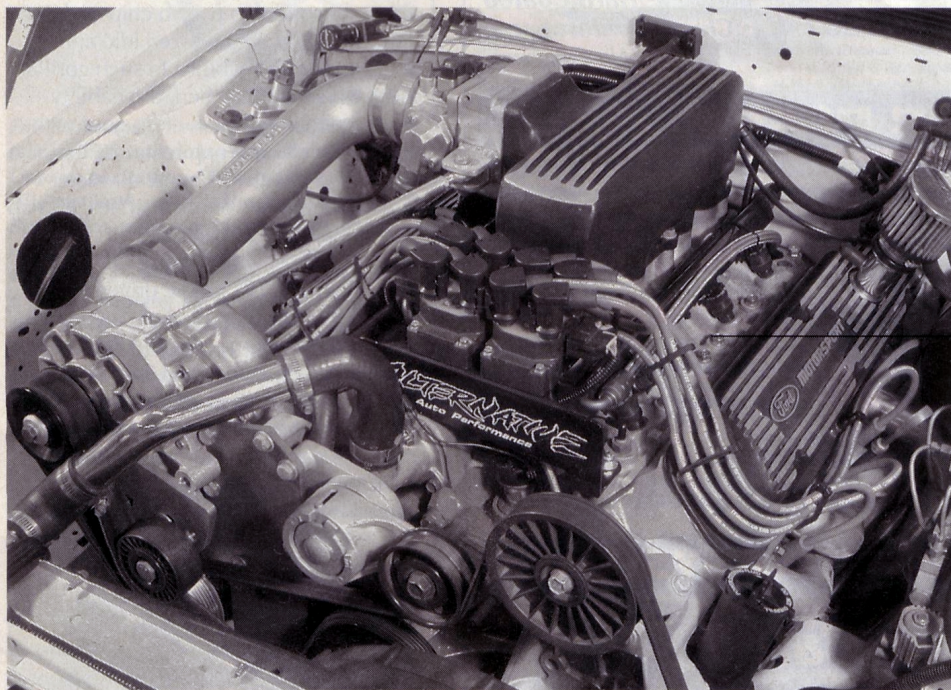


Electronic Animal Trainer



In recent issues we featured a couple of Alternative's more radical engine transplants, such as Roger Kappeli's '97 Cobra ragtop ("Backward-Compatible Cubes," Feb. '01, p. 24) that now houses a 640-hp, 392-inch

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blown Windsor, and Turbo Joe Spiteri's nine-second, supercharged Four-Valve modular-powered '91 Fox coupe ("High-Speed Half-Breed," Dec. 2000, p. 78). Lidio confesses he would have been hesitant to tackle either of these projects without using Speed-Pro's speed density-based engine-management system in place of Ford's Electronic Engine Control.

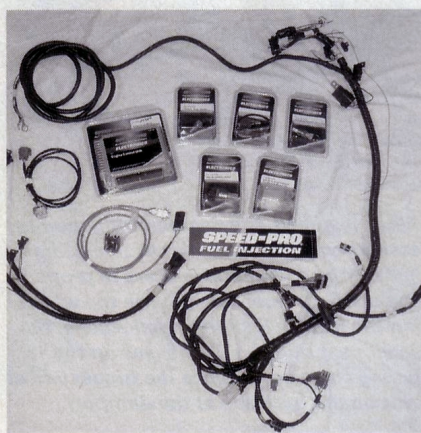
In addition to normal applications where someone is simply seeking control of his own tuning, Lidio strongly recommends the Speed-Pro system in two circumstances—the first of which is the radical pushrod application churning out, say, 600 or more rear-wheel horsepower. Though Lidio could usually chip-tune such beasts for good wide-open-throttle (open-loop) operation, he found there was often no way to chip-trick the EEC into allowing civilized idle and part-throttle driveability. In such gorilla pushrod situations, then, driveability is a compelling reason Lidio goes with Speed-Pro. "Some applications," he explains, "because of mass air meter incompatibilities, or mismatches, end up with what I like to call mass air resolution problems, which cause idle problems with EEC IV." We've driven or ridden in a couple of Lidio's Speed-Pro-managed creations (see The Rise of Civilization sidebar), and their factory-like cold-start, idling, and part-throttle manners have certainly been impressive—as has been their fierce power.

Other Lidio-approved features of Speed-Pro are its datalogging capability (up to eight channels), and—if optioned with a wide-band oxygen sensor—its ability to perform closed-loop wide-open-throttle operation, wherein the user simply sets a desired air/fuel ratio and the Speed-Pro does everything possible to maintain it. This latter feature can save a lot of time messing with calibration tables. And, as with other user-tunable systems, Speed-Pro eliminates paying to have a new chip burned, or for a revised air meter, every time your combination changes—meaning it could conceivably pay for itself over the long term.

