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Service Information Bulletin

SUBJECT	DATE
Symptom Diagnostics : Noisy 1- Box™ Aftertreatment	August 2016

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	DD Platform	Symptom Diagnostics : Noisy 1- Box™ Aftertreatment	Procedure has been updated.

DiagnosticLink users: Please update the troubleshooting guides in DiagnosticLink with this newest version. To update the tool troubleshooting guide, open DiagnosticLink and from the Help – Troubleshooting Guides menu, select the appropriate troubleshooting manual, then click Update.



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2 Symptom Diagnostics: Noisy 1- Box Aftertreatment

This diagnostic is used to identify the cause of a noisy 1-Box Aftertreatment.

Check as follows:

1. Visually inspect the entire exhaust system for signs of leaks or damage. Is any damage found?
 - a. Yes; repair as necessary.
 - b. No; Go to step 2.
2. Inspect that the aftertreatment inlet heat shields are not broken loose and rattling. Is there a loose or damaged heat shield?
 - a. Yes; repair the heat shield. If the inlet heat shield has tabs, refer to **11 TS-6** (<http://ddcsn-ddc.freightliner.com/cps/rde/xbcr/ddcsn/11TS6.pdf>).
 - b. No; Go to step 3.
3. Inspect the inboard and outboard Diesel Particulate Filter (DPF) covers and verify nothing is loose or rattling. Is there a loose DPF cover?
 - a. Yes; repair the loose cover.
 - b. No; Go to step 4.
4. Turn off engine after inspection.



WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.



WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

5. Disconnect the aftertreatment inlet pipe and start the engine to verify the noise is coming from the aftertreatment. Did the noise go away once the aftertreatment inlet pipe was disconnected?
 - a. Yes; reconnect the aftertreatment inlet pipe and Go to step 6.
 - b. No; inspect other truck components to identify the noise.
6. Connect DiagnosticLink[®].



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WARNING: HOT EXHAUST

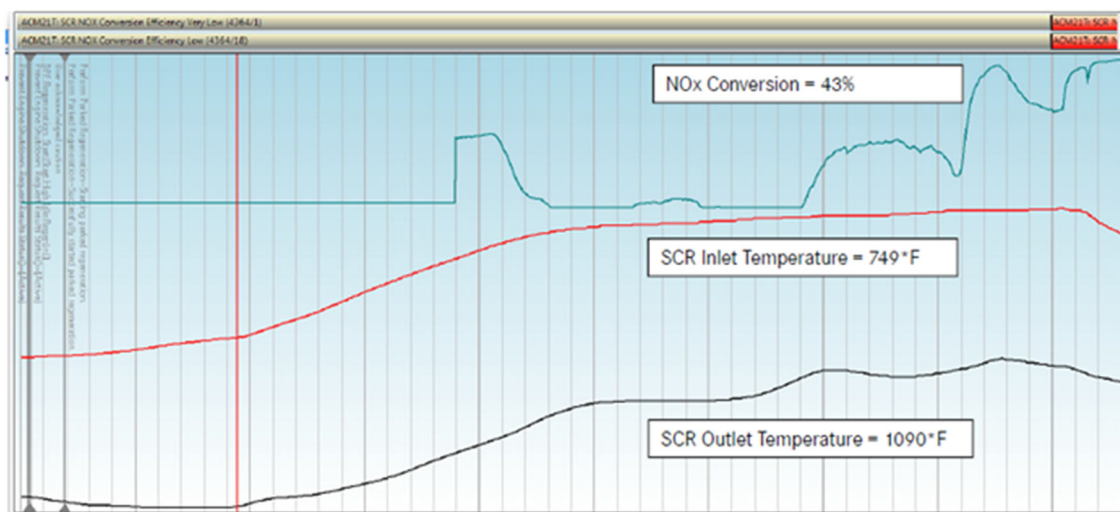
During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

7. Start the engine and run a Parked Regen. Monitor Diesel Oxidation Catalyst (DOC) inlet pressure and engine speed during the regen.

