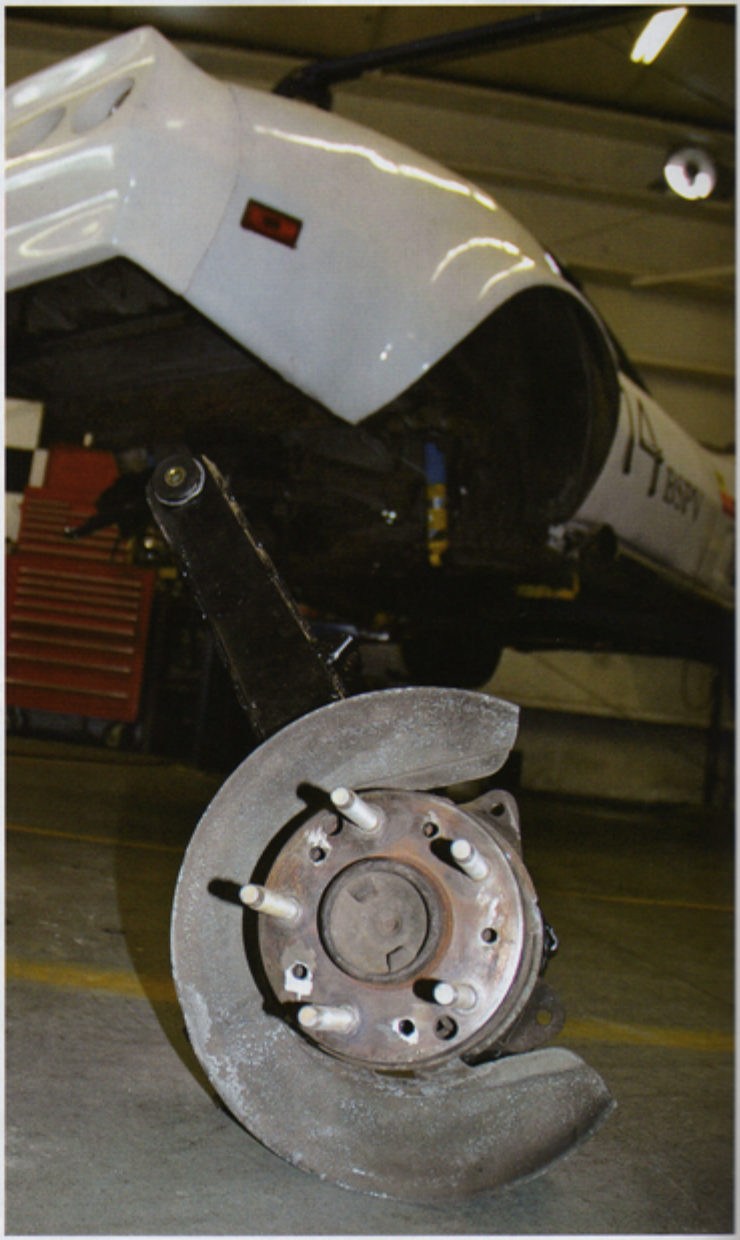
Pressed for SUCCESS

The concept was clever and inexpensive—blend the wheel carrier and suspension arm into a single unit—but the reality left C2s and C3s with a (literal) weak link. Jeff Glenn shows what it takes to redo these cars' rear trailing arms. Photographs by the author.



Ever notice how many C2/C3 trailing-arm rebuilders are out there? There's a reason. This piece not only carries the rear-wheel assembly, it also locates it in three dimensions. That makes it one of the most highly stressed parts of the car, and among the most safety-critical. End result? They wear out quickly, and the handling becomes terrible.

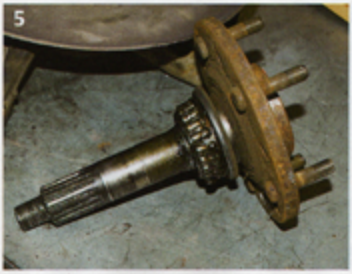
Brand-new trailing-arm assemblies run about $700 and $1200 per side. Rebuilts are cheaper, maybe $350 each with good cores, but that's still over a grand for both sides plus professional labor. So what about doing the rebuilds yourself? Is it worth it? Even possible? That's what I'm here to find out.

