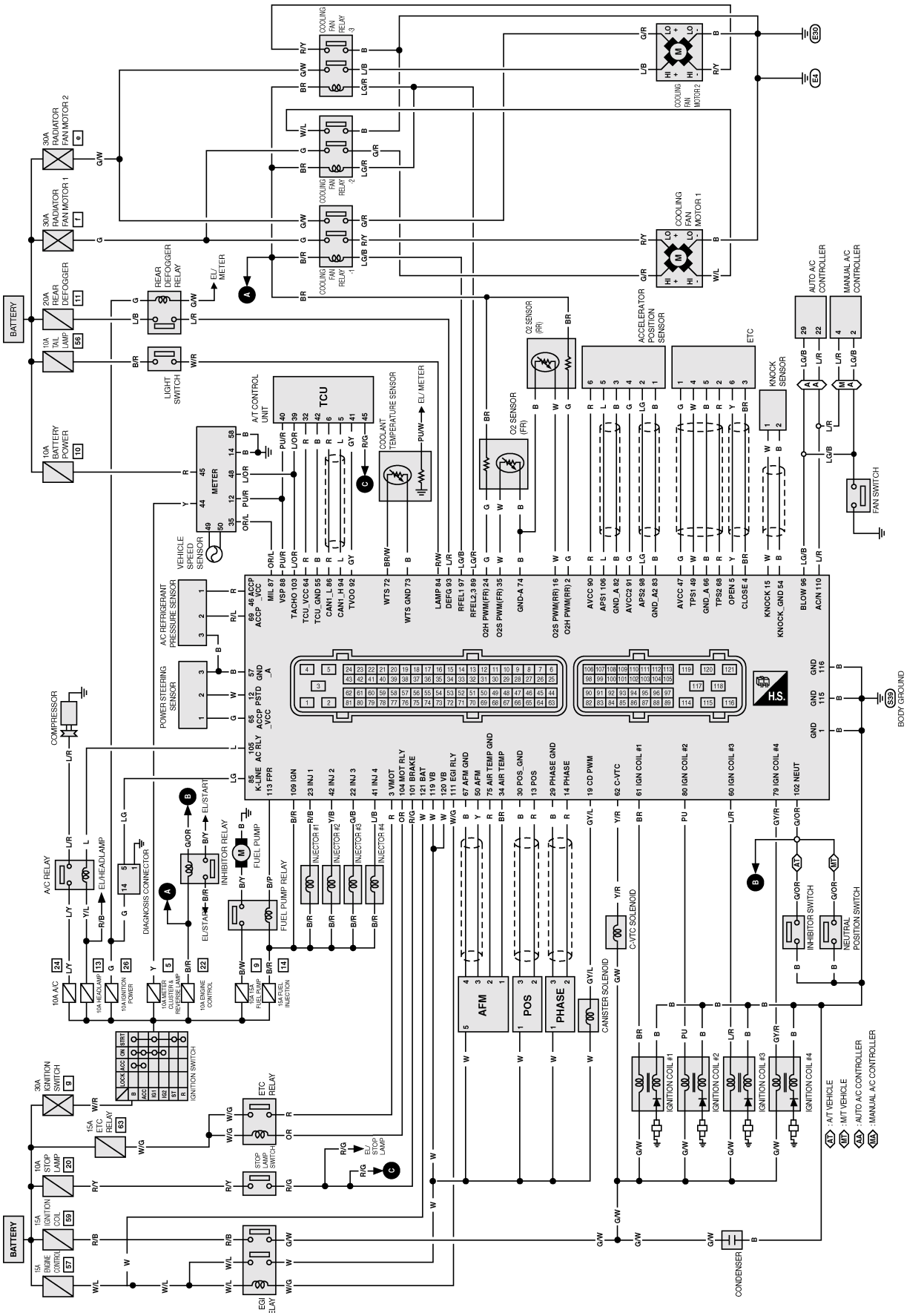
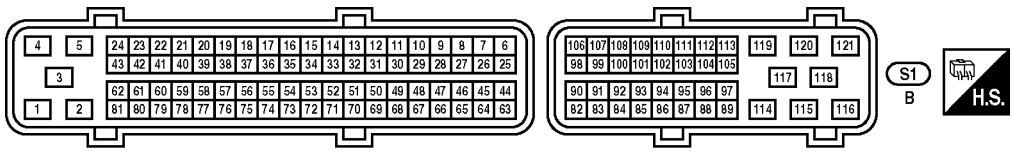
Circuit Diagram



