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NOTE:

- If DTC U1000 or U1001 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-163</u>, "<u>DTC U1000</u>, <u>U1001 CAN COMMUNICATION LINE</u>".
- If DTC U1010 is displayed with other DTC, first perform the trouble diagnosis for DTC U1010.
 Refer to EC-166, "DTC U1010 CAN COMMUNICATION".

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CONSULT-II GST* ²	ECM* ³	ltems (CONSULT-II screen terms)	Reference page
U1000	1000*4	CAN COMM CIRCUIT	EC-163
U1001	1001*4	CAN COMM CIRCUIT	EC-163
U1010	1010	CONTROL UNIT (CAN)	EC-166
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P0014	0014	EXH/V TIM CONT-B1*6	EC-173
P0021	0021	INT/V TIM CONT-B2	EC-168
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P0037	0037	HO2S2 HTR (B1)	EC-186
P0038	0038	HO2S2 HTR (B1)	EC-186
P0051	0051	A/F SEN1 HTR (B2)	EC-178
P0052	0052	A/F SEN1 HTR (B2)	EC-178
P0057	0057	HO2S2 HTR (B2)	EC-186
P0058	0058	HO2S2 HTR (B2)	EC-186
P0075	0075	INT/V TIM V/CIR-B1	EC-195
P0078	0078	EX V/T MGT/RTDR-B1* ⁶	EC-203
P0081	0081	INT/V TIM V/CIR-B2	EC-195
P0084	0084	EX V/T MGT/RTDR-B2*6	EC-203
P0101	0101	MAF SEN/CIRCUIT	EC-211
P0102	0102	MAF SEN/CIRCUIT	EC-220
P0103	0103	MAF SEN/CIRCUIT	EC-220
P0112	0112	IAT SEN/CIRCUIT	EC-228
P0113	0113	IAT SEN/CIRCUIT	EC-228
P0117	0117	ECT SEN/CIRC	EC-234
P0118	0118	ECT SEN/CIRC	EC-234
P0122	0122	TP SEN 2/CIRC	EC-240
P0123	0123	TP SEN 2/CIRC	EC-240
P0125	0125	ECT SENSOR	EC-248
P0127	0127	IAT SENSOR	EC-252
P0128	0128	THERMSTAT FNCTN	EC-255
P0130	0130	A/F SENSOR1 (B1)	EC-257

А		Items	* 1	DTC:
	Reference page	(CONSULT-II screen terms)	ECM* ³	CONSULT-II GST* ²
EC	EC-268	A/F SENSOR1 (B1)	0131	P0131
-	EC-278	A/F SENSOR1 (B1)	0132	P0132
_	EC-288	A/F SENSOR1 (B1)	0133	P0133
С	EC-301	HO2S2 (B1)	0137	P0137
_	EC-313	HO2S2 (B1)	0138	P0138
_ D	EC-327	HO2S2 (B1)	0139	P0139
	EC-257	A/F SENSOR1 (B2)	0150	P0150
=	EC-268	A/F SENSOR1 (B2)	0151	P0151
Е	EC-278	A/F SENSOR1 (B2)	0152	P0152
=	EC-288	A/F SENSOR1 (B2)	0153	P0153
	EC-301	HO2S2 (B2)	0157	P0157
- F	EC-313	HO2S2 (B2)	0158	P0158
_	EC-327	HO2S2 (B2)	0159	P0159
G	EC-339	FUEL SYS-LEAN-B1	0171	P0171
=	EC-351	FUEL SYS-RICH-B1	0172	P0172
-	EC-339	FUEL SYS-LEAN-B2	0174	P0174
- H	EC-351	FUEL SYS-RICH-B2	0175	P0175
_	EC-362	FTT SENSOR	0181	P0181
-	EC-367	FTT SEN/CIRCUIT	0182	P0182
_	EC-367	FTT SEN/CIRCUIT	0183	P0183
_	EC-371	TP SEN 1/CIRC	0222	P0222
- J	EC-371	TP SEN 1/CIRC	0223	P0223
_	EC-379	MULTI CYL MISFIRE	0300	P0300
K	EC-379	CYL 1 MISFIRE	0301	P0301
_ '\	EC-379	CYL 2 MISFIRE	0302	P0302
_	EC-379	CYL 3 MISFIRE	0303	P0303
L	EC-379	CYL 4 MISFIRE	0304	P0304
_	EC-379	CYL 5 MISFIRE	0305	P0305
- N./I	EC-379	CYL 6 MISFIRE	0306	P0306
_ M	EC-389	KNOCK SEN/CIRC-B1	0327	P0327
_	EC-389	KNOCK SEN/CIRC-B1	0328	P0328
_	EC-394	CKP SEN/CIRCUIT	0335	P0335
_	EC-402	CMP SEN/CIRC-B1	0340	P0340
_	EC-402	CMP SEN/CIRC-B2	0345	P0345
_	EC-412	TW CATALYST SYS-B1	0420	P0420
_	EC-412	TW CATALYST SYS-B2	0430	P0430
=	EC-418	EVAP PURG FLOW/MON	0441	P0441
=	EC-423	EVAP SMALL LEAK	0442	P0442
=	EC-431	PURG VOLUME CONT/V	0443	P0443
_	EC-439	PURG VOLUME CONT/V	0444	P0444
=	EC-439	PURG VOLUME CONT/V	0445	P0445
_	EC-446	VENT CONTROL VALVE	0447	P0447

DTC*1			
CONSULT-II GST* ²	ECM*3	ltems (CONSULT-II screen terms)	Reference page
P0448	0448	VENT CONTROL VALVE	EC-455
P0451	0451	EVAP SYS PRES SEN	EC-464
P0452	0452	EVAP SYS PRES SEN	EC-467
P0453	0453	EVAP SYS PRES SEN	EC-474
P0455	0455	EVAP GROSS LEAK	EC-482
P0456	0456	EVAP VERY SML LEAK	EC-490
P0460	0460	FUEL LEV SEN SLOSH	EC-499
P0461	0461	FUEL LEVEL SENSOR	EC-501
P0462	0462	FUEL LEVL SEN/CIRC	EC-503
P0463	0463	FUEL LEVL SEN/CIRC	EC-503
P0500	0500	VEH SPEED SEN/CIRC*5	EC-505
P0506	0506	ISC SYSTEM	EC-507
P0507	0507	ISC SYSTEM	EC-509
P0550	0550	PW ST P SEN/CIRC	EC-511
P0603	0603	ECM BACK UP/CIRCUIT	EC-516
P0605	0605	ECM	EC-520
P0643	0643	SENSOR POWER/CIRC	EC-523
P0700	0700	ТСМ	AT-113
P0705	0705	PNP SW/CIRC	<u>AT-114</u>
P0710	0710	ATF TEMP SEN/CIRC	<u>AT-136</u>
P0717	0717	TURBINE SENSOR	<u>AT-125</u>
P0720	0720	VEH SPD SEN/CIR AT*5	<u>AT-120</u>
P0740	0740	TCC SOLENOID/CIRC	<u>AT-127</u>
P0744	0744	A/T TCC S/V FNCTN	<u>AT-129</u>
P0745	0745	L/PRESS SOL/CIRC	<u>AT-131</u>
P0850	0850	P-N POS SW/CIRCUIT	EC-529
P1078	1078	EXH TIM SEN/CIR-B1*6	EC-537
P1084	1084	EXH TIM SEN/CIR-B2* ⁶	<u>EC-537</u>
P1148	1148	CLOSED LOOP-B1	EC-547
P1168	1168	CLOSED LOOP-B2	EC-547
P1211	1211	TCS C/U FUNCTN	EC-548
P1212	1212	TCS/CIRC	EC-549
P1217	1217	ENG OVER TEMP	EC-550
P1225	1225	CTP LEARNING	EC-562
P1226	1226	CTP LEARNING	<u>EC-564</u>
P1564	1564	ASCD SW	<u>EC-566</u>
P1572	1572	ASCD BRAKE SW	EC-574
P1574	1574	ASCD VHL SPD SEN	EC-590
P1610 - P1615	1610 - 1615	NATS MALFUNCTION	<u>EC-46</u>
P1715	1715	IN PULY SPEED	EC-592
P1730	1730	A/T INTERLOCK	AT-143
P1752	1752	I/C SOLENOID/CIRC	AT-148

רם	™C* ¹	Items		
CONSULT-II GST* ²	ECM*3	(CONSULT-II screen terms)	Reference page	
P1754	1754	I/C SOLENOID FNCTN	<u>AT-150</u>	
P1757	1757	FR/B SOLENOID/CIRC	<u>AT-152</u>	
P1759	1759	FR/B SOLENOID FNCT	<u>AT-154</u>	
P1762	1762	D/C SOLENOID/CIRC	<u>AT-156</u>	
P1764	1764	D/C SOLENOID FNCTN	<u>AT-158</u>	
P1767	1767	HLR/C SOL/CIRC	<u>AT-160</u>	
P1769	1769	HLR/C SOL FNCTN	<u>AT-162</u>	
P1772	1772	LC/B SOLENOID/CIRC	<u>AT-164</u>	
P1774	1774	LC/B SOLENOID FNCT	<u>AT-166</u>	
P1805	1805	BRAKE SW/CIRCUIT	EC-593	
P2100	2100	ETC MOT PWR	EC-598	
P2101	2101	ETC FUNCTION/CIRC	EC-604	
P2103	2103	ETC MOT PWR	EC-598	
P2118	2118	ETC MOT	<u>EC-611</u>	
P2119	2119	ETC ACTR	<u>EC-616</u>	
P2122	2122	APP SEN 1/CIRC	EC-618	
P2123	2123	APP SEN 1/CIRC	EC-618	
P2127	2127	APP SEN 2/CIRC	EC-626	
P2128	2128	APP SEN 2/CIRC	EC-626	
P2135	2135	TP SENSOR	EC-634	
P2138	2138	APP SENSOR	<u>EC-642</u>	
P2A00	2A00	A/F SENSOR1 (B1)	EC-651	
P2A03	2A03	A/F SENSOR1 (B2)	EC-651	

^{*1: 1}st trip DTC No. is the same as DTC No.

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^{*2:} This number is prescribed by SAE J2012.

^{*3:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

^{*4:} The troubleshooting for this DTC needs CONSULT-II.

^{*5:} When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

^{*6:} For models with M/T

Alphabetical Index

NBS00028

NOTE:

- If DTC U1000 or U1001 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC U1010 is displayed with other DTC, first perform the diagnosis for DTC U1010. Refer to <u>EC-166</u>, "DTC U1010 CAN COMMUNICATION".

	DTC	*1		
Items (CONSULT-II screen terms)	CONSULT-II GST* ²	ECM* ³	Reference page	
A/F SENSOR1 (B1)	P0130	0130	EC-257	
A/F SENSOR1 (B1)	P0131	0131	EC-268	
A/F SENSOR1 (B1)	P0132	0132	EC-278	
A/F SENSOR1 (B1)	P0133	0133	EC-288	
A/F SENSOR1 (B1)	P2A00	2A00	EC-651	
A/F SENSOR1 (B2)	P0150	0150	EC-257	
A/F SENSOR1 (B2)	P0151	0151	EC-268	
A/F SENSOR1 (B2)	P0152	0152	EC-278	
A/F SENSOR1 (B2)	P0153	0153	EC-288	
A/F SENSOR1 (B2)	P2A03	2A03	EC-651	
A/F SEN1 HTR (B1)	P0031	0031	EC-178	
A/F SEN1 HTR (B1)	P0032	0032	EC-178	
A/F SEN1 HTR (B2)	P0051	0051	EC-178	
A/F SEN1 HTR (B2)	P0052	0052	<u>EC-178</u>	
A/T INTERLOCK	P1730	1730	<u>AT-143</u>	
A/T TCC S/V FNCTN	P0744	0744	<u>AT-129</u>	
APP SEN 1/CIRC	P2122	2122	EC-618	
APP SEN 1/CIRC	P2123	2123	EC-618	
APP SEN 2/CIRC	P2127	2127	EC-626	
APP SEN 2/CIRC	P2128	2128	EC-626	
APP SENSOR	P2138	2138	EC-642	
ASCD BRAKE SW	P1572	1572	EC-574	
ASCD SW	P1564	1564	EC-566	
ASCD VHL SPD SEN	P1574	1574	EC-590	
ATF TEMP SEN/CIRC	P0710	0710	<u>AT-136</u>	
BRAKE SW/CIRCUIT	P1805	1805	EC-593	
CAN COMM CIRCUIT	U1000	1000*4	EC-163	
CAN COMM CIRCUIT	U1001	1001*4	EC-163	
CKP SEN/CIRCUIT	P0335	0335	<u>EC-394</u>	
CLOSED LOOP-B1	P1148	1148	EC-547	
CLOSED LOOP-B2	P1168	1168	EC-547	
CMP SEN/CIRC-B1	P0340	0340	EC-402	
CMP SEN/CIRC-B2	P0345	0345	EC-402	
CONTROL UNIT (CAN)	U1010	1010	<u>EC-166</u>	
CTP LEARNING	P1225	1225	EC-562	
CTP LEARNING	P1226	1226	<u>EC-564</u>	
CYL 1 MISFIRE	P0301	0301	EC-379	

Hama	DTC		
Items (CONSULT-II screen terms)	CONSULT-II GST* ²	ECM*3	Reference page
CYL 2 MISFIRE	P0302	0302	EC-379
CYL 3 MISFIRE	P0303	0303	EC-379
CYL 4 MISFIRE	P0304	0304	EC-379
CYL 5 MISFIRE	P0305	0305	EC-379
CYL 6 MISFIRE	P0306	0306	EC-379
D/C SOLENOID/CIRC	P1762	1762	<u>AT-156</u>
D/C SOLENOID FNCTN	P1764	1764	<u>AT-158</u>
ECM	P0605	0605	EC-520
ECM BACK UP/CIRCUIT	P0603	0603	EC-516
ECT SEN/CIRC	P0117	0117	EC-234
ECT SEN/CIRC	P0118	0118	EC-234
ECT SENSOR	P0125	0125	EC-248
ENG OVER TEMP	P1217	1217	EC-550
ETC ACTR	P2119	2119	EC-616
ETC FUNCTION/CIRC	P2101	2101	EC-604
ETC MOT	P2118	2118	EC-611
ETC MOT PWR	P2103	2103	EC-598
TC MOT PWR	P2100	2100	EC-598
EVAP GROSS LEAK	P0455	0455	EC-482
EVAP PURG FLOW/MON	P0441	0441	EC-418
EVAP SMALL LEAK	P0442	0442	EC-423
EVAP SYS PRES SEN	P0451	0451	EC-464
EVAP SYS PRES SEN	P0452	0452	EC-467
EVAP SYS PRES SEN	P0453	0453	EC-474
EVAP VERY SML LEAK	P0456	0456	<u>EC-490</u>
EX V/T MGT/RTDR-B1* ⁶	P0078	0078	EC-203
X V/T MGT/RTDR-B2*6	P0084	0084	EC-203
EXH TIM SEN/CIR-B1* ⁶	P1078	1078	EC-537
EXH TIM SEN/CIR -B2* ⁶	P1084	1084	EC-537
EXH/V TIM CONT-B1* ⁶	P0014	0014	EC-173
EXH/V TIM CONT-B2* ⁶	P0024	0024	EC-173
FR/B SOLENOID/CIRC	P1757	1757	AT-152
FR/B SOLENOID FNCT	P1759	1759	AT-154
TTT SEN/CIRCUIT	P0182	0182	EC-367
TT SEN/CIRCUIT	P0183	0183	EC-367
TT SENSOR	P0181	0181	EC-362
FUEL LEV SEN SLOSH	P0460	0460	EC-499
FUEL LEVEL SENSOR	P0461	0461	EC-501
FUEL LEVL SEN/CIRC	P0462	0462	EC-503
FUEL LEVL SEN/CIRC	P0463	0463	EC-503
FUEL SYS-LEAN-B1	P0171	0171	EC-339

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	DTC	· ¹	
Items (CONSULT-II screen terms)	CONSULT-II GST* ²	ECM* ³	Reference page
FUEL SYS-LEAN-B2	P0174	0174	EC-339
FUEL SYS-RICH-B1	P0172	0172	EC-351
FUEL SYS-RICH-B2	P0175	0175	EC-351
HLR/C SOL FNCTN	P1769	1769	AT-162
HLR/C SOL/CIRC	P1767	1767	AT-160
HO2S2 (B1)	P0138	0138	EC-313
HO2S2 (B1)	P0139	0139	EC-327
HO2S2 (B1)	P0137	0137	EC-301
HO2S2 (B2)	P0158	0158	EC-313
HO2S2 (B2)	P0159	0159	EC-327
HO2S2 (B2)	P0157	0157	EC-301
HO2S2 HTR (B1)	P0037	0037	EC-186
HO2S2 HTR (B1)	P0038	0038	EC-186
HO2S2 HTR (B2)	P0057	0057	EC-186
HO2S2 HTR (B2)	P0058	0058	EC-186
/C SOLENOID/CIRC	P1752	1752	<u>AT-148</u>
/C SOLENOID FNCTN	P1754	1754	AT-150
AT SEN/CIRCUIT	P0112	0112	EC-228
AT SEN/CIRCUIT	P0113	0113	EC-228
AT SENSOR	P0127	0127	EC-252
N PULY SPEED	P1715	1715	EC-592
NT/V TIM CONT-B1	P0011	0011	EC-168
NT/V TIM CONT-B2	P0021	0021	EC-168
NT/V TIM V/CIR-B1	P0075	0075	EC-195
NT/V TIM V/CIR-B2	P0081	0081	EC-195
SC SYSTEM	P0506	0506	EC-507
SC SYSTEM	P0507	0507	EC-509
KNOCK SEN/CIRC-B1	P0327	0327	EC-389
KNOCK SEN/CIRC-B1	P0328	0328	EC-389
_/PRESS SOL/CIRC	P0745	0745	<u>AT-131</u>
LC/B SOLENOID FNCT	P1774	1774	<u>AT-166</u>
LC/B SOLENOID/CIRC	P1772	1772	AT-164
MAF SEN/CIRCUIT	P0101	0101	EC-211
MAF SEN/CIRCUIT	P0102	0102	EC-220
MAF SEN/CIRCUIT	P0103	0103	EC-220
MULTI CYL MISFIRE	P0300	0300	EC-379
NATS MALFUNCTION	P1610 - P1615	1610 - 1615	EC-46
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	P0000	0000	_
P-N POS SW/CIRCUIT	P0850	0850	EC-529
PNP SW/CIRC	P0705	0705	AT-114
PURG VOLUME CONT/V	P0444	0444	EC-439

Items (CONSULT-II screen terms)	DT	DTC*1		
	CONSULT-II GST* ²	ECM* ³	Reference page	
PURG VOLUME CONT/V	P0445	0445	EC-439	_
PURG VOLUME CONT/V	P0443	0443	EC-431	
PW ST P SEN/CIRC	P0550	0550	EC-511	_
SENSOR POWER/CIRC	P0643	0643	EC-523	_
TCC SOLENOID/CIRC	P0740	0740	<u>AT-127</u>	_
TCM	P0700	0700	<u>AT-113</u>	_
TCS C/U FUNCTN	P1211	1211	EC-548	_
TCS/CIRC	P1212	1212	EC-549	_
THERMSTAT FNCTN	P0128	0128	EC-255	_
TP SEN 1/CIRC	P0222	0222	EC-371	_
TP SEN 1/CIRC	P0223	0223	EC-371	_
TP SEN 2/CIRC	P0122	0122	EC-240	_
TP SEN 2/CIRC	P0123	0123	EC-240	_
TP SEN/CIRC A/T	P1705	1705	<u>AT-133</u>	_
TP SENSOR	P2135	2135	EC-634	_
TURBINE SENSOR	P0717	0717	<u>AT-125</u>	_
TW CATALYST SYS-B1	P0420	0420	EC-412	_
TW CATALYST SYS-B2	P0430	0430	EC-412	_
VEH SPD SEN/CIR AT*5	P0720	0720	AT-120	_
VEH SPEED SEN/CIRC*5	P0500	0500	EC-505	_
VENT CONTROL VALVE	P0447	0447	EC-446	_
VENT CONTROL VALVE	P0448	0448	EC-455	_

^{*1: 1}st trip DTC No. is the same as DTC No.

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^{*2:} This number is prescribed by SAE J2012.

^{*3:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

^{*4:} The troubleshooting for this DTC needs CONSULT-II.

^{*5:} When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

^{*6:} For models with M/T.

PRECAUTIONS PFP:00001

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

IRS00020

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 Battery Service

NBS0002A

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

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

NBS0002

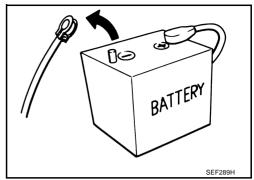
The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

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 slidelocking type harness connector. For description and how to disconnect, refer to <u>PG-79</u>, "HAR-NESS 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.

Precaution

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



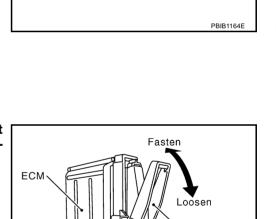
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EC

- Do not disassemble ECM.
- If a battery cable is disconnected, the memory will return to the ECM value.

The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.

- If the battery is disconnected, the following emission related diagnostic information will be lost within 24 hours.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st freeze frame data
- System readiness test (SRT) codes
- Test values
- When connecting ECM harness connector, fasten it securely with a lever as far as it will go as shown in the figure.

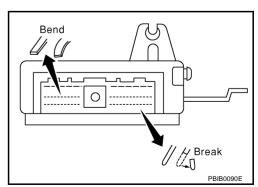


Lever

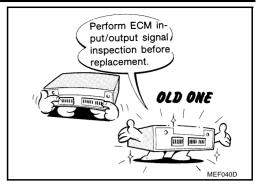
Protector

SEC406D

- When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).
 - Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.
- Securely connect ECM harness connectors.
 A poor connection can cause an extremely high (surge) voltage to develop in coil and condenser, thus resulting in damage to ICs.
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.
- Keep engine control system parts and harness dry.

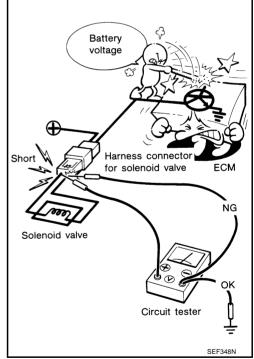


- Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly. Refer to <u>EC-111, "ECM Terminals and Reference Value"
 </u>
- Handle mass air flow sensor carefully to avoid damage.
- Do not disassemble mass air flow sensor.
- Do not clean mass air flow sensor with any type of detergent.
- Do not disassemble electric throttle control actuator.
- Even a slight leak in the air intake system can cause serious incidents.
- Do not shock or jar the camshaft position sensor (PHASE), crankshaft position sensor (POS).
- After performing each TROUBLE DIAGNOSIS, perform DTC Confirmation Procedure or Overall Function Check. The DTC should not be displayed in the DTC Confirmation Procedure if the repair is completed. The Overall Function Check should be a good result if the repair is completed.

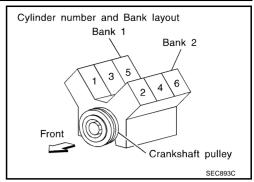




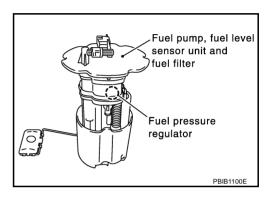
- When measuring ECM signals with a circuit tester, never allow the two tester probes to contact.
 Accidental contact of probes will cause a short circuit and damage the ECM power transistor.
- Do not use ECM ground terminals when measuring input/ output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.



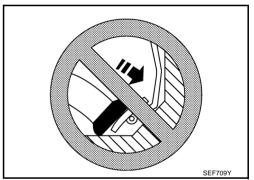
 B1 indicates the bank 1, B2 indicates the bank 2 as shown in the figure.



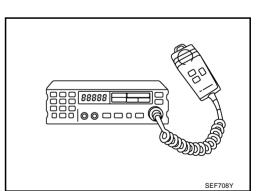
- Do not operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.



- Do not depress accelerator pedal when starting.
- Immediately after starting, do not rev up engine unnecessarily.
- Do not rev up engine just prior to shutdown.



- When installing C.B. ham radio or a mobile phone, be sure to observe the following as it may adversely affect electronic control systems depending on installation location.
- Keep the antenna as far as possible from the electronic control units.
- Keep the antenna feeder line more than 20 cm (8 in) away from the harness of electronic controls.
 Do not let them run parallel for a long distance.
- Adjust the antenna and feeder line so that the standingwave radio can be kept smaller.
- Be sure to ground the radio to vehicle body.



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PREPARATION

PREPARATION PFP:00002

Special Service Tools

NBS0002E

Tool number (Kent-Moore No.) Tool name		Description
KV10117100 (J-36471-A) Heated oxygen sensor wrench	S-NT379	Loosening or tightening heated oxygen sensor with 22 mm (0.87 in) hexagon nut
KV10114400 (J-38365) Heated oxygen sensor wrench	S-NT636	Loosening or tightening heated oxygen sensor a: 22 mm (0.87 in)
(J-44626) Air fuel ratio (A/F) sensor wrench	LEM054	Loosening or tightening air fuel ratio (A/F) sensor
(J-44321) Fuel pressure gauge kit	LEC642	Checking fuel pressure
KV109E0010 (J-46209) Break-out box	Break Out Box 000000000000000000000000000000000000	Measuring ECM signals with a circuit tester
KV109E0080 (J-45819) Y-cable adapter	S-NT826	Measuring ECM signals with a circuit tester
EG17650301 (J-33984-A) Radiator cap tester adapter		Adapting radiator cap tester to radiator cap and radiator filler neck a: 28 (1.10) dia. b: 31.4 (1.236) dia. c: 41.3 (1.626) dia. Unit: mm (in)

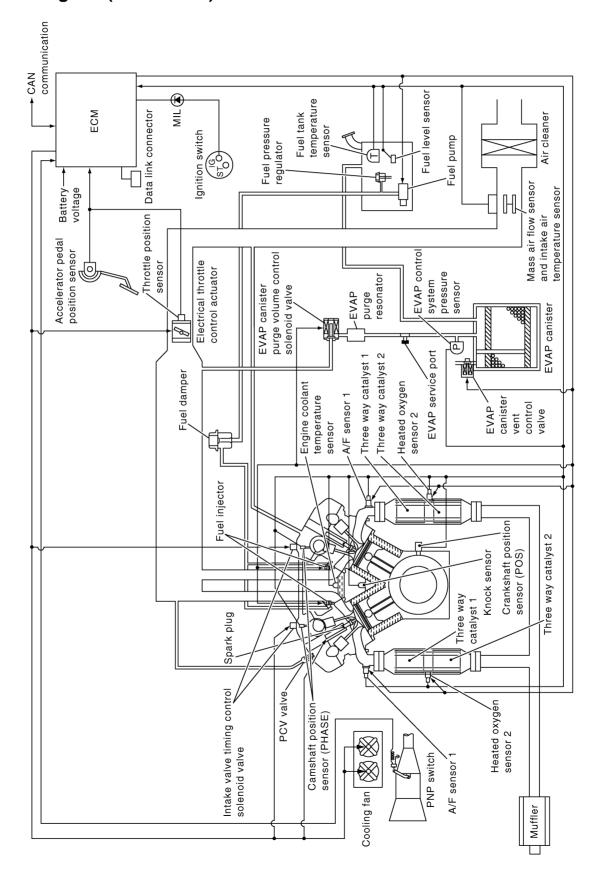
PREPARATION

ommercial Servi	ce Tools	NBS0002F
Tool name (Kent-Moore No.)		Description
Leak detector i.e.: (J-41416)		Locating the EVAP leak
EVAP service port adapter i.e.: (J-41413-OBD)	S-NT703	Applying positive pressure through EVAP service port
Fuel filler cap adapter i.e.: (MLR-8382)	S-NT704	Checking fuel tank vacuum relief valve opening pressure
Socket wrench	19 mm (0.75 in) Note than 32 mm (1.26 in)	Removing and installing engine coolant temperature sensor
Oxygen sensor thread cleaner i.e.: (J-43897-18) (J-43897-12)	S-NT705 Mating surface shave cylinder Flutes AEM488	Reconditioning the exhaust system threads before installing a new oxygen sensor. Use with anti-seize lubricant shown below. a: 18 mm diameter with pitch 1.5 mm for Zirconia Oxygen Sensor b: 12 mm diameter with pitch 1.25 mm for Titania Oxygen Sensor
Anti-seize lubricant i.e.: (Permatex TM 133AR or equivalent meeting MIL specification MIL-A- 907)	S-NT779	Lubricating oxygen sensor thread cleaning tool when reconditioning exhaust system threads.

ENGINE CONTROL SYSTEMSystem Diagram (A/T Models)

PFP:23710

NBS0002G



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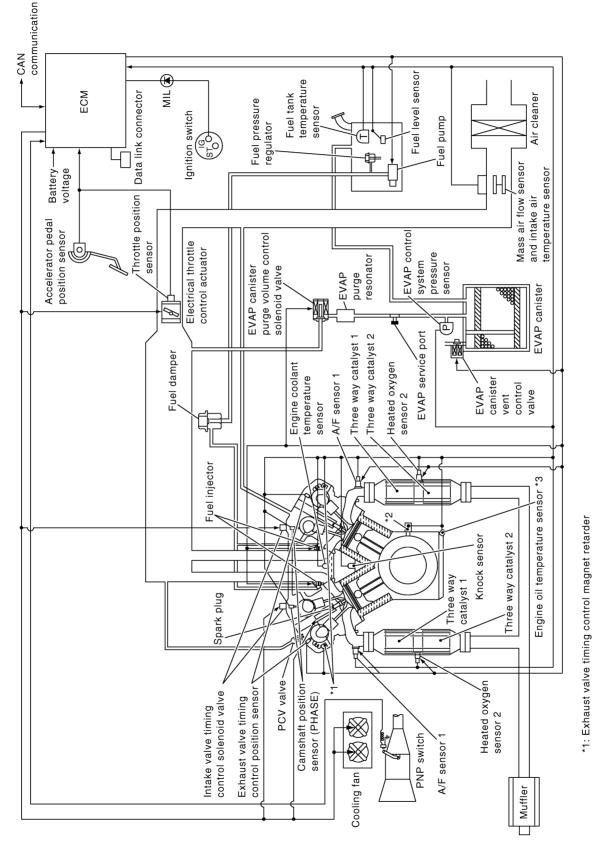
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*2: Crankshaft position sensor (POS) *3: This sensor/actuator is not for controlling the engine system, nor for the on board diagnosis.



PBIB2775E

Multiport Fuel Injection (MFI) System INPUT/OUTPUT SIGNAL CHART

NBS00021

Sensor	Input Signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*3		
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature		
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas		
Throttle position sensor	Throttle position		
Accelerator pedal position sensor	Accelerator pedal position	Fuel injection	
Park/neutral position (PNP) switch	Gear position	& mixture ratio	
Knock sensor	Engine knocking condition	control	
Battery	Battery voltage*3		
Power steering pressure sensor	Power steering operation		
Heated oxygen sensor 2*1	Density of oxygen in exhaust gas		
Air conditioner switch	Air conditioner operation*2		
Wheel sensor	Vehicle speed*2		

^{*1:} This sensor is not used to control the engine system under normal conditions.

SYSTEM DESCRIPTION

The amount of fuel injected from the fuel injector is determined by the ECM. The ECM controls the length of time the valve remains open (injection pulse duration). The amount of fuel injected is a program value in the ECM memory. The program value is preset by engine operating conditions. These conditions are determined by input signals (for engine speed and intake air) from both the crankshaft position sensor and the mass air flow sensor.

VARIOUS FUEL INJECTION INCREASE/DECREASE COMPENSATION

In addition, the amount of fuel injected is compensated to improve engine performance under various operating conditions as listed below.

<Fuel increase>

- During warm-up
- When starting the engine
- During acceleration
- Hot-engine operation
- When selector lever is changed from N to D (A/T models)
- High-load, high-speed operation

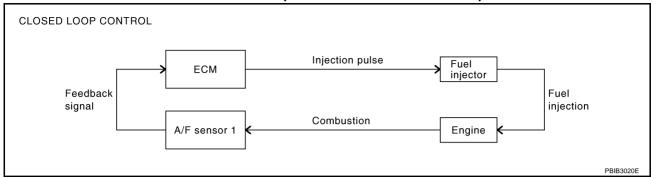
<Fuel decrease>

- During deceleration
- During high engine speed operation

^{*2:} This signal is sent to the ECM through CAN communication line.

^{*3:} ECM determines the start signal status by the signals of engine speed and battery voltage.

MIXTURE RATIO FEEDBACK CONTROL (CLOSED LOOP CONTROL)



The mixture ratio feedback system provides the best air-fuel mixture ratio for driveability and emission control. The three way catalyst 1 can then better reduce CO, HC and NOx emissions. This system uses air fuel ratio (A/F) sensor 1 in the exhaust manifold to monitor whether the engine operation is rich or lean. The ECM adjusts the injection pulse width according to the sensor voltage signal. For more information about air fuel ratio (A/F) sensor 1, refer to EC-268, "DTC P0131, P0151 A/F SENSOR 1". This maintains the mixture ratio within the range of stoichiometric (ideal air-fuel mixture).

This stage is referred to as the closed loop control condition.

Heated oxygen sensor 2 is located downstream of the three way catalyst 1. Even if the switching characteristics of air fuel ratio (A/F) sensor 1 shift, the air-fuel ratio is controlled to stoichiometric by the signal from heated oxygen sensor 2.

Open Loop Control

The open loop system condition refers to when the ECM detects any of the following conditions. Feedback control stops in order to maintain stabilized fuel combustion.

- Deceleration and acceleration
- High-load, high-speed operation
- Malfunction of air fuel ratio (A/F) sensor 1 or its circuit
- Insufficient activation of air fuel ratio (A/F) sensor 1 at low engine coolant temperature
- High engine coolant temperature
- During warm-up
- After shifting from N to D (A/T models)
- When starting the engine

MIXTURE RATIO SELF-LEARNING CONTROL

The mixture ratio feedback control system monitors the mixture ratio signal transmitted from air fuel ratio (A/F) sensor 1. This feedback signal is then sent to the ECM. The ECM controls the basic mixture ratio as close to the theoretical mixture ratio as possible. However, the basic mixture ratio is not necessarily controlled as originally designed. Both manufacturing differences (i.e., mass air flow sensor hot wire) and characteristic changes during operation (i.e., fuel injector clogging) directly affect mixture ratio.

Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"Fuel trim" refers to the feedback compensation value compared against the basic injection duration. Fuel trim includes short term fuel trim and long term fuel trim.

"Short term fuel trim" is the short-term fuel compensation used to maintain the mixture ratio at its theoretical value. The signal from air fuel ratio (A/F) sensor 1 indicates whether the mixture ratio is RICH or LEAN compared to the theoretical value. The signal then triggers a reduction in fuel volume if the mixture ratio is rich, and an increase in fuel volume if it is lean.

"Long term fuel trim" is overall fuel compensation carried out long-term to compensate for continual deviation of the short term fuel trim from the central value. Such deviation will occur due to individual engine differences, wear over time and changes in the usage environment.

Revision: 2005 August **EC-25** 2006 350Z

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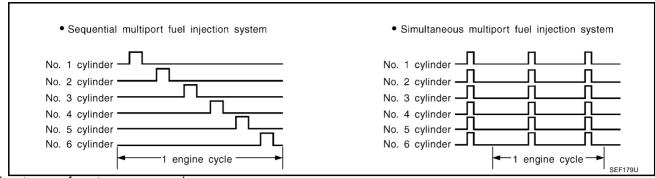
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FUEL INJECTION TIMING



Two types of systems are used.

Sequential Multiport Fuel Injection System

Fuel is injected into each cylinder during each engine cycle according to the firing order. This system is used when the engine is running.

Simultaneous Multiport Fuel Injection System

Fuel is injected simultaneously into all six cylinders twice each engine cycle. In other words, pulse signals of the same width are simultaneously transmitted from the ECM.

The six fuel injectors will then receive the signals two times for each engine cycle.

This system is used when the engine is being started and/or if the fail-safe system (CPU) is operating.

FUEL SHUT-OFF

Fuel to each cylinder is cut off during deceleration, operation of the engine at excessively high speeds or operation of the vehicle at excessively high speeds.

Electronic Ignition (EI) System INPUT/OUTPUT SIGNAL CHART

NBS0002J

Sensor	Input Signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*2		
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature		Power transistor
Throttle position sensor	Throttle position	Ignition timing	
Accelerator pedal position sensor	Accelerator pedal position	control	
Knock sensor	Engine knocking		
Park/neutral position (PNP) switch	Gear position		
Battery	Battery voltage*2		
Wheel sensor	Vehicle speed*1		

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

Firing order: 1-2-3-4-5-6

The ignition timing is controlled by the ECM to maintain the best air-fuel ratio for every running condition of the engine. The ignition timing data is stored in the ECM.

The ECM receives information such as the injection pulse width and camshaft position sensor (PHASE) signal. Computing this information, ignition signals are transmitted to the power transistor.

During the following conditions, the ignition timing is revised by the ECM according to the other data stored in the ECM.

- At starting
- During warm-up
- At idle
- At low battery voltage

^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

During acceleration

The knock sensor retard system is designed only for emergencies. The basic ignition timing is programmed within the anti-knocking zone, if recommended fuel is used under dry conditions. The retard system does not operate under normal driving conditions. If engine knocking occurs, the knock sensor monitors the condition. The signal is transmitted to the ECM. The ECM retards the ignition timing to eliminate the knocking condition.

Fuel Cut Control (at No Load and High Engine Speed) INPUT/OUTPUT SIGNAL CHART

NBS0002K

Sensor	Input Signal to ECM	ECM function	Actuator	
Park/neutral position (PNP) switch	Neutral position			
Accelerator pedal position sensor	Accelerator pedal position		Fuel injector	
Engine coolant temperature sensor	Engine coolant temperature	Fuel cut con-		
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine coolant temperature Fuel cut control	, doi injection		
Wheel sensor	Vehicle speed*			

^{*:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

If the engine speed is above 1,800 rpm under no load (for example, the shift position is neutral and engine speed is over 1,800 rpm) fuel will be cut off after some time. The exact time when the fuel is cut off varies based on engine speed.

Fuel cut will be operated until the engine speed reaches 1,500 rpm, then fuel cut will be cancelled.

NOTE:

This function is different from deceleration control listed under <u>EC-24</u>, "Multiport Fuel Injection (MFI) System".

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AIR CONDITIONING CUT CONTROL

AIR CONDITIONING CUT CONTROL

PFP:23710

Input/Output Signal Chart

NBS0002L

Sensor	Input Signal to ECM	ECM function	Actuator	
Air conditioner switch	Air conditioner ON signal*1			
Throttle position sensor	Throttle position		Air conditioner relay	
Accelerator pedal position sensor	Accelerator pedal position			
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*2	Air conditioner		
Engine coolant temperature sensor	Engine coolant temperature	cut control		
Refrigerant pressure sensor	Refrigerant pressure			
Power steering pressure sensor	Power steering operation			
Wheel sensor	Vehicle speed*1			
Battery	Battery voltage*2			

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

This system improves engine operation when the air conditioner is used. Under the following conditions, the air conditioner is turned OFF.

- When the accelerator pedal is fully depressed.
- When cranking the engine.
- At high engine speeds.
- When the engine coolant temperature becomes excessively high.
- When operating power steering during low engine speed or low vehicle speed.
- When engine speed is excessively low.
- When refrigerant pressure is excessively low or high.

^{*2:} ECM determines the start signal status by the signal of engine speed and battery voltage.

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

PFP:18930

System Description INPUT/OUTPUT SIGNAL CHART

NBS0002M

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Sensor	Input signal to ECM	ECM function	Actuator		
ASCD brake switch	Brake pedal operation	ASCID vehicle speed control			
Stop lamp switch	Brake pedal operation				
ASCD clutch switch (M/T models)	Clutch pedal operation				
ASCD steering switch	ASCD steering switch operation		Electric throttle control		
Park/Neutral position (PNP) switch	Gear position		actuator		
Unified meter and A/C amp.	Vehicle speed*				
TCM (A/T models)	Powertrain revolution*				

^{*:} This signal is sent to the ECM through CAN communication line.

BASIC ASCD SYSTEM

Refer to Owner's Manual for ASCD operating instructions.

Automatic Speed Control Device (ASCD) allows a driver to keep vehicle at predetermined constant speed without depressing accelerator pedal. Driver can set vehicle speed in advance between approximately 40 km/h (25 MPH) and 144 km/h (89 MPH).

ECM controls throttle angle of electric throttle control actuator to regulate engine speed.

Operation status of ASCD is indicated by CRUISE indicator and SET indicator in combination meter. If any malfunction occurs in ASCD system, it automatically deactivates control.

NOTE:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

SET OPERATION

Press MAIN switch. (The CRUISE indicator in combination meter illuminates.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 144 km/h (89 MPH), press SET/COAST switch. (Then SET indicator in combination meter illuminates.)

ACCELERATE OPERATION

If the RESUME/ACCELERATE switch is pressed during cruise control driving, increase the vehicle speed until the switch is released or vehicle speed reaches maximum speed controlled by the system. And then ASCD will keep the new set speed.

CANCEL OPERATION

When any of following conditions exist, cruise operation will be canceled.

- CANCEL switch is pressed
- More than 2 switches at ASCD steering switch are pressed at the same time (Set speed will be cleared)
- Brake pedal is depressed
- Clutch pedal is depressed or gear position is changed to the neutral position (M/T models)
- Selector lever is changed to N, P, R position (A/T models)
- Vehicle speed decreased to 13 km/h (8 MPH) lower than the set speed
- VDC/TCS system is operated

When the ECM detects any of the following conditions, the ECM will cancel the cruise operation and inform the driver by blinking indicator lamp.

- Engine coolant temperature is slightly higher than the normal operating temperature, CRUISE lamp may blink slowly.
 - When the engine coolant temperature decreases to the normal operating temperature, CRUISE lamp will stop blinking and the cruise operation will be able to work by pressing SET/COAST switch or RESUME/ACCELERATE switch.
- Malfunction for some self-diagnoses regarding ASCD control: SET lamp will blink quickly.

If MAIN switch is turned to OFF during ASCD is activated, all of ASCD operations will be canceled and vehicle speed memory will be erased.

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

COAST OPERATION

When the SET/COAST switch is pressed during cruise control driving, decrease vehicle set speed until the switch is released. And then ASCD will keep the new set speed.

RESUME OPERATION

When the RESUME/ACCELERATE switch is pressed after cancel operation other than pressing MAIN switch is performed, vehicle speed will return to last set speed. To resume vehicle set speed, vehicle condition must meet following conditions.

- Brake pedal is released
- Clutch pedal is released (M/T models)
- A/T selector lever is in other than P and N positions (A/T models)
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 144 km/h (89 MPH)

Component Description ASCD STEERING SWITCH

NBS0002N

Refer to EC-566

ASCD BRAKE SWITCH

Refer to EC-574 and EC-662.

ASCD CLUTCH SWITCH

Refer to EC-574 and EC-662.

STOP LAMP SWITCH

Refer to EC-574, EC-593 and EC-662.

ELECTRIC THROTTLE CONTROL ACTUATOR

Refer to EC-598, EC-604, EC-611 and EC-616.

ASCD INDICATOR

Refer to EC-677.

CAN COMMUNICATION

CAN COMMUNICATION

PFP:23710

System Description

NBS00020

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. Refer to LAN-24, "CAN Communication Unit", about CAN communication for detail.

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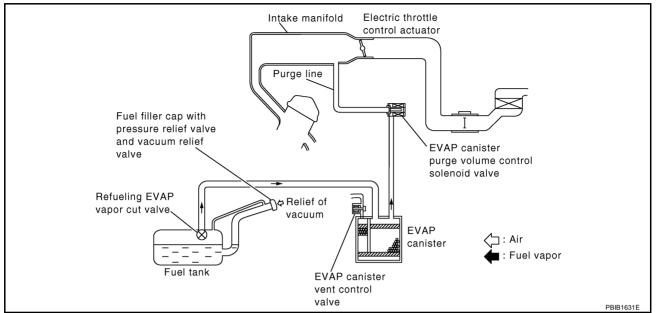
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EVAPORATIVE EMISSION SYSTEM

PFP:14950

Description SYSTEM DESCRIPTION

NBS0002P



The evaporative emission system is used to reduce hydrocarbons emitted into the atmosphere from the fuel system. This reduction of hydrocarbons is accomplished by activated charcoals in the EVAP canister.

The fuel vapor in the sealed fuel tank is led into the EVAP canister which contains activated carbon and the vapor is stored there when the engine is not operating or when refueling to the fuel tank.

The vapor in the EVAP canister is purged by the air through the purge line to the intake manifold when the engine is operating. EVAP canister purge volume control solenoid valve is controlled by ECM. When the engine operates, the flow rate of vapor controlled by EVAP canister purge volume control solenoid valve is proportionally regulated as the air flow increases.

EVAP canister purge volume control solenoid valve also shuts off the vapor purge line during decelerating and idling.

EVAPORATIVE EMISSION LINE DRAWING

EC Intake manifold collector D Е EVAP purge resonator G Н EVAP service port EVAP canister purge volume control solenoid valve M

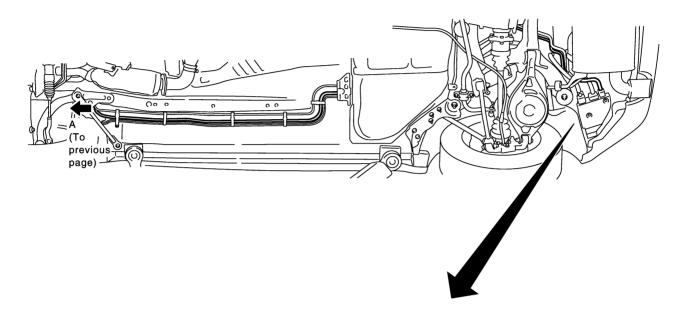
NOTE: Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

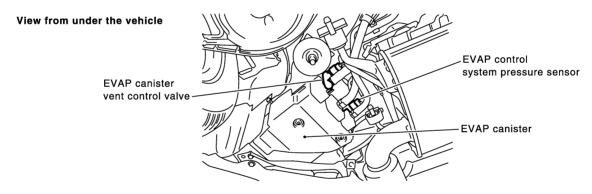
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EC-33 2006 350Z Revision: 2005 August

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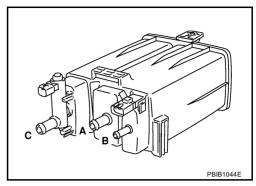


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Component Inspection EVAP CANISTER

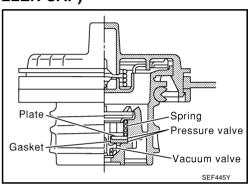
Check EVAP canister as follows:

- Block port B.
- Blow air into port A and check that it flows freely out of port C. 2.
- Release blocked port B.
- Apply vacuum pressure to port **B** and check that vacuum pressure exists at the ports A and C.
- 5. Block port A and B.
- Apply pressure to port **C** and check that there is no leakage.



FUEL TANK VACUUM RELIEF VALVE (BUILT INTO FUEL FULLER CAP)

1. Wipe clean valve housing.



Check valve opening pressure and vacuum.

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

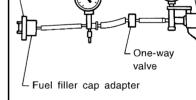
- 2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm²,

-0.87 to -0.48 psi)

3. If out of specification, replace fuel filler cap as an assembly.

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



EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-444.

FUEL TANK TEMPERATURE SENSOR

Refer to EC-366.

EVAP CANISTER VENT CONTROL VALVE

Refer to EC-453.

EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-466.

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NBS0002Q

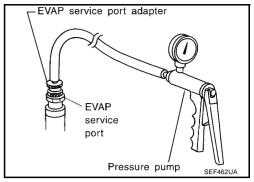
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EVAP SERVICE PORT

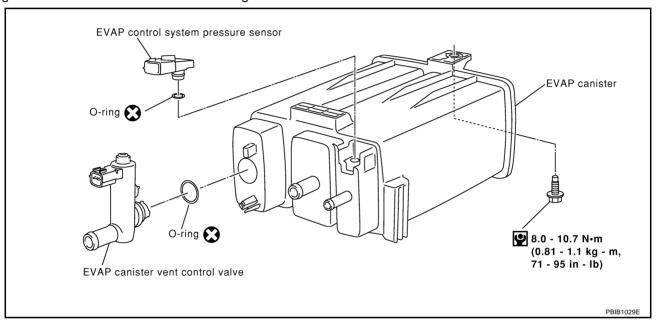
Positive pressure is delivered to the EVAP system through the EVAP service port. If fuel vapor leakage in the EVAP system occurs, use a leak detector to locate the leak.



NBS0002R

Removal and Installation EVAP CANISTER

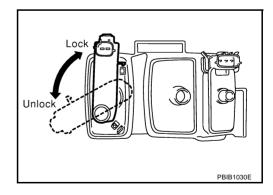
Tighten EVAP canister as shown in the figure.



EVAP CANISTER VENT CONTROL VALVE

- 1. Turn EVAP canister vent control valve counterclockwise.
- 2. Remove the EVAP canister vent control valve.

Always replace O-ring with a new one.



How to Detect Fuel Vapor Leakage

NBS0002S

CAUTION:

- Never use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in EVAP system.

NOTE:

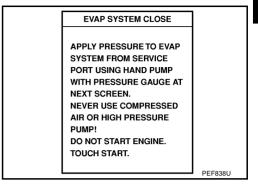
- Do not start engine.
- Improper installation of EVAP service port adapter to the EVAP service port may cause a leak.

Revision: 2005 August **EC-36** 2006 350Z

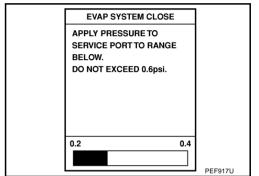
EVAPORATIVE EMISSION SYSTEM

(A) WITH CONSULT-II

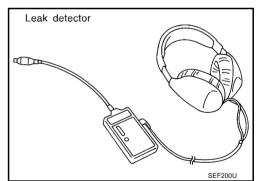
- 1. Attach the EVAP service port adapter securely to the EVAP service port.
- 2. Also attach the pressure pump and hose to the EVAP service port adapter.
- 3. Turn ignition switch ON.
- Select the "EVAP SYSTEM CLOSE" of "WORK SUPPORT MODE" with CONSULT-II.
- 5. Touch "START". A bar graph (Pressure indicating display) will appear on the screen.



- 6. Apply positive pressure to the EVAP system until the pressure indicator reaches the middle of the bar graph.
- 7. Remove EVAP service port adapter and hose with pressure pump.

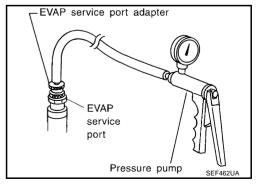


8. Locate the leak using a leak detector. Refer to EC-33, "EVAPO-RATIVE EMISSION LINE DRAWING".



WITHOUT CONSULT-II

- 1. Attach the EVAP service port adapter securely to the EVAP service port.
- 2. Also attach the pressure pump with pressure gauge to the EVAP service port adapter.



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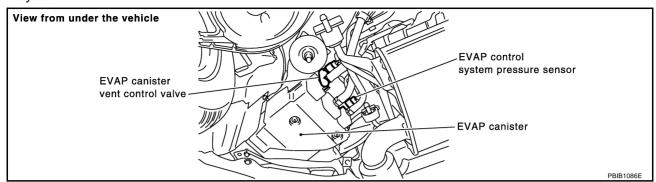
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EVAPORATIVE EMISSION SYSTEM

3. Apply battery voltage between the terminals of EVAP canister vent control valve to make a closed EVAP system.



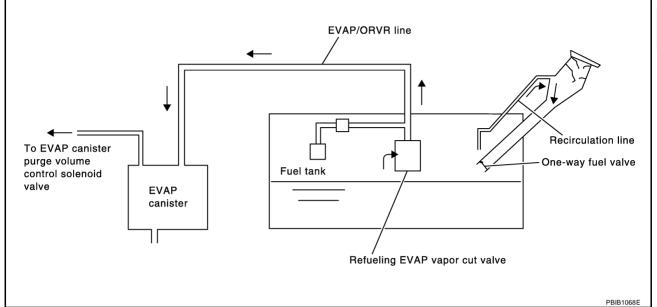
- 4. To locate the leak, deliver positive pressure to the EVAP system until pressure gauge points reach 1.38 to 2.76 kPa (0.014 to 0.028 kg/cm², 0.2 to 0.4 psi).
- 5. Remove EVAP service port adapter and hose with pressure pump.
- 6. Locate the leak using a leak detector. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING" .

ON BOARD REFUELING VAPOR RECOVERY (ORVR)

PFP:00032

System Description

NRS0002T



From the beginning of refueling, the air and vapor inside the fuel tank go through refueling EVAP vapor cut valve and EVAP/ORVR line to the EVAP canister. The vapor is absorbed by the EVAP canister and the air is released to the atmosphere.

When the refueling has reached the full level of the fuel tank, the refueling EVAP vapor cut valve is closed and refueling is stopped because of auto shut-off. The vapor which was absorbed by the EVAP canister is purged during driving.

WARNING:

When conducting inspections below, be sure to observe the following:

- Put a "CAUTION: INFLAMMABLE" sign in workshop.
- Do not smoke while servicing fuel system. Keep open flames and sparks away from work area.
- Be sure to furnish the workshop with a CO₂ fire extinguisher.

CAUTION:

- Before removing fuel line parts, carry out the following procedures:
- Put drained fuel in an explosion-proof container and put lid on securely.
- Release fuel pressure from fuel line. Refer to <u>EC-81, "FUEL PRESSURE RELEASE"</u>.
- Disconnect battery ground cable.
- Always replace O-ring when the fuel gauge retainer is removed.
- Do not kink or twist hose and tube when they are installed.
- Do not tighten hose and clamps excessively to avoid damaging hoses.
- After installation, run engine and check for fuel leaks at connection.
- Do not attempt to top off the fuel tank after the fuel pump nozzle shuts off automatically.
 Continued refueling may cause fuel overflow, resulting in fuel spray and possibly a fire.

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Diagnostic Procedure

SYMPTOM: FUEL ODOR FROM EVAP CANISTER IS STRONG.

NBS00020

1. CHECK EVAP CANISTER

- 1. Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.2 kg (4.9 lb).

OK or NG

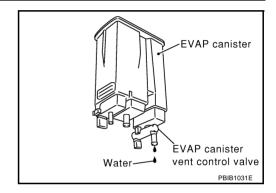
OK >> GO TO 2. NG >> GO TO 3.

2. CHECK IF EVAP CANISTER SATURATED WITH WATER

Does water drain from the EVAP canister?

Yes or No

Yes >> GO TO 3. No >> GO TO 5.



3. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

5. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-42, "Component Inspection".

OK or NG

OK >> INSPECTION END

NG >> Replace refueling EVAP vapor cut valve with fuel tank.

SYMPTOM: CANNOT REFUEL/FUEL ODOR FROM THE FUEL FILLER OPENING IS STRONG WHILE REFUELING.

1. CHECK EVAP CANISTER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.2 kg (4.9 lb).

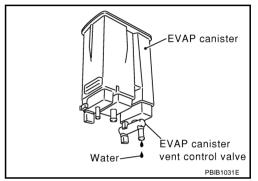
OK >> GO TO 2. NG >> GO TO 3.

2. Check if evap canister saturated with water

Does water drain from the EVAP canister?

Yes or No

Yes >> GO TO 3. No >> GO TO 5.



3. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

5. CHECK VENT HOSES AND VENT TUBES

Check hoses and tubes between EVAP canister and refueling EVAP vapor cut valve for clogging, kink, looseness and improper connection.

OK or NG

OK >> GO TO 6.

NG >> Repair or replace hoses and tubes.

6. CHECK FILLER NECK TUBE

Check recirculation line for clogging, dents and cracks.

OK or NG

OK >> GO TO 7.

NG >> Replace filler neck tube.

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7. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-42, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace refueling EVAP vapor cut valve with fuel tank.

8. CHECK FUEL FILLER TUBE

Check filler neck tube and hose connected to the fuel tank for clogging, dents and cracks.

OK or NG

OK >> GO TO 9.

NG >> Replace fuel filler tube.

9. CHECK ONE-WAY FUEL VALVE-I

Check one-way valve for clogging.

OK or NG

OK >> GO TO 10.

NG >> Repair or replace one-way fuel valve with fuel tank.

10. CHECK ONE-WAY FUEL VALVE-II

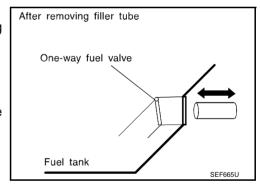
- 1. Make sure that fuel is drained from the tank.
- 2. Remove fuel filler tube and hose.
- Check one-way fuel valve for operation as follows.
 When a stick is inserted, the valve should open, when removing stick it should close.

Do not drop any material into the tank.

OK or NG

OK >> INSPECTION END

NG >> Replace fuel filler tube or replace one-way fuel valve with fuel tank.



NBS0002V

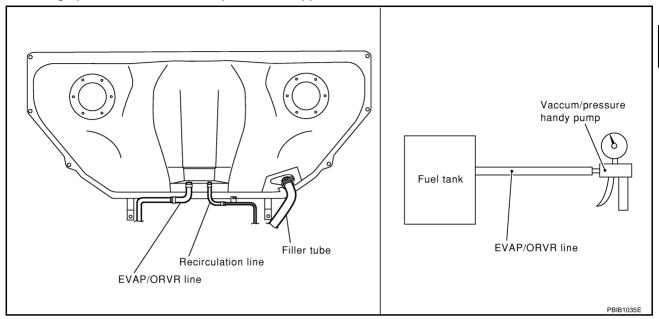
Component Inspection REFUELING EVAP VAPOR CUT VALVE

- (P) With CONSULT-II
- 1. Remove fuel tank. Refer to FL-10, "FUEL TANK".
- 2. Drain fuel from the tank as follows:
- a. Remove fuel feed hose located on the fuel gauge retainer.
- Connect a spare fuel hose, one side to fuel gauge retainer where the hose was removed and the other side to a fuel container.
- c. Drain fuel using "FUEL PUMP RELAY" in "ACTIVE TEST" mode with CONSULT-II.
- Check refueling EVAP vapor cut valve for being stuck to close as follows.
 Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- 4. Check refueling EVAP vapor cut valve for being stuck to open as follows.
- a. Connect vacuum pump to hose end.
- b. Remove fuel gauge retainer with fuel gauge unit.

Always replace O-ring with new one.

c. Put fuel tank upside down.

d. Apply vacuum pressure to hose end [-13.3 kPa (-100 mmHg, -3.94 inHg)] with fuel gauge retainer remaining open and check that the pressure is applicable.

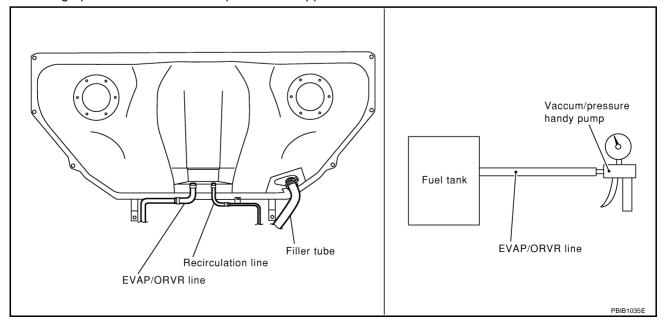


⋈ Without CONSULT-II

- 1. Remove fuel tank. Refer to FL-10, "FUEL TANK".
- 2. Drain fuel from the tank as follows:
- Remove fuel gauge retainer.
- b. Drain fuel from the tank using a handy pump into a fuel container.
- Check refueling EVAP vapor cut valve for being stuck to close as follows.
 Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- Check refueling EVAP vapor cut valve for being stuck to open as follows.
- a. Connect vacuum pump to hose end.
- b. Remove fuel gauge retainer with fuel gauge unit.

Always replace O-ring with new one.

- c. Put fuel tank upside down.
- d. Apply vacuum pressure to hose end [-13.3 kPa (-100 mmHg, -3.94 inHg)] with fuel gauge retainer remaining open and check that the pressure is applicable.



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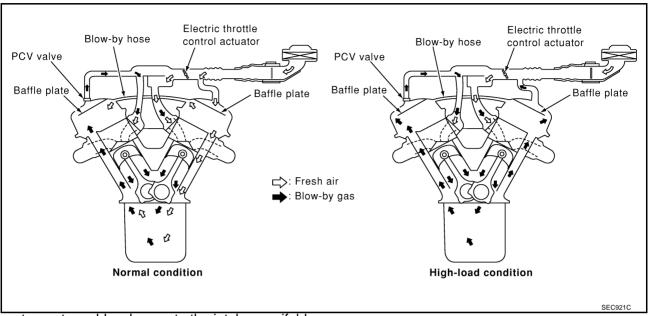
POSITIVE CRANKCASE VENTILATION

POSITIVE CRANKCASE VENTILATION

PFP:11810

Description SYSTEM DESCRIPTION

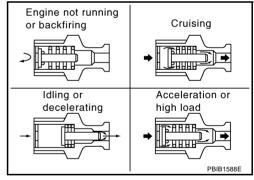
NBS0002W



This system returns blow-by gas to the intake manifold.

The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold. During partial throttle operation of the engine, the intake manifold sucks the blow-by gas through the PCV valve. Normally, the capacity of the valve is sufficient to handle any blow-by and a small amount of ventilating air. The ventilating air is then drawn from the air inlet tubes into the crankcase. In this process the air passes through the hose connecting air inlet tubes to rocker cover. Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve. The flow goes through the hose connection in the reverse direction.

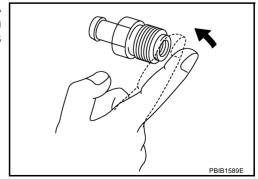
On vehicles with an excessively high blow-by, the valve does not meet the requirement. This is because some of the flow will go through the hose connection to the air inlet tubes under all conditions.



NBS0002X

Component Inspection PCV (POSITIVE CRANKCASE VENTILATION) VALVE

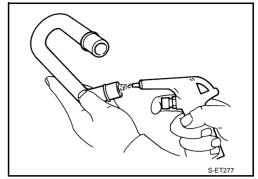
With engine running at idle, remove PCV valve from rocker cover. A properly working valve makes a hissing noise as air passes through it. A strong vacuum should be felt immediately when a finger is placed over valve inlet.



POSITIVE CRANKCASE VENTILATION

PCV VALVE VENTILATION HOSE

- 1. Check hoses and hose connections for leaks.
- 2. Disconnect all hoses and clean with compressed air. If any hose cannot be freed of obstructions, replace.



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NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)

NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)

PFP:25386

Description

- If the security indicator lights up with the ignition switch in the ON position or "NATS MALFUNCTION" is displayed on "SELF-DIAG RESULTS" screen, perform self-diagnostic results mode with CONSULT-II using NATS program card. Refer to <u>BL-165</u>, "NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)".
- Confirm no self-diagnostic results of NVIS (NATS) is displayed before touching "ERASE" in "SELF-DIAG RESULTS" mode with CONSULT-II.
- When replacing ECM, initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs must be carried out with CONSULT-II using NATS program card.

SELF DIAG RES	SELF DIAG RESULTS						
DTC RESULTS	DTC RESULTS TIME						
NATS MALFUNCTION [P1610]	0						

Therefore, be sure to receive all keys from vehicle owner. Regarding the procedures of NVIS (NATS) initialization and all NVIS (NATS) ignition key ID registration, refer to CONSULT-II Operation Manual, IVIS/NVIS.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

PFP:00028

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Introduction

The ECM has an on board diagnostic system, which detects malfunctions related to engine sensors or actuators. The ECM also records various emission-related diagnostic information including:

Emission-related diagnostic information	Diagnostic service
Diagnostic Trouble Code (DTC)	Service \$03 of SAE J1979
Freeze Frame data	Service \$02 of SAE J1979
System Readiness Test (SRT) code	Service \$01 of SAE J1979
1st Trip Diagnostic Trouble Code (1st Trip DTC)	Service \$07 of SAE J1979
1st Trip Freeze Frame data	
Test values and Test limits	Service \$06 of SAE J1979
Calibration ID	Service \$09 of SAE J1979

The above information can be checked using procedures listed in the table below.

×: Applicable —: Not applicable

	DTC	1st trip DTC	Freeze Frame data	1st trip Freeze Frame data	SRT status	SRT code	Test value
CONSULT-II	×	×	×	×	×	×	_
GST	×	×	×	_	×	×	×
ECM	×	×*	_	_	×	_	_

^{*:} When DTC and 1st trip DTC simultaneously appear on the display, they cannot be clearly distinguished from each other.

The malfunction indicator lamp (MIL) on the instrument panel lights up when the same malfunction is detected in two consecutive trips (Two trip detection logic), or when the ECM enters fail-safe mode. (Refer to EC-91, "Fail-safe Chart".)

Two Trip Detection Logic

NBS00030

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When a malfunction is detected for the 1st time, 1st trip DTC and 1st trip Freeze Frame data are stored in the ECM memory. The MIL will not light up at this stage. <1st trip>

If the same malfunction is detected again during the next drive, the DTC and Freeze Frame data are stored in the ECM memory, and the MIL lights up. The MIL lights up at the same time when the DTC is stored. <2nd trip> The "trip" in the "Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation. Specific on board diagnostic items will cause the ECM to light up or blink the MIL, and store DTC and Freeze Frame data, even in the 1st trip, as shown below.

×: Applicable —: Not applicable

		M	IIL		D.	TC	1st trip DTC		
Items	1st trip		2nd trip		1st trip	2nd trip	1st trip	2nd trip	
ionie	Blinking	Lighting up	Blinking	Lighting up	displaying	displaying	displaying	display- ing	
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0306 is being detected	×	_	_	_	_	_	×	_	
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0306 is being detected	_	_	×	_	_	×	_	_	
One trip detection diagnoses (Refer to <u>EC-48</u> , " <u>EMISSION-RELATED DIAGNOSTIC INFOR-MATION ITEMS"</u> .)	_	×	_	_	×	_	_	_	
Except above	_	_	_	×	_	×	×	_	

When there is an open circuit on MIL circuit, the ECM cannot warn the driver by lighting up MIL when there is malfunction on engine control system.

Therefore, when electrical controlled throttle and part of ECM related diagnoses are continuously detected as NG for 5 trips, ECM warns the driver that engine control system malfunctions and MIL circuit is open by means of operating fail-safe function.

The fail-safe function also operates when above diagnoses except MIL circuit are detected and demands the driver to repair the malfunction.

Engine operating condition in fail-safe mode

Engine speed will not rise more than 2,500 rpm due to the fuel cut

Emission-related Diagnostic Information EMISSION-RELATED DIAGNOSTIC INFORMATION ITEMS

NBS00031

×: Applicable —: Not applicable

Items	DTC	·*1		Test value/		MIL lighting	Reference	
(CONSULT-II screen terms)	CONSULT-II GST* ²	ECM*3	SRT code	Test limit (GST only)	Trip	up	page	
OAN COMM OIDOUT	114000	5			1 (A/T)	×	E0 400	
CAN COMM CIRCUIT	U1000	1000* ⁵	_	_	2 (M/T)	_	<u>EC-163</u>	
CAN COMM CIRCUIT	U1001	1001* ⁵	_	_	2	_	EC-163	
CONTROL UNIT (CAN)	U1010	1010			1 (A/T)	×	EC-166	
CONTROL ONLY (CAN)	01010	1010			2 (M/T)	_	<u>LO-100</u>	
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	P0000	0000	_	1	_	Flashing* ⁷	EC-63	
INT/V TIM CONT-B1	P0011	0011	_	_	2	×	EC-168	
EXH/V TIM CONT-B1*8	P0014	0014	_	_	2	×	EC-173	
INT/V TIM CONT-B2	P0021	0021	_	_	2	×	EC-168	
EXH/V TIM CONT-B2*8	P0024	0024	_	_	2	×	EC-173	
A/F SEN1 HTR (B1)	P0031	0031	_	×	2	×	EC-178	
A/F SEN1 HTR (B1)	P0032	0032	_	×	2	×	EC-178	
HO2S2 HTR (B1)	P0037	0037	_	×	2	×	EC-186	
HO2S2 HTR (B1)	P0038	0038	_	×	2	×	EC-186	
A/F SEN1 HTR (B2)	P0051	0051	_	×	2	×	EC-178	
A/F SEN1 HTR (B2)	P0052	0052	_	×	2	×	EC-178	
HO2S2 HTR (B2)	P0057	0057	_	×	2	×	EC-186	
HO2S2 HTR (B2)	P0058	0058	_	×	2	×	EC-186	
INT/V TIM V/CIR-B1	P0075	0075	_		2	×	EC-195	
EX V/T MGT/RTDR-B1*8	P0078	0078	_	_	2	×	EC-203	
INT/V TIM V/CIR-B2	P0081	0081	_	_	2	×	EC-195	
EX V/T MGT/RTDR-B2*8	P0084	0084	_	_	2	×	EC-203	
MAF SEN/CIRCUIT	P0101	0101	_	_	2	×	EC-211	
MAF SEN/CIRCUIT	P0102	0102	_	_	1	×	EC-220	
MAF SEN/CIRCUIT	P0103	0103	_	_	1	×	EC-220	
IAT SEN/CIRCUIT	P0112	0112	_	_	2	×	EC-228	
IAT SEN/CIRCUIT	P0113	0113	_	_	2	×	EC-228	
ECT SEN/CIRC	P0117	0117	_	_	1	×	EC-234	
ECT SEN/CIRC	P0118	0118	_		1	×	EC-234	
TP SEN 2/CIRC	P0122	0122	_	_	1	×	EC-240	
TP SEN 2/CIRC	P0123	0123	_	_	1	×	EC-240	
ECT SENSOR	P0125	0125	_	_	2	×	EC-248	
IAT SENSOR	P0127	0127	_	_	2	×	EC-252	

ltono	DTC	C* ¹		Test value/		MII limbilia	Doforer
Items (CONSULT-II screen terms)	CONSULT-II GST* ²	ECM* ³	SRT code	Test limit (GST only)	Trip	MIL lighting up	Reference page
THERMSTAT FNCTN	P0128	0128	_		2	×	EC-255
A/F SENSOR1 (B1)	P0130	0130	_	×	2	×	EC-257
A/F SENSOR1 (B1)	P0131	0131	_	×	2	×	EC-268
A/F SENSOR1 (B1)	P0132	0132	_	×	2	×	EC-278
A/F SENSOR1 (B1)	P0133	0133	×	×	2	×	EC-288
HO2S2 (B1)	P0137	0137	×	×	2	×	EC-301
HO2S2 (B1)	P0138	0138	×	×	2	×	EC-313
HO2S2 (B1)	P0139	0139	×	×	2	×	EC-327
A/F SENSOR1 (B2)	P0150	0150	_	×	2	×	EC-257
A/F SENSOR1 (B2)	P0151	0151	_	×	2	×	EC-268
A/F SENSOR1 (B2)	P0152	0152	_	×	2	×	EC-278
A/F SENSOR1 (B2)	P0153	0153	×	×	2	×	EC-288
HO2S2 (B2)	P0157	0157	×	×	2	×	EC-301
HO2S2 (B2)	P0158	0158	×	×	2	×	EC-313
HO2S2 (B2)	P0159	0159	×	×	2	×	EC-327
FUEL SYS-LEAN-B1	P0171	0171	_	_	2	×	EC-339
FUEL SYS-RICH-B1	P0172	0172	_	_	2	×	EC-351
FUEL SYS-LEAN-B2	P0174	0174	_	_	2	×	EC-339
FUEL SYS-RICH-B2	P0175	0175	_	_	2	×	EC-351
FTT SENSOR	P0181	0181	_	_	2	×	EC-362
FTT SEN/CIRCUIT	P0182	0182	_	_	2	×	EC-367
FTT SEN/CIRCUIT	P0183	0183	_	_	2	×	EC-367
TP SEN 1/CIRC	P0222	0222	_	_	1	×	EC-371
TP SEN 1/CIRC	P0223	0223	_	_	1	×	EC-371
MULTI CYL MISFIRE	P0300	0300	_	_	2	×	EC-379
CYL 1 MISFIRE	P0301	0301	_	_	2	×	EC-379
CYL 2 MISFIRE	P0302	0302	_	_	2	×	EC-379
CYL 3 MISFIRE	P0303	0303	_	_	2	×	EC-379
CYL 4 MISFIRE	P0304	0304	_	_	2	×	EC-379
CYL 5 MISFIRE	P0305	0305	_	_	2	×	EC-379
CYL 6 MISFIRE	P0306	0306	_	_	2	×	EC-379
KNOCK SEN/CIRC-B1	P0327	0327	_	_	2	_	EC-389
KNOCK SEN/CIRC-B1	P0328	0328	_	_	2	_	EC-389
CKP SEN/CIRCUIT	P0335	0335	_	_	2	×	EC-394
CMP SEN/CIRC-B1	P0340	0340	_	_	2	×	EC-402
CMP SEN/CIRC-B2	P0345	0345	_	_	2	×	EC-402
TW CATALYST SYS-B1	P0420	0420	×	×	2	×	EC-412
TW CATALYST SYS-B2	P0430	0430	×	×	2	×	EC-412
EVAP PURG FLOW/MON	P0441	0441	×	×	2	×	EC-418
EVAP SMALL LEAK	P0442	0442	×	×	2	×	EC-423
PURG VOLUME CONT/V	P0443	0443	_	_	2	×	EC-431
PURG VOLUME CONT/V	P0444	0444	_	_	2	×	EC-439

Revision: 2005 August **EC-49** 2006 350Z

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	DTC*1			Test value/		NAIL P. L.C.	Reference page
Items (CONSULT-II screen terms)	CONSULT-II GST*2 ECM*3		SRT code	Test limit (GST only)	Trip	MIL lighting up	
PURG VOLUME CONT/V	P0445	0445	_	_	2	×	EC-439
VENT CONTROL VALVE	P0447	0447	_	_	2	×	EC-446
VENT CONTROL VALVE	P0448	0448	_	_	2	×	EC-455
EVAP SYS PRES SEN	P0451	0451	_	_	2	×	EC-464
EVAP SYS PRES SEN	P0452	0452	_	_	2	×	EC-467
EVAP SYS PRES SEN	P0453	0453	_	_	2	×	EC-474
EVAP GROSS LEAK	P0455	0455	_	_	2	×	EC-482
EVAP VERY SML LEAK	P0456	0456	×* ⁴	×	2	×	EC-490
FUEL LEV SEN SLOSH	P0460	0460	_	_	2	×	EC-499
FUEL LEVEL SENSOR	P0461	0461	_	_	2	×	EC-501
FUEL LEVL SEN/CIRC	P0462	0462	_	_	2	×	EC-503
FUEL LEVL SEN/CIRC	P0463	0463	_	_	2	×	EC-503
VEH SPEED SEN/CIRC*6	P0500	0500	_	_	2	×	EC-505
ISC SYSTEM	P0506	0506	_	_	2	×	EC-507
ISC SYSTEM	P0507	0507	_	_	2	×	EC-509
PW ST P SEN/CIRC	P0550	0550	_	_	2	_	EC-511
ECM BACK UP/CIRCUIT	P0603	0603	_	_	2	×	EC-516
ECM	P0605	0605	_	_	1 or 2	× or —	EC-520
SENSOR POWER/CIRC	P0643	0643	_	_	1	×	EC-523
TCM	P0700	0700	_	_	1	×	<u>AT-113</u>
PNP SW/CIRC	P0705	0705	_	_	2	×	<u>AT-114</u>
ATF TEMP SEN/CIRC	P0710	0710	_	_	2	×	<u>AT-136</u>
TURBINE SENSOR	P0717	0717	_	_	2	×	<u>AT-125</u>
VEH SPD SEN/CIR AT*6	P0720	0720	_	_	2	×	<u>AT-120</u>
TCC SOLENOID/CIRC	P0740	0740	_	_	2	×	<u>AT-127</u>
A/T TCC S/V FNCTN	P0744	0744	_	_	2	×	AT-129
L/PRESS SOL/CIRC	P0745	0745	_	_	2	×	AT-131
P-N POS SW/CIRCUIT	P0850	0850	_	_	2	×	EC-529
EXH TIM SEN/CIR-B1*8	P1078	1078	_	_	2	×	EC-537
EXH TIM SEN/CIR-B2*8	P1084	1084	_	_	2	×	EC-537
CLOSED LOOP-B1	P1148	1148	_	_	1	×	EC-547
CLOSED LOOP-B2	P1168	1168	_	_	1	×	EC-547
TCS C/U FUNCTN	P1211	1211	_	_	2	_	EC-548
TCS/CIRC	P1212	1212	_	_	2	_	EC-549
ENG OVER TEMP	P1217	1217	_	_	1	×	EC-550
CTP LEARNING	P1225	1225	_	_	2	_	EC-562
CTP LEARNING	P1226	1226	_	_	2	_	EC-564
ASCD SW	P1564	1564	_	_	1	_	EC-566
ASCD BRAKE SW	P1572	1572	_	_	 1	_	EC-574
ASCD VHL SPD SEN	P1574	1574	_	_	<u>'</u> 1	_	EC-590
NATS MALFUNCTION	P1610 - P1615	1610 - 1615	_	_	2	_	EC-46

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Items	DTO	C*1		Test value/		MIL lighting	Reference
(CONSULT-II screen terms)	CONSULT-II GST* ²	ECM*3	SRT code	Test limit (GST only)	Trip	up	page
IN PULY SPEED	P1715	1715	_	_	2	_	EC-592
A/T INTERLOCK	P1730	1730	_	_	1	×	<u>AT-143</u>
I/C SOLENOID/CIRC	P1752	1752	_	_	1	×	<u>AT-148</u>
I/C SOLENOID FNCTN	P1754	1754	_	_	1	×	<u>AT-150</u>
FR/B SOLENOID/CIRC	P1757	1757	_	_	1	×	<u>AT-152</u>
FR/B SOLENOID/CIRC	P1759	1759	_	_	1	×	<u>AT-154</u>
D/C SOLENOID/CIRC	P1762	1762	_	_	1	×	<u>AT-156</u>
D/C SOLENOID FNCTN	P1764	1764	_	_	1	×	<u>AT-158</u>
HLR/C SOL/CIRC	P1767	1767	_	_	1	×	<u>AT-160</u>
HLR/C SOL FNCTN	P1769	1769	_	_	1	×	<u>AT-162</u>
LC/B SOLENOID/CIRC	P1772	1772	_	_	1	×	<u>AT-164</u>
LC/B SOLENOID FNCT	P1774	1774	_	_	1	×	<u>AT-166</u>
BRAKE SW/CIRCUIT	P1805	1805	_	_	2	_	EC-593
ETC MOT PWR	P2100	2100	_	_	1	×	EC-598
ETC FUNCTION/CIRC	P2101	2101	_	_	1	×	EC-604
ETC MOT PWR	P2103	2103	_	_	1	×	EC-598
ETC MOT	P2118	2118	_	_	1	×	EC-611
ETC ACTR	P2119	2119	_	_	1	×	EC-616
APP SEN 1/CIRC	P2122	2122	_	_	1	×	EC-618
APP SEN 1/CIRC	P2123	2123	_	_	1	×	EC-618
APP SEN 2/CIRC	P2127	2127	_	_	1	×	EC-626
APP SEN 2/CIRC	P2128	2128	_	_	1	×	EC-626
TP SENSOR	P2135	2135	_	_	1	×	EC-634
APP SENSOR	P2138	2138	_	_	1	×	EC-642
A/F SENSOR1 (B1)	P2A00	2A00	_	×	2	×	EC-651
A/F SENSOR1 (B2)	P2A03	2A03	_	×	2	×	EC-651

^{*1: 1}st trip DTC No. is the same as DTC No.

DTC AND 1ST TRIP DTC

The 1st trip DTC (whose number is the same as the DTC number) is displayed for the latest self-diagnostic results obtained. If the ECM memory was cleared previously, and the 1st trip DTC did not reoccur, the 1st trip DTC will not be displayed.

If a malfunction is detected during the 1st trip, the 1st trip DTC is stored in the ECM memory. The MIL will not light up (two trip detection logic). If the same malfunction is not detected in the 2nd trip (meeting the required driving pattern), the 1st trip DTC is cleared from the ECM memory. If the same malfunction is detected in the 2nd trip, both the 1st trip DTC and DTC are stored in the ECM memory and the MIL lights up. In other words, the DTC is stored in the ECM memory and the MIL lights up when the same malfunction occurs in two consecutive trips. If a 1st trip DTC is stored and a non-diagnostic operation is performed between the 1st and 2nd trips, only the 1st trip DTC will continue to be stored. For malfunctions that blink or light up the MIL during the 1st trip, the DTC and 1st trip DTC are stored in the ECM memory.

^{*2:} This number is prescribed by SAE J2012.

^{*3:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

^{*4:} SRT code will not be set if the self-diagnostic result is NG.

^{*5:} The troubleshooting for this DTC needs CONSULT-II.

^{*6:} When the fail-safe operations for both self-diagnoses occur at the same time, the MIL illuminates.

^{*7:} When the ECM is in the mode of displaying SRT status, MIL may flash. For the details, refer to EC-56, "How to Display SRT Status".

^{*8:} For models with M/T.

Procedures for clearing the DTC and the 1st trip DTC from the ECM memory are described in <u>EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION"</u>.

For malfunctions in which 1st trip DTCs are displayed, refer to EC-48, "EMISSION-RELATED DIAGNOSTIC <a href="INFORMATION ITEMS". These items are required by legal regulations to continuously monitor the system/component. In addition, the items monitored non-continuously are also displayed on CONSULT-II.

1st trip DTC is specified in Service \$07 of SAE J1979. 1st trip DTC detection occurs without lighting up the MIL and therefore does not warn the driver of a malfunction. However, 1st trip DTC detection will not prevent the vehicle from being tested, for example during Inspection/Maintenance (I/M) tests.

When a 1st trip DTC is detected, check, print out or write down and erase (1st trip) DTC and Freeze Frame data as specified in Work Flow procedure Step 2, refer to EC-84, "WORK FLOW". Then perform DTC Confirmation Procedure or Overall Function Check to try to duplicate the malfunction. If the malfunction is duplicated, the item requires repair.

How to Read DTC and 1st Trip DTC

DTC and 1st trip DTC can be read by the following methods.

(II) With CONSULT-II

With GST

CONSULT-II or GST (Generic Scan Tool) Examples: P0340, P1148, P1706, etc.

These DTCs are prescribed by SAE J2012.

(CONSULT-II also displays the malfunctioning component or system.)

No Tools

The number of blinks of the MIL in the Diagnostic Test Mode II (Self-Diagnostic Results) indicates the DTC. Example: 0340, 1148, 1706, etc.

These DTCs are controlled by NISSAN.

- 1st trip DTC No. is the same as DTC No.
- Output of a DTC indicates a malfunction. However, GST or the Diagnostic Test Mode II do not indicate whether the malfunction is still occurring or has occurred in the past and has returned to normal. CONSULT-II can identify malfunction status as shown below. Therefore, using CONSULT-II (if available) is recommended.

A sample of CONSULT-II display for DTC and 1st trip DTC is shown below. DTC or 1st trip DTC of a malfunction is displayed in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT-II. Time data indicates how many times the vehicle was driven after the last detection of a DTC.

If the DTC is being detected currently, the time data will be [0].

If a 1st trip DTC is stored in the ECM, the time data will be [1t].

	SELF DIAG RESU	ILTS		SELF DIAG RESU	ILTS
	DTC RESULTS	TIME		DTC RESULTS	TIME
DTC	CKP SEN/CIRCUIT [P0335]	0	1st trip	CKP SEN/CIRCUIT [P0335]	1t
display			DTC display		

FREEZE FRAME DATA AND 1ST TRIP FREEZE FRAME DATA

The ECM records the driving conditions such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed, vehicle speed, absolute throttle position, base fuel schedule and intake air temperature at the moment a malfunction is detected.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data. The data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-II or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-II screen, not on the GST. For details, see <u>EC-126</u>, "Freeze Frame Data and 1st Trip Freeze Frame Data".

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority		Items						
1	Freeze frame data	Misfire — DTC: P0300 - P0306 Fuel Injection System Function — DTC: P0171, P0172, P0174, P0175						
2		Except the above items (Includes A/T related items)						
3	1st trip freeze frame of	data						

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For example, the EGR malfunction (Priority: 2) was detected and the freeze frame data was stored in the 2nd trip. After that when the misfire (Priority: 1) is detected in another trip, the freeze frame data will be updated from the EGR malfunction to the misfire. The 1st trip freeze frame data is updated each time a different malfunction is detected. There is no priority for 1st trip freeze frame data. However, once freeze frame data is stored in the ECM memory, 1st trip freeze data is no longer stored (because only one freeze frame data or 1st trip freeze frame data can be stored in the ECM). If freeze frame data is stored in the ECM memory and freeze frame data with the same priority occurs later, the first (original) freeze frame data remains unchanged in the ECM memory.

Both 1st trip freeze frame data and freeze frame data (along with the DTCs) are cleared when the ECM memory is erased. Procedures for clearing the ECM memory are described in EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION".

SYSTEM READINESS TEST (SRT) CODE

System Readiness Test (SRT) code is specified in Service \$01 of SAE J1979.

As part of an enhanced emissions test for Inspection & Maintenance (I/M), certain states require the status of SRT be used to indicate whether the ECM has completed self-diagnosis of major emission systems and components. Completion must be verified in order for the emissions inspection to proceed.

If a vehicle is rejected for a State emissions inspection due to one or more SRT items indicating "INCMP", use the information in this Service Manual to set the SRT to "CMPLT".

In most cases the ECM will automatically complete its self-diagnosis cycle during normal usage, and the SRT status will indicate "CMPLT" for each application system. Once set as "CMPLT", the SRT status remains "CMPLT" until the self-diagnosis memory is erased.

Occasionally, certain portions of the self-diagnostic test may not be completed as a result of the customer's normal driving pattern; the SRT will indicate "INCMP" for these items.

NOTE:

The SRT will also indicate "INCMP" if the self-diagnosis memory is erased for any reason or if the ECM memory power supply is interrupted for several hours.

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 indica- tion)	Perfor- mance Pri- ority*	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.
CATALYST	2	Three way catalyst function	P0420, P0430
	1	EVAP control system	P0442
EVAP SYSTEM	2	EVAP control system	P0456
	2	EVAP control system purge flow monitoring	P0441
	2	Air fuel ratio (A/F) sensor 1	P0133, P0153
HO2S		Heated oxygen sensor 2	P0139, P0159
HU25		Heated oxygen sensor 2	P0137, P0157
		Heated oxygen sensor 2	P0138, P0158

^{*:} 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		
Self-diagr			\leftarrow ON \rightarrow O		ion cycle $OFF \leftarrow ON ightarrow C$	0FF ← ON →
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	ОК	_	_
		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.

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

When all SRT related self-diagnoses showed OK results through several different cycles, the SRT will indicate "CMPLT" at the time the respective self-diagnoses have at least one OK result. \rightarrow Case 2 above

If one or more SRT related self-diagnoses showed NG results in 2 consecutive cycles, the SRT will also indicate "CMPLT". \rightarrow Case 3 above

The table above shows that the minimum number of cycles for setting SRT as "INCMP" is one (1) for each self-diagnosis (Case 1 & 2) or two (2) for one of self-diagnoses (Case 3). However, in preparation for the state emissions inspection, it is unnecessary for each self-diagnosis to be executed twice (Case 3) for the following reasons:

- The SRT will indicate "CMPLT" at the time the respective self-diagnoses have one (1) OK result.
- The emissions inspection requires "CMPLT" of the SRT only with OK self-diagnosis results.
- When, during SRT driving pattern, 1st trip DTC (NG) is detected prior to "CMPLT" of SRT, the self-diagnosis memory must be erased from ECM after repair.
- If the 1st trip DTC is erased, all the SRT will indicate "INCMP".

NOTE:

SRT can be set as "CMPLT" together with the DTC(s). Therefore, DTC check must always be carried out prior to the state emission inspection even though the SRT indicates "CMPLT".

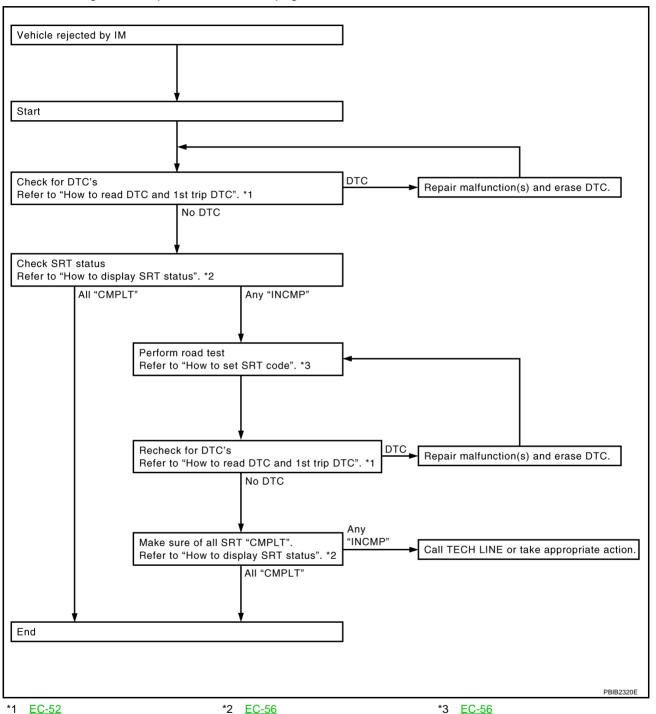
^{—:} Self-diagnosis is not carried out.

SRT Service Procedure

If a vehicle has failed the state emissions inspection due to one or more SRT items indicating "INCMP", review the flowchart diagnostic sequence on the next page.

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How to Display SRT Status

(P) WITH CONSULT-II

Selecting "SRT STATUS" in "DTC CONFIRMATION" mode with CONSULT-II.

For items whose SRT codes are set, a "CMPLT" is displayed on the CONSULT-II screen; for items whose SRT codes are not set, "INCMP" is displayed.

A sample of CONSULT-II display for SRT code is shown in the figure.

"INCMP" means the self-diagnosis is incomplete and SRT is not set. "CMPLT" means the self-diagnosis is complete and SRT is set.

NOTF:

Though displayed on the CONSULT-II screen, "HO2S HTR" is not SRT item.

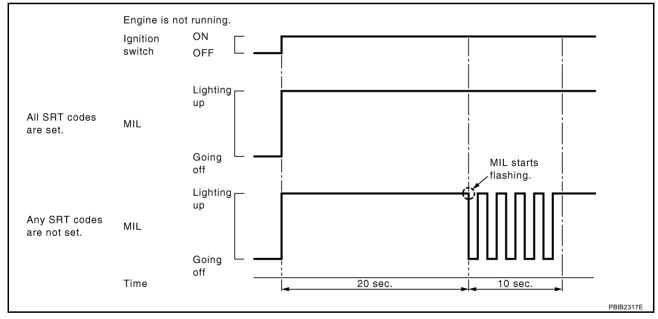
WITH GST

Selecting Service \$01 with GST (Generic Scan Tool)

NO TOOLS

A SRT code itself can not be displayed while only SRT status can be.

- 1. Turn ignition switch ON and wait 20 seconds.
- SRT status is indicated as shown below.
- When all SRT codes are set, MIL lights up continuously.
- When any SRT codes are not set, MIL will flash periodically for 10 seconds.



How to Set SRT Code

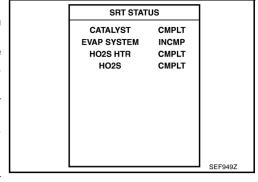
To set all SRT codes, self-diagnosis for the items indicated above must be performed one or more times. Each diagnosis may require a long period of actual driving under various conditions.

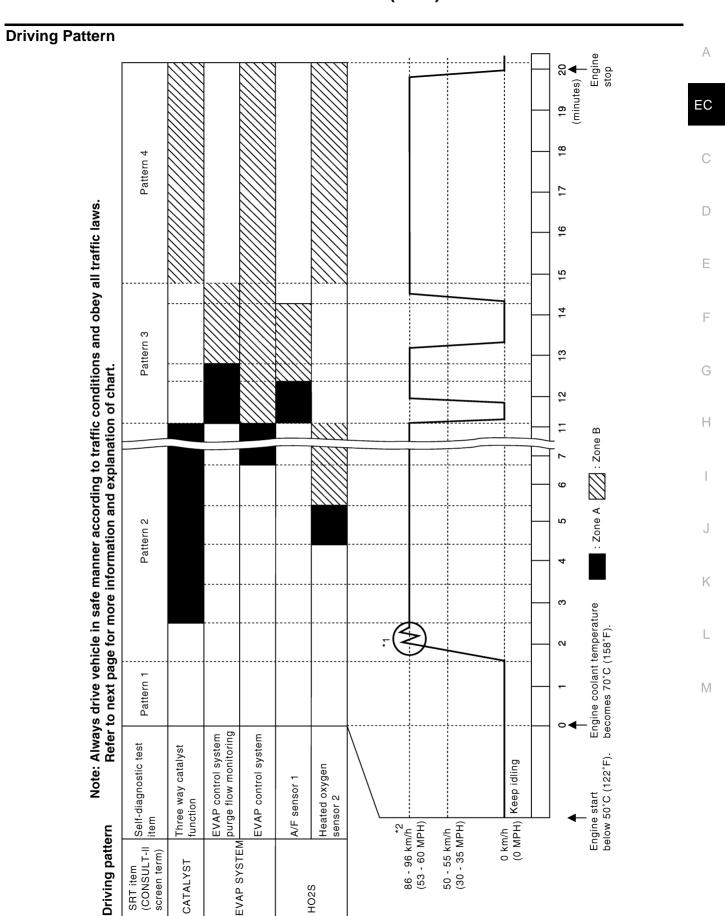
(P) WITH CONSULT-II

Perform corresponding DTC Confirmation Procedure one by one based on Performance Priority in the table on <u>EC-53</u>, <u>"SRT Item"</u>.

WITHOUT CONSULT-II

The most efficient driving pattern in which SRT codes can be properly set is explained on the next page. The driving pattern should be performed one or more times to set all SRT codes.





PBIB2906E

- The time required for each diagnosis varies with road surface conditions, weather, altitude, individual driving habits, etc.
 - Zone A refers to the range where the time, required for the diagnosis under normal conditions*, is the shortest
 - Zone B refers to the range where the diagnosis can still be performed if the diagnosis is not completed within zone A.
- *: Normal conditions refer to the following:
- Sea level
- Flat road
- Ambient air temperature: 20 30°C (68 86°F)
- Diagnosis is performed as quickly as possible under normal conditions.
 Under different conditions [For example: ambient air temperature other than 20 30°C (68 86°F)], diagnosis may also be performed.

Pattern 1:

- The engine is started at the engine coolant temperature of −10 to 35°C (14 to 95°F) (where the voltage between the ECM terminal 73 and ground is 3.0 - 4.3V).
- The engine must be operated at idle speed until the engine coolant temperature is greater than 70°C (158°F) (where the voltage between the ECM terminal 73 and ground is lower than 1.4V).
- The engine is started at the fuel tank temperature of warmer than 0°C (32°F) (where the voltage between the ECM terminal 107 and ground is less than 4.1V).

Pattern 2:

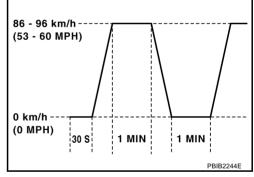
• When steady-state driving is performed again even after it is interrupted, each diagnosis can be conducted. In this case, the time required for diagnosis may be extended.

Pattern 3:

- Operate vehicle following the driving pattern shown in the figure.
- Release the accelerator pedal during decelerating vehicle speed from 90 km/h (56 MPH) to 0 km/h (0 MPH).

Pattern 4:

- The accelerator pedal must be held very steady during steadystate driving.
- If the accelerator pedal is moved, the test must be conducted all over again.
- *1: Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again.
- *2: Checking the vehicle speed with GST is advised.



Suggested Transmission Gear Position for A/T Models

Set the selector lever in the D position.

Suggested Upshift Speeds for M/T Models

Shown below are suggested vehicle speeds for shifting into a higher gear. These suggestions relate to fuel economy and vehicle performance. Actual upshift speeds will vary according to road conditions, the weather and individual driving habits.

	For normal acceleration [less than 1,21	For quick acceleration in low altitude areas and high altitude areas [over 1,219 m (4,000 ft)]:	
Gear change	ACCEL shift point km/h (MPH)	CRUISE shift point km/h (MPH)	km/h (MPH)
1st to 2nd	21 (13)	13 (8)	24 (15)
2nd to 3rd	37 (23) 26 (16)		40 (25)
3rd to 4th	48 (30)	40 (25)	64 (40)
4th to 5th	60 (37)	48 (30)	72 (45)
6th	68 (42)	53 (33)	80 (50)

Suggested Maximum Speed in Each Gear

Downshift to a lower gear if the engine is not running smoothly, or if you need to accelerate.

Do not exceed the maximum suggested speed (shown below) in any gear. For level road driving, use the highest gear suggested for that speed. Always observe posted speed limits and drive according to the road conditions to ensure sage operation. Do not over-rev the engine when shifting to a lower gear as it may cause engine damage or loss of vehicle control.

Gear	km/h (MPH)
1st	56 (35)
2nd	96 (60)
3rd	136 (85)
4th	_
5th	_
6th	_

TEST VALUE AND TEST LIMIT (GST ONLY — NOT APPLICABLE TO CONSULT-II)

The following is the information specified in Service \$06 of SAE J1979.

The test value is a parameter used to determine whether a system/circuit diagnostic test is OK or NG while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.

These data (test value and test limit) are specified by Test ID (TID) and Component ID (CID) and can be displayed on the GST screen.

Item	Self-diagnostic test item	DTC -	Test value (GST display)		Test limit	Conversion
пеш	Self-diagnostic test item		TID	CID	rest illillit	Conversion
CATALYST	Three way catalyst function (Bank 1)	P0420	01H	01H	Max.	1/128
		P0420	02H	81H	Min.	1
	Three way catalyst function (Bank 2)	P0430	03H	02H	Max.	1/128
		P0430	04H	82H	Min.	1
	EVAP control system (Small leak)	P0442	05H	03H	Max.	1/128 mm ²
EVAP SYSTEM	EVAP control system purge flow monitoring	P0441	06H	83H	Min.	20 mV
	EVAP control system (Very small leak)	P0456	07H	03H	Max.	1/128 mm ²

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lto-ma	Colf diagnostic test item	DTC	Test value (GST display)		Toot limit	0
Item	Self-diagnostic test item	DTC	TID	CID	Test limit	Conversion
		P0131	41H	8EH	Min.	5mV
		P0132	42H	0EH	Max.	5mV
		P2A00	43H	0EH	Max.	0.002
	Air final ratio (A/E) concer 4 (Donly 4)	P2A00	44H	8EH	Min.	0.002
	Air fuel ratio (A/F) sensor 1 (Bank 1)	P0133	45H	8EH	Min.	0.004
		P0130	46H	0EH	Max.	5mV
		P0130	47H	8EH	Min.	5mV
		P0133	48H	8EH	Min.	0.004
		P0151	4CH	8FH	Min.	5mV
		P0152	4DH	0FH	Max	5mV
	Air fuel ratio (A/F) sensor 1 (Bank 2)	P2A03	4EH	0FH	Max.	0.002
HO2S		P2A03	4FH	8FH	Min.	0.002
пого		P0153	50H	8FH	Min.	0.004
		P0150	51H	0FH	Max.	5mV
		P0150	52H	8FH	Min.	5mV
		P0153	53H	8FH	Min.	0.004
	Heated oxygen sensor 2 (Bank 1)	P0138	1CH	06H	Max.	10mV
		P0139	19H	86H	Min.	10mV/500 ms
		P0137	1AH	86H	Min.	10 mV
		P0138	1BH	06H	Max.	10 mV
	Heated arrange arrange (Facel, O)	P0158	24H	07H	Max	10mV
		P0159	21H	87H	Min.	10 mV/500 ms
	Heated oxygen sensor 2 (Bank 2)	P0157	22H	87H	Min.	10 mV
		P0158	23H	07H	Max.	10 mV
	Air fuel ratio (A/F) sensor 1 heater (Bank 1)	P0032	57H	10H	Max.	5 mV
HO2S	All ruerratio (AVF) sensor i fleater (Bank 1)	P0031	58H	90H	Max.	5 mV
	Air fuel ratio (A/F) sensor 1 heater (Bank 2)	P0052	59H	11H	Max.	5 mV
		P0051	5AH	91H	Max.	5 mV
HEATER	Heated oxygen sensor 2 heater (Bank 1)	P0038	2DH	0AH	Max.	20 mV
	Troated oxygen sensor 2 heater (Dank 1)	P0037	2EH	8AH	Min.	20 mV
	Heated oxygen sensor 2 heater (Bank 2)	P0058	2FH	0BH	Max.	20 mV
	Treated oxygen sensor 2 heater (Dank 2)	P0057	30H	8BH	Min.	20 mV

HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION How to Erase DTC

(II) WITH CONSULT-II

The emission related diagnostic information in the ECM can be erased by selecting "ERASE" in the "SELF-DIAG RESULTS" mode with CONSULT-II.

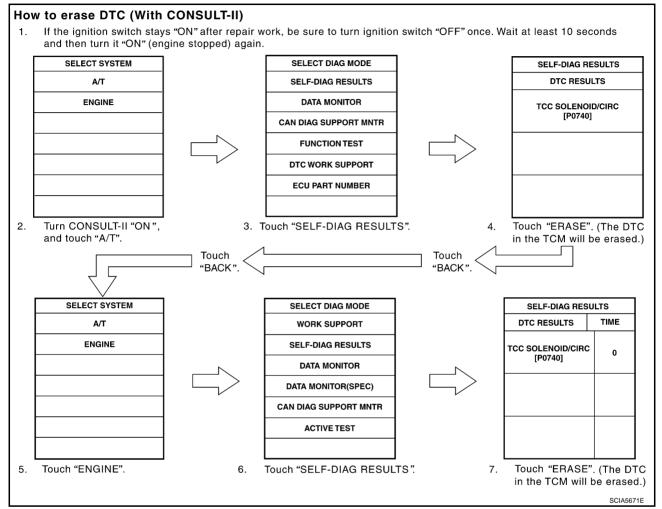
If DTCs are displayed for both ECM and TCM (Transmission control module), they need to be erased individually from the ECM and TCM (Transmission control module).

NOTE

If the DTC is not for A/T related items (see EC-8, "INDEX FOR DTC"), skip steps 2 through 4.

- 1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- 2. Turn CONSULT-II ON and touch "A/T".
- 3. Touch "SELF-DIAG RESULTS".

- Touch "ERASE". [The DTC in the TCM (Transmission control module) will be erased.] Then touch "BACK" twice.
- 5. Touch "ENGINE".
- Touch "SELF-DIAG RESULTS".
- 7. Touch "ERASE". (The DTC in the ECM will be erased.)



WITH GST

The emission related diagnostic information in the ECM can be erased by selecting Service \$04 with GST.

NOTE:

If the DTC is not for A/T related items (see EC-8, "INDEX FOR DTC"), skip step 2.

- 1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- Perform AT-40, "HOW TO ERASE DTC (WITH GST)". (The DTC in the TCM will be erased.)
- 3. Select Service \$04 with GST (Generic Scan Tool).

NO TOOLS

NOTE:

If the DTC is not for A/T related items (see EC-8, "INDEX FOR DTC"), skip step 2.

- 1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- 2. Perform AT-40, "HOW TO ERASE DTC (NO TOOLS)". (The DTC in the TCM will be erased.)
- Change the diagnostic test mode from Mode II to Mode I by depressing the accelerator pedal. Refer to <u>EC-63</u>, "<u>HOW TO SWITCH DIAGNOSTIC TEST MODE</u>".
- If the battery is disconnected, the emission-related diagnostic information will be lost within 24 hours.
- The following data are cleared when the ECM memory is erased.

Revision: 2005 August **EC-61** 2006 350Z

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

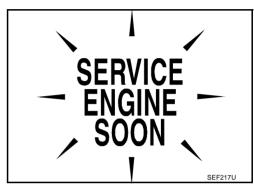
Actual work procedures are explained using a DTC as an example. Be careful so that not only the DTC, but all of the data listed above, are cleared from the ECM memory during work procedures.

Malfunction Indicator Lamp (MIL) DESCRIPTION

NBS00032

The MIL is located on the instrument panel.

- The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
 If the MIL does not light up, refer to DI-60, "WARNING LAMPS", or see EC-716, "MIL AND DATA LINK CONNECTOR".
- 2. When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



ON BOARD DIAGNOSTIC SYSTEM FUNCTION

The on board diagnostic system has the following three functions.

Diagnostic Test Mode	KEY and ENG. Status	Function	Explanation of Function
Mode I	Ignition switch in ON position Engine stopped	BULB CHECK	This function checks the MIL bulb for damage (blown, open circuit, etc.). If the MIL does not come on, check MIL circuit.
	Engine running	MALFUNCTION WARNING	This is a usual driving condition. When a malfunction is detected twice in two consecutive driving cycles (two trip detection logic), the MIL will light up to inform the driver that a malfunction has been detected. The following malfunctions will light up or blink the MIL in the 1st trip.
			Misfire (Possible three way catalyst damage)
			One trip detection diagnoses
Mode II	Ignition switch in ON position Engine stopped	SELF-DIAGNOSTIC RESULTS	This function allows DTCs and 1st trip DTCs to be read.

When there is an open circuit on MIL circuit, the ECM cannot warn the driver by lighting up MIL when there is malfunction on engine control system.

Therefore, when electrical controlled throttle and part of ECM related diagnoses are continuously detected as NG for 5 trips, ECM warns the driver that engine control system malfunctions and MIL circuit is open by means of operating fail-safe function.

The fail-safe function also operates when above diagnoses except MIL circuit are detected and demands the driver to repair the malfunction.

Engine operating condition in fail-safe mode

Engine speed will not rise more than 2,500 rpm due to the fuel cut

MIL Flashing Without DTC

When any SRT codes are not set, MIL may flash without DTC. For the details, refer to EC-56, "How to Display SRT Status".

HOW TO SWITCH DIAGNOSTIC TEST MODE

NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Always ECM returns to Diagnostic Test Mode I after ignition switch is turned OFF.

How to Set Diagnostic Test Mode II (Self-diagnostic Results)

- Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 2 Repeat the following procedure guickly 5 times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 10 seconds until the MIL starts blinking.

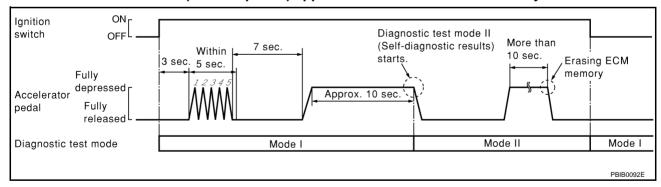
NOTE:

Do not release the accelerator pedal for 10 seconds if MIL may start blinking on the halfway of this 10 seconds. This blinking is displaying SRT status and is continued for another 10 seconds. For the details, refer to EC-56, "How to Display SRT Status".

Fully release the accelerator pedal. ECM has entered to Diagnostic Test Mode II (Self-diagnostic results).

NOTE:

Wait until the same DTC (or 1st trip DTC) appears to confirm all DTCs certainly.



How to Erase Diagnostic Test Mode II (Self-diagnostic Results)

- Set ECM in Diagnostic Test Mode II (Self-diagnostic results). Refer to EC-63, "How to Set Diagnostic Test Mode II (Self-diagnostic Results)"
- 2. Fully depress the accelerator pedal and keep it for more than 10 seconds. The emission-related diagnostic information has been erased from the backup memory in the ECM.
- 3. Fully release the accelerator pedal, and confirm the DTC 0000 is displayed.

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DIAGNOSTIC TEST MODE I — BULB CHECK

In this mode, the MIL on the instrument panel should stay ON. If it remains OFF, check the bulb. Refer to DI-60. "WARNING LAMPS" or see EC-716. "MIL AND DATA LINK CONNECTOR".

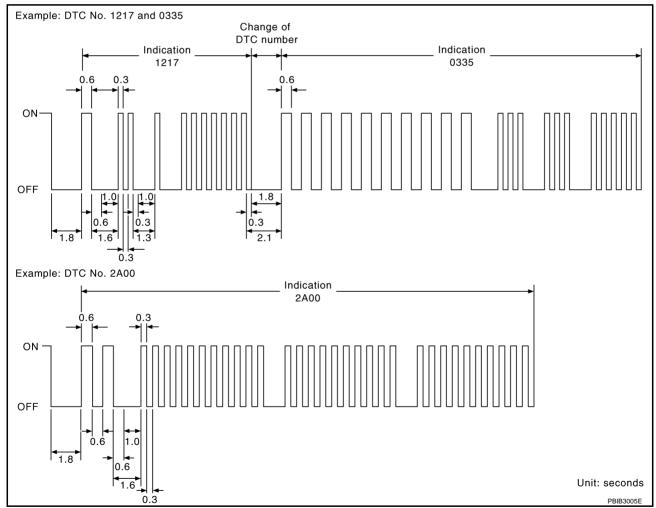
DIAGNOSTIC TEST MODE I — MALFUNCTION WARNING

MIL	Condition		
ON	When the malfunction is detected.		
OFF	No malfunction.		

These DTC numbers are clarified in Diagnostic Test Mode II (SELF-DIAGNOSTIC RESULTS)

DIAGNOSTIC TEST MODE II — SELF-DIAGNOSTIC RESULTS

In this mode, the DTC and 1st trip DTC are indicated by the number of blinks of the MIL as shown below. The DTC and 1st trip DTC are displayed at the same time. If the MIL does not illuminate in diagnostic test mode I (Malfunction warning), all displayed items are 1st trip DTCs. If only one code is displayed when the MIL illuminates in diagnostic test mode II (SELF-DIAGNOSTIC RESULTS), it is a DTC; if two or more codes are displayed, they may be either DTCs or 1st trip DTCs. DTC No. is same as that of 1st trip DTC. These unidentified codes can be identified by using the CONSULT-II or GST. A DTC will be used as an example for how to read a code.



A particular trouble code can be identified by the number of four-digit numeral flashes. The "zero" is indicated by the number of ten flashes. The "A" is indicated by the number of eleven flash. The length of time the 1,000th-digit numeral flashes on and off is 1.2 seconds consisting of an ON (0.6-second) - OFF (0.6-second) cycle. The 100th-digit numeral and lower digit numerals consist of a 0.3-second ON and 0.3-second OFF cycle. A change from one digit numeral to another occurs at an interval of 1.0-second OFF. In other words, the later numeral appears on the display 1.3 seconds after the former numeral has disappeared.

A change from one trouble code to another occurs at an interval of 1.8-second OFF.

In this way, all the detected malfunctions are classified by their DTC numbers. The DTC 0000 refers to no malfunction. (See $\underline{\text{EC-8}}$, "INDEX FOR $\underline{\text{DTC}}$ ")

How to Erase Diagnostic Test Mode II (Self-diagnostic Results)

The DTC can be erased from the back up memory in the ECM by depressing accelerator pedal. Refer to EC-63, "How to Erase Diagnostic Test Mode II (Self-diagnostic Results)".

- If the battery is disconnected, the DTC will be lost from the backup memory within 24 hours.
- Be careful not to erase the stored memory before starting trouble diagnoses.

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OBD System Operation Chart RELATIONSHIP BETWEEN MIL, 1ST TRIP DTC, DTC, AND DETECTABLE ITEMS

NBS00033

- When a malfunction is detected for the 1st time, the 1st trip DTC and the 1st trip freeze frame data are stored in the ECM memory.
- When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data are stored in the ECM memory, and the MIL will come on. For details, refer to EC-47, "Two Trip Detection Logic".
- The MIL will go off after the vehicle is driven 3 times (driving pattern B) with no malfunction. The drive is counted only when the recorded driving pattern is met (as stored in the ECM). If another malfunction occurs while counting, the counter will reset.
- The DTC and the freeze frame data will be stored until the vehicle is driven 40 times (driving pattern A) without the same malfunction recurring (except for Misfire and Fuel Injection System). For Misfire and Fuel Injection System, the DTC and freeze frame data will be stored until the vehicle is driven 80 times (driving pattern C) without the same malfunction recurring. The "TIME" in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT-II will count the number of times the vehicle is driven.
- The 1st trip DTC is not displayed when the self-diagnosis results in OK for the 2nd trip.

