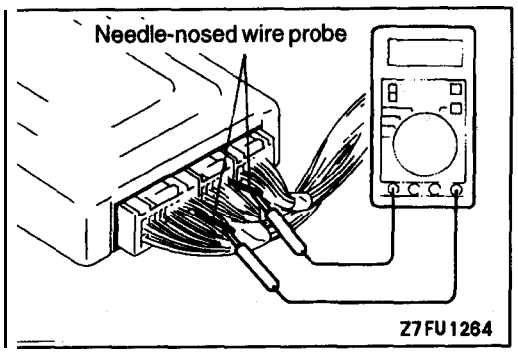


CHECK AT THE ENGINE CONTROL MODULE (ECM)

13100920223

TERMINAL VOLTAGE CHECK CHART

1. Connect a needle-nosed wire probe (paper clip etc.) to a voltmeter probe.
2. insert the needle-nosed wire probe into each of the ECM connector terminals from the wire side, and measure the voltage while referring to the check chart.

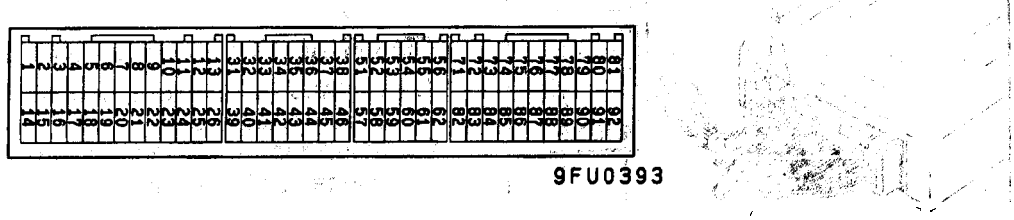
NOTE
1. Measure voltage with the ECM connectors connected.
2. You may find it convenient to pull out the ECM to make it easier to reach the connector terminals.'
3. Checks don't have to be carried out in the order given in the chart.

Caution
Short-circuiting the positive (+) probe between a connector terminal and ground could damage the vehicle wiring, the sensor, ECM, or all three. Use care to prevent this!

3. If voltmeter shows any division from 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 repair has corrected the problem.

TSB Revision

ECM Connector Terminal Arrangement



Terminal No. <2.0L Engine (Turbo)>	Terminal No. <2.4L Engine>	Check item	Check condition (Engine condition)	Normal condition
1	1	No. 1 injector	• Engine: Warm, idle • Suddenly depress the accelerator pedal.	From 11–14 V momentarily drops slightly
14	14	No. 2 injector		
2	2	No. 3 injector		
15	15	No. 4 injector		
3	–	Fuel pressure solenoid	Ignition switch: ON	B+
			Engine: From cranking to idling (Within approx. 2 minutes)	0–3 V → B+
4		Stepper motor coil <A1>	• Engine: Warm, idle • Check immediately after hot restart	0–6 V (repeats)
17		Stepper motor coil <A2>		
5	–	Stepper motor coil <B1>		
18		Stepper motor coil <B2>		
–	4	Idle air control motor (Closed)	Ignition switch: Immediately after turning ON	2V or more (Momentartly) → O-l V
–	17	Idle air control motor (Open)	Ignition switch: Immediately after turning ON	4V or more (Momentartly) → O-l V
–	5	Idle air control motor valve position sensor No.1	Ignition switch: Immediately after turning ON	1.5–4V (Momentarily) → O-l V or 4.5-5.5 V
	18	Idle air control motor valve position sensor No.2	Ignition switch: Immediately after turning ON	1.5–4V (Momentarily) → O-l V or 4.5-5.5 V
6	6	EGR solenoid	Ignition switch: ON	B+
			• Engine: Idle • Suddenly depress the accelerator pedal.	From B+, momentarily drops
7	7	Engine/transaxle general control torque reduction request signal 1	Engine: Idle	4.5-5.5 V
			During driving and speed-changing after engine warming up	0–1 V
8		Fuel pump relay	Ignition switch: ON	B+
			Engine: Idle	0–3 V
	8	Fuel pump relay module	Ignition switch: ON	0–0.5 V
			Engine: Cranking	0.7–2.8 V
			Engine: Idle	
9	9	Evaporative emission purge solenoid	Ignition switch: ON	B+
			Engine: Warm, 3,000 r/min	0–3 V

