

Dealer Service Instructions for:

## **Safety Recall No. 999**

# **Steering Gear Crossmember Reinforcement**

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*Please remove and discard from your files all previous copies of Safety Recall No. 999 (dated May 2002). The wheel alignment curb height and design height specifications have been revised.*

### **Models**

**1999 - 2000 (SR) Dodge Viper (Coupe and Roadster)**

*NOTE: This recall applies only to the above vehicles built from March 1, 1999 through October 2, 2000 (MDH 030111 through MDH 1002XX).*

**IMPORTANT:** Some of the involved vehicles may be in dealer used vehicle inventory. **Dealers should complete this recall service on these vehicles before retail delivery.** Dealers should also perform this recall on vehicles in for service. Involved vehicles can be determined by using the DIAL VIP System.

### **Subject**

Aggressive driving, such as racing, on about 2,200 of the above vehicles, may lead to cracking and separation of the steering gear crossmember from the frame. This can cause unexpected steering looseness and lag which could result in an accident without warning.

### **Repair**

The steering gear crossmember must be inspected for cracks. Vehicles with a cracked steering gear crossmember must have the crossmember replaced. All involved vehicles must have frame gussets and a steering gear crossmember reinforcement installed.

|                          |
|--------------------------|
| <b>Parts Information</b> |
|--------------------------|

### **A. Steering Gear Crossmember Reinforcement Package**

**NOTE:** Steering gear crossmember reinforcement package CAAM9981 is required to repair each vehicle. An additional parts package, listed below, may be required. This depends on what conditions may be found on a particular vehicle.

| <u>Part Number</u> | <u>Description</u>                                     |
|--------------------|--|
| <b>CAAM9981</b>    | <b>Steering Gear Crossmember Reinforcement Package</b> |

Each package contains the following components:

| <u>Quantity</u> | <u>Description</u>                      |
|-----------------|---|
| 1               | Steering Gear Crossmember Reinforcement |
| 1               | Right Side Frame Rail Gusset            |
| 1               | Left Side Frame Rail Gusset             |
| 24              | Structural Steel Rivets                 |

**Each dealer** to whom vehicles in the recall were invoiced (or the current dealer at the same street address) will receive enough of each reinforcement package to service about **10%** of those vehicles.

### **B. Steering Gear Crossmember Assembly**

| <u>Part Number</u> | <u>Description</u>                        |
|--------------------|---|
| <b>CAAM9983</b>    | <b>Steering Gear Crossmember Assembly</b> |

### **C. Corrosion Protection**

| <u>Part Number</u> | <u>Description</u>                  |
|--------------------|-------------------------------------|
| <b>CAAM9987</b>    | <b>Zinc Rich Primer (quart can)</b> |

**NOTE:** One can of zinc rich primer will repair approximately 20 vehicles.

| <u>Part Number</u> | <u>Description</u>       |
|--------------------|--------------------------|
| <b>CAAM9988</b>    | <b>Black Spray Paint</b> |

**Each dealer** to whom vehicles in the recall were invoiced (or the current dealer at the same street address) will receive ONE (1) can of zinc rich primer and black spray paint. Additional primer and paint may be ordered as required.

### **D. Vehicle Curb Height Adjustment Shims**

| <u>Part Number</u> | <u>Description</u>                       |
|--------------------|--|
| <b>04709321</b>    | <b>Spring Seat Shim, Increase Height</b> |
| <b>04763943</b>    | <b>Spring Seat, Reduced Height</b>       |

## **Special Tools**

A special air/hydraulic power set riveter tool is required for the installation of the structural rivets. ALL Chrysler and Dodge dealers previously received ONE (1) W-AK175ACH Power Set Riveter, free of charge, through Pentastar Service Equipment (PSE) in December 1998.

Additional power riveters may be ordered through Pentastar Service Equipment (PSE) at dealer cost by calling 1-800-223-5623 or faxing 1-800-734-4334. Additional power riveters are NOT reimbursable by DaimlerChrysler.

### **The following existing special tools may be required to perform this recall:**

- #6632 Adapter, Torque Wrench
- W-AK175ACH Riveter, Air/Hydraulic Powered
- GP-2020-C3.5 Compressor, Coil Spring
- APS357B or JHW-0-472 Wrench, Spanner
- #6914 Height Gages, Suspension
- #8396-1 Adapter, Height Gage
- #6990 Essential Tool Kit, Viper  
Kit Contains:
  - #6996 - Switch Box, Inclinator
  - #6989 - Inclinator
  - #6916 - Adapter, Rear Caster
  - #6915 - Adapter, Front Caster

## Service Procedure

### A. Inspect Steering Gear Crossmember

1. Raise the vehicle on an appropriate hoist.
2. Inspect the steering gear crossmember-to-frame attachment for cracks in areas shown in Figure 1.
  - If **cracks** are found, continue with Section “B – Replace Steering Gear Crossmember.”
  - If **no cracks** are found, continue with Section “C – Install Steering Gear Crossmember Reinforcement Bracket.”

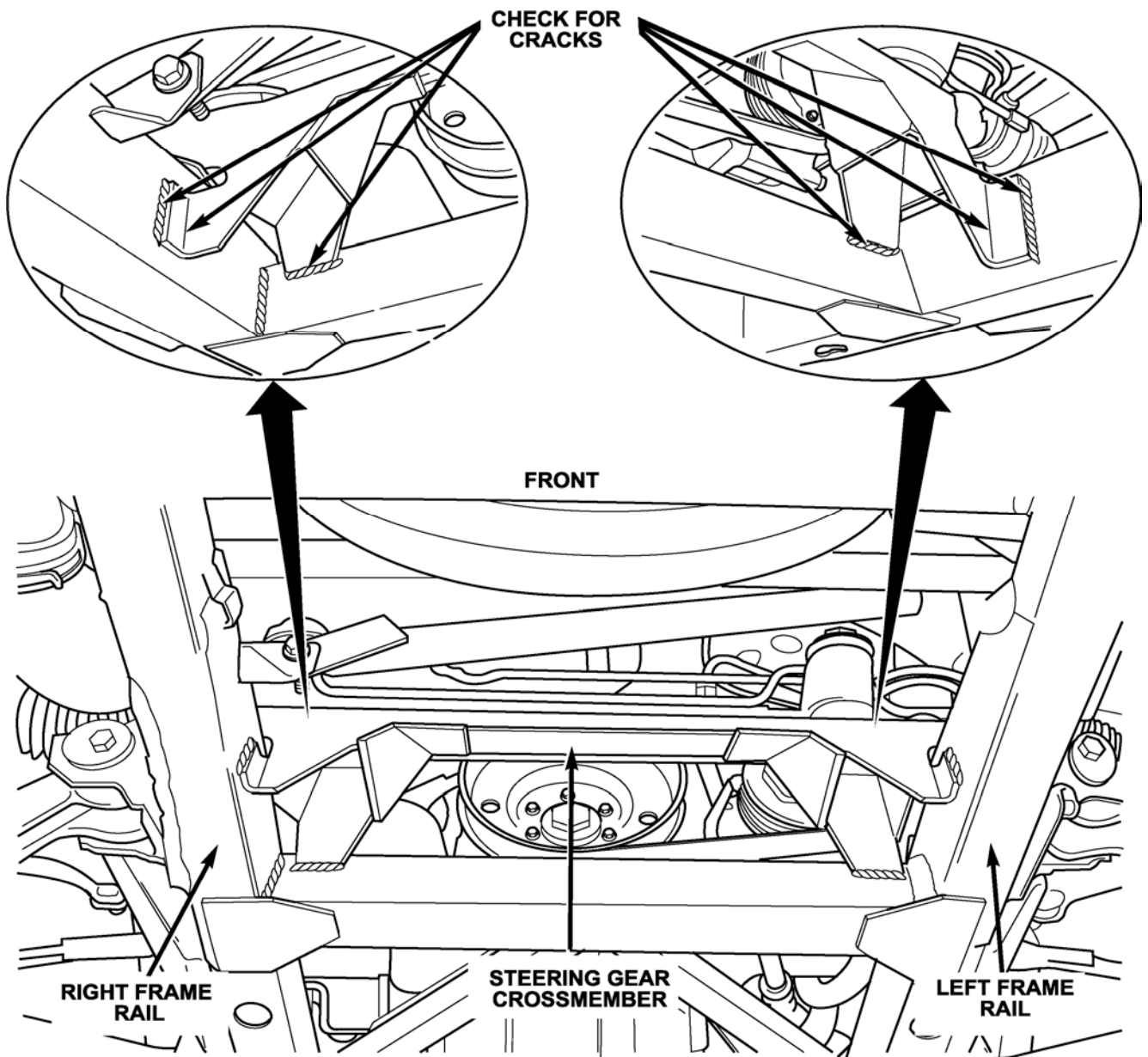


Figure 1 – Under-Car View

## Service Procedure (Continued)

### B. Replace Steering Gear Crossmember

**NOTE:** Steering gear crossmember replacement requires the use of P/N CAAM9983.

1. Remove both rear tire and wheel assemblies.
2. Remove the fasteners that attach the battery access panel (Figure 2) and remove the panel.
3. Disconnect and isolate the negative battery cable at the battery.

**NOTE:** To enhance customer satisfaction, remember to record all radio settings before disconnecting the battery and to reset all electronic memory (clock, radio settings, etc.) when you have completed the service procedure.

