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	DLK Door & Lock
K BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY	SEC Security Control System
	GW Glass & Window System
	PWC Power Window Control System
	RF Roof
	EXT Exterior
	BRM Body Repair
	MIR Mirrors
L DRIVER CONTROLS	EXL Exterior Lighting System
	INL Interior Lighting System
	WW Wiper & Washer
	DEF Defogger
	HRN Horn
	PWO Power Outlet
	BCS Body Control System
M ELECTRICAL & POWER CONTROL	LAN LAN System
	PCS Power Control System
	CHG Charging System
	PG Power Supply, Ground & Circuit Elements
	MWI Meter, Warning Lamp & Indicator
	WCS Warning Chime System
N DRIVER INFORMATION & MULTIMEDIA	AV Audio, Visual & Navigation System
	CCS Cruise Control System
O CRUISE CONTROL	MA Maintenance
P MAINTENANCE	

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TELESCOPIC SWITCH

< DTC/CIRCUIT DIAGNOSIS >

Automatic drive positioner control unit		Ground	Continuity
Connector	Terminal		
M51	11		
	27		Not existed

Is the inspection result normal?

- YES >> Replace automatic drive positioner control unit. Refer to [ADP-208, "Removal and Installation"](#).
 NO >> Repair or replace harness.

3.CHECK TELESCOPIC SWITCH

Refer to [ADP-73, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Replace tilt & telescopic switch. Refer to [ADP-211, "Removal and Installation"](#).

4.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000003842550

1.CHECK TELESCOPIC SWITCH

- Turn ignition switch OFF.
- Disconnect tilt & telescopic switch connector.
- Check continuity between tilt & telescopic switch terminals.

Tilt & telescopic switch		Condition	Continuity	
Terminal				
1	2	Telescopic switch (forward)	Operate	Existed
			Release	Not existed
	3	Telescopic switch (backward)	Operate	Existed
			Release	Not existed

Is the inspection result normal?

- YES >> INSPECTION END
 NO >> Replace tilt & telescopic switch. Refer to [ADP-211, "Removal and Installation"](#).

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ADP

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

Monitor Item	Condition	Value/Status
DOOR SW-DR	Driver door closed	Off
	Driver door opened	On
DOOR SW-AS	Passenger door closed	Off
	Passenger door opened	On
DOOR SW-RR	Rear RH door closed	Off
	Rear RH door opened	On
DOOR SW-RL	Rear LH door closed	Off
	Rear LH door opened	On
DOOR SW-BK	Back door closed	Off
	Back door opened	On
CDL LOCK SW	Other than power door lock switch LOCK	Off
	Power door lock switch LOCK	On
CDL UNLOCK SW	Other than power door lock switch UNLOCK	Off
	Power door lock switch UNLOCK	On
KEY CYL LK-SW	Other than driver door key cylinder LOCK position	Off
	Driver door key cylinder LOCK position	On
KEY CYL UN-SW	Other than driver door key cylinder UNLOCK position	Off
	Driver door key cylinder UNLOCK position	On
KEY CYL SW-TR	NOTE: The item is indicated, but not monitored.	Off
HAZARD SW	Hazard switch is OFF	Off
	Hazard switch is ON	On
REAR DEF SW	NOTE: The item is indicated, but not monitored.	Off
TR CANCEL SW	NOTE: The item is indicated, but not monitored.	Off
TR/BD OPEN SW	Back door opener switch OFF	Off
	While the back door opener switch is turned ON	On
TRNK/HAT MNTR	NOTE: The item is indicated, but not monitored.	Off
RKE-LOCK	LOCK button of the Intelligent Key is not pressed	Off
	LOCK button of the Intelligent Key is pressed	On
RKE-UNLOCK	UNLOCK button of the Intelligent Key is not pressed	Off
	UNLOCK button of the Intelligent Key is pressed	On
RKE-TR/BD	NOTE: The item is indicated, but not monitored.	Off
RKE-PANIC	PANIC button of the Intelligent Key is not pressed	Off
	PANIC button of the Intelligent Key is pressed	On
RKE-P/W OPEN	UNLOCK button of the Intelligent Key is not pressed	Off
	UNLOCK button of the Intelligent Key is pressed and held	On
RKE-MODE CHG	LOCK/UNLOCK button of the Intelligent Key is not pressed and held simultaneously	Off
	LOCK/UNLOCK button of the Intelligent Key is pressed and held simultaneously	On
OPTICAL SENSOR	Bright outside of the vehicle	Close to 5 V
	Dark outside of the vehicle	Close to 0 V

HANDS-FREE PHONE SYSTEM

< SYSTEM DESCRIPTION >

[WITHOUT NAVIGATION]

Component Description

INFOID:000000003838544

Part name	Description
AV CONTROL UNIT	<ul style="list-style-type: none">Inputs TEL voice signal or voice guidance signal from TEL adapter unit and outputs it to BOSE amp. during reception.Connects with TEL adapter unit and AV communication and controls hands free phone system.
FRONT DISPLAY UNIT	<ul style="list-style-type: none">Front display image is controlled by the serial communication from AV control unit.Inputs RGB image signal (RGB, RGB area and RGB synchronizing) from AV control unit and displays the status of hands free phone system.
BOSE AMP.	Inputs TEL voice signal or voice guidance signal from AV control unit and outputs it to front door speaker and center speaker.
FRONT DOOR SPEAKER	Outputs TEL voice signal or voice guidance signal from BOSE amp.
FRONT SQUAWKER	
PRESET SWITCH	<ul style="list-style-type: none">Adjust the sound when using TEL.The operation signal is transmitted to AV control unit via AV communication.
STEERING SWITCH	<ul style="list-style-type: none">The hands free phone system can be operated.Steering switch signal (operation signal) is output to AV control unit.
MICROPHONE	<ul style="list-style-type: none">Used when operating the hands-free phone.Outputs Mic. signal (TEL voice signal) to TEL adapter unit.The power (Mic. power supply) is supplied from TEL adapter unit.
TEL ADAPTER UNIT	<ul style="list-style-type: none">Inputs the TEL voice signal from TEL antenna and outputs it to AV control unit.It is connected with AV control unit via AV communication and controlled with AV control unit.
TEL ANTENNA	Receives the TEL voice signal and outputs it to TEL adapter unit.

CAMERA CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

[WITHOUT NAVIGATION]

BOSE AUDIO WITHOUT NAVIGATION

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS06FY-MZ



Terminal No.	Color of Wire	Signal Name [Specification]
2A	G	-
5A	V	-

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS17FY-CS



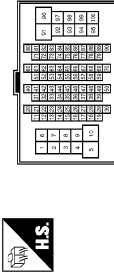
Terminal No.	Color of Wire	Signal Name [Specification]
12C	R	-

Connector No.	M5
Connector Name	WIRE TO WIRE
Connector Type	TH40MW-CS1.5



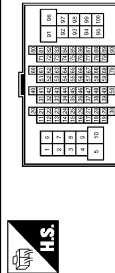
Terminal No.	Color of Wire	Signal Name [Specification]
14	P	-
15	L	-

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
29	V	-
100	Y	-

Connector No.	M7
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
11	Y	- [Without pre-crash seat belt]
12	V	- [Without pre-crash seat belt]
13	V	- [Without pre-crash seat belt]
14	V	- [Without pre-crash seat belt]
15	LG	- [Without pre-crash seat belt]
16	V	- [Without pre-crash seat belt]
17	G	- [Without pre-crash seat belt]
18	R	- [Without pre-crash seat belt]
51	V	-
52	LG	-
53	SHIELD	-

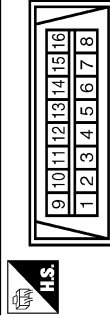
54	BR	-
55	Y	-
56	SHIELD	-
57	P	-
58	L	-
59	SHIELD	-
64	L	-
65	W	-
66	V	-
67	LG	-
68	T	-
69	G	-
70	V	-
92	O	-

Connector No.	M13
Connector Name	FRONT SOUAVNER LH
Connector Type	TK02FER



Terminal No.	Color of Wire	Signal Name [Specification]
1	L	-
2	W	-

Connector No.	M24
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

JCNWM1026GB

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[NAVIGATION (SINGLE MONITOR)]

2. Check if any DTC is displayed in the self-diagnosis results.

Is DTC displayed?

YES >> GO TO 3.

NO >> GO TO 4.

3. TROUBLE DIAGNOSIS FOR DTC

1. Check the DTC indicated in the self-diagnosis results.

2. Perform the relevant diagnosis referring to the DTC Index. Refer to [AV-564. "DTC Index"](#).

>> GO TO 5.

4. TROUBLE DIAGNOSIS FOR SYMPTOMS

Perform the relevant diagnosis referring to the diagnosis chart by symptom. Refer to [AV-565. "Symptom Table"](#).

>> GO TO 5.

5. ERROR PART REPAIR

1. Repair or replace the identified malfunctioning parts.

2. Perform a self-diagnosis for "SONAR" with CONSULT-III.

NOTE:

Erase the stored self-diagnosis results after repairing or replacing the relevant components if any DTC has been indicated in the self-diagnosis results.

3. Check that the symptom does not occur.

Does the symptom occur?

YES >> GO TO 1.

NO >> INSPECTION END

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AV

U1243 FRONT DISPLAY UNIT

< DTC/CIRCUIT DIAGNOSIS >

[NAVIGATION (SINGLE MONITOR)]

3. CHECK COMMUNICATION SIGNAL

1. Connect front display unit connector and AV control unit connector.
2. Turn ignition switch ON.
3. Check signal between front display unit harness connector and ground.

(+)		(-)	Condition	Reference value
Front display unit				
Connector	Terminal			
M75	11	Ground	When adjusting display brightness.	

Is inspection result normal?

YES >> GO TO 4.

NO >> Replace AV control unit.

4. CHECK COMMUNICATION SIGNAL

Check signal between front display unit harness connector and ground.

(+)		(-)	Condition	Reference value
Front display unit				
Connector	Terminal			
M75	22	Ground	When adjusting display brightness.	

Is inspection result normal?

YES >> INSPECTION END

NO >> Replace front display unit.

FRONT DISPLAY UNIT

< ECU DIAGNOSIS INFORMATION >

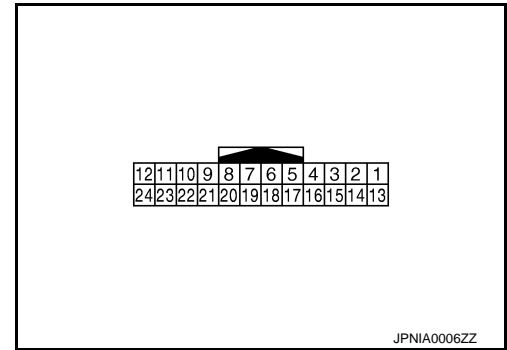
[NAVIGATION (SINGLE MONITOR)]

FRONT DISPLAY UNIT

Reference Value

INFOID:000000003826736

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	-	Signal name	Input/ Output			
1 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
2 (P)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
3 (L)	Ground	ACC power supply	Input	Ignition switch ACC	—	Battery voltage
4	—	Shield	—	—	—	—
5 (R)	Ground	AUX image ground	—	Ignition switch ON	—	0 V
6 (W)	Ground	RGB signal (G: green)	Input	Ignition switch ON	Start confirmation/adjust- ment mode, and then dis- play color bar by selecting “Color Spectrum Bar” on DISPLAY DIAGNOSIS screen.	
7	—	Shield	—	—	—	—
8 (R)	Ground	Horizontal synchronizing (HP) signal	Output	Ignition switch ON	—	

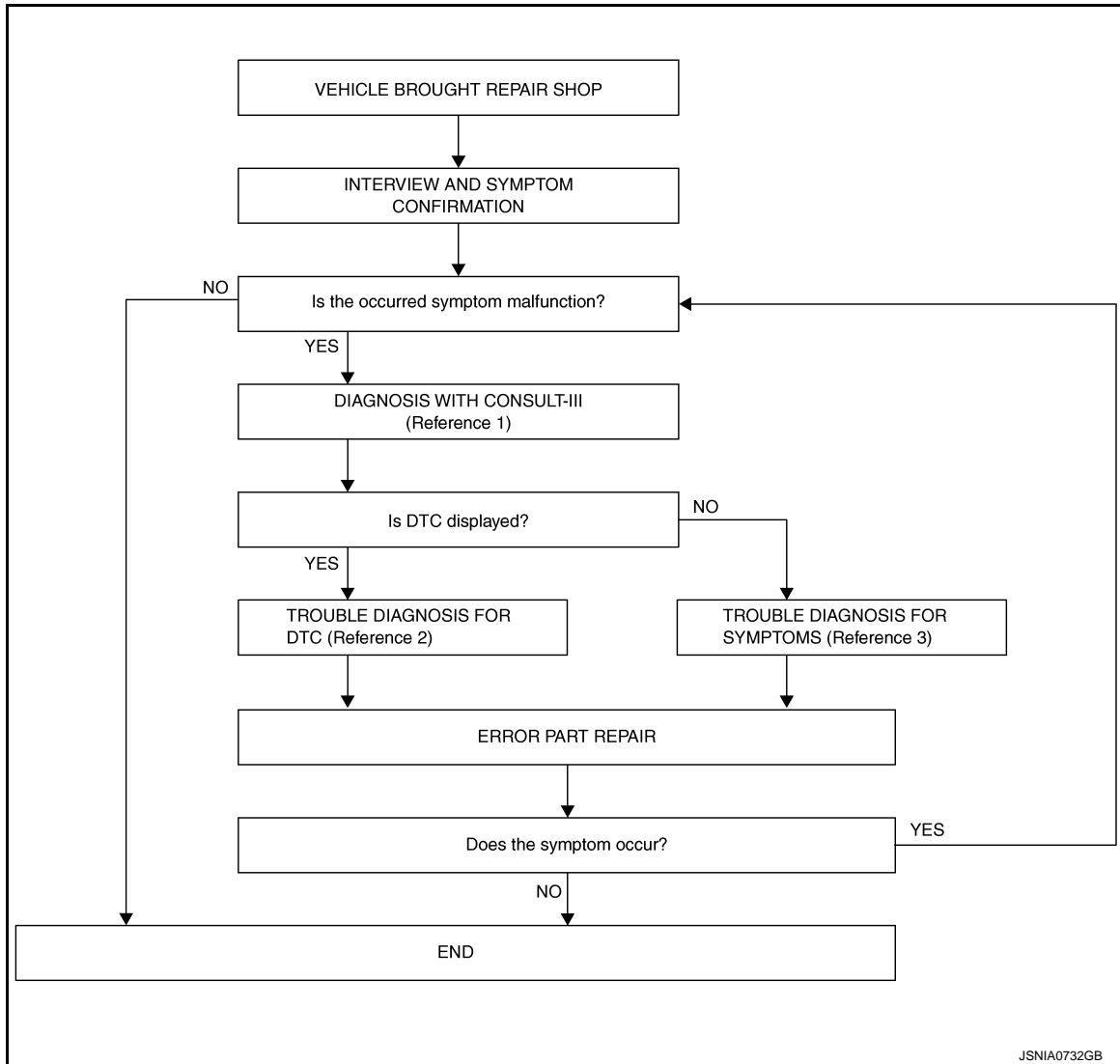
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow (Multi AV)

INFOID:000000003940607

OVERALL SEQUENCE



- Reference 1... Refer to [AV-671, "CONSULT-III Function \(MULTI AV\)"](#).
- Reference 2... Refer to [AV-801, "DTC Index"](#).
- Reference 3... Refer to [AV-1028, "Symptom Table"](#).

DETAILED FLOW

1. INTERVIEW AND SYMPTOM CONFIRMATION

Check the malfunction symptoms by performing the following items.

- Interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred).
- Check the symptom.

Is the occurred symptom malfunction?

YES >> GO TO 2.

NO >> INSPECTION END

2. DIAGNOSIS WITH CONSULT-III

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U121C AV CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

[NAVIGATION (TWIN MONITOR)]

U121C AV CONTROL UNIT

Description

INFOID:000000003825761

Replace the AV control unit if this DTC is displayed. Refer to [AV-1045, "Removal and Installation"](#).

Part name	Description
AV CONTROL UNIT	<ul style="list-style-type: none">Integrates hard disk drive (HDD) allowing map data and music data to be stored.It is the master unit of the MULTI AV system, and is connected to each control unit by communication. It operates each system according to communication signals from AV control unit.AV control unit includes the audio, hands-free phone, voice control, navigation, satellite radio, and vehicle information functions.It is connected to ECM, unified meter and A/C amp. via CAN communication to obtain necessary information for the vehicle information function.It is connected to BCM via CAN communication transmitting/receiving for the vehicle settings function.It inputs the illumination signals that are required for the display dimming control.It inputs the signals for driving status recognition (vehicle speed, reverse and parking brake).Update of map data is performed with the CONSULT-III and the applicable cable.

DTC Logic

INFOID:000000003825762

DTC	Display contents of CONSULT-III	DTC Detection Condition	Action to take
U121C	HDD-ACCESS [U121C]	Internal malfunction of AV control unit (HDD access error) is detected.	Replace AV control unit

VIDEO DISTRIBUTOR

< ECU DIAGNOSIS INFORMATION >

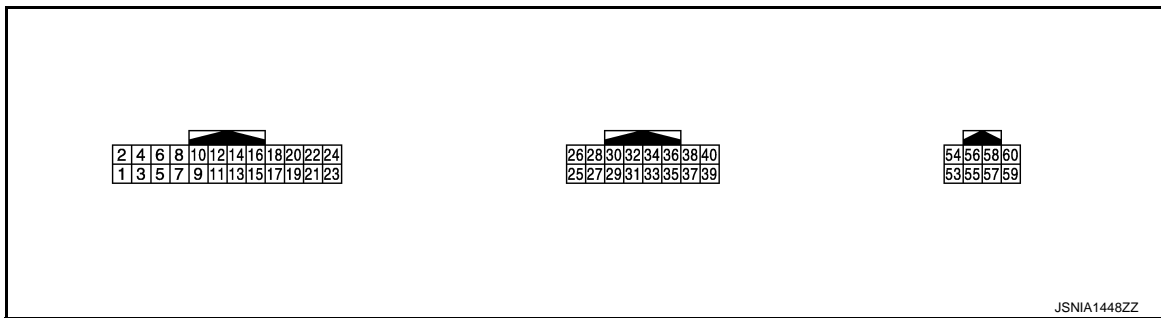
[NAVIGATION (TWIN MONITOR)]

VIDEO DISTRIBUTOR

Reference Value

INFOID:000000003825975

TERMINAL LAYOUT

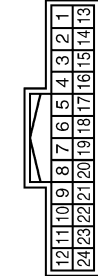
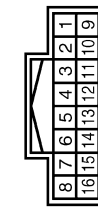
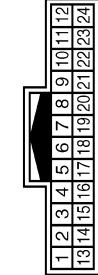
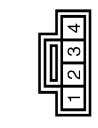


PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	-	Signal name	Input/ Output			
3 (G)	—	AV communication signal (H)	Input/ Output	—	—	—
4 (R)	—	AV communication signal (L)	Input/ Output	—	—	—
7	—	Shield	—	—	—	—
8 (R)	6 (G)	Composite image signal for front display unit	Output	Ignition switch ON	When AUX or DVD image is displayed on front display unit.	
19 (W)	21	AUX image signal	Input	Ignition switch ON	When AUX image is dis- played.	
21	—	Shield	—	—	—	—
22	—	Shield	—	—	—	—
23 (P)	22	DVD image signal	Input	Ignition switch ON	When DVD image is dis- played.	
24* (L)	—	—	—	—	—	—

BOSE AUDIO WITH NAVIGATION (TWIN MONITOR)

Connector No.	Connector Name	Connector Type	Terminal No.	Color of Wire	Signal Name [Specification]
R2	WIRE TO WIRE	TH24FW-NH	12	SHIELD	
			24	R	
			10	G	
R7	WIRE TO WIRE	TH15FW-NH	8	SHIELD	
			9	R	
			10	G	
R11	WIRE TO WIRE	TH24MW-NH	1	R	MICROPHONE SIGNAL
			2	SHIELD	MICROPHONE GND
			4	L	MICROPHONE VCC
R17	MICROPHONE	TK03FW	1	R	MICROPHONE SIGNAL
			2	SHIELD	MICROPHONE GND
			4	L	MICROPHONE VCC



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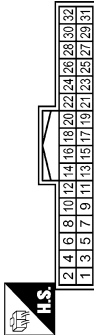
SONAR CONTROL UNIT (WITH AROUND VIEW MONITOR)

< ECU DIAGNOSIS INFORMATION >

[NAVIGATION (TWIN MONITOR)]

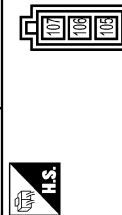
BOSE AUDIO WITH NAVIGATION (TWIN MONITOR)

Connector No.	M182
Connector Name	DVD PLAYER
Connector Type	TH22PW-RH



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	GND
2	Y	BATTERY
3	L	ILLUMINATION
4	V	ACC
5	B	SHIELD
7	P	DVD IMAGE SIGNAL
9	L	
11	G	AUX SOUND SIGNAL LH (-)
12	R	AUX SOUND SIGNAL RH (-)
13	B	AUX SOUND SIGNAL LH (+)
14	W	AUX SOUND SIGNAL RH (+)

Connector No.	M371
Connector Name	AV CONTROL UNIT (WITH NAVI)
Connector Type	GT13SH-2/1S-HU



Terminal No.	Color of Wire	Signal Name [Specification]
105	-	FM SUB
106	-	AM-FM MAIN
107	-	ANTENNA AMP. ON SIGNAL

Terminal No.	Color of Wire	Signal Name [Specification]
16	B	SHIELD
17	G	HEADPHONE SOUND SIGNAL SIGNAL LH (+)
18	R	HEADPHONE SOUND SIGNAL SIGNAL LH (-)
19	BR	HEADPHONE SOUND SIGNAL SIGNAL RH (+)
20	Y	HEADPHONE SOUND SIGNAL SIGNAL RH (-)
21	Y	SOUND SIGNAL LH (+)
22	BR	SOUND SIGNAL LH (-)
23	R	SOUND SIGNAL RH (+)
24	G	SOUND SIGNAL RH (-)
25	B	SHIELD
27	B	AV COMM (L)
29	R	AV COMM (H)
30	G	AV COMM (H)

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	AUX SOUND SIGNAL RH (+)
2	SB	AUX SOUND SIGNAL GND
3	B	AUX SOUND SIGNAL LH (+)
7	W	AUX IMAGE SIGNAL
8	SHIELD	SHIELD

Connector No.	M373
Connector Name	AV CONTROL UNIT (WITH NAVI)
Connector Type	GT5-1S-HU



Terminal No.	Color of Wire	Signal Name [Specification]
110	-	GPS ANTENNA
111	SHIELD	SHIELD

Connector No.	M183
Connector Name	AUXILIARY INPUT JACKS
Connector Type	A08FW



Terminal No.	Color of Wire	Signal Name [Specification]
14	W	
15	L	
17	BR	

Connector No.	M374
Connector Name	WIRE TO WIRE
Connector Type	GT16C-1S-HU



Terminal No.	Color of Wire	Signal Name [Specification]
1	-	

Connector No.	M303
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK08FGY



JCNWM1076GB

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

Service item	Setting item	Setting	
ROOM LAMP BAT SAV SET	On*	With the interior room lamp battery saver function	
	Off	Without the interior room lamp battery saver function	
ROOM LAMP TIMER SET	MODE 1*	30 min.	Sets the interior room lamp battery saver timer operating time.
	MODE 2	60 min.	
BATTERY SAVER SET	On*	With the exterior lamp battery saver function	
	Off	Without the exterior lamp battery saver function	

