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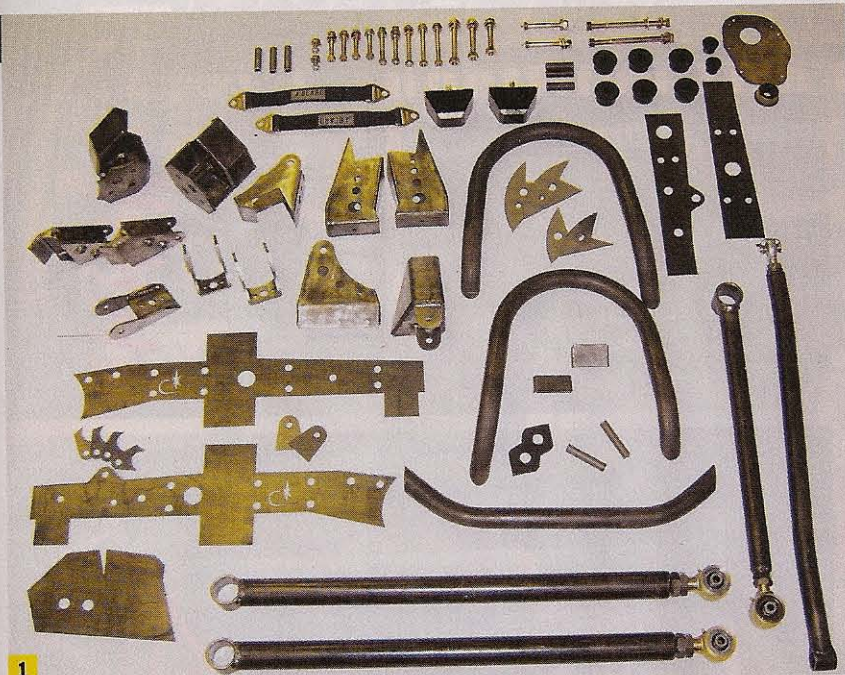
**TECHNICAL**

BY Harry Wagner  
PHOTOGRAPHY HARRY WAGNER

**CUSTOM  
FABRICATION YOU  
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# TOYOTA COILOVER CONVERSION





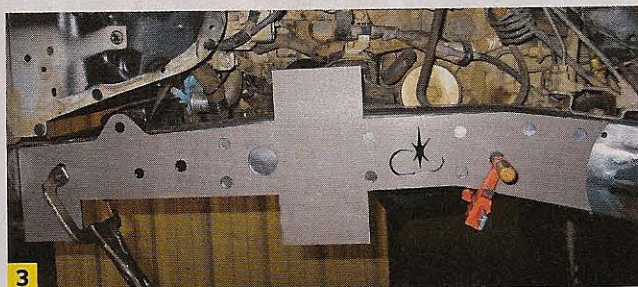
**1** Frame and axle brackets are all laser-cut and fully welded and come with all necessary hardware. This is the "basic" kit from Off Road Solutions. Considering the multitude of parts, it doesn't look very basic to us! However, this kit can be installed by a competent do-it-yourselfer.

**2** The first step in the conversion is to remove all of the factory suspension and steering components. ORS uses a plasma cutter and then cleans the frame with a grinder and flap disk. The motor mounts are integrated into the factory suspension bracketry, so ORS boxes the mounts to retain strength and keep them from tearing off the frame.

**3** Laser-cut brackets are used to reinforce the frame on the inside and outside of both framerails. This is necessary to counteract the added stresses of the new suspension and steering and also to eliminate the factory crumple zone. The holes in the frame brackets allow greater weld surface for even more strength.

**4** The steering gear from an '86-'95 Toyota pickup or 4Runner is added to the frame instead of using the stock box. The frame plates are configured to properly locate the gear and sleeve the frame, making this a fool-proof process. A tubular crossmember is also added under the engine for strength, and the pressure and return lines from the steering pump to the box are cleanly routed along this tube, out of harm's way.

**5** The frame mounts for the suspension links require the use of a Front Range Off Road crossmember for clearance between the framerails. This crossmember is also stronger than the factory piece and adds ground clearance.



**T** OYOTA PRODUCED ITS LAST solid-axle mini-truck more than 20 years ago. Since that time, shops and individuals have been retrofitting solid front axles under IFS trucks and 4Runners for greater articulation and durability on the trail. For years, few leaf spring and crossover steering conversions have varied from the standard formula. With all the advancements in four-wheeling technology, from three-speed transfer cases to rockcrawling-specific tires, it only makes sense that the solid-axle swap would evolve as well.

Off Road Solutions (ORS) has raised the

bar with its coilover solid-axle swap (CSAS) kit. The folks at ORS have dialed in the spring rates, shock valving, and suspension geometry to take the guesswork out of your front suspension by testing various configurations for several years on their own vehicles. The kits are available for '86-'95 pickups and 4Runners as well as '96-'07 Tacomas and 4Runners.

