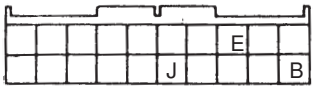
DTC INSPECTION
DTC Table

DTC No.	Indicator Pattern	Condition
09		Engine coolant temperature (ECT) sensor malfunction
12		Control lever position sensor malfunction
36		Glow plug relay malfunction

DTC 09	ENGINE COOLANT TEMPERATURE (ECT) SENSOR MALFUNCTION
DETECTION CONDITION	Input value to PCM is excessively high or low for more than 2.0 sec.
POSSIBLE CAUSE	• ECT sensor malfunction • Open or short circuit in wiring from ECT sensor terminal A to PCM terminal E • Open or short circuit in wiring from ECT sensor terminal B to PCM terminal B

STEP	INSPECTION		ACTION
1	Does ECT sensor or PCM connector have poor connection?	Yes	Repair or replace connector, then go to Step 6.
		No	Go to next step.
2	Disconnect ECT sensor connector. Turn engine switch on. Is there 5 V at connector terminal A?	Yes	Go to next step.
		No	Inspect for open or short circuit in wiring harness. (PCM terminal B–ECT sensor terminal B)
3	Is there continuity between connector terminal A and PCM terminal E?	Yes	Go to next step.
		No	Repair or replace wiring harness, then go to Step 6.
4	Is ECT sensor okay? + CONTROL SYSTEM, ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION	Yes	Go to next step.
		No	Replace ECT sensor, then go to Step 6.
5	Clear DTC from memory. Is same code No. present after performing “After Repair Procedure”?	Yes	Go to Step 1.
		No	Intermittent poor connection in harnesses or connector. Repair connectors and/or harnesses, then go to next step.
6	Clear DTC from memory. Is there any DTC present after performing “After Repair Procedure”?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

PCM (20 PIN)



HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)

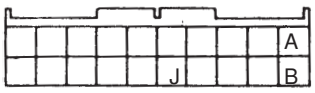
ECT SENSOR

HARNESS SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)

DTC 12	CONTROL LEVER POSITION SENSOR MALFUNCTION
DETECTION CONDITION	• Input voltage from control lever positIon sensor is below 0.1 V or above 4.75 V when continued for 1.0 sec. • When idle switch is on, input voltage from control lever position sensor is below 0.35V or above 1.39V.
POSSIBLE CAUSE	• Control lever position sensor malfunction • Idle switch malfunction • Open circuit in wiring from control lever position sensor (FIP connector: 8pin) terminal C to PCM terminal B • Open or short circuit in wiring from control lever position sensor (FIP connector: 8pin) terminal A to PCM terminal J • Open or short circuit in wiring from control lever position sensor (FIP connector: 8pin) terminal B to PCM terminal A • Open or short circuit wiring from idle switch (FIP connector: 8pin) terminal E to PCM terminal H

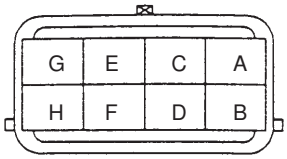
STEP	INSPECTION		ACTION
1	Does control lever position sensor connector or PCM connector have poor connection?	Yes	Repair or replace connectors, then go to Step 7.
		No	Go to next step.
2	Disconnect control lever position sensor connector. Turn engine switch on. Is there 5 V at connector terminal B?	Yes	Go to next step.
		No	Inspect for open or short circuit in wiring harness. (PCM terminal A–control lever position sensor terminal B)
3	Is there continuity between connector terminal A and PCM terminal J?	Yes	Go to next step.
		No	Repair or replace wiring harness, then go to Step 7.
4	Is there continuity between connector terminal C and PCM terminal B?	Yes	Replace control lever position sensor, then go to Step 7.
		No	Repair or replace wiring harness, then go to Step 7.
5	Is there continuity between connector terminal E and PCM terminal H?	Yes	Go to next step.
		No	Repair or replace wiring harness, then go to Step 7.
6	Is idle switch okay? + CONTROL SYSTEM, IDLE SWITCH INSPECTION	Yes	Go to next step.
		No	Replace idle switch.
7	Clear DTC from memory. Is same code No. present after performing “After Repair Procedure”?	Yes	Go to Step 1.
		No	Intermittent poor connection in harness or connector. Repair connector and/or harness, then go to next step.
8	Clear DTC from memory. Is there any DTC present after performing “After Repair Procedure”?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

PCM (20 PIN)



HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)

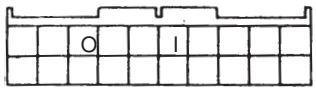
CONTROL LEVER POSITION SENSOR



HARNESS SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)

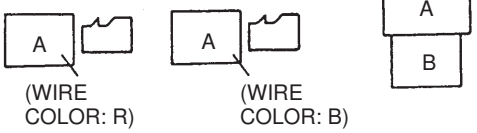
DTC 36	GLOW PLUG RELAY MALFUNCTION
DETECTION CONDITION	• When the glow plug relay is on, current voltage signal of the relay below 1.0 V is inputted to the PCM continuously for more than 1.0 sec. • When the glow plug relay is off, signal of the relay current voltage above 4.0 V is inputted to the PCM continuously for more than 1.0 sec.
POSSIBLE CAUSE	• Glow plug relay malfunction • Open or short circuit in wiring from PCM terminal O to glow plug relay terminal A (BR) • Open or short circuit in wiring from PCM terminal I to glow plug relay terminal A (B) • Open or short circuit in wiring from glow plug relay terminal A (R) to glow fuse

STEP	INSPECTION		ACTION
1	Does glow plug relay connector or PCM connector have poor connection?	Yes	Repair or replace connectors, then go to Step 5.
		No	Go to next step.
2	Remove glow plug relay. Is there continuity between connector terminal A and PCM terminal O? Is there continuity between connector terminal A (B) and PCM terminal I?	Yes	Go to next step.
		No	Repair or replace wiring harness.
3	Is there continuity between connector terminal B and body GND?	Yes	Go to next step.
		No	Repair or replace wiring harness.
4	Is there continuity between connector terminal A (R) and glow fuse?	Yes	Go to next step.
		No	Repair or replace wiring harness.
5	Is glow plug relay okay? + INTAKE-AIR SYSTEM, GLOW PLUG RELAY INSPECTION	Yes	Go to next step.
		No	Replace glow plug relay.
6	Clear DTC from memory. Is same code No. present after performing “After Repair Procedure”?	Yes	Go to Step 1.
		No	Intermittent poor connection in harnesses or connectors. Repair connectors and/or harnesses, then go to next step.
7	Clear DTC from memory. Is there any DTC present after performing “After Repair Procedure”?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.



PCM (20 PIN)

HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)



GLOW PLUG RELAY

HARNESS SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)