

QUICK REFERENCE CHART M35/M45
ENGINE TUNE-UP DATA (VQ35DE)

PF0:00000

ELS0003W

Engine model		VQ35DE				
Firing order		1-2-3-4-5-6				
Idle speed A/T (In "P" or "N" position)	rpm	650 ± 50				
Ignition timing (BTDC at idle speed) A/T (In "P" or "N" position)		15° ± 5°				
CO% at idle		0.7 - 9.9% and engine runs smoothly				
Drive Belt	Deflection adjustment		Unit: mm (in)	Tension adjustment		Unit: N (kg, lb)
	Used belt		New belt	Used belt		New belt
	Limit	After adjustment		Limit	After adjustment	
Alternator and power steering oil pump belt	7 (0.28)	4 - 5 (0.16 - 0.20)	3.5 - 4.5 (0.138 - 0.177)	294 (30, 66)	730 - 818 (74.5 - 83.5, 164 - 184)	838 - 926 (85.5 - 94.5, 188 - 208)
A/C compressor belt	12 (0.47)	9 - 10 (0.35 - 0.39)	8 - 9 (0.31 - 0.35)	196 (20, 44)	348 - 436 (35.5 - 44.5, 78 - 98)	470 - 559 (48 - 57, 106 - 126)
Applied pushing force	98N (10kg, 22lb)			—		
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		1,275 (13.0, 185) /300				
Minimum		981 (10.0, 142) /300				
Spark plug	Standard type		PLFR5A-11			
	Hot type		PLFR4A-11			
	Cold type		PLFR6A-11			

HOW TO USE THIS MANUAL

PFP:00008

GI

Description

NAS0007G

This volume explains "Removal, Disassembly, Installation, Inspection and Adjustment" and "Trouble Diagnoses".

Terms

NAS0007H

- The captions **WARNING** and **CAUTION** warn you of steps that must be followed to prevent personal injury and/or damage to some part of the vehicle.
WARNING indicates the possibility of personal injury if instructions are not followed.
CAUTION indicates the possibility of component damage if instructions are not followed.
BOLD TYPED STATEMENTS except **WARNING** and **CAUTION** give you helpful information.
Standard value:Tolerance at inspection and adjustment.
Limit value:The maximum or minimum limit value that should not be exceeded at inspection and adjustment.

Units

NAS0007I

- The **UNITS** given in this manual are primarily expressed as the SI UNIT (International System of Unit), and alternatively expressed in the metric system and in the yard/pound system.
Also with regard to tightening torque of bolts and nuts, there are descriptions both about range and about the standard tightening torque.

"Example"

Range

Outer Socket Lock Nut : 59 - 78 N-m (6.0 - 8.0 kg-m, 43 - 58 ft-lb)

Standard

Drive Shaft Installation Bolt : 44.3 N-m (4.5 kg-m, 33 ft-lb)

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NAS0007J

- **ALPHABETICAL INDEX** is provided at the end of this manual so that you can rapidly find the item and page you are searching for.
- **A QUICK REFERENCE INDEX**, a black tab (e.g. **BR**) is provided on the first page. You can quickly find the first page of each section by matching it to the section's black tab.
- **THE CONTENTS** are listed on the first page of each section.
- **THE TITLE** is indicated on the upper portion of each page and shows the part or system.
- **THE PAGE NUMBER** of each section consists of two or three letters which designate the particular section and a number (e.g. "BR-5").
- **THE SMALL ILLUSTRATIONS** show the important steps such as inspection, use of special tools, knacks of work and hidden or tricky steps which are not shown in the previous large illustrations. Assembly, inspection and adjustment procedures for the complicated units such as the automatic transaxle or transmission, etc. are presented in a step-by-step format where necessary.

PRECAUTIONS

PFP:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

NBS004RW

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 and SB section of this Service Manual.

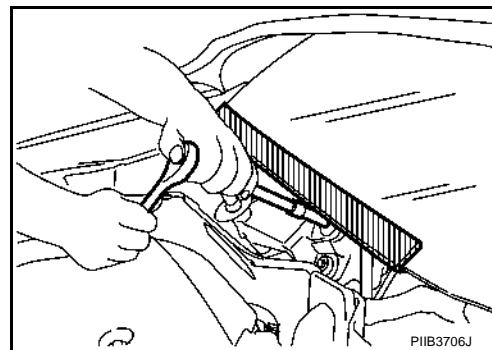
WARNING:

- 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 section.
- 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 for Procedures without Cowl Top Cover

