

300C THE CORNERS

HOLD ON TIGHT! WE'VE BUILT THIS MODERN MUSCLE CAR TO HANDLE ANYTHING WE THROW AT IT!



BY MATT SPROUSE

Performance: a word that is practically extinct from Detroit's current production models. With the exception of the Corvette and Viper super cars and the more moderately priced Mustang and Challenger, there seems little left for the traditional muscle car enthusiast. One overlooked jewel might just be Chrysler's rear-wheel drive LX-platform, which contains 300-plus horsepower, fully independent suspension, and aggressive looks that rival any Euro sport touring sedan.

The LX-platform encompasses the Dodge Charger, the recently retired Magnum, and the Chrysler 300. These models share the same

suspension components, chassis design and best of all, they're all available with the optional 5.7-liter Hemi V-8, giving them more than enough power to rival most GM or blue oval rides. Additionally, Hemi-powered LX cars have become far more affordable, and the automotive aftermarket has continued to support them with performance and appearance upgrades.

We decided to really test the limits of

the LX-platform with our 300C project car. Our direction seemed set from the beginning: the 300C had all the power we needed (at least for now), but the suspension was really set up for a softer touring car feel. Our goal was to refine the suspension and handling characteristics enough to make it feel at home on city streets or at the road course on the weekend. With all the right components intact—struts up front and a fully independent rear suspen-

sion—we were convinced that with a few changes we could have our 300C handling on par with some of the best.

No aspect of the 300C's suspension will go un-scrutinized as we work to transform the car's sluggish feel in the corners into a corner carving g-machine. Follow along as we select our components and build the new American "muscle car." You might just change your mind about these sedans in the process.

AIR RIDE TECHNOLOGIES-LX KIT

Because we're striving for improved handling on the track, a low stance and a contour-hugging suspension is necessary, but keeping it streetable is exactly why we went in the direction of air pressure versus coils. There are many companies making air suspension systems for the LX-platform, but we needed the best for performance handling, which made the choice simple. We selected Air Ride Technologies components for our project because they aren't just about laying the frame on the ground; their components are built with performance in mind. While attending a track event featuring exclusively Air Ride Technologies-equipped vehicles, one extreme trip around the track with NASCAR roadrace driver, Boris Said, helped drive the point home of the performance benefits of quality air-suspension systems.

Air Ride Technologies' new kit for the LX-platform provides excellent tunability, which allowed us to easily tailor our 300C for the street or the track. Double-adjustable ShockWave front struts allow tuning of rebound, compression, and ride height and replaced the soft factory struts. The CoolRide rear system replaced the springs with high quality air bags and double-adjustable shocks, making this kit perfect for a daily driven car that can be dialed up to kill for the track.

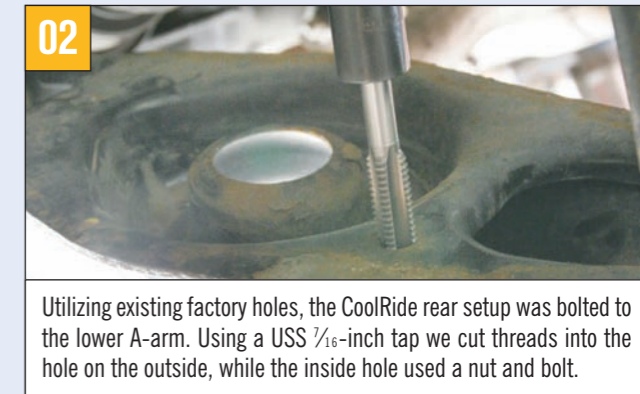
The brains behind the suspension is the LevelPro system and the new AirPod. Gone are the days of constantly monitoring air pressure to level the car properly. Plumbing older systems was a chore as well, with all the compressors, solenoids, computer, tank, and wiring being independent units. The recently released AirPod makes short work of setting

up a new system; everything is consolidated into one compact unit, minimizing noise and space needed in our trunk.

