1958-64 Impala StrongArm Front Suspension

ShockWaves and StrongArms turn a rolling disaster into a nimble cruiser

by Doc Frohmader

While I was at Air Ride Technologies to do a couple of installation stories, they rolled a 1962 Chevy Impala onto the lot. Actually a very nice unrestored car with one of the most solid bodies I've seen in a long time on one of these cars, it was the kind of raw material someone like me wants to get his hands on. What was interesting beyond the norm was that I saw the untouched original and was able to see first-hand what I remember from my wasted youth. The wallowing, nose-diving, and understeering had changed imperceptibly from the happy days when these cars were fresh and new and brought tears of reminiscence to my old eyes. Ahhh, the bad old days of bad suspension!

To give you some kind of idea just how this worked, I put my life in the hands of Greg Schneider at ART and we went out to a couple of locations to snap a few shots. In a parking lot he made a few loops around at maybe 15 mph and this saw the car dive down on the outside wheel so hard that the tire was running almost to the whitewall. The inside tire was nearly off the ground.

Even at 30 mph, the original suspension was as GM built it – soft and soggy with a tendency to wallow and dive and understeer. Today most of us just won't accept what was state of the art back then and what is just not safe today. We can do LOTS better.

Do yourself a favor and spend some time cleaning up. Some scraping and power washing will do wonders, not only for appearance but to make the work go smoother. Why fight grease and slime and why get all that cool new stuff covered in gunk?

The original suspension. It's a relatively modern IFS with full-width upper and lower arms, coil springs, tube shocks and even a sway bar. The basics are there but to get any serious performance out of it you need to apply some current technology and the ART kit is just the ticket.

Start disassembly by removing the upper shock mount nuts to release the shock bayonet. Sometimes this goes easy, but it they are really rusted together you might have to cut the bayonet. If so, be careful not to damage anything else.

The lower shock mount is a standard GM arrangement and comes apart by removing the two bolts. I'd suggest that if you can you should wet all the old threads with some penetrating oil a couple times before starting the job and then just before. If you snap off a bolt it takes time to fix, so this is a cheap way to buy insurance.

Going through a corner, Greg was brave enough to hit nearly 30 mph (where I had the same day driven a Nova through at 55 without a problem) and we saw the same near collapse of the outside and near lift-off of the inner tire. Neither of us had the frijoles to push the car harder for fear it would end up in the ditch or rolled. I didn't ride bad, though, if you like a mushy and wallowing cruise.

I tell you about this because (as you might have guessed) we were shortly to install a new Air Ride Technologies air suspension system, along with some brakes and wheels/tires that would support what was almost certainly a much improved suspension. That, of course, was mere speculation (based on previous experience) at the time but we were sure enough of the eventual outcome we thought we'd do a test run and record results before so we could accurately report the changes later. Being somewhat crazed old guys with at least a vestigial death wish, we thought this was all good fun and a means to create a fairly good adrenaline buzz. We were right.

Pull the original sway bar mounts off at either end. Here's another place where you could easily snap off hardware, so the penetrating oil is a good idea. You can leave the bar in place and reuse it, but it may be a good time to replace the links.

The truth is that while the car had pretty much state of the art suspension for 1962 American iron, it leaves a lot to be desired compared to even the most lowly squashed jellybean econo-box of today. A lot of engineering development has seen light since this car was built and it is obvious to a ludicrous degree that much can be done to make the handling and ride better than it was.

In this case, this car was to first get a set of StrongArm tubular steel A-arms backed up with a set of ShockWave combination air spring and billet race-style adjustable shocks. From long experience the ART people have learned that cars of this generation will also need a good sway bar and a set of brakes, along with modern tires and rims to accommodate the enhanced handling and make it fully functional at a high performance level. Can you imagine 5-inch rims and a set of narrow bias-ply tires trying to keep up with any modern suspension?

I guess this points out something that we all inherently sense: That any suspension is only as good as the weakest link. If, for example, you have the right springs but wrong shocks handling will never handle at its best. If you set up the suspension to handle some serious G's and haven't the tire to grab the street, you just push through the corner.

Often you can back off the tie rod nuts to clean threads, then give the steering arm a sway and the joint will pop apart. If not, you'll need to use a pickle fork. This is also a good time to take the brake lines off so the brake and spindle assembly can be removed later.