NBS004RX

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



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

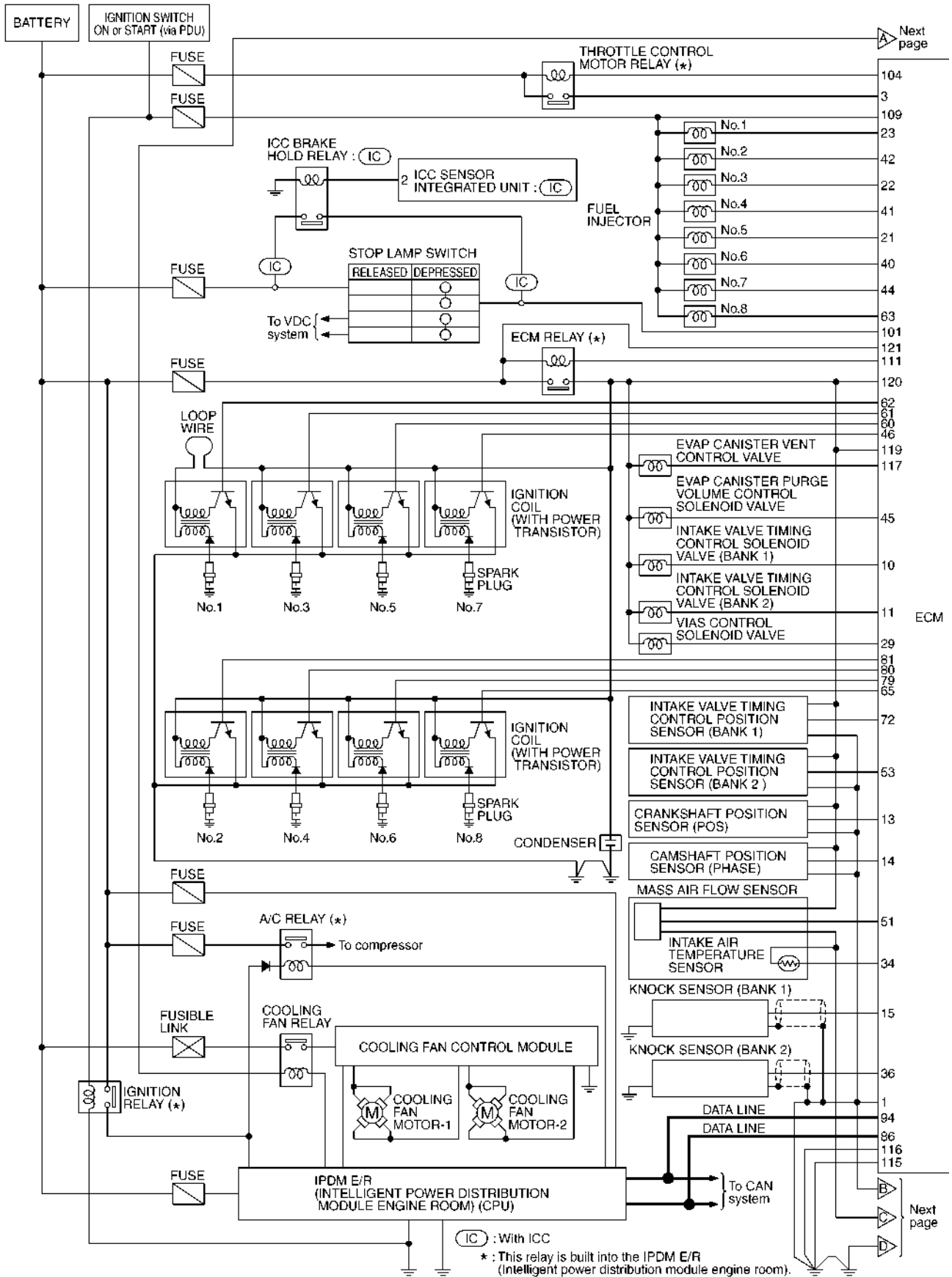
NBS004RY

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

CAUTION:

- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to [PG-102, "HARNES CONNECTOR"](#).
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

