Technical Service Bulletin

Technical Service Bulletin: TSB200182	**Released Date**: 18-Feb-2021
Water In the Fuel System and Corrosion on Fuel System Components	

Water In the Fuel System and Corrosion on Fuel System Components

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

Product Affected

- B4.5 CM2350 B129B
- B4.5 CM2350 B146C
- B4.5 CM2350 B147B
- B6.7 CM2350 B121B
- B6.7 CM2350 B135B
- B6.7 CM2350 B136C
- B6.7 CM2350 B148B
- B6.7 CM2450 B155B
- B6.7 CM2670 B167B
- ISB/ISD6.7 CM2150 SN
- ISB6.7 CM2350 B103
- ISF2.8 CM2220
- ISF2.8 CM2220 AN
- ISF2.8 CM2220 ECCF2
- ISF2.8 CM2220 ECF2

- ISF2.8 CM2220 F101
- ISF2.8 CM2220 F122
- ISF2.8 CM2220 F129
- ISF2.8 CM2220 IAN
- QSB4.5 CM2350 B106
- QSB4.5 CM2350 B122
- QSB6.7 CM2150 B109
- QSB6.7 CM2250 B128
- QSB6.7 CM2250 EC
- QSB6.7 CM2350 B105
- QSB6.7 CM2350 B112
- QSB6.7 CM2350 B130
- QSB6.7 CM850(CM2850)
- QSB7 CM2880 B117
- QSF2.8 CM2880 F104
- QSF2.8 CM2880 F105
- QSF2.8 CM2880 F108
- QSF2.8 CM2880 F114

Issue

Water in the fuel systems will cause corrosion on fuel system components. This document outlines ways to identify corrosion on fuel system components and detect water in the fuel.

Symptom:

- Corrosion on fuel system components
- Any of the fault codes found in Table 1 below

Table 1, Fault Codes Related to Fuel System Corrosion

Fault Code	Fault Code Description
322	Injector Solenoid Driver Cylinder 1 Circuit - Current Below Normal or Open Circuit
323	Injector Solenoid Driver Cylinder 5 Circuit - Current Below Normal or Open Circuit

Table 1, Fault Codes Related to Fuel System Corrosion	
Fault Code	**Fault Code Description**
324	Injector Solenoid Driver Cylinder 3 Circuit - Current Below Normal or Open Circuit
325	Injector Solenoid Driver Cylinder 6 Circuit - Current Below Normal or Open Circuit
331	Injector Solenoid Driver Cylinder 2 Circuit - Current Below Normal or Open Circuit
332	Injector Solenoid Driver Cylinder 4 Circuit - Current Below Normal or Open Circuit
559	Injector Metering Rail 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
1139	Injector Solenoid Driver Cylinder 1 - Mechanical System Not Responding or Out of Adjustment
1141	Injector Solenoid Driver Cylinder 2 - Mechanical System Not Responding or Out of Adjustment
1142	Injector Solenoid Driver Cylinder 3 - Mechanical System Not Responding or Out of Adjustment
1143	Injector Solenoid Driver Cylinder 4 - Mechanical System Not Responding or Out of Adjustment
1144	Injector Solenoid Driver Cylinder 5 - Mechanical System Not Responding or Out of Adjustment
1145	Injector Solenoid Driver Cylinder 6 - Mechanical System Not Responding or Out of Adjustment
1654	Engine Misfire Cylinder 1 - Condition Exists
1655	Engine Misfire Cylinder 2 - Condition Exists
1656	Engine Misfire Cylinder 3 - Condition Exists
1657	Engine Misfire Cylinder 4 - Condition Exists
1658	Engine Misfire Cylinder 5 - Condition Exists

Table 1, Fault Codes Related to Fuel System Corrosion	
Fault Code	**Fault Code Description**
1659	Engine Misfire Cylinder 6 - Condition Exists
1718	Engine Misfire for Multiple Cylinders - Condition Exists
4691	Engine Injector Metering Rail 1 Cranking Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
5895	Engine Misfire Cylinder #1 - Root Cause Not Known
5896	Engine Misfire Cylinder #2 - Root Cause Not Known
5897	Engine Misfire Cylinder #3- Root Cause Not Known
5898	Engine Misfire Cylinder #4 - Root Cause Not Known
5899	Engine Misfire Cylinder #5 - Root Cause Not Known
5911	Engine Misfire Cylinder #6 - Root Cause Not Known
1852	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Moderately Severe Level - Amber

Root Cause

- Water in the fuel system causes damage to the fuel system.

