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Coding Information

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Title: 2010 MaxxForce 11/13 Aftertreatment Service

Applies To: 2010 MaxxForce 11/13

**DESCRIPTION**

A properly operating aftertreatment system requires little manual intervention from the operator. DPF Lamps that are illuminated may indicate a problematic drive cycle or an extended idle condition that may not be conducive to transparent DPF regenerations. These illuminated lamps may also be the result of a previous or current upstream engine system concern.

**NOTE:**

Removal of the DOC or DPF for inspection purposes should not be performed until diagnostics require it.

**TRIAGE**

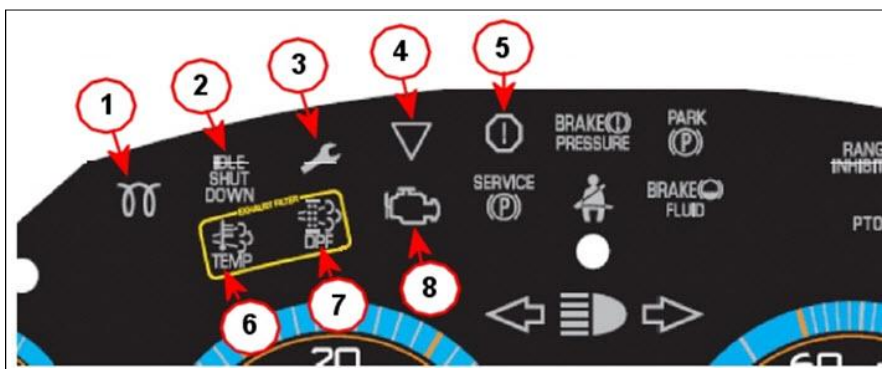
- Check vehicle history (Warranty and Case Files)
- Record the active and inactive codes. Diagnostic Trouble Codes can be saved using the freeze frame feature in Service Maxx and may be needed later if a case file is required.
- Collect Trip data and Event History
- Record the current calibration. Check vehicle calibration scorecard and calibrate if needed.
- Check for any open campaigns applicable to this repair and update per campaign.

**CUSTOMER QUESTIONNAIRE**

1. Can you explain when the vehicle experiences the problem?  
 - For instance, is it at idle, under load or is there anything unique about the circumstances?
2. Check the status of the INHIBIT switch. Position should be OFF (when equipped).
3. Ask the driver if a parked REGEN was attempted and what was the result?
4. Did any lights such as the 'Check Engine Light' or 'DPF Lamp' show up on the dash? If so, what lamps were on?
5. Did the problem just start or has it been getting worse over time?
6. Has any work been done recently to the engine or chassis?
7. Has the vehicle been in for the same problem before? If we rode with you, how would you duplicate the problem?
8. How much time does the vehicle spend idling?
9. Does the vehicle exhibit any of the following symptoms?
  - Visible black smoke
  - Gray smoke / faint black smoke
  - Aftertreatment lamps illuminated

**GENERAL INFORMATION**

Dash Identification (Only Lamps 5, 6 and 7 will be discussed in this article):



Lamp ID Lamp Name

5 Stop Engine

Description

Illuminates Red Used in conjunction with other Warning Lights or General Text and Warning Messages to indicate a red STOP alert. This alert may be an indication of a serious problem has occurred. The Engine may derate or Shutdown soon. Pull the vehicle safely off the roadway,



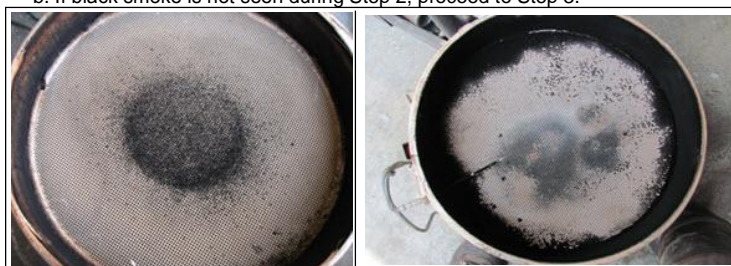
turn on flashers, set park brake, place warning and Shut Off the engine. Seek service immediately.

