BR213, 217, 222 [E63/S63] Check Engine Light on with Misfire DTC's

Topic number	LI07.61-P-067717
Version	6
Function group	07.61 ME fuel injection/ ignition system
Date	09-12-2018
Validity	BR213 E63 Models BR222 S63 Models BR217 S63 Models
Reason for change	Added smoke test instructions. Added injector performance data interpretation.

Complaint:

Check engine light illuminated.

Engine may be running rough.

Possible fault codes:

P030022 - Combustion misfiring was detected

P030185 - Combustion misfiring of cylinder 1 was detected.

P030285 - Combustion misfiring of cylinder 2 was detected.

P030385 - Combustion misfiring of cylinder 3 was detected.

P030485 - Combustion misfiring of cylinder 4 was detected.

P030585 - Combustion misfiring of cylinder 5 was detected.

P030685 - Combustion misfiring of cylinder 6 was detected.

P030785 - Combustion misfiring of cylinder 7 was detected.

P030885 - Combustion misfiring of cylinder 8 was detected.

Cause:

Under Investigation

Attachments	
File	Description
M177LS2 Intake Manifold Leak Area.jpg	M177LS2 Intake Manifold Leak Area

Remedy:

Perform the Following:

1) Smoke test intake/exhaust and check for leaks.

1. Working each bank one at a time; remove the upstream O2 sensor and install the smoke tip. Seal around the tip to ensure there are no leaks.

2. Seal the exhaust tip outlet and air box inlets.
3. Turn the smoke machine on at the maximum possible pressure.
4. Using very soapy water (it should create suds by itself by spraying) saturate all connections, fittings, rubber hoses, intake manifolds, charge air cooler, and exhaust and check for leaks.
    - Look for signs of bubbles
    - Move and stress the components
    - Perform the check with engine cold and after a 5 minute run time (lukewarm)
5. Move the smoke probe from the upstream O2 sensor port (exhaust checking) to the purge valve line (intake checking) and repeat the process
6. If leaks are found:

- Repair as necessary.
- Clear the mixture adaptations, clear the fault codes, and perform 3 AMG Engine Adaptation Drives (per the AMG User's Guide)
- Compare the new injection performance data to the initial injection performance data. Then perform another 2 AMG Engine Adaptation Drives and pull the injection performance data again.
- Asses the car. If the injector performance data has normalized (per the attachments) release the car. If not, proceed to step (2) and open a PTSS case with all three injector performance data printouts.

2) Check driver's side intake manifold for cracks near the rear (see attachments) of the engine.

- If damage is found, order a new manifold for the driver's side bank from EPC and OPEN PTSS case with pictures of damage. Include the following:

1. Production stamp on the damaged manifold (looks like a pair of clocks)
2. Production sticker

- If no damage is found, or repair does not remedy complaint proceed to step (3).

3) Inspect ignition coils and verify they are PN: A 177 906 95 00.

- Replace as necessary.
- If all coils are PN A 177 906 95 00 swap the coil(s) of the misfiring cylinder(s) with those of cylinder(s) that are not misfiring and road test the vehicle.
    - If the misfires move with the coils, replace the coils and the spark plugs on original misfiring cylinders
    - If the misfires do not move with coils, proceed to step 4

4) Measure the following grounds. If any reading is above 0.5 ohm, check grounding locations (per attachments)

- ME Connector F, Pin 1 to ground
- ME Connector F, Pin 2 to ground
- ME Connecter F, Pin 4 to ground
- ME Connector M, Pin 6 to ground
- ALL Coils, Pin 1 to ground
- Rework grounding locations by removing and cleaning the chassis ground point(s) of any paint or debris.
- If rework/replacement does not remedy complaint, proceed to step 5.

5) Perform a Xentry guided high pressure fuel test from cold start and obtain the injector performance data, and initial quick test with fault freeze

- If the test fails for either bank, replace the high pressure fuel pump for that bank.
- If the test passes for both banks, road test the car with ECO start/stop disabled and allow the vehicle to achieve operating temperature
    - Shut the vehicle down and observe the fuel pressures on the left and right banks at t=0, t=30 minutes, t=60 minutes, and t>120 minutes
        - If at any time the fuel pressure drops below the minimum value and/or a large differential exists between the left and right banks, boroscope the cylinders on the bank with low fuel pressure and determine if one or more of the injectors is leaking.
            - If the fuel pressure remains within acceptable limits proceed to step (6)

- If one or more of the injectors is leaking, open a PTSS case and upload pictures of the failed injector(s) taken with the boroscope as well as the information collected via Xentry thus far
  - Replace the failed injector(s) and all the injector seals
  - Update the IMA coding for the new injectors in their respective cylinders via Xentry
  - Perform an AMG engine adaptation drive (at least 50 miles total)
  - Upload the new injector performance data and quick test to the case
  - Road test the vehicle. If the complaint is no longer present the PTSS case can be closed and the vehicle released.

6) Open PTSS Case if Above do not Remedy the Complaint

Include in the case:

1) All Data from step (5)

2) MED1775 Control Unit Log

3) Software update check for ME and Transmission control units

5) Engine Performance Data

6) Injector Performance Data

7) Graphical Readout of Fault Counter from Cold Start

8) Mechanical Compression Test of ALL Cylinders NOTE: A PICOscope compression test is also acceptable if a mechnical compression tester is not available

9) Leakdown Test of ALL cylinders

10) Boroscope of MISFIRING Cylinder(s)

- Important: Before performing the boroscope examination, it is imperative that the engine be left to sit until cold and that the piston is at BDC.

Attachments	
File	Description
Ground points LS2_BR213_englx.pdf	M177LS2 BR213 Ground Check
Ground Points LS2_BR222 (002).pdf	M177LS2 BR222 Ground Check
Fault Counter.pdf	Fault Counter Instructions
Injection Performance Data.pdf	Injector Performance Data Interpretation

Control unit/fault code		
Control unit	Fault code	Fault text
N3/10 - Motor electronics 'MED1775' for combustion engine 'M177' (ME)	-	-