Thank you for purchasing the absolute finest of wiring kits for the Ford Motor Co. 4.6 3 valve modular engine. This harness works on the 2005 through 2009 Ford Mustang GT fuel injected engine. We have taken considerable time to work out the circuitry so that you, the customer will understand at least some of what this is all about. We ask that you follow our instructions closely. There are some valuable HOW-TO’s on our website (www.thedetailzone.com) under PROJECTS that can help you with your install.

These engines originally used a “returnless” fuel system. The ECM maintained a fuel pump that was equipped to operate at variable speeds. A fuel pump driver module and a fuel rail pressure transducer worked with the ECM to control this special factory fuel pump that was designed to run at variable voltages and thus variable speeds. That is how fuel pressure was controlled in these factory vehicles. If you plan to use an aftermarket fuel pump, you will need to install a fuel pressure regulator between the pump and the fuel rail and run a return line from that fuel pressure regulator back to the fuel tank. You will still need to use the fuel rail pressure transducer and the fuel pump driver module. Proper adjustments will need to be made in your ECM program to facilitate the use of an aftermarket fuel pump. Please call if you have questions.

These engines require 32-33 PSI at idle and 41-42 PSI at WOT. We recommend that the fuel pump be mounted in the fuel tank. Custom installations are available from Tanks Inc. (320-558-6882) and Rock Valley (800-344-1934).
NOTE: FORD diagnostic procedures are very detailed, lengthy and impossible to cover in this set of instructions. Purchasing the FORD ENGINE/ EMISSIONS DIAGNOSIS shop manual will help you learn about the engine you installed and guide you through the correct diagnostic procedures Ford recommends. This book is available through your local Ford dealer or Helm Inc. Helm is the distributor for the shop manuals for General Motors and Ford Motor Company. Helm can be contacted at 800-782-4356 or on their web site www.helmisc.com

***Note***
The ECM for this engine must be reprogrammed to have the PATS anti-theft removed, along with other necessary changes. This was explained to you at the time of order. If you have not had the ECM reprogrammed or have any questions please call us at 610-485-1981.

WARNING!
After the kit installation is complete and it is necessary to diagnose a starting or drive ability problem, follow the procedures recommended in the shop manual. All voltage tests must be preformed using a HIGH impedance, digital voltmeter. DO NOT use a test light on this system! DAMAGE WILL BE DONE to the engine computer if a test light is used on this system.

STARTING INSTALLATION
Disconnect the battery before starting and do not reconnect until instructed. Make sure that all of the components you are using are compatible before installing them. In addition to the complete engine and transmission, you will need the correct year ECM (2005-2010 Mustang GT computer), accelerator pedal and fuel pump driver module.

This harness does not include provisions for emissions (EGR, Rear O2 sensors that monitor catalytic converter function and EVAP) and is not intended for installation on emission controlled vehicles.

Lay the harness out to become familiar with it's layout. You will note that the legs of the harness that run down the left and right sides of the intake will Y at the back of the engine and then proceed through the firewall to the underdash area. The harness is labeled for the driver and passenger sides. A grommet has been supplied for passing the harness through the firewall. Use the following template for the grommet hole:
Once the harness is properly located on the engine, begin plugging corresponding connectors into the sensors. Most wires will have printing on them, close to the connector, as to their use but in some occasions this will not be the case. Follow the wire colors specified to make positive identification. If any connectors do not fit properly, please call our tech department.

**DRIVER SIDE HARNESS**

**DRIVER SIDE CAM POSITION SENSOR:** There is a Cam Position Sensor on each head. This connector has Orange and Grey wires. These are longest wires on the driver’s side harness with a connector. Plug connector into sensor mounted in the front top of the engine in the timing cover.

**OIL PRESSURE & WATER TEMP:** There are flying leads built into the harness on the driver’s side to connect to your oil pressure and water temp sending units. These inputs do not go to the computer but exit the harness at the under dash area for your convenience.

**ELECTRONIC THROTTLE CONTROL:** This connector has Orange and Dark Blue wires. This connector plugs into the unit on the driver’s side of the throttle body.

