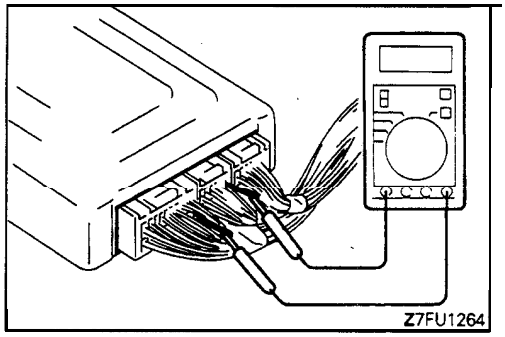


ENGINE CONTROL MODULE (ECM) TERMINAL VOLTAGES INSPECTION

(1) Connect a very thin wire probe (such as a paper clip) to the probe of the voltmeter.
(2) Insert the very thin probe from the wire side into contact with each of the terminals of the ECM connector and check the voltage, while referring to the check chart.

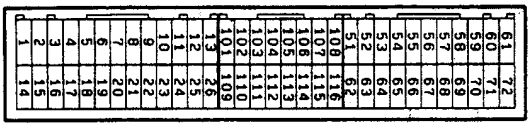
NOTE
1. Measure a voltage with the ECM connector connected.
2. Measure the voltage between each terminal and the No. 26 terminal (ground terminal).
3. Withdraw the ECM for easier access to the connector terminals.
4. The inspection need not be performed in the order of the chart.

Caution
Short-circuiting the positive (+) probe between a connector terminal and ground could cause damage to the vehicle wiring, sensors or ECM, or all of them. Use care to prevent it!

(3) If the voltmeter shows any deviation from the standard value, check the corresponding sensor, actuator and related electrical wiring, then repair or replace.
(4) After repair or replacement, recheck with the voltmeter to confirm that the problem has cleared completely.

TERMINAL VOLTAGE CHECK CHART

Engine Control Module Connector Terminal Configuration



Z7FU0653

Terminal No.	Check point	Check conditions (Engine conditions)	Standard value	Remarks
60	Back-up power supply	Ignition switch: OFF	B+	
12	Power supply	Ignition switch: ON	B+	
25				
62	Ignition switch IG	Ignition switch: ON	B+	
108	MFI relay (power supply)	Ignition switch: OFF	B+	
		Ignition switch: ON	o-3 v	
8	MFI relay (fuel pump)	Ignition switch ON	B+	
		Engine: Idle	o-3 v	
61	Sensor impressed voltage	Ignition switch: ON	4.5–5.5 v	–

TSB Revision

Terminal No.	Check point	Check conditions (Engine conditions)		Standard value	Remarks
70	Volume air flow sensor	Engine: Idle		2.2–3.2 V	–
		Engine: 2,000 rpm			
19	Volume air flow sensor reset signal	Engine: Idle		0–1 V	–
		Engine: 3,000 rpm		6–9 V	
52	Intake air temperature sensor	Ignition switch: ON	When intake temperature is 0°C (32°F)	3.2–3.8 V	–
			When intake temperature is 20°C (68°F)	2.3–2.9 V	
			When intake temperature is 40°C (104°F)	1.5–2.1 V	
			When intake temperature is 80°C (176°F)	0.4–1.0 V	
65	Barometric pressure sensor	Ignition switch: ON	When altitude is 0 m (0 ft.)	3.7–4.3 V	–
			When altitude is 1,200 m (3,937 ft.)	3.2–3.8 V	
63	Water temperature sensor	Ignition switch: ON	When water temperature is 0°C (32°F)	3.2–3.8 V	–
			When water temperature is 20°C (68°F)	2.3–2.9 V	
			When water temperature is 40°C (104°F)	1.3–1.9 V	
			When water temperature is 80°C (176°F)	0.3–0.9 V	
64	Throttle position sensor	Ignition switch: Kept in ON state for more than 15 seconds	Idle	0.3–1.0 V	–
			Wide open throttle	4.5–5.5 V	
67	Closed throttle position switch	Ignition switch: ON	Throttle valve placed in idle position	0–1 V	–
			Throttle valve placed in slightly opened position	4 V or mere	
68	Camshaft position sensor	Engine: Cranked		0.2–3.0 V	–
		Engine: Idle			
69	Crankshaft position sensor	Engine: Cranked		0.2–3.0 V	–
		Engine: Idle			
51	Ignition switch-ST	Engine: Cranked		8 V or more	M/T
71	Park/Neutral position switch	Ignition switch: ON	Selector lever set to P or N	0–3 V	A/T
			Selector lever set to D, 2, L or R	8–14 V	

