INSTALLATION INSTRUCTIONS

2650
LOWERING SPINDLE
DODGE RAM

Congratulations! You were selective enough to choose a BELLTECH PRODUCT. We have spent many hours developing our line of products so that you will receive maximum performance with minimum difficulty during installation.

Note: Confirm that all of the hardware listed in the parts list is in the kit. **Do not** begin installation if any part is missing. Read the instructions thoroughly before beginning this installation.

Warning: **DO NOT** work under a vehicle supported by only a jack. Place support stands securely under the vehicle in the manufacturer's specified locations unless otherwise instructed.

Warning: **DO NOT** drive vehicle until all work has been completed and checked. Torque all hardware to values specified.

Reminder: Proper use of safety equipment and eye/face/hand protection is absolutely necessary when using these tools to perform procedures!

Note: It is very helpful to have an assistant available during installation.

RECOMMENDED TOOLS:

- Properly rated floor jack, support stands, and wheel chocks
- Combination wrench set
- Torque wrench: *0-75 lb ft. range*
- Ratcheting socket wrench and sockets sets
- Safety Glasses

KIT INSTALLATION

1. This is a complex installation that requires removal of the lower control arms, removal and replacement of the lower ball joints and possible welding. Someone should not attempt it without the proper tools and some experience in installations of this type. Removal and replacement of the ball joints must be accomplished using equipment designed for this operation or ball joint and/or lower control arm damage may result. **We recommend** that a qualified mechanic or repair facility perform the installation.
2. As there are a number of OEM fasteners that will be removed, and can be re-used, during this installation, it is the **installer's responsibility to replace worn or damaged hardware as needed**.
3. Place the vehicle on a firm level surface such as seasoned asphalt or concrete. Firmly set the parking brake, block the front and rear of the rear wheels, and raise the front of the vehicle off the ground using a lifting device rated for this load. Position a set of jack stands rated for this load under the forward frame rails just aft of the portion of the frame that rises to the front suspension attach points.
4. Lower the vehicle down onto the jack stands and with the lifting devices still in position, check the vehicle for stability on the jack stands.
5. Remove and set aside the front wheels and tires.

6. Remove the front steering tie rod ball joint cotter pin and loosen the nut approximately 4 turns (Photo 1). Strike the steering tie rod ball joint area until the steering tie rod ball joint stud is loosened in the steering knuckle casting (Photo 2). Remove the steering tie rod nut and allow the steering tie rod to swing out of the immediate work area.
7. Rotate the steering knuckle to access the brake caliper retaining Allen bolts. Loosen the bolts and thread them out of the steering knuckle (Photo 3). Lift the caliper off of the brake rotor and secure against the frame rail so that the brake hose is not under any tension (Photo 4 & 5).
8. Remove the cotter pins from the upper and lower steering knuckle ball joint nuts. Loosen the steering knuckle ball joint nuts approximately four (4) turns but **do not** remove them (Photo 6, 7, & 8).
9. Strike the steering knuckle in the area of the ball joint stud to loosen the ball joint stud in the steering knuckle casting (Photo 9, 10 & 11).
10. Remove the outer bearing dust cap from the rotor; remove the cotter pin and the bearing securing nut and washer (Photo 12 & 13). **CAUTION**: **Take care when removing the bearing-securing nut, as the weight of the rotor will tend to cause the bearing and the rotor to slide off of the steering knuckle pin.**
11. Remove the outer wheel bearing and slide the rotor straight off of the steering knuckle pin (Photo 14 & 15). Set the rotor and the bearings away from the work area in a dust free location.
12. Remove the three bolts that secure the brake rotor dust shield to the steering knuckle. Remove the brake rotor dust shield and set aside (Photo 16).
13. Lift the steering knuckle to unload the upper ball joint nut, remove the nut and lift the upper control arm stud out of the steering knuckle boss (Photo 17).
14. Supporting the steering knuckle, remove the bottom ball joint nut and allow the steering knuckle to come clear of the lower ball joint stud (Photo 18).
15. Remove the lower anti-sway bar end link hardware and set aside (Photo 19). Supporting the lower control arm, remove and retain the lower shock absorber hardware (Photo 20). Allow the lower control arm to lower to the point that the coil spring can be removed. **CAUTION**: **Springs under load store considerable amounts of energy**. Lower the control arm slowly and use care as coil spring unloads and comes out of its lower seat (Photo 21).
16. With the lower control arm unsupported, measure the distance from the end of the control arm to a fixed point such as the bottom of the fender edge (Photo 22). This distance will be used as a reference when the control arm is re-installed.
17. Supporting the lower control arm, loosen and remove the lower control arm pivot bolts (Photo 23 & 24). Remove the lower control arm from the vehicle.
18. Remove the snap ring from the topside of the OEM ball joint (Photo 25). Using a die grinder with a cutoff wheel, or similar tool, grind through the spot welds that secure the ball joint to the lower control arm (Photo 26). **CAUTION: Do not cut into the material of the lower control arm**. Cuts in this area could weaken the control arm and lead to failure of the part.
19. Have the ball joint removed from the lower control arm and replace it with the kit supplied ball joint. The kit supplied ball joint must be installed so that the stud is pointed 180 degrees from that of the stud in the original ball joint in the original position (Photo 27). **CAUTION: Do not remove or replace ball joints with a hammer or in a similar manner**. Striking the ball joint can distort the housing and lead to an early failure of the part. Remove and replace the ball-joints using the proper equipment. **NOTE: The kit supplied ball joint is slightly larger than** the OEM **ball joint and must be pressed into the lower control arm**. Small tack welds, similar to the OEM spot-welds, may be used to secure the kit supplied ball joint in place after installation. **CAUTION: Do not tack weld the ball joint using a flame as a heat source**

