

# Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

## 2022 Mazda MX-5 Miata Service and Repair Manual

[Go to manual page](#)

# DTC TABLE [RADAR UNIT]

SM2899796

id1502a601740

×: Applicable--: Not applicable

DTC No.	Warning indication *1.	HBC warning light (amber) *1	Traffic jam assist (TJA) warning light (amber)	Description	Fail-safe			Drive cycle
					Mazda radar cruise control (MRCC)	Smart brake support (SBS)	Distance recognition support system (DRSS)	
C0049:85	Display	-	Illuminated	Brake fluid level signal error	×	×	×	-
C0063:54	Display	-	Illuminated	Mazda radar cruise control (MRCC) system initialization not implemented	×	×	-	-
C1105:62	Display	-	Illuminated	Brake light signal malfunction	×	×	-	-
C1A67:04	Display	-	Illuminated	Radar unit internal circuit malfunction	×	×	×	-
C1A67:4B	Display	-	Illuminated	Radar unit is outside of operation range (ignition power supply, internal temperature)	×	×	×	-
C1A67:54	Display	-	Illuminated	Radar unit aiming adjustment not implemented	×	×	×	-
C1A67:78	Display	-	Illuminated	Radar unit axis is deviated	×	×	×	-

DTC No.	Warning indication *1.	HBC warning light (amber) *1	Traffic jam assist (TJA) warning light (amber)	Description	Fail-safe			Drive cycle
					Mazda radar cruise control (MRCC)	Smart brake support (SBS)	Distance recognition support system (DRSS)	
U2300:54	Display	–	Illuminated	Configuration error (data not received)	×	×	×	–
U2300:55	Display	–	Illuminated	Configuration error (no configuration)	×	×	×	–
U2300:56	Display	–	Illuminated	Configuration error (Ineffective/non-interchangeable data read)	×	×	×	–
U3000:04	Display	–	Illuminated	Smart brake support (SBS) system operation malfunction	×	×	×	–
U3000:44	Display	–	Illuminated	Radar unit configuration information error	×	×	×	–
U3000:49	Display	–	Illuminated	Radar unit internal malfunction	×	×	×	–
U3003:16	Display	–	Illuminated	Radar unit power supply voltage decreases	×	×	×	–
U3003:17	Display	–	Illuminated	Radar unit power supply voltage increases	×	×	×	–

\*1:With multi-information display

\*2:If multiple warnings are displayed, they are displayed in order of importance and it is necessary to change the screen.

\*3:C: CMDTC self test, D: ODDTC self test

\*4:If both the front and rear wheels are rotated using a 2 or 4-wheel chassis dynamometer, the radar unit determines that there is an error in the location information of the object which is detected by the radar unit. As a result, the radar unit detects DTC C1A67:92, and at the same time it displays a warning indication in the multi-information display and turns on the HBC warning light (amber). The warning indication displayed in the multi-information display disappears and the HBC warning light (amber) turns off when the ignition is switched OFF after the vehicle is removed from the 2 or 4-wheel chassis dynamometer. The stored DTC C1A67:92 can be cleared from the memory using the M-MDS.

Step	Inspection		Action
3	<b>VERIFY IF MALFUNCTIONING LOCATION IS SAS CONTROL MODULE DEPENDING ON REPEATABILITY</b> <ul style="list-style-type: none"> <li>• Clear the DTC for the radar unit using the M-MDS. (See <b>CLEARING DTC [RADAR UNIT].</b>)</li> <li>• Retrieve the radar unit DTCs using the M-MDS. (See <b>DTC INSPECTION [RADAR UNIT].</b>)</li> <li>• Is the same DTC displayed?</li> </ul>	Yes	Replace the SAS control module, then go to the next step. (See <b>SAS CONTROL MODULE REMOVAL/INSTALLATION [STANDARD DEPLOYMENT CONTROL SYSTEM - MEXICO SPEC.]</b> .) (See <b>SAS CONTROL MODULE REMOVAL/INSTALLATION [TWO STEP DEPLOYMENT CONTROL SYSTEM - US/CANADA/ISRAEL SPEC.]</b> .)
		No	Go to Step 5.
4	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> <ul style="list-style-type: none"> <li>• Clear the DTC for the radar unit using the M-MDS. (See <b>CLEARING DTC [RADAR UNIT].</b>)</li> <li>• Retrieve the radar unit DTCs using the M-MDS. (See <b>DTC INSPECTION [RADAR UNIT].</b>)</li> <li>• Is the same DTC displayed?</li> </ul>	Yes	Replace the radar unit, then go to the next step. (See <b>RADAR UNIT REMOVAL/INSTALLATION.</b> ) Go to the next step.
		No	Go to the next step.
5	<b>VERIFY IF OTHER DTCs DISPLAYED</b> <ul style="list-style-type: none"> <li>• Are any other DTCs displayed?</li> </ul>	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [RADAR UNIT].</b> )
		No	DTC troubleshooting completed.

