



***Installation Instructions for:
EMS P/N 30-1510 and 30-1510U
2003-2005 Dodge SRT-4***



WARNING:

This installation is not for the tuning novice nor the PC illiterate! Use this system with **EXTREME** caution! The AEM EMS System allows for total flexibility in engine tuning. Misuse of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of management systems or are not PC literate, please do not attempt the installation. Refer the installation to a AEM trained tuning shop or call 800-423-0046 for technical assistance. You should also visit the AEM EMS Tech Forum at <http://www.aempower.com>

NOTE: AEM holds no responsibility for any engine damage that results from the misuse of this product!

This product is legal in California for racing vehicles only and should never be used on public highways.

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Instruction Part Number: 10-1510
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The AEM Engine Management System (EMS) is the result of extensive development on a wide variety of vehicles. Each system is engineered for a particular application. The AEM EMS differs from all others in several ways. The EMS features unique plug and play technology. There is no need to modify the factory wiring harness and in most cases the vehicle may be returned to stock in a matter of minutes. The AEMPro software is configured to work with the factory sensors and equipment, so there is no need for expensive or hard to find sensors, making replacements and repairs as simple as with any stock vehicle. For stock and slightly modified vehicles, the AEMPro software comes programmed with base parameters, providing a solid starting point for beginner tuning. For more heavily modified cars, the EMS has many spare inputs and outputs allowing the elimination of add-on rev-limiters, boost controllers, nitrous controllers, fuel computers, etc. It also includes a configurable onboard data logger capable of recording 512kb of information. Every EMS comes with all functions installed and activated, and there are no expensive options or upgrades to be performed.

Please visit the AEM EMS Forum at <http://www.aempower.com> to register the system before beginning. AEM posts the most current software and base maps online. The forum also has many helpful hints/tips to make the EMS perform its best.

While the base map may be a good starting point and will save considerable time and money, it will not replace the need to tune the specific application. AEM base maps are tuned conservatively and are not intended to be driven aggressively. Ignoring this can and will damage an engine.

If the UEGO EMS was purchased, the stock O2 #1 sensor should be removed and replaced with the AEM sensor supplied with the EMS. The UEGO EMS furnishes the user with real time, accurate and repeatable air/fuel ratio values. The system consists of an internal air fuel ratio (AFR) controller, wiring harness, and a wide band oxygen sensor with a weld-in sensor bung.

The heart of the AEM wideband controller is the Bosch LSU4.2 Universal Exhaust Gas Oxygen (UEGO) sensor. This type of sensor is commonly referred to as "laboratory grade" and works on a different principle than the normal oxygen sensor found in most vehicles. Its unique design makes precision AFR measurements possible over the entire operating range. UEGO type sensors use a "current pump" within the sensor itself to determine the actual oxygen concentration within the sensing element or, lacking any oxygen, it determines the amount of oxygen required to regain stoichiometric operation. The output is in the form of a very small current, which varies depending on the air-fuel ratio. This is completely different from normal oxygen sensors (1, 2, and 4 wire types), which directly output a voltage.

Each AEM UEGO sensor is individually calibrated using a laser trimmed resistor integral found on the connector body. This process replaces the traditional "free air" calibration procedure when changing sensors and implements a sensor specific calibration for unparalleled accuracy.

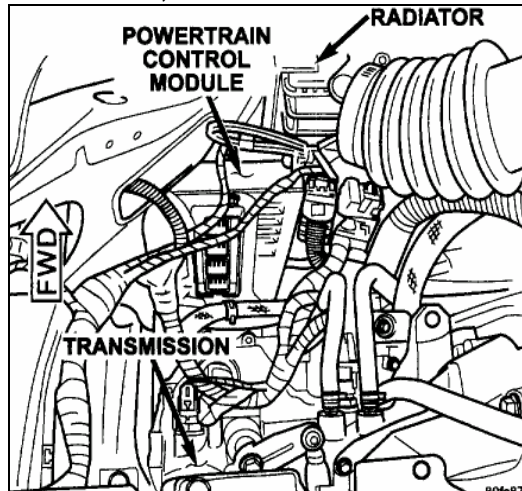
Read and understand these instructions BEFORE attempting to install this product.

The Dodge SRT-4 utilizes a PCI-Bus. This multiplex system drives the Body Control Module, Air Bag System Diagnostic Module, Full ATC Display Head (if equipped), ABS Module, Travel Module, and SKIM. Fortunately, the ECU only has to transmit signals for the Instrument Panel. In order for the Instrument Panel to be controlled with the EMS, the stock ECU has to be "integrated". In other words, the stock ECU has to be relocated and connected to the EMS via the harness supplied. The stock ECU is only there to control the tachometer, speedometer, and coolant gauge. Note: the Check Engine Light will remain ON at all times with the EMS installed. There is no way around this as the DaimlerChrysler CAN system controls the check engine light completely.

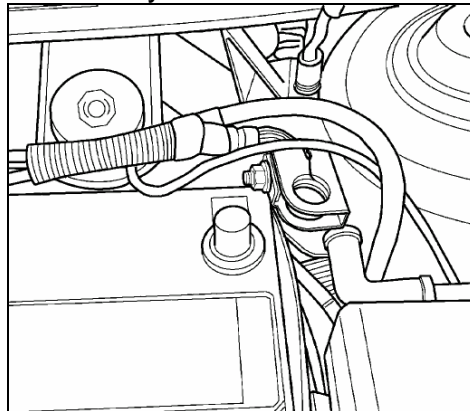
Uninstalling the Stock ECU:

The stock Engine Control Unit (ECU) will be relocated down a few inches, turned 90deg, and mounted against the front left inner chassis wall. Note: the stock ECU bracket will not be used to relocate the stock ECU, but will be used to mount the EMS.

