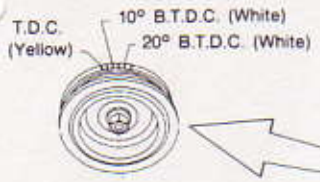


SEF946L

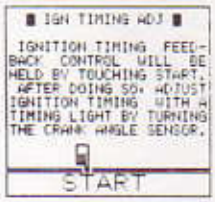
Adjust ignition timing to the specified value by turning distributor after loosening bolts which secure distributor.

10° B.T.D.C.

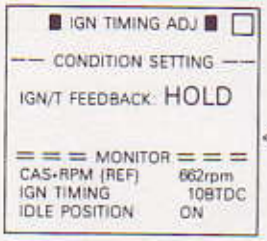
1) Select "IGN TIMING ADJ" in "WORK SUPPORT" mode.
2) Touch "START".

OR

1) Turn off engine and disconnect throttle sensor harness connector.
2) Start engine.



SEF579K



Check idle speed.

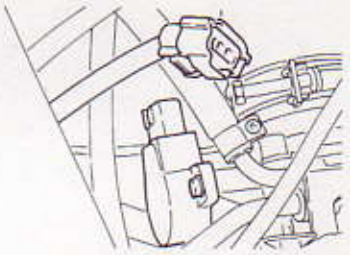
- Read idle speed "IGN TIMING ADJ" in "WORK SUPPORT" mode.

OR

- Check idle speed.

675 ± 50 rpm

SEF704K

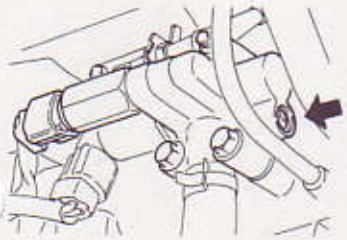


EEF024

O.K.

N.G.

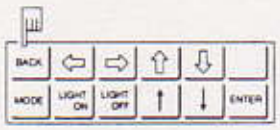
Race engine (2,000 - 3,000 rpm) 2 or 3 minutes under no-load and then run engine at idle speed.



EEF025

Check idle speed by turning idle speed adjusting screw.

675 rpm



1) Touch "BACK".

OR

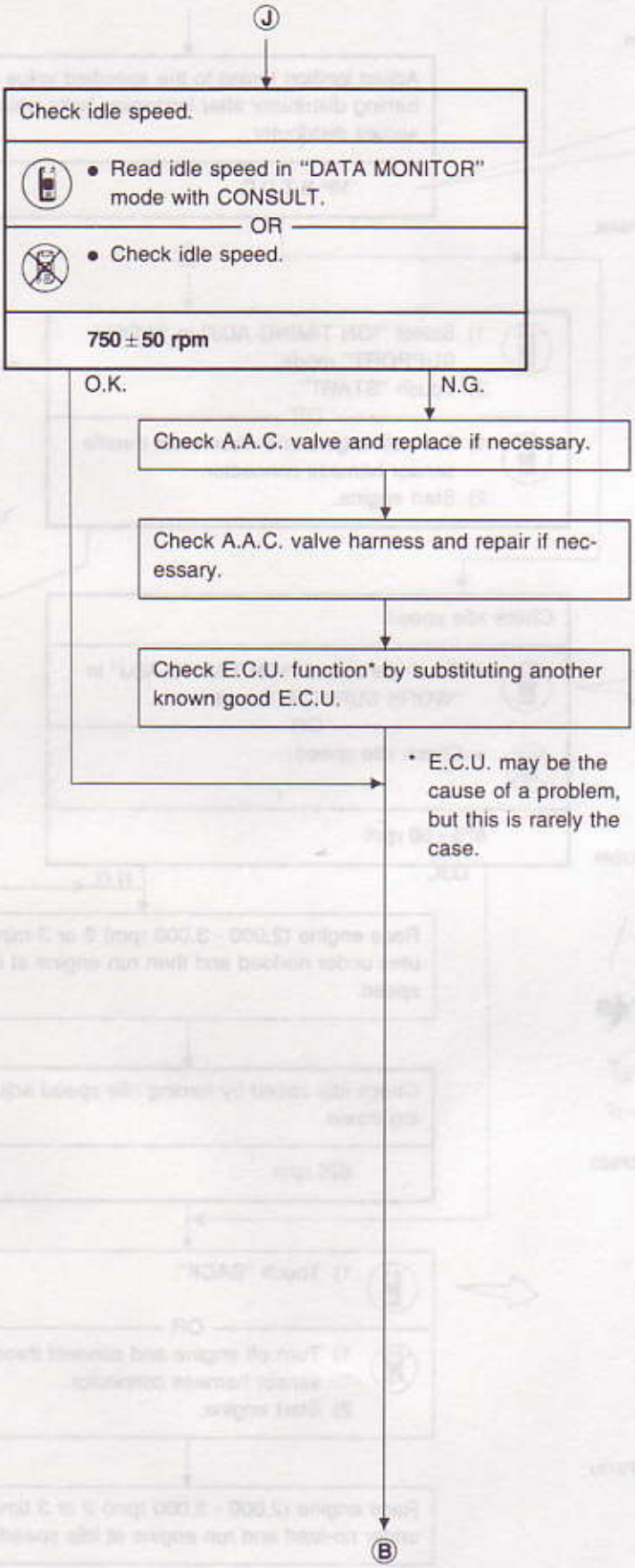
1) Turn off engine and connect throttle sensor harness connector.
2) Start engine.

SEF913J

Race engine (2,000 - 3,000 rpm) 2 or 3 times under no-load and run engine at idle speed.


MONITOR NO FAIL
RECORD

SEF135K


J
Check idle speed.
• Read idle speed in "DATA MONITOR" mode with CONSULT.
OR
• Check idle speed.
750 ± 50 rpm
O.K.
N.G.
Check A.A.C. valve and replace if necessary.
Check A.A.C. valve harness and repair if necessary.
Check E.C.U. function* by substituting another known good E.C.U.
* E.C.U. may be the cause of a problem, but this is rarely the case.
B

SEF320K

Ⓑ

1. See "M/R F/C MNT" in "Data monitor" mode.
2) Run engine at about 2,000 rpm for about 2 minutes under no-load.
3) Maintaining engine at 2,000 rpm under no-load (engine is warmed up sufficiently.), check that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.

RICH → LEAN → RICH →

1 time **2 times**

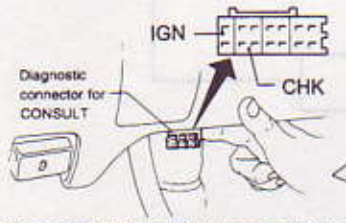
LEAN → RICH.....

N.G. → Ⓒ

OR

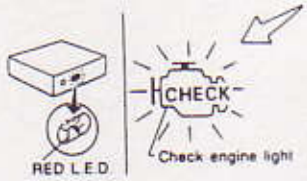
1) Set "Exhaust gas sensor monitor" in the self-diagnostic mode II. (See page EF & EC-222).
2) Run engine at about 2,000 rpm for about 2 minutes under no-load.
3) Maintaining engine at 2,000 rpm under no-load, check to make sure that the RED L.E.D. on the E.C.U. or the check engine light on the instrument panel goes ON and OFF more than 5 times during 10 seconds.

O.K.



(Connect CHK and IGN terminals with a suitable harness)

EEF007

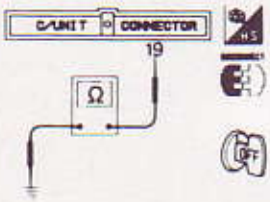


SEF621K

END

As for the location of exhaust gas sensor harness connector, refer to page EF&EC-294

SEC240B



SEC241B

Ⓒ

Check exhaust gas sensor harness:
1) Turn off engine and disconnect battery ground cable.
2) Disconnect E.C.U. S.M.J. harness connector from E.C.U.
3) Disconnect exhaust gas sensor harness connector and connect main harness side terminal for exhaust gas sensor to ground with a jumper wire.
4) Check for continuity between terminal No. (19) of E.C.U. S.M.J. harness connector and body ground.

Continuity exists ..... O.K.
Continuity does not exist ..... N.G.

O.K.

N.G.

Repair or replace harness.

Ⓔ

Connect E.C.U. S.M.J. harness connector to control unit.

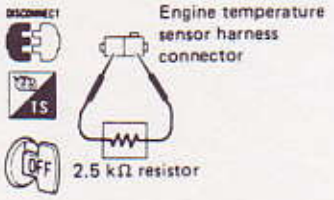
Connect battery ground cable.

1) Select "ENG TEMPERATURE" in "ACTIVE TEST" mode.
2) Set "ENGINE TEMP" to 20°C (68°F) by touching "Qu" and "Qd" and "UP", "DOWN".

OR

1) Disconnect engine temperature sensor harness connector.
2) Connect a resistor (2.5 kΩ) between terminals of engine temperature sensor harness connector.

SEF321K



SEC242B

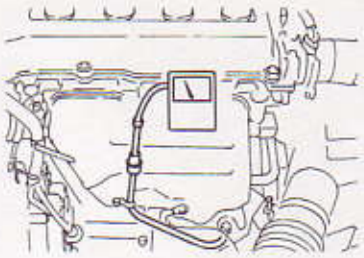
Start engine and warm it up until water temperature indicator points to middle of gauge.

EEF008

Ⓓ

Ⓓ

Race engine two or three times under no-load, then run engine at idle speed.

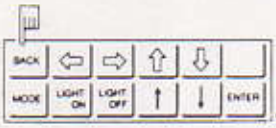


EEF045

Check "CO"%.
Remove test-take off plug and insert "CO" meter probe into test-take off tube sealing with a suitable cap.

SEF248F

Idle CO: Less than 1.0%



After checking CO%,

1)Touch "BACK".

O.K.

1) Disconnect the resistor from terminals of engine temperature sensor harness connector.
2) Connect engine temperature sensor harness connector to engine temperature sensor.

SEF913J

N.G.

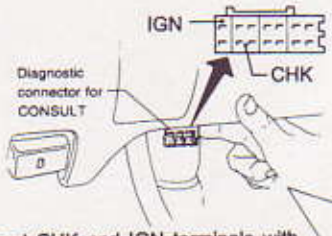
Replace exhaust gas sensor.

SEF320K

1) See "M/R F/C MNT" in "Data monitor" mode
2) Maintaining engine at 2,000 rpm under no-load (engine is warmed up sufficiently.), check that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.

RICH → LEAN → RICH →
1 time 2 times →
LEAN → RICH .....

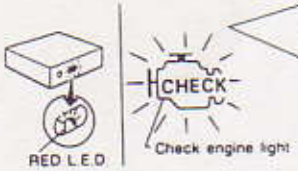
OR



(Connect CHK and IGN terminals with a suitable harness)

EEF007

1) Set "Exhaust gas sensor monitor" in the self-diagnostic mode II. (See page EF & EC-222.)
2) Maintaining engine at 2,000 rpm under no-load, check to make sure that the RED L.E.D. on the E.C.U. or the check engine light on the instrument panel goes ON and OFF more than 5 times during 10 seconds.

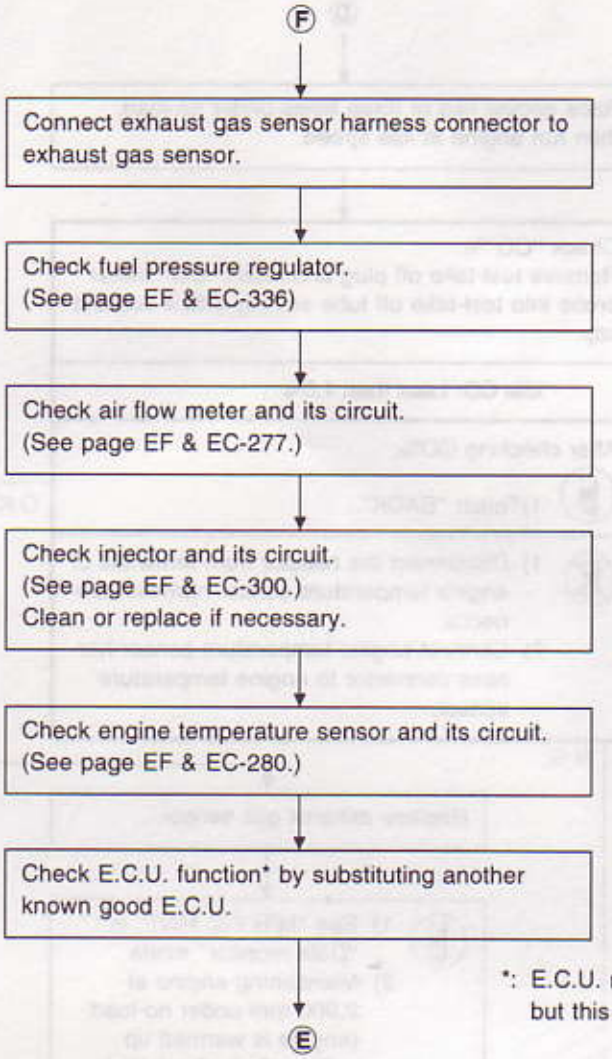


O.K.

N.G.

SEF621K

Ⓕ Ⓔ

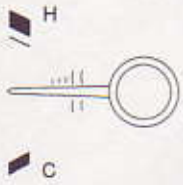


*: E.C.U. may be the cause of a problem, but this is rarely the case.

FOR MODELS WITHOUT CATALYZER

Checking and adjusting idle rpm and ignition timing

START



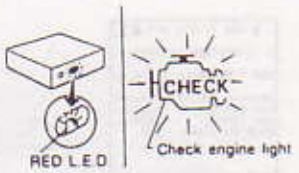
EEF008

Visually check the following:
- Air cleaner clogging
- Hoses and ducts for leaks
- E.G.R. valve operation
- Electrical connectors
- Gasket
- Throttle valve and throttle sensor operation

SEF247F

Start engine and warm it up until water temperature indicator points to the middle of gauge.
Ensure engine stays below 1,000 rpm.

Open engine hood and run engine at about 2,000 rpm for about 2 minutes under no-load.



SEF621K

Perform E.C.C.S. self-diagnosis (Mode II).

O.K. — N.G.

Repair or replace components as necessary.

SEF248F

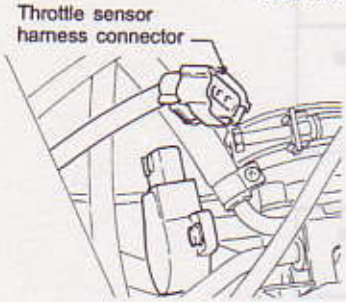
Run engine at about 2,000 rpm for about 2 minutes under no-load.
Race engine two or three times under no-load, then run engine for about 1 minute at idle speed.

SEF579K

1) Select "IGN TIMING ADJ" in "WORK SUPPORT" mode.
2) Touch "START".

— OR —

1) Turn off engine and disconnect throttle sensor harness connector.
2) Start engine.



EEF024

Race engine (2,000 - 3,000 rpm) 2 or 3 minutes under no-load and then run engine at idle speed.

Check ignition timing with a timing light.

10° ± 2° B.T.D.C.

SEF946L

O.K. → Ⓐ

N.G. → Ⓘ

SEF946L

Ⓐ

Ⓘ

Adjust ignition timing to the specified value by turning distributor after loosening bolts which secure distributor.

10° B.T.D.C.

SEF580K

Check idle speed.

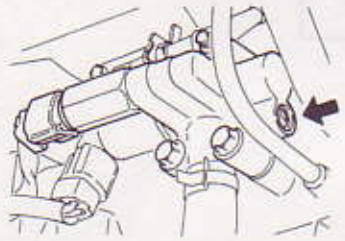
- Read idle speed in "IGN TIMING ADJ" in "WORK SUPPORT" mode.

OR

- Check idle speed.

675 ± 50 rpm

O.K.

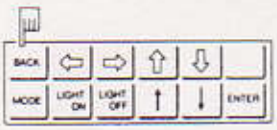


EEF025

Race engine (2,000 - 3,000 rpm) 2 or 3 times under no-load and run engine at idle speed.

Adjust idle speed by turning idle speed adjusting screw.

675 rpm



SEF913J

1) Touch "BACK"

OR

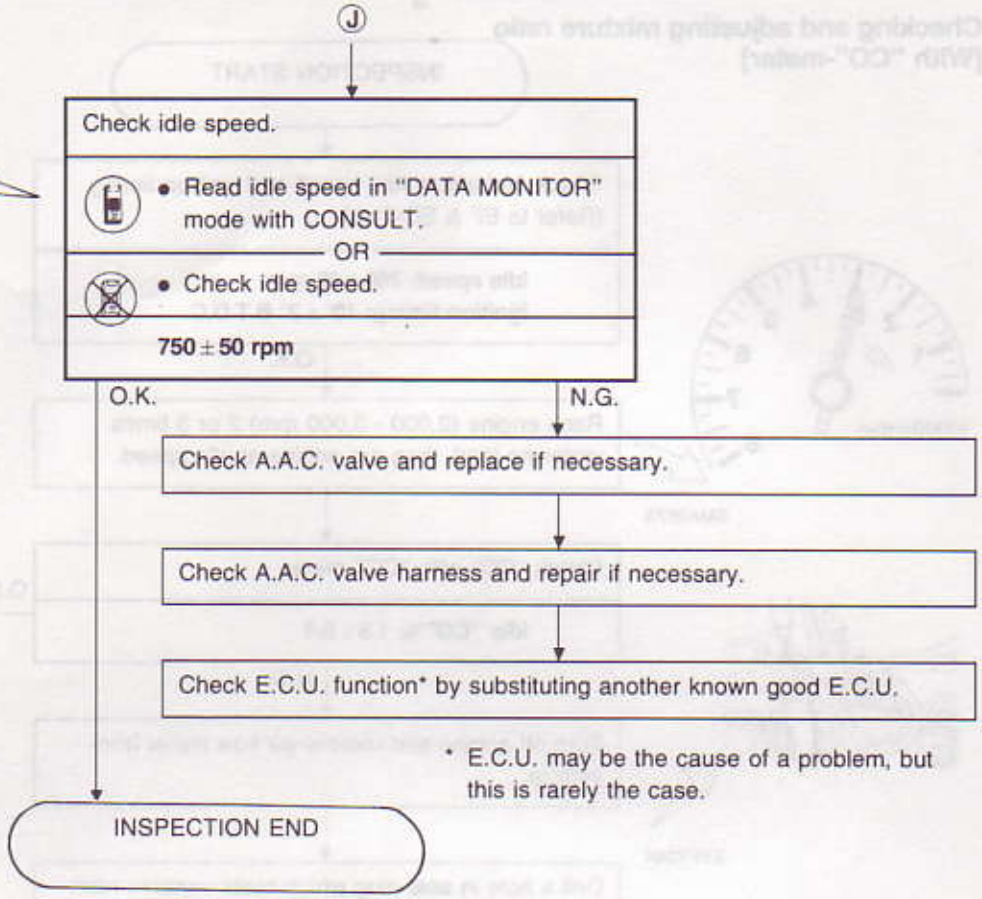
1) Turn off engine and connect throttle sensor harness connector.
2) Start engine.

Race engine (2,000 - 3,000 rpm) 2 or 3 times under no-load and run engine at idle speed.

Ⓙ


MONITOR NO FAIL
RECORD

SEF135K


J
Check idle speed.
• Read idle speed in "DATA MONITOR" mode with CONSULT.
OR
• Check idle speed.
750 ± 50 rpm
O.K.
N.G.
Check A.A.C. valve and replace if necessary.
Check A.A.C. valve harness and repair if necessary.
Check E.C.U. function* by substituting another known good E.C.U.
* E.C.U. may be the cause of a problem, but this is rarely the case.
INSPECTION END

Checking and adjusting mixture ratio
[With "CO"-meter]

INSPECTION START

Check and adjust idle speed and ignition timing.
(Refer to EF & EC-213.)

Idle speed: 750 ± 50 rpm
Ignition timing: 10° ± 2° B.T.D.C.

O.K.

SMA957A

Race engine (2,000 - 3,000 rpm) 2 or 3 times under no-load, then run engine at idle speed.

Check "CO" with "CO"-meter.

Idle "CO"%: 1.5 ± 0.5

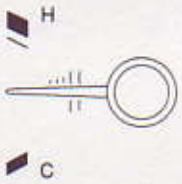
O.K.

N.G.

SEF706K

Turn off engine and remove air flow meter from vehicle.

Drill a hole in seal plug which seals variable resistor of air flow meter and remove seal plug.



Install air flow meter on vehicle. Start engine and warm it up untill water temperature indicator reads normal operating temperature.

EEF008

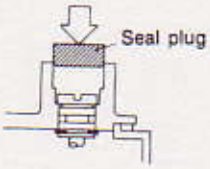
Race engine (2,000 - 3,000 rpm) 2 or 3 times under no-load, then run engine at idle speed.

Adjust "CO"% by turning variable resistor on air flow meter.

Idle "CO"%: 1.5 ± 0.5

SEF707K

Turn off engine and remove air flow meter from vehicle.

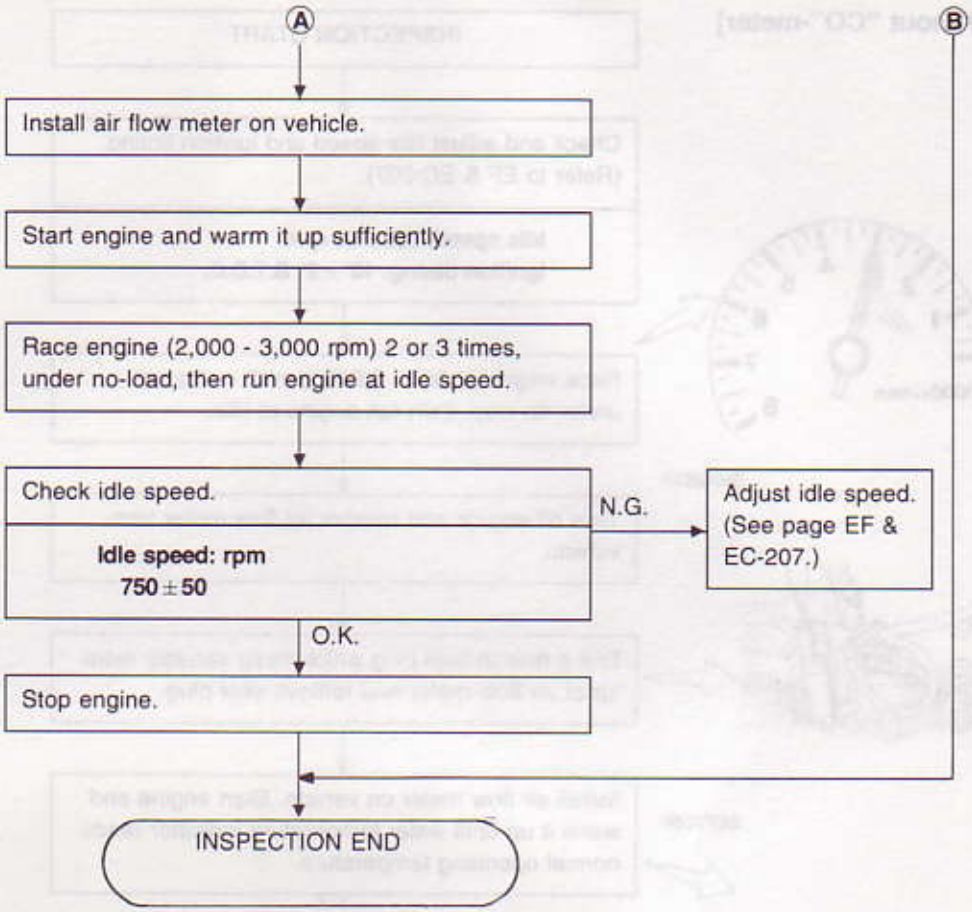


Insert new seal plug into variable resistor hole.
Tap seal plug with a suitable bar, thereby installing seal plug on air flow meter.

SEF708K

Ⓐ

Ⓑ


Ⓐ
Install air flow meter on vehicle.
Start engine and warm it up sufficiently.
Race engine (2,000 - 3,000 rpm) 2 or 3 times, under no-load, then run engine at idle speed.
Check idle speed.
Idle speed: rpm
750 ± 50
N.G.
Adjust idle speed. (See page EF & EC-207.)
O.K.
Stop engine.
Ⓑ
INSPECTION END

[Without "CO"-meter]

INSPECTION START

Check and adjust idle speed and ignition timing. (Refer to EF & EC-207).

Idle speed: 750 ± 50 rpm
Ignition timing: 10° ± 2° B.T.D.C.

SMA957A

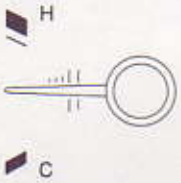
Race engine (2,000 - 3,000 rpm) 2 or 3 times under no-load, then run engine at idle.

Turn off engine and remove air flow meter from vehicle.

Drill a hole in seal plug which seals variable resistor of air flow meter and remove seal plug.

SEF706K

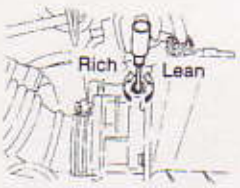
Install air flow meter on vehicle. Start engine and warm it up until water temperature indicator reads normal operating temperature.



Race engine (2,000 - 3,000 rpm) 2 or 3 times under no-load, then run engine at idle speed.

Adjust mixture ratio with engine speed set at maximum by turning variable resistor.

EEF008

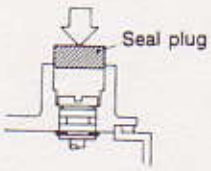


Turn variable resistor of air flow meter one full turn counterclockwise.

Turn off engine and remove air flow meter from vehicle.

SEF707K

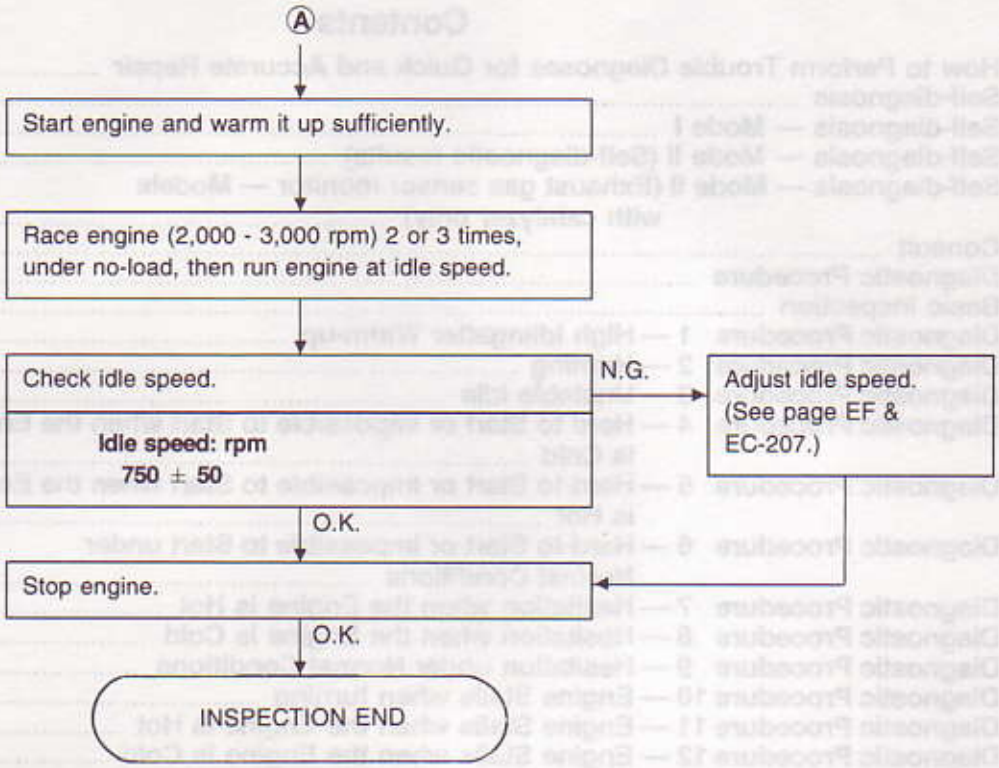
Insert new seal plug into variable resistor hole. Tap seal plug with a suitable bar, thereby installing seal plug on air flow meter.



Install air flow meter on vehicle.

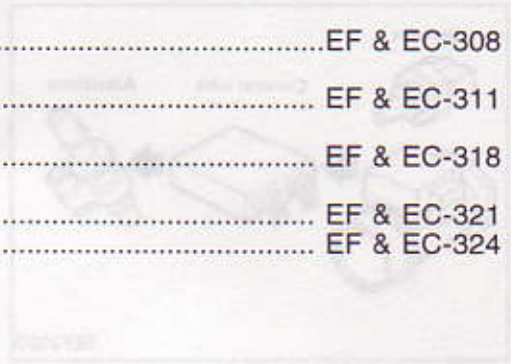
Ⓐ

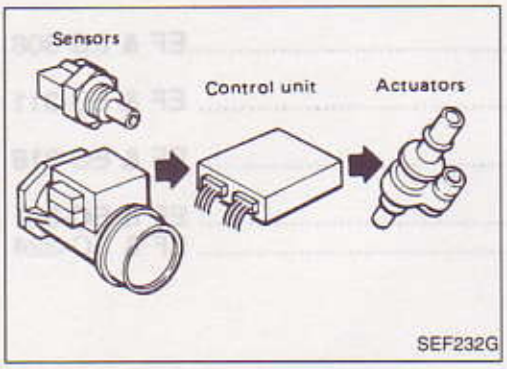
SEF708K

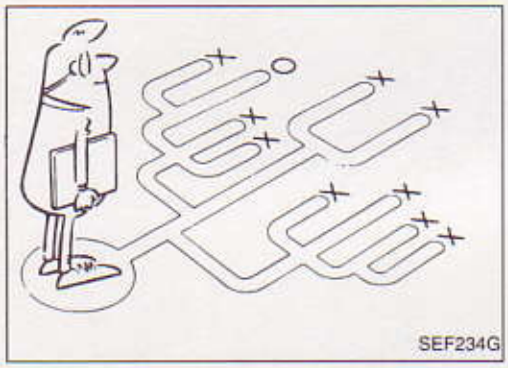

Ⓐ
Start engine and warm it up sufficiently.
Race engine (2,000 - 3,000 rpm) 2 or 3 times, under no-load, then run engine at idle speed.
Check idle speed.
Idle speed: rpm
750 ± 50
N.G.
Adjust idle speed. (See page EF & EC-207.)
O.K.
Stop engine.
O.K.
INSPECTION END

Contents

Contents (Cont'd)







How to Perform Trouble Diagnoses for Quick and Accurate Repair

INTRODUCTION

The engine has an electronic control unit to control major systems such as fuel control, ignition control, idle speed control, etc. The control unit accepts input signals from sensors and instantly drives actuators. It is essential that both kinds of signals are proper and stable. At the same time, it is important that there are no conventional problems such as vacuum leaks, fouled spark plugs, or other problems with the engine.

It is much more difficult to diagnose a problem that occurs intermittently rather than continuously. Most intermittent problems are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.

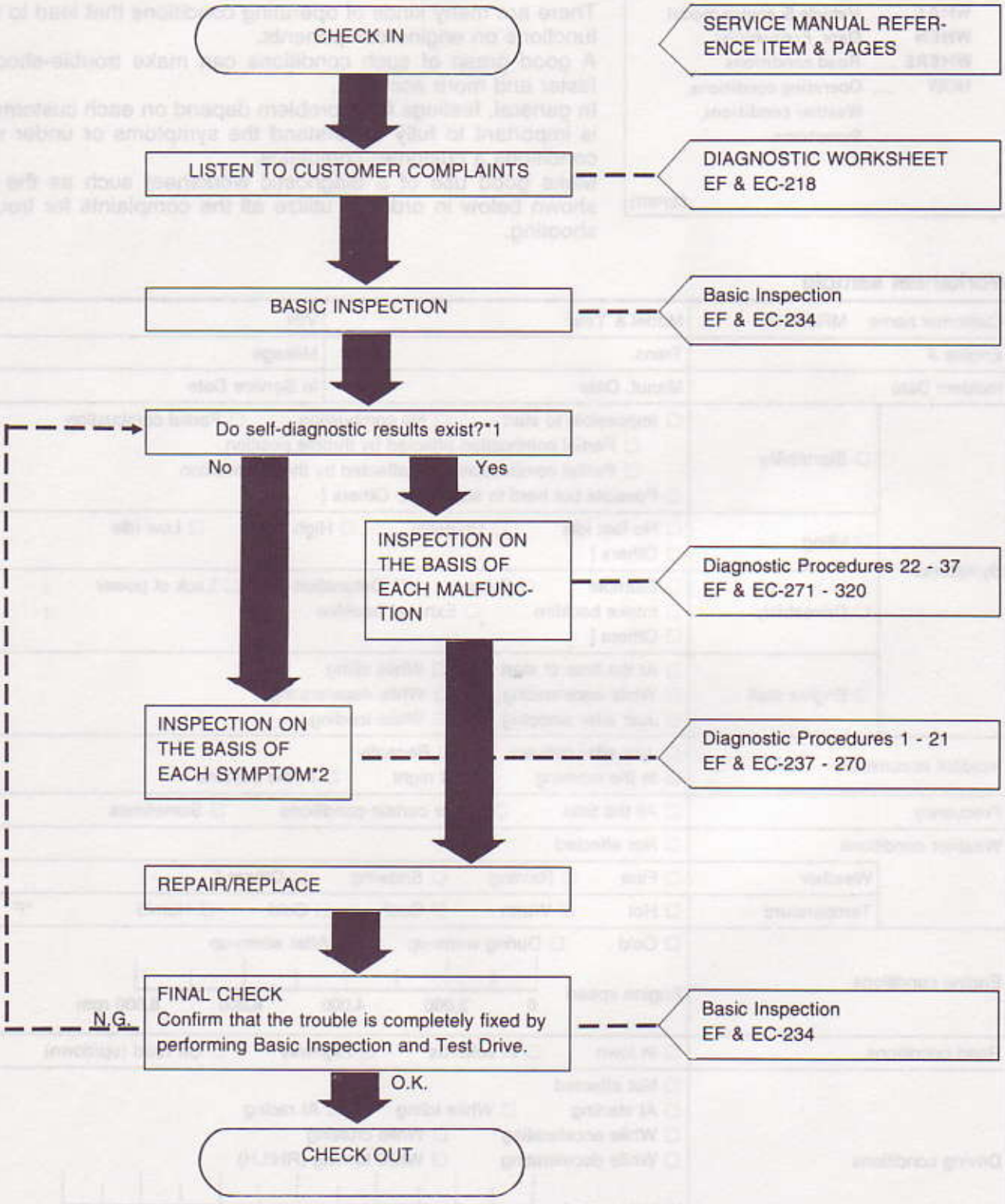
A visual check only may not find the cause of the problems, so a road test with a circuit tester connected to a suspected circuit should be performed.

Before undertaking actual checks, take just a few minutes to talk with a customer who approaches with a driveability complaint. The customer is a very good supplier of information on such problems, especially intermittent ones. Through interaction with the customer, find out what symptoms are present and under what conditions they occur.

Start your diagnosis by looking for "conventional" problems first. This is one of the best ways to troubleshoot driveability problems on an electronically controlled engine vehicle.

How to Perform Trouble Diagnoses for Quick and Accurate Repair (Cont'd)

WORK FLOW



*1: If the self-diagnosis cannot be performed, check main power supply and ground circuit. (See Diagnostic Procedure 22.)
*2: If the trouble is not duplicated, see INTERMITTENT PROBLEM SIMULATION (EF & EC-219).

How to Perform Trouble Diagnoses for Quick and Accurate Repair (Cont'd)

KEY POINTS

WHAT ..... Vehicle & engine model
WHEN ..... Date, Frequencies
WHERE ..... Road conditions
HOW ..... Operating conditions, Weather conditions, Symptoms

SEF907L

DIAGNOSTIC WORKSHEET

There are many kinds of operating conditions that lead to malfunctions on engine components.
A good grasp of such conditions can make trouble-shooting faster and more accurate.
In general, feelings for a problem depend on each customer. It is important to fully understand the symptoms or under what conditions a customer complains.
Make good use of a diagnostic worksheet such as the one shown below in order to utilize all the complaints for trouble-shooting.

Worksheet sample

Customer name MR/MS	Model & Year	VIN
Engine #	Trans.	Mileage
Incident Date	Manuf. Date	In Service Date
Symptoms — ☐ Startability	☐ Impossible to start ☐ No combustion ☐ Partial combustion ☐ Partial combustion affected by throttle position ☐ Partial combustion NOT affected by throttle position ☐ Possible but hard to start ☐ Others [ ]	
Symptoms — ☐ Idling	☐ No fast idle ☐ Unstable ☐ High idle ☐ Low idle ☐ Others [ ]	
Symptoms — ☐ Driveability	☐ Stumble ☐ Surge ☐ Detonation ☐ Lack of power ☐ Intake backfire ☐ Exhaust backfire ☐ Others [ ]	
Symptoms — ☐ Engine stall	☐ At the time of start ☐ While idling ☐ While accelerating ☐ While decelerating ☐ Just after stopping ☐ While loading	
Incident occurrence	☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night ☐ In the daytime	
Frequency	☐ All the time ☐ Under certain conditions ☐ Sometimes	
Weather conditions	☐ Not affected	
Weather	☐ Fine ☐ Raining ☐ Snowing ☐ Others [ ]	
Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold ☐ Humid °F	
Engine conditions	☐ Cold ☐ During warm-up ☐ After warm-up Engine speed 0 2,000 4,000 6,000 8,000 rpm	
Road conditions	☐ In town ☐ In suburbs ☐ Highway ☐ Off road (up/down)	
Driving conditions	☐ Not affected ☐ At starting ☐ While idling ☐ At racing ☐ While accelerating ☐ While cruising ☐ While decelerating ☐ While turning (RH/LH) Vehicle speed 0 10 20 30 40 50 60 MPH	
Check engine light	☐ Turned on ☐ Not turned on	

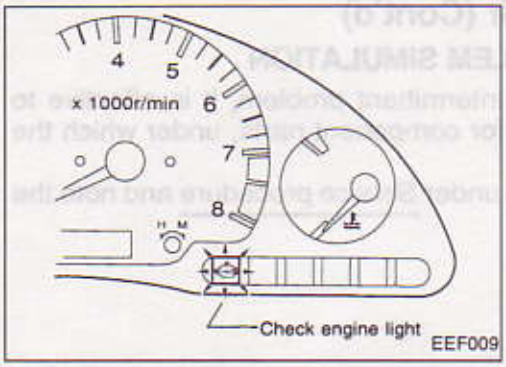
How to Perform Trouble Diagnoses for Quick and Accurate Repair (Cont'd)

INTERMITTENT PROBLEM SIMULATION

In order to duplicate an intermittent problem, it is effective to create similar conditions for component parts, under which the problem might occur.
Perform the activity listed under Service procedure and note the result.