We recently paid a visit to Off Road Solutions' shop, where they were performing a CSAS on an '00 Tacoma. The truck owner chose to run 2.5x1.25-inch Johnny Joints in the 2-inch, 0.250-wall DOM control arms, but suspension links with FK rod ends and 2.25-inch, 0.375-wall DOM tubing are also

available. The control arms are arranged in a three-link configuration, with one upper link to limit axlewrap and a Panhard bar to control lateral movement. The lower links are 39 inches long. To put this in perspective, most Wrangler long-arm suspensions use lower links that are 28 inches long and the factory TJ lower control arms are a mere 15 inches long. The links are set up to minimize caster and pinion-angle changes as the suspension cycles.

The system is designed to work with 2-inch body, 14-inch-travel remote-reservoir shocks. The conversion shown uses Fox shocks fitted with Eibach 275-pound over 200-pound springs. The



## TOYOTA COILOVER CONVERSION

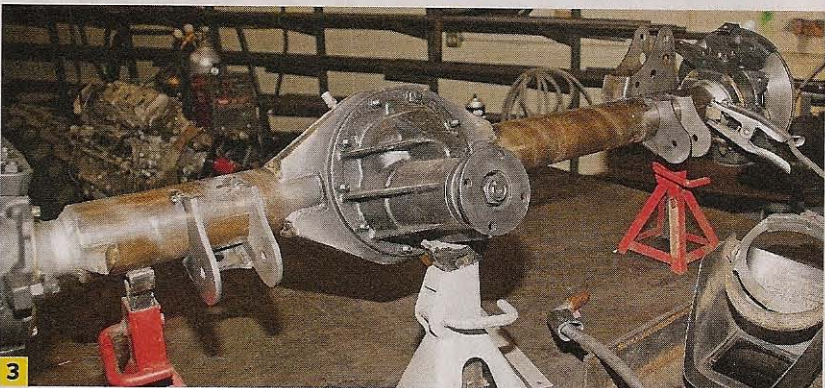
**1** Boxed mounts for the suspension links are added to the frame. As with all the brackets, these mounts are precision laser-cut and include precise instructions for proper locating. The CSAS is available in kit form, but having Off Road Solutions perform the swap in-house ensures that all of the positions and welding are correct.

**2** The upper hoop is welded in place along with the associated gussets. The 1.75-inch, 0.120-wall tube is just right for this application of the Fox shocks and Eibach springs.

**3** This particular swap used a Diamond axlehousing instead of the stock Toyota axle. It uses factory Toyota solid-axle knuckles and accepts all standard crossover steering components; however, a custom-length tie rod and drag link are required. The link brackets and track-bar brackets are tacked onto the housing once the pinion angle and caster have been set.

**4** The coilover mounts used in the ORS kit are massive. They are gusseted for strength and fully boxed from 3/4-inch steel. ORS double-checks all of the angles before tack-welding the mounts in place. When performing final welding, remember to cover the knuckle and brakes and allow the housing to cool between passes to reduce the chance of warping.

**5** The completed suspension is strong, provides a supple ride on the road, and results in gobs of articulation on the trail. Bumpstop brackets are properly located on the frame to limit uptravel that could result in the axlehousing contacting the oil pan or the coilover shocks bottoming out. The suspension geometry uses one upper link to control axlewrap and a Panhard bar to control lateral movement. All mounts are tucked into the frame for improved ground clearance.



**“This suspension kit is available at a fraction of the price of custom fab work”**

shocks mount to fully gusseted hoops made from 1.75-inch, 0.120-wall tubing on the top and 3/4-inch boxed and gusseted mounts on the axle. This customer chose to use a Diamond axlehousing, which is easier to weld brackets to than a cast Dana centersection.

Off Road Solutions has done an excellent job of tailoring this kit for the end user. Such details as bumpstop placement, steering clearance, and brake-line routing have been addressed with this conversion. A mind-boggling array of options is available, from the full-meal-deal kit complete with coilovers and all links and hardware, to a basic kit that comes with everything but the coils and shocks, to a link kit that leaves the fabrication of shock hoops up to the customer. The laser-cut

mounting brackets are also available separate from the CSAS kit for those who want to do their own fabrication work. All kits are available with either FK rod ends or Johnny Joints for even more options. Regardless of the kit chosen, the CSAS provides trail prowess and durability that was previously available only through custom fabrication. This off-the-shelf suspension kit is available at a fraction of the price of custom fab work too.

So how does it work? In technical rockcrawling the approach angle and articulation are superior to any leaf-sprung suspension, and axlewrap is nonexistent. High-speed terrain is also much more fun, with the remote-reservoir coilovers soaking up all but the largest bumps and remaining free of fade for

miles. Many question the streetability of long-travel coilovers, but freeway driving with this kit is comparable to stock. Any changes seem more related to ride height than the dramatic change in suspension design. Rear leaf springs complement the coilovers nicely on the pavement and provide stability when combined with the proper coil-spring rate. The only downside we can see to the Off Road Solutions CSAS is that your Toyota will think it is a buggy after the kit is installed. Don't blame us if the sheetmetal suffers and your doors won't open. 🌀

### SOURCE

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[www.offroadsolutions.com](http://www.offroadsolutions.com)