Verification and Resolution

- Inspect fuel system components for corrosion.
  a. **Only** if directed by published troubleshooting to remove the specific parts listed below, check parts listed below for corrosion. Do **not** remove parts outside of those directed by published troubleshooting.
  b. Parts to inspect for corrosion if directed to remove according to published troubleshooting:
     i. Injector fuel supply connector (For example of corrosion, see Figure 2 below)
     ii. Fuel pump electronic fuel control actuator (For example of corrosion, see Figure 4 below)
     iii. Fuel rail pressure relief valve (For example of corrosion, see Figure 6 below
- **Only** If corrosion is found on any of the components listed above, proceed to inspect the fuel tank and see Service Bulletin, Water in Fuel Contamination, Bulletin 5659823 (/qs3/pubsys2/xml/en/bulletin/Examples of Water in Fuel.html) for restoring the fuel system.

- Sample the fuel and inspect for signs of water in the fuel tank.
  a. Sample fuel from the lowest point of the fuel tank.
  b. Siphon fuel or use fuel tank drain plug and drain fuel into a clear container.
  c. Let the fuel sit for 5 minutes.
- Check fuel sample for signs of water in the clear container.
  a. If free-standing water is found in the bottom of the clear container (See Figure 7 below), see Service Bulletin, Water in Fuel Contamination, Bulletin 5659823 (/qs3/pubsys2/xml/en/bulletin/5659823.html) for repair.
  b. If no free-standing water is found at the bottom of the container:
     i. Print fuel bar chart. Select hyperlink below for fuel bar chart.

     Note : https://quickserve.cummins.com/common/files/qsol/cms/distillate_fuel_bar_chart.pdf (https://quickserve.cummins.com/common/files/qsol/cms/distillate_fuel_bar_chart.pdf)

     ii. Place fuel bar chart behind the fuel sample and compare with examples in Figure 8-10.
     iii. If Line 1 on fuel bar chart is **not** visible while looking through fuel sample, see Service Bulletin, Water in Fuel Contamination, Bulletin 5659823 (/qs3/pubsys2/xml/en/bulletin/5659823.html) for restoring the fuel system.

Examples of Corrosion:

Signs of corrosion can be seen in the fuel pump electronic fuel control actuator, fuel rail pressure relief valve, and the injector fuel supply connector. See Figures below for examples.

Figure 1, Normal and Acceptable Corrosion on Injector Connector Above Oring.

