Technical Service Bulletin

Technical Service Bulletin: TSB180106	**Released Date**: 15-Aug-2018
Installation Instructions for New Variable Geometry Turbocharger Actuator	

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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:

- X15 CM2350 X114B
- X15 CM2350 X116B

Original Equipment Manufacturer (OEM):

- Kenworth Model:
  - T680
  - T880
- Peterbilt Model:
  - 579
  - 567

Issue

Symptom:

- Fault codes 1894, 2387, 1897, 6432, 5177, 2198, 1976, 1938, 2635, 4956, 4957

Root Cause:

- Prolonged condensate drips from the overhead air conditioning condenser line causes the corrosion of the variable geometry turbocharger (VGT) actuator connector interface.

Verification

Air conditioning line is positioned directly above VGT actuator. See Figure 1 below.

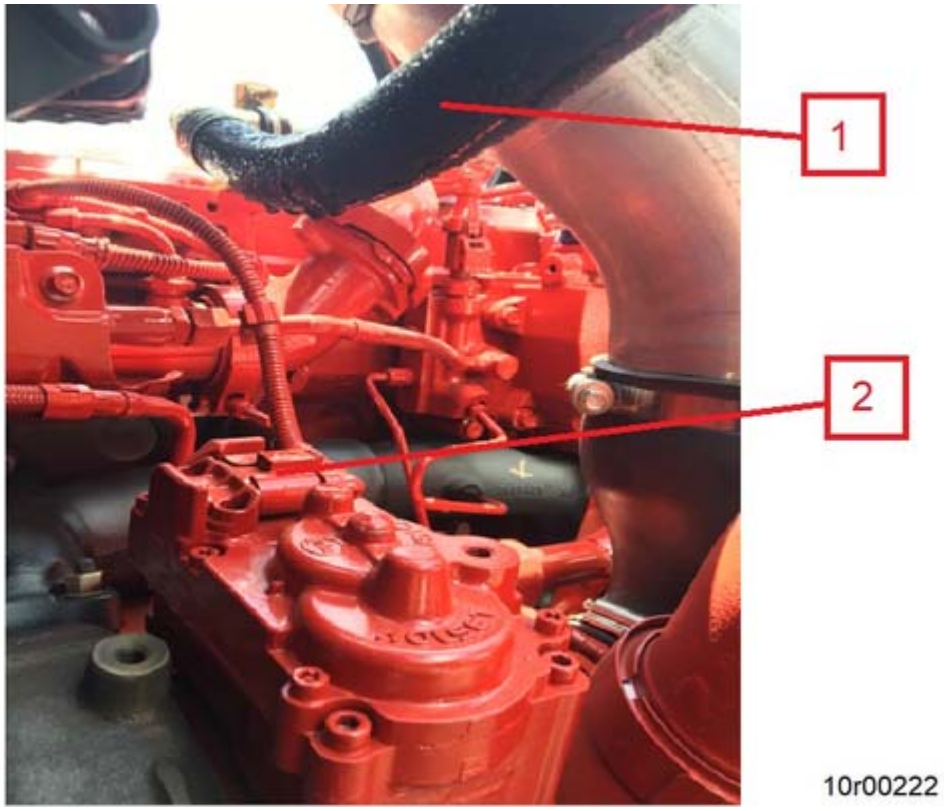

Figure 1, Air Conditioning Line (1), and VGT Actuator (2).

Resolution

- A new VGT actuator installation process has been developed to prevent corrosion of VGT actuator connector interface.
- When installing new VGT actuator, follow Service Instructions below.

Service Instructions

Parts Required

The parts required to install the sealant are provided in Table 1 below.

Table 1, Required Parts	
Part Description	**Part Number**
Loctite® 290 (50 ml bottle)	3823682
Permatex® Flowable Silicone	81730-1
QD® Contact Cleaner	3824510

Installation Tools

Additional tools required for the service procedure are listed below in Table 2.

