

**** SOLUTION ****

Title	Model Year (MY) 2017, 2018 - US17 GHG Emissions Engine - Common Rail Fuel Injector - Electrical Test
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Mack Models

Mack Model	LR , TE - TerraPro , AN - Anthem , GR - Granite , PI - Pinnacle
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Volvo Models

Volvo Model	VN , VNL , VNR , VNX , VAH , VHD
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Emission Standard

Emission Standard	US17 , US17+OBD16 , US17+OBD18 , US17+OBD19
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Engine family

Engine family	11L Engine , 13L Engine , MP7 , MP8
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**** SOLUTION ****

Cause	US17 GHG Emissions Engine - Common Rail Fuel Injector electrical faults for " Circuit Open", " Short Circuit High ", and " Circuit Short to Ground or Open ".
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Applicable DTC listed below.

P0201-13	Cylinder 1 Injector "A" Open Circuit
P0202-13	Cylinder 2 Injector "A" Open Circuit
P0203-13	Cylinder 3 Injector "A" Open Circuit
P0204-13	Cylinder 4 Injector "A" Open Circuit
P0205-13	Cylinder 5 Injector "A" Open Circuit
P0206-13	Cylinder 6 Injector "A" Open Circuit
P0262-00	Injector 1 Short Circuit High
P0265-00	Injector 2 Short Circuit High
P0268-00	Injector 3 Short Circuit High
P0271-00	Injector 4 Short Circuit High
P0274-00	Injector 5 Short Circuit High
P0277-00	Injector 6 Short Circuit High
P0256-14	Injector Pump Fuel Metering Control B - Circuit Short To Ground or Open
P2A16-14	Injector Pump Fuel Metering Control D - Circuit Short To Ground or Open
P2A1E-14	Injector Pump Fuel Metering Control F - Circuit Short To Ground or Open
P0259-00	Injection Pump Fuel Metering Control B High
P2A19-00	Injection Pump Fuel Metering Control D High
P2A21-00	Injection Pump Fuel Metering Control F High

Solution

NOTE: All six injectors should be verified to be within spec when performing the checks below, regardless of whether codes are present for all six.

- Ignition switch must be in the off position before disconnecting any wiring connector(s) or electrical checks performed.
- Break Out Box 88890085 and Digital Volt Ohm Meter (DVOM) is needed to perform this test.
- **IMPORTANT:** Check the resistance (Ohms) across the break out box and document prior to performing other checks. (see photo)



The ohms reading across the break out box needs to be subtracted from the ohms reading of Step 1 on Non-Pumping Injectors and Step 1 & 2 on Pumping Injectors.

Connect break out box 88890085 directly to the injector to be tested.