*: Factory setting

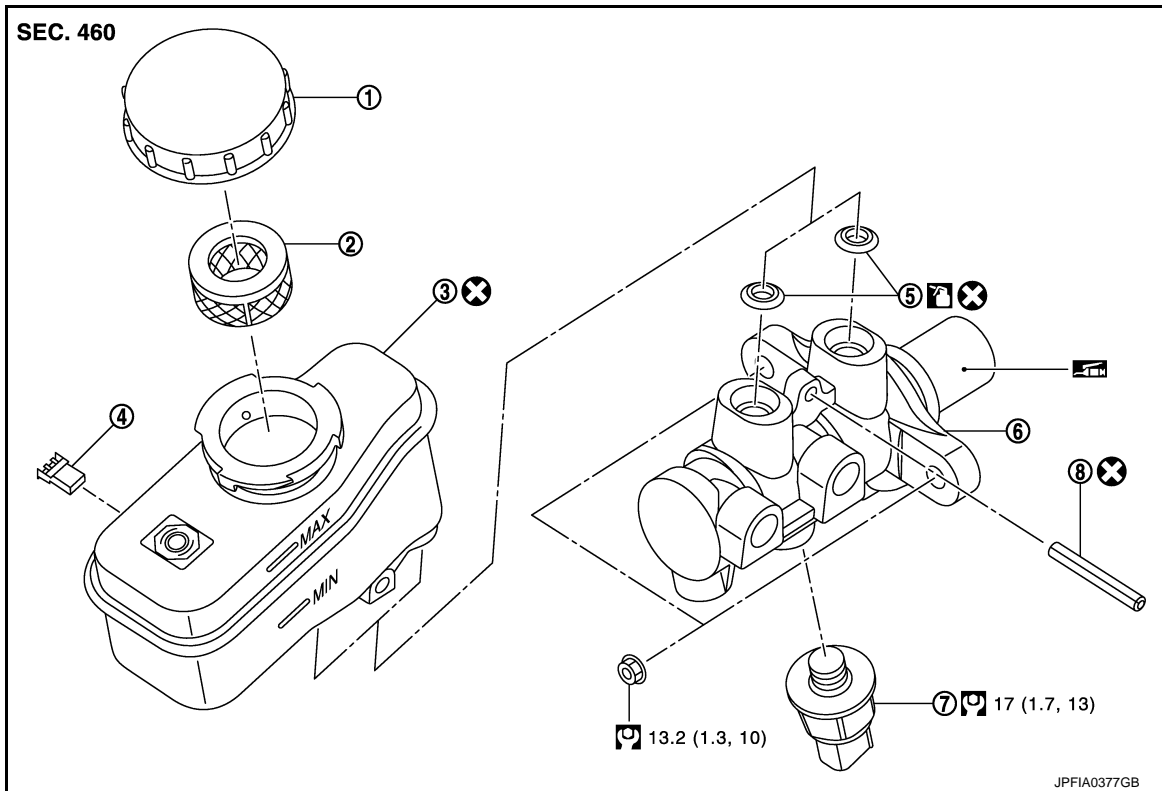
DATA MONITOR

Monitor item [Unit]	Description
REQ SW-DR [On/Off]	The switch status input from request switch (driver side)
REQ SW-AS [On/Off]	The switch status input from request switch (passenger side)
REQ SW-RR [On/Off]	NOTE: The item is indicated, but not monitored.
REQ SW-RL [On/Off]	
PUSH SW [On/Off]	The switch status input from push-button ignition switch
UNLK SEN-DR [On/Off]	Driver door unlock status input from unlock sensor
KEY SW-SLOT [On/Off]	Key switch status input from key slot
DOOR SW-DR [On/Off]	The switch status input from front door switch (driver side)
DOOR SW-AS [On/Off]	The switch status input from front door switch (passenger side)
DOOR SW-RR [On/Off]	The switch status input from rear door switch (RH)
DOOR SW- RL [On/Off]	The switch status input from rear door switch (LH)
DOOR SW-BK [On/Off]	The switch status input from back door switch
CDL LOCK SW [On/Off]	Lock switch status received from central door lock/unlock switch by power window switch serial link
CDL UNLOCK SW [On/Off]	Unlock switch status received from central door lock/unlock switch by power window switch serial link
KEY CYL LK-SW [On/Off]	Lock switch status received from key cylinder lock/unlock switch by power window switch serial link
KEY CYL UN-SW [On/Off]	Unlock switch status received from key cylinder lock/unlock switch by power window switch serial link
TRNK/HAT MNTR [On/Off]	The switch status input from trunk room lamp switch
RKE-LOCK [On/Off]	Lock signal status received from remote keyless entry receiver
RKE-UNLOCK [On/Off]	Unlock signal status received from remote keyless entry receiver


ACTIVE TEST


BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >



- | | | |
|---------------------------------------|-----------------|-------------------|
| 1. Reservoir cap | 2. Oil strainer | 3. Reservoir tank |
| 4. Brake fluid level switch connector | 5. Grommet | 6. Cylinder body |
| 7. Pressure sensor | 8. Pin | |

: Apply silicone grease.

: Apply brake fluid.

Refer to [GI-4. "Components"](#) for symbols not described on the above.

Removal and Installation

INFOID:000000003858923

REMOVAL

CAUTION:

Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.

1. Remove the master cylinder cover.
2. Remove hoodledge cover. Refer to [EXT-22. "Exploded View"](#).
3. Drain brake fluid. Refer to [BR-10. "Draining"](#).
4. Separate the brake tube from the master cylinder assembly with a flare nut wrench.

CAUTION:

Never scratch the flare nut and the brake tube.

5. Remove master cylinder mounting nuts.
6. Separate the brake fluid level switch harness connector.
7. Separate the pressure sensor harness connector (with ICC).
8. Remove the master cylinder assembly.

CAUTION:

- **Depress the brake pedal several times to release the vacuum pressure from the brake booster. Then remove the master cylinder assembly.**
- **Never depress the brake pedal after the master cylinder assembly is removed.**
- **The piston of the master cylinder assembly is exposed. Never damage it when removing the master cylinder.**

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

Monitor item (Unit)	SELECT MONITOR ITEM		Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	
LDP) WIPER SIGNAL (Stop/PRTCT/1low/1high/Low/High) (Note 2)	×	×	Front wiper operating condition received from BCM via CAN communication
LDP) TURN SIGNAL (Off/LH/RH/LH&RH) (Note 2)	×	×	Turn signal operating condition received from BCM via CAN communication
LDP) STOP LMP SW (On/Off) (Note 2)	×	×	Stop lamp switch signal status
LDP) WARN REQ (On/Off) (Note 2) (Note 3)	—	—	Status of warning request that transmits to lane camera unit via CAN communication
LDP) WARN control (On/Off) (Note 2) (Note 3)	—	—	Status of warning main controller for LDP
LDP) REDY signal (On/Off) (Note 2) (Note 3)	—	—	Status of internal judgment by LDP controller [ABS actuator and electric unit (control unit)]
LDP) STATUS signal (STANDBY/WARN/MASK/Off) (Note 2) (Note 3)	—	—	Status of internal judgment by LDP controller [ABS actuator and electric unit (control unit)]
LDP) BRAKE SW (On/Off) (Note 2)	×	×	Brake switch signal status
LDP) LDW SW (On/Off) (Note 2)	×	×	LDW switch status received from lane camera unit via CAN communication
LDP) Camera lost (Detect/Deviate/Both) (Note 2) (Note 3)	—	—	Lane marker detected condition received from lane camera unit via CAN communication
LDP) Lane unclear (On/Off) (Note 2) (Note 3)	—	—	Lane marker condition received from lane camera unit via CAN communication

NOTE:

- 1: A brief moment of On/Off condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.
- 2: With LDP models.
- 3: The item displayed on "SPECIFIC DATA MONITOR" in "Specific Function".

ACTIVE TEST

CAUTION:

- Do not perform active test while driving vehicle.
- Make sure to completely bleed air from brake system.
- The active test cannot be started when ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are ON.
- ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are ON during active test.
- Erase memory of the lane camera unit after implementing active test. Refer to [CCS-436. "CONSULT-III Function \(LANE CAMERA\)".](#)

NOTE:

- When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (Only solenoid valve and ABS motor.)
- "TEST IS STOPPED" is displayed 10 seconds after operation start.
- After "TEST IS STOPPED" is displayed, to perform test again.

Test Item

ABS SOLENOID VALVE

- Touch "Up", "Keep" and "Down". Then use screen monitor to check that solenoid valve operates as shown in the table below.

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PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000005189742

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIR BAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

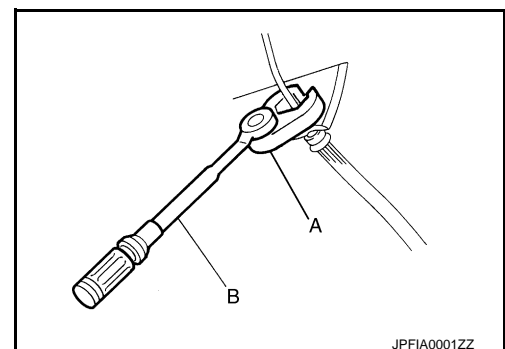
Precaution for Brake System

INFOID:000000003828071

WARNING:

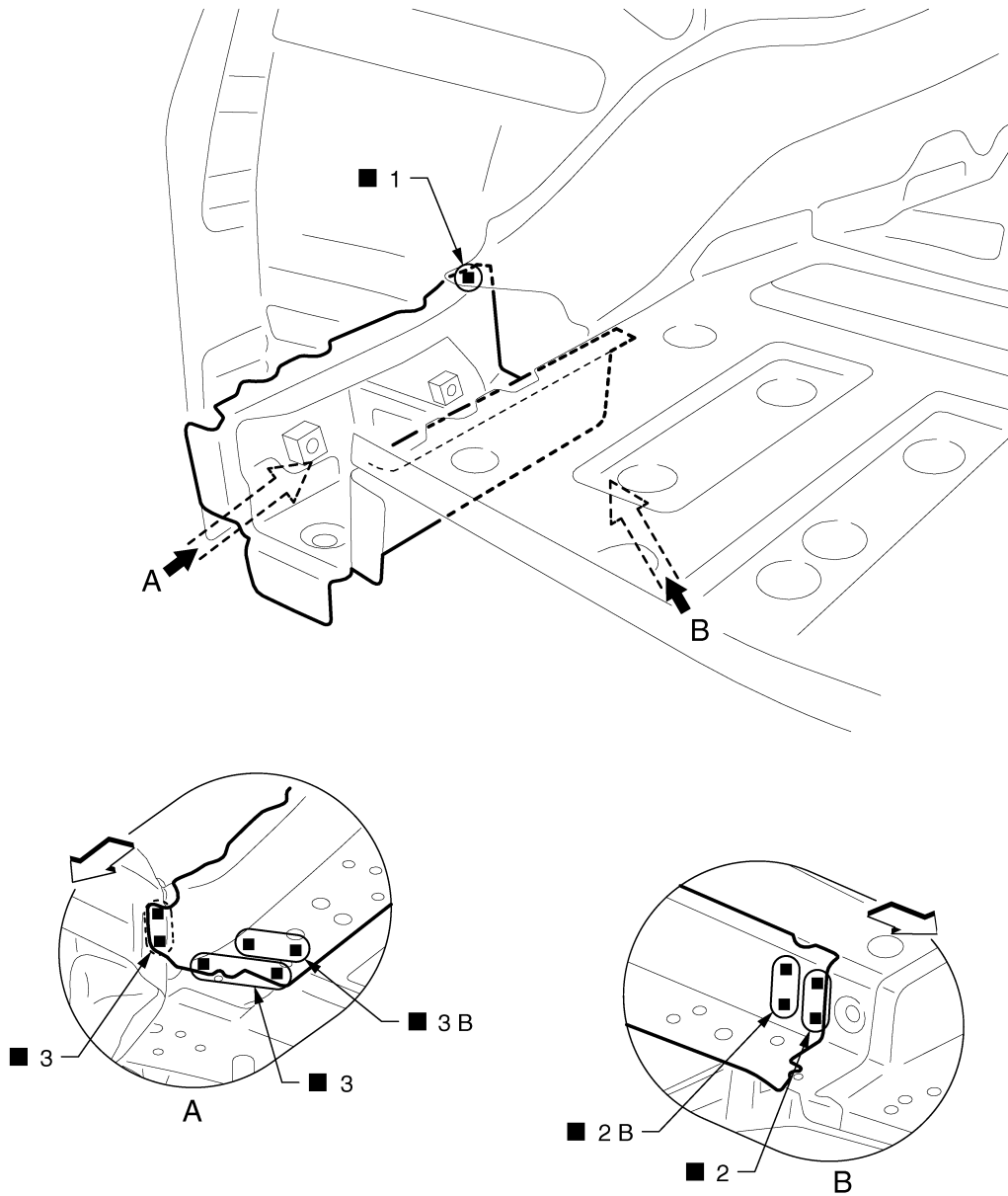
Clean brake pads and shoes with a waste cloth, then wipe with a dust collector.

- Only use "DOT 3" brake fluid. Refer to [MA-12. "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Never use mineral oils such as gasoline or light oil. They may damage rubber parts and cause improper operation.
- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with a crow-foot (A) and torque wrench (B).
- Always conform the specified tightening torque when installing the brake pipes.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) connector or the battery negative terminal before performing the work.



REPLACEMENT OPERATIONS

< REMOVAL AND INSTALLATION >



JSKIA0692ZZ

↩: Vehicle front

Replacement parts

- Rear side member extension (LH)

C1A13 STOP LAMP RELAY

[ICC (FULL SPEED RANGE)]

< DTC/CIRCUIT DIAGNOSIS >

- YES >> GO TO 20.
- NO >> GO TO 11.

11. CHECK ICC BRAKE HOLD RELAY

1. Remove ICC brake hold relay.
2. Check for continuity between ICC brake hold relay terminals.

ICC brake hold relay		Continuity
Terminal		
6	7	Not existed

Is the inspection result normal?

- YES >> GO TO 20.
- NO >> Replace ICC brake hold relay.

12. CHECK HARNESS BETWEEN BRAKE BOOSTER CONTROL UNIT AND ICC BRAKE HOLD RELAY

1. Turn ignition switch OFF.
2. Disconnect brake booster control unit connector and remove ICC brake hold relay.
3. Check for continuity between the brake booster control unit harness connector and ICC brake hold relay harness connector.

Brake booster control unit		ICC brake hold relay		Continuity
Connector	Terminal	Connector	Terminal	
B249	47	E91	1	Existed

4. Check for continuity between brake booster control unit harness connector and ground.

Brake booster control unit		Ground	Continuity
Connector	Terminal		
B249	47		Not existed

Is the inspection result normal?

- YES >> GO TO 13.
- NO >> Repair the harnesses or connectors.

13. CHECK HARNESS BETWEEN ICC BRAKE HOLD RELAY AND GROUND

Check for continuity between ICC brake hold relay harness connector and ground.

ICC brake hold relay		Ground	Continuity
Connector	Terminal		
E91	2		Existed

Is the inspection result normal?

- YES >> GO TO 14.
- NO >> Repair the harnesses or connectors.

14. CHECK ICC BRAKE HOLD RELAY

Check resistance between ICC brake hold relay terminals.

ICC brake hold relay		Resistance
Terminal		
1	2	Approx. 75 Ω

Is the inspection result normal?

- YES >> GO TO 15.
- NO >> Replace ICC brake hold relay.

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CCS

ICC SYSTEM CANNOT BE SET (MAIN SWITCH TURNS ON/OFF)

< SYMPTOM DIAGNOSIS >

[ICC (FULL SPEED RANGE)]

"D RANGE SW">>Refer to [CCS-168, "Diagnosis Procedure"](#).

"SET/COAST SW">>Refer to [CCS-65, "DTC Logic"](#).

"BRAKE SW">>Refer to [CCS-60, "DTC Logic"](#).

"WIPER SW" (When the front wiper operation is normal)>>GO TO 5.

"WIPER SW" (When the front wiper operation is malfunctioning)>>Performs the diagnosis of the front wiper.

Refer to [WW-99, "WITH RAIN SENSOR : Symptom Table"](#) (With rain sensor) or [WW-101, "WITHOUT RAIN SENSOR : Symptom Table"](#) (Without rain sensor).

"PKB SW">>Refer to [MWI-70, "Diagnosis Procedure"](#).

5. REPLACE ICC SENSOR INTEGRATED UNIT

-
1. Replace the ICC sensor integrated unit. Refer to [CCS-180, "Exploded View"](#).
 2. Perform the laser beam aiming. Refer to [CCS-13, "LASER BEAM AIMING ADJUSTMENT : Description"](#).

>> GO TO 6.

6. CHECK ICC SYSTEM

-
1. Erase the self-diagnosis results, and then perform "All DTC Reading" again after performing the action test. (Refer to [CCS-18, "ACTION TEST : Description"](#) for action test.)
 2. Check that the ICC system is normal.

>> INSPECTION END

C1A22 BCU CIRCUIT

[DCA]

< DTC/CIRCUIT DIAGNOSIS >

C1A22 BCU CIRCUIT

Description

INFOID:000000003902473

- The brake booster control unit receives the brake fluid pressure command signal from ICC sensor integrated unit via ITS communication and activates the booster solenoid to operate the brake booster.
- The brake booster adjusts the brake fluid pressure by driving the booster solenoid.
- The brake pedal is controlled when the brake booster adjusts the brake fluid pressure.

DTC Logic

INFOID:000000003902474

DTC DETECTION LOGIC

DTC (On board display)	Trouble diagnosis name	DTC detecting condition	Possible causes
C1A22 (22)	BCU CIRCUIT	If the brake booster control unit cannot control the brake booster	<ul style="list-style-type: none">• Stop lamp switch circuit• ICC brake switch circuit• Stop lamp switch• ICC brake switch• Incorrect stop lamp switch installation• Incorrect ICC brake switch installation• ECM• Brake booster control unit

NOTE:

If DTC "C1A22" is detected along with DTC "U1000", first diagnose the DTC "U1000". Refer to [CCS-306, "ICC SENSOR INTEGRATED UNIT : DTC Logic"](#).

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Turn the DCA switch ON.
3. Perform "All DTC Reading" with CONSULT-III.
4. Check if the "C1A22" is detected as the current malfunction in self-diagnosis results of "ICC".

Is "C1A22" detected as the current malfunction?

- YES >> Refer to [CCS-249, "Diagnosis Procedure"](#).
NO >> Refer to [GI-35, "Intermittent Incident"](#).

Diagnosis Procedure

INFOID:000000003902475

1. CHECK SELF-DIAGNOSIS RESULTS

Check if "C1A05" or "U1000" is detected other than "C1A22" in "Self Diagnostic Result" of "ICC".

Is any DTC detected?

- YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to [CCS-330, "DTC Index"](#).
NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH AND ICC BRAKE SWITCH

Check that "STOP LAMP SW" and "BRAKE SW" operate normally in "DATA MONITOR" of "ICC".

Is the inspection result normal?

- YES >> GO TO 10.
NO-1 >> When "BRAKE SW" operation is malfunctioning: GO TO 3.
NO-2 >> When "STOP LAMP SW" operation is malfunctioning: GO TO 5.

3. CHECK ICC BRAKE SWITCH INSTALLATION

1. Turn the ignition switch OFF.
2. Check ICC brake switch for correct installation. Refer to [BR-7, "Inspection and Adjustment"](#).

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ICC SENSOR INTEGRATED UNIT

< ECU DIAGNOSIS INFORMATION >

[DCA]

DTC		CONSULT-III display	ICC system warning lamp	Fail-safe function	Reference
CONSULT-III	On board display			DCA system	
C1F01	91	APA MOTOR MALF	×	×	CCS-279
C1F02	92	APA C/U MALF	×	×	CCS-281
C1F05	95	APA PWR SUPPLY CIR	×	×	CCS-284
U0121	127	VDC CAN CIR2	×	×	CCS-290
U0126	130	STRG SEN CAN CIR1	×	×	CCS-292
U0129	125	BCU CAN CIR2	×	×	CCS-294
U0401	120	ECM CAN CIR1	×	×	CCS-296
U0402	122	TCM CAN CIR1	×	×	CCS-298
U0415	126	VDC CAN CIR1	×	×	CCS-300
U0418	124	BCU CAN CIR1	×	×	CCS-302
U0428	131	STRG SEN CAN CIR2	×	×	CCS-304
U1000	100	CAN COMM CIRCUIT	×	×	CCS-306
U1010	110	CONTROL UNIT (CAN)	×	×	CCS-309

PRE-INSPECTION FOR DIAGNOSIS

< BASIC INSPECTION >

[LDW & LDP]

PRE-INSPECTION FOR DIAGNOSIS

Inspection Procedure

INFOID:000000003867041

1.CHECK CAMERA LENS AND WINDSHIELD

Are camera lens and windshield contaminated with foreign materials?

- YES >> Clean camera lens and windshield.
- NO >> GO TO 2.

2.CHECK LANE CAMERA UNIT INSTALLATION CONDITION

Check lane camera unit installation condition (installation position, properly tightened, a bent bracket).

Is it properly installed?

- YES >> GO TO 3.
- NO >> Install lane camera unit properly, and perform camera aiming. Refer to [CCS-418, "CAMERA AIMING ADJUSTMENT : Description"](#).

3.CHECK VEHICLE HEIGHT

Check vehicle height. Refer to [FSU-20, "Wheel Height"](#) (2WD) or [FSU-40, "Wheel Height"](#) (AWD).

Is vehicle height appropriate?

- YES >> INSPECTION END
- NO >> Repair vehicle to appropriate height.

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CCS

NORMAL OPERATING CONDITION

Description

INFOID:000000003867118

LANE DEPARTURE WARNING (LDW)

- LDW system is only a warning device to inform the driver of a potential unintended lane departure. It does not steer the vehicle or prevent loss of control. It is the driver's responsibility to stay alert, drive safely, keep the vehicle in the traveling lane, and be in control of the vehicle at all times.
- LDW system does not operate at speeds below approximately 72 km/h (45 MPH) or if it cannot detect lane markers.
- Excessive noise interfere with the warning sound, and the buzzer may not be heard.
- LDW system may not function properly under the following conditions:
 - On roads where there are multiple parallel lane markers; lane markers that are faded or not painted clearly; yellow painted lane markers; non-standard lane markers; or covered with water, dirt or snow, etc.
 - On roads where the discontinued lane markers are still detectable.
 - On roads where there are sharp curves.
 - On roads where there are sharply contrasting objects, such as shadows, snow, water, wheel ruts, seams or lines remaining after road repairs. (The LDW system could detect these items as lane markers.)
 - On roads where the traveling lane merges or separates.
 - When the vehicle's traveling direction does not align with the lane marker.
 - When traveling close to other vehicle in front of the vehicle, which obstructs the lane camera unit detection range.
 - When rain, snow or dirt adheres to the windshield in front of the lane camera unit.
 - When the headlights are not bright due to dirt on the lens or if the aiming is not adjusted properly.
 - When strong light enters the lane camera unit. (For example, the light directly shines on the front of the vehicle at sunrise or sunset.)
 - When a sudden change in brightness occurs. (For example, when the vehicle enters or exits a tunnel or under a bridge.)

LANE DEPARTURE PREVENTION (LDP)

- LDP system does not steer the vehicle or prevent loss of control. It is the driver's responsibility to stay alert, drive safely, keep the vehicle in the traveling lane, and be in control of vehicle at all times.
- LDP system is primarily intended for use on well-developed freeways or highways. It may not detect the lane markers in certain roads, weather or driving conditions.
- Using the LDP system under some conditions of road, lane marker or weather, or when driver changes lanes without using the turn signal could lead to an unexpected system operation. In such conditions, driver needs to correct the vehicle's direction with driver's steering operation to avoid accidents.
- When the LDP system is operating, avoid excessive or sudden steering maneuvers. Otherwise, driver could lose control of the vehicle.
- The LDP system does not operate at speeds below approximately 72 km/h (45 MPH) or if it cannot detect lane markers.
- The LDP system may not function properly under the following conditions, and do not use the LDP system:
 - During bad weather (rain, fog, snow, wind, etc.).
 - When driving on slippery roads, such as on ice or snow, etc.
 - When driving on winding or uneven roads.
 - When there is a lane closure due to road repairs.
 - When driving in a makeshift lane.
 - When driving on roads where the lane width is too narrow.
 - When driving without normal tire conditions (for example, tire wear, low tire pressure, installation of spare tire, tire chains, non-standard wheels).
 - When the vehicle is equipped with non-original brake parts or suspension parts.
- Excessive noise does interfere with the warning sound, and the buzzer may not be heard.
- The functions of the LDP system (warning and brake control assist) may or may not operate properly under the following conditions:
 - - On roads where there are multiple parallel lane markers; lane markers that are faded or not painted clearly; yellow painted lane markers; non-standard lane markers or covered with water, dirt or snow, etc.
 - On roads where discontinued lane markers are still detectable.
 - On roads where there are sharp curves.
 - On roads where there are sharply contrasting objects, such as shadows, snow, water, wheel ruts, seams or lines remaining after road repairs (The LDP system could detect these items as lane markers.).

WATER PUMP

< REMOVAL AND INSTALLATION >

[VK50VE]

CAUTION:

- Handle the water pump vane so that it does not contact any other parts.
- Never disassemble water pump.

INSTALLATION

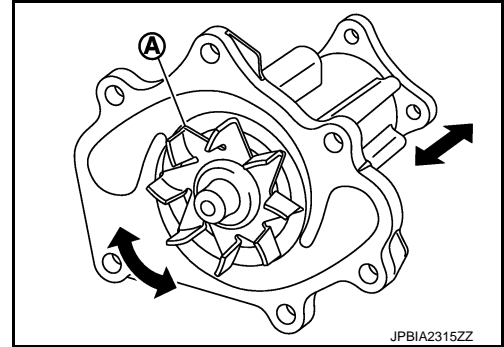
Install in the reverse order of removal.

