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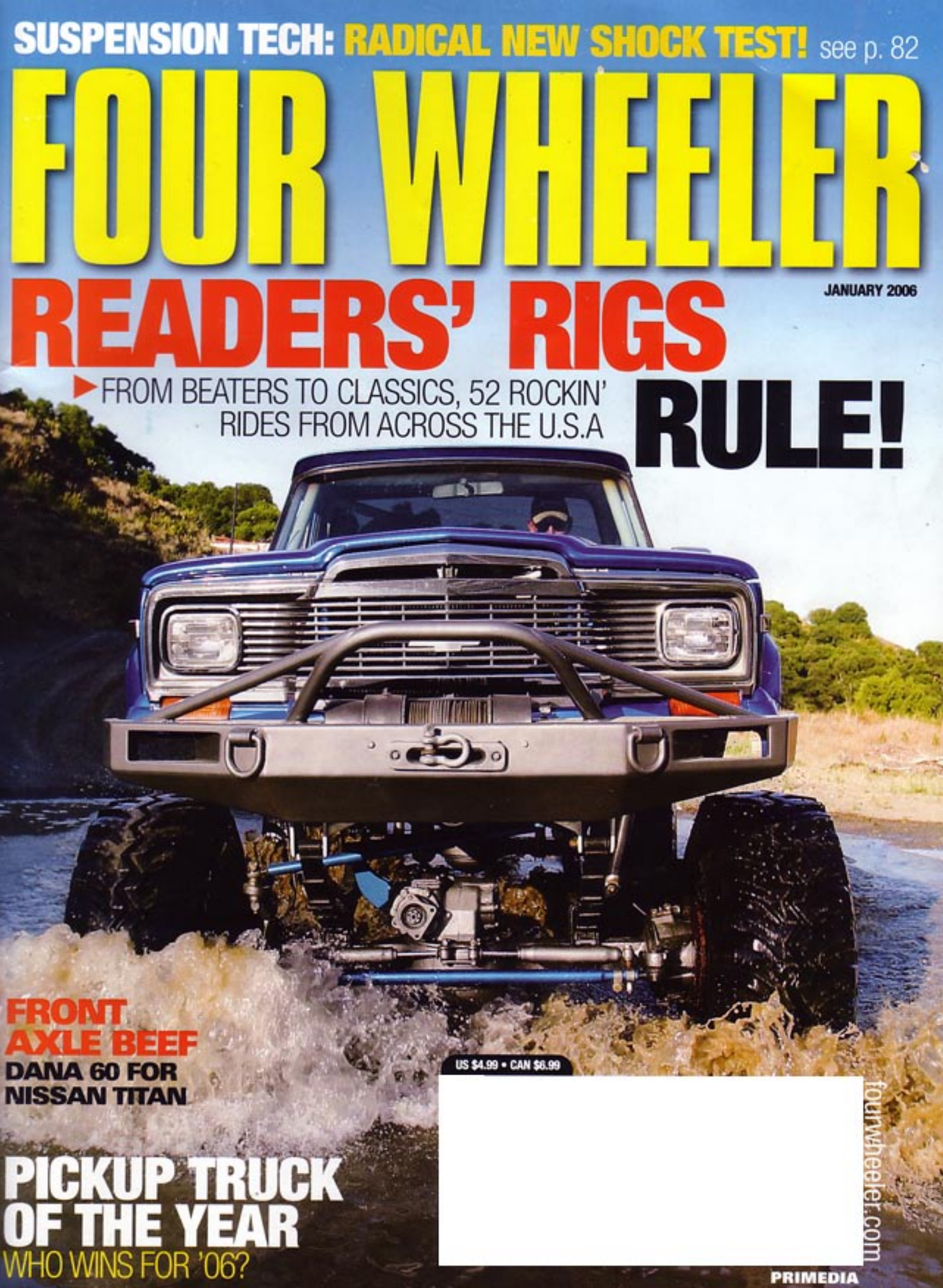

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PROJECT TITAN

MILD 2 WILD

Part IV: Taking the Blowtorch to Our Titan's IFS

By Robin Stover **Photography:** Robin Stover

If you've been following our Project Titan buildup, you probably know that this particular vehicle has seen its fair share of bolt-on parts. And if you're a savvy reader, you already know we plan to significantly alter this rig in preparation for Top Truck Challenge 2006. Luckily, our generous friends at Nissan kicked down another pre-production Titan to fill in the editorial gap between Joe Bolt-On and those affluent enough to afford a TTC rig. We're calling the twin buildups "Mild 2 Wild" Titans.

