

OVERREV

# ELECTROMOTIVE ENGINE CONTROLS

Superior Ignition and Engine Management Systems

REV LIMIT 15000 RPM

90 °C

AD3

2.40

0% GPO #1

0% GPO #2

OFF GPO #3

OFF GPO #4

BATTERY 12.0 V

TOTAL FPW% 97%

MAP 254.1 kPa

1. SET ADVANCE TO ZERO
2. CLEAR ZERO ADVANCE
3. ADD FIXED ADV/RTD (-10 to 10 Deg)
4. ADD FPW% OFFSET(-40% to 40% FPW)
5. CHANGE UAP (3 to 30 ms) =
6. CHANGE PULSEWIDTH OFFSET (-)
7. CHANGE TPS BLEND OFFSET (0 to 100%)
8. CHANGE GPO # 1 OFFSET (-30% to 30%)
9. CHANGE GPO # 2 OFFSET (-30% to 30%)
0. CHANGE AFR OFFSET (UP/DOWN)

Use ALT# keys to Access Engine



'Total Engine Control' Systems and Components Catalog

ENGINE RPM



MANIFOLD MAP



GAMA



GENERAL PURPOSE OUTPUT



INJECTOR DUTY CYCLE 81.93%

ON TIME 4.34 Ms

FOR DUTY CYCLE 0.00%

5.30 Ms 0.00 Ms

PRIMARY DUTY 0%

Check Engine Light

Print Form

<< BACK

GPO 100

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CR 12.3

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## About Electromotive

Electromotive was formed in 1981 to advance the use of digital electronics for engine control systems. Pioneering work with advanced digital ignition circuitry led to the creation of the High Resolution Electronic Ignition Control system, which was patented in 1985\*. In 1987, Electromotive combined a new fuel injection system with the highly successful ignition system, creating the most progressive engine management products available. Now the next generation of products including the TEC<sup>3</sup>r and XDI continue to break new ground with innovative design and ideas. Electromotive's technology offers unmatched performance and flexibility.

\* patent number RE. 34, 183

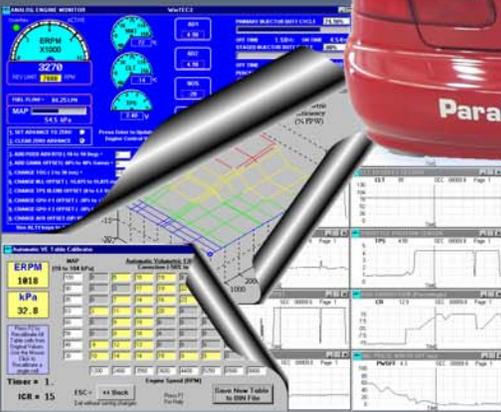
## High Performance Ignition

Major OEM's have used Electromotive's patented ignition technology for many years. Offering superior products through innovative technology, the Electromotive ignition can be used in extreme race situations or in a normal daily driver. This direct ignition is capable of delivering a full charge to the spark plug beyond 15,000 RPM and provides complete control over timing. Electromotive Ignition systems have the ability to deliver 150mj of energy throughout the RPM range. Unmatched in performance, the Electromotive ignition is capable of spark durations up to ten times that of conventional ignition systems. Electromotive originally developed the advanced direct ignition system for high performance applications; today that same technology is an integral part of most OEM engines.



## From Mind to Manufacture

Always looking to the future, the Research and Development staff at Electromotive is always striving to develop innovative and creative new products. Our in house engineers, software professionals and manufacturing team maintain the highest standards in the development and testing of Electromotive products. Rigid quality assurance procedures are used throughout the production process to assure flawless operation and complete customer satisfaction.



## Made in America, Winning Races Worldwide



# ELECTROMOTIVE ENGINE CONTROLS

## **Electromotive's Fundamental Advantage**

What separates Electromotive's sophisticated Engine Control from those of other manufacturers is its patented, industry leading Direct Fire Ignition system. With both the stand-alone XDI ignition systems and the Total Engine Control systems, Electromotive utilizes a 58-tooth crank trigger wheel. This "high resolution" signal feeds continuous information to custom ignition chips so that timing error is virtually eliminated. This "high resolution" circuitry is used to accurately determine both the coil charge time and the Ignition Event in actual angular values (degrees of crank rotation). This eliminates the dynamic error that is prevalent in our competitors products. Others may claim 1/4° degree accuracy, but without this accurate crankshaft position information, they're just wishing.

Every Engine Control system from Electromotive uses multiple ignition coils and advanced, automatically adjusting dwell circuits to assure the coils are fully charged (but not over charged), every time. The powerful spark of this patented system delivers this full spark energy directly to the plugs without misfires. Unlike multi-spark CD systems that only give you a single very short duration spark when above 3000 rpm, Electromotive puts a full 150mJ of spark energy to the coils, which results in a spark with more than ten times the duration of a CD spark from idle to 15,000 rpm.

Look at the typical competitors box: the C.D.(Capacitive Discharge) Ignition. This Ignition does not CHARGE the Ignition Coil. Rather it uses the 1:100 Winding ratio of the coil as a TRANSFORMER. First, the 12 volts of your electrical system is converted to 200-500 volts and stored in a CAPACITOR. When the SPARK is needed the CAPACITOR is DISCHARGED into your Ignition Coil, Instantly producing a SPARK of 30,000 to 50,000 volts with a DURATION of only 0.1 to 0.3 milliseconds (0.0003 seconds)... this is NOT A LONG SPARK !

THE SUPERIOR SOLUTION: Multiple Coil Ignition Systems. By using an Ignition Coil for every pair of companion Cylinders, the TIME available to CHARGE an Ignition coil goes up by a factor of 4 on an 8cyl Engine. This allows the full benefit of an INDUCTIVE CHARGING method to be realized: the coil will apply enough voltage to the spark plug to jump the gap (regardless of cylinder pressure). The coil will then dissipate the rest of its available energy in spark plug DURATION. Depending on cylinder pressure, spark duration will typically be over 2 milliseconds, regardless of RPM. A 2 millisecond spark duration results in a spark plug arc that can last for over 90 degrees of crankshaft rotation! This will burn ANY air fuel mixture imaginable!

So, no matter which of our Products you choose, you will always know that the Ignition System is STATE OF THE ART and READY FOR ANYTHING !

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Electromotive Products are protected by some or all of US Patent Nos. RE34,183; 5,081,969; and 6,367,570

**ALL NEW  
for  
2004**



### **NEW - eXtreme Direct Ignition**

Electromotive's patented advanced digital ignition control resides inside the new XDI, the most powerful stand-alone ignition available. With an amazing 0.1° degree timing accuracy, the XDI assures optimum resolution. The advanced coil-charging scheme delivers the highest possible Spark Output regardless of RPM. The 60 tooth crank trigger wheel replaces that mechanical distributor plagued with timing slop (cap and rotor wear) and eliminates spark scatter due to gear lash, chain stretch etc.

### **Ignition Curves that You control!**

Forget recurring the old distributor, with the XDI's knobs (no P.C. required!), you can adjust the spark advance curves for different engine speeds and optimum performance. Plug in a MAP sensor for vacuum advance or boost retards. The robust, finned chassis also features a diagnostic LED that will help you troubleshoot the system should you ever experience a problem with the system.

Use the knobs to adjust your rev limits as well. The integral rev-limiter may be set anywhere between 4,000 to 15,000 RPM. For drag racing an additional rev-limiter can be wired for staging rev-limiter! The new 'Triple Smooth' rev limiting technology first retards the timing to negative 12°. The 2<sup>nd</sup> step cuts the coil current in half. In the 3<sup>rd</sup> step the coil current is cut off. All of this happening in a millisecond results in very smooth rev limiting action.

**The XDI is built to run  
most 1, 2, 3, 4, 6, 8  
and 12 Cylinder Engines**

The XDI has the ability to provide an ignition timing increase when the engine is operating in a light load condition such as cruising or idling. The so-called "vacuum advance" feature of the XDI works by installing a MAP (Manifold Absolute Pressure) sensor into the intake manifold and sending the sensor's output to the XDI. The XDI will then increase the ignition timing based on the MAP sensor reading. 1-, 2-, and 3-Bar MAP sensors can be used with this feature, thus benefiting boosted and non-boosted engines.

A 1-Bar sensor will advance the timing beyond the XDI's knob settings by 15° when the manifold vacuum is 30" Hg. It will then ramp down the added advance to 0° once the manifold vacuum goes to 0" Hg.

2-Bar and 3-Bar sensors also supply 15° of added advance when the engine is at 30" Hg, but the points at which the added advance ramps to 0° are different. The 2-Bar ramps down to 0° advance when the manifold boost is 15psi, while the 3-Bar sensor ramps down to 0° advance when the boost is 30psi.

