

# EFI FOR ANY CAR

## A Collection of the Most Popular Electronic Fuel-Injection Systems in the Aftermarket

By Christopher Campbell

Photography: Randy Lorentzen  
and the manufacturers



The benefits and shortcomings of EFI versus carburetion is a hot and ongoing battle in the hot rod community—and one we're not going to engage in for this feature. No, for this one we're going to assume you're already intrigued by fuel injection and want to know what your options are. One thing's for sure—there are plenty of choices to find the right system for your car. To save you time, we did the digging to ferret out all the street-oriented conversions the aftermarket has to offer. From off-the-shelf, turnkey systems that come with all the necessary parts to custom-crafted systems, we've got all the players.

In addition, we've got real-world installation details and test data to weigh the benefits on average muscle cars. We can't test 'em all, but we picked three EFI systems with widely differing approaches to fuel-injection conversion, installed them on real muscle cars, tuned them, dyno'd them, then hit the streets to give you an unbiased evaluation on the ease of installation, performance of the kit, and what's it like living with them day to day.

Unfortunately, we don't have all the room we need, so consider this a tantalizing preview of the EFI kits on the market. For the full, uncut version log on to [HOTROD.com](http://HOTROD.com).

### ACCEL DFI

#### Who are you?

The ignition, fuel, and engine management branch of the Mr. Gasket Co.

#### What kits are available?

Thruster Engine Builder's series (pictured), Pro-Ram, Street-Ram, and manifold kits.

#### What extras or options are available?

Standard (HEGO) oxygen sensor control, linear wideband (UEGO) oxygen sensor control, dual-fan control (primary and secondary), one-, two-, or three-stage nitrous control, transmission torque converter lockup (TCC) control, shift light

control, A/C clutch control, malfunction indicator lamp output, knock sensor control, and two-step rev limiting.

#### How do I tune it?

Using a laptop and ACCEL's software.

#### What else will I need to get my car on the road?

High-pressure fuel lines, basic handtools, and possibly an air cleaner.

#### How much does it cost?

\$1,199.98 to \$3,500.00

### SOURCE

ACCEL-DFI; Wixom, MI; 248/380-2780;  
[www.accel-dfi.com](http://www.accel-dfi.com)



## AFI

### Who are you?

Affordable Fuel Injection was founded by brothers Norm and Kevin Witte in 1998 with the sole purpose of bringing an affordable turnkey conversion to the market. Norm has worked in the development of fuel-injection systems for more than 25 years, with GM in the '80s and Ford in the '90s and '00s.

### What kits are available?

AFI builds wiring harnesses to convert throttle-body injection (TBI) into most vehicles and TPI/MPFI harnesses to make the conversion to fuel injection. It also builds complete stand-alone fuel-injection systems for TBI, TPI (tuned port), and MPFI (multiport) units.

### What extras or options are available?

Emissions options, a torque converter clutch such as on the 700-R4, an electric fan, 4L60E and 4L80E transmission controls (TBI only), an rpm lift for winch and compressor operation, and VSS output for electronic dash display.

### How do I tune it?

AFI kits are delivered pre-tuned. In some instances where large camshafts and performance engines are concerned, additional tuning is required via laptop computer with the provided software and an exchange of calibration chips.

### What else will I need to get my car on the road?

High-pressure fuel lines and an air cleaner assembly.

### How do I buy it?

Online at [www.affordable-fuel-injection.com](http://www.affordable-fuel-injection.com) or phone 248/556-5976.

### How much does it cost?

Prices range from \$950.00 for a TBI unit up to \$2,500.00 for a big-block MPFI unit. Custom-built units are available at a higher cost.

## SOURCE

AFI; Elsie, MI; 248/556-5976; [www.affordable-fuel-injection.com](http://www.affordable-fuel-injection.com)

## DYNATEK

### Who are you?

Dynatek developed its Classic Fuel Injection (CFI) system from the desire to combine the classic good looks of down-draft Weber IDA carburetors with the precision tuning and performance offered by electronic fuel injection.

### What kits are available?

Ford applications include 302, 351, FE, and 429/460 engine families. Chevy applications include SBC, BBC, and even the LS engine families, with LS3 applications in development. Dodge applications include the new 5.7L/6.1L Hemis. The CFI is also available for air-cooled VW applications and any custom intake manifold that will accept IDA Weber carbs.