20. Depending on the wheel backspacing, it may be necessary to trim the lower control arm to prevent wheel-to-control arm contact. If control arm trimming is required, the kit supplied control arm "boxing" plates should be installed (Photo 28 & 29). Install the boxing plates using good welding practices, but

do not weld the plates in using a flame as a heat source and do not use a full perimeter weld. Several short beads are recommended to reduce heat build up in the control arm structure or in the ball joint assembly.

21. Apply high quality grease to the ball joint until the grease squeezes out of the bearing ball channels and slightly fills the ball joint rubber boot seal (Photo 30).

22. Install the lower control arm back into the vehicle using OEM hardware (Photo 31). Raise the control arm to a point that the measurement taken in Step 14 is reduced by 1" inch when measured between the same two points (Photo 32). Torque the lower control arm pivot hardware to 150 ft-lbs.

23. Re-install the coil spring, re-install the lower shock eye hardware and torque to 100ft-lbs. Install the Anti-Sway Bar end link and torque the nut to 25ft-lbs. (Photo 33, 34 &35)

24. Fit the lowered spindle to the lower ball joint stud and install the lower ball joint nut. Lift the upper control arm so that the upper control arm ball joint stud can be fitted into the spindle upper ball joint boss (Photo 36 & 37). Torque the upper ball joint nut to 55ft-lbs. And the lower ball joint nut to 94ft-lbs. Install new cotter pins to secure the ball joint nuts.

25. Re-install the brake dust shield using the OEM dust shield bolts (Photo 38). Torque the dust shield bolts to 18ft-lbs.

26. Apply high quality wheel bearing grease to the spindle-bearing pin and to the rear dust seal face. Install the brake rotor straight onto the spindle pin. Re-install the outer wheel bearing, washer, nut, and locking tab (Photo 39 & 40). Tighten the wheel bearing nut according to the following procedure:

- **a.** Torque the bearing-securing nut to 10ft-lbs.
- **b.** Loosen the nut to a "just loose" position by hand. If the cotter pin holes do not line up, loosen the nut until the cotter pin holes do line up, but in no case is the nut to be backed off more than ¼ turn from the previous "just loose" position.
- **c.** Install a new cotter pin so that the ends do not interfere with the dust cap. Bend the ends of the cotter pin against the nut and cut off any excess cotter pin length.
- **d.** Re-install the brake caliper and torque the caliper retaining bolts to 38ft-lbs. (Photo 41).
- **e.** Re-install the steering tie rod ball joint stud in the spindle steering arm. Torque the steering rod nut 40 ft-lbs. And install a new cotter pin to secure the nut.

27. Locate the front brake system junction blocks behind the upper control arm pivot bolt nut, where the rigid brake line transitions into a flexible line. Remove the bolt that secures the junction Check that all components and fasteners have been properly installed, tightened and torqued.

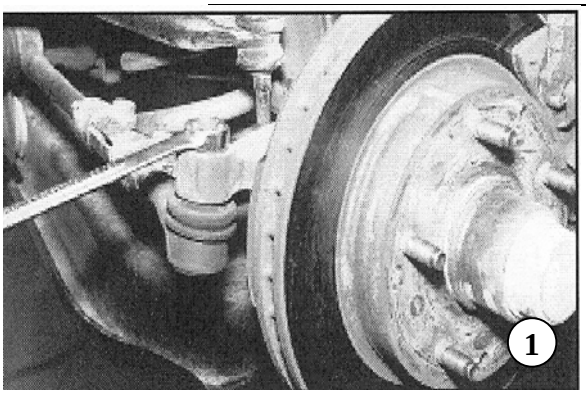
28. Check brake hoses, and other components for any possible interference.

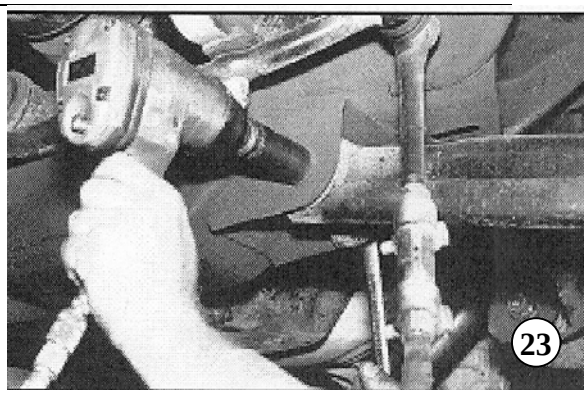
29. Lift vehicle and remove support stands. Carefully lower vehicle to ground.

