

MAP HAPPY: ON THE ROAD WITH ALPINE NAVIGATION

CAR STEREO REVIEW

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A '95 GMC
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Current Affair

Tested: High Current alternator, Ungo security system BY MICHAEL MICHNAY & MICAH SHEVELOFF

High Current Technologies Powermaxx MC-200 High-Output Alternator

AFTERMARKET ACCESSORIES CAN COMPLICATE A VEHICLE'S electrical equation. Adding accessories to your ride, such as fog lights, mega-watt driving lights, winches, a microwave oven, radar detectors, cellphones, and a satellite dish, as well as what most of us *really* want—a better stereo system—contribute to greater demands on your car's electrical system. Usually, a new CD head unit and a mid-size power amp can be added without straining the stock charging system. However, once you begin wiring in *serious* power-draining gear, it's time to start thinking about an alternator upgrade.

Your goal should be to find an alternator that can supply enough current to run both the car's electrical system as well as your constantly-being-upgraded audio toys. The battery should only act as a buffer to supply power during the high-current peak demands of the audio system.

A few months ago, I started work on a '97 Toyota 4Runner Limited that I soon realized would need more juice than it had on tap. What to do? Enter High Current Technologies owner Marvin Crawford, who's developed a 200-ampere hot-rated medium-case alternator known as the Powermaxx MC-200 (\$900 as tested; \$750 to \$950 depending on application; slightly more for special applications). The MC-200 took its lead from a typical medium-case 135-ampere hot-rated alternator, which can usually be retrofitted to almost any vehicle. By removing the diode pack and voltage regulator from inside the alternator case, Crawford gained room to use a larger rotor and stator, the two components that generate electricity. The MC-200's warranty is 1 year, extendable to 2 years through a dealer-sponsored program.

By remotely packaging the diodes, which convert AC current to DC, there's more room in the MC-200 for larger diodes that can handle 200 amperes. Crawford also designed a cast-aluminum case for the diodes to house a cooling fan for forced-air cooling that improves efficiency. The voltage regulator is also in a separate package and is adjustable, allowing you to fine tune output voltage. The diode and voltage regulator could've been mounted in the same package, but, in most applications, I'd

rather be installing multiple small components under the hood, rather than trying to find the space to house one large bulky one.

The MC-200 was able to use the stock brackets, adjuster, and hardware, with a couple of spacers as the only extras. I installed the diode pack between the 4Runner's battery and the driver's-side fender, a location that allowed fresh air from behind the headlight to keep the MC-200 cool while also keeping it protected from the elements. This location also allowed me to keep the three 4-gauge cables that connect the stator to the diodes down to about 42 inches in length. The positive and negative 1/0-gauge charge cables from the diode pack were kept to 2 and 3 feet respectively, with the positive cable going to a heavy duty multi-battery isolator that had been previously installed, and the negative line to the chassis ground point. The voltage regulator got snaked into a cubby on the same fender, just forward of the firewall. I was also supplied with a connector to plug into the OEM harness so I didn't need to cut any factory wires when connecting to the new voltage regulator. When the install was done, the OEM idiot light remained fully functional.

Upon starting the engine, I had an increase in charge to 14.3 volts at 1,000 RPM (AKA cold-start idle) from the stock system's voltage of around 13.8 volts. As I started adding load (i.e., all of the stock accessories and the stereo at low-to-

medium volume), the voltage remained stable. As I increased the volume on the stereo, I started seeing about a 1.0-volt swing in the charge relative to the music. Taking RPM up to 1,800 brought the voltage back to a stable 14.3 volts. Compared to what I started with in the original set-up, I was up a good 1.5 volts.

Maxx factors: The MC-200 (left), the fan-cooled diode pack (above)



As I reduced the RPM, the engine settled into a normal "hot" idle of 700

RPM and the alternator made little output. This isn't an uncommon scenario, since alternator current output is related to engine RPM. Crawford's goal with the MC-200, however, is to provide close to 100 amperes at idle. A quick recheck of the stock drive pulley on the crankshaft revealed the need for a smaller pulley on the alternator to raise stator RPM. Since the Toyota-supplied pulley was the smallest one commercially available, Crawford's partner, a machinist, cut a custom pulley and shaft nut for the 4Runner and sent it my way. After a quick pulley change, I had 70 amperes and 14.6 volts at 700 RPM. (I'd tweaked the voltage regulator to 14.6 volts before changing the

pulley.) At 800 RPM, I got 100 amperes, and, at 1,000 RPM, 130 amperes. By turning on all of the accessories, going to near max on the stereo's volume, and adding load with a battery/alternator tester, I recorded 170 amperes at 14.6 volts! When my load tester started to smoke, I had to stop, but, throughout my test, the voltage stayed steady at 14.6 volts.

This alternator didn't ever sag in output. If I could've left more load on for a longer time to run the battery down some, I probably would've seen at least a model-number-mirroring 200 amperes. I was quite impressed.

It used to be common when cruising at 60 MPH to be turning more than 2,300 RPM, but today's quest for increased fuel economy has created engines that can push a vehicle to 60 MPH at closer to 1,700 RPM or less. This particular 4Runner turns about 1,800 RPM at 70 MPH; cruising around town, it often averages below 1,400 RPM. Therefore, the ability to reach higher current levels at relatively low engine RPM has become more of a necessity than a bonus. With High Current Technologies' MC-200 under your hood, you can more than fulfill your quest for power—and keep your stereo system thumping in the bargain.