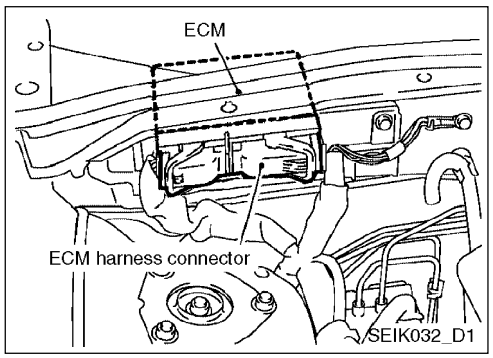
SECK001_D1

Trouble Diagnosis (Cont'd)

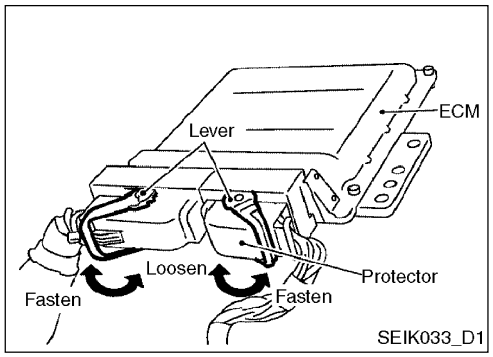
ECM Harness Connector Terminal Layout



SEIK034_D1



SEIK032_D1



SEIK033_D1

ECM Terminals and Reference Value

PREPARATION

1. ECM is located behind in the left side of the cowl top (behind the strut tower).
   For this inspection.
2. Remove ECM harness protector.
3. When disconnecting ECM harness connector, loosen it with levers as far as they will go as shown at right.
4. Connect a break-out box and Y-cable adapter 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

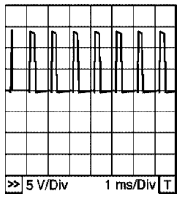
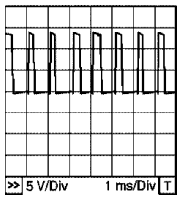
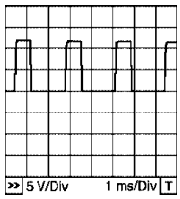
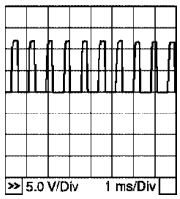
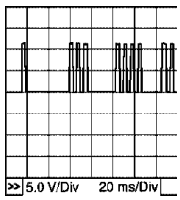
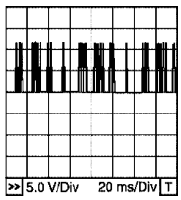
Specification data are reference values and are measured between each terminal and ground.
Pulse signal is measured by CONSULT-II

CAUTION:

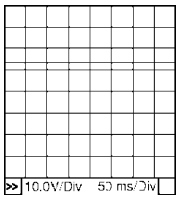
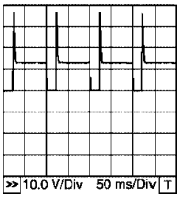
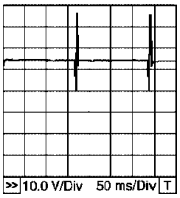
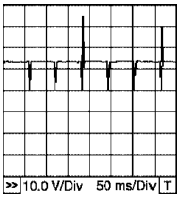
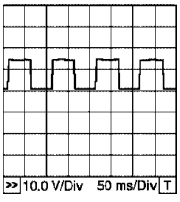
- **Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.**

Terminal No.	Wire Color	Item	Condition	Data (DC Voltage)
1	B	ECM ground	**[Engine is running]** ● Idle speed	Engine ground
3	R	Throttle control motor power supply	**[Ignition switch ON]**	BATTERY VOLTAGE (11 - 14V)

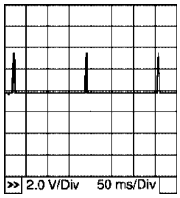
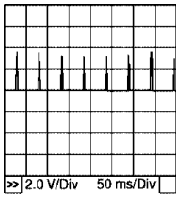
Trouble Diagnosis (Cont'd)

