



# HEMITRONIX

*Lo-Buck Breakthrough! E-Z injected 3G Hemi swap.*



*The junkyards are teeming with 3G Hemis! Make one your very own, but keep it injected. With A.C. Nutter's cool swap, you can leave the OEM computer (circled) behind.*

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Photos by Eric Dahlquist, or as credited

**N**o question about it. 3G Hemi swaps are hot these days. And why not? Junkyards are now teeming with 'em. They have, after all, been in production since 2003. The block is the same basic dimensions as an LA engine, and mounts and headers are readily available (TTI). In some swaps, OEM exhaust manifolds can even be used. Yup, it looks like all the stars are aligned.

Not quite. The 3G Hemi, in 5.7, 6.1, and 6.4L displacements, is a thoroughly modern powerplant. Meaning: dry-manifold SMPI fuel delivery, coil-on-plug ignition, and throttle by wire. It has no provision for a distributor



**(2) Tens of thousands of '60s and '70s Mopars are simply begging for Hemi power. With—repeat—with—SMPI. Otherwise, why bother?**

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(3) The dream. A mint 3G Hemi appears. Thanks, genie. But, then...



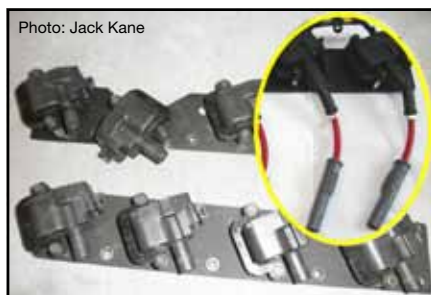
(4) ...the reality sets in. Whaddya expect for under a grand? Caviar? Actually, you get copper 'n' vinyl spaghetti with grease sauce, but, thanks to Mr. Nutter, that nightmare goes away.



(5) The key ingredient supplied with Nutter's "HemiTronix" deal is a junkyard Delphi computer, used in a bazillion GM cars from 1999 thru 2004. Is this any better than the PCMs used by Ma Mopar? No. But it does have one huge advantage: The aftermarket, apparently with help from the factory, has totally cracked the software code, meaning anyone can tune, modify, calibrate, and tweak to his heart's content.



(6) Of course, the Delphi box and Mopar sensors don't normally play in the same sandbox. That's the key to this swap—making the Delphi PCM think it is connected to a GM engine. The primary ingredient in this swap is a custom harness, supplied with the HemiTronix kit. Everything plugs into either the OEM Mopar components (injectors, etc.) or replacement sensors, etc., supplied with the kit. All you have to hook up are, basically, four wires: (1) ground, (2) battery +12V, (3) ignition-on +12V and (4) one wire to the fuel pump.



(7) The kit includes Delphi-compatible coils and mounting brackets. See photo 17 for an installed view. Wires are also supplied.



(8) Stock 3G Hemi injectors, including whatever's on your boneyard beast, will plug right into the HemiTronix harness.

or carburetor, and the crankshaft electronic impulses are delivered in an asymmetrical, non-standard timing pattern. The upshot: Electronics are a major headache. There have, of course, been several workarounds. First has been what we'll call "old school". In this approach, the intake manifold is replaced by one designed for a carburetor, and a carb is bolted on, giving up all the huge advantages of SMPI. To handle the ignition, either a modified timing cover, with distributor drive, is installed (with a distribu-



(9) A high-volume, high-pressure inline-style fuel pump, regulator and fittings are also available as an option.



(10) The stock throttle-by-wire body has to go. In its stead...

tor), or the "MSD Box," a slick unit designed specifically for this swap, is installed, keeping the ignition system, at least, DIS and fully solid-state.

Installers determined to keep the SMPI, with all its attendant (and huge) advantages, have had far fewer options. They can use a



(11) Nutter supplies a huge 80mm hi-flow mechanically-actuated throttle body, complete with matching sensors. It bolts right on to the stock manifold. You will need a longer throttle cable (Lokar, etc.)



(12) A new cam sprocket with Delphi-compatible cam tone ring (really, just a simple on/off deal, just like what's in a 318 Magnum distributor) is supplied, with a matching sensor and adapter.

"standalone" harness (think: hotwire.com) and a factory computer, which has been re-programmed to ignore the missing other computers that it normally sees. This is totally viable, but newer ('05-up) computers haven't had their software fully cracked, making swaps such as these trickier. And, should you desire more HP than stock, things become even more difficult.

