NUMBER: 09-010-06

GROUP: Engine

DATE: September 16, 2006

THIS BULLETIN SUPERSEDES TECHNICAL SERVICE BULLETIN 09-005-05, DATED DECEMBER 2, 2005, WHICH SHOULD BE REMOVED FROM YOUR FILES. THIS IS A COMPLETE REVISION AND NO ASTERISKS HAVE BEEN USED TO HIGHLIGHT REVISIONS.

SUBJECT:
Multiple Cylinder Misfire Or Rough Idle

OVERVIEW:
This bulletin involves rotating all engine exhaust valves, replacing the valve spring retainer locks with a new design to increase valve rotation at lower RPM, inspecting/replacing the MAP sensor (as necessary), and decarbonizing the combustion chamber.

MODELS:

2004 - 2006	(CS)	Pacifica
2005 - 2006	(LX)	Chrysler 300/Magnum/Charger

NOTE: This bulletin applies to CS models built after February 1, 2004 (MDH 0201XX) equipped with a 3.5L engine (Sales Code EGN).

NOTE: This bulletin applies to LX models equipped with a 3.5L engine (sales code EGG) except 2006 vehicles equipped with California Emissions (sales codes NAE) built on or before May 2, 2006 (MDH 0502XX). See Technical Service Bulletin 18-016-06 dated May 4, 2006 for more information..

SYMPTOM/CONDITION:
The customer may experience occasional engine misfire (rough running engine) during certain vehicle operating conditions.

In addition, MIL illumination may also have occurred due to Diagnostic Trouble Code (DTC) P0300 - Multiple Cylinder Misfire. Various single cylinder misfire DTC's may also be present. If the frequency of misfire is high, the Powertrain Control Module (PCM) may place the engine in “Limp-In” mode.

The misfire condition may be caused by one or more engine exhaust valves that are slow to close due to a build up of carbon on the valve stem.

DIAGNOSIS:

1. This condition may occur when the engine is not allowed to run at engine RPM's that are greater than 3,500 RPM. At 5,000 RPM or higher the engine exhaust valves will rotate if not impeded by high carbon deposits. Low engine RPM's and high carbon deposits are associated with short trip driving where the engine is not allowed to fully warm to normal engine operating temperatures. Cold ambient temperatures will increase engine warm-up time and increase the likelihood of carbon deposit build-up on the stem of the engine exhaust valve. Fuel detergent quality may also contribute to the condition; the customer may want to try a different brand of fuel.
2. Verify that the engine misfire condition is not caused by faulty engine mechanical or electrical components.
3. If the engine mechanical and electrical systems are operating properly perform the Repair Procedure.

PARTS REQUIRED:

Qty.	Part No.	Description
1	05174566AA	Premium Fuel System Cleaning Kit Kit Contents: 1 - 11 oz Premium Fuel System Cleaner 1 - 11 oz. Combustion Chamber Cleaner 1 - 6 oz. Premium Air Intake Cleaner - **DO NOT USE AEROSOL FOR THIS SERVICE ACTION**
1	05183546AA	Combustion Clean
24	53022277AA	Lock, Valve Spring Retainer
AR (1)	05033310AC	Sensor, MAP (LX Models)
AR (1)	04896003AB	Sensor, MAP (CS Models)

SPECIAL TOOLS/EQUIPMENT REQUIRED:

All Vehicles

MD 998772A	Valve Spring Compressor
6527	Valve Spring Adapter
NPN	Battery Charger
NPN	Compression Tester Spark Plug Adapter
WN-04010	Wynn’s Enviropurge Fuel Injector Cleaning Apparatus and Adaptors available through teamPSE

LX Vehicles

CH9401	StarSCAN Tool
CH9404	StarSCAN Vehicle Cable
CH9409	StarSCAN Documentation Kit

CS Vehicles

CH2002	General Purpose Interface Bus Cable Assembly
CH6000A	Scan Tool (DRBIII®)
CH7000A/7001A	J1962 Cable with red DRBIII® connector

REPAIR PROCEDURE:

VALVE ROTATION:

1. Relieve the fuel pressure. Refer to the detailed service information available in TechCONNECT under: Service Info > 14-Fuel System > Fuel Delivery > Standard Procedure > Fuel System Pressure Release Procedure.
2. Remove upper intake manifold. Refer to the detailed service information available in TechCONNECT under: Service Info > 9 - Engine > Manifolds > Intake Manifold > Removal.
3. Remove cylinder head cover(s). Refer to the detailed service information available in TechCONNECT under: Service Info > 9 - Engine > Cylinder Head > Cylinder Head Cover(s) > Removal.
4. Remove rocker arm and shaft assembly. Refer to the detailed service information available in TechCONNECT under: Service Info > 9 - Engine > Cylinder Head > Rocker Arm / Adjuster Assembly > Removal).
5. Clean and mark the tip of each exhaust valve stem at the 12 O'clock position with a paint marker. The paint mark will be used later to assist with determining the amount of valve rotation.
6. Remove the spark plugs.
7. Rotate the crankshaft clockwise, until the number 1 piston is at Top Dead Center (TDC) on the compression stroke.
8. Install the compression tester spark plug adapter in cylinder #1 spark plug hole. With air hose attached to spark plug adapter, apply 620.5 to 689 kPa (90 to 100 psi) air pressure. This is to hold valves into place while servicing components.
9. Using Tool MD 998772A (1) with adapter 6527 (4) or equivalent, **slightly compress** the exhaust valve spring to release tension against the valve and valve spring retainer (Fig. 1).
10. Remove the valve spring retainer locks and discard the locks.

NOTE: It is important that the valve rotation section of this repair procedure be performed.

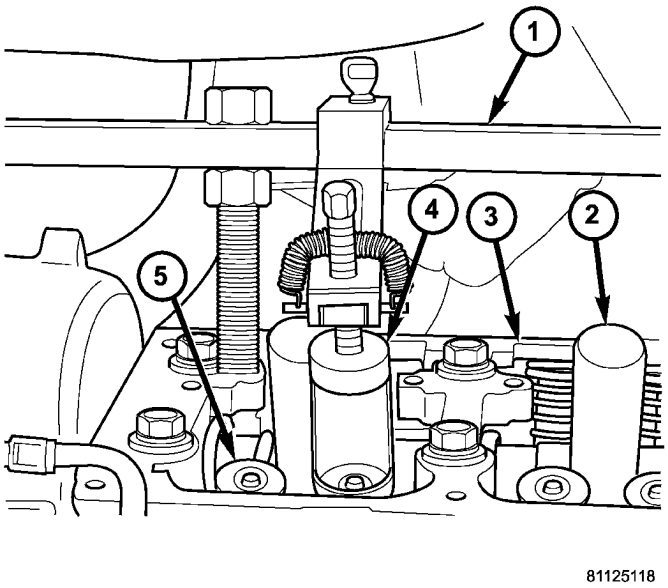

Fig. 1 VALVE SPRING COMPRESSION

1 - MD 998772A
2 - SPARK PLUG TUBES
3 - CYLINDER HEAD
4 - 6527 - ADAPTOR
5 - VALVE SPRING RETAINER

CAUTION: Only grab the valve stem tip being careful not to cause damage.

11. Using **needle nose pliers grab the tip of the valve stem** and rotate the exhaust valve 90° (move the mark to the 3 O'clock position).
12. Install two new valve spring retainer locks, p/n 53022277AA.
13. After installing locks, release tension on valve spring and verify proper installation.
14. Remove Special Tool MD 998772A (1) and spark plug adapter tool.
15. Repeat Step #7 through Step #14 on the remaining 5 cylinders using the firing sequence 1-2-3-4-5-6. **Make sure the piston is at TDC in each cylinder of the exhaust valve spring retainer lock that is being removed.** When all the exhaust valves have been rotated 90° and all the exhaust valve spring retainer locks have been replaced, proceed to the next step.
16. Install rocker arm and shaft assembly, refer to the service information available in TechCONNECT group 9 - Engine/Cylinder Head/Rocker Arm / Adjuster assembly - Installation.
17. Install cylinder head cover(s), refer to the service information available in TechCONNECT group 9 - Engine/Cylinder Head/Cylinder Head Cover(s) - Installation.
18. Install upper intake manifold, refer to the service information available in TechCONNECT group 9 - Engine/Manifolds/Intake Manifold - Installation. When complete, proceed to MAP Sensor Inspection.

MAP SENSOR INSPECTION

1. Inspect the MAP sensor (Fig. 2) for LX models or (Fig. 3) for CS models.
   a. If the MAP sensor is the new style, no further action is necessary for the MAP sensor. Proceed to Decarboning Combustion Chamber and Valves.
   b. If the MAP sensor is the old style, proceed to the next step.