Inspection

INFOID:000000003890768

INSPECTION AFTER REMOVAL

- Visually check that there is no significant dirt or rusting on water pump body and vane (A).
- Check there is no slack in vane shaft, and that it turns smoothly when rotated by hand.
- If anything is found, replace water pump.



INSPECTION AFTER INSTALLATION

- Check that the reservoir tank cap is tightened.
- Check for leakage of engine coolant using the radiator cap tester adapter (commercial service tool) and the radiator cap tester (commercial service tool). Refer to [CO-33. "Inspection"](#).
- Start and warm up the engine. Visually check that there is no leakage of engine coolant.

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

Is malfunctioning part detected?

YES >> GO TO 8.

NO >> Check voltage of related BCM terminals using CONSULT-III.

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

1. Repair or replace the malfunctioning part.
2. Reconnect parts or connectors disconnected during Diagnostic Procedure again after repair and replacement.
3. Check DTC. If DTC is displayed, erase it.

>> GO TO 9.

9. FINAL CHECK

When DTC was detected in step 2, perform DTC Confirmation Procedure or Component Function Check again, and then check that the malfunction has been repaired securely.

When symptom was described from the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Does the symptom reappear?

YES (DTC is detected)>>GO TO 7.

YES (Symptom remains)>>GO TO 6.

NO >> **INSPECTION END**

UNLOCK SENSOR

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).

NO >> Repair or replace harness.

3.CHECK UNLOCK SENSOR GROUND CIRCUIT

Check continuity between front door lock assembly (driver side) harness connector and ground.

Front door lock assembly (driver side)		Ground	Continuity
Connector	Terminal		
D15	4		Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness.

4.CHECK UNLOCK SENSOR

Refer to [DLK-93, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace front door lock assembly (driver side). Refer to [DLK-258, "DOOR LOCK : Removal and Installation"](#).

5.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000003843003

1.CHECK UNLOCK SENSOR

1. Turn ignition switch OFF.
2. Disconnect front door lock assembly (driver side) (unlock sensor) connector.
3. Check front door lock assembly (driver side) (unlock sensor) terminals.

Front door lock assembly (driver side) (unlock sensor)		Front door lock assembly (driver side) (unlock sensor) condition	Continuity
Terminal			
3	4	Unlock	Existed
		Lock	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace front lock assembly (driver side) (unlock sensor). Refer to [DLK-258, "DOOR LOCK : Removal and Installation"](#).

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DLK

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

CONSULT display	Fail-safe	Freeze Frame Data •Vehicle Speed •Odo/Trip Meter •Vehicle Condition	Intelligent Key warn- ing lamp ON	Reference page
No DTC is detected. Further testing may be required.	—	—	—	—
U1000: CAN COMM	—	—	—	BCS-34
U1010: CONTROL UNIT (CAN)	—	—	—	BCS-35
U0415: VEHICLE SPEED SIG	—	—	—	BCS-36
B2013: ID DISCORD BCM-S/L	×	×	—	SEC-50
B2014: CHAIN OF S/L-BCM	×	×	—	SEC-51
B2190: NATS ANTENNA AMP	×	—	—	SEC-42
B2191: DIFFERENCE OF KEY	×	—	—	SEC-45
B2192: ID DISCORD BCM-ECM	×	—	—	SEC-46
B2193: CHAIN OF BCM-ECM	×	—	—	SEC-48
B2195: ANTI SCANNING	×	—	—	SEC-49
B2553: IGNITION RELAY	—	×	—	PCS-50
B2555: STOP LAMP	—	×	—	SEC-54
B2556: PUSH-BTN IGN SW	—	×	×	SEC-56
B2557: VEHICLE SPEED	×	×	×	SEC-58
B2560: STARTER CONT RELAY	×	×	×	SEC-59
B2562: LOW VOLTAGE	—	×	—	BCS-37
B2601: SHIFT POSITION	×	×	×	SEC-60
B2602: SHIFT POSITION	×	×	×	SEC-63
B2603: SHIFT POSI STATUS	×	×	×	SEC-65
B2604: PNP SW	×	×	×	SEC-68
B2605: PNP SW	×	×	×	SEC-70
B2606: S/L RELAY	×	×	×	SEC-72
B2607: S/L RELAY	×	×	×	SEC-73
B2608: STARTER RELAY	×	×	×	SEC-75
B2609: S/L STATUS	×	×	×	SEC-77
B260A: IGNITION RELAY	×	×	×	PCS-52
B260B: STEERING LOCK UNIT	—	×	×	SEC-81
B260C: STEERING LOCK UNIT	—	×	×	SEC-82
B260D: STEERING LOCK UNIT	—	×	×	SEC-83
B260F: ENG STATE SIG LOST	×	×	×	SEC-84
B2612: S/L STATUS	×	×	×	SEC-88
B2614: ACC RELAY CIRC	—	×	×	PCS-54
B2615: BLOWER RELAY CIRC	—	×	×	PCS-56
B2616: IGN RELAY CIRC	—	×	×	PCS-58
B2617: STARTER RELAY CIRC	×	×	×	SEC-92
B2618: BCM	×	×	×	PCS-60
B2619: BCM	×	×	×	SEC-94
B261A: PUSH-BTN IGN SW	—	×	×	SEC-95
B261E: VEHICLE TYPE	×	×	× (Turn ON for 15 seconds)	SEC-98

FRONT DOOR LOCK

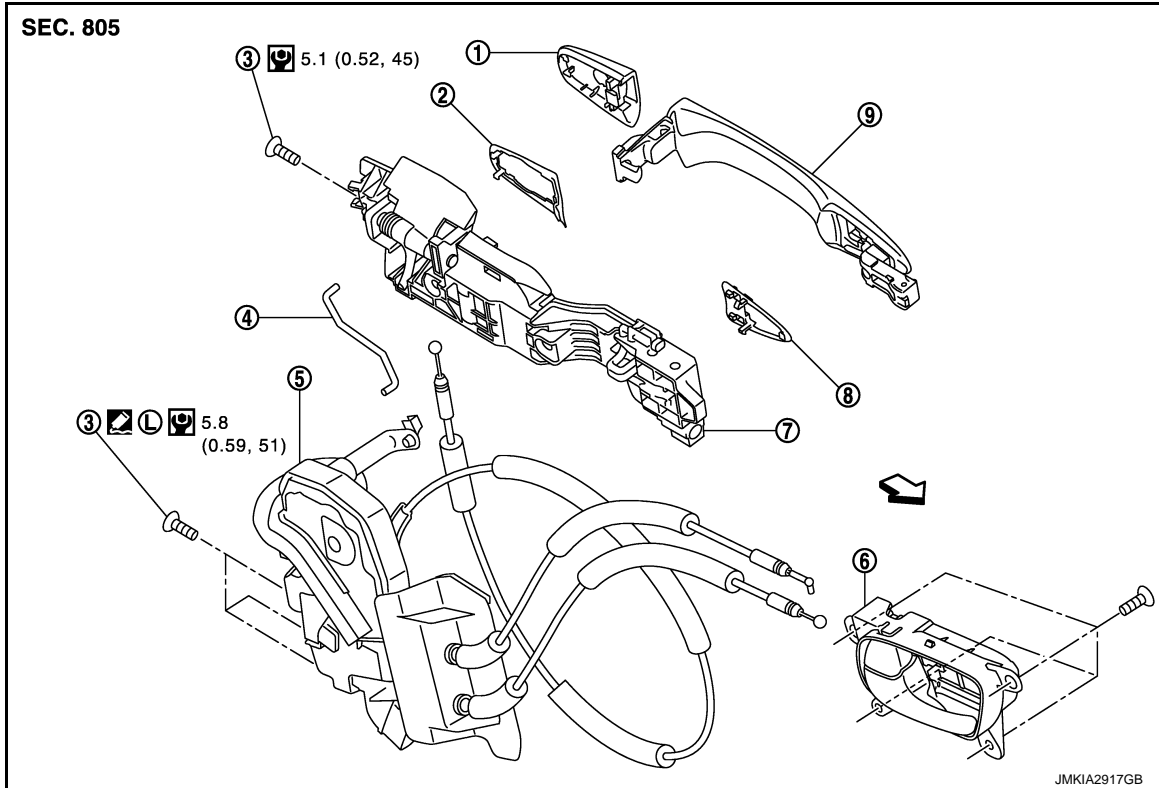
< REMOVAL AND INSTALLATION >

- When installing key rod, rotate key rod holder until a click is felt.
- After installation, check door open/close, lock/unlock operation.

INSIDE HANDLE

INSIDE HANDLE : Exploded View

INFOID:000000003940566



- | | | |
|---|-----------------------|-------------------|
| 1. Door key cylinder assembly (driver side)
Outside handle escutcheon (passenger side) | 2. Rear gasket | 3. TORX bolt |
| 4. Key rod (driver side) | 5. Door lock assembly | 6. Inside handle |
| 7. Outside handle bracket | 8. Front gasket | 9. Outside handle |

← : Vehicle front

Refer to [GI-4, "Components"](#) for symbols in the figure.

INSIDE HANDLE : Removal and Installation

INFOID:000000003843169

REMOVAL

1. Remove front door finisher. Refer to [INT-11, "Removal and Installation"](#).
2. Disconnect door lock cables from inside handle.
3. Remove inside handle mounting screws, and then remove the inside handle.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

- Check door lock cables are properly engaged with inside handle.
- After installation, check door open/close, lock/unlock operation.

OUTSIDE HANDLE

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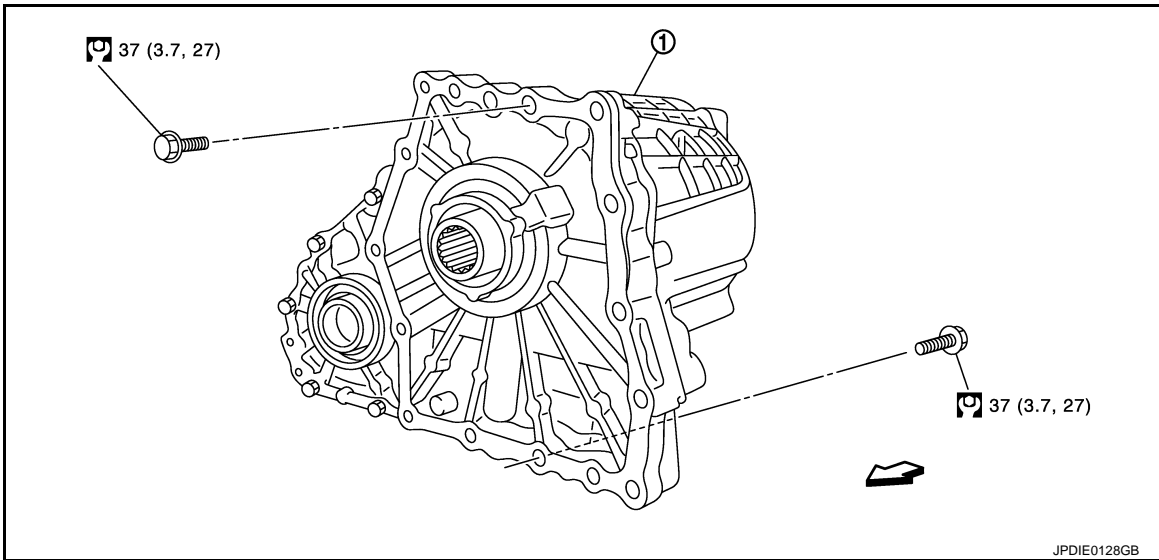
TRANSFER ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[TRANSFER: ETX13C]

VK50VE : Exploded View

INFOID:000000003879277



1. Transfer assembly

↔: Vehicle front

Refer to [GI-4, "Components"](#) for symbols in the figure.

VK50VE : Removal and Installation

INFOID:000000003879219

REMOVAL

1. Remove transmission assembly from the vehicle. Refer to [EM-196, "Removal and Installation"](#).
2. Remove transfer air breather hose.
3. Remove rear engine mounting member and engine mounting insulator with power tool. Refer to [EM-196, "Exploded View"](#).
4. Support transfer assembly with a jack.
5. Remove transfer mounting bolts with power tool and separate transfer from transmission.

CAUTION:

Secure transfer assembly and transmission assembly to a jack.

INSTALLATION

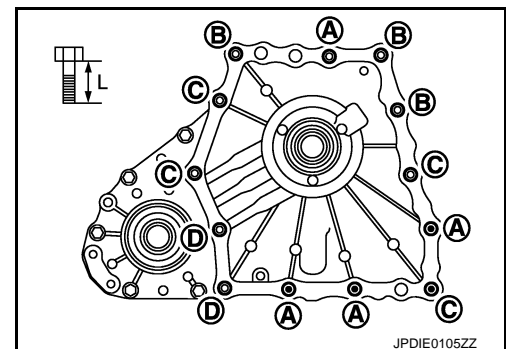
Note the following, and install in the reverse order of removal.

- When installing the transfer to the transmission, install the mounting bolts following the standard below, tighten bolts to the specified torque.

Bolt No.	A	B	C	D
Quantity	4	3	4	2
Bolt length "L" mm (in)	75 (2.95)	45 (1.77)	40 (1.57)	30 (1.18)

●: Transfer to transmission.

○: Transmission to transfer.



- When installing transfer air breather hose, make sure there are no pinched or restricted areas on the transfer air breather hose caused by bending or winding.

FRONT FINAL DRIVE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[FRONT FINAL DRIVE: F160A]

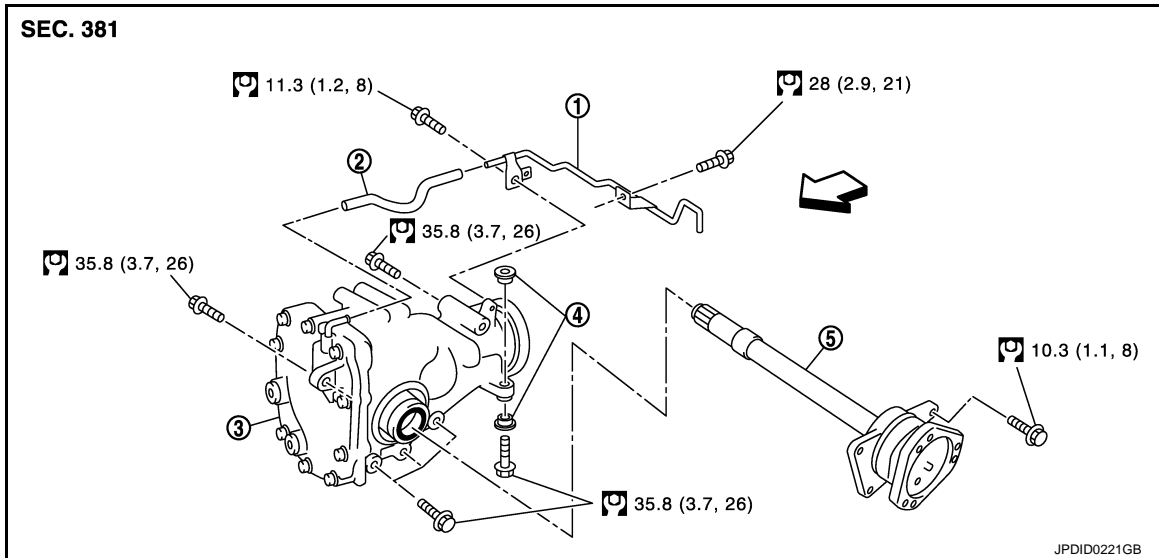
UNIT REMOVAL AND INSTALLATION

FRONT FINAL DRIVE ASSEMBLY

VQ35HR

VQ35HR : Exploded View

INFOID:000000003890020



- | | | |
|------------------|------------------|-------------------------------|
| 1. Breather tube | 2. Breather hose | 3. Front final drive assembly |
| 4. Bushing | 5. Side shaft | |

←: Vehicle front

Refer to [GI-4. "Components"](#) for symbols in the figure.

VQ35HR : Removal and Installation

INFOID:000000003890021

REMOVAL

1. Remove engine assembly from the vehicle. Refer to [EM-87. "AWD : Removal and Installation"](#).
2. Separate engine assembly and suspension member.
3. Remove engine mounting bracket (RH) (lower). Refer to [EM-87. "AWD : Exploded View"](#).
4. Remove air breather hose and tube.
5. Remove side shaft. Refer to [DLN-151. "Exploded View"](#).
6. Remove final drive assembly mounting bolts with power tool and separate front final drive assembly from engine.

INSTALLATION

Note the following, install in the reverse order of removal.

- When installing the side shaft, apply multi-purpose grease to contact surface of side shaft and side shaft oil seal.

DIFFERENTIAL ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

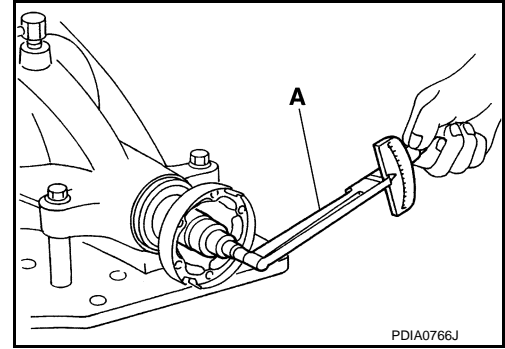
[REAR FINAL DRIVE: R200]

3. Rotate drive pinion back and forth 2 to 3 times to check for unusual noise and rotation malfunction.
4. Rotate drive pinion at least 20 times to check for smooth operation of the bearing.
5. Measure total preload with the preload gauge (A) [SST: ST3127S000 (J-25765-A)].

Standard

Total preload torque

: Refer to [DLN-254, "Pre-load Torque"](#).



NOTE:

Total preload torque = Pinion bearing preload torque + Side bearing preload torque

- If measured value is out of the specification, disassemble it to check and adjust each part. Adjust the pinion bearing preload and side bearing preload. Adjust the pinion bearing preload first, then adjust the side bearing preload.

When the preload torque is large

On pinion bearings: Replace the collapsible spacer.

On side bearings: Use thinner side bearing adjusting washers by the same amount to each side.

When the preload is small

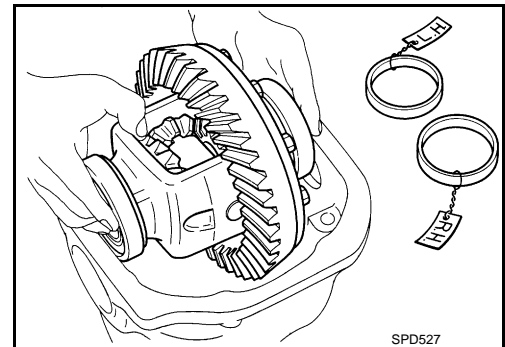
On pinion bearings: Tighten the drive pinion lock nut.

On side bearings: Use thicker side bearing adjusting washers by the same amount to each side.

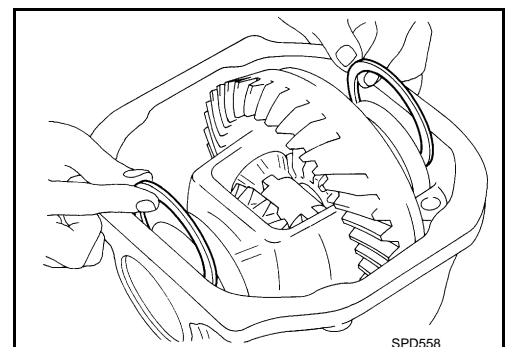
SIDE BEARING PRELOAD

Before inspection and adjustment, drain gear oil.

1. Remove rear cover. Refer to [DLN-223, "AWD : Disassembly"](#).
2. Make sure all parts are clean. Also, make sure the bearings are well lubricated with gear oil.
3. Place the differential case, with side bearings and bearing races installed, into gear carrier.



4. Insert left and right original side bearing adjusting washers in place between side bearings and gear carrier.



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INSPECTION AND ADJUSTMENT

[VQ35HR]

< BASIC INSPECTION >

For procedure, refer to [EC-24, "IGNITION TIMING : Special Repair Requirement"](#).

For specification, refer to [EC-572, "Ignition Timing"](#).

Is the inspection result normal?

YES >> GO TO 19.

NO >> GO TO 11.

11.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

1. Stop engine.

2. Perform [EC-25, "ACCELERATOR PEDAL RELEASED POSITION LEARNING : Special Repair Requirement"](#).

>> GO TO 12.

12.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform [EC-25, "THROTTLE VALVE CLOSED POSITION LEARNING : Special Repair Requirement"](#).

>> GO TO 13.

13.PERFORM IDLE AIR VOLUME LEARNING

Perform [EC-25, "IDLE AIR VOLUME LEARNING : Special Repair Requirement"](#).

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 14.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

14.CHECK IDLE SPEED AGAIN

1. Start engine and warm it up to normal operating temperature.

2. Check idle speed.

For procedure, refer to [EC-24, "IDLE SPEED : Special Repair Requirement"](#).

For specification, refer to [EC-572, "Idle Speed"](#).

Is the inspection result normal?

YES >> GO TO 15.

NO >> GO TO 17.

15.CHECK IGNITION TIMING AGAIN

1. Run engine at idle.

2. Check ignition timing with a timing light.

For procedure, refer to [EC-24, "IGNITION TIMING : Special Repair Requirement"](#).

For specification, refer to [EC-572, "Ignition Timing"](#).

Is the inspection result normal?

YES >> GO TO 19.

NO >> GO TO 16.

16.CHECK TIMING CHAIN INSTALLATION

Check timing chain installation. Refer to [EM-54, "Removal and Installation"](#).

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair the timing chain installation. Then GO TO 4.

17.DETECT MALFUNCTIONING PART

Check the following.

• Check camshaft position sensor and circuit. Refer to [EC-279, "Component Inspection"](#).

• Check crankshaft position sensor and circuit. Refer to [EC-273, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 18.

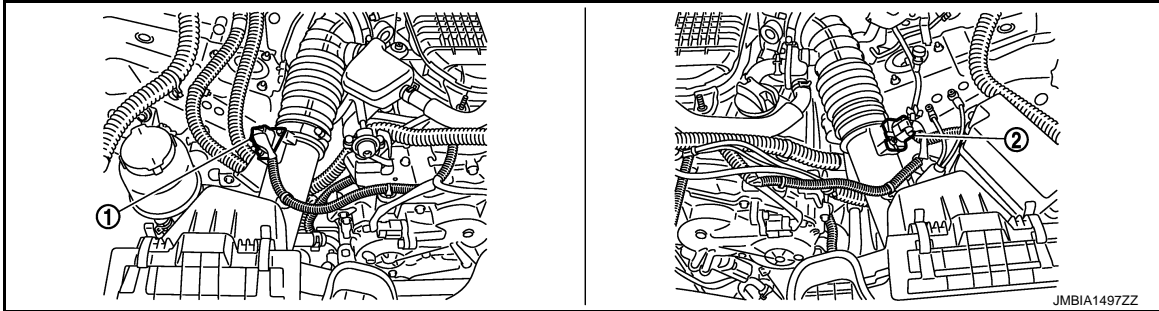
NO >> Repair or replace malfunctioning part. Then GO TO 4.

18.CHECK ECM FUNCTION

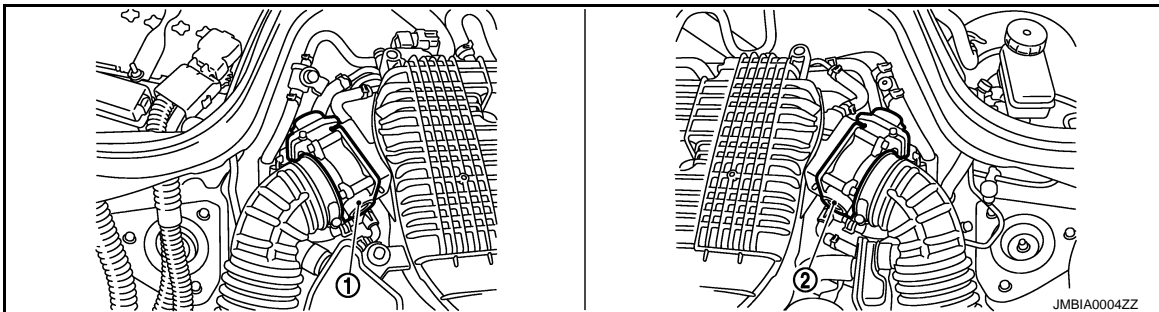
INTAKE VALVE TIMING CONTROL

< SYSTEM DESCRIPTION >

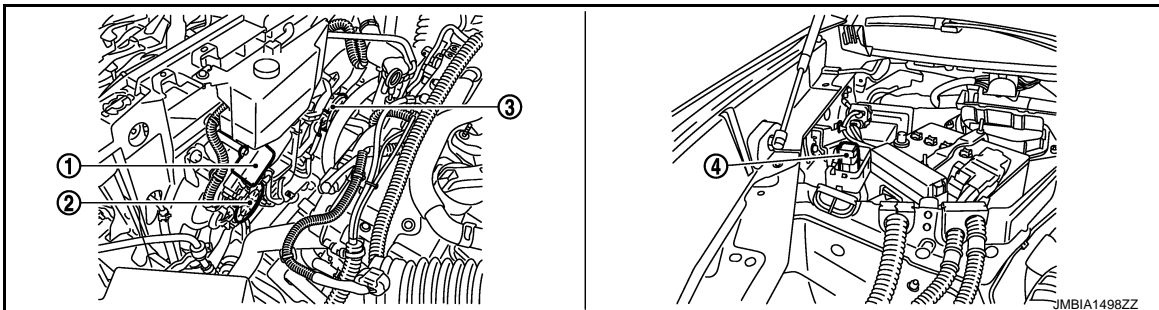
[VQ35HR]



1. Mass air flow sensor (with intake air temperature sensor) (bank 1)
2. Mass air flow sensor (with intake air temperature sensor) (bank 2)



1. Electric throttle control actuator (bank 1)
2. Electric throttle control actuator (bank 2)



1. Cooling fan control module
2. Cooling fan motor-1
3. Cooling fan motor-2
4. Cooling fan relay

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P0117, P0118 ECT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

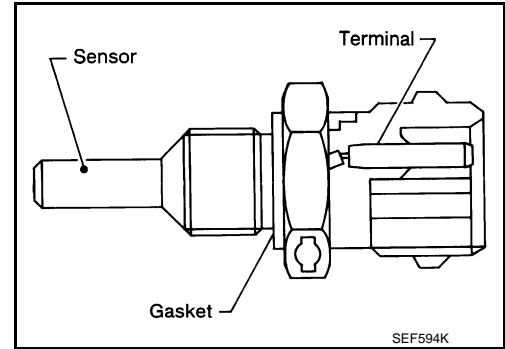
[VQ35HR]

P0117, P0118 ECT SENSOR

Description

INFOID:000000003856079

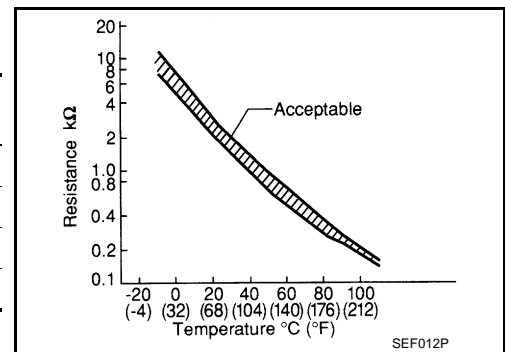
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature [°C (°F)]	Voltage* (V)	Resistance (kΩ)
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

*: These data are reference values and are measured between ECM terminals 71 (Engine coolant temperature sensor) and 84 (Sensor ground).



DTC Logic

INFOID:000000003856080

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0117	Engine coolant temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	<ul style="list-style-type: none"> • Harness or connectors (The sensor circuit is open or shorted.) • Engine coolant temperature sensor
P0118	Engine coolant temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON and wait at least 5 seconds.
2. Check DTC.

Is DTC detected?

- YES >> Go to [EC-189, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

P0335 CKP SENSOR

[VQ35HR]

< DTC/CIRCUIT DIAGNOSIS >

3. Turn ignition switch OFF and wait at least 10 seconds.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5 V with ignition switch ON.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

1. Start engine and let it idle for at least 5 seconds.
If engine does not start, crank engine for at least 2 seconds.
2. Check 1st trip DTC.

Is 1st trip DTC detected?

- YES >> Go to [EC-271, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003856160

1.CHECK GROUND CONNECTION

1. Turn ignition switch OFF.
2. Check ground connection M95. Refer to Ground Inspection in [GI-38, "Circuit Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace ground connection.

2.CHECK CRANKSHAFT POSITION (CKP) SENSOR POWER SUPPLY CIRCUIT-I

1. Disconnect CKP sensor harness connector.
2. Turn ignition switch ON.
3. Check the voltage between CKP sensor harness connector and ground.

CKP sensor		Ground	Voltage (V)
Connector	Terminal		
F2	1	Ground	Approx. 5

Is the inspection result normal?

- YES >> GO TO 8.
NO >> GO TO 3.

3.CHECK CKP SENSOR POWER SUPPLY CIRCUIT-II

1. Turn ignition switch ON.
2. Disconnect ECM harness connector.
3. Check the continuity between CKP sensor harness connector and ECM harness connector.

CKP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F2	1	F101	46	Existed

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Repair open circuit.

4.CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

P0550 PSP SENSOR

[VQ35HR]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

3.CHECK PSP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between PSP sensor harness connector and ECM harness connector.

PSP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F35	1	F102	96	Existed

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

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit, short to ground short to power in harness or connectors.

4.CHECK PSP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between PSP sensor harness connector and ECM harness connector.

PSP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F35	2	F102	87	Existed

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

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

5.CHECK PSP SENSOR

Refer to [EC-354, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace PSP sensor.

6.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000003856233

1.CHECK POWER STEERING PRESSURE SENSOR

1. Turn ignition switch OFF.
2. Reconnect all harness connectors disconnected.
3. Start engine and let it idle.
4. Check the voltage between ECM harness connector terminals under the following conditions.

ECM			Condition	Voltage (V)	
Connector	+	-			
	Terminal	Terminal			
F102	87	96	Steering wheel	Being turned	0.5 - 4.5
				Not being turned	0.4 - 0.8

Is the inspection result normal?

P1574 ASCD VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35HR]

P1574 ASCD VEHICLE SPEED SENSOR

Description

INFOID:000000003856334

The ECM receives two vehicle speed signals via CAN communication line. One is sent from "unified meter and A/C amp.", and the other is from TCM (Transmission control module). The ECM uses these signals for ASCD control. Refer to [EC-66, "System Description"](#) for ASCD functions.

DTC Logic

INFOID:000000003856335

DTC DETECTION LOGIC

NOTE:

- If DTC P1574 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to [EC-347, "DTC Logic"](#).
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to [EC-358, "DTC Logic"](#).
- If DTC P1574 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to [EC-360, "DTC Logic"](#).

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1574	ASCD vehicle speed sensor	The difference between the two vehicle speed signals is out of the specified range.	<ul style="list-style-type: none">• Harness or connectors (The CAN communication line is open or shorted.)• Unified meter and A/C amp.• ABS actuator and electric unit (control unit)• Wheel sensor• TCM• ECM

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start engine (VDC switch OFF).
2. Drive the vehicle at more than 40 km/h (25 MPH).

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

3. Check DTC.

Is DTC detected?

- YES >> Go to [EC-437, "Diagnosis Procedure"](#).
NO >> INSPECTION END

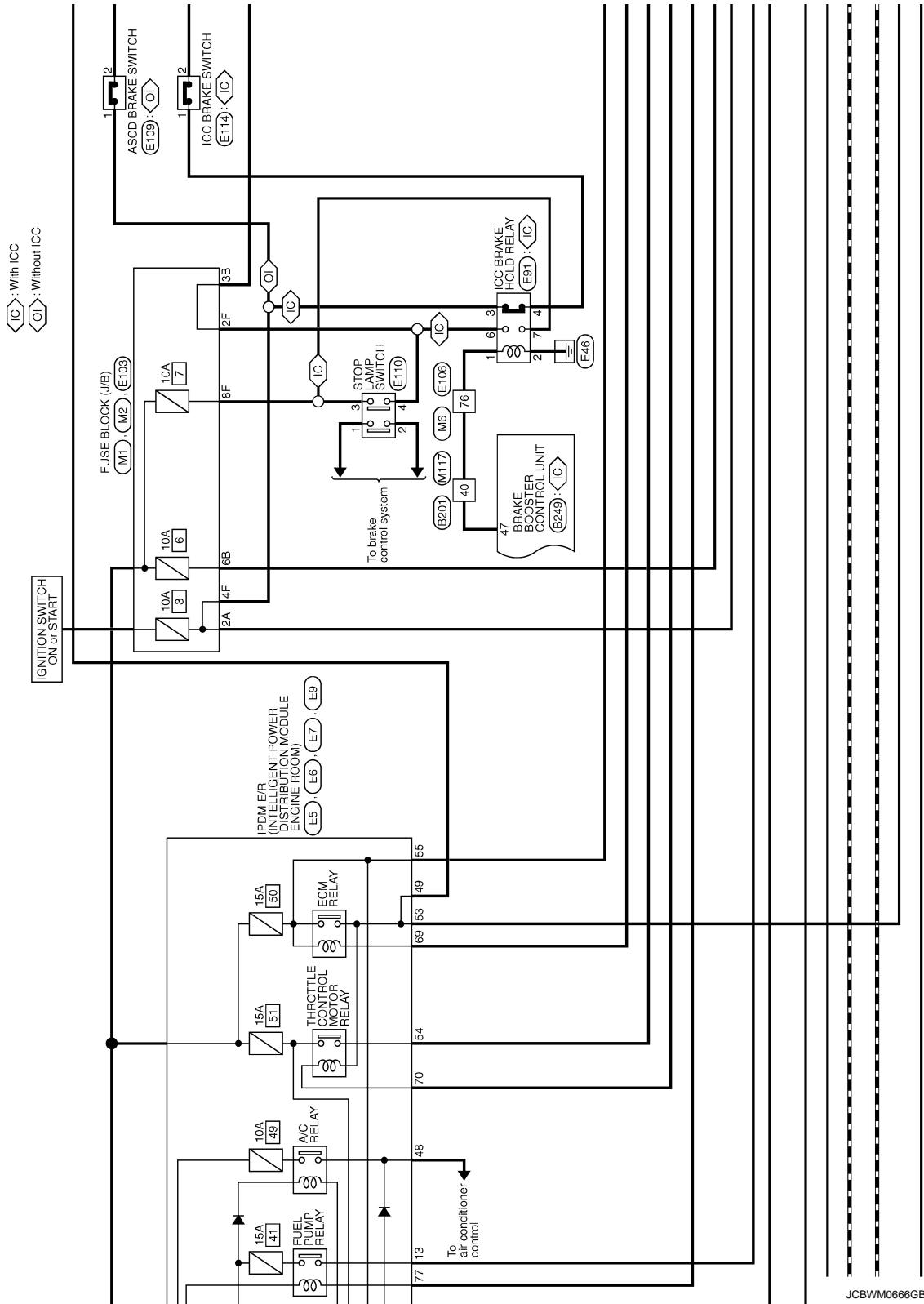
Diagnosis Procedure

INFOID:000000003856336

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to [TM-74, "Diagnosis Description"](#).

Is the inspection result normal?



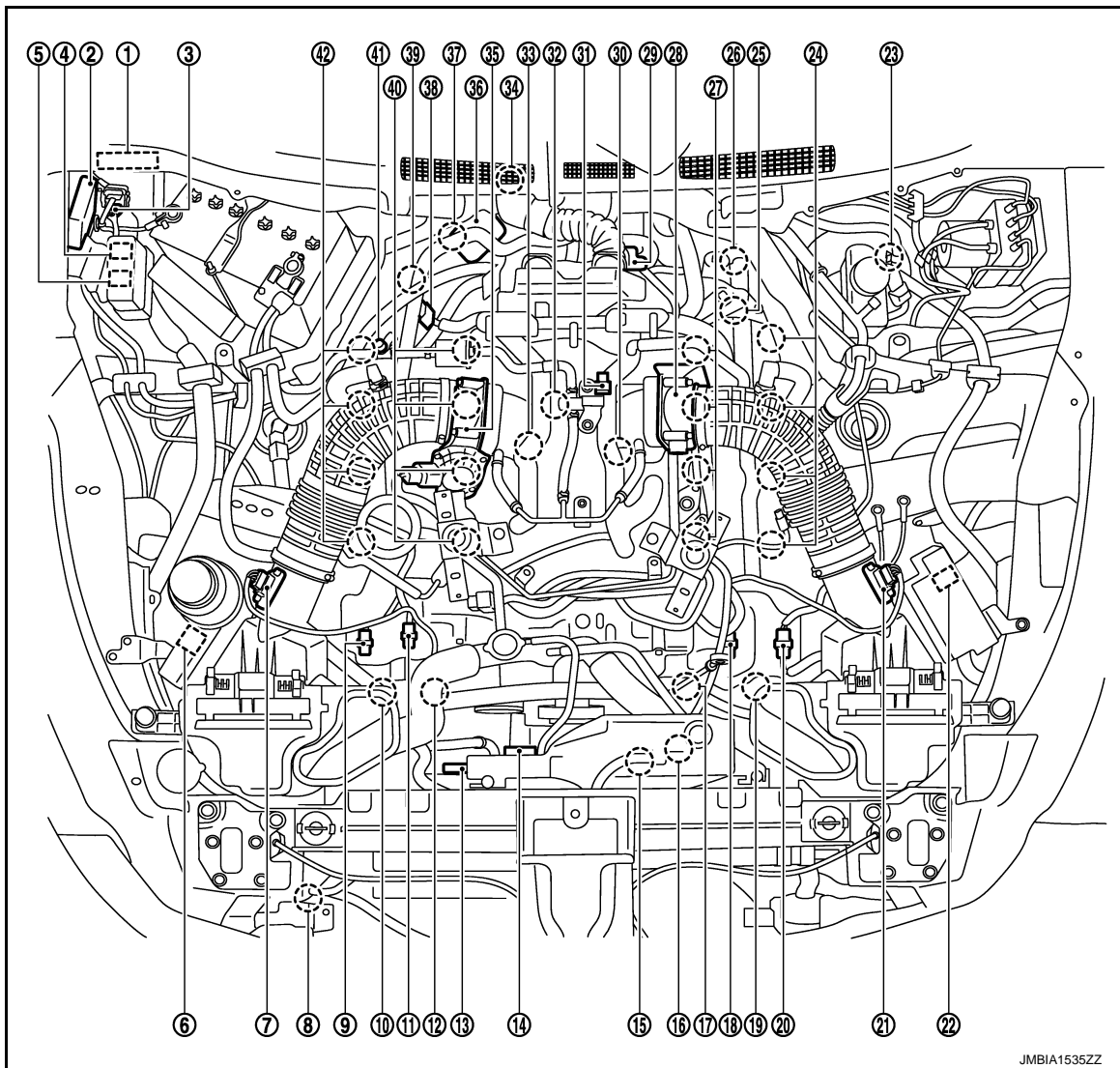
MULTIPOINT FUEL INJECTION SYSTEM

< SYSTEM DESCRIPTION >

[VK50VE]

Component Parts Location

INFOID:000000003958640



- | | | |
|--|---|--|
| 1. IPDM E/R | 2. VVEL control module | 3. Battery current sensor |
| 4. VVEL actuator motor relay | 5. Cooling fan relay-1 | 6. Cooling fan relay-2 |
| 7. Mass air flow sensor (bank 2) | 8. Refrigerant pressure sensor | 9. Exhaust valve timing control position sensor (bank 2) |
| 10. Exhaust valve timing control solenoid valve (bank 2) | 11. Camshaft position sensor (bank 2) | 12. Intake valve timing control solenoid valve (bank 2) |
| 13. Cooling fan motor-1 | 14. Cooling fan control module-1 | 15. Cooling fan motor-2 |
| 16. Cooling fan control module-2 | 17. Intake valve timing control solenoid valve (bank 1) | 18. Camshaft position sensor (bank 1) |
| 19. Exhaust valve timing control solenoid valve (bank 1) | 20. Exhaust valve timing control position sensor (bank 1) | 21. Mass air flow sensor (with intake air temperature sensor) (bank 1) |
| 22. ICC brake hold relay (ICC models) | 23. Brake booster pressure sensor | 24. Ignition coil (with power transistor) and spark plug (bank 1) |
| 25. VVEL actuator motor (bank 1) | 26. VVEL control shaft position sensor (bank 1) | 27. Fuel injector (bank 1) |
| 28. Electric throttle control actuator (bank 1) | 29. A/F sensor 1 (bank 1) | 30. Knock sensor (bank 1) |

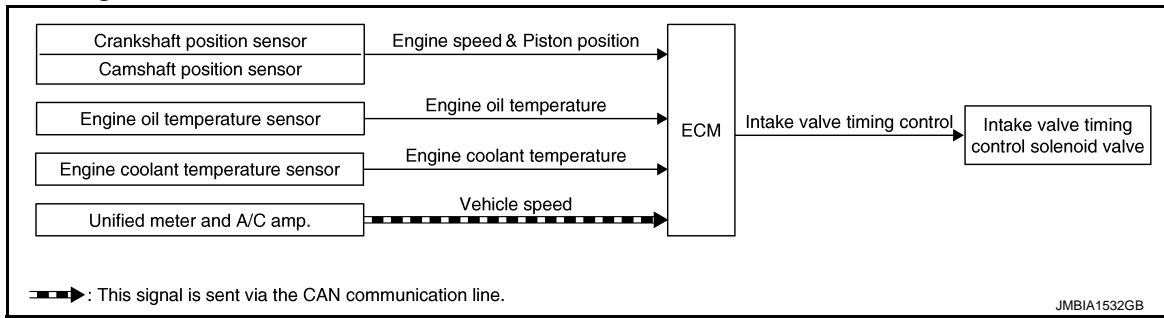
INTAKE VALVE TIMING CONTROL

[VK50VE]

< SYSTEM DESCRIPTION >

INTAKE VALVE TIMING CONTROL

System Diagram



System Description

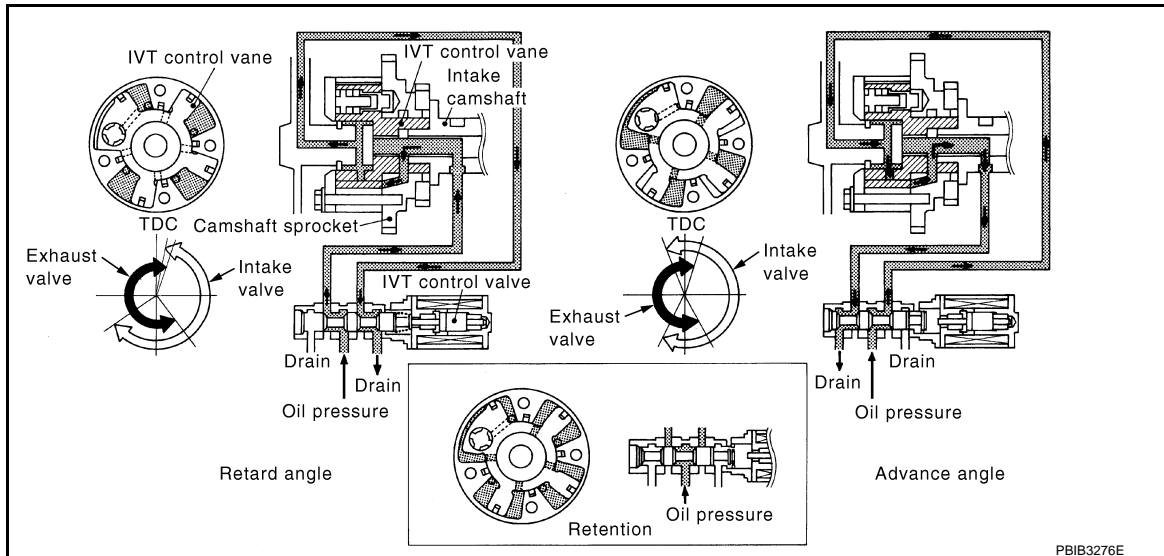
INFOID:000000003958668

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor	Engine speed and piston position	Intake valve timing control	Intake valve timing control solenoid valve
Camshaft position sensor			
Engine oil temperature sensor	Engine oil temperature		
Engine coolant temperature sensor	Engine coolant temperature		
Unified meter and A/C amp.	Vehicle speed*		

*: This signal is sent to the ECM via the CAN communication line.

SYSTEM DESCRIPTION



This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the intake valve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine coolant temperature. Then, the ECM sends ON/OFF pulse duty signals to the intake valve timing control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the intake valve to increase engine torque in low/mid speed range and output in high speed range.

P0101, P010B MAF SENSOR

[VK50VE]

< DTC/CIRCUIT DIAGNOSIS >

Is 1st trip DTC detected?

- YES >> Go to [EC-770. "Diagnosis Procedure"](#).
- NO-1 >> With CONSULT-III: GO TO 3.
- NO-2 >> With GST: GO TO 5.

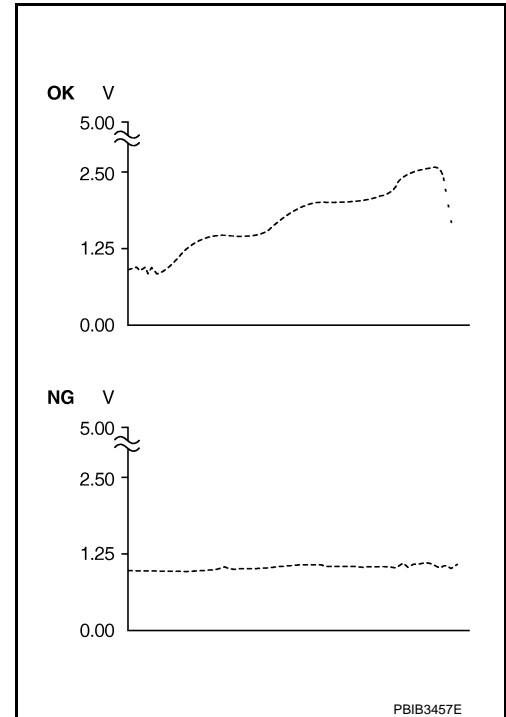
3. CHECK MASS AIR FLOW SENSOR FUNCTION

Ⓜ With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and warm it up to normal operating temperature.
If engine cannot be started, go to [EC-770. "Diagnosis Procedure"](#).
3. Select "MAS A/F SE-B1/B2" in "DATA MONITOR" mode with CONSULT-III.
4. Check the voltage of "MAS A/F SE-B1/B2".
5. Increases engine speed to approximately 4,000 rpm.
6. Monitor the linear voltage rise in response to engine speed increases.

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Go to [EC-770. "Diagnosis Procedure"](#).



4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

1. Maintain the following conditions for at least 10 consecutive seconds.

ENG SPEED	More than 2,000 rpm
TP SEN 1-B1	More than 3 V
TP SEN 2-B1	More than 3 V
TP SEN 1-B2	More than 3 V
TP SEN 2-B2	More than 3 V
Selector lever	Suitable position
Driving location	Driving vehicle uphill (Increased engine load) will help maintain the driving conditions required for this test.

CAUTION:

Always drive vehicle at a safe speed.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

- YES >> Go to [EC-770. "Diagnosis Procedure"](#).
- NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Ⓜ With GST

Perform component function check. Refer to [EC-770. "Component Function Check"](#).

NOTE:

P0197, P0198 EOT SENSOR

[VK50VE]

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

INFOID:000000003958782

1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.
2. Check ground connection M95. Refer to Ground Inspection in [GI-38. "Circuit Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace ground connection.

2. CHECK ENGINE OIL TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

1. Disconnect engine oil temperature (EOT) sensor harness connector.
2. Turn ignition switch ON.
3. Check the voltage between EOT sensor harness connector and ground.

EOT sensor		Ground	Voltage (V)
Connector	Terminal		
F38	1	Ground	Approx. 5

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Repair open circuit, short to ground or short to power in harness or connectors.

3. CHECK EOT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between EOT sensor harness connector and ECM harness connector.

EOT sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F38	2	F110	34	Existed

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

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Repair open circuit, short to ground or short to power in harness or connectors.

4. CHECK ENGINE OIL TEMPERATURE SENSOR

Refer to [EC-852. "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 5.
NO >> Replace engine oil temperature sensor.

5. CHECK INTERMITTENT INCIDENT

Refer to [GI-35. "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000004032235

1. CHECK ENGINE OIL TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect engine oil temperature sensor harness connector.
3. Remove engine oil temperature sensor.

P0456 EVAP CONTROL SYSTEM

[VK50VE]

< DTC/CIRCUIT DIAGNOSIS >

NO >> Replace "fuel level sensor unit and fuel pump (main)".

22.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

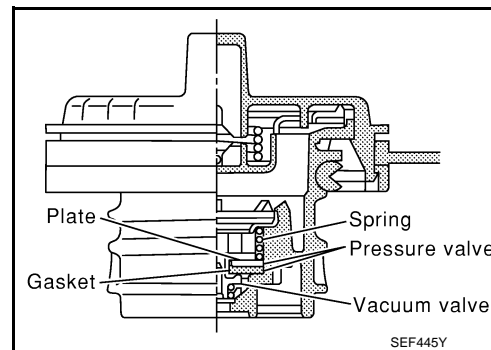
>> INSPECTION END

Component Inspection

INFOID:000000004032243

1.CHECK FUEL FILLER CAP

1. Turn ignition switch OFF.
2. Remove fuel filler cap.
3. Wipe clean valve housing.



4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.
5. Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm², 2.22 - 2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm², -0.87 to -0.48 psi)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

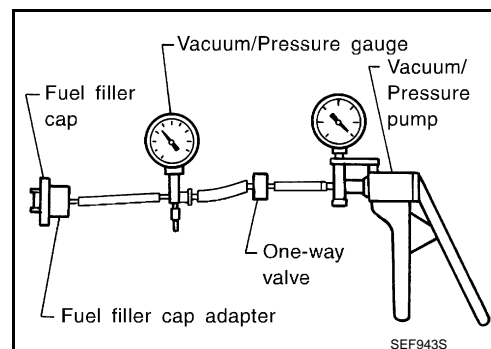
2.REPLACE FUEL FILLER CAP

Replace fuel filler cap.

CAUTION:

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may illuminate.

>> INSPECTION END



P1550 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VK50VE]

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
M160	99	APP sensor (Without ICC)	E112	6
		APP sensor (with ICC)	E116	3

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair short to ground or short to power in harness or connectors.

6. CHECK COMPONENTS

Check the following.

- Crankshaft position sensor (Refer to [EC-870, "Component Inspection"](#).)
- Camshaft position sensor (bank 1) (Refer to [EC-875, "Component Inspection"](#).)
- Exhaust valve timing control position sensor (bank 1) (Refer to [EC-972, "Component Inspection"](#).)
- EVAP control system pressure sensor (Refer to [EC-911, "Component Inspection"](#).)
- Manifold pressure sensor (Refer to [EC-1115, "Component Inspection"](#).)

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace malfunctioning component.

7. CHECK APP SENSOR

Refer to [EC-1074, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 14.

NO >> GO TO 8.

8. REPLACE ACCELERATOR PEDAL ASSEMBLY

1. Replace accelerator pedal assembly.
2. Perform [EC-1075, "Special Repair Requirement"](#).

>> INSPECTION END

9. CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E21	2	F111	70	Existed

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

Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 10.

10. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F10, E10
- Harness for open or short between battery current sensor and ECM

>> Repair open circuit, short to ground or short to power in harness or connectors.

11. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

FUEL PUMP

< DTC/CIRCUIT DIAGNOSIS >

[VK50VE]

8. CHECK FUEL PUMP

Refer to [EC-1101](#), "Component Inspection".

Is the inspection result normal?

- YES >> GO TO 9.
- NO >> Replace fuel pump.

9. CHECK FPCM

Refer to [EC-995](#), "Component Inspection".

Is the inspection result normal?

- YES >> GO TO 10.
- NO >> Replace FPCM.

10. CHECK INTERMITTENT INCIDENT

Refer to [GI-35](#), "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:000000003959024

1. CHECK FUEL PUMP

1. Turn ignition switch OFF.
2. Disconnect "fuel level sensor unit and fuel pump (main)" harness connector.
3. Check resistance between "fuel level sensor unit and fuel pump (main)" terminals as follows.

Terminals	Resistance
1 and 3	0.2 - 5.0 Ω [at 25°C (77°F)]

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Replace "fuel level sensor unit and fuel pump (main)"

ECM

< ECU DIAGNOSIS INFORMATION >

[VK50VE]

Item	OBD-MID	Self-diagnostic test item	DTC	Test value and Test limit (GST display)		Description
				TID	Unit and Scaling ID	
MISFIRE	A1H	Multiple Cylinder Misfires	P0301	80H	24H	Misfiring counter at 1000 revolution of the first cylinder
			P0302	81H	24H	Misfiring counter at 1000 revolution of the second cylinder
			P0303	82H	24H	Misfiring counter at 1000 revolution of the third cylinder
			P0304	83H	24H	Misfiring counter at 1000 revolution of the fourth cylinder
			P0305	84H	24H	Misfiring counter at 1000 revolution of the fifth cylinder
			P0306	85H	24H	Misfiring counter at 1000 revolution of the sixth cylinder
			P0307	86H	24H	Misfiring counter at 1000 revolution of the seventh cylinder
			P0308	87H	24H	Misfiring counter at 1000 revolution of the eighth cylinder
			P0300	88H	24H	Misfiring counter at 1000 revolution of the multiple cylinders
			P0301	89H	24H	Misfiring counter at 200 revolution of the first cylinder
			P0302	8AH	24H	Misfiring counter at 200 revolution of the second cylinder
			P0303	8BH	24H	Misfiring counter at 200 revolution of the third cylinder
			P0304	8CH	24H	Misfiring counter at 200 revolution of the fourth cylinder
			P0305	8DH	24H	Misfiring counter at 200 revolution of the fifth cylinder
			P0306	8EH	24H	Misfiring counter at 200 revolution of the sixth cylinder
			P0307	8FH	24H	Misfiring counter at 200 revolution of the seventh cylinder
			P0308	90H	24H	Misfiring counter at 200 revolution of the eighth cylinder
			P0300	91H	24H	Misfiring counter at 1000 revolution of the single cylinder
			P0300	92H	24H	Misfiring counter at 200 revolution of the single cylinder
			P0300	93H	24H	Misfiring counter at 200 revolution of the multiple cylinders

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

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INTAKE MANIFOLD

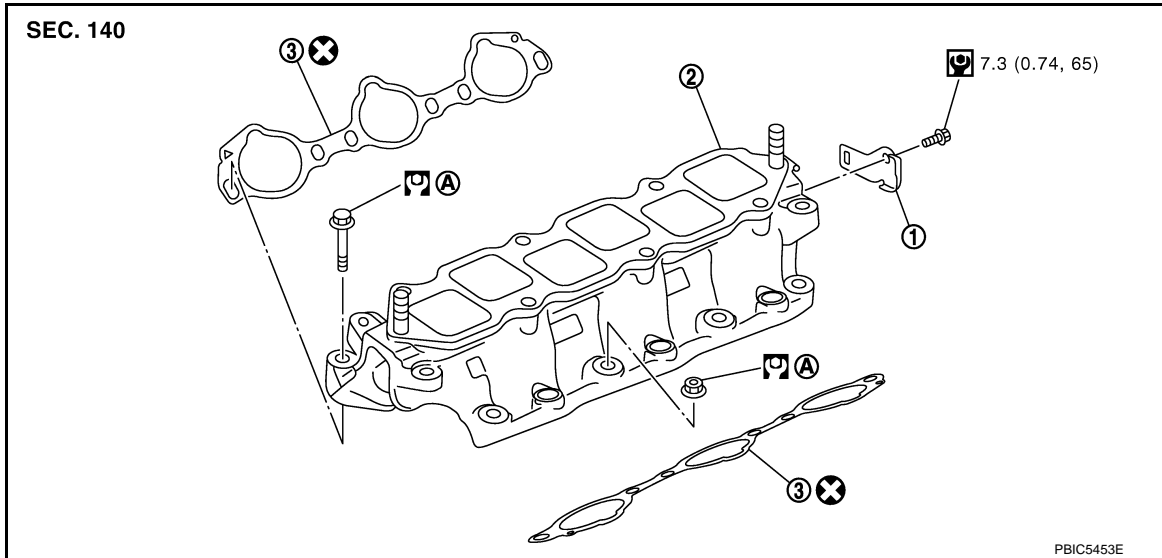
< REMOVAL AND INSTALLATION >

[VQ35HR]

INTAKE MANIFOLD

Exploded View

INFOID:000000003887344



1. Harness bracket 2. Intake manifold 3. Gasket

A. Refer to [EM-34](#)

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000003887345

REMOVAL

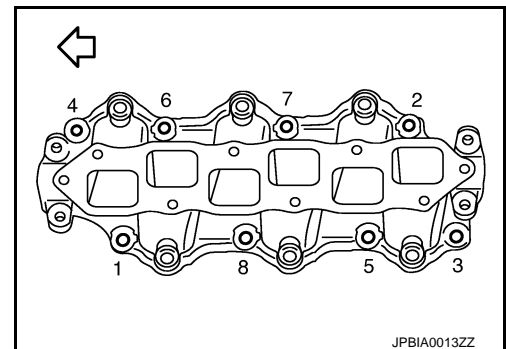
1. Release fuel pressure. Refer to [EC-567, "Inspection"](#).
2. Remove intake manifold collector. Refer to [EM-31, "Exploded View"](#).
3. Remove fuel tube and fuel injector assembly. Refer to [EM-40, "Exploded View"](#).
4. Remove harness bracket.
5. Loosen mounting bolts and nuts in reverse order as shown in the figure to remove intake manifold with power tool.

← : Engine front

CAUTION:

- Cover engine openings to avoid entry of foreign materials.
- Put a mark on the intake manifold and the cylinder head with paint before removal because they need installed in the specified direction.

6. Remove gaskets.



INSTALLATION

Note the following item, and install in the reverse order of removal.

INTAKE MANIFOLD

- If stud bolts were removed, install them and tighten to the specified torque below.

: 10.8 N·m (1.1 kg·m, 8 ft·lb)

CYLINDER BLOCK

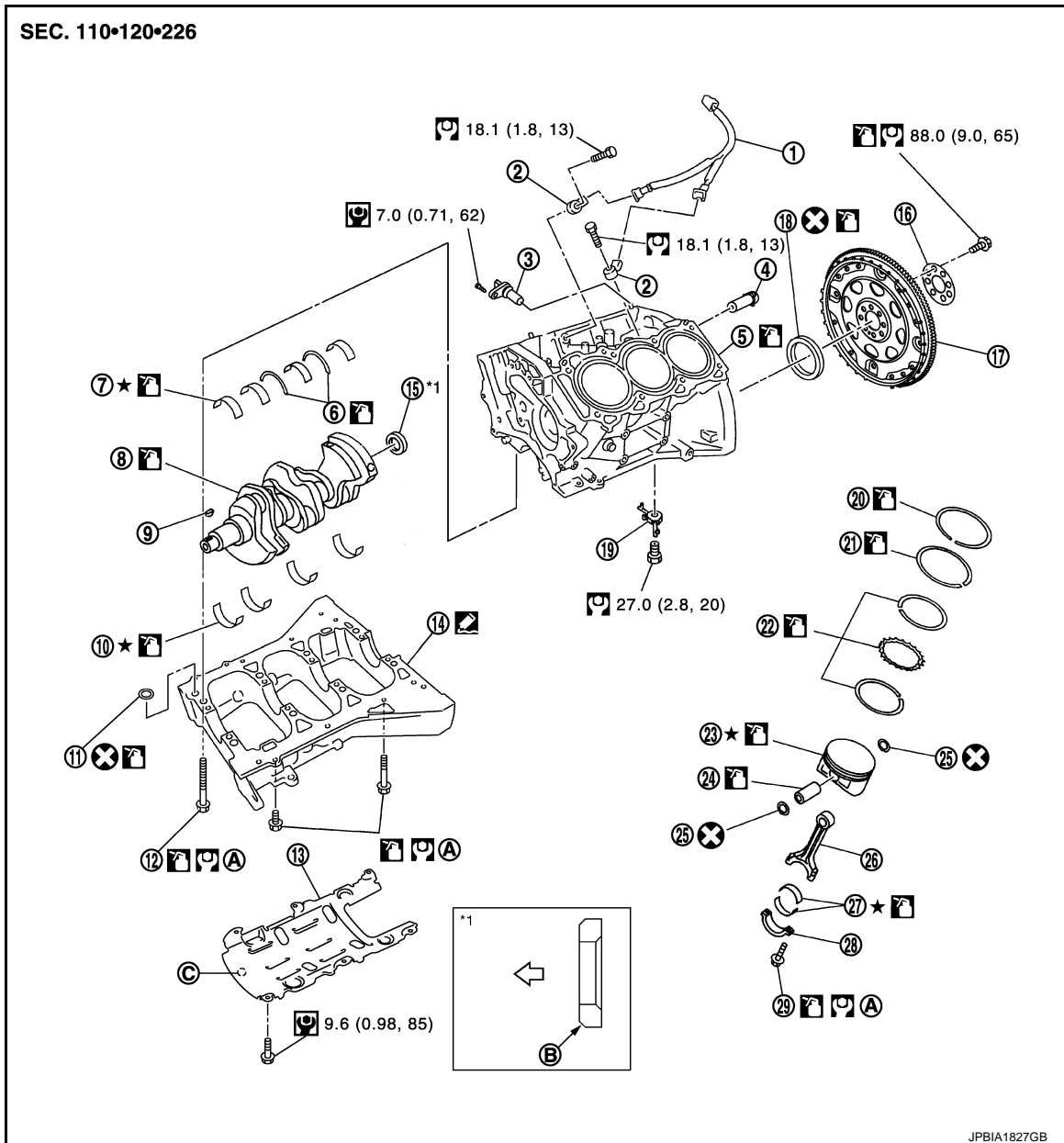
< UNIT DISASSEMBLY AND ASSEMBLY >

[VQ35HR]

CYLINDER BLOCK

Exploded View

INFOID:000000003887389



- | | | |
|---------------------------------------|--------------------------|-------------------------------|
| 1. Sub harness | 2. Knock sensor | 3. Crankshaft position sensor |
| 4. Cylinder block heater (for Canada) | 5. Cylinder block | 6. Thrust bearing |
| 7. Main bearing (upper) | 8. Crankshaft | 9. Crankshaft key |
| 10. Main bearing (lower) | 11. O-ring | 12. Lower cylinder block bolt |
| 13. Baffle plate | 14. Lower cylinder block | 15. Pilot converter |
| 16. Reinforcement plate | 17. Drive plate | 18. Rear oil seal |
| 19. Oil jet | 20. Top ring | 21. Second ring |
| 22. Oil ring | 23. Piston | 24. Piston pin |
| 25. Snap ring | 26. Connecting rod | 27. Connecting rod bearing |
| 28. Connecting rod bearing cap | 29. Connecting rod bolt | |
| A. Refer to EM-118 | B. Chamfered | C. Front mark |

ENGINE ASSEMBLY

[VK50VE]

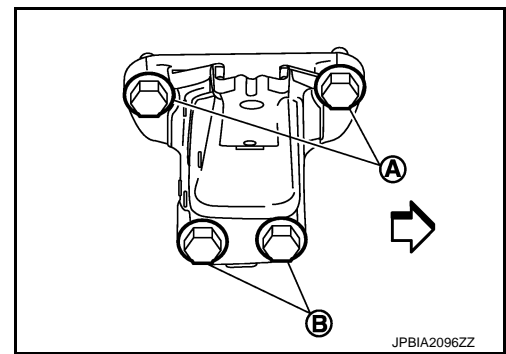
< UNIT REMOVAL AND INSTALLATION >

- When installing engine mounting bracket (RH and LH) on cylinder block, tighten two upper bolts (A) first. Then tighten two lower bolts (B).

⇐ : Engine front

NOTE:

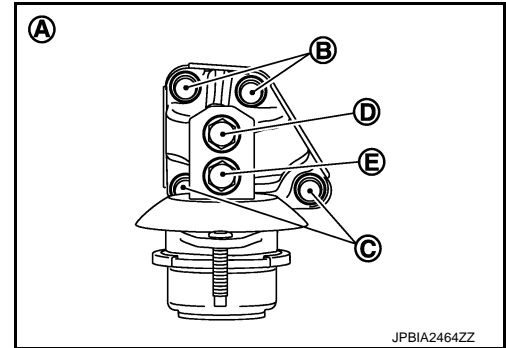
This figure shows an example of bank 2.



- When installing engine mounting bracket (rear) on transfer, tighten two upper bolts (B) first. Then tighten two lower bolts (C).

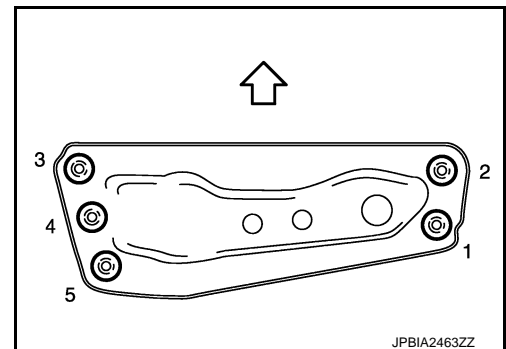
A : Rear view

- When installing engine mounting insulator (rear) on engine mounting bracket (rear), tighten upper bolts (D) first. Then tighten lower bolts (E).



- Tighten rear engine mounting member bolts in numerical order as shown in the figure.

⇐ : Vehicle front



- Check that all engine mounting insulators are seated properly, then tighten mounting nuts and bolts.

Inspection

INFOID:000000003733441

INSPECTION AFTER INSTALLATION

Inspection for Leakage

The following are procedures for checking fluid leakage, lubricant leakage.

- Before starting engine, check oil/fluid levels including engine coolant and engine oil. If any are less than the required quantity, fill them to the specified level. Refer to [MA-12. "Fluids and Lubricants"](#).
- Follow the procedure below to check for fuel leakage.
 - Turn ignition switch to the "ON" position (with engine stopped). With fuel pressure applied to fuel piping, check for fuel leakage at connection points.
 - Start engine. With engine speed increased, check again for fuel leakage at connection points.
- Run engine to check for unusual noise and vibration.

NOTE:

If hydraulic pressure inside chain tensioner drops after removal/installation, slack in guide may generate a pounding noise during and just after the engine start. However, this does not indicate a malfunction. The noise will stop after hydraulic pressure rises.

- Warm up engine thoroughly to check that there is no leakage of fuel, or any oil/fluids including engine oil and engine coolant.
- Bleed air from lines and hoses of applicable lines, such as in cooling system.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[VK50VE]

Gap	Standard	1.1 (0.043)
	Limit	1.4 (0.055)

Exhaust Manifold

INFOID:000000003733467

EXHAUST MANIFOLD

Unit: mm (in)

Items		Limit
Surface distortion	Exhaust manifold	0.7 (0.028)

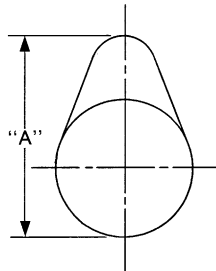
Camshaft

INFOID:000000003733468

CAMSHAFT (EXH)

Unit: mm (in)

Items		Standard	Limit
Camshaft (EXH) journal oil clearance	No. 1	0.045 - 0.086 (0.0018 - 0.0034)	0.150 (0.0059)
	No. 2, 3, 4, 5	0.030 - 0.071 (0.0012 - 0.0028)	
VVEL ladder assembly bracket inner diameter (EXH side)		26.000 - 26.021 (1.0236 - 1.0244)	—
Camshaft (EXH) journal diameter	No. 1	25.935 - 25.955 (1.0211 - 1.0218)	—
	No. 2, 3, 4, 5	25.950 - 25.970 (1.0217 - 1.0224)	—
Camshaft (EXH) end play		0.115 - 0.188 (0.0045 - 0.0074)	0.24 (0.0094)
Camshaft (EXH) cam height "A"		45.475 - 45.665 (1.7904 - 1.7978)	44.275 (1.7431)
Camshaft (EXH) runout [TIR*]		Less than 0.02 mm (0.0008)	0.05 (0.002)
Camshaft sprocket (EXH) runout [TIR*]		—	0.2 (0.0079)



SEM671

*: Total indicator reading

CAMSHAFT (INT)

Unit: mm (in)

Items	Standard	Limit
Drive shaft end play	0.115 - 0.188 (0.0045 - 0.0074)	0.24 (0.0094)
Camshaft sprocket (INT) runout [TIR* ¹]	—	0.15 (0.0059)

*¹: Total indicator reading

VALVE LIFTER

Unit: mm (in)

Items	Standard
Valve lifter outer diameter	33.980 - 33.990 (1.3378 - 1.3382)
Valve lifter hole diameter	34.000 - 34.016 (1.3386 - 1.3392)
Valve lifter clearance	0.010 - 0.036 (0.0004 - 0.0014)

U1010 CONTROL UNIT (CAN)

[XENON TYPE]

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

DTC Logic

INFOID:000000003846482

DTC DETECTION LOGIC

[U1000] CAN communication circuit

DTC	CONSULT-III display description	DTC detection condition	Possible causes
U1010	CONTROL UNIT (CAN)	AFS control unit detected internal CAN communication circuit malfunction.	AFS control unit

Diagnosis Procedure

INFOID:000000003846483

1. REPLACE AFS CONTROL UNIT

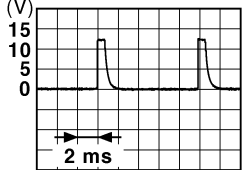
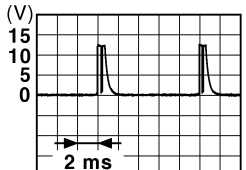

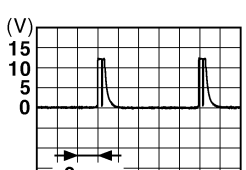

When DTC [U1010] is detected, replace AFS control unit.

>> Replace AFS control unit.

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

[XENON TYPE]

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
		Signal name	Input/ Output			
+	-					
108 (R)	Ground	Combination switch INPUT 4	Input	Combination switch	All switches OFF (Wiper intermittent dial 4)	 1.4 V
					Lighting switch AUTO (Wiper intermittent dial 4)	 1.3 V
					Lighting switch 1ST (Wiper intermittent dial 4)	 1.3 V
					Rear wiper switch INT (Wiper intermittent dial 4)	 1.3 V
					Any of the conditions below with all switches OFF	 1.3 V
					<ul style="list-style-type: none"> • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6 	

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EXL
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O
P

SQUEAK AND RATTLE TROUBLE DIAGNOSES

< SYMPTOM DIAGNOSIS >

Diagnostic Worksheet

INFOID:000000004063235



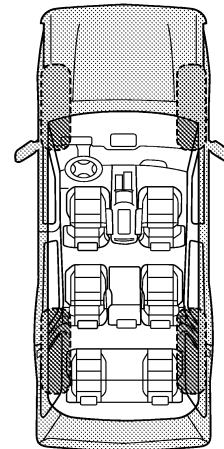
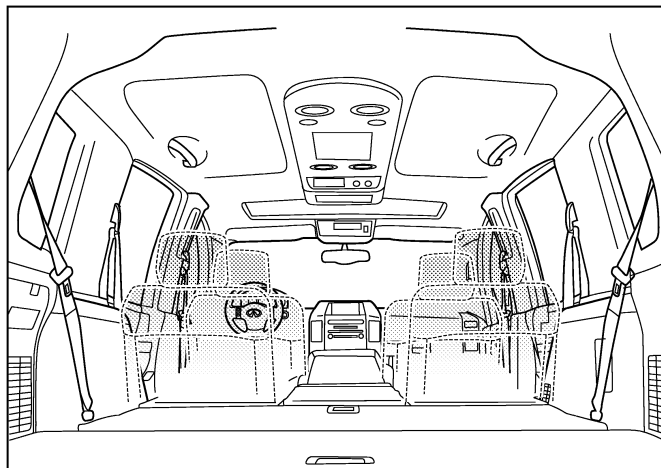
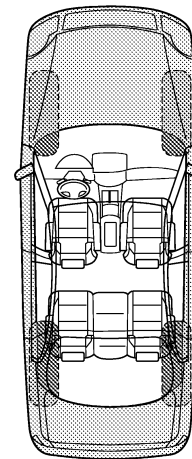
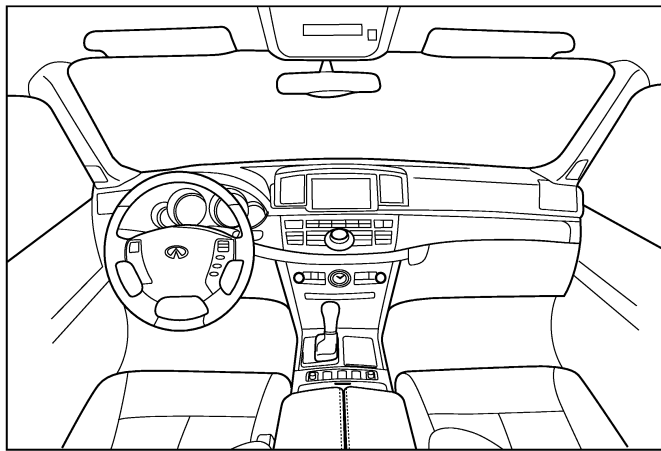
SQUEAK & RATTLE DIAGNOSTIC WORKSHEET

Dear Infiniti Customer:

We are concerned about your satisfaction with your Infiniti vehicle. Repairing a squeak or rattle sometimes can be very difficult. To help us fix your Infiniti right the first time, please take a moment to note the area of the vehicle where the squeak or rattle occurs and under what conditions. You may be asked to take a test drive with a service consultant or technician to ensure we confirm the noise you are hearing.

I. WHERE DOES THE NOISE COME FROM? (circle the area of the vehicle)

The illustrations are for reference only, and may not reflect the actual configuration of your vehicle.



Continue to page 2 of the worksheet and briefly describe the location of the noise or rattle. In addition, please indicate the conditions which are present when the noise occurs.

PIIB8741E

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

General Precautions

INFOID:000000003890781

WARNING:

When replacing fuel line parts, be sure to observe the following.

- Put a “CAUTION: FLAMMABLE” sign in the workshop.
- Be sure to work in a well ventilated area and furnish workshop with a CO2 fire extinguisher.
- Never smoke while servicing fuel system. Keep open flames and sparks away from the work area.

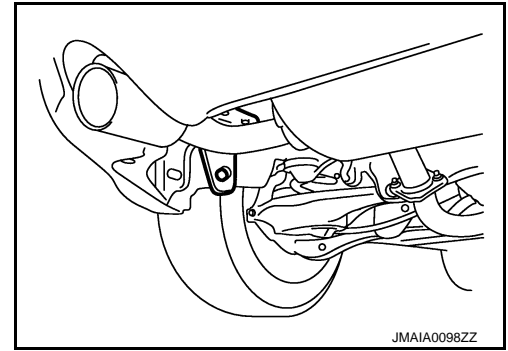
CAUTION:

- Use gasoline required by the regulations for octane number. Refer to [GI-25, "Fuel"](#).
- Before removing fuel line parts, perform out the following procedures:
 - Put drained fuel in an explosion-proof container and put the lid on securely. Keep the container in safe area.
 - Release fuel pressure from the fuel lines. Refer to [EC-567, "Inspection"](#) (VO35HR) or [EC-1228, "Inspection"](#) (VK50VE).
 - Disconnect the battery cable from the negative terminal.
- Always replace O-rings with new ones.
- Never kink or twist tubes when they are being installed.
- Never tighten hose clamps excessively to avoid damaging hoses.
- After installing tubes, check there is no fuel leakage at connections in the following steps.
 - Apply fuel pressure to fuel lines with turning ignition switch “ON” (with engine stopped). Then check for fuel leakage at connections.
 - Start engine and rev it up and check for fuel leakage at connections.
- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the “MIL” may come on.
- For servicing “Evaporative Emission System” parts, refer to [EC-84, "System Diagram"](#) (VQ35HR) or [EC-654, "System Diagram"](#) (VK50VE).
- For servicing “On Board Refueling Vapor Recovery (ORVR)” parts, refer to [EC-489, "Description"](#) (VQ35HR) or [EC-1116, "Description"](#) (VK50VE).

TOW TRUCK TOWING

< PRECAUTION >

- Rear hook is not available.



AUTOMATIC TRANSMISSION

To tow a vehicle equipped with an automatic transmission, an appropriate vehicle dolly **MUST** be placed under the towed vehicle's drive wheels. **Always** follow the dolly manufacturer's recommendations when using their product.

If the vehicle is stuck in sand, snow, mud, etc., use the following procedure:

1. Turn off the Vehicle Dynamic Control System.
2. Make sure the area in front and behind the vehicle is clear of obstructions.
3. Turn the steering wheel right and left to clear an area around the front tires.
4. Slowly rock the vehicle forward and backward.
Shift back and forth between R (reverse) and D (drive).
Apply the accelerator as little as possible to maintain the rocking motion.
Release the accelerator pedal before shifting between R and D.
Do not spin the tires above 35 mph (55 km/h).
5. If the vehicle can not be freed after a few tries, contact a professional towing service to remove the vehicle.

REFRIGERANT

[VQ35HR]

< PERIODIC MAINTENANCE >

Evacuate air for approximately 10 minutes or more to remove any remaining refrigerant integrated to the compressor oil, etc.

>> GO TO 8.

8. REPLACE OR REPAIR REFRIGERANT SYSTEM PARTS

1. Replace or repair the malfunctioning part.

CAUTION:

- Always use a new O-ring for the parts that the cooler system was removed.
- Apply compressor oil to the O-rings of piping when installing the piping. However, never apply it to the threads.

2. Adjust the compressor oil amount according to the replaced parts. Refer to [HA-29. "Maintenance of Lubricant Quantity"](#).

>> GO TO 9.

9. EVACUATE AIR FROM THE REFRIGERANT SYSTEM

Evacuate air from the refrigerant system for approximately 25 minutes or more.

CAUTION:

Evacuate air for at least approximately 15 minutes or more if the parts are replaced.

>> GO TO 10.

10. CHECK AIRTIGHTNESS OF REFRIGERANT SYSTEM

Check the airtightness of the refrigerant system for approximately 25 minutes or more.

CAUTION:

Check the airtightness for at least approximately 15 minutes or more if the parts are replaced.

Does the pressure decrease?

YES >> GO TO 11.

NO >> GO TO 8.

11. CHECK REFRIGERANT LEAKAGE

1. Connect refrigerant recovery/recycling recharging equipment or manifold gauge set (SST: J-39183).

2. Charge the refrigerant of approximately 200 g (7.05 oz) to the refrigerant system.

3. Check for refrigerant leakage. Refer to [HA-34. "Inspection"](#).

NOTE:

When using electrical leak detector (SST: J-41995). Refer to [HA-35. "Inspection"](#).

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace parts according to the inspection results.

12. CHARGE REFRIGERANT

1. Connect recovery/recycling recharging equipment or manifold gauge set (SST: J-39183).

2. Evacuate air again.

3. Charge the specified amount of refrigerant to the refrigerant system.

>> GO TO 13.

13. CHECK REFRIGERANT LEAKAGE

Check for refrigerant leakage again. Refer to [HA-34. "Inspection"](#).

NOTE:

When using electrical leak detector (SST: J-41995). Refer to [HA-35. "Inspection"](#).

Is the inspection result normal?

YES >> GO TO 14.

NO >> GO TO 6.

14. CHECK OPERATION

Check the A/C system for normal operation. Refer to [HA-32. "Inspection"](#).

HEATER & COOLING UNIT ASSEMBLY

[VK50VE]

< REMOVAL AND INSTALLATION >

- | | | |
|---------------------------|--|---|
| 49. Foot door (right) | 50. J-nut | 51. Max. cool door lever |
| 52. Defroster door lever | 53. Defroster door link | 54. Max. cool door link |
| 55. Intake sensor | 56. Intake sensor bracket | 57. Air mix door motor (passenger side) |
| 58. Air mix door adapter | 59. Heater & cooling unit case (right) | 60. Max. cool door (right) |
| 61. Max. cool door (left) | 62. Air mix door (Slide door) | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

HEATER & COOLING UNIT ASSEMBLY

HEATER & COOLING UNIT ASSEMBLY : Removal and Installation

INFOID:000000004114586

REMOVAL

1. Set the temperature at 18.0°C (60°F).
2. Disconnect the battery cable from the negative terminal.
3. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
4. Drain engine coolant from cooling system. Refer to [CO-33, "Draining"](#).
5. Remove cowl top cover. Refer to [EXT-22, "Exploded View"](#).
6. Remove engine cover. Refer to [EM-174, "Exploded View"](#).
7. Disconnect one-touch joint between low-pressure pipe 1 (1) and low-pressure pipe 2 (2) with disconnecter (SST: 9253089916) (A).

CAUTION:

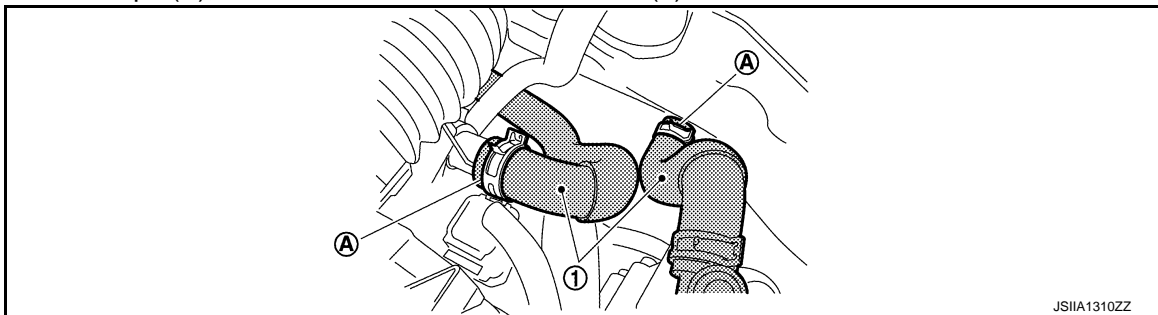
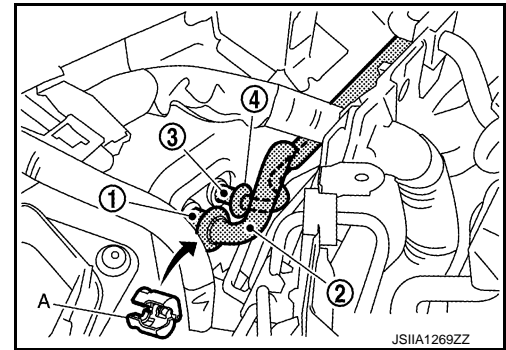
Cap or wrap the joint of the A/C piping with suitable material such as vinyl tape to avoid the entry of air.

8. Disconnect one-touch joint between high-pressure pipe 1 (4) and high-pressure pipe 2 (3) with disconnecter (SST: 9253089908).

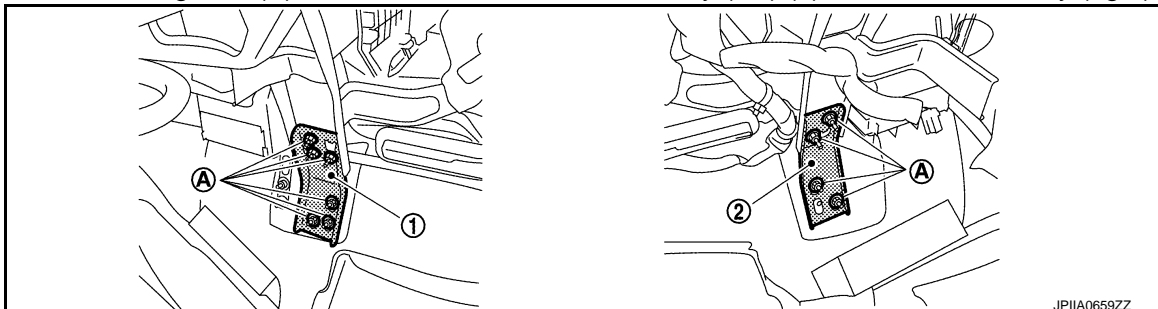
CAUTION:

Cap or wrap the joint of the A/C piping with suitable material such as vinyl tape to avoid the entry of air.

9. Remove clamps (A), and then disconnect heater hoses (1).



10. Remove instrument panel assembly. Refer to [IP-11, "Exploded View"](#).
11. Remove defroster nozzle and adaptor duct. Refer to [VTL-11, "Exploded View"](#).
12. Remove blower unit. Refer to [HA-114, "Exploded View"](#).
13. Remove mounting nuts (A), and then remove instrument stay (left) (1) and instrument stay (right) (2).



14. Disconnect drain hose from heater & cooling unit assembly.

INTAKE DOOR MOTOR

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

INTAKE DOOR MOTOR WITHOUT ACCS

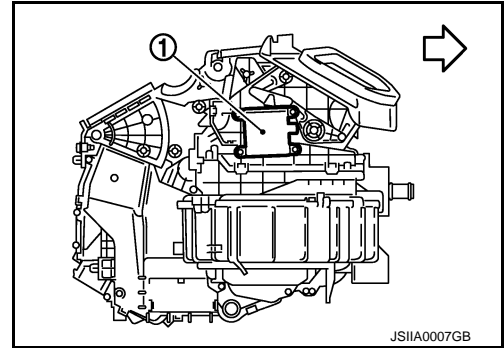
WITHOUT ACCS : Description

INFOID:000000003894117

COMPONENT DESCRIPTION

Intake Door Motor

The intake door motor (1) is attached to the blower unit. It rotates so that air is drawn from inlets set by the unified meter and A/C amp. Motor rotation is conveyed to a lever which activates the intake door.



←: Vehicle front

WITHOUT ACCS : Component Function Check

INFOID:000000003894118

1. CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Press intake switch.
2. REC indicator turns ON.
3. Listen for intake door position change (Slight change of blower sound can be heard.).
4. Press intake switch again.
5. FRE indicator turns ON.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to [HAC-77. "WITHOUT ACCS : Diagnosis Procedure"](#).

WITHOUT ACCS : Diagnosis Procedure

INFOID:000000003894119

1. PERFORM SELF-DIAGNOSIS

Perform self-diagnosis function. Refer to [HAC-56. "WITHOUT ACCS : Diagnosis Description"](#).

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 2.

2. CHECK POWER SUPPLY FOR INTAKE DOOR MOTOR

Check voltage between intake door motor harness connector and ground.

(+)		(-)		Voltage
Connector	Terminal	—		
M254	1	Ground		Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. CHECK SIGNAL FOR INTAKE DOOR MOTOR

Confirm A/C LAN signal between intake door motor harness connector and ground using an oscilloscope.

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HAC

SELF-DIAGNOSIS CANNOT BE PERFORMED

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

SELF-DIAGNOSIS CANNOT BE PERFORMED

Description

INFOID:000000003894161

Symptom: Self-diagnosis function does not operate normally.

Inspection procedure

INFOID:000000003894162

1. CHECK SELF-DIAGNOSIS FUNCTION

1. Turn ignition switch ON.
2. Set in self-diagnosis mode as per the following. Within 10 seconds after starting engine (ignition switch is turned ON.), press OFF switch for at least 5 seconds.

NOTE:

- If battery voltage drops below 12 V during diagnosis STEP-3, door motor speed becomes slower and as a result, the system may generate an error even when operation is normal. Start engine before performing this diagnosis to avoid this.
- Former STEP-1 (indicators and display screen are checked) does not exist in this self-diagnosis function.
- OFF switch may not be recognized according to the timing of pressing it. Operate OFF switch after the intake switch indicators are turned ON.

Does self-diagnosis function operate?

- YES >> INSPECTION END
NO >> GO TO 2.

2. CHECK POWER SUPPLY AND GROUND CIRCUIT OF UNIFIED METER AND A/C AMP.

Check power supply and ground circuit of unified meter and A/C amp. Refer to [HAC-69. "UNIFIED METER AND A/C AMP. : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> Replace unified meter and A/C amp.
NO >> Repair or replace malfunctioning part(s).

PUDDLE LAMP CIRCUIT

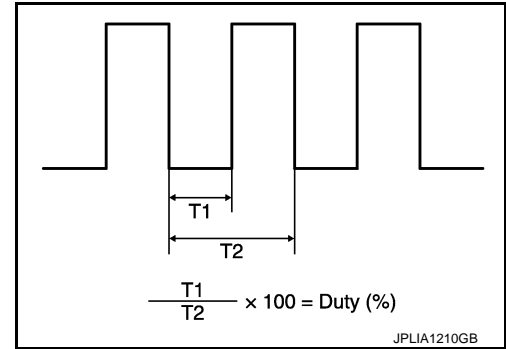
< DTC/CIRCUIT DIAGNOSIS >

PUDDLE LAMP CIRCUIT

Description

INFOID:000000003943192

Controls the lamp (ground side) by PWM signal (duty).



Component Function Check

INFOID:000000003943193

1. CHECK PUDDLE LAMP CONTROL FUNCTION

CONSULT-III ACTIVE TEST

1. Turn ignition switch ON.
2. Select "PUDDLE LAMP" of TOTAL ILLUM C/U active test item.
3. While operating the test items, check puddle lamps operation.

Test item		Operation	
PUDDLE LAMP	On	Puddle lamps	ON
	Off		OFF

Are the puddle lamps turned ON/OFF?

- YES >> Puddle lamp circuit is normal.
 NO >> Refer to [INL-47, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003943194

1. CHECK PUDDLE LAMP CONTROL OUTPUT

CONSULT-III ACTIVE TEST

1. Turn ignition switch ON.
2. Select "PUDDLE LAMP" of TOTAL ILLUM C/U active test item.
3. While operating the test items, check voltage between total illumination control unit harness connector and ground.

Driver side

Total illumination control unit		Ground	Test item	Voltage (Approx.)
Connector	Terminal		PUDDLE LAMP	
M129	40	Ground	On	0 V
			Off	12 V

Passenger side

Total illumination control unit		Ground	Test item	Voltage (Approx.)
Connector	Terminal		PUDDLE LAMP	
M129	39	Ground	On	0 V
			Off	12 V

Is the measurement value normal?

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INL

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:000000004068682

VALUES ON THE DIAGNOSIS TOOL


CONSULT-III MONITOR ITEM


Monitor Item	Condition	Value/Status
FR WIPER HI	Other than front wiper switch HI	Off
	Front wiper switch HI	On
FR WIPER LOW	Other than front wiper switch LO	Off
	Front wiper switch LO	On
FR WASHER SW	Front washer switch OFF	Off
	Front washer switch ON	On
FR WIPER INT	Other than front wiper switch INT	Off
	Front wiper switch INT	On
FR WIPER STOP	Front wiper is not in STOP position	Off
	Front wiper is in STOP position	On
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	Wiper intermittent dial position
RR WIPER ON	Other than rear wiper switch ON	Off
	Rear wiper switch ON	On
RR WIPER INT	Other than rear wiper switch INT	Off
	Rear wiper switch INT	On
RR WASHER SW	Rear washer switch OFF	Off
	Rear washer switch ON	On
RR WIPER STOP	Rear wiper is in STOP position	Off
	Rear wiper is not in STOP position	On
TURN SIGNAL R	Other than turn signal switch RH	Off
	Turn signal switch RH	On
TURN SIGNAL L	Other than turn signal switch LH	Off
	Turn signal switch LH	On
TAIL LAMP SW	Other than lighting switch 1ST and 2ND	Off
	Lighting switch 1ST or 2ND	On
HI BEAM SW	Other than lighting switch HI	Off
	Lighting switch HI	On
HEAD LAMP SW 1	Other than lighting switch 2ND	Off
	Lighting switch 2ND	On
HEAD LAMP SW 2	Other than lighting switch 2ND	Off
	Lighting switch 2ND	On
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
AUTO LIGHT SW	Other than lighting switch AUTO	Off
	Lighting switch AUTO	On
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
RR FOG SW	NOTE: The item is indicated, but not monitored.	Off

LUGGAGE FLOOR TRIM

< REMOVAL AND INSTALLATION >

- | | | |
|----------------------------|---|-------------------------------|
| 10. Luggage room lamp | 11. Luggage floor finisher front | 12. Luggage floor spacer (LH) |
| 13. Luggage rear plate cap | 14. Luggage rear plate | 15. Luggage floor spacer (RH) |
| 16. Tonneau cover assembly | 17. Tonneau cover (Back door trim side) | 18. Luggage side finisher lid |
| 19. Bose woofer | | |

 : Clip

 : Pawl

 : Metal clip


Removal and Installation

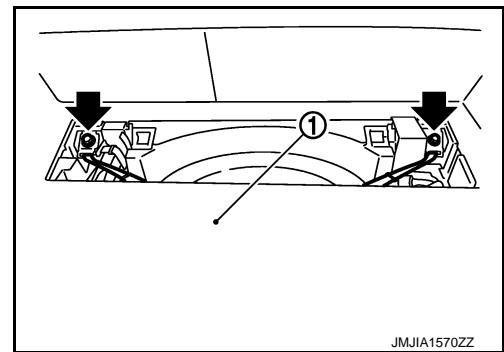
INFOID:000000003854283

REMOVAL

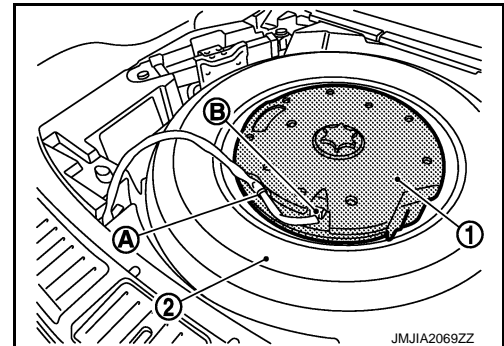
LUGGAGE REAR PLATE

1. Fully open back door.
2. Remove tonneau cover assembly.
3. Open and pull luggage finisher center (1) backwards, till the bolts are visible.
4. Remove both bolts and then remove luggage finisher center.


 : Bolt




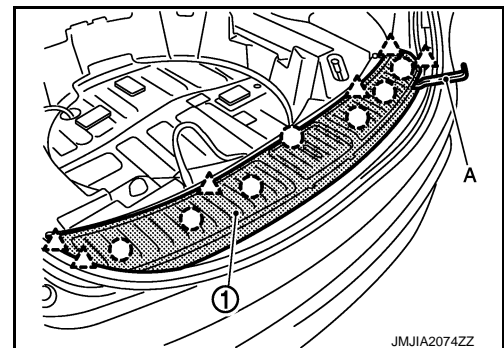
5. Remove the clip (A), disconnect the woofer harness connector (B), and then remove the woofer (1) and spire tire (2). Refer to [AV-1055, "Removal and Installation"](#).



6. Remove the rear seat assembly. Refer to [SE-83, "Removal and Installation"](#).
7. Remove the luggage floor finisher front (LH/RH).
8. Remove back door weather-strip.
9. Disengage the rear plate (1) fixing clips with a remover tool (A) then remove it.
10. Hold both sides of luggage rear plate, pull upwards to remove.

 : Clip

 : Pawl



LUGGAGE FLOOR SPACER

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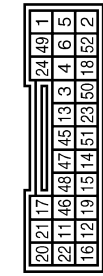
CAN COMMUNICATION SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

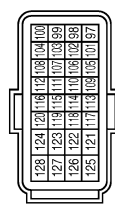
CAN SYSTEM (2WD MODELS OR AWD MODELS WITHOUT AFS OR ICC)

Connector No.	M147
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Type	TK28FY-EK-SC



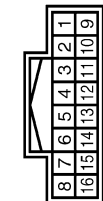
Terminal No.	Color of Wire	Signal Name [Specification]
21	L	CAN-H
46	P	CAN-L

Connector No.	M160
Connector Name	ECM (WITH V6 ENGINE)
Connector Type	RH2JFGY-RZ8-R-LH-Z



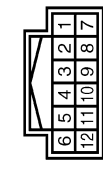
Terminal No.	Color of Wire	Signal Name [Specification]
101	P	VEHCAN-L
105	L	VEHCAN-H

Connector No.	R7
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
1	L	-
2	P	-

Connector No.	R8
Connector Name	LANE CAMERA UNIT
Connector Type	TH12FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
5	P	CAN-L
10	L	CAN-H

A-BAG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000003903967

1. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-5, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace the main harness.

NO >> Replace parts whose air bag system has a malfunction.

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ECM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000003904375

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 ECM 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 ECM.
 2. Check the resistance between the ECM harness connector terminals.
- VQ engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M107	114	113	Approx. 108 – 132

- VK engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M160	105	101	Approx. 108 – 132

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the ECM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- VQ engine models: [EC-144, "Diagnosis Procedure"](#)
- VK engine models: [EC-739, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- VQ engine models: [EC-23, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- VK engine models: [EC-580, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT \(ECM\) : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

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

ECM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000003904650

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 ECM 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 ECM.
 2. Check the resistance between the ECM harness connector terminals.
- VQ engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M107	114	113	Approx. 108 – 132

- VK engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M160	105	101	Approx. 108 – 132

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the ECM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- VQ engine models: [EC-144, "Diagnosis Procedure"](#)
- VK engine models: [EC-739, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- VQ engine models: [EC-23, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - VK engine models: [EC-580, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT \(ECM\) : Special Repair Requirement"](#)

- YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000003905139

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 ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E41	35	14	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-101. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-136. "Exploded View"](#).
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

PERIODIC MAINTENANCE

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

Introduction of Periodic Maintenance

INFOID:000000004001294

Two different maintenance schedules are provided, and should be used, depending upon the conditions in which the vehicle is mainly operated. **After 60,000 miles (96,000 km) or 48 months, continue the periodic maintenance at the same mileage/time intervals.**

Schedule 1	Follow Periodic Maintenance Schedule 1 if the driving habits frequently include one or more of the following driving conditions: <ul style="list-style-type: none"> • Repeated short trips of less than 5 miles (8 km). • Repeated short trips of less than 10 miles (16 km) with outside temperatures remaining below freezing. • Operating in hot weather in stop-and-go "rush hour" traffic. • Extensive idling and/or low speed driving for long distances, such as police, taxi or door-to-door delivery use. • Driving in dusty conditions. • Driving on rough, muddy, or salt spread roads. • Towing a trailer, using a camper or a car-top carrier. 	Emission Control System Maintenance	MA-7
		Chassis and Body Maintenance	
Schedule 2	Follow Periodic Maintenance Schedule 2 if none of driving conditions shown in Schedule 1 apply to the driving habits.	Emission Control System Maintenance	MA-9
		Chassis and Body Maintenance	

Schedule 1

INFOID:000000004001295

EMISSION CONTROL SYSTEM

Abbreviations: R = Replace. I = Inspect. Correct or replace if necessary. []: At the mileage intervals only

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								Reference Section - Page or - Content Title
Perform at number of miles, kilometers or months, whichever comes first.	Miles x 1,000 (km x 1,000) Months	3.75 (6) 3	7.50 (12) 6	11.25 (18) 9	15 (24) 12	18.75 (30) 15	22.5 (36) 18	26.25 (42) 21	30 (48) 24	
Drive belts	NOTE (1)									MA-14 MA-22
Air cleaner filter	NOTE (2)								[R]	MA-18 MA-26
EVAP vapor lines									I*	MA-21 MA-29
Fuel lines									I*	MA-17 MA-26
Fuel filter	NOTE (3)									—
Engine coolant	NOTE (4)									MA-14 MA-23
Engine oil		R	R	R	R	R	R	R	R	MA-18 MA-26
Engine oil filter (Use genuine NISSAN engine oil filter or equivalent.)		R	R	R	R	R	R	R	R	MA-19 MA-27
Spark plugs (Iridium-tipped type)	NOTE (5)	Replace every 105,000 miles (169,000 km).								MA-20 MA-28
Intake & exhaust valve clearance*	NOTE (6)									EM-20 EM-169

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AUTOMATIC DRIVE POSITIONER CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

[WITH ADP]

Terminal No.		Wire color	Description		Condition		Voltage (V) (Approx.)
+	-		Signal name	Input/ Output			
24	Ground	R	Set switch signal	Input	Set switch	Push	0
						Other than above	5
25	Ground	SB	Memory switch 2 signal	Input	Memory switch 2	Push	0
						Other than above	5
26	Ground	Y	UART communication (RX)	Input	Ignition switch ON		
27	Ground	G	Telescopic switch backward signal	Input	Telescopic switch	Operate (backward)	0
						Other than above	5
30	Ground	R	Door mirror motor (RH) down output signal	Output	Door mirror (RH)	Operate (down)	Battery voltage
						Other than above	0
			Door mirror motor (RH) right output signal			Operate (right)	Battery voltage
						Other than above	0
31	Ground	L	Door mirror motor (LH) up output signal	Output	Door mirror (LH)	Operate (up)	Battery voltage
						Other than above	0
32	Ground	L	Door mirror motor (LH) left output signal	Output	Door mirror (LH)	Operate (left)	Battery voltage
						Other than above	0
33	Ground	W	Sensor power supply	Input	—	5	
34	Ground	R	Power source (Fuse)	Input	—	Battery voltage	
35	Ground	L	Tilt motor up output signal	Output	Steering tilt	Operate (up)	Battery voltage
						Other than above	0
36	Ground	GR	Telescopic motor forward output signal	Output	Steering telescopic	Operate (forward)	Battery voltage
						Other than above	0
39	Ground	W	Power source (C/B)	—	—	Battery voltage	
40	Ground	B	Ground	—	—	0	
41	Ground	Y	Sensor ground	—	—	0	

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METER SYSTEM

< SYSTEM DESCRIPTION >

- | | | |
|--|---|-------------------------------|
| 1. Fuel level sensor unit and fuel pump (main) | 2. BCM | 3. IPDM E/R |
| 4. ECM : EC-31, "Component Parts Location" (VQ engine models)
ECM : EC-590, "Component Parts Location" (VK engine models) | 5. Oil pressure switch (VQ engine models) | 6. Ambient sensor |
| 7. Oil pressure switch (VK engine models) | 8. ABS actuator and electric unit (control unit) | 9. Unified meter and A/C amp. |
| 10. Combination meter | 11. Fuel level sensor unit (sub) | |
| A. Rear seat (bottom) | B. Dash side finisher (passenger side) | C. Hoodledge cover (RH) |
| D. 2WD [oil pan (upper) RH side] | E. AWD [oil filter bracket part (VQ engine models)] | F. Condenser (front) |
| G. AWD [oil filter bracket part (VK engine models)] | H. Hoodledge cover (LH) | I. Behind cluster lid C |

METER EFFECT FUNCTION : Component Description

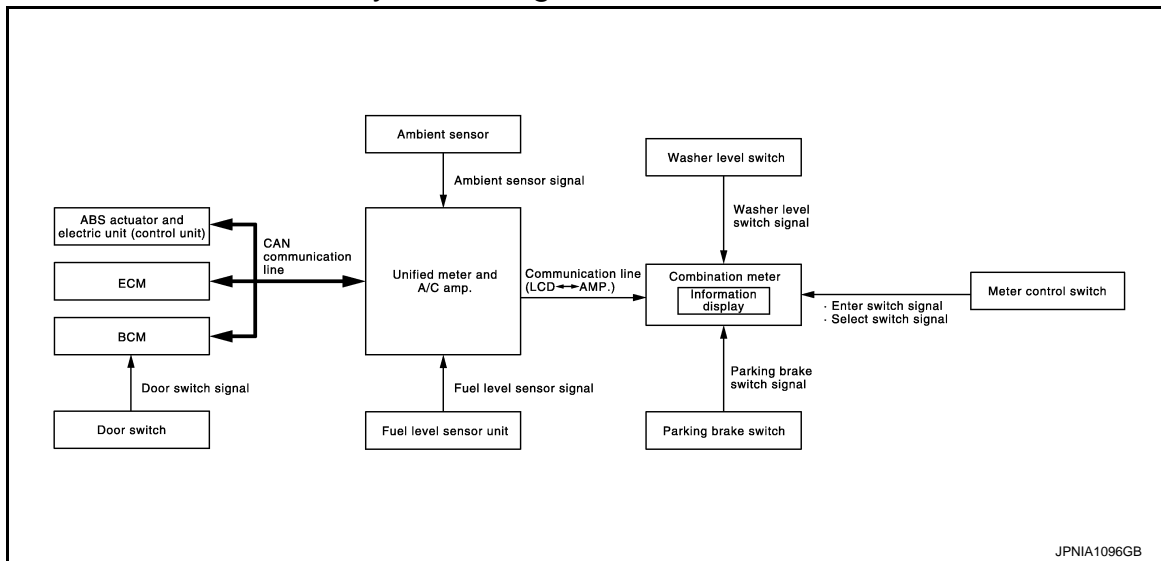
INFOID:000000003887242

Unit	Description
Combination meter	Receives a meter effect signal through the unified meter and A/C amp. and performs meter effect.
Unified meter and A/C amp.	Receives signals from each unit with the CAN communication and transmits a meter effect signal to the combination meter through the communication line.
ECM	Transmits an engine speed signal and an engine status signal to the unified meter and A/C amp. with the CAN communication.
BCM	Transmits a starter relay status signal to the unified meter and A/C amp. with the CAN communication.
ABS actuator and electric unit (control unit)	Transmits a vehicle speed signal to the unified meter and A/C amp. with the CAN communication.
TCM	Transmits a shift position signal to the unified meter and A/C amp. with the CAN communication.

INFORMATION DISPLAY

INFORMATION DISPLAY : System Diagram

INFOID:000000003887078



INFORMATION DISPLAY : System Description

INFOID:000000003887079

DESCRIPTION

- The combination meter retrieves the information required for controlling the operations of the information display from the communication signals from the unified meter and A/C amp., etc.

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

Monitor Item	Condition	Value/Status
REQ SW -DR	Driver door request switch is not pressed	Off
	Driver door request switch is pressed	On
REQ SW -AS	Passenger door request switch is not pressed	Off
	Passenger door request switch is pressed	On
REQ SW -RR	NOTE: The item is indicated, but not monitored.	Off
REQ SW -RL	NOTE: The item is indicated, but not monitored.	Off
REQ SW -BD/TR	Back door request switch is not pressed	Off
	Back door request switch is pressed	On
PUSH SW	Push-button ignition switch (push switch) is not pressed	Off
	Push-button ignition switch (push switch) is pressed	On
IGN RLY2 -F/B	Ignition switch in OFF or ACC position	Off
	Ignition switch in ON position	On
CLUCH SW	NOTE: The item is indicated, but not monitored.	Off
BRAKE SW 1	The brake pedal is depressed when No. 7 fuse is blown	Off
	The brake pedal is not depressed when No. 7 fuse is blown, or No. 7 fuse is normal	On
BRAKE SW 2	The brake pedal is not depressed	Off
	The brake pedal is depressed	On
DETE/CANCL SW	Selector lever in P position	Off
	Selector lever in any position other than P	On
SFT PN/N SW	Selector lever in any position other than P and N	Off
	Selector lever in P or N position	On
S/L -LOCK	Steering is unlocked	Off
	Steering is locked	On
S/L -UNLOCK	Steering is locked	Off
	Steering is unlocked	On
S/L RELAY-F/B	Ignition switch in OFF or ACC position	Off
	Ignition switch in ON position	On
UNLK SEN -DR	Driver door is unlocked	Off
	Driver door is locked	On
PUSH SW -IPDM	Push-button ignition switch (push-switch) is not pressed	Off
	Push-button ignition switch (push-switch) is pressed	On
IGN RLY1 -F/B	Ignition switch in OFF or ACC position	Off
	Ignition switch in ON position	On
DETE SW -IPDM	Selector lever in any position other than P	Off
	Selector lever in P position	On
SFT PN -IPDM	Selector lever in any position other than P and N	Off
	Selector lever in P or N position	On
SFT P -MET	Selector lever in any position other than P	Off
	Selector lever in P position	On
SFT N -MET	Selector lever in any position other than N	Off
	Selector lever in N position	On

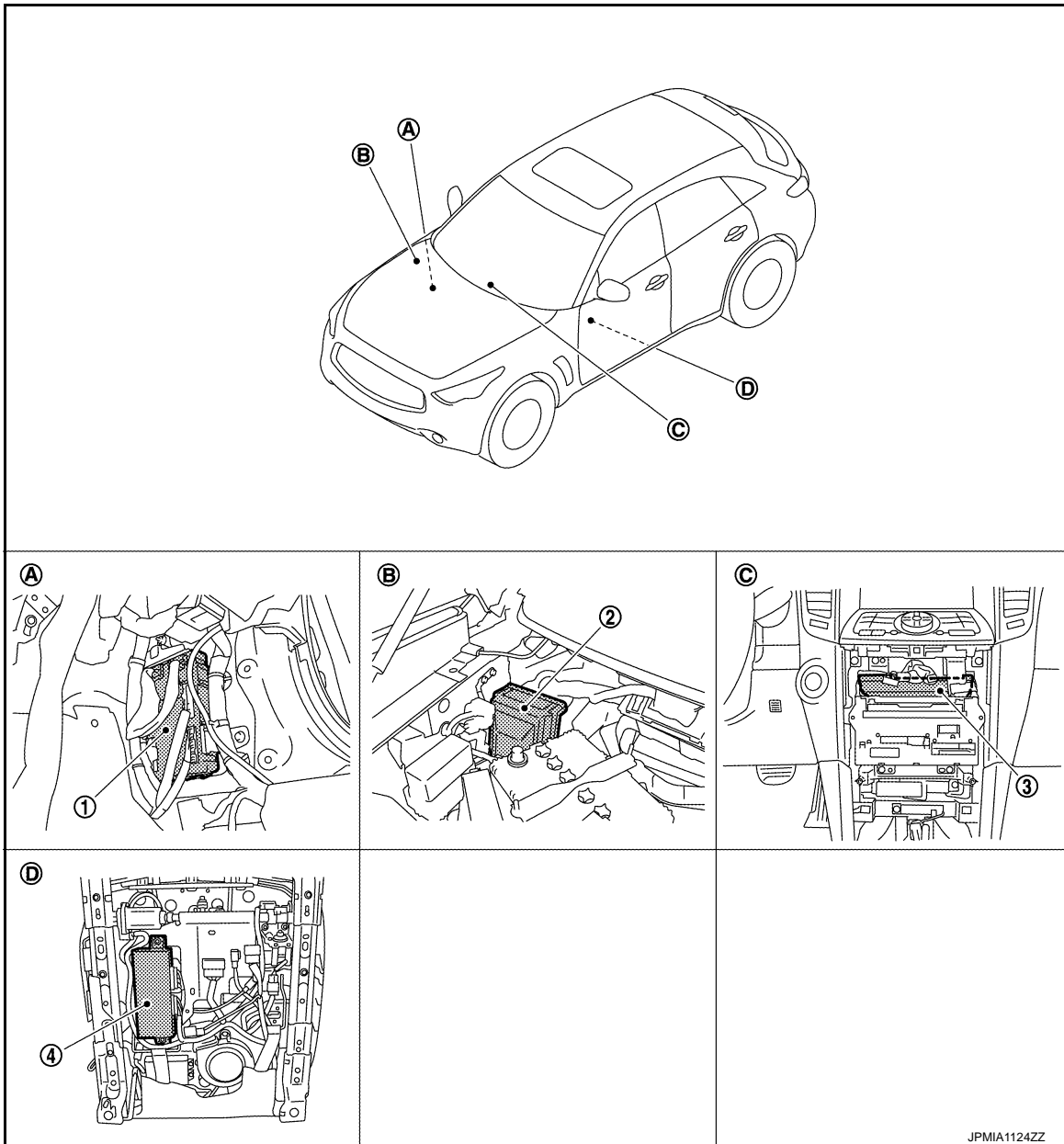
POWER CONSUMPTION CONTROL SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R]

Component Parts Location

INFOID:000000003884999



1. BCM

4. Driver seat control unit

A. Dash side lower (passenger side)

D. Backside of the seat cushion (driver seat)

2. IPDM E/R

B. Engine room dash panel (RH)

3. Unified meter and A/C amp.

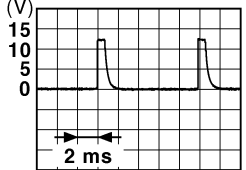
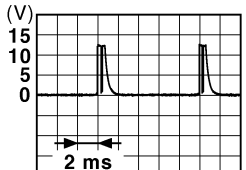

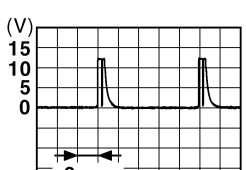

C. Behind cluster lid C

JPMIA1124ZZ

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

[POWER DISTRIBUTION SYSTEM]

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
108 (R)	Ground	Combination switch INPUT 4	Input	Combination switch	All switches OFF (Wiper intermittent dial 4)	 1.4 V
					Lighting switch AUTO (Wiper intermittent dial 4)	 1.3 V
					Lighting switch 1ST (Wiper intermittent dial 4)	 1.3 V
					Rear wiper switch INT (Wiper intermittent dial 4)	 1.3 V
					Any of the conditions below with all switches OFF	 1.3 V

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[FRONT & REAR WINDOW ANTI-PINCH]

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000003906108

DETAILED FLOW

1.OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain as much malfunction information (conditions and environment when the malfunction occurred) as possible when the customer brings the vehicle in.

>> GO TO 2.

2.REPRODUCE THE MALFUNCTION INFORMATION

Check the malfunction on the vehicle that the customer describes.
Inspect the relation of the symptoms and the condition when the symptoms occur.

>> GO TO 3.

3.IDENTIFY THE MALFUNCTIONING SYSTEM WITH "SYMPTOM DIAGNOSIS"

Use "Symptom diagnosis" from the symptom inspection result in step 2. Then identify where to start the diagnosis based on possible causes and symptoms.

>> GO TO 4.

4.IDENTIFY MALFUNCTIONING PARTS WITH "COMPONENT DIAGNOSIS"

Perform the diagnosis with "Component diagnosis" of the applicable system.

>> GO TO 5.

5.REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 6.

6.FINAL CHECK

Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 2.

Is the malfunctioning part repaired or replaced?

YES >> Trouble diagnosis is completed.

NO >> GO TO 3.

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FRONT POWER WINDOW SWITCH

< ECU DIAGNOSIS INFORMATION >

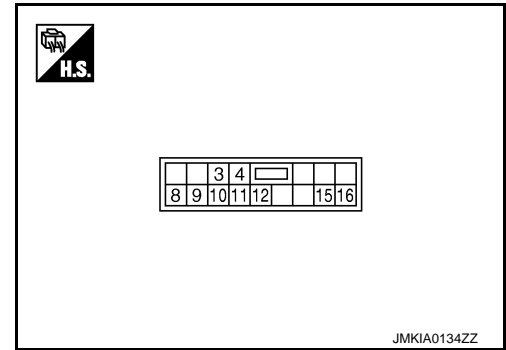
[FRONT & REAR WINDOW ANTI-PINCH]

FRONT POWER WINDOW SWITCH

Reference Value

INFOID:000000003906173

TERMINAL LAYOUT



PHYSICAL VALUES

FRONT POWER WINDOW SWITCH

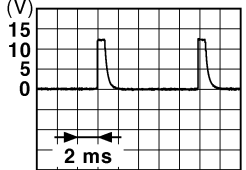
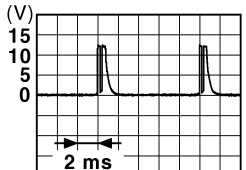
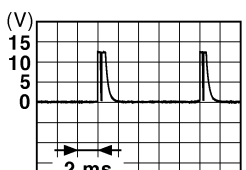
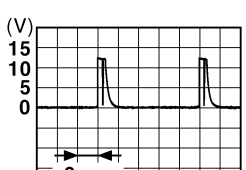
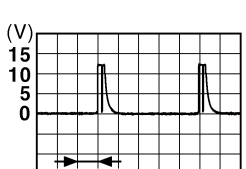
Terminal No. (wire color)		Description		Condition	Voltage [V] (Approx.)
+	-	Signal name	Input/ Output		
3 (LG)	Ground	Encoder ground	—	—	0
4 (W)	Ground	Encoder power supply	Output	When ignition switch ON or power window timer operates	Battery voltage
8 (L)	Ground	Power window motor UP signal	Output	When power window motor is operated UP	Battery voltage
9 (G)	Ground	Power window motor DOWN signal	Output	When power window motor is operated DOWN	Battery voltage
10 (Y)	Ground	Battery power supply	Input	—	Battery voltage
11 (B)	Ground	Ground	—	—	0
12 (P)	Ground	Encoder pulse signal 1	Input	When power window motor operates	

JMKIA0070GB

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

[FRONT WINDOW ANTI-PINCH]

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
		Signal name	Input/ Output			
+	-					
88 (V)	Ground	Combination switch INPUT 3	Input	Combination switch	All switches OFF (Wiper intermittent dial 4)	 1.4 V
					Lighting switch HI (Wiper intermittent dial 4)	 1.3 V
					Lighting switch 2ND (Wiper intermittent dial 4)	 1.3 V
					Rear washer switch ON (Wiper intermittent dial 4)	 1.3 V
					Any of the conditions below with all switches OFF <ul style="list-style-type: none"> • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3 	 1.3 V
89 (SB)	Ground	Push-button ignition switch (Push switch)	Input	Push-button igni- tion switch (Push switch)	Pressed Not pressed	0 V 12 V
90 (P)	Ground	CAN-L	Input/ Output	—	—	—
91 (L)	Ground	CAN-H	Input/ Output	—	—	—

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PWC

SECTION **RF**
ROOF

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PREPARATION

< PREPARATION >

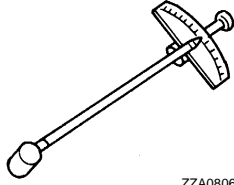
PREPARATION

PREPARATION

Special Service Tool

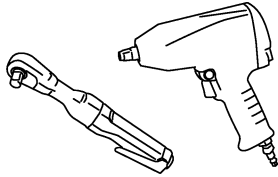
INFOID:000000003858859

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST3127S000 (J-25765-A) Preload gauge  ZZA0806D	Measuring rotating torque of ball joint

Commercial Service Tool

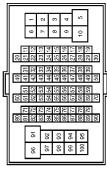



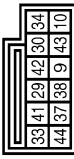

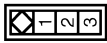



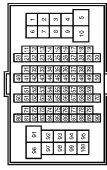

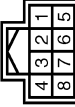

INFOID:000000003858860

Tool name	Description
Power tool  PBIC0190E	Loosening bolts and nuts

SEAT BELT WARNING SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

SEAT BELT WARNING SYSTEM

Connector No. B1	WIRE TO WIRE TH80FW-GS16-TM4			Terminal No. 84	Color of Wire SB	Signal Name [Specification] -
Connector No. B55	WIRE TO WIRE NS10FW-CS			Terminal No. 60 61	Color of Wire B SB	Signal Name [Specification] -
Connector No. B15	AIR BAG DIAGNOSIS SENSOR UNIT TK12FY-2V-EX			Terminal No. 41	Color of Wire SB	Signal Name [Specification] LH BUCKLE SW INPUT
Connector No. B13	SEAT BELT BUCKLE SWITCH (DRIVER SIDE) (WITHOUT CLIMATE CONTROLLED SEAT) A03FW			Terminal No. 1 2	Color of Wire SB B	Signal Name [Specification] -
Connector No. B209	WIRE TO WIRE NS10FW-CS			Terminal No. 60 61	Color of Wire B LG	Signal Name [Specification] -
Connector No. B201	WIRE TO WIRE TH80FW-GS16-TM4			Terminal No. 80 81 82	Color of Wire O G Y	Signal Name [Specification] -
Connector No. B214	OCCUPANT DETECTION SYSTEM CONTROL UNIT TH80FW-NH			Terminal No. 2 4 5 7	Color of Wire G O B P	Signal Name [Specification] COMMUNICATION IGN GND K LINE

JCHWM0225GB

SEAT SWITCH INDICATOR DOES NOT OPERATE IN HEAT OR COOL POSITION

< SYMPTOM DIAGNOSIS >

SEAT SWITCH INDICATOR DOES NOT OPERATE IN HEAT OR COOL POSITION

Diagnosis Procedure

INFOID:000000003857651

1. CHECK CLIMATE CONTROLLED SEAT SWITCH INDICATOR

Check climate controlled seat indicator.

Refer to [SE-28, "Component Function Check"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

2. CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-35, "Intermittent Incident"](#).

NO >> GO TO 1.

B2192 ID DISCORD, IMMUECM

< DTC/CIRCUIT DIAGNOSIS >

[INTELLIGENT KEY SYSTEM]

NO >> GO TO 4.

4.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

>> INSPECTION END

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INTELLIGENT KEY SYSTEM/ENGINE START FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[INTELLIGENT KEY SYSTEM]

INTELLIGENT KEY SYSTEM / ENGINE START FUNCTION

Connector No.	M119
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	HS16FW-CS

4	5	6	7	8	9	10		
11	12	13	14	15	16	17	18	19



Terminal No.	Color of Wire	Signal Name [Specification]
11	R	BAT (FUSE)
13	B	GND
15	Y	ACC IND

Connector No.	M121
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH

11	12	13	14	15	16	17	18	19				
20	21	22	23	24	25	26	27	28	29	30	31	32



Terminal No.	Color of Wire	Signal Name [Specification]
34	SB	LUGGAGE ROOM ANT-
35	V	LUGGAGE ROOM ANT+
47	Y	IGN RELAY (PDM/E/R)/CONT
52	LG	STARTER RELAY SW
66	LG	BACK DOOR SW
68	BR	REAR RH DOOR SW
69	R	REAR LH DOOR SW

Connector No.	M122
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH

11	12	13	14	15	16	17	18	19				
20	21	22	23	24	25	26	27	28	29	30	31	32



Terminal No.	Color of Wire	Signal Name [Specification]
72	R	ROOM ANT2-
73	G	ROOM ANT2+
78	Y	ROOM ANT1-
79	BR	ROOM ANT1+
83	GR	KEYLESS ENTRY RECEIVER SIGNAL
89	SB	PUSH SW
90	P	CAN-L
91	L	CAN-H
93	V	ON IND
96	GR	A/T SHIFT SELECTOR POWER SUPPLY
97	L	S/L CONDITION 1

98	P	S/L CONDITION 2
99	R	SHIFT P
103	BR	KEYLESS ENTRY RECEIVER POWER SUPPLY
106	W	S/L UNIT POWER SUPPLY
111	GR	S/L UNIT COMM

Connector No.	M123
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH

11	12	13	14	15	16	17	18	19				
20	21	22	23	24	25	26	27	28	29	30	31	32



Connector No.	M131
Connector Name	INSIDE KEY ANTENNA (INSTRUMENT CENTER)
Connector Type	RK02MGY



Connector No.	M137
Connector Name	A/T SHIFT SELECTOR
Connector Type	TH12FW-NH

1	2	3	4	5	6
7	8	9	10	11	12



Connector No.	M146
Connector Name	INSIDE KEY ANTENNA (CONSOLE)
Connector Type	RK02FGY



Terminal No.	Color of Wire	Signal Name [Specification]
116	BR	STOP LAMP SW 1
118	P	STOP LAMP SW 2
124	LG	PASSENGER DOOR SW
134	GR	LOCK IND
137	B	RECEIVER/SENSOR GND
140	R	SHIFT N/P
141	G	SECURITY INDICATOR OUTPUT
150	GR	DRIVER DOOR SW

Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	
2	Y	

Terminal No.	Color of Wire	Signal Name [Specification]
10	GR	
11	R	

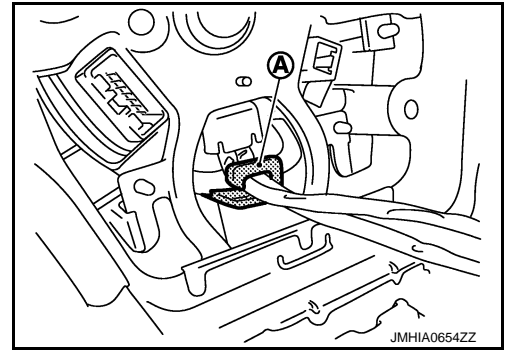
Terminal No.	Color of Wire	Signal Name [Specification]
1	G	
2	R	

JCKWM1464GB

DRIVER AIR BAG MODULE

< REMOVAL AND INSTALLATION >

- Fix the driver air bag module harness to the harness fixing hook (A).