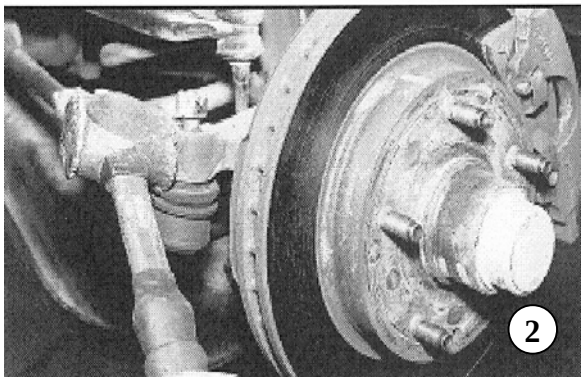
30. Immediately test-drive the vehicle in a remote location so that you can become accustomed to the revised driving characteristics and handling. Be aware that the vehicle will handle substantially different now that it has been modified.

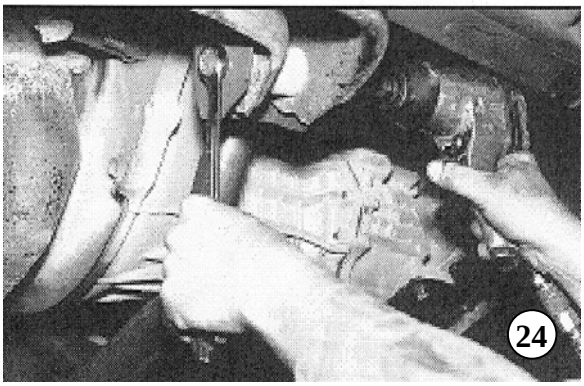
31. Installation is complete. Check <u>all</u> of the hardware and re-torque at intervals for the first 10, 100, 1000 miles.

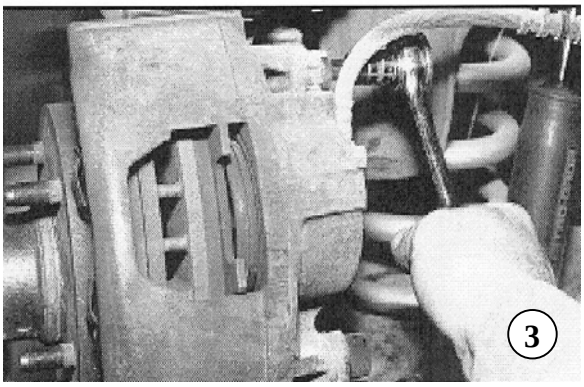
PART#	DESCRIPTION	QTY
2650-350	Left Hand Spindle	1
2650-450	Right Hand Spindle	1
2650-005	Ball Joint, Special	2
2650-010	Reinforcing plate	2
2650-012	Brake Block 3/8” x 5/8” x ¾” Spacer	2
112010	8mm x 1.25 x 45mm GRD 8 C/S ZP	2
110204	8mm A325 F/W ZP	2
110-910	Cotter Pin 1/8” x 1 ½” ZP	6
110-908	Cotter Pin 7/64” x 1 ¼” ZP	2