"Here" is Corvette Express in Vacaville, California. Owner Joe Mosby has been in the Corvette biz for years, and one of his shop's specialties is trailing-arm rebuilds. They do it for private customers and, more importantly, in volume for various catalog vendors. If anybody knows the ins and outs of the rebuild process, this is the guy.

So what are we really talking about here? The arms themselves rarely fail; it's the bearing in the rear and/or the bushing at the front that go bad, leading to groans, creaks, whines, buzzing, sloppy handling, directional instability...even potential rear-wheel seizure and big-time driveline damage. If your C2 or C3 starts hunting and wandering, the nose bushings of the trailing arms are one likely cause.

The arms we'll being doing here came off a 1974 autocrosser that sees occasional street use. A recent switch to big rear slicks seems to have overtaxed the already aging hardware, so technician Jason Cotter is preparing to do a full rebuild. (He'll also fit bigger wheel studs and re-route the e-brake cable to clear the new oversized wheels, but that's not our worry.)

A: First, take stock of the trailing arms. Most likely the rubber nose bushings will be disintegrating, with little chunks of rubber trying to escape *(photo 1)*. If the nose bushings are in really great shape it's possible—albeit just barely—to leave the control arms in place on the car, press out the spindles, and redo the rear bearings *in situ*. It's usually not worth the



sk, however—it's easier and safer to just do ll this stuff on the bench.

3: Getting the trailing arm out of the car is retty straightforward. Put your Corvette in he air, undo the e-brake cable, and take the aliper off the upright, hanging it up out of the ay *(photo 2)*. If the rotors haven't been off he car before, they'll be riveted and bolted in lace—you'll need to drill out the former and ndo the latter to get those off next. (Techni- ally, you can also leave the caliper and rotor lone and undo them later on the bench. Your hoice.) Take the spring off exactly as directed y a Chevy shop manual; you can really bust ourself up if you do it wrong. Next, pull off he halfshaft, shock, and strut rod.

Now note the position of the nose-bolt hims at the front of the arm—you'll need to ut these back in the same orientation later to et the alignment as close as possible. Re-align- ient is usually needed anyway, but at least ou'll be in the ballpark.

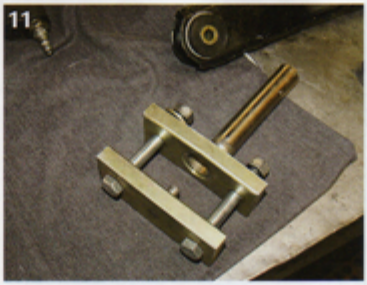
If the nose bolt is rusted into place—okay, *since* the nose bolt is rusted in place—carefully cut it off on both sides of the frame.

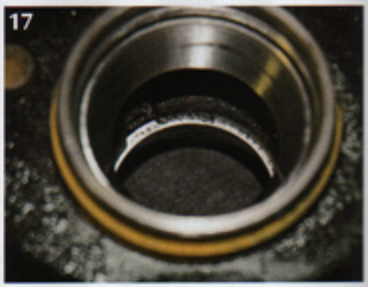
C: With the arm out of the car, take the cotter pin out of the castellated nut at the end of the spindle *(photo 3)*. Corvette Express has a special jig that holds the spindle so that the nut can be loosened, but you can just slip a rotor back onto the lugs and temporarily hold things in place with a screwdriver. Unwind the nut by hand (using impact tools here can damage the threads), freeing the flange and the dust deflector.

D: Next, take the spindle out of the trailing arm. There's a special $200 press tool for this job *(photo 4)*, and you're basically sunk without it. If you don't want to fork that much over, see if anyone in your local Corvette club has one they can offer. (Corvette Express has fashioned its own tool, since Mosby doesn't like how the standard tool applies leverage to the possibly fragile caliper ears.) Take the spindle out and put it on the bench *(photo 5)*.

