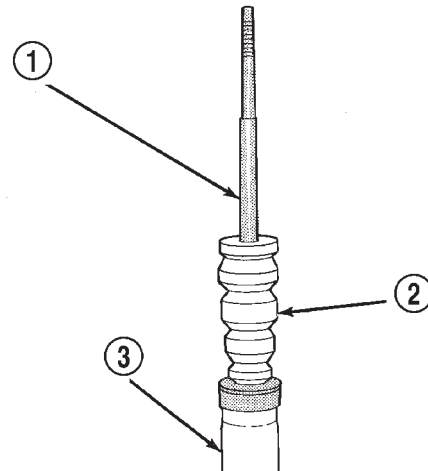
(5) Install the upper shock rod isolator bushing and sleeve in the upper shock mount until seated into lower bushing (Fig. 49). The smaller end of the bushing is to be pointed away from the mount when installed.

(6) Install the lower coil spring isolator (Fig. 48) on the lower spring seat of the shock absorber.

(7) Install the jounce bumper as shown on the rod of the shock absorber (Fig. 51).

(8) Install the collar on the rod of the shock absorber assembly with the undercut side of sleeve facing down (Fig. 52). Push the collar down until seated on the step of the shock absorber rod.

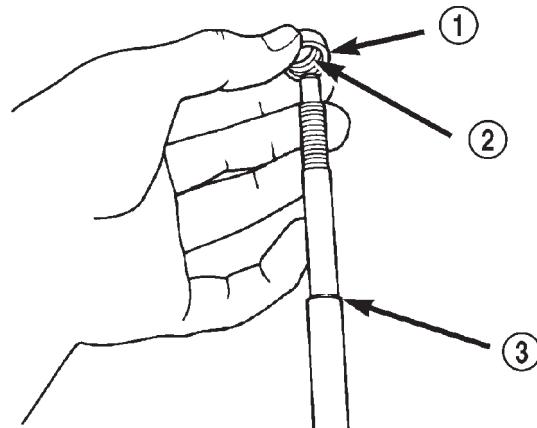
(9) Install the shock through the bottom of the coil spring until the lower spring seat contacts the lower



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Fig. 51 Jounce Bumper Installed

- 1 - SHOCK ABSORBER ROD
2 - SHOCK ABSORBER JOUNCE BUMPER
3 - SHOCK ABSORBER



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Fig. 52 Installing Collar On Shock Absorber Rod

- 1 - COLLAR
2 - UNDERCUT
3 - SHOCK ABSORBER ROD STEP

end of the coil spring. Install the clamp temporarily securing the shock absorber to the coil spring (Fig. 44).

(10) Install dust shield and cup over the jounce bumper and onto the rod of the shock absorber.

(11) Install the lower shock rod bushing retainer washer on the shock absorber rod.

(12) Install the upper spring isolator on the top of the coil spring. The bottom of the isolator is contoured to fit around the inside diameter of the coil spring (Fig. 46).

(13) Install the upper shock mount bracket and rod isolator bushings as an assembly on the top of the rod of the shock absorber (Fig. 44).

DISASSEMBLY AND ASSEMBLY (Continued)

(14) Install the upper shock rod bushing retainer washer. Make sure the concave side is facing up.

(15) Install the shock assembly retainer nut. Hold the shock rod from rotating using special socket Snap-On A136, or an equivalent, and tighten the retainer nut using a crow foot wrench (on the end of a torque wrench and extension) to a torque of 55 N·m (40 ft. lbs.) (Fig. 45).

(16) Position the upper shock mount so its studs are in line with the bolt hole in the shock absorber lower bracket (Fig. 44).

(17) Slowly release the tension from the coil spring by backing off the compressor drive fully. As the tension is relieved, make sure the upper mount, isolator, and coil spring align properly. Remove the clamp from the lower end of the coil spring and shock. Push back the spring compressor upper and lower hooks, then remove the shock assembly from the spring compressor.

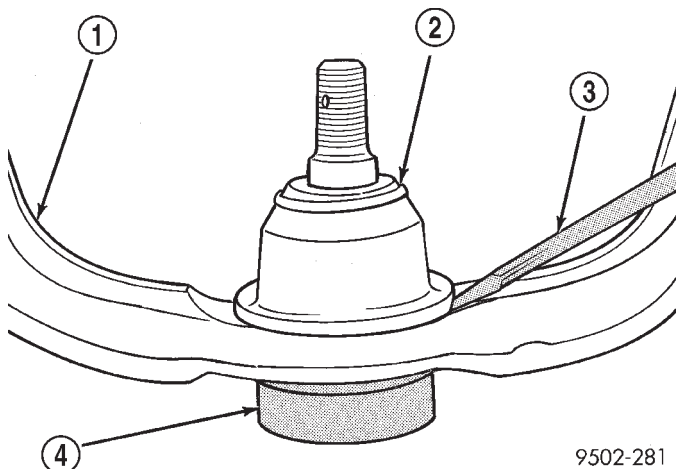
(18) Install shock assembly on the vehicle. Refer to REMOVAL AND INSTALLATION in this section for the required procedure.