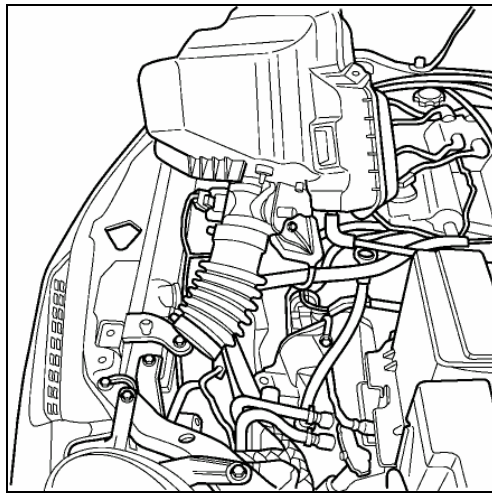
- 1) Referring to the picture below, locate the stock ECU.



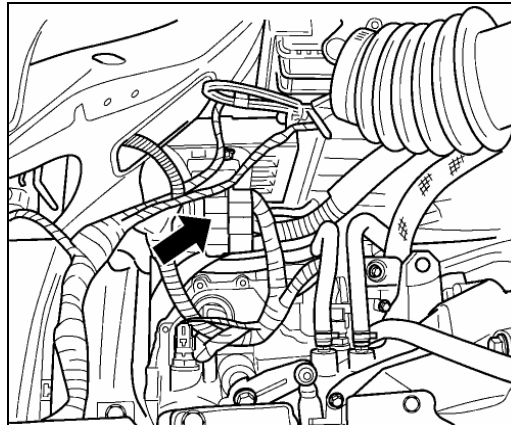
- 2) Disconnect the negative battery cable as shown below.



- 3) Remove the factory air cleaner box illustrated below.



- 4) Raise the vehicle preferably on a lift. If using a jack, remember to use stands.
- 5) Unlock the stock ECU connectors by pulling the red tabs back with your thumb.
- 6) Disconnect all 3 connectors from the stock ECU. Avoid excessive stress or pulling on the wires, as this may damage the harness. Do not cut any of the wires in the factory harness to remove them.

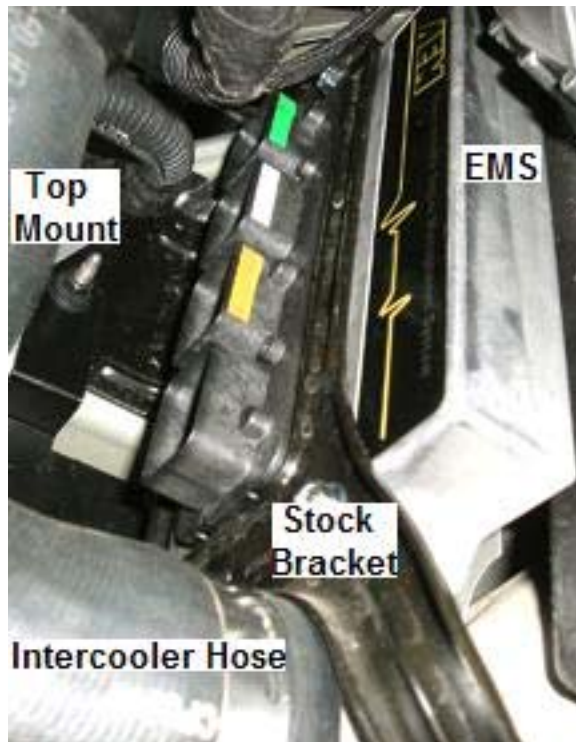


- 7) Remove the wire harness clip from the stock ECU bracket.
- 8) Loosen the intercooler hose clamp and pull the rubber hose off the intercooler outlet for easy access.
- 9) Remove the two lower mounting screws and side mounting nut as well as the three 6mm ECU-to-bracket bolts.
- 10) Separate the stock ECU from the bracket and temporarily remove both parts from the vehicle. Do not discard any of the stock components as most of them will be reused.

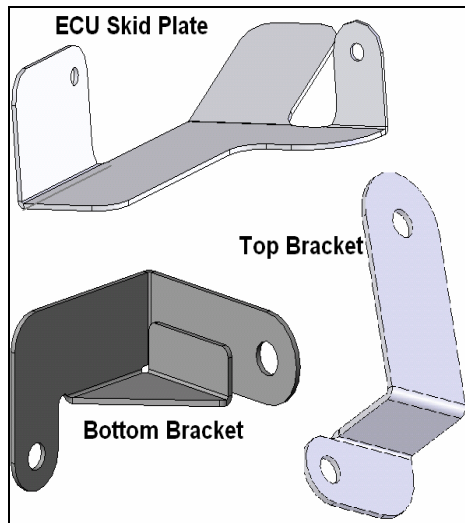
Mounting the Hardware:

The AEM Engine Management System uses the stock ECU bracket and mounts in the same location as the stock ECU.

- 1) Using 3 of the supplied M6X1.0 bolts, secure the stock ECU bracket to the EMS.
- 2) Hook the ECU bracket on the fixed side mounting stud. Do not screw the factory nut onto the stud yet.



- 3) Next, temporarily mount the AEM Skid Plate to the frame using the lower left stock ECU bracket screw. Note: the AEM Skid Plate is located at the highest possible point to protect the stock ECU from all minor road debris.