NOTICE: If DOC inlet pressure is (19.9 kPa) 2.9 psi or higher at any time during the parked regen, immediately stop the regen because turbocharger damage may occur.

8. Review the last seven minutes of the parked regeneration log data. The illustration below identifies the last seven minutes of the parked regen.
9. Is the Selective Catalyst Reduction (SCR) inlet temperature lower than SCR outlet temperature by more than 38°C (68.4°F)?

Example : SCR Outlet temp (587°C) 1090°F minus SCR Inlet Temp (398°C) 749°F = (116°C) 241°F. The difference between inlet and outlet temperature is (116°C) 241°F, which is greater than (20.2°C) 68.4°F.



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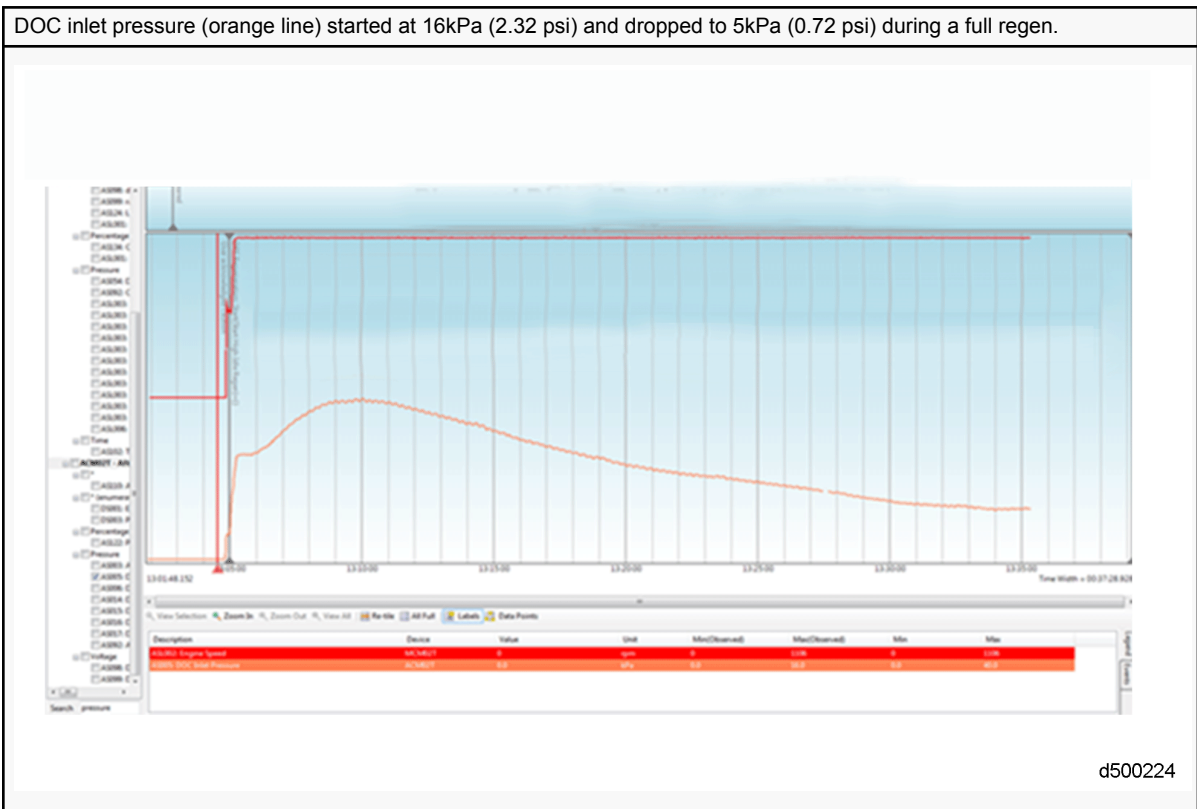
- a. Yes; Go to step 10.
 - b. No; Go to step 11. for log file review.
10. Perform a low temperature Aftertreatment Device (ATD) check using DiagnosticLink to check for a drifted temperature sensor. Are the SCR inlet and SCR outlet temperatures within 25°C (45°F) during the last five minutes of this test?
 - a. Yes; replace the DOC/SCR module. This indicates internal structural damage; see image below. The ATD checklist is NOT required since the ATD is the primary failed part.