SUMMARY CHART

Items	Fuel Injection System	Misfire	Other
MIL (goes off)	3 (pattern B)	3 (pattern B)	3 (pattern B)
DTC, Freeze Frame Data (no display)	80 (pattern C)	80 (pattern C)	40 (pattern A)
1st Trip DTC (clear)	1 (pattern C), *1	1 (pattern C), *1	1 (pattern B)
1st Trip Freeze Frame Data (clear)	*1, *2	*1, *2	1 (pattern B)

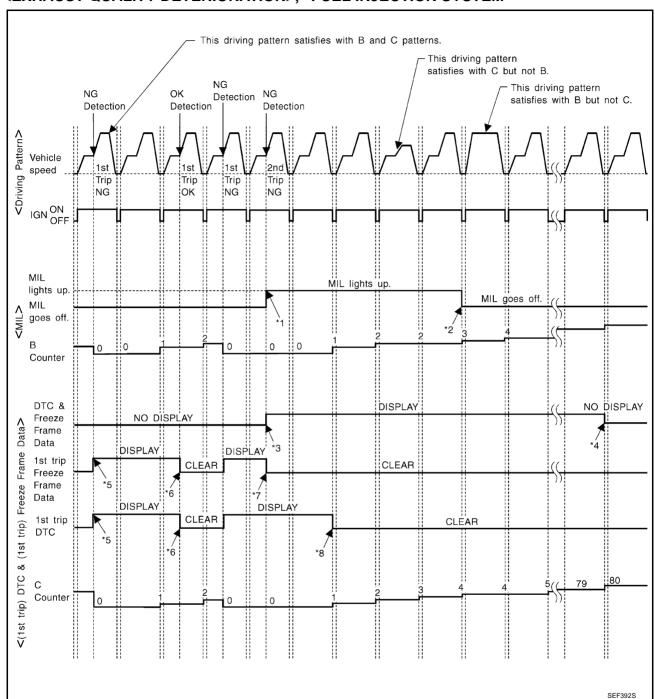
For details about patterns B and C under "Fuel Injection System" and "Misfire", see $\underline{\text{EC-}68}$.

For details about patterns A and B under "Other", see EC-70.

^{*1:} Clear timing is at the moment OK is detected.

^{*2:} Clear timing is when the same malfunction is detected in the 2nd trip.

RELATIONSHIP BETWEEN MIL, DTC, 1ST TRIP DTC AND DRIVING PATTERNS FOR "MISFIRE" <EXHAUST QUALITY DETERIORATION>, "FUEL INJECTION SYSTEM"



- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 80 times (pattern C) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- *2: MIL will go off after vehicle is driven 3 times (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the 1st time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- *8: 1st trip DTC will be cleared when vehicle is driven once (pattern C) without the same malfunction after DTC is stored in ECM.
- *3: When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- *6: The 1st trip DTC and the 1st trip freeze frame data will be cleared at the moment OK is detected.

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EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM"

<Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunction.
- The MIL will go off when the B counter reaches 3. (*2 in OBD SYSTEM OPERATION CHART)

<Driving Pattern C>

Driving pattern C means the vehicle operation as follows:

The following conditions should be satisfied at the same time:

Engine speed: (Engine speed in the freeze frame data) ±375 rpm

Calculated load value: (Calculated load value in the freeze frame data) x (1±0.1) [%]

Engine coolant temperature (T) condition:

- When the freeze frame data shows lower than 70°C (158°F), T should be lower than 70°C (158°F).
- When the freeze frame data shows higher than or equal to 70°C (158°F), T should be higher than or equal to 70°C (158°F).

Example:

If the stored freeze frame data is as follows:

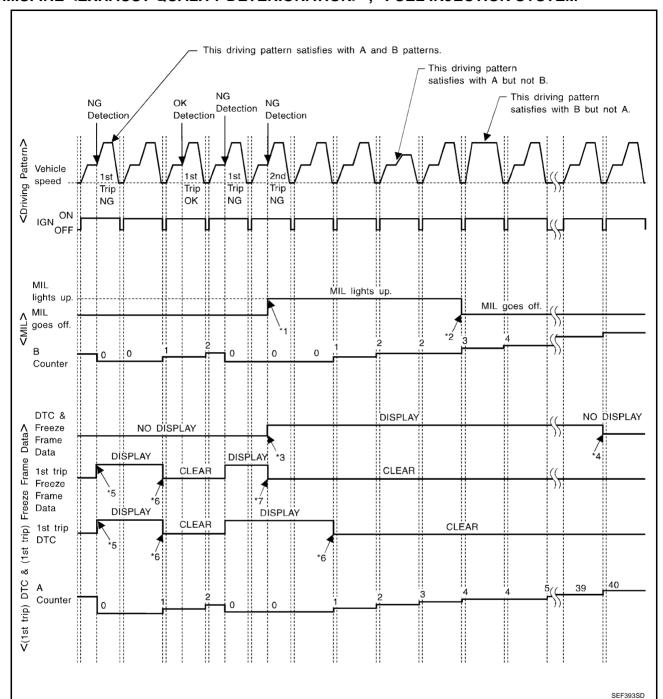
Engine speed: 850 rpm, Calculated load value: 30%, Engine coolant temperature: 80°C (176°F)

To be satisfied with driving pattern C, the vehicle should run under the following conditions:

Engine speed: 475 - 1,225 rpm, Calculated load value: 27 - 33%, Engine coolant temperature: more than 70°C (158°F)

- The C counter will be cleared when the malfunction is detected regardless of vehicle conditions above.
- The C counter will be counted up when vehicle conditions above is satisfied without the same malfunction.
- The DTC will not be displayed after C counter reaches 80.(*2 in OBD SYSTEM OPERATION CHART)
- The 1st trip DTC will be cleared when C counter is counted once without the same malfunction after DTC is stored in ECM.

RELATIONSHIP BETWEEN MIL, DTC, 1ST TRIP DTC AND DRIVING PATTERNS <u>EXCEPT</u> FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM"



- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 40 times (pattern A) without the same malfunction.

 (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- *2: MIL will go off after vehicle is driven 3 times (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the 1st time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- *3: When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- *6: 1st trip DTC will be cleared after vehicle is driven once (pattern B) without the same malfunction.

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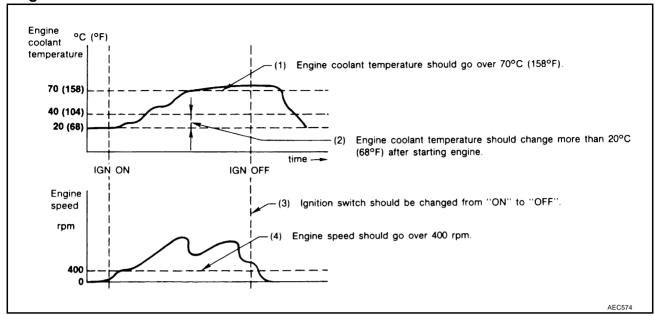
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EXPLANATION FOR DRIVING PATTERNS <u>EXCEPT</u> FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM"

<Driving Pattern A>



- The A counter will be cleared when the malfunction is detected regardless of (1) (4).
- The A counter will be counted up when (1) (4) are satisfied without the same malfunction.
- The DTC will not be displayed after the A counter reaches 40.(*2 in OBD SYSTEM OPERATION CHART)

<Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunctions.
- The MIL will go off when the B counter reaches 3 (*2 in OBD SYSTEM OPERATION CHART).

BASIC SERVICE PROCEDURE

BASIC SERVICE PROCEDURE

PFP:00018

NBS00034

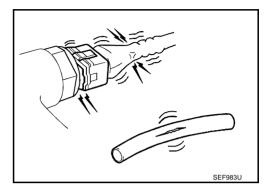
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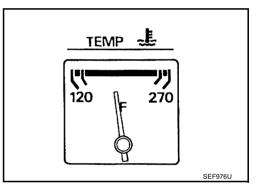
Basic Inspection

1. INSPECTION START

1. Check service records for any recent repairs that may indicate a related malfunction, or a current need for scheduled maintenance.

- 2. Open engine hood and check the following:
- Harness connectors for improper connections
- Wiring harness for improper connections, pinches and cut
- Vacuum hoses for splits, kinks and improper connections
- Hoses and ducts for leaks
- Air cleaner clogging
- Gasket
- 3. Confirm that electrical or mechanical loads are not applied.
- Headlamp switch is OFF.
- Air conditioner switch is OFF.
- Rear window defogger switch is OFF.
- Steering wheel is in the straight-ahead position, etc.
- Start engine and warm it up until engine coolant temperature indicator points the middle of gauge. Ensure engine stays below 1,000 rpm.

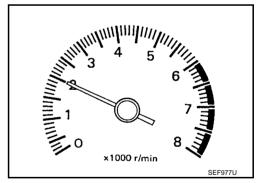




- 5. Run engine at about 2,000 rpm for about 2 minutes under no-load.
- 6. Make sure that no DTC is displayed with CONSULT-II or GST.

OK or NG

OK >> GO TO 3. NG >> GO TO 2.



2. REPAIR OR REPLACE

Repair or replace components as necessary according to corresponding Diagnostic Procedure.

>> GO TO 3.

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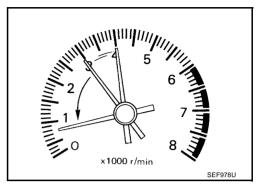
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BASIC SERVICE PROCEDURE

3. CHECK TARGET IDLE SPEED

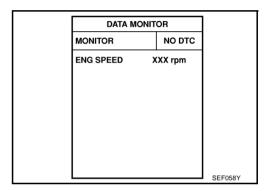
(P) With CONSULT-II

- 1. Run engine at about 2,000 rpm for about 2 minutes under no-load.
- 2. Rev engine (2,000 to 3,000 rpm) two or three times under no-load, then run engine at idle speed for about 1 minute.



3. Read idle speed in "DATA MONITOR" mode with CONSULT-II. Refer to EC-76, "IDLE SPEED".

A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)



⋈ Without CONSULT-II

- Run engine at about 2,000 rpm for about 2 minutes under no-load.
- 2. Rev engine (2,000 to 3,000 rpm) two or three times under no-load, then run engine at idle speed for about 1 minute.
- 3. Check idle speed. Refer to EC-76, "IDLE SPEED".

A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)

OK or NG

OK >> GO TO 10. NG >> GO TO 4.

4. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- Stop engine.
- 2. Perform EC-78, "Accelerator Pedal Released Position Learning" .

>> GO TO 5.

5. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-79, "Throttle Valve Closed Position Learning".

>> GO TO 6.

6. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-79. "Idle Air Volume Learning".

Is Idle Air Volume Learning carried out successfully?

Yes or No

Yes >> GO TO 7.

No >> 1. Follow the instruction of Idle Air Volume Learning.

2. GO TO 4.

7. CHECK TARGET IDLE SPEED AGAIN

(P) With CONSULT-II

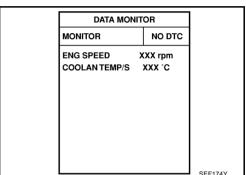
- Start engine and warm it up to normal operating temperature.
- Read idle speed in "DATA MONITOR" mode with CONSULT-II. Refer to EC-76, "IDLE SPEED".

A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)

Without CONSULT-II

- Start engine and warm it up to normal operating temperature.
- Check idle speed. Refer to EC-76, "IDLE SPEED".

A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)



OK or NG

OK >> GO TO 10. NG >> GO TO 8.

8. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-402, "DTC P0340, P0345 CMP SENSOR (PHASE)".
- Check crankshaft position sensor (POS) and circuit. Refer to EC-394, "DTC P0335 CKP SENSOR (POS)".

OK or NG

OK >> GO TO 9.

NG >> 1. Repair or replace.

2. GO TO 4.

9. CHECK ECM FUNCTION

- Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to BL-165, "NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)" .

>> GO TO 4.

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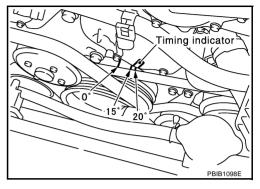
10. CHECK IGNITION TIMING

- 1. Run engine at idle.
- 2. Check ignition timing with a timing light. Refer to <u>EC-76</u>, "IGNITION TIMING".

A/T: $15 \pm 5^{\circ}$ BTDC (in P or N position) M/T: $15 \pm 5^{\circ}$ BTDC (in Neutral position)

OK or NG

OK >> GO TO 19. NG >> GO TO 11.



11. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- 1. Stop engine.
- Perform <u>EC-78</u>, "Accelerator <u>Pedal Released Position Learning</u>".

>> GO TO 12.

12. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-79, "Throttle Valve Closed Position Learning".

>> GO TO 13.

13. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-79, "Idle Air Volume Learning".

Is Idle Air Volume Learning carried out successfully?

Yes or No

Yes >> GO TO 14.

No >> 1. Follow the instruction of Idle Air Volume Learning.

2. GO TO 4.

14. CHECK TARGET IDLE SPEED AGAIN

(P) With CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Read idle speed in "DATA MONITOR" mode with CONSULT-II. Refer to <u>EC-76, "IDLE SPEED"</u>.

A/T: 650 \pm 50 rpm (in P or N position) M/T: 650 \pm 50 rpm (in Neutral position)

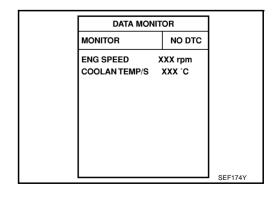
(R) Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Check idle speed. Refer to <u>EC-76</u>, "IDLE SPEED".

A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)

OK or NG

OK >> GO TO 15. NG >> GO TO 17.



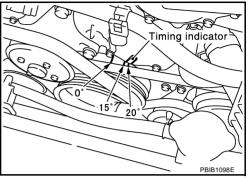
15. CHECK IGNITION TIMING AGAIN

- 1. Run engine at idle.
- 2. Check ignition timing with a timing light. Refer to EC-76. "IGNITION TIMING".

A/T: $15 \pm 5^{\circ}$ BTDC (in P or N position) M/T: $15 \pm 5^{\circ}$ BTDC (in Neutral position)

OK or NG

OK >> GO TO 19. NG >> GO TO 16.



16. CHECK TIMING CHAIN INSTALLATION

Check timing chain installation. Refer to EM-59, "TIMING CHAIN".

OK or NG

OK >> GO TO 17.

NG >> 1. Repair the timing chain installation.

2. GO TO 4.

17. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-402, "DTC P0340, P0345 CMP SENSOR (PHASE)".
- Check crankshaft position sensor (POS) and circuit. Refer to EC-394, "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

- Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to BL-165, "NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)".

>> GO TO 4.

19. INSPECTION END

Did you replace the ECM, referring this Basic Inspection procedure?

Yes or No

>> 1. Perform EC-77, "VIN Registration" Yes

- 2. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".
- 3. INSPECTION END

>> INSPECTION END No

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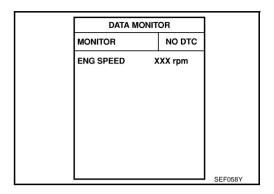
2006 350Z

Idle Speed and Ignition Timing Check IDLE SPEED

NBS00035

(P) With CONSULT-II

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



₩ith GST

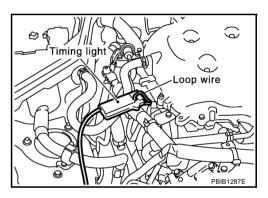
Check idle speed in Service \$01 with GST.

IGNITION TIMING

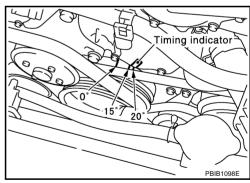
Any of following two methods may be used.

Method A

1. Attach timing light to loop wire as shown.

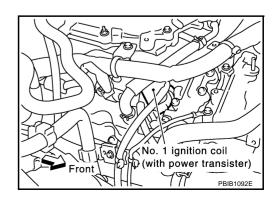


2. Check ignition timing.

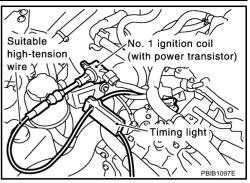


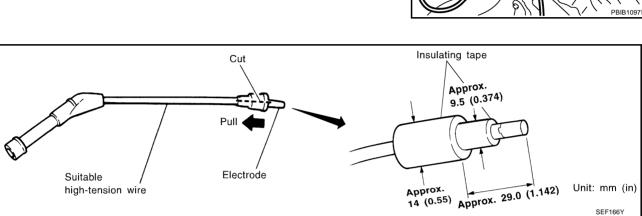
Method B

1. Remove No. 1 ignition coil.

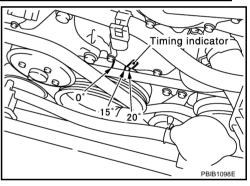


Connect No. 1 ignition coil and No. 1 spark plug with suitable high-tension wire as shown, and attach timing light clamp to this wire.





3. Check ignition timing.



VIN Registration DESCRIPTION

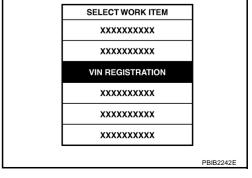
VIN Registration is an operation to registering VIN in ECM. It must be performed each time ECM is replaced.

Accurate VIN which is registered in ECM may be required for Inspection & Maintenance (I/M).

OPERATION PROCEDURE

(P) With CONSULT-II

- Check the VIN of the vehicle and note it. Refer to GI-48, "IDENTIFICATION INFORMATION".
- 2. Turn ignition switch ON and engine stopped.
- Select "VIN REGISTRATION" in "WORK SUPPORT" mode.
- Follow the instruction of CONSULT-II display.



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Exhaust Valve Timing Control Learning (M/T Models) DESCRIPTION

NBS00038

Exhaust Valve Timing Control Learning is an operation to learn the characteristic of exhaust valve timing control magnet retarder by comparing the target angle of exhaust camshaft with the actual retarded angle of exhaust camshaft. It must be performed each time exhaust valve timing control magnet retarder is disconnected or replaced, or ECM is replaced.

OPERATION PROCEDURE

(P) With CONSULT-II

- 1. Start engine and warm it up to normal operation temperature.
- 2. Set shift lever in neutral position and confirm that following electrical or mechanical loads are not applied.
- Headlamp switch is OFF
- Air conditioner switch is OFF
- Rear defogger switch is OFF
- Steering wheel is in the straight-ahead position, etc.
- 3. Keep the engine speed between 1,800 and 2,000 rpm.
- Select "EXH V/T CONTROL LEARN" in "WORK SUPPORT" mode with CONSULT-II.

	WORK S	UPPORT		
EXH V/T (CONTROL			
LEARN				
	ADJ MO	ONITOR		
EN	IG SPEE	.D	xxxrpm	
COO	LAN TEN	/IP/S	xx°C	
VHC	L SPEED) SE	0km/h	
P/N	N POSI S	W	ON	
EX⊦	V/T LEA	RN	YET	
	STA	RT		
MODE	BACK	LIGHT	COPY	PBIB2760E

- 5. Touch "START" and wait 20 seconds.
- 6. Make sure that "CMPLT" is displayed on CONSULT-II screen.

Learning completed : CMPLT Learning not yet : YET

	WORK S	UPPORT		
EXH V/T (LEARN	CONTROL		CMPLT	
	ADJ MO	ONITOR		
EN	IG SPEE	.D	xxxrpm	
COO	LAN TEN	/IP/S	xx°C	
VHC	L SPEED	SE	0km/h	
P/N	N POSI S	W	ON	
EXH	V/T LEA	RN	CMPLT	
	STA	\RT		
MODE	BACK	LIGHT	COPY	PBIB2759E

⋈ Without CONSULT-II

- 1. Start engine and warm it up to normal operation temperature.
- 2. Set shift lever in neutral position and confirm that following electrical or mechanical loads are not applied.
- Headlamp switch is OFF
- Air conditioner switch is OFF
- Rear defogger switch is OFF
- Steering wheel is in the straight-ahead position, etc.
- 3. Keep the engine speed between 1,800 and 2,000 rpm at 20 seconds.

Accelerator Pedal Released Position Learning DESCRIPTION

NBS00039

Accelerator Pedal Released Position Learning is an operation to learn the fully released position of the accelerator pedal by monitoring the accelerator pedal position sensor output signal. It must be performed each time harness connector of accelerator pedal position sensor or ECM is disconnected.

OPERATION PROCEDURE

- 1. Make sure that accelerator pedal is fully released.
- Turn ignition switch ON and wait at least 2 seconds.
- 3 Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON and wait at least 2 seconds.
- Turn ignition switch OFF and wait at least 10 seconds.

Throttle Valve Closed Position Learning **DESCRIPTION**

Throttle Valve Closed Position Learning is an operation to learn the fully closed position of the throttle valve by monitoring the throttle position sensor output signal. It must be performed each time harness connector of electric throttle control actuator or ECM is disconnected.

OPERATION PROCEDURE

- 1. Make sure that accelerator pedal is fully released.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds. Make sure that throttle valve moves during above 10 seconds by confirming the operating sound.

Idle Air Volume Learning DESCRIPTION

Idle Air Volume Learning is an operation to learn the idle air volume that keeps each engine within the specific range. It must be performed under any of the following conditions:

- Each time electric throttle control actuator or ECM is replaced.
- Idle speed or ignition timing is out of specification.

PREPARATION

Before performing Idle Air Volume Learning, make sure that all of the following conditions are satisfied. Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery voltage: More than 12.9V (At idle)
- Engine coolant temperature: 70 100°C (158 212°F)
- Park/neutral position (PNP) switch: ON
- Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

On vehicles equipped with daytime light systems, if the parking brake is applied before the engine is started, the headlamp will not be illuminated.

- Steering wheel: Neutral (Straight-ahead position)
- Vehicle speed: Stopped
- Transmission: Warmed-up
- For A/T models with CONSULT-II
- Drive vehicle until "ATF TEMP SE 1" in "DATA MONITOR" mode of "A/T" system indicates less than 0.9V.
- For A/T models without CONSULT-II and M/T models
- Drive vehicle for 10 minutes.

OPERATION PROCEDURE

(A) With CONSULT-II

- Perform EC-78, "Accelerator Pedal Released Position Learning".
- Perform EC-79, "Throttle Valve Closed Position Learning".
- Start engine and warm it up to normal operating temperature.
- Check that all items listed under the topic PREPARATION (previously mentioned) are in good order.

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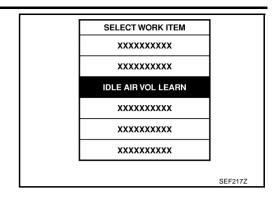
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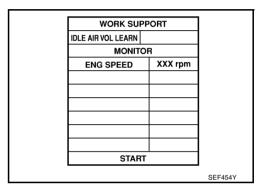




Select "IDLE AIR VOL LEARN" in "WORK SUPPORT" mode.

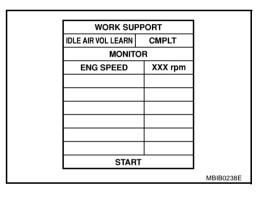


6. Touch "START" and wait 20 seconds.



- Make sure that "CMPLT" is displayed on CONSULT-II screen. If "CMPLT" is not displayed, Idle Air Volume Learning will not be carried out successfully. In this case, find the cause of the incident by referring to the DIAGNOSIS PROCEDURE below.
- 8. Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications.

ITEM	SPECIFICATION
Idle speed	A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)
Ignition timing	A/T: $15 \pm 5^{\circ}$ BTDC (in P or N position) M/T: $15 \pm 5^{\circ}$ BTDC (in Neutral position)

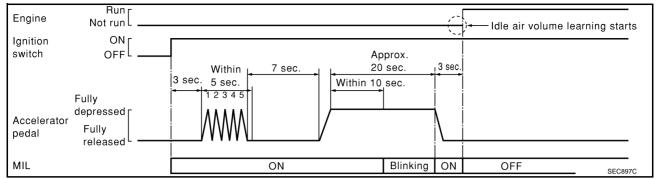


Without CONSULT-II

NOTE

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- 1. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check that all items listed under the topic PREPARATION (previously mentioned) are in good order.
- 5. Turn ignition switch OFF and wait at least 10 seconds.
- 6. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 7. Repeat the following procedure quickly five times within 5 seconds.
- a. Fully depress the accelerator pedal.
- b. Fully release the accelerator pedal.
- Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
- 9. Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
- 10. Start engine and let it idle.

11. Wait 20 seconds.



12. Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications.

ITEM	SPECIFICATION
Idle speed	A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)
Ignition timing	A/T: $15 \pm 5^{\circ}$ BTDC (in P or N position) M/T: $15 \pm 5^{\circ}$ BTDC (in Neutral position)

13. If idle speed and ignition timing are not within the specification, Idle Air Volume Learning will not be carried out successfully. In this case, find the cause of the incident by referring to the DIAGNOSTIC PROCEDURE below.

DIAGNOSTIC PROCEDURE

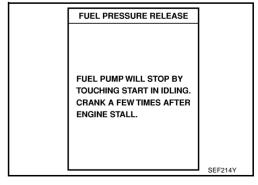
If Idle Air Volume Learning cannot be performed successfully, proceed as follows:

- 1. Check that throttle valve is fully closed.
- 2. Check PCV valve operation.
- 3. Check that downstream of throttle valve is free from air leakage.
- When the above three items check out OK, engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.
 It is useful to perform <u>EC-143</u>, "TROUBLE DIAGNOSIS SPECIFICATION VALUE".
- 5. If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform Idle Air Volume Learning all over again:
 - Engine stalls.
 - Erroneous idle.

Fuel Pressure Check FUEL PRESSURE RELEASE

With CONSULT-II

- Turn ignition switch ON.
- Perform "FUEL PRESSURE RELEASE" in "WORK SUPPORT" mode with CONSULT-II.
- Start engine.
- After engine stalls, crank it two or three times to release all fuel pressure.
- Turn ignition switch OFF.



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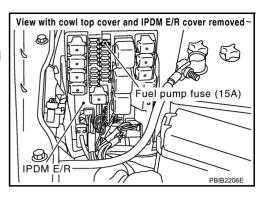
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⋈ Without CONSULT-II

- Remove fuel pump fuse located in IPDM E/R.
- 2. Start engine.
- After engine stalls, crank it two or three times to release all fuel pressure.
- 4. Turn ignition switch OFF.
- 5. Reinstall fuel pump fuse after servicing fuel system.



FUEL PRESSURE CHECK

CAUTION:

Before disconnecting fuel line, release fuel pressure from fuel line to eliminate danger.

NOTE

Prepare pans or saucers under the disconnected fuel line because the fuel may spill out. The fuel pressure cannot be completely released because Z33 models do not have fuel return system. Use Fuel Pressure Gauge Kit (J-44321) to check fuel pressure.

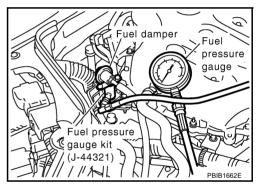
- 1. Release fuel pressure to zero. Refer to EC-81, "FUEL PRESSURE RELEASE".
- Install the inline fuel quick disconnected fitting between fuel damper and fuel injector tube.
- 3. Connect the fuel pressure gauge (quick connector adapter hose) to the inline fuel quick disconnected fitting.
- 4. Turn ignition switch ON and check for fuel leakage.
- 5. Start engine and check for fuel leakage.
- 6. Read the indication of fuel pressure gauge.

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

- 7. If result is unsatisfactory, go to next step.
- 8. Check the following.
 - Fuel hoses and fuel tubes for clogging
 - Fuel filter for clogging
 - Fuel pump
 - Fuel pressure regulator for clogging

If OK, replace fuel pressure regulator.

If NG, repair or replace.



TROUBLE DIAGNOSIS

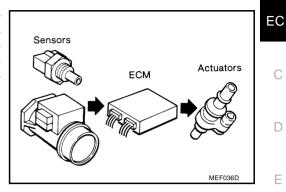
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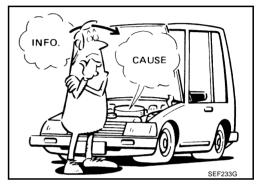
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Trouble Diagnosis Introduction INTRODUCTION

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



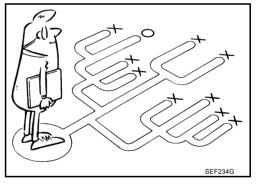
It is much more difficult to diagnose an incident that occurs intermittently rather than continuously. Most intermittent incidents are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.



A visual check only may not find the cause of the incidents. A road test with CONSULT-II (or GST) or a circuit tester connected should be performed. Follow the WORK FLOW on EC-84.

Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such incidents, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A DIAGNOSTIC WORKSHEET like the example on <u>EC-88</u> should be used.

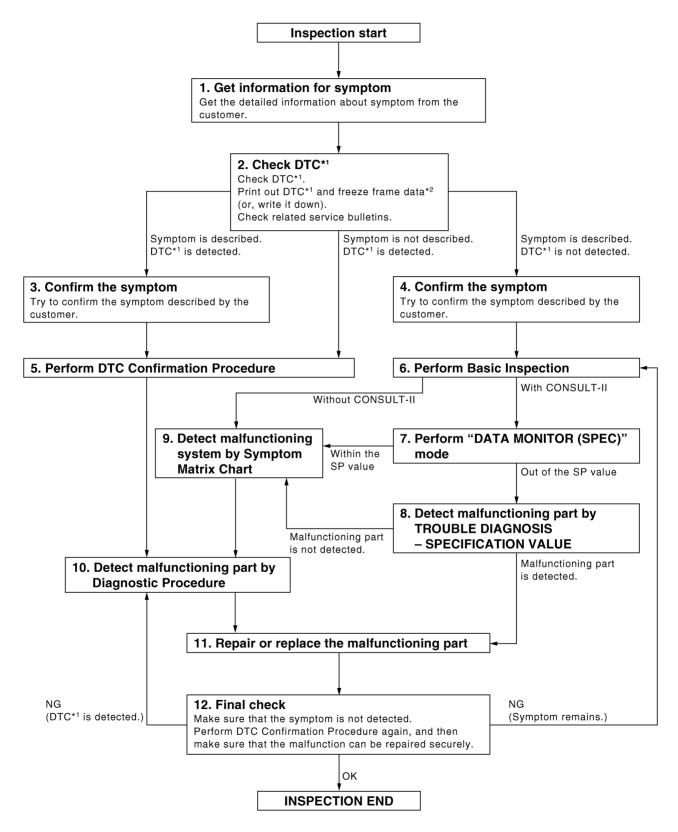
Start your diagnosis by looking for conventional malfunctions first. This will help troubleshoot driveability malfunctions on an electronically controlled engine vehicle.



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WORK FLOW Overall Sequence



^{*1:} Include 1st trip DTC.

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^{*2:} Include 1st trip freeze frame data.

Detailed Flow

$1.\,$ GET INFORMATION FOR SYMPTOM

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the EC-87. "DIAGNOSTIC WORKSHEET".

>> GO TO 2.

2. CHECK DTC*1

Check DTC*1.

Perform the following procedure if DTC*¹ is displayed.

Record DTC*1 and freeze frame data*2. (Print them out with CONSULT-II or GST.)

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Erase DTC*1, (Refer to EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION"

Study the relationship between the cause detected by DTC*1 and the symptom described by the customer. (Symptom Matrix Chart is useful. Refer to EC-92, "Symptom Matrix Chart".)

Check related service bulletins for information.

Is any symptom described and any DTC detected?

Symptom is described, DTC*1 is displayed>>GO TO 3.

Symptom is described, DTC*1 is not displayed>>GO TO 4.

Symptom is not described, DTC*1 is displayed>>GO TO 5.

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3. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer (except MIL ON).

DIAGNOSIS WORK SHEET is useful to verify the incident.

Connect CONSULT-II to the vehicle in "DATA MONITOR (AUTO TRIG)" mode and check real time diagnosis results.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

DIAGNOSIS WORK SHEET is useful to verify the incident.

Connect CONSULT-II to the vehicle in "DATA MONITOR (AUTO TRIG)" mode and check real time diagnosis results.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

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5. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC Confirmation Procedure for the displayed DTC*1, and then make sure that DTC*1 is detected again.

At this time, always connect CONSULT-II to the vehicle, and check diagnostic results in real time on "DATA MONITOR (AUTO TRIG)".

If two or more DTCs*¹ are detected, refer to <u>EC-89, "DTC Inspection Priority Chart"</u> and determine trouble diagnosis order.

NOTE:

- Freeze frame data*² is useful if the DTC*¹ is not detected.
- Perform Overall Function Check if DTC Confirmation Procedure is not included on Service Manual. This simplified check procedure is an effective alternative though DTC*1 cannot be detected during this check.
 If the result of Overall Function Check is NG, it is the same as the detection of DTC*1 by DTC Confirmation Procedure.

Is DTC*1 detected?

Yes >> GO TO 10.

No >> Check according to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

6. PERFORM BASIC INSPECTION

Perform EC-71, "Basic Inspection".

With CONSULT-II>>GO TO 7. Without CONSULT-II>>GO TO 9.

7. PERFORM DATA MONITOR (SPEC) MODE

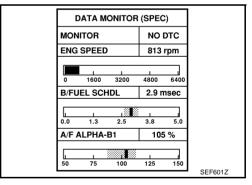
(P) With CONSULT-II

Make sure that "MAS A/F SE-B1", "B/FUEL SCHDL", and "A/F ALPHA-B1", "A/F ALPHA-B2" are within the SP value using CONSULT-II "DATA MONITOR (SPEC)" mode.

Refer to EC-144, "Diagnostic Procedure".

Are they within the SP value?

Yes >> GO TO 9. No >> GO TO 8.



8. DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Detect malfunctioning part according to <u>EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE"</u>. Is malfunctioning part detected?

Yes >> GO TO 11. No >> GO TO 9.

9. DETECT MALFUNCTIONING SYSTEM BY SYMPTOM MATRIX CHART

Detect malfunctioning system according to <u>EC-92</u>, "Symptom Matrix Chart" based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

>> GO TO 10.

10. DETECT MALFUNCTIONING PART BY DIAGNOSTIC PROCEDURE

Inspect according to Diagnostic Procedure of the system.

NOTE:

The Diagnostic Procedure in EC section described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnostic Procedure. For details, refer to Circuit Inspection in GI-27, "How to Perform Efficient Diagnosis for an Electrical Incident".

Is malfunctioning part detected?

Yes >> GO TO 11.

No >> Monitor input data from related sensors or check voltage of related ECM terminals using CON-SULT-II. Refer to EC-137, "CONSULT-II Reference Value in Data Monitor", EC-111, "EC-111, "EC-

11. REPAIR OR REPLACE THE MALFUNCTIONING PART

- 1. Repair or replace the malfunctioning part.
- Reconnect parts or connectors disconnected during Diagnostic Procedure again after repair and replacement.
- 3. Check DTC. If DTC is displayed, erase it, refer to EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION".

>> GO TO 12.

12. FINAL CHECK

When DTC was detected in step 2, perform DTC Confirmation Procedure or Overall Function Check again, and then make sure that the malfunction have been repaired securely.

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

OK or NG

OK

NG (DTC*1 is detected)>>GO TO 10.

NG (Symptom remains)>>GO TO 6.

>> 1. Before returning the vehicle to the customer, make sure to erase unnecessary DTC*1 in ECM and TCM (Transmission Control Module). (Refer to EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION" and AT-38, "HOW TO ERASE DTC".)

- 2. If the completion of SRT is needed, drive vehicle under the specific driving pattern. Refer to EC-57, "Driving Pattern".
- 3. INSPECTION END
- *1: Include 1st trip DTC.
- *2: Include 1st trip freeze frame data.

DIAGNOSTIC WORKSHEET

Description

There are many operating conditions that lead to the malfunction of engine components. A good grasp of such conditions can make troubleshooting faster and more accurate.

In general, each customer feels differently about a incident. It is important to fully understand the symptoms or conditions for a customer complaint.

Utilize a diagnostic worksheet like the one on the next page in order to organize all the information for troubleshooting.

Some conditions may cause the MIL to come on steady or blink and DTC to be detected. Examples:

- Vehicle ran out of fuel, which caused the engine to misfire.
- Fuel filler cap was left off or incorrectly screwed on, allowing fuel to evaporate into the atmosphere.

KEY POINTS

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

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Worksheet Sample

Customer nar	ne MR/MS	Model & Year	VIN										
Engine #		Trans.	Mileage										
Incident Date		Manuf. Date	In Service Date										
Fuel and fuel	filler cap	☐ Vehicle ran out of fuel causing misfire☐ Fuel filler cap was left off or incorrectly screwed on.											
	☐ Startability	☐ Impossible to start ☐ No combus ☐ Partial combustion affected by th ☐ Partial combustion NOT affected ☐ Possible but hard to start ☐ Other	nrottle position I by throttle position										
Symptoms	□ Idling	☐ No fast idle ☐ Unstable ☐ F☐ Others [High idle ☐ Low idle]										
cyp.toe	Driveability	☐ Stumble ☐ Surge ☐ Knock☐ Intake backfire ☐ Exhaust backfi☐ Others [☐ Lack of power re]										
	☐ Engine stall	☐ At the time of start ☐ While idling ☐ While accelerating ☐ While dece ☐ Just after stopping ☐ While loadi	lerating										
Incident occur	rrence	☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night [☐ In the daytime										
Frequency		☐ All the time ☐ Under certain cond	ditions										
Weather cond	litions	☐ Not affected											
	Weather	☐ Fine ☐ Raining ☐ Snowing	Others [
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐	Cold Humid °F										
		☐ Cold ☐ During warm-up ☐ /	After warm-up										
Engine condit	ions	Engine speed0 2,000	4,000 6,000 8,000 rpm										
Road conditio	ns	☐ In town ☐ In suburbs ☐ Hig	hway										
Driving condit	ions	☐ While accelerating☐ While cruis☐ While decelerating☐ While turning	ng (RH/LH)										
Malfunction in	udicator lamp	0 10 20 ☐ Turned on ☐ Not turned on	30 40 50 60 MPH										
Malfunction in	iuicator iamp	□ Turned on □ Not turned on											

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DTC Inspection Priority Chart

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If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

NOTE:

- If DTC U1000 or U1001 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC U1010 is displayed with other DTC, first perform the diagnosis for DTC U1010. Refer to <u>EC-166</u>, "DTC U1010 CAN COMMUNICATION".

Priority	Detected items (DTC)	
1	U1000 U1001 CAN communication line	
	U1010 CAN communication	
	 P0101 P0102 P0103 Mass air flow sensor 	
	P0112 P0113 P0127 Intake air temperature sensor	
	P0117 P0118 P0125 Engine coolant temperature sensor	
	P0128 Thermostat function	
	 P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor 	
	P0181 P0182 P0183 Fuel tank temperature sensor	
	• P0327 P0328 Knock sensor	
	P0335 Crankshaft position sensor (POS)	
	P0340 P0345 Camshaft position sensor (PHASE)	
	 P0460 P0461 P0462 P0463 Fuel level sensor 	
	P0500 Vehicle speed sensor	
	● P0605 ECM	
	P0643 Sensor power supply	
	• P0700 TCM	
	P0705 Park/Neutral position (PNP) switch	
	P0850 Park/Neutral position (PNP) switch	
	• P1610 - P1615 NATS	
	P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor	

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Priority	Detected items (DTC)
2	● P0031 P0032 P0051 P0052 Air fuel ratio (A/F) sensor 1 heater
	• P0037 P0038 P0057 P0058 Heated oxygen sensor 2 heater
	P0075 P0081 Intake valve timing control solenoid valve
	 ▶ P0078 P0084 Exhaust valve timing control magnet retarder*
	• P0130 P0131 P0132 P0133 P0150 P0151 P0152 P0153 P2A00 P2A03 Air fuel ratio (A/F) sensor 1
	• P0137 P0138 P0139 P0158 P0159 Heated oxygen sensor 2
	P0441 EVAP control system purge flow monitoring
	P0443 P0444 P0445 EVAP canister purge volume control solenoid valve
	P0447 P0448 EVAP canister vent control valve
	P0451 P0452 P0453 EVAP control system pressure sensor
	P0550 Power steering pressure sensor
	P0603 ECM power supply
	• P0710 P0717 P0720 P0740 P0744 P0745 P1730 P1752 P1754 P1757 P1759 P1762 P1764 P1767 P1769 P1772
	P1774 A/T related sensors, solenoid valves and switches
	P1078 P1084 Exhaust valve timing control position sensor*
	P1217 Engine over temperature (OVERHEAT)
	P1805 Brake switch
	P2101 Electric throttle control function
	P2100 P2103 P2118 Electric throttle control actuator
3	P0011 P0021 Intake valve timing control
	P0014 P0024 Exhaust valve timing control*
	P0171 P0172 P0174 P0175 Fuel injection system function
	• P0300 - P0306 Misfire
	P0420 P0430 Three way catalyst function
	P0442 EVAP control system (SMALL LEAK)
	P0455 EVAP control system (GROSS LEAK)
	P0456 EVAP control system (VERY SMALL LEAK)
	P0506 P0507 Idle speed control system
	P1148 P1168 Closed loop control
	P1211 TCS control unit
	P1212 TCS communication line
	P1564 ASCD steering switch
	P1572 ASCD brake switch
	P1574 ASCD vehicle speed sensor
	P1715 Turbine revolution sensor
	P2119 Electric throttle control actuator

^{*:} For models with M/T.

Fail-safe Chart

When the DTC listed below is detected, the ECM enters fail-safe mode and the MIL lights up.

DTC No.	Detected items	Engine opera	ating condition in fail-safe mode									
P0102 P0103	Mass air flow sensor circuit	Engine speed will not rise more tha	n 2,400 rpm due to the fuel cut.	EC								
P0117 P0118	Engine coolant tempera- ture sensor circuit	ignition switch ON or START.	determined by ECM based on the time after turning polant temperature decided by ECM.									
		Condition	Engine coolant temperature decided (CONSULT-II display)									
		Just as ignition switch is turned ON or START	40°C (104°F)									
		More than approx. 4 minutes after ignition ON or START	80°C (176°F)	Е								
		Except as shown above 40 - 80°C (104 - 176°F) (Depends on the time)										
		When the fail-safe system for engine coolant temperature sensor is activated, the coof fan operates while engine is running.										
P0122 P0123 P0222 P0223 P2135	Throttle position sensor	order for the idle position to be with	e ECM controls the electric throttle control actuator in regulating the throttle opening in der for the idle position to be within +10 degrees. e ECM regulates the opening speed of the throttle valve to be slower than the normal ndition.									
P0643	Sensor power supply	ECM stops the electric throttle control actuator control, throttle valve is maintain fixed opening (approx. 5 degrees) by the return spring.										
P2100 P2103	Throttle control motor relay	ECM stops the electric throttle contributed opening (approx. 5 degrees) by	rol actuator control, throttle valve is maintained at a by the return spring.									
P2101	Electric throttle control function	ECM stops the electric throttle contributed opening (approx. 5 degrees) by	rol actuator control, throttle valve is maintained at a by the return spring.									
P2118	Throttle control motor	ECM stops the electric throttle contributed opening (approx. 5 degrees) by	rol actuator control, throttle valve is maintained at a by the return spring.									
P2119	Electric throttle control actuator	malfunction:)	tor does not function properly due to the return spring ctuator by regulating the throttle opening around the not rise more than 2,000 rpm.	k								
			in fail-safe mode is not in specified range:) ontrol actuator by regulating the throttle opening to 20	l								
		the engine stalls.	ve is stuck open:) down gradually by fuel cut. After the vehicle stops, /T), Neutral (M/T) position, and engine speed will not	ľ								
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	order for the idle position to be with	le control actuator in regulating the throttle opening in in +10 degrees. eed of the throttle valve to be slower than the normal									

• When there is an open circuit on MIL circuit, the ECM cannot warn the driver by lighting up MIL when there is malfunction on engine control system.

Therefore, when electrical controlled throttle and part of ECM related diagnoses are continuously detected as NG for 5 trips, ECM warns the driver that engine control system malfunctions and MIL circuit is open by means of operating fail-safe function.

The fail-safe function also operates when above diagnoses except MIL circuit are detected and demands the driver to repair the malfunction.

Engine operating condition in fail-safe mode Engine speed will not rise more than 2,500 rpm due to the fuel cut

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Symptom Matrix Chart SYSTEM — BASIC ENGINE CONTROL SYSTEM

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							S\	/MPT	ОМ						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
-	y symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	FO 000
Fuel	Fuel pump circuit	1	1	2	3	2	4	2	2			3		2	EC-690
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-82
	Fuel injector circuit	1	1	2	3	2	4	2	2	4		2			EC-682
Air	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-32
All	Positive crankcase ventilation system Incorrect idle speed adjustment	3	3	4	4	4	1	1	1	1		1	1		EC-44 EC-71
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-604, EC-616
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-71
_	Ignition circuit	1	1	2	2	2		2	2			2			EC-697
Power s	supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-154
Mass air	r flow sensor circuit	1			2										EC-211, EC-220
Engine	coolant temperature sensor circuit	ļ					3			3					EC-234, EC-248
Air fuel r	ratio (A/F) sensor 1 circuit		1	2	3	2		2	2			2			EC-178, EC-257, EC-268, EC-278, EC-288, EC-651
Throttle	position sensor circuit						2			2					EC-240, EC-371, EC-562, EC-564, EC-634
Accelera	ator pedal position sensor circuit			3	2	1									EC-523, EC-618, EC-626, EC-642
Knock s	ensor circuit			2								3			EC-389
Cranksh	naft position sensor (POS) circuit	2	2												EC-394
	aft position sensor (PHASE) circuit	3	2												EC-402
Vehicle	speed signal circuit		2	3		3						3			EC-505

						S	/MPT	OM						
	HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Power steering pressure sensor circuit		2					3	3						EC-511
ECM	2	2	3	3	3	3	3	3	3	3	3			EC-516, EC-520
Intake valve timing control solenoid valve circuit		3	2		1	3	2	2	3		3			EC-195
Exhaust valve timing control magnet retarder circuit*		3	2		1	3	2	2	3		3			EC-173
Park/neutral position (PNP) switch circuit			3		3		3	3			3			EC-529
Refrigerant pressure sensor circuit		2				3			3		4			EC-710
Electrical load signal circuit							3							EC-680
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	ATC-36
VDC/TCS/ABS control unit ABS actuator and electric unit (control unit)			4											BRC-86, BRC-44

^{*:} For models with M/T.

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^{1 - 6:} The numbers refer to the order of inspection. (continued on next page)

SYSTEM — ENGINE MECHANICAL & OTHER

	SYMPTOM														
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty s	ymptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	
Fuel	Fuel tank	5													FL-10
	Fuel piping	3		5	5	5		5	5			5			EM-38
	Vapor lock		5												
	Valve deposit	5		5						5					_
	Poor fuel (Heavy weight gasoline, Low octane)				5	5		5	5			5			_
Air	Air duct														<u>EM-16</u>
	Air cleaner		5			5									<u>EM-16</u>
	Air leakage from air duct (Mass air flow sensor — electric throttle control actuator)			5			5	5	5			5			<u>EM-16</u>
	Electric throttle control actuator	5			5										<u>EM-18</u>
	Air leakage from intake manifold/ Collector/Gasket														EM-18, EM-23
Cranking	Battery	4	1	1		4		4	1					4	<u>SC-4</u>
	Generator circuit	1	1	1		1		1	1					1	SC-21
	Starter circuit	3										1			<u>SC-10</u>
	Signal plate	6										, 			EM-137
	Park/neutral position (PNP) switch	4													MT-11 or AT-114
Engine	Cylinder head	5	5	5	5	5		5	5			5			<u>EM-119</u>
	Cylinder head gasket								,		4		3		
	Cylinder block														
	Piston												4		
	Piston ring	6	6	6	6	6		6	6			6			EM-137
	Connecting rod								6 6	,					
	Bearing														
	Crankshaft														

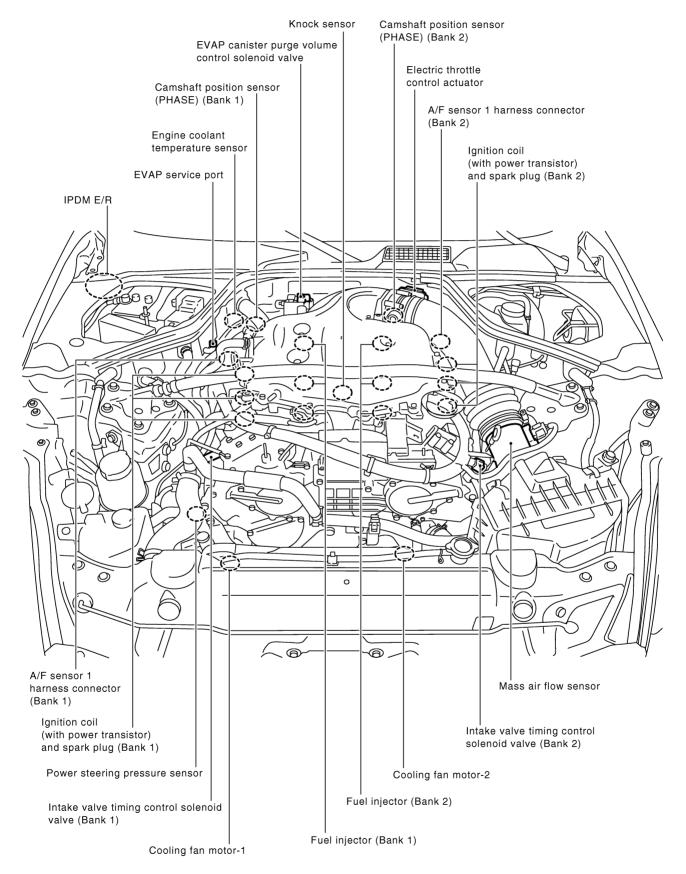
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		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page	EC C	
Warranty	symptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА			
Valve	Timing chain														EM-59	F	
mecha- nism	Camshaft														EM-101		
1110111	Intake valve timing control	5	5	5	5	5		5	5			5			EM-59	G	
	Exhaust valve timing control*	3	3	5	5	3		5	5			5			<u>EM-59</u>		
	Intake valve												3		EM-119		
	Exhaust valve												3		<u>LIVI-113</u>	Н	
Exhaust	Exhaust manifold/Tube/Muffler/ Gasket	5	5	5	5	5		5	5			5			EM-25, EX-		
	Three way catalyst														<u> </u>	I	
Lubrica- tion	Oil pan/Oil strainer/Oil pump/Oil filter/Oil gallery/Oil cooler	5	5	5	5	5		5	5			5			EM-29, LU- 13, LU-10, LU-11	J	
	Oil level (Low)/Filthy oil														<u>LU-7</u>		
Cooling	Radiator/Hose/Radiator filler cap														<u>CO-13</u> , <u>CO-17</u>	K	
	Thermostat									5					<u>CO-28</u>		
	Water pump	5	5	5	5	5		5	5		4	5			CO-23	L	
	Water gallery	5	5	5	5	Э		5	5		4	э			<u>CO-30</u>	_	
	Cooling fan									5					<u>CO-21</u>		
	Coolant level (Low)/Contami- nated coolant									•						<u>CO-10</u>	M
NVIS (NIS NATS)	SAN Vehicle Immobilizer System —	1	1												EC-46 or BL-165		

^{*:} For models with M/T.

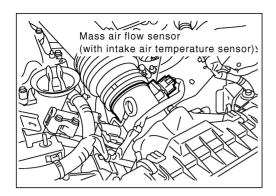
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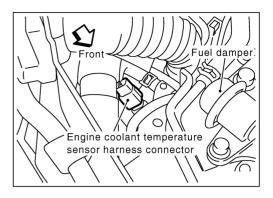
Engine Control Component Parts Location (A/T Models)

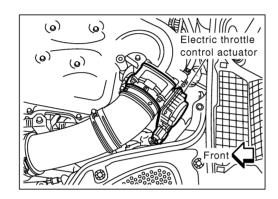
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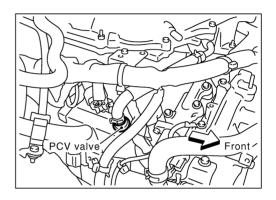


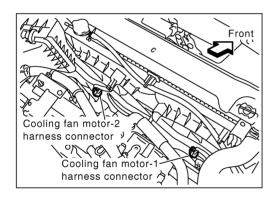
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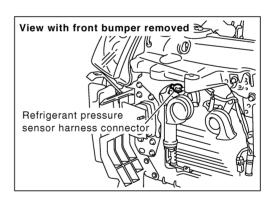


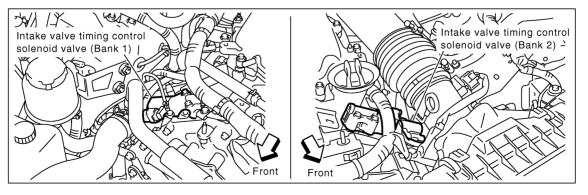












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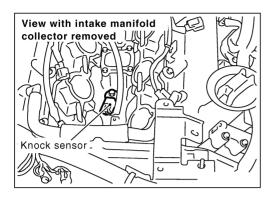
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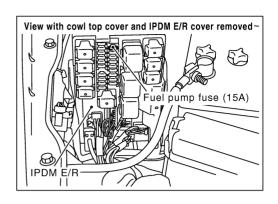
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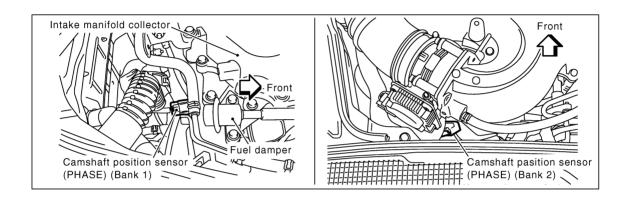
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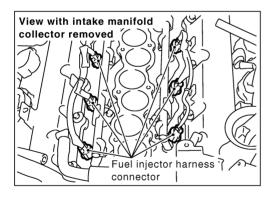
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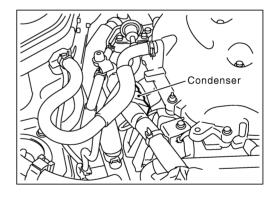
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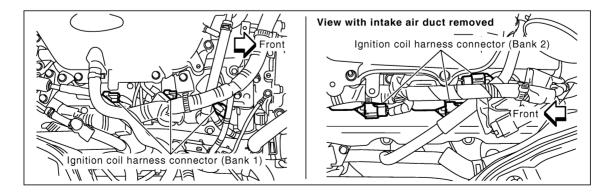




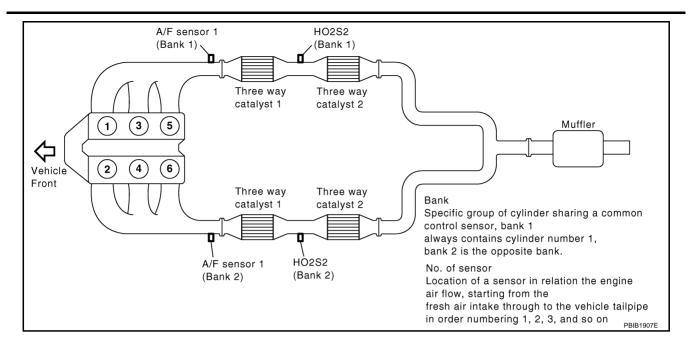


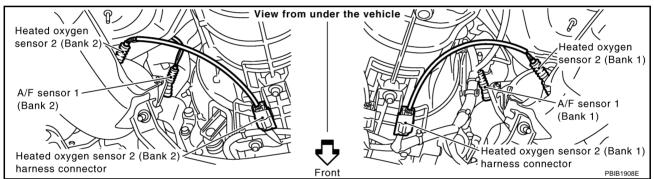






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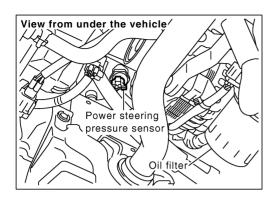
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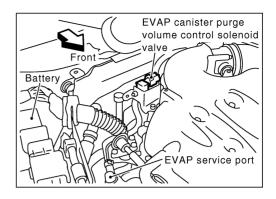
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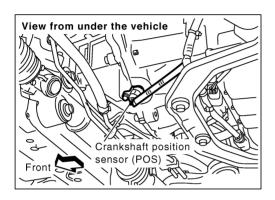
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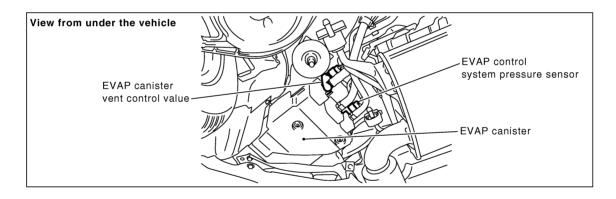
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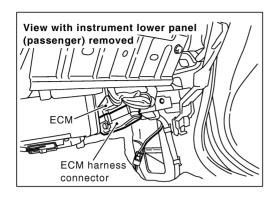


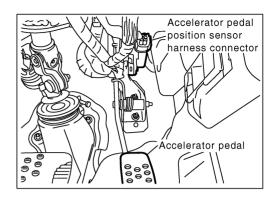


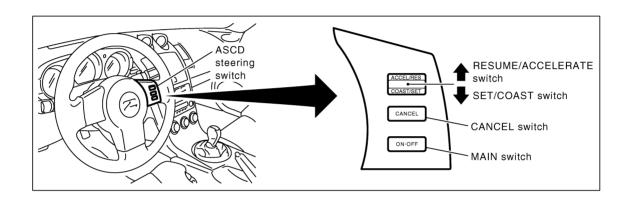


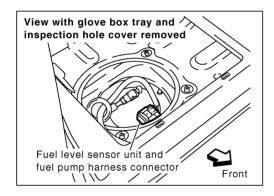


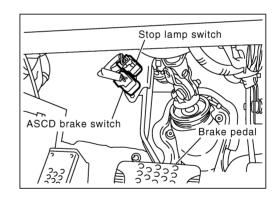
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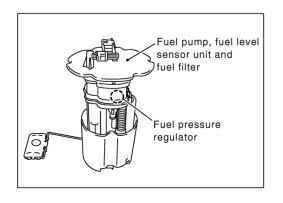


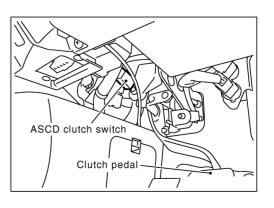












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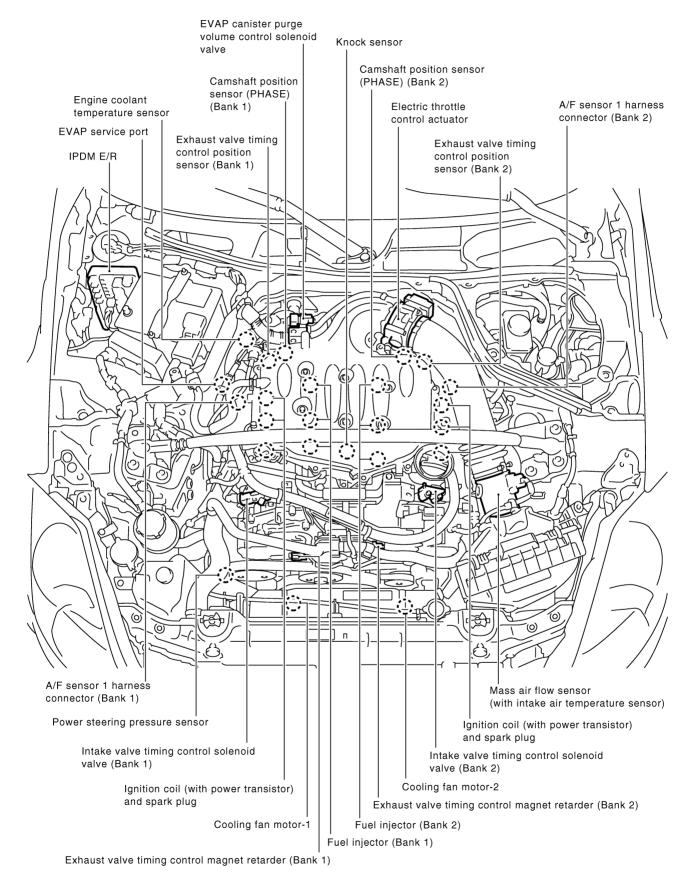
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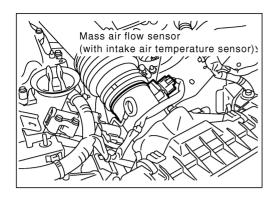
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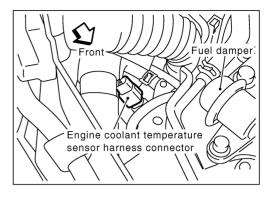
Engine Control Component Parts Location (M/T Models)

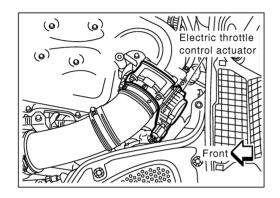
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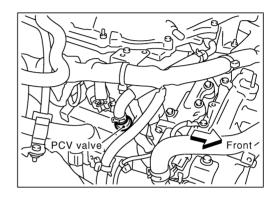


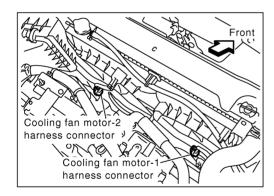
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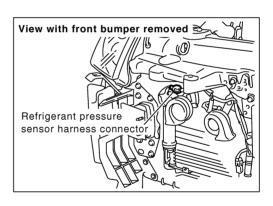


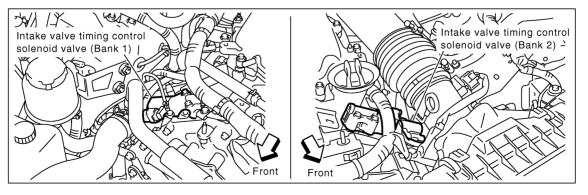












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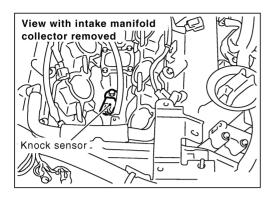
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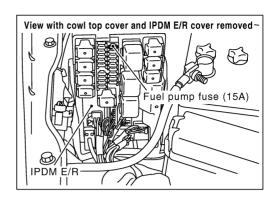
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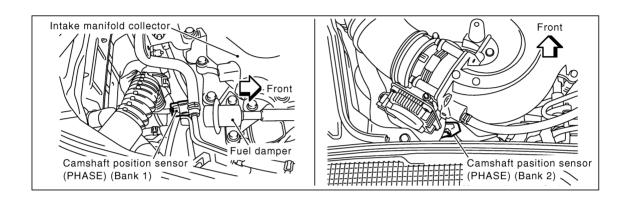
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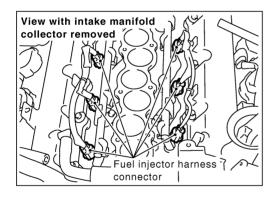
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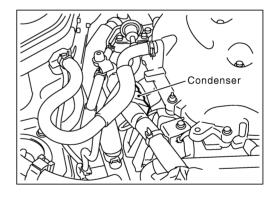
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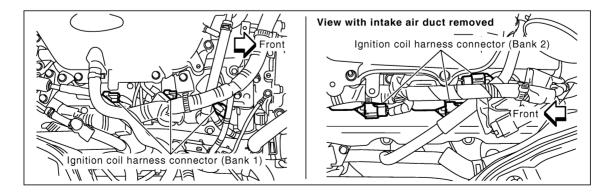




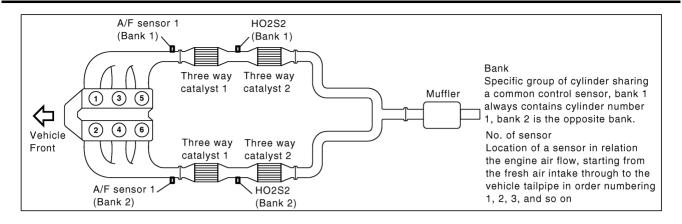


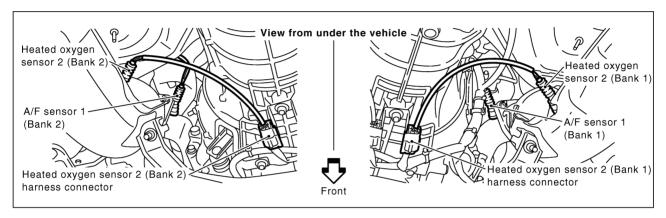


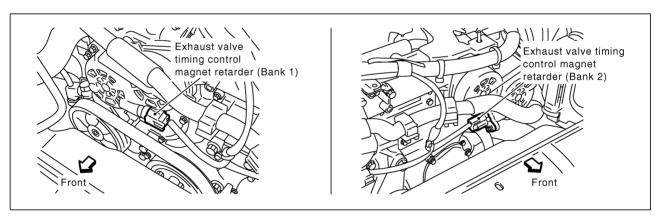


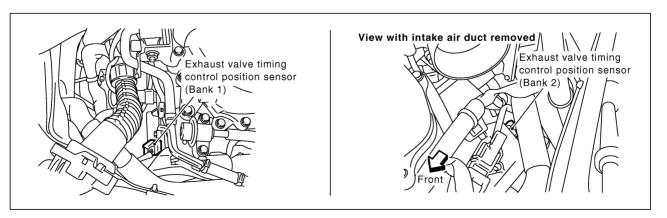


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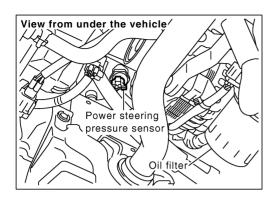
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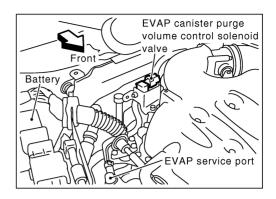
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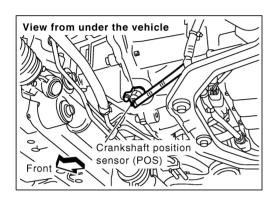
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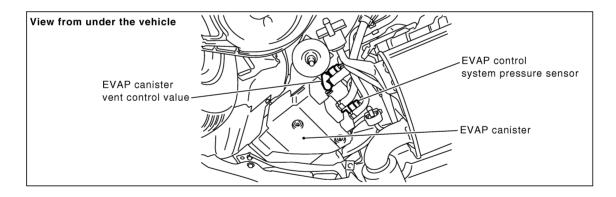
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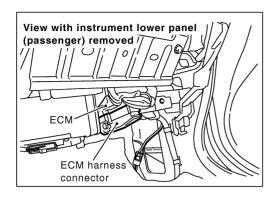


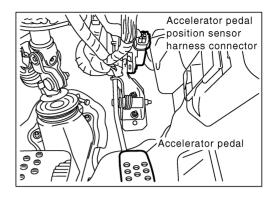


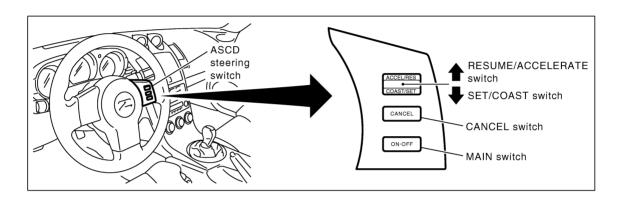


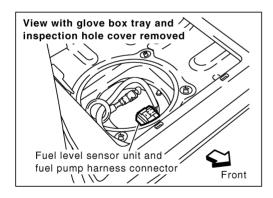


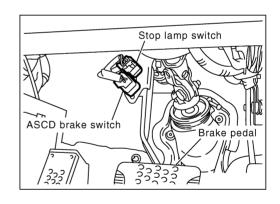
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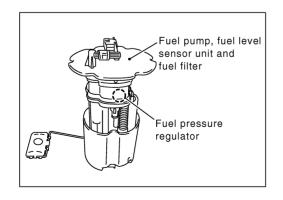


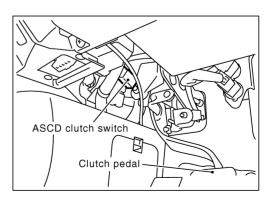












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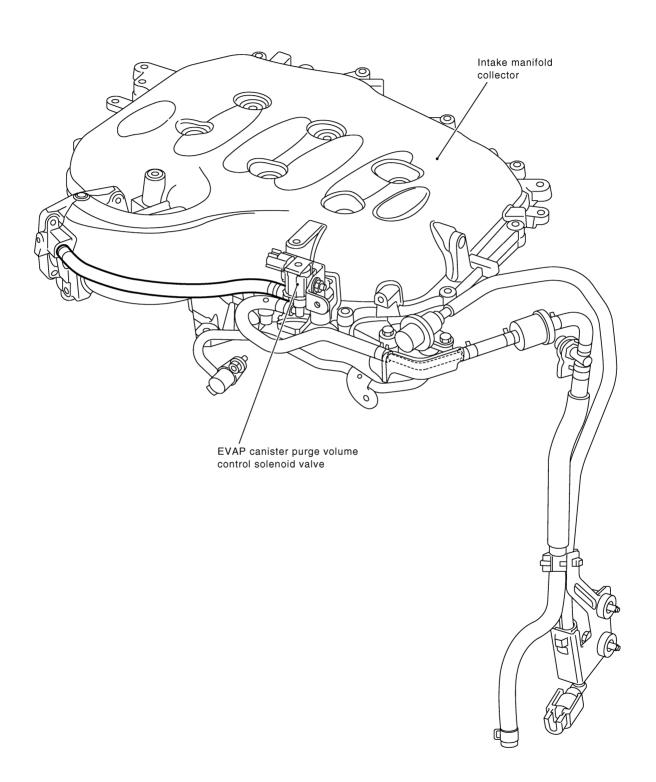
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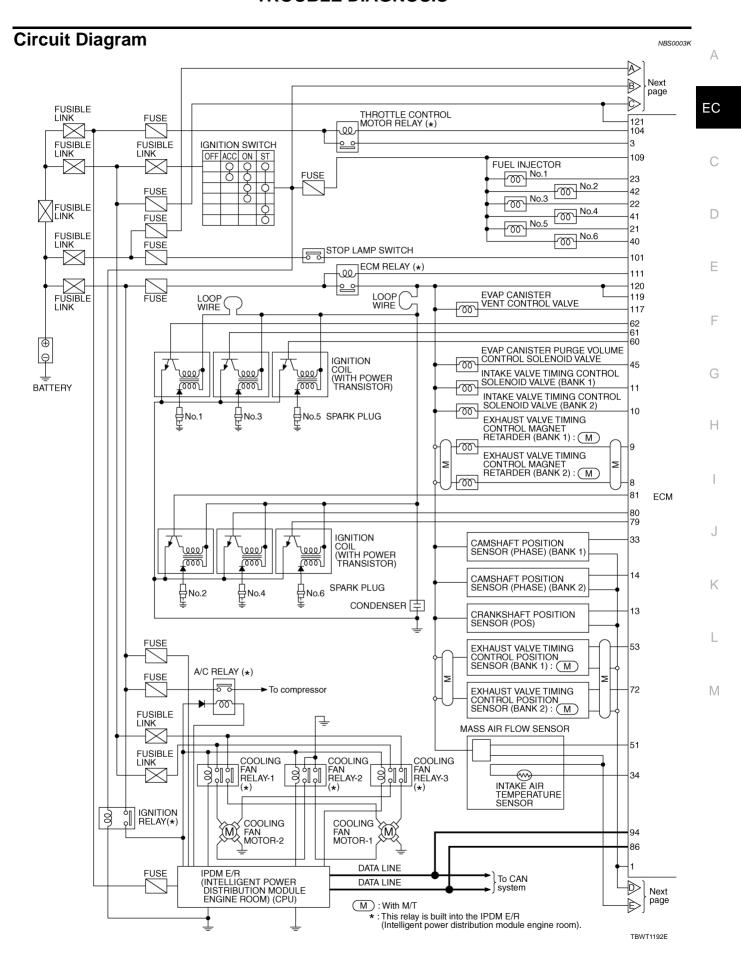
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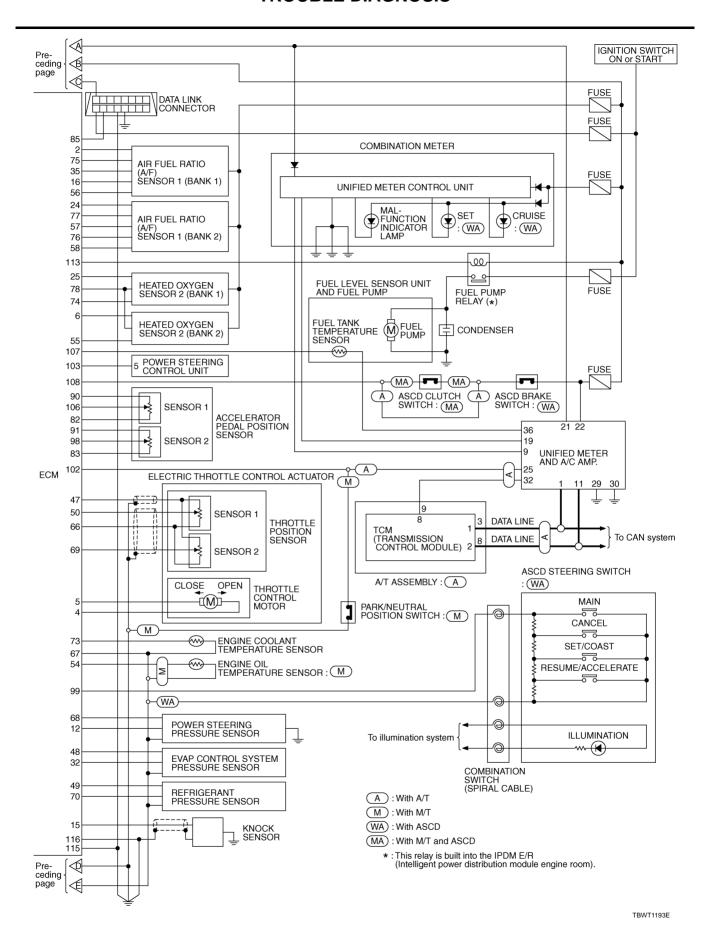


NOTE: Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

PBIB2095E

Refer to <u>EC-22, "System Diagram (A/T Models)"</u> or <u>EC-23, "System Diagram (M/T Models)"</u> for Vacuum Control System.





ECM Harness Connector Terminal Layout

NBS0003L

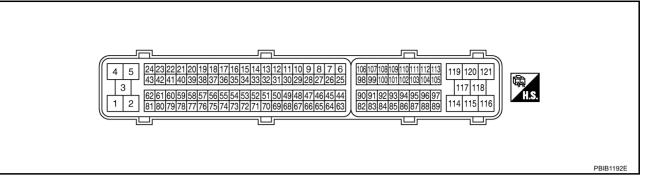
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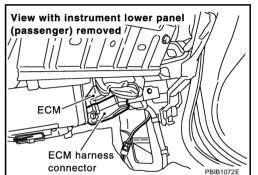
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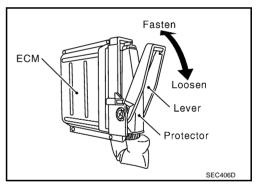
ECM Terminals and Reference Value PREPARATION

NBS0003M

- 1. ECM is located behind the passenger side instrument lower panel. For this inspection, remove passenger side instrument lower panel.
- Remove ECM harness connector.



- When disconnecting ECM harness connector, loosen it with levers as far as they will go as shown in the figure.
- 4. Connect a break-out box (SST) and Y-cable adapter (SST) between the ECM and ECM harness connector.
 - Use extreme care not to touch 2 pins at one time.
 - Data is for comparison and may not be exact.



ECM INSPECTION TABLE

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECMs transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
1	В	ECM ground	[Engine is running] • Idle speed	Body ground
2	L	A/F sensor 1 heater (bank 1)	[Engine is running]Warm-up conditionIdle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
3	G	Throttle control motor relay power supply	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
4	R/L	Throttle control motor (Close)	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	0 - 14V★ >> 5 V/Div 1 ms/Div T PBIB1104E
5	CR/L	Throttle control motor (Open)	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	0 - 14V★
6	P/L	Heated oxygen sensor 2 heater (bank 2)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. [Ignition switch: ON] Engine stopped 	0 - 1.0V BATTERY VOLTAGE
			 [Engine is running] Engine speed: Above 3,600 rpm [Engine is running] Warm-up condition Idle speed 	(11 - 14V) BATTERY VOLTAGE (11 - 14V)
8*	G/R	Exhaust valve timing control magnet retarder (bank 2)	[Engine is running] • Warm-up condition • Engine speed: Above 1,500 rpm	7 - 12V*
			[Engine is running] • Warm-up condition • Idle speed	BATTERY VOLTAGE (11 - 14V)
9*	SB	Exhaust valve timing control magnet retarder (bank 1)	[Engine is running]Warm-up conditionEngine speed: Above 1,500 rpm	7 - 12V★

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
			[Engine is running] • Warm-up condition • Idle speed	BATTERY VOLTAGE (11 - 14V)
10	W/G	Intake valve timing control solenoid valve (bank 2)	 [Engine is running] Warm-up condition When revving engine up to 2,000 rpm quickly 	7 - 12V★
			[Engine is running]Warm-up conditionIdle speed	BATTERY VOLTAGE (11 - 14V)
11	G/B	Intake valve timing control solenoid valve (bank 1)	 [Engine is running] Warm-up condition When revving engine up to 2,000 rpm quickly 	7 - 12V*
12	L/W	Power steering pressure	[Engine is running] ■ Steering wheel: Being turned	0.5 - 4.5V
		sensor	[Engine is running]Steering wheel: Not being turned	0.4 - 0.8V
			[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	Approximately 1.6V★ >>> 5.0 V/Div 1 ms/Div T
13 W/L	Crankshaft position sensor (POS)	[Engine is running] • Engine speed: 2,000 rpm	Approximately 1.4V★ Solution 1 ms/Div T PBIB1041E	

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
		Camshaft position sensor	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	1.0 - 4.0V★ 2.0 N/Div 20 ms/Div T PBIB2493E
14	R/G	(PHASE) (bank 2)	[Engine is running] ● Engine speed: 2,000 rpm	1.0 - 4.0V★ 2> 5.0 V/Div 20 ms/Div PBIB1040E
15	W	Knock sensor	[Engine is running] ● Idle speed	Approximately 2.5V
16	LG			Approximately 3.1V
35	Y/B	A/F sensor 1 (bank 1)	[Engine is running]Warm-up conditionIdle speed	Approximately 2.6V
56	W/L			Approximately 2.3V
75	P/B		• Tule speed	Approximately 2.3V
21	SB	Fuel injector No. 5	[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	BATTERY VOLTAGE (11 - 14V)★
22 23	R/Y R/B	Fuel injector No. 3 Fuel injector No. 1	[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V) 10.0 V/Div 50 ms/Div SEC985C
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] ■ Warm-up condition ■ Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)	А
25	P/B	Heated oxygen sensor 2	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 	0 - 1.0V	EC C
		heater (bank 1)	minute under no load. [Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)	D E
32	BR/W	EVAP control system pres- sure sensor	[Ignition switch: ON]	Approximately 1.8 - 4.8V	
			[Engine is running] • Warm-up condition • Idle speed	1.0 - 4.0∨★	F G
33	R/L	R/L Camshaft position sensor (PHASE) (bank 1)	NOTE: The pulse cycle changes depending on rpm at idle.	>> 5.0 V/Div 20 ms/Div ▼ PBIB2493E	Н
			[Engine is running] ● Engine speed: 2,000 rpm	1.0 - 4.0V★	J
34	Y/G	Intake air temperature sensor	[Engine is running]	Approximately 0 - 4.8V Output voltage varies with intake air temperature.	K
40	LG/B	Fuel injector No. 6	[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	BATTERY VOLTAGE (11 - 14V)*	L M
41 42	41 W/L 42 B/R	L Fuel injector No. 4	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)★ IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	

	1			
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
45		,, EVAP canister purge vol-	 [Engine is running] Idle speed Accelerator pedal: Not depressed even slightly, after engine starting. 	BATTERY VOLTAGE (11 - 14V)★
45	G/W	ume control solenoid valve	 [Engine is running] Engine speed: About 2,000 rpm (More than 100 seconds after starting engine) 	BATTERY VOLTAGE (11 - 14V)★ 10.0 V/Dlv 50 ms/Dlv L7 SEC991C
47	W/R	Sensor power supply (Throttle position sensor)	[Ignition switch: ON]	Approximately 5V
48	PU	Sensor power supply (EVAP control system pressure sensor)	[Ignition switch: ON]	Approximately 5V
49	B/Y	Sensor power supply (Refrigerant pressure sensor)	[Ignition switch: ON]	Approximately 5V
F0	C	Throttle position concerd	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	More than 0.36V
50	G	Throttle position sensor 1	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	Less than 4.75V
F4	CN	Mana air flow concer	[Engine is running]Warm-up conditionIdle speed	0.9 - 1.2V
51	G/Y	Mass air flow sensor	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.5 - 1.9V

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
501			[Engine is running] • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	0 - 1.0V★
53*	L	Exhaust valve timing control position sensor (bank 1)	[Engine is running] • Engine speed: 2,000 rpm	0 - 1.0V★ 1.0V★ 2.0V/Div PBIB2046E
55	L/B	Heated oxygen sensor 2 (bank 2)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V
57	G			Approximately 2.6V
58	W	A/F sensor 1	[Engine is running]● Warm-up condition● Idle speed	Approximately 2.3V
76	Υ	(bank 2)		Approximately 3.1V
77	Р			Approximately 2.3V
60	PU/W	Ignition signal No. 5	[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	0 - 0.2V★
61 62	L/R Y/R	Ignition signal No. 3 Ignition signal No. 1	[Engine is running] • Warm-up condition • Engine speed: 2,500 rpm	0.1 - 0.4V★
66	L	Sensor ground (Throttle position sensor)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
67	B/W	Sensor ground	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)	
68	R/W	Sensor power supply (Power steering pressure sensor)	[Ignition switch: ON]	Approximately 5V	
			[Ignition switch: ON]		
			Engine stopped	Less than 4.75V	
			• Shift lever: D (A/T) or 1st (M/T)	Less man 4.75 v	
69	Υ	Throttle position sensor 2	Accelerator pedal: Fully released		
09	'	Throttie position sensor 2	[Ignition switch: ON]		
			Engine stopped	More than 0.36V	
			• Shift lever: D (A/T) or 1st (M/T)	Wore than 0.30V	
			Accelerator pedal: Fully depressed		
			[Engine is running]		
70	W	Refrigerant pressure sensor	Warm-up condition	1.0 - 4.0V	
		3,	 Both A/C switch and blower switch: ON (Compressor operates.) 		
		G Exhaust valve timing control position sensor (bank 2)		0 - 1.0V★	
			[Engine is running]		
			Idle speed		
			NOTE:		
			The pulse cycle changes depending on rpm at idle.	>> 5.0 V/Div T PBIB2867E	
72*	R/G			0 - 1.0∨★	
			[Engine is running] ● Engine speed: 2,000 rpm	D - 1.0V ➤ > 5.0V/Div PBIB2046E	
70	DD W	Engine coolant temperature		Approximately 0 - 4.8V	
73	BR/Y	sensor	[Engine is running]	Output voltage varies with engine coolant temperature.	
			[Engine is running]	- '	
			Revving engine from idle to 3,000 rpm		
74			quickly after the following conditions are		
	OR	Heated oxygen sensor 2	met.	0 - Approximately 1.0V	
		(bank 1)	- Engine: After warming up	•	
			 Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 		
			[Engine is running]		
78	B/Y	Sensor ground (Heated oxygen sensor)	Warm-up condition	Approximately 0V	
	- , .	(Heated oxygen sensor)	Idle speed	•	

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
79	GY/R GY	Ignition signal No. 6	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	0 - 0.2V★
80 81	BR	Ignition signal No. 4 Ignition signal No. 2	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	0.1 - 0.4V★
82	Υ	Sensor ground (Accelerator pedal position sensor 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V
83	R/G	Sensor ground (Accelerator pedal position sensor 2)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
85	PU/W	Data link connector	[Ignition switch: ON] • CONSULT-II or GST: Disconnected	Approximately 5V - Battery voltage (11 - 14V)
86	Р	CAN communication line	[Ignition switch: ON]	Approximately 1.1 - 2.3V Output voltage varies with the communication status.
90	L	Sensor power supply (Accelerator pedal position sensor 1)	[Ignition switch: ON]	Approximately 5V
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V
94	L	CAN communication line	[Ignition switch: ON]	Approximately 2.6 - 3.2V Output voltage varies with the communication status.
98	R/Y	Accelerator pedal position sensor 2	[Ignition switch: ON] ● Engine stopped ● Accelerator pedal: Fully released	0.15 - 0.60V
98 K/		2011201 Z	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	1.95 - 2.40V

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TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
			[Ignition switch: ON] • ASCD steering switch: OFF	Approximately 4V
			[Ignition switch: ON] • MAIN switch: Pressed	Approximately 0V
99	G/Y	ASCD steering switch	[Ignition switch: ON] • CANCEL switch: Pressed	Approximately 1V
			[Ignition switch: ON] • RESUME/ACCELERATE switch: Pressed	Approximately 3V
			[Ignition switch: ON] • SET/COAST switch: Pressed	Approximately 2V
104	L/OB	Ston lamp quitch	[Ignition switch: OFF] • Brake pedal: Fully released	Approximately 0V
101	L/OR	Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14V)
102	BR/Y	PNP switch	[Ignition switch: ON] • Shift lever: P or N (A/T), Neutral (M/T)	Approximately 0V
102	DIV I	FINE SWILCH	[Ignition switch: ON] • Except above position	BATTERY VOLTAGE (11 - 14V)
104	SB	Throttle control motor relay	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14V)
			[Ignition switch: ON]	0 - 1.0V
			[Ignition switch: ON]	
			• Engine stopped	0.5 - 1.0V
106	B/W	Accelerator pedal position sensor 1	Accelerator pedal: Fully released	
			[Ignition switch: ON]	
			Engine stopped	3.9 - 4.7V
107	GY/R	Fuel tank temperature sensor	Accelerator pedal: Fully depressed [Engine is running]	Approximately 0 - 4.8V Output voltage varies with fuel tank temperature.
108	B/R	ASCD brake switch	 [Ignition switch: ON] Brake pedal: Slightly depressed (A/T) Brake pedal and/or clutch pedal: Slightly depressed (M/T) 	Approximately 0V
.00	B/R	ASOD DIAKE SWICH	 [Ignition switch: ON] Brake pedal: Fully released (A/T) Brake pedal and clutch pedal: Fully released (M/T) 	BATTERY VOLTAGE (11 - 14V)
			[Ignition switch: OFF]	OV
109	W/B	Ignition switch	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
111	GY/L	ECM relay (Self shut-off)	[Engine is running][Ignition switch: OFF]For a few seconds after turning ignition switch OFF	0 - 1.5V
		(odii siiut-oii)	[Ignition switch: OFF] • More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
			[Ignition switch: ON]	
			For 1 second after turning ignition switch ON	0 - 1.5V
113	LG/B	Fuel pump relay	[Engine is running]	
110	LO/D	on a fulliple ay	[Ignition switch: ON]	BATTERY VOLTAGE
			 More than 1 second after turning ignition switch ON. 	(11 - 14V)
115	B/Y	FOM survivad	[Engine is running]	De de conserve d
116	B/R	ECM ground	• Idle speed	Body ground
117	G/W	EVAP canister vent control valve	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
121	R/W	Power supply for ECM (Back-up)	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14V)

^{*:} For models with M/T.

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^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

CONSULT-II Function (ENGINE) FUNCTION

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Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT-II unit.
Self-diagnostic results	Self-diagnostic results such as 1st trip DTC, DTCs and 1st trip freeze frame data or freeze frame data can be read and erased quickly.*
Data monitor	Input/Output data in the ECM can be read.
Data monitor (SPEC)	Input/Output of the specification for Basic fuel schedule, AFM, A/F feedback control value and the other data monitor items can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
Active test	Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the ECMs and also shifts some parameters in a specified range.
DTC & SRT confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
Function test	This mode is used to inform customers when their vehicle condition requires periodic maintenance.
ECM part number	ECM part number can be read.

^{*:} The following emission-related diagnostic information is cleared when the ECM memory is erased.

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

ENGINE CONTROL COMPONENT PARTS/CONTROL SYSTEMS APPLICATION

		DIAGNOSTIC TEST MODE								
		WORK		IAGNOSTIC SULTS	D.4.T.4	DATA		DTC 8		
	Item	WORK SUP- PORT	DTC*1	FREEZE FRAME DATA* ²	DATA MONI- TOR	MONI- TOR (SPEC)	ACTIVE TEST	SRT STATUS	DTC WORK SUP- PORT	
	Crankshaft position sensor (POS)		×	×	×	×				
	Camshaft position sensor (PHASE)		×	×	×	×				
	Mass air flow sensor		×		×	×				
	Engine coolant temperature sensor		×	×	×	×	×			
	Engine oil temperature sensor*3 *4				×	×				
	Air Fuel ratio (A/F) sensor 1		×		×	×		×	×	
	Heated oxygen sensor 2		×		×	×		×	×	
	Vehicle speed sensor		×	×	×	×				
	Accelerator pedal position sensor		×		×	×				
	Throttle position sensor		×	×	×	×				
	Fuel tank temperature sensor		×		×	×	×			
	EVAP control system pressure sensor		×		×	×				
	Intake air temperature sensor		×	×	×	×				
5	Knock sensor		×							
INPUT	Refrigerant pressure sensor				×	×				
	Closed throttle position switch (accelerator pedal position sensor signal)				×	×				
	Air conditioner switch				×	×				
	Park/neutral position (PNP) switch		×		×	×				
	Stop lamp switch		×		×	×				
	Power steering pressure sensor		×		×	×				
	Battery voltage				×	×				
	Load signal				×	×				
	Exhaust valve timing control position sensor*3		×		×	×				
	Fuel level sensor		×		×	×				
	ASCD steering switch		×		×	×				
	ASCD brake switch		×		×	×				
	ASCD clutch switch		×		×	×				

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		DIAGNOSTIC TEST MODE								
		WORK	_	SELF-DIAGNOSTIC RESULTS		DATA		DTC & SRT CONFIRMATION		
	Item		DTC*1	FREEZE FRAME DATA* ²	DATA MONI- TOR	MONI- TOR (SPEC)	ACTIVE TEST	SRT STATUS	DTC WORK SUP- PORT	
	Fuel injector				×	×	×			
	Power transistor (Ignition timing)				×	×	×			
	Throttle control motor relay		×		×	×				
RTS	Throttle control motor		×							
ENGINE CONTROL COMPONENT PARTS OUTPUT	EVAP canister purge volume control solenoid valve		×		×	×	×		×	
NC N	Air conditioner relay				×	×				
MP 7	Fuel pump relay	×			×	×	×			
OL COM	Cooling fan relay		×		×	×	×			
ROL	Air fuel ratio (A/F) sensor 1 heater		×		×	×		×* ⁵		
DNT	Heated oxygen sensor 2 heater		×		×	×		×* ⁵		
S E	EVAP canister vent control valve	×	×		×	×	×			
ENGIN	Intake valve timing control solenoid valve		×		×	×	×			
	Exhaust valve timing control magnet retarder*3	×	×		×	×	×			
	Calculated load value			×	×	×				

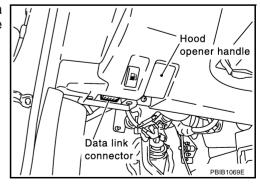
X: Applicable

INSPECTION 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. Turn ignition switch OFF.
- 2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector, which is located under LH dash panel near the hood opener handle.
- 3. Turn ignition switch ON.



^{*1:} This item includes 1st trip DTCs.

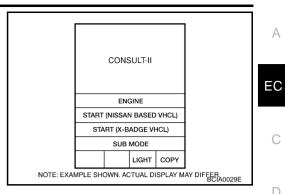
^{*2:} This mode includes 1st trip freeze frame data or freeze frame data. The items appear on CONSULT-II screen in freeze frame data mode only if a 1st trip DTC or DTC is detected. For details, refer to EC-126. "Freeze Frame Data and 1st Trip Freeze Frame Data".

^{*3:} For models with M/T.

^{*4:} This sensor is not used to control the engine system.

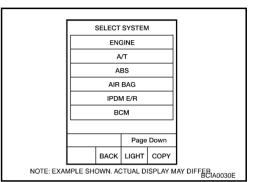
^{*5:} Always "CMPLT" is displayed.

Touch "START (NISSAN BASED VHCL)".



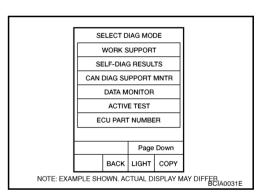
Touch "ENGINE".

If "ENGINE" is not indicated, go to GI-39, "CONSULT-II Data Link Connector (DLC) Circuit".



6. Perform each diagnostic test mode according to each service procedure.

For further information, see the CONSULT-II Operation Manual.



WORK SUPPORT MODE

Work Item

WORK ITEM	CONDITION	USAGE
FUEL PRESSURE RELEASE	FUEL PUMP WILL STOP BY TOUCHING START DUR- ING IDLING. CRANK A FEW TIMES AFTER ENGINE STALLS.	When releasing fuel pressure from fuel line
IDLE AIR VOL LEARN	THE IDLE AIR VOLUME THAT KEEPS THE ENGINE WITHIN THE SPECIFIED RANGE IS MEMORIZED IN ECM.	When learning the idle air volume
SELF-LEARNING CONT	THE COEFFICIENT OF SELF-LEARNING CONTROL MIXTURE RATIO RETURNS TO THE ORIGINAL COEF- FICIENT.	When clearing the coefficient of self-learning control value

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WORK ITEM	CONDITION	USAGE
EVAP SYSTEM CLOSE	CLOSE THE EVAP CANISTER VENT CONTROL VALVE IN ORDER TO MAKE EVAP SYSTEM CLOSE UNDER THE FOLLOWING CONDITIONS.	When detecting EVAP vapor leak point of EVAP system
	• IGN SW ON	
	ENGINE NOT RUNNING	
	AMBIENT TEMPERATURE IS ABOVE 0°C (32°F).	
	NO VACUUM AND NO HIGH PRESSURE IN EVAP SYSTEM	
	• FUEL TANK TEMP. IS MORE THAN 0°C (32°F).	
	WITHIN 10 MINUTES AFTER STARTING EVAP SYSTEM CLOSE	
	WHEN TRYING TO EXECUTE EVAP SYSTEM CLOSE UNDER THE CONDITION EXCEPT ABOVE, CONSULT- II WILL DISCONTINUE IT AND DISPLAY APPROPRI- ATE INSTRUCTION.	
	NOTE: WHEN STARTING ENGINE, CONSULT-II MAY DISPLAY "BATTERY VOLTAGE IS LOW. CHARGE BATTERY", EVEN IN USING CHARGED BATTERY.	
VIN REGISTRATION	IN THIS MODE, VIN IS REGISTERED IN ECM.	When registering VIN in ECM
EXH V/T CONTROL LEARN* ²	IN THIS MODE, OPERATION TO LEARN EXHAUST VALVE TIMING CONTROL MAGNET RETARDER CHARACTERISTIC.	When learning the exhaust valve timing control
TARGET IDLE RPM ADJ*1	IDLE CONDITION	When setting target idle speed
TARGET IGN TIM ADJ*1	IDLE CONDITION	When adjusting target ignition timing

^{*1:} This function is not necessary in the usual service procedure.

SELF-DIAG RESULTS MODE

Self Diagnostic Item

Regarding items of DTC and 1st trip DTC, refer to $\underline{\text{EC-48}}$, "EMISSION-RELATED DIAGNOSTIC INFORMATION ITEMS".)

Freeze Frame Data and 1st Trip Freeze Frame Data

Freeze frame data item*	Description
DIAG TROUBLE CODE [PXXXX]	The engine control component part/control system has a trouble code, it is displayed as PXXXX. (Refer to EC-8, "INDEX FOR DTC" .)
FUEL SYS-B1	"Fuel injection system status" at the moment a malfunction is detected is displayed.
FUEL SYS-B2	One mode in the following is displayed. Mode2: Open loop due to detected system malfunction Mode3: Open loop due to driving conditions (power enrichment, deceleration enleanment) Mode4: Closed loop - using oxygen sensor(s) as feedback for fuel control Mode5: Open loop - has not yet satisfied condition to go to closed loop
CAL/LD VALUE [%]	The calculated load value at the moment a malfunction is detected is displayed.
COOLANT TEMP [°C] or [°F]	The engine coolant temperature at the moment a malfunction is detected is displayed.
L-FUEL TRM-B1 [%]	"Long-term fuel trim" at the moment a malfunction is detected is displayed.
L-FUEL TRM-B2 [%]	The long-term fuel trim indicates much more gradual feedback compensation to the base fuel schedule than short-term fuel trim.

^{*2:} For models with M/T.

Freeze frame data item*	Description	
S-FUEL TRM-B1 [%]	"Short-term fuel trim" at the moment a malfunction is detected is displayed.	
S-FUEL TRM-B2 [%]	The short-term fuel trim indicates dynamic or instantaneous feedback compensation to the base fuel schedule.	E
ENGINE SPEED [rpm]	The engine speed at the moment a malfunction is detected is displayed.	
VEHICL SPEED [km/h] or [mph]	The vehicle speed at the moment a malfunction is detected is displayed.	
ABSOL TH-P/S [%]	The throttle valve operating angle at the moment a malfunction is detected is displayed.	
B/FUEL SCHDL [msec]	The base fuel schedule at the moment a malfunction is detected is displayed.	
INT/A TEMP SE [°C] or [°F]	The intake air temperature at the moment a malfunction is detected is displayed.	

^{*:} This item is the same as that of 1st trip freeze frame data.

DATA MONITOR MODE Monitored Item

×: Applicable

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Monitored item [Unit]	ECM INPUT SIG- NALS	MAIN SIG- NALS	Description	Remarks	
ENG SPEED [rpm]	×	×	 Indicates the engine speed computed from the signals of the crankshaft position sensor (POS) and camshaft position sensor (PHASE). 	 Accuracy becomes poor if engine speed drops below the idle rpm. If the signal is interrupted while the engine is running, an abnormal value may be indicated. 	
MAS A/F SE-B1 [V]	×	×	The signal voltage of the mass air flow sensor is displayed.	When the engine is stopped, a certain value is indicated.	
B/FUEL SCHDL [msec]		×	"Base fuel schedule" indicates the fuel injection pulse width programmed into ECM, prior to any learned on board correction.		
A/F ALPHA-B1 [%]		×	The many value of the gir find ratio for the state	When the engine is stopped, a certain value is indicated.	
A/F ALPHA-B2 [%]		×	 The mean value of the air-fuel ratio feedback correction factor per cycle is indicated. 	 This data also includes the data for the air-fuel ratio learning control. 	
COOLAN TEMP/S [°C] or [°F]	×	×	The engine coolant temperature (determined by the signal voltage of the engine coolant temperature sensor) is displayed.	When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The engine cool- ant temperature determined by the ECM is displayed.	
A/F SEN1 (B1) [V]	×	×	The A/F signal computed from the input sig-		
A/F SEN1 (B2) [V]	×		nal of the A/F sensor 1 is displayed.		
HO2S2 (B1) [V]	×		The signal voltage of the heated oxygen sen-		
HO2S2 (B2) [V]	×		sor 2 is displayed.		
HO2S2 MNTR (B1) [RICH/LEAN]	×		Display of heated oxygen sensor 2 signal: RICH: Means the amount of oxygen after	When the engine is stopped, a certain	
HO2S2 MNTR (B2) [RICH/LEAN]			three way catalyst is relatively small. LEAN: Means the amount of oxygen after three way catalyst is relatively large.	value is indicated.	
VHCL SPEED SE [km/h] or [mph]	×	×	The vehicle speed computed from the vehicle speed signal sent from combination meter is displayed.		

Monitored item [Unit]	ECM INPUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
BATTERY VOLT [V]	×	×	The power supply voltage of ECM is displayed.	
ACCEL SEN 1 [V]	×	×	The accelerator pedal position sensor signal	ACCEL SEN 2 signal is converted by
ACCEL SEN 2 [V]	×		voltage is displayed.	ECM internally. Thus, it differs from ECM terminal voltage signal.
THRTL SEN 1 [V]	×	×	The throttle position sensor signal voltage is	THRTL SEN 2 signal is converted by Converted by Thus, it differs from
THRTL SEN 2 [V]	×		displayed.	ECM internally. Thus, it differs from ECM terminal voltage signal.
FUEL T/TEMP SE [°C] or [°F]	×		 The fuel temperature (determined by the sig- nal voltage of the fuel tank temperature sen- sor) is displayed. 	
INT/A TEMP SE [°C] or [°F]	×	×	 The intake air temperature (determined by the signal voltage of the intake air tempera- ture sensor) is indicated. 	
EVAP SYS PRES [V]	×		 The signal voltage of EVAP control system pressure sensor is displayed. 	
FUEL LEVEL SE [V]	×		The signal voltage of the fuel level sensor is displayed.	
START SIGNAL [ON/OFF]	×	×	 Indicates start signal status [ON/OFF] computed by the ECM according to the signals of engine speed and battery voltage. 	After starting the engine, [OFF] is displayed regardless of the starter signal.
CLSD THL POS [ON/OFF]	×	×	 Indicates idle position [ON/OFF] computed by ECM according to the accelerator pedal posi- tion sensor signal. 	
AIR COND SIG [ON/OFF]	×	×	 Indicates [ON/OFF] condition of the air conditioner switch as determined by the air conditioner signal. 	
P/N POSI SW [ON/OFF]	×	×	 Indicates [ON/OFF] condition from the park/ neutral position (PNP) switch signal. 	
PW/ST SIGNAL [ON/OFF]	×	×	 [ON/OFF] condition of the power steering system (determined by the signal voltage of the power steering pressure sensor signal) is indicated. 	
LOAD SIGNAL [ON/OFF]	×	×	 Indicates [ON/OFF] condition from the electrical load signal. ON: Rear window defogger switch is ON and/or lighting switch is in 2nd position. OFF: Both rear window defogger switch and lighting switch are OFF. 	
IGNITION SW [ON/OFF]	×		 Indicates [ON/OFF] condition from ignition switch signal. 	
HEATER FAN SW [ON/OFF]	×		 Indicates [ON/OFF] condition from the heater fan switch signal. 	
BRAKE SW [ON/OFF]	×		 Indicates [ON/OFF] condition from the stop lamp switch signal. 	
INJ PULSE-B1 [msec]		×	Indicates the actual fuel injection pulse width company at the input	When the engine is stopped, a certain
INJ PULSE-B2 [msec]			compensated by ECM according to the input signals.	computed value is indicated.
IGN TIMING [BTDC]		×	Indicates the ignition timing computed by ECM according to the input signals.	When the engine is stopped, a certain value is indicated.

Monitored item [Unit]	ECM INPUT SIG- NALS	MAIN SIG- NALS	Description	Remarks	А
CAL/LD VALUE [%]			"Calculated load value" indicates the value of the current air flow divided by peak air flow.		EC
MASS AIRFLOW [g·m/s]			Indicates the mass air flow computed by ECM according to the signal voltage of the mass air flow sensor.		С
PURG VOL C/V [%]			 Indicates the EVAP canister purge volume control solenoid valve control value computed by the ECM according to the input signals. The opening becomes larger as the value in according. 		D
INT/V TIM (B1) [°CA]			 increases. Indicates [°CA] of intake camshaft advanced 		Е
INT/V TIM (B2) [°CA]			angle.		F
EXH/V TIM B1* [°CA] EXH/V TIM B2*			Indicates [°CA] of exhaust camshaft retarded angle.		G
[°CA] INT/V SOL (B1) [%]			The control value of the intake valve timing		Н
INT/V SOL (B2) [%]			control solenoid valve (determined by ECM according to the input signals) is indicated. The advance angle becomes larger as the value increases.		
EX V/T DTY B1* [%]			The control value of the exhaust valve timing control magnet retarder (determined by ECM		
EX V/T DTY B2* [%]			 according to the input signals) is indicated. The retard angle becomes larger as the value increases. 		J
AIR COND RLY [ON/OFF]		×	The air conditioner relay control condition (determined by ECM according to the input signals) is indicated.		K
FUEL PUMP RLY [ON/OFF]		×	Indicates the fuel pump relay control condition determined by ECM according to the input signals.		L
VENT CONT/V [ON/OFF]			The control condition of the EVAP canister vent control valve (determined by ECM according to the input signals) is indicated. ON: Closed OFF: Open		M
THRTL RELAY [ON/OFF]		×	 Indicates the throttle control motor relay con- trol condition determined by the ECM accord- ing to the input signals. 		
COOLING FAN [HI/LOW/OFF]		×	The control condition of the cooling fan (determined by ECM according to the input signals) is indicated. HI: High speed operation LOW: Low speed operation OFF: Stop		
HO2S2 HTR (B1) [ON/OFF] HO2S2 HTR (B2)			Indicates [ON/OFF] condition of heated oxygen sensor 2 heater determined by ECM		
[ON/OFF]			according to the input signals.		

Monitored item [Unit]	ECM INPUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
I/P PULLY SPD [rpm]			Indicates the engine speed computed from the turbine revolution sensor signal.	
VEHICLE SPEED [km/h] or [MPH]			Indicates the vehicle speed computed from the revolution sensor signal.	
IDL A/V LEARN [YET/CMPLT]			Display the condition of Idle Air Volume Learning YET: Idle Air Volume Learning has not been performed yet. CMPLT: Idle Air Volume Learning has already been performed successfully.	
ENG OIL TEMP* [°C] or [°F]			 The engine oil temperature (determined by the signal voltage of the engine oil tempera- ture sensor) is displayed. 	This sensor is not used to control the engine system.
TRVL AFTER MIL [km] or [mile]			Distance traveled while MIL is activated.	
A/F S1 HTR (B1) [%]			 Indicates A/F sensor 1 heater control value computed by ECM according to the input sig- nals. 	
A/F S1 HTR (B2) [%]			The current flow to the heater becomes larger as the value increases.	
AC PRESS SEN [V]			The signal voltage from the refrigerant pressure sensor is displayed.	
VHCL SPEED SE [km/h] or [mph]			The vehicle speed computed from the vehicle speed signal sent from TCM is displayed.	
SET VHCL SPD [km/h] or [mph]			The preset vehicle speed is displayed.	
MAIN SW [ON/OFF]			Indicates [ON/OFF] condition from MAIN switch signal.	
CANCEL SW [ON/OFF]			 Indicates [ON/OFF] condition from CANCEL switch signal. 	
RESUME/ACC SW [ON/OFF]			Indicates [ON/OFF] condition from RESUME/ ACCELERATE switch signal.	
SET SW [ON/OFF]			Indicates [ON/OFF] condition from SET/ COAST switch signal.	
BRAKE SW1 [ON/OFF]			 Indicates [ON/OFF] condition from ASCD brake switch signal and ASCD clutch switch signal (M/T) 	
BRAKE SW2 [ON/OFF]			 Indicates [ON/OFF] condition of stop lamp switch signal. 	
VHCL SPD CUT [NON/CUT]			 Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed increased to excessively high compared with the ASCD set speed, and ASCD operation is cut off. 	
LO SPEED CUT [NON/CUT]			 Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed decreased to excessively low compared with the ASCD set speed, and ASCD operation is cut off. 	

Monitored item [Unit]	ECM INPUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
AT OD MONITOR [ON/OFF]			Indicates [ON/OFF] condition of A/T O/D according to the input signal from the TCM.	For M/T models always "OFF" is displayed.
AT OD CANCEL [ON/OFF]			Indicates [ON/OFF] condition of A/T O/D cancel signal sent from the TCM.	For M/T models always "OFF" is displayed.
CRUISE LAMP [ON/OFF]			Indicates [ON/OFF] condition of CRUISE lamp determined by the ECM according to the input signals.	
SET LAMP [ON/OFF]			 Indicates [ON/OFF] condition of SET lamp determined by the ECM according to the input signals. 	
EXH V/T LEARN* [YET/CMPLT]			Display the condition of Exhaust Valve Timing Control Learning YET: Exhaust Valve Timing Control Learning has not been performed yet. CMPLT: Exhaust Valve Timing Control Learning has already been performed successfully.	
Voltage [V]				
Frequency [msec], [Hz] or [%]				 Only "#" is displayed if item is unable to be measured.
DUTY-HI			Voltage, frequency, duty cycle or pulse width measured by the probe.	• Figures with "#"s are temporary ones.
DUTY-LOW			measured by the probe.	They are the same figures as an actual piece of data which was just previously
PLS WIDTH-HI				measured.
PLS WIDTH-LOW				

^{*:} For models with M/T.

NOTE:

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically.

DATA MONITOR (SPEC) MODE

Monitored Item

Monitored item [Unit]	ECM INPUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
ENG SPEED [rpm]	×	×	 Indicates the engine speed computed from the signals of the crankshaft posi- tion sensor (POS) and camshaft position sensor (PHASE). 	
MAS A/F SE-B1 [V]	×	×	The signal voltage of the mass air flow sensor specification is displayed.	When engine is running specification range is indicated.
B/FUEL SCHDL [msec]		×	"Base fuel schedule" indicates the fuel injection pulse width programmed into ECM, prior to any learned on board correction.	When engine is running specification range is indicated.
A/F ALPHA-B1 [%] A/F ALPHA-B2 [%]		×	The mean value of the air-fuel ratio feed- back correction factor per cycle is indi- cated.	 When engine is running specification range is indicated. This data also includes the data for the air-fuel ratio learning control.

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NOTE:

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically.

ACTIVE TEST MODE Test Item

TEST ITEM	CONDITION	JUDGEMENT	CHECK ITEM (REMEDY)
FUEL INJEC- TION	 Engine: Return to the original trouble condition Change the amount of fuel injection using CONSULT-II. 	If trouble symptom disappears, see CHECK ITEM.	 Harness and connectors Fuel injector Air fuel ratio (A/F) sensor 1
IGNITION TIM- ING	 Engine: Return to the original trouble condition Timing light: Set Retard the ignition timing using CONSULT-II. 	If trouble symptom disappears, see CHECK ITEM.	Perform Idle Air Volume Learning.
POWER BAL- ANCE	 Engine: After warming up, idle the engine. A/C switch OFF Shift lever: P or N (A/T), Neutral (M/T) Cut off each fuel injector signal one at a time using CONSULT-II. 	Engine runs rough or dies.	 Harness and connectors Compression Fuel injector Power transistor Spark plug Ignition coil
COOLING FAN*1	Ignition switch: ON Turn the cooling fan "HI", "LOW" and "OFF" using CONSULT-II.	Cooling fan moves and stops.	Harness and connectorsCooling fan motorIPDM E/R
ENG COOLANT TEMP	 Engine: Return to the original trouble condition Change the engine coolant temperature using CONSULT-II. 	If trouble symptom disappears, see CHECK ITEM.	 Harness and connectors Engine coolant temperature sensor Fuel injector
FUEL PUMP RELAY	 Ignition switch: ON (Engine stopped) Turn the fuel pump relay "ON" and "OFF" using CONSULT-II and listen to operating sound. 	Fuel pump relay makes the operating sound.	Harness and connectors Fuel pump relay
PURG VOL CONT/V	 Engine: After warming up, run engine at 1,500 rpm. Change the EVAP canister purge volume control solenoid valve opening percent using CONSULT-II. 	Engine speed changes according to the opening percent.	Harness and connectors Solenoid valve
FUEL/T TEMP SEN	Change the fuel tank temperature	using CONSULT-II.	
VENT CON- TROL/V	 Ignition switch: ON (Engine stopped) Turn solenoid valve "ON" and "OFF" with the CONSULT-II and listen to operating sound. 	Solenoid valve makes an operating sound.	Harness and connectorsSolenoid valve
INT V/T ASSIGN ANGLE	 Engine: Return to the original trouble condition Change intake valve timing using CONSULT-II. 	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Intake valve timing control solenoid valve
EXH V/T ASSIGN ANGLE* ²	 Engine: Return to the original trouble condition Change exhaust valve timing using CONSULT-II. 	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Exhaust valve timing control magnet retarder

^{*1:} Leaving cooling fan "OFF" with CONSULT-II while engine is running may cause the engine to overheat.

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^{*2:} For models with M/T.

DTC & SRT CONFIRMATION MODE SRT STATUS Mode

For details, refer to EC-53, "SYSTEM READINESS TEST (SRT) CODE".

SRT WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to set the SRT while monitoring the SRT status.

DTC WORK SUPPORT Mode

Test mode	Test item	Corresponding DTC No.	Reference page
	PURG FLOW P0441	P0441	EC-418
EVAPORATIVE SYS-	EVP SML LEAK P0442/P1442*	P0442	EC-423
TEM	EVP V/S LEAK P0456/P1456*	P0456	EC-490
	PURG VOL CN/V P1444	P0443	EC-431
	A/F SEN1 (B1) P1276	P0130	EC-257
A/F SEN1	A/F SEN1 (B1) P1278/P1279	P0133	EC-288
A/F SENT	A/F SEN1 (B2) P1286	P0150	EC-257
	A/F SEN1 (B2) P1288/P1289	P0153	EC-288
	HO2S2 (B1) P0139	P0139	EC-327
	HO2S2 (B1) P1146	P0138	EC-313
HO2S2	HO2S2 (B1) P1147	P0137	EC-301
HU232	HO2S2 (B2) P0159	P0159	EC-327
	HO2S2 (B2) P1166	P0158	EC-313
	HO2S2 (B2) P1167	P0157	EC-301

^{*:} DTC P1442 and P1456 does not apply to Z33 models but appears in DTC WORK SUPPORT Mode screens.