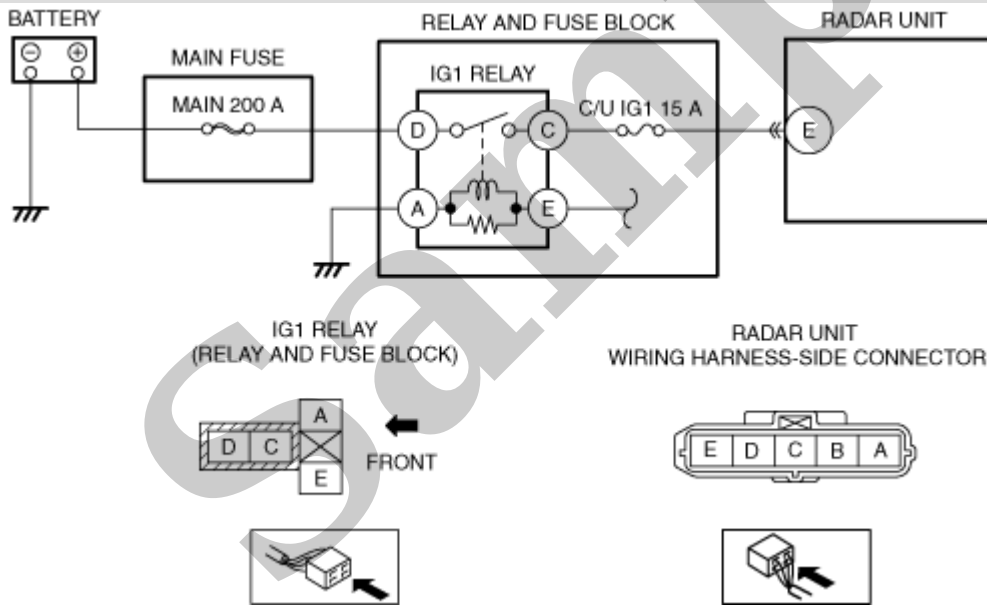


# DTC C1A67:4B [RADAR UNIT]

SM2899801

id1502a601790

Description	Radar unit is outside of operation range (ignition power supply, internal temperature)
Detection condition	<ul style="list-style-type: none"> <li>• Radar unit power supply voltage is other than 9.5 or more or less than 15.5 V.</li> <li>• Temperature in radar unit exceeds specification.</li> </ul>
Fail-safe	<ul style="list-style-type: none"> <li>• Inhibits the Mazda radar cruise control (MRCC) system control</li> <li>• Inhibits the smart brake support (SBS) system control</li> <li>• Inhibits the distance recognition support system (DRSS) control</li> <li>• Inhibits the traffic jam assist (TJA).</li> </ul>
Possible cause	<ul style="list-style-type: none"> <li>• DTCs are stored in the PCM.</li> <li>• Battery malfunction</li> <li>• IG1 relay malfunction</li> <li>• Short to ground in wiring harness between MAIN 200 A fuse and IG1 relay terminal D</li> <li>• Open circuit in wiring harness between battery positive terminal and IG1 relay terminal D</li> <li>• Radar unit connector or terminal malfunction</li> <li>• Short to ground in wiring harness between IG1 relay terminal C and radar unit terminal E</li> <li>• C/U IG1 15 A fuse malfunction</li> <li>• Open circuit in wiring harness between IG1 relay terminal C and radar unit terminal E</li> <li>• Radar unit malfunction</li> </ul>



