



# ShockWave Upgrade

When you're ready to step up to air...

by Doc Frohmader

Some years back, in Oklahoma City at the Nats, I met Bret Voelkel (owner of a budding new company called Air Ride Technologies). Bret was standing on a platform welded to a rod chassis, and with the flick of a switch was raising and lowering the ride height of that display rig. Everyone looked. Some stayed to play (step right up and take a ride...). A good many stood back and said, "It'll never fly. Danged new fangled technology will kill us all and probably ruin our health to boot! **Won't somebody think about the children!**" An insightful and courageous few liked what they saw and laid down some cash - and never looked back.

Today, after a lot of hard work and dedication, Air Ride Technologies is THE company for air ride innovation and undisputed leader in research and development. They've build a lot of parts and kits, many of which are engineered for street rod applications, so it appears that air ride has been embraced by the car guys. You see a lot of them cruising. The improved ride comfort, handling, adjustable ride height, and look have won a lot of loyal air ride users.

As you may know, the newest, slickest setup from Air Ride is called the ShockWave and is a combination of conventional air springs and 12-way adjustable shocks contained in a billet aluminum CNC-milled housing. It's turned a lot of heads with simplicity and high-end performance. But what about those of us who previously built a rod with conventional coils or coil-overs, (or conventional air springs) and lust after the best? Fear not, pilgrims, there's a solution.



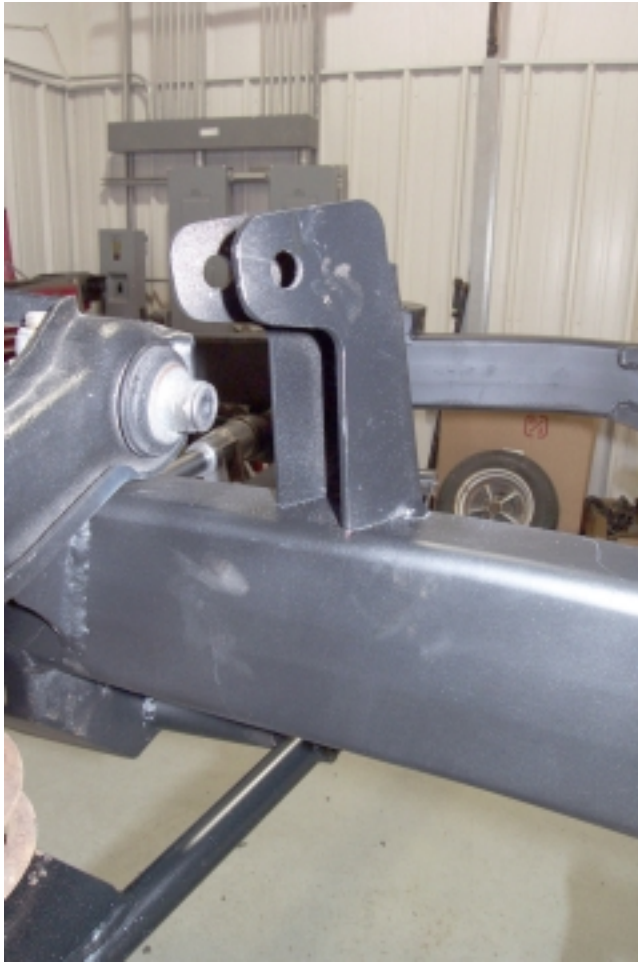
*We started our with the original Fatman M-II setup using an OEM upper arm, aftermarket tube lower arm, and steel coil. If you have air springs, you also have the separate shock and welded-on upper mount like this. Obviously, this photo shows not one style, but the hardware used with both air and coils.*



*Rodney stripped off the old brakes, spindles, springs, arms, and shocks. There's no need to drop the rack. Much will be reused.*



*The original spring hat (right) compared to the trimmed part (left). Trimming off the outer lip provides clearance for the new air spring. Make sure there's no chance of abrading the spring. The area removed is not structural when using ShockWaves.*



*If you had an existing conventional air system, the shock mount was welded to the frame rail. It is no longer required. Clip it off and make some room. Obviously, if you used coils, this was not used.*



*Sure, it's not mandatory, but you've got to admit the new tube arm is not only stronger but better looking than the OEM part. This is Air Ride's new M-II upper tube arm.*

I've heard rodders concerned that to upgrade to ShockWaves will involve too much re-work to make it practical. You know - cutting, welding, hacking, and a lot of re-paint. I have to admit, if you have a finished car or something near it, you probably hate the idea of backing up that far and starting over. Fortunately, Air Ride Technologies has the parts you need to make it happen with a minimum of chaos. To prove it, Rod (Welding Rod) Mason and I converted Bret's '39 Ford rag-top chassis from coils up front and coil-overs in the rear to a full set of ShockWave air spring/shock combinations. He also added a set of polished stainless bars for the four-bar setup that ART has recently started offering.

