



## Gen5 LT Installation Instructions

*Thank-you for choosing Swap Specialties and Performance for your LT project needs. Expect everything to be the highest of quality, craftsmanship, and detail. Each and every product is 100% tested to prove so. Please follow these simple guidelines to ensure proper installation and function of your product(s).*

*If you need assistance, please call or text our tech support line at (989) 413-0160*

### Getting to know your Control Module(s)

Your ECM from Swap comes tuned for standalone operation free of the vehicle of its origin. Some minor performance and drivability enhancements have been altered in the computer to give your engine the best performance and ease of economy. Some changes may need to be made and/or programmed if you have made engine enhancements such as:



Actual Product may vary depending on Application

- Larger Fuel Injectors
- Aftermarket Camshaft
- Electronic Transmission Enhancements
- Turbo or Supercharger Installation
- Significant Internal Motor Modifications
- Gear Ratio and Tire Size of your project

*We can provide the changes you need with our simple and fast Mail-In program. We do recommend that any major motor modifications be tuned on a dynamometer by a professional to achieve maximum potential and operation.*

### Installation

Your PCM is a factory manufactured unit and is completely weatherproof. Many popular mounting locations are on fenders, under dash, under battery trays, and on a firewall- The options are virtually endless. However, DO NOT MOUNT IN CLOSE PROXIMITY TO HEAT such as close to exhaust or heat exchanger.

Mounting brackets are available for your PCM but some fabrication may be needed to fit in custom areas. As will all electrical components, do not weld on, screw to, or drill any PCM. Vital interior components of the computers are sensible to electricity and must not be tampered with.

#### **ECM, PCM, TCM..... What in the heck is the difference?**

A **PCM** (Powertrain Control Module) Controls BOTH the engine AND the tranny. Gen5 setups have them SEPARATED into the **ECM** (Engine Control Module) and the **TCM** (Transmission Control Module). So, you will have 2 controllers (if your running a electronic transmission) that are matched from us to operate both together. If you are providing your own computer(s) make sure they (ECM and TCM) are from the same vehicle or you may have issues.

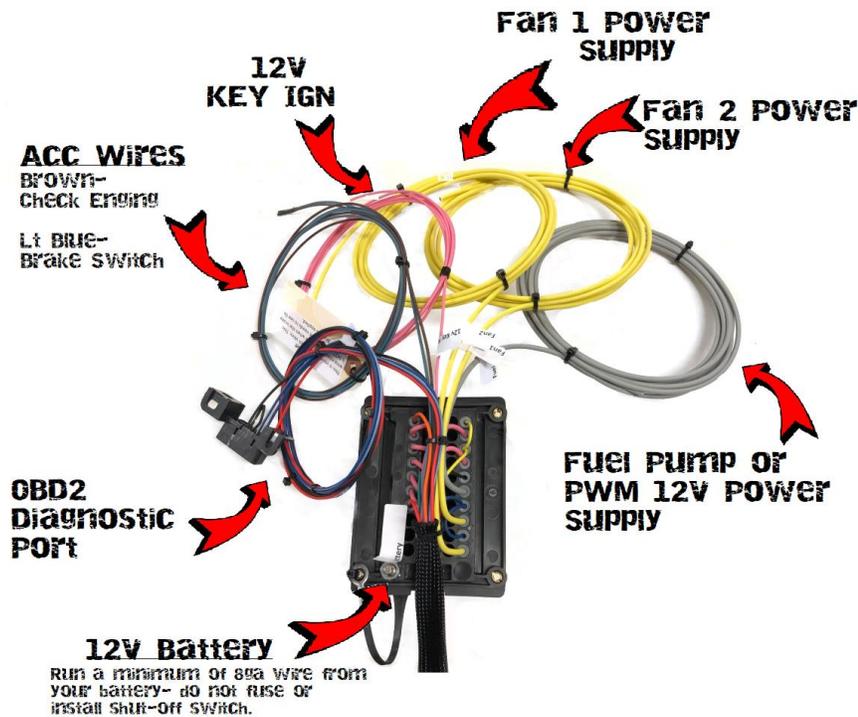
## It's Harness Time!