Circuit Diagram



TROUBLE DIAGNOSIS

No.	Item	Symptom	Condition	Diagnostic Item	Reference page			
8	Shift Shock	Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	AT-132			
				2. Control linkage adjustment	AT-227			
				3. Engine speed signal	AT-124			
				4. CAN communication line	AT-105			
				5. Turbine revolution sensor	AT-117			
				6. Vehicle speed sensor-A/T and vehicle speed sensor-MTR	AT-119, AT-140			
				7. Torque converter clutch solenoid valve	AT-126			
				8. A/T fluid level and state	AT-53			
				9. Control valve with TCM	AT-236			
			OFF vehicle	10. Torque converter	AT-298			
9		Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	AT-132			
				2. Control linkage adjustment	AT-227			
				3. CAN communication line	AT-105			
				4. A/T fluid level and state	AT-53			
				5. Control valve with TCM	AT-236			
			OFF vehicle	6. Front brake (brake band)	AT-298			
				7. Input clutch	AT-323			
				8. High and low reverse clutch	AT-335			
				9. Direct clutch	AT-337			
10	No Up Shift	Gear does not change from D1 → D2 or from M1 → M2 . Refer to AT-201, "A/T Does Not Shift: D1 → D2" .	ON vehicle	1. A/T fluid level and state	AT-53			
				2. Vehicle speed sensor-A/T and vehicle speed sensor-MTR	AT-119, AT-140			
				3. ATF pressure switch 5 and direct clutch solenoid valve	AT-176, AT-155			
				4. Line pressure test	AT-55			
				5. CAN communication line	AT-105			
				6. Control valve with TCM	AT-236			
			OFF vehicle	7. Direct clutch	AT-337			
			11		Gear does not change from D2 → D3 or from M2 → M3 . Refer to AT-203, "A/T Does Not Shift: D2 → D3" .	ON vehicle	1. A/T fluid level and state	AT-53
							2. Vehicle speed sensor-A/T and vehicle speed sensor-MTR	AT-119, AT-140
							3. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-178, AT-159
							4. Line pressure test	AT-55
							5. CAN communication line	AT-105
							6. Control valve with TCM	AT-236
OFF vehicle	7. High and low reverse clutch	AT-335						

BODY REPAIR

Rear fender hemming process

1. A wheel arch is to be installed and hemmed over left and right outer wheel house.
2. In order to hem the wheel arch, it is necessary to repair any damaged or defaced parts around outer wheel house.

CAUTION:

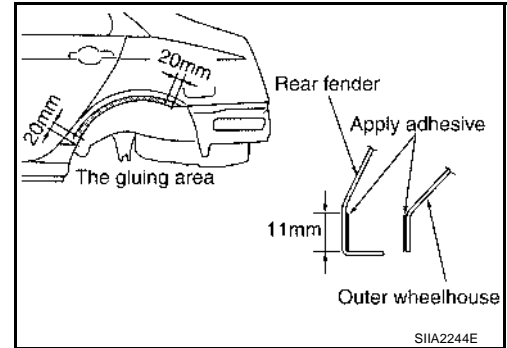
Ensure that the area that is to be glued around outer wheelhouse is undamaged or defaced.

Procedure of the hemming process

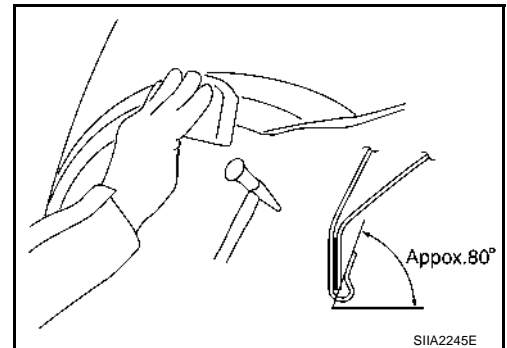
- Peel off old bonding material on the surface of outer wheelhouse and clean thoroughly.
- Peel off a primer coat in the specified area where new adhesive is to be applied on rear fender (the replacing part).
- Apply new adhesive to both specified areas of outer wheelhouse and rear fender.

<Adhesive> **3M automix panel bond 8115, or any equivalents**

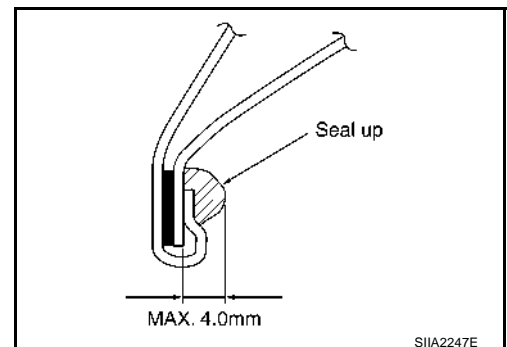
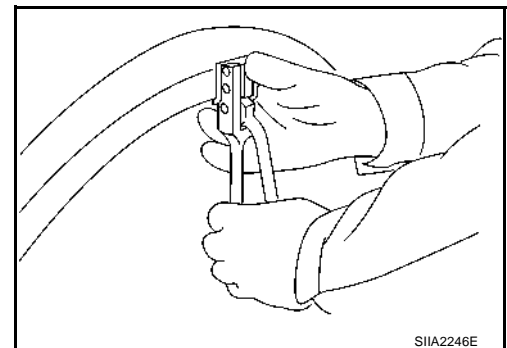
- Attach rear fender to the body of the car, and weld the required part except the hemming part.
- Bend the welded part starting from the center of the wheel arch gradually with a hammer and a dolly. (Also hem the end of the flange.)
- Hemming with a hammer is conducted to an approximate angle of 80 degrees.