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- b. No; replace the drifted SCR temperature sensor and Go to step 11.
- 11. Review the parked regen log file. Compare your DOC inlet pressure reading to the screen shots below (steps 12,13, and 14) to identify a possible cause of the aftertreatment noise.
- 12. Is the DOC Inlet Pressure starting out high above 10 kPa (1.45 psi) and decreases during a parked regen?
 - a. Yes; Go to step 15.
 - b. No; Go to step 13.

Table 1.



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- 13. Is the DOC inlet pressure starting above the pressure specified below and stays high?

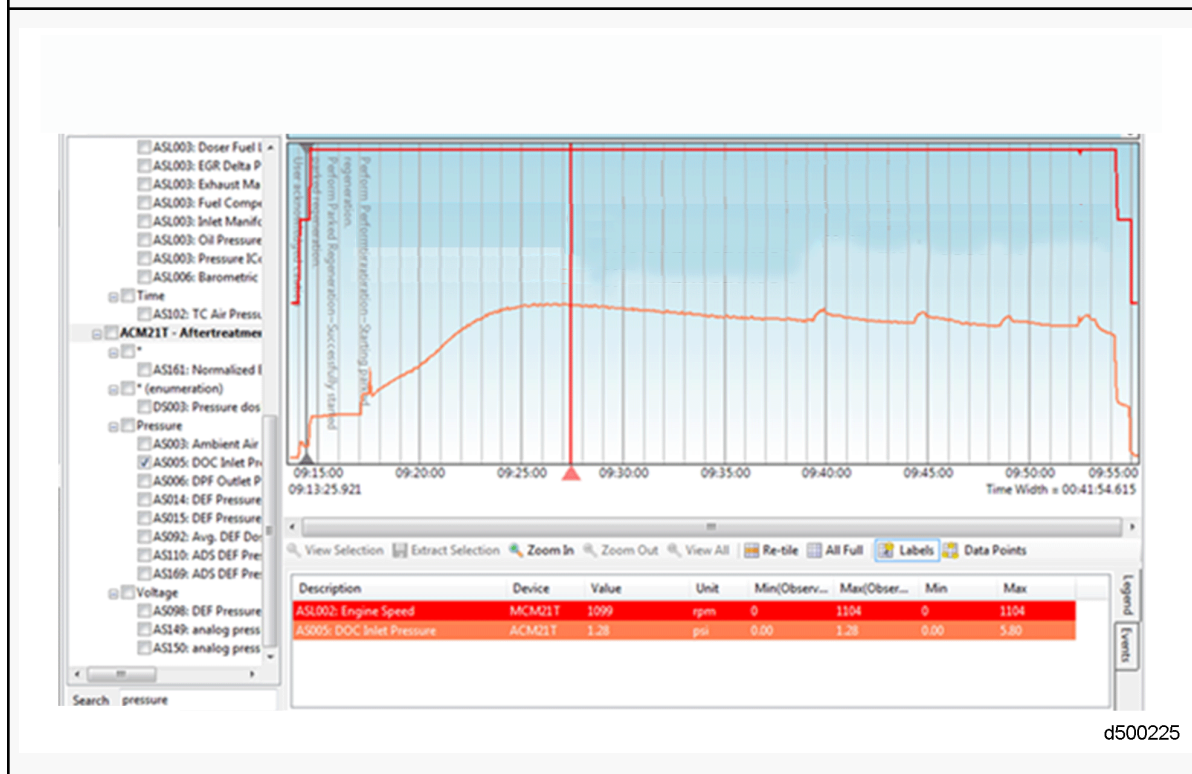
Table 2.

EPA10	10 KPa (1.45 psi)
GHG14	6 KPa (.89 psi)
GHG14 DD15 AT Only	7 KPa (1.01 psi)

- Yes; Go to step 16.
- No; Go to step 14.

Table 3.

