I - SYSTEM/COMPONENT TESTS

1990 Nissan 240SX

1990 ENGINE PERFORMANCE
Nissan Systems & Component Testing

Nissan; Axxess, 240SX

INTRODUCTION

Before testing separate components or systems, perform procedures in F - BASIC TESTING article. Since many computer-controlled and monitored components set a trouble code if they malfunction, also perform procedures in G - TESTS W/CODES article.

NOTE: Testing individual components does not isolate shorts or opens. Perform all voltage tests with a Digital Volt-Ohmmeter (DVOM) with a minimum 10-megohm input impedance, unless stated otherwise in test procedure. Use ohmmeter to isolate wiring harness shorts or opens.

AIR INDUCTION SYSTEMS

POWER VALVE CONTROL SOLENOID

Remove vacuum lines and electrical connector from solenoid. Remove solenoid from vehicle. Connect hand-held vacuum pump to middle vacuum port of solenoid. Apply battery voltage to solenoid. Ensure correct polarity is used or damage to solenoid may result. Apply vacuum. As battery voltage is applied and removed from solenoid, vacuum should alternately bleed from remaining 2 ports.

SURGE TANK & ONE-WAY CHECK VALVE

Apply vacuum to surge tank located on firewall. Vacuum should hold. Apply vacuum to both sides of one-way check valve. Valves should hold vacuum in only one direction. Ensure valve is installed with holding side away from vacuum source.

SWIRL CONTROL VALVE SYSTEM

The Axxess swirl control valve actuator and solenoid are located next to distributor.

The 240SX swirl control valve actuator and solenoid are located on rear of cylinder head. Also see appropriate SWIRL CONTROL VALVE diagnostic chart.

SWIRL CONTROL VALVE

Valve should close when vacuum is applied to swirl control valve actuator and should open when vacuum is not applied.

SWIRL CONTROL VALVE SOLENOID

Remove vacuum lines and electrical connector from solenoid. Remove solenoid from vehicle. Connect hand-held vacuum pump to middle vacuum port of solenoid. Apply battery voltage to solenoid. Ensure correct polarity is used or damage to solenoid may result. Apply vacuum. As battery voltage is applied and removed from solenoid, vacuum should alternately bleed from remaining 2 ports.

COMPUTERIZED ENGINE CONTROLS

ELECTRONIC CONTROL UNIT (ECU) POWER & GROUND SIGNALS

See appropriate ECU POWER SOURCE & GROUND diagnostic chart.

ENGINE SENSORS & SWITCHES

NOTE: For location and identification of ECU terminals, see appropriate L - WIRING DIAGRAMS article.

AIRFLOW METER

Ensure there is no dust or foreign material in hot wire air passage. Faults in the airflow meter circuit should set a trouble code. If Code 12 is set, go to CODE 12 diagnostic procedures in G - TESTS W/CODES article. Also see AIRFLOW METER VOLTAGE TEST table.

AIRFLOW METER VOLTAGE TEST TABLE (1)

Application	ECU Terminal (2)	Voltage
Axxess	16	1.0-3.0
240SX	16	1.0-3.0

(1) - Measure voltage between ground and indicated ECU terminal. Voltage should increase with an increase in airflow (RPM). DO NOT run engine at high RPM under no load.
(2) - To identify ECU terminals, see appropriate L - WIRING DIAGRAMS article.

AIR CONDITIONER SWITCH

Check switch signal voltage at appropriate ECU terminal. With engine running both and A/C and blower switches on, voltage should be zero volt. With engine running and A/C off switch, voltage should be 11-14 volts.

AIR TEMPERATURE SENSOR

On Axxess the air temperature sensor is on air cleaner box, near idle switch. Measure sensor resistance across sensor terminals. At 68°F (20°C), resistance should be about 2100-2900 ohms. At 176°F (80°C), resistance should be about 270-380 ohms.

On 240SX, air temperature sensor is a component part of mass airflow sensor. Check sensor voltage values against values in AIR TEMPERATURE SENSOR VOLTAGE TEST table. Replace sensor if voltages are not within specifications.

AIR TEMPERATURE SENSOR VOLTAGE TEST TABLE (1)

Application	Temperature °F (°C)	Volts
Axxess & 240SX	68 (20)	1.0-1.5
	176 (80)	.3

(1) - With engine running, measure voltage between ground and ECU terminal No. 26.

CRANKSHAFT ANGLE SENSOR

Crankshaft angle sensor is part of the distributor. If a fault is present in crank angle sensor, Code 11 may be set in ECU memory. If Code 11 is set, go to CODE 11 diagnostic procedures in G - TESTS W/CODES article.

To test crank angle sensor, leave sensor wiring connected. Using a logic probe or DVOM with an analog bar graph function, connect negative lead to ground and alternately connect positive lead to one-degree signal and 120/180-degree signal terminals of ECU. See CRANK ANGLE SENSOR ECU INPUT SIGNAL TERMINALS table.

With the engine cranking, peak voltage for one-degree signal should measure about 2.3-2.8 volts on DVOM. Peak voltage for 120/180-degree signal should measure about .1-.4 volt with engine cranking. If either signal is not present, check harness for short or open circuit. If no problems are found, replace crank angle sensor.

NOTE: It is possible to measure crank angle sensor voltage with a conventional DVOM without bar graph function; however, it may not be easy to determine peak voltage signal due to the averaging of signal.

CRANK ANGLE SENSOR ECU INPUT SIGNAL TERMINALS TABLE (1)

Model	1° Signal	120°/180° Signal
Axxess & 240SX	31 & 40	22 & 30

(1) - To identify ECU terminals, see appropriate WIRING DIAGRAMS article.

ENGINE (COOLANT) TEMPERATURE SENSOR

Disconnect engine (coolant) temperature sensor connector. Measure resistance across sensor terminals. Check sensor resistance values against values in ENGINE (COOLANT) TEMPERATURE SENSOR RESISTANCE TEST table. Replace sensor if values are not as specified.

ENGINE (COOLANT) TEMPERATURE SENSOR RESISTANCE TEST TABLE (1)

Temperature °F (°C)	Ohms
68 (20)	2100-2900
176 (80)	300-330

(1) - Measure resistance across sensor terminals.

EXHAUST GAS (OXYGEN) SENSOR

If fault is present in oxygen sensor circuit, Code 33 will be set in ECU memory. If Code 33 is set, go to CODE 33 diagnostic procedures in G - TESTS W/CODES article. Check sensor voltage values against values in EXHAUST GAS (OXYGEN) SENSOR VOLTAGE TEST table. Replace sensor if values are not as specified.

EXHAUST GAS (OXYGEN) SENSOR VOLTAGE TEST TABLE (1)

Condition	Volts
Lean	.1

Rich	1.0

(1) - With engine running at normal operating temperature, measure voltage between oxygen sensor connector terminal and ground.

EXHAUST GAS TEMPERATURE SENSOR (CALIFORNIA MODELS ONLY)

Place exhaust gas temperature sensor in boiling water at 212°F (100°C). Resistance at 212°F (100°C) should be 76,770-93,830 ohms. As temperature increases, sensor resistance should decrease. Check sensor voltage values against values in EXHAUST GAS TEMPERATURE SENSOR VOLTAGE TEST table. Replace sensor if values are not as specified.

EXHAUST GAS TEMPERATURE SENSOR VOLTAGE TEST TABLE (1)

Application	Terminal No.	Volts w/ EGR Closed	Volts w/ EGR Open
Axxess	8	1.0 or more	0-1.0
240SX	8	1.0 or more	0-1.0

(1) - With engine running, measure voltage between ground and indicated ECU terminal.

NEUTRAL/INHIBITOR SWITCH

Check sensor voltage values against values in NEUTRAL/INHIBITOR SWITCH TEST table. Replace sensor if values are not as specified. Also see appropriate NEUTRAL/INHIBITOR SWITCH, NEUTRAL SWITCH & A/T CONTROL or NEUTRAL/INHIBITOR SWITCH & RELAY diagnostic chart.

NEUTRAL/INHIBITOR SWITCH TEST TABLE (1)

Application	Terminal No.	Volts In Park/Neutral	Volts In All Other Positions
Axxess	35	0	Battery
240SX	35	0	6.0-7.0

(1) - Turn ignition on. With transmission in specified position, check voltage between ground and indicated ECU terminal.

POWER STEERING OIL PRESSURE SWITCH

Switch is attached to power steering high pressure hose. Signal is used by ECU to help control idle speed. Check voltage at appropriate ECU terminal with engine idling and steering wheel in straight ahead position. See appropriate J - PIN VOLTAGE CHARTS and L - WIRING DIAGRAMS articles to identify proper ECU terminal for testing. Voltage should be 7-9 volts. Turn steering wheel from side to side. With steering wheel being turned, voltage should be .1-.3 volt. See appropriate POWER STEERING OIL PRESSURE SWITCH diagnostic chart.

THROTTLE POSITION SENSOR (TPS) & IDLE SWITCH

Throttle position sensor and idle switch are a combined assembly located on side of throttle body. See D - ADJUSTMENTS article for adjustment procedures. Check sensor voltage values against values in THROTTLE POSITION SENSOR VOLTAGE TEST table. Replace sensor if values are not as specified in table.

THROTTLE POSITION SENSOR VOLTAGE TEST TABLE (1)

Application	Terminal No.	Volts
Axxess & 240SX	20	.4-4.0

(1) - Turn ignition on. Measure voltage between ground and indicated ECU terminal. Observe voltage while opening and closing throttle valve.

VEHICLE SPEED SENSOR

Remove vehicle speed sensor from transmission. Connect DVOM across sensor terminals. Turn vehicle speed sensor by hand and note voltage. Reading should be .5 volt (alternating current). Check sensor continuity against values in VEHICLE SPEED SENSOR TEST table. Replace sensor if values are not as specified in table.

VEHICLE SPEED SENSOR TEST TABLE (1)

Application	Terminal No.
Axxess & 240SX	32

(1) - Disconnect ECU connector. Check continuity between ground and indicated ECU terminal while turning drive wheels. Ohmmeter reading should fluctuate between continuity and no continuity.

RELAYS & SOLENOIDS

RELAYS

A variety of relays are used and can be tested 2 different ways. The following relays can be tested using a ohmmeter and remotely supplied power and ground circuits:

* Fuel pump relay
* Main relay
* Radiator (cooling) fan relay
* Mixture heater relay
* Neutral/park relay.

Safety relays can be tested using an ohmmeter, voltmeter and remotely supplied power and ground circuits. All testing procedures require proper identification of relay internals. See appropriate L - WIRING DIAGRAMS article.

EXCEPT SAFETY RELAY

Turn ignition on. Ensure power to relay exists. Turn ignition off. Disconnect connector from relay being tested. Using ohmmeter, check for relay winding continuity across appropriate relay terminals. See appropriate L - WIRING DIAGRAMS article to identify proper relay

terminals (wire colors) for testing. Energize relay and check continuity of relay output circuit.

* EXAMPLE: Typical Fuel Pump Relay

1) Turn ignition on. Ensure battery voltage exists at Blue wires of safety relay and fuel pump relay. See Fig. 1. If battery voltage is not present at both Blue wires, check for a blown 10-amp power fuse or an open circuit between fuse and relays.
2) Turn ignition off. Unplug fuel pump relay. Check for continuity across Blue wire and Blue/White wire terminals. If continuity does not exist, relay is defective. If continuity exists, connect ohmmeter leads across Orange wire and Black wire terminals. Energize relay by applying battery voltage to Blue wire terminal and ground to Blue/White wire terminal. Ensure continuity exists while relay is energized.

SAFETY RELAY

Turn ignition on and ensure power to relay exists. Turn ignition off. Disconnect safety relay connector. Using an ohmmeter, check one-way internal diode in safety relay by checking for continuity in both directions. Energize relay and check for voltage signal on relay output circuit.

* EXAMPLE: Typical Safety Relay

1) Turn ignition on. Using a voltmeter, check for battery voltage at Blue wire of safety relay. See Fig. 1. If voltage is not present, check for blown 10-amp fuse or open circuit between fuse and relay.
2) Turn ignition off. Disconnect safety relay connector. Using ohmmeter, check for continuity across relay's Black wire and Blue wire terminals. Reverse ohmmeter leads. Continuity should only exist in one direction. Connect voltmeter positive lead to Red/Blue wire terminal. Connect negative voltmeter lead to Black wire terminal. Apply battery voltage to Blue wire terminal and ground to Black wire terminal. Voltmeter should show battery voltage while relay is energized.

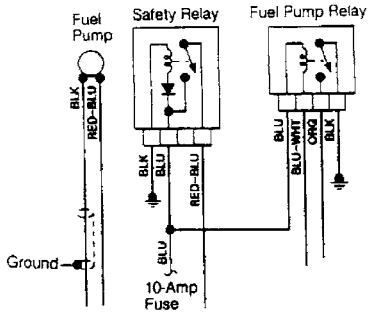


Fig. 1: Testing Typical Fuel Pump & Safety Relay
Courtesy of Nissan Motor Co., U.S.A.

SOLENOIDS

AIR INJECTION CONTROL VALVE SOLENOID

See AIR INJECTION under EMISSION SYSTEMS & SUB-SYSTEMS.

EGR/CANISTER CONTROL SOLENOID

See EXHAUST GAS RECIRCULATION (EGR) under EMISSION SYSTEMS & SUB-SYSTEMS in this article.

FAST IDLE CONTROL DEVICE (FICD) SOLENOID (240SX)

On 240SX, apply battery voltage to solenoid terminals. Solenoid should operate. Also check solenoid plunger for sticking and check for broken spring. Also see appropriate FAST IDLE CONTROL DEVICE (FICD) diagnostic chart.

FUEL PRESSURE REGULATOR SOLENOID

See appropriate FUEL PRESSURE REGULATOR SOLENOID diagnostic chart. Also see FUEL DELIVERY SYSTEM under FUEL SYSTEM in this article.

POWER VALVE CONTROL SOLENOID

See POWER VALVE SYSTEM under AIR INDUCTION SYSTEMS in this article.

SWIRL CONTROL VALVE SOLENOID

See SWIRL CONTROL VALVE SYSTEM under AIR INDUCTION SYSTEMS in this article. Also see appropriate SWIRL CONTROL VALVE diagnostic chart.

FUEL SYSTEM

FUEL PRESSURE

For fuel pressure procedures and specifications, see FUEL PRESSURE under FUEL SYSTEM in F - BASIC TESTING article.

FUEL PRESSURE REGULATOR

Relieve fuel pressure from system. Connect fuel pressure gauge between fuel filter and fuel tube. Remove hose from fuel pressure regulator and plug intake manifold. Connect hand-held vacuum pump to pressure regulator. Turn engine on and gradually apply vacuum to regulator. Fuel pressure should decrease as vacuum increases. Compare fuel pressures to regulated pressure values listed in FUEL PRESSURE table in F - BASIC TESTING article. If pressures are not as specified, replace fuel pressure regulator.

FUEL PRESSURE REGULATOR SOLENOID

See appropriate FUEL PRESSURE REGULATOR SOLENOID diagnostic chart. Remove vacuum lines and electrical connector from solenoid. Remove solenoid from vehicle. Connect hand-held vacuum pump to middle vacuum port of solenoid. Apply battery voltage to solenoid. Ensure correct polarity is used or damage to solenoid may result. Apply vacuum. As battery voltage is applied and removed from solenoid,

vacuum should alternately bleed from remaining 2 ports. Solenoid resistance should be 30-40 ohms.

FUEL PUMP

If fuel pump does not run, disconnect fuel pump connector. Provide ground and battery voltage to fuel pump connector terminals. See appropriate L - WIRING DIAGRAMS article to identify fuel pump connector terminals (wire colors). If pump runs, see RELAYS under RELAYS & SOLENOIDS for testing, or repair open or short in harness between relay and pump. If pump does not run, replace fuel pump. Also see appropriate FUEL PUMP diagnostic chart.

FUEL PUMP RELAY

See RELAYS under RELAYS & SOLENOIDS.

START SIGNAL

Start (ON-OFF switch) signal is used for ECU control of fuel pump and pressure regulator control solenoid. See appropriate START SIGNAL diagnostic chart.