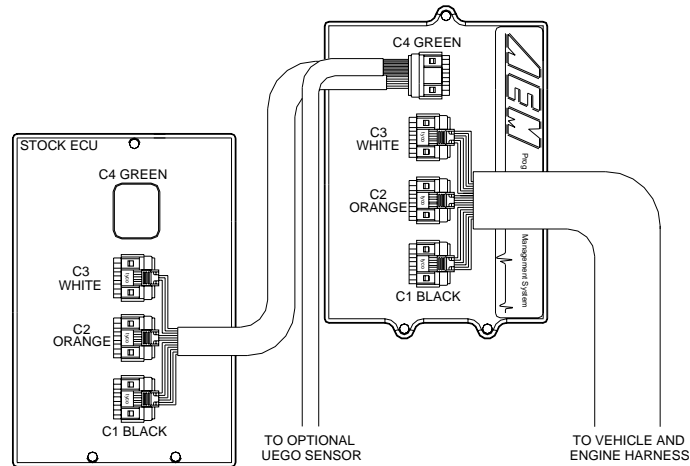


- 4) Find the factory hole located on the front left inner chassis wall and fasten the AEM Skid Plate using the supplied 6mm nut and M6x1.0 bolt.
- 5) Secure the AEM Top Bracket to the top mounting hole on the stock ECU (nearest the green plug) using the factory hardware.
- 6) Next, loop the AEM Top Bracket around the fixed stud where the EMS is mounted and tighten the factory nut.
- 7) Unbolt the sheet metal screw that was temporarily installed for the AEM Skidplate.
- 8) With the EMS/bracket, sandwich the AEM Bottom Bracket and the AEM Skidplate.
- 9) Position the lower EMS/bracket mounting holes into place and fasten both lower sheet metal screws.

- 10) Secure the AEM Bottom Bracket to the bottom mounting hole on the stock ECU using the factory hardware.



Routing the Harness Wiring:

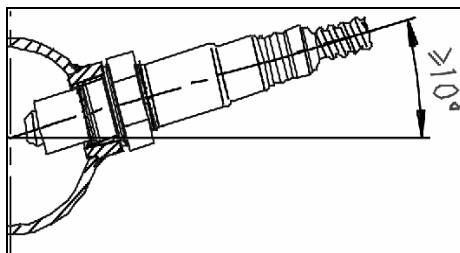


- 1) Plug the factory wiring harness into the EMS and position it so the wires are not pulled tight or stressed in any manner.
- 2) Plug the green C4 connector of the supplied ECU Relocation Harness into the EMS.
- 3) Plug the other 3 connectors of the Relocation Harness into the stock ECU at their respective positions. The picture below shows the completed installation taken from underneath the vehicle.



Installing the UEGO Sensor (UEGO EMS Only):

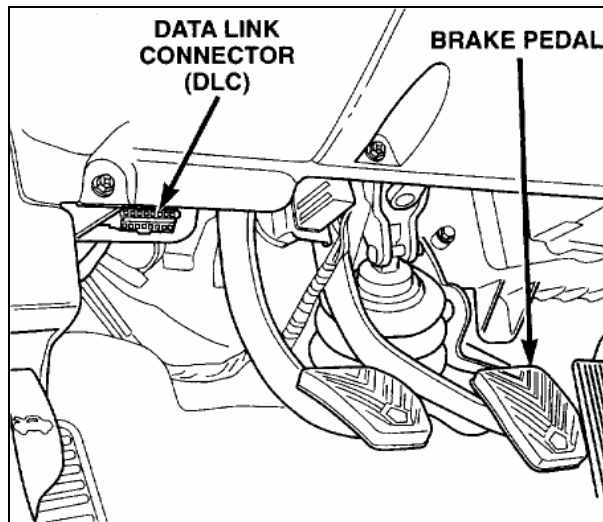
In many circumstances, the UEGO sensor can be used in the factory's front most oxygen sensor location. Alternatively, a M18 X 1.5 boss is supplied if a new spot is required. Make sure the UEGO sensor is at least 18 inches downstream from the exhaust port. If high extended EGT's (over 800C) or leaded fuel is anticipated, mount the sensor at least 36 inches or more downstream of the exhaust port as sensor overheating can occur. On turbo engines, the UEGO sensor must be installed after the turbocharger, if not, the pressure differential will greatly affect the accuracy of the unit. For accurate readings, the sensor must be mounted before catalytic converters and/or auxiliary air pumps. To prevent collection of liquids between the sensor housing and sensor element during the cold start phase, the installation angle should be inclined at least 10° towards horizontal with the electrical connection upwards, see below.



Route the UEGO connector (out of C4 at the EMS) to the UEGO sensor being careful to stay away from heat and the suspension.

Installing the Communication Cable:

Because the ECU is located up front in the engine bay, the best solution for PC communication is using the data link connector (DLC) which is normally used by the factory ECU. The DLC is located inside the vehicle, under the instrument panel, left of the steering column. Connect the supplied communication cable to the DLC and to the PC for tuning.



Reconnect the negative battery cable and reinstall the factory air cleaner box.

