

ENGINE TUNE-UP DATA (VK45DE)

Engine model	VK45DE	
Firing order	1-8-7-3-6-5-4-2	
Idle speed A/T (In "P" or "N" position)	rpm	650 ± 50
Ignition timing (BTDC at idle speed)	12° ± 5°	
CO% at idle	0.7 - 9.9% and engine runs smoothly	
Tensions of drive belts	Auto adjustment by auto tensioner	
Radiator cap relief pressure	kPa (kg/cm ² , psi)	
Standard	78 - 98 (0.8 - 1.0 , 11 - 14)	
Limit	59 (0.6, 9)	
Cooling system leakage testing pressure		
kPa (kg/cm ² , psi)	157 (1.6, 23)	
Compression pressure	kPa (kg/cm ² , psi)/rpm	
Standard	1,320 (13.5, 191) /300	
Minimum	1,130 (11.5, 164) /300	
Spark plug	Standard type	PLFR5A-11
	Hot type	PLFR4A-11
	Cold type	PLFR6A-11

FRONT WHEEL ALIGNMENT (Unladen*)

ELS0003X

Axle		2WD		AWD
Tire		245/45R18	245/40R19	245/45R18
Camber Degree minute (Decimal degree)	Minimum	-1° 00' (-1.00°)		
	Nominal	-0° 15' (-0.25°)		
	Maximum	0° 30' (0.50°)		
	Left and right difference	33' (0.55°) or less		
Caster Degree minute (Decimal degree)	Minimum	3° 45' (3.75°)	3° 50' (3.83°)	3° 05' (3.08°)
	Nominal	4° 30' (4.50°)	4° 35' (4.58°)	3° 50' (3.83°)
	Maximum	5° 15' (5.25°)	5° 20' (5.33°)	4° 35' (4.58°)
	Left and right difference	39' (0.65°) or less		
Kingpin inclination Degree minute (Decimal degree)	Minimum	6° 30' (6.50°)		
	Nominal	7° 15' (7.25°)		
	Maximum	8° 00' (8.00°)		
Total toe-in	Distance	Minimum	0 mm (0 in)	
		Nominal	1 mm (0.04 in)	
		Maximum	2 mm (0.08 in)	
	Angle (left wheel or right wheel) Degree minute (Decimal degree)	Minimum	0' (0°)	
		Nominal	3' (0.05°)	
		Maximum	6' (0.10°)	

ACCELERATOR CONTROL SYSTEM

ACCELERATOR CONTROL SYSTEM

PFP:18005

Components

NBS005RP

A

ACC

C

D

E

F

G

H

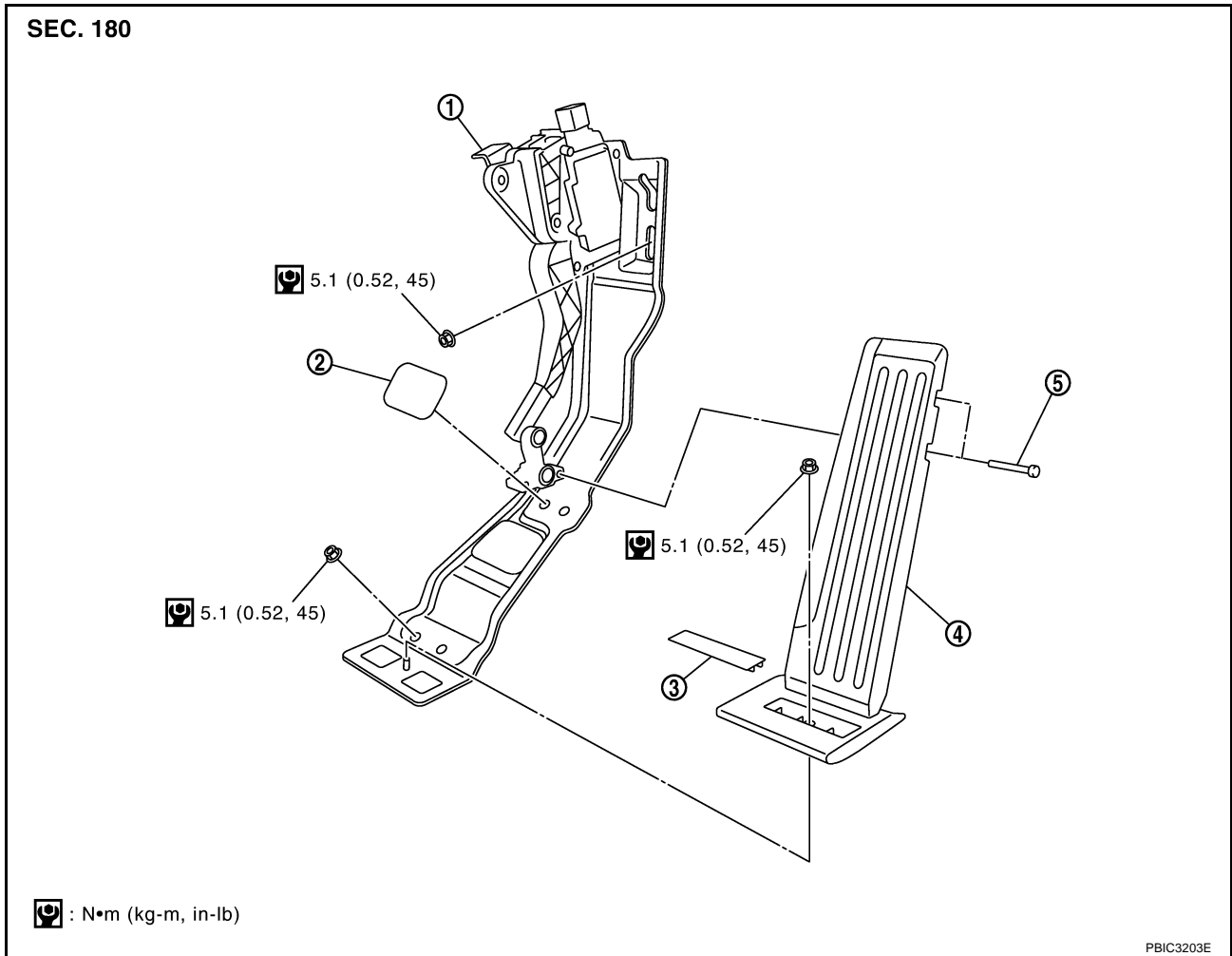
I

J

K

L

M



- | | | |
|---|------------------------------------|--------|
| 1. Accelerator pedal bracket and lever assembly | 2. Accelerator pedal stopper cover | 3. Cap |
| 4. Accelerator pedal pad | 5. Pin | |