In the rear, the job is about as simple as it can get. The ShockWaves are designed to fit into the same locations as most coil-over units. The second generation ShockWaves have a domed top to them which means most of the clearance issues

that crop up when angling them near crossmembers are no longer an issue. It's like the tops were chamfered back. Another trick with the new generation ShockWaves is they no longer have the threaded housings. Early ShockWaves were threaded because the QA-1 shocks coil-over type shocks used to manufacture them had threads. When used as coil-over shocks, the threads adjust overall height and spring compression. Air springs don't require any such adjustment, so threads just gather dirt and confuse some people. Besides, this way the housing could be made adjustable for air fitting location and it's got a smoother look to boot.

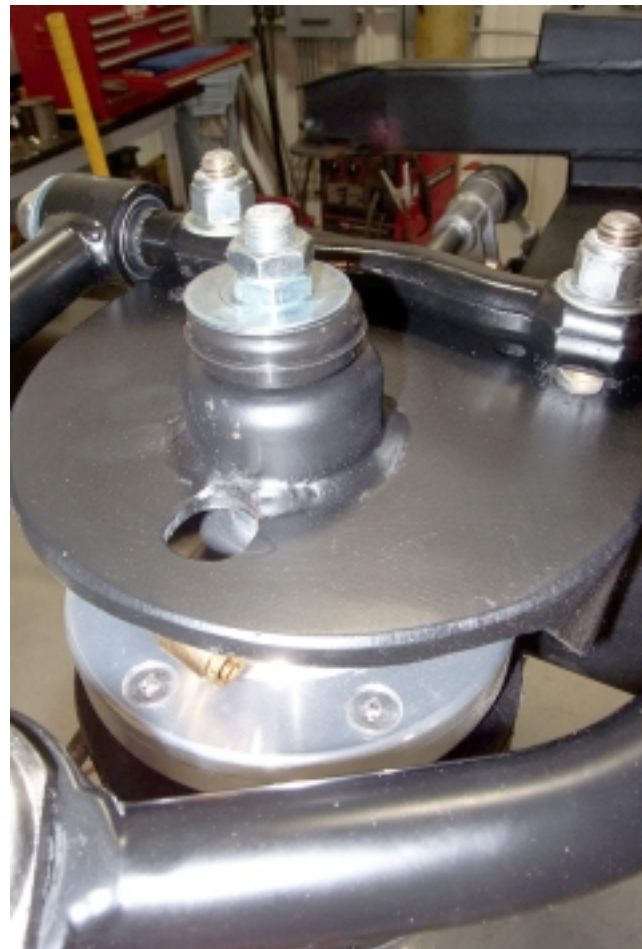
The only alteration to the rear is a small billet bracket which bolts onto the original four-bar axle mount. This drops the mount lug for the ShockWave down slightly and moves it back slightly for spring clearance, plus increases strength by using two large bolts to secure it.



*The lower arm at right is an aftermarket arm designed for use with a coil spring. The shape and structure are required. On the other hand, The ART tube lower arm is designed for use with air springs or coil-overs and is smaller, cleaner, and stronger.*



*Rodney lifts the assembled ShockWave unit into the original spring hat after bolting on the upper arm. It uses a conventional bayonet type mount like many shocks.*



*Make sure you rotate the air fitting to where you want it routed. Lines have to be tight and kept safe from abrasion. The top mount of the ShockWave is double-nutted to keep it tight.*

The shock stud threads into the new bracket. When you install it, slip both bolts through the bracket and mount, but put the nut on the top one only. Use the lower bolt to keep alignment. Tighten the top completely, push the lower bolt through, nut it down and tighten completely. Thread the shock stud in and tighten it. Then just slip the entire ShockWave unit onto the stud and nut it down.