Table 2, Required Items	
Service Tools	**Additional**
Cleaning brush	Gloves
Automotive pick	Safety glasses
Shop air	-

Objective of Service Instruction:

- Application of Loctite® is to fill in hidden crevices to prevent water intrusion and corrosion.
- Application of Permatex® silicone is to form an external secondary waterproof seal around plastic connector including under connector. See Figure 2 below.

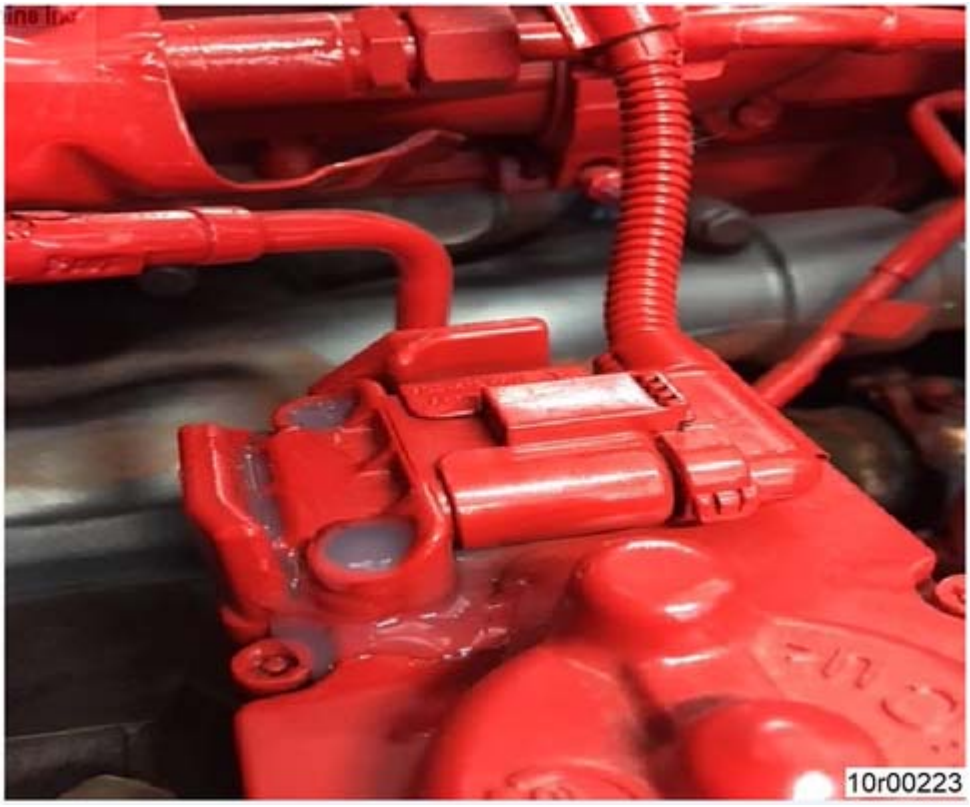

Figure 2, VGT Actuator After Repair.

Personal Protection Equipment (PPE)

- Completing a Job Safety Assessment (JSA) prior to performing work helps identify job safety hazards and prevent incidents.
- To reduce the possibility of personal injury, personal protective equipment (PPE) **must** be utilized. Reference General Safety Instructions Procedure 204-006 in Section I of the corresponding Service Manual.

⚠ WARNING ⚠

Batteries can emit explosive gases. To reduce the possibility of personal injury, always ventilate the compartment before servicing the batteries. To reduce the possibility of arcing, remove the negative (-) battery cable first and attach the negative (-) battery cable last.