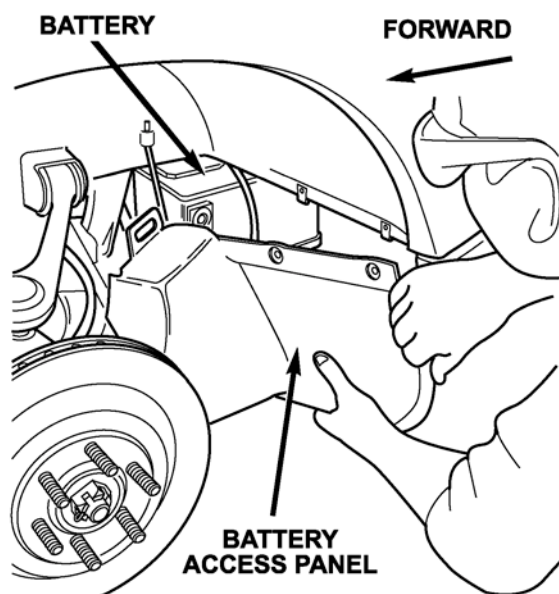


Figure 2

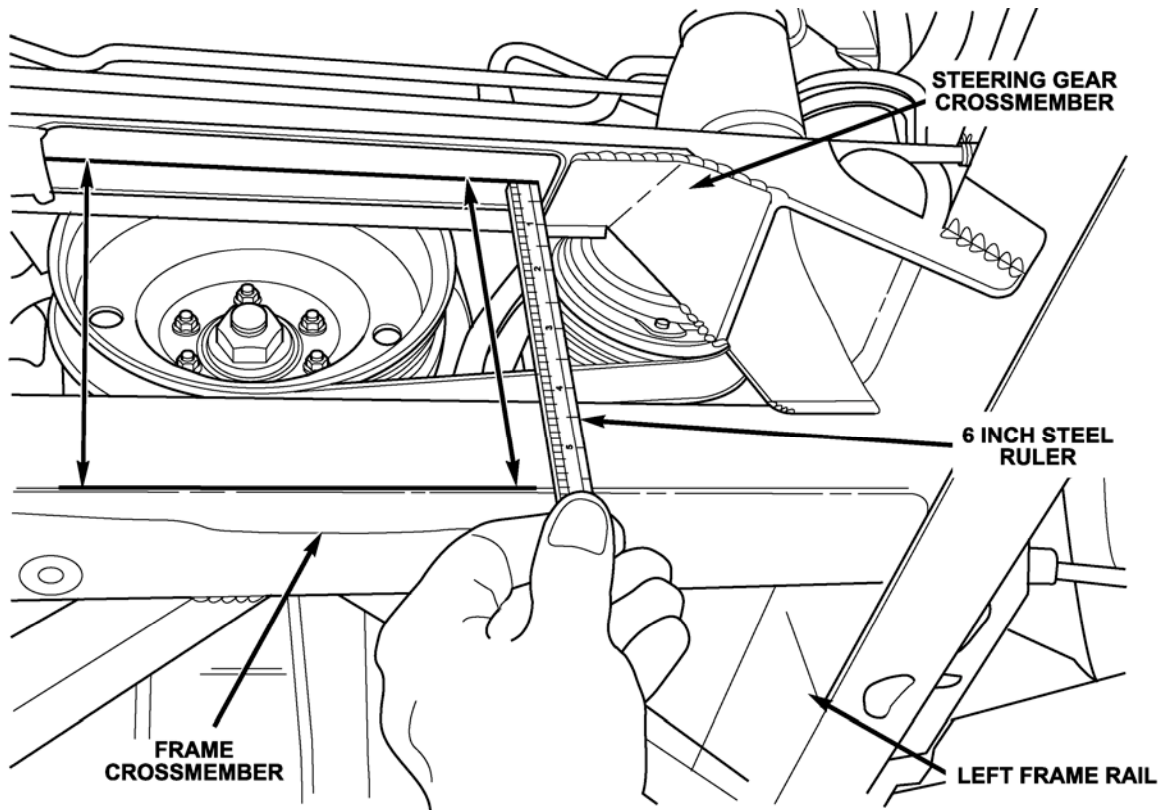
4. Disconnect and isolate the positive battery cable at the battery.

**CAUTION:** Failure to isolate both the positive and negative battery cables from the battery may cause Powertrain Control Module (PCM) and/or battery damage during welding.

**Service Procedure (Continued)**

**B. Replace Steering Gear Crossmember (Continued)**

5. Using a 6-inch steel ruler, measure the distance from the inside rear edge of the steering gear crossmember to the lower edge of the frame crossmember. Perform this measurement procedure on the right and left side of the steering crossmember (Figure 3). Record these measurements for future reference.



**Figure 3**

## Service Procedure (Continued)

### B. Replace Steering Gear Crossmember (Continued)

- Using Special Tool #6632, remove the two steering gear mounting bolts (Figure 4).

**CAUTION:** There are selective toe pattern shims located between the steering gear mounting bushings and the steering gear crossmember (Figure 5). Using a grease pencil, mark the shims (right or left side) so that they can be reinstalled into their original position.

**NOTE:** The right side steering gear mounting bolt has a tapping plate nut located on the bottom side of the steering gear crossmember (Figure 5). The tapping plate nut must be saved.

- Using plastic tie straps or equivalent, temporarily secure the steering gear tie rod arms to the stabilizer bar. This will keep the steering gear suspended above the steering gear crossmember.
- Using a cut off wheel, grind off all of the welds that hold the steering gear crossmember to the frame.

**CAUTION:** Do not use plasma arc cutting equipment or cutting torch to remove the steering gear crossmember.

- Once the steering gear crossmember has been removed, grind all areas where the new steering crossmember is to be welded. All old weld material and paint must be removed.

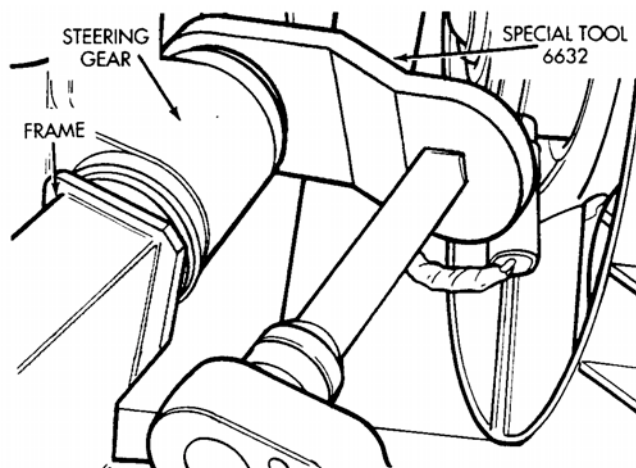


Figure 4

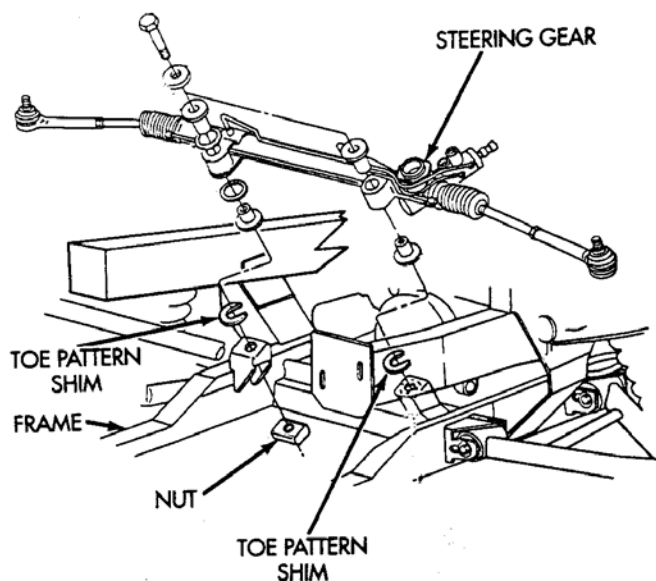


Figure 5



## Service Procedure (Continued)

### B. Replace Steering Gear Crossmember (Continued)

10. Using two “C” clamps, carefully clamp the new steering gear crossmember into position. Center the steering gear crossmember between the frame rails and use the measurements recorded in Step 5 to set new steering gear crossmember to the correct height (Figure 6).

**NOTE:** Place the “C” clamps at the bottom edge of the crossmember mounting tab.

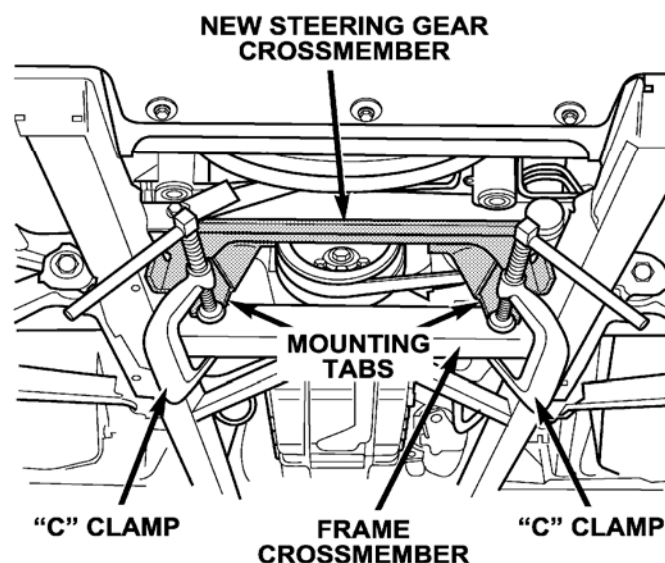


Figure 6

11. Shield the surrounding area and components from exposure to welding heat and spatter.
12. Tack weld the rear crossmember mounting tabs into position. Remove the “C” clamps and check the position of the crossmember. Adjust the location if necessary.

**WARNING:** Only use the specified welding wire (Lincoln Electric Co. NR-211 MP). Do not substitute with other types or thickness welding wire.

**IMPORTANT:** All welding must be performed by a qualified welder.

**NOTE:** Refer to the Welding Procedure Specifications Chart on page 32 of this document for all welder set-up information.

**CAUTION:** Attach the welder ground lead directly to the frame as close to the weld area as possible.

13. Weld the rear crossmember tabs into position (Figure 8). Do not weld the front tabs at this time.
14. Using “C” clamps, clamp the right and left side steering crossmember front tabs to the frame rails (Figure 7).

**NOTE:** Both front tabs must be clamped into place before welding.

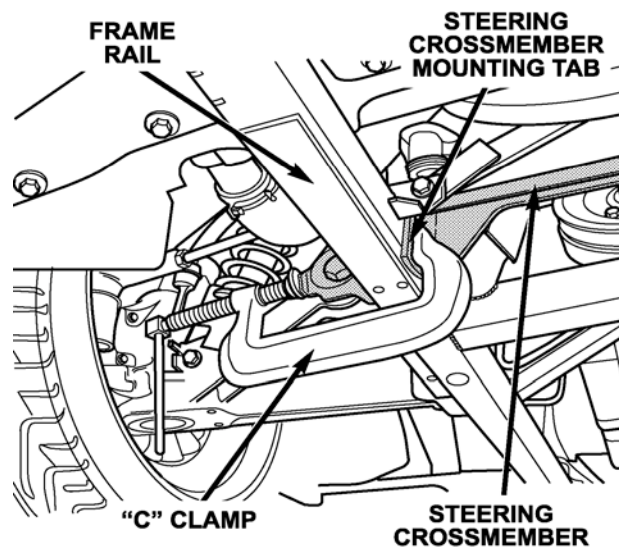


Figure 7 – Right Side Shown



**Service Procedure (Continued)**

**B. Replace Steering Gear Crossmember (Continued)**

15. Tack weld the front steering gear crossmember mounting tabs to the side of the frame rails and then remove the “C” clamps (Figure 8).

16. Recheck the steering gear crossmember positioning and adjust if required.

17. Weld the steering gear crossmember mounting tabs to the side of the frame rails (Figure 8).

18. Remove the weld splatter shielding installed in Step 11.

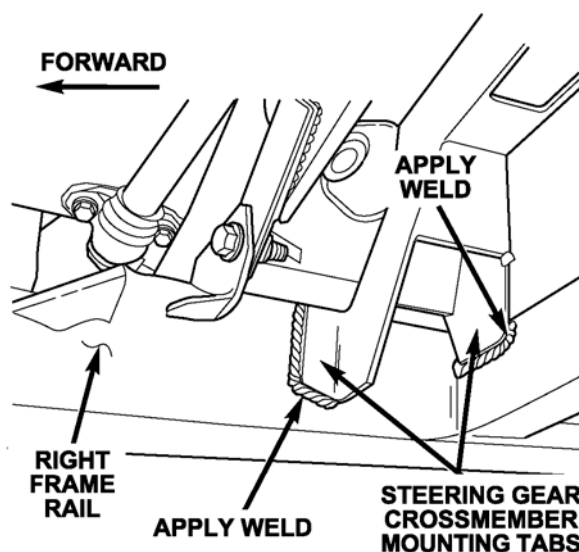
19. Remove the tie straps and position the steering gear onto the steering gear crossmember.