This has led many swappers to toss the factory electronics entirely. Megasquirt, a user-supported, D-I-Y system, is one possibility, but it can't handle DIS, has limited options, and is not workable with the Hemi's strange crank-pulse system (designed to insure quick starts).

The aftermarket stands ready, of course. Flip 'em your gold card, and AEM and FAST, to name but two of the possibilities, are happy to ship you excellent, ready-to-go systems. All it takes is money. As usual.

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Photo: Jack Kane

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**(13) This bolts right onto the camshaft, no gymnastics (and provides an opportunity to install a new timing chain while you are in there).**



**(15) This also bolts on in the stock location. The downside: The crank's gotta come out for this (but the rods, pistons, and cylinder heads can remain in place). Eventually, maybe the Delphi PCM can be taught to read the stock Mopar pulse pattern.**



**(14) Similarly, a new crank tone ring is included, as is a new detonation sensor (the small gizmo at top right).**

But suppose we told you there's a plug-and-play system, with a full factory feature set, OEM reliability, that comes pre-tuned, yet allows almost infinite tuning changes, and it costs about \$2500, with a harness, and all the other necessary accouterments, ready to rock. Interested? You betcha!

The fertile gray matter of A.C. Nutter ([www.nuttracingengines.com](http://www.nuttracingengines.com), 360-256-5787), a Pacific Northwest engine builder of some repute, has come up with a really slick plan, actually, a total package, which he calls HemiTronix. Here's the basics and how it came to be: Delphi, an OEM supplier of engine controllers and sensors, has sold tens of millions of computer systems to Detroit, mostly GM. Owing to the massive quantities of units on the road, their software has been totally cracked, to the point that there's after-market apps that make tuning calibrations and modifications to the Delphi system as simple as playing with any typical Windows PC program. Positive manifold pressure? Huge throttle body? Hot cam? Nitrous?



**(16) If your engine came with MDS (cylinder deactivation) solenoids, you'd be smart to yank 'em, and replace them with the O-ringed plastic blockoff plugs used on early 5.7L, all 6.1L, and manual-trans 6.4L Hemis. Part number: 53032221AA. They're dirt cheap.**



**(17) One of the first prototypes ready for a dyno spin. Street? It would be a good idea to use plug wires with boots, and plug the unused plug tubes.**

Ported heads? Headers? Whatever you can dream up, the software can accommodate. And with A.C.'s harness and sensor package, this deal simply plugs any 3G Hemi directly into the Delphi PCM. Then you run a couple of wires to an electric fuel pump, ground, battery, and ignition-on +12V, turn the key, and drive on.

OK, maybe that's a slight oversimplification—but it is close. Here's the fine print: There's no way to make the Delphi computer play nice with the Chrysler sensors, cam and crank tone wheel, sensors, and coils. So A.C. swaps to Delphi coils and sensors, and makes up CNC'd tone rings to generate

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Photo: Jack Kane

Photo: Richard Ehrenberg

Photo: Jack Kane



(18) With the available software, you can tune your 3G Hemi just as freely as you would with an expensive aftermarket PCM setup. Even better, if you provide Nutter with your engine's parameters, he'll supply your PCM with tune that is quite close—literally, plug-'n'-drive.



(19) All external components, including manifolds, can remain bone-stock. But...

Photo: Richard Ehrenberg



(20) ...if you want to power-up your engine, by using a different intake manifold (XV's shown), headers, hotter cam, big throttle body (FAST 4-Bbl shown) etc....

the cam and crank pulses looked for by the Delphi. At that point, the computer thinks it is connected to a LS Chev engine, and now you turn the key.

It gets better. If you're computer gun shy, a-s we said, A.C. will send you a PCM with a custom calibration based on the specs of your engine. Or, you can buy the software tuner package and do it yourself. But one of the best parts is that virtually every chassis-dyno shop in North America will be able to do the tuning for you. They all have at least one of the software packages needed to get the tune spot-on.

