G - TESTS W/CODES

1992 Subaru SVX

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1992 ENGINE PERFORMANCE
Subaru Self-Diagnostics

SVX
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INTRODUCTION

NOTE: For any problems with abbreviations please see the
          ABBREVIATIONS article in the GENERAL INFORMATION Section.

          If no faults were found while performing BASIC DIAGNOSTIC
PROCEDURES proceed with self-diagnostics. If no fault codes or only
pass codes are present after entering self-diagnostics, proceed to H -
TESTS W/O CODES article in the ENGINE PERFORMANCE Section for
diagnosis by symptom (i.e. ROUGH IDLE, NO START, etc.).

SELF-DIAGNOSTIC SYSTEM

          Hard Failures
          Hard failures cause CHECK ENGINE light to illuminate and
remain on until problem is repaired. If light comes on and remains on
(light may flash) during vehicle operation, cause of malfunction must
be determined using diagnostic (code) charts. If a sensor fails,
control unit will use a substitute value in its calculations to
continue engine operation. In this condition, commonly known as limp-
in mode, the vehicle runs but driveability will not be optimum.

          Intermittent Failures
          Intermittent failures may cause CHECK ENGINE light to flicker
or illuminate and go out after the intermittent fault goes away.
However, the corresponding trouble code will be retained in ECU
memory. If related fault does not reoccur within a certain time frame,
related trouble code will be erased from ECU memory. Intermittent
failures may be caused by a sensor, connector or wiring related
problems. See INTERMITTENTS in the H - TESTS W/O CODES article in the
ENGINE PERFORMANCE Section.

RETRIEVING CODES

          1) Enter specific test mode by connecting or disconnecting
read memory and/or test mode connectors as shown in RELATIONSHIP
BETWEEN MODES & CONNECTORS table. Connectors are located behind left
side of dash. See Fig. 1.
          2) Observe either CHECK ENGINE or O2 sensor monitor light.
Note trouble codes, if any. Long illumination periods of 1.2 seconds
designate the tens digit in the numbered codes. Short illumination
periods of .2 second designate the ones digit in the numbered codes.
          3) Tens and one digits are separated by a .03-second interval
of non illumination. Example: 3 long flashes (1.2 seconds each),
followed by 5 short flashes (.02 second each) designate code 35.
          4) Code is repeated after a break of 2 seconds, unless
another code is present which will be displayed after the 2-second
break. Once all codes have been displayed, sequence will repeat.
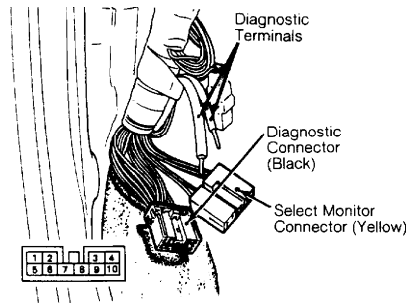
DIAGNOSTIC CONNECTOR TERMINALS:
1. Test Mode (PFI)
2. Read Memory Mode (PFI)
3. Clear Memory (SRS)
4. Not Used
5. Test Mode (Power Steering)
6. Read Memory (Power Steering)
7. Diagnostic Terminal (Power Steering)
8. Diagnostic Terminal (Passive Restraint System)
9. Diagnostic Terminal (SRS)
10. Ground

92H26945
Fig. 1: Locating Diagnostic Test Connectors
Courtesy of Subaru of America, Inc.

RELATIONSHIP BETWEEN MODES & CONNECTORS TABLE

Mode	Read Memory Connector	Test Mode Connector
U-CHECK (1)	Disconnected	Disconnected
READ MEMORY (1)	Connected	Disconnected
D-CHECK (1)	Disconnected	Connected
CLEAR MEMORY (2)	Connected	Connected

(1) - Key on, engine off.
(2) - Key on, engine running.

TROUBLE CODE IDENTIFICATION CHART

TROUBLE CODE IDENTIFICATION CHART TABLE

Code	Circuit Affected	Probable Cause
11	Crank Angle Sensor No. 1	No Reference Signal
12	Starter Switch	Open/Short Circuit
13	Cam Angle Sensor	No Signal
14	Fuel Injector No. 1	Inoperative Fuel Injector
15	Fuel Injector No. 2	Inoperative Fuel Injector
16	Fuel Injector No. 3	Inoperative Fuel Injector
17	Fuel Injector No. 4	Inoperative Fuel Injector
18	Fuel Injector No. 5	Inoperative Fuel Injector
19	Fuel Injector No. 6	Inoperative Fuel Injector
21	Coolant Temperature Sensor	Open/Short Circuit
22	Knock Sensor No. 1 (Right)	Open/Short Circuit
23	Airflow Sensor Circuit	Open/Short Circuit
24	By-Pass Air Control Valve	Open/Short Circuit
28	Knock Sensor No. 2 (Left)	Abnormal Sensor Signal
29	Crank Angle Sensor No. 2	No Signal
31	Throttle Position Sensor	Open/Short Circuit
32	Oxygen Sensor No. 1 (Right)	Sensor Inoperative
33	Vehicle Speed Sensor No. 2	No Reference Signal
34	EGR Solenoid	EGR Solenoid Valve Inoperative
35	Purge Control Solenoid Valve	Open/Short Circuit

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37  ......  Oxygen Sensor No. 2 (Left)  ..........  Sensor Inoperative
38  ........  Engine Torque Control  ................  Shorted Circuit
41  ......  Air Fuel Learning Ctrl  .  Faulty Learning Ctrl Function
45  .....  Atmospheric Pressure Sensor  ...............  Faulty Sensor
51  .........  Neutral Switch  ...................  Abnormal Signal
52  .......  Parking Brake Switch  ................  Abnormal Signal
55 (1)  .......  EGR Temp Sens  ...................  Abnormal Signal
56 (1)  .......  EGR System  ................  Stuck Open/Closed EGR

(1) - California models only.
```

CLEARING CODES

After malfunction has been corrected, trouble code will clear from memory when CLEAR MEMORY mode is accessed. Unless all items check okay in D-CHECK mode, memory will not be cleared. See RELATIONSHIP BETWEEN MODES & CONNECTORS table.

ECM LOCATION

Legacy ECM is located behind the left dash panel.

CODE CHART WIRE COLORS

WIRE COLOR ABBREVIATIONS USED IN CODE CHARTS TABLE

Abbreviation	Color
BR	Black/Red
B	Black
Br	Brown
BW	Black/White
BY	Black/Yellow
G	Green
GB	Green/Black
GL	Green/Blue
GR	Green/Red
Gr	Gray
GW	Green/White
GY	Green/Yellow
L	Blue
Lb	Light Blue
Lg	Light Green
LgB	Light Green/Black
LR	Blue/Red
LW	Blue/White
LY	Blue/Yellow
Or	Orange
P	Pink
R	Red
RY	Red/Yellow
V	Violet
W	White
WB	White/Black
WR	White/Red
WY	White/Yellow
Y	Yellow
YL	Yellow/Blue
YR	Yellow/Red
YW	Yellow/White

SUMMARY

If no hard fault codes (or only pass codes) are present, driveability symptoms exist or intermittent codes exist, proceed to the H – TESTS W/O CODES article in the ENGINE PERFORMANCE Section for diagnosis by symptom (i.e. ROUGH IDLE, NO START, etc.) or intermittent diagnostic procedures.

DIAGNOSTIC CODE CHARTS

NOTE: The following diagnostic flow charts and mini-schematics are courtesy of Subaru of America, Inc.

OPERATION OF SELF-DIAGNOSTIC SYSTEM IN "NO TROUBLE" CONDITION

OPERATION OF SELF-DIAGNOSTIC SYSTEM – NO TROUBLE MENU TABLE (1)

Mode	Read Memory Terminal	Test Mode Terminal	Condition	CHECK ENGINE Light
U-check	X	X	Key ON (Engine OFF)	ON
			Engine ON	OFF
Read Memory	O	X	Key ON (Engine OFF)	Blink
			Engine ON	
D-check	X	O	Key ON (Engine OFF)	ON
			Engine ON	Vehicle spec code —> Blink (2)
Clear Memory	O	O	Key ON (Engine OFF)	ON
			Engine ON	Vehicle spec code —> Blink

(1) – O: Connect   X: Disconnect

(2) – When the engine operates at a speed greater than 2,000 rpm for more than 40 seconds, the check engine light blinks. However, when all check items check out "OK", even before the 40 seconds is reached, the check engine light blinks.

OPERATION OF SELF-DIAGNOSTIC SYSTEM - "TROUBLE" MENU

OPERATION OF SELF-DIAGNOSTIC SYSTEM – TROUBLE MENU TABLE (1)

Mode	Read Memory Terminal	Test Mode Terminal	Condition	CHECK ENGINE Light
U-check	X	X	Key ON	ON
Read			Key ON	Trouble code

Memory	O	X	(Engine OFF)	(memory)
			Engine ON	ON
D-check	X	O	Engine ON	Trouble code (2)
Clear Memory	O	O	Engine ON	Trouble code (2)

(1) – O: Connect   X: Disconnect

(2) – When the engine operates at a speed greater than 2,000 rpm
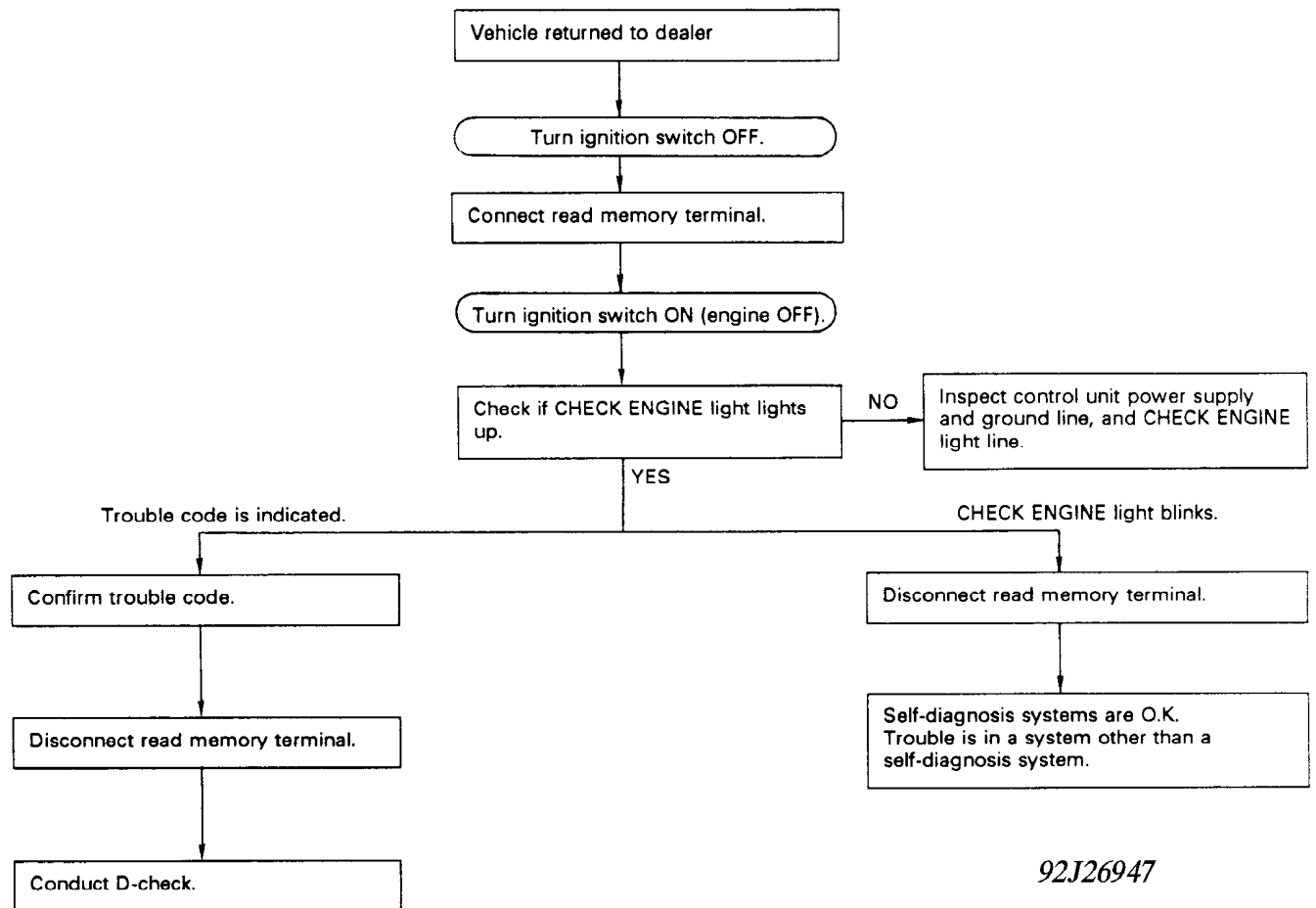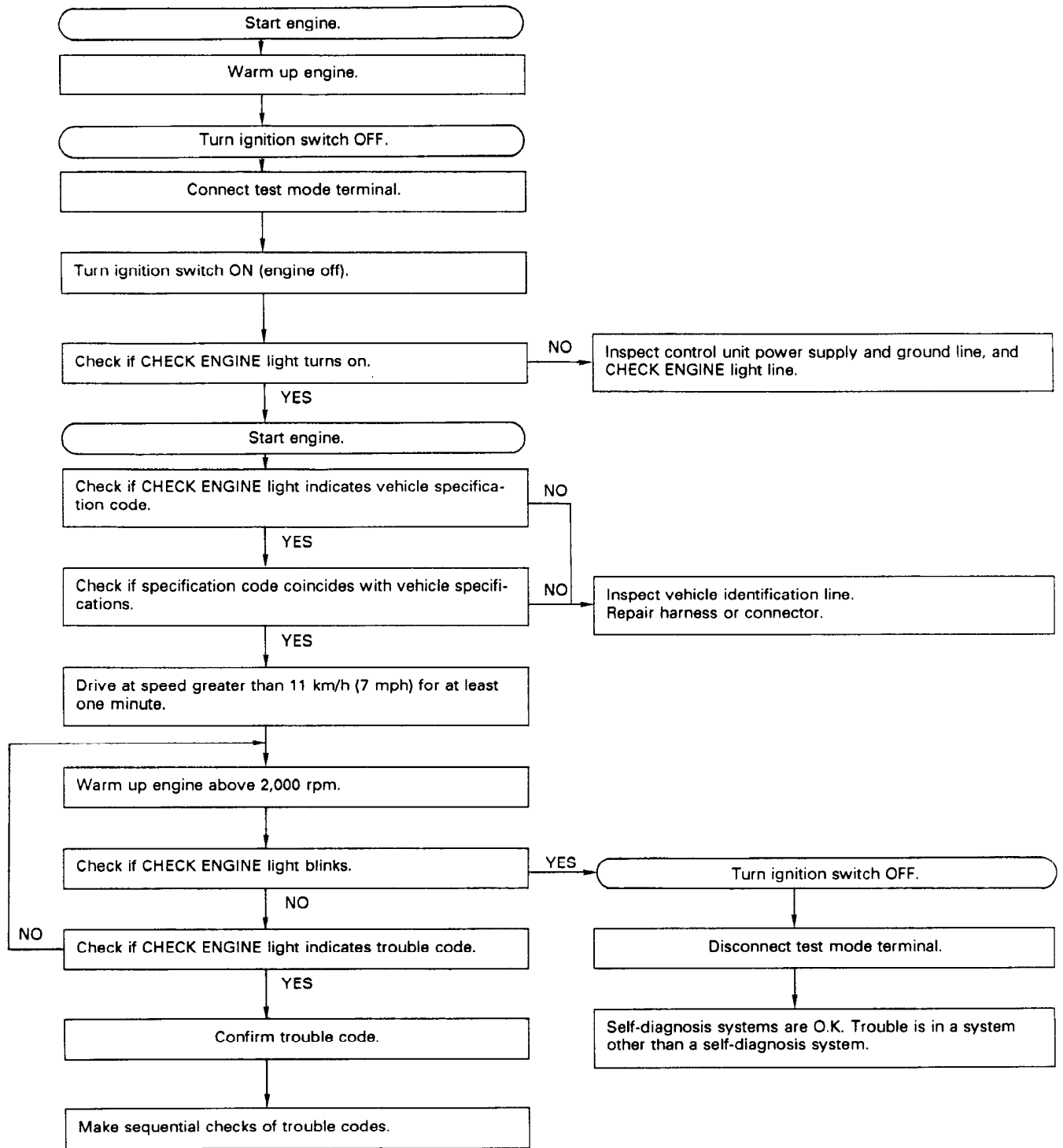   for more than 40 seconds, a trouble code is emitted.

READ MEMORY MODE

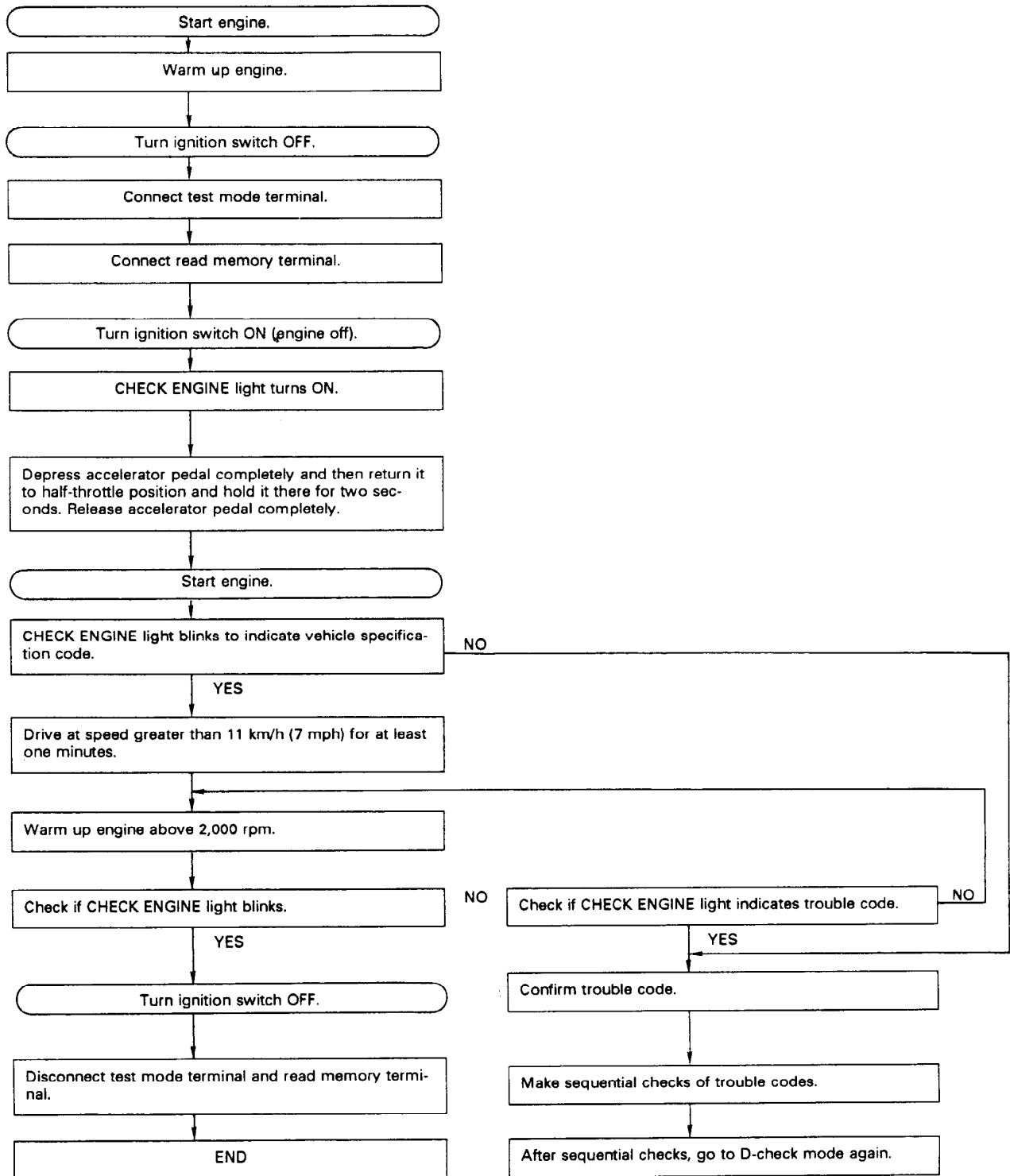*92J26947*

Fig. 2: Flow Chart – Read Memory Mode

D-CHECK MODE

