TROUBLESHOOTING

TROUBLESHOOTING HINTS

1. Engine troubles are usually not caused by the EFI system. When troubleshooting, always first check the condition of the other systems.
   (a) Electronic source
      - Battery
      - Fusible links
      - fuses

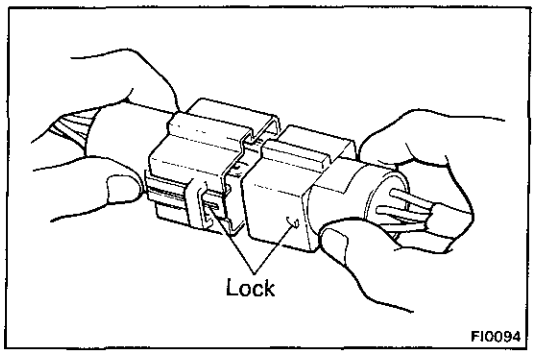
   (b) Body ground
   (c) Fuel supply
      - Fuel leakage
      - Fuel filter
      - Fuel pump

   (d) Ignition system
      - Spark plug
      - High-tension cord
      - Distributor
      - Igniter and ignition coil

   (e) Air induction system
      - Vacuum leaks

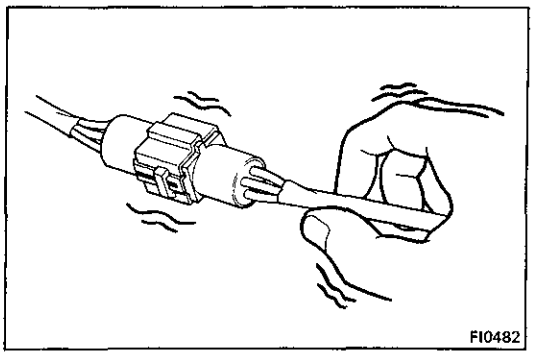
   (f) Emission control system
      - PCV system
      - EGR system

   (g) Others
      - Ignition timing (ESA system)
      - Idle speed



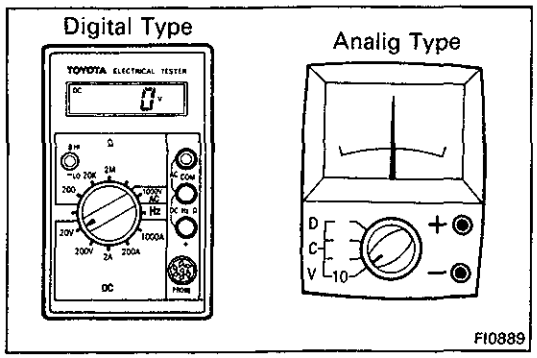
2. The most frequent cause of problems is simply a bad contact in wiring connectors. Always make sure that connections are secure.

   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. Sufficiently troubleshoot for other causes before replacing the ECU. The ECU is of high quality and it is expensive.



4. Use a volt/ohmmeter with high impedance (10 k /V minimum) for troubleshooting of the electrical circuit. (See page FI-27)

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

CHECK ELECTRIC SOURCE → BAD → 1. Battery (1) Connection (2) Gravity–Drive belt-charging system (3) Voltage; 2. Fusible link

OK

CHECK STARTING SYSTEM → BAD → 1. Ignition switch; 2. Starter; 3. Wiring/Connection

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

CHECK DIAGNOSIS SYSTEM
Check for output of diagnosis code. (See page FI-21)
→ Malfunction code(s) → Diagnosis code(s) (See pages FI-24, 25)

Normal code

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE → BAD → 1. Oil filler cap; 2. Oil dipstick; 3. Hose connections; 4. PCV hose(s); 5. EGR system – EGR valve stays open

OK

CHECK IGNITION SPARK
(See pages IG-6, 7) → BAD → 1. High-tension cords; 2. Distributor; 3. Ignition coil, igniter

OK

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector.
2. Check ignition timing.
Standard: 5° BTDC @ idle
→ NO → Ignition timing – Adjust (See page EM-24)