20. Lift the left side of the steering gear slightly and place the left side selective toe pattern shims under the steering gear mounting bushing (Figure 5). Then install the mounting bolt. Do not tighten the mounting bolt at this time.

21. Lift the right side of the steering gear slightly and place the right side selective toe pattern shims under the steering gear mounting bushing (Figure 5). Then install the mounting bolt and tapping plate nut.

22. Using Special Tool #6632 and a torque wrench, tighten both mounting bolts to 150 ft. lbs. (203 N·m).

23. Continue with Step 5 of Section “C – Install Steering Gear Crossmember Reinforcement Bracket.”



**Figure 8 – Right Side Shown**

|                                      |
|--------------------------------------|
| <b>Service Procedure (Continued)</b> |
|--------------------------------------|

## **C. Install Steering Gear Crossmember Reinforcement Bracket**

**NOTE:** Steering gear crossmember reinforcement repair requires the use of P/N CAAM9981 repair package.

**NOTE:** For vehicles that have had a steering gear crossmember installed (Section “B”), proceed to step 5.

1. Remove both rear tire and wheel assemblies.
2. Remove the fasteners that attach the battery access panel (Figure 2) and remove the panel.
3. Disconnect and isolate the negative battery cable at the battery.

**NOTE:** To enhance customer satisfaction, remember to record all radio settings before disconnecting the battery and to reset all electronic memory (clock, radio settings, etc.) when you have completed the service procedure.

4. Disconnect and isolate the positive battery cable at the battery.

**CAUTION:** Failure to isolate both the positive and negative battery cables from the battery may cause Powertrain Control Module (PCM) and/or battery damage during welding.

**Service Procedure (Continued)**

**C. Install Steering Gear Crossmember Reinforcement Bracket**  
**(Continued)**

5. Place the steering gear reinforcement bracket into position, just in front of the steering gear crossmember and on top of the frame rails (Figure 9). The reinforcement bracket must be centered between the frame rails.

**NOTE: The reinforcement bracket must be positioned flush against the steering gear crossmember. Minor grinding of the existing steering gear crossmember welds may be required.**

6. Mark all of the locations on the steering gear crossmember, frame rails and reinforcement bracket where welding will be performed with a grease pencil (Figure 9).

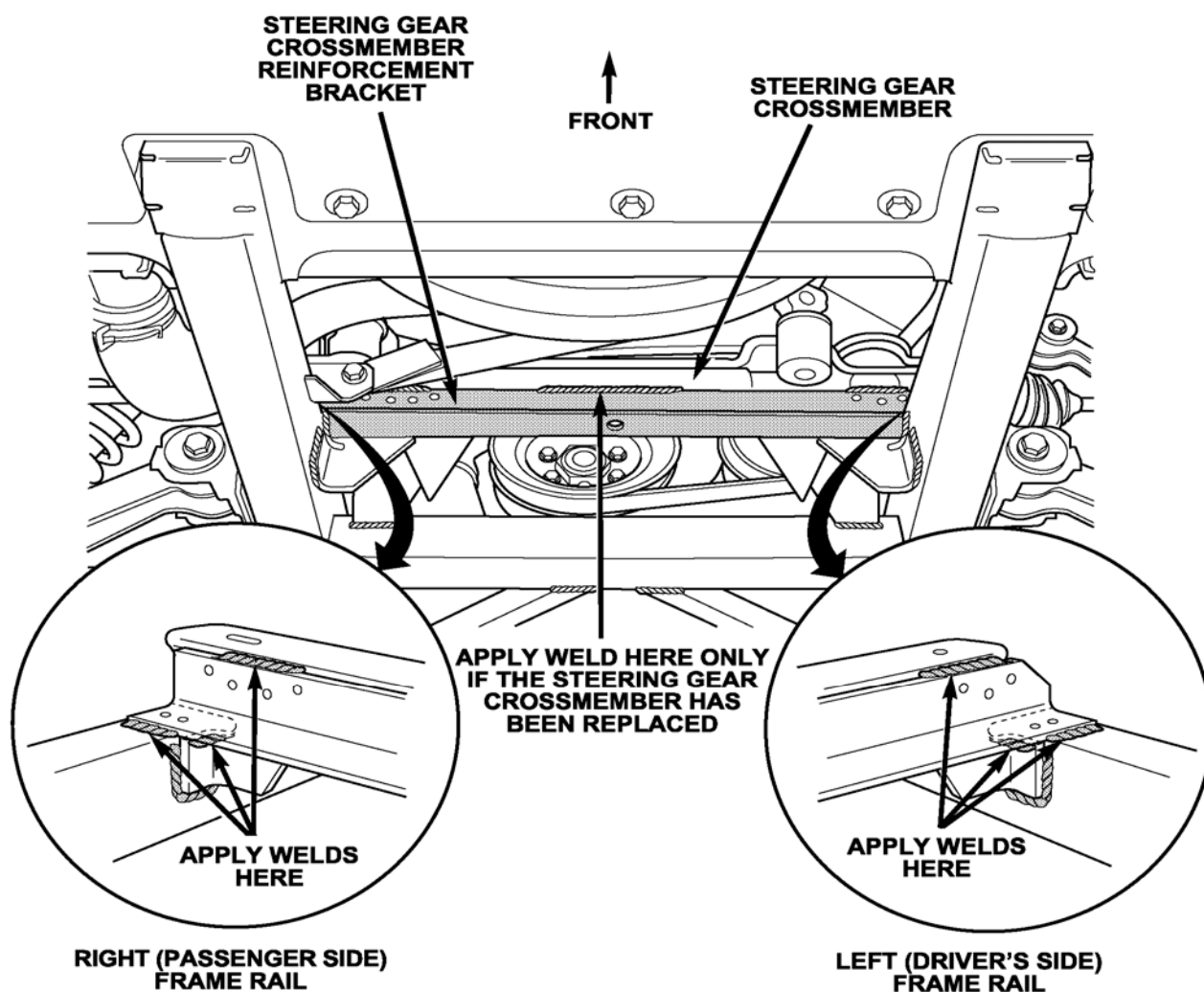


Figure 9

|                                      |
|--------------------------------------|
| <b>Service Procedure (Continued)</b> |
|--------------------------------------|

### **C. Install Steering Gear Crossmember Reinforcement Bracket (Continued)**

7. Remove the reinforcement bracket from the vehicle.
8. Using a grinding wheel, remove all E-coat from the reinforcement bracket, steering gear crossmember and frame rails within 1 inch of the weld areas marked in Step 6.
9. Place the reinforcement bracket back into position and clamp it into place.
10. Tack weld each side of the reinforcement bracket to the frame rail.

**WARNING: Only use the specified welding wire (Lincoln Electric Co. NR-211 MP). Do not substitute with other types or thickness welding wire.**

**IMPORTANT: All welding must be performed by a qualified welder.**

**NOTE: Refer to the Welding Procedure Specifications Chart on page 32 of this document for all welder set-up information.**

**CAUTION: Attach the welder ground lead directly to the frame as close to the weld area as possible.**

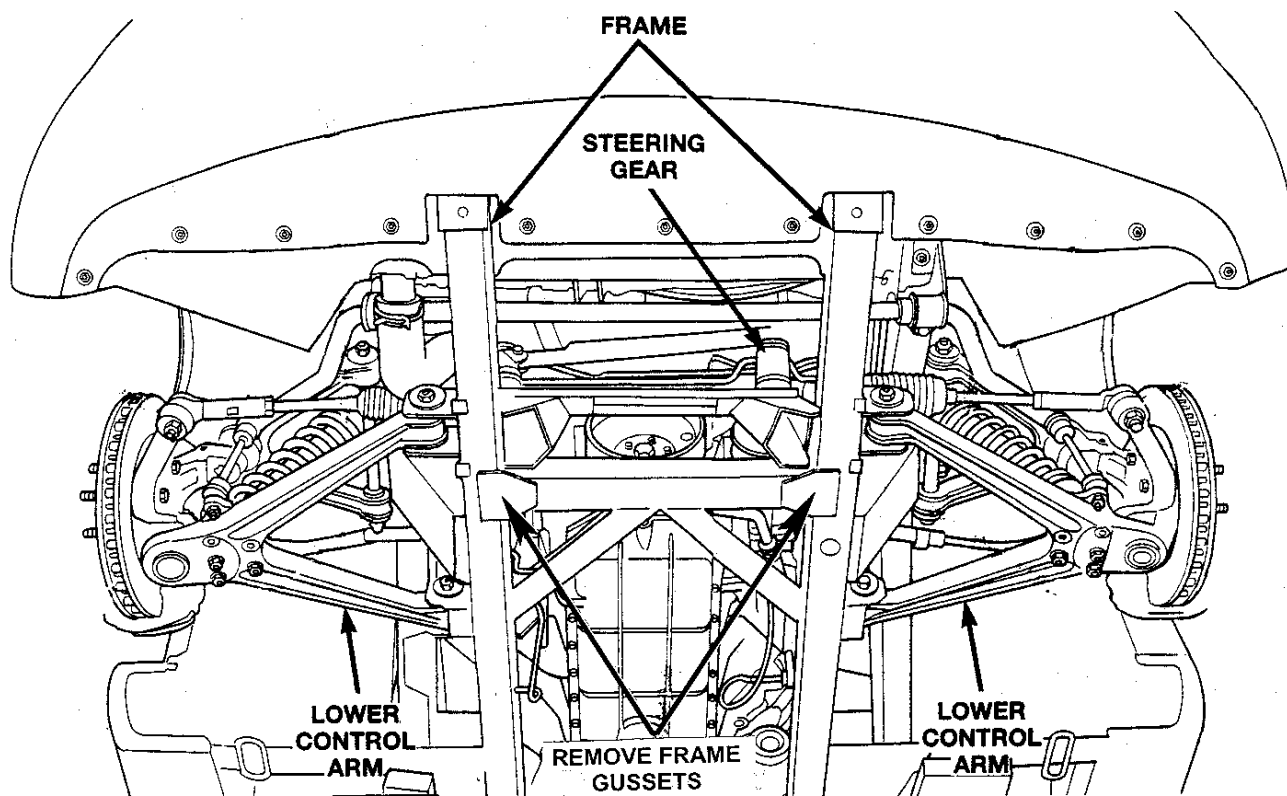
11. Remove the clamps and verify that the reinforcement bracket is properly positioned. Adjust the reinforcement bracket position if necessary.
12. Weld the reinforcement bracket to the frame rails and steering gear crossmember as shown in Figure 9.