Support the lower A-arm with a jack, back off the ball joint nuts to clean the threads, the with the nuts backed off just a bit and the jack dropped, give the spindle a good whack with a hammer and it should pop loose. The bottom joint gets the same treatment but since there's no spring pressure to pop it, you may need the pickle fork.

Support the suspension with a jack and remove the upper ball joint nut, then SLOWLY drop the jack to release spring pressure. For safety, wrap a length of chain around the spring and lower arm so the spring can't pop out as you do this.

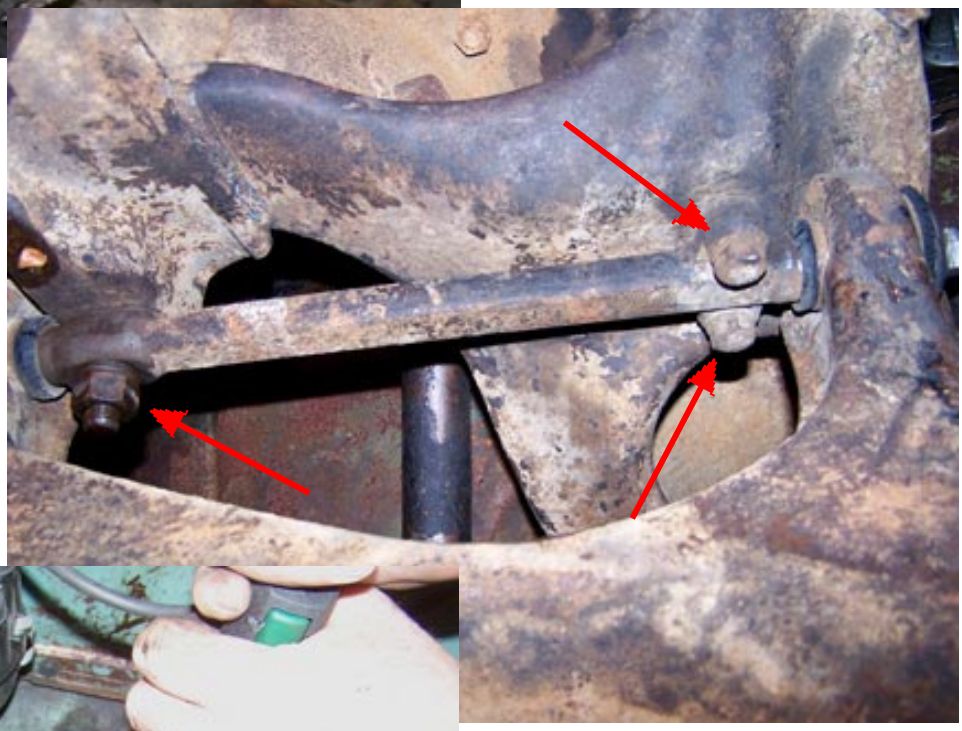
In this case the original drum brakes simply are not up to even the original suspension under today's driving conditions and so there's no real point in doing the suspension work without beefing up the braking. I know this is obvious to some degree, but it never hurts to remind you that the ultimate resto-mod thumper you are dreaming of does not rely solely on one component. You can put a hell of a big engine under the hood and go nowhere if that's all you have (this from experience)!

On this car the guys actually started by doing some cleanup and inspection. Pressure washing the grease and grime off helps to see where potential problems are - in addition to making the work a lot less nasty. Here, to get the rebuilding process started and make good photos, they ran a wire brush over the area and shot the remains with some chassis black.

When you disassemble, you'll find that it is possible to remove the coils without a spring compressor. However, even when the A-arm is dropped all the way down, there's just enough pressure left so if you get your face in the way you could get hurt. I recommend that you wrap a chain around the lower arm and spring so it can't fly and when you get to where the arm is all the way down you can use a pry bar to pop the spring out without it taking off as well.

If you have the car set high enough on the stands, the lower arm will drop down far enough to hang. At that point the spring should be loose and you can reach in an lift it out of the way.

Remove the three retaining bolts from the lower A-arm cross shaft and you can get the old A-arm and the rest out of the way.



The upper A-arm is removed but backing off the two nuts on the cross shaft on either side. Preserve the alignment shims so you can replace them for temporary re-alignment later.