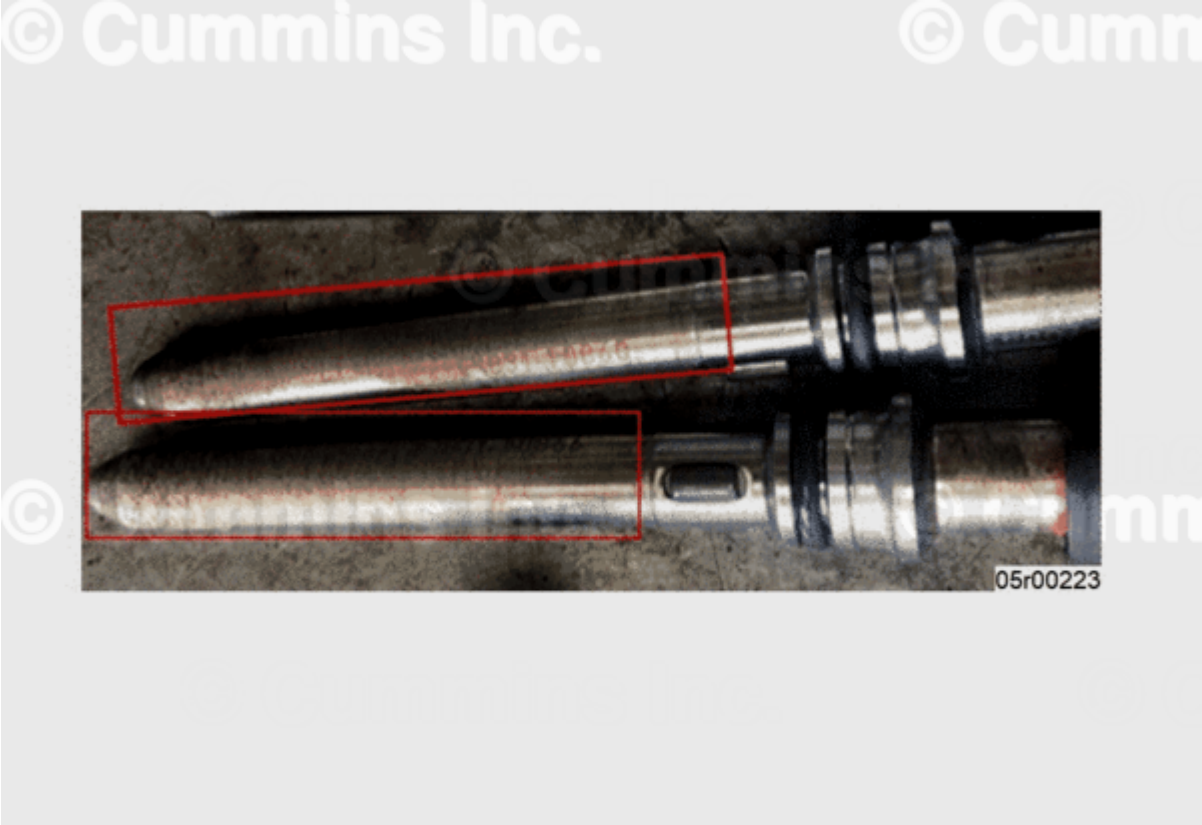

Figure 2, Abnormal and Unacceptable Corrosion on Injector Connector Below Oring.

Figure 3, Clean and Acceptable Fuel pump Electronic Fuel Control Actuator.

Figure 4, Corroded and Unacceptable Fuel pump Electronic Fuel Control Actuator.

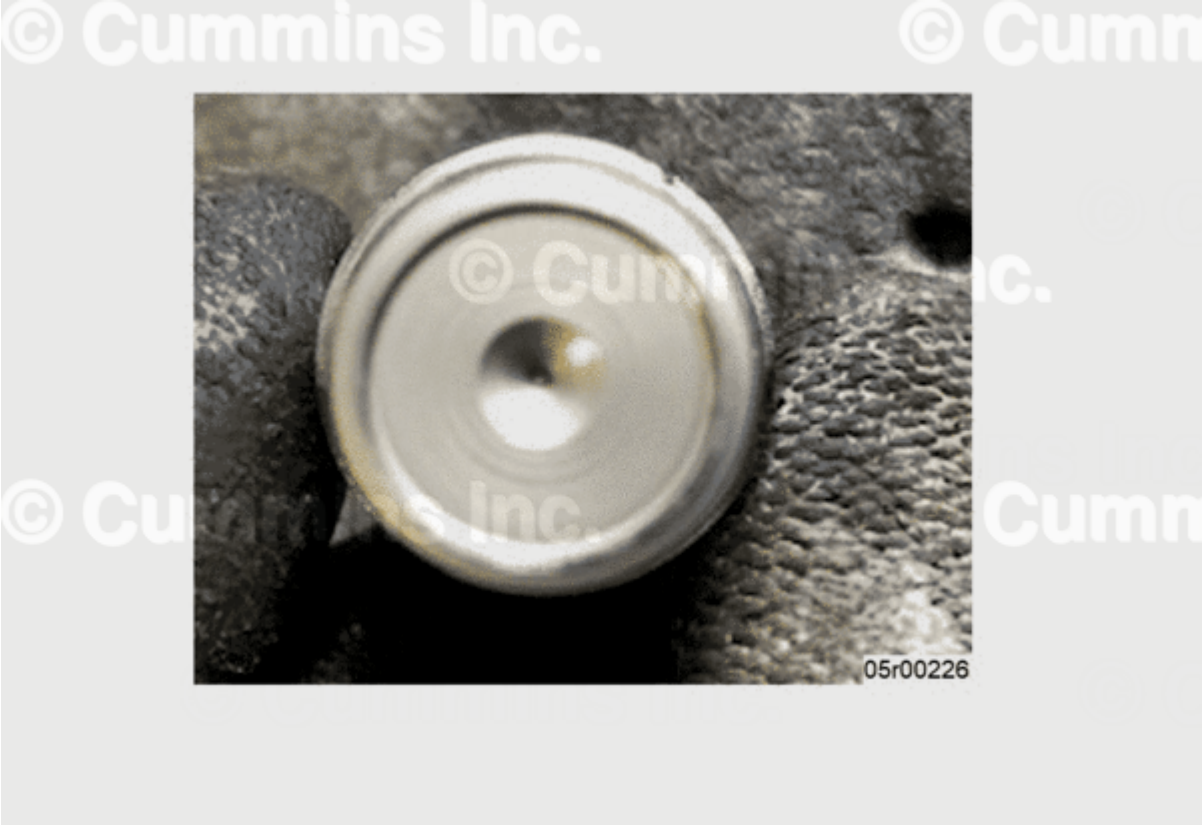

Figure 5, Clean and Acceptable Fuel Rail Pressure Relief Valve Corrosion.

