Sore Joints

Volvo Trailing Arm Bushings

When was the last time that you checked the rear suspension bushings on a customer's car *before* they started making noise? Probably not recently. We usually ignore these important suspension components until they start making strange and unusual noises that the owner can't remember hearing before. Only then does the car get a road test and a careful suspension inspection.

Wouldn't it make more sense to check the suspension, and replace the worn suspension bushings before your customer gets a chance to hear them for himself? If you've ever had trouble selling suspension work before the customer has heard any warning noises, just ask him how tired he thinks his arms would be if he had been holding onto the rear suspension for all those miles.

Making an Example

Volvo owners like to get in their Volvos and drive. High mileage is a badge of honor. Most owners also like their cars well enough to part with some cash when the old ground pounder needs work. Our project car's owner dumped $1500.00 worth of rejuvenation into his pride and joy during its trip to the shop. It was a perfect candidate for suspension work.

One of the things the owner mentioned when he dropped the car off was that the rear suspension made a clunking noise each time he got on or off the gas pedal. The noise was also there when he stepped on the brakes. Anything that changed the suspension loading, or shifted the weight of the car fore and aft caused the noise. Having seen this problem many times before, our host shop knew just where to look.

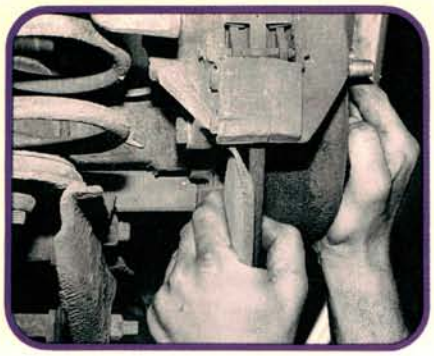
The Volvo 240's conventional rigid axle and non-independent rear suspension look a lot like dozens of rear drive domestic car designs. Four trailing arms and a transverse link keep the axle positioned under the car, and a sway bar helps out in the handling department.

The suspension is a durable design, and suspension bushing wear usually doesn't show up until the car has gone at least 80,000 miles. If the bushings wear out sooner than that, you can figure that the owner has really been hard on the car.

Ninety-nine percent of all Volvo 240 rear suspension bushing wear can be found in just two of the rear suspension's trailing arm bushings. These bushings mount the lower trailing arms to the rear axle housing. They were the ones that were causing the clunk on this customer's car.

As we'll show you, the worn trailing arm bushings can be diagnosed and replaced for a nice profit, using tools that you probably already own. Volvo has been using the same basic rear suspension design since they started making 240s. So if you can fix one, you can fix all of them.

—By Karl Seyfert



1

To check the lower trailing arm bushings, raise the car on a frame contact hoist so the rear axle hangs free. Now push up on each end of the rear axle from below. You'll be able to feel the looseness in the suspension if the lower trailing arm bushings are worn.

2

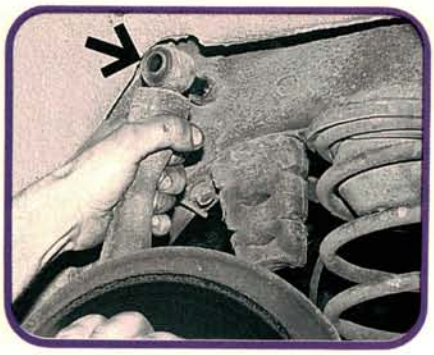
The lower trailing arm bushings are pressed into mounting ears on the underside of the axle housing (arrow). The trailing arm, shock absorber, sway bar, and coil spring must be disconnected and lowered out of the way to replace the bushings. We found it easier to replace the bushings one side at a time.

3

Support the rear axle housing with a jack stand. The trailing arm can't be lowered far enough to get at the trailing arm bushing unless the rear shock is disconnected first. The rear shocks limit the rear suspension's downward travel, so the stand is needed to keep the axle from dropping too far.

4

Normally the next step would be to remove the lower shock mounting bolt from the trailing arm. The underside of this Volvo had seen over 80,000 miles of northeastern Ohio weather, so we didn't expect it to be easy. The lower shock bolts on both trailing arms were rusted solid to the lower shock bushings.



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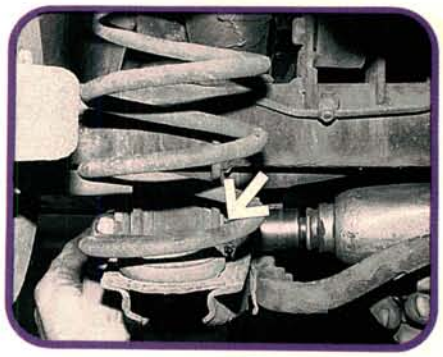
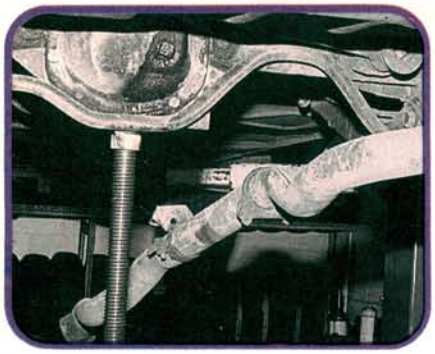
There are a couple of options in this situation. If the rear shocks need replacement anyway, cutting the rusted lower shock bushings with a torch only takes a few extra minutes. The shocks were still good in this car, so we disconnected the upper shock mounting nut instead.