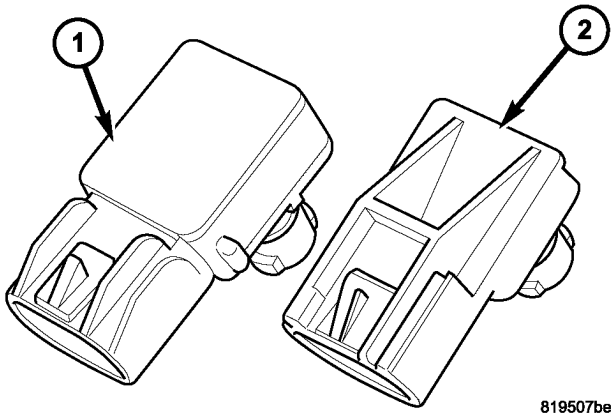

Fig. 2 LX MODELS - MAP SENSOR

1 - NEW STYLE SENSOR (p/n 05033310AC)

2 - OLD STYLE SENSOR

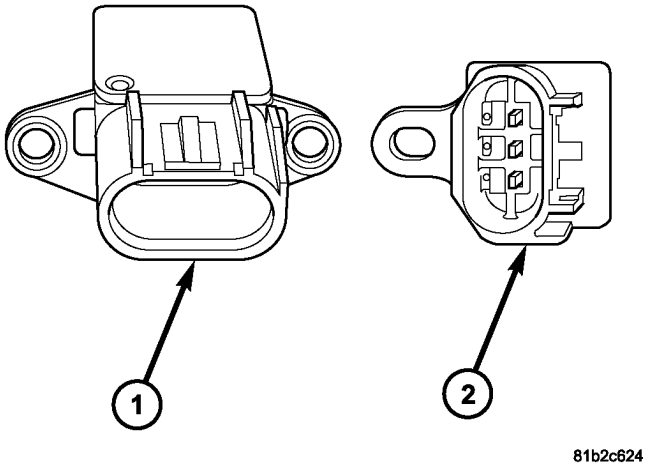

Fig. 3 CS MODELS - MAP SENSOR

1 - NEW STYLE SENSOR (p/n 04896003AB)

2 - OLD STYLE SENSOR

2. Replace the MAP sensor with p/n 05033310AC for LX models or p/n 04896003AB for CS models. If the vehicle is a CS model, be sure the new sensor opening is facing a downward direction when installed and only use one fastener. Refer to the detailed service information available in TechCONNECT, under: Service Info > 14-Fuel System > Fuel Injection > MAP Sensor > Removal and Installation. When complete, proceed to Decarboning Combustion Chamber and Valves.

DECARBONING COMBUSTION CHAMBER AND VALVES:

CAUTION: Do not use the Premium Air Intake Cleaner provided with kit 05174566AA for this service action.

NOTE: Use both fuel tank additives.

1. Pour the “Premium Fuel System Cleaner” from kit p/n 05174566AA, and “Combustion Clean” p/n 05183546AA, into a **FULL** fuel tank.
2. Start the vehicle engine and allow the engine to reach normal operating temperature.
3. Disable the fuel pump by removing the fuel pump relay
4. Disconnect the fuel supply line quick disconnect fitting from the fuel rail.
5. Install the appropriate adapter, either #31814 or #31815. Be sure to engage the adapter completely (push until a "click" is noticed).
6. Pour the “Premium Combustion Chamber Cleaner” from kit p/n 05174566AA, into the cleaning canister.
7. Suspend the fuel injector cleaning apparatus under the hood. The regulator knob must be fully counterclockwise to the OFF position. Connect the cleaning apparatus service hose to the supply adapter.
8. Turn the regulator knob clockwise to the recommended cleaning pressure (58 psi). Be sure there are no leaks before starting the engine.
9. Start the engine and run at normal idle (or fast idle, 1200- 1500 rpm, to shorten service time) until the product has been used up and the engine stalls.
10. When the engine stalls, turn the ignition off.
11. Disconnect the cleaning apparatus and adapter.
12. Reconnect fuel line and the fuel pump relay.
13. Turn ignition key to the "ON" position to energize the fuel pump. Check for leaks. Start the engine and run for at least 2 minutes to clear the fuel system of any residual product.
14. Using the DRBIII® or the StarSCAN erase any engine DTC's.

Road Test:

1. In a safe vehicle operating location that will allow the vehicle to be driven safely and at the posted speed limit, accelerate the vehicle until the engine reaches 4500 RPM.
2. Hold the engine speed at this RPM for 15 seconds.
3. Slow down and in a safe location pull to the side of the road. Allow the engine to idle for five seconds.
4. Repeat steps 1 through 3 five more times.

POLICY:

Reimbursable within the provisions of the warranty.

TIME ALLOWANCE:

Labor Operation No:	Description	Amount
09-95-01-94	Exhaust valve rotation, replace valve spring retaining lock, inspect and replace MAP sensor if necessary. Perform fuel system cleaning. (A)	3.8 Hrs. LX Vehicles
09-95-01-95	Exhaust Valve Rotation, replace valve spring retaining lock, inspect and replace MAP sensor if necessary. Perform fuel system cleaning. (A)	3.9 Hrs. CS Vehicles

FAILURE CODE:

ZZ	Service Action