```
                    ┌─────────────────────────────┐
                    │        Start engine.         │
                    └──────────────┬──────────────┘
                    ┌──────────────┴──────────────┐
                    │        Warm up engine.       │
                    └──────────────┬──────────────┘
                    ┌──────────────┴──────────────┐
                    │   Turn ignition switch OFF.  │
                    └──────────────┬──────────────┘
                    ┌──────────────┴──────────────┐
                    │  Connect test mode terminal. │
                    └──────────────┬──────────────┘
          ┌────────────────────────┴────────────────────────┐
          │    Turn ignition switch ON (engine off).         │
          └────────────────────────┬────────────────────────┘
                                    │
          ┌─────────────────────────────────────────┐   NO   ┌──────────────────────────────────────────────┐
          │   Check if CHECK ENGINE light turns on.  │───────▶│ Inspect control unit power supply and ground │
          └─────────────────────────┬───────────────┘        │ line, and CHECK ENGINE light line.           │
                                  YES                          └──────────────────────────────────────────────┘
                    ┌──────────────┴──────────────┐
                    │        Start engine.         │
                    └──────────────┬──────────────┘
          ┌─────────────────────────────────────────┐   NO
          │ Check if CHECK ENGINE light indicates    │────┐
          │ vehicle specification code.              │    │
          └─────────────────────────┬───────────────┘    │
                                  YES                      │
          ┌─────────────────────────────────────────┐   NO │  ┌──────────────────────────────────────────┐
          │ Check if specification code coincides    │──────┼─▶│ Inspect vehicle identification line.      │
          │ with vehicle specifications.             │      │  │ Repair harness or connector.              │
          └─────────────────────────┬───────────────┘      │  └──────────────────────────────────────────┘
                                  YES                        │
          ┌─────────────────────────────────────────┐       │
          │ Drive at speed greater than 11 km/h      │       │
          │ (7 mph) for at least one minute.         │       │
          └─────────────────────────┬───────────────┘       │
        ┌───────────────────────────┤
        │ ┌─────────────────────────────────────────┐
        │ │ Warm up engine above 2,000 rpm.          │
        │ └─────────────────────────┬───────────────┘
        │ ┌─────────────────────────────────────────┐  YES   ┌──────────────────────────────────────────┐
        │ │ Check if CHECK ENGINE light blinks.      │───────▶│      Turn ignition switch OFF.            │
        │ └─────────────────────────┬───────────────┘        └──────────────────┬───────────────────────┘
        │                          NO                          ┌──────────────────┴───────────────────────┐
        │ ┌─────────────────────────────────────────┐         │    Disconnect test mode terminal.         │
NO──────┤ │ Check if CHECK ENGINE light indicates    │         └──────────────────┬───────────────────────┘
        │ │ trouble code.                            │         ┌──────────────────┴───────────────────────┐
          └─────────────────────────┬───────────────┘         │ Self-diagnosis systems are O.K. Trouble   │
                                  YES                          │ is in a system other than a self-diagnosis │
          ┌─────────────────────────────────────────┐         │ system.                                    │
          │        Confirm trouble code.             │         └──────────────────────────────────────────┘
          └─────────────────────────┬───────────────┘
          ┌─────────────────────────────────────────┐
          │  Make sequential checks of trouble codes. │
          └─────────────────────────────────────────┘
```

92A26948
Fig. 3: Flow Chart - D-Check Mode

CLEAR MEMORY MODE