## Diagnostic Procedure

Step	Inspection		Action
			has a short to ground. Go to Step 9.
		No	Go to the next step.
		Yes	Go to the next step.
8	<b>INSPECT IG1 RELAY CIRCUIT FOR OPEN CIRCUIT</b> <ul style="list-style-type: none"> <li>• Verify that the IG1 relay is removed.</li> <li>• Verify that the radar unit connector is disconnected.</li> <li>• Inspect for continuity between IG1 relay terminal C (wiring harness-side) and radar unit terminal E (wiring harness-side).</li> <li>• Is there continuity?</li> </ul>	No	Inspect the C/U IG1 15 A fuse. <ul style="list-style-type: none"> <li>• If the fuse is damaged:               <ul style="list-style-type: none"> <li>— Replace the fuse.</li> </ul> </li> <li>• If the fuse is normal:               <ul style="list-style-type: none"> <li>— Refer to the wiring diagram and verify whether or not there is a common connector between IG1 relay terminal C and radar unit terminal E.</li> </ul> </li> </ul> <p><b>If there is a common connector:</b></p> <ul style="list-style-type: none"> <li>• Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit.</li> <li>• Repair or replace the malfunctioning part.</li> </ul> <p><b>If there is no common connector:</b></p> <ul style="list-style-type: none"> <li>• Repair or replace the wiring harness which has an open circuit.</li> </ul> Go to the next step.
9	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> <ul style="list-style-type: none"> <li>• Always reconnect all disconnected connectors.</li> <li>• Connect the negative battery terminal. (See <b>NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.</b>)</li> <li>• Clear the DTC for the radar unit using the M-MDS. (See <b>CLEARING DTC [RADAR UNIT].</b>)</li> <li>• Retrieve the radar unit DTCs using the M-MDS. (See <b>DTC INSPECTION [RADAR UNIT].</b>)</li> <li>• Is the same DTC displayed?</li> </ul>	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> <li>• If the malfunction recurs, replace the radar unit. (See <b>RADAR UNIT REMOVAL/INSTALLATION.</b>)</li> </ul> Go to the next step.
		No	Go to the next step.
10	<b>VERIFY IF OTHER DTCs DISPLAYED</b> <ul style="list-style-type: none"> <li>• Are any other DTCs displayed?</li> </ul>	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [RADAR UNIT].</b> )
		No	DTC troubleshooting completed.

Step	Inspection		Action
3	<b>VERIFY AREA AROUND RADAR UNIT</b> <ul style="list-style-type: none"> <li>Remove front bumper. (See <b>FRONT BUMPER REMOVAL/INSTALLATION.</b>)</li> <li>Visually inspect the area around the radar unit for the following: <ul style="list-style-type: none"> <li>Dirt</li> <li>Adhering foreign matter (reflective object)</li> <li>Scratched or damaged</li> </ul> </li> <li>Is there any dirt, foreign matter (reflective object) or damage, or are there any scratches around the radar unit?</li> </ul>	Yes	Return the radar unit to their normal condition, then go to Step 7.
		No	<b>Without multi-information display</b> <ul style="list-style-type: none"> <li>Go to the next step.</li> </ul> <b>With multi-information display</b> <ul style="list-style-type: none"> <li>Go to Step 5.</li> </ul>
4	<b>VERIFY CENTER DISPLAY</b> <ul style="list-style-type: none"> <li>Is the message indicating related radar unit malfunction displayed in the center display?</li> </ul>	Yes	Switch the ignition off, leave it for 30 min to cool down the radar unit, switch the ignition ON (engine off or on) again and verify the message indicating related radar unit malfunction displayed in the center display. <b>Message is not displayed</b> <ul style="list-style-type: none"> <li>Go to the Step 6.</li> </ul> <b>Message is displayed</b> <ul style="list-style-type: none"> <li>Replace radar unit, then go to Step 7. (See <b>RADAR UNIT REMOVAL/INSTALLATION.</b>)</li> </ul>
		No	Go to the next step.
5	<b>VERIFY MULTI-INFORMATION DISPLAY</b> <ul style="list-style-type: none"> <li>Verify if "Front radar blocked" is displayed in the instrument cluster multi-information display.</li> <li>Is "Front radar blocked" displayed?</li> </ul>	Yes	Switch the ignition off, leave it for 30 min to cool down the radar unit, switch the ignition ON (engine off or on) again and verify the message indicating "Front radar blocked" in the multi-information display. <b>"Front radar blocked" is not displayed</b> <ul style="list-style-type: none"> <li>Go to the next step.</li> </ul> <b>"Front radar blocked" is displayed</b> <ul style="list-style-type: none"> <li>Replace radar unit, then go to Step 7. (See <b>RADAR UNIT REMOVAL/INSTALLATION.</b>)</li> </ul>
		No	Go to the next step.
6	<b>VERIFY RADAR UNIT BRACKET</b> <ul style="list-style-type: none"> <li>Verify that there is no bending or damage on the radar unit bracket.</li> <li>Is there bending or damage on the radar unit bracket?</li> </ul>	Yes	Replace the radar unit bracket and perform the aiming adjustment. (See <b>RADAR UNIT DISASSEMBLY/ASSEMBLY.</b> ) (See <b>RADAR UNIT AIMING.</b> ) Go to the next step.
		No	Go to the next step.
7	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> <ul style="list-style-type: none"> <li>Clear the DTC for the radar unit using the M-MDS. (See <b>CLEARING DTC [RADAR UNIT].</b>)</li> <li>Retrieve the radar unit DTCs using the M-MDS. (See <b>DTC INSPECTION [RADAR UNIT].</b>)</li> <li>Is the same DTC displayed?</li> </ul>	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> <li>If the malfunction recurs, replace the radar unit. (See <b>RADAR UNIT REMOVAL/INSTALLATION.</b>)</li> </ul> Go to the next step.
		No	Go to the next step.
8	<b>VERIFY IF OTHER DTCs DISPLAYED</b> <ul style="list-style-type: none"> <li>Are any other DTCs displayed?</li> </ul>	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [RADAR UNIT].</b> )
		No	DTC troubleshooting completed.

Step	Inspection		Action
4	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> <ul style="list-style-type: none"> <li>• Clear the DTC for the radar unit using the M-MDS. (See <b>CLEARING DTC [RADAR UNIT].</b>)</li> <li>• Switch the ignition ON (engine off or on) and wait for 6 s or more.</li> <li>• Retrieve the radar unit DTCs using the M-MDS. (See <b>DTC INSPECTION [RADAR UNIT].</b>)</li> <li>• Is the same DTC displayed?</li> </ul>	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> <li>• If the malfunction recurs, replace the radar unit. (See <b>RADAR UNIT REMOVAL/INSTALLATION.</b>)</li> </ul> Go to the next step.
		No	Go to the next step.
5	<b>VERIFY IF OTHER DTCs DISPLAYED</b> <ul style="list-style-type: none"> <li>• Are any other DTCs displayed?</li> </ul>	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [RADAR UNIT].</b> )
		No	DTC troubleshooting completed.

Sample

# DTC U0301:09 [RADAR UNIT]

SM2899808

id1502a601880

Description	Error signal received from PCM
Detection condition	<ul style="list-style-type: none"> <li>• There is an error in the following signals sent from the PCM.                             <ul style="list-style-type: none"> <li>— Brake switch signal</li> <li>— Cruise control system control signal</li> <li>— Cruise control switch error signal</li> <li>— PCM internal malfunction signal</li> <li>— Engine speed error signal</li> <li>— Accelerator opening angle error signal</li> </ul> </li> </ul>
Fail-safe	<ul style="list-style-type: none"> <li>• Inhibits the Mazda radar cruise control (MRCC) system control</li> <li>• Inhibits the smart brake support (SBS) system control</li> <li>• Inhibits the distance recognition support system (DRSS) control</li> <li>• Inhibits the traffic jam assist (TJA).</li> </ul>
Possible cause	<ul style="list-style-type: none"> <li>• DTCs are stored in the PCM.</li> <li>• DTCs are stored in the DSC HU/CM.                             <ul style="list-style-type: none"> <li>— DSC HU/CM malfunction</li> </ul> </li> <li>• PCM malfunction</li> <li>• Radar unit malfunction</li> </ul>
System wiring diagram	Not applicable

## Diagnostic Procedure

Step	Inspection	Action				
1	<p><b>VERIFY PCM DTCs</b></p> <ul style="list-style-type: none"> <li>• Retrieve the PCM DTCs using the M-MDS. (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)]</b>.) (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)]</b>.) (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]</b>.) (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>• Are any other DTCs displayed?</li> </ul>	<table border="0"> <tr> <td style="text-align: center; vertical-align: middle;">Yes</td> <td style="vertical-align: top;">                     Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [PCM (SKYACTIV-D 2.2)]</b>.) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5T)]</b>.) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]</b>.) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)                 </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">No</td> <td style="vertical-align: top;">                     Go to the next step.                 </td> </tr> </table>	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [PCM (SKYACTIV-D 2.2)]</b> .) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5T)]</b> .) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]</b> .) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)	No	Go to the next step.
Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [PCM (SKYACTIV-D 2.2)]</b> .) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5T)]</b> .) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))]</b> .) (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)					
No	Go to the next step.					

# DTC U0316:09 [RADAR UNIT]

SM2899809

id1502a601890

Description	Error signal received from DSC HU/CM
Detection condition	<ul style="list-style-type: none"> <li>• There is an error in the following signals sent from the DSC HU/CM.               <ul style="list-style-type: none"> <li>— Yaw rate signal</li> <li>— Lateral-G signal</li> <li>— Longitudinal-G signal</li> <li>— Wheel speed signal</li> <li>— Brake fluid pressure signal</li> <li>— Cruise control system control signal</li> <li>— Signal error in brake light circuit</li> </ul> </li> </ul>
Fail-safe	<ul style="list-style-type: none"> <li>• Inhibits the Mazda radar cruise control (MRCC) system control</li> <li>• Inhibits the smart brake support (SBS) system control</li> <li>• Inhibits the distance recognition support system (DRSS) control</li> <li>• Inhibits the traffic jam assist (TJA).</li> </ul>
Possible cause	<ul style="list-style-type: none"> <li>• DTCs are stored in the SAS control module.               <ul style="list-style-type: none"> <li>— SAS control module malfunction</li> </ul> </li> <li>• DTCs are stored in the DSC HU/CM.</li> <li>• DTCs are stored in the rear body control module (RBCM).               <ul style="list-style-type: none"> <li>— Rear body control module (RBCM) malfunction</li> </ul> </li> <li>• DSC HU/CM malfunction</li> <li>• Radar unit malfunction</li> </ul>
System wiring diagram	Not applicable

## Diagnostic Procedure

Step	Inspection	Action	
1	<b>VERIFY SAS CONTROL MODULE DTCs</b> <ul style="list-style-type: none"> <li>• Retrieve the SAS control module DTCs using the M-MDS. (See <a href="#">DTC INSPECTION [SAS CONTROL MODULE (STANDARD DEPLOYMENT CONTROL SYSTEM - MEXICO SPEC.)]</a>.) (See <a href="#">DTC INSPECTION [SAS CONTROL MODULE (TWO-STEP DEPLOYMENT CONTROL SYSTEM - US/CANADA/ISRAEL SPEC.)]</a>.)</li> <li>• Are any DTCs displayed?</li> </ul>	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <a href="#">DTC TABLE [SAS CONTROL MODULE (STANDARD DEPLOYMENT CONTROL SYSTEM - MEXICO SPEC.)]</a> .) (See <a href="#">DTC TABLE [SAS CONTROL MODULE (TWO-STEP DEPLOYMENT CONTROL SYSTEM - US/CANADA/ISRAEL SPEC.)]</a> .)
		No	Go to the next step.