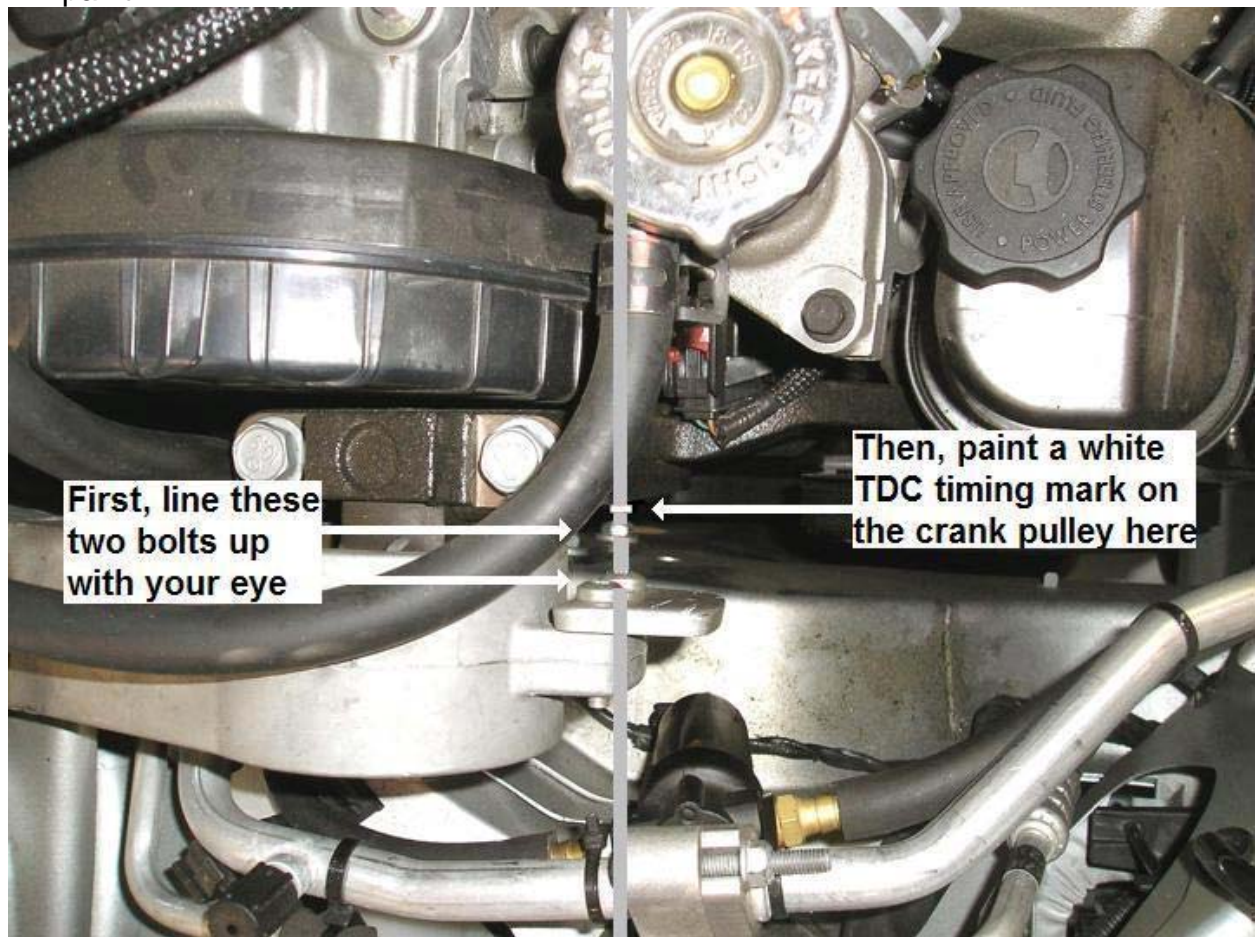
Ready to begin tuning the vehicle:

This calibration needs to be properly tuned and is not recommended for street use. To find an AEM Factory Trained Tuner in your area, go to the AEM website: www.aempower.com. **NEVER TUNE THE VEHICLE WHILE DRIVING.**

- 1) Install the supplied AEM CD.
- 2) Read AEM EFI Basics, AEMPro User Guide, and AEMLog Users Manual now located on your desktop.
- 3) Open the AEMPro software
- 4) Turn the ignition switch ON, but do not start the engine.
- 5) Go to: **ECU | Send New Calibration**. Upload the base calibration file (.cal) that most closely matches the vehicle's configuration to be tuned. Full details of the test vehicle used to generate each map can be found in the **Notes** section in the **Setup** window of the AEMPro software. The base maps can be found in the Dodge folder located in: **My Computer | Local Disk (C:) | Program Files | AEM | AEMPro | Startup Calibrations**
- 6) Set the throttle range: Select the **Configure** drop down menu, then **ECU Setup | Set Throttle Range** and then follow the instructions given on the screen.
- 7) Calibrate the lambda sensor channel (UEGO Only): With the ignition ON and the sensor unplugged, change the **O2 #1 Gain** (Setup | Sensors | Oxygen Sensor | Oxygen Sensor #1 | Options - O2 Sensor #1) until the **O2 #1 Volts** parameter displays **3.94 Volts (+/- 0.02 Volts)**. This should yield an **O2 #1 Gain** between 1.24-1.30. If using the non-UEGO EMS, keep the **O2 #1 Gain** at **1.0**.
- 8) If your engine's components are not close to the base map's setup, now is the time to reference the **AEMPro User Manual** and calibrate the base map (offline) to your engine specifications, i.e. injector size, MAP sensor selection, etc.
- 9) Because the Dodge SRT-4 does not have a timing mark from the factory, a mark should be made to verify the ignition timing.
 - Pull the front right side wheel off.
 - In the inner fender well, pry the plastic cover off to expose the 19mm crank pulley bolt.



- Manually spin the engine to the cylinder #1 TDC position using a dial indicator or caliper at the number 1 spark plug hole.
- As shown below, line up the two bolts and mark the crank pulley with white paint.



Note: You can also make a timing reference by pulling off the upper timing belt cover and using the cam gear's TDC etching marks.

- Reinstall the spark plug, pulley cover, wheel, etc.
- Start the engine. If the vehicle does not start, reference the AEM Pro User Manual. If the problem persists, try the AEM Tech **Support Forum** www.aempower.com or the **AEM Tech Line 1-800-423-0046**.
- First set the **Ignition Map** to zero by going to: **Ignition | Ignition Map**.
- Highlight the entire table.

- Click “**M**” for menu and “**C**” for copy on the keyboard. This copies the entire Ignition Map and stores it on the clipboard.
- Now click “**S**” for set value.
- Enter “**0**” and click **OK**.
- If there are any ignition trims, temporarily zero them out in the **Ignition | <<Advanced Ign>> | Ignition Trims** section.
- Select the **Configure** drop down menu, then **ECU Setup | Set Ignition**.
- Using a timing light, reference the No. 1 coil signal and compare the physical engine timing to the parameter **Ignition Timing** displayed.
- Use the **Advance/Retard** buttons to make the timing number match at idle. Note: while using the **Advance/Retard** buttons in the AEMPro software, the engine’s timing is changing not the **Ignition Timing** parameter.
- Now rev and hold the engine at high rpm to verify that the values still agree with each other. If not, change the option **Pickup Delay Comp** in the ignition pull down menu until the numbers match.

Because the ignition timing is non adjustable on these engines, the base map’s **Ignition Sync** and **Pickup Delay Comp** should be correct. However, improper ignition timing is the easiest way to destroy an engine so it is always a good idea to verify it before proceeding.