	Variable factor	Influential part	Target condition	Service procedure
1	Mixture ratio	Pressure regulator	Made lean	Remove vacuum hose and apply vacuum.
			Made rich	Remove vacuum hose and apply pressure.
2	Ignition timing	Crank angle sensor	Advanced	Rotate distributor clockwise.
			Retarded	Rotate distributor counterclockwise.
3*	Mixture ratio feedback control	Exhaust gas sensor	Suspended	Disconnect exhaust gas sensor harness connector.
		Control unit	Operation check	Perform self-diagnosis (Mode II) at 2,000 rpm.
4	Idle speed	A.A.C. valve	Raised	Turn idle adjusting screw counterclockwise.
			Lowered	Turn idle adjusting screw clockwise.
5	Electrical connection (Electric continuity)	Harness connectors and wires	Poor electrical connection or improper wiring	Tap or wiggle.
				Race engine rapidly. See if the torque reaction of the engine unit causes electric breaks.
6	Temperature	Control unit	Cooled	Cool with an icing spray or similar device.
			Warmed	Heat with a hair drier. **[WARNING: Do not overheat the unit.]**
7	Moisture	Electric parts	Damp	Wet. **[WARNING: Do not directly pour water on components. Use a mist sprayer.]**
8	Electric loads	Load switches	Loaded	Turn on headlamps, air conditioner, rear defogger, etc.
9	Idle switch condition	Control unit	ON-OFF switching	Rotate throttle sensor body.
10	Ignition spark	Timing light	Spark power check	Try to flash timing light for each cylinder using ignition coil adapter.

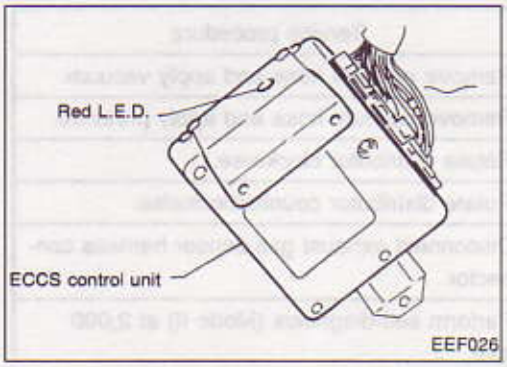
*: Models with catalyzer only



Self-diagnosis

CHECK ENGINE LIGHT

A check engine light has been adopted on all models. This light blinks simultaneously with the RED L.E.D. on the E.C.U.



E.C.U. L.E.D.

The E.C.U. is situated behind the glove box, and only has one RED L.E.D.

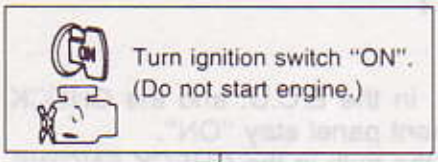
SELF-DIAGNOSTIC FUNCTION

Condition	Mode	Mode I	Mode II
Ignition switch in "ON" position	Engine stopped	BULB CHECK	SELF-DIAGNOSTIC RESULTS
	Engine running	MALFUNCTION WARNING	EXHAUST GAS SENSOR MONITOR*

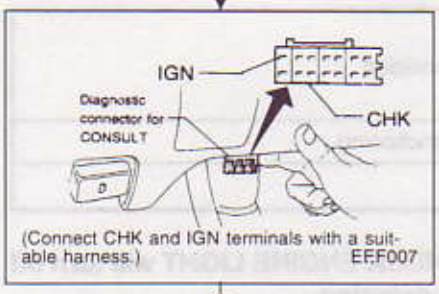
*: Models with catalyzer only

Self-diagnosis (Cont'd)

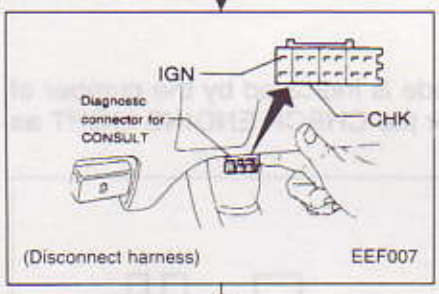
HOW TO SWITCH MODES



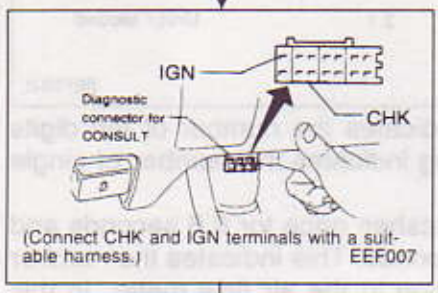
Mode I — BULB CHECK



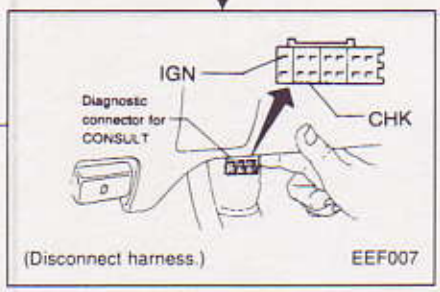
Wait at least 2 seconds.

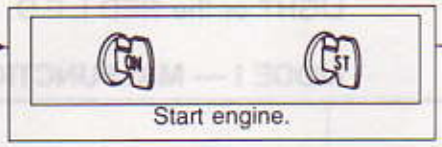


MODE II — SELF-DIAGNOSTIC RESULTS

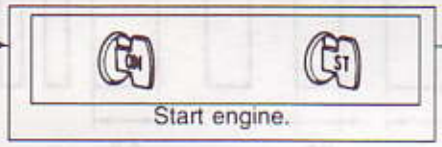


Wait at least 2 seconds.





Mode I — MALFUNCTION WARNING



Mode II — EXHAUST GAS SENSOR MONITOR★

- **Switching the modes is not possible when the engine is running.**
- **When the ignition switch is turned off during diagnosis in each mode, and then turned back on again after power to the E.C.U. has dropped off completely, the diagnosis will automatically return to Mode I.**

*: Models with catalyzer only

Self-diagnosis — Mode I

MODE I — BULB CHECK

In this mode, the RED L.E.D. in the E.C.U. and the CHECK ENGINE LIGHT in the instrument panel stay "ON".
If either remain "OFF", check the bulb in the CHECK ENGINE LIGHT or the RED L.E.D.

MODE I — MALFUNCTION WARNING

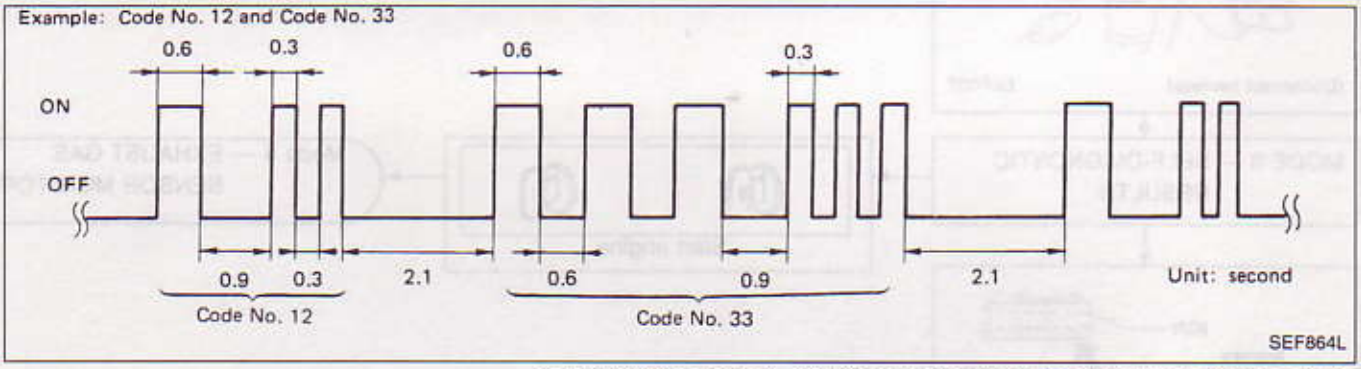
CHECK ENGINE LIGHT and RED L.E.D.	Condition
ON	When the E.C.U.'s C.P.U. is malfunctioning.
OFF	O.K.

- **The RED L.E.D. and the CHECK ENGINE LIGHT will turn off when normal condition is detected.**

Self-diagnosis — Mode II (Self-diagnostic results)

DESCRIPTION

In this mode, a malfunction code is indicated by the number of flashes from the RED L.E.D. or the CHECK ENGINE LIGHT as shown below:



Long (0.6 second) blinking indicates the number of ten digits and short (0.3 second) blinking indicates the number of single digits.
For example, the red L.E.D. flashes once for 0.6 seconds and then it flashes twice for 0.3 seconds. This indicates the number "12" and refers to a malfunction in the air flow meter. In this way, all the problems are classified by their code numbers.

Display code table

Code No.	Detected items
11*	Crank angle sensor circuit
12	Air flow meter circuit
13	Engine temperature sensor circuit
14	Vehicle speed sensor circuit
21*	Ignition signal circuit
43	Throttle sensor circuit
55	No malfunction in the above circuits

*: Check items causing a malfunction of crank angle sensor circuit first, if both code No. 11 and 21 are displayed at the same time.

Self-diagnosis — Mode II (Self-diagnostic results) (Cont'd)

Code No.	Detected items	Malfunction is detected when ...	Check item (remedy)
*11	Crank angle sensor circuit	• Either 1° or 180° signal is not entered for the first few seconds during engine cranking. • Either 1° or 180° signal is not input often enough while the engine speed is higher than the specified rpm.	• Harness and connector (If harness and connector are normal, replace crank angle sensor.)
12	Air flow meter circuit	• The air flow meter circuit is open or shorted. (An abnormally high or low voltage is entered.)	• Harness and connector (If harness and connector are normal, replace air flow meter.)
13	Engine temperature sensor circuit	• The engine temperature sensor circuit is open or shorted. (An abnormally high or low output voltage is entered.)	• Harness and connector • Engine temperature sensor
14	Vehicle speed sensor circuit	• The vehicle speed sensor circuit is open or shorted.	• Harness and connector • Vehicle speed sensor (reed switch)
*21	Ignition signal circuit	• The ignition signal in the primary circuit is not entered during engine cranking or running.	• Harness and connector • Power transistor unit
43	Throttle sensor circuit	• The throttle sensor circuit is open or shorted. (An abnormally high or low voltage is entered.)	• Harness and connector • Throttle sensor

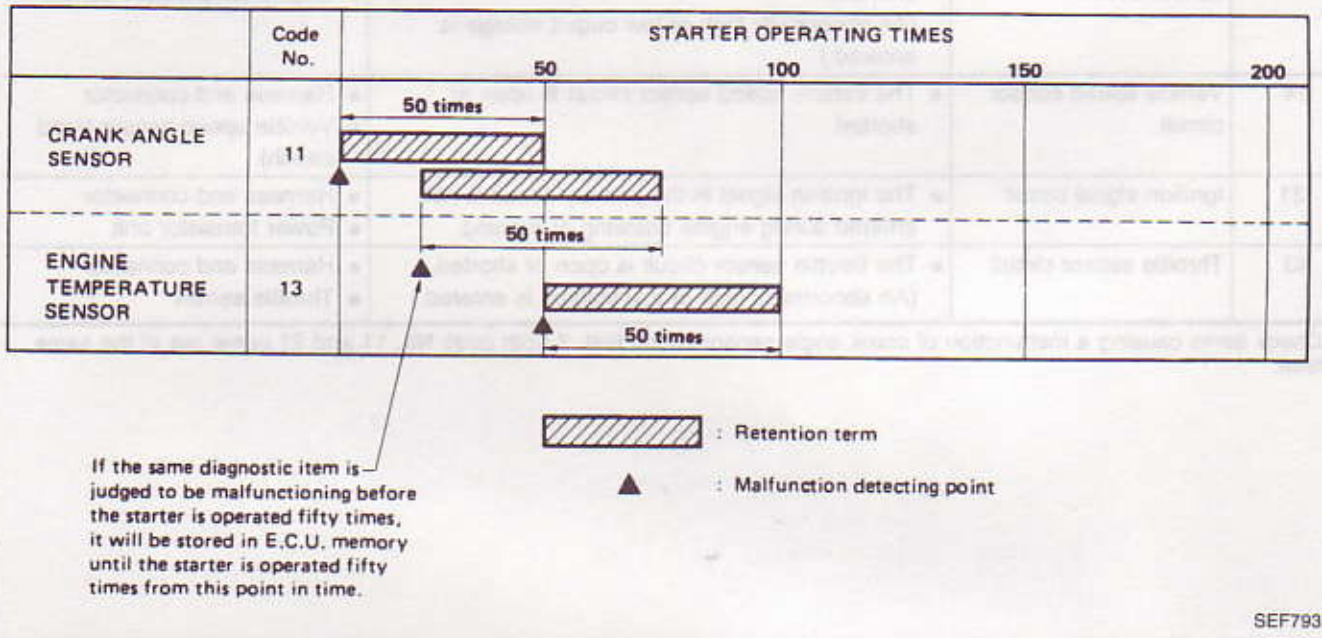
*: Check items causing a malfunction of crank angle sensor circuit first, if both code No. 11 and 21 come out at the same time.

Self-diagnosis — Mode II (Self-diagnostic results) (Cont'd)

RETENTION OF DIAGNOSTIC RESULTS

The diagnostic results will remain in E.C.U.memory until the starter is operated fifty times after a diagnostic item has been judged to be malfunctioning. The diagnostic result will then be canceled automatically. If a diagnostic item which has been judged to be malfunctioning and stored in memory is again judged to be malfunctioning before the starter is operated fifty times, the second result will replace the previous one. It will be stored in E.C.U. memory until the starter is operated fifty times more.

RETENTION TERM CHART (Example)



HOW TO ERASE SELF-DIAGNOSTIC RESULTS

The malfunction code is erased from the backup memory on the E.C.U. when the diagnostic mode is changed from Mode II to Mode I. (Refer to "HOW TO SWITCH MODES".)

- **When the battery terminal is disconnected, the malfunction code will be lost from the backup memory within 24 hours.**
- **Do not erase the stored memory before beginning self-diagnosis.**

Self-diagnosis — Mode II (Exhaust gas sensor monitor — Models with catalyzer only)

DESCRIPTION

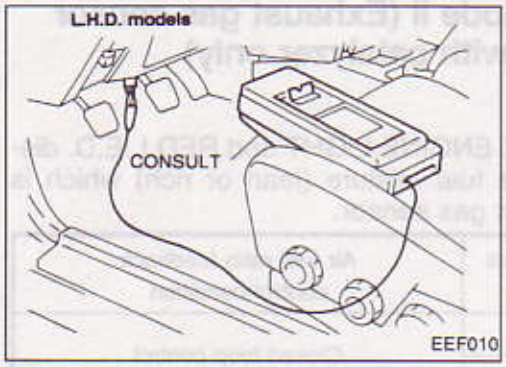
In this mode, the CHECK ENGINE LIGHT and RED L.E.D. display the condition of the fuel mixture (lean or rich) which is monitored by the exhaust gas sensor.

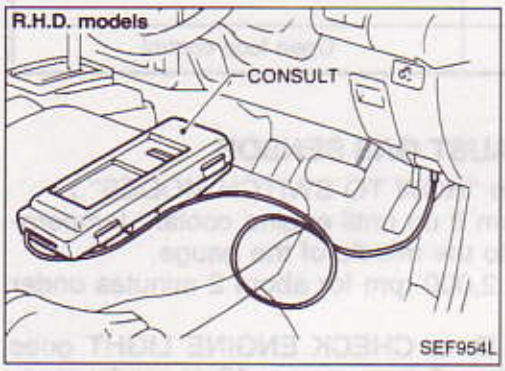
CHECK ENGINE LIGHT and RED L.E.D.	Fuel mixture condition in the exhaust gas	Air fuel ratio feedback control condition
ON	Lean	Closed loop control
OFF	Rich	
★Remains ON or OFF	Any condition	Open loop control

★: Maintains conditions just before switching to open loop.

HOW TO CHECK EXHAUST GAS SENSOR

1. Set Mode II. (Refer to "HOW TO SWITCH MODES".)
2. Start engine and warm it up until engine coolant temperature indicator points to the middle of the gauge.
3. Run engine at about 2,000 rpm for about 2 minutes under no-load conditions.
4. Make sure RED L.E.D. or CHECK ENGINE LIGHT goes ON and OFF more than 5 times every 10 seconds; measured at 2,000 rpm under no-load.

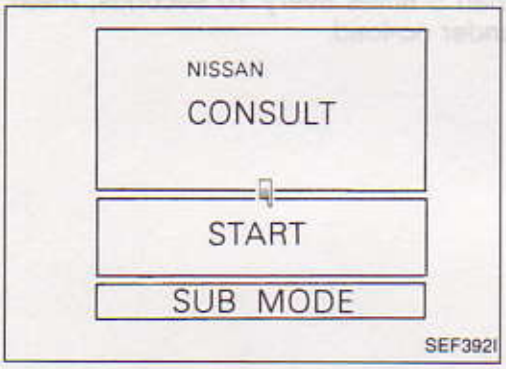




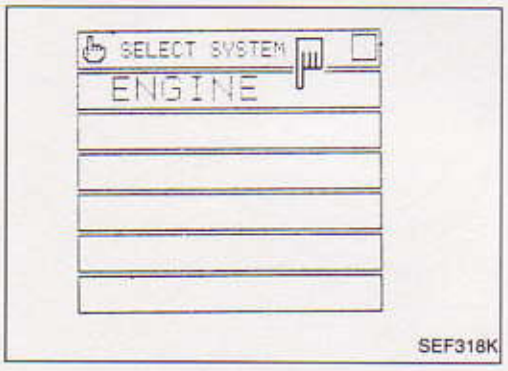
Consult

CONSULT INSPECTION PROCEDURE

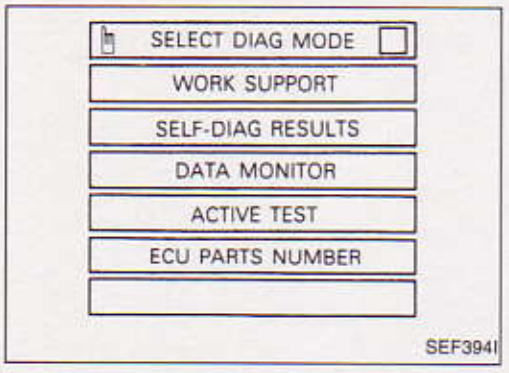
1. Turn off ignition switch.
2. Connect "CONSULT" to diagnostic connector. (Diagnostic connector is located behind the fuse box cover.)



3. Turn on ignition switch.
4. Touch "START".



5. Touch "ENGINE".



6. Perform each diagnostic mode according to the inspection sheet as follows:

For further information, see the CONSULT Operation Manual.

Consult (Cont'd)

E.C.C.S. COMPONENT PARTS APPLICATION

E.C.C.S. COMPONENT PARTS \ MODE		WORK SUPPORT	SELF-DIAGNOSTIC RESULTS	DATA MONITOR	ACTIVE TEST	FUNCTION TEST
INPUT	Crank angle sensor		X	X		
	Air flow meter		X	X		
	Engine temperature sensor		X	X	X	
	Exhaust gas sensor★			X★		X
	Vehicle speed sensor			X		X
	Throttle sensor	X	X	X		X
	Exhaust gas temperature sensor★			X★		
	Ignition switch (start signal)			X		X
	Air conditioner switch			X		
	Neutral switch			X		X
	Power steering oil pressure switch			X		X
	Battery			X		
OUTPUT	Injector			X	X	X
	Power transistor (Ignition signal)	X (Ignition timing)	X (Ignition timing)	X	X (Ignition timing)	X
	A.A.C. valve	X		X	X	X
	E.G.R. & canister control solenoid valve			X	X	
	Air conditioner relay			X		
	Fuel pump relay	X		X	X	X
	Radiator fan			X	X	X

X: Applicable
★: Models with catalyzer only

FUNCTION

Diagnostic mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT unit.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the control unit can be read.
Active test	Mode in which CONSULT drives some actuators apart from the control units and also shifts some parameters in a specified range.
E.C.U. part numbers	E.C.U. part numbers can be read.
Function test	Conducted by CONSULT instead of a technician to determine whether each system is "OK" or "NG".

Consult (Cont'd)

WORK SUPPORT MODE

WORK ITEM	CONDITION	USAGE
THROTTLE SENSOR ADJUSTMENT	CHECK THE THROTTLE SENSOR SIGNAL. ADJUST IT TO THE SPECIFIED VALUE BY ROTATING THE SENSOR BODY UNDER THE FOLLOWING CONDITIONS. • IGN SW "ON" • ENG NOT RUNNING • ACC PEDAL NOT PRESSED	When adjusting throttle sensor initial position.
IGNITION TIMING ADJUSTMENT	• IGNITION TIMING FEEDBACK CONTROL WILL BE HELD BY TOUCHING "START". AFTER DOING SO, ADJUST IGNITION TIMING WITH A TIMING LIGHT BY TURNING THE CRANK ANGLE SENSOR.	When adjusting initial ignition timing.
AAC VALVE ADJUSTMENT	SET ENGINE RPM AT THE SPECIFIED VALUE UNDER THE FOLLOWING CONDITIONS. • ENGINE WARMED UP • NO-LOAD	When adjusting idle speed.
FUEL PRESSURE RELEASE	• FUEL PUMP WILL STOP BY TOUCHING "START" DURING IDLING. CRANK A FEW TIMES AFTER ENGINE STALLS.	When releasing fuel pressure from fuel line.

SELF-DIAGNOSTIC RESULTS MODE

DIAGNOSTIC ITEM	DIAGNOSTIC ITEM IS DETECTED WHEN ...	CHECK ITEM (REMEDY)
CRANK ANGLE SENSOR*	• Either 1° or 180° signal is not entered for the first few seconds during engine cranking. • Either 1° or 180° signal is not input often enough while the engine speed is higher than the specified rpm.	• Harness and connector (If harness and connector are normal, replace crank angle sensor.)
AIR FLOW METER	• The air flow meter circuit is open or shorted. (An abnormally high or low voltage is entered.)	• Harness and connector (If harness and connector are normal, replace air flow meter.)
ENGINE TEMP SENSOR	• The engine temperature sensor circuit is open or shorted. (An abnormally high or low output voltage is entered.)	• Harness and connector • Engine temperature sensor
VEHICLE SPEED SENSOR	• The vehicle speed sensor circuit is open or shorted.	• Harness and connector • Vehicle speed sensor
IGN SIGNAL-PRIMARY*	• The ignition signal in primary circuit is not entered during engine cranking or running.	• Harness and connector • Power transistor unit
THROTTLE SENSOR	• The throttle sensor circuit is open or shorted. (An abnormally high or low voltage is entered.)	• Harness and connector • Throttle sensor

*: Check items causing a malfunction of crank angle sensor circuit first, if both "CRANK ANGLE SENSOR" and "IGN SIGNAL-PRIMARY" come out at the same time.

Consult (Cont'd)

DATA MONITOR MODE

Remarks:

- The monitor item marked ★ is applicable to vehicles with catalyzer.
- Specification data are reference values.
- Specification data are output/input values which are detected or supplied by the E.C.U. at the connector.
  * Specification data may not be directly related to their components signals/values/operations.
  i.e. Adjust ignition timing with a timing light before monitoring IGN TIMING, because the monitor may show the specification data in spite of the ignition timing not being adjusted to the specification data. This IGN TIMING monitors the data calculated by the E.C.U. according to the signals input from the crank angle sensor and other ignition timing related sensors.

MONITOR ITEM	CONDITION		SPECIFICATION	CHECK ITEM WHEN OUTSIDE SPEC.
CAS, RPM (REF)	• Tachometer: Connect • Run engine and compare tachometer indication with the CONSULT value.		Almost the same speed as the CONSULT value.	• Harness and connector • Crank angle sensor
AIR FLOW MTR	• Engine: After warming up, idle the engine • A/C switch "OFF" • Shift lever "N"	Idle	0.7 - 1.1V	• Harness and connector • Air flow meter
		2,000 rpm	1.0 - 1.5V	
ENG TEMP SEN	• Engine: After warming up		More than 70°C (158°F)	• Harness and connector • Engine temperature sensor
EXH GAS SEN★	• Engine: After warming up	Maintaining engine speed at 2,000 rpm	0 - 0.3V ↔ 0.6 - 1.0V	• Harness and connector • Exhaust gas sensor • Intake air leaks • Injectors
M/R F/C MNT★			LEAN ↔ RICH Changes more than 5 times during 10 seconds.	
CAR SPEED SEN	• Turn drive wheels and compare speedometer indication with the CONSULT value		Almost the same speed as the CONSULT value	• Harness and connector • Vehicle speed sensor
BATTERY VOLT	• Ignition switch: ON (Engine stopped)		11 - 14V	• Battery • E.C.U. power supply circuit
THROTTLE SEN	• Ignition switch: ON (Engine stopped)	Throttle valve fully closed	Approx. 0.5V	• Harness and connector • Throttle sensor • Throttle sensor adjustment
		Throttle valve fully opened	Approx. 5.0V	
START SIGNAL	• Ignition switch: ON → START		OFF → ON	• Harness and connector • Starter switch
IDLE POSITION	• Ignition switch: ON (Engine stopped)	Throttle valve: Idle position	ON	• Harness and connector • Throttle sensor • Throttle sensor adjustment
		Throttle valve: Slightly open	OFF	
AIR COND SIG	• Engine: After warming up, idle the engine	A/C switch "OFF"	OFF	• Harness and connector • Air conditioner switch
		A/C switch "ON"	ON	
NEUTRAL SW	• Ignition switch: ON	Shift lever in neutral	ON	• Harness and connector • Neutral switch
		Except above	OFF	
PW/ST SIGNAL	• Engine: After warming up, idle the engine	Steering wheel in neutral (forward direction)	OFF	• Harness and connector • Power steering oil pressure switch
		The steering wheel is turned	ON	
FUEL PUMP RLY	• Ignition switch is turned to ON (Operates for 5 seconds) • Engine running and cranking • When engine is stopped (stops in 1.0 seconds)		ON	• Harness and connector • Fuel pump relay
	Except as shown above		OFF	
RADIATOR FAN	• After warming up engine, idle the engine. • A/C switch "OFF"	Engine temperature is 99°C (210°F) or less	OFF	• Harness and connector • Radiator fan relay • Radiator fan
		Engine temperature is 100°C (212°F) or more	ON	
INJ PULSE	• Engine: After warming up • A/C switch "OFF" • Shift lever "N" • No-load	Idle	2.5 - 3.3 msec.	• Harness and connector • Injector • Air flow meter • Intake air system
		2,000 rpm	2.5 - 3.3 msec.	

Consult (Cont'd)

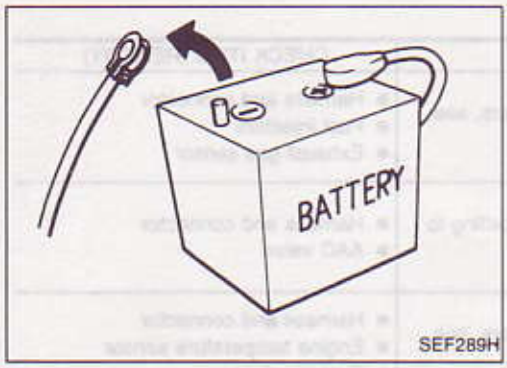
MONITOR ITEM	CONDITION		SPECIFICATION	CHECK ITEM WHEN OUTSIDE SPEC.
IGN TIMING	ditto	Idle	10° B.T.D.C.	• Harness and connector • Crank angle sensor
		2,000 rpm	More than 20° B.T.D.C.	
AAC VALVE	ditto	Idle	20 - 40%	• Harness and connector • A.A.C. valve
		2,000 rpm	—	
A/F ALPHA	• Engine: After warming up	Maintaining engine speed at 2,000 rpm	75 - 125%	• Harness and connector • Injectors • Air flow meter • Exhaust gas sensor • Canister purge line • Intake air system
AIR COND RLY	• Air conditioner switch OFF → ON		OFF → ON	• Harness and connector • Air conditioner switch • Air conditioner relay
EGR CONT S/V**	• Engine: After warming up • A/C switch "OFF" • Shift lever "N" • No-load	Idle	ON	• Harness and connector • E.G.R. & canister control solenoid valve
		2,000 rpm	OFF	

Consult (Cont'd)

ACTIVE TEST MODE

TEST ITEM	CONDITION	JUDGMENT	CHECK ITEM (REMEDY)
FUEL INJECTION TEST	• Engine: Return to the original trouble condition • Change the amount of fuel injection using CONSULT.	If trouble symptom disappears, see CHECK ITEM.	• Harness and connector • Fuel injectors • Exhaust gas sensor
AAC/V OPENING TEST	• Engine: After warming up, idle the engine. • Change the AAC valve opening percent using CONSULT.	Engine speed changes according to the opening percent.	• Harness and connector • AAC valve
ENGINE TEMP TEST	• Engine: Return to the original trouble condition • Change the engine coolant temperature using CONSULT.	If trouble symptom disappears, see CHECK ITEM.	• Harness and connector • Engine temperature sensor • Fuel injectors
IGN TIMING TEST	• Engine: Return to the original trouble condition • Timing light: Set • Retard the ignition timing using CONSULT.	If trouble symptom disappears, see CHECK ITEM.	• Adjust initial ignition timing
EGR CONT SOL/V TEST*	• Ignition switch: ON • Turn solenoid valve "ON" and "OFF" with the CONSULT and listen to operating sound.	Each solenoid valve makes an operating sound.	• Harness and connector • Solenoid valve
RADIATOR FAN TEST	• Ignition switch: ON • Turn the radiator fan "ON" and "OFF" using CONSULT.	Radiator fan moves and stops.	• Harness and connector • Radiator fan motor
FUEL PUMP RLY TEST	• Ignition switch: ON (Engine stopped) • Turn the fuel pump relay "ON" and "OFF" using CONSULT and listen to operating sound.	Fuel pump relay makes the operating sound.	• Harness and connector • Fuel pump relay
SELF-LEARN CONT TEST*	• In this test, the coefficient of self-learning control mixture ratio returns to the original coefficient by touching "CLEAR" on the screen.		

Remarks: The monitor item marked * is applicable to vehicles with catalyzer only.



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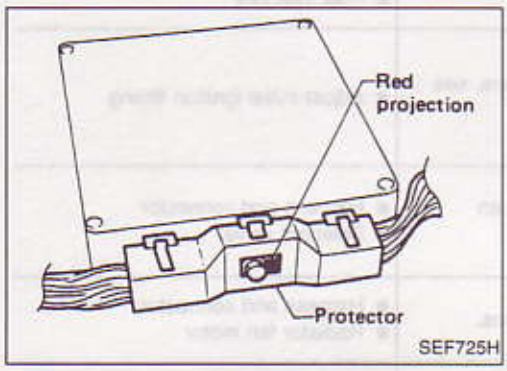
Diagnostic Procedure

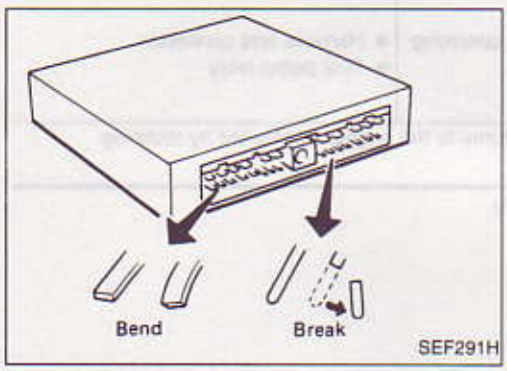
CAUTION:

1. Before connecting or disconnecting the E.C.U. harness connector to or from any E.C.U., be sure to turn the ignition switch to the "OFF" position and disconnect the negative battery terminal in order not to damage E.C.U. as battery voltage is applied to E.C.U. even if ignition switch is turned off. Failure to do so may damage the E.C.U.



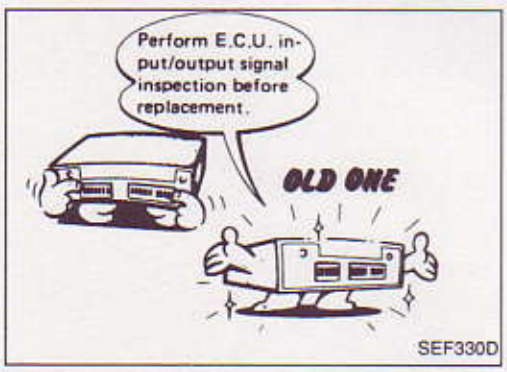
SEF725H

2. When connecting E.C.U. harness connector, tighten securing bolt until red projection is in line with connector face.



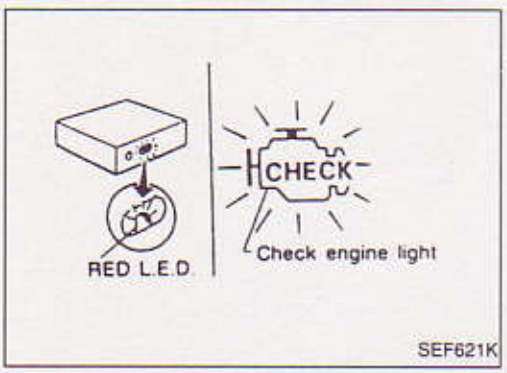
SEF291H

3. When connecting or disconnecting pin connectors into or from E.C.U., take care not to damage pin terminals (bend or break).
4. Make sure that there are not any bends or breaks on E.C.U. pin terminal, when connecting pin connectors.



SEF330D

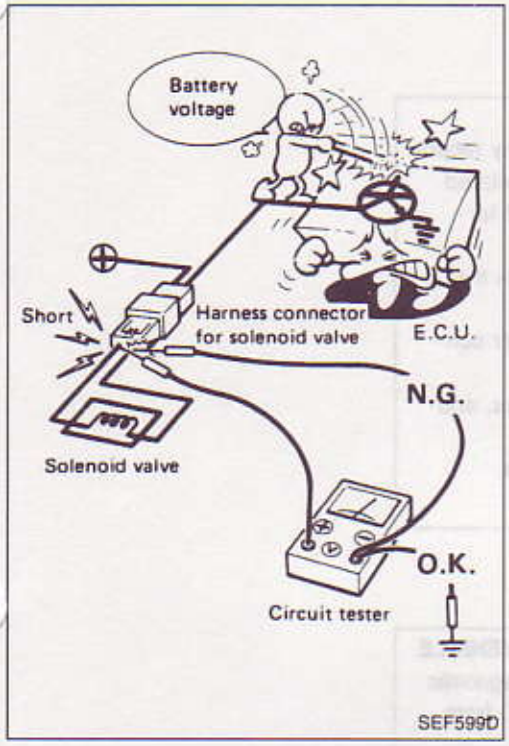
5. Before replacing E.C.U., perform E.C.U. input/output signal inspection and make sure whether E.C.U. functions properly or not. (See page EF & EC-324.)



SEF621K

6. After performing this "Diagnostic Procedure", perform E.C.C.S. self-diagnosis and driving test.

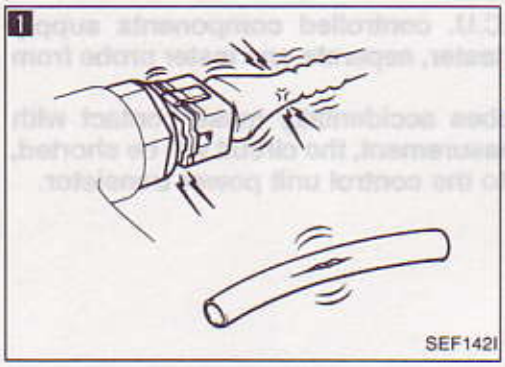
Diagnostic Procedure (Cont'd)



7. **When measuring E.C.U. controlled components supply voltage with a circuit tester, separate one tester probe from the other.**
   If the two tester probes accidentally make contact with each other during measurement, the circuit will be shorted, resulting in damage to the control unit power transistor.

