Technical Support Bulletin

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DATE: 4-29-2009

SUBJECT: **GM Drive by Wire Throttle Body Cleaning Procedure and Relearn Procedures**

I have been receiving a lot of calls at the Tech Support Line about proper throttle body cleaning procedures on various vehicles. Please find the first in a series of Manufacturer's Recommended Procedures.

For the model year 2007, GM has 66 named vehicles, not including Isuzu, Saab, and Suzuki imports. There is no wonder there is confusion out there. While the cleaning procedure is pretty normal across the board with GM, there are 6 different relearn procedures listed, and a lot that require no relearn at all. Below is the procedure for cleaning. The following pages include a list by name of which procedures to use. This is a comprehensive list for the model year 2007. Older or newer vehicles could differ.

Throttle Body Cleaning

Important: Over extended time and mileage, deposits may accumulate on the back of the throttle valve plate. The source of the deposit is exhaust gas recirculation (EGR) gas. Typically these deposits pose no problem. Occasionally the deposit may accumulate to a point where perceived pedal effort or throttle valve movement is effected. This procedure should not be performed on vehicles with mileage under 80 450 km (50,000 mi).

1. Remove the air intake duct. Refer to Air Cleaner Inlet Duct Replacement .
   Caution: Turn OFF the ignition before inserting fingers into the throttle bore. Unexpected movement of the throttle blade could cause personal injury.
   Notice: Do not insert any tools into the throttle body bore in order to avoid damage to the throttle valve plate.
2. Inspect the throttle body bore and the throttle valve plate for deposits. You will need to open the throttle valve in order to inspect all surfaces.
   Notice: Do not use any solvent that contains Methyl Ethyl Ketone (MEK). This solvent may damage fuel system components.
3. Clean the throttle body bore and the throttle valve plate using a clean shop towel with ETech Chemicals ET110 Throttle Body Cleaner.
4. Install the air intake duct. Refer to Air Cleaner Inlet Duct Replacement.
5. Perform the Throttle Learn Procedure. Refer to Throttle Learn.

GM Relearn Procedure List

Car Name:	Carline 4th Digit	Truckline 5th Digit	Procedure	Notes:
Acadia		R/V	4	
Allure	W		No Procedure Listed	
Antara		C	No Procedure Listed	
Ascender		S/T	No Procedure Listed	
Aura	Z		4	
Avalanche		C/K	4	Updated by TSB 1
Aveo	S/T		1	
Barina	S/T		1	
Bas	Z		4	
Canyon		S/T	No Procedure Listed	
Captiva		C	No Procedure Listed	
Cobalt	A		4	
Colorado		S/T	No Procedure Listed	
Corvette	Y		4	
Corvette (early)	Y		3	
CTS	D		No Procedure Listed	
DTS	K		4	
Envoy		S/T	4	Updated by TSB 1
Epica	L/V		2	Updated by TSB 2
Equinox		L	4	
Escalade		C/K	4	Updated by TSB 1
Express		G/H	4	Updated by TSB 1
G3	S/T		1	
G5	A		4	
G6	Z		4	
Grand Prix	W		4	
HHR	A		4	
Hummer H2		N	4	Updated by TSB 1
Hummer H3		N	No Procedure Listed	
I-290		S/T	No Procedure Listed	
I-370		S/T	No Procedure Listed	
Impala	W		4	
Ion	A		4	
Lacrosse	W		No Procedure Listed	
Lucerne	H		4	
Malibu	Z		4	
Matiz	K/M		1	
Montana SV6		U/V/X	4	
Monte Carlo	W		4	
Optra	J		1	
Outlook		R/V	4	

GM Relearn Procedure List (continued)

Car Name:	Carline 4th Digit	Truckline 5th Digit	Procedure	Notes:
Rainier		S/T	No Procedure Listed	
Relay	U		4	
Rendevous		A/B	No Procedure Listed	
Saab 97x		S/T	4	Updated by TSB 1
Savana		G/H	4	Updated by TSB 1
Sierra		C/K	4	Updated by TSB 1
Silverado		C/K	4	Updated by TSB 1
Sky	M		4	
Solstice	M		4	
Spark	K/M		1	
SRX	E		4	
STS	D		4	
Suburban		C/K	4	Updated by TSB 1
Tahoe		C/K	4	Updated by TSB 1
Terrain		C	No Procedure Listed	
Terraza		U/V/X	4	
Torrent		L	4	
Trail Blazer		S/T	4	Updated by TSB 1
Uplander		U/V/X	4	
Vibe	S		No Procedure Listed	
Viva	J		1	
Vivant	U		1	
Vue	Z		4	
Wave	S/T		1	
XLR	Y		4	
Yukon		C/K	4	Updated by TSB 1

Procedure 1 Throttle/Idle Learn

The Idle Learn Procedure listed below must be performed whenever the following occurs:

- The throttle body assembly is replaced
- The throttle body is cleaned
- The engine control module (ECM) is replaced
- The idle air control valve (IAC) is replaced
- Power disconnection (battery cable, ECM fuse, etc.) (Delphi ECM only)

1. Turn the ignition ON.
2. Turn the ignition OFF for 15 seconds.
3. Turn the ignition ON for 5 seconds.
4. Turn the ignition OFF for 15 seconds.
5. Start the engine in park/neutral.
6. Allow the engine to run until the engine coolant temperature is greater than 85°C (185°F).
7. Turn the A/C ON for 10 seconds, if equipped.
8. If the vehicle is equipped with an automatic transaxle, apply the parking brake. While pressing the brake pedal, place the transaxle in drive (D) for 10 seconds.
9. Turn the A/C OFF for 10 seconds, if equipped.
10. If the vehicle is equipped with an automatic transaxle, while pressing the brake pedal, place the transaxle in park/neutral.
11. Turn the ignition OFF. The idle learn procedure is complete.

Procedure 2 Throttle/Idle Learn

The Procedure listed below needs to be performed whenever the following occurs:

- The throttle body assembly is replaced
- The throttle body is cleaned
- The ECM is replaced or programmed

1. Turn OFF all accessories.
2. Ignition ON, engine OFF, clear the DTCs with a scan tool.
   Important: The ECM must be reset with the ignition ON and the engine OFF or a stalling condition may occur.
3. Reset the ECM learned values with a scan tool.
4. Turn OFF the ignition for 20 seconds.
5. Turn ON the ignition for 10 seconds.
6. Turn OFF the ignition for 20 seconds.
7. Turn ON the ignition for 10 seconds.
8. Start the engine in park/neutral.
9. Turn OFF the ignition. The idle learn procedure is complete.

Procedure 3 Throttle/Idle Learn

Anytime the PCM or the battery is disconnected, the PCM looses power, or the PCM is reprogrammed, the PCM's learned idle position is lost. The engine idle is unstable when the learned idle position is lost.

Perform the following procedure in order to return the learned idle to the correct position:

Automatic Transmission

1. Turn OFF the ignition.
2. Restore the PCM battery feed.
3. Turn OFF the A/C controls.
4. Set the parking brake and block the drive wheels.
5. Start the engine.
6. Allow the engine coolant temperature to reach 80°C (176°F)
7. Shift the transmission selector into the drive range.
8. Allow the engine to idle for 5 minutes.
9. Turn ON the A/C controls.
10. Allow the engine to idle for 5 minutes.
11. Shift the transmission selector into the park range.
12. Allow the engine to idle for 5 minutes.
13. Turn OFF the A/C controls.
14. Allow the engine to idle for 5 minutes.
15. Turn OFF the engine for 30 seconds.

Manual Transmission

1. Turn OFF the ignition.
2. Restore the PCM battery feed.
3. Turn OFF the A/C controls.
4. Set the parking brake and block the drive wheels.
5. Transmission in neutral.
6. Start the engine.
7. Allow the engine coolant temperature to reach 80°C (176°F)
8. Turn ON the A/C controls.
9. Allow the engine to idle for 5 minutes.
10. Turn OFF the A/C controls.
11. Allow the engine to idle for 5 minutes.
12. Turn OFF the engine for 30 seconds.

Procedure 4 Throttle/Idle Learn

Description

The engine control module (ECM) learns the idle position of the throttle plate to ensure the correct idle. Anytime the throttle body is cleaned or replaced, the ECM must learn the new throttle position. The idle may be unstable or a DTC may set if the throttle position is not learned.

Conditions for Running the Throttle Learn Procedure

- DTCs P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0506, and P0507 are not set.
- The engine speed is between 450-4,000 RPM.
- The manifold absolute pressure (MAP) is greater than 5 kPa.
- The mass air flow (MAF) is greater than 2 g/s.
- The ignition 1 voltage is greater than 10 volts.

Throttle Learn

Important: Do NOT perform this procedure if DTCs are set. Refer to Diagnostic Trouble Code (DTC) List - Vehicle.

1. Start and idle the engine in PARK for 3 minutes.
2. With a scan tool, monitor desired and actual RPM.
3. The ECM will start to learn the new idle cells and Desired RPM should start to decrease.
4. Ignition OFF for 60 seconds.
5. Start and idle the engine in PARK for 3 minutes.
6. After the 3 minute run time the engine should be idling normal.

   Important: During the drive cycle the check engine light may come on with idle speed DTCs. If idle speed codes are set, clear codes so the ECM can continue to learn.

   ⇒ If the engine idle speed has not been learned the vehicle will need to be driven at speeds above 70 km/h (44 mph) with several decelerations and extended idles.

7. After the drive cycle, the engine should be idling normally.

   ⇒ If the engine idle speed has not been learned, turn OFF the ignition for 60 seconds and repeat step 6.