- Go back to the **Ignition Map**, highlight the table and click “**M**” for menu.
- Before clicking “**P**” for paste, make sure that the last copy function was from copying the original ignition map.
- You are now ready to tune the engine.

Application Notes for EMS P/N 30-1510 and 30-1510U

Make:	Dodge
Models:	SRT-4
Years Covered:	2003-2005
Displacement:	2.4L
Engine Configuration:	Inline 4
Firing Order:	1-3-4-2
N/A, S/C or T/C:	Turbocharged
Load Sensor Type:	MAP
MAP Min:	0.30 Volts (-14.06 psig)
MAP Max:	4.88 Volts (20.92 psig)
MAF Min:	---
MAF Max:	---
# Coils:	2 (Factory Wasted Spark)
How to hook up CDI:	Direct: EMS to CDI to Coils
# Injectors:	Inj 1-4
Inj @ 58psi (Stock):	525cc ('03) / 577cc ('04-'05)
Inj Resistors:	N/A
Injection Mode:	Sequential
Knock Sensors:	1
Lambda Sensors:	2
Idle Motor Type:	Pulse Width
Main Relay Control:	No (hardware controlled)
Crank Pickup Type:	Hall Effect
Crank Teeth/Cycle:	68-8
Cam Pickup Type:	Hall Effect
Cam Teeth/Cycle:	6+1 Long Tooth
Trans Offered:	Manual
Trans Supported:	Manual
Drive Options:	FWD
Supplied Harness:	Coms/ECU Relocation (& UEGO)

Spare Injector Drivers:	Inj #5, Pin C2-5
Spare Injector Drivers:	Inj #6, Pin C2-4
Spare Injector Drivers:	Inj #7, Pin C1-5
Spare Injector Drivers:	Inj #8, Pin C1-4
Spare Injector Drivers:	Inj #9, Pin C1-6
Spare Injector Drivers:	Inj #10, Pin C1-7
Spare Coil Drivers:	Coil #3, Pin C1-1
Spare Coil Drivers:	Coil #5, Pin C1-3
Boost Control:	PW #2 (HS), Pin C1-28
Spare Low Side Driver:	Low Side #1, Pin C1-2
Spare Low Side Driver:	Low Side #2, Pin C1-19
Spare Low Side Driver:	Low Side #4, Pin C1-24
Spare Low Side Driver:	Low Side #7, Pin C1-34
Spare Low Side Driver:	Low Side #8, Pin C1-35
Spare Low Side Driver:	Low Side #9, Pin C2-15
Spare Low Side Driver:	Low Side #10, Pin C3-13
Spare Low Side Driver:	Idle #5, Pin C2-6
Spare High Side Driver:	High Side #3, Pin C3-9
Spare High Side Driver:	High Side #4, Pin C3-10
Spare High Side Driver:	Idle #2, Pin C2-8
EGT 1 Location:	EGT #1, Pin C3-25
EGT 2 Location:	EGT #2, Pin C3-31
EGT 3 Location:	EGT #3, Pin C3-33
EGT 4 Location:	EGT #4, Pin C3-36
Speed Density Input:	MAP, Pin C2-23
Spare 0-5V Channels:	Gear, Pin C2-26
Spare Speed Input:	Spare Speed, Pin C1-8
Spare Switch Input:	---
A/C Switch Input	Switch #6, Pin C3-24

PnP	Function is properly configured but available for reassignment
Available	Function is not currently allocated and is available for use
Dedicated	Function is fixed and can not be changed

Pin #	2003-2005 Dodge SRT-4	30-1510(U) EMS	I/O	Availability
C1-1	---	Coil #3	Output	Avail, Coil Gnd, 1.5A Max, High Current
C1-2	---	Low Side Driver #1	Output	Avail, Switched Gnd, 1.5A Max
C1-3	---	Coil #5	Output	Avail, Coil Gnd, 1.5A Max, High Current
C1-4	---	Injector #8	Output	Avail, Injector Gnd, 1.5A Max
C1-5	---	Injector #7	Output	Avail, Injector Gnd, 1.5A Max
C1-6	---	Injector #9	Output	Avail, Injector Gnd, 1.5A Max
C1-7	---	Injector #10	Output	Avail, Injector Gnd, 1.5A Max
C1-8	---	Spare Speed	Input	Avail, Speed Input
C1-9	Ground	Power Ground	Input	Dedicated
C1-10	---	---	---	Not Used
C1-11	Fused Ignition Switch Output (Run-Start)	Ign Switch	Input	Dedicated
C1-12	---	Ign Switch	Input	Dedicated
C1-13	Vehicle Speed Signal	Vehicle Speed	Input	PnP for Vehicle Speed Sensor
C1-14	Brake Fluid Level Switch	Switch #1	Input	Avail, Switched Input
C1-15	Throttle Inlet Pressure Solenoid Control	Idle #1	Output	Avail, Ground / +12V, 1.5 A Max
C1-16	---	---	---	Not Used
C1-17	Surge Solenoid Control	Idle #3	Output	Avail, Ground / +12V, 1.5 A Max
C1-18	Ground	Power Ground	Input	Dedicated
C1-19	---	Low Side Driver #2	Output	Avail, Switched Gnd, 1.5A Max
C1-20	Oil Pressure Signal	Switch #2	Input	Dedicated
C1-21	---	---	---	Not Used
C1-22	Ambient Temperature Sensor	ADCR11	Input	Avail, 0-5 Volt Input
C1-23	Throttle Inlet Pressure Signal	MAF	Input	Avail, 0-5 Volt Input
C1-24	---	Low Side Driver #4	Output	Avail, Switched Gnd, 1.5A Max
C1-25	SCI Receive	PCTX	Output	Dedicated
C1-26	---	---	---	Not Used
C1-27	5 Volt Supply	5V Sensor	Output	Dedicated
C1-28	Wastegate Solenoid Control	PW #2 (High Side)	Output	PnP for Boost Control, Supplies 12V (Not Ground)
C1-29	Fused B(+)	Permanent Power	Input	Dedicated
C1-30	Fused Ignition Switch Output (Start)	Start	Input	Dedicated
C1-31	---	---	---	Not Used
C1-32	---	---	---	Not Used
C1-33	---	---	---	Not Used
C1-34	---	Low Side Driver #7	Output	Avail, Switched Gnd, 1.5A Max
C1-35	---	Low Side Driver #8	Output	Avail, Switched Gnd, 1.5A Max
C1-36	SCI Transmit	PCRX	Input	Dedicated
C1-37	---	---	---	Not Used
C1-38	PCI Bus	PCI Bus	Output	Dedicated

