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Document ID: IK1201048

Availability: ISIS, FleetISIS

Major System: ENGINES

Current Language: English

Other Languages: NONE

Viewed: 15783

Revision: 8

Created: 1/8/2014

Last Modified: 8/27/2015

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Coding Information

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Title: 190-0 Engine Overspeed Vehicle Event Fault

Applies To: 2010 MaxxForce 15, N13

CHANGE LOG

- 2015/08/27 - Removed 2010-2013 MaxxForce 11/13. Refer to updated manual 1741.
- 2015/05/04 - Updated part numbers so they can copy and pasted into the Parts Catalog.
- 2015/04/27 - Updated part number to Prostar Water pump
- 2015/03/09 - Added repair information for 11L
- 2015/02/19 - Changed DOC/DPF repair information (replace instead of drain when oil soaked)
- 2014/10/24 - Revised formatting added for drive engagement information

DESCRIPTION

This document addresses engine fault code 190-0 for engine overspeed. The code can be set for using an inappropriate gear for downhill engine braking or engine operating on an uncommanded fuel source. All diagnostics and repair information necessary for a thorough and complete repair, are in the following iKNOW.

It is important to note with the 10/24/2014 revision that the low mount fan drive clutch (viscous, feature code 0012THX) must be replaced for engine overspeed.

SYMPTOMS and TROUBLE CODES

Diagnostic Trouble Codes & Dashboard Indicator Lights:

DTC/Light	Description
SPN 190 FMI 0	Engine Overspeed
SPN 731 FMI 16	Knock Detected, Cylinder Acceleration Above Normal

SPN 731 FMI 18	Knock Detected, Unexpected Fueling Without Demand
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Proceed with 190-0 diagnostics before reviewing the 731's.

Customer Observations or Concerns:

- Engine Speed Without Command
- Malfunction Indicator Light (MIL)
- Red Stop Lamp (RSL)

Fault Code Entry Condition:

Condition / Description	Setting Criteria	Enable Conditions / Values	Time Required
Detection of engine overspeed and set fault when	Engine speed exceeds 2600 RPM with no fuel requested	Key On Engine Speed > 2600 RPM for > 1 Sec, MIL sets for > 10 sec, RSL sets	1 event

SPECIAL TOOLS

Tool Description	Tool Number	Comments
Electronic Service Tool (EST)	E-Z Tech, ServiceMaxx	

SERVICE PARTS INFORMATION

Kit Description	Part Number	Quantity Required	Notes
Tube, Hi Pressure Rail to Injector 1	3012753C*	1	All Models
Tube, Hi Pressure Rail to Injector 2	3006042C*	1	All Models
Tube, Hi Pressure Rail to Injector 3	3005678C*	1	All Models
Tube, Hi Pressure Rail to Injector 4	3005679C*	1	All Models
Tube, Hi Pressure Rail to Injector 5	3012757C*	1	All Models
Tube, Hi Pressure Rail to Injector 6	3012758C*	1	All Models
Tube, Hi Pressure Pump to Rail	3005763C*	1	All Models
Kit, Fuel Injector	3007640C*	6	13L
Kit, Fuel Injector	2612566C*	6	11L
Kit, HP Turbo Cartridge	2511792C*	1	13L
Ring, "O" #118 0.862" x 0.965"	1820907C*	1	If necessary
Kit, Water Pump Assembly	3007644C*	1	All Models
Gasket Tape, Exhaust 3/4"x36yds	2604051C*	1	All Models
Tube Assembly, Oil Supply	3018397C*	1	All Models

Fitting, Oil Tube	2512772C*	1	All Models
Spacer	62917010831	1	If necessary
Stud Bolt	1819245C*	1	If necessary
Fan Drive, Stratis Viscous Low-Mount	HOR9906017	1	All Models

PROCEDURE OVERVIEW

To prevent engine damage, do not attempt to start the engine until a full engine analysis and all diagnostic steps have been completed. Failure to do so may result in catastrophic damage.

