

ACCESSORIES & EQUIPMENT

Power Mirror Control (w/Memory) (Diagnostic Codes & Symptom Tests) - Sienna

POWER MIRROR CONTROL SYSTEM (W/ MEMORY)

DTC U0142: LOST COMMUNICATION WITH MAIN BODY ECU

DESCRIPTION

The DTCs are stored when the CAN communication system is malfunctioning.

DTC No.	DTC Detection Condition	Trouble Area
U0142	Lost communication with main body ECU	CAN communication system

INSPECTION PROCEDURE

PROCEDURE

1. **CHECK FOR DTC**
 - a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
 - b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

OK

DTCs are not output.

NG --> See step 3

OK --> See step 2

2. **USE SIMULATION METHOD TO CHECK.** Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**
3. **GO TO CAN COMMUNICATION SYSTEM.** Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**

SYMPTOM TESTS

Driver Side Power Mirror cannot be Adjusted with Power Mirror Switch

SYSTEM DESCRIPTION

When the mirror adjust switch is operated, the main body ECU detects the switch operation and sends the mirror adjust switch signal to the outer mirror control ECU assembly (driver side) via CAN communication. On receiving the signal, the outer mirror control ECU assembly (driver side) operates the vertical and horizontal mirror motors, which are built into the outer rear view mirror assembly LH, to adjust the mirror surface

position.

WIRING DIAGRAM

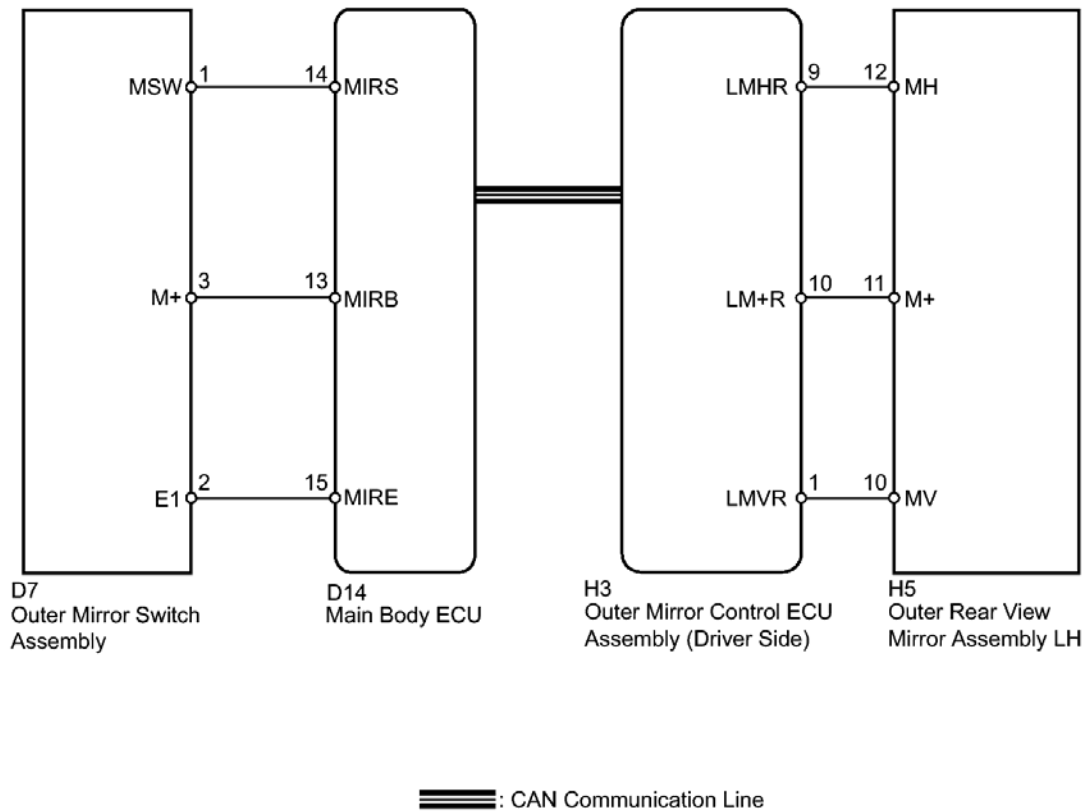


Fig. 1: Driver Side Power Mirror - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Use the Techstream to check if the CAN communication system is functioning normally. Refer to **DIAGNOSTIC TROUBLE CODE CHART**.