E: With the spindle out of the way, the backplate that locates the e-brake hardware, caliper bracket, and spindle support can be taken off by undoing the four nuts just inside the e-brake shoes and the top-mounted bolt with the locktab *(photo 6)*. Undo the four nuts first, sliding the shoes around as needed to make way for your socket. Next, use a punch to flatten the tabs on the fifth bolt, then back it out and put it away someplace safe. Take off the backing plate *(photo 7)*, then gently tap the caliper bracket and spindle-support bearing carrier off the arm *(photo 8)*. You may need to pry with a chisel to separate the two cast pieces *(photo 9)*.

If the arm is going to be sandblasted and painted, tap the four studs out next. If you're just going to clean everything and refit new hardware, dig out the narsty old grease and then run a die down the threads to clean them





up. Completely rebuilt and refinished arms should of course get new studs.

F: With the back of the arm bare, let's move on to the nose bushing. They're a pain to remove under the best of circumstances, but if the bolt is rusted in there you've got an additional annoying step—grinding the bolt down on both sides until you're able to punch it out.

At the factory, the stock-style rubber bushing was pressed into place and then had its center tube flared. Drill out the center tube (with an 11/16" bit) and then undo the retaining washer. If you've led a good, clean life, the rubber will pop out with the sleeve *(photo 10)*; if you're like the rest of us sinners, it's time to get out the sledgehammer and chisel or air hammer. Alternatively, if you plan on going over to urethane bushings and are thus worried about scarring the bushing sleeves, you can burn out the old rubber with a torch. (It's smelly and toxic, but all kinds of fun.)

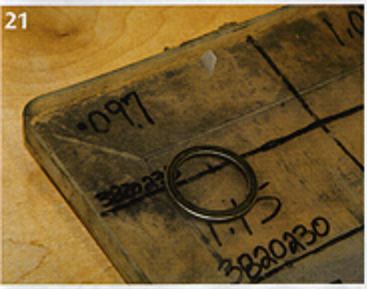
The bare arm can now be sandblasted or cleaned with solvent. After cleaning, check it closely for cracking, split seams, ovaled holes, and other damage.

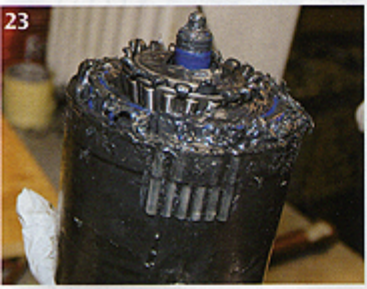
G: Once the arm has been okayed and repainted, the nose bushing is the first thing back in. Most urethane bushings require you to press the new plastic down over the original metal sleeves; pre-sleeved units are also available if the old bits got mangled. If you're doing it yourself, grease the new poly with the provided lube and push. To make sure the shaft lines up with the bushing, press in from both sides or apply force onto a flat surface.

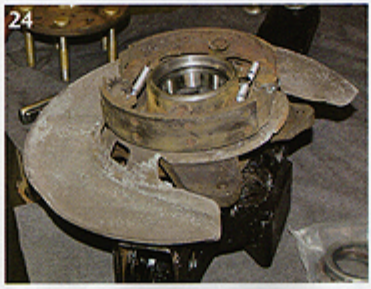
Urethane bushings are best used for racing applications or very aggressive street driving, where stiffness and noise aren't a concern. For most other uses, rubber is quieter and gives a noticeably better ride. If you're staying with OE-type rubber units, finishing the installation requires a $50 staking tool *(photo 11)* to compact the rubber into the arm while simultaneously flaring the center tube.

H: Now let's go back to the spindle for a minute. If you're re-using the old unit, it'll take yet another special puller (this one about $160) to yank off the old inner bearing. If the old spindle is bent, ovaled, or deeply scored, it's better to just toss it out for a new one.

I: Back on the trailing arm, you're ready to reinstall or replace the four carrier bolts. Using a punch and a hammer *(photo 12)*, firmly drive the bolts in until the "clank" with each stroke changes pitch. That's how you know that they've truly bottomed.







J: After cleaning and inspecting the old spindle-support bearing carrier, mount the unit in a vice and gently tap out the races from behind using the small notches provided *(photo 13)*. Alternate sides, tapping gently to ease the race out without it becoming cockeyed.