FUEL CONTROL SYSTEM

FEEDBACK SYSTEM

1) Start engine and warm to operating temperature. Ensure idle speed and timing are adjusted to specification. Monitor Green LED on ECU while increasing engine speed to about 2000 RPM for 2 minutes under no-load condition.
2) Note the number of flashes by Green LED every 10 seconds. See ECU GREEN LED FEEDBACK RESPONSE table. Number of flashes during a 10-second period should at least equal number of flashes listed in table.
3) Race engine 2 or 3 times and allow to idle. Enter self-diagnostic Mode II. Disconnect throttle sensor/switch harness connector. Monitor Red LED and Green LED while idling. Red LED and Green LED should flash simultaneously. If not, adjust airflow meter (if adjustable). See D - ADJUSTMENTS article.
4) If airflow meter adjustment does not affect the LEDs, and ECU self-diagnostic system only flashes Code 55 (pass), either airflow meter, oxygen sensor or ECU is defective.

ECU GREEN LED FEEDBACK RESPONSE TABLE

Application	(1) Flashes (@ 2000 RPM)
Axxess & 240SX	5

(1) - Number of flashes in 10-second period.

FUEL INJECTOR

See appropriate INJECTOR MALFUNCTION diagnostic chart. Use DIAGNOSTIC CHARTS DIRECTORY table at beginning of this article to locate chart.

START SIGNAL

Start (ON-OFF switch) signal is used for ECU control of injector(s). See appropriate START SIGNAL diagnostic chart.

INJECTOR RESISTANCE SPECIFICATIONS TABLE

Application	Ohms
Axxess	10-14
240SX	10-15

IDLE CONTROL SYSTEM

AIR REGULATOR

See appropriate AIR REGULATOR diagnostic chart. Measure resistance across regulator valve terminals. Resistance should be about 70-80 ohms.

AUXILIARY AIR CONTROL (AAC) SOLENOID/VALVE

See appropriate AUXILIARY AIR CONTROL (AAC) diagnostic chart. Disconnect AAC Solenoid and check resistance across solenoid terminals. The resistance should be 10 ohms at 68°F (20°C).

FAST IDLE CONTROL DEVICE (FICD)

See appropriate FAST IDLE CONTROL DEVICE (FICD) diagnostic chart.

FAST IDLE CONTROL (WITH A/C) (AXXESS)

See FAST IDLE CONTROL (WITH A/C) diagnostic chart.

START SIGNAL

Start (ON-OFF switch) signal is used for ECU control of air regulator. See appropriate START SIGNAL diagnostic chart.

IGNITION SYSTEM

For ignition system testing, see F - BASIC TESTING article.

START SIGNAL

Start (ON-OFF switch) signal is used for ECU control of ignition system. See appropriate START SIGNAL diagnostic chart.

TIMING CONTROL SYSTEMS

TIMING ADVANCE SYSTEM

Ignition timing advance is controlled by the ECU based upon sensor input signals reflecting ignition timing needs. If timing problems are experienced, inspect input signals for proper operation. See appropriate component or ECU PIN VOLTAGE CHARTS in J - PIN VOLTAGE CHARTS article. Inputs which help control timing include the following:

* Crank angle sensor
* Airflow meter
* Engine (coolant) temperature
* Idle switch in idle position
* Ignition switch crank signal
* Battery voltage.

EMISSION SYSTEMS & SUB-SYSTEMS

AIR INJECTION CONTROL VALVE SOLENOID

Remove vacuum lines and electrical connector from solenoid. Remove solenoid from vehicle. Connect hand-held vacuum pump to middle vacuum port of solenoid. Apply battery voltage to solenoid. See Fig. 2. Ensure correct polarity is used or damage to solenoid may result. Apply vacuum. As battery voltage is applied and removed from solenoid, vacuum should alternately bleed from remaining 2 ports.

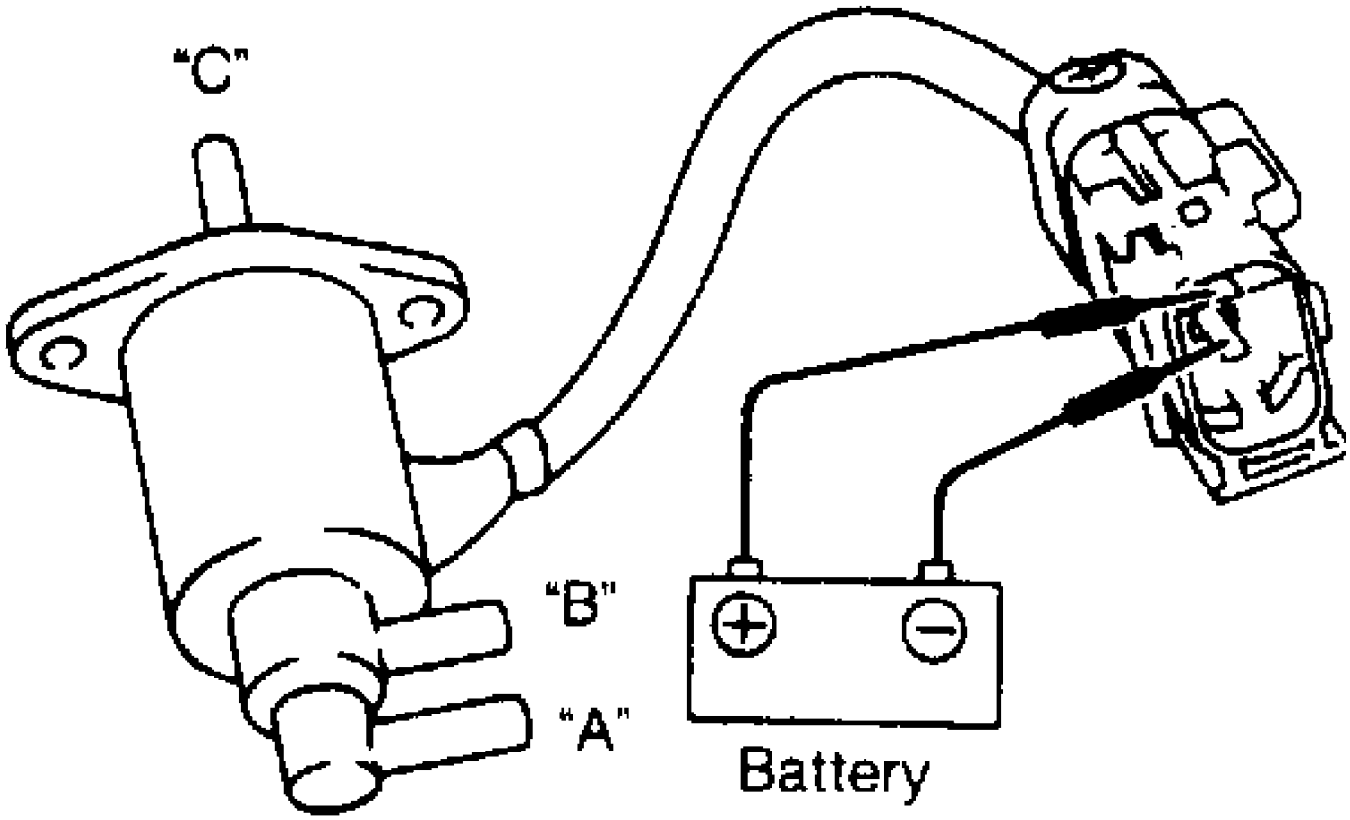


Fig. 2: Typical Air Injection Control Solenoid
Courtesy of Nissan Motor Co., U.S.A.

CANISTER PURGE SYSTEM

FUEL TANK VACUUM RELIEF VALVE

Wipe valve housing clean. Find means to inhale air through cap. A slight resistance accompanied by clicks indicates vacuum relief valve is okay. By further inhaling air, resistance and clicks should disappear. If valve is clogged or if no resistance is felt, replace fuel tank filler cap.

FUEL VAPOR VENT LINE

1) Check all hoses and fuel filler cap for leaks. Disconnect fuel tank vapor hose at canister. Attach "T" fitting, manometer, and shutoff valve to hose. See Fig. 3.

2) Slowly apply air pressure to open shutoff valve until manometer indicates 15 3/4" (400 mm) water. Close shutoff valve. Remove air supply.

3) Fuel tank and hoses should hold this pressure within 1" (25 mm) of water for 2 1/2 minutes. If not, repair or replace components as necessary.

4) If pressure holds for 2 1/2 minutes, remove fuel filler cap. Ensure pressure drops. If not, check hoses and lines for obstructions.

CARBON CANISTER

Remove hose from valve port. Blow through hose. Air should pass through purge and vent lines, but should not pass through vacuum lines. See Fig. 4.

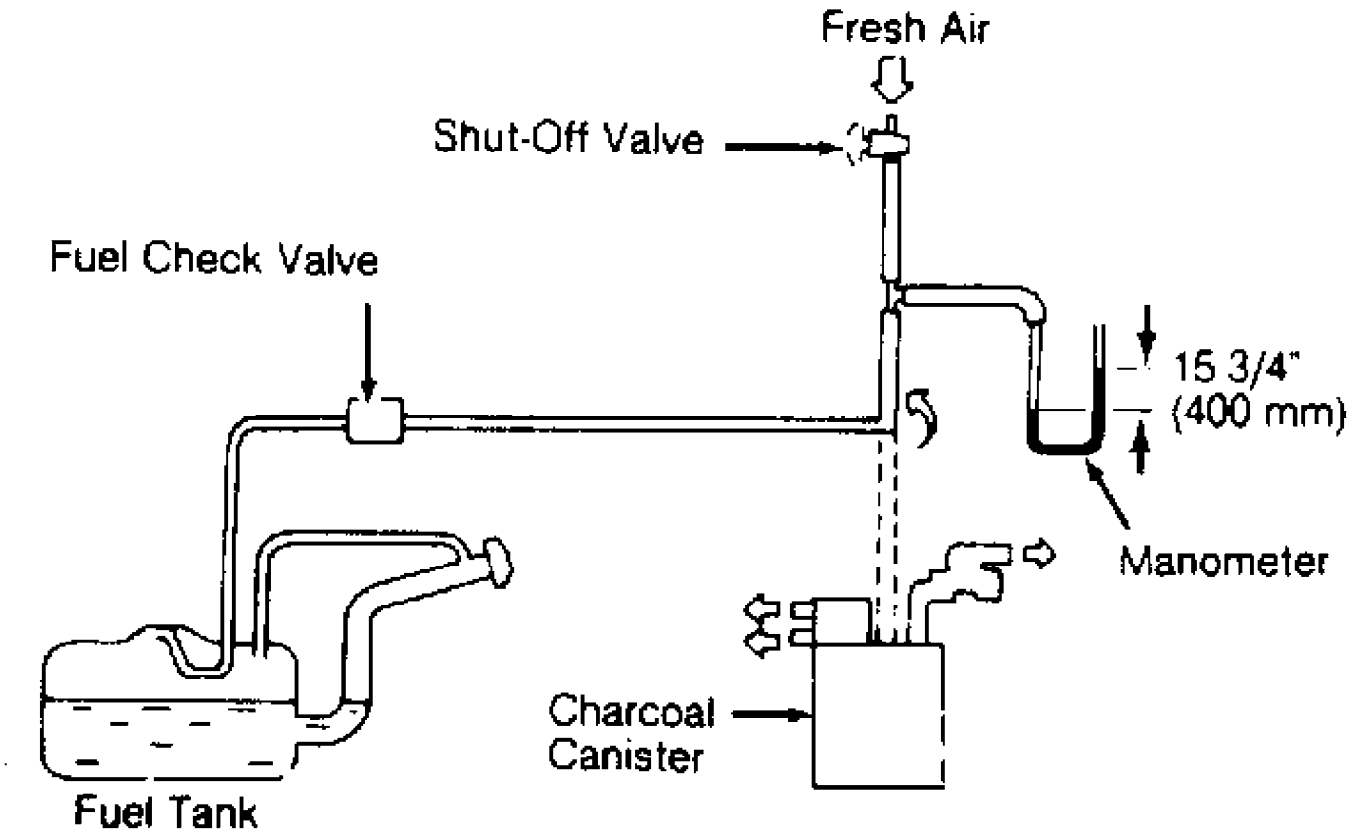


Fig. 3: Testing Fuel Vapor Vent Line
Courtesy of Nissan Motor Co., U.S.A.

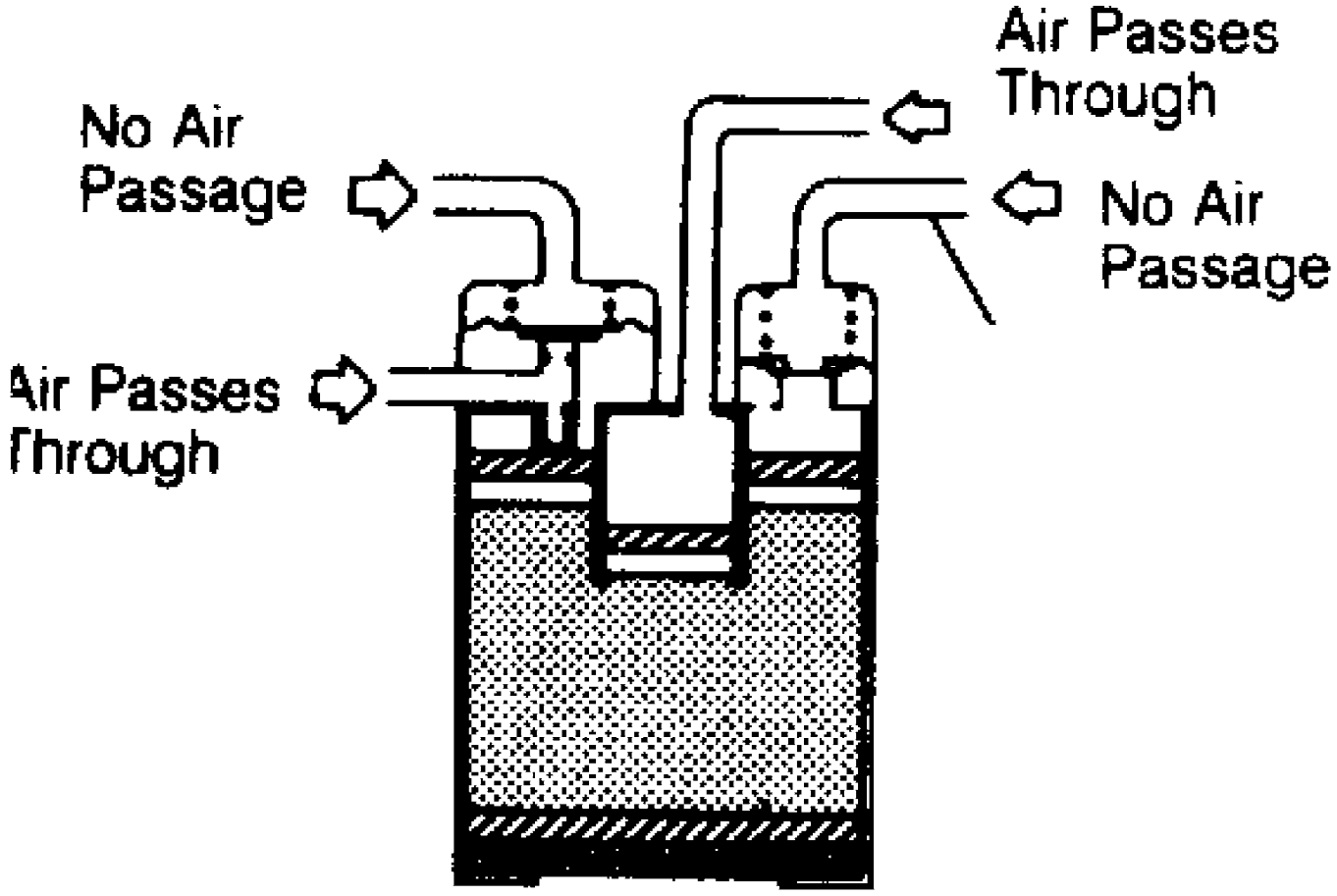


Fig. 4: Testing Canister Purge
Courtesy of Nissan Motor Co., U.S.A.

FUEL CHECK VALVE

Disconnect hoses from fuel check valve. Apply air on fuel tank side of valve. Resistance should be felt and a portion of air flow should be directed toward carbon canister. Repeat test on carbon canister side of valve. Air should flow freely through valve. If valve does not function as stated, replace check valve.

