

Killer Body Mounts.

By Scott Mueller

I am ready to announce an incredibly inexpensive, unbelievably easy to install, and extremely effective handling modification for the '94-'96 Impala SS as well as all other B-cars from '77 through '96. I originally promised this modification quite some time ago, now I can finally deliver!

First, a little history. I have owned several B-cars over the years, including a '78 Buick Riviera 2-door (yes, the Riv was a B-car in '77-'78 with a 6.6L 403ci Olds engine, THM-400 trans AND 4-wheel disc brakes, which many thought were "new" for '94 in the 9C1 and Impala), an '88 Caprice 9C1, a '94 Impala SS, and a '95 Caprice 9C1. I have always been a huge fan of the GM B-cars, especially the heavy duty police package (9C1) models, because in particular they handle so well.

After purchasing a new Impala SS in early '94 I felt that something was amiss with the handling compared with the '88 Caprice 9C1 I also owned at the time. I began making improvements to the Impala, first installing the same 2nd gen. F-car front and Herb Adams rear swaybars and Bilstein 1104/0929 shocks I had also used on my '88 Caprice. Even with these improvements, the Caprice still felt better than the Impala! In particular it felt stiffer and much more settled on the suspension, where the Impala continued to have a weird "loose" feeling, especially in the front end.

I knew the '90 and earlier 9C1 models in particular had stiffer springs than the '91 and up B-cars including the Impala, so I proceeded to install on the Impala the same factory springs that I had on the '88 9C1. Now I thought the suspensions should be identically configured between them, and the handling should be identical as well. But alas, the Impala still felt "loose" and a bit unsettled as compared to the 9C1, so something else was missing...

This difference in feel was further compounded when I later purchased a '95 9C1. Even though I had yet to install the bigger swaybars and stiffer shocks on the '95, it also felt more settled and stable than my Impala, in a way that is somewhat hard to define.

I did some further investigation, and this led me to look under the vehicles (in particular the '94 Impala and '95 9C1) to compare them as closely as possible. There had to be a difference on the 9C1 models which added a subtle yet noticeable improvement to the feel of the car. Well, after no more than a quick glance looking up from underneath I could CLEARLY see the problem, and the solution! Read on...

Before I reveal the difference, I must share a little technical background. As most of you are aware, the B-car from '77 through '96 inclusive uses a separate body on frame construction (much like a truck), with the SAME basic frame design being used for all those years, even though the body changed substantially in '91. When the B-cars were assembled at the factory, the body and frame would be built up down separate assembly lines, and in the final stages of assembly, the completed body and frame finally would meet (called the "body drop"). At that point workers would lower the finished body on top of the frame, with a series of rubber biscuit-like upper body mount cushions sandwiched between the frame and the body for isolation. In a pit below, additional workers would install lower body cushions and bolts to cinch the frame down onto the body.

The end result was a kind of sandwich as shown in a side view:

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Body
-----| |-----
  ---| |---
    | | | Upper cushion
  ---| |---
-----| |----- Frame
  ---| |---
    | | | Lower cushion w/integral washer
  ===| |===
    |--| Bolt
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The body bolts go up through the lower cushion, the frame, the upper cushion, and thread into a hole in the body. When tightened down, this results in a firm mount, yet one which helps to isolate vibration between the frame and body. Note that the lower cushion is made of rubber about 2" in diameter and includes an integral washer molded into the bottom.

There are a total of 7 of these body mounts on each side of the frame, or 14 total for the vehicle. They are numbered from the front to the rear, with the first #1 mount being located right behind and inboard of the front wheels below the cowl. Mount #2 is about 6" outboard of the first mount, and mount #3 is a foot or so further down the frame, below the B-pillar area. Mount #4 is directly in front of the rear wheels, where the frame starts to curve inward. Mount #5 is at the top of the frame next to each rear wheel, and is unique in that there is no bolt running through it. The #5 upper cushion merely snaps into a hole in the frame, and the weight of the body holds it in place. Mount numbers 6 and 7 are along the rear part of the frame, with #7 at the far rear just in front of the bumper supports.

OK, I guess you've waited long enough. <g> The amazing discovery I made, and the essential difference between the standard B-cars (including the Impala) and the heavy duty Caprice 9C1 models, is that for all '94-'96 B-cars EXCEPT the 9C1 models, the factory LEFT OUT the lower body mount cushions for the FRONT THREE mounts on both sides of the vehicle!!! Instead of a lower body mount with integral washer, they use the large washer alone, which is left hanging about 3/4" to 1" below the frame, as the bolt bottoms out in the body with the head hanging about that distance below. This means that essentially the entire front half of the vehicle is NOT really ATTACHED to the frame, but merely RESTS on it instead. You can actually JACK UP on the body, and lift it AN INCH OFF the frame, before the washer will finally contact the frame and prevent any further separation!

This to me was astonishing, and at first I thought I was looking at a defect unique to my Impala (gee, a defect? on a Chevy? <g>). But this was no isolated assembly-line glitch, since every single Impala I have checked since is missing the same three front lower body mounts on each side. I could also clearly see that my 9C1, and EVERY 9C1 I have checked in fact HAS these mounts, which explained to me the critical difference in their handling. You can do all you want to improve springs, shocks, swaybars, and control arms, but these upgrades don't work as well as they should if the body is not firmly attached to the frame!!