**NOTE: Vehicles that have had a new steering gear crossmember installed must have an extra weld applied as shown in Figure 9.**

13. Clean all weld areas and apply zinc rich primer (P/N CAAM9987) to all new welds and bare metal.
14. After the zinc rich primer is dry, apply black spray paint (P/N CAAM9988) to cover the zinc rich primer applied in Step 13.
15. Continue with **Section “D – Install Frame Gussets.”**

**Service Procedure (Continued)**

**D. Install Frame Gussets**



**Figure 10 – Bottom View**

1. Using a cut off wheel or grinder, grind off the welds that hold the left and right side frame rail gussets to the frame rails (Figure 10).

**CAUTION:** Do not use plasma arc cutting equipment or a cutting torch to remove the frame rail gussets.

2. If required, use a chisel to remove the old gussets after welds are ground off.
3. After the old gussets have been removed, grind off any remaining weld from the frame rail areas.
4. Thoroughly clean and degrease the frame rail. Then apply zinc rich primer to all bare metal.

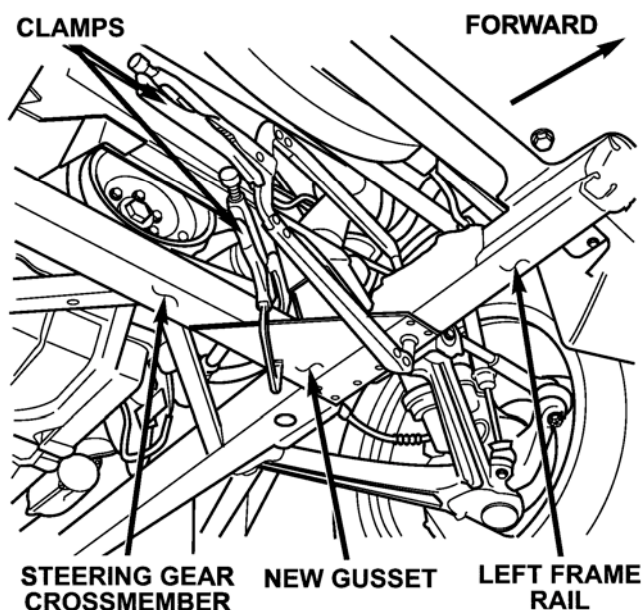
## Service Procedure (Continued)

### D. Install Frame Gussets (Continued)

5. After the zinc rich primer is dry, apply black spray paint to cover the zinc rich primer applied in Step 4.
6. Position and clamp the new left side gusset into place (Figure 11).

**NOTE: Right and left side gussets are not interchangeable. Make sure that the correct gusset is being installed.**

7. Using the new gusset as a template, drill eleven 1/4 inch (6.35 mm) holes into the frame rail.
8. Brush zinc primer into holes drilled in Step 7 to prevent corrosion.
9. Using power rivet gun (P/N W-AK175ACH) or equivalent, rivet the new gusset into place using the provided structural rivets.
10. Remove clamps from the gusset.
11. Apply a coat of black spray paint over the rivet heads.
12. Repeat steps 6 through 11 to install the new gusset on the right side frame rail gusset.
13. ➤ If the vehicle had the steering gear crossmember replaced, continue with Section “E – Wheel Alignment.”
  - If the vehicle did not have the steering gear crossmember replaced, wheel alignment is not required. No further action is necessary. Return the vehicle to the customer.



**Figure 11 – Left Side Shown**

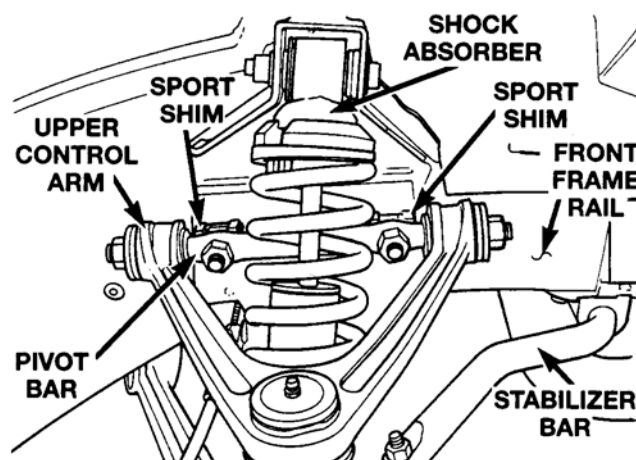


## Service Procedure (Continued)

### E. Wheel Alignment

**NOTE:** The following alignment procedure is only required on vehicles that have had the steering gear crossmember replaced.

1. Before beginning the wheel alignment on the vehicle, the following pre-alignment inspection must be completed.
  - a. Check and adjust the tire pressure. Refer to the placard on the vehicle for pressure specification.
  - b. Verify correct tire size and equal tread wear.
  - c. Inspect each tire/wheel assembly for evidence of an unbalance condition.
  - d. Inspect the wheels for excessive radial and/or lateral runout.
  - e. Inspect the front and rear wheel hub and bearing assemblies for looseness.
  - f. Inspect ball studs and linkage pivot points and the steering gear for looseness, roughness, binding or a sticking condition.
  - g. Inspect all suspension components for wear.
  - h. Inspect the front and rear shock absorber assemblies for leaks or signs of damage.
  - i. Inspect the front and rear coil springs on the shock absorbers for signs of damage.
  - j. Verify that the front suspension upper control arm sport shims have not been removed (Figure 12). Correct camber angles can not be set if the sport shims have been removed.



**Figure 12 – Right Side Shown**

**CAUTION:** The vehicle's suspension geometry and alignment settings change rapidly as the vehicle changes height. For this reason, it is extremely important that all suspension specifications be checked and adjusted with the vehicle at the correct curb height. Alignment specifications must be checked with the vehicle at curb height, the fuel tank full, fluids at the correct fill level, and all factory supplied equipment (top, removable windows, spare tire etc.) must be in the vehicle.

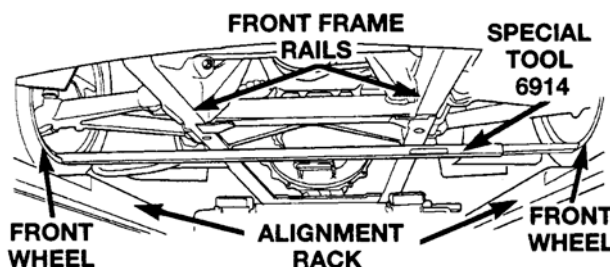
**NOTE:** Any additional repairs discovered during the pre-alignment inspection are the vehicle owner's responsibility.

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

2. Place the vehicle on an alignment machine.

**NOTE:** The alignment machine being used must have the capability of performing a four-wheel alignment.



3. Check and set the **curb height** of the vehicle using the procedure below.

**NOTE:** Curb height is the height that the vehicle is at when it has a full tank of fuel, all fluids are filled to their proper levels, and no passengers or additional weight is added to the vehicle. All factory supplied equipment (top, removable windows, spare tire etc.) must be in the vehicle.

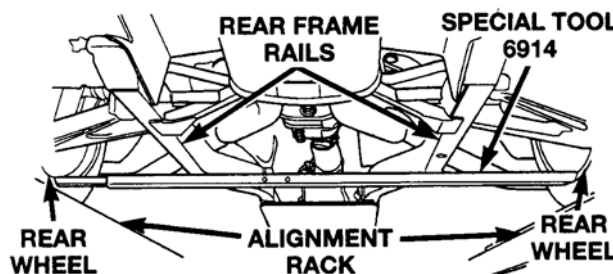


Figure 13

- a. Install front and rear Vehicle Height Checking Fixture (Special Tool #6914) at the base of both inner flanges of the front and rear wheels as shown in Figure 13.

**NOTE:** Vehicles equipped with the ACR package and/or BBS racing wheels must have Special Tool #8396-1 adapters installed onto Special Tool #6914 checking fixture before installing on the front and rear wheels.

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

b. Check the distance from the bottom of each of the **front** frame rails to the top surface of the Vehicle Height Checking Fixture (Special Tool #6914) (Figure 14). The distance should be **2 inches  $\pm$  ¼ inch (50 mm  $\pm$  6 mm)**.

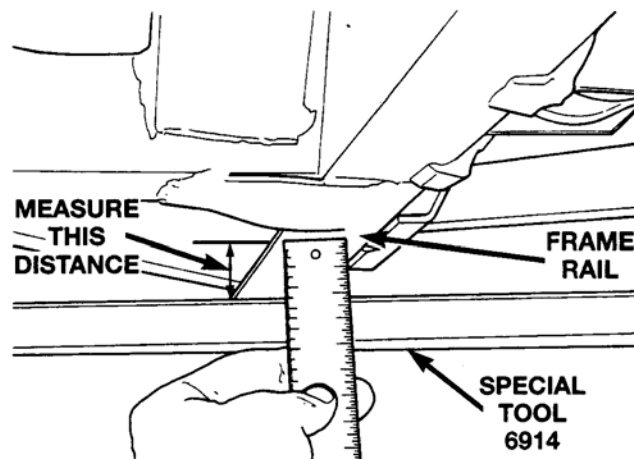


Figure 14

c. Check the distance from the bottom of each of the **rear** frame rails to the top surface of the Vehicle Height Checking Fixture (Special Tool #6914) (Figure 15). The distance should be **2 ½ inches  $\pm$  ¼ inch (64 mm  $\pm$  6 mm)**.

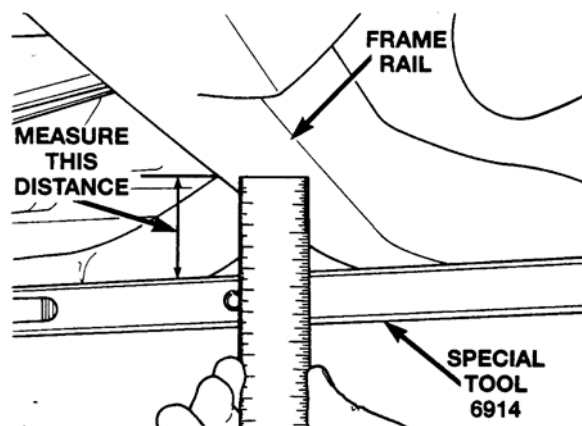


Figure 15

d. If the vehicle does not meet curb height specifications, continue with **Section “F - Setting the Vehicle Design Height”** before continuing with this procedure. If the curb height is within specifications, continue with Step 4 of this procedure.

**NOTE: Vehicle curb height can be affected if the rubber bushings used in the vehicle’s suspension are not tightened with the vehicle at Design Height. This is due to the extreme stiffness of the rubber used in the suspension component bushings.**

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

4. Install the wheel alignment equipment onto the vehicle per alignment equipment manufacturer's instructions.

**NOTE:** The vehicle is equipped with flangeless style wheels, thus any alignment equipment used must be capable of attaching to the outside edge of the wheel rim lip.

**CAUTION:** Both front and rear caster angle on the vehicle must be read directly off the front and rear knuckle through the use of inclinometer sensors attached to the DRB III scan tool. Do not use the alignment machine's sweep method to measure caster angle.

