

Installation Guide

GM LS3 Swap Wiring Harness

Drive-By-Wire

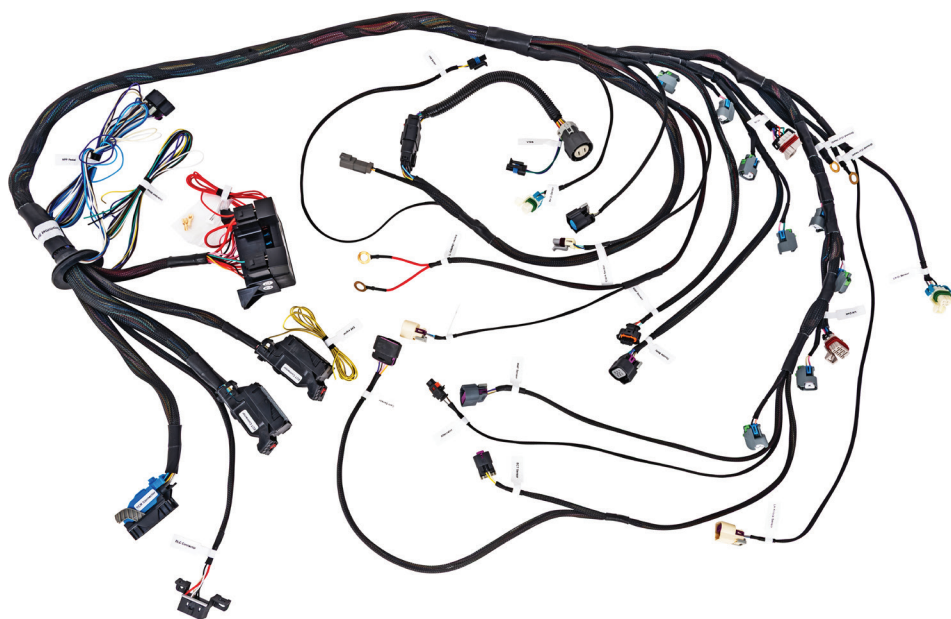


Table of Contents

Read Before Installation.....	1	Cooling Fan.....	4
Requirements.....	1	Oxygen Sensors (02).....	4
Notes.....	1	Fuse Block Diagram.....	5
Location.....	2	Alternator.....	6
Grounding.....	2	Tachometer.....	6
Connections.....	2	E85 Wiring.....	6
Installation.....	3	Accelerator Pedal.....	6
Fuel Pump.....	3	Sensor Part Numbers.....	7
Mass Air Flow Sensor (MAF).....	4	Wiring Color Explanation.....	7

Read Before Installation

It is important to read and understand these instructions before beginning on the installation of your wiring harness. If you have access to a trusted mechanic, you might consider having the installation done by a professional. Proper installation is important for the best results.

Note: Proper installation is the responsibility of the installer. Improper installation will void your warranty and may result in potential engine or vehicle damage.

Requirements

This harness is designed to be a complete wiring harness for fuel injection systems on 1999 and newer GM Vortec engines equipped with a Drive-By-Wire throttle body, and a T56 manual, or Electronic automatic transmission.

Notes

- Never disconnect the battery or the PCM (Powertrain Control Module) while the ignition is turned "ON".
- Never short any wires in the wiring harness to ground. This can cause damage to the PCM. **Note:** The exception being the ground wires.
- A multi-tester with a minimum of 10-Mohm (Milliohms) resistance is required to test the circuits. Do not back probe wires, this can lead to permanent wire damage.
- It is recommended that you use a VSS (Vehicle Speed Sensor) with both a T56 or automatic transmission. Unexpected stalling during hard braking or an inoperable throttle body can result from not using the VSS.

Location

- The wiring harness is designed to mount under the dash or in the kick panel on the right side of the vehicle.
- Route the harness away from sharp edges, exhaust pipes, and hinges.
- Allow enough slack in the harness in locations where movement could possibly occur.

Grounding

Proper grounding is crucial for the harness to operate. This includes battery, chassis, and engine. This harness is equipped with grounding wire on the rear portion of the driver side cylinder head and adjacent the fuse block.

- Connect the chassis ground strap or grounding cable to the negative side of the battery.
- Connect the engine ground strap or cable to the chassis.
- Connect a ground strap from the engine to the body.
- Ensure that all of the engine and wiring harness grounds are clean and secure. A minimum $\frac{3}{4}$ " braided strap from the engine to the vehicle chassis is recommended.
- Attach the harness ground eyelets two (2), one (1) to the chassis, to the engine block ensuring the connections are clean and secure.