```
                    ┌─────────────────────────────┐
                    │        Start engine.        │
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │       Warm up engine.       │
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │   Turn ignition switch OFF. │
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │  Connect test mode terminal.│
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │ Connect read memory terminal│
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │Turn ignition switch ON (engine off).│
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │ CHECK ENGINE light turns ON.│
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │Depress accelerator pedal completely and then return it│
                    │to half-throttle position and hold it there for two sec-│
                    │onds. Release accelerator pedal completely.│
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │        Start engine.        │
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐         NO
                    │CHECK ENGINE light blinks to indicate vehicle specifica-│──────────┐
                    │tion code.                   │                         │
                    └─────────────────────────────┘                         │
                                  │ YES                                      │
                    ┌─────────────────────────────┐                         │
                    │Drive at speed greater than 11 km/h (7 mph) for at least│    │
                    │one minutes.                 │                         │
                    └─────────────────────────────┘                         │
                                  │◄───────────────────────────────┐        │
                    ┌─────────────────────────────┐                │        │
                    │ Warm up engine above 2,000 rpm.│            │        │
                    └─────────────────────────────┘                │        │
                                  │                                │        │
                    ┌─────────────────────────────┐  NO  ┌─────────────────────────────┐  NO
                    │Check if CHECK ENGINE light blinks.│──►│Check if CHECK ENGINE light indicates trouble code.│──┘
                    └─────────────────────────────┘      └─────────────────────────────┘
                                  │ YES                              │ YES
                    ┌─────────────────────────────┐      ┌─────────────────────────────┐
                    │   Turn ignition switch OFF. │      │    Confirm trouble code.    │
                    └─────────────────────────────┘      └─────────────────────────────┘
                                  │                                │
                    ┌─────────────────────────────┐      ┌─────────────────────────────┐
                    │Disconnect test mode terminal and read memory termi-│ │Make sequential checks of trouble codes.│
                    │nal.                         │      └─────────────────────────────┘