Before beginning diagnostics:

- Submit a Health Report
- Do not update calibration until instructed to do so
- Take pictures of all damage for failure evidence
- Do not replace any parts until inspections have been completed

DIAGNOSTIC STEPS

Step	Action	Decision
1	Visually inspect the turbo outlet pipe. <ul style="list-style-type: none"> • Remove turbo outlet pipe • Remove CAC outlet pipe 	Yes. Step 3
	Is there excessive oil coming from the High Pressure Turbo	No. Step 2
Step	Action	Decision
2	Interview Driver. <ul style="list-style-type: none"> • When did the fault occur? • How was the truck operating when the fault occurred? • Save Freeze Frame data from 190-0 fault code • Save vehicle trip report 	Open a Case File. Attach the trip report, freeze frame data and set condition information.
Step	Action	Decision
3	Visually inspect the engine block for damage.	Yes. Document damage and open iApproval for engine replacement.
	Is there damage to the block?	No. Step 4

Step	Action	Decision
4	<p>Connect to the ECM using an Engine Service Tool (EST).</p> <ul style="list-style-type: none"> Open vehicle trip report located under Sessions>Vehicle Trip Report>Trip Data Reference PID 58071 - Trip Maximum Engine Speed <p>What is the recorded engine speed?</p>	2600 to 3200 RPM. Step 5
		Greater than 3200. Step 7

Step	Action	Decision
5	<p>Check for internal damage.</p> <ul style="list-style-type: none"> Drain engine oil and remove oil pan Inspect block and liners for damage <p>Is there damage to the block?</p>	Yes. Document damage and open iApproval for engine replacement.
		No. Step 6

Step	Action	Decision
6	<p>Perform the following.</p> <ul style="list-style-type: none"> Verify oil has not reached the DOC/DPF if it has remove the DOC/DPF and replace. Reinstall oil pan and refill Replace all 6 injectors (reference Engine Service Manual for instructions) Replace Turbo Center Section 13L (reference Engine Service Manual for instructions) Update turbo oil supply line (reference TSI 14-12-03 for instructions) Clean the Charge Air Cooler (reference TSI 13-12-17R1 for instructions) For applications with feature code 0012THX (Horton Viscous Fan Drive) <ul style="list-style-type: none"> Replace the low mount fan drive clutch (reference service manual for instructions) 	Proceed to Step 9.

Step	Action	Decision
7	<p>Check for internal damage.</p> <ul style="list-style-type: none"> Drain engine oil and remove oil pan Inspect block and liners for damage <p>Is there damage to the block?</p>	Yes. Document damage and open iApproval for engine replacement.
		No. Step 8

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Step	Action	Decision
8	<p>Perform the following.</p> <ul style="list-style-type: none"> • Verify oil has not reached the DOC/DPF. If it has remove the DOC/DPF and replace. • Reinstall oil pan and refill • Replace all 6 injectors (reference service manual for instructions) • Replace Turbo Center Section 13L (reference Engine Service Manual for instructions) • Update turbo oil supply line (reference TSI 14-12-03 for instructions) • Replace the water pump (reference service manual for instructions) • Clean the Charge Air Cooler (reference TSI 13-12-17R1 for instructions) • For applications with feature code 0012THX (Horton Viscous Fan Drive) <ul style="list-style-type: none"> ◦ Replace the low mount fan drive clutch (reference service manual for instructions) 	Proceed to Step 9.

Step	Action	Decision
9	<p>Verify engine calibration.</p> <ul style="list-style-type: none"> • Review Health Report or on Command Connection for calibration level <p>Is the calibration up-to-date?</p>	<p>Yes. Diagnostic complete.</p> <hr/> <p>No. Update calibration. Diagnostic complete.</p>

REPAIR STEPS

See service manual or above linked iKNowS/TSI's for appropriate repair steps.

WARRANTY INFORMATION

Claim Requirements/Approvals:

Full engine replacement requires an iApproval
 DOC/DPF replacement requires an iApproval

Warranty Claim Coding:

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Group:	12000 - Engine
Noun:	135 - Turbocharger, Hi PSI or Single

Standard Repair Times:

If MaxxForce 15 and N13 SRTs are not available, use MaxxForce 13 times as T-time.

Step	Description	Chassis	Engine	SRT	Hours
1,3	Visual Inspection	ProStar+	2010 EPA MaxxForce 11/13	R12-2117U	0.3
		WorkStar	2010 EPA MaxxForce 11/13	N12-2117U	0.3
		PayStar (5000)	2010 EPA MaxxForce 11/13	T12-2117U	0.3
		TranStar (8600)	2010 EPA MaxxForce 11/13	Q12-2117U	0.3
2	Check trip data for Max RPM recorded	ProStar+	2010 EPA MaxxForce 11/13	R12-2119U	0.1
		WorkStar	2010 EPA MaxxForce 11/13	N12-2119U	0.1
		PayStar (5000)	2010 EPA MaxxForce 11/13	T12-2119U	0.1
		TranStar (8600)	2010 EPA MaxxForce 11/13	Q12-2119U	0.1
5,6 7,8	Remove and reinstall oil pan	ProStar+	2010 EPA MaxxForce 11/13	R12-4591U	2.0
		WorkStar	2010 EPA MaxxForce 11/13	N12-4591U	2.0
		PayStar (5000)	2010 EPA MaxxForce 11/13	T12-4591U	2.0
		TranStar (8600)	2010 EPA MaxxForce 11/13	Q12-4591U	2.0
6,8	Remove and Replace Injectors (6)	ProStar+	2010 EPA MaxxForce 11/13	R12-7563U-15	4.6
		WorkStar	2010 EPA MaxxForce 11/13	N12-7563U-15	4.3
		PayStar (5000)	2010 EPA MaxxForce 11/13	T12-7563U-15	4.3
		TranStar (8600)	2010 EPA MaxxForce 11/13	Q12-7563U-15	4.3
		ProStar+	2010 EPA MaxxForce 11/13		0.5

