

Technical Service Bulletin

Mazda North American Operations
Irvine, CA 92618-2922

**Subject:**

POOR HEATER PERFORMANCE AND/OR DTC P011A:00 STORED

Bulletin No.: 07-007/19

Last Issued: 11/04/2019

BULLETIN NOTES

This bulletin supersedes the previously issued bulletin(s) listed below: The changes are noted in Red.

Previous TSBs:	Date(s) Issued:
07-007/17	09/08/17

APPLICABLE MODEL(S)/VINS

2014-2018 Mazda3

2019 Mazda3 (Japan built) vehicles with VINs lower than JM1 BP ***** 131366 (produced before Apr. 1, 2019)

2019 Mazda3 (Mexico built) vehicles

2014-2019 (US spec) / 2020 (Mexico spec) Mazda6 vehicles with VINs lower than JM1 GL ***** 504134 (produced before Apr. 1, 2019)

2016-2019 CX-3 vehicles with VINs lower than JM1 DK ***** 441849 (produced before Apr. 1, 2019)

2013-2019 CX-5 vehicles with VINs lower than JM3 KF ***** 605884 (produced before Apr. 1, 2019)

2016-2019 CX-9 vehicles with VINs lower than JM3 TC ***** 323662 (produced before Apr. 1, 2019)

2016-2019 MX-5 vehicles with VINs lower than JM1 ND ***** 308245 (produced before Apr. 1, 2019)

DESCRIPTION

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

For 2014-2016 Mazda6 and 2013-2016 (US spec) / 2017 (Mexico spec) CX-5, the CHECK ENGINE light may turn on with DTC P011A:00 (ECT sensor No.1/No.2 performance problem) stored at the same time.

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

To solve this concern, two mass production changes have been implemented.

- a) The concentration of the coolant has been increased so that the amount of the contained anti-rust additive is higher.
- b) The composition of the coolant has been changed (the ratio of the anti-rust additive has increased).

SUBJECT VIN RANGE do not have mass production change implemented.

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Spec.	VIN Range / Production Date range		
		a) + b)	b)
Mazda3 (BM)			
2014-2016	JM1 BM***** (Japan Built)	100001 - 355940	-
		Jun. 11, 2013 - Jun. 23, 2016	-
	3MZ BM***** (Mexico Built)	100001 - 330142	-
		Dec. 4, 2013 - Sep. 3, 2016	-
Mazda3 (BN)			
2017-2018	JM1 BN***** (Japan Built)	100001 - 168290	168291 - 199538
		Jun. 27, 2016 - Sep. 1, 2017	Sep. 4, 2017- Oct. 31, 2018
	3MZ BN***** (Mexico Built)	100001 - 173224	173224 - 277187
		Sep. 1, 2016 - Sep. 4, 2017	Sep. 5, 2017 - Dec. 20, 2018
Mazda3 (BP)			
2019	JM1 BP***** (Japan Built)	-	100001 - 131366
		-	Sep. 25, 2018 - Apr. 1, 2019
	3MZ BP***** (Mexico Built)	-	100001 - 999999
		-	Jan. 15, 2019 -
Mazda6 (GJ)			
2014-2016	JM1 GJ*****	100001 - 488592	-
		Oct. 25, 2012 - Jun. 30, 2016	-
Mazda6 (GL)			
US 2017-2019	JM1 GL*****	100001 - 145921	145922 - 504134
Mexico 2017-2020		Jun. 13, 2016 - Sep. 1, 2017	Sep. 4,2017 - Apr. 1, 2019
CX-3 (DK)			
2016 - 2019	JM1 DK*****	100001 - 312504	312505 - 441849
		Mar. 9, 2015 - Sep. 1, 2017	Sep. 5, 2017 - Apr. 1, 2019
CX-5 (KE)			
US 2013-2016	JM3 KE****	100001 - 921726	-
Mexico 2013-2017		Dec. 15, 2011 - Dec. 21, 2016	-
CX-5 (KF)			
US 2017-2019	JM3 KF*****	100001 - 212222	212223 - 605884
Mexico 2018-2019		Dec. 27, 2016 - Sep. 1, 2017	Sep. 4,2017 - Apr. 1, 2019
CX-9 (TC)			
2016 - 2019	JM3 TC*****	100001 - 206006	206007 - 323662
		Feb. 11, 2016 - Sep. 1, 2017	Sep. 4, 2017 - Apr. 1, 2019
MX-5 (ND)			
	JM1 ND*****	100001 - 125180	125181 - 125278

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2016 - 2017 Convertible Top		Apr. 20, 2015 - Aug. 25, 2017	Sep. 4, 2017 - Sep. 30, 2017
2017 Retractable Fastback	JM1 ND**** *	100001 - 109269	109270 - 109865
		Oct. 4, 2016 - Sep. 1, 2017	Sep. 4, 2017 - Sep. 30, 2017
2018-2019	JM1 ND**** *	-	200001 - 308245
		-	Oct. 3, 2017 - Apr. 1, 2019

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 plugged heater core.