# Crank Triggered Multiple Coil Direct Fire Ignition!



By utilizing an ignition coil for every pair of companion cylinders, the *time* available to *charge* the coils goes up by a factor of 4 on an 8-cylinder engine. Producing full spark energy up to an incredible 15,000 RPM while delivering a spark duration in excess of one millisecond. That's over 10 times the spark duration per spark event than CD boxes!

**THE XDI MAKES MORE POWER!**

**•All XDI units come with Manual. Select Universal Trigger Wheel & Bracket (or Crank Trigger Kit) & Mag Sensor sold separately.**

**Description**

Description	Part #
XDI Controll Unit (for 1 to 12 cylinder applications)	<b>016-50000</b>
4 Cylinder DFU (Direct Fire Unit)	<b>070-33400</b>
6 Cylinder DFU (Direct Fire Unit)	<b>070-33600</b>
Extra DFU cable for multi-DFU configurations	<b>016-50200</b>
XDI Manual	<b>001-50000</b>

**Special Applications: Call for consultation on your project. The powerful XDI can do the Job!**

1 cyl. 2 & 4-stroke engines.	6 cyl. Dual plug 4-stroke.
2 cyl. even-fire 4-strokes.	6 cyl. Odd-fire.
2 cyl. 2-strokes.	12 cyl. .
3 cyl. 2 & 4-strokes.	2 Rotor.
4 cyl. 2-strokes.	3 Rotor.
4 cyl. Dual plug 4-strokes.	

## XDI Accessories and Optional Upgrades

**Utilize a MAP Sensor for even more control over your ignition**

*Automatic Timing Advance as Load Decreases*

*Just like a Distributor vacuum advance*

*Great for Boosted Applications*

1 Bar Map Sensor  
#71110



**Description**

Manifold Absolute Pressure (MAP) Sensor, 1 Bar	Normally Aspirated	<b>300-71110</b>
Manifold Absolute Pressure (MAP) Sensor, 2 Bar	Up to 15 lbs. Boost	<b>300-71120</b>
Manifold Absolute Pressure (MAP) Sensor, 3 Bar	Up to 30 lbs. Boost	<b>300-71130</b>
Manifold Absolute Pressure (MAP) Sensor, 4 Bar	Up to 52 lbs. Boost	<b>300-71140</b>
Cable and Connector for 1 Bar MAP Sensor		<b>301-71111</b>
Cable and Connector for 2 & 3 Bar MAP Sensor		<b>301-71121</b>
Oil Pump Drive for Small and Big Block Chevy		<b>261-72601</b>
Crank Trigger Simulator		<b>150-10001</b>
Remote Timing Advance Control Unit		<b>012-15200</b>



Remote Timing Advance Unit #012-15200

**Remote Advance Control**

When squeezing the last HP out of your racing engine on the dyno, this will help you find the exact amount of timing for maximum performance!



2 & 3 Bar Map Cable and Connector #301-71121



Small & Big Block Chevy Oil Pump Drive #261-72601



Crank Trigger Simulator #150-10001

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# TEC3

Total  
Engine  
Control

Superior  
Engine  
Management  
with patented  
Direct Fire  
Ignition

Super Long  
Duration Spark  
Will Light any  
Mixture!  
You will never  
run out of  
Spark Energy

High Resolution  
Crank Triggered  
Accuracy will  
safely make  
More Power!

WinTEC Software  
Features 'Tuning Wizard'  
Auto Calibrate Mode  
Pull-Down Menus  
and Hot Keys

Multiple Processing Centers dedicated to fuel control, crank-trigger wheel speed and location, ignition command and other vital engine functions

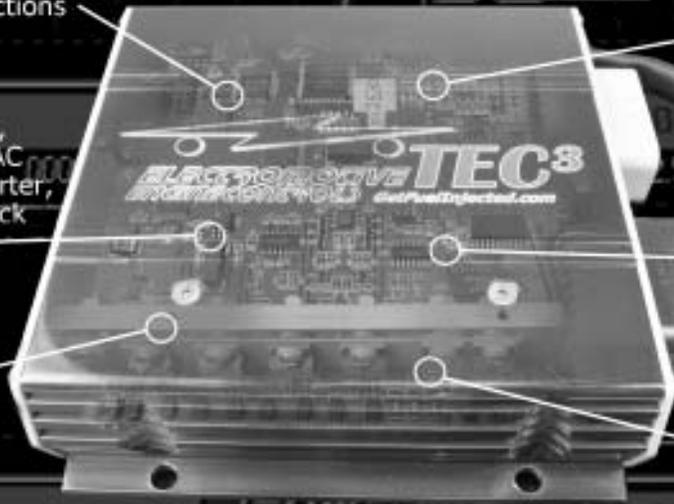
Control fans, fuel pumps waste gate, nitrous, VTEC, shift lights, water pump, AC compressor, torque converter, idle air control motor, knock parameters and more

Built-in coil drivers and Electromotive's super powerful ignition eliminate external capacitive discharge multi-spark boxes

Configurable for 1, 2, 3, 4, 6, 8 cylinder engines and Rotaries with a 12 cyl. and 6 cyl. odd fire dual plug option

Run TBI, MPI, TPI and individual throttle bodies. Multiple injection modes including Electromotive's Crankshaft Sequential and Camshaft Sequential with individual cylinder trim

On-board Data Logging



**3D PROGRAMMABLE FUEL INJECTION CONTROL  
SUPER ACCURATE DISTRIBUTORLESS IGNITION  
INTEGRATED INTO ONE SYSTEM  
INCLUDING DATA LOGGING!**

- Crank Triggered Multiple Coil Direct Fire Is the Most Accurate and Delivers the Longest Spark Duration
- Powerful WinTEC Software Includes 'Tuning Wizard' for fast Start-ups
- On-Board Data Acquisition records vital Engine and Chassis information
- Activate Nitrous, Turbo Boost, VTEC, Shift Light, Cooling Fans and more
- Built-in additional Configurable Injector Outputs
- New Dual RPM Limiters with 'Triple Smooth' Technology for the Softest Rev Limit
- One Control Unit for 99% of Applications



**The Newest Generation TEC, Now with Separate DFU's (Direct Fire Unit), is the Most Powerful Ignition and Engine Control System Available**

The new TEC<sup>3r</sup> (Total Engine Control *revisited*) represents the latest advances in state-of-the-art fuel injection control integrated with the most powerful and accurate direct fire ignition system ever put into one performance package. The TEC<sup>3r</sup> is a PC programmable engine control system featuring an intuitive Windows-based platform with easy pull-down menus and a new "Tuning Wizard" that will have you up and running in no time. Whether you choose to run throttle body injection, tuned port, multi-port, individual throttle bodies, whatever, just make your choice within the WinTEC software and the TEC<sup>3</sup> unit will program your engine for more power. Street enthusiasts will enjoy the benefits of a 'distributorless' ignition system that is not only adjustable, accurate and powerful, but also gives some improved firewall clearance and freedom from all of those "add-on" boxes. For competition and ultra high output engines, the sophistication and power of the TEC<sup>3</sup> system simply out-performs other production and aftermarket systems.

*The New TEC<sup>3r</sup> incorporates the winning features of our previous TEC-II system while adding an abundance of new features and a powerful new processing platform which melds the Electronic Fuel Injection (EFI) control with its patented digital Direct Ignition System (DIS). The laser etched ECU with its waterproof OEM style connectors and harness may be mounted under the hood or in the engine compartment and will activate separate multi-coil DFU's (Direct-Fire Units). This Incredible ignition is capable of delivering a full charge to the plug up to 15,000 RPM and is capable of spark durations up to ten times that of conventional ignition systems!*



**Features:**

- PC programmable and configurable for 1, 2, 3, 4, 6, 8, 12 cyl and up to 3 rotor engines.
- Operate in Open or Closed loop
- Run True Sequential, Phased Sequential or Simultaneous Injection with programmable injector output currents.
- Configurable for TBI, MPI, TPI and individual Throttle Bodies
- Additional Injector Output Drivers built-in
- Full 150mJ of Spark Energy utilized per each ignition event
- New Dual Rev Limiters with 'Triple-Smooth' Technology. 1st step retards timing to negative -12° degrees. 2nd step cuts coil current in half. 3rd step coil current and fuel are cut-off, all in a millisecond.
- Four Programmable GPO's (General Purpose Outputs) to control or activate Waste Gate, Nitrous, VTEC, Shift Lights, Water Pumps and Fans, AC Compressor, Torque Converter etc.
- New Programmable Electronic Tachometer Output
- Uses primarily GM type sensors
- Diagnostic monitoring with codes issued through Check Engine light or within the WinTEC software
- Easy to install bolt-on Trigger Wheel and Mag Sensor Kits

**TEC means 'Total Engine Control'  
For Street or Competition**

Electromotive Products are protected by some or all of US Patent Nos. RE34,183; 5,081,969; and 6,367,570

## 'Total Engine Control' is yours with the New Wintec 3.x Software

The new WinTEC 3.0 Software is even more powerful than previous versions with newly added features and tools. Tuning experts will appreciate the sophistication and in-depth control, while first time tuners will find the program easier than ever to master utilizing the user friendly windows interface with pull down menus. Electromotive's unique 'Tuning Wizard' will have you answering a few simple questions and firing your engine up faster than any other system in the business. With point and click abilities, Hot Keys and generous Help Screens available throughout the program, it won't be long before you are now as the 'Tuning Wizard'!

