

TROUBLESHOOTING

TROUBLESHOOTING HINTS

1. Engine troubles are usually not caused by the MFI and SFI systems.

When troubleshooting, always first check the condition of the other systems.

(a) Electronic source

- Battery
- Fusible links
- Fuses

(b) Body ground

(c) Fuel supply

- Fuel leakage
- Fuel filter
- Fuel pump

(d) Ignition system

- Spark plugs
- High-tension cords
- Distributor
- Ignition coil
- Ignite

(e) Air induction system

- Vacuum leaks

(f) Emission control system

- PCV system
- EGR system

(g) Others

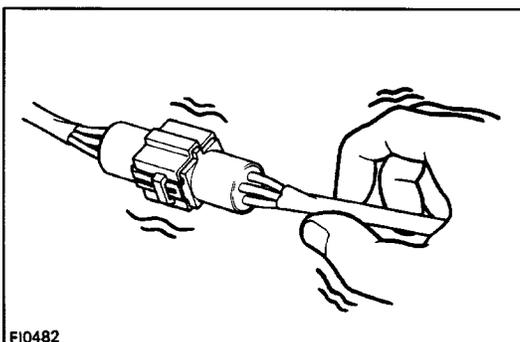
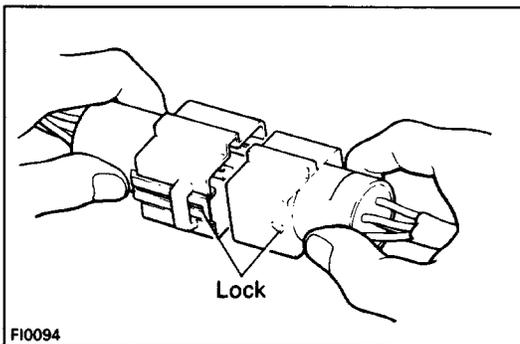
- Ignition timing (ESA system)
- Idle speed (IAC system)
- etc.

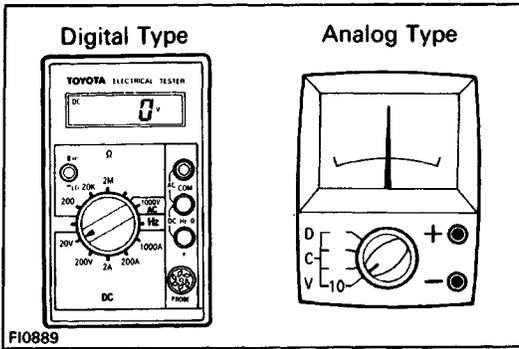
2. The most frequent cause of problems is simply a bad contact in wiring connectors. Always check that connections are secure.

When inspecting the connector, pay particular attention to the following points:

- (a) Check to see that the terminals are not bent.
- (b) Check to see that the connector is pushed in completely and locked.
- (c) Check to see that there is no signal change when the connector is slightly tapped or wiggled.

3. Troubleshoot sufficiently for other causes before replacing the ECM, as the ECM is of high quality and it is expensive.

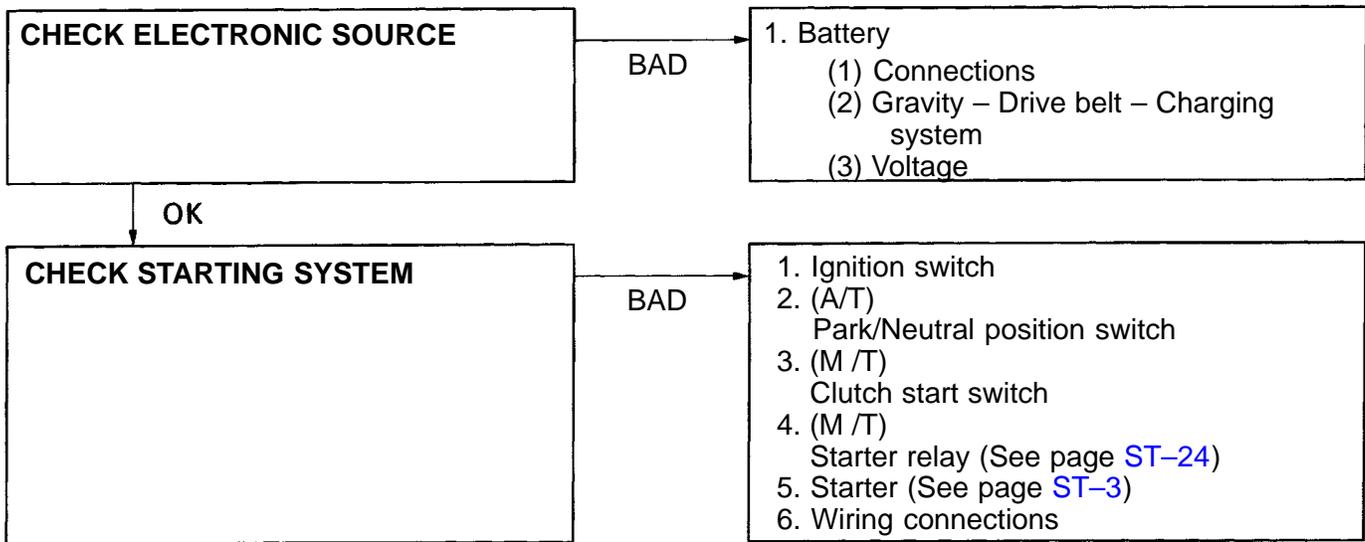




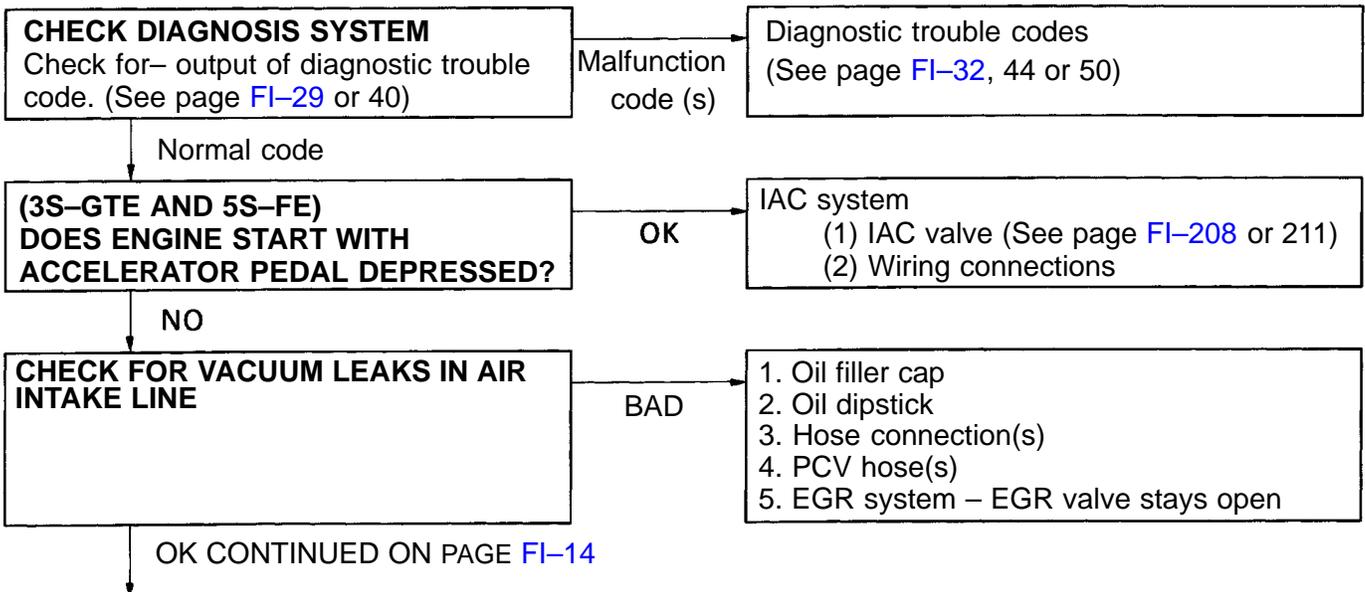
4. Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) for troubleshooting of the electrical circuit. (See page FI-58)