With all the guesswork taken out, the Air Ride Technologies LX kit was a breeze to install. We won't apologize for the lack of step-by-step photos in the installation; it really is that easy to install.



01 We began by safely and properly supporting the car on a lift. After bracing the lower control arm with a jack, we unbolted the control arms to allow the lower A-arm to swing freely. We then lowered the jack to remove the stock spring, and also removed the three shock bolts.



02 Utilizing existing factory holes, the CoolRide rear setup was bolted to the lower A-arm. Using a USS 1/16-inch tap we cut threads into the hole on the outside, while the inside hole used a nut and bolt.



03 We attached the air bag lower plate to the A-arm using a 1/16-inch bolt and lock washer. For clearance, a 3/8-inch button head bolt and nut secured the inside.



04 Before we attached the upper mount, it was necessary to connect the air lines even though we had not routed them to the AirPod. The DOT-approved plastic lines simply slid into the fitting and were secure when pulled.



05 To attach the upper air bag bracket, we clamped it in place, marked the location of the holes for the mounting plate on the upper spring perch, and then drilled the bolt holes with the plate removed.



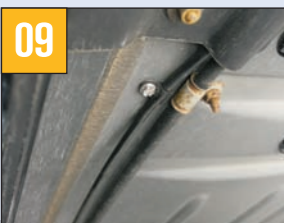
06 The double-adjustable shock is a factory replacement part. We attached it to the lower A-arm and bolted it to the top of the shock tower.



07 Installing the new front ShockWave struts was pretty straight-forward. After removing the spindle from the upper A-arm, we removed the stock strut and bolted the new ShockWave to the lower A-arm. It's a good idea to connect the air lines at this time as well.



08 While the factory struts used studs to secure the top, the new ShockWave assemblies use three bolts instead.



09 After attaching the air lines to the struts and air bags, we routed them through the fender wells and beneath the floor pans, keeping them clear of contact from exhaust, sharp edges, and moving parts.



10 After checking suspension and wheel/tire clearance, we located a good spot in the fender well to mount the Level-Pro sensor. We modified the sensor arm for shock and anti-sway bar clearance.



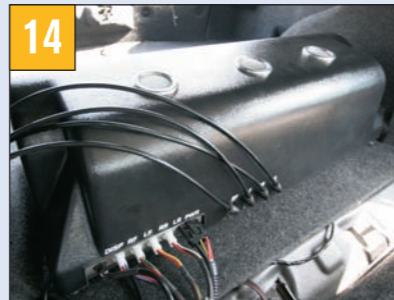
11 Welding a tab to the lower A-arm provided an attachment point for the LevelPro sensor.



12 The front sensor arms were attached to the lower tab on the anti-sway bar mounting bolt.



13 We routed the air lines and sensor wiring to the trunk. Rubber grommets were used in all drilled holes. As a precaution, anywhere lines or wires came in contact with an edge, we covered them with protective sheathing to prevent damage.



14 The AirPod fit perfectly between the wheel wells in the trunk, mounted to the floor. Connections for the air lines and wiring were clearly marked, making installation a snap.

HOTCHKIS SPORT SUSPENSION-ANTI-SWAY BAR SET

Even having the best bags, wheels, and tires on the market, you'll never get your car to stick without the proper anti-sway bar set up.

When cornering without anti-sway bars, the chassis rolls to the outside of the corner, compressing the suspension on the outside while the inside suspension extends. This causes extreme camber changes in your wheel and tire and reduces the available traction. The tire to the outside of the corner will experience positive camber, allowing the tire to ride on its sidewall, while the inside will see negative camber reducing tire contact area, which results in a loss of traction.