**DRIVER SIDE VARIABLE VALVE TIMING:** There is a Variable Valve Timing Sensor on each head. This connector has Red and Purple wires. Plug connector into the sensor mounted in the front top of the valve cover.

**FUEL RAIL PRESSURE SENSOR:** This connector has Pink, White, Grey and Yellow wires. Plug connector into sensor mounted at the front of the fuel rail.

**DRIVER SIDE INJECTORS AND COILS:** Injector and coil numbers 5 through 8 are in this side of the harness. Both the injectors and coils have the same color wires but their connectors will only plug into their appropriate items. Cylinder 5 has Red and Yellow wires, Cylinder 6 has Red and Orange wires, Cylinder 7 has Red and Light Blue wires and Cylinder 8 has Red and Dark Blue wires. Plug connectors into the proper positions.

**MASS AIR FLOW SENSOR:** This connector has Red, Black, Tan, Lt Blue, Dk Green and Grey wires. This sensor needs to be located between the Throttle Body and the Air Cleaner. Avoid angles in the intake duct work close to the Mass Air Flow meter or faulty readings can result. Once Mass Air Flow Sensor is located/mounted, plug the connector into the sensor.

**GROUND:** The large Black wire with a bare ring applied to it must be attached to a good engine ground at the rear of the engine.

**DRIVER SIDE OXYGEN SENSOR:** This connector has Red, Grey, Yellow and Dark Blue wires. There is one oxygen sensor per bank of cylinders. **Install the driver’s side/left O2 sensors in the exhaust manifold or in the header collector as close to the block as possible.** NOTE: The O2 sensors do not send a signal to the ECM until they reach 600 degrees. Mounting them in header collectors may take longer for them to heat up causing the ECM to stay in OPEN LOOP longer than normal. If you must install an adapter, use part # OS-30. Once the oxygen sensor has been located in the exhaust, plug the connector into this sensor.
**PASSENGER SIDE HARNESS**

**CRANK POSITION SENSOR:** This connector has Black and Grey wires. These are the longest wires on the passenger’s side harness with a connector. This connector plugs into the sensor low on the passenger side of the engine.

**PASSENGER SIDE CAM POSITION SENSOR:** There is a Cam Position Sensor on each head. This connector has Dark Blue and Grey wires. Plug connector into sensor mounted in the front top of the engine in the timing cover.

**THROTTLE POSITION SENSOR:** This connector has Yellow, Red, Light Green and White wires. This connector plugs into the unit on the passenger’s side of the throttle body.

**PASSENGER SIDE VARIABLE VALVE TIMING:** There is a Variable Valve Timing Sensor on each head. This connector has Red and Dk Green wires. Plug connector into the sensor mounted in the front top of the valve cover.

**ALTERNATOR CONNECTIONS:** There is a two gang connector located in the harness for alternator functions. Please contact us for more information.

**A/C CONNECTION:** There is a Light Blue flying lead built into the harness on the passenger side to connect to the A/C compressor if so equipped. This input does not go to the computer but exits the harness at the under dash area for your convenience.

**PASSENGER SIDE INJECTORS AND COILS:** Injector and coil numbers 1 through 4 are in this side of the harness. Both the injectors and coils have the same color wires but their connectors will only plug into their appropriate items. Cylinder 1 has Red and Light Green wires, Cylinder 2 has Red and Pink wires, Cylinder 3 has Red and White wires and Cylinder 4 has Red and Dark Green wires. Plug connectors into the proper positions.

**PASSENGER SIDE OXYGEN SENSOR:** This connector has Red, Grey, White and Light Blue wires. There is one oxygen sensor per bank of cylinders. Install the passenger’s side/right O2 sensors in the exhaust manifold or in the header collector as close to the block as possible. NOTE: The O2 sensors do not send a signal to the ECM until they reach 600 degrees. Mounting them in header collectors may take longer for them to heat up causing the ECM to stay in OPEN LOOP longer than normal. If you must install an adapter, use part # OS-30. Once the oxygen sensor has been located in the exhaust, plug the connector into this sensor.

**INTAKE MANIFOLD RUNNER CONTROL:** This connector has Red, Black, Dark Blue and Light Green wires. This connector plugs into the intake runner control module located at the back of the intake, somewhat low in the valley.

