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Coding Information

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Title: ACM/DCU and DSI Faults Troubleshooting

Applies To: 2010 and 2013 (OBD) Emission DT, 9 & 10

CHANGE LOG

- 12/23/14 - Added new step one, calibration update, updated keywords and added new SRT
- 12/16/14 - Updated ACM component location & article accent colors
- 5/13/14 - Added step based diagnostics
- 3/10/14 - New article released

DESCRIPTION

This document is for troubleshooting the Aftertreatment Control Module(ACM)/Doser Control Unit (DCU) and Down Stream Injection(DSI) assembly on the 2010 and 2013 emissions DT/9/10 engines.

NOTE: Before the ACM/DCU or DSI is ever replaced it should be thoroughly diagnosed. A majority of concerns are found to be wiring/connection issues and these parts are No Trouble Found (NTF).

NOTE: Recent calibration releases contain ACM/DCU (609/19) and DSI Module fault monitor (3471/7 & 3471/10) updates. Ensure calibration is up to date.

SYMPTOM

Intermittent or active codes associated with the ACM/DCU or DSI assembly

Diagnostic Trouble Codes

The following is a list of the most frequent codes that are a result of wiring or connection issues:

DTC	Description
609-19	ACM not detected on J1939 (Calibration Update)
3471-7	AFT Fuel Doser Valve Not Responding as Expected (Calibration Update)
3471-10	AFT Fuel Doser Valve Abnormal Rate of Change (Calibration Update)
3479-4	AFT Fuel Doser Valve Short to Ground
3480-3	AFTFP1 signal Out of Range HIGH
3482-4	AFT Fuel Shutoff Valve Short to Ground

Customer Complaint

- Check engine lamp (aftertreatment codes)
- Unit will not perform a regen (parked or rolling)

DIAGNOSTICS

The ACM/DCU and DSI assembly should be thoroughly diagnosed before one is ever replaced. A majority of units with these codes are found to have wiring issues with the module or assembly. The following steps highlight areas that should be checked for wiring or connection issues.

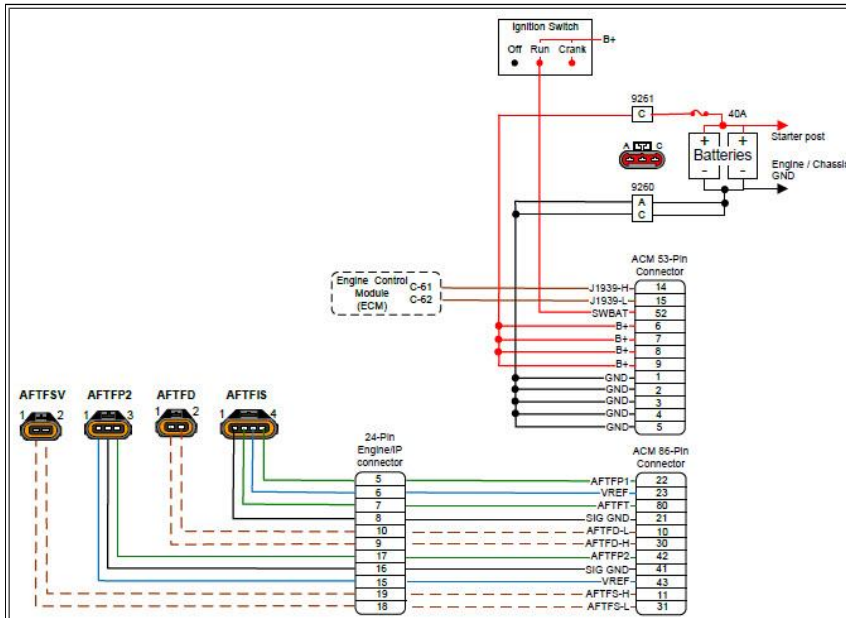


Figure # 1: MaxxForce DT/9/10 Aftertreatment wiring diagram

Step 1: Check Dealer Scorecard - Calibration Status

It is essential to ensure the calibration is up to date on all units. Fault monitor updates have been released for DSI related faults.

Does the dealer scorecard for the VIN reflect the calibration up to date?

Yes: Continue to Step 2.

No: If not up to date, please update the calibration using NETs, PocketMaxx, DLC AU or NavKal. Retest and verify aftertreatment fault does not return.

Step 2: DSI connector inspection

The four connectors at the DSI assembly (AFTFP1, AFTFP2, AFTFD, AFTFIS) should be checked for loose or broken pins. Verify connector pins are making proper contact by performing a pin drag test. Each of the four connectors should snap securely into place, if not then check for cracked connectors.

Are all four connectors and their pins properly secured?

Yes: Continue to Step 3.

No: Replace any connectors or pins that do not make secure connections. Retest and verify aftertreatment fault does not return.