OK CONTINUED ON PAGE FI-11

OK CONTINUED FROM PAGE FI-10

CHECK FUEL SUPPLY TO INJECTOR
1. Fuel in tank
2. Fuel pressure in fuel line
   (1) Connect terminals +B and FP of the check connector.
   (2) Fuel pressure at fuel hose of fuel filter can be felt. (See page FI-43)

BAD →
1. Fuel line – Leakage – deformation
2. Fuse
3. Circuit opening relay (See page FI-66)
4. Fuel pump (See page FI-42)
5. Fuel filter
6. Fuel pressure regulator (See page FI-51)

OK ↓

CHECK SPARK PLUGS
Standard: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

NO →
1. Spark plugs
2. Compression pressure
   Minimum: 9.0 kg/cm² (128 psi, 883 kPa) at 250 rpm
3. Valve clearance (Cold)
   Standard: IN 0.20 – 0.30 mm (0.008 – 0.012 in.)
   EX 0.25 – 0.35 mm (0.010 – 0.014 in.)

BAD (ALL Plugs WET) →
1. Injectors – shorted or leaking
2. Injector wiring – short circuited
3. Cold start injector – leakage (See page FI-48)
4. Start injector time switch (See page FI-67)

OK ↓

CHECK AUXILIARY AIR VALVE
(See page FI-60)

BAD →
1. Auxiliary air valve
2. Water hoses
3. Air hoses

OK ↓

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI-27)

BAD →
1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay
3. Vacuum sensor
4. Water temp. sensor
5. Air temp. sensor
6. Injection signal circuit
   (1) Injector wiring
   (2) ECU

SYMPTOM – ENGINE OFTEN STALLS

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI-21)

Malfunction code(s) → Diagnosis code(s) (See pages FI-24, 25)

Normal code ↓

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE

BAD →
1. Oil filler cap
2. Oil dipstick
3. Hose connections
4. PCV hose(s)
5. EGR system – EGR valve stays open

OK ↓

CHECK FUEL SUPPLY TO INJECTOR
1. Fuel in tank
2. Fuel pressure in fuel line
   (1) Connect terminals +B and FP of the check connector.
   (2) Fuel pressure at fuel hose of fuel filter. (See page FI-43)

BAD →
1. Fuel line – deformation
2. Fuses
3. Circuit opening relay (See page FI-66)
4. Fuel pump (See page FI-42)
5. Fuel filter
6. Fuel pressure regulator (See page FI-51)

OK ↓

CHECK AIR FILTER ELEMENT

BAD → Element – Clean or replace

OK ↓

CHECK IDLE SPEED (AND IDLE CO CONCENTRATION)
Standard: 800 rpm

NO → Idle speed – Adjust (See page EM-33)

OK ↓

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector.
2. Check ignition timing.
   Standard: 5° BTDC @ idle

NO → Ignition timing – Adjust (See page EM-31)

OK ↓

CHECK SPARK PLUGS
Standard: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

NO →
1. Spark plugs
2. Compression pressure
   Minimum: 9.0 kg/cm² (128 psi, 883 kPa) at 250 rpm
3. Valve clearnce (Cold)
   Standard: IN 0.20 – 0.30 mm (0.008 – 0.012 in.)
   EX 0.25 – 0.35 mm (0.010 – 0.014 in.)

OK ↓

CHECK COLD START INJECTOR
(See page FI-48)

BAD →
1. Cold start injector
2. Start injector time switch. (See page FI-67)

OK ↓ CONTINUED ON PAGE FI-13

OK CONTINUED FROM PAGE FI-12

CHECK AUXILIARY AIR VALVE
(See page FI-60)

BAD →
1. Auxiliary air valve
2. Water hose
3. Air hoses

OK

CHECK FUEL PRESSURE
(See page FI-43)

BAD →
1. Fuel pump (See page FI-42)
2. Fuel filter
3. Fuel pressure regulator (See page FI-51)