- Starting from the center, hem the wheel arch gradually, using slight back and forth motion with a hemming tool.



- Seal up the area around the hemmed end of the flange.



PRECAUTIONS

PF0:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

NKS003X0

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WARNING:

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- 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 section.
- 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 CONSULT-II

NKS003XP

When connecting CONSULT-II to data link connector, connect them through CONSULT-II CONVERTER.

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.

CHECK POINTS FOR USING CONSULT-II

1. Has CONSULT-II been used without connecting CONSULT-II CONVERTER on this vehicle?
 - If YES, GO TO 2.
 - If NO, GO TO 5.
2. Is there any indication other than indications relating to CAN communication system in the self-diagnosis results?
 - If YES, GO TO 3.
 - If NO, GO TO 4.
3. Based on self-diagnosis results unrelated to CAN communication, carry out the inspection.
4. Malfunctions may be detected in self-diagnosis depending on control units carrying out CAN communication. Therefore, erase the self-diagnosis results.
5. Diagnose CAN communication system. Refer to [LAN-9, "TROUBLE DIAGNOSES WORK FLOW"](#) .

Precautions For Trouble Diagnosis CAN SYSTEM

NKS003XQ

- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch OFF and disconnect the battery cable from the negative terminal before checking the circuit.

A
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LAN

CAN SYSTEM (TYPE 12)

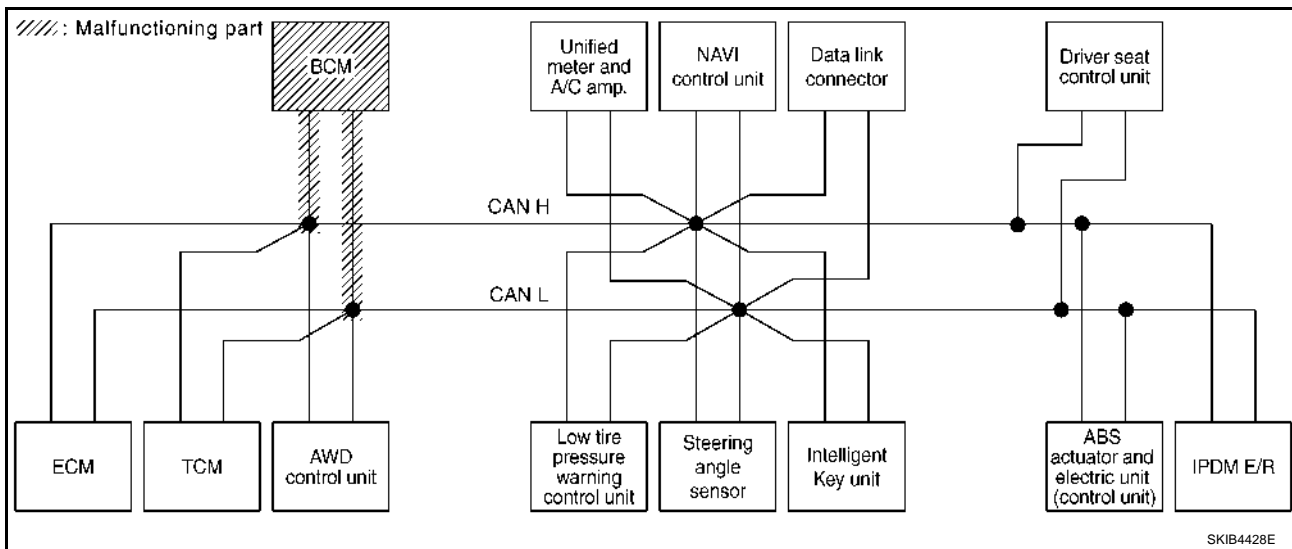
[CAN]