Removal and Installation

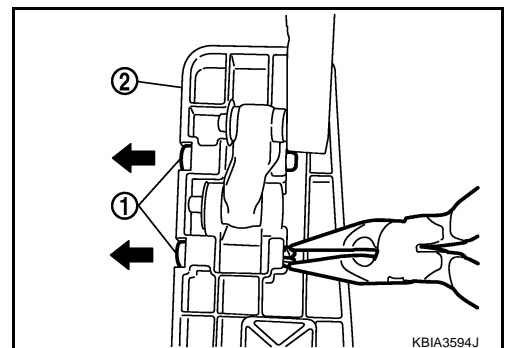
REMOVAL

NBS005RQ

1. Disconnect accelerator pedal position sensor harness connector.
2. Remove front kicking plate and dash side finisher. Refer to [EI-37, "BODY SIDE TRIM"](#).
3. Remove the cap and the inside mounting nut, and then disassemble the accelerator pedal pad from the floor carpet.
4. Press the pin (1) with long-nose pliers and pull them out in the direction shown by the arrow (←). Then remove the accelerator pedal pad (2).

CAUTION:

Do not disengage the part (the link) other than pins.



5. Remove accelerator pedal stopper cover.

DTC P1731 A/T 1ST ENGINE BRAKING

DTC P1731 A/T 1ST ENGINE BRAKING

PPF:00000

Description

NCS001MZ

Fail-safe function to prevent sudden decrease in speed by engine brake other than at M1 position.

CONSULT-II Reference Value

NCS001N0

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-21 .	ON
	Low coast brake disengaged. Refer to AT-21 .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-21 .	ON
	Low coast brake disengaged. Refer to AT-21 .	OFF

On Board Diagnosis Logic

NCS001N1

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1731 A/T 1ST E/BRAKING” with CONSULT-II or 13th judgement flicker without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the proper voltage signal from the sensor.
 - When TCM monitors each ATF pressure switch and solenoid monitor value, and detects as irregular when engine brake of 1st gear acts other than at M1 position.

Possible Cause

NCS001N2

- Harness or connectors
(Sensor circuit is open or shorted.)
- Low coast brake solenoid valve
- ATF pressure switch 2

DTC Confirmation Procedure

NCS001N3

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

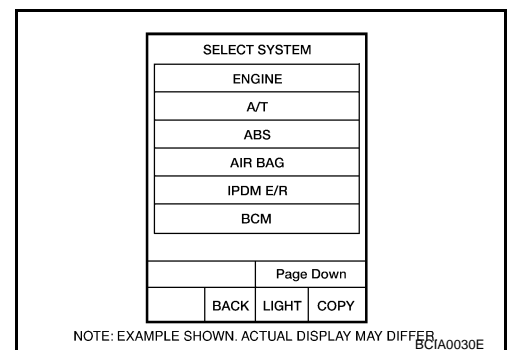
NOTE:

If “DTC Confirmation Procedure” has been previously preformed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch ON.
2. Select “SELECTION FROM MENU” in “DATA MONITOR” mode for “A/T” with CONSULT-II and check monitor “ENGINE SPEED”, “MANU MODE SW” and “GEAR”.
3. Touch “START”.
4. Start engine.
5. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
ENGINE SPEED: 1,200 rpm
MANU MODE SW: ON
GEAR: “1” position
6. If DTC is detected, go to [AT-146. "Diagnostic Procedure"](#) .