TSB Revision

Terminal No. <2.0L Engine (Turbo)>	Terminal No. <2.4L Engine>	Check item	Check condition (Engine condition)		Normal condition
10	10	Ignition power transistor <A>	Engine: 3,000 r/min		0.3–3.0 V
23	23	Ignition power transistor <B>			
11	–	Turbocharger waste gate solenoid	Ignition switch: ON		B+
			Engine: Idle (When the premium gasoline is used)		0–3 V
12	12	Power supply	Ignition switch: ON		B+
25	25				
16	–	Boost meter	Ignition switch: ON		4–13V
			• Engine: Idle • Suddenly depress the accelerator pedal.		From B+, momentarily drops
19	19	Volume air flow sensor reset signal	Engine: Idle		Q-I V
			Engine: 3,000 r/min		6-9 V
20	20	Fan motor relay (High)	Radiator fan is not operating [Engine coolant temperature is 90°C (194°F) or less]		B+
			Radiator fan is operating at high speed [Engine coolant temperature is 105°C (221°F) or more]		0–3 V
21	2 1	Fan motor relay (Low)	Radiator fan is not operating [Engine coolant temperature is 90°C (194°F) or less]		B+
			Radiator. fan is operating at low speed [Engine coolant temperature is 90–105°C (194–221°F) or more]		0–3 V
22	22	A/C compressor clutch relay	• Engine: Idle • A/C switch: OFF → ON (A/C compressor is operating)		B+ or momentarily 6 V or more → 0–3 V as A/C clutch cycles
33	33	Generator G terminal	• Engine: idle after warm-up (radiator fan: OFF) • Headlight: OFF → ON • Rear defogger switch: OFF → ON • Stop lamp: OFF → ON		0.2–3.5 V, voltage drops
36	36	Check engine/Malfunction indicator lamp	Ignition switch: OFF → ON		0–3 V → 9–13 V (after several seconds have passed)
37	37	Power steering pressure switch	Engine: Warm, idle	When steering wheel is stationary	B+
				When steering wheel is turned	0–3 V
38	38	MFI relay (Power supply)	Ignition switch: OFF		B+
			Ignition switch: ON		0–3 V

TSB Revision

Terminal No. <2.0L Engine (Turbo)>	Terminal No. <2.4L Engine>	Check item	Check condition (Engine condition)		Normal condition
41	41	Generator FR Terminal	• Engine: idle after warm-up (radiator fan: OFF) • Headlight: OFF → ON • Rear defogger switch: OFF → ON • Stop lamp: OFF → ON		Battery voltage drops 0.2–3.5 V
42	42	A/C refrigerant intermediate pressure switch	A/C refrigerant pressure (High-pressure side)	1,373 kPa (199 psi) or less	B+
				1,863 kPa (270 psi) or more	0–3 V
43	43	Engine/transaxle general control torque reduction request signal 2	Engine: Idle		0–1 V
			During driving and speed-changing after engine warming up		1–5.5 V
45	45	A/C switch	Engine: Idle	Turn the A/C switch OFF	0–3 V
				Turn the A/C switch ON (A/C compressor is operating)	B+
46	46	Engine/transaxle general control torque execution signal	Engine: Idle at the coolant temperature of 50°C (122°F) or lower		0–1 V
			Engine: Warm, idle		1–4 V
54	54	Heated oxygen sensor heater (Rear)	Engine: Warm, idle		0–3 V
			Engine: 5,000 r/min		B+
-	55	Evaporative emission ventilation solenoid	Ignition switch: ON		B+
			After the engine has warmed up, drive the vehicle at a constant speed 88 km/h (55 mph) (OBD-II monitoring conditions).		Momentarily 0–3V
58	58	Engine ignition signal	Engine: 3,000 r/min		0.3–3.0 V
60	60	Heated oxygen sensor heater (Front)	Engine: Warm, idle		0–3 V
			Engine: 5,000 r/min		B+
	61	Fuel tank differential pressure sensor	Engine: Idle		1.2–3.8 V
71	71	Ignition switch-ST	Engine: Cranking		8V or more
72	72	Intake air temperature sensor	Ignition switch: ON	When intake air temperature is 0°C (32°F)	3.2–3.8 V
				When intake air temperature is 20°C (68°F)	2.3-2.9 V
				When intake air temperature is 40°C (104°F)	1.5–2.1 V
				When intake air temperature is 80°C (176°F)	0.4–1.0 V