TROUBLESHOOTING PROCEDURES

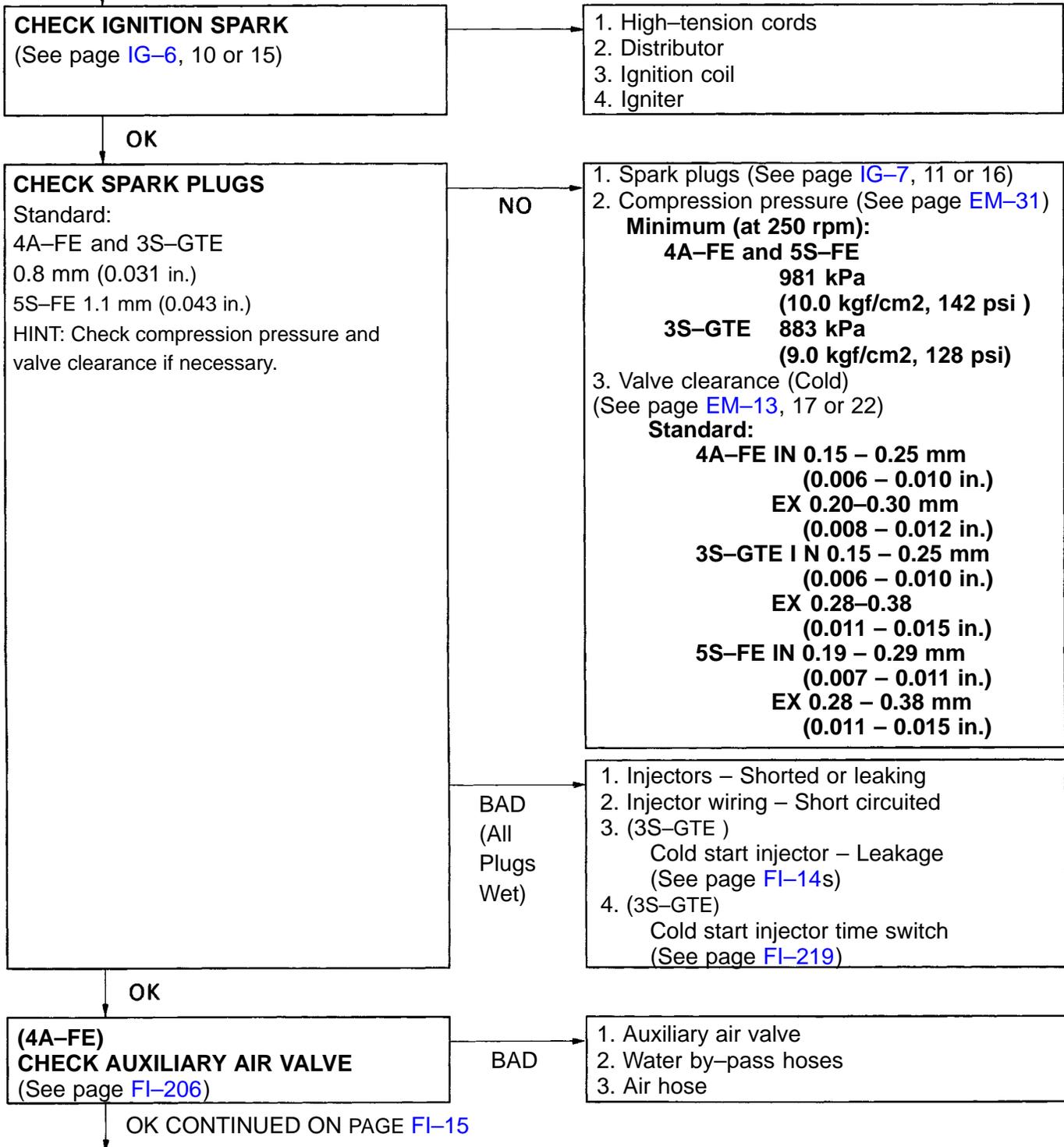
SYMPTOM – DIFFICULT TO START OR NO START (ENGINE WILL NOT CRANK OR CRANKS SLOWLY)



SYMPTOM – DIFFICULT TO START OR NO START (CRANKS OK)



OK CONTINUED FROM PAGE FI-13



CHECK IGNITION SPARK
(See page IG-6, 10 or 15)

- 1. High-tension cords
- 2. Distributor
- 3. Ignition coil
- 4. Igniter

OK

CHECK SPARK PLUGS
Standard:
4A-FE and 3S-GTE
0.8 mm (0.031 in.)
5S-FE 1.1 mm (0.043 in.)
HINT: Check compression pressure and
valve clearance if necessary.

NO

- 1. Spark plugs (See page IG-7, 11 or 16)
- 2. Compression pressure (See page EM-31)
Minimum (at 250 rpm):
4A-FE and 5S-FE
981 kPa
(10.0 kgf/cm2, 142 psi)
3S-GTE 883 kPa
(9.0 kgf/cm2, 128 psi)
- 3. Valve clearance (Cold)
(See page EM-13, 17 or 22)
Standard:
4A-FE IN 0.15 - 0.25 mm
(0.006 - 0.010 in.)
EX 0.20-0.30 mm
(0.008 - 0.012 in.)
3S-GTE IN 0.15 - 0.25 mm
(0.006 - 0.010 in.)
EX 0.28-0.38
(0.011 - 0.015 in.)
5S-FE IN 0.19 - 0.29 mm
(0.007 - 0.011 in.)
EX 0.28 - 0.38 mm
(0.011 - 0.015 in.)

BAD
(All
Plugs
Wet)

- 1. Injectors - Shorted or leaking
- 2. Injector wiring - Short circuited
- 3. (3S-GTE)
Cold start injector - Leakage
(See page FI-14s)
- 4. (3S-GTE)
Cold start injector time switch
(See page FI-219)

OK

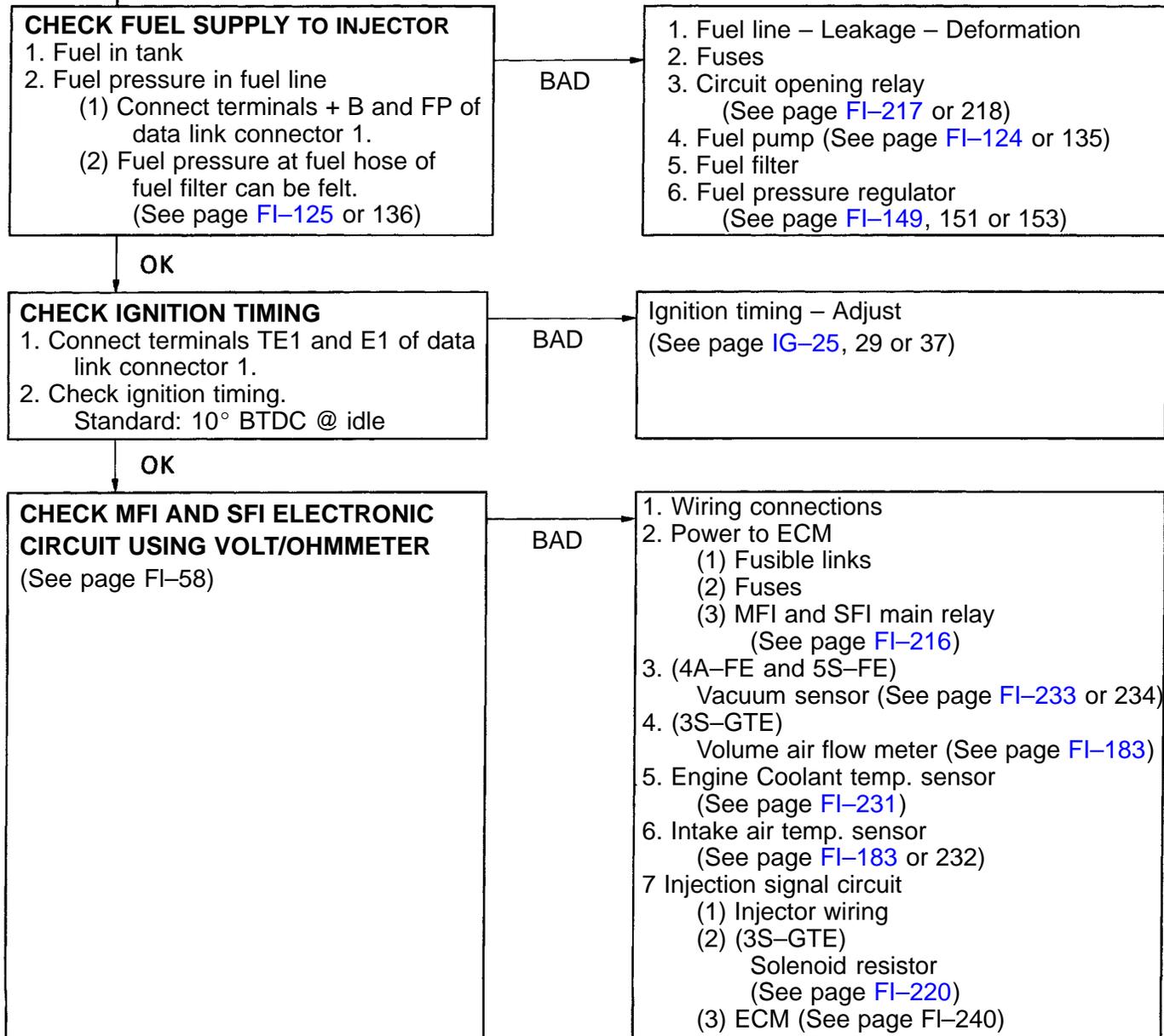
**(4A-FE)
CHECK AUXILIARY AIR VALVE**
(See page FI-206)