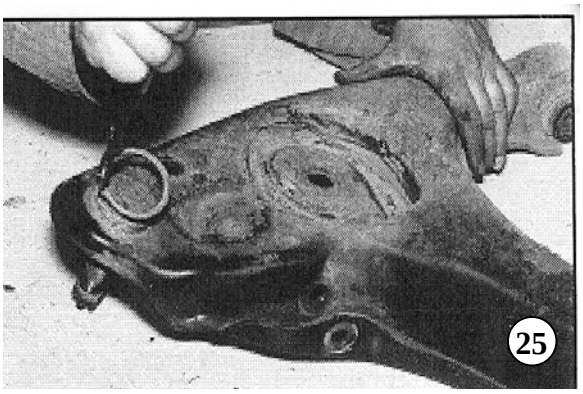


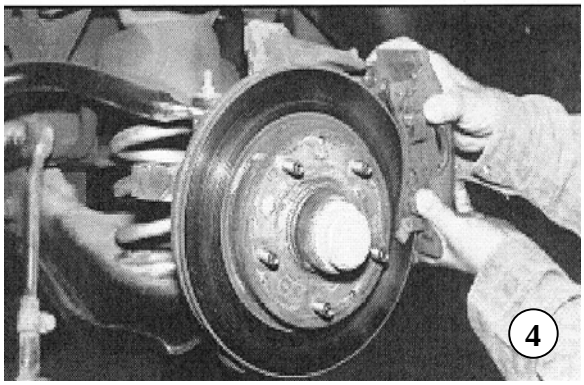








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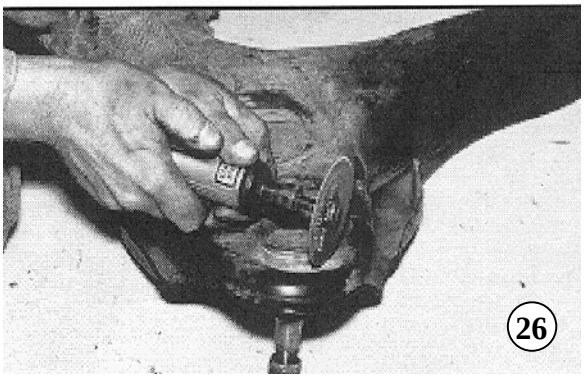
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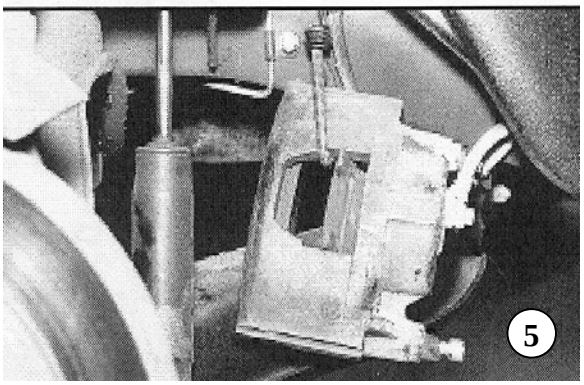
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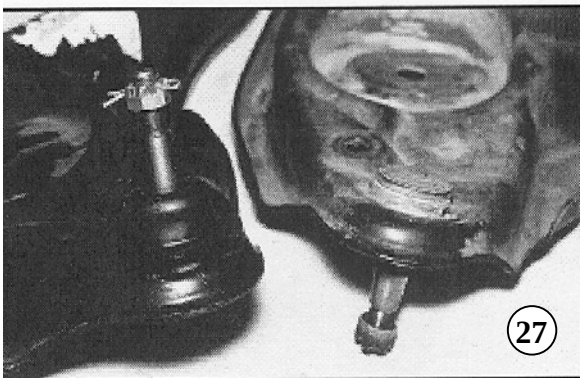
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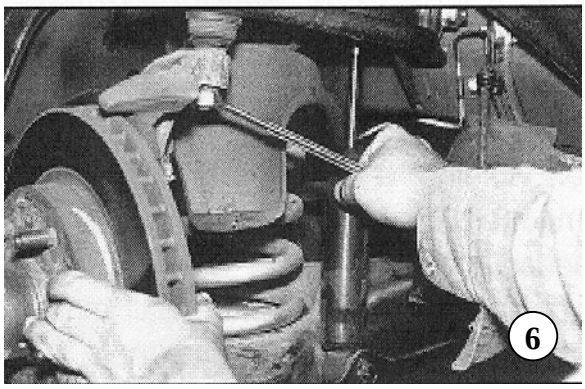
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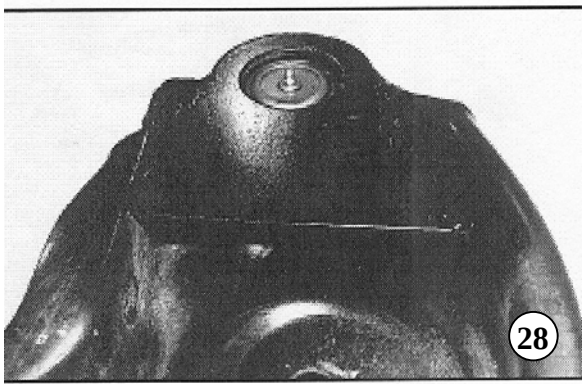
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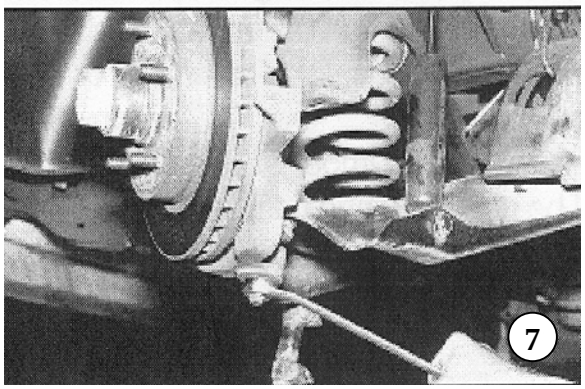
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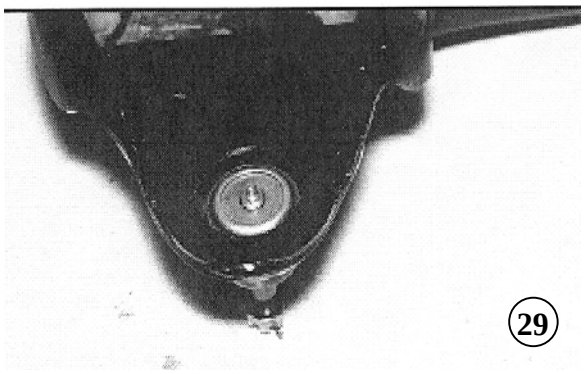