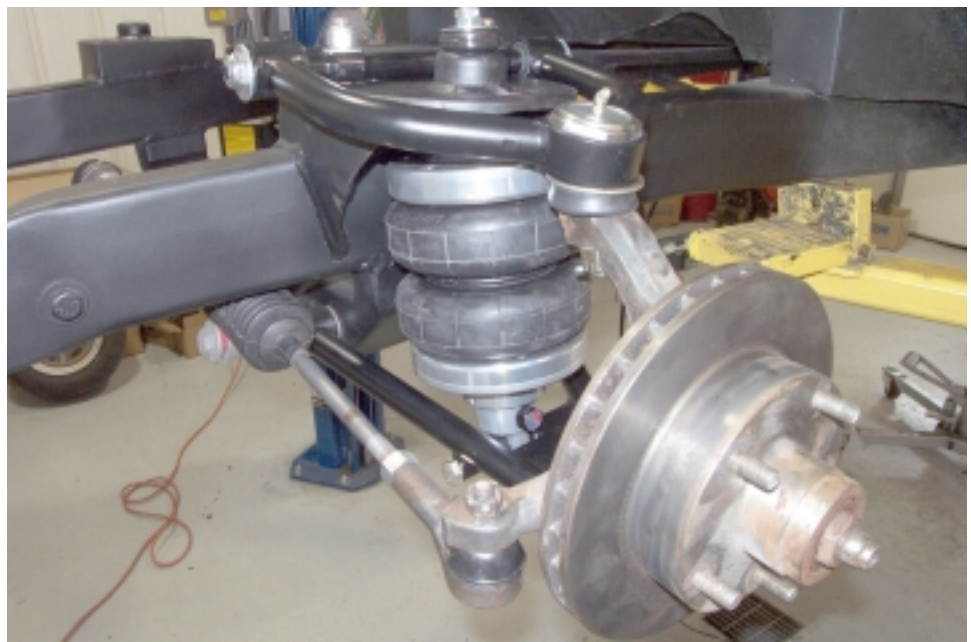
Before you plumb the units for air, make sure you have made two adjustments. First, the adjuster for the shock action should be positioned so it is out of the way of road rash and still accessible. The shock is a 12-position adjustable item so you can dial in your ride for maximum comfort and performance. You also want to locate the air fitting in the top of the ShockWave so it is in the best location. To do that, loosen the Allen set screw in the lower spring housing and turn the entire housing until the fitting is where you want it and re-tighten the set screw. Remember when running air lines to fasten them so they do not move around or vibrate and so there is no possibility of a line being rubbed through or abraded.

Up front, it takes a little more work. The good news is the original Mustang II crossmember and other hardware on the Fatman Fabrications chassis do not have to be removed or any major re-work done (all the others I've seen will likewise accommodate this upgrade). Rodney removed the old A-arms, spindles, brakes, and springs and stepped back for a look.



*The adjuster knob can be located either facing in or out, but in most cases it will be safest pointed out. Once secured in the lower arm, you can loosen the Allen set screw as shown here and rotate the air spring until the fitting is where you want it.*

*The completed front ShockWave setup. Cleaner, more compact, lighter, and more responsive.*





*The rear kit for one side. The ShockWave unit is very much like a coil-over but with an air spring, so swapping out should be a snap.*



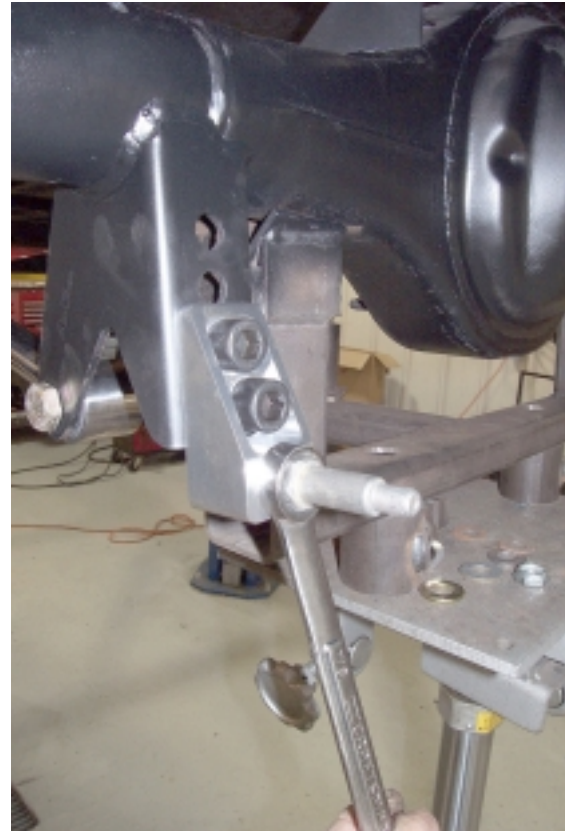
*Coil-overs like those in Bret's '39 are common stuff and in many cases the work fine. However, heavier vehicles stretch the limits of some coil-overs and the difference in ride quality is pronounced compared to ShockWaves.*



*Also part of Bret's upgrade were a set of polished stainless bars that ART has recently started manufacturing.*



*The new billet lower mount bolts to the original coil-over mount. You'll have to tighten the top bolt before you can push the lower one fully through or you won't get a wrench on it.*



*The stud mount threads into the mount rather than going with a through-bolt. Use a little anti-seize on the threads.*