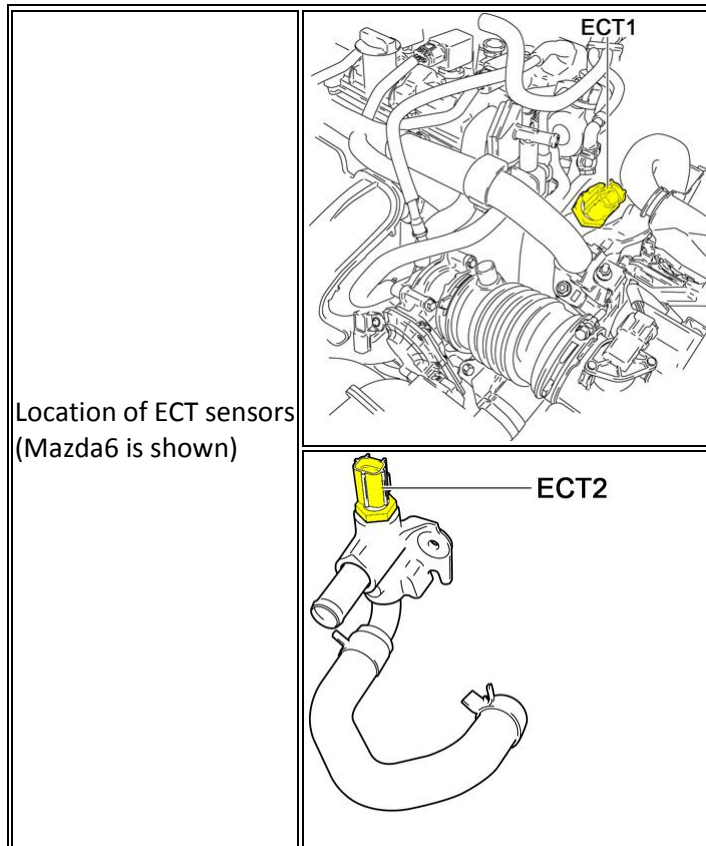
NOTE: DTC P011A:00 (ECT2 sensor on the heater hose) is available only for 2013-2016 (US spec) / 2017 (Mexico spec) CX-5 and 2014-2016 Mazda6.

STEP	INSPECTION	RESULTS	ACTION
1	Is there any engine related DTC other than P011A:00 stored? (See above NOTE)	Yes	Perform diagnosis for the DTC according to the instructions on MGSS.
		No	Go to next step.
2	Is there any air bubbles observed in the engine cooling system?	Yes	Go to next step.
		No	Go to step 4.
3	Perform engine coolant leakage inspection according to the instructions on MGSS. Are air bubbles still observed while the engine is running?	Yes	Possible cylinder head gasket leakage.
		No	Go to next step.
4	For some CX-5 and Mazda6 only: Is DTC P011A:00 stored? (See NOTE A about P011A:00)	Yes	Check ECT sensors for correct output performance
		No	Go to next step.
5	Check ECT sensors for correct output performance. Is it normal or abnormal? (See NOTE B for the Check Procedure)	Normal	Go to next step.
		Abnormal	Possible problem with ECT sensor related system.
6	Inspect heater hose IN and OUT for temperature difference. Is there no difference or a large difference? (See NOTE C for Inspection Procedure)	No difference	Possible other causes. Contact Hotline.
		Large difference	Heater core is plugged. Replace heater core and replace engine coolant twice. Go to Repair Procedure.

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NOTE A: DTC P011A:00 (ECT sensor No.1/No.2 performance problem) is for 2013-2016 (US spec) / 2017 (Mexico spec) CX-5 and 2014-2016 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.



NOTE B: Check ECT sensors for output performance

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.

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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

ECT1 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.