BAD

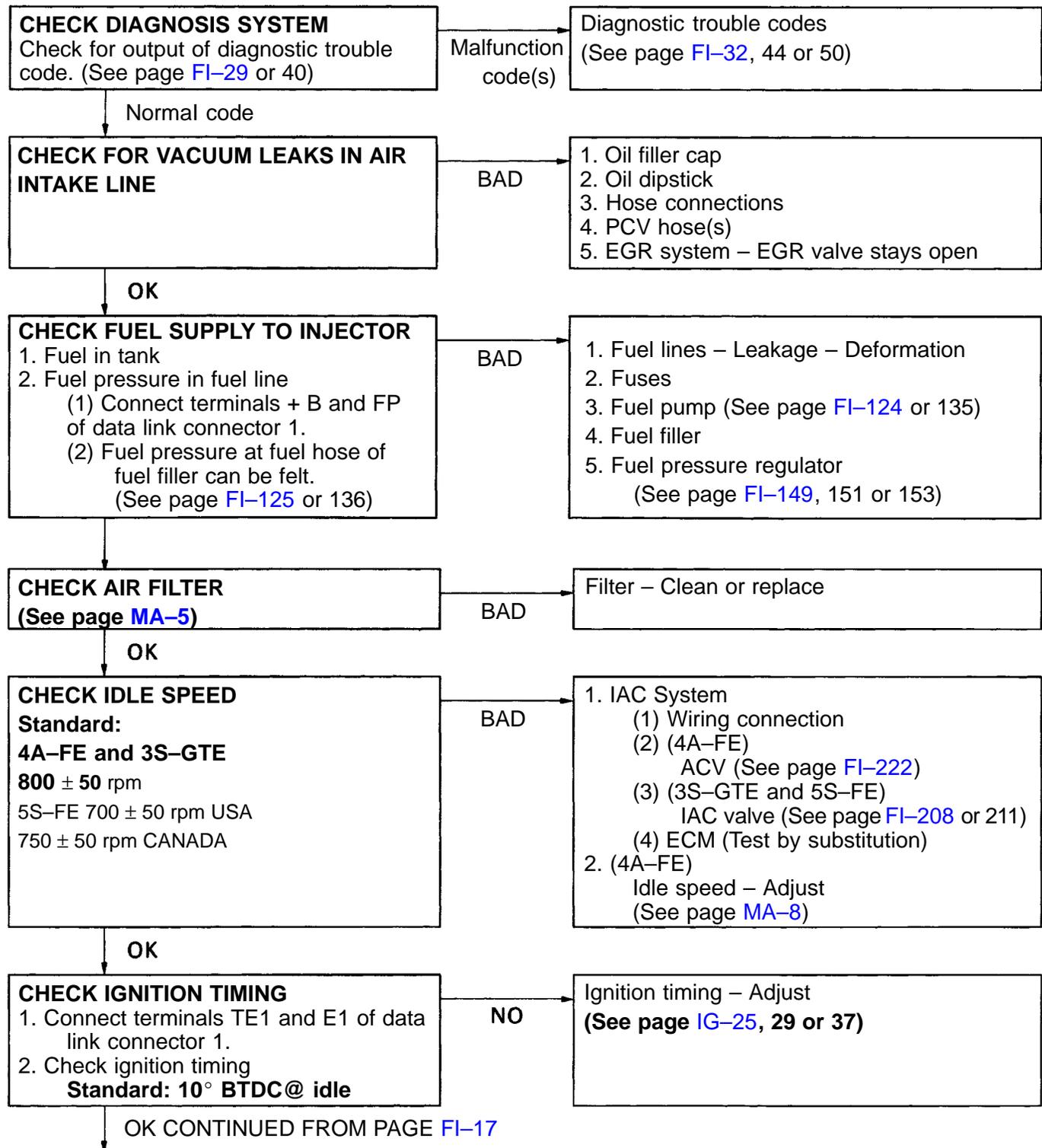
- 1. Auxiliary air valve
- 2. Water by-pass hoses
- 3. Air hose

OK CONTINUED ON PAGE FI-15

OK CONTINUED FROM PAGE FI-14



SYMPTOM – ENGINE OFTEN STALLS



OK CONTINUED ON PAGE [FI-16](#)

CHECK SPARK PLUG
Standard:
4A-FE and 3S-GTE
0.8 mm (0.031 in.)
5S-FE 1.1 mm (0.043 in.)
 HINT: Check compression pressure and valve clearance if necessary.

NO

1. Spark plugs (See page [IG-7](#), 11 or 16)
2. Compression pressure (See page [EM-31](#))
Minimum (at 250 rpm):
4A-FE and 5S-FE
981 kPa
(10.0 kgf/cm², 142 psi)
3S-GTE 883 kPa
(9.0 kgf/cm², 128 psi)
3. Valve clearance (Cold)
 (See page [EM-13](#), 17 or 22)
Standard:
4A-FE IN 0.15-0.25 mm
(0.006 - 0.010 in.)
EX 0.20-0.30
(0.008 - 0.012 in.)
3S-GTE IN (0.15 - 0.25 mm
(0.006 - 0.010 in.)
EX 0.28 - 0.38 mm
(0.011 - 0.015 in.)
5S-FE IN 0.19 - 0.29 mm
(0.007 - 0.011 in.)
EX 0.28-0.38 mm
(0.011 - 0.015 in.)

OK

(3S-GTE)
CHECK COLD START INJECTOR
 (See page [FI-146](#))

BAD

1. Cold start injector
 (See page [FI-146](#))
2. Cold start injector time switch
 (See page [FI-219](#))

OK CONTINUED FROM PAGE [FI-16](#)

CHECK FUEL PRESSURE
 (See page [FI-125](#), 128 or 136)

BAD

1. Fuel pump (See page [FI-124](#) or 135)
2. Fuel filter
3. Fuel pressure regulator
 (See page [FI-149](#), 151 or 153)

OK

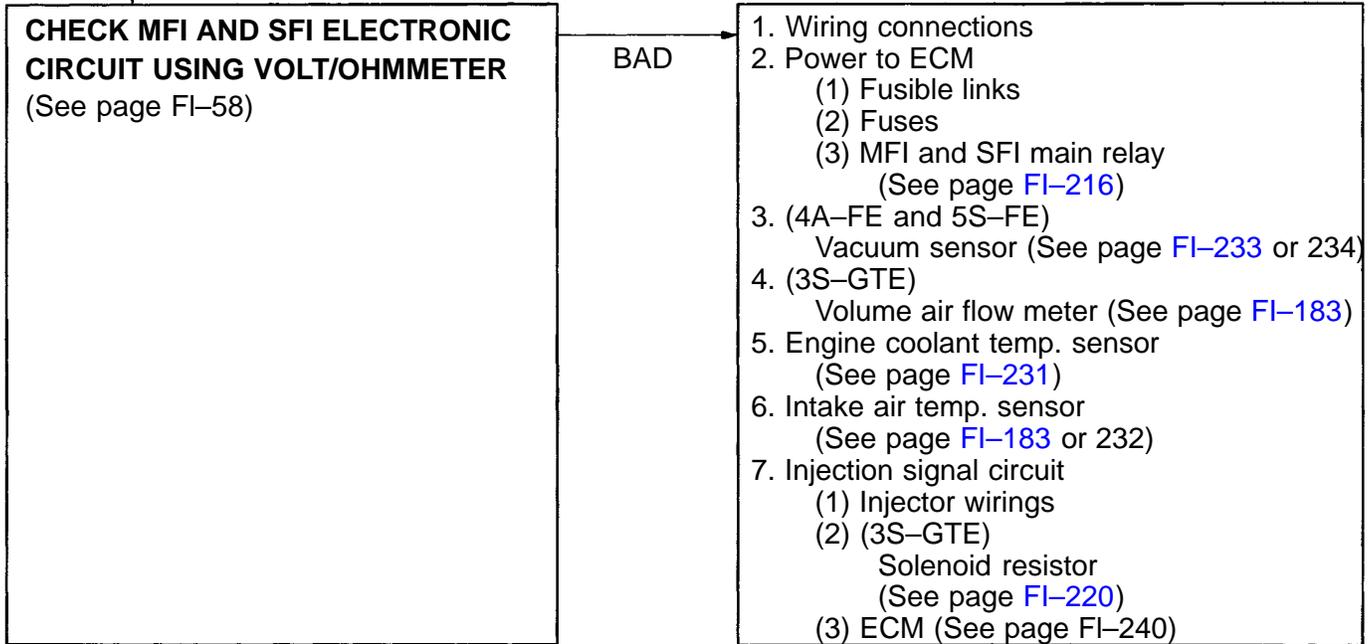
CHECK INJECTORS
 (See page [FI-155](#), 160 or 169)

