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Coding Information

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**Title: 2010-2012 MaxxForce 7 Air Compressor/Turbocharger Oil Seal Leaks**

**Applies To: 2010-2012 MaxxForce 7**

## **CHANGE LOG**

2015/9/10 - Added keywords to article  
 2014/09/03 - Improved Diagnostic Clarity, Steps, and Repair Steps. Added Warranty Claim Coding for Consistency with Claims.  
 2014/08/02 - Initial Article Release

## **DESCRIPTION**

Excessive crankcase pressure in the 2010 - 2013 MaxxForce 7 may cause air compressor and/or turbocharger oil seal leaks. The air compressor and turbocharger oil returns feed directly into the crankcase, this results in high internal component pressure pushing oil past the seals.

**NOTE: There will be a new Turbocharger Diagnostic and Cleaning Procedure released soon to address coked turbochargers. This procedure has proved effective at cleaning severely coked housings and binding compressor wheels.**

## **SYMPTOMS**

- Turbochargers Pushing Oil in Intake/Exhaust
- Air Compressor Oil Seal Failure/Leaks
- Front and Rear Main Seal Leaks
- Plugged Crankcase Breather
- Excessive Oil Exiting Breather Tube

## **REQUIRED TOOLS**

- ZTSE4146A - Engine Blow-by Orifice Tool
- ZTSE4284 - Oil Fill Tube Orifice Adapter
- ZTSE4409 - Pressure Test Kit (OR ZTSE2217A - Slack Tube Manometer)
- Standard Plug (Obtained Locally)
- EZTECH with ServiceMaxx


## **DIAGNOSTIC STEPS**

Please reference *Diagnostic Manual 0000001681* under Performance Diagnostics, Special Test Procedures, and Blow-by Test & Crankcase Pressure Test. If the engine is not in a runnable condition due to excessive leaks/oil contamination, disconnect CAC to prevent oil entering engine and/or press the air compressor seal back in place for diagnostic purposes only.

**Note:** If the turbochargers are left disconnected the results of the crankcase pressure and blow-by tests will be skewed lower than actual. This may also result in oil passage from the turbochargers due to an increased delta pressure across the oil seals between the internal and external turbocharger pressure. At any point during testing if the CAC hoses collapse this is an indication of high restriction between the inlet of the engine and the atmosphere on the inlet of the low pressure turbocharger. This could be due to a plugged CAC or a binding/seized turbocharger.

Step	Action	Decision
1	Verify the crankcase breather is a non-serviceable certified breather. Please See <a href="#">121203 New Non-Serviceable Crankcase Breather - EPA 10 MaxxForce® 7</a>	Yes - Step 2
		No - Order a Certified Breather and Continue to Step 2
2	Crankcase Pressure (Crankcase Breather Condition) - Measure the engine crankcase pressure per the <i>Diagnostic Manual</i> . (High Idle Spec: 24 inches H <sub>2</sub> O)	Yes - Step 3
		No - Step 3
3	Engine Blow-by (Power Cylinder Condition) - Measure the engine blow-by pressure per the <i>Diagnostic Manual</i> . (High Idle MAX Spec: 9 inches H <sub>2</sub> O)	Yes - Step 4
		No - Step 4
4	Relative Compression Test – Run two relative compression tests with a battery charger connected to supply ample power to the starter.	Yes - See Below
		No - See Below

## **REPAIR STEPS**

Research vehicle warranty history for related or repeat failures and claims. If a similar claim has been submitted in the last 6 months please open a Technical Support Case File containing ALL the above results as well as the Engine Parameter File exported in ServiceMaxx and await for further instruction (ServiceMaxx >> File >> Export Parameters). If you have questions about warranty implications, please call the Warranty group at 1-800-336-4500  Option 5.

In all instances if Step 3 is out of specification please open a Technical Support Case File containing ALL the above results as well as the Engine Parameter File exported in ServiceMaxx and await for further instruction. Turbochargers will pass oil if the internal chamber pressure becomes more than 2" H<sub>2</sub>O higher than the turbine or compressor pressure (Boost and Exhaust Back Pressure). Instances of elevated EOP and CCP with low boost will cause seepage past oil rings, THIS DOES NOT DAMAGE THE RINGS.


