

<b>Technical Service Bulletin Number</b>
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TSB150038
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## Technical Service Bulletin

### Subject

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Improper Exhaust Gas Recirculation (EGR) Cooler Replacement with No Failure Found

### Issue

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Exhaust Gas Recirculation (EGR) coolers returned to the factory, stated to be failed because of internal coolant leaks, were tested and found to be within specification.

The EGR coolers tested by the factory were found to have acceptable measured pressure loss and no continuous formation of bubbles near the gas tubes or bulkhead while performing the EGR cooler pressure test found in Procedure 011-019 in the ISX12 G CM2180 EJ Service Manual.

The EGR coolers, incorrectly stated to be failed because of internal coolant leaks, were replaced for the following reason(s):

- Signs of moisture in the EGR cooler
- Signs of moisture in the EGR crossover tube
- Hard to diagnose low coolant level fault codes

### Verification

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Product Affected:

- ISX12 G CM2180 EJ

The EGR cooler pressure test **must** be performed to determine if the EGR cooler is leaking coolant. Moisture in the EGR crossover tube or EGR cooler may be water condensation and is **not** adequate evidence that the EGR cooler is leaking. Use the following procedure in the

ISX12 G CM2180 EJ Service Manual, Bulletin 4310682. [Refer to Procedure 011-019 in section 11.](#)

## Resolution

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The EGR cooler should **only** be replaced for the following reason(s):

- EGR cooler does **not** pass the EGR cooler pressure test
- EGR cooler does **not** meet the reuse guidelines defined in the clean and inspect for reuse section of Procedure 011-019 in section 11

## Warranty Statement

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The information in this document has no effect on present warranty coverage or repair practices, nor does it authorize TRP or Campaign actions.

## Document History

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Date	Details
2015-3-18	Module Created
2015-3-20	none

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**Last Modified: 20-Mar-2015**

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**Technical Service Bulletin Number**

TSB140019

**Technical Service Bulletin****Subject**

ISX15 CM2250, QSX15 CM2250 ECF, ISX12 CM2250, and QSX11.9 CM2250 ECF Fuel Pump - Ceramic Plunger and Tappet Roller Inspection and Repair

**Warranty Statement**

The information in this document has no effect on present warranty coverage or repair practices, nor does it authorize TRP or Campaign actions.

**Contents**

<b>Associated Procedures</b>			
<b>Procedure Title</b>	<b>Procedure Number</b>	<b>Service Model Name</b>	<b>Bulletin Number</b>
Fuel Pump	<a href="#">Refer to Procedure 005-016</a>	ISX15 CM2250	4022250
Fuel Pump	<a href="#">Refer to Procedure 005-016</a>	ISX12/ISX11.9 CM2250	2883445
Fuel Pump	<a href="#">Refer to Procedure 005-016</a>	QSX15 CM2250 ECF	2883557
Fuel Pump	<a href="#">Refer to Procedure 005-016</a>	QSX11.9 CM2250 ECF	2883561
Fuel Pump Head	<a href="#">Refer to Procedure 005-227</a>	ISX15 CM2250	4022250
Fuel Pump Head	<a href="#">Refer to Procedure</a>	ISX12/ISX11.9	2883445

	005-227	CM2250	
Fuel Pump Head	Refer to Procedure 005-227	QSX15 CM2250 ECF	2883557
Fuel Pump Head	Refer to Procedure 005-227	QSX11.9 CM2250 ECF	2883561
Lubricating Oil Cooler	Refer to Procedure 007-003	ISX15 CM2250	4022250
Lubricating Oil Cooler	Refer to Procedure 007-003	ISX12/ISX11.9 CM2250	2883445
Lubricating Oil Cooler	Refer to Procedure 007-003	QSX15 CM2250 ECF	2883557
Lubricating Oil Cooler	Refer to Procedure 007-003	QSX11.9 CM2250 ECF	2883561
Lubricating Oil Cooler Element	Refer to Procedure 007-007	ISX15 CM2250	4022250
Lubricating Oil Cooler Element	Refer to Procedure 007-007	ISX12/ISX11.9 CM2250	2883445
Lubricating Oil Cooler Element	Refer to Procedure 007-007	QSX15 CM2250 ECF	2883557
Lubricating Oil Cooler Element	Refer to Procedure 007-007	QSX11.9 CM2250 ECF	2883561
Lubricating Oil Filter (Spin- On)	Refer to Procedure 007-013	ISX15 CM2250	4022250
Lubricating Oil Filter (Spin- On)	Refer to Procedure 007-013	ISX12/ISX11.9 CM2250	2883445
Lubricating Oil Filter (Spin- On)	Refer to Procedure 007-013	QSX15 CM2250 ECF	2883557
Lubricating Oil Filter (Spin- On)	Refer to Procedure 007-013	QSX11.9 CM2250 ECF	2883561
Lubricating Oil Filter Bypass Valve	Refer to Procedure 007-014	ISX15 CM2250	4022250
Lubricating Oil Filter Bypass Valve	Refer to Procedure 007-014	ISX12/ISX11.9 CM2250	2883445
Lubricating Oil Filter Bypass Valve	Refer to Procedure 007-014	QSX15 CM2250 ECF	2883557
Lubricating Oil Filter Bypass Valve	Refer to Procedure 007-014	QSX11.9 CM2250 ECF	2883561
Lubricating Oil Thermostat	Refer to Procedure	ISX15 CM2250	4022250