TSB Revision

Terminal No.	Check point	Check conditions (Engine conditions)		Standard value	Remarks
66	Vehicle speed sensor	• Ignition switch: ON • Move the vehicle slowly forward		0 ↔ 5 V (Changes repeated)	–
107	Power steering pressure switch	Engine: Idle, warm	Steering wheel placed in neutral (straight ahead) position	B+	
			Steering wheel turned half a turn	O-3 V	
115	Air conditioning switch 1	Engine: Idle	Air conditioning switch set to OFF	O-3 V	–
			Air conditioning switch set to ON (Air conditioning compressor in driven state)	B+	
20	Airconditioning switch 2	Engine: Running at idle	Air conditioning switch set to OFF	0–3 V	
			• Air conditioning switch set to ON • Indoor set temperature brought closer to atmospheric temperature	B+	
22	Air conditioning relay	• Engine: Idle • Air conditioning switch: OFF → ON (Air compressor in driven state)		B+ or 6 V or more for a moment → O-3 V as A/C clutch cycles	–
6	Fan motor relay (Lo)	Radiator fan not operating (Coolant temperature: below 90°C [194°F])		B+	1994and later Federal model
		Radiator fan operating at low speeds (Coolant temperature: 95–105°C [203–221 °F])		o-3 v	
53	Fan motor relay (Hi)	Radiator fan not operating (Coolant temperature: below 90°C [194°F])		B+	1994 and later Federal model
		Radiator fan operating at high speeds (Coolant temperature: above 105°C [221°F]		o-3 v	
24	Electric load switch	Engine: Running at idle	Lighting switch set to OFF	o-3 v	
			Lighting switch set to ON	B+	
56 55	Heated oxygen sensor	Engine: Warm, 2000 rpm (Digital voltmeter to be used for checking)		0 ↔ 0.8 V (Changes repeated)	Terminal 55 for rear bank of turbo-charged engine
1	No.1 injector	Engine: Running at idle after warmup, and accelerated abruptly by depressing accelerator pedal		Falls temporarily a little from 11-14v	–
14	No.2 injector				
2	No.3 injector				
15	No.4 injector				
3	No.5 injector				
16	No.6 injector				

TSB Revision

Terminal No.	Check point	Check conditions (Engine conditions)		Standard value	Remarks
4	Stepper motor coil <A1>	Engine: Warm Check immediately after hot restart		B+ ↔ 0–3 V (Changed repeated)	–
17	Stepper motor coil <A2>				
5	Stepper motor coil <B1>				
18	Stepper motor coil <B2>				
10	Ignition power transistor unit A	Engine speed: 3,000 rpm		0.3-3 v	
23	Ignition power transistor unit B				
11	Ignition power transistor unit C				
9	Evaporative emission purge solenoid	Ignition switch: ON		B+	
		Engine: Warm, 3,000 rpm		o-3 v	
7	Fuel pressure solenoid	Ignition switch: ON		B+	Turbo
		Engine: Warm, 3,000 rpm		0–3 V → B+	
105	Turbocharger waste gate solenoid	Ignition switch: ON		B+	Turbo
		Engine: Idle (when the premium gasoline is used)		O-3 V	
11	Turbo meter	Ignition switch: ON		4-13 v	Turbo
		Engine: Depress the accelerator pedal abruptly while the engine is idling		Falls temporarily from B+	
21	Fuel pump relay 2	Engine: Depress the accelerator pedal abruptly while the engine is idling		Rises temporarily from o-3 v	Turbo
101	Engine ignition signal	Engine: 3,000 rpm		0.3-3 v	
102	Valve opened or closed indication signal	Muffler mode changeover switch: ON	Engine: Idle	o-3 v	Turbo
			Engine: 4,500 rpm	B+	
103	Muffler mode changeover switch	Ignition switch: ON	Changeover switch set to ON (TOUR)	O-3 V	Turbo
			Changeover switch set to OFF (SPORT)	B+	
104	Ignition timing adjustment terminal	Ignition switch: ON	Ignition timing adjustment terminal connected to ground	O-I V	
			Ignition timing adjustment terminal disconnected from ground	4.0-5.5 V	
106	Check engine/malfunction indicator lamp	Ignition switch: OFF → ON		0–3 V → 9-13 v (Several seconds later)	–

TSB Revision

Terminal No.	Check point	Check conditions (Engine conditions)		Standard value	Remarks
6	EGR solenoid	Ignition switch: ON		B+	California – Non Turbo, Turbo
		Engine: Idle Suddenly depress the accelerator pedal.		Falls temporarily from B+.	
53	EGR temperature sensor	Ignition switch: ON	When sensor temperature is 50°C (122°F)	3.6–4.4 V	California
			When sensor temperature is 100°C (212°F)	2.2–3.0 V	
111	Induction control valve position sensor No. 1	Ignition switch: ON		0–1 V or 4.5–5.5 V	Non Turbo
		Engine: Slowly accelerated from idling speed to 5,000 rpm		0–1 V or 4.5–5.5 V → 1.5–4 V (for a moment)	
103	Induction control valve position sensor No. 2	Ignition switch: ON		0–1 V or 4.5–5.5 V	Non Turbo
		Engine: Slowly accelerated from idling speed to 5,000 rpm		O-l V or 4.5-5.5 v → 1.5-4 v (for a moment)	
110	Induction control valve (Opened)	Engine: Slowly accelerated from idling speed to 5,000 rpm		O-l V → 4 V or more (for a moment)	Non Turbo
109	Induction control valve (Closed)	Engine: Slowly decelerated from 5,000 rpm to idling speed			
114	Anti-lock braking signal	Engine: Idle		B+	Turbo
		• When vehicle is put in motion for the first time after the ignition switch was placed in ON position • Vehicle speed: 0 → 10km/h (0 → 0.6mph)		B+ → O-3 V (for a moment)	
116	Total control "Reduce torque" request signal 1	Engine: Idle		4.5-5.5 v	A/T
		Engine: Running at idle after warmup and changing speeds		O-l V	
59	Total control "Reduce torque" request signal 2	Engine: Idle		o-1 v	A/T
		Engine: Running at idle after warmup and changing speeds		l-5.5 V	
7	Total control "Reduce torque" execution signal	Engine: Running at idle with coolant temperature at 50°C (122°F) or lower		O-l V	A/T
		Engine: Idle, warm		1–4 V	

TSB Revision