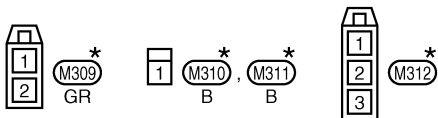
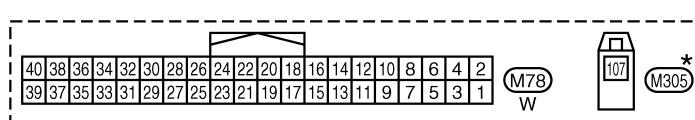
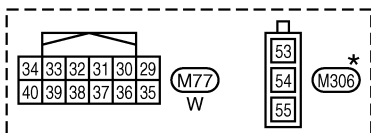
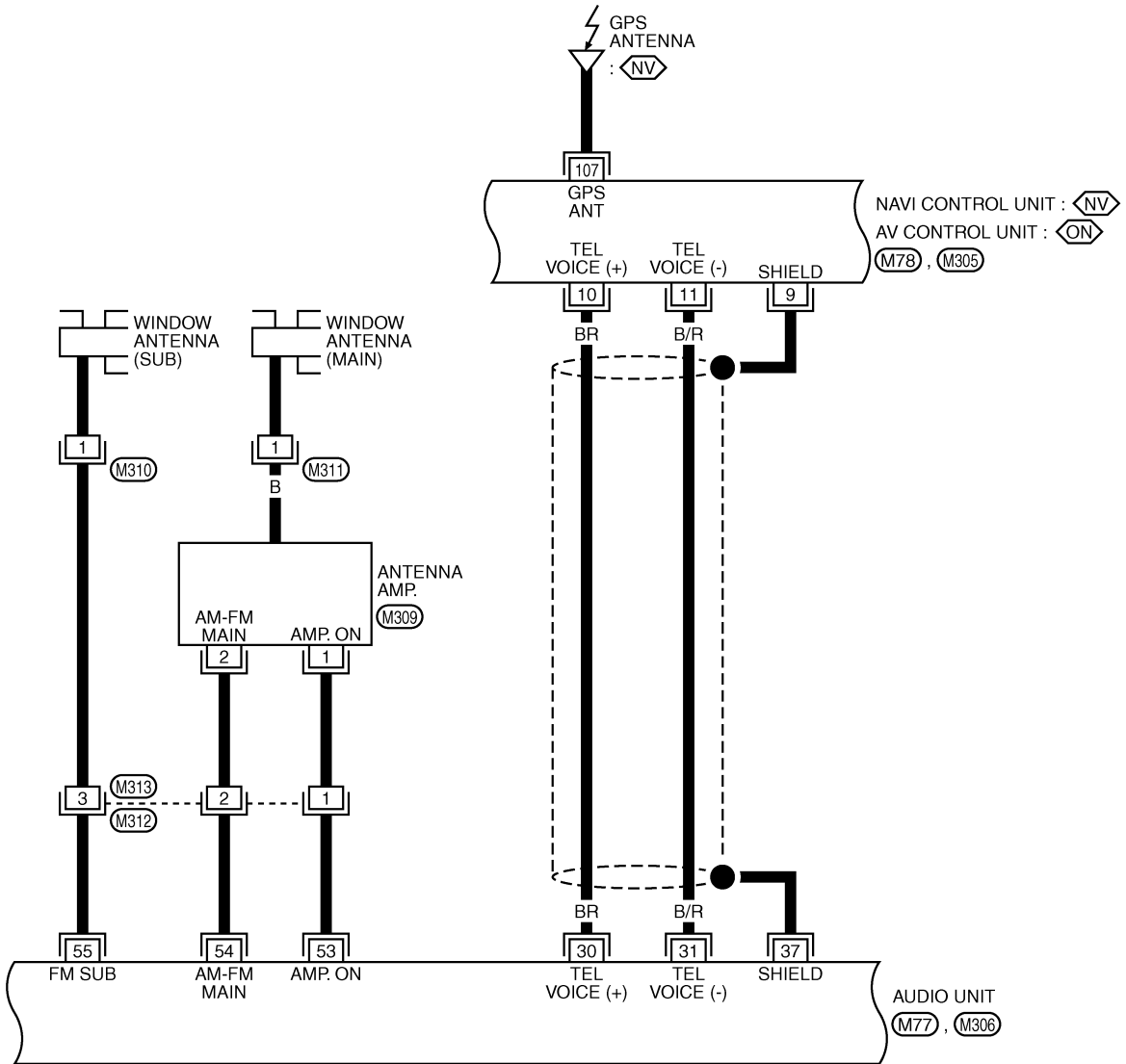


SYSTEM DESCRIPTION [WITHOUT MOBILE ENTERTAINMENT SYSTEM]

AV-AV-06

(NV) : WITH NAVIGATION SYSTEM

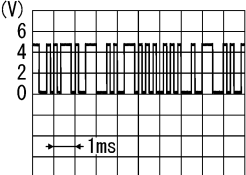
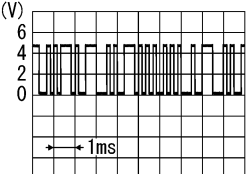
(ON) : WITHOUT NAVIGATION SYSTEM



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

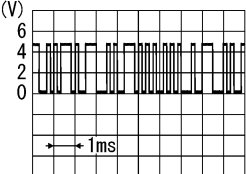
TKWT5103E

TERMINALS AND REFERENCE VALUE FOR CONTROL UNIT [WITH MOBILE ENTERTAINMENT SYSTEM]

Terminal (Wire color)		Item	Signal input/ output	Condition		Reference value
+	-			Ignition switch	Operation	
17 (W/L)	Ground	Communication signal (DISP-CONT)	Output	ON	When adjusting display brightness.	 <small>PKIB5039J</small>
18	-	Shield	-	-	-	-
19 (O/L)	Ground	Communication signal (CONT-DISP)	Input	ON	When adjusting display brightness.	 <small>PKIB5039J</small>
20 (V)	Ground	ACC power supply	Input	ACC	-	Battery voltage
21 (L)	Ground	Battery power supply	Input	OFF	-	Battery voltage
23 (B)	Ground	Ground	-	ON	-	Approx. 0 V

Rear Display Unit

NKS004AR

Terminal (Wire color)		Item	Signal input/ output	Condition		Reference value
+	-			Ignition switch	Operation	
1 (B/Y)	Ground	Ground	-	ON	-	Approx. 0 V
2 (B/Y)	Ground	Ground	-	ON	-	Approx. 0 V
3 (L/O)	Ground	Battery power supply	Input	OFF	-	Battery voltage
4 (L/Y)	Ground	Battery power supply	Input	OFF	-	Battery voltage
6 (W/L)	Ground	ACC power supply	Input	ACC	-	Battery voltage
8	-	Shield	-	-	-	-
9 (L)	Ground	Communication signal (DISP-DIST)	Output	ON	When adjusting display brightness.	 <small>PKIB5039J</small>

TROUBLE DIAGNOSIS

PFP:00004

Fail-Safe Function
ABS, EBD SYSTEM

NFS000Q8

In the event there is a malfunction with the electrical system, the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp will turn on when it is the ABS that is malfunctioning, and the brake warning lamp, ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp will turn on when it is the EBD that is malfunctioning. At the same time, the VDC/TCS/ABS will be put in one of the following states by the fail-safe function.

- When the ABS malfunctions, only the EBD operates. The condition is the same as that of models without VDC/TCS/ABS.

NOTE:

ABS self-diagnosis sound may be heard. This is normal condition because a self-diagnosis for "Ignition switch ON" and "The first starting" are being performed.

- When the EBD malfunctions, the EBD and ABS will not operate. The condition is the same as that of models without VDC/TCS/ABS and EBD.

VDC/TCS

In case of VDC/TCS system malfunction, the VDC OFF indicator lamp and SLIP indicator lamp or only VDC OFF indicator lamp are turned on, and the condition of the vehicle is the same as the condition of vehicles without VDC/TCS equipment. In case of electrical malfunction with the VDC/TCS system, the ABS control continues to operate normally even though VDC/TCS does not operate.

