

## 1990-1995 4 Runner Leaf Conversion

Taken from off-road.com article **May 1, 1999** – Installation done at All Pro Off Road

**Note: Article parts edited due to stronger aftermarket parts now available through All Pro Off Road. Edited areas are in bold type**

For most of its life the coil spring suspension on the back of my 4Runner has done a good job both on the trail and off. However after swapping in a solid front axle from All Pro Off Road and installing 35" tires, I needed a bit more lift in the rear to match the front solid axle conversion and provide clearance for the 35" tires. There were a number of problems with lifting the coil suspension beyond the 3" it already had. See section bellow on "Why Change to Leafs" for more details.

The hardest part of converting my rear coil suspension to leaf springs was removing the coil suspension and all of its brackets from the axle and frame. This took by far the most time of all the steps involved. There are five different control arms and each of them has two brackets, one at each end. The pan hard crossmember was also removed. My original plan was to keep the upper control arms In case I needed them to control axle wrap. I also planned to keep the rear sway bar to control lean on the highway. As it turns out neither was possible and to do things correctly both must be removed. The rear exhaust also needed to be cut and will be relocated later.



The soft feel and poor road performance of a lifted coil suspension was annoying on the highway. The truck had a tendency to go all over the road and was a hand full to control. Off-road the truck had a tendency to feel tipsy and would lean easily, especially on side hills. This caused me to choose a very conservative route when choosing the components for the rear suspension. To control sway and limit that tipsy feeling that a soft suspension can give I choose to get a relatively stiff leaf spring: an All Pro 8 leaf pack with an extra torque leaf to control axle wrap. By making the spring pack as long as possible I am able to

control axle wrap and still allow good rear travel without using a torque rod. The springs I choose are 56" long that have 5.5" of lift when compared to a 1989 Toyota leaf spring. These springs can also be installed on any 1979-1995 truck or leaf sprung 4Runner. Some welding and cutting is required.

The springs are mounted using four spring hangers, just like the factory uses. These are relatively cheap to purchase and are easy to weld onto the frame. The ones used here are from a 1985 truck and can be ordered directly from Toyota. Now stronger, thicker spring & shackle mounts are available through All Pro. You can also see the two tiny tack welds that hold the hangers in place temporarily. It was hard to determine where exactly to put the springs so every thing was tack welded in place to allow for easy changes. To reduce rubbing problems I had with my 35" tires in the rear I choose to move the rear axle back 1.5". This reduces the amount of overhang behind the axle.



On the axle a 2" longer than normal spring perch was made. The spring perches Toyota uses are 4" long. By making the perches a little longer (6" total) the axle does not wrap as easily do to the larger spring contact area. Spring perches can also be purchased from a number of custom shops. You can see here the axle with the original link brackets removed. The sway bar mounts were retained for possible future use. Currently, All Pro offers a HD weld on perch that is included in the rear suspension kit. Another alternative is to use a housing off a 1986-1995 Pickup, which already has the correct perches installed, and does not require removal of coil

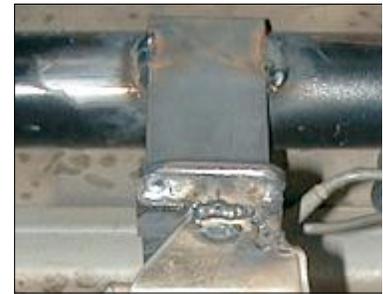
and link brackets, making the job much easier.

I made a set of shackles for the rear using flat bar steel. There is no crossbar on these shackles to allow the leaf spring to twist a little, thus allowing a little more travel. The corners of the shackles were rounded to prevent binding with the frame. Greaseable shackle bolts and bushings were used and allow for easy lubing. Adding a shot of grease at every oil change should keep the squeaks under control. Shackles with greaseable bolts are now standard with the All Pro rear suspension kit. With the mounts all tacked into place the tires were installed and the truck put down on the ground to see if everything is in the proper place, then the entire thing was disassembled and the finish welding was completed. Next the suspension was assembled again and the welds were painted.



The pan hard rod crossmember was removed to allow the Rancho 9012 shocks to be mounted as high as possible. These were mounted upside down to prevent damage to the adjusters. A new crossmember was created using 2" round tubing and 2 pieces of flat bar. The 1" body lift I have allowed for a little extra space for the new crossmember to be mounted slightly above the frame. A U-bolt flip kit was used to make the under side of the axle as clean as possible. There is nothing under the axle to hang up on now. Bump stops were installed to limit compression, preventing damage to the springs.

My proportioning valve was connected to the pan hard rod crossmember and when this was removed the valve mount was removed too. So a small bracket was fabbed up that allows the valve to be mounted in the same location as before. The valve arm has been tied up to increase rear breaking effectiveness.



#### Why Change to Leafs?



There are a host of other problems associated with modifying the original coil system to accommodate the 5"+ of rear lift I needed to match the front solid axle conversion and clear my 35". When lifting the rear suspension it is necessary to relocate the mounting points so as to level the control arms. If the control arms are not nearly level with the ground the rear axle induces bump steer when the body rolls to one side or you hit a bump with one of the rear tires.

The axle really needed to be moved back by 1.5" to center it in the wheel well. This I felt was the best way to clear the 35"s tires with the minimum lift possible. Due to the close proximity of the coil springs, shocks, and pan hard tower it would not be easy to move the original system back. With the leaf springs, choosing axle position is just a matter of welding the perches in the proper location. The brackets I used for the rear coil suspension were the Pro Comp 4" rear lift along with custom coil springs made by A1 spring. The Pro comp kit comes with 5-drop brackets, one for each of the rear control arms. The "upper" two drop brackets bolt onto the existing upper axle brackets on the differential. This causes more leverage to be placed on the original bracket and several people have reported that left upper bracket has been ripped off of the differential.



The lower bracket extensions do not seem to have any failure problems however they hang down quite low and are constantly hitting and hanging up on the trail.



The Pan hard rod relocation bracket drops the pan hard rod by about 2" but with the rear lift at about 5.5" the pan hard rod is still at an angle. The main problem with this is that it causes the rear axle to shift to the right as the rear suspension drops. This causes the drive shaft to hit the gas tank and reduces spring extension because

the suspension binds as it is pulled to the right by the pan hard rod. The pan hard rod really needs to be level when the truck is sitting on level ground.

I truly believe that all of these problems could be solved except for the ground clearance issues related to the lower control arms. To solve these problems and set up the rear end so that it would be safe to drive and get the full 20" of travel it is capable of would require most of the suspension to be cut off and replaced or relocated. This would be a very time consuming process and would require lots of trial and error work.



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### Overall Results

The coil spring suspensions used over the years include stock, 1.5" Downey coils, 3" coil and spacer kit, 4" Pro Comp and now the leaf spring swap. Leaf springs have netted about 6" of rear lift and the truck sits level now. The rear travel as measured on a 20-degree ramp right after installation is 19.5" of articulation. Two weeks later I performed the same test and as predicted by Jon at All Pro the springs would travel further after breaking in. Now I measure 21" of rear articulation.

With the Downey 3" lift I got about 19", with the Pro Comp 4" lift I got 20.5" While the Downey 3" lift worked and drove very well the Pro Comp kit springs were way too soft and they caused the truck to be much less stable on and off road.

The springs work wonderfully and provide a very nice controlled ride. They are able to support much more weight than any of the coil suspensions and provide a very comfy ride. When people take a ride in my truck they can't believe it's sitting on leaf springs. I do not plan to put sway bars on like I had used with the coil suspension. The leaf spring suspension does not allow body roll like the coil suspension did. Over all the rear suspension made a huge improvement both in terms of off road ride but also in load handling and street ride. I can confidently recommend these springs for any Toyota truck or 4Runner.