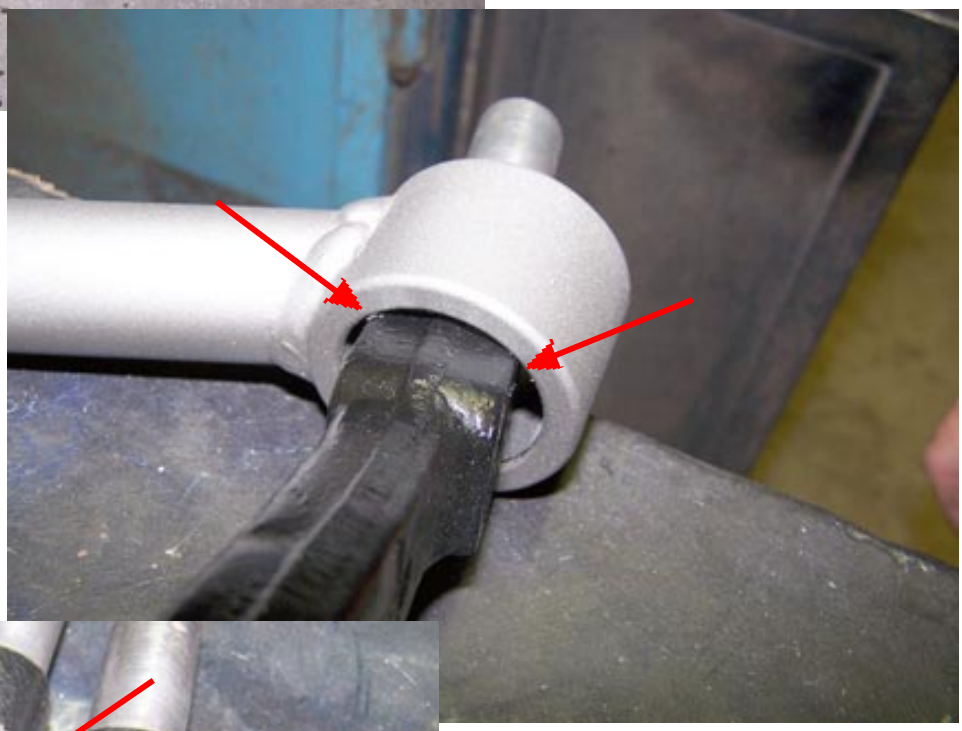
It's a good idea to so some cleaning and painting once the car is apart. It's the best time because things are out of the way as much as possible. A wire brush, scraper, and some elbow work, followed by a little chassis black paint really improve the look and protect the chassis.

A comparison of the original lower arm and the new StrongArm. Can we say that there's a BIG difference? These new arms are made for either ShockWave air suspension and require no additional hardware.

This is the kit for one side, plus the original spindle, steering arm, and upper A-arm cross shaft cleaned and ready to reinstall. If you don't have good upper cross shafts, you can get new ones for an up-charge from ART.

Getting the shafts out of the A-arms is best done with an air chisel like this. You'll want to be careful not to damage the shaft but the bushing is pretty much toast by the time you get it out.

The cross shafts have to be slid inside the A-arm bushing bosses but in stock form this can't be done. As you can see, the squared edges of the shaft prevent this.



On ONE end of the shaft, you chamfer the corners of the shaft end. Here you see the original and a modified shaft. It doesn't harm strength or function, just makes the shaft fit through the arm.

