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KA-01937 Boost Control Diagnosis Guide

Document Information

Location: Powertrain - Engine

Topic: Engine warning & loss of power under load

Condition: Permanent

Diagnostic Trouble Codes:

P023400 - Boost Pressure Control :: Bank 1 Over Boost

P02CA00 - Boost Pressure Control :: Bank 2 Over Boost

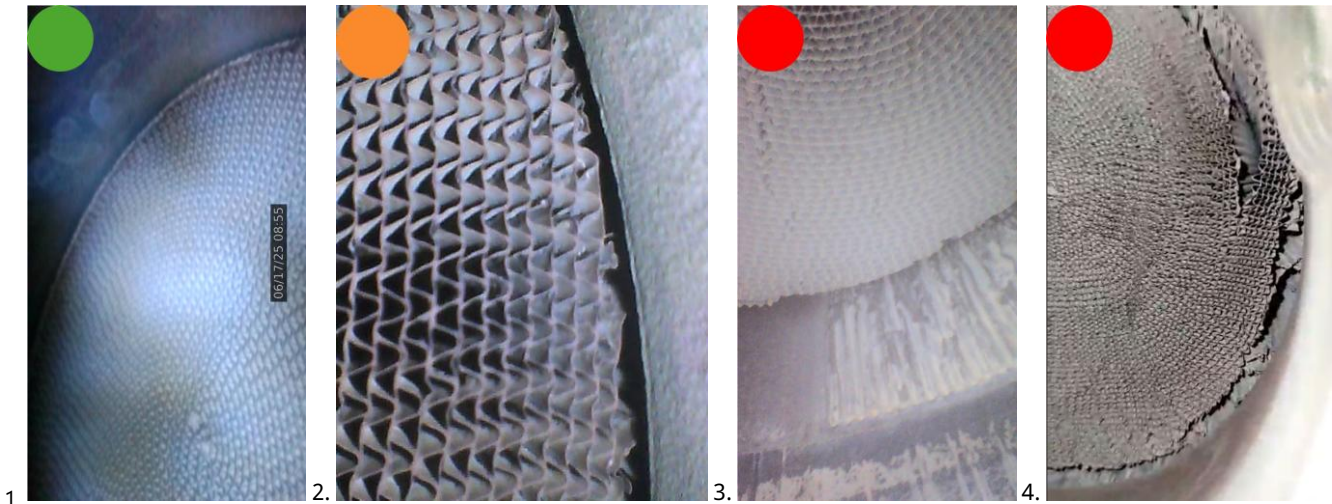
P029900 - Boost Pressure Control :: Bank 1 Under Boost

P02CB00 - Boost Pressure Control :: Bank 2 Under Boost

Measure

This document aims to guide diagnosis for specific vehicle concern: Repeatable engine warning and loss of power under load with a boost pressure control DTC. Conditions for these DTC's suggest an imbalance of airflow between bank 1 & 2, blockage or leakage of clean air flow. Please follow the below steps to aid identifying the root cause of the concern:

1. Smoke & air path pressure test (If possible, recommend filling system with smoke test, then pressure test to make it easier to identify any leak areas)
 - If any leak found, rectify and retest vehicle
2. Check catalyst bricks
 - Document images of catalyst internal structure and continue with next steps
 - If severely damaged, then replace before further running of the vehicle
 - Examples below show a good condition catalyst (1), partially cracked - ok for use in further testing only (2), separated
 - replace before any further running (3), cracked and separated - replace before any further running (4)



3. Inspect waste gate actuators:

Vehicles with electronic actuators:

- Check for any visual signs of damage such as heat degradation of plastic material.
- Confirm if actuators move fully in and out during ignition cycle
- If vehicle is also storing waste gate related DTCs, then check wiring between TCU & Actuators and voltages as per KA01890

Vehicles with pneumatic actuators:

- Inspect vacuum system for any signs of leakage
- Follow MSP procedure: Wastegate actuator adjustment

If concern persists, please submit TR with all supporting attachments and diagnosis completed, with MDS AV log files from step 4.