Preparatory Steps

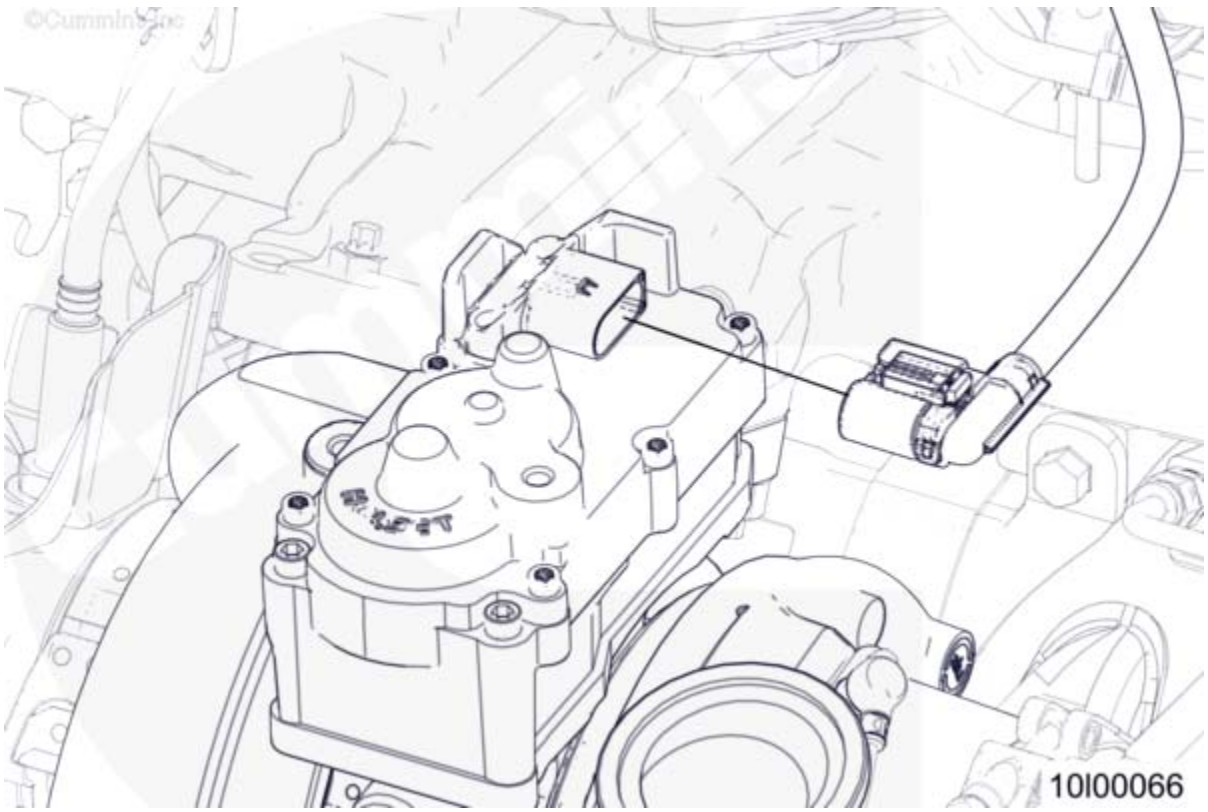

Figure 3, VGT Actuator Disconnect.

1. Turn keyswitch to OFF position.
2. Disconnect batteries. See equipment manufacturer service information.
3. Disconnect VGT actuator from engine wiring harness. See Figure 3 above.

Cleaning and Preparation

Figure 4, Moisture on Air Conditioning Line

1. Clean air conditioner line to remove moisture.
2. Verify water does **not** drop on VGT actuator during cleaning.

⚠ WARNING ⚠

Wear appropriate eye and face protection when using compressed air. Flying debris and dirt can cause personal injury.

Cleaning and Preparation

Figure 5, Cleaning VGT Actuator With Brush.