8. Once the engine speed has returned to normal, clear DTCs.

TSB 1 - #PIP4578: Incorrect Idle DTC P0507 And/Or Tip In Hesitation After Throttle Body Or ECM Related Repairs - keywords P0121 - (Feb 17, 2009)

Subject: Incorrect Idle, DTC P0507, and/or Tip In Hesitation After Throttle Body or ECM Related Repairs

Models: 2007-2008 Cadillac Escalade
2006-2008 Chevrolet Trail Blazer
2007-2008 Chevrolet Avalanche, Express, Silverado, Suburban, Tahoe
2006-2008 GMC Envoy
2007-2008 GMC Savana, Sierra, Yukon
2007-2008 Hummer H2
2006-2008 Saab 97x
with 4.8L, 5.3L, 6.0L, 6.2L Gen IV V8 Engine
(RPO Codes L76, L92, L9H, LC9, LFA, LH6, LMF, LMG, LS2, LY2, LY5, LY6)

Condition/Concern:

As carbon builds up in the throttle body, the ECM/PCM learns to compensate for it so it can control the throttle plate accordingly. If the throttle body is cleaned or replaced for another concern, such as a P0121 DTC, without performing a Tech 2 idle learn reset, a high idle and/or P0507 DTC may be induced. In a similar fashion, if there is carbon build up in the throttle body and the ECM/PCM is replaced/reprogrammed without performing the Throttle/Idle Learn procedure in SI, an idle surge, deceleration RPM surge, and/or tip-in hesitation may be induced.

Recommendation/Instructions:

If SI diagnosis does not isolate the cause of this concern, perform the following steps as necessary:

1. If a driveability concern is experienced right after throttle body cleaning/replacement and SI diagnosis does not isolate the cause of it, perform step 1a.-1d., re-evaluate the concern after each step, and do not continue to the next step if a step repairs the vehicle:
   - a. Perform the Tech 2 "reset idle learn/idle learn reset" procedure to erase/reset the learned throttle angle. Depending on the vehicle, this function is normally found in the ECM menu for Module Set Up or Special Functions/TAC System.
   - b. Disconnect the ECM for 15 minutes and reconnect it.
   - c. Reprogram the ECM with the latest calibrations by using the "replace and reprogram ECM/PCM" option in TIS2Web (may be the same calibrations in some instances).
   - d. If SI diagnosis does not isolate the cause of this concern and it is not resolved after performing the steps above, replace the ECM.
2. If a driveability concern is experienced right after ECM reprogramming/replacement and SI diagnosis does not isolate the cause of it, perform each step below, re-evaluate the concern after each step, and do not continue to the next step if a step repairs the vehicle:
   - a. Perform the Throttle/Idle Learn drive cycle described in SI.
   - b. If SI does not contain a Throttle/Idle Learn drive cycle for the vehicle you are working on, clean the throttle body and perform the Tech 2 "reset idle learn/idle learn reset" procedure to erase/reset the learned throttle angle. Depending on the vehicle, this function is normally found in the ECM menu for Module Set Up or Special Functions/TAC System.
3. If you have an open TAC case for this concern, please close the TAC case accordingly.
   Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.

TSB 2 - #06-06-04-032A: Info - Electronic Throttle Control (ETC) Adaptive Value Reset (Idle Learn) Procedure - (Jul 18, 2006)

Subject: Electronic Throttle Control (ETC) Adaptive Value Reset (Idle Learn) Procedure
Models: 2006 Chevrolet Epica with 2.5L L6 (VIN L - RPO LBK) Engine (Canada and Export Only)
2007 Chevrolet Epica with 2.0L or 2.5L L6 Engine (Export Only)

This bulletin is being revised to delete the requirement for the engine to be fully cooled down before performing this procedure. Please discard Corporate Bulletin Number 06-06-04-032 (Section 06 - Engine).

The purpose of this bulletin is to inform dealers of a required adaptive value reset procedure (also referred to as the "idle learn procedure") for the electronic throttle control (ETC) system. If the adaptive value reset procedure is not performed when necessary, DTC P2119 (Throttle Closed Position Performance) may set and engine RPM may fluctuate at idle.
The adaptive value reset procedure must be performed after completing any of the following procedures:

- ECM reprogramming
- ECM replacement
- ETC throttle body replacement
- Cleaning/removal of carbon deposits on the throttle body

Adaptive Value Reset (Idle Learn) Procedure

Important: Reset the adaptive values and clear DTCs with the ignition ON with the engine OFF. If the adaptive values are reset or DTCs are cleared while the engine is running, the engine may stall.

1. Turn the ignition ON with the engine OFF.
2. If any DTCs are stored in the ECM, clear all DTCs using a scan tool.
3. Reset the adaptive values using a scan tool.
4. Turn the ignition OFF for 20 seconds.
5. Turn the ignition ON for 10 seconds.
6. Turn the ignition OFF for 20 seconds.
7. Turn the ignition ON for 10 seconds.
8. Start the engine in park/neutral position.
9. Turn the ignition OFF. The procedure is complete.