CAUTION:

If the Fail-Safe function is activated, then perform self-diagnosis for VDC/TCS/ABS control system.

How to Perform Trouble Diagnoses
BASIC CONCEPT

NFS000Q8

- The most important point to perform trouble diagnosis is to understand systems (control and mechanism) in vehicle thoroughly.

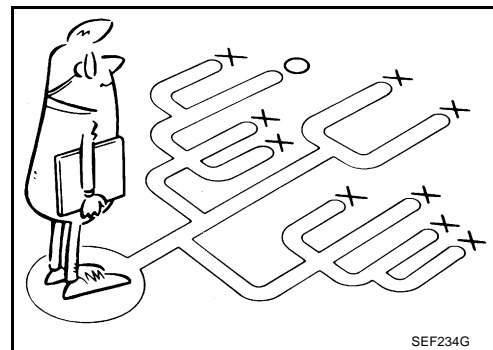
- It is also important to clarify customer complaints before inspection.

First of all, reproduce symptom, and understand it fully.

Ask customer about his/her complaints carefully. In some cases, they will be necessary to check symptom by driving vehicle with customer.

CAUTION:

Customers are not professionals. Do not assume "maybe customer means..." or "maybe customer mentioned this symptom".

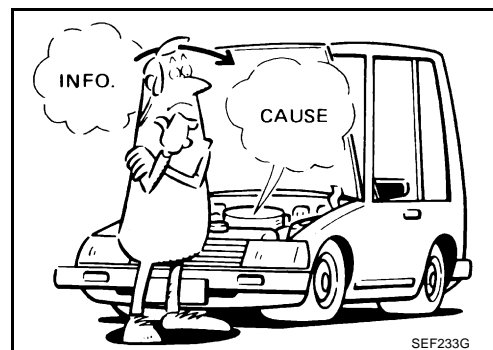


SEF234G

- It is essential to check symptoms right from beginning in order to repair a malfunction completely.

For an intermittent malfunction, it is important to reproduce symptom based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairs are performed without any symptom check, no one can judge if malfunction has actually been eliminated.

- After diagnostic, make sure to perform "ERASE MEMORY". Refer to [BRC-24, "ERASE MEMORY"](#).
- Always read "GI General Information" to confirm general precautions. Refer to [GI-4, "General Precautions"](#).



SEF233G

ON BOARD DIAGNOSTIC (OBD) SYSTEM

[VQ35DE]

If, during the state emissions inspection, the SRT indicates "CMPLT" for all test items, the inspector will continue with the emissions test. However, if the SRT indicates "INCMP" for one or more of the SRT items the vehicle is returned to the customer untested.

NOTE:

If MIL is ON during the state emissions inspection, the vehicle is also returned to the customer untested even though the SRT indicates "CMPLT" for all test items. Therefore, it is important to check SRT ("CMPLT") and DTC (No DTCs) before the inspection.

SRT Item

The table below shows required self-diagnostic items to set the SRT to "CMPLT".

SRT item (CONSULT-II indication)	Performance Priority*	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.
CATALYST	2	Three way catalyst function	P0420, P0430
EVAP SYSTEM	2	EVAP control system purge flow monitoring	P0441
	1	EVAP control system	P0442
	2	EVAP control system	P0456
HO2S	2	Air fuel ratio (A/F) sensor 1	P0133, P0153
		Heated oxygen sensor 2	P0137, P0157
		Heated oxygen sensor 2	P0138, P0158
		Heated oxygen sensor 2	P0139, P0159

*: If completion of several SRTs is required, perform driving patterns (DTC confirmation procedure), one by one based on the priority for models with CONSULT-II.

SRT Set Timing

SRT is set as "CMPLT" after self-diagnosis has been performed one or more times. Completion of SRT is done regardless of whether the result is OK or NG. The set timing is different between OK and NG results and is shown in the table below.

Self-diagnosis result		Example						
		Diagnosis	Ignition cycle					
			← ON →	OFF	← ON →	OFF	← ON →	OFF
All OK	Case 1	P0400	OK (1)	— (1)	OK (2)	— (2)		
		P0402	OK (1)	— (1)	— (1)	OK (2)		
		P1402	OK (1)	OK (2)	— (2)	— (2)		
		SRT of EGR	"CMPLT"	"CMPLT"	"CMPLT"	"CMPLT"		
	Case 2	P0400	OK (1)	— (1)	— (1)	— (1)		
		P0402	— (0)	— (0)	OK (1)	— (1)		
		P1402	OK (1)	OK (2)	— (2)	— (2)		
		SRT of EGR	"INCMP"	"INCMP"	"CMPLT"	"CMPLT"		
NG exists	Case 3	P0400	OK	OK	—	—		
		P0402	—	—	—	—		
		P1402	NG	—	NG	NG (Consecutive NG)		
		(1st trip) DTC	1st trip DTC	—	1st trip DTC	DTC (= MIL ON)		
		SRT of EGR	"INCMP"	"INCMP"	"INCMP"	"CMPLT"		

OK: Self-diagnosis is carried out and the result is OK.

NG: Self-diagnosis is carried out and the result is NG.

—: Self-diagnosis is not carried out.

