GEN III/IV CHEVROLET SMALL BLOCK TO NISSAN 300ZX 58X WIRING HARNESS

INSTALLATION INSTRUCTIONS

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1.0 INTRODUCTION

Thank you for purchasing what LOJ considers to be the most up-to-date and easiest-to install automotive fuel injection harness on the market. This harness is designed to be a complete wiring harness for the fuel injection system on General Motors 2006 and newer LSX/Vortec fuel injected engines using a 58X crank sensor and factory installed Drive By Wire Throttle Body.

NOTE: LOJ customizes the 58X harnesses to customer specifications prior to shipment. This includes variations in Accelerator Pedal, Alternator, Variable Valve Timing (VVT) Camshaft, Intake Manifold and Mass Airflow Sensor (MAF). If the incorrect items are used, the engine will not work correctly. Please ensure you are using the correct components prior to installation.

This harness is constructed with GM Delphi Connectors and Terminals with GXL (600 volt polyethylene cross-linked) wire which is professionally assembled and 100% quality inspected prior to shipping. This harness includes all wiring that is needed by the ECM to run and control the fuel injection system.

2.0 PRECAUTIONS

Below are a few precautions that should be taken prior to and after installing this wiring harness:

1. Never disconnect the battery or the ECM Connectors while the ignition is turned 'On'.

2. Never short any wires in this harness to ground (with the exception of the 'Ground' wires) or damage to the ECM will result.

3. Never use a 'Test Light' to determine the condition of any circuits. A digital Volt/Ohm Meter with a minimum of 10-Mohm resistance is required to test any circuits. Do not back probe wires as this can lead to permanent wire damage.

3.0 PRE-INSTALLATION REQUIREMENTS

The following information details some of the hardware and software requirements when installing this harness:

(SEE TABLE 2 FOR COMPATIBLE REPLACEMENT SENSOR PART NUMBERS)

1. All LSX/Vortec Engines will require the VATs System to be removed from the ECM. If the VATs is not removed from the ECM the engine will NOT start. Contact LOJ for removal of this function if you are supplying your own PCM.

2. Factory Stock LSX/Vortec Engines utilized four (4) O2 Sensors; two (2) Sensors on each side of the engine, one before and one after the catalytic converter. The rear O2 Sensors (after the catalytic converters) are not used with the LOJ Harness. Provisions are provided for two oxygen sensors in the harness.

3. LSX/Vortec engines utilized Evaporative and CCP features for emissions control. This harness does not include these provisions. Evaporative and CCP are not necessary for engine operation. ECM reprogramming may be necessary to avoid storing a Diagnostic Trouble Code (DTC) for absence of emissions equipment.

4. If any sensors are missing or damaged, LOJ recommends replacements listed in Table 2. Note that the ECM listed in Table 2 must be used.

5. You MUST have a two-position brake switch for proper Drive by Wire throttle control. The brake switch should be closed (electrically connected) when the brakes ARE NOT being applied and open (not electrically connected) when the brakes ARE being applied.

CAUTION: FAILURE TO WIRE THE TWO POSITION BRAKE SWITCH CORRECTLY COULD RESULT IN AN INOPERABLE THROTTLE CONDITION.

4.0 TOOLS

Non-Standard Tools Required for Installation:

1. Terminal Crimping Tool

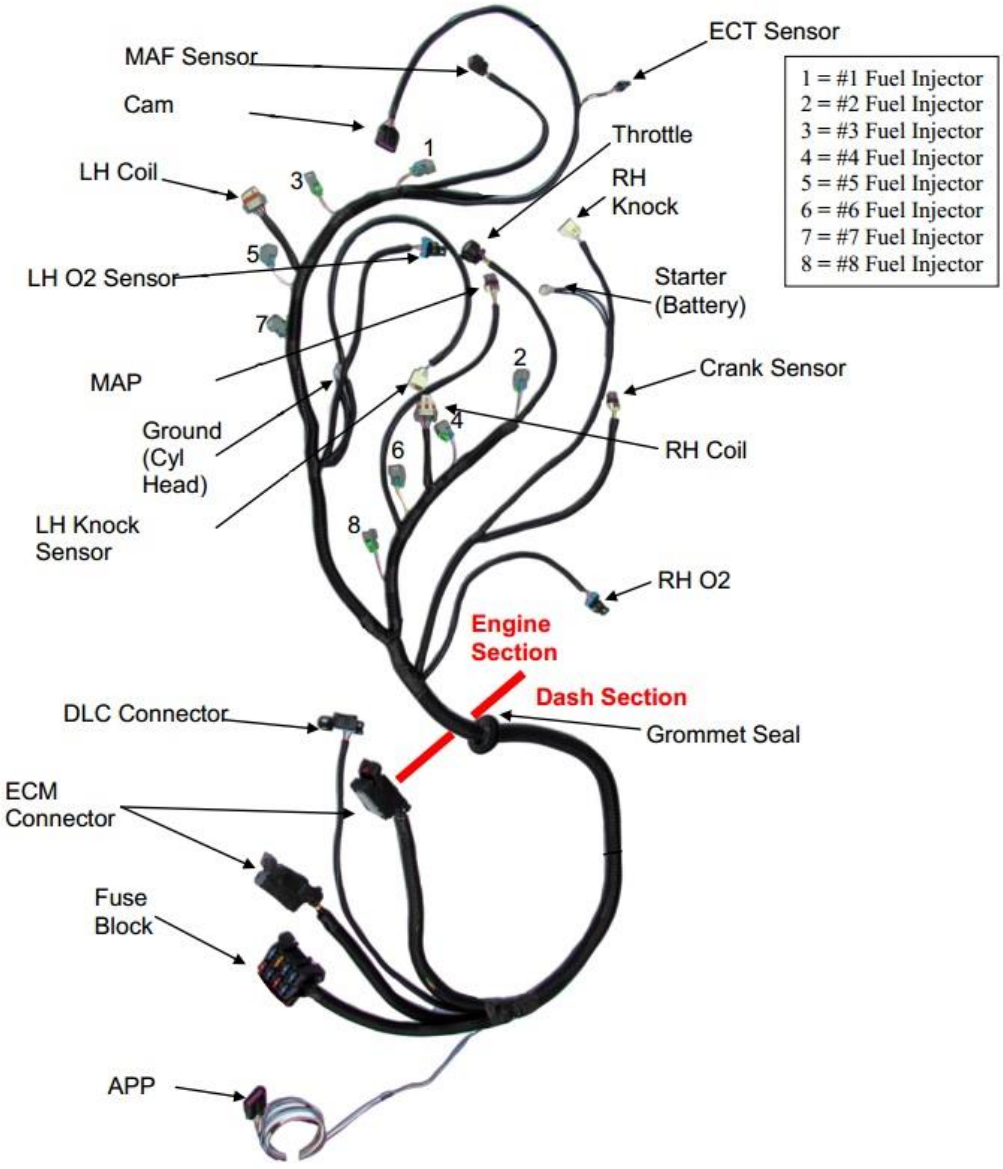
2. Wire Strippers

5.0 ROUGH INSTALLATION/ROUTING

This harness was designed with the intent of ECM mounting in the passenger compartment (e.g. glove box, or under dash). This fuel injection harness has two sections, the Engine Compartment Section, and the Dash Section, reference Figure 1 below. Note that the Engine Compartment Section is on one side of the Grommet Seal and the Dash Section is on the other side.

- ENGINE COMPARTMENT SECTION: Includes wiring for the fuel injectors, coils and sensors.
- DASH SECTION: Includes ignition feed wires, DLC Connector, Underdash Wires, Accelerator Pedal Position Sensor, ECM Connectors, and Fuse/Relay Center.

FIGURE 1



NOTE: Routing your harness WILL REQUIRE the removal of the AC Evaporator from under the dashboard. It is IMPOSSIBLE to feed the required wires from inside the car into the engine compartment with these components in place. Damage to the harness resulting from attempting to install the harness without removing the necessary components is the sole responsibility of the user.

5.1 Clear the area where the stock ECU was located. There is ample wire in the harness to get creative with mounting options in this area.

5.2 A good exercise is to lay out the wire harness on the floor beside your vehicle and identify all the connectors and wires.

5.3 You will want to route the harness through and around open areas. Inside edges provide extra protection from hazards and also provide places for tie wraps, clips and other support.

5.4 Route the harness away from sharp edges, exhaust pipes, and the hood, trunk and door hinges.

5.5 Allow enough slack in the harness at places where movement could possibly occur (body to frame, frame to engine, etc.).

5.6 Familiarize yourself with the harness by locating each of the harness sections and by looking at the connectors on the wire ends, reference Figure 1.

As with all automotive wiring, the grounding circuit is critical for proper operation. Ensure that there is secure grounding of the following, battery to engine, battery to chassis, engine to chassis, and harness to engine.

NOTE: This harness is equipped with Ground Wiring on the rear portion of the driver side cylinder head.

5.7 Connect a ground strap or cable (minimum of a 4 Ga. wire) from the negative battery terminal to the chassis (frame).

5.8 Connect a ground strap (minimum of a 4 Ga. wire) from the engine to the chassis (frame). DO NOT RELY UPON THE MOTOR MOUNTS TO MAKE THIS CONNECTION.

HARNESS INSTALLATION

CAUTION: BEFORE BEGINNING INSTALLATION, DISCONNECT THE POWER FROM YOUR VEHICLE BY REMOVING THE NEGATIVE BATTERY CABLE FROM THE BATTERY.

Connecting the Wiring Harness is a simple process and is detailed in the following steps.

6.1 From inside the vehicle, feed the Engine Section of the wiring harness through the hole in the firewall. You can adapt to the existing grommet or try to salvage the OEM grommet and reuse.

NOTE: Make no wire connections or permanent mounting of any kind at this time. Remember to route harness away from sharp edges, exhaust pipes, hinges and moving parts.

6.2 Route the engine compartment section to the top of the engine. The engine section is designed to be separated into left side (driver) and right side (passenger) sections, in much the same way as factory wiring. Each side is wire loomed separately, BUT IS NOT LABELED. The driver side of the engine section is longer, and has the connectors for the CAM, MAF, and ECT Sensor, reference Figure 1.

6.3 Route the driver side section behind the intake manifold and then between the driver side rocker cover and fuel rail.

6.4 Route the passenger side section between the passenger side rocker cover and fuel rail.

6.5 Route the Battery Positive (2 LARGE RING TERMINALS COVERED IN RED HEAT SHRINK), Knock sensor connector and Crank sensor connectors behind the passenger head and under the exhaust manifold (header) to their respective locations.

6.6 Route the Fuse Block/Relay Center and ECM connectors to their preferred mounting locations. Position the ECM in its intended location (e.g. under the dash).

CAUTION: IT IS IMPORTANT TO AVOID ECM CONTACT WITH MOISTURE OR DAMAGE MAY OCCUR.

6.7 Route the APP wires and brake switch wire, Figure 1, to the driver side of the dash.

7.0 ENGINE COMPARTMENT SECTION CONNECTIONS

7.1 Locate the black wires in the driver side group that end in two, large ring terminals and ground them to the engine, Figure 1. (Commonly to the rear of the driver side cylinder head).

7.2 Using Figure 1 and specific connections indicated in Table 1 connect the wiring as directed.

7.3 The single ORANGE wire in the engine compartment section near the grommet should be used to connect to a factory Nissan 300ZX Coolant Temperature sensor. (Typically placed in the LOJ Innovations Heater Block, Make sure to Ground the block to the chassis or the gauge will not function!)

7.4 The single GREEN and single BLUE wires are used to allow the PCM to control two electric fans. These are GROUND TRIGGERS for dedicated fan relays (Not Included). **DO NOT CONNECT THESE DIRECTY TO YOUR FAN GROUNDS!! PCM DAMAGE WILL RESULT!!**

7.5 Vehicle Speed Sensor (VSS) Connection. There is a long lead coming off the back of the harness containing a purple wire and a green wire. These two wires must be spliced into your stock VSS wires. The Green wire connects to the VSS Yellow wire and the Purple wire connects to the VSS Blue wire. Do not sever the existing connection or else your speedometer will not function!

NOTE: In stock configuration Fan #1 will come ON at 226F and go OFF at 221F Fan #2 will come ON at 235F and go OFF at 230F.(ECM reprogramming is available through LOJ to alter fan temperatures).

Table 1 – Engine Compartment Connection Checklist

Connector	Connected To	Wire Colors	Check if Complete
1	#1 Injector	Pink, Black	
2	#2 Injector	Pink, Dk Green	
3	#3 Injector	Pink, Tan	
4	#4 Injector	Pink, Lt Blue	
5	#5 Injector	Pink, White	
6	#6 Injector	Pink, Yellow	
7	#7 Injector	Pink, Red	
8	#8 Injector	Pink, Dk Blue	
9	LH Coil	Black, Red, Dk Green, Brown, Lt Blue, Purple, Pink	
10	RH Coil	Black, Orange, Dk Green, Brown, Lt Blue, Purple, Pink	
11	LH O2 Sensor	Tan, Purple, Pink, Gray	
12	MAF Sensor	Yellow, Black, Pink, Purple, Tan	
13	ECT Sensor	Tan, Yellow	
14	Cam Sensor	Orange, Pink, Brown, Purple(VVT Only), Tan(VVT Only)	
15	LH Knock Sensor	Dk Blue, Lt Gray	
16	Throttle Body	Brown, Yellow, Tan, Dk Green, Lt Blue, Purple	
17	MAP Sensor	Orange, Lt Green, Gray	
18	RH Knock Sensor	Lt Blue, Gray	
19	RH O2 Sensor	Tan, Purple, Pink, Lt Green	
20	Crank Sensor	Dk Blue, Yellow, Lt Green	
21	**Starter (Battery Positive) 2 RING TERMINALS**	Large Ring Terminal (Red)	
22	Grounds (Rear of Cylinder Head)	Black	
23	Gauge Coolant Temp Sensor	Orange	
24	Cooling Fan 1	Green	
25	Cooling Fan 2	Blue	

8.0 DASH SECTION CONNECTIONS

The wires in this section consist of the DLC (OBDII Port), Accelerator Pedal Position Sensor, ECM Connectors, V32 Interface Connector, and Brake Signal wires.

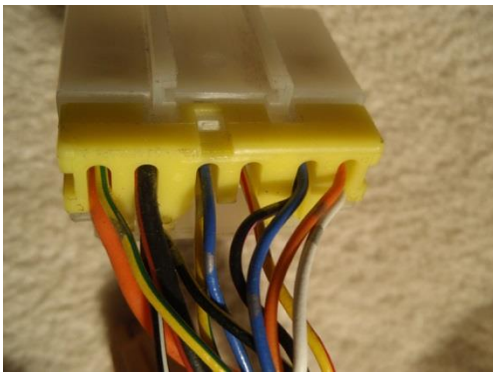
CAUTION: DO NOT MAKE ANY CONNECTIONS WHILE THE ECM IS PLUGGED INTO THE HARNESS.

8.1 Using Figure 1, connect the wiring as directed.

8.2 Connect the 2 ECM connectors to the ECM, BEING CAREFUL NOT TO BEND ANY PINS. Connectors are color coded to prevent incorrect installation.

8.3 Permanently mount your ECM, Accelerator Pedal, and Fuse Center.

8.4 Connect the Z32 interface connector splices under the dash according to the table below. We recommend reusing the connector off the factory Z harness so that the harness can be easily removed if needed. This is the connector required:



Simply strip the end of each Z32 wire listed in the table below and crimp to the LOJ harness using a quality crimping plier. These insulated crimps are heat shrinkable! After crimping, use a heat gun to shrink the insulator over the connection. LOJ Recommends de-pinning the unused wires from the Z32 connector. This can be accomplished by removing the yellow backing plate from the plug, and by releasing each terminal with a small pick. Otherwise, insulate the end of each unused wire if de-pinning is not an option.

Z32 Underdash Connector Wiring

Z32 Underdash Connector Layout		
Function	Z32 Pin/Color	LOJ Harness Color
Check Engine Light	14 – YELLOW/GREEN	BROWN
Tachometer	5 - YELLOW/RED	WHITE
12V Ignition On/Start	13 – BLACK/RED	RED
Coolant Temp (Gauge)	12 – BLUE/BLACK	ORANGE
Fuel Pump Trigger	4 – BLACK/PINK	BLACK
Brake Signal** (12V BRAKES APPLIED)	SOURCE AT BRAKE PEDAL SWITCH	PURPLE

** **FAILURE TO WIRE THE TWO POSITION BRAKE SWITCH CORRECTLY COULD RESULT IN AN INOPERABLE THROTTLE CONDITION.**

8.5 Brake Switch Connection. The Z32 has two switches mounted to the brake pedal under the dashboard. (SEE FIGURE 2) One is a Brake Light Switch and the other is a Cruise Control Cancel Switch. Use the Brake Light Switch to supply 12V to the purple wire listed above when the brake pedal IS DEPRESSED. The 12V should go away when the pedal is released. (Normally Open Switch) Depending on the year of your Z32, a relay may be required.

To determine which switch is which, unplug one at a time and check to see if the brake lights still operate. They should work when the Cruise Control Cancel Switch is unplugged.

8.5 After all connections have been made throughout the harness, reconnect the battery.

CAUTION: BE SURE THE IGNITION IS OFF WHEN YOU RECONNECT THE BATTERY OR DAMAGE TO THE ECM WILL OCCUR.

Figure 2