Each year, our sister publication *4-Wheel & Off-Road* takes on the mammoth task of building a project vehicle to shock and awe the masses during their annual Ultimate Adventure event. As with any aspirational buildup, they go big with each and every aspect of the rig. From a Super Duty on 46s, to an Avalanche with rear steer, or even to the more recent Toyota Taco-crawler, these rigs have captivated their audience with graft-to-fit hardware that is priced well beyond the yearly incomes of most individuals. That's why they're called "aspirational" vehicles. What's most important about these types of projects is the trickle-down effect that both their design and execution have on the mainstream. This is what we're after here. We don't expect to see another late-model fullsize at TTC, but we do hope the ideas and equipment we showcase will help you with your rig.

Building the Foundation

To succeed with anything, you must first develop a plan. Our plans began with the idea of competing in TTC with our own Titan. To execute our plan, we sought help from a master fabricator well versed in Top Truck–styled rigs. Toby Lavender owns a

small fabrication shop called Triple X Traction in Seaside, California. You may recall Toby's flexible flatfender that took Third Place back in 2002. Toby also attended as a judge during the 2005 event. Needless to say, Toby was a good fit as our chief builder for the project. We dropped our Titan off, knowing full well that the rig would probably never be suitable for everyday commuting again.

All Nissan Titans come with independent front suspension from the factory. Looking back at the history of TTC, we found that only one out of 13 First Place winners had IFS. For this reason, we decided to abandon the factory suspension in favor of a proven solid front axle. We contacted Dynatrac of Huntington Beach, California, to commission a custom ProRock Dana 60 front axlehousing for the project. We chose this axle because it is the standard by which all others in the industry are judged. These axles feature best-in-class ground clearance, a high-pinion diff, interference-free oiling, and a high-strength centersection with a unique link mounting surface built right into the housing. We had the guys at Dynatrac set ours up with 4.56:1 gearing from Yukon Gear. We left the diff carrier open for now because industry buzz at the time suggested that a totally new electric locker was nearing production from Detroit Locker. More on that in a future issue.

1 The project began with the removal of all the factory IFS components. A plasma torch made quick work of all unneeded metal. Once this process was completed, measurements were provided to Dynatrac. Our new housing arrived in just a few weeks' time. Though not recommended by Dynatrac, we removed the ball-joint end forgings (inner Cs and outer knuckles) in favor of stronger kingpin-style steering knuckles from Dedenbear. We knew butchering the Pro Rock axle would completely void our warranty, but the modification allowed use of much stronger axleshafts and steering components—all required assets for a winning TTC rig.

2 Randy's Ring & Pinion hooked us up with three install kits for the project. Two kits provided all the necessary hardware for each new kingpin knuckle, and one kit took care of the Yukon ring-and-pinion gearset.

3 We swapped out the pinion yoke provided with our ProRock 60 because we wanted a much stronger billet yoke with U-bolt–style mounting hardware (above). U-bolts are much stronger than traditional U-joint straps. We ordered this yoke from Summit Racing Equipment. The setup was designed to work with 1350 U-joints.

4 A knuckle failure during TTC would most definitely result in a DNF for at least one event, sowe asked Dedenbear to provide us with what they say are the strongest Dana 60 knuckles on the market. Cast from high-strength ductile iron, these knucklesfeature extra material in critical areas to prevent failures. The Dedenbear knuckles also feature a fifth bolt hole for high-steer arms. This was good because we plan to run a fully hydraulic steering system.

5 With the axle hung exactly where it was going to sit at ride height, Toby began the process of installing the Dedenbear inner Cs. To do this, he first heated each inner C to 450 degrees in an oven. This caused the material to expand, thus ensuring the tight-fitting Cs would slip easily onto the axletubes. Toby wore thick leather gloves to handle the hot inner Cs. Once set to the proper angle, the Dedenbear inner Cs were welded to the ProRock housing. This step required a powerful welder to get the proper penetration.

6 Once the Dedenbear knuckles were in place, we spray-painted them black. Next, we installed five ARP studs in each steering knuckle. These steels are the strongest available and provide cheap insurance against steering failures on the trail.


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7 Toby hooked us up with a pair of his Triple X Traction billet steering arms that he says won't break even under extreme torture. This picture shows a third double-ended high-steer arm which Toby also offers for custom hydraulic steering applications. All Triple X Traction billet steering arms are nickel-plated to prevent rust.