VACUUM RELIEF FILLER CAP

Wipe cap clean. Apply vacuum from tank side. Slight resistance should be felt and the cap should make distinct clicking noises. As vacuum increases, resistance should decrease and clicking noise should stop. If valve is plugged or no resistance is felt, replace cap as an assembly.

EXHAUST GAS RECIRCULATION (EGR)

EGR CONTROL SYSTEM

See appropriate EGR CONTROL and EGR FUNCTION diagnostic charts.

EGR BACKPRESSURE TRANSDUCER (240SX)

Plug one port of the EGR backpressure transducer (EGR-BPT). See Figs. 5 and 6. Connect hand-held vacuum pump to remaining EGR vacuum port. Apply vacuum and check for leaks. If leak is present, replace BPT valve.

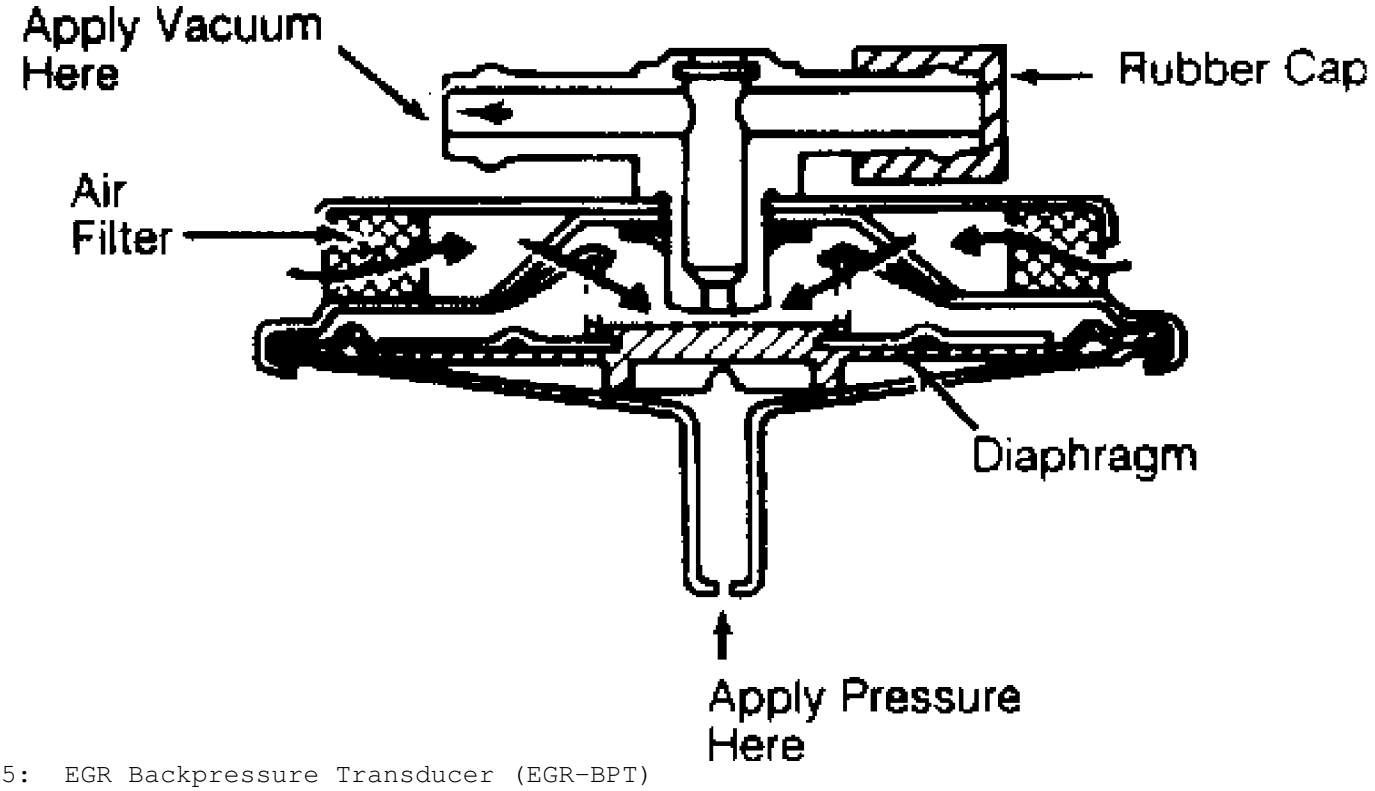


Fig. 5: EGR Backpressure Transducer (EGR-BPT)
Courtesy of Nissan Motor Co., U.S.A.

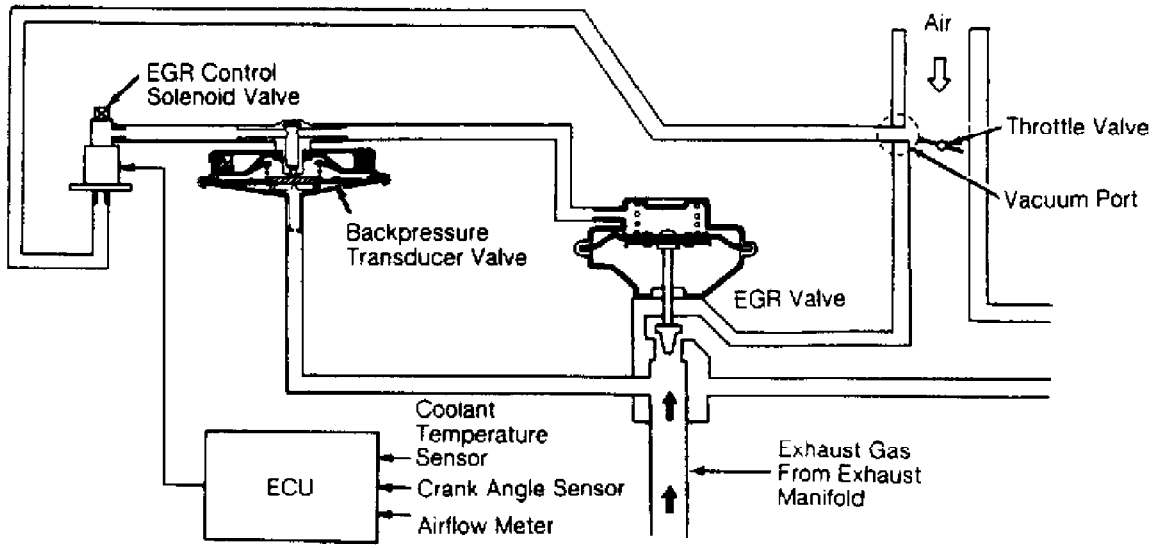


Fig. 6: Typical EGR System
Courtesy of Nissan Motor Co., U.S.A.

EGR VALVE SOLENOID (3-PORT)

Remove vacuum lines and electrical connector from solenoid. Remove solenoid from vehicle. Connect hand-held vacuum pump to middle vacuum port of solenoid. Apply battery voltage to solenoid. Ensure correct polarity is used or damage to solenoid may result. Apply vacuum. As battery voltage is applied and removed from solenoid, vacuum should alternately bleed from remaining 2 ports (includes bleed filter). Solenoid resistance should be 30-40 ohms.

START SIGNAL

Start (ON-OFF switch) signal is used for ECU control of EGR solenoid. See appropriate START SIGNAL diagnostic chart.

POSITIVE CRANKCASE VENTILATION (PCV)

Run engine at idle. Remove ventilation hose from PCV valve. If valve is working properly, a hissing noise should be heard from hose and a strong vacuum should be felt immediately when finger is placed over valve inlet. If not, check hose and hose connections for leaks or obstructions. Repair or replace as necessary.

MISCELLANEOUS CONTROLS

NOTE: Although some of the controlled devices listed here are not technically engine performance components, they can affect driveability if they malfunction.

RADIATOR (COOLING) FAN MOTOR (AXXESS)

The ECU performs on-off control and low/high speed control of the radiator (cooling) fan according to vehicle speed, engine temperature, and A/C on signal. Axxess models use 2 or more relays.

RADIATOR (COOLING) FAN CONTROL RELAY(S)

See RELAYS under RELAYS & SOLENOIDS. Also see appropriate table under RADIATOR COOLING FAN CONTROL RELAY OPERATION for relay(s) operation.

RADIATOR (COOLING) FAN CONTROL RELAY OPERATION

A/C SWITCH OFF TABLE (AXXESS)

Engine Coolant Temp. °F (°C)	Cooling Fan Speed (1)	Relay No. (Off or On)
Less Than 201 (94)	Off	1 & 2 (Off)
203-210 (95-99)	Low	1 (On), 2 (Off)
Greater Than 212 (100)	High	1 & 2 (On)

(1) - The radiator (cooling) fan operates on high speed if the engine temperature sensor is no good.

A/C SWITCH & BLOWER SWITCH ON TABLE (AXXESS)

Engine Coolant Temp. °F (°C)	Cooling Fan Speed (1)	Relay No. (Off or On)
Evaporator Outlet Temp. Between 37-46°F (3-8°C)		

```
   Less Than 201 (94)  .......  (2) Low  .............  1 (On), 2(Off)
   Between 203-210 (95-99)  ....  Low  .............  1 (On), 2 (Off)
   Greater Than 212 (100)  .....  High  ..................  1 & 2 (On)

Evaporator Outlet Temp.
  Greater Than 46°F (8°C)
   Less Than 201 (94)  .......  (2) High  ..............  1 & 2 (On)
   Between 203-210 (95-99)  ..  (3) High  ..............  1 & 2 (On)
   Greater Than 212 (100)  .....  High  ..................  1 & 2 (On)
```

(1) - The radiator (cooling) fan operates on high speed if the engine temperature sensor is no good.
(2) - The radiator (cooling) fan should be off when vehicle speed is greater than 50 MPH.
(3) - The radiator (cooling) fan should be on low speed when vehicle speed is greater than 50 MPH.

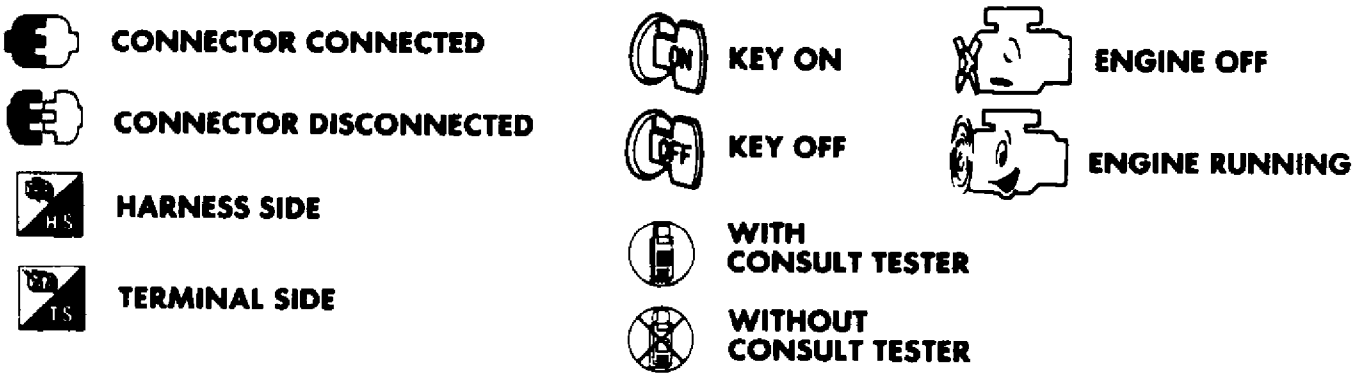


Fig. 7: Identifying Diagnostic Chart Symbols
Courtesy of Nissan Motor Co., U.S.A.

DIAGNOSTIC CHARTS

NOTE: To identify ECU terminals, see appropriate L - WIRING DIAGRAMS article.

AIR INJECTION VALVE CHART

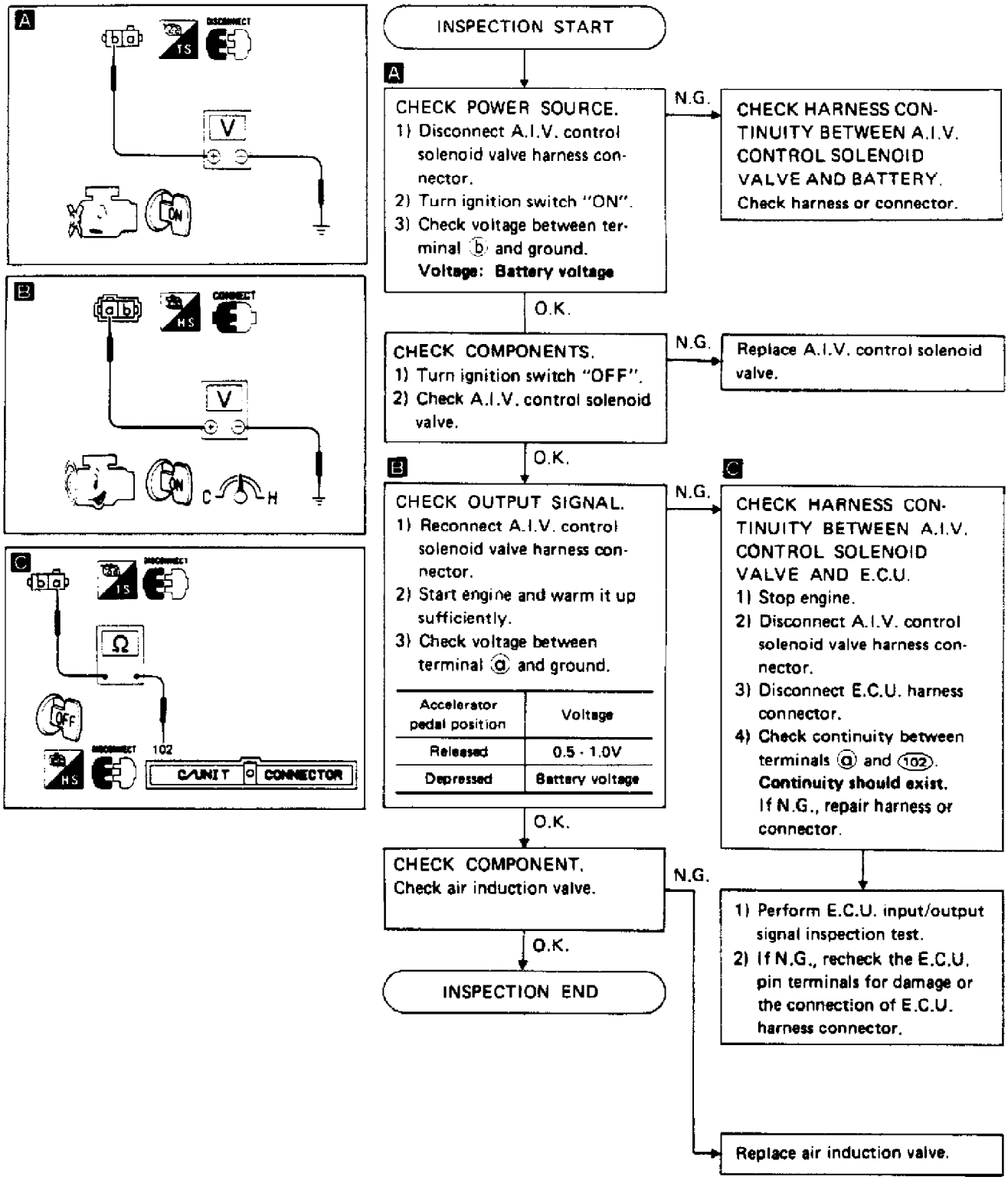


Fig. 8: Air Injection Valve Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

AIR REGULATOR CHART (240SX)