                    └─────────────────────────────┘                │
                                  │                      ┌─────────────────────────────┐
                    ┌─────────────────────────────┐      │After sequential checks, go to D-check mode again.│
                    │            END              │      └─────────────────────────────┘
                    └─────────────────────────────┘
```

92B26949

Fig. 4: Flow Chart – Clear Memory Mode

CODE 11, CRANK ANGLE SENSOR NO. 1

92F26950

Fig. 5:   Schematic – Code 11, Crank Angle Sensor No. 1

DIAGNOSIS:
No signal entered into ECU from crank angle sensor 1 for more than 3 seconds, after ignition switch is turned ON.

TROUBLE SYMPTOM:
● Engine stall restarting impossible.
● Failure of engine start.

92G26951

Fig. 6:   Flow Chart – Code 11, Crank Angle Sensor No. 1

CODE 12, STARTER SWITCH
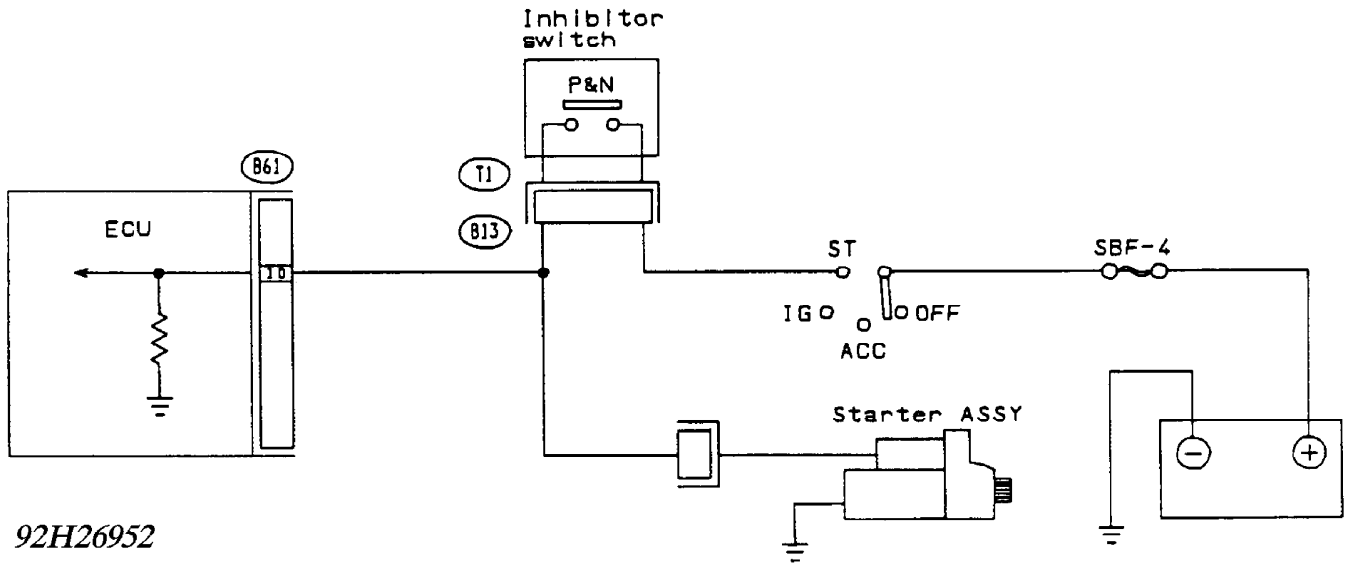
92H26952

Fig. 7: Schematic - Code 12, Starter Switch

TROUBLE SYMPTOM:
● Failure of engine start

DIAGNOSIS:
Abnormal signal from starter switch

92I26953

Fig. 8: Flow Chart - Code 12, Starter Switch

CODE 13, CAM ANGLE SENSOR
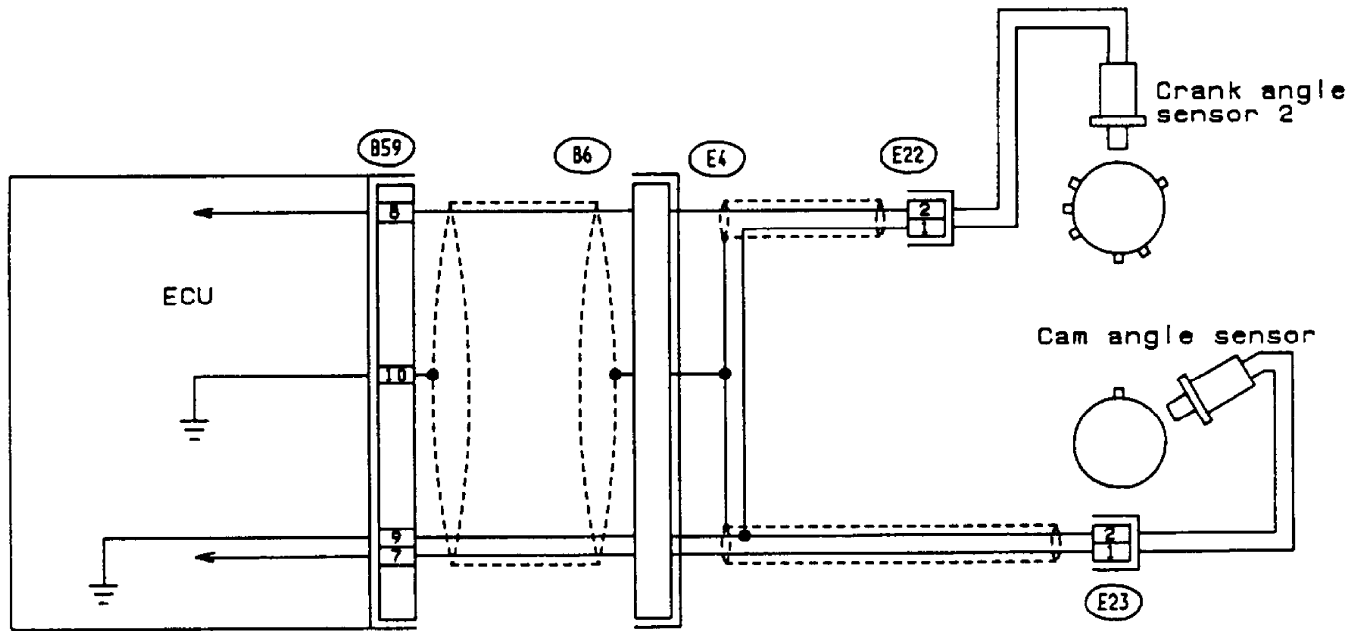
92J26954

Fig. 9:   Schematic – Code 13, CAM Angle Sensor

DIAGNOSIS:
No signal entered into ECU from cam angle sensor while the signal of crank angle sensor 1 inputs more than 140 times.

TROUBLE SYMPTOM:
- Failure of engine start.
- Engine stall.
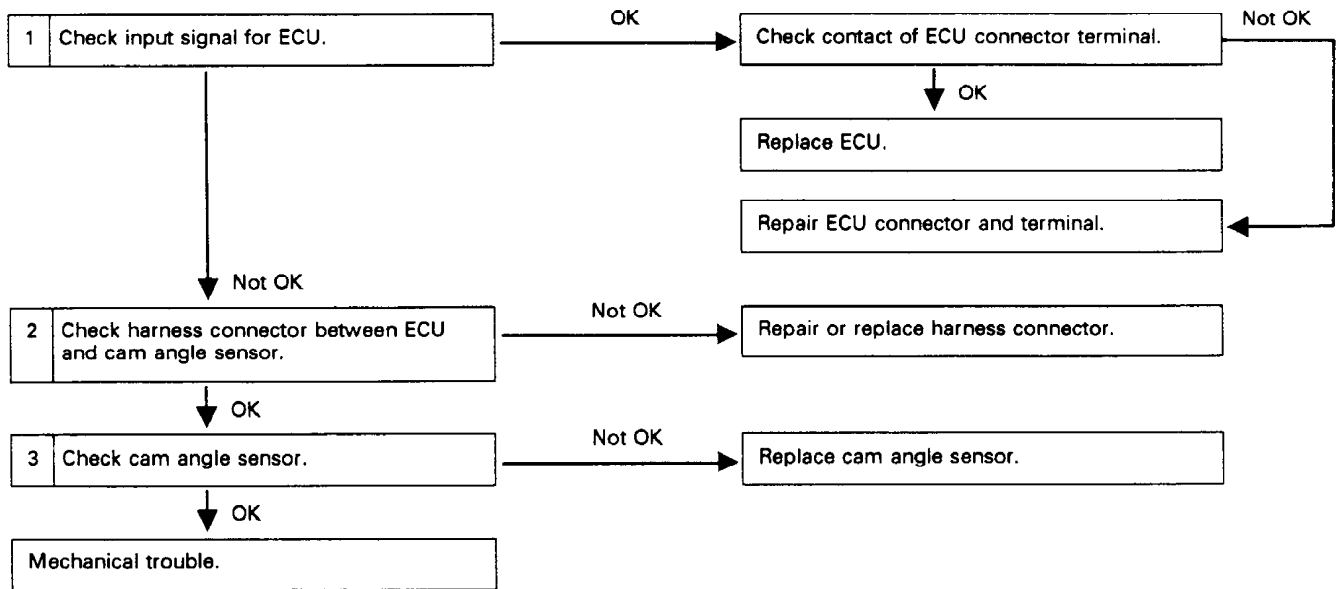
92A26955

Fig. 10:   Flow Chart – Code 13, CAM Angle Sensor

CODES 14, 15, 16 & 17, 18 & 19 FUEL INJECTORS
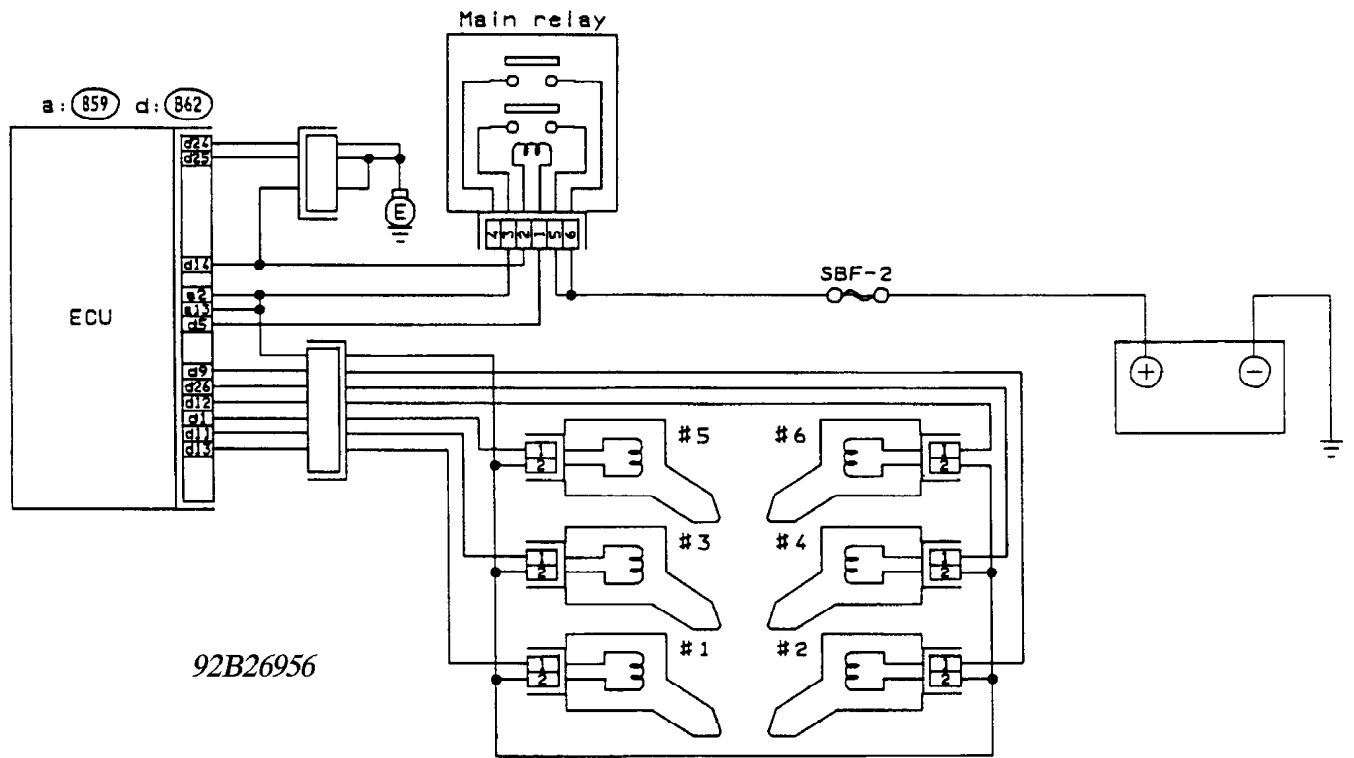
Fig. 11: Schematic - Codes 14, 15, 16 & 17, 18 & 19 Fuel Injectors

DIAGNOSIS:
• Fuel injector inoperative.
• Abnormal signal emitted from ECU to fuel injector.

TROUBLE SYMPTOM:
• Engine stall
• Erroneous idling
• Rough driving
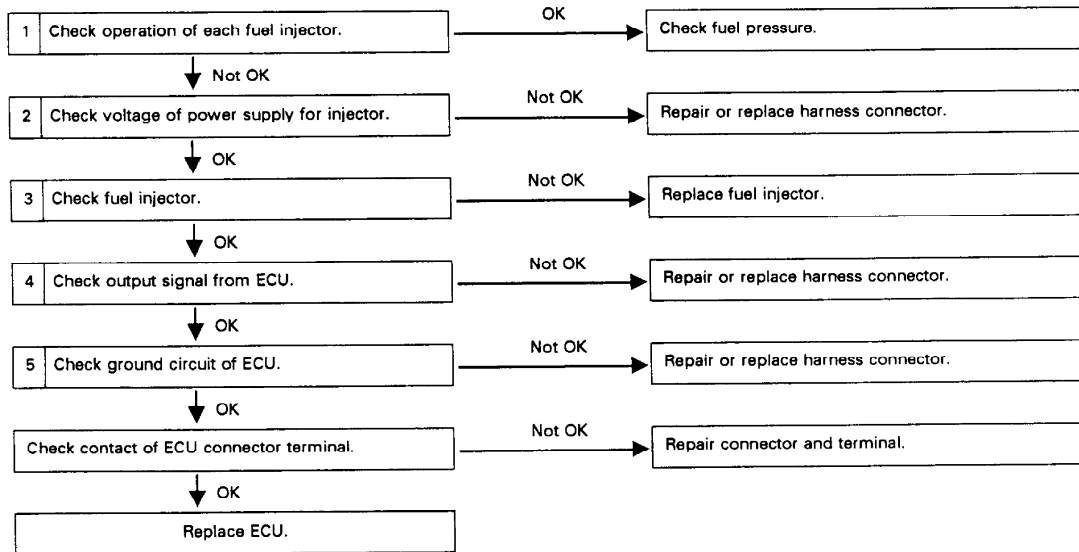
Fig. 12: Flow Chart - Codes 14, 15, 16 & 17, 18 & 19 Fuel Injectors

CODE 21, COOLANT (WATER) TEMPERATURE SENSOR

B59

Vcc

ECU

B6   E4

E24

Water
temperature
sensor
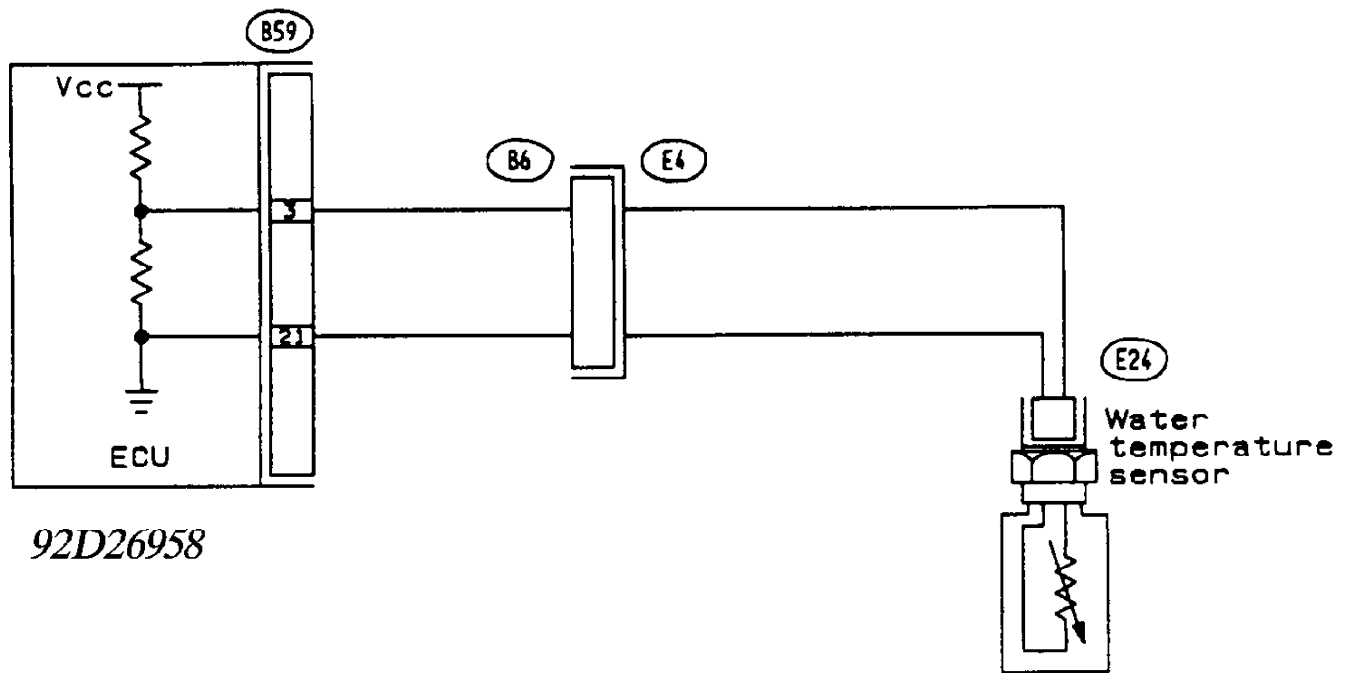
92D26958

Fig. 13: Schematic – Code 21, Coolant (Water) Temperature Sensor

DIAGNOSIS:
Abnormal signal is from water temperature sensor.

TROUBLE SYMPTOM:
● Failure of engine to start
● Erroneous idling
● Poor driving performance

| 1 | Check water temperature sensor. | → Not OK → | Replace water temperature sensor. |

↓ OK

| 2 | Check harness connector between ECU and water temperature sensor. | → Not OK → | Repair or replace harness connector. |

↓ OK

| Check contact of ECU connector terminal. | → Not OK → | Repair ECU connector. |

↓ OK

| Replace ECU. |
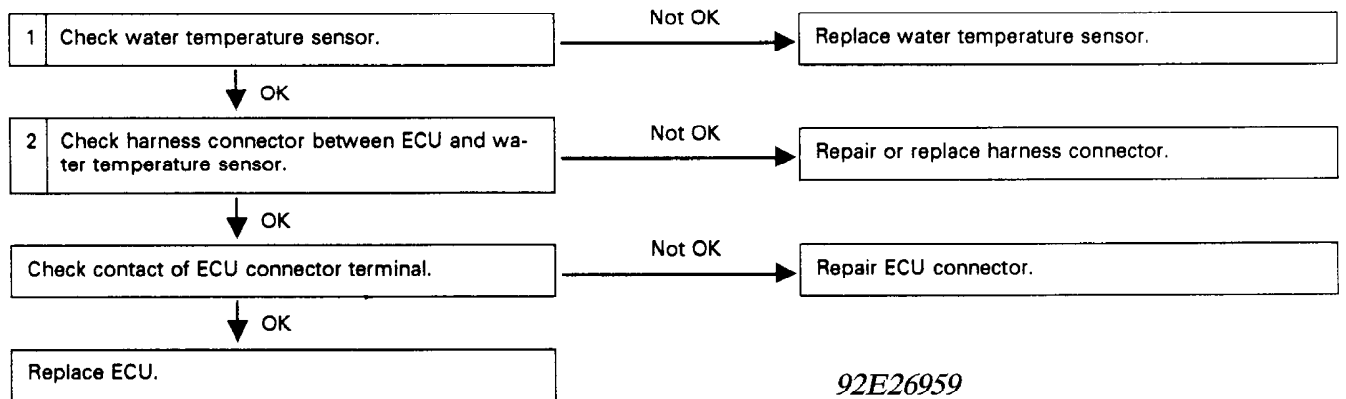
92E26959

Fig. 14: Flow Chart – Code 21, Coolant (Water) Temperature Sensor
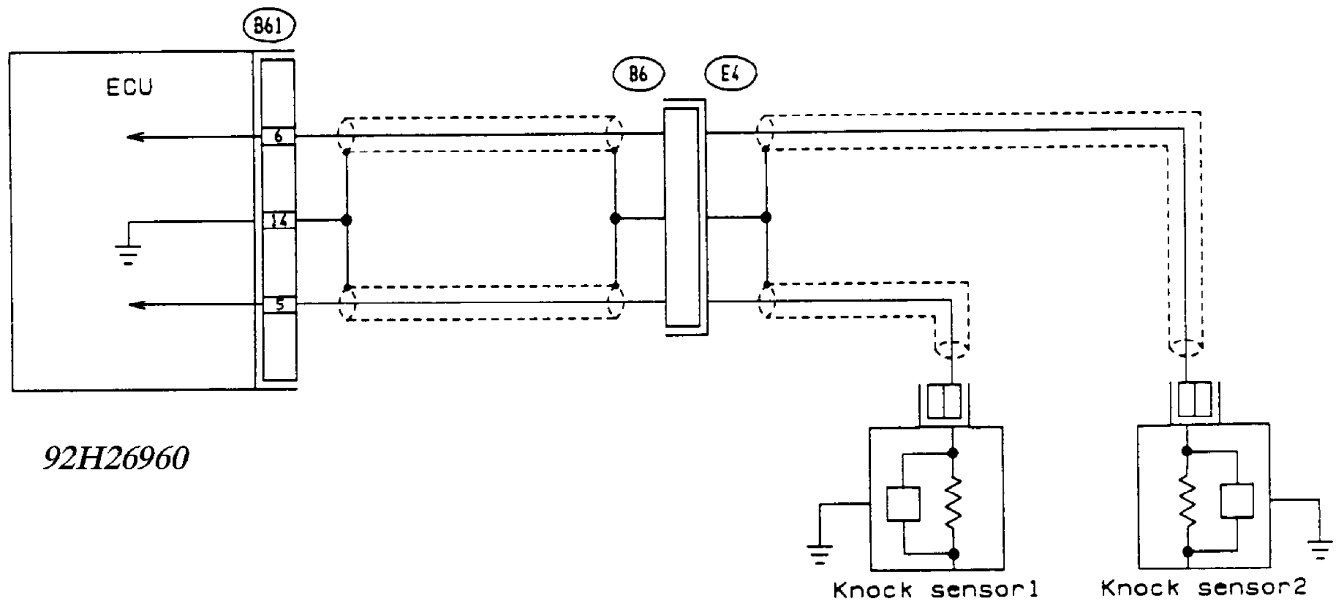
CODE 22, KNOCK SENSOR NO. 1

92H26960
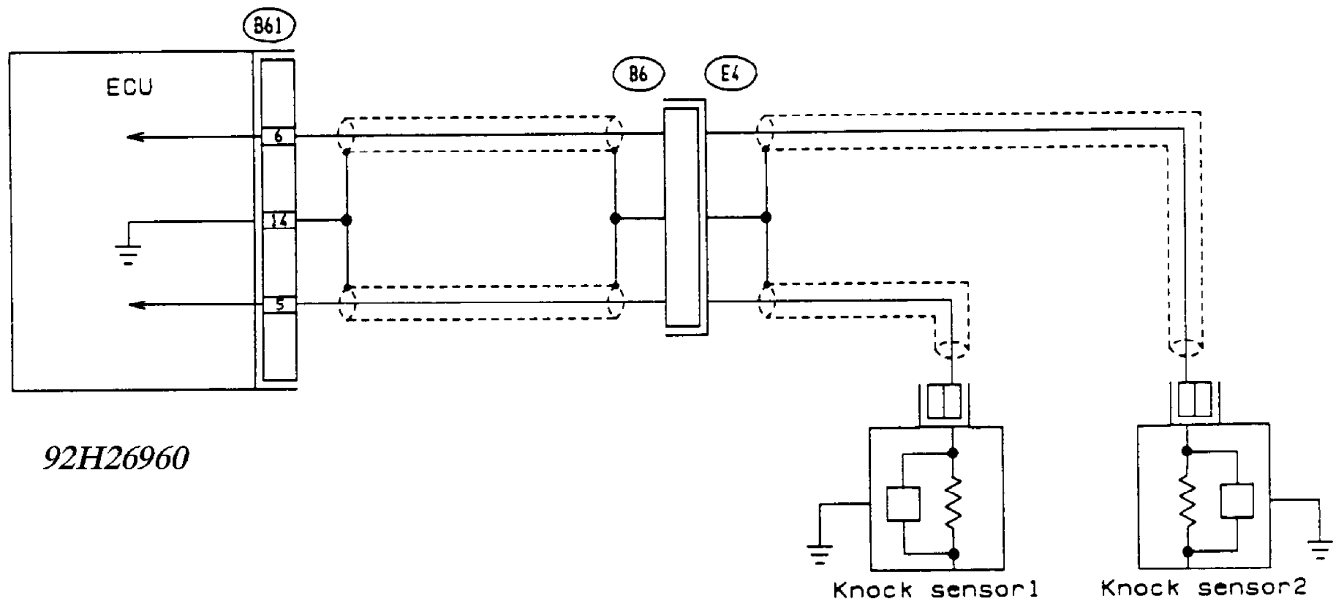
Fig. 15: Schematic – Code 22, Knock Sensor

DIAGNOSIS:
Abnormal signal from knock sensor 1.
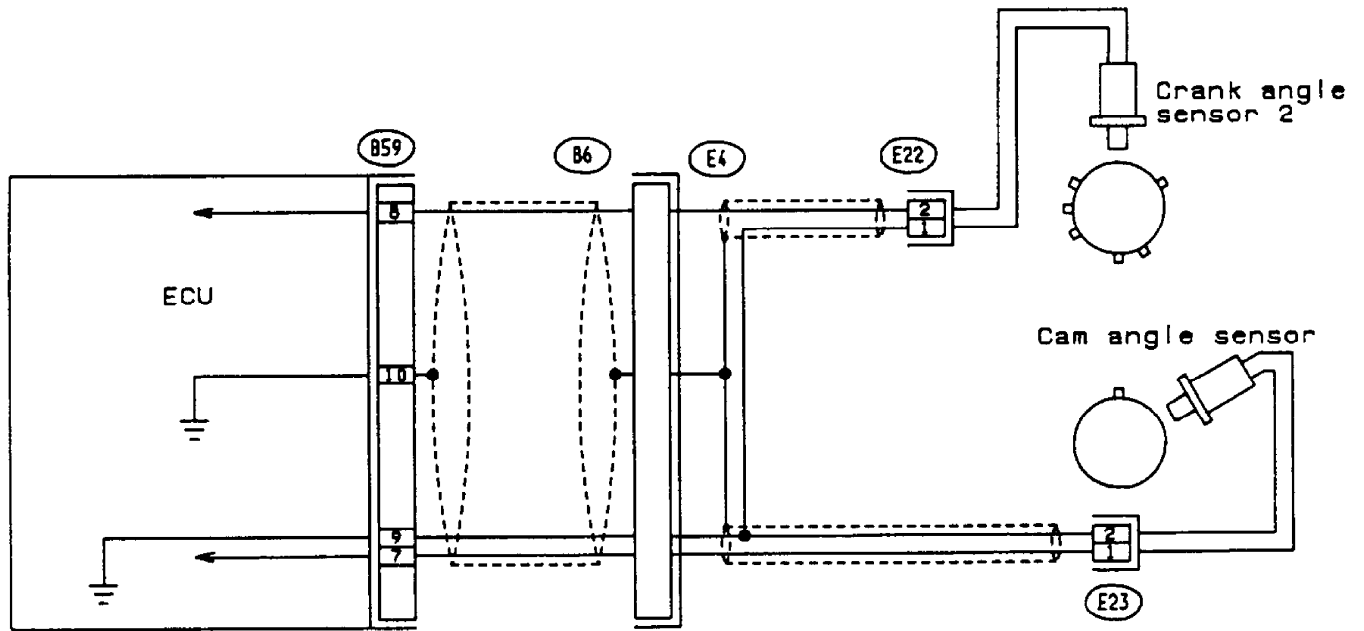