OK

CAN communication DTC is not output.

NG --> See step 8

OK: Go to next step

2. READ VALUE USING TECHSTREAM (OUTER MIRROR SWITCH ASSEMBLY)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mirror Selection SW (L)	Mirror select switch signal for LH mirror / ON or OFF	ON: Mirror select switch in L position OFF: Mirror select switch off or in R position	-
Mirror Position SW (R)	Mirror adjust switch signal (Right) / ON or OFF	ON: Mirror adjust switch pressed right OFF: Mirror adjust switch not pressed right	Check with the mirror select switch in the L position.
Mirror Position SW (L)	Mirror adjust switch signal (Left) / ON or OFF	ON: Mirror adjust switch pressed left OFF: Mirror adjust switch not pressed left	Check with the mirror select switch in the L position.
		ON:	

Mirror Position SW (Up)	Mirror adjust switch signal (Up) / ON or OFF	Mirror adjust switch pressed up OFF: Mirror adjust switch not pressed up	Check with the mirror select switch in the L position.
Mirror Position SW (Dwn)	Mirror adjust switch signal (Down) / ON or OFF	ON: Mirror adjust switch pressed down OFF: Mirror adjust switch not pressed down	Check with the mirror select switch in the L position.

OK

On the Techstream screen, ON or OFF is displayed for each item according to the table above.

NG --> See step 6

OK: Go to next step

3. **PERFORM ACTIVE TEST USING TECHSTREAM (POWER MIRROR CONTROL FUNCTION)**

- Enter the following menus: Body Electrical / Mirror L / Active Test.
- Perform the Active Test according to the display on the Techstream.

MIRROR L

Tester Display	Test Part	Control Range	Diagnostic Note
Mirror Up/Down	Mirror vertical operation	Up / Down	-
Mirror Right/Left	Mirror horizontal operation	Right / Left	-

OK

Mirror operates normally.

NG --> See step 4

OK --> See step 9

4. **INSPECT OUTER REAR VIEW MIRROR ASSEMBLY LH**

- a. Remove the outer rear view mirror assembly LH. Refer to **REMOVAL** .