Case 7

Check BCM circuit. Refer to [LAN-593, "BCM Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR														SELF-DIAG RESULTS		
	Initial diagnosis	Transmit diagnosis	Receive diagnosis											CAN COMM CIRCUIT (U1000)			CAN COMM CIRCUIT (U1001)
			ECM	TCM	AWD/4WD	BCM	TIRE-P	STRG	I-KEY	METER/M&A	MULTI AV	YDC/TCS/ABS	IPDM E/R				
ENGINE	—	—	UNKWN	—	UNKWN	UNKWN	UNKWN	—	—	—	—	UNKWN	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	—	NG	UNKWN	UNKWN	—	UNKWN	—	—	—	—	—	UNKWN	—	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
ALL MODE AWD/4WD	—	NG	UNKWN	UNKWN	—	—	—	—	—	—	—	UNKWN	—	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
BCM	No indication	—	UNKWN	UNKWN	—	—	—	—	—	—	UNKWN	UNKWN	UNKWN	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
AIR PRESSURE MONITOR	No indication	—	UNKWN	UNKWN	—	—	—	—	—	—	—	—	—	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
INTELLIGENT KEY	No indication	—	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	—	—	UNKWN	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
METER A/C AMP	No indication	—	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
MULTI AV	No indication	—	UNKWN	UNKWN	—	—	UNKWN	UNKWN	—	—	—	UNKWN	—	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
AUTO DRIVE POS.	No indication	NG	—	—	UNKWN	—	UNKWN	—	—	—	—	UNKWN	—	—	—	—	—
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	—	UNKWN	—	—	—	—	—	—	CAN COMM CIRCUIT (U1000)	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	UNKWN	—	—	—	—	—	—	—	—	CAN COMM CIRCUIT (U1000)	—

PKIB8526E



SKIB4428E

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DTC P0131, P0151 A/F SENSOR 1

PFP:22693

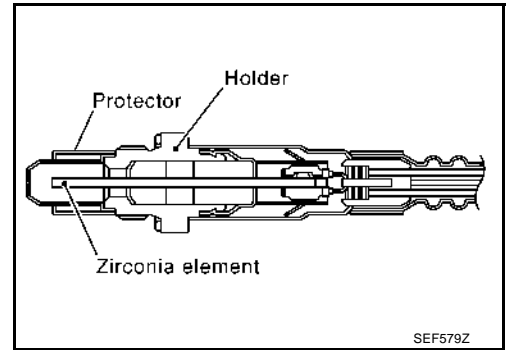
Component Description

NBS004WG

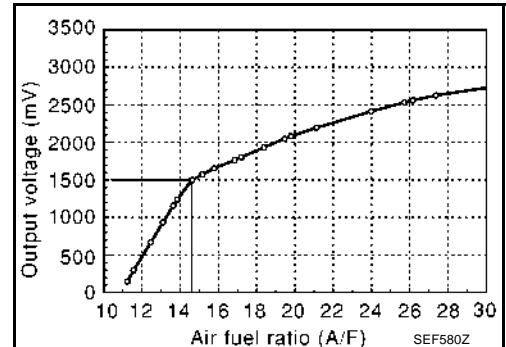
The air fuel ratio (A/F) sensor 1 is a planar dual-cell limit current sensor. The sensor element of the A/F sensor 1 is the combination of a Nernst concentration cell (sensor cell) with an oxygen-pump cell, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range ($0.7 < \lambda < \text{air}$).

The exhaust gas components diffuse through the diffusion gap at the electrode of the oxygen pump and Nernst concentration cell, where they are brought to thermodynamic balance.



An electronic circuit controls the pump current through the oxygen-pump cell so that the composition of the exhaust gas in the diffusion gap remains constant at $\lambda = 1$. Therefore, the A/F sensor 1 is able to indicate air/fuel ratio by this pumping of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of 700 - 800°C (1,292 - 1,472°F).



CONSULT-II Reference Value in Data Monitor Mode

NBS004WH

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
A/F SEN1 (B1) A/F SEN1 (B2)	● Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 1.5 V

On Board Diagnosis Logic

NBS004WI

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately low.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0131 0131 (Bank 1)	Air fuel ratio (A/F) sensor 1 circuit low voltage	● The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 0V.	<ul style="list-style-type: none"> ● Harness or connectors (The A/F sensor 1 circuit is open or shorted.) ● A/F sensor 1
P0151 0151 (Bank 2)			

DTC Confirmation Procedure

NBS004WJ

NOTE:

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

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

Ⓟ WITH CONSULT-II

1. Start engine and warm it up to normal operating temperature.
2. Select "A/F SEN1 (B1)" or "A/F SEN1 (B2)" in "DATA MONITOR" mode with CONSULT-II.

17. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to [EC-1082, "DTC P0340 CAMSHAFT POSITION \(CMP\) SENSOR \(PHASE\)"](#).
- Check crankshaft position sensor (POS) and circuit. Refer to [EC-1075, "DTC P0335 CKP SENSOR \(POS\)"](#).

OK or NG

- OK >> GO TO 18.
- NG >> 1. Repair or replace.
2. GO TO 4.

18. CHECK ECM FUNCTION

1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
2. Perform initialization of IVIS (NATS) system and registration of all IVIS (NATS) ignition key IDs. Refer to [BL-248, "ECM Re-Communicating Function"](#).

>> GO TO 4.

19. INSPECTION END

Did you replace ECM, referring this Basic Inspection procedure?

Yes or No

- Yes >> 1. Perform [EC-787, "VIN Registration"](#).
- 2. **INSPECTION END**
- No >> **INSPECTION END**

Idle Speed and Ignition Timing Check

IDLE SPEED

NBS005A7

 **With CONSULT-II**

Check idle speed in "DATA MONITOR" mode with CONSULT-II.

DATA MONITOR	
MONITOR	NO DTC
ENG SPEED	XXX rpm

SEF058Y

 **With GST**

Check idle speed with GST.

IGNITION TIMING

Any of following two methods may be used.

EXHAUST SYSTEM

NBS005RL

Removal and Installation

CAUTION:

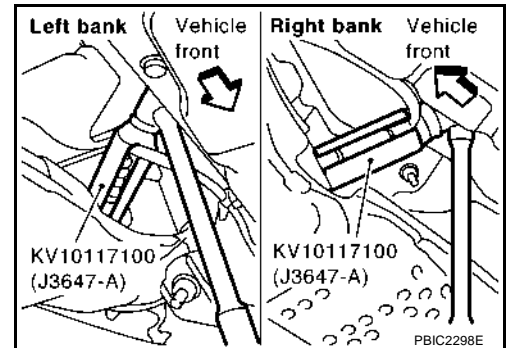
- Be sure to use genuine exhaust system parts or equivalents which are specially designed for heat resistance, corrosion resistance, and shape.
- Perform the operation with the exhaust system fully cooled down because the system will be hot just after engine stops.
- Be careful not to cut your hand on the heat insulator edge.

REMOVAL

- Disconnect each joint and mounting using power tool.
- Remove heated oxygen sensor 2 as follows:
 - Using heated oxygen sensor wrench (SST), removal heated oxygen sensor 2.

CAUTION:

Be careful not to damage heated oxygen sensor 2.



INSTALLATION

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

- Check for deformation of the grommets (18 and 20 of Components).
- Insert the collar (17 of Components) vertically.
- Install the collar (5 of Components) with its lower surface horizontal.
- Temporarily tighten nuts and bolts when installing exhaust pipe assembly. Tighten them to the specified torque when connecting the vehicle rear to the vehicle front.

CAUTION:

- Always replace exhaust tube gaskets with new ones when reassembling.
- Discard any heated oxygen sensor which has been dropped onto a hard surface such as a concrete floor. Use a new one.
- Before installing a new heated oxygen sensor, clean exhaust system threads using the heated oxygen sensor thread cleaner [commercial service tool: J-43897-18 or J-43897-12], and apply the anti-seize lubricant (commercial service tool).
- Do not over torque heated oxygen sensor. Doing so may cause damage to heated oxygen sensor, resulting in the "MIL" coming on.
- If heat insulator is badly deformed, repair or replace it. If deposits such as mud pile up on the heat insulator, remove them.
- When installing heat insulator avoid large gaps or interference between heat insulator and each exhaust pipe.
- Remove deposits from the sealing surface of each connection. Connect them securely to avoid gases leakage.
- Temporarily tighten mounting nuts on the exhaust manifold side and mounting bolts on the vehicle side. Check each part for unusual interference, and then tighten them to the specified torque.
- When installing each mounting rubber, avoid twisting or unusual extension in up/down and right/left directions.