BALL JOINT (REAR UPPER)

The rear upper control arm must be removed from the vehicle for replacement of the ball joint. Refer to CONTROL ARM (REAR UPPER) in the REMOVAL AND INSTALLATION section of this service manual group for the required procedure.

REMOVAL

(1) Using a screw driver or other suitable tool, pry seal boot up and off of ball joint assembly (Fig. 53).

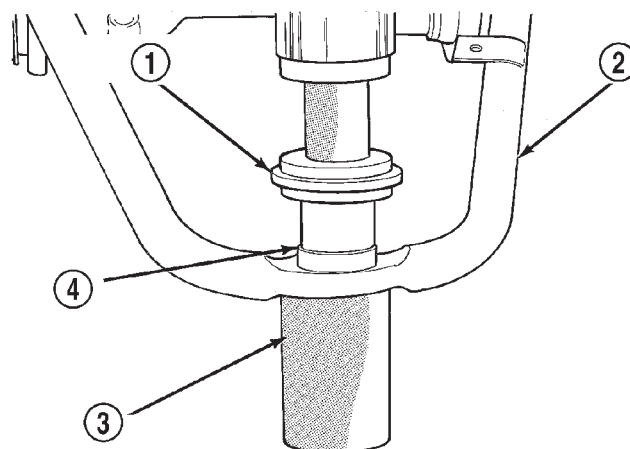


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Fig. 53 Ball Joint Seal Boot Removal

- 1 - UPPER CONTROL ARM
- 2 - BALL JOINT SEAL
- 3 - SCREWDRIVER
- 4 - BALL JOINT

(2) Position Receiving Cup, Special Tool 6758 to support control arm when removing ball joint assembly (Fig. 54). Install Remover/Installer, Special Tool 6804 on top of ball joint assembly (Fig. 54).



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Fig. 54 Removing Ball Joint From Upper Control Arm

- 1 - SPECIAL TOOL 6804
- 2 - CONTROL ARM
- 3 - SPECIAL TOOL 6758
- 4 - BALL JOINT

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

INSTALLATION

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

(2) Position assembly in an arbor press with Receiving Cup, Special Tool 6758 supporting lower control arm (Fig. 55). Then install Remover/Installer, Special Tool 6804 on the top of the ball joint assembly (Fig. 55).

CAUTION: When installing the ball joint in the upper control arm, do not press the ball joint into the control arm all the way. The lip on the ball joint must not touch the surface of the control arm. Refer to Step 3 below when installing the ball joint.

(3) Carefully align all pieces. Using the arbor press, press the ball joint into the control arm until a gap of 3mm (1/8 inch) is between lip on ball joint and surface of lower control arm.

(4) Install a **NEW** ball joint assembly sealing boot on ball joint assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

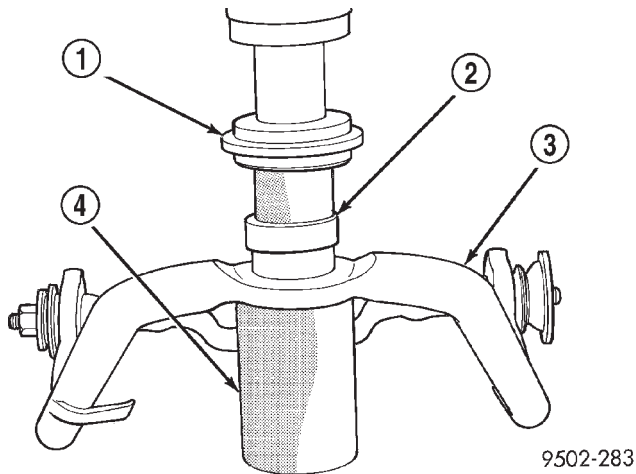


Fig. 55 Installing Ball Joint In Upper Control Arm

- 1 - SPECIAL TOOL 6804
2 - BALL JOINT
3 - CONTROL ARM
4 - SPECIAL TOOL 6758

CAUTION: Do not use an arbor press to install the sealing boot on the lower control arm ball joint assembly. Damage to the sealing boot can occur due to excessive pressure applied to sealing boot when being installed.

