# Technical Service Bulletin

**Mazda North American Operations**
**Irvine, CA 92618-2922**

| **Subject:** | **Bulletin No.:** 07-007/17 |
|---|---|
| **POOR HEATER PERFORMANCE WITH DTC P011A:00** | **Last Issued:** 09/08/2017 |

## APPLICABLE MODEL(S)/VINS

2014-2016 Mazda3 Japan Built vehicles with VINs lower than JM1 BM ****** 355940 (produced before June 23, 2016)
2014-2016 Mazda3 Mexico Built vehicles with VINs lower than 3MZ BM ****** 330142 (produced before Sept 03, 2016)
2017-2018 Mazda3
2014-2016 Mazda6 vehicles with VINs lower than JM1 GJ ****** 488592 (produced before June 30, 2016)
2017 Mazda6
2017-2018 Mazda6 Mexico
2013-2017 CX-5 vehicles with VINs lower than JM3 KE ****** 921726 (produced before Dec 21, 2016)

## DESCRIPTION

Some customers may complain about poor heater performance even after the engine reaches normal operating temperature. This may be caused by a clogged heater unit.

For Mazda6 and CX-5, the check engine light may illuminate with the DTC P011A:00 stored at the same time.

- P011A:00 ECT sensor No.1/No.2 performance problem

**NOTE:** Refer to TSB 01-015/15 if the customer is using a block heater at temperatures below freezing.

Customers having this concern should have their vehicle repaired using the following repair procedure.

## DIAGNOSIS PROCEDURE

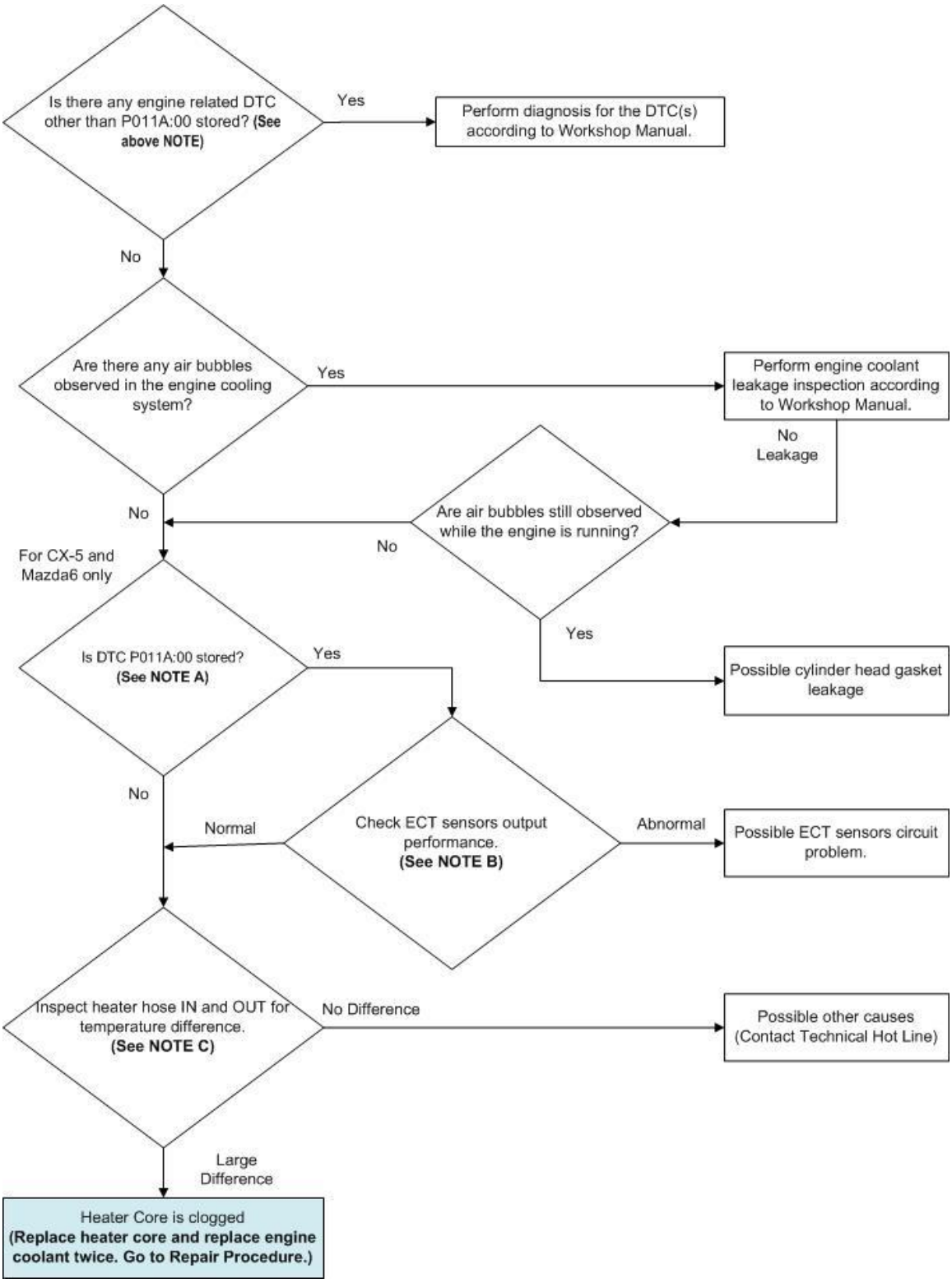
Perform the following diagnosis procedure to determine if the concern is caused by a clogged heater core.

