LOW FREQUENCY ENGINE KNOCKING NOISE AT HOT IDLE

TSB 09-23-7

FORD:
2009-2010 Expedition, F-150

LINCOLN:
2009-2010 Navigator

ISSUE

Some 2009-2010 F150 vehicles equipped with a 4.6L 3V or 5.4L 3V engine, Expedition and Navigator vehicles may exhibit a low frequency knocking noise from the engine at hot idle only. The noise is predominately heard from the right front wheel well area and/or the right hand (RH) engine cam cover. This noise may be generated from the RH variable camshaft timing (VCT) phaser assembly. This procedure was created to diagnose the RH VCT phaser assembly.

ACTION

Follow the Service Procedure steps to correct the condition.

SERVICE PROCEDURE

The Integrated Diagnostic System (IDS) tests were developed specifically for the vehicles and Power Control Module (PCM) strategies for these vehicles.

Per Workshop Manual (WSM), Powertrain Controls and Emissions Diagnostics (PC/ED) and Scheduled Maintenance Guide, review customer service history for use of any aftermarket oil filters.

1. Check for possible diagnostic trouble codes (DTCs).
    a. No DTCs present, proceed to Step 2.
    b. If DTCs are present, discontinue with this procedure and refer to the PC/ED manual for diagnostics.
2. Engine must be at full operating temperature over 190 °F (88 °C) cylinder head temperature (CHT).
3. Connect IDS diagnostics tool and verify software version is at the latest level (63 or later required).
4. Begin a new vehicle session.
5. Open Tool Box selection.
6. Open Data Logger.
7. Select Powertrain Engine.
8. Select PCM Data Logger.
9. Clear the preselected items by clicking the eraser icon button.
10. Select variable cam timing desired angle number (VCT_DSD).
11. Go to live display and press the tick mark.
12. Make sure the parameter identification (PID) is highlighted with the dark lines above and below the data being displayed.
13. Press number symbol: (output state control mode) of the VCT_DSD number PID.
14. Press the Control Item Activate (finger on the button) icon to enable manual control of the PID.
15. Use the plus button to command to 4 degrees. (One click is equal to 1 degree) When commanding the advance, both banks will normally adjust.
    a. If degrees will not advance, or there is an exclamation point after the PID selected, conditions are not being met. Check for possible VCT solenoid circuit faults, DTCs, incorrect engine timing, or a mechanically broken VCT phaser.
    b. Listen carefully to the low frequency knock noise while commanding the VCT_DSD from 0 to 4 degrees.
        (1) If noise level is noticeably reduced as the VCT desired angle is commanded from 0 to 4 degrees, the noise source is the RH VCT phaser assembly. Proceed to Step 17.

(2) If the low frequency knock noise is not noticeably reduced at 4 degrees, proceed to Step 16.

16. This step will create a 2nd unrelated noise, best described as a high pitch clatter or valve train type noise. This noise is to be expected during this step and does not indicate any component failure. Ignore the high pitch clatter noise and concentrate on listening for a noticeable reduction to the low frequency knock noise. Command VCT_DSD to 5 degrees while listening carefully to the low frequency knock noise. At the transition from 4 to 5 degrees, the high pitch clatter noise will begin, but should be ignored.

    a. If the level of the low frequency knock noise is noticeably reduced as VCT_DSD reaches 5 degrees, the noise source is the RH VCT phaser. Proceed to Step 17.

    b. If the level of the low frequency knock noise does not reduce noticeably as VCT_DSD reaches 5 degrees, stop and proceed to the WSM, section 303-00 for engine noise diagnostics.

Some higher frequency clatter is normal at or above the 5 degree advance. What is being pursued is for the level of the low frequency knock noise to be noticeably reduced when advanced from 4 to 5 degrees.

17. Due to normal engine dynamics, the VCT phaser knock noise is produced by the RH VCT phaser assembly. Replace only the RH VCT phaser assembly per WSM, Section 303-01 for the noise described in this procedure.

PART NUMBER	PART NAME
3R2Z-6A257-DA	VCT Phaser Kit

WARRANTY STATUS: Eligible Under Provisions Of New Vehicle Limited Warranty Coverage
IMPORTANT: Warranty coverage limits/policies are not altered by a TSB. Warranty coverage limits are determined by the identified causal part.

OPERATION	DESCRIPTION	TIME
MT092307	Use SLTS Operations If Available; Claim Additional Diagnosis Or Labor Performed As Actual Time	Actual Time

DEALER CODING

BASIC PART NO.	CONDITION CODE
6A257	42