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Coding Information

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Title: Big Bore Coolant Leak to Lube Oil
Applies To: 2010 MaxxForce 11/13L Engines

CHANGE LOG

04/20/2015 - Un-tagged N13 from this article and corresponding iKNOW articles. The information for coolant overflow is located in the respective diagnostic manual for N13 engines. Changed EGR cooler leak detection tool number from "KL20060NAV" to "12-892-02".

2014/09/22 - Changed step 2 to reference TL2900004 instead of the Engine Service Manual. Modified format. Added HT EGR Cooler core kit to parts table. Added EGR Cooler Core SRTs.

2014/07/10 - Removed other resources section. the link to IK1201066 is in the description.

2014/06/25 - Link HT EGR cooler leak to new iKNOW (HT core removal)

2014/06/02 - Deleted the Special Requirements section. Added Air compressor warranty code info.

2014/05/14 - Link LT EGR cooler leak to new iKNOWs (LT core removal)

2014/04/11 - Launch to field

DESCRIPTION

This document is supplement to [IK1201066 - Coolant Consumption and SPN-111 FMI-1](#) for coolant in the oil.

SYMPTOM

Engine oil with a light gray and sludgy appearance. The crankcase may also be overfilled.

SPECIAL TOOLS

Tool Description	Tool Number	Comments	
Plastic Plug / Cap Kit	ZTSE4891	Used for sealing components during repairs	
Radiator Pressure Testing Kit	ZTSE2384		

Coolant Cap Pressure Testing Kit	09-040-01	Perform with warm engine	
Coolant Management Tool	KL5007NAV	Cooling system drain and vacuum fill	
EGR Cooler Leak Detection Test Kit	12-892-02	HT and LT EGRC Pressure Tester	
EGR Cooler Alignment Tool	12-892-01	If replacing an HT or LT EGRC section	
EGR Cooler Lifting Bracket	12-892-03	If removing EGR Cooler	
Kit, Charge Air Cooler Test	ZTSE6042	LPCAC Pressure Test Tool	

DIAGNOSTIC PROCEDURE:

Possible Causes

Failed EGR Cooler
 Cracked cylinder liner
 Failed cylinder Head rear gear train freeze plug
 Failed air compressor
 Cracked oil cooler housing
 Missing/damaged oil cooler gaskets
 Missing/damaged oil filter module gasket
 Missing mounting bolts for the oil filter module to the crankcase

Step	Action	Decision
1	Check lube oil for proper level and visible contamination. Oil contaminated with coolant generally causes the oil to thicken and coagulate, giving the oil a light gray sludgy appearance. Does the lube oil show signs of visual contamination?	Yes: Go to step 2
		No: Take an oil sample for analysis. Restore the engine to operational condition and retest cooling system.
Step	Action	Decision
2	Pressure test Low Temp (LT) and High Temp (HT) EGR cooler, on engine. Using KL 20060 NAV - EGR Cooler Leak Detection Test Kit, pressure test EGR cooler following the procedure in TL2900004. Is there a leak present in either of the EGR Cooler sections?	Yes: Go to step 3
		No: Reinstall removed components then, go to step 4.
Step	Action	Decision
3	Verify which section of the EGR Cooler is leaking.	HT EGR Cooler: Replace HT EGR Cooler core, see

Which Section of the EGR Cooler is leaking?		IK1201113 , then go to step 8. LT EGR Cooler: Replace LT EGR Cooler core, see IK1201100 . Repair complete. Both LT and HT: Follow the individual instructions above. Neither procedure interferes with the other, so there's no set order of repair.
Step	Action	Decision
4	Remove oil pan following procedures in the Engine Service Manual. Inspect the inside of the crankcase for evidence of coolant leakage. - Remove deaeration tank cap. - Install Radiator Pressure Testing Kit ZTSE2384 with Surge Tank Cap Adaptor on deaeration tank. - Pressurize cooling system to 117 kPa (17 psi) for a minimum of 15 minutes. Is coolant leakage present inside the crankcase?	Yes: Go to step 5. No: Restore the engine to operational condition and retest cooling system.
Step	Action	Decision
5	Identify where the coolant leakage in the crankcase originates. (Cylinder Liners or Rear Gear Train) - Inspect for coolant at bottom edge of cylinder liners. - Inspect for coolant evident at the rear gear train area. What area does the coolant leakage originate from?	Cylinder Liners: Go to step 7. Rear Gear Train Area: Inspect cylinder head freeze plugs for leaking coolant. Repair as necessary. Then go to step 8. Neither Area: Go to step 6.
Step	Action	Decision
6	Identify where the coolant leakage in the crankcase originates. (Air Compressor or Oil Cooler) - Inspect for coolant evident at the Air Compressor drain. - Inspect for coolant evident at the Oil Cooler drain.	Air Compressor Drain: Replace Air Compressor. Then go to step 8 Oil Cooler Drain: Check for leaking oil cooler module gasket as per the Engine Service Manual. Repair as necessary. Then go to step 8. Neither Area: Restore the engine to operational condition and retest cooling system.