- 6 High Exhaust Temperature (HEST) Illuminates Yellow when exhaust system components are operating under normal conditions and exhaust gases are at high temperatures. This is normal operation when the aftertreatment system is in active or passive regeneration.
- 7 Diesel Particulate Filter (DPF) Yellow (Solid or Flashing) to indicate the need to regenerate the Diesel Particulate Filter. Operators should follow the instructions on the Sun Visor Decal.

DPF Lamp	Level	Condition	Codes	Warranty Coverage
Solid	Level 1	Exhaust Filter regeneration is required.	None	No – customer responsibility unless related to upstream engine system concern.
Flashing	Level 2	Exhaust Filter is full; Parked Regen is required.	SPN 3719 FMI 16	No – customer responsibility unless related to upstream engine system concern.
and Flashing Alarm	Level 3	Exhaust Filter is full; Engine Performance is limited.	SPN 3719 FMI 0	No – customer responsibility unless related to upstream engine system concern.
	Shutdown	A serious problem has occurred.	None	Yes – Normal Warranty coverage

**DIAGNOSTIC PROCEDURE**

1. Diagnose and repair any active, healing, or inactive fault codes before troubleshooting SPN 3719 FMI 16 and SPN 3719 FMI 0. Codes other than 3719 FMI 16 and SPN 3719 FMI 0, can be the root cause for the aftertreatment concerns and need to be repaired before proceeding to Step 2.
2. Snap accelerate the engine from idle to high idle (100% APS) several times. Watch for black smoke coming out of the exhaust outlet pipe.
  - a. If black smoke is seen repeatedly, request iApprove to replace the DPF.
  - b. If black smoke is not seen during Step 2, proceed to Step 3.



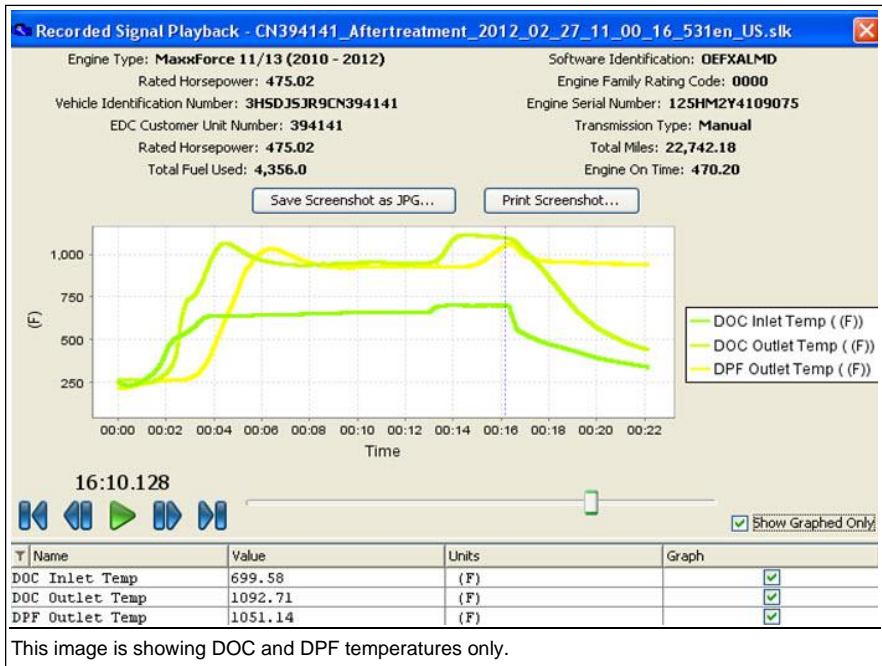
Soot should not be found on the media or around the canister wall. Request iApprove to replace DPF.