### What extras or options are available?

Options include ported intake manifolds (worth up to 40 hp) and a stainless braided fuel system (including an adjustable fuel pressure regulator). Additional options include polishing, chrome-plating, and powder-coating of the intake manifold and throttle bodies.

### How do I tune it?

The CFI system comes with a library of preprogrammed tunes for a wide variety of different engine displacements and combinations but can be tuned using a standard laptop computer. Since the CFI system incorporates closed-loop operation, the idle, part-throttle, and cruise conditions will be optimized by the ECU.

### What else will I need to get my car on the road?

The kit includes all the necessary components including a high-pressure fuel pump, lines, filters, and fittings to allow installation of the system on a vehicle.

### How do I buy it?

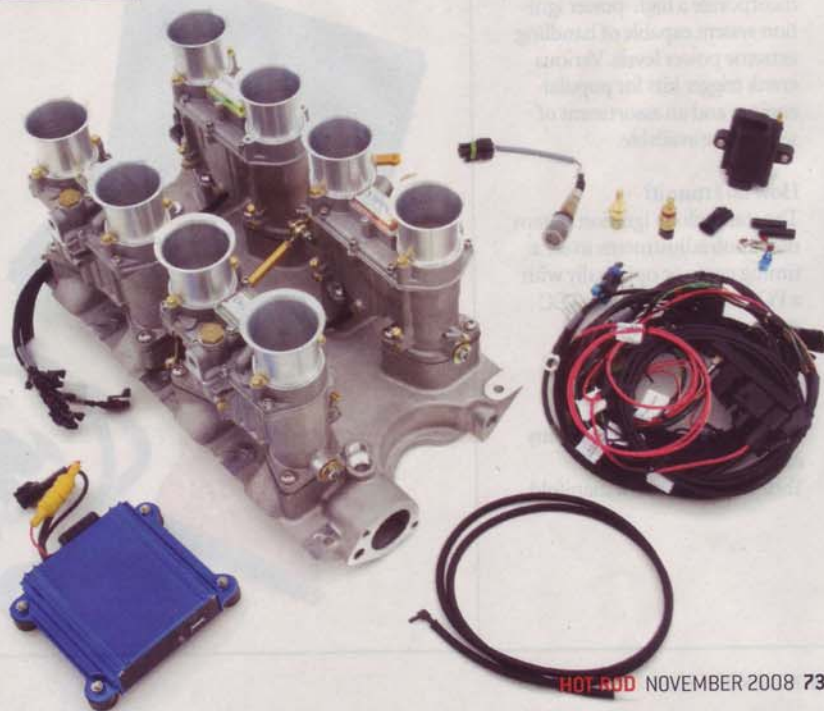
The CFI system is available directly from Dynatek Racing, though a dealer network is currently being established (dealer inquiries welcome).

### How much does it cost?

CFI systems range from \$5,995.00 to \$6,995.00.

## SOURCE

DYNATEK RACING; Masury, OH; 866/839-0177; [www.dynatekracing.com](http://www.dynatekracing.com)





## ELECTROMOTIVE

### Who are you?

Electromotive is a Virginia-based engineering and manufacturing company specializing in high-resolution, distributorless ignition systems and related control and has been manufacturing race-grade direct ignition systems since the '80s with and without EFI options.

### What kits are available?

Two TEC systems: the TECgt [up to eight cylinders] and TEC3r [up to 12 cylinders].

### What extras or options are available?

The TEC systems are race-ready, come with all software features enabled on every product, and incorporate a high-power ignition system capable of handling extreme power levels. Various crank trigger kits for popular engines and an assortment of sensors are available.

### How do I tune it?

The stand-alone ignition system uses knob adjustments to set a timing curve or optionally with a PC interface using WinTEC software. All TEC systems include Electromotive's WinTEC software.

### What else will I need to get my car on the road?

Your choice of intake manifold.

### How do I buy it?

Contact Electromotive directly to find the best dealer for your project.

### How much does it cost?

As low as \$595.00 for an XDI ignition controller and it can exceed \$3,000.00 for a TEC3r with engine sensors, coils, wires, and injectors.

## SOURCE

ELECTROMOTIVE INC., Manassas, VA; 703/331-0100; www.electromotive-inc.com or www.distributorless.com

## FAST EFI

### Who are you?

FAST (Fuel Air Spark Technology) has been designing and building EFI products for more than 10 years. Hardware and software are designed in-house by its engineers.

