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**Document ID:** IK1201048

**Availability:** ISIS, FleetISIS

**Major System:** ENGINES

**Current Language:** English

**Other Languages:** NONE

**Viewed:** 14467

**Revision:** 7

**Created:** 1/8/2014

**Last Modified:** 5/4/2015

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#### Coding Information

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**Title:** 190-0 Engine Overspeed Vehicle Event Fault

**Applies To:** 2010 MaxxForce 11,13,15, N13

## CHANGE LOG

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 fan drive replacement information  
 2014/06/09 - Updated repair to include Oil Supply Line

## 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 |
|----------------|---------------------------------------------------|

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<br>Engine Speed > 2600 RPM<br>for > 1 Sec, MIL sets<br>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    | <b>Visually inspect the turbo outlet pipe.</b> <ul style="list-style-type: none"> <li>• Remove turbo outlet pipe</li> <li>• Remove CAC outlet pipe</li> </ul> Is there excessive oil coming from the High Pressure Turbo                                           | <b>Yes.</b> Step 3                                                                                |
|      |                                                                                                                                                                                                                                                                    | <b>No.</b> Step 2                                                                                 |
| Step | Action                                                                                                                                                                                                                                                             | Decision                                                                                          |
| 2    | <b>Interview Driver.</b> <ul style="list-style-type: none"> <li>• When did the fault occur?</li> <li>• How was the truck operating when the fault occurred?</li> <li>• Save Freeze Frame data from 190-0 fault code</li> <li>• Save vehicle trip report</li> </ul> | <b>Open a Case File.</b> Attach the trip report, freeze frame data and set condition information. |
| Step | Action                                                                                                                                                                                                                                                             | Decision                                                                                          |
| 3    | <b>Visually inspect the engine block for damage.</b><br>Is there damage to the block?                                                                                                                                                                              | <b>Yes.</b> Document damage and open iApproval for engine replacement.                            |
|      |                                                                                                                                                                                                                                                                    | <b>No.</b> Step 4                                                                                 |

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

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

| Step | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Decision           |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 6    | <b>Perform the following.</b> <ul style="list-style-type: none"> <li>Verify oil has not reached the DOC/DPF if it has remove the DOC/DPF and replace.</li> <li>Reinstall oil pan and refill</li> <li>Replace all 6 injectors (reference Engine Service Manual for instructions)</li> <li>Replace Turbo Center Section <b>13L</b> (reference Engine Service Manual for instructions)</li> <li>Replace Turbo Center Section <b>11L</b> (reference <a href="#">IK1201073</a> for instructions)</li> <li>Update turbo oil supply line (reference <a href="#">TSI 14-12-03</a> for instructions)</li> <li>Clean the Charge Air Cooler (reference <a href="#">TSI 13-12-17R1</a> for instructions)</li> <li><b>For applications with feature code 0012THX (Horton Viscous Fan Drive)</b> <ul style="list-style-type: none"> <li>Replace the low mount fan drive clutch (reference service manual for instructions)</li> </ul> </li> </ul> | Proceed to Step 9. |

| Step | Action                                                                                                                                                               | Decision                                                                   |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 7    | <b>Check for internal damage.</b> <ul style="list-style-type: none"> <li>Drain engine oil and remove oil pan</li> <li>Inspect block and liners for damage</li> </ul> | <b>Yes.</b> Document damage and open iApproval for engine replacement.<br> |

|  |                               |                   |
|--|-------------------------------|-------------------|
|  | Is there damage to the block? | <b>No.</b> Step 8 |
|--|-------------------------------|-------------------|

| Step | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Decision           |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 8    | <b>Perform the following.</b> <ul style="list-style-type: none"> <li>• Verify oil has not reached the DOC/DPF. If it has remove the DOC/DPF and replace.</li> <li>• Reinstall oil pan and refill</li> <li>• Replace all 6 injectors (reference service manual for instructions)</li> <li>• Replace Turbo Center Section <b>13L</b> (reference Engine Service Manual for instructions)</li> <li>• Replace Turbo Center Section <b>11L</b> (reference <a href="#">IK1201073</a> for instructions)</li> <li>• Update turbo oil supply line (reference <a href="#">TSI 14-12-03</a> for instructions)</li> <li>• Replace the water pump (reference service manual for instructions)</li> <li>• Clean the Charge Air Cooler (reference <a href="#">TSI 13-12-17R1</a> for instructions)</li> <li>• <b>For applications with feature code 0012THX (Horton Viscous Fan Drive)</b> <ul style="list-style-type: none"> <li>◦ Replace the low mount fan drive clutch (reference service manual for instructions)</li> </ul> </li> </ul> | Proceed to Step 9. |

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

## **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:

|               |                                      |
|---------------|--------------------------------------|
| <b>Group:</b> | 12000 - Engine                       |
| <b>Noun:</b>  | 135 - Turbocharger, Hi PSI or Single |

### Standard Repair Times:

| 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<br>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 |
| 6,8 | Injector R&R,<br>Engine Brake add-on          | ProStar+                     | 2010 EPA MaxxForce 11/13 | R12-7563U-1  | 0.5 |
|     |                                               | 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<br>Replace Turbo<br>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<br>Replace Water<br>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<br>and inspection             | Horizontal<br>Aftertreatment | 2010 EPA MaxxForce 11/13 | A12-4901     | 0.9 |
|     |                                               | Vertical<br>Aftertreatment   | 2010 EPA MaxxForce 11/13 | A12-4903     | 1.0 |
| 6,8 | CAC Removal and<br>Reinstallation             | ProStar+                     | 2010 EPA MaxxForce 11/13 | R09-3925U-20 | 1.0 |
|     |                                               | WorkStar                     | 2010 EPA MaxxForce 11/13 | N09-3925U-21 | 3.0 |
|     |                                               |                              | 2010 EPA MaxxForce 11/13 |              | 3.0 |

|            |                                                |                 |                          |              |      |
|------------|------------------------------------------------|-----------------|--------------------------|--------------|------|
|            |                                                | PayStar (5000)  |                          | T-Time       |      |
|            |                                                | TranStar (8600) | 2010 EPA MaxxForce 11/13 | Q09-3925U-20 | 1.0  |
| 2,3<br>5,7 | Engine Assembly<br>Removal and<br>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<br>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<br>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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