**KNOCK SENSORS:** This connector has Red, Yellow, White and Dark Green wires. The knock sensors are located in the valley, beneath the intake. The two knock sensors are hard wired to a four gang connector located at the rear of the engine. Plus our connector into the mating connector for the knock sensors.

**CYLINDER HEAD TEMPERATURE:** This connector has Yellow and Grey wires. Plug this connector into the sensor located at the passenger side rear valley area, under the intake.
BACK OF ENGINE HARNESS

ELECTRIC FAN CONNECTIONS: There are Light Blue and Black wires exiting the harness in this area for the electric fan. The Light Blue should be wired to the positive side of the fan and the Black should be wired to the ground side of the fan. There is a fan relay built into the harness and is capable of handling a 70 amp fan. The temperature that the fan turns on at is controlled by the ECM and is programmable when ECM reprogramming takes place.

FUEL PUMP CONNECTIONS: There are four wires coming off of an eight gang connector at the back of the engine. The wires is a Tan, Light Green and two Black wires. These four wires need to go to the fuel tank. The Light Green and the black wire printed sending unit are for the fuel level sending unit if you need the computer to read these values. The large gauge Black Wire and Tan wire are for the fuel pump. The Black is for the fuel pump ground, the Tan is for the fuel pump power. Be sure to make good connections at the fuel pump.

AUTOMATIC TRANSMISSION CONNECTIONS: If you ordered a harness for the 5R55S automatic transmission, you have received a short harness that contains all of the necessary transmission harness and circuitry. There are three main connectors that will connect to the main engine harness at the back of the engine. There are a three gang connector, an eight gang connector, and a ten gang connector. Plug these three connectors into the main harness.

SPEED SENSORS: There are three speed sensors on the 5R55S transmission.

The Turbine Shaft Speed Sensor is the connector with Dark Green and Grey wires. This connector plugs into the most forward speed sensor on the transmission.

The Intermediate Speed Sensor is the connector with Orange and Grey wires. This connector plugs into the middle speed sensor on the transmission.

The Output Shaft Speed Sensor is the connector with Dark Blue and Grey wires. This connector plugs into the most rearward speed sensor on the transmission.

TRANSMISSION SOLENOID CONNECTOR: This is the connector with the bolt through it. This plugs in on the driver’s side of the transmission. Install connector, making sure connector fits straight as it get's tightened to the transmission.

TRANSMISSION RANGE SENSOR: This connector plugs into the sensor mounted on the side of the transmission near the shifter shaft. There are two loose wires coming out of the transmission. These heavier gauge Lt Blue and the Purple wires are for the neutral safety circuit. Locate the wire that runs from the ignition switch to the starter solenoid. Cut the wire and connect the Lt Blue wire to the wire running from the ignition switch and the Purple wire to the wire running from the starter solenoid. NOTE: If you are wiring this circuit to a Ron Francis Wire Works Wiring Kit, these wires will be a color for color match.

MANUAL TRANSMISSION CONNECTIONS: Two of the three connectors in the main harness for the transmission will not be used as they are for the automatic transmission functions. You will be attaching a two gang connector with Grey and Dark Blue wires to the speed sensor on the transmission. These two wires have a three gang connector on the other end which attaches to the mate to that three gang connector at the rear of the engine at the transmission group.
UNDER DASH PORTION OF HARNESS

FUEL PUMP DRIVER MODULE: A fuel pump driver module must be used. This connector contains six wires, 3 Tan wires, 2 Black wires and a Light Blue wire. Plug our connector into the unit and mount the fuel pump driver module where ever possible under the dash.

ACCELERATOR PEDAL: This connector contains Brown, Yellow, White, Red, Tan and two Grey wires. Once the pedal assembly has been located and installed, plug our connector into the pedal assembly sensor.

DIAGNOSTIC CONNECTOR (DLC): This connector contains Yellow, White, Light Green, Purple and two Black wires. Mount this unit in a convenient location under the dash. This is the receptacle for connecting a scan tool to the system.