OK

CHECK INJECTORS
(See page FI-53)

BAD → Injection condition

OK

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI-27)

BAD →
1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay
3. Vacuum sensor
4. Water temp. sensor
5. Air temp. sensor
6. Injection signal circuit
   (1) Injector wiring
   (2) ECU

SYMPTOM – ENGINE SOMETIMES STALLS

CHECK DIAGNOSTIC SYSTEM
Check for output of diagnostic code.
(See page FI-21)

Malfunction code(s) → Diagnostic(s) (See pages FI-24, 25)

Normal code

CHECK WIRING CONNECTORS AND RELAYS
Check that there is signal change when the connector or relay is slightly tapped or wiggled.

BAD →
1. Connectors
2. EFI main relay (See page FI-65)
3. Circuit opening relay (See page FI-66)

SIMPTOM – ROUGH IDLING AND/OR MISSING

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI-21)

→ Malfunction code(s) → Diagnostic code(s) (See pages FI-24, 25)

↓ Normal code

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE

→ BAD → 1. Oil filler cap
2. Oil dipstick
3. Hose connections
4. PCV hose(s)
5. EGR system – EGR valve stays open

↓ OK

CHECK AIR FILTER ELEMENT

→ BAD → Element – Clean or replace

↓ OK

CHECK IDLE SPEED (AND IDLE CO CONCENTRATION)
Standard: 800 rpm

→ NO → Idle speed – Adjust

↓ OK

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector
2. Check ignition timing.
Standard: 5° BTDC @ idle

→ NO → Ignition timing – Adjust (See page EM-31)

↓ OK

CHECK SPARK PLUGS
Standard: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

→ NO → 1. Spark plugs
2. Compression pressure
Minimum: 9.0 kg/cm² (128 psi, 883 kPa) at 250 rpm
3. Valve clearance (Cold)
Standard: IN 0.20 – 0.30 mm (0.008 – 0.012 in.)
EX 0.25 – 0.35 mm (0.010 – 0.014 in.)

↓ OK

CHECK COLD START INJECTOR
(See page FI-48)

→ BAD → 1. Cold start injection
2. Start injector time switch (See page FI-67)

↓ OK

CHECK FUEL PRESSURE
(See page FI-43)

→ BAD → 1. Fuel pump (See page FI-42)
2. Fuel filter
3. Fuel pressure regulator (See page FI-51)

↓ OK

CHECK INJECTORS
(See page FI-53)