Your standalone harness comes setup to run from the **PASSENGER REAR** of the engine unless otherwise ordered. The harness will come with a "Natural" form to fit the motor and intake and ensure ease of installation. Please keep adequate clearances from exhaust and tight areas to prevent any issues down the road. Also assure any tight wires may need to be rerouted to ensure integrity.

Connectors and wires will all be labeled accordingly. Furthermore, each wire and connector is formed to specific lengths to reach components. If for any reason something looks like it wont reach, please take the time to ensure you have the correct item you are trying to connect.

## Relay/Fuse Box and Accelerator Pedal

The relay and fuse box is completely weatherproof and can be mounted anywhere on the vehicle. A diagram on the inside cover shows relay and fuse location. This can be a main point of troubleshooting if problems ever arise.

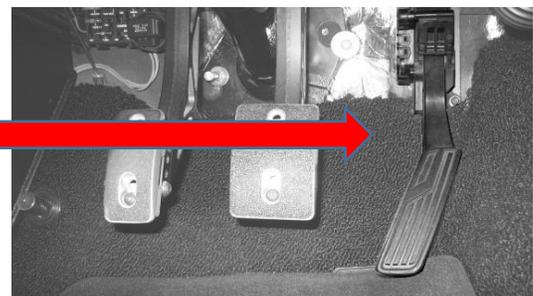


### **The wires provided are not long enough?**

*If you need to extend any wires please make sure the wire size is the same size or larger. DO NOT use "crimp connects" as these are not weatherproof and may malfunction as time passes. Please use a rosin-core solder if possible to connect any extending wires and use a heat shrink sleeve to shield and cover the joint.*

### **Accelerator Pedal**

The accelerator pedal should be mounted in a location that is comfortable and clear of any obstruction. If you have a car engine, you will need to run a car platform pedal, same for truck engine, truck pedal. Fabrication may be needed to accomplish a safe, clean, and comfortable pedal mount



## Where do my wires go to?

### **Battery**

*Do I need this? YES!*

The back of the fuse box has a 1/4" stud. A wire DIRECTLY FROM THE BATTERY needs to be run to this post. A minimum of 10 GA WIRE or larger should be used. This fuse box protects the entire setup so no need to fuse this connection.

DO NOT setup a disconnect to this wire. The PCM learns your driving habits, power and efficiency data, and fuel habits and it needs battery power to store it. If you kill power to the battery the computer has to learn this data from the start and may ultimately harm its processor.

### **12v Key IGN**

*Do I need this? YES!*

This wire needs to see 12v with ignition on **AND WHILE CRANKING**. Also known as IGN 1, this wire tells the computer when you turn the key on and also shuts the system down.

The engine will not shut down until this wire loses power. If you cannot connect it directly to the key switch please refer to a wire that is not powering another vehicle component- A draw could keep this circuit hot or make it lose power while cranking

### **Fuel Pump**

*Do I need this? YES!*

#### **Relay-**

This wire is the output from your fuel pump relay. This needs to go directly to the fuel pump "+" terminal on the pump. A 12v supply with max of 15 amps will be supplied. For dual pump setups please assure a jumper wire from pumps or addition to this wire is soldered securely and shielded from weather.

#### **PWM-**

If you are running a Pulse Width Module (PWM) your fuel system will be returnless and the PWM will run the pump at a rate to keep correct pressure. A fuel pressure sensor and module will need to be installed correctly and all connections in your PWM harness must be plugged in.

### **Fan 1 and Fan 2**

*Do I need this? Only if you are running electric fans*

These wires are outputs from your fan relays. These provide power to your fan(s) and need to go directly to the "+" on each fan.

### **CE Light**

*Do I need this? No*

This here is your Check Engine Light. This wire PROVIDES THE GROUND for the light operation. The other side of your light will need to see 12v IGN1, not battery power.