When all SRT related self-diagnoses showed OK results in a single cycle (Ignition OFF-ON-OFF), the SRT will indicate "CMPLT". → Case 1 above

DTC P0222, P0223 TP SENSOR

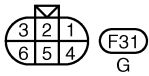
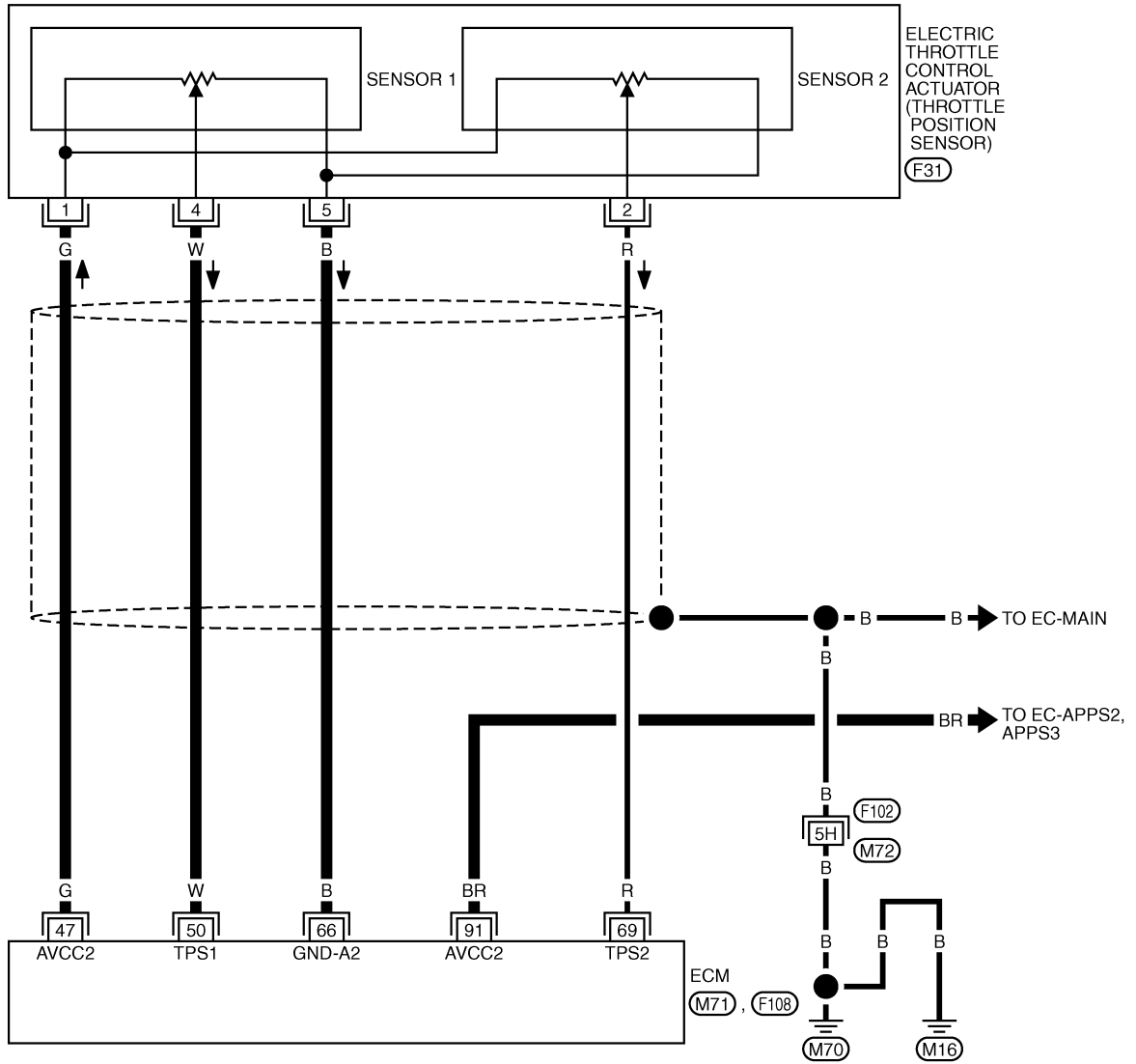
[VQ35DE]

Wiring Diagram

NBS004Y1

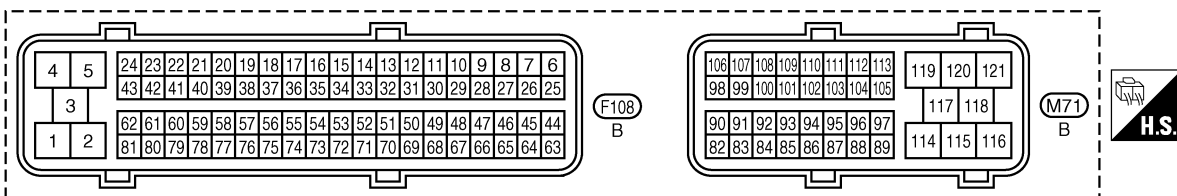
EC-TPS1-01

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



REFER TO THE FOLLOWING.

(F102) -SUPER MULTIPLE JUNCTION (SMJ)



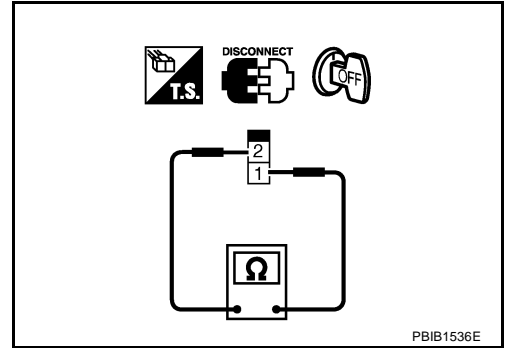
TBWT1475E

Component Inspection ICC BRAKE SWITCH

1. Turn ignition switch OFF.
2. Disconnect ICC brake switch harness connector.
3. Check continuity between ICC brake switch terminals 1 and 2 under the following conditions.

Condition	Continuity
Brake pedal: Fully released	Should exist
Brake pedal: Slightly depressed	Should not exist

4. If NG, adjust ICC brake switch installation, refer to [BR-6](#), "[BRAKE PEDAL](#)", and perform step 3 again.

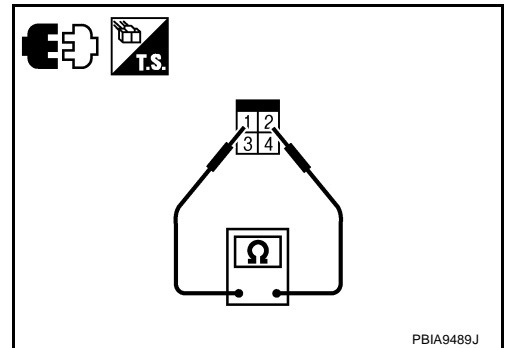


STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector.
3. Check continuity between stop lamp switch terminals 1 and 2 under the following conditions.