Real Time Data Display with 'Tune on the Fly', change tuning parameters with the engine running while viewing results.

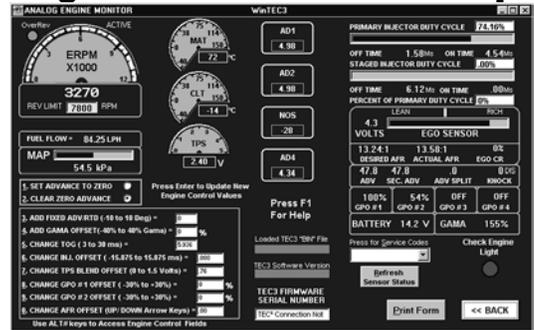
First time Start-ups have never been easier utilizing the 'Tuning Wizard'. Simply answer the questions regarding your engine combination and the 'Tuning Wizard' will create a starting base line program for you. You are now running!

Interactive Graphical Interface Screens featuring fully adjustable 3D tables with up to 256 points (values) available. This allows the user to easily tune right from these screens by altering values for Fuel (Volumetric Efficiency), Ignition Curves, Air/Fuel Ratio and more. Unlike other systems that require repetitious entry of points into their maps, WinTEC3.0 utilizes Advanced Thermodynamic Algorithms (linear curves not steps) which produces smooth data curves with a lot less effort.

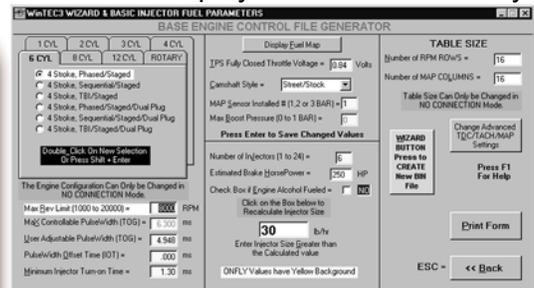
Cold Start and Warm up Enrichments make for excellent driveability. Knock Control will suppress low octane engine ping. The best idle control in the business is the WinTEC 'Blend' feature. A special screen allowing idle adjustment by the *blending* of different sensor signals to provide a smoother and more stable idle even in engines using aggressive profile cams!

Proportional Air Fuel Ratio programmability allows the tuner to target different ratios for varied driving conditions. Operate Multi-Stage Nitrous and Boost Control and adjust fuel enrichment and timing curves accordingly.

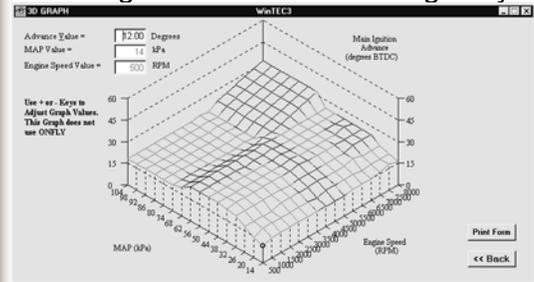
## New WinTEC Windows based Software is Powerful for Pro Tuners yet first time user friendly with the 'Tuning Wizard' for fast start-ups!



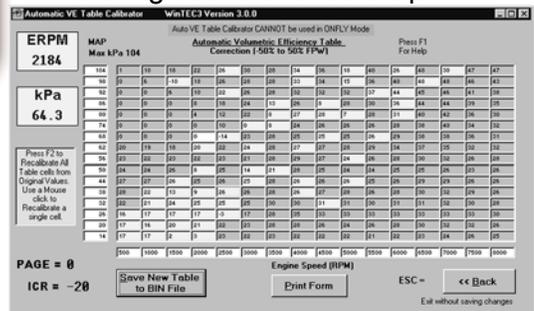
### Real Time Display with 'Tune on the Fly'



### 'Tuning Wizard' makes starting easy



### 3D Ignition Advance Graph



### Automatic VE Table Calibrator

Simultaneously record data from up to 25 different values including:

- Air/Fuel Ratios
- Injector Duty Cycle
- Injector Pulse Width
- RPM
- Throttle Position
- Gear Position
- Boost Monitoring
- Boost Regulation
- Manifold Air Temp
- Coolant Temp
- Timing Advance
- Knock
- Nitrous Activation
- Nitrous Monitoring
- Various Chassis Input Monitoring

WinTEC 3.0 software allows viewing of all sensor readings, output settings, status readings, compensations and diagnostic monitoring

### New On-Board Data Acquisition

- Adjustable Sample Rates
- View Multiple Data Graphs side by side or Graphs may be overlaid for comparison
- Graphic Screen Displays may be Printed and Data may also be exported to a Spreadsheet program for further analysis
- Data Logging can be started and stopped manually using a switch, or the system can be configured to automatically start and stop via values pre-set by the user

**Configure the TEC<sup>3</sup> Engine Management System for that Winning Combination**



**Description**

- TEC<sup>3r</sup> ECU for 1, 2, 3, 4, 6, 8, 12 cyl, 2 and 3 Rotor applications
- TEC<sup>3r</sup> 6' Main Harness (23 pin connectors only) for 33000
- TEC<sup>3r</sup> 6' Terminated Harness (ECU and Sensor connectors only)
- TEC<sup>3</sup> Custom Harness w/connectors (built to customer specs)
- TEC<sup>3r</sup> Power Harness (w. 4 fuses & 2 relays) for all TEC<sup>3</sup>'s
- DFU (coil pack) for 4 cyl.applications
- DFU for 6 cylinder applications
- DFU's for 8 cylinder applications
- TEC<sup>3r</sup> Installation and Calibration Manual (Printed Version)
- TEC<sup>3r</sup> WinTEC CD (Software w/ electronic version of manual)
- TEC<sup>3r</sup> to Computer Communications Cable

Part #
<b>070-34000</b>
<b>070-34200</b>
<b>070-34200</b>
<b>070-34201</b>
<b>070-40000</b>
<b>070-33400</b>
<b>070-33600</b>
<b>070-33800</b>
<b>001-10000</b>
<b>001-10001</b>
<b>001-10002</b>

*• All TEC<sup>3</sup> ECU's come with Manual, WinTEC-3 Software and Communications Cable. Select Universal Trigger Wheel and Bracket (or Crank Trigger Kit) and Mag Sensor sold separately.*



Main Harness  
'Unterminated'  
#070-33200



Custom Harnesses  
available built to  
your specs  
#070-33101



Power  
Harness  
#070-40000

**TEC<sup>3</sup> Accessories and Optional Upgrades**

**Crank Trigger Simulator**

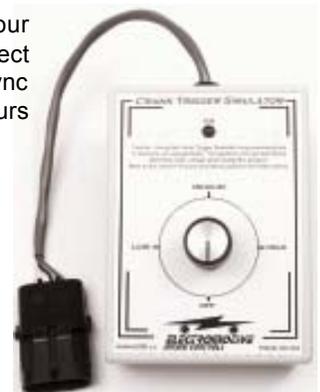
The Electromotive Crank Trigger Simulator is a useful tool for diagnosing problems with your Electromotive Ignition or Engine Management System. It duplicates the waveform output of a perfect 58 tooth crank trigger Sensor, and is adjustable from 0-16,000 rpm. Also included is a cam sync pulse, which can be used to simulate a sequential engine management setup. This pulse occurs every other revolution, just as a cam-signal would.

**Crank Trigger Simulator**

**150-10001**

**Wide Band Oxygen Sensing Capabilities**

While other systems require a costly upgrade or charge extra for Wide Band module support, Electromotive now includes this feature in the TEC<sup>3</sup>. No need to run a specific set-up designated by the ECU manufacturer, Electromotive allows you to utilize your favorite 0-5 volt output sensor and module. The WinTEC software allows you to select the wide range option and run closed loop should you desire, with datalogging and/or A/F correction. The software alerts you to your A/F ratios and voltage status within the program on a variety of screen locations. Early TEC<sup>3</sup> users need simply download the free software and firmware version of the WinTEC software.



