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**Author:** Jay Weston

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Coding Information

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**Title:** Oil Leak- Road Draft Tube IBB

**Applies To:** 2010 and 2013 MaxxForce 11 & 13L, 2013 N13 13L

## CHANGE LOG

2015/06/15 - Revised formatting, coding updated to include N13

## DESCRIPTION

This iKNOW will guide the user through troubleshooting the CCOS (Crankcase Oil Separator) in cases where excessive lubrication oil consumption is noted or a concern of oil leaking out of the road draft tube.

## SYMPTOMS

**Diagnostic Trouble Codes & Dashboard Indicator Lights:**

DTC/Light	Description
SPN 4227 FMI 7/ Possible MIL lamp	CC Oil Separator Speed: Not Spinning

**Customer Observations or Concerns:**

- Excessive lubrication oil consumption
- Oil leak at the road draft tube

## SPECIAL TOOLS / SOFTWARE

Tool Description	Tool Number	Comments
Ultrasonic Leak Detector	ZTSE4800	
Crankcase Pressure Test Tool	ZTSE4039	11/13/N13 Crankcase pressure test adapter
Kit, Water Manometer	ZTSE2217A	Slack Tube Monometer, (Digital manometer can be used but must be sourced locally)
MaxxForce 11/13L Cap & Plug	ZTSE4891	Misc. cap sizes
Kit, Pressure Test	ZTSE4409	

## **SERVICE PARTS INFORMATION**

Kit Description	Part Number	Qty	Notes
KIT, BREATHER HOUSING	2512067C*	1	Use newest part number available
TUBE, ASSY TURBO OIL SUPPLY	3018397C*	1	Use newest part number available
KIT, BREATHER JET PLATE	2512660C*	1	Use newest part number available
FILTER, OIL, FILTER OIL, SPINNER II MODEL 960	3681678C*	1	Use newest part number available

## **DIAGNOSTIC STEP(s)**

Step	Action	Decision
1	<b>Crankcase Oil Breather Separator Speed Test</b> <ul style="list-style-type: none"> <li>• Ensure Engine Coolant Temperature is above 183° F (84° C)</li> <li>• Connect EST to Vehicle</li> <li>• Start Engine</li> <li>• Monitor CC Oil Separator RPM (Crankcase Oil Separator Speed)</li> </ul> <p>Is the CC Oil Separator RPM &gt; <u>6000 RPM</u></p>	<b>Yes.</b> Proceed to Step 3
		<b>No.</b> Proceed to Step 2
2	<b>Audio Check for CCOS Movement</b> <ul style="list-style-type: none"> <li>• Ensure Engine Coolant Temperature is above 183° F (84° C)</li> <li>• Connect EST to Vehicle</li> <li>• Start Engine</li> <li>• Place Tool ZTSE4800 near the CCOSS Sensor</li> <li>• Turn the engine off and quickly monitor CCOS for centrifugal noise (audible noise of spinning for around 15 sec.)</li> </ul> <p>Was noise heard though tool ZTSE4800 when the engine was turned off?</p>	<b>Yes.</b> Proceed to CCOSS Sensor Diagnostics in the Engine Diagnostic Manual
		<b>No.</b> Replace CCOS. Reference <a href="#">IK1201272</a> for instructions Proceed to Step 1.
3	<b>Crankcase Pressure Test</b> <ol style="list-style-type: none"> <li>1. Disconnect Breather Outlet Tube from the top of the CCOS</li> <li>2. Connect ZTSE4039 to the 90° hose from the outlet tube</li> <li>3. Connect Tool ZTSE4409 or equivalent to ZTSE4039</li> <li>4. Start the engine</li> <li>5. Raise RPM to &gt;2000 RPM (Customer Parameters may limit the RPM when at a parked condition)</li> <li>6. Allow time for a stable reading and record the results</li> </ol> <p>Is Crankcase Pressure below 8 in/H2O?</p>	<b>Yes.</b> Replace CCOS Reference <a href="#">IK1201272</a> for instructions
		<b>Note: The CCOS can fail in a manner where it will not separate oil despite maintaining adequate RPM and low crankcase pressure</b>
		<b>No, and the truck is equipped with a Chassis mounted Centrifugal Oil Filter.</b> Proceed to Step 4
		<b>No, and the truck is <u>not</u> equipped with a Chassis mounted Centrifugal Oil Filter.</b> Proceed to Step 5

Step	Action	Decision
4	<b>Crankcase Pressure Test - Bypass Chassis Mounted Centrifugal Oil Filter</b>  1. Drain the vehicle air tanks until the pressure is removed from the air system 2. Remove the air line from the chassis mounted centrifugal oil filter and cap the 3. Install the Air Cap, Fuel Cap, and Plud from tool ZTSE4891 4. Start the engine 5. Raise RPM to >2000 RPM (Customer Parameters may limit the RPM when at a parked condition) 6. Allow time for a stable reading and record the Crankcase Pressure results  Is Crankcase Pressure below 8 in/H2O?	<b>Yes.</b> Replace the Chassis Mounted Centrifugal Oil Filter.  Diagnostics Complete
		<b>No.</b> Proceed to Step 5
Step	Action	Decision
5	<b>Crankcase Pressure Test - Bypass the Truck Mounted Air Compressor.</b>  1. Remove discharge line from air compressor 2. Start Engine 3. Raise RPM to >2000 RPM (Customer Parameters may limit the RPM when at a parked condition) 4. Allow time for a stable reading and record the Crankcase Pressure results  Is Crankcase Pressure below 8 in/H2O?	<b>Yes.</b> Repair or replace air compressor  Diagnostics Complete.
		<b>No.</b> Engine has a compression leak into the crankcase. See Engine Service Service Manual

## REPAIR STEPS

See appropriate Service Manual for proper removal and installation steps. The latest can be found through the MSI, linked below.