Terminal No	Wire Color	Item	Condition	Data (DC Voltage)
4	BR	Throttle control motor (Close)	**[Ignition switch ON]** ● Engine stopped ● Gear position is 1st (M/T models) ● Gear position is D (A/T models) ● Accelerator pedal is releasing	0 ~ 14 V ★ 
5	Y	Throttle control motor (Open)	**[Ignition switch ON]** ● Engine stopped ● Gear position is 1st (M/T models) ● Gear position is D (A/T models) ● Accelerator pedal is depressing	0 ~ 14 V ★ 
12	W	Power steering pressure sensor	**[Engine is running]** ● Steering wheel is being turned	0.5 ~ 5.0 V
			[Engine is running] ● Steering wheel is not being turned	0.4 ~ 0.8 V
13	R	Crankshaft position sensor (POS)	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 3.0 V ★ 
			[Engine is running] ● Engine speed is 2,000 rpm	Approximately 3.0 V ★ 
14	R	Camshaft position sensor (PHASE)	**[Engine is running]** ● Warm-up condition ● Idle speed	1.0 ~ 4.0 ★ 
			[Engine is running] ● Engine speed is 2,000 rpm	1.0 ~ 4.0 ★ 

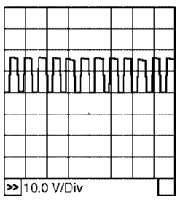
Trouble Diagnosis (Cont'd)

Terminal No	Wire Color	Item	Condition	Data (DC Voltage)
15	W	Knock sensor	**[Engine is running]** ● Idle speed	Approximately 2.5 V
16	W	Heated oxygen sensor 2	**[Engine is running]** ● Idle speed	Approximately 0 ~ 1 V
19	GY/L	EVAP canister purge volume control solenoid valve	**[Engine is running]** ● Idle speed	BATTERY VOLTAGE (11 - 14 V) ★ 
			[Engine is running] ● Engine speed is about 2,000 rpm (More than 100 seconds after starting engine)	Approximately 10 V ★ 
22 23 41 42	G/B R/B L/B Y/B	Injector No. 3 Injector No. 1 Injector No. 4 Injector No. 2	**[Engine is running]** ● Warm-up condition ● Idle speed	BATTERY VOLTAGE (11 - 14 V) ★ 
			[Engine is running] ● Warm-up condition ● Engine speed is 2,000 rpm	BATTERY VOLTAGE (11 - 14 V) ★ 
24	G	Heated oxygen sensor 1 heater	**[Engine is running]** ● Warm-up condition ● Engine speed is below 3,600 rpm	Approximately 7.0 V ★ 
			[Ignition switch "ON"] ● Engine stopped. **[Engine is running]** ● Engine speed is above 3,600 rpm	BATTERY VOLTAGE (11 - 14 V)
29	B	Camshaft position sensor (PHASE) ground	**[Engine is running]** ● Idle speed	Approximately 0 V
30	B	Camshaft position sensor (POS) ground	**[Engine is running]** ● Idle speed	Approximately 0 V

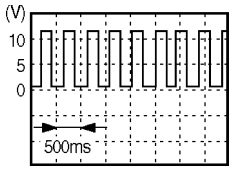
Trouble Diagnosis (Cont'd)

Terminal No	Wire Color	Item	Condition	Data (DC Voltage)
34	BR	Intake air temperature sensor	**[Engine is running]**	Approximately 0 - 4.8 V Output voltage varies with intake air temperature.
35	W	Heated oxygen sensor 1	**[Engine is running]** ● Warm-up condition ● Engine speed is 2,000 rpm	0 - Approximately 1.0 V (Periodically change)
46	R	Sensor power supply (Refrigerant pressure	**[Ignition switch ON]**	Approximately 5 V
47	G	sensor) Sensor power supply	**[Ignition switch ON]**	Approximately 5 V
49	W	(Throttle position sensor) Throttle position sensor 1	**[Ignition switch ON]** ● Engine stopped ● Gear position is 1st (M/T models) ● Gear position is D (A/T models) ● Accelerator pedal fully released	More than 0.36 V
			[Ignition switch ON] ● Engine stopped ● Gear position is 1st (M/T models) ● Gear position is D (A/T models) ● Accelerator pedal fully depressed	Less than 4.75 V
50	Y	Mass air flow sensor	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 1.0 - 1.7 V
			[Engine is running] ● Warm-up condition ● Engine speed is 2,500 rpm	Approximately 1.5 - 2.1 V
54	B		**[Engine is running]** ● Idle speed	Approximately 0 V
57	B	Sensor ground (Knock sensor shield circuit) Sensors' ground (Power	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 V
60 61 79 80	L/R BR GY/R PU	steering pressure sensor/Refrigerant pressure sensor/ASCD steering switch) Ignition signal No. 3 Ignition signal No. 1 Ignition signal No. 4 Ignition signal No. 2	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 - 0.1 V ★ 
			[Engine is running] ● Warm-up condition ● Engine speed is 2,000 rpm	Approximately 0 - 0.1 V ★ 