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REAL TIME DIAGNOSIS IN DATA MONITOR MODE (RECORDING VEHICLE DATA) Description

CONSULT-II has two kinds of triggers and they can be selected by touching "SETTING" in "DATA MONITOR" mode.

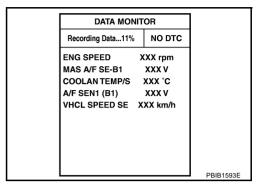
- "AUTO TRIG" (Automatic trigger):
 - The malfunction will be identified on the CONSULT-II screen in real time.

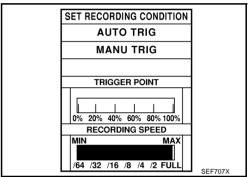
In other words, DTC/1st trip DTC and malfunction item will be displayed if the malfunction is detected by ECM.

At the moment a malfunction is detected by ECM, "MONITOR" in "DATA MONITOR" screen is changed to "Recording Data... xx%" as shown at right, and the data after the malfunction detection is recorded. Then when the percentage reached 100%, "REAL-TIME DIAG" screen is displayed. If "STOP" is touched on the screen during "Recording Data... xx%", "REAL-TIME DIAG" screen is also displayed.

The recording time after the malfunction detection and the recording speed can be changed by "TRIGGER POINT" and "Recording Speed". Refer to CONSULT-II Operation Manual.

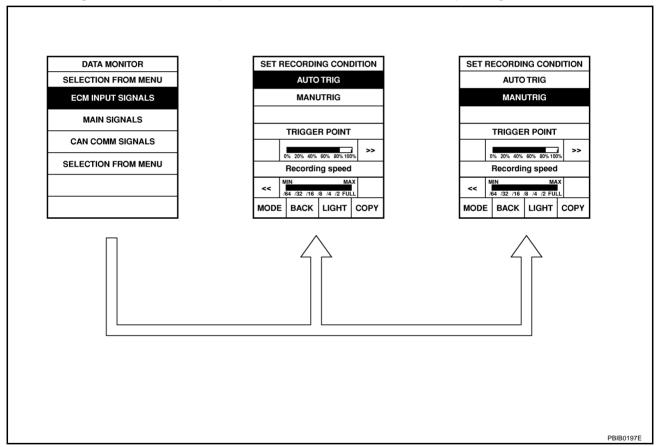
- 2. "MANU TRIG" (Manual trigger):
 - DTC/1st trip DTC and malfunction item will not be displayed automatically on CONSULT-II screen even though a malfunction is detected by ECM.
 - DATA MONITOR can be performed continuously even though a malfunction is detected.





Operation

- 1. "AUTO TRIG"
 - While trying to detect the DTC/1st trip DTC by performing the DTC Confirmation Procedure, be sure to select to "DATA MONITOR (AUTO TRIG)" mode. You can confirm the malfunction at the moment it is detected.
 - While narrowing down the possible causes, CONSULT-II should be set in "DATA MONITOR (AUTO TRIG)" mode, especially in case the incident is intermittent.
 When you are inspecting the circuit by gently shaking (or twisting) the suspicious connectors, components and harness in the DTC Confirmation Procedure, the moment a malfunction is found the DTC/1st trip DTC will be displayed. (Refer to INCIDENT SIMULATION TESTS in GI-27, "How to Perform Efficient Diagnosis for an Electrical Incident".)
- "MANU TRIG"
 - If the malfunction is displayed as soon as "DATA MONITOR" is selected, reset CONSULT-II to "MANU TRIG". By selecting "MANU TRIG" you can monitor and store the data. The data can be utilized for further diagnosis, such as a comparison with the value for the normal operating condition.

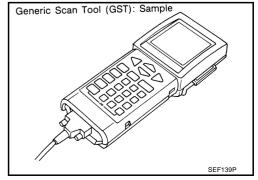


Generic Scan Tool (GST) Function DESCRIPTION

Generic Scan Tool (OBDII scan tool) complying with SAE J1978 has 8 different functions explained below.

ISO9141 is used as the protocol.

The name GST or Generic Scan Tool is used in this service manual.



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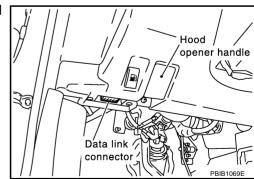
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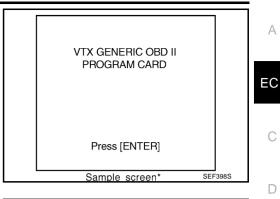
Diagnostic test mode		Function	
Service \$01	READINESS TESTS	This diagnostic service gains access to current emission-related data values, including analog inputs and outputs, digital inputs and outputs, and system status information.	
Service \$02	(FREEZE DATA)	This diagnostic service gains access to emission-related data value which were stored by ECM during the freeze frame. For details, refer to EC-52, "FREEZE FRAME DATA AND 1ST TRIP FREEZE FRAME DATA".	
Service \$03	DTCs	This diagnostic service gains access to emission-related power train trouble codes which were stored by ECM.	
		This diagnostic service can clear all emission-related diagnostic information. This includes: • Clear number of diagnostic trouble codes (Service \$01)	
		Clear diagnostic trouble codes (Service \$03)	
Service \$04	CLEAR DIAG INFO	Clear trouble code for freeze frame data (Service \$01)	
		Clear freeze frame data (Service \$02)	
		Reset status of system monitoring test (Service \$01)	
		Clear on board monitoring test results (Service \$06 and \$07)	
Service \$06	(ON BOARD TESTS)	This diagnostic service accesses the results of on board diagnostic monitoring tests of specific components/systems that are not continuously monitored.	
Service \$07	(ON BOARD TESTS)	This diagnostic service enables the off board test drive to obtain test results for emission related powertrain components/systems that are continuously monitored during normal driving conditions.	
		This diagnostic service can close EVAP system in ignition switch ON position (Engine stopped). When this diagnostic service is performed, EVAP canitser vent control valve can be closed. In the following conditions, this mode cannot function. • Low ambient temperature	
Service \$08	_	Low battery voltage	
		Engine running	
		Ignition switch OFF	
		Low fuel temperature	
		Too much pressure is applied to EVAP system	
Service \$09	(CALIBRATION ID)	This diagnostic service enables the off-board test device to request specific vehicle information such as Vehicle Identification Number (VIN) and Calibration IDs.	

INSPECTION PROCEDURE

- 1. Turn ignition switch OFF.
- Connect GST to data link connector, which is located under LH dash panel near the hood opener handle.

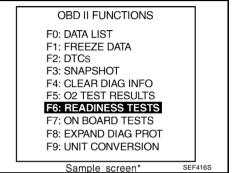


- Turn ignition switch ON.
- Enter the program according to instruction on the screen or in the operation manual.
 - (*: Regarding GST screens in this section, sample screens are shown.)



Perform each diagnostic mode according to each service proce-

For further information, see the GST Operation Manual of the tool maker.



CONSULT-II Reference Value in Data Monitor

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Specification data are reference values.

Specification data are output/input values which are detected or supplied by the ECM at the connector.

* Specification data may not be directly related to their components signals/values/operations.
i.e. Adjust ignition timing with a timing light before monitoring IGN TIMING, because the monitor may show the specification data in spite of the ignition timing not being adjusted to the specification data. This IGN TIMING monitors the data calculated by the ECM

according to the signals input from the camshaft position sensor and other ignition timing related sensors.			
MONITOR ITEM	CONDITION		SPECIFICATION
ENG SPEED	Run engine and compare CONSULT-II value with the tachometer indication.		Almost the same speed as the tachometer indication
MAS A/F SE-B1	See EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE".		
B/FUEL SCHDL	See EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE".		
A/F ALPHA-B1 A/F ALPHA-B2	See EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE" .		
COOLAN TEMP/S	Engine: After warming up		More than 70°C (158°F)
A/F SEN1 (B1) A/F SEN1 (B2)	Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 1.5V
HO2S2 (B1) HO2S2 (B2)	 Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 		$0 - 0.3V \longleftrightarrow Approx. 0.6 - 1.0V$
HO2S2 MNTR (B1) HO2S2 MNTR (B2)	 Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 		LEAN ←→ RICH
VHCL SPEED SE	Turn drive wheels and compare CONSULT-II value with the speedometer indication.		Almost the same speed as the speedometer indication
BATTERY VOLT	Ignition switch: ON (Engine stopped)		11 - 14V
ACCEL SEN 1	Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	0.5 - 1.0V
		Accelerator pedal: Fully depressed	4.0 - 4.8V

MONITOR ITEM	CONDITION		SPECIFICATION
	Ignition switch: ON	Accelerator pedal: Fully released	0.3 - 1.2V
ACCEL SEN 2*1	(Engine stopped)	Accelerator pedal: Fully depressed	3.9 - 4.8V
THRTL SEN 1 THRTL SEN 2*1	 Ignition switch: ON (Engine stopped) Shift lever: D (A/T) or 1st (M/T) 	Accelerator pedal: Fully released Accelerator pedal: Fully depressed	More than 0.36V Less than 4.75V
EVAP SYS PRES	• Ignition switch: ON		Approx. 1.8 - 4.8V
START SIGNAL	 Ignition switch: ON → START → 0 	ON .	OFF \rightarrow ON \rightarrow OFF
CLSD THL POS	● Ignition switch: ON → START → V • Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	ON → ON → OI 1
		Accelerator pedal: Slightly depressed	OFF
	(=::9:::-2 -::-рр-га)	Air conditioner switch: OFF	OFF
AIR COND SIG	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates.)	ON
		Shift lever: P or N (A/T), Neutral (M/T)	ON
P/N POSI SW	Ignition switch: ON	Shift lever: Except above position	OFF
	Engine: After warming up, idle	Steering wheel: Not being turned	OFF
PW/ST SIGNAL	the engine	Steering wheel: Being turned	ON
	Ignition switch: ON	Rear window defogger switch is ON and/or lighting switch is in 2nd	ON
LOAD SIGNAL		Rear window defogger switch is OFF and lighting switch is OFF	OFF
IGNITION SW	• Ignition switch: $ON \rightarrow OFF \rightarrow ON$		$ON \to OFF \to ON$
	Engine: After warming up, idle the engine	Heater fan: Operating	ON
HEATER FAN SW		Heater fan: Not operating	OFF
DDAKE OW	Ignition switch: ON	Brake pedal: Fully released	OFF
BRAKE SW		Brake pedal: Slightly depressed	ON
INJ PULSE-B1 INJ PULSE-B2	Engine: After warming up	Idle	2.0 - 3.0 msec
	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	1.9 - 2.9 msec
	Engine: After warming up	Idle	13° - 18° BTDC
IGN TIMING	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	25° - 45° BTDC
CAL/LD VALUE	Engine: After warming up	Idle	5% - 35%
	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,500 rpm	5% - 35%
	Engine: After warming up	Idle	2.0 - 6.0 g·m/s
MASS AIRFLOW	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,500 rpm	7.0 - 20.0 g·m/s

MONITOR ITEM	CO	SPECIFICATION	
PURG VOL C/V	 Engine: After warming up Shift lever: P or N (A/T), Neutral (M/T) 	Idle (Accelerator pedal is not depressed even slightly, after engine starting)	0%
TONG VOL 6/V	Air conditioner switch: OFF No load	2,000 rpm	EC
	Engine: After warming up	Idle	–5° - 5°CA
INT/V TIM (B1) INT/V TIM (B2)	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	When revving engine up to 2,000 rpm quickly	Approx. 0° - 30°CA
	Engine: After warming up	Idle	_5° - 5°CA
EXH/V TIM B1* ² EXH/V TIM B2* ²	Shift lever: NeutralAir conditioner switch: OFFNo load	Engine speed: Above 1,500 rpm	Approx. 0° - 30°CA
	Engine: After warming up	Idle	0% - 2%
INT/V SOL (B1) INT/V SOL (B2)	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	When revving engine up to 2,000 rpm quickly	Approx. 0% - 50%
-	Engine: After warming up	Idle	0% - 2%
EX V/T DTY B1* ² EX V/T DTY B2* ²	Shift lever: NeutralAir conditioner switch: OFFNo load	Engine speed: Above 1,500 rpm	Approx. 0% - 70%
	Engine: After warming up, idle the engine	Air conditioner switch: OFF	OFF
AIR COND RLY		Air conditioner switch: ON (Compressor operates)	ON
FUEL PUMP RLY	 For 1 second after turning ignition switch ON Engine running or cranking 		ON
VENEZ CONTAC	Except above conditions		OFF K
VENT CONT/V	Ignition switch: ON		OFF
THRTL RELAY	Ignition switch: ON	Engine coolant temperature is 97°C	ON L
	Engine: After warming up, idle	(206°F) or less	OFF
COOLING FAN	the engine • Air conditioner switch: OFF	Engine coolant temperature is between 98°C (208°F) and 99°C (210°F)	LOW
		Engine coolant temperature is 100°C (212°F) or more	н
– Engine: After warming up		after the following conditions are met. en 3,500 and 4,000 rpm for 1 minute and	ON
	Engine speed: Above 3,600 rpm		OFF
I/P PULLY SPD	Vehicle speed: More than 20 km/h (12 MPH)		Almost the same speed as the tachometer indication
VEHICLE SPEED	Turn drive wheels and compare CONSULT-II value with the speedometer indication.		Almost the same speed as the speedometer indication
TRVL AFTER MIL	Ignition switch: ON	Vehicle has traveled after MIL has turned ON.	0 - 65,535 km (0 - 40,723 mile)
ENG OIL TEMP*2 *3	Engine: After warming up		More than 70°C (158°F)

MONITOR ITEM	CONDITION		SPECIFICATION
A/F S1 HTR (B1) A/F S1 HTR (B2)	Engine: After warming up, idle the engine		0 - 100%
AC PRESS SEN	 Engine: Idle Both A/C switch and blower switch are ON. (Compressor operates.) 		1.0 - 4.0V
VEH SPEED SE	Turn drive wheels and compare speedometer indication with the CONSULT-II value.		Almost the same speed as the CONSULT-II value
SET VHCL SPD	■ Engine, Krinning ASCT, Oberating		The preset vehicle speed is displayed.
MAIN SW	1 27 27 1 01	MAIN switch: Pressed	ON
IVIAIIN SVV	Ignition switch: ON	MAIN switch: Released	OFF
CANCEL SW	1 11 01	CANCEL switch: Pressed	ON
CANCEL 3W	Ignition switch: ON	CANCEL switch: Released	OFF
DECUME/ACC CW	• Ignition switch: ON	RESUME/ACCELERATE switch: Pressed	ON
RESUME/ACC SW		RESUME/ACCELERATE switch: Released	OFF
SET SW	Ignition switch: ON	SET/COAST switch: Pressed	ON
SET SW		SET/COAST switch: Released	OFF
	Ignition switch: ON	Brake pedal: Fully released (A/T) Brake pedal and clutch pedal: Fully	ON
BRAKE SW1		released (M/T) • Brake pedal: Slightly depressed (A/T)	
		Brake pedal and/or clutch pedal: Slightly depressed (M/T)	OFF
DDAKE OWO	Ignition switch: ON	Brake pedal: Fully released	OFF
BRAKE SW2		Brake pedal: Slightly depressed	ON
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time \rightarrow at the 2nd time	$ON \to OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET LAMP	When vehicle speed is between 40 km/h (25 MPH) and 144 km/h (89MPH)	ASCD: Not operating	OFF

^{*1:} Accelerator pedal position sensor 2 signal and throttle position sensor 2 signal are converted by ECM internally. Thus, they differ from ECM terminals voltage signal.

^{*2:} For models with M/T.

^{*3:} This sensor is not used to control the engine system.

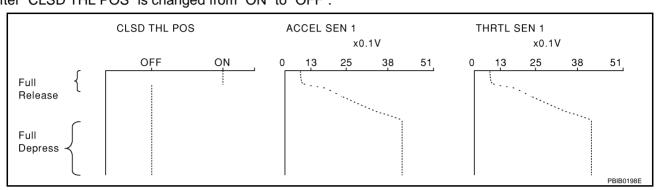
Major Sensor Reference Graph in Data Monitor Mode

NBS0003Q

The following are the major sensor reference graphs in "DATA MONITOR" mode.

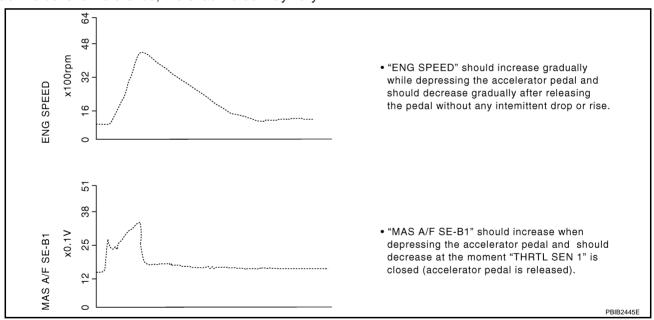
CLSD THL POS, ACCEL SEN 1, THRTL SEN 1

Below is the data for "CLSD THL POS", "ACCEL SEN 1" and "THRTL SEN 1" when depressing the accelerator pedal with the ignition switch ON and with shift lever in D position (A/T), 1st position (M/T). The signal of "ACCEL SEN 1" and "THRTL SEN 1" should rise gradually without any intermittent drop or rise after "CLSD THL POS" is changed from "ON" to "OFF".



ENG SPEED, MAS A/F SE-B1, THRTL SEN 1, HO2S2 (B1), INJ PULSE-B1

Below is the data for "ENG SPEED", "MAS A/F SE-B1", "THRTL SEN 1", "HO2S2 (B1)" and "INJ PULSE-B1" when revving engine quickly up to 4,800 rpm under no load after warming up engine sufficiently. Each value is for reference, the exact value may vary.



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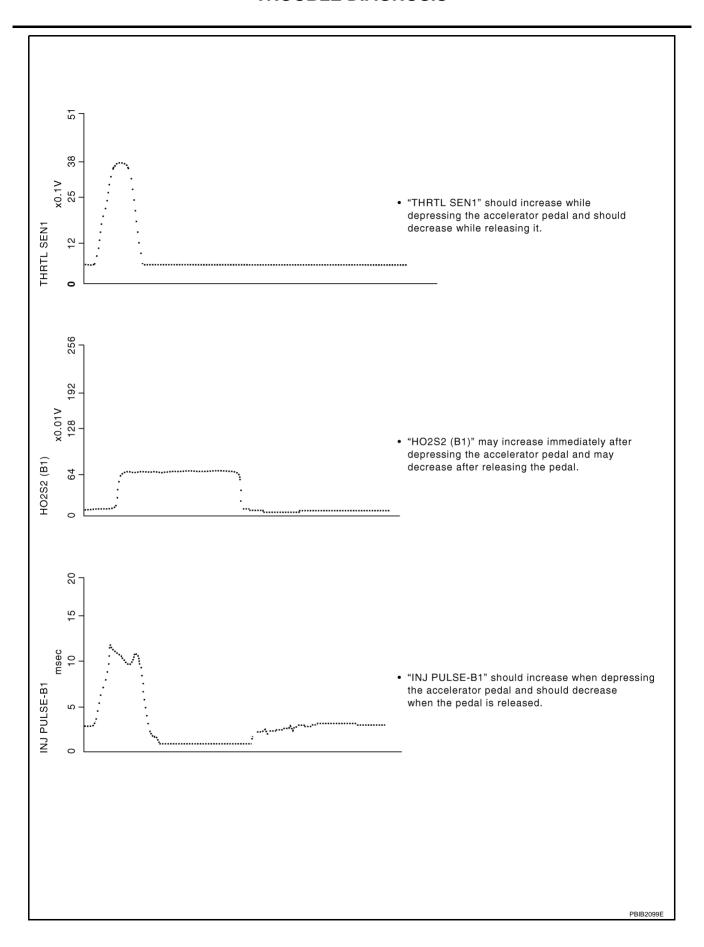
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TROUBLE DIAGNOSIS - SPECIFICATION VALUE

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

PFP:00031

Description

The specification (SP) value indicates the tolerance of the value that is displayed in "DATA MONITOR (SPEC)" mode of CONSULT-II during normal operation of the Engine Control System. When the value in "DATA MONITOR (SPEC)" mode is within the SP value, the Engine Control System is confirmed OK. When the value in "DATA MONITOR (SPEC)" mode is NOT within the SP value, the Engine Control System may have one or more malfunctions.

The SP value is used to detect malfunctions that may affect the Engine Control System, but will not light the MIL.

The SP value will be displayed for the following three items:

- B/FUEL SCHDL (The fuel injection pulse width programmed into ECM prior to any learned on board correction)
- A/F ALPHA-B1/B2 (The mean value of air-fuel ratio feedback correction factor per cycle)
- MAS A/F SE-B1 (The signal voltage of the mass air flow sensor)

Testing Condition

Vehicle driven distance: More than 5,000 km (3,107 miles)

- Barometric pressure: 98.3 104.3 kPa (1.003 1.064 kg/cm², 14.25 15.12 psi)
- Atmospheric temperature: 20 30°C (68 86°F)
- Engine coolant temperature: 75 95°C (167 203°F)
- Transmission: Warmed-up*1
- For A/T models: After the engine is warmed up to normal operating temperature, drive vehicle until "ATF TEMP 1" (A/T fluid temperature sensor signal) indicates more than 60°C (140°F).
- For M/T models: After the engine is warmed up to normal operating temperature, drive vehicle for 5 minutes.
- Electrical load: Not applied*²
- Rear window defogger switch, air conditioner switch, lighting switch are OFF. Steering wheel is straight ahead.
- Engine speed: Idle

Inspection Procedure

NOTE:

Perform "DATA MONITOR (SPEC)" mode in maximum scale display.

- 1. Perform EC-71, "Basic Inspection".
- Confirm that the testing conditions indicated above are met.
- Select "B/FUEL SCHDL", "A/F ALPHA-B1", "A/F ALPHA-B2" and "MAS A/F SE-B1" in "DATA MONITOR (SPEC)" mode with CONSULT-II.
- 4. Make sure that monitor items are within the SP value.
- If NG, go to <u>EC-144</u>, "<u>Diagnostic Procedure</u>".

DATA MONITOR (SPEC)

MONITOR NO DTC

ENG SPEED 813 rpm

0 1600 3200 4800 6400

B/FUEL SCHDL 2.9 msec

0.0 1.3 2.5 3.8 5.0

A/F ALPHA-B1 105 %

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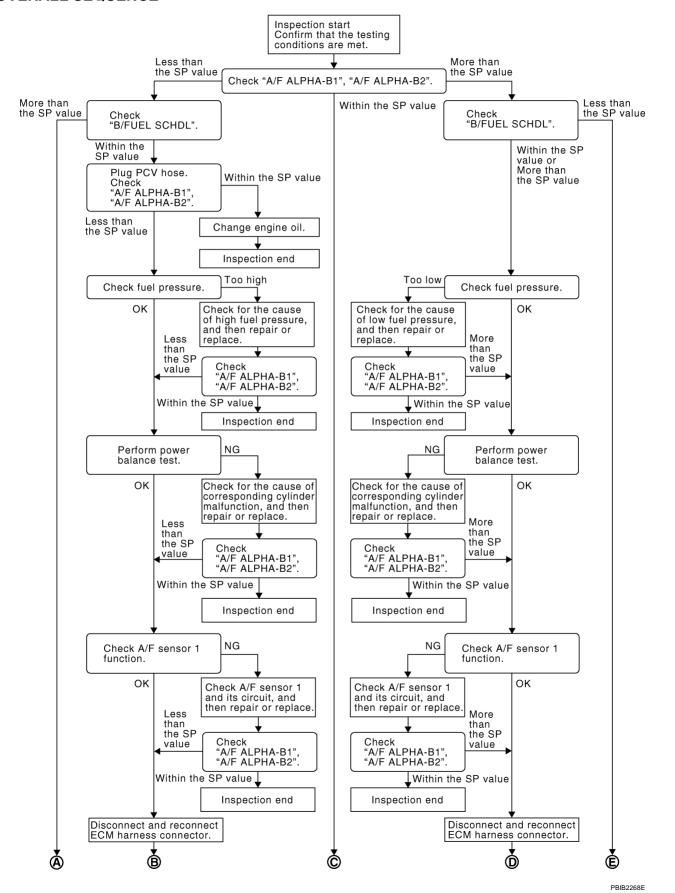
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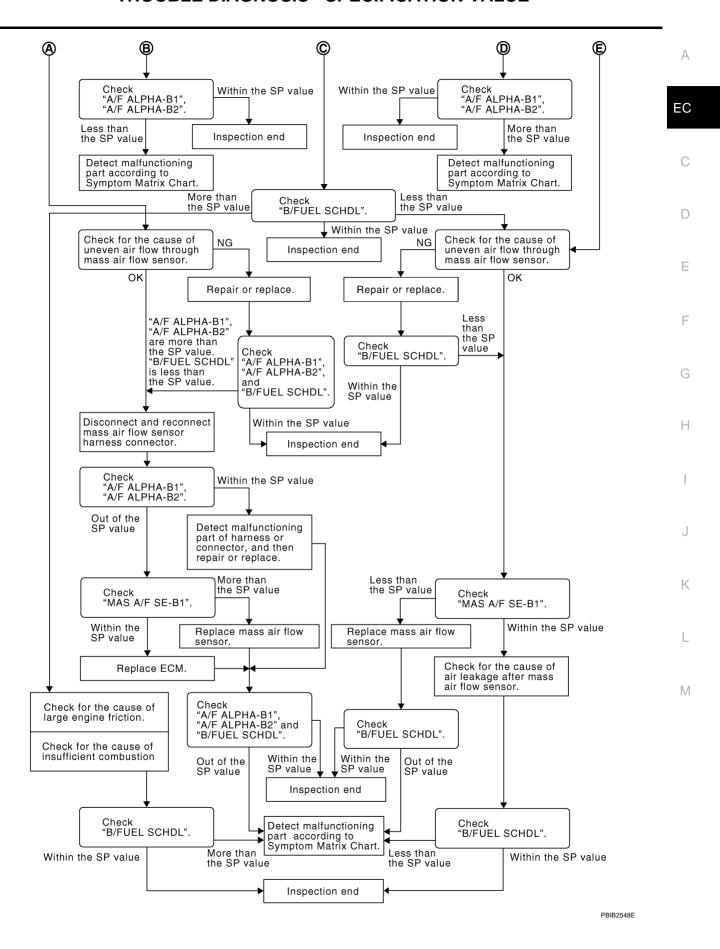
Diagnostic Procedure OVERALL SEQUENCE

NBS0003U



EC-144

Revision: 2005 August



DETAILED PROCEDURE

1. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- Start engine. 1.
- 2. Confirm that the testing conditions are met. Refer to EC-143, "Testing Condition".
- 3. Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

NOTE:

Check "A/F ALPHA-B1", "A/F ALPHA-B2" for approximately 1 minute because they may fluctuate. It is NG if the indication is out of the SP value even a little.

OK or NG

OK >> GO TO 17.

NG (Less than the SP value)>>GO TO 2.

NG (More than the SP value)>>GO TO 3.

NO DTC ENG SPEED XXX rpm 3200 A/F ALPHA-B1 XX % 125 PRIR2360F

DATA MONITOR (SPEC)

MONITOR

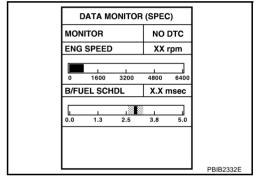
2. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "DATA MONITOR (SPEC)" mode, and make sure that the indication is within the SP value.

OK or NG

OK >> GO TO 4.

NG (More than the SP value)>>GO TO 19.



3. CHECK "B/FUEL SCHDL"

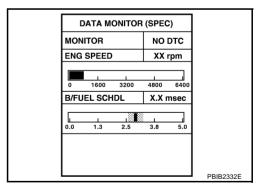
Select "B/FUEL SCHDL" in "DATA MONITOR (SPEC)" mode, and make sure that the indication is within the SP value.

OK or NG

OK >> GO TO 6.

NG (More than the SP value)>>GO TO 6.

NG (Less than the SP value)>>GO TO 25.



4. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Stop the engine.
- 2. Disconnect PCV hose, and then plug it.
- Start engine.
- 4. Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> GO TO 5.

NG >> GO TO 6.

5. CHANGE ENGINE OIL

- 1. Stop the engine.
- 2. Change engine oil.

NOTE:

This symptom may occur when a large amount of gasoline is mixed with engine oil because of driving conditions (such as when engine oil temperature does not rise enough since a journey distance is too short during winter). The symptom will not be detected after changing engine oil or changing driving condition.

>> INSPECTION END

6. CHECK FUEL PRESSURE

Check fuel pressure. (Refer to EC-81, "Fuel Pressure Check".)

OK or NG

OK >> GO TO 9.

NG (Fuel pressure is too high)>>Replace fuel pressure regulator, refer to EC-81, "Fuel Pressure Check". GO TO 8.

NG (Fuel pressure is too low)>>GO TO 7.

7. DETECT MALFUNCTIONING PART

- Check the following.
- Clogged and bent fuel hose and fuel tube
- Clogged fuel filter
- Fuel pump and its circuit (Refer to EC-690, "FUEL PUMP".)
- If NG, repair or replace the malfunctioning part. (Refer to EC-81, "Fuel Pressure Check".) If OK, replace fuel pressure regulator.

>> GO TO 8.

8. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- Start engine.
- Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG >> GO TO 9.

9. PERFORM POWER BALANCE TEST

- Perform "POWER BALANCE" in "ACTIVE TEST" mode.
- Make sure that the each cylinder produces a momentary engine speed drop.

OK or NG

OK >> GO TO 12.

NG >> GO TO 10.

POWER BALANCE		
MONITOR	₹	
ENG SPEED	XXX rpm	
MAS A/F SE-B1	XXX V	
		PBIB0133

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ACTIVE TEST

10. DETECT MALFUNCTIONING PART

- 1. Check the following.
- Ignition coil and its circuit (Refer to <u>EC-697, "IGNITION SIGNAL"</u>.)
- Fuel injector and its circuit (Refer to EC-682, "FUEL INJECTOR" .)
- Intake air leakage
- Low compression pressure (Refer to <u>EM-119</u>, "<u>CHECKING COMPRESSION PRESSURE</u>".)
- If NG, repair or replace the malfunctioning part.
 If OK, replace fuel injector. (It may be caused by leakage from fuel injector or clogging.)

>> GO TO 11.

11. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Start engine.
- 2. Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG >> GO TO 12.

12. CHECK A/F SENSOR 1 FUNCTION

Perform all DTC Confirmation Procedure related with A/F sensor 1.

- For DTC P0130, P0150, refer to EC-269, "DTC Confirmation Procedure".
- For DTC P0131, P0151, refer to <u>EC-279, "DTC Confirmation Procedure"</u>.
- For DTC P0132, P0152, refer to EC-652, "DTC Confirmation Procedure".
- For DTC P0133, P0153, refer to <u>EC-289, "DTC Confirmation Procedure"</u>.
- For DTC P2A00, P2A03, refer to EC-258, "DTC Confirmation Procedure".

OK or NG

OK >> GO TO 15.

NG >> GO TO 13.

13. CHECK A/F SENSOR 1 CIRCUIT

Perform Diagnostic Procedure according to corresponding DTC.

>> GO TO 14.

14. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Start engine.
- 2. Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG >> GO TO 15.

15. DISCONNECT AND RECONNECT ECM HARNESS CONNECTOR

- 1. Stop the engine.
- 2. Disconnect ECM harness connector. Check pin terminal and connector for damage, and then reconnect it.

>> GO TO 16.

16. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Start engine.
- 2. Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG >> Detect malfunctioning part according to EC-92, "Symptom Matrix Chart".

17. CHECK "B/FUEL SCHDL"

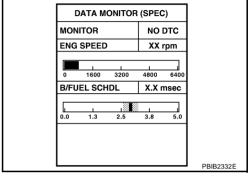
Select "B/FUEL SCHDL" in "DATA MONITOR (SPEC)" mode, and make sure that the indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG (More than the SP value)>>GO TO 18.

NG (Less than the SP value)>>GO TO 25.



18. DETECT MALFUNCTIONING PART

- Check for the cause of large engine friction. Refer to the following. 1.
- Engine oil level is too high
- Engine oil viscosity
- Belt tension of power steering, alternator, A/C compressor, etc. is excessive
- Noise from engine
- Noise from transmission, etc.
- Check for the cause of insufficient combustion. Refer to the following.
- Valve clearance malfunction
- Intake valve timing control function malfunction
- Camshaft sprocket installation malfunction, etc.

>> Repair or replace malfunctioning part, and then GO TO 30.

19. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system

OK or NG

OK >> GO TO 21.

NG >> Repair or replace malfunctioning part, and then GO TO 20.

EC

$20.\ \mathsf{CHECK}\ \texttt{``A/F}\ \mathsf{ALPHA-B1"},\ \texttt{``A/F}\ \mathsf{ALPHA-B2"},\ \mathsf{AND}\ \texttt{``B/FUEL}\ \mathsf{SCHDL"}$

Select "A/F ALPHA-B1", "A/F ALPHA-B2", and "B/FUEL SCHDL" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG ("B/FUEL SCHDL" is more, "A/F ALPHA-B1", "A/F ALPHA-B2" are less than the SP value)>>GO TO 21.

21. DISCONNECT AND RECONNECT MASS AIR FLOW SENSOR HARNESS CONNECTOR

- 1. Stop the engine.
- 2. Disconnect mass air flow sensor harness connector. Check pin terminal and connector for damage and then reconnect it again.

>> GO TO 22.

22. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Start engine.
- 2. Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> 1. Detect malfunctioning part of mass air flow sensor circuit and repair it. Refer to EC-211, "DTC P0101 MAF SENSOR".

2. GO TO 29.

NG >> GO TO 23.

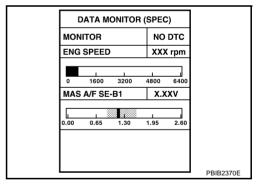
23. CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "DATA MONITOR (SPEC)" mode, and make sure that the indication is within the SP value.

OK or NG

OK >> GO TO 24.

NG (More than the SP value)>>Replace mass air flow sensor, and then GO TO 29.



24. REPLACE ECM

- Replace ECM.
- Perform initialization of NVIS(NATS) system and registration of all NVIS(NATS) ignition key IDs. Refer to <u>BL-167</u>, "<u>ECM Re-communicating Function</u>".
- 3. Perform EC-77, "VIN Registration".
- 4. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".
- 5. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 6. Perform EC-79, "Throttle Valve Closed Position Learning".
- 7. Perform EC-79, "Idle Air Volume Learning".

>> GO TO 29.

$\overline{2}5$. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system

OK or NG

OK >> GO TO 27.

NG >> Repair or replace malfunctioning part, and then GO TO 26.

26. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "DATA MONITOR (SPEC)" mode, and make sure that the indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG (Less than the SP value)>>GO TO 27.

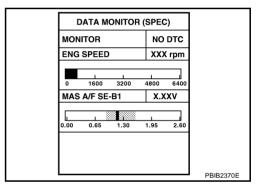
27. CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "DATA MONITOR (SPEC)" mode, and make sure that the indication is within the SP value.

OK or NG

OK >> GO TO 28.

NG (Less than the SP value)>>Replace mass air flow sensor, and then GO TO 30.



28. CHECK INTAKE SYSTEM

Check for the cause of air leak after the mass air flow sensor. Refer to the following.

- Disconnection, looseness, and cracks in air duct
- Looseness of oil filler cap
- Disconnection of oil level gauge
- Open stuck, breakage, hose disconnection, or cracks of PCV valve
- Disconnection or cracks of EVAP purge hose, open stuck of EVAP canister purge volume control solenoid valve
- Malfunctioning seal of rocker cover gasket
- Disconnection, looseness, or cracks of hoses, such as vacuum hose, connecting to intake air system parts
- Malfunctioning seal of intake air system, etc.

>> GO TO 30.

29. CHECK "A/F ALPHA-B1", "A/F ALPHA-B2", AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1", "A/F ALPHA-B2", and "B/FUEL SCHDL" in "DATA MONITOR (SPEC)" mode, and make sure that the each indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG >> Detect malfunctioning part according to <u>EC-92</u>, "Symptom Matrix Chart".

Revision: 2005 August **EC-151** 2006 350Z

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30. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "DATA MONITOR (SPEC)" mode, and then make sure that the indication is within the SP value.

OK or NG

OK >> INSPECTION END

NG >> Detect malfunctioning part according to EC-92, "Symptom Matrix Chart".

TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT

TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT

PFP:00006

Description

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Intermittent incidents may occur. In many cases, the malfunction resolves itself (the part or circuit function returns to normal without intervention). It is important to realize that the symptoms described in the customer's complaint often do not recur on (1st trip) DTC visits. Realize also that the most frequent cause of intermittent incidents occurrences is poor electrical connections. Because of this, the conditions under which the incident occurred may not be clear. Therefore, circuit checks made as part of the standard diagnostic procedure may not indicate the specific malfunctioning area.

Common intermittent incidents Report Situations

STEP in Work Flow	Situation
2	The CONSULT-II is used. The SELF-DIAG RESULTS screen shows time data other than [0] or [1t].
3 or 4	The symptom described by the customer does not recur.
5	(1st trip) DTC does not appear during the DTC Confirmation Procedure.
10	The Diagnostic Procedure for PXXXX does not indicate the malfunctioning area.

Diagnostic Procedure

1. INSPECTION START

Erase (1st trip) DTCs.

Refer to EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION" .

>> GO TO 2.

2. CHECK GROUND TERMINALS

Check ground terminals for corroding or loose connection.

Refer to EC-162, "Ground Inspection".

OK or NG

OK >> GO TO 3.

NG >> Repair or replace.

3. SEARCH FOR ELECTRICAL INCIDENT

Perform GI-27, "How to Perform Efficient Diagnosis for an Electrical Incident", "INCIDENT SIMULATION TESTS".

OK or NG

OK >> GO TO 4.

NG >> Repair or replace.

4. CHECK CONNECTOR TERMINALS

Refer to GI-24, "How to Check Terminal", "HOW TO PROBE CONNECTORS", "How to Check Enlarged Contact Spring of Terminal".

OK or NG

OK >> INSPECTION END

NG >> Repair or replace connector.

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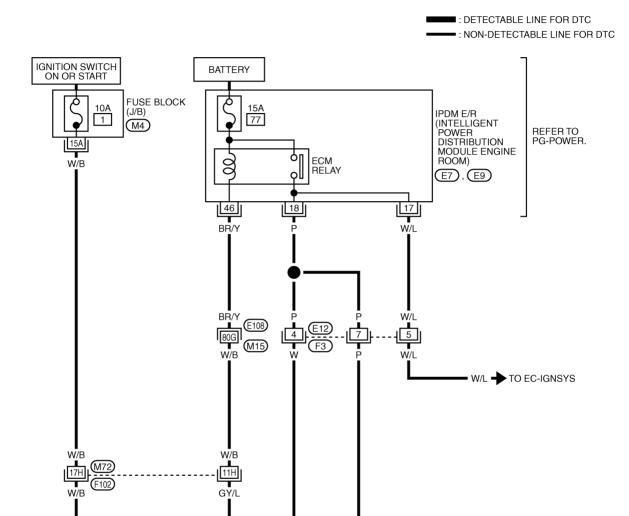
POWER SUPPLY AND GROUND CIRCUIT Wiring Diagram

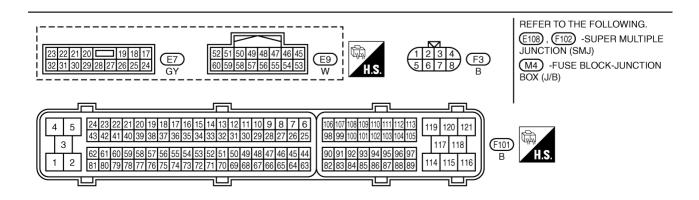
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PFP:24110

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EC-MAIN-01





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ECM (F101)

TBWT1194F

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
			[Ignition switch: OFF]	OV
109	W/B	Ignition switch	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
	111 GY/L ECM relay (Self shut-off)		[Engine is running] [Ignition switch: OFF]	0 - 1.5V
111		•	 For a few seconds after turning ignition switch OFF 	0 - 1.50
		(Seil Stiut-Oil)	[Ignition switch: OFF]	BATTERY VOLTAGE
			More than a few seconds after turning ignition switch OFF	(11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

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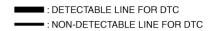
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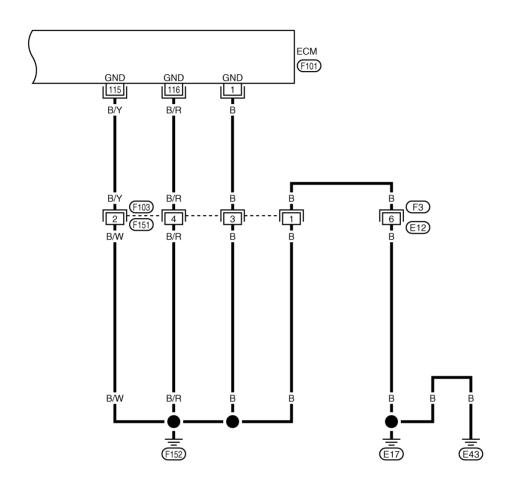
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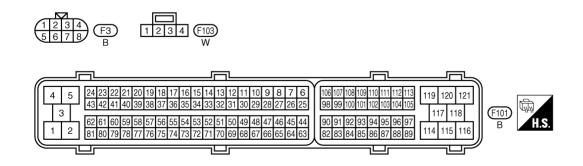
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EC-MAIN-02







TBWT1195E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
1	В	ECM ground	[Engine is running] ● Idle speed	Body ground
115 116	B/Y B/R	ECM ground	[Engine is running] ● Idle speed	Body ground

Diagnostic Procedure

1. INSPECTION START

Start engine.

Is engine running?

Yes or No

Yes >> GO TO 8. No >> GO TO 2.

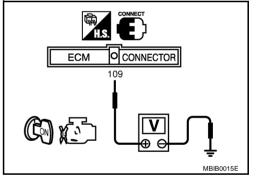
2. CHECK ECM POWER SUPPLY CIRCUIT-I

- Turn ignition switch OFF and then ON.
- 2. Check voltage between ECM terminal 109 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M72, F102
- Fuse block (J/B) connector M4
- 10A fuse
- Harness for open or short between ECM and fuse
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

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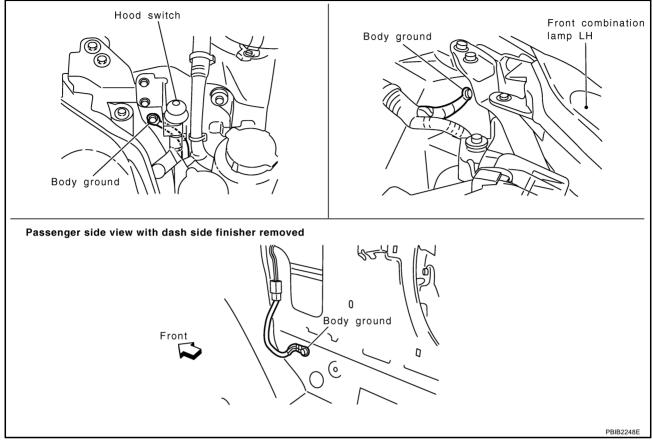
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4. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

OK >> GO TO 5.

NG >> Repair or replace ground connections.

5. CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-I

- Disconnect ECM harness connector.
- Check harness continuity between ECM terminals 1, 115, 116 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 7.

NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F103, F151
- Harness connectors F3, E12
- Harness for open or short between ECM and ground

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

$7_{\scriptscriptstyle \perp}$ check ecm power supply circuit-II

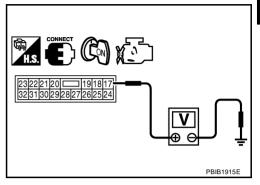
- 1. Reconnect ECM harness connector disconnected.
- 2. Turn ignition switch ON.
- Check voltage between IPDM E/R terminal 17 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> Go to EC-697, "IGNITION SIGNAL".

NG >> GO TO 8.



8. CHECK ECM POWER SUPPLY CIRCUIT-III

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and then OFF. 2.
- Check voltage between ECM terminals 119, 120 and ground with CONSULT-II or tester.

After turning ignition switch OFF, battery voltage will exist for a few seconds, then drop approximately 0V.

OK or NG

OK >> GO TO 15.

NG (Battery voltage does not exist.)>>GO TO 9.

NG (Battery voltage exists for more than a few seconds.)>>GO TO

ECM CONNECTOR 119, 120 PBIB1630E

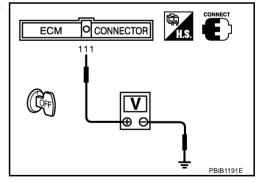
9. CHECK ECM POWER SUPPLY CIRCUIT-IV

Check voltage between ECM terminal 111 and ground with CON-SULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 10. NG >> GO TO 12.



10. CHECK ECM POWER SUPPLY CIRCUIT-V

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E7.
- Check harness continuity between ECM terminals 119, 120 and IPDM E/R terminal 18. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 18. NG >> GO TO 11.

EC-159 Revision: 2005 August 2006 350Z

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11. DETECT MALFUNCTIONING PART

Check the following.

- Harness or connectors E12, F3
- Harness for open or short between ECM and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

12. CHECK ECM POWER SUPPLY CIRCUIT-VI

- 1. Disconnect IPDM E/R harness connector E9.
- Check harness continuity between ECM terminal 111 and IPDM E/R terminal 46. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 14. NG >> GO TO 13.

13. DETECT MALFUNCTIONING PART

Check the following.

- Harness or connectors E108, M15
- Harness or connectors M72, F102
- Harness for open or short between ECM and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK 15A FUSE

- Disconnect 15A fuse from IPDM E/R.
- 2. Check 15A fuse.

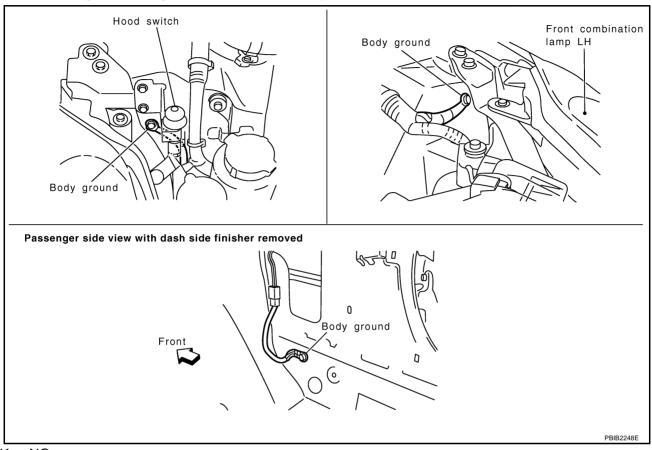
OK or NG

OK >> GO TO 18.

NG >> Replace 15A fuse.

15. CHECK GROUND CONNECTIONS

Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 16.

NG >> Repair or replace ground connections.

16. CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-II

- 1. Disconnect ECM harness connector.
- Check harness continuity between ECM terminals 1, 115, 116 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 18. NG >> GO TO 17.

17. DETECT MALFUNCTIONING PART

Check the following.

Revision: 2005 August

- Harness or connectors F103, F151
- Harness or connectors F3, E12
- Harness for open or short between ECM and ground.
 - >> Repair open circuit or short to power in harness or connectors.

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18. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

- OK >> Replace IPDM E/R. Refer to <u>PG-16</u>, "IPDM E/R (INTELLIGENT POWER DISTRIBUTION MOD-<u>ULE ENGINE ROOM)"</u>.
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

Ground Inspection

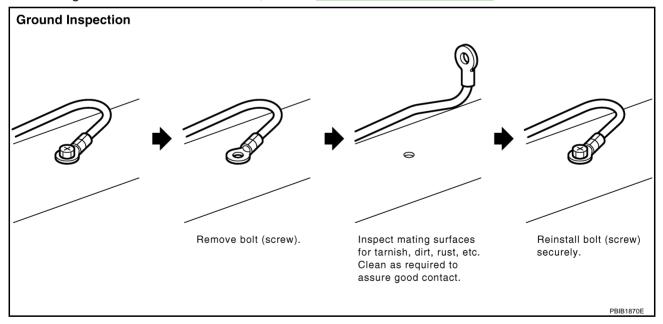
NBS0003Z

Ground connections are very important to the proper operation of electrical and electronic circuits. Ground connections are often exposed to moisture, dirt and other corrosive elements. The corrosion (rust) can become an unwanted resistance. This unwanted resistance can change the way a circuit works.

Electronically controlled circuits are very sensitive to proper grounding. A loose or corroded ground can drastically affect an electronically controlled circuit. A poor or corroded ground can easily affect the circuit. Even when the ground connection looks clean, there can be a thin film of rust on the surface. When inspecting a ground connection follow these rules:

- Remove the ground bolt or screw.
- Inspect all mating surfaces for tarnish, dirt, rust, etc.
- Clean as required to assure good contact.
- Reinstall bolt or screw securely.
- Inspect for "add-on" accessories which may be interfering with the ground circuit.
- If several wires are crimped into one ground eyelet terminal, check for proper crimps. Make sure all of the wires are clean, securely fastened and providing a good ground path. If multiple wires are cased in one eyelet make sure no ground wires have excess wire insulation.

For detailed ground distribution information, refer to PG-29, "Ground Distribution".



DTC U1000, U1001 CAN COMMUNICATION LINE

DTC U1000, U1001 CAN COMMUNICATION LINE

PFP:23710

Description

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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.

On Board Diagnosis Logic

NBS00041

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
U1000* ¹ 1000* ¹ U1001* ² 1001* ²	CAN communication line	 ECM cannot communicate to other control units. ECM cannot communicate for more than the specified time. 	Harness or connectors (CAN communication line is open or shorted)

^{*1:} This self-diagnosis has the one trip detection logic (A/T). The MIL will not light up for this diagnosis (M/T).

DTC Confirmation Procedure

NBS00042

- Turn ignition switch ON and wait at least 3 seconds.
- Select "DATA MONITOR" mode with CONSULT-II.
- If 1st trip DTC is detected, go to EC-165, "Diagnostic Procedure".

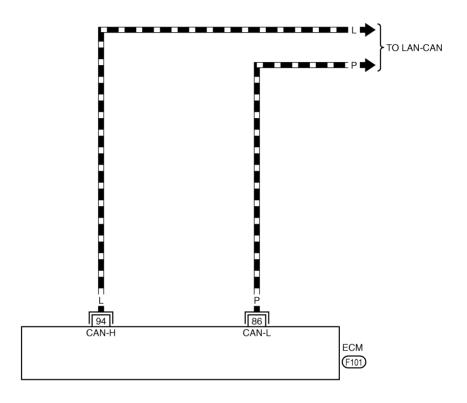
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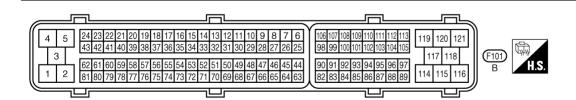
^{*2:} The MIL will not light up for this diagnosis.

Wiring Diagram

EC-CAN-01

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





TBWT0698E

DTC U1000, U1001 CAN COMMUNICATION LINE

Diagnostic Procedure

NBS00044

Go to LAN-3, "Precautions When Using CONSULT-II" .

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DTC U1010 CAN COMMUNICATION

DTC U1010 CAN COMMUNICATION

PFP:23710

Description

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.

On Board Diagnosis Logic

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This self-diagnosis has the one trip detection logic (A/T). The MIL not light up for this diagnosis (M/T).

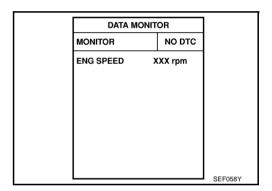
DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
U1010 1010	CAN communication bus	Initializing CAN communication bus is mal- functioning.	• ECM

DTC Confirmation Procedure

(P) WITH CONSULT-II

NBS002VN

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. If DTC is detected, go to EC-167, "Diagnostic Procedure".



WITH GST

Follow the procedure "WITH CONSULT-II" above.

DTC U1010 CAN COMMUNICATION

Diagnostic Procedure NBS002VO Α 1. INSPECTION START (P) With CONSULT-II EC 1. Turn ignition switch ON. Select "SELF-DIAG RESULTS" mode with CONSULT-II. Touch "ERASE". Perform DTC Confirmation Procedure. See EC-166, "DTC Confirmation Procedure". 5. Is the DTC U1010 displayed again? **With GST** 1. Turn ignition switch ON. Select "Service \$04" with GST. F **Perform DTC Confirmation Procedure.** See EC-166, "DTC Confirmation Procedure". 4. Is the DTC U1010 displayed again? Yes or No Yes >> GO TO 2. No >> INSPECTION END G 2. REPLACE ECM Н 1. Replace ECM. 2. Perform initialization of IVIS (NATS) system and registration of all IVIS (NATS) ignition key IDs. Refer to BL-167, "ECM Re-communicating Function" 3. Perform EC-77, "VIN Registration". 4. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)" 5. Perform EC-78, "Accelerator Pedal Released Position Learning". 6. Perform EC-79, "Throttle Valve Closed Position Learning". 7. Perform EC-79, "Idle Air Volume Learning". >> INSPECTION END

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Revision: 2005 August **EC-167** 2006 350Z

DTC P0011, P0021 IVT CONTROL

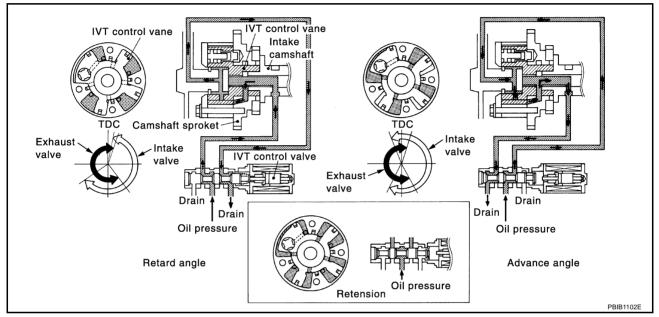
PFP:23796

DescriptionSYSTEM DESCRIPTION

NBS00045

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed and piston position		
Camshaft position sensor (PHASE)	Lingine speed and piston position	Intake valve	Intake valve timing control
Engine coolant temperature sensor	Engine coolant temperature	timing control	solenoid valve
Wheel sensor	Vehicle speed*		

^{*:} This signal is sent to the ECM through CAN Communication line



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.

CONSULT-II Reference Value in Data Monitor Mode

NBS00046

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
	Engine: After warming up	Idle	–5° - 5°CA
INT/V TIM (B1) INT/V TIM (B2)	 Shift lever: P or N (A/T), Neutral (M/T) 	When revving engine up to 2,000 rpm	Approx. 0° - 30°CA
	Air conditioner switch: OFF	quickly	
	No load		
	Engine: After warming up	Idle	0% - 2%
INT/V SOL (B1) INT/V SOL (B2)	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF 	When revving engine up to 2,000 rpm	Approx. 0% - 50%
	No load	quickly	

On Board Diagnosis Logic

NBS00047

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DTC No.	Trouble diagnosis name	Detecting condition	Possible cause
P0011 0011 (Bank 1)			Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Intake valve control solenoid valve
P0021 0021 (Bank 2)	Intake valve timing control performance	There is a gap between angle of target and phase-control angle degree.	 Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for intake valve timing control

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode.

Detected items	Engine operating condition in fail-safe mode
Intake valve timing control	The signal is not energized to the solenoid valve and the valve control does not function.

DTC Confirmation Procedure

NBS00048

CAUTION:

Always drive at a safe speed.

NOTE:

- If DTC P0011 or P0021 is displayed with DTC P0075 or P0081, first perform trouble diagnosis for DTC P0075 or P0081. Refer to EC-195, "DTC P0075, P0081 IVT CONTROL SOLENOID VALVE".
- 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 between 10V and 16V at idle.

(A) WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to the normal operating temperature.
- Maintain the following conditions for at least 6 consecutive seconds.

Hold the accelerator pedal as steady as possible.

VHCL SPEED SE	100 - 120 km/h (63 - 75 MPH)
ENG SPEED	2,000 - 4,000 rpm (A constant rotation is maintained.)
COOLANT TEMP/S	More than 60°C (140°F)
B/FUEL SCHDL	More than 7.26 msec
Shift lever	D position (A/T) 5th position (M/T)

DATA MONITOR

MONITOR

NO DTC

ENG SPEED XXX rpm

COOLAN TEMP/S XXX 'C

VHCL SPEED SE XXX km/h

B/FUEL SCHDL XXX msec

- Let engine idle for 10 seconds.
- If 1st trip DTC is detected, go to <u>EC-170</u>, "<u>Diagnostic Procedure</u>".
 If 1st trip DTC is not detected, go to next step.
- 6. Maintain the following conditions for at least 20 consecutive seconds.

ENG SPEED	1,700 - 3,175 rpm (A constant rotation is maintained.)
COOLANT TEMP/S	70 - 105°C (158 - 221°F)

Shift lever	1st or 2nd position
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)

7. If 1st trip DTC is detected, go to EC-170, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

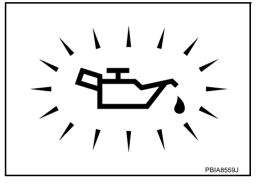
1. CHECK OIL PRESSURE WARNING LAMP

- Start engine.
- Check oil pressure warning lamp and confirm it is not illuminated.

OK or NG

OK >> GO TO 2.

NG >> Go to <u>LU-8</u>, "OIL PRESSURE CHECK".



NBS00049

2. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-172, "Component Inspection".

OK or NG

OK >> GO TO 3.

NG >> Replace intake valve timing control solenoid valve.

3. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-401, "Component Inspection".

OK or NG

OK >> GO TO 4.

NG >> Replace crankshaft position sensor (POS).

4. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-411, "Component Inspection".

OK or NG

OK >> GO TO 5.

NG >> Replace camshaft position sensor (PHASE).

5. CHECK CAMSHAFT (INT)

Check the following.

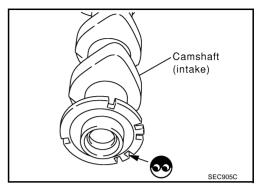
- Accumulation of debris to the signal plate of camshaft rear end
- Chipping signal plate of camshaft rear end

OK or NG

OK >> GO TO 6.

NG >

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



6. CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

Yes or No

Yes >> Check timing chain installation. Refer to EM-59, "TIMING CHAIN".

No >> GO TO 7.

7. CHECK LUBRICATION CIRCUIT

Refer to EM-103, "INSPECTION AFTER REMOVAL".

OK or NG

OK >> GO TO 8.

NG >> Clean lubrication line.

8. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

For Wiring Diagram, refer to EC-396 for CKP sensor (POS) and EC-404 for CMP sensor (PHASE).

>> INSPECTION END

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Component Inspection INTAKE VALVE TIMING CONTROL SOLENOID VALVE

NBS0004A

- 1. Disconnect intake valve timing control solenoid valve harness connector.
- Check resistance between intake valve timing control solenoid valve as follows.

Terminal	Resistance
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]
1 or 2 and ground	$\stackrel{\scriptstyle \sim \; \Omega}{\text{(Continuity should not exist.)}}$

If NG, replace intake valve timing control solenoid valve. If OK, go to next step.

- 3. Remove intake valve timing control solenoid valve.
- Provide 12V DC between intake valve timing control solenoid valve terminals and then interrupt it. Make sure that the plunger moves as shown in the figure.

CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

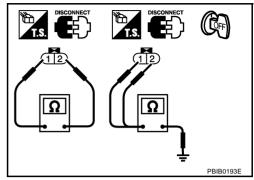
If NG, replace intake valve timing control solenoid valve.

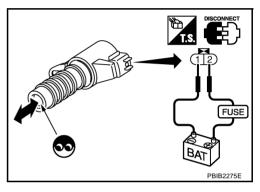
NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Removal and Installation INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EM-59, "TIMING CHAIN".





NBS0004B

DTC P0014 P0024 EVT CONTROL

PFP:23795

Description SYSTEM DESCRIPTION

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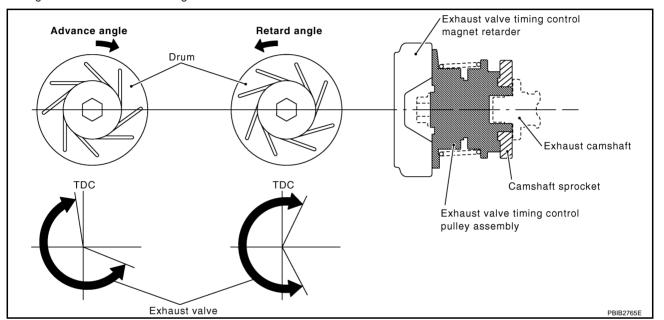
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Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed and piston position			
Camshaft position sensor (PHASE)	Lingine speed and pistori position	Exhaust valve timing control	Exhaust valve timing control magnet retarder	
Engine coolant temperature sensor	Engine coolant temperature			
Exhaust valve timing control position sensor	Exhaust valve timing signal			
Wheel sensor	Vehicle speed*			

^{*:} This signal is sent to the ECM through CAN Communication line



This mechanism magnetically controls cam phases continuously with the fixed operating angle of the exhaust 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 exhaust valve timing control magnet retarder depending on driving status. This makes it possible to control the shut/open timing of the exhaust valve to increase engine torque and output in a range of high engine speed.

CONSULT-II Reference Value in Data Monitor Mode

NBS0004D

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Specification data are reference values.

MONITOR ITEM	CON	SPECIFICATION	
-	Engine: After warming up	Idle	−5° - 5°CA
EXH/V TIM B1	Shift lever: Neutral		
EXH/V TIM B2	Air conditioner switch: OFF	Engine speed: Above 1,500 rpm	Approx. 0° - 30°CA
	No load		
	Engine: After warming up	Idle	0% - 2%
EX V/T DTY B1 EX V/T DTY B2	Shift lever: Neutral		
	Air conditioner switch: OFF	Engine speed: Above 1,500 rpm	Approx. 0% - 70%
	No load		

On Board Diagnosis Logic

NBS0004E

DTC No.	Trouble diagnosis name	Detecting condition	Possible cause
P0014 0014 (Bank 1)			 Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Exhaust valve timing control position sensor
P0024 0024 (Bank 2)	Exhaust valve timing control performance	There is a gap between angle of target and phase-control angle degree.	 Exhaust valve control magnet retarder Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Exhaust valve timing control pulley assembly

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode.

Detected items	Engine operating condition in fail-safe mode
Exhaust valve timing control	The signal is not energized to the exhaust valve timing control magnet retarder and the magnet retarder control does not function.

DTC Confirmation Procedure

NBS0004F

CAUTION:

Always drive at a safe speed.

NOTE

- If DTC P0014 or P0024 is displayed with DTC P0078, P0084, P1078 or P1084, first perform trouble diagnosis for DTC P0078, P0084 or P1078, P1084. Refer to EC-203, "DTC P0078 P0084 EVT CONTROL P0078 P0084 EVT CONTRO
- If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

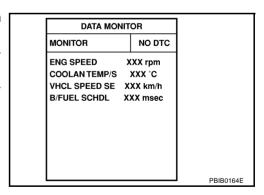
TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 10V and 16V at idle.

(II) WITH CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to the normal operating tempera-
- Maintain the following conditions for at least 6 consecutive seconds.
 - Hold the accelerator pedal as steady as possible.

VHCL SPEED SE	100 - 120 km/h (63 - 75 MPH)
ENG SPEED	500 - 2,000 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 60°C (140°F)
B/FUEL SCHDL	More than 7.26 msec
Shift lever	5th position



- 4. Let engine idle for 10 seconds.
- If 1st trip DTC is detected, go to <u>EC-175</u>, "<u>Diagnostic Procedure</u>".
 If 1st trip DTC is not detected, go to next step.
- 6. Maintain the following conditions for at least 20 consecutive seconds.

ENG SPEED	2,000 - 2,950 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	70 - 105°C (158 - 221°F)

Shift lever	1st or 2nd position
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)

Α

7. If 1st trip DTC is detected, go to EC-175, "Diagnostic Procedure".

EC

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

NBS0004G

1. INSPECTION START

Do you have CONSULT-II?

Yes or No

Yes >> GO TO 2. No >> GO TO 3. Е

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2. CHECK FUNCTION OF EXHAUST VALVE TIMING CONTROL -I

(I) With CONSULT-II

1. Turn ignition switch ON.

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- Select "EXH V/T ANGLE" in "ACTIVE TEST" mode with CON-SULT-II.
- 3. Start engine and keep the engine speed at 2,500 rpm, then touch "START".
- 4. Make sure that the values of "EXH/V TIM B1" and "EXH/V TIM B2" change when touching "UP" or "DOWN".

OK or NG

OK >> GO TO 12. NG >> GO TO 4.

	ACTIV	ETE	ST		_
EXTV	/T ANGL	.E		0°	
MONITOR					
EN	G SPPEI)	X	XXrpm	
EXH	I/V TIM E	31	7	XXXCA	
EXH	I/V TIM E	32	7	XXXCA	
EX V/T DTY B1			XXX%		
EX V/T DTY B2			XXX%		
υ	P		DO	WN	
MODE	BACK	LIG	нт	COPY	PBIB2761E
					PBIB2761E

3. CHECK FUNCTION OF EXHAUST VALVE TIMING CONTROL -II

Without CONSULT-II

- 1. Start engine and rev engine up above 1,500 rpm.
- 2. Read the voltage signal between ECM terminal 8, 9 and ground with oscilloscope.
- 3. Verify that the oscilloscope screen shows the signal wave as shown below.



PBIB1790E

OK or NG

OK >> GO TO 12. NG >> GO TO 4.

4. CHECK EXHAUST VALVE TIMING CONTROL MAGNET RETARDER

Refer to EC-177, "Component Inspection".

OK or NG

OK >> GO TO 6. NG >> GO TO 5.

5. REPLACE EXHAUST VALVE TIMING CONTROL MAGNET RETARDER

- 1. Replace exhaust valve timing control magnet retarder.
- 2. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".

>> INSPECTION END

6. CHECK EXHAUST VALVE TIMING CONTROL POSITION SENSOR

Refer to EC-546, "Component Inspection".

OK or NG

OK >> GO TO 7.

NG >> Replace exhaust valve timing control position sensor.

7. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-401, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace crankshaft position sensor (POS).

8. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-411, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Replace camshaft position sensor (PHASE).

9. CHECK CAMSHAFT (EXH)

Check the following.

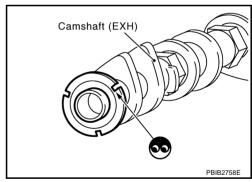
- Accumulation of debris to the signal plate of camshaft rear end
- Chipping signal plate of camshaft rear end

OK or NG

OK >> GO TO 10.

NG >> Remove

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



10. CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned. Are there any service records that may cause timing chain misaligned?

Yes or No

Yes >> Check timing chain installation. Refer to EM-59, "TIMING CHAIN".

No >> GO TO 11.

11. REPLACE EXHAUST VALVE TIMING CONTROL PULLEY ASSEMBLY

- Replace exhaust valve timing control pulley assembly and exhaust valve timing control magnet retarder. Refer to <u>EM-101</u>, "<u>CAMSHAFT</u>" and <u>EM-47</u>, "<u>FRONT TIMING CHAIN CASE</u>".
- 2. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".

>> INSPECTION END

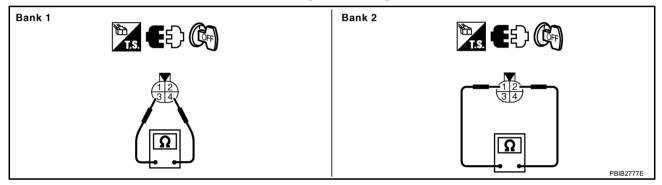
12. CHECK INTERMITTENT INCIDENT

Refer to <u>EC-153</u>, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". For Wiring Diagram, refer to <u>EC-396</u> for CKP sensor (POS) and <u>EC-404</u> for CMP sensor (PHASE).

>> INSPECTION END

Component Inspection EXHAUST VALVE TIMING CONTROL MAGNET RETARDER

- 1. Disconnect exhaust valve timing control magnet retarder harness connector.
- 2. Check resistance between exhaust valve timing control magnet retarder terminals as follows.



Bank	Terminal	Resistance
1	3 and 4	9.0 - 11.0Ω [at 20°C (68°F)]
2	1 and 2	9.0 - 11.022 [at 20 C (00 1)]

- 3. If NG, replace exhaust valve timing control magnet retarder and go to the next step.
- 4. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".

Removal and Installation EXHAUST VALVE TIMING CONTROL MAGNET RETARDER

Refer to EM-47, "FRONT TIMING CHAIN CASE".

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DTC P0031, P0032, P0051, P0052 A/F SENSOR 1 HEATER

PFP:22693

Description SYSTEM DESCRIPTION

NBS000B6

Sensor	Input Signal to ECM	ECM function	Actuator
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Air fuel ratio (A/F) sensor 1 heater	Air fuel ratio (A/F) sensor 1 heater
Mass air flow sensor Amount of intake air		control	

The ECM performs ON/OFF duty control of the A/F sensor 1 heater corresponding to the engine operating condition to keep the temperature of A/F sensor 1 element at the specified range.

CONSULT-II Reference Value in Data Monitor Mode

NBS000B7

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
A/F S1 HTR (B1) A/F S1 HTR (B2)	Engine: After warming up, idle the engine	0 - 100%

On Board Diagnosis Logic

NBS000B8

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0031 0031 (Bank 1)	Air fuel ratio (A/F) sensor	The current amperage in the air fuel ratio (A/F) sensor 1 heater circuit is out of the normal range.	Harness or connectors (The A/F sensor 1 heater circuit is	
P0051 0051 (Bank 2)	low input	(An excessively low voltage signal is sent to ECM through the air fuel ratio (A/F) sensor 1 heater.)	open or shorted.)Air fuel ratio (A/F) sensor 1 heater	
P0032 0032 (Bank 1)	Air fuel ratio (A/F) sensor	The current amperage in the air fuel ratio (A/F) sensor 1 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the air fuel ratio (A/F) sensor 1 heater.)	Harness or connectors (The A/F sensor 1 heater circuit is	
P0052 0052 (Bank 2)	high input		shorted.)Air fuel ratio (A/F) sensor 1 heater	

DTC Confirmation Procedure

NBS000B9

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 between 10.5V and 16V at idle.

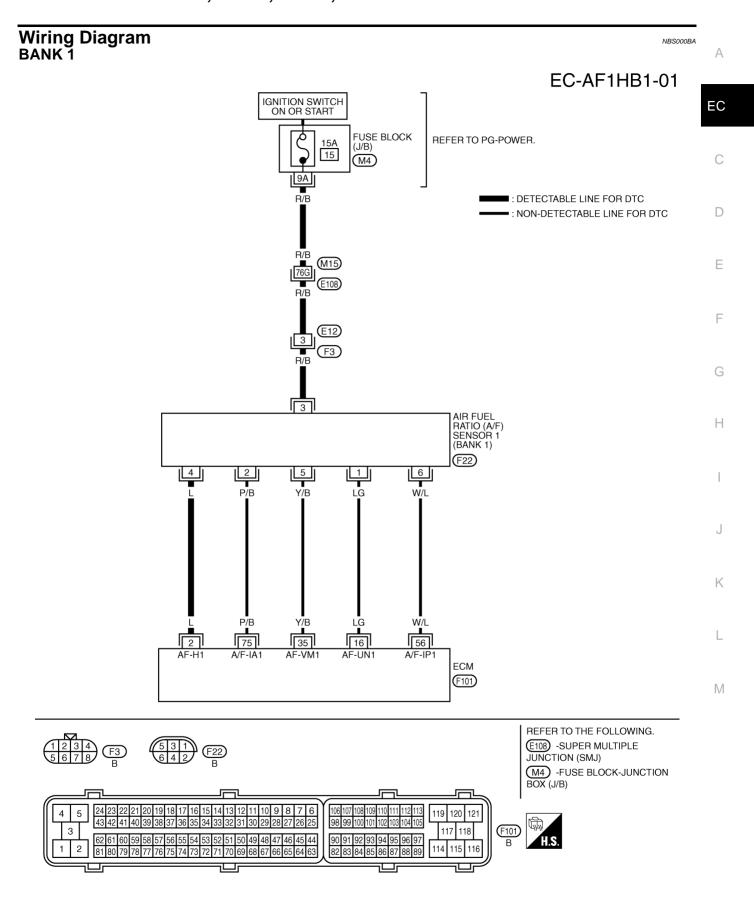
(P) WITH CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and let it idle for at least 10 seconds.
- If 1st trip DTC is detected, go to <u>EC-183, "Diagnostic Procedure"</u>

DATA MONITOR		
MONITOR	NO DTC	
ENG SPEED >	(XX rpm	
		SEF058Y

WITH GST

Follow the procedure "WITH CONSULT-II" above.



TBWT1216E

DTC P0031, P0032, P0051, P0052 A/F SENSOR 1 HEATER

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

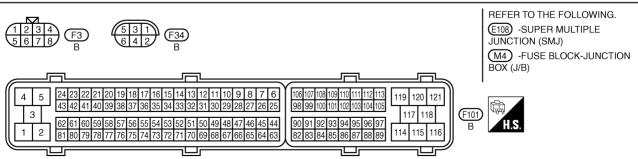
CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	LG	A/F sensor 1 (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 3.1V
35	Y/B			Approximately 2.6V
56	W/L			Approximately 2.3V
75	P/B			Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

DTC P0031, P0032, P0051, P0052 A/F SENSOR 1 HEATER **BANK 2** Α EC-AF1HB2-01 IGNITION SWITCH ON OR START EC FUSE BLOCK REFER TO PG-POWER. 15A (J/B) 15 $\overline{(M4)}$ С : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC D R/B M15 Е R/B **E108 E12** 3 R/B (F3) G 3 AIR FUEL RATIO (A/F) SENSOR 1 (BANK 2) Н (F34) 5 1 6 24 57 58 76 77 AF-VM2 AF-UN2 A/F-IP2 A/F-IA2 ECM (F101) M



TBWT1217E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
57	G			Approximately 2.6V
58	W	A/F sensor 1 (bank 2) [Engine is running] • Warm-up condition		Approximately 2.3V
76	Υ		Idle speed	Approximately 3.1V
77	Р			Approximately 2.3V

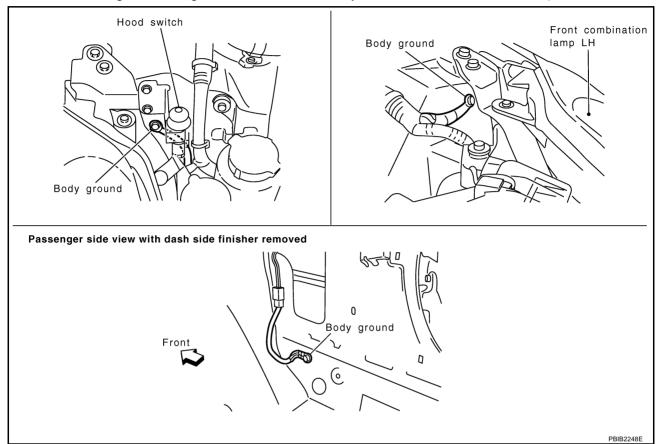
^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

NBS000BB

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

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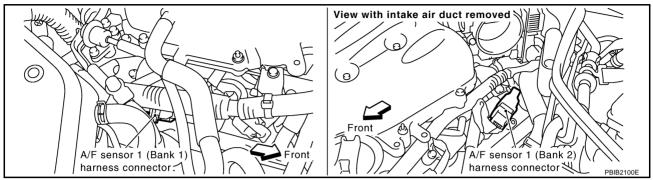
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2. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

Disconnect air fuel ratio (A/F) sensor 1 harness connector.

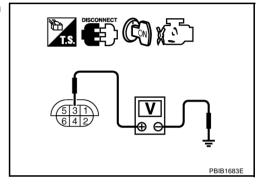


- 2. Turn ignition switch ON.
- Check voltage between A/F sensor 1 terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M15, E108
- Harness connectors E12, F3
- Fuse block (J/B) connector M4
- 15A fuse
- Harness for open or short between A/F sensor 1 and fuse
 - >> Repair or replace harness or connectors.

4. CHECK A/F SENSOR 1 HEATER OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness continuity between ECM terminal 2 (bank 1) or 24 (bank 2) and A/F sensor 1 terminal 4. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 5.

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

5. CHECK A/F SENSOR 1 HEATER

Refer to EC-185, "Component Inspection".

OK or NG

OK >> GO TO 6. NG >> GO TO 7.

6. CHECK INTERMITTENT INCIDENT

Perform EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 7.

NG >> Repair or replace.

7. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning A/F sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads (using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12) and approved anti-seize lubricant.

>> INSPECTION END

Component InspectionAIR FUEL RATIO (A/F) SENSOR 1 HEATER

Check resistance between terminals 3 and 4.

Resistance: 2.3 - 4.3 Ω [at 25°C (77°F)]

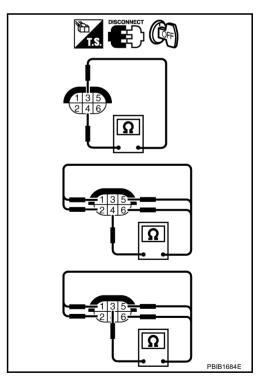
Check continuity between terminals 3 and 1, 2, 5, 6, terminals 4 and 1, 2, 5, 6.

Continuity should not exist.

If NG, replace the A/F sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Heated Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.



Removal and Installation AIR FUEL RATIO (A/F) SENSOR 1

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST".

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DTC P0037, P0038, P0057, P0058 HO2S2 HEATER

PFP:226A0

Description SYSTEM DESCRIPTION

NBS0004J

Sensor	Input signal to ECM	ECM function	Actuator	
Camshaft position sensor (PHASE)	Engine speed			
Crankshaft position sensor (POS)	Engine speed	Heated oxygen sensor 2		
Engine coolant temperature sensor	Engine coolant temperature		Heated oxygen sensor 2 heater	
Mass air flow sensor	Amount of intake air			

The ECM performs ON/OFF control of the heated oxygen sensor 2 heater corresponding to the engine speed, amount of intake air and engine coolant temperature.

OPERATION

Engine speed rpm	Heated oxygen sensor 2 heater
Above 3,600	OFF
Below 3,600 rpm after the following conditions are met.	
Engine: After warming up	ON
 Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	

CONSULT-II Reference Value in Data Monitor Mode

NBS0004K

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
	Engine speed: Below 3,600 rpm after the following conditions are met.	
LICOCC LITT (D4)	- Engine: After warming up	ON
HO2S2 HTR (B1) HO2S2 HTR (B2)	 Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	
	Engine speed: Above 3,600 rpm	OFF

On Board Diagnosis Logic

NBS0004L

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0037 0037 (Bank 1)	Heated oxygen	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range.	Harness or connectors (The heated oxygen sensor 2 heater circuit is)	
P0057 0057 (Bank 2) sensor 2 heater control circuit low		(An excessively low voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	open or shorted.) • Heater oxygen sensor 2 heater	
P0038 0038 (Bank 1)	Heated oxygen	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range.	Harness or connectors (The heated oxygen sensor 2 heater circuit is	
P0058 0058 (Bank 2)	sensor 2 heater control circuit high	(An excessively high voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	shorted.) • Heater oxygen sensor 2 heater	

DTC Confirmation Procedure

NBS0004M

NOTE:

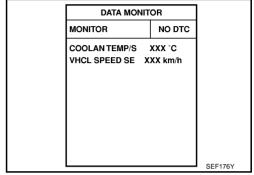
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 11V and 16V at idle.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start the engine and keep the engine speed between 3,500 rpm and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. If 1st trip DTC is detected, go to EC-192, "Diagnostic Procedure"



WITH GST

Follow the procedure "WITH CONSUT-II" above.

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Wiring Diagram BANK 1 NBS0004N EC-02H2B1-01 IGNITION SWITCH ON OR START : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC FUSE BLOCK REFER TO PG-POWER. (J/B) 15 $\overline{(M4)}$ R/B M15
76G E108
R/B E12
3 F3
R/R R/B R/B 2 HEATED OXYGEN SENSOR 2 (BANK 1) (F11) 3 4 P/B OR B/Y B/Y OR 25 74 78 ECM (F101) REFER TO THE FOLLOWING. 1 2 3 4 5 6 7 8 F3 B (E108) -SUPER MULTIPLE JUNCTION (SMJ) M4) -FUSE BLOCK-JUNCTION BOX (J/B)

TBWT1196E

90 91 92 93 94 95 96 97

82 83 84 85 86 87 88 89

5 3

1 2 119 120

114 115

117 118

116

(F101)

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
25 P/B	P/B	Heated oxygen sensor 2 heater (bank 1)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: after warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - 1.0V
			[Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)
74	OR	Heated oxygen sensor 2 (bank 1)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V

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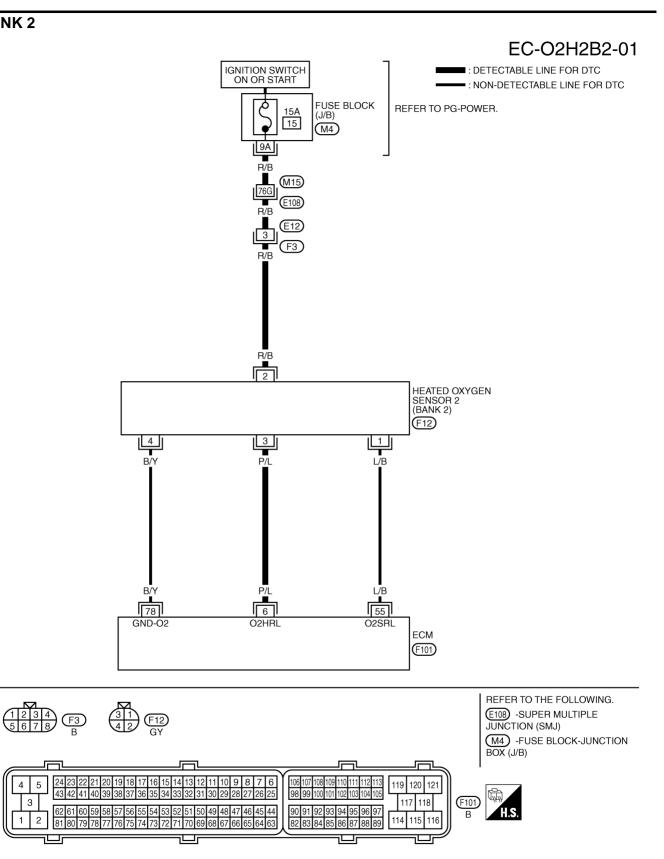
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BANK 2

3



TBWT1197E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)	EC
6	P/L	Heated oxygen sensor 2 heater (bank 2)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: after warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - 1.0V	C D
			[Ignition switch: ON]Engine stopped[Engine is running]Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)	F
25	P/B	Heated oxygen sensor 2 heater (bank 1)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: after warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - 1.0V	G
			[Ignition switch: ON]Engine stopped[Engine is running]Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)	J
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V	 K

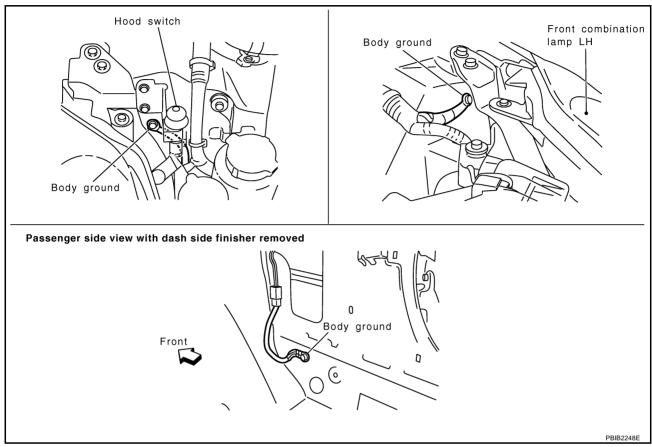
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Diagnostic Procedure

NBS00040

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



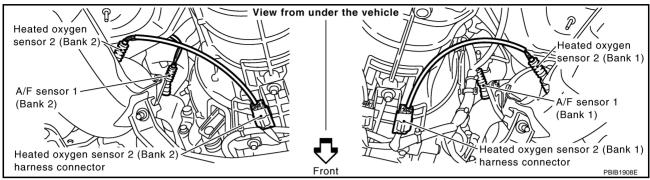
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK HO2S2 POWER SUPPLY CIRCUIT

Disconnect heated oxygen sensor 2 harness connector.

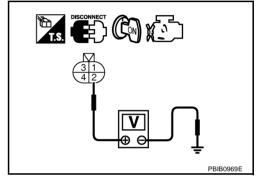


- Turn ignition switch ON.
- Check voltage between HO2S2 terminal 2 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. >> GO TO 3. NG



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M15, E108
- Harness connectors E12, F3
- Fuse block (J/B) connector M4
- 15A fuse
- Harness for open or short between heated oxygen sensor 2 and fuse
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S2 OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness continuity between ECM terminal and HO2S2 terminal as follows. Refer to Wiring Diagram.

DTC	Tern	ninals	Bank
ыс	ECM	Sensor	Dalik
P0037, P0038	25	3	1
P0057, P0058	6	3	2

Continuity should exist.

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

OK or NG

OK >> GO TO 5.

Revision: 2005 August

NG

EC

2006 350Z

EC-193

5. CHECK HEATED OXYGEN SENSOR 2 HEATER

Refer to EC-194, "Component Inspection".

OK or NG

OK >> GO TO 6.

NG >> Replace malfunctioning heated oxygen sensor 2.

6. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection HEATED OXYGEN SENSOR 2 HEATER

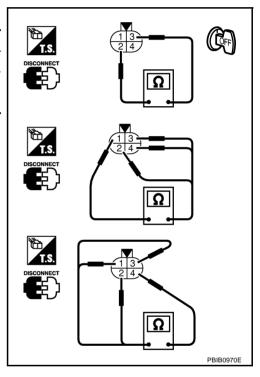
1. Check resistance between HO2S2 terminals as follows.

Terminal No.	Resistance
2 and 3	5.0 - 7.0 Ω [at 25°C (77°F)]
1 and 2, 3, 4	Ω
4 and 1, 2, 3	(Continuity should not exist)

2. If NG, replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.



Removal and Installation HEATED OXYGEN SENSOR 2

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST" .

NBS0004Q

NBS0004P

DTC P0075, P0081 IVT CONTROL SOLENOID VALVE

Component Description

PFP:23796

NBS000BR

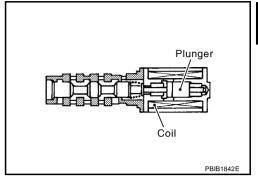
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The intake valve timing control solenoid valve changes the oil amount and direction of flow through intake valve timing control unit or stops oil flow.

The longer pulse width advances valve angle.

The shorter pulse width retards valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the intake valve angle at the control position.



CONSULT-II Reference Value in Data Monitor Mode

NRSOORS

Specification data are reference values.

MONITOR ITEM	CON	IDITION	SPECIFICATION
	Engine: After warming up	Idle	0% - 2%
INT/V SOL (B1) INT/V SOL (B2)	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No-load 	When revving engine up to 2,000 rpm quickly	Approx. 0% - 50%

On Board Diagnosis Logic

NBS000BT

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0075 0075 (Bank 1) P0081 0081 (Bank 2)	Intake valve timing control solenoid valve circuit	An improper voltage is sent to the ECM through intake valve timing control solenoid valve.	Harness or connectors (The intake valve timing control solenoid valve circuit is open or shorted.) Intake valve timing control solenoid valve

DTC Confirmation Procedure

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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.

(P) WITH CONSULT-II

- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II. 2.
- Start engine and let it idle for 5 seconds.
- If 1st trip DTC is detected, go to EC-200, "Diagnostic Procedure"

DATA	MONITOR
MONITOR	NO DTC
ENG SPEED	XXX rpm
	SEF058

WITH GST

Following the procedure "WITH CONSULT-II" above.

EC-195 Revision: 2005 August 2006 350Z

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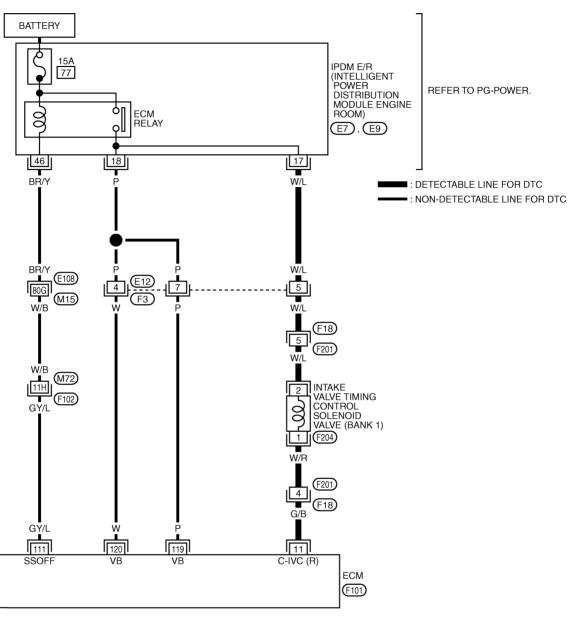
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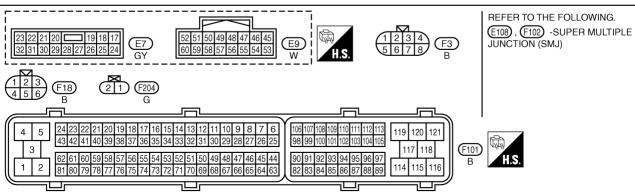
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Wiring Diagram BANK 1

NBS000BV

EC-IVCB1-01





TBWT1221E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
		Intake valve timing control solenoid valve (bank 1)	[Engine is running]Warm-up conditionIdle speed	BATTERY VOLTAGE (11 - 14V)
11	G/B		 [Engine is running] Warm-up condition When revving engine up to 2,000 rpm quickly 	7 - 12V★ → 10.0 V/Div PBIB1790E
111	GY/L	ECM relay (Self shut-off)	[Engine is running] [Ignition switch: OFF] ● For a few seconds after turning ignition switch OFF [Ignition switch: OFF]	0 - 1.5V BATTERY VOLTAGE
119	P W	Power supply for ECM	 More than a few seconds after turning ignition switch OFF [Ignition switch: ON] 	(11 - 14V) BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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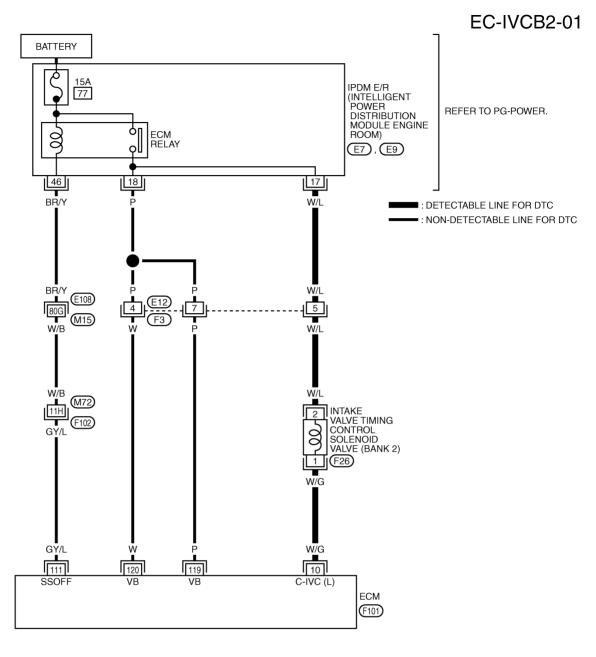
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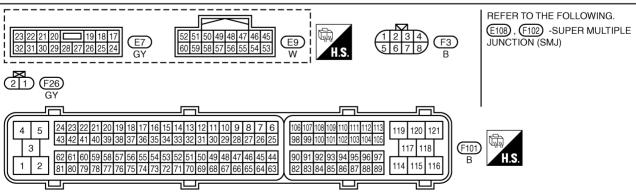
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BANK 2





TBWT1222E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
		Intake valve timing control solenoid valve (bank 2)	[Engine is running]Warm-up conditionIdle speed	BATTERY VOLTAGE (11 - 14V)
10	W/G		 [Engine is running] Warm-up condition When revving engine up to 2,000 rpm quickly 	7 - 12V*
111	GY/L	ECM relay (Self shut-off)	 [Engine is running] [Ignition switch: OFF] For a few seconds after turning ignition switch OFF [Ignition switch: OFF] More than a few seconds after turning ignition switch OFF 	0 - 1.5V BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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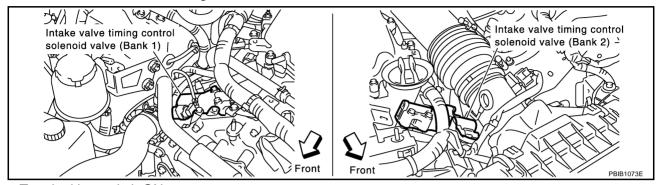
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Diagnostic Procedure

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1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.

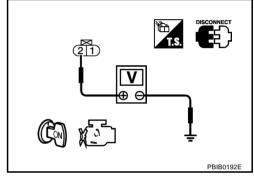


- 3. Turn ignition switch ON.
- 4. Check voltage between intake valve timing control solenoid valve terminal 2 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 3. NG >> GO TO 2.



2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness connectors F18, F201 (bank 1)
- Harness for open or short between intake valve timing control solenoid valve and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness continuity between ECM terminal 11 (bank 1) or 10 (bank 2) and intake valve timing control solenoid valve terminal 1. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 5. NG >> GO TO 4.

4. DETECT MALFUNCTIONING PART Check the following. Harness connectors F18, F201 (bank 1) EC Harness for open and short between ECM and intake valve timing control solenoid valve >> Repair open circuit or short to ground or short to power in harness or connectors. 5. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE Refer to EC-202, "Component Inspection". OK or NG OK >> GO TO 6. NG >> Replace intake valve timing control solenoid valve. 6. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". >> INSPECTION END

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EC-201 2006 350Z Revision: 2005 August

Component Inspection INTAKE VALVE TIMING CONTROL SOLENOID VALVE

NBS000BX

- 1. Disconnect intake valve timing control solenoid valve harness connector.
- Check resistance between intake valve timing control solenoid valve as follows.

Terminal	Resistance
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]
1 or 2 and ground	$\stackrel{\scriptstyle \infty \; \Omega}{\text{(Continuity should not exist.)}}$

If NG, replace intake valve timing control solenoid valve. If OK, go to next step.

- 3. Remove intake valve timing control solenoid valve.
- Provide 12V DC between intake valve timing control solenoid valve terminals and then interrupt it. Make sure that the plunger moves as shown in the figure.

CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

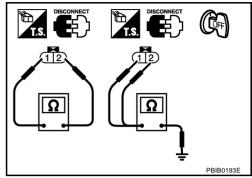
If NG, replace intake valve timing control solenoid valve.

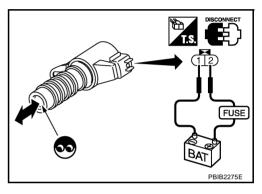
NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Removal and Installation INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EM-59, "TIMING CHAIN".





NBS000BY

DTC P0078 P0084 EVT CONTROL MAGNET RETARDER

PFP:23795

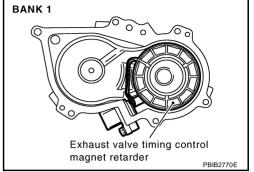
Component Description

NBS0004R

Exhaust valve timing control magnet retarder controls the shut/open timing of the exhaust valve by ON/OFF pulse duty signals sent from the ECM.

The longer pulse width retards valve angle.

The shorter pulse width advances valve angle.



CONSULT-II Reference Value in Data Monitor Mode

NRS0004S

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
	Engine: After warming up	Idle	0% - 2%
EX V/T DTY B1	Shift lever: Neutral		
EX V/T DTY B2	 Air conditioner switch: OFF 	Engine speed: Above 1,500 rpm	Approx. 0% - 70%
	No load		

On Board Diagnosis Logic

NBS0004T

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0078 0078 (Bank 1)	Exhaust valve timing con- trol magnet retarder cir-	An improper voltage is sent to the ECM through exhaust valve timing control magnet	Harness or connectors (Exhaust valve timing control magnet retarder circuit is open or shorted.)
P0084 0084 (Bank 2)	cuit	retarder.	Exhaust valve timing control magnet retarder

DTC Confirmation Procedure

NBS0004U

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.

(A) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 5 seconds.
- 4. If 1st trip DTC is detected, go to EC-208, "Diagnostic Procedure"

	DATA MONIT		
	MONITOR	NO DTC	
	ENG SPEED X	XX rpm	
L			SEF058Y

WITH GST

Following the procedure "WITH CONSULT-II" above.

Revision: 2005 August **EC-203** 2006 350Z

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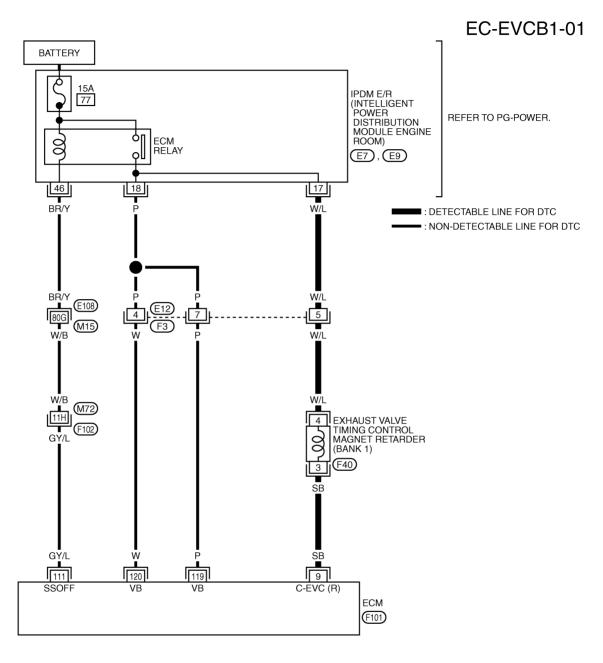
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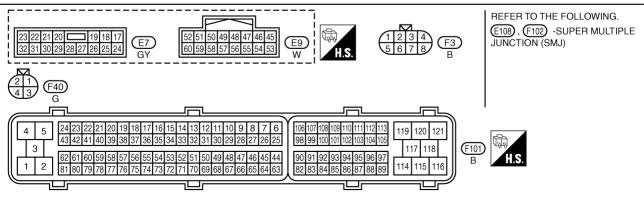
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Wiring Diagram BANK 1





TBWT1198E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
		Exhaust valve timing control magnet retarder (bank 1)	[Engine is running]Warm-up conditionIdle speed	BATTERY VOLTAGE (11 - 14V)
9	SB		[Engine is running]Warm-up conditionEngine speed: Above 1,500 rpm	7 - 12V*
111	GY/L	ECM relay (Self shut-off)	 [Engine is running] [Ignition switch: OFF] For a few seconds after turning ignition switch OFF [Ignition switch: OFF] More than a few seconds after turning ignition switch OFF 	0 - 1.5V BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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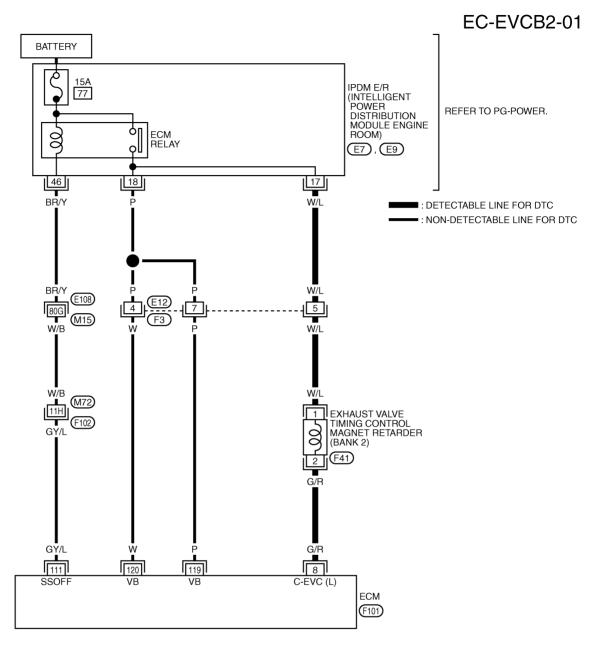
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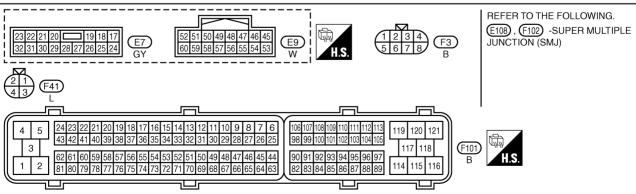
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BANK 2





TBWT1199E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
		Exhaust valve timing control magnet retarder (bank 2)	[Engine is running]Warm-up conditionIdle speed	BATTERY VOLTAGE (11 - 14V)
8	G/R		[Engine is running]Warm-up conditionEngine speed: Above 1,500 rpm	7 - 12V★ → 10.0 V/Div PBiB1790E
111	GY/L	GY/L ECM relay (Self shut-off)	[Engine is running][Ignition switch: OFF]For a few seconds after turning ignition switch OFF	0 - 1.5V
			[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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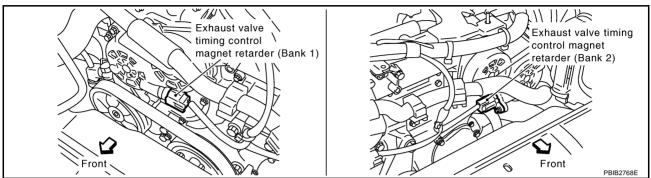
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Diagnostic Procedure

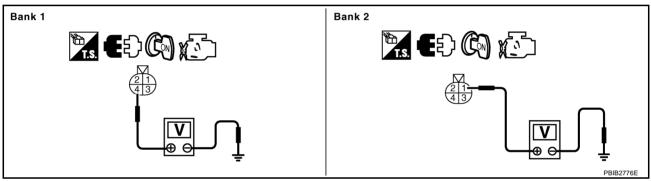
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1. CHECK EXHAUST VALVE TIMING CONTROL MAGNET RETARDER POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect exhaust valve timing control magnet retarder harness connector.



- 3. Turn ignition switch ON.
- 4. Check voltage between exhaust valve timing control magnet retarder terminal 4 (bank 1) or 1 (bank 2) and ground with CONSULT-II or tester.



Voltage: Battery voltage

OK or NG

OK >> GO TO 3. NG >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

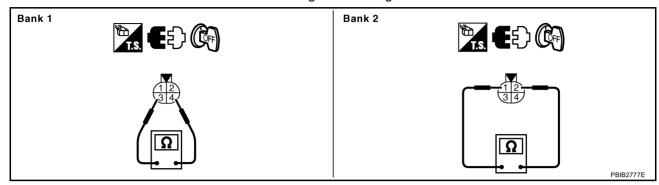
- Harness connectors E12, F3
- Harness for open or short between exhaust valve timing control magnet retarder and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK EXHAUST VALVE TIMING CONTROLMAGNET RETARDER OUTPUT SIGNAL CIRCUIT FOR **OPEN AND SHORT** Turn ignition switch OFF. 1. EC 2. Disconnect ECM harness connector. Check harness continuity between the following; ECM terminal 9 and exhaust valve timing control magnet retarder terminal 3 (bank 1), ECM terminal 8 and exhaust valve timing control magnet retarder terminal 2 (bank 2). Refer to Wiring Diagram. Continuity should exist. \Box 4. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 4. F NG >> Repair open circuit or short to ground or short to power in harness or connectors. 4. CHECK EXHAUST VALVE TIMING CONTROL MAGNET RETARDER Refer to EC-210, "Component Inspection". OK or NG OK >> GO TO 6. NG >> GO TO 5. 5. REPLACE EXHAUST VALVE TIMING CONTROL MAGNET RETARDER Н Replace exhaust valve timing control magnet retarder. Perform EC-78. "Exhaust Valve Timing Control Learning (M/T Models)". >> INSPECTION END 6. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". >> INSPECTION END

Component Inspection EXHAUST VALVE TIMING CONTROL MAGNET RETARDER

NBS0004X

- 1. Disconnect exhaust valve timing control magnet retarder harness connector.
- 2. Check resistance between exhaust valve timing control magnet retarder terminals as follows.



Bank	Terminal	Resistance	
1	3 and 4	9.0 - 11.0Ω [at 20°C (68°F)]	
2	1 and 2	9.0 - 11.012 [at 20 °C (66 °F)]	

- 3. If NG, replace exhaust valve timing control magnet retarder and go to the next step.
- 4. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".

Removal and Installation EXHAUST VALVE TIMING CONTROL MAGNET RETARDER

NBS0004Y

Refer to EM-47, "FRONT TIMING CHAIN CASE".

DTC P0101 MAF SENSOR

PFP:22680

Component Description

NBS0004Z

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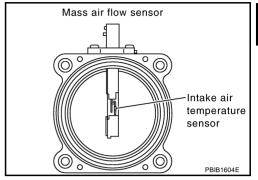
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The mass air flow sensor is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire is to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



CONSULT-II Reference Value in Data Monitor Mode

NBS00050

Specification data are reference values.

MONITOR ITEM	CON	NDITION	SPECIFICATION
MAS A/F SE-B1	See EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE".		
	Engine: After warming up	Idle	5% - 35%
CAL/LD VALUE	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,500 rpm	5% - 35%
	Engine: After warming up	Idle	2.0 - 6.0 g·m/s
MASS AIRFLOW	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,500 rpm	7.0 - 20.0 g·m/s

On Board Diagnosis Logic

NBS00051

DTC No.	Trouble diagnosis name		DTC detecting condition	Possible cause
	Mass air flow sensor cir-	A)	A high voltage from the sensor is sent to ECM under light load driving condition.	 Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor EVAP control system pressure sensor Intake air temperature sensor
P0101 0101	cuit range/performance problem	B)	A low voltage from the sensor is sent to ECM under heavy load driving condition.	 Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor EVAP control system pressure sensor Intake air temperature sensor

DTC Confirmation Procedure

NBS00052

Perform PROCEDURE FOR MALFUNCTION A first.

If the DTC cannot be confirmed, perform PROCEDURE FOR MALFUNCTION B.

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.

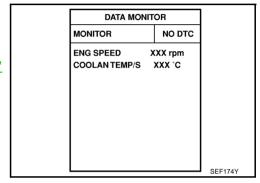
PROCEDURE FOR MALFUNCTION A

NOTE:

If engine will not start or stops soon, wait at least 10 seconds with engine stopped (Ignition switch ON) instead of running engine at idle speed.

(P) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Run engine for at least 10 seconds at idle speed.
- 5. If 1st trip DTC is detected, go to EC-215, "Diagnostic Procedure"



With GST

Follow the procedure "With CONSULT-II" above.

PROCEDURE FOR MALFUNCTION B

CAUTION:

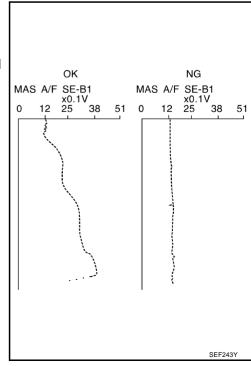
Always drive vehicle at a safe speed.

(P) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Start engine and warm it up to normal operating temperature.

 If engine cannot be started, go to EC-215, "Diagnostic Procedure".
- Select "DATA MONITOR" mode with CONSULT-II.
- 4. Check the voltage of "MAS A/F SE-B1" with "DATA MONITOR".
- 5. Increases engine speed to about 4,000 rpm.
- 6. Monitor the linear voltage rise in response to engine speed increases.

If NG, go to EC-215, "Diagnostic Procedure". If OK, go to following step.



Maintain the following conditions for at least 10 consecutive seconds.

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

If 1st trip DTC is detected, go to <u>EC-215, "Diagnostic Procedure"</u>

DATA MONITOR		
MONITOR	NO DTC	
ENG SPEED 3 VHCL SPEED SE 3 THRTL SEN 1 THRTL SEN 2	XXX rpm XXX km/h XXX V XXX V	
		PBIB0199E

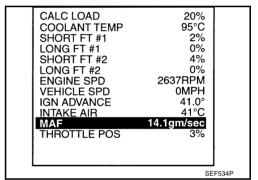
NBS00053

Overall Function Check PROCEDURE FOR MALFUNCTION B

Use this procedure to check the overall function of the mass air flow sensor circuit. During this check, a 1st trip DTC might not be confirmed.

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Select Service \$01 with GST.
- 3. Check the mass air flow sensor signal with Service \$01.
- 4. Check for linear mass air flow sensor signal value rise in response to increases to about 4,000 rpm in engine speed.
- 5. If NG, go to EC-215, "Diagnostic Procedure".



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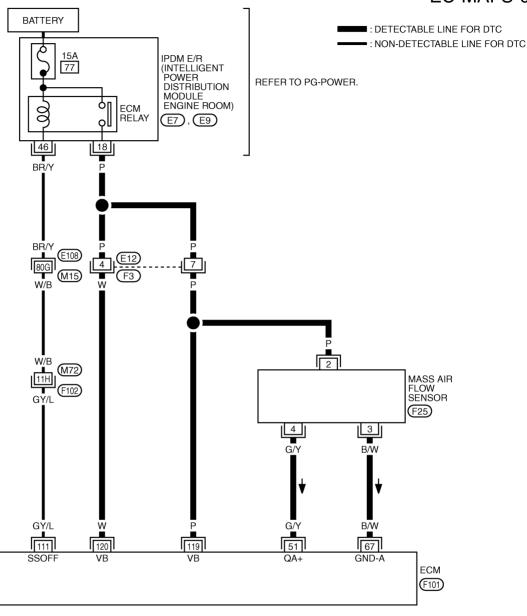
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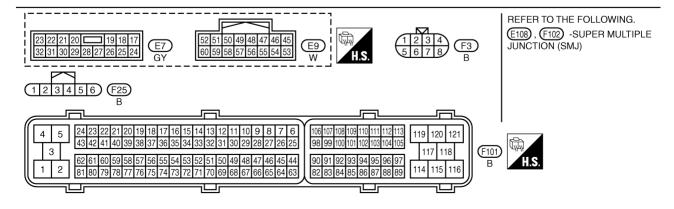
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Wiring Diagram NBS00054

EC-MAFS-01





TBWT1200E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

		•		
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
51 0	G/Y	Mass air flow sensor	[Engine is running]Warm-up conditionIdle speed	0.9 - 1.2V
			[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.5 - 1.9V
67	B/W	Sensor ground	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V
111	GY/L	ECM relay (Self shut-off)	 [Engine is running] [Ignition switch: OFF] For a few seconds after turning ignition switch OFF 	0 - 1.5V
			[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

1. INSPECTION START

Which malfunction (A or B) is duplicated?

A or B

A >> GO TO 3.

B >> GO TO 2.

2. CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct and intake manifold

OK or NG

OK >> GO TO 3.

NG >> Reconnect the parts.

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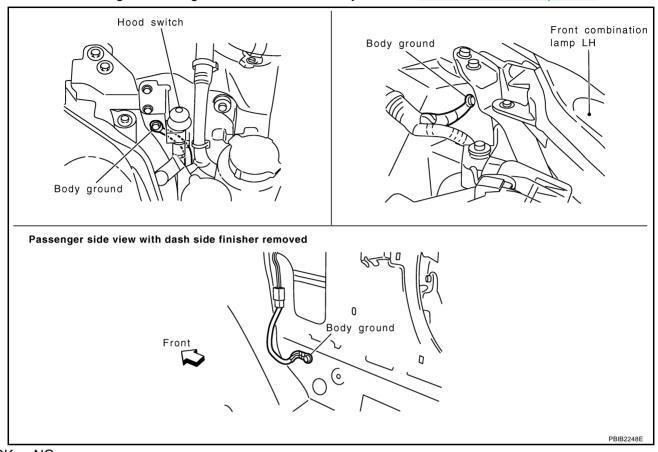
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3. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

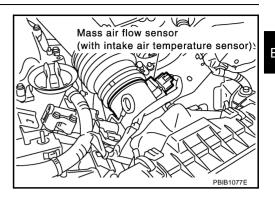
OK >> GO TO 4.

NG >> Repair or replace ground connections.

DTC P0101 MAF SENSOR

4. CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect mass air flow (MAF) sensor harness connector.
- 2. Turn ignition switch ON.