TROUBLE SYMPTOM:
● Poor driving performance.

92I26961
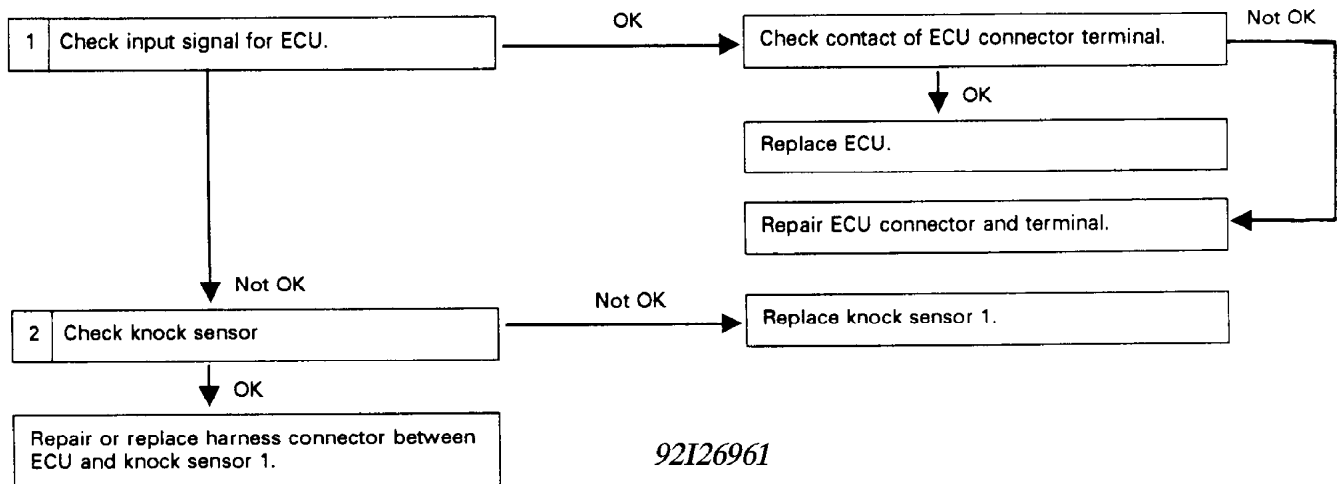
Fig. 16: Flow Chart – Code 22, Knock Sensor

CODE 23, AIRFLOW SENSOR CIRCUIT

a: B59 **b:** B60

B1

Air flow sensor

ECU
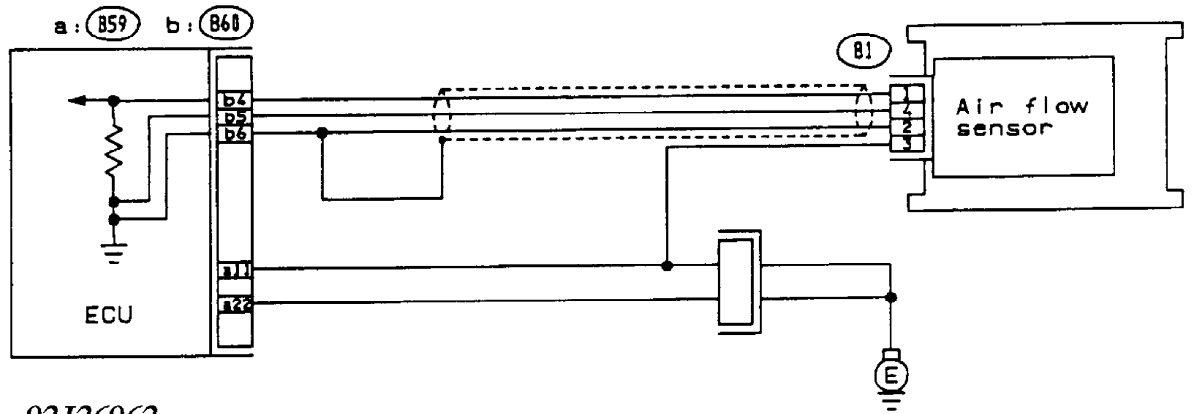
92J26962

Fig. 17: Schematic – Code 23, Airflow Sensor Circuit

DIAGNOSIS:
Abnormal signal from air flow sensor.

TROUBLE SYMPTOM:
• Engine stall
• Erroneous idling
• Poor driving performance

| 1 | Check input signal for ECU. |

OK →

Check contact of ECU connector terminal. — Not OK →

↓ OK

Replace ECU.

Repair ECU connector and terminal. ←

↓ Not OK

| 2 | Check harness connector between ECU and air flow sensor. |

Not OK →

Repair or replace harness connector.

↓ OK

Replace air flow sensor.
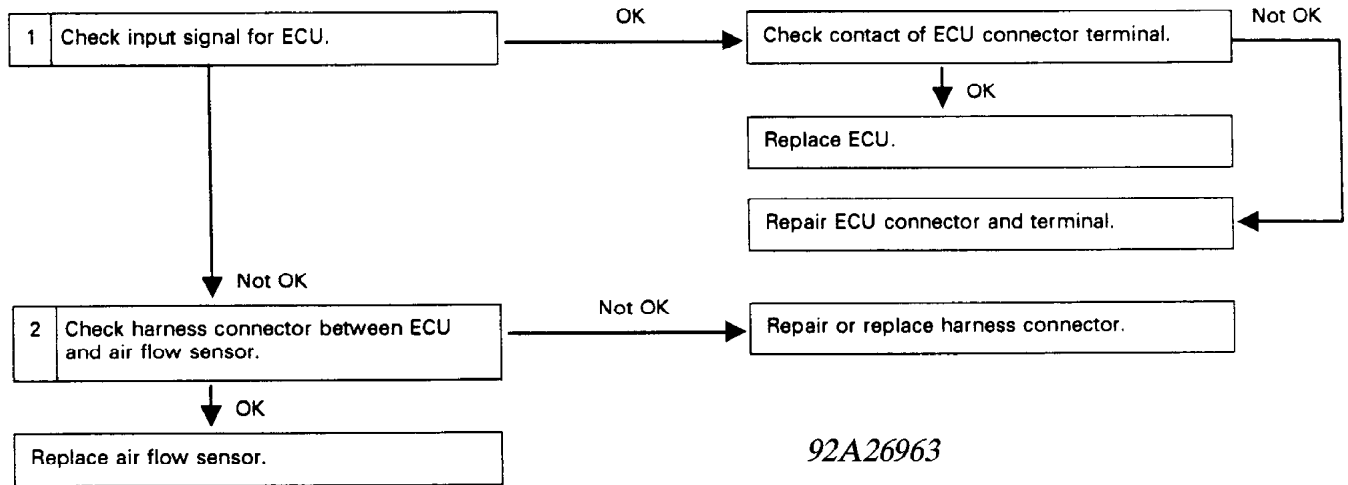
92A26963

Fig. 18: Flow Chart – Code 23, Airflow Sensor Circuit

CODE 24, BY-PASS AIR CONTROL SOLENOID VALVE

92B26964
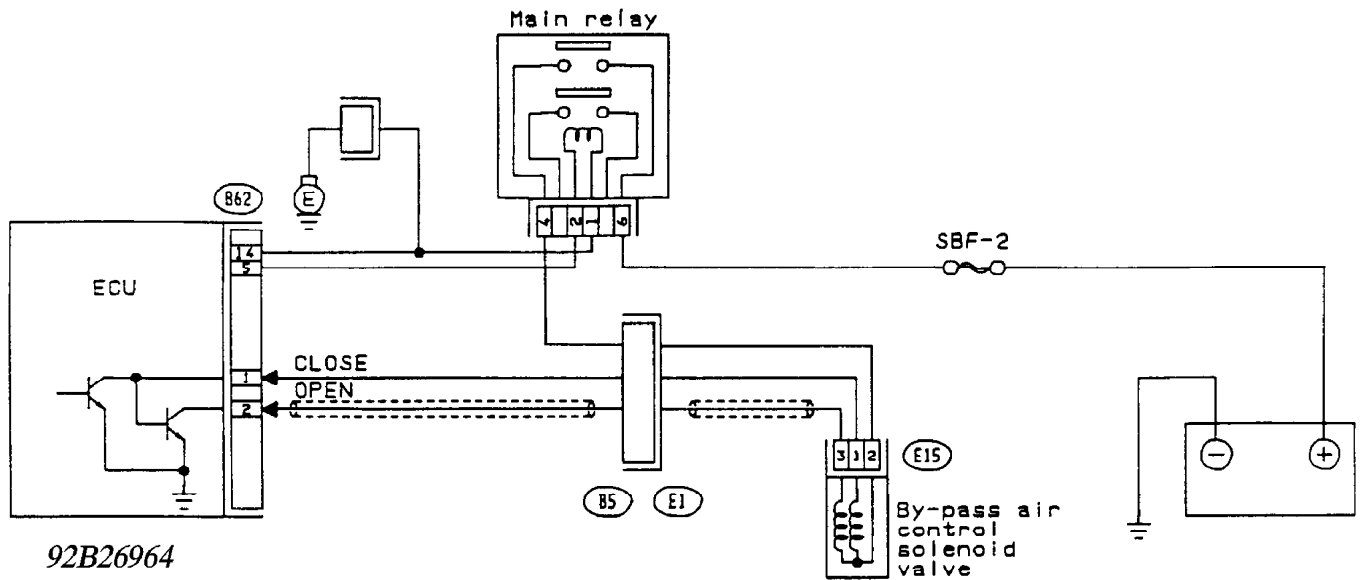
Fig. 19: Schematic – Code 24, By-Pass Air Control Solenoid Valve

DIAGNOSIS:
● Air by-pass control solenoid valve inoperative.
● Abnormal signal emitted from ECU to by-pass air control solenoid valve.

TROUBLE SYMPTOM:
● Engine stall
● Erroneous idling
● Engine breathing

92C26965
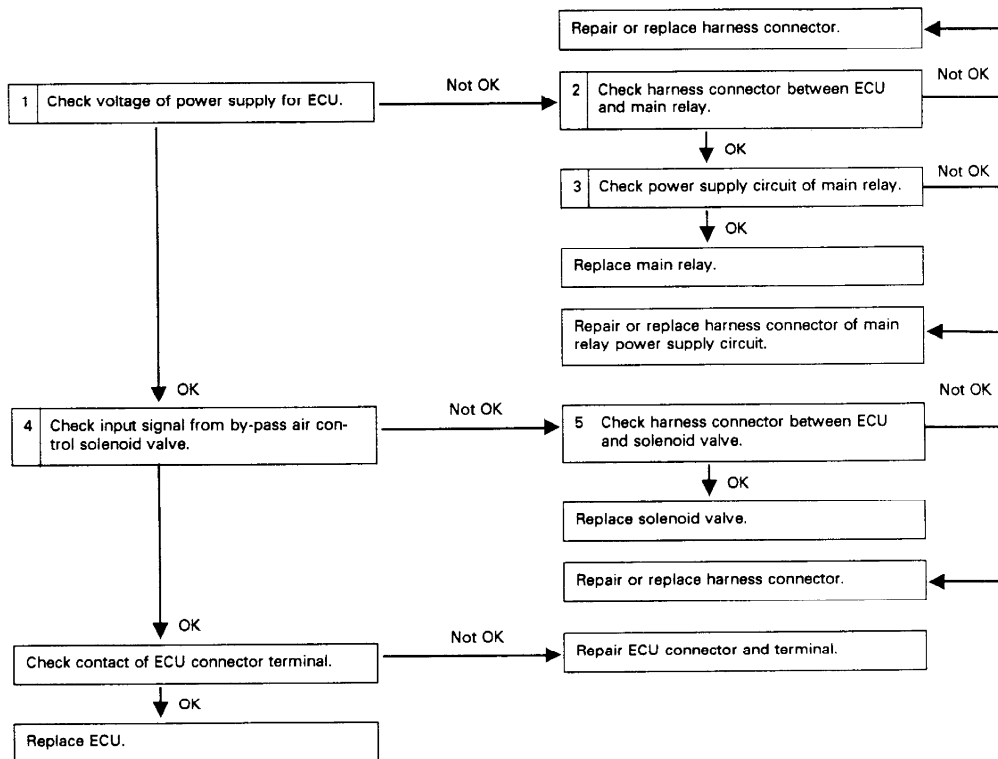
Fig. 20: Flow Chart – Code 24, By-Pass Air Control Solenoid Valve

CODE 28, KNOCK SENSOR NO. 2

92H26960

Fig. 21: Schematic - Code 28, Knock Sensor No. 2

DIAGNOSIS:
Abnormal signal is entered from knock sensor 2.

TROUBLE SYMPTOM:
● Poor driving performance.

92E26967
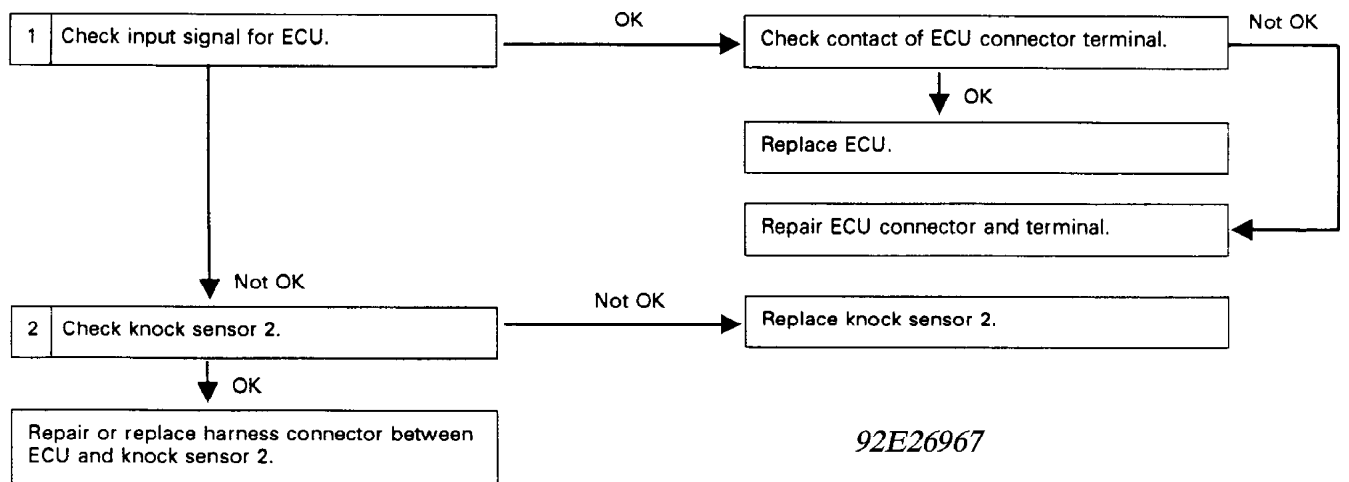
Fig. 22: Flow Chart - Code 28, Knock Sensor No. 2
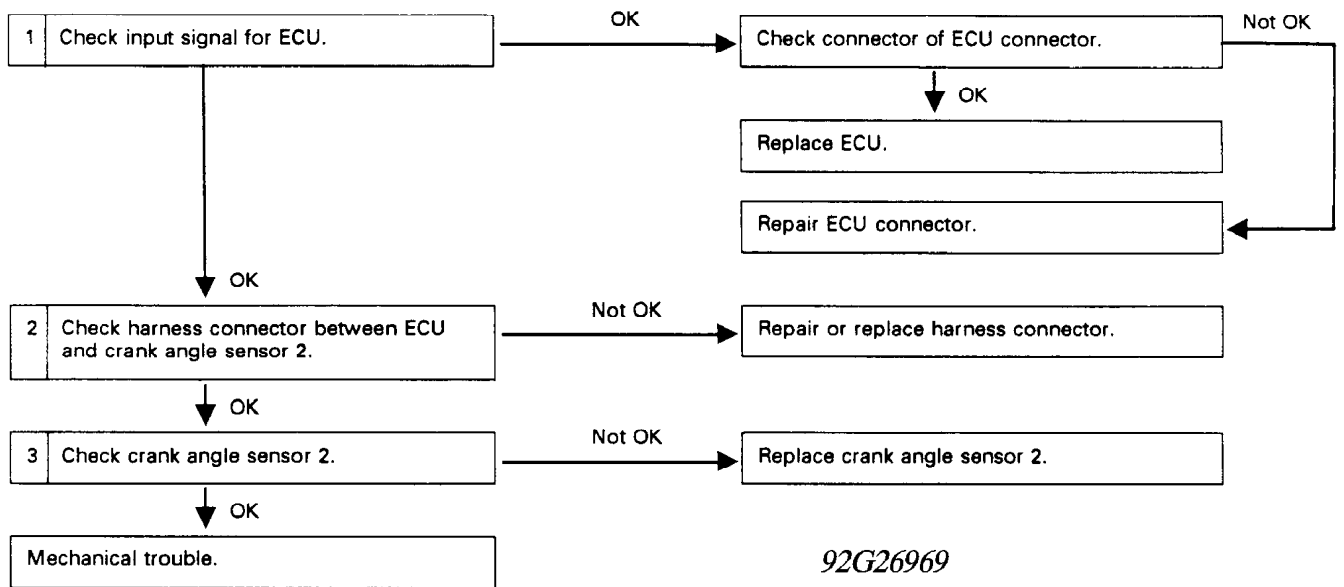
CODE 29, CRANK ANGLE SENSOR NO. 2

92J26954

Fig. 23: Schematic - Code 29, Crank Angle Sensor No. 2

DIAGNOSIS:
No signal inputs from crank angle sensor 2, while the signal from crank angle sensor 1 inputs to ECU more than 12 times.
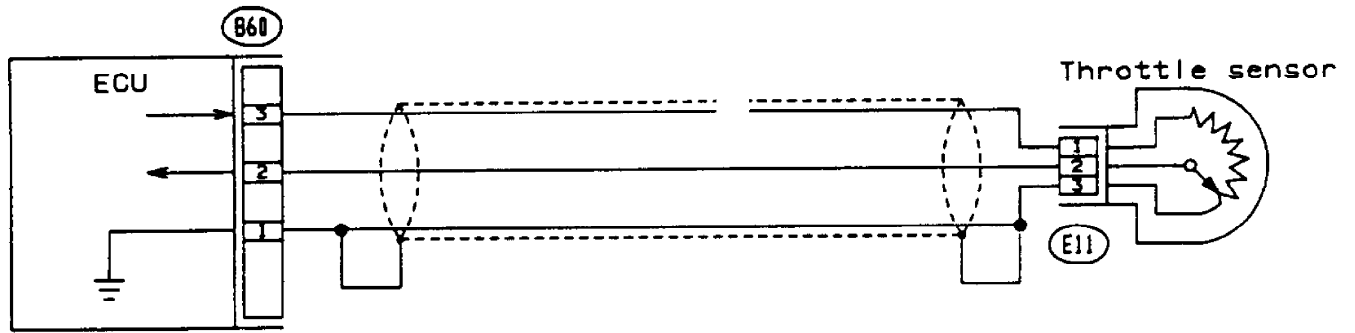
TROUBLE SYMPTOM:
• Failure engine to start.

92G26969

Fig. 24: Flow Chart - Code 29, Crank Angle Sensor No. 2
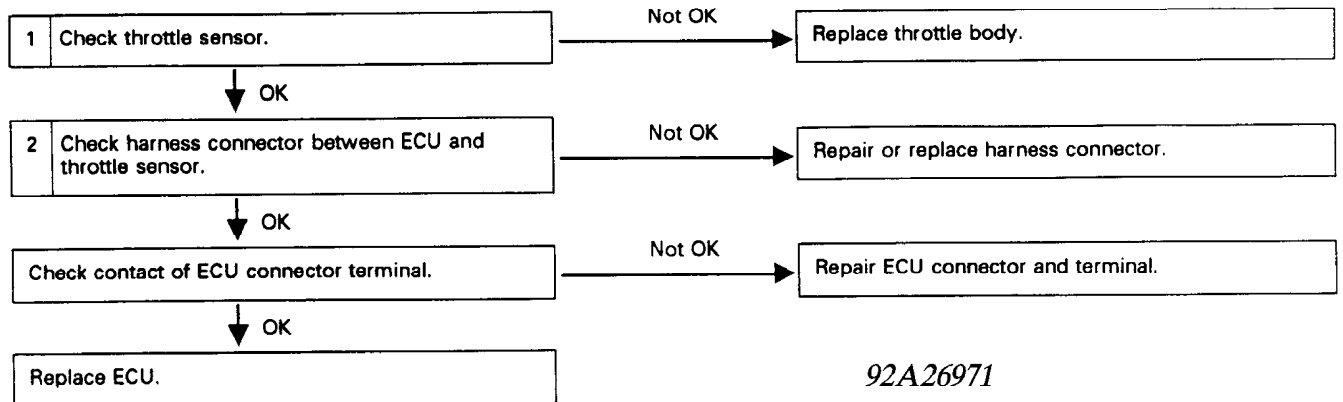
CODE 31, THROTTLE POSITION SENSOR

92J26970

Fig. 25: Schematic - Code 31, Throttle Position Sensor

DIAGNOSIS:
Abnormal signal from throttle sensor.

TROUBLE SYMPTOM:
● Erroneous idling
● Engine stall
● Poor driving performance

| 1 | Check throttle sensor. | Not OK → | Replace throttle body. |

↓ OK

| 2 | Check harness connector between ECU and throttle sensor. | Not OK → | Repair or replace harness connector. |

↓ OK

| Check contact of ECU connector terminal. | Not OK → | Repair ECU connector and terminal. |

↓ OK

| Replace ECU. |

92A26971

Fig. 26: Flow Chart - Code 31, Throttle Position Sensor

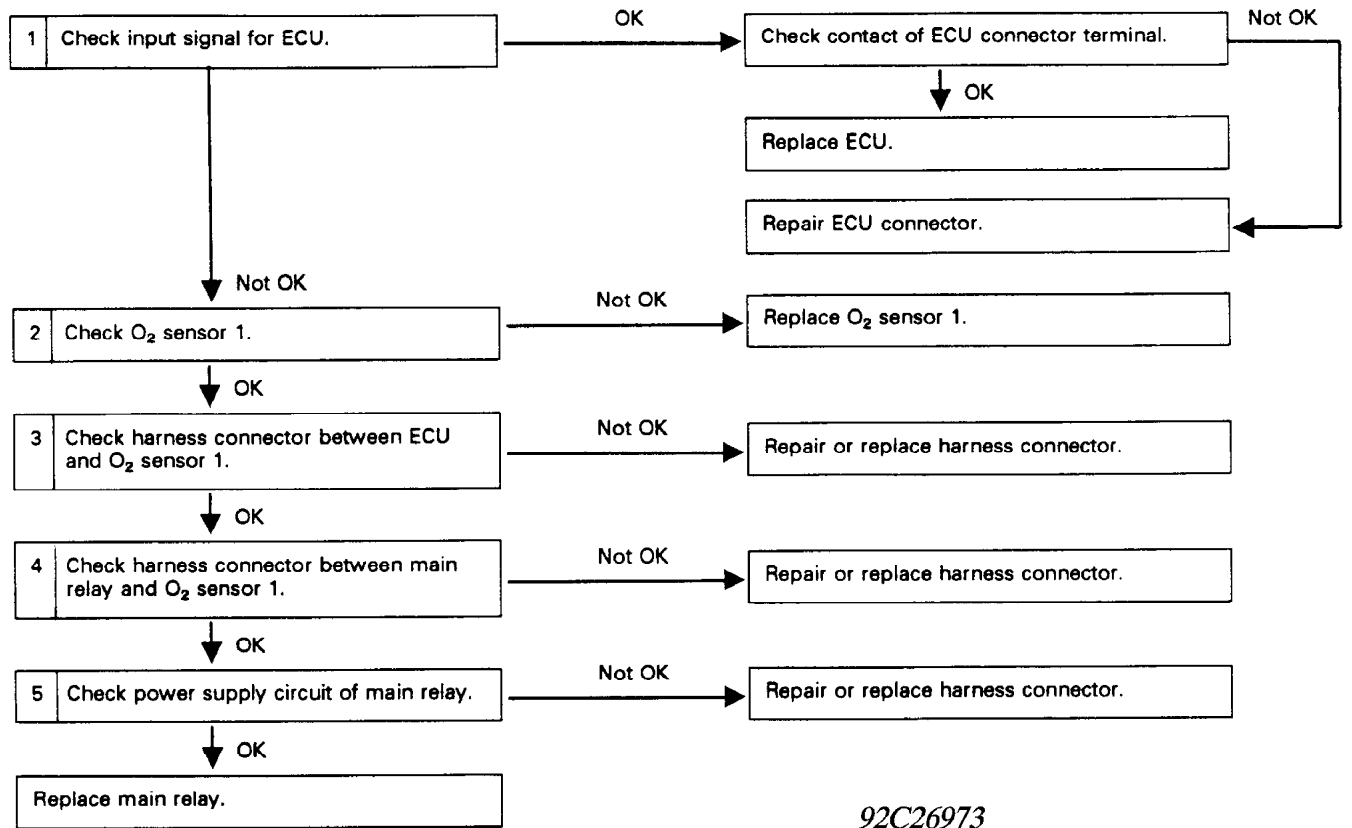## CODE 32, OXYGEN (O2) SENSOR NO. 1
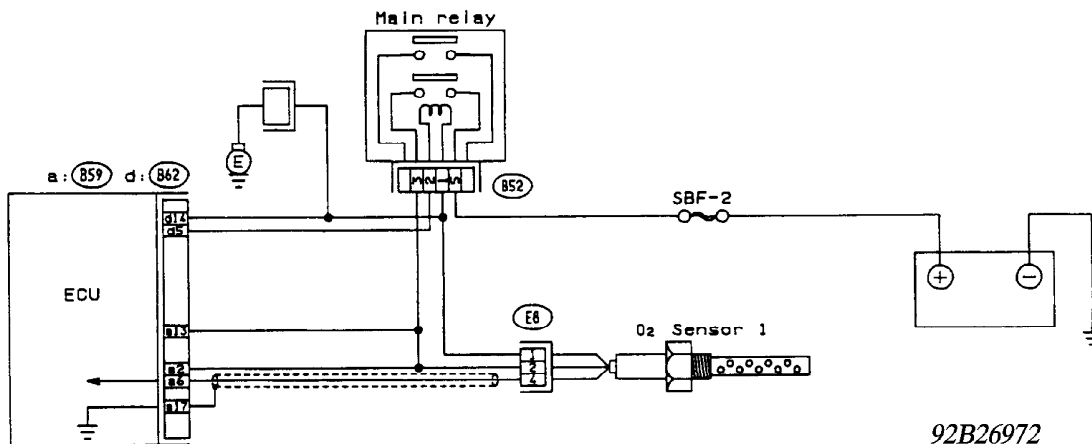
92B26972

Fig. 27: Schematic - Code 32, Oxygen (O2) Sensor No. 1

DIAGNOSIS:
- O$_2$ 1 inoperative
- Faulty feed back control system

TROUBLE SYMPTOM:
- Erroneous idling
- Rough driving