## WARRANTY INFORMATION

Warranty Claim Coding: (dependent on repair made)

<b>Group:</b>	12000 - Engine
<b>Noun:</b>	215 - Filter, Oil Seperator, Crankcase Vent

<b>Group:</b>	04000 - Air Brakes
<b>Noun:</b>	202 - Air Compressor, Air Brakes

Standard Repair Time(s):

Step	Description	Chassis	Engine	SRT	Hours
1	Crankcase Oil Breather Separator Speed Test	All	EPA 10 11,13, N13	Tech Time	0.3 hr.
2	Audio Check for CCOS Movement	All	EPA 10 11,13, N13	Tech Time	0.1 hr.
2/3	CRANCASE BREATHER, REPLACE	ProStar	EPA 10 11,13	<a href="#">R12-9215U</a>	0.9 hr.
		ProStar	N13	<a href="#">R12-9215US</a>	0.9 hr.
		TranStar	EPA 10 11,13	<a href="#">Q12-9215U</a>	0.9 hr.
		TranStar	N13	<a href="#">Q12-9215US</a>	0.9 hr.

		WorkStar	EPA 10 11,13	<a href="#">N12-9215U</a>	0.9 hr.
		WorkStar	N13	<a href="#">N12-9215US</a>	0.9 hr.
		PayStar	EPA 10 11,13	<a href="#">T12-9215U</a>	0.9 hr.
		LoneStar	EPA 10 11,13	<a href="#">S12-9215U</a>	0.9 hr.
		CAT CT660	EPA 10 11,13	<a href="#">TC12-9215U</a>	0.9 hr.
3	ELECTRONIC ENGINE PERFORMANCE, Diagnose (Crankcase Pressure Test)	All	EPA 10 11,13, N13	<a href="#">R12-2194U</a>	0.6 hr.
4	Bypass Chassis Mounted Centrifugal Oil Filter	All	EPA 10 11,13, N13	Tech Time	0.3 hr
4	SOOT CENTRIFUGE FILTER (CHASSIS MOUNTED), REPLACE	ProStar	EPA 10 11,13	<a href="#">R12-4656U-25</a>	0.8 hr.
		TranStar	EPA 10 11,13	<a href="#">Q12-4656U-25</a>	0.8 hr.
		WorkStar	EPA 10 11,13	<a href="#">N12-1656U-25</a>	0.8 hr.
		PayStar	EPA 10 11,13	<a href="#">T12-4656U-25</a>	0.8 hr.
5	Bypass the Truck Mounted Air Compressor.	All	EPA 10 11,13, N13	Tech Time	0.3 hr.
5	AIR COMPRESSOR, REPLACE	ProStar -Single Cylinder	EPA 10 11,13	<a href="#">R04-1202U-21</a>	3.5 hr.
		ProStar - Two Cylinder	EPA 10 11,13	<a href="#">R04-1202U</a>	3.4 hr.
		ProStar 113 - Two Cylinder	EPA 10	<a href="#">R04-1202U-20</a>	3.4 hr.
		ProStar - Two Cylinder	N13	<a href="#">R04-1202US</a>	3.4 hr.
		ProStar - Single Cylinder	N13	<a href="#">R04-1202US-20</a>	3.5 hr.
		TranStar - Single Cylinder	EPA 10 11,13	<a href="#">Q04-1202U-20</a>	3.5 hr.
		TranStar - Two Cylinder	EPA 10 11,13	<a href="#">Q04-1202U</a>	3.4 hr.
		TranStar - Single Cylinder	N13	<a href="#">Q04-1202US-20</a>	3.5 hr.
		TranStar - Two Cylinder	N13	<a href="#">Q04-1202US</a>	3.4 hr.
		WorkStar - Single Cylinder	EPA 10 11,13	<a href="#">N04-1202U-20</a>	3.4 hr.
		WorkStar - Two Cylinder	EPA 10 11,13	<a href="#">N04-1202U</a>	3.5 hr.
		WorkStar - Single Cylinder	N13	<a href="#">N04-1202US-20</a>	3.4 hr.
		WorkStar - Two Cylinder	N13	<a href="#">N04-1202U</a>	3.5 hr.
		PayStar - Single Cylinder	EPA 10 11,13	<a href="#">T04-1202U-20</a>	3.4 hr.
		PayStar - Two Cylinder	EPA 10 11,13	<a href="#">T04-1202U</a>	3.5 hr.
		PayStar - Single Cylinder	N13	<a href="#">T04-1202US-20</a>	3.4 hr.
		PayStar - Two Cylinder	N13	<a href="#">T04-1202US</a>	3.5 hr.
		LoneStar - Single Cylinder	EPA 10 11,13	<a href="#">S04-1202U-21</a>	3.4 hr.
		LoneStar - Two Cylinder	EPA 10 11,13	<a href="#">S04-1202U</a>	3.5 hr.
		CAT CT660 - Single Cylinder	N13	<a href="#">TC04-1202US-20</a>	3.4 hr.
CAT CT660 - Two Cylinder	N13	<a href="#">TC04-1202US</a>	3.5 hr.		

## OTHER RESOURCES

[Master Service Information Site](#)

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