Trouble Diagnosis (Cont'd)

Terminal No	Wire Color	Item	Condition	Data (DC Voltage)
62	Y/R	Intake valve timing control solenoid valve	**[Engine is running]** ● Warm-up condition ● Idle speed	BATTERY VOLTAGE (11 - 14 V) ★
			[Engine is running] ● Warm-up condition ● When revving engine up to 2,000 rpm quickly	7 - 10 V ★ 
65	G	Sensor power supply (Power steering pressure sensor)	**[Ignition switch ON]**	Approximately 5 V
66	B	Sensor ground (Throttle position sensor)	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 V
67	B	Sensor ground (Mass air flow sensor)	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 V
68	R	Throttle position sensor 2	**[Ignition switch ON]** ● Engine stopped ● Gear position is 1st (M/T models) ● Gear position is D (A/T models) ● Accelerator pedal fully released	Less than 4.75 V
			[Ignition switch ON] ● Engine stopped ● Gear position is 1st (M/T models) ● Gear position is D (A/T models) ● Accelerator pedal fully depressed	More than 0.36 V
69	R/L	Refrigerant pressure sensor	**[Engine is running]** ● Warm-up condition ● Both A/C switch and blower switch are ON (Compressor operates.)	Approximately 1.0 - 4.0 V ★
72	BR/W	Engine coolant temperature sensor	**[Engine is running]**	Approximately 0 - 4.8 V Output voltage varies with engine coolant temperature.
73	B	Sensor ground (Engine coolant temperature sensor)	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 V
74	B	Heated oxygen sensor ground	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 V
75	R	Sensor ground (Intake air temperature sensor)	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 V

Trouble Diagnosis (Cont'd)

Terminal No	Wire Color	Item	Condition	Data (DC Voltage)
82	B	Sensor ground Accelerator pedal position sensor 1)	**[Engine is running]** ● Warm-up condition ● Idle speed	Approximately 0 V
83	B	Sensor ground Accelerator pedal position sensor 2)		
84	R/W	Electrical load signal (Headlamp signal)	Lighting switch is ON	BATTERY VOLTAGE (11 - 14 V)
			Lighting switch is OFF	Approximately 0 V
85	LG	DATA link connector (K-Line)	CONSULT-II is disconnected.	Approximately 0 V
			CONSULT-II is connected.	BATTERY VOLTAGE (11 - 14 V)
86	R	CAN communication line	During communication between ECU and TCU	Approximately 2.3 V
87	OR/L	MIL drive signal	MIL (mulfunction indicator lamp) ON	Approximately 0 V
			MIL (mulfunction indicator lamp) OFF	Approximately 11 - 14 V
88	PU/R	Vehicle speed input signal	● Engine stopped ● Gear position is Neutral (M/T models) ● Gear position is P or N (A/T models) (while turning the wheel)	0 - Approximately 12 V (Periodically change)
			● Lift the drive wheel ● Gear position is any drive gear (M/T models) ● Gear position is D (A/T models)	0 - Approximately 12 V (Periodically change) 
89	LG/R	Cooling fan relay (High)	Cooling fan is operating	Approximately 0 V
			Cooling fan is not operating	BATTERY VOLTAGE (11 - 14 V)
90	R	Sensor power supply (Accelerator pedal position sensor 1)	**[Ignition switch ON]**	Approximately 5V
91	G	Sensor power supply (Accelerator pedal position sensor 2)		
92	GY	Engine and automatic transaxle integrated control	Same with TPS 1 sensor input value	
93	L/R	Electrical load signal (Rear window defogger signal)	Rear window defogger switch is ON	BATTERY VOLTAGE (11 - 14 V)
			Rear window defogger switch is OFF	Approximately 0 V
94	L	CAN communication line	During communication between ECU and TCU	Approximately 2.8 V
96	LG/B	Heater fan switch signal	**[ignition switch ON]** ● Heater fan control switch is ON	Approximately 0 V
			[ignition switch ON] ● Heater fan control switch is OFF	BATTERY VOLTAGE (11 - 14 V)
97	LG/B	Cooling fan relay (Low)	**[Engine is running]** ● Cooling fan is operating	Approximately 1 V
			[Engine is running] ● Cooling fan is not operating	BATTERY VOLTAGE (11 - 14 V)
98	LG	Accelerator pedal position sensor	**[Ignition switch ON]** ● Engine stopped ● Accelerator pedal fully released	Approximately 0.5 V
			[Ignition switch ON] ● Engine stopped ● Accelerator pedal fully depressed	Approximately 2.3 V