Condition	Continuity
Brake pedal: Fully released	Should not exist
Brake pedal: Slightly depressed	Should exist

4. If NG, adjust stop lamp switch installation, refer to [BR-6](#), "[BRAKE PEDAL](#)", and perform step 3 again.

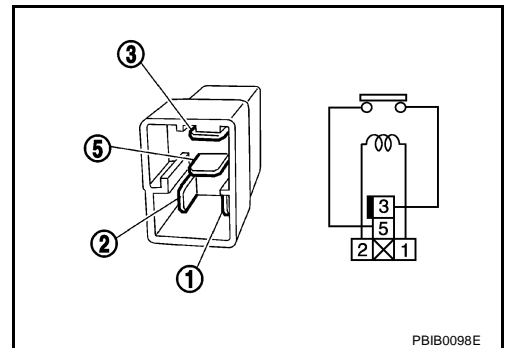


ICC BRAKE HOLD RELAY

1. Check continuity between ICC brake hold relay terminals 3 and 5 under the following conditions.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Should not exist
No current supply	Should exist

2. If NG, replace ICC brake hold relay.



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PREPARATION

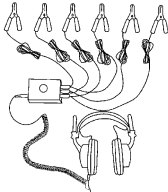
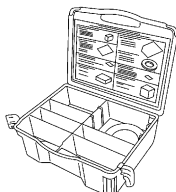
PREPARATION

PFP:00002

Special Service Tools

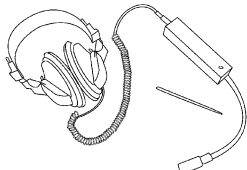

NIS00248

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
(J-39570) Chassis ear  SIIA0993E	Location the noise
(J-43980) NISSAN Squeak and Rattle Kit  SIIA0994E	Repairing the cause of noise

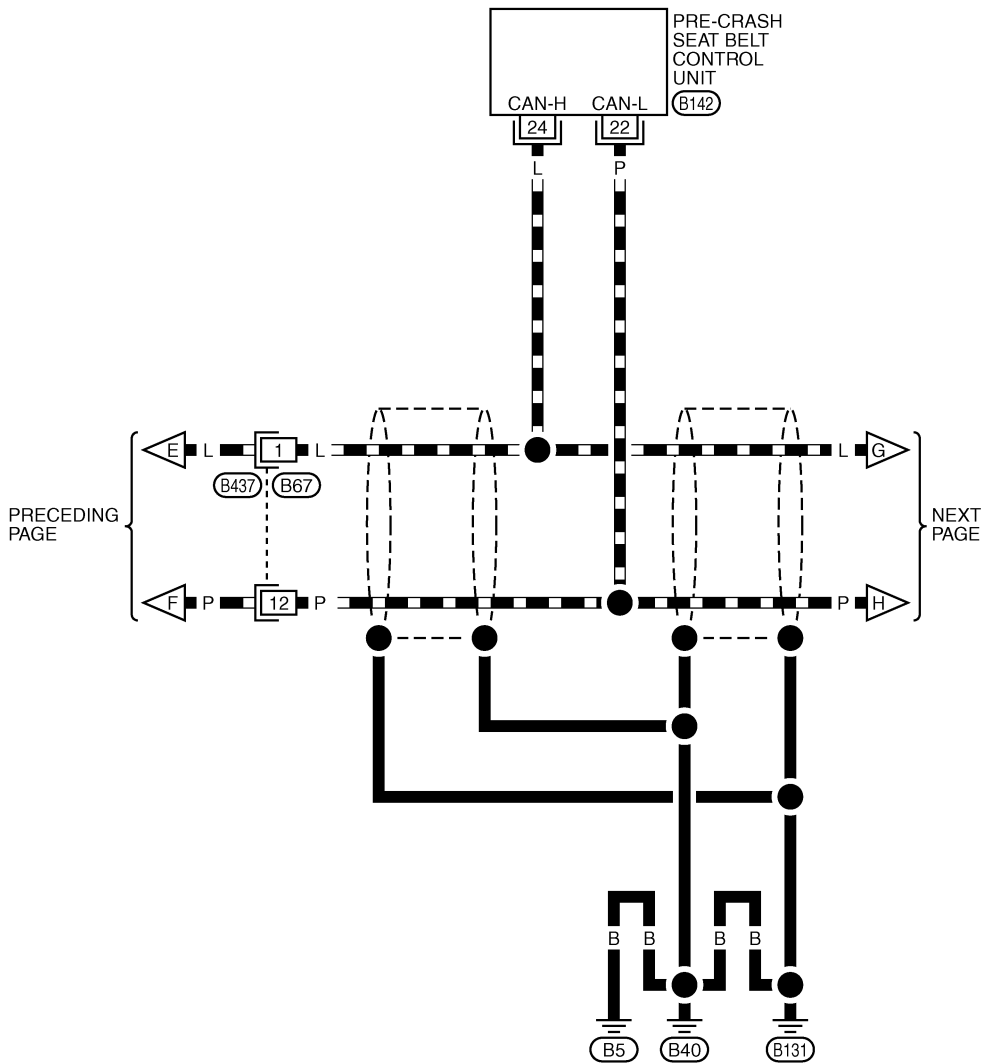
Commercial Service Tools

NIS00249

Tool name	Description
Engine ear  SIIA0995E	Location the noise
Power tool  PIIB1407E	

LAN-CAN-04

▬ : DATA LINE



6	5	4	12	11	10	9	8	7	3	2	1	(B142)		
26	25	24	23	22	21	20	19	18	17	16	15	14	13	W

1	2	3	4	5	6	7	8	9	10	11	(B437)		
12	13	14	15	16	17	18	19	20	21	22	23	24	BR

TKWT5298E

HEADLAMP (FOR CANADA) - DAYTIME LIGHT SYSTEM -

DAYTIME LIGHT OPERATION

With the engine running, the lighting switch in the OFF or AUTO position (headlamp is not illuminate) and parking brake released, the IPDM E/R receives input request signal from BCM to turn on daytime light. This input is communicated across the CAN communication lines. The CPU of the IPDM E/R controls the daytime light relay coil. When energized, this relay directs power

- through daytime light relay terminals 5 and 3
- through front combination lamp RH terminal 2
- through front combination lamp RH terminal 6
- through IPDM E/R terminal 27
- through 10A fuse (No. 72, located in IPDM E/R)
- through 10A fuse (No. 74, located in IPDM E/R)
- through IPDM E/R terminal 28
- to front combination lamp LH terminal 6.