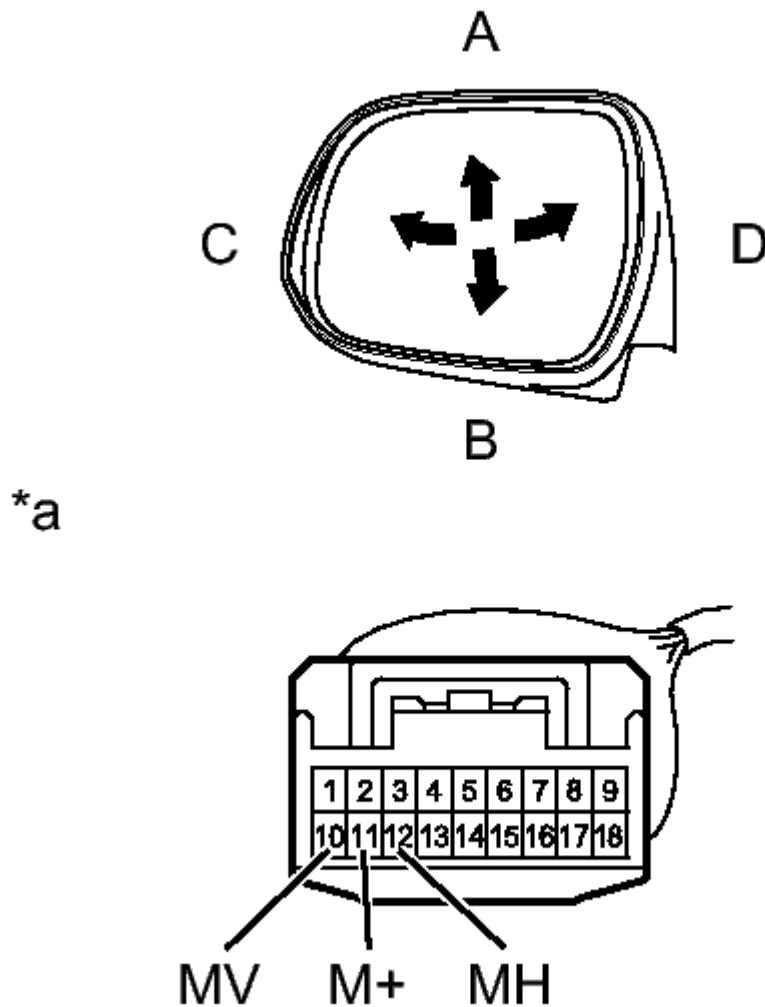


Fig. 2: Inspecting Outer Rear View Mirror Assembly LH
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Apply auxiliary battery voltage and check the operation of the outer rear view mirror assembly LH.

OK

Measurement Condition	Specified Condition
Auxiliary battery positive (+) -- > 10 (MV) Auxiliary battery negative (-) -- > 11 (M+)	Turns upward (A)
Auxiliary battery negative (-) -- > 10 (MV) Auxiliary battery positive (+) -- > 11 (M+)	Turns downward (B)
Auxiliary battery positive (+) -- > 12 (MH) Auxiliary battery negative (-) -- > 11 (M+)	Turns left (C)
Auxiliary battery negative (-) -- > 12 (MH) Auxiliary battery positive (+) -- > 11 (M+)	Turns right (D)

TEXT IN ILLUSTRATION

*a	Component without harness connected (Outer Rear View Mirror Assembly LH)
----	--

NG --> See step 10

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY LH - OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE))

- a. Disconnect the H5 outer rear view mirror assembly LH connector.
- b. Disconnect the H3 the outer mirror control ECU assembly (driver side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
H5-10 (MV) - H3-1 (LMVR)	Always	Below 1 ohms
H5-11(M+) - H3-10 (LM+R)	Always	Below 1 ohms
H5-12 (MH) - H3-9 (LMHR)	Always	Below 1 ohms
H5-10 (MV) - Body ground	Always	10 kohms or higher
H5-11(M+) - Body ground	Always	10 kohms or higher
H5-12 (MH) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 11

6. INSPECT OUTER MIRROR SWITCH ASSEMBLY

- a. Remove the outer mirror switch assembly. Refer to **REMOVAL** .