BAD

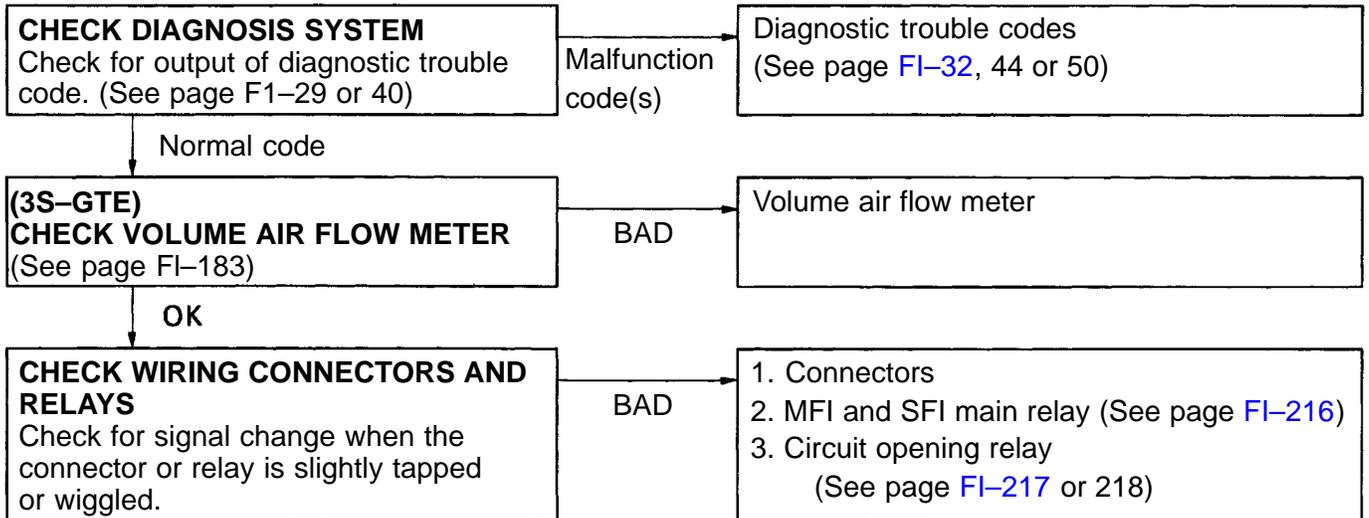
Injection condition

OK CONTINUED ON PAGE [FI-18](#)

