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2016 MAZDA MX-5 / Miata RF OEM Service and Repair Workshop Manual

Go to manual page

PID	Unit/Operation	Data contents	Data read/use method	Module control terminal
LL_P/R *6	Unlock/Other	Passenger/rear door lock link operation condition • Unlock: Front door lock-link switch (RH), rear door lock-link switch (LH), rear door lock-link switch (RH) are in unlock. • Other: Front door lock-link switch (RH), rear door lock-link switch (LH), rear door lock-link switch (RH) are in other than unlock.	–	3J (Lock input (lock-link switch (passenger, rear door)))
LL_SW_D_LK	Off/On	Driver's door lock link switch (lock side) operation condition • Off: Front door lock-link switch (LH) is in unlock. • On: Front door lock-link switch (LH) is in lock.	–	3O (Lock input (front door lock-link switch (driver's door))
LL_SW_D_UNL	Off/On	Driver's door lock link switch (unlock side) operation condition • Off: Front door lock-link switch (LH) is in lock. • On: Front door lock-link switch (LH) is in unlock.	–	3M (Unlock input (front door lock-link switch (driver's door)))
R_FOG_L_CS	Off/On	Note • Displays in the M-MDS but it does not operate.		
R_FOG_LMP	Off/On	Note • Displays in the M-MDS but it does not operate.		
R_LMP	Off/On	Back-up light operation output signal • Off: Back-up light is turned off. • On: Back-up light is turned on.	–	–
R_LMP_CS	Off/On/Unknown/Fault	Back-up light operation request signal from instrument cluster • Off: Back-up light off signal is received. • On: Back-up light on signal is received. • Unknown: Back-up light control signal not determined • Fault: Communication with instrument cluster is failed.	–	3E, 3G (CAN)
R_WIP_MT_LO	Off/On	Rear wiper motor operation output signal • Off: Rear wiper motor is not operated. • On: Rear wiper motor is operated.	–	4T (Rear wiper motor control (LO))

ACTIVE COMMAND MODES INSPECTION [REAR BODY CONTROL MODULE (RBCM)]

SM2899021

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1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

(1)Select "DataLogger".

(2)Select "Modules".

(3)Select "R_BCM".

3.Select the simulation items from the PID table.

4.Perform the active command modes function, inspect the operations for each parts.

• If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

ACTIVE COMMAND MODES TABLE [REAR BODY CONTROL MODULE (RBCM)]

SM2899022

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Simulation item	Unit/Operation	Data contents	Output part name	Operation condition
BG_HORN_RLY *1	Off/On	• Off: Stops theft-deterrent horn. • On: Sounds the theft-deterrent horn.	Rear body control module (RBCM)	Ignition switched ON (engine off or on)
DL_MT_A	Lock/Unlock	Note • Displays in the M-MDS but it does not operate.		
ELAT_MT_RLY	Off/On	• Off: Stops the liftgate latch release operation. • On: Releases the liftgate latch.	Liftgate latch and lock actuator	Ignition switched ON (engine off or on)
ELAT_UNL	Off/On	• Off: Stops the liftgate latch release operation. • On: Releases the liftgate latch.	Liftgate latch and lock actuator	Ignition switched ON (engine off or on)
R_FOG_LMP	Off/On	Note • Displays in the M-MDS but it does not operate.		
R_LMP	Off/On	• Off: Turns off back-up light. • On: Illuminates back-up light.	Back-up light	Ignition switched ON (engine off or on)
R_WIP_MT_LO	Off/On	• Off: Stops rear wiper motor. • On: Operates rear wiper motor.	Rear wiper motor	Ignition switched ON (engine off or on)
STOP_LMP_CS *2	Off/On	• Off: Turns off brake light. • On: Illuminates brake light.	• Brake light • High-mount brake light	Ignition switched ON (engine off or on)

*1:With theft-deterrent horn

*2:With roll stability control

Step	Inspection		Action
2	**INSPECT SAS CONTROL MODULE CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Disconnect the SAS control module connector. • Inspect the connector engagement and connection condition and inspect the terminals for damage, deformation, corrosion, or disconnection. • Is the connector normal?	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 8.
3	**INSPECT REAR BODY CONTROL MODULE (RBCM) CONNECTOR CONDITION** • Disconnect the rear body control module (RBCM) connector. • Inspect the connector engagement and connection condition and inspect the terminals for damage, deformation, corrosion, or disconnection. • Is the connector normal?	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 8.
4	**INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND REAR BODY CONTROL MODULE (RBCM) FOR SHORT TO GROUND** • Verify that the SAS control module and rear body control module (RBCM) connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — SAS control module terminal 2AE (Type-A) — SAS control module terminal 3X (Type-B) • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals. • SAS control module terminal 2AE—Rear body control module (RBCM) terminal 3R (Type-A) • SAS control module terminal 3X—Rear body control module (RBCM) terminal 3R (Type-B) **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to ground. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to ground. Go to Step 8.
		No	Go to the next step.
5	**INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND REAR BODY CONTROL MODULE (RBCM) FOR SHORT TO POWER SUPPLY** • Verify that the SAS control module and rear body control module (RBCM) connectors are disconnected. • Connect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Switch the ignition ON (engine off or on). • Measure the voltage at the following terminals (wiring harness-side): — SAS control module terminal 2AE (Type-A) — SAS control module terminal 3X (Type-B) • Is the voltage 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals. • SAS control module terminal 2AE—Rear body control module (RBCM) terminal 3R (Type-A) • SAS control module terminal 3X—Rear body control module (RBCM) terminal 3R (Type-B) **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to power supply. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to power supply. Go to Step 8.