Trouble Diagnosis (Cont'd)

Terminal No	Wire Color	Item	Condition	Data (DC Voltage)
101	R/G	Stop lamp switch	**[Ignition switch OFF]** ● Brake pedal fully released	Approximately 0 V
			[Ignition switch OFF] ● Brake pedal fully depressed	BATTERY VOLTAGE (11 - 14 V)
102	G/OR	PNP switch	**[Ignition switch ON]** ● Engine stopped ● Gear position is Neutral (M/T models) ● Gear position is P or N (A/T models)	Approximately 0 V
			[Ignition switch ON] ● Engine stopped ● Except the above gear position	Approximately 5 V
104	OR	Throttle control motor relay	**[Ignition switch OFF]**	BATTERY VOLTAGE (11 - 14 V)
			[Ignition switch ON]	Approximately 0 V
105	L	Air conditioner relay	**[Engine is running]** ● Both A/C switch and blower switch are ON (Compressor operates)	Approximately 0 V
			[Engine is running] ● A/C switch is OFF	BATTERY VOLTAGE (11 - 14 V)
106	L	Accelerator pedal position sensor 1	**[Ignition switch ON]** ● Engine stopped ● Accelerator pedal fully released	0.5 - 1.0 V
			[Ignition switch ON] ● Engine stopped ● Accelerator pedal fully depressed	3.9 - 4.7 V
109	B/R	Ignition switch	**[Ignition switch OFF]**	Approximately 0 V
			[Ignition switch ON]	BATTERY VOLTAGE (11 - 14 V)
110	L/R	Air conditioner switch signal	**[Engine is running]** ● Both A/C switch and blower switch are ON	Approximately 0 V
			[Engine is running] ● A/C switch is OFF	BATTERY VOLTAGE (11 - 14 V)
111	W/G	EGI relay	**[Engine is running]** **[Ignition switch OFF]** ● For a 4 seconds after turning ignition switch OFF	Approximately 0 V
			[Ignition switch OFF] ● More than a 4 seconds passed after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14 V)
113	B/P	Fuel pump relay	**[Ignition switch ON]** ● For 1 second after turning ignition switch ON	Approximately 0 V
			[Engine is running] **[Ignition switch ON]** ● More than 1 second after turning ignition switch ON	BATTERY VOLTAGE (11 - 14 V)

Trouble Diagnosis (Cont'd)

Terminal No	Wire Color	Item	Condition	Data (DC Voltage)
115 116	B B	ECM ground	**[Engine is running]** ● Idle speed	Engine ground
119 120	W W	Power supply for ECM	**[Ignition switch ON]**	BATTERY VOLTAGE (11 - 14 V)
121	W	Power supply for ECM (Back-up)	**[Ignition switch OFF]**	BATTERY VOLTAGE (11 - 14 V)

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

CONSULT-II Function

FUNCTION

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.*1
Data monitor	Input/Output data in the ECM can be read.
Data monitor (spec)	Specification with basic fuel schedule, MAS A/F sensor and A/F alpha 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.
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.

*1: The following emission-related diagnostic information is cleared when the ECM memory is erased.
- Diagnostic trouble codes
- Freeze frame data
- Others