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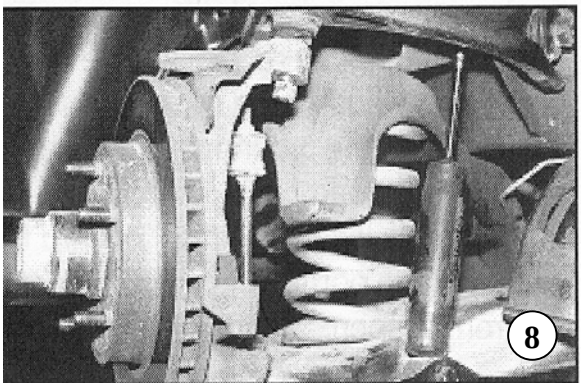
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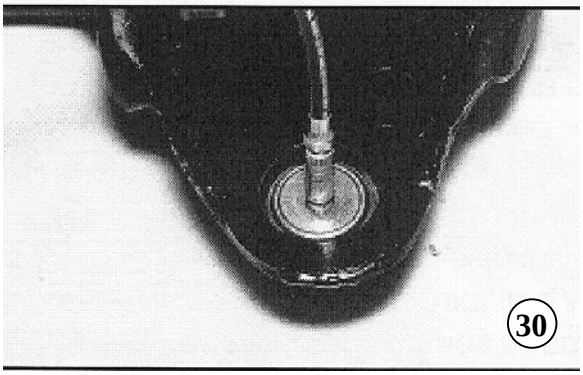
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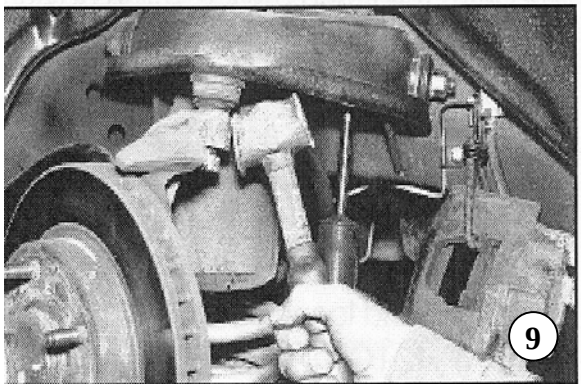
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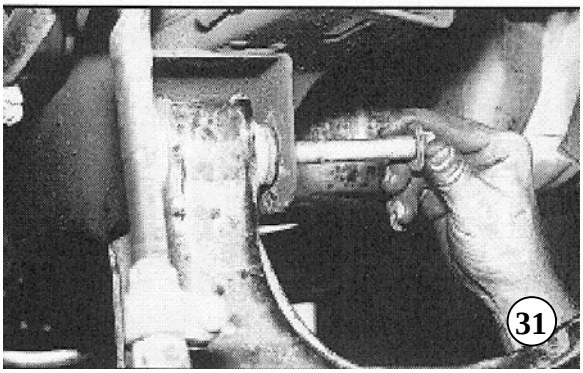
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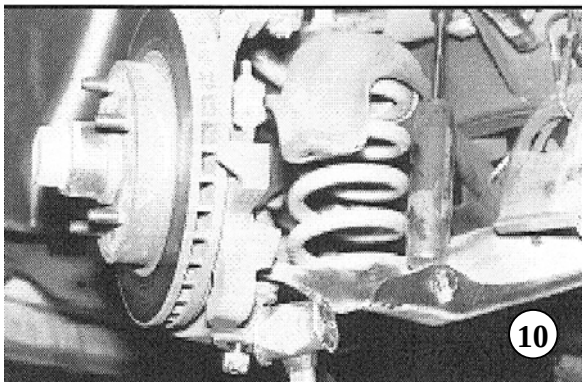
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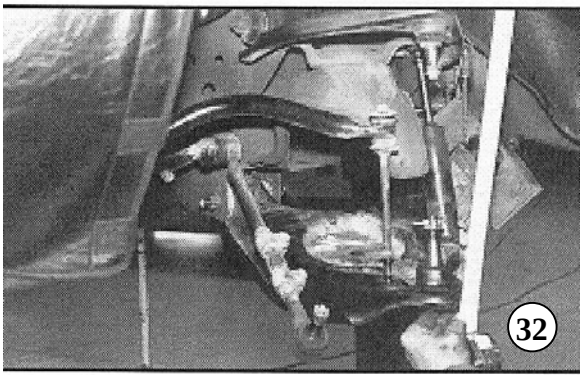
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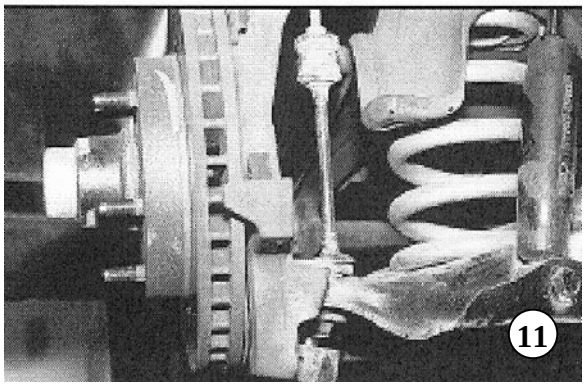