```
1 | Check input signal for ECU.    ──OK──►  Check contact of ECU connector terminal.  ──Not OK──┐
                                                              │ OK                               │
         │                                            Replace ECU.                               │
         ▼ Not OK                                                                                │
                                                    Repair ECU connector.  ◄─────────────────────┘

2 | Check O₂ sensor 1.    ──Not OK──►  Replace O₂ sensor 1.
         │ OK

3 | Check harness connector between ECU    ──Not OK──►  Repair or replace harness connector.
    and O₂ sensor 1.
         │ OK

4 | Check harness connector between main   ──Not OK──►  Repair or replace harness connector.
    relay and O₂ sensor 1.
         │ OK

5 | Check power supply circuit of main relay.  ──Not OK──►  Repair or replace harness connector.
         │ OK

Replace main relay.
```

92C26973

Fig. 28:   Flow Chart – Code 32, Oxygen (O2) Sensor No. 1

CODE 33, VEHICLE SPEED SENSOR NO. 2
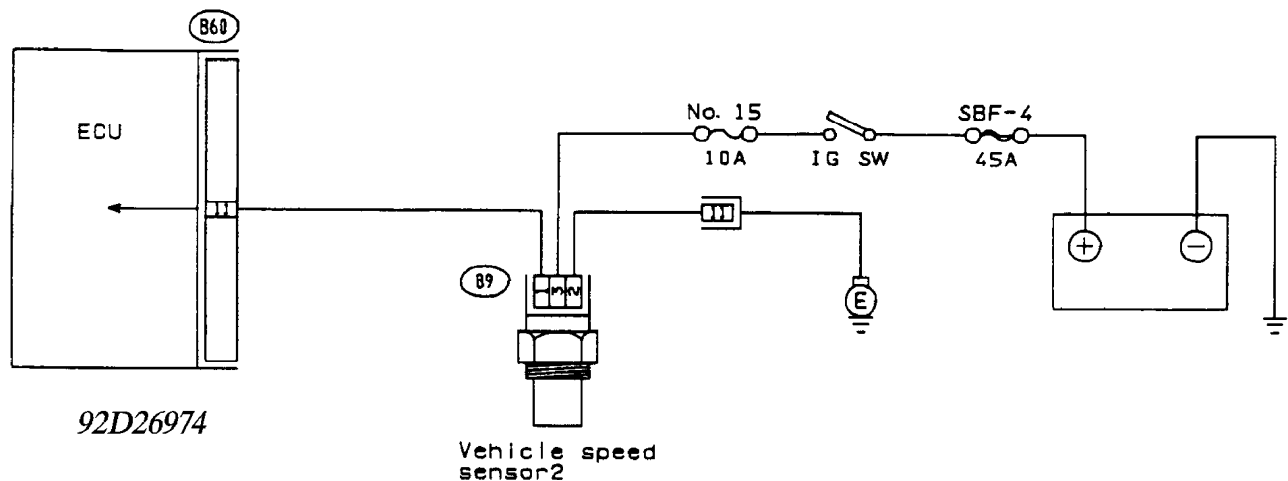
92D26974

Fig. 29:   Schematic – Code 33, Vehicle Speed Sensor No. 2