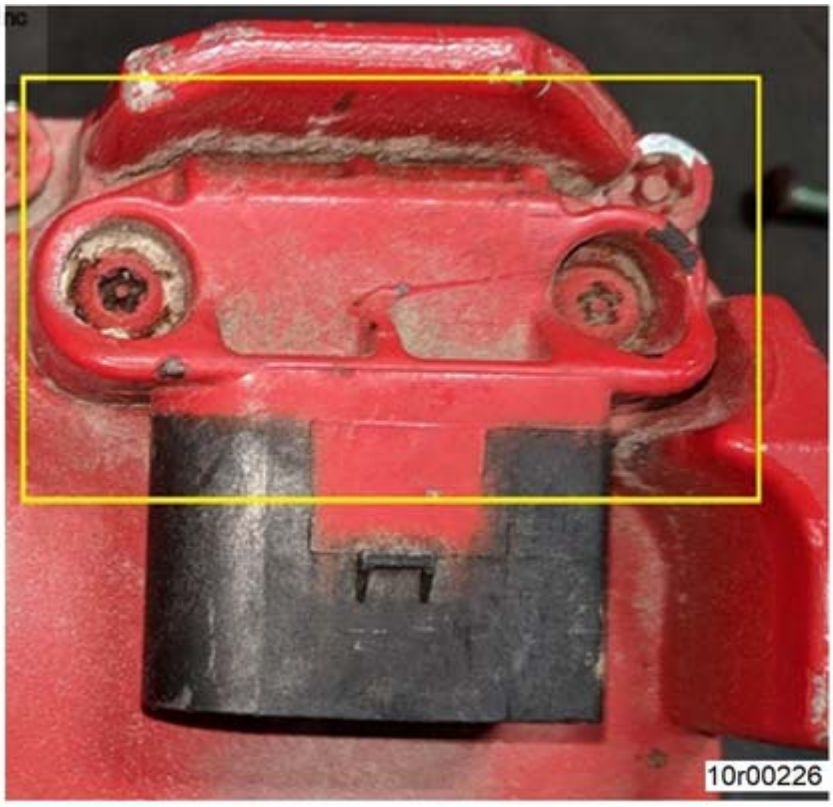

Figure 6, Crusted Debris.

1. Remove loose dirt and debris from around VGT Actuator with brush. See Figure 5 above.
2. Use an automotive pick to loosen any debris between connector and shield. See Figure 6 above.
3. Apply QD® Contact Cleaner, Part Number 3824510, and use a brush around the VGT actuator connector to remove as much oil and dirt as possible.
4. Use shop air to remove any remaining loose debris.

⚠ CAUTION ⚠

Do not apply Loctite® to pin area of the connector. Do not apply loctite to connector capscrews.

Loctite® 290 Application

Figure 7, Application of Loctite®.

Figure 8, Cleaning Excess Loctite®.

Figure 9, Cleaning Excess Loctite®.

1. Apply a liberal amount of Loctite® 290 around entire black plastic VGT actuator connector body where it meets aluminum actuator cover. See Figure 7 above.
2. Clean up any excess Loctite®.
3. Loctite® 290 will wick under plastic cover and fill any gaps that may create a leak path.
4. Check for Loctite® 290 around entire plastic connector body.
5. Wait 5 minutes to allow Loctite® 290 to wick into any crevices.
6. Wipe away excess Loctite® 290 from the VGT actuator and connector with a lint free cloth. See Figures 8 and 9 above.