### What kits are available?

Distributor-equipped engines up to 500 hp will use the EZ EFI kits that utilize a throttle-body injector, which bolts right on to your favorite 4bbl intake manifold and physically fits within the same space as a 4bbl carburetor—and even utilizes the same linkage as a carburetor. The small, weatherproof ECU has a simple four-wire hookup for ease of installation. Complete XFI kits can handle up to 1,000 hp. Coil-on-plug engines will use the Crate/Transplant XFI kit.

### What extras or options are available?

EZ EFI comes with no available options. Complete XFI kits can be optioned with internal data-logging and intelligent traction control.

### How do I tune it?

The EZ EFI is an auto-tuning unit; just answer a few simple questions about your engine with a supplied handheld setup tool that also functions as a diagnostic tool. The controller starts from zero with the information you supply and begins building the tune-up as you run the engine and drive the car. Complete XFI kits use C-ComXFI software.

### What else will I need to get my car on the road?

Handtools. Everything else is provided in the kit.

### How do I buy it?

Through local dealers or direct.

### How much does it cost?

EZ EFI is approximately \$1,800.00 and complete XFI kits range from \$3,600.00 to \$4,300.00.

## SOURCE

FUEL AIR SPARK; Memphis, TN; 877/334-8355; www.fuelairspark.com







## HILBORN

### Who are you?

Stuart Hilborn made the first constant flow fuel injector in 1948 and his company has continued to evolve while keeping that distinctive Hilborn look.

### What kits are available?

Choose from 331-392 Hemi, 426 Hemi, 6.1L and 440-Wedge, along with 302, 351W, 390, 428, 429, 427SOHC, 460 Fords and, of course, small- and big-block Chevys. Blown cars also have the option of scoop- or hat-style injectors.

### What extras or options are available?

Porting of the castings for maximum power. If the Carabine ECU is chosen for fuel management, an Innovate Motorsports LM-1 is included. Polishing and powdercoating are available.

### How do I tune it?

The Carabine ECU does not require the use of an O<sub>2</sub>, MAP, or MAF sensor and is preflowed at the factory for easy start-up. Fine-tuning is accomplished with a screwdriver. A stand-alone O<sub>2</sub> sensor such as the LM-1 can be used for fine-tuning. Kits using a FAST XFI ECU are also available.

### What else will I need to get my car on the road?

High-pressure fuel lines, coolant lines, throttle linkage, and some wiring.

### How do I buy it?

Direct or through dealers.

### How much does it cost?

Kits range from \$5,000.00 to \$9,000.00.

## SOURCE

HILBORN; Alisa Viejo, CA; 949/360-0909; www.hilborninjection.com

## HOLLEY

### Who are you?

You know them as a ubiquitous name in carburetors, but Holley's also been in the fuel-injection market since the early '80s.

### What kits are available?

Commander 950 multipoint fuel-injection (pictured), Commander 950 throttle-body injection, Commander 950 stealth-ram MPI, Commander 950 universal MPI, Commander 950 engine-management, Commander 950 race MPFI, Commander 950 power pack.

### What extras or options are available?

All complete systems can be purchased with a narrowband O<sub>2</sub> or with a Bosch or NTK wideband O<sub>2</sub>. Wideband O<sub>2</sub> gauges help with tuning and monitoring the engine's air/fuel ratio. There is

also an auxiliary injector driver that expands the ECU's capability to control an additional eight injectors.

### How do I tune it?

Detailed tuning manual and real-time, on-the-fly tuning via laptop software.

### What else will I need to get my car on the road?

High-pressure fuel lines.

### How do I buy it?

At [www.holley.com](http://www.holley.com) or call 800/HOLLEY1 to find your nearest dealer.

### How much does it cost?

\$1,700.00 to \$3,600.00

## SOURCE

HOLLEY; Bowling Green, KY; 800/HOLLEY1 or 270/782-2900; [www.holley.com](http://www.holley.com)





## HOWELL ENGINE DEVELOPMENTS

### Who are you?

Howell Engine Developments was founded by Bill and Matt Howell with the intent to supply wiring harnesses for the transplant of GM late-model fuel-injected engines into previously carbureted vehicles. As the market matured, the company ventured into complete TBI systems as well.

### What kits are available?

TBI kits that are applicable to GM, Ford, Chrysler, AMC, and International engines and just about any previously carbureted V-8 or V-6.

### What extras or options are available?

Kits are all-inclusive but can be tailored to specific applications.