3. Perform Onboard Filter Cleanliness Test (OBFC) using Service Maxx.
  - Record an Aftertreatment Session while OBFC is running.
  - Performance of the OBFC can be observed live while the test is running and can be replayed later for review.
  - Observe exhaust gas temperatures from DOC Outlet Temp, DOC Inlet Temp and DPF Outlet Temp.
  - Refer to [Aftertreatment Diagnostic Manual Supplement](#) for information regarding OBFC.
4. If OBFC runs successfully, go to Step 7.
5. If OBFC aborts, replay OBFC using Service Maxx and observe Aftertreatment temperatures and diagnostic trouble codes.
  - The replay of the snapshot can be used to observe temperatures and other parameters that could abort the OBFC.
  - Refer to [Aftertreatment Diagnostic Manual Supplement](#) (performing OBFC) for diagnostic information.
    - a. However, if the values below are met the OBFC was good and no further diagnosis is necessary.

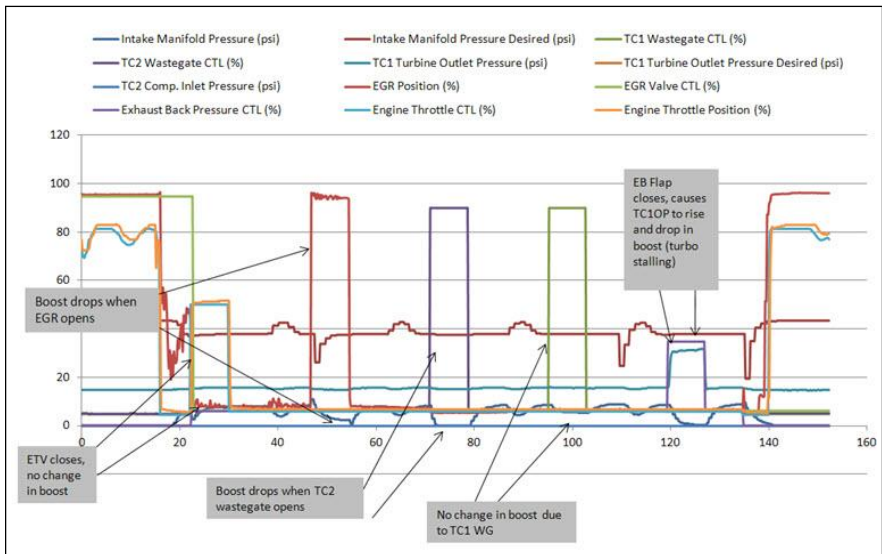
**After Treatment Guidelines for Actuators and Sensors during OBFC:**

DOCIT minimum operating tempertaure 500F (260C)      DOCOT operating range 900 - 1250F (482 - 676C)  
 DPFOT operating range 900 - 1250F (482 - 676C)      ETV operating range 75 - 85%  
 EGRV operating range < 5%

**Representative Aftertreatment Replay of a Properly Performing OBFCT:**



a. If the OBFCT aborted and temp values were not met, perform an AMT (air management test) and collect a snapshot.



b. Review snapshot data and correct areas of concern or attach snapshot to the case file.

6. After the repairs are completed, return to Step 3 and run the OBFCT.  
 a. After successfully performing an OBFCT, proceed to Step 7.

7. Perform the following.  
 a. Complete all open AFC's.  
 b. Clear DTCs.

**RELATED INFORMATION**

1. Maintenance:
  - a. Steps to take after DPF cleaning or replacement [IK0700035](#).
  - b. Determining DPF health on a used truck [IK0700030](#).
  - c. DPF ash cleaning interval chart.