Further investigation showed that this disturbing "defect" was actually intentional, amazing as that may sound. Technical Service Bulletin (TSB) number 43-20-01, titled "Information on Body Mount" and issued on 08/18/94 has the story. Here is the text of that bulletin:

SUBJECT: BODY MOUNT ASSEMBLY DESIGN CHANGE

MODELS: 1994 CHEVROLET CAPRICE WITH RPO'S FE1, FE2, FE3, FE4 OR F41

THIS BULLETIN IS BEING ISSUED TO CLARIFY AN INTERIM BODY MOUNT ASSEMBLY DESIGN CHANGE AFFECTING CERTAIN MOUNT LOCATIONS WITH RPO FE1, FE2, FE3, FE4 OR F41 SUSPENSION LEVELS AND ASSEMBLED AFTER VIN BREAKPOINT RR 138000.

THE DESIGN CHANGE TO THE BODY MOUNT ASSEMBLY ELIMINATES THE BODY BOLT LOWER CUSHION ASSEMBLY AND REPLACES IT WITH A FLAT METALLIC RETAINER/WASHER AT THE 1, 2 AND 3 MOUNT POSITIONS.

I noted that this bulletin DOES NOT include the SEO 7B3 suspension which is standard on the Caprice 9C1, hence they still received the proper 1, 2 and 3 mounts, even though ALL of the other B-cars (including the Impala) did NOT.

So, the first thing I did after finding this out was to order the "missing" mounts and install them on my Impala. The installation is very easy as you will see, and only takes a few minutes. Upon my first drive after installing the missing mounts I could instantly feel the difference. It was amazing, the car now felt much more solid and tight. My Impala FINALLY had the same tight feel as I had experienced in my Caprice 9C1s!

Now, being the type of person I am (who can leave nothing alone) I re-examined the newly installed mounts, and studied the rest of the mounts on the vehicle more closely as well. What I found is that the bolts bottom out in the threaded holes in the body, with the head of the bolt resting up to an inch below the frame. Since the standard lower body mounts are only 5/8" thick (compressed), several of the lower mounts were NOT touching the frame, meaning the body could lift up from 1/8" to 1/2" or so before the lower body cushion would make contact. Also when examining one of the standard factory lower cushions, I felt that they were constructed of a very low durometer (soft) rubber, and thought that something a little firmer would be in order.

So I set out to find if there were different lower body mounts available from other vehicle applications, which I might be able to use on the B-car to close these gaps and further tighten the body to the frame. After ordering a variety of different mount cushion part numbers (all I could find), and trial fitting them, I can now finally announce the ultimate upgrade for the lower body mounts! The great thing is that a complete set of upgraded mounts cost only \$62.58 and can be installed in minutes with the simplest of tools.

This upgrade applies even to the 9C1 cars, as well as the '93 and older B-cars which apparently had all of the lower body mounts factory installed. Of course it is MOST noticeable on the '94-'96 non-9C1 B-cars which are missing the front three mounts completely.

The applicable lower body mounts are as follows:

P/N	Description	Cost (ea.)
377801	Stock 5/8" thick soft rubber (Black)	\$7.16
457917	New 3/4" thick firm rubber (Dk Green)	\$4.24
457915	New 7/8" thick firm rubber (Pink)	\$5.41

Note that the thicker cushions are color coded with paint, which makes them easier to identify. For this upgrade you will want to remove and replace all of the missing cushions as well as the

existing soft 5/8" cushions with the thicker 7/8" (pink) versions, EXCEPT the number 7 mount, which I found works better with the 3/4" thick (dk green) cushion. Note that mount number 5 does not use a bolt, and thus requires no lower cushion at all. The upgrade would therefore consist of the following 12 new lower body mounts:

P/N	Usage	Net	Qty.	Amount
457915	Position 1, 2, 3, 4, and 6	\$5.41	10	\$54.10
457917	Position 7	\$4.24	2	\$8.48
Total:				\$62.58

These cushions can be purchased through any GM dealer.

You will want to install the 7/8" (pink) lower body mount cushions at locations 1, 2, 3, 4, and 6, replacing the flat washers or existing 5/8" soft cushions. Finally you will also want to install 3/4" thick (dk green) cushions at the number 7 locations. Again note that location 5 uses no lower mount whatsoever.

Here are the installation instructions:

- 1.) While this CAN be done without even jacking up the car, it will be easier (especially if you are doing this for the first time) if you raise the car and put it on jackstands.
- 2.) Using a 15mm socket and 6" extension on a standard 3/8" or 1/2" ratchet, remove the #1 (front) body mount bolts and large washers (or existing soft cushion w/integral washer) from both sides of the frame. They are accessed through a large 2-1/8" hole in the bottom of the frame.
- 3.) Slide the new cushions over the bolts, and insert each bolt and cushion up through the hole in the frame and into the threaded hole in the body. Tighten the bolts to 30 ft-lbs.

Note that the FSM calls for 52 ft-lbs, but I have found that the threaded holes in the body like to strip(!), and 30 ft-lbs. works extremely well with far less of a chance of stripping out the hole. If you do strip the threads in the hole, you will likely have to use an oversized bolt, as it is difficult to repair those threads.

- 4.) Repeat the procedure for the next location on both sides of the frame. Work your way down from mount #1 through #7, doing both sides each time. This will prevent any possible body movement or misalignment during the procedure. Remember that the pair of thinner 3/4" (dk green) cushions are to be used in the #7 position, all other positions work best with the thicker 7/8" (pink) cushions.

When you get to #7, that's it! The entire procedure should take less time that it takes to change your oil. Now take the car for a drive and see if you don't notice a huge difference. In my case it also cured a creaking I was getting in the A-pillars, where the loosely attached body was flexing around the windshield. Especially for older Impalas and Caprices, you should find that this procedure tightens up the body noticeably.

If you do this mod, please let me know (scottmueller@compuserve.com) what you think, before and after the change. Happy modding!