**NOTE**: DTC P011A:00 (ECT2 sensor on the heater hose) is available only for CX-5 and Mazda6.



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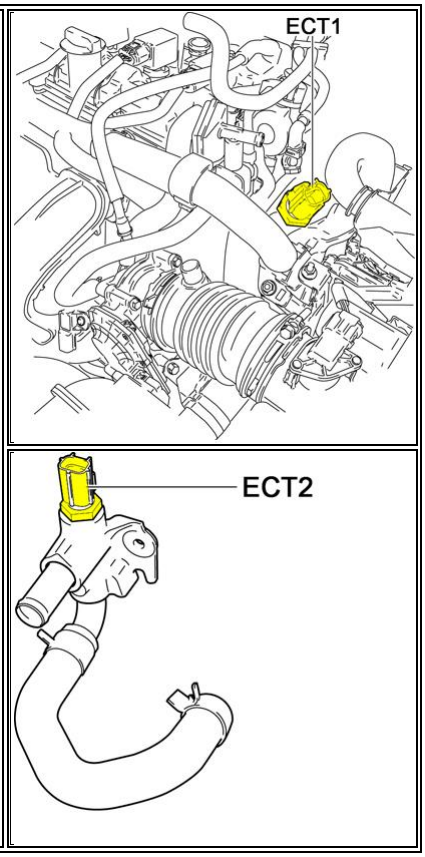





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**NOTE A**: DTC P011A:00 (ECT sensor No.1/No.2 performance problem) is for CX-5 and Mazda6 only. The purpose of having two ECT sensors is to mutually monitor their performances. If two temperature values detected by the sensors are different beyond the specified value, the DTC P011A:00 is set.

| | |
| --- | --- |
| Location of ECT sensors (Mazda6 is shown) |  |

**NOTE B** Check ECT Sensors for output performance



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Perform the following inspection during a cold soak (vehicle sitting overnight without starting).
Read the temperature values of the following PIDs in M-MDS Datalogger.

- ECT: Engine Coolant Temperature.
- ECT2_V: ECT sensor No.2 voltage.
- AMB_TEMP: Ambient Temperature.

Use below table to convert ECT2_V (voltage) into the temperature.

| **Output (V)** | **4.84** | **4.79** | **4.72** | **4.64** | **4.55** | **4.43** | **4.30** | **4.14** | **3.96** | **3.77** | **3.56** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp (°C) | -40 | -35 | -30 | -25 | -20 | -15 | -10 | -5 | 0 | 5 | 10 |
| Temp (°F) | -40 | -31 | -22 | -13 | -4 | 5 | 14 | 23 | 32 | 41 | 50 |
| **Output (V)** | **3.33** | **3.10** | **2.86** | **2.63** | **2.39** | **2.17** | **1.95** | **1.75** | **1.57** | **1.40** | **1.25** |
| Temp (°C) | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
| Temp (°F) | 59 | 68 | 77 | 86 | 95 | 104 | 113 | 122 | 131 | 140 | 149 |
| **Output (V)** | **1.11** | **0.99** | **0.87** | **0.78** | **0.69** | **0.61** | **0.55** | **0.48** | **0.43** | **0.38** | **0.34** |
| Temp (°C) | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 |
| Temp (°F) | 158 | 167 | 176 | 185 | 194 | 203 | 212 | 221 | 230 | 239 | 248 |