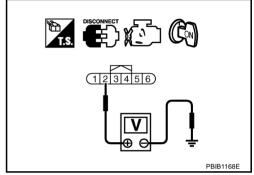


3. Check voltage between MAF sensor terminal 2 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 6. NG >> GO TO 5.



5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between IPDM E/R and MAF sensor
- Harness for open or short between MAF sensor and ECM

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

6. CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between MAF sensor terminal 3 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.

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

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DTC P0101 MAF SENSOR

7. CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between MAF sensor terminal 4 and ECM terminal 51. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 8.

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

8. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-218, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Replace intake air temperature sensor.

9. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-466, "Component Inspection".

OK or NG

OK >> GO TO 10.

NG >> Replace EVAP control system pressure sensor.

10. CHECK MASS AIR FLOW SENSOR

Refer to EC-218, "Component Inspection".

OK or NG

OK >> GO TO 11.

NG >> Replace MAF sensor.

11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection MASS AIR FLOW SENSOR

NBS00056

- (P) With CONSULT-II
- 1. Reconnect all harness connectors disconnected.
- 2. Start engine and warm it up to normal operating temperature.
- Connect CONSULT-II and select "DATA MONITOR" mode.
- 4. Select "MAS A/F SE-B1" and check indication under the following conditions.

Condition	MAS A/F SE-B1 (V)
Ignition switch ON (Engine stopped.)	Approx. 0.4
Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 1.9
Idle to about 4,000 rpm	0.9 - 1.2 to Approx. 2.4*

DATA MONITOR

MONITOR

NO DTC

ENG SPEED XXX rpm

MAS A/F SE-B1 XXX V

COOLAN TEMP/S XXX C

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

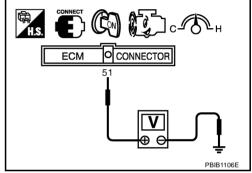
DTC P0101 MAF SENSOR

- If the voltage is out of specification, proceed the following.
- Check for the cause of uneven air flow through mass air flow sensor. Refer to following. a.
 - Crushed air ducts
 - Malfunctioning seal of air cleaner element
 - Uneven dirt of air cleaner element
 - Improper specification of intake air system parts
- b. If NG, repair or replace malfunctioning part and perform step 2 to 4 again. If OK, go to next step.
- 6. Turn ignition switch OFF.
- 7 Disconnect mass air flow sensor harness connector and reconnect it again.
- Perform step 2 to 4 again.
- If NG, clean or replace mass air flow sensor.

⋈ Without CONSULT-II

- 1. Reconnect all harness connectors disconnected.
- 2. Start engine and warm it up to normal operating temperature.
- Check voltage between ECM terminal 51 (Mass air flow sensor signal) and ground.

Condition	Voltage V
Ignition switch ON (Engine stopped.)	Approx. 0.4
Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 1.9
Idle to about 4,000 rpm	0.9 - 1.2 to Approx. 2.4*



^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

- 4. If the voltage is out of specification, proceed the following.
- a. Check for the cause of uneven air flow through mass air flow sensor. Refer to following.
 - Crushed air ducts
 - Malfunctioning seal of air cleaner element
 - Uneven dirt of air cleaner element
 - Improper specification of intake air system parts
- If NG, repair or replace malfunctioning part and perform step 2 to 3 again. If OK, go to next step.
- Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector and reconnect it again.
- Perform step 2 and 3 again.
- If NG, clean or replace mass air flow sensor.

Removal and Installation MASS AIR FLOW SENSOR

Refer to EM-16, "AIR CLEANER AND AIR DUCT".

NBS00057

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DTC P0102, P0103 MAF SENSOR

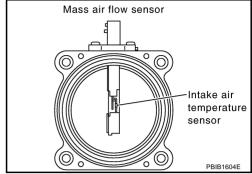
PFP:22680

Component Description

NBS00058

The mass air flow sensor is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire is to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



CONSULT-II Reference Value in Data Monitor Mode

NRSOOSS

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
MAS A/F SE-B1	See EC-143, "TROUBLE DIAGNOS	IS - SPECIFICATION VALUE" .	
Engine: After warming up		Idle	5% - 35%
CAL/LD VALUE	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,500 rpm	5% - 35%
	Engine: After warming up	Idle	2.0 - 6.0 g⋅m/s
MASS AIRFLOW	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,500 rpm	7.0 - 20.0 g·m/s

On Board Diagnosis Logic

NBS0005A

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0102 0102	Mass air flow sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	 Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor
P0103 0103	Mass air flow sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	 Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode and the MIL lights up.

Detected items	Engine operating condition in fail-safe mode
Mass air flow sensor circuit	Engine speed will not rise more than 2,400 rpm due to the fuel cut.

DTC Confirmation Procedure

PSOODER

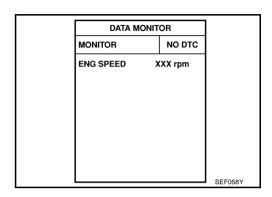
NOTE:

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

PROCEDURE FOR DTC P0102

(II) With CONSULT-II

- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and wait at least 5 seconds.
- 4. If DTC is detected, go to EC-223, "Diagnostic Procedure".



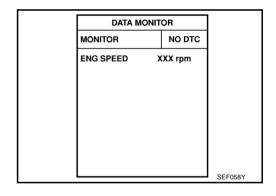
With GST

Follow the procedure "With CONSULT-II" above.

PROCEDURE FOR DTC P0103

(A) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- Wait at least 5 seconds.
- 4. If DTC is detected, go to <u>EC-223, "Diagnostic Procedure"</u>. If DTC is not detected, go to next step.
- Start engine and wait at least 5 seconds.
- If DTC is detected, go to <u>EC-223, "Diagnostic Procedure"</u>.



With GST

Follow the procedure "With CONSULT-II" above.

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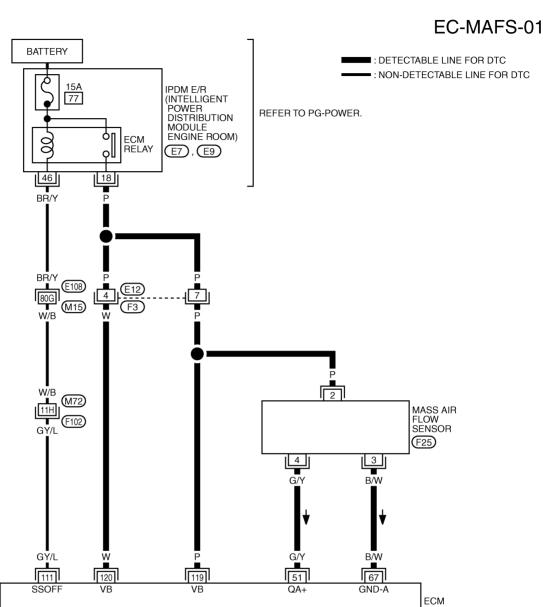
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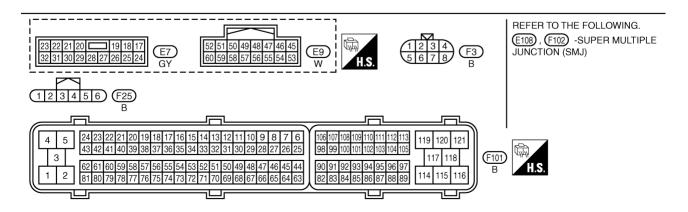
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Wiring Diagram





TBWT1200E

(F101)

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
51	G/Y	Mass air flow sensor	[Engine is running]Warm-up conditionIdle speed	0.9 - 1.2V
31	5/1	MIASS AII HOW SCHSUI	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.5 - 1.9V
67	B/W	Sensor ground	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V
111	GY/L	ECM relay (Self shut-off)	 [Engine is running] [Ignition switch: OFF] For a few seconds after turning ignition switch OFF 	0 - 1.5V
		(con onat on)	[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

1. INSPECTION START

Which malfunction (P0102 or P0103) is duplicated?

P0102 or P0103

P0102 >> GO TO 2.

P0103 >> GO TO 3.

2. CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct and intake manifold

OK or NG

OK >> GO TO 3.

NG >> Reconnect the parts.

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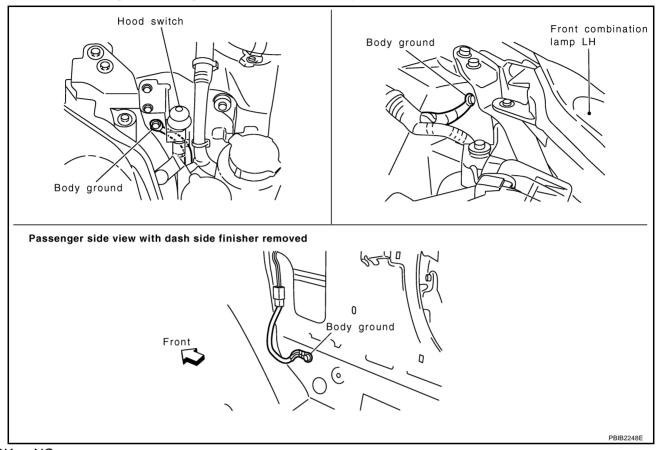
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3. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



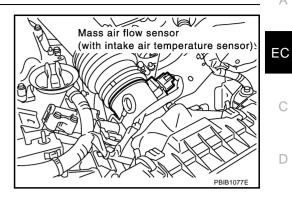
OK or NG

OK >> GO TO 4.

NG >> Repair or replace ground connections.

4. CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- Disconnect mass air flow (MAF) sensor harness connector.
- 2. Turn ignition switch ON.

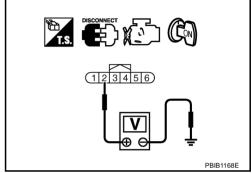


Check voltage between MAF sensor terminal 2 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

>> GO TO 6. OK NG >> GO TO 5.



5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between IPDM E/R and MAF sensor
- Harness for open or short between MAF sensor and ECM

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

6. CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness continuity between MAF sensor terminal 3 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.

Revision: 2005 August

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

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7. CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between MAF sensor terminal 4 and ECM terminal 51. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 8.

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

8. CHECK MASS AIR FLOW SENSOR

Refer to EC-226, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Replace MAF sensor.

9. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

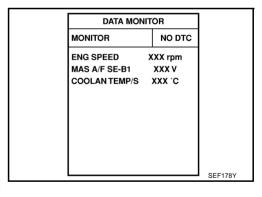
>> INSPECTION END

Component Inspection MASS AIR FLOW SENSOR

NBS0005E

- (P) With CONSULT-II
- Reconnect all harness connectors disconnected.
- 2. Start engine and warm it up to normal operating temperature.
- Connect CONSULT-II and select "DATA MONITOR" mode.
- 4. Select "MAS A/F SE-B1" and check indication under the following conditions.

Condition	MAS A/F SE-B1 (V)
Ignition switch ON (Engine stopped.)	Approx. 0.4
Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 1.9
Idle to about 4,000 rpm	0.9 - 1.2 to Approx. 2.4*



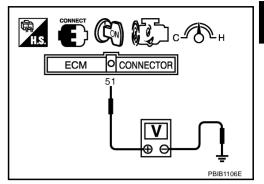
^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

- 5. If the voltage is out of specification, proceed the following.
- a. Check for the cause of uneven air flow through mass air flow sensor. Refer to following.
 - Crushed air ducts
 - Malfunctioning seal of air cleaner element
 - Uneven dirt of air cleaner element
 - Improper specification of intake air system parts
- b. If NG, repair or replace malfunctioning part and perform step 2 to 4 again. If OK, go to next step.
- Turn ignition switch OFF.
- 7. Disconnect mass air flow sensor harness connector and reconnect it again.
- Perform step 2 to 4 again.
- 9. If NG, clean or replace mass air flow sensor.

⋈ Without CONSULT-II

- 1. Reconnect all harness connectors disconnected.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Check voltage between ECM terminal 51 (Mass air flow sensor signal) and ground.

Condition	Voltage V
Ignition switch ON (Engine stopped.)	Approx. 0.4
Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 1.9
Idle to about 4,000 rpm	0.9 - 1.2 to Approx. 2.4*



- *: Check for linear voltage rise in response to engine being increased to about 4,000 rpm.
- 4. If the voltage is out of specification, proceed the following.
- a. Check for the cause of uneven air flow through mass air flow sensor. Refer to following.
 - Crushed air ducts
 - Malfunctioning seal of air cleaner element
 - Uneven dirt of air cleaner element
 - Improper specification of intake air system parts
- b. If NG, repair or replace malfunctioning part and perform step 2 to 3 again. If OK, go to next step.
- 5. Turn ignition switch OFF.
- 6. Disconnect mass air flow sensor harness connector and reconnect it again.
- 7. Perform step 2 and 3 again.
- 8. If NG, clean or replace mass air flow sensor.

Removal and Installation MASS AIR FLOW SENSOR

Refer to EM-16, "AIR CLEANER AND AIR DUCT" .

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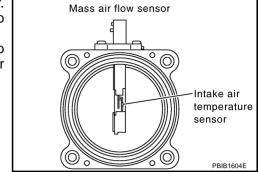
PFP:22630

Component Description

NBS0005G

The intake air temperature sensor is built-into mass air flow sensor. The sensor detects intake air temperature and transmits a signal to the ECM.

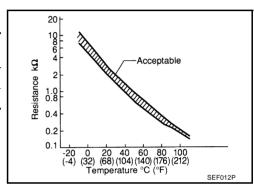
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance kΩ
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} This data is reference values and is measured between ECM terminal 34 (Intake air temperature sensor) and ground.



CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

On Board Diagnosis Logic

NBS0005H

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0112 0112	Intake air tempera- ture sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0113 0113	Intake air tempera- ture sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Intake air temperature sensor

DTC Confirmation Procedure

NBS0005I

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.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Wait at least 5 seconds.
- 4. If 1st trip DTC is detected, go to EC-231, "Diagnostic Procedure"

DATA MONITOR

MONITOR NO DTC

ENG SPEED XXX rpm

SEF058Y

WITH GST

Follow the procedure "WITH CONSULT-II" above.

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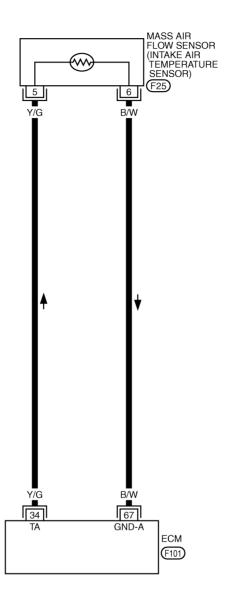
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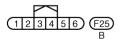
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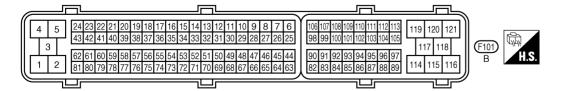
Wiring Diagram

EC-IATS-01

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







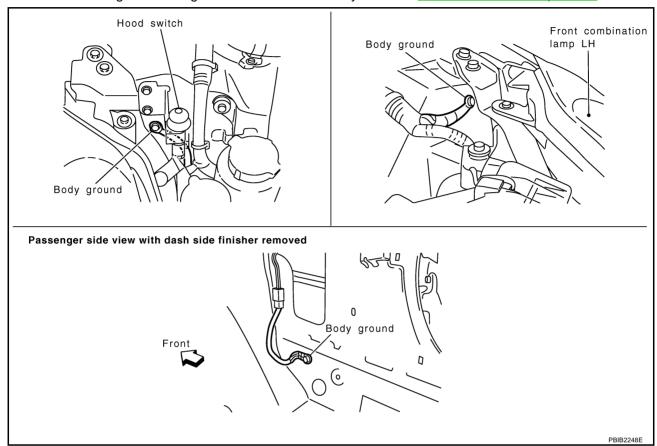
TBWT0477E

Diagnostic Procedure

NBS0005K

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

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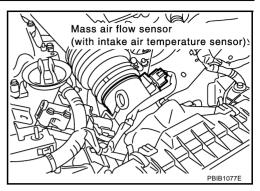
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2. CHECK INTAKE AIR TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Disconnect mass air flow sensor (intake air temperature sensor is built-into) harness connector.
- 2. Turn ignition switch ON.



Check voltage between mass air flow sensor terminal 5 and ground.

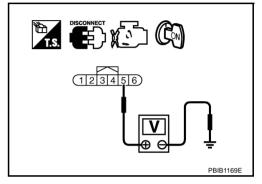
Voltage: Approximately 5V

OK or NG

OK >> GO TO 3.

NG >> Repair or

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



3. CHECK INTAKE AIR TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between mass air flow sensor terminal 6 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4.

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

4. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-233, "Component Inspection".

OK or NG

OK >> GO TO 5.

NG >> Replace mass air flow sensor (with intake air temperature sensor).

5. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection INTAKE AIR TEMPERATURE SENSOR

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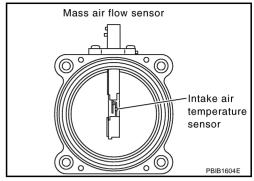
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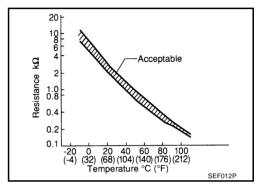
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1. Check resistance between mass air flow sensor terminals 5 and 6 under the following conditions.

Intake air temperature °C (°F)	Resistance kΩ
25 (77)	1.800 - 2.200

2. If NG, replace mass air flow sensor (with intake air temperature sensor).





Removal and Installation MASS AIR FLOW SENSOR

NBS0005M

Refer to EM-16, "AIR CLEANER AND AIR DUCT" .

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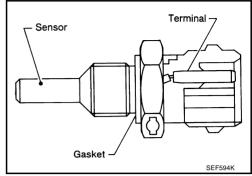
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PFP:22630

Component Description

NBS0005N

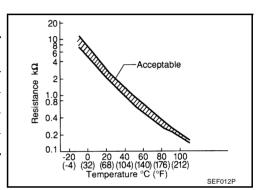
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The 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	2.1 - 2.9
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} This data is reference values and is measured between ECM terminal 73 (Engine coolant temperature sensor) and ground.



CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

On Board Diagnosis Logic

NBS00050

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition	Possible Cause
P0117 0117	Engine coolant tem- perature sensor cir- cuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0118 0118	Engine coolant tem- perature sensor cir- cuit high input	An excessively high voltage from the sensor is sent to ECM.	· · · · · · · · · · · · · · · · · · ·

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode and the MIL lights up.

Detected items	Engine operating condition in fail-safe mode		
	Engine coolant temperature will be determined by ECM based on the time after turning ignition switch ON or START. CONSULT-II displays the engine coolant temperature decided by ECM.		
	Condition	Engine coolant temperature decided (CONSULT-II display)	
Engine coolant temper-	Just as ignition switch is turned ON or START	40°C (104°F)	
ature sensor circuit	More than approx. 4 minutes after ignition ON or START	80°C (176°F)	
	Except as shown above	40 - 80°C (104 - 176°F) (Depends on the time)	
	When the fail-safe system for engine coolant tempera while engine is running.	ature sensor is activated, the cooling fan operates	

DTC Confirmation Procedure

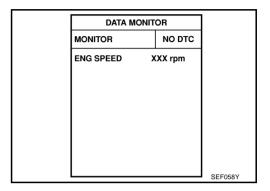
RS0005P

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.

(I) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Wait at least 5 seconds.
- 4. If DTC is detected, go to EC-237, "Diagnostic Procedure".



WITH GST

Follow the procedure "WITH CONSULT-II" above.

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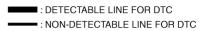
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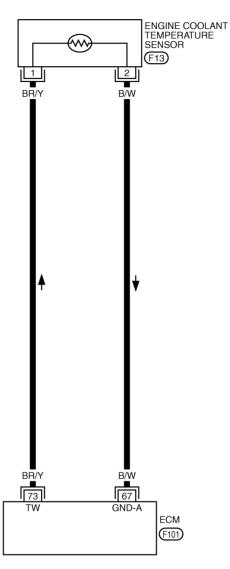
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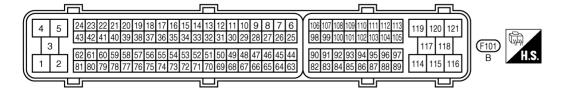
Wiring Diagram

EC-ECTS-01









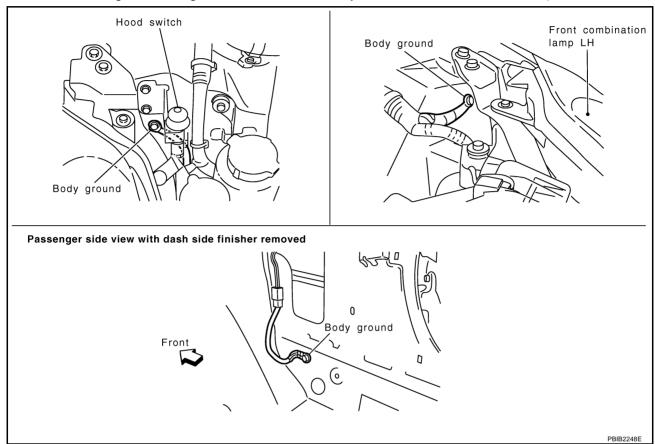
TBWT0478E

Diagnostic Procedure

NBS0005R

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

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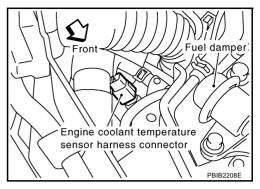
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$\overline{2}$. CHECK ECT SENSOR POWER SUPPLY CIRCUIT

- Disconnect engine coolant temperature (ECT) sensor harness connector.
- 2. Turn ignition switch ON.



Check voltage between ECT sensor terminal 1 and ground with CONSULT-II or tester.

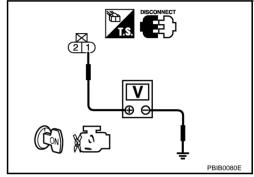
Voltage: Approximately 5V

OK or NG

OK >> GO TO 3.

NG >> Repai

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



3. CHECK ECT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between ECT sensor terminal 2 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4

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

4. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-239, "Component Inspection".

OK or NG

OK >> GO TO 5.

NG >> Replace engine coolant temperature sensor.

5. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection ENGINE COOLANT TEMPERATURE SENSOR

NBS0005S

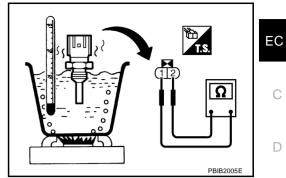
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1. Check resistance between engine coolant temperature sensor terminals 1 and 2 as shown in the figure.



<Reference data>

Engine coolant temperature °C (°F)	Resistance kΩ	
20 (68)	2.1 - 2.9	
50 (122)	0.68 - 1.00	
90 (194)	0.236 - 0.260	

If NG, replace engine coolant temperature sensor.

Acceptable Ĝ 1.0 0.8 0.2 0 20 40 60 80 100 (32) (68) (104) (140) (176) (212) Temperature °C (°F) SEF012P

Removal and Installation ENGINE COOLANT TEMPERATURE SENSOR

Refer to CO-30, "WATER OUTLET AND WATER PIPING".

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DTC P0122, P0123 TP SENSOR

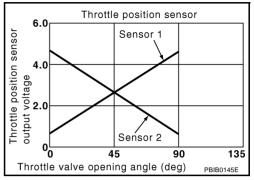
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Component Description

NBS0005U

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



CONSULT-II Reference Value in Data Monitor Mode

NRSOOSV

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
THRTL SEN 1	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36V
THRTL SEN 2*	(Engine stopped) ■ Shift lever: D (A/T), 1st (M/T)	Accelerator pedal: Fully depressed	Less than 4.75V

^{*:} Throttle position sensor 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage signal.

On Board Diagnosis Logic

NBS0005W

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0122 0122	Throttle position sensor 2 circuit low input	An excessively low voltage from the TP sensor 2 is sent to ECM.	Harness or connectors (The TP sensor 2 circuit is open or	
P0123 0123	Throttle position sensor 2 circuit high input	An excessively high voltage from the TP sensor 2 is sent to ECM.	shorted.) (The APP sensor 2 circuit is shorted.)	
			Electric throttle control actuator (TP sensor 2)	
			Accelerator pedal position sensor (APP sensor 2)	

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Engine operation condition in fail-safe mode

The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.

The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.

So, the acceleration will be poor.

DTC Confirmation Procedure

PSOODEY

NOTE:

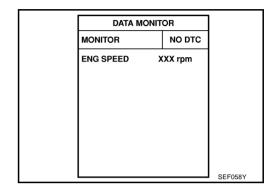
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

(II) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 1 second.
- 4. If DTC is detected, go to EC-244, "Diagnostic Procedure" .



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Follow the procedure "WITH CONSULT-II" above.

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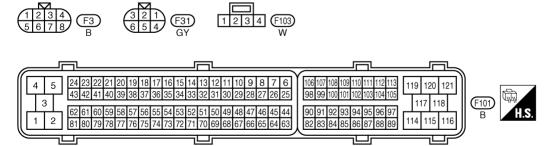
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Wiring Diagram NBS0005Y

EC-TPS2-01 : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC ELECTRIC THROTTLE CONTROL ACTUATOR (THROTTLE POSITION SENSOR) SENSOR 1 SENSOR 2 (F31) 4 5 2 B TO EC-MAIN ■ B/OR ➡ TO EC-APPS2, APPS3 F3 (E12) B/OR 91 47 66 69 50 ECM (F101)



TBWT1201E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
47	W/R	Sensor power supply (Throttle position sensor)	[Ignition switch: ON]	Approximately 5V
50	G Throttle position sensor 1		 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	More than 0.36V
			 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	Less than 4.75V
66	L	Sensor ground (Throttle position sensor)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
69	Y	Throttle position sensor 2	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	Less than 4.75V
00	•	Tillottic position sensor 2	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	More than 0.36V
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V

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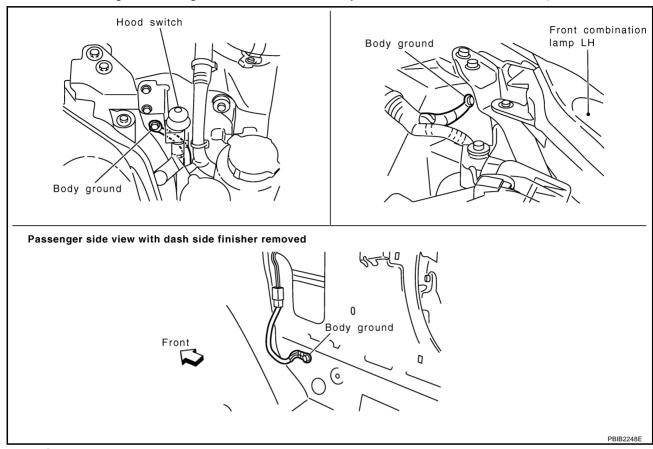
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Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



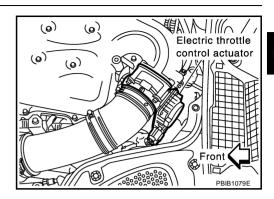
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$\overline{2}$. CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT-I

- Disconnect electric throttle control actuator harness connector.
- 2. Turn ignition switch ON.

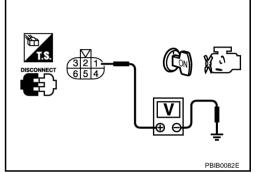


Check voltage between electric throttle control actuator terminal 1 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 7. NG >> GO TO 3.



3. CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between electric throttle control actuator terminal 1 and ECM terminal 47. Refer to Wiring Diagram.

Continuity should exist.

OK or NG

>> GO TO 4. OK

NG >> Repair open circuit.

4. CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT-III

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

ECM terminal	Sensor terminal	Reference Wiring Diagram
47	Electric throttle control actuator terminal 1	EC-242
91	APP sensor terminal 4	EC-628

OK or NG

OK >> GO TO 5.

NG >> Repair short to ground or short to power in harness or connectors.

5. CHECK APP SENSOR

Refer to EC-633, "Component Inspection".

OK or NG

OK >> GO TO 11. NG >> GO TO 6.

EC-245 Revision: 2005 August 2006 350Z

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6. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Perform EC-78, "Accelerator Pedal Released Position Learning" .
- 3. Perform EC-79, "Throttle Valve Closed Position Learning".
- 4. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

7. CHECK THROTTLE POSITION SENSOR 2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between electric throttle control actuator terminal 5 and ECM terminal 66. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 8.

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

8. CHECK THROTTLE POSITION SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between ECM terminal 69 and electric throttle control actuator terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 9.

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

9. CHECK THROTTLE POSITION SENSOR

Refer to EC-247. "Component Inspection".

OK or NG

OK >> GO TO 11.

NG >> GO TO 10.

10. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace the electric throttle control actuator.
- Perform <u>EC-79</u>, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection THROTTLE POSITION SENSOR

NBS00060

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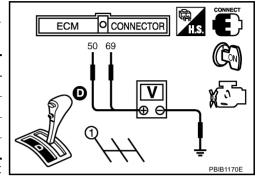
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- Reconnect all harness connectors disconnected.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- Turn ignition switch ON.
- 4. Set shift lever to D (A/T) or 1st (M/T) position.
- Check voltage between ECM terminals 50 (TP sensor 1 signal),
 (TP sensor 2 signal) and ground under the following conditions.

Terminal	Accelerator pedal	Voltage
50	Fully released	More than 0.36V
(Throttle position sensor 1)	Fully depressed	Less than 4.75V
69	Fully released	Less than 4.75V
(Throttle position sensor 2)	Fully depressed	More than 0.36V



- 6. If NG, replace electric throttle control actuator and go to the next step.
- 7. Perform EC-79, "Throttle Valve Closed Position Learning".
- 8. Perform EC-79, "Idle Air Volume Learning".

Removal and Installation ELECTRIC THROTTLE CONTROL ACTUATOR

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

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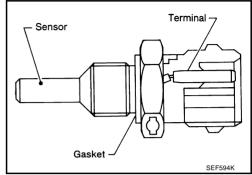
Component Description

NBS00062

NOTE:

If DTC P0125 is displayed with P0117 or P0118, first perform the trouble diagnosis for DTC P0117 or P0118. Refer to EC-234, "DTC P0117, P0118 ECT SENSOR".

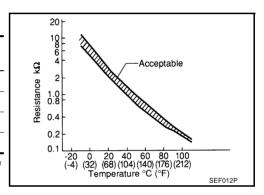
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The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



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance k Ω
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.1 - 2.9
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} This data is reference values and is measured between ECM terminal 73 (Engine coolant temperature sensor) and ground.



CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

On Board Diagnosis Logic

NBS00063

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0125 0125	Insufficient engine cool- ant temperature for closed loop fuel control	 Voltage sent to ECM from the sensor is not practical, even when some time has passed after starting the engine. Engine coolant temperature is insufficient for closed loop fuel control. 	 Harness or connectors (High resistance in the circuit) Engine coolant temperature sensor Thermostat

DTC Confirmation Procedure

NBS00064

CAUTION:

Be careful not to overheat engine.

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.

(II) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Check that "COOLAN TEMP/S" is above 10°C (50°F). If it is above 10°C (50°F), the test result will be OK. If it is below 10°C (50°F), go to following step.
- Start engine and run it for 65 minutes at idle speed.
 If "COOLAN TEMP/S" increases to more than 10°C (50°F) within 65 minutes, stop engine because the test result will be OK.
- 5. If 1st trip DTC is detected, go to EC-250, "Diagnostic Procedure"

		1
DATA MON	IITOR	
MONITOR	NO DTC	
ENG SPEED	XXX rpm	
COOLAN TEMP/S	XXX °C	
		SEF174Y

WITH GST

Follow the procedure "WITH CONSULT-II" above.

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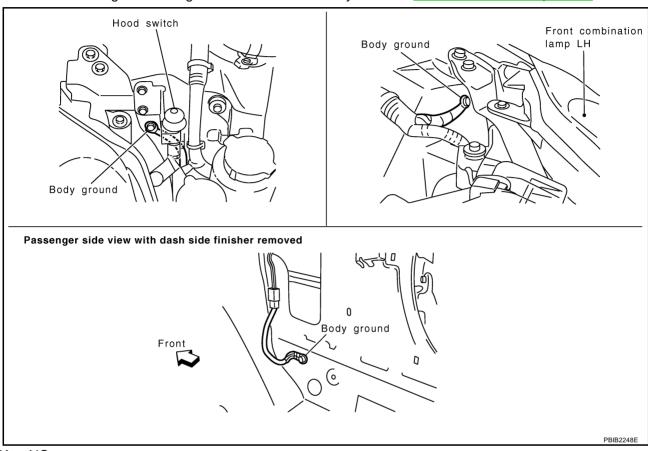
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Diagnostic Procedure

NBS00065

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-251, "Component Inspection".

OK or NG

OK >> GO TO 3.

NG >> Replace engine coolant temperature sensor.

3. CHECK THERMOSTAT OPERATION

When the engine is cold [lower than 70°C (158°F)] condition, grasp lower radiator hose and confirm the engine coolant does not flow.

OK or NG

OK >> GO TO 4.

NG >> Repair or replace thermostat. Refer to <u>CO-28</u>, "WATER INLET AND THERMOSTAT ASSEMBLY"

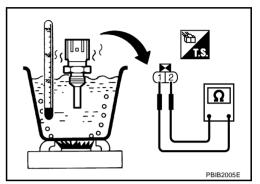
4. CHECK INTERMITTENT INCIDENT

Refer to <u>EC-153</u>, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" . Refer to <u>EC-236</u>, "Wiring Diagram" .

>> INSPECTION END

Component Inspection ENGINE COOLANT TEMPERATURE SENSOR

1. Check resistance between engine coolant temperature sensor terminals 1 and 2 as shown in the figure.



<Reference data>

Engine coolant temperature °C (°F)	Resistance kΩ
20 (68)	2.1 - 2.9
50 (122)	0.68 - 1.00
90 (194)	0.236 - 0.260

2. If NG, replace engine coolant temperature sensor.

NBS00067

Removal and Installation ENGINE COOLANT TEMPERATURE SENSOR

Refer to CO-30, "WATER OUTLET AND WATER PIPING".

Revision: 2005 August **EC-251** 2006 350Z

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DTC P0127 IAT SENSOR

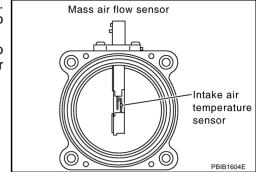
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Component Description

NBS00068

The intake air temperature sensor is built into mass air flow sensor. The sensor detects intake air temperature and transmits a signal to the ECM.

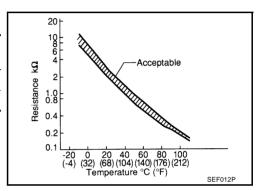
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance kΩ
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} This data is reference values and is measured between ECM terminal 34 (Intake air temperature sensor) and ground.



CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

On Board Diagnosis Logic

NBS00069

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0127 0127	Intake air temperature too high	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signal from engine coolant temperature sensor.	Harness or connectors (The sensor circuit is open or shorted)Intake air temperature sensor

DTC Confirmation Procedure

NBS0006A

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.

CAUTION:

Always drive vehicle at a safe speed.

TESTING CONDITION:

This test 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.

(P) WITH CONSULT-II

- 1. Wait until engine coolant temperature is less than 90°C (194°F)
- a. Turn ignition switch ON.

DTC P0127 IAT SENSOR

- b. Select "DATA MONITOR" mode with CONSULT-II.
- c. Check the engine coolant temperature.
- If the engine coolant temperature is not less than 90°C (194°F), turn ignition switch OFF and cool down engine.
 - Perform the following steps before engine coolant temperature is above 90°C (194°F).
- 2. Turn ignition switch ON.
- 3. Select "DATA MONITOR" mode with CONSULT-II.
- 4. Start engine.
- Hold vehicle speed at more than 70 km/h (43 MPH) for 100 consecutive seconds.
- 6. If 1st trip DTC is detected, go to EC-253, "Diagnostic Procedure".

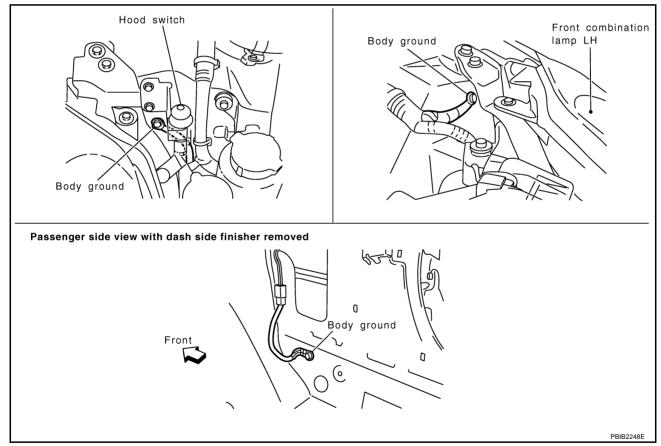
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Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to <a>EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

DATA MONITOR

MONITOR

NO DTC

ENG SPEED XXXX rpm
COOLAN TEMP/S XXX °C
VHCL SPEED SE XXX km/h
B/FUEL SCHDL XXXX msec

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DTC P0127 IAT SENSOR

$\overline{2}$. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-233, "Component Inspection".

OK or NG

OK >> GO TO 3.

NG >> Replace mass air flow sensor (with intake air temperature sensor).

3. CHECK INTERMITTENT INCIDENT

Refer to <u>EC-153</u>, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" . Refer to <u>EC-230</u>, "Wiring Diagram" .

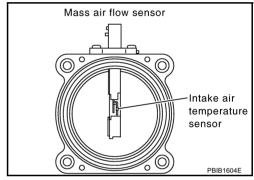
>> INSPECTION END

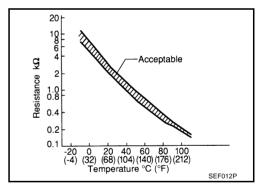
Component Inspection INTAKE AIR TEMPERATURE SENSOR

1. Check resistance between intake air temperature sensor terminals 5 and 6 under the following conditions.

Intake air temperature °C (°F)	Resistance kΩ
25 (77)	1.800 - 2.200

2. If NG, replace mass air flow sensor (with intake air temperature sensor).





Removal and Installation MASS AIR FLOW SENSOR

Refer to EM-16, "AIR CLEANER AND AIR DUCT".

NBS0006D

NBS0006C

DTC P0128 THERMOSTAT FUNCTION

DTC P0128 THERMOSTAT FUNCTION

PFP:21200

On Board Diagnosis Logic

NBS0006E

Engine coolant temperature has not risen enough to open the thermostat even though the engine has run long enough.

This is due to a leak in the seal or the thermostat stuck open.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0128 0128	Thermostat function	The engine coolant temperature does not reach to specified temperature even though the engine has run long enough.	Thermostat Leakage from sealing portion of thermostat Engine coolant temperature sensor

DTC Confirmation Procedure

NBS0006F

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:

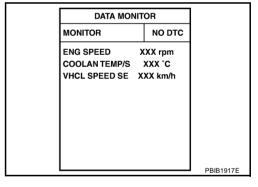
- For best results, perform at ambient temperature of −10°C (14°F) or higher.
- For best results, perform at engine coolant temperature of −10°C (14°F) to 60°C (140°F).

(P) WITH CONSULT-II

- 1. Replace thermostat with new one. Refer to <u>CO-28, "WATER INLET AND THERMOSTAT ASSEMBLY"</u>. Use only a genuine NISSAN thermostat as a replacement. If an incorrect thermostat is used, the MIL may come on.
- Turn ignition switch ON.
- 3. Select "COOLAN TEMP/S" in "DATA MONITOR" mode with CONSULT-II.
- 4. Check that the "COOLAN TEMP/S" is above 60°C (140°F). If it is below 60°C (140°F), go to following step. If it is above 60°C (140°F), cool down the engine to less than 60°C (140°F), then retry from step 1.
- Drive vehicle for 10 consecutive minutes under the following conditions.

VHCL SPEED SE	80 - 120 km/h (50 - 75 MPH)

If 1st trip DTC is detected, go to EC-255, "Diagnostic Procedure"



WITH GST

Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

NBS0006G

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-256, "Component Inspection".

OK or NG

OK >> INSPECTION END

NG >> Replace engine coolant temperature sensor.

Revision: 2005 August **EC-255** 2006 350Z

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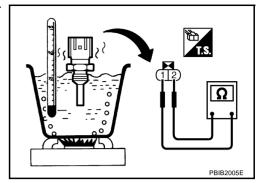
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DTC P0128 THERMOSTAT FUNCTION

Component Inspection ENGINE COOLANT TEMPERATURE SENSOR

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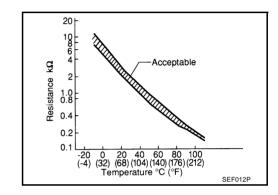
1. Check resistance between engine coolant temperature sensor terminals 1 and 2 as shown in the figure.



<Reference data>

Engine coolant temperature °C (°F)	Resistance kΩ
20 (68)	2.1 - 2.9
50 (122)	0.68 - 1.00
90 (194)	0.236 - 0.260

2. If NG, replace engine coolant temperature sensor.



NBS0006I

Removal and Installation ENGINE COOLANT TEMPERATURE SENSOR

Refer to CO-30, "WATER OUTLET AND WATER PIPING".

DTC P0130, P0150 A/F SENSOR 1

PFP:22693

Component Description

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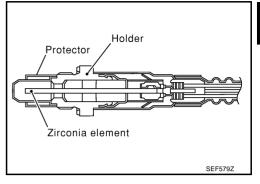
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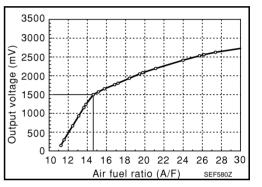
The air fuel ratio (A/F) sensor 1 is a planar dual-cell limit current sensor. The sensor element of the A/F sensor 1 is the combination of a Nernst concentration cell (sensor cell) with an oxygen-pump cell, which transports ions. It has a heater in the element.

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 < λ < 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 λ = 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

NBS000ET

Specification data are reference values.

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

On Board Diagnosis Logic

RSOODELL

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal fluctuates according to fuel feedback control.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause	L
P0130 0130 (Bank 1)	Air fuel ratio (A/F) sensor 1	The A/F signal computed by ECM from the A/	Harness or connectors (The A/F sensor 1 circuit is open or	M
P0150 0150 (Bank 2)	circuit	F sensor 1 signal is constantly approx. 1.5V.	shorted.) • Air fuel ratio (A/F) sensor 1	

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

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 11V at idle.

(A) 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.
- Check "A/F SEN1 (B1)" or "A/F SEN1 (B2)" indication.
 If the indication is constantly approx. 1.5V and does not fluctuates, go to <u>EC-264, "Diagnostic Procedure"</u>.
 If the indication fluctuates around 1.5V, go to next step.
- 4. Select "A/F SEN1 (B1) P1276" (for DTC P0130) or "A/F SEN1 (B2) P1286" (for DTC P0150) of "A/F SEN1" in "DTC WORK SUPPORT" mode with CONSULT-II.
- Touch "START".
- 6. When the following conditions are met, "TESTING" will be displayed on the CONSULT-II screen.

ENG SPEED	1,100 - 3,200 rpm
VHCL SPEED SE	More than 64 km/h (46 MPH)
B/FUEL SCHDL	1.0 - 8.0 msec
Shift lever	D position (A/T) 5th position (M/T)

If "TESTING" is not displayed after 20 seconds, retry from step 2.

	A/F SEN1 (B1) P1276		
	OUT OF CONDITION		
	MONITOR		
	ENG SPEED	XXX rpm	
	B/FUEL SCHDL	XXX msec	
	COOLAN TEMP/S XXX °C		
	VHCL SPEED SE XXX km/h		
'			SEF576Z

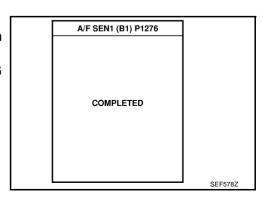
7. Release accelerator pedal fully.

NOTF:

Never apply brake during releasing the accelerator pedal.

A/F SEN1 (B1) P	1276	
TESTING		
SELECT 3RD GEAR A RELEASE ACCELERATOR		
MONITOR		
ENG SPEED XXX rpm		
B/FUEL SCHDL	XXX msec	
COOLAN TEMP/S XXX °C		
VHCL SPEED SE	XXX km/h	
		SEF577Z

- 8. Make sure that "TESTING" changes to "COMPLETED". If "TESTING" changed to "OUT OF CONDITION", retry from step 6.
- Make sure that "OK" is displayed after touching "SELF-DIAG RESULT".
 - If "NG" is displayed, go to EC-264, "Diagnostic Procedure".



Overall Function Check

NBS000EW

NBS000EV

Use this procedure to check the overall function of the A/F sensor 1 circuit. During this check, a 1st trip DTC might not be confirmed.

Revision: 2005 August **EC-258** 2006 350Z

WITH GST

- Start engine and warm it up to normal operating temperature.
- Drive the vehicle at a speed of 80 km/h (50 MPH) for a few minutes in the suitable gear position.
- Set shift lever to D position (A/T) or 5th position (M/T), then release the accelerator pedal fully until the vehicle speed decreases to 50 km/h (30 MPH).

NOTE:

Never apply brake during releasing the accelerator pedal.

- Repeat steps 2 to 3 for five times.
- 5. Stop the vehicle and turn ignition switch OFF.
- Wait at least 10 seconds and restart engine.
- 7. Repeat steps 2 to 3 for five times.
- 8. Stop the vehicle and connect GST to the vehicle.
- Make sure that no 1st trip DTC is displayed. If the 1st trip DTC is displayed, go to EC-264, "Diagnostic Procedure".

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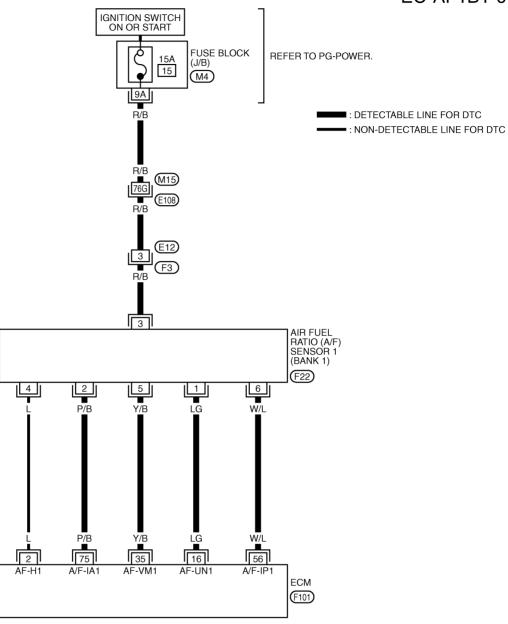
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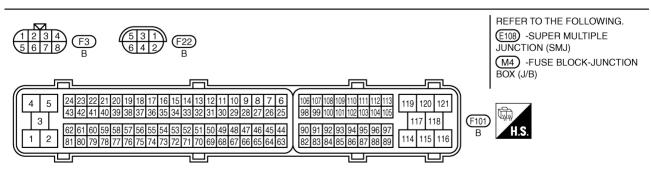
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Wiring Diagram BANK 1

NBS000EX

EC-AF1B1-01





TBWT1229E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	LG		Ferning in annual 2	Approximately 3.1V
35	Y/B	A/F sensor 1 (bank 1)	[Engine is running]● Warm-up condition● Idle speed	Approximately 2.6V
56	W/L	AVE SELISOF F (Dalik I)		Approximately 2.3V
75	P/B	1		Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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BANK 2

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EC-AF1B2-01 IGNITION SWITCH ON OR START FUSE BLOCK (J/B) REFER TO PG-POWER. 15A 15 $\overline{(M4)}$ ■: DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC R/B 76G R/B M15 (E108) (E12) 3 R/B (F3) 3 AIR FUEL RATIO (A/F) SENSOR 1 (BANK 2) (F34) 6 5 58 24 77 57 76 AF-VM2 AF-UN2 A/F-IP2 A/F-IA2 ECM (F101) REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 119 120 F101 B 114

TBWT1230E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
57	G		Ferning is according	Approximately 2.6V
58	W	A/F sensor 1 (bank 2)	[Engine is running] ■ Warm-up condition ■ Idle speed	Approximately 2.3V
76	Υ	TVI SCHSULL (Dalik Z)		Approximately 3.1V
77	Р	1		Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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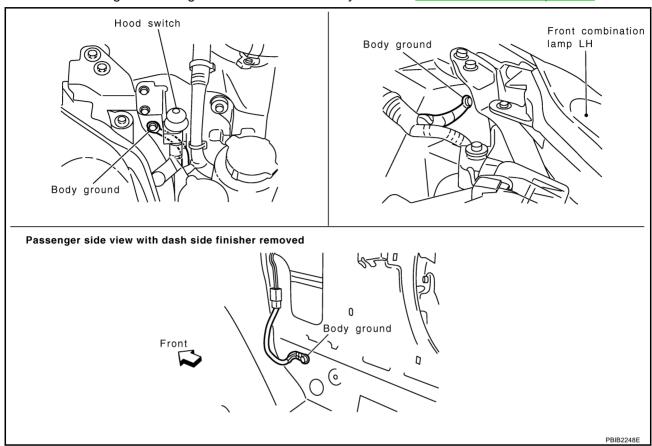
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Diagnostic Procedure

NBS000EY

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



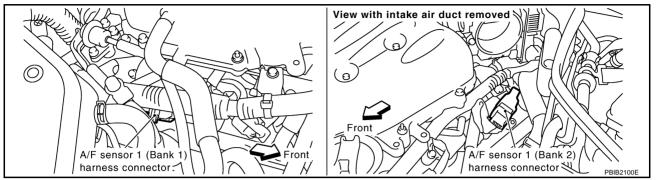
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

1. Disconnect air fuel ratio (A/F) sensor 1 harness connector.

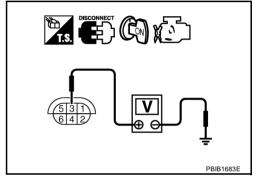


- 2. Turn ignition switch ON.
- 3. Check voltage between A/F sensor 1 terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M15, E108
- Harness connectors E12, F3
- Fuse block (J/B) connector M4
- 15A fuse
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

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4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank1	2	75
Danki -	5	35
	6	56
	1	76
Bank 2	2	77
Dalik Z	5	57
	6	58

Continuity should exist.

4. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Bank 1		Bank 2	
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal
1	16	1	76
2	75	2	77
5	35	5	57
6	56	6	58

Continuity should not exist.

5. Also check harness for short to power.

OK or NG

OK >> GO TO 5.

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

5. CHECK INTERMITTENT INCIDENT

Perform EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 6.

NG >> Repair or replace.

6. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning A/F sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads (using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12) and approved anti-seize lubricant.

>> INSPECTION END

Removal and Installation AIR FUEL RATIO (A/F) SENSOR 1

NBS000EZ

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST" .

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PFP:22693

Component Description

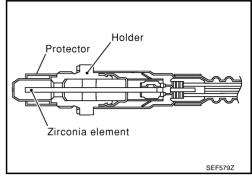
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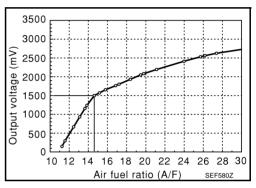
The air fuel ratio (A/F) sensor 1 is a planar dual-cell limit current sensor. The sensor element of the A/F sensor 1 is the combination of a Nernst concentration cell (sensor cell) with an oxygen-pump cell, which transports ions. It has a heater in the element.

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 < λ < 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

NBS000E1

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 1.5V

On Board Diagnosis Logic

NBS000E2

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) P0151 0151 (Bank 2)	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.	 Harness or connectors (The A/F sensor 1 circuit is open or shorted.) Air fuel ratio (A/F) sensor 1

DTC Confirmation Procedure

IBS000E3

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 11V at idle.

(A) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" or "A/F SEN1 (B2)" in "DATA MONITOR" mode with CONSULT-II.
- 3. Check "A/F SEN1 (B1)" or "A/F SEN1 (B2)" indication. If the indication is constantly approx. 0V, go to EC-274, "Diagnostic Procedure".

If the indication is not constantly approx. 0V, go to next step.

- 4. Turn ignition switch OFF, wait at least 10 seconds and then restart engine.
- Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine.
- Maintain the following conditions for about 20 consecutive seconds.

	ENG SPEED	XXX rpm	
	COOLAN TEMP/S	XXX °C	
n	A/F SEN1 (B1)	XXX V	
1/			
l)			
)-			
			SEF581Z
_			- 74

DATA MONITOR

NO DTC

MONITOR

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 MPH)
B/FUEL SCHDL	1.5 - 9.0 msec
Shift lever	Suitable position

NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 4, return to step 4.
- 7. If 1st trip DTC is displayed, go to EC-274, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II" above.

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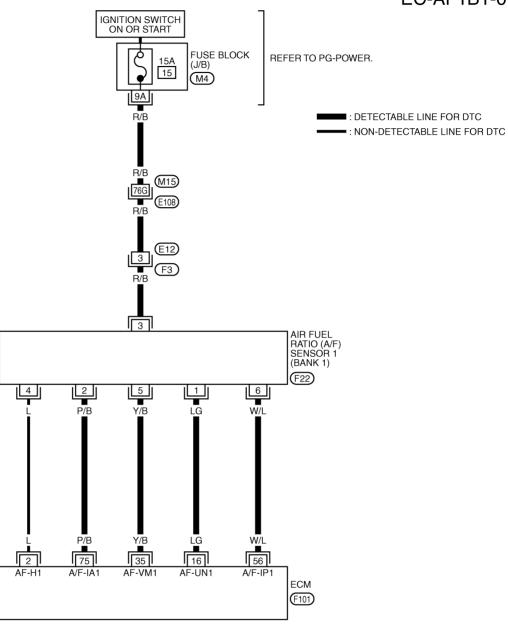
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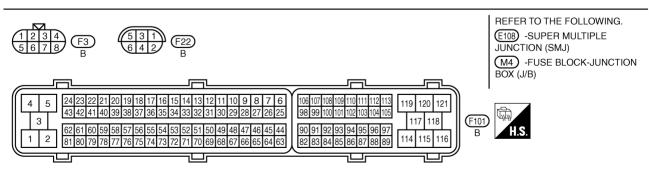
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Wiring Diagram BANK 1

NBS000E4

EC-AF1B1-01





TBWT1229E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	L/G		re	Approximately 3.1V
35	Y/B	A/F sensor 1 (bank 1)	[Engine is running] • Warm-up condition	Approximately 2.6V
56	W/L	TVI SCHSULL (DallK I)	Idle speed	Approximately 2.3V
75	P/B	1	1 .5.0 00000	Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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BANK 2

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EC-AF1B2-01 IGNITION SWITCH ON OR START FUSE BLOCK (J/B) REFER TO PG-POWER. 15A 15 $\overline{(M4)}$ ■: DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC R/B 76G R/B M15 E108 (E12) 3 R/B (F3) 3 AIR FUEL RATIO (A/F) SENSOR 1 (BANK 2) (F34) 6 5 58 24 77 57 76 AF-VM2 AF-UN2 A/F-IP2 A/F-IA2 ECM (F101) REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 119 120 F101 B 114

TBWT1230E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
57	G			Approximately 2.6V
58	W	A/F sensor 1 (bank 2)	[Engine is running]Warm-up conditionIdle speed	Approximately 2.3V
76	Υ	AVE SELISOL I (Dalik 2)		Approximately 3.1V
77	Р		• Tale speed	Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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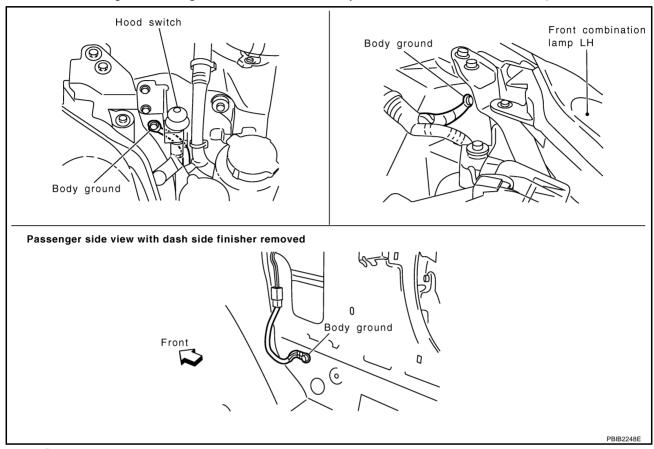
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NBS000E5

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



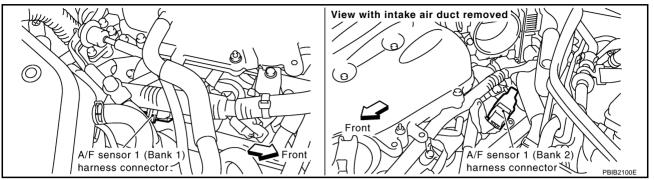
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

1. Disconnect air fuel ratio (A/F) sensor 1 harness connector.

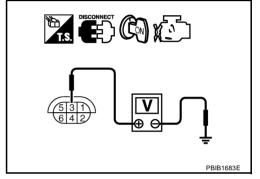


- 2. Turn ignition switch ON.
- 3. Check voltage between A/F sensor 1 terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M15, E108
- Harness connectors E12, F3
- Fuse block (J/B) connector M4
- 15A fuse
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

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4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank1	2	75
Danki -	5	35
	6	56
	1	76
Ponk 2	2	77
Bank 2	5	57
	6	58

Continuity should exist.

4. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Bank 1		Bank 2	
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal
1	16	1	76
2	75	2	77
5	35	5	57
6	56	6	58

Continuity should not exist.

5. Also check harness for short to power.

OK or NG

OK >> GO TO 5.

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

5. CHECK INTERMITTENT INCIDENT

Perform EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 6.

NG >> Repair or replace.

6. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning A/F sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads (using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12) and approved anti-seize lubricant.

>> INSPECTION END

Removal and Installation AIR FUEL RATIO (A/F) SENSOR 1

NBS000E6

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST".

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PFP:22693

Component Description

NBS000E7

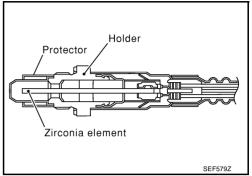
The air fuel ratio (A/F) sensor 1 is a planar dual-cell limit current sensor. The sensor element of the A/F sensor 1 is the combination of a Nernst concentration cell (sensor cell) with an oxygen-pump cell, which transports ions. It has a heater in the element.

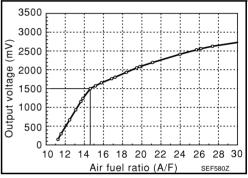
The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range (0.7 <

The exhaust gas components diffuse through the diffusion gap at the they are brought to thermodynamic balance.

is integrated in the sensor to ensure the required operating tempera-

electrode of the oxygen pump and Nernst concentration cell, where An electronic circuit controls the pump current through the oxygen-3500 pump cell so that the composition of the exhaust gas in the diffusion 3000 gap remains constant at $\lambda = 1$. Therefore, the A/F sensor 1 is able to 2500 indicate air/fuel ratio by this pumping of current. In addition, a heater





CONSULT-II Reference Value in Data Monitor Mode

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Specification data are reference values.

ture of 700 - 800°C (1,292 - 1,472°F).

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 1.5V

On Board Diagnosis Logic

NBS000E9

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 high.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0132 0132 (Bank 1)	Air fuel ratio (A/F) sensor 1	The A/F signal computed by ECM from the A/F	Harness or connectors (The A/F sensor 1 circuit is open or
P0152 0152 (Bank 2)	circuit high voltage	sensor 1 signal is constantly approx. 5V.	shorted.) • Air fuel ratio (A/F) sensor 1

DTC Confirmation Procedure

IBSOOGEA

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 11V at idle.

(A) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" or "A/F SEN1 (B2)" in "DATA MONITOR" mode with CONSULT-II.
- 3. Check "A/F SEN1 (B1)" or "A/F SEN1 (B2)" indication. If the indication is constantly approx. 5V, go to EC-284, "Diagnostic Procedure".

If the indication is not constantly approx. 5V, go to next step.

- 4. Turn ignition switch OFF, wait at least 10 seconds and then restart engine.
- Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine.
- Maintain the following conditions for about 20 consecutive seconds.

DATA MONITOR		
MONITOR	NO DTC	
COOLAN TEMP/S	XX rpm XXX °C XXX V	
		SEF581Z

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 MPH)
B/FUEL SCHDL	1.5 - 9.0 msec
Shift lever	Suitable position

NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 4, return to step 4.
- 7. If 1st trip DTC is displayed, go to EC-284, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II" above.

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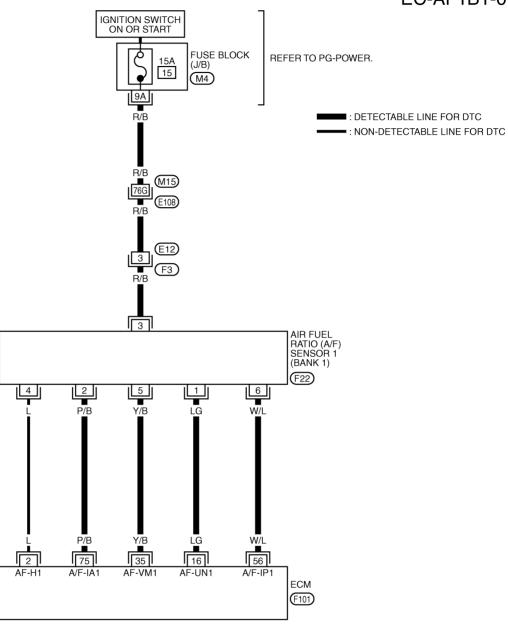
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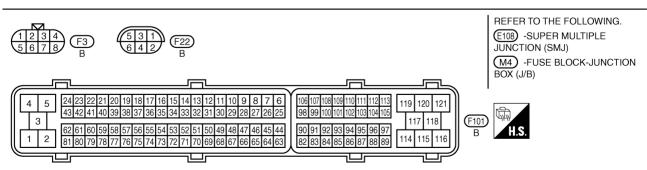
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Wiring Diagram BANK 1

NBS000EB

EC-AF1B1-01





TBWT1229E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	LG		Forming in many in 2	Approximately 3.1V
35	Y/B	A/F sensor 1 (bank 1)	[Engine is running] • Warm-up condition	Approximately 2.6V
56	W/L	AVE SELISOF I (DATIK I)	Idle speed	Approximately 2.3V
75	P/B			Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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EC-AF1B2-01 IGNITION SWITCH ON OR START FUSE BLOCK (J/B) REFER TO PG-POWER. 15A 15 $\overline{(M4)}$ ■: DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC R/B 76G R/B M15 (E108) (E12) 3 R/B (F3) 3 AIR FUEL RATIO (A/F) SENSOR 1 (BANK 2) (F34) 6 5 58 24 77 57 76 AF-VM2 AF-UN2 A/F-IP2 A/F-IA2 ECM (F101) REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 119 120 F101 B 114

TBWT1230E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
57	G	A/F sensor 1 (bank 2)		Approximately 2.6V
58	W		[Engine is running] • Warm-up condition	Approximately 2.3V
76	Υ	TVI SCHSULL (DallK 2)	Idle speed	Approximately 3.1V
77	Р		• Idio opood	Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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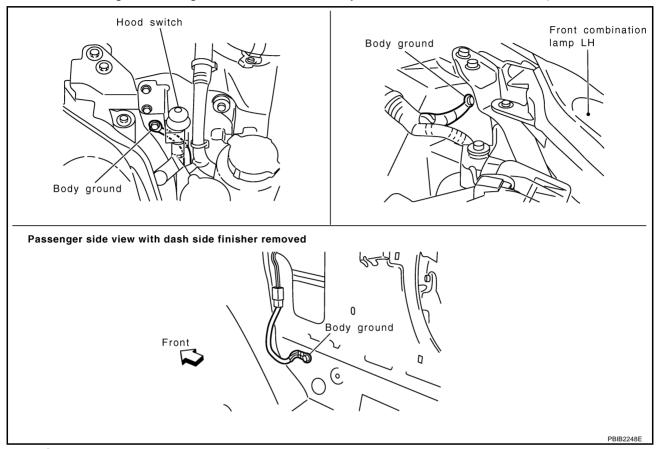
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NBS000EC

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



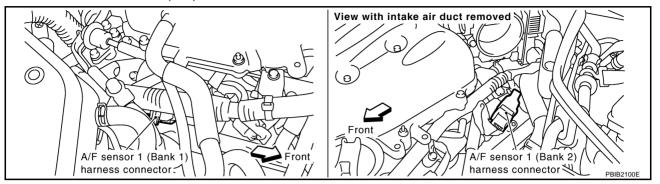
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

1. Disconnect air fuel ratio (A/F) sensor 1 harness connector.

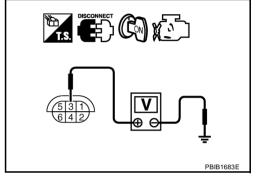


- 2. Turn ignition switch ON.
- 3. Check voltage between A/F sensor 1 terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M15, E108
- Harness connectors E12, F3
- Fuse block (J/B) connector M4
- 15A fuse
- Harness for open or short between A/F sensor 1 and fuse
 - >> Repair or replace harness or connectors.

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4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank1	2	75
Daliki	5	35
	6	56
Bank 2	1	76
	2	77
	5	57
	6	58

Continuity should exist.

4. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Bank 1		Bank 2	
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal
1	16	1	76
2	75	2	77
5	35	5	57
6	56	6	58

Continuity should not exist.

5. Also check harness for short to power.

OK or NG

OK >> GO TO 5.

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

5. CHECK INTERMITTENT INCIDENT

Perform EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 6.

NG >> Repair or replace.

6. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning A/F sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads (using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12) and approved anti-seize lubricant.

>> INSPECTION END

Removal and Installation AIR FUEL RATIO (A/F) SENSOR 1

NBS000ED

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST".

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Component Description

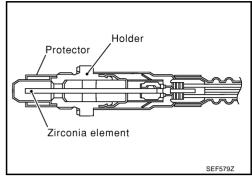
NBS000F0

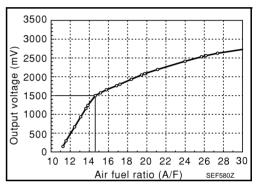
The air fuel ratio (A/F) sensor 1 is a planar dual-cell limit current sensor. The sensor element of the A/F sensor 1 is the combination of a Nernst concentration cell (sensor cell) with an oxygen-pump cell, which transports ions. It has a heater in the element.

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 < λ < 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

NBS000F1

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 1.5V

On Board Diagnosis Logic

NBS000F2

To judge the malfunction of A/F sensor 1, this diagnosis measures response time of the A/F signal computed by ECM from the A/F sensor 1 signal. The time is compensated by engine operating (speed and load), fuel feedback control constant, and the A/F sensor 1 temperature index. Judgment is based on whether the compensated time (the A/F signal cycling time index) is inordinately long or not.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0133 0133 (Bank 1)	Air fuel ratio (A/F) sensor 1 circuit slow response	The response of the A/F signal computed by ECM from A/F sensor 1 signal takes more than the specified time.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.)
P0153 0153			 Air fuel ratio (A/F) sensor 1 Air fuel ratio (A/F) sensor 1 heater Fuel pressure Fuel injector
(Bank 2)		Intake air leaksExhaust gas leaksPCVMass air flow sensor	

DTC Confirmation Procedure

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 11V at idle.

(A) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load. 3.
- Let engine idle for 1 minute.

the following step.

- Select "A/F SEN1(B1) P1278/P1279" (for DTC P0133) or "A/F SEN1(B1) P1288/P1289" (for DTC P0153) of "A/F SEN1" in "DTC WORK SUPPORT" mode with CONSULT-II.
- Touch "START". If "COMPLETED" appears on CONSULT-II screen, go to step If "COMPLETED" does not appear on CONSULT-II screen, go to

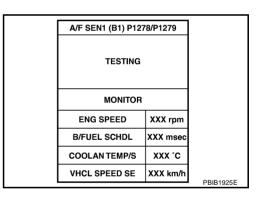
A/F SEN1 (B1) P12	78/P1279	
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OUT OF CONDI		
MONITOR		
ENG SPEED		
B/FUEL SCHDL	XXX msec	
COOLAN TEMP/S		
VHCL SPEED SE	XXX km/h	PBIB0756E
•	-	FDIDU/50E

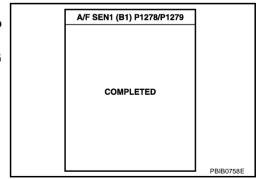
- 7. After perform the following procedure, "TESTING" will be displayed on the CONSULT-II screen.
- Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.
- Fully release accelerator pedal and then let engine idle for about 10 seconds.
 - If "TESTING" is not displayed after 10 seconds, refer to EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE".
- Wait for about 20 seconds at idle at under the condition that "TESTING" is displayed on the CONSULT-II screen.

9.	Make sure that "TESTING" changes to "COMPLETED".
	If "TESTING" changed to "OUT OF CONDITION", refer to
	EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE".

10. Make sure that "OK" is displayed after touching "SELF-DIAG RESULT".

If "NG" is displayed, go to EC-295, "Diagnostic Procedure".





WITH GST

- Start engine and warm it up to normal operating temperature.
- Select Service \$01 with GST.
- Calculate the total value of "Short term fuel trim" and "Long term fuel trim" indications. Make sure that the total percentage should be within $\pm 15\%$. If OK, go to the following step.

If NG, check the following.

EC-289 2006 350Z Revision: 2005 August

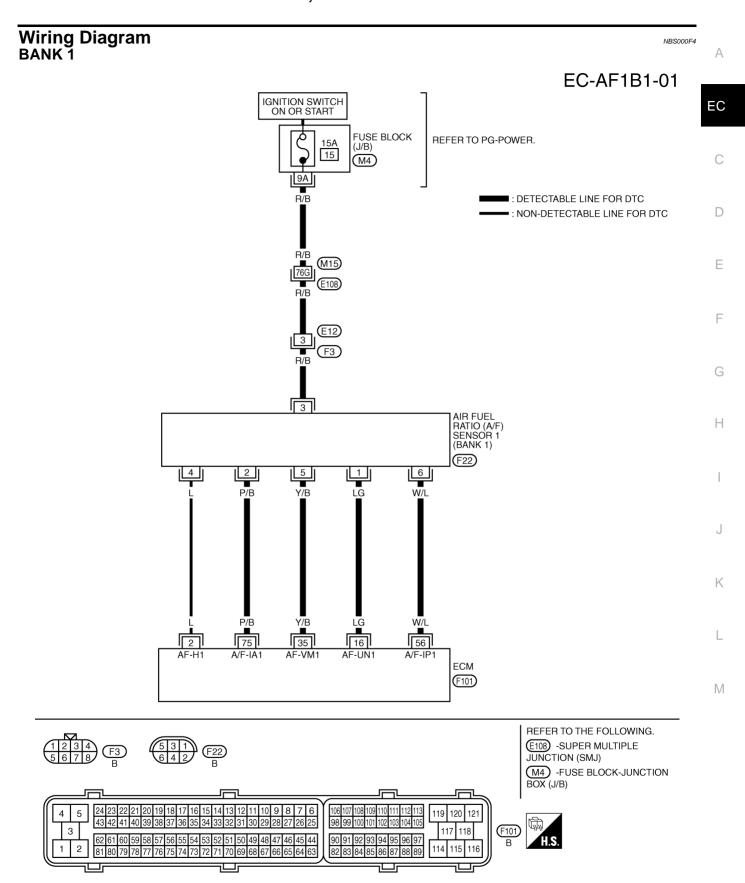
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- Intake air leaks
- Exhaust gas leaks
- Incorrect fuel pressure
- Lack of fuel
- Fuel injector
- Incorrect PCV hose connection
- PCV valve
- Mass air flow sensor
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1minute under no load.
- 6. Let engine idle for 1 minute.
- 7. Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.
- 8. Fully release accelerator pedal and then let engine idle for about 1 minute.
- 9. Select Service \$07 with GST.
 - If 1st trip DTC is detected, go to EC-295, "Diagnostic Procedure" .



TBWT1229E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

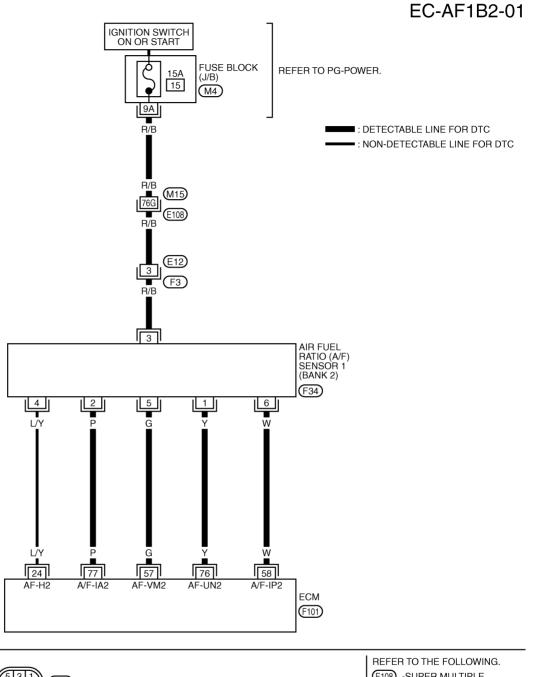
CAUTION:

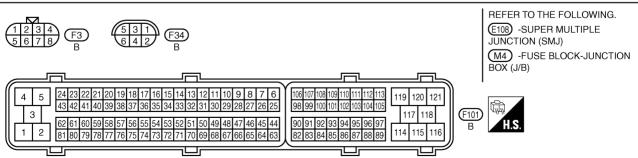
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	LG			Approximately 3.1V
35	Y/B	A/F sensor 1 (bank 1)	[Engine is running] • Warm-up condition	Approximately 2.6V
56	W/L	AVE SENSON (DANK I)	Idle speed	Approximately 2.3V
75	P/B			Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

BANK 2





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Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
57	G			Approximately 2.6V
58	W	A/F sensor 1 (bank 2)	[Engine is running]	Approximately 2.3V
76	Υ	AVI SCIISOI I (DAIIK Z)	Warm-up condition Idle speed	Approximately 3.1V
77	Р			Approximately 2.3V

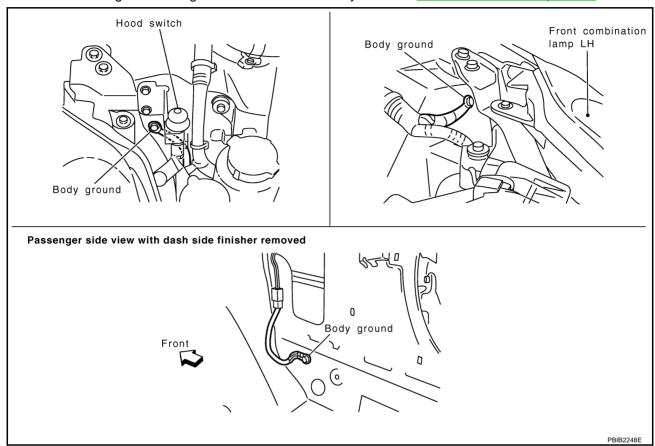
^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

NBS000F5

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



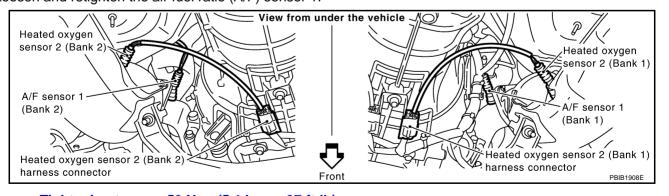
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. RETIGHTEN AIR FUEL RATIO (A/F) SENSOR 1

Loosen and retighten the air fuel ratio (A/F) sensor 1.



Tightening torque: 50 N-m (5.1 kg-m, 37 ft-lb)

>> GO TO 3.

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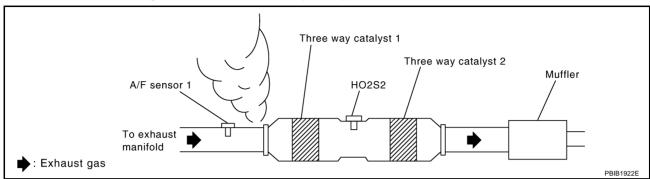
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3. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst 1.



OK or NG

OK >> GO TO 4.

NG >> Repair or replace.

4. CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

OK or NG

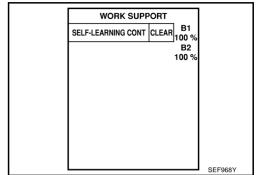
OK >> GO TO 5.

NG >> Repair or replace.

5. CLEAR THE SELF-LEARNING DATA

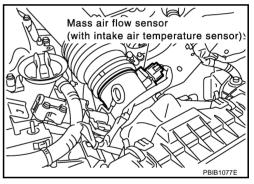
(II) With CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-II.
- Clear the self-learning control coefficient by touching "CLEAR" or "START".
- 4. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0171, P172, P0174 or P0175 detected? Is it difficult to start engine?



8 Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector.
- 4. Restart engine and let it idle for at least 5 seconds.
- 5. Stop engine and reconnect mass air flow sensor harness connector.
- 6. Make sure DTC P0102 is displayed.
- Erase the DTC memory. Refer to <u>EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION"</u>.
- 8. Make sure DTC P0000 is displayed.
- Run engine for at least 10 minutes at idle speed.
 Is the 1st trip DTC P0171, P0172, P0174 or P0175 detected?
 Is it difficult to start engine?



Yes or No

Yes >> Perform trouble diagnosis for DTC P0171, P0174 or P0172, P0175. Refer to <u>EC-339, "DTC P0171, P0174 FUEL INJECTION SYSTEM FUNCTION"</u> or <u>EC-351, "DTC P0172, P0175 FUEL INJECTION SYSTEM FUNCTION"</u>.

No >> GO TO 6.

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Revision: 2005 August **EC-297** 2006 350Z

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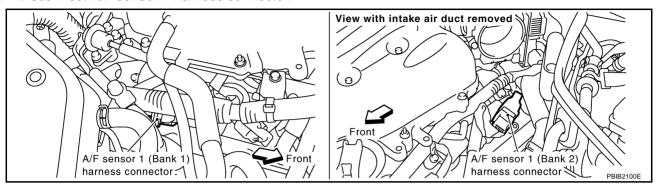
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6. CHECK A/F SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.

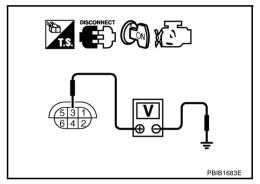


- 3. Turn ignition switch ON.
- 4. Check voltage between A/F sensor 1 terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 8. NG >> GO TO 7.



7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M15, E108
- Harness connectors E12, F3
- Fuse block (J/B) connector M4
- 15A fuse
- Harness for open or short between A/F sensor 1 and fuse
 - >> Repair or replace harness or connectors.

8. Check a/f sensor 1 input signal circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank1	2	75
Daliki	5	35
	6	56
	1	76
Bank 2	2	77
Dalik 2	5	57
	6	58

Continuity should exist.

4. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Bank 1		Ва	nk 2
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal
1	16	1	76
2	75	2	77
5	35	5	57
6	56	6	58

Continuity should not exist.

5. Also check harness for short to power.

OK or NG

OK >> GO TO 9.

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

9. CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-185, "Component Inspection".

OK or NG

OK >> GO TO 10.

NG >> Replace A/F sensor 1.

10. CHECK MASS AIR FLOW SENSOR

Refer to EC-218, "Component Inspection".

OK or NG

OK >> GO TO 11.

NG >> Replace mass air flow sensor.

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11. CHECK PCV VALVE

Refer to EC-44, "POSITIVE CRANKCASE VENTILATION".

OK or NG

OK >> GO TO 12.

NG >> Repair or replace PCV valve.

12. CHECK INTERMITTENT INCIDENT

Perform EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 13.

NG >> Repair or replace.

13. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning A/F sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads (using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12) and approved anti-seize lubricant.

>> INSPECTION END

Removal and Installation AIR FUEL RATIO (A/F) SENSOR 1

NBS000F6

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST".

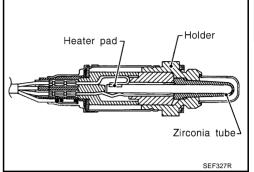
Component Description

The heated oxygen sensor 2, after three way catalyst 1, monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



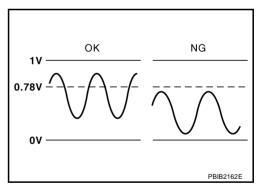
CONSULT-II Reference Value in Data Monitor Mode

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
	Revving engine from idle to 3,000 rpm quickly after the following conditions are met	
HO2S2 (B1) HO2S2 (B2)	- Engine: After warming up	0 - 0.3V ←→ Approx. 0.6 - 1.0V
110232 (B2)	 Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	
LICOSC MITTO (D.1)	Revving engine from idle to 3,000 rpm quickly after the following conditions are met	
HO2S2 MNTR (B1) HO2S2 MNTR (B2)	- Engine: After warming up	$LEAN \longleftrightarrow RICH$
	 Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	

On Board Diagnosis Logic

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity before the three way catalyst 1 causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the maximum voltage of the sensor is sufficiently high during the various driving condition such as fuelcut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0137 0137 (Bank 1)	Heated oxygen sensor	The maximum voltage from the sensor is not	Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2
P0157 0157 (Bank 2)	2 circuit low voltage	reached to the specified voltage.	Fuel pressureFuel injectorIntake air leaks

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EC-301 Revision: 2005 August 2006 350Z

DTC Confirmation Procedure

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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.

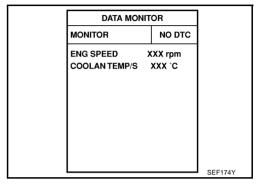
(P) WITH CONSULT-II

TESTING CONDITION:

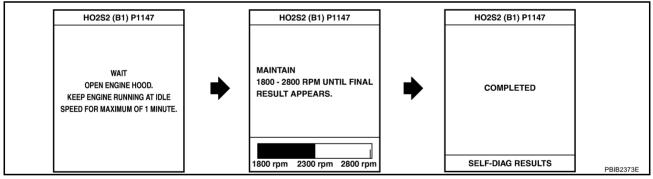
For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).

If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).



- Open engine hood.
- 8. Select "HO2S2 (B1) P1147" (for DTC P0137) or "HO2S2 (B2) P1167" (for DTC P0157) of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-II.
- 9. Start engine and following the instruction of CONSULT-II.



NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Make sure that "OK" is displayed after touching "SELF-DIAG RESULTS".

If "NG" is displayed, refer to EC-308, "Diagnostic Procedure".

If "CAN NOT BE DIAGNOSED" is displayed, perform the following.

- Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- b. Return to step 1.

Overall Function Check

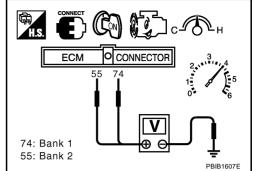
NBS000D0

Use this procedure to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

WITH GST

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Set voltmeter probes between ECM terminal 74 [HO2S2 (B1) signal] or 55 [HO2S2 (B2) signal] and ground.

- 6. Check the voltage when revving up to 4,000 rpm under no load at least 10 times.
 - (Depress and release accelerator pedal as soon as possible.) The voltage should be above 0.78V at least once during this procedure.
 - If the voltage can be confirmed in step 6, step 7 is not necessary.
- 7. Keep vehicle at idling for 10 minutes, then check the voltage. Or check the voltage when coasting from 80 km/h (50 MPH) in D position (A/T), 4th gear position (M/T).
 - The voltage should be above 0.78V at least once during this procedure.
- 8. If NG, go to EC-308, "Diagnostic Procedure".



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Wiring Diagram
BANK 1

EC-O2S2B1-01 IGNITION SWITCH ON OR START : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC FUSE BLOCK REFER TO PG-POWER. (J/B) 15 $\overline{M4}$ M15 (E108) (E12) 3 R/B (F3) R/B 2 HEATED OXYGEN SENSOR 2 (BANK 1) (F11) 3 4 P/B OR B/Y OR 74 25 78 ECM (F101) REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ) M4 -FUSE BLOCK-JUNCTION BOX (J/B) 119 120

117 118

114 115 116

(F101)

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90 91 92 93 94 95 96 97

82 83 84 85 86 87 88 89

1 2 3 4 5 6 7 8 F3 B

> 3 3

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Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
25	P/B	Heated oxygen sensor 2 heater (bank 1)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - 1.0V
			[Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)
74	OR	Heated oxygen sensor 2 (bank 1)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V

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BANK 2

1234 5678 F3 B

3

81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63

EC-O2S2B2-01 IGNITION SWITCH ON OR START : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC FUSE BLOCK (J/B) REFER TO PG-POWER. 15A 15 $\overline{(M4)}$ M15 E108 E12 F3 R/B HEATED OXYGEN SENSOR 2 (BANK 2) (F12) | 3 | | P/L L/B 55 78 6 GND-O2 O2HRL O2SRL ECM (F101) REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 119 120 117 118 (F101) 114 115 116

TBWT1203E

82 83 84 85 86 87 88 89

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)	E
6	P/L	Heated oxygen sensor 2 heater (bank 2)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - 1.0V	
	[Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)			
55	L/B	Heated oxygen sensor 2 (bank 2)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V	
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V	<u> </u>

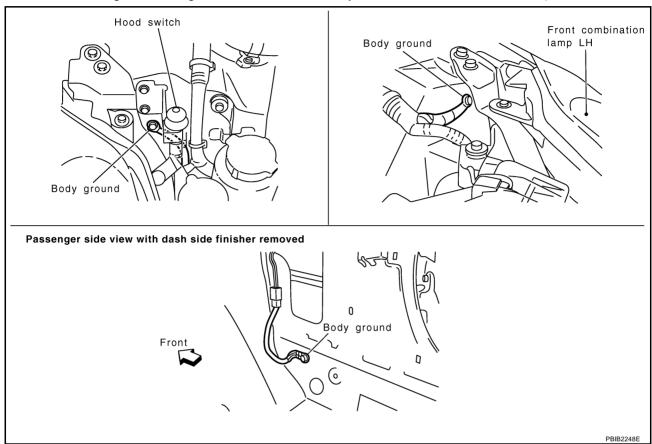
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Diagnostic Procedure

NBS000D2

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

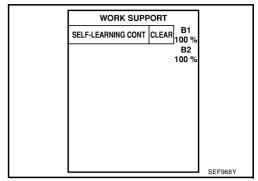
OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CLEAR THE SELF-LEARNING DATA

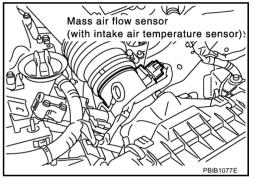
(II) With CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-II.
- 3. Clear the self-learning control coefficient by touching "CLEAR".
- 4. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0171 or P0174 detected? Is it difficult to start engine?



W Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector, and restart and run engine for at least 5 seconds at idle speed.
- Stop engine and reconnect mass air flow sensor harness connector.
- 5. Make sure DTC P0102 is displayed.
- 6. Erase the DTC memory. Refer to <u>EC-60, "HOW TO ERASE</u> EMISSION-RELATED DIAGNOSTIC INFORMATION".
- 7. Make sure DTC P0000 is displayed.
- 8. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0171 or P0174 detected? Is it difficult to start engine?



Yes or No

Yes >> Perform trouble diagnosis for DTC P0171or P0174. Refer to <u>EC-339, "DTC P0171, P0174 FUEL INJECTION SYSTEM FUNCTION"</u>.

No >> GO TO 3.

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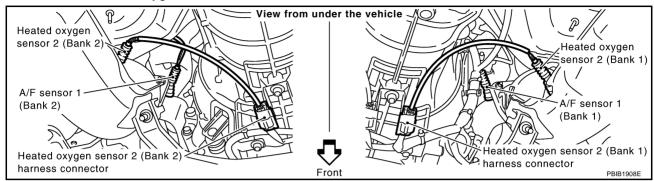
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3. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect heated oxygen sensor 2 harness connector.



 Check harness continuity between HO2S2 terminal 4 and ECM terminal 78. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4.

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

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between ECM terminal and HO2S2 terminal as follows. Refer to Wiring Diagram.

DTC	Term	Bank	
ыс	ECM	Sensor	Dank
P0137	74	1	1
P0157	55	1	2

Continuity should exist.

Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

DTC	Term	Bank	
ы	ECM	Sensor	Dank
P0137	74	1	1
P0157	55	1	2

Continuity should not exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 5.

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

5. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-311, "Component Inspection".

OK or NG

OK >> GO TO 6.

NG >> Replace malfunctioning heated oxygen sensor 2.

6. CHECK INTERMITTENT INCIDENT

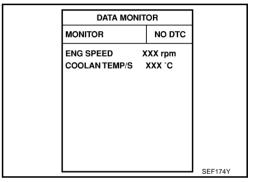
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection HEATED OXYGEN SENSOR 2

(P) With CONSULT-II

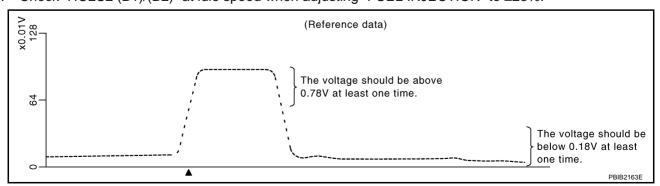
- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to the normal operating tempera-
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.



6. Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)/(B2)" as the monitor item with CONSULT-II.

ACTIVE TES	ST	
FUEL INJECTION	25 %	
MONITOR		
ENG SPEED	XXX rpm	
HO2S2 (B1)	xxx v	
HO2S2 (B2)	xxx v	
		PBIB1672E

7. Check "HO2S2 (B1)/(B2)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)/(B2)" should be above 0.78V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)/(B2)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

CAUTION:

Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

Revision: 2005 August **EC-311** 2006 350Z

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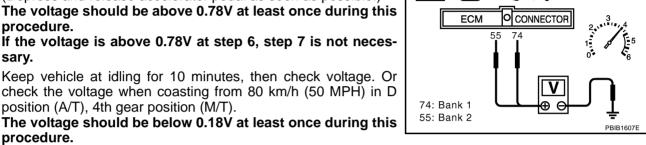
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Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

⋈ Without CONSULT-II

- Start engine and warm it up to the normal operating temperature. 1.
- Turn ignition switch OFF and wait at least 10 seconds. 2.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Set voltmeter probes between ECM terminal 74 [HO2S2 (B1) signal] or 55 [HO2S2 (B2) signal] and ground.
- Check the voltage when revving up to 4.000 rpm under no load at least 10 times.
 - (Depress and release accelerator pedal as soon as possible.) The voltage should be above 0.78V at least once during this procedure.
 - sary.
- 7. Keep vehicle at idling for 10 minutes, then check voltage. Or check the voltage when coasting from 80 km/h (50 MPH) in D position (A/T), 4th gear position (M/T).
 - procedure.



8. If NG, replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

Removal and Installation **HEATED OXYGEN SENSOR 2**

NBS000D4

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST".

Component Description

PFP:226A0

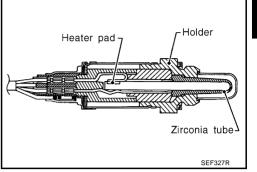
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The heated oxygen sensor 2, after three way catalyst 1, monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



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CONSULT-II Reference Value in Data Monitor Mode

Specification data are reference values.

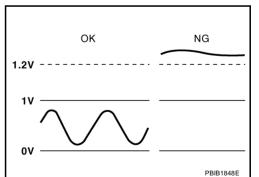
MONITOR ITEM	CONDITION	SPECIFICATION
HO2S2 (B1) HO2S2 (B2)	 Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	0 - 0.3V ←→ Approx. 0.6 - 1.0V
HO2S2 MNTR (B1) HO2S2 MNTR (B2)	 Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	LEAN ←→ RICH

On Board Diagnosis Logic

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/ F) sensor 1. The oxygen storage capacity of the three way catalyst 1 causes the longer switching time.

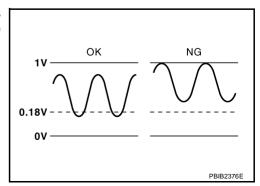
MALFUNCTION A

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



MALFUNCTION B

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.



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DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
P0138 0138 (Bank 1)		A)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted)Heated oxygen sensor 2
P0158 0158 (Bank 2)	Heated oxygen sensor 2 circuit high voltage	B)	The minimum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector

DTC Confirmation Procedure

NBS001NN

Perform PROCEDURE FOR MALFUNCTION A first.

If DTC cannot be confirmed, perform PROCEDURE FOR MALFUNCTION B.

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.

PROCEDURE FOR MALFUNCTION A

With CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to the normal operating tempera-
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 2 minutes.
- 6. If 1st trip DTC is detected, go to EC-320, "PROCEDURE FOR MALFUNCTION A".

DATA MONITOR MONITOR NO DTC ENG SPEED XXX rpm COOLAN TEMP/S XXX °C

With GST

Follow the procedure "With CONSULT-II" above.

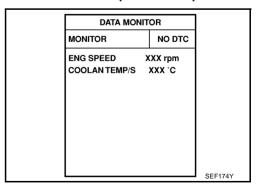
PROCEDURE FOR MALFUNCTION B

(P) With CONSULT-II

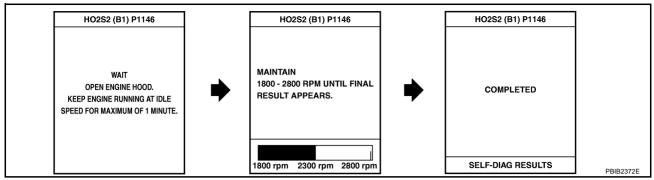
TESTING CONDITION:

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).
 - If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).
- 7. Open engine hood.
- Select "HO2S2 (B1) P1146" (for DTC P0138) or "HO2S2 (B2) P1166" (for DTC P0158) of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-II.



9. Start engine and following the instruction of CONSULT-II.



NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

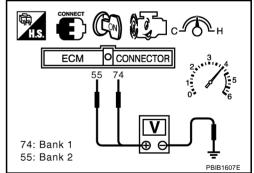
- 10. Make sure that "OK" is displayed after touching "SELF-DIAG RESULTS". If "NG" is displayed, refer to EC-322, "PROCEDURE FOR MALFUNCTION B" . If "CAN NOT BE DIAGNOSED" is displayed, perform the following.
- a. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- b. Return to step 1.

Overall Function Check PROCEDURE FOR MALFUNCTION B

Use this procedure to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

With GST

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Set voltmeter probes between ECM terminal 55 [HO2S2 (B2) signal] or 74 [HO2S2 (B1) signal] and ground.
- 6. Check the voltage when revving up to 4,000 rpm under no load at least 10 times.
 - (Depress and release accelerator pedal as soon as possible.) The voltage should be below 0.18V at least once during this procedure.
 - If the voltage can be confirmed in step 6, step 7 is not necessary.
- Keep vehicle at idling for 10 minutes, then check the voltage. Or check the voltage when coasting from 80 km/h (50 MPH) in D position.
 - The voltage should be below 0.18V at least once during this procedure.
- 8. If NG, go to EC-322, "PROCEDURE FOR MALFUNCTION B".



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Wiring Diagram BANK 1 NBS0006N EC-O2S2B1-01 IGNITION SWITCH ON OR START : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC FUSE BLOCK REFER TO PG-POWER. (J/B) 15 $\overline{M4}$ M15 (E108) (E12) 3 R/B (F3) R/B 2 HEATED OXYGEN SENSOR 2 (BANK 1) (F11) 3 4 P/B OR B/Y OR 74 25 78 ECM (F101) REFER TO THE FOLLOWING. 1 2 3 4 5 6 7 8 B (E108) -SUPER MULTIPLE JUNCTION (SMJ) M4 -FUSE BLOCK-JUNCTION BOX (J/B)

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90 91 92 93 94 95 96 97

82 83 84 85 86 87 88 89

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119 120

114 115 116

117 118

(F101)

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
25 P/B		Heated oxygen sensor 2 heater (bank 1)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - 1.0V
	[Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm		BATTERY VOLTAGE (11 - 14V)	
74	OR	Heated oxygen sensor 2 (bank 1)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V

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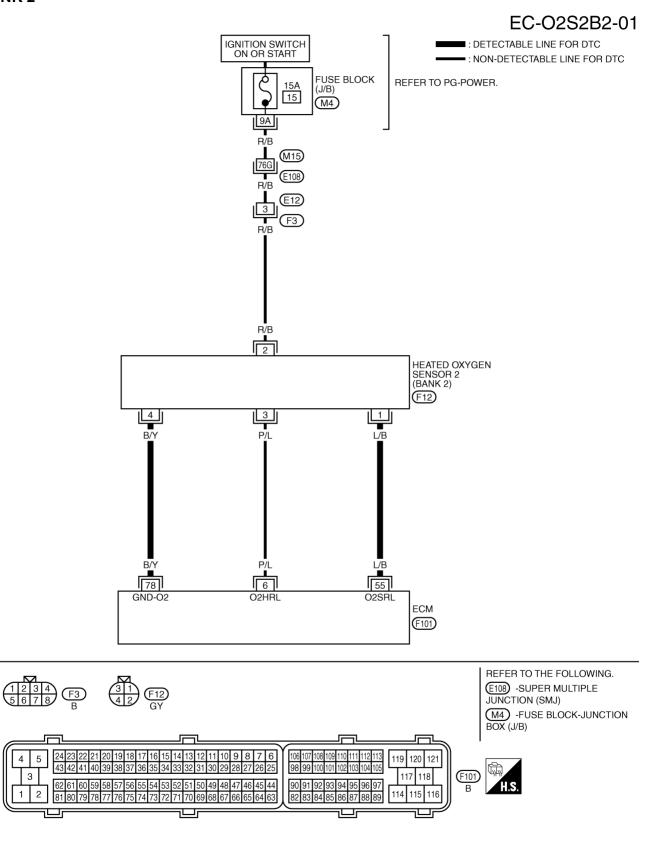
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BANK 2



TBWT1203E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
6 P/L		Heated oxygen sensor 2	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 	0 - 1.0V
	heater (bank 2)	minute under no load. [Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)	
55	L/B	Heated oxygen sensor 2 (bank 2)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V

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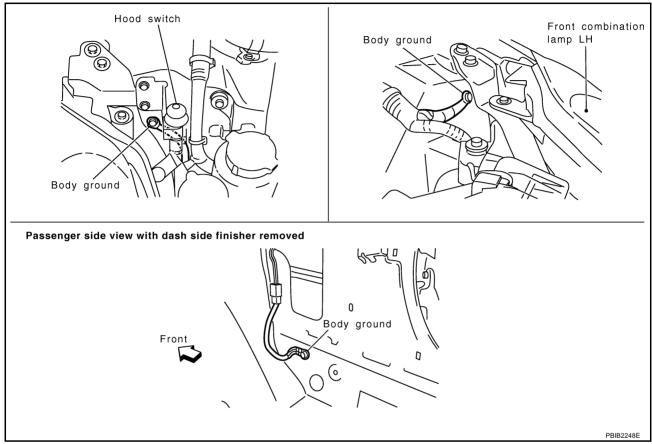
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Diagnostic Procedure PROCEDURE FOR MALFUNCTION A

NBS001NO

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to PG-29, "Ground Distribution".



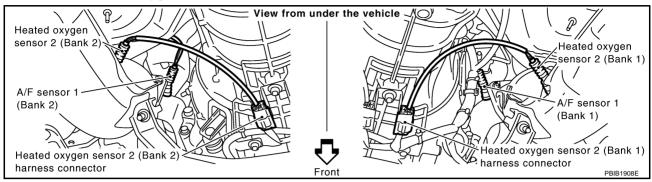
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$\overline{2}$. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

Disconnect heated oxygen sensor 2 harness connector.



- 2. Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 78 and HO2S2 terminal 4. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 3.

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

3. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check harness continuity between ECM terminal and HO2S2 terminal as follows.
 Refer to Wiring Diagram.

DTC	Term	Bank	
ы	ECM	Sensor	Dank
P0138	74	1	1
P0158	55	1	2

Continuity should exist.

2. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

DTC	Term	Bank	
ыс	ECM	Sensor	Dank
P0138	74	1	1
P0158	55	1	2

Continuity should not exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 4.

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

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4. CHECK HO2S2 CONNECTOR FOR WATER

Check connectors for water.

Water should not exist.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace harness or connectors.

5. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-311, "Component Inspection".

OK or NG

OK >> GO TO 6.

NG >> Replace malfunctioning heated oxygen sensor 2.

6. CHECK INTERMITTENT INCIDENT

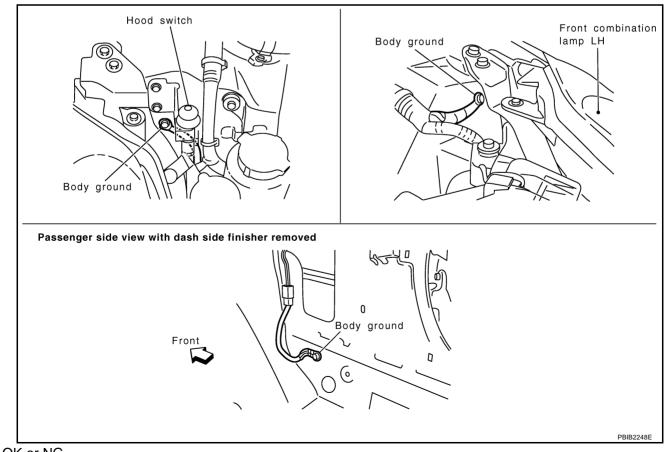
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

PROCEDURE FOR MALFUNCTION B

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to PG-29, "Ground Distribution".



OK or NG

OK >> GO TO 2.

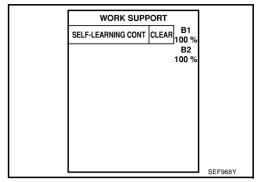
NG >> Repair or replace ground connections.

Revision: 2005 August **EC-322** 2006 350Z

2. CLEAR THE SELF-LEARNING DATA

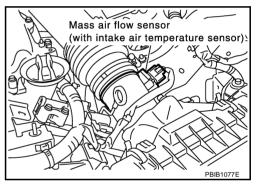
(II) With CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-II.
- 3. Clear the self-learning control coefficient by touching "CLEAR".
- 4. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0172 or P0175 detected? Is it difficult to start engine?



W Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector, and restart and run engine for at least 5 seconds at idle speed.
- Stop engine and reconnect mass air flow sensor harness connector.
- 5. Make sure DTC P0102 is displayed.
- 6. Erase the DTC memory. Refer to <u>EC-60, "HOW TO ERASE</u> EMISSION-RELATED DIAGNOSTIC INFORMATION".
- 7. Make sure DTC P0000 is displayed.
- 8. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0172 or P0175 detected? Is it difficult to start engine?



Yes or No

Yes >> Perform trouble diagnosis for DTC P0172, P0175. Refer to <u>EC-351, "DTC P0172, P0175 FUEL INJECTION SYSTEM FUNCTION"</u>.

No >> GO TO 3.

1

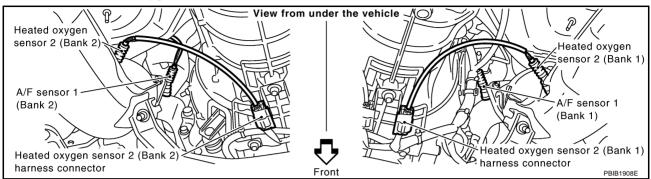
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3. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.



- 3. Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 78 and HO2S2 terminal 4. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4.

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

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between ECM terminal and HO2S2 terminal as follows. Refer to Wiring Diagram.

DTC	Term	Bank	
ыс	ECM	Sensor	Dank
P0138	74	1	1
P0158	55	1	2

Continuity should exist.

2. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

DTC	Tern	Bank	
ыс	ECM	Sensor	Dank
P0138	74	1	1
P0158	55	1	2

Continuity should not exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 5.

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

5. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-311, "Component Inspection".

OK or NG

OK >> GO TO 6.

NG >> Replace malfunctioning heated oxygen sensor 2.

6. CHECK INTERMITTENT INCIDENT

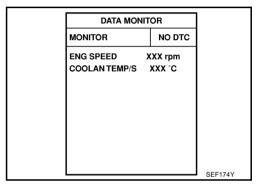
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection **HEATED OXYGEN SENSOR 2**

(P) With CONSULT-II

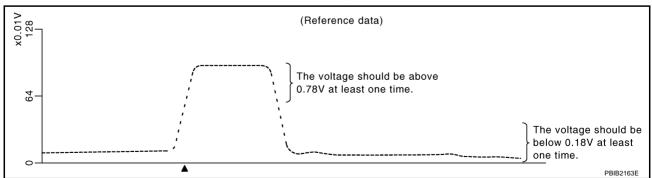
- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- Start engine and warm it up to the normal operating tempera-
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.



Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)/(B2)" as the monitor item with CONSULT-II.

ACTIVE TES	ST	
FUEL INJECTION	25 %	
MONITOR	1	
ENG SPEED	XXX rpm	
HO2S2 (B1)	xxx v	
HO2S2 (B2)	xxx v	
		PBIB1672E

Check "HO2S2 (B1)/(B2)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)/(B2)" should be above 0.78V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)/(B2)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

CAUTION:

Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

EC-325 Revision: 2005 August 2006 350Z

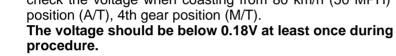
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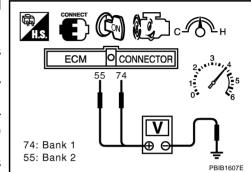
NBS0006P F

Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

⋈ Without CONSULT-II

- Start engine and warm it up to the normal operating temperature. 1.
- Turn ignition switch OFF and wait at least 10 seconds. 2.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Set voltmeter probes between ECM terminal 74 [HO2S2 (B1) signal] or 55 [HO2S2 (B2) signal] and ground.
- Check the voltage when revving up to 4.000 rpm under no load at least 10 times.
 - (Depress and release accelerator pedal as soon as possible.) The voltage should be above 0.78V at least once during this procedure.
 - If the voltage is above 0.78V at step 6, step 7 is not necessary.
- 7. Keep vehicle at idling for 10 minutes, then check voltage. Or check the voltage when coasting from 80 km/h (50 MPH) in D position (A/T), 4th gear position (M/T).
 - The voltage should be below 0.18V at least once during this





8. If NG, replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

Removal and Installation **HEATED OXYGEN SENSOR 2**

NBS0006Q

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST".

DTC P0139, P0159 HO2S2

PFP:226A0

NBS0006R

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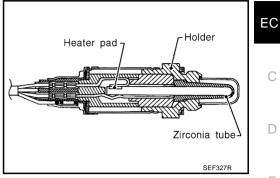
Component Description

The heated oxygen sensor 2, after three way catalyst 1, monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



CONSULT-II Reference Value in Data Monitor Mode

NBS0006S

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION	
LIO202 (D4)	Revving engine from idle to 3,000 rpm quickly after the following conditions are met	0 - 0.3V ←→ Approx. 0.6 -	
HO2S2 (B1) HO2S2 (B2)	- Engine: After warming up	1.0V ←→ Approx. 0.0 -	
110202 (02)	 Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 		
HO2S2 MNTR (B1) HO2S2 MNTR (B2)	Revving engine from idle to 3,000 rpm quickly after the following conditions are met		
	- Engine: After warming up	$LEAN \longleftrightarrow RICH$	
	 Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 		

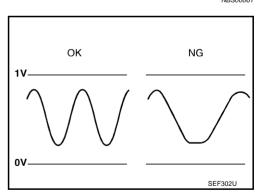
On Board Diagnosis Logic

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The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity before the three way catalyst 1 causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the switching response of the sensor's voltage is faster than specified during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0139 0139 (Bank 1)	9	It takes more time for the sensor to respond	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2
P0159 0159 (Bank 2)	2 circuit slow response	between rich and lean than the specified time.	Fuel pressureFuel injectorIntake air leaks

DTC Confirmation Procedure

NBS0006U

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.

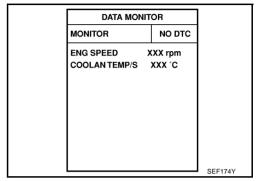
(P) WITH CONSULT-II

TESTING CONDITION:

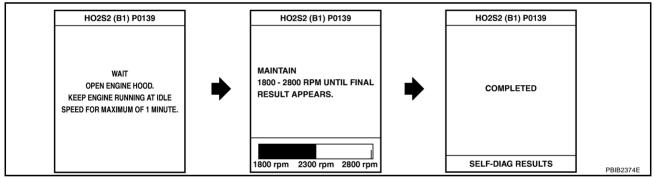
For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).

If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).



- Select "HO2S2 (B1) P0139" or "HO2S2 (B2) P0159" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-II.
- 8. Start engine and following the instruction of CONSULT-II.



NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

- 9. Make sure that "OK" is displayed after touching "SELF-DIAG RESULTS".
 - If "NG" is displayed, refer to EC-334, "Diagnostic Procedure".
 - If "CAN NOT BE DIAGNOSED" is displayed, perform the following.
- a. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- b. Return to step 1.

Overall Function Check

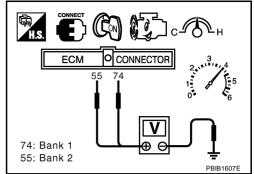
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Use this procedure to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

WITH GST

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Set voltmeter probes between ECM terminal 74 [HO2S2 (B1) signal] or 55 [HO2S2 (B2) signal] and ground.

- 6. Check the voltage when revving up to 4,000 rpm under no load at least 10 times.
 - (Depress and release accelerator pedal as soon as possible.) A change of voltage should be more than 0.06V for 1 second during this procedure.
 - If the voltage can be confirmed in step 6, step 7 is not necessary.
- 7. Keep vehicle at idling for 10 minutes, then check the voltage. Or check the voltage when coasting from 80 km/h (50 MPH) in D position (A/T), 4th gear position (M/T).
 - A change of voltage should be more than 0.06V for 1 second during this procedure.
- 8. If NG, go to EC-334, "Diagnostic Procedure".



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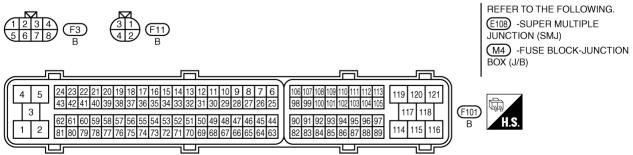
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Wiring Diagram BANK 1 NBS0006W EC-O2S2B1-01 IGNITION SWITCH ON OR START : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC FUSE BLOCK REFER TO PG-POWER. (J/B) 15 $\overline{M4}$ M15 (E108) (E12) 3 R/B (F3) R/B 2 HEATED OXYGEN SENSOR 2 (BANK 1) (F11) 3 4 P/B OR B/Y OR 74 25 78 ECM (F101)



TBWT1202E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
25	P/B	Heated oxygen sensor 2 heater (bank 1)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 	0 - 1.0V
	Tieater (balik 1)	minute under no load. [Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)	
74	OR	Heated oxygen sensor 2 (bank 1)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V

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BANK 2

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EC-O2S2B2-01 IGNITION SWITCH ON OR START : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC FUSE BLOCK (J/B) REFER TO PG-POWER. 15A 15 $\overline{(M4)}$ M15 E108 E12 F3 R/B HEATED OXYGEN SENSOR 2 (BANK 2) (F12) | 3 | | P/L L/B 55 78 6 GND-O2 O2HRL O2SRL ECM (F101) REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 119 120 117 118 (F101) 114 115 116 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 82 83 84 85 86 87 88 89

TBWT1203E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)	E
6	P/L	Heated oxygen sensor 2 heater (bank 2)	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - 1.0V	
		 [Ignition switch: ON] Engine stopped [Engine is running] Engine speed: Above 3,600 rpm 	BATTERY VOLTAGE (11 - 14V)		
55	L/B	Heated oxygen sensor 2 (bank 2)	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load. 	0 - Approximately 1.0V	
78	B/Y	Sensor ground (Heated oxygen sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V	<u> </u>

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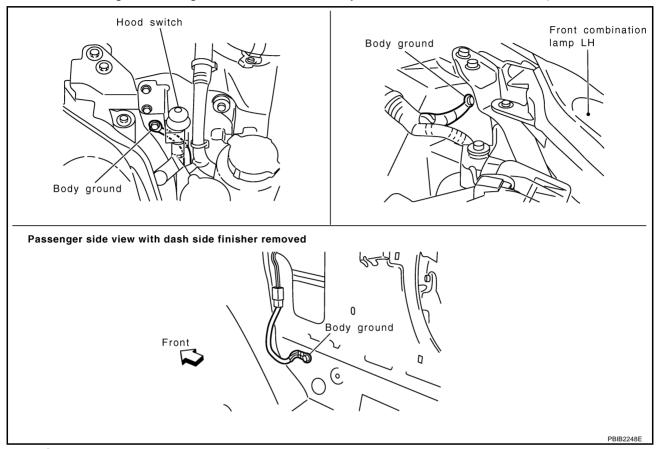
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Diagnostic Procedure

NBS0006X

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

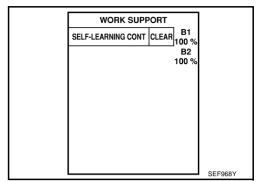
OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CLEAR THE SELF-LEARNING DATA

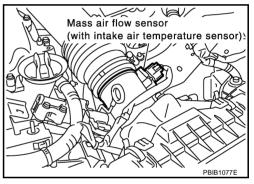
(II) With CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-II.
- 3. Clear the self-learning control coefficient by touching "CLEAR".
- 4. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0171, P0172, P0174 or P0175 detected? Is it difficult to start engine?



Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector, and restart and run engine for at least 5 seconds at idle speed.
- Stop engine and reconnect mass air flow sensor harness connector.
- 5. Make sure DTC P0102 is displayed.
- 6. Erase the DTC memory. Refer to <u>EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION"</u>.
- 7. Make sure DTC P0000 is displayed.
- 8. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0171, P0172, P0174 or P0175 detected? Is it difficult to start engine?



Yes or No

Yes >> Perform trouble diagnosis for DTC P0171, P0174 or P0172, P0175. Refer to <u>EC-339, "DTC P0171, P0174 FUEL INJECTION SYSTEM FUNCTION"</u> or <u>EC-351, "DTC P0172, P0175 FUEL INJECTION SYSTEM FUNCTION"</u>.

No >> GO TO 3.

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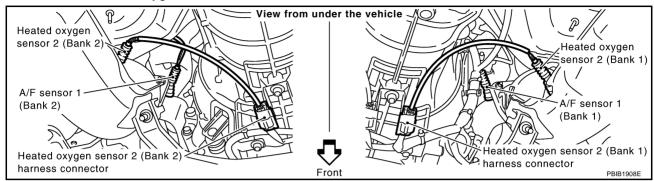
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Revision: 2005 August **EC-335** 2006 350Z

3. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect heated oxygen sensor 2 harness connector.



 Check harness continuity between HO2S2 terminal 4 and ECM terminal 78. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4.

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

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between ECM terminal and HO2S2 terminal as follows. Refer to Wiring Diagram.

DTC	Term	Bank	
ыс	ECM	Sensor	Dalik
P0139	74	1	1
P0159	55	1	2

Continuity should exist.

2. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

DTC	Terminals		Bank	
ыс	ECM	Sensor	Balik	
P0139	74	1	1	
P0159	55	1	2	

Continuity should not exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 5.

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

5. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-337, "Component Inspection".

OK or NG

OK >> GO TO 6.

NG >> Replace malfunctioning heated oxygen sensor 2.

6. CHECK INTERMITTENT INCIDENT

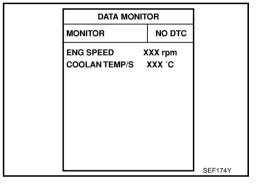
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection HEATED OXYGEN SENSOR 2

(P) With CONSULT-II

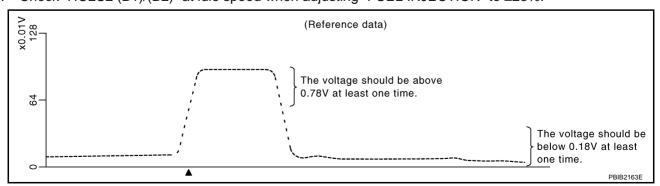
- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.



6. Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)/(B2)" as the monitor item with CONSULT-II.

ACTIVE TES	ST	
FUEL INJECTION	25 %	
MONITOR	1	
ENG SPEED	XXX rpm	
HO2S2 (B1)	xxx v	
HO2S2 (B2)	xxx v	
		PBIB1672E

7. Check "HO2S2 (B1)/(B2)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)/(B2)" should be above 0.78V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)/(B2)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

CAUTION:

Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

Revision: 2005 August **EC-337** 2006 350Z

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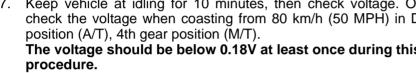
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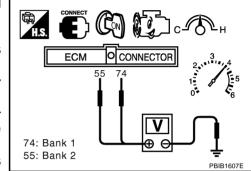
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Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

⋈ Without CONSULT-II

- Start engine and warm it up to the normal operating temperature. 1.
- Turn ignition switch OFF and wait at least 10 seconds. 2.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Set voltmeter probes between ECM terminal 74 [HO2S2 (B1) signal] or 55 [HO2S2 (B2) signal] and ground.
- Check the voltage when revving up to 4.000 rpm under no load at least 10 times.
 - (Depress and release accelerator pedal as soon as possible.) The voltage should be above 0.78V at least once during this procedure.
 - If the voltage is above 0.78V at step 6, step 7 is not necessary.
- 7. Keep vehicle at idling for 10 minutes, then check voltage. Or check the voltage when coasting from 80 km/h (50 MPH) in D position (A/T), 4th gear position (M/T).
 - The voltage should be below 0.18V at least once during this





8. If NG, replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

Removal and Installation **HEATED OXYGEN SENSOR 2**

NBS0006Z

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST".

DTC P0171, P0174 FUEL INJECTION SYSTEM FUNCTION

PFP:16600

On Board Diagnosis Logic

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With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the air fuel ratio (A/F) sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too lean.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	F
P0171			Intake air leaks	
0171 (Darah 4)			Air fuel ratio (A/F) sensor 1	
(Bank 1)			Fuel injector	F
	Fuel injection system too lean	The amount of mixture ratio compensation is too	Exhaust gas leaks	
P0174			Incorrect fuel pressure	
0174		large. (The mixture ratio is too lean.)	Lack of fuel	(
(Bank 2)	2)		Mass air flow sensor	
			Incorrect PCV hose connection	
				- -

DTC Confirmation Procedure

NBS00071

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

(P) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON and select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CON-SULT-II.
- Clear the self-learning control coefficient by touching "CLEAR".
- Select "DATA MONITOR" mode with CONSULT-II.
- Start engine again and let it idle for at least 10 minutes. The 1st trip DTC P0171 or P0174 should be detected at this stage, if a malfunction exists. If so, go to EC-345, "Diagnostic Procedure".

NOTE:

If 1st trip DTC is not detected during above procedure, performing the following procedure is advised.

- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed	Engine speed in the freeze frame data \pm 400 rpm
Vehicle speed	Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)

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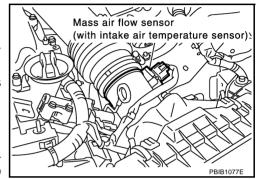
WORK SUPPORT SELF-LEARNING CONT CLEAR 100 % 100 % SEF968Y

Engine coolant temperature	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
(T) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

- 7. If it is difficult to start engine at step 6, the fuel injection system has a malfunction, too.
- 8. Crank engine while depressing accelerator pedal. If engine starts, go to EC-345, "Diagnostic Procedure". If engine does not start, check exhaust and intake air leak visually.

WITH GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Disconnect mass air flow sensor harness connector.
- 4. Restart engine and let it idle for at least 5 seconds.
- Stop engine and reconnect mass air flow sensor harness connector.
- Select Service \$03 with GST. Make sure DTC P0102 is detected.
- 7. Select Service \$04 with GST and erase the DTC P0102.
- 8. Start engine again and let it idle for at least 10 minutes.
- Select Service \$07 with GST. The 1st trip DTC P0171 or P0174 should be detected at this stage, if a malfunction exists. If so, go to <u>EC-345</u>, "<u>Diagnostic Procedure</u>".



NOTE:

If 1st trip DTC is not detected during above procedure, performing the following procedure is advised.

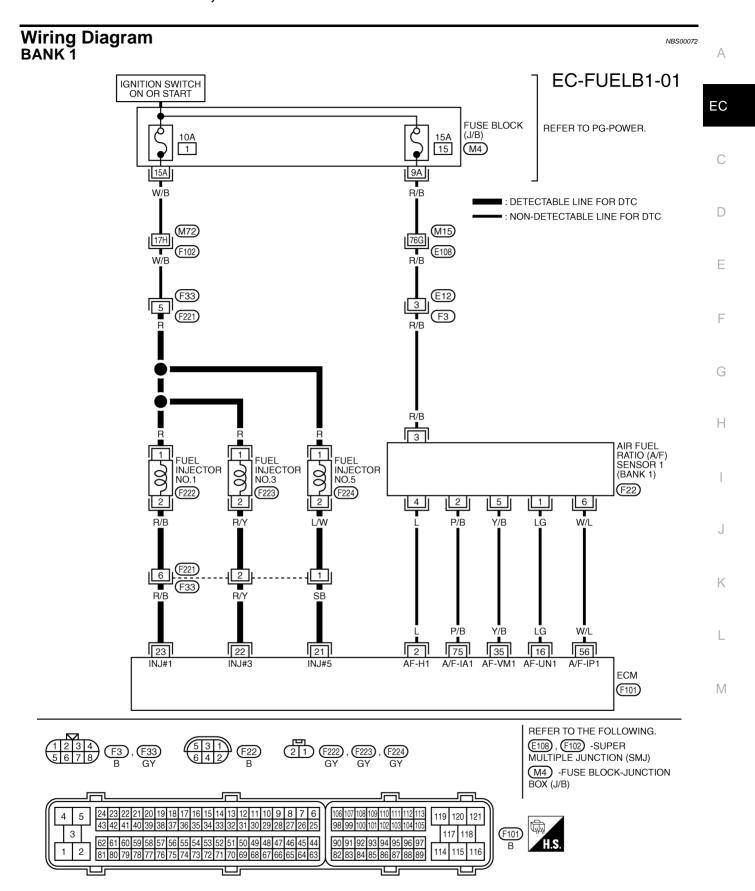
- a. Turn ignition switch OFF and wait at least 10 seconds.
- b. Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed	Engine speed in the freeze frame data ± 400 rpm
Vehicle speed in the freeze frame data ± 10 km/h (6 MPH)	
Engine coolant temperature	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
(T) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

- 10. If it is difficult to start engine at step 8, the fuel injection system has a malfunction.
- 11. Crank engine while depressing accelerator pedal. If engine starts, go to EC-345, "Diagnostic Procedure". If engine does not start, check exhaust and intake air leak visually.



TBWT1204E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	LG			Approximately 3.1V
35	Y/B	A/F sensor 1 (bank 1)	[Engine is running] • Warm-up condition	Approximately 2.6V
56	W/L	A/F Selisor (Dalik I)	Idle speed	Approximately 2.3V
75	P/B		Tale speed	Approximately 2.3V
21 22	SB R/Y	Fuel injector No. 5 Fuel injector No. 3	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	BATTERY VOLTAGE (11 - 14V)★
22 23	R/B	Fuel injector No. 3 Fuel injector No. 1	[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)★ 10.0 V/Div 50 ms/Div SEC985C

BANK 2 Α EC-FUELB2-01 IGNITION SWITCH ON OR START EC FUSE BLOCK REFER TO PG-POWER. 15A 15 10A (J/B) (M4)9A 15A C w/B R/B ■ : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC D (M72) (M15)17H (F102) W/B (E108) B/B Е (E12) (F33) (F221) (F3) R/B G R/B .3 Н AIR FUEL RATIO (A/F) SENSOR 1 (BANK 2) FUEL FUEL INJECTOR NO.2 INJECTOR NO.4 INJECTOR NO.6 (F34) 9 4 5 1 6 2 (F225) (F226) (F227) PU/R R/W R/L F221 3 - 7 4 (F33) K B/R W/L LG/B 24 41 40 77 57 58 42 76 INJ#2 INJ#4 INJ#6 AF-H2 A/F-IA2 AF-VM2 AF-UN2 A/F-IP2 **ECM** (F101) M REFER TO THE FOLLOWING. (E108), (F102) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 「 119 120 4 5 3 117 118 (F101) 2 114 115 116 82 83 84 85 86 87 88 89

TBWT1205E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

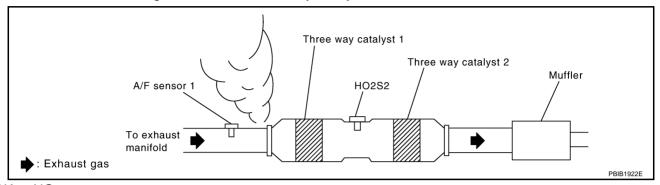
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Volta	age)
24	L/Y	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T	PBIB1584E
40 41	LG/B W/L	Fuel injector No. 6 Fuel injector No. 4	[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	BATTERY VOLTAGE (11 - 14V)★	SEC984C
41 42	B/R	Fuel injector No. 4 Fuel injector No. 2	[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)* 10.0 V/Div 50 ms/Div	SEC985C
57	G			Approximately 2.6V	
58	W	A/F sensor 1 (bank 2)	[Engine is running] • Warm-up condition	Approximately 2.3V	
76	Υ		Idle speed	Approximately 3.1V	
77	Р		• ruic speed	Approximately 2.3V	

Diagnostic Procedure

1. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst 1.



OK or NG

OK >> GO TO 2.

NG >> Repair or replace.

2. CHECK FOR INTAKE AIR LEAK

- 1. Listen for an intake air leak after the mass air flow sensor.
- 2. Check PCV hose connection.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace.

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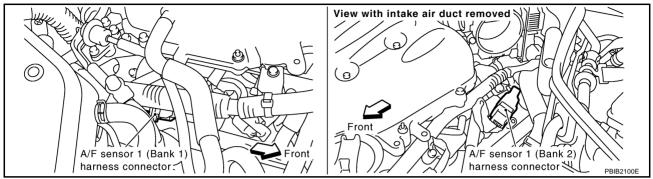
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$\overline{3}$. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.



- 3. Disconnect ECM harness connector.
- 4. Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank 1	2	75
Dalik i	5	35
	6	56
	1	76
Bank 2	2	77
Dalik Z	5	57
	6	58

Continuity should exist.

5. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Bank 1		Bank 2	
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal
1	16	1	76
2	75	2	77
5	35	5	57
6	56	6	58

Continuity should not exist.

6. Also check harness for short to power.

OK or NG

OK >> GO TO 4.

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

4. CHECK FUEL PRESSURE Release fuel pressure to zero. Refer to EC-81, "FUEL PRESSURE RELEASE". Install fuel pressure gauge and check fuel pressure. Refer to EC-82, "FUEL PRESSURE CHECK". EC At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi) OK or NG >> GO TO 6. OK NG >> GO TO 5. 5. DETECT MALFUNCTIONING PART D Check the following. Fuel pump and circuit (Refer to EC-690, "FUEL PUMP".) F Fuel pressure regulator (Refer to EC-82, "FUEL PRESSURE CHECK") Fuel lines (Refer to FL-3, "Checking Fuel Lines".) Fuel filter for clogging >> Repair or replace. 6. CHECK MASS AIR FLOW SENSOR (P) With CONSULT-II Н 1. Install all removed parts. 2. Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-II. 2.0 - 6.0 q·m/sec: at idling 7.0 - 20.0 g·m/sec: at 2,500 rpm **With GST** 1. Install all removed parts. Check mass air flow sensor signal in Service \$01 with GST. 2.0 - 6.0 g·m/sec: at idling 7.0 - 20.0 g·m/sec: at 2,500 rpm OK or NG OK (With CONSULT-II)>>GO TO 7. OK (Without COUSULT-II)>>GO TO 8. NG >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to EC-211, "DTC P0101 MAF SENSOR".

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7. CHECK FUNCTION OF FUEL INJECTOR

(I) With CONSULT-II

- 1. Start engine.
- 2. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-II.
- 3. Make sure that each circuit produces a momentary engine speed drop.

ACTIVE TES	Т	
POWER BALANCE		
MONITOR		
ENG SPEED	XXX rpm	
MAS A/F SE-B1	xxx v	
		PBIB0133E

OK or NG

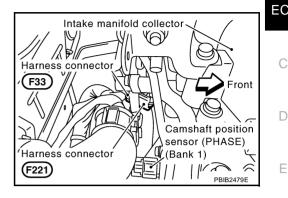
OK >> GO TO 10.

NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-682, "FUEL INJECTOR".

8. CHECK FUNCTION OF FUEL INJECTOR-I

W Without CONSULT-II

- Stop engine.
- 2. Disconnect harness connectors F33, F221
- Turn ignition switch ON.

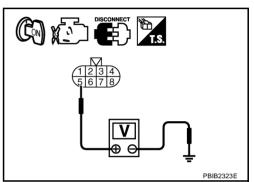


Check voltage between harness connector F33 terminal 5 and ground with CONSULT-II or tester.

Voltage: Battery voltage

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness continuity between harness connector F33 and ECM as follows. Refer to Wiring Diagram.

Cylinder	Harness connector F33 terminal	ECM terminal
1	6	23
2	4	42
3	2	22
4	3	41
5	1	21
6	7	40



Continuity should exist.

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

OK or NG

OK >> GO TO 9.

NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-682, "FUEL INJECTOR".

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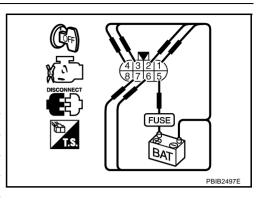
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9. CHECK FUNCTION OF FUEL INJECTOR-II

Provide battery voltage between harness connector F221 as follows and then interrupt it. Listen to each fuel injector operating sound.

Cylinder	Harness connector F221 terminal	
Cylinder	(+)	(-)
1		6
2	5	4
3		2
4		3
5		1
6		7



Operating sound should exist.

OK or NG

OK >> GO TO 10.

NG >> Perform trouble diagnosis for FUEL INJECTOR CIRCUIT, refer to EC-682, "FUEL INJECTOR".

10. CHECK FUEL INJECTOR

- 1. Confirm that the engine is cooled down and there are no fire hazards near the vehicle.
- 2. Turn ignition switch OFF.
- 3. Reconnect all harness connectors disconnected.
- Disconnect all fuel injector harness connectors.
- 5. Remove fuel injector gallery assembly. Refer to EM-38, "FUEL INJECTOR AND FUEL TUBE". Keep fuel hose and all fuel injectors connected to fuel injector gallery.
- 6. For DTC P0171, reconnect fuel injector harness connectors on bank 1. For DTC P0174, reconnect fuel injector harness connectors on bank 2.
- 7. Disconnect all ignition coil harness connectors.
- 8. Prepare pans or saucers under each fuel injector.
- Crank engine for about 3 seconds.
 For DTC P0171, make sure that fuel sprays out from fuel injectors on bank 1.

For DTC P0174, make sure that fuel sprays out from fuel injectors on bank 2.

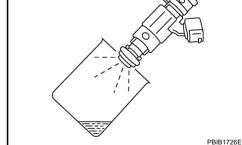
Fuel should be sprayed evenly for each fuel injector.

OK or NG

NG

OK >> GO TO 11.

>> Replace fuel injectors from which fuel does not spray out. Always replace O-ring with new ones.



11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

DTC P0172, P0175 FUEL INJECTION SYSTEM FUNCTION

PFP:16600

On Board Diagnosis Logic

NRS00074

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the air fuel ratio (A/F) sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too rich.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0172			Air fuel ratio (A/F) sensor 1
0172 (Bank 1)		Fuel injection system does not operate properly.	Fuel injector
	Fuel injection system too rich	The amount of mixture ratio compensation is too	Exhaust gas leaks
P0175 0175	Hon	large. (The mixture ratio is too rich.)	Incorrect fuel pressure
(Bank 2)			Mass air flow sensor

DTC Confirmation Procedure

NBS00075

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

(A) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CON-SULT-II.
- Clear the self-learning control coefficient by touching "CLEAR".
- Select "DATA MONITOR" mode with CONSULT-II.
- Start engine again and let it idle for at least 10 minutes. The 1st trip DTC P0172, P0175 should be detected at this stage, if a malfunction exists. If so, go to EC-357, "Diagnostic Procedure".

NOTE:

If 1st trip DTC is not detected during above procedure, performing the following procedure is advised.

- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for a certain time. Refer to the table below.

Hold the accelerator pedal as steady as possible.

WORK SUPPORT

SELF-LEARNING CONT CLEAR 100 %

B2 100 %

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed in the freeze frame data \pm 400 rpm	
Vehicle speed in the freeze frame data ± 10 km/h (6 MPH)	
Engine coolant temperature	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
(T) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

- If it is difficult to start engine at step 6, the fuel injection system has a malfunction, too.
- Crank engine while depressing accelerator pedal.

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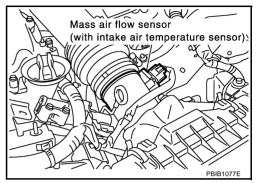
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If engine starts, go to <u>EC-357</u>, "<u>Diagnostic Procedure</u>" . If engine does not start, remove ignition plugs and check for fouling, etc.

WITH GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Disconnect mass air flow sensor harness connector. Then restart and run engine for at least 5 seconds at idle speed.
- Stop engine and reconnect mass air flow sensor harness connector
- Select Service \$03 with GST. Make sure DTC P0102 is detected.
- 6. Select Service \$04 with GST and erase the DTC P0102.
- 7. Start engine again and let it idle for at least 10 minutes.
- Select Service \$07 with GST. The 1st trip DTC P0172 or P0175 should be detected at this stage, if a malfunction exists. If so, go to <u>EC-357</u>, "<u>Diagnostic Procedure</u>".



NOTE:

If 1st trip DTC is not detected during above procedure, performing the following procedure is advised.

- a. Turn ignition switch OFF and wait at least 10 seconds.
- b. Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for a certain time. Refer to the table below.

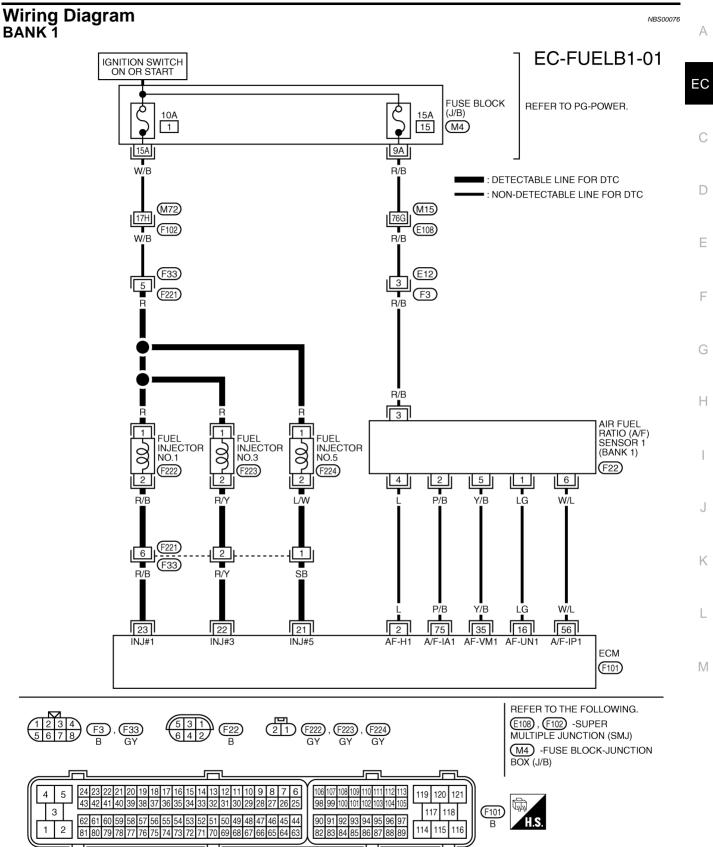
Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed Engine speed in the freeze frame data \pm 400 rpm	
Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)	
Engine coolant temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

- If it is difficult to start engine at step 7, the fuel injection system has a malfunction.
- 10. Crank engine while depressing accelerator pedal.

If engine starts, go to EC-357, "Diagnostic Procedure". If engine does not start, remove ignition plugs and check for fouling, etc.



TBWT1204E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	LG		[Engine is running] • Warm-up condition • Idle speed	Approximately 3.1V
35	Y/B	A/E consor 1 (bonk 1)		Approximately 2.6V
56	W/L	A/F sensor 1 (bank 1)		Approximately 2.3V
75	P/B			Approximately 2.3V
21 22 23	SB R/Y R/B	Fuel injector No. 5 Fuel injector No. 3 Fuel injector No. 1	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	BATTERY VOLTAGE (11 - 14V)★
			[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)★ 10.0 V/Div 50 ms/Div SEC985C

BANK 2 Α EC-FUELB2-01 IGNITION SWITCH ON OR START EC FUSE BLOCK REFER TO PG-POWER. 15A 15 10A (J/B) (M4)9A 15A C w/B R/B ■ : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC D (M72) (M15)(F102) W/B (E108) B/B Е (E12) (F33) (F221) (F3) R/B G R/B .3 Н AIR FUEL RATIO (A/F) SENSOR 1 (BANK 2) FUEL FUEL INJECTOR NO.2 INJECTOR NO.4 INJECTOR NO.6 (F34) 9 4 5 1 6 2 (F225) (F226) (F227) PU/R R/W R/L F221 3 - 7 4 (F33) K B/R W/L LG/B 24 41 40 77 57 58 42 76 INJ#2 INJ#4 INJ#6 AF-H2 A/F-IA2 AF-VM2 AF-UN2 A/F-IP2 **ECM** (F101) M REFER TO THE FOLLOWING. (E108), (F102) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 乛 119 120 4 5 3 117 118 (F101) 2 114 115 116 82 83 84 85 86 87 88 89

TBWT1205E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

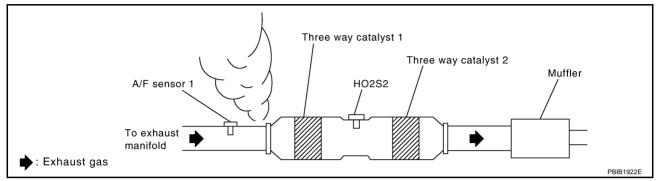
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Volta	ge)
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ >> 10.0V/Div 10 ms/Div T	PBIB1584E
40 LG/B 41 W/L 42 B/R		Fuel injector No. 6 Fuel injector No. 4 Fuel injector No. 2	[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	BATTERY VOLTAGE (11 - 14V)★	SEC984C
			[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)★	SEC985C
57	G	A/F sensor 1 (bank 2)	FF	Approximately 2.6V	_
58	W		[Engine is running] • Warm-up condition	Approximately 2.3V	
76	Υ		Idle speed	Approximately 3.1V	
77	Р		- 1	Approximately 2.3V	

Diagnostic Procedure

1. CHECK EXHAUST GAS LEAK

NBS00077

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst 1.



OK or NG

OK >> GO TO 2.

NG >> Repair or replace.

2. CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace.

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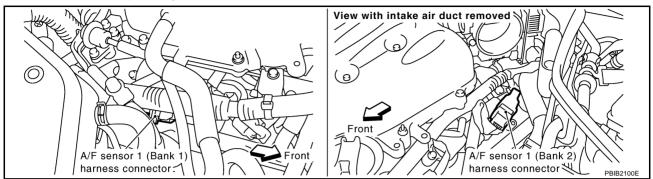
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$\overline{3}$. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.



- 3. Disconnect ECM harness connector.
- 4. Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank 1	2	75
	5	35
	6	56
	1	76
Bank 2	2	77
Dalik 2	5	57
	6	58

Continuity should exist.

5. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Ва	nk 1	Bank 2		
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal	
1	16	1	76	
2	75	2	77	
5	35	5	57	
6	56	6	58	

Continuity should not exist.

6. Also check harness for short to power.

OK or NG

OK >> GO TO 4.

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

4. CHECK FUEL PRESSURE

- Release fuel pressure to zero. Refer to EC-81, "FUEL PRESSURE RELEASE".
- Install fuel pressure gauge and check fuel pressure. Refer to EC-82, "FUEL PRESSURE CHECK".

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

OK or NG

>> GO TO 6. OK NG >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Fuel pump and circuit (Refer to EC-690, "FUEL PUMP".)
- Fuel pressure regulator (Refer to EC-82, "FUEL PRESSURE CHECK".)

>> Repair or replace.

6. CHECK MASS AIR FLOW SENSOR

(P) With CONSULT-II

- 1. Install all removed parts.
- 2. Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-II.

2.0 - 6.0 q·m/sec: at idling 7.0 - 20.0 g·m/sec: at 2,500 rpm

With GST

- 1. Install all removed parts.
- Check mass air flow sensor signal in Service \$01 with GST.

2.0 - 6.0 g·m/sec: at idling 7.0 - 20.0 g·m/sec: at 2,500 rpm

OK or NG

OK (With CONSULT-II)>>GO TO 7.

OK (Without CONSULT-II)>>GO TO 8.

>> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to EC-211, "DTC P0101 MAF SENSOR".

7. CHECK FUNCTION OF FUEL INJECTOR

(II) With CONSULT-II

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with [CONSULT-II.
- 3. Make sure that each circuit produces a momentary engine speed drop.

ACTIVE TES	Т	
POWER BALANCE		
MONITOR		
ENG SPEED	XXX rpm	
MAS A/F SE-B1	xxx v	
		PBIB0133E

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OK or NG

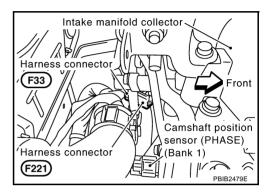
OK >> GO TO 10.

NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to <u>EC-682, "FUEL INJECTOR"</u>.

8. CHECK FUNCTION OF FUEL INJECTOR-I

W Without CONSULT-II

- 1. Stop engine.
- 2. Disconnect harness connector F33, F221
- 3. Turn ignition switch ON.



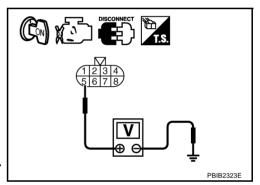
Check voltage between harness connector F33 terminal 5 and ground with CONSULT-II or tester.

Voltage: Battery voltage

- 5. Turn ignition switch OFF.
- 6. Disconnect ECM harness connector.
- 7. Check harness continuity between harness connector F33 and ECM as follows.

Refer to Wiring Diagram.

Cylinder	Harness connector F33 terminal	ECM terminal
1	6	23
2	4	42
3	2	22
4	3	41
5	1	21
6	7	40



Continuity should exist.

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

OK or NG

OK >> GO TO 9.

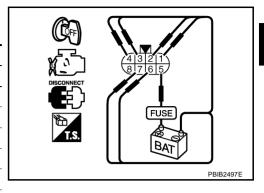
NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-682, "FUEL INJECTOR".

DTC P0172, P0175 FUEL INJECTION SYSTEM FUNCTION

9. CHECK FUNCTION OF FUEL INJECTOR-II

Provide battery voltage between harness connector F221 as follows and then interrupt it. Listen to each fuel injector operating sound.

Culindor	Harness connector F221 terminal		
Cylinder	(+)	(-)	
1	5	6	
2 3 4		4	
		2	
		3	
5		1	
6		7	



Operating sound should exist.

OK or NG

OK >> GO TO 10.

NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to <u>EC-682, "FUEL INJECTOR"</u>.

10. CHECK FUEL INJECTOR

- Remove fuel injector assembly. Refer to <u>EM-38</u>, "<u>FUEL INJECTOR AND FUEL TUBE</u>".
 Keep fuel hose and all fuel injectors connected to fuel injector gallery.
- 2. Confirm that the engine is cooled down and there are no fire hazards near the vehicle.
- Reconnect all harness connectors disconnected.
- 4. Disconnect all fuel injector harness connectors.
- 5. Disconnect all ignition coil harness connectors.
- 6. Prepare pans or saucers under each fuel injectors.
- Crank engine for about 3 seconds.
 Make sure fuel does not drip from fuel injector.

OK or NG

OK (Does not drip.)>>GO TO 11.

NG (Drips.)>>Replace the fuel injectors from which fuel is dripping. Always replace O-ring with new one.

11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

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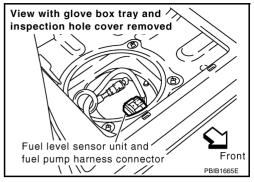
DTC P0181 FTT SENSOR

PFP:22630

Component Description

NBS00078

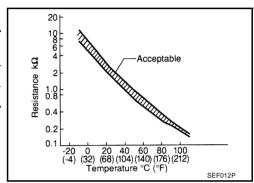
The fuel tank temperature sensor is used to detect the fuel temperature inside the fuel tank. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the fuel temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical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



<Reference data>

Fluid temperature °C (°F)	Voltage* V	Resistance kΩ
20 (68)	3.5	2.3 - 2.7
50 (122)	2.2	0.79 - 0.90

^{*:} This data is reference values and is measured between ECM terminal 107 (Fuel tank temperature sensor) and ground.



CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

On Board Diagnosis Logic

NBS00079

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0181 0181	Fuel tank temperature sensor circuit range/ performance	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signals from engine coolant temperature sensor and intake air temperature sensor.	 Harness or connectors (The sensor circuit is open or shorted) Fuel tank temperature sensor

DTC Confirmation Procedure

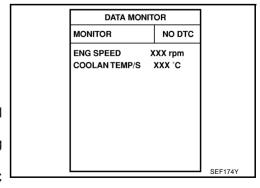
NBS0007A

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.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- Wait at least 10 seconds.
 If the result is NG, go to <u>EC-365, "Diagnostic Procedure"</u>.
 If the result is OK, go to following step.
- Check "COOLAN TEMP/S" value.
 If "COOLAN TEMP/S" is less than 60°C (140°F), the result will be OK.
 If "COOLAN TEMP/S" is above 60°C (140°F), go to the following
- Cool engine down until "COOLAN TEMP/S" is less than 60°C (140°F).
- Wait at least 10 seconds.
- 7. If 1st trip DTC is detected, go to EC-365, "Diagnostic Procedure".



DTC P0181 FTT SENSOR

WITH GST

Follow the procedure "WITH CONSULT-II" above.

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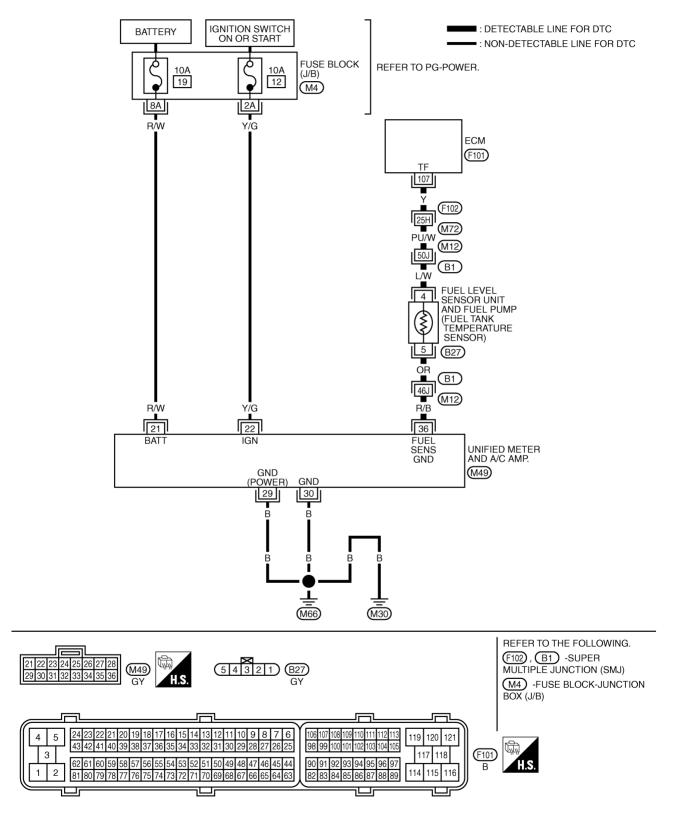
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Wiring Diagram NBS0007B

EC-FTTS-01



TBWT1206E

DTC P0181 FTT SENSOR

Diagnostic Procedure

NBS0007C

CHECK DTC WITH "UNIFIED METER AND A/C AMP."

Refer to DI-50, "SELF-DIAGNOSTIC RESULTS".

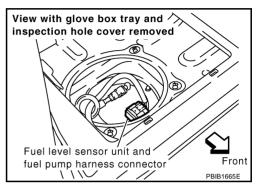
OK or NG

OK >> GO TO 2.

NG >> Go to DI-21. "Fuel Level Sensor Signal Inspection".

2. CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Disconnect "fuel level sensor unit and fuel pump" harness connector.
- Turn ignition switch ON.

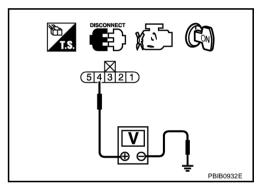


Check voltage between "fuel level sensor unit and fuel pump" terminal 4 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 4. >> GO TO 3. NG



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M72, F102
- Harness connectors B1, M12
- Harness for open or short between ECM and "fuel level sensor unit and fuel pump"

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

4. CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect "unified meter and A/C amp." harness connector M49.
- Check harness continuity between "fuel level sensor unit and fuel pump" terminal 5 and "unified meter and A/C amp." terminal 36. Refer to Wiring Diagram.

Continuity should exist.

4. Also check harness for short to power.

OK or NG

OK >> GO TO 6.

NG >> GO TO 5.

Revision: 2005 August

EC-365 2006 350Z EC

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DTC P0181 FTT SENSOR

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M12
- Harness for open or short between "fuel level sensor unit and fuel pump" and "unified meter and A/C amp."
 - >> Repair open circuit or short to ground or short to power in harness or connector.

6. CHECK FUEL TANK TEMPERATURE SENSOR

Refer to EC-366, "Component Inspection".

OK or NG

OK >> GO TO 7.

NG >> Replace fuel level sensor unit.

7. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

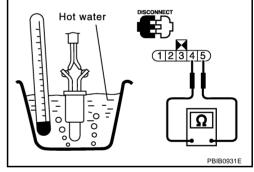
>> INSPECTION END

Component Inspection FUEL TANK TEMPERATURE SENSOR

NBS0007D

- Remove fuel level sensor unit.
- 2. Check resistance between "fuel level sensor unit and fuel pump" terminals 4 and 5 by heating with hot water or heat gun as shown in the figure.

Temperature °C (°F)	Resistance k Ω
20 (68)	2.3 - 2.7
50 (122)	0.79 - 0.90



NBS0007E

Removal and Installation FUEL TANK TEMPERATURE SENSOR

Refer to FL-4, "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY".

Revision: 2005 August **EC-366** 2006 350Z

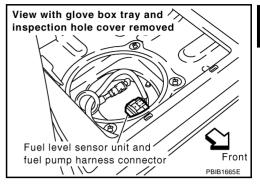
DTC P0182, P0183 FTT SENSOR

PFP:22630

Component Description

NBS0007F

The fuel tank temperature sensor is used to detect the fuel temperature inside the fuel tank. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the fuel 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>

Fluid temperature °C (°F)	Voltage* V	Resistance $k\Omega$
20 (68)	3.5	2.3 - 2.7
50 (122)	2.2	0.79 - 0.90

^{*:} This data is reference values and is measured between ECM terminal 107 (Fuel tank temperature sensor) and ground.

-Acceptable Resistance kn 1.0 0.8 0.4 0.2 0 20 40 60 80 100 (32) (68) (104) (140) (176) (212) Temperature °C (°F) SEF012P

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

On Board Diagnosis Logic

NBS0007G

	DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
	P0182 0182	Fuel tank temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
-	P0183 0183	Fuel tank temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

DTC Confirmation Procedure

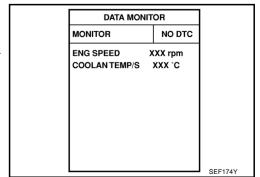
NBS0007H

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.

(A) WITH CONSULT-II

- Turn ignition switch ON.
- 2 Select "DATA MONITOR" mode with CONSULT-II.
- 3. Wait at least 5 seconds.
- If 1st trip DTC is detected, go to EC-369, "Diagnostic Procedure"



WITH GST

Follow the procedure "WITH CONSULT-II" above.

EC-367 Revision: 2005 August 2006 350Z

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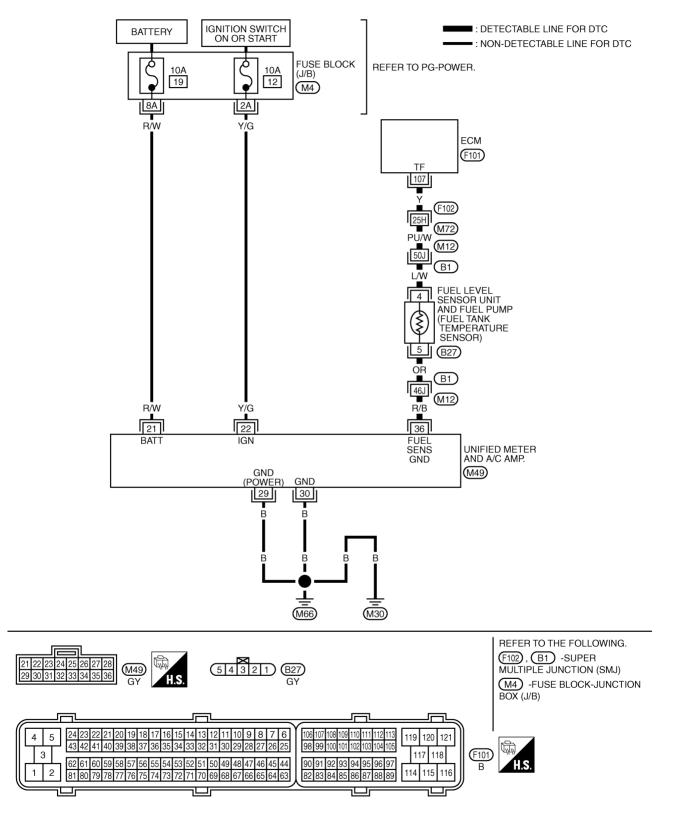
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Wiring Diagram

EC-FTTS-01



TBWT1206E

DTC P0182, P0183 FTT SENSOR

Diagnostic Procedure

NBS0007J

CHECK DTC WITH "UNIFIED METER AND A/C AMP."

Refer to DI-50, "SELF-DIAGNOSTIC RESULTS".

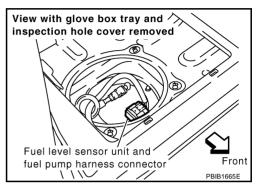
OK or NG

OK >> GO TO 2.

NG >> Go to DI-21. "Fuel Level Sensor Signal Inspection".

2. CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Disconnect "fuel level sensor unit and fuel pump" harness connector.
- Turn ignition switch ON.

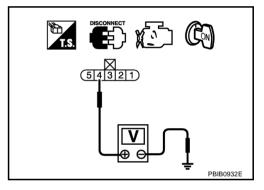


Check voltage between "fuel level sensor unit and fuel pump" terminal 4 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 4. >> GO TO 3. NG



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M72, F102
- Harness connectors B1, M12
- Harness for open or short between ECM and "fuel level sensor unit and fuel pump"

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

4. CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect "unified meter and A/C amp." harness connector M49.
- Check harness continuity between "fuel level sensor unit and fuel pump" terminal 5 and "unified meter and A/C amp." terminal 36. Refer to Wiring Diagram.

EC-369

Continuity should exist.

4. Also check harness for short to power.

OK or NG

OK >> GO TO 6.

NG >> GO TO 5.

Revision: 2005 August

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DTC P0182, P0183 FTT SENSOR

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M12
- Harness for open or short between "fuel level sensor unit and fuel pump" and "unified meter and A/C amp."
 - >> Repair open circuit short to ground or short to power in harness or connector.

6. CHECK FUEL TANK TEMPERATURE SENSOR

Refer to EC-366, "Component Inspection".

OK or NG

OK >> GO TO 7.

NG >> Replace fuel level sensor unit.

7. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

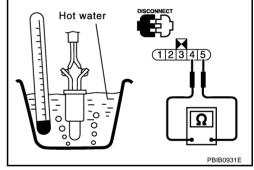
>> INSPECTION END

Component Inspection FUEL TANK TEMPERATURE SENSOR

NBS0007K

- 1. Remove fuel level sensor unit.
- 2. Check resistance between "fuel level sensor unit and fuel pump" terminals 4 and 5 by heating with hot water or heat gun as shown in the figure.

Temperature °C (°F)	Resistance $k\Omega$
20 (68)	2.3 - 2.7
50 (122)	0.79 - 0.90



Removal and Installation FUEL TANK TEMPERATURE SENSOR

NBS0007L

Refer to FL-4, "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY".

Revision: 2005 August **EC-370** 2006 350Z

DTC P0222, P0223 TP SENSOR

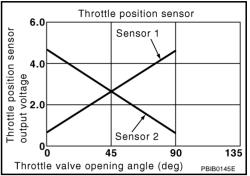
PFP:16119

Component Description

NBS0007M

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has the two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



CONSULT-II Reference Value in Data Monitor Mode

NBS0007N

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
THRTL SEN 1	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36V
THRTL SEN 2*	(Engine stopped) ■ Shift lever: D (A/T), 1st (M/T)	Accelerator pedal: Fully depressed	Less than 4.75V

^{*:} Throttle position sensor 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage signal.

On Board Diagnosis Logic

NBS00070

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0222 0222	Throttle position sensor 1 circuit low input	An excessively low voltage from the TP sensor 1 is sent to ECM.	Harness or connectors (The TP sensor 1 circuit is open or	
			shorted.) (The APP sensor 2 circuit is shorted.)	
·	An excessively high voltage from the TP sensor 1 is sent to ECM.	Electric throttle control actuator (TP sensor 1)		
			 Accelerator pedal position sensor (APP sensor 2) 	

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode an the MIL lights up.

Engine operation condition in fail-safe mode

The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.

The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.

So, the acceleration will be poor.

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DTC Confirmation Procedure

NBS00071

NOTE:

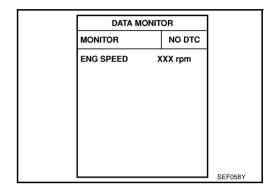
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

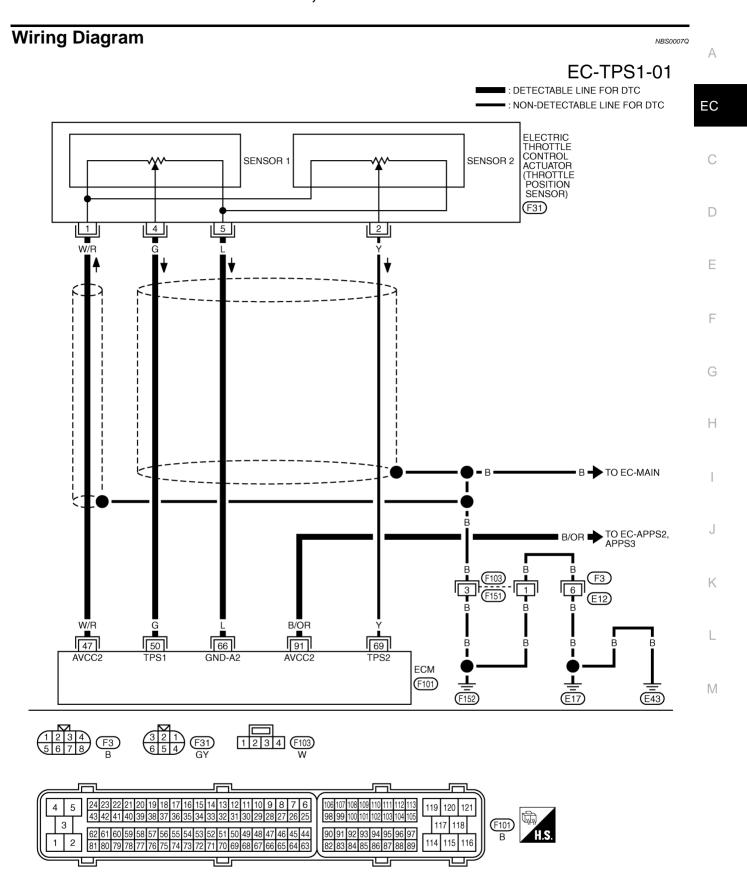
(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 1 second.
- 4. If DTC is detected, go to EC-375, "Diagnostic Procedure".



WITH GST

Follow the procedure "WITH CONSULT-II" above.



TBWT1207E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

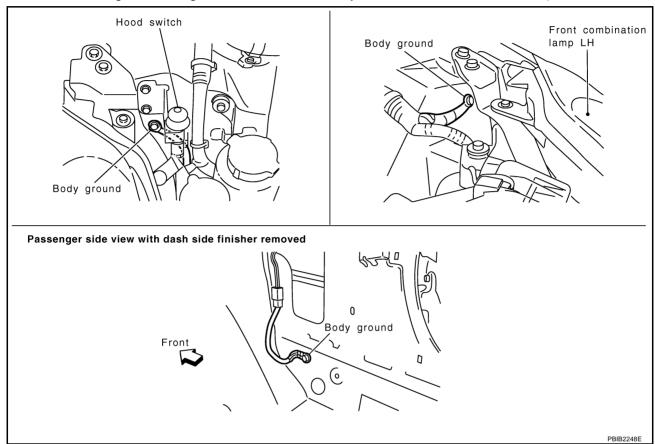
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
47	W/R	Sensor power supply (Throttle position sensor)	[Ignition switch: ON]	Approximately 5V
50	G	Throttle position sensor 1	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	More than 0.36V
30	G	Throttle position sensor 1	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	Less than 4.75V
66	L	Sensor ground (Throttle position sensor)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
69	Y	Throttle position sensor 2	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	Less than 4.75V
09	T	Throttle position sensor 2	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	More than 0.36V
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V

Diagnostic Procedure

NBS0007R

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

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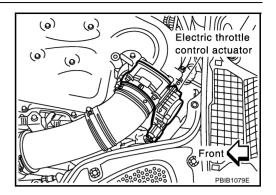
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2. CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT-I

- 1. Disconnect electric throttle control actuator harness connector.
- 2. Turn ignition switch ON.

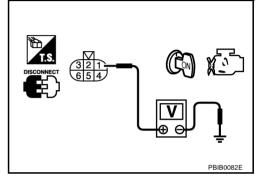


 Check voltage between electric throttle control actuator terminal 1 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 7. NG >> GO TO 3.



3. CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between electric throttle control actuator terminal 1 and ECM terminal 47. Refer to Wiring Diagram.

Continuity should exist.

OK or NG

OK >> GO TO 4.

NG >> Repair open circuit.

4. CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT-III

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

ECM terminal	Sensor terminal	Reference Wiring Diagram
47	Electric throttle control actuator terminal 1	EC-373
91	APP sensor terminal 4	EC-628

OK or NG

OK >> GO TO 5.

NG >> Repair short to ground or short to power in harness or connectors.

5. CHECK APP SENSOR

Refer to EC-633, "Component Inspection".

OK or NG

OK >> GO TO 11. NG >> GO TO 6.

6. REPLACE ACCELERATOR PEDAL ASSEMBLY 1. Replace accelerator pedal assembly. 2. Perform EC-78, "Accelerator Pedal Released Position Learning". EC 3. Perform EC-79, "Throttle Valve Closed Position Learning". 4. Perform EC-79, "Idle Air Volume Learning". >> INSPECTION END 7. CHECK THROTTLE POSITION SENSOR 1 GROUND CIRCUIT FOR OPEN AND SHORT Turn ignition switch OFF. 1. 2. Disconnect ECM harness connector. F Check harness continuity between electric throttle control actuator terminal 5 and ECM terminal 66. Refer to Wiring Diagram. Continuity should exist. 4. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 8. NG >> Repair open circuit or short to ground or short to power in harness or connectors. 8. CHECK THROTTLE POSITION SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Н Check harness continuity between ECM terminal 50 and electric throttle control actuator terminal 4. Refer to Wiring Diagram. Continuity should exist. 2. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 9. NG >> Repair open circuit or short to ground or short to power in harness or connectors. 9. CHECK THROTTLE POSITION SENSOR Refer to EC-378, "Component Inspection". OK or NG OK >> GO TO 11. NG >> GO TO 10. M 10. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR 1. Replace the electric throttle control actuator. 2. Perform EC-79, "Throttle Valve Closed Position Learning". 3. Perform EC-79, "Idle Air Volume Learning". >> INSPECTION END 11. CHECK INTERMITTENT INCIDENT

>> INSPECTION END

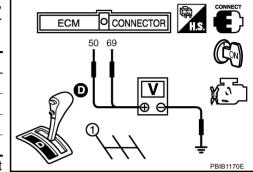
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

Component Inspection THROTTLE POSITION SENSOR

NBS0007S

- 1. Reconnect all harness connectors disconnected.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Turn ignition switch ON.
- 4. Set shift lever to D (A/T) or 1st (M/T) position.
- Check voltage between ECM terminals 50 (TP sensor 1 signal),
 (TP sensor 2 signal) and ground under the following conditions.

Terminal	Accelerator pedal	Voltage
50	Fully released	More than 0.36V
(Throttle position sensor 1)	Fully depressed	Less than 4.75V
69	Fully released	Less than 4.75V
(Throttle position sensor 2)	Fully depressed	More than 0.36V



- If NG, replace electric throttle control actuator and go to the next step.
- 7. Perform EC-79, "Throttle Valve Closed Position Learning".
- 8. Perform EC-79, "Idle Air Volume Learning".

Removal and Installation ELECTRIC THROTTLE CONTROL ACTUATOR

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

NBS0007T

DTC P0300 - P0306 MULTIPLE CYLINDER MISFIRE, NO. 1 - 6 CYLINDER MISFIRE

On Board Diagnosis Logic

NBS0007U

When a misfire occurs, engine speed will fluctuate. If the engine speed fluctuates enough to cause the crank-shaft position (CKP) sensor (POS) signal to vary, ECM can determine that a misfire is occurring.

Sensor	Input Signal to ECM	ECM function
Crankshaft position sensor (POS)	Engine speed	On board diagnosis of misfire

The misfire detection logic consists of the following two conditions.

One Trip Detection Logic (Three Way Catalyst Damage)

On the 1st trip that a misfire condition occurs that can damage the three way catalyst (TWC) due to overheating, the MIL will blink.

When a misfire condition occurs, the ECM monitors the CKP sensor signal every 200 engine revolutions for a change.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will turn off.

If another misfire condition occurs that can damage the TWC on a 2nd trip, the MIL will blink.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will remain on. If another misfire condition occurs that can damage the TWC, the MIL will begin to blink again.

2. Two Trip Detection Logic (Exhaust quality deterioration)

For misfire conditions that will not damage the TWC (but will affect vehicle emissions), the MIL will only light when the misfire is detected on a 2nd trip. During this condition, the ECM monitors the CKP sensor signal every 1,000 engine revolutions.

A misfire malfunction can be detected on any one cylinder or on multiple cylinders.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0300 0300	Multiple cylinder misfire detected	Multiple cylinder misfire.	Improper spark plug Insufficient compression
P0301 0301	No.1 cylinder misfire detected	No. 1 cylinder misfires.	Incorrect fuel pressure
P0302 0302	No. 2 cylinder misfire detected	No. 2 cylinder misfires.	The fuel injector circuit is open or shorted
P0303 0303	No. 3 cylinder misfire detected	No. 3 cylinder misfires.	Fuel injector Intake air leak
P0304 0304	No. 4 cylinder misfire detected	No. 4 cylinder misfires.	 The ignition signal circuit is open or shorted
P0305 0305	No. 5 cylinder misfire detected	No. 5 cylinder misfires.	Lack of fuel Signal plate
P0306 0306	No. 6 cylinder misfire detected	No. 6 cylinder misfires.	Air fuel ratio (A/F) sensor 1Incorrect PCV hose connection

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DTC Confirmation Procedure

NRSOOOTV

PBIB0164F

DATA MONITOR

COOLAN TEMP/S XXX °C VHCL SPEED SE XXX km/h

B/FUEL SCHDL XXX msec

NO DTC

XXX rpm

MONITOR

FNG SPEED

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws when driving.

NOTE:

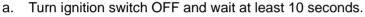
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

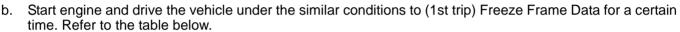
(WITH CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Restart engine and let it idle for about 15 minutes.
- 5. If 1st trip DTC is detected, go to EC-380, "Diagnostic Procedure"

NOTE:

If 1st trip DTC is not detected during above procedure, performing the following procedure is advised.





Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed	Engine speed in the freeze frame data ± 400 rpm
Vehicle speed	Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)
Engine coolant temperature	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
(T) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

The time to driving varies according to the engine speed in the freeze frame data.

Engine speed	Time
Around 1,000 rpm	Approximately 10 minutes
Around 2,000 rpm	Approximately 5 minutes
More than 3,000 rpm	Approximately 3.5 minutes

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

NBS0007W

1. CHECK FOR INTAKE AIR LEAK AND PCV HOSE

- Start engine and run it at idle speed.
- 2. Listen for the sound of the intake air leak.
- Check PCV hose connection.

OK or NG

OK >> GO TO 2.

NG >> Discover air leak location and repair.

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$\overline{2}$. CHECK FOR EXHAUST SYSTEM CLOGGING

Stop engine and visually check exhaust tube, three way catalyst and muffler for dents.

OK or NG

OK (With CONSULT-II)>>GO TO 3. OK (Without CONSULT-II)>>GO TO 4.

NG >> Repair or replace it.

3. PERFORM POWER BALANCE TEST

(P) With CONSULT-II

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

ACTIVE TES	Т	
POWER BALANCE		
MONITOR		
ENG SPEED	XXX rpm	
MAS A/F SE-B1	xxx v	
		PBIB0133E

Yes or No

Yes >> GO TO 4. No >> GO TO 10. Н

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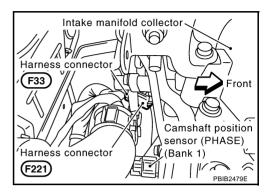
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4. CHECK FUNCTION OF FUEL INJECTOR-I

W Without CONSULT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect harness connectors F33, F221
- 3. Turn ignition switch ON.

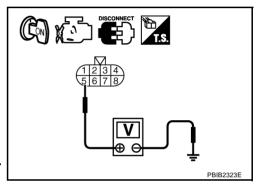


4. Check voltage between harness connector F33 terminal 5 and ground with CONSULT-II or tester.

Voltage: Battery voltage

- 5. Turn ignition switch OFF.
- 6. Disconnect ECM harness connector.
- Check harness continuity between harness connector F33 and ECM as follows.
 Refer to Wiring Diagram.

Cylinder	Harness connector F33 terminal	ECM terminal
1	6	23
2	4	42
3	2	22
4	3	41
5	1	21
6	7	40



Continuity should exist.

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

OK or NG

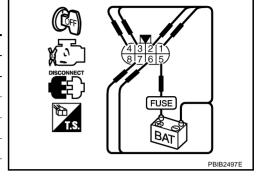
OK >> GO TO 5.

NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to <u>EC-682, "FUEL INJECTOR"</u>.

5. CHECK FUNCTION OF FUEL INJECTOR-II

Provide battery voltage between harness connector F221 as follows and then interrupt it. Listen to each fuel injector operating sound.

Cylinder	Harness connector F221 terminal	
Cyllilder	(+)	(-)
1		6
2		4
3	5	2
4	3	3
5		1
6		7



Operating sound should exist.

OK or NG

OK >> GO TO 6.

NG \rightarrow Perform trouble diagnosis for FUEL INJECTOR, refer to <u>EC-682</u>, "FUEL INJECTOR".

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6. CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

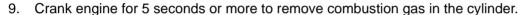
Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

Do not use CONSULT-II to release fuel pressure, or fuel pressure applies again during the following procedure.

- 4. Start engine.
- 5. After engine stalls, crank it two or three times to release all fuel pressure.
- 6. Turn ignition switch OFF.
- 7. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- Remove ignition coil and spark plug of the cylinder to be checked.

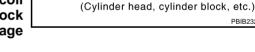


- 10. Connect spark plug and harness connector to ignition coil.
- 11. Fix ignition coil using a rope etc. with gap of 13 17 mm between the edge of the spark plug and grounded metal portion as shown in the figure.
- 12. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.



CAUTION:

 Do not approach to the spark plug and the ignition coil within 50cm. Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



• It might cause to damage the ignition coil if the gap of more than 17 mm is taken.

NOTE

When the gap is less than 13 mm, the spark might be generated even if the coil is malfunctioning.

OK or NG

OK >> GO TO 10. NG >> GO TO 7.

7. CHECK FUNCTION OF IGNITION COIL-II

- 1. Turn ignition switch OFF.
- Disconnect spark plug and connect a known-good spark plug.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

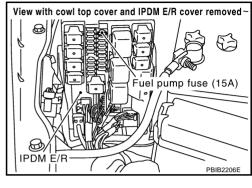
Spark should be generated.

OK or NG

OK >> GO TO 8.

Revision: 2005 August

NG >> Check ignition coil, power transistor and their circuits. Refer to <u>EC-697</u>, "IGNITION SIGNAL".



†13 - 17 mm

2006 350Z

Grounded metal portion

EC-384

8. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

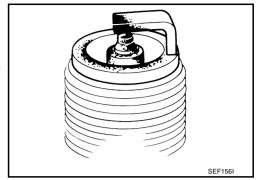
OK or NG

OK

>> Replace spark plug(s) with standard type one(s). For spark plug type, refer to MA-20, "Changing Spark Plugs (Platinum-Tipped Type)".

NG >> 1. Repair or clean spark plug.

2. GO TO 9.



9. CHECK FUNCTION OF IGNITION COIL-III

1. Reconnect the initial spark plugs.

2. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

OK or NG

OK >> INSPECTION END

NG >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to MA-20, "Changing Spark Plugs (Platinum-Tipped Type)".

10. CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to $\underline{\sf EM-119}$, "CHECKING COMPRESSION PRESSURE" .

OK or NG

OK >> GO TO 11.

NG >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

11. CHECK FUEL PRESSURE

- 1. Install all removed parts.
- 2. Release fuel pressure to zero. Refer to <u>EC-81, "FUEL PRESSURE RELEASE"</u>.
- Install fuel pressure gauge and check fuel pressure. Refer to EC-82, "FUEL PRESSURE CHECK".

At idle: Approximately 350 kPa (3.57 kg/cm², 51 psi)

OK or NG

OK >> GO TO 13.

NG >> GO TO 12.

12. DETECT MALFUNCTIONING PART

Check the following.

- Fuel pump and circuit (Refer to <u>EC-690, "FUEL PUMP"</u>.)
- Fuel pressure regulator (Refer to <u>EC-82, "FUEL PRESSURE CHECK"</u>.)
- Fuel lines (Refer tor FL-3, "Checking Fuel Lines".)
- Fuel filter for clogging
 - >> Repair or replace.

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13. CHECK IGNITION TIMING

Check the following items. Refer to EC-71, "Basic Inspection" .

Items	Specifications
Target idle speed	A/T: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in neutral position)
Ignition timing	A/T: $15 \pm 5^{\circ}$ BTDC (in P or N position) M/T: $15 \pm 5^{\circ}$ BTDC (in neutral position)

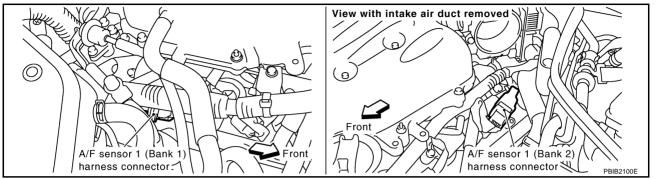
OK or NG

OK >> GO TO 14.

NG >> Follow the <u>EC-71, "Basic Inspection"</u>.

14. CHECK A/F SENSOR 1 INPUT SIGNAL

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.



- 3. Disconnect ECM harness connector.
- 4. Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank 1	2	75
Dalik i	5	35
	6	56
	1	76
Bank 2	2	77
Dallk 2	5	57
	6	58

Continuity should exist.

5. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Bai	nk 1	Ba	nk 2
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal
1	16	1	76
2	75	2	77
5	35	5	57
6	56	6	58

Continuity should not exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 15.

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

15. CHECK A/F SENSOR 1 HEATER

Refer to EC-185, "Component Inspection".

OK or NG

OK >> GO TO 16.

NG >> Replace (malfunctioning) A/F sensor 1.

Revision: 2005 August **EC-387** 2006 350Z

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16. CHECK MASS AIR FLOW SENSOR

(P) With CONSULT-II

Check mass air flow sensor signal in "DATA MONITOR" mode with CONSULT-II.

2.0 - 6.0 g⋅m/sec: at idling 7.0 - 20.0 g⋅m/sec: at 2,500 rpm

With GST

Check mass air flow sensor signal in Service \$01 with GST.

2.0 - 6.0 g·m/sec: at idling 7.0 - 20.0 g·m/sec: at 2,500 rpm

OK or NG

OK >> GO TO 17.

NG >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to EC-211, "DTC P0101 MAF SENSOR".

17. CHECK SYMPTOM MATRIX CHART

Check items on the rough idle symptom in EC-92, "Symptom Matrix Chart" .

OK or NG

OK >> GO TO 18.

NG >> Repair or replace.

18. ERASE THE 1ST TRIP DTC

Some tests may cause a 1st trip DTC to be set.

Erase the 1st trip DTC from the ECM memory after performing the tests.

Refer to EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION".

>> GO TO 19.

19. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

DTC P0327, P0328 KS

PFP:22060

Component Description

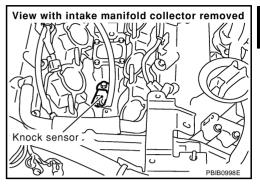
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The knock sensor is attached to the cylinder block. It senses engine knocking using a piezoelectric element. A knocking vibration from the cylinder block is sensed as vibrational pressure. This pressure is converted into a voltage signal and sent to the ECM.



On Board Diagnosis Logic

NRSOOTV

The MIL will not light up for these diagnoses.

DTC No.	Trouble diagnosis name	DTC detected condition	Possible cause
P0327 0327	Knock sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0328 0328	Knock sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Knock sensor

DTC Confirmation Procedure

IBS0007Z

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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 10V at idle.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Start engine and run it for at least 5 seconds at idle speed.
- 3. If 1st trip DTC is detected, go to EC-391, "Diagnostic Procedure"

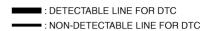
MONITOR ENG SPEED	NO DTC
ENG SPEED	XXX rpm
1	
	se

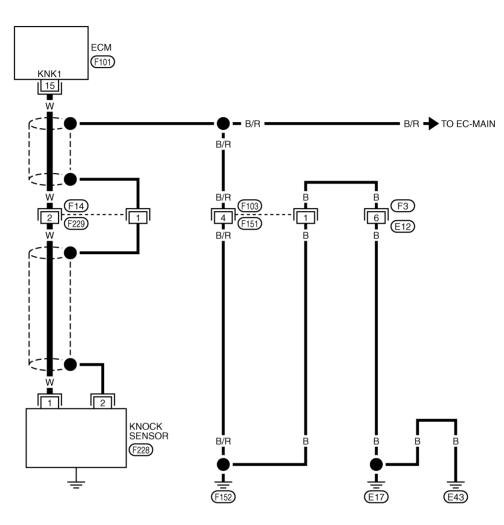
WITH GST

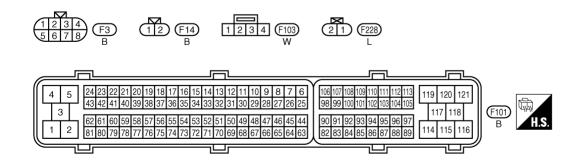
Follow the procedure "WITH CONSULT-II" above.

Wiring Diagram

EC-KS-01







TBWT1208E

DTC P0327, P0328 KS

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
15	W	Knock sensor	[Engine is running] ● Idle speed	Approximately 2.5V

Diagnostic Procedure

NBS00081

1. CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-I

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check resistance between ECM terminal 15 and ground. Refer to Wiring Diagram.

It is necessary to use an ohmmeter which can measure more than 10 M Ω .

Resistance: Approximately 532 - 588 k Ω [at 20°C (68°F)]

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

OK or NG

OK >> GO TO 5. NG >> GO TO 2.

$2\cdot$ CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-II

- Disconnect knock sensor harness connector.
- Check harness continuity between ECM terminal 15 and knock sensor terminal 1.

Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4. NG >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F14, F229
- Harness for open or short between ECM and knock sensor

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

EC-391

4. CHECK KNOCK SENSOR

Refer to EC-393, "Component Inspection".

OK or NG

OK >> GO TO 5.

Revision: 2005 August

NG >> Replace knock sensor. View with intake manifold collector removed Knock sensor

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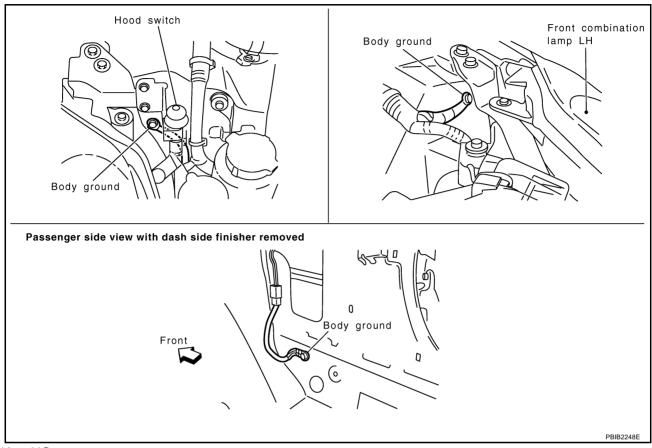
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5. CHECK GROUND CONNECTIONS

Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 6.

NG >> Repair or replace ground connections.

6. CHECK KNOCK SENSOR SHIELD CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect knock sensor harness connector.
- 2. Check harness continuity between knock sensor terminal 2 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 8. NG >> GO TO 7.

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F14, F229
- Harness connectors F103, F151
- Harness connectors F3, E12
- Harness for open or short between knock sensor terminal 2 and ground

>> Repair open circuit or short power in harness or connectors.

8. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection KNOCK SENSOR

Check resistance between knock sensor terminal 1 and ground.

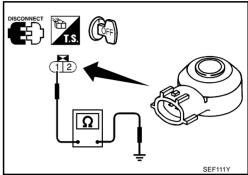
NOTE:

It is necessary to use an ohmmeter which can measure more than 10 M Ω .

Resistance: Approximately 532 - 588 kΩ [at 20°C (68°F)]

CAUTION:

Do not use any knock sensors that have been dropped or physically damaged. Use only new ones.



NBS00083

Removal and Installation **KNOCK SENSOR**

Refer to EM-137, "CYLINDER BLOCK".

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EC-393 2006 350Z Revision: 2005 August

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DTC P0335 CKP SENSOR (POS)

DTC P0335 CKP SENSOR (POS)

PFP:23731

Component Description

NBS00084

The crankshaft position sensor (POS) is located on the oil pan facing the gear teeth (cogs) of the signal plate. It detects the fluctuation of the engine revolution.

The sensor consists of a permanent magnet and Hall IC.

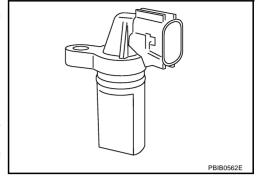
When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

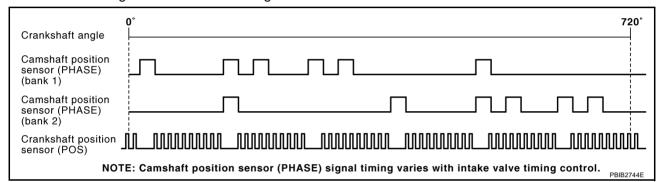
The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

The ECM receives the voltage signal and detects the fluctuation of the engine revolution.

ECM receives the signals as shown in the figure.





CONSULT-II Reference Value in Data Monitor Mode

NBS00085

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
ENG SPEED	Run engine and compare CONSULT-II value with the tachometer indication.	Almost the same speed as the tachometer indication.

On Board Diagnosis Logic

NBS00086

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
	Crankshaft position sensor (POS) circuit	 The crankshaft position sensor (POS) signal is not detected by the ECM during the first few seconds of engine cranking. 	 Harness or connectors (The sensor circuit is open or shorted) Crankshaft position sensor (POS) Signal plate
P0335 0335		 The proper pulse signal from the crankshaft position sensor (POS) is not sent to ECM while the engine is running. 	
		 The crankshaft position sensor (POS) signal is not in the normal pattern during engine running. 	

DTC P0335 CKP SENSOR (POS)

DTC Confirmation Procedure

PS00087

NOTE:

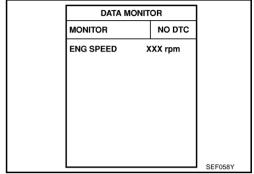
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

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

(A) WITH CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 2. Crank engine for at least 2 seconds and run it for at least 5 seconds at idle speed.
- 3. If 1st trip DTC is detected, go to EC-398, "Diagnostic Procedure"



WITH GST

Follow the procedure "WITH CONSULT-II" above.

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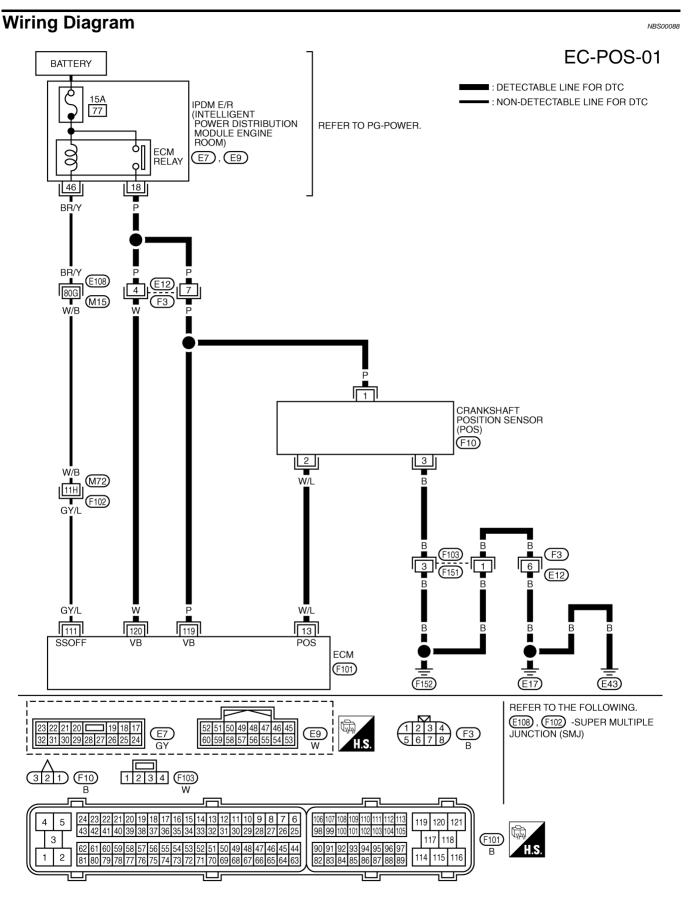
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DTC P0335 CKP SENSOR (POS)



TBWT1209E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
13 W/L		Crankshaft position sensor	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	Approximately 1.6V★ → 5.0 V/Div 1 ms/Div T PBIB1041E
13	W/L	(POS)	[Engine is running] ● Engine speed: 2,000 rpm	Approximately 1.4V★ → 5.0 V/Div 1 ms/Div T PBIB1042E
111	GY/L	GY/L ECM relay (Self shut-off)	[Engine is running] [Ignition switch: OFF] ● For a few seconds after turning ignition switch OFF	0 - 1.5V
			[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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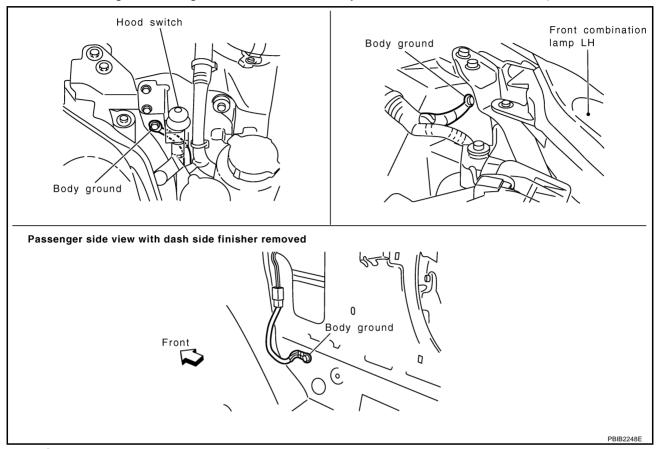
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NBS00089

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



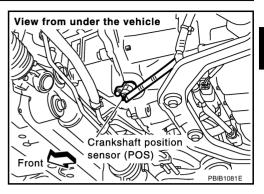
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$2.\,$ check crankshaft position (ckp) sensor (pos) power supply circuit

- Disconnect crankshaft position (CKP) sensor (POS) harness connector.
- Turn ignition switch ON.

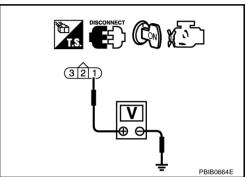


Check voltage between CKP sensor (POS) terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between CKP sensor (POS) and ECM
- Harness for open or short between CKP sensor (POS) and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK CKP SENSOR (POS) GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Check harness continuity between CKP sensor (POS) terminal 3 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 6. NG >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness connectors F103, F151
- Harness for open or short between CKP sensor (POS) and ground

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

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6. CHECK CKP SENSOR (POS) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- 2. Check harness continuity between ECM terminal 13 and CKP sensor (POS) terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.

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

7. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-401, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace CKP sensor (POS).

8. CHECK GEAR TOOTH

Visually check for chipping signal plate gear tooth.

OK or NG

OK >> GO TO 9.

NG >> Replace the signal plate.

9. CHECK INTERMITTENT INCIDENT

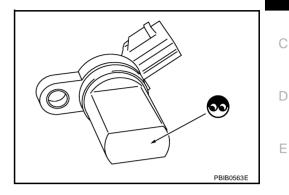
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

>> INSPECTION END

Component Inspection CRANKSHAFT POSITION SENSOR (POS)

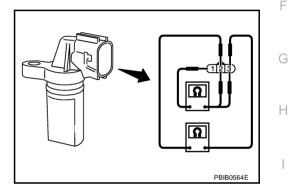
1. Loosen the fixing bolt of the sensor.

- 2. Disconnect CKP sensor (POS) harness connector.
- 3. Remove the sensor.
- 4. Visually check the sensor for chipping.



5. Check resistance as shown in the figure.

Terminal No. (Polarity)	Resistance Ω [at 25°C (77°F)]
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞
2 (+) - 3 (-)	



NBS0008B

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Removal and Installation CRANKSHAFT POSITION SENSOR (POS)

Refer to EM-29, "OIL PAN AND OIL STRAINER".

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Revision: 2005 August **EC-401** 2006 350Z

DTC P0340, P0345 CMP SENSOR (PHASE)

PFP:23731

Component Description

NBS0008C

The camshaft position sensor (PHASE) senses the retraction of camshaft (INT) to identify a particular cylinder. The camshaft position sensor (PHASE) senses the piston position.

When the crankshaft position sensor (POS) system becomes inoperative, the camshaft position sensor (PHASE) provides various controls of engine parts instead, utilizing timing of cylinder identification signals.

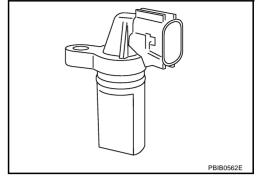
The sensor consists of a permanent magnet and Hall IC.

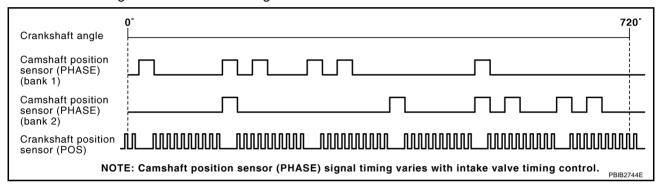
When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

ECM receives the signals as shown in the figure.





CONSULT-II Reference Value in Data Monitor Mode

NBS0008D

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
ENG SPEED		Almost the same speed as the tachometer indication.

On Board Diagnosis Logic

NBS0008E

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0340 0340		The cylinder No. signal is not sent to ECM	Harness or connectors (The sensor circuit is open or shorted)	
(Bank 1)		for the first few seconds during engine	Camshaft position sensor (PHASE)	
	Camshaft position sensor (PHASE) circuit	cranking.	Camshaft (INT)	
P0345 0345 (Bank 2)		 The cylinder No. signal is not sent to ECM during engine running. The cylinder No. signal is not in the normal pattern during engine running. 	Starter motor (Refer to <u>SC-10, "START-ING SYSTEM"</u> .)	
			Starting system circuit (Refer to <u>SC-10,</u> "STARTING SYSTEM" .)	
			Dead (Weak) battery	

DTC Confirmation Procedure

PSUUDE

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.

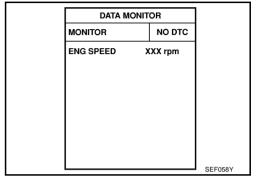
TESTING CONDITION:

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

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Crank engine for at least 2 seconds and run it for at least 5 seconds at idle speed.
- 4. If 1st trip DTC is detected, go to EC-407, "Diagnostic Procedure"

 If 1st trip DTC is not detected, go to next step.
- 5. Maintaining engine speed at more than 800 rpm for at least 5 seconds.
- 6. If 1st trip DTC is detected, go to <u>EC-407, "Diagnostic Procedure"</u>



WITH GST

Follow the procedure "WITH CONSULT-II" above.

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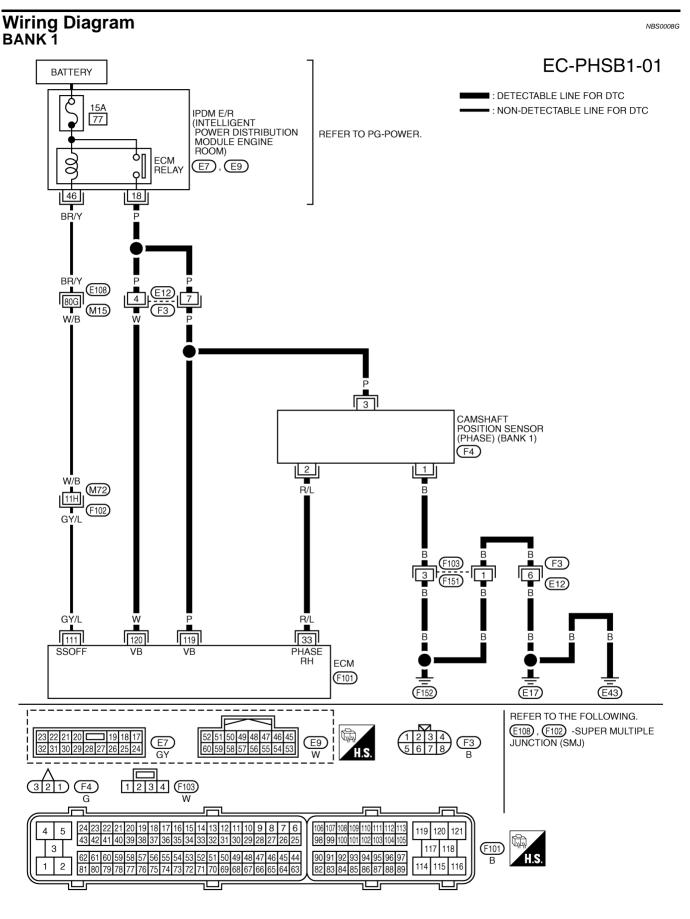
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TBWT1210E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
33	D/I	Camshaft position sensor	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	1.0 - 4.0V★ 2.5.0 V/Div 20 ms/Div T PBIB2493E
33	R/L	(PHASE) (bank 1)	[Engine is running] ● Engine speed: 2,000 rpm	1.0 - 4.0V★ >> 5.0 V/Div 20 ms/Div PBIB1040E
111 GY/L	GY/L	ECM relay	[Engine is running] [Ignition switch: OFF] ● For a few seconds after turning ignition switch OFF	0 - 1.5V
		(Self shut-off)	[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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BANK 2 EC-PHSB2-01 BATTERY ■: DETECTABLE LINE FOR DTC 15A 77 : NON-DETECTABLE LINE FOR DTC IPDM E/R (INTELLIGENT POWER DISTRIBUTION REFER TO PG-POWER. MODULE ENGINE ROOM) ECM (E7), (E9) RELAY 46 18 BR/Y BR/Y (E108) 4 (M15) 3 CAMSHAFT POSITION SENSOR (PHASE) (BANK 2) 2 R/G W/B 11H (M72) (F102) GŸ/L R/G 111 14 120 119 PHASE **ECM** (F101) (F152) (E17) (E43) REFER TO THE FOLLOWING. E108), (F102) -SUPER MULTIPLE JUNCTION (SMJ) (E9) 119 120 3 117 118 (F101) 114 116 115 82 83 84 85 86 87 88 89

TBWT1211E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
14	R/G	Camshaft position sensor	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	1.0 - 4.0V★ 1.0 - 4.0V★ 20 ms/Div T
14	100	(PHASE) (bank 2)	[Engine is running] ● Engine speed: 2,000 rpm	1.0 - 4.0V★ 1.0 - 4.0V★ 20 ms/Div PBIB1040E
111	GY/L	ECM relay (Self shut-off)	[Engine is running][Ignition switch: OFF]For a few seconds after turning ignition switch OFF	0 - 1.5V
			[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

1. CHECK STARTING SYSTEM

Turn ignition switch to START position.

Does the engine turn over?

Does the starter motor operate?

Yes or No

Yes >> GO TO 2.

No >> Check starting system. (Refer to <u>SC-10, "STARTING SYSTEM"</u> .)

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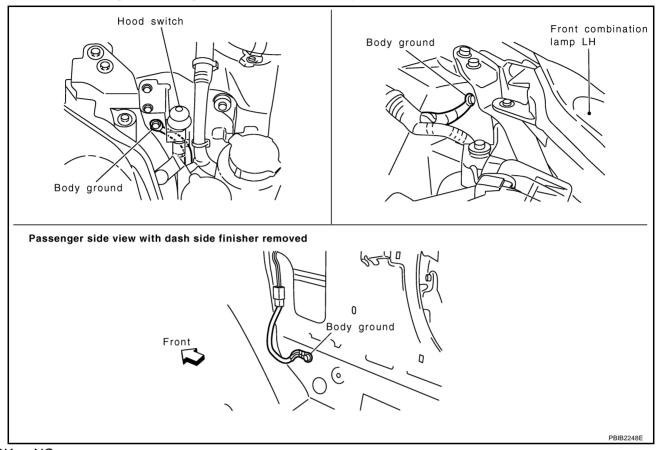
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2. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



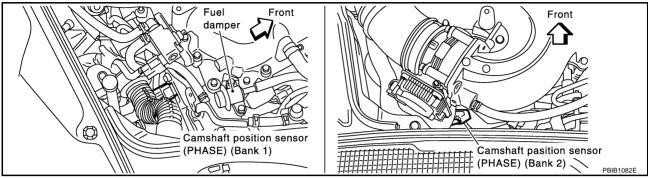
OK or NG

OK >> GO TO 3.

NG >> Repair or replace ground connections.

$\overline{3}$. CHECK CAMSHAFT POSITION (CMP) SENSOR (PHASE) POWER SUPPLY CIRCUIT

Disconnect camshaft position (CMP) sensor (PHASE) harness connector.

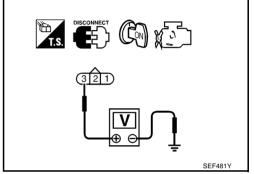


- Turn ignition switch ON.
- Check voltage between CMP sensor (PHASE) terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 5. >> GO TO 4. NG



4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between CMP sensor (PHASE) and ECM
- Harness for open or short between CMP sensor (PHASE) and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK CMP SENSOR (PHASE) GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Check harness continuity between CMP sensor (PHASE) terminal 1 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

Revision: 2005 August

- Harness connectors F103, F151
- Harness connectors E12, F3
- Harness for open or short between CMP sensor (PHASE) and ground

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

EC-409

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7. CHECK CMP SENSOR (PHASE) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- 2. Check harness continuity between ECM terminal 33 (bank 1) or 14 (bank 2) and CMP sensor (PHASE) terminal 2.

Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 8.

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

8. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-411, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Replace CMP sensor (PHASE).

9. CHECK CAMSHAFT (INT)

Check the following.

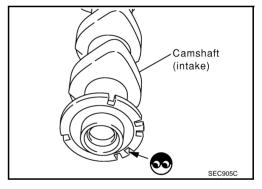
- Accumulation of debris to the signal plate of camshaft rear end
- Chipping signal plate of camshaft rear end

OK or NG

OK >> GO TO 10.

NG >> Remove

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



10. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

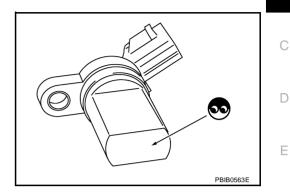
Component Inspection CAMSHAFT POSITION SENSOR (PHASE)

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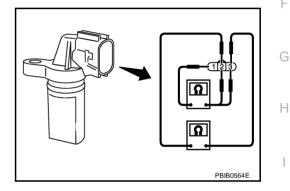
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- 1. Loosen the fixing bolt of the sensor.
- 2. Disconnect CMP sensor (PHASE) harness connector.
- 3. Remove the sensor.
- 4. Visually check the sensor for chipping.



5. Check resistance as shown in the figure.

Terminal No. (Polarity)	Resistance Ω [at 25°C (77°F)]
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞
2 (+) - 3 (-)	



NBS0008J

Removal and Installation CAMSHAFT POSITION SENSOR (PHASE)

Refer to EM-101, "CAMSHAFT".

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DTC P0420, P0430 THREE WAY CATALYST FUNCTION

DTC P0420, P0430 THREE WAY CATALYST FUNCTION

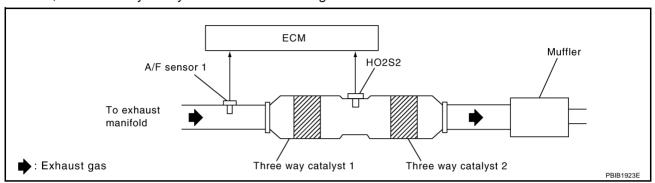
PFP:20905

On Board Diagnosis Logic

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The ECM monitors the switching frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2. A three way catalyst 1 with high oxygen storage capacity will indicate a low switching frequency of heated oxygen sensor 2. As oxygen storage capacity decreases, the heated oxygen sensor 2 switching frequency will increase.

When the frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2 approaches a specified limit value, the three way catalyst 1 malfunction is diagnosed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0420			Three way catalyst 1
0420 (Bank 1)			Exhaust tube
(Balik I)		Three way catalyst 1 does not operate prop-	Intake air leaks
D0420	Catalyst system effi- ciency below threshold	erly. Three way catalyst 1 does not have enough	Fuel injector
P0430 0430	dioney below uncertain	oxygen storage capacity.	Fuel injector leaks
(Bank 2)	ank 2)	1 731 111 131 117	Spark plug
			Improper ignition timing

DTC Confirmation Procedure

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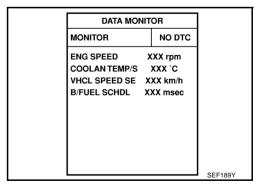
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

(P) WITH CONSULT-II

TESTING CONDITION:

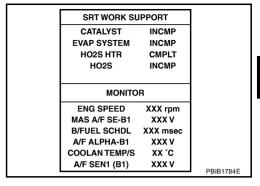
Do not hold engine speed for more than the specified minutes below.

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).
 - If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).
- 7. Open engine hood.



DTC P0420. P0430 THREE WAY CATALYST FUNCTION

- Select "DTC & SRT CONFIRMATION" then "SRT WORK SUP-PORT" mode with CONSULT-II.
- 9. Rev engine up to 2,000 to 3,000 rpm and hold it for 3 consecutive minutes then release the accelerator pedal completely. If "INCMP" of "CATALYST" changed to "CMPLT", go to step 12.
- 10. Wait 5 seconds at idle.



11. Rev engine up to 2,000 to 3,000 rpm and maintain it until "INCMP" of "CATALYST" changes to "CMPLT" (It will take approximately 5 minutes).

If not "CMPLT", stop engine and cool it down to less than 70°C (158°F) and then retest from step 1.

SRT WORK SU	IPPORT	
CATALYST	CMPLT	
EVAP SYSTEM	INCMP	
HO2S HTR	CMPLT	
HO2S	INCMP	
моніто	R	
ENG SPEED	XXX rpm	
MAS A/F SE-B1	XXX V	
B/FUEL SCHDL	XXX msec	
A/F ALPHA-B1	XXX V	
COOLAN TEMP/S	XX °C	
A/F SEN1 (B1)	XXX V	DD1D4705E
		PBIB1785E

- 12. Select "SELF-DIAG RESULTS" mode with CONSULT-II.
- 13. Confirm that the 1st trip DTC is not detected.

 If the 1st trip DTC is detected, go to EC-414, "Diagnostic Procedure".

SELF DIAG RESULTS	
DTC RESULTS TIME	
NO DTC IS DETECTED. FURTHER TESTING	
MAY BE REQUIRED.	
	SEF535Z

Overall Function Check

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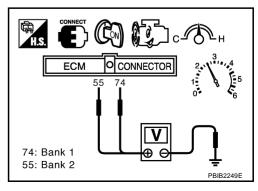
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Use this procedure to check the overall function of the three way catalyst 1. During this check, a 1st trip DTC might not be confirmed.

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- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1minute.
- 5. Open engine hood.
- 6. Set voltmeters probes between ECM terminal 74 [HO2S2 (bank 1) signal], 55 [HO2S2 (bank 2) signal] and ground.
- 7. Keep engine speed at 2,500 rpm constant under no load.
- Make sure that the voltage does not vary for more than 5 seconds. It the voltage fluctuation cycle take less than 5 seconds.
 Go to <u>EC-414</u>, "<u>Diagnostic Procedure</u>".
- 1cycle: $0.6 1.0 \rightarrow 0 0.3 \rightarrow 0.6 1.0$



DTC P0420, P0430 THREE WAY CATALYST FUNCTION

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Diagnostic Procedure

1. CHECK EXHAUST SYSTEM

Visually check exhaust tubes and muffler for dent.

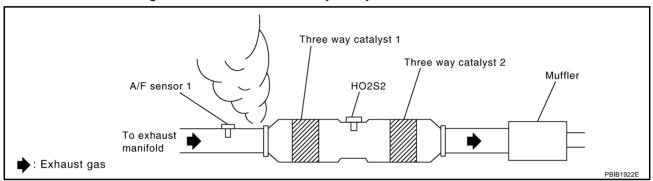
OK or NG

OK >> GO TO 2.

NG >> Repair or replace.

2. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before the three way catalyst 1.



OK or NG

OK >> GO TO 3.

NG >> Repair or replace.

3. CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

OK or NG

OK >> GO TO 4.

NG >> Repair or replace.

4. CHECK IGNITION TIMING

Check the following items. Refer to EC-71, "Basic Inspection" .

Items	Specifications		
Target idle speed	A/T	650 ± 50 rpm (in P or N position)	
rarget fule speed	M/T	650 ± 50 rpm (in Neutral position)	
Ignition timing	A/T	15 ± 5° BTDC (in P or N position)	
	M/T	15 ± 5° BTDC (in Neutral position)	

OK or NG

OK >> GO TO 5.

NG >> Follow the <u>EC-71</u>, "Basic Inspection".

DTC P0420, P0430 THREE WAY CATALYST FUNCTION

5. CHECK FUEL INJECTOR

- 1. Stop engine and turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Turn ignition switch ON.
- Check voltage between ECM terminals 21, 22, 23, 40, 41, 42 and ground with CONSULT-II or tester.
 Refer to Wiring Diagram for fuel injectors, <u>EC-683</u>, "Wiring Dia-

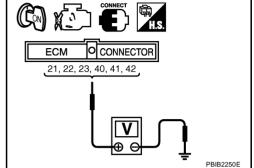
Voltage: Battery voltage

OK or NG

gram".

OK >> GO TO 6.

NG >> Perform <u>EC-684</u>, "<u>Diagnostic Procedure</u>" .



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DTC P0420. P0430 THREE WAY CATALYST FUNCTION

6. CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

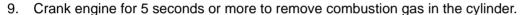
Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- Reconnect ECM harness connector disconnected.
- 3. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

Do not use CONSULT-II to release fuel pressure, or fuel pressure applies again during the following procedure.

- 4. Start engine.
- 5. After engine stalls, crank it two or three times to release all fuel pressure.
- 6. Turn ignition switch OFF.
- 7. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- Remove ignition coil and spark plug of the cylinder to be checked.



- 10. Connect spark plug and harness connector to ignition coil.
- 11. Fix ignition coil using a rope etc. with gap of 13 17 mm between the edge of the spark plug and grounded metal portion as shown in the figure.
- 12. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.



CAUTION:

 Do not approach to the spark plug and the ignition coil within 50cm. Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



When the gap is less than 13 mm, the spark might be generated even if the coil is malfunctioning.

OK or NG

OK >> GO TO 10. NG >> GO TO 7.

7. CHECK FUNCTION OF IGNITION COIL-II

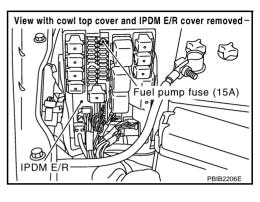
- Turn ignition switch OFF. 1.
- Disconnect spark plug and connect a known-good spark plug.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

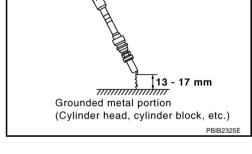
Spark should be generated.

OK or NG

OK >> GO TO 8.

NG >> Check ignition coil, power transistor and their circuits. Refer to EC-697, "IGNITION SIGNAL".





DTC P0420, P0430 THREE WAY CATALYST FUNCTION

8. CHECK SPARK PLUG

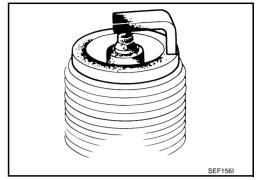
- 1. Turn ignition switch OFF.
- 2. Check the spark plugs and check for fouling, etc.

OK or NG

OK >> GO TO 9.

NG

>> Repair or replace spark plug (s) with standard type one (s). For spark plug type ignition coil. Refer to MA-20, "Changing Spark Plugs (Platinum-Tipped Type)".



9. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- 2. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

OK or NG

OK >> INSPECTION END

NG >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to MA-20, "Changing Spark Plugs (Platinum-Tipped Type)".

10. CHECK FUEL INJECTOR

- Turn ignition switch OFF.
- Remove fuel injector assembly.
 Refer to EM-38, "FUEL INJECTOR AND FUEL TUBE".

Keep fuel hose and all fuel injectors connected to fuel injector gallery.

- 3. Disconnect all ignition coil harness connectors.
- 4. Reconnect all fuel injector harness connectors disconnected.
- Turn ignition switch ON. Make sure fuel does not drip from fuel injector.

OK or NG

OK (Does not drip.)>>GO TO 11.

NG (Drips.)>>Replace the fuel injector(s) from which fuel is dripping.

11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

Trouble is fixed.>>INSPECTION END

Trouble is not fixed.>>Replace three way catalyst assembly.

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DTC P0441 EVAP CONTROL SYSTEM

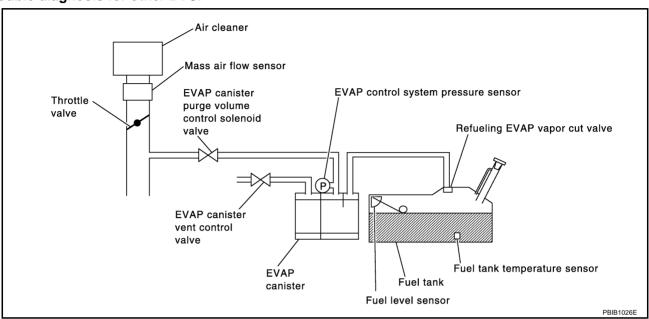
PFP:14950

System Description

NBS00080

NOTE:

If DTC P0441 is displayed with other DTC such as P2122, P2123, P2127, P2128 or P2138, first perform trouble diagnosis for other DTC.



In this evaporative emission (EVAP) control system, purge flow occurs during non-closed throttle conditions. Purge volume is related to air intake volume. Under normal purge conditions (non-closed throttle), the EVAP canister purge volume control solenoid valve is open to admit purge flow. Purge flow exposes the EVAP control system pressure sensor to intake manifold vacuum.

On Board Diagnosis Logic

NBS0008P

Under normal conditions (non-closed throttle), sensor output voltage indicates if pressure drop and purge flow are adequate. If not, a malfunction is determined.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
516 116	Trouble diagnosis name	Die detecting condition	EVAP canister purge volume control solenoid valve stuck closed EVAP control system pressure sensor and the circuit Loose, disconnected or improper con-
P0441 0441	EVAP control system incorrect purge flow	EVAP control system does not operate properly, EVAP control system has a leak between intake manifold and EVAP control system pressure sensor.	nection of rubber tubeBlocked rubber tubeCracked EVAP canister
			EVAP canister purge volume control solenoid valve circuit
			Accelerator pedal position sensor
			Blocked purge port
			EVAP canister vent control valve

DTC Confirmation Procedure

NBS0008Q

CAUTION:

Always drive vehicle at a safe speed.

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:

Always perform test at a temperature of 5°C (41°F) or more.

Revision: 2005 August **EC-418** 2006 350Z

(A) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and let it idle for at least 70 seconds.
- Select "PURG FLOW P0441" of "EVAPORATIVE SYSTEM" in "DTC CONFIRMATION" mode with CON-SULT-II.
- 5. Touch "START". If "COMPLETED" is displayed, go to step 7.
- 6. When the following conditions are met, "TESTING" will be displayed on the CONSULT-II screen. Maintain the conditions continuously until "TESTING" changes to "COMPLETED". (It will take at least 35 seconds.)

Shift lever	Suitable position
VHCL SPEED SE	32 - 120 km/h (20 - 75 MPH)
ENG SPEED	500 - 3,000 rpm
B/FUEL SCHDL	1.3 - 9.0 msec
COOLAN TEMP/S	70 - 100°C (158 - 212°F)

PURG FLOW P	0441		PURG FLOW P	0441		PURG FLOW P0441
OUT OF COND	ITION		TESTING			
MONITOR	!	•	MONITOR		•	COMPLETED
ENG SPEED	XXX rpm	r	ENG SPEED	XXX rpm	,	
B/FUEL SCHDL	XXX msec		B/FUEL SCHDL	XXX msec		
COOLAN TEMP/S	xxx °c		COOLAN TEMP/S	xxx °c		
VHCL SPEED SE	XXX km/h		VHCL SPEED SE	XXX km/h		

If "TESTING" is not changed for a long time, retry from step 2.

7. Make sure that "OK" is displayed after touching "SELF-DIAG RESULTS". If "NG" is displayed, refer to EC-420, "Diagnostic Procedure".

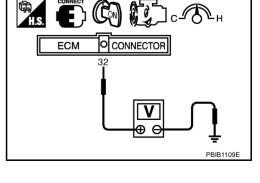
Overall Function Check

Use this procedure to check the overall monitoring function of the EVAP control system purge flow monitoring. During this check, a 1st trip DTC might not be confirmed.

GI WITH GST

- 1. Lift up drive wheels.
- 2. Start engine (VDC switch or TCS switch OFF) and warm it up to normal operating temperature.
- Turn ignition switch OFF, wait at least 10 seconds.
- 4. Start engine and wait at least 70 seconds.
- 5. Set voltmeter probes to ECM terminals 32 (EVAP control system pressure sensor signal) and ground.
- 6. Check EVAP control system pressure sensor value at idle speed and note it.
- Establish and maintain the following conditions for at least 1 minute.

Air conditioner switch	ON
Headlamp switch	ON
Rear window defogger switch	ON
Engine speed	Approx. 3,000 rpm
Shift lever	Any position other than P, N or R



Verify that EVAP control system pressure sensor value stays 0.1V less than the value at idle speed (measured at step 6) for at least 1 second.

Revision: 2005 August **EC-419** 2006 350Z

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9. If NG, go to EC-420, "Diagnostic Procedure".

Diagnostic Procedure

1. CHECK EVAP CANISTER

Turn ignition switch OFF. 1.

Check EVAP canister for cracks.

OK or NG

OK (With CONSULT-II)>>GO TO 2.

OK (Without CONSULT-II)>>GO TO 3.

NG >> Replace EVAP canister.

2. CHECK PURGE FLOW

(P) With CONSULT-II

- 1. Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".
- Start engine and let it idle.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-II.
- Rev engine up to 2,000 rpm.
- 5. Touch "Qd" and "Qu" on CONSULT-II screen to adjust "PURG VOL CONT/V" opening and check vacuum existence.

PURG VOL CONT/V	Vacuum
100%	Should exist.
0%	Should not exist.

ACTIVE TEST	
PURG VOL CONT/V	XXX %
MONITOR	
ENG SPEED	XXX rpm
A/F ALPHA-B1	XX %
A/F ALPHA-B2	XX %

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OK or NG

OK >> GO TO 7.

NG >> GO TO 4.

3. CHECK PURGE FLOW

Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".
- Start engine and let it idle.

Do not depress accelerator pedal even slightly

Check vacuum gauge indication before 60 seconds passed after starting engine.

Vacuum should not exist.

Revving engine up to 2,000 rpm after 100 seconds passed after starting engine.

Vacuum should exist.

OK or NG

OK >> GO TO 7.

NG >> GO TO 4.

4. CHECK EVAP PURGE LINE

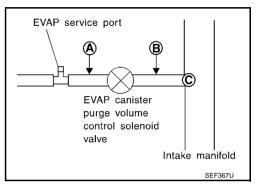
- 1. Turn ignition switch OFF.
- 2. Check EVAP purge line for improper connection or disconnection. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 5. NG >> Repair it.

5. CHECK EVAP PURGE HOSE AND PURGE PORT

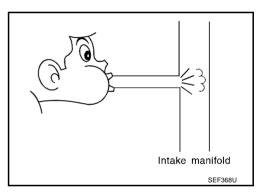
- Disconnect purge hoses connected to EVAP service port A and EVAP canister purge volume control solenoid valve B.
- Blow air into each hose and EVAP purge port C.



3. Check that air flows freely.

OK or NG

OK (With CONSULT-II)>>GO TO 6. OK (Without CONSULT-II)>>GO TO 7. NG >> Repair or clean hoses and/or purge port.



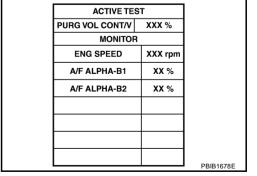
6. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P) With CONSULT-II

- Start engine.
- 2. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-II. Check that engine speed varies according to the valve opening.

OK or NG

OK >> GO TO 8. NG >> GO TO 7.



7. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-444, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace EVAP canister purge volume control solenoid valve.

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8. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

Water should not exist.

OK or NG

OK >> GO TO 9.

NG >> Replace EVAP control system pressure sensor.

9. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR FUNCTION

Refer to EC-468, "DTC Confirmation Procedure" for DTC P0452 and EC-475, "DTC Confirmation Procedure" for P0453.

OK or NG

OK >> GO TO 10.

NG >> Replace EVAP control system pressure sensor.

10. CHECK RUBBER TUBE FOR CLOGGING

- 1. Disconnect rubber tube connected to EVAP canister vent control valve.
- 2. Check the rubber tube for clogging.

OK or NG

OK >> GO TO 11.

NG >> Clean the rubber tube using an air blower.

11. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-453, "Component Inspection".

OK or NG

OK >> GO TO 12.

NG >> Replace EVAP canister vent control valve.

12. CHECK EVAP PURGE LINE

Inspect EVAP purge line (pipe and rubber tube). Check for evidence of leaks.

Refer to EC-33, "EVAPORATIVE EMISSION LÍNE DRAWING".

OK or NG

OK >> GO TO 13.

NG >> Replace it.

13. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 14.

14. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

DTC P0442 EVAP CONTROL SYSTEM

PFP:14950

On Board Diagnosis Logic

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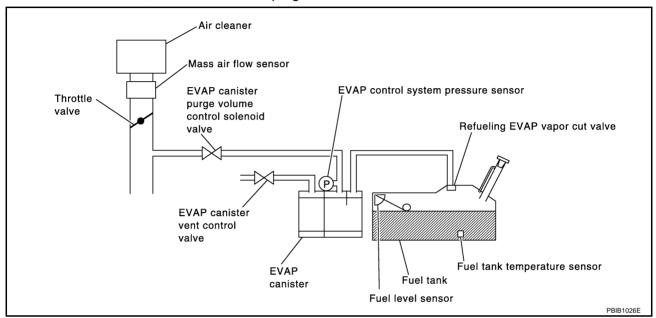
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This diagnosis detects leaks in the EVAP purge line using engine intake manifold vacuum.

If pressure does not increase, the ECM will check for leaks in the line between the fuel tank and EVAP canister purge volume control solenoid valve, under the following Vacuum test conditions.

The EVAP canister vent control valve is closed to shut the EVAP purge line off. The EVAP canister purge volume control solenoid valve will then be opened to depressurize the EVAP purge line using intake manifold vacuum. After this occurs, the EVAP canister purge volume control solenoid valve will be closed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
			Incorrect fuel tank vacuum relief valve
			Incorrect fuel filler cap used
			Fuel filler cap remains open or fails to close.
			Foreign matter caught in fuel filler cap.
			Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve.
			 Foreign matter caught in EVAP canister vent control valve.
			EVAP canister or fuel tank leaks
			EVAP purge line (pipe and rubber tube) leaks
P0442	EVAP control system small leak detected	EVAP control system has a leak, EVAP	EVAP purge line rubber tube bent
0442	(negative pressure)	control system does not operate prop- erly.	Loose or disconnected rubber tube
	(25 2 2222 2)		EVAP canister vent control valve and the circuit
			EVAP canister purge volume control solenoid valve and the circuit
			Fuel tank temperature sensor
			O-ring of EVAP canister vent control valve is missing or damaged
			EVAP canister is saturated with water
			EVAP control system pressure sensor
			Fuel level sensor and the circuit
			Refueling EVAP vapor cut valve
			ORVR system leaks

CAUTION:

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.

DTC Confirmation Procedure

NBS0008U

NOTF:

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

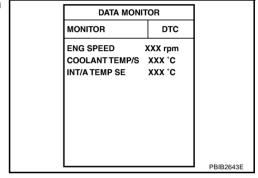
TESTING CONDITION:

- Perform "DTC WORK SUPPORT" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.
- Always perform test at a temperature of 0 to 30°C (32 to 86°F).

(P) WITH CONSULT-II

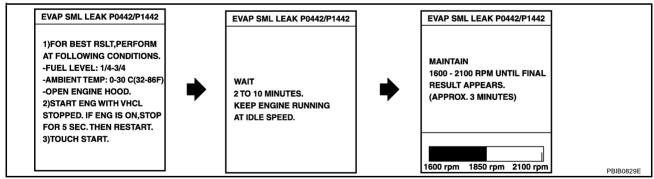
- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- Make sure that the following conditions are met.

COOLAN TEMP/S: 0 - 70°C (32 - 158°F) INT/A TEMP SE: 0 - 30°C (32 - 86°F)



Select "EVAP SML LEAK P0442/P1442" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-II.

Follow the instruction displayed.



NOTE:

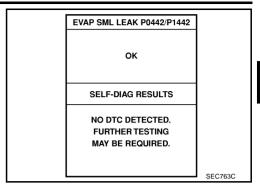
If the engine speed cannot be maintained within the range displayed on the CONSULT-II screen, go to EC-71, "Basic Inspection".

Make sure that "OK" is displayed.

If "NG" is displayed, refer to EC-425, "Diagnostic Procedure".

NOTE:

Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.



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NOTE:

Be sure to read the explanation of EC-57, "Driving Pattern" before driving vehicle.

- 1. Start engine.
- 2. Drive vehicle according to EC-57, "Driving Pattern".
- 3. Stop vehicle.
- Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- Select Service \$07 with GST.
- If P0442 is displayed on the screen, go to EC-425, "Diagnostic Procedure".
- If P0441 is displayed on the screen, go to EC-420, "Diagnostic Procedure".

Diagnostic Procedure

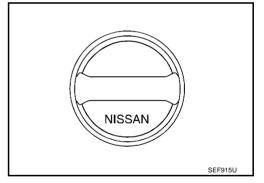
1. CHECK FUEL FILLER CAP DESIGN

- Turn ignition switch OFF.
- 2. Check for genuine NISSAN fuel filler cap design.

OK or NG

>> GO TO 2. OK

NG >> Replace with genuine NISSAN fuel filler cap.



2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

OK or NG

OK >> GO TO 3.

NG >> 1. Open fuel filler cap, then clean cap and fuel filler neck threads using air blower.

2. Retighten until ratcheting sound is heard.

3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

OK or NG

OK >> GO TO 5.