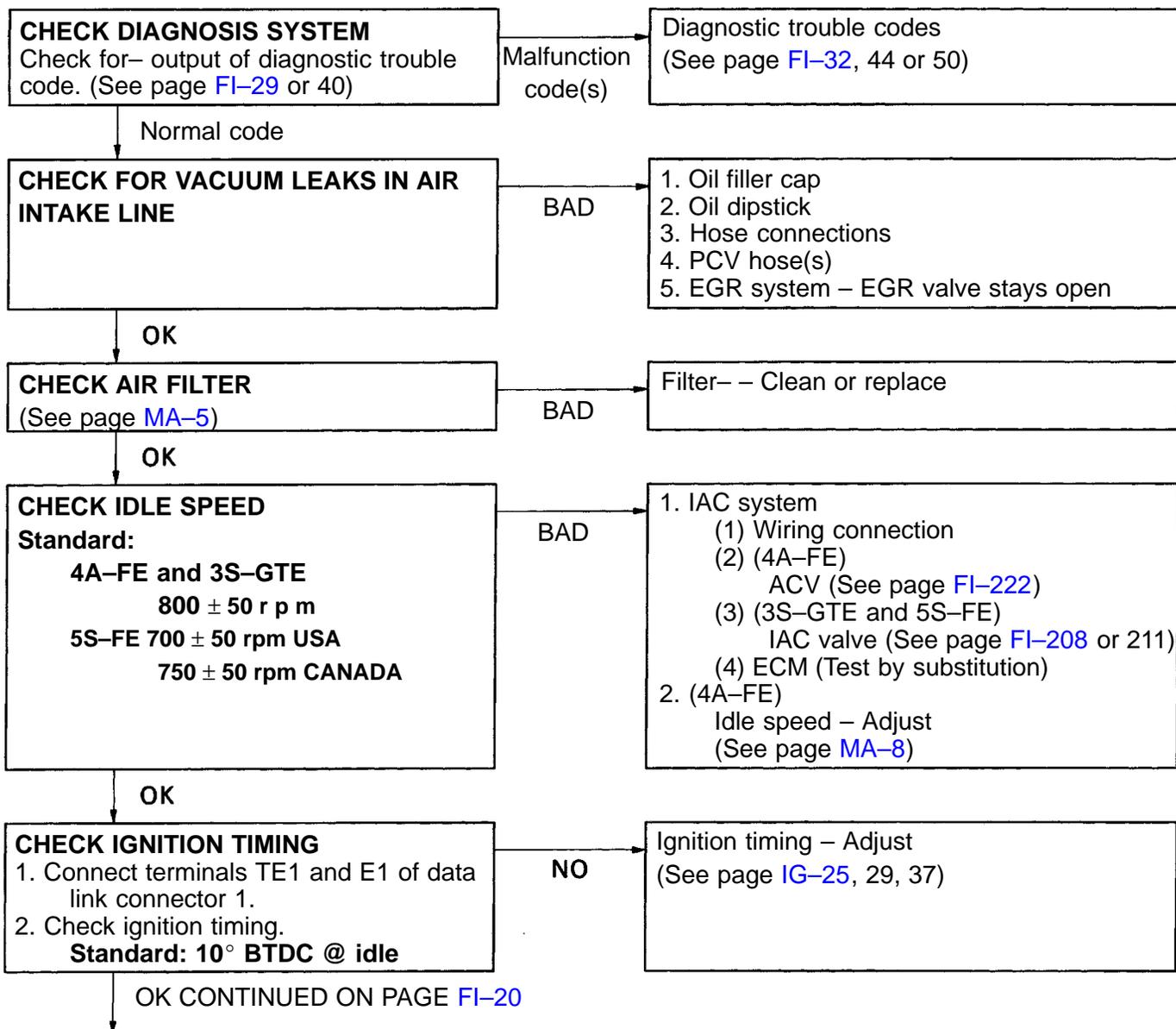
OK CONTINUED FROM PAGE FI-17



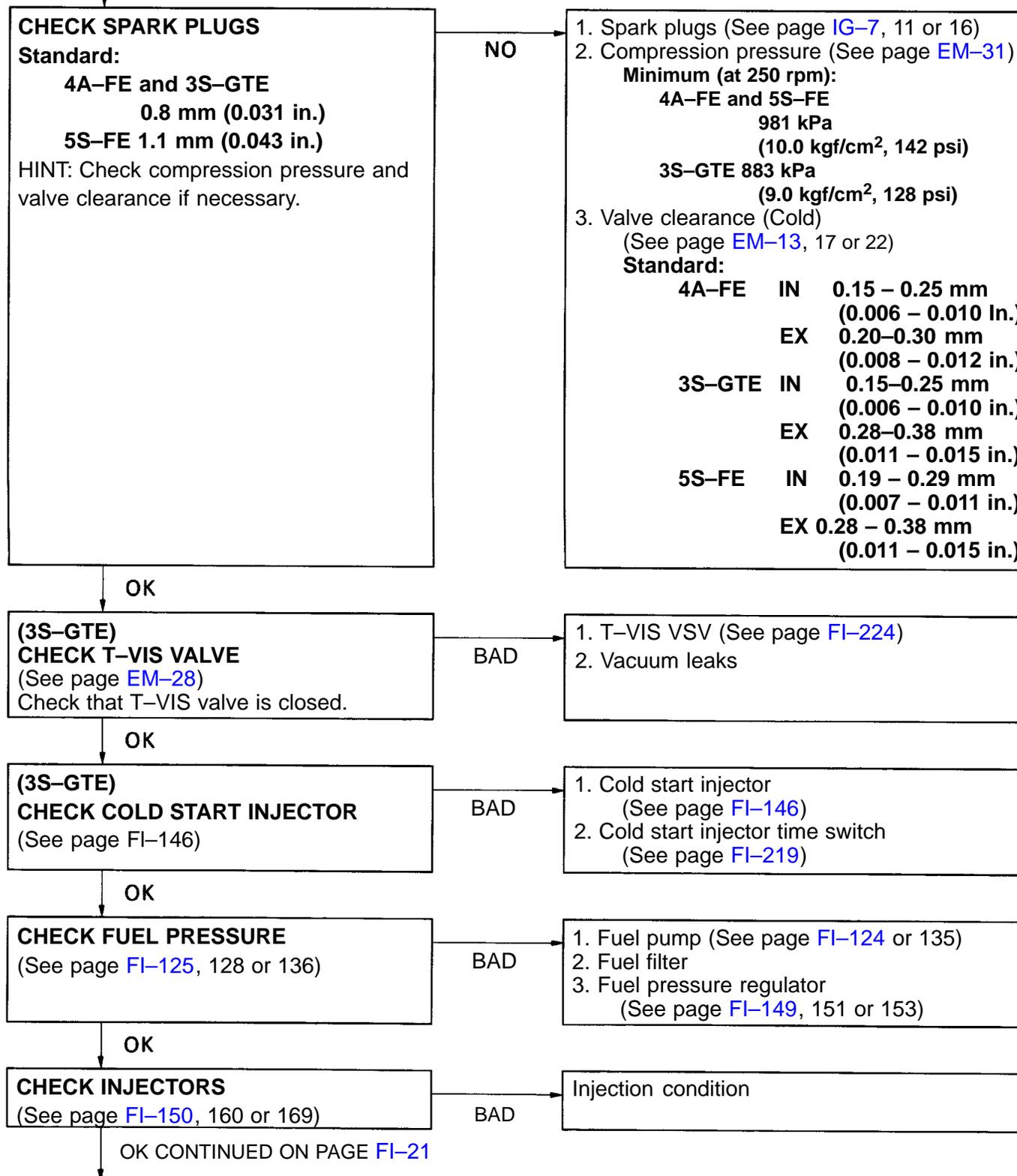
SYMPTOM – ENGINE SOMETIMES STALLS

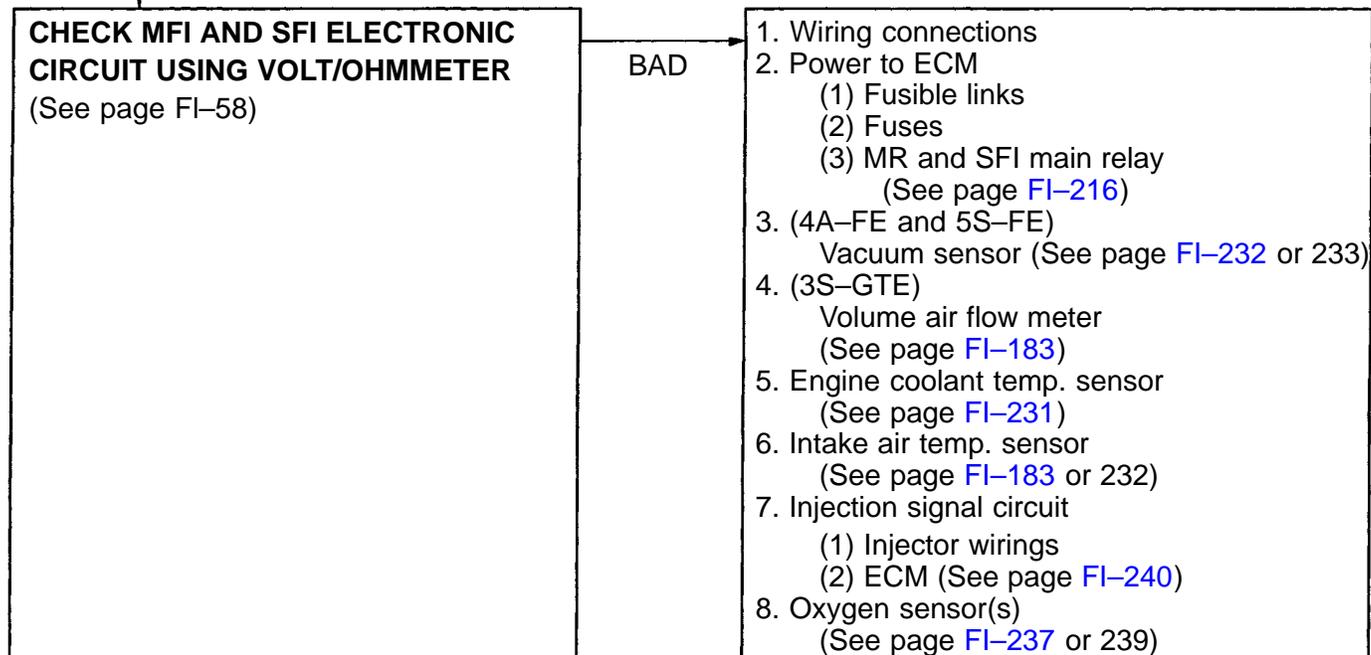


SYMPTOM – ROUGH IDLING AND/OR MISSING



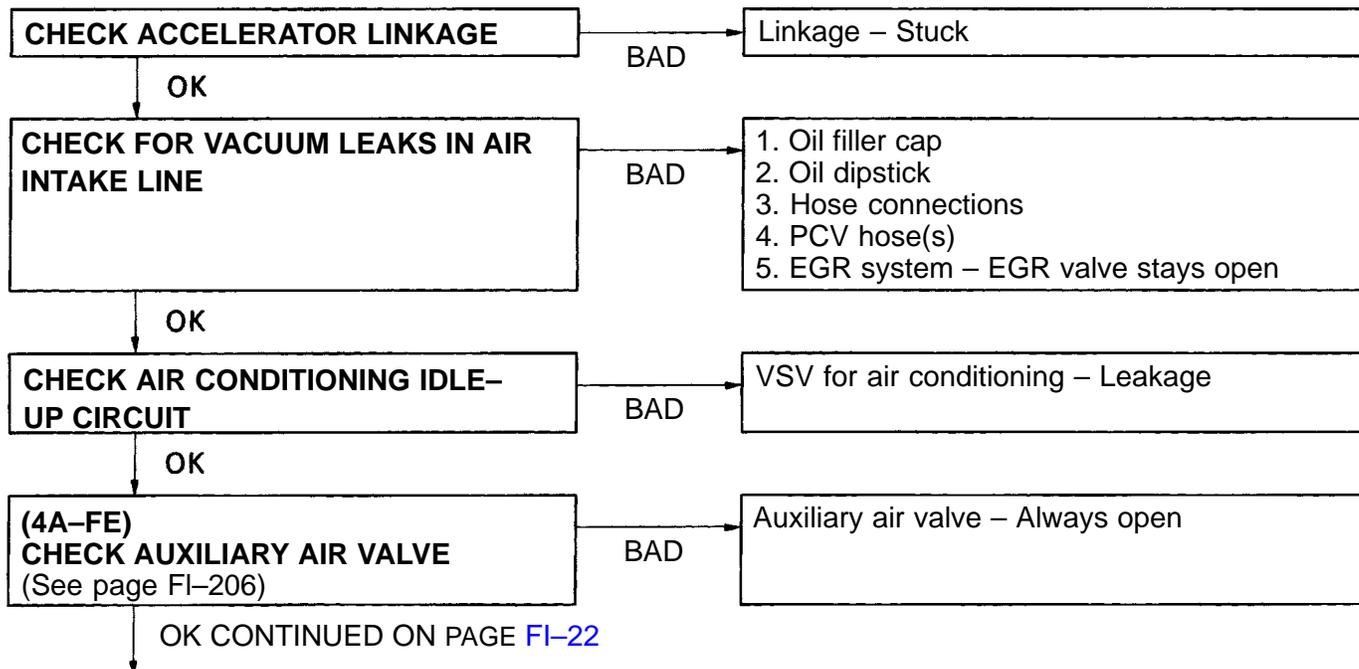
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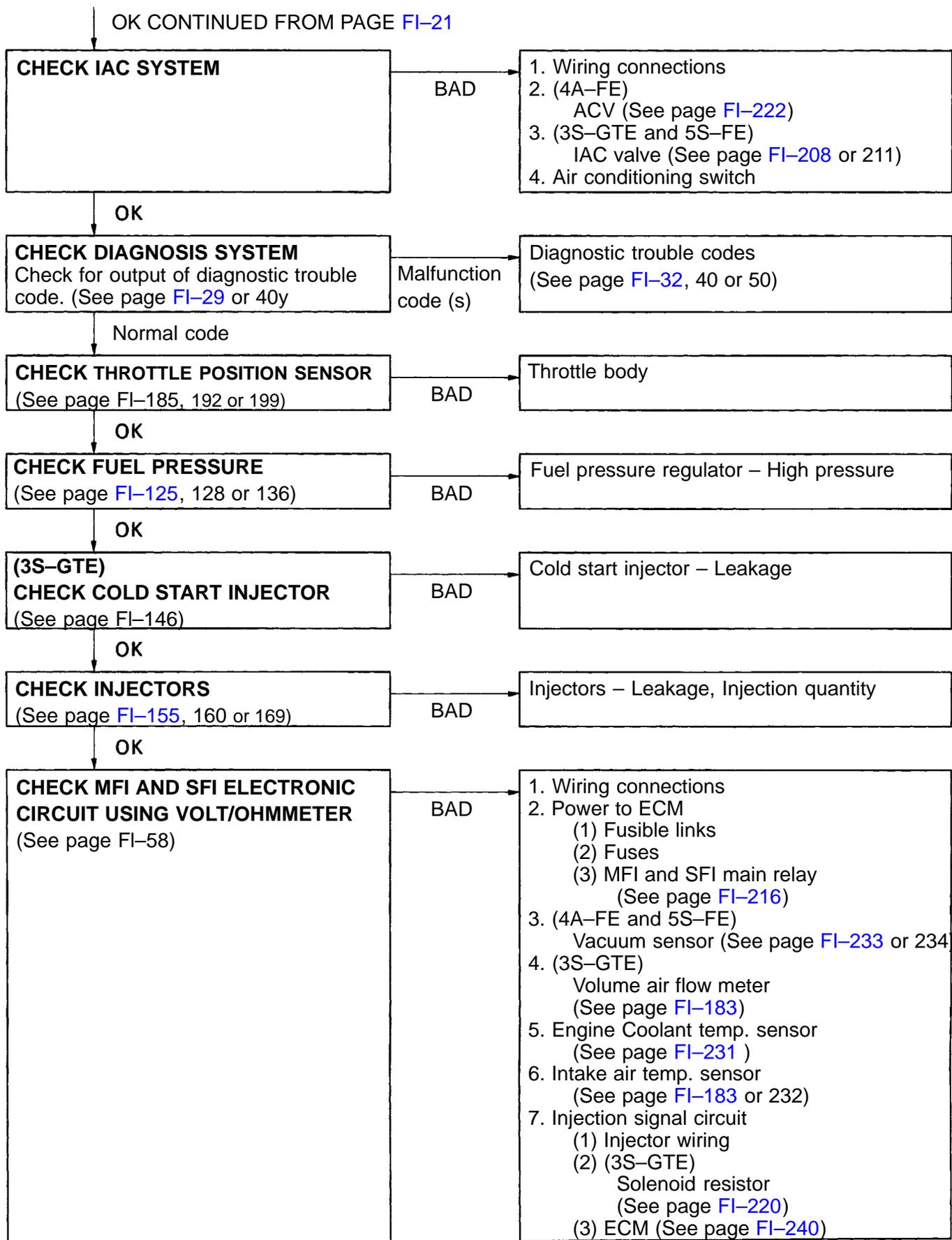


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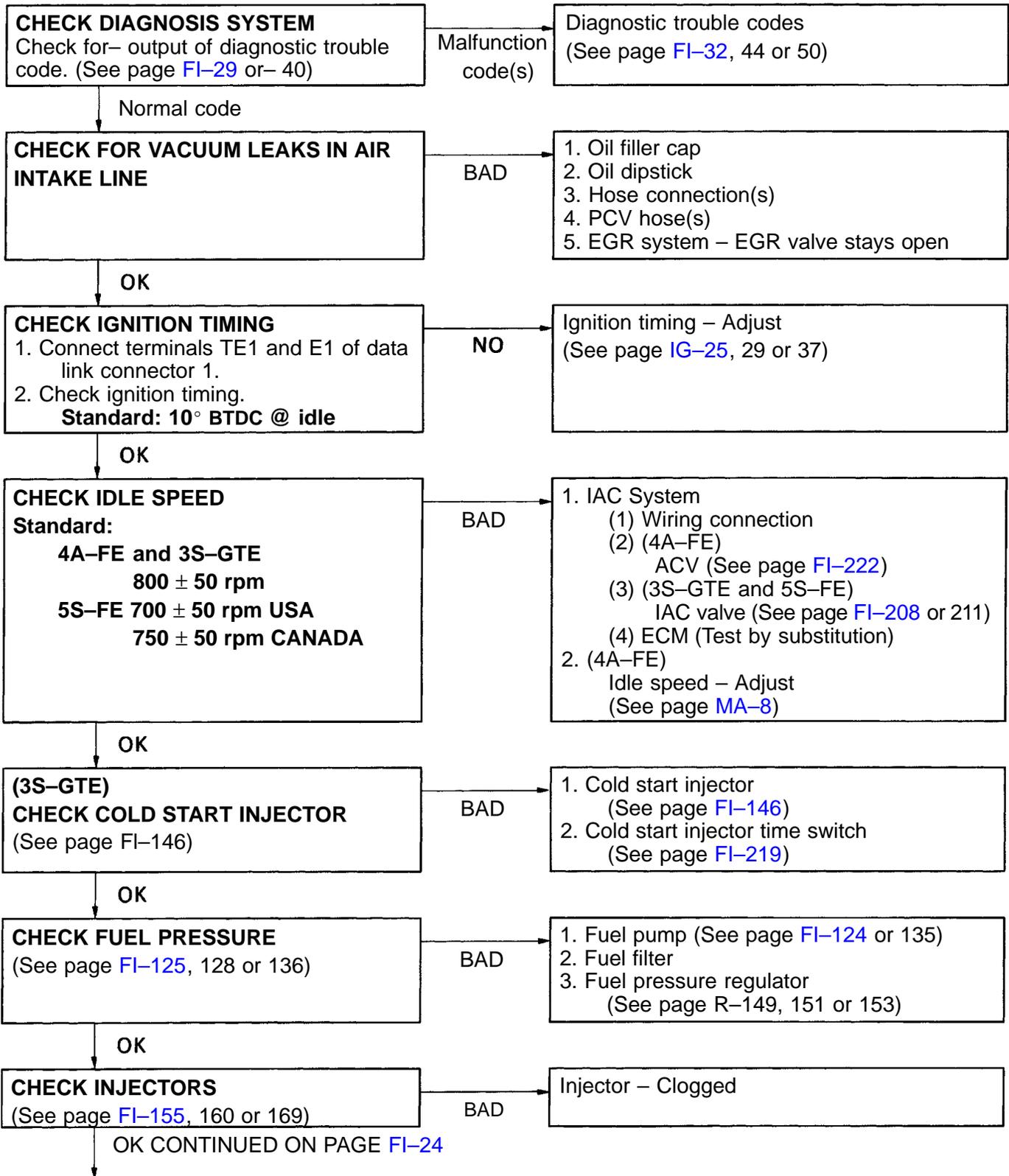
SYMPTOM – HIGH ENGINE SPEED (NO DROP)

HINT (5S-FE): Disconnecting the battery will cause the idling speed data in the IAC to be returned to the initial idling speed, causing the idling speed to rise above 700 rpm (5S-FE USA), 750 rpm (5S-FE CANADA). Should this happen, either carry out a driving test, including stop-go several times at a speed above 10 km/h, or start the engine, idle for 30 seconds and then turn the engine off repeatedly. By doing this, idle data will be stored in the IAC and the idle rpm will be at specified value.

