SERVICE BULLETIN

NUMBER: 11-002-08

GROUP: Exhaust

DATE: MAY 21, 2008

THIS BULLETIN SUPERSEDES TECHNICAL SERVICE BULLETIN 11-003-07, DATED OCTOBER 24, 2007. THIS IS A COMPLETE REVISION AND NO ASTERISKS HAVE BEEN USED TO HIGHLIGHT REVISIONS.

SUBJECT:
Cummins 6.7L Diesel Turbocharger - Necessary System Inspections And Tests

OVERVIEW:
This bulletin involves the inspection and/or test of the Diesel Turbocharger and related emissions system components.

MODELS:

2007 - 2008	(DH/D1)	Ram Truck (2500/3500)

NOTE: This bulletin applies to vehicle equipped with a Cummins 6.7L engine (sales code ETJ).

SYMPTOM/CONDITION:
The customer may experience a Malfunction Indicator Lamp (MIL) illumination. Additional diagnosis may reveal that the MIL is due to Diagnostic Trouble Code (DTC): **P2262 - Turbocharger Boost Pressure Not Detected - Mechanical.**

DIAGNOSIS:
1. Connect the StarSCAN® to the Diagnostic Link Connector (DLC).
2. Set the parking brake. Start the vehicle engine.
3. From the “Home” screen on the StarSCAN® select:
   a. “ECU View” button.
   b. “PCM Powertrain Control Module” button.
   c. “View DTC's” button.
4. **Record all Diagnostic Trouble Codes (DTC's) that are present in the PCM.**

NOTE: It is IMPORTANT to record (capture) all DTC's present in the PCM prior to proceeding further with this diagnosis. Procedures later may cause all DTC's to be erased.

5. Is **DTC P1451, P2463, or P242F** present in the PCM?
   a. If **YES** >>> **STOP**. Refer to **Service Bulletin (SB) 11-002-07** (or later bulletin) to address this concern and before proceeding further with this Service Bulletin. In addition to other repairs, SB 11-002-07 may direct the technician to perform a thorough cleaning of Engine and Exhaust Aftertreatment System components. Contact STAR if additional assistance is required. Proceed to the next step **ONLY after SB 11-002-07** has been reviewed and/or performed.
   b. If **NO** >>> then proceed to the next step.
6. Verify that the PCM is at the latest application software level.
7. Is the PCM at the latest application software level?
   a. If **YES** >>> then proceed to the next step.
   b. If **NO** >>> then reprogram the PCM to the latest software level. Refer to **SB 18-013-08** (or later bulletin). Proceed to the next step ONLY after the PCM has been reprogrammed to the latest software level.
8. Was **DTC P2262** present in the PCM?
   a. If **YES** >>> then the Turbocharger, along with other Engine and Exhaust Aftertreatment System components, will require a thorough cleaning or replacement. Refer to **Service Bulletin 11-001-08**. Proceed to the next step.
   b. If **NO** >>> then **STOP**. This bulletin does not apply.
9. Make sure all other Engine and Exhaust Aftertreatment System related DTC's, not listed above, have been corrected prior to proceeding further.
10. Once all other Engine and Exhaust Aftertreatment System related DTC's have been corrected, and with only **DTC P2262** remaining, proceed to the Repair Procedure in this Service Bulletin.

PARTS REQUIRED:

Qty.	Part No.	Description
(AR) 1	68048234AA	Kit, Turbocharger (inc. gaskets and seals)
1	68038089AA	Gasket, EGR Cooler (at rear of cooler)
1	68005465AA	Gasket, EGR Cooler (natural - at front of cooler for V-band joint)
1	68005465AA	Gasket, EGR Crossover Tube (natural - driver side)
1	68027035AA	Gasket, EGR Crossover Tube (metal - passenger side)
2	68005184AA	Gasket, EGR Valve
1	68024672AA	Gasket, Intake Plenum (Air Intake Connection)
(AR) 1	68027034AB	Valve, EGR Airflow Throttle Control
(AR) 1	68005256AA	Gasket, Throttle Body (EGR Airflow Throttle Control Valve)
(AR) 1	53034051AB	Filter, Air
(AR) 1	68002441AB	Sensor, Charge Air (Mass Air Flow Sensor)
(AR) 1	68002434AA	Sensor, Temperature / Pressure (Intake Air Pressure Sensor)
(AR) 2	68028729AA	Cleaner, Mopar EGR System
(AR) 1	04897150AB	Cleaner, Brake Parts Non-Chlorinated

Qty.	Part No.	Description
(AR) 1	04897151AB	Cleaner, Brake Parts Non-Chlorinated (VOC exempt)

REPAIR PROCEDURE:

NOTE: Refer to the appropriate 6.7L Turbocharger Cleaning Procedure Service Bulletin 11-001-08 for detailed turbocharger cleaning repair procedures. The turbocharger cleaning and/or cleaning port drilling and taping procedures are NOT contained in this Service Bulletin.