The new races *(photo 14)* are two different sizes, and each must be pressed into its appropriate carrier *(photo 15)*. If one race drops in too easily, that means you're putting it into the wrong carrier. Drive the new races in using a press tool *(photo 16)*, then feel around at the rear notches to make sure that they're fully seated *(photo 17)*. Once they're good, mount the spindle-support bearing carrier and the caliper bracket back on the trailing arm *(photo 18)*.

K: Usually, new e-brake shoes and a new or repainted backing plate would be fit next, but our autocross '74 only needed new stainless-steel springs. When replacing the springs, make sure they hook flush with the shoes, or they can pop off.

The cleaned backing plate and e-brake assembly attaches over the caliper bracket and secures all three assemblies *(photo 19)*. Start the four nuts with new lock washers and leave them loose. After that, put on a new locktab and run the large top bolt down finger-tight. A quick shot to 80 lbs-ft with an impact gun or a torque wrench comes next, followed by bending the locktabs down over the bolt with a hammer and punch *(photo 20)*. Finish tightening the assembly by driving the four remaining nuts to 35 lbs-ft.

L: Now comes the really fiddly bit: Setting up the bearing tolerances before they get pressed into the arm. Play in the rear spindle is controlled by shimming a collar between the bearings *(photo 21)*. The distance is typically measured by a bench-mounted dial indicator, but again Corvette Express has created their own tool. Either way, the spec is about 0.006 inch.

Before greasing the bearings, mock up the spindle bearing and spacer and determine the proper shim thickness by trial and error *(photo 22)*, making sure to re-torque each time before measurement. Once the right runout is set, pull the bearings one more time and final-pack them with grease *(photo 23)*.

M: Next, with the halfshaft side of the arm facing the bench *(photo 24)*, grease the center of the carrier and drop the greased outer bearing into its race. Tap the dust cover *(photo 25)* in place with a bit of similarly sized pipe or flat stock *(photo 26)*, then set the spindle into the trailing arm with the wheel studs pointing

up. Gently flip the arm over and then drop the collar spacer and shim over the spindle. The greased inner bearing should follow, meeting up with the inner race.

Carefully support the spindle from below, then take the whole assembly to a large press. At Corvette Express, the press is pre-fit with a jig that holds the spindle by its studs. In a regular shop, you'll need to fab something up on the fly to hold the spindle without damaging the stud threads.

N: As the bearings are pressed onto the spindle, the whole assembly will drop toward the wheel studs. Eventually, you'll feel it bottoming out through the arm of the press as you pump *(photo 27)*. When removing the arm from the press, support the spindle to keep it from dropping out the bottom.

Now put the arm back on a bench with the inner bearing facing up. Take the remaining dust cover and begin tapping it down with your pipe section or flat stock. Once it starts to find its seat, you can drive it the rest of the way home with a hammer. To finish, relocate the outer deflector *(photo 28)* and then refit the flange that holds on the driveshaft U-joint yoke *(photo 29)*. The single castellated nut goes on last *(photo 30)*; torque it by hand to 100 lbs-ft *(photo 31)* and fit a new cotter pin.

O: The rebuilt arm *(photo 32)* can now be returned to the car *(photo 33)* and reunited with the rotors and the rest of the rear suspension. When it comes to mounting the nose bolts through the frame *(photo 34)*, stock-style bushings are a little easier to deal with since the same shims are re-used with the captive-washer setup. With urethane bushings, dab the washers with grease to keep them in place while you try running the bolt in. Once everything's all lined up, recheck the shims to make sure that nothing accidentally got knocked out of line or went in at a funny angle. With that taken care of, have the rear wheels professionally aligned and you should be all set.

So that's it—a pretty elaborate process, and one that requires a lot of specialized tools and presses and similar butt-chapping extras. Even a specialist with all the right hardware at his fingertips will spend a couple of hours per side on this job, not including removal and reinstallation of the arms themselves. In short, while you *could* do this whole thing yourself, unless you've got several cars that all need to get rebuilt trailing arms, it's probably not worth the buy-in. With an investment of at least $300 for new tools, a few hundred more for the raw bearings and bushings, and lots of visits to your local machine shop required, just ordering rebuilt arms from a catalog starts to look mighty appealing.

But hey—it's your butt that'll get chapped, not mine. At least you can *technically* do this job yourself. ○