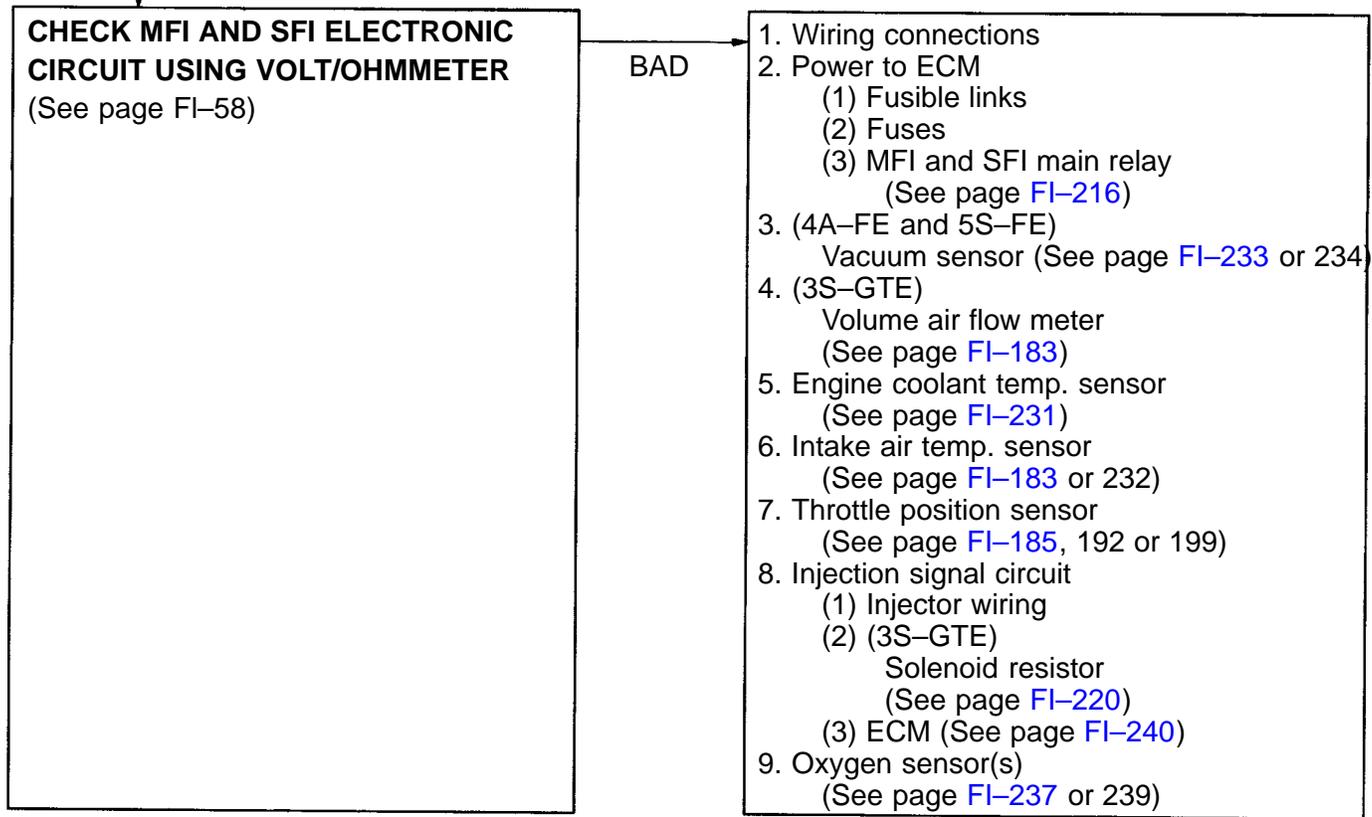




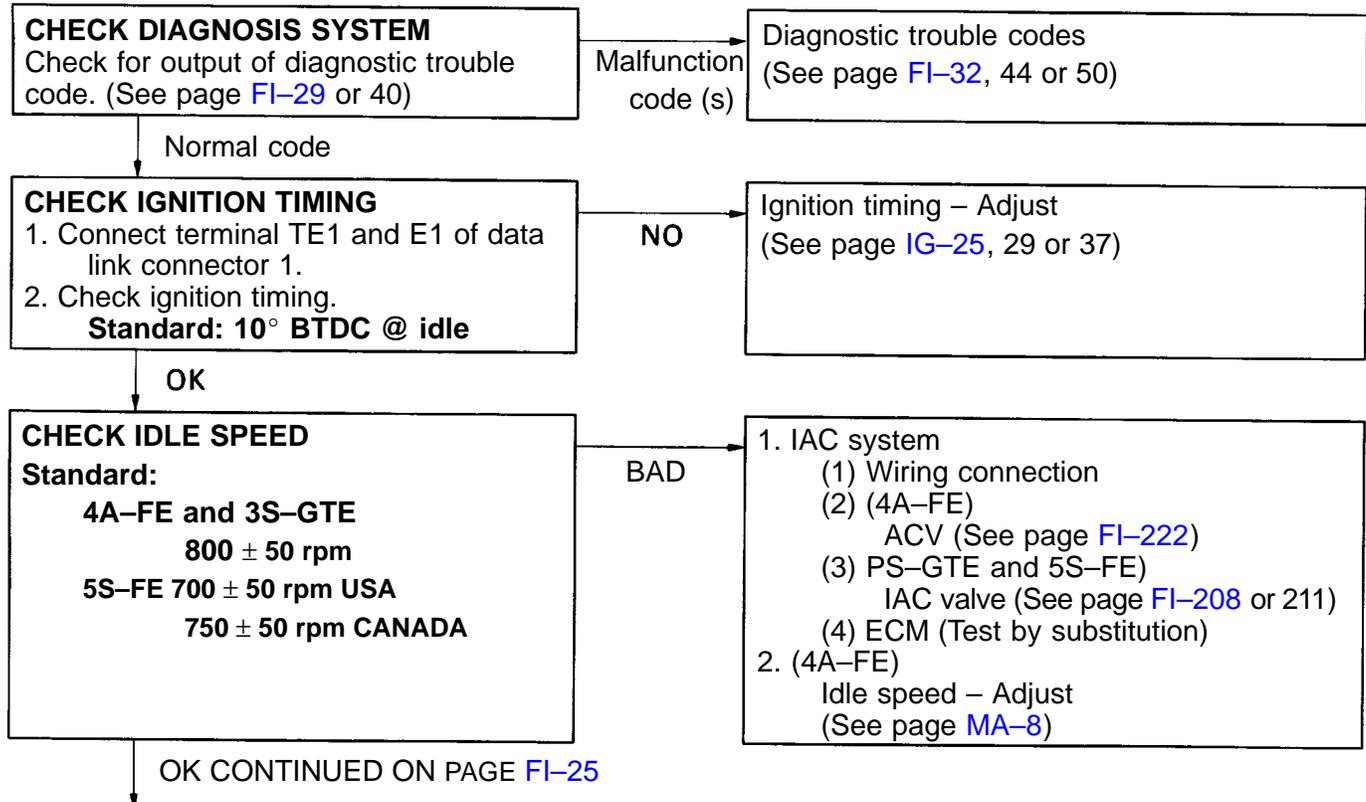
SYMPTOM – ENGINE BACKFIRES – Lean Fuel Mixture