**NOTE:** All necessary adapters, cables, switch box and inclinometers are available in Viper Essential Tool Kit #6990.

5. Use the following procedure to connect and calibrate the DRB III and inclinometers.

**NOTE:** The DRB III must have a Super Card 2 installed to perform caster measurements.

- a. Plug the cable from the switch box (Special Tool #6996) into the PEP module connector on the DRB III marked "INCL" (Figure 16).
- b. Plug the power cable (supplied with the DRB III kit) into the DRB III power connector marked "VEHICLE" (Figure 16).

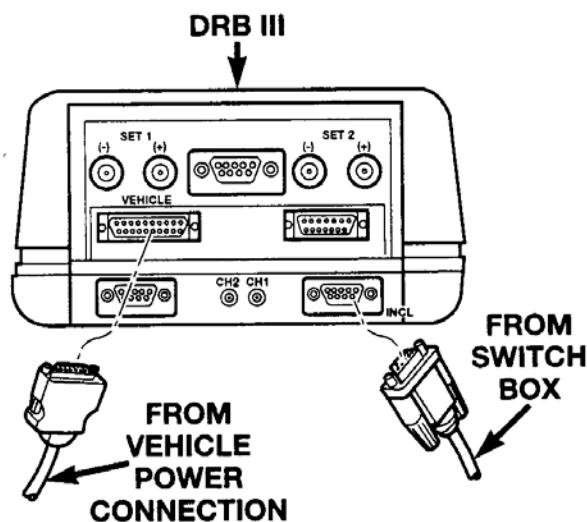


Figure 16

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

- c. Attach the two inclinometers (Special Tool #6989) to the switch box (Special Tool #6996) (Figure 17).

**NOTE: Only two inclinometers are supplied and should be used as a pair to measure either rear caster or front caster, one at a time.**

- d. Attach the power cable from the DRB III to the vehicle data connector.
- e. Select the **PEP Module Tools (#4)** option from the main menu screen.
- f. Select the **Inclinometer/Viper Alignment (#4) option** from the Stand Alone Main Menu.
- g. Select the **Read/Display Angle (#1) option** from Inclinometer Main Menu. This option is used to calibrate the inclinometers before being used on the vehicle.

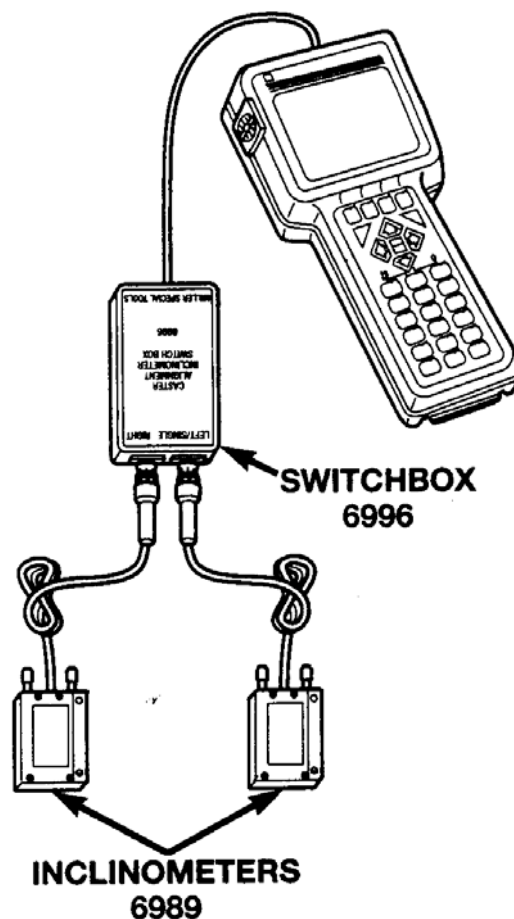


Figure 17

**CAUTION: The inclinometer (Special Tool #6989) must be calibrated prior to each time it will be used to read the caster angle on the vehicle.**

- h. Press **F2** on the DRB III key pad to show both inclinometers.

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

- i. Place both inclinometers together on a known flat level surface such as the alignment rack, with the knurled ends of the fastening screws facing upward (Figure 18).
- j. Press enter to continue.
- k. Rotate the inclinometers 180 degrees in place, then **press enter again** to calibrate both inclinometers in the other direction. The inclinometers are now ready to be installed on the vehicle (Figure 18).

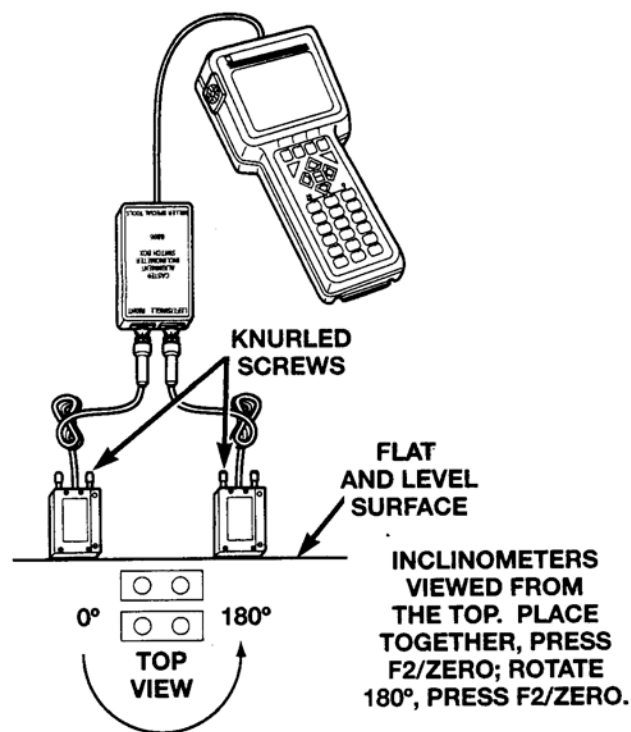


Figure 18

6. Mount the inclinometers to the rear Caster Angle Fixtures (Special Tool #6916) (Figure 19).

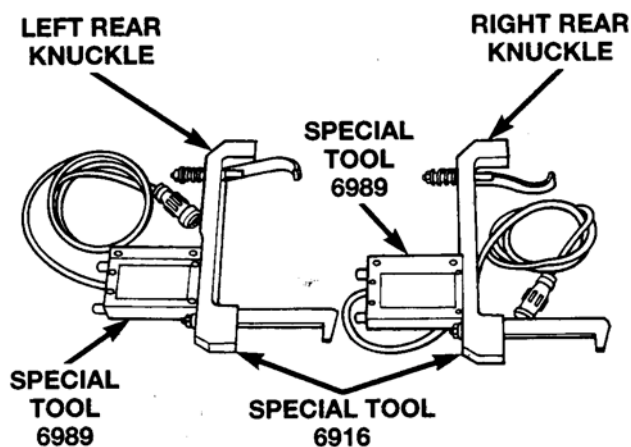


Figure 19



## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

7. Once the inclinometers are attached to the rear Caster Angle Fixtures, they can be mounted on the rear knuckle caster angle pads as shown in Figures 20.

**CAUTION:** The caster pads are located on the rear edge of the rear knuckle. Be sure that the caster pads are thoroughly cleaned before mounting the caster inclinometers on the knuckles. The caster inclinometers must sit flat on the caster pads to obtain accurate caster readings.

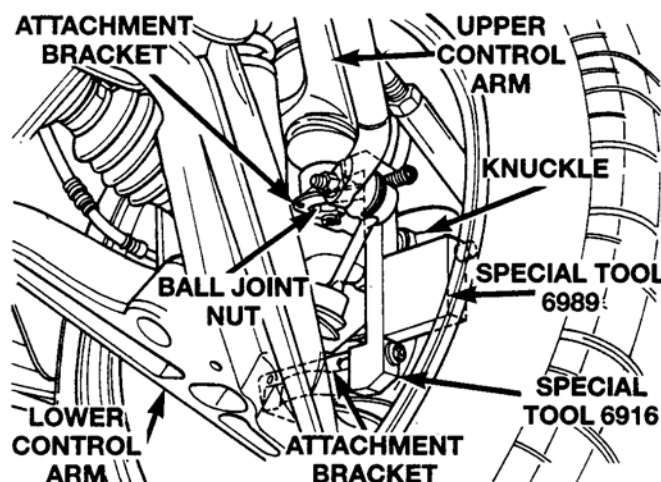


Figure 20 – Right Side Shown

8. Adjust the rear caster angle using the measurements viewed on the DRB III screen, and the camber angle using the measurements viewed on the alignment equipment. Camber and caster angles are adjusted by turning the cam bolts on the lower control arm bushings (Figure 21). Refer to the Alignment Specifications Chart on page 33 of this document.