NOTE: It is IMPORTANT that this Repair Procedure be performed completely prior to returning the vehicle to the customer. The Engine and Exhaust Aftertreatment System components must be returned to a "LIKE NEW" condition. Perform a thorough cleaning of the systems and do not omit repair steps.

NOTE: Detailed removal and installation procedures (and graphics), required to perform this bulletin, will NOT be listed individually in each Inspection and Test Section of this Repair Procedure. It will be important to refer to TechCONNECT for all detailed service procedures.

NOTE: The StarSCAN® must be at software level Release 8.05 before proceeding.

A). TURBOCHARGER HARNESS AND CONNECTOR INSPECTION:

1. Disconnect the Electronic Turbocharger Actuator electrical harness connector.
2. Check both mating ends of the harness, connector, and connector pins for damage.
3. Is there damage to the harness, connector body, or connector pins?
   a. If YES >>> then repair the harness, connector body, and/or pin(s). Proceed to the next step.
   b. If NO >>> then connect the Electronic Turbocharger Actuator electrical harness connector. Proceed to Section B - Turbocharger Cleaning or Replacement.
4. Connect the Electronic Turbocharger Actuator electrical harness connector.
5. Clear all DTC's. At the "HOME" screen of the StarSCAN®:
   a. Turn the ignition switch to the "ON/RUN" position. Do not start vehicle engine.
   b. Select "System View".
   c. Select "All DTC's".
   d. Select "Clear All Stored DTC's".
   e. Select "Yes" at the confirm screen.
   f. Turn the ignition switch to the **"OFF"** position. **WAIT 10 seconds.**
   g. Start the vehicle engine to verify that all DTC's have been erased.
   h. Stop the vehicle engine. Turn the ignition switch to the "OFF" position.
6. Perform a validation test drive. Determine if DTC P2262 has returned. DTC P2262 is a two trip fault. The technician must use the StarSCAN® to determine if DTC P2262 has returned and is present in the PCM.
7. Is **DTC P2262** present in the PCM?
   a. If YES >>> then proceed to Section B - Turbocharger Cleaning or Replacement.
   b. If NO >>> then proceed to Section C - Air Filter and Housing Inspection.

B). TURBOCHARGER CLEANING or REPLACEMENT:

1. Perform a thorough turbocharger cleaning. **Refer to Service Bulletin (SB) 11-001-08 - 6.7L Turbocharger Cleaning Procedure** for detailed instructions and warranty expense. **ONLY** when SB 11-001-08 has been completed, then proceed to the next step.
2. Using the StarSCAN®, clear all fault codes.
3. With SB 11-001-08 completed, perform a **VALIDATION TEST DRIVE**. Monitor the StarSCAN® to determine if DTC P2262 returns during the validation test drive. DTC P2262 is a two trip fault where a MIL will not illuminate until DTC 2262 is seen during a second trip. The validation test drive will be the first trip. Therefore, the technician must use the StarSCAN® during the validation test drive to determine if DTC P2262 reoccurs and is now present in the PCM.
4. During or following the validation test drive, did DTC P2262 return and is present in the PCM?
   a. If YES >>> then replace the Turbocharger. Follow the detailed service replacement procedures available on TechCONNECT to replace the turbocharger. **Contact STAR for additional technical assistance** . Then proceed to Section C - Air Filter and Housing Inspection.
   b. If NO >>> then the turbocharger cleaning was effective. Proceed to Section C - Air Filter and Housing Inspection.

C). AIR FILTER AND HOUSING INSPECTION:

1. Remove the air filter housing cover.
2. Inspect the air filter and air filter housing for soot accumulation.
3. Is soot accumulation present on the ENGINE / TURBO side of the air filter and air filter housing?
   a. If YES >>> then proceed to the next step.
   b. If NO >>> then assemble the air housing components and proceed to the next Section.
4. Replace the air filter, mass air flow sensor, and intake air pressure sensor. Clean the air filter housing and duct to the turbocharger.
5. Assemble the air housing components.
6. Proceed to the next section.