INSPECTION AFTER INSTALLATION

- Make sure clearance between tail tube and rear bumper is even.
- With engine running, check exhaust tube joints for gas leakage and unusual noises.
- Check to ensure that mounting brackets and mounting rubbers are installed properly and free from undue stress. Improper installation could result in excessive noise and vibration.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PF0:00003

NVH Troubleshooting Chart

NES000J5

Use chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

Symptom		Possible cause and SUSPECTED PARTS														Reference page		
		Improper installation, looseness	Shock absorber deformation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	PROPELLER SHAFT	DIFFERENTIAL	REAR AXLE AND REAR SUSPENSION	TIRES	ROAD WHEELS	DRIVE SHAFT		BRAKES	STEERING
REAR SUSPENSION	Noise	x	x	x	x	x	x			x	x	x	x	x	x	x	x	RSU-7
	Shake	x	x	x	x		x			x		x	x	x	x	x	x	RSU-10
	Vibration	x	x	x	x	x				x		x	x		x			—
	Shimmy	x	x	x	x			x				x	x	x		x	x	—
	Judder	x	x	x								x	x	x		x	x	—
	Poor quality ride or handling	x	x	x	x	x		x	x			x	x	x				RSU-7 RSU-5 RSU-17

x: Applicable

POWER WINDOW SYSTEM

2. CHECK HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect BCM and door switch connector.
3. Check continuity between BCM connector and door switch connector.

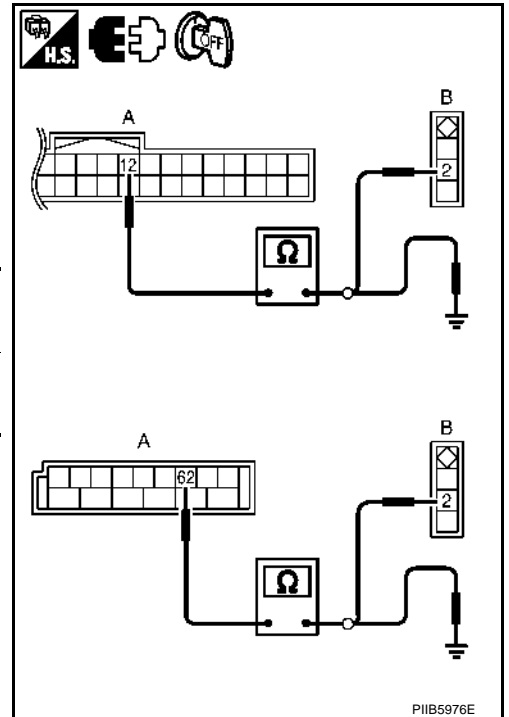
A		B		Continuity
BCM connector	Terminal	Door switch connector	Terminal	
M1	12	B35	2	Yes
M3	62	B11		

4. Check continuity between BCM connector ground.

A		Ground	Continuity
BCM connector	Terminal		
M1	12		No
M3	62		

OK or NG

- OK >> GO TO 3.
 NG >> Repair or replace harness.



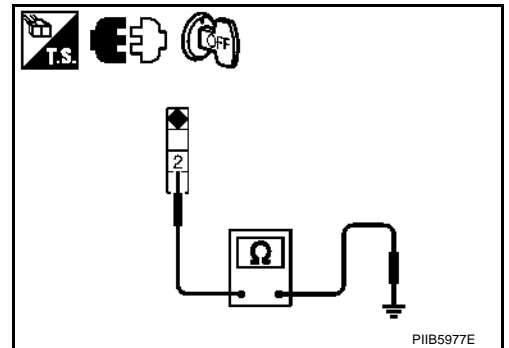
3. CHECK DOOR SWITCH

Check door switches.

Terminal		Door switch	Continuity
Door switches			
2	Ground part of door switch	Pushed	No
		Released	Yes

OK or NG

- OK >> GO TO 4.
 NG >> Replace malfunction door switch.



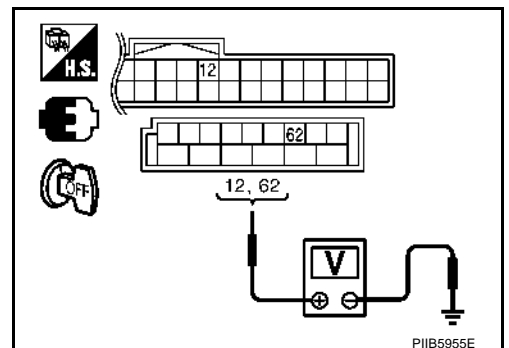
4. CHECK BCM OUTPUT SIGNAL

1. Connect BCM connector.
2. Check voltage between BCM connector ground.

Terminal		Voltage (V) (Approx.)	
(+)			
BCM connector	Terminal	(-)	
M1	12	Ground	Battery voltage
M3	62		