(5) Position Receiving Cup, Special Tool 6758 over sealing boot so it is aligned properly with bottom edge of sealing boot (Fig. 56). Apply pressure **BY HAND** to special tool 6758, until sealing boot is pressed squarely against surface of control arm.

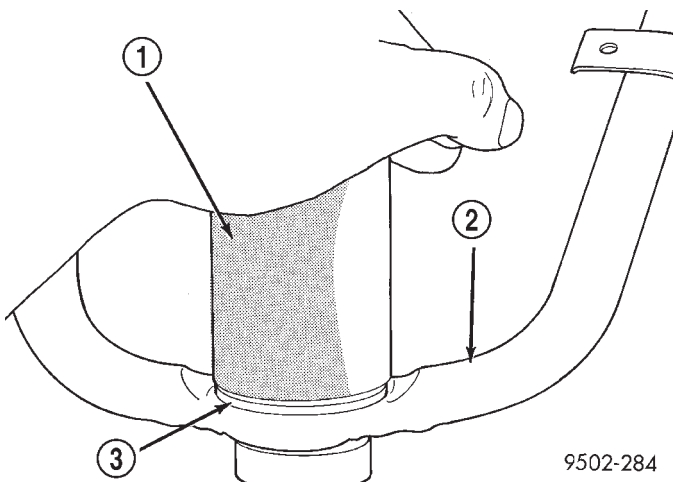


Fig. 56 Ball Joint Seal Boot Installation

- 1 - SPECIAL TOOL 6758
2 - CONTROL ARM
3 - BALL JOINT SEAL

(6) Reinstall the control arm on the vehicle. Refer to **CONTROL ARM (REAR UPPER)** in the **REMOVAL AND INSTALLATION** section of this service manual group for the required procedure.

SPECIFICATIONS

REAR SUSPENSION FASTENER TORQUE SPECIFICATIONS
DESCRIPTION
TORQUE
Shock Assembly:

- Body Mounting Nuts 54 N·m (40 ft. lbs.)
Knuckle Bolt/Nut 95 N·m (70 ft. lbs.)
Rod To Upper Mount Nut . . . 55 N·m (40 ft. lbs.)

Knuckle:

- Brake Support Plate Mounting Bolts . . . 61 N·m
(45 ft. lbs.)

Hub And Bearing:

- Knuckle Retaining Nut . . . 250 N·m (185 ft. lbs.)
Wheel Stud Mounting Nuts 109-150 N·m
(80-110 ft. lbs.)

Upper Control Arm:

- Pivot Bar To Crossmember . . 107 N·m (80 ft. lbs.)

Lateral Links:

- To Knuckle Nuts 108 N·m (80 ft. lbs.)
Jam Nuts 92 N·m (68 ft. lbs.)
To Suspension Crossmember Nuts 108 N·m
(80 ft. lbs.)

Trailing Link:

- Shaft Nuts (Front And Rear) . 99 N·m (73 ft. lbs.)
Bracket To Body Mounting Bolts 34 N·m
(25 ft. lbs.)

Ball Joint:

- To Knuckle Castle Nut 85 N·m (63 ft. lbs.)

Rear Suspension Crossmember:

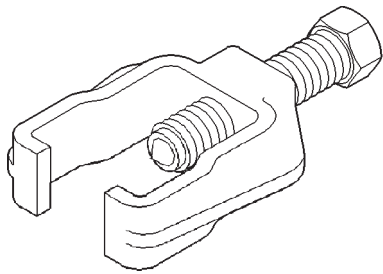
- Body Attaching Bolts 108 N·m (80 ft. lbs.)

Stabilizer Bar:

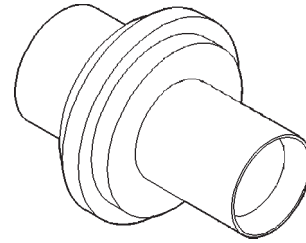
- Isolator Bushing Retainer Bolt 28 N·m
(20 ft. lbs.)
Lateral Link Attaching Link Nut 35 N·m
(26 ft. lbs.)
Bracket To Crossmember Bolts 28 N·m
(20 ft. lbs.)

SPECIAL TOOLS

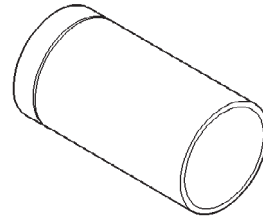
REAR SUSPENSION



Puller, Pitman Arm CT-1106



*Remover, Suspension Arm Bushing And Ball Joint
6804*



Installer, Ball Joint 6758