D). CHARGE AIR COOLER (CAC) SYSTEM INSPECTION:

NOTE: EXCESSIVE SOOT ACCUMULATION is a fluffy deposit of soot WITH THICKNESS on the inner surface of CAC system components.

NOTE: It is considered NORMAL to have a little “dusting” on the inner surface of CAC system components.

1. Remove the Charge Air Cooler (CAC) hoses.
2. Inspect the CAC for excessive soot.
3. Is there excessive soot in the CAC?
   a. If YES >>> then the CAC requires cleaning. Proceed to the next step.
   b. If NO >>> then proceed to the next section - “Grid Heater Inspection”.
4. Remove the Charge Air Cooler from the vehicle.
5. Thoroughly clean the Charge Air Cooler and connecting hoses with a non-caustic solvent (i.e. dish soap or laundry detergent and water).

WARNING: DO NOT use mineral spirits, combustion cleaners, flammable cleaners, or equivalents to clean the charge air cooler and hoses. Residue from these chemicals may enter the engine combustion chamber, cause the engine to over rev, and may damage the engine.

6. Install the Charge Air Cooler and connecting hoses to the vehicle.
7. Verify that ALL Charge Air Cooler system connections are correct and tight.
8. Proceed to the next section.

E). GRID HEATER INSPECTION:

1. Remove the air intake connection.
2. Clean excess soot from the grid heater using a shop vacuum. Do not use compressed air which may force soot into the intake.
3. Install the air intake connection with new gasket.
4. Proceed to the next section.

F). EXHAUST GAS RECIRCULATION (EGR) SYSTEM INSPECTION:

1. Remove and inspect the Exhaust Gas Recirculation (EGR) System.
   a. Remove the EGR Crossover tube from the vehicle.
   b. Remove the EGR Valve from the vehicle. Disassemble the EGR Valve for cleaning.
   c. Remove the EGR Cooler from the vehicle.
2. Thoroughly clean the EGR Crossover tube, EGR Valve, and EGR Cooler in Mopar EGR System Cleaner.

NOTE: The EGR valve MUST BE disassembled in order to properly clean the valve. Refer to TechCONNECT for detailed service procedures, from the Service Info tab select: 25 - Emissions Control > Valve - EGR - 6.7L > Removal / Cleaning / Installation.

3. Remove the EGR Orifice Temperature Sensor. The sensor is located on the intake plenum / snorkel, below, and to the rear of the EGR valve.
   a. Clean the sensor end of the EGR Orifice Temperature Sensor with Mopar Brake Parts Cleaner.
   b. Install the EGR Orifice Temperature Sensor to the intake plenum / snorkel.
4. Proceed to the next section.

G). INSTALL EGR SYSTEM COMPONENTS:

1. Assembly EGR Valve.
2. Install the EGR Cooler, EGR Valve, EGR Crossover tube, and new gaskets to engine.
3. Verify that all connections are torqued to the correct specification.
4. Proceed to the next section.

H). AIR INDUCTION SYSTEM PRESSURE TEST:

1. Loosen air inlet tube clamp at the turbocharger.
2. Remove the air filter housing and the inlet tube from the vehicle assembly.
3. Install the Charge Air Cooler (CAC) Pressure Tester 9022, with adapter 10137, to the turbocharger fresh air inlet. Tighten tool clamp to 8 Nm (72 in. lbs.).

CAUTION: Never attempt to start or run the vehicle at any time during this test, engine damage may occur.

4. If equipped, fasten the safety chain around a solid surface behind the turbocharger.

WARNING: Never run the CAC Pressure Test without the safety chain (if equipped) securely fastened.

5. Before attaching shop air to the pressure regulator, verify that the regulator is at its lowest pressure setting (set to 0 psi.).
6. Attach an air supply to the regulator and SLOWLY increase the air pressure until the pressure gauge reads 138 kPa (20 psi.).

WARNING: Never apply more than 138 kPa (20 psi.) air pressure to the charge air cooler system. Severe damage to the charge air cooler system may occur.

7. Using a mixture of soap and water, spray the Turbocharger, Charge Air Cooler (CAC), the CAC hoses, and all other air induction system component connections. Inspect for air leaks. Note air leak locations.
8. Before ANY attempt is made to repair the CAC system, or other air induction system components, it is necessary to completely discharge the Air Induction System of all pressurized air. Remove air pressure from Tester and air induction system.
9. Were there any air leaks / loose connections in the air induction system?
   a. If YES >>> then repair the loose connection(s) and retest the air induction system.
   b. If NO >>> then proceed to the next step.
10. Remove the CAC Pressure Tester.
11. Install the air inlet tube over the turbocharger inlet and tighten the band clamp to 35 in. lbs.
12. Proceed to the next section.