Lidio considers the newer EEC V processors even more problematic than the EEC IV from a tuning perspective. "Modular-equipped Mustangs have a more strict EEC V computer with OBD-II in the background," he says. "It allows a lot less control over some stuff we'd like to have control of." Because of the EEC

V's Big-Brotherish habits, Lidio asserts, "The future of modular racing will rely—in my opinion—heavily on after-market electronics. It doesn't have to be Speed-Pro, of course, but that's my favorite." Lidio favors Speed-Pro particularly because of its pricing and user-friendly interface.

Which brings us to the second circumstance where Lidio feels a Speed-Pro or similar stand-alone system is an absolute necessity. That is when swapping a modular engine into any chassis



For situations where he can't coerce the factory EEC into doing what he wants, Lidio unhesitatingly turns to Speed-Pro. Alternative Auto sells the stand-alone Speed-Pro engine-management system—complete with wide-band O₂ sensor—for \$2,100. The pictured system consists of the ECU; coolant, air temp, and O₂ sensors; an idle air control motor; an adapter for remote IAC mount; main, injector, and O₂-sensor harnesses; and a computer interface cable. Also included, but not shown, is the C-Com system software.



The heart of the EDIS' accuracy is the powdered-metal "36-minus-1"-tooth crank trigger wheel. The only way you can buy it from Ford is as part of this Explorer damper assembly for about \$90. Unfortunately, once you press the wheel off the back, the damper/pulley assembly goes in the garbage as it cannot be used on Mustang applications. Lidio is trying to find a source of the trigger wheel only.

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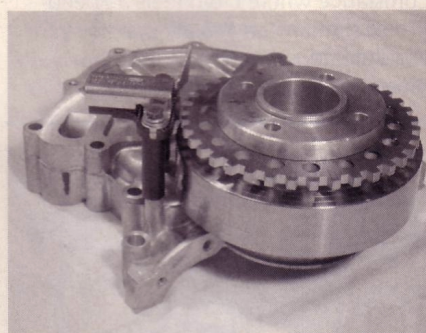
that didn't come from the factory with one—be it a pre-'96 Mustang, a Cobra kit car, or a street rod. "It's literally almost impossible to do it with a production EEC V harness," Lidio explains, "because the harness isn't as clean and simple as the A9L harness that came on '89 through '93 Mustangs, where, with just two or three connections, you just picked the whole engine and computer clean from the body and put it in a street rod or kit-car Cobra. That's not happening anymore because the [EEC V] harness is overly integrated into the body loom." Of course, even if people do somehow manage to transfer the harness, they are then stuck with the EEC V's tuning issues and limits once they begin to build on the motor.

The Accuracy of EDIS

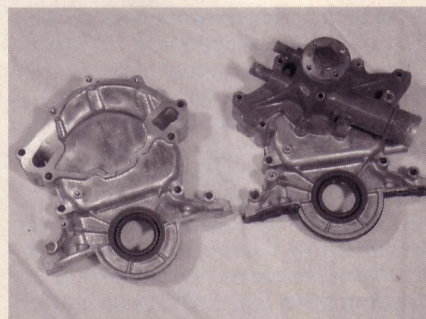
Speed-Pro works perfectly fine with a typical small-block's TFI ignition system, but that didn't stop Lidio—ever the perfectionist—from experimenting with adapting the late-model Explorer 5.0's EDIS ignition hardware to pushrod Mustang applications. What he sought was the plus-or-minus ¼-degree spark accuracy of the crank-triggered distributorless system—that and the uniqueness of having a distributorless small-block.

Admittedly, most street applications will do just fine with a TFI ignition's lesser accuracy (Lidio has heard the TFI's tolerance can be as much as plus-or-minus 3 degrees). But as the revs climb, so does EDIS' value. "I think at high rpm

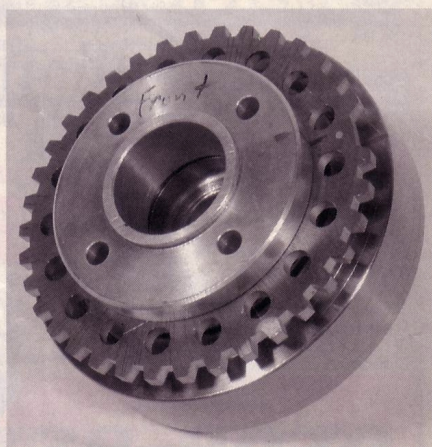
is where it can really pay off," Lidio says. "They say crank triggers usually are worth anywhere from 20 to 40 horses, depending on the application and the rpm. That's where I think it will pay off." Lidio also cites EDIS' coil-packs and lack of a moving distributor as real benefits. And if MSD's DIS-4 ignition box is



When installed, the damper/trigger wheel assembly will look similar to this. Lidio had to make up metal spacers to properly line up the trigger sensor with the wheel (on the factory Explorer applications, the sensor sat right on the bosses on the timing chain cover, since the trigger wheel was on the backside of the damper).