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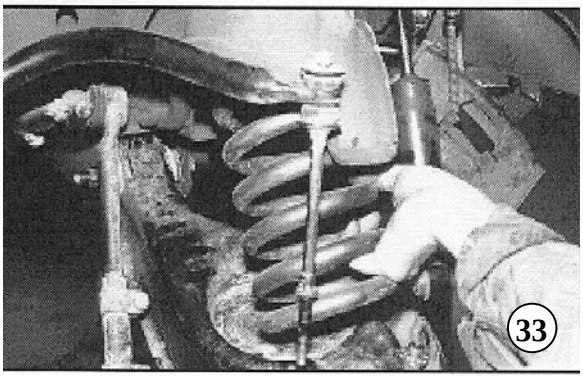
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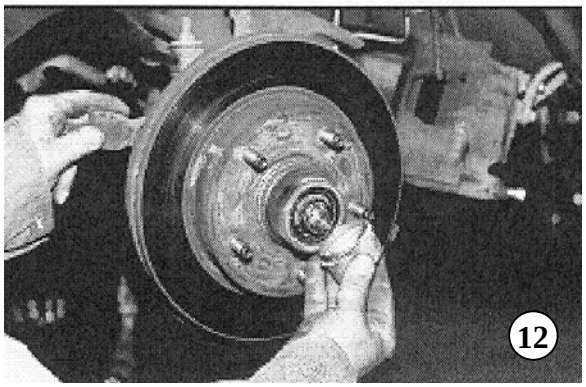
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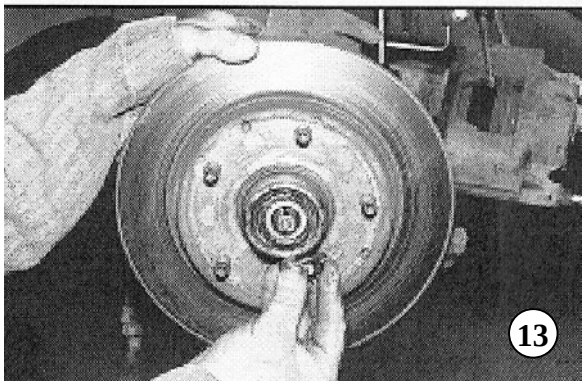
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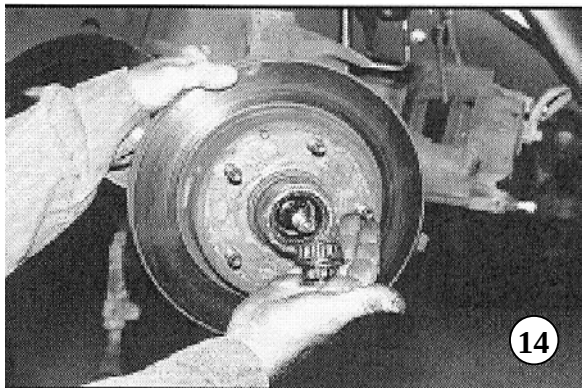
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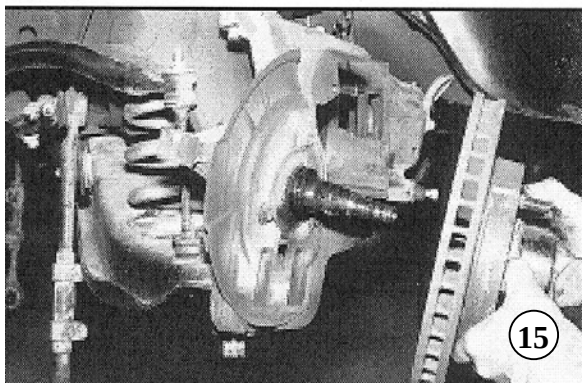
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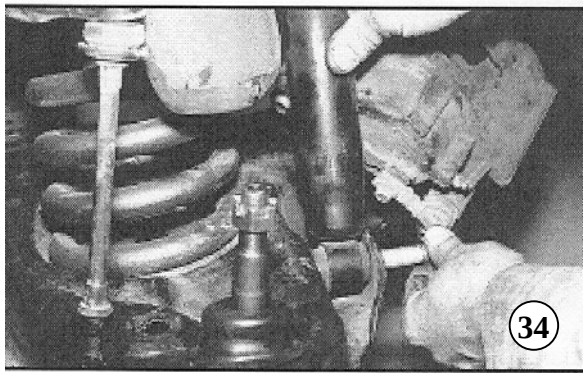
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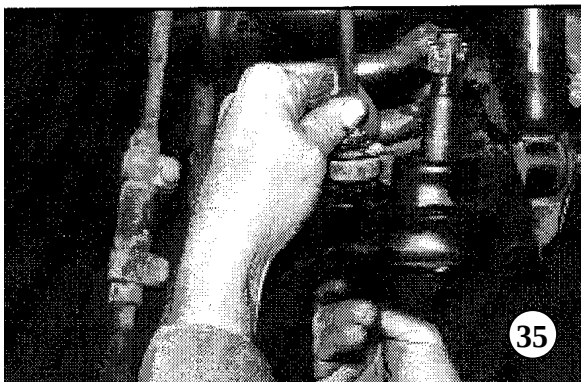
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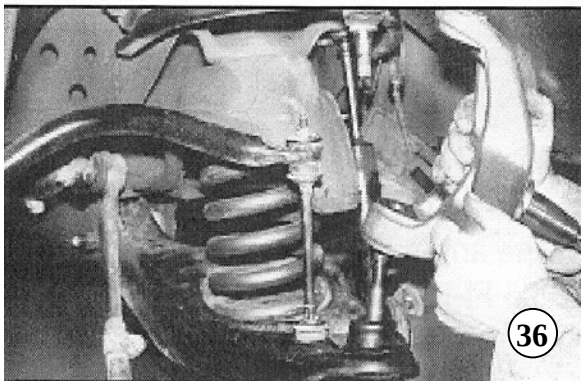