Electromotive Products are protected by some or all of US Patent Nos. RE34,183; 5,081,969; and 6,367,570

TEC<sup>3</sup>  
dimensions



### Outputs

#### Fuel Injector Drivers

- 8 peak and hold injector outputs - selectable from 4/1 to 2/0.5 amps peak and hold.
- Up to 16 low or high impedance injectors can be driven
- Low impedance injectors: One or Two per driver (2 to 3 ohms per injector)
- High impedance injectors: One or Two per driver (12 to 16 ohms per injector)
- TBI injectors: 1 per driver (1 - 1.6 ohms per injector)

#### Coil Outputs

- 6 x 9amp direct-fire coil drivers
- Feedback charging loop for ideal cylinder-to-cylinder consistency
- No "ignition modules" or "CD" boxes needed

#### Idle Air Control (IAC) Motor

- Provides control of 4-wire stepper motor IAC's
- Adjustable idle speed increase for cold starts
- Adjusts idle speed in response to engine load (i.e. A/C activation)

#### General Purpose Outputs (GPO's)

- 4 channel low-amp pull-to-ground outputs
- Channels 1 & 2 have pulse-width capability
- Channels 1-4: on/off activation for fan relays, torque converters, waste gates, etc.
- 4 amps max total current draw for GPO1-4 (1 amp per channel if all four are used)

#### Spare Output

- On/off capability
- 1 amp max current draw

#### Fuel Pump Control

- Low current pull-to-ground output for activation of fuel pump relay
- Configurable for fuel system priming

#### Tachometer Output

- Programmable Signal output for (i.e.: allows use of 8 cylinder Tach on 6 cylinder engine)
- Drives modern 0-12 volt tachometers
- Amplifier available for high voltage triggered tachometers

#### Check Engine Light Output

- Multi-code diagnostic tool for sensor failures
- Pull-to-ground output for small instrument panel light (1 amp max current draw)

#### ECU Diagnostic LED

- Warns of crank trigger problems
- Multi-code diagnostics

#### ECU Cooling Fan

- Turns on with unit
- Allows for sustained ultra-high rpm operation w/ low impedance injectors

### Inputs

#### General Purpose Inputs (GPI's)

- Channels 1-4 are 0-5 Volt analog inputs
- Channels 3 & 4 may also be used for speed inputs (magnetic, optical, and hall effect sensors are supported)
- Provides fuel and ignition trims, datalog enable, valet switch, NOS retard, and more

#### Engine Sensor Inputs

- Crank Sensor
  - ... 2-wire magnetic sensor (compatible w/ some OEM's)
  - ... Uses Electromotive-spec 60(-2) tooth crank trigger
  - ... Ultra-high resolution engine position input
- Cam Sensor
  - ... Necessary for full-sequential applications
  - ... Once-per-cam-revolution pulse

## Electromotive TEC3r ECU Specifications

- Manifold Air Pressure (MAP) Sensor
  - ... 1 Bar: 0-104 kPa for Naturally Aspirated Engines
  - ... 2 Bar: 0-206 kPa for turbo/super charged engines up to 1 Bar boost (~15 psi)
  - ... 3 Bar: 0-313 kPa for forced induction engines up to 2 Bar Boost (~30 psi)
- Throttle Position Sensor (TPS)
  - ... Compatible with most OEM 3-wire setups
- Coolant Temperature Sensor (CLT)
  - ... Uses NTC thermistor coolant sensor (2-wire)
- Manifold Air Temperature Sensor (MAT)
  - ... Uses NTC thermistor manifold temperature sensor (2-wire)
- Knock Sensor (KNK)
  - ... Provides ability to detect pre-ignition
  - ... Compatible with piezo-style knock sensors (1-wire)
- Oxygen Sensor (EGO)
  - ... Compatible with 1-, 3-, and 4-wire oxygen sensors

### Patented Coil Control

#### Angle Based Timing Control

- Ultra-high resolution triggering
- Engine position known to within 1/8 degree
- Patented under US Patent RE 34,183

#### Feedback Charging Control

- Monitors each coil firing event
- Coil current monitoring
  - ... Consistent dwell adjustment
  - ... Full coil charging without overcharging

### Tuning Features

#### Ignition Timing Map

- From 8 x 8 to 16 x 16 user definable tables of RPM vs. MAP for ignition advance angle
- 256-point interpolation between data points
- 1 degree adjustment increments
- +/-1/4 degree spark timing accuracy, worst case

#### Fuel Map

- Two numbers define slope of fuel curve
- From 8 x 8 to 16 x 16 tables of RPM vs. MAP for volumetric efficiency corrections
- 256-point interpolation between data points
- 1% adjustment increments (up to 0.001millisecond resolution)

#### Load Sensing

- MAP sensor based
- TPS & MAP based (using 'TPS/MAP Blend' feature)

#### Rev Limiters

- Progressive "soft" rev limiter (3 stages)
- Fuel injector cutoff
- 1000-20000rpm capability for primary rev limiter
- 1000-20000rpm capability for auxiliary rev limiter

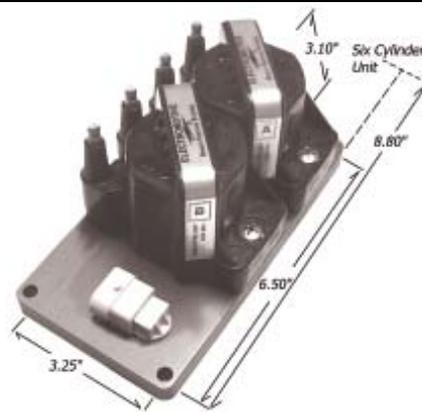
#### On-Fly Tuning

- Glitch-free, real-time tuning while engine is running
- Full control of all fuel, ignition, and input/output parameters

### Compensation Features

- Fuel
  - ...Individual cylinder fuel trims
  - ...Oxygen sensor closed loop corrections
  - ...Starting (cranking) enrichments
  - ...Cold start / cold weather enrichments
  - ...Accelerator pump enrichments
  - ...Deceleration fuel cutoff
  - ...Battery voltage correction for injector pulsewidths
- Ignition
  - ...Coolant temperature-based advance adjustments
  - ...Manifold air temperature-based advance adjustments
  - ...Smooth idle advance control (integrated w/ IAC settings)
  - ...Paired-cylinder timing trims (each coil has timing trim)
  - ...Individual-cylinder timing trims for full-sequential setups
  - ...Ignition timing offsets for odd-fire applications
  - ...RPM-based timing split for rotary application

More  
Electromotive  
TEC<sup>3</sup> Specifications



**Supported Engine Management Configurations**  
**20,000rpm capability for all engines**

**4-Stroke**

- 1-, 2-, 3-, 4-, 6-, 8- and 12-cylinder even-fire engines
- 2, 4- and 6-cylinder odd-fire engines
- 2, 4- and 6-cylinder dual-plug engines
- Full sequential fuel injection on all even-fire applications up to 8cylinders
- Phase-sequential and TBI injection on all applications
- Staged injection available for most setups
- Multi Coil Direct ignition control for all applications

**2-Stroke**

- 1-, 2-, 3-, 4- and 6-cylinder engines
- Full sequential fuel injection or TBI
- Staged injection available for all setups
- Coil-per-plug for all applications

**Rotary**

- 1-, 2- and 3-rotor engines
- Full sequential fuel injection w/ staged injection or TBI
- Coil-per-plug for all applications

**Datalogging Features**

**On-Board Datalogging (No Laptop Required)**

- 1 Mb of available memory
- Activated by switch to +5 Volts on GPI channel
- Can be activated by engine speed.
- Sampling rate is adjustable from 5-100 samples-per-second
- Total datalogging time is dependent on sampling rate
- ... 100 samples-per-second: 44 seconds of data
- ... 5 samples-per-second: 15 minutes of data

**Laptop Datalogging**

- Records to hard drive on laptop
- Sampling rate is approximately 25 samples-per-second
- Total datalogging time is dependent only on hard drive space

**Environmental Considerations**

Two Sealed 23-Pin AMP Connectors for Inputs & Outputs

Sealed High-Amperage Delphi Main Power Connector

Sealed Printed Circuit Board

**PC Requirements**

**Computer**

- IBM-Compatible PC
- Pentium-1 233 or better
- 800 x 600 monitor
- 64 Mb of ram
- 10 MB of free hard drive space

**Data Drives**

- CD-ROM for software installation
- 3.5" floppy by request

**Communications**

- RS-232 9- or 25-pin D connector
- COM 1-4 (software selectable)