	What area does the coolant leakage originate from?	
Step	Action	Decision
7	Inspect lower edges of cylinder liners for coolant leaks. Note cylinder number(s) where coolant leakage is identified. Is coolant leakage present between cylinder liner and crankcase?	Yes: Replace failed cylinder liner O-ring (s). Then go to step 8. No: Go to “Coolant Overflow” Symptom diagnostic section in the Engine Diagnostic Manual for further testing.
Step	Action	Decision
8	Change the engine oil, filter and soot centrifuge oil filter (if equipped).	Repair Complete.

SERVICE PARTS INFORMATION:

Kit Description	Part Number	Quantity Required	Ordering Instructions
HT EGR Cooler	3014254C94	1	Order from Navistar
LT EGR Cooler	3015862C92	1	Order from Navistar
Kit, Low Temp Core	2513209C91	1	Order from Navistar
Kit, High Temp Core	2513445C91	1	Order from Navistar
Oxygen/Lambda Sensor (O ₂ S)	3006233C1	1 (If necessary)	Order from Navistar
Oil Filter Kit	3007498C93	1	Order from Navistar
Soot centrifuge oil filter Kit	2606467C92	1	Order from Navistar

WARRANTY INFORMATION:

Group:	12000
Noun:	892 EGR Cooler 186 EGR Cooler Coolant Manifolds/Pipes/Connections 192 Cylinder Liner

Air Compressor

Group:	04000
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Noun:	202 Air Compressor, Air Brake
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[Warranty Coding Manual CTS-1025](#)

STANDARD REPAIR TIME(s):

[Standard Repair Time Manual](#)

LT EGR Cooler Core, Replace

Hours	Code	Model	Engine	Qualifier 1
1.7	FA12-7892U-20	9900i	MaxxForce 11/13 2010 Emissions	122 BBC
2.1	N12-7892U	Workstar	MaxxForce 11/13 2010 Emissions	
2.1	Q12-7892U	Transtar	MaxxForce 11/13 2010 Emissions	
1.8	R12-7892U	Prostar	MaxxForce 11/13 2010 Emissions	113 BBC
1.7	R12-7892U-20	Prostar	MaxxForce 11/13 2010 Emissions	122 BBC
1.7	S12-7892U-20	Lonestar	MaxxForce 11/13 2010 Emissions	122 BBC
2.1	T12-7892U	5000	MaxxForce 11/13 2010 Emissions	

HT EGR Cooler Core, Replace

Hours	Code	Model	Engine
3.4	FA12-8892U	9900i	MaxxForce 11/13 2010 Emissions
3.1	N12-8892U	Workstar	MaxxForce 11/13 2010 Emissions
3.1	Q12-8892U	Transtar	MaxxForce 11/13 2010 Emissions
3.4	R12-8892U	Prostar	MaxxForce 11/13 2010 Emissions
3.4	S12-8892U	Lonstar	MaxxForce 11/13 2010 Emissions
3.1	T12-8892U	5000	MaxxForce 11/13 2010 Emissions
3.1	TC12-8892U	CAT CT660	MaxxForce 11/13 2010 Emissions

Engine Oil and Filter Change

12 - ENGINE OIL AND FILTER CHANGE

Hours	Code	Model	Engine	Qualifier 1	Qualifier 2
0.6	A12-1889U	WorkStar	MAXXFORCE 11/13	With 2010 Emission Engines	

NOTE: Oil Change is included in EGR Cooler service plan SRT.

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