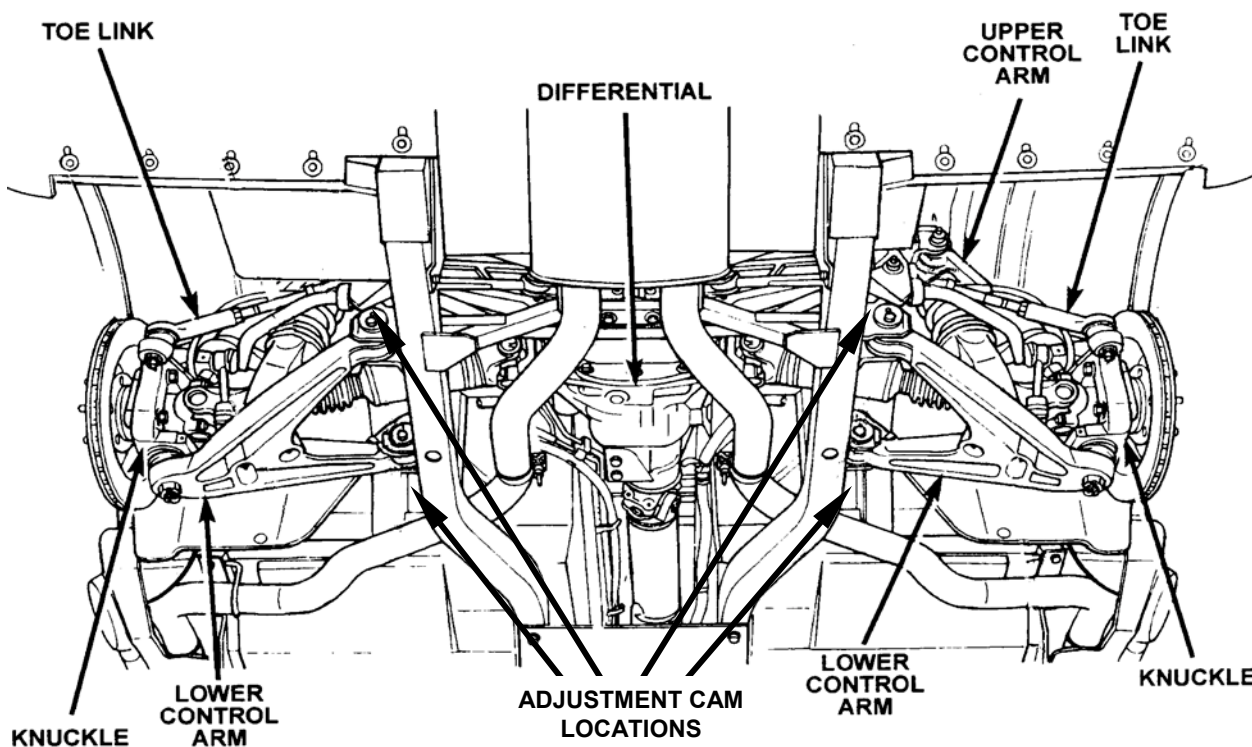


Figure 21

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

9. Transfer the inclinometers to the front Caster Angle Fixtures (Special Tool #6915) (Figure 22).

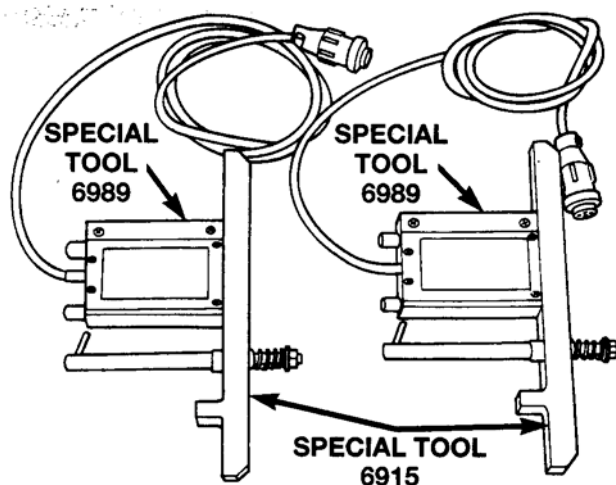


Figure 22

10. Once the inclinometers are attached to the front Caster Angle Fixtures, the fixtures can be mounted on the front knuckle caster pads as shown in Figures 23.

**CAUTION:** The caster pads are located on the front edge of the front steering knuckle. Be sure that the caster pads are thoroughly cleaned before mounting the caster inclinometers on the front steering knuckles. The caster inclinometers must sit flat on the caster pads to obtain accurate caster readings.

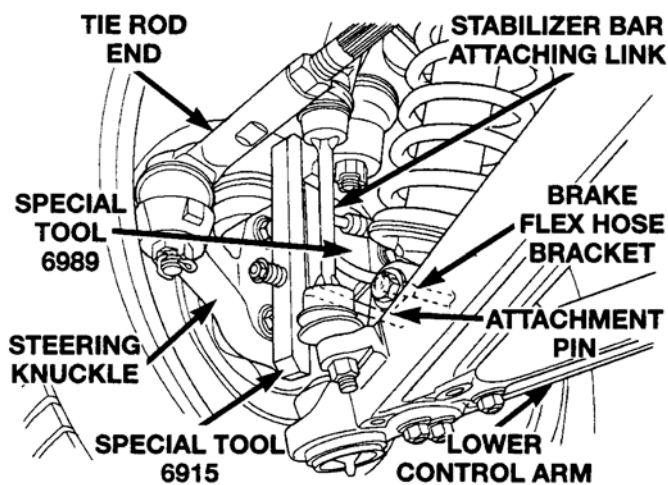


Figure 23 – Right Side Shown

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

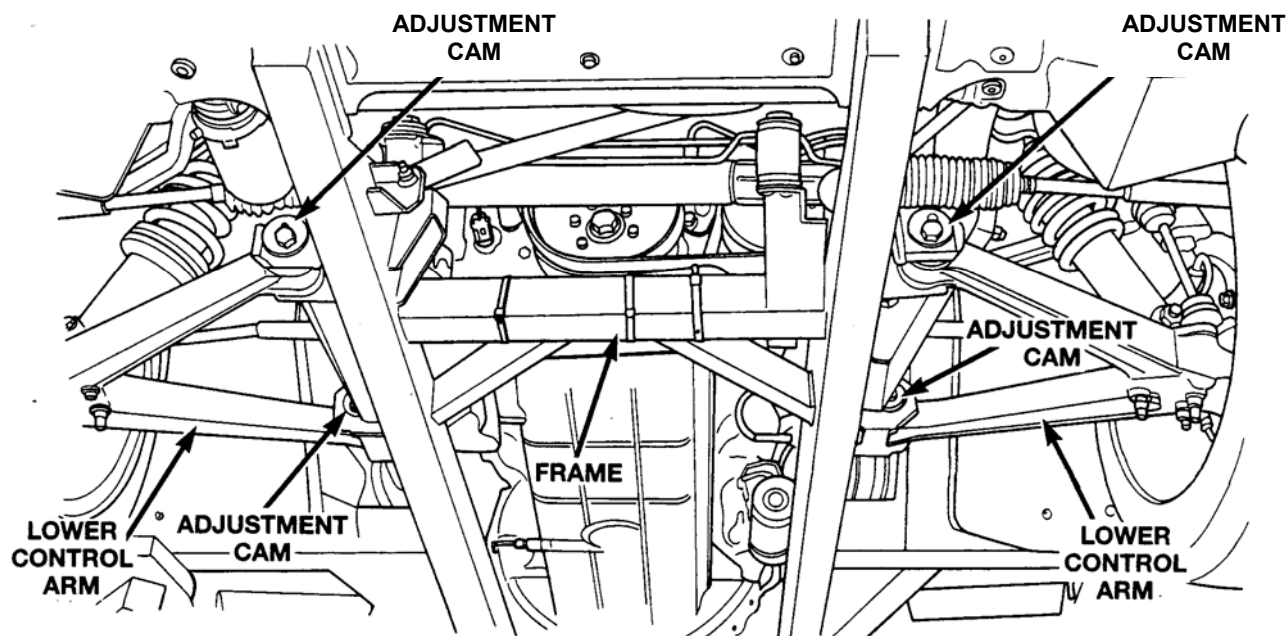


Figure 24

11. Adjust the front caster angle using the measurements viewed on the DRB III screen, and the camber angle using the measurements viewed on the alignment equipment. Camber and caster angles are adjusted by turning the cam bolts on the lower control arm bushings (Figure 24). Refer to the Alignment Specifications Chart on page 33 of this document.
12. Set the front and rear static wheel toe using the following procedure.

**NOTE: The engine should be running during the front wheel toe setting procedure.**

- a. Start the engine and turn the wheels both ways before straightening and centering the steering wheel. Center the steering wheel and retain the steering wheel position with a steering wheel clamp.
- b. Loosen the front outer tie rod end jam nut (Figure 25).
- c. Remove the clamp from the front inner tie rod boot (Figure 25).

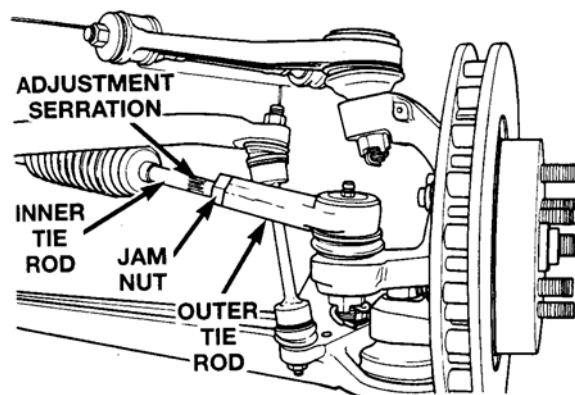
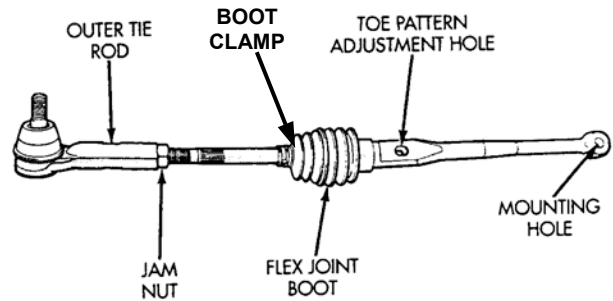


Figure 25 – Left Side Shown

## Service Procedure (Continued)

### E. Wheel Alignment (Continued)

- d. Remove the clamp from the rear flex joint boot and loosen the tie rod jam nut (Figure 26).
- e. To adjust the rear wheel toe, rotate the right and/or left toe link in the direction required to obtain the specified individual wheel toe position. Refer to the Alignment Specifications Chart on page 33 of this document.



**Figure 26 – Left Rear Shown**

- f. To adjust the front wheel toe, grasp and rotate the right and/or left inner tie rod at the adjustment serration in the direction required to obtain the specified individual wheel toe position. Refer to the Alignment Specifications Chart on page 33 of this document.
  - g. Once the individual wheel toe is set to specifications, tighten all of the jam nuts to 55 ft. lbs. (75 N·m).
  - h. Straighten both front tie rod boots at the inner tie rod so that the boots are not twisted. Then install both inner tie rod boot clamps.
  - i. Straighten both rear flex joint boots so that the boots are not twisted (Figure 26). Then install both boot clamps.
  - j. Remove the steering wheel clamp.
- 13. Remove the alignment equipment from the vehicle.
  - 14. Remove the caster angle inclinometers from the front knuckles.
  - 15. Remove the vehicle from the alignment rack and return it to the customer.

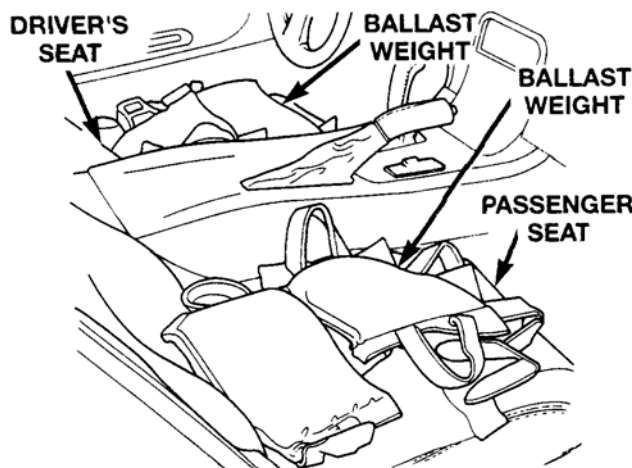


## Service Procedure (Continued)

### F. Setting the Vehicle Design Height

**NOTE:** The following procedure is only required on vehicles that have incorrect design height as determined by Section “E – Wheel Alignment.”

- Loosen the mounting bolts for the suspension components listed below. The bolts must be loosened enough to allow the suspension to move without loading (twisting) the rubber isolator bushings.
  - Front and rear lower control arm-to-frame bracket mounting bolts.
  - Front and rear upper control arm-to-frame bracket mounting bolts.
  - Front upper control arm-to-pivot bar end nuts.
  - Front and rear shock absorber-to-frame bracket mounting bolts.
  - Front and rear shock absorber-to-lower control arm mounting bolts.
- Add ballast weight as required to the passenger compartment of the vehicle to lower the front of the vehicle to the specified design height (Figure 27).