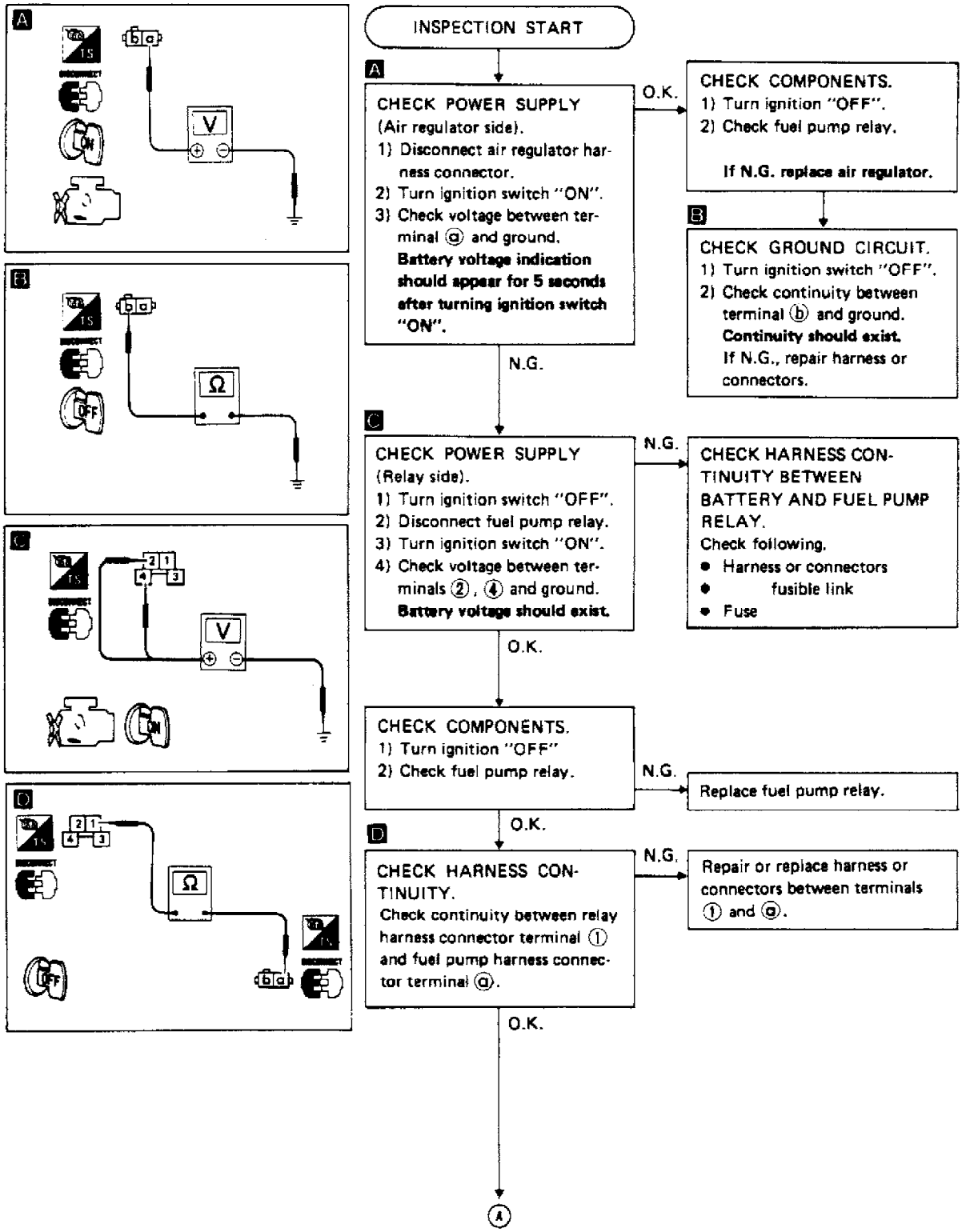


Fig. 9: 240SX Air Regulator Diagnostic Chart (1 of 2)
Courtesy of Nissan Motor Co., U.S.A.

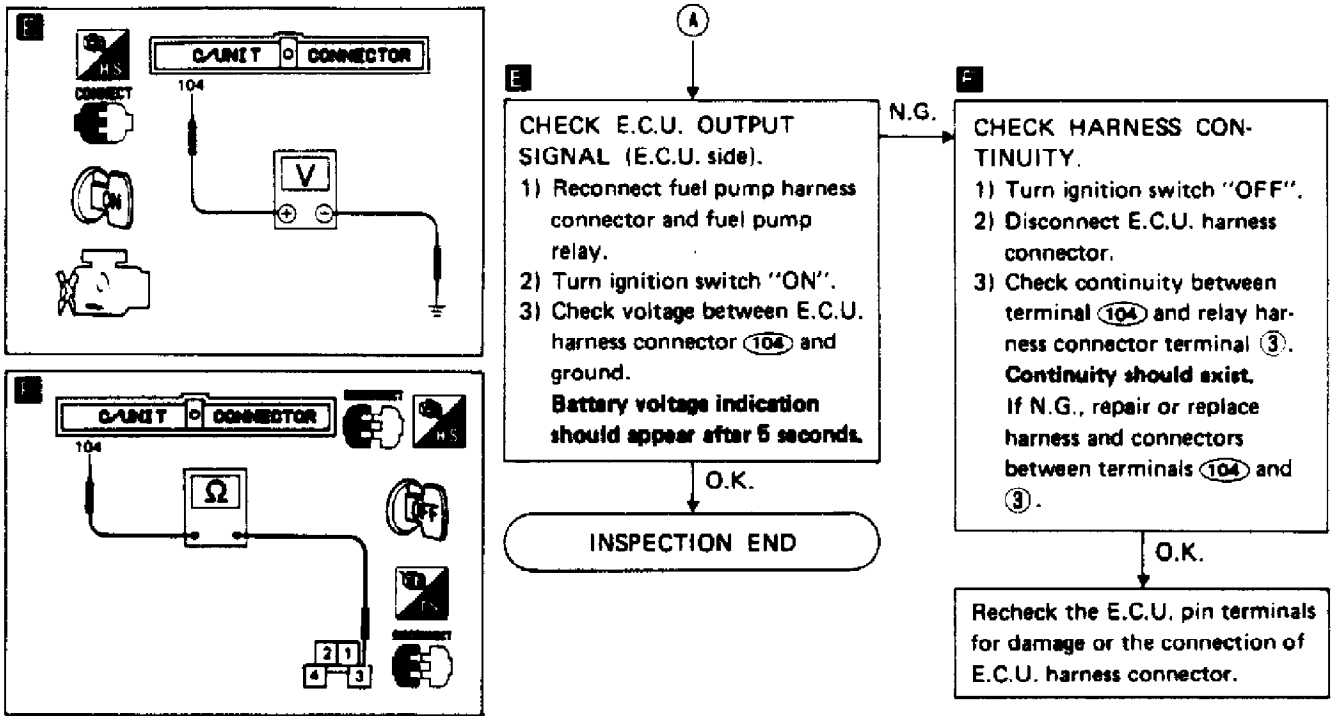


Fig. 10: 240SX Air Regulator Diagnostic Chart (2 of 2)
Courtesy of Nissan Motor Co., U.S.A.

AUXILIARY AIR CONTROL CHART

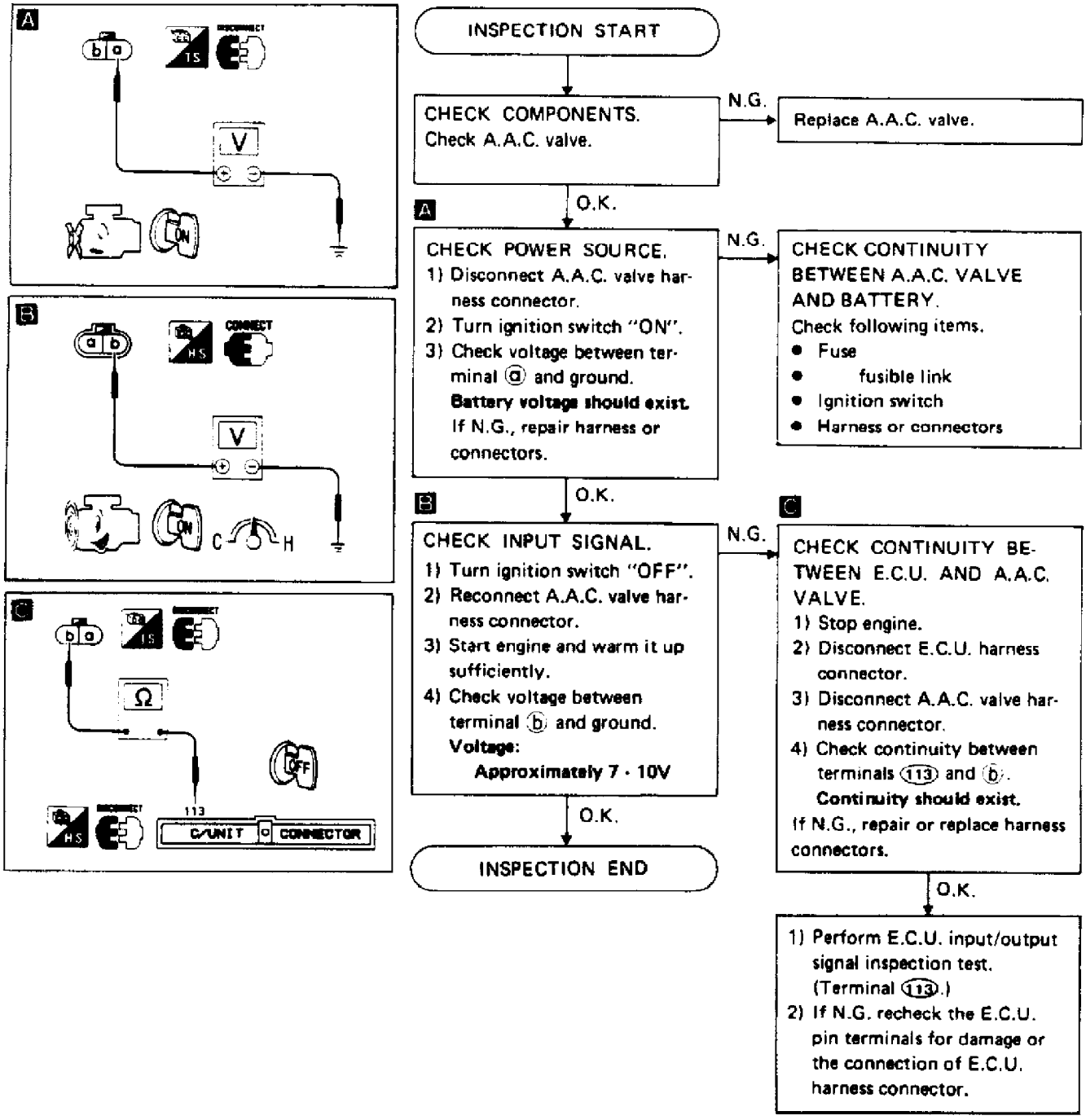


Fig. 11: Auxiliary Air Control (AAC) Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

EGR FUNCTION CHART

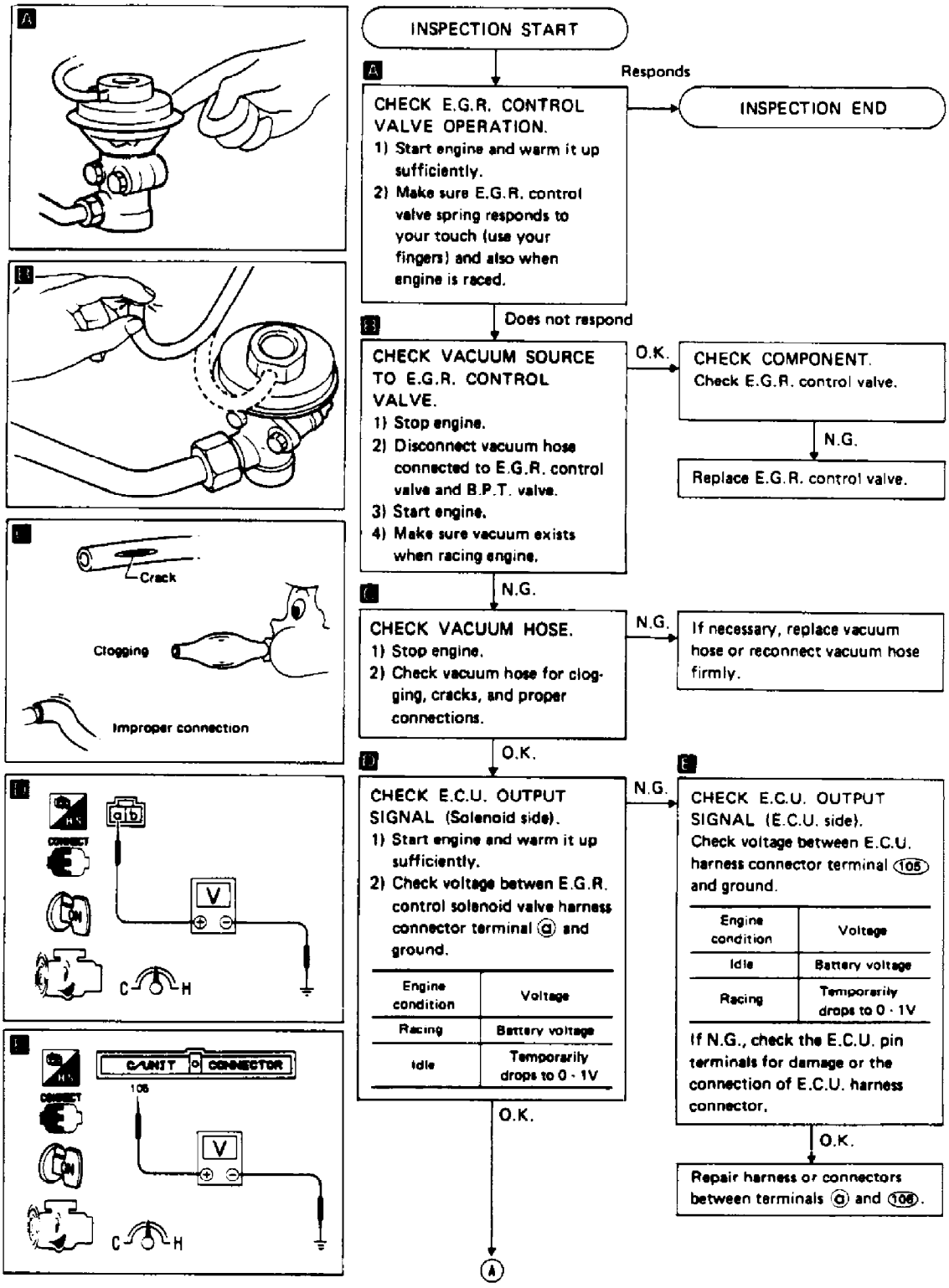


Fig. 12: EGR Function Diagnostic Chart (1 of 2)
Courtesy of Nissan Motor Co., U.S.A.

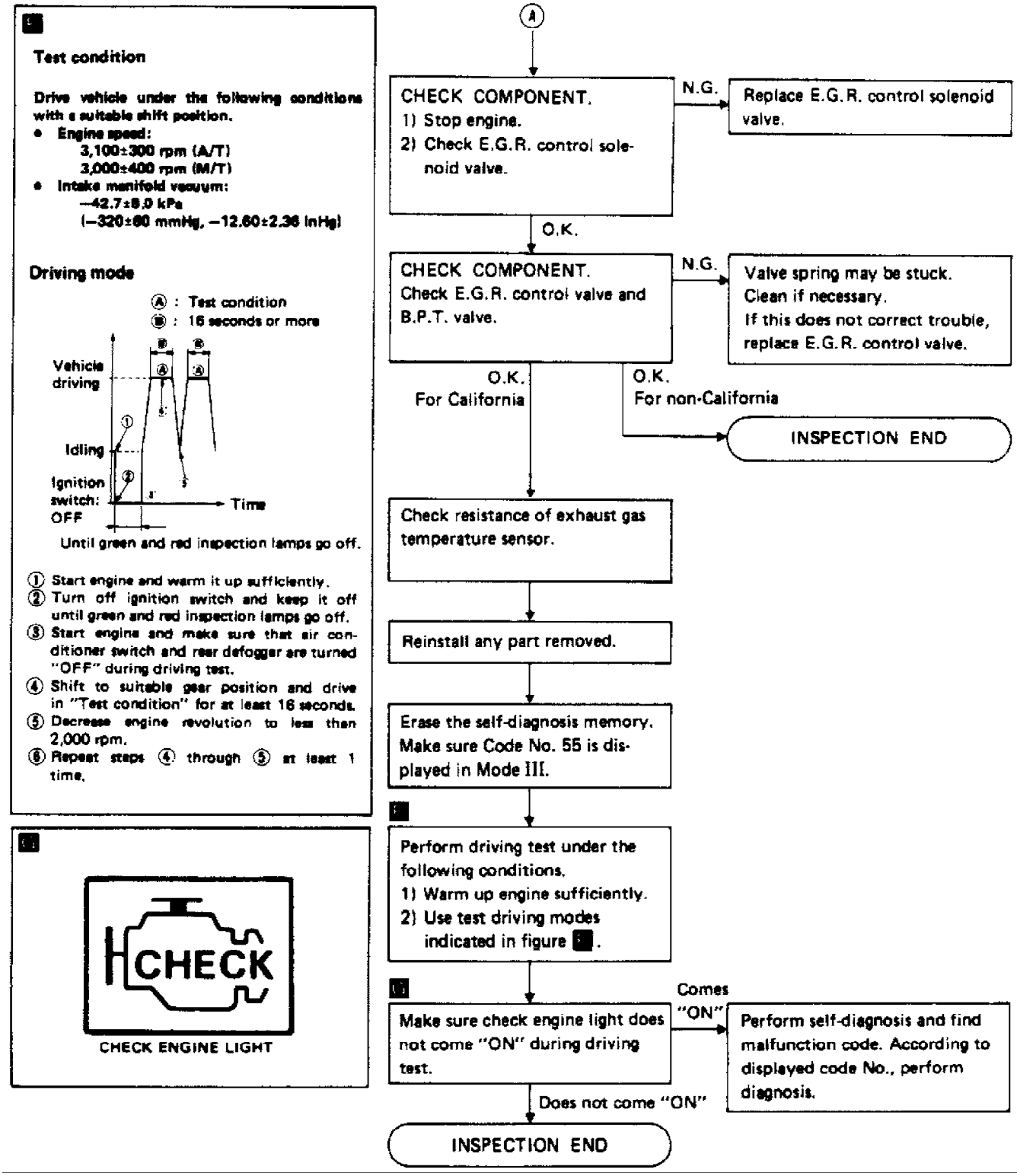


Fig. 13: EGR Function Diagnostic Chart (2 of 2)
Courtesy of Nissan Motor Co., U.S.A.

FAST IDLE CONTROL (WITH A/C) CHART (AXXESS)

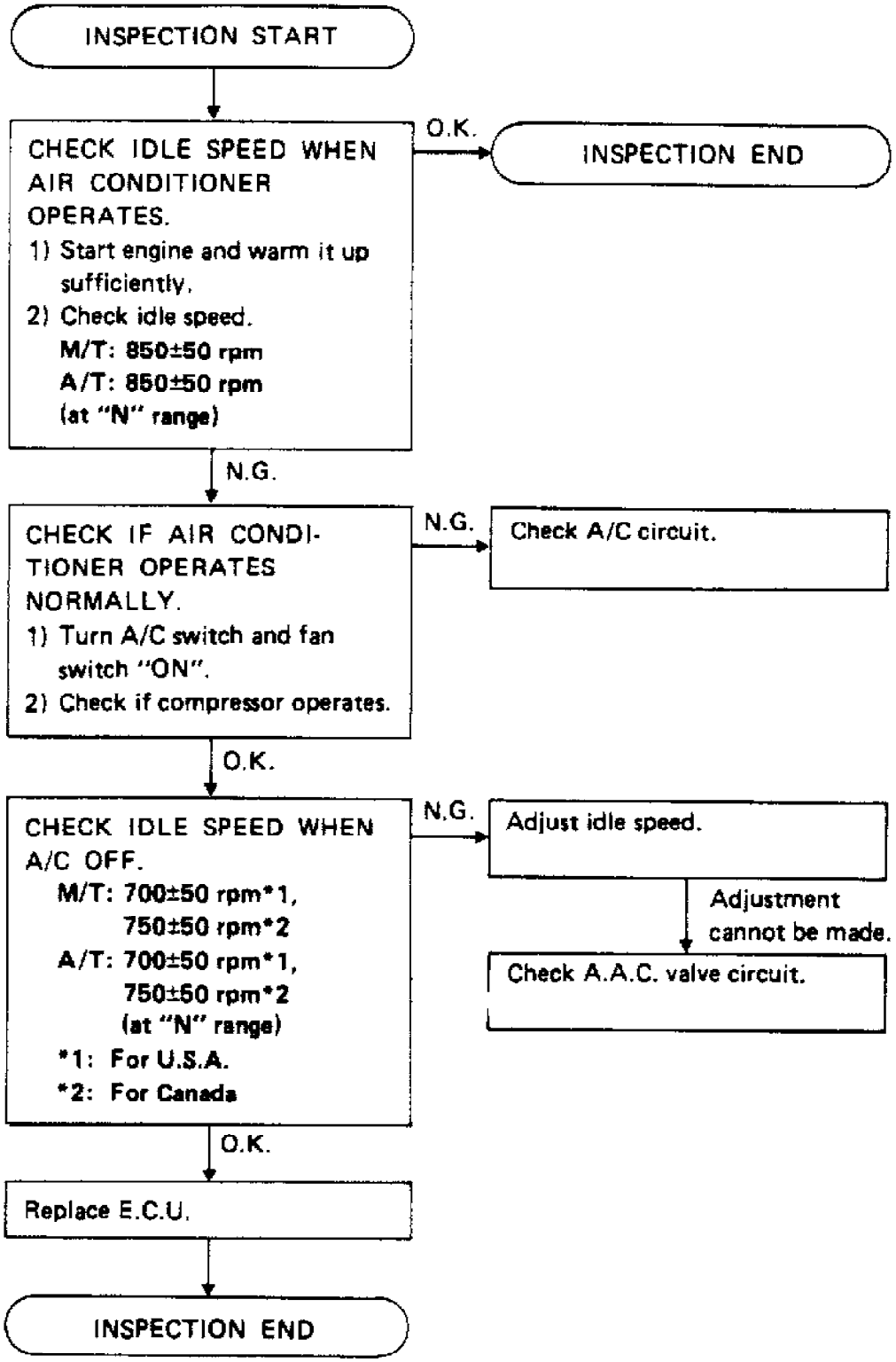


Fig. 14: Fast Idle Control (With A/C) Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

FAST IDLE CONTROL DEVICE (FICD) CHART (240SX)

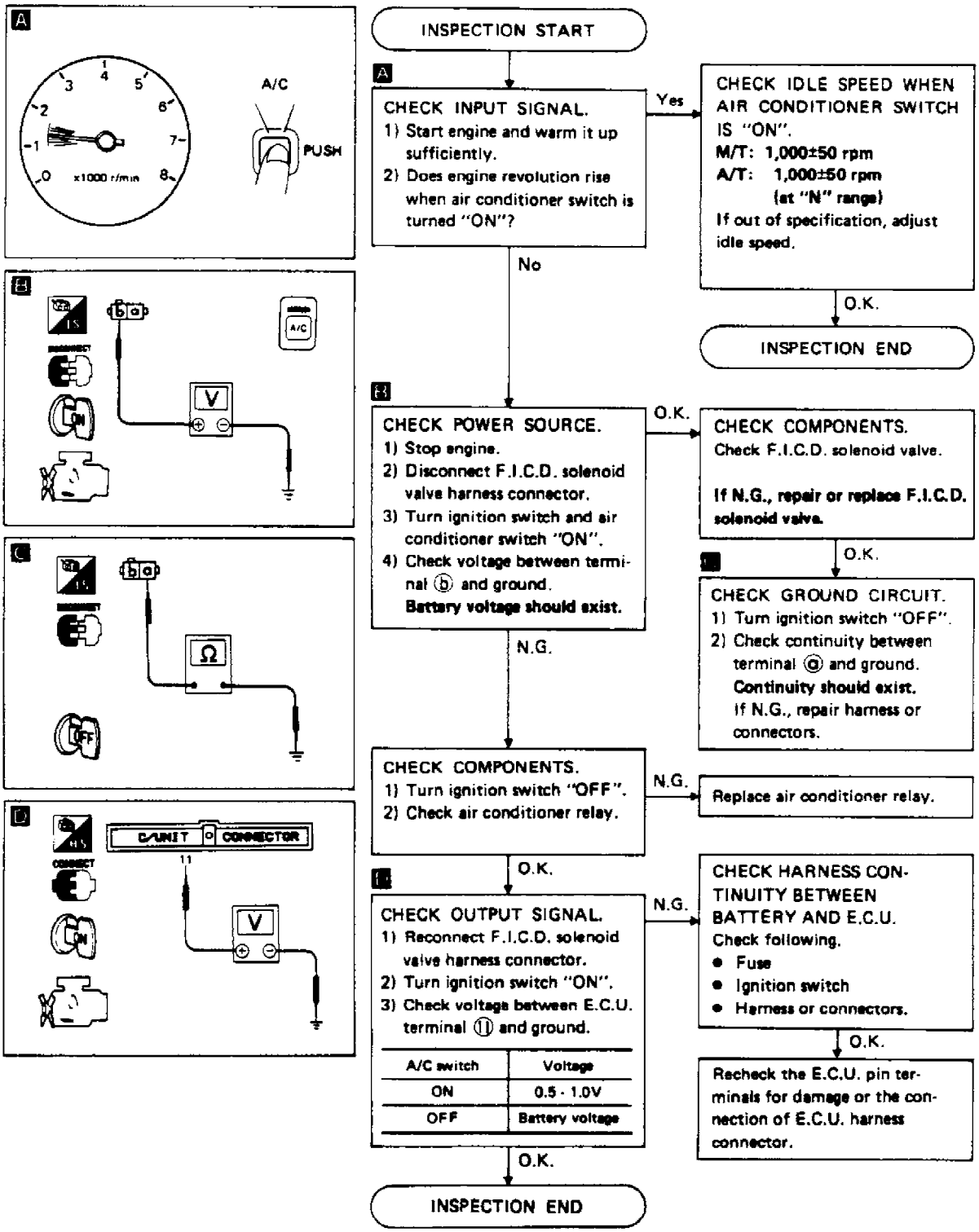
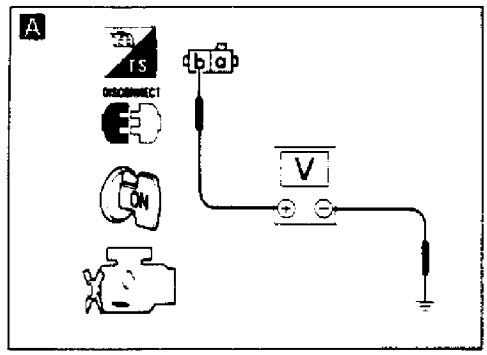
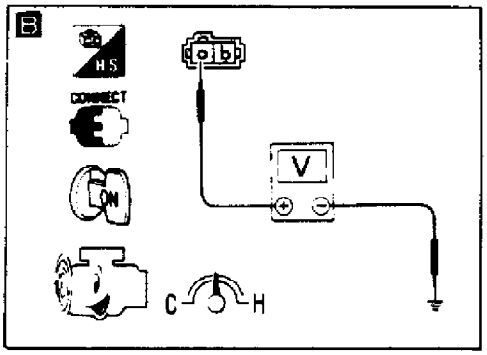
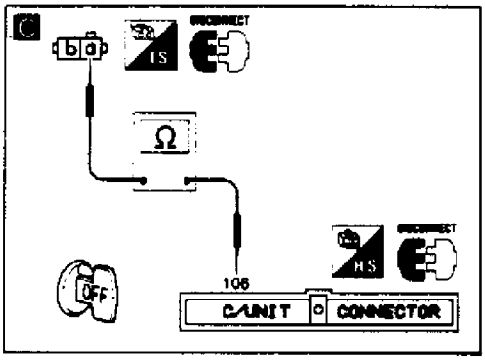


Fig. 15: Fast Idle Control Device (FICD) Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

FUEL PRESSURE REGULATOR SOLENOID CHART







INSPECTION START

A

CHECK POWER SOURCE.
1) Disconnect P.R. control solenoid valve harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal ⓑ and ground.
Battery voltage should exist.

N.G. → CHECK CONTINUITY BETWEEN P.R. CONTROL SOLENOID VALVE AND BATTERY.
Check following items.
- Fuse
- Ignition switch
- Harness or connectors

O.K. ↓

CHECK COMPONENTS.
1) Turn ignition switch "OFF".
2) Check P.R. control solenoid valve.

N.G. → Replace P.R. control solenoid valve.

O.K. ↓

B

CHECK OUTPUT SIGNAL.
1) Reconnect P.R. control solenoid valve harness connector.
2) Start engine and warm it up sufficiently [until more than 90°C (194°F) of coolant temperature].
3) Turn ignition switch "OFF" and then start engine again.
4) Check voltage between terminals ⓐ and ground.
Voltage:
0.5 - 1.0V (for 3 minutes after starting)

N.G. → **C**

CHECK HARNESS CONTINUITY BETWEEN P.R. CONTROL SOLENOID VALVE AND E.C.U.
1) Stop engine.
2) Disconnect P.R. control solenoid valve harness connector.
3) Disconnect E.C.U. harness connector.
4) Check continuity between terminals ⓐ and (106).
Continuity should exist.
If N.G., repair harness or connector.

O.K. ↓

INSPECTION END

O.K. ↓

1) Perform E.C.U. input/output signal inspection test.
2) If N.G., recheck the E.C.U. pin terminal (106) for damage or the connection of E.C.U. harness connector.

Fig. 16: Fuel Pressure Regulator Solenoid Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

FUEL PUMP CHART (AXXESS)

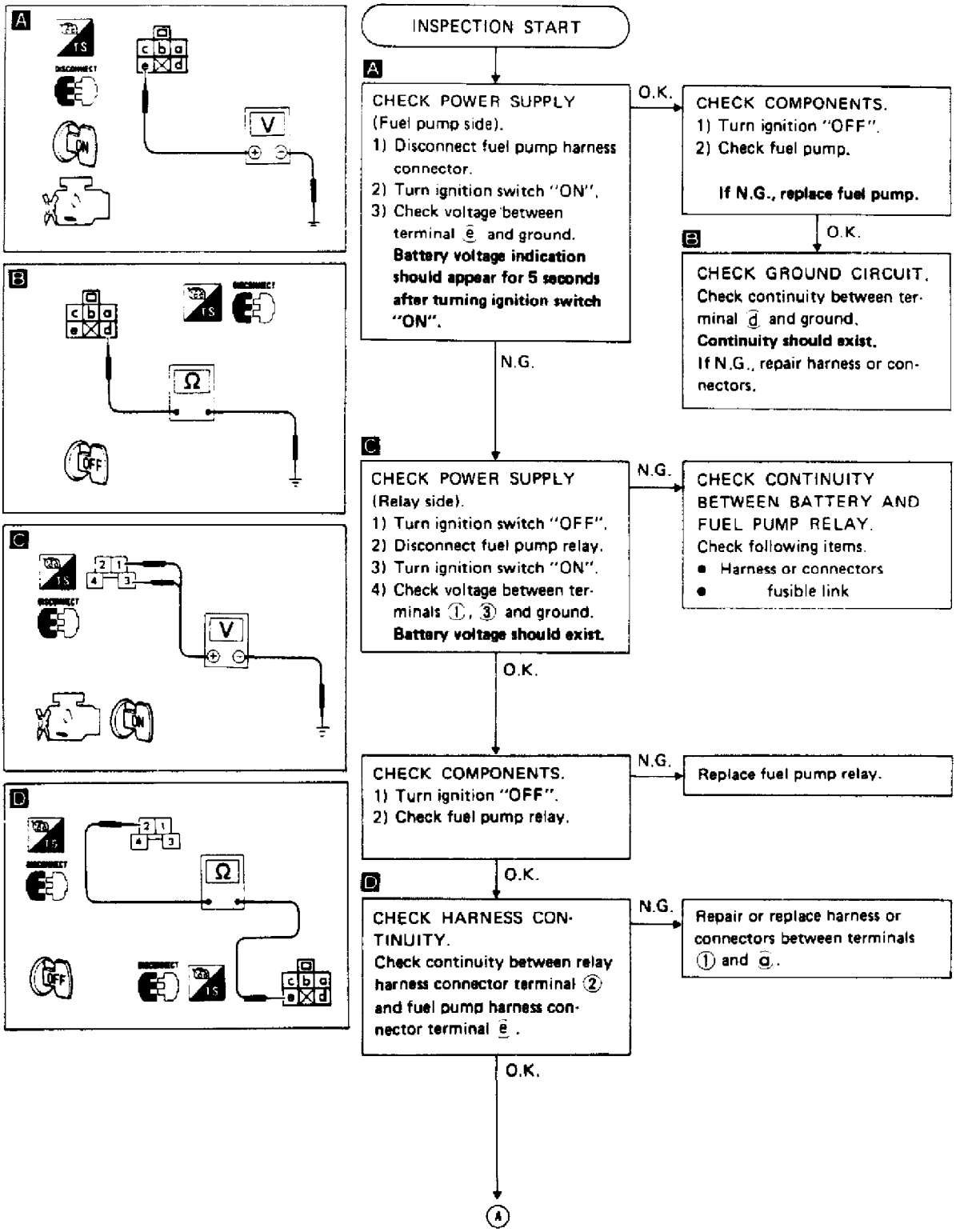


Fig. 17: Fuel Pump Diagnostic Chart (1 of 2)
Courtesy of Nissan Motor Co., U.S.A.

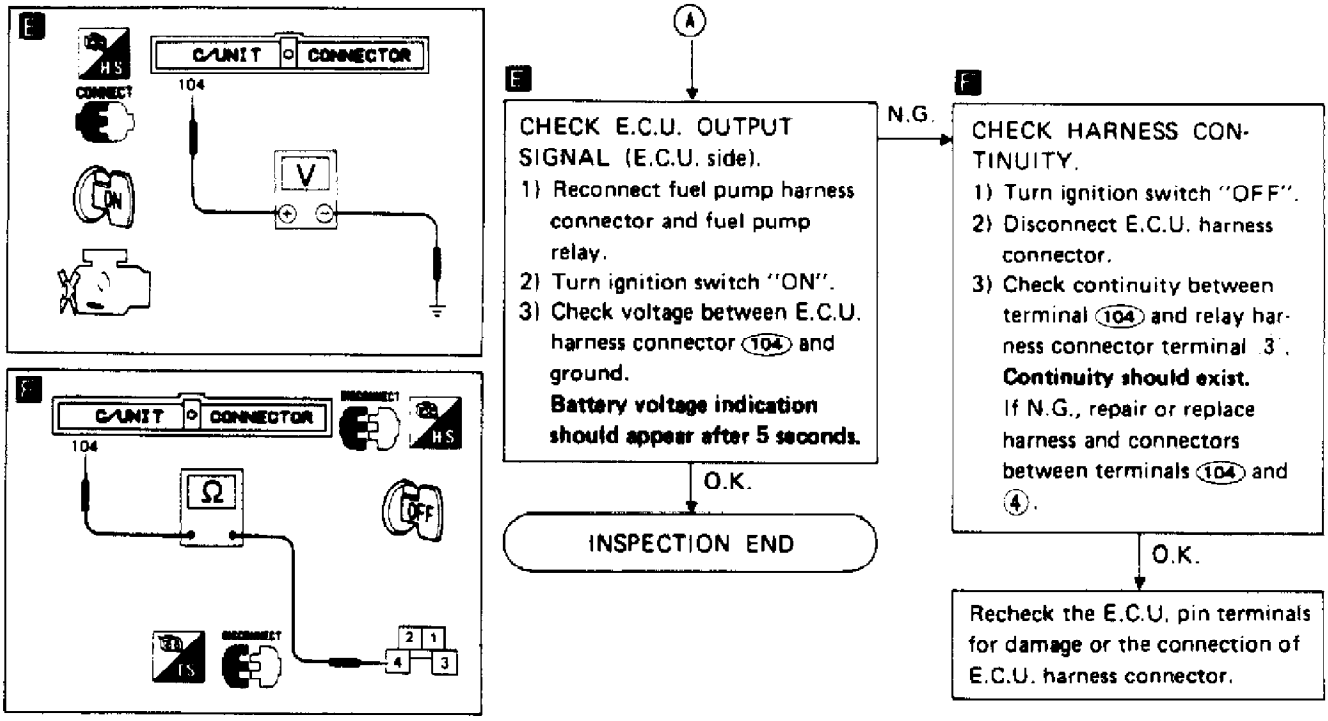


Fig. 18: Fuel Pump Diagnostic Chart (2 of 2))
Courtesy of Nissan Motor Co., U.S.A.

FUEL PUMP CHART (240SX)

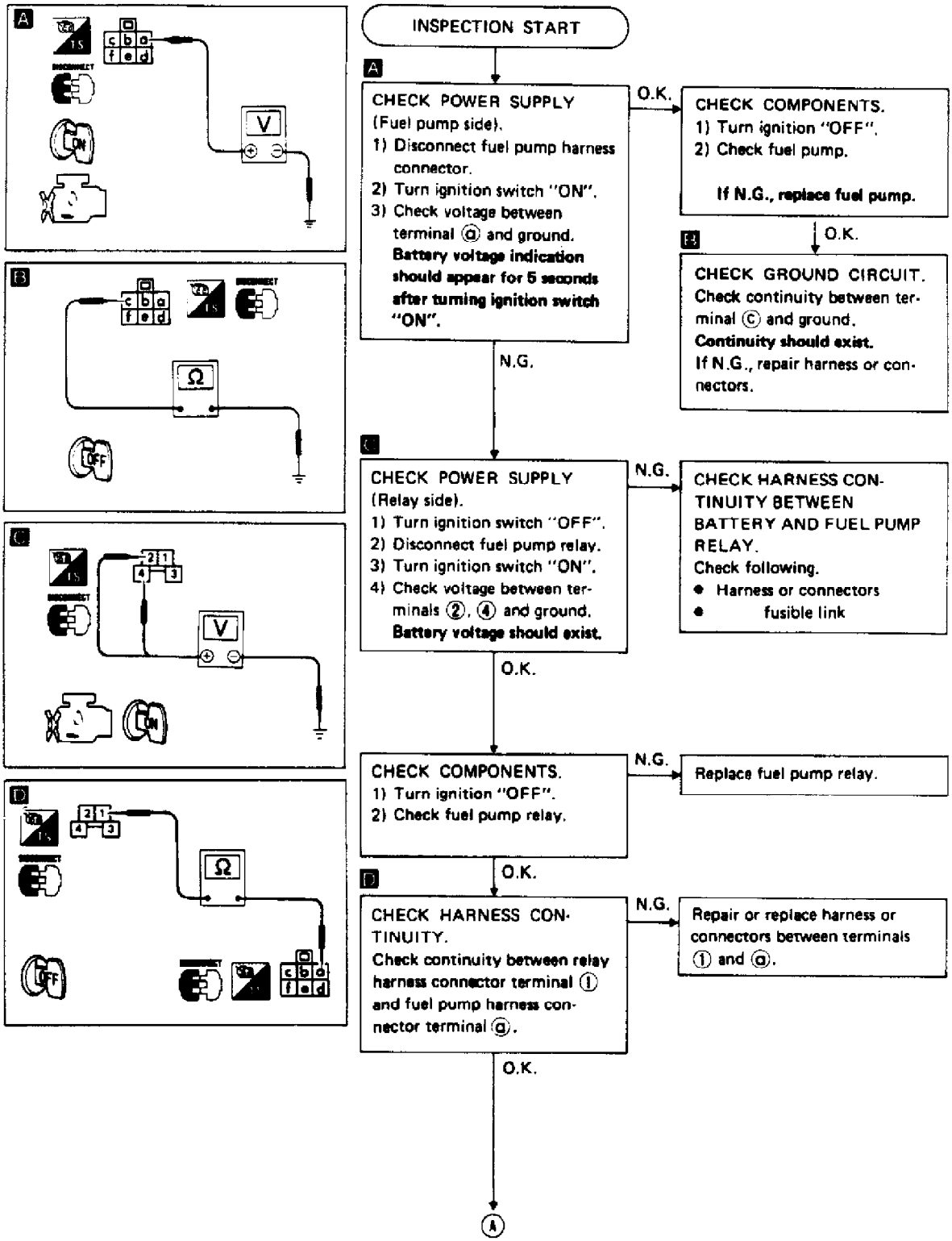


Fig. 19: Fuel Pump Diagnostic Chart (1 of 2)
Courtesy of Nissan Motor Co., U.S.A.

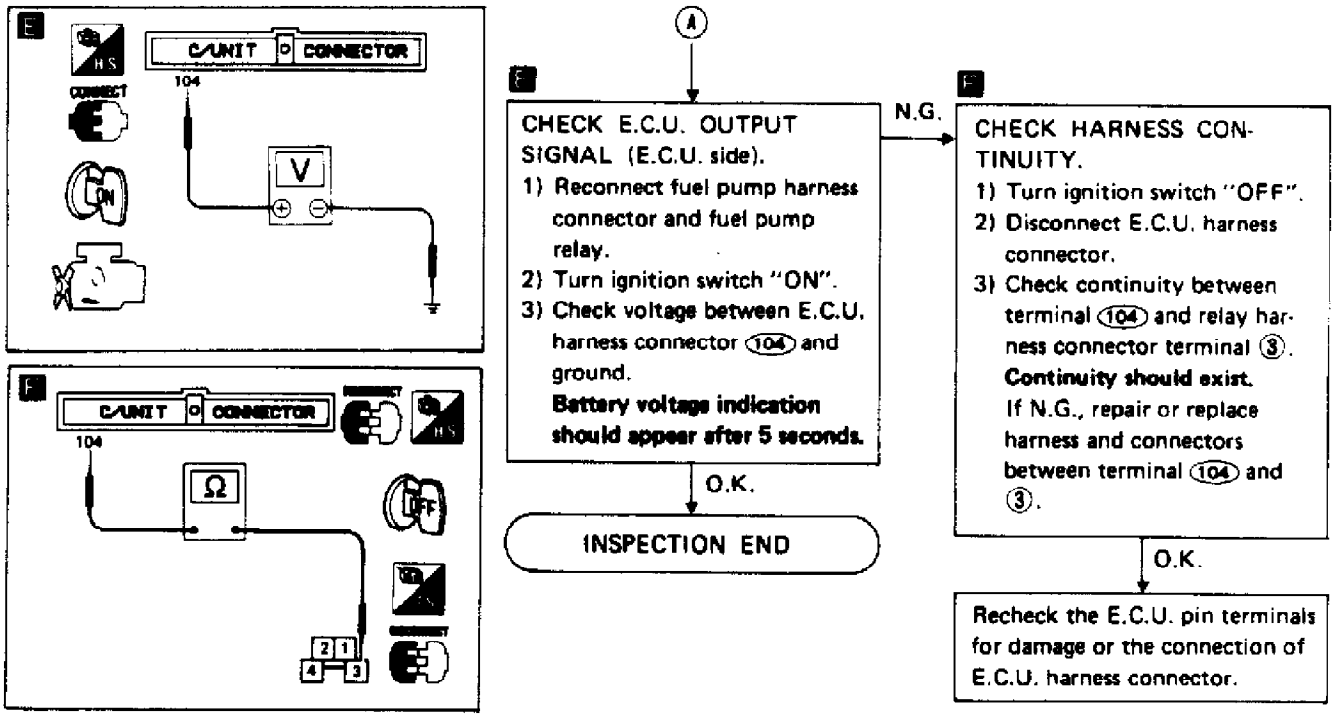


Fig. 20: Fuel Pump Diagnostic Chart (2 of 2)
Courtesy of Nissan Motor Co., U.S.A.

IDLE SWITCH CHART

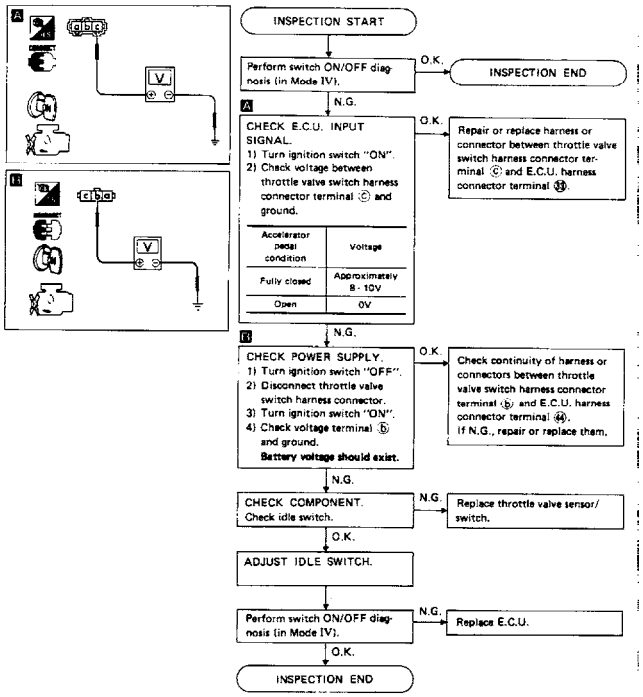


Fig. 21: Idle Switch Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

INJECTOR MALFUNCTION CHART

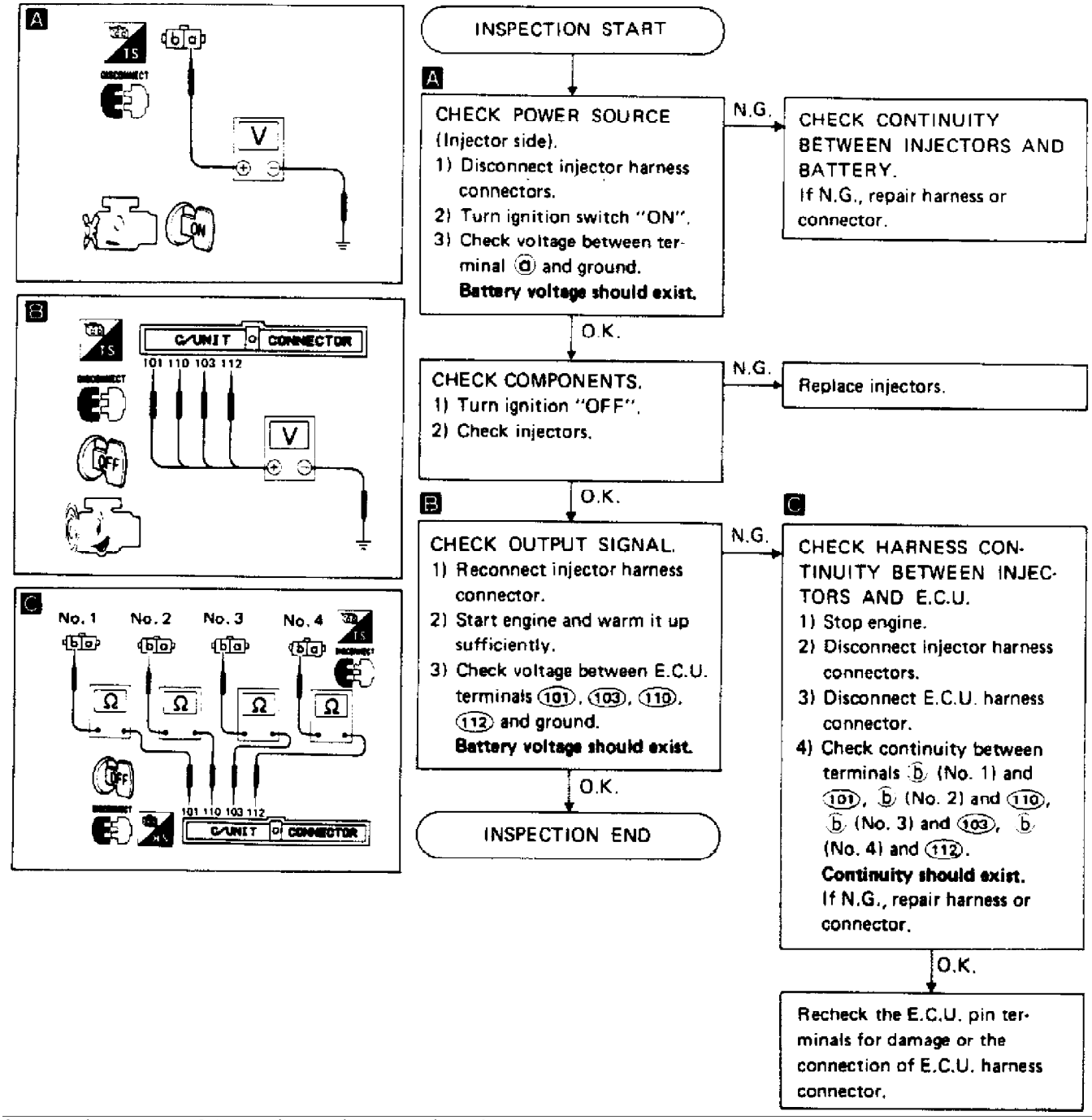


Fig. 22: Injector Malfunction Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

NEUTRAL/INHIBITOR SWITCH CHART

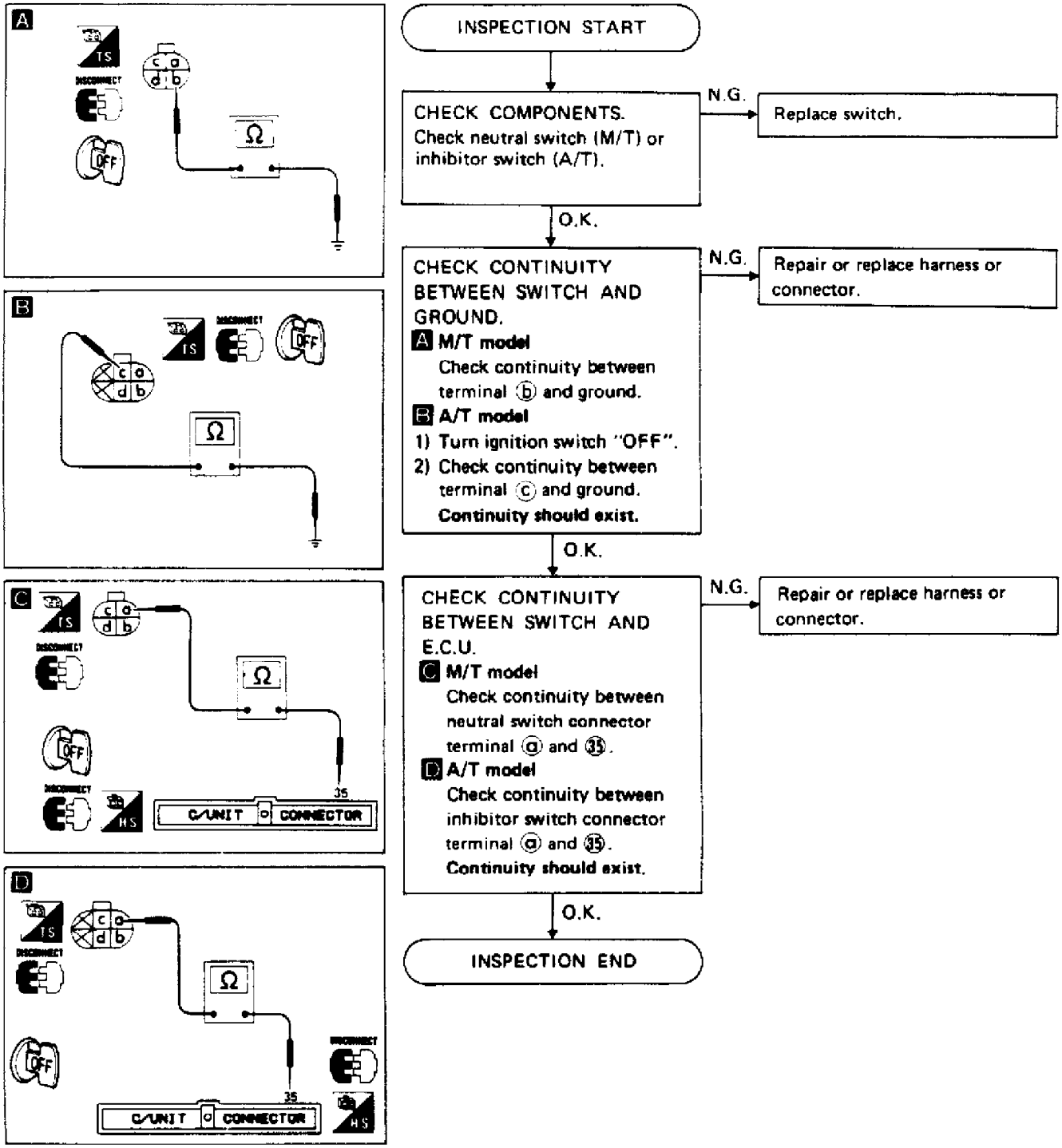


Fig. 23: Axxess Neutral/Inhibitor Switch Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

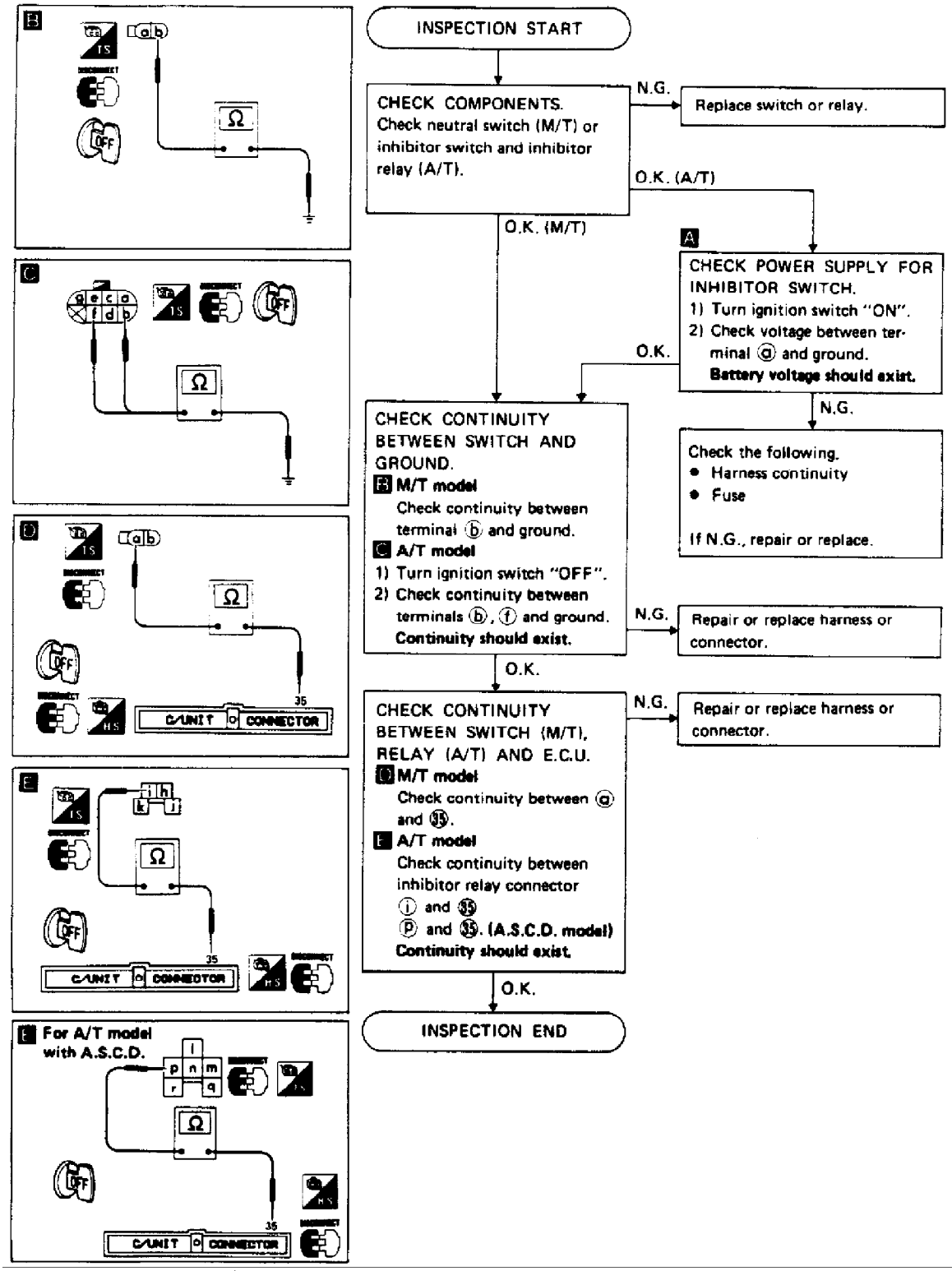


Fig. 24: 240SX Neutral/Inhibitor Switch & Relay Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

ECU POWER SOURCE & GROUND CHART

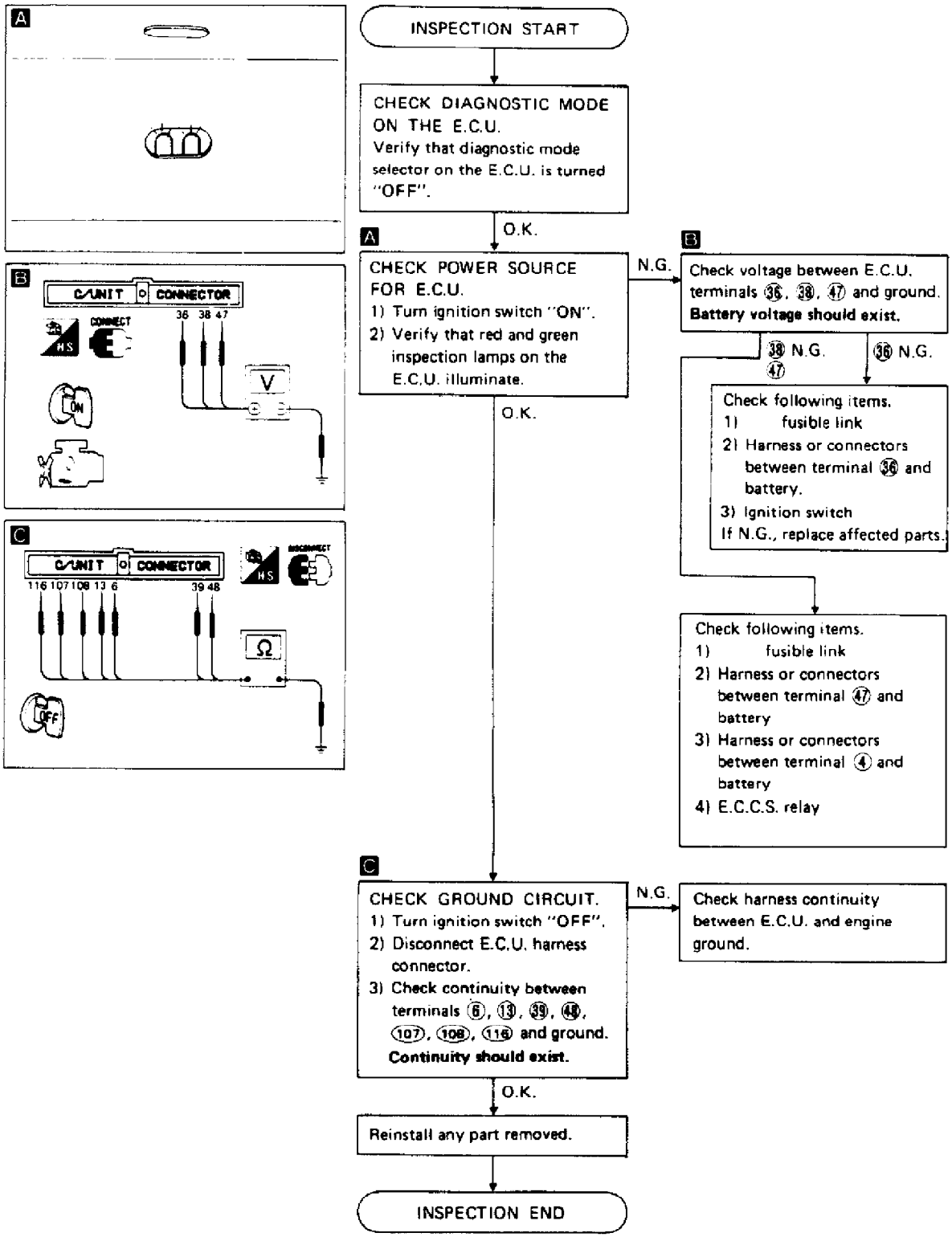


Fig. 25: Axxess ECU Power Source & Ground Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

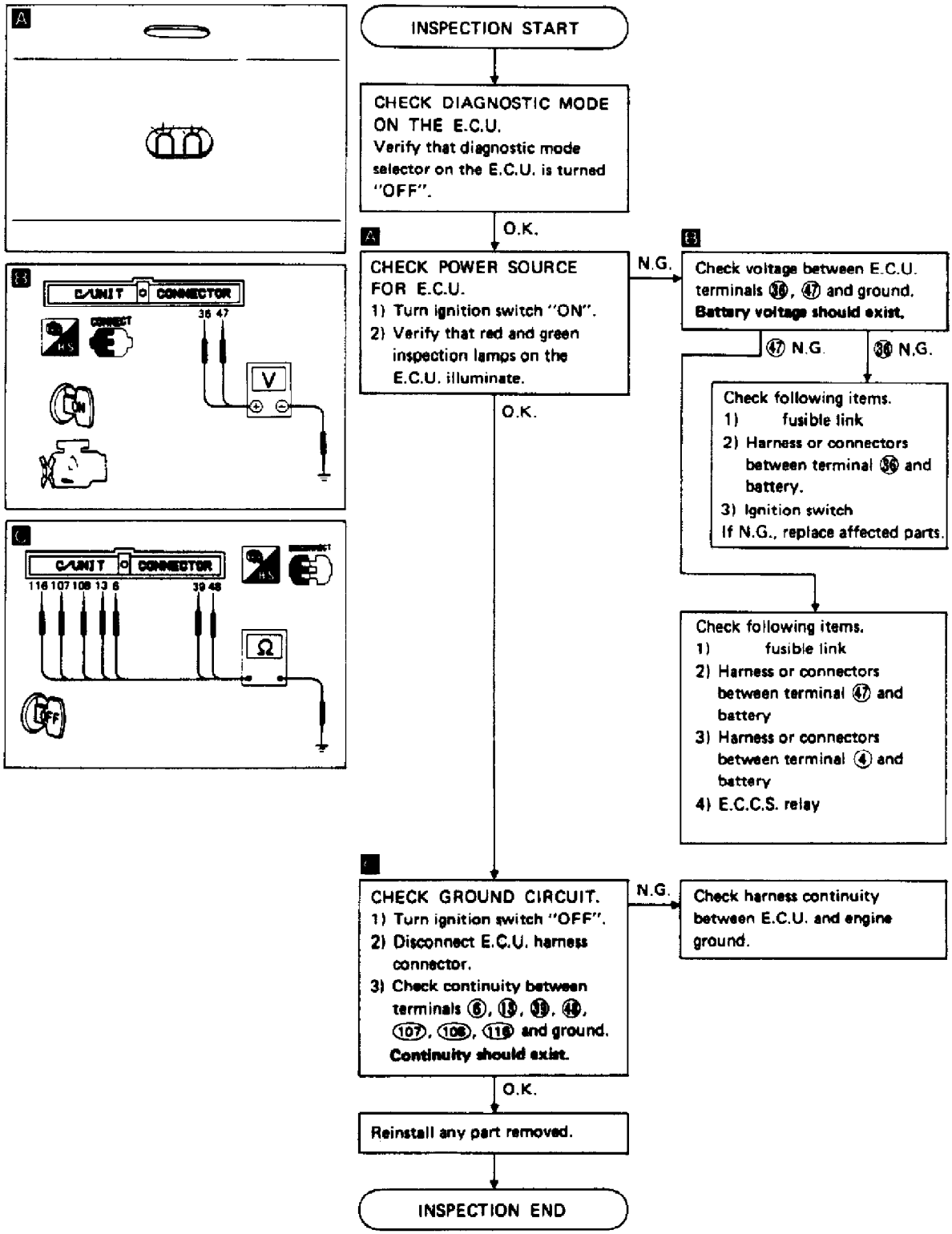


Fig. 26: 240SX ECU Power Source & Ground Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

RADIATOR (COOLING) FAN CONTROL CHART (AXXESS)

