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Service Information Bulletin

SUBJECT	DATE
Symptom Diagnostics - Hard Start/No Start - Two-Filter Fuel System	February 2014

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	DD Platform	Test-A	Changed step 5b to direct you to step 7.

DEMAND PERFORMANCE™

13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.demanddetroit.com

2 Test-A - Two-Filter Fuel System

NOTICE: “Hard Start/No Start – Two Filter Fuel System” test MUST be completed before performing this test. Refer to section "Hard Start/No Start - Two-Filter Fuel System (This Test Must Be Done First)".

Table 1.

Service Tools Used in the Procedure	
Tool Number	Description
J-48704	HP Fuel Rail Test Caps

NOTE: KM59 GEN1 fuel filter module return lines are secured to the module with banjo bolts.

NOTE: KM63 GEN2 fuel filter module return lines are secured to the module with a mounting plate attached to the Pressure Limiting Valve (PLV) return line.

Check the following:

1. Review Fuel System Integrity Check (FSIC) routine log file using DiagnosticLink™ 7.x or higher. Is the engine speed over 150 rpm while cranking?
   a. Yes; Go to step 2.
   b. No; perform the following checks. If any are the cause of cranking speed under 150 rpm, fix the issue and attempt to start the engine using FSIC. If cranking speed is now above 150 rpm and engine does not start, Go to step 2.
      - Verify battery voltage; refer to Original Equipment Manufacturer (OEM) specifications.
      - Perform a cranking compression test.
      - Remove the accessory drive belt and check cranking speed.
      - Remove the air compressor and check cranking speed.
2. Is fuel compensation pressure over 241 kPa (35 psi) while cranking?
   a. Yes; Go to step 3.
   b. No; Go to step 10.
3. Does “Engine State” equal “Start” while cranking?
   a. Yes; Go to step 4.
   b. No; correct status of the AUX shutdown switch or starter type.
4. Does Kw/Nw show or stay “ON / Enabled / True” while cranking the engine?
   a. Yes; Go to step 5.
   b. No; repair the camshaft or crankshaft sensor failure; refer to appropriate troubleshooting.
5. Is the actual fuel rail pressure over 150 bar (2176 psi)?
   a. Yes; Go to step 6.
   b. No; Go to step 7.
6. Is the actual fuel mass over 0 mg/St?
   a. Yes; Go to step 7.
   b. No; Go to step 8.
7. Does it take more than two minutes and 30 seconds for fuel rail pressure to drop below 10 bar (145 psi) after cranking?
   a. Yes; replace the fuel injectors. Refer to section "Removal of the Fuel Injector – Two-Filter Fuel System".
   b. No; Go to step 8.
8. Is the correct PLV installed on the engine? Refer to section "Inspection of the Pressure Limiting Valve – Two-Filter System".
   a. Yes; Go to step 9.
   b. No; install a new PLV.
9. Is the desired fuel rail pressure over 150 bar (2176 psi)?

a. Yes; check for aerated fuel. Refer to section "Aerated Fuel Test – Two-Filter Fuel System".
b. No; contact the Detroit™ Customer Support Center at 800-445-1980.

10. Install ESOC 350, start priming and attempt to start the engine with the Fuel System Integrity Check routine. Does the engine start?
    a. Yes; allow Fuel System Integrity Check routine to complete. Refer to section "Test-C - Two-Filter Fuel System".
    b. No; engine does not start and actual fuel rail pressure increases by more than 3 bar (44 psi). Go to step 11.
    c. No, engine does not start, and actual fuel rail pressure does not increase by more than 3 bar (44 psi); inspect the high pressure pump drive gear for slipping on the pump camshaft. Refer to section "Removal of the High Pressure Fuel Pump – Two-Filter System".
11. Review the Log file from above start attempt. Does compensation pressure increase above 241 kPa (35 psi) while priming and cranking?
    a. Yes; Go to step 12.
    b. No; remove and inspect the two-stage valve. Refer to section "Removal of the Two-Stage Valve for Two-Filter System ".
12. Remove the PLV return line at the filter module and crank the engine for 10 seconds. Is there any return flow from the PLV line during cranking?
    a. Yes; replace the PLV. Refer to section "Removal of the Pressure Limiting Valve - Two-Filter System".
    b. No; Go to step 13.
13. Check for aerated fuel. Is the fuel aerated?
    a. Yes; determine cause of aerated fuel and repair as necessary. Refer to section "Aerated Fuel Test – Two-Filter Fuel System".
    b. No; Go to step 14.
14. Remove the prefilter and inspect the prefilter check ball. Is fuel present on top of the check ball?
    a. Yes; reinstall the prefilter. Go to step 15.
    b. No; add fuel to the top of the top of the check ball. If fuel drains down past the check ball, install a new fuel filter module. Refer to section "Removal of the Fuel Filter Module Housing Half – Two-Filter System"
15. Cap the fuel rail at all six fuel injector feed connections using J-48704 tool (HP Fuel Rail Test Caps) and attempt to start the engine. Does the fuel rail pressure reach the desired rail pressure?
    a. Yes; Go to step 16.
    b. No; replace the high pressure fuel pump. Refer to section "Removal of the High Pressure Fuel Pump – Two-Filter System".
16. Does the fuel rail pressure bleed down under 100 bar (1450 psi) in less than two minutes?
    a. Yes; replace the high pressure fuel pump. Refer to section "Removal of the High Pressure Fuel Pump – Two-Filter System". Email log files to the Detroit™ Customer Support Center.
    b. No; contact the Detroit™ Customer Support Center at 800-445-1980.