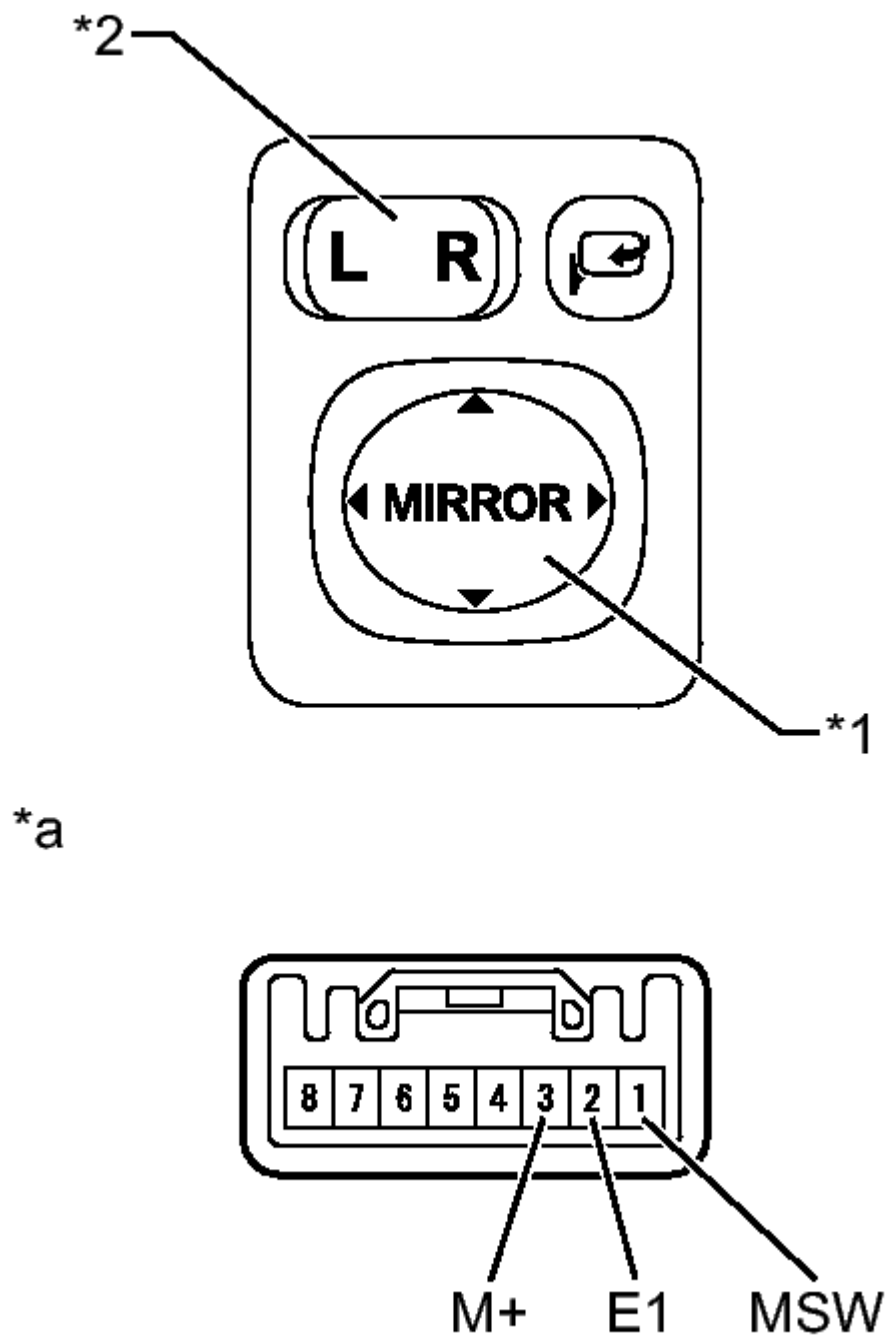


Fig. 3: Inspecting Outer Mirror Switch Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
3 (M+) - 2 (E1)	Mirror adjust switch pressed up	90 to 110 ohms
	Mirror adjust switch pressed down	437 to 503 ohms
	Mirror adjust switch pressed left	744 to 856 ohms
	Mirror adjust switch pressed right	225 to 275 ohms
1 (MSW) - 2 (E1)	Mirror select switch L	90 to 110 ohms
	Mirror select switch off	10 kohms or higher

TEXT IN ILLUSTRATION

*1	Mirror Adjust Switch
*2	Mirror Select Switch
*a	Component without harness connected (Outer Mirror Switch Assembly)

NG --> See step 12

OK: Go to next step

7. CHECK HARNESS AND CONNECTOR (OUTER MIRROR SWITCH ASSEMBLY - MAIN BODY ECU)

- a. Disconnect the D7 outer mirror switch assembly connector.
- b. Disconnect the D14 main body ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D7-2 (E1) - D14-15 (MIRE)	Always	Below 1 ohms
D7-3 (M+) - D14-13 (MIRB)	Always	Below 1 ohms
D7-1 (MSW) - D14-14 (MIRS)	Always	Below 1 ohms
D7-2 (E1) - Body ground	Always	10 kohms or higher
D7-3 (M+) - Body ground	Always	10 kohms or higher
D7-1 (MSW) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 13

8. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
9. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE). Refer to REMOVAL**
10. **REPLACE OUTER REAR VIEW MIRROR ASSEMBLY LH. Refer to REMOVAL**
11. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE). Refer to**

REMOVAL

12. **REPLACE OUTER MIRROR SWITCH ASSEMBLY. Refer to REMOVAL**
13. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

Front Passenger Side Power Mirror cannot be Adjusted with Power Mirror Switch

SYSTEM DESCRIPTION

When the mirror adjust switch is operated, the main body ECU detects the switch operation and sends the mirror adjust switch signal to the outer mirror control ECU assembly (front passenger side) via CAN communication. On receiving the signal, the outer mirror control ECU assembly (front passenger side) operates the vertical and horizontal mirror motors, which are built into the outer rear view mirror assembly RH, to adjust the mirror surface position.

