

Installation Manual for Super Pro Polyurethane Bushings on 240 Series Volvos

I installed a set of Super Pro bushings in my 1980 Volvo 244, using suspension components from mixed donor cars: some were from a 1977 242 DL, some were from a 1979 242 GT, and some were from a 1984 245 DL. Though these vehicles are very different, installation should be typical since none of them used parts specific to that model.

The tools I used were: 1/4" air die grinder with carbide burrs, 3/8" air drill with assorted hole saws and a "drywall saw", 1/4" wood rasp drill attachments, propane torch, Vice-Grips, a really big hammer, flat blade screwdriver, large drift, 5" angle grinder, cold chisel, and a bench vise. You may be able to complete the installation without some of these tools or with better ones of your own choice, but if you get all the necessary bushings pushed out by a shop it'll save you lots of mess and aggravation! Many Volvo dealerships will charge a minimal fee to press out these bushings.

It should be noted that this article was written after the very first set of bushings had been replaced and we used whatever method we felt was appropriate with the tools we had. Subsequently we have found most of these bushings can be removed much more easily with some heat from a propane torch. It's important to note that "burning" out the bushings is **not** what we recommend. **Melting** them out is the key. Heat up the shell just enough to break the bond between rubber and steel and push or pull the bushing out. You are then left with a shell to either remove or clean up. I've used the heat method numerous times now and many times in a closed garage. If it's done correctly, there should be no smoke, no fire and relatively little smell...

I'll break up the removal of all the rubber bushings into the individual pairs below.

Front control arm, front bushings:

This is one of the worst bushings to remove because the amount of rubber in between the inner and outer races is so thin, I couldn't get a hole saw in there. I ended up heating this bushing with the propane torch until it started to get very soft, at which point the inner race began to ooze out of position and I grabbed it with the Vice-Grips and twisted it out. You need to get the outer race out of the control arm to install the poly bushing, so I cut a deep groove into the race with a carbide burr on my die-grinder, so that at the deepest part of the groove I almost cut through the bushing shell. Then I bashed out the outer race with the drift and big hammer. This procedure was used in all but two pairs of bushings.

Front control arm, rear bushings:

This bushing requires that you leave the outer race in place, so all I did was cut the rubber bushing with the hole saw and hammered out the inner race. That left what remained of the bushing still bonded to the outer race. I then used the hole saw to help shave off most of the rest of the bushing and a wood rasp to clean off the rest of the bushing. Remember

not to remove the outer race!!! Alternatively, one can use a propane torch and heat up the bushing shell until it starts to sizzle. Grasp the inner sleeve with some vice grips. When the heat is evenly distributed and the bond between the rubber and steel shell has been melted, twist and pull on the vice grips. The bushing should pop out, leaving only a small amount of residual rubber to clean up.

Rear lower trailing arm, front bushings:

This bushing is pretty straightforward – cut the inner race out with the hole saw, big enough that you get as much of the bushing with the inner race as possible. Because the inner race is so long, you may have to cut it flush with the control arm to be able to get the hole saw as deep as possible. You may need some heat too, because this bushing is so long you may not be able to get all the way through it, even going from both sides. Once you get the inner race and rubber bushing out, you've got to remove the outer race using the method described in the front control arm, front bushing.

Panhard Rod, body side bushing:

This bushing is very straightforward – very similar to that of the rear lower control arm, front bushing, except that it's so narrow you may be able to get all the way through it from one side with the hole saw. Removal of the outer race is necessary.

Panhard Rod, axle side bushing:

This one is a little tricky, because like the front control arm, front bushings, the rubber membrane is so thin you can't get at it with a hole saw. Heat it with the torch and bash the inner race out, then cut out the outer race as you did with the body side bushing.

Torque Rods, front and rear bushings:

I used the 1984 torque rods for this application, but only because I had them handy. I'm not sure exactly how difficult it is to remove the "butterfly" bushings on the earlier torque rods, but at least there's no outer race to worry about! Removal of these bushings is similar to that of the panhard rod, and you need to remove the outer race too.

Axle bushings or Rear Trailing Arm Bushings (TAB's):

First, go have a beer to calm down. It's much easier with the axle out on your workbench, but I did it with the axle in the car. It'd also be easier if you removed the axle shafts, brake backing plates, and brake caliper mounts, which I also didn't do. The alternative is to work from underneath the car, inboard of the bushings, but on 1977 and older 240s, the exhaust goes under the axle, which makes life difficult when working on the passenger side.