```
                                              ┌──────────────────────────────────┐
                                              │ Repair or replace power supply    │◄──┐
                                              │ and/or ground circuit.            │   │
                                              └──────────────────────────────────┘   │
                                                                              Not OK  │
┌─────────────────────────────┐    OK    ┌──────────────────────────────────┐       │
│ 1 │ Check input signal for  │─────────►│ 2 │ Check power supply and ground │───────┘
│   │ ECU.                    │          │   │ line of ECU.                  │
└─────────────────────────────┘          └──────────────────────────────────┘
                                                       │ OK              Not OK
                                          ┌──────────────────────────────────┐───┐
                                          │ Check contact of ECU connector    │   │
                                          │ terminal.                         │   │
                                          └──────────────────────────────────┘   │
                                                       │ OK                       │
                                          ┌──────────────────────────────────┐   │
                                          │ Replace ECU.                      │   │
                                          └──────────────────────────────────┘   │
                                          ┌──────────────────────────────────┐   │
                                          │ Repair ECU connector terminal.    │◄──┘
                                          └──────────────────────────────────┘
         │ Not OK
┌─────────────────────────────┐  Not OK  ┌──────────────────────────────────┐
│ 3 │ Check harness connector │─────────►│ Repair or replace harness          │
│   │ between ECU and vehicle │          │ connector.                        │
│   │ speed sensor 2.         │          └──────────────────────────────────┘
└─────────────────────────────┘
         │ OK
┌─────────────────────────────┐    OK    ┌──────────────────────────────────┐  Not OK
│ 4 │ Check voltage of power  │─────────►│ 5 │ Check voltage of power supply │───┐
│   │ supply and ground line  │          │   │ for main relay.               │   │
│   │ for vehicle speed       │          └──────────────────────────────────┘   │
│   │ sensor 2.               │                     │ OK                         │
└─────────────────────────────┘          ┌──────────────────────────────────┐   │
                                          │ Replace main relay.               │   │
                                          └──────────────────────────────────┘   │
                                          ┌──────────────────────────────────┐   │
                                          │ Repair or replace harness          │◄──┘
                                          │ connector of main relay power     │
                                          │ supply line.                      │
                                          └──────────────────────────────────┘
         │ Not OK
┌─────────────────────────────┐  Not OK  ┌──────────────────────────────────┐
│ 6 │ Check vehicle speed     │─────────►│ Replace vehicle speed sensor 2.   │
│   │ sensor 2.               │          └──────────────────────────────────┘
└─────────────────────────────┘
         │ OK
┌─────────────────────────────┐
│ Mechanical trouble in        │
│ transmission.                │
└─────────────────────────────┘
```

92E26975

Fig. 30: Flow Chart – Code 33, Vehicle Speed Sensor No. 2

CODE 34, EXHAUST GAS RECIRCULATION (EGR) SOLENOID VALVE

Main relay

ECU

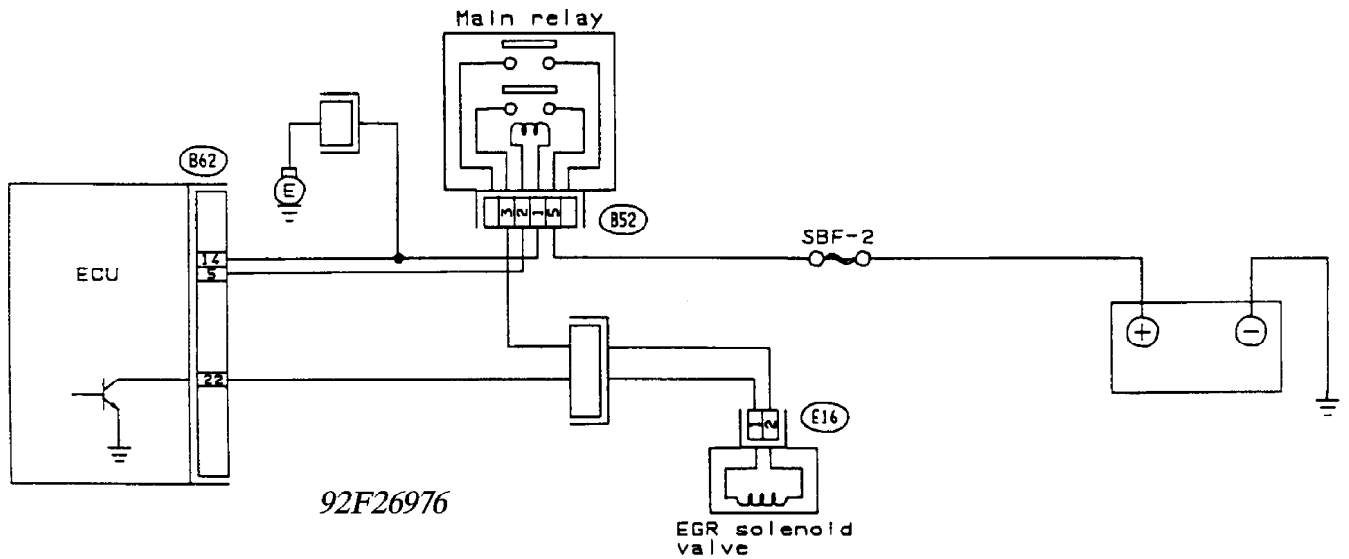B62

B52

SBF-2

E16

EGR solenoid valve

92F26976

Fig. 31: Schematic - Code 34, Exhaust Gas Recirculation (EGR) Solenoid Valve

DIAGNOSIS:
• Abnormal signal is emitted from ECU.
• EGR solenoid valve inoperative.

TROUBLE SYMPTOM:
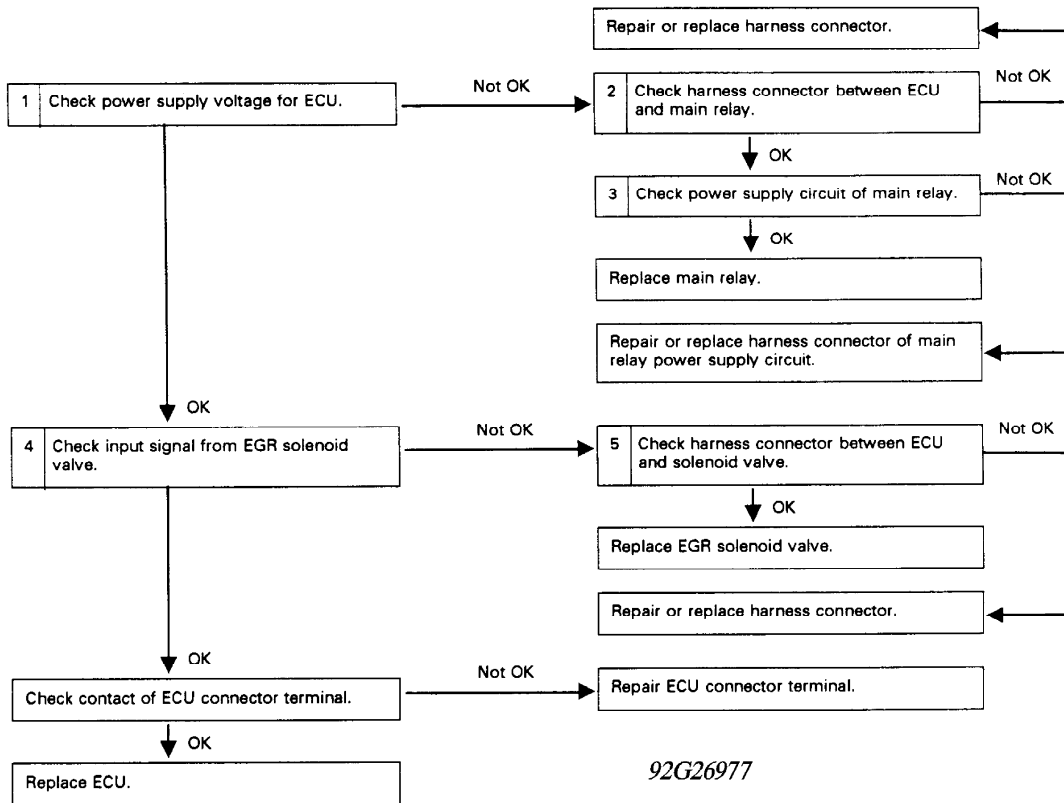Poor driving performance on low engine speed.
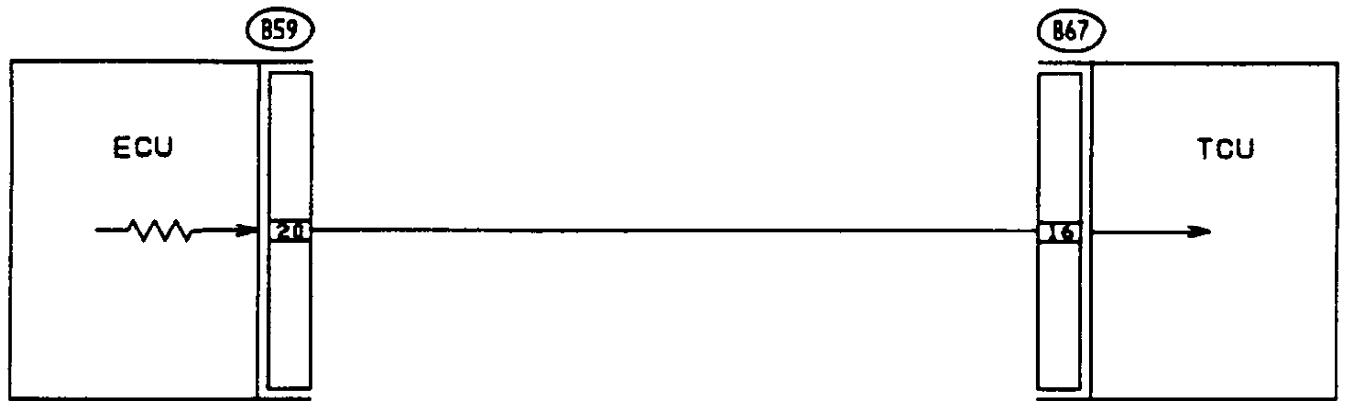

Repair or replace harness connector.	

| 1 | Check power supply voltage for ECU. |

Not OK →

| 2 | Check harness connector between ECU and main relay. |

Not OK

↓ OK

| 3 | Check power supply circuit of main relay. |