**Physical Dimensions**

Length: 5.65" plus 0.65" for connectors (14.35 cm + 1.65 cm)  
Width: 6.40" (16.26 cm)  
Height: 1.67" (4.24 cm)  
Weight: 1.8 lbs (.82 kg)  
Bolt Hole Pattern: 3.50" x 6.03" (use ¼" or 6mm fasteners)

**TEC<sup>3</sup> Connector Pin Outs**

**White Connector**

Wire Name	Pin#	Color	Output/Input Style
W1	Coil Channel "A1"	White, 16awg (in 3-wire plus shield)	
W2	Coil Channel "B1"	Red, 16awg (in 3-wire plus shield)	
W3	Coil Channel "C1"	Black, 16awg (in 3-wire plus shield)	
W4	Coil Channel "A2"	White, 16awg (in 3-wire plus shield)	
W5	Coil Channel "B2"	Red, 16awg (in 3-wire plus shield)	
W6	Coil Channel "C2"	Black, 16awg (in 3-wire plus shield)	
W7	Injector Channel 1	Yellow w/ Black Stripe, 18awg	
W8	Injector Channel 2	Yellow w/ Red Stripe, 18awg	
W9	Injector Channel 3	Yellow w/ Green Stripe, 18awg	
W10	Coil Wire Shield	Bare, 16awg (shields coil channel outputs)	
W11	Idle Air Control "D"	Dark Blue w/ White Stripe, 20awg	
W12	Idle Air Control "C"	Dark Blue w/ Black Stripe, 20awg	
W13	Idle Air Control "B"	Dark Green w/ White Stripe, 20awg	
W14	Idle Air Control "A"	Dark Green w/ Black Stripe, 20awg	
W15	Injector Channel 4	Yellow w/ Blue Stripe, 18awg	
W16	Injector Channel 7	Light Blue w/Green Stripe, 18awg	
W17	Injector Channel 8	Light Blue w/Blue Stripe, 18awg	
W18	Gen. Purpose Out. 1	White w/ Black Stripe, 18awg	
W19	Gen. Purpose Out. 2	White w/ Red Stripe, 18awg	
W20	Gen. Purpose Out. 3	White w/ Green Stripe, 18awg	
W21	Gen. Purpose Out. 4	White w/ Blue Stripe, 18awg	
W22	Injector Channel 5	Light Blue w/ Black Stripe, 18awg	
W23	Injector Channel 6	Light Blue w/ Red Stripe, 18awg	

**Gray Connector**

G1	Tachometer Output	Brown, 20awg
G2	Check Engine Light	Pink, 20awg
G3	+5 Volt Output	Gray w/ Red Stripe, 18awg
G4	Crank/Cam Ground	Black, 22awg (for crank & cam cables)
G5	Switched +12 Volt Input	Yellow, 20awg
G6	Oxygen Sensor -	Tan, 20awg
G7	Oxygen Sensor +	Violet, 20awg
G8	Knock Sensor Input	Orange, 20awg
G9	Crank Sensor Input	Red, 22awg (in 2-wire plus shield)
G10	Cam Sensor Input	Red, 22awg (in 2-wire plus shield)
G11	Crank/Cam Shield	Bare, 22awg (shields both crank & cam cables)
G12	CLT Input	Gray, 20awg
G13	MAT Input	White, 20awg
G14	TPS Input	Dark Blue, 20awg
G15	MAP Input	Dark Green, 20awg
G16	Gen. Purpose Input 1	Orange w/ Black Stripe, 20awg
G17	Gen. Purpose Input 2	Orange w/ Red Stripe, 20awg
G18	Gen. Purpose Input 3	Orange w/ Green Stripe, 20awg
G19	Gen. Purpose Input 4	Orange w/ Blue Stripe, 20awg
G20	Fuel Pump Relay Ground	Light Green, 20awg
G21	Spare Output	White w/ Orange Stripe, 18awg **
G22	Sensor Ground	Black w/ White Stripe, 18awg
G23	-unused-	

Electromotive Products are protected by some or all of US Patent Nos. RE34,183; 5,081,969; and 6,367,570

# Crank Trigger Kits Bolt-on Ease Makes Installation a Breeze

**Electromotive's Super High Resolution Crank Trigger Wheels and Application Specific Mag Sensor Brackets make going Distributorless Easy!**



7.25" Wheel fits 6.75" OEM style & some After-market dampers

Small Chevy Kit #200-72707 with Mag Sensor #255-72250

Electromotive's patented Direct Fire Ignition Systems are engineered to utilize these high resolution 60 tooth crank trigger wheels designed to interface with our custom circuitry, unequaled only by OEM manufactures licensed by Electromotive.

- Precision laser cut, zinc plated, steel wheels are built to bolt-on to your engine and will provide unmatched accuracy
- Brackets and hubs are machined from 6061-T6 aluminium for strength and precision. Unless specified, all kits utilize a 1/2" mag sensor (sold separately)
- Extremely durable. Electromotive Trigger Kits continue to perform even in hot, dirty, wet or even muddy conditions and are impervious to vibration
- High quality fasteners and hardware used in kits



Honda Kit #200-72410 shown front and rear featuring the Unorthodox Pulley



Dodge Neon Trigger Kit #200-73001 utilizes Unorthodox Racing Underdrive Pulley #0201101



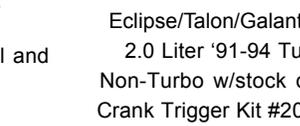
Toyota 4AGE #200-73010



Small Block Ford Kit #200-72819 4-bolt pulley style, shown with Mag Sensor #255-72250



RX-7 Weld-on crank trigger wheel and bracket kit #200-73006 shown attached to the factory pulley



Eclipse/Talon/Galant DOHC 2.0 Liter '91-94 Turbo & Non-Turbo w/stock dampers Crank Trigger Kit #200-73002



Toyota MR2 2nd Generation 3S-GTE & 3S-GE #200-73003



VW 'Type 1' Trigger Kit #200-72401 with Bracket and Scat Crank Pulley

**Description ~ Crank Trigger Kits ~ Part #**

Description	Part #
Chrysler 426 - HEMI crank trigger kit	200-7200
VW "type 1" for air-cooled bug engines	200-72401
Honda "B-series" for 1.6 - 1.8 liter's	200-42410
Small Block Chevy 7.25" (for 7" and smaller balancers)	200-72707
Jeep 4.2 liter (258 cid 6 cylinder)	200-72780
Small Block Chevy 8.25" (for factory 8" balancer only)	200-72808
Ford 289 / 302 ( 3 bolt pulley)	200-72818
Ford 302 HO and 351 W (4 bolt pulley)	200-72819
Big Block Chevy	200-72820
Chevy LT-1	200-72828
Dodge Neon (requires special pulley)	200-73001
Diamond Star Eclipse/Talon/Galant 2.0l	200-73002
Toyota 3SGTE (2nd Gen MR2 turbo)	200-73003
Toyota 2JZ (Lexus IS300, 1JZ and Supra)	200-73005
Mazda RX7 (3rd Gen)	200-73006
Toyota 4AG (1st Gen MR2)	200-73010

• Porsche, Mazda Rotaries & Miata, Subaru, Ford FE & Flathead, Datsun L-Series and Nissan, BMW, Alfa Romeo, Ferrari, VW and other kits available through our Dealer Network



# Custom Trigger Wheels 60 Tooth Accuracy For Special Applications

Small Block Ford #220-72510  
For Late Model or Crate Motors  
using 3-Bolt Damper. Wheel  
only 6.5" OD. Customer to build  
Mag Sensor Bracket or use or  
universal bracket #210-72003

4.6/5.4L  
Ford  
Wheel  
Mounts  
Inside  
Timing  
Cover and  
uses factory Mag Sensor



LS-1 Pulley  
machined with the  
60-2 tooth pattern.  
Customer to build  
Mag Bracket or use  
universal bracket  
#210-72003  
Also works for many Hondas,  
Nissan SR20's, Audi, Gen 6  
Big Block Chevy and other  
applications. Requires  
customer pulley or damper.