### How do I tune it?

All kits include a calibration prom based on the engine specs given. (No tuning needed.)

### What else will I need to get my car on the road?

Nothing else. The TBI kits are made up of everything you need to change over a previously carbureted engine, i.e. a wiring harness, GM ECM, all sensors, an external fuel pump, an adapter plate, a fuel line, and so on.

### How do I buy it?

Directly or from one of more than 250 dealers.

### How much does it cost?

Kits generally run \$1,200.00 to \$1,500.00.

## SOURCE

HOWELL ENGINE DEVELOPMENTS; Marine City, MI; 810/765-5100; www.howellEFI.com

## MOTEC

### Who are you?

Shane Tecklenburg spent five years with MoTeC Systems. During his tenure there, he realized the need for a more user-friendly packaging of MoTeC equipment to offer performance enthusiasts access to the products without the need to have an engineering team on staff for the build.

### What kits are available?

STM Chev V-8 kit for Chevrolet big- or small-block with standard deck height.

### What extras or options are available?

Boost control or idle control

and wheel-speed sensor for traction control. Two optional sensor inputs can be used for things such as pressure and/or temperature or can be connected to a driver-adjustable switch to change fuel, boost, and ignition advance on the fly.

### How do I tune it?

Using MoTeC's tuning interface. You need a laptop that runs Windows 98 up through Vista. The tuning software is DOS-based and requires either a nine-pin serial port or a USB-to-serial adapter for laptops, which do not have the nine-pin serial port. You can download the software for free from MoTeC's website.

### What else will I need to get my car on the road?

A throttle body with a TPS sensor attached, an EFI manifold of some kind, a properly sized electric fuel pump, an aftermarket CDI ignition system, and a filter with the related plumbing.

### How do I buy it?

Go to [www.fastmotorsports.com](http://www.fastmotorsports.com), send an e-mail to [shaneteck@yahoo.com](mailto:shaneteck@yahoo.com), or call 714/318-5845.

### How much does it cost?

Around \$6,500.00

## SOURCE

FAST MOTORSPORTS/ST CONSULTING; Huntington Beach, CA; 714/318-5845; [www.fastmotorsports.com](http://www.fastmotorsports.com)





## MOTORVATION

### Who are you?

Motorvation is a performance EFI company that supplies everything from tuning aids—such as chips, programmers, modules, and so on—to complete stand-alone race systems.

### What kits are available?

A four-barrel TBI can be used to convert a factory GM 2bbl to a 750-cfm 4bbl TBI or to convert carb to EFI with a GM ECU or aftermarket controller.

### What extras or options are available?

Wideband O<sub>2</sub> sensors, two-stage nitrous control, and a custom wiring harness.

### How do I tune it?

A specific custom tune is installed in the ECU from Motorvation based on the customer's needs. The tuning software is provided. All you need is a laptop computer. The software has been designed with simplicity in mind—just follow the easy-to-understand instructions. You will have control over all the key functions needed to custom-tune your own vehicle.

### What else do I need to get my car on the road?

The Motorvation system only needs high-pressure fuel lines and fittings to get you rolling.

### How much does it cost?

Kits begin at \$2,790.00 for the basic street system.

## SOURCE

MOTORVATION; Cordova, TN; 901/821-0033; www.motorvation.tv

## PANTERA EFI

### Who are you?

Lance Nist of Pantera EFI has 25 years of experience in the engine-management-system manufacturing field, and his systems have fueled everything from street cars to road racers.

### What kits are available?

Most popular engine families are covered by the EFI/DIS conversion packages including multiple versions for GM LS-series engines. The 882 model has eight channels for ignition and eight channels for fuel required to provide sequential operation on a V-8. Custom kits are available.

### What extras or options are available?

Polished or anodized finishes.

### How do I tune it?

Kits are precalibrated with DTS dyno-proven programs. Software is included for those who'd like to create their own tunes.

### What else will I need to get my car on the road?

High-pressure fuel lines.

### How do I buy it?

www.panteraefi.com

### How much does it cost?

The cost of the complete LS-stack kit for the cathedral-port head is \$6,995.00. **HRM**

## SOURCE

PANTERA EFI; Santa Ana, CA; 949/250-1797; www.panteraefi.com



## SEE MORE AT HOTROD.COM

We're out of pages here, but go online to see more EFI kits, the stand-alone controllers, and custom-crafted EFI kits out there for creating your own fuelie conversion.