ETC1 and ECT2 sensor voltage values must match the AMB_TEMP values (during a cold soak).
If the detected values are not equivalent to the ambient temperature and/or any of the following DTCs is stored, failure of the ECT sensor related system is possible.

| DTC No. | Condition |
|---|---|
| P0116:00 | ECT sensor No.1 circuit range/performance problem |
| P0117:00 | ECT sensor No.1 circuit low input |
| P0118:00 | ECT sensor No.1 circuit high input |
| P2183:00 | ECT sensor No.2 circuit range/performance problem |
| P2184:00 | ECT sensor No.2 circuit low input |
| P2185:00 | ECT sensor No.2 circuit high input |

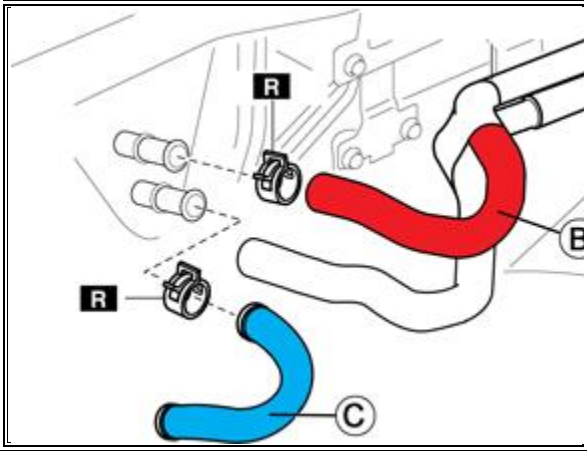
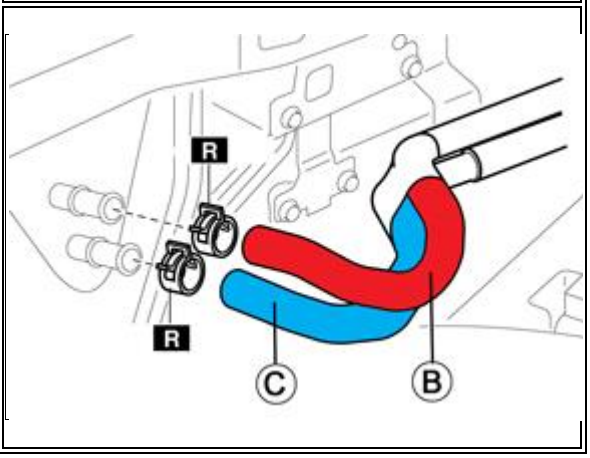


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**NOTE C**: Inspect heater hose IN and OUT for temperature difference.
Using a thick cloth or gloves, touch the heater hose IN and heater hose OUT by hand to feel the temperature. If there is an obvious difference in temperature between both hoses, the heater core may be clogged.

**NOTE**: When doing this inspection, turn the HVAC blower fan OFF. If ON, the heater core radiates heat, so the temperature difference between IN and OUT hoses will generate heat even if the heater core is not clogged.

| Heater Hose IN (B): Upper side of heater core<br>Heater Hose OUT (C): Lower side of heater core | | |
|---|---|---|
| | With Water Temp Sensor | Without Water Temp Sensor |
| Mazda 6 is shown |  |  |



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## REPAIR PROCEDURE

If clogging of the heater core was determined by the diagnosis procedure, replace the heater core with a new one and replace the contaminated engine coolant twice.

**NOTE**: Remove the old contaminated coolant by draining the coolant twice and refiling with new coolant.

**WARNING:**

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
- When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.