I). EXHAUST GAS PRESSURE SENSOR, TUBE, AND HOUSING:

1. Remove both the exhaust gas pressure sensor and the exhaust gas pressure sensor tube. The exhaust gas pressure sensor is located at the thermostat outlet tube / housing (at right front of engine).
2. Using Mopar Brake Parts Cleaner and shop air, **THOROUGHLY clean the exhaust gas pressure sensor tube, and the thermostat housing ports / passage for the exhaust gas tube and sensor.**

NOTE: Carefully make sure the sensing end of the exhaust gas pressure sensor is clear. The exhaust gas pressure sensor diaphragm can be damaged if a tool is inserted into the end of the sensor. Take care not to damage the sensor.

3. **VERIFY** that there are no blockages in the pressure tube or thermostat housing exhaust pressure ports. Be certain to inspect the small passage between the exhaust gas pressure sensor tube port and exhaust gas pressure sensor port in the thermostat housing.
4. Install the exhaust gas pressure sensor and the exhaust gas pressure sensor tube. Verify all connections are correct and tight.
5. Proceed to the next section.

J). EGR AIRFLOW THROTTLE CONTROL VALVE TEST:

1. Remove the charge air tube from the intake manifold.
2. Using a mirror, note the position of the EGR Airflow Throttle Control Valve.
3. With a helper, start the vehicle engine, let idle for 10 seconds and key off.
4. Using a mirror, note the position of the EGR Airflow Throttle Control Valve immediately after the engine is shut down.

NOTE: If functioning properly, the EGR Airflow Throttle Control Valve will cycle closed immediately after the engine is shut down.

5. Did the EGR airflow throttle control valve cycle closed immediately at engine shut down?
   a. If YES >>> then proceed to the next section.
   b. If NO >>> then replace the EGR airflow throttle control valve. Then proceed to the next section

K). CHECK FOR EXHAUST SYSTEM BLACK SMOKE PROCEDURE:

1. Verify that the engine and exhaust aftertreatment systems have been reassembled correctly prior to proceeding.
2. Check for exhaust system black smoke.
   a. Set the vehicle parking (emergency) brake.
   b. Place the vehicle transmission in the park or neutral (manual transmission) position.
   c. Start the vehicle engine.
   d. Verify that the engine coolant is at operating temperature.
   e. In a safe area, with the vehicle stationary and engine FULLY warmed and running, perform a “snap throttle”. From idle to wide open throttle and back to idle three or four times
   f. Look for the presence of black smoke from the exhaust system in the passenger rear mirror. Any visible black smoke or soot collected on the inside of the exhaust system tail pipe outlet indicates a failed DPF.
   g. Stop engine. Turn the ignition switch to the “OFF” position.
3. Is black smoke present from the vehicle exhaust system?
   a. If YES >>> then **STOP.** The Diesel Particulate Filter (DPF) requires replacement. Contact STAR for additional technical assistance. **Refer to the Service Bulletin 11-002-07**.
   b. If NO >>> then **STOP**. No further repairs are required at this time.
4. This concludes the Diesel Turbocharger cleaning or replacement, and the related system checks and inspection process.

POLICY:
Reimbursable within the provisions of the warranty.

TIME ALLOWANCE:

Labor Operation No:	Description	Amount
09-44-01-93	Turbocharger, Install Cleaning Port and Clean (B) **Note: Refer to the Service Bulletin 11-001-08 Turbocharger Cleaning Procedure for detailed repair procedures.**	2.1 Hrs.
09-44-01-94	Turbocharger, Clean (B) **Note: Refer to the Service Bulletin 11-001-08 Turbocharger Cleaning Procedure for detailed repair procedures.**	1.5 Hrs.
09-44-01-91	Turbocharger Assembly - Replace Turbocharger (B)	2.1 Hrs.
09-44-01-92	Turbocharger & Emissions System - Inspections and Tests (B)	A/T
	Note: Refer to the appropriate Service Bulletin(s) for specific times and labor operations number regarding the following: Diesel Particulate Filter (SB 11-002-07), and/or ECM reprogramming (SB 18-013-08) or later SB's..	

FAILURE CODE:

ZZ	Service Action