DIESEL EXHAUST FLUID (DEF) QUALITY CONCERN

SITUATION	CAUSE	ACTION
 A customer may express a concern that the Malfunction Indicator Lamp (MIL) is illuminated and/or the 'Incorrect DEF Quality' message is displayed on the Instrument Cluster (IC) 	 Incorrect Diesel Exhaust Fluid (DEF) quality 	Should a customer express this concern, follow the pinpoint test below
 A technician may find Diagnostic Trouble Codes (DTCs) P2BA9 and /or P20EE stored in the Powertrain Control Module (PCM) 	 Incorrect fluid type (coolant, screenwash, diesel, etc) 	Delow
	Induction air leaks	
	Exhaust gas leaks	
	 Selective Catalyst Reduction (SCR) deposits or contamination 	
	NOx sensor issues	
	PCM software	

DIESEL EXHAUST FLUID (DEF) QUALITY PINPOINT TESTS

∧ NOTES:

- Check for any outstanding campaigns or service bulletins for this customer concern prior to carrying out this pinpoint test.
- The following pinpoint test must be completed in full and in the order shown.

PINPOINT TEST B : DEF QUALITY - P2BA9 AND P20EE		
B1: DIESEL EXHAUST FLUID QUALITY CHECKS		
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS	
	1 Drain a small amount of DEF Fluid from the tank (50ml) and, using a digital refractometer to check the concentration of the DEF Fluid. To be within specification, the concentration of the DEF fluid should be between 31.8% - 32.2% (although, a reading of above 30% could be considered acceptable). Three DEF fluid samples from the tank should be tested concurrently to confirm an accurate and stable reading. If, in any of the 3 tests, the result is not within specification, or if there are any signs of debris, then drain and replace the fluid	
	Does the fluid meet the specification? Yes Proceed to next step No If DEF added to the vehicle by the customer is found to be of poor quality, or a different fluid other than specified (Screen-Wash or Coolant) is found, this will not be paid for under warranty. Make sure the customer is aware of any possible costs prior to completing any repair work. Replace the DEF and proceed to next step	

B2: INSPECTION OF THE INTAKE SYSTEM				
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS			
	 Check all intake pipes, exhaust pipes and joints for leaks, using the high pressure diagnostic leak detector test (95-0106) 			
	Was any leaks detected within the intake and exhaust systems?			
	Repair leaking intake and exhaust systems joints as required and proceed to next step No			
	Proceed to next step			
	B3: TESTING THE OPERATION OF DIESEL EXHAUST FLUID INJECTOR			
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS			
	1 Remove the Diesel Exhaust Fluid (DEF) injector from the exhaust			
	2 Check the DEF injector for blockage/failure. Using the Jaguar Land Rover approved Selective Catalyst Reduction (SCR) diagnostic tool and application, perform an SCR dosing module test. All on-screen prompts must be followed			
Did the test pass?				
	Proceed to next step			
	Replace the dosing module and run special application - Diesel exhaust fluid prime and pressure test to prime the system following the replacement. Proceed to next step			
	B4: INSPECTION OF THE DPF AND (SCR) CATALYTIC CONVERTER ASSEMBLY			
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS			
	E:			
Vehicles with integral Diesel Particulate Filter (DPF) and Selective Catalyst Reduction (SCR) catalytic converter assemblies should be inspected for blockage and evidence of soot. Soot on the rear face of the filter could indicate a failing DPF				
	1 Check for deposits on the front or rear face of the SCR catalyst including mixer using a borescope. The rear face of the SCR needs to be clear from blockage and a white / gray in color			
	Was any deposits present on the SCR catalyst faces?			
	Replace the SCR catalyst converter assembly			
	Proceed to next step			
	B5: CHECK PCM FOR NOX SENSOR PERFORMANCE RELATED DTC'S			
TEST CONDITIONS	NS DETAILS/RESULTS/ACTIONS			
	 Using the Jaguar Land Rover approved diagnostic equipment, check if any of the following NOx sensor related DTCs are present on the Powertrain Control Module (PCM) prior to P2BA9 or P20EE being present P229F-28, P22A0-16, P229E-13, P22FE-64 			
	Was any of the NOx sensor related DTC's listed above present on the PCM prior to P2BA9 or P20EE being present? Yes			
	 Check the NOx sensor circuit for short circuit to power, short to ground, open circuit, high resistance. Repair circuit as necessary Inspect connectors for signs of water ingress and pins for damage and/or corrosion 			

B5: CHECK PCM FOR NOX SENSOR PERFORMANCE RELATED DTC'S				
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS			
	 3. If no issues are identified with the wiring system then consider the NOx sensor to be contaminated or poisoned. This contamination will be internal to the sensor, it is not possible to clean it off so the sensor must be replaced. Install a new sensor as necessary and proceed to next step No Proceed to next step 			
B6: RESET SELECTIVE CATALYST REDUCTION QUALITY MONITOR				
TEST CONDITIONS	EST DETAILS/RESULTS/ACTIONS			
	1 Using the Jaguar Land Rover approved diagnostic equipment, run application - Reset Selective Catalyst Reduction quality monitor			
	Did the application run correctly and have all warning lights on the Instrument Cluster (IC) extinguished Yes Proceed to next step No If the application did not run correctly, or the warning lights on the Instrument Cluster (IC) are still illuminated, run the application againWhen the application has run correctly and the warning lights are extinguished, proceed to next step			
B7: POWERTRAIN CONTROL MODULE UPDATE				
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS			
NOTE: Make sure the DTCs are cleared following completion of the PCM software download				
	1 Make sure the Powertrain Control Module (PCM) is updated to the latest level software			
	Is the Powertrain Control Module (PCM) updated to the latest level software Yes Test completed. No further actions required No Using the Jaguar Land Rover approved diagnostic equipment, update the Powertrain Control Module (PCM) to the latest level software			

DEF DOSING MODULE INSPECTION

A visual inspection of the Dosing Module face can be completed. If the 3 injector holes can be seen in the center of the DM then it can be refitted. The soot will naturally clean off at the next DPF Regen cycle. The level of soot seen will vary depending on at which point the vehicle is within the regeneration cycle



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