One other thing I should mention right now is that your outer races better be in good condition – the poly bushings NEED these for support, so if your axle bushings are all rusty and gross, stop right now and get ‘em replaced.

I used the air drill (which is powerful enough and fast enough for this operation) and the drywall saw (like you get in one of those magic Craftsman drill bit kits: a ¼” drill bit with a rasp along the side instead of flutes), and drilled/twisted a bunch of holes through the bushings. With enough molestation, the bushing became weak enough that I could grab onto the inner race with the Vice-Grips and twist it out. Now I used the hole saw to shave the bushing from the outer shell and used the rasp to finish the job. On my bushings, the outboard side of the outer shell was tapered in from the factory (bullet-shaped for easier installation into the axle), and I had to bash that taper out to install the poly bushing (see illustration #4). Again, subsequent experience has shown that heat will make the removal of these bushings a relatively simple process.

Body Preparation:

About the only thing you need to do to the body of the car to install these bushings is to remove the guide plate welded to the body of the car, where the rear lower control arm, front bushing mounts to. This guide plate is shaped like an inverted Vee, and it accepts and locates the original inner race (see illustration #1). Since the poly bushing goes cheek-to-cheek with the body mounts, that guide plate must be removed. On one side I used the angle grinder to cut through the two plug welds that holds this onto the body, and on the other side I used the die grinder and carbide burr to cut through the welds. Which worked better? The die grinder, but it left big sharp shards of metal that bothered me for the rest of the job. Then I used the cold chisel and big hammer to knock it from the body. Use the angle grinder to smooth off the welds or gouges after you’re done.

Installation of bushings into the control arms:

As per the suggestion on the Super Pro packaging, I made some bushing soup while making my morning coffee on the day I was to install the suspension. Boiling the bushings in hot water helps to soften them up to make them easier to install. Using a little of the grease (supplied with the bushings in the Super Pro kit) helped too.

The front control arm, front bushings are easy – these are installed in two pieces, so apply a little grease and they’re in. Install the inner sleeve with lots of grease and set the control arms aside. The rear bushings are almost as easy – they’re so big and the rear lip is so small, they twist in with hand pressure pretty easily. I found that if I tried to put them in cock-eyed and twisted them in (after greasing the lip a little bit) was easiest. You might need some gentle persuasion with a hammer to finish the installation. Grease and install the inner sleeve, and install the rear bushing onto the front control arm. The beveled washer goes to the rear of the rear bushing, beveled out so there’s a gap at the perimeter of the washer between the washer and the bushing (see illustration #2). Go ahead and torque them up on the bench – one of the beauties of poly bushings is that the inner sleeve slides on the bushing so you have no worries of binding the bushing and

don't need to wait until the car's at ride height to torque the bushings down. Bolt the front bushing into the car first, and then bolt the rear bushing bucket to the car.

The rear lower control arm, front bushings are the toughest to install because they're so long and the shoulder is so wide. I swore at them and it didn't help much... The way I got it done was to grease the bushing lip on one side (add a little grease to the area that's gonna be surrounded by the control arm, too) and center the bushing (greased lip) in the control arm sleeve. Clamp these both in the bench vise, so the vice is trying to squish the bushing and the control arm together (see illustration #3). The jaws on my bench vise were too narrow and I found the bushing would compress and twist out of the jaws, so I used a piece of 3" angle iron set over the bushing-side jaw, which helped immensely. Put enough pressure on the bushing that it starts to deform a little, and gently pry the bushing lip into the control arm hole, working from opposite sides of the bushing. Eventually you'll get enough of the bushing lip pushed into the hole that you can crank on the vise and the bushing will slide in the hole without crushing. You'll have to hammer the bushing through the end of the control arm and if you've greased it a little bit the bushing will just slide into place. Alternatively, you can use a really large socket or a piece of pipe as a spacer to push against the control arm and use the bench vise to squish the bushing into place. Again, grease and install the inner sleeves.

The panhard rod bushings and torque rod bushings are installed in much the same manner as the rear lower control arm, front bushings, but are much easier to do. Grease the lip, hold in the vise, pry the lip into the hole, squeeze the bushing in, and hammer it through. Install the inner sleeve.

The axle bushings gave me a bit of trouble. Because of the taper pressed into the outer shell of the old bushing, and the physical size of the new bushing, I needed a long bolt and some washers to install the poly bushings, by making a bolt-based bushing press (see illustration #4). Bolt through washer, bolt/washer through both bushings, washer and nut on bolt, apply torque, bushings squeeze into place. You may need the same assembly to install the inner sleeve – I did!