1.Replace the heater core. Refer to MGSS online Workshop Manual:

- Mazda3 - A/C UNIT REMOVAL/INSTALLATION and A/C UNIT DISASSEMBLY/ASSEMBLY.
- Mazda6 - A/C UNIT REMOVAL/INSTALLATION and A/C UNIT DISASSEMBLY/ASSEMBLY.
- CX-5 - A/C UNIT REMOVAL/INSTALLATION and A/C UNIT DISASSEMBLY/ASSEMBLY.

2. Make sure the radiator cap is removed, then drain the coolant from the radiator drain plug as much as possible.
3. Tighten the radiator drain plug.
4. Refill the cooling system with FL22 (55% premix) coolant at the radiator filler neck until it is close to the top of the filler neck.

**NOTE**: Do not use water to adjust the coolant concentration. Minerals contained in the water may generate deposits causing clogging of the cooling system and rust on the parts. Service coolant (FL22 55% pre-diluted) using a specified quality of water is the solution.

5. Install the radiator cap.
6. Start the engine and warm-up to normal operating temperature to open the thermostat. To confirm that thermostat is fully open, the lower radiator hose will be hot to the touch.

**CAUTION**: The lower radiator hose will get hot when the thermostat is opened. Use a thick cloth or gloves when touching the hose.

- Thermostat initial-opening temperature: 177 - 182°F (80.5 - 83.5°C)
- Thermostat full-open temperature: 188 - 193°F (86.5 - 89.5°C)



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7. Mix the coolant in the cooling system using the following steps:

a. Run the engine at 2,500 rpm for 5 min.

b. Maintain the engine speed at 3,000 rpm for 5 seconds, then allow the engine to idle.

8. Repeat the step 2 – 7 to replace the coolant at the second time.

9. Allow the engine to cool down so that you can safely remove the reservoir tank.
10. Drain the old coolant from the reservoir tank and then reinstall it.
11. Replace the coolant in the reservoir tank with new FL22.
12. Inspect the engine coolant and reservoir tank levels and adjust with new FL22 as needed.
13. Verify repair.

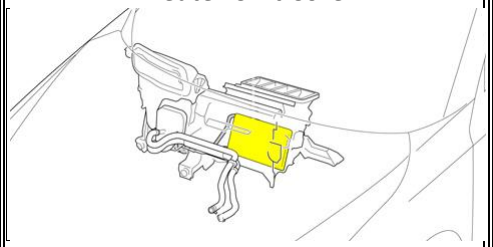
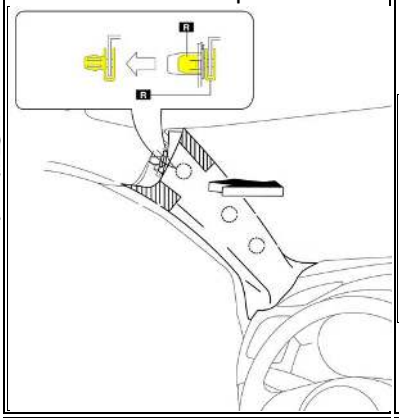
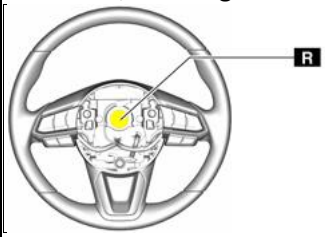
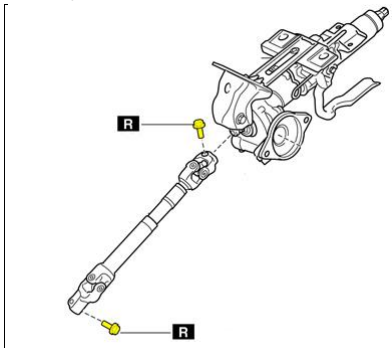
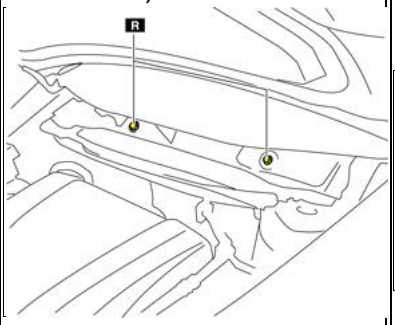
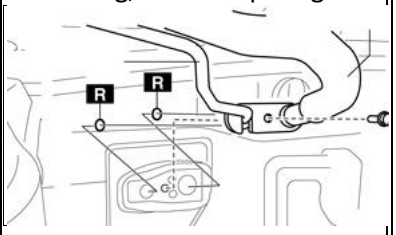
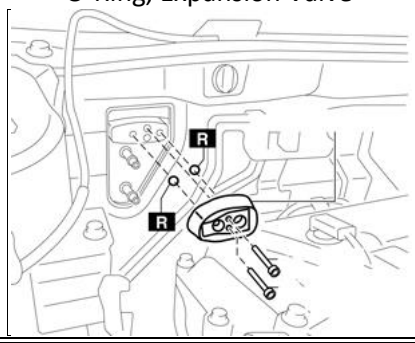
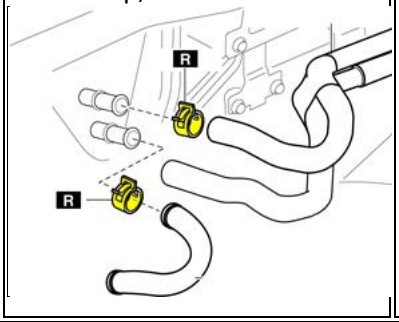
## PARTS INFORMATION

