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#03-06-04-030H: Various Driveability Symptoms Due to Clogged Fuel Injectors, MIL/SES DTCs P0171, P0172, P0174, P0300, P1174, P1175 (Clean Fuel Injectors and/or Perform Injector Test With AFIT CH-47976) - (Aug 28, 2012)

Subject: Various Driveability Symptoms Due to Clogged Fuel Injectors, MIL/SES DTCs P0171, P0172, P0174, P0300, P1174, P1175 (Clean Fuel Injectors and/or Perform Injector Test With AFIT CH-47976)

Models: 2005-2013 GM Passenger Cars and Light Duty Trucks

Equipped with Engine RPOs listed in the Table Below and MULTEC® 2 Fuel Injectors

Attention: GM does not support cleaning injectors on any engines that are not listed in this bulletin. Engines other than the ones listed in this bulletin that diagnosis indicates having restricted injectors should have those injectors replaced.

This bulletin is being revised to update the model years to 2013 and to update Applicable Engine RPOs table. Please discard Corporate Bulletin Number 03-06-04-030G (Section 06 – Engine/Propulsion System).

Applicable Engine RPOs

Model Year	Engine RPO
2005	LH6, LS2, LQ4, LM7, LR4, L33, LQ9, L31, LU3, LL8, LK5, L52, L18
2006	LH6, LS2, LQ4, LM7, LR4, L33, LQ9, L31, LU3, LL8, LK5, L52, L18
2007	LH6, LS2, LQ4, LM7, LR4, LY2, LY5, L76, L92, LU3, LLR, LLV, LL8, L18
2008	LH8, LS2, L92, LY2, LY5, LY6, LH6, LFA, LU3, L18
2009	LH8, LS2, LH6, LY2, LFA, LY5, LU3, L18
2010	LU3
2011	LU3
2012	LU3
2013	LU3

Condition

Some customers may comment on any of the following various driveability symptoms:

- Extended Crank Time
- Hard to Start
- MIL/SES Illuminated with DTCs
- Hesitation
- Lack of Power
- Surge or Chuggle
- Rough Idle
- Light or Intermittent Misfire

Cause

Due to various factors, the fuel injectors may become restricted. Extensive testing has demonstrated that fuel related issues are the cause of clogged injectors. At this point, no specific fuel, fuel constituent, or engine condition has been identified as causing the restriction. The restriction causes the engine to operate at a lean air fuel ratio. This may either trigger the MIL to illuminate or the engine to develop various driveability symptoms.

Correction

Fuel injector restrictions, deposits can be cleaned on the vehicle using the following procedure. Under NO circumstances should this procedure be modified, changed or shortened. As a long term solution, and to prevent reoccurrence, customers should be encouraged to use ***Top Tier Detergent Gasoline***. For further information on Top Tier detergent gasoline and fuel retailers, please refer to the latest version of the following Corporate Bulletin Numbers:

- 04-06-04-047 (U.S. Only)
- 05-06-04-022 (Canada ONLY)

Notice: GM UPPER ENGINE AND FUEL INJECTOR CLEANER is the only injector cleaning agent approved for use with General Motors fuel system components. Other injector cleaners may cause damage to plastics, plated metals or bearings. General Motors has completed extensive laboratory testing of GM Upper Engine and Fuel Injector Cleaner, and can assure its compatibility with General Motors fuel system components, as long as the cleaning procedure is followed correctly.

Injector Cleaning Procedure

The following tools, or their equivalent, are required:

- CH-47976 Active Fuel Injector Tester (AFIT)
- J 35800-A Fuel Injector Cleaner
- J 37287 Fuel Line Shut-off Adapter
- J 42964 Fuel Line Shut-off Adapter
- J 42873 Fuel Line Shut-off Adapter
- * One bottle of GM Upper Engine and Fuel Injector Cleaner, P/N 88861803 (in Canada, P/N 88861804)
- * One bottle of GM Fuel System Treatment Plus, P/N 88861013 (in Canada, P/N 88861012)

Active Fuel Injector Tester (AFIT- CH-47976)

Some dealers may not have an Active Fuel Injector Tester (AFIT- CH-47976). Dealers can contact 1-800-GM-TOOLS (1-800-468-6657) to order an AFIT- CH-47976. Dealers still can test the fuel injectors without an AFIT. Refer to Fuel Injector Diagnosis (w/ J 39021 or Tech 2®) in SI.