Permatex® Silicone Application

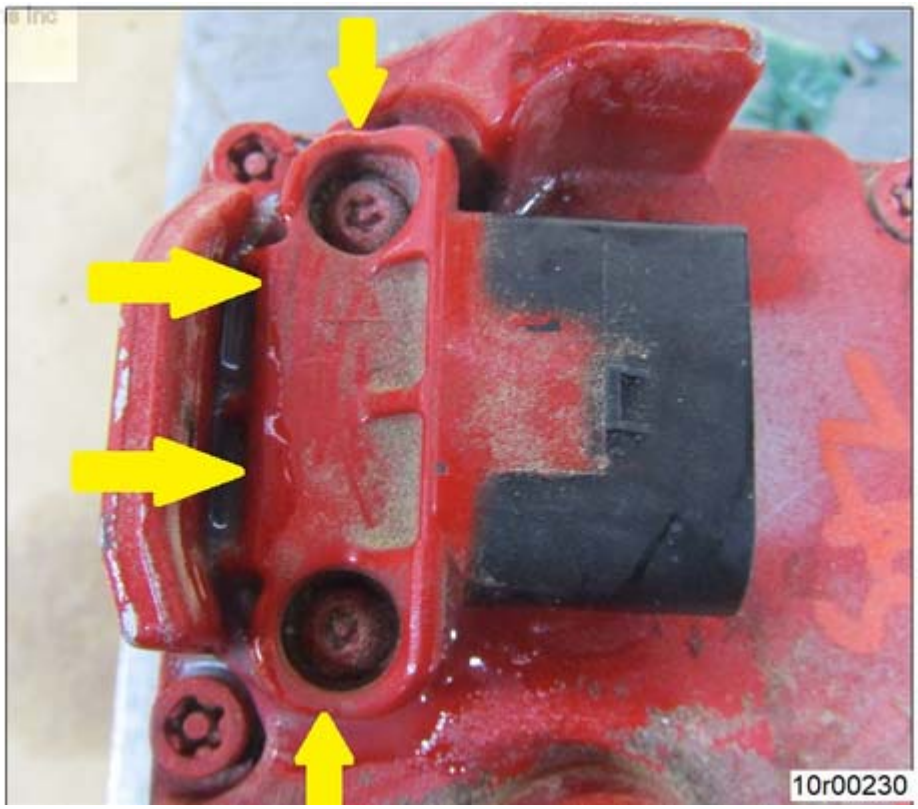

Figure 10, Permatex® Silicone Application Path.

Figure 11, Permatex® Silicone Application On Capscrews.

Figure 12, Permatex® Silicone Application Around Connector

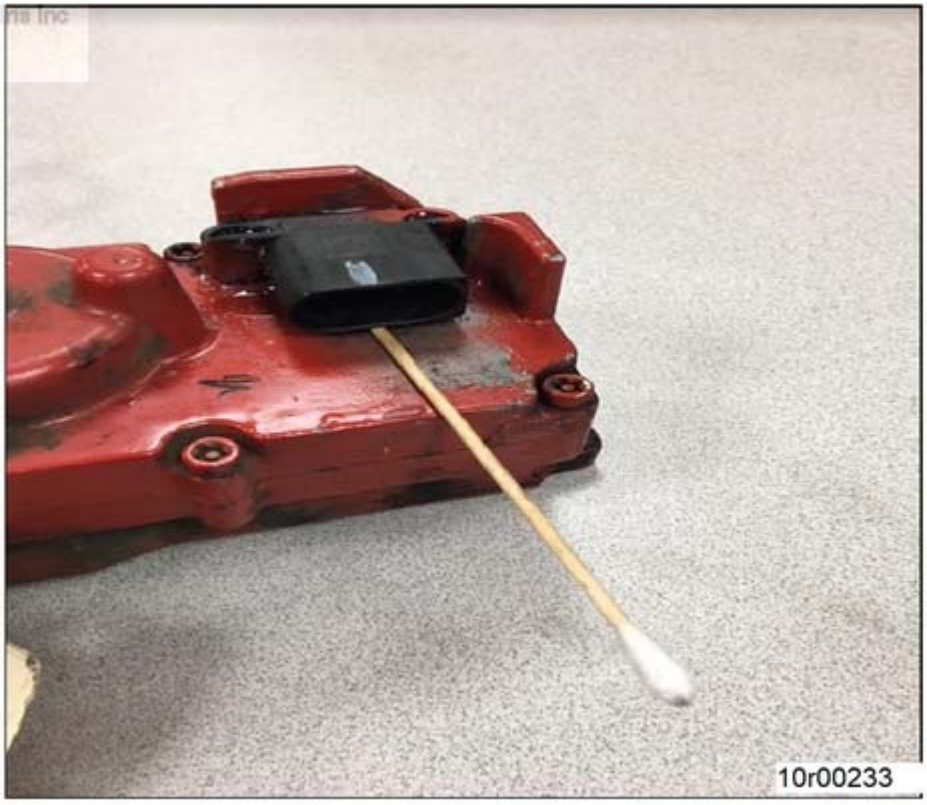

Figure 13, Application of Permatex® Silicone Under Connector.

Figure 14, Witness Mark Applied.

1. Apply Permatex® silicone (PN: 81730-1) around the plastic VGT actuator connector body. See Figure 10.
2. Apply Permatex® silicone on top of VGT actuator connector mounting capscrews. See Figure 11.
3. Apply Permatex® silicone on edges shown, using swab stick to spread silicone underneath to make a thin layer at VGT actuator connector interface. See Figures 12 and 13.
4. Using a white paint marker, apply witness mark “X” on VGT actuator body. See Figure 14.
5. Witness mark indicates repair has been made to VGT actuator.

Finishing Steps

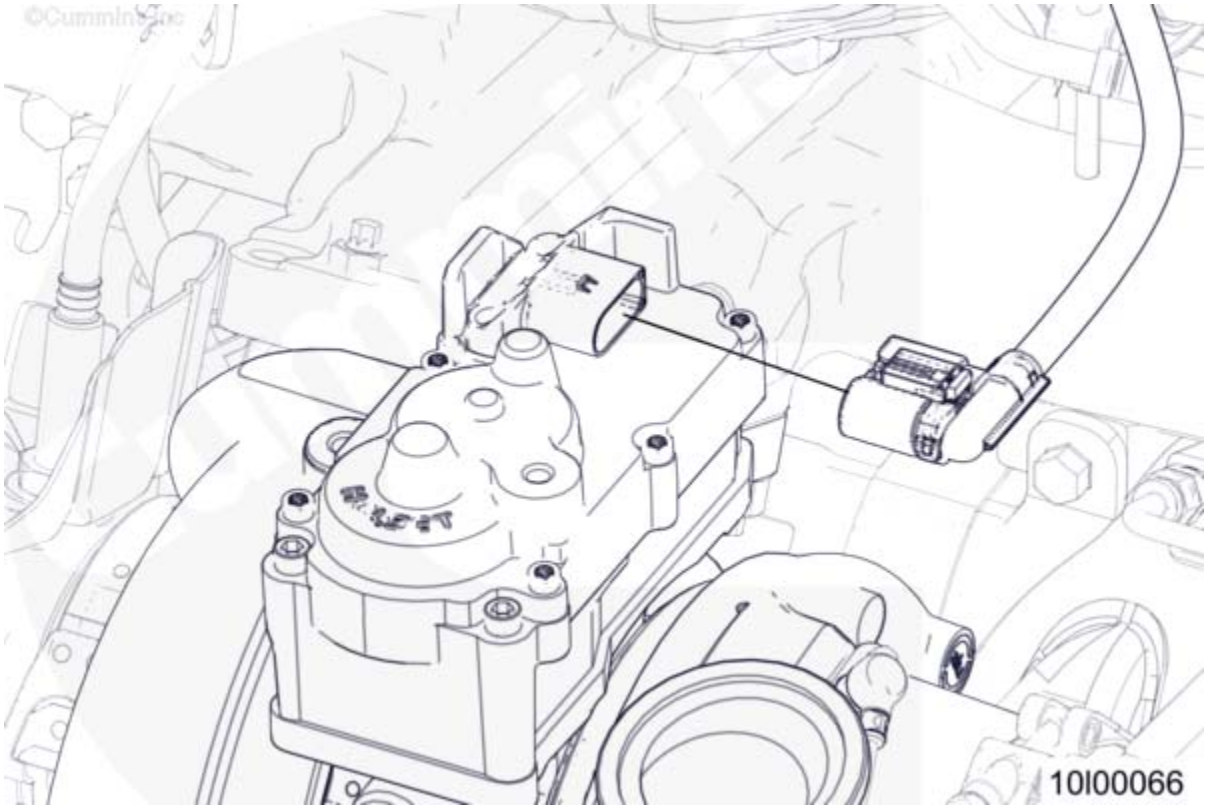

Figure 15, VGT Actuator Connection.