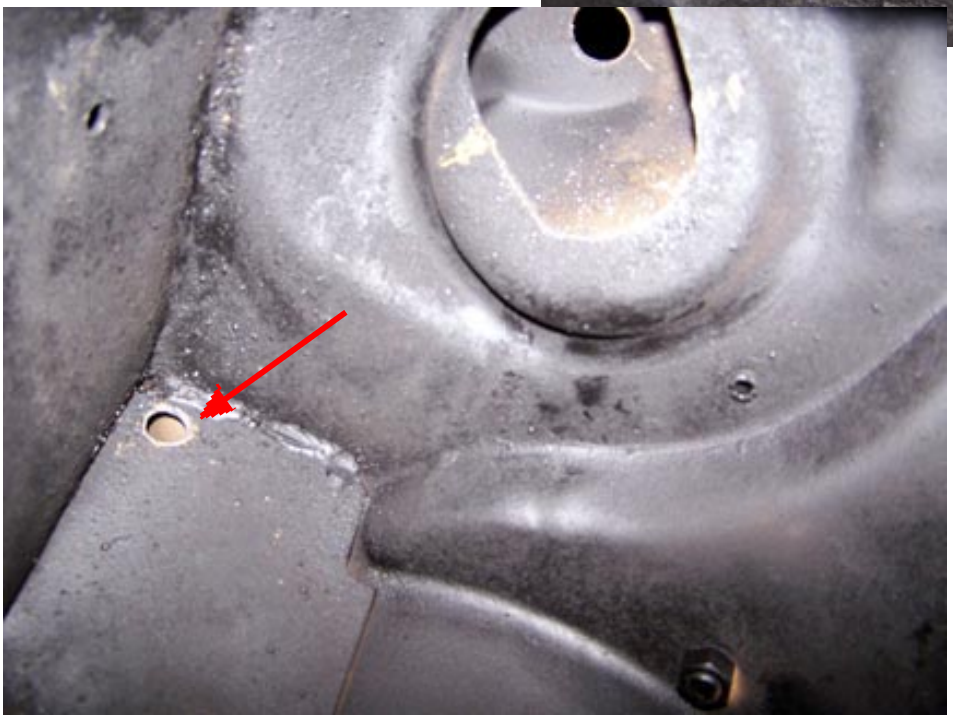
The bushings are installed after the shaft is inserted in the A-arm. Press them in, don't beat them.

The shafts are held in just as in the stock setup by the large flat washers and bolts. Assemble it all now, but don't actually tighten it up until the woe job is done and the car is sitting at ride height.

The upper ball joints assemble like this. Yes, there is a right and wrong way – the dust seal slides on from the bottom.

The upper shock mount holes are enlarged to 5/8 accommodate the ShockWave mounts. This now carries more load, so the mount is larger.

On the underside of the spring tower the opening you see her must be enlarged for ShockWave clearance. The area marked in chalk is what needs to be removed. Check your clearances!



In addition to seeing the enlarge opening, here you see where a hole was drilled up in the top corner for the air line. It will get a rubber grommet for protection later.

The upper mount parts and air fitting are installed like this. The new swivel mount on the ShockWave eliminates the need for bushings. Before installing, add the air line as it can't be reached after the ShockWave is installed.

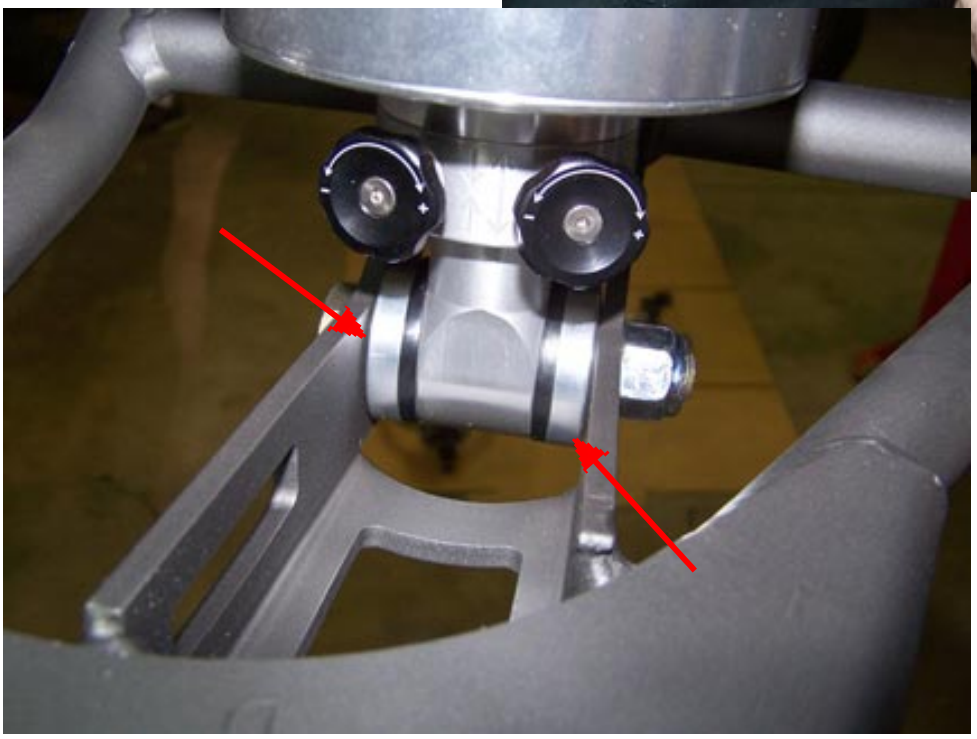
The ShockWave is tightened up at the top end after orienting the adjuster knobs where they are convenient. For the moment, the unit just hangs in the spring tower.