Step 3: ACM/DSI wiring inspection

Wiring from the ACM/DCU to DSI should be inspected for any chafing and proper routing. Also inspect the powers and grounds for any issues. If the issue is centralized on a particular wire or circuit, then it should be load tested and wiggled to pinpoint the issue.

Is wiring intact and properly routed?

*See figure #2

Yes: Continue to Step 4.

No: Correct any wiring issues and make sure it is properly routed. Retest and verify aftertreatment fault does not return.



Figure #2: Harness chafing(incorrectly routed)

Step 4: ACM connector inspection

The ACM/DCU 86-Pin, 53-pin and the 24-Pin Engine/IP connector should be inspected for connection issues at the pins. A weak pin or one that is not fully snapped into the connector can create intermittent codes from vehicle vibration. By removing the connector comb you can easily inspect pins and check their wire crimp connection.

Do all connector pins make a secure connection?

**See figure #3*

Yes: Continue to Step 5.

No: Replace any connector pins that do not make a good connection or properly snap into the connector. Retest and verify aftertreatment fault does not return.

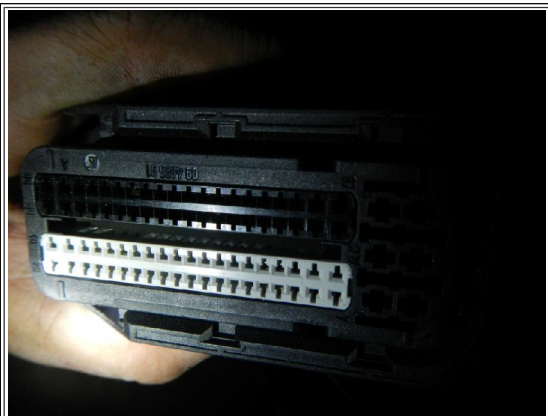


Figure #3: Connector Inspection(ACM/DCU 86-Pin)

Step 5: Verifying ACM/DCU communication

For issues with the Controller Area Network (CAN) bus reference [IK0800080](#). Ensure the ACM/DCU is communicating on the CAN bus and has ignition power when turned on. Using servicemaxx, the ACM/DCU will show up on the sniffer if it is communicating. Check wiring and splices for any power supply/ground issues. If the ACM/DCU is not properly powered up it will not communicate on the bus.

Does the ACM/DCU power up and communicate on the CAN bus?

Yes: Continue to Step 6.

No: Find and correct the wiring or connection issue. Retest and verify aftertreatment fault does not return.

Step 6: Verify fault codes

Retest for the aftertreatment fault and verify that it is still a current issue (**faults have been corrected by disconnecting and reconnecting connectors that had a bad/dirty connection**). If all diagnostics have been completed and the fault code continues to return then a new ACM/DCU should be installed (If available try a test ACM/DCU first). Verify the fault codes do not return after replacing the module.

Component Location

Aftertreatment Control Module (ACM)/Doser Control Unit (DCU)

- DuraStar & WorkStar - Is installed underneath the cab just below the drivers floorboard
- Bus AE & CE - Behind battery box
- Bus RE - In engine compartment behind fuse panel (right side)

Diagnostic Manual Updates

Follow the Engine Diagnostic Manual([click here](#)) for proper voltage and wiring specifications. The information below has been updated from the manual.

Updated ACM/DCU Voltage Reference (VREF)
- ACM/DCU P/N 1890993C1, KOEO voltage reference is 6V
- ACM/DCU P/N 7085804C1, KOEO voltage reference is 12V
- ACM/DCU P/N 7094050C1, KOEO voltage reference is 12V

SERVICE PARTS INFORMATION

ACM Connector Part Numbers		
	ACM 53-Pin connector	ACM 86-Pin connector
Terminal 16GA	3710403C1	N/A
Terminal 20GA	3710402C1	3710402C1

24-Pin Engine/IP Connector Part Numbers	
	24-Pin(Female)
Terminal 20GA(cavities 5-10 & 15-19)	3860055C1
Connector Body	3857801C1

DSI Connector Part Numbers				
	AFTSV 2-Pin connector	AFTFP2 3-Pin connector	AFTFD 2-Pin connector	AFTFIS 4-Pin connector
Terminal 18GA	3689960C1	3689959C1	3689960C1	3689959C1
Connector Body	Located in harness repair kit	Located in harness repair kit	Located in harness repair kit	Located in harness repair kit

WARRANTY INFORMATION**Warranty Claim Coding**

Group:	8960 - MISC. (ELECTRIC)
Noun:	909 - Harness, Cab Wires Conn's & Terminals

Standard Repair Time

Description	SRT Link	Hours
Wiring Repair(s)	A08-2004A	0.8
ECM - Engine, Program	A12-3510T	0.4

OTHER RESOURCES[MaxxForce DT/9/10 Diagnostic Manual](#)[Aftertreatment Diagnostic Manual \(I6/BB\)](#)[MaxxForce DT/9/10 Wiring Schematic](#)[J1939 Data Link Troubleshooting](#) Hide Details

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