8 Front axle breakage is probably the most common problem we've seen at TTC. This is why we decided to equipped our ProRock 60 with the very best axleshafts money can buy. Largely overlooked because of their price, the 35-spline 300M CV 60 axles from Longfield Super Axles are second to none. Built to suit, these axles are the ultimate solution to front axle breakage issues. Again, we warn you these aren't your typical axleshafts. Aside from their high price, they're unique because they don't rely on U-joints to transfer torque to the stub axle. Instead they use a 300M constant-velocity joint with six ⅞-inch ball bearings. Their design is similar to a typical Birfield found in a solid-axle Toyota pickup, except that these are much larger. We chose these axles because they eliminate annoying steering feedback and offer a very functional 45-degree range of steering movement. Not to mention Longfield warranties them against breakage for life. Additional features include a countersunk grease fitting and a hard nylon protective covering that prevents outside contamination. You can get these super axles set up for either Ford or GM applications, and each side includes a 300M stub shaft.

9 We chose to run axle slugs instead of hubs for two reasons. The first is because they offer unparalleled reliability. Second, they don't stick out like hubs do, so they are much less likely to get caught on rocks during events like the Mini Rubicon. We think this setup will work well with a selectable locker and the trick CV axleshafts mentioned above. These particular axle slugs are manufactured by Triple X Traction for Dana 60s. Notice the blue Spydertrax billet wheel spacers in this photo. We installed these because they too will help tuck the hub assembly deeper into the wheel.

10 We decided to use a triangulated three-link design to locate our ProRock 60 axle. The setup was built from scratch and was designed for maximum flex. This required heavy-duty rod ends capable of handling at least 25 degrees of deflection without issue. Weeks of research led us to Evolution Machining and Fabrication of Alberta, Canada. Evolution builds custom rod ends specifically for custom 4x4s. We like them because they are built by four-wheeling enthusiasts who push the envelope in their own rigs. We ordered six of these extreme joints with ¾-inch bolt holes and 4-inch-long fine-thread shanks. Built from 4140 HTSR steel, these joints are virtually indestructible. They also come with weldable bungs that provide a high shoulder to ensure ample penetration.

11 One of the nice parts about starting from scratch with this particular axle was building custom mounting brackets that offer increased strength as well as good looks. Notice how the bracket captures the entire axletube, thus providing the most contact area possible for welds. This can be a good thing when bouncing aggressively over slippery logs in the Frame Twister. Once the proper angle was established, these brackets were welded all the way around the axletubes.

12 Toby added a gusset to each lower-link arm bracket to ensure strength. These little touches can make all the difference when extreme-force events occur.

13 This is how the upper third link, constructed of 2-inch OD ¼-inch-wall DOM seamless steel tubing, attaches to the axlehousing. This link triangulated the mounting links. We like this setup because it's

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beefy and simple. Later on, when we set up the front suspension, we plan to add a Panhard bar to locate the front axle laterally. Toby built the three-link arms out of.

14 Our friends at Howe Performance supplied us with a fully hydraulic steering system for the project Titan. We'll save the details of how this system was set up for another article. Hydraulic steering systems can be very tricky to get right, so we plan to cover the details in depth to avoid possible confusion. For now, we'll just say that Toby mounted a double-ended ram up high using the correct method to prevent steering failures.

15 We wanted a driveshaft that could withstand the abuse of TTC, so we contacted our friends at Pat's Driveline. We asked them to build us the ultimate front driveshaft for our project Titan. Pat's Driveline is owned by the Gear Center Group, which is headquartered in Edmonton, Alberta, Canada. With more than 20 retail operations across Canada, Pat's is one of the leading drivetrain specialists in the world. They offer a wide variety of product support for powertrain components found in all types of mobile equipment. For us, they built a beautiful long-travel, 1-ton unit. It features a Bigelow 40-degree CV joint to help reduce driveline angle and minimize vibrations; seamless tubing; a long-travel slip section with rolled splines for increased load capacity; and a nylon-coated slip sleeve for reduced friction. Both ends of this driveshaft feature 1350-series U-joints.

16 Finally, with all these stout axle components in place, we wanted a built-in failure point to protect the truck's vital components. Our answer came in the form of a Power Train Saver, also from Pat's Driveline. These units are proven effective by large-scale trucking firms to prevent drivetrain damage due to overtorque situations. The Power Train Saver installs inline on the driveshaft and houses three easily replaceable torque fuses to protect differential gears, axles, and driveshafts. When an overtorque event occurs, the torque fuses will shear. The driveshaft will remain in place supported by an internal system. To get back on the trail, you simply remove the broken torque fuses and replace them with new ones. It only takes about five minutes to change a set of torque fuses, and they're available in shear values from 2,000 to 45,000 lb-ft of torque (We haven't been able to test the setup yet, but the plan is to start low and work our way up.) We suspect these units will become very popular in coming years as they can save tons on money when used appropriately.

17 This is how we left our project Titan once the majority of the front axle work was completed. It's always hard to visualize the end result, so we installed some tubular spacers to demonstrate ride height without the Fox coilovers in place. Next time, we'll tackle the truck's flexible suspension setup. Stay tuned. **FW**


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