Along the same lines is breaking the ball joints loose without getting into trouble. The best way is to pull all the cotter pins and back the nuts off far enough so all the threads are cleaned up first. Otherwise you can find that instead of the nut spinning off you just turn the ball inside the housing of the joint. Then, spin them back on until you get about 1/8 or less gap between the nut and the spindle, so there is just a little room for the joint to break and move. Then give the connection a good swat with a large hammer and it should pop apart. Only after the joints are popped loose and you have the A-arm and spring supported by the jack will you remove the upper nut and slowly back the jack down to release the spring pressure.

I'll assume that you are smart enough and careful enough to make sure the car is on solid jack stands and you have a floor jack that is big enough and strong enough to work with. Like the spring removal, you can take your time and do it right or you can rush through, get sloppy, and get yourself hurt.

The new StrongArm lower A-arm uses the same mounting arrangement as stock, but ART includes these billet retainer caps. The new lower cross shafts don't have the cast-on ears.

The original threaded block is reused, so make sure the threads are clean and in good shape. You get this part by reaching into the spring pocket above the bolt holes.



The ShockWave is secured at the bottom to the lower A-arm with a single bolt. A billet washer is used on either side between the mount ears as spacers.

The upper arms are installed just the way the originals were removed. If you were smart, you saved the alignment shims and put the back in the same place they were removed – giving you rough alignment so you can get the car to the alignment shop.

Because both A-arms are replaced, along with the springs and shocks, they all get removed and set aside. You will reuse the original spindles and steering arms as well as the brakes (unless you upgrade). An upgrade to the sway bar is a real improvement, but the factory sway bar can be reused with this kit.

You'll notice that there are a few small modifications to be made to the original frame. For one, you'll have to drill out the original upper shock mount holes to 5/8 to fit the new ShockWave mount. To reverse this to stock you'd have to install a bushing, but that's a minor deal. Second, you'll have to open up the underside of the spring tower, just under the upper shock mount. This is not visible when the job is done, it's required to get clearance for the upper part of the ShockWave, and it has no affect on original parts should you ever what to reverse this installation. Finally, you'll have to drill a hole in the upper part of the shock tower to allow an air line to be run.

The lower ball joint seal is installed using this tool or a tube so the seal slides up and on without damage. They are tricky without the right tool and can be damaged.

Before installing the spindle, it's a good idea to align the ball joint studs so the cotter pins can be easily reached. They rotate inside the housing so a punch works well to move them.

In all, this is a relatively easy kit to install as Air Ride did a fine job of engineering the new components to fit properly and to require minimal alterations. They originally required the re-use of the original upper A-arm cross shafts but recently found a source for reproduction shafts and that is no longer an issue. New shafts are an extra cost item so you may want to re-use the originals. I'd say that a reasonably skilled amateur with basic tools and a good floor jack and jack stands can manage this job with no problem. For the pro installer in a well-equipped shop, it's a slam-dunk.

Source:
Air Ride Technologies
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The spindle will slide onto both ball joint studs from the bottom. Tighten both and install the cotter pins.

The steering stop bolts on and can be adjusted or even modified so you can set it for just about any wheel and tire combo. Make sure you avoid tire rub.

Install the sway bars links and tighten them down. Now the brakes can be reinstalled and bled and we're getting close to the end.

The completed assembly not only looks great, but it performs much better. It is lighter, making the suspension more nimble. It is stronger. The Shock Wave units not only have the proven benefits for handling and ride that only air can offer, but with the adjustable (up and down, 12-ways each) shocks inside you can tune this suspension to perform like we could only dream of in the past.