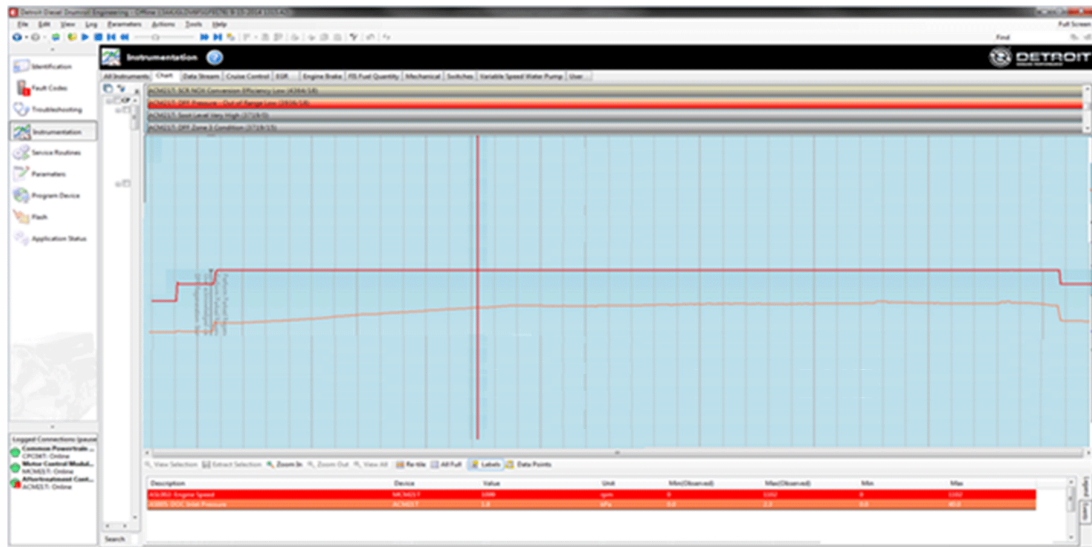
DOC inlet pressure (orange line) started at 6 kPa (0.87 psi) and stayed there throughout the regen. The slight spikes seen in the pressure reading are due to the fan turning on/off.



- Is the DOC inlet pressure starting out **low** and staying **low**, below 3.1 kPa (.45 psi)?
 - Yes; The Aftertreatment System (ATS) is considered noisy. Replace the DOC/SCR module. This indicates internal structural damage; see image below. The ATD checklist is **NOT** required since the ATD is the primary failed part. Verify repair. Go to step 17.
 - No; The Aftertreatment System (ATS) is considered noisy. Replace the DOC/SCR module. This indicates internal structural damage; see image below. The ATD checklist is **NOT** required since the ATD is the primary failed part. Verify repair. Go to step 17.

Table 4.

DOC inlet pressure (orange line) starts out low and stays low, below 10 KPa (1.45 psi) the ATS is considered noisy. The noise may be more present between 7 to 9 KPa (1.01 psi – 1.30 psi).



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15. This indicates that the DPFs were plugged and the parked regen has cleared them. Verify the noise is gone and complete the ATD check list to possibly identify why the unit was plugged.
For EPA10: Refer to section "EPA10 Perform Performance Check - Low Temperature ATD"
For GHG14: Refer to section "GHG14 Perform Performance Check - Low Temperature ATD"
16. The DOC is considered plugged. Since the DOC inlet pressure stayed steady and there is still a noise, run the DOC Face Unplugging procedure in DiagnosticLink under Actions-Aftertreatment. Refer to section "EPA10 and GHG14 Diesel Oxidation Catalyst Face Cleaning". After completing the service routine, verify the noise is gone. Go to step 17.
17. Review DDEC reports to find out if excessive engine idle time is the cause of the plugged DOC. Refer to section "How to Retrieve DDEC Reports". If the vehicle exhibits high idle time refer to Warranty letter 15-049R (http://ddcsn-ddc.freightliner.com/cps/rde/xbc/dccsn/15-049R_REV_Detroit_One_Box_ATD_Failure_Modes.pdf).