

PROJECT NISMO FRONTIER

Part 6: Suspension R&D + Testing = Results

By Robin Stover **Photography:** Robin Stover, Ken Brubaker, and courtesy of Calmini

Our Nismo Frontier has gathered a sizable fan base in the last two years. Reader feedback is never without praise for our midsize project and its bolt-on nature. However, we're often questioned about which suspension system we installed under our Nismo. Unfortunately our response is not always what people expect, let alone want to hear. You see, when we were in the market for a lift kit, the Frontier platform was new from the ground up, and suspension options were extremely limited. This was a royal pain in

the rear for us because we wanted to improve the stock setup. So instead of getting mad about it, we converted our frustration into progress, volunteering our truck as a guinea pig to a select few aftermarket suspension manufacturers, hoping to jumpstart our favorite midsize platform in that particular area of upgrades.

First, we dropped the vehicle off at Calmini of Bakersfield, California. Calmini specializes in the import market and jumped at the opportunity to mock up an affordable cosmetic drop-bracket-style lift kit for us. The kit Calmini prototyped,

although not intended to drastically improve trail performance, did raise the vehicle 5 inches, which allowed fitment of 33-inch tires. Along with the improvement in ride height came an additional inch of ground clearance, thanks to an intelligently designed lower front cross-member.

Next, we dropped our project off with the capable designers of Total Chaos Fabrication of Corona, California. Total Chaos is well known for building high-quality long-travel suspension systems for desert racers and prerunners. After about a



Moab's Kane Creek Trail was no match for our Nismo Frontier. Here *Four Wheeler* Publisher Steve VonSeggern creeps cautiously across one of several creek crossings along the route.

week with these go-fast experts, a new tubular upper control arm was refined and fit-tested on our truck.

Finally, we decided to consult our friends in the R&D department at Light Racing for a much needed "mobility improvement session." These guys are all about secondary

suspension (air bumps), and the products they build are second to none. Our session resulted in a new application for Light Racing's sweet new Compact Jounce shock line. We like Jounce Shocks because they allow increased speed and mobility by removing the harshness from a bottom-out

event. Light Racing's engineers used our truck to design, fabricate, and test a set of mounting brackets for the new system.

The results of all our time and energy are significant to Frontier owners because now there are actually a few suspension options available for public consumption.



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1 This is the new Calmini drop-bracket suspension lift for Frontiers. You'll notice it comes with taller knuckles to help accommodate a 5-inch increase in overall ride height.

2 We're going to skip to the main course because space is tight. What you're looking at here is the driver-side rearmost front crossmember mount. This is where the lower A-arm bolts up, as well as where the rear of the front differential is attached to the frame. In this photo, the metal bracket has been marked with a silver pencil. This is where the Calmini kit requires that installers cut out a small piece to allow fitment of the new dropped crossmember. This is the only major "can't-go-back" portion of the Calmini kit.

3 Here again you can see where the OE bracket was cut (arrow). Notice how the new (blue) crossmembers drop the differential down from the factory location. This is typical with drop-bracket lift kits. As you might imagine, these lowered mounting points increase leverage on the frameraills. (This is why we don't recommend drop-bracket kits for the go-fast crowd.) To combat the added leverage, Calmini uses aft-braces (not shown) that help distribute stress loads back to the factory transmission crossmember. These braces work fine for everyday driving scenarios, but don't expect this arrangement to hold up in the Baja 1000.

4 This picture illustrates how Calmini achieves lift using the OE Bilstein strut. Notice the blue piece between the top of the strut and the factory coil bucket. It has a similar effect to walking on stilts, i.e., no actual increase in wheel travel, just elevation change.

5 Here, the technicians are installing the large front differential skidplate supplied with the suspension lift. This rigid piece of 1/4-inch steel substantially stiffens the front drop-down assembly while protecting the vulnerable aluminum front differential at the same time. It comes powdercoated blue, as does the rest of the kit's bracketry.

6 The rear of the Calmini kit utilizes a 2-inch lift block and new U-bolts to achieve a 2-inch increase in ride height. The new Calmini monotube gas shock is a sure improvement over stock, but is in no way designed for high-heat, fast desert driving.