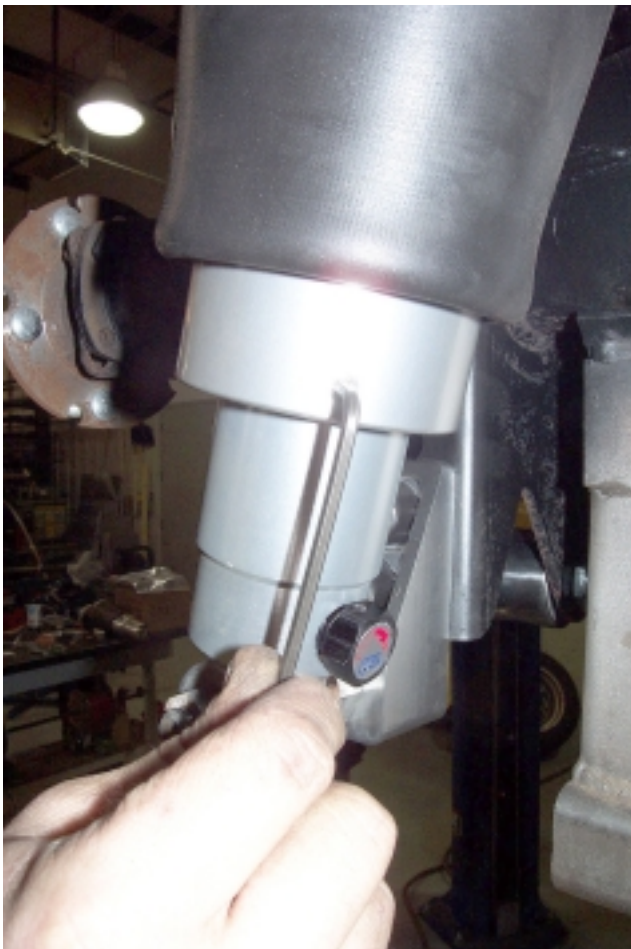
The car used a set of original M-II upper A-arms and tube lower arms. Air Ride makes its own tube A-arms, so it's natural Bret would want them on this car. There's other good reasons, though. The uppers were changed both to improve appearance and because they are a much stronger and lighter unit. The lowers were swapped for the same reasons, but also because they have a different design specific for ShockWave or coil-over use. There's no need for the wide open curved shape of the conventional tube arms, or the plate for mounting coil springs for this application. Bret makes up his arms with straight tube in a simple triangular shape. It's a simple design for a simple application, the lower mount is dropped for longer shock stroke and better performance, and the arm is reinforced for strength.

*The ShockWave is set up to use the standard 15-1/2 inch stud to stud length. Unfortunately, there are some rods where this was not heeded (sometimes the reason for poor ride quality) so you want to make sure at ride height this distance is close. A 12-inch compact-length ShockWave is also available for limited-space applications, but try to use the 15-inch for best ride quality.*





*Another key to good suspension is clearance so it can work. Ideally, you want 3-1/2 inches of space between the axle housing and frame at ride height. If you don't do this with almost all suspensions, you will pay with your back and butt.*



*Once the ShockWave is bolted in place, adjust the air fitting position by loosening the Allen set screw and turning the air spring over the shock.*



*Front and now rear completed with a simple, but elegant set of ShockWaves. Once you got the plumbing and controls installed, you can experiment with air pressures and shock settings (remember the QA-1 shocks inside have a 12-way adjustment).*



*A typical selection of power and control gear for air ride includes a pump, tank, lines and fittings, switches and valves (the RidePro solenoids shown here) and gauges.*

*One of the most popular control upgrades is this digital switch/gauge unit used with the RidePro solenoid operated valves. There are several different configurations, but because Dakota Digital makes them you can get them to match your digital dash.*



When you do this, there may be two modifications to the original frame that have to be done. If you already have air springs, the upper shock mount used to relocate the shock outside the spring pad is no longer needed. There is no point in leaving it hanging, so trim it off and spot the paint over that area.

The original Fatman spring hat needs a bit of clearancing if you are starting with coils or coil-overs. As you'll see, the outer lip of the hat is cut away to allow plenty of room for conventional air springs or ShockWaves to operate. That means the outer lip can interfere. A little cutting, smoothing, and touch-up and Rod was ready for assembly.

The new A-arms are a simple bolt-in. The old spindles and brakes were re-used. The ShockWave unit bolts into the upper hat with a bayonet mount, and at the bottom there's a conventional eye mount. The air fitting was again rotated to best position and all plumbing made neat and tight.

I'm sorry there isn't anything more to deal with. If this conversion were more complicated I could write more, take more pictures and hold Ol' Brian up for more of Street Rodder's cash, but I'll just have to live with the fact that the job just isn't that hard. I hope you won't be too disappointed that you couldn't do more hard work, but in time I suspect you'll get over it.