Not OK

↓ OK

Replace main relay.

Repair or replace harness connector of main relay power supply circuit.

↓ OK

| 4 | Check input signal from EGR solenoid valve. |

Not OK →

| 5 | Check harness connector between ECU and solenoid valve. |

Not OK

↓ OK

Replace EGR solenoid valve.

Repair or replace harness connector.

↓ OK

Check contact of ECU connector terminal.

Not OK →

Repair ECU connector terminal.

↓ OK

Replace ECU.

92G26977

Fig. 32: Flow Chart - Code 34, Exhaust Gas Recirculation (EGR) Solenoid Valve

CODE 35, PURGE CONTROL SOLENOID
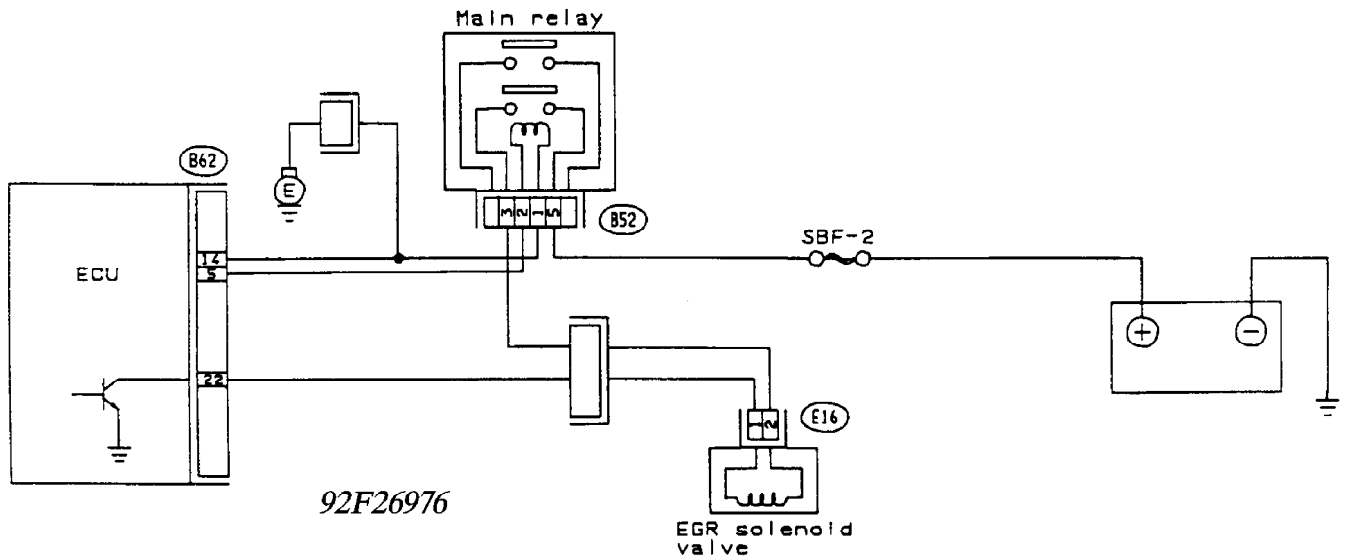
Fig. 33: Schematic – Code 35, Purge Control Solenoid

DIAGNOSIS:
● Abnormal signal is emitted from ECU.
● Purge control solenoid valve inoperative.

TROUBLE SYMPTOM:
● Poor driving performance
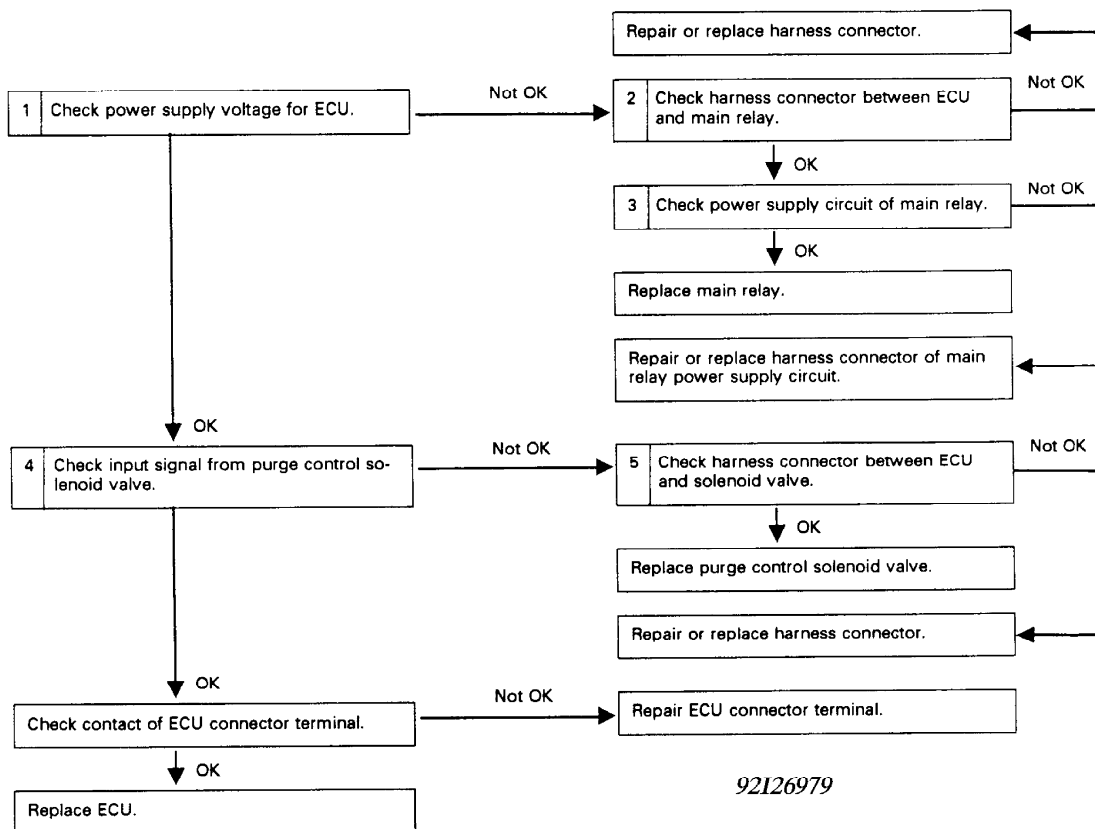
Fig. 34: Flow Chart – Code 35, Purge Control Solenoid

CODE 37, OXYGEN (O2) SENSOR NO. 2

Fig. 35: Schematic – Code 37, Oxygen (O2) Sensor No. 2

DIAGNOSIS:
- O₂ sensor 2 inoperative
- Faulty feed back control system

TROUBLE SYMPTOM:
- Erroneous idling
- Rough driving

92C26981

Fig. 36: Flow Chart – Code 37, Oxygen (O2) Sensor No. 2

CODE 38, ENGINE TORQUE CONTROL

B59   B67

ECU   TCU

20   16

92D26982

B59

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22

B67

1	2	3	4	5	6
7	8	9	10	11	12
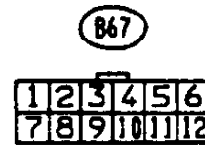
Fig. 37: Schematic – Code 38, Engine Torque Control

DIAGNOSIS:
• Signal from TCU is not transmitted to ECU.

TROUBLE SYMPTOM:
Excessive shift shock

| 1 | Check input signal for ECU from TCU. | OK → | Check contact of ECU connector terminal. | Not OK |

OK ↓

Replace ECU.

Repair ECU connector.

Not OK ↓

| 2 | Check harness connector between ECU and TCU. | Not OK → | Repair or replace harness connector. |

OK ↓

Check contact of TCU connector terminal. | Not OK → | Repair TCU connector. |

OK ↓

Replace TCU.
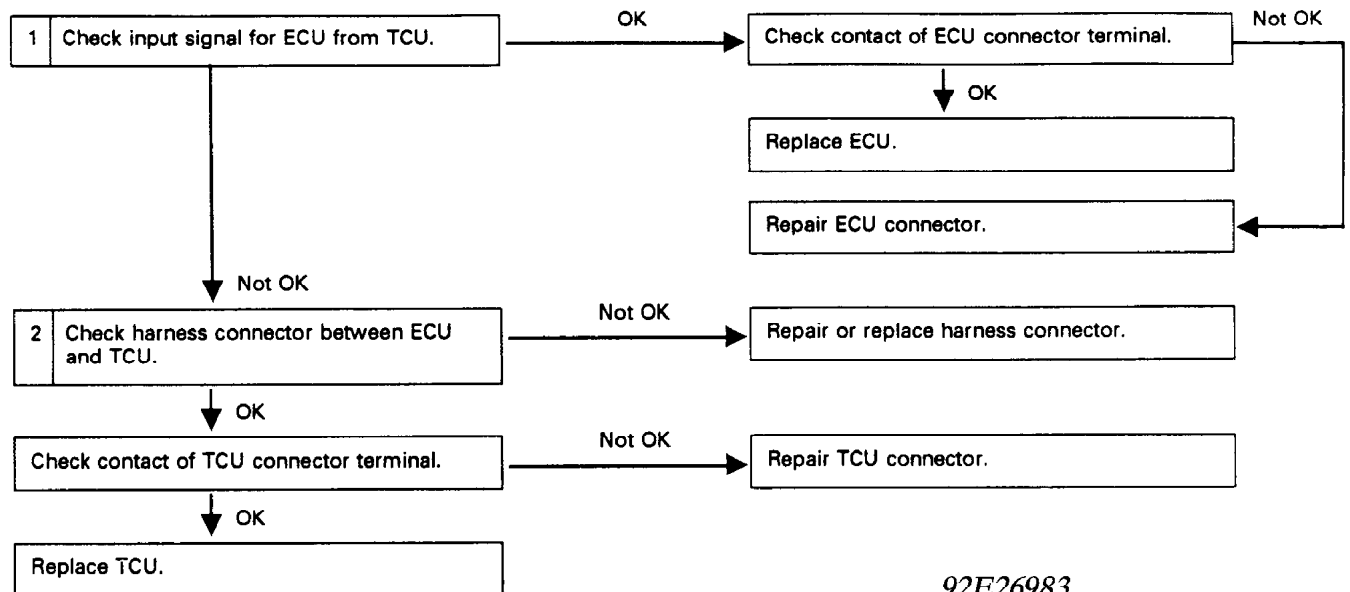
92E26983

Fig. 38: Flow Chart – Code 38, Engine Torque Control

CODE 41, AIR/FUEL RATIO CONTROL SYSTEM

DIAGNOSIS:
Faulty learning control system

TROUBLE SYMPTOM:
● Erroneous idling
● Engine stall

1	Check operation of injectors.	Not OK →	● Check harness connector. ● Replace fuel injector.
	↓ OK		
2	Check air flow sensor.	Not OK →	● Check harness connector. ● Replace air flow sensor.
	↓ OK		
3	Check water temperature sensor.	Not OK →	Replace water temperature sensor.
	↓ OK		
4	Check throttle sensor.	Not OK →	Replace throttle body ASSY.
	↓ OK		
5	Check O$_2$ 1 & 2.	Not OK →	Replace O$_2$ 1 or 2.
	↓ OK		
6	Check fuel pressure.	Not OK →	Check fuel pump and/or pressure regulator.
	↓ OK		
7	Check injectors.	Not OK →	Replace fuel injector.
	↓ OK		
	Check contact of ECU connector terminal.	Not OK →	Repair ECU connector.
	↓ OK		
	Replace ECU.		

92F26984

Fig. 39: Flow Chart – Code 41, Air/Fuel Ratio Control System

CODE 45, ATMOSPHERIC PRESSURE SENSOR (NON-TURBO)

Code 45 indicates a faulty atmospheric pressure sensor inside the ECU. Symptoms include the following:

*   Rough or erratic idle.
*   Failure of engine to start.

If a code 45 is displayed, replace the ECU.

CODE 51, NEUTRAL SAFETY SWITCH

Inhibitor switch

92G26985
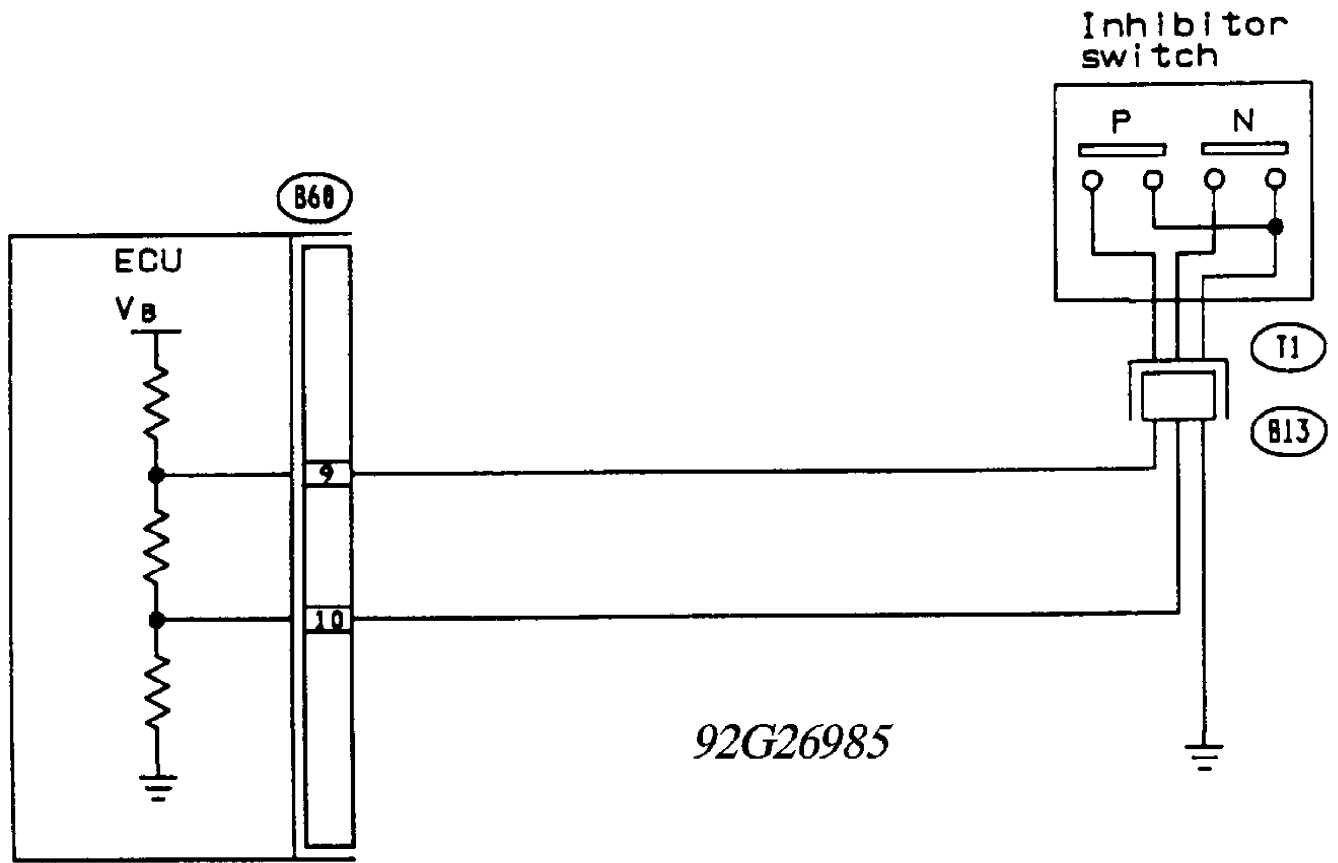
Fig. 40:   Schematic – Code 51, Nuetral Switch

DIAGNOSIS:
Abnormal signal entered from inhibitor switch.

TROUBLE SYMPTOM:
Erroneous idling.

92H26986
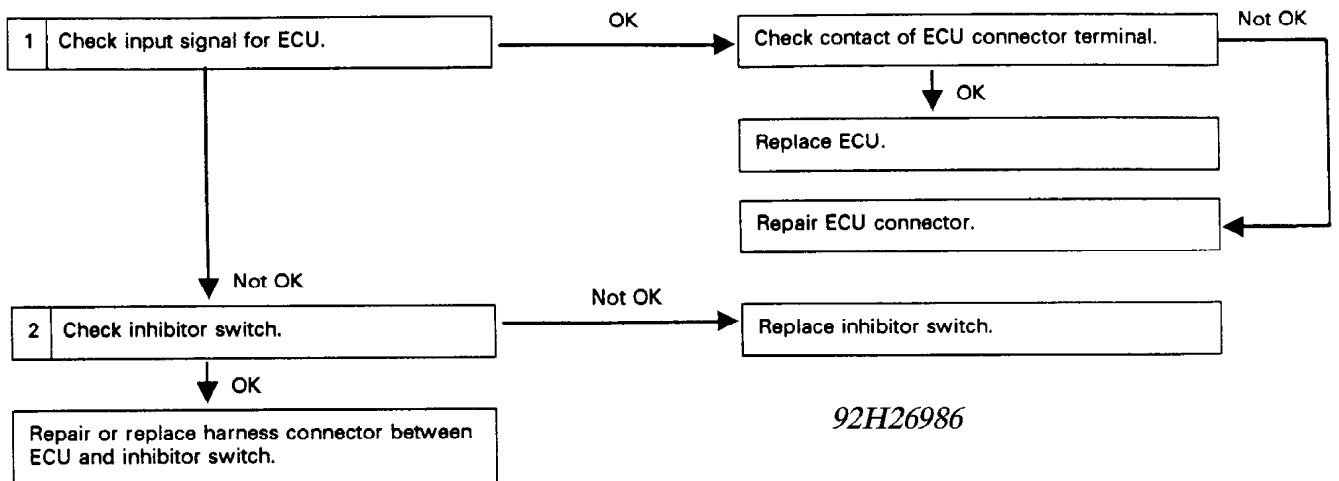
Fig. 41: Flow Chart – Code 51, Nuetral Switch
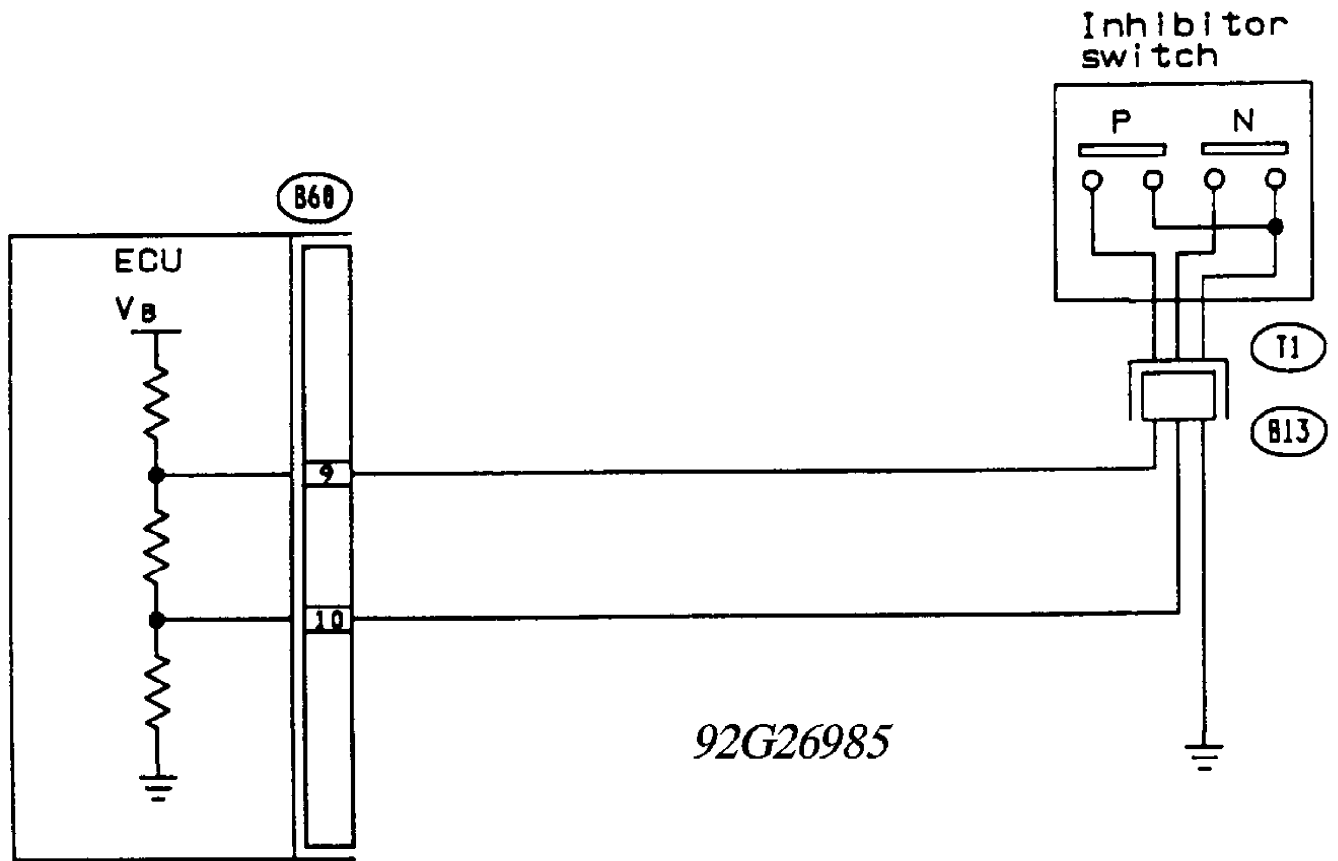
CODE 52, PARKING POSITION SIGNAL

Fig. 42:   Schematic – Code 52, Parking Position Signal

DIAGNOSIS:
Abnormal signal entered from inhibitor switch.

TROUBLE SYMPTOM:
● Erroneous idling.
● Poor warm-up performance with select lever in
"P" position.

92J26988
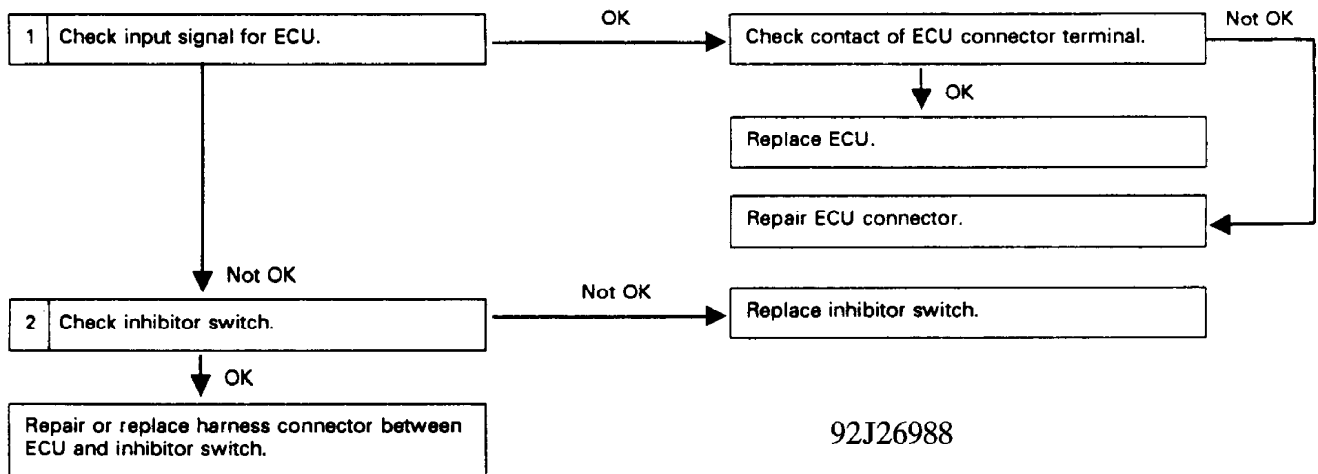
Fig. 43:   Flow Chart – Code 52, Parking Position Signal
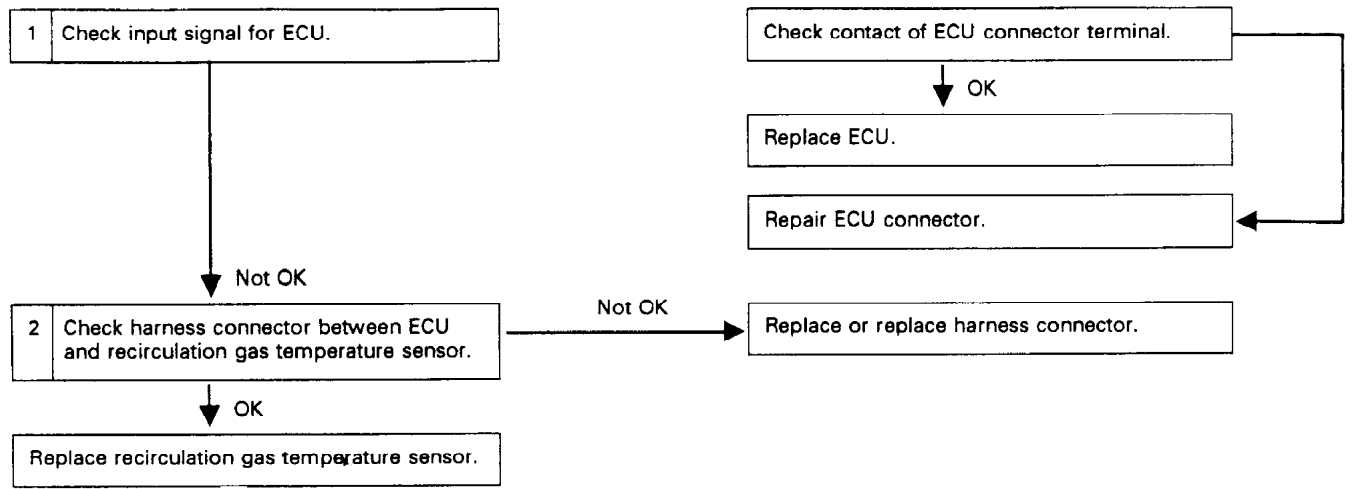
CODE 55, EXHAUST GAS RECIRCULATION (EGR) TEMPERATURE SENSOR
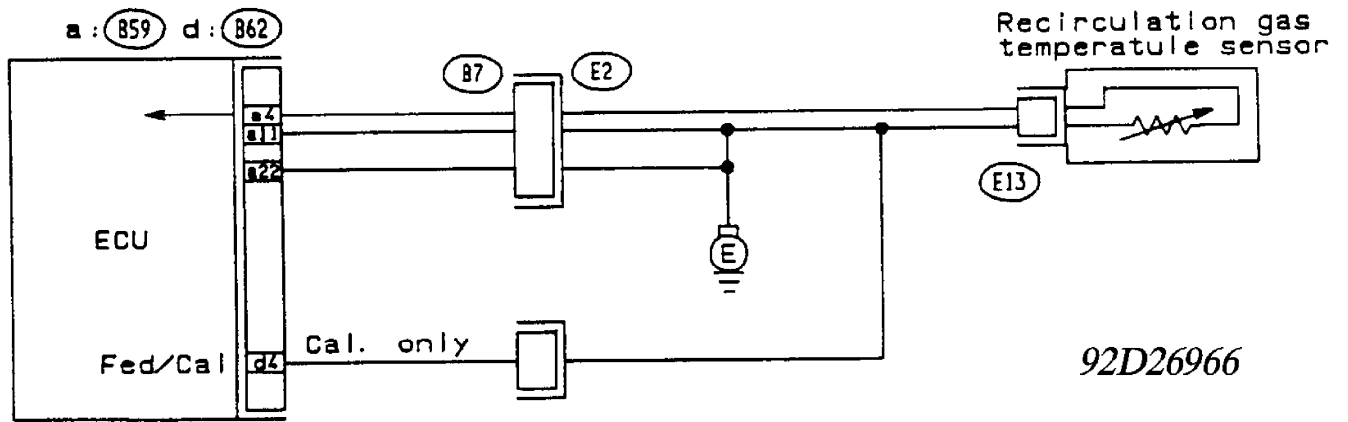
Fig. 44:   Schematic – Code 55, Exhaust Gas Recirculation (EGR) Temp
Sens

92F26968

Fig. 45:   Flow Chart –Code 55, Exhaust Gas Recirculation (EGR) Temp
Sens

CODE 56, EXHAUST GAS RECIRCULATION (EGR) SYSTEM

Check for mechanical problem w/EGR valve, EGR vacuum
controller and/or EGR line. EGR may be stuck in open or closed
position. Symptom includes the following.

*   Poor driveability at low speed.