7 We wanted to improve on Nissan's factory ride quality, so we contacted Deaver Spring Manufacturing of Santa Ana, California. Deaver builds a soft-riding minipack that replaces the OE overload leaf with a three-leaf progressive add-in pack. The design helps eliminate ride harshness by distributing ride forces over a larger spring surface area. The kit raises rear vehicle ride height by 2.5 inches and comes complete with all necessary mounting hardware. This modification improved ride quality significantly. The only downside to this setup is that the design diminishes payload capacity by about half, which means you can't tow or haul as heavy a load as before. For our purposes, this sacrifice was well worth it.



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8 Altogether, it only took Deaver's technicians about 30 minutes to install both minipacks in our Frontier. Deaver removed the 2-inch Calmini lift block in addition to the stock overload leaves. This gave our truck a level stance front to rear.



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9 Up front, some minor fender trimming was necessary to prevent tire rub while turning during suspension compression. A non-Nismo Frontier may require even more fender trimming because the stock ride height is about 1/4 inch less than a Nismo-spec truck. As you can see, the necessary trimming was pretty minimal with the Toyo Open Country Mud-Terrain tires we installed. It's worth noting that different wheel backspacing may also affect tire clearance, so we recommend asking retailers for advice before cutting.



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10 We installed a sweet-looking set of 18x8 American Racing "Fuel" wheels. These wheels are air-sensor-compliant and feature gloss-black painted spokes. The tires we picked were the extremely tough Baja-proven Toyo Open Country MT in a 33x12.50R18. With a 10-ply rating, these tires should provide a surplus of puncture-free service miles.



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11 Our friends at Light Racing of Catheys Valley, California, designed, built, and installed the Compact Jounce shock kit you see here. We had them install this system after the prototype Calmini lift was removed and the original OE suspension parts were reinstalled. This way, Light Racing could prototype the system and ensure fitment on both lifted and non-lifted Frontiers. As you can see, the front kit is pretty simple, consisting of two main parts; the jounce shock with upper mount, and the lower A-arm contact pad.



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12 The rear Jounce Shock kit is equally simple to the front. A frame-mounted bracket houses the jounce Shock canister, while a lower contact pad, secured to the top of the axlehousing, provides a sizable flat contact patch setup to accommodate the axle's range of movement.

13 Here you can see our Project Frontier restored back to its stock suspension, tires, and wheels. The only difference now is that the Jounce Shocks are absorbing the force from this small jump at Light Racing's R & D facility. Now, the truck lands smooth every time and we never get a harsh shock or loud bang associated with a bottom out. Instead, the Compact Jounce Shocks are absorbing the energy in a controlled manner.

14 This is a stock '05 Nismo Frontier that we borrowed from our friends at Antioch Nissan in Antioch,

California. We brought this truck along to demonstrate the differences between a stock and Jounce Shock-equipped truck. We ran each truck over the same jump at the same speed. We first ran our Jounce Shock-equipped Project Frontier, and after four successful landings we were satisfied with the results. Next we hit the jump with the stock truck you see here. This was the third jump of our test session. Just as the shutter of our camera snapped closed, the stock driver-side front Bilstein Nismo-spec strut experienced a catastrophic failure. The shock simply wasn't designed to handle the force of the jump. Something had to give.

15 We pulled off the driver-side front tire to inspect the failure. Shock oil was everywhere, indicating complete destruction and an end to our day's test session.



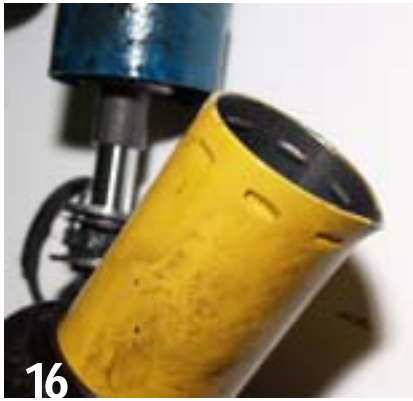
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16 Upon closer inspection, we found the swaged end cap, now separated from the shock body, had simply popped off, bending the shock body in the process. Residual damage was also found on the shock's cast-steel piston. Needless to say, we proved the worthiness of the Jounce Shocks with this carnage. Our Project Frontier, having survived the test, was



good to go for another round, thanks to the Jounce Shocks.

17 This shot shows the dome-shaped contact pad Light Racing uses on the front of the Frontier kit. The shape of this pad is very important to help align the Jounce Shock during impact.

SOURCES

American Racing
www.americanracing.com

Calmini Products
800/345-3305, www.calmini.com

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