In the event that engine Crankcase Pressure, Blow-by, & RCT are within specification, remove the culprit turbocharger(s) for inspection and clean what is necessary. Turbochargers exhibiting excessive shaft play along with oil carryover should be replaced. The oil rings in a turbocharger are metallic compressible rings very similar to piston rings. The only way these rings can become damaged or compromised is if the turbocharger thrust bearing begins to fail resulting in excessive shaft play. The oil rings then begin to hold the shaft in place causing the rings to wear.

If the Aftertreatment has been compromised by oil open a Technical Support Case File containing ALL the above results along with supporting picture documentation. It is highly recommended if root cause remains unknown to review oil service records and send an oil sample for further analysis.

**\*\*\*IN ALL INSTANCES OUT OF SPECIFICATION, DO NOT REPLACE THE TURBOCHARGER OR AIR COMPRESSOR FOR OIL LEAKAGE/CONTAMINATION. RETURNING THE CRANKCASE PRESSURE AND ENGINE BLOW-BY TO AN ACCEPTABLE RANGE WILL CEASE OIL CARRYOVER. CLEAN THE TURBOCHARGERS PER [IK1200965](#) AND IF REQUIRED REPLACE THE AIR COMPRESSOR SEAL USING KIT BX107969N\*\*\***

After doing all diagnostic steps, if the results remain out of specification, or you receive conflicting results, verify each step was completed correctly and the proper decision was made. Do NOT replace the leaking component and notify supervisor, if issue remains unresolved open a case file with Navistar's Technical Support for further action.

## **WARRANTY CLAIM CODING**

If you have questions about warranty implications, please call the Warranty group at 1-800-336-4500  Option 5.

Root Cause: Engine Condition/Blow-by

<b>Group:</b>	<b>12000</b>
<b>Noun:</b>	<b>192 - Sleeve Cylinder</b>

Root Cause: Crankcase Ventilation

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

Root Cause: Turbocharger

<b>Group:</b>	<b>12000</b>
<b>Noun:</b>	<b>135 - Twin Turbocharger Assembly, High/Low Pressure Turbo</b>

Root Cause: Air Compressor

<b>Group:</b>	<b>04017, 04028, 04036, 04090, 04091, 04092 (See Coding Manual for Details)</b>
<b>Noun:</b>	<b>202, 207, 209 (See Coding Manual for Details)</b>

- Link to the Coding Manual: [https://evaluate.internationaldelivers.com/service\\_kb/DocTool/Documents/Published/RC2800001/Files/CTS1025.pdf](https://evaluate.internationaldelivers.com/service_kb/DocTool/Documents/Published/RC2800001/Files/CTS1025.pdf)

## **STANDARD REPAIR TIMES (SRT)**

<b>Diagnostic Test</b>	<b>Application</b>	<b>Warranty Code</b>	<b>SRT</b>
Blow-By	CE/BE	GY12-2056X	0.3 Hrs
	4300	K12-2056X	

	A/E Bus	TG12-2056X	
	Terminal Tractor	TT12-2056X-20	
	TerraStar	TS12-2056X	

Diagnostic Test	Application	Warranty Code	SRT
Crankcase Pressure	CE/BE	GY12-2057X	0.2 Hrs
	4300	K12-2057X	
	A/E Bus	TG12-2057X	
	Terminal Tractor	TT12-2057X-20	
	TerraStar	TS12-2057X	

Diagnostic Test	Application	Warranty Code	SRT
Relative Compression	CE/BE	GY12-2058X	0.2 Hrs
	4300	K12-2058X	
	A/E Bus	TG12-2058X	
	Terminal Tractor	TT12-2058X-20	
	TerraStar	TS12-2058X	

Action	Application	Warranty Code	SRT
Air Compressor Pulley	All	A04-320	1.4 Hrs
Crankcase Breather	CE/BE	GY12-6051X	0.6 Hrs
	4300, 4400	KL12-6051X	
	A/E Bus	TG12-6051X	
	TerraStar	TS12-6051X	

- Link to the Standard Repair Time Manual: [https://evaluate.internationaldelivers.com/service/service\\_info/SRT.aspx?Grpcode=12](https://evaluate.internationaldelivers.com/service/service_info/SRT.aspx?Grpcode=12)

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