You'll need to buy a timing chain cover that has those two bosses on which to mount the trigger sensor—factory Mustang 5.0 covers did not have them. The version on the right is off the 5.0 Explorer and fits SN-95 applications. The one on the left is for Fox cars (the water pump bolt pattern differs) and is available through Alternative Auto.



Lidio fits the wheel to an FRPP crank damper (about \$275) and spacer (\$30+/-). To properly reference it with the inductive trigger sensor, the wheel's missing tooth should be aligned with the damper's 30-degree BTDC timing mark.



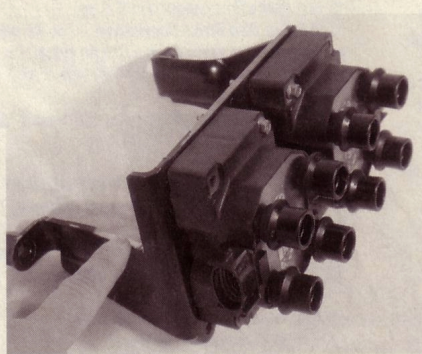
About \$250 will buy you the EDIS8 (eight-cylinder) control module and 12-wire harness from a Ford dealer. The module controls firing order, which is common between small-blocks and modulares.

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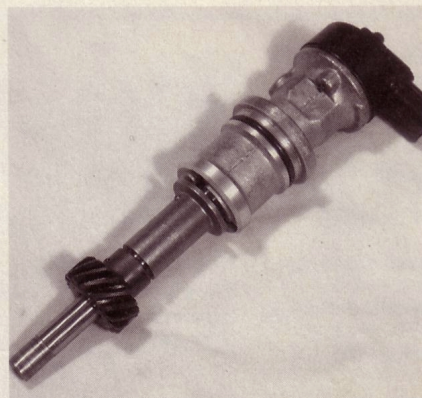
up to the task, Lidio thinks EDIS could find a home in 1,000-plus-horsepower Renegade, Outlaw, or Pro 5.0 cars.

A look at our lead photo shows that Lidio was indeed successful in creating the distributorless pushrod Mustang, and we've included photos and some pricing of the bits involved in an EDIS conversion. Whether or not you need the system's spark accuracy, it's still a cool conversation piece. Lidio has done the EDIS conversion only in concert with Speed-Pro. He doesn't yet know whether it can be made to work with a Mustang's factory EEC IV or EEC V.

Don't get us wrong. Lidio isn't advocating a Speed-Pro and EDIS conver-



Lidio has so far been able to find used EDIS coil packs, but new ones are about \$90 each from your dealer. The coil pack bracket (\$30) is from the Explorer and bolts right on 5.0s after a bit of grinding to clear a coolant rail. To go on the taller-deck 351, a little bending and tweaking is needed, but Lidio says it will fit.



As a distributor replacement plug, use the Explorer 5.0's cam position sensor assembly, which will bolt right into a 302 block (its cam sensor function is not necessary on the bank-fire Speed-Pro; it's just to fill the hole). If yours is a 351-based engine, however, this part will need some modification to fit properly. Lidio can set you up with the correctly modified version.

sion just because your otherwise-stock 5.0 got a cam and head change. But as the Mustang aftermarket power combinations continue to become crazier, he's merely recognizing the factory stuff's limitations. **5.0**

The Rise of Civilization

Yes, too much horsepower is just about enough. But all too often, horsepower's rise is accompanied by the fall of factory driveability, taking a lot of the pleasure out of the daily commute. On a cold, gray February afternoon, Lidio Iacobelli offered to demonstrate the overall civility of his faithfully quick yellow Fox notchback, now returned to regular street duty and fitted with both Speed-Pro and EDIS to tame the muscular ways of its T-trim-blown 392. So we strapped into the shotgun seat with Lidio at the wheel and Speed-Pro running in real time on the laptop on our knees.

Full-throttle performance was about what you'd expect from a nine-second Fox—that is to say, nothing short of breathtaking. But in a departure from many cars that aren't even nearly as quick, this one displays better manners than an English butler. In fact, aside from a slight hissing from the blower bypass, you'd have no clue there were over 600 horses on call. Some of this politeness no doubt stems from the four mufflers plumbed into its 3-inch exhaust, but most—such as its OEM-quality cold-start and part-throttle operation—Lidio attributes to the Speed-Pro and its wide-band O₂ sensor.

Despite being overcammed in Lidio's opinion, the car's idle is also impressively smooth and steady, especially in view of its automatic transmission—a result of Speed-Pro automatically and instantaneously varying idle spark advance by as much as 20 degrees, as required. In all, it's a civilized demonstration of Speed-Pro's capability, and Lidio's tuning ability.

SOURCES

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