C2-1	---	---	---	Not Used
C2-2	---	---	---	Not Used
C2-3	---	---	---	Not Used
C2-4	---	Injector #6	Output	Avail, Injector Gnd, 1.5A Max
C2-5	---	Injector #5	Output	Avail, Injector Gnd, 1.5A Max
C2-6	---	Idle #5	Output	Avail, Ground / +12V, 1.5 A Max
C2-7	---	---	---	Not Used

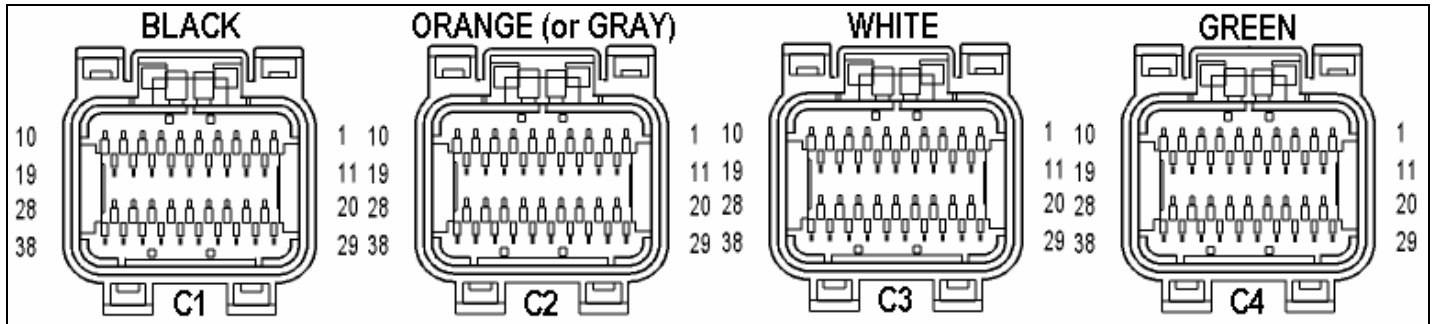
C2-8	---	Idle #2	Output	Avail, Ground / +12V, 1.5 A Max
C2-9	Coil Control No. 2	Coil #2	Output	PnP for Coil 2, High Current
C2-10	Coil Control No. 1	Coil #1	Output	PnP for Coil 1, High Current
C2-11	Injector Control No. 4	Injector #4	Output	PnP for Injector 4
C2-12	Injector Control No. 3	Injector #3	Output	PnP for Injector 3
C2-13	Injector Control No. 2	Injector #2	Output	PnP for Injector 2
C2-14	Injector Control No. 1	Injector #1	Output	PnP for Injector 1
C2-15	---	Low Side Driver #9	Output	Avail, Switched Gnd, 1.5A Max
C2-16	---	---	---	Not Used
C2-17	O2 1/2 Heater Control	High Side Driver #1	Output	Avail, +12V, 1.5A Max
C2-18	O2 1/1 Heater Control	High Side Driver #2	Output	Avail, +12V, 1.5A Max
C2-19	GEN Field Control	---	---	Not Used
C2-20	ECT Sensor	Coolant	Input	PnP for Water Temperature
C2-21	TP Sensor Signal	TPS	Input	PnP for Throttle Position
C2-22	---	Idle #4	Output	Avail, Ground / +12V, 1.5 A Max
C2-23	MAP Signal	MAP	Input	PnP for MAP Sensor
C2-24	Knock Sensor Return	Power Ground	Input	Dedicated
C2-25	Knock Sensor Signal	Knock #1	Input	PnP for Knock Sensor
C2-26	---	Gear	Input	Avail, 0-5 Volt Input
C2-27	Sensor Ground	Sensor Ground	Output	Dedicated
C2-28	IAC Return	Power	Input	Dedicated
C2-29	5 Volt Supply	5V Sensor	Output	Dedicated
C2-30	IAT Signal	AIT	Input	PnP for Air Temperature
C2-31	O2 1/1 Signal	<Lambda #1>	Input	<O2 #1 Input N/A for 30-1510U>
C2-32	O2 Return	Sensor Ground	Output	Dedicated
C2-33	O2 Signal	Lambda #2	Input	Avail, O2 Sensor Input
C2-34	CMP Signal	Cam	Input	PnP for Cam Sensor
C2-35	CKP Signal	Crank	Input	PnP for Crank Sensor
C2-36	---	---	---	Not Used
C2-37	---	Power Ground	Input	Dedicated
C2-38	IAC Control	PW #1	Output	PnP for Idle Air Control