Anti-sway bars transfer the compression and rebound from one side of the chassis to the other, utilizing all four corners in a turn. When taking a corner with the proper anti-sway bars, the outside will compress along with the inside, essentially increasing the spring rate



and reducing the camber changes. By reducing the amount of camber change, it will decrease the time the chassis is rolling, allowing for quicker acceleration out of a turn.

Suspension load forces are also transferred from front to rear. When coming out of a corner, acceleration causes weight to be transferred to the rear suspension. Having a rear anti-sway bar that is too stiff prohibits smooth transfer of the force, resulting in loss of traction (oversteer). An anti-sway bar that is too light will

cause the front to lose traction (understeer).

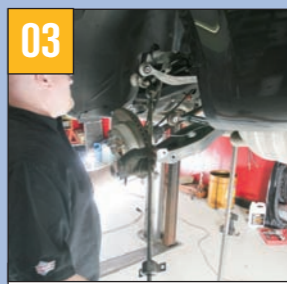
Hotchkis Suspension's beefed-up front anti-sway bar for the LX-platform has a 35mm hollow design that reduces weight and increases the overall stiffness by 30-percent. Perhaps more importantly, Chrysler's rear anti-sway bar is a small 15mm solid design that gives the 300C its inherent understeer problems. Hotchkis stepped up the rear sway-bar to a 19mm hollow design and increased the overall stiffness by 150-percent.



01 After removing the factory front anti-sway bar, the Hotchkis piece was bolted in its place, utilizing factory hardware and brackets with new poly bushings.



02 The rear anti-sway bar runs on top of the independent rear suspension. To remove it, we unbolted the rear axle assembly, loosened the exhaust and lowered it a few inches.



03 We then unbolted the factory anti-sway bar and snaked it out one side of the car around the suspension components.



04 The Hotchkis rear anti-sway bar fit perfectly; all bushings were greased to reduce bind.

AMERICAN RACING-TORQ-THRUST M TOYO TIRES-PROXIES4

We knew from the beginning that the stock wheels and tires would need to be upgraded in order for our 300C to really perform. The factory 225/60R18 tires provide too much sidewall deflection and were designed for daily commuting and minimal performance demands. The 18-inch factory wheels looked fine, but our project demanded more aggressive, larger diameter wheels while reducing sidewall deflection.

It's well known that wheels set the tone and look of a ride, and American Racing's Torq-Thrust M series wheels embody muscle car attitude. Their recently released Torq-Thrust M wheels build upon that rich racing heritage.

To get as much rubber on the ground as possible, we selected 22x9.5-inch wheels for all four

corners, which allowed us to use all the lateral real estate up front with a 1/2-inch to spare in the rear. We then wrapped them in Toyo's ultra high performance Proxies4 (255/35ZR22) with a W99 rating capable of up to 168 mph. Overall tire diameter remained virtually unchanged from the original tires, although the sidewalls were reduced from 5 1/2 inches to 3 1/2 inches, resulting in a stronger sidewall. The Proxies4 tread pattern offers an optimized shoulder, a center rib for stability in corners, a unique W-design for wet conditions, and a tire compound that provide firm contact without sacrificing tire wear.



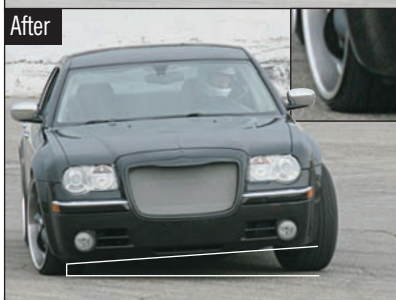
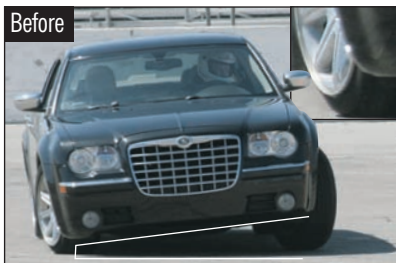
HANDLING CHARACTERISTICS-RESULTS

Installation was easy, with the majority of our time spent routing airlines and wiring, which we made sure to install away from rubbing situations to ensure that they were safely secured beneath the car. We are confident that with simple hand tools, most enthusiasts can accomplish this complete project during the course of a weekend.