TSB Revision

Terminal No. <2.0L Engine (Turbo)>	Terminal No. <2.4L Engine>	Check item	Check condition (Engine condition)		Normal condition
73	73	Manifold differential pressure sensor	Engine: Idle		0.8–2.4 V
			• Engine: Idle • Suddenly depress the accelerator pedal		rises from 0.8–2.4 V suddenly
75	75	Heated oxygen sensor (Rear)	• Transaxle: 2nd <M/T>, L range <A/T> • Driving with the throttle widely open • Engine: 3,500 r/min or more		0.6–1.0 V
76	76	Heated oxygen sensor (Front)	Engine: Warm, 2,500 r/min (Use a digital-type voltmeter)		0 ↔ 0.8V (repeats)
80	80	Backup power supply	Ignition switch: OFF		B+
81	81	Sensor impressed voltage	Ignition switch: ON		4.5-5.5 V
92	–	Ignition switch-IG	Ignition switch: ON		B+
33	83	Engine coolant temperature sensor	Ignition switch: ON	When engine coolant temperature is 0°C (32°F)	3.2-3.8 V
				When engine coolant temperature is 20°C (68° F)	2.3-2.9 V
				When engine coolant temperature is 40°C (104°F)	1.3–1.9 V
				When engine coolant temperature is 80°C (176°F)	0.3–0.9 V
14	84	Throttle position sensor	Ignition switch: ON (Check for smooth voltage increase as throttle valve is moved from idle position to wide open throttle.)	Idle	0.3–1.0 V
				Wide open throttle valve	4.5-5.5 V
15	85	Barometric pressure sensor	Ignition switch: ON	When altitude is 0 m (0 ft.)	3.7-4.3 V
				When altitude is 1,260 m (3937 ft.)	3.2-3.8 V
16	86	Vehicle speed sensor	• Ignition switch: ON • Move the vehicle slowly forward		0 ↔ 5 V (repeats)

TSB Revision

Terminal No. <2.0L Engine (Turbo)>	Terminal No. <2.4L Engine>	Check item	Check condition (Engine condition)		Normal condition
87	87	Closed throttle position switch	Ignition switch: ON	Set throttle valve to idle position	O-l V
				Slightly open throttle valve	4 V or more
88	88	Camshaft position sensor	Engine: Cranking		0.4–3.0 V
			Engine: Idle		0.5–2.0 V
89	89	Crankshaft position sensor	Engine: Cranking		0.4–4.0 V
			Engine: Idle		1.5–2.5 V
90	90	Volume air flow sensor	Engine: Idle		2.2-3.2 V
			Engine: 2,500 r/min		
91	91	Park/Neutral position switch <A/T>	Ignition switch: ON	Set selector lever to P or N	0–3 V
				Set-selector lever to D, 2, L or R	8-14 V

TSB Revision

TERMINAL RESISTANCE AND CONTINUITY CHECKS

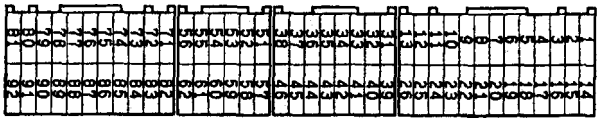
1. Turn the ignition switch off.
2. Disconnect the ECM connector.
3. Measure the resistance and check for continuity between the terminals of the ECM harness-side connector while referring to the check chart.