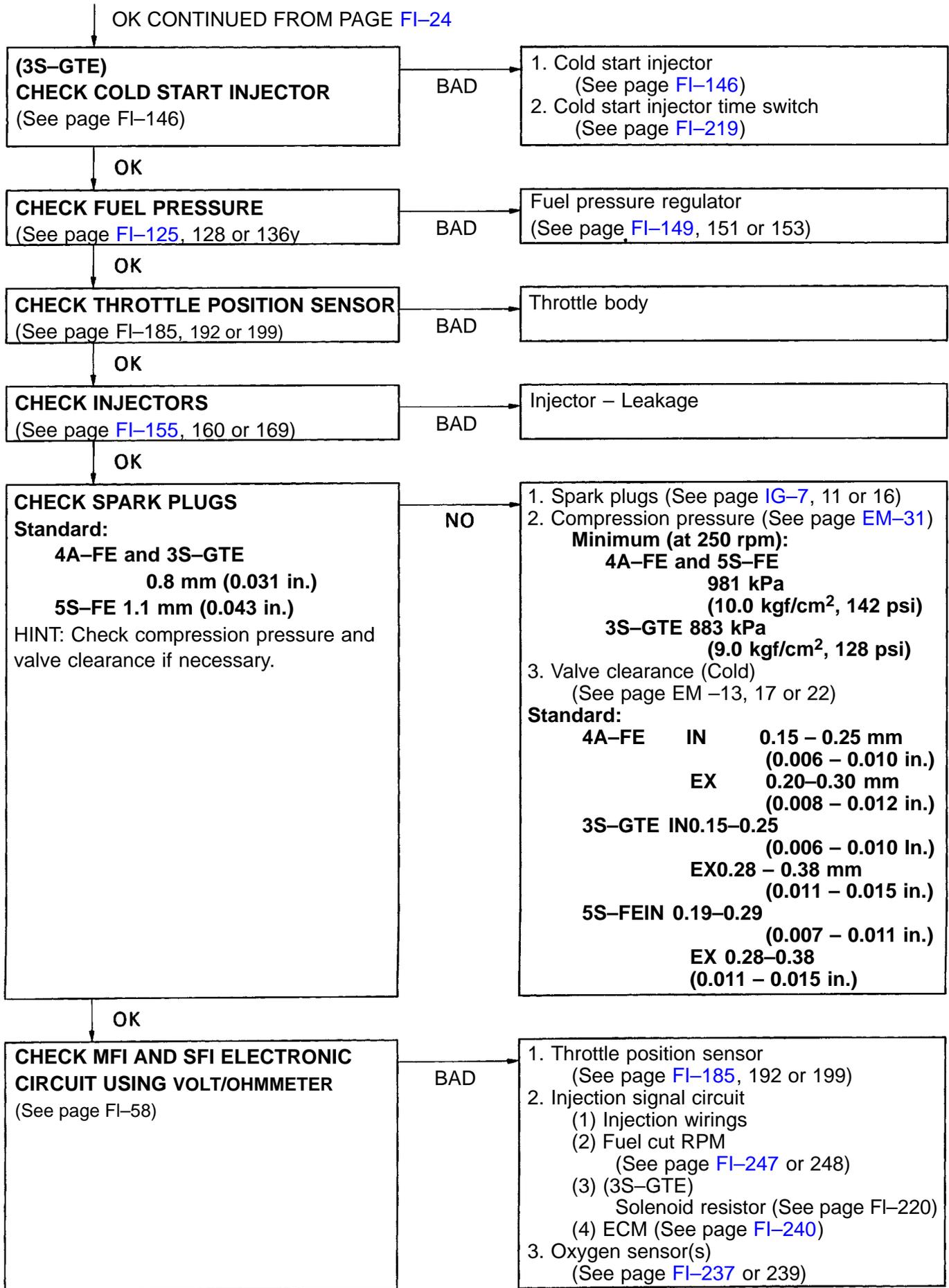


OK CONTINUED FROM PAGE [FI-23](#)

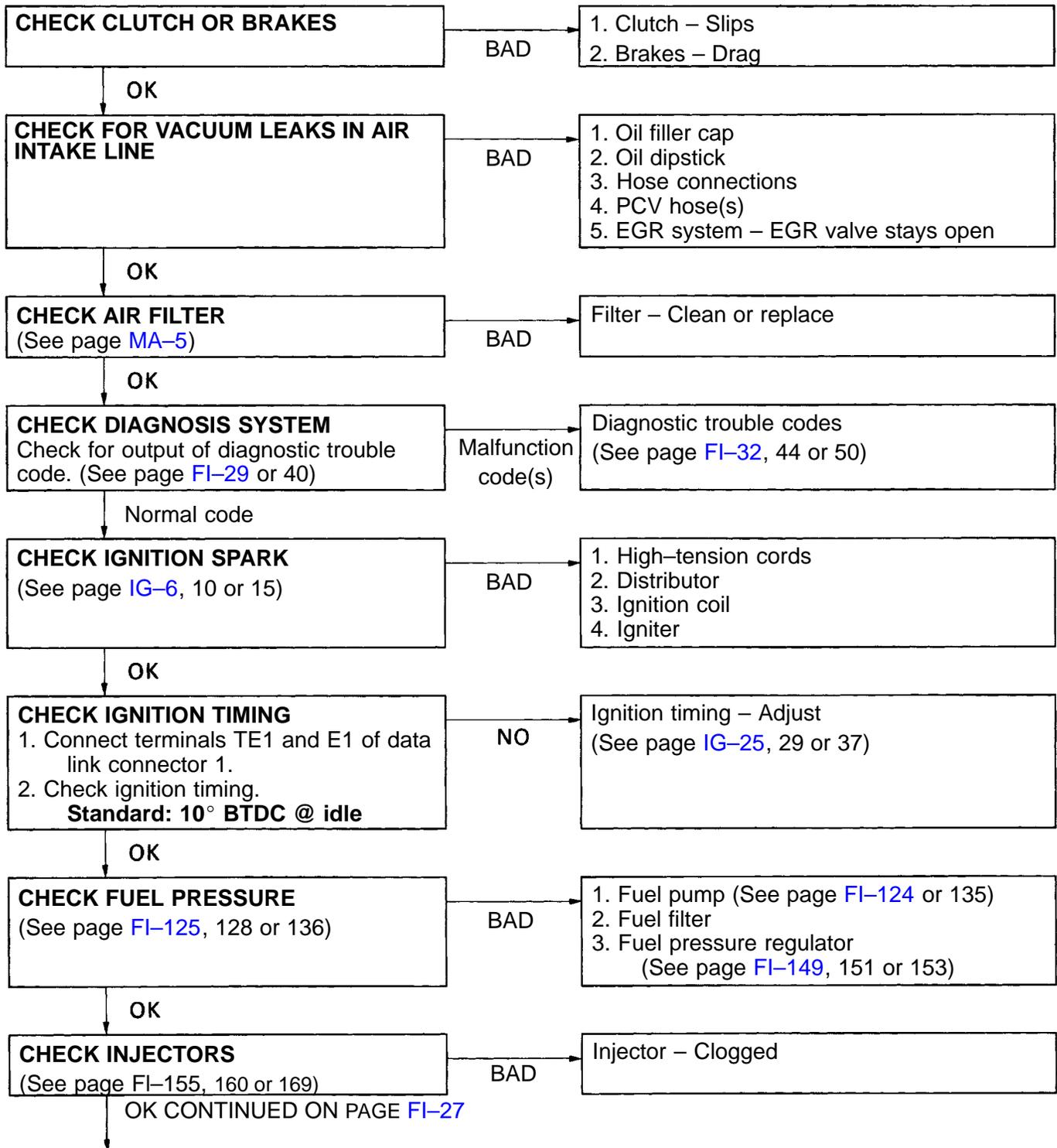


SYMPTOM – MUFFLER EXPLOSION (AFTER FIRE) – Rich Fuel Mixture Misfire





SYMPTOM – ENGINE HESITATES AND/OR POOR ACCELERATION



OK CONTINUED FROM PAGE FI-26

CHECK SPARK PLUGS

Standard:

4A-FE and 3S-GTE

0.8 mm (0.031 in.)

5S-FE 1.1 mm (0.043 in.)

HINT: Check compression pressure and valve clearance if necessary.

NO

1. Spark plugs (See page IG-7, 11 or 16)
2. Compression pressure (See page EM-31)
Minimum (at 250 rpm):
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	EX	0.28 - 0.38 mm (0.011 - 0.015 in.)
5S-FE	IN	0.19 - 0.29 mm (0.007 - 0.011 in.)
	EX	0.28 - 0.38 mm (0.011 - 0.015 in.)

OK

**(3S-GTE)
CHECK T-VIS VALVE**

(See page EM-28)

Check if air control valve is open with engine running at 4,200 rpm or above.

BAD

1. T-V I S VSV (See page FI-224)
2. Vacuum leaks

OK

**CHECK MFI AND SFI ELECTRONIC
CIRCUIT USING VOLT/OHMMETER**

(See page FI-58)

BAD

1. Wiring connections
2. Power to ECM
 - (1) Fusible links
 - (2) Fuses
 - (3) MFI and SR main relay
(See page FI-216)
3. (4A-FE and 5S-FE)
Vacuum sensor (See page FI-233 or 234)
4. (3S-GTE)
Volume air flow meter
(See page FI-183)
5. Engine coolant temp. sensor
(See page FI-231)
6. Intake air temp. sensor
(See page FI-183 or 232)
7. Throttle position sensor
(See page FI-185, 192 or 199)
8. Injection signal circuit
 - (1) Injector wirings
 - (2) (3S-GTE)
Solenoid resistor
(See page FI-220)
 - (3) ECM (See page FI-240)