EPA 2010 Emissions CI-4 Oil	EPA 2010 Emissions CJ-4 Oil
200,000 – 325,000 miles (MPG dependant)	250,000 – 400,000 miles (MPG dependant)

2. DPF:  
 a. Service guidelines:

- i.. If TC1TOP is greater than or equal to 5 psi and the DPFDp is above 2 psi at High Idle the DPF is restricted – **Perform OBFCT.**
- ii.. DPF face plugging can be traced to the following concerns.
  - Air Management System
  - Fuel System
  - Drive cycle / load factor
  - Vehicle application

b. [FSX DPF Reuse Guidelines.pdf](#)

c. Coolant Ingestion:

- Coolant contaminated DPFs can be cleaned with OBFCT. Reference [Aftertreatment Diagnostic Manual Supplement](#) (performing OBFCT).
- If the DPF has been in service over an extended period of time where coolant has been continually added to the engine, open an iApprove case file.



DPF Outlet Normal Operation



DPF Outlet Coolant Stained - Reusable

d. Oil Ingestion -- Open an iApprove Case File if:

1. DPFs that have oil contamination
2. DPF is saturated with oil, see [FSX oil contamination safety letter](#).

**DO NOT ATTEMPT TO RUN THE OBFCT OR CLEAN THE DPF**



DPF Outlet - Oil Contaminated



DPF Outlet Coolant - Oil Contaminated

e. Damaged DPF - Open an iApprove Case File if:

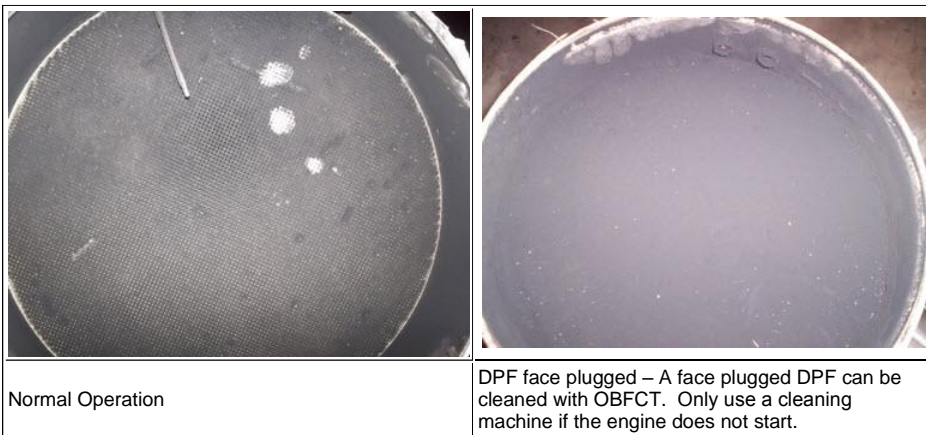
1. External canister damaged (canister or sealing damage).
2. Media damage due to over fueling.

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f. DPF Face Plugging:

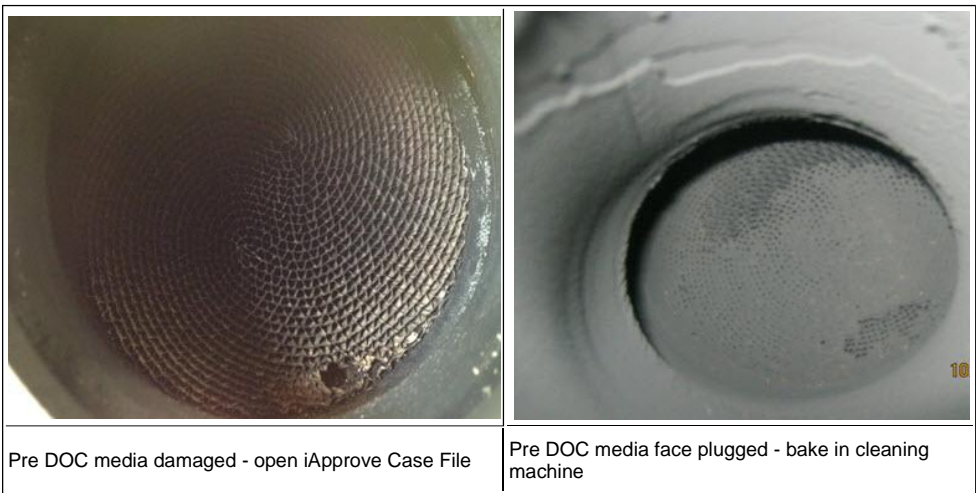
1. Normal operation.
2. A face plugged DPF can be cleaned with OBFCT. Only use a cleaning machine if the engine does not start.

