



**NUMBER:** 18-012-11

**GROUP:** Vehicle Performance

**DATE:** February 24, 2011

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**HELP USING THE wiTECH DIAGNOSTIC APPLICATION FOR FLASHING AN ECU IS AVAILABLE BY SELECTING “HELP” THEN “HELP CONTENTS” AT THE TOP OF THE wiTECH DIAGNOSTIC APPLICATION WINDOW.**

**THE wiTECH SOFTWARE LEVEL MUST BE AT RELEASE 11.03 OR HIGHER TO PERFORM THIS PROCEDURE.**

***SUBJECT:***

Flash: MIL Illumination Or Tapping Sound Heard Under Hood At Key Up Or After Key Off With Driveability And Transmission Improvements

***OVERVIEW:***

This bulletin involves flash reprogramming the Powertrain Control Module (PCM) and then the Transmission Control Module (TCM) with new software and then performing a TCM module initialization.

**NOTE: A TCM module initialization must be performed after the reprogramming of the PCM and TCM to take full advantage of the new software features.**

***MODELS:***

2011 (WK) Grand Cherokee

**NOTE: This Service Bulletin applies to vehicles equipped with a 3.6L engine (Sales Code ERB) and NAG1 transmission (Sales Code DGJ) built before December 20, 2010 (MDH 1220XX).**

***SYMPTOM/CONDITION:***

Some customers may notice any of the following;

**MIL Illumination**

Upon further investigation the Technician may find that any of the following Diagnostic Trouble Codes (DTC) have been set:

- a. P0344 - Camshaft Position Sensor Intermittent - Bank 1 Sensor 1
- b. P0349 - Camshaft Position Sensor Circuit Intermittent - Bank 2 Sensor 1
- c. P0369 - Camshaft Position Sensor Intermittent - Bank 1 Sensor 2
- d. P0394 - Bank 2 Camshaft Position Sensor 2/2 Circuit Intermittent
- e. P050B - Cold Start Ignition Timing Performance



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- f. P0730 - Incorrect Gear Ratio
- g. P0219 - Engine Overspeed

### **Driveability Improvements or Tapping Sound**

- a. A slight tapping sound is heard from under the hood. This could also be described as a rattle or clicking sound also. This condition can be heard when the ignition key is turned to accessory or start or right after ignition key has been turned off. This condition was caused by a cleaning routine of the cam actuator controller by the PCM. To correct this condition a calibration change was made to modify the duty cycle and frequency of the PCM controlled cleaning routine of the cam actuator.
- b. At a light throttle tip in (2 to 6%) the RPM may oscillate slightly (+/- 200 rpm). If the throttle tip in is increased then the issue is not present.
- c. Lacks Performance. Some driving conditions can produce circumstances where excessive pedal effort is required to get the Powertrain to accelerate the vehicle as desired. The PCM calibration for pedal vs. torque relationship was changed to allow for more torque delivery at less pedal effort/travel. In accordance with this PCM calibration change, the TCM was re-calibrated to provide optimal performance and fuel economy. The combined PCM and TCM software improvements will translate into a feeling of improved performance to the driver.
- d. Customer describe a "Loss of Power" event due to transmission going to Neutral during a heavy throttle 4-3 downshift. This may happen when driving at moderate speed, 35 to 70 MPH (56 to 112 KPH) when the driver accelerates with pedal input from 40-100% triggering a 4-3 downshift. The may set the P0730 - Incorrect Gear Ratio DTC along with the MIL light ON and cause a Neutral condition within the transmission. This will typically be described as a "Loss of Power" complaint. The MIL for the P0730 will clear after 3 consecutive ignition cycles without setting another P0730 DTC. The P0730 DTC will remain stored in the TCM for 40 consecutive "good" ignition cycles and then be cleared. To correct this condition the TCM pressure control and torque management were re-calibrated improve the 4-3 downshift control during these conditions.