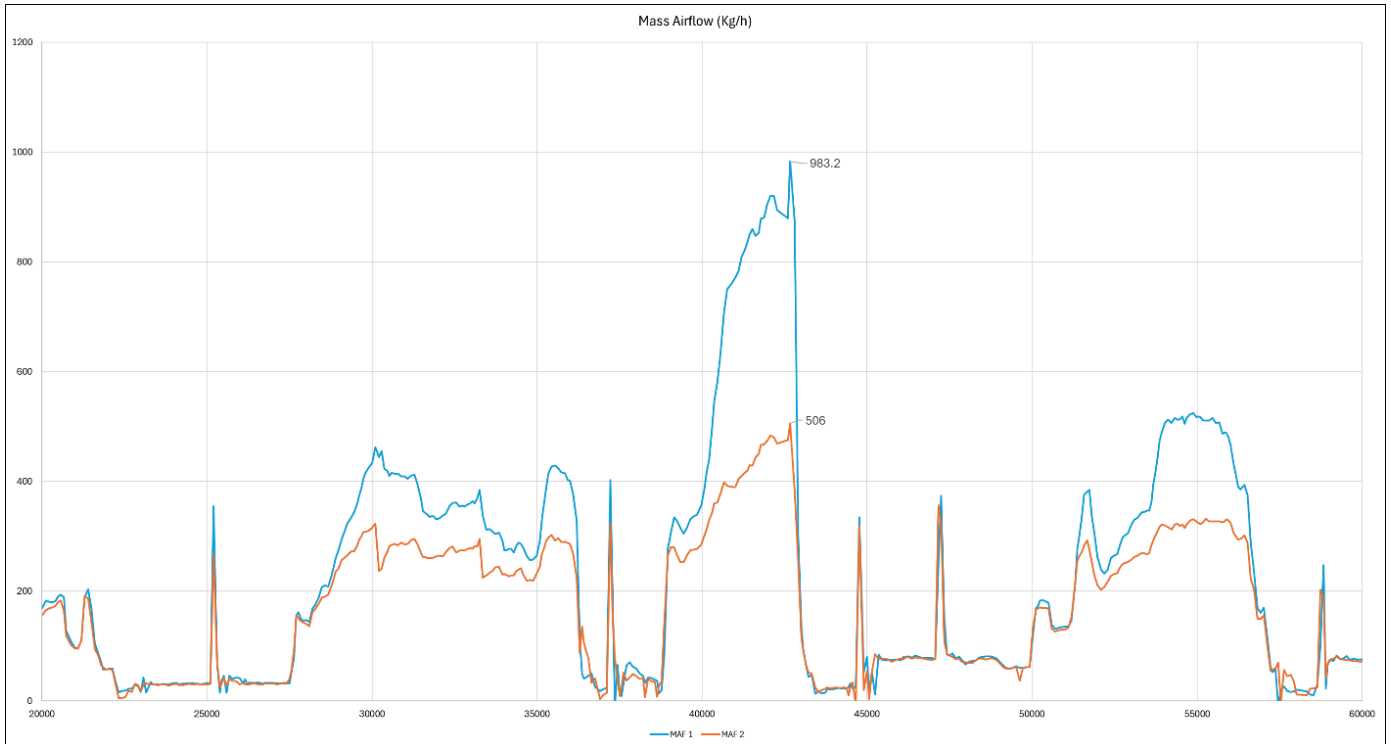
Please note: The .CSV and .Properties files are required in order to create graphs for TR review.