NG >> GO TO 4. EC

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4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-35. "FUEL TANK VACUUM RELIEF VALVE (BUILT INTO FUEL FULLER CAP)".

OK or NG

OK >> GO TO 5.

NG >> Replace fuel filler cap with a genuine one.

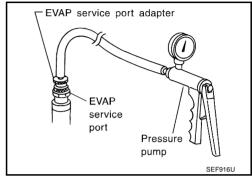
5. INSTALL THE PRESSURE PUMP

To locate the EVAP leak, install EVAP service port adapter and pressure pump to EVAP service port securely. For the location of EVAP service port, refer to $\underline{\text{EC-33}}$, $\underline{\text{"EVAPORATIVE EMISSION LINE DRAWING"}}$.

NOTE:

Improper installation of the EVAP service port adapter to the EVAP service port may cause leaking.

With CONSULT-II>>GO TO 6. Without CONSULT-II>>GO TO 7.



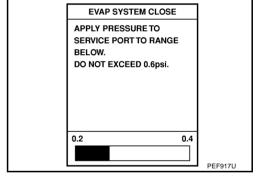
6. CHECK FOR EVAP LEAK

(II) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "EVAP SYSTEM CLOSE" of "WORK SUPPORT" mode with CONSULT-II.
- 3. Touch "START" and apply pressure into the EVAP line until the pressure indicator reaches the middle of the bar graph.

CAUTION:

- Never use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.

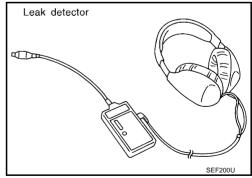


4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 8.

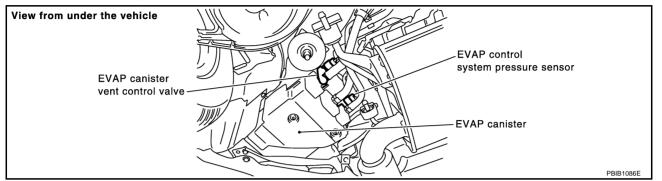
NG >> Repair or replace.



7. CHECK FOR EVAP LEAK

W Without CONSULT-II

- Turn ignition switch OFF.
- 2. Apply 12 volts DC to EVAP canister vent control valve. The valve will close. (Continue to apply 12 volts until the end of test.)



Pressurize the EVAP line using pressure pump with 1.3 to 2.7 kPa (10 to 20 mmHg, 0.39 to 0.79 inHg), then remove pump and EVAP service port adapter.

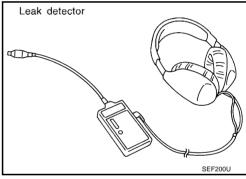
CAUTION:

- Never use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.
- 4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 8.

NG >> Repair or replace.



8. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

- EVAP canister vent control valve is installed properly. Refer to EC-36, "Removal and Installation".
- EVAP canister vent control valve. Refer to EC-453, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Repair or replace EVAP canister vent control valve and O-ring.

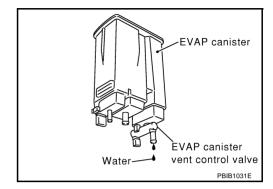
EC

9. CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Does water drain from the EVAP canister?

Yes or No

Yes >> GO TO 10. No (With CONSULT-II)>>GO TO 12. No (Without CONSULT-II)>>GO TO 13.



10. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.2 kg (4.9 lb).

OK or NG

OK (With CONSULT-II)>>GO TO 12. OK (Without CONSULT-II)>>GO TO 13. NG >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

12. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(P) With CONSULT-II

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- 4. Touch "Qu" on CONSULT-II screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

OK or NG

OK >> GO TO 15. NG >> GO TO 14.

ACTIVE TEST		
PURG VOL CONT/V	XXX %	
MONITOF	1	
ENG SPEED	XXX rpm	
A/F ALPHA-B1	XX %	
A/F ALPHA-B2	XX %	
		PBIB1678E

13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION **W** Without CONSULT-II Start engine and warm it up to normal operating temperature. EC 2. Stop engine. 3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port. 4. Start engine and let it idle for at least 80 seconds. Check vacuum hose for vacuum when revving engine up to 2,000 rpm. OK or NG OK >> GO TO 16. D NG >> GO TO 14. 14. CHECK VACUUM HOSE F Check vacuum hoses for clogging or disconnection. Refer to EC-108, "Vacuum Hose Drawing". OK or NG F OK >> GO TO 15. NG >> Repair or reconnect the hose. 15. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE Refer to EC-444, "Component Inspection". OK or NG Н OK >> GO TO 16. NG >> Replace EVAP canister purge volume control solenoid valve. 16. CHECK FUEL TANK TEMPERATURE SENSOR Refer to EC-366, "Component Inspection". OK or NG OK >> GO TO 17. NG >> Replace fuel level sensor unit. 17. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR Refer to EC-473, "Component Inspection". OK or NG OK >> GO TO 18. NG >> Replace EVAP control system pressure sensor. M 18. check evap purge line Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper connection. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING". OK or NG OK >> GO TO 19. NG >> Repair or reconnect the hose. 19. CLEAN EVAP PURGE LINE

Revision: 2005 August **EC-429** 2006 350Z

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 20.

$\overline{20}$. Check evap/orvr line

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to EC-39, "ON BOARD REFUELING VAPOR RECOVERY (ORVR)".

OK or NG

OK >> GO TO 21.

NG >> Repair or replace hoses and tubes.

21. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

OK or NG

OK >> GO TO 22.

NG >> Repair or replace hose, tube or filler neck tube.

22. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-42, "REFUELING EVAP VAPOR CUT VALVE".

OK or NG

OK >> GO TO 23.

NG >> Replace refueling EVAP vapor cut valve with fuel tank.

23. CHECK FUEL LEVEL SENSOR

Refer to DI-25, "FUEL LEVEL SENSOR UNIT".

OK or NG

OK >> GO TO 24.

NG >> Replace fuel level sensor unit.

24. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

DTC P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

DTC P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

PFP:14920

Description SYSTEM DESCRIPTION

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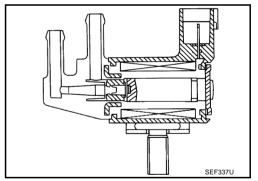
Sensor	Input Signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1			
Mass air flow sensor	Amount of intake air			
Engine coolant temperature sensor	Engine coolant temperature			
Battery	Battery voltage*1			
Throttle position sensor	Throttle position	EVAP canister purge flow control	EVAP canister purge vol- ume control solenoid valve	
Accelerator pedal position sensor	Accelerator pedal position	parge nen cenner		
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)			
Fuel tank temperature sensor	Fuel temperature in fuel tank			
Wheel sensor	Vehicle speed*2			

^{*1:} ECM determines the start signal status by the signals of engine speed and battery voltage.

This system controls flow rate of fuel vapor from the EVAP canister. The opening of the vapor by-pass passage in the EVAP canister purge volume control solenoid valve changes to control the flow rate. The EVAP canister purge volume control solenoid valve repeats ON/OFF operation according to the signal sent from the ECM. The opening of the valve varies for optimum engine control. The optimum value stored in the ECM is determined by considering various engine conditions. When the engine is operating, the flow rate of fuel vapor from the EVAP canister is regulated as the air flow changes.

COMPONENT DESCRIPTION

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



CONSULT-II Reference Value in Data Monitor Mode

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Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
PURG VOL C/V	 Engine: After warming up Shift lever: P or N (A/T), Neutral (M/T) 	Idle (Accelerator pedal is not depressed even slightly, after engine starting)	0%
	 Air conditioner switch: OFF No load	2,000 rpm	_

^{*2:} This signal is sent to the ECM through CAN communication line.

DTC P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

On Board Diagnosis Logic

NBS000FG

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
			EVAP control system pressure sensor
P0443 0443	EVAP canister purge volume control solenoid	The canister purge flow is detected during the specified driving conditions, even when EVAP canister purge volume control solenoid valve is	 EVAP canister purge volume control solenoid valve (The valve is stuck open.) EVAP canister vent control valve
	V2IVA .	completely closed.	 EVAP canister Hoses (Hoses are connected incorrectly or clogged.)

DTC Confirmation Procedure

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NOTE:

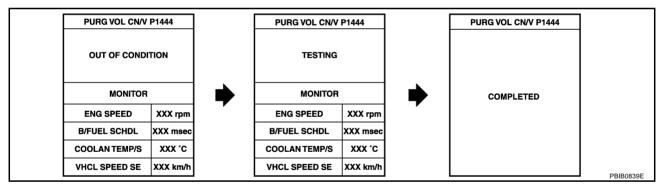
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

(P) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- Select "PURG VOL CN/V P1444" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-II.
- 5. Touch "START".



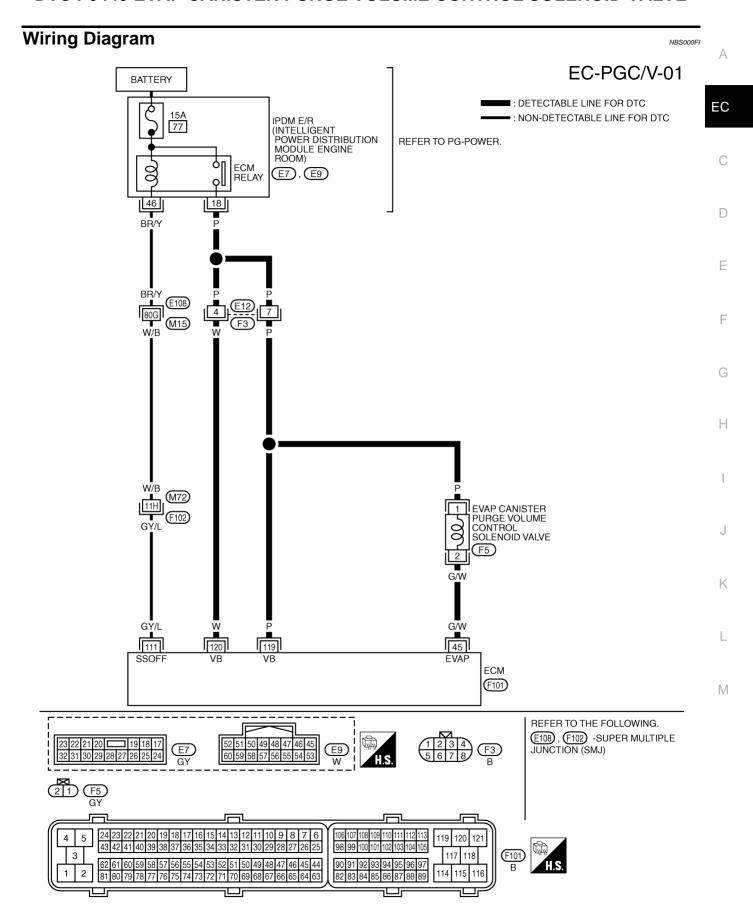
Start engine and let it idle until "TESTING" on CONSULT-II changes to "COMPLETED". (It will take approximately 10 seconds.)

If "TESTING" is not displayed after 5 minutes, retry from step 2.

7. Make sure that "OK" is displayed after touching "SELF-DIAG RESULTS". If "NG" is displayed, refer to EC-435, "Diagnostic Procedure".

WITH GST

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and let it idle for at least 20 seconds.
- 4. Select Service \$07 with GST.
- 5. If 1st trip DTC is detected, go to EC-435, "Diagnostic Procedure".



TBWT1212E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

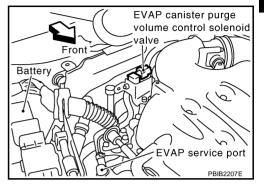
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
45	0.004	EVAP canister purge volume control solenoid valve	 [Engine is running] Idle speed Accelerator pedal is not depressed even slightly, after engine starting. 	BATTERY VOLTAGE (11 - 14V)★ In the state of the state o
45	G/W		 [Engine is running] Engine speed is about 2,000 rpm (More than 100 seconds after starting engine). 	BATTERY VOLTAGE (11 - 14V)★ In the state of the state
111	GY/L	ECM relay	[Engine is running] [Ignition switch: OFF] • For a few seconds after turning ignition switch OFF	0 - 1.5V
		(Self shut-off) [Ignition switch: OFF] • More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)	
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIR-CUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Turn ignition switch ON.

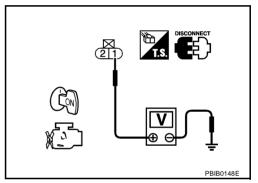


Check voltage between EVAP canister purge volume control solenoid valve terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 3. NG >> GO TO 2.



2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between EVAP canister purge volume control solenoid valve and IPDM E/R
- Harness for open or short between EVAP canister purge volume control solenoid valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OUTPUT SIGNAL CIR-**CUIT FOR OPEN AND SHORT**

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 45 and EVAP canister purge volume control solenoid valve terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4.

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

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4. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- 2. Check connectors for water.

Water should not exist.

OK or NG

OK >> GO TO 5.

NG >> Replace EVAP control system pressure sensor.

5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-466, "Component Inspection".

OK or NG

OK (With CONSULT-II)>>GO TO 6.

OK (Without CONSULT-II)>>GO TO 7.

NG >> Replace EVAP control system pressure sensor.

6. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(II) With CONSULT-II

- 1. Turn ignition switch OFF.
- Reconnect harness connectors disconnected.
- 3. Start engine.
- 4. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-II. Check that engine speed varies according to the valve opening.

OK or NG

OK >> GO TO 8. NG >> GO TO 7.

ACTIVE TEST		
PURG VOL CONT/V	XXX %	
MONITOR	l	
ENG SPEED	XXX rpm	
A/F ALPHA-B1	XX %	
A/F ALPHA-B2	XX %	
		DDID 4070F
		PBIB1678E

7. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-438, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace EVAP canister purge volume control solenoid valve.

8. CHECK RUBBER TUBE FOR CLOGGING

- 1. Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

OK or NG

OK >> GO TO 9.

NG >> Clean the rubber tube using an air blower.

9. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-453, "Component Inspection".

OK or NG

OK >> GO TO 10.

NG >> Replace EVAP canister vent control valve.

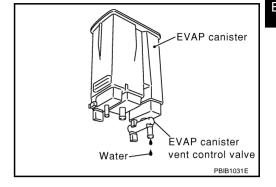
Revision: 2005 August **EC-436** 2006 350Z

10. CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Does water drain from the EVAP canister?

OK or NG

OK >> GO TO 11. NG >> GO TO 13.



11. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.2 kg (4.9 lb).

OK or NG

OK >> GO TO 13. NG >> GO TO 12.

12. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
 - >> Repair hose or replace EVAP canister.

13. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

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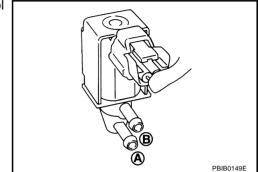
Component Inspection EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

NBS000FK

(P) With CONSULT-II

Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

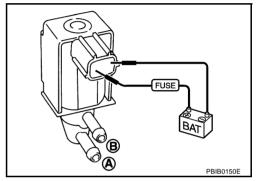
Condition (PURG VOL CONT/V value)	Air passage continuity between A and B	
100%	Yes	
0%	No	



⋈ Without CONSULT-II

Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between A and B
12V direct current supply between terminals 1 and 2	Yes
No supply	No



NBS000FL

Removal and Installation EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR" .

DTC P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Description SYSTEM DESCRIPTION

NBS0008W

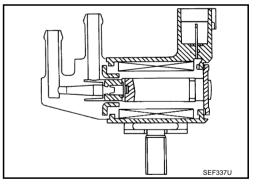
Sensor	Input Signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1			
Mass air flow sensor	Amount of intake air			
Engine coolant temperature sensor	Engine coolant temperature			
Battery	Battery voltage*1			
Throttle position sensor	Throttle position	EVAP canister purge flow control	EVAP canister purge vol- ume control solenoid valve	
Accelerator pedal position sensor	Accelerator pedal position	purge new control	anio control colonida varvo	
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)			
Fuel tank temperature sensor	Fuel temperature in fuel tank			
Wheel sensor	Vehicle speed* ²			

^{*1:} ECM determines the start signal status by the signals of engine speed and battery voltage.

This system controls flow rate of fuel vapor from the EVAP canister. The opening of the vapor by-pass passage in the EVAP canister purge volume control solenoid valve changes to control the flow rate. The EVAP canister purge volume control solenoid valve repeats ON/OFF operation according to the signal sent from the ECM. The opening of the valve varies for optimum engine control. The optimum value stored in the ECM is determined by considering various engine conditions. When the engine is operating, the flow rate of fuel vapor from the EVAP canister is regulated as the air flow changes.

COMPONENT DESCRIPTION

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



CONSULT-II Reference Value in Data Monitor Mode

NBS0008X

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
PURG VOL C/V	 Engine: After warming up Shift lever: P or N (A/T), Neutral (M/T) 	Idle (Accelerator pedal is not depressed even slightly, after engine starting)	0%
	 Air conditioner switch: OFF No load	2,000 rpm	_

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^{*2:} This signal is sent to the ECM through CAN communication line.

On Boa	On Board Diagnosis Logic				
DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause		
P0444 0444	EVAP canister purge volume control solenoid valve circuit open	An excessively low voltage signal is sent to ECM through the valve	 Harness or connectors (The solenoid valve circuit is open or shorted.) EVAP canister purge volume control solenoid valve 		
P0445 0445	EVAP canister purge volume control solenoid valve circuit shorted	An excessively high voltage signal is sent to ECM through the valve	 Harness or connectors (The solenoid valve circuit is shorted.) EVAP canister purge volume control solenoid valve 		

DTC Confirmation Procedure

NBS0008Z

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 battery voltage is more than 11V at idle.

(P) WITH CONSULT-II

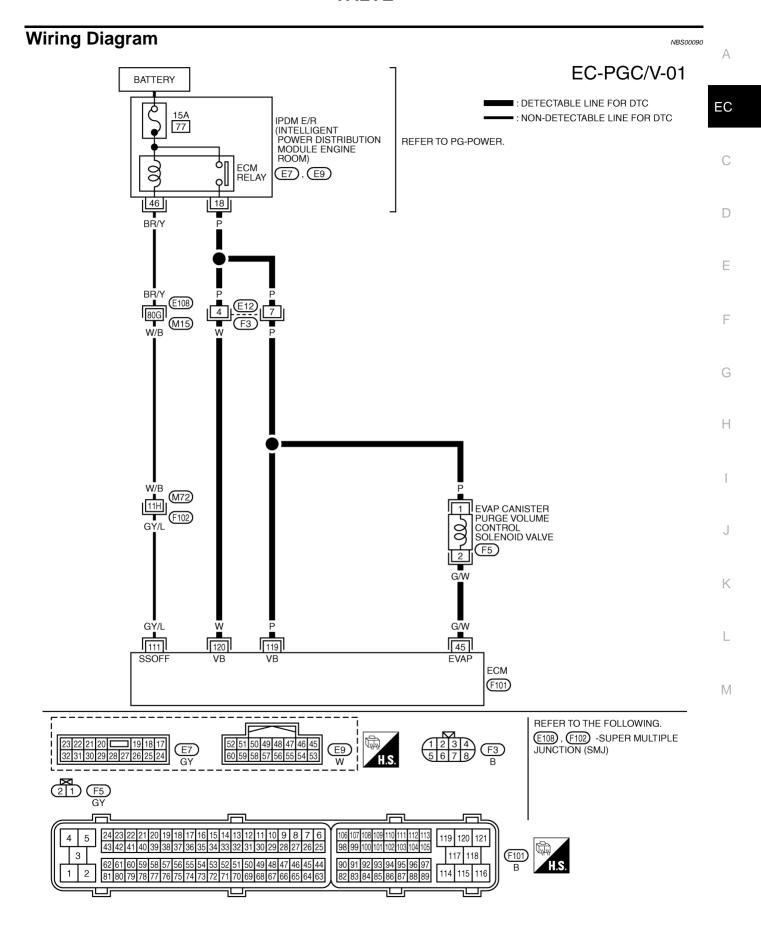
- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for at least 13 seconds.
- 4. If 1st trip DTC is detected, go to EC-443, "Diagnostic Procedure"

MONITOR	
MONITOR	NO DTC
ENG SPEED	XXX rpm

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Revision: 2005 August **EC-440** 2006 350Z



TBWT1212E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

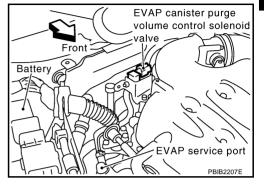
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
45	G/W	EVAP canister purge volume control solenoid valve	 [Engine is running] Idle speed Accelerator pedal is not depressed even slightly, after engine starting. 	BATTERY VOLTAGE (11 - 14V)★
45	G/W		 [Engine is running] Engine speed is about 2,000 rpm (More than 100 seconds after starting engine). 	BATTERY VOLTAGE (11 - 14V)★ 10.0 V/Div 50 ms/Div T SEC991C
111	GY/L ECM relay (Self shut-off)	 [Engine is running] [Ignition switch: OFF] For a few seconds after turning ignition switch OFF 	0 - 1.5V	
		(con state on)	[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIR-CUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Turn ignition switch ON.

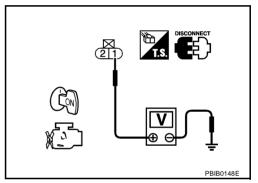


Check voltage between EVAP canister purge volume control solenoid valve terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 3. NG >> GO TO 2.



2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between EVAP canister purge volume control solenoid valve and IPDM E/R
- Harness for open or short between EVAP canister purge volume control solenoid valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OUTPUT SIGNAL CIR-**CUIT FOR OPEN AND SHORT**

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 45 and EVAP canister purge volume control solenoid valve terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

Revision: 2005 August

OK (With CONSULT-II)>>GO TO 4.

OK (Without CONSULT-II)>>GO TO 5.

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

> **EC-443** 2006 350Z

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4. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(II) With CONSULT-II

- 1. Reconnect all harness connectors disconnected.
- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-II. Check that engine speed varies according to the valve opening.

OK or NG

OK >> GO TO 6. NG >> GO TO 5.

ACTIVE TEST		
PURG VOL CONT/V	XXX %	
MONITOR		
ENG SPEED	XXX rpm	
A/F ALPHA-B1	XX %	
A/F ALPHA-B2	XX %	
		PBIB1678E

5. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-444, "Component Inspection".

OK or NG

OK >> GO TO 6.

NG >> Replace EVAP canister purge volume control solenoid valve.

6. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

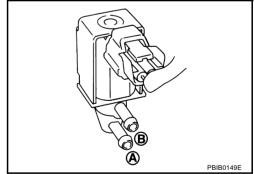
Component Inspection EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

NBS00092

(P) With CONSULT-II

Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

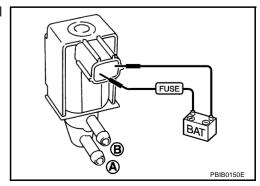
Condition (PURG VOL CONT/V value)	Air passage continuity between A and B	
100%	Yes	
0%	No	



⊗ Without CONSULT-II

Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between A and B
12V direct current supply between terminals 1 and 2	Yes
No supply	No



Removal and Installation EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

NBS00093

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DTC P0447 EVAP CANISTER VENT CONTROL VALVE

PFP:14935

Component Description

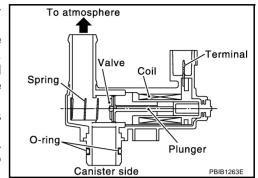
NBS00094

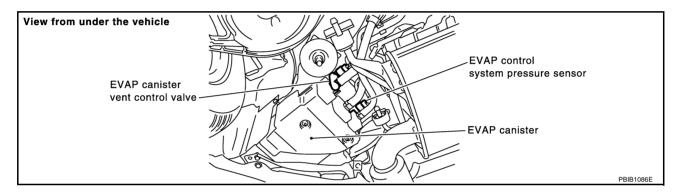
The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.





CONSULT-II Reference Value in Data Monitor Mode

NBS00095

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
VENT CONT/V	Ignition switch: ON	OFF

On Board Diagnosis Logic

NBS00096

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0447 0447	EVAP canister vent control valve circuit open	An improper voltage signal is sent to ECM through EVAP canister vent control valve.	 Harness or connectors (The valve circuit is open or shorted.) EVAP canister vent control valve

DTC Confirmation Procedure

NBS00097

NOTE:

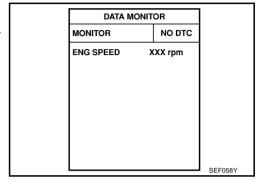
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm battery voltage is more than 11V at idle.

(II) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and wait at least 8 seconds.
- 4. If 1st trip DTC is detected, go to EC-451, "Diagnostic Procedure"



WITH GST

Follow the procedure "WITH CONSULT-II" above.

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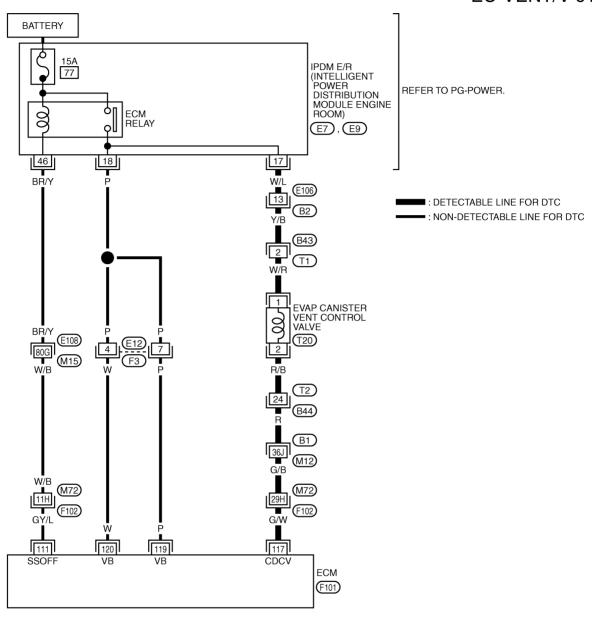
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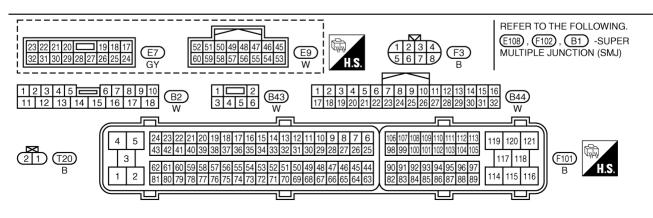
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Wiring Diagram COUPE MODELS

NBS00098

EC-VENT/V-01





TBWT1213E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
111	GY/L	ECM relay (Self shut-off)	[Engine is running] [Ignition switch: OFF] ● For a few seconds after turning ignition switch OFF	0 - 1.5V
			 [Ignition switch: OFF] More than a few seconds after turning ignition switch OFF 	BATTERY VOLTAGE (11 - 14V)
117	G/W	EVAP canister vent control valve	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

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ROADSTER MODELS EC-VENT/V-02 BATTERY IPDM E/R 77 (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE REFER TO PG-POWER. ECM RELAY 00 ROOM) E7), E9 18 46 17 W/L BR/Y ■: DETECTABLE LINE FOR DTC (E106) : NON-DETECTABLE LINE FOR DTC Y/B (B2) (B61) (T23) W/R (E108) 80G W/B (M15) EVAP CANISTER VENT CONTROL VALVE 3 (T20) R/B (T2) (B44) (B1) 36J (M12)G/B W/B M72 (M72)29H (F102) (F102) GŸ/L G/W 111 117 120 119 SSOFF CDCV ECM (F101) REFER TO THE FOLLOWING. (E108), (F102), (B1) -SUPER F3 MULTIPLE JUNCTION (SMJ) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 (B61) (B2) (B44) 5 119 120 2 1 T20 98 99 100 101 102 103 104 105 3 (F101) 90 91 92 93 94 95 96 97 1 2 114 115 82 83 84 85 86 87 88 89

TBWT1214E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
111	GY/L	ECM relay (Self shut-off)	[Engine is running] [Ignition switch: OFF] ● For a few seconds after turning ignition switch OFF	0 - 1.5V
			[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
117	G/W	EVAP canister vent control valve	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

1. INSPECTION START

Do you have CONSULT-II?

Yes or No

Yes >> GO TO 2. No >> GO TO 3.

$2. \ \mathsf{CHECK} \ \mathsf{EVAP} \ \mathsf{CANISTER} \ \mathsf{VENT} \ \mathsf{CONTROL} \ \mathsf{VALVE} \ \mathsf{CIRCUIT}$

(II) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "VENT CONTROL/V" in "ACTIVE TEST" mode with CONSULT-II.
- 3. Touch "ON/OFF" on CONSULT-II screen.
- 4. Check for operating sound of the valve. Clicking noise should be heard.

OK or NG

OK >> GO TO 7. NG >> GO TO 3.

ACTIVE TES		
VENT CONTROL/V	OFF	
MONITOR		
ENG SPEED	XXX rpm	
A/F ALPHA-B1	xxx %	
A/F ALPHA-B2	XXX %	
		PBIB1679E

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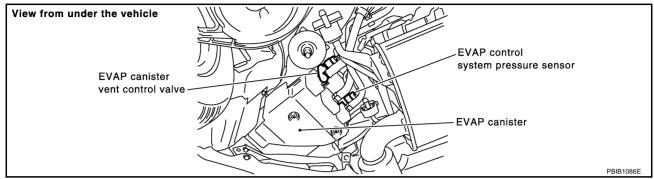
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$\overline{3}$. CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect EVAP canister vent control valve harness connector.

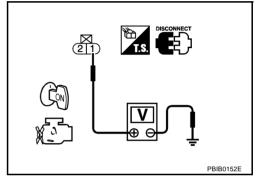


- 3. Turn ignition switch ON.
- 4. Check voltage between EVAP canister vent control valve terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 5. NG >> GO TO 4.



4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E106, B2
- Harness connectors B43, T1 (Coupe models)
- Harness connectors B61, T23 (Roadster models)
- IPDM E/R harness connector E7
- 15A fuse
- Harness for open or short between EVAP canister vent control valve and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK EVAP CANISTER VENT CONTROL VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 117 and EVAP canister vent control valve terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors T2, B44
- Harness connectors B1. M12
- Harness connectors M72, F102
- Harness for open or short between EVAP canister vent control valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK RUBBER TUBE FOR CLOGGING

- 1. Turn ignition switch OFF.
- 2. Disconnect rubber tube connected to EVAP canister vent control valve.
- 3. Check the rubber tube for clogging.

OK or NG

OK >> GO TO 8.

NG >> Clean the rubber tube using an air blower.

8. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-453, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Replace EVAP canister vent control valve.

9. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection EVAP CANISTER VENT CONTROL VALVE

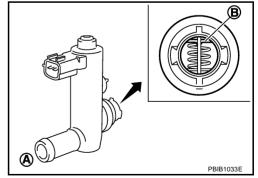
(P) With CONSULT-II

- 1. Remove EVAP canister vent control valve from EVAP canister.
- Check portion **B** of EVAP canister vent control valve for being rusted.

If NG, replace EVAP canister vent control valve.

If OK, go to next step.

- 3. Reconnect harness connectors disconnected.
- 4. Turn ignition switch ON.



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- 5. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 6. Check air passage continuity and operation delay time.

 Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between A and B
ON	No
OFF	Yes

Operation takes less than 1 second.

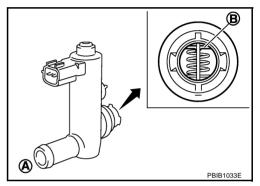
If NG, replace EVAP canister vent control valve.

If OK, go to next step.

- 7. Clean the air passage (Portion A to B) of EVAP canister vent control valve using an air blower.
- 8. Perform step 6 again.

Without CONSULT-II

- 1. Remove EVAP canister vent control valve from EVAP canister.
- 2. Check portion **B** of EVAP canister vent control valve for being rusted.



ACTIVE TEST

MONITOR ENG SPEED OFF

XXX rpm

XXX %

XXX %

PBIB1679E

VENT CONTROL/V

A/F ALPHA-B1

A/F ALPHA-B2

3. Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

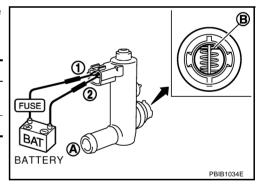
Condition	Air passage continuity between A and B
12V direct current supply between terminals 1 and 2	No
OFF	Yes



If NG, replace EVAP canister vent control valve.

If OK, go to next step.

- 4. Clean the air passage (Portion A to B) of EVAP canister vent control valve using an air blower.
- 5. Perform step 3 again.



DTC P0448 EVAP CANISTER VENT CONTROL VALVE

PFP:16935

Component Description

NBS000FM

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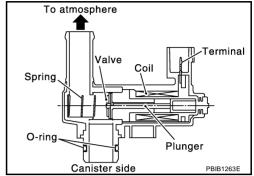
 D

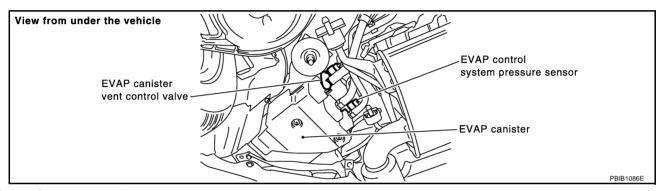
The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.





CONSULT-II Reference Value in Data Monitor Mode

NBS000FN

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
VENT CONT/V	Ignition switch: ON	OFF

On Board Diagnosis Logic

NBS000FO

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
		EVAP canister vent control valve	
P0448	EVAP canister vent con-	canister vent con-	EVAP control system pressure sensor and the circuit
0448	trol valve close		Blocked rubber tube to EVAP canister vent control valve
		EVAP canister is saturated with water	

DTC Confirmation Procedure

NBS000FF

NOTE:

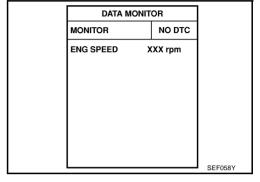
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

(P) WITH CONSULT-II

- Turn ignition switch ON and wait at least 5 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 4. Start engine and let it idle for at least 1 minute.
- 5. Repeat next procedures for three times.
- a. Increase the engine speed up to 3,000 to 3,500 rpm and keep it for 2 minutes and 50 seconds to 3 minutes.

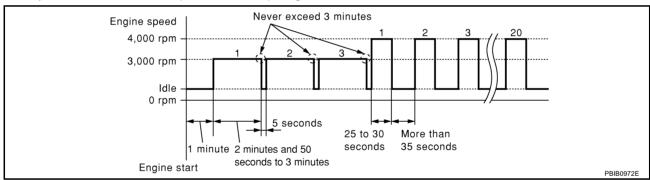
Never exceed 3 minutes.

- Fully released accelerator pedal and keep engine idle for about 5 seconds.
- 6. If 1st trip DTC is detected, go to EC-460, "Diagnostic Procedure"



If 1st trip DTC is not detected, go to the next step.

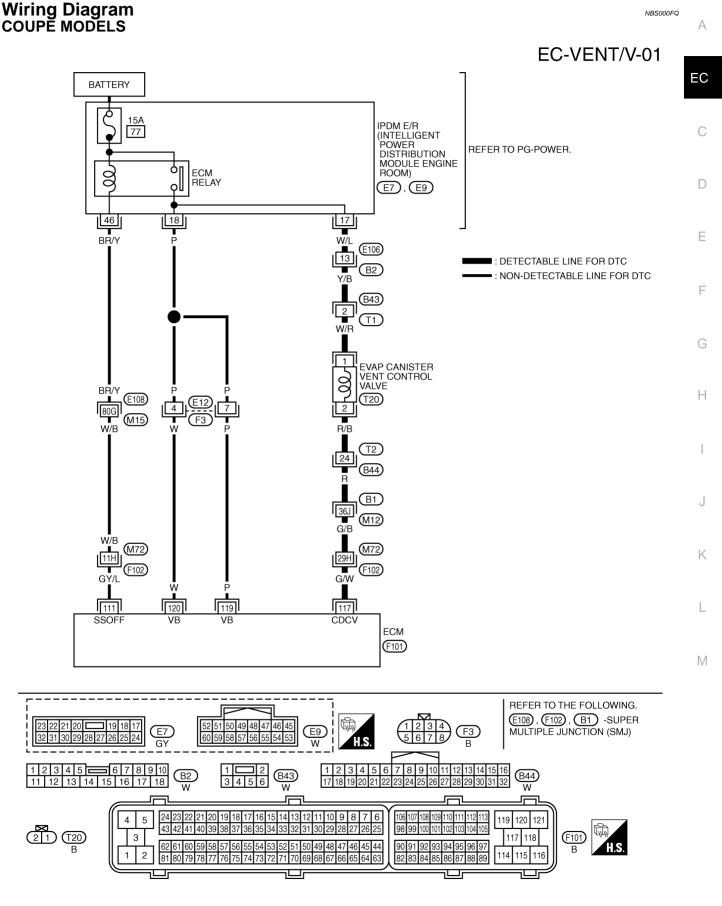
- 7. Repeat next procedure for 20 times.
- a. Quickly increase the engine speed up to 4,000 to 4,500 rpm or more and keep it for 25 to 30 seconds.
- b. Fully released accelerator pedal and keep engine idle for at least 35 seconds.



8. If 1st trip DTC is detected, go to EC-460, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II" above.



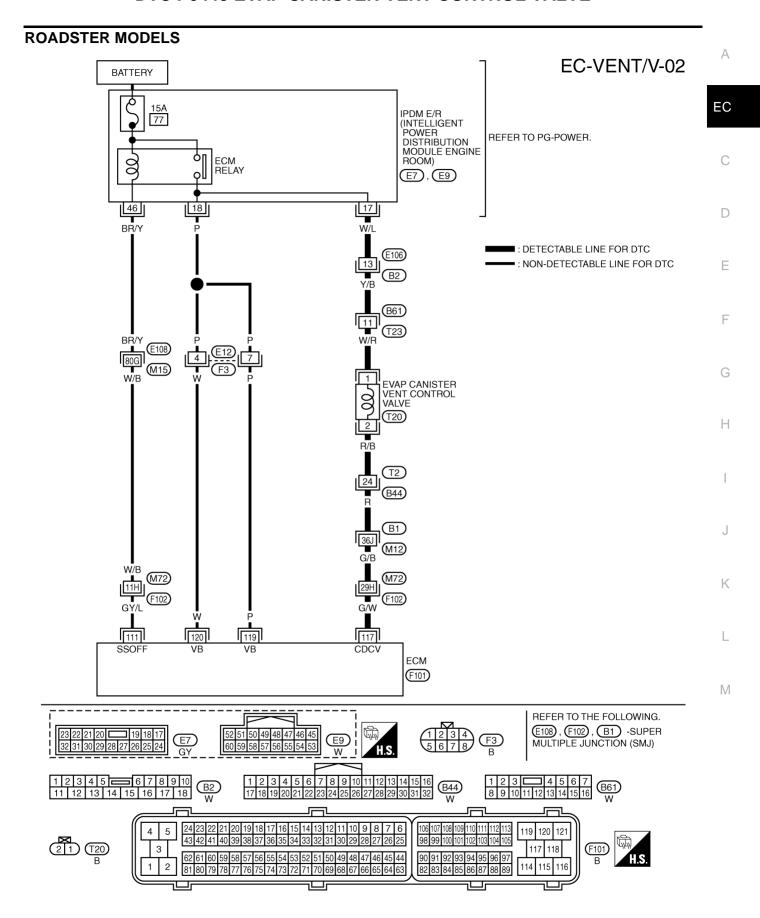
TBWT1213E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
111	GY/L	ECM relay (Self shut-off)	[Engine is running] [Ignition switch: OFF] • For a few seconds after turning ignition switch OFF	0 - 1.5V
		(Jell Stateon)	[Ignition switch: OFF] • More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
117	G/W	EVAP canister vent control valve	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)



TBWT1214E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

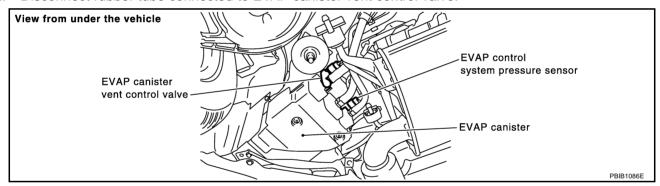
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
111	GY/L	ECM relay (Self shut-off)	[Engine is running] [Ignition switch: OFF] • For a few seconds after turning ignition switch OFF	0 - 1.5V
		(och shat on)	[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
117	G/W	EVAP canister vent control valve	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

1. CHECK RUBBER TUBE

NBS000FR

- 1. Turn ignition switch OFF.
- 2. Disconnect rubber tube connected to EVAP canister vent control valve.



3. Check the rubber tube for clogging.

OK or NG

OK >> GO TO 2.

NG >> Clean rubber tube using an air blower.

2. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-462, "EVAP CANISTER VENT CONTROL VALVE".

OK or NG

OK >> GO TO 3.

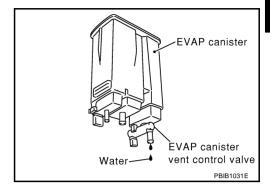
NG >> Replace EVAP canister vent control valve.

$\overline{3}$. CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached
- 2. Does water drain from the EVAP canister?

OK or NG

OK >> GO TO 4. NG >> GO TO 6.



4. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor

The weight should be less than 2.2 kg (4.9 lb).

OK or NG

OK >> GO TO 6. NG >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
 - >> Repair hose or replace EVAP canister.

6. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

Water should not exist.

OK or NG

>> GO TO 7. OK

NG >> Replace EVAP control system pressure sensor.

7. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-466, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace EVAP control system pressure sensor.

8. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

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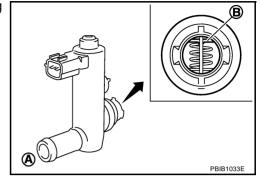
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Component Inspection EVAP CANISTER VENT CONTROL VALVE

NBS000FS

(P) With CONSULT-II

- 1. Remove EVAP canister vent control valve from EVAP canister.
- 2. Check portion **B** of EVAP canister vent control valve for being rusted.
 - If NG, replace EVAP canister vent control valve. If OK, go to next step.
- 3. Reconnect harness connectors disconnected.
- 4. Turn ignition switch ON.



ACTIVE TEST

MONITOR ENG SPEED OFF

XXX rpm

XXX %

XXX %

XXX V

XXX V

VENT CONTROL/V

A/F ALPHA-B1

A/F ALPHA-B2

HO2S1 (B1)

HO2S1 (B2)

- 5. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 6. Check air passage continuity and operation delay time.

 Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between A and B
ON	No
OFF	Yes

Operation takes less than 1 second.

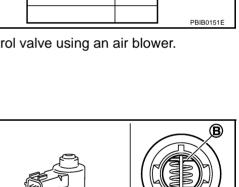
If NG, replace EVAP canister vent control valve.

If OK, go to next step.

- 7. Clean the air passage (Portion A to B) of EVAP canister vent control valve using an air blower.
- 8. Perform step 6 again.

⋈ Without CONSULT-II

- 1. Remove EVAP canister vent control valve from EVAP canister.
- Check portion **B** of EVAP canister vent control valve for being rusted.



Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

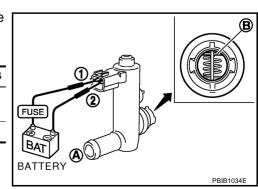
Condition	Air passage continuity between A and B
12V direct current supply between terminals 1 and 2	No
OFF	Yes

Operation takes less than 1 second.

If NG, replace EVAP canister vent control valve.

If OK, go to next step.

4. Clean the air passage (Portion A to B) of EVAP canister vent control valve using an air blower.



PBIB1033E

5. Perform step 3 again.

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DTC P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

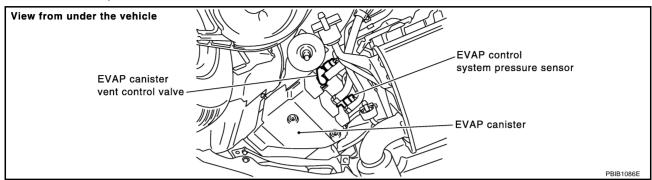
DTC P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

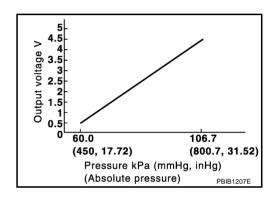
PFP:22365

Component Description

NBS0009B

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.





CONSULT-II Reference Value in Data Monitor Mode

NBS0009C

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
EVAP SYS PRES	Ignition switch: ON	Approx. 1.8 - 4.8V

On Board Diagnosis Logic

NBS0009D

NOTE:

If DTC P0451 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-523, "DTC P0643 SENSOR POWER SUPPLY".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0451 0451	EVAP control system pressure sensor performance	ECM detects a sloshing signal from the EVAP control system pressure sensor	Harness or connectors EVAP control system pressure sensor

DTC P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Confirmation Procedure

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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.

(I) WITH CONSULT-II

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and wait at least 40 seconds.

NOTE:

Do not depress accelerator pedal even slightly.

If 1st trip DTC is detected, go to EC-465, "Diagnostic Procedure"

DATA MONITOR

MONITOR NO DTC

ENG SPEED XXX rpm

COOLAN TEMP/S XXX °C

FUEL T/TMP SE XXX °C

SEF194Y

WITH GST

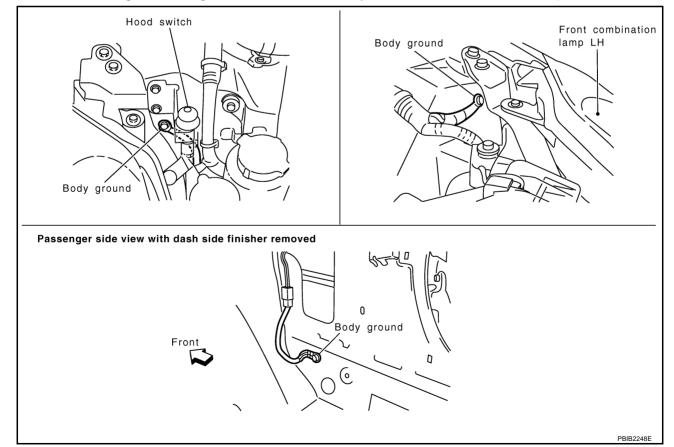
Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

Turn ignition switch OFF.

2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

Revision: 2005 August **EC-465** 2006 350Z

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NBS0009F

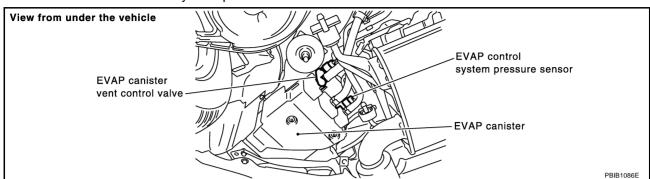
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DTC P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

2. CHECK EVPA CONTROL SYSTEM PRESSURE SENSOR CONNECTOR FOR WATER

Disconnect EVAP control system pressure sensor harness connector.



2. Check sensor harness connector for water.

Water should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace harness connector.

3. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-466, "Component Inspection".

OK or NG

OK >> GO TO 4.

NG >> Replace EVAP control system pressure sensor.

4. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

Refer to EC-469, "Wiring Diagram".

>> INSPECTION END

Component Inspection EVAP CONTROL SYSTEM PRESSURE SENSOR

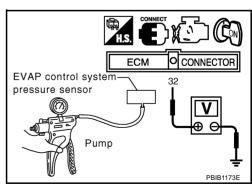
NBS0009G

- 1. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. **Always replace O-ring with a new one.**
- Install a vacuum pump to EVAP control system pressure sensor.
- 3. Turn ignition switch ON and check output voltage between ECM terminal 32 and ground under the following conditions.

Applied vacuum kPa (mmHg, inHg)	Voltage V
Not applied	1.8 - 4.8
-26.7 (-200, -7.87)	2.1 to 2.5V lower than above value

CAUTION:

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-700 mmHg, -27.56 inHg) or pressure over 101.3 kPa (760 mmHg, 29.92 inHg).
- 4. If NG, replace EVAP control system pressure sensor.



DTC P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

PFP:25085

Component Description

NBS0009H

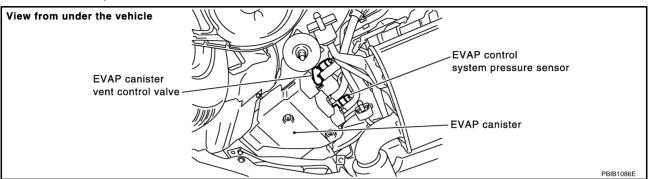
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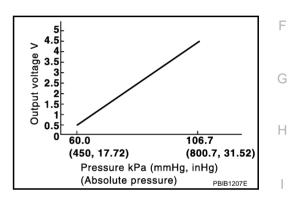
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The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.





CONSULT-II Reference Value in Data Monitor Mode

NBS00091

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
EVAP SYS PRES	Ignition switch: ON	Approx. 1.8 - 4.8V

On Board Diagnosis Logic

NBS0009J

NOTE:

If DTC P0452 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to $\underline{\text{CC-523, "DTC P0643 SENSOR POWER SUPPLY"}}$.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	M
P0452 0452	EVAP control system pressure sensor low input	An excessively low voltage from the sensor is sent to ECM.	 Harness or connectors (The sensor circuit is open or shorted.) EVAP control system pressure sensor 	

DTC P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Confirmation Procedure

NBS0009

NOTE:

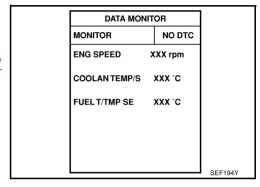
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

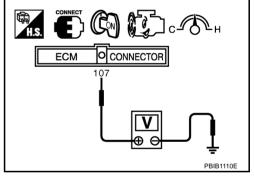
(P) WITH CONSULT-II

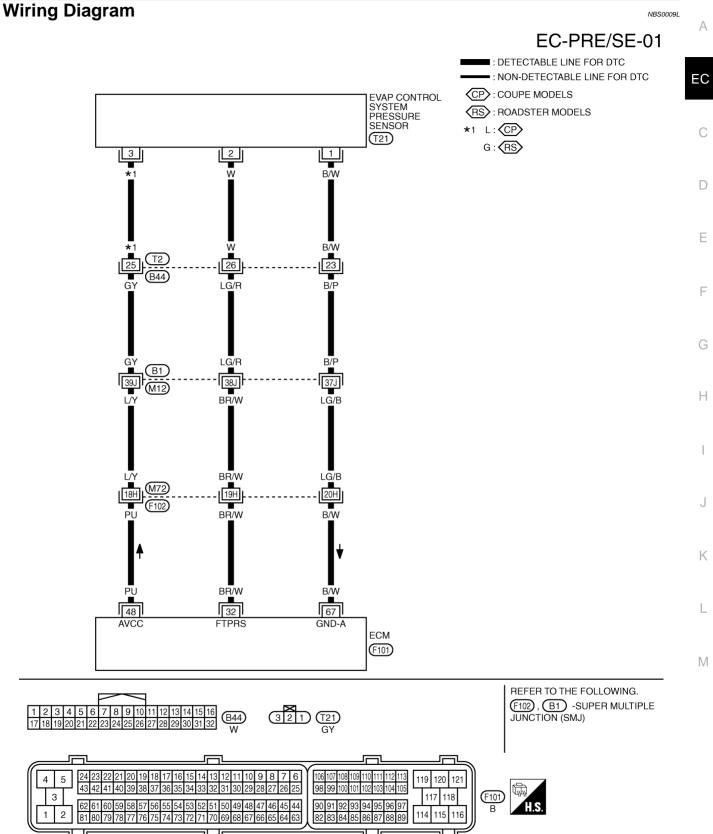
- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Select "DATA MONITOR" mode with CONSULT-II.
- 5. Make sure that "FUEL T/TEMP SE" is more than 0°C (32°F).
- Start engine and wait at least 20 seconds.
 If 1st trip DTC is detected, go to <u>EC-470, "Diagnostic Procedure"</u>



WITH GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Check that voltage between ECM terminal 107 (Fuel tank temperature sensor signal) and ground is less than 4.2V.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and wait at least 20 seconds.
- Select Service \$07 with GST.
 If 1st trip DTC is detected, go to <u>EC-470</u>, "<u>Diagnostic Procedure</u>"





TBWT1215E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

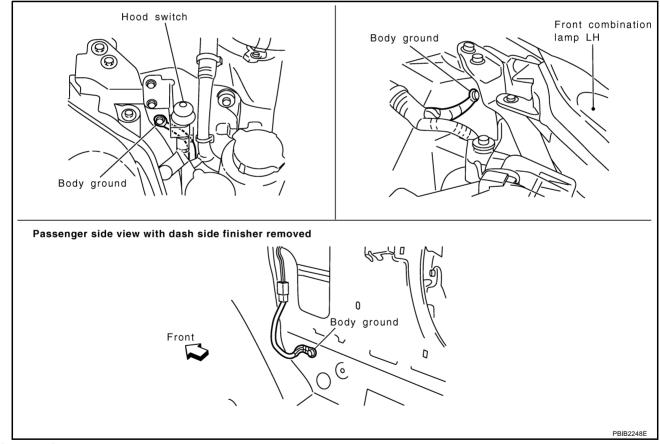
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
32	BR/W	EVAP control system pres- sure sensor	[Ignition switch: ON]	Approximately 1.8 - 4.8V
48	PU	Sensor power supply (EVAP control system pressure sensor)	[Ignition switch: ON]	Approximately 5V
67	B/W	Sensor ground	[Engine is running]Warm-up conditionIdle speed	Approximately 0V

Diagnostic Procedure

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1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



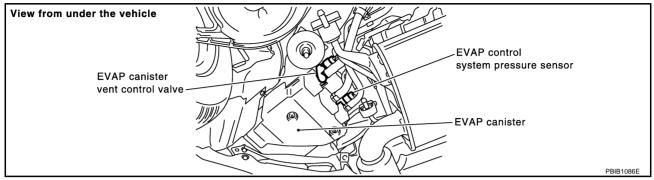
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$\overline{2}$. CHECK CONNECTOR

1. Disconnect EVAP control system pressure sensor harness connector.



2. Check sensor harness connector for water.

Water should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace harness connector.

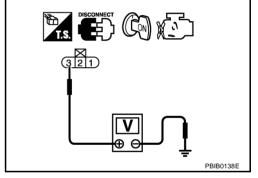
3. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch ON.
- Check voltage between EVAP control system pressure sensor terminal 3 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 5. NG >> GO TO 4.



4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors T2, B44
- Harness connectors B1, M12
- Harness connectors M72, F102
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

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5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check harness continuity between EVAP control system pressure sensor terminal 1 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors T2, B44
- Harness connectors B1, M12
- Harness connectors M72, F102
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check harness continuity between ECM terminal 32 and EVAP control system pressure sensor terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 9. NG >> GO TO 8.

8. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors T2, B44
- Harness connectors B1, M12
- Harness connectors M72, F102
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-473, "Component Inspection".

OK or NG

OK >> GO TO 10.

NG >> Replace EVAP control system pressure sensor.

Revision: 2005 August **EC-472** 2006 350Z

10. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection EVAP CONTROL SYSTEM PRESSURE SENSOR

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- 1. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. **Always replace O-ring with a new one.**
- 2. Install a vacuum pump to EVAP control system pressure sensor.
- 3. Turn ignition switch ON and check output voltage between ECM terminal 32 and ground under the following conditions.

Applied vacuum kPa (mmHg, inHg)	Voltage V	
Not applied	1.8 - 4.8	
-26.7 (-200, -7.87)	2.1 to 2.5V lower than above value	

EVAP control system pressure sensor Pump PBIB1173E

CAUTION:

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-700 mmHg, -27.56 inHg) or pressure over 101.3 kPa (760 mmHg, 29.92 inHg).
- 4. If NG, replace EVAP control system pressure sensor.

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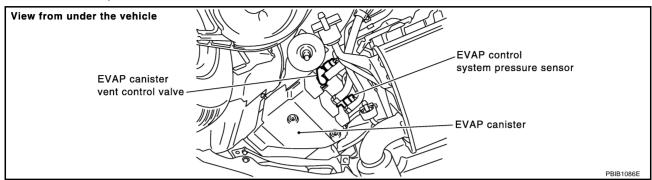
DTC P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

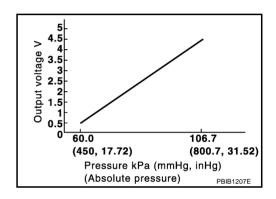
PFP:25085

Component Description

NBS00090

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.





CONSULT-II Reference Value in Data Monitor Mode

NBS0009P

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
EVAP SYS PRES	Ignition switch: ON	Approx. 1.8 - 4.8V

On Board Diagnosis Logic

NBS0009Q

NOTE:

If DTC P0453 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-523, "DTC P0643 SENSOR POWER SUPPLY".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0453 0453	EVAP control system pressure sensor high input	An excessively high voltage from the sensor is sent to ECM.	 Harness or connectors (The sensor circuit is open or shorted.) EVAP control system pressure sensor EVAP canister vent control valve EVAP canister Rubber hose from EVAP canister vent control valve to vehicle frame

DTC Confirmation Procedure

PSOOOD

NOTE:

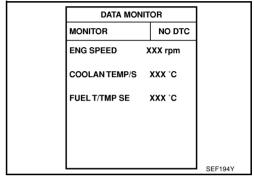
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

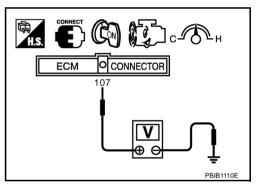
(P) WITH CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Select "DATA MONITOR" mode with CONSULT-II.
- 5. Make sure that "FUEL T/TEMP SE" is more than 0°C (32°F).
- 6. Start engine and wait at least 20 seconds.
- 7. If 1st trip DTC is detected, go to EC-477, "Diagnostic Procedure"



GI WITH GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Check that voltage between ECM terminal 107 (Fuel tank temperature sensor signal) and ground is less than 4.2V.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and wait at least 20 seconds.
- Select Service \$07 with GST.
 If 1st trip DTC is detected, go to <u>EC-477</u>, "<u>Diagnostic Procedure</u>"



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Wiring Diagram

EC-PRE/SE-01

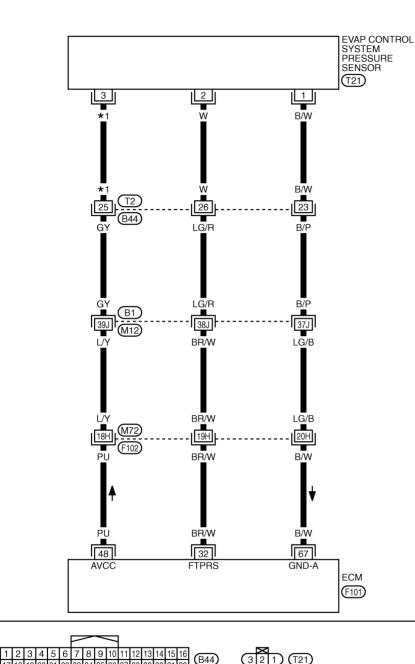
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC

CP : COUPE MODELS

(RS): ROADSTER MODELS

*1 L: CP

G : (RS)



3

REFER TO THE FOLLOWING.

(F102), (B1) -SUPER MULTIPLE
JUNCTION (SMJ)

(F101)

B

H.S.

TBWT1215E

119 120 121

117 118

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

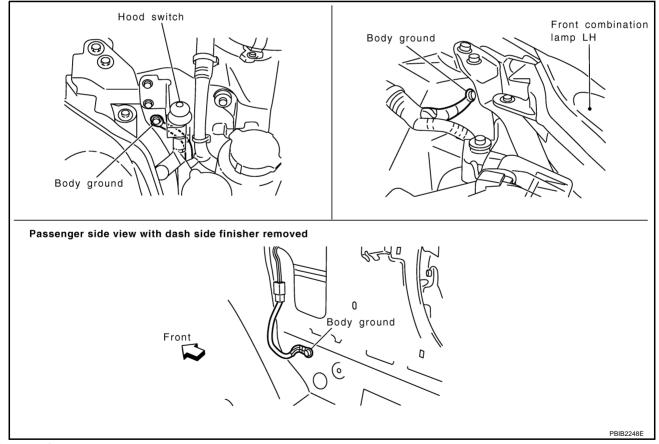
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
32	BR/W	EVAP control system pressure sensor	[Ignition switch: ON]	Approximately 1.8 - 4.8V
48	PU	Sensor power supply (EVAP control system pressure sensor)	[Ignition switch: ON]	Approximately 5V
67	B/W	Sensor ground	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

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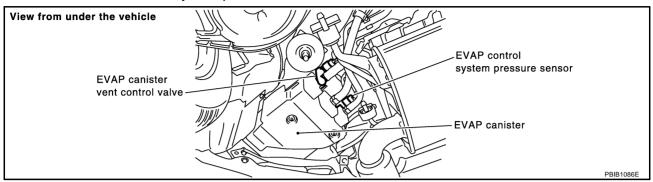
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2. CHECK CONNECTOR

1. Disconnect EVAP control system pressure sensor harness connector.



2. Check sensor harness connector for water.

Water should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace harness connector.

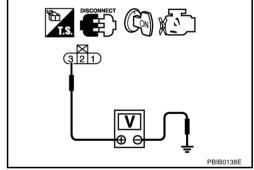
3. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch ON.
- 2. Check voltage between EVAP control system pressure sensor terminal 3 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 5. NG >> GO TO 4.



4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors T2, B44
- Harness connectors B1, M12
- Harness connectors M72, F102
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT FOR OPEN AND **SHORT**

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness continuity between EVAP control system pressure sensor terminal 1 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.

>> GO TO 6. NG

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors T2, B44
- Harness connectors B1, M12
- Harness connectors M72, F102
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check harness continuity between ECM terminal 32 and EVAP control system pressure sensor terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 9. >> GO TO 8. NG

8. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors T2, B44
- Harness connectors B1, M12
- Harness connectors M72, F102
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

EC-479

9. CHECK RUBBER TUBE

- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging, vent and kinked.

OK or NG

OK >> GO TO 10.

Revision: 2005 August

NG >> Clean the rubber tube using an air blower. EC

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10. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-453, "Component Inspection".

OK or NG

OK >> GO TO 11.

NG >> Replace EVAP canister vent control valve.

11. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-481, "Component Inspection".

OK or NG

OK >> GO TO 12.

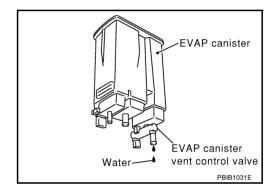
NG >> Replace EVAP control system pressure sensor.

12. CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Does water drain from the EVAP canister?

Yes or No

Yes >> GO TO 13. No >> GO TO 15.



13. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.2 kg (4.9 lb).

OK or NG

OK >> GO TO 15. NG >> GO TO 14.

14. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
 - >> Repair hose or replace EVAP canister.

15. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection EVAP CONTROL SYSTEM PRESSURE SENSOR

NBS0009U

1. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. **Always replace O-ring with a new one.**

- 2. Install a vacuum pump to EVAP control system pressure sensor.
- 3. Turn ignition switch ON and check output voltage between ECM terminal 32 and ground under the following conditions.

Applied vacuum kPa (mmHg, inHg)	Voltage V	
Not applied	1.8 - 4.8	
-26.7 (-200, -7.87)	2.1 to 2.5V lower than above value	

EVAP control system pressure sensor Pump Pump PBIB1173E

CAUTION:

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-700 mmHg, -27.56 inHg) or pressure over 101.3 kPa (760 mmHg, 29.92 inHg).
- 4. If NG, replace EVAP control system pressure sensor.

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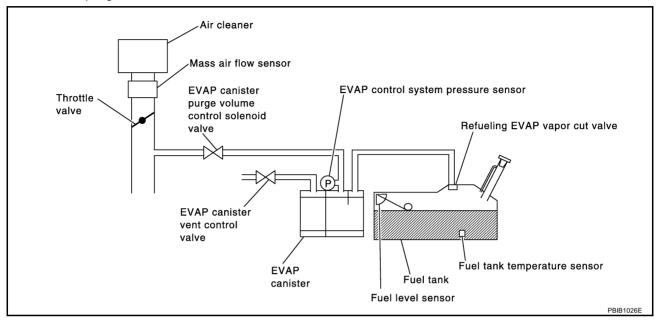
DTC P0455 EVAP CONTROL SYSTEM

PFP:14950

On Board Diagnosis Logic

NBS0009V

This diagnosis detects a very large leak (fuel filler cap fell off etc.) in EVAP system between the fuel tank and EVAP canister purge volume control solenoid valve.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0455 0455	EVAP control system gross leak detected	EVAP control system has a very large leak such as fuel filler cap fell off, EVAP control system does not operate properly.	 Fuel filler cap remains open or fails to close. Incorrect fuel tank vacuum relief valve Incorrect fuel filler cap used Foreign matter caught in fuel filler cap. Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve. Foreign matter caught in EVAP canister vent control valve. EVAP canister or fuel tank leaks EVAP purge line (pipe and rubber tube) leaks EVAP purge line rubber tube bent. Loose or disconnected rubber tube EVAP canister vent control valve and the circuit EVAP canister purge volume control solenoid valve and the circuit Fuel tank temperature sensor O-ring of EVAP canister vent control valve is missing or damaged. EVAP control system pressure sensor Refueling EVAP vapor cut valve ORVR system leaks

CAUTION:

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.

• Use only a genuine NISSAN rubber tube as a replacement.

DTC Confirmation Procedure

NRSOOOW

CAUTION:

Never remove fuel filler cap during the DTC Confirmation Procedure.

NOTE:

- Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.
- If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

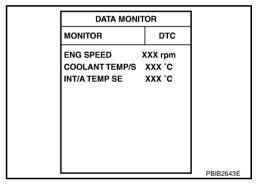
TESTING CONDITION:

- Perform "DTC WORK SUPPORT" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.
- Open engine hood before conducting the following procedures.

(WITH CONSULT-II

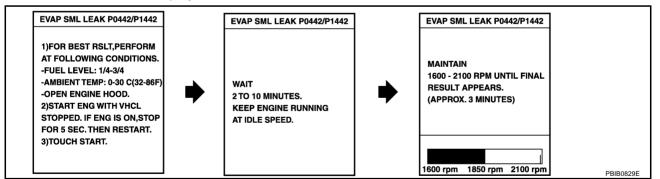
- 1. Tighten fuel filler cap securely until ratcheting sound is heard.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- 5. Make sure that the following conditions are met.

COOLAN TEMP/S: 0 - 70°C (32 - 158°F) INT/A TEMP SE: 0 - 60°C (32 - 140°F)



Select "EVAP SML LEAK P0442/P1442" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-II.

Follow the instruction displayed.



NOTE:

If the engine speed cannot be maintained within the range displayed on the CONSULT-II screen, go to EC-71, "Basic Inspection".

Revision: 2005 August **EC-483** 2006 350Z

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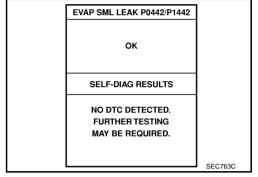
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Make sure that "OK" is displayed.
 If "NG" is displayed, select "SELF-DIAG RESULTS" mode and make sure that "EVAP GROSS LEAK [P0455]" is displayed. If it is displayed, refer to EC-484, "Diagnostic Procedure"

If P0442 is displayed, perform <u>EC-425</u>, "<u>Diagnostic Procedure</u>" for DTC P0442.



WITH GST

NOTE:

Be sure to read the explanation of <u>EC-57</u>, "<u>Driving Pattern</u>" before driving vehicle.

- 1. Start engine.
- 2. Drive vehicle according to EC-57, "Driving Pattern".
- 3. Stop vehicle.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Select Service \$07 with GST.
 - If P0455 is displayed on the screen, go to EC-484, "Diagnostic Procedure".
 - If P0442 is displayed on the screen, go to EC-425, "Diagnostic Procedure", for DTC P0442.
 - If P0441 is displayed on the screen, go to EC-420, "Diagnostic Procedure", for DTC P0441.

Diagnostic Procedure

1. CHECK FUEL FILLER CAP DESIGN

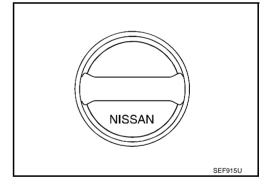
NBS0009X

- Turn ignition switch OFF.
- 2. Check for genuine NISSAN fuel filler cap design.

OK or NG

OK >> GO TO 2.

NG >> Replace with genuine NISSAN fuel filler cap.



2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

OK or NG

NG

OK >> GO TO 3.

>> 1. Open fuel filler cap, then clean cap and fuel filler neck threads using air blower.

2. Retighten until ratcheting sound is heard.

3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

OK or NG

OK >> GO TO 5.

NG >> GO TO 4.

4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-35. "FUEL TANK VACUUM RELIEF VALVE (BUILT INTO FUEL FULLER CAP)".

OK or NG

OK >> GO TO 5.

NG >> Replace fuel filler cap with a genuine one.

5. CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks, improper connection or disconnection.

Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 6.

NG >> Repair or reconnect the hose.

6. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 7.

7. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

EVAP canister vent control valve is installed properly. Refer to EC-36, "Removal and Installation".

EVAP canister vent control valve. Refer to EC-453, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Repair or replace EVAP canister vent control valve and O-ring.

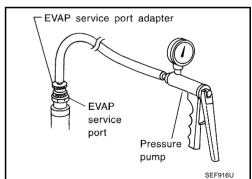
8. INSTALL THE PRESSURE PUMP

To locate the EVAP leak, install EVAP service port adapter and pressure pump to EVAP service port securely. For the location of EVAP service port, refer to EC-33, "EVAPORATIVE EMISSION LINE **DRAWING**".

NOTE:

Improper installation of the EVAP service port adapter to the EVAP service port may cause leaking.

With CONSULT-II>>GO TO 9. Without CONSULT-II>>GO TO 10.



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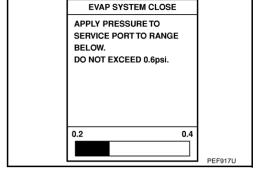
9. CHECK FOR EVAP LEAK

(II) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "EVAP SYSTEM CLOSE" of "WORK SUPPORT" mode with CONSULT-II.
- 3. Touch "START" and apply pressure into the EVAP line until the pressure indicator reaches the middle of the bar graph.

CAUTION:

- Never use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.

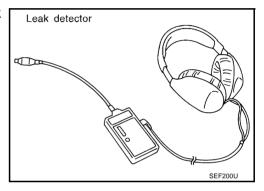


4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 11.

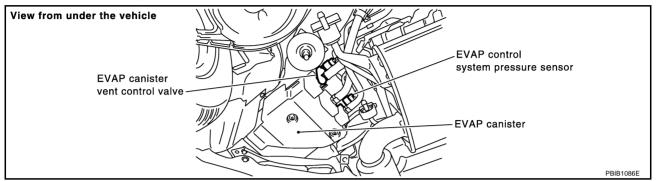
NG >> Repair or replace.



10. CHECK FOR EVAP LEAK

W Without CONSULT-II

- Turn ignition switch OFF.
- 2. Apply 12 volts DC to EVAP canister vent control valve. The valve will close. (Continue to apply 12 volts until the end of test.)



3. Pressurize the EVAP line using pressure pump with 1.3 to 2.7 kPa (10 to 20 mmHg, 0.39 to 0.79 inHg), then remove pump and EVAP service port adapter.

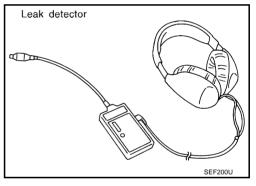
CAUTION:

- Never use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.
- 4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 12.

NG >> Repair or replace.



11. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(P) With CONSULT-II

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- Touch "Qu" on CONSULT-II screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

OK or NG

OK >> GO TO 14. NG >> GO TO 13.

ACTIVE TES	ST TS	
PURG VOL CONT/V	XXX %	
MONITOR		
ENG SPEED	XXX rpm	
A/F ALPHA-B1	XX %	
A/F ALPHA-B2	XX %	
L		PBIB16781

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12. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

₩ Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Stop engine.
- Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 4. Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

OK or NG

OK >> GO TO 15. NG >> GO TO 13.

13. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to EC-108, "Vacuum Hose Drawing" .

OK or NG

OK (With CONSULT-II)>>GO TO 14. OK (Without CONSULT-II)>>GO TO 15.

NG >> Repair or reconnect the hose.

14. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P) With CONSULT-II

- 1. Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-II. Check that engine speed varies according to the valve opening.

OK or NG

OK >> GO TO 16. NG >> GO TO 15.

ACTIVE TEST		
PURG VOL CONT/V	XXX %	
MONITOF	}	
ENG SPEED	XXX rpm	
A/F ALPHA-B1	XX %	
A/F ALPHA-B2	XX %	
		PBIB1678E

15. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-444, "Component Inspection".

OK or NG

OK >> GO TO 16.

NG >> Replace EVAP canister purge volume control solenoid valve.

16. CHECK FUEL TANK TEMPERATURE SENSOR

Refer to EC-366, "Component Inspection".

OK or NG

OK >> GO TO 17.

NG >> Replace fuel level sensor unit.

17. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-473, "Component Inspection".

OK or NG

OK >> GO TO 18.

NG >> Replace EVAP control system pressure sensor.

Revision: 2005 August **EC-488** 2006 350Z

18. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to EC-39, "ON BOARD REFUELING VAPOR RECOVERY (ORVR)".

OK or NG

OK >> GO TO 19.

NG >> Repair or replace hoses and tubes.

19. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

OK or NG

OK >> GO TO 20.

NG >> Repair or replace hose, tube or filler neck tube.

20. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-42, "REFUELING EVAP VAPOR CUT VALVE".

OK or NG

OK >> GO TO 21.

NG >> Replace refueling EVAP vapor cut valve with fuel tank.

21. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

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DTC P0456 EVAP CONTROL SYSTEM

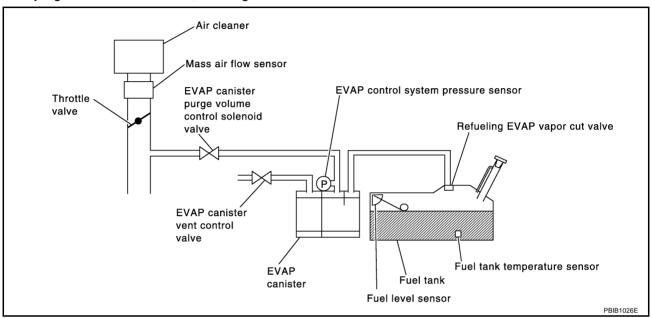
PFP:14950

On Board Diagnosis Logic

NBS0009Y

This diagnosis detects very small leaks in the EVAP line between fuel tank and EVAP canister purge volume control solenoid valve, using the intake manifold vacuum in the same way as conventional EVAP small leak diagnosis.

- If ECM judges a leak which corresponds to a very small leak, the very small leak P0456 will be detected.
- If ECM judges a leak equivalent to a small leak, EVAP small leak P0442 will be detected.
- If ECM judges there are no leaks, the diagnosis will be OK.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
			Incorrect fuel tank vacuum relief valve	
			Incorrect fuel filler cap used	
			Fuel filler cap remains open or fails to close.	
			Foreign matter caught in fuel filler cap.	
			Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve.	
			Foreign matter caught in EVAP canister vent control valve.	
			EVAP canister or fuel tank leaks	
			EVAP purge line (pipe and rubber tube) leaks	
	Evaporative emission control system very small leak (negative pressure check)		EVAP purge line rubber tube bent	
P0456		 EVAP system has a very small leak. EVAP system does not operate properly. 	Loose or disconnected rubber tubeEVAP canister vent control valve and the circuit	
0456				
0.00			EVAP canister purge volume control solenoid valve and the circuit	
			Fuel tank temperature sensor	
			O-ring of EVAP canister vent control valve is missing or damaged	
			EVAP canister is saturated with water	
			EVAP control system pressure sensor	
			Refueling EVAP vapor cut valve	
			ORVR system leaks	
			Fuel level sensor and the circuit	
			Foreign matter caught in EVAP canister purge vol- ume control solenoid valve	

CAUTION:

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.

DTC Confirmation Procedure

NRS0009Z

NOTF:

- If DTC P0456 is displayed with P0442, first perform trouble diagnosis for DTC P0456.
- After repair, make sure that the hoses and clips are installed properly.
- 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:

- Open engine hood before conducting following procedure.
- If any of following conditions are met just before the DTC confirmation procedure, leave the vehicle for more than 1 hour.
- Fuel filler cap is removed.
- Refilled or drained the fuel.
- EVAP component parts is/are removed.
- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

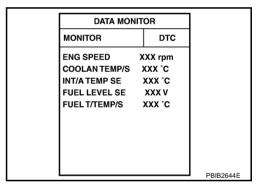
(P) WITH CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.
- Make sure the following conditions are met.

FUEL LEVEL SE: 0.25 - 1.4V

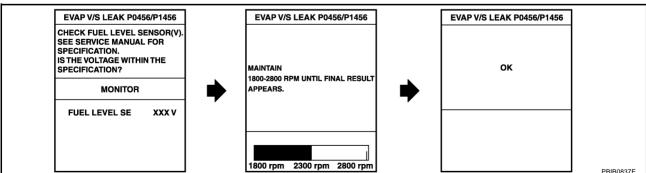
COOLAN TEMP/S: 0 - 32°C (32 - 90°F) **FUEL T/TMP SE: 0 - 35°C (32 - 95°F)** INT/A TEMP SE: More than 0°C (32°F)

If NG, turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle) or refilling/draining fuel until the output voltage condition of the "FUEL LEVEL SE" meets within the range above and leave the vehicle for more than 1 hour. Then start from step 1).



- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "EVAP V/S LEAK P0456/P1456" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-II.

Follow the instruction displayed.



Make sure that "OK" is displayed.

If "NG" is displayed, refer to EC-492, "Diagnostic Procedure".

NOTE:

 If the engine speed cannot be maintained within the range displayed on CONSULT-II screen, go to EC-71, "Basic Inspection".

EC-491 2006 350Z Revision: 2005 August

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PBIB0837E

 Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.

Overall Function Check

NBS000A0

WITH GST

Use this procedure to check the overall function of the EVAP very small leak function. During this check, a 1st trip DTC might not be confirmed.

CAUTION:

- Never use compressed air, doing so may damage the EVAP system.
- Do not start engine.
- Do not exceeded 4.12 kPa (0.042 kg/cm², 0.6 psi).
- Attach the EVAP service port adapter securely to the EVAP service port. For the location of EVAP service port, refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".
- 2. Set the pressure pump and a hose.
- 3. Also set a vacuum gauge via 3-way connector and a hose.
- 4. Turn ignition switch ON.
- 5. Connect GST and select Service \$08.
- Using Service \$08 control the EVAP canister vent control valve (close).
- Apply pressure and make sure the following conditions are satisfied.

Pressure to be applied: 2.7 kPa (20 mmHg, 0.79 inHg) Time to be waited after the pressure drawn in to the EVAP system and the pressure to be dropped: 60 seconds and

the pressure should not be dropped more than 0.4 kPa (3 mmHg, 0.12 inHg).

If NG, go to EC-492, "Diagnostic Procedure".

If OK, go to next step.

- 8. Disconnect GST.
- 9. Start engine and warm it up to normal operating temperature.
- 10. Turn ignition switch OFF and wait at least 10 seconds.
- 11. Restart engine and let it idle for 90 seconds.
- 12. Keep engine speed at 2,000 rpm for 30 seconds.
- 13. Turn ignition switch OFF.

NOTE:

For more information, refer to GST Instruction Manual.

Diagnostic Procedure

NBS000A

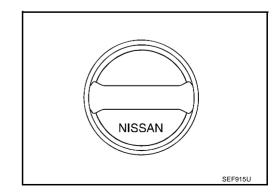
1. CHECK FUEL FILLER CAP DESIGN

- 1. Turn ignition switch OFF.
- 2. Check for genuine NISSAN fuel filler cap design.

OK or NG

OK >> GO TO 2.

NG >> Replace with genuine NISSAN fuel filler cap.



Adapter for EVAP service port

EVAP

service port

Pressure pump

$\overline{2}$. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

OK or NG

OK >> GO TO 3.

NG >> 1. Open fuel filler cap, then clean cap and fuel filler neck threads using air blower.

2. Retighten until ratcheting sound is heard.

3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

OK or NG

OK >> GO TO 5.

NG >> GO TO 4.

4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-35, "FUEL TANK VACUUM RELIEF VALVE (BUILT INTO FUEL FULLER CAP)".

OK or NG

OK >> GO TO 5.

NG >> Replace fuel filler cap with a genuine one.

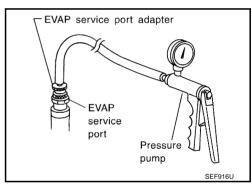
5. INSTALL THE PRESSURE PUMP

To locate the EVAP leak, install EVAP service port adapter and pressure pump to EVAP service port securely. For the location of EVAP service port, refer to EC-33, "EVAPORATIVE EMISSION LINE <a href="DRAWING".

NOTE:

Improper installation of the EVAP service port adapter to the EVAP service port may cause leaking.

With CONSULT-II>>GO TO 6. Without CONSULT-II>>GO TO 7.



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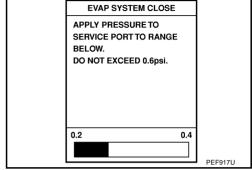
6. CHECK FOR EVAP LEAK

(II) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "EVAP SYSTEM CLOSE" of "WORK SUPPORT" mode with CONSULT-II.
- 3. Touch "START" and apply pressure into the EVAP line until the pressure indicator reaches the middle of the bar graph.

CAUTION:

- Never use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.



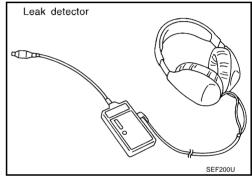
4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details.

Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 8.

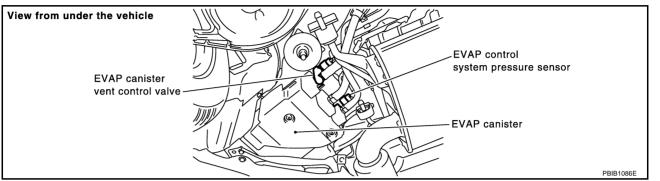
NG >> Repair or replace.



7. CHECK FOR EVAP LEAK

W Without CONSULT-II

- Turn ignition switch OFF.
- 2. Apply 12 volts DC to EVAP canister vent control valve. The valve will close. (Continue to apply 12 volts until the end of test.)



3. Pressurize the EVAP line using pressure pump with 1.3 to 2.7 kPa (10 to 20 mmHg, 0.39 to 0.79 inHg), then remove pump and EVAP service port adapter.

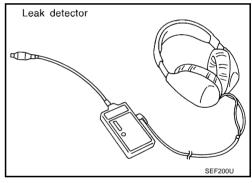
CAUTION:

- Never use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.
- 4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING".

OK or NG

OK >> GO TO 8.

NG >> Repair or replace.



8. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

- EVAP canister vent control valve is installed properly. Refer to <u>EC-36</u>, "Removal and Installation".
- EVAP canister vent control valve.
 Refer to <u>EC-453</u>, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Repair or replace EVAP canister vent control valve and O-ring.

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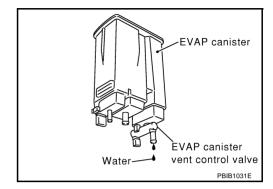
IVI

9. CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Does water drain from the EVAP canister?

Yes or No

Yes >> GO TO 10. No (With CONSULT-II)>>GO TO 12. No (Without CONSULT-II)>>GO TO 13.



10. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.2 kg (4.9 lb).

OK or NG

OK (With CONSULT-II)>>GO TO 12. OK (Without CONSULT-II)>>GO TO 13. NG >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

12. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(P) With CONSULT-II

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- Touch "Qu" on CONSULT-II screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

OK or NG

OK >> GO TO 15. NG >> GO TO 14.

ACTIVE TE	ST	
PURG VOL CONT/V	XXX %	
MONITOR	}	
ENG SPEED	XXX rpm	
A/F ALPHA-B1	XX %	
A/F ALPHA-B2	XX %	
		PBIB1678E

13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION **W** Without CONSULT-II Start engine and warm it up to normal operating temperature. EC 2. Stop engine. 3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port. 4. Start engine and let it idle for at least 80 seconds. Check vacuum hose for vacuum when revving engine up to 2,000 rpm. OK or NG OK >> GO TO 16. D NG >> GO TO 14. 14. CHECK VACUUM HOSE F Check vacuum hoses for clogging or disconnection. Refer to EC-108, "Vacuum Hose Drawing". OK or NG F OK >> GO TO 15. NG >> Repair or reconnect the hose. 15. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE Refer to EC-444, "Component Inspection". OK or NG Н OK >> GO TO 16. NG >> Replace EVAP canister purge volume control solenoid valve. 16. CHECK FUEL TANK TEMPERATURE SENSOR Refer to EC-366, "Component Inspection". OK or NG OK >> GO TO 17. NG >> Replace fuel level sensor unit. 17. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR Refer to EC-473, "Component Inspection". OK or NG OK >> GO TO 18. NG >> Replace EVAP control system pressure sensor. M 18. check evap purge line Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper connection. Refer to EC-33, "EVAPORATIVE EMISSION LINE DRAWING". OK or NG OK >> GO TO 19. NG >> Repair or reconnect the hose. 19. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 20.

20. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to <u>EC-39</u>, "ON BOARD REFUELING VAPOR RECOVERY (ORVR)".

OK or NG

OK >> GO TO 21.

NG >> Repair or replace hoses and tubes.

21. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

OK or NG

OK >> GO TO 22.

NG >> Repair or replace hose, tube or filler neck tube.

22. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-42, "Component Inspection".

OK or NG

OK >> GO TO 23.

NG >> Replace refueling EVAP vapor cut valve with fuel tank.

23. CHECK FUEL LEVEL SENSOR

Refer to DI-25, "FUEL LEVEL SENSOR UNIT".

OK or NG

OK >> GO TO 24.

NG >> Replace fuel level sensor unit.

24. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

DTC P0460 FUEL LEVEL SENSOR

Component Description

PFP:25060

NBS000A2

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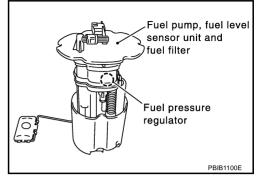
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The fuel level sensor is mounted in the fuel level sensor unit. The sensor detects a fuel level in the fuel tank and transmits a signal to the "unified meter and A/C amp.". The "unified meter and A/C amp." sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.



On Board Diagnosis Logic

NBS000A3

NOTE:

- If DTC P0460 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P0460 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010.
 Refer to <u>EC-166</u>, "<u>DTC U1010 CAN COMMUNICATION</u>".

When the vehicle is parked, naturally the fuel level in the fuel tank is stable. It means that output signal of the fuel level sensor does not change. If ECM senses sloshing signal from the sensor, fuel level sensor malfunction is detected.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0460 0460	Fuel level sensor circuit noise	Even though the vehicle is parked, a signal being varied is sent from the fuel level sensor to ECM.	 Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Unified meter and A/C amp. Fuel level sensor

DTC Confirmation Procedure

NRS000A4

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.

(A) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and wait maximum of 2 consecutive minutes.
- 4. If 1st trip DTC is detected, go to EC-500, "Diagnostic Procedure"

DATA MON	IITOR
MONITOR	NO DTC
FUELT/TMP SE	XXX °C
FUEL LEVEL SE	xxx v

WITH GST

Follow the procedure "WITH CONSULT-II" above.

DTC P0460 FUEL LEVEL SENSOR

Diagnostic Procedure

1. CHECK FUEL GAUGE OPERATION

NBS000A5

Refer to DI-16, "Self-Diagnosis Mode of Combination Meter" .

OK or NG

OK >> GO TO 2.

NG >> Follow the instruction of <u>DI-16</u>, "Self-Diagnosis Mode of Combination Meter".

2. CHECK FUEL LEVEL SENSOR AND CIRCUIT

Refer to DI-21, "Fuel Level Sensor Signal Inspection".

OK or NG

OK >> GO TO 3.

NG >> Repair or replace malfunctioning parts.

3. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Removal and Installation FUEL LEVEL SENSOR

NBS000A6

Refer to FL-4, "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY".

DTC P0461 FUEL LEVEL SENSOR

DTC P0461 FUEL LEVEL SENSOR

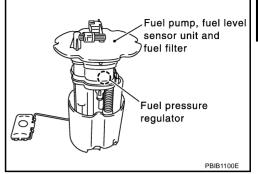
PFP:25060

Component Description

NRSOOAZ

The fuel level sensor is mounted in the fuel level sensor unit. The sensor detects a fuel level in the fuel tank and transmits a signal to the "unified meter and A/C amp.". The "unified meter and A/C amp." sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.



On Board Diagnosis Logic

NRSOOAR

NOTE:

- If DTC P0461 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P0461 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-166, "DTC U1010 CAN COMMUNICATION".

Driving long distances naturally affect fuel gauge level.

This diagnosis detects the fuel gauge malfunction of the gauge not moving even after a long distance has been driven.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0461 0461	Fuel level sensor circuit range/performance	The output signal of the fuel level sensor does not change within the specified range even though the vehicle has been driven a long distance.	 Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Unified meter and A/C amp. Fuel level sensor

Overall Function Check

NRSOOAA

Use this procedure to check the overall function of the fuel level sensor function. During this check, a 1st trip DTC might not be confirmed.

WARNING:

When performing following procedure, be sure to observe the handling of the fuel. Refer to FL-10, "FUEL TANK".

TESTING CONDITION:

Before starting overall function check, preparation of draining fuel and refilling fuel is required.

(A) WITH CONSULT-II

NOTE:

Start from step 10, if it is possible to confirm that the fuel cannot be drained by 30 \(\ell \) (7-7/8 US gal, 6-5/ 8 Imp gal) in advance.

- Prepare a fuel container and a spare hose.
- Release fuel pressure from fuel line, refer to EC-81, "FUEL PRESSURE RELEASE".
- Remove the fuel feed hose on the fuel level sensor unit.
- 4. Connect a spare fuel hose where the fuel feed hose was removed.
- Turn ignition switch OFF and wait at least 10 seconds then turn ON.
- Select "FUEL LEVEL SE" in "DATA MONITOR" mode with CONSULT-II. 6

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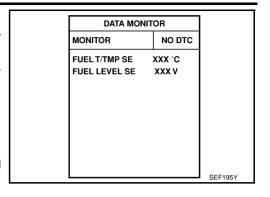
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DTC P0461 FUEL LEVEL SENSOR

- 7. Check "FUEL LEVEL SE" output voltage and note it.
- Select "FUEL PUMP" in "ACTIVE TEST" mode with CONSULT-II.
- 9. Touch "ON" and drain fuel approximately 30 $\,\ell$ (7-7/8 US gal, 6-5/8 Imp gal) and stop it.
- 10. Check "FUEL LEVEL SE" output voltage and note it.
- 11. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal).
- 12. Check "FUEL LEVEL SE" output voltage and note it.
- 13. Confirm whether the voltage changes more than 0.03V during step 7 to 10 and 10 to 12.

If NG, go to EC-502, "Diagnostic Procedure".



WITH GST

NOTE:

Start from step 8, if it is possible to confirm that the fuel cannot be drained by 30 $\,\ell$ (7-7/8 US gal, 6-5/8 Imp gal) in advance.

- 1. Prepare a fuel container and a spare hose.
- 2. Release fuel pressure from fuel line. Refer to EC-81, "FUEL PRESSURE RELEASE" .
- Remove the fuel feed hose on the fuel level sensor unit.
- 4. Connect a spare fuel hose where the fuel feed hose was removed.
- 5. Turn ignition switch ON.
- Drain fuel by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) from the fuel tank using proper equipment.
- 7. Confirm that the fuel gauge indication varies.
- 8. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal).
- Confirm that the fuel gauge indication varies.
- 10. If NG, go to EC-502, "Diagnostic Procedure".

Diagnostic Procedure

NBS000AA

1. CHECK FUEL GAUGE OPERATION

Refer to DI-16, "Self-Diagnosis Mode of Combination Meter".

OK or NG

OK >> GO TO 2.

NG >> Follow the instruction of <u>DI-16</u>, "Self-Diagnosis Mode of Combination Meter".

2. CHECK FUEL LEVEL SENSOR AND CIRCUIT

Refer to DI-21, "Fuel Level Sensor Signal Inspection".

OK or NG

OK >> GO TO 3.

NG >> Repair or replace malfunctioning parts.

3. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Removal and Installation FUEL LEVEL SENSOR

NBS000AB

Refer to FL-4, "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY"

Revision: 2005 August **EC-502** 2006 350Z

DTC P0462, P0463 FUEL LEVEL SENSOR

Component Description

PFP:25060

NBS000AC

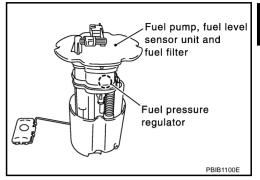
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The fuel level sensor is mounted in the fuel level sensor unit. The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.



On Board Diagnosis Logic

NRSOOAD

NOTE:

- If DTC P0462 or P0463 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P0462 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010.
 Refer to <u>EC-166, "DTC U1010 CAN COMMUNICATION"</u>.

This diagnosis indicates the former, to detect open or short circuit malfunction.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0462 0462	Fuel level sensor circuit low input	An excessively low voltage is sent from the sensor is sent to ECM.	Harness or connectors (The CAN communication line is open or	Н
P0463 0463	Fuel level sensor circuit high input	An excessively high voltage is sent from the sensor is sent to ECM.	 shorted) Harness or connectors (The sensor circuit is open or shorted) Unified meter and A/C amp. Fuel level sensor 	

DTC Confirmation Procedure

NBS000AF

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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 11V at ignition switch ON.

(A) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Wait at least 5 seconds.
- 4. If 1st trip DTC is detected, go to EC-504, "Diagnostic Procedure"

NO DTC
xxx v

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Revision: 2005 August **EC-503** 2006 350Z

DTC P0462, P0463 FUEL LEVEL SENSOR

Diagnostic Procedure

1. CHECK FUEL GAUGE OPERATION

NBS000AF

Refer to DI-16, "Self-Diagnosis Mode of Combination Meter" .

OK or NG

OK >> GO TO 2.

NG >> Follow the instruction of <u>DI-16</u>, "Self-Diagnosis Mode of Combination Meter" .

2. CHECK FUEL LEVEL SENSOR AND CIRCUIT

Refer to DI-21, "Fuel Level Sensor Signal Inspection".

OK or NG

OK >> GO TO 3.

NG >> Repair or replace malfunctioning parts.

3. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Removal and Installation FUEL LEVEL SENSOR

NBS000AG

Refer to FL-4, "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY" .

DTC P0500 VSS PFP:32702

Description NBS000AH

NOTE:

- If DTC P0500 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P0500 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-166. "DTC U1010 CAN COMMUNICATION".

The vehicle speed signal is sent to the "unified meter and A/C amp". from the VDC/TCS/ABS control unit (with VDC models) or "ABS actuator and electric unit (control unit)" (without VDC models) by CAN communication line. The unified meter and A/C amp. then sends the signal to the ECM by CAN communication line.

On Board Diagnosis Logic

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DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0500 0500	Vehicle speed sensor vehicle speed sensor is sent to ECM		Harness or connectors (The CAN communication line is open or shorted)
		vehicle speed sensor is sent to ECM	 Harness or connectors (The vehicle speed signal circuit is open or shorted)
			Wheel sensor
		Unified meter and A/C amp.	
			VDC/TCS/ABS control unit (with VDC models)
			ABS actuator and electric unit (control unit) (without VDC models)

DTC Confirmation Procedure

NRS000A

CAUTION:

Always drive vehicle at a safe speed.

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:

Steps 1 and 2 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.

(P) WITH CONSULT-II

- Start engine (VDC switch or TCS switch OFF).
- Read "VHCL SPEED SE" in "DATA MONITOR" mode with CONSULT-II. The vehicle speed on CONSULT-II should exceed 10 km/h (6 MPH) when rotating wheels with suitable gear position. If NG, go to EC-506, "Diagnostic Procedure". If OK, go to following step.
- Select "DATA MONITOR" mode with CONSULT-II.
- Warm engine up to normal operating temperature.
- Maintain the following conditions for at least 60 consecutive seconds.

ENG SPEED	1,600 - 6,000 rpm (A/T) 1,800 - 6,000 rpm (M/T)
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	6.0 - 31.8 msec
Shift lever	Except P or N position (A/T) Neutral position (M/T)
PW/ST SIGNAL	OFF

SPEED	1,600 - 6,000 rpm (A/T) 1,800 - 6,000 rpm (M/T)
DLAN TEMP/S	More than 70°C (158°F)
JEL SCHDL	6.0 - 31.8 msec
lever	Except P or N position (A/T) Neutral position (M/T)
ST SIGNAL	OFF
f 1 at trip DTC is detected as	to EC EOC "Diagnostic Presedure"

6.	If 1st trip DTC is detected, go to	EC-506, "Diagnostic Procedure"
	•	

DATA MONITOR NO DTC MONITOR ENG SPEED XXX rpm COOLAN TEMP/S XXX °C B/FUEL SCHDL XXX msec PW/ST SIGNAL OFF VHCL SPEED SE XXX km/h SEF196Y

EC-505 Revision: 2005 August 2006 350Z

DTC P0500 VSS

Overall Function Check

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Use this procedure to check the overall function of the vehicle speed sensor circuit. During this check, a 1st trip DTC might not be confirmed.

WITH GST

- 1. Lift up drive wheels.
- Start engine.
- Read vehicle speed sensor signal in Service \$01 with GST.
 The vehicle speed sensor on GST should be able to exceed 10 km/h (6 MPH) when rotating wheels with suitable gear position.
- 4. If NG, go to EC-506, "Diagnostic Procedure".

Diagnostic Procedure

NBS000AL

1. CHECK DTC WITH "VDC/TCS/ABS CONTROL UNIT (WITH VDC MODELS)" OR "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) (WITHOUT VDC MODELS)"

Refer to <u>BRC-86, "TROUBLE DIAGNOSIS"</u> (with VDC models) or refer to <u>BRC-44, "TROUBLE DIAGNOSIS"</u> (without VDC models).

OK or NG

OK >> GO TO 2.

NG >> Repair or replace.

2. CHECK DTC WITH UNIFIED METER AND A/C AMP.

Refer to DI-4, "COMBINATION METERS".

>> INSPECTION END

DTC P0506 ISC SYSTEM

DTC P0506 ISC SYSTEM

PFP:23781

Description

NBS000AM

NOTE:

If DTC P0506 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

On Board Diagnosis Logic

NBS000AN

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0506 0506	Idle speed control sys- tem RPM lower than expected	The idle speed is less than the target idle speed by 100 rpm or more.	Electric throttle control actuator Intake air leak

DTC Confirmation Procedure

NBSOOOAO

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.
- If the target idle speed is out of the specified value, perform <u>EC-79</u>, "Idle Air Volume Learning", before conducting DTC Confirmation Procedure. For the target idle speed, refer to <u>EC-718</u>, "SER-VICE DATA AND SPECIFICATIONS (SDS)".

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

WITH CONSULT-II

- Open engine hood.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON again and select "DATA MONITOR" mode with CONSULT-II.
- Start engine and run it for at least 1 minute at idle speed.
- If 1st trip DTC is detected, go to <u>EC-508</u>, "<u>Diagnostic Procedure</u>"

DATA MONITOR

MONITOR

NO DTC

ENG SPEED XXX rpm
COOLAN TEMP/S XXX 'C

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Revision: 2005 August **EC-507** 2006 350Z

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DTC P0506 ISC SYSTEM

Diagnostic Procedure

1. CHECK INTAKE AIR LEAK

NBS000AP

- 1. Start engine and let it idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

OK or NG

OK >> GO TO 2.

NG >> Discover air leak location and repair.

2. REPLACE ECM

- 1. Stop engine.
- 2. Replace ECM.
- 3. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to <u>BL-167</u>, "ECM Re-communicating Function".
- 4. Perform EC-77, "VIN Registration".
- 5. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".
- 6. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 7. Perform EC-79, "Throttle Valve Closed Position Learning".
- 8. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

DTC P0507 ISC SYSTEM

DTC P0507 ISC SYSTEM

PFP:23781

Description

NBS000AQ

NOTE:

If DTC P0507 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

On Board Diagnosis Logic

NBS000AR

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0507 0507 Idle speed control system RPM higher than expected		Electric throttle control actuator	
	. •	The idle speed is more than the target idle speed by 200 rpm or more.	Intake air leak
			PCV system

DTC Confirmation Procedure

NBS000AS

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.
- If the target idle speed is out of the specified value, perform <u>EC-79</u>, "Idle Air Volume Learning", before conducting DTC Confirmation Procedure. For the target idle speed, refer to <u>EC-718</u>, "SER-VICE DATA AND SPECIFICATIONS (SDS)".

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

(P) WITH CONSULT-II

- Open engine hood.
- Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON again and select "DATA MONITOR" mode with CONSULT-II.
- 5. Start engine and run it for at least 1 minute at idle speed.
- 6. If 1st trip DTC is detected, go to EC-510, "Diagnostic Procedure"

DATA MO	NIT	OR	
MONITOR		NO DTC	
ENG SPEED	>	(XX rpm	
COOLAN TEMP/S	i	XXX °C	
			SEF174

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Revision: 2005 August **EC-509** 2006 350Z

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DTC P0507 ISC SYSTEM

Diagnostic Procedure

1. CHECK PCV HOSE CONNECTION

NBS000AT

Confirm that PCV hose is connected correctly.

OK or NG

OK >> GO TO 2.

NG >> Repair or replace.

2. CHECK INTAKE AIR LEAK

- 1. Start engine and let it idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

OK or NG

OK >> GO TO 3.

NG >> Discover air leak location and repair.

3. REPLACE ECM

- 1. Stop engine.
- 2. Replace ECM.
- 3. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to <u>BL-167</u>, "ECM Re-communicating Function".
- 4. Perform EC-77, "VIN Registration".
- 5. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".
- 6. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 7. Perform EC-79, "Throttle Valve Closed Position Learning".
- 8. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

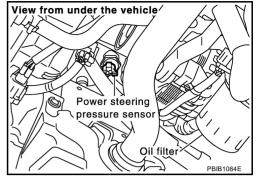
DTC P0550 PSP SENSOR

PFP:49763

Component Description

NBS000AU

Power steering pressure (PSP) sensor is installed to the power steering high-pressure tube and detects a power steering load. This sensor is a potentiometer which transforms the power steering load into output voltage, and emits the voltage signal to the ECM. The ECM controls the electric throttle control actuator and adjusts the throttle valve opening angle to increase the engine speed and adjusts the idle speed for the increased load.



CONSULT-II Reference Value in Data Monitor Mode

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Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
PW/ST SIGNAL	Engine: After warming up, idle	Steering wheel: Not being turned	OFF
FW/ST SIGNAL	the engine	Steering wheel: Being turned	ON

On Board Diagnosis Logic

NBS000AW

The MIL will not light up for this diagnosis.

NOTE:

If DTC P0550 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-523, "DTC P0643 SENSOR POWER SUPPLY".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0550 0550	Power steering pressure sensor circuit	An excessively low or high voltage from the sensor is sent to ECM.	 Harness or connectors (The sensor circuit is open or shorted) Power steering pressure sensor

DTC Confirmation Procedure

NBS000AX

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.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- Start engine and let it idle for at least 5 seconds.
- If 1st trip DTC is detected, go to EC-513, "Diagnostic Procedure"

DATA MONITOR	
NO DTC	1
XXX rpm	1
	SEF058Y
	NO DTC

® WITH GST

Follow the procedure "WITH CONSULT-II" above.

EC-511 Revision: 2005 August 2006 350Z

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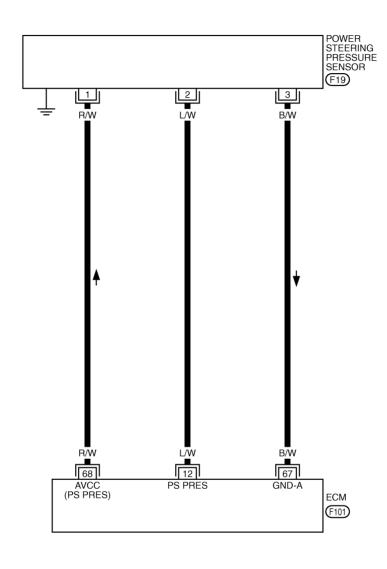
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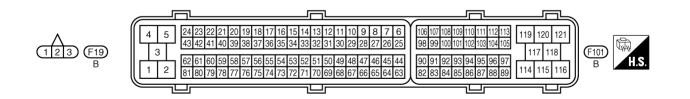
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Wiring Diagram NBS000AY

EC-PS/SEN-01







TBWT0494E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

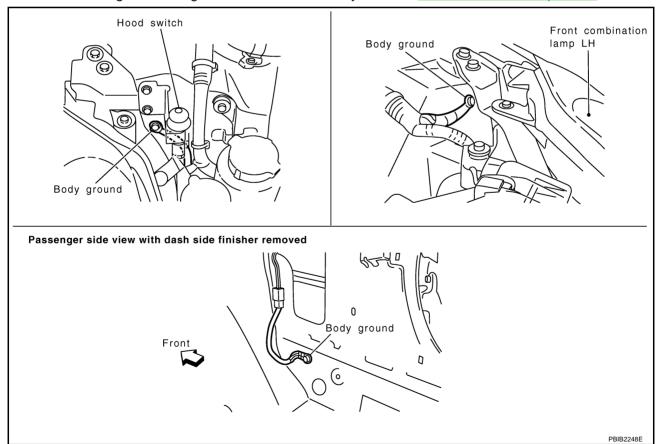
TER-	WIRE		CONDITION	DATA (DO V. K	
MINAL NO.	COLOR	ITEM	CONDITION	DATA (DC Voltage)	
			[Engine is running]	0.5 - 4.5V	
12 L/W	L/W	Power steering pressure sensor	Steering wheel: Being turned		
			[Engine is running]	0.4 - 0.8V	
			Steering wheel: Not being turned	3	
			[Engine is running]		
67 B/	B/W	B/W Sensor ground	Warm-up condition	Approximately 0V	
			Idle speed		
68	R/W	Sensor power supply (Power steering pressure sensor)	[Ignition switch: ON]	Approximately 5V	

Diagnostic Procedure

NBS000AZ

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

Revision: 2005 August **EC-513** 2006 350Z

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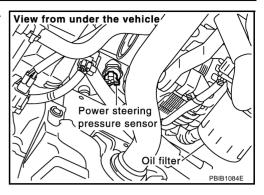
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$\overline{2}$. CHECK PSP SENSOR POWER SUPPLY CIRCUIT

- Disconnect power steering pressure (PNP) sensor harness connector.
- 2. Turn ignition switch ON.



Check voltage between PSP sensor terminal 1 and ground with CONSULT-II or tester.

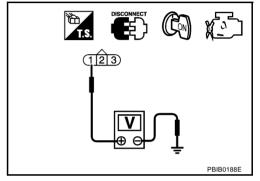
Voltage: Approximately 5V

OK or NG

OK >> GO TO 3.

NG >> Repair or

>> Repair open circuit or 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 harness continuity between PSP sensor terminal 3 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4.

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

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

 Check harness continuity between ECM terminal 12 and PSP sensor terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 5.

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

5. CHECK PSP SENSOR

Refer to EC-515, "Component Inspection".

OK or NG

OK >> GO TO 6.

NG >> Replace PNP sensor.

6. CHECK INTERMITTENT INCIDENT

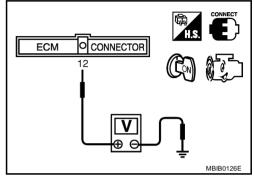
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection POWER STEERING PRESSURE SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Start engine and let it idle.
- 3. Check voltage between ECM terminal 12 and ground under the following conditions.

Condition	Voltage
Steering wheel: Being turned	0.5 - 4.5V
Steering wheel: Not being turned	0.4 - 0.8V



NBS000B1

Removal and Installation POWER STEERING PRESSURE SENSOR

Refer to PS-34, "HYDRAULIC LINE".

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Revision: 2005 August **EC-515** 2006 350Z

DTC P0603 ECM POWER SUPPLY

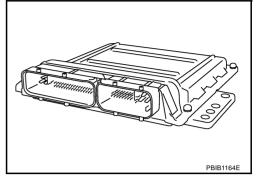
DTC P0603 ECM POWER SUPPLY

PFP:23710

Component Description

NBS000BE

Battery voltage is supplied to the ECM even when the ignition switch is turned OFF for the ECM memory function of the DTC memory, the air-fuel ratio feedback compensation value memory, the Idle Air Volume Learning value memory, etc.



On Board Diagnosis Logic

NBS000BF

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0603 0603	ECM power supply circuit	ECM back-up RAM system does not function properly.	 Harness or connectors [The ECM power supply (back-up) circuit is open or shorted.] ECM

DTC Confirmation Procedure

NBS000BG

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.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 1 second.
- 4. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 5. Repeat steps 3 and 4 for 4 times.
- If 1st trip DTC is detected, go to <u>EC-518</u>, "<u>Diagnostic Procedure</u>"

DATA MONITOR

MONITOR NO DTC

ENG SPEED XXX rpm

SEF058Y

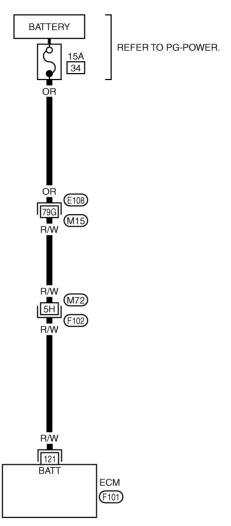
WITH GST

Follow the procedure "WITH CONSULT-II" above.

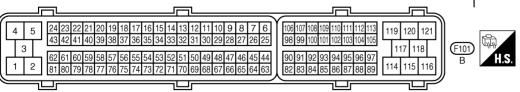
Wiring Diagram

EC-ECM/PW-01

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



REFER TO THE FOLLOWING. (E108), (F102) -SUPER MULTIPLE JUNCTION (SMJ)



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DTC P0603 ECM POWER SUPPLY

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
121	R/W	Power supply for ECM (Back-up)	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

NBS000BI

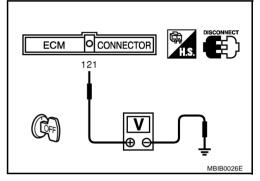
1. CHECK ECM POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Check voltage between ECM terminal 121 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 3. NG >> GO TO 2.



2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- 15A fuse
- Harness for open or short between ECM and battery
 - >> Repair or replace harness or connectors.

3. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 4.

NG >> Repair or replace harness or connectors.

DTC P0603 ECM POWER SUPPLY

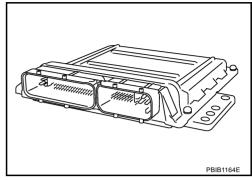
4. perform dtc confirmation procedure	A
With CONSULT-II	
1. Turn ignition switch ON.	
2. Select "SELF DIAG RESULTS" mode with CONSULT-II.	EC
3. Touch "ERASE".	
4. Perform DTC Confirmation Procedure. See EC-516, "DTC Confirmation Procedure".	С
5. Is the 1st trip DTC P0603 displayed again?	
With GST	D
1. Turn ignition switch ON.	
2. Select Service \$04 with GST.	
3. Perform DTC Confirmation Procedure. See EC-516, "DTC Confirmation Procedure".	Е
4. Is the 1st trip DTC P0603 displayed again?	
Yes or No	F
Yes >> GO TO 5. No >> INSPECTION END	
	G
5. REPLACE ECM	
1. Replace ECM.	
 Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to <u>BL-167</u>, "ECM Re-communicating Function" 	Н
3. Perform EC-77, "VIN Registration" .	1
4. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".	1
5. Perform EC-78, "Accelerator Pedal Released Position Learning".	
6. Perform EC-79, "Throttle Valve Closed Position Learning".	J
7. Perform <u>EC-79</u> , "Idle Air Volume Learning".	
>> INSPECTION END	K

DTC P0605 ECM PFP:23710

Component Description

NBS000B2

The ECM consists of a microcomputer and connectors for signal input and output and for power supply. The ECM controls the engine.



On Board Diagnosis Logic

NBS000B3

This self-diagnosis has one or two trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
P0605 0605	Engine control module	A)	ECM calculation function is malfunctioning.	
		B)	ECM EEP-ROM system is malfunctioning.	• ECM
		C)	ECM self shut-off function is malfunctioning.	

FAIL-SAFE MODE

ECM enters fail-safe mode when the malfunction A is detected.

Detected items	Engine operation condition in fail-safe mode	
Malfunction A	 ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring. ECM deactivates ASCD operation. 	