	007-039		
Lubricating Oil Thermostat	Refer to Procedure 007-039	ISX12/ISX11.9 CM2250	2883445
Lubricating Oil Thermostat	Refer to Procedure 007-039	QSX15 CM2250 ECF	2883557
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Aftertreatment Testing	Refer to Procedure 014-013	ISX15 CM2250	4022250
Aftertreatment Testing	Refer to Procedure 014-013	ISX12/ISX11.9 CM2250	2883445
Aftertreatment Testing	Refer to Procedure 014-013	QSX15 CM2250 ECF	2883557
Aftertreatment Testing	Refer to Procedure 014-013	QSX11.9 CM2250 ECF	2883561

This document, in conjunction with the information provided within the manuals listed in the table above, provides the inspection and repair practice when ceramic plungers are found to be fractured (see Figure 1) and/or tappet roller damage is found on fuel pumps with ceramic plungers (see Figure 2). Ceramic plungers can be identified by their white color. See Procedure 005-227 in the Associated Procedures Table for removal of the fuel pump head.



Figure 1: Fractured Fuel Pump Ceramic Pumping Plunger

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Figure 2: Fuel Pump Tappet Roller Assemblies

If the ceramic plungers are fractured (see Figure 1), but no damage is found on the fuel pump tappet rollers (see Figure 2), no further inspection is needed. Perform the following steps for the appropriate engine (ISX15 CM2250, QSX15 CM2250 ECF, ISX12/ISX11.9 CM2250, or QSX11.9 CM2250 ECF):

1. Replace the fuel pump. See Procedure 005-016 in the Associated Procedures Table.
  - a. For ISX15 CM2250 or QSX15 CM2250 ECF: Refer to TSB110064 (New Two-Cylinder High-Pressure Fuel Pump Assembly) if replacing a three-cylinder two-piston pump with a two-cylinder pump.
  - b. For ISX15 CM2250 or QSX15 CM2250 ECF: New fuel lines are required if replacing a fuel pump gear pump with bottom mount fuel lines. See Technical Service Bulletin, New Fuel Pump Gear Pump with Revised Fuel Line Locations, TSB130044.
2. Change the engine lubricating oil and lubricating oil filter. See Procedure 007-013 in the Associated Procedures Table.

If the fuel pump tappet rollers are damaged (see Figure 2), perform the following steps for the appropriate engine (ISX15 CM2250, QSX15 CM2250 ECF, ISX12/ISX11.9 CM2250, or QSX11.9 CM2250 ECF):

1. Replace the fuel pump. See Procedure 005-016 in the Associated Procedures Table.
  - a. For ISX15 CM2250 or QSX15 CM2250 ECF: See Technical Service Bulletin, New Two-Cylinder High-Pressure Fuel Pump Assembly, TSB110064, if replacing a three-cylinder two-piston pump with a two-cylinder pump.
  - b. For ISX15 CM2250 or QSX15 CM2250 ECF: New fuel lines are required if replacing a fuel pump gear pump with bottom mount fuel lines. See Technical Service Bulletin, New Fuel Pump Gear Pump with Revised Fuel Line Locations, TSB130044.
  - c. For ISX15 CM2250 engines not covered by warranty, there is an option to use a fuel pump short block service kit. See Technical Service Bulletin, New Fuel Pump Short Block Service Kit, TSB150033.
2. Drain the engine lubricating oil and remove the lubricating oil filter. See Procedure 007-013 in the Associated Procedures Table.
3. Thoroughly clean the oil cooler housing. See Procedure 007-003 in the Associated Procedures Table.
4. Replace the lubricating oil cooler element. See Procedure 007-007 in the Associated Procedures Table.
5. Replace the oil filter bypass valve. See Procedure 007-014 in the Associated Procedures Table.
6. Replace the lubricating oil thermostat. See Procedure 007-039 in the Associated Procedures Table.
7. Install a new lubricating oil filter. See Procedure 007-013 in the Associated Procedures Table.
8. Fill the engine with new lubricating oil.
9. Perform an aftertreatment diesel particulate filter regeneration. See Procedure 014-013 in the Associated Procedures Table.
10. Perform a second lubricating oil and lubricating oil filter change. See Procedure 007-013 in the Associated Procedures Table.

## CAUTION

Immediately upon removal of the lubricating oil cooler assembly, a plug must be inserted into the housing and cylinder block oil passage drillings. Failure to insert the oil passage plug can result in a bearing failure, crankshaft failure, or both.

## CAUTION

Do not allow dirt or foreign material to enter oil passages in the cylinder block when cleaning the gasket sealing surfaces. Connecting rod bearing failures can be caused if debris is introduced into the cylinder block or lubricating oil cooler housing oil passages. Therefore, use of power tools combined with abrasive pads to clean gasket surfaces is not recommended.

## Document History

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Date	Details
2014-2-14	Module Created
2014-9-4	none
2014-10-24	Broken link
2014-10-29	typo
2015-1-7	Procedure steps need updated
2015-3-17	Added the fuel pump short block service kit TSB reference

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