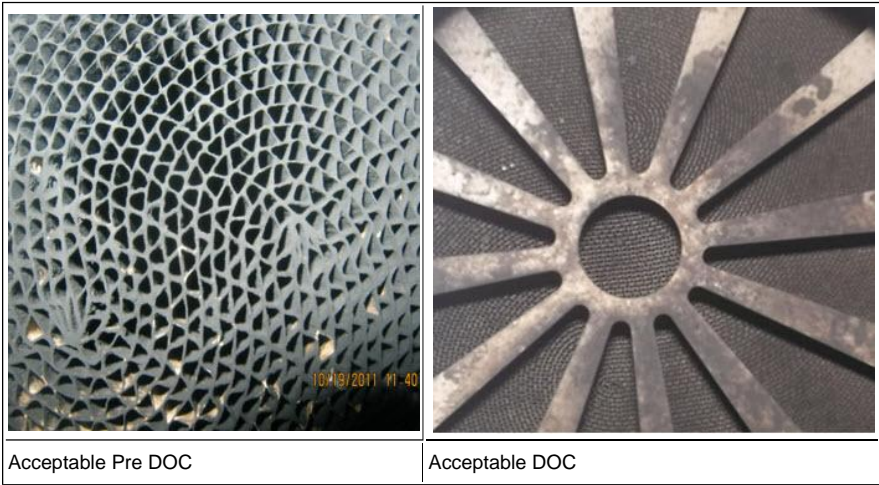


5. Pre DOC / DOC:

a. Pre DOC and DOC service guidelines:

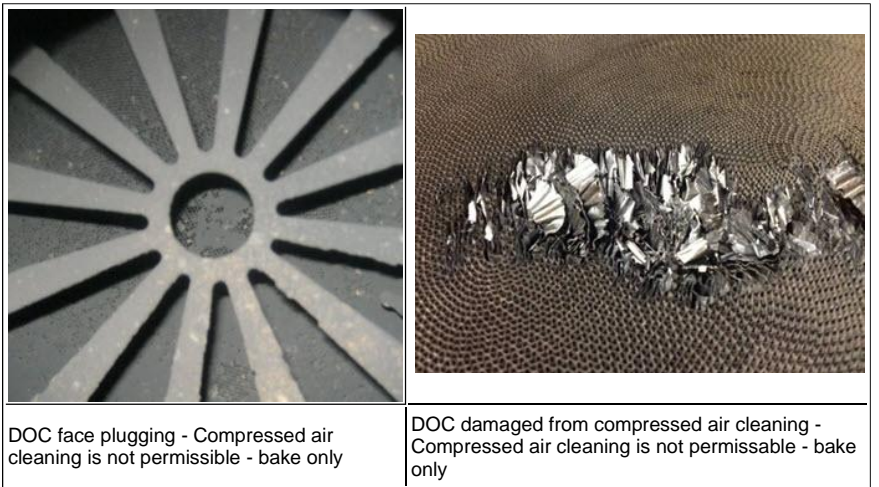
- i. Pre DOC and DOC face plugging (indicated by poor OBFCT results) can only be cleaned by baking.
- ii. Do not use the DPF Pneumatic Cleaner on these components as damage may result. See [DOC Damage as a Result of Improper Cleaning](#).
- iii. Pre DOC and DOC face plugging can be traced to the following concerns.
  - Air Management System
  - Fuel System
  - Drive cycle / load factor
  - Vehicle application
- iv. If no white smoke and no coolant loss is observed the pre DOC and DOC are operating normally.
- v. If TC1TOP is greater than or equal to 5 psi and the DPFDIP is below .5 psi at High Idle, indicates pre DOC or DOC plugging maybe present.
- vi. Photos of acceptable and not acceptable pre DOC / DOC components.





Acceptable Pre DOC

Acceptable DOC



DOC face plugging - Compressed air cleaning is not permissible - bake only

DOC damaged from compressed air cleaning - Compressed air cleaning is not permissible - bake only

6. Cleaning Machine Locator:

- a. DPF Cleaning Tool Locator
- b. Navistar Dealer Cleaning Tool Locator – Select 'DPF Cleaning' under 'Show Advanced Options'.

7. AFI:

- a. AFI service guidelines:

- i. Cleaning

- If AFI cleaning is required, it is not necessary to remove the coolant lines from the AFI. You only need to remove the fuel line that is on top of the AFI. The

- coolant lines are flexible which will allow enough movement to clean the AFI.

- ii. Carefully clean AFI by hand using a soft bristle brush and shop air.

- iii. Inspect and thoroughly clean AFI bore in the Thermal Management Valve Housing.

- iv. Perform DSI de-aeration fuel bleeding procedure with Service Maxx to eliminate air from the AFI fuel supply line. This procedure should be performed

- anytime fuel system service is required including fuel filter service.

8. Oxygen Sensor:

- a. Oxygen sensor service guidelines:

- i. If the sensor is subjected to oil or coolant replacement is required.

- ii. All new or reused sensors require O2 sensor calibration procedure using Service Maxx.

- b. If calibration of a used O2 sensor is successful reuse the original gasket.

- c. If the recalibration test fails – rerun the test a second time.

- d. If the recalibration test fails both times – replace sensor.

**Repair Aftertreatment SRT Operations:**

<b>NOTE:</b>	
Use only SRT operations that are required.	

ProStar	TranStar	WorkStar	Hours	Description
R12-6754U	Q12-6754U	N12-6754U	1	Pre DOC R and R
R12-6006L	-	-	1.5	DOC R & R <b>Sleeper cab</b> , Horizontal Mount
A12-4901	A12-4901	A12- 4901	0.9	DOC R & R All Models, <b>Horizontal Mount</b>

A12-4903	A12-4903	A12-4903	1	DOC R & R All Models, <b>Vertical Mount</b>
R12-6007L	-	-	0.9	DPF R & R <b>Sleeper cab</b> , Horizontal Mount
A12-4931	A12-4931	A12-4931	0.5	DPF R & R All Models, <b>Horizontal Mount</b>
A12-4933	A12-4933	A12-4933	0.6	DPF R & R All Models, <b>Vertical Mount</b>
R12-7559U	-	-	2.3	AFI R & R
-	Q12-7559U	N12-7559U	1.5	AFI R & R
-	Q12-7559U-1	-	0.6	TranStar w/Premium Interior
A12-7559L-20	A12-7559L-20	A12-7559L-20	0.2	AFI cleaning
R12-8647U	Q12-8647U	N12-8647U	0.9	O2 sensor R & R
A12- 7235A-20	A12- 7235A-20	A12- 7235A-20	0.5	OBFACT procedure
A12-T1	A12-T1	A12-T1	0.2	DSI DeAeration Procedure

**WARRANTY**

1. Locating DPF serial number [IK1200272](#).

2. Warranty Information:

- [WPL2800073](#) - WPL 12-018G Warranty iApproval Requirements
- [WPL2800021](#) - Diesel Particulate Filter (DPF) Cleaning Reimbursement WPL 11-002G
- [WPL2800020](#) - Engine Emission Component Coverage WPL 11-003G
- [IK0700031](#) - DPF cleaning or replacement warranty

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