Grease the cheeks of all the bushings, and install in place using an anti-seize compound on the bolts/nuts. Go ahead and torque in place with the suspension at full droop – the inner sleeves slide around in the suspension so there's no binding.

Driving impressions:

All I can say is that the bushings performed miles better than I ever hoped they would. The ride is a little bit firmer, but there is no heavy jarring or extra harshness that I assumed would accompany the firmer bushings. That's probably because my old bushings were 23 years old and petrified, but you may experience the same thing I did if your car has the original stuff. I still get some pull over uneven roads from my 205/55x15 tires, but what I notice is that the car didn't want to change directions anymore!!! If I hold the wheel straight, the car goes straight! Before, I had to turn the wheel into the crown of the road or the rut, but now though it still pulls the wheel in my

hands, it goes where I point it. The biggest thing I was worried about was the driveshaft vibration I expected to get, but again I was surprised: most of it went away and when I fix the middle U-joint I expect more of it to disappear. If the rest of this car were stock, I think it would ride very close to it did when brand new, but the steering is much more positive than any Volvo I've driven!

I've only had these bushings in my car for a few weeks, but I will keep an ear out for squeaks, meaning I've got to pull the suspension apart and re-grease the bushings. I may install grease zerk fittings at that time, to make the greasing procedure pain-free. If fixing the driveshaft's U-joints doesn't fix the vibrations, I'll look at building some adjustable torque rods so that I can play with the pinion angle: the rubber bushings deflected so much that the factory built the car with the rear axle pointed pinion-down, so that when power was applied and the axle rotated, the output of the transmission and the input of the rear axle pinion were parallel. If you have the patience and a welder, you might perform these operations right away – I wanted to see how the bushings would perform stock, and I'm very satisfied.

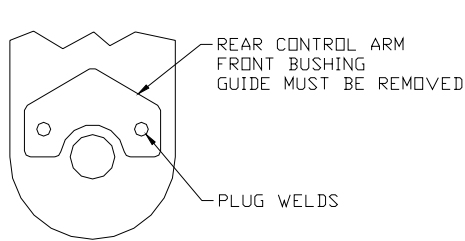


ILLUSTRATION #1

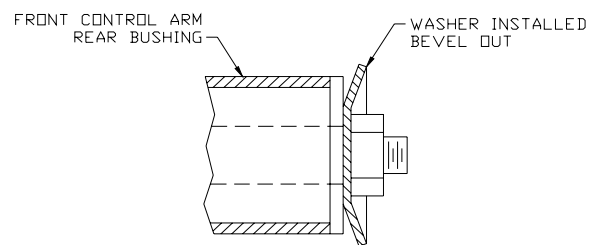


ILLUSTRATION #2

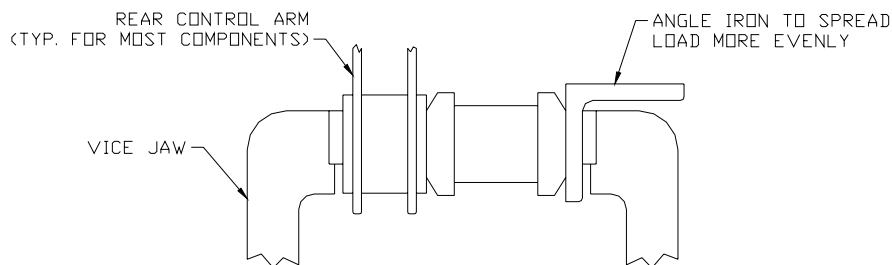


ILLUSTRATION #3

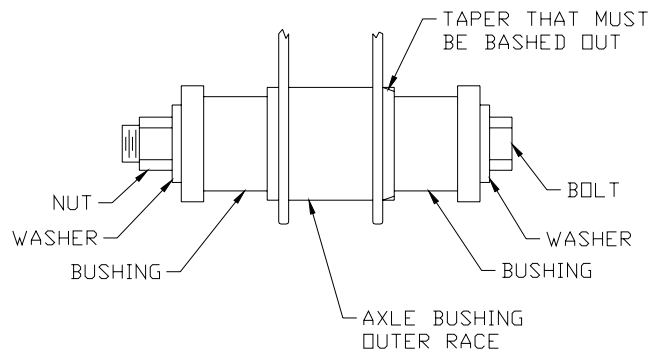


ILLUSTRATION #4