Body Bushing Replacement GM “A” Body

Although our beloved GM Intermediate (“A” bodies: Chevelle/Malibu/El Camino, Tempest/GTO, Cutlass/F-85, Skylark, Sprint, and similar) are known to have “Full Frame” construction, you might be surprised to witness how flexible the frame actually is. One source claims the frame was designed to flex in order to “improve” the ride quality. The body, while not as rigid as a “unibody”, is surprisingly strong. All those stamped sheetmetal panels welded together as a 3-D assembly provide considerable stiffness. The body needs to be properly attached to the frame so the strength of the body can be combined with the strength of the frame.

Attaching the body to the frame is accomplished at the factory with multiple rubber cushions and steel hardware; the rubber isolates vibration and noise, yet the rubber—under compression from the attaching bolts ‘n’ washers—allows the body structure and the frame to work together to resist flex. The number of cushions varies with the year and the model; convertibles generally have more cushions than non-convertibles.

My particular El Camino was an incredible rattle-trap. Every bump in the road produced squeaks and groans. If I tried to jack up the truck, I could watch the body and frame separate because the rubber mounts through the radiator support were completely rotted out, as were the mounts by the tailgate. Because the radiator support was no longer properly attached to the frame, and the front of the fenders hang off of the radiator support, the front fenders no longer aligned with the rest of the body. In fact the driver's door caught on the back edge of the front fender, producing a wonderful crease in the door, and the most amazing oil-can PA-PING! every time the door opened.
The obvious solution was for me to replace the body mount cushions before re-aligning the fenders and doors. I purchased a set of polyurethane body mounts, and then waited about five years to work up the courage to actually perform the service. I had every expectation that the job of replacing body mounts would be a hateful procedure, filled with explorations into new ways of cursing 'n' swearing. In the meantime, the 'Camino sat in the back yard. It was too ugly, rusty, and creaky to take any pride in, and I probably didn't put 100 miles on the thing in those 5 years. We had an agreement, the El Camino and I: I ignored it, and it continued to rust. You see, **installing** the mounts is—usually—no big deal. The real problem is getting the **old** mounts out. There are three different things that can happen when you try to remove the old rubber mounting cushions:

- The old bolt unscrews from the nut and everything is happy. If ALL your bolts unscrew, go buy a lottery ticket! You're only gonna need **one**; today is your lucky day.
- The old bolt is seized in the nut; and your impact gun turns the bolt hard enough that the nut distorts its cage and just spins—or the cage tears its spot-welds. Either way, the cage no longer prevents the nut from turning. You may have to cut open the body to remove the cage, and hold the nut with a wrench while you continue to rattle the bolt from underneath with Mister Impact Wrench. Then, with the bolt removed, you clean up the nut and re-weld the cage to the body.
- The old bolt is seized in the nut; and the bolt shank is so corroded that the bolt breaks leaving a perfectly good cage still welded to the body. You may have to cut open the body to break the spot-welds on the cage, and then pull the nut-and-broken-bolt out from the top side. Then, with the bolt removed, you clean up the nut and re-weld the cage to the body.

On my 'Camino, there were ten body mount bolts. There are fourteen cushions, but four cushions were not secured with bolts—they're just sandwiched between body and frame. Five bolts came out, three spun the nuts, and two bolts (which started out with 7/16" shanks) were rusted down to about 1/4" diameter; the shanks twisted and broke.
As it turns out, if you remove the front inner fenders, you can access the two nuts at the firewall through existing openings in the body. (Four nuts on a convertible, I guess—two on each side because the convertibles have double cushions at the firewall.) Those nuts did not have cages on them which is why they just spun when I tried to unscrew those bolts. Apparently, GM expects you to pull the inner fenders for access, and so welded cages to trap the nuts in place aren’t provided. One inner fender came out quite nicely; the other had its own seized hardware and about half the bolt heads had to be blown off with an oxy-acetylene torch. I re-installed the inner fenders with new bolts and extruded nuts, and anti-seize.
The other three “problem children” required the body to be cut open to access the nuts 'n' cages. I cut the body with a die grinder and abrasive cutoff wheel. Clearly, you want eye, lung, and ear protection, it's loud; and the abrasive wheel dust and steel sparks are nasty. Never stand in-line with an abrasive wheel, they can and do explode (!!!) with little warning particularly in the hands of someone who doesn't have a lot of experience with cutting a straight line. Some cutoff tools come with a clear plastic shield. I won't say I like that kind—the plastic doesn't stay clear very long, and then you can't see what you're cutting. OSHA won't approve of non-shielded cutoff wheels, though. You'll want to be sure that you're cutting in the right place, directly over the cage nut and with enough room on each side of the nut for tool clearance. As far as I'm concerned, it's better to cut a bigger access hole intentionally than to have to cut—and re-cut—and re-cut because you didn't cut in the right place the first time.
Removing the cages is best done with a spot-weld cutter—but a ~1/2” drill bit will work. Figure out where the thing was spot-welded (two spots per cage, one on each flange) and drill the spot welds in the cage but avoid drilling the body. Then knock the cage free from the body with a hammer and chisel, or an air hammer 'n' chisel bit by trying to pry between the cage and the body. It can take some wire-brushing and close inspection to figure out where the spot welds are—depending on how much rust is covering the cage.
As it turned out, my 'Camino had been hit in the front end at some point prior to me buying the thing. I knew this, and I believed the damaged had been localized to the very front of the right side frame member—where the bumper brackets attach. In reality, the frame from about the firewall forward had been tweaked—and then improperly pulled back. The radiator support and bumper brackets were more-or-less in proper position. Unfortunately, the frame was still tweaked at the firewall body mount. This also explains why the original body mount in this position was ripped. The frame surface that the cushion sits on had a small mountain in it that pushed into the rubber and overstressed it. I bashed the offending peak with a hammer until it submitted. Since the frame was cracked right at the peak, each side of the “mountain” tapped down fairly flat. Then I welded the split in the frame, and shoved a new cushion back in. It took power tools, big pry-bars and a lot of harsh language to get the bolt through the hole in the body. Yes, I realize that the frame should be professionally pulled into position, and no, that's not going to happen anytime soon.
I knew that the radiator support brackets were rusted; I've been looking for a replacement radiator support for quite a while. Most of the ones I've seen are just as bad as the one I have; the battery acid leaks onto the rad support and corrodes the rad support and the inner fender. I can save the inner fender, and I've found a usable rad support, for future installation. For awhile, though, this is what I'm stuck with.