				R12-7563U-1	
6,8	Injector R&R, Engine Brake add-on	WorkStar	2010 EPA MaxxFORCE 11/13	N12-7563U-1	0.5
		PayStar (5000)	2010 EPA MaxxFORCE 11/13	T12-7563U-1	0.5
		TranStar (8600)	2010 EPA MaxxFORCE 11/13	Q12-7563U-1	0.5
6,8	Remove and Replace Turbo Center Section	ProStar+	2010 EPA MaxxFORCE 11/13	R12-6135U-21	2.3
		WorkStar	2010 EPA MaxxFORCE 11/13	N12-6135U-21	2.3
		PayStar (5000)	2010 EPA MaxxFORCE 11/13	T12-6135U-21	2.3
		TranStar (8600)	2010 EPA MaxxFORCE 11/13	Q12-6135U-21	2.3
8	Remove and Replace Water Pump	ProStar+	2010 EPA MaxxFORCE 11/13	R12-3374A	1.4
		WorkStar	2010 EPA MaxxFORCE 11/13	N12-3774A	1.4
		PayStar (5000)	2010 EPA MaxxFORCE 11/13	T12-3374A	1.4
		TranStar (8600)	2010 EPA MaxxFORCE 11/13	Q12-3774A	1.4
6,8	CAC Cleaning	All	2010 EPA MaxxFORCE 11/13	A09-3925A	1.1
9	Calibration Update	All	2010 EPA MaxxFORCE 11/13	A12-3510A-20	0.4
6,8	DOC/DPF removal and inspection	Horizontal Aftertreatment	2010 EPA MaxxFORCE 11/13	A12-4901	0.9
		Vertical Aftertreatment	2010 EPA MaxxFORCE 11/13	A12-4903	1.0
6,8	CAC Removal and Reinstallation	ProStar+	2010 EPA MaxxFORCE 11/13	R09-3925U-20	1.0
		WorkStar	2010 EPA MaxxFORCE 11/13	N09-3925U-21	3.0
		PayStar (5000)	2010 EPA MaxxFORCE 11/13	T-Time	3.0
		TranStar (8600)	2010 EPA MaxxFORCE 11/13		1.0

				Q09-3925U-20	
2,3 5,7	Engine Assembly Removal and Installation	ProStar+	2010 EPA MaxxFORCE 11/13	R12-1051U	14.2
		WorkStar	2010 EPA MaxxFORCE 11/13	N12-1051U	14.8
		PayStar (5000)	2010 EPA MaxxFORCE 11/13	T12-1051U	13.8
		TranStar (8600)	2010 EPA MaxxFORCE 11/13	Q12-1051U	13.8
6,8	Retrofit Turbo Oil Supply Line	ProStar+ 122	2010 EPA MaxxFORCE 11/13	R12-6135U-3	0.3
		ProStar+ 113	2010 EPA MaxxFORCE 11/13	R12-6135U-4	0.1
		WorkStar	2010 EPA MaxxFORCE 11/13	N12-6135U-4	0.1
		PayStar (5000)	2010 EPA MaxxFORCE 11/13	T12-6135U-4	0.1
		TranStar (8600)	2010 EPA MaxxFORCE 11/13	Q12-6135U-4	0.1
6,8	Fan Drive Replacement	ProStar+122	2010 EPA MaxxFORCE 11/13	R12-3744U	1.1
		ProStar+113	2010 EPA MaxxFORCE 11/13	R12-3744U-20	2.4
		WorkStar	2010 EPA MaxxFORCE 11/13	N12-3744U	2.4
		PayStar (5000)	2010 EPA MaxxFORCE 11/13	T12-3744U	2.4
		TranStar (8600)	2010 EPA MaxxFORCE 11/13	Q12-3744U	2.4

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OTHER RESOURCES

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