4. Provided you have permission and viability to road test and recreate concern safely, please reference KA-01661 to setup and record MDS AV log during occurrence of concern with the following AV signals logging:

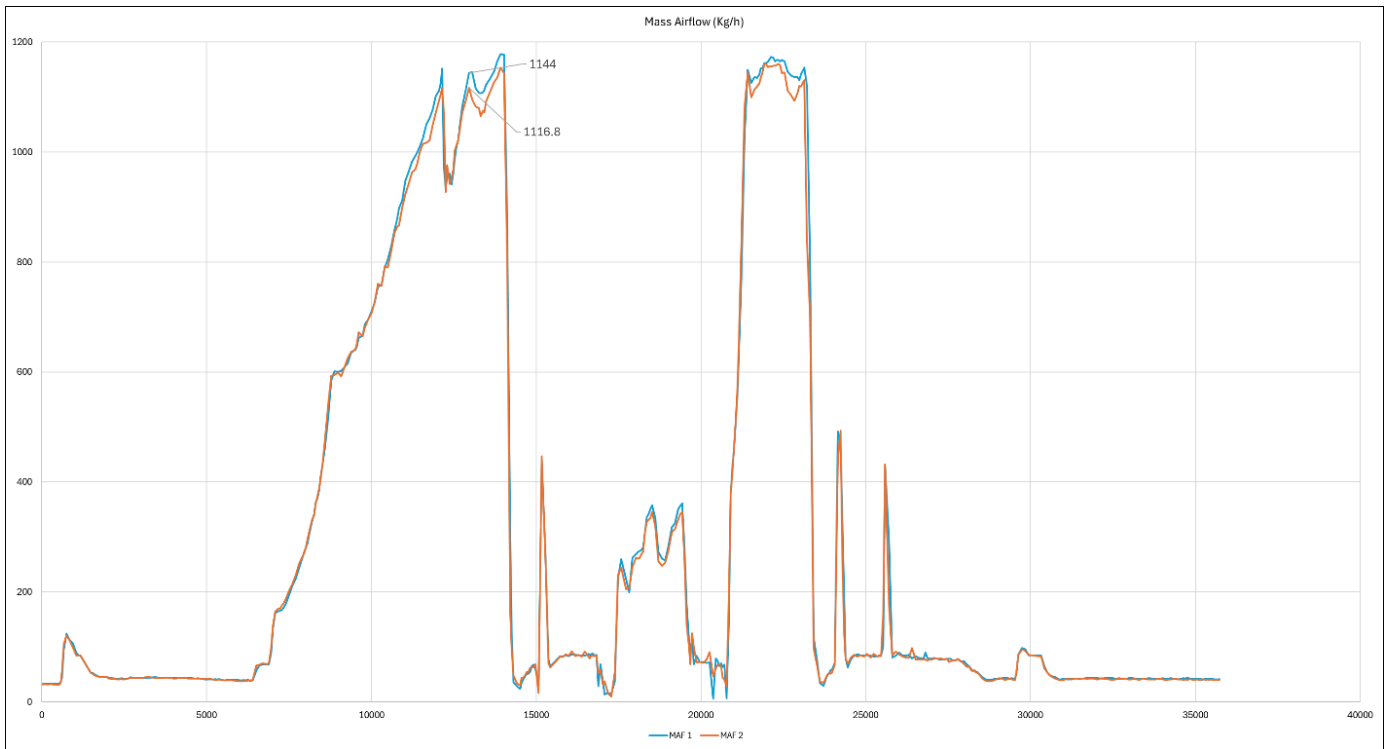
- Engine RPM
- Mass Airflow RH
- Mass Airflow LH
- Boost Pressure RH
- Boost Pressure LH

Ensure you observe limitations of driving laws in your region when performing road tests.

The below example graph shows large imbalance of mass airflow. The boost control DTC will trigger when vehicle detects sustained period of MAF imbalance over 150 Kg/h.



The below example shows good balance of mass airflow.



5. Inspect dump valve solenoid – Remove and check solenoid moves freely (Based on data and TR guidance from step 4) ◦
Note: P13 vehicles from MY18 are fitted with a single solenoid governing both dump valves

Further diagnosis steps will be guided through technical request support based on specific case by case basis.

Parts Information

N/A

Repair Time

N/A

Attachments

N/A

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