Connections Required for Correct Operation

APPLICATION	CONNECTOR
Coolant Sensor	2 Pin
MAF Sensor	5 Pin
Camshaft Position Sensor	5 Pin
MAP Sensor	3 Pin
Oxygen Sensors	4 Pin
Knock Sensor	2 Pin
Ignition Coil Blocks	7 Pin
Fuel Injectors	2 Pin
Crankshaft Position Sensor	3 Pin
Ignition Switch Output Wire	1 Wire
Engine Grounds	2 Eyelets
Chassis Ground	1 Eyelet
Battery Power	2 Eyelets
Cooling Fan Control Wires	2 Wires
Alternator Control Connector	2 Wires
VSS (Vehicle Speed Sensor)	2 Pin
E85 Sensor	1 Wire
APP (Accelerator Pedal)	6 Pin
4L60E Transmission	13 Pin
4L80E Transmission	11 Pin
ISS (Input Shaft Speed)	2 Pin
Throttle Body	6 Pin

Installation

1. Disconnect power from the vehicle by removing the negative battery cable from the battery.
2. Mark the position that the wiring harness will go through the firewall with a metal punch. Using a 2" hole saw, drill a hole into the firewall. Deburr the hole to ensure that no damage to the wiring will occur.
3. From the inside of the vehicle, feed the engine section of the wiring through the hole you just drilled.
4. Route the engine compartment harness to the corresponding side; driver and passenger. The driver's side section has the connectors for the Alternator, MAF, and ECT.
5. Route the battery positive and crank sensor connectors behind the passenger side head and under the exhaust manifold.
6. Route the fuse block and PCM connectors to your preferred mounting positions. Keep the PCM away from moisture or damage may occur.
7. Locate the black wires in the driver's side wiring with two ring terminals. These are the engine grounds.
8. When connecting the two PCM connectors take care to not bend any of the pins. For ease of assembly, the connectors are color coded.
9. All wires not being used should be taped and secured to avoid creating an unwanted short.
10. Permanently mount your PCM to the desired location.
11. Once all of the connections have been made throughout the wiring harness, reconnect the battery.

CAUTION:

Be sure the ignition is off when reconnecting the battery or damage to the PCM will occur.

Fuel Pump

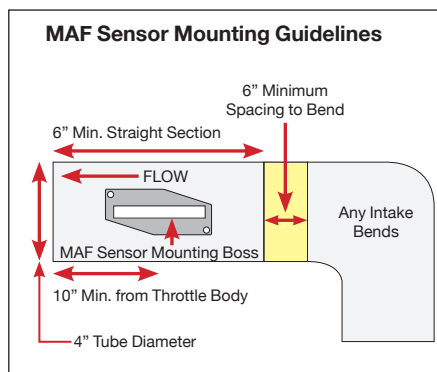
A fuel pump relay is provided with the signal side of the relay being pre-wired. The harness has two blade terminals to complete this circuit. Ensure that properly sized and fused wiring is used. Insert the terminal into the relay holder.

- When connecting the two PCM connectors take care to not bend any of the pins. For ease of assembly, the connectors are color coded.
- Don't vacuum reference the fuel system. It must run a constant 60psi (400 kPa).
- Ensure the fuel pressure is a constant 60 PSI (400 kPa) with the engine running. This is what the control system has been designed to run.
- Ensure the fuel pump has the following flow capability.
 - LS2/3/376: Min 40gph @ 60psi
 - LSX454/7: Min 50gph @ 60psi

Mass Air Flow (MAF) Sensor

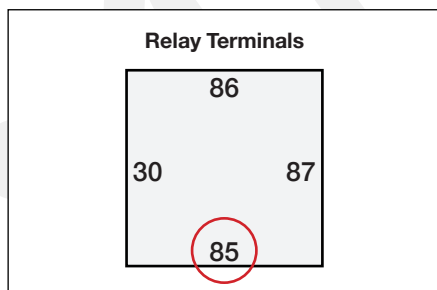
The induction system should be four (4) inches in diameter and have a minimum straight section six (6) inches in length.

Mount the MAF sensor in the middle of the straight induction section, ensuring that the middle of the mounting boss is at least 10 inches from the throttle body.



Cooling Fan

The cooling fan is controlled by the ECM. Wire the ECM to the ground control side of your cooling fan relay, (the #85 terminal marked on the relay).



Oxygen (O2) Sensor

It is important that the Oxygen Sensors are mounted per the instructions below. The exhaust system **MUST** be properly sealed. Any leaks near the sensors, upstream or downstream, can cause false readings leading to incorrect operation of the fuel control system.

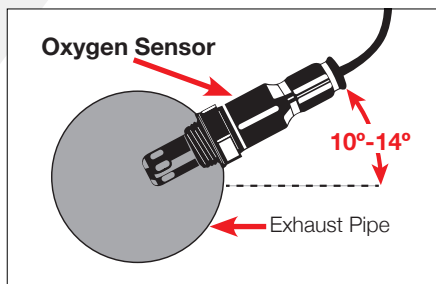
Vehicle performance, and/or driveability, may be affected if sensors are not mounted as recommended or if an exhaust leak exists. Leak check the exhaust system to ensure adequate sealing. **Note:** *Even small leaks can affect fuel control.*

Oxygen sensors should be mounted in the collector area of the exhaust manifolds in a location that allows exhaust gases from all cylinders to be sampled equally.

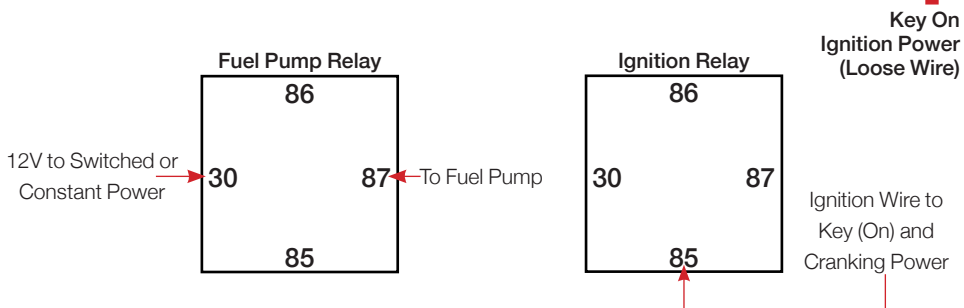
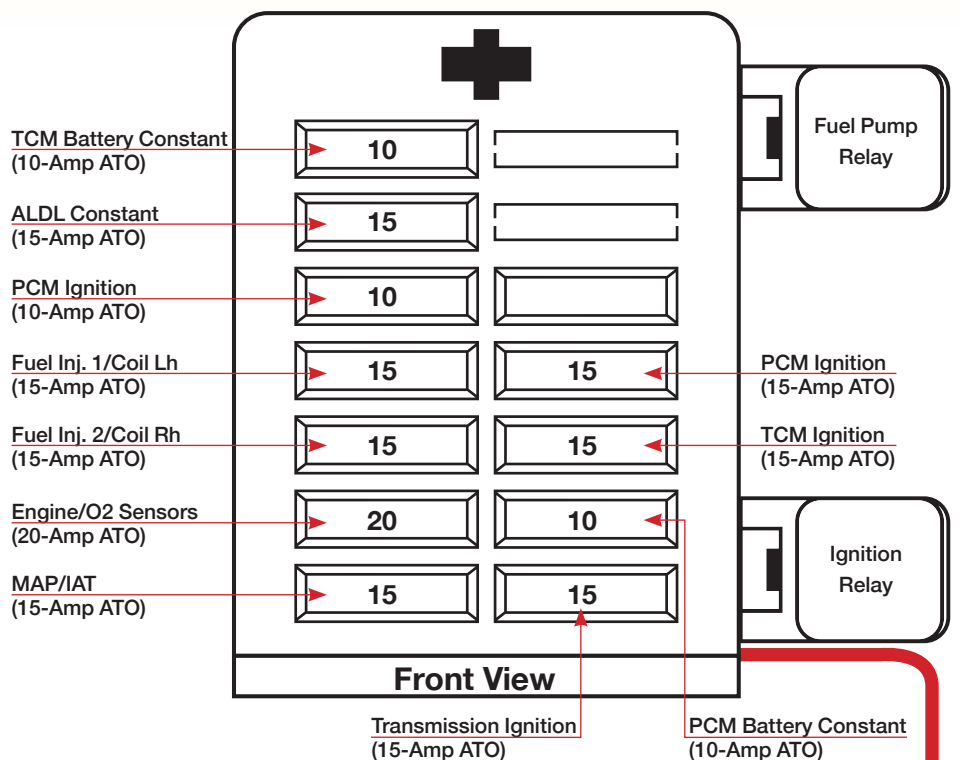
CAUTION:

DO NOT solder or alter any Oxygen sensor wiring. Doing so will impact the wiring resistance and result in incorrect readings.

To prevent the collection of fluid between the sensor housing and element during the cold start phase, install inclined at least 10° from horizontal with the electrical connection upward.



Fuse Block

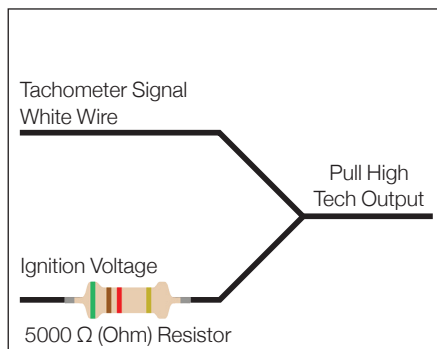


Alternator

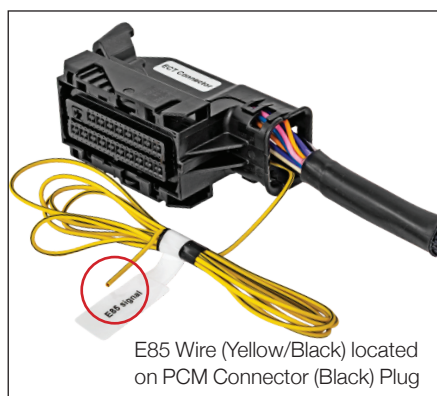
Connections are included for the stock 2-wire alternator.

Tachometer

A tachometer signal is included as a loose white wire.

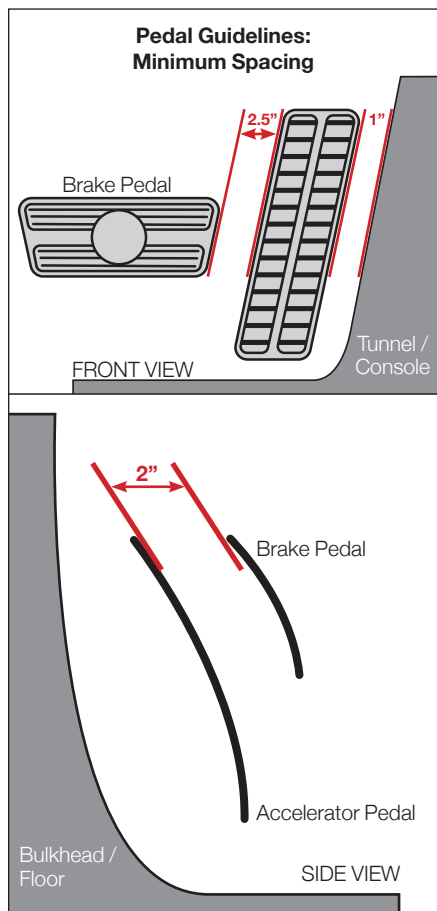


E85 Wiring



Accelerator Pedal

Mount the accelerator pedal per the following dimensional guidelines. Mounting details are application-specific and are left to the user. Ensure that the pedal is securely mounted to the vehicle.



Sensor Part Numbers

SENSOR DESCRIPTION	PART NUMBER
Main Computer (PCM)	GM# 9354896, GM# 12200411
Manifold Absolute Pressure (MAP)	GM# 16212460, Delco# 12614970
Idle Air Control Sensor (IAC)	GM# 17113391
Engine Coolant Temp Sensor (ECT)	GM# 15326388, Delco# 213-953
Oil Pressure Sensor	GM# 12562267
Ignition Coil	GM# 12558948
Oxygen Sensor (O2)	GM# 25161131, Delco# AFS123
Throttle Position Sensor (TPS)	GM# 17123852, Delco# 213-912
Mass Air Flow Sensor (MAF)	GM# 25168491, Delco# 213-364
Cam Position Sensor	GM# 12561211, Delco# 213-363
Crankshaft Position Sensor	GM# 12560228, Delco# 213-354
Knock Sensor	GM# 10456603
Brake Switch	Delco# D850A

Wiring Color Explanation

ACCESSORY WIRES		
Brown	Mil Lamp Ground	Through Automotive Light to 12V
Black	Speedometer	Speedometer Module
White	Tachometer	Electronic Tachometer
Dark Green	Fan 1 Ground	Ground Side of Fan Relay 1
Dark Blue	Fan 2 Ground	Ground Side of Fan Relay 2
Orange	Park Neutral Signal	To Ground (In Park & Neutral)
Purple	Brake Signal/TCC Ground	To 12V
Black Multiple Wires	Chassis Ground (Ring Terminal)	Chassis Ground
Red	Ignition Relay	12V Ignition Source
Multiple	PCM Connectors	PCM

If you have any issues, or if this wiring harness is damaged, please contact Customer Service at: 1.800.345.4545.

Return Information:

Once this wiring harness has been modified, it will not be accepted for return.



1-800-345-4545 jeps.com