Step	Inspection		Action
1	VERIFY REAR BODY CONTROL MODULE (RBCM) DTCs AGAIN • Clear the DTC for the rear body control module (RBCM) using the M-MDS. (See CLEARING DTC [REAR BODY CONTROL MODULE (RBCM)].) • Switch the ignition ON (engine off or on) and wait for 3 s or more. • Retrieve the rear body control module (RBCM) DTCs using the M-MDS. (See DTC INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) • Is the same DTC displayed?	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT TELEMATICS COMMUNICATION UNIT CONNECTOR CONDITION • Switch the ignition off. • Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Disconnect the telematics communication unit connector. • Inspect the connector engagement and connection condition and inspect the terminals for damage, deformation, corrosion, or disconnection. • Is the connector normal?	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 8.
3	INSPECT REAR BODY CONTROL MODULE (RBCM) CONNECTOR CONDITION • Disconnect the rear body control module (RBCM) connector. • Inspect the connector engagement and connection condition and inspect the terminals for damage, deformation, corrosion, or disconnection. • Is the connector normal?	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 8.
4	INSPECT WIRING HARNESS BETWEEN TELEMATICS COMMUNICATION UNIT AND REAR BODY CONTROL MODULE (RBCM) FOR SHORT TO GROUND • Verify that the telematics communication unit and rear body control module (RBCM) connectors are disconnected. • Inspect for continuity between telematics communication unit terminal 1AC (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between telematics communication unit terminal 1AC and rear body control module (RBCM) terminal 3R. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to ground. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to ground. Go to Step 8.
		No	Go to the next step.

DTC B143A:00 [REAR BODY CONTROL MODULE (RBCM)]

SM2899025

id0902p409030

Description	Collision detection unlock function operation
Detection condition	• Rear body control module (RBCM) operates the collision detection unlock function.
Fail-safe	Not applicable
Possible cause	**Caution** **• The rear body control module (RBCM) operates the collision detection unlock function in the event of a collision to enhance rescue operation from outside the vehicle. The rear body control module (RBCM) operates the collision detection unlock function and outputs this DTC simultaneously. Explain to the customer that this may not indicate a malfunction even if this DTC is output.** • Collision detection unlock function operated due to vehicle collision. • Rear body control module (RBCM) internal malfunction
System wiring diagram	Not applicable

Diagnostic Procedure

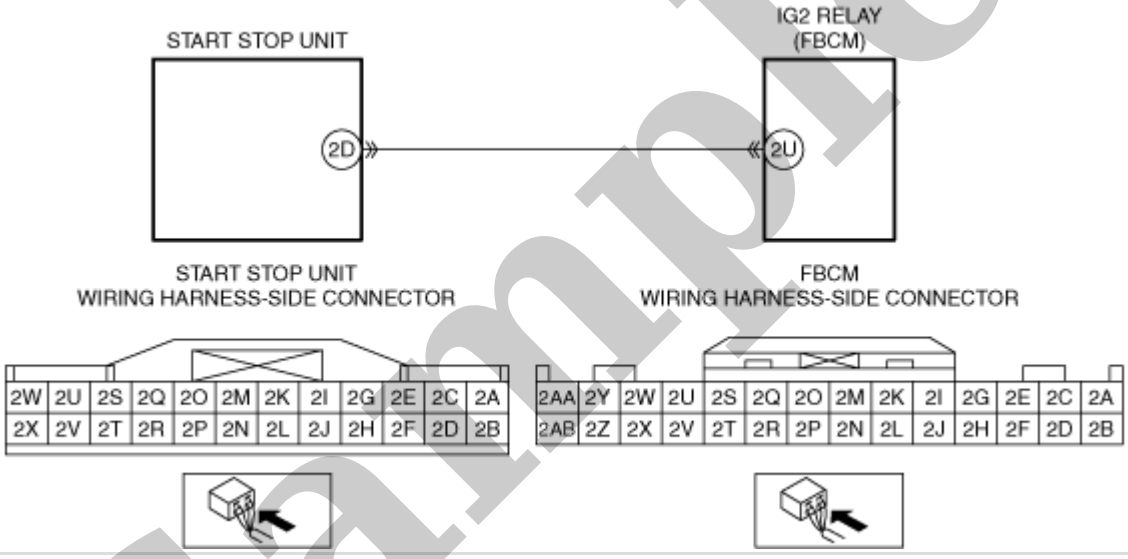
Step	Inspection		Action
1	VERIFY REAR BODY CONTROL MODULE (FBCM) DTCs AGAIN • Clear the DTC for the rear body control module (RBCM) using the M-MDS. (See CLEARING DTC [REAR BODY CONTROL MODULE (RBCM)].) • Retrieve the rear body control module (RBCM) DTCs using the M-MDS. (See DTC INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) • Is the same DTC displayed?	Yes	Go to the next step.
		No	Go to Step 3.
2	VERIFY IF COLLISION DETECTION UNLOCK FUNCTION OPERATED • Lock all the doors by operating the driver's door lock knob. • Clear the DTC for the rear body control module (RBCM) using the M-MDS. (See CLEARING DTC [REAR BODY CONTROL MODULE (RBCM)].) • Retrieve the rear body control module (RBCM) DTCs using the M-MDS. (See DTC INSPECTION [REAR BODY CONTROL MODULE (RBCM)].) • Is the same DTC displayed?	Yes	Replace the rear body control module (RBCM), then go to the next step. (See REAR BODY CONTROL MODULE (RBCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY IF OTHER DTCs DISPLAYED • Are any other DTCs displayed?	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See DTC TABLE [REAR BODY CONTROL MODULE (RBCM)].)
		No	DTC troubleshooting completed.