Figure 16, Moisture on Air Conditioning Line.

1. Connect engine wiring harness connector to VGT Actuator. See Figure 15.
2. Install any clips or wire ties that were disturbed.
3. Wipe air conditioning line to verify no moisture is present. See Figure 16.
4. To enable optimum curing, do **not** idle engine with air conditioner ON after application of Loctite® and Permatex® Silicone silicone.
5. Return to service as soon as possible.

Loctite® and Permatex® Silicone Curing:

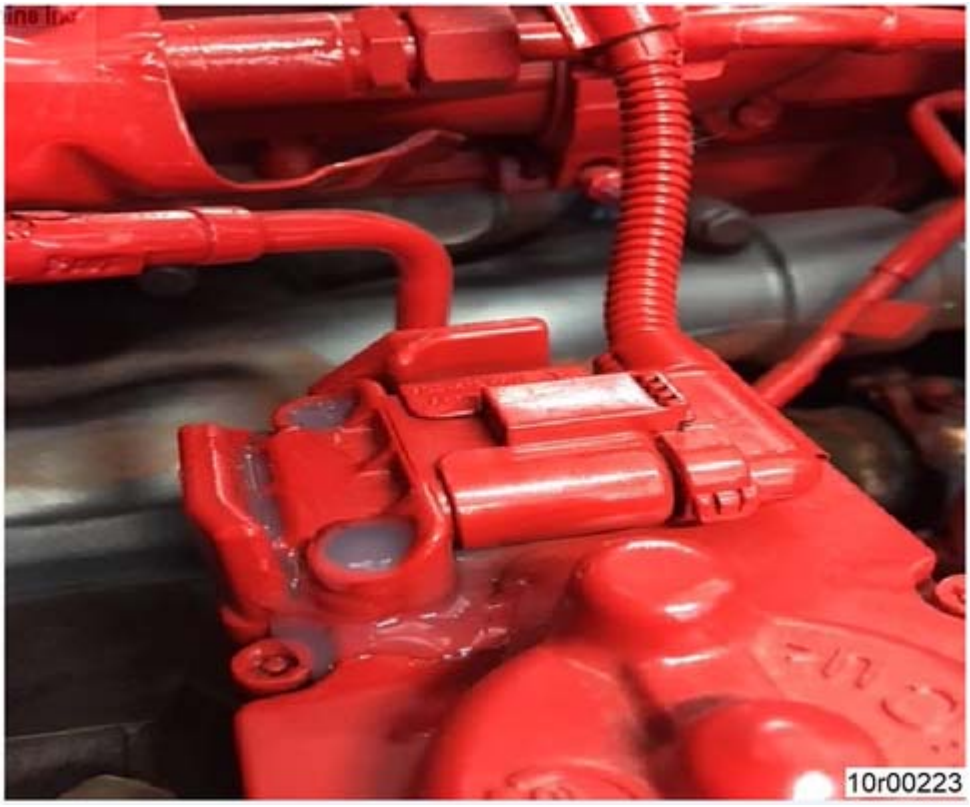

Figure 17, Completed Repair.

- Expect Loctite® to cure as shown in Figure 17 in 2 hours after vehicle returns to service
- Expect the Permatex® Silicone silicone to be tack-free in one hour. Full cure within 24 hours after application

Production Status

Implemented for production. See Table 2.

Table 4, Production Information		
ESN First	**Build Date[1]**	**Plant**
80080832	2 July 2018	Jamestown Engine Plant
[1]Engine build date can be found on engine dataplate.		

Document History

Date	Details
2018-8-8	Module Created

Last Modified: 15-Aug-2018