### **Tach**

*Do I need this? No*

This wire is a tachometer OUTPUT. It gives a output signal for a gauge hookup. Keep in mind different gauges use different signals to operate. Refer to your gauge manual for proper operation

### **Speedo**

*Do I need this? No*

Yup, just like it says, this wire is a speedo output for your convenience. Again, all gauges are different so please refer to your gauge manual to see what your gauge is looking for. This is a standard GM 4k output.

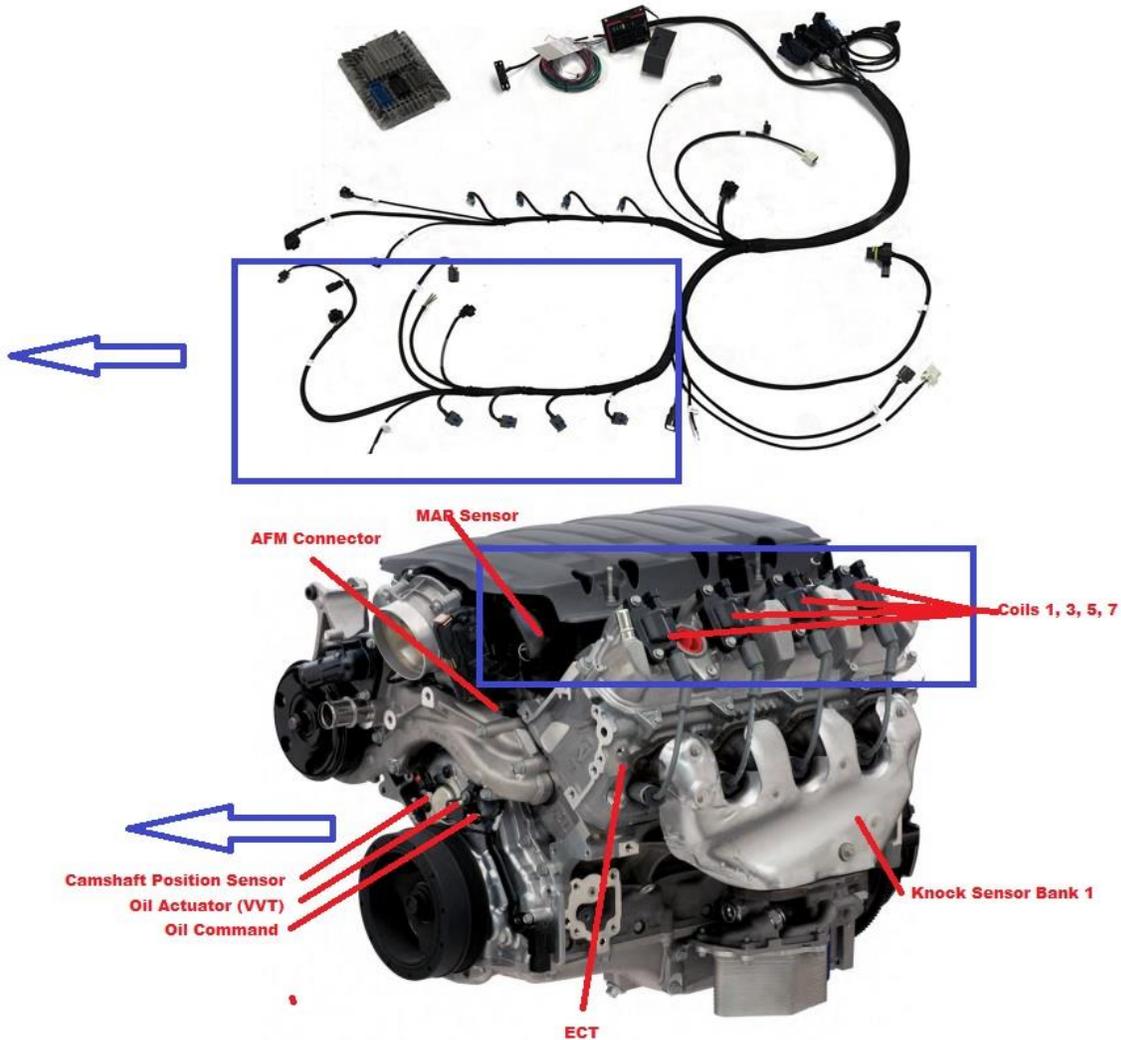
### **Brake Switch**

*Do I need this? Only on Automatic electronic transmissions*