DTC Confirmation Procedure

NBS000B

Perform PROCEDURE FOR MALFUNCTION A first. If the 1st trip DTC cannot be confirmed, perform PROCEDURE FOR MALFUNCTION B. If there is no malfunction on PROCEDURE FOR MALFUNCTION B, perform PROCEDURE FOR MALFUNCTION C.

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.

PROCEDURE FOR MALFUNCTION A

(P) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- If 1st trip DTC is detected, go to <u>EC-521, "Diagnostic Procedure"</u>

DATA MONIT		
MONITOR NO DTO		
ENG SPEED XXX rpm		
		SEF058Y

With GST

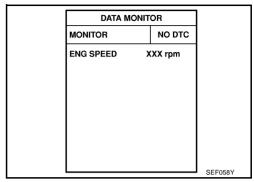
Follow the procedure "With CONSULT-II" above.

DTC P0605 ECM

PROCEDURE FOR MALFUNCTION B

With CONSULT-II

- Turn ignition switch ON and wait at least 1 second.
- Select "DATA MONITOR" mode with CONSULT-II.
- Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 4. If 1st trip DTC is detected, go to EC-521, "Diagnostic Procedure"



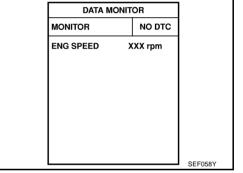
With GST

Follow the procedure "With CONSULT-II" above.

PROCEDURE FOR MALFUNCTION C

(P) With CONSULT-II

- Turn ignition switch ON and wait at least 1 second.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Repeat step 3 for 32 times.
- If 1st trip DTC is detected, go to EC-521, "Diagnostic Procedure"



With GST

Follow the procedure "With CONSULT-II" above.

Diagnostic Procedure

1. INSPECTION START

(II) With CONSULT-II

- Turn ignition switch ON.
- Select "SELF DIAG RESULTS" mode with CONSULT-II.
- Touch "ERASE". 3.
- 4. Perform DTC Confirmation Procedure.

See EC-520, "DTC Confirmation Procedure".

5. Is the 1st trip DTC P0605 displayed again?

With GST

- 1. Turn ignition switch ON.
- Select Service \$04 with GST.
- **Perform DTC Confirmation Procedure.** See EC-520, "DTC Confirmation Procedure".
- 4. Is the 1st trip DTC P0605 displayed again?

Yes or No

Yes >> GO TO 2.

>> INSPECTION END No

EC-521 Revision: 2005 August 2006 350Z

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NBS000B5

DTC P0605 ECM

2. REPLACE ECM

- 1. Replace ECM.
- 2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to BL-167, "ECM Re-communicating Function".
- 3. Perform EC-77, "VIN Registration".
- 4. Perform EC-78, "Exhaust Valve Timing Control Learning (M/T Models)".
- 5. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 6. Perform EC-79, "Throttle Valve Closed Position Learning".
- 7. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

DTC P0643 SENSOR POWER SUPPLY

On Board Diagnosis Logic

PFP:18919

NBS000DW

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This self-diagnosis has the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0643 0643	Sensor power supply circuit short	ECM detects a voltage of power source for sensor is excessively low or high.	Harness or connectors (The APP sensor 1 circuit is shorted.) (The EVAP control system pressure sensor circuit is shorted.) (The PSP sensor circuit is shorted.) (The Refrigerant pressure sensor circuit is shorted.) Accelerator pedal position sensor (APP sensor 1) EVAP control system pressure sensor Power steering pressure sensor Refrigerant pressure sensor

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Engine operation condition in fail-safe mode

ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.

DTC Confirmation Procedure

NBS000DX

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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 10V at idle.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- Start engine and let it idle for 1 second.
- 4. If DTC is detected, go to EC-526, "Diagnostic Procedure".

DATA		
MONITOR	NO DTC	
ENG SPEED	XXX rpm	

WITH GST

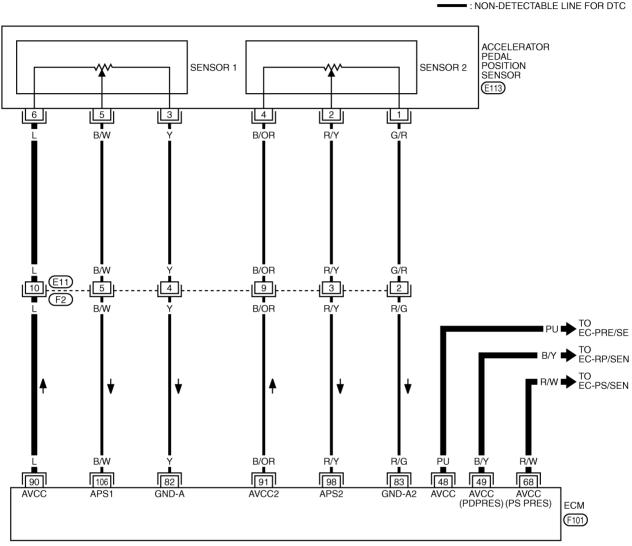
Follow the procedure "WITH CONSULT-II" above.

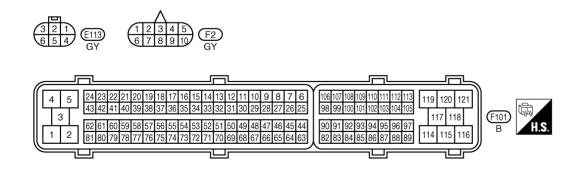
Revision: 2005 August **EC-523** 2006 350Z

Wiring Diagram NBS000DY

EC-SEN/PW-01

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





TBWT1228E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

•		•	•	•	
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)	EC
48	PU	Sensor power supply (EVAP control system pressure sensor)	[Ignition switch: ON]	Approximately 5V	С
49	B/Y	Sensor power supply (Refrigerant pressure sensor)	[Ignition switch: ON]	Approximately 5V	D
68	R/W	Sensor power supply (Power steering pressure sensor)	[Ignition switch: ON]	Approximately 5V	E
82	Υ	Sensor ground (Accelerator pedal position sensor 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V	F
83	R/G	Sensor ground (Accelerator pedal position sensor 2)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V	G
90	L	Sensor power supply (Accelerator pedal position sensor 1)	[Ignition switch: ON]	Approximately 5V	Н
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V	-
98	R/Y	Accelerator pedal position	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully released	0.15 - 0.60V	J
90	IV I	sensor 2	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	1.95 - 2.40V	K
106	B/W	Accelerator pedal position	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully released	0.5 - 1.0V	L
106	D/VV	sensor 1	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	3.9 - 4.7V	M

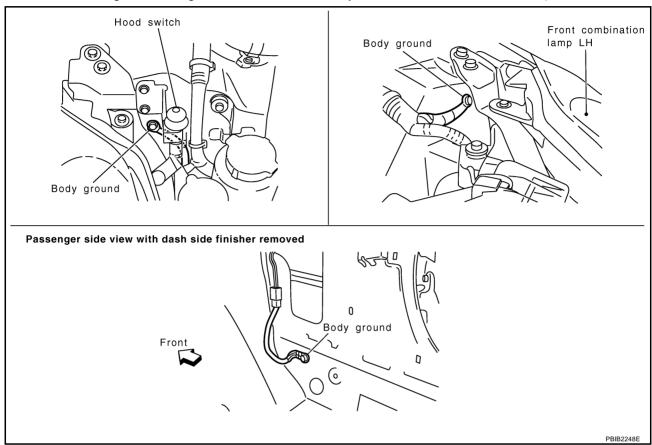
EC-525 Revision: 2005 August 2006 350Z Α

Diagnostic Procedure

NBS000DZ

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



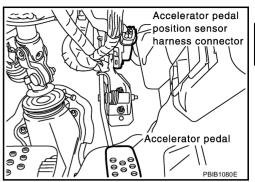
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$\overline{2}$. CHECK ACCELERATOR PEDAL POSITION SENSOR 1 POWER SUPPLY CIRCUIT-I

- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.

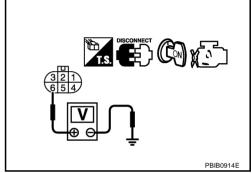


Check voltage between APP sensor terminal 6 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

>> GO TO 7. OK NG >> GO TO 3.



3. CHECK ACCELRATOR PEDAL POSITION SENSOR 1 POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between APP sensor terminal 6 and ECM terminal 90. Refer to Wiring Diagram.

Continuity should exist.

OK or NG

OK >> GO TO 7. NG >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open between ECM and APP sensor

>> Repair open circuit.

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5. CHECK SENSOR POWER SUPPLY CIRCUITS

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

ECM terminal	Sensor terminal	Reference Wiring Diagram
48	EVAP control system pressure sensor terminal 3	EC-469
49	Refrigerant pressure sensor terminal 1	EC-711
68	PSP sensor terminal 1	EC-512
90	APP sensor terminal 6	EC-524

OK or NG

OK >> GO TO 6.

NG >> Repair short to ground or short to power in harness or connectors.

6. CHECK COMPONENTS

Check the following.

- EVAP control system pressure sensor (Refer to EC-466, "Component Inspection".)
- Refrigerant pressure sensor (Refer to ATC-83, "COMPONENT INSPECTION" .)
- Power steering pressure sensor (Refer to <u>EC-515, "Component Inspection"</u>.)

OK or NG

OK >> GO TO 9.

NG >> Replace malfunctioning component.

7. CHECK APP SENSOR

Refer to EC-625, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> GO TO 8.

8. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Perform EC-78, "Accelerator Pedal Released Position Learning" .
- 3. Perform EC-79, "Throttle Valve Closed Position Learning".
- 4. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

9. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

DTC P0850 PNP SWITCH

PFP:23006

Component Description

NBS000GB

When the shift position is P or N (A/T), Neutral (M/T), park/neutral position (PNP) switch is ON. ECM detects the position because the continuity of the line (the ON signal) exists.

CONSULT-II Reference Value in Data Monitor Mode

NRSOOGC

Specification data are reference values.

MONITOR ITEM	CON	SPECIFICATION		
P/N POSI SW	Ignition switch: ON	Shift lever: P or N (A/T), Neutral (M/T)	ON	
1 /N 1 OSI SW	Ignition switch: ON	Shift lever: Except above position	OFF	

On Board Diagnosis Logic

NBS000GE

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0850 0850	Park/neutral position switch	The signal of the park/neutral position (PNP) switch is not changed in the process of engine starting and driving.	 Harness or connectors [The park/neutral position (PNP) switch circuit is open or shorted.] Park/neutral position (PNP) switch Unified meter and A/C amp. (A/T models) TCM (A/T models)

DTC Confirmation Procedure

NBS000GF

CAUTION:

Always drive vehicle at a safe speed.

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

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "P/N POSI SW" in "DATA MONITOR" mode with CON-SULT-II. Then check the "P/N POSI SW" signal under the following conditions.

Position (Shift lever)	Known-good signal	
N or P position (A/T) Neutral position (M/T)	ON	
Except above position	OFF	

DATA MONITOR MONITOR NO DTC P/N POSI SW ON

If NG, go to EC-534, "Diagnostic Procedure".

If OK, go to following step.

- 3. Select "DATA MONITOR" mode with CONSULT-II.
- Start engine and warm it up to normal operating temperature.
- Maintain the following conditions for at least 60 consecutive sec-5. onds.

ENG SPEED	1,400 - 6375 rpm
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	2.0 - 31.8 msec
VHCL SPEED SE	More than 64 km/h (40 MPH)
Shift lever	Suitable position

If 1st trip DTC is detected, go to EC-534, "Diagnostic Procedure"

DATA MONITOR		
MONITOR	NO DTC	
ENG SPEED	XXX rpm	
COOLAN TEMP/S	XXX °C	
VHCL SPEED SE	XXX km/h	
P/N POSI SW	OFF	
B/FUEL SCHDL	XXX msec	CEE040V
L		SEF213Y

EC-529 Revision: 2005 August 2006 350Z

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Overall Function Check

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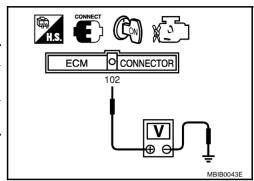
Use this procedure to check the overall function of the park/neutral position (PNP) switch circuit. During this check, a 1st trip DTC might not be confirmed.

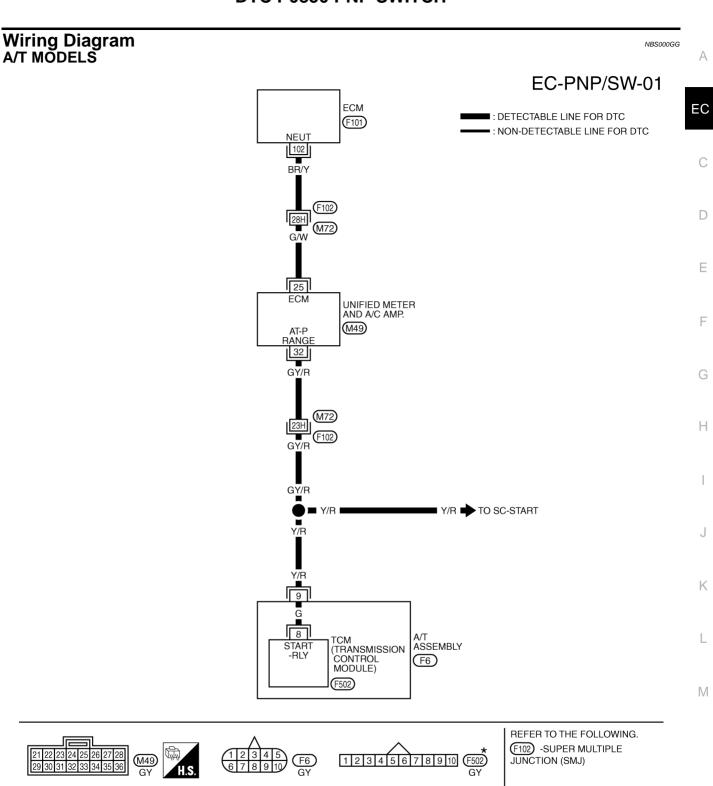
WITH GST

- 1. Turn ignition switch ON.
- 2. Check voltage between ECM terminal 102 (PNP switch signal) and ground under the following conditions.

Condition (Shift lever)	Voltage V (Known-good data)	
P or N position (A/T) Neutral position (M/T)	Approx. 0	
Except above position	BATTERY VOLTAGE (11 - 14V)	

^{3.} If NG, go to EC-534, "Diagnostic Procedure".





5 119 120 3 117 118 (F101)

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

TBWT1234E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

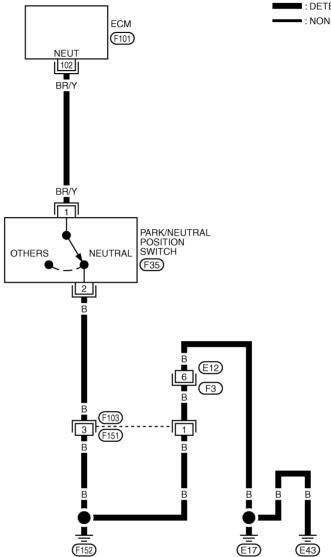
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
102 BR/Y	PNP switch	[Ignition switch: ON] • Selector lever: P or N	Approximately 0V	
		[Ignition switch: ON] • Except above position	BATTERY VOLTAGE (11 - 14V)	

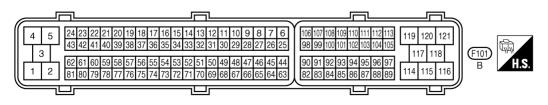
M/T MODELS

EC-PNP/SW-02

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



1234 5678 B 12 F35 B 1234 F103 W



TBWT1235E

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Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
102 BR/Y	PNP switch	[Ignition switch: ON] • Shift lever: Neutral	Approximately 0V	
		[Ignition switch: ON] • Except above position	BATTERY VOLTAGE (11 - 14V)	

Diagnostic Procedure

NBS000GH

A/T MODELS

1. CHECK DTC WITH TCM

Refer to AT-37, "OBD-II Diagnostic Trouble Code (DTC)".

OK or NG

OK >> GO TO 2.

NG >> Repair or replace.

2. CHECK STARTING SYSTEM

Turn ignition switch OFF, then turn it to START.

Does starter motor operate?

Yes or No

Yes >> GO TO 3.

No >> Refer to <u>SC-10, "STARTING SYSTEM"</u>.

3. CHECK PNP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect A/T assembly harness connector.
- 3. Disconnect "unified meter and A/C amp." harness connector.
- Check harness continuity between A/T assembly terminal 9 and "unified meter and A/C amp." terminal 32. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 5. NG >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F102, M72
- Harness for open or short between A/T assembly and "unified meter and A/C amp."

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

5. CHECK PNP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-II 1. Disconnect ECM harness connector. Check harness continuity between ECM terminal 102 and "unified meter and A/C amp." terminal 25. EC Refer to Wiring Diagram. Continuity should exist. 3. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 7. NG >> GO TO 6. 6. DETECT MALFUNCTIONING PART F Check the following. Harness connectors F102, M72 Harness for open or short between ECM and "unified meter and A/C amp.". >> Repair open circuit or short to ground or short to power in harness or connectors. 7. CHECK PNP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-III Check harness continuity between A/T assembly terminal 9 and TCM terminal 8. Refer to AT-109, "DTC P0615 START SIGNAL CIRCUIT". Н Continuity should exist. 2. Also check harness for short to ground and short to power. OK or NG >> GO TO 8. OK NG >> Repair open circuit or short to ground or short to power in harness connectors. 8. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". OK or NG OK >> GO TO 9. NG >> Repair or replace. 9. REPLACE "UNIFIED METER AND A/C AMP."

>> INSPECTION END

Refer to DI-46, "UNIFIED METER AND A/C AMP".

M/T MODELS

1. CHECK PNP SWITCH GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect park/neutral position (PNP) switch harness connector.
- 3. Check harness continuity between PNP switch terminal 2 and ground. Refer to Wiring Diagram.

Continuity should exist.

4. Also check harness for short to power.

OK or NG

OK >> GO TO 3 NG >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F103, F151
- Harness connector E12, F3
- Harness for open or short between PNP switch and ground

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

3. CHECK PNP SWITCH INPUT SIGNAL CIRCUIT

- Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 102 and PNP switch terminal 1. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4.

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

4. CHECK PNP SWITCH

Refer to MT-11. "PARK/NEUTRAL POSITION SWITCH".

OK or NG

OK >> GO TO 5.

NG >> Replace PNP switch.

5. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

DTC P1078 P1084 EVT CONTROL POSITION SENSOR

PFP:23731

Component Description

NBS000BJ

Exhaust valve timing control position sensor detects the concave groove of the exhaust camshaft rear end.

This sensor signal is used for sensing a position of the exhaust camshaft.

This sensor uses a Hall IC.

Based on the position of the exhaust camshaft, ECM controls exhaust valve timing control magnet retarder to optimize the shut/open timing of exhaust valve for the driving condition.



CONSULT-II Reference Value in Data Monitor Mode

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Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
	Engine: After warming up	Idle	−5° - 5°CA
EXH/V TIM B1	Shift lever: Neutral		
EXH/V TIM B2	Air conditioner switch: OFF	Engine speed: 2,000 rpm	Approx. 0° - 30°CA
	No load		

On Board Diagnosis Logic

NBS000BL

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1078 1078 (Bank 1)	Exhaust valve timing control position sensor circuit	An excessively high or low voltage from the sensor is sent to ECM.	Harness or connectors (Exhaust valve timing control position sensor circuit is open or shorted)
P1084 1084 (Bank 2)			Exhaust valve timing control position sensor
			Crankshaft position sensor (POS)
			Camshaft position sensor (PHASE)
			Accumulation of debris to the signal pick-up portion of the camshaft

DTC Confirmation Procedure

NBS000BM

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.

(I) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 10 seconds.
- 4. If 1st trip DTC is detected, go to EC-542, "Diagnostic Procedure"

DATA MONITOR

MONITOR

NO DTC

ENG SPEED XXX rpm

SEF058Y

WITH GST

Follow the procedure WITH CONSULT-II above.

Revision: 2005 August **EC-537** 2006 350Z

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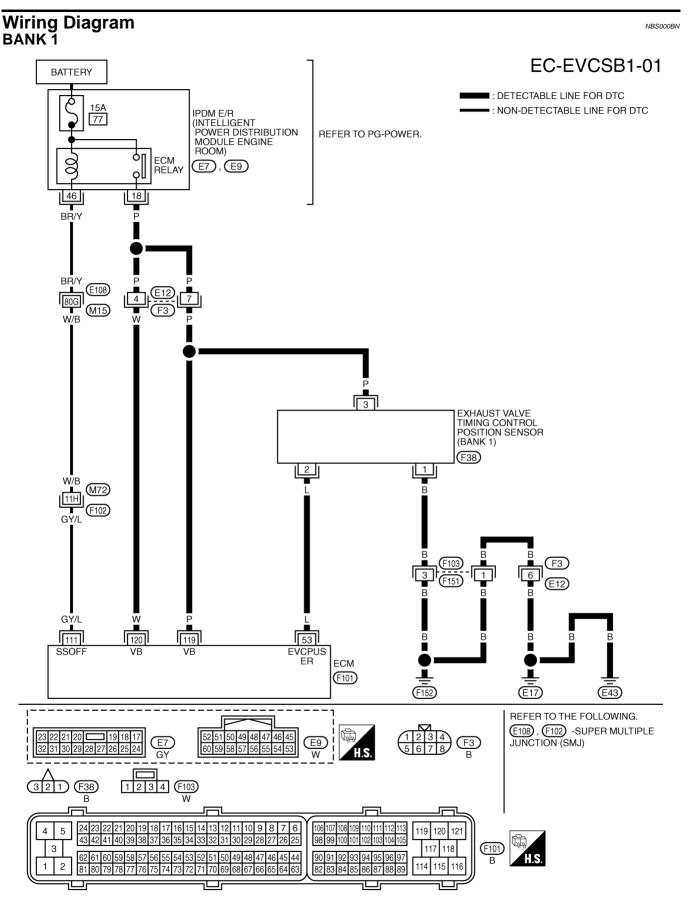
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Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
53		Exhaust valve timing control	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	0 - 1.0V★
33	53 L Exhaust valve tilling control position sensor (bank 1)	[Engine is running] • Warm-up condition • Engine speed: 2,000rpm	0 - 1.0V★	
111 GY/L ECM relay (Self shut-off)	-	[Engine is running] [Ignition switch: OFF] ● For a few seconds after turning ignition switch OFF	0 - 1.5V	
	(Sell Silut-Oil)	[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)	
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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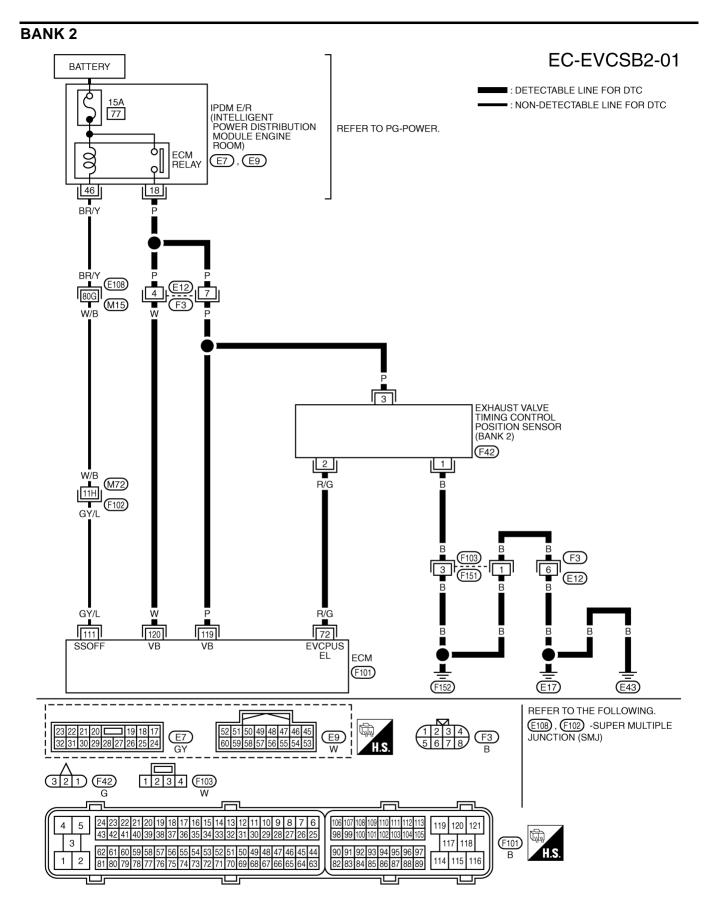
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TBWT1220E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
72	R/G	Exhaust valve timing control	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	0 - 1.0V★
72 R/0	NG	position sensor (bank 2)	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	0 - 1.0V★ →→→ 5.0V/Div PBIB2046E
111	GY/L	ECM relay	[Engine is running][Ignition switch: OFF]For a few seconds after turning ignition switch OFF	0 - 1.5V
		(Self shut-off)	[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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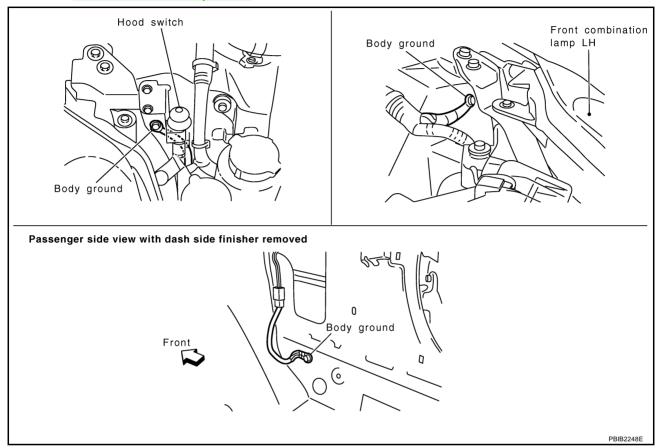
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Diagnostic Procedure

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1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to <u>EC-162</u>, "<u>Ground Inspection</u>".



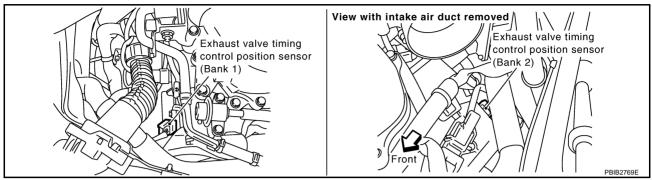
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$2. \ \mathsf{CHECK} \ \mathsf{EXHAUST} \ \mathsf{VALVE} \ \mathsf{TIMING} \ \mathsf{CONTROL} \ \mathsf{POSITION} \ \mathsf{SENSOR} \ \mathsf{POWER} \ \mathsf{SUPPLY} \ \mathsf{CIRCUIT}$

1. Disconnect exhaust valve timing control position sensor harness connector.

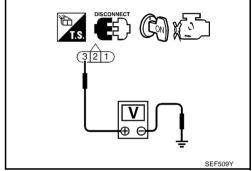


- 2. Turn ignition switch ON.
- 3. Check voltage between exhaust valve timing control position sensor terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between exhaust valve timing control position sensor and IPDM E/R
- Harness for open or short between exhaust valve timing control position sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK EXHAUST VALVE TIMING CONTROL POSITION SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Check harness continuity between exhaust valve timing control position sensor terminal 1 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 6. NG >> GO TO 5. EC

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5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F103, F151
- Harness connectors F3, E12
- Harness for open or short between exhaust valve timing control position sensor and ground
 - >> Repair open circuit or short to power in harness or connectors.

6. CHECK EXHAUST VALVE TIMING CONTROL POSITION SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 53 (bank 1) or 72 (bank 2) and exhaust valve timing control position sensor terminal 2.
 Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.

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

7. CHECK EXHAUST VALVE TIMING CONTROL POSITION SENSOR

Refer to EC-546, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace exhaust valve timing control position sensor.

8. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-401, "Component Inspection".

OK or NG

OK >> GO TO 9.

NG >> Replace crankshaft position sensor (POS).

9. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-411, "Component Inspection".

OK or NG

OK >> GO TO 10.

NG >> Replace camshaft position sensor (PHASE).

10. CHECK CAMSHAFT (EXH)

Check the following;

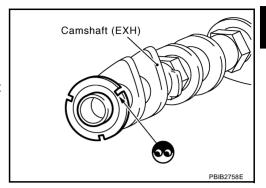
- Accumulation of debris to the signal plate of camshaft rear end
- Chipping signal plate of camshaft rear end

OK or NG

OK >> GO TO 11.

NG

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

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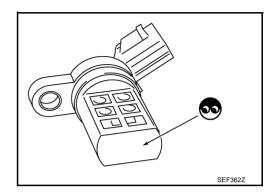
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Component Inspection EXHAUST VALVE TIMING CONTROL POSITION SENSOR

NBS000BP

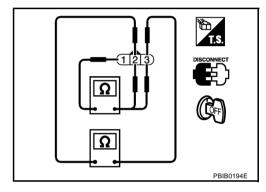
- 1. Disconnect exhaust valve timing control position sensor harness connector.
- 2. Loosen the fixing bolt of the sensor.
- 3. Remove the sensor.
- 4. Visually check the sensor for chipping.



5. Check resistance as shown below.

Terminal No. (Polarity)	Resistance Ω [at 25°C (77°F)]
3 (+) - 1 (-)	
2 (+) - 1 (-)	Except 0 or ∞
3 (+) - 2 (-)	

6. If NG, replace exhaust valve timing control position sensor.



NBS000BQ

Removal and Installation EXHAUST VALVE TIMING CONTROL POSITION SENSOR

Refer to EM-101, "CAMSHAFT".

DTC P1148, P1168 CLOSED LOOP CONTROL

DTC P1148, P1168 CLOSED LOOP CONTROL

PFP:22690

NBS000D5

On Board Diagnosis Logic

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1148 1148 (Bank 1)	Closed loop control function	The closed loop control function for bank 1 does not operate even when vehicle is driving in the specified condition.	Harness or connectors [The air fuel ratio (A/F) sensor 1 circuit is open or shorted.]
P1168 1168 (Bank 2)		The closed loop control function for bank 2 does not operate even when vehicle is driving in the specified condition.	 Air fuel ratio (A/F) sensor 1 Air fuel ratio (A/F) sensor 1 heater

DTC P1148 or P1168 is displayed with another DTC for air fuel ratio (A/F) sensor 1. Perform the trouble diagnosis for the corresponding DTC.

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DTC P1211 TCS CONTROL UNIT

DTC P1211 TCS CONTROL UNIT

PFP:47850

Description

The malfunction information related to TCS is transferred through the CAN communication line from VDC/TCS/ABS control unit (with VDC models) or "ABS actuator and electric unit (control unit)" (without VDC models) to ECM.

Be sure to erase the malfunction information such as DTC not only for VDC/TCS/ABS control unit (with VDC models) or "ABS actuator and electric unit (control unit)" (without VDC models) but also for ECM after TCS related repair.

On Board Diagnosis Logic

NBS000D7

Freeze frame data is not stored in the ECM for this self-diagnosis. The MIL will not light up for this self-diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1211 1211	TCS control unit	ECM receives a malfunction information from VDC/TCS/ABS control unit (with VDC models) or "ABS actuator and electric unit (control unit)" (without VDC models).	VDC/TCS/ABS control unit (with VDC models) ABS actuator and electric unit (control unit) (without VDC models) TCS related parts

DTC Confirmation Procedure

NBS000D8

TESTING CONDITION:

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

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for at least 60 seconds.
- 4. If 1st trip DTC is detected, go to EC-548, "Diagnostic Procedure"

DATA MONITOR

MONITOR NO DTC

ENG SPEED XXX rpm

SEF058Y

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

NBS000D9

Go to <u>BRC-86, "TROUBLE DIAGNOSIS"</u> (With VDC models) or <u>BRC-44, "TROUBLE DIAGNOSIS"</u> (Without VDC models).

DTC P1212 TCS COMMUNICATION LINE

DTC P1212 TCS COMMUNICATION LINE

PFP:47850

Description NBS000DA

NOTE:

- If DTC P1212 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P1212 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-166, "DTC U1010 CAN COMMUNICATION".

This CAN communication line is used to control the smooth engine operation during the TCS operation. Pulse signals are exchanged between ECM and VDC/TCS/ABS control unit (with VDC models) or "ABS actuator and electric unit (control unit)" (without VDC models).

Be sure to erase the malfunction information such as DTC not only for VDC/TCS/ABS control unit (with VDC models) or "ABS actuator and electric unit (control unit)" (without VDC models) but also for ECM after TCS related repair.

On Board Diagnosis Logic

NBS000DE

Freeze frame data is not stored in the ECM for this self-diagnosis. The MIL will not light up for this self-diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1212 1212	TCS communication line	ECM can not receive the information from VDC/TCS/ABS control unit (with VDC models) or "ABS actuator and electric unit (control unit)" (without VDC models) continuously.	 Harness or connectors (The CAN communication line is open or shorted.) VDC/TCS/ABS control unit (with VDC models) ABS actuator and electric unit (control unit) (without VDC models) Dead (Weak) battery

DTC Confirmation Procedure

NBS000DC

TESTING CONDITION:

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

(A) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- Start engine and let it idle for at least 10 seconds.
- If 1st trip DTC is detected, go to EC-549, "Diagnostic Procedure"

DATA M	ONITOR	1
MONITOR	MONITOR NO DTC	
ENG SPEED	XXX rpm	1
		SEF058Y

WITH GST

Follow the procedure "WITH CONSULT-II" above.

Diagnostic Procedure

NBS000DD

Go to BRC-86, "TROUBLE DIAGNOSIS" (With VDC models) or BRC-44, "TROUBLE DIAGNOSIS" (Without VDC models).

EC-549 Revision: 2005 August 2006 350Z

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DTC P1217 ENGINE OVER TEMPERATURE

PFP:00000

Description SYSTEM DESCRIPTION

NBS000DF

NOTE:

- If DTC P1217 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P1217 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to <u>EC-166, "DTC U1010 CAN COMMUNICATION"</u>.

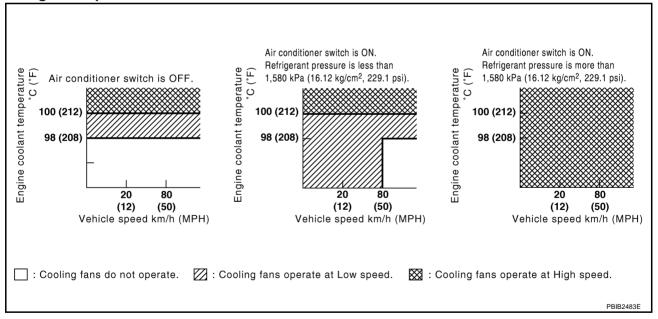
Cooling Fan Control

Sensor	Input Signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1		
Battery	Battery voltage*1		
Wheel sensor	Vehicle speed*2	Cooling fan	IPDM E/R (Cooling fan relays)
Engine coolant temperature sensor	Engine coolant temperature	Control	(Gooming fair relays)
Air conditioner switch	Air conditioner ON signal*2		
Refrigerant pressure sensor	Refrigerant pressure		

^{*1:} The ECM determines the start signal status by the signals of engine speed and battery voltage.

The ECM controls the cooling fan corresponding to the vehicle speed, engine coolant temperature, refrigerant pressure, and air conditioner ON signal. The control system has 3-step control [HIGH/LOW/OFF].

Cooling Fan Operation



^{*2:} This signal is sent to ECM through CAN communication line.

Cooling Fan Relay Operation

The ECM controls cooling fan relays in the IPDM E/R through CAN communication line.

Cooling fan speed	Cooling fan relay			
Cooling fair speed	1	2	3	
Stop	OFF	OFF	OFF	
Low	ON	OFF	OFF	
High	ON	ON	ON	

COMPONENT DESCRIPTION

Cooling Fan Motor

The cooling fan operates at each speed when the current flows in the cooling fan motor as follows.

Cooling fan speed	Cooling fan motor terminals		
Cooling lan speed	(+)	(-)	
Low	1	4	
LOW	2	3	
High	1 and 2	3 and 4	

CONSULT-II Reference Value in Data Monitor Mode

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
	Engine: After warming up, idle	Air conditioner switch: OFF	OFF
AIR COND SIG	the engine	Air conditioner switch: ON (Compressor operates.)	ON
	 Engine: After warming up, idle the engine Air conditioner switch: OFF 	Engine coolant temperature is 97°C (206°F) or less	OFF
COOLING FAN		Engine coolant temperature is between 98°C (208°F) and 99°C (210°F)	LOW
		Engine coolant temperature is 100°C (212°F) or more	н

On Board Diagnosis Logic

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If the cooling fan or another component in the cooling system malfunctions, engine coolant temperature will rise.

When the engine coolant temperature reaches an abnormally high temperature condition, a malfunction is indicated.

This self-diagnosis has the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1217 1217	Engine over tempera- ture (Overheat)	 Cooling fan does not operate properly (Overheat). Cooling fan system does not operate properly (Overheat). Engine coolant was not added to the system using the proper filling method. Engine coolant is not within the specified range. 	 Harness or connectors (The cooling fan circuit is open or shorted.) Cooling fan IPDM E/R (Cooling fan relays) Radiator hose Radiator Radiator cap Water pump Thermostat For more information, refer to EC-561, "Main 12 Causes of Overheating"

CAUTION:

When a malfunction is indicated, be sure to replace the coolant. Refer to <u>CO-10</u>, <u>"Changing Engine Coolant"</u>. Also, replace the engine oil. Refer to <u>LU-8</u>, <u>"Changing Engine Oil"</u>.

- 1. Fill radiator with coolant up to specified level with a filling speed of 2 liters per minute. Be sure to use coolant with the proper mixture ratio. Refer to MA-13, "ANTI-FREEZE COOLANT MIXTURE RATIO".
- 2. After refilling coolant, run engine to ensure that no water-flow noise is emitted.

Overall Function Check

NBS000DH

Use this procedure to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator.

Wrap a thick cloth around cap. Carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. Then turn the cap all the way off.

(P) WITH CONSULT-II

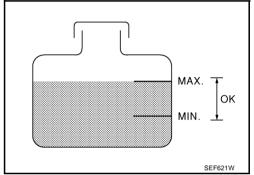
1. Check the coolant level in the reservoir tank and radiator.

NOTF:

Allow engine to cool before checking coolant level.

If the coolant level in the reservoir tank and/or radiator is below the proper range, skip the following steps and go to EC-556. "Diagnostic Procedure".

- 2. Confirm whether customer filled the coolant or not. If customer filled the coolant, skip the following steps and go to EC-556, "Diagnostic Procedure".
- 3. Turn ignition switch ON.



- Perform "COOLING FAN" in "ACTIVE TEST" mode with CON-SULT-II.
- 5. If the results are NG, go to EC-556, "Diagnostic Procedure".

ACTIVE TES	ST	
COOLING FAN	OFF	
MONITOR	1	
COOLAN TEMP/S	xxx °c	
		SEF646X

WITH GST

1. Check the coolant level in the reservoir tank and radiator.

NOTE:

Allow engine to cool before checking coolant level.

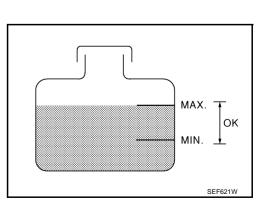
If the coolant level in the reservoir tank and/or radiator is below the proper range, skip the following steps and go to $\underline{\text{EC-556}}$. "Diagnostic Procedure".

- 2. Confirm whether customer filled the coolant or not. If customer filled the coolant, skip the following steps and go to EC-556. <a href=""Diagnostic Procedure".
- Start engine.

CAUTION:

Be careful not to overheat engine.

- Turn air conditioner switch ON.
- 5. Turn blower fan switch ON.

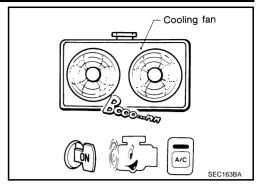


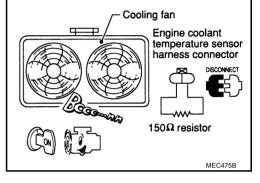
- 6. Make sure that cooling fan operates at low speed. If NG, go to <u>EC-556</u>, "<u>Diagnostic Procedure</u>". If OK, go to the following step.
- Turn ignition switch OFF.
- 8. Turn air conditioner switch and blower fan switch OFF.
- Disconnect engine coolant temperature sensor harness connector.
- 10. Connect 150Ω resistor to engine coolant temperature sensor harness connector.
- 11. Restart engine and make sure that cooling fan operates at higher speed than low speed.

CAUTION:

Be careful not to overheat engine.

12. If NG, go to EC-556, "Diagnostic Procedure".





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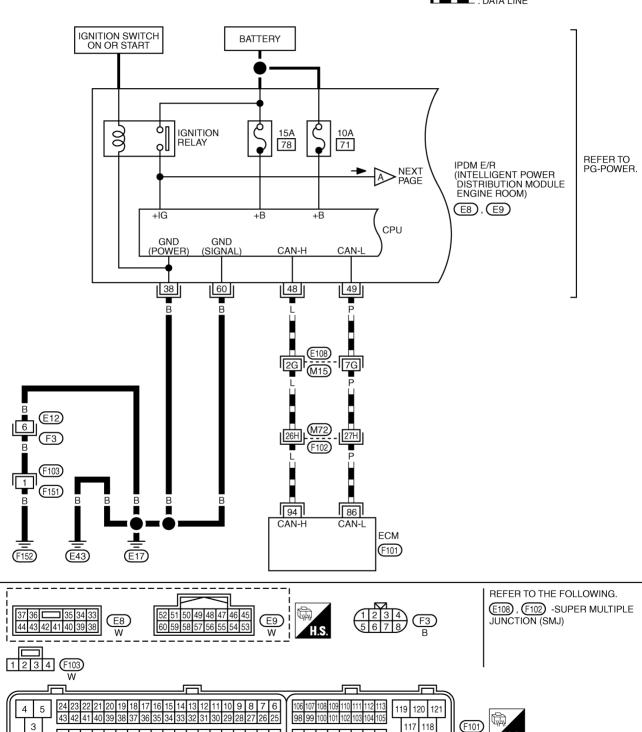
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Wiring Diagram

EC-COOL/F-01

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

DATA LINE



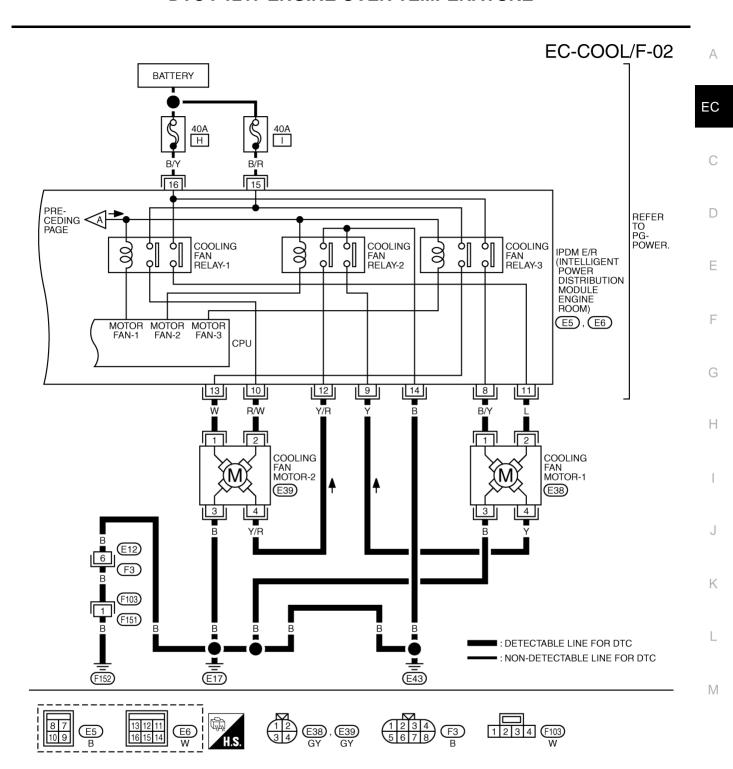
TBWT1226E

82 83 84 85 86 87 88 89

114 115

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TBWT1227E

Diagnostic Procedure

1. INSPECTION START

Do vou have CONSULT-II?

Yes or No

Yes >> GO TO 2.

Nο >> GO TO 4.

2. CHECK COOLING FAN LOW SPEED OPERATION

(II) With CONSULT-II

- 1. Start engine and let it idle.
- Select "COOLING FAN" in "ACTIVE TEST" mode with CON-SULT-II and touch "LOW" on the CONSULT-II screen.
- 3. Make sure that cooling fans-1 and -2 operate at low speed.

OK or NG

OK >> GO TO 3.

NG

>> Check cooling fan low speed control circuit. (Go to EC-558, "PROCEDURE A".)

ACTIVE TES	Т
COOLING FAN	LOW
MONITOR	
COOLAN TEMP/S	xxx °c

3. CHECK COOLING FAN HIGH SPEED OPERATION

(II) With CONSULT-II

- Touch "HIGH" on the CONSULT-II screen.
- Make sure that cooling fans-1 and -2 operate at higher speed than low speed.

OK or NG

OK >> GO TO 6.

NG

>> Check cooling fan high speed control circuit. (Go to EC-560, "PROCEDURE B".)

	ACTIVE TES	ST	
	COOLING FAN	HIGH	
	MONITOR	1	
	COOLAN TEMP/S	xxx °c	
ı			SEF785Z

4. CHECK COOLING FAN LOW SPEED OPERATION

Without CONSULT-II

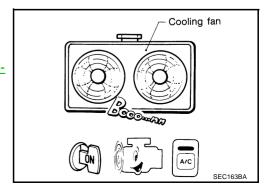
- 1. Start engine and let it idle.
- Turn air conditioner switch ON.
- Turn blower fan switch ON.
- 4. Make sure that cooling fans-1 and -2 operate at low speed.

OK or NG

OK >> GO TO 5.

NG

>> Check cooling fan low speed control circuit. (Go to EC-558, "PROCEDURE A".)



NBS000DJ

5. CHECK COOLING FAN HIGH SPEED OPERATION

8 Without CONSULT-II

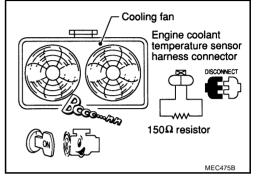
- Turn ignition switch OFF.
- 2 Turn air conditioner switch and blower fan switch OFF.
- Disconnect engine coolant temperature sensor harness connector.
- Connect 150 Ω resistor to engine coolant temperature sensor harness connector.
- 5. Restart engine and make sure that cooling fans-1 and -2 operate at higher speed than low speed.

OK or NG

OK >> GO TO 6.

NG

>> Check cooling fan high speed control circuit. (Go to EC-560, "PROCEDURE B".)



6. CHECK COOLING SYSTEM FOR LEAK

Refer to CO-10, "LEAK CHECK".

OK or NG

OK >> GO TO 7.

NG >> Check the following for leak.

- Hose
- Radiator
- Water pump

7. CHECK RADIATOR CAP

Refer to CO-15, "Checking Radiator Cap".

OK or NG

OK >> GO TO 8.

NG >> Replace radiator cap.

8. CHECK THERMOSTAT

Refer to CO-28, "WATER INLET AND THERMOSTAT ASSEMBLY".

OK or NG

OK >> GO TO 9.

NG >> Replace thermostat

9. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-239, "Component Inspection".

OK or NG

OK >> GO TO 10.

Revision: 2005 August

>> Replace engine coolant temperature sensor. NG

10. CHECK MAIN 12 CAUSES

If the cause cannot be isolated, go to EC-561, "Main 12 Causes of Overheating" .

>> INSPECTION END

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2006 350Z

PROCEDURE A

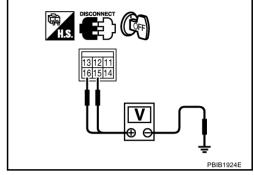
1. CHECK POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector E6.
- 3. Check voltage between IPDM E/R terminals 15, 16 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 3. NG >> GO TO 2.



2. DETECT MALFUNCTIONING PART

Check the following.

- 40A fusible links
- Harness for open or short between IPDM E/R and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK COOLING FAN MOTORS CIRCUIT

- Disconnect cooling fan motor-1 harness connector and cooling fan motor-2 harness connector.
- 2. Disconnect all IPDM E/R harness connectors.
- Check harness continuity between the following; cooling fan motor-1 terminal 2 and IPDM E/R terminal 11, cooling fan motor-1 terminal 3 and ground, IPDM E/R terminal 38, 60 and ground, Refer to wiring diagram.

Continuity should exist.

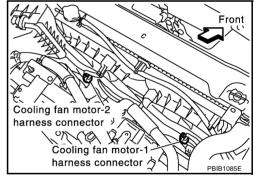
 Check harness continuity between the following; cooling fan motor-2 terminal 2 and IPDM E/R terminal 10, cooling fan motor-2 terminal 3 and ground. Refer to wiring diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 5. NG >> GO TO 4.



	the following.
	rness connector E12, F3
	rness connector F103, F151 rness for open or short between cooling fan motors-1, 2 and IPDM E/R
	irness for open or short between cooling fan motors-1, 2 and ground
	rness for open or short between IPDM E/R and ground
	>> Repair open circuit or short to ground or short to power in harness or connectors.
5. сн	IECK COOLING FAN MOTORS
	o EC-561, "Component Inspection" .
OK or I	
OK NG	>> GO TO 6. >> Replace cooling fan motors.
_	IECK INTERMITTENT INCIDENT
	n <u>EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT"</u> .
OK or I	
OK	>> Replace IPDM E/R. Refer to <u>PG-16</u> , "IPDM E/R (INTELLIGENT POWER DISTRIBUTION MOD- <u>ULE ENGINE ROOM)"</u> .
NG	>> Repair or replace harness or connector.
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Revision: 2005 August **EC-559** 2006 350Z

PROCEDURE B

1. CHECK COOLING FAN MOTORS CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan motor-1 harness connector and cooling fan motor-2 harness connector.
- 3. Disconnect all IPDM E/R harness connectors.
- Check harness continuity between the following; cooling fan motor-1 terminal 1 and IPDM E/R terminal 8, cooling fan motor-1 terminal 4 and IPDM E/R terminal 9, IPDM E/R terminal 14, 38, 60 and ground, Refer to wiring diagram.

Continuity should exist.

- 5. Also check harness connector for short to ground or short to power.
- Check harness continuity between the following; cooling fan motor-2 terminal 1 and IPDM E/R terminal 13, cooling fan motor-2 terminal 4 and IPDM E/R terminal 12, Refer to wiring diagram.



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

OK or NG

OK >> GO TO 3. NG >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connector E12, F3
- Harness connector F103, F151
- Harness for open or short between cooling fan motors-1, 2 and IPDM E/R
- Harness for open or short between cooling fan motors-1, 2 and ground
- Harness for open or short between IPDM E/R and ground
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK COOLING FAN MOTORS

Refer to EC-561, "Component Inspection".

OK or NG

OK >> GO TO 4.

NG >> Replace cooling fan motors.

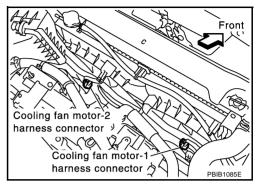
4. CHECK INTERMITTENT INCIDENT

Perform EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> Replace IPDM E/R. Refer to PG-16, "IPDM E/R (INTELLIGENT POWER DISTRIBUTION MOD-ULE ENGINE ROOM)".

NG >> Repair or replace harness or connectors.



Main 12 Causes of Overheating

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Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	1	Blocked radiator	Visual	No blocking	_
		 Blocked condenser 			
		 Blocked radiator grille 			
		 Blocked bumper 			
Ī	2	Coolant mixture	Coolant tester	50 - 50% coolant mixture	MA-13
	3	Coolant level	Visual	Coolant up to MAX level in reservoir tank and radiator filler neck	CO-10
Ī	4	Radiator cap	Pressure tester	59 - 98 kPa	<u>CO-15</u>
				(0.6 - 1.0 kg/cm ² , 9 - 14 psi) (Limit)	
ON*2	5	Coolant leaks	Visual	No leaks	<u>CO-10</u>
ON*2	6	Thermostat	Touch the upper and lower radiator hoses	Both hoses should be hot	<u>CO-28</u>
ON*1	7	Cooling fan	CONSULT-II	Operating	See trouble diagnosis for DTC P1217 (EC-550).
OFF	8	Combustion gas leak	Color checker chemical tester 4 Gas analyzer	Negative	_
ON*3	9	Coolant temperature gauge	Visual	Gauge less than 3/4 when driving	_
		Coolant overflow to reservoir tank	Visual	No overflow during driving and idling	<u>CO-10</u>
OFF* ⁴	10	Coolant return from reservoir tank to radia- tor	Visual	Should be initial level in reservoir tank	CO-10
OFF	11	Cylinder head	Straight gauge feeler gauge	0.1 mm (0.004 in) Maximum distortion (warping)	<u>EM-119</u>
	12	Cylinder block and pistons	Visual	No scuffing on cylinder walls or piston	EM-137

^{*1:} Turn the ignition switch ON.

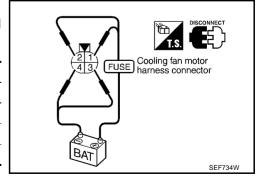
For more information, refer to CO-6, "OVERHEATING CAUSE ANALYSIS" .

Component Inspection COOLING FAN MOTORS-1 AND -2

NBS000DL

- 1. Disconnect cooling fan motor harness connectors.
- 2. Supply cooling fan motor terminals with battery voltage and check operation.

	Speed	term	inals
	Opeed	(+)	(–)
	Low	1	4
Cooling fan motor	LOW	2	3
	High	1 and 2	3 and 4



Cooling fan motor should operate.

If NG, replace cooling fan motor.

^{*2:} Engine running at 3,000 rpm for 10 minutes.

^{*3:} Drive at 90 km/h (55 MPH) for 30 minutes and then let idle for 10 minutes.

^{*4:} After 60 minutes of cool down time.

DTC P1225 TP SENSOR

DTC P1225 TP SENSOR

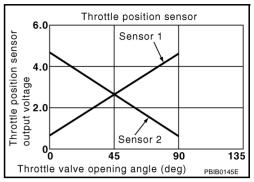
PFP:16119

Component Description

NBS000DM

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



On Board Diagnosis Logic

NBS000DN

The MIL will not light up for this diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1225 1225	Closed throttle position learning performance	Closed throttle position learning value is excessively low.	Electric throttle control actuator (TP sensor 1 and 2)

DTC Confirmation Procedure

NBS000DO

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 10V at idle.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- If 1st trip DTC is detected, go to <u>EC-563</u>, "<u>Diagnostic Procedure</u>"

DATA MONITOR
MONITOR NO DTC
ENG SPEED XXX rpm

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WITH GST

Follow the procedure "WITH CONSULT-II" above.

DTC P1225 TP SENSOR

Diagnostic Procedure

NBS000DP

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1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

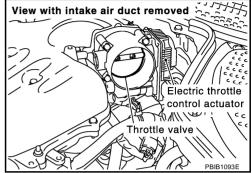
- 1. Turn ignition switch OFF.
- 2. Remove the intake air duct.
- 3. Check if foreign matter is caught between the throttle valve and the housing.

OK or NG

OK >> GO TO 2.

NG

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace the electric throttle control actuator.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

Removal and Installation ELECTRIC THROTTLE CONTROL ACTUATOR

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

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DTC P1226 TP SENSOR

DTC P1226 TP SENSOR

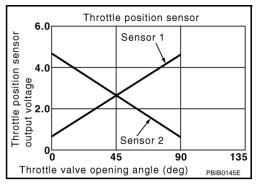
PFP:16119

Component Description

NBS000DR

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



On Board Diagnosis Logic

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The MIL will not light up for this diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1226 1226	Closed throttle position learning performance	Closed throttle position learning is not performed successfully, repeatedly.	Electric throttle control actuator (TP sensor 1 and 2)

DTC Confirmation Procedure

NBS000DT

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 10V at idle.

(P) WITH CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Repeat steps 3 and 4 for 32 times.
- 6. If 1st trip DTC is detected, go to EC-565, "Diagnostic Procedure"

DATA MONITOR

MONITOR NO DTC

ENG SPEED XXX rpm

SEF058Y

WITH GST

Follow the procedure "With CONSULT-II" above.

DTC P1226 TP SENSOR

Diagnostic Procedure

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1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

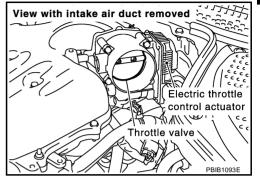
- 1. Turn ignition switch OFF.
- 2. Remove the intake air duct.
- 3. Check if foreign matter is caught between the throttle valve and the housing.

OK or NG

OK >> GO TO 2.

NG >> F

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace the electric throttle control actuator.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

Removal and Installation ELECTRIC THROTTLE CONTROL ACTUATOR

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

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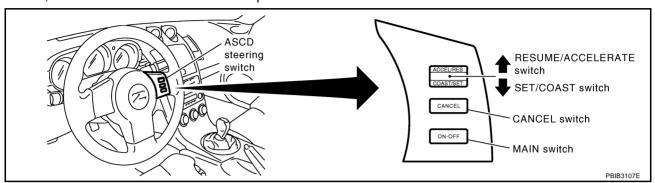
DTC P1564 ASCD STEERING SWITCH

PFP:25551

Component Description

NBS000FT

ASCD steering switch has variant values of electrical resistance for each button. ECM reads voltage variation of switch, and determines which button is operated.



Refer to EC-29, "AUTOMATIC SPEED CONTROL DEVICE (ASCD)" for the ASCD function.

CONSULT-II Reference Value in Data Monitor Mode

NBS000FU

Specification data are reference values.

MONITOR ITEM		CONDITION	SPECIFICATION
MAIN SW	- Ignition quitable ON	MAIN switch: Pressed	ON
IVIAIN SVV	Ignition switch: ON	MAIN switch: Released	OFF
CANCEL SW	- Ignition quitable ON	CANCEL switch: Pressed	ON
CANCEL SVV	Ignition switch: ON	CANCEL switch: Released	OFF
RESUME/ACC SW	- Invition quitable ON	RESUME/ACCELERATE switch: Pressed	ON
RESUME/ACC SW	Ignition switch: ON	RESUME/ACCELERATE switch: Released	OFF
SET SW	• Ignition switch: ON	SET/COAST switch: Pressed	ON
SET SW	Ignition switch: ON	SET/COAST switch: Released	OFF

On Board Diagnosis Logic

NBS000FV

This self-diagnosis has the one trip detection logic.

The MIL will not light up for this diagnosis.

NOTE:

If DTC P1564 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-520, "DTC P0605 ECM".

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition	Possible Cause
P1564 1564	ASCD steering switch	 An excessively high voltage signal from the ASCD steering switch is sent to ECM. ECM detects that input signal from the ASCD steering switch is out of the specified range. ECM detects that the ASCD steering switch is stuck ON. 	 Harness or connectors (The switch circuit is open or shorted.) ASCD steering switch ECM

DTC Confirmation Procedure

NBS000FW

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.

(P) WITH CONSULT-II

- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- Wait at least 10 seconds.
- Press MAIN switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press CANCEL switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press RESUME/ACCELERATE switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press SET/COAST switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 8. If DTC is detected, go to EC-570, "Diagnostic Procedure".

GI WITH GST

Follow the procedure "WITH CONSULT-II" above.

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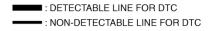
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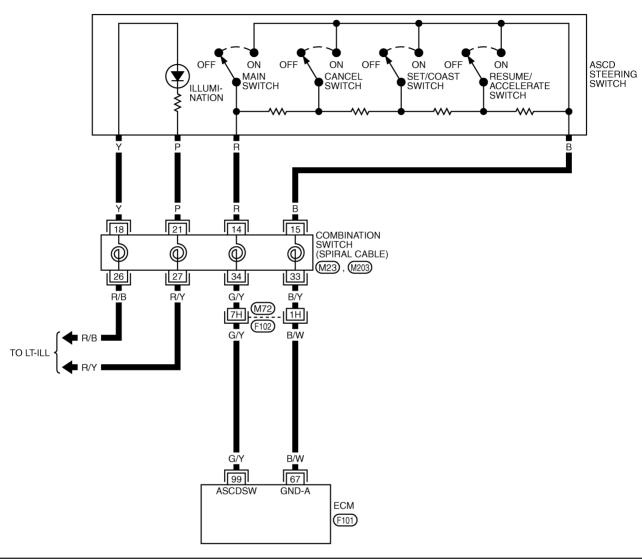
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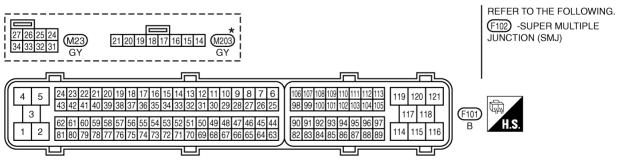
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Wiring Diagram NBS000FX

EC-ASC/SW-01







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

TBWT1231E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
67	B/W	Sensor ground	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V
			[Ignition switch: ON] • ASCD steering switch: OFF	Approximately 4V
			[Ignition switch: ON] • MAIN switch: Pressed	Approximately 0V
99	G/Y	ASCD steering switch	[Ignition switch: ON] • CANCEL switch: Pressed	Approximately 1V
			[Ignition switch: ON] • RESUME/ACCELERATE switch: Pressed	Approximately 3V
			[Ignition switch: ON] • SET/COAST switch: Pressed	Approximately 2V

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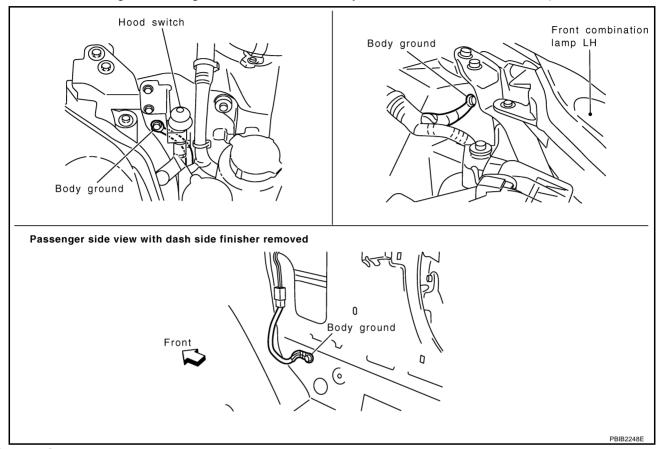
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NBS000FY

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK ASCD STEERING SWITCH CIRCUIT

(II) With CONSULT-II

- Turn ignition switch ON.
- Select "MAIN SW", "RESUME/ACC SW", "SET SW" and "CANCEL SW" in "DATA MONITOR" mode with CONSULT-II.
- Check each item indication under the following conditions.

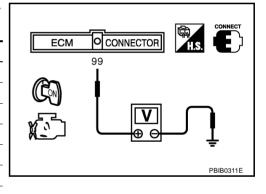
Switch	Monitor item	Condition	Indication
MAIN switch	MAIN SW	Pressed	ON
WAIN SWILCH	WAIN SW	Released	OFF
CANCEL switch	CANCEL SW	Pressed	ON
CANCEL SWILLI	CANCEL SW	Released	OFF
RESUME/ACCEL-	RESUME/ACC SW	Pressed	ON
ERATE switch	RESONE/ACC SW	Released	OFF
SET/COAST switch	SET SW	Pressed	ON
SE 1/COAST SWILLII	SLI SW	Released	OFF

DATA MONI	TOR
MONITOR	NO DTC
MAIN SW CANCEL SW RESUME/ACC SW SET SW	OFF OFF OFF

Without CONSULT-II

- Turn ignition switch ON.
- Check voltage between ECM terminal 99 and ground with pressing each button.

Switch	Condition	Voltage [V]
MAIN switch	Pressed	Approx. 0
WAIN SWILCH	Released	Approx. 4
CANCEL switch	Pressed	Approx. 1
CANCLE SWILCH	Released	Approx. 4
RESUME/ACCELERATE	Pressed	Approx. 3
switch	Released	Approx. 4
SET/COAST switch	Pressed	Approx. 2
	Released	Approx. 4



OK or NG

OK >> GO TO 8. NG >> GO TO 3.

3. CHECK ASCD STEERING SWITCH GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Disconnect combination switch harness connector M203. 3.
- Check harness continuity between combination switch terminal 15 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 5. NG >> GO TO 4.

EC-571 Revision: 2005 August 2006 350Z

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4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M72, F102
- Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK ASCD STEERING SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between ECM terminal 99 and combination switch terminal 14. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M72, F102
- Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK ASCD STEERING SWITCH

Refer to EC-573, "Component Inspection".

OK or NG

OK >> GO TO 8.

NG >> Replace steering wheel.

8. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

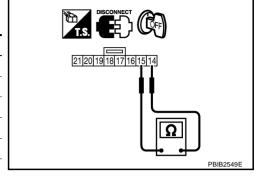
>> INSPECTION END

Component Inspection ASCD STEERING SWITCH

NBS000FZ

- 1. Disconnect combination switch (spiral cable) harness connector M203.
- Check continuity between combination switch (spiral cable) terminals 14 and 15 with pushing each switch.

Switch	Condition	Resistance $[\Omega]$
MAIN switch	Pressed	Approx. 0
WAIN SWILCH	Released	Approx. 4,000
CANCEL switch	Pressed	Approx. 250
CANCLE SWITCH	Released	Approx. 4,000
RESUME/ACCELERATE	Pressed	Approx. 1,480
switch	Released	Approx. 4,000
SET/COAST switch	Pressed	Approx. 660
SE 1760AST SWITCH	Released	Approx. 4,000



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DTC P1572 ASCD BRAKE SWITCH

DTC P1572 ASCD BRAKE SWITCH

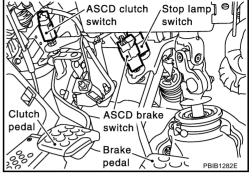
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Component Description

NBS000G0

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal).

Refer to <u>EC-29</u>, "<u>AUTOMATIC SPEED CONTROL DEVICE (ASCD)</u>" for the ASCD function.



CONSULT-II Reference Value in Data Monitor Mode

NBS000G1

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
BRAKE SW 1	Ignition switch: ON	Brake pedal: Fully released (A/T) Brake pedal and clutch pedal: Fully released (M/T)	ON
(ASCD brake switch)	• Igiliuon switch. ON	 Brake pedal: Slightly depressed (A/T) Brake pedal and/or clutch pedal: Slightly depressed (M/T) 	OFF
BRAKE SW 2 (Stop lamp switch)	- Innition quitable ON	Brake pedal: Fully released	OFF
	Ignition switch: ON	Brake pedal: Slightly depressed	ON

On Board Diagnosis Logic

NBS000G2

This self-diagnosis has the one trip detection logic.

The MIL will not light up for this diagnosis.

NOTE:

- If DTC P1572 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-520, "DTC P0605 ECM".
- This self-diagnosis has the one trip detection logic. When malfunction A is detected, DTC is not stored in ECM memory. And in that case, 1st trip DTC and 1st trip freeze frame data are displayed.
 1st trip DTC is erased when ignition switch OFF. And even when malfunction A is detected in two consecutive trips, DTC is not stored in ECM memory.

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition		Possible Cause
		A)	When the vehicle speed is above 30km/h (19 MPH), ON signals from the stop lamp switch and the ASCD brake switch are sent to ECM at the same time.	 Harness or connectors (The stop lamp switch circuit is shorted.) Harness or connectors (The ASCD brake switch circuit is shorted.)
P1572 1572	ASCD brake switch	B)	ASCD brake switch signal is not sent to ECM for extremely long time while the vehicle is driving	 Harness or connectors (The ASCD clutch switch circuit is shorted.) (M/T models) Stop lamp switch ASCD brake switch ASCD clutch switch (M/T models) Incorrect stop lamp switch installation Incorrect ASCD brake switch installation Incorrect ASCD clutch switch installation (M/T models) ECM

DTC P1572 ASCD BRAKE SWITCH

DTC Confirmation Procedure

NBS000G3

CAUTION:

Always drive vehicle at a safe speed.

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.
- Procedure for malfunction B is not described here. It takes extremely long time to complete procedure for malfunction B. By performing procedure for malfunction A, the incident that causes malfunction B can be detected.

TESTING CONDITION:

Steps 4 and 5 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.

(II) WITH CONSULT-II

- Start engine (VDC switch or TCS switch OFF).
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Press MAIN switch and make sure that CRUISE indicator lights up.
- Drive the vehicle for at least 5 consecutive seconds under the following condition.

VHCL SPEED SE	More than 30 km/h (19 MPH)
Shift lever	Suitable position

If 1st trip DTC is detected, go to EC-579, "Diagnostic Procedure"

If 1st trip DTC is not detected, go to the following step.

5. Drive the vehicle for at least 5 consecutive seconds under the following condition.

VHCL SPEED SE	More than 30 km/h (19 MPH)
Shift lever	Suitable position
Driving location	Depress the brake pedal for more than five seconds so as not to come off from the above-mentioned vehicle speed.

If 1st trip DTC is detected, go to EC-579, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II" above.

DATA MONITOR

MONITOR

NO DTC

ENG SPEED XXX rpm
VHCL SPEED SE XXX km/h
CRUISE LAMP ON
BRAKE SW 1 ON
BRAKE SW 2 OFF

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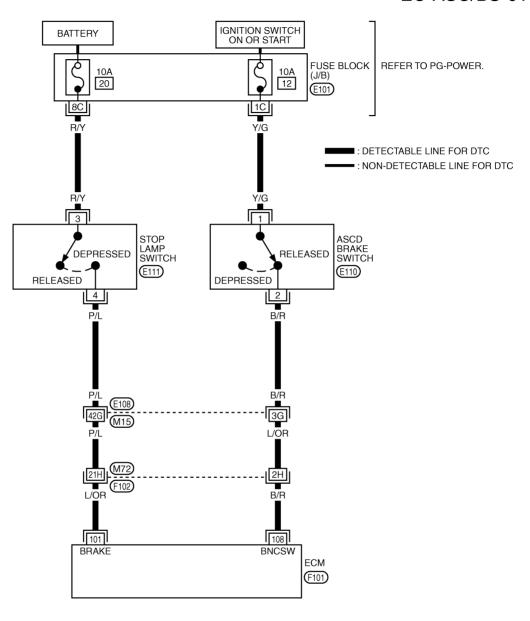
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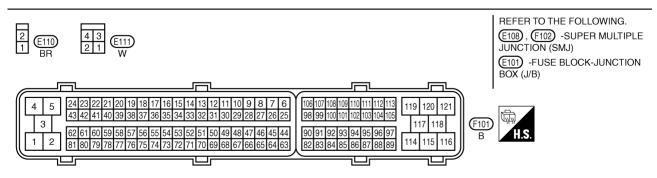
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Wiring Diagram
A/T MODELS

NBS000G4

EC-ASC/BS-01





TBWT1232E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
101	L/OR	Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Fully released	Approximately 0V
101	DOIL	Olop lamp switch	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14V)
108	B/R	ASCD brake switch	[Ignition switch: ON] • Brake pedal: Slightly depressed	Approximately 0V
106	D/K	ASOD DIAKE SWILCH	[Ignition switch: ON] • Brake pedal: Fully released	BATTERY VOLTAGE (11 - 14V)

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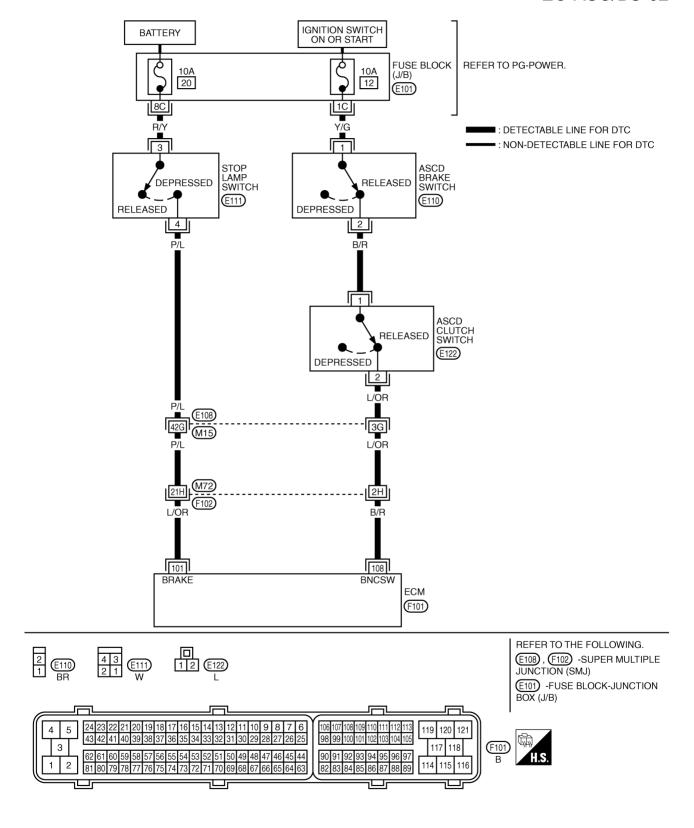
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M/T MODELS

EC-ASC/BS-02



TBWT1233E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
101	L/OR	Stop lamp switch	[Ignition switch: OFF] ● Brake pedal: Fully released	Approximately 0V
101	DOR	Otop ramp switch	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14V)
108	B/R	ASCD brake switch	[Ignition switch: ON] ● Brake pedal and/or clutch pedal: Slightly depressed	Approximately 0V
			[Ignition switch: ON] • Brake pedal and clutch pedal: Fully released	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

NBS000G5

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A/T MODELS

1. CHECK OVERALL FUNCTION-I

(II) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-II.
- 3. Check "BRAKE SW1" indication under the following conditions.

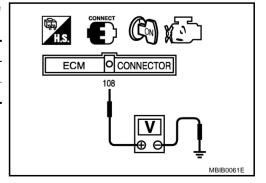
CONDITION	INDICATION
Brake pedal: Slightly depressed	OFF
Brake pedal: Fully released	ON

DATA MONIT	OR
MONITOR	NO DTC
BRAKE SW1	OFF

⋈ Without CONSULT-II

- 1. Turn ignition switch ON.
- 2. Check voltage between ECM terminal 108 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal: Slightly depressed	Approximately 0V
Brake pedal: Fully released	Battery voltage



OK or NG

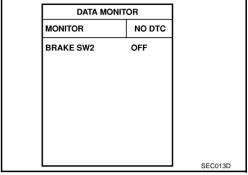
OK >> GO TO 2. NG >> GO TO 3.

2. CHECK OVERALL FUNCTION-II

(II) With CONSULT-II

- 1. Select "BRAKE SW2" in "DATA MONITOR" mode with CONSULT-II.
- 2. Check "BRAKE SW2" indication under the following conditions.

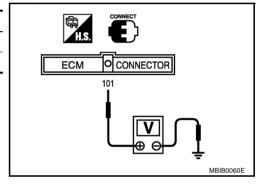
CONDITION	INDICATION
Brake pedal: Fully released	OFF
Brake pedal: Slightly depressed	ON



W Without CONSULT-II

Check voltage between ECM terminal 101 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal: Fully released	Approximately 0V
Brake pedal: Slightly depressed	Battery voltage

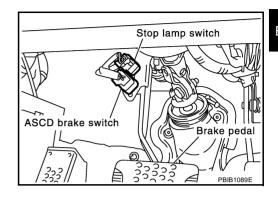


OK or NG

OK >> GO TO 13. NG >> GO TO 8.

$\overline{3}$. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- Turn ignition switch ON.

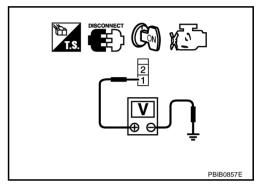


4. Check voltage between ASCD brake switch terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 5. NG >> GO TO 4.



4. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between ASCD brake switch and fuse

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

5. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 108 and ASCD brake switch terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

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6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and ASCD brake switch
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK ASCD BRAKE SWITCH

Refer to EC-589, "Component Inspection"

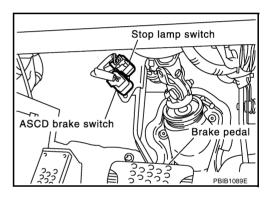
OK or NG

OK >> GO TO 13.

NG >> Replace ASCD brake switch.

8. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.

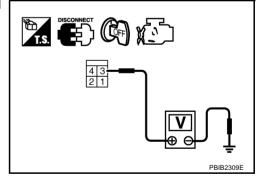


3. Check voltage between stop lamp switch terminal 3 and ground with CONSULT -II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 10. NG >> GO TO 9.



9. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between stop lamp switch and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

$\overline{10}$. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Disconnect ECM harness connector. Check harness continuity between ECM terminal 101 and stop lamp switch terminal 4. EC Refer to Wiring Diagram. Continuity should exist. 3. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 12. NG >> GO TO 11. D 11. DETECT MALFUNCTIONING PART F Check the following. Harness connectors E108, M15 Harness connectors M72, F102 Harness for open or short between ECM and stop lamp switch >> Repair open circuit or short to ground or short to power in harness or connectors. G 12. CHECK STOP LAMP SWITCH Н Refer to EC-589, "Component Inspection" OK or NG OK >> GO TO 13. NG >> Replace stop lamp switch. 13. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". >> INSPECTION END

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M/T MODELS

1. CHECK OVERALL FUNCTION-I

(II) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-II.
- 3. Check "BRAKE SW1" indication under the following conditions.

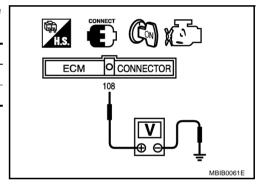
CONDITION	INDICATION
Brake pedal and/or clutch pedal: Slightly depressed	OFF
Brake pedal and clutch pedal: Fully released	ON

DATA MONIT	OR	
MONITOR	NO DTC	
BRAKE SW1	OFF	
		SEC011D

⊗ Without CONSULT-II

- Turn ignition switch ON.
- 2. Check voltage between ECM terminal 108 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal and/or clutch pedal: Slightly depressed	Approximately 0V
Brake pedal and clutch pedal: Fully released	Battery voltage



OK or NG

OK >> GO TO 2. NG >> GO TO 3.

2. CHECK OVERALL FUNCTION-II

(II) With CONSULT-II

- 1. Select "BRAKE SW2" in "DATA MONITOR" mode with CONSULT-II.
- 2. Check "BRAKE SW2" indication under the following conditions.

CONDITION	INDICATION
Brake pedal: Fully released	OFF
Brake pedal: Slightly depressed	ON

DATA MO	NITOR
MONITOR	NO DTC
BRAKE SW2	OFF

W Without CONSULT-II

Check voltage between ECM terminal 101 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal: Fully released	Approximately 0V
Brake pedal: Slightly depressed	Battery voltage

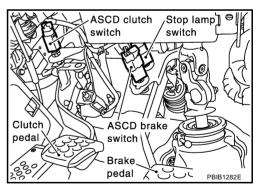
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OK or NG

OK >> GO TO 16. NG >> GO TO 11.

3. CHECK ASCD BRAKE SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ASCD clutch switch harness connector.
- 3. Turn ignition switch ON.

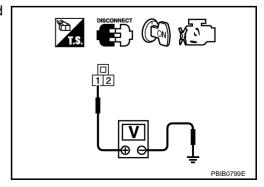


4. Check voltage between ASCD clutch switch terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 8. NG >> GO TO 4.



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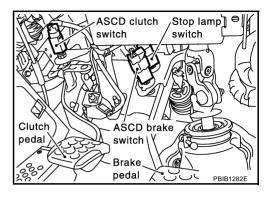
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4. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Turn ignition switch ON.

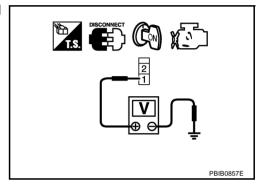


4. Check voltage between ASCD brake switch terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 6. NG >> GO TO 5.



5. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between ASCD brake switch and fuse
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Check harness continuity between ASCD brake switch terminal 2 and ASCD clutch switch terminal 1. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.

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

7. CHECK ASCD BRAKE SWITCH

Refer to EC-589, "Component Inspection"

OK or NG

OK >> GO TO 16.

NG >> Replace ASCD brake switch.

8. CHECK ASCD CLUTCH SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between ASCD clutch switch terminal 2 and ECM terminal 108. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 10. >> GO TO 9. NG

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and ASCD clutch switch

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

10. CHECK ASCD CLUTCH SWITCH

Refer to EC-589, "Component Inspection".

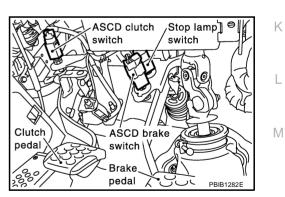
OK or NG

OK >> GO TO 16.

NG >> Replace ASCD clutch switch.

11. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect stop lamp switch harness connector.

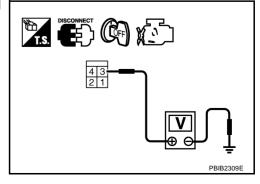


Check voltage between stop lamp switch terminal 3 and ground with CONSULT -II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 13. NG >> GO TO 12.



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12. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between stop lamp switch and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

13. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 101 and stop lamp switch terminal 4. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 15. NG >> GO TO 14.

14. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and stop lamp switch
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

15. CHECK STOP LAMP SWITCH

Refer to EC-589, "Component Inspection"

OK or NG

OK >> GO TO 16.

NG >> Replace stop lamp switch.

16. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

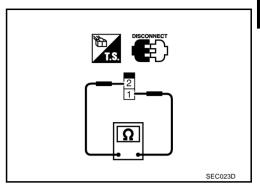
Component Inspection ASCD BRAKE SWITCH

NBS000G6

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Check continuity between ASCD 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

If NG, adjust ASCD brake switch installation, refer to <u>BR-7</u>, <u>"BRAKE PEDAL"</u>, and perform step 3 again.

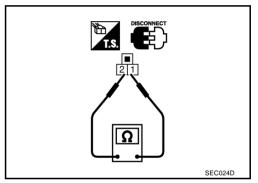


ASCD CLUTCH SWITCH (M/T MODELS)

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

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

If NG, adjust ASCD clutch switch installation, refer to <u>CL-5</u>, <u>"CLUTCH PEDAL"</u>, and perform step 3 again.

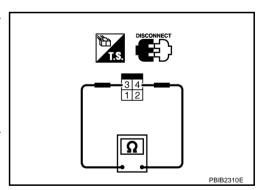


STOP LAMP SWITCH

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check continuity between stop lamp switch terminals 3 and 4 under the following conditions.

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

If NG, adjust stop lamp switch installation, refer to <u>BR-7</u>, <u>"BRAKE PEDAL"</u>, and perform step 3 again.



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DTC P1574 ASCD VEHICLE SPEED SENSOR

DTC P1574 ASCD VEHICLE SPEED SENSOR

PFP:31036

Component Description

NRSOOG7

The ECM receives two vehicle speed sensor 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-29, "AUTOMATIC SPEED CONTROL DEVICE (ASCD)" for ASCD functions.

On Board Diagnosis Logic

VRSOOGR

This self-diagnosis has the one trip detection logic.

The MIL will not light up for this diagnosis.

NOTF:

- If DTC P1574 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P1574 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010.
 Refer to EC-166, "DTC U1010 CAN COMMUNICATION".
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500.
 Refer to <u>EC-505</u>, "<u>DTC P0500 VSS</u>"
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605.
 Refer to <u>EC-520</u>, "<u>DTC P0605 ECM"</u>

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition	Possible Cause
P1574 1574	ASCD vehicle speed sensor	ECM detects a difference between two vehicle speed signals is out of the specified range.	 Harness or connectors (The CAN communication line is open or shorted.) Unified meter and A/C amp. VDC/TCS/ABS control unit (with VDC models) ABS actuator and electric unit (control unit) (without VDC models) Wheel sensor TCM(A/T models) ECM

DTC Confirmation Procedure

NBS000G9

CAUTION:

Always drive vehicle at a safe speed.

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:

Step 3 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.

(P) WITH CONSULT-II

- 1. Start engine (VDC switch or TCS switch OFF).
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Drive the vehicle at more than 40 km/h (25 MPH).
- 4. If DTC is detected, go to EC-591, "Diagnostic Procedure".

DATA MONITOR			
MONITOR		NO DTC	
ENG SPEED VHCL SPEED SE		CXX rpm CXX km/h	
			PBIB2673E

DTC P1574 ASCD VEHICLE SPEED SENSOR

	H GST	
Follow t	he procedure "WITH CONSULT-II" above.	
. •	ostic Procedure ECK DTC WITH TCM	NBS000GA
Check DOK or NOK NG	OTC with TCM. Refer to <u>AT-37</u> . IG >> GO TO 2. >> Perform trouble shooting relevant to DTC indicated.	
2. сн	ECK DTC WITH "VDC/TSC/ABS CONTROL UNIT (WITH VDC MODELS)" OR "ABS ACTUAT ECTRIC UNIT (CONTROL UNIT) (WITHOUT VDC MODELS)"	OR
Refer to OK or N OK NG	BRC-86, "TROUBLE DIAGNOSIS" or refer to BRC-44, "TROUBLE DIAGNOSIS". IG >> GO TO 3. >> Repair or replace.	
_	ECK DTC WITH "UNIFIED METER AND A/C AMP."	
Refer to	DI-4, "COMBINATION METERS" .	
	>> INSPECTION END	

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DTC P1715 INPUT SPEED SENSOR (TURBINE REVOLUTION SENSOR)

DTC P1715 INPUT SPEED SENSOR (TURBINE REVOLUTION SENSOR)

PFP:31935

Description

NBS002VP

ECM receives turbine revolution sensor signal from TCM through CAN communication line. ECM uses this signal for engine control.

CONSULT-II Reference Value in Data Monitor Mode

NRS002VO

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
I/P PULLY SPD	Vehicle speed: More than 20 km/h (12MPH)	Almost the same speed as the tachometer indication

On Board Diagnosis Logic

NBS002VR

NOTE:

- If DTC P1715 is displayed with DTC U1000, U1001 first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN COMMUNICATION LINE".
- If DTC P1715 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-166, "DTC U1010 CAN COMMUNICATION".
- If DTC P1715 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-520, "DTC P0605 ECM".
- If DTC P1715 is displayed with DTC P0335, first perform the trouble diagnosis for DTC P0335. Refer to EC-394, "DTC P0335 CKP SENSOR (POS)".
- If DTC P1715 is displayed with DTC P0340 or P0345 first perform the trouble diagnosis for DTC P0340 or P0345. Refer to EC-402, "DTC P0340, P0345 CMP SENSOR (PHASE)".

The MIL will not lights up for this diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1715 1715	Input speed sensor (Turbine revolution sen- sor) (TCM output)	Turbine revolution sensor signal is different from the theoretical value calculated by ECM from revolution sensor signal and engine rpm signal.	 Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (Turbine revolution sensor circuit is open or shorted) TCM

Diagnostic Procedure

NBS002VS

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to AT-37, "ON BOARD DIAGNOSTIC (OBD) SYSTEM".

OK or NG

OK >> GO TO 2.

NG >> Perform trouble shooting relevant to DTC indicated.

2. REPLACE TCM

Replace TCM. Refer to AT-41, "TROUBLE DIAGNOSIS".

>> INSPECTION END

DTC P1805 BRAKE SWITCH

PFP:25320

Description

NBS000GI

Brake switch signal is applied to the ECM through the stop lamp switch when the brake pedal is depressed. This signal is used mainly to decrease the engine speed when the vehicle is driving.

CONSULT-II Reference Value in Data Monitor Mode

NBS000GJ

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
BRAKE SW	Ignition switch: ON	Brake pedal: Fully released	OFF
DIVARLE OW	• Igrittori switch. Olv	Brake pedal: Slightly depressed	ON

On Board Diagnosis Logic

NBS000GK

The MIL will not light up for this diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1805 1805	Brake switch	A brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	 Harness or connectors (The stop lamp switch circuit is open or shorted.) Stop lamp switch

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode.

Engine operating condition in fail-safe mode

ECM controls the electric throttle control actuator by regulating the throttle opening to a small range.

Therefore, acceleration will be poor.

Vehicle condition	Driving condition
When engine is idling	Normal
When accelerating	Poor acceleration

DTC Confirmation Procedure

NRSOOGI

(A) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Fully depress the brake pedal for at least 5 seconds.
- Erase the DTC with CONSULT-II.
- Select "DATA MONITOR" mode with CONSULT-II.
- 5. If 1st trip DTC is detected, go to EC-595, "Diagnostic Procedure"

WITH GST

Follow the procedure "WITH CONSULT-II" above.

EC-593 Revision: 2005 August 2006 350Z

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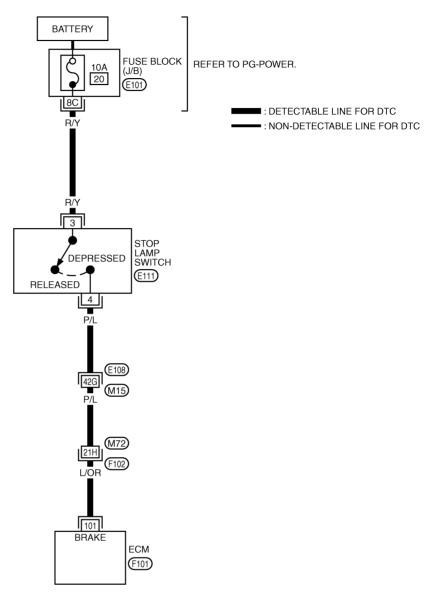
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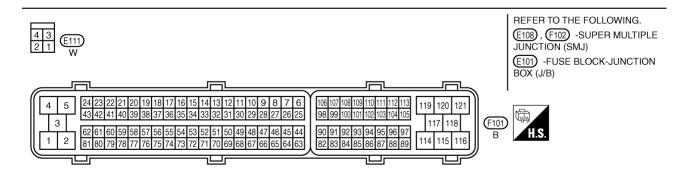
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Wiring Diagram

EC-BRK/SW-01





TBWT1236E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
101 L/OR	Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Fully released	Approximately 0V	
	LOK	Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

NBS000GN

1. CHECK STOP LAMP SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Check the stop lamp when depressing and releasing the brake pedal.

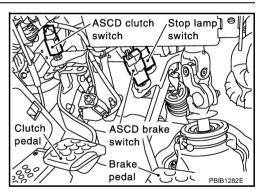
Brake pedal	Stop lamp
Fully released	Not illuminated
Slightly depressed	Illuminated

OK or NG

OK >> GO TO 4. NG >> GO TO 2.

2. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

1. Disconnect stop lamp switch harness connector.

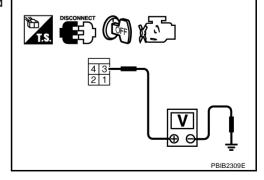


Check voltage between stop lamp switch terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



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$\overline{3}$. DETECT MALFUNCTIONING PART

Check the following.

- 10A fuse
- Fuse block (J/B) connector E101
- Harness for open and short between stop lamp switch and fuse
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

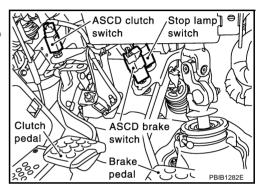
- Disconnect ECM harness connector.
- 2. Disconnect stop lamp switch harness connector.
- Check harness continuity between ECM terminal 101 and stop lamp switch terminal 4.
 Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 6. NG >> GO TO 5.



5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and stop lamp switch
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK STOP LAMP SWITCH

Refer to EC-597, "Component Inspection".

OK or NG

OK >> GO TO 7.

NG >> Replace stop lamp switch.

/. CHECK INTERMITTENT INCIDENT

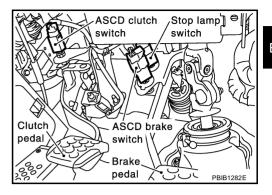
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection STOP LAMP SWITCH

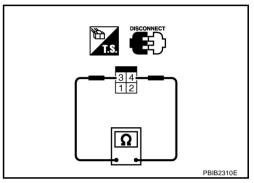
NBS000GO

1. Disconnect stop lamp switch harness connector.



2. Check continuity between stop lamp switch terminals 3 and 4 under the following conditions.

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



3. If NG, adjust stop lamp switch installation, refer to BR-7, "BRAKE PEDAL", and perform step 2 again.

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DTC P2100, P2103 THROTTLE CONTROL MOTOR RELAY

PFP:16119

Component Description

NRSOOCA

Power supply for the throttle control motor is provided to the ECM via throttle control motor relay. The throttle control motor relay is ON/OFF controlled by the ECM. When the ignition switch is turned ON, the ECM sends an ON signal to throttle control motor relay and battery voltage is provided to the ECM. When the ignition switch is turned OFF, the ECM sends an OFF signal to throttle control motor relay and battery voltage is not provided to the ECM.

CONSULT-II Reference Value in Data Monitor Mode

NBS000CB

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
THRTL RELAY	• Ignition switch: ON	ON

On Board Diagnosis Logic

NBS000CC

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P2100 2100	Throttle control motor relay circuit open	ECM detects a voltage of power source for throttle control motor is excessively low.	 Harness or connectors (The throttle control motor relay circuit is open) Throttle control motor relay 	
P2103 2103	Throttle control motor relay circuit short	ECM detect the throttle control motor relay is stuck ON.	 Harness or connectors (The throttle control motor relay circuit is shorted) Throttle control motor relay 	

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Engine operating condition in fail-safe mode

ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.

DTC Confirmation Procedure

NBS000CD

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.

PROCEDURE FOR DTC P2100

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V.

(P) With CONSULT-II

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Select "DATA MONITOR"" mode with CONSULT-II.
- 3. Start engine and let it idle for 5 seconds.
- 4. If DTC is detected, go to EC-601, "Diagnostic Procedure".

DATA MONITOR		
MONITOR	NO DTC	
ENG SPEED	XXX rpm	
		SEF058Y

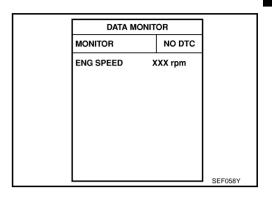
⊚ With GST

Follow the procedure "With CONSULT-II" above.

PROCEDURE FOR DTC P2103

(P) With CONSULT-II

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. If DTC is detected, go to EC-601, "Diagnostic Procedure".



With GST

Follow the procedure "With CONSULT-II" above.

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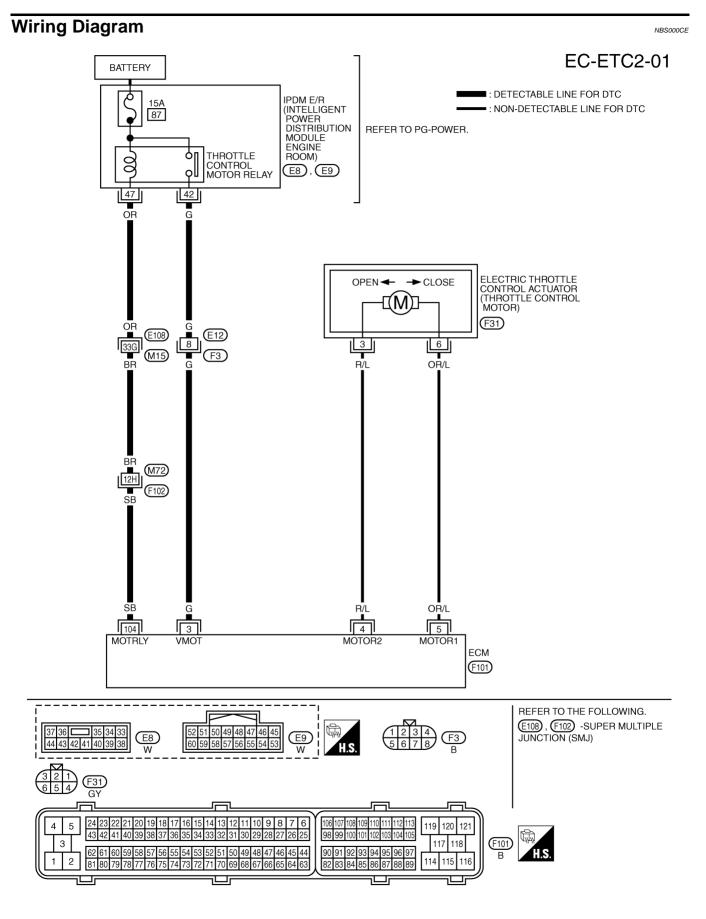
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TBWT1224E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

				T
TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
3	G	Throttle control motor relay power supply	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
4	R/L	Throttle control motor (Close)	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	0 - 14V★ ≥ 5 V/Div 1 ms/Div T PBIB1104E
5	CR/L	Throttle control motor (Open)	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	0 - 14V★
104	SB	Throttle control motor relay	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14V)
			[Ignition switch: ON]	0 - 1.0V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

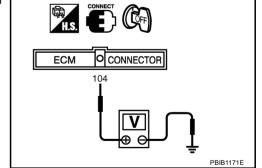
1. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Check voltage between ECM terminal 104 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 5. NG >> GO TO 2.



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$\overline{2}$. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT-II

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E9.
- Check continuity between ECM terminal 104 and IPDM E/R terminal 47. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4. >> GO TO 3. NG

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and IPDM E/R

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

4. CHECK FUSE

- Disconnect 15A fuse.
- Check 15A fuse for blown.

OK or NG

>> GO TO 8. OK

NG >> Replace 15A fuse.

5. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-I

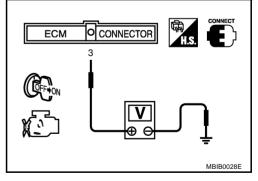
- Turn ignition switch ON. 1.
- Check voltage between ECM terminal 3 and ground under the following conditions with CONSULT-II or tester.

Ignition switch	Voltage
OFF	Approximately 0V
ON	Battery voltage (11 - 14V)

OK or NG

OK >> GO TO 8.

NG >> GO TO 6.



6. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II 1. Turn ignition switch OFF. 2. Disconnect ECM harness connector. EC Disconnect IPDM E/R harness connector E8. Check continuity between ECM terminal 3 and IPDM E/R terminal 42. Refer to Wiring Diagram. Continuity should exist. 5. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 8. NG >> GO TO 7. 7. DETECT MALFUNCTIONING PART Check the following. Harness connectors E12, F3 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. 8. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". OK or NG OK >> Replace IPDM E/R. Refer to PG-16, "IPDM E/R (INTELLIGENT POWER DISTRIBUTION MOD-ULE ENGINE ROOM)". NG >> Repair or replace harness or connectors.

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EC-603 Revision: 2005 August 2006 350Z

DTC P2101 ELECTRIC THROTTLE CONTROL FUNCTION

PFP:16119

Description

NBS000C3

NOTE:

If DTC P2101 is displayed with DTC P2100 or 2119, first perform the trouble diagnosis for DTC P2100 or P2119. Refer to EC-598, "DTC P2100, P2103 THROTTLE CONTROL MOTOR RELAY" or EC-616, "DTC P2119 ELECTRIC THROTTLE CONTROL ACTUATOR".

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc.

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

On Board Diagnosis Logic

NBS000C4

This self-diagnosis has the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2101 2101	Electric throttle control performance	Electric throttle control function does not operate properly.	Harness or connectors (The throttle control motor circuit is open or shorted) Electric throttle control actuator

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Engine operating condition in fail-safe mode

ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.

DTC Confirmation Procedure

NBS000C5

NOTE:

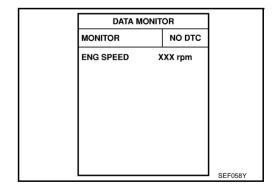
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V when engine is running.

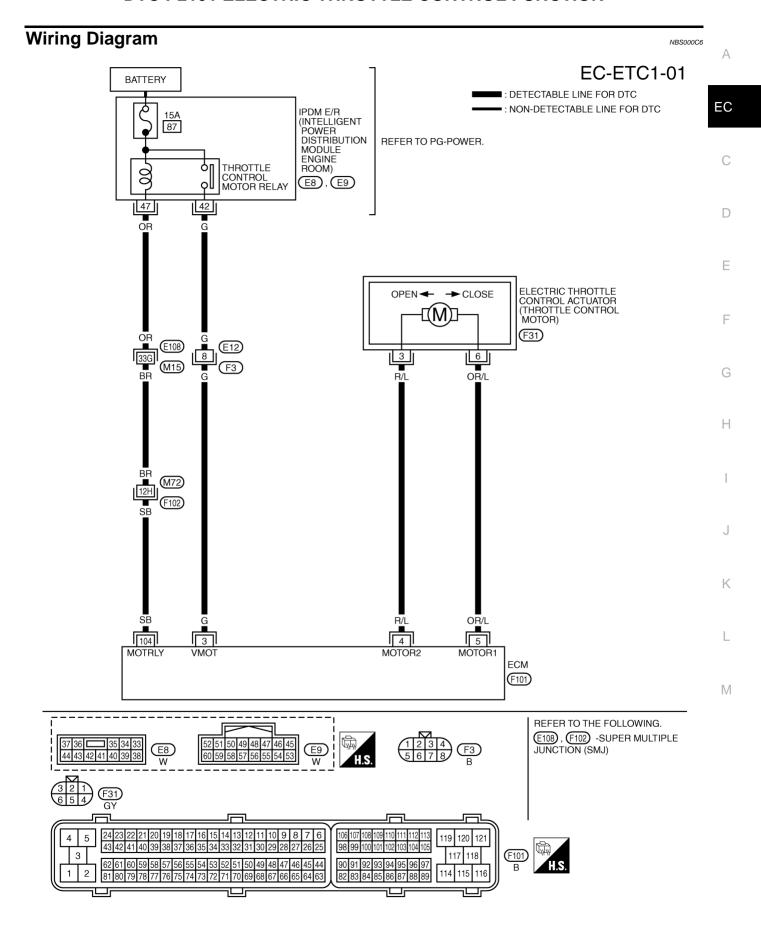
(P) WITH CONSULT-II

- Turn ignition switch ON and wait at least 2 seconds.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 5 seconds.
- If DTC is detected, go to <u>EC-607</u>, "<u>Diagnostic Procedure</u>".



WITH GST

Follow the procedure "WITH CONSULT-II" above.



TBWT1223E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
3	G	Throttle control motor relay power supply	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
4	R/L	Throttle control motor (Close)	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	0 - 14V★ >>> 5 V/Div 1 ms/Div 1 PBIB1104E
5	CR/L	Throttle control motor (Open)	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	0 - 14V★ >>> 5 V/Div 1 ms/Div 1 PBIB1105E
104	SB	Throttle control motor relay	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14V)
			[Ignition switch: ON]	0 - 1.0V

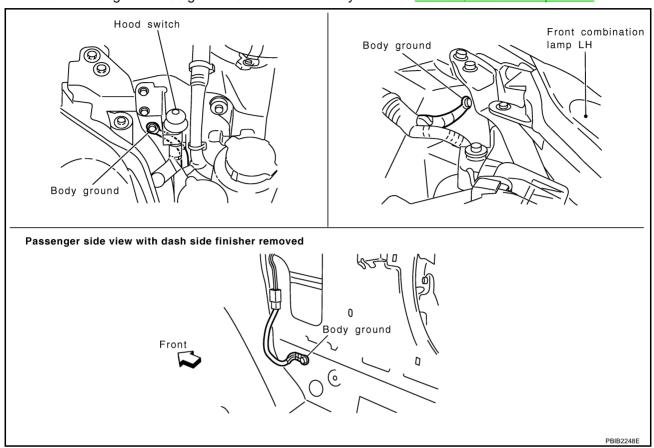
^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

NBS000C7

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

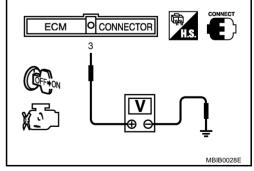
2. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-I

Check voltage between ECM terminal 3 and ground under the following conditions with CONSULT-II or tester.

Ignition switch	Voltage
OFF	Approximately 0V
ON	Battery voltage (11 - 14V)

OK or NG

OK >> GO TO 10. NG >> GO TO 3.



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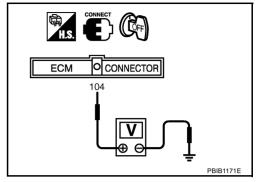
3. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Check voltage between ECM terminal 104 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 7. NG >> GO TO 4.



4. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT-II

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E9.
- Check continuity between ECM terminal 104 and IPDM E/R terminal 47. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 6. NG >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and IPDM E/R

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

6. CHECK FUSE

- 1. Disconnect 15A fuse.
- 2. Check 15A fuse for blown.

OK or NG

OK >> GO TO 7.

NG >> Replace 15A fuse.

7. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E8.
- Check continuity between ECM terminal 3 and IPDM E/R terminal 42. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 9. NG >> GO TO 8.

8. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between ECM and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

OK or NG

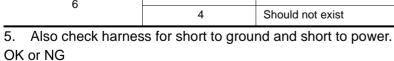
OK >> Replace IPDM E/R. Refer to PG-16, "IPDM E/R (INTELLIGENT POWER DISTRIBUTION MOD-ULE ENGINE ROOM)" .

NG >> Repair or replace harness or connectors.

10. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN OR SHORT

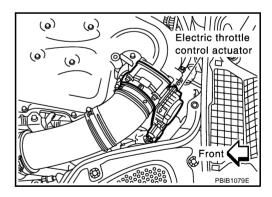
- 1. Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check harness continuity between the following terminals. Refer to Wiring Diagram.

Electric throttle control actuator terminal	ECM terminal	Continuity
3	5	Should not exist
	4	Should exist
6	5	Should exist
	4	Should not exist



OK >> GO TO 11.

NG >> Repair or replace.



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11. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

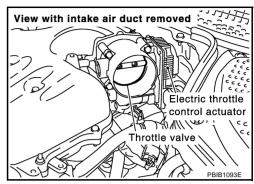
- 1. Remove the intake air duct.
- 2. Check if foreign matter is caught between the throttle valve and the housing.

OK or NG

OK >> GO TO 12.

NG

>> Remove the foreign matter and clean the electric throttle control actuator inside.



12. CHECK THROTTLE CONTROL MOTOR

Refer to EC-610, "Component Inspection".

OK or NG

OK >> GO TO 13.

NG >> GO TO 14.

13. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

OK or NG

OK >> GO TO 14.

NG >> Repair or replace harness or connectors.

14. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace the electric throttle control actuator.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

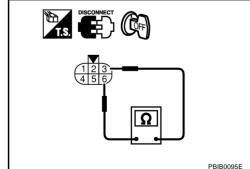
Component Inspection THROTTLE CONTROL MOTOR

NBS000C8

- 1. Disconnect electric throttle control actuator harness connector.
- Check resistance between terminals 3 and 6.

Resistance: Approximately 1 - 15 Ω [at 25 °C (77°F)]

- 3. If NG, replace electric throttle control actuator and go to next step.
- 4. Perform EC-79, "Throttle Valve Closed Position Learning".
- 5. Perform EC-79, "Idle Air Volume Learning".



NBS000C9

Removal and Installation ELECTRIC THROTTLE CONTROL ACTUATOR

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

DTC P2118 THROTTLE CONTROL MOTOR

DTC P2118 THROTTLE CONTROL MOTOR

PFP:16119

Component Description

NBS000CG

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

On Board Diagnosis Logic

NRSOOCH

This self-diagnosis has the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2118 2118	Throttle control motor circuit short	ECM detects short in both circuits between ECM and throttle control motor.	 Harness or connectors (The throttle control motor circuit is shorted.) Electric throttle control actuator (Throttle control motor)

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode and the MIL lights up.

Engine operating condition in fail-safe mode

ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return

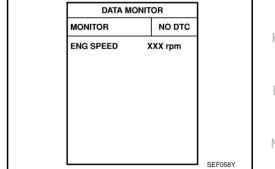
DTC Confirmation Procedure

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

WITH CONSULT-II

- Turn ignition switch ON and wait at least 2 seconds. 1.
- 2. Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 5 seconds.
- If DTC is detected, go to EC-614, "Diagnostic Procedure".



WITH GST

Follow the procedure "WITH CONSULT-II" above.

EC-611 Revision: 2005 August 2006 350Z

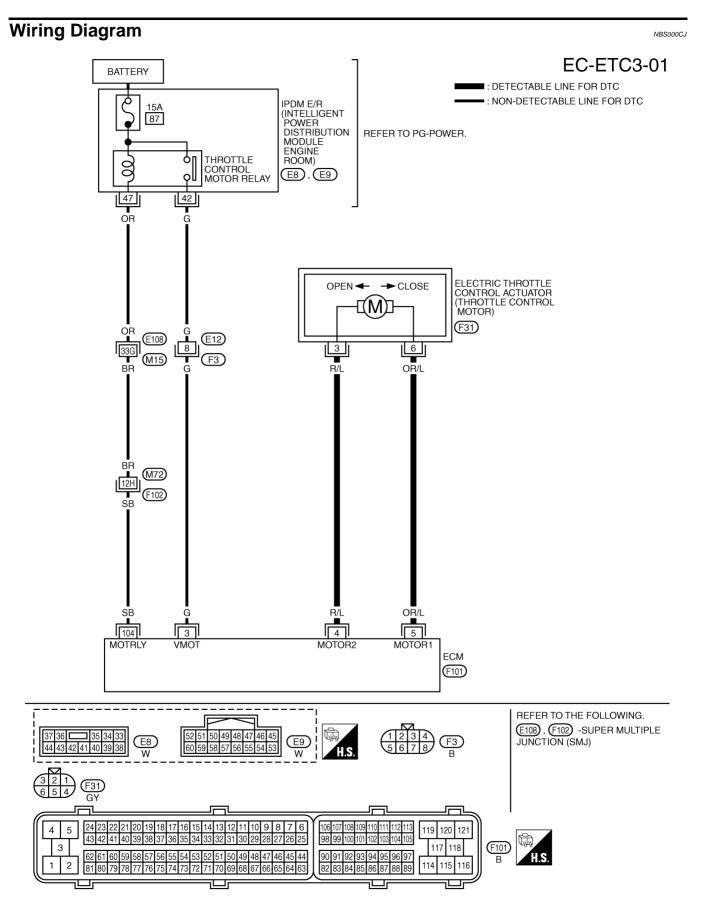
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DTC P2118 THROTTLE CONTROL MOTOR



TBWT1225E

DTC P2118 THROTTLE CONTROL MOTOR

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

	COLOR	ITEM	CONDITION	DATA (DC Voltage)
3	G	Throttle control motor relay power supply	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
4	R/L	Throttle control motor (Close)	[Ignition switch: ON] • Engine stopped • Shift lever: D (A/T) or 1st (M/T) • Accelerator pedal: Fully released	0 - 14V★ >>> 5 V/Div 1 ms/Div T PBIB1104E
5	CR/L	Throttle control motor (Open)	[Ignition switch: ON] ● Engine stopped ● Shift lever: D (A/T) or 1st (M/T) ● Accelerator pedal: Fully depressed	0 - 14V★ >>> 5 V/Div 1 ms/Div T PBIB1105E
104	SB	Throttle control motor relay	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14V) 0 - 1.0V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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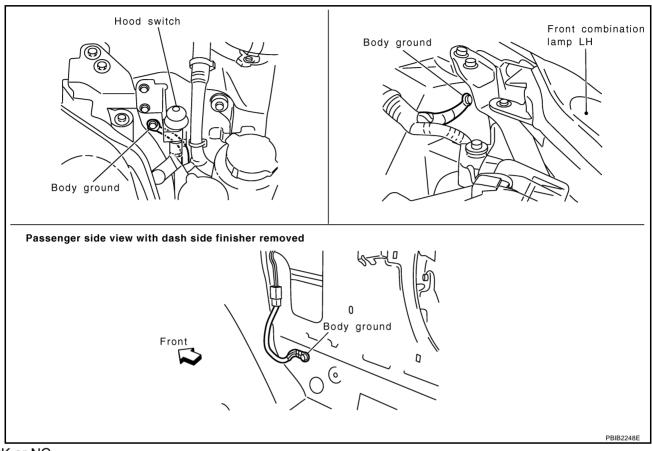
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DTC P2118 THROTTLE CONTROL MOTOR

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



OK or NG

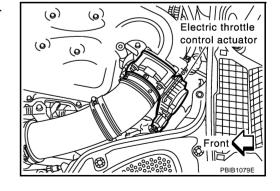
OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN OR SHORT

- 1. Disconnect electric throttle control actuator harness connector.
- 2. Disconnect ECM harness connector.
- 3. Check harness continuity between the following terminals. Refer to Wiring Diagram.

Electric throttle control actuator terminal	ECM terminal	Continuity
3	5	Should not exist
3	4	Should exist
6	5	Should exist
	4	Should not exist



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

OK or NG

OK >> GO TO 3.

NG >> Repair or replace.

DTC P2118 THROTTLE CONTROL MOTOR

$\overline{3}$. CHECK THROTTLE CONTROL MOTOR

Refer to EC-615, "Component Inspection".

OK or NG

OK >> GO TO 4. NG >> GO TO 5.

4. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 5.