Important: As mentioned in the AFIT User Guide, vehicles that are not listed in the AFIT menu can still be tested with the AFIT. Depending on the model, it may be possible to enter the previous model year and proceed with testing using the DLC connection. If this is not possible on the model that you are working on, it will be necessary to use the direct connection method outlined in the AFIT User Guide (See Pages 17-31).

General Motors recommends that the Active Fuel Injector Tester (AFIT) be used in testing fuel injectors. If the SI diagnostics do not isolate a cause for this concern, use the Active Fuel Injector Tester (AFIT - CH-47976) to perform an "Injector Test" as outlined in the AFIT User Guide.

The AFIT "Injector Test" measures the flow characteristics of all fuel injectors, which is more precise when compared with the standard Tech 2® fuel injector balance test. As a result, the

AFIT is more likely to isolate the cause of a P1174 DTC (for example: if it is being caused by a fuel injector concern).

The CH-47976 (Active Fuel Injector Tester - AFIT) can also be used to measure fuel pressure and fuel system leak down. Also, as mentioned in the P1174 SI diagnosis, if the misfire current counters or misfire graph indicate any misfires, it may be an indicator of the cylinder that is causing the concern. Refer to Fuel Injector Diagnosis (w/CH-47976) in SI for additional instructions.

Training (U.S.)

To access the training video on AFIT, take the following path at the GM Training Website:

1. After logging into the gmtraining.com website, choose the link on the left side of the page titled "web video library."
2. Then choose "technical."
3. Next, within the search box, type in September course number "10206.09D.
4. This will bring up a link with this course. Scroll through to choose "feature topic."
5. At this point, the seminar can be chosen to view or the video related to the AFIT.

Additional training is available from the gmtraining.com website. Please see TECHassist 16044.18T2 Active Fuel Injector Tester and also see 16044.14D1 GM Powertrain Performance for more information on GM Upper Engine and Fuel Injector Cleaner.

Also, dealers can now download software updates for the AFIT at GM Dealer Equipment (GMDE) on the web at http://www.gmde.net/AFIT.cfm.

Training (Canada)

To access the training video on AFIT, take the following path at the GMPro LMS Training Website:

1. After logging into the <www.gmprocanada.com> website, choose the link on the left side of the page titled "Catalog."
2. Then choose "Catalog Search."
3. Next, within the search box, Select Course Number - Contains - "T" then select search.
4. This will bring up a list of TECHassist courses. Scroll through to choose "Active Fuel Injector Tester" and select "View."
5. At this point, a new window will open and the program can be Launched.

Also, dealers can now download software updates for the AFIT at GM Dealer Equipment (GMDE) on the web at http://www.gmde.net/softwareupdates/.

Techlink

Additional information can be found on AFIT (June 2006 Edition) and GM Upper Engine and Fuel Injector Cleaner (November 2006 Edition) in Techlink. To access the articles, take the following path:

1. Go to GM GlobalConnect.
2. Click on the Service Tab in GM GlobalConnect (in Canada, click Technician Resources in the Service Library of GM GlobalConnect).
3. Click on the GM Techlink Hyperlink.
4. Click on the Archives Hyperlink at GM Techlink.

- Click on 06-2006 in the Archives Section and Click on the Active Fuel Injector Tester Link in the June 2006 Techlink Article.
- Click on 11–2006 in the Archives Section and Click on the GM Top Engine Cleaner Replaced Link in the November 2006 Techlink Article.
- Click on 7-2010 in the Archives Section and Click on AFIT Adapter for Direct Injection Engines and Duramax Diesels in the July 2010 Techlink article.

Injector Cleaning Procedure

Notice: GM UPPER ENGINE AND FUEL INJECTOR CLEANER is the only injector cleaning agent recommended. DO NOT USE OTHER CLEANING AGENTS AS THEY MAY CONTAIN METHANOL, WHICH CAN DAMAGE FUEL SYSTEM COMPONENTS. Under NO circumstances should the GM Upper Engine and Fuel Injector Cleaner be added to the vehicle fuel tank.Do not exceed the recommended cleaning solution concentration. Testing has demonstrated that exceeding the

recommended cleaning solution concentration does not improve the effectiveness of this procedure.