### **Transmission Improvements:**

- a. Lack of performance feeling during low vehicle speed turning or cornering maneuvers. To correct this condition a new TCM feature was developed to detect when the vehicle is in a turn and will then not perform an upshift.
- b. Harsh 3-4-3 change mind shift. This happens when driving at moderate speed of 30 to 50 mph (48 to 80 kmh) when the driver reduces accelerator pedal input to 5-10%. The TCM then schedules a 3-4 upshift. When the driver accelerates rapidly, pedal input from 40-100% this will CANCEL the 3-4 upshift and trigger a "change mind" shift and revert back to 3rd gear. The TCM "change mind" pressure control and torque management were re-calibrated to smooth the shift control during this maneuver.
- c. Noticeable higher engine RPM during low speed driving. This condition will be noticed during parking lot or city traffic low speed driving. The TCM logic was refined to keep the upshift inhibit more linear vs. vehicle speed.
- d. Engagement shudder when transmission is shifted into DRIVE or REVERSE immediately after the vehicle is starting. This shudder is caused by a lack of hydraulic prime in the transmission pump which requires a higher pressure demand to the applying clutch to avoid the shudder during the engagement. The TCM logic was changed to detect an engagement to DRIVE or REVERSE immediately after the engine starting which will then utilizing a special pressure apply rate ONLY during these conditions.
- e. More pedal effort to maintain speed while towing trailer during HOT ambient conditions of greater than 100° F (37° C). The TCM logic was optimized to improve

this feeling.

- f. Overall Improved shift quality. TCM calibrations were changed to deliver optimal shift quality during all driving conditions.
- g. Poor shift quality when using autostick (-) lever to initiate a transmission down shift. This will be notice when tapping lever (-) minus around 35 to 45 MPH (56 to 72 KPH) with a light accelerator pedal input of 5 to 10%. This was caused by B2 clutch apply pressure being calibrated too high for the 4-3 downshift. The TCM calibration was changed to lower the B2 clutch apply pressure during this maneuver.

**DIAGNOSIS:**

Using a Scan Tool (wiTECH™) with the appropriate Diagnostic Procedures available in TechCONNECT, verify no DTC's are set. If DTC's are present other then the one listed above record them on the repair order and repair as necessary before proceeding further with this bulletin.

If the above condition is present, perform the Repair Procedure.

**PARTS REQUIRED:**

Qty.	Part No.	Description
1	04275086AB	Label, Authorized Modification

**REPAIR PROCEDURE:**

**NOTE: If this flash process is interrupted/aborted, the flash should be restarted.**

1. Reprogram the PCM with the latest software. Help using the wiTECH diagnostic application for flashing an ECU is available by selecting "Help" then "Help Contents" at the top of the wiTECH diagnostic application window.
2. Reprogram the TCM with the latest software. Help using the wiTECH diagnostic application for flashing an ECU is available by selecting "Help" then "Help Contents" at the top of the wiTECH diagnostic application window. **After PCM and TCM reprogramming, the following must be performed:**
  - a. Clear any DTC's that may have been set in other modules due to reprogramming. The wiTECH application will automatically present all DTCs after the flash and allow the tech to clear them.
  - b. **Performing a TCM module initialization.**

**NOTE: A TCM module initialization must be performed after the reprograming of the PCM and TCM to take full advantage of the new software features.**

3. Type the necessary information on the "Authorized Modification Label" and attach it near the VECI label.

**POLICY:**

Reimbursable within the provisions of the warranty.

**TIME ALLOWANCE:**

<b>Labor Operation No:</b>	<b>Description</b>	<b>Amount</b>
18-19-06-J7	Module, Powertrain Control (PCM) - Reprogram (C)	0.2 Hrs.
18-19-05-92	Module, Transmission Control (TCM) - Reprogram (C)	0.2 Hrs.

**FAILURE CODE:**

FM	Flash Module
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