NG >> Repair or replace harness or connectors.

5. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace the electric throttle control actuator.
- Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

Component Inspection THROTTLE CONTROL MOTOR

1. Disconnect electric throttle control actuator harness connector.

Check resistance between terminals 3 and 6.

Resistance: Approximately 1 - 15 Ω [at 25 °C (77°F)]

- If NG, replace electric throttle control actuator and go to next 3.
- 4. Perform EC-79, "Throttle Valve Closed Position Learning".
- 5. Perform EC-79, "Idle Air Volume Learning".

PRIBONSE

NBS000CM

Removal and Installation **ELECTRIC THROTTLE CONTROL ACTUATOR**

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

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EC-615 Revision: 2005 August 2006 350Z

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DTC P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

DTC P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

PFP:16119

Component Description

NBS000BZ

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc.

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The throttle position sensor detects the throttle valve position, and the opening and closing speed of the throttle valve and feeds the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

On Board Diagnosis Logic

NBS000C0

This self-diagnosis has the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
P2119	Electric throttle control	A)	Electric throttle control actuator does not function properly due to the return spring malfunction.	
2119	actuator	B)	Throttle valve opening angle in fail-safe mode is not in specified range.	Electric throttle control actuator
		C)	ECM detects the throttle valve is stuck open.	

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Detected items	Engine operating condition in fail-safe mode
Malfunction A	ECM controls the electric throttle actuator by regulating the throttle opening around the idle position. The engine speed will not rise more than 2,000 rpm.
Malfunction B	ECM controls the electric throttle control actuator by regulating the throttle opening to 20 degrees or less.
Malfunction C	While the vehicle is driving, it slows down gradually by fuel cut. After the vehicle stops, the engine stalls. The engine can restart in N or P (A/T), Neutral (M/T) position, and engine speed will not exceed 1,000 rpm or more.

DTC Confirmation Procedure

NBS000C1

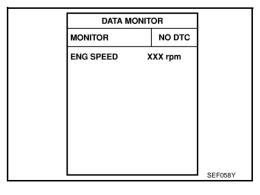
NOTE:

- Perform PROCEDURE FOR MALFUNCTION A AND B first. If the DTC cannot be confirmed, perform PROCEDURE FOR MALFUNCTION C.
- If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

PROCEDURE FOR MALFUNCTION A AND B

(P) With CONSULT-II

- Turn ignition switch ON and wait at least 1 second.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Set shift lever to D position (A/T) or 1st position (M/T), and wait at least 3 seconds.
- 4. Set shift lever to P position (A/T) or Neutral position (M/T).
- 5. Turn ignition switch OFF and wait at least 10 seconds.
- 6. Turn ignition switch ON and wait at least 1 second.
- Set shift lever to D position (A/T) or 1st position (M/T), and wait at least 3 seconds.
- 8. Set shift lever to P position (A/T) or Neutral position (M/T).
- Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 10. If DTC is detected, go to EC-617, "Diagnostic Procedure".



DTC P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

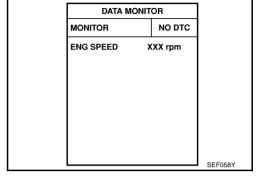
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Follow the procedure "With CONSULT-II" above.

PROCEDURE FOR MALFUNCTION C

With CONSULT-II

- 1. Turn ignition switch ON and wait at least 1 second.
- Select "DATA MONITOR" mode with CONSULT-II.
- Set shift lever to D position (A/T) or 1st position (M/T) and wait at least 3 seconds.
- Set shift lever to N, P position (A/T) or Neutral (M/T) position.
- 5. Start engine and let it idle for 3 seconds.
- 6. If DTC is detected, go to EC-617, "Diagnostic Procedure".



With GST

Follow the procedure "With CONSULT-II" above.

Diagnostic Procedure

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

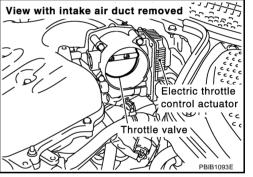
- Remove the intake air duct. 1.
- Check if a foreign matter is caught between the throttle valve and the housing.

OK or NG

OK >> GO TO 2.

NG

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace the electric throttle control actuator.
- Perform EC-79, "Throttle Valve Closed Position Learning".
- Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

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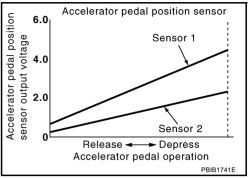
PFP:18002

Component Description

NBS000GP

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

CONSULT-II Reference Value in Data Monitor Mode

NBS000GQ

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
ACCEL SEN 1	Ignition switch: ON	Accelerator pedal: Fully released	0.5 - 1.0V
ACCEL SEN I	(Engine stopped)	Accelerator pedal: Fully depressed	4.0 - 4.8V
ACCEL SEN 2*	Ignition switch: ON	Accelerator pedal: Fully released	0.3 - 1.2V
ACCEL SEN 2	(Engine stopped)	Accelerator pedal: Fully depressed	3.9 - 4.8V
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON
CLOD THE FOO	(Engine stopped)	Accelerator pedal: Slightly depressed	OFF

^{*:} Accelerator pedal position sensor 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage.

On Board Diagnosis Logic

NBS000GR

These self-diagnoses have the one trip detection logic.

NOTE:

If DTC P2122 or P2123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-523, "DTC P0643 SENSOR POWER SUPPLY".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2122 2122	Accelerator pedal position sensor 1 circuit low input	An excessively low voltage from the APP sensor 1 is sent to ECM.	Harness or connectors (The APP sensor 1 circuit is open or shorted.)
P2123 2123	Accelerator pedal position sensor 1 circuit high input	An excessively high voltage from the APP sensor 1 is sent to ECM.	,

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Engine operating condition in fail-safe mode

The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.

So, the acceleration will be poor.

The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.

DTC Confirmation Procedure

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NOTE:

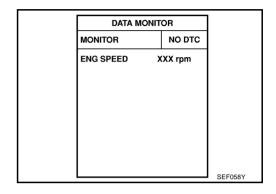
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

(II) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 1 second.
- 4. If DTC is detected, go to EC-622, "Diagnostic Procedure" .



WITH GST

Follow the procedure "WITH CONSULT-II" above.

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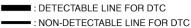
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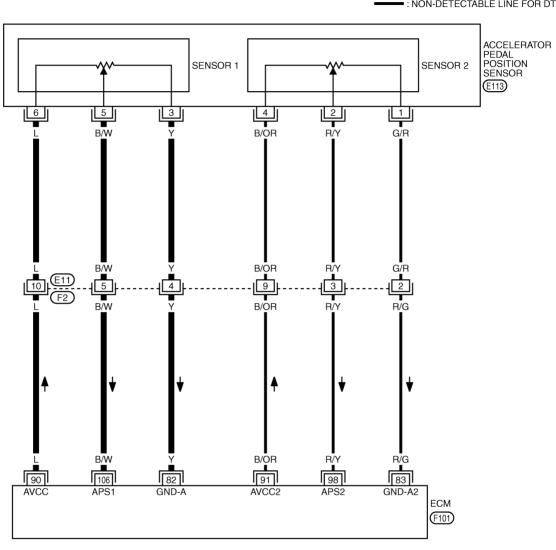
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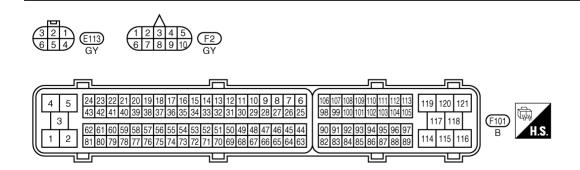
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Wiring Diagram NBS000GT

EC-APPS1-01







TBWT1237E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
82	Υ	Sensor ground (Accelerator pedal position sensor 1)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
83	R/G	Sensor ground (Accelerator pedal position sensor 2)	[Engine is running]● Warm-up condition● Idle speed	Approximately 0V
90	L	Sensor power supply (Accelerator pedal position sensor 1)	[Ignition switch: ON]	Approximately 5V
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V
98	R/Y	Accelerator pedal position	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully released	0.15 - 0.60V
90	TV I	sensor 2	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	1.95 - 2.40V
106	B/W	Accelerator pedal position sensor 1	[Ignition switch: ON] ● Engine stopped ● Accelerator pedal: Fully released	0.5 - 1.0V
100		SCHOULT	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	3.9 - 4.7V

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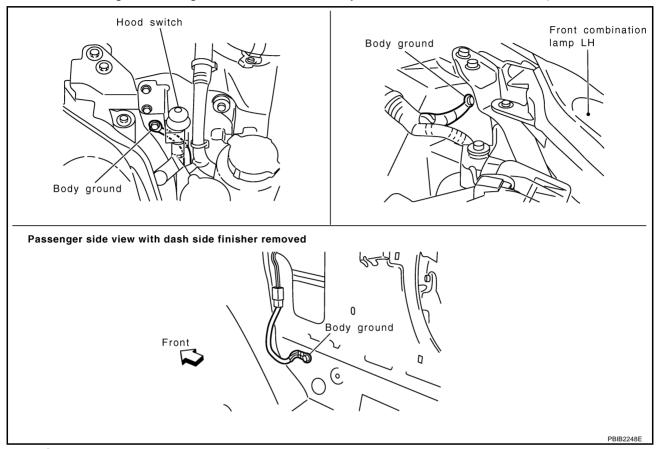
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NBS000GU

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



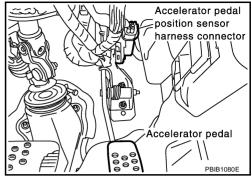
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.

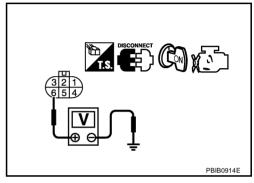


Check voltage between APP sensor terminal 6 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open or short between ECM and APP sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK APP SENSOR 1 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness continuity between APP sensor terminal 3 and ECM terminal 82. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 6. NG >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open or short between ECM and APP sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

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6. CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between ECM terminal 106 and APP sensor terminal 5. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 8. NG >> GO TO 7.

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open or short between ECM and APP sensor

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

8. CHECK APP SENSOR

Refer to EC-650, "Component Inspection".

OK or NG

OK >> GO TO 10. NG >> GO TO 9.

9. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 3. Perform EC-79, "Throttle Valve Closed Position Learning".
- 4. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

10. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

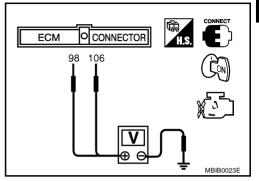
>> INSPECTION END

Component Inspection ACCELERATOR PEDAL POSITION SENSOR

NBS000GV

- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- Check voltage between ECM terminals 106 (APP sensor 1 signal), 98 (APP sensor 2 signal) and ground under the following conditions.

Terminal	Accelerator pedal	Voltage
106	Fully released	0.5 - 1.0V
(Accelerator pedal position sensor 1)	Fully depressed	3.9 - 4.7V
98	Fully released	0.15 - 0.60V
(Accelerator pedal position sensor 2)	Fully depressed	0.5 - 1.0V 3.9 - 4.7V



- If NG, replace accelerator pedal assembly and go to next step.
- Perform EC-78, "Accelerator Pedal Released Position Learning". 5.
- Perform EC-79, "Throttle Valve Closed Position Learning".
- Perform EC-79, "Idle Air Volume Learning".

Removal and Installation **ACCELERATOR PEDAL**

Refer to ACC-3, "ACCELERATOR CONTROL SYSTEM".

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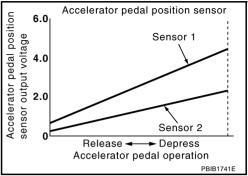
PFP:18002

Component Description

NBS000GX

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

CONSULT-II Reference Value in Data Monitor Mode

NBS000GY

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
ACCEL SEN 1	Ignition switch: ON	Accelerator pedal: Fully released	0.5 - 1.0V
ACCEL SEN I	(Engine stopped)	Accelerator pedal: Fully depressed	4.0 - 4.8V
ACCEL SEN 2*	Ignition switch: ON	Accelerator pedal: Fully released	0.3 - 1.2V
ACCEL SEN 2	(Engine stopped)	Accelerator pedal: Fully depressed	3.9 - 4.8V
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON
CLOD THE FOO	(Engine stopped)	Accelerator pedal: Slightly depressed	OFF

^{*:} Accelerator pedal position sensor 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage.

On Board Diagnosis Logic

NBS000GZ

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2127 2127	Accelerator pedal position sensor 2 circuit low input	An excessively low voltage from the APP sensor 2 is sent to ECM.	Harness or connectors (The APP sensor 2 circuit is open or shorted.)
P2128 2128	Accelerator pedal position sensor 2 circuit high input	An excessively high voltage from the APP sensor 2 is sent to ECM.	 (The TP sensor circuit is shorted.) Accelerator pedal position sensor (APP sensor 2) Electric throttle control actuator (TP sensor 1 and 2)

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Engine operating condition in fail-safe mode

So, the acceleration will be poor.

The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.

The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.

DTC Confirmation Procedure

SOOOHO

NOTE:

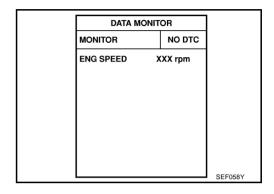
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

(II) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 1 second.
- 4. If DTC is detected, go to EC-630, "Diagnostic Procedure" .



WITH GST

Follow the procedure "WITH CONSULT-II" above.

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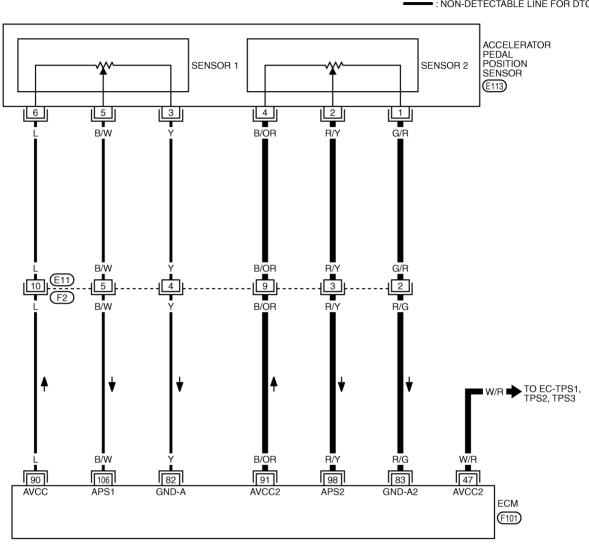
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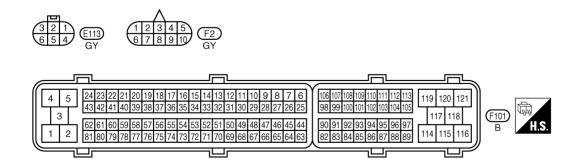
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Wiring Diagram NBS000H1

EC-APPS2-01

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





TBWT1238E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER-				
MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
47	W/R	Sensor power supply (Throttle position sensor)	[Ignition switch: ON]	Approximately 0V
82	Υ	Sensor ground (Accelerator pedal position sensor 1)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
83	R/G	Sensor ground (Accelerator pedal position sensor 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V
90	L	Sensor power supply (Accelerator pedal position sensor 1)	[Ignition switch: ON]	Approximately 5V
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V
98	R/Y	Accelerator pedal position sensor 2	 [Ignition switch: ON] ● Engine stopped ● Accelerator pedal: Fully released [Ignition switch: ON] ● Engine stopped ● Accelerator pedal: Fully depressed 	0.15 - 0.60V 1.95 - 2.40V
106	B/W	Accelerator pedal position sensor 1	 Accelerator pedal: Fully depressed [Ignition switch: ON] Engine stopped Accelerator pedal: Fully released [Ignition switch: ON] Engine stopped Accelerator pedal: Fully depressed 	0.5 - 1.0V 3.9 - 4.7V

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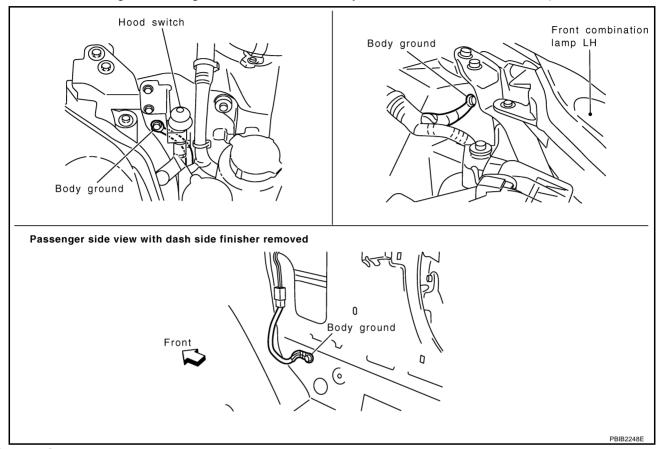
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NBS000H2

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



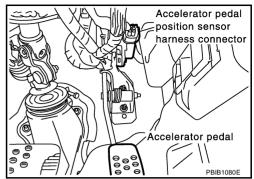
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$\overline{2}$. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT- I

- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.

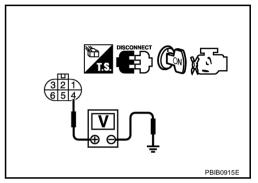


Check voltage between APP sensor terminal 4 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 8. NG >> GO TO 3.



3. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between APP sensor terminal 4 and ECM terminal 91. Refer to Wiring Diagram.

Continuity should exist.

OK or NG

OK >> GO TO 5. NG >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open between ECM and APP sensor

>> Repair open circuit.

5. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-III

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

ECM terminal Sensor terminal		Reference Wiring Diagram
47 Electric throttle control actuator terminal 1		EC-636
91	APP sensor terminal 4	EC-628

OK or NG

OK >> GO TO 6.

NG >> Repair short to ground or short to power in harness or connectors. EC

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6. CHECK THROTTLE POSITION SENSOR

Refer to EC-641, "Component Inspection".

OK or NG

OK >> GO TO 14. NG >> GO TO 7.

7. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace the electric throttle control actuator.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

8. CHECK APP SENSOR 2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness continuity between APP sensor terminal 1 and ECM terminal 83. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 10. NG >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open or short between ECM and APP sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK APP SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check harness continuity between ECM terminal 98 and APP sensor terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 12. NG >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open or short between ECM and APP sensor

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

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12. check app sensor

Refer to EC-650, "Component Inspection".

OK or NG

OK >> GO TO 13. NG >> GO TO 14.

13. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- Perform EC-78, "Accelerator Pedal Released Position Learning".
- Perform EC-79, "Throttle Valve Closed Position Learning".
- 4. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

14. CHECK INTERMITTENT INCIDENT

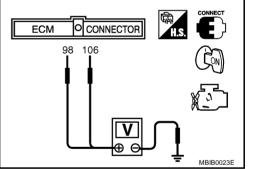
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection ACCELERATOR PEDAL POSITION SENSOR

- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- Check voltage between ECM terminals 106 (APP sensor 1 signal), 98 (APP sensor 2 signal) and ground under the following conditions.

Terminal	Accelerator pedal	Voltage
106	Fully released	0.5 - 1.0V
(Accelerator pedal position sensor 1)	Fully depressed	3.9 - 4.7V
98	Fully released	0.15 - 0.60V
(Accelerator pedal position sensor 2)	Fully depressed	1.95 - 2.40V



- 4. If NG, replace accelerator pedal assembly and go to next step.
- Perform EC-78, "Accelerator Pedal Released Position Learning".
- Perform EC-79, "Throttle Valve Closed Position Learning".
- Perform EC-79, "Idle Air Volume Learning".

Removal and Installation **ACCELERATOR PEDAL**

Refer to ACC-3, "ACCELERATOR CONTROL SYSTEM".

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DTC P2135 TP SENSOR

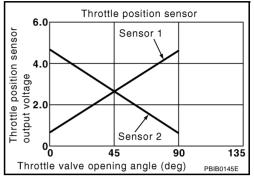
PFP:16119

Component Description

NBS000H5

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



CONSULT-II Reference Value in Data Monitor Mode

NRSOOOHA

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
THRTL SEN 1 THRTL SEN 2*	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36V
	(Engine stopped) ■ Shift lever: D (A/T), 1st (M/T)	Accelerator pedal: Fully depressed	Less than 4.75V

^{*:} Throttle position sensor 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage signal.

On Board Diagnosis Logic

NBS000H7

This self-diagnosis has the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2135 2135	Throttle position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from TP sensor 1 and TP sensor 2.	 Harness or connector (The TP sensor 1 and 2 circuit is open or shorted.) (The APP sensor 2 circuit is shorted.) Electric throttle control actuator (TP sensor 1 and 2) Accelerator pedal position sensor (APP sensor 2)

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode and the MIL lights up.

Engine operation condition in fail-safe mode

The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.

The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.

So, the acceleration will be poor.

DTC Confirmation Procedure

NBS000H8

NOTE:

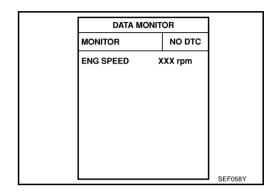
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

(II) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 1 second.
- 4. If DTC is detected, go to EC-638, "Diagnostic Procedure" .



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Follow the procedure "WITH CONSULT-II" above.

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Wiring Diagram NBS000HS

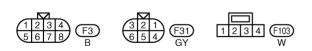
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SENSOR 1

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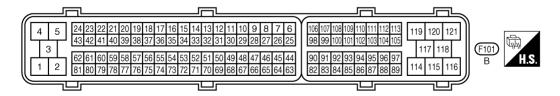
EC-TPS3-01 : DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC ELECTRIC THROTTLE CONTROL ACTUATOR (THROTTLE POSITION SENSOR) SENSOR 2 (F31) ■ B ■ TO EC-MAIN ■ B/OR ➡ TO EC-APPS2, APPS3 F3



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B/OR

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ECM (F101)

TBWT1239E

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(E12)

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
47	W/R	Sensor power supply (Throttle position sensor)	[Ignition switch: ON]	Approximately 5V
		 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	More than 0.36V	
50	50 G Throttle position sensor 1	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	Less than 4.75V	
66	L	Sensor ground (Throttle position sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0V
69	69 Y	Throttle position sensor 2	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully released 	Less than 4.75V
00	•	Tillotale position sensor 2	 [Ignition switch: ON] Engine stopped Shift lever: D (A/T) or 1st (M/T) Accelerator pedal: Fully depressed 	More than 0.36V
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V

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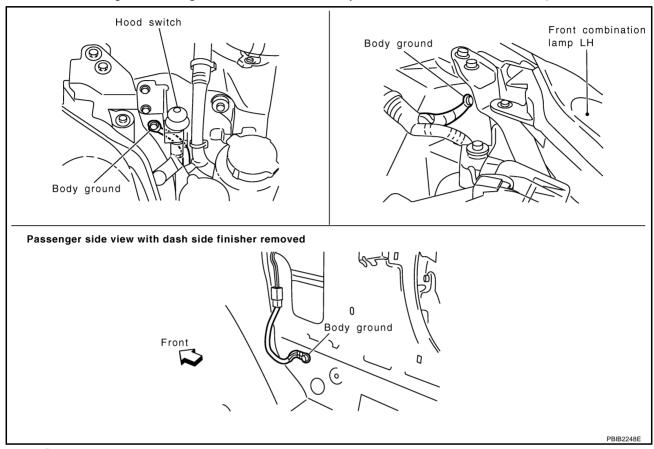
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Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



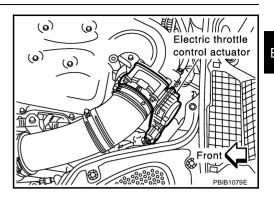
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

$\overline{2}$. CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-I

- 1. Disconnect electric throttle control actuator harness connector.
- 2. Turn ignition switch ON.

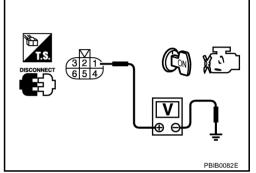


Check voltage between electric throttle control actuator terminal 1 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

>> GO TO 7. OK NG >> GO TO 3.



3. CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between electric throttle control actuator terminal 1 and ECM terminal 47. Refer to Wiring Diagram.

Continuity should exist.

OK or NG

>> GO TO 4. OK

NG >> Repair open circuit.

4. CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-III

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

ECM terminal	Sensor terminal	Reference Wiring Diagram
47	Electric throttle control actuator terminal 1	EC-636
91	APP sensor terminal 4	EC-628

OK or NG

OK >> GO TO 5.

NG >> Repair short to ground or short to power in harness or connectors.

5. CHECK APP SENSOR

Refer to EC-633, "Component Inspection".

OK or NG

OK >> GO TO 11. NG >> GO TO 6.

EC-639 Revision: 2005 August 2006 350Z

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6. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Perform EC-78, "Accelerator Pedal Released Position Learning" .
- 3. Perform EC-79, "Throttle Valve Closed Position Learning".
- 4. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

7. CHECK THROTTLE POSITION SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between electric throttle control actuator terminal 5 and ECM terminal 66. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 8.

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

8. CHECK THROTTLE POSITION SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check harness continuity between the following;

ECM terminal 50 and electric throttle control actuator terminal 4,

ECM terminal 69 and electric throttle control actuator terminal 2.

Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 9.

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

9. CHECK THROTTLE POSITION SENSOR

Refer to EC-641, "Component Inspection".

OK or NG

OK >> GO TO 11.

NG >> GO TO 10.

10. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace the electric throttle control actuator.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection THROTTLE POSITION SENSOR

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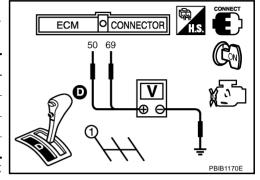
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- Reconnect all harness connectors disconnected.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Turn ignition switch ON.
- 4. Set shift lever to D (A/T) or 1st (M/T) position.
- Check voltage between ECM terminals 50 (TP sensor 1 signal), 69 (TP sensor 2 signal) and ground under the following conditions.

Terminal	Accelerator pedal	Voltage
50	Fully released	More than 0.36V
(Throttle position sensor 1)	Fully depressed	Less than 4.75V
69	Fully released	Less than 4.75V
(Throttle position sensor 2)	Fully depressed	More than 0.36V



- If NG, replace electric throttle control actuator and go to the next step.
- Perform EC-79, "Throttle Valve Closed Position Learning".
- 8. Perform EC-79, "Idle Air Volume Learning".

Removal and Installation **ELECTRIC THROTTLE CONTROL ACTUATOR**

Refer to EM-18, "INTAKE MANIFOLD COLLECTOR".

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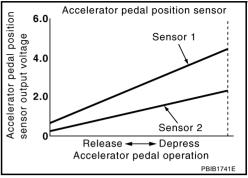
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Component Description

NBS000HD

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

CONSULT-II Reference Value in Data Monitor Mode

NBS000HE

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
ACCEL SEN 1	Ignition switch: ON	Accelerator pedal: Fully released	0.5 - 1.0V
ACCEL SEN I	(Engine stopped)	Accelerator pedal: Fully depressed	4.0 - 4.8V
ACCEL SEN 2*	Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	0.3 - 1.2V
		Accelerator pedal: Fully depressed	3.9 - 4.8V
CLSD THL POS	Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	ON
		Accelerator pedal: Slightly depressed	OFF

^{*:} Accelerator pedal position sensor 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage.

On Board Diagnosis Logic

NBS000HF

This self-diagnosis has the one trip detection logic.

NOTE:

If DTC P2138 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-523, "DTC P0643 SENSOR POWER SUPPLY".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2138 2138	Accelerator pedal position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from APP sensor 1 and APP sensor 2.	 Harness or connector (The APP sensor 1 and 2 circuit is open or shorted.) (The TP sensor circuit is shorted.) Accelerator pedal position sensor (APP sensor 1 and 2) Electric throttle control actuator (TP sensor 1 and 2)

FAIL-SAFE MODE

When the malfunction is detected, ECM enters fail-safe mode and the MIL lights up.

Engine operating condition in fail-safe mode

The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.

The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.

So, the acceleration will be poor.

DTC Confirmation Procedure

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NOTE:

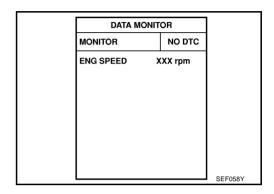
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

(II) WITH CONSULT-II

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-II.
- 3. Start engine and let it idle for 1 second.
- 4. If DTC is detected, go to EC-646, "Diagnostic Procedure".



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Follow the procedure "WITH CONSULT-II" above.

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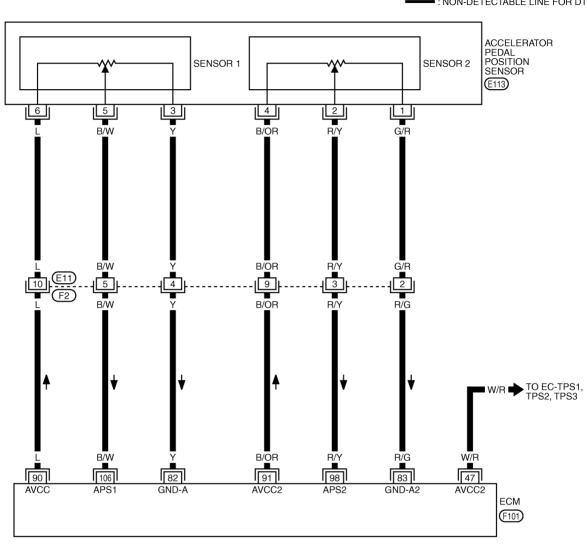
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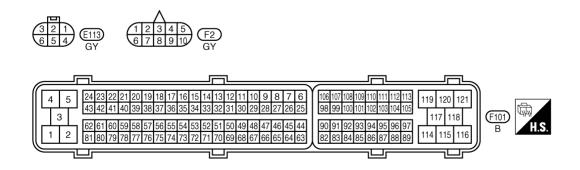
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Wiring Diagram

EC-APPS3-01

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





TBWT1240E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
47	W/R	Sensor power supply (Throttle position sensor)	[Ignition switch: ON]	Approximately 5V
82	Y	Sensor ground (Accelerator pedal position sensor 1)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
83	R/G	Sensor ground (Accelerator pedal position sensor 2)	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
90	L	Sensor power supply (Accelerator pedal position sensor 1)	[Ignition switch: ON]	Approximately 5V
91	B/OR	Sensor power supply (Accelerator pedal position sensor 2)	[Ignition switch: ON]	Approximately 5V
98	R/Y	Accelerator pedal position sensor 2	 [Ignition switch: ON] ● Engine stopped ● Accelerator pedal: Fully released 	0.15 - 0.60V
			[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	1.95 - 2.40V
106	B/W	Accelerator pedal position sensor 1	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully released	0.5 - 1.0V
	D/VV		[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	3.9 - 4.7V

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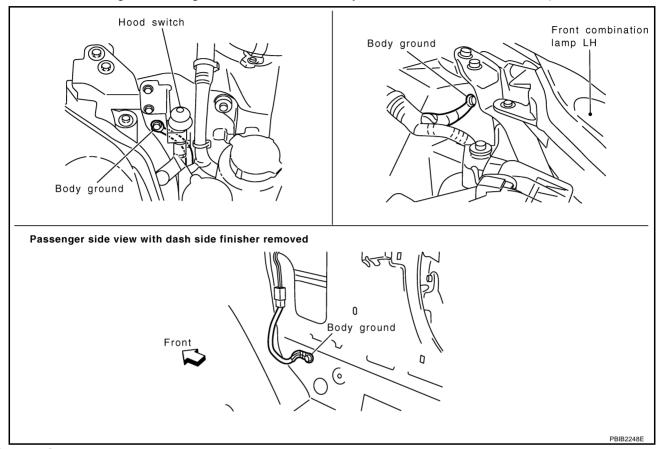
Revision: 2005 August **EC-645** 2006 350Z

NBS000HI

Diagnostic Procedure

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection" .



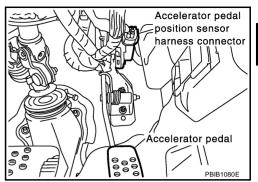
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. CHECK APP SENSOR POWER 1 SUPPLY CIRCUIT

- Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.

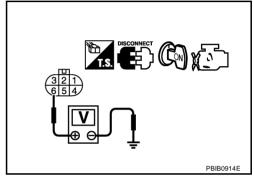


3. Check voltage between APP sensor terminal 6 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 4. NG >> GO TO 3.



3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open or short between ECM and APP sensor

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

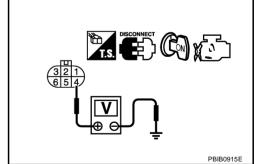
4. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

Check voltage between APP sensor terminal 4 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 10. NG >> GO TO 5.



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5. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between APP sensor terminal 4 and ECM terminal 91. Refer to Wiring Diagram.

Continuity should exist.

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- Harness for open between ECM and APP sensor

>> Repair open circuit.

7. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-III

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

ECM terminal	Sensor terminal	Reference Wiring Diagram
47	Electric throttle control actuator terminal 1	EC-636
91	APP sensor terminal 4	EC-644

OK or NG

OK >> GO TO 8.

NG >> Repair short to ground or short to power in harness or connectors.

8. CHECK THROTTLE POSITION SENSOR

Refer to EC-641, "Component Inspection".

OK or NG

OK >> GO TO 16.

NG >> GO TO 9.

9. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace the electric throttle control actuator.
- 2. Perform EC-79, "Throttle Valve Closed Position Learning".
- 3. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

DTC P2138 APP SENSOR

10. CHECK APP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT Turn ignition switch OFF. 2. Disconnect ECM harness connector. EC Check harness continuity between the following: APP sensor terminal 1 and ECM terminal 83, APP sensor terminal 3 and ECM terminal 82. Refer to Wiring Diagram. Continuity should exist. 4. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 12. NG >> GO TO 11. F 11. DETECT MALFUNCTIONING PART Check the following. Harness connectors E11, F2 Harness for open or short between ECM and APP sensor >> Repair open circuit or short to ground or short to power in harness or connectors. 12. CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Н Check harness continuity between the following; ECM terminal 106 and APP sensor terminal 5, ECM terminal 98 and APP sensor terminal 2. Refer to Wiring Diagram. Continuity should exist. 2. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 14. NG >> GO TO 13. 13. DETECT MALFUNCTIONING PART Check the following. Harness connectors E11, F2 M Harness for open or short between ECM and APP sensor >> Repair open circuit or short to ground or short to power in harness or connectors. 14. CHECK APP SENSOR Refer to EC-650, "Component Inspection". OK or NG OK >> GO TO 16.

Revision: 2005 August **EC-649** 2006 350Z

NG

>> GO TO 15.

DTC P2138 APP SENSOR

15. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 3. Perform EC-79, "Throttle Valve Closed Position Learning".
- 4. Perform EC-79, "Idle Air Volume Learning".

>> INSPECTION END

16. CHECK INTERMITTENT INCIDENT

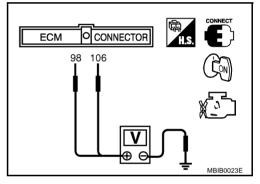
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection ACCELERATOR PEDAL POSITION SENSOR

- Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check voltage between ECM terminals 106 (APP sensor 1 signal), 98 (APP sensor 2 signal) and ground under the following conditions.

Terminal	Accelerator pedal	Voltage
106	Fully released	0.5 - 1.0V
(Accelerator pedal position sensor 1)	Fully depressed	3.9 - 4.7V
98	Fully released	0.15 - 0.60V
(Accelerator pedal position sensor 2)	Fully depressed	1.95 - 2.40V



- 4. If NG, replace accelerator pedal assembly and go to next step.
- 5. Perform EC-78, "Accelerator Pedal Released Position Learning".
- 6. Perform EC-79, "Throttle Valve Closed Position Learning".
- 7. Perform EC-79, "Idle Air Volume Learning".

Removal and Installation ACCELERATOR PEDAL

Refer to ACC-3, "ACCELERATOR CONTROL SYSTEM".

NBS000HK

NBS000HJ

DTC P2A00, P2A03 A/F SENSOR 1

PFP:22693

Component Description

NBS000EE

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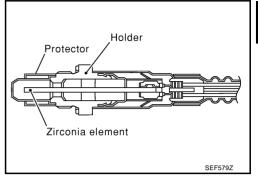
EC

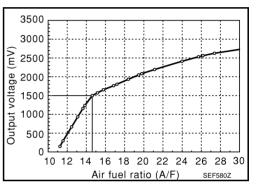
The air fuel ratio (A/F) sensor 1 is a planar dual-cell limit current sensor. The sensor element of the A/F sensor 1 is the combination of a Nernst concentration cell (sensor cell) with an oxygen-pump cell, which transports ions. It has a heater in the element.

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 < λ < 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 λ = 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

NBS000EF

Specification data are reference values.

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

On Board Diagnosis Logic

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To judge the malfunction, the A/F signal computed by ECM from the A/F sensor 1 signal is monitored not to be shifted to LEAN side or RICH side.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P2A00 2A00 (Bank 1) P2A03 2A03 (Bank 2)	Air fuel ratio (A/F) sensor 1 circuit range/performance	 The output voltage computed by ECM from the A/F sensor 1 signal is shifted to the lean side for a specified period. The output voltage computed by ECM from the A/F sensor 1 signal is shifted to the rich side for a specified period. 	 Air fuel ratio (A/F) sensor 1 Air fuel ratio (A/F) sensor 1 heater Fuel pressure Fuel injector Intake air leaks

DTC Confirmation Procedure

NBS000EH

NOTE:

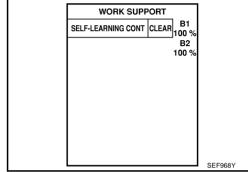
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

(A) WITH CONSULT-II

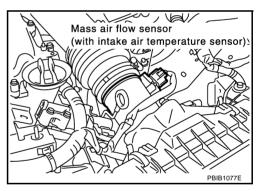
- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON and select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CON-SULT-II.
- 4. Clear the self-learning coefficient by touching "CLEAR".
- 5. Turn ignition switch OFF and wait at least 10 seconds.
- 6. Start engine and keep the engine speed between 3,500 and 4,000 rpm for 1 minute under no load.
- 7. Let engine idle for 1 minute.
- 8. Keep engine speed between 2,500 and 3,000 rpm for 20 minutes.
- 9. If 1st trip DTC is detected, go to EC-657, "Diagnostic Procedure"

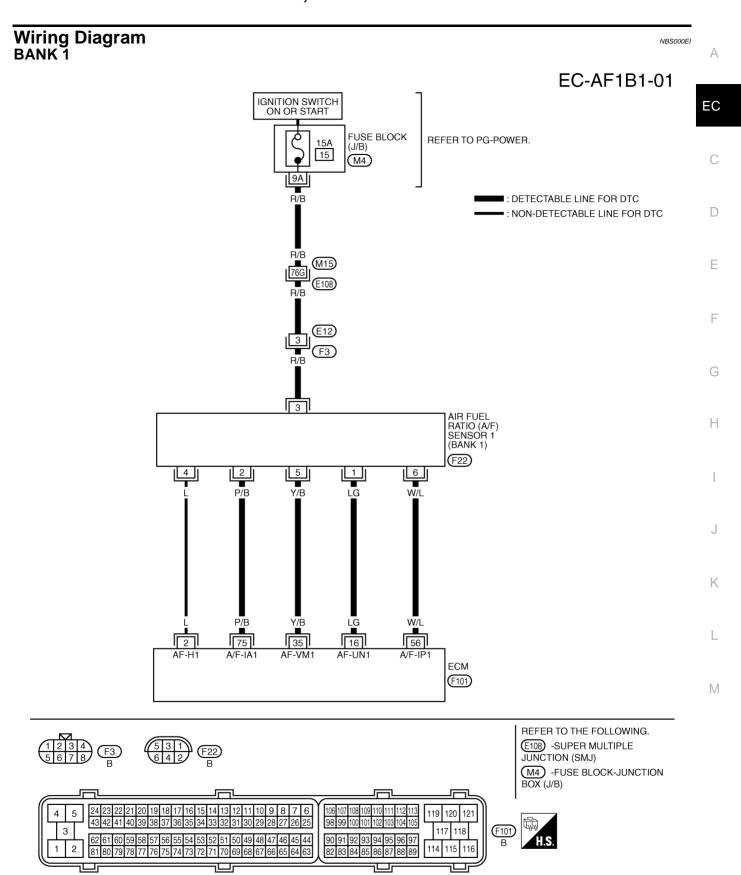


WITH GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Disconnect mass air flow sensor harness connector.
- Start engine and let it idle for at least 5 seconds.
- Stop engine and reconnect mass air flow sensor harness connector.
- Select Service \$03 with GST and make sure that DTC P0102 is detected.
- 7. Select Service \$04 with GST and erase the DTC P0102.
- 8. Start engine and keep the engine speed between 3,500 and 4,000 rpm for 1 minute under no load.
- 9. Let engine idle for 1 minute.
- Keep engine speed between 2,500 and 3,000 rpm for 20 minutes.
- 11. Select Service \$07 with GST.

 If 1st trip DTC is detected, go to <u>EC-657</u>, "<u>Diagnostic Procedure</u>".





TBWT1229E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

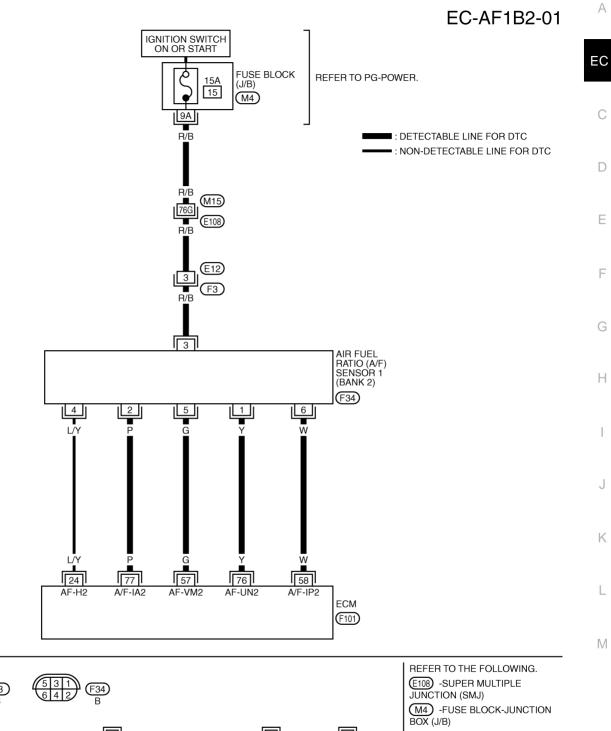
CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	L	A/F sensor 1 heater (bank 1)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
16	LG			Approximately 3.1V
35	Y/B	A/F sensor 1 (bank 1)	[Engine is running] • Warm-up condition	Approximately 2.6V
56	W/L	ANI SCHSULL (DALIK I)	Idle speed	Approximately 2.3V
75	P/B			Approximately 2.3V

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

BANK 2



TBWT1230E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
24	LY	A/F sensor 1 heater (bank 2)	[Engine is running] • Warm-up condition • Idle speed	Approximately 5V★ → 10.0V/Div 10 ms/Div T PBIB1584E
57	G			Approximately 2.6V
58	W	A/F sensor 1 (bank 2)	[Engine is running] • Warm-up condition	Approximately 2.3V
76	Υ	AVI SCIISOI I (DAIIK Z)	Idle speed	Approximately 3.1V
77	Р			Approximately 2.3V

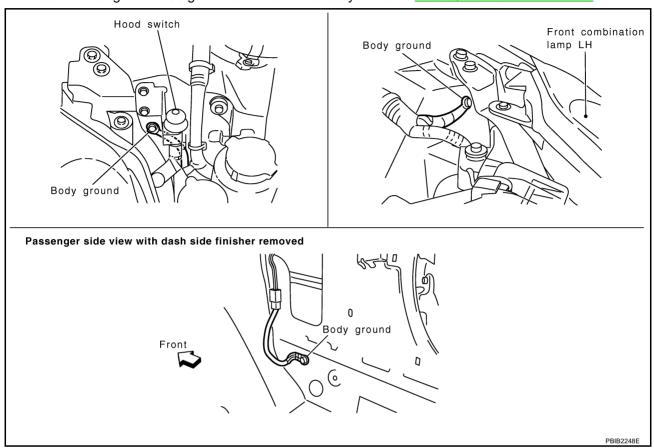
^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

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1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Loosen and retighten three ground screws on the body. Refer to PG-29, "Ground Distribution" .



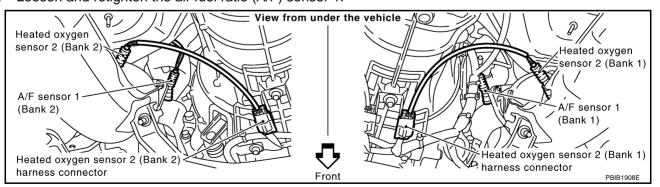
OK or NG

OK >> GO TO 2.

NG >> Repair or replace ground connections.

2. RETIGHTEN AIR FUEL RATIO SENSOR 1

Loosen and retighten the air fuel ratio (A/F) sensor 1.



Tightening torque: 50 N-m (5.1 kg-m, 37 ft-lb)

>> GO TO 3.

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$\overline{3}$. Check for intake air leak

- 1. Start engine and run it at idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

OK or NG

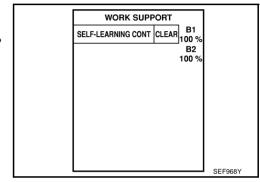
OK >> GO TO 4.

NG >> Repair or replace.

4. CLEAR THE SELF-LEARNING DATA

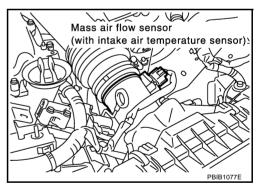
(I) With CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-II.
- 3. Clear the self-learning control coefficient by touching "CLEAR".
- 4. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0171, P0172, P0174 or P0175 detected? Is it difficult to start engine?



Without CONSULT-II

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector.
- Restart engine and let it idle for at least 5 seconds.
- Stop engine and reconnect mass air flow sensor harness connector.
- 6. Make sure DTC P0102 is displayed.
- 7. Erase the DTC memory. Refer to <u>EC-60, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION"</u>.
- 8. Make sure DTC P0000 is displayed.
- Run engine for at least 10 minutes at idle speed.
 Is the 1st trip DTC P0171, P0172, P0174 or P0175 detected?
 Is it difficult to start engine?



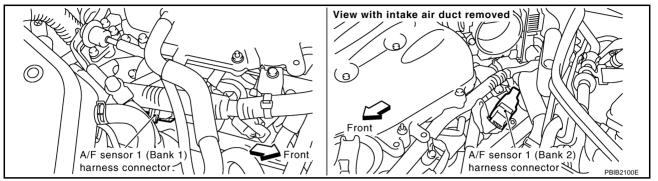
Yes or No

Yes >> Perform trouble diagnosis for DTC P0171, P0174 or P0172, P0175. Refer to <u>EC-339, "DTC P0171, P0174 FUEL INJECTION SYSTEM FUNCTION"</u> or <u>EC-351, "DTC P0172, P0175 FUEL INJECTION SYSTEM FUNCTION"</u>.

No >> GO TO 5.

5. CHECK HARNESS CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.



Check harness connector for water.

Water should not exit.

OK or NG

OK >> GO TO 6.

NG >> Repair or replace harness connector.

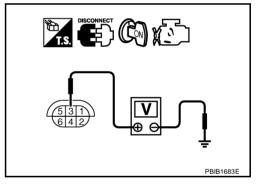
6. CHECK A/F SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Turn ignition switch ON.
- 2. Check voltage between A/F sensor 1 terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 8. NG >> GO TO 7.



7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M15, E108
- Harness connectors E12, F3
- Fuse block (J/B) connector M4
- 15A fuse
- Harness for open or short between A/F sensor 1 and fuse
 - >> Repair or replace harness or connectors.

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8. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between the following terminals. Refer to Wiring Diagram.

	A/F sensor 1 terminal	ECM terminal
	1	16
Bank1	2	75
Daliki	5	35
	6	56
	1	76
Bank 2	2	77
Dank 2	5	57
	6	58

Continuity should exist.

4. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

Ba	nk 1	Bai	nk 2
A/F sensor 1 terminal	ECM terminal	A/F sensor 1 terminal	ECM terminal
1	16	1	76
2	75	2	77
5	35	5	57
6	56	6	58

Continuity should not exist.

5. Also check harness for short to power.

OK or NG

OK >> GO TO 9.

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

9. CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-185, "Component Inspection".

OK or NG

OK >> GO TO 10.

NG >> GO TO 11.

10. CHECK INTERMITTENT INCIDENT

Perform EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> GO TO 11.

NG >> Repair or replace.

11. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning A/F sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

>> INSPECTION END

Removal and Installation AIR FUEL RATIO (A/F) SENSOR 1

Refer to EM-25, "EXHAUST MANIFOLD AND THREE WAY CATALYST" .

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ASCD BRAKE SWITCH

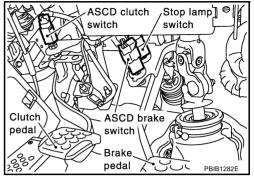
PFP:25320

Component Description

NBS00019

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal).

Refer to <u>EC-29</u>, "<u>AUTOMATIC SPEED CONTROL DEVICE (ASCD)</u>" for the ASCD function.



CONSULT-II Reference Value in Data Monitor Mode

NBS000IA

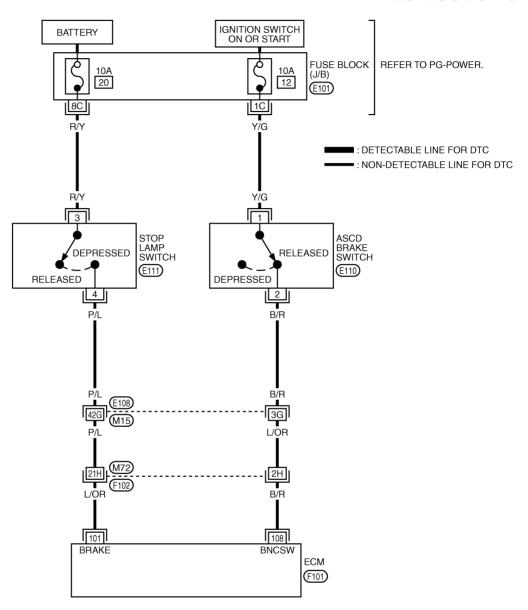
Specification data are reference values.

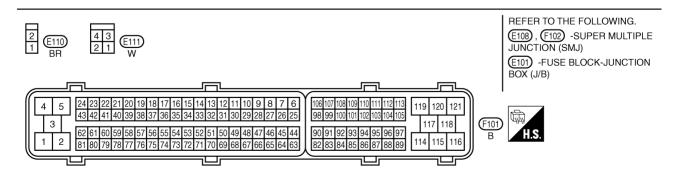
MONITOR ITEM		CONDITION	SPECIFICATION
BRAKE SW 1	a Ignition quitable ON	Brake pedal: Fully released (A/T) Brake pedal and clutch pedal: Fully released (M/T)	ON
(ASCD brake switch)	Ignition switch: ON	 Brake pedal: Slightly depressed (A/T) Brake pedal and/or clutch pedal: Slightly depressed (M/T) 	OFF
BRAKE SW 2	a Ignition quitable ON	Brake pedal: Fully released	OFF
(Stop lamp switch)	Ignition switch: ON	Brake pedal: Slightly depressed	ON

Wiring Diagram
A/T MODELS

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EC-ASCBOF-01





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Specification data are reference values and are measured between each terminal and ground.

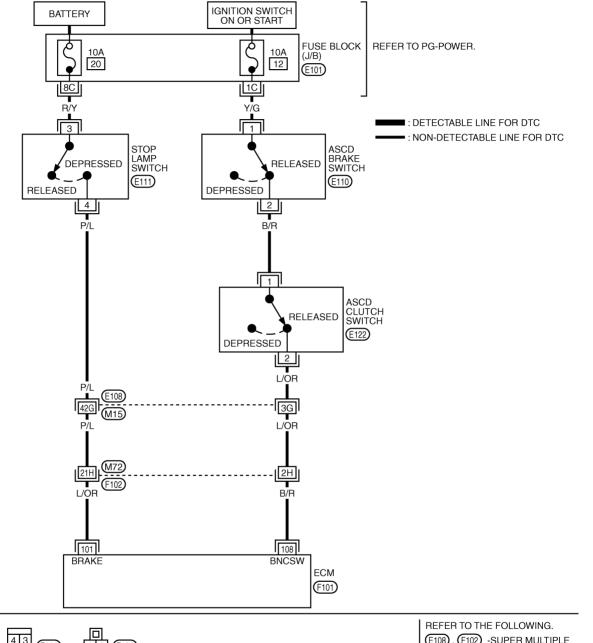
CAUTION:

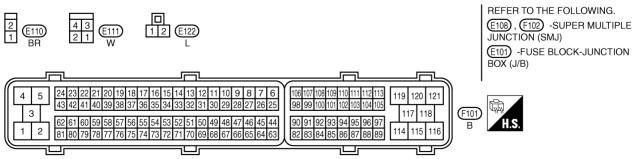
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
101	101 L/OR Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Fully released	Approximately 0V	
101		Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14V)
108	B/R	ASCD brake switch	[Ignition switch: ON] • Brake pedal: Slightly depressed	Approximately 0V
100	D/IX	AGOD BIANG SWILLII	[Ignition switch: ON] • Brake pedal: Fully released	BATTERY VOLTAGE (11 - 14V)

M/T MODELS

EC-ASCBOF-02





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Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
101	101 L/OR Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Fully released	Approximately 0V	
101 L/OR	Stop lamp switch	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14V)	
108	B/R	ASCD brake switch	[Ignition switch: ON] • Brake pedal and/or clutch pedal: Slightly depressed	Approximately 0V
			[Ignition switch: ON] • Brake pedal and clutch pedal: Fully released	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

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A/T MODELS

1. CHECK OVERALL FUNCTION-I

(II) With CONSULT-II

- 1. Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-II.
- 3. Check "BRAKE SW1" indication under the following conditions.

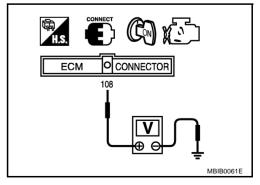
CONDITION	INDICATION
Brake pedal: Slightly depressed	OFF
Brake pedal: Fully released	ON

DATA MO	NITOR	
MONITOR	NO DTC	
BRAKE SW1	OFF	
		SEC011

W Without CONSULT-II

- 1. Turn ignition switch ON.
- 2. Check voltage between ECM terminal 108 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal: Slightly depressed	Approximately 0V
Brake pedal: Fully released	Battery voltage



OK or NG

OK >> GO TO 2. NG >> GO TO 3.

2. CHECK OVERALL FUNCTION-II

(I) With CONSULT-II

- 1. Select "BRAKE SW2" in "DATA MONITOR" mode with CONSULT-II.
- 2. Check "BRAKE SW2" indication in "DATA MONITOR" mode.

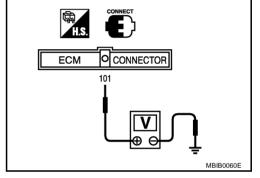
CONDITION	INDICATION
Brake pedal: Fully released	OFF
Brake pedal: Slightly depressed	ON

DATA MO	NITOR
MONITOR	NO DTC
BRAKE SW2	OFF

Without CONSULT-II

Check voltage between ECM terminal 101 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal: Fully released	Approximately 0V
Brake pedal: Slightly depressed	Battery voltage



OK or NG

OK >> INSPECTION END

NG >> GO TO 8.

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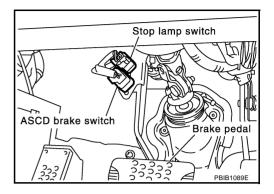
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3. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Turn ignition switch ON.

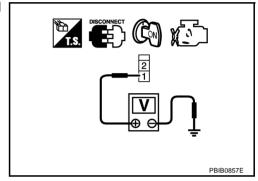


4. Check voltage between ASCD brake switch terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 5. NG >> GO TO 4.



4. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between ASCD brake switch and fuse

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

5. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness continuity between ECM terminal 108 and ASCD brake switch terminal 2. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and ASCD brake switch
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK ASCD BRAKE SWITCH

Refer to EC-676, "Component Inspection"

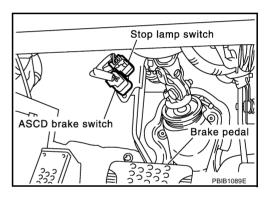
OK or NG

OK >> GO TO 13.

NG >> Replace ASCD brake switch.

8. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.

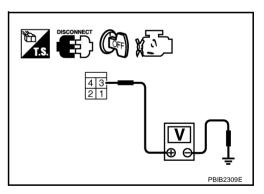


3. Check voltage between stop lamp switch terminal 3 and ground with CONSULT -II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 10. NG >> GO TO 9.



9. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between stop lamp switch and battery

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

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$\overline{10}$. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- 2. Check harness continuity between ECM terminal 101 and stop lamp switch terminal 4. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 12. NG >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and stop lamp switch

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

12. CHECK STOP LAMP SWITCH

Refer to EC-676, "Component Inspection"

OK or NG

OK >> GO TO 13.

NG >> Replace stop lamp switch.

13. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

M/T MODELS

1. CHECK OVERALL FUNCTION-I

(II) With CONSULT-II

- Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-II.
- Check "BRAKE SW1" indication under the following conditions.

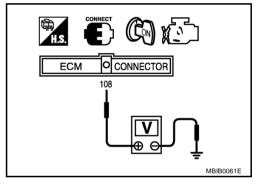
CONDITION	INDICATION
Brake pedal and/or clutch pedal: Slightly depressed	OFF
Brake pedal and clutch pedal: Fully released	ON

DATA MO	NITOR
MONITOR	NO DTC
BRAKE SW1	OFF

⋈ Without CONSULT-II

- Turn ignition switch ON.
- Check voltage between ECM terminal 108 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal and/or clutch pedal: Slightly depressed	Approximately 0V
Brake pedal and clutch pedal: Fully released	Battery voltage



OK or NG

OK >> GO TO 2. NG >> GO TO 3.

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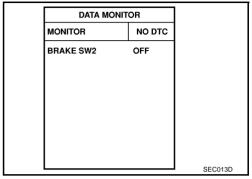
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2. CHECK OVERALL FUNCTION-II

(II) With CONSULT-II

- 1. Select "BRAKE SW2" in "DATA MONITOR" mode with CONSULT-II.
- 2. Check "BRAKE SW2" indication under the following conditions.

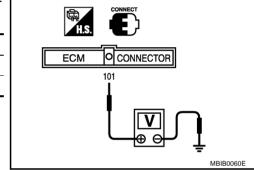
CONDITION	INDICATION
Brake pedal: Fully released	OFF
Brake pedal: Slightly depressed	ON



(R) Without CONSULT-II

Check voltage between ECM terminal 101 and ground under the following conditions.

CONDITION	VOLTAGE
Brake pedal: Fully released	Approximately 0V
Brake pedal: Slightly depressed	Battery voltage



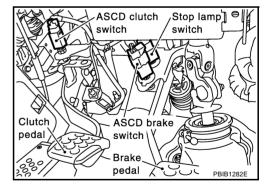
OK or NG

OK >> INSPECTION END

NG >> GO TO 11.

3. CHECK ASCD BRAKE SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD clutch switch harness connector.
- 3. Turn ignition switch ON.

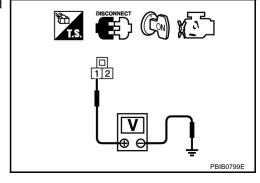


4. Check voltage between ASCD clutch switch terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

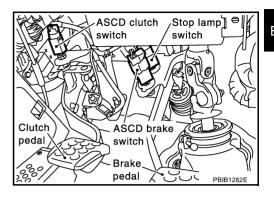
OK or NG

OK >> GO TO 8. NG >> GO TO 4.



4. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- Turn ignition switch ON.

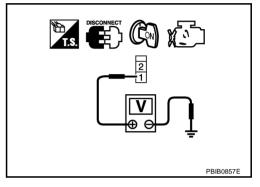


4. Check voltage between ASCD brake switch terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 6. NG >> GO TO 5.



5. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between ASCD brake switch and fuse

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

6. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Check harness continuity between ASCD brake switch terminal 2 and ASCD clutch switch terminal 1. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.

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

7. CHECK ASCD BRAKE SWITCH

Refer to EC-676, "Component Inspection"

OK or NG

OK >> GO TO 16.

NG >> Replace ASCD brake switch.

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8. CHECK ASCD CLUTCH SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between ASCD clutch switch terminal 2 and ECM terminal 108. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 10. NG >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between ECM and ASCD clutch switch

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

10. CHECK ASCD CLUTCH SWITCH

Refer to EC-676, "Component Inspection".

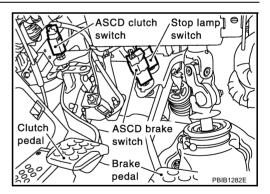
OK or NG

OK >> GO TO 16.

NG >> Replace ASCD clutch switch.

11. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

1. Disconnect stop lamp switch harness connector.

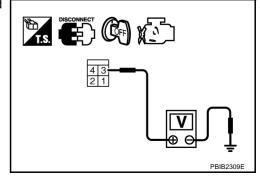


Check voltage between stop lamp switch terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 13. NG >> GO TO 12.



Check the following.	
Fuse block (J/B) connector E101	
10A fuse	EC
Harness for open or short between stop lamp switch and battery	
>> Repair open circuit or short to ground or short to power in harness or connectors.	С
13. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT	D
Disconnect ECM harness connector.	D
Check harness continuity between ECM terminal 101 and stop lamp switch terminal 4. Refer to Wiring Diagram.	Е
Continuity should exist.	
 Also check harness for short to ground and short to power. OK or NG 	F
OK >> GO TO 15. NG >> GO TO 14.	G
14. DETECT MALFUNCTIONING PART	G
Check the following.	Н
Harness connectors E108, M15	
Harness connectors M72, F102	
Harness for open or short between ECM and stop lamp switch	'
>> Repair open circuit or short to ground or short to power in harness or connectors.	J
15. CHECK STOP LAMP SWITCH	
Refer to EC-676, "Component Inspection"	K
OK or NG	
OK >> GO TO 16. NG >> Replace stop lamp switch.	ı
	_
16. CHECK INTERMITTENT INCIDENT	
Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".	M

>> INSPECTION END

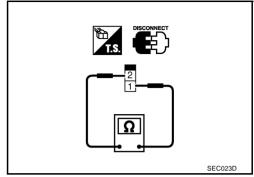
Component Inspection ASCD BRAKE SWITCH

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- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Check continuity between ASCD 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

If NG, adjust ASCD brake switch installation, refer to <u>BR-7</u>, <u>"BRAKE PEDAL"</u>, and perform step 3 again.

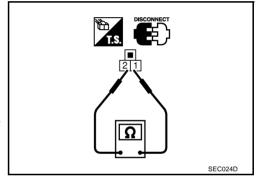


ASCD CLUTCH SWITCH (M/T MODELS)

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD clutch switch harness connector.
- Check continuity between ASCD clutch switch terminals 3 and 4 under the following conditions.

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

If NG, adjust ASCD clutch switch installation, refer to <u>CL-5</u>, <u>"CLUTCH PEDAL"</u>, and perform step 3 again.

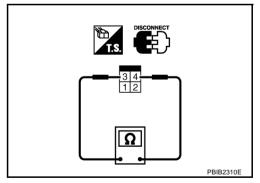


STOP LAMP SWITCH

- 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

If NG, adjust stop lamp switch installation, refer to <u>BR-7</u>, <u>"BRAKE PEDAL"</u>, and perform step 3 again.



ASCD INDICATOR

ASCD INDICATOR PFP:24814

Component Description

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ASCD indicator lamp illuminates to indicate ASCD operation status. Lamp has two indicators, CRUISE, SET, and is integrated in combination meter.

CRUISE indicator illuminates when MAIN switch on ASCD steering switch is turned ON to indicated that ASCD system is ready for operation.

SET indicator illuminates when following conditions are met.

- CRUISE indicator is illuminated.
- SET/COAST switch on ASCD steering switch is turned ON while vehicle speed is within the range of ASCD setting.

SET indicator remains lit during ASCD control.

Refer to EC-29, "AUTOMATIC SPEED CONTROL DEVICE (ASCD)" for the ASCD function.

CONSULT-II Reference Value in Data Monitor Mode

NBS000IF

Specification data are reference value.

MONITOR ITEM	CONDITION		SPECIFICATION
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time \rightarrow at the 2nd time	$ON \to OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET LAMP	When vehicle speed is between 40 km/h (25 MPH) and 144 km/h (89 MPH)	ASCD: Not operating	OFF

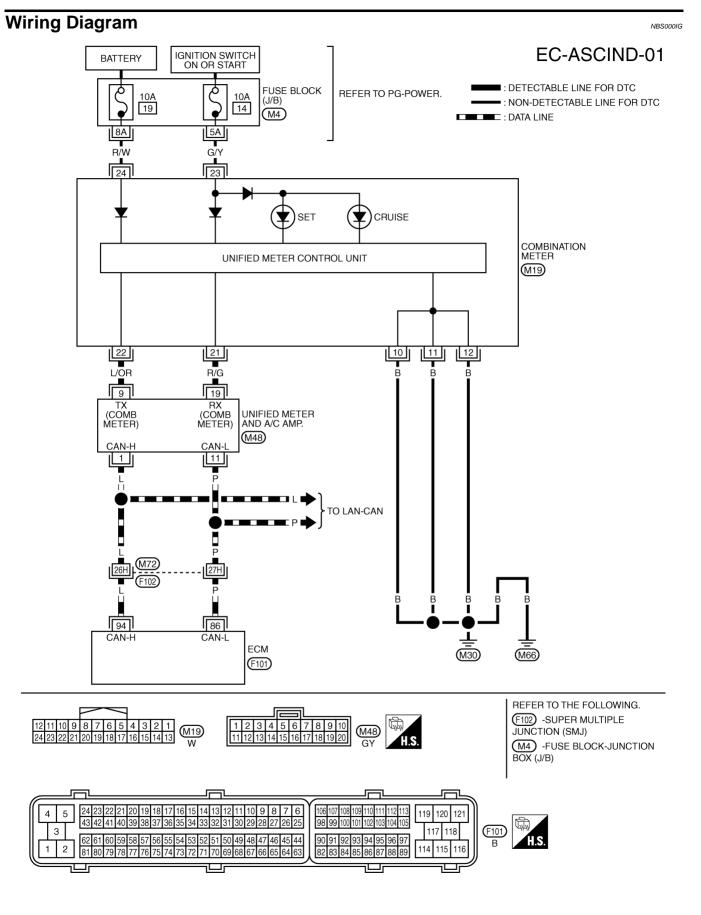
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ASCD INDICATOR

Diagnostic Procedure NBS000IH Α 1. CHECK OVERALL FUNCTION Check ASCD indicator under the following conditions. EC ASCD INDICATOR CONDITION **SPECIFICATION** MAIN switch: Pressed at the CRUISE LAMP • Ignition switch: ON $ON \rightarrow OFF$ 1st time \rightarrow at the 2nd time MAIN switch: ON ASCD: Operating ON • When vehicle speed is SET LAMP between 40 km/h (25 MPH) OFF ASCD: Not operating D and 144 km/h (89 MPH) OK or NG OK >> INSPECTION END F NG >> GO TO 2. 2. CHECK DTC Check that DTC U1000 or U1001 is not displayed. OK or NG OK >> GO TO 3. >> Perform trouble diagnoses for DTC U1000, U1001. Refer to EC-163, "DTC U1000, U1001 CAN NG COMMUNICATION LINE". Н 3. CHECK DTC WITH "UNIFIED METER AND A/C AMP." Refer to DI-50, "SELF-DIAGNOSTIC RESULTS". OK or NG OK >> GO TO 4. NG >> Go to DI-56, "DTC [B2202] Meter Communication Circuit" . 4. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". >> INSPECTION END

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ELECTRICAL LOAD SIGNAL

ELECTRICAL LOAD SIGNAL

PFP:25350

Description

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The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred through the CAN communication line from BCM to ECM via IPDM E/R.

CONSULT-II Reference Value in Data Monitor Mode

NBS00017

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
LOAD SIGNAL	Ignition switch: ON	Rear window defogger switch is ON and/or lighting switch is in 2nd.	ON
		Rear window defogger switch is OFF and lighting switch is OFF.	OFF
HEATER FAN SW	Engine: After warming up, idle the engine	Heater fan: Operating	ON
		Heater fan: Not operating	OFF

Diagnostic Procedure

NBS00018

1. CHECK LOAD SIGNAL CIRCUIT OVERALL FUNCTION-I

- 1. Turn ignition switch ON.
- 2. Connect CONSULT-II and select "DATA MONITOR" mode.
- 3. Select "LOAD SIGNAL" and check indication under the following conditions.

Condition	Indication
Rear window defogger switch: ON	ON
Rear window defogger switch: OFF	OFF

DATA MONI	ror
MONITORING NO DTC	
LOAD SIGNAL	ON

OK or NG

OK >> GO TO 2. NG >> GO TO 4.

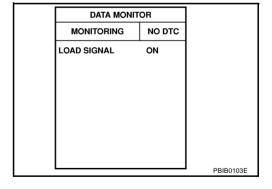
2. CHECK LOAD SIGNAL CIRCUIT OVERALL FUNCTION-II

Check "LOAD SIGNAL" indication under the following conditions.

Condition	Indication
Lighting switch: ON at 2nd position	ON
Lighting switch: OFF	OFF

OK or NG

OK >> GO TO 3. NG >> GO TO 5.



ELECTRICAL LOAD SIGNAL

$\overline{3}$. CHECK HEATER FAN SIGNAL CIRCUIT OVERALL FUNCTION

(II) With CONSULT-II

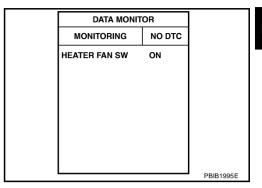
Check "HEATER FAN SW" in "DATA MONITOR" mode with CON-SULT-II under the following conditions.

Condition	Indication
Heater fan: Operating	ON
Heater fan: Not operating	OFF

OK or NG

OK >> INSPECTION END

NG >> GO TO 6.



4. CHECK REAR WINDOW DEFOGGER SYSTEM

Refer to GW-57, "REAR WINDOW DEFOGGER".

>> INSPECTION END

5. CHECK HEADLAMP SYSTEM

Refer to LT-5, "HEADLAMP (FOR USA)" or LT-36, "HEADLAMP (FOR CANADA) - DAYTIME LIGHT SYSTEM -" .

>> INSPECTION END

6. CHECK HEATER FAN CONTROL SYSTEM

Refer to ATC-36, "TROUBLE DIAGNOSIS".

>> INSPECTION END

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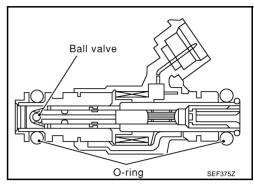
FUEL INJECTOR

FUEL INJECTOR PFP:16600

Component Description

NBS000HQ

The fuel injector is a small, precise solenoid valve. When the ECM supplies a ground to the fuel injector circuit, the coil in the fuel injector is energized. The energized coil pulls the ball valve back and allows fuel to flow through the fuel injector into the intake manifold. The amount of fuel injected depends upon the fuel injection pulse duration. Pulse duration is the length of time the fuel injector remains open. The ECM controls the injection pulse duration based on engine fuel needs.



CONSULT-II Reference Value in Data Monitor Mode

NBS000HR

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
B/FUEL SCHDL	See EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE" .		
	Engine: After warming up	Idle	2.0 - 3.0 msec
INJ PULSE-B1 INJ PULSE-B2	 Shift lever: P or N (A/T), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	1.9 - 2.9 msec

Wiring Diagram Α **EC-INJECT-01** IGNITION SWITCH ON OR START EC : DETECTABLE LINE FOR DTC FUSE BLOCK REFER TO PG-POWER. : NON-DETECTABLE LINE FOR DTC 10A (J/B) 1 (M4) C 15A w/B M72 D (F102) w/B Е W/B (F221) Н FUEL FUEL FUEL FUEL FUEL INJECTOR NO.1 INJECTOR NO.3 <u>1</u>2004≈ INJECTOR NO.6 INJECTOR NO.5 INJECTOR NO.2 INJECTOR NO.4 2 9 (F222 (F223) (F224) (F225) (F226) (F227) PU/R R/B L/W R/W R/L 3 6 1 4 R/B R/Y SB B/R W/L LG/B 23 40 42 21 41 22 INJ#1 INJ#3 INJ#5 INJ#2 INJ#4 INJ#6 ECM (F101) M REFER TO THE FOLLOWING. (F102) -SUPER MULTIPLE JUNCTION (SMJ) (M4) -FUSE BLOCK-JUNCTION BOX (J/B) 119 120 121 (F101) 117 118 3 В 2 114 115

TBWT1243E

82 83 84 85 86 87 88 89

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FUEL INJECTOR

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Volta	ge)
22 F	SB R/Y R/B	Fuel injector No. 5 Fuel injector No. 3 Fuel injector No. 1	[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	BATTERY VOLTAGE (11 - 14V)*	SEC984C
			[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)*	SEC985C
40 LG/B 41 W/L 42 B/R		/L Fuel injector No. 4	[Engine is running] • Warm-up condition • Idle speed NOTE: The pulse cycle changes depending on rpm at idle.	BATTERY VOLTAGE (11 - 14V)*	SEC984C
			[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)* 110.0 V/Div 50 ms/Div	SEC985C

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

1. INSPECTION START

NBS000HT

Turn ignition switch to START.

Is any cylinder ignited?

Yes or No

Yes (With CONSULT-II)>>GO TO 2. Yes (without CONSULT-II)>>GO TO 3. No >> GO TO 6.

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2. CHECK OVERALL FUNCTION

(I) With CONSULT-II

- 1. Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-II.
- 3. Make sure that each circuit produces a momentary engine speed drop.

	·		
	ACTIVE TES	ST	
	POWER BALANCE		
	MONITOR	ì	
	ENG SPEED	XXX rpm	
	MAS A/F SE-B1	xxx v	
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L			PBIB0133E

OK or NG

OK >> INSPECTION END

NG >> GO TO 6.

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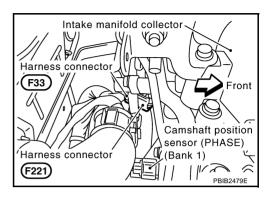
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3. CHECK FUNCTION OF FUEL INJECTOR-I

W Without CONSULT-II

- Turn ignition switch OFF.
- 2. Disconnect harness connector F33, F221
- 3. Turn ignition switch ON.

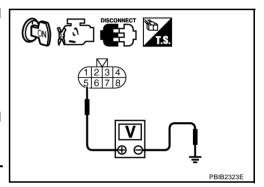


Check voltage between harness connector F33 terminal 5 and ground with CONSULT-II or tester.

Voltage: Battery voltage

- 5. Turn ignition switch OFF.
- 6. Disconnect ECM harness connector.
- Check harness continuity between harness connector F33 and ECM as follows. Refer to Wiring Diagram.

Cylinder	Harness connector F33 terminal	ECM terminal
1	6	23
2	4	42
3	2	22
4	3	41
5	1	21
6	7	40



Continuity should exist.

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

OK or NG

OK >> GO TO 5. NG >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

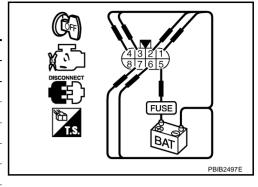
- Harness connectors M72, F102
- Harness connectors F33, F221
- Fuse block (J/B) connector M4
- 10A fuse
- Harness for open or short between harness connector F33 and fuse
- Harness for open or short between harness connector F33 and ECM

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

5. CHECK FUNCTION OF FUEL INJECTOR-II

Provide battery voltage between harness connector F221 as follows and then interrupt it. Listen to each fuel injector operating sound.

Cylinder -	Harness connector F221 terminal	
Cylinder	(+)	(-)
1		6
2		4
3	5	2
4	3	3
5		1
6		7



Operating sound should exist.

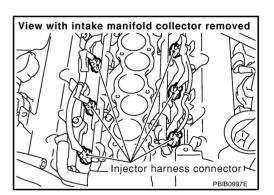
OK or NG

OK >> INSPECTION END

NG >> GO TO 6.

6. CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.

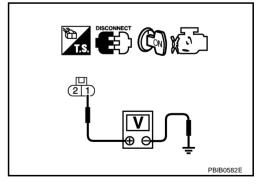


- 3. Turn ignition switch ON.
- 4. Check voltage between fuel injector terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 8. NG >> GO TO 7.



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7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M72, F102
- Harness connectors F33, F221
- Fuse block (J/B) connector M4
- 10A fuse
- Harness for open or short between fuel injector and fuse
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK FUEL INJECTOR OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness continuity between fuel injector terminal 2 and ECM terminals 21, 22, 23, 40, 41, 42. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 10. NG >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F221, F33
- Harness for open or short between fuel injector and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK FUEL INJECTOR

Refer to EC-689, "Component Inspection".

OK or NG

OK >> GO TO 11.

NG >> Replace malfunctioning fuel injector.

11. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

>> INSPECTION END

Component Inspection FUEL INJECTOR

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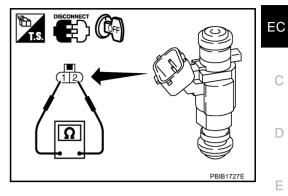
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1. Disconnect fuel injector harness connector.

2. Check resistance between terminals as shown in the figure.

Resistance: 11.1 - 14.5 Ω [at 10 - 60°C (50 - 140°F)]



NBS000HV

Removal and Installation FUEL INJECTOR

Refer to EM-38, "FUEL INJECTOR AND FUEL TUBE" .

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FUEL PUMP PFP:17042

Description SYSTEM DESCRIPTION

NBS000HW

Sensor	Input Signal to ECM	ECM Function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*	Fuel pump control	Fuel pump relay
Battery	Battery voltage*		

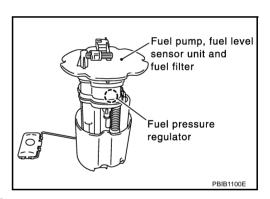
^{*:} ECM determines the start signal status by the signals of engine speed and battery voltage.

The ECM activates the fuel pump for several seconds after the ignition switch is turned ON to improve engine startability. If the ECM receives a engine speed signal from the camshaft position sensor (PHASE), it knows that the engine is rotating, and causes the pump to operate. If the engine speed signal is not received when the ignition switch is ON, the engine stalls. The ECM stops pump operation and prevents battery discharging, thereby improving safety. The ECM does not directly drive the fuel pump. It controls the ON/OFF fuel pump relay, which in turn controls the fuel pump.

Condition	Fuel pump operation	
Ignition switch: ON	Operates for 1 second.	
Engine running or cranking	Operates.	
Engine: Stopped	Stops in 1.5 seconds.	
Except as shown above	Stops.	

COMPONENT DESCRIPTION

A turbine type design fuel pump is used in the fuel tank.

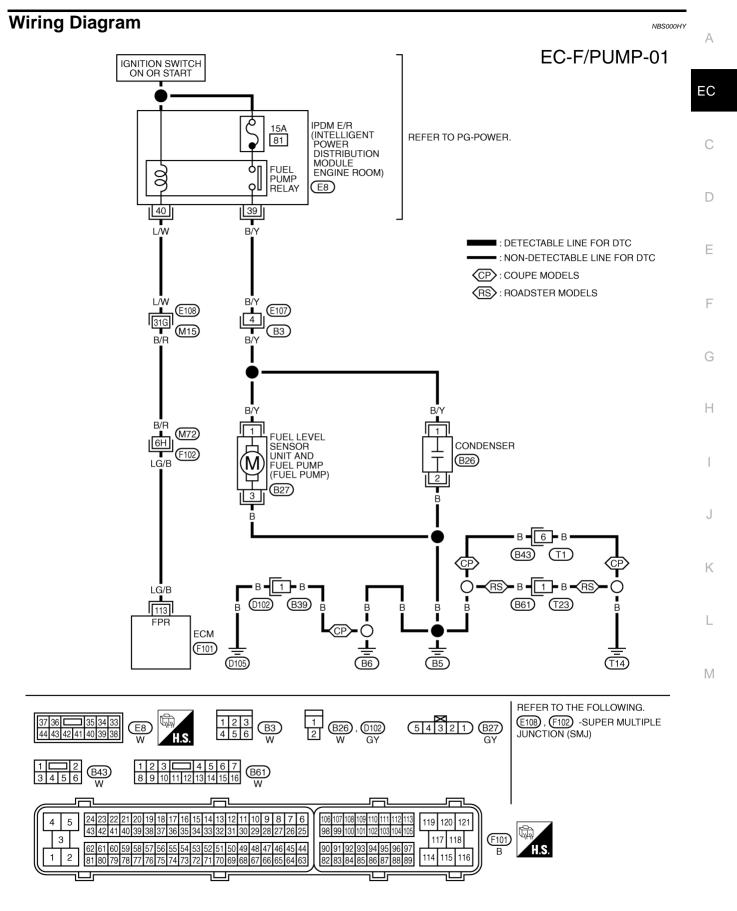


CONSULT-II Reference Value in Data Monitor Mode

NBS000HX

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
For 1 second after turning ignition switch ON FUEL PUMP RLY Engine running or cranking		ON
	Except above conditions	OFF



Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
113	113 LG/B Fuel pump relay	[Ignition switch: ON]● For 1 second after turning ignition switch ON[Engine is running]	0 - 1.5V	
113	LO/B	T del pullip relay	[Ignition switch: ON] • More than 1 second after turning ignition switch ON.	BATTERY VOLTAGE (11 - 14V)

Diagnostic Procedure

1. CHECK OVERALL FUNCTION

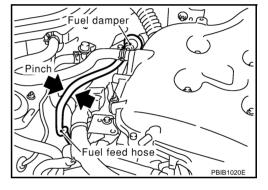
- 1. Turn ignition switch ON.
- 2. Pinch fuel feed hose with two fingers.

Fuel pressure pulsation should be felt on the fuel feed hose for 1 second after ignition switch is turned ON.

OK or NG

OK >> INSPECTION END

NG >> GO TO 2.



NBS000HZ

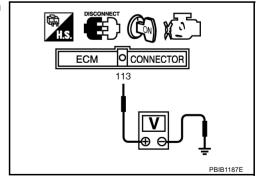
2. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between ECM terminal 113 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 5. NG >> GO TO 3.



3. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-I

- Disconnect IPDM E/R harness connector E8. 1.
- Check harness continuity between IPDM E/R terminal 40 and ECM terminal 113. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 4. NG >> GO TO 15.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness connectors M72, F102
- Harness for open or short between IPDM E/R and ECM

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

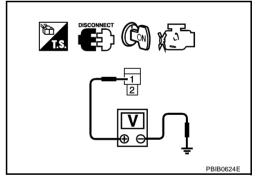
5. CHECK CONDENSER POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- Disconnect condenser harness connector.
- 4. Turn ignition switch ON.
- Check voltage between condenser terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage should exist for 1 second after ignition switch is turned ON.

OK or NG

OK >> GO TO 9. NG >> GO TO 6.



6. CHECK 15A FUSE

- 1. Turn ignition switch OFF.
- Disconnect 15A fuse.
- Check 15A fuse.

OK or NG

OK >> GO TO 7. NG >> Replace fuse. EC

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7. CHECK CONDENSER POWER SUPPLY CIRCUIT-II

- 1. Disconnect IPDM E/R harness connector E8.
- 2. Check harness continuity between IPDM E/R terminal 39 and condenser terminal 1. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

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OK >> GO TO 15.
NG >> GO TO 8.
```

8. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E107, B3
- Harness for open or short between IPDM E/R and condenser
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK CONDENSER GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Check harness continuity between condenser terminal 2 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

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OK >> GO TO 11.
NG >> GO TO 10
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10. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B43, T1 (Coupe models)
- Harness connectors B39, D102 (Coupe models)
- Harness connectors B61, T23 (Roadster models)
- Harness for open or short between condenser and ground
 - >> Repair open circuit or short to power in harness or connectors.

11. CHECK CONDENSER

Refer to EC-696, "Component Inspection".

OK or NG

```
OK >> GO TO 12.
```

NG >> Replace condenser.

12. CHECK FUEL PUMP POWER SUPPLY AND GROUND CIRCUIT FOR OPEN AND SHORT

- Disconnect "fuel level sensor unit and fuel pump" harness connector
- 2. Disconnect harness connectors E107, B3.
- Check harness continuity between the following; "fuel level sensor unit and fuel pump" terminal 1 and harness connector B3 terminal 4,

"fuel level sensor unit and fuel pump" terminal 3 and ground. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 14. NG >> GO TO 13.

13. DETECT MALFUNCTIONING PART

Check the following.

- Harness connector B3
- Harness connectors B43, T1 (Coupe models)
- Harness connectors B39, D102 (Coupe models)
- Harness connectors B61, T23 (Roadster models)
- Harness for open or short between "fuel level sensor unit and fuel pump" and harness connector B3
- Harness for open or short between "fuel level sensor unit and fuel pump" and ground
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK FUEL PUMP

Refer to EC-696, "Component Inspection".

OK or NG

OK >> GO TO 15.

Revision: 2005 August

NG >> Replace "fuel level sensor unit and fuel pump".

15. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT".

OK or NG

OK >> Replace IPDM E/R.

NG >> Repair or replace harness or connectors.

View with glove box tray and inspection hole cover removed

Fuel level sensor unit and fuel pump harness connector

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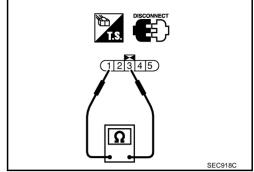
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Component Inspection FUEL PUMP

NBS00010

- 1. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 2. Check resistance between "fuel level sensor unit and fuel pump" terminals 1 and 3.

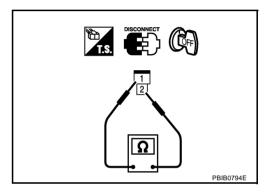
Resistance: 0.2 - 5.0 Ω [at 25°C (77°F)]



CONDENSER

- 1. Disconnect condenser harness connector.
- 2. Check resistance between condenser terminals 1 and 2.

Resistance: Above 1 M Ω [at 25°C (77°F)]



Removal and Installation FUEL PUMP

NBS000I1

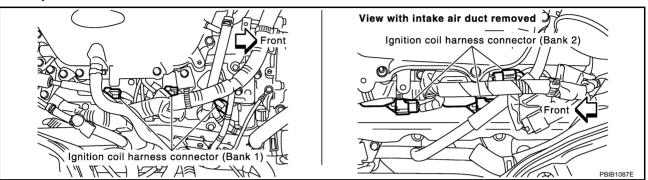
Refer to FL-4, "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY" .

IGNITION SIGNAL PFP:22448

Component Description IGNITION COIL & POWER TRANSISTOR

NBS000HL

The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns ON and OFF the ignition coil primary circuit. This ON/OFF operation induces the proper high voltage in the coil secondary circuit.



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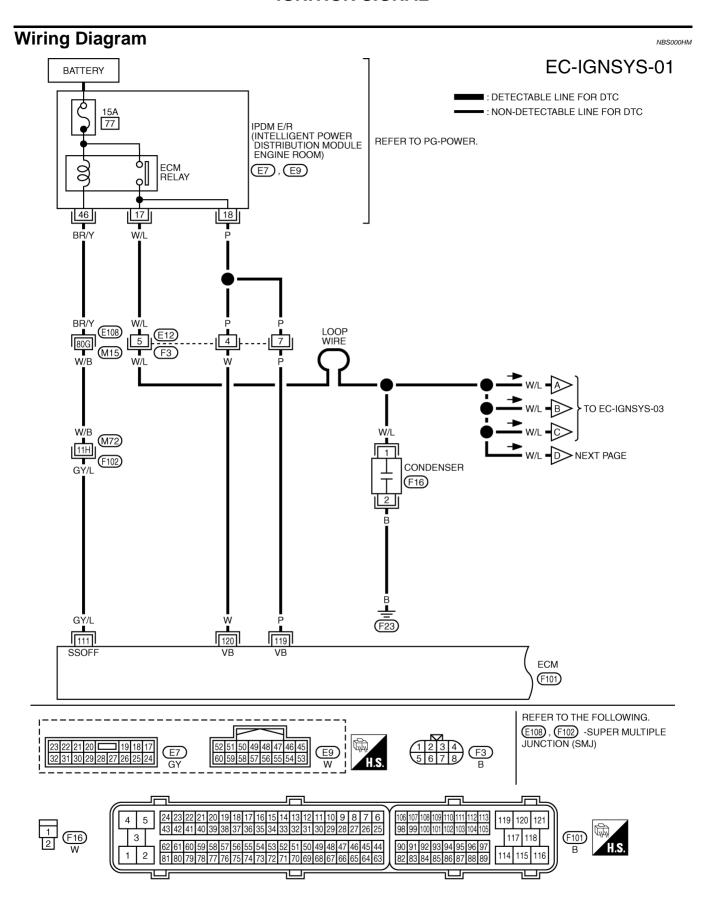
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TBWT1241E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
111	GY/L	ECM relay (Self shut-off)	[Engine is running] [Ignition switch: OFF] • For a few seconds after turning ignition switch OFF	0 - 1.5V
		(Seil Silut-Oil)	[Ignition switch: OFF] • More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
119 120	P W	Power supply for ECM	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

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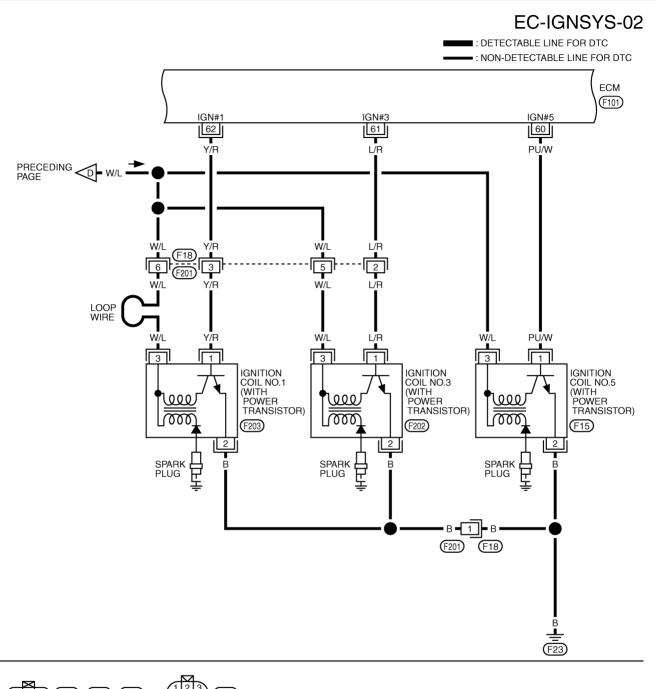
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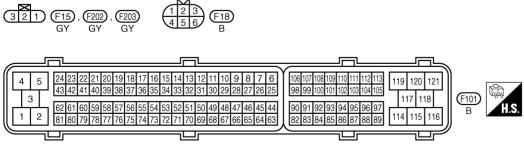
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TBWT0518E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
60 PU/W Ignition signal No. 5	Ignition signal No. 5 Ignition signal No. 3	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	0 - 0.2V★	
61 62	L/R Y/R	Ignition signal No. 1	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	0.1 - 0.4V★

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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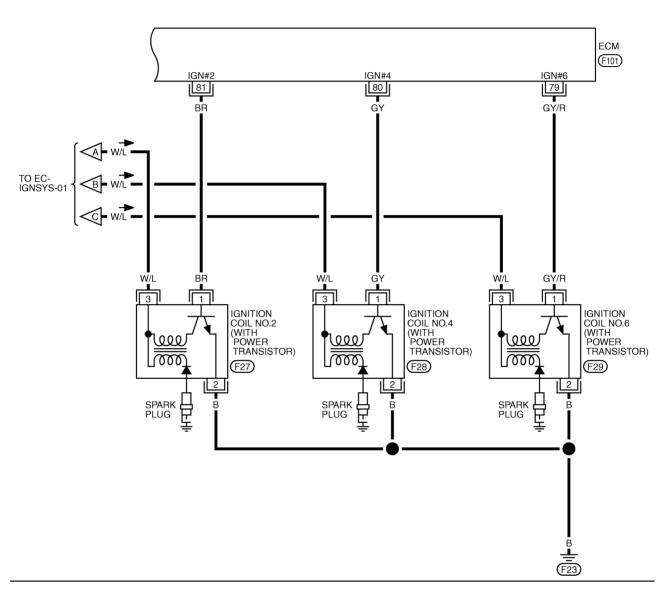
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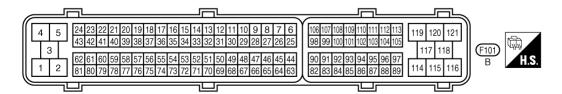
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EC-IGNSYS-03









TBWT1242E

Specification data are reference values and are measured between each terminal and ground. Pulse signal is measured by CONSULT-II.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
79 80	3 1 3 1	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle. 	0 - 0.2V★	
81	BR	Ignition signal No. 4 Ignition signal No. 2	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	0.1 - 0.4V★

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

1. CHECK ENGINE START

Turn ignition switch OFF and restart engine.

Is engine running?

Yes or No

Yes (With CONSULT-II)>>GO TO 2. Yes (Without CONSULT-II)>>GO TO 3.

No >> GO TO 4.

2. CHECK OVERALL FUNCTION

With CONSULT-II

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-II.
- 2. Make sure that each circuit produces a momentary engine speed drop.

OK or NG

OK >> INSPECTION END

NG >> GO TO 10.

ACTIVE TES	5 T	
POWER BALANCE		
MONITOR	<u> </u>	
ENG SPEED	XXX rpm	
MAS A/F SE-B1	xxx v	
		PBIB0133E

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$\overline{3}$. CHECK OVERALL FUNCTION

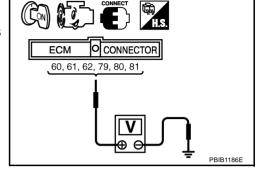
W Without CONSULT-II

- 1. Let engine idle.
- 2. Read the voltage signal between ECM terminals 60, 61, 62, 79, 80, 81 and ground with an oscilloscope.
- 3. Verify that the oscilloscope screen shows the signal wave as shown below.

NOTE:

The pulse cycle changes depending on rpm at idle.





OK or NG

OK >> INSPECTION END

NG >> GO TO 10.

4. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-I

1. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.

SEC986C

2. Check voltage between ECM terminals 119, 120 and ground with CONSULT-II or tester.

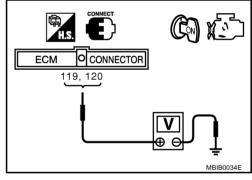
Voltage: Battery voltage

OK or NG

NG

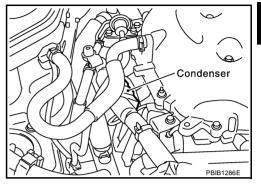
OK >> GO TO 5.

>> Go to <u>EC-154</u>, "<u>POWER SUPPLY AND GROUND CIR-CUIT"</u>.



5. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- 2. Disconnect condenser harness connector.
- 3. Turn ignition switch ON.

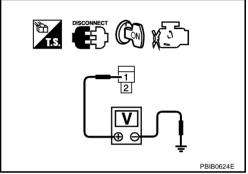


Check voltage between condenser terminal 1 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 8. >> GO TO 6. NG



6. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-III

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector E7.
- Check harness continuity between IPDM E/R terminal 17 and condenser terminal 1. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 17. NG >> GO TO 7.

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E12, F3
- Harness for open or short between IPDM E/R and condenser
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

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8. CHECK CONDENSER GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Check harness continuity between condenser terminal 2 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 9.

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

9. CHECK CONDENSER

Refer to EC-708, "Component Inspection".

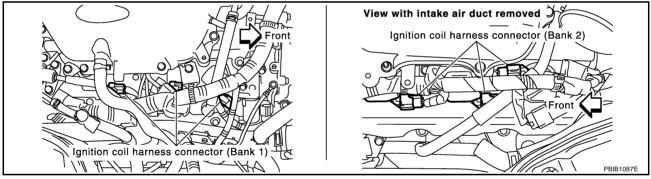
OK or NG

OK >> GO TO 10.

NG >> Replace condenser.

10. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-IV

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect ignition coil harness connector.

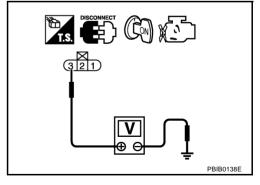


- 4. Turn ignition switch ON.
- 5. Check voltage between ignition coil terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage

OK or NG

OK >> GO TO 12. NG >> GO TO 11.



11. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F18, F201
- Harness for open or short between ignition coil and harness connector F3
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

$\overline{12}$. CHECK IGNITION COIL GROUND CIRCUIT FOR OPEN AND SHORT Turn ignition switch OFF. Check harness continuity between ignition coil terminal 2 and ground. EC Refer to Wiring Diagram. Continuity should exist. Also check harness for short to power. OK or NG OK >> GO TO 14. NG >> GO TO 13. 13. DETECT MALFUNCTIONING PART F Check the following. Harness connectors F18, F201 Harness for open or short between ignition coil and ground >> Repair open circuit or short to power in harness or connectors. 14. check ignition coil output signal circuit for open and short Disconnect ECM harness connector. Н Check harness continuity between ECM terminals 60, 61, 62, 79, 80, 81 and ignition coil terminal 1. Refer to Wiring Diagram. Continuity should exist. 3. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 16. NG >> GO TO 15. 15. DETECT MALFUNCTIONING PART Check the following. Harness connectors F18, F201 Harness for open or short between ignition coil and ECM >> Repair open circuit or short to ground or short to power in harness or connectors. M 16. CHECK IGNITION COIL WITH POWER TRANSISTOR Refer to EC-708, "Component Inspection". OK or NG OK >> GO TO 17. NG >> Replace malfunctioning ignition coil with power transistor. 17. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". OK or NG

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

>> Replace IPDM E/R.

OK NG

Component Inspection IGNITION COIL WITH POWER TRANSISTOR

NBS000HO

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Disconnect ignition coil harness connector.
- 3. Check resistance between ignition coil terminals as follows.

Terminal No. (Polarity)	Resistance Ω [at 25°C (77°F)]
1 and 2	Except 0 or ∞
1 and 3	Event 0
2 and 3	- Except 0

- If NG, Replace ignition coil with power transistor.
 If OK, go to next step.
- 5. Turn ignition switch OFF.
- 6. Reconnect all harness connectors disconnected.
- 7. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

Do not use CONSULT-II to release fuel pressure, or fuel pressure applies again during the following procedure.

- 8. Start engine.
- 9. After engine stalls, crank it two or three times to release all fuel pressure.
- 10. Turn ignition switch OFF.
- 11. Remove ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 12. Remove ignition coil and spark plug of the cylinder to be checked.
- 13. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 14. Connect spark plug and harness connector to ignition coil.
- 15. Fix ignition coil using a rope etc. with gap of 13 17 mm between the edge of the spark plug and grounded metal portion as shown in the figure.
- 16. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded part.

Spark should be generated.

CAUTION:

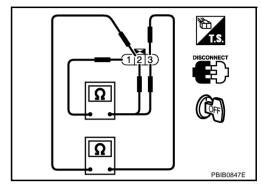
- Do not approach to the spark plug and the ignition coil within 50cm. Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.
- It might cause to damage the ignition coil if the gap of 17 mm or more is taken.

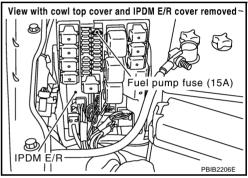
When the gap is less than 13 mm, the spark might be generated even if the coil is malfunctioning.

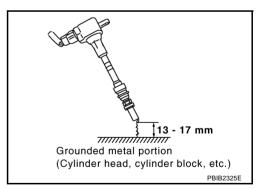
17. If NG, Replace ignition coil with power transistor.

CONDENSER

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser harness connector.

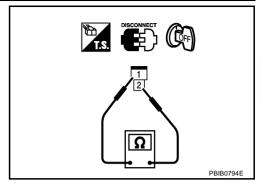






3. Check resistance between condenser terminals 1 and 2.

Resistance: Above 1 M Ω [at 25°C (77°F)]



Removal and Installation IGNITION COIL WITH POWER TRANSISTOR

Refer to EM-35, "IGNITION COIL".

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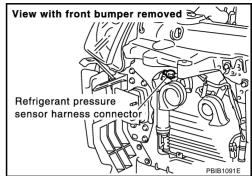
REFRIGERANT PRESSURE SENSOR

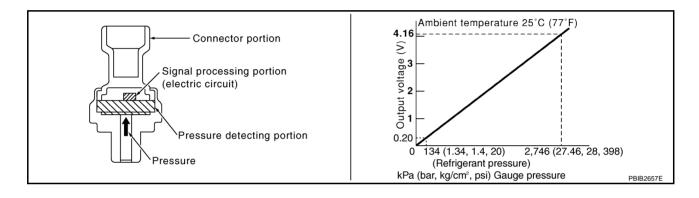
PFP:92136

Component Description

NBS00012

The refrigerant pressure sensor is installed at the condenser of the air conditioner system. The sensor uses an electrostatic volume pressure transducer to convert refrigerant pressure to voltage. The voltage signal is sent to ECM, and ECM controls cooling fan system.

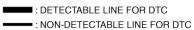


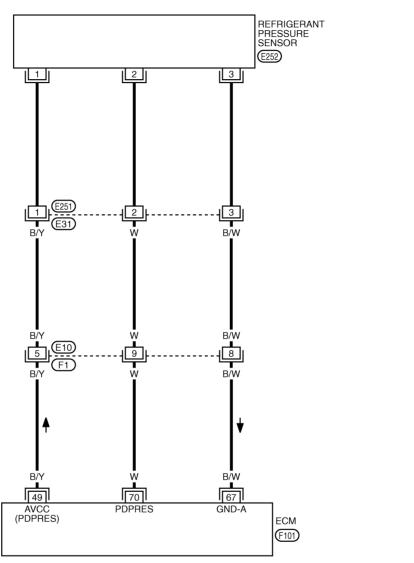


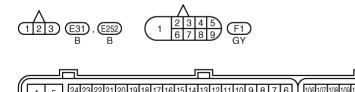
Wiring Diagram

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EC-RP/SEN-01







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Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TER- MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
49	В/Ү	Sensor power supply (Refrigerant pressure sensor)	[Ignition switch: ON]	Approximately 5V
67	B/W	Sensor ground	[Engine is running]Warm-up conditionIdle speed	Approximately 0V
70	70 W Refrigerant pressure sensor		[Engine is running] • Warm-up condition • Both A/C switch and blower fan switch: ON (Compressor operates.)	

Diagnostic Procedure

NBS00014

1. CHECK REFRIGERANT PRESSURE SENSOR OVERALL FUNCTION

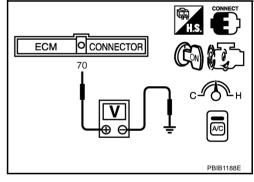
- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn A/C switch and blower fan switch ON.
- 3. Check voltage between ECM terminal 70 and ground with CON-SULT-II or tester.

Voltage: 1.0 - 4.0V

OK or NG

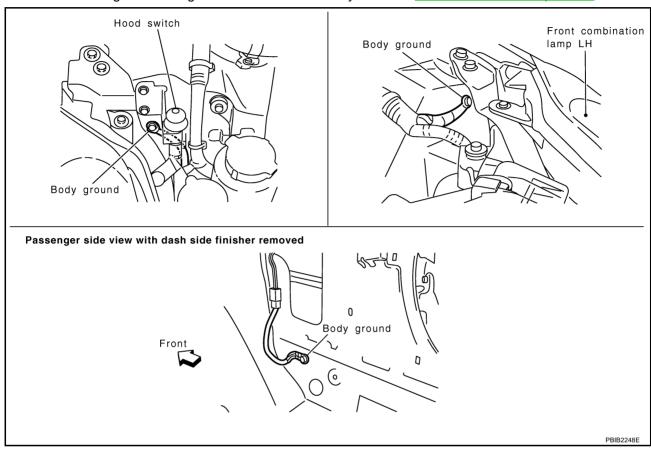
OK >> INSPECTION END

NG >> GO TO 2.



2. CHECK GROUND CONNECTIONS

- 1. Turn A/C switch and blower fan switch OFF.
- 2. Stop engine.
- 3. Turn ignition switch OFF.
- 4. Loosen and retighten three ground screws on the body. Refer to EC-162, "Ground Inspection".



OK or NG

OK >> GO TO 3.

NG >> Repair or replace ground connections.

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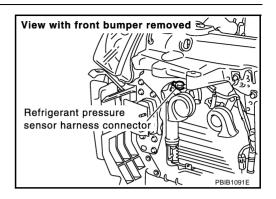
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3. CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect refrigerant pressure sensor harness connector.
- 2. Turn ignition switch ON.

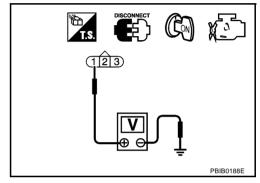


Check voltage between refrigerant pressure sensor terminal 1 and ground with CONSULT-II or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 5. NG >> GO TO 4.



4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E251, E31
- Harness connectors E10, F1
- Harness for open or short between ECM and refrigerant pressure sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK REFRIGERANT PRESSURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between refrigerant pressure sensor terminal 3 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7. NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E251, E31
- Harness connectors E10, F1
- Harness for open or short between ECM and refrigerant pressure sensor

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

7. CHECK REFRIGERANT PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Check harness continuity between ECM terminal 70 and refrigerant pressure sensor terminal 2. Refer to Wiring Diagram. EC Continuity should exist. 2. Also check harness for short to ground and short to power. OK or NG OK >> GO TO 9. NG >> GO TO 8. D 8. DETECT MALFUNCTIONING PART Check the following. F Harness connectors E251, E31 Harness connectors E10, F1 Harness for open or short between ECM and refrigerant pressure sensor >> Repair open circuit or short to ground or short to power in harness or connectors. 9. CHECK INTERMITTENT INCIDENT Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT". Н OK or NG OK >> Replace refrigerant pressure sensor. NG >> Repair or replace. Removal and Installation NBS00015 REFRIGERANT PRESSURE SENSOR Refer to ATC-141, "Removal and Installation of Refrigerant Pressure Sensor" .

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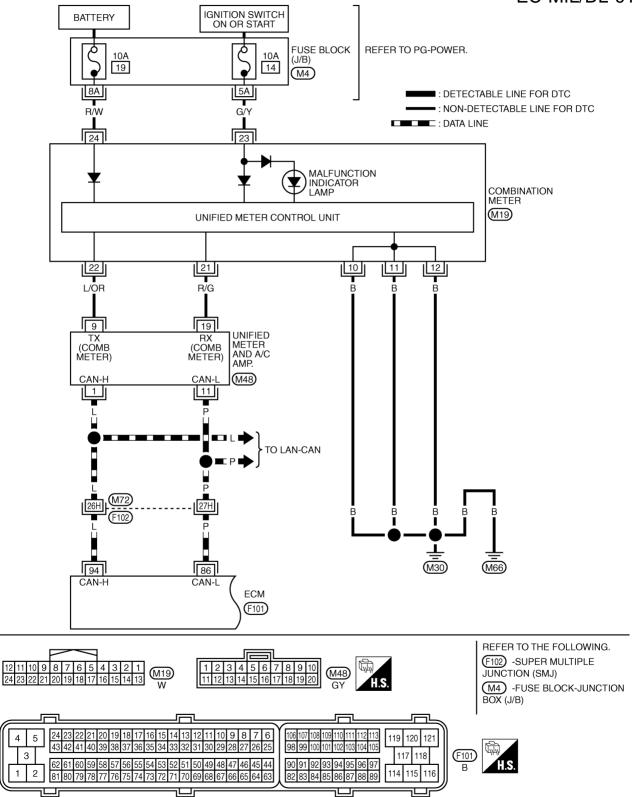
MIL AND DATA LINK CONNECTOR

MIL AND DATA LINK CONNECTOR Wiring Diagram

PFP:24814

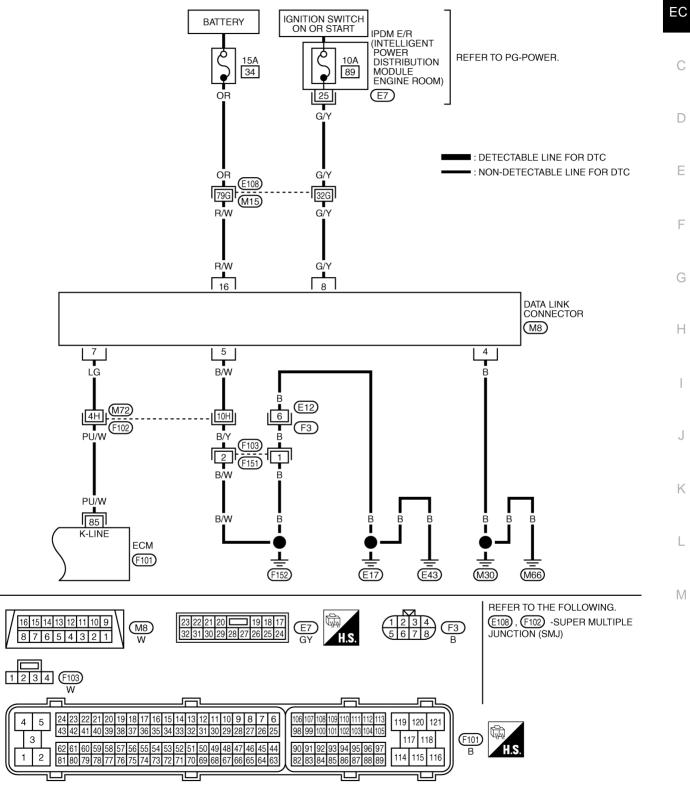
NBS000II

EC-MIL/DL-01



TBWT0700E

EC-MIL/DL-02



TBWT1248E

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Fuel Pressure

Fuel pressure at idling kPa (kg/cm ² , psi)	Approximately 350 (3.57, 51)
Idle Speed and Ignition Timing	NBS000IK

Target idle speed		A/T	No load* (in P or N position)	- 650 ± 50 rpm	
		M/T	No load* (in Neutral position)		
	Coupe	A/T	In P or N position	775 rpm or more	
Air conditioner: ON		M/T	In Neutral position	- 775 rpm or more	
Air conditioner: ON	Roadster	A/T	In P or N position	700 rpm or more	
		M/T	In Neutral position	700 rpm or more	
Ignition timing		A/T	In P or N position	15° ± 5° PTDC	
		M/T	In Neutral position	15° ± 5° BTDC	

^{*:} Under the following conditions:

- Air conditioner switch: OFF
- Electric load: OFF (Lights, heater fan & rear window defogger)
- Steering wheel: Kept in straight-ahead position

Calculated Load Value

NBS000IL

Conditions	Calculated load value % (Using CONSULT-II or GST)	
At idle	5 - 35	
At 2,500 rpm	5 - 35	

Mass Air Flow Sensor

NBS000IM

Supply voltage	Battery voltage (11 - 14V)
Output voltage at idle	0.9 - 1.2V*
Mass air flow (Using CONSULT-II or GST)	2.0 - 6.0 g·m/sec at idle* 7.0 - 20.0 g·m/sec at 2,500 rpm*

^{*:} Engine is warmed up to normal operating temperature and running under no load.

Intake Air Temperature Sensor

NBS000IN

Temperature °C (°F)	Resistance kΩ	
25 (77)	1.800 - 2.200	
80 (176)	0.283 - 0.359	

Engine Coolant Temperature Sensor

NBS000IO

Temperature °C (°F)	Resistance kΩ
20 (68)	2.1 - 2.9
50 (122)	0.68 - 1.00
90 (194)	0.236 - 0.260

Air Fuel Ratio (A/F) Sensor 1 Heater

NBS000IP

Resistance [at 25°C (77°F)]	2.3 - 4.3Ω
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Heated Oxygen sensor 2 Heater

NBS000IQ

 $5.0 - 7.0\Omega$

Resistance [at 25°C (77°F)] Crankshaft Position Sensor (POS)

NBS000IR

Refer to EC-401, "Component Inspection".

SERVICE DATA AND SPECIFICATIONS (SDS)

Camshaft Position Sensor (PHASE)		NBS000IS	
Refer to EC-411, "Component Inspection".			Α
Throttle Control Motor		NBS000IT	
Resistance [at 25°C (77°F)]	Approximately 1 - 15 Ω		EC
Fuel Injector		NBS000IU	
Resistance [at 10 - 60°C (50 - 140°F)]	11.1 - 14.5Ω		С
Fuel Pump			
Resistance [at 25°C (77°F)]	0.2 - 5.0Ω		D

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SERVICE DATA AND SPECIFICATIONS (SDS)