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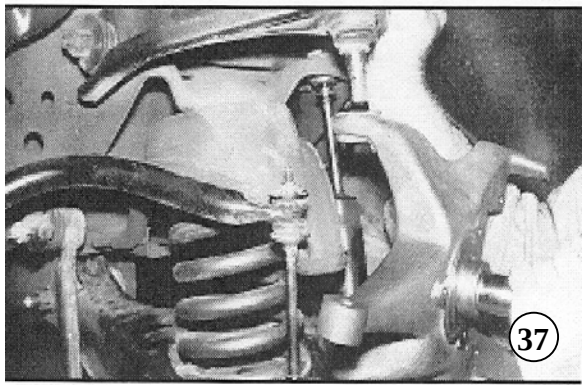
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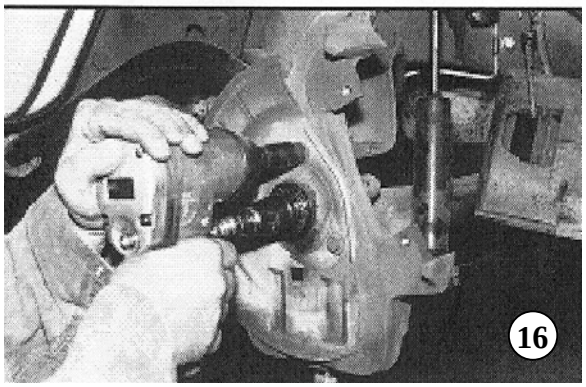
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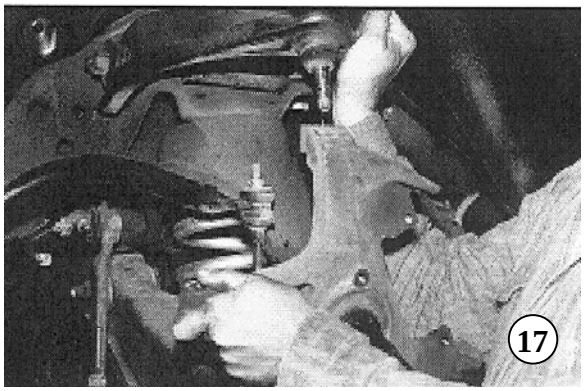
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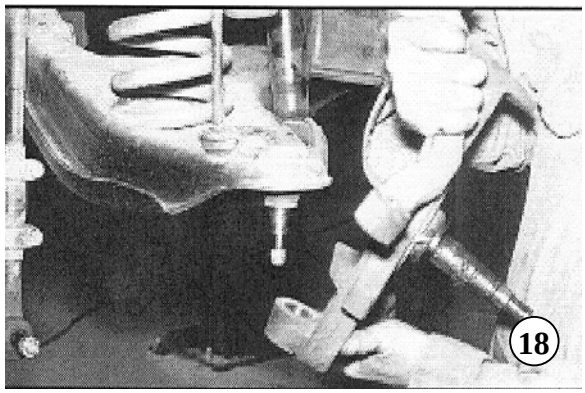
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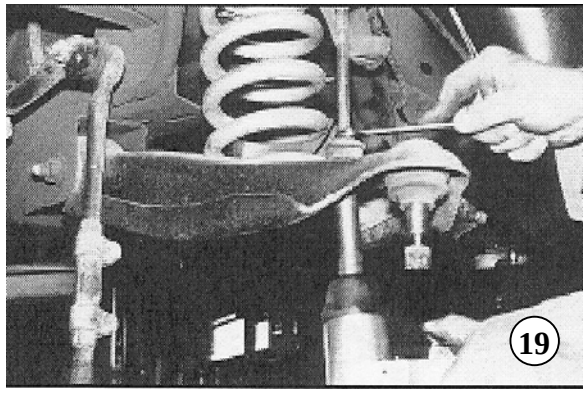
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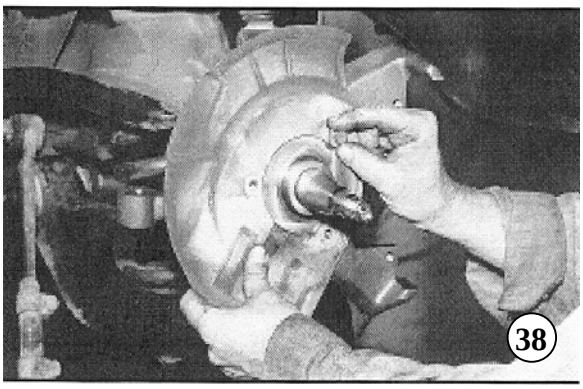
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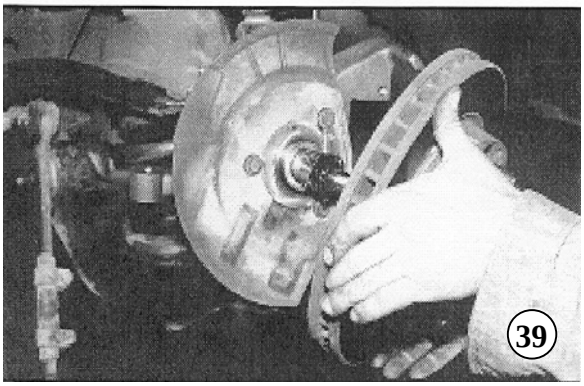
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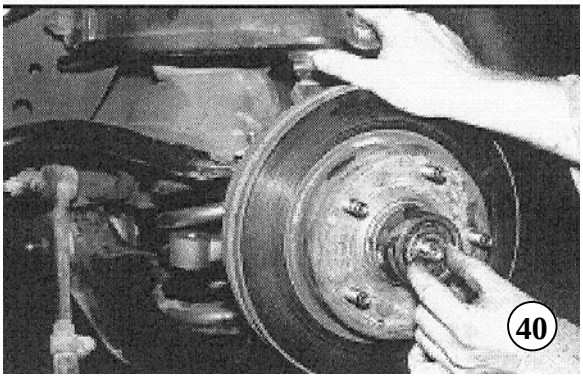