—Michael Michnay

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Ungo MS3001 Security System

ATTENTION TO DETAIL IS IMPERATIVE when it comes to the wide world of automotive security. Although it's not uncommon for a customer to ask for a security system that's loaded with techno gadgetry and luxurious extra features, most daily commuters enter my shop looking for a reliable, low-cost automotive alarm; in other words, basic fare. Generally speaking, these so-called no-frills security devices are very well made, and will certainly be a nuisance to car thieves if properly installed. Unfortunately for consumers, many of these systems get installed haphazardly. More often than not, inexpensive car alarms are being carelessly installed underneath a vehicle's dashboard just out of sight of a



Ungo cherry: a brand-new MS3001 system



scratch his or her hands and/or arms on them. Inside the

brain, you'll find the system's two-zone shock sensor and an impressive array of internal jumpers for a product in this price range. The jumpers allow you to customize the alarm system to your automobile.

Note: Jumper settings are determined by the type of vehicle into which the security system is being installed. Read the installation manual very carefully when you're doing the initial setup. After that, and once the jumpers are in place, final sensor adjustment is made via remote control. Thus, there's no need to access the brain after the installation is complete. This lets the installer bury the brain far away from the eyes and hands of a potential thief.

The MS3001 also has an impressive feature array. Designed to thwart code-grabbers, the Varicode² remotes have a solid feel, a modern shape, and are powered via a readily available watch-style 12-volt battery. Illuminated entry and exit buttons activate your car's interior dome light(s) for 20 seconds whenever the alarm is disarmed or the vehicle's ignition is turned off. A chirp mute courteously keeps the neighbors sleeping soundly, and a tamper alert lets you know when the system has been triggered, through a one long/one short chirp indication, and which zone has been violated via LED flashes.

Two auxiliary convenience channels are also on tap. The first can be used to pop open an electric trunk or activate a remote-start feature. Ungo has thoughtfully made it possible to bypass the shock sensor by depressing the AUX 1 button on either remote, so that a remote start won't cause the alarm to trigger. The second auxiliary channel can be used to activate or defeat an accessory (like a car stereo) when the ignition is off. This feature can be set to operate continuously, when the button is depressed on the transmitter, or as a latched on/off switch.

Impressed with the MS3001 straight out of the box, I wanted to see how it performed in the real world. Jason Venne (an alarm specialist at my shop) and I in-

passing pedestrian, but are easily accessible to the been-there, seen-that professional car thief. What a shame. An alarm system should be tucked up behind the dash, cleverly hidden from prying eyes and villainous hands.

That brief security sermon thus brings us to the Ungo MS3001 (\$140 uninstalled), which falls smack dab in the middle of the low-cost security-system category since no pager, remote starts, or radar sensors are included in the package. Inside its colorfully illustrated box, you'll find a control unit, two three-button remotes, a 125-dB siren, all related wire looms, an owner's manual, and an installation manual. And that's all, folks!

Noticeably absent from the box's contents is a packet of installation hardware, which generally includes a fuse holder, wire connectors, mounting screws, wire ties, and hood and trunk switches for cars that don't have them. Although most install shops generally stock all the necessary mounting hardware, Ungo should've at least included a fuse holder for the system's main power since they suggest running the alarm's power lead directly from the vehicle's battery. This install scenario is a potential powder keg: Without a fuse at the power source, a frayed or crimped power wire could cause a fire. So, please, *always use a fuse*.

Anyhow, after a preliminary examination of the alarm, I could tell its construction was very well thought out. The supplied wire harnesses are of excellent quality, and snap confidently into the compact control unit (AKA the brain). This sleek-looking brain is made of rugged plastic and is formed with nicely rounded edges, so a technician working under your vehicle's dashboard won't

parts & security

stalled the system in a 1997 Oldsmobile Achieva. The technical information and schematics provided with the MS3001 were very clear and made the interface a real breeze, but I don't think Ungo should've affixed a complete wiring diagram to the bottom of the brain. In my book, that's supplying too much information, sort of like inscribing the combination to a safe on its outer door.

Keeping the install neat was a legitimate challenge with the MS3001, which carries a limited lifetime warranty when installed by an approved Ungo dealer. An 11-inch antenna (which extends the range of the remote controls) protrudes from one side of the semi-rectangular shaped brain, while various wires and wire harnesses stick out from the other three sides. After reading the well-written install manual, Jason and I decided to attach the brain to the dashboard's metal superstructure with two mounting screws. The brain can also be tie-wrapped to a

dash support or existing under-the-dash wire harness. However, since the shock sensor is mounted in the brain, its sensitivity is directly affected by the brain's mounting locale. I chose to go the sensitive route by mounting the brain on a solid surface.

Three relays were needed in addition to the starter-kill relay included with the kit. (Note: These relays aren't supplied, but hermetically sealed relays are readily available at your local specialty store.) The first two relays were used to control door lock/unlock. The third was used to activate the vehicle's interior dome light. Although some larger systems include these particular relays inside the brain, the compact size of the MS3001's brain seemed like a worthwhile trade-off.

The momentary valet switch was solid and small enough to locate discreetly, so we placed it in the Achieva's armrest compartment. The flashing LED lamp, which we installed on the center console

next to the shifter, is housed within a flimsy plastic shell; this is the system's only real design oversight. The 125-dB siren, mounted under the hood, was standard and unpleasant when triggered.

Even though it serves up pretty basic fare, the Ungo MS3001 sure does an excellent job in providing what many consumers are looking for: good, reliable protection. This is exactly the type of affordable product that should be beating the thieves and reducing the incidence of vehicle thefts everywhere—as long as adequate time is spent concealing the components, that is. If educated consumers demand good workmanship, then moderately priced systems like the MS3001 will go a long way in successfully taking a bite out of crime.

—Micah Sheveloff

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