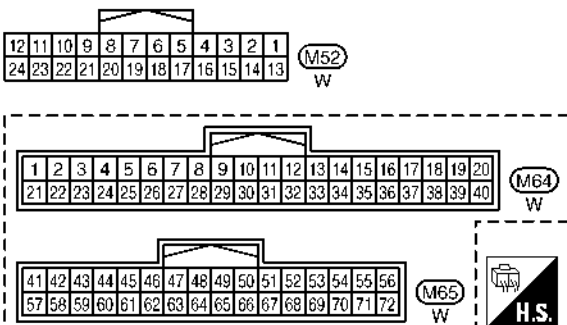
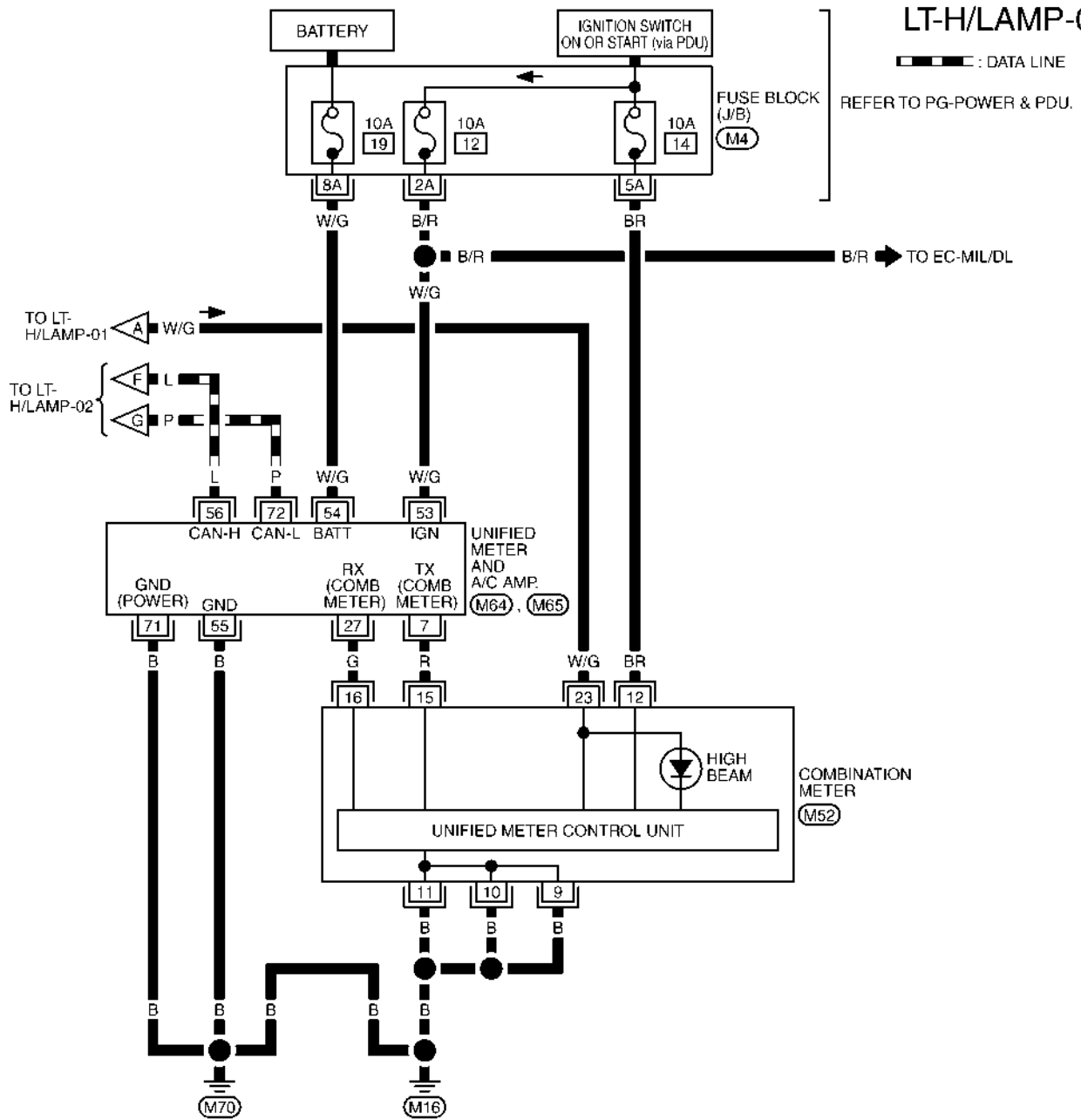
OK or NG

- OK >> Further inspection is necessary, Refer to symptom chart.
 NG >> Replace BCM.



A
B
C
D
E
F
G
H
GW
J
K
L
M

HEADLAMP (FOR USA) - CONVENTIONAL TYPE -



REFER TO THE FOLLOWING.
 (M4) - FUSE BLOCK-JUNCTION BOX (J/B)

TKWT5061E