→ BAD → Injection condition

↓ OK CONTINUED ON PAGE FI-15

OK CONTINUED FROM PAGE FI-14

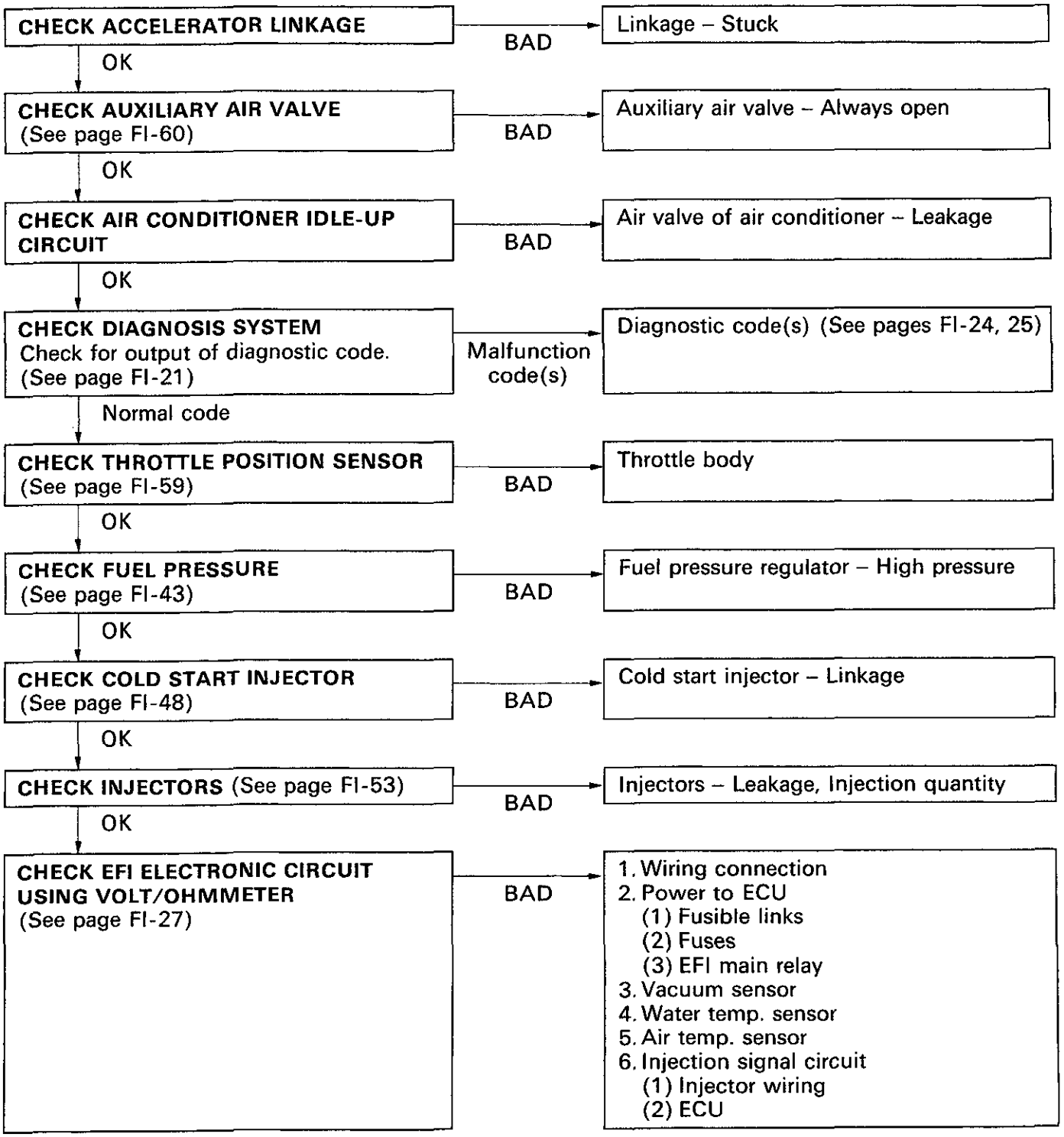
CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI-27)

BAD →

1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay
3. Vacuum sensor
4. Water temp. sensor
5. Air temp. sensor
6. Injection signal circuit
   (1) Injector wiring
   (2) ECU

Oxygen sensor

SYMPTOM – HIGH ENGINE IDLE SPEED (NO DROP)



SYMPTOM – ENGINE BACKFIRES-Lean Fuel Mixture

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI-21)

→ Malfunction code(s) → Diagnostic code(s) (See pages FI-24, 25)

↓ Normal code

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE

→ BAD →
1. Oil filler cap
2. Oil dipstick
3. Hose connections
4. PCV hose(s)
5. EGR system – EGR valve stays open

↓ OK

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector
2. Check ignition timing.
   Standard: 5° BTDC @ idle

→ NO → Ignition timing – Adjust (See page EM-31)

↓ OK

CHECK IDLE SPEED (AND IDLE CO CONCENTRATION)
(See pages EM-33, 34)

→ NO →
1. Idle speed – Adjust
2. Idle CO concentration – Adjust

↓ OK

CHECK COLD START INJECTOR
(See page FI-48)

→ BAD →
1. Cold start injection
2. Start injector time switch. (See page FI-67)

↓ OK

CHECK FUEL PRESSURE
(See page FI-43)

→ BAD →
1. Fuel pump (See page FI-42)
2. Fuel filter
3. Pressure regulator (See page FI-51)