NOTE
1. When measuring resistance and checking continuity' a harness for checking contact pin pressure should' be used instead of inserting a test probe.
2. Checks do not have to be carried out in the order given in this chart.

Caution
If resistance or continuity checks are performed on the wrong terminals, damage to the vehicle wiring, sensors, ECM, and/or ohmmeter may occur. Use care to prevent this!

4. If the ohmmeter shows any deviation from the normal condition, check the corresponding sensor, actuator and related electrical wiring, and then repair or replace.
5. After repair or replacement, recheck with the ohmmeter to confirm that the repair or replacement has corrected the problem.

ECM Harness Side Connector Terminal Arrangement



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Terminal No.	Inspection item	Normal condition (Check condition)
1–12	No. 1 injector	2-3 Ω [At 20°C (68°F)] <2.0L Engine (Turbo)> 13-16 Ω [At 20°C (68°F)] <2.4L Engine>
14-12	No. 2 injector	
2-12	No. 3 injector	
15-12	No. 4 injector	
3-12	Fuel pressure solenoid	36-44 Ω [At 20°C (68°F)]
4-12	Stepper motor coil (Al) <2.0L Engine (Turbo)>	28-33 Ω [At 20°C (68°F)]
17-12	Stepper motor coil (A2) <2.0L Engine (Turbo)>	
5-12	Stepper motor coil (B1) <2.0L Engine (Turbo)>	
18-12	Stepper motor coil (B2) <2.0L Engine (Turbo)>	
4-17	IAC motor <2.4L Engine>	Continuity

TSB Revision

Terminal' No.	Inspection item	Normal condition (Check condition)
6-12	EGR solenoid	36-44 Ω [At 20°C (68°F)]
9-12	Evaporative emission purge solenoid	36-44 Ω [At 20°C (68°F)]
11-12	Turbocharger waste gate solenoid <2.0L Engine (Turbo)>	36-44 Ω [At 20°C (68°F)]
13–Body ground	E C M g r o u n d	Continuity (0Ω)
26–Body ground	ECM ground	
54-12	Heated oxygen sensor heater (rear)	Approx. 12 Ω [At 20°C (68°F)]
55-12	Evaporative emission ventilation solenoid	36-44 Ω [At 20°C (68°F)]
30–12	Heated oxygen sensor heater (front)	Approx. 12 Ω [At 20°C (68°F)]
72-92	Intake air temperature sensor	5.3-6.7 kΩ [When intake air temperature is 0°C (32°F)]
		2.3–3.0 kΩ [When intake air temperature is 20°C (68°F)]
		1.0– 1.5 kΩ [When intake air temperature is 40°C (104°F)]
		0.30–0.42 kΩ [When intake air temperature is 80°C (176°F)]
33–92	Engine coolant temperature sensor	5.1–6.5 kΩ [When coolant temperature is 0°C (32°F)]
		2.1–2.7 kΩ [When coolant temperature is 20°C (68° F)]
		0.9– 1.3 kΩ [When coolant temperature is 40°C (104°F)]
		0.26–0.36 kΩ [When coolant temperature is 80°C (176°F)]
17-92	Closed throttle position switch	Continuity (when throttle valve is at idle position)
		No continuity (when throttle valve is slightly open)
21 -Body ground	Park/Neutral position switch <A/T>	Continuity (when select lever is at P or N)
		No continuity (when select lever is at D, 2, L or R)