This wire needs to see 12 volts when the vehicle brakes are NOT applied. It is for transmission operation and makes sure the torque converter unlocks when you are stopping. Think of this wire as opposite of the brake lights..... See our website for an example relay setup if you need further help.

## On to the Engine Side

### Bank 1 "Driver Side"



#### Coils

Coils for Cylinders 1, 3, 5, and 7. The Harness will lay in the valley between the intake and the head.

#### ECT

Engine Coolant Temperature Sensor. On the head in front of Cylinder #1 exhaust port.

#### MAP

Manifold Absolute Pressure Sensor measured manifold vacuum/pressure. It is located on the Intake side behind the throttle body.

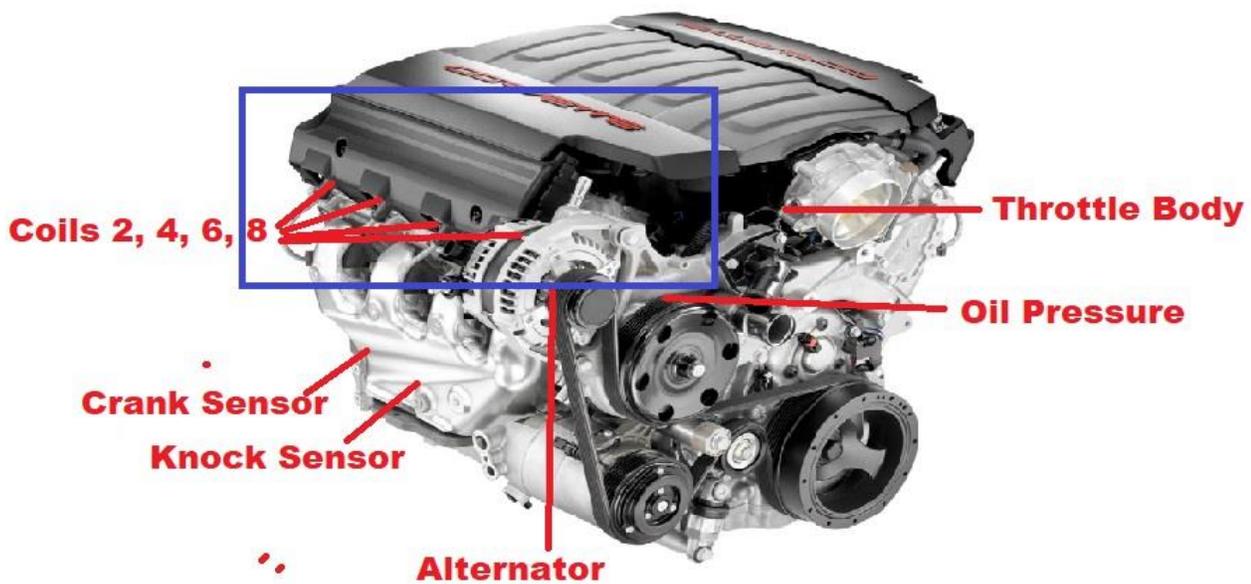
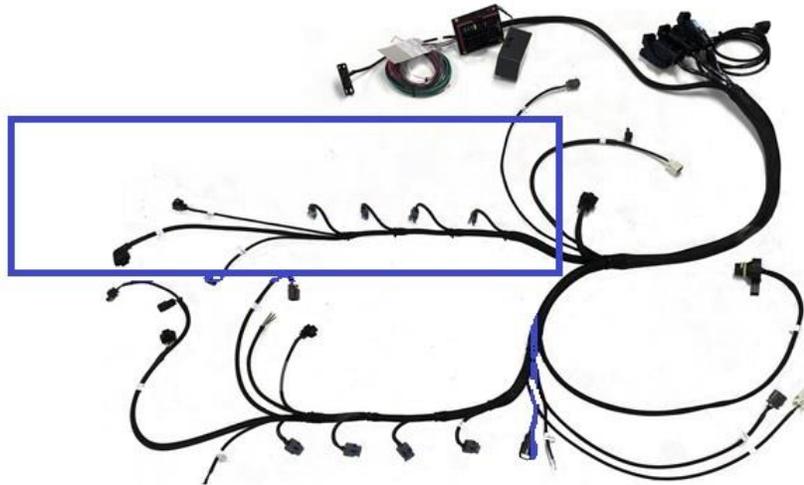
#### AFM Connector

If your running a stock cam engine setup, the AFM will need to be connected. It is located below the MAP sensor under the intake and throttle body.

#### Camshaft Position Sensor, VVT, and Oil Pump Command

In the front of the engine on the timing cover is your camshaft sensor and controls. If your running a stock cam all 3 of these will need to be connected.

## Bank 2 "Passenger Side"



### Crank Sensor (CKP)

The crank position sensor is behind the starter. You may need to remove your starter to gain enough access to the sensor.

### Knock Sensor

The Knock sensor is just forward of the crank sensor on the side of the block.

### Alternator

In the front of the engine, make sure you have a battery wire run from it to the battery and the starter to complete the charging system.

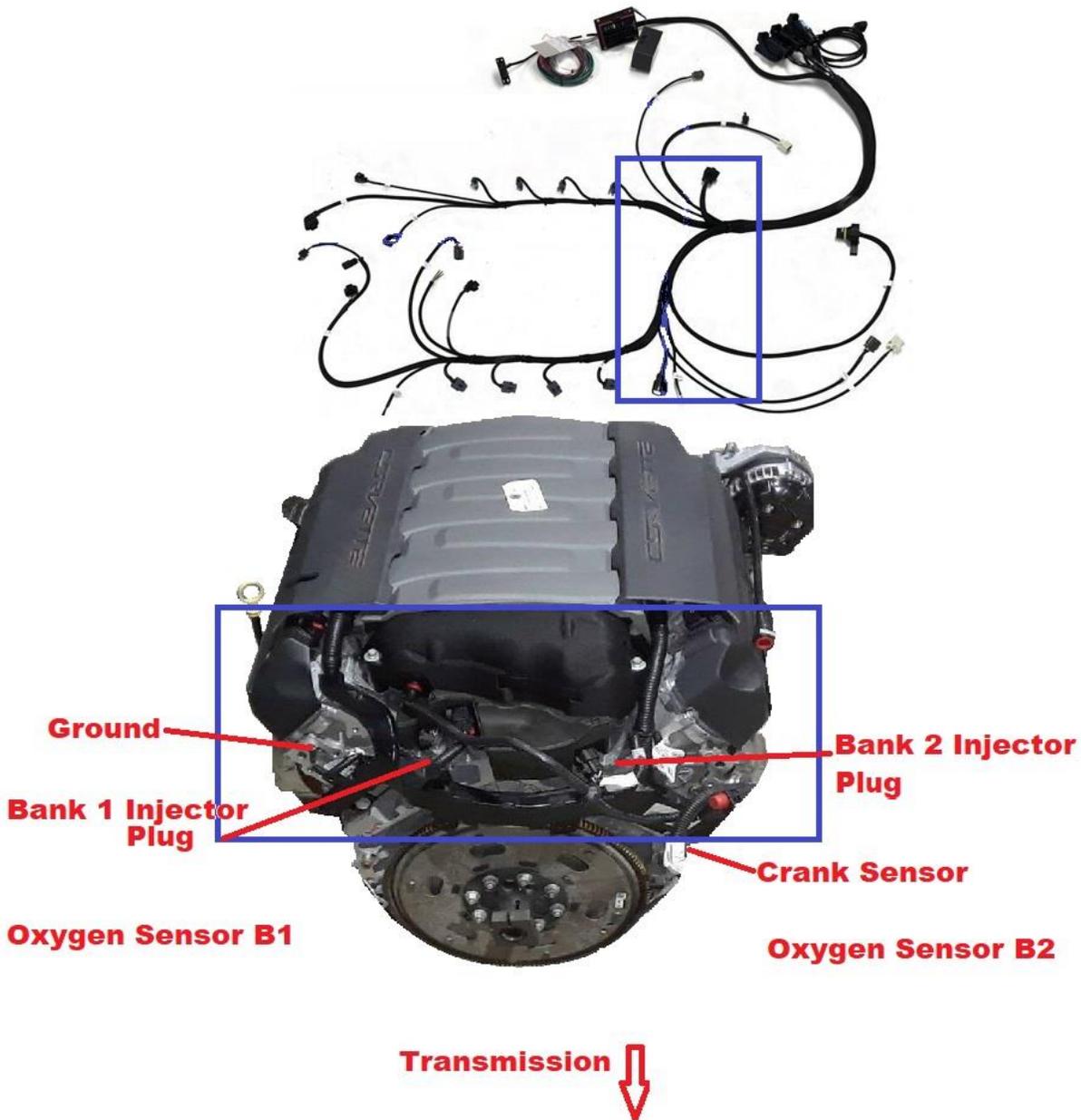
### Oil Pressure

The oil pressure sensor is located in the front of the block, below the throttle body on the passenger side of the engine. Not to be confused with the camshaft position sensor on the timing cover.

### Throttle Body

The plug that controls the throttle body is on the passenger side of the body.

## Rear Components



### Injector Plugs

The injectors have a sub harness for each side. Plug in each accordingly.

### Crankshaft Position Sensor (CKP)

The Crank position sensor is located right behind the starter on the block, passenger side. You may have to remove the starter to access the sensor.

### Oxygen Sensors

You will need to run at least the upstream Oxygen sensors on each side. To meet emissions you will need the downstreams as well.

### Ground

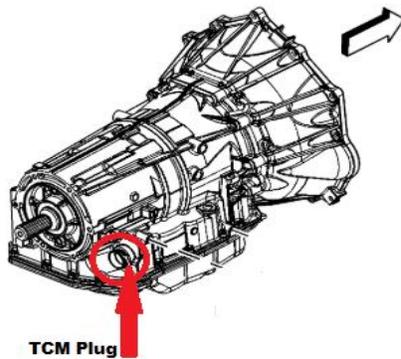
Make sure the surface is clean and bolt the ground eyelet to the back of the head in an open spot.

**Transmission (a-k-a, the tranny)**

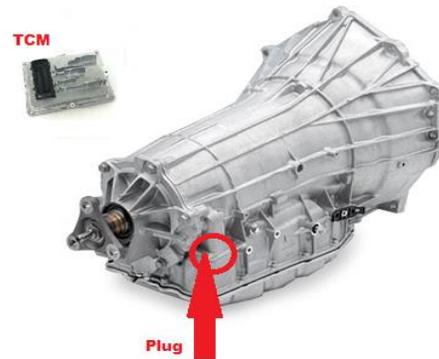
If you are running an electric transmission your harness will come with the correct plug(s). If you are running a standalone transmission, no need to read any further, your all set!

The computer is setup with the gear ratio and tire size you gave us on the order. Simply plug in the appropriate connections shown below and its time to turn the tires.

**6L80e/6L90e Computer is INSTIDE the Trans**



**8L80/8L90e Computer is Separate from the Trans**



**Questions, Comments, Gripes, Moans, or Frustrations.....**

*Please email us, we would love to help out with any questions you have. You can also call us at anytime, we are here to help and make your LT swap the best investment of your project.*

[Info@SwapSpecialties.com](mailto:Info@SwapSpecialties.com)

(989) 720-SWAP (989-720-7927)

8am-5pm EST or leave a message

**Notes:**