Ground is supplied

- to combination lamp LH terminal 2
- through grounds E22 and E43.

With power and grounds supplied, the daytime lights illuminate. The high beam headlamps are now wired in series and illuminate at a reduced intensity.

COMBINATION SWITCH READING FUNCTION

Refer to [BCS-3, "COMBINATION SWITCH READING FUNCTION"](#) .

AUTO LIGHT OPERATION

For auto light operation, refer to [LT-115, "System Description"](#) .

CAN Communication System Description

NKS004HQ

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

CAN Communication Unit

NKS004HR

Refer to [LAN-50, "CAN System Specification Chart"](#) .

FRONT FOG LAMP

Refer to [LT-198, "Wiring Diagram — F/FOG —"](#).

OK or NG

OK >> GO TO 2.

NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#).

2. CHECK POWER SUPPLY CIRCUIT

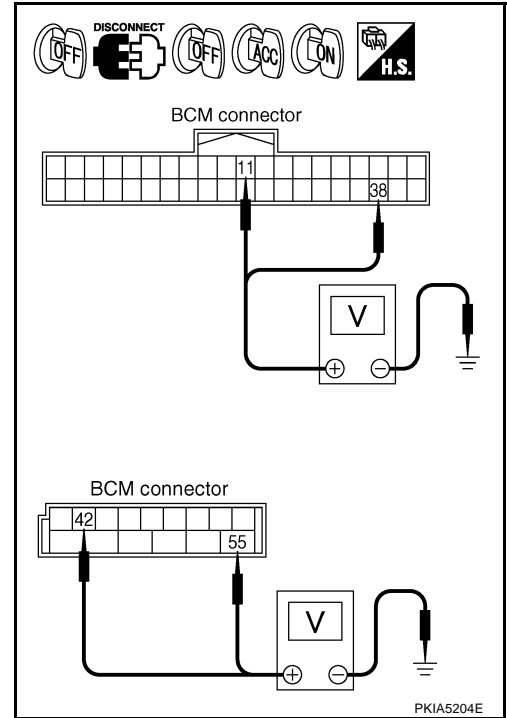
1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check voltage between BCM harness connector and ground.

Terminal		(-)	Ignition switch position		
(+)	BCM connector		Terminal	OFF	ACC
M1	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M2	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage

OK or NG

OK >> GO TO 3.

NG >> Check harness for open or short between BCM and fuse.



3. CHECK GROUND CIRCUIT

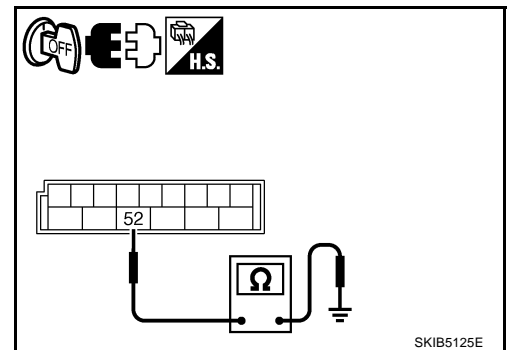
Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M2	52		Yes

OK or NG

OK >> INSPECTION END

NG >> Check harness ground circuit.



CONSULT-II Functions (BCM)

Refer to [LT-57, "CONSULT-II Functions \(BCM\)"](#) in HEADLAMP (FOR USA) -XENON TYPE-.

Refer to [LT-23, "CONSULT-II Functions \(BCM\)"](#) in HEADLAMP (FOR USA) -CONVENTIONAL TYPE-.

Refer to [LT-94, "CONSULT-II Functions \(BCM\)"](#) in HEADLAMP (FOR CANADA).

CONSULT-II Functions (IPDM E/R)