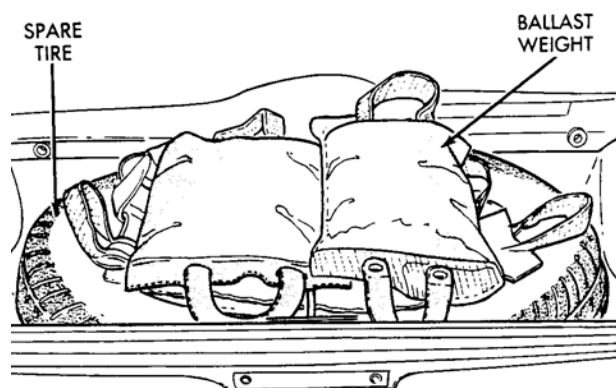
**Figure 27**

**CAUTION:** Do not over ballast the vehicle. If the vehicle is over ballasted, the design height will be incorrect and the special tool can be bent.

**NOTE:** When lowering the vehicle to its specified design height do not add all the ballast (weight) to the vehicle at one time. Add ballast slowly until the correct distance between the Vehicle Height Checking Fixtures (Special Tool #6914) and the frame of the vehicle is achieved.

The approximate total weight needed to lower the vehicle to its design height is 400 lbs. (180 Kg). The weight distribution in the vehicle is about 330 lbs. (150 Kg) in the passenger compartment (165 lbs. (75 Kg) per seat) and 70 lbs. (30 Kg) in the trunk (Figure 27 and 28).

**NOTE:** Vehicles equipped with the ACR package will require significantly more weight to achieve design height.



**Figure 28**

## **Service Procedure (Continued)**

### **F. Setting the Vehicle Design Height (Continued)**

3. Check the vehicle's front design height by measuring between the Height Checking Fixture (Special Tool #6914) and the frame rail crossmember (Figure 14). The **front design height** with added weight should be **1-13/64 inch  $\pm$  1/4 (30 mm  $\pm$  6 mm)**

**NOTE: Vehicles equipped with the ACR package and/or BBS racing wheels must have Special Tool #8396-1 adapters installed onto Special Tool #6914 checking fixture before installing on the front and rear wheels.**

4. Check the vehicle's rear design height by measuring between the Height Checking Fixture (Special Tool #6914) and the frame rail crossmember (Figure 15). The **rear design height** with added weight should be **1 inch  $\pm$  1/4 (25 mm  $\pm$  6 mm).**

**NOTE: After ballasting the rear of the vehicle, recheck the front design height to see if the front of the vehicle lifted when the rear was ballasted.**

5. With the vehicle properly ballasted, tighten the mounting bolts of the following suspension components:
  - Front and rear lower control arm to frame bracket cam adjusting bolts and nuts to 75 ft. lbs. (101 N·m).
  - Rear upper control arm to frame bracket pivot bolts to 70 ft. lbs. (95 N·m).
  - Front upper control arm to pivot bar mounting end nuts to 100 ft. lbs. (136 N·m).
  - Front and rear shock absorber to frame bracket mounting bolts to 100 ft. lbs. (136 N·m).
  - Front shock absorber to lower control arm mounting bolts to 100 ft. lbs. (136 N·m).
  - Rear shock absorber to lower control arm mounting bolts to 140 ft. lbs. (190 N·m).

6. Remove the ballast from the trunk and passenger compartment of the vehicle.



## **Service Procedure (Continued)**

### **F. Setting the Vehicle Design Height (Continued)**

7. Lightly jounce the front and rear suspension of the vehicle to ensure that the vehicle is settled at curb height.

**NOTE: When jouncing the vehicle, the vehicle must be released at the bottom of the jounce cycle. This will ensure the vehicle's suspension will raise the vehicle to the correct curb height at the top of the jounce cycle.**

8. Check vehicle's **front curb height** by measuring the distance from the front frame rail to the top of the Vehicle Height Checking Fixture (Figure 14). The front curb height should be **2 inches  $\pm$  ¼ inch (50 mm  $\pm$  6 mm)**.
9. Check vehicle's **rear curb height** by measuring the distance from the rear frame rail to the top of the Vehicle Height Checking Fixture (Figure 15). The rear curb height should be **2 ½ inches  $\pm$  ¼ inch (64 mm  $\pm$  6 mm)**.
10. If the curb height is within specifications continue with **Step 4 of Section "E - Wheel Alignment."** If the vehicle does not meet vehicle curb height specification after setting the design height, inspect the following suspension components of the vehicle for conditions that may cause the vehicle to not meet vehicle curb height specifications:
  - Shock absorber assembly mounting bushings.
  - Upper and lower control arm mounting bushings.
  - Shock absorber springs.
  - Frame damage to the vehicle which affects mounting location of a suspension component.
  - Front and rear sway bar.
  - Inspect all suspension components for signs of damage.
11. If the component inspection does not determine why the vehicle is not meeting front and/or rear curb height specification, the coil springs on the shock absorber assemblies can be shimmed, or have a reduced height spring seat installed to correct the curb height on standard suspension vehicles. Vehicles with ACR suspension have adjustable spring seats. Continue with **Section "G – Coil Spring Preload Adjustment"** or **Section "H – Coil Spring Preload Adjustment (ACR Suspension).**

## Service Procedure (Continued)

### G. Coil Spring Preload Adjustment

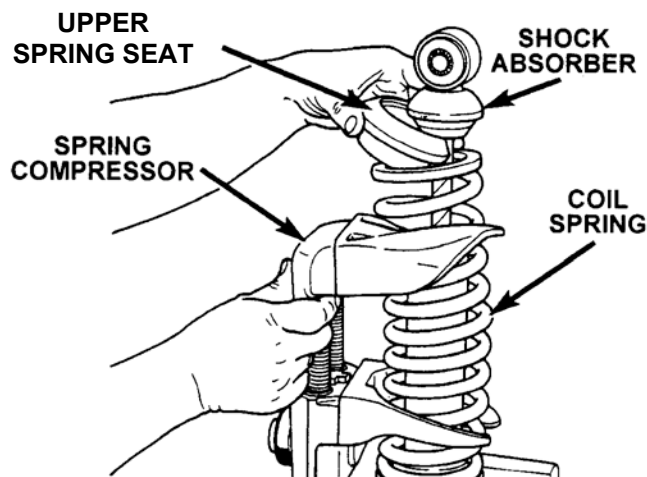
**NOTE:** The following procedure is only required on vehicles that have incorrect design height as determined by Section “F – Setting the Vehicle Design Height.”

**CAUTION:** If the shock absorber/coil spring assembly on the front or rear of the vehicle requires shimming or reduced height upper spring seats, both sides (front or rear) must have the same shims or reduced height spring seat installed.

1. Remove both front and/or rear shock absorber/coil spring assemblies from the vehicle.
2. Securely hold the shock absorber in a vise by clamping the lower bushing.

**CAUTION:** Do not clamp the shock absorber in a vise that is not equipped with protective caps on the vise jaws. Failure to use protective caps will result in damage to the bushing and clevis of the shock absorber.

3. Compress the shock absorber coil spring using Professional Service Equipment Spring Compressor GP-2020-C3.5 or equivalent (Figure 29). The spring compressor must be equipped with an A-20 spring shoe on the top and bottom.



**Figure 29**

## Service Procedure (Continued)

### G. Coil Spring Preload Adjustment (Continued)

4. Compress the coil spring enough to allow the coil spring upper seat to be removed (Figure 30).

- If the vehicle was lower than curb height specification, add one spring shim under the upper spring seat (P/N 04709321).
- If the vehicle was higher than curb height specification, remove the original upper spring seat and replace it with a reduced height spring seat (P/N 04763943).

**CAUTION:** When installing the upper spring seat, be sure the end of the last coil of the coil spring is not positioned at the cut-out notch in the spring shim or upper spring seat (Figure 30).

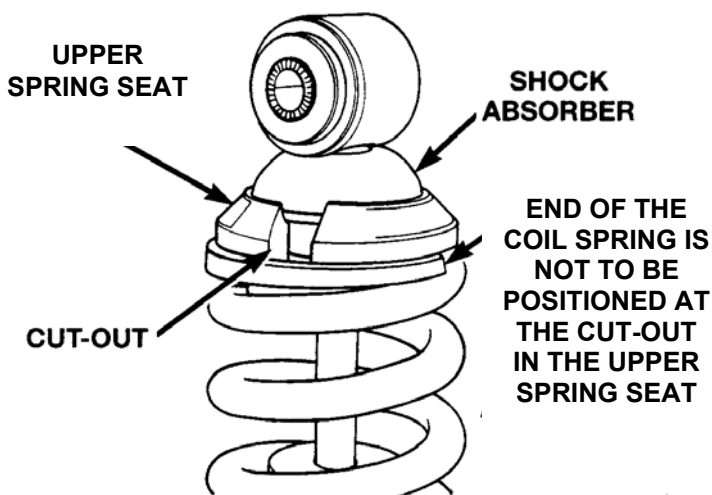


Figure 30

5. Release the spring compressor tension on the coil spring and remove the spring compressor from the coil spring.
6. Remove the shock absorber/coil spring assembly from the vise.
7. Repeat steps 2 through 6 for the other shock absorber/coil spring as necessary.
8. Install both front and/or rear shock absorber/coil spring assemblies onto the vehicle.

**CAUTION:** When installing shock absorber/coil spring assemblies, the vehicle must be at design height before tightening the upper and lower mounting bolts to specifications.

9. Continue with Section “F – Setting the Vehicle Design Height.”

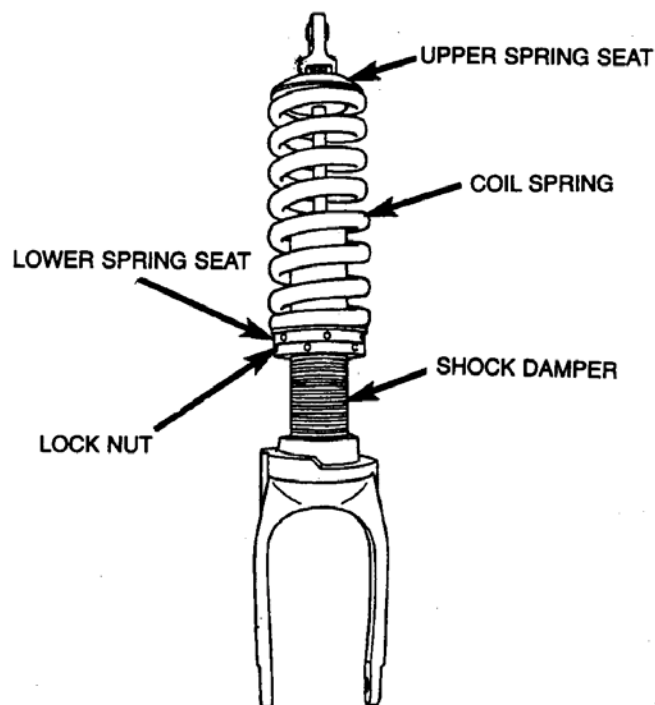
**Service Procedure (Continued)**

## **H. Coil Spring Preload Adjustment - ACR Suspension**

**NOTE:** The following procedure is only required on vehicles that have incorrect design height as determined by Section “F – Setting the Vehicle Design Height.”