DTC B112A:11 [START STOP UNIT]

SM2899036

id0902p602040

Description	**IG2 relay circuit malfunction**
Detection condition	• Start stop unit detects the IG2 relay output monitor voltage of 2.5 V or less for 0.5 s or more with the ignition switched ON (engine off or on).
Fail-safe	Not applicable
Possible cause	• Front body control module (FBCM) connector or terminal malfunction • Start stop unit connector or terminal malfunction • Short to ground in wiring harness between start stop unit terminal 2D and front body control module (FBCM) terminal 2U • Front body control module (FBCM) malfunction • Start stop unit malfunction



Diagnostic Procedure

Step	Inspection		Action
1	**INSPECT FRONT BODY CONTROL MODULE (FBCM) CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Disconnect the front body control module (FBCM) connector. • Inspect the connector engagement and connection condition and inspect the terminals for damage, deformation, corrosion, or disconnection. • Is the connector normal?	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 5.

Step	Inspection		Action
5	VERIFY IF OTHER DTCs DISPLAYED • Are any other DTCs displayed?	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See DTC TABLE [START STOP UNIT].)
		No	DTC troubleshooting completed.

DTC B124C:56 [START STOP UNIT]

SM2899038

id0902p602070

Description	Turn switch internal circuit malfunction
Detection condition	• Start stop unit detects that the turn switch LH and RH are turned on simultaneously for 5 s or more.
Fail-safe	Not applicable
Possible cause	• Start stop unit configuration error • The installations of the light switch and the wiper and washer switch are reversed. • Turn switch malfunction • Start stop unit malfunction
System wiring diagram	Not applicable

Diagnostic Procedure

Step	Inspection		Action
1	PERFORM START STOP UNIT CONFIGURATION (USING AS-BUILT DATA) • Using the M-MDS, perform the start stop unit configuration (using As-Built data). (See START STOP UNIT CONFIGURATION (USING AS-BUILT DATA).) • Clear the DTC for the start stop unit using the M-MDS. (See CLEARING DTC [START STOP UNIT].) • Operate the turn switch to RH position and wait for 5 s or more. • Operate the turn switch to LH position and wait for 5 s or more. • Retrieve the start stop unit DTCs using the M-MDS. (See DTC INSPECTION [START STOP UNIT].) • Is the same DTC displayed?	Yes	Using the M-MDS, perform the start stop unit configuration (using As-Built data) again, then go to the next step. (See START STOP UNIT CONFIGURATION (USING AS-BUILT DATA).)
		No	Go to Step 5.
2	VERIFY IF INSTALLATIONS OF LIGHT SWITCH AND WIPER AND WASHER SWITCH ARE REVERSED • Verify the installation condition of the light switch and the wiper and washer switch. • Are the light switch and the wiper and washer switch installed correctly?	Yes	Go to the next step.
		No	Install the light switch and the wiper and washer switch properly, then go to Step 4. (See LIGHT SWITCH REMOVAL/INSTALLATION.) (See WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
3	INSPECT TURN SWITCH • Inspect the turn switch. (See LIGHT SWITCH INSPECTION.) • Is the turn switch normal?	Yes	Go to the next step.
		No	Replace the light switch, then go to the next step. (See LIGHT SWITCH REMOVAL/INSTALLATION.)