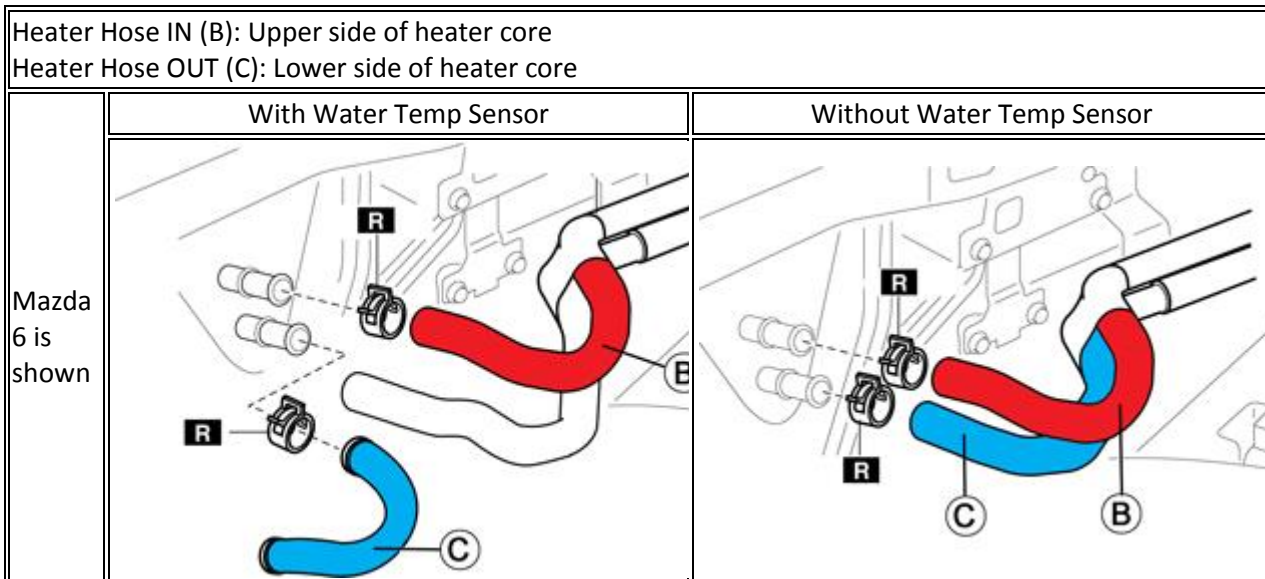
DTC No.	Condition
P0116:00	ECT sensor No.1 circuit range/performance problem
P0117:00	ECT sensor No.1 circuit low input
P0118:00	ECT sensor No.1 circuit high input
P2183:00	ECT sensor No.2 circuit range/performance problem
P2184:00	ECT sensor No.2 circuit low input
P2185:00	ECT sensor No.2 circuit high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

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NOTE C: Inspect heater hose IN and OUT for temperature difference.

Using a thermal temperature gun or thermocouple, measure the heater hose IN and heater hose OUT temperature. If there is an obvious difference in temperature between both hoses, the heater core may be plugged.

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 plugged.



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REPAIR PROCEDURE

If the heater core was determined to be plugged 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 refilling 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, then 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 then remove it.

1. Replace the heater core by referring to the instructions on MGSS.

- 2014-2018 Mazda3 - (A/C UNIT REMOVAL/INSTALLATION) and (A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2019 Mazda3 - (A/C UNIT REMOVAL/INSTALLATION) and (A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2014-2017 (US spec)/2018 (Mexico spec) Mazda6 - (A/C UNIT REMOVAL/INSTALLATION) and (A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2018-2019 (US spec)/2019 (Mexico spec) Mazda6 - (A/C UNIT REMOVAL/INSTALLATION) and (A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2013-2016 (US spec)/2017 (Mexico spec) CX-5 - (A/C UNIT REMOVAL/INSTALLATION) and (A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2017 (US spec)/2018 (Mexico spec)-2019 CX-5 - (A/C UNIT REMOVAL/INSTALLATION) and (A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2016-2019 CX-3 - (A/C UNIT REMOVAL/INSTALLATION) and (A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2016-2019 CX-9 - (FRONT A/C UNIT REMOVAL/INSTALLATION) and (FRONT A/C UNIT DISASSEMBLY/ASSEMBLY)
- 2016-2019 MX-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 that can cause clogging of the cooling system and rust on the parts. Using service coolant (FL22 55% pre-diluted) with a specified quality of water is the solution.

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5. Install the radiator cap.

CAUTION: The lower radiator hose will get hot when the thermostat is opened.

6. Start the engine and warm-up the engine to normal operating temperature to open the thermostat (engine cooling fan comes on with climate control turned off).

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.

c. Repeat steps (a) and (b) several times.

8. Repeat the step 2 – 7 to replace the coolant a 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 the new FL22.

12. Inspect the engine coolant and reservoir tank levels and adjust with new FL22 as needed.

13. Verify repair.

PARTS INFORMATION

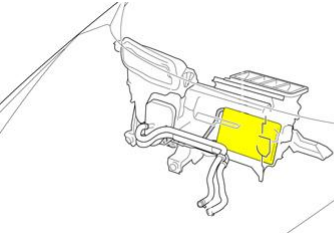
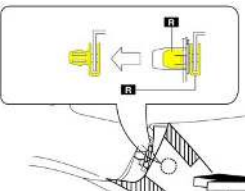
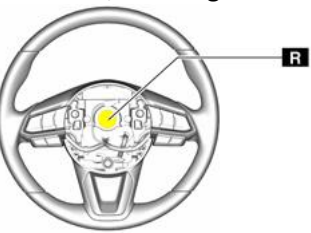
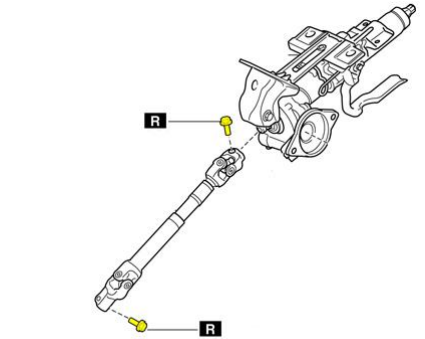
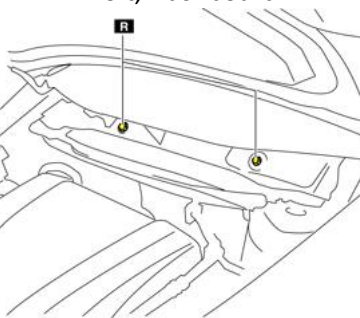
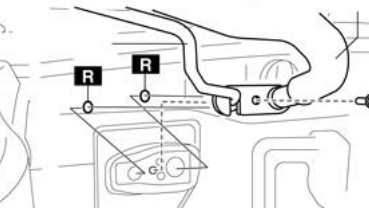
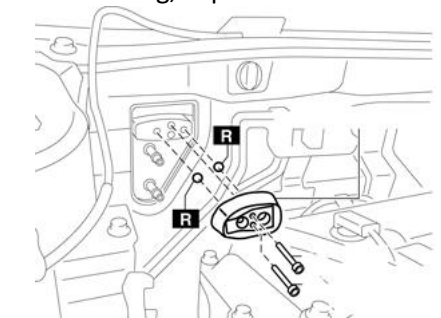
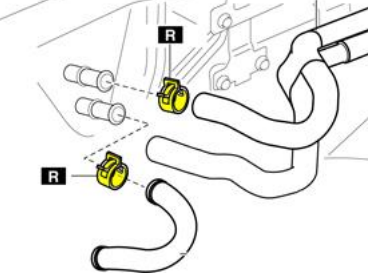
Parts Number	Description	Qty.	Note 1	Note 2
****-61-A10*	Heater Unit Core	1	---	Use GEPC with VIN for part number
****-68-162*	Trim Clip	0 or 2	Non-reusable part	
****-11-003* or ****-11-007* or ****-81-200*	Bolt, Steering Wheel	1		
****-32-099*	Bolt, Intermediate Shaft Upper	1		
****-32-099*	Bolt, Intermediate Shaft Lower	1		
9YA0-20-682	Bolt, Dashboard (Not necessary for MX-5)	1 or 2		
****-61-J17*	O-Ring, Cooler Pipe-Low	1		
****-61-J17* or ****-61-J19*****-61-J17* or ****-61-J19*****-61-J17* or ****-61-J19*	O-Ring, Cooler Pipe-High	1		
****-61-J17* or ****-76-754*	O-Ring, Expansion Valve-Low	1		
****-61-J17* or ****-61-J19*	O-Ring, Expansion Valve-High	1		
****-61-242* or ****-15-182*	Clip, Heater Hose	0 or 2		
****-61-D10*	Heater Unit Core, Rear	1		

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****-61-J17*	O-ring, Expansion Valve, Low	2	For vehicles with rear heater	
****-61-J17*	O-ring, Expansion Valve, High	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 	Trim Clip 	Bolt, Steering Wheel 
Bolt, Intermediate Shaft Upper Bolt, Intermediate Shaft Lower 	Bolt, Dashboard 	O-Ring, Cooler Pipe Low O-Ring, Cooler Pipe High 
O-Ring, Expansion Valve 	Clip, Heater Hose 	

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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.

Warranty Type	A		
Symptom Code	59		
Damage Code	93		
Part Number Main Cause	****-61-A10*		
Quantity	1		
Operation Number / Labor Hours:	XXN7TXRX	2014-2018 Mazda3	4.7 Hrs.
		2019 Mazda3	4.8 Hrs.4.8 Hrs.4.8 Hrs.4.8 Hrs.4.8 Hrs.4.8 Hrs.
		Mazda6	4.7 Hrs.4.7 Hrs.
		CX-3	4.8 Hrs.
		CX-5	
		CX-9 2WD	6.8 Hrs.
		CX-9 4WD	7.4 Hrs.
		MX-5	4.3 Hrs.
	Perform the diagnosis procedure, replace the heater core and replace engine coolant twice.		

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

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