BluePrint ENGINES®

THE AUTHORITY IN CRATE ENGINES.

LS EFI SYSTEM INSTALLATION MANUAL

WWW.BLUEPRINTENGINES.COM

SM134 - MEI40009998 - REV 10/16/24

Failure to follow the instructions of this manual may result in system failure. Understanding this document fully is required to begin the installation of this EFI system. If the manual is not fully understood, the process of installation should be halted.

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1.0 – Introduction

Thank you for purchasing the BluePrint EFI System. BluePrint Engines has written this manual to help you with the installation of the EFI system and contains the information needed to successfully install the EFI system. Please follow the instructions in this manual to ensure a worry-free process when installing the ECM, wiring, and the other components associated with the EFI system on your brand-new engine. This EFI system does not need any modifications to the ECM and is ready to run with the tune that is installed from BluePrint Engines.

Please read this entire manual before starting the process of installation to save yourself time and money, as well as to ensure reliable operation. Please follow our installation tips and warnings to keep yourself safe and to ensure that the engine and EFI system will operate properly.

If you should need assistance with the installation, please reach out to the technical service department at 308-236-1050, Monday through Friday 8 a.m. to 5 p.m. Central Standard Time (CST) USA, or email us at support@blueprintengines.com. Please be close to your vehicle when you call to ensure proper service can be provided.

2.0 – Warnings

To preserve the warranty of the engine and EFI system, please follow the instructions of this manual for the installation of your EFI system. This manual provides visual examples and diagrams to assist you. If you have questions, do not hesitate to reach out to the technical service department at BluePrint engines.

Failure to follow the instructions of this manual may result in faulty components, damage to the EFI system, and will VOID the warranty.

Take precautions when installing the EFI system to maintain a safe work environment in order to prevent damage and injuries.

For the protection of all parties and property, a qualified or trained person should be performing the installation process of the EFI system and the other necessary components.

Make sure that the harness is routed properly by avoiding harsh corners, pinch points, and sharp edges that could cause damage.

Safely secure and seal any unused connections (such as the auxiliary outputs, bare wire ends, etc.) to prevent contamination or a circuit short.

Make sure the EFI system connections are all connected before connecting the battery power source to the fuse relay center.

Proper grounds are vital to the harness. Ensure that all grounds have been cleaned and are tight.

An engine ground to the chassis is required for the system to properly operate. A minimum of a ¾ inch braided strap from the engine to the vehicle chassis is recommended.

Make sure a minimum of 8 AWG wire is used to connect the fuse panel/relay center to the battery.

3.0 – Parts List

Table 1: Parts included with the BluePrint EFI system.

Item	QTY	Part Number	Description
A	1		ECM
B	1		Main Power Harness
C	2		Oxygen Sensors
D	2		Oxygen Sensor Mounting Ring
E	1		Accelerator Pedal

4.0 — Before Installing BluePrint EFI Harness

1. Disconnect the battery.
2. A constant battery 12V source is required from the vehicle engine harness, but the factory engine harness will not be used.
3. This BluePrint Engine is a standalone system that is operated with a simple 12V keyed or switched **"ON"** power source and 12V battery connections.
4. Constant 12V power connections must be connected to clean voltage sources and must not be connected to circuits that may have a ballast or fusible circuits.
5. Remove the existing engine wiring harness from the vehicle only after verifying any equipment you wish to remain functional is not affected, such as the radio, gauges, etc.
6. Consult a professional if you do not understand the above steps.

5.0 — Fuel System

The fuel pump must be able to supply a **constant 58-60 psi of fuel pressure** for the engine to operate properly. The fuel pump also must be able to flow 240-340LPH at 58-60 psi while the engine is running. Make sure all components of the fuel system are rated for the use of gasoline. The fuel system needs a supply line and a return line. If you are using an inline fuel pump, there should be a pre-filter (100 micron) mounted before the pump and a (30/10 micron) post-filter mounted before the fuel rails, as shown in Figure 1. Figure 2 shows an alternative routing. Filter specifications are the same as above. There also **MUST** be a fuel pressure regulator in line with the EFI system installed after the fuel rail. The recommended proper plumbing of the fuel system is shown below as a graphical representation. BluePrint Engines recommends fuel pressure regulator **BPP13109BK** or **BPP13101BK** with use of gauge **BPP15633** and pump kit **BPP5267**.

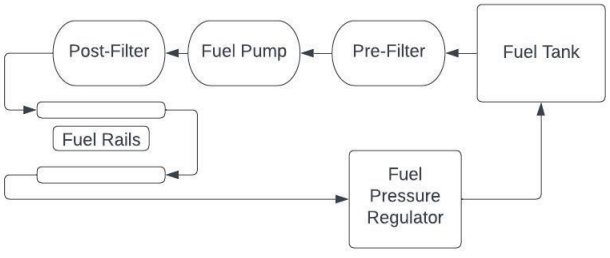


Figure 1: Fuel system routing diagram

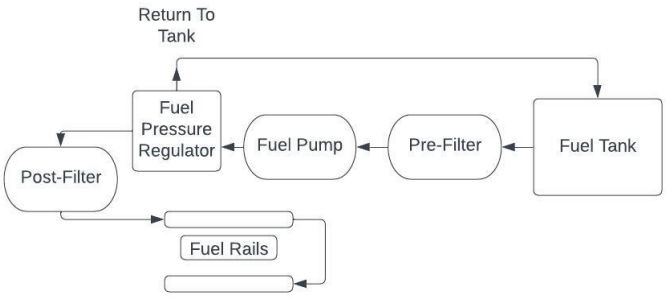


Figure 2: Alternate fuel system routing diagram

6.0 – Oxygen Sensor Installation

The oxygen sensor should be mounted in a location that is serviceable and where the sensor can read the exhaust flow from each bank, which is found after the cylinders merge into one collective pipe. The sensor should not be placed more than 46-50" from the exhaust ports on the engine. If you are using long tube headers, the sensor should be mounted 1-12" after the collector and must have no less than 18-26" of exhaust pipe after the sensor. Figure 2 shows one of the two oxygen sensors included in the EFI system to be installed.

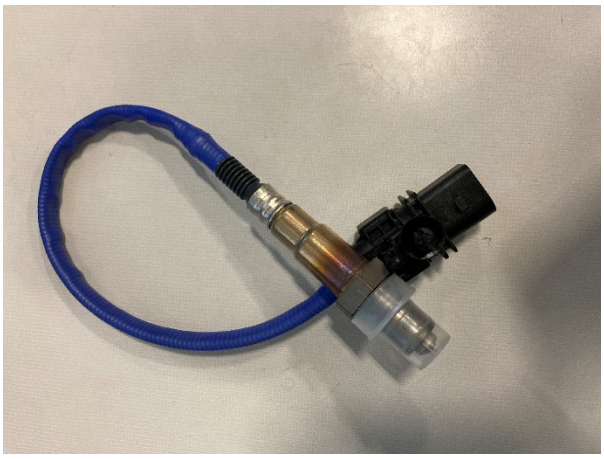


Figure 2: Oxygen sensor included with the EFI System.

If your vehicle has a catalytic converter, the oxygen sensor **MUST** be located between the engine and the catalytic converter.

Mount the oxygen sensor in the upper half of the exhaust tubing and with the angle, "X" being greater than 10 degrees from horizontal, shown in Figure 3. The sensor can be mounted on either side of the exhaust pipe. The only restraint is that the sensor **MUST** be mounted at an angle greater than 10 degrees from horizontal. This ensures that the condensation in the exhaust tubing will not enter the sensor and cause premature sensor failure.

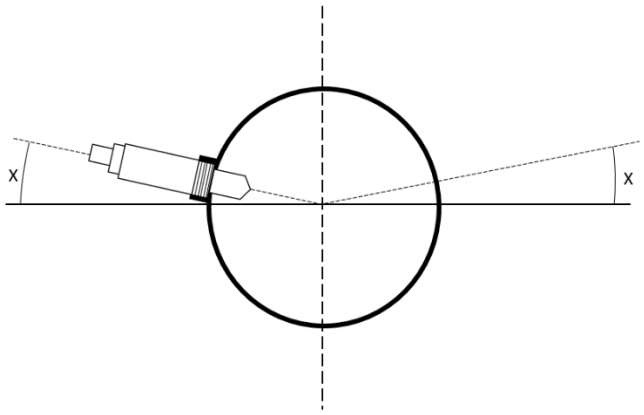


Figure 3: Oxygen sensor mounting location

Drill a 7/8" hole in the location picked for the sensor and weld the threaded bung into the 7/8" hole. Weld the bung completely around to ensure a leak-proof connection when the engine is operating. Install the oxygen sensor into the threaded bung and tighten securely.

For aid in removal, add anti-seize to the threads of the oxygen sensor. To prevent damage, do not get any anti-seize on the tip of the sensor.

6.1 Installation Tips

Do NOT run the engine with the oxygen sensor installed if it is not plugged in and powered by the ECM. Doing so will cause damage to the sensor.

Someone with experience in welding exhaust systems should install the oxygen sensor bung. Any experienced exhaust shop will be able to perform this task at a minimum cost. (Note: If the installation of the oxygen sensor is performed in the vehicle, make sure all wiring to the ECM is disconnected. It is best to remove the ECM from the vehicle before welding.)

The use of leaded fuel will degrade an oxygen sensor. Prolonged use is not recommended unless periodic replacement is carried out.

If using RTV silicone sealant, ensure that it is compatible with the oxygen sensors, i.e., Wurth Super RTV Silicone (Gray). This information should be found on the RTV package.

7.0 ECM Mounting

The mounting location of the ECM is up to the installer of the EFI system. The ECM is weather protected. If mounted under the hood, avoid areas close to the exhaust, high temperature locations, and areas that could see large amounts of water. The ECM also should avoid being mounted close to CD ignition boxes, spark plug wires, and other electrical devices. The ECM connections are water resistant. To ensure no water contamination, mount the ECM with the connections facing down or on its side as a precaution. The ECM has four mounting locations that have rubber feet (shown in Figure 4). Mounting the ECM flat is the preferred method. When tightening the ECM, ensure the hardware is not overtightened because damage could be caused to the ECM.

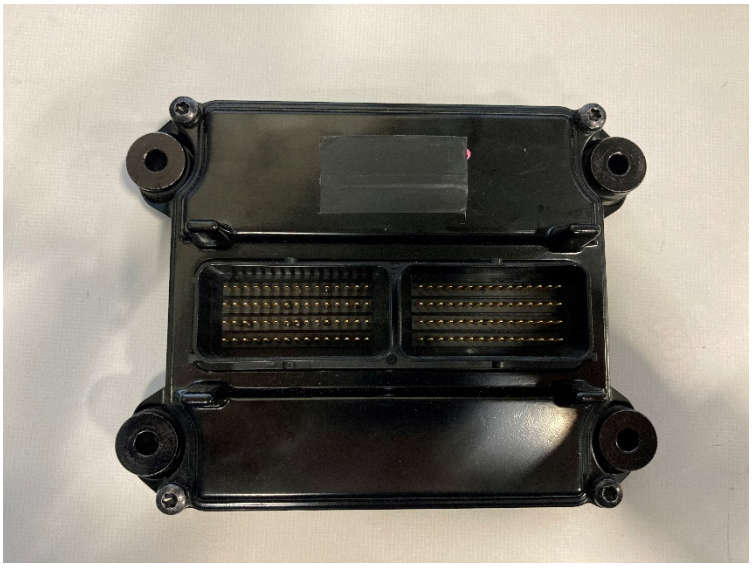


Figure 4: ECM mounting locations

8.0 Wiring

The BluePrint EFI system requires clean, constant voltage and ground sources. The wiring harness must be installed by following the previous advice in **Section 4.0** to ensure proper function and hassle-free installation. The harness is a complete unit that must be completely connected for the engine to operate properly.

8.1 Installation Tips

Install the main power source directly on the fuse/panel relay center to the battery with the use of an 8 AWG wire with proper terminals.

Keep sensor wiring separate from high voltage components and wiring on the engine. It is best that the spark plug wires do not physically contact any of the harness wires to ensure proper functioning.

If any alterations must be made to the harness, properly crimp, or crimp and solder any wire connections to ensure the connections have proper contact.

Apply quality heat shrink over any of these connections to avoid contamination.

An engine ground to the chassis is required for the system to properly operate. A minimum of a ¾ inch braided strap from the engine to the vehicle chassis is recommended.

NEVER run high voltage wires in the same bundle or loop together with any EFI sensor wiring.
If wires need to cross, try to do so at an angle.

Only use proper electrical connectors, such as crimper/solder terminals with heat shrink, as well as manufactured male/female plugs to ensure connectivity.

It is not advised to splice signal wires for sensors between different electronic control units.

Please make sure that the harness is routed properly, avoiding harsh corners, pinch points, and sharp edges that could cause damage.

Safely secure and seal any unused connections (auxiliary outputs, bare wire ends, etc.) to prevent contamination or a circuit short.

Make sure the EFI system connections are all connected before connecting the battery power source to the fuse panel/relay center.

Proper grounds are vital to the harness, so ensure that all the grounds have been cleaned and are fastened.

9.0 Harness Installation

The BluePrint EFI system was designed to have one main 12V power source for ease of installation. The circle in Figure 5 shows the location of the main power connection, and Figure 6 shows a closer view to the exact location. Connect the power bar directly to the battery with a minimum of 8 AWG wire with proper solder/crimp terminals on both ends. The two studs mounted near the main power source are accessory power options that are 50 amp fused.

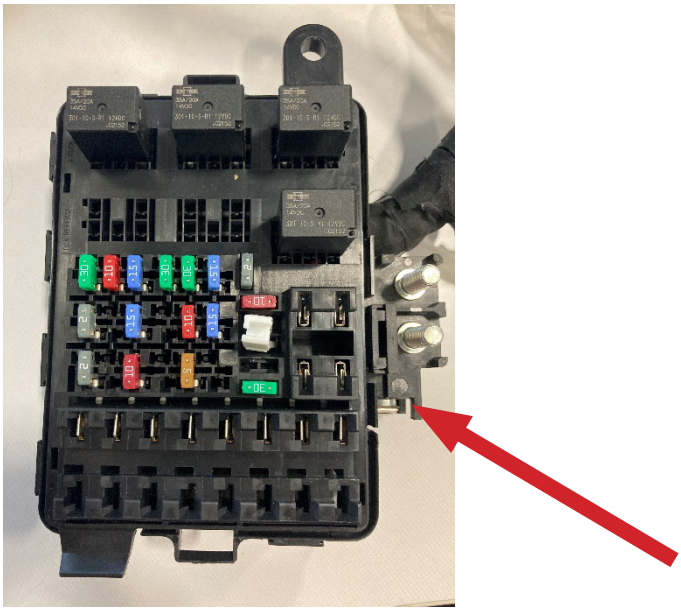


Figure 5: Main power connection needs to be connected DIRECTLY TO THE BATTERY!

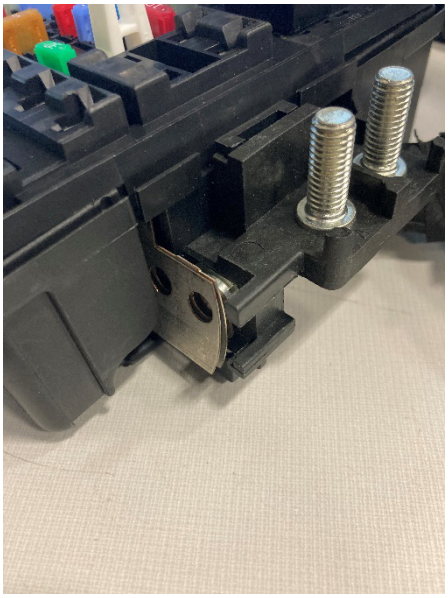


Figure 6: Closer look at the main power connection

The fuse panel/relay center has one main connection that takes a M6 x 1.00 bolt to fasten the battery connection through a proper solder/crimp terminal to the main fuse panel/relay center. The box itself has one mounting location. A M8 hole that needs to be fastened down to secure the fuse panel/relay center from moving is shown in Figure 7.

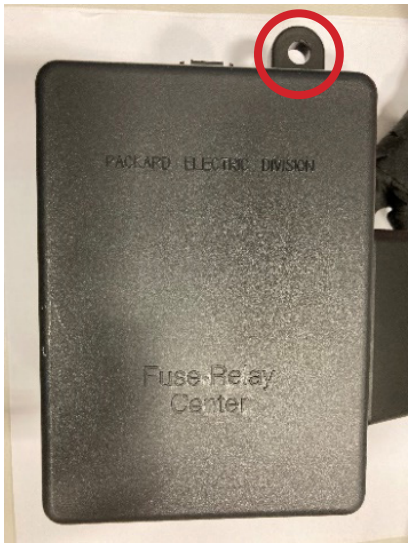


Figure 7: Fuse panel/relay center mounting tab is shown in the red circle

The ECM has one connection that has a slide, which allows the connector to be locked and unlocked when fastened to the ECM. When the slide is out, the connector is in the unlocked position. When the slide is closed, the connector is locked and fully connected to the ECM.

The ECM, if mounted in the interior of the vehicle, will have to have the harness routed out into the engine compartment through the firewall. It is up to the installer to choose the routing and mounting process of the harness through the firewall. It is recommended to install a rubber grommet around the hole to ensure the harness does not pinch or wear through the insulation, causing a failure. If there is an existing hole, ensure that there will be no pinched wires and that the harness can be routed without any damage to the parts in the installation or operation of the engine.

The harness grounds are to be fastened to the rear of the even and odd cylinder head. The designation of the even and odd cylinder banks is shown in Figure 8. The engine must be grounded to the chassis. Ensure the battery is then grounded to the chassis to ensure proper function of the EFI system.

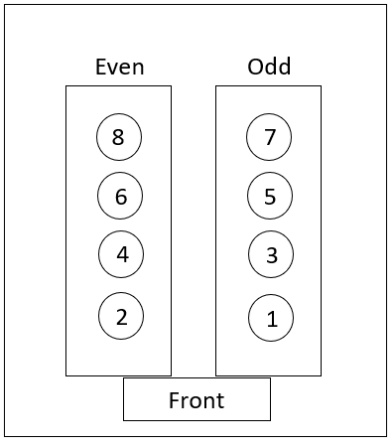


Figure 8: The engine with cylinder numbers and bank designation for reference

10.0 Required Electrical Connections

Accelerator Pedal Sensor (PEDAL)

The connector is to be run to the accelerator pedal, supplied with the kit for the DBW throttle body. Reference section 12.0 for proper accelerator pedal installation.

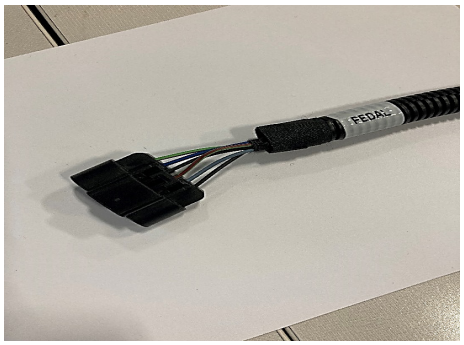


Figure 9: Pedal plug for DBW connector

Alternator Connector (GEN)

This connector is for use ONLY with an OEM style, a late model GM LS alternator that requires an exciter wire for operation. If the engine is purchased with the pulley kit from BluePrint Engines or you are using another aftermarket "one wire alternator," this wire is **NOT NEEDED** and can be terminated.

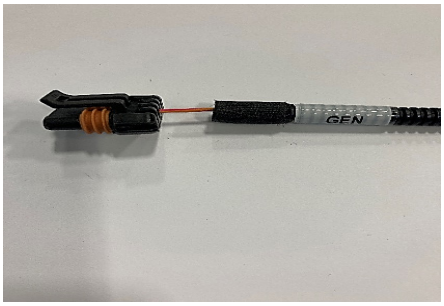


Figure 10: Plug for exciter wire for GM LS style alternator

Battery Power (Stud at fuse/relay center)

This is to be mounted for ease of access for service of fuses. The 12V source is to be installed **DIRECTLY TO THE BATTERY ONLY** by an 8 AWG wire.

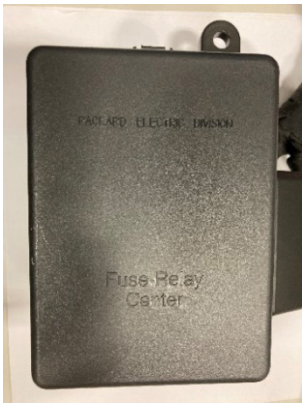


Figure 11: Main fuse and relay center

Camshaft Position Sensor (CAM)

This sensor is located on the front timing cover of the engine, close to the crank balancer.

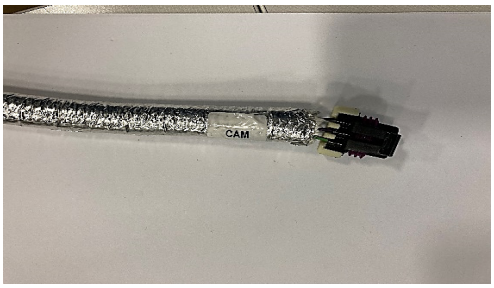


Figure 13: Camshaft position sensor connector.

Cooling Fan Control Wire (C.FAN)

This is the 12V power source wire for the cooling fan, which is controlled by the ECM. If connected properly, the wire will command a 12V electric fan when the engine coolant reaches 190°F. This wire is a 10-amp fused/relayed connection and must be connected to an electric fan that meets the output amperage. If not being used, the wire must be terminated.

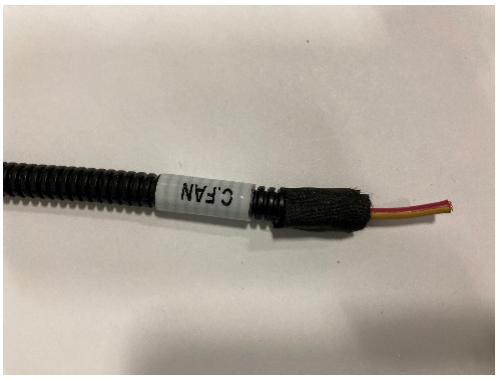


Figure 14: Cooling fan wire lead

Crankshaft Position Sensor (CRANK)

This sensor is located below the passenger side exhaust manifold, close to the engine starter.

Figure 15: Crankshaft position sensor connector

Data Link Connector (DLC)/On Board Data Connector (OBD)

This is to be mounted in an accessible location. A conventional OBDII scanner can be used to read engine faults.

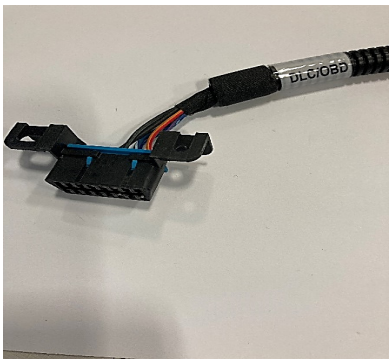


Figure 16: Data link connector/On board data connector

Electronic Throttle Control (ETC)

This plugs into the throttle body on the engine to control the throttle blade.

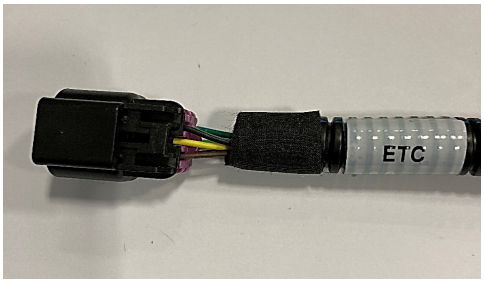


Figure 17: Electronic throttle control connector

Engine Coolant Temperature (ECT)

Connect this to the coolant temperature sensor on the driver's side cylinder head at the front.

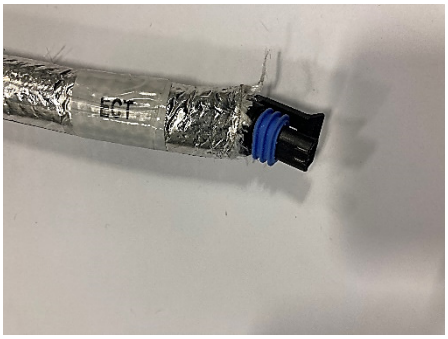


Figure 18: Engine coolant temperature connector

Engine Harness Grounds

There are two sets of eyelets for the harness grounds. These should be connected by a M10 x 1.5 x 12 bolt in the back of the odd and even cylinder heads.

Figure 19: Ground eyelet connectors

Engine Oil Pressure

This connector is to be plugged into the oil pressure sensor, which is located on the back of the engine behind the intake manifold.

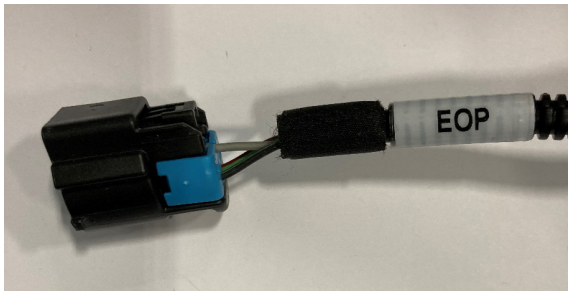


Figure 20: Engine oil pressure connector

Fuel Injectors (8 total)

The fuel injector connectors plug directly into the fuel injectors installed on the engine and are labeled to ensure proper connections.

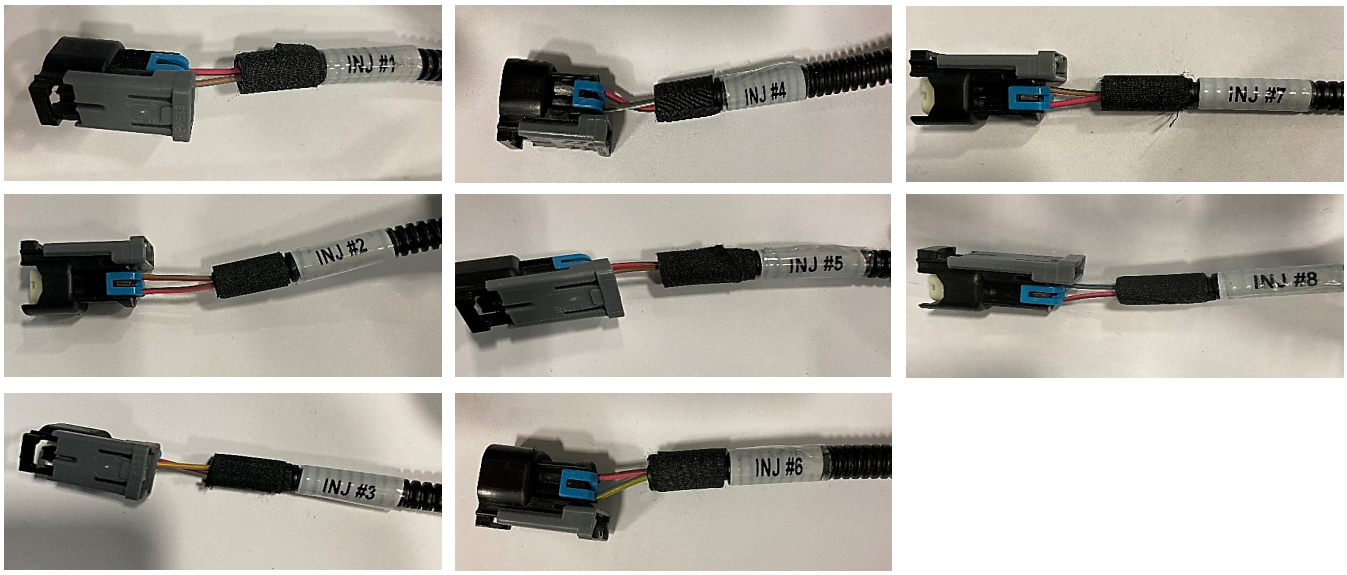


Figure 21: Eight injector connectors all labeled to ensure proper sequence

Fuel Pump Control (PUMP)

This wire is the 12V power source for the fuel pump. When the wire is connected, the ECM will command the fuel pump. The fuel pump will need a ground wire, which needs to be run from the negative side of the fuel pump to chassis ground. This wire is a 30-amp fused/ relayed connection and can be connected directly to a fuel pump that meets the output amperage.

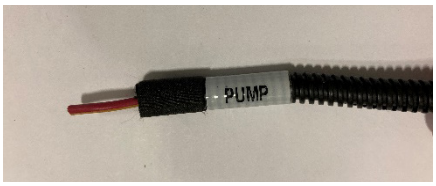


Figure 22: Fuel pump control wire for the ECM command

Ignition Coil Connecters (2 total)

Connect each bank of coils into their respective connectors. The driver's side of the engine is **"COIL ODD"** and the passenger **"COIL EVEN"**. If these are not connected properly, the engine will not operate correctly.

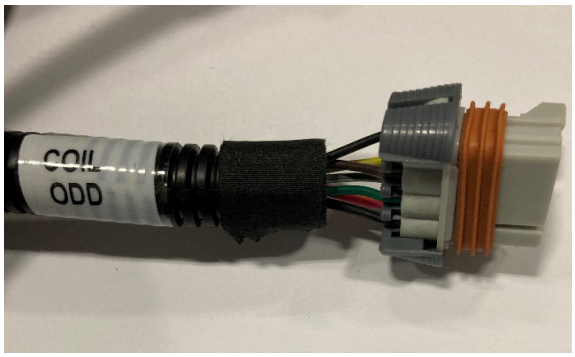


Figure 23: Ignition coil odd connector

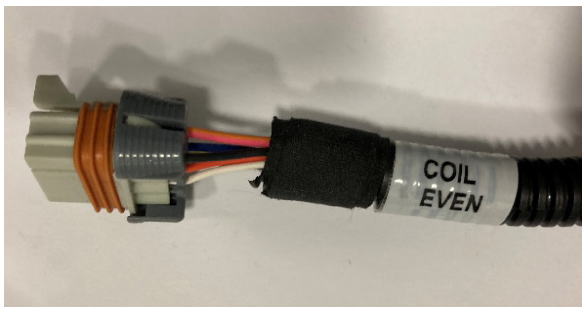


Figure 24: Ignition coil even connector

Ignition Switch Input (IGN)

The blue wire must be connected to a switched 12V source. The power source should not have a voltage when the key is in the **OFF** position. This connection must only be energized when the automobile key is in the **ON** position and during cranking of the engine. Do not connect the switched 12V wire to sources, such as the ignition coil, audio systems, etc. Many circuits in vehicles do **NOT** have power in **ON**, **CRANK**, and **RUN** positions of the key. This wire **MUST** be connected to a source that has power in all three positions.

Figure 25: Ignition switch input wire for a switched 12V

Knock Sensors (2 total)

These sensors must be connected to the engine for the engine to operate. If one or both sensors are disconnected, the engine will be derated and not have full power.

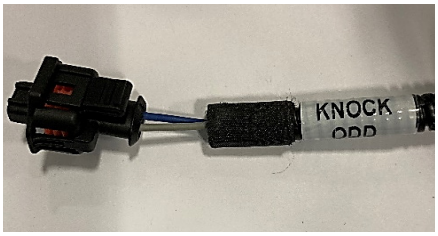


Figure 26: Knock sensor odd connector

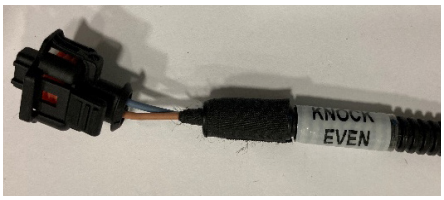


Figure 27: Knock sensor even connector

Main ECM Connector

The connector shown is to be plugged directly into the ECM.

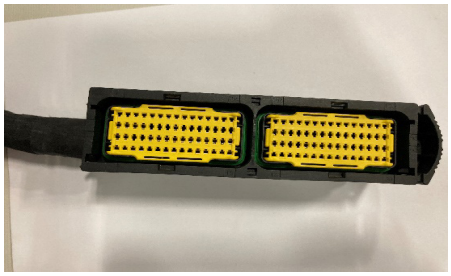


Figure 28: Main ECM connector

Malfunction Indicator Lamp (MIL)

This 12V wire can be connected to a MIL light, if supported on the vehicle. If the vehicle does not have a current MIL light, the installation of a 12V low current amber light is required. The light must be visible in the interior of the vehicle.

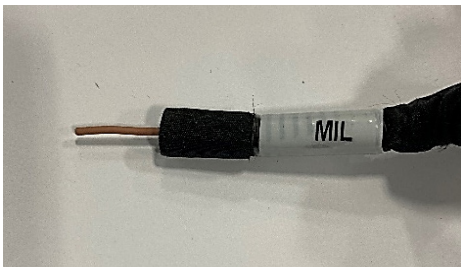


Figure 29: MIL wire for a low current 12V light

Oxygen Sensors (2 total)

Plug both the odd and the even bank connectors into the previously installed oxygen sensors in the exhaust manifolds.

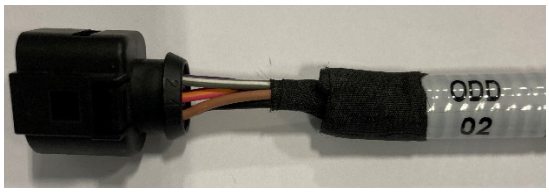


Figure 30: Oxygen sensor odd connector

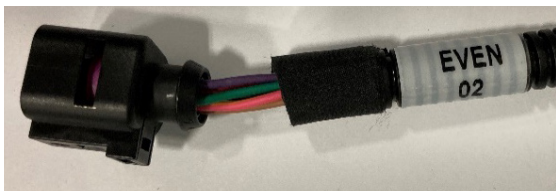


Figure 31: Oxygen sensor even connector

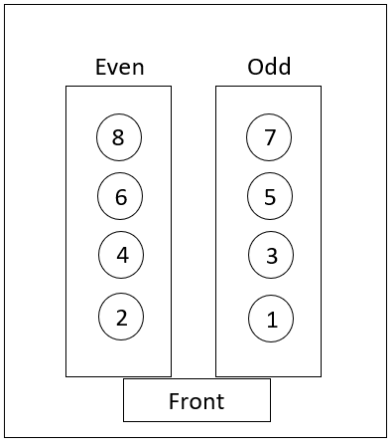


Figure 32: The engine with cylinder numbers and bank designation for reference

Temperature Manifold Absolute Pressure (TMAP)

Connect the plug to the TMAP sensor in the intake manifold at the rear of the engine.

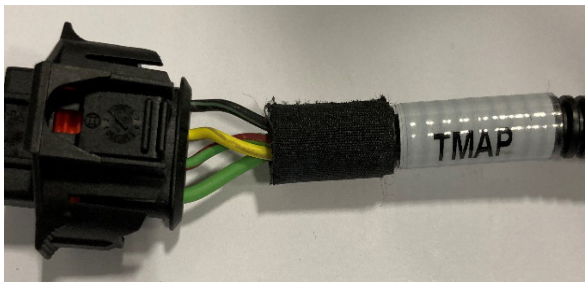


Figure 33: TMAP sensor connector

Vehicle Speed Sensor (VSS)

The vehicle speed sensor connector is compatible with 1990 and newer GM Transmissions with a 2-terminal speed sensor, commonly found on 4L60e, 4l80e, T56, etc. transmissions.

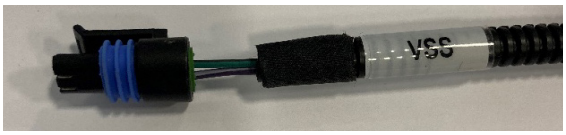


Figure 34: Vehicle speed sensor connector

11.0 Auxiliary Connections

11.1 Air Filter

BluePrint Engines recommends the air filter assembly BPPLS01013. This can be bought from https://blueprintengines.com/products/blueprint-engines-air-intake-kit-for-ls-engines. This kit is what intake system the engine was dyno tested with at our facility. The kit may need to be modified to fit your specific application.

11.2 Brake Booster Connection

The source for the brake booster is located under the intake manifold on the rear. There are three different connections that can be used, and it is up to the installer which connections to connect the brake booster, which is shown in Figure 35. The elbow is connected to the PCV system **(Do Not Disconnect)**.

Figure 35: Brake booster port connections

11.3 Bulkhead Connector

The bulkhead connector has 12 terminals that have various outputs, which can be integrated into the vehicle but does not require them to be connected for the engine to operate. The male connector for the bulkhead is Delphi 15326854-B, and the male terminals is Delphi 15326269-L. Figure 36 has a diagram of the connector for pin identification.

Figure 36: Front View of the Bulkhead Connector

Table 2 has the terminals with wire color to help assist if any of these connections are desired.

Table 2: Bulkhead Connector Outputs

Terminal	Color	Description
A	Plug	Empty
B	Lt. Green	MAP Signal
C	Plug	Empty
D	Pink	Tach Output
E	Tan	MIL Indicator Circuit
F	Blue w/ Pink	CAN (-)
G	Black	Ground
H	Red	Battery 12V
J	Red	Switched 12V Power
K	Dark Green	TPS 2
L	Grey	Oil Pressure
M	Blue w/ White	CAN (+)

Description:

MAP signal can be used for a gauge value. The output is a 0-5 voltage signal ranging from 10–105 KPa. The ground in the bulkhead terminal must be connected.

Tach Output is a 12V square wave that can be used with a conventional tachometer.

CAN (-) and CAN (+) provide communication messages from the ECM, containing the engine parameters if further integration is desired. The two connections can be used with an electronic dash readout display.

Ground is important for the completion of the oil pressure, MAP sensor, and the TPS 2 circuits. The ground is also capable of being used for other modules connected to either of the 12V outputs in the bulkhead connector.

Battery 12V is an auxiliary constant power output.

Switched 12V is a power output that only has voltage when the ignition is on.

TPS 2 is an output used for load indication in a transmission controller or a gauge output. The output is a 0-5V volt signal. The ground in the bulkhead terminal must be connected.

Oil Pressure terminal in the bulkhead connector can be used for a pressure gauge. If you are using the output for the oil pressure, the Engine Oil Pressure (EOP) must be connected to the oil pressure sensor in the engine. The sensor is a 0-5V output. The ground in the bulkhead terminal must be connected.

11.4 Fresh Air Connection

The fresh-air valve cover port is on the front right of the passenger side valve cover. That port must be connected to the intake tube for the fresh air supply of the engine by a 3/8" vacuum hose, shown in Figure 37. If you are using an alternate intake tube, the fresh air line must be connected to the tube between the throttle body and the air filter using a 3/8" vacuum hose.

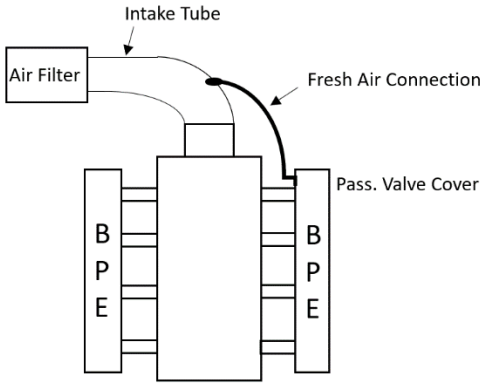


Figure 37: Fresh air connection routing diagram

11.5 Steam Port

Steam ports are all connected and have one connection at the front of the engine under the intake manifold. This port is necessary to be connected to a fitting in the radiator or the tapped port in the water pump housing.

12.0 Accelerator Pedal Placement

Installation of the accelerator pedal must follow the minimum spacing requirements below. The accelerator pedal must be mounted in a location on the firewall that allows for free range of motion of the pedal and free of any obstruction that would not allow the pedal to function properly. The rest of the mounting details are application specific and left to the installer of the pedal assembly. The harness of the accelerator pedal must be protected when routed through the firewall to prevent damage to the harness. Use of a rubber grommet the size of the hole drilled is recommended.

Minimum Spacing Requirements

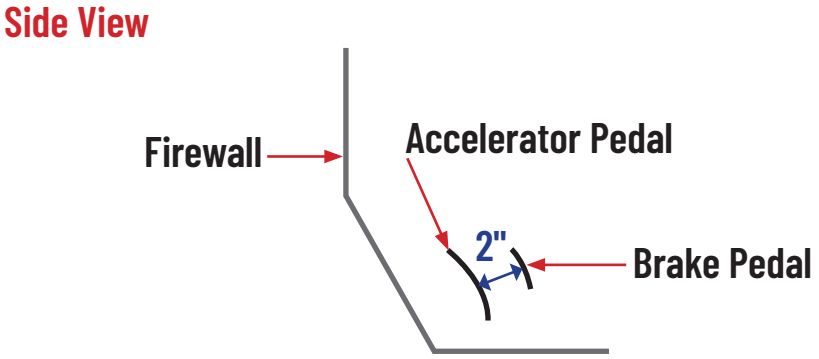


Figure 38: Side view of the pedal minimum pedal installation measurements

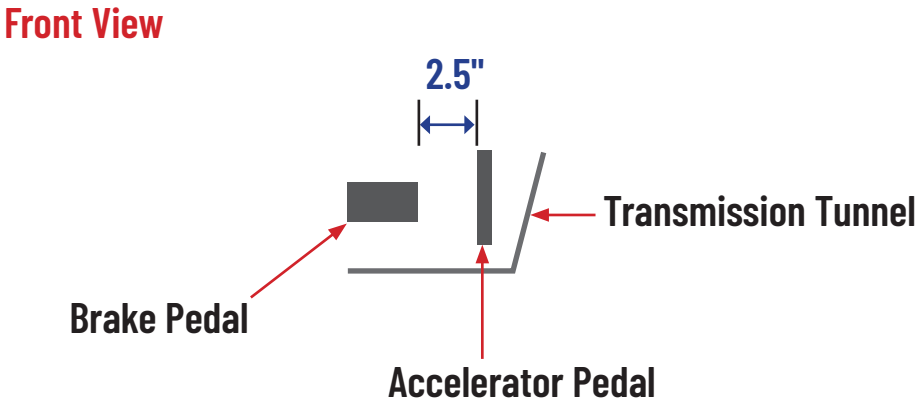


Figure 39: Front view of the pedal minimum pedal installation measurements

13.0 Start Up Procedure

Please reference the LS Installation Guide below for the installation and startup of your engine. This guide is provided with the engine. An electronic version is on the BluePrint Engines website at https://blueprintengines.com/pages/tech-tips LS Installation Guide.

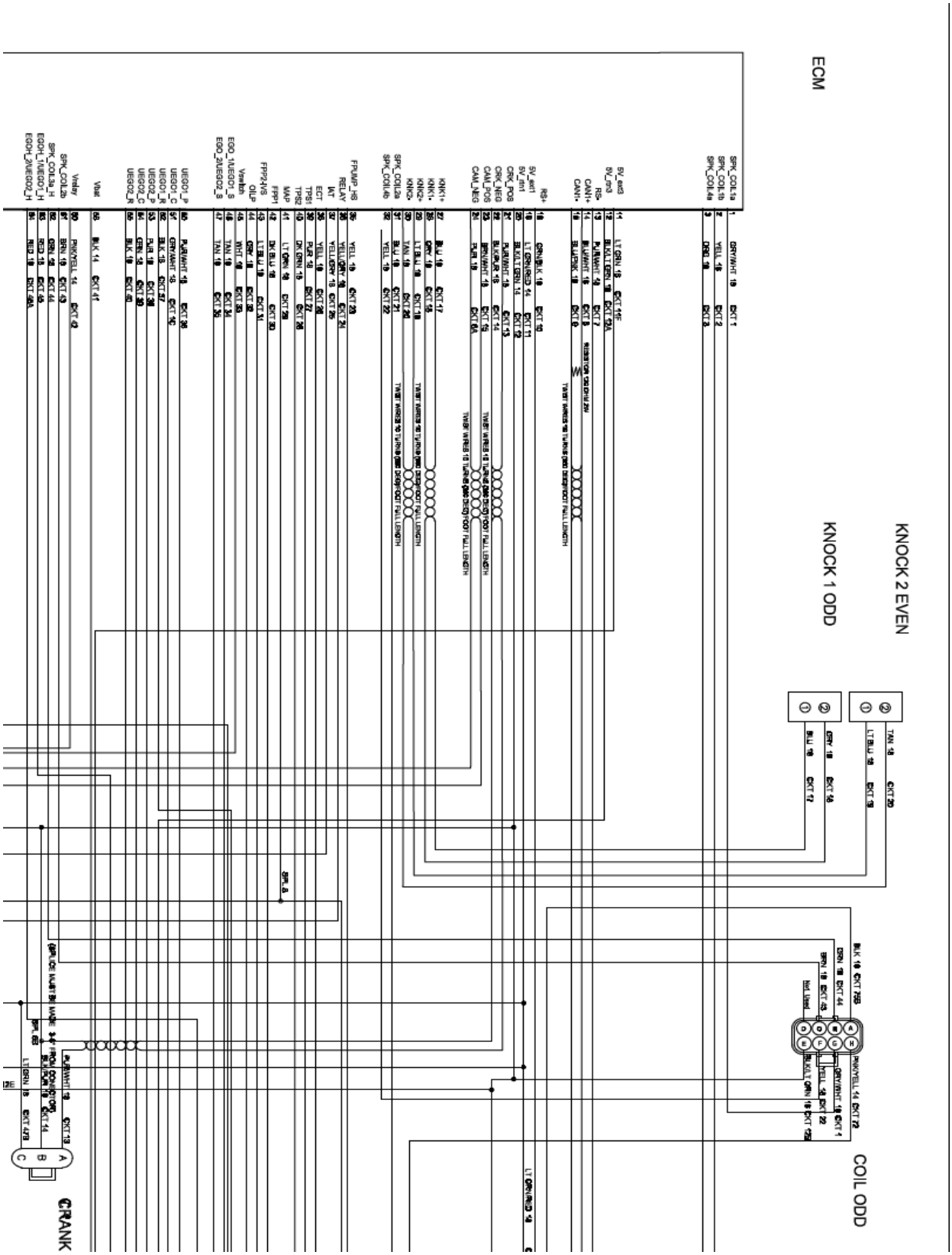
14.0 ECM Pinout

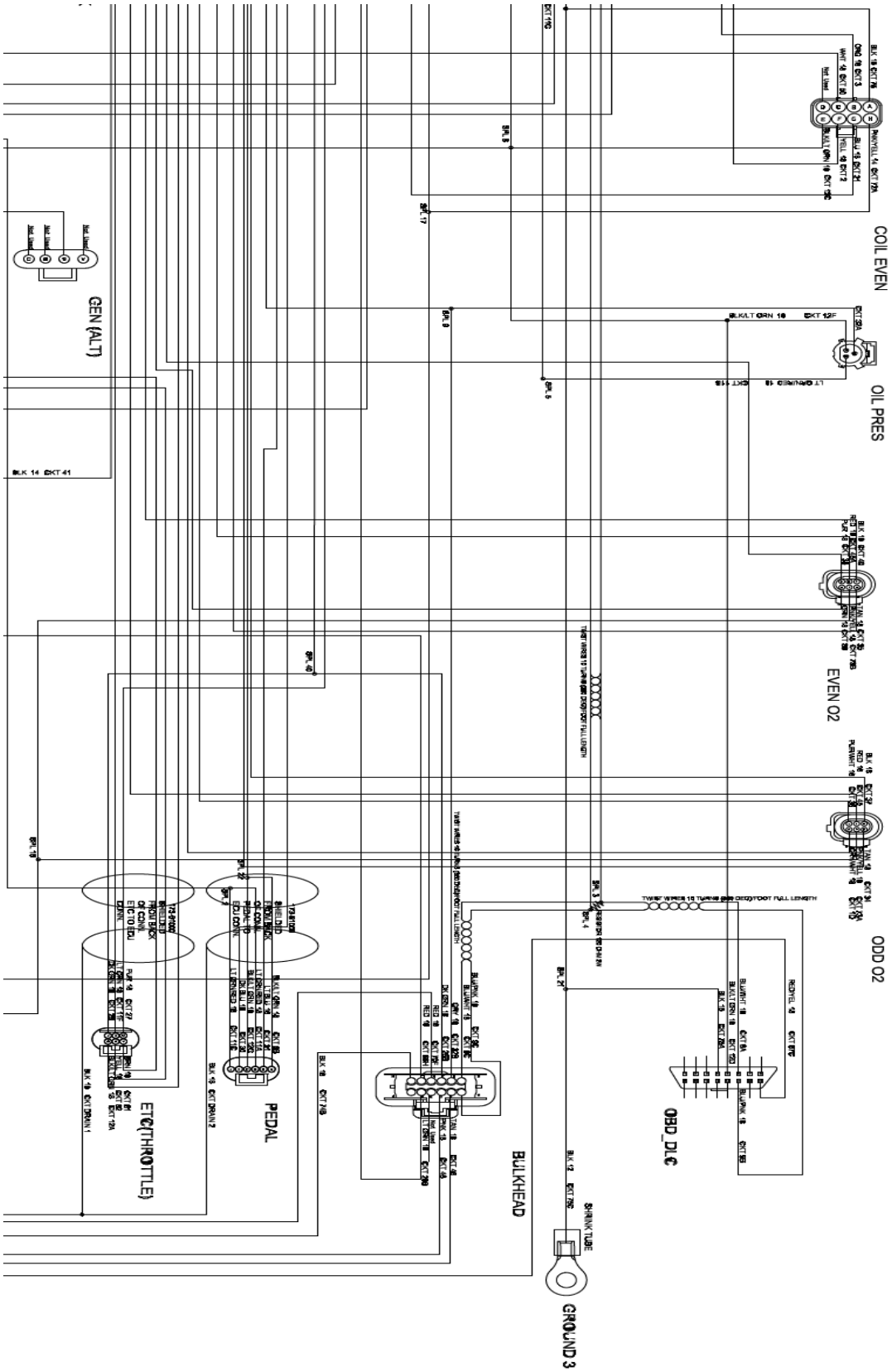
Table 3: ECM Pinout

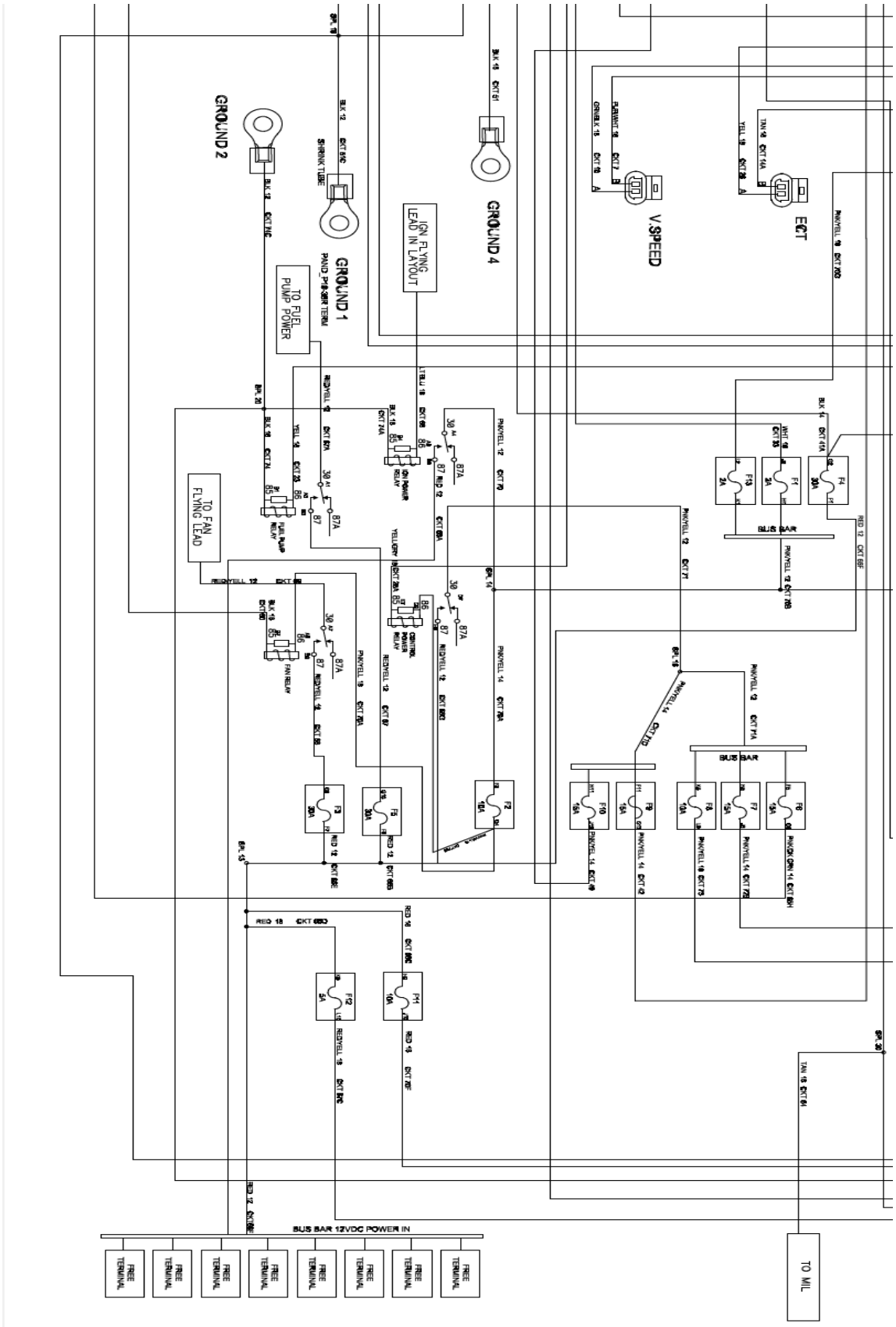
Terminal	Color	Description
1	GRY/WHT	Spark Coil
2	YELL	Spark Coil
3	ORG	Spark Coil
11	LT GRN	ETC 5V
12	BLK/LT GRN	ETC 5V
13	PUR/WHT	VSS GRD
14	BLU/WHT	CAN (+)
15	BLU/PNK	CAN (-)
18	GRN/BLK	VSS 5V
19	LT GRN/RED	5V Sens (+)
20	BLK/LT GRN	5V Sens (-)
21	PUR/WHT	Crank +
22	BLK/PUR	Crank -
23	BRN/WHT	Cam +
24	PUR	Cam -
27	BLU	Knock 1+
28	GRY	Knock 1-
29	LT BLU	Knock 2+
30	Tan	Knock 2-
31	BLU	Spark Coil
32	YELL	Spark Coil
35	YELL	Fuel Pump
36	YELL/GRY	Relay
37	YELL/GRY	IAT
38	YELL	ECT
39	PUR	TPS1
40	DK GRN	TPS2
41	LT GRN	MAP
42	DK BLU	Pedal Position 1
43	LT BLU	Pedal Position 2
44	GRY	Oil Press.
45	WHT	12V Switch
46	TAN	UEGO1_S
47	TAN	UEGO2_S

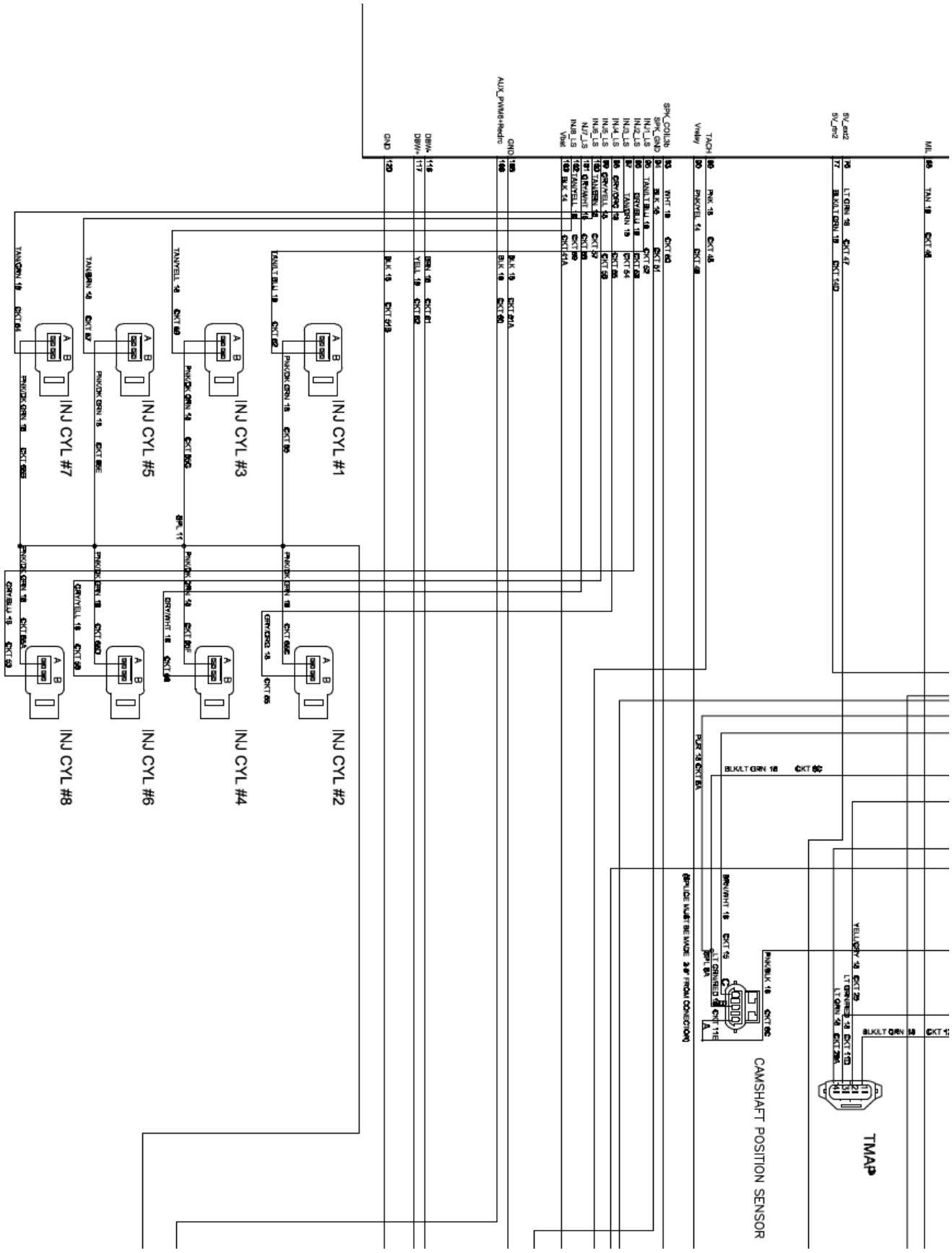
Terminal	Color	Description
50	PUR/WHT	UEGO1 _P
51	GRY/WHT	UEGO1 _C
52	BLK	UEGO1 _R
53	PUR	UEGO2 _P
54	GRN	UEGO2 _C
55	BLK	UEGO2 _R
58	BLK	12V
60	PNK/YELL	V Relay
61	BRN	Spark Coil
62	GRN	Spark Coil
63	RED	UEGO1_H
64	RED	UEGO2_H
68	TAN	MIL
76	LT GRN	Pedal 5V
77	BLK/LT GRN	Pedal 5V
89	PNK	Tach
90	PNK/YEL	V Relay
93	WHT	Spark Coil
94	BLK	Spark Ground
95	TAN/LT BLU	INJ 1
96	GRY/BLU	INJ 2
97	TAN/GRN	INJ 3
98	GRY/ORG	INJ 4
99	GRY/YEL	INJ 5
100	TAN/BRN	INJ 6
101	GRY/WHT	INJ 7
102	TAN/YEL	INJ 8
103	BLK	12V
108	BLK	Ground
109	BLK	Elec. Fan
116	BRN	DBW -
117	YELL	DBW +
120	BLK	Ground

Wiring Diagram




COIL EVEN
OIL PRES
EVEN O2
ODD O2
GEN (ALT)
OBD_DLC
BULKHEAD
PEDAL
ETC(THROTTLE)
GROUND 3
SHRINK TUBE


GROUND 2
GROUND 1
GROUND 4
V-SPEED
ECT
IGN FLYING LEAD IN LAYOUT
TO FUEL PUMP POWER
TO FAN FLYING LEAD
BUS BAR
BUS BAR 12VDC POWER IN
FREE TERMINAL
TO MIL


INJ CYL #1
INJ CYL #2
INJ CYL #3
INJ CYL #4
INJ CYL #5
INJ CYL #6
INJ CYL #7
INJ CYL #8
CAMSHAFT POSITION SENSOR
TMAP

Index

Common Fault Codes

Fault Code	Description	Root Cause
P0105	MAP Sensor Malfunction	Defective sensor/Vacuum leak/Faulty wiring
P0110	IAT Sensor Malfunction	Defective sensor/Dirty air filter/Faulty wiring
P0115	ECT Sensor Malfunction	Defective sensor/Faulty wiring/Low coolant/Air bubble in coolant
P0120	TPS Sensor Malfunction	Defective sensor/Faulty wiring/Dirty throttle body
P0135	Oxygen Sensor Malfunction	Defective sensor/Exhaust leak/ECT sensor/Faulty wiring
P0171	Fuel System Too Lean	Vacuum leak/TMAP sensor/Low fuel pressure
P0201,2,3,4,5,6,7,8	Defective Fuel Injectors	Corroder or plugged injector/Faulty wiring
P0301,2,3,4,5,6,7,8	Engine Cylinder Misfires	Worn spark plugs, ignition wires, ignition coil/Cam Sensor
P0325	Knock Sensor 1 Malfunction	Defective sensor/Faulty wiring
P0335	Crank Sensor Malfunction	Defective sensor/Damaged reluctor wheel/Faulty wiring
P0340	Camshaft Sensor Malfunction	Defective sensor/Damaged sensor ring/Faulty wiring

Replacement Sensors

Sensors	BPE Part Number	Common Part Number
Accelerator Pedal	BPP12250049	GM10379038
Camshaft Sensor	BPP18151014	GMC12591720
Coolant Sensor	BPP12250050	GM15326388
Crankshaft Sensor	BPP12250051	GM12585546
Fuel Injectors	BPP12150034	GM12576341
Fuel Rail Kit	BPP12131290	Contact BPE
Ignition Coils	BPP18151018	GMC19355500
Knock Sensor	BPP10150049	Contact BPE
O2 Sensors	BPP12150016	Contact BPE
Oil Pressure Sensor	BPP12250052	GMC12621234
Spark Plugs	BPP12150035	AC 41110
Throttle Body	BPP12191019	Contact BPE
TMAP Sensor	BPP18150015	Contact BPE
Wiring Harness	BPP12150011	Contact BPE

*Some store brand cross-references to these numbers may not be compatible with the engine, and you may need to contact BluePrint Engines for a replacement sensor.

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