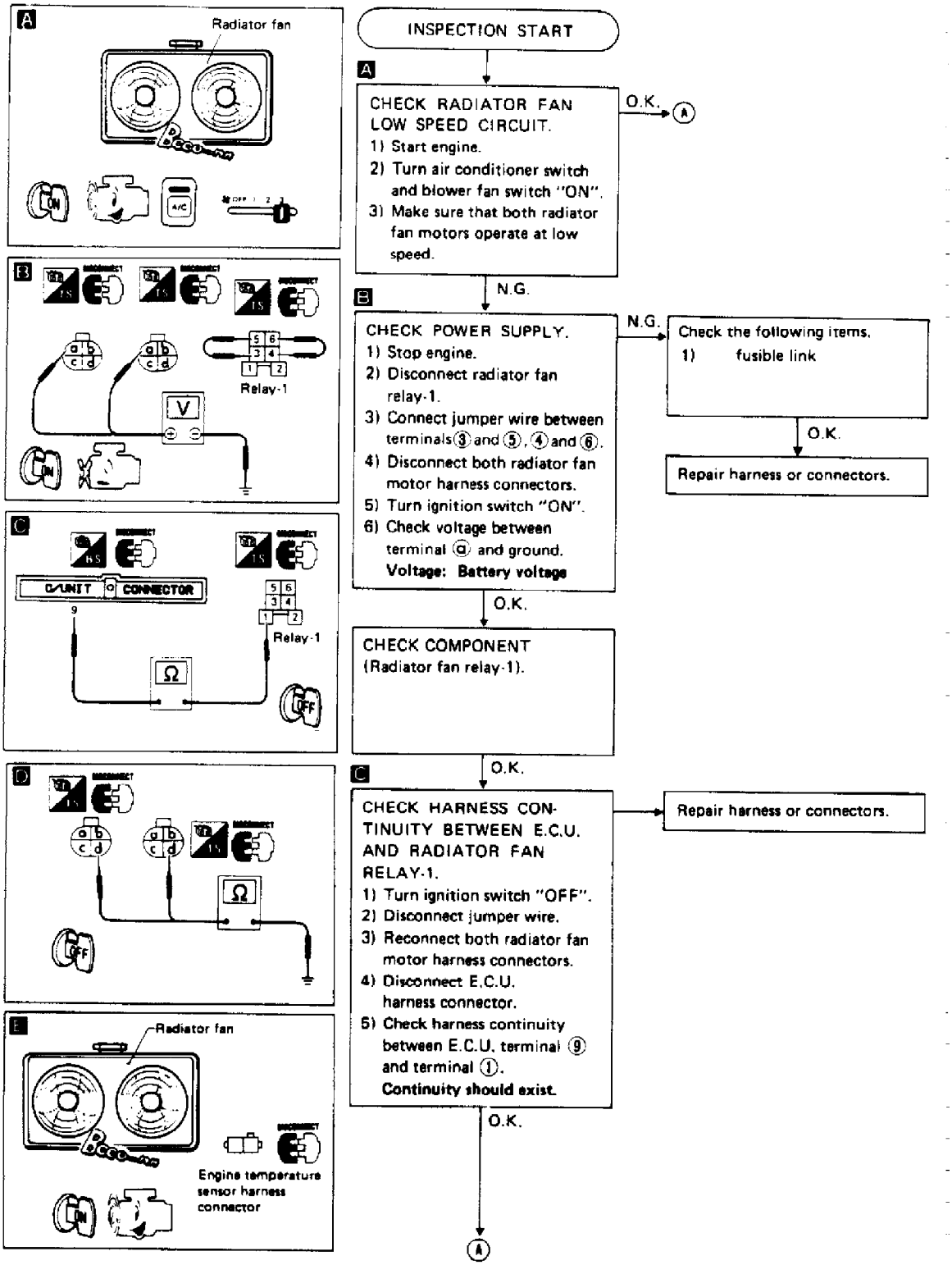


Fig. 27: Radiator (Cooling) Fan Control Diagnostic Chart (1 of 3)
Courtesy of Nissan Motor Co., U.S.A.

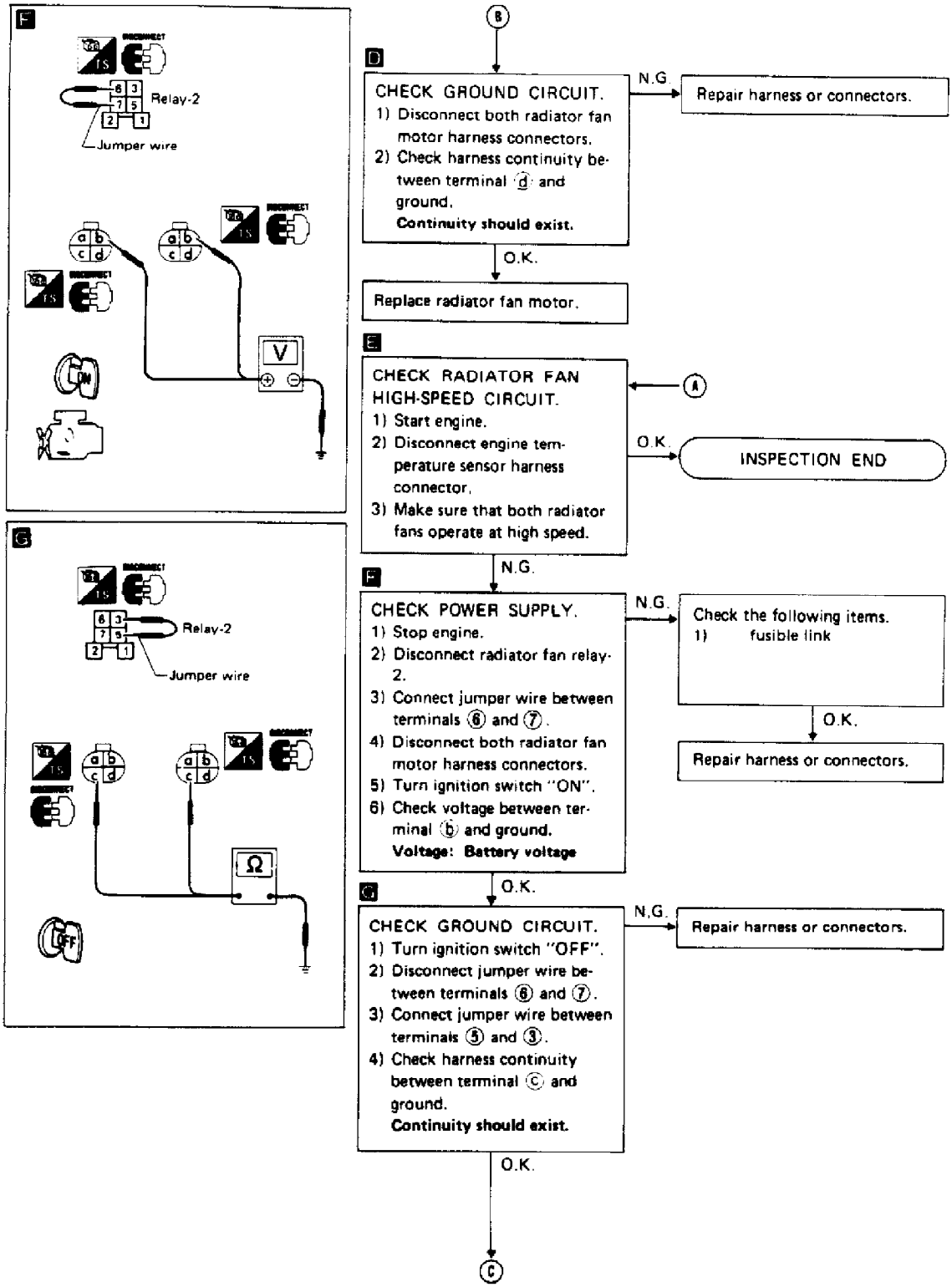


Fig. 28: Radiator (Cooling) Fan Control Diagnostic Chart (2 of 3)
Courtesy of Nissan Motor Co., U.S.A.

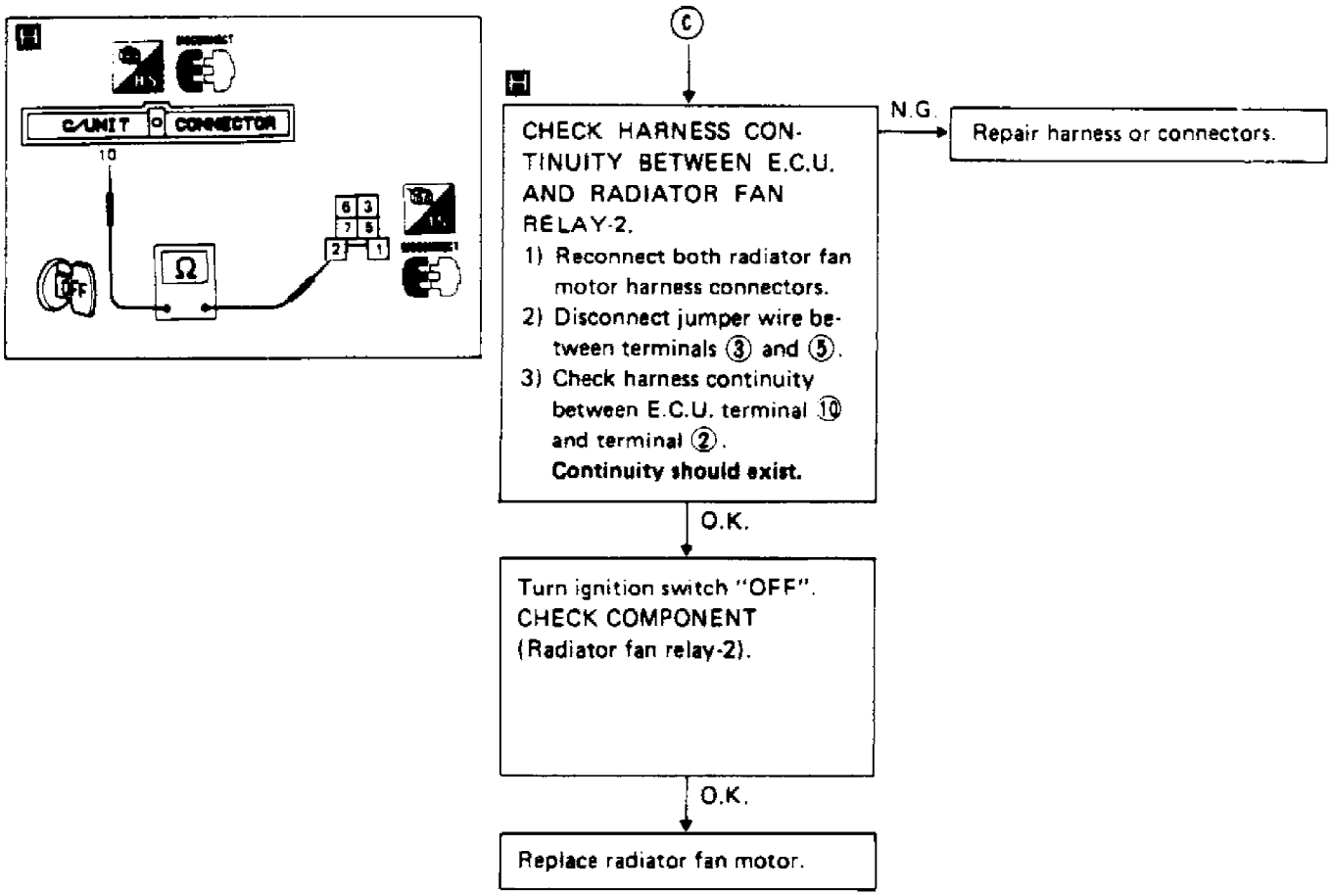


Fig. 29: Radiator (Cooling) Fan Control Diagnostic Chart (3 of 3)
Courtesy of Nissan Motor Co., U.S.A.

START SIGNAL CHART

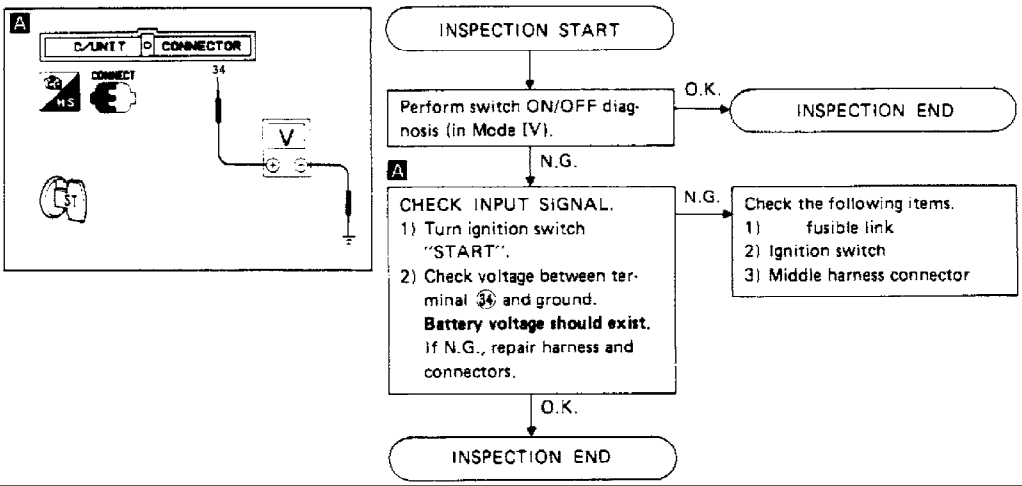
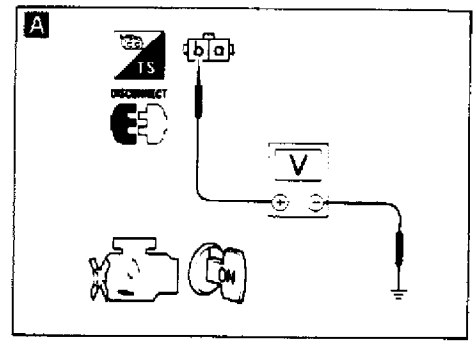
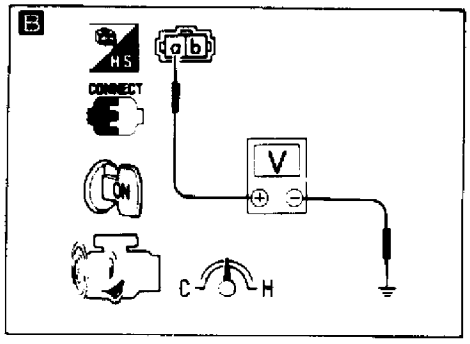
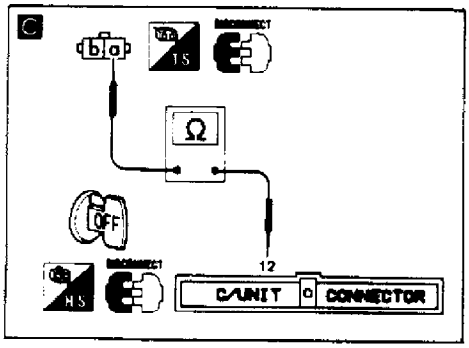


Fig. 30: Start Signal Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.

SWIRL CONTROL VALVE CHART







INSPECTION START

A

CHECK POWER SOURCE.
1) Disconnect S.C.V. control solenoid valve harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal ⓑ and ground.
Battery voltage should exist.

N.G. → CHECK CONTINUITY FOR POWER SOURCE.
Check harness or connectors between terminals ⓑ and ⊕.

O.K.

CHECK COMPONENTS.
1) Turn ignition switch "OFF".
2) Check S.C.V. control solenoid valve.

N.G. → Replace S.C.V. control solenoid valve.

O.K.

B

CHECK OUTPUT SIGNAL.
1) Reconnect S.C.V. control solenoid valve harness connector.
2) Start engine and warm it up sufficiently.
3) Check voltage between terminal ⓐ and ground.

Engine speed	Voltage between terminal ⓐ and ground
Less than approx. 1,400 rpm	0.5 - 1.0V
More than approx. 1,400 rpm	Battery voltage

N.G. → **C**

CHECK HARNESS CONTINUITY BETWEEN SOLENOID AND E.C.U.
1) Stop engine.
2) Disconnect S.C.V. control solenoid valve harness connector and E.C.U. harness connector.
3) Check continuity between terminals ⓐ and ⑫.
Continuity should exist.
If N.G., repair or replace harness or connector.

O.K.

1) Perform E.C.U. input/output signal inspection test. (Terminal ⑫)
2) If N.G., recheck the E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

O.K.

CHECK COMPONENT.
Check swirl control valve and actuator.

N.G. → Replace swirl control valve or actuator.

O.K.

INSPECTION END

Fig. 31: Swirl Control Valve Diagnostic Chart
Courtesy of Nissan Motor Co., U.S.A.