

QUICK REFERENCE INDEX

Publication Number:
SM7E00-1C11E0E



MODEL C11 SERIES

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	EC Engine Control System
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	EX Exhaust System
	STR Starting System
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	FSU Front Suspension
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	PB Parking Brake System
	BRC Brake Control System
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	HRN Horn
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	LAN LAN System
	PCS Power Control System
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	WCS Warning Chime System
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HOW TO USE THIS MANUAL

< HOW TO USE THIS MANUAL >

Number	Item	Description																
14	Wire color	<ul style="list-style-type: none"> This shows a code for the color of the wire. 																
		<table border="0"> <tr> <td>B = Black</td> <td>BR = Brown</td> </tr> <tr> <td>W = White</td> <td>OR or O = Orange</td> </tr> <tr> <td>R = Red</td> <td>P = Pink</td> </tr> <tr> <td>G = Green</td> <td>PU or V (Violet) = Purple</td> </tr> <tr> <td>L = Blue</td> <td>GY or GR = Gray</td> </tr> <tr> <td>Y = Yellow</td> <td>SB = Sky Blue</td> </tr> <tr> <td>LG = Light Green</td> <td>CH = Dark Brown</td> </tr> <tr> <td></td> <td>DG = Dark Green</td> </tr> </table>	B = Black	BR = Brown	W = White	OR or O = Orange	R = Red	P = Pink	G = Green	PU or V (Violet) = Purple	L = Blue	GY or GR = Gray	Y = Yellow	SB = Sky Blue	LG = Light Green	CH = Dark Brown		DG = Dark Green
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Y = Yellow	SB = Sky Blue																	
LG = Light Green	CH = Dark Brown																	
	DG = Dark Green																	
<p>When the wire color is striped, the base color is given first, followed by the stripe color as shown below: Example: L/W = Blue with White Stripe</p>																		
15	Option description	<ul style="list-style-type: none"> This shows a description of the option abbreviation used on the page. 																
16	Switch	<ul style="list-style-type: none"> This shows that continuity exists between terminals 1 and 2 when the switch is in the A position. Continuity exists between terminals 1 and 3 when the switch is in the B position. 																
17	Assembly parts	<ul style="list-style-type: none"> Connector terminal in component shows that it is a harness incorporated assembly. 																
18	Cell code	<ul style="list-style-type: none"> This identifies each page of the wiring diagram by section, system and wiring diagram page number. 																
19	Current flow arrow	<ul style="list-style-type: none"> Arrow indicates electric current flow, especially where the direction of standard flow (vertically downward or horizontally from left to right) is difficult to follow. 																
		<ul style="list-style-type: none"> A double arrow "↔" shows that current can flow in either direction depending on circuit operation. 																
20	System branch	<ul style="list-style-type: none"> This shows that the system branches to another system identified by cell code (section and system). 																
21	Page crossing	<ul style="list-style-type: none"> This arrow shows that the circuit continues to another page identified by cell code. The C will match with the C on another page within the system other than the next or preceding pages. 																
22	Shielded line	<ul style="list-style-type: none"> The line enclosed by broken line circle shows shield wire. 																
23	Component box in wave line	<ul style="list-style-type: none"> This shows that another part of the component is also shown on another page (indicated by wave line) within the system. 																
24	Component name	<ul style="list-style-type: none"> This shows the name of a component. 																
25	Connector number	<ul style="list-style-type: none"> This shows the connector number. The letter shows which harness the connector is located in. 																
		<ul style="list-style-type: none"> Example: M: main harness. For detail and to locate the connector, refer to PG section "Main Harness", "Harness Layout". A coordinate grid is included for complex harnesses to aid in locating connectors. 																
26	Ground (GND)	<ul style="list-style-type: none"> The line spliced and grounded under wire color shows that ground line is spliced at the grounded connector. 																
27	Ground (GND)	<ul style="list-style-type: none"> This shows the ground connection. For detailed ground distribution information, refer to "Ground Distribution" in PG section. 																
28	Connector views	<ul style="list-style-type: none"> This area shows the connector faces of the components in the wiring diagram on the page. 																
29	Common component	<ul style="list-style-type: none"> Connectors enclosed in broken line show that these connectors belong to the same component. 																
30	Connector color	<ul style="list-style-type: none"> This shows a code for the color of the connector. For code meaning, refer to wire color codes, Number 14 of this chart. 																
31	Fusible link and fuse box	<ul style="list-style-type: none"> This shows the arrangement of fusible link(s) and fuse(s), used for connector views of "POWER SUPPLY ROUTING" in PG section. The open square shows current flow in, and the shaded square shows current flow out. 																
32	Reference area	<ul style="list-style-type: none"> This shows that more information on the Super Multiple Junction (SMJ) and Joint Connectors (J/C) exists on the PG section. Refer to "Reference Area" for details. 																

Harness Indication

ENGINE UNIT

< DISASSEMBLY AND ASSEMBLY >

[MR18DE]

2. Install water drain plug (1) to cylinder block.

↔ : Engine front

- Apply liquid gasket to the drain plug thread.
Use Genuine Silicone RTV Sealant or equivalent. Refer to [GI-27, "Recommended Chemical Products and Sealants"](#).

9.8 N·m (1.0 kg·m, 87 in·lb)

3. Remove dust, dirt, and engine oil on the bearing mating surfaces of cylinder block and main bearing cap.

4. Install thrust bearings to the both sides of the No. 3 journal housing (B) on cylinder block.

↔ : Engine front

- Install thrust bearings with the oil groove (A) facing crankshaft arm (outside).

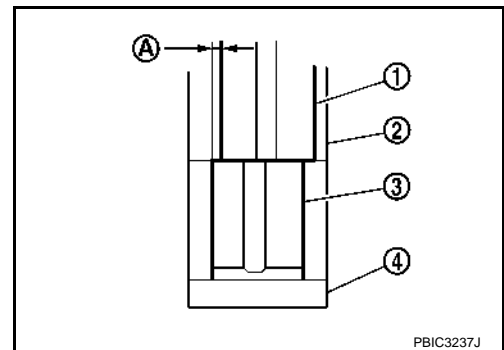
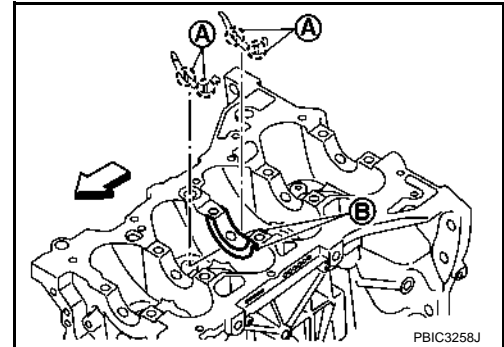
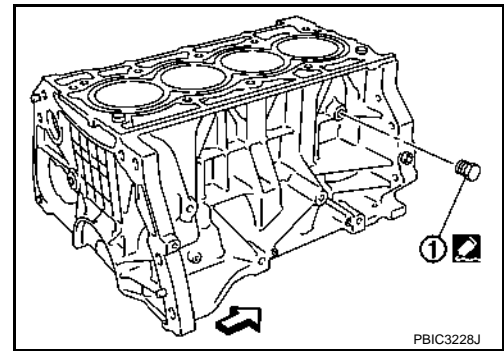
5. Install the main bearings paying attention to the direction.

CAUTION:

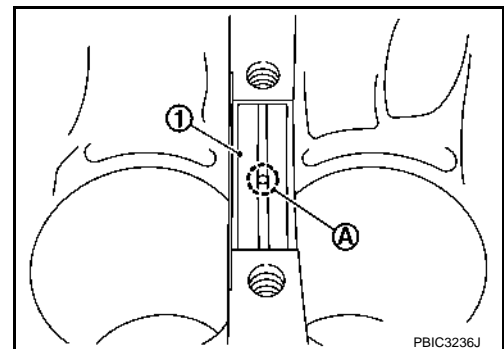
- Before installing main bearings, apply new engine oil to the bearing surface (inside). Do not apply new engine oil to the back surface, but thoroughly clean it.
- When installing, align main bearing to the center position of cylinder block and main bearing cap.
- The difference (A) between main bearing upper (1) and main bearing lower (3) should be 0.85 mm (0.033 in) or less when installing.

2 : Cylinder block

4 : Main bearing cap



- Ensure the oil holes on cylinder block and oil holes (A) on the main bearings (1) are aligned.



6. Install signal plate to crankshaft if removed.
7. Set the signal plate with the flange facing toward the counter weight side (engine front side) to the crankshaft rear surface.
8. Apply new engine oil to threads and seat surfaces of bolts.

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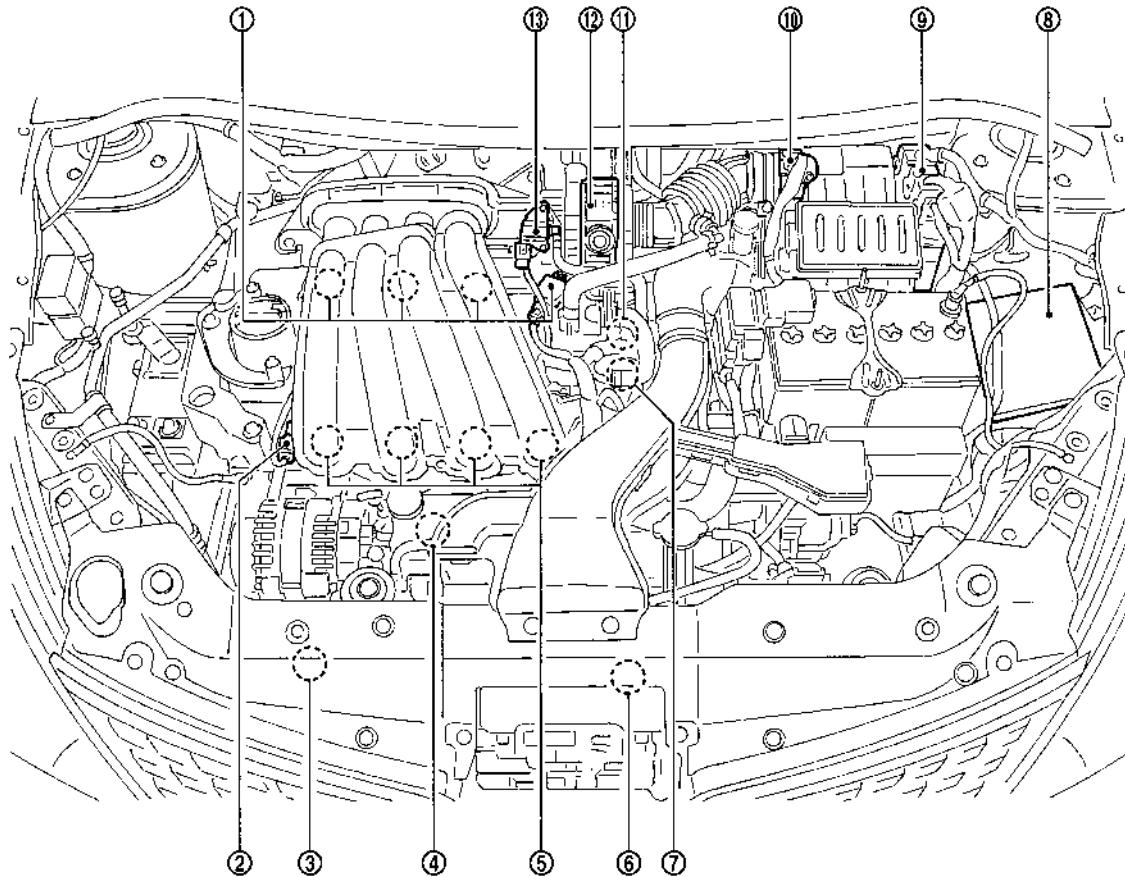
COOLING FAN CONTROL

< FUNCTION DIAGNOSIS >

[HR16DE (WITH EURO-OBD)]

Component Parts Location

INFOID:000000001677956



PBIB2939E

- | | | |
|---|---|--|
| 1. Ignition coil (with power transistor) and spark plug | 2. Intake valve timing control solenoid valve | 3. Refrigerant pressure sensor |
| 4. Knock sensor | 5. Fuel injector | 6. Cooling fan motor |
| 7. Camshaft position sensor (PHASE) | 8. IPDM E/R | 9. ECM |
| 10. Mass air flow sensor (with intake air temperature sensor) | 11. Engine coolant temperature sensor | 12. Electric throttle control actuator (with built in throttle position sensor and throttle control motor) |
| 13. EVAP canister purge volume control solenoid valve | | |

PRECAUTIONS

[HR16DE (WITH EURO-OBD)]

< PRECAUTION >

On Board Diagnostic (OBD) System of Engine and A/T

INFOID:000000001161417

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MI) to warn the driver of a malfunction causing emission deterioration.

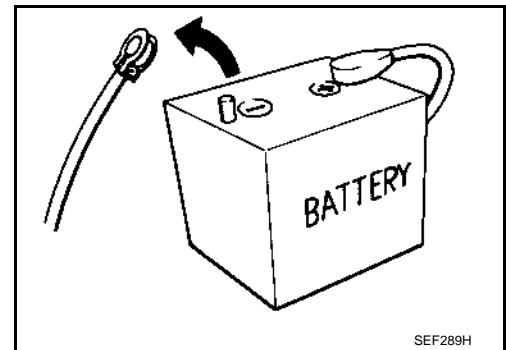
CAUTION:

- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MI to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MI to light up due to the open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to **XX-XX, "*****"**.
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MI to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MI to light up due to the malfunction of the fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM before returning the vehicle to the customer.

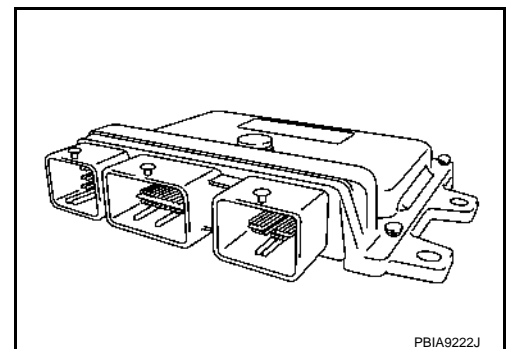
General Precautions

INFOID:000000001161418

- Always use a 12 volt battery as power source.
- Do not attempt to disconnect battery cables while engine is running.
- Before connecting or disconnecting the ECM harness connector, turn ignition switch OFF and disconnect negative battery cable. Failure to do so may damage the ECM because battery voltage is applied to ECM even if ignition switch is turned OFF.
- Before removing parts, turn ignition switch OFF and then disconnect battery ground cable.



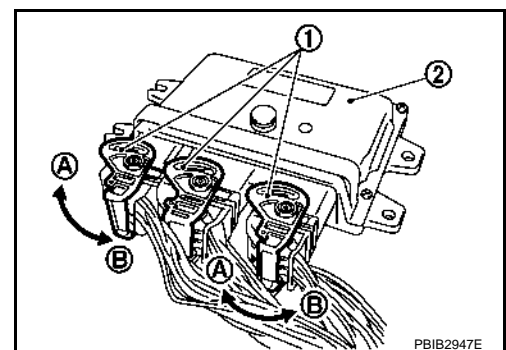
- Do not disassemble ECM.
- If a battery cable is disconnected, the memory will return to the ECM value.
The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.
- If the battery is disconnected, the following emission-related diagnostic information will be lost within 24 hours.



- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values

- When connecting ECM harness connector (1), fasten (B) it securely with a lever as far as it will go as shown in the figure.

- 2. ECM
- A. Loosen



COOLING FAN

< COMPONENT DIAGNOSIS >

[HR16DE (WITHOUT EURO-OBD)]

>> Repair or replace malfunctioning part.

3. CHECK COOLING FAN MOTORS CIRCUIT FOR OPEN AND SHORT

1. Disconnect cooling fan motor harness connector.
2. Check the continuity between IPDM E/R harness connector and cooling fan motor harness connector.

IPDM E/R		Cooling fan motor		Continuity
Connector	Terminal	Connector	Terminal	
E44	24	E3	1	Existed
E45	30			

3. Check the continuity between cooling fan motor harness connector or IPDM E/R harness connector and ground.

Cooling fan motor		IPDM E/R		Ground	Continuity
Connector	Terminal	Connector	Terminal		
E3	2	E46	59	Ground	Existed
			39		

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness for open or short between cooling fan motor and IPDM E/R
- Harness for open or short between cooling fan motor and ground
- Harness for open or short between IPDM E/R and ground
- Resistor E5

>> Repair or replace malfunctioning part.

5. CHECK COOLING FAN MOTORS CIRCUIT FOR OPEN AND SHORT

1. Disconnect cooling fan motor harness connector.
2. Check the continuity between IPDM E/R harness connector and cooling fan motor harness connector.

IPDM E/R		Cooling fan motor		Continuity
Connector	Terminal	Connector	Terminal	
E44	23	E3	1	Existed
	24		2	
E45	30		3	

3. Check the continuity between cooling fan motor harness connector or IPDM E/R harness connector and ground.

Cooling fan motor		IPDM E/R		Ground	Continuity
Connector	Terminal	Connector	Terminal		
E3	4	E46	59	Ground	Existed
			39		

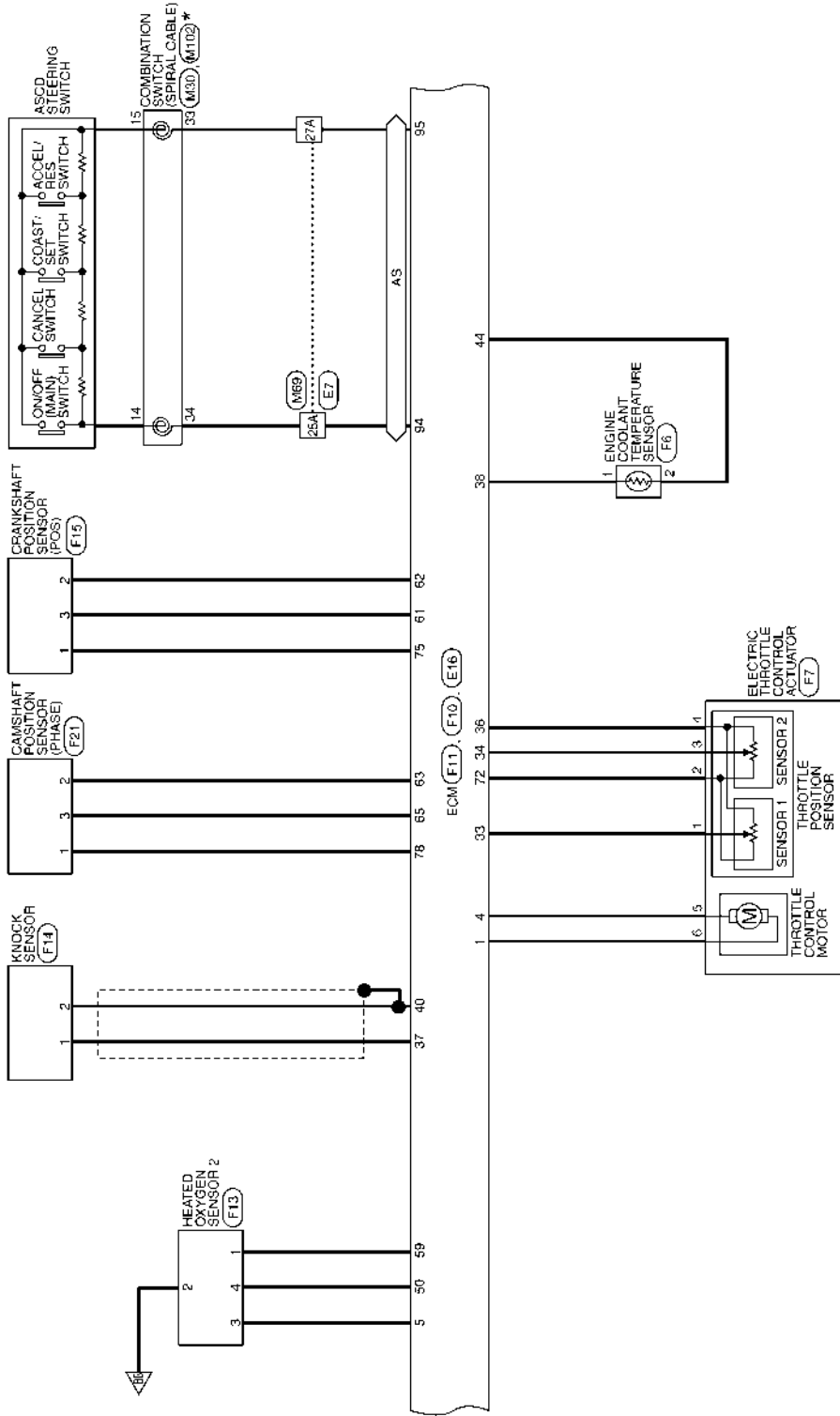
4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

AS : WITH ASCD



* : THIS CONNECTOR IS NOT SHOWN IN "HARNES LAYOUT" OF PG SECTION.

ALBWA0187GE

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A/T SHIFT LOCK SYSTEM

< COMPONENT DIAGNOSIS >

[TYPE 1 (4AT: RE4F03B)]

- Check voltage between A/T device harness connector terminal 5 and ground.

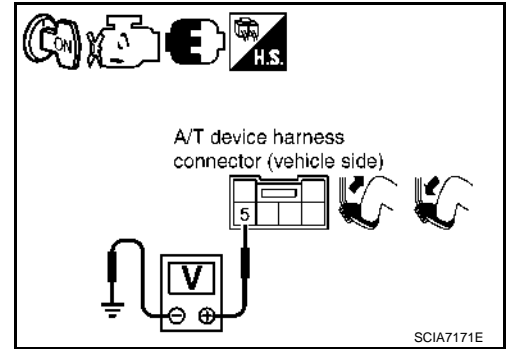
Voltage:

Brake pedal depressed: Battery voltage

Brake pedal released: 0V

OK or NG

- OK >> GO TO 7.
NG >> GO TO 5.



5. CHECK STOP LAMP SWITCH

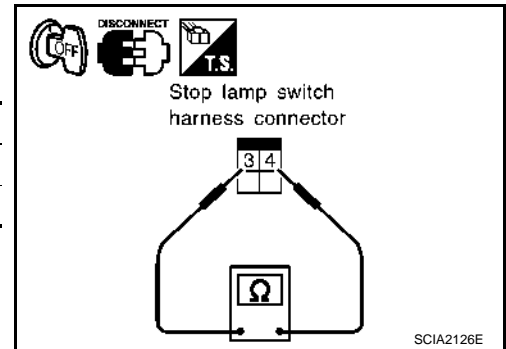
- Turn ignition switch OFF.
- Disconnect stop lamp switch harness connector.
- Check continuity between stop lamp switch harness connector terminals 3 and 4.

Condition	Continuity
When brake pedal is depressed	Yes
When brake pedal is released	No

Check stop lamp switch after adjusting brake pedal. Refer to [BR-6, "Inspection and Adjustment"](#).

OK or NG

- OK >> GO TO 6.
NG >> Repair or replace damaged parts.



6. DETECT MALFUNCTIONING ITEM

Check the following. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between ignition switch and stop lamp switch harness connector
- Harness for short or open between stop lamp switch harness connector and A/T device harness connector
- 10A fuse [No. 3, located in the fuse block (J/B)]
- Ignition switch.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

7. CHECK GROUND CIRCUIT

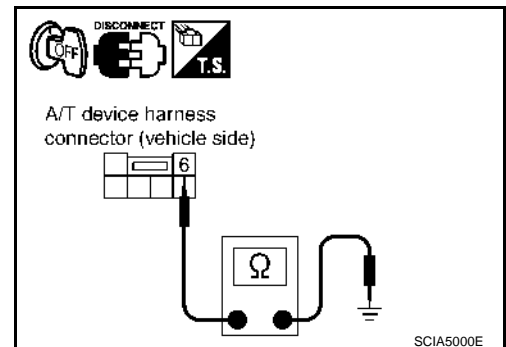
- Turn ignition switch OFF.
- Disconnect A/T device harness connector.
- Check continuity between A/T device harness connector terminal 6 and ground.

Continuity should exist.

- Connect A/T device harness connector.

OK or NG

- OK >> Replace shift lock solenoid and park position switch assembly.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.



BRAKE FLUID

< ON-VEHICLE MAINTENANCE >

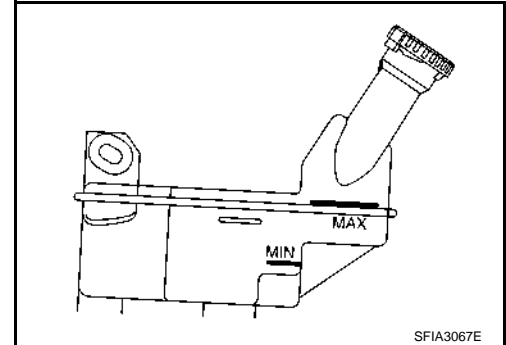
BRAKE FLUID

On Board Inspection

INFOID:000000001716919

CHECKING BRAKE FLUID LEVEL

- Make sure the fluid level in the reservoir tank is within the standard (between MAX and MIN lines).
- Visually check around the reservoir tank for fluid leakage.
- If fluid level is excessively low, check brake system for fluid leakage.
- Release parking brake lever and see if brake warning lamp goes off. If not, check brake system for fluid leakage.



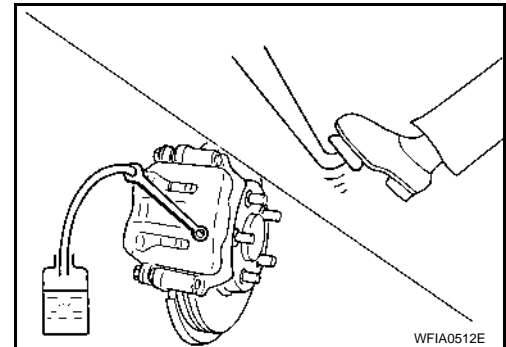
Drain and Refill

INFOID:000000001716920

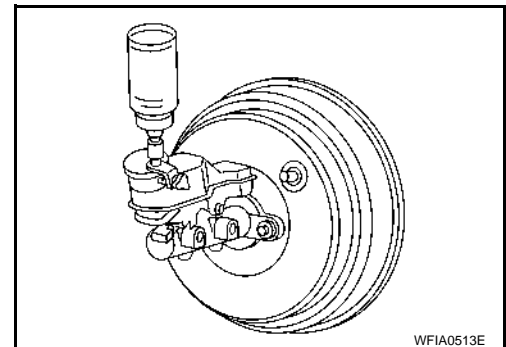
CAUTION:

- Refill using recommended brake fluid. Refer to [MA-19. "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, immediately wipe them with cloth and wash it away with water.
- Before working, disconnect connectors of ABS actuator and electric unit (control unit) or battery cable from the negative terminal.

1. Connect a vinyl tube to bleed valve.
2. Depress the brake pedal, loosen the bleed valve, and gradually remove the brake fluid.



3. Clean inside of reservoir tank, and refill with new brake fluid.
4. Loosen bleed valve, depress brake pedal slowly to full stroke and then release it. Repeat the procedure every 2 or 3 seconds until the new brake fluid comes out, then close the bleed valve while depressing the brake pedal. Repeat the same procedure for each wheel.
5. Bleed air. Refer to [BR-8. "Bleeding Brake System"](#).



Bleeding Brake System

INFOID:000000001716921

CAUTION:

- While bleeding, pay attention to master cylinder fluid level.
- Before working, disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.

1. Connect a vinyl tube to the rear right bleed valve.
2. Fully depress brake pedal 4 to 5 times.

INTAKE SENSOR

Removal and Installation

INFOID:000000001700349

REMOVAL

1. Remove the evaporator. Refer to [VTL-41, "Removal and Installation of Evaporator"](#).

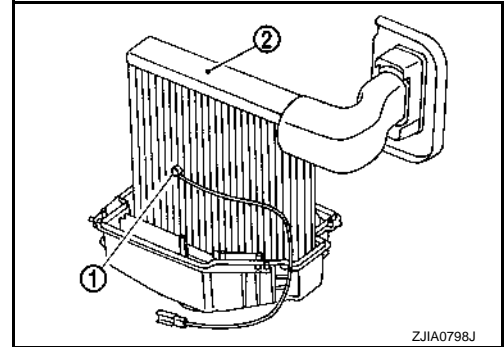
CAUTION:

Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.

2. Remove the intake sensor (1) from the evaporator (2).

CAUTION:

Mark the position of intake sensor on the evaporator for installation.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and then apply compressor oil to it when installing it.
- Install the intake sensor in the same position as the original intake sensor.
- When recharging refrigerant, check for leaks.

INSUFFICIENT COOLING

[AUTO AIR CONDITIONER (W/NAVI)]

< SYMPTOM DIAGNOSIS >

INSUFFICIENT COOLING

Component Function Check

INFOID:000000001547374

SYMPTOM: Insufficient cooling

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - TEMPERATURE DECREASE

1. Press the AUTO switch.
2. Turn temperature control dial counterclockwise until 18° C (60° F) is displayed.
3. Check for cold air at discharge air outlets.

Can the symptom be duplicated?

YES >> GO TO 3.

NO >> GO TO 2.

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check for any symptoms. Refer to [HAC-202, "Operational Check"](#).

Does another symptom exist?

YES >> Refer to [HAC-298, "Symptom Matrix Chart"](#).

NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 3.

4. PERFORM SELF-DIAGNOSIS

Perform self-diagnosis Refer to [HAC-213, "Front Air Control Self-Diagnosis"](#).

Is the inspection result normal?

YES >> GO TO 5.

NO >> Refer to [HAC-218, "Front Air Control Self-Diagnosis Code Chart"](#).

5. CHECK DRIVE BELTS

Check compressor belt tension. Refer to [EM-15, "Checking"](#) HR16DE [EM-142, "Checking Drive Belts"](#) or HR18DE or [EM-263, "Inspection and Adjustment"](#) K9K.

Is the inspection result normal?

OK >> GO TO 6.

NG >> Adjust or replace compressor belt. Refer to [XX-XX, "*****"](#).

6. CHECK AIR MIX DOOR OPERATION

Check and verify air mix door mechanism for smooth operation. Refer to [HAC-225, "Air Mix Door Motor Component Function Check"](#)

Does air mix door operate correctly?

YES >> GO TO 7.

NO >> Check air mix door motor circuit. Refer to [HAC-226, "Air Mix Door Motor Diagnosis Procedure"](#).

7. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operate correctly?

YES >> GO TO 8.

NO >> Check cooling fan motor. Refer to [CO-18, "Component \(Models with A/C\)"](#).

8. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE

Check recovery/recycling equipment before connecting to vehicle. Verify there is no pressure in the recovery/recycling equipment by checking the gauges. If pressure exists, recover refrigerant from equipment lines.

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DOOR SWITCH

< COMPONENT DIAGNOSIS >

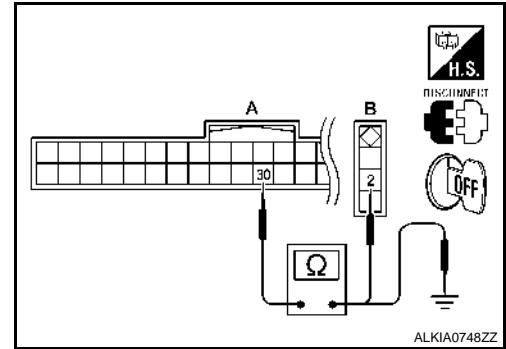
[WITHOUT I-KEY & SUPER LOCK]

- Check continuity between BCM connector (A) M18 terminal 30 and passenger door switch connector (B) B27 terminal 2.

BCM connector	Terminal	Door switch connector	Terminal	Continuity
M18	30	B27	2	Yes

- Check continuity between BCM connector (A) M18 terminal 30 and ground.

BCM connector	Terminal	Ground	Continuity
M18	30		No



Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness between BCM and door switch.

3.CHECK DOOR SWITCH

Check door switch.

Refer to [DLK-502, "PASSENGER SIDE : Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace front door switch (passenger side). Refer to [XX-XX, "*****"](#).

4.CHECK INTERMITTENT INCIDENT

Refer to @@@.

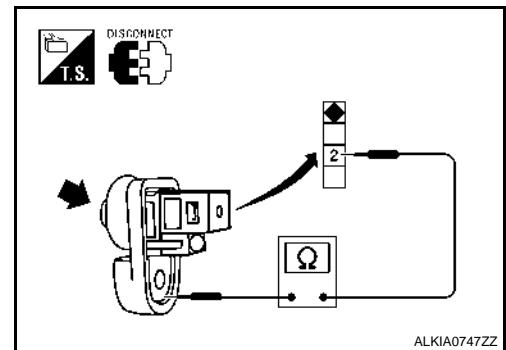
>> INSPECTION END

PASSENGER SIDE : Component Inspection

INFOID:000000001530629

1.CHECK DOOR SWITCH

- Turn ignition switch OFF.
- Check passenger door switch.



Terminal		Door switch condition	Continuity
Door switch			
2	Ground part of door switch	Pressed	Yes
		Released	No

Is the inspection result normal?

YES >> Door switch is OK.

NO >> Replace front door switch (passenger side). Refer to [XX-XX, "*****"](#).

REAR LH

SECURITY SYSTEM PRE-WIRING

< COMPONENT DIAGNOSIS >

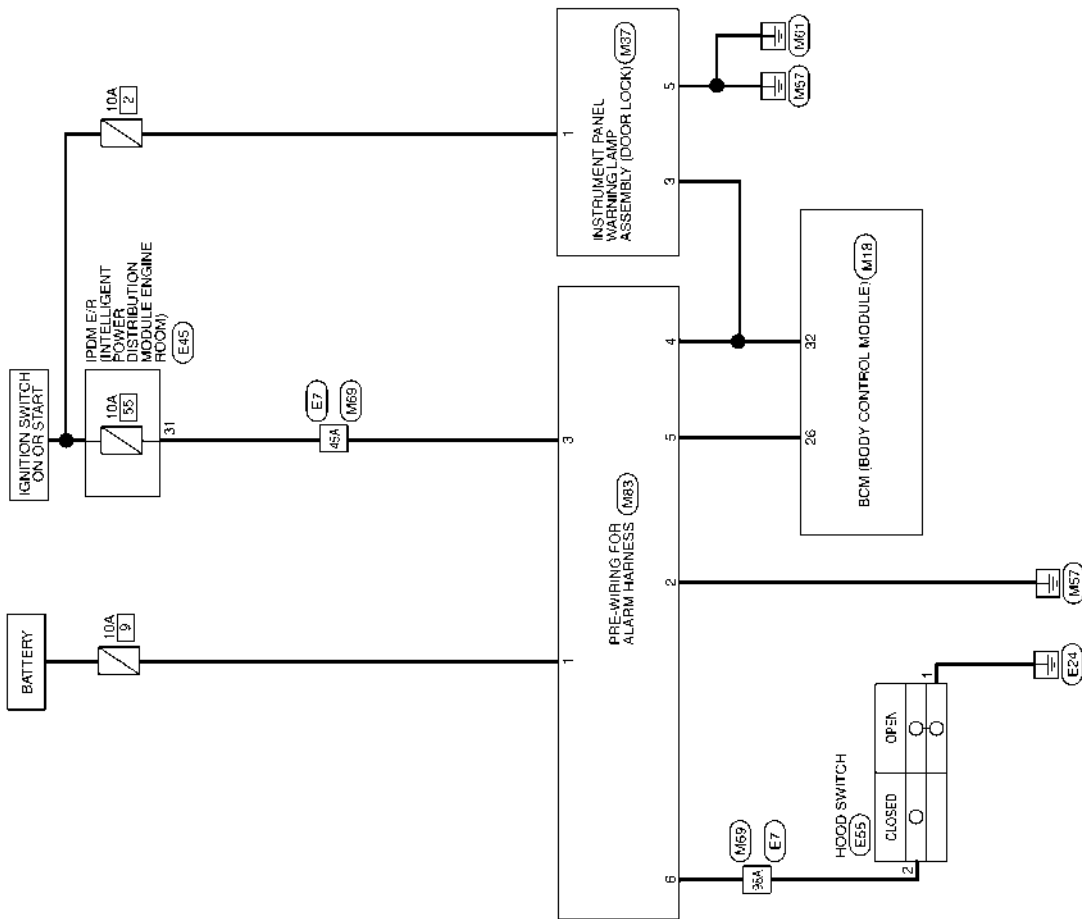
[WITHOUT INTELLIGENT KEY SYSTEM]

SECURITY SYSTEM PRE-WIRING

Wiring Diagram - SECURITY SYSTEM PRE-WIRING -

INFOID:000000001532180

SECURITY SYSTEM PRE-WIRING



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SEC

ALKWA0086GE

HEADLAMP (LO) CIRCUIT

< COMPONENT DIAGNOSIS >

HEADLAMP (LO) CIRCUIT

HEADLAMP (HALOGEN)

HEADLAMP (HALOGEN) : Description

INFOID:000000001523262

The IPDM E/R (intelligent power distribution module engine room) controls the headlamp low relay based on inputs from the BCM via the CAN communication lines. When the headlamp low relay is energized, power flows through fuses 40 and 41, located in the IPDM E/R. Power then flows to the front combination lamps to the headlamp low beam.

HEADLAMP (HALOGEN) : Component Function Check

INFOID:000000001523263

1. CHECK HEADLAMP (LO) OPERATION

⊗ WITHOUT CONSULT-III

1. Start IPDM E/R auto active test. Refer to XX-XX, "*****".
2. Check that the headlamp is turned ON.

NOTE:

HI/LO is repeated 1 second each when using the IPDM E/R auto active test.

Ⓜ CONSULT-III

1. Select "EXTERNAL LAMP" of IPDM E/R active test item.
2. With operating the test items, check that the headlamp is turned ON.

LO : Headlamp ON
OFF : Headlamp OFF

Is the headlamp turned ON?

YES >> Headlamp (LO) is normal.

NO >> Refer to EXL-37, "HEADLAMP (HALOGEN) : Diagnosis Procedure".

HEADLAMP (HALOGEN) : Diagnosis Procedure

INFOID:000000001523264

1. CHECK HEADLAMP (LO) FUSES

1. Turn the ignition switch OFF.
2. Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Headlamp LO (LH)	IPDM E/R	40	15A
Headlamp LO (RH)	IPDM E/R	41	15A

Is the fuse open?

YES >> Repair the harness and replace the fuse.

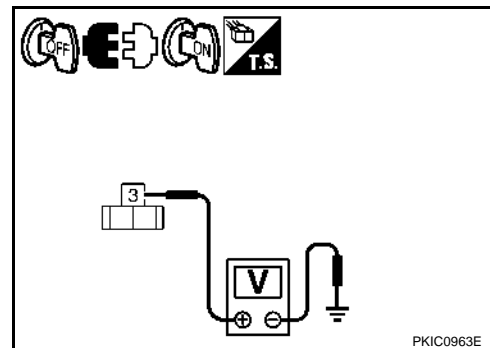
NO >> GO TO 2

2. CHECK HEADLAMP (LO) OUTPUT VOLTAGE

Ⓜ CONSULT-III

1. Turn the ignition switch OFF.
2. Disconnect the front combination lamp connector.
3. Turn the ignition switch ON.
4. Select "EXTERNAL LAMP" of IPDM E/R active test item.
5. With EXTERNAL LAMP ON, check the voltage between the combination lamp connector and ground.

(+)		Terminal	(-)	Voltage
Connector				
LH	E25	3	Ground	Battery voltage
RH	E26	3		



I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001334147

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M52	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-37, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [SEC-79, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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