Before we began our 300C project, we took it to a local track during a "Test & Tune" day. We were able to test the limits of our stock 300C, and really get to know its handling characteristics. While it was comfortable on the road, it was like a wet noodle on the track. Coming up to a corner, it had the tendency to dive when braking hard, and once into them, it felt very unstable. We experienced a fair amount of body roll, which caused the stock wheels and tires to go off camber and roll over on the sidewall of the tire, losing traction. After traction was lost, it began pushing in the corners, indicating understeer.

Selecting the right products for our build was essential to alleviating these issues, because the car would also have to withstand the rigors of pothole-laden daily commutes. The Air Ride system was a great choice—on the street we were able to dial our double-adjustable shocks down to a lighter setting to achieve a softer, stock-like feel in the suspension, even though we now had beefier anti-sway bars and stiffer sidewalls. The LevelPro system was also great for the street, with three programmable heights, one for laying it on its frame, clearing obstacles, and for normal ride height.

Even though we could adjust the car to be a kitten on the street, its greatest improvements were seen on the track. With all of our new components in place, we took our 300C to an open-track road course event to discover what these components could do together. After a comfortable 350-



Stiffer suspension, larger anti-sway bars, and high performance wheels and tires yielded us better handling and quicker times on the track. Performance on our test course revealed a reduction in time from 8.11 seconds to 7.60 seconds, netting a 6.7-percent decrease.

mile journey, we increased the rebound and compression-dampening settings on our struts and shocks before getting out on the track. Using MSD's G2X Datalogger, we refined our ride height and shock/strut settings, which resulted in reduced lap times. Additionally, the G2X measures Lateral-Gs and Acceleration-Gs, which also improved as we made our adjustments, indicating improvements in those areas as well.

The Air Ride Technologies double-adjustable shocks and struts allow near limitless adjustability for setting up our 300C for the track. The adjustable ride height gave us a much needed lower center of gravity with an increased spring rate. The Hotchkis' anti-sway bars reduced body roll and neutralized our understeer issues with a lot less front-end dive under hard braking


Once the Air Ride Technologies' LevelPro system was installed, we were able to easily program three separate ride heights into the computer. Our normal ride height was set at two inches below stock height. The two other settings are used for fully deflated (for when parked), and fully inflated (to clear obstacles), but neither should be used for routine driving.



situations, holding tight in the corners.

The American Racing wheels and Toyo tires gave the car real stickiness in the corners under dry conditions. The wheel/tire combination also performed well in wet conditions by grabbing the corners while other performance cars on the track were spending time in the weeds.

The cars that make up the LX-platform are true performers, and with a little help they can be made to handle as good as they look. Working with time-tested, proven companies and their components is vital in achieving positive results. Our revitalized 300C has already proven itself on the track, but we'll be testing this project over the long haul as a daily commuter in temperatures ranging from sub-zero to 100-plus degrees, over pothole-ridden side roads, and on interstate cruises. Watch for project updates in the months to come on your Member website (www.streetmachineclub.com).

The performance gains we've experienced are impressive. The improved handling makes the car more fun to drive and the low-slung, aggressive stance causes heads to turn wherever our 300C goes. There's no doubting that we've created a killer street machine for the street and the track. 

WEB VIDEO

To watch video of our 300C project on the track, visit the Club website at www.streetmachineclub.com.

SOURCES

Air Ride Technologies
www.ridetech.com
(812) 481-4781

American Racing
www.americanracing.com

Hotchkis Sport Suspension
www.hotchkis.net
(888) 751-8918

MSD Ignition
www.msdisignition.com
(915) 857-5200

Toyo Tires
www.toyo.com
(800) 442-8696