6

Remove the lower trailing arm bushing mounting bolt. The inside diameter of the trailing arm bushing is much larger than the mounting bolt's outside diameter. The mounting bolt only contacts the bushing on dimples at either end of the bushing. The bushing can't seize to the mounting bolt.



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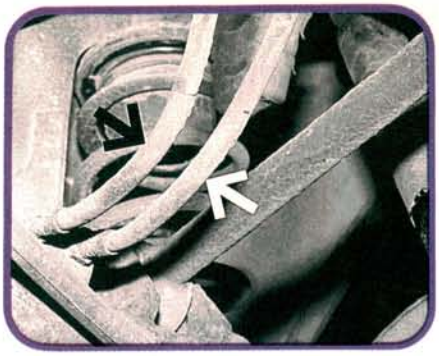
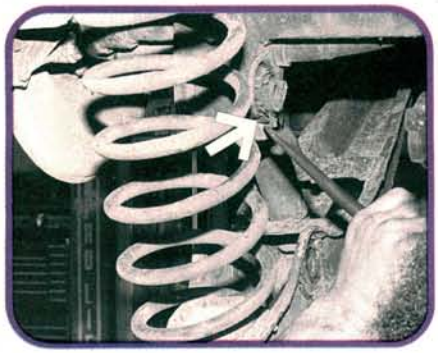
The sway bar was our next obstacle. The lower shock mounting bolts also happen to mount the sway bar to the trailing arms. The trailing arms wouldn't drop far enough before the sway bar hit the exhaust system. We disconnected the exhaust behind the converter, then moved it out of the way.



8

Don't forget about the flexible rear brake hoses while you're jockeying the rear axle and trailing arm around. The hoses are long, but may be stretched or damaged if you let the rear axle drop too low. Keep the jack stand positioned under the axle at all times to protect the hoses.

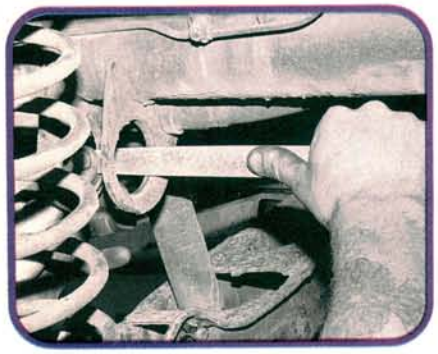


9

Drop the trailing arm far enough to get a clear shot at the bushing. Collapse the bottom side of the bushing with an air chisel and a muffler cutting bit. Work carefully to avoid damaging the rear axle mounting ears. The rear spring stays attached to the trailing arm and blocks our view in this photo.

10

The outer bushing mounting ear has a smaller inside diameter than the inner ear, so the bushing must be removed by driving it toward the center of the car. Working at the center of the bushing, use the air chisel to carefully push the caved-in bushing to the right.



11

File the inside diameter of the mounting ears to remove any rust. Don't get carried away, we need a tight fit between the mounting ears and the new bushing. Make sure both ears are parallel to each other and are at right angles to the axle housing. Apply a thin coat of grease inside the ears.

12

The new bushing is marked for proper installation position. The arrow molded into the rubber section of the bushing must point straight down when the bushing is installed in the rear axle mounting ears. The bushing's notched center section grips the inside of the trailing arm when the mounting bolt is tightened.

13

The new bushing's outside diameter is tapered, so installation must be in the opposite direction of removal. Test fit each end of the bushing in the larger diameter inner mounting ear. One end of the bushing will slip through the mounting ear more easily than the other. This is the end to install first.

14

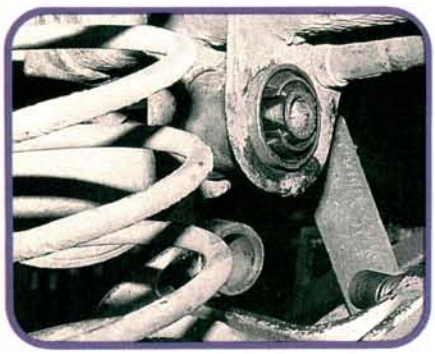
The new bushing can be installed most of the way into the mounting ears by tapping on the edge of the bushing. Stop often to check the bushing for proper alignment with the outer mounting ear. Stop tapping when the bushing stops sliding outward easily. We'll use a press to finish the job.

15

Volvo uses a special press to install the trailing arm bushings. A garden-variety ball joint press can also be pressed into service. Use an installer cup that pushes on the steel outer ridge of the bushing. You may need to modify the receiving end of the press so that it contacts the axle's outer bushing mounting ear.

16

Tighten the press slowly while watching the new bushing's progress. If the axle mounting ears start to bend sideways as you push the bushing into place, back off the press and tap the ears back into position. Then continue pressing. Make sure the outer press cup doesn't bind on the bushing.



17

Keep pressing until the new bushing is centered between the two mounting ears. Don't push the bushing too far. Reversing direction is no fun. Over pressing can also enlarge the mounting ears' inside diameters and make for a loose bushing fit.

18

We're almost done with one side. It may take some wiggling to get all the mounting bolts to line up properly. Don't forget about the brake hoses. Final tightening of the trailing arm bushing and shock mounting bolts should be done with the suspension at its normal ride height.