Measurement conditions

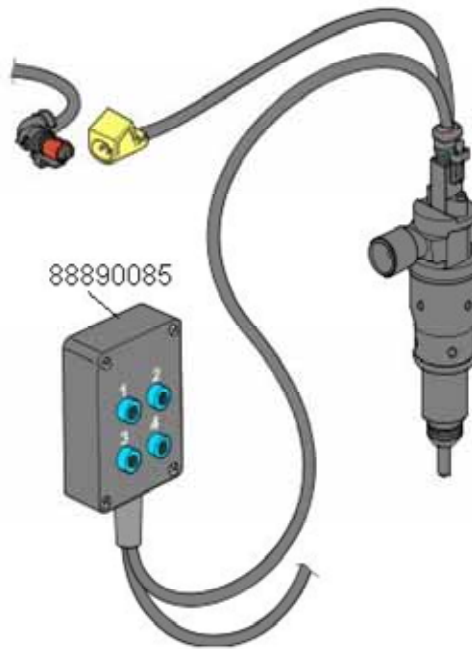


Power OFF

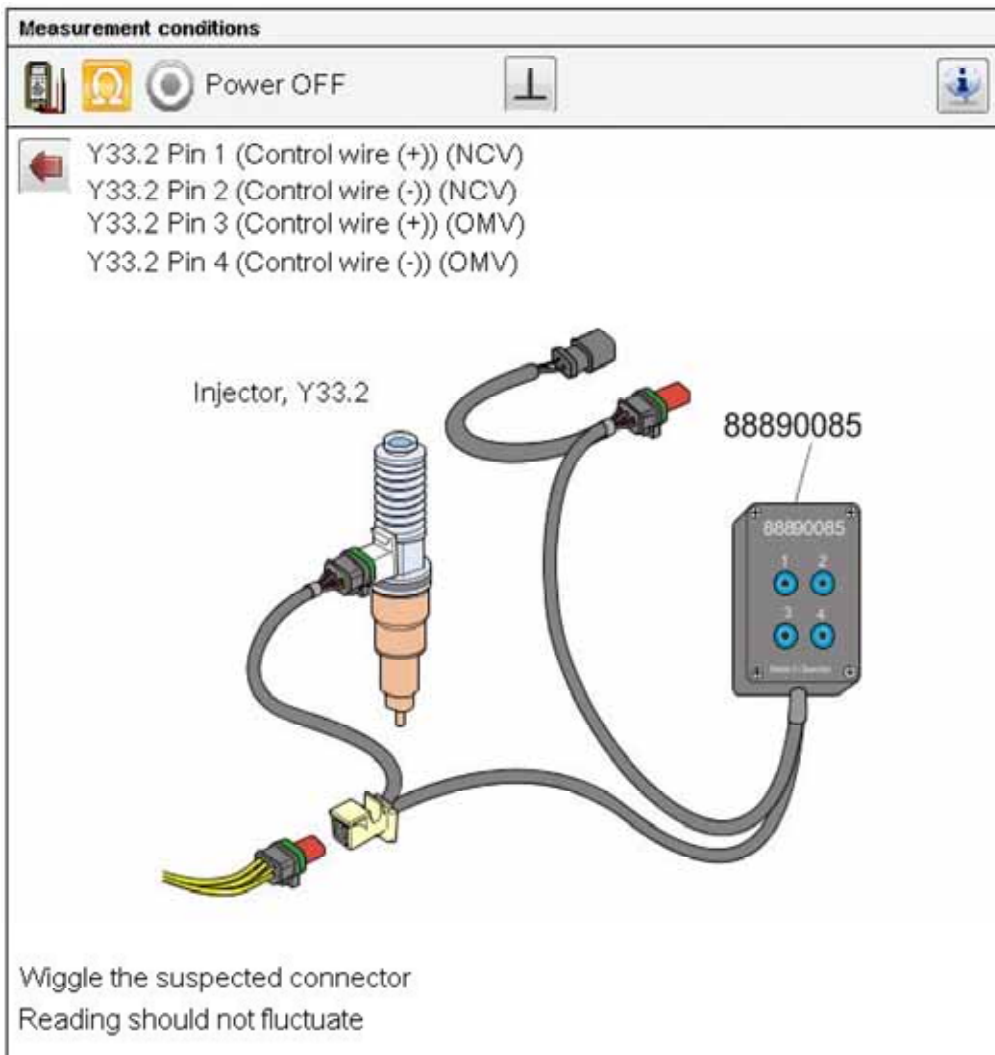


Y33.1 Pin 1 (Control wire (+)) (NCV)

Y33.1 Pin 2 (Control wire (-)) (NCV)



Wiggle the suspected connector
Reading should not fluctuate



Test procedure below is to be performed with a DVOM measuring Ohms.

		Testing	Test points		Specification
NON - Pumping Injector	Step 1	NCV	Pin 1	Pin 2	0.5 - 1.5 ohms
	Step 2	NCV to ground	Pin 1	Ground	OL- open circuit
			Pin2	Ground	OL- open circuit
Pumping Injector	Step 1	NCV	Pin 1	Pin 2	0.5 - 1.3 ohms
	Step 2	OMV	Pin 3	Pin4	0.7 - 1.5 ohms
	Step 3	NCV - OMV	Pin 1	Pin 4	OL - open circuit
			Pin 2	Pin 3	OL - open circuit
	Step 4	NCV & OMV to ground	Pin 1	Ground	OL - open circuit
			Pin 2	Ground	OL - open circuit
			Pin 3	Ground	OL - open circuit
			Pin 4	Ground	OL - open circuit

NOTE: When performing Step 2 (Non-Pumping) and Step 4 (Pumping) use the injector for the ground as shown in the photos.



If the following electrical tests are in specification **DO NOT** replace the injector as this is **NOT** the root cause of the electrical fault code(s). If injector electrical faults code(s) were present, close inspection of all wiring connector(s) and the wiring harness are required both on internal and external wiring harness.

Some key areas for inspection:

- External harness rubbing towards left rear of engine on cab or brackets
- Terminal issue in the Valve Cover Interface (VCI) connectors (both internal and external harness

Solution visibility

Dealer distribution

Function(s)/component(s) affected

Function affected

Diagnostic tool , Engine , fuel system , injectors , low-pressure circuit , high-pressure circuit

Function Group

Function Group

2371 Injector

Customer effect

Main customer effect

fault code/display

Fluid implicated

Fuel

Fault Codes And Error Codes

OBDDII Diagnostic Trouble Codes (P, U, B Format)

P0201-13 , P0202-13 , P0203-13 , P0204-13 , P0205-13 , P0206-13 , P0256-14 , P0259-00 , P0262-00 , P0265-00 , P0268-00 , P0271-00 , P0274-00 , P0277-00 , P2A16-14 , P2A19-00 , P2A1E-14 , P2A21-00

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