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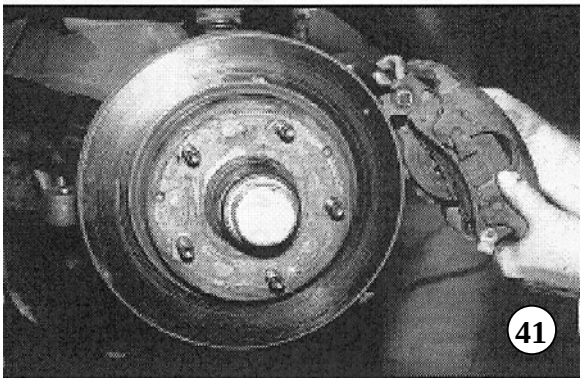
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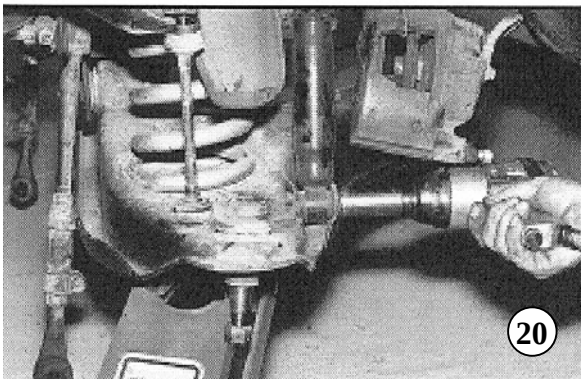
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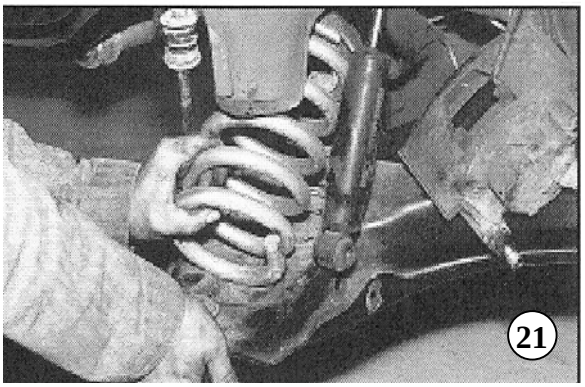
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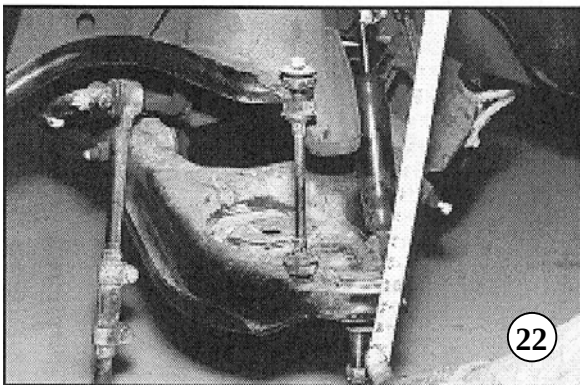
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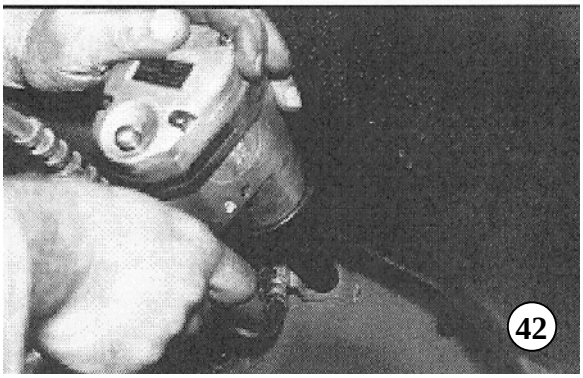
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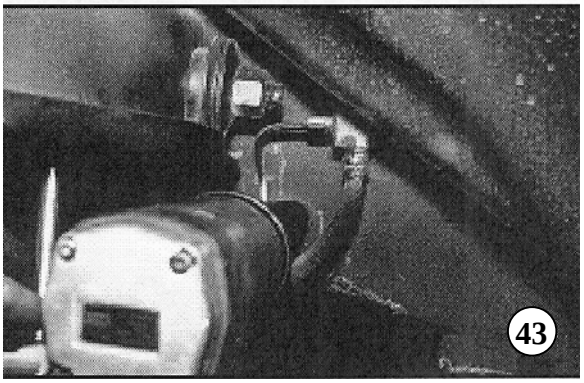
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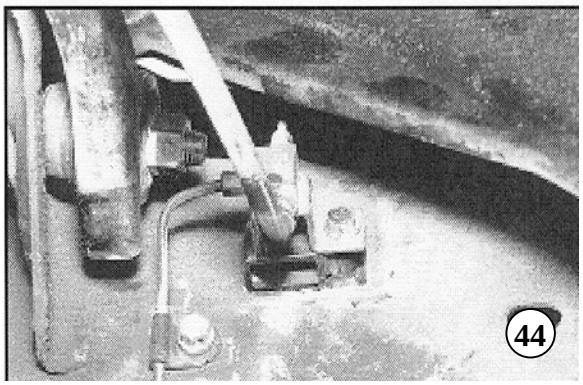
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