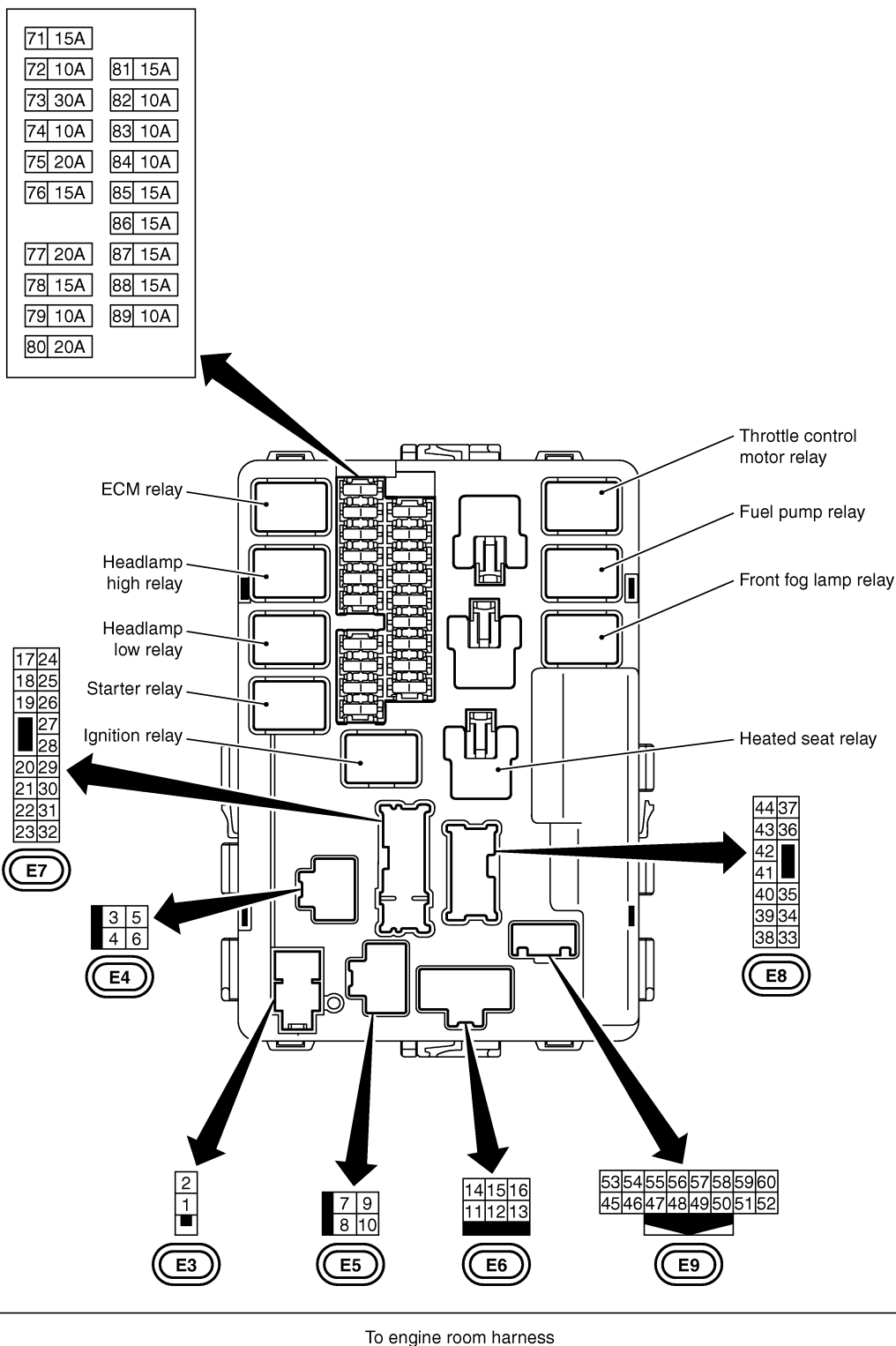
Refer to [LT-59, "CONSULT-II Functions \(IPDM E/R\)"](#) in HEADLAMP (FOR USA) -XENON TYPE-.

Refer to [LT-25, "CONSULT-II Functions \(IPDM E/R\)"](#) in HEADLAMP (FOR USA) -CONVENTIONAL TYPE-.

Refer to [LT-96, "CONSULT-II Functions \(IPDM E/R\)"](#) in HEADLAMP (FOR CANADA).

IPDM E/R Terminal Arrangement

NKS004E9



CKIT0665E

TROUBLE DIAGNOSIS

NHS00097

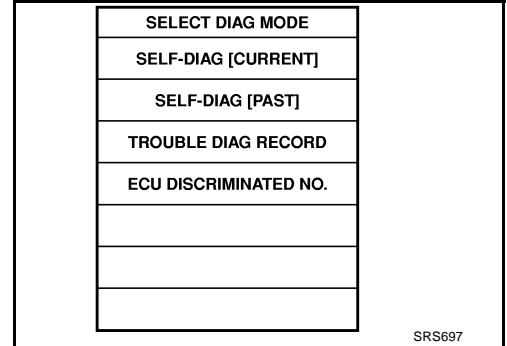
Trouble Diagnosis with CONSULT-II DIAGNOSTIC PROCEDURE 2

Refer to [GI-38, "CONSULT-II Start Procedure"](#).

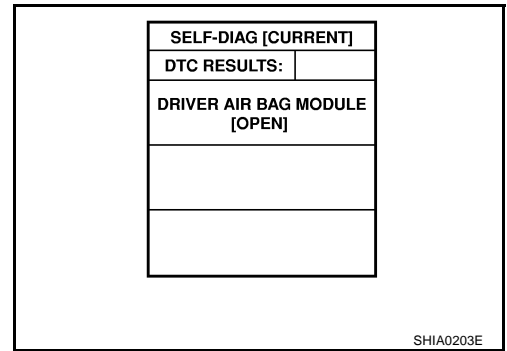
CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

1. Touch "SELF-DIAG [CURRENT]".

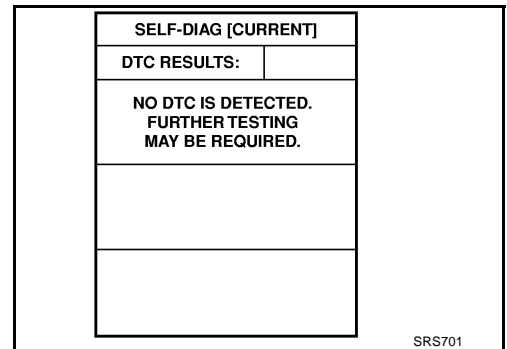


2. Diagnostic code is displayed on "SELF-DIAG [CURRENT]".



a. If no malfunction is detected on "SELF-DIAG [CURRENT]" even though malfunction is detected in "SRS Operation Check", check the battery voltage. If the battery voltage is less than 9 V, charge or replace the battery. Then go to [SRS-27, "DIAGNOSTIC PROCEDURE 3"](#). If the battery voltage is OK, go to [SRS-29, "DIAGNOSTIC PROCEDURE 4 \(CONTINUED FROM DIAGNOSTIC PROCEDURE 2\)"](#) to diagnose the following cases:

- Self-diagnosis result "SELF-DIAG [PAST]" (previously stored in the memory) might not be erased after repair.
- The SRS system malfunctions intermittently.



DTC No. Index ("SELF-DIAG [CURRENT]")

Diagnostic item	Explanation	Repair order "Recheck SRS at each replacement"
NO DTC IS DETECTED.	When malfunction is indicated by the "AIR BAG" warning lamp in User mode.	<ul style="list-style-type: none"> ● Low battery voltage (Less than 9 V) ● Self-diagnosis result "SELF-DIAG [PAST]" (previously stored in the memory) might not be erased after repair. ● Intermittent malfunction has been detected in the past.
	<ul style="list-style-type: none"> ● No malfunction is detected. 	—