Now, let's be clear. Installing new body mounts is actually a pretty easy job most of the time. I lifted one side of the body off the frame an inch or two, using a floor jack and a 4-by-4 up against the pinch-weld to spread the stress, being careful to support the body so it won't drop and crush my fingers. I'd thought about what items are frame-mounted; and what items are body-mounted—and tried to keep in mind what's going to happen when the body is jacked up off the frame. Some potential issues:

- Assure the fan shroud (mounted to the body) isn't being lifted up into the engine fan
- Assure the metal brake tubes from brake master cylinder to frame; and the brake hose at the rear axle aren't being over-stressed.
- Assure that the steering column isn't over-stressed
- Verify that the various wires that are routed between body and chassis aren't being pulled.
- Assure the clutch and shift linkage from body to frame isn't overstressed.
- Verify distributor-to-firewall clearance.

Take out all the old cushions on the side that's lifted, chase the threads in the nuts with a used tap or re-threading tool. The instructions included with the new Poly mounts says to re-use the flat washers and the washers with the sleeves. All my old hardware was rusted to death; and I couldn't find a supplier for the stamped washer/sleeves. I fabricated new sleeves from steel tubing, (four @ 3/4” OD and six @ 1” OD—but your requirements may vary) and just used a new flat washer top and bottom. Use thin- or thick-wall tubing—your choice.
Stamped steel washer w/ sleeve

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Stamped steel washer w/ sleeve replaced by 1/8 thick flatwasher and steel tubing sleeve. My bushing set required some 1” OD and some 3/4” OD steel sleeves, 1.25” long.

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I took a guess at the required length, feel free to make yours shorter or longer.
Stuff the new cushions in place so the shoulders poke through the holes in the frame or the radiator support brackets, and set the body back down. I used a tapered punch or a tapered pry-bar through the center of the mounts to assure the mounts are in line with the nuts since the bolts I used didn't have the tapered section at the top like the original bolts. I applied anti-seize to the threads of the new bolts. (I almost never install bolts “dry”—threaded fasteners that aren’t anti-seized or lubed are chemically thread-locked, or coated with some kind of sealant depending on the application. That’s a philosophy I suggest you adopt.) Loosely install the new bolts through the new mounts along with the second part of the cushion. Then do the same thing on the other side. When all the bolts are through all the new cushions, measure the body-to-frame side-to-side and adjust as needed so the body is squarely in place and centered on the frame front and rear. Torque all the body mount bolts to ~30 ft-lbs. The actual GM torque specification allows up to 45 ft/lbs for my vehicle; but since the bolts are lubricated with anti-seize, I knock off ~20% from the torque spec. Check and adjust door and fender alignment as needed—I added washers between the frame and the cushion to lift the front of the fenders. Test drive the car, (some bumpy roads preferred) and re-check the torque on the bolts. They should still have at least 20 ft-lbs residual torque.

One unexpected positive result was that I discovered an un-used cage nut already in position in the body under each of the doors. Normally, an unsecured (no bolt through the middle) cushion goes in each place, but I managed to install a pair of two-piece “secured” mounts, torqued with washers and bolts through the “bonus” cage nuts.

Overall, this is a VERY worthwhile—but frustrating—project. I could tell the body/frame was more rigid before I even got the vehicle down off the jack stands. Getting fresh mounts and hardware in place and properly torqued made a H-U-G-E difference! That said, I've had to re-align the front fenders so the doors will open—even my passenger door was rubbing the back edge of the front fenders after the radiator support was properly secured to the frame instead of floating freely on rotted-out mounts.
Interestingly, the bushing kit I bought (Energy Suspension 3.4115G listed for Chevelle/Malibu '68—72) included everything the 3.4113G (El Camino '68—72) has, plus a few extra bushings AND it was priced less at Summit. Go figure! That's why I had extra "secured" bushings to install in place of two of the unsecured bushings specified.

Time to completion given ready access to air tools, welder, cutting torch, etc.: 
**Best case**—all the bolts unscrew readily; you can re-use at least some of your hardware, and you don't have to spend too much time re-aligning the fenders: my estimate—**Two hours.** Less if you're lucky. Don't gloat. Everyone hates a sore winner.

What I expect to be "typical" time—you're going to cut the body in a couple of places, and the fenders need minimal re-alignment: my estimate—**Eight to twelve hours.**

What I spent on MY vehicle, probably close to a worst-case scenario: **Eleven hours** to remove all bolts, cut and re-weld cage nuts, and cut and re-weld 3 body openings. All but one bolt re-installed. **Two additional hours** to remove and replace inner fenders (one needed the bolts torched out.) **Two additional hours** to rework frame at firewall cushion and install the last bolt. **Three additional hours** to align front fenders. **Two additional hours** driving all over creation looking for suitable hardware, and fabricating tubular spacers. These times are very approximate; I was too busy being angry to watch the clock closely.

**Parts List not including ordinary shop supplies:**

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<th>Item</th>
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<th>Quantity</th>
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