All OEM 3G Hemis were throttle by wire—no mechanical throttle cable. So A.C.'s package includes a large (80mm) throttle body that bolts on to the stock Hemi manifold and nearly allows a normal bowden

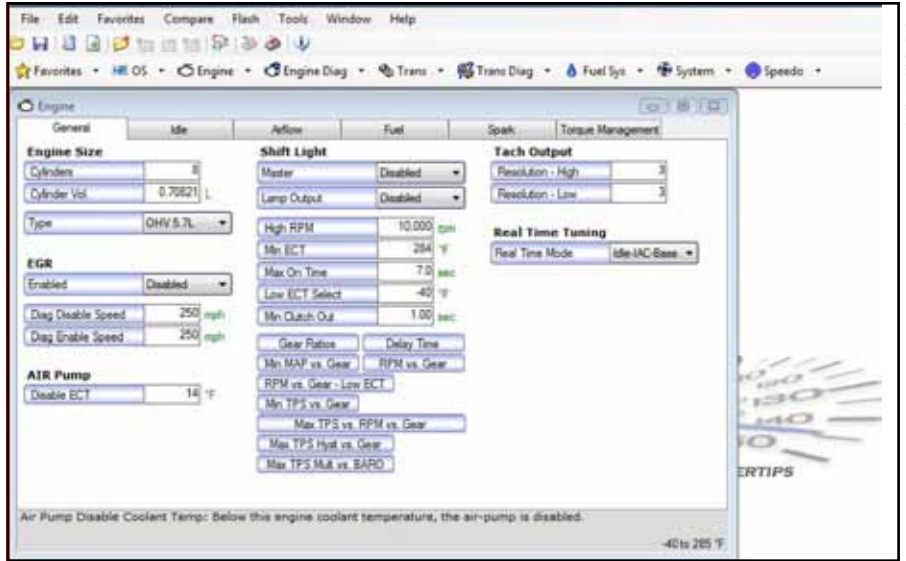


Photo: Jack Kane

(21) ...the software can easily accommodate it. Even blowers, dry nitrous systems, etc.

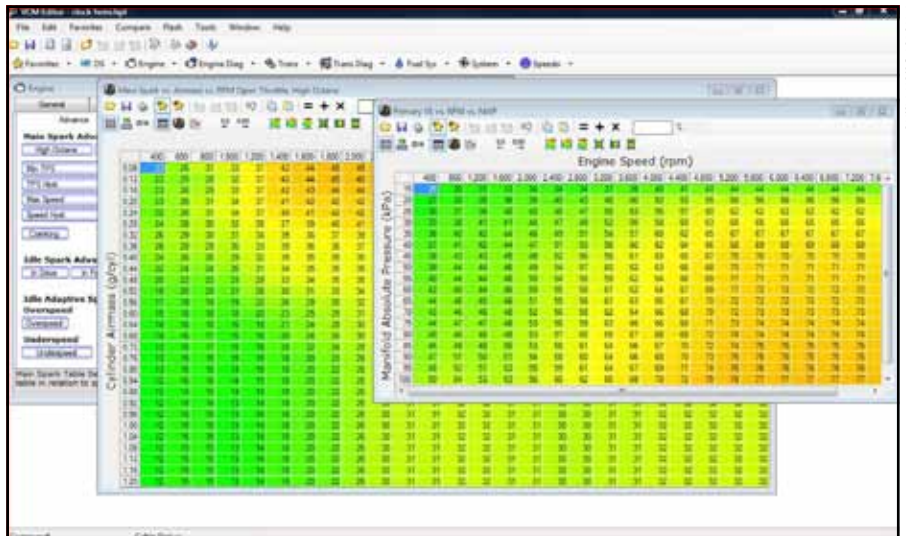


Photo: Jack Kane

(22) Here's a typical fuel-air spreadsheet showing VE vs. RPM vs. MAP. This kind of tuning is really fun. You can do this on the dyno, or on the fly with a laptop.



(23) On the dyno at nut-terracingengines.com, the first test mule (see where it came from on page 40), a dead-stock 2004 truck 5.7L, made 390 HP and 420 lb.-ft., with all stock manifolding but no cats and Nutter's throttle body. '09-up 5.7Ls, 6.1, and 6.4Ls will make lots more power. Even on a pre-'09 5.7L, with headers, some head work, a cam, etc., 500 HP is a cakewalk.

system on a number of 5.7Ls. But there's no reason at all why a 6.1 or 6.4L wouldn't hook up just as easily. In fact, he is building a highly modified 6.55L version as this article is being written.

The fine points of this swap and hookup are, as usual, covered in the accompanying photographs and their attendant

cable throttle cable/pedal setup. (The cable will need to be way longer than stock, Lokar has what you need.)

As of this writing, Nutter has installed this

captions, as is the standard MA procedure.

While we don't expect carburetors to disappear entirely, this swap certainly puts 'em one step closer to extinction. ★