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To: State I/M Program Administrators and Service Technicians

Re: Jaguar Engine Control Module (ECM) Readiness Reporting

Background:

OBD II systems are required to report if a vehicle has completed its major diagnostics since its fault memory was last cleared. This is often referred to as "readiness". Each major monitor has its own readiness indicator.

As with all vehicles, readiness will be reset on Jaguar vehicles if the battery is disconnected or discharged, if memory is cleared by a scan tool, or when re-programming or replacement of the engine control module occurs.

State vehicle emissions test programs usually require that all but one or two readiness indicators be set as a condition of a vehicle passing their test. This is to ensure that at least the majority of the diagnostics have had the chance to find a fault, if one is present. Some state programs use the reported readiness status from the 'continuous' monitors (misfire, fuel system, and comprehensive components) in addition to the 'non-continuous' monitors (e.g., catalyst, oxygen sensor, etc.) while other states only use the 'non-continuous' monitors.

In the majority of cases, the readiness indicators on the affected Jaguars will be set during normal use of the vehicle. However, please be aware that certain Jaguar vehicles may need additional driving specifically to set readiness to complete for the "comprehensive component" readiness monitor (one of the 'continuous' monitors). The drive cycle described in this bulletin provides additional detail to ensure all necessary parameters to set readiness for comprehensive component monitoring are met.

These vehicles are:

Model	Model Year	Engine
Jaguar X-Type	2002 to 2007	2.5 and 3.0 Liter V6
Jaguar S-Type	2003 to 2005	3.0 Liter V6, 4.2 Liter V8 (naturally aspirated and supercharged)
Jaguar XJ	2004 to 2005	4.2 Liter V8 (naturally aspirated and supercharged)
Jaguar XK	2003 to 2006	4.2 Liter V8 (naturally aspirated and supercharged)

Readiness for Comprehensive Component Monitoring:

Although there are a number of monitors that must run before comprehensive component monitoring is set to ready, Jaguar's experience is that the most likely reason that an affected vehicle does not report that comprehensive component monitoring is complete is because the evaporative emission system 0.020 inch leak check has not yet completed. This is the diagnostic associated with the P0456 fault code.

As allowed by OBD regulation, these cars have both a 0.020 inch and a 0.040 inch leak check monitor and the "evaporative system" readiness is based solely on the 0.040 inch leak check monitor. On these particular cars, Jaguar tied the "comprehensive components" monitor readiness to essentially every diagnostic that was not associated with one of the other readiness monitors including the 0.020 inch leak check.

Drive Cycle to Complete the 0.020 inch Evaporative Leak Check:

There is an engine run time counter that must be below 1 hour 24 minutes for the 0.020 inch leak check monitor to complete and this counter will not reset unless the engine temperature is below 40 degrees C (104 degrees F). Therefore, it is recommended that the following cycle is conducted from a cold start (e.g., first start of the day for the car) within 1 hour and 24 minutes of the engine temperature exceeding 40 degrees C (104 degrees F). This counter value is retained between drive cycles, i.e. it is not reset when the ignition is turned off.

The system needs to run both the gross and small leak diagnostic to complete the 0.020 inch evaporative leak diagnostic. The following conditions apply to BOTH and must be met for them to run successfully:

- Intake air temperature must be between -8 and 70 degrees C (18 and 158 degrees F).
- Barometric pressure must also be ***greater*** than 74.5 kPa (22.27 inHg), which is equivalent to an altitude of around 8,200 feet ***or less***.
- Fuel level must be between 30 and 85% for the duration of the test.

NOTE: The vehicle must be operated safely and within all prevailing traffic regulations, when being driven according to the above requirements. Mobile diagnostic equipment operation may require the use of an assistant.

First, the system will execute a gross leak diagnostic (P0455). The following conditions must be met to run the monitor:

- Start engine from cold, engine coolant temperature (ECT) must have been below 40 degrees C (104 degrees F) at start.

NOTE: There is an additional condition that considers fuel level change in order to guard against fuel slosh generating a false fail. For this reason while the diagnostic is likely to be in progress, avoid rough road surfaces and vehicle manoeuvres such as sudden lane changes.

- Engine must be running for greater than 12 minutes and 45 seconds.

NOTE: The 1 hour and 24 minute time limit must not be exceeded during the combined time of execution of both this AND the small leak test that follows.

- Engine coolant temperature (ECT) between 70 and 110 degrees C (158 and 230 degrees F).
- Maintain a road speed between 8 and 80 miles per hour.
- The system needs these conditions to be valid for approximately 50 seconds.

Following the gross leak diagnostic, the 0.020 inch monitor will run. The following conditions must be met to run the monitor:

- Continuous period of operation at less than 2 mph (e.g., at idle) for at least 66 seconds.

NOTE: There is an additional condition that considers fuel level change in order to guard against fuel slosh generating a false fail. For this reason while the diagnostic is likely to be in progress, avoid rough road surfaces and vehicle manoeuvres such as sudden lane changes.

- Engine air flow (MAF) between 1.5 and 15 grams/second (12 to 119 lbs/hour).