Basic Inspection

1

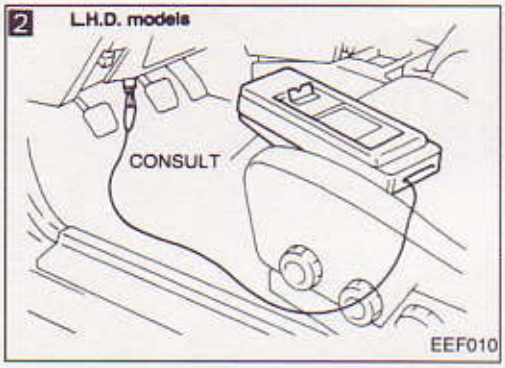

SEF142I

BEFORE STARTING

1. Check service records for any recent repairs that may indicate a related problem, or the current need for scheduled maintenance.
2. Open engine hood and check the following:

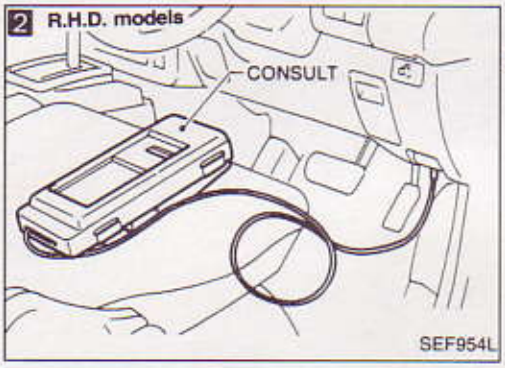
- Harness connectors for proper connections
- Vacuum hoses for splits, kinks, and proper connections
- Wiring for proper connections, pinches, and cuts

2 L.H.D. models



EEF010

2 R.H.D. models

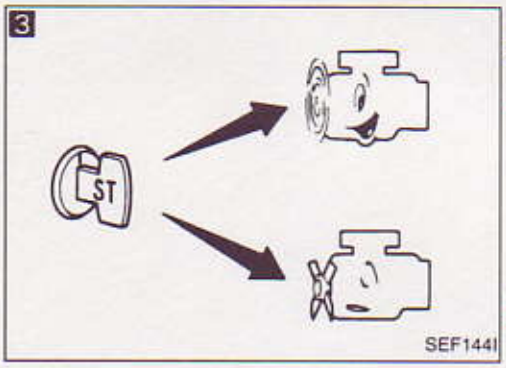


SEF954L

CONNECT CONSULT TO THE VEHICLE

Connect "CONSULT" to the diagnostic connector and select "ENGINE" from the menu. (Refer to page EF & EC-226.)

3



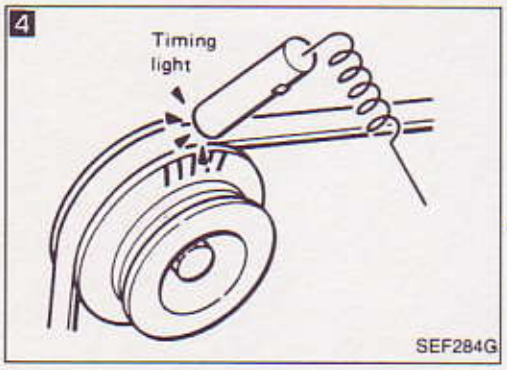
SEF144I

DOES ENGINE START?

No → Go to 6

Yes

4



SEF284G

CHECK IGNITION TIMING.

Warm up engine sufficiently and check ignition timing at idle using timing light. (Models with catalyzer: Refer to page 199. Models without catalyzer: Refer to page 207.)

Ignition timing:

10° ± 2° B.T.D.C.

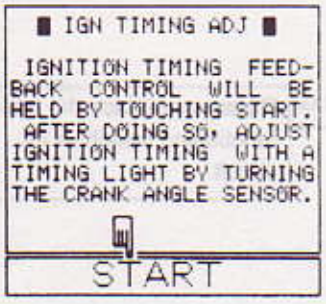
N.G. → Adjust ignition timing by turning crank angle sensor.

O.K.

(Go to Ⓐ on next page.)

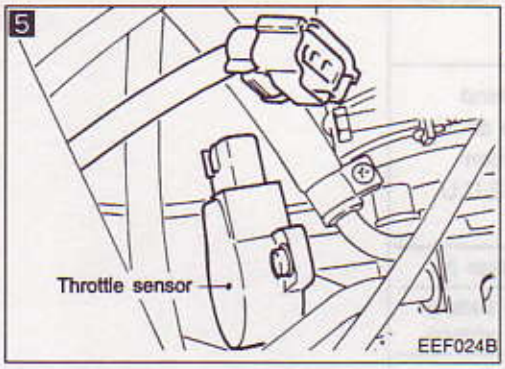
Basic Inspection (Cont'd)

5



SEF579K

5

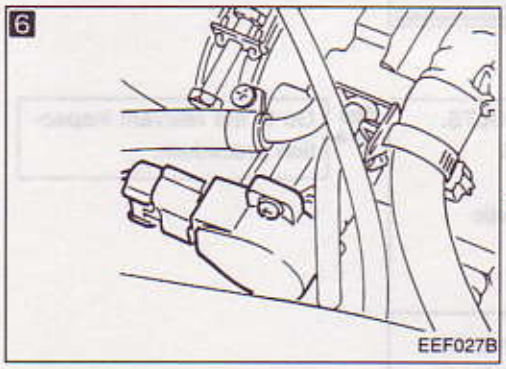


EEF024B

6

SEF581K

6



EEF027B

Ⓐ

5

CHECK IDLE ADJ. SCREW INITIAL SET RPM.

1. Select "IGN TIMING ADJ" in "WORK SUPPORT" mode.
2. When touching "START", does engine rpm fall to 675 ± 50 rpm (in "N" position)?

No → Adjust engine rpm by turning idle adjusting screw.

OR

When disconnecting throttle sensor harness connector, does engine rpm fall to 675 ± 50 rpm (in "N" position)?

Yes

6

CHECK THROTTLE SENSOR IDLE POSITION.

1. Perform "THROTTLE SEN. ADJ" in "WORK SUPPORT" mode.
2. Check that output voltage of throttle sensor is 0.45 to 0.55V. (Throttle valve fully closes.) and "IDLE POSITION" stays "ON".

N.G. →
1. Adjust output voltage by rotating throttle sensor body.
2. Disconnect throttle sensor harness connector for a few seconds and then reconnect it.
3. Confirm that "IDLE POSITION" stays "ON".

OR

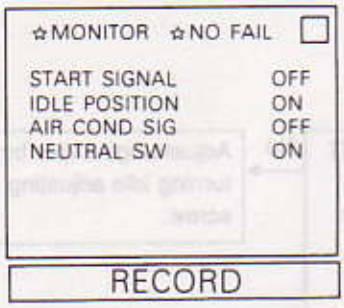
Measure output voltage of throttle sensor using voltmeter, and check that it is 0.45 to 0.55V. (Throttle valve fully closed.)

O.K.

(Go to Ⓑ on next page.)

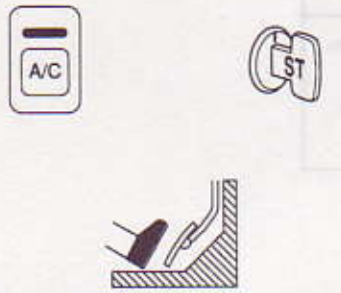
Basic Inspection (Cont'd)

7



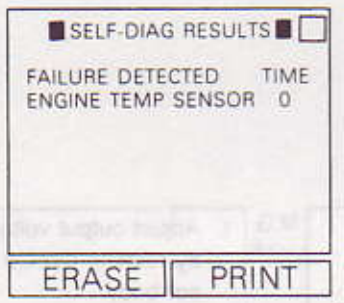
SEF384J

7



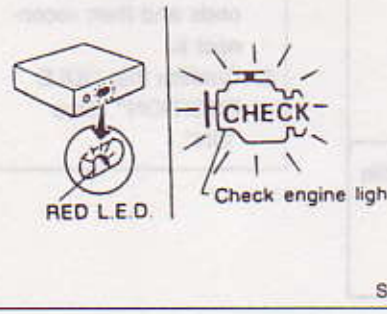
EEF012

8



SEF151I

8



SEF621K

Ⓑ

7

CHECK SWITCH INPUT SIGNAL.

Select the following switches in "DATA MONITOR" mode,

a) Start signal,
b) Idle position,
c) Air conditioner signal,
d) Neutral (Parking) switch,

and check the switches' ON-OFF operation.

N.G. → Repair or replace the malfunctioning switch or its circuit.

OR

Remove E.C.U. from behind glove box and check the above switches ON-OFF operation using voltmeter at each E.C.U. terminal.

Switch	Condition	Voltage (V)
Start signal	IGN ON → IGN START	0 → Battery voltage
Idle position	—	—
A/C signal	A/C OFF → A/C ON (Engine running)	Battery voltage → 0 - 0.3
Neutral (Parking switch)	Shift lever is Neutral position → Except Neutral position	0 → Battery voltage

O.K.

8

READ SELF-DIAGNOSTIC RESULTS.

1. Perform "SELF-DIAG RESULTS" mode.
2. Read out self-diagnostic results.
3. Is a failure detected?

Yes → Go to the relevant inspection procedure.

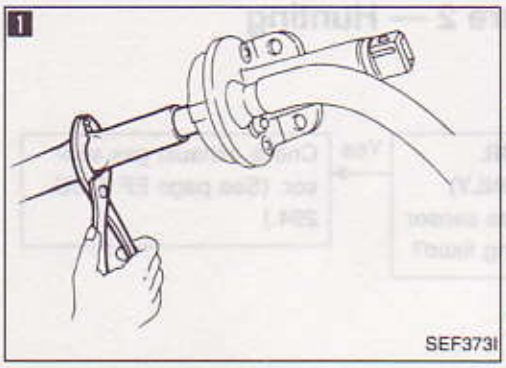
OR

1. Set "Self-diagnostic results mode" in Mode II. (Refer to page EF & EC-222.)
2. Count the number of RED L.E.D. or check engine light flashes and read out the codes.
3. Are the codes shown?

No

INSPECTION END

1

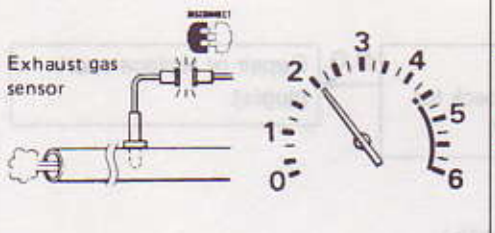


SEF373I

2

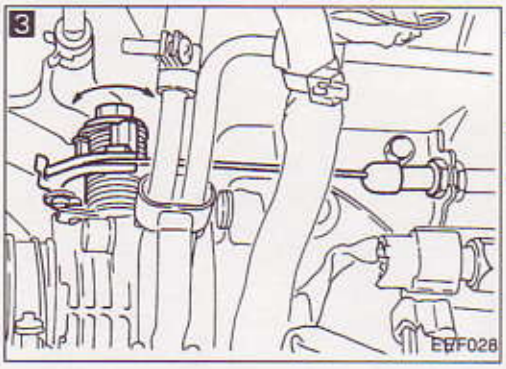
SEF348K

2



SEF375I

3



EEF028

Diagnostic Procedure 1 — High Idling after Warm-up

1

CHECK AIR REGULATOR.
When pinching the air regulator hose, does the engine speed drop?

Yes → Check air regulator and circuit. (See page EF & EC-306.)

No ↓

2

CHECK INTAKE AIR LEAK.
(MODELS WITH CATALYZER ONLY)

1. Select "SELF-LEARNING CONT" in "ACTIVE TEST" mode.
2. Clear the self-learning control coefficient by touching "CLEAR".
3. Does the engine speed drop?

— OR —

1. Disconnect exhaust gas sensor harness connector.
2. After racing engine at 2,000 rpm under no-load for about 30 seconds, does the engine speed drop?

Yes → Discover air leak location and repair.

No ↓

3

CHECK THROTTLE LINKAGE.

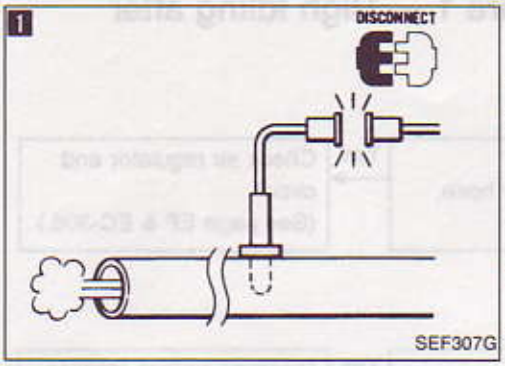
1. Check that throttle linkage moves smoothly.
2. Confirm that throttle valve both fully opens and fully closes.

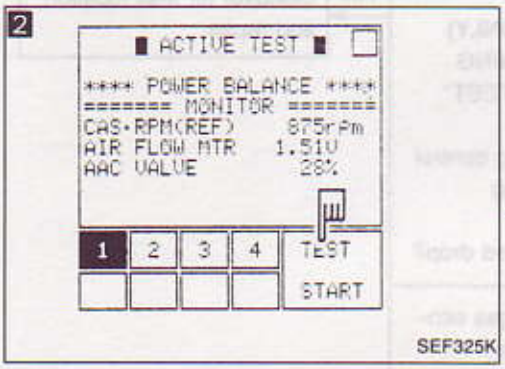
N.G. → Repair throttle linkage or sticking of throttle valve.

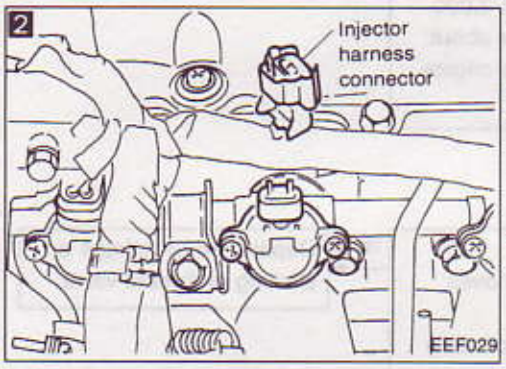
O.K. ↓

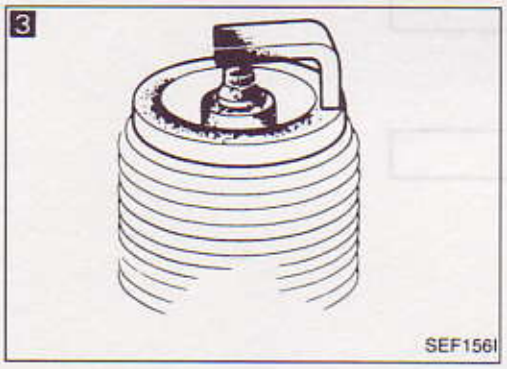
INSPECTION END

Diagnostic Procedure 2 — Hunting









1

CHECK EXHAUST GAS SENSOR. (MODELS WITH CATALYZER ONLY)
When disconnecting exhaust gas sensor harness connector, is the hunting fixed?

Yes → Check exhaust gas sensor. (See page EF & EC-294.)

No ↓

2

PERFORM POWER BALANCE TEST.
1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

No → Go to **4** .

— OR —

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

Yes ↓

3

CHECK SPARK PLUGS.
Remove the spark plugs and check for fouling, etc.

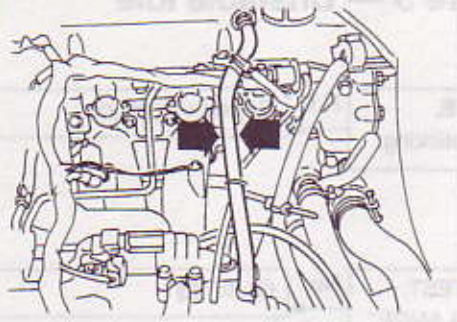
N.G. → Repair or replace spark plug(s).

O.K. ↓

(Go to Ⓐ on next page.)

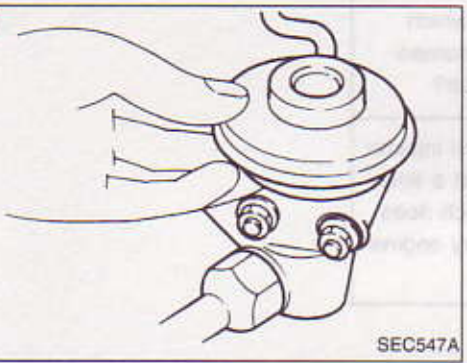
Diagnostic Procedure 2 — Hunting (Cont'd)

4



EEF030

5



SEC547A

Ⓐ

4

CHECK FOR INTAKE AIR LEAK.
When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

Yes → Discover air leak location and repair.

No

5

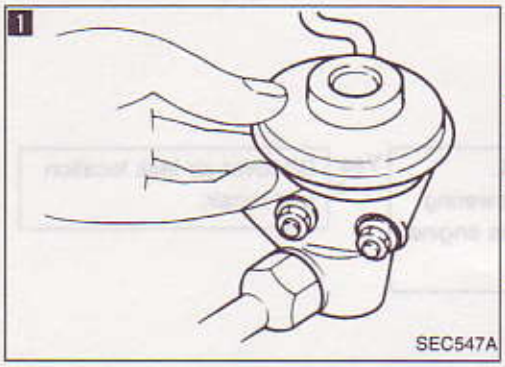
CHECK E.G.R. CONTROL VALVE.
Check E.G.R. control valve for sticking.

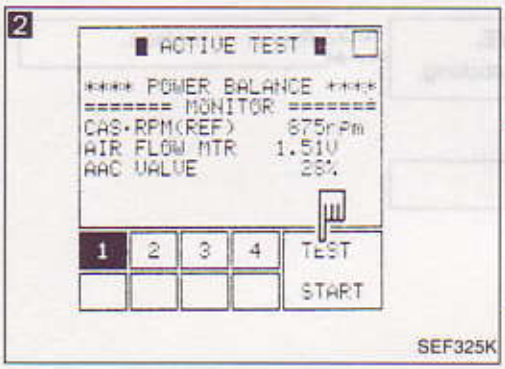
N.G. → Repair or replace.

O.K.

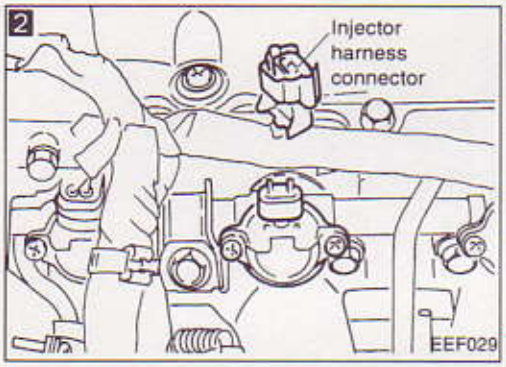
INSPECTION END

Diagnostic Procedure 3 — Unstable Idle

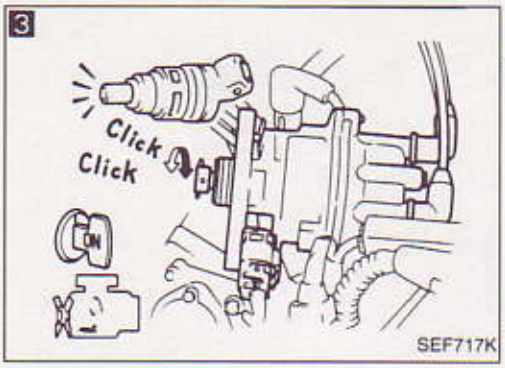

SEC547A



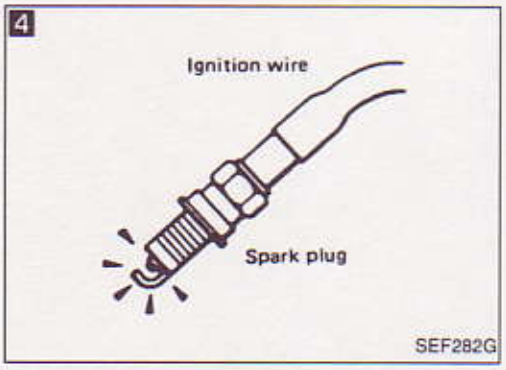
SEF325K



EEF029



SEF717K



SEF282G

1

CHECK E.G.R. CONTROL VALVE.
Check E.G.R. control valve for sticking.

N.G. → Repair or replace.

O.K. ↓

2

PERFORM POWER BALANCE TEST.
1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

OR

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

No → Go to 6

Yes ↓

3

CHECK INJECTOR.
1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Ignition switch ON. (Do not start engine.)
3. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

Yes ↓

4

CHECK IGNITION SPARK.
1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

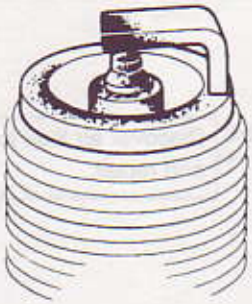
N.G. → Check ignition coil, power transistor and their circuits. (See page EF & EC-283.)

O.K. ↓

(Go to Ⓐ on next page.)

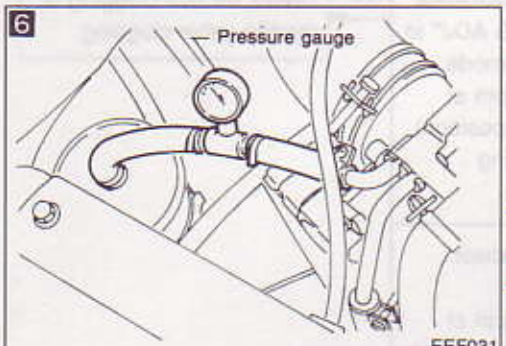
Diagnostic Procedure 3 — Unstable Idle (Cont'd)

5



SEF156I

6

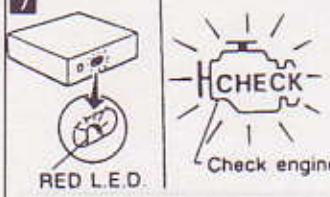


EEF031

7

SEF320K

7



SEF621K

Ⓐ

5 **CHECK SPARK PLUGS.**
Remove the spark plugs and check for fouling, etc.

N.G. → Repair or replace spark plug(s).

O.K.

6 **CHECK FUEL PRESSURE.**
1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.
   At idle:
   Approx. 245 kPa
   (2.45 bar, 2.5 kg/cm², 36 psi)

N.G. → Check fuel pump and circuit.

O.K.

7 **CHECK EXHAUST GAS SENSOR. (MODELS WITH CATALYZER ONLY)**

1. See "M/R F/C MNT" in "Data monitor" mode.
2. Maintaining engine at 2,000 rpm under no-load (engine is warmed up sufficiently.), check that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.
   RICH→LEAN→RICH→
   1 time 2 times
   LEAN→RICH.....

N.G. → Replace exhaust gas sensor.

OR

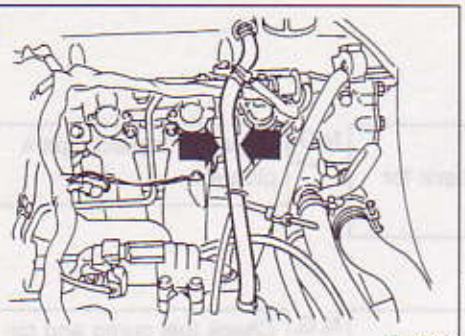
1. Set "Exhaust gas sensor monitor" in the self-diagnostic Mode II. (See page EF & EC-222.)
2. Maintaining engine at 2,000 rpm under no-load, check to make sure that the RED L.E.D. on the E.C.U. or the check engine light on the instrument panel goes ON and OFF more than 5 times during 10 seconds.

O.K.

(Go to Ⓑ on next page.)

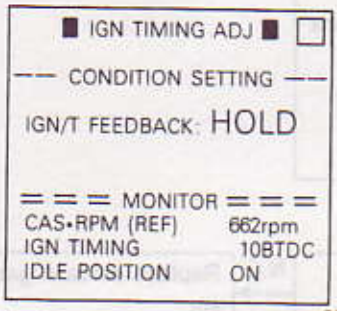
Diagnostic Procedure 3 — Unstable Idle (Cont'd)

8



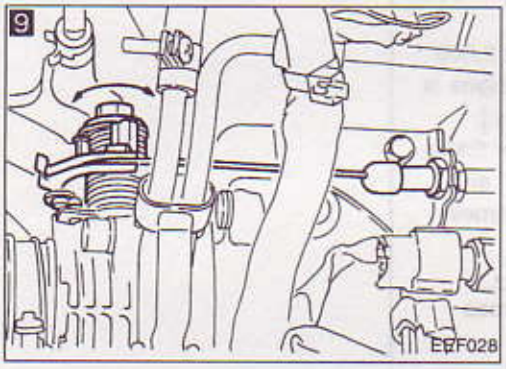
EEF030

9



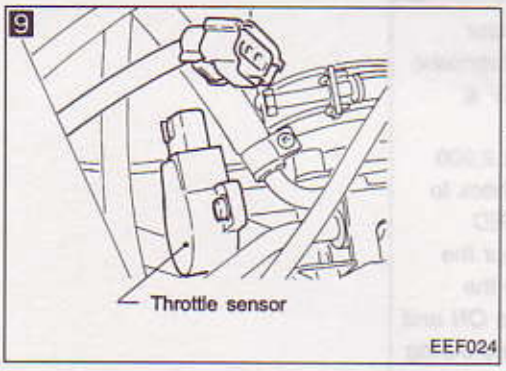
SEF704K

9



EEF028

9



EEF024

10

COMPRESSION PRESSURE

SEF309G

Ⓑ

8 **CHECK FOR INTAKE AIR LEAK.**
When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

Yes → Discover air leak location and repair.

No

9 **CHECK IDLE ADJ. SCREW CLOGGING.**

1. Perform "IGN TIMING ADJ" in "WORK SUPPORT" mode.
2. Can you set engine rpm at 675 ± 50 rpm (in "N" position) by turning idle adjusting screw?

No → Check for IAS clogging or throttle valve clogging.

OR

1. Disconnect throttle sensor harness connector.
2. Can you set engine rpm at 675 ± 50 rpm (in "N" position) by turning idle speed adjusting screw?

Yes

10 **CHECK COMPRESSION PRESSURE.**

- Check compression pressure.

Standard:
kPa (bar, kg/cm², psi)/350 rpm
1,324 (13.24, 13.5, 192)
Minimum:
kPa (bar, kg/cm², psi)/350 rpm
1,128 (11.28, 13.5, 192)
Difference between each cylinder:
kPa (bar, kg/cm², psi)/350 rpm
98 (0.98, 1.0, 14)

N.G. → Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

O.K.

11 **CHECK E.C.U. HARNESS CONNECTOR.**
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K.

12 **TRY A KNOWN GOOD E.C.U.★**

Trouble is fixed. → Replace E.C.U.

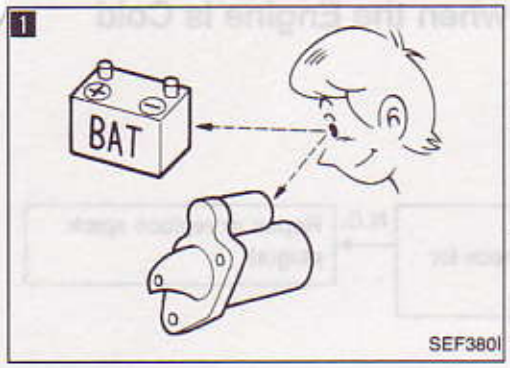
Trouble is not fixed.

INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 4 — Hard to Start or Impossible to Start when the Engine is Cold

1



SEF380I

CHECK BATTERY AND STARTER.
Check battery and starter condition. (Refer to EL section.)

N.G. → Repair or replace.

O.K. ↓

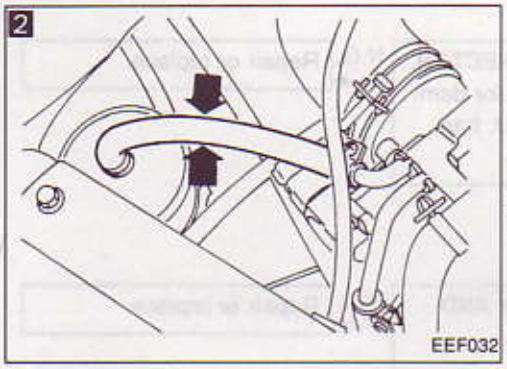
2

CHECK FUEL PRESSURE.
1. Pinch fuel feed hose with fingers.
2. When cranking the engine, is there any pressure on the fuel feed hose?

No → Check fuel pump and circuit. (See page EF & EC-302.)

Yes ↓

3

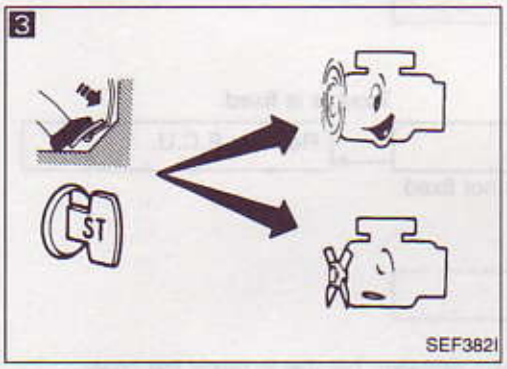

EEF032

CHECK AIR REGULATOR AND A.A.C. VALVE.
When pressing accelerator pedal fully, can you start the engine.

Yes → Check A.A.C. valve, air regulator and circuits. (See pages EF & EC-306.)

No ↓

4



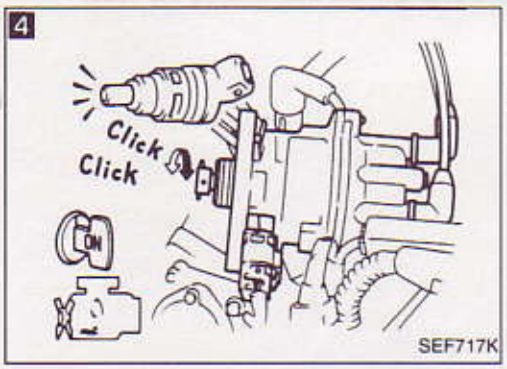
SEF382I

CHECK INJECTOR.
1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Turn ignition switch ON. (Do not start engine.)
3. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

Yes ↓

5

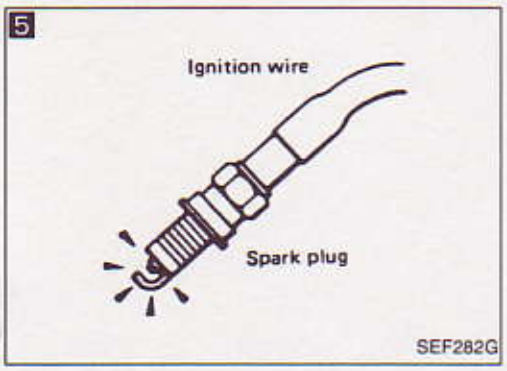


SEF717K

CHECK IGNITION SPARK.
1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

N.G. → Check ignition coil, power transistor unit and their circuits. (See page EF & EC-283.)

O.K. ↓



SEF282G

(Go to Ⓐ on next page.)

Diagnostic Procedure 4 — Hard to Start or Impossible to Start when the Engine is Cold (Cont'd)

6

SEF156I

Ⓐ

6

CHECK SPARK PLUGS.
Remove the spark plugs and check for fouling, etc.

N.G. → Repair or replace spark plug(s).

O.K.

7

CHECK E.C.U. HARNESS CONNECTOR.
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K.

8

CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.
Refer to page EF & EC-271.

N.G. → Repair or replace.

O.K.

9

TRY A KNOWN GOOD E.C.U.★

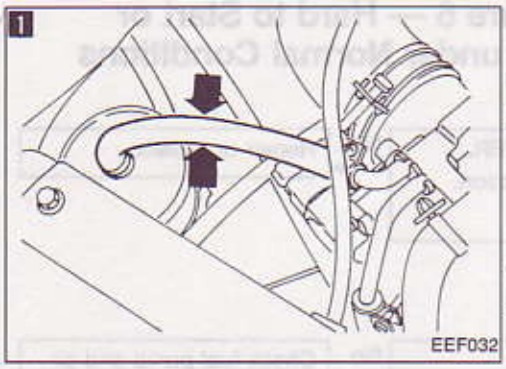
Trouble is fixed. → Replace E.C.U.

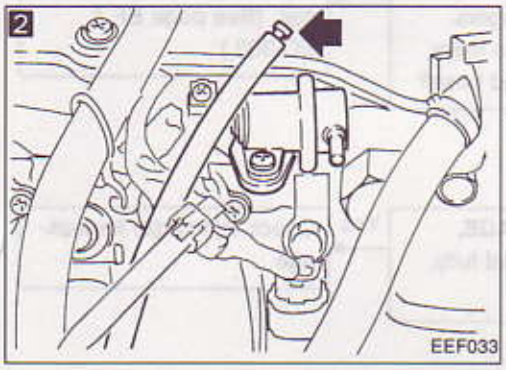
Trouble is not fixed.

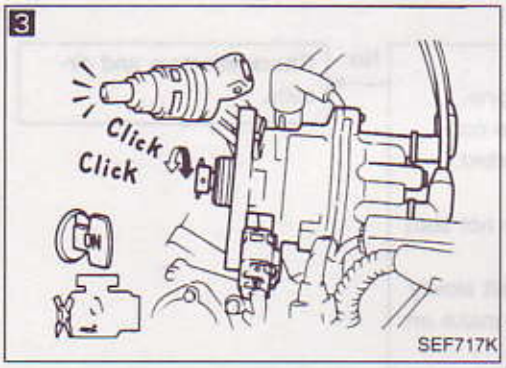
INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

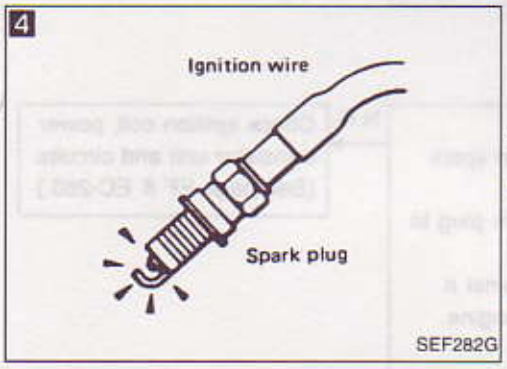
Diagnostic Procedure 5 — Hard to Start or Impossible to Start when the Engine is Hot


EEF032


EEF033



SEF717K



SEF282G

1 **CHECK FUEL PRESSURE.**
1. Pinch fuel feed hose with fingers.
2. When cranking the engine, is there any pressure on the fuel feed hose?

No → Check fuel pump and circuit. (See page EF & EC-302.)

Yes ↓

2 **CHECK FUEL VAPOR.**
1. Disconnect fuel pressure regulator vacuum hose and plug hose.
2. Can you start engine?

Yes → Check fuel properties.

No ↓

3 **CHECK INJECTOR.**
1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Turn ignition switch ON. (Do not start engine.)
3. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

Yes ↓

4 **CHECK IGNITION SPARK.**
1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

N.G. → Check ignition coil, power transistor and circuits. (See page EF & EC-283.)

O.K. ↓

5 **CHECK E.C.U. HARNESS CONNECTOR.**
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K. ↓

6 **CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.**
Refer to page EF & EC-271.

N.G. → Repair or replace.

O.K. ↓

7 **TRY A KNOWN GOOD E.C.U.★**

Trouble is fixed. → Replace E.C.U.

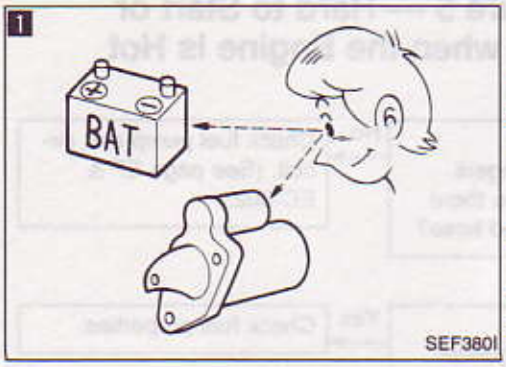
Trouble is not fixed. ↓

INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 6 — Hard to Start or Impossible to Start under Normal Conditions

1



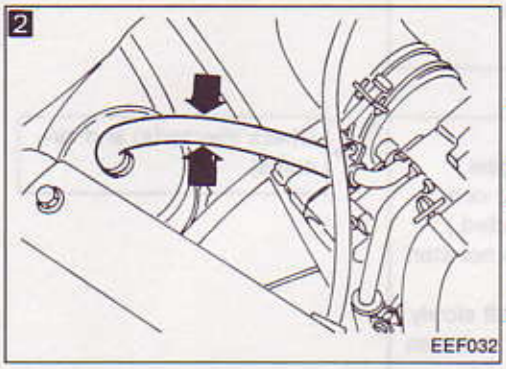
SEF380I

CHECK BATTERY AND STARTER.
Check battery and starter operation.
(Refer to EL section.)

N.G. → Repair or replace.

O.K. ↓

2

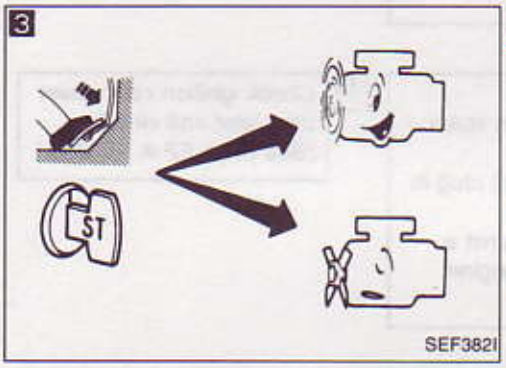

SEF032

CHECK FUEL PRESSURE.
1. Pinch fuel feed hose with fingers.
2. When cranking the engine, is there any pressure on the fuel feed hose?

No → Check fuel pump and circuit. (See page EF & EC-302.)

Yes ↓

3



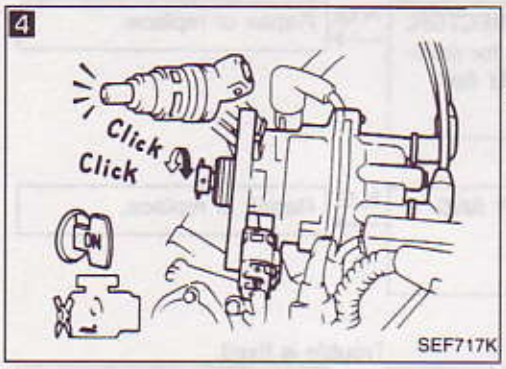
SEF382I

CHECK INJECTOR FOR LEAKAGE.
When pressing accelerator pedal fully, can you start the engine.

Yes → Check injector(s) for leakage.

No ↓

4



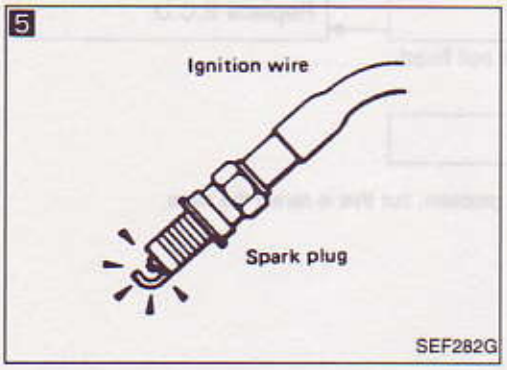
SEF717K

CHECK INJECTOR.
1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injectors and circuits.

Yes ↓

5



SEF282G

CHECK IGNITION SPARK.
1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

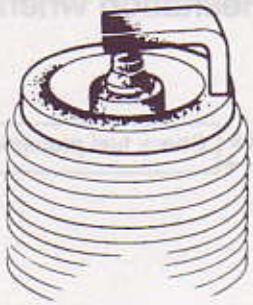
N.G. → Check ignition coil, power transistor unit and circuits. (See page EF & EC-283.)

O.K. ↓

(Go to Ⓐ on next page.)

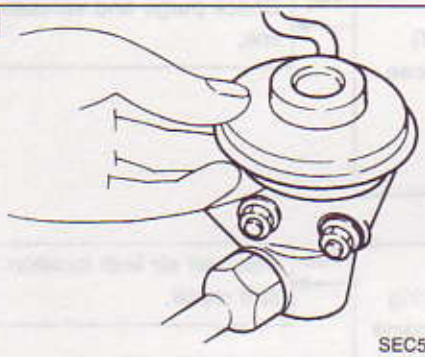
Diagnostic Procedure 6 — Hard to Start or Impossible to Start under Normal Conditions (Cont'd)

6



SEF156I

7



SEC547A

Ⓐ

6 **CHECK SPARK PLUGS.**
Remove the spark plugs and check for fouling, etc.
N.G. → Repair or replace spark plug(s).
O.K. ↓

7 **CHECK E.C.U. CONTROL VALVE.**
Check the E.C.R. control valve for sticking.
N.G. → Repair or replace.
O.K. ↓

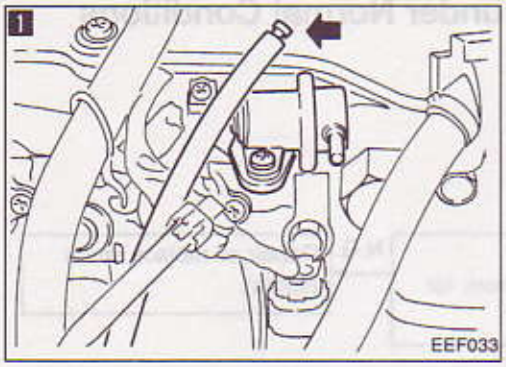
8 **CHECK E.C.U. HARNESS CONNECTOR.**
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.
N.G. → Repair or replace.
O.K. ↓

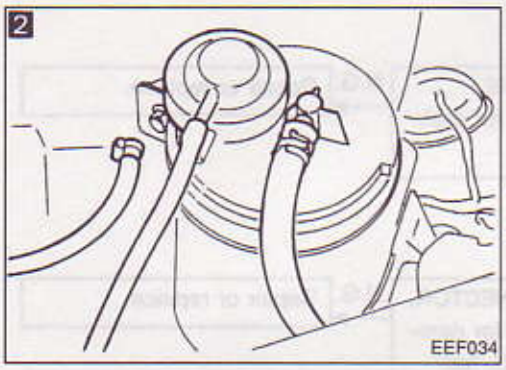
9 **CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.**
Refer to page EF & EC-271.
N.G. → Repair or replace
O.K. ↓

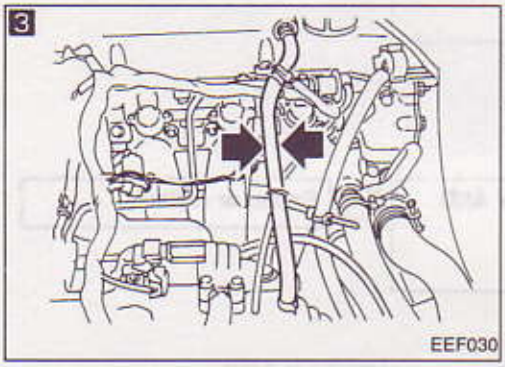
10 **TRY A KNOWN GOOD E.C.U.★**
Trouble is fixed. → Replace E.C.U.
Trouble is not fixed. ↓

INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.







Diagnostic Procedure 7 — Hesitation when the Engine is Hot

1

CHECK FUEL VAPOR.
1. Disconnect fuel pressure regulator vacuum hose and plug hose.
2. Perform cruise test.
3. Does the hesitation disappear?

Yes → Check fuel properties.

No ↓

2

CHECK CANISTER PURGE. (MODELS WITH CATALYZER ONLY)
1. Disconnect canister purge line hose and plug hose.
2. Perform cruise test.
3. Does the hesitation disappear?

Yes → Check purge and vacuum line.

No ↓

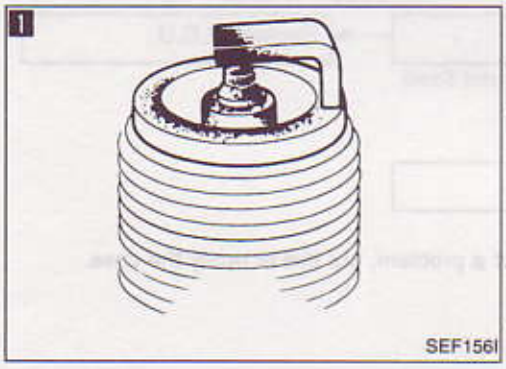
3

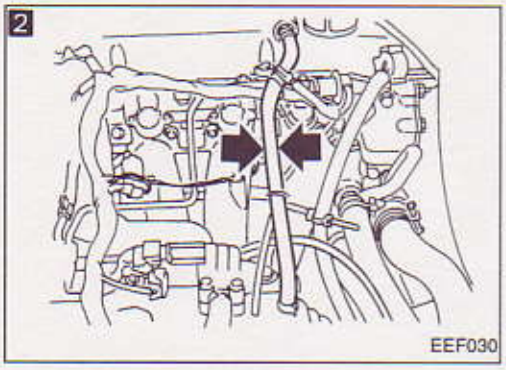
CHECK FOR INTAKE AIR LEAK.
When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

Yes → Discover air leak location and repair.

No ↓

INSPECTION END





Diagnostic Procedure 8 — Hesitation when the Engine is Cold

1

CHECK SPARK PLUGS.
Remove spark plugs and check for fouling, etc.

N.G. → Repair or replace spark plug(s).

O.K. ↓

2

CHECK FOR INTAKE AIR LEAK.
When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

Yes → Discover air leak location and repair.

No ↓

Trouble is fixed.

3

TRY A KNOWN GOOD AIR FLOW METER.

→ Replace air flow meter.

Trouble is not fixed. ↓

4

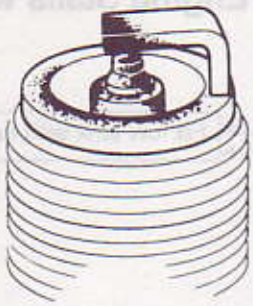
CHECK FOR INTAKE VALVE DEPOSITS.
If there are deposits on intake valves, remove them.

↓

INSPECTION END

Diagnostic Procedure 9 — Hesitation under Normal Conditions

1



SEF156I

CHECK SPARK PLUGS.
Remove spark plugs and check for fouling, etc.

N.G. → Repair or replace spark plug(s).

O.K. ↓

2

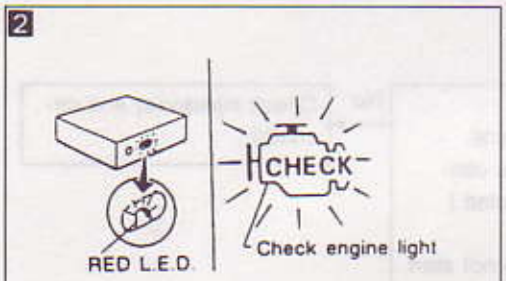
SEF320K

CHECK EXHAUST GAS SENSOR. (MODELS WITH CATALYZER ONLY)

1. See "M/R F/C MNT" in "DATA MONITOR" mode.
2. Maintaining engine at 2,000 rpm under no-load (with engine warmed up sufficiently.), check to make sure that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.
   RICH→LEAN→RICH→
   1 time 2 times
   LEAN→RICH.....

N.G. → Replace exhaust gas sensor.

OR

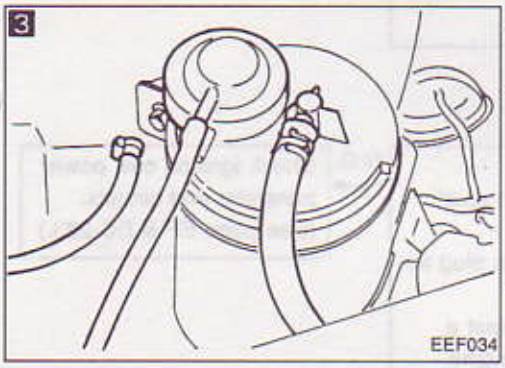


SEF621K

1. Set "Exhaust gas sensor monitor" in the self-diagnostic Mode II. (See page EF & EC-222.)
2. Maintaining engine at 2,000 rpm under no-load, check that the RED L.E.D. on the E.C.U. or the check engine light on the instrument panel goes ON and OFF more than 5 times during 10 seconds.

O.K. ↓

3



EEF034

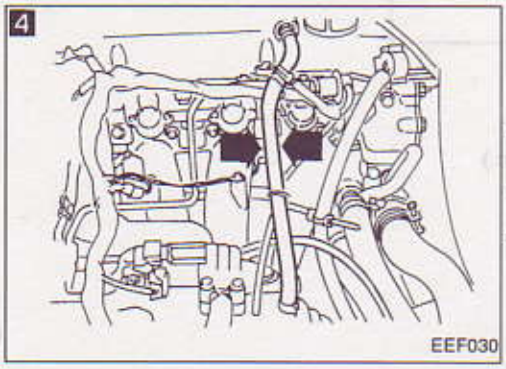
CHECK CANISTER PURGE. (MODELS WITH CATALYZER ONLY)

1. Disconnect canister purge line hose and plug hose.
2. Perform cruise test.
3. Does the hesitation disappear?

Yes → Check purge and vacuum line.

No ↓

4



EEF030

CHECK FOR INTAKE AIR LEAK.
When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

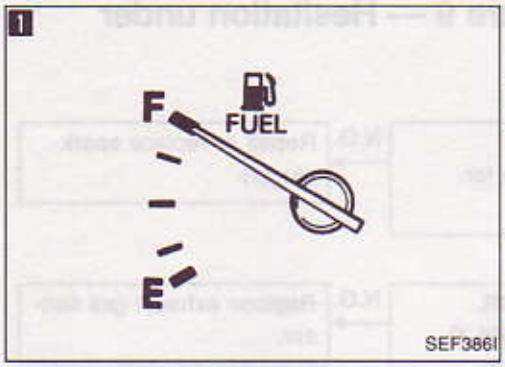
Yes → Discover air leak location and repair.

No ↓

INSPECTION END

Diagnostic Procedure 10 — Engine Stalls when Turning

1



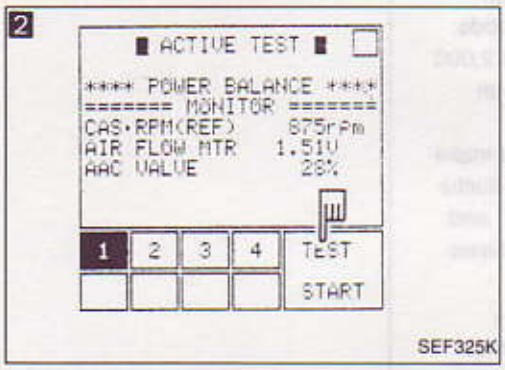
SEF386I

CHECK FUEL LEVEL.
Check to see that there is enough fuel in tank.

N.G. → Fill fuel tank with fuel.

O.K. ↓

2



SEF325K

PERFORM POWER BALANCE TEST.

1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

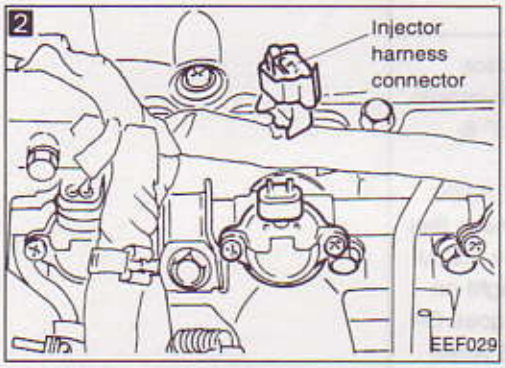
OR

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

No → Go to 5 .

Yes ↓

2



EEF029

3

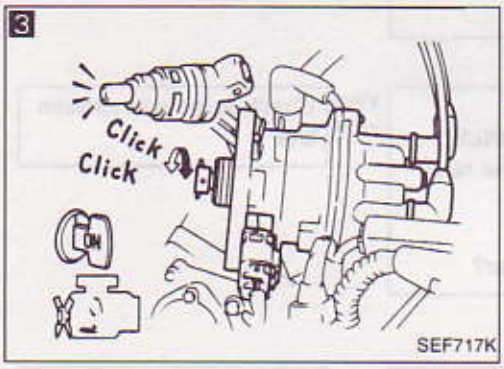
CHECK INJECTOR.

1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

Yes ↓

3



SEF717K

4

CHECK IGNITION SPARK.

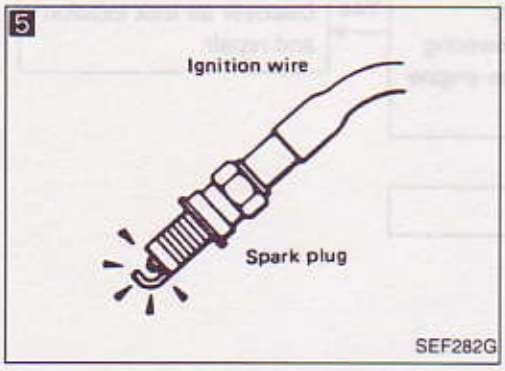
1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

N.G. → Check ignition coil, power transistor and circuits. (See page EF & EC-283.)

O.K. ↓

(Go to Ⓐ on next page.)

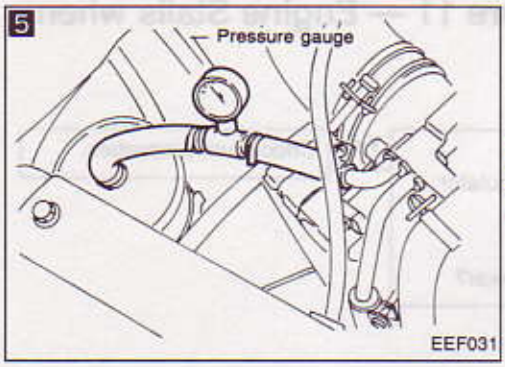
5



SEF282G

Diagnostic Procedure 10 — Engine Stalls when Turning (Cont'd)

5



Ⓐ

5

CHECK FUEL PRESSURE.
1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:
Approx. 245 kPa
(2.45 bar, 2.5 kg/cm², 36 psi)
The moment throttle valve is fully open:
Approx. 294 kPa
(2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pressure regulator diaphragm.

O.K.

6

CHECK E.C.U. HARNESS CONNECTOR.
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K.

7

CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.
Refer to page EF & EC-271.

N.G. → Repair or replace.

O.K.

8

TRY A KNOWN GOOD E.C.U.★

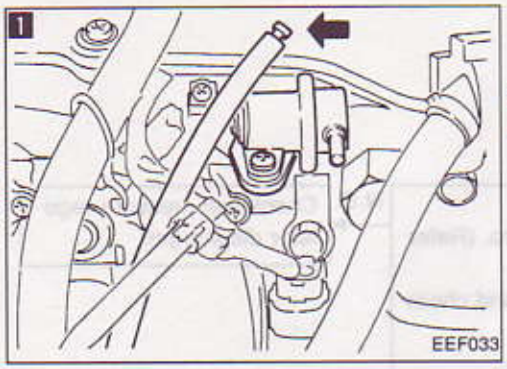
Trouble is fixed. → Replace E.C.U.

Trouble is not fixed.

INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 11 — Engine Stalls when the Engine is Hot



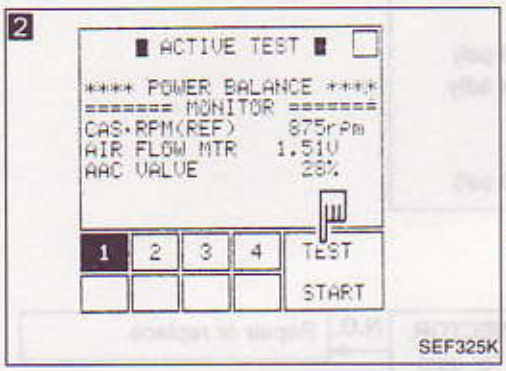
1

CHECK FUEL VAPOR.

1. Disconnect fuel pressure regulator vacuum hose and plug hose.
2. Perform cruise test.
3. Does the engine stall disappear?

Yes → Check fuel properties.

No ↓



2

PERFORM POWER BALANCE TEST.

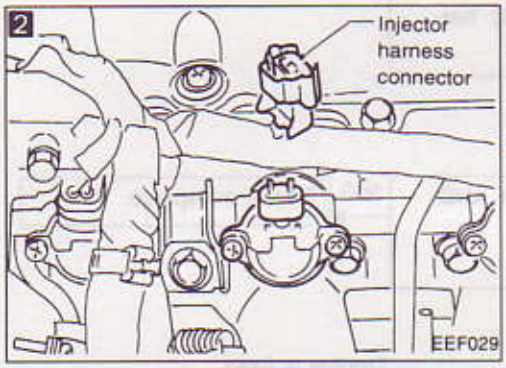
1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

OR

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

No → Go to **5** .

Yes ↓



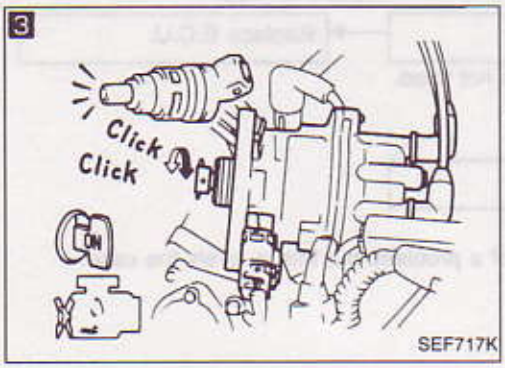
3

CHECK INJECTOR.

1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

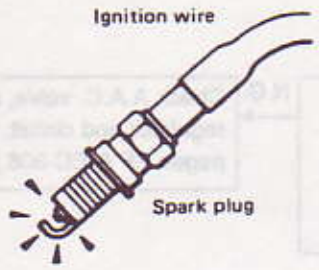
Yes ↓



(Go to Ⓐ on next page.)

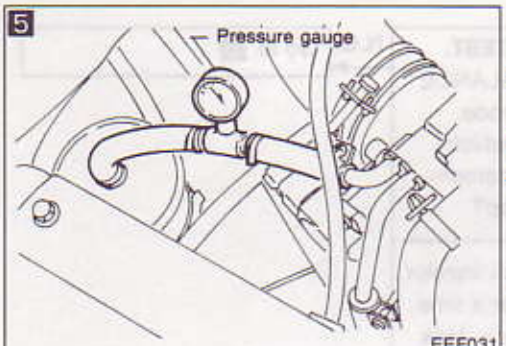
Diagnostic Procedure 11 — Engine Stalls when the Engine is Hot (Cont'd)

4



SEF282G

5



EEF031

Ⓐ

4

CHECK IGNITION SPARK.
1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

N.G. → Check ignition coil, power transistor and their circuits. (See page EF & EC-283.)

O.K.

5

CHECK FUEL PRESSURE.
1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:
Approx. 245 kPa
(2.45 bar, 2.5 kg/cm², 36 psi)

A few seconds after ignition switch is turned OFF to ON:
Approx. 294 kPa
(2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pressure regulator diaphragm.

O.K.

6

CHECK E.C.U. HARNESS CONNECTOR.
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K.

7

CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.
Refer to page EF & EC-271.

N.G. → Repair or replace.

O.K.

8

TRY A KNOWN GOOD E.C.U.★

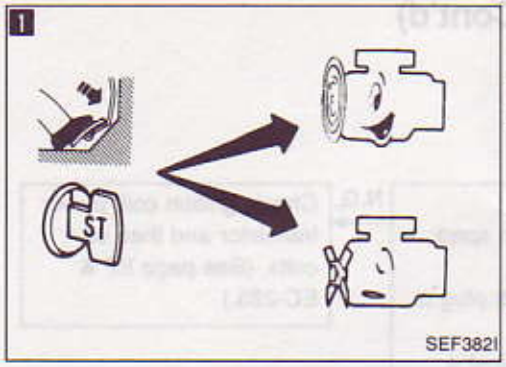
Trouble is fixed. → Replace E.C.U.

Trouble is not fixed.

INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 12 — Engine Stalls when the Engine is Cold



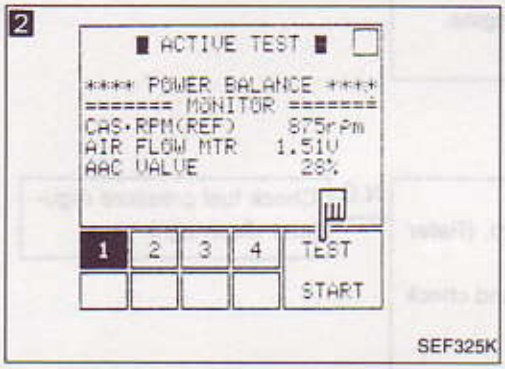
SEF382I

1

CHECK AIR REGULATOR AND A.A.C. VALVE.
When the engine is cold, can you start the engine when pressing accelerator pedal fully?

N.G. → Check A.A.C. valve, air regulator and circuit. (See pages EF & EC-306.)

O.K. ↓



SEF325K

2

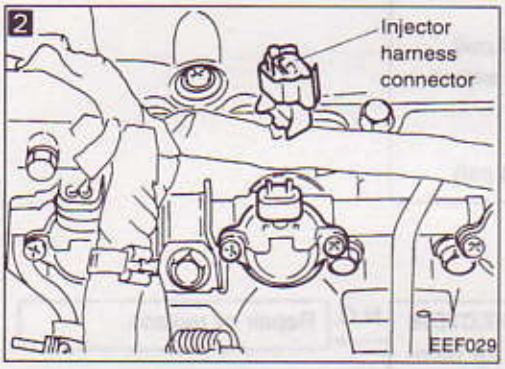
PERFORM POWER BALANCE TEST.
1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

N.G. → Go to 6 .

OR

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

O.K. ↓



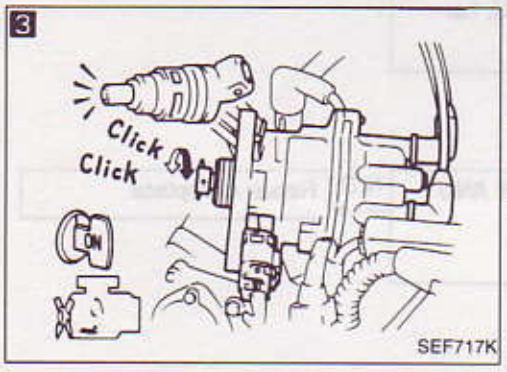
EEF029

3

CHECK INJECTOR.
1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

N.G. → Check injector(s) and circuit(s).

O.K. ↓



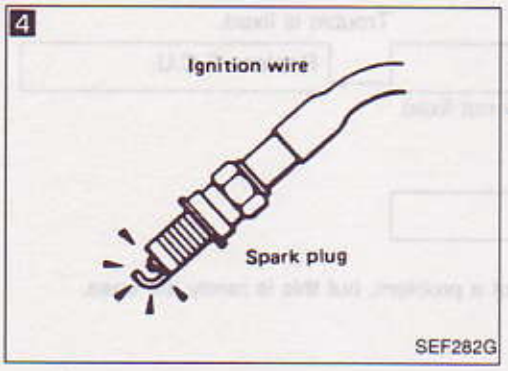
SEF717K

4

CHECK IGNITION SPARK.
1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

N.G. → Check ignition coil, power transistor and circuits. (See page EF & EC-283.)

O.K. ↓

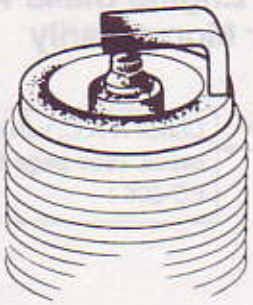


SEF282G

(Go to Ⓐ on next page.)

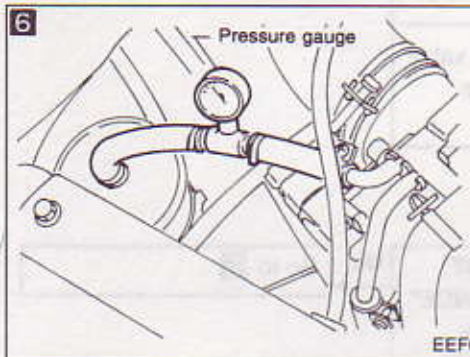
Diagnostic Procedure 12 — Engine Stalls when the Engine is Cold (Cont'd)

5



SEF156I

6



EEF031

Ⓐ

5 **CHECK SPARK PLUGS.**
Remove the spark plugs and check for fouling, etc.
N.G. → Repair or replace spark plug(s).
O.K. ↓

6 **CHECK FUEL PRESSURE.**
1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:
Approx. 245 kPa
(2.45 bar, 2.5 kg/cm², 36 psi)
A few seconds after ignition switch is turned OFF to ON:
Approx. 294 kPa
(2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pressure regulator diaphragm.
O.K. ↓

7 **CHECK E.C.U. HARNESS CONNECTOR.**
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.
N.G. → Repair or replace.
O.K. ↓

8 **CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.**
Refer to page EF & EC-277.
N.G. → Repair or replace.
O.K. ↓

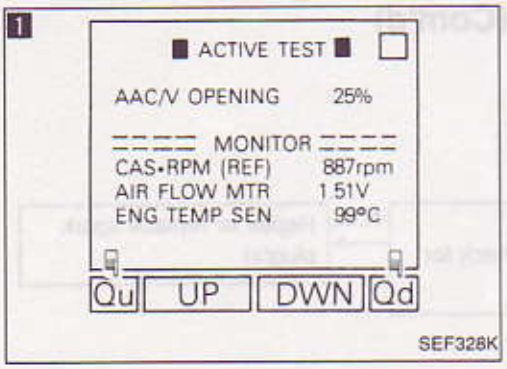
9 **TRY A KNOWN GOOD E.C.U.★**
Trouble is fixed. → Replace E.C.U.
Trouble is not fixed. ↓

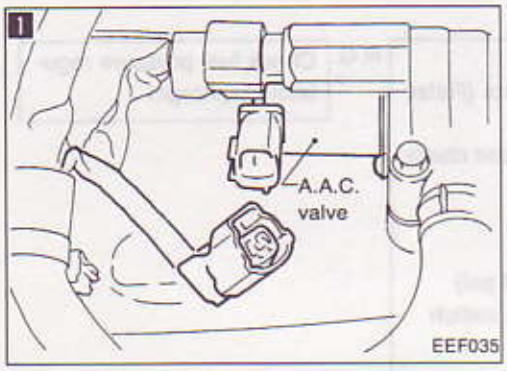
INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 13 — Engine Stalls when Stepping on the Accelerator Momentarily

1





CHECK A.A.C. VALVE.

1. Select "A.A.C. VALVE OPENING" in "ACTIVE TEST" mode.
2. When touching "Qu" and "Qd", does the engine speed change according to the percent of A.A.C. valve opening?

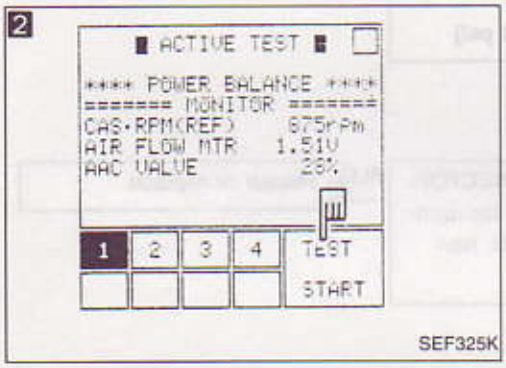
No → Check A.A.C. valve and circuit. (See page EF & EC-306.)

OR

When disconnecting A.A.C. valve harness connector, does the engine speed drop?

Yes ↓

2



PERFORM POWER BALANCE TEST.

1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

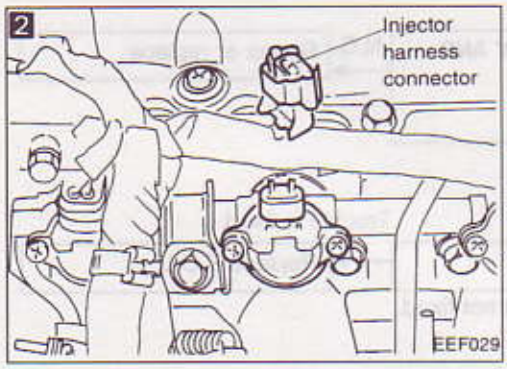
No → Go to 5 .

OR

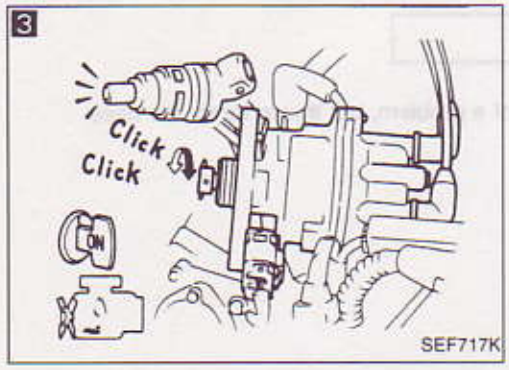
When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

Yes ↓

2



3



CHECK INJECTOR.

1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

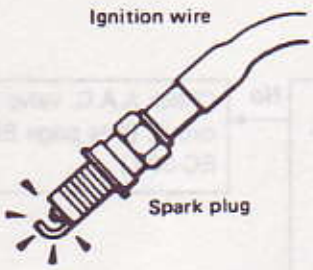
No → Check injector(s) and their circuit(s).

Yes ↓

(Go to Ⓐ on next page.)

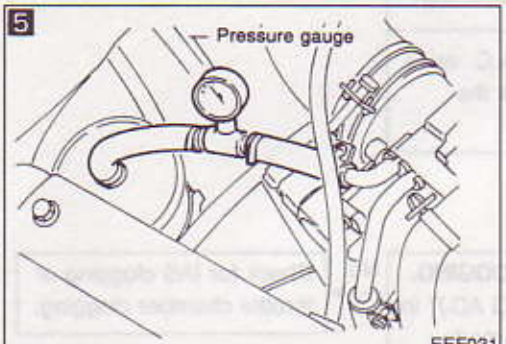
Diagnostic Procedure 13 — Engine Stalls when Stepping on the Accelerator Momentarily (Cont'd)

4



SEF282G

5



EEF031

Ⓐ

4 **CHECK IGNITION SPARK.**

1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against an earth point with engine cranking.
4. Check for spark.

N.G. → Check ignition coil, power transistor and their circuits. (See page EF & EC-283.)

O.K. ↓

5 **CHECK FUEL PRESSURE.**

1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:
Approx. 245 kPa
(2.45 bar, 2.5 kg/cm², 36 psi)
A few seconds after ignition switch is turned OFF to ON:
Approx. 294 kPa
(2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pressure regulator diaphragm.

O.K. ↓

6 **CHECK E.C.U. HARNESS CONNECTOR.**
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K. ↓

7 **CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.**
Refer to page EF & EC-271.

N.G. → Repair or replace.

O.K. ↓

8 **TRY A KNOWN GOOD E.C.U.★**

Trouble is fixed. → Replace E.C.U.

Trouble is not fixed. ↓

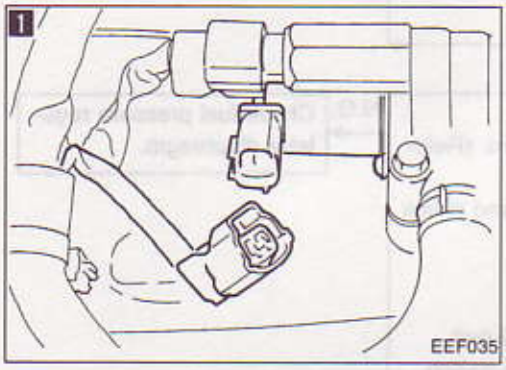
INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

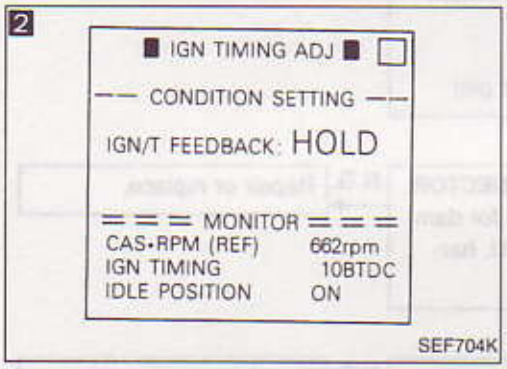
Diagnostic Procedure 14 — Engine Stalls after Decelerating

1

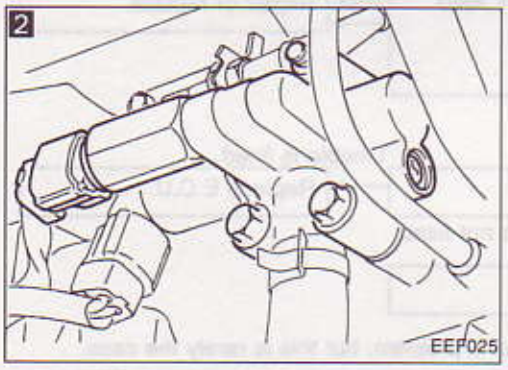
1



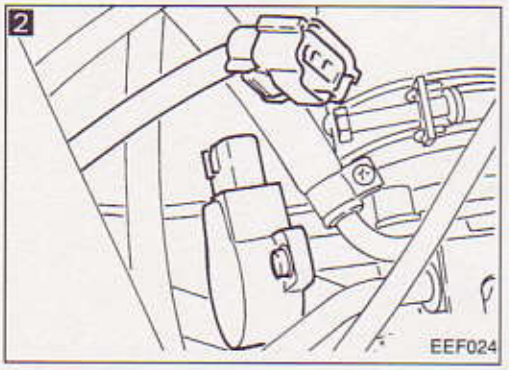
2



2



2



1

CHECK A.A.C. VALVE.

1. Select "A.A.C. VALVE OPENING" in "ACTIVE TEST" mode.
2. When touching "Qu" and "Qd", does the engine speed change according to the percent of A.A.C. valve opening?

No → Check A.A.C. valve and circuit. (See page EF & EC-306.)

OR

When disconnecting A.A.C. valve harness connector, does the engine speed drop?

Yes

2

CHECK IDLE ADJ. SCREW CLOGGING.

1. Perform "IGN TIMING ADJ" in "WORK SUPPORT" mode.
2. Can you set engine rpm at 675 ± 50 rpm (in "N" position) by turning idle adjusting screw?

No → Check for IAS clogging or throttle chamber clogging.

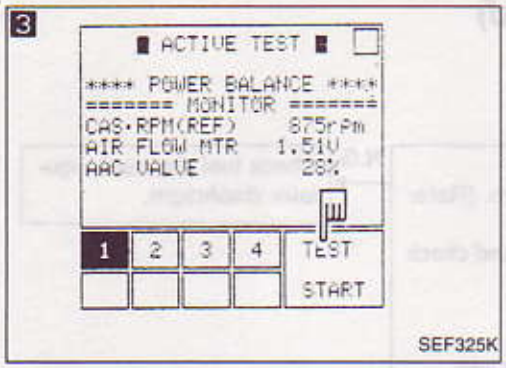
OR

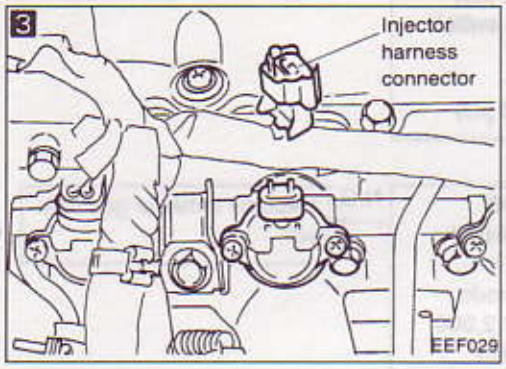
1. Disconnect throttle sensor harness connector.
2. Can you set engine rpm at 675 ± 50 rpm (in "N" position) by turning idle adjusting screw?

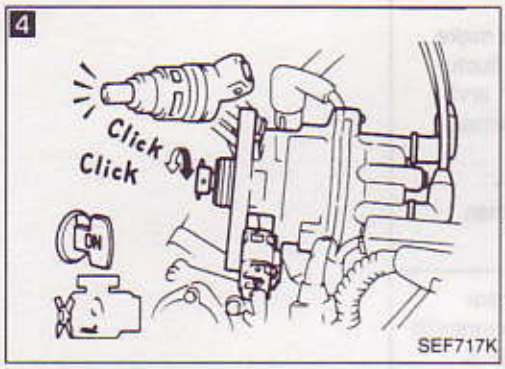
Yes

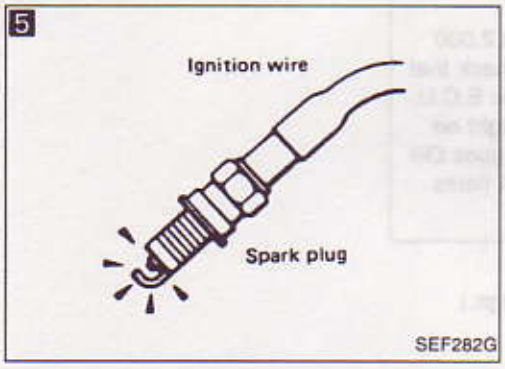
(Go to Ⓐ on next page.)

Diagnostic Procedure 14 — Engine Stalls after Decelerating (Cont'd)









Ⓐ

3 **PERFORM POWER BALANCE TEST.**

1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

No → Go to **6**

— OR —

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

Yes ↓

4 **CHECK INJECTOR.**

1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

Yes ↓

5 **CHECK IGNITION SPARK.**

1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

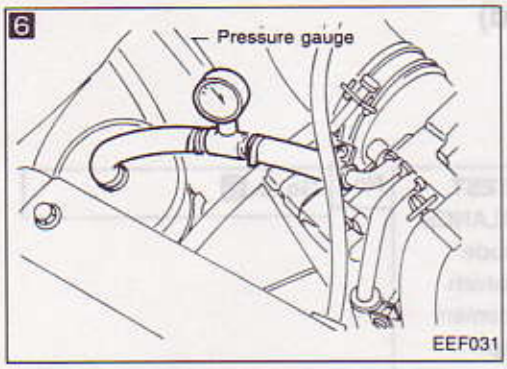
No → Check ignition coil, power transistor and circuits. (See page EF & EC-283.)

Yes ↓

(Go to Ⓑ on next page.)

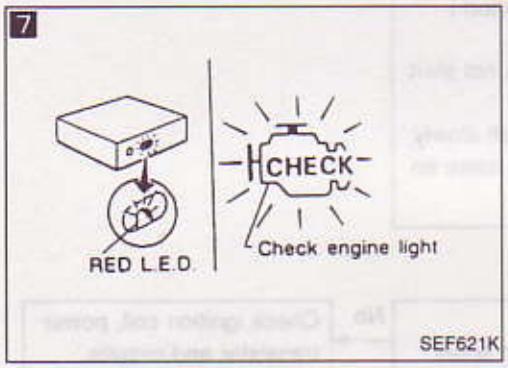
Diagnostic Procedure 14 — Engine Stalls after Decelerating (Cont'd)

6



7

7



Ⓑ

6

CHECK FUEL PRESSURE.

1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:

Approx. 245 kPa (2.45 bar, 2.5 kg/cm², 36 psi)

A few seconds after ignition switch is turned OFF to ON:

Approx. 294 kPa (2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pressure regulator diaphragm.

O.K. ↓

7

CHECK EXHAUST GAS SENSOR. (MODELS WITH CATALYZER ONLY)

1. See "M/R F/C MNT" in "DATA MONITOR" mode.
2. Maintaining engine at 2,000 rpm under no-load (with engine warmed up sufficiently.), check to make sure that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.

RICH→LEAN→RICH→ (1 time) (2 times) LEAN→RICH.....

N.G. → Replace exhaust gas sensor.

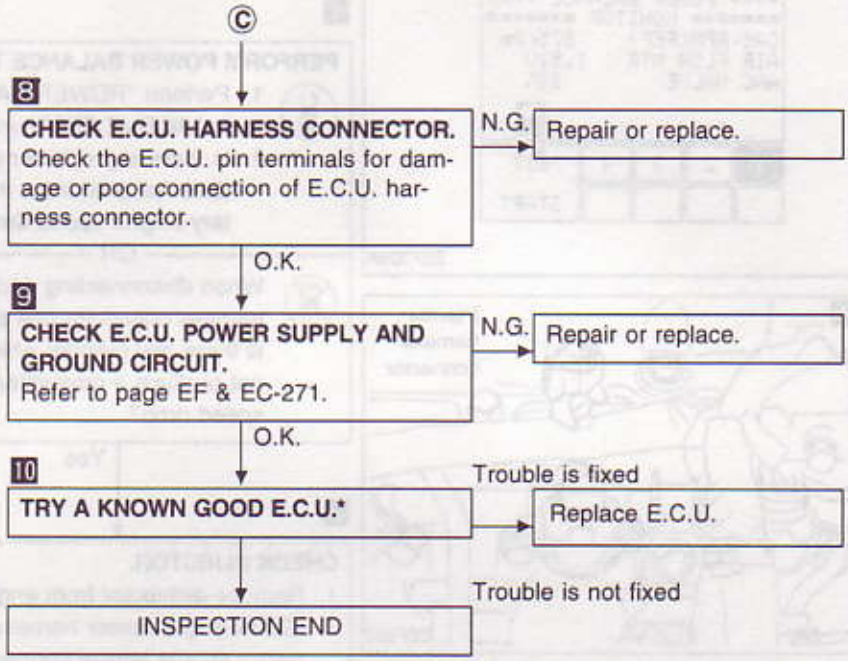
OR

1. Set "Exhaust gas sensor monitor" in the self-diagnostic Mode II. (See page EF & EC-222.)
2. Maintaining engine at 2,000 rpm under no-load, check that the RED L.E.D. on the E.C.U. or the check engine light on the instrument panel goes ON and OFF more than 5 times during 10 seconds.

O.K. ↓

(Go to Ⓒ on the next page.)

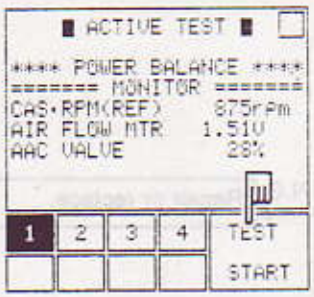
Diagnostic Procedure 14 — Engine Stalls after Decelerating (Cont'd)



*: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 15 — Engine Stalls when Accelerating or when Driving at Constant Speed

1



SEF325K

PERFORM POWER BALANCE TEST.

1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

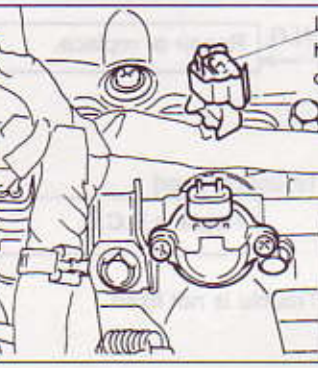
No → Go to 4.

— OR —

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

Yes ↓

1



EEF029

2

CHECK INJECTOR.

1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

Yes ↓

2

SEF717K

3

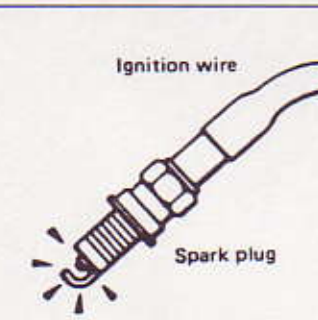
CHECK IGNITION SPARK.

1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

No → Check ignition coil, power transistor and circuits. (See page EF & EC-283.)

Yes ↓

3

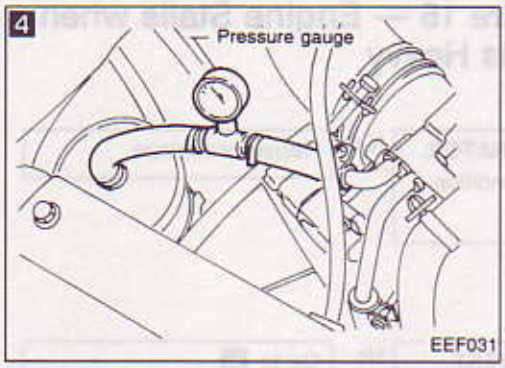


SEF282G

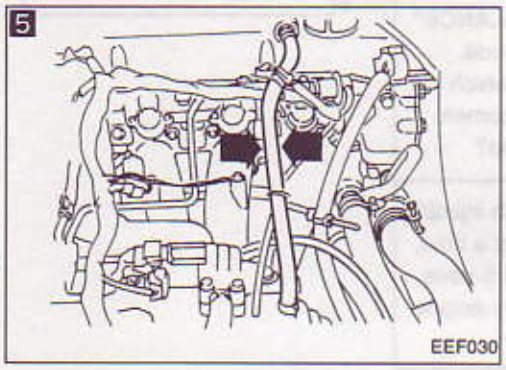
(Go to Ⓐ on next page.)

Diagnostic Procedure 15 — Engine Stalls when Accelerating or when Driving at Constant Speed (Cont'd)

4



5



Ⓐ

4

CHECK FUEL PRESSURE.
1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:
Approx. 245 kPa
(2.45 bar, 2.5 kg/cm², 36 psi)
A few seconds after ignition switch is turned OFF to ON:
Approx. 294 kPa
(2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pump, circuit and fuel pressure regulator.

O.K.

5

CHECK FOR INTAKE AIR LEAK.
When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

Yes → Discover air leak location and repair.

No

6

CHECK E.C.U. HARNESS CONNECTOR.
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K.

7

CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.
Refer to page EF & EC-271.

Yes → Repair or replace.

No

8

TRY A KNOWN GOOD E.C.U.★

Trouble is fixed. → Replace E.C.U.

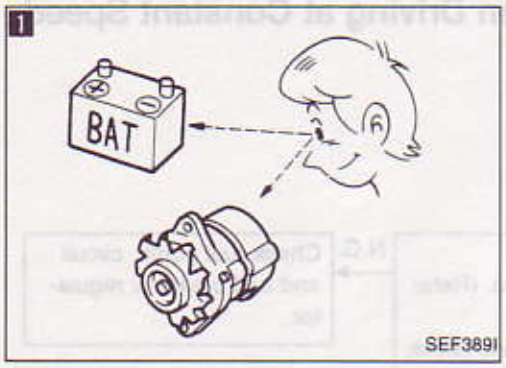
Trouble is not fixed.

INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 16 — Engine Stalls when the Electrical Load is Heavy

1

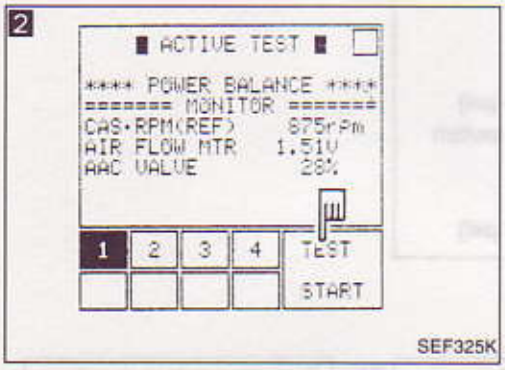


CHECK BATTERY AND ALTERNATOR.
Check battery and alternator condition. (Refer to EL section.)

N.G. → Repair or replace.

O.K. ↓

2



PERFORM POWER BALANCE TEST.

1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

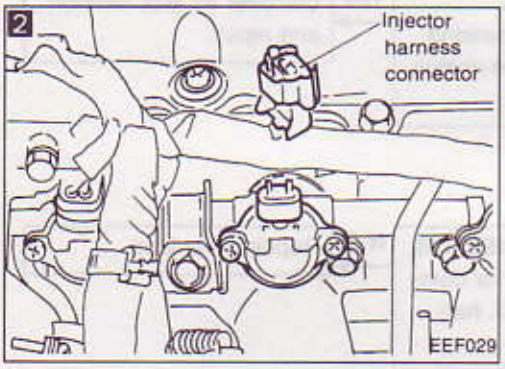
No → Go to 5 .

OR

When disconnecting each injector harness connector one at a time, is there any cylinder which does not produce a momentary engine speed drop?

Yes ↓

2



3

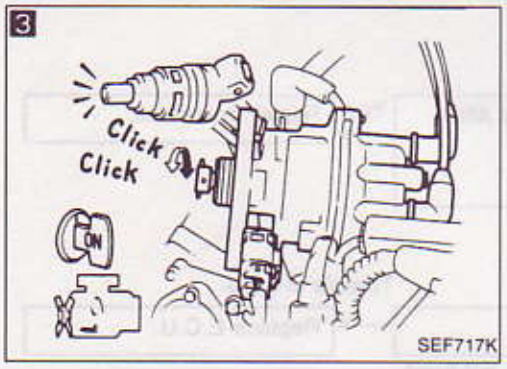
CHECK INJECTOR.

1. Remove distributor from engine. (Crank angle sensor harness connector should remain connected.)
2. Disconnect ignition wires.
3. Turn ignition switch ON. (Do not start engine.)
4. When rotating distributor shaft slowly by hand, does each injector make an operating sound?

No → Check injector(s) and circuit(s).

Yes ↓

3



4

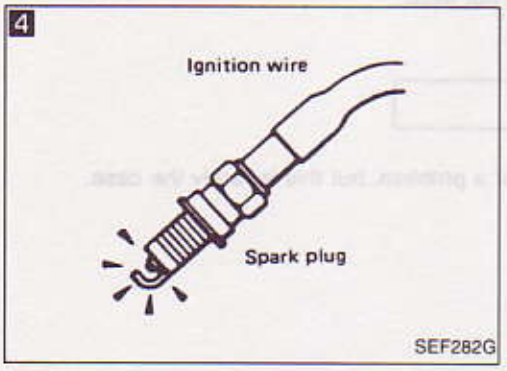
CHECK IGNITION SPARK.

1. Disconnect ignition wire from spark plug.
2. Connect a known good spark plug to the ignition wire.
3. Place end of spark plug against a suitable ground and crank engine.
4. Check for spark.

N.G. → Check ignition coil, power transistor and circuits. (See page EF & EC-283.)

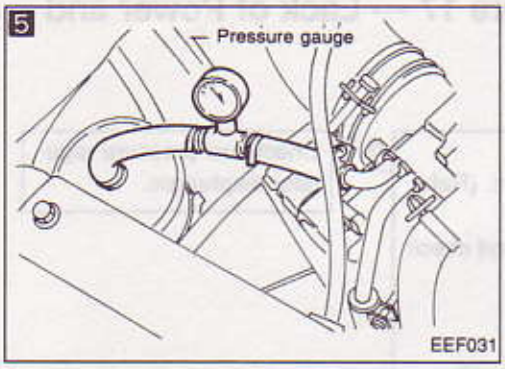
O.K. ↓

4



(Go to Ⓐ on next page.)

Diagnostic Procedure 16 — Engine Stalls when the Electrical Load is Heavy (Cont'd)



Ⓐ

5

CHECK FUEL PRESSURE.
1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:
Approx. 245 kPa
(2.45 bar, 2.5 kg/cm², 36 psi)
A few seconds after ignition switch is turned OFF to ON:
Approx. 294 kPa
(2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pressure regulator diaphragm.

O.K.

6

CHECK E.C.U. HARNESS CONNECTOR.
Check the E.C.U. pin terminals for damage or poor connection of E.C.U. harness connector.

N.G. → Repair or replace.

O.K.

7

CHECK E.C.U. POWER SUPPLY AND GROUND CIRCUIT.
Refer to page EF & EC-271.

N.G. → Repair or replace.

O.K.

8

TRY A KNOWN GOOD E.C.U.★

Trouble is fixed. → Replace E.C.U.

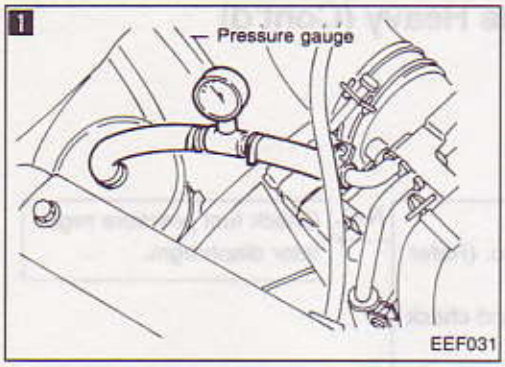
Trouble is not fixed.

INSPECTION END

★: E.C.U. may be the cause of a problem, but this is rarely the case.

Diagnostic Procedure 17 — Lack of Power and Stumble

1



CHECK FUEL PRESSURE.

1. Release fuel pressure to zero. (Refer to page EF & EC-324.)
2. Install fuel pressure gauge and check fuel pressure.

At idle:

Approx. 245 kPa
(2.45 bar, 2.5 kg/cm², 36 psi)

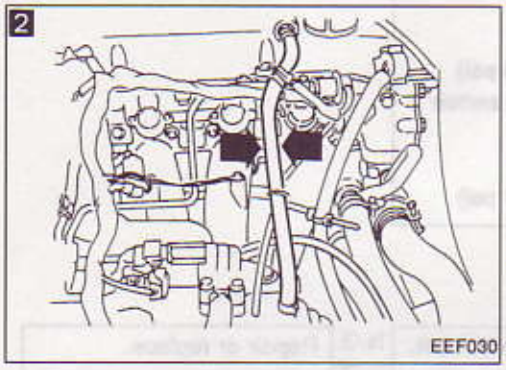
A few seconds after ignition switch is turned OFF to ON:

Approx. 294 kPa
(2.94 bar, 3.0 kg/cm², 43 psi)

N.G. → Check fuel pressure regulator diaphragm.

O.K. ↓

2



CHECK FOR INTAKE AIR LEAK.

When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

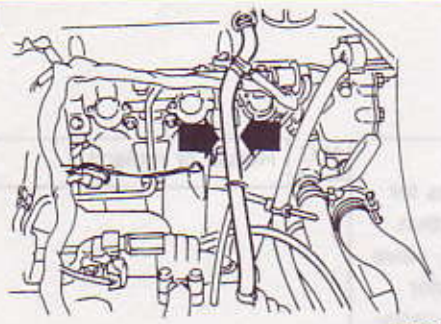
Yes → Discover air leak location and repair.

No ↓

INSPECTION END

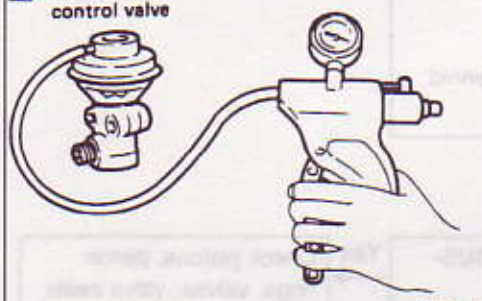
Diagnostic Procedure 18 — Detonation

1



EEF030

2 E.G.R. control valve

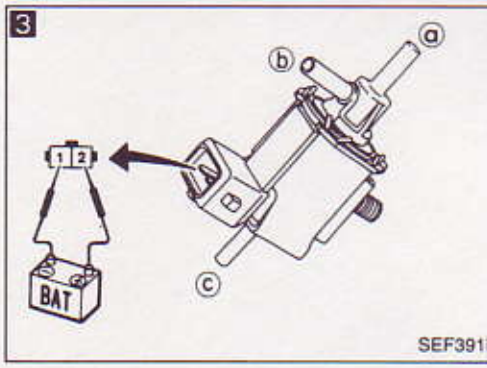


SEF820F

3

SEF582K

3



SEF391K

1

CHECK FOR INTAKE AIR LEAK.
When pinching blow-by hose (lowering the blow-by air supply), does the engine rpm rise?

Yes → Discover air leak location and repair.

No ↓

2

CHECK E.G.R. OPERATION.
1. Apply vacuum directly to the E.G.R. valve using a handy vacuum pump.
2. Check to see that the engine runs rough or dies.

No → Check E.G.R. valve for sticking.

Yes ↓

3

CHECK E.G.R. & CANISTER CONTROL SOLENOID VALVE.

1. Select "E.G.R. CONT SOL VALVE" in "ACTIVE TEST" mode.
2. Turn E.G.R. & canister control solenoid valve ON and OFF.
3. Check operating sound.

N.G. → Check solenoid valve and circuit.

OR

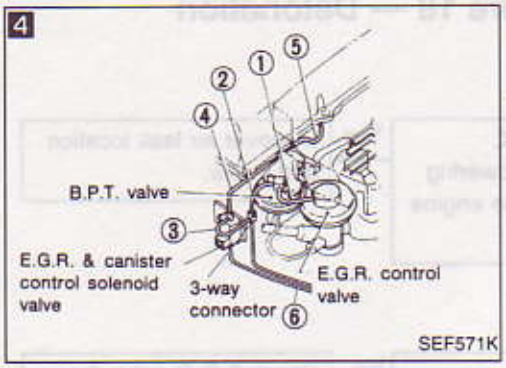
1. Disconnect E.G.R. & canister control solenoid valve harness connector.
2. Supply E.G.R. & canister control solenoid valve terminals with battery current and check operating sound.

O.K. ↓

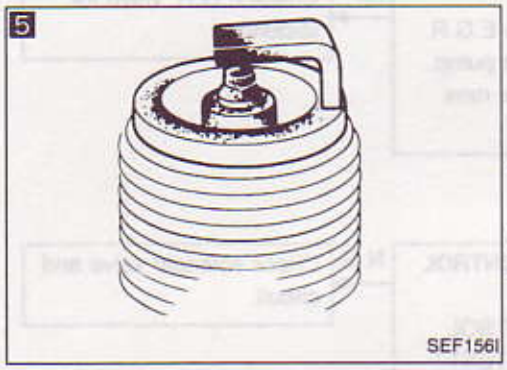
(Go to Ⓐ on next page.)

Diagnostic Procedure 18 — Detonation (Cont'd)

4



5



Ⓐ

4

CHECK VACUUM HOSES.
Check the following vacuum hoses for clogging, cracks and poor connection.
① E.G.R. control valve to B.P.T. valve
② B.P.T. valve to 3-way connector
③ 3-way connector to E.G.R. & canister control solenoid valve
④ E.G.R. & canister control solenoid valve to vacuum tube
⑤ Vacuum tube to air cleaner
⑥ E.G.R. & canister control solenoid valve to lower throttle body

N.G. → Repair or replace.

O.K.

5

CHECK FOR OIL LEAK TO COMBUSTION CHAMBER.
Remove spark plugs and check for fouling with oil.

Yes → Check pistons, piston rings, valves, valve seats, valve oil seal, engine oil level, etc.

No

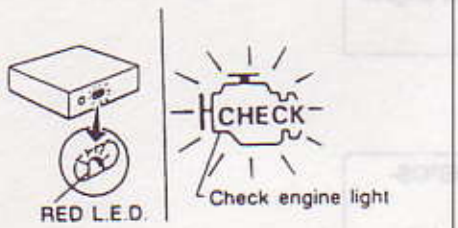
INSPECTION END

Diagnostic Procedure 19 — Surge

1

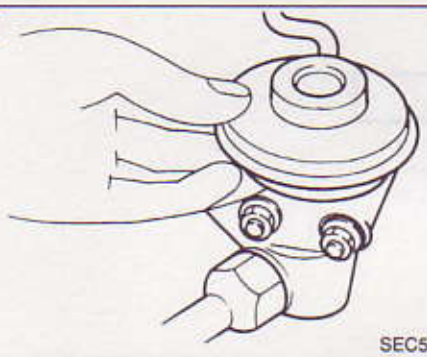
SEF320K

1



SEF621K

2



SEC547A

1

CHECK EXHAUST GAS SENSOR. (MODELS WITH CATALYZER ONLY)

1. See "M/R F/C MNT" in "DATA MONITOR" mode.
2. Maintaining engine at 2,000 rpm under no-load (with engine warmed up sufficiently.), check to make sure that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.
   RICH→LEAN→RICH→ LEAN→RICH.....
   1 time 2 times

N.G. → Replace exhaust gas sensor.

OR

1. Set "Exhaust gas sensor monitor" in the self-diagnostic Mode II. (See page EF & EC-222.)
2. Maintaining engine at 2,000 rpm under no-load, check that the RED L.E.D. on the E.C.U. or the check engine light on the instrument panel goes ON and OFF more than 5 times during 10 seconds.

O.K. ↓

2

CHECK E.G.R. CONTROL VALVE.
Check E.G.R. control valve for sticking.

N.G. → Repair or replace.

O.K. ↓

3

TRY A KNOWN GOOD E.C.U.★

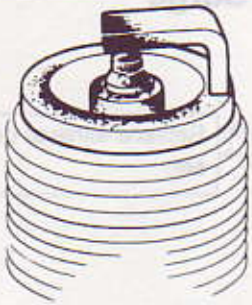
Trouble is fixed. → Replace E.C.U.

Trouble is not fixed. ↓

INSPECTION END

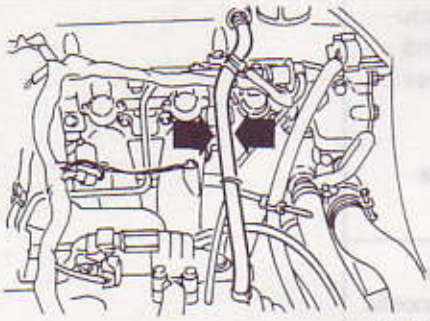
★: E.C.U. may be the cause of a problem, but this is rarely the case.

1



SEF156I

2



EEF030

Diagnostic Procedure 20 — Backfire through the Intake

1

CHECK SPARK PLUGS.
Remove the spark plugs and check for fouling, etc.

N.G. → Repair or replace spark plug(s).

O.K. ↓

2

CHECK INTAKE AIR LEAK.
When pinching blow-by hose (lowering the blow-by air supply), does the engine speed rise?

Yes → Discover air leak location and repair.

No ↓

3

CHECK FOR INTAKE VALVE DEPOSITS.
If there are deposits on intake valves, remove them.

↓

INSPECTION END

Diagnostic Procedure 21 — Backfire through the Exhaust

CHECK ENGINE TEMPERATURE SENSOR.
Check engine temperature sensor and its circuit. (See page EF & EC-280.)

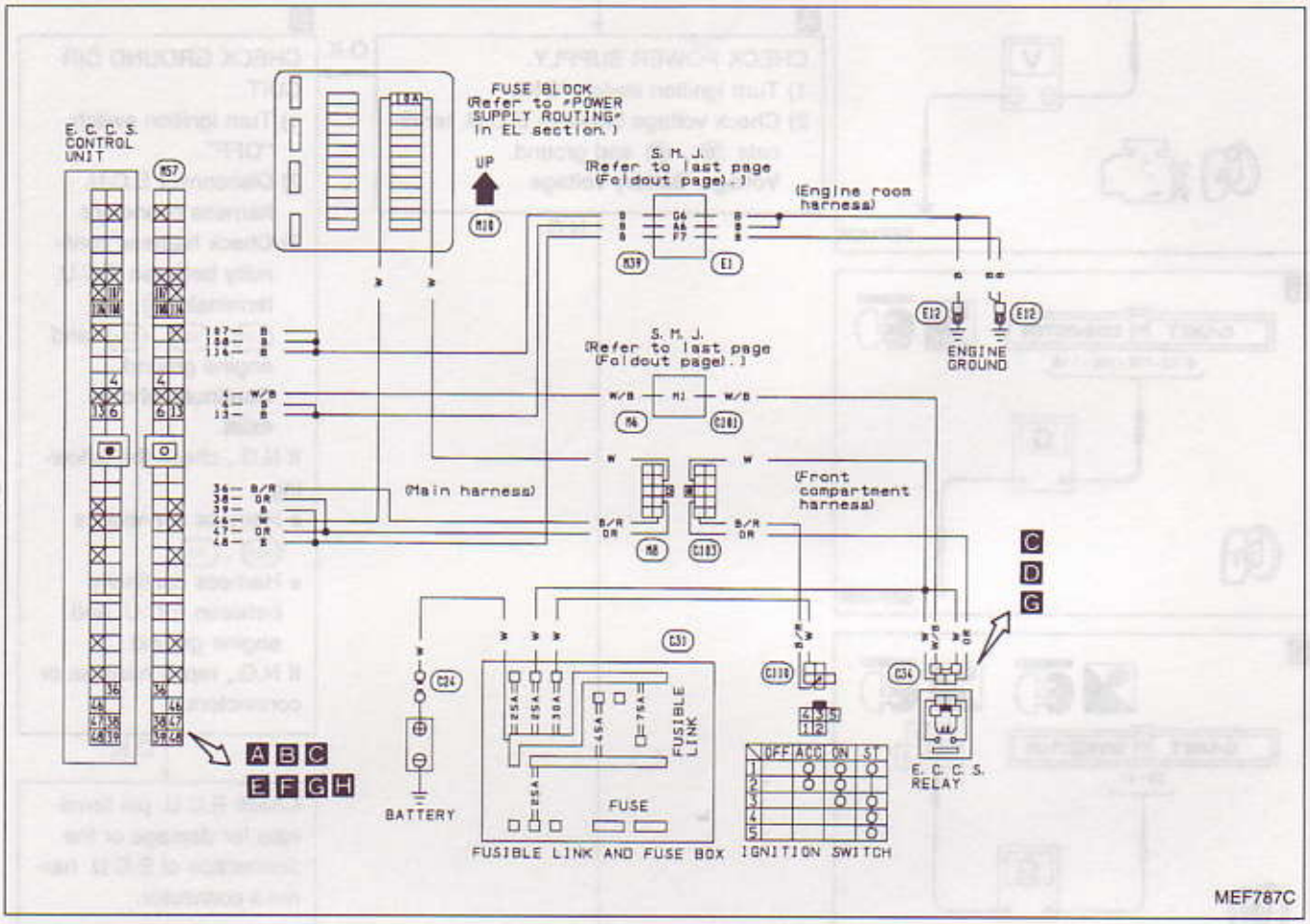
N.G. → Replace or repair.

O.K. ↓

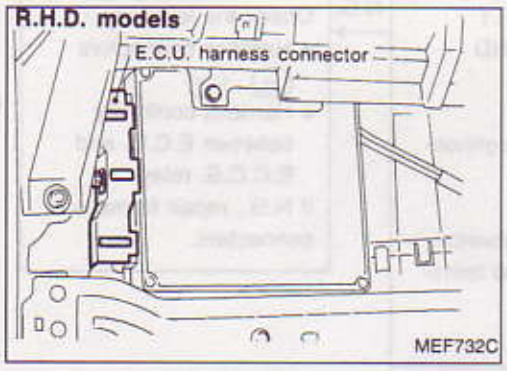
INSPECTION END

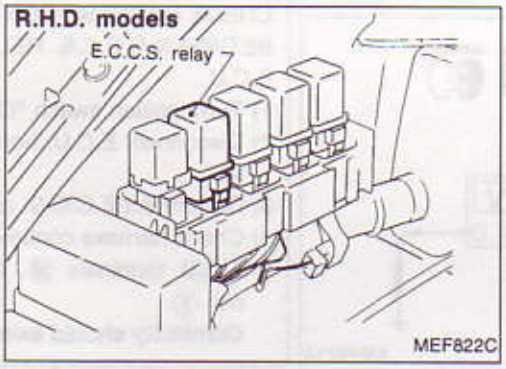
Diagnostic Procedure 22

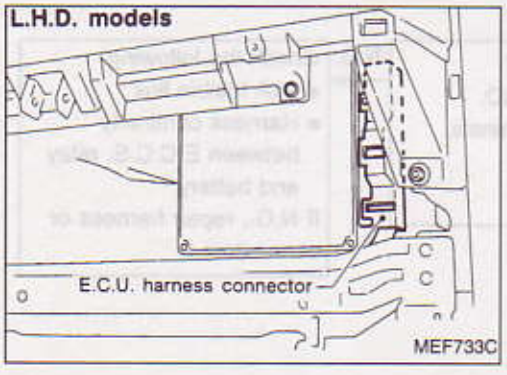
MAIN POWER SUPPLY AND GROUND CIRCUIT (Not self-diagnostic item)

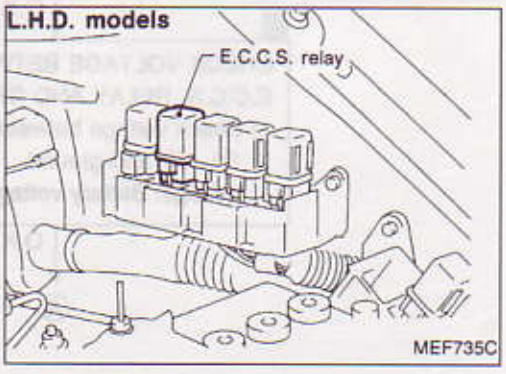


Harness layout



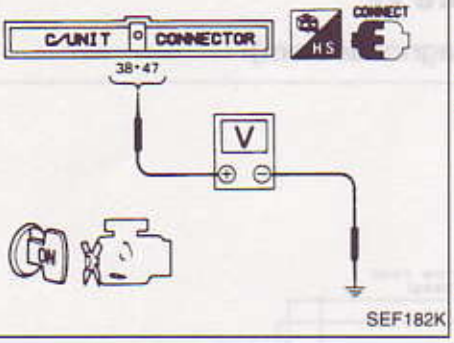




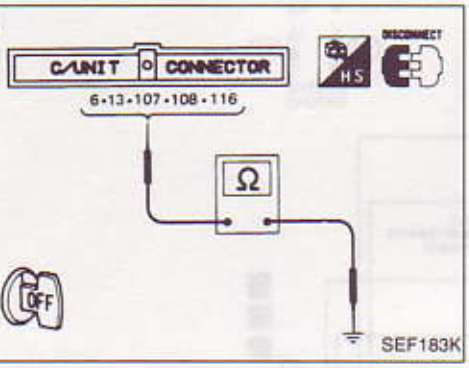


Diagnostic Procedure 22 (Cont'd)

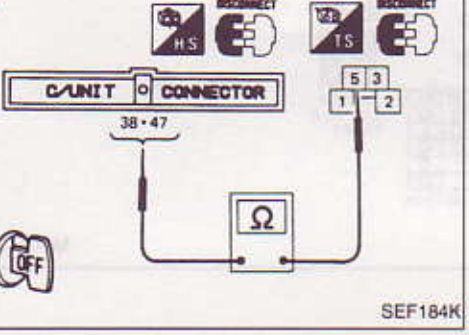
A



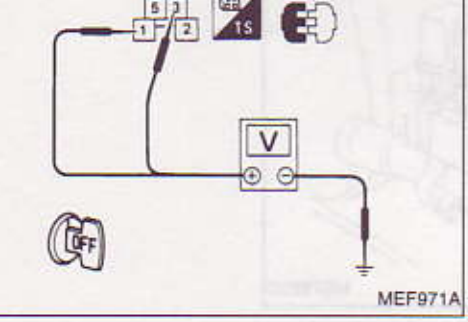
B



C



D



INSPECTION START

A

CHECK POWER SUPPLY.
1) Turn ignition switch "ON".
2) Check voltage between E.C.U. terminals (38), (47) and ground.
Voltage: Battery voltage

O.K. → **B**

N.G. ↓

B

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect E.C.U. harness connector.
3) Check harness continuity between E.C.U. terminals (6), (13), (107), (108), (116) and engine ground.
Continuity should exist.

If N.G., check the following.
- Harness connectors (M19), (E1)
- Harness continuity between E.C.U. and engine ground

If N.G., repair harness or connectors.

O.K. ↓

Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

C

CHECK HARNESS CONTINUITY BETWEEN E.C.C.S. RELAY AND E.C.U.
1) Turn ignition switch "OFF".
2) Disconnect E.C.U. harness connector.
3) Disconnect E.C.C.S. relay.
4) Check harness continuity between E.C.U. terminals (38), (47) and terminal (5).
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M8), (C103)
- Harness continuity between E.C.U. and E.C.C.S. relay

If N.G., repair harness or connectors.

O.K. ↓

D

CHECK VOLTAGE BETWEEN E.C.C.S. RELAY AND GROUND.
1) Check voltage between terminals (1), (3) and ground.
Voltage: Battery voltage

N.G. → Check the following.
- 25A fusible link
- Harness continuity between E.C.C.S. relay and battery

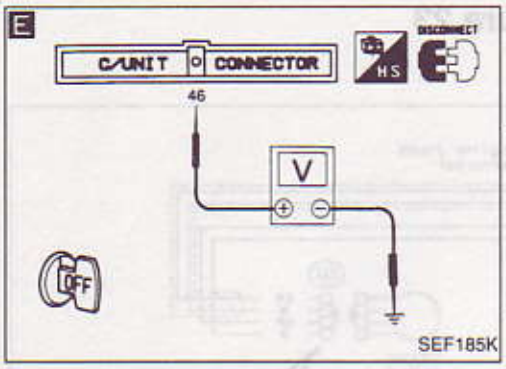
If N.G., repair harness or connectors.

O.K. ↓

Ⓐ

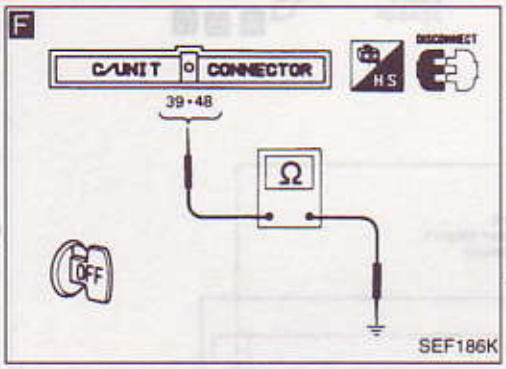
Diagnostic Procedure 22 (Cont'd)

E



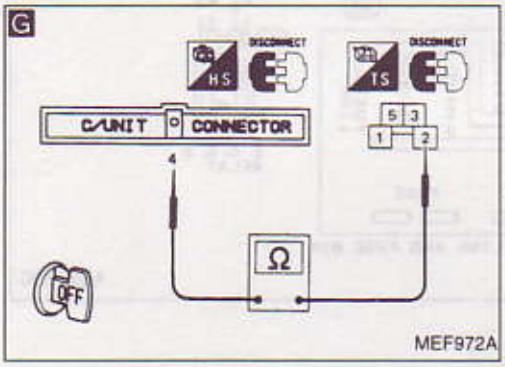
SEF185K

F



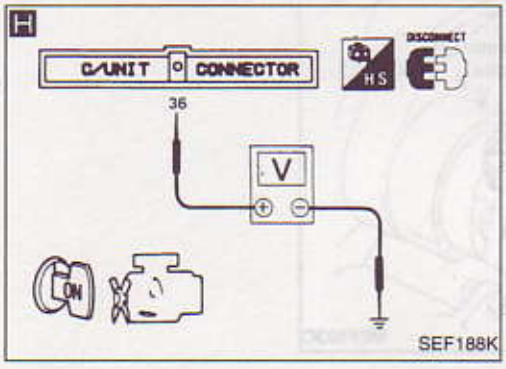
SEF186K

G



MEF972A

H



SEF188K

Ⓐ

E

CHECK VOLTAGE BETWEEN E.C.U. AND GROUND.
1) Check voltage between E.C.U. terminal (46) and ground.
Voltage: Battery voltage

N.G. → Check the following.
- Harness connectors (M8), (C103)
- 10A fuse
- Harness continuity between E.C.U. and fusible link

If N.G., repair harness or connectors.

O.K. ↓

F

CHECK GROUND CIRCUIT.
1) Check harness continuity between E.C.U. terminals (39), (48) and engine ground.
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between E.C.U. and engine ground

If N.G., repair harness or connectors.

O.K. ↓

G

CHECK OUTPUT SIGNAL CIRCUIT.
1) Check harness continuity between E.C.U. terminal (4) and terminal (2).
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M6), (C101)
- Harness continuity between E.C.U. and E.C.C.S. relay

If N.G., repair harness or connectors.

O.K. ↓

H

CHECK INPUT SIGNAL CIRCUIT.
1) Turn ignition switch "ON".
2) Check voltage between E.C.U. terminal (36) and ground.
Voltage: Battery voltage

N.G. → Check the following.
- Harness connectors (M8), (C103)
- Harness continuity between E.C.U. and ignition switch

If N.G., repair harness or connectors.

O.K. ↓

CHECK COMPONENT (E.C.C.S. relay).
Refer to "Electrical Components Inspection".
(See page EF & EC-324.)

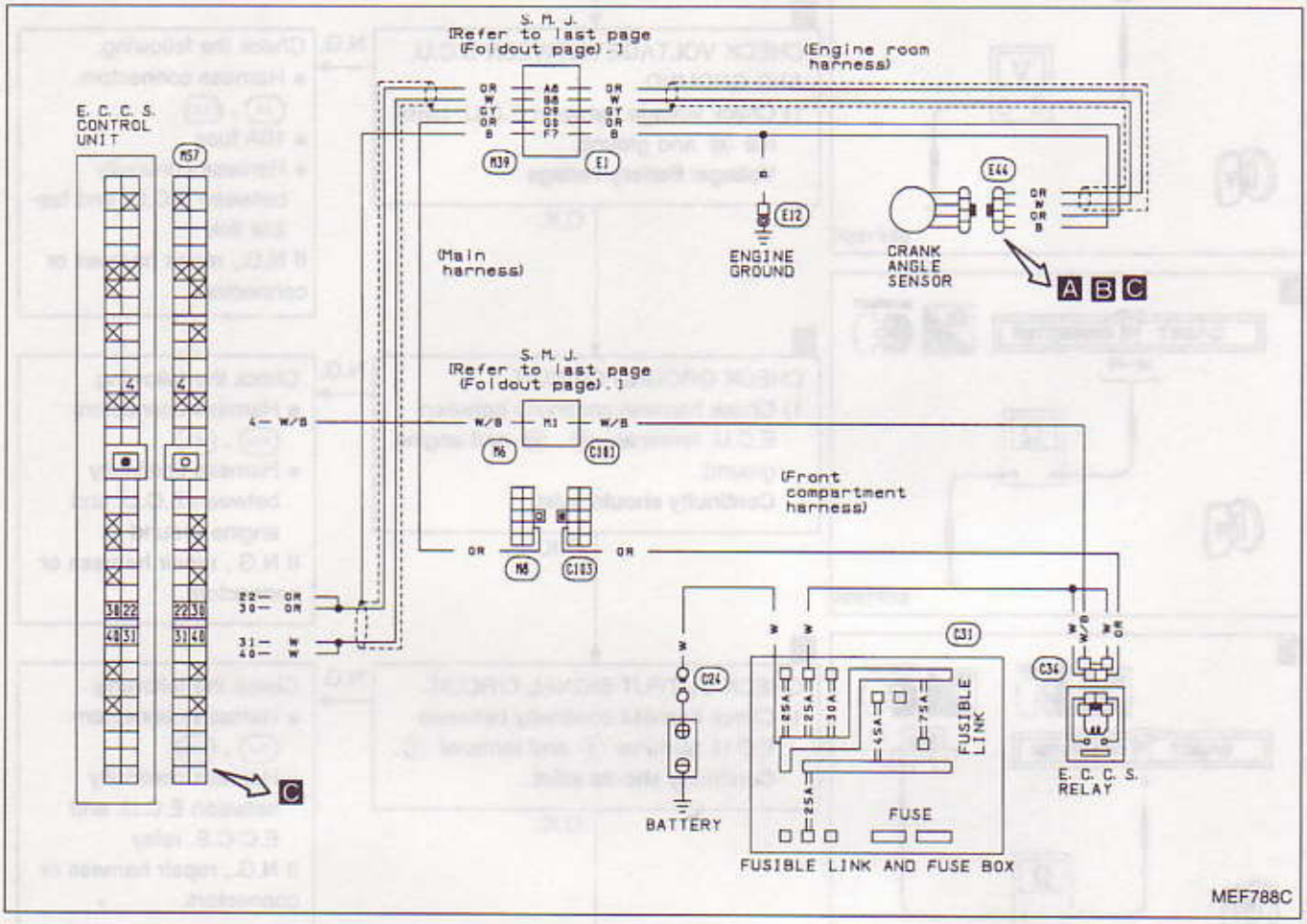
N.G. → Replace E.C.C.S. relay.

O.K. ↓

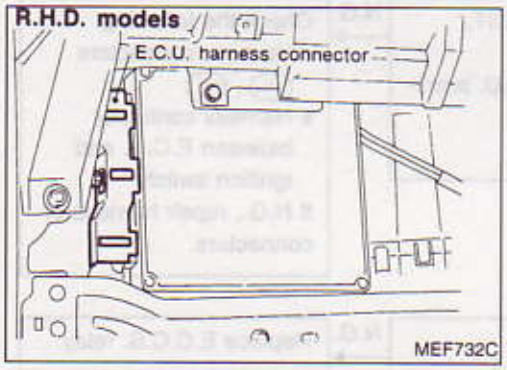
Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

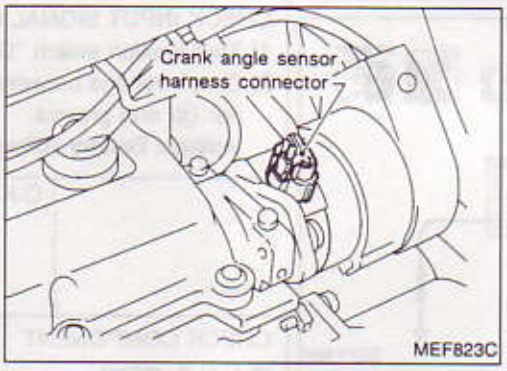
Diagnostic Procedure 23

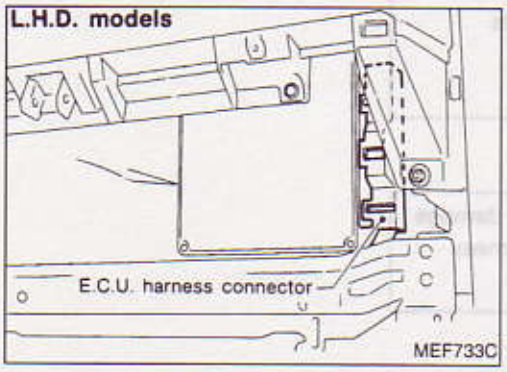
CRANK ANGLE SENSOR (Code No. 11)



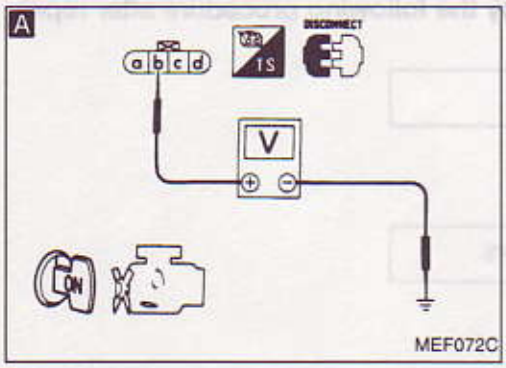
Harness layout

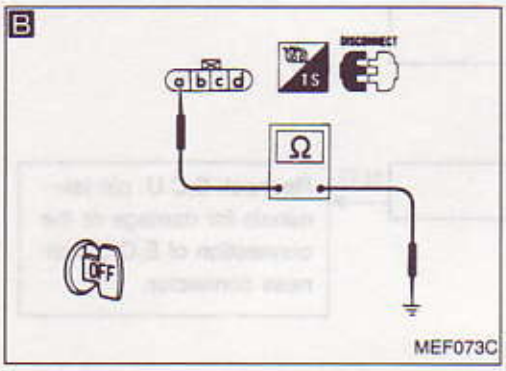


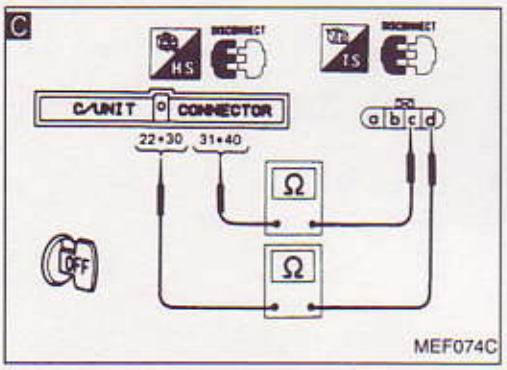




Diagnostic Procedure 23 (Cont'd)







INSPECTION START

A

CHECK POWER SUPPLY.
1) Disconnect crank angle sensor harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal (b) and ground.
Voltage: Battery voltage

N.G. → Check the following.
- Harness connectors (C103), (M8)
- Harness connectors (M39), (E1)
- Harness continuity between crank angle sensor and E.C.C.S. relay

If N.G., repair harness or connectors.

O.K. ↓

B

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Check harness continuity between terminal (a) and engine ground.
Continuity should exist.

N.G. → Repair harness or connectors.

O.K. ↓

C

CHECK INPUT SIGNAL CIRCUIT.

1) Reconnect crank angle sensor harness connector.
2) Start engine.
3) Read crank angle sensor signals in "DATA MONITOR" mode with CONSULT.
rpm: 750 ± 50

N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between crank angle sensor and E.C.U.

If N.G., repair harness or connectors.

OR

1) Disconnect E.C.U. harness connector.
2) Check harness continuity between terminal (c) and E.C.U. terminals (31), (40) (1° signal), terminal (d) and E.C.U. terminals (22), (30) (180° signal).
Continuity should exist.

O.K. ↓

CHECK COMPONENT
(Crank angle sensor).
Refer to "Electrical Components Inspection".
(See page EF & EC-324.)

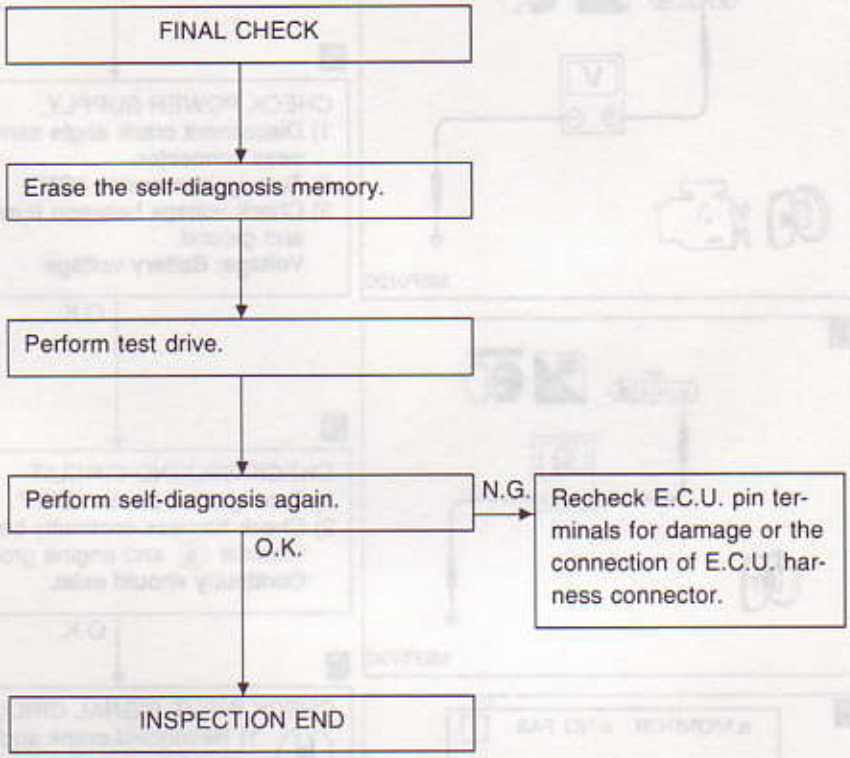
N.G. → Replace crank angle sensor.

O.K. ↓

Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

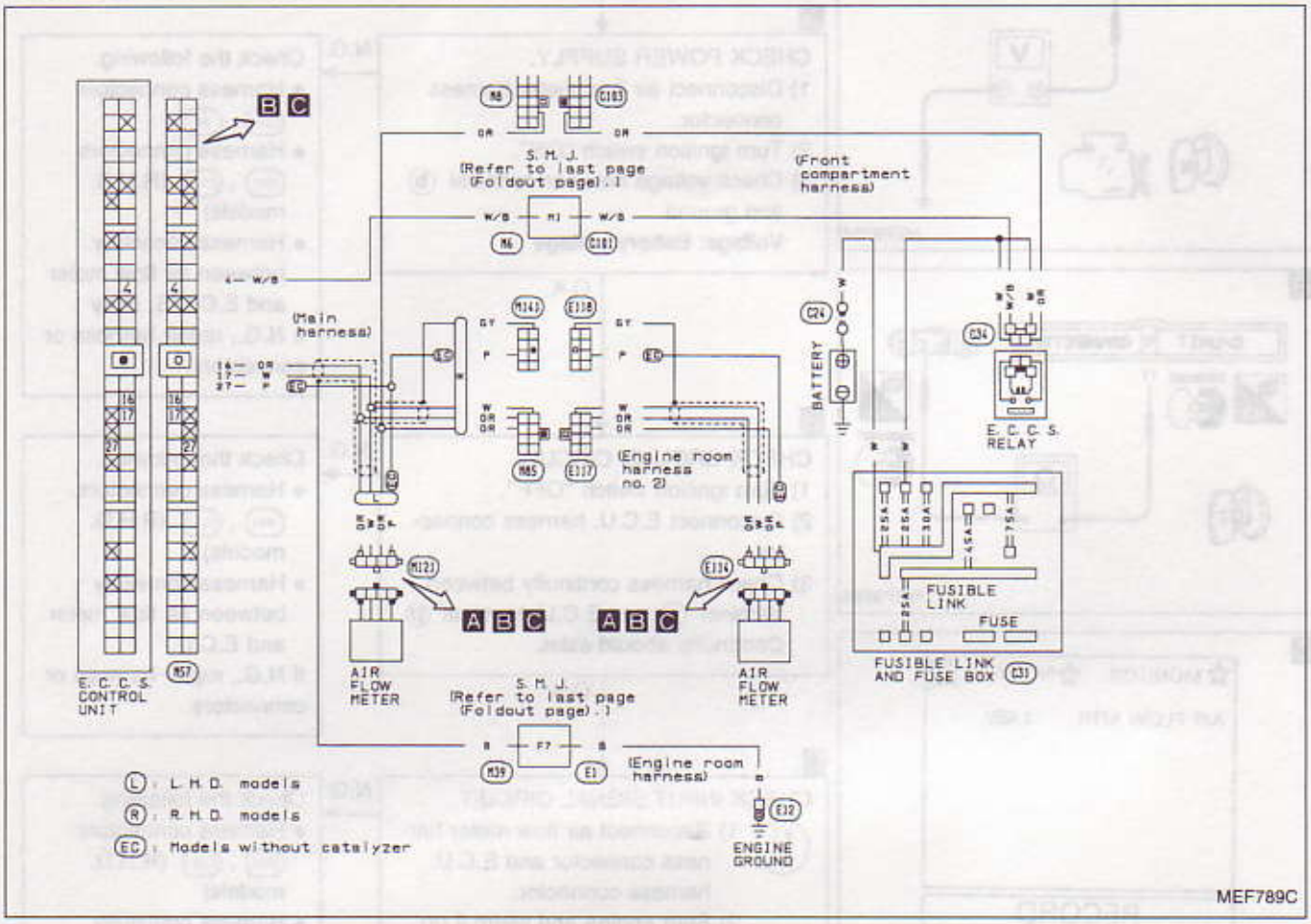
Diagnostic Procedure 23 (Cont'd)

Perform FINAL CHECK by the following procedure after repair is completed.



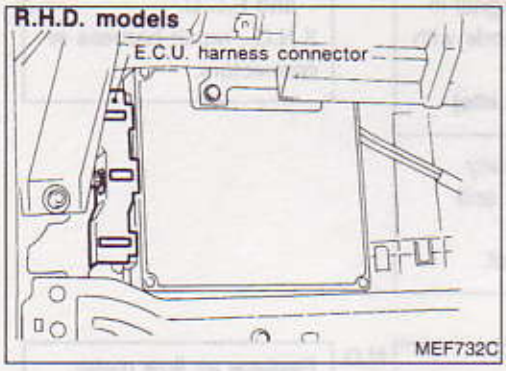
Diagnostic Procedure 24

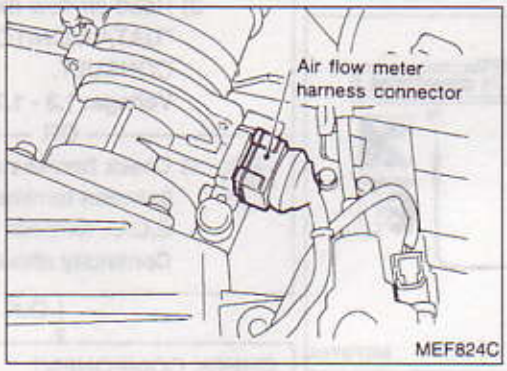
AIR FLOW METER (Code No. 12)



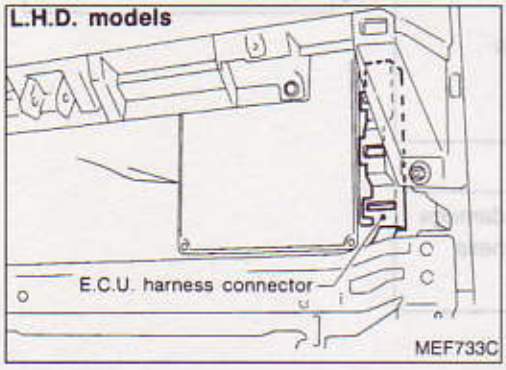
Harness layout

R.H.D. models



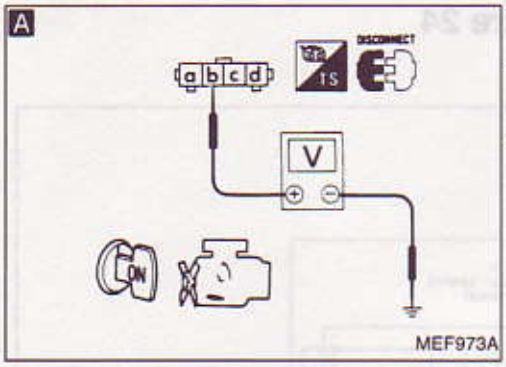


L.H.D. models



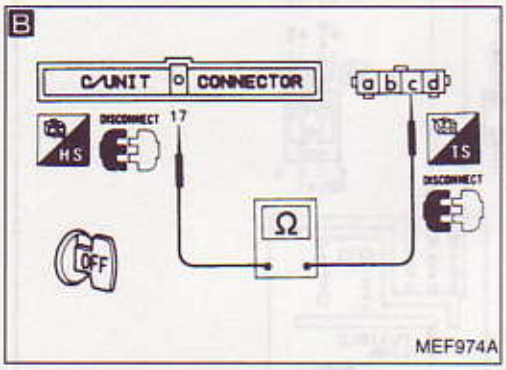
Diagnostic Procedure 24 (Cont'd)

A



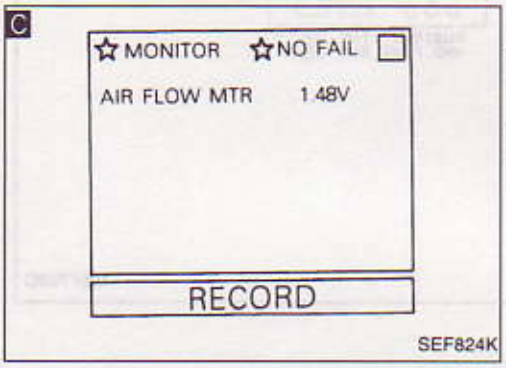
MEF973A

B



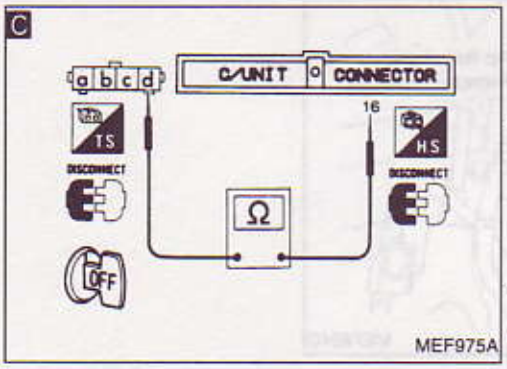
MEF974A

C



SEF824K

C



MEF975A

INSPECTION START

A

CHECK POWER SUPPLY.
1) Disconnect air flow meter harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal (b) and ground.
Voltage: Battery voltage

N.G. → Check the following.
- Harness connectors (C103), (M8)
- Harness connectors (M85), (E117) (R.H.D. models)
- Harness continuity between air flow meter and E.C.C.S. relay

If N.G., repair harness or connectors.

O.K. ↓

B

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect E.C.U. harness connector.
3) Check harness continuity between terminal (c) and E.C.U. terminal (17).
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M85), (E117) (R.H.D. models)
- Harness continuity between air flow meter and E.C.U.

If N.G., repair harness or connectors.

O.K. ↓

C

CHECK INPUT SIGNAL CIRCUIT.

1) Reconnect air flow meter harness connector and E.C.U. harness connector.
2) Start engine and warm it up sufficiently.
3) Read air flow meter signal in "DATA MONITOR" mode with CONSULT.
Voltage: 1.3 - 1.7V (At idle)

N.G. → Check the following.
- Harness connectors (M85), (E117) (R.H.D. models)
- Harness continuity between air flow meter and E.C.U.

If N.G., repair harness or connectors.

— OR —

1) Check harness continuity between terminal (d) and E.C.U. terminal (16).
Continuity should exist.

O.K. ↓

CHECK COMPONENT
(Air flow meter).
Refer to "Electrical Components Inspection".
(See page EF & EC-324.)

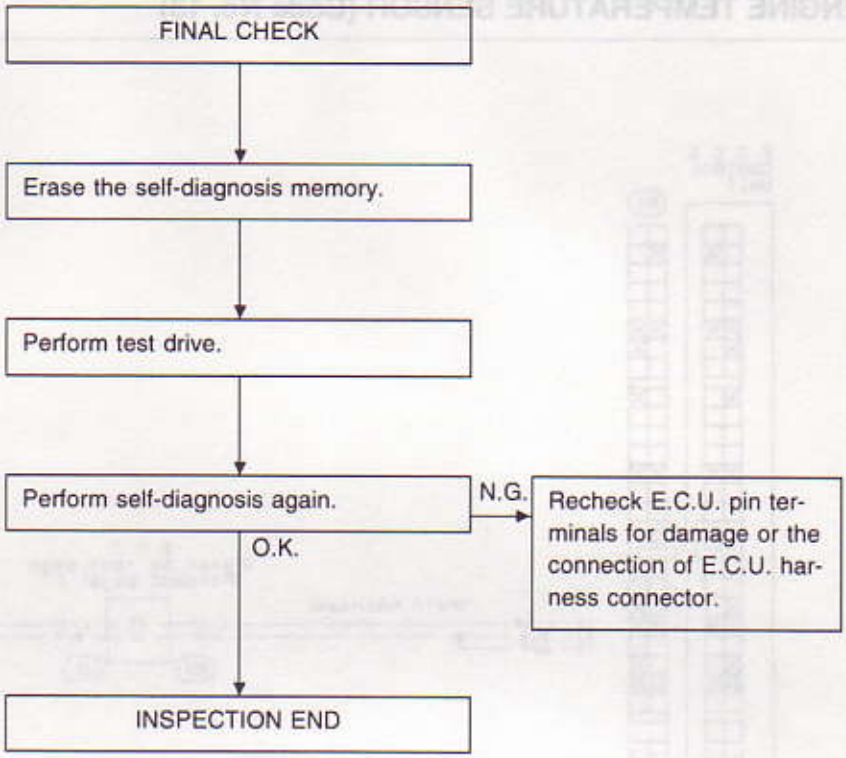
N.G. → Replace air flow meter.

O.K. ↓

Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

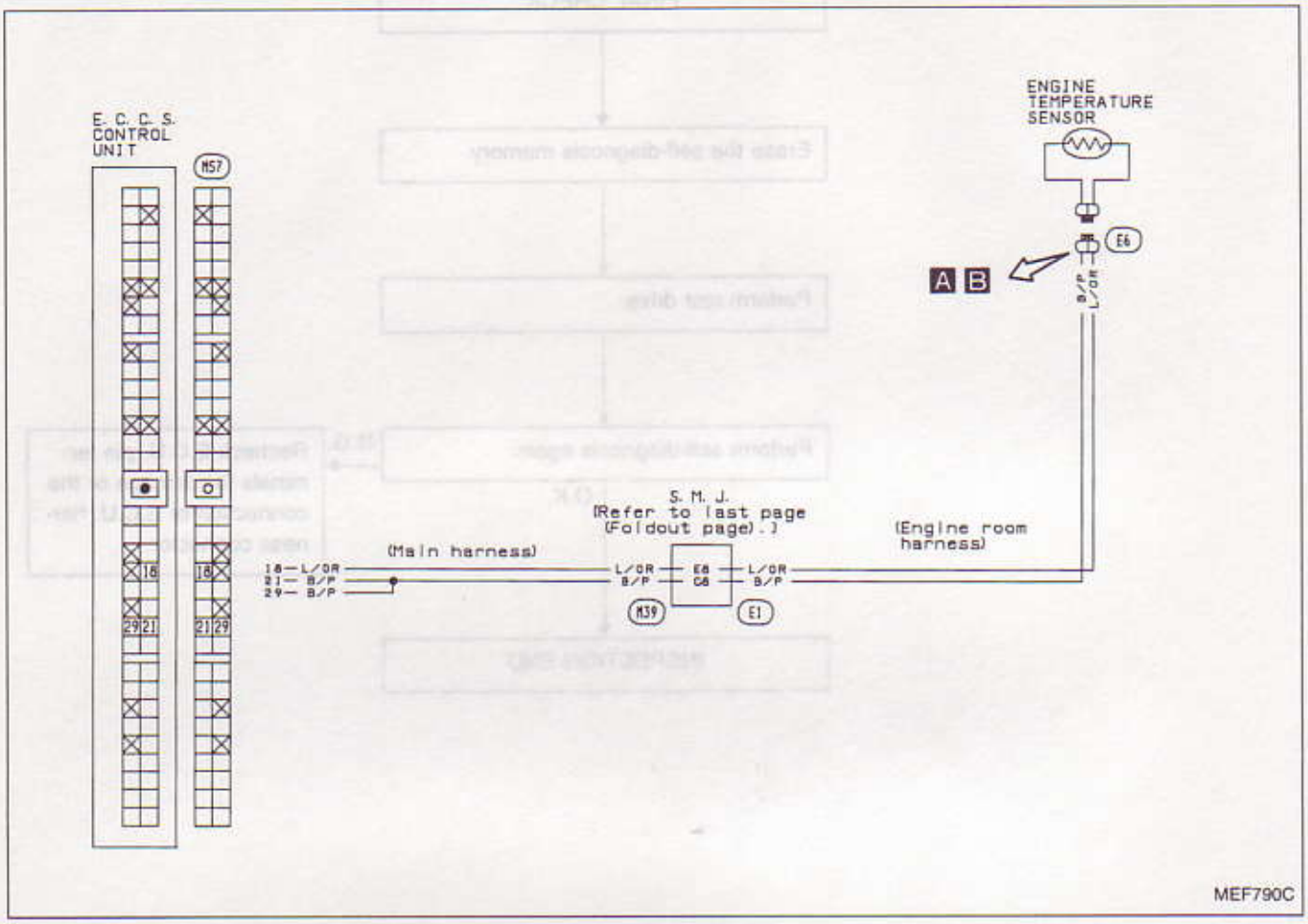
Diagnostic Procedure 24 (Cont'd)

Perform FINAL CHECK by the following procedure after repair is completed.

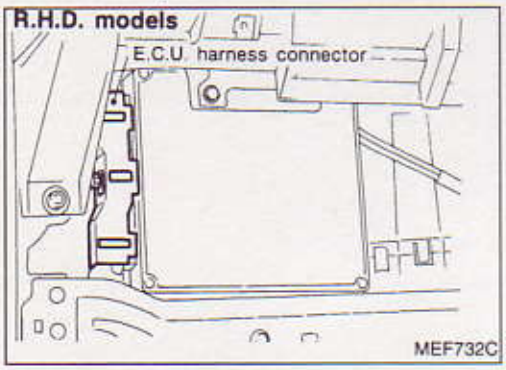


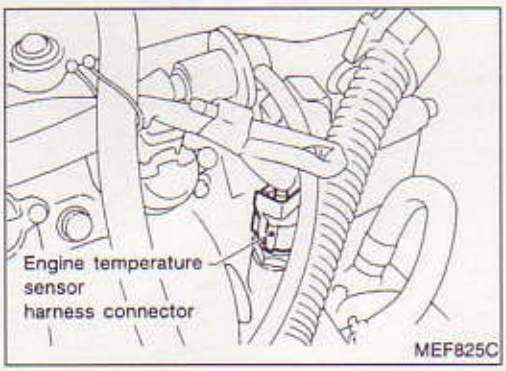
Diagnostic Procedure 25

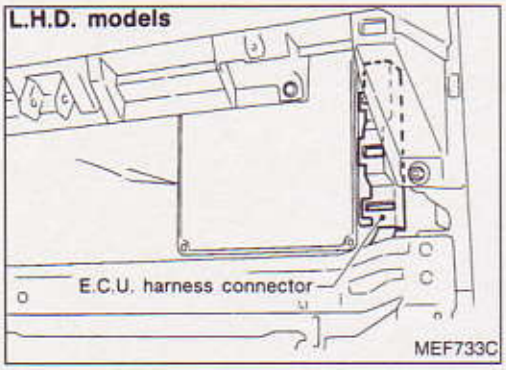
ENGINE TEMPERATURE SENSOR (Code No. 13)



Harness layout





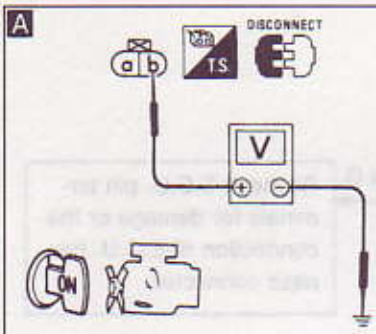


Diagnostic Procedure 25 (Cont'd)

A

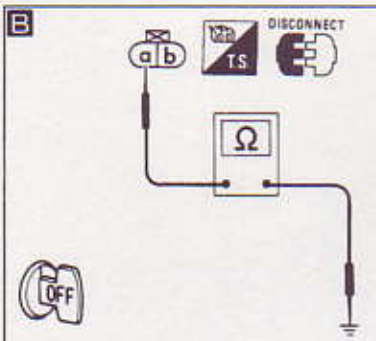
SEF825K

A



MEF754C

B



MEF755C

INSPECTION START

A

CHECK POWER SUPPLY.

1) Start engine and warm it up sufficiently.
2) Select engine temperature sensor signal in "DATA MONITOR" mode with CONSULT.
3) Stop engine
4) When restarting engine make sure that CONSULT indicates "ENG.TEMP SEN" is 50°C (122°F) or more.

N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between E.C.U. and engine temperature sensor.

If N.G., repair harness or connectors.

OR

1) Disconnect engine temperature sensor harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal (b) and ground.
Voltage: Approximately 5V

O.K. ↓

B

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Check harness continuity between terminal (a) and engine ground.
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between E.C.U. and engine temperature sensor.

If N.G., repair harness or connectors.

O.K. ↓

CHECK COMPONENT
(Engine temperature sensor).
Refer to "Electrical Components Inspection".
(See page EF & EC-324.)

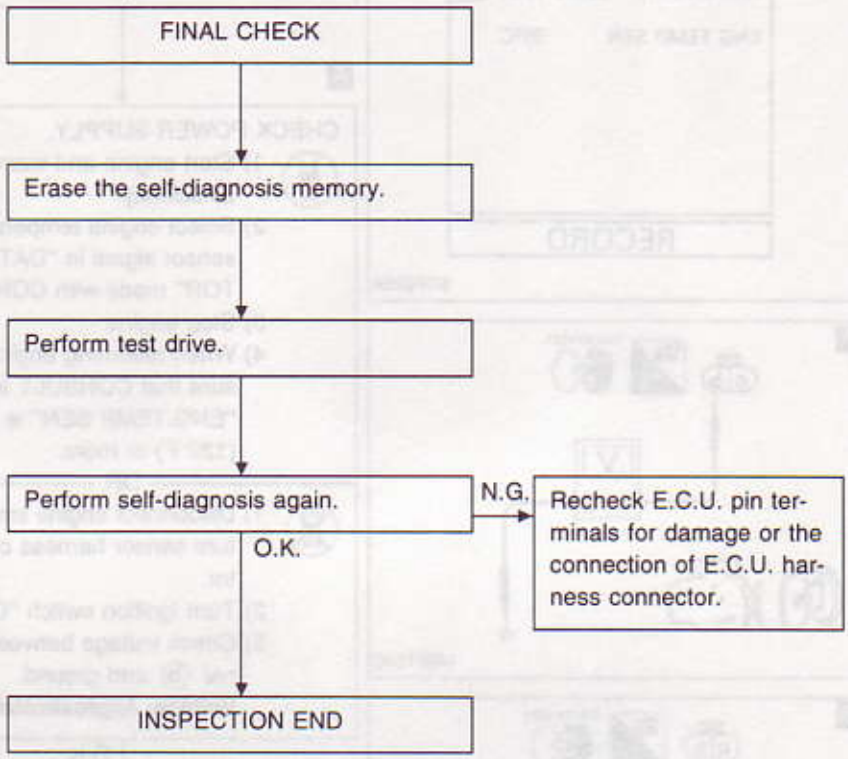
N.G. → Replace engine temperature sensor.

O.K. ↓

Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

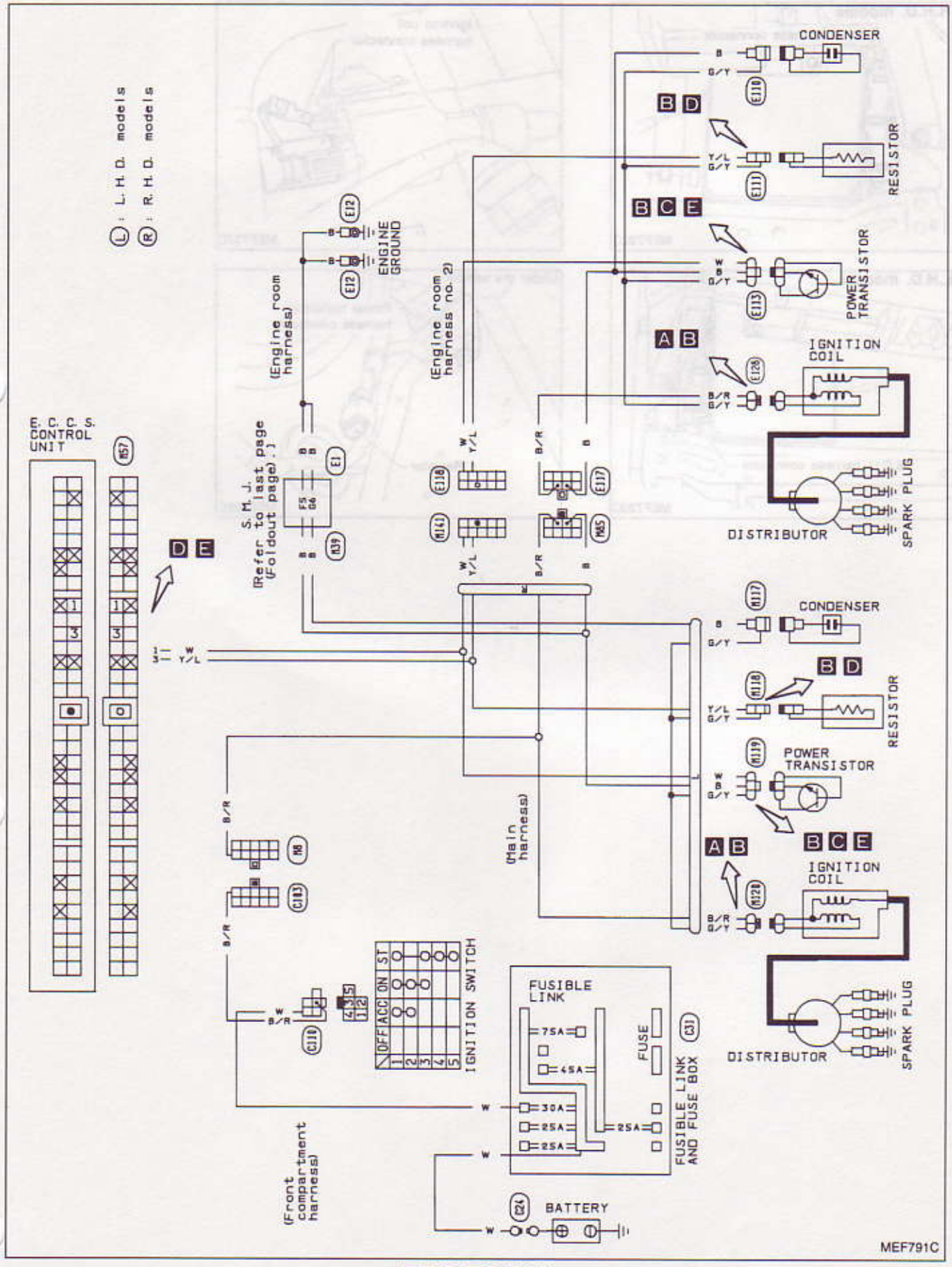
Diagnostic Procedure 25 (Cont'd)

Perform FINAL CHECK by the following procedure after repair is completed.



Diagnostic Procedure 26

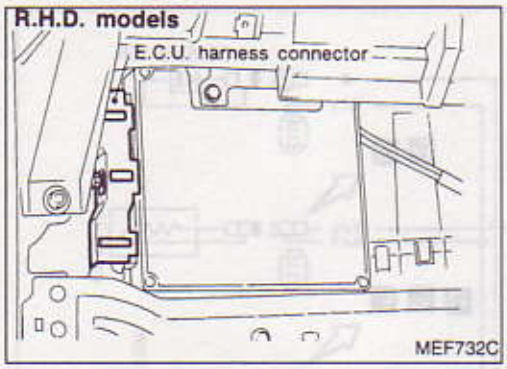
IGNITION SIGNAL (Code No. 21)

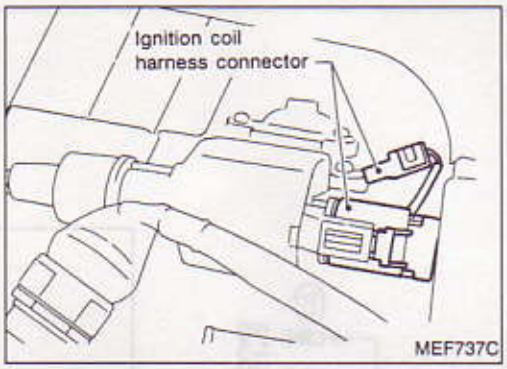


Diagnostic Procedure 26 (Cont'd)

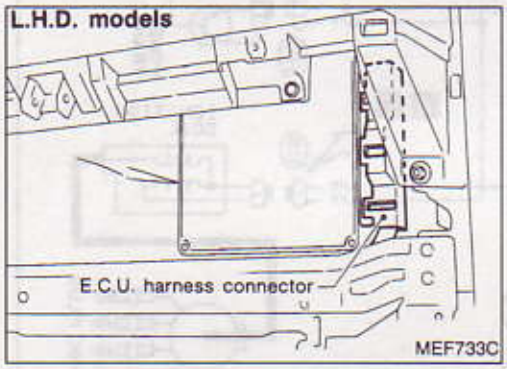
Harness layout

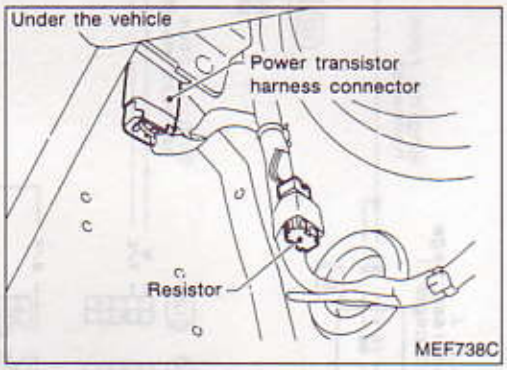
R.H.D. models





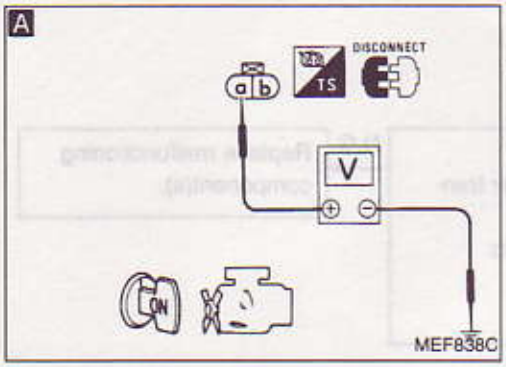
L.H.D. models



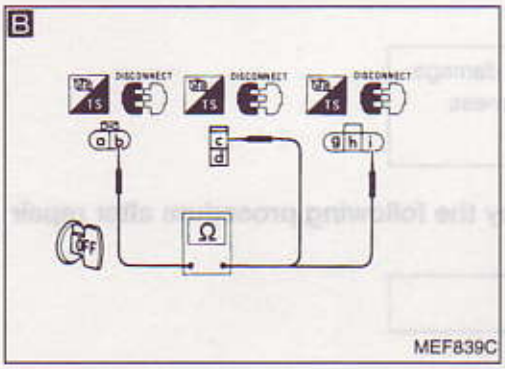


Diagnostic Procedure 26 (Cont'd)

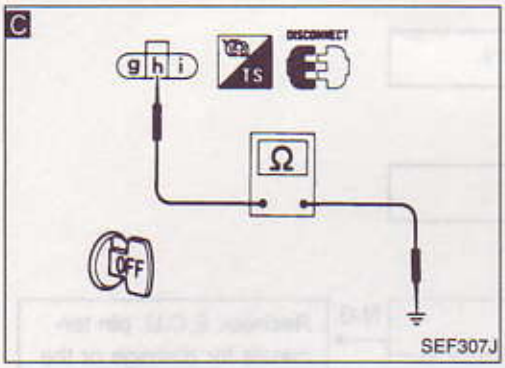
A



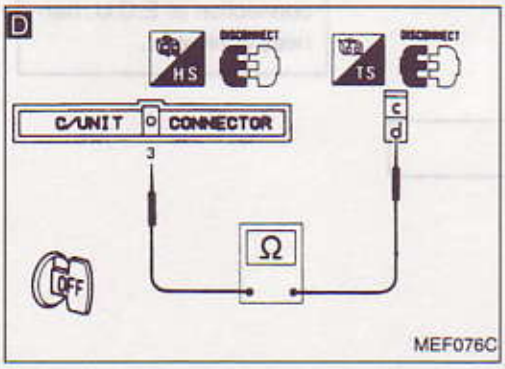
B



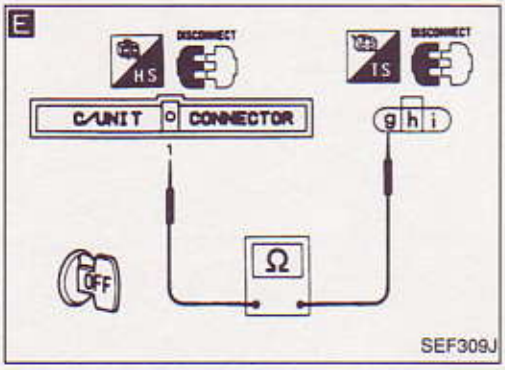
C



D



E



INSPECTION START

A

CHECK POWER SUPPLY.
1) Disconnect ignition coil harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal (a) and ground.
Voltage: Battery voltage

N.G. → Check the following.
- Harness connectors (C103), (M8)
- Harness connectors (M85), (E117) (R.H.D. models)
- Harness continuity between ignition coil and ignition switch

If N.G., repair harness or connectors.

O.K. ↓

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect resistor harness connector.
3) Disconnect power transistor harness connector.

B 4) Check harness continuity between terminal (b) and terminals (c), (i).
Continuity should exist.

C 5) Check harness continuity between terminal (h) and engine ground.
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M85), (E117) (R.H.D. models)
- Harness connectors (M39), (E1)
- Harness continuity between power transistor and engine ground
- Harness continuity between ignition coil and power transistor
- Harness continuity between ignition coil and resistor

If N.G., repair harness or connector.

O.K. ↓

D

CHECK INPUT SIGNAL CIRCUIT.
1) Disconnect E.C.U. harness connector.
2) Check harness continuity between terminal (d) and E.C.U. terminal (3).
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M141), (E118) (R.H.D. models)
- Harness continuity between resistor and E.C.U.

If N.G., repair harness or connector.

O.K. ↓

E

CHECK OUTPUT SIGNAL CIRCUIT.
1) Check harness continuity between terminal (g) and E.C.U. terminal (1).
Continuity should exist.

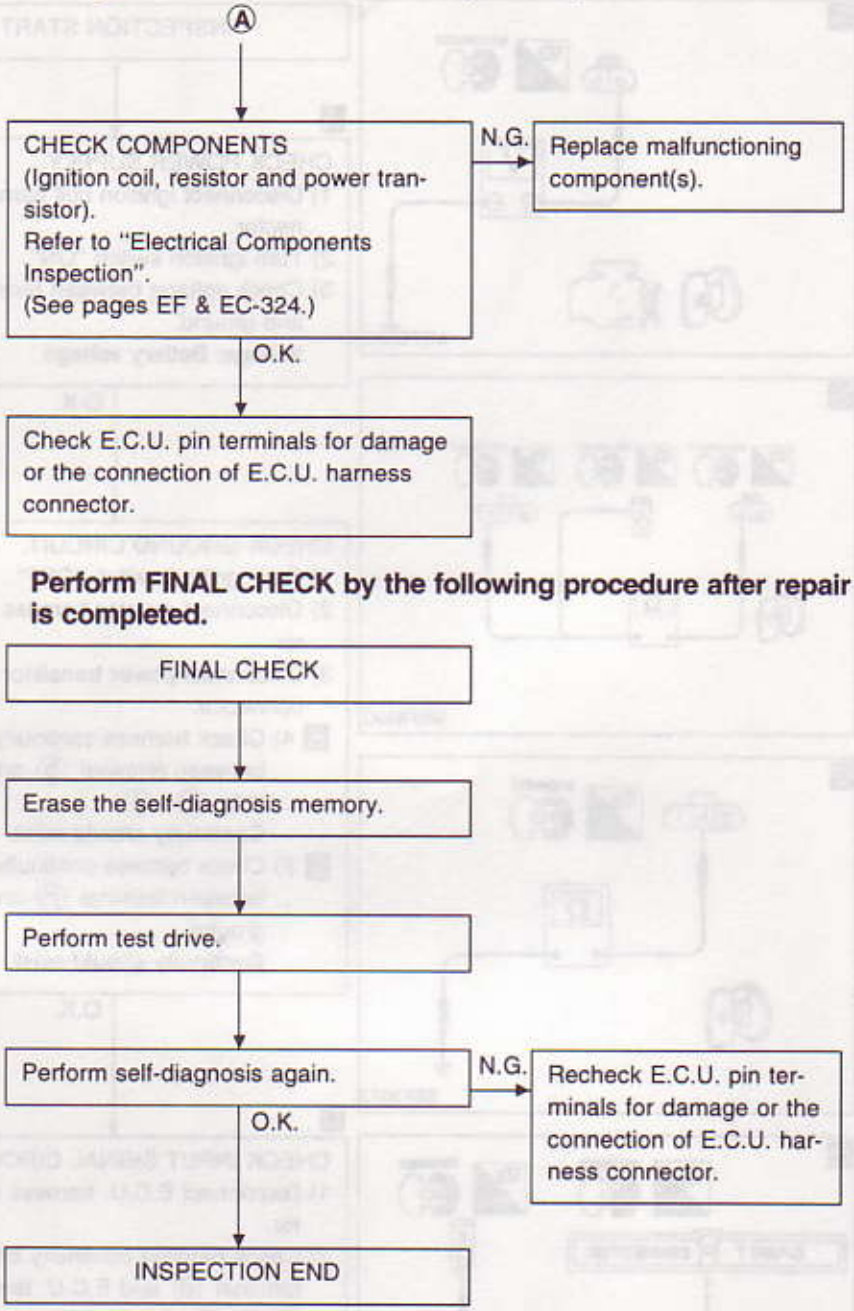
N.G. → Check the following.
- Harness connectors (M141), (E118) (R.H.D. models)
- Harness continuity between power transistor and E.C.U.

If N.G., repair harness or connectors.

O.K. ↓

(A)

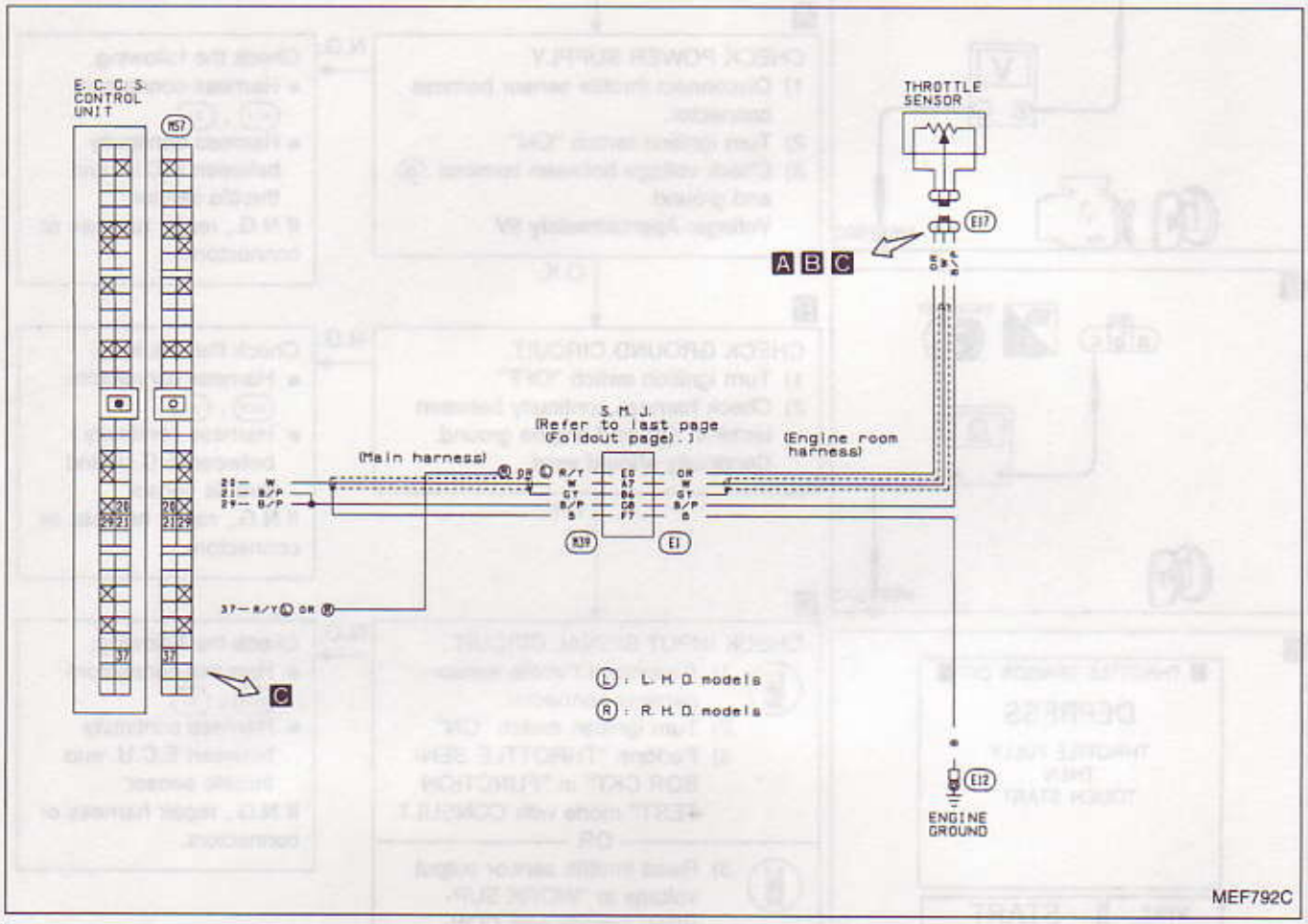
Diagnostic Procedure 26 (Cont'd)



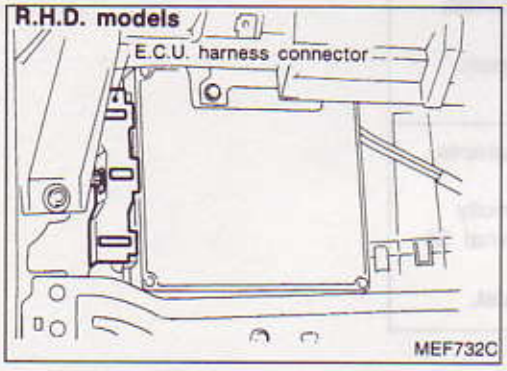
Perform FINAL CHECK by the following procedure after repair is completed.

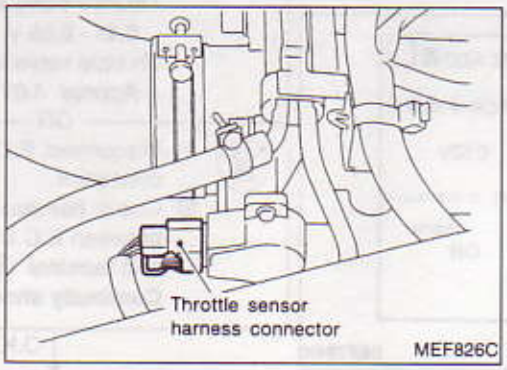
Diagnostic Procedure 27

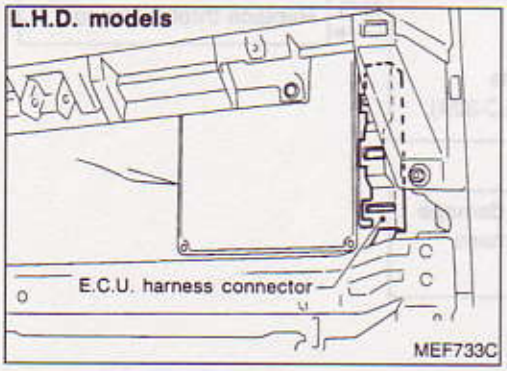
THROTTLE SENSOR (Code No. 34)



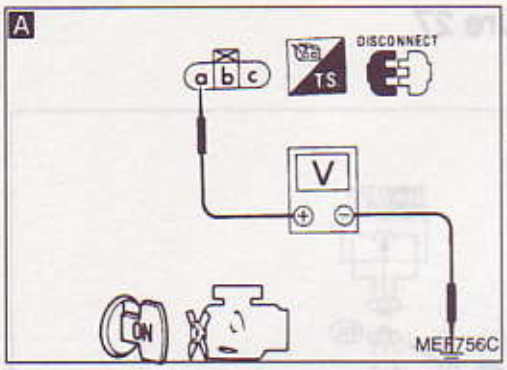
Harness layout

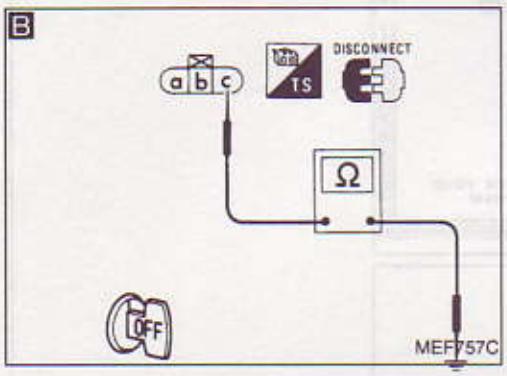


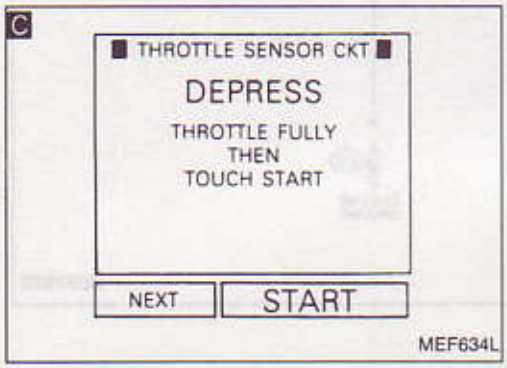


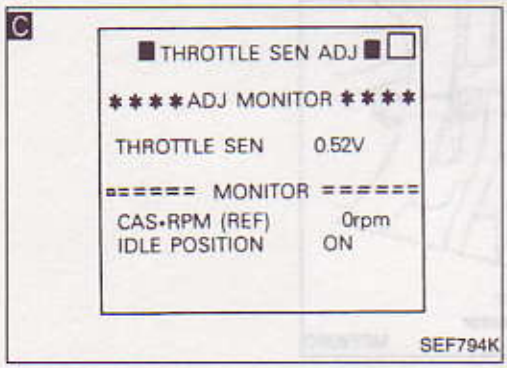


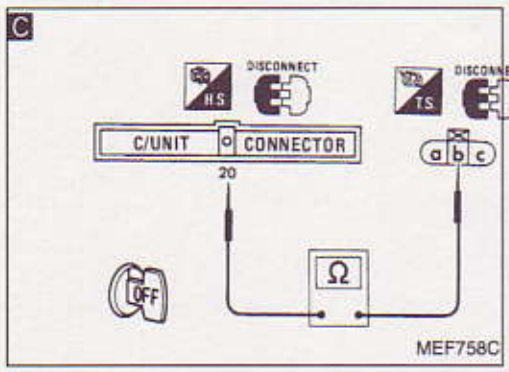
Diagnostic Procedure 27 (Cont'd)











INSPECTION START

A

CHECK POWER SUPPLY.
1) Disconnect throttle sensor harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal (a) and ground.
Voltage: Approximately 5V

N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between E.C.U. and throttle sensor

If N.G., repair harness or connectors.

O.K. ↓

B

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Check harness continuity between terminal (c) and engine ground.
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between E.C.U. and throttle sensor

If N.G., repair harness or connectors.

O.K. ↓

C

CHECK INPUT SIGNAL CIRCUIT.

1) Reconnect throttle sensor harness connector.
2) Turn ignition switch "ON".
3) Perform "THROTTLE SENSOR CKT" in "FUNCTION TEST" mode with CONSULT.

OR

3) Read throttle sensor output voltage in "WORK SUPPORT" mode with CONSULT.
Throttle valve fully closed: 0.45 - 0.55 V
Throttle valve fully open: Approx. 4.0V

OR

1) Disconnect E.C.U. harness connector.
2) Check harness continuity between E.C.U. terminal (20) and terminal (b).
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between E.C.U. and throttle sensor

If N.G., repair harness or connectors.

O.K. ↓

CHECK COMPONENT (Throttle sensor).
Refer to "Electrical Components Inspection". (See page EF & EC-324).

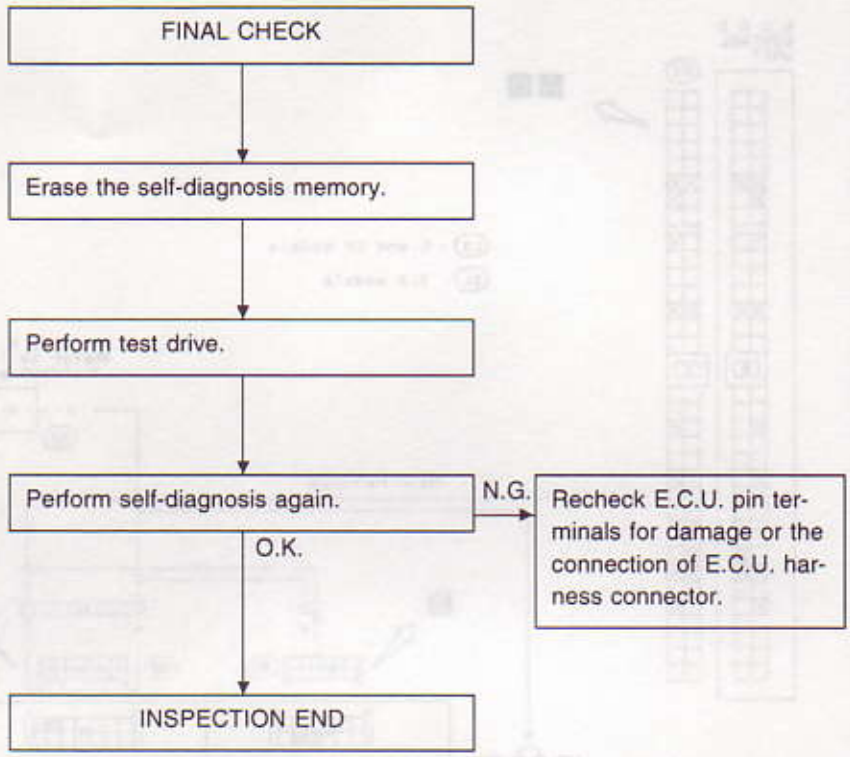
N.G. → Replace throttle sensor.

O.K. ↓

Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

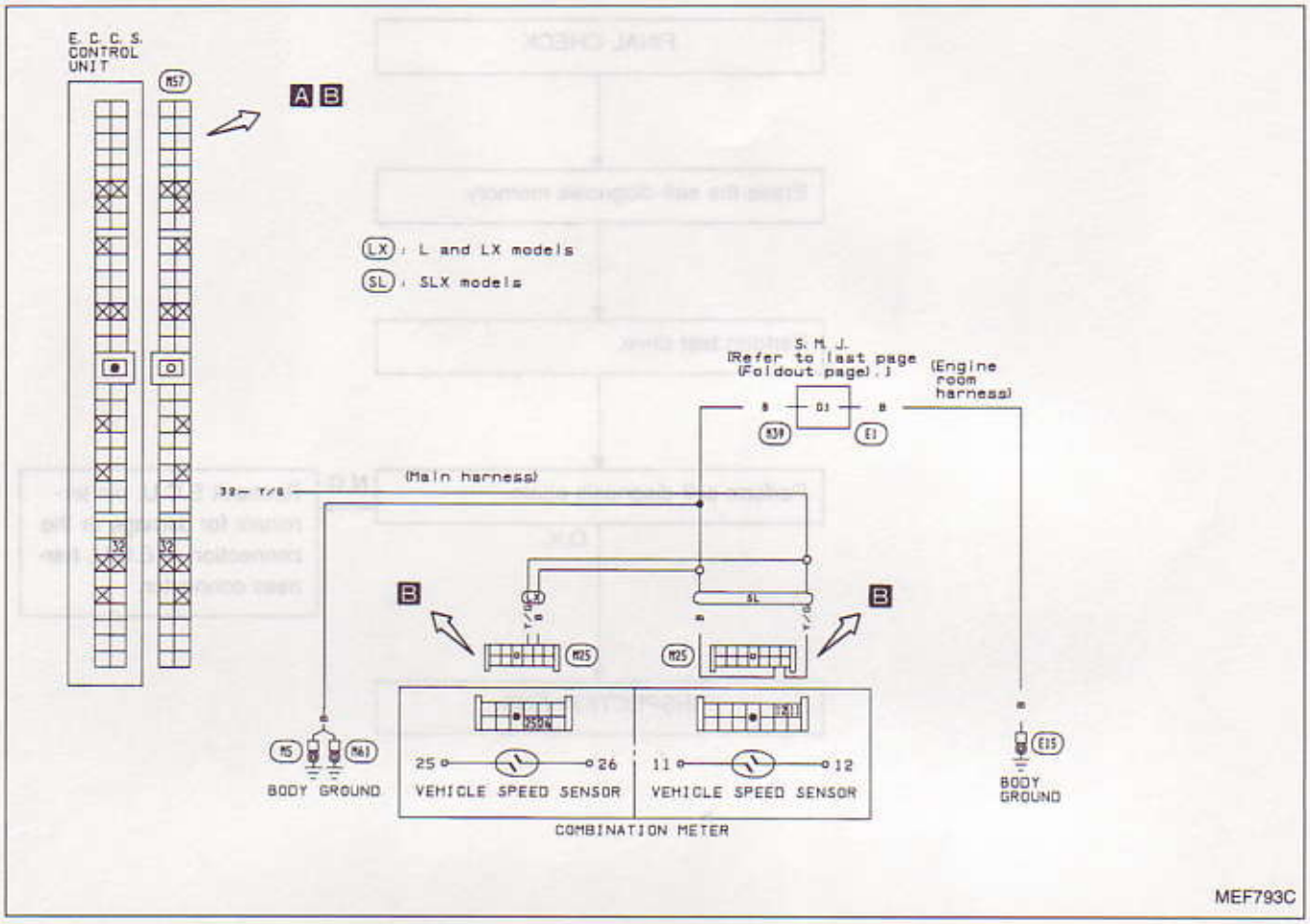
Diagnostic Procedure 27 (Cont'd)

Perform FINAL CHECK by the following procedure after repair is completed.

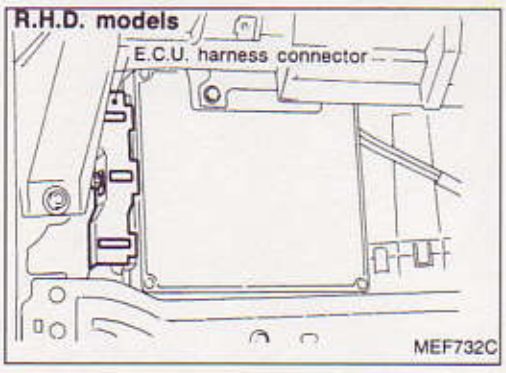


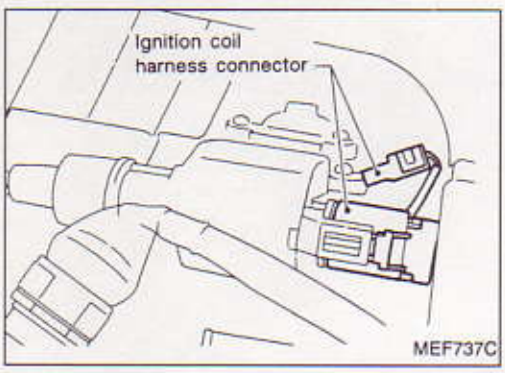
Diagnostic Procedure 28

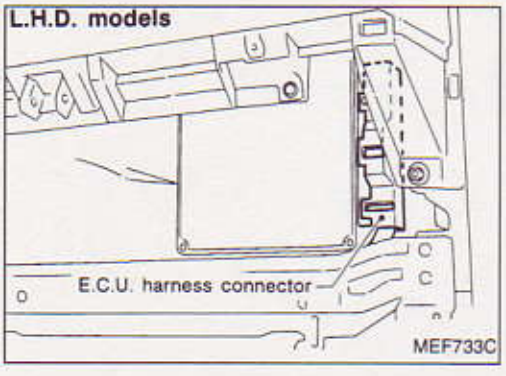
VEHICLE SPEED SENSOR (Not self-diagnostic item)

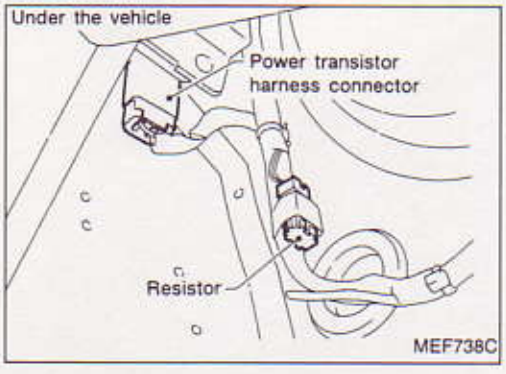


Harness layout



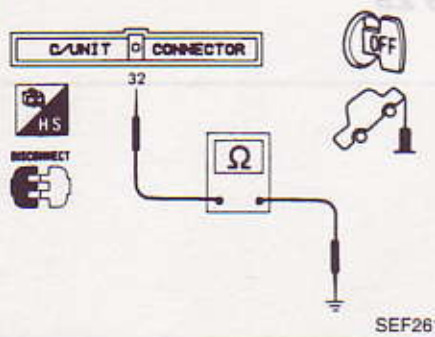






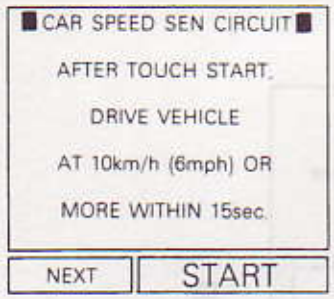
Diagnostic Procedure 28 (Cont'd)

A



SEF261K

B

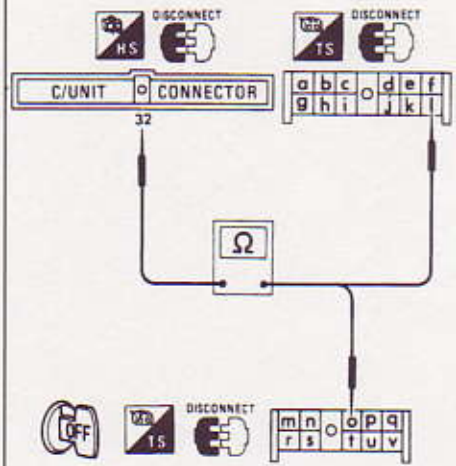


SEF631L

B

SEF587I

B



MEF840C

INSPECTION START

A

CHECK OVERALL FUNCTION
1) Jack up front wheels.
2) Disconnect E.C.U. harness connector.
3) Rotate front wheel by hand.
4) Check harness continuity between E.C.U. terminal ㉜ and body ground.
Continuity should come and go.

O.K. → INSPECTION END.

N.G.

CHECK SPEEDOMETER FUNCTION.
Make sure that speedometer functions properly.

N.G. → Check vehicle speed sensor and circuit. (Refer to EL section.)

O.K.

B

CHECK INPUT SIGNAL CIRCUIT.
1) Reconnect E.C.U. harness connector
2) Perform "CAR SPEED SEN CIRCUIT" in "FUNCTION TEST" mode with CONSULT.

N.G. → Repair harness or connectors.

OR

2) Read vehicle speed sensor signal in "DATA MONITOR" mode with CONSULT.
CONSULT value should be the same as the speedometer indication.

OR

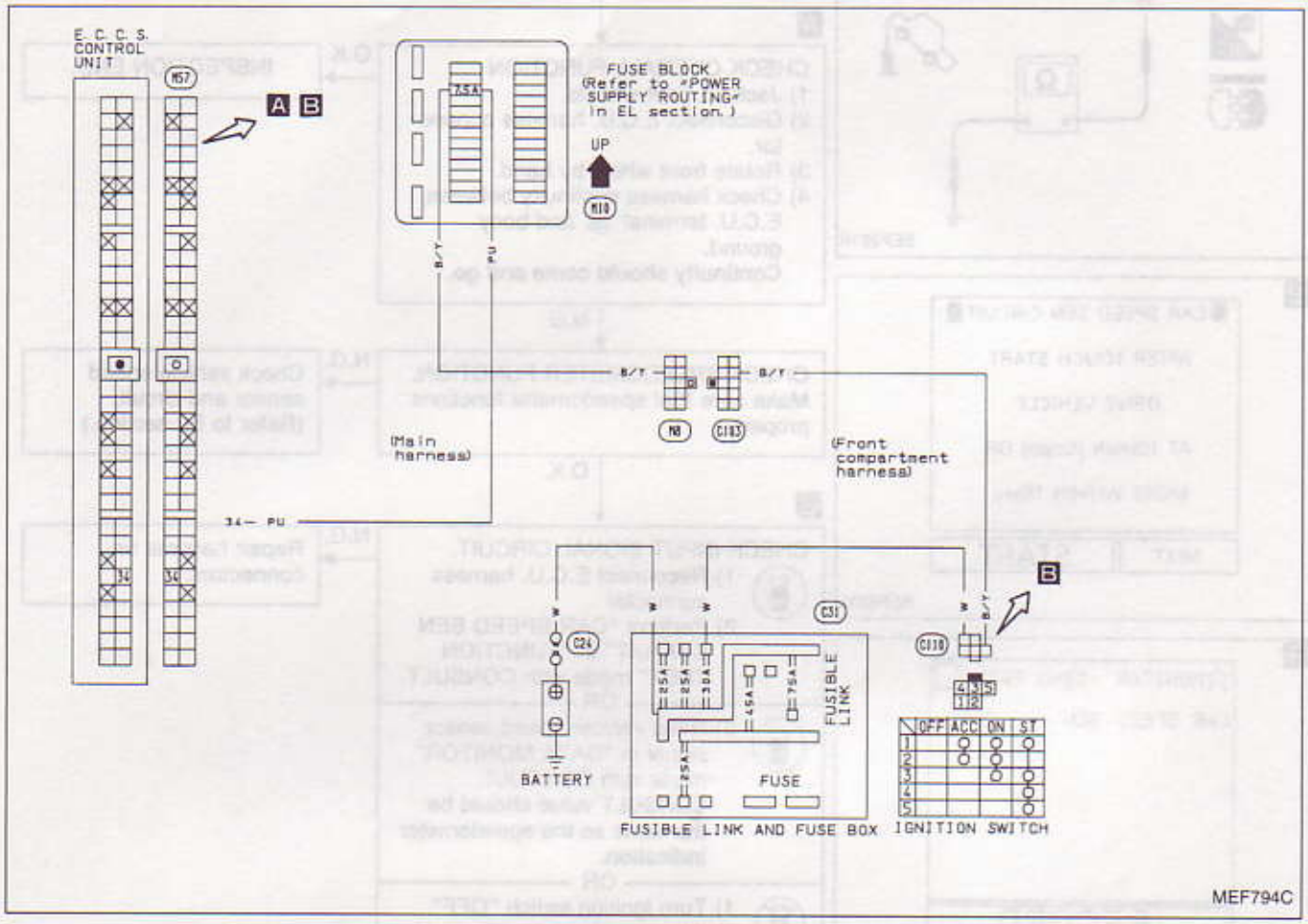
1) Turn ignition switch "OFF".
2) Disconnect combination meter harness connector.
3) Check harness continuity between E.C.U. terminal ㉜ and terminal ① (SLX models), terminal ⓞ (L and LX models).
Continuity should exist.

O.K.

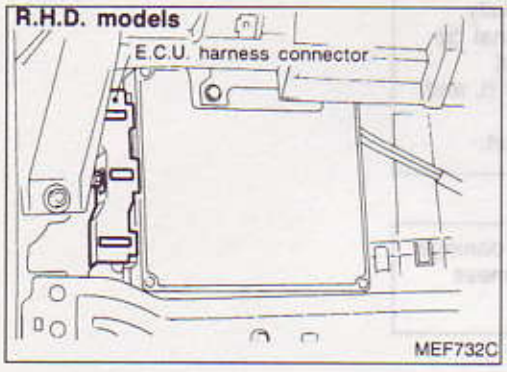
Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

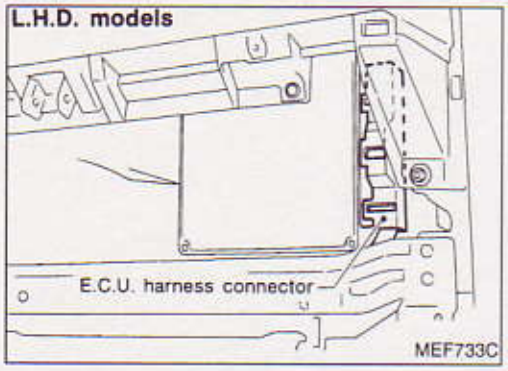
Diagnostic Procedure 29

START SIGNAL (Not self-diagnostic item)



Harness layout



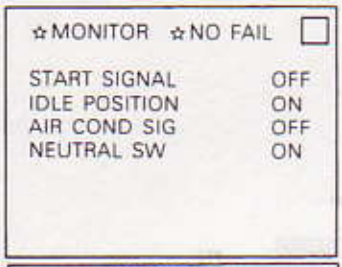


Diagnostic Procedure 29 (Cont'd)

A

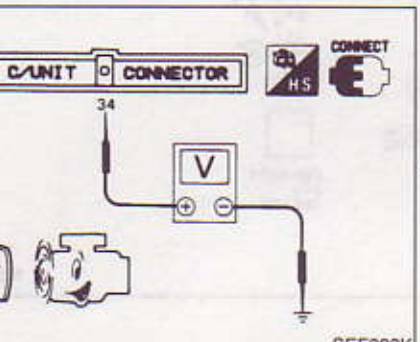
SEF191L

A



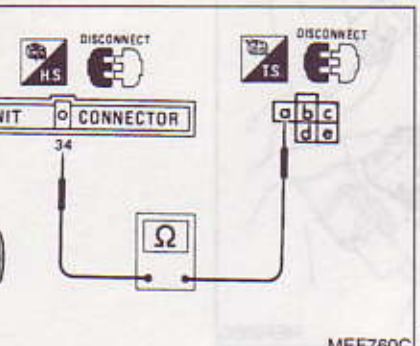
SEF384J

A



SEF202K

B



MEF760C

INSPECTION START

A

CHECK OVERALL FUNCTION.

1) Turn ignition switch "ON".
2) Perform "START SIGNAL CIRCUIT" in "FUNCTION TEST" mode with CONSULT.

O.K. → INSPECTION END

OR

2) Check start signal in "DATA MONITOR" mode with CONSULT.

IGN "ON"	OFF
IGN "START"	ON

OR

1) Turn ignition switch to "START".
2) Check voltage between E.C.U. terminal ㉞ and ground.

Voltage:

Ignition switch "START"
Battery voltage
Except above
Approximately 0V

N.G.

B

CHECK INPUT SIGNAL CIRCUIT.

1) Turn ignition switch "OFF".
2) Disconnect E.C.U. harness connector and ignition switch harness connector.
3) Check harness continuity between E.C.U. terminal ㉞ and terminal ⓐ.

Continuity should exist.

N.G. → Check the following.
- Harness connectors (M8), (C101)
- 7.5A fuse
- Harness continuity between E.C.U. and ignition switch

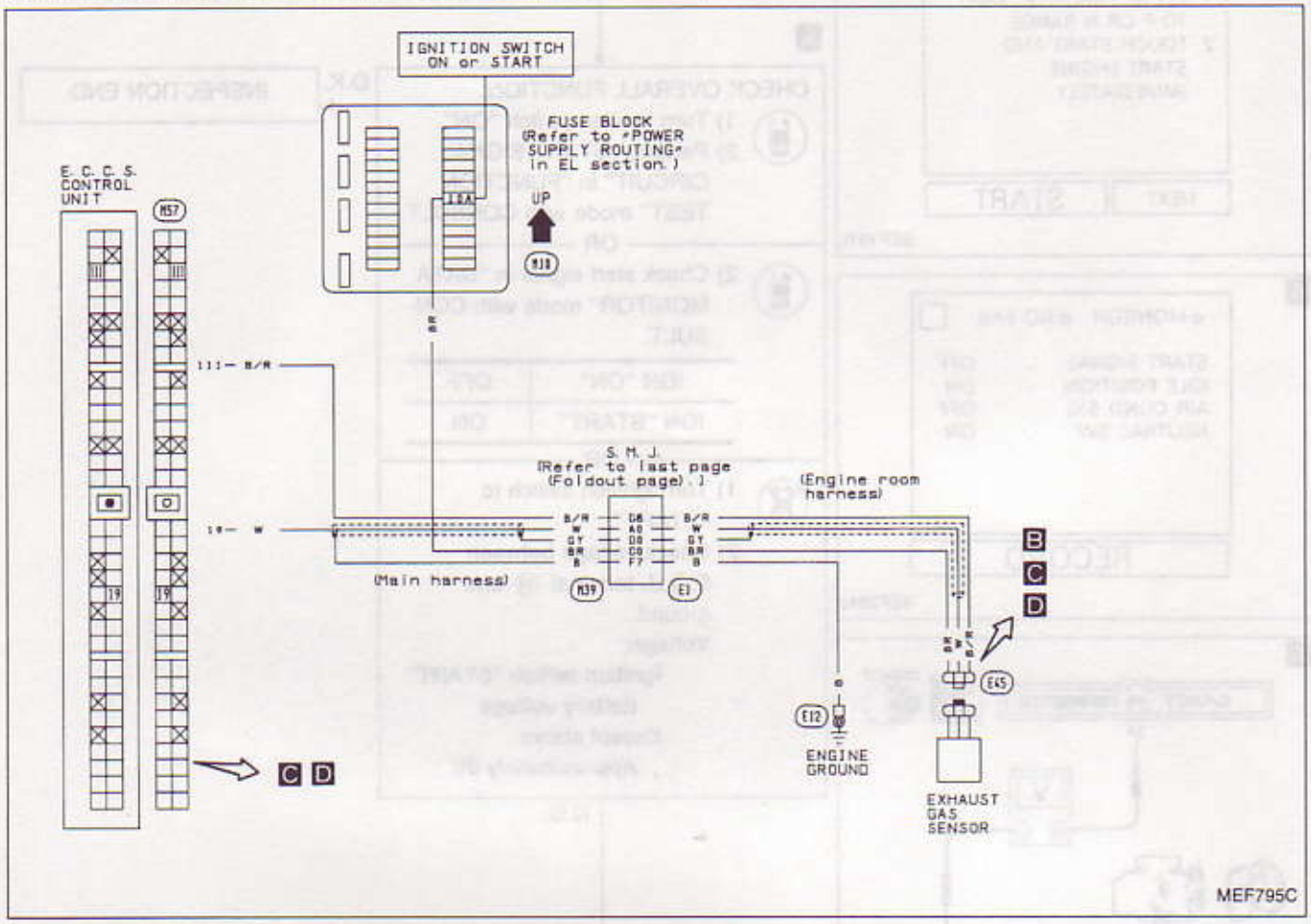
If N.G., repair harness or connectors.

O.K.

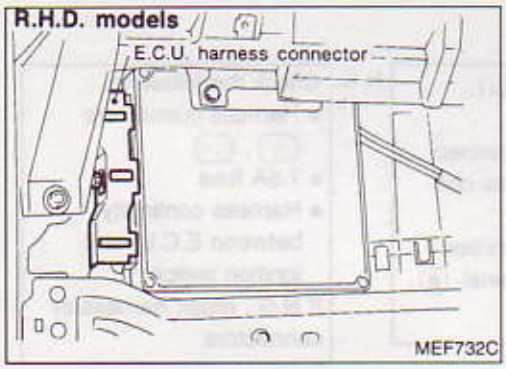
Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

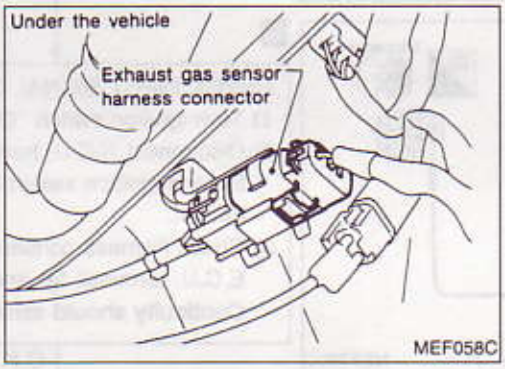
Diagnostic Procedure 30

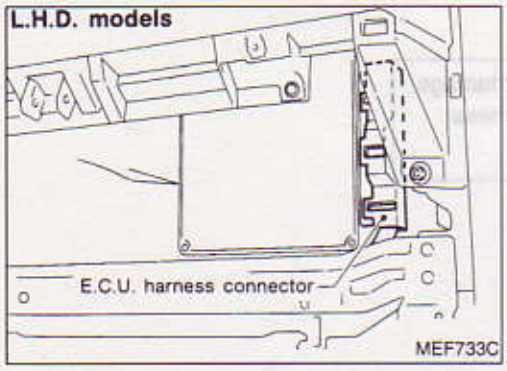
EXHAUST GAS SENSOR (Not self-diagnostic item)



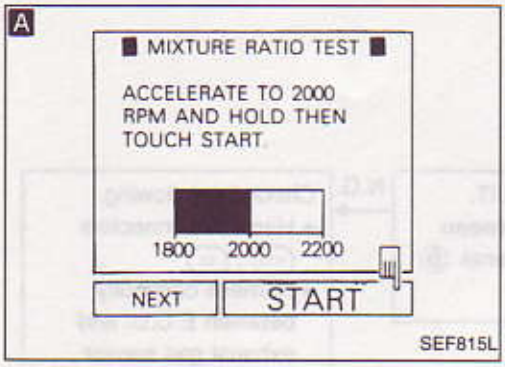
Harness layout

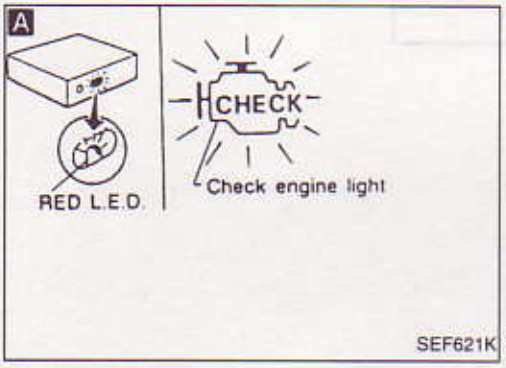


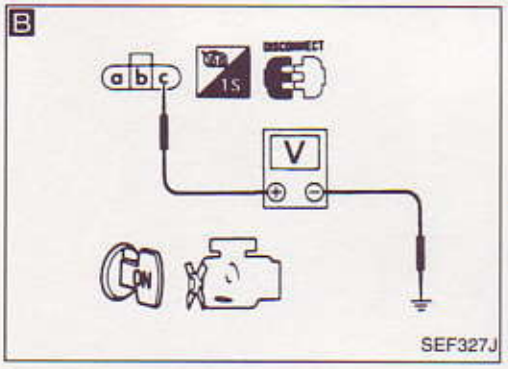


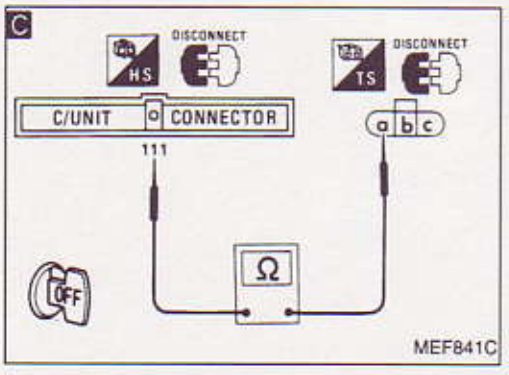


Diagnostic Procedure 30 (Cont'd)









INSPECTION START

A

CHECK EXHAUST GAS SENSOR CIRCUIT.

1) Start engine and warm it up sufficiently.
2) Perform "MIXTURE RATIO TEST" in "FUNCTION TEST" mode with CONSULT.

— OR —

2) Make sure that "M/R F/C MNT" in "DATA MONITOR" mode indicates "RICH" and "LEAN" periodically more than 5 times during 10 seconds at 2,000 rpm.

— OR —

1) Start engine and warm it up sufficiently.
2) Run engine at about 2,000 rpm for about 2 minutes under no-load.
3) Set E.C.U. diagnosis mode to Mode II.
4) Keep engine speed at 2,000 rpm and make sure that the RED L.E.D. on E.C.U. or the check engine light on the instrument panel goes on and off more than 5 times during 10 seconds.

O.K. → INSPECTION END

N.G.

B

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect exhaust gas sensor harness connector.
3) Turn ignition switch "ON".
4) Check voltage between terminal (c) and ground.
Voltage: Battery voltage

N.G. → Check the following.
- Harness connectors (M39), (E1)
- 10A fuse
- Harness continuity between exhaust gas sensor and fuse

If N.G., repair harness or connectors.

O.K.

C

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect E.C.U. harness connector.
3) Check harness continuity between E.C.U. terminal (111) and terminal (a).
Continuity should exist.

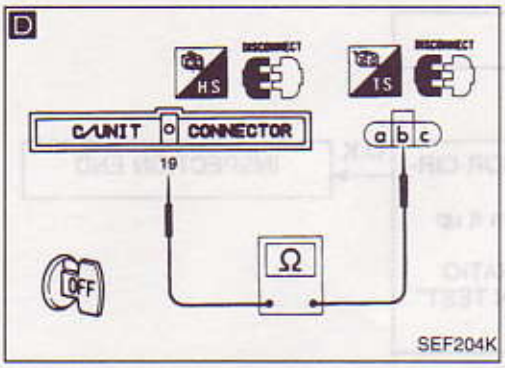
N.G. → Check the following.
- Harness connectors (M39), (E1)
- Harness continuity between exhaust gas sensor and E.C.U.

If N.G., repair harness or connectors.

O.K.

Ⓐ

Diagnostic Procedure 30 (Cont'd)



Ⓐ

D

CHECK INPUT SIGNAL CIRCUIT.
1) Check harness continuity between E.C.U. terminal ⑲ and terminal ⓑ.
Continuity should exist.

N.G. → Check the following.
- Harness connectors (M19), (E1)
- Harness continuity between E.C.U. and exhaust gas sensor

If N.G., repair harness or connectors.

O.K. ↓

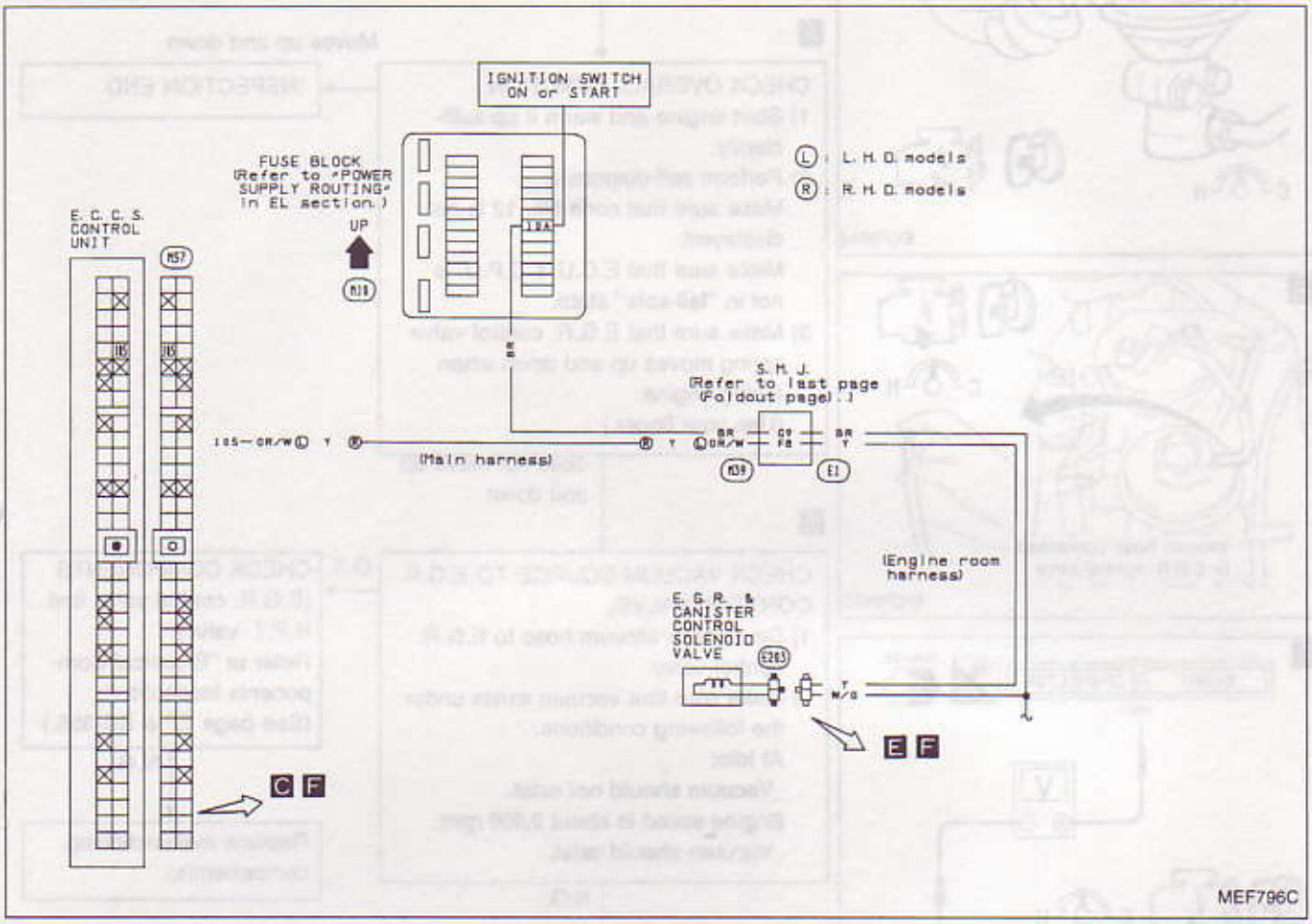
Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

O.K. ↓

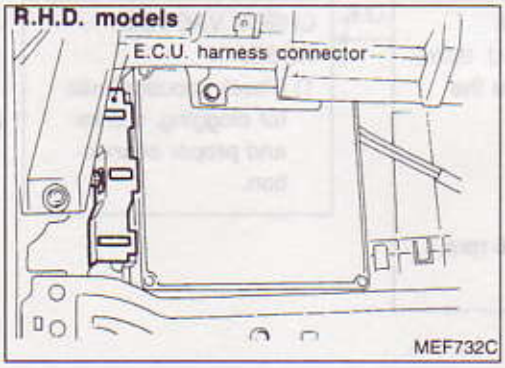
Replace exhaust gas sensor.

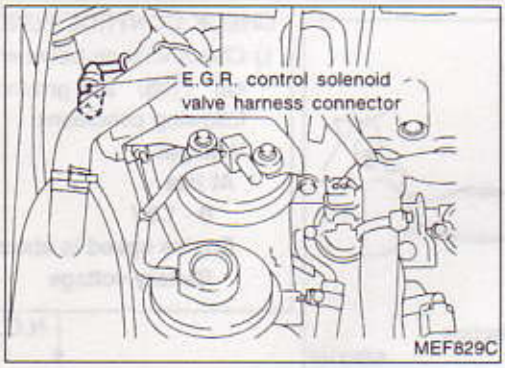
Diagnostic Procedure 31

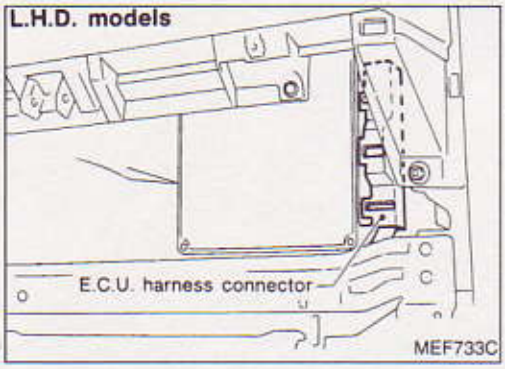
E.G.R. CONTROL (Not self-diagnostic item)



Harness layout

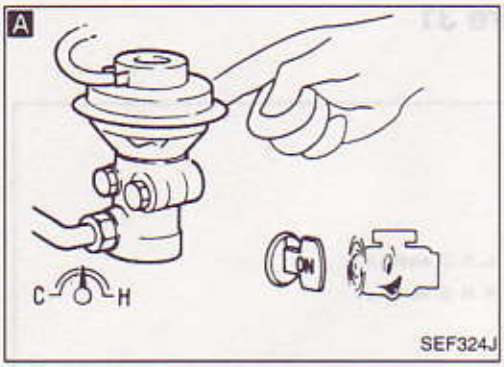






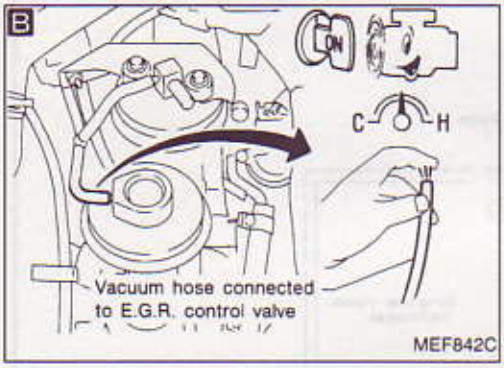
Diagnostic Procedure 31 (Cont'd)

A



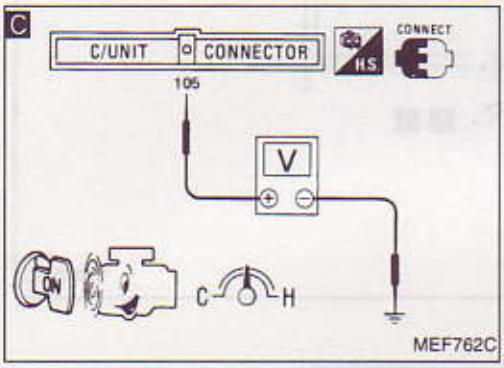
SEF324J

B



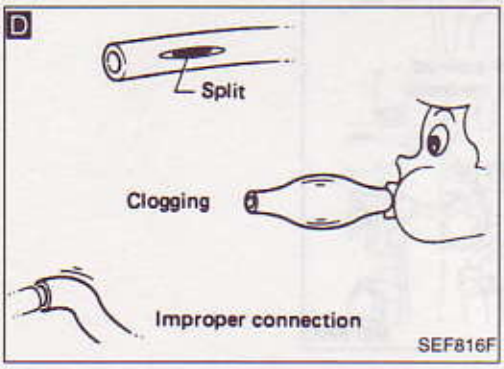
MEF842C

C



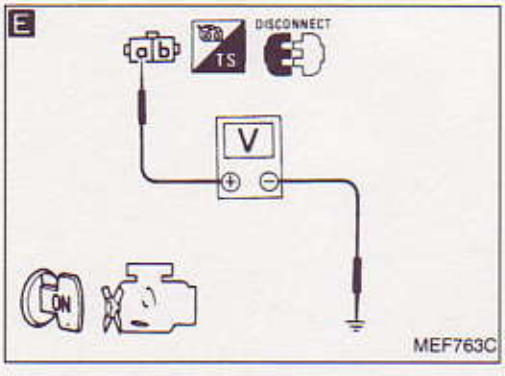
MEF762C

D



SEF816F

E



MEF763C

INSPECTION START

A

CHECK OVERALL FUNCTION.
1) Start engine and warm it up sufficiently.
2) Perform self-diagnosis.
Make sure that code No. 12 is not displayed.
Make sure that E.C.U.'s C.P.U. is not in "fail-safe" state.
3) Make sure that E.G.R. control valve spring moves up and down when racing engine.
(Use your finger.)

Moves up and down → INSPECTION END

does not move up and down

B

CHECK VACUUM SOURCE TO E.G.R. CONTROL VALVE.
1) Disconnect vacuum hose to E.G.R. control valve.
2) Make sure that vacuum exists under the following conditions.
At idle:
Vacuum should not exist.
Engine speed is about 2,500 rpm:
Vacuum should exist.

O.K. → CHECK COMPONENTS (E.G.R. control valve and B.P.T. valve).
Refer to "Electrical Components Inspection".
(See page EF & EC-355.)

N.G. → Replace malfunctioning component(s).

N.G.

C

CHECK CONTROL FUNCTION.
1) Check voltage between E.C.U. terminal (105) and ground under the following conditions.
Voltage:
At idle
0 - 1.0V
Engine speed is about 2,500 rpm
Battery voltage

O.K. → D

D

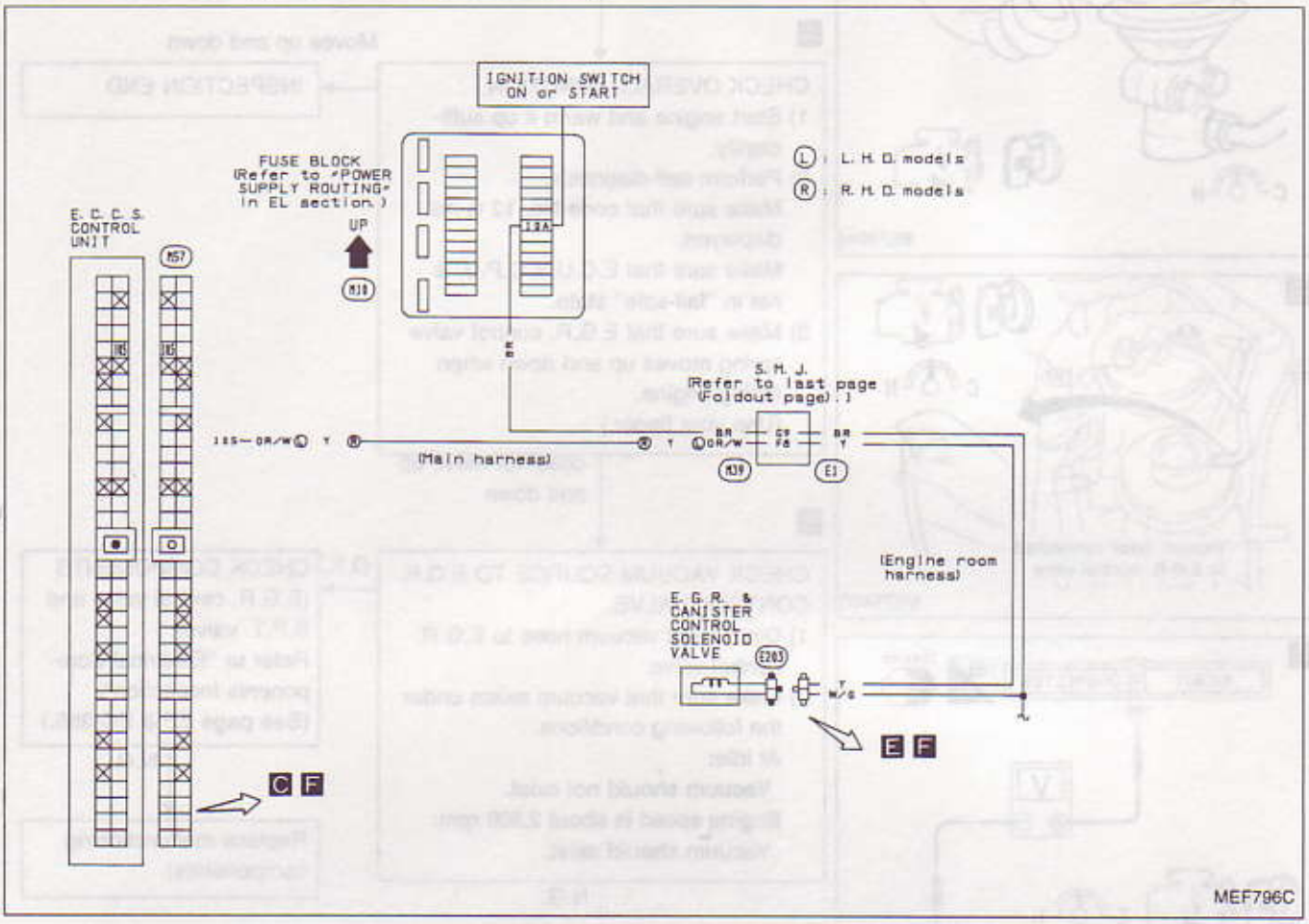
CHECK VACUUM HOSE.
1) Check vacuum hose for clogging, cracks and proper connection.

N.G.

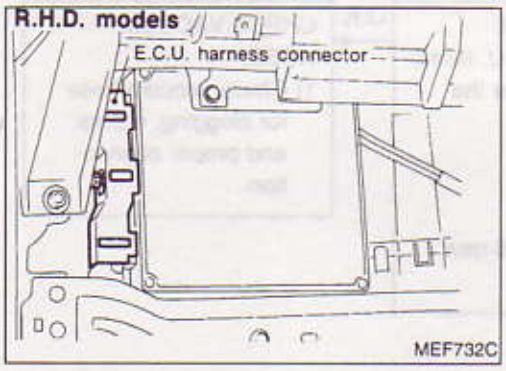
Ⓐ

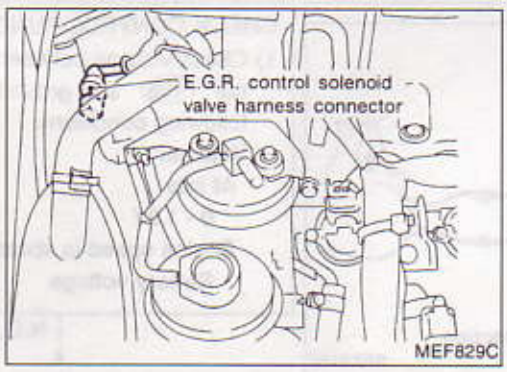
Diagnostic Procedure 31

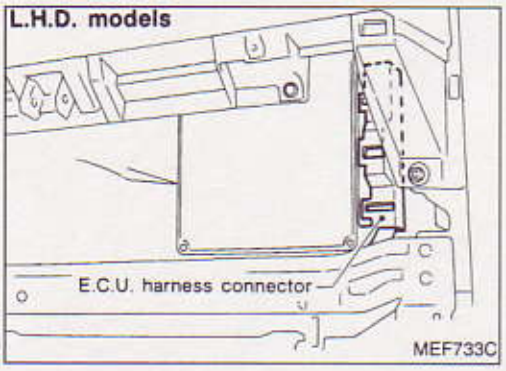
E.G.R. CONTROL (Not self-diagnostic item)



Harness layout

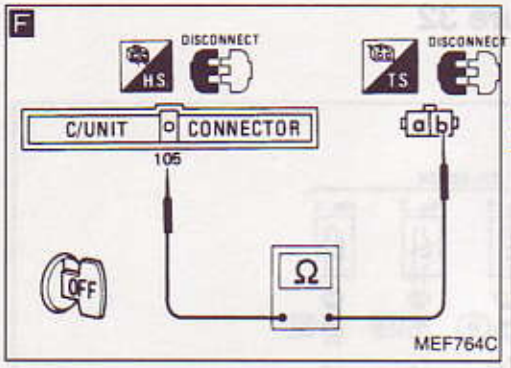






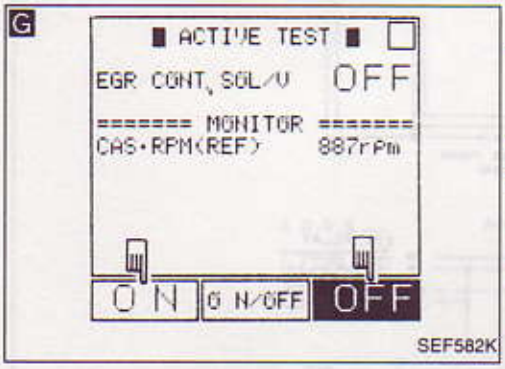
Diagnostic Procedure 31 (Cont'd)

F



MEF764C

G



SEF582K

Ⓐ

E

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect E.G.R. & canister control solenoid valve harness connector.
3) Turn ignition switch "ON".
4) Check voltage between terminal ⓐ and ground.
Voltage: Battery voltage

N.G. → Check the following.
- Harness connectors (M19), (E1)
- 10A fuse
- Harness continuity between E.G.R. & canister control solenoid valve and fuse

If N.G., repair harness or connectors.

O.K. ↓

F

CHECK OUTPUT SIGNAL CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect E.C.U. harness connector.
3) Check harness continuity between E.C.U. terminal (105) and terminal ⓑ
Continuity should exist.

N.G. → Repair harness or connectors.

O.K. ↓

G

CHECK COMPONENT
(E.G.R. & canister control solenoid valve).

1) Reconnect E.G.R. & canister control solenoid valve harness connector and E.C.U. harness connector.
2) Start engine.
3) Turn E.G.R. & canister control solenoid valve "ON" and "OFF" in "ACTIVE TEST" mode with CONSULT and check operating sound.

N.G. → Replace E.G.R. & canister control solenoid valve.

OR

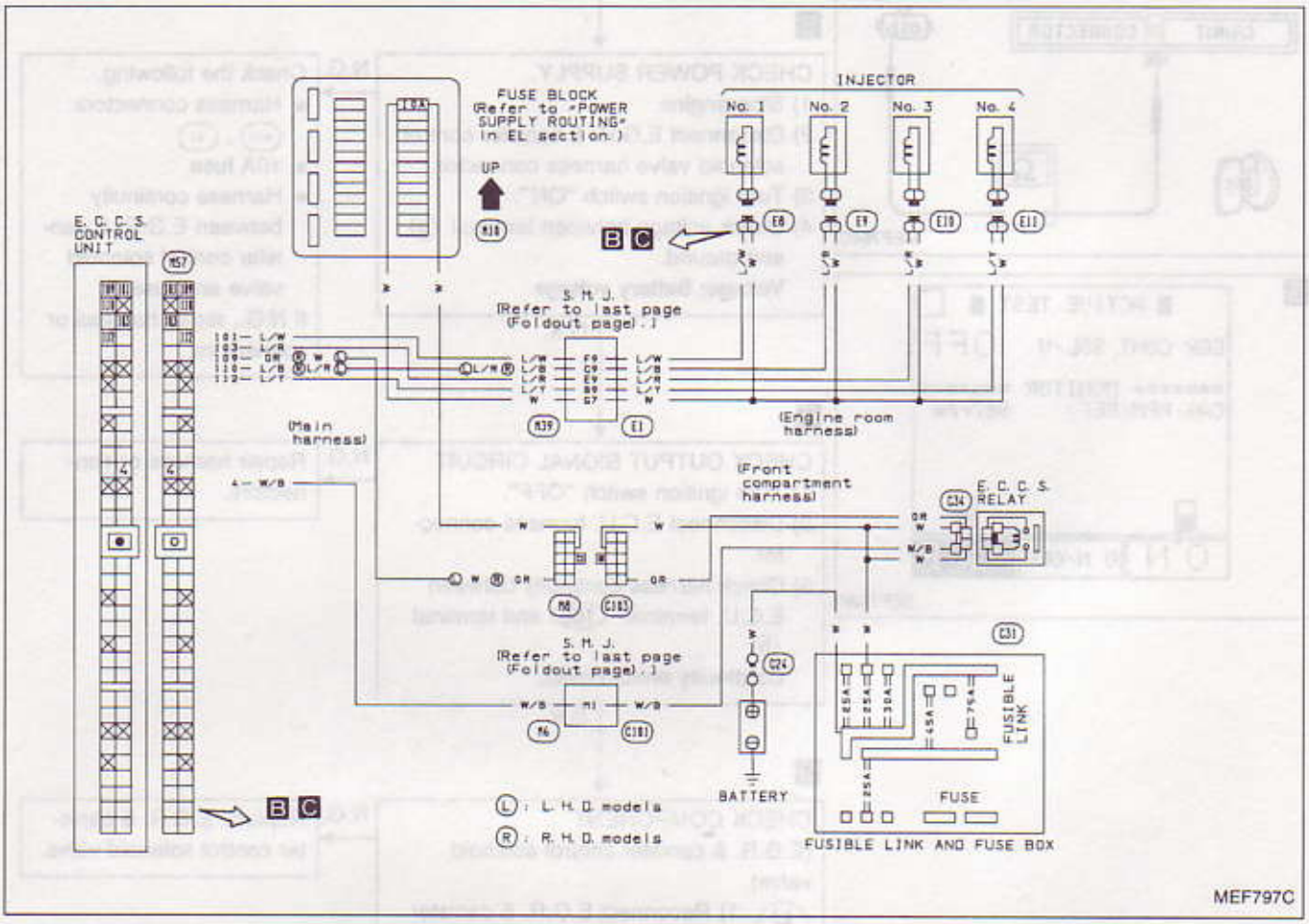
Refer to "Electrical Components Inspection".
(See page EF & EC-324).

O.K. ↓

Check E.C.U. pin terminals for damage or the connection of E.C.U. harness connector.

Diagnostic Procedure 32

INJECTOR (Not self-diagnostic item)



Harness Layout