C3-1	---	Injector #9i	Output	Avail, Inverted Injector
C3-2	---	Injector #10i	Output	Avail, Inverted Injector
C3-3	Automatic Shut Down Relay Control	Main Relay	Output	Dedicated
C3-4	High Speed Radiator Fan	Low Side Driver #5	Output	PnP for Cooling Fan
C3-5	---	---	---	Not Used
C3-6	Fan Relay Control	Low Side Driver #3	Output	PnP for Cooling Fan
C3-7	---	---	---	Not Used
C3-8	NVLD Solenoid Control	Idle #6	Output	Avail, Ground / +12V, 1.5 A Max
C3-9	---	High Side Driver #3	Output	Avail, +12V, 1.5A Max
C3-10	---	High Side Driver #4	Output	Avail, +12V, 1.5A Max
C3-11	A/C Clutch Relay Control	Low Side Driver #6	Output	PnP for A/C Clutch Relay
C3-12	---	---	---	Not Used
C3-13	---	Low Side Driver #10	Output	Avail, Switched Gnd, 1.5A Max
C3-14	---	---	---	Not Used
C3-15	---	---	---	Not Used
C3-16	---	Sensor Ground	Output	Avail, Sensor Ground
C3-17	Sensor Ground	Sensor Ground	Output	Dedicated
C3-18	---	---	---	Not Used
C3-19	Automatic Shut Down Relay Output	Power	Input	Dedicated

C3-20	Evap Purge Control	Idle #8	Output	PnP for Purge Control
C3-21	Clutch Interlock Switch Signal	Switch #3	Input	Avail, Switched Input
C3-22	---	---	---	Not Used
C3-23	Brake Switch Signal	---	---	Not Used
C3-24	A/C Switch Sense	Switch #6	Input	PnP for A/C Switch
C3-25	---	EGT #1	Input	Avail, RTD Temp
C3-26	Clutch Up Switch Signal	Switch #4	Input	Avail, Switched Input
C3-27	---	---	---	Not Used
C3-28	Automatic Shut Down Relay Output	Power	Input	Dedicated
C3-29	Evap Purge Return	Idle #7	Output	Avail, Ground / +12V, 1.5 A Max
C3-30	Power Steering Pressure Switch Signal	Switch #5	Input	Avail, Switched Input
C3-31	---	EGT #2	Input	Avail, RTD Temp
C3-32	Battery Temperature Signal	Spare Temp	Input	Avail, 0-5 Volt Input
C3-33	---	EGT #3	Input	Avail, RTD Temp
C3-34	---	---	---	Not Used
C3-35	NVLD Switch Signal	---	---	Not Used
C3-36	---	EGT #4	Input	Avail, RTD Temp
C3-37	Fuel Pump Relay Control	Low Side Driver #11	Output	PnP for Fuel Pump
C3-38	Starter Relay Control	Low Side Driver #12	Output	PnP for Starter

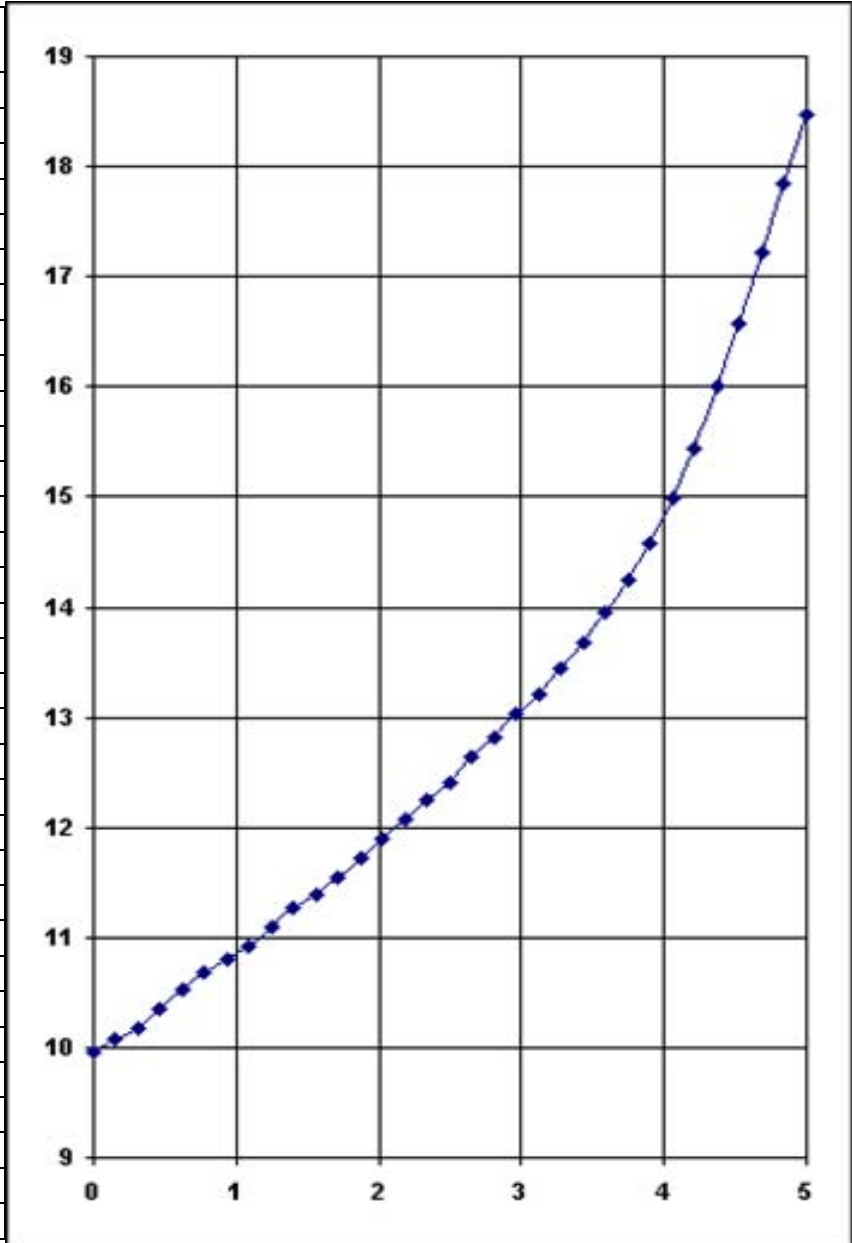
C4-1	To Stock ECU	Power Ground	Output	Dedicated
C4-2	To Stock ECU	Ign Switch	Output	Dedicated
C4-3	To Stock ECU	Ign Switch	Output	Dedicated
C4-4	To Stock ECU	Vehicle Speed	Output	Dedicated
C4-5	To Stock ECU	Power Ground	Output	Dedicated
C4-6	To Stock ECU	PCI Bus-PCM	Output	Dedicated
C4-7	To Stock ECU	Coolant Sensor	Output	Dedicated
C4-8	To Stock ECU	Sensor Ground	Output	Dedicated
C4-9	To Stock ECU	Crank Sensor	Output	Dedicated
C4-10	To Stock ECU	Sensor Ground	Output	Dedicated
C4-11	To Stock ECU	Power	Output	Dedicated
C4-12	To Stock ECU	Power	Output	Dedicated
C4-13	To Stock ECU	Permanent Power	Output	Dedicated
C4-14	To Stock ECU	Alternator GEN Field Control	Output	Dedicated
C4-15	To Stock ECU	Ambient Temperature Sensor	Output	Dedicated
C4-16	To Stock ECU	Battery Temperature Signal	Output	Dedicated
C4-17	To Stock ECU	Oil Pressure Signal	Output	Dedicated
C4-18	---	---	---	Not Used
C4-19	---	---	---	Not Used
C4-20	---	---	---	Not Used
C4-21	---	---	---	Not Used
C4-22	---	---	---	Not Used
C4-23	---	---	---	Not Used
C4-24	---	---	---	Not Used
C4-25	---	---	---	Not Used
C4-26	---	---	---	Not Used
C4-27	---	---	---	Not Used
C4-28	---	---	---	Not Used
C4-29	---	---	---	Not Used
C4-30	---	---	---	Not Used
C4-31	---	---	---	Not Used

