GLC63 with M177LS1 - Engine Light Illuminated - P030022 Misfire

Topic number	LI07.61-P-069688
Version	2
Function group	07.61 ME fuel injection/ ignition system
Date	04-26-2019
Validity	253 GLC63 Equipped with M177LS1
Reason for change	Added attachment. Added definitions to fuel pressures.
Reason for block	

Complaint:

Customer complains that CEL is illuminated. May also complain of rough running.

Cause:

Under inverstigation.

Attachments	
File	Description
BR253_ground_points.pdf	Ground Point Locations
M177LS2 Intake Manifold Leak Area.jpg	Intake manifold leak area

Remedy:

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.
2. Seal around the tip to ensure there are no leaks.
3. Seal the exhaust tip outlet to the O2 sensor bung.
4. Turn the smoke machine on at the maximum possible pressure.
5. Look for leaks in the exhaust.
6. Using very soapy water (it should create suds by itself by spraying) saturate all connections.
   - Look for signs of bubbles.
   - Move and stress the components.
   - Perform the check with engine cold and after a 5 minute run time (lukewarm).
7. Working each bank one at a time, install the smoke machine tip into the intake air temperature sensor port.
8. Remove the oil fill cap.
9. Turn the pressure up on the smoke machine to maximum and fill the engine with smoke until it begins to come out of the oil fill port.
10. Reinstall the oil fill cap.
11. Look for leaks.
12. Using very soapy water (it should create suds by itself by spraying) saturate all connections.
    - Look for signs of bubbles.
    - Perform the check with engine cold and after a 5 minute run time (lukewarm)
13. If leaks are found, open a PTSS case and perform the following:
    - Repair the leaks as necessary.
    - Clear the mixture adaptations, clear the fault codes, and perform 3 AMG Engine Adaptation Drives (per the AMG User's Guide).
    - Pull the new injector performance data.

- Compare the new injector performance data to the initial injection performance data pulled when the car first arrived.
  - The ORA and FRA values should have changed.
  - If the ORA/FRA values have not changed; stop and ask for assistance in the PTSS case.
- Then perform another 2 AMG Engine Adaptation Drives and pull the injector performance data again.
- Upload all three injector performance data printouts to the PTSS case.

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

1. If damage is found, order a new manifold for the driver's side bank from EPC and OPEN PTSS case with pictures of damage.
2. Include the following:
   - Production stamp on the damaged manifold (looks like a pair of clocks)
   - Production sticker
3. If no damage is found, or repair does not remedy complaint proceed to step (3).

3.) 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.

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

1. If the test fails for either bank, replace the high pressure fuel pump for that bank.
2. 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 in Xentry and/or a large differential (>50 bar) 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 (5).
     - 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.

5.) 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
4. Engine Performance Data
5. Injector Performance Data
6. Line Graph Version of the Fault Counter from Cold Start

Symptoms

Power generation / Engine management / Engine running / Runs rough/shakes
Power generation / Engine management / Indicator lamp / Engine diagnosis / lit

Control unit/fault code		
Control unit	Fault code	Fault text
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030027	Combustion misfiring has been detected. The signal change rate is above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030485	Combustion misfiring of cylinder 4 has been detected. There is a signal above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030185	Combustion misfiring of cylinder 1 has been detected. There is a signal above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030385	Combustion misfiring of cylinder 3 has been detected. There is a signal above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030685	Combustion misfiring of cylinder 6 has been detected. There is a signal above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030285	Combustion misfiring of cylinder 2 has been detected. There is a signal above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030785	Combustion misfiring of cylinder 7 has been detected. There is a signal above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030585	Combustion misfiring of cylinder 5 has been detected. There is a signal above the permissible limit value.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030022	Combustion misfiring has been detected. The signal amplitude is greater than the maximum amplitude.
N3/10 - Motor electronics 'MED1775' for combustion engine 'M178' (ME)	P030885	Combustion misfiring of cylinder 8 has been detected. There is a signal above the permissible limit value.