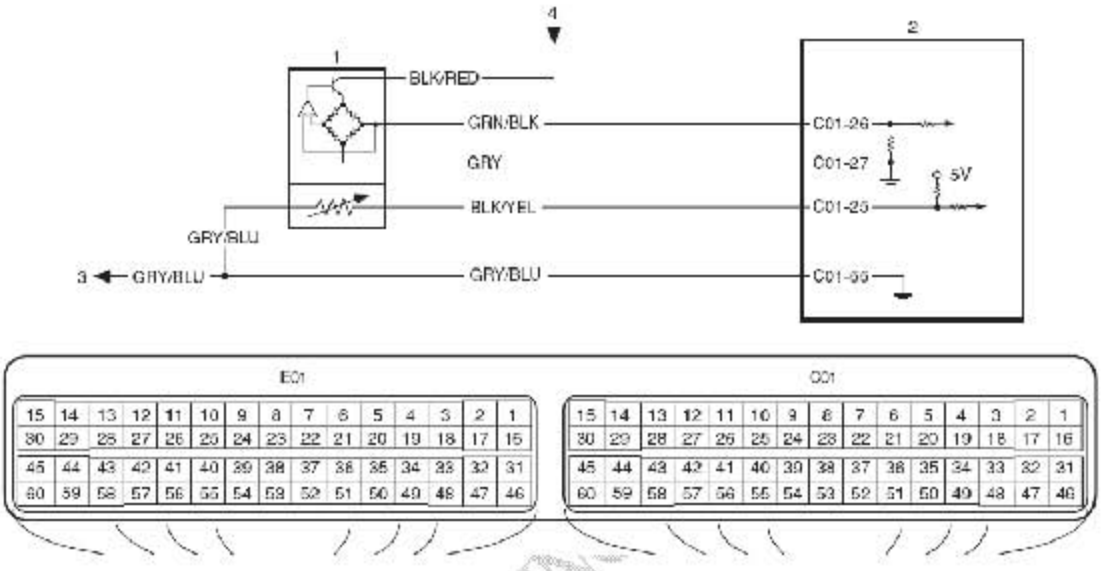
P0111 Intake Air Temperature Circuit Range Performance

Wiring Diagram



1. MAF and IAT sensor	3. To other sensors
2. ECM	4. From main relay

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Difference of maximum IAT minus minimum IAT is less than specified value while ECT is over 70 °C (158 °F) after 10 min from cold engine start (ECT is lower than 30°C (86 °F) at engine start). (2 driving cycle detection logic)	• High resistance circuit • MAF and IAT sensor •ECM

DTC Confirmation Procedure

1) With ignition switch turned OFF, connect scan tool.
2) Turn ON ignition switch, clear DTC using scan tool.
3) Start engine and warm up to normal operating temperature. (ECT approx. 90 – 95 ° C, 194 – 203 ° F)
4) Run engine at idle speed for 10 min. or more.
5) Check DTC and pending DTC.

DTC Troubleshooting

Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check".
2	IAT sensor and its circuit check 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Turn ignition switch to ON position. 3) Check intake air temp. displayed on scan tool. Is –40 °C (–40 °F) or 119 °C (246 °F) indicated?	Go to Step 3.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection in Section 00".
3	Wire harness check 1) Disconnect MAF and IAT sensor connector (1) with ignition switch turned OFF. 2) Check for proper connection to MAF and IAT sensor connector (1) at "BLK/YEL" and "GRY/BLU" wire terminals. 3) If OK, then with ignition switch turned ON, measure voltage between "BLK/YEL" wire terminal of MAF and IAT sensor connector and vehicle body ground. Is measured voltage applied to "BLK/YEL" wire terminal about 4 – 6 V?	Go to Step 8.	Go to Step 4.

Step	Action	Yes	No
4	ECM voltage check 1) Turn OFF ignition switch. 2) Remove ECM from its bracket with ECM connectors connected. 3) Check for proper connection of ECM connector at "C01-25" terminal. 4) If OK, then turn ON ignition switch, measure voltage between "C01-25" terminal of ECM connector and vehicle body ground. Is voltage about 4 – 6 V at terminal?	"BLK/YEL" wire is open circuit. If wire and connection are OK, go to Step 5.	Go to Step 5.
5	Wire circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between "BLK/YEL" wire terminal of MAF and IAT sensor connector and vehicle body ground. Is resistance infinity?	Go to Step 6.	"BLK/YEL" wire is shorted to ground or other circuit. If wire is OK, substitute a known-good ECM and recheck.
6	Wire circuit check 1) Turn ignition switch to ON position. 2) Measure voltage between "BLK/YEL" wire terminal of MAF and IAT sensor connector and vehicle body ground. Is voltage about 0 V?	Go to Step 7.	"BLK/YEL" wire shorted to other circuit. If wire is OK, substitute a known-good ECM and recheck.
7	Wire circuit check 1) Measure resistance between "C01-25" terminal of ECM connector and "BLK/YEL" wire terminal of MAF and IAT sensor connector with ignition switch turned OFF. Is resistance below 3 Ω?	Go to Step 8.	"BLK/YEL" wire is high resistance circuit.

Step	Action	Yes	No
8	Ground circuit check 1) Connect connectors to ECM. 2) Check for proper connection of MAF and IAT sensor connector at "GRY/BLU" wire terminal. 3) Measure resistance between "GRY/BLU" wire terminal of MAF and IAT sensor connector and vehicle body ground with ignition switch turned OFF. Is resistance below 5 Ω?	Go to Step 10.	Go to Step 9.
9	Ground circuit check 1) Remove ECM from its bracket with ECM connectors connected. 2) Measure resistance between "C01-55" terminal of ECM connector and vehicle body ground. Is resistance below 3 Ω?	"GRY/BLU" wire is open or high resistance circuit. Poor "C01-55" connection.	Faulty ECM ground circuit. If circuit is OK, substitute a known-good ECM and recheck.
10	IAT sensor check 1) Check IAT sensor according to "Intake Air Temperature (IAT) Sensor Inspection in Section 1C". Is it in good condition?	Substitute a known-good ECM and recheck.	Replace MAF and IAT sensor.