C4-32	---	---	---	Not Used
C4-33	To UEGO Sensor (30-1510U Only)	Nernst Voltage (UN)	Input	Dedicated
C4-34	To UEGO Sensor (30-1510U Only)	Trim Current (IA)	Input	Dedicated
C4-35	To UEGO Sensor (30-1510U Only)	Power	Input	Dedicated, High Current
C4-36	To UEGO Sensor (30-1510U Only)	Heater - (VH-)	Input	Dedicated, High Current
C4-37	To UEGO Sensor (30-1510U Only)	Virtual Ground (VM)	Input	Dedicated
C4-38	To UEGO Sensor (30-1510U Only)	Pumping Current (IP)	Input	Dedicated



Oxygen Sensor #1 Calibrations (UEGO EMS ONLY)

O2 (V)	AFR (GAS)	LAMBDA
0.000	9.950	0.679
0.156	10.070	0.687
0.312	10.180	0.695
0.468	10.350	0.706
0.624	10.520	0.718
0.780	10.690	0.730
0.936	10.810	0.738
1.092	10.920	0.745
1.248	11.090	0.757
1.404	11.270	0.769
1.560	11.380	0.777
1.716	11.550	0.788
1.872	11.720	0.800
2.028	11.900	0.812
2.184	12.070	0.824
2.340	12.240	0.835
2.496	12.410	0.847
2.652	12.640	0.863
2.808	12.810	0.874
2.964	13.040	0.890
3.120	13.210	0.902
3.276	13.440	0.917
3.432	13.670	0.933
3.588	13.950	0.952
3.744	14.240	0.972
3.900	14.580	0.995
4.056	14.980	1.023
4.212	15.440	1.054
4.368	16.010	1.093
4.524	16.580	1.132
4.680	17.210	1.175
4.836	17.840	1.218
4.992	18.470	1.261



Calculating the Air Fuel Ratio of common fuels from the Lambda value

Gasoline AFR = Lambda * 14.65

Methanol AFR = Lambda * 6.47

Diesel AFR = Lambda * 14.5

Propane AFR = Lambda * 15.7

Ethanol AFR = Lambda * 9.00

CNG AFR = Lambda * 14.5

UEGO Controller/Sensor Specifications (UEGO EMS Only)

Supply Voltage (nominal):	9 to 18 Volts
Measuring range:	0.68 to 1.26 Lambda
Type:	Bosch UEGO LSU4.2
Accuracy:	+/- 1%
Temperature Limit:	930C
Initial Warm-up Time:	Less than 20 seconds
Weight:	80 grams
Heater Current:	1.1A at 12.0V
Mounting:	M18 X 1.5 thread, Torque to 30 ft-lbs
Nominal Service Life:	100,000 km for Unleaded Fuel
	60,000 km for Leaded Fuel 0.15g Pb/l
	30,000 km for Leaded Fuel 0.40g Pb/l
	20,000 km for Leaded Fuel 0.60g Pb/l

Notes:

The sensor should not be subject to mechanical or thermal shock or it may be damaged.

The sensor is not designed for operation on leaded fuels. Doing so will dramatically shorten sensor life.

Long term running in the rich region (Lambda < 0.95) will shorten sensor life.

High exhaust temperatures (over 850C) will shorten sensor life.

Engine oil consumption at a rate greater than 1 quart per 1,000 miles will shorten sensor life.

Do not run the engine with the UEGO sensor installed without power applied to the controller and the sensor plugged in.

Product List

Quantity	Part Number	Description
1	35-1510U	ECU Assembly
1	35-3004	EMS Coms Cable
1	35-3531U	Cable, SRT-4 ECU Relocation w/ UEGO
1	35-3531	Cable, SRT-4 ECU Relocation
1	35-5920	Bracket Top, SRT-4
1	35-5921	Bracket Bottom, SRT-4
1	35-5922	ECU Skidplate, SRT-4
4	1-2038	Bolt, M6x1x20
1	444.460.04	Nut, Flange 6mm
2	10-922S	Decals
1	10-1510	30-1510 Instructions
1	10-100	CD, EMS
1	10-560	Box
10	3-1510-S	Strip Pins
1	35-2010	LSU 4.2 Sensor
1	35-4005	Bung, Mild Steel, O2 Sensor
1	35-4001	Plug, O2 Sensor