AJ6 FAULT CODES AND IDLE SETTING

1. READING FAULT CODES

JAGUAR 3.6 - LUCAS 9CU SYSTEM

Failure Code Readout. When the fascia display indicates "Fueling Failure" it is indicating that a fault has been detected. The fault identification number can be displayed as follows when the vehicle is stationary.

1. Switch off engine.
2. Wait 10 seconds.
3. Switch on ignition - do not try to start engine.
4. Fault code will now be displayed on fascia panel (saloon) or trip computer (XJS).

Attempting to start the engine will clear codes from memory. If the fault still exists it will be again registered. This provides a convenient way of checking when a fault has been rectified. Fault Identification Numbers:-

1. Cranking signal failure.
2. Airflow meter.
3. Coolant sensor.
4. Lambda (oxygen sensor) feedback (catalyst equipped cars)
5. Airflow meter high/throttle potentiometer low - incompatible.
6. Airflow meter low/throttle potentiometer high - incompatible.
7. Idle fuel adjustment circuit failed.
8. Not allocated – I believe Air Temp Sensor was to be here..

JAGUAR 3.2 & 4.0 - LUCAS 15CU SYSTEM.

Failure Code Readout. When a fault has been detected the facia panel will display "Check Engine" warning. The relevant fault code can be identified with the vehicle stationary by using the following procedure:-

1. Switch off engine.
2. Wait 5 seconds.
3. Turn ignition switch to position 2 - do not start engine.
4. Press VCM button (saloon). XJ-S will automatically display code 5 seconds after ignition is switched on.
5. Fault code number should be seen on VCM or trip computer display.

Fault codes can only be cleared by use of dealer JDS, PDU or similar (also to display fault codes) or by grounding the lead provided for the purpose from the ECU (see below). If more than one fault has been logged the first one must be rectified or cleared before the next will be displayed for which the above procedure must be repeated. Fault codes and related functions are listed below.

15CU Fault Codes and Functions - 3.2 and 4 litre AJ6 Engine

11. Idle pot. Looks for more than 4 volts on trim pot wire. Defaults to 2.5 volts.
12. Air flow meter. Looks for air flow meter signal less than 0.2 or more than 4.5 volts between 400 and 300 RPM.
14. Coolant thermistor. Looks for signal less than 0.1 or more than 4.9 volts fully warm; less than 3.54 volts after cold start; voltage change of more than 0.7 volt when fully warm.
16. Air thermistor. Looks for signal less than 0.1 or more than 4.9 volts.
17. Throttle pot. Looks for signal less than 0.25 volts.
18. Throttle pot/airflow meter signal conflict. Looks for throttle pot signal above 2.25 volts while AF signal indicates light load. Defaults to ignore throttle pot signal above 1.5 volts therefore open loop operation with full load enrichment is disabled.
19. Throttle pot/airflow meter signal conflict. Looks for closed throttle signal while AF signal indicates high load with speed above 1000 RPM. Defaults to ignore closed throttle signal therefor idle functions are disabled.
22. Fuel pump drive circuit. Checks for short or open circuit to pump relay.
23. Lambda sensor error - fueling rich. Feedback signal high despite correcting weak by more than 12.5%.
24. Ignition drive circuit. Checks that ignition drive pulse exceeds 4.5 volts and is below 0.1 volts with no pulse.
26. Lambda sensor error - fueling weak. Feedback signal low despite correcting rich by more than 12.5%.
29. ECU self test. Program data checksum wrong - corrupted.
33. Injector drive circuit fault. Checks that injector voltage during initial turn on period (1.3 milliseconds) does not exceed 1.2 volts.
34. Injector drive fault or injector leakage. Checks that feedback sensor is not indicating rich fueling during over-run cut off above 2000 RPM.
37. EGR circuit check. Checks voltage across EGR valve for open or short circuit.
39. EGR temp sensor check. Looks for conflict between EGR temperature sensor reading and state (i.e. open/closed) of EGR valve. Disables EGR by default.
44. Oxygen sensor circuit check. Looks for absence of feedback signal. Also if weak fueling error cannot be corrected by up to 12.5% enrichment, enrichment of 37.5% is applied and fault flagged if no corrective response is detected. Defaults to open loop operation.
46. Idle speed control valve coil 1. Checks that off voltage is less than 0.85 volts and on voltage exceeds 12.25 volts.
47. Idle speed control valve coil 2. Checks that off voltage is less than 0.85 volts and on voltage exceeds 12.25 volts.
48. Idle speed control valve error. Looks for idle speed being too high with valve closed (coolant temp below 35C) or too low with valve open (coolant temp above 75C).
66. Air injection relay drive circuit. Looks at voltage across relay to detect open or short circuit.
68. Road speed sensor. Looks for conflicting speed signal (less than 1.5 m.p.h.) with engine speed above 2800 r.p.m. and AF signal above 3 volts, with transmission not in neutral.
69. Drive/neutral gear selection error. Looks for engine start when D or N not selected, or for engine speed above 3550 r.p.m. and high load signal when D or N are selected.
89. Purge valve circuit. Looks at voltage across purge valve winding to detect open or short circuit.