Toyota Supra '93-'98 3.0 Liter  
Remove OEM Wheel from lower Crank  
Pulley, line-up index mark and re-weld  
Uses Factory Mag Sensor



**These Wheels Are**



**No Brackets or  
Sensors Required!**

Description	~ Custom Trigger Wheels ~	Part #
Supra '93-'98 3.0 Liter Trigger Wheel 3.01", 60 tooth (OEM style, weld-on)		<b>220-72301</b>
Ford 4.6/5.4 SOHC & DOHC trigger wheel only (replaces OEM w/ 60 tooth)		<b>220-72500</b>
Small Block Ford Wheel for 3-Bolt Damper applications, 60 tooth 6.5" OD		<b>220-72510</b>

## Universal Trigger Wheels

## Magnetic Sensor Brackets



Universal  
Bracket #210-72003  
Uniquely adjustable for multiple angles



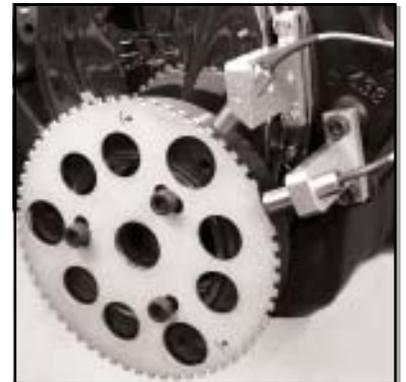
Drill and  
Shape to  
Your  
Application



Small Chevy Brackets  
#210-72701 (left) &  
#210-72801



New Sm. Chevy 30° Bracket  
#210-72802. Great for clearing  
accessories



Small Chevy Bracket #210-72701 on  
timing cover & #210-72802 New 30°  
Bracket on front motor mount which  
works well on late models (Vortec etc.),  
or as back-up sensor. Also use both with  
GM Odd-Fire 4.3 Liter based V-6's.

Big Block Chevy Bracket #210-72830 Single Bolt  
design works well for custom applications

### Description ~ Universal Trigger Wheels ~ Part #

2.75"/70mm dia. 120 tooth (camshaft speed)	<b>230-72128</b>
3.25"/85mm dia. 120 tooth (camshaft speed)	<b>230-72133</b>
2.375" dia. trigger wheel, 60 tooth (60mm)	<b>230-72624</b>
2.50" dia. trigger wheel, 60 tooth, 1.5" ID	<b>230-72625</b>
2.50" dia. trigger wheel, 60 tooth, 10mm ID	<b>230-72625-E</b>
3.50" dia. trigger wheel, 60 tooth (90mm)	<b>230-72635</b>
5.00" dia. trigger wheel, 60 tooth (125mm)	<b>230-72650</b>
6.0" dia. trigger wheel, 60 tooth (155mm)	<b>230-72660</b>
7.25" dia. trigger wheel, 60 tooth (185mm)	<b>230-72672</b>

### Description ~ Mag Sensor Brackets ~ Part #

Universal Sensor Bracket for 1/2" Sensor	<b>210-72003</b>
Sm. Blk. Chevy 1/2" bracket (7.25" wheel)	<b>210-72701</b>
Sm. Blk. Chevy 1/2" bracket (8.25" wheel)	<b>210-72801</b>
Sm. Blk. Chevy 30° bracket (7.25" wheel)	<b>210-72802</b>
Sm. Blk. Chevy 30° bracket (8.25" wheel)	<b>210-72803</b>
Big Blk. Chevy 1/2", single bolt style, round	<b>210-72830</b>
Chevy LT1 3/8" sensor (water pump mount)	<b>210-72703</b>

**Call (703) 331-0100 for a Dealer near You**

Electromotive Products are protected by some or all of US Patent Nos. RE34,183; 5,081,969; and 6,367,570



**Highest Quality Direct Fire Ignition and Fuel Injection Components for your Electromotive System and EFI conversion needs**

**Magnetic Sensors**



**Most New TEC<sup>3</sup> and HPX systems utilize the 1/2" Mag Sensor**

3/8 Mag Sensor with connector #250-72219

1/2 Mag Sensor with connector #255-72250



'Y' cable & connectors #250-72220 used for utilizing two 3/8" or 1/2" Mag Sensors for dual plug HPV/HPX applications

**MAP Sensors**



**Manifold Absolute Pressure Sensors**

- Highest Quality OEM Style
- Use in conjunction with the HPX unit to simulate vacuum advance like a distributor or in boosted applications to automatically advance timing as load decreases

Description	~ MAP Sensors ~	Part #
MAP Sensor, 1 Bar (Normally Aspirated)		<b>300-71110</b>
MAP Sensor, 2 Bar (Up to 15 lbs Boost)		<b>300-71120</b>
MAP Sensor, 3 Bar (Up to 30 lbs Boost)		<b>300-71130</b>

*\*Note: all above sensors come with connectors, pins & seals*

**Throttle Position Sensor**



**Ready for Competition**

- Compatible with Electromotive Crank Trigger Wheels
- Quality Magnetic Reluctor delivers highest triggering accuracy and performance
- High strength stainless steel sealed case insures moisture-free connection and is corrosion resistant
- Proven off-road, can handle excessive vibration and performs even in wet and muddy conditions

Description	~ Mag Sensors ~	Part #
<b>* New Style 1/2" diameter used with HPX and TEC<sup>3</sup></b>		
Mag Sensor, round point, 1/2" with connector		<b>255-72218</b>
Mag Sensor, round point, 1/2" with 'Y' cable and connectors for dual plug HPX units		<b>255-72213</b>
<b>* Old Style 3.8" diameter used with early units &amp; special applications</b>		
Mag Sensor, round point, 3/8" with connector		<b>250-72210</b>
Mag Sensor, round point, 3/8" with 'Y' cable and connectors for dual plug HPV/HPX units		<b>250-72213</b>
Mag Sensor, chisel point, 3/8 (120 tooth wheel)		<b>250-72212</b>

Description	~ TPS Sensors ~	Part #
TPS Sensor, GM early model arm style		<b>310-71310</b>
TPS Sensor, GM late model shaft style		<b>310-71320</b>
TPS Sensor, Ford style 2 notch		<b>310-71330</b>
TPS Sensor, 'D' type (Bosch style)		<b>310-71340</b>

*\*Note: all above sensors come with connectors, pins & seals*

**Coolant/MAT/Knock Sensors**



Small and Big Block Chevy Oil Pump Drive #261-72601

Small Block Ford Oil Pump Drive with Cam Sync Pulse Output #261-72602 Customer to provide connector



Coolant Sensor #305-71210

MAT Sensor #305-71220

Knock Sensor #305-71410

Description	~ Oil Pump Drives ~	Part #
Small and Big Block Chevy Oil Pump Drive		<b>261-72601</b>
Small Block Ford oil pump drive (w/Cam Sync Pulse)		<b>261-72602</b>

Description	~ CLT/MAT/KNK Sensors ~	Part #
Coolant (CLT) Sensor		<b>305-71210</b>
Manifold Air Temperature (MAT) Sensor		<b>305-71220</b>
Knock Sensor		<b>305-71410</b>

*\*Note: all above sensors come with connectors, pins & seals*

**More Electromotive Components**

**We Are Your One Stop Ignition and EFI Shop!**



**Oxygen Sensors**



4-wire Heated Exhaust Gas Oxygen Sensor #315-72120



Weld-in Boss for Exhaust EGO/HEGO sensors #315-72111

Description	~ O2 Sensors ~	Part #
Exhaust Gas Oxygen (EGO) sensor, 1 wire		<b>315-72110</b>
EGO/HEGO boss, weld in for exhaust		<b>315-72111</b>
Heated Exhaust Gas Oxygen (HEGO) sensor 4-wire		<b>315-72120</b>
Wide-band O2 sensor (7-wire)		<b>315-72130</b>

*\*Note: all above sensors come with connectors*

**TEC-II Cables & Connectors**



Coolant Sensor cable & connector #306-71211

TPS Sensor cable & connector #311-71321

HEGO Sensor cable & connector #316-72121

Description	~ TEC-II Cable and Connectors ~	Part #
MAP Sensor cable and connector for 1 bar		<b>301-71111</b>
MAP Sensor cable and connector for 2 & 3 bar		<b>301-71121</b>
Coolant Sensor cable and connector		<b>306-71211</b>
MAT Sensor cable and connector		<b>306-71221</b>
Knock Sensor cable and connector		<b>306-71411</b>
TPS Sensor cable and connector for #71310,71330		<b>311-71311</b>
TPS Sensor cable and connector for #71320		<b>311-71321</b>
TPS Sensor cable and connector for #71340		<b>311-71331</b>
EGO Sensor cable and connector for 1-wire		<b>316-72112</b>
HEGO Sensor cable and connector for 4-wire		<b>316-72121</b>
IAC cable & inline 4 connector for motor #81110		<b>326-81111</b>
IAC cable & square 4 connector for motor #81100		<b>326-81101</b>