BUNDLE OF LEADS EXITING HARNESS AT UNDERDASH PORTION:

<table>
<thead>
<tr>
<th>Color</th>
<th>Printing</th>
<th>Purpose/Where to wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>KEYED RUN</td>
<td>Ignition Power Supply</td>
</tr>
<tr>
<td>Purple</td>
<td>BRK LT SW</td>
<td>Switched side of brake switch</td>
</tr>
<tr>
<td>Light Green</td>
<td>FUEL SEND</td>
<td>Gas gauge input from sender</td>
</tr>
<tr>
<td>Dark Green</td>
<td>BACK UP LTS</td>
<td>To backup lights at rear of vehicle</td>
</tr>
<tr>
<td>Red</td>
<td>TCS</td>
<td>Power for TCS Switch-see below*</td>
</tr>
<tr>
<td>White</td>
<td>TCS</td>
<td>Signal for TCS Switch-see below*</td>
</tr>
<tr>
<td>Light Blue</td>
<td>AC</td>
<td>To A/C system for compressor control</td>
</tr>
<tr>
<td>White</td>
<td>OIL</td>
<td>Oil Pressure signal for gauge</td>
</tr>
<tr>
<td>Dark Blue</td>
<td>WATER</td>
<td>Water Temp signal for gauge</td>
</tr>
</tbody>
</table>

*TCS: The ECM has the capability to lock-out fourth gear of the transmission with a push of a button. Pushing the momentary contact switch button will lock-out fourth gear in the transmission for city driving. Pushing the button again will turn the TCIL off and release the lock-out allowing the transmission to shift into fourth gear for highway driving. The factory Mustang had a light indicating lockout of fourth gear, however, the circuit was fed through a high speed data line to the original gauge cluster and is not available for aftermarket applications.

Mount a two terminal momentary contact switch in dash or near the shifter lever. Both wires to the TCS switch. You may connect the wires to either terminal on the switch.

INERTIA SWITCH: We have included the wiring necessary for the Ford inertia switch. This connector has Tan and Pink wires. The inertia switch cuts off the electric fuel pump in the advent of an accident. Mount the inertia switch in a convenient area under the dash in a dry area.

NOTE: The inertia switch has a red button on top of it that must be set (pushed down) in order for the fuel pump to operate. If the pump fails to operate check the inertia switch making sure the red button is in the down position.

RELAY/FUSE CENTER AND ECM: Mount the Fuse/Relay center a convenient location, as well as the ECM. Below is a chart on the use of each fuse.

Please note that there is a quick connector near the relay center on a red wire. This quick connector is for installing a tach driver module for a TACH input, if desired. A tach driver module is necessary for adding an aftermarket tach. Autometer part number 9117 is the most common item available in speed shops and mail order establishments. Please call for more info.
<table>
<thead>
<tr>
<th>Fuse Block</th>
<th>Fuse Size Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAF &amp; O2 Sensors</td>
<td>20 AMP</td>
</tr>
<tr>
<td>Fuel Pump</td>
<td>20 AMP</td>
</tr>
<tr>
<td>Left &amp; Right Coils</td>
<td>20 AMP</td>
</tr>
<tr>
<td>Injectors, Trans, ECM, Other</td>
<td>20 AMP</td>
</tr>
</tbody>
</table>

The separate fuse and relay are for the electric fan circuit.

**BATTERY FEED:** The large battery feed wire must be connected to a good battery source. To the battery itself, the starter solenoid where battery cable attaches or to another comparable battery feed.

**STARTING THE ENGINE**

You have now made all of the connections necessary to TRY to start your car. If you try now, you will be disappointed since you did not hook up the battery. You can do so now.

**We're trying...**

The Detail Zone has made every effort to assure a quality product and can assure you that this system works well in your application. Most of the 'problem' calls we have had to date are basic trouble shooting questions which have nothing to do with the wire harness system we sold you.

We are committed to offering the most user friendly wiring systems available and support this with many years experience in the wiring and fuel injection fields. Please be certain that all connections are correct and tests run before calling. Your unit can be tested at any Ford Motor Company Dealership with no difficulty.
The Detail Zone has taken the extra effort to produce a quality, easy to understand instructions. We will aggressively prosecute any other harness supplier who attempts to copy this material!!