Notes:

Because codes 26 and 44 can be activated by running out of fuel they only display once until the next ignition on/off event. They are still retained in memory for access via JDS/PDU until cleared.

Non USA catalyst cars have a restricted fault code system which only displays once until the next ignition on/off event. Codes 11, 12, 14, 16, 17, 18, 19, 23, 26, 44 & 68 are the only codes which will activate a warning display.

Non catalyst cars. As above but codes 23, 26 & 44 are inactive.

There is no fault code relating to the crankshaft sensor.

Clearing fault codes without use of a diagnostic instrument (PDU, etc.)

The DTC reset lead is provided for this purpose. On saloons it has a red connector on the end of a K/R wire under the glove box trim panel on the passenger side. On XJ-S it has a purple connector on a Y/G wire behind the centre console panel in passenger footwell. Grounding the wire for 3 seconds clears one code number at a time in order of priority. The code display process must be repeated after each grounding of the wire to check for further stored codes.

Disconnection of the battery supply to the ECU will clear all codes from memory but will also clear adaptive memory data.

2. IDLE STEPPER MOTOR SETTING PROCEDURE

3.6 Litre

1. Run engine until fully warm.
2. Switch off and remove connector from coolant sensor.
3. Insert 100 ohm resistor across coolant connector terminals.
4. Switch on ignition and after 10 seconds remove connector from stepper motor (which will now be fully seated and closing off idle orifice).
5. Switch off ignition, remove 100 ohm resistor and reconnect coolant sensor.
6. Start engine and set base idle speed to 600 r.p.m. via air bypass adjustment screw near to stepper motor.
7. Reconnnect stepper motor - idle should now stabilise around 700 r.p.m.
8. Check idle CO - factory setting quoted as 1-2% but we find that most engines idle best with a weak setting around 1% or even slightly less depending on HC emision being stable.

3.2 & 4.0 Litre

1. Run engine until fully warm.
2. Switch off ignition.
3. After 5 seconds switch on ignition - wait 5 seconds - remove connector from stepper motor.
4. Switch off ignition.
5. Wait 15 seconds then replace connector on stepper motor.
6. Repeat operation sequence 3 - 5 twice - on the last occasion do not reconnect stepper motor.
7. Start engine and set base idle to 550 - 600 r.p.m. via air bypass adjuster.
8. Switch ignition off and reconnect idle stepper motor.
9. Restart engine - idle speed should now stabilise around speed shown below.
10. Check idle CO as for 3.6 (if non-cat).

Specified Idle Speed.
Cold in neutral - 800 (Auto)
Hot in neutral - 700 (Auto)
Cold in drive - 650 (Auto)
Hot in drive - 580 (Auto) (3.2L = 650)
Hot in Neutral - 800 (Manual)

Note: Cold idle speeds will be slightly higher at very low temperatures.

If the above procedures do not result in stable idling, check that the throttle potentiometer is correctly set. While the ECU will automatically compensate for minor errors within the range of the adaptive memory, a badly adjusted throttle potentiometer can cause spurious drivability and idling problems.

Correct potentiometer settings at closed throttle are:
3.6 Litre = 0.32 volts.
3.2 & 4.0 Liter = 0.6 volts.

S Petry
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