**IAC Motors & GPO Solenoids**



Boost Control Solenoid #320-86000

IAC Motor O-Ring style #325-81110

Idle Air Control Body (universal) #325-81112

Idle Air Control Body (Ford style) #325-81114

Description	~ IAC's & GPO Solenoids ~	Part #
Boost Control Solenoid, (3/16" OD, 1/8" ID)		<b>320-86000</b>
IAC Motor, old-style threaded, use square 4 conn.		<b>325-81100</b>
IAC Motor, O-ring style, use inline connector		<b>325-81110</b>
IAC Body, O-ring style, 2 port universal, w/barbs		<b>325-81112</b>
IAC Body, O-ring style, Ford adapter, w/o barbs		<b>325-81114</b>

*\*Note: above IAC motors come with connectors & terminals*

**WeatherPack Connectors, Wire Harnesses & Misc. Wiring**



Description	~ Electrical Components ~	Part #
TEC³ AMP main connectors (23 position ea. w/50 terminals)		<b>340-90000</b>
TEC³ DFU conn.(4 pos'n Metri-pack w/5 terminals)		<b>340-90002</b>
Relay, 5 position 20/30 amp 12v		<b>340-91200</b>
Relay connector for #91200		<b>340-91201</b>

**\*Note: WeatherPack Kits include male and female connectors, terminals and seals**

WeatherPack Connector Kit, 1 position	<b>340-92110</b>
WeatherPack Conn. Kit, 2 pos. (power on TEC-II)	<b>340-92120</b>
WeatherPack Conn.Kit, 3 pos. inline (crank/cam on TEC³)	<b>340-92130</b>
WeatherPack Conn.Kit, 4 pos. inline (4-wire O2 sensors)	<b>340-92140</b>
WeatherPack Connector Kit, 4 position, square	<b>340-92141</b>
WeatherPack Connector Kit, 5 position, circular	<b>340-92150</b>
WeatherPack Connector Kit, 6 position, inline	<b>340-92160</b>
WeatherPack Connector Kit, 25 pair	<b>340-92190</b>
Fuel Injector Connector,(Bosch-style, sealed w/3 terminals)4-pk	<b>340-92221</b>
Faston Spade Conn. Set of 8, (for HPX spade terminals)	<b>340-92301</b>

**Crimping and Pin Tools**



Description	~ Connector Tools ~	Part #
Weather-Pack Pin Removal Tool		<b>340-92100</b>
Metri-Pack Pin Removal Tool		<b>340-91150</b>
TEC³ AMP Terminal Crimping Tool		<b>340-91150</b>
Weather-Pack Terminal Crimper (MAP,KNK,O2,TPS,more)		<b>340-92101</b>
Universal Terminal Crimper (IAC, CLT, MAT, good all around)		<b>340-91152</b>

**www.GetFuelInjected.com**

Further helpful information on Electromotive Products can be obtained by visiting our website. You will find the following items:

- New product introductions
- Dealer listing and location
- Wiring harness color codes
- Calibration Software info
- Manuals in PDF format
- Technical sheets
- Frequently asked questions
- Customer pictures

Electromotive Products are protected by some or all of US Patent Nos. RE34,183; 5,081,969; and 6,367,570

**More  
Electromotive  
Components**

**Electromotive  
Performance Injectors**

Precision Manufactured to our exacting specifications by Siemens™.

**Electromotive Performance Injectors** are a Bosch Pintle style, low resistance, 'Peak & Hold' design that will deliver high flow rates with precision spray patterns for Maximum Power. Flow matched to very tight tolerances, these are Super High Quality injectors capable of handling the most rigorous racing applications.



160 lbs/hr  
#370-84160



72 lbs/hr  
#370-83172



31 lbs/hr  
#370-83131

**No Need to go elsewhere for injectors, Electromotive Performance Injectors are second to none!**

Description	~ Fuel Injectors ~	Part #
Fuel Injector, low resistance, 26 lbs/hr@3 bar (43.5psi)		<b>370-83126</b>
Fuel Injector, low resistance, 31 lbs/hr@3 bar (43.5psi)		<b>370-83131</b>
Fuel Injector, low resistance, 37 lbs/hr@3 bar (43.5psi)		<b>370-83137</b>
Fuel Injector, low resistance, 45 lbs/hr@3 bar (43.5psi)		<b>370-83145</b>
Fuel Injector, low resistance, 55 lbs/hr@3 bar (43.5psi)		<b>370-83155</b>
Fuel Injector, low resistance, 72 lbs/hr@3 bar (43.5psi)		<b>370-83172</b>
Fuel Injector, low resistance, 82 lbs/hr@3 bar (43.5psi)		<b>370-83182</b>
Fuel Injector, low resistance, 160lbs/hr@3 bar (43.5psi)		<b>370-84160</b>

**Injector Bosses**

**Convert your Manifold to EFI!**

Weld-in Boss #390-85101 (left)  
Threaded Boss #390-85102



Description	~ Injector Bosses ~	Part #
Injector Boss, weld-in		<b>390-85101</b>
Injector Boss, threaded		<b>390-85102</b>
Injector Boss & Cap assembly		<b>390-85100</b>

**Fuel Rail**



High Flow Fuel Rail #390-82300



Description	~ Fuel Rail ~	Part #
Fuel Rail extrusion, priced per foot		<b>390-82300</b>

**When Your Engine Says "Feed me!" Electromotive Products Can Deliver!**

**Electromotive Billet Air Doors**

- Integral Idle Air Control, TPS and MAP
- Progressive and non-progressive linkage
- Holley 4150 series footprint
- Fully CNC'd 6061-T6 aluminium



1000 CFM 4bbl. Door with 1.75" Blades  
#400-89110



1600 CFM 2bbl. Door For Big Inch Engines  
#400-89160

Electromotive throttle bodies are perfectly suited to top off your multiport fuel injection whether it is a street or competition engine. Utilizing a standard Holley 4150 bolt pattern, these billet aluminum bodies provide extremely low turbulence at full throttle and are available in both 1000 CFM (1 3/4" blade) and 1600 CFM 2bbl versions. For street cars using the 1000 cfm unit, cruise around on the primary throttles enjoying the low-speed crispness while saving the secondaries for full throttle action. However, if your racing environment requires a 'non-progressive' linkage, the uniquely designed throttle linkage allows you to easily switch from 'progressive' to 'non-progressive' in just a minute. Plus it includes mounts for automatic transmission kick-down cables, cruise control cables, and of course throttle cables. If a high lift cam has given your engine an annoying surge at idle, our 1000cfm throttle body features an integral GM idle air control motor that will rid your engine of that unstable idle and provide an idle 'step-up' when your air conditioning compressor turns on. Also included is a throttle position sensor for a quick hook-up to your engine control computer. MAP sensor mount and 3/8" and 1/4" vacuum ports are built-in as well. An Air Cleaner Riser #500-59175, is included with each unit.

Description	~ Air Doors ~	Part #
4bbl 1.75", 1000cfm air door with IAC & TPS		<b>400-89110</b>
2bbl 1600cfm air door with TPS		<b>400-89160</b>
Air Cleaner Riser 1.75" I.D. X 6.25" long		<b>500-59175</b>

**Fuel Pressure Regulators**



Fuel Rail Mount style



Hose Barb Mount style #380-84244

Description	~ Fuel Rail ~	Part #
Regulator, fuel rail mount, 2.5 bar (36 psi)		<b>380-84139</b>
Regulator, fuel rail mount, 3 bar (43.5 psi)		<b>380-84144</b>
Regulator, fuel rail mount, 3.5 bar (54 psi)		<b>380-84153</b>
Regulator, hose barb mount, 3 bar (43.5 psi)		<b>380-84244</b>



**MOST  
FREQUENTLY  
ASKED  
QUESTIONS  
ABOUT**



**ELECTROMOTIVE PRODUCTS**

**How much horsepower will I gain from your system?**

7% and higher, depending on the application.

**Do you have a unit for my vehicle/engine?**

We have systems for all vehicles with spark ignited engines.

**How hard is it to install and how long will it take?**

The units that use our Bolt-On trigger wheel are easy to install by yourself. Otherwise a machine shop may be needed to bore the trigger wheel holes for installation. Installation, for the first time, may take one weekend .

**Is it Multi-Port or Throttle Body fuel injection?**

Either fueling types are available, including Individual Throttle Bodies.

**Will I get better fuel economy?**

Yes, if the vehicle is calibrated correctly.

**How much spark voltage/energy does it have?**

Up to 70,000 volts and energy of 150mJ (milliJoules).

**How does it eliminate the distributor?**

It has multi coils which allow each spark plug to be fired directly from the coil towers instead of through a mechanical distributor.

**Will the waste spark damage my engine?**

No, the coil fires a plug on the compression stroke and a plug on the exhaust stroke. This fired on the exhaust is called waste spark and has no effect at all on the engine.