Important: Vehicles with less than 160 km (100 mi) on the odometer should not have the injectors cleaned. These vehicles should have any out of specification injectors replaced.

1. For 4, 5 and 6 cylinder engines, empty two of the 30 ml (1 oz) reservoirs of the GM Upper Engine and Fuel Injector Cleaner container into the J 35800-A – Injector Cleaning Tank then add 420 ml (14 oz) of regular unleaded gasoline. If you are using any other brand of cleaning tank, you will need a total of 60 ml (2 oz) mixed with 420 ml (14 oz) of regular unleaded gasoline.
2. For 8 cylinder engines, empty two of the 30 ml (1 oz) reservoirs of the GM Upper Engine and Fuel Injector Cleaner container into the J 35800-A – Injector Cleaning Tank then add 420 ml (14 oz) of regular unleaded gasoline. If you are using any other brand of cleaning tank, you will need a total of 60 ml (2 oz) of Upper Engine and Fuel Injector Cleaner mixed with 420 ml (14 oz) of regular unleaded gasoline. ***This procedure will need to be repeated for a second time for an 8 cylinder engine (8 cylinder engines receive 960 ml total fluid – 120 ml (4 oz) of Upper Engine and Fuel Injector Cleaner and 840 ml (28 oz) of gasoline.***
3. Be sure to follow all additional instructions provided with the tool.
4. Electrically disable the vehicle fuel pump by either removing the fuel pump fuse or the fuel pump relay and disconnecting the oil pressure switch connector, if equipped.
5. Turn the ignition to the OFF position.
6. Relieve fuel pressure and disconnect the fuel feed and return lines at the fuel rail. Plug the fuel feed and return lines coming off the fuel rail with J 37287, J 42873 or J 42964 as appropriate for the fuel system.
7. Connect the J 35800-A to the vehicle fuel rail.
8. Pressurize the J 35800-A to 510 kPa (75 psi).
9. Start and idle the engine until it stalls, due to lack of fuel. This should take approximately 15-20 minutes.
10. Turn the ignition to the OFF position.
11. Disconnect the J 35800-A from the fuel rail.
12. Reconnect the vehicle fuel pump relay and oil pressure switch connector, if equipped.
13. Remove the J 37287, J 42873 or J 42964 and reconnect the vehicle fuel feed and return lines.
14. Start and idle the vehicle for an additional two minutes to ensure residual injector cleaner is flushed from the fuel rail and fuel lines.
15. Pour the entire contents of ***GM Fuel System Treatment Plus (P/N 88861013 [in Canada, P/N 88861012])*** into the tank and advise the customer to fill the tank.
16. Review the benefits of using Top Tier Detergent gasoline with the customer and recommend that they add a bottle of ***GM Fuel System Treatment Plus*** to the fuel tank at every oil change. Regular use of GM Fuel System Treatment Plus should keep the customer from having to repeat the injector cleaning procedure.
17. Road test the vehicle to verify that the customer concern has been corrected.

Parts Information

Part Number	Description	Qty
88861803	GM Upper Engine and Fuel Injector Cleaner 473 ml (16 oz) Container (U.S.)	1*
88861804	GM Upper Engine and Fuel Injector Cleaner 473 ml Container (Canada)	1
88861013	Fuel System Treatment Plus 591 ml (20 oz) Container (U.S.)	1
88861012	Fuel System Treatment Plus 591 ml Container (Canada)	1

* Only 1/8 of the cost may be claimed for 4 and 6 cylinder engines and 1/4 of the cost for 8 cylinder engines.

Warranty Information

For vehicles repaired under warranty, use:

Labor Operation	Description	Labor Time
J5645*	***Cleaning Injector:***	
	4 Cylinder Engine	0.8 hr
	5 Cylinder Engine	0.7 hr
	6 Cylinder Engine	0.7 hr
	8 Cylinder Engine	0.9 hr
Add**	Diagnostic Time	0.0–0.3 hr

* This labor operation is for bulletin use only. It will not be published in the Labor Time Guide.

**A total diagnostic time equal to the time allowed for cleaning, J5645, may be claimed for performing the injector diagnosis procedure.