Figure 6, Corroded and Unacceptable Fuel Rail Pressure Relief Valve Corrosion.

Examples of Water in Fuel

Figure 7, Free Standing Water in Diesel Fuel.

Figure 8, 0 ml of Water Added to Diesel Fuel.

Figure 9, 1 ml [.0 fl-oz] Water Added to Diesel Fuel.

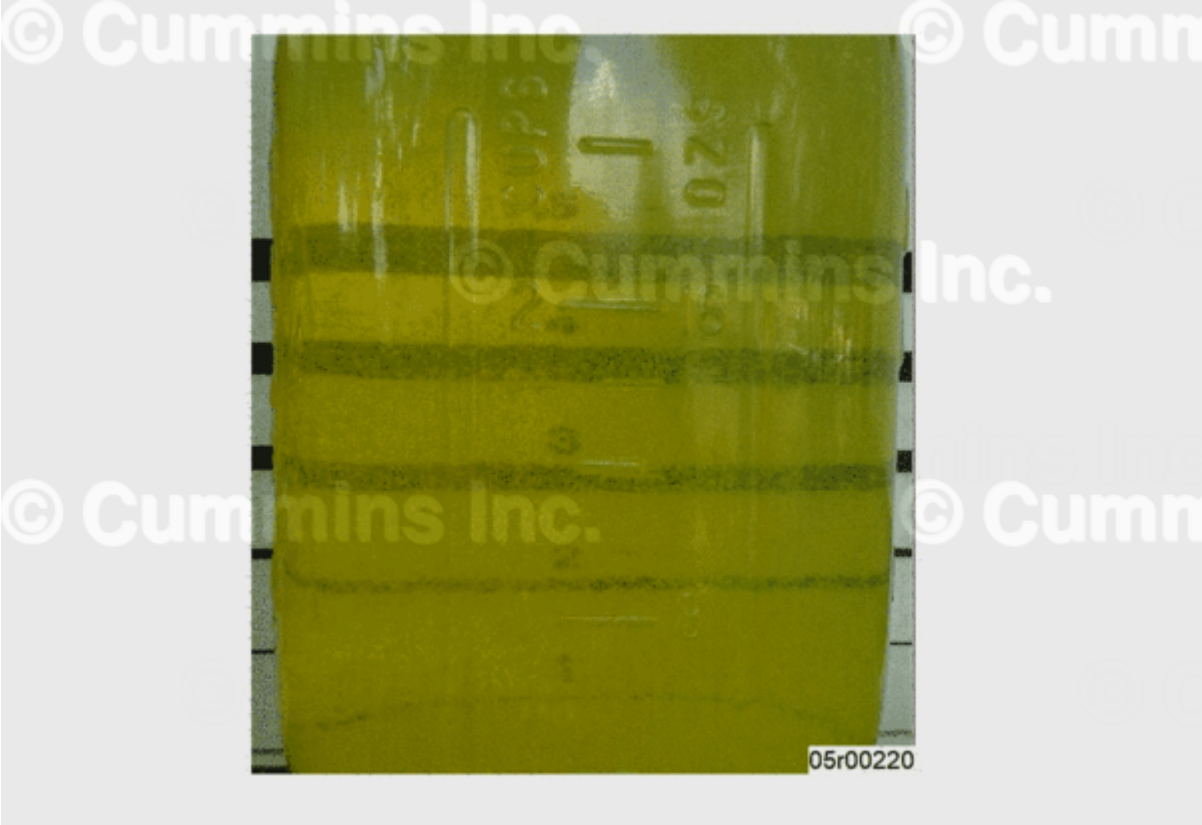

Figure 10, 3 ml [.10 fl-oz] Water Added to Diesel Fuel.

Figure 11, 5 ml [.17 fl-oz] Water Added to Diesel Fuel.

Document History

Date	Details
2020-8-31	Module Created
2020-9-21	Fixed typos.
2020-10-8	Update issue section.
2021-2-17	Added engines to Product Affected.

Last Modified: 18-Feb-2021