↓ OK

CHECK INJECTORS
(See page FI-53)

→ BAD → Injectors – Clogged

↓ OK

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI-27)

→ BAD →
1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay
3. Vacuum sensor
4. Water temp. sensor
5. Air temp. sensor
6. Throttle position sensor
7. Injection signal circuit
   (1) Injector wiring
   (2) Fuel cut RPM (See page FI-75)
   (3) ECU
8. Oxygen sensor

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

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI-21)

→ Malfunction code(s) → Diagnostic code(s) (See pages FI-24, 25)

Normal ↓

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector
2. Check ignition timing.
Standard: 5° BTDC @ idle

→ NO → Ignition timing – Adjust
(See page EM-31)

OK ↓

CHECK IDLE SPEED (AND IDLE CO CONCENTRATION)
(See pages EM-31, 32)

→ NO →
1. Idle speed – Adjust
2. Idle CO concentration – Adjust

OK ↓

CHECK COLD START INJECTOR
(See page FI-48)

→ BAD →
1. Cold start injector
2. Start injector time switch
(See page FI-67)

OK ↓

CHECK FUEL PRESSURE
(See page FI-43)

→ BAD → Fuel pressure regulator

OK ↓

CHECK INJECTORS (See page FI-53)

→ BAD → Injectors – Leakage

OK ↓

CHECK SPARK PLUGS
Standard: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

→ NO →
1. Spark plugs
2. Compression pressure
Minimum: 9.0 kg/cm² (128 pis, 883 kPa) at 250 rpm
3. Valve clearance (Cold)
Standard: IN 0.20 – 0.30 mm (0.008 – 0.012 in.)
EX 0.25 – 0.35 mm (0.010 – 0.014 in.)

OK ↓

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI-27)

→ BAD →
1. Throttle position sensor
2. Injection signal circuit
(1) Injector wiring
(2) Fuel cut RPM (See page FI-75)
(3) ECU
3. Oxygen sensor

SYMPTOM – ENGINE HESITATES AND/OR POOR ACCELERATION

CHECK CLUTCH OR BRAKES
→ BAD → 1. Clutch – Slips; 2. Brakes – Drag
OK ↓

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE
→ BAD → 1. Oil filler cap; 2. Oil dipstick; 3. Hose connections; 4. PCV hose(s); 5. EGR system – EGR valve stays open
OK ↓

CHECK AIR FILTER ELEMENT
→ BAD → Element – Clean or replace
OK ↓

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code. (See page FI-21)
→ Malfunction code(s) → Diagnostic code(s) (See pages FI-24, 25)
Normal code ↓

CHECK IGNITION SPARK
(See page IG-6)
→ BAD → 1. High-tension cords; 2. Distributor; 3. Ignition coil, igniter
OK ↓

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector
2. Check ignition timing.
   Standard: 5° BTDC @ idle
→ NO → Ignition timing – Adjust (See page EM-31)
OK ↓

CHECK FUEL PRESSURE
(See page FI-43)
→ BAD → 1. Fuel pump (See page FI-42); 2. Fuel filter; 3. Fuel pressure regulator (See page FI-51)
OK ↓

CHECK INJECTORS
(See page FI-53)
→ BAD → Injection condition
OK ↓

CHECK SPARK PLUGS
Standard: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.
→ BAD → 1. Spark plugs
2. Compression pressure
Minimum: 9.0 kg/cm² (128 psi, 883 kPa) at 250 rpm
3. Valve clearance (Cold)
Standard: IN 0.20 – 0.30 mm (0.008 – 0.012 in.)
EX 0.25 – 0.35 mm (0.010 – 0.014 in.)

OK CONTINUED ON PAGE FI-20

OK CONTINUED FROM PAGE FI-19

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI-27)

BAD →

1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay
3. Vacuum sensor
4. Water temp. sensor
5. Air temp. sensor
6. Throttle position sensor
7. Injection signal circuit
   (1) Injector wiring
   (2) ECU