- Never damage the harness while installing.
- Tighten the TORX bolts after completely adjusting the centers of fixing holes on the driver air bag module side and the steering wheel side. If the holes are misaligned, the bolt threads are damaged and the module is not installed securely.
- If malfunction is detected by the air bag warning lamp, after repair or replacement of the malfunctioning parts, reset the memory using self-diagnosis or CONSULT-III. Refer to [SRC-20, "CONSULT-III Function"](#).
- After the work is completed, check that no system malfunction is detected by air bag warning lamp.

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B1074, B1075, B1076, B1077, B1078, B1079 DIAGNOSIS SENSOR UNIT

< DTC/CIRCUIT DIAGNOSIS >

- YES >> GO TO 3.
- NO >> Replace wiring harness.

3. REPLACE AIR BAG DIAGNOSIS SENSOR UNIT

1. Replace air bag diagnosis sensor unit. Refer to [SR-19. "Exploded View"](#).
2. Perform DTC confirmation procedure. Refer to [SRC-67. "DTC Logic"](#).

Is DTC detected?

- YES >> GO TO 1.
- NO >> INSPECTION END

B1212, B1213, B1214 RH1 SAT-SENS

< DTC/CIRCUIT DIAGNOSIS >

B1212, B1213, B1214 RH1 SAT-SENS

Description

INFOID:000000003987815

Main "G" sensor generates signal voltage, when it detects deceleration beyond the specified level by vehicle side collision.

OPERATION

When air bag diagnosis sensor unit judges both signal voltage of the "G" sensor and the Safing algorithm to be that of collision which exceeds specified level, the driving circuit switches on and feeds the electric ignitor of both the front side air bag and side curtain air bag.

STRUCTURE

Integrated type of the "G" sensor element for side collision with output terminals for signal voltage.

INSTALLATION

RH satellite sensor is installed at the underside of center pillar with fixed nuts.

DTC Logic

INFOID:000000003987816

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B1212 B1213 B1214	RH1 SAT-SENS	RH satellite sensor is malfunctioning	<ul style="list-style-type: none">• Disconnection of wiring harness• Malfunction in RH satellite sensor• Malfunction in air bag diagnosis sensor unit

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAG RESULT

With CONSULT-III

1. Turn ignition switch ON.
2. Perform "AIR BAG" Self Diagnostic Result.

Without CONSULT-III

1. Turn ignition switch ON.
2. Check the air bag warning lamp status. Refer to [SRC-16. "Air Bag Warning Lamp Diagnosis"](#).

NOTE:

SRS does not enter diagnosis mode if no malfunction is detected in user mode.

Is malfunctioning part detected?

- YES >> Refer to [SRC-151, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003987817

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal and wait at least 3 minutes. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK HARNESS CONNECTOR

Check the harness connector.

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Replace harness connector.

2.CHECK WIRING HARNESS

Check the wiring harness externals.

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Replace wiring harness.

ENGINE SPEED SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT REAR ACTIVE STEER]

NO >> Repair or replace damaged parts.

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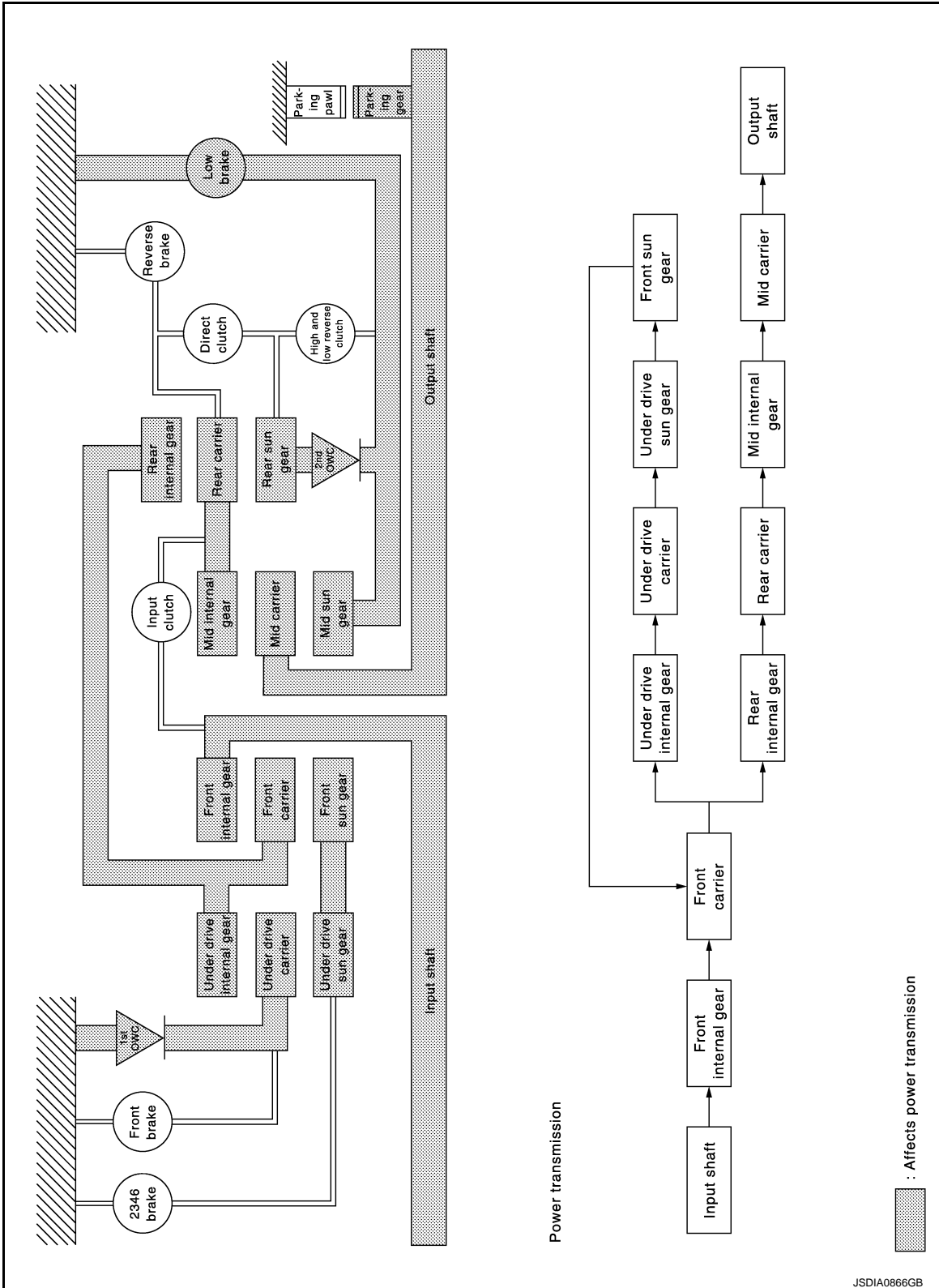
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SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- The 1st one-way clutch regulates counterclockwise rotation of the under drive carrier.
- The 2nd one-way clutch regulates counterclockwise rotation of the rear sun gear.
- The mid sun gear is fixed by the low brake.
- Each planetary gear enters the state described below.

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P2731 PRESSURE CONTROL SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P2731 PRESSURE CONTROL SOLENOID F

Description

INFOID:000000003838943

- The 2346 brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The 2346 brake solenoid valve controls the 2346 brake control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000003838944

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2731	Pressure Control Solenoid F	A DTC is set if the 2346 brake solenoid valve monitor value is 0.4 A or less when the 2346 brake solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• 2346 brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more
MANU MODE SW : ON
GEAR : 2nd
VHCL/S SE-A/T : 10 km/h (7 MPH) or more

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2731" detected?

- YES >> Go to [TM-132, "Diagnosis Procedure"](#).
NO >> Check intermittent incident. Refer to [GI-35, "Intermittent Incident"](#).

Diagnosis Procedure

INFOID:000000003838945

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

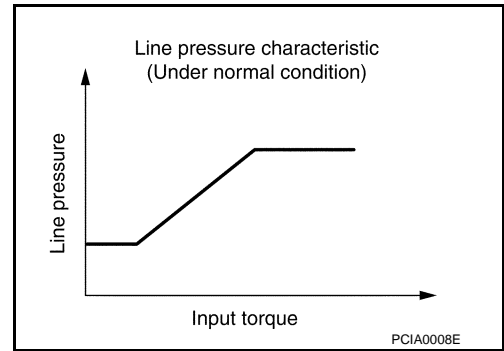
- YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).
NO >> Repair or replace damaged parts.

LINE PRESSURE CONTROL

[7AT: RE7R01B (VK50VE)]

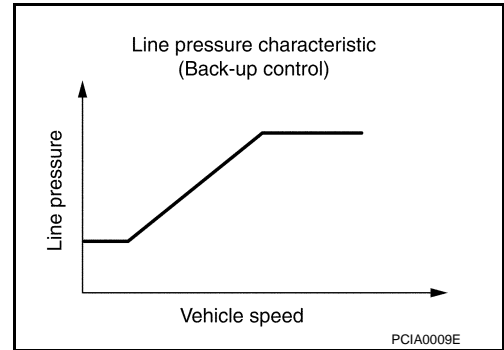
< SYSTEM DESCRIPTION >

Each clutch is adjusted to the necessary pressure to match the engine drive force.



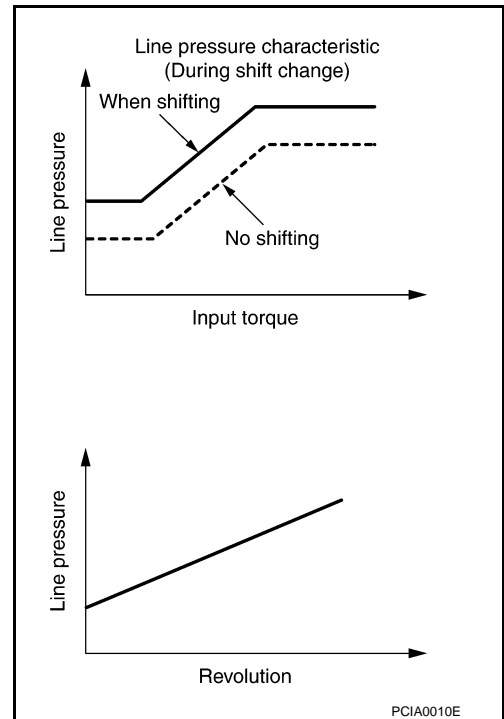
Back-up Control (Engine Brake)

When the select operation is performed during driving and the A/T is shifted down, the line pressure is set according to the vehicle speed.



During Shift Change

The necessary and adequate line pressure for shift change is set. For this reason, line pressure pattern setting corresponds to engine torque and gearshift selection. Also, line pressure characteristic corresponds to engine speed, during engine brake operation.



At Low Fluid Temperature

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P0745 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:000000004040713

The line pressure solenoid valve regulates the oil pump discharge pressure to suit the driving condition in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000004040714

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0745	Pressure Control Solenoid A	A DTC is set if the line pressure solenoid valve monitor value is 0.4 A or less when the line pressure solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Line pressure solenoid valve

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Wait for 5 seconds or more at idle speed in "N" position.
3. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0745" detected?

- YES >> Go to [TM-298, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040715

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
NO >> Repair or replace damaged parts.

FLUID COOLER SYSTEM

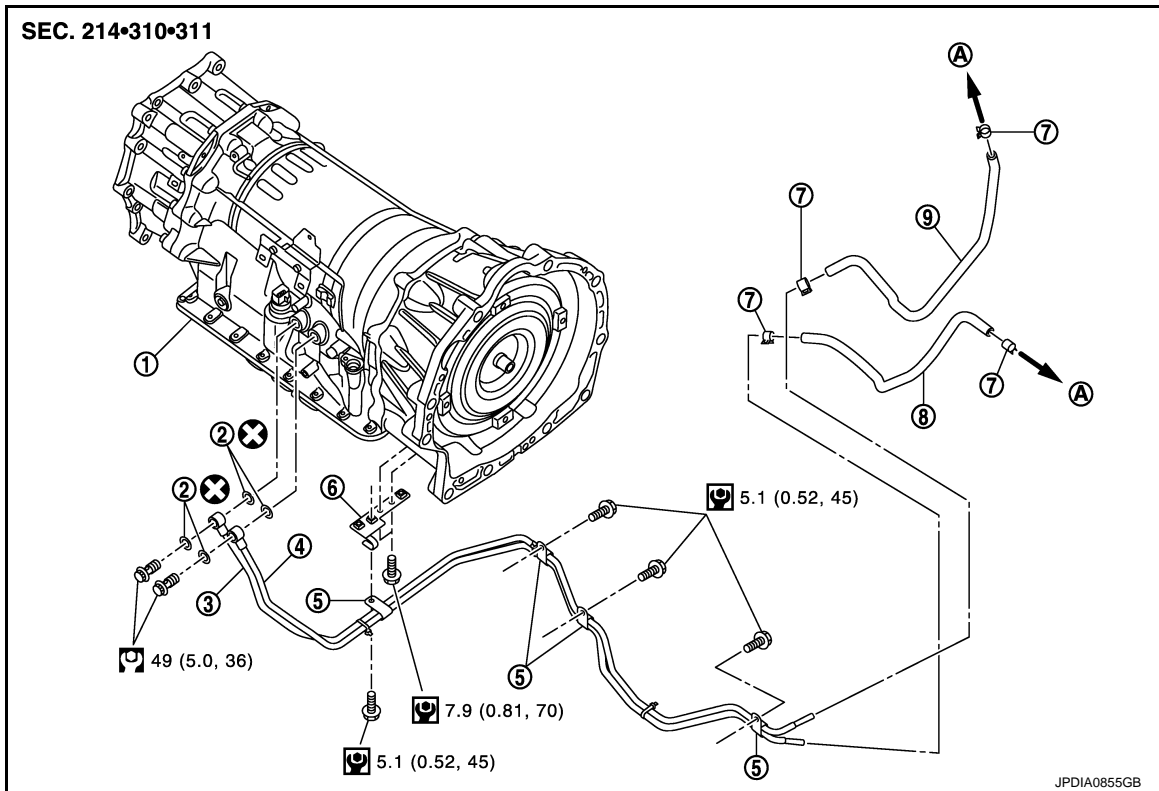
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

FLUID COOLER SYSTEM

Exploded View

INFOID:000000004040828



- | | | |
|--------------------------|----------------------------|----------------------------|
| 1. A/T assembly | 2. Copper washer | 3. A/T fluid cooler tube |
| 4. A/T fluid cooler tube | 5. Clip | 6. Bracket |
| 7. Hose clamp | 8. A/T fluid cooler hose B | 9. A/T fluid cooler hose A |
| A. To radiator | | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

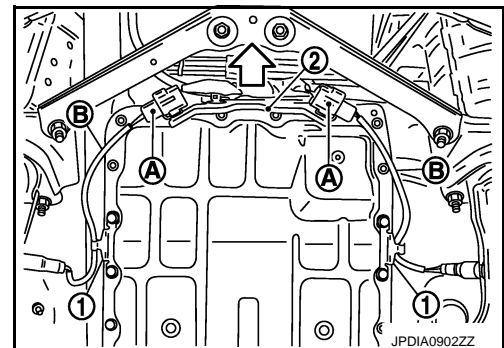
INFOID:000000004040829

REMOVAL

- Shift the selector lever to "N" position, and release the parking brake.
- Remove air duct (inlet). Refer to [EM-177, "Exploded View"](#).
- Remove engine under cover with a power tool. Refer to [EXT-31, "Exploded View"](#).
- Remove A/T fluid cooler hose A and A/T fluid cooler hose B.
- Disconnect heated oxygen sensor 2 harness connectors (A).

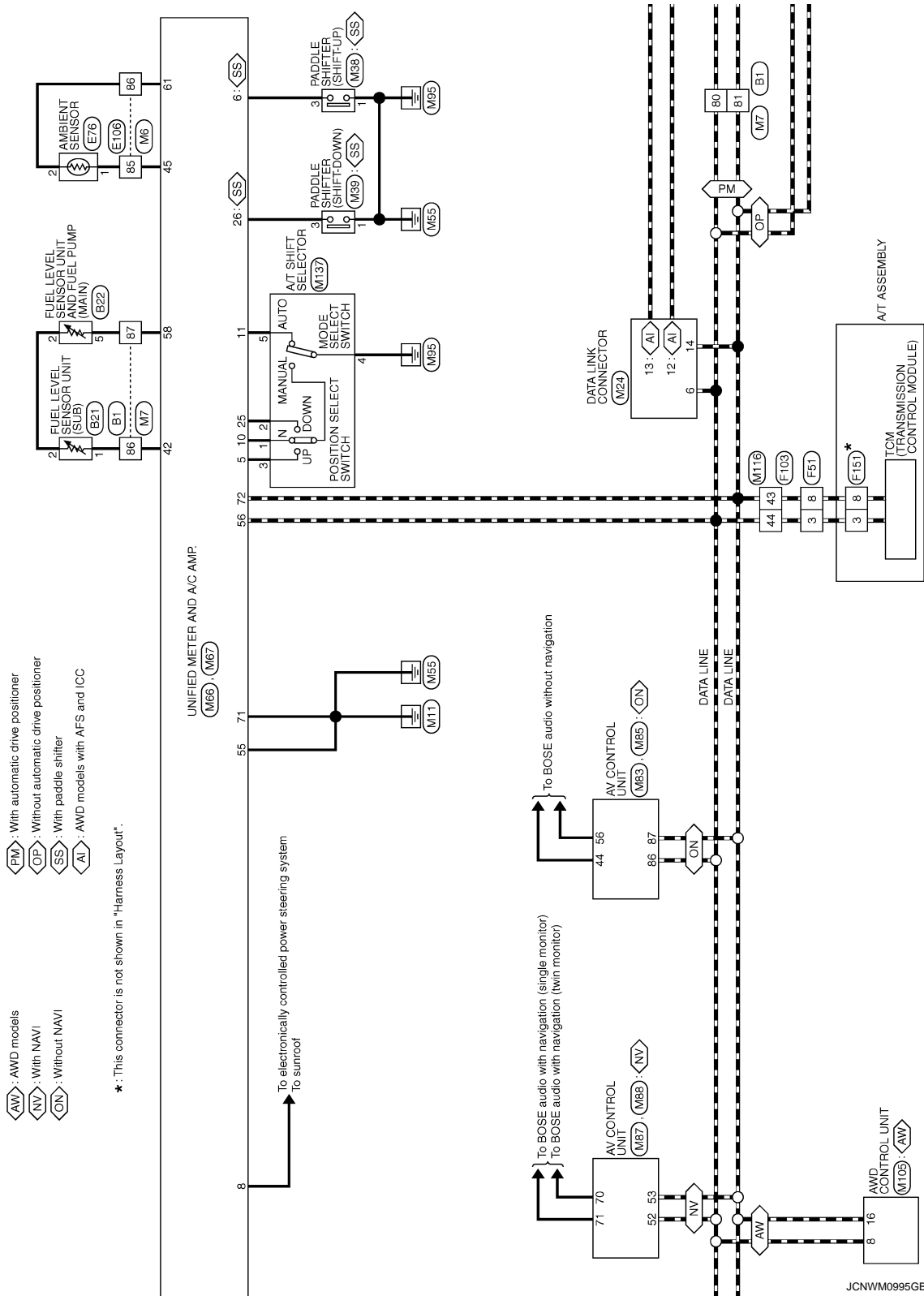
↔ : Vehicle front

- Remove heated oxygen sensor 2 harness (B) from clips (1).
- Remove harness bracket (2) from A/T assembly. Refer to [TM-384, "Exploded View"](#).
- Remove front propeller shaft. Refer to [DLN-109, "VK50VE : Exploded View"](#).
- Remove front drive shaft (right side). Refer to [FAX-26, "Exploded View"](#).
- Remove A/T fluid cooler tubes from A/T assembly and engine assembly.
- Plug up opening such as the A/T fluid cooler tube hole.



UNIFIED METER AND A/C AMP.

< ECU DIAGNOSIS INFORMATION >




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WCS

C1750, C1751, C1752, C1753 RECEIVER

< DTC/CIRCUIT DIAGNOSIS >

- Use an oscilloscope and check the input signal waveform between the low tire pressure warning control unit harness connector terminals and ground. Refer to [WT-45, "Reference Value"](#).

Connector	Terminal	—	Condition	Standard
M96	3	Ground	Standby status	 <p>OCC3879D</p>
	4			
	5			
	6			

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK TIRE PRESSURE RECEIVER POWER SUPPLY CIRCUIT

- Disconnect the tire pressure receiver harness connector.
- Check the voltage between the tire pressure receiver harness connector and ground.

Connector	Terminal	—	Voltage
E53 (Front LH)	1	Ground	7 - 16 V
E19 (Front RH)			
B43 (Rear LH)			
B251 (Rear RH)			

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected part.

3. CHECK TIRE PRESSURE RECEIVER GROUND CIRCUIT

- Disconnect the low tire pressure warning control unit harness connector and tire pressure receiver harness connector.
- Check the continuity between the low tire pressure warning control unit harness connector and tire pressure receiver harness connector.

Low tire pressure warning control unit		Tire pressure receiver		Continuity
M96	26	E53 (Front LH)	4	Existed
	25	E19 (Front RH)		
	24	B43 (Rear LH)		
	23	B251 (Rear RH)		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected part.

4. CHECK FOR CHANGE TO THE TIRE PRESSURE RECEIVER INSTALLATION POSITION. (EXAMPLE: FRONT LH RECEIVER OK/NG JUDGMENT)

☞ With CONSULT-III

- Exchange the front LH tire pressure receiver with the front RH tire pressure receivers.
- Perform low tire pressure warning control unit self-diagnosis.

Is DTC "C1751" detected?

YES >> Replace the front RH tire pressure receiver.

NO >> Perform trouble diagnosis of the low tire pressure warning control unit. Refer to [WT-32, "Diagnosis Procedure"](#).

REAR WIPER MOTOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

REAR WIPER MOTOR CIRCUIT

Component Function Check

INFOID:000000003843925

1. CHECK REAR WIPER ON OPERATION

CONSULT-III ACTIVE TEST

1. Select "RR WIPER" of BCM active test item.
2. With operating the test item, check rear wiper operation.

On : Rear wiper ON operation

Off : Stop the rear wiper.

Is rear wiper operation normally?

- YES >> Rear wiper motor circuit is normal.
NO >> Refer to [WW-38, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003843926

1. CHECK REAR WIPER MOTOR OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

1. Turn the ignition switch OFF.
2. Disconnect rear wiper motor connector.
3. Turn the ignition switch ON.
4. Select "RR WIPER" of BCM active test item.
5. With operating the test item, check voltage between BCM harness connector and ground.

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
BCM		REAR WIPER	Battery voltage
Connector	Terminal		
M120	26	On	Battery voltage
		Off	0 V

Is the measurement value normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK REAR WIPER MOTOR SHORT CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M120	26		Not existed

Does continuity exist?

- YES >> Repair the harness or connector.
NO >> Replace BCM. Refer to [BCS-82, "Exploded View"](#).

3. CHECK REAR WIPER MOTOR OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector and rear wiper motor harness connector.

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