| Parts Number | Description | Qty. | Note 1 | Note 2 |
|---|---|---|---|---|
| ****-61-A10* | Heater Unit Core | 1 | --- | Use GEPC with VIN for part number |
| ****-68-162* | Trim Clip | 2 | Non-reusable part | |
| 9YA0-11-00** | Bolt, Steering Wheel | 1 | | |
| ****-32-099 | Bolt, Intermediate Shaft Upper | 1 | | |
| B455-32-099B | Bolt, Intermediate Shaft Lower | 1 | Non-reusable part | All Models |
| 9YA0-20-682 | Bolt, Dashboard | 2 | | |
| BBM4-61-J17 | O-Ring, Cooler Pipe Low and Expansion Valve | 2 | | |
| GJ6A-61-J19 | O-Ring, Cooler Pipe High | 1 | | |
| GJ6E-61-J19 | O-Ring, Expansion Valve | 1 | | |
| BP4K-61-242 | Clip, Heater Hose | 2 | | |
| 0000-77-508E-20 | FL22 Coolant | As needed | --- | |
| 5555-FG-002 | Refrigerant | As needed | | |



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| **Mazda6 images are shown** | | |
|---|---|---|
| Heater Unit Core<br> | Trim Clip<br> | Bolt, Steering Wheel<br> |
| Bolt, Intermediate Shaft Upper<br>Bolt, Intermediate Shaft Lower<br> | Bolt, Dashboard<br> | O-Ring, Cooler Pipe Low<br>O-Ring, Cooler Pipe High<br> |
| O-Ring, Expansion Valve<br> | Clip, Heater Hose<br> | |



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## WARRANTY INFORMATION

**NOTE:**

- This warranty information applies only to verified customer complaints on vehicles eligible for warranty repair.
- This repair will be covered under Mazda's New Vehicle Limited Warranty term.
- Additional diagnostic time cannot be claimed for this repair.

<table>
<tr><td>Warranty Type</td><td colspan="3">A</td></tr>
<tr><td>Symptom Code</td><td colspan="3">59</td></tr>
<tr><td>Damage Code</td><td colspan="3">93</td></tr>
<tr><td>Part Number Main Cause</td><td colspan="3">****-61-A10*</td></tr>
<tr><td>Quantity</td><td colspan="3">1</td></tr>
<tr><td rowspan="4">Operation Number / Labor Hours:</td><td rowspan="3">XXN7TXRX</td><td>Mazda3</td><td rowspan="2">4.7 Hrs.</td></tr>
<tr><td>Mazda6</td></tr>
<tr><td>CX-5</td><td>4.8 Hrs.</td></tr>
<tr><td colspan="3">Operation: Perform the diagnosis procedure, replace the heater core and replace engine coolant twice.</td></tr>
</table>

**NOTE**: Enter coolant, refrigerant and all replacement parts as Related Part.



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