**Is this system reliable and is help available?**

Yes, with a decade of experience, it is guaranteed to run without failure, period. All cars made world wide are going to this. .

Yes, technicians are available M-F 8:30-5:00 est.

**How does it compare to a CD Ignition (Capacitor Discharge)?**

According to the BOSCH® automotive handbook 3rd edition...

Page 460... "The major advantage of the CDI is that it generally remains impervious to electrical shunts in the high voltage ignition circuit, especially those due to spark-plug contamination. For many applications the spark duration of 0.1 ... 0.3 ms is too brief to ensure that the air-fuel mixture will ignite reliably. Thus CDI is only designed for specific types of engine, and today its use is restricted to a few applications only, as transistorized ignition systems have virtually the same performance. CDI is not suited for aftermarket installations."

**Why is it better than brand X?**

Simply said, Electromotive's patented ignition is the best (see page 1 Electromotive's Fundamental Advantage). This 'State of the Art' Ignition System and patented technology is available ONLY in Electromotive's Aftermarket Engine Management - our competitors cannot offer it. So far only OEMs are licensed to use this. Electromotive's ignition puts out more energy at the right advance angle and continues to perform at higher RPM's; thereby, giving increased overall performance at all times. Other systems rely on time-based technology for calculating crankshaft location. Electromotive utilizes it's patented and much more accurate angular based technology in conjunction with a 60 tooth trigger wheel which optimizes coil charging time and the release of spark energy of extremely long duration at just the right time.

When it comes to EFI control and engine management, the new TEC<sup>3</sup> certainly does not disappoint. The new 3D programmable WinTEC 3.0 software is simple enough for Street Enthusiasts and first time tuners, yet sophisticated enough for the most demanding ultra high output competition engines. Selectable within the software, the user may run throttle body, tuned port, multi-port, individual throttle body, true sequential, phase sequential or batch fired injection in closed or open loop. It can control ancillary devices such as nitrous (up to 4 stages), boost, torque converters and more. With its unique 'Tuning Wizard' it may be the easiest engine management system to get up and running. The *Tuning Wizard*, after a few simple user inputs, will establish a baseline program for you. Now that you are running, the TEC<sup>3</sup> will auto calibrate the fuel curve based on your desired air/fuel ratio. Also the innovative WinTEC 3.0 software offers the 'Best Idle Control in the business'. Featuring a special 'Blend' screen, it enables engines that are aggressively cammed to achieve a smoother and more manageable idle. The unique WinTEC software features 'Tune on the Fly', cold-start and warm-up enrichments, knock control, new 'Triple-Smooth' rev limiters and linear advance tables that eliminates the need to enter point after point. The ability to run multiple injectors per cylinder is also built in. On-board Data Acquisition is now standard and can simultaneously record data from up to 25 different values. Viewable via multiple screens and even graph overlays with adjustable resolution times.

With the all-inclusive fuel injection and engine management systems, integrated with the powerful and accurate Direct Fire Ignition, with the TEC you truly get Total Engine Control!

Electromotive Products are protected by some or all of US Patent Nos. RE34,183; 5,081,969; and 6,367,570

**Terms and Conditions****Electromotive Product Warranty**

Only products Manufactured by Electromotive are covered by Electromotive's limited warranty for a period of one-year from date of shipment by Electromotive.

Products not manufactured by Electromotive are expressly excluded from any consideration under these terms – for information regarding products not manufactured by Electromotive you must contact the specific product's manufacturer.

Whenever possible, Electromotive attempts to replace defective products rather than repair them. Replacement puts the "Customer First" and offers many benefits over repair; the greatest benefit being the timeliness of the replacement process. However, in some cases, replacement with a 'like new' refurbished product is not possible, and a warranty repair situation occurs. In these situations, Electromotive strives to keep our repair times to a minimum (on average 2 to 3 business days upon receipt - excluding the necessary shipping time). Customers should follow the appropriate steps outlined below to initiate a warranty replacement or repair.

**Warranty Replacement**

Contact Electromotive Technical Support at 1-703-331-0100 9am to 5pm Eastern Time. The customer must have the serial number and original proof-of-purchase available. Electromotive's Technical Support staff will attempt to help you correct any minor issues that might be causing the problem. If we are unable to fix the issue to your satisfaction, a return merchandise authorization (RMA) number will be issued. Under our Warranty program, Electromotive will typically ship the customer a replacement unit on the same day the defective product arrives.

The replacement product will assume the remainder of your original product's warranty or 90 days, whichever is greater.

**Warranty Coverage**

Electromotive warrants its products to be free from defects in material and workmanship during the warranty period. If a product proves to be defective in material or workmanship during the warranty period, Electromotive will, at its sole option, repair or replace the product with a similar product. Replacement product or parts may include remanufactured or refurbished parts or components.

**Length of Warranty**

Electromotive products are warranted for one (1) year parts and one (1) year labor. Warranty begins upon date of shipment from Electromotive.

**Who the Warranty Protects**

This warranty is valid only for the purchaser from Electromotive.

**Warranty Exclusions**

1. Any product, on which the serial number has been defaced, modified or removed.
2. Damage, deterioration or malfunction resulting from:
  - A. Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.
  - B. Repair or attempted repair by anyone not authorized by Electromotive.
  - C. Any damage of the product due to shipment.
  - D. Removal or installation of the product.
  - E. Causes external to the product, such as electric power fluctuations or failure.
  - F. Use of supplies or parts not meeting Electromotive's specifications.
  - G. Any other cause, which does not relate to a product defect.
3. Removal, installation, and set-up service charges.
4. Shipping Charges.
5. Any warranty of merchantability, express or implied, is excluded except as otherwise set forth herein.
6. There are no warranties that extend beyond the description on the face of this document.
7. There are no warranties of fitness for a particular purpose except as stated on the face of this "Electromotive Product Warranty".
8. Any and all oral warranties are excluded and will not be honored.
9. Consequential damages will not be covered by this warranty.

**How to Obtain Warranty Service**

1. For information on warranty service, contact your Electromotive Value Added Dealer or call Electromotive Technical Support at 1-703-331-0100 from 9am to 5pm Eastern Time Monday through Friday - e-mail [support@electromotive-inc.com]. To obtain warranty service, you will be required to provide:
  - a. Original dated sales receipt
  - b. Your name
  - c. Your address
  - d. The serial number of the product
  - e. A description of the problem
  - f. Contact information (daytime phone number or email address)
2. Take or ship the product in the original or a suitable replacement container to:

**Electromotive, Inc.**  
**9131 Centreville Road**  
**Manassas VA 20110**

**LIMITATION OF IMPLIED WARRANTIES**

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED HEREIN INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

**EXCLUSION OF DAMAGES**

ELECTROMOTIVE'S LIABILITY IS LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT. ELECTROMOTIVE SHALL NOT BE LIABLE FOR:

1. DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE WITH BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF ADVISED OF THEIR POSSIBILITY OF SUCH DAMAGES.
2. ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE.
3. ANY CLAIM AGAINST THE CUSTOMER BY ANY OTHER PARTY.
4. SHIPPING CHARGES.



# ELECTROMOTIVE ENGINE CONTROLS



AD2	AD3	DESIRED AFR	ACTUAL AFR	EGO CR
.00		25.4	25.4	.0
		ADV	SEC. ADV	ADV SPLIT
		0%	0%	OFF
		GPO #1	GPO #2	GPO #3
				OFF



1. SET Update New  
2. CLEAR ZERO ADVANCE Engine Control TEST Values

3. ADD  
4. ADD  
5. CHA  
6. CHA  
7. CHA  
8. CHA  
9. CHA  
10. CHANGE AFR OFFSET (UP/ DOWN Arrow Keys) = .00

Use ALT# keys to Access Engine Control TEST Fields



For Help  
Loaded  
TEC3 Fi  
TEC3 SERIA



OFF TIME 5.30 Ms ON TIME .00 Ms  
PERCENT OF BRILLIANT PULS 0%

Check Engine Light

Print Form

<< BACK

10000  
8000  
6000  
4000  
2000  
0

MAP 99.7 SEC 00009.8 Page 1

IGNITION ADVANCE (DEG)  
ADV 26 SEC 00009.8 Page 1

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**Crank Triggered, Multiple Coil, Direct Fire, Tunable Ignitions**

**Laptop Controlled, Super Powerful Engine Management for Electronic Fuel Injection featuring our Patented Ignition with Data Logging**

**EFI Sensors and Connectors**

**Hardware and Accessories for your EFI Conversion Project**

**The Finest Technical Support in the Business**

**Electromotive Billet Air Doors deliver drivability and performance**

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GENERAL PURPOSE OUTPUT  
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EGO CORRECTION (Percentage)  
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