1. Remove the front and/or rear shock absorber assemblies from the vehicle (Figure 31).
2. Securely hold the shock absorber in a vise by clamping the lower bushing or clevis.

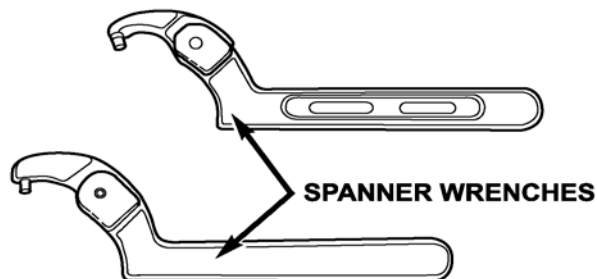
**CAUTION:** Do not clamp the shock absorber in a vise that is not equipped with protective caps on the vise jaws. Failure to use protective caps will result in damage to the bushing and clevis of the shock absorber.



**Figure 31 – Rear Shock Assembly Shown**

3. Using two adjustable pin spanner wrenches (Snap-on P/N APS357B, OTC P/N JHW-0-472 or equivalent), one on the lower spring seat and the other on the lock nut below it, loosen and back off the lock nut (Figures 31 and 32).
4. Using one of the adjustable pin spanner wrenches, rotate the lower spring seat in the direction needed.

**NOTE:** If the vehicle was lower than curb height specification, rotate the spring seat upward. If the vehicle was higher than curb height specification, rotate the spring seat downward.



**Figure 32**

|                                      |
|--------------------------------------|
| <b>Service Procedure (Continued)</b> |
|--------------------------------------|

## **H. Coil Spring Preload Adjustment - ACR Suspension (Continued)**

5. Once preferred spring height is achieved, thread the lock nut up against the bottom of the lower spring seat.
6. Place an adjustable pin spanner wrench on the lower spring seat to hold it in place, then tighten the lock nut up against the lower spring seat.
7. Remove the shock absorber/coil spring assembly from the vise.
8. Repeat steps 2 through 7 for the other shock absorber/coil spring as necessary.
9. Install front and/or rear shock absorber/coil spring assemblies onto the vehicle.

**CAUTION: When installing shock absorber/coil spring assemblies, the vehicle must be at design height before tightening the upper and lower mounting bolts to specifications.**

10. Continue with Section “F – Setting the Vehicle Design Height.”

|                                      |
|--------------------------------------|
| <b>Service Procedure (Continued)</b> |
|--------------------------------------|

### WELDING PROCEDURE SPECIFICATIONS

| WELDING PROCESS   | *FLUX CORED ARC  |
|---|--|
| Electrode Type  | Lincoln Electric Co Product No: NR-211 MP<br>(Do Not Substitute) |
| Electrode Size Inches   | .045 (1.2 mm) Tubular  |
| Electrode Stick Out   | 3/8" – 1/2" (10 – 13 mm)   |
| Polarity  | Electrode -<br>Work Piece +                                      |
| Shielding Gas   | Self-Shielded  |
| Gas Flow rate   | N/A  |
| Wire Feed Speed (inches per min.)                                       | 90 - 110 (38 – 46.5 mm per second)                               |
| Approx. Welding Amperage (All Positions)                                | 130 – 140  |
| Voltage   | 15.5 - 16.5  |
| Direction of Welding:<br>Vertical Position<br>Flat Position<br>Overhead | Vertical - down<br>Flat- Push or drag<br>Overhead-Push or drag   |

\* Flux Cored Arc is the only approved Welding Method

**WARNING:** Only use the specified welding wire (Lincoln Electric Co. NR-211 MP).  
Do not substitute with other types or thickness welding wire.

**NOTE:** Flux Cored Arc Welding is a welding process that uses a special type of welding wire in a standard wire feed (MIG) welder. Flux Cored welding wire is a hollow wire (tubular) with a flux center. When an arc is created during the welding process, the flux located in the center of the welding wire burns and creates its own shielding gas. No additional shielding gas (CO<sub>2</sub>/Ar) is required when using this grade of Flux Cored welding wire.



|                                      |
|--------------------------------------|
| <b>Service Procedure (Continued)</b> |
|--------------------------------------|

### WHEEL ALIGNMENT SPECIFICATIONS

| WHEEL ALIGNMENT<br>ADJUSTMENT***  | FRONT<br>SUSPENSION*                        | REAR<br>SUSPENSION*                           |
|---|---|---|
| Vehicle Curb Height   | 2 inches $\pm$ ¼ inch<br>(50 mm $\pm$ 6 mm) | 2 ½ inches $\pm$ ¼ inch<br>(64 mm $\pm$ 6 mm) |
| Vehicle Design Height   | 1-13/64 inches + ¼ inch<br>(30 mm + 6 mm)   | 1 inch $\pm$ ¼ inch<br>(25 mm $\pm$ 6 mm)     |
| CAMBER  | - 0.20° $\pm$ 0.20°                         | - 0.50° $\pm$ 0.20°                           |
| CASTER  | + 6.0° $\pm$ 0.50°                          | + 1.0° $\pm$ 0.20°                            |
| TOE** (Per Wheel)   | + 0.05° $\pm$ 0.04°                         | + 0.10° $\pm$ 0.04°                           |
| * The vehicle must be at specified curb height before performing alignment.<br>** Positive (+) is toe in; Negative (-) is toe out.<br>*** Maximum left to right alignment specification differential is: Caster 0.50° Toe 0.04° |   |   |

**CAUTION:** The suspension geometry is such that the vehicle alignment settings change rapidly as the vehicle changes height. For this reason, it is extremely important that all suspension specifications be checked and adjusted with the vehicle at the correct curb height. Alignment specifications must be checked with the vehicle at curb height, the fuel tank full, fluids at the correct fill level, and all factory supplied equipment (top, removable windows, spare tire etc.) must be in the vehicle.

**NOTE:** Vehicle curb height is the difference in height between the outer end of the front and rear lower control arms and the frame of the vehicle. All alignment adjustments must be made with the vehicle set to its required curb height specification.

**NOTE:** Vehicle design height is the height specification the vehicle must be at when tightening fasteners for the vehicle's suspension components that are mounted using rubber isolator bushings.

## Completion Reporting and Reimbursement

Claims for vehicles that have been serviced must be submitted on the DIAL System. Claims submitted will be used by DaimlerChrysler to record recall service completions and provide dealer payments.

**Use the following labor operation number and the related operation as necessary. The related operation must be included in the same condition as the primary repair labor operation.**

|  | <b><u>Labor Operation<br/>Number</u></b> | <b><u>Time<br/>Allowance</u></b> |
|--|--|----------------------------------|
| Inspect Steering Gear Crossmember for Cracks. Install Steering Gear Crossmember Reinforcement and Frame Gussets. | 13-99-91-82                              | 2.6 hours                        |

### **Related Operation:**

|   |             |           |
|---|-------------|-----------|
| Replace Steering Gear Crossmember and Four Wheel Alignment (Includes Setting Design Height and Curb Height) | 13-99-91-50 | 5.3 hours |
|---|-------------|-----------|

Add the cost of the recall parts package(s) plus applicable dealer allowance to your claim.

NOTE: See the Warranty Administration Manual, Recall Claim Processing Section, for complete recall claim processing instructions.

## Parts Return

Not required.

### **Dealer Notification and Vehicle List**

All dealers will receive a copy of this dealer recall notification letter by first class mail. Two additional copies will be sent through the DCMMS, and the MDS2 will be updated to include this recall in the near future. **Each dealer to whom involved vehicles were invoiced will receive a list of their involved vehicles.** The vehicle list is arranged in Vehicle Identification Number (VIN) sequence. Owners known to DaimlerChrysler are also listed. The lists are for dealer reference in arranging for service of involved vehicles.

### **DIAL System Functions 53 and VIP**

All involved vehicles have been entered to DIAL System Functions 53 and VIP for dealer inquiry as needed.

Function 53 provides involved dealers with an updated VIN list of their incomplete vehicles. The customer name, address and phone number are listed if known. Completed vehicles are removed from Function 53 within several days of repair claim submission. To use this system, type “53” at the “ENTER FUNCTION” prompt, then type “ORD999”.

### **Owner Notification and Service Scheduling**

All involved vehicle owners known to DaimlerChrysler are being notified of the service requirement by first class mail. They are requested to schedule appointments for this service with their dealers. A copy of the owner letter is attached.

Enclosed with each owner letter is an Owner Notification Form. The involved vehicle and recall are identified on the form for owner or dealer reference as needed.

**Vehicle Not Available**

If a vehicle is not available for service, let us know by filling out the pre-addressed Owner Notification Form or describe the reason on a postcard and mail to:

DaimlerChrysler Corporation  
CIMS 482-00-85  
800 Chrysler Drive East  
Auburn Hills, Michigan 48326-2757

**Additional Information**

If you have any questions or need assistance in completing this action, please contact your Zone Service Office.

Customer Services Field Operations  
DaimlerChrysler Corporation

# DAIMLERCHRYSLER

## **SAFETY RECALL TO REINFORCE YOUR VEHICLE'S STEERING GEAR CROSSMEMBER**

Dear Dodge Viper Owner:

This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.

DaimlerChrysler Corporation has determined that a defect, which relates to motor vehicle safety, exists in some **1999 and 2000 model year Dodge Viper vehicles**.

***The problem is...***

**Aggressive driving, such as racing, may lead to cracking and separation of the steering gear crossmember from the frame. This can cause unexpected steering looseness and lag which could result in an accident without warning.**

***What DaimlerChrysler  
and your dealer will  
do...***

**DaimlerChrysler will repair your vehicle** (identified in the enclosed form) **free of charge (parts and labor)**. To do this, your dealer will inspect your vehicle's steering gear crossmember and install a reinforcement bracket. The repair will take about 3 hours to complete. If cracks are found in the steering gear crossmember, a new crossmember will be installed which will require an additional 6 hours to complete. However additional time may also be necessary depending on how dealer appointments are scheduled and processed.

***What you must do to  
ensure your safety...***

- Simply **contact your dealer** right away to schedule a service appointment. Ask the dealer to hold the parts for your vehicle or to order them before your appointment.
- **Bring the enclosed form with you to your dealer.** It identifies the required service to the dealer.

***If you need help...***

If you have questions or concerns which the dealer is unable to resolve, please contact the DaimlerChrysler Customer Assistance Center at 1-800-853-1403. A representative will assist you.

If you have already experienced the problem described above and have paid to have it repaired, you may send your original receipts and/or other adequate proof of payment to the following address for reimbursement: DaimlerChrysler Customer Assistance Center, P.O. Box 1040, St. Charles, MO 63302-1040, Attention: Reimbursement.

If your dealer fails or is unable to remedy this defect without charge and within a reasonable time, you may submit a written complaint to the Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, DC 20590, or call the toll-free Auto Safety Hotline at 1-888-327-4236.

We're sorry for any inconvenience, but we are sincerely concerned about your safety. Thank you for your attention to this important matter.

***Buckle***

***up***

Customer Services Field Operations  
DaimlerChrysler Corporation  
999