WIRING DIAGRAM

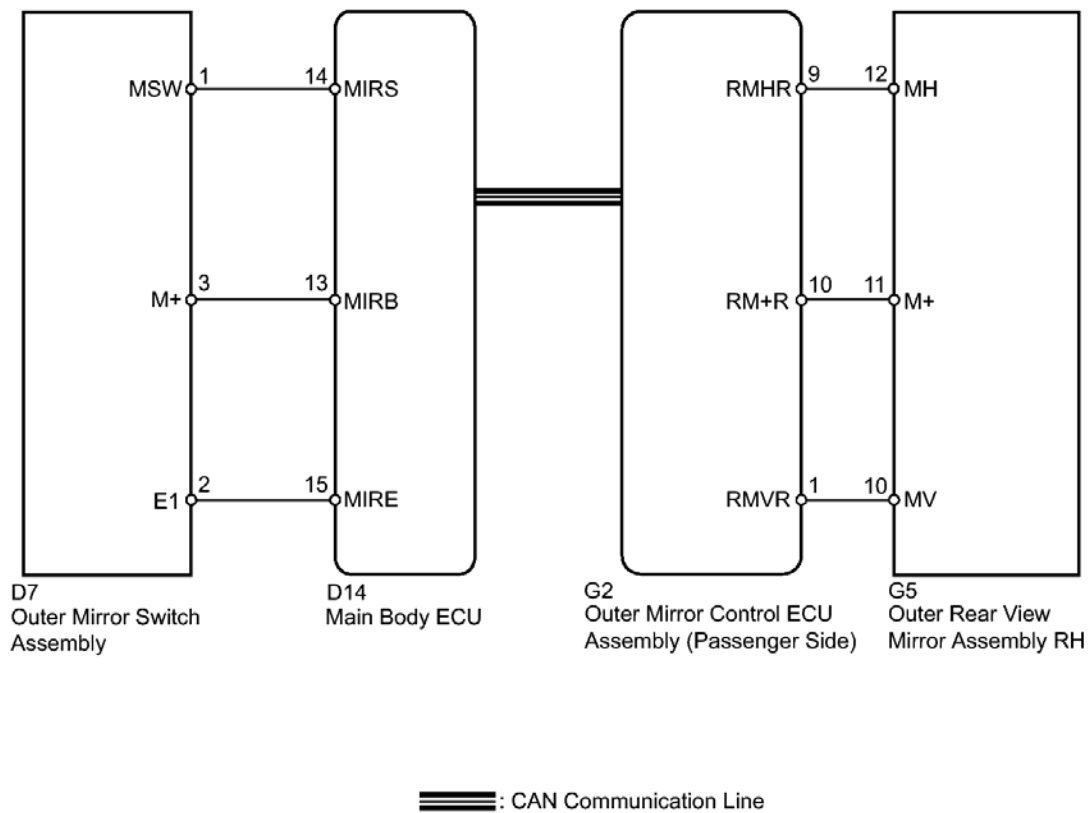


Fig. 4: Front Passenger Side Power Mirror - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Use the Techstream to check if the CAN communication system is functioning normally. Refer to **DIAGNOSTIC TROUBLE CODE CHART** .

OK

CAN communication DTC is not output.

NG --> See step 8

OK: Go to next step

2. READ VALUE USING TECHSTREAM (OUTER MIRROR SWITCH ASSEMBLY)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mirror Selection SW (R)	Mirror select switch signal for RH mirror / ON or OFF	ON: Mirror select switch in R position OFF: Mirror select switch off or in L position	-
Mirror Position SW (R)	Mirror adjust switch signal (Right) / ON or OFF	ON: Mirror adjust switch pressed right OFