



**LS1
Fuel Pressure
Sending Unit
Tutorial**

Andy Reyna

LS1

Fuel Pressure

Sending Unit

Tutorial

Copyright © 1998-2006 [EFILive Limited](#) and Andy Reyna (TAQuickness).
All rights reserved

First published
Aug 12, 2006

Revised

Never

Disclaimer:

The author of this tutorial is in no way responsible for what you do with this information. This tutorial has been written for informational purposes only. In other words, use at your own risk.

Credits:

From the author: It is not my intent to take credit for work that is not mine. The content of this write up is largely derived from personal experience and information found on the Internet. If it looks like you originally wrote any part of this, you probably did, and I thank you for sharing that information on the Internet.

Special thanks to: **Beer99C5**, **CamTom12**, **DrX**, and **EFILive**.

EFILive is a registered trademark of EFILive Limited.
AutoTap is a registered trademark of B&B Electronics Manufacturing Company.
Acrobat Reader is a registered trademark of Adobe Systems Incorporated.
Microsoft Windows is a registered trademark of Microsoft Corporation.
All other trademarks belong to their respective owners.

Contents

Before you begin.....	2
Install Sending Unit.....	3
Leak Check.....	4
General Wiring.....	5
Pin-Outs.....	6
FlashScan V1 Wiring	7
EGR Wiring.....	8
Configure Scan Tool	9
Verify Results.....	10

Before you begin

The test vehicles used while compiling this tutorial:

2000 Pontiac Firebird:

LS1 equipped, running EFILive Custom OS3

1999 Chevrolet Corvette:

LS1 equipped, running OEM OS

1. Please read the entire contents of this tutorial before performing any of the steps.

2. Upgrading to the latest release of the EFILive software will help ensure all features are available and appear as documented.

Upgrades may be downloaded, free of charge here:

http://www.efilive.com/downloads/downloads_7.html

3. This tutorial describes the steps necessary to install and configure Autometer's fuel pressure sending unit (pn 2246) and wire harness (pn 5223), on an OEM (stock) fuel rail.

4. A -4an to 1/8 NPT (female to female) fitting is required for the install. These fittings can be found in a number of speed shops and retail locations.

5. A Schrader valve removal tools is required.

6. A digital voltmeter is required.

7. A fire extinguisher, safety glasses, and non-absorbent gloves are highly recommended.

8. Do not smoke or work in areas that will ignite fuel.

9. If you are not comfortable working with your vehicles fuel system, please hire a professional mechanic to install the fuel pressure sending unit.

10. WORK SAFE! ! ! What's the point of doing all this work if you kill or injure yourself in the process!

Install Sending Unit

1. Disconnect negative battery cable.
2. Install -4an to 1/8 NPT fitting to sending unit (Teflon sealant, not tape, may be used).
3. Relieve fuel system pressure.
4. Remove Schrader valve from fuel rail.
5. Install sending unit and fitting to fuel rail (Teflon sealant, not tape, may be used).



Leak Check

1. Place a thick pad of paper towels around the sending unit.
2. Connect negative battery cable.
3. Turn the key to the on position (DO NOT START ENGINE).
4. Wait 5 seconds.
5. Turn key off.
6. Inspect paper towels for fuel.
7. If any leaks are found, correct them before proceeding.
8. Repeat this process 2 or 3 times. You do not want a fuel leak!



General Wiring

After verifying there are no fuel system leaks, decide how to bring the fuel pressure signal in. The simplest way is to wire directly into the FlashScan interface. Alternatively, the sending unit can be wired directly into the PCM via the EGR input. Vehicles that were not equipped with EGR from the factory can also utilize the EGR input with some additional wiring (See PCM pin-outs below).

The following information is common to all of the wiring installations:

The sending unit runs on +5vdc. Applying +12vdc to the sending unit will fry the unit and likely void the warranty. The use of a +5vdc regulator (available from electronic parts stores) or one of the PCM's +5vdc reference signals is highly recommended.

The sending unit wire harness (5223) has five wires (2 red, 2 black, 1 purple), and two ends (1 square, 1 round). Only one end and three wires will be used.

1. Connect the round end of the wire harness to the sending unit.
2. Cut the square end of the wire harness off.

If all steps were followed correctly, the wire harness will be connected to the sending unit with approximately 20 feet of red, black, and purple wiring left.

Pin-Outs

Sending unit wire harness pin-out:

Red = +5vdc

Black = Ground

Purple = 0-5vdc signal

1998 LS1 PCM EGR Pin-Out:

Red Connector:

Pin 62, Black, EGR Pintle Position Ground

Blue Connector:

Pin 9, Brown, EGR Pintle Position Sensor Signal

Pin 65, Grey, 5V Reference

1999+ LS1 PCM EGR Pin-Out:

Blue Connector:

Pin 41, Black, EGR Pintle Position Ground

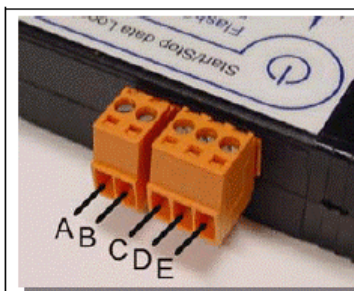
Pin 47, Grey, EGR Pintle Position Sensor 5V Reference

Pin 55, Brown, EGR Pintle Position Sensor Signal

FlashScan V1 Wiring

1. Route the **purple wire** from the sending unit wire harness to the FlashScan interface.
2. Connect the sending unit **purple wire** to terminal C or E on the FlashScan interface (see pin-out below).
3. Connect the sending unit **red wire** to +5vdc (either regulator or PCM EGR reference voltage).
4. Connect the sending unit **black wire** to chassis ground or PCM EGR ground.

FlashScan Pin-outs

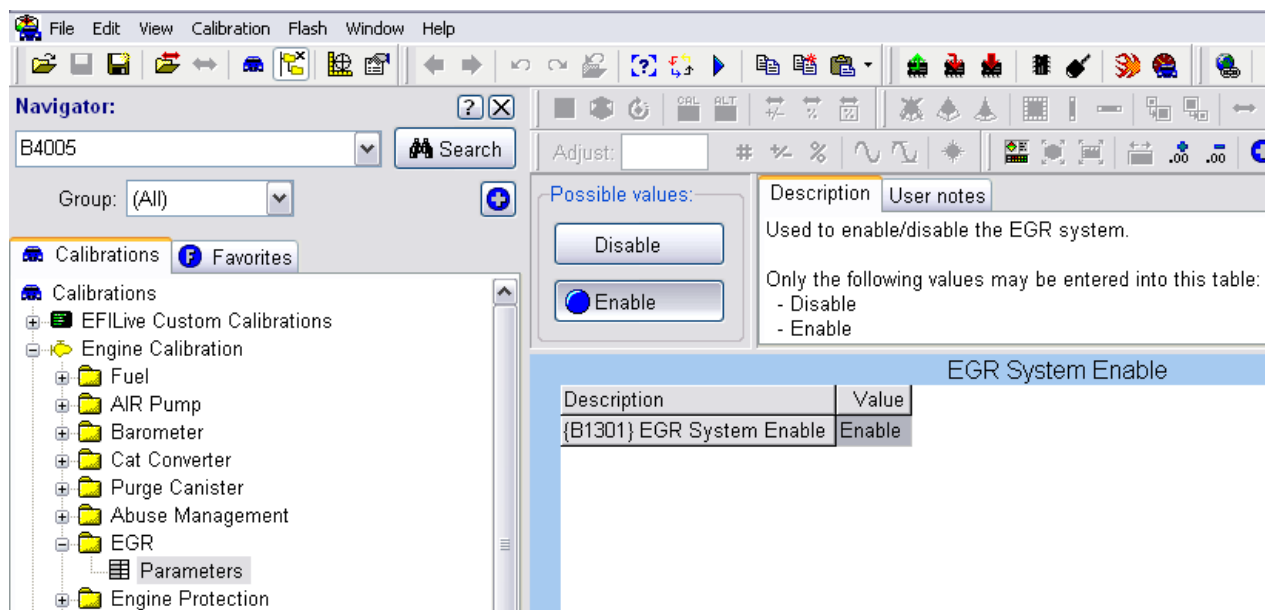


Pin	(PID)	Description
A	{EXT. EGT}	Alumel lead of type-k thermocouple
B		Chromel lead of type-k thermocouple
C	{EXT. AD2}	Analog voltage 0 to 4.8 volts only
D	-	Analog voltage common ground
E	{EXT. AD1}	Analog voltage 0 to 4.8 volts only

EGR Wiring

(All LS1 PCM's 1997+)

1. Turn the key to the on position – do not start engine.
2. Locate the EGR wire harness.
3. The EGR harness has two grey wires. Use a voltmeter to identify the grey wire with +5vdc. The other grey wire is ground for the EGR solenoid and will likely measure 0 volts.
4. Turn the key off.
5. Connect the sending unit **red wire** to the EGR +5vdc **grey wire**.
6. Connect the sending unit **black wire** to the EGR **black wire**.
7. Connect the sending unit **purple wire** to the EGR **brown wire**.
8. Open the tune tool and verify {B1301} is set to enable. Re-flash if necessary.



Vehicles with out EGR from the factory:

Most Corvettes, 2001+ vehicles were not equipped with the EGR system; however, the PCM still has provisions for the EGR. By enabling {B1301} and wiring the sending unit directly to the PCM (see PCM pin-outs on previous page), fuel pressure may be monitored via the EGR PID's in the scan tool.

Configure Scan Tool

Additional information on creating custom PID's can be found in the Scan Tool help.

1. Locate the file "calc_pids.txt", default directory: **My Documents\EFILive\V7\User Configuration**, and open with notepad.exe.
2. The following information in the box below needs to be added to calc_pids.txt:

```
# =====
# File details
# -----
# This section defines various details about the file format.
*FILE
#Parameter Value Description
#-----
VERSION 7.1.1 File version
DECSEP . Decimal separator used in this file

# =====
# Units
# -----
*UNITS
#Code System Abbr Description
#-----
PSI Imperial PSI "Pounds Per Square Inch"

# =====
# Add slot definitions here
# -----
#Units Low High Fmt Expression
#-----
*CLC-00-001
PSI 0.00 100.00 .2 "({xxx.xxx}*25)-12.5"

# =====
*PRN - Parameter Reference Numbers
# -----
#Code PRN SLOT Units System Description
#-----
CALC.FP F001 CLC-00-001 PSI Fuel "Fuel Pressure"
```

FlashScan connections **xxx.xxx** = EXT.AD1 or EXT.AD2

EGR connections **xxx.xxx** = GM.EGRS

Verify Results

Before verifying results, make one last visual inspection of the sending unit install. Verify there are no leaks and all electrical connections are solid.

1. Open the scan tool.
2. Select the PID tab (F8)
3. For FlashScan installations, select the following PID's
 - EXT.AD1
 - or
 - EXT.AD2
 - CALC.FP
4. For EGR Installations, select the following PID's
 - GM.EGRS
 - CALC.FP
5. Start the engine
6. Connect to the vehicle (Ctrl+F3)
7. Start Logging (F3)
8. Select the Data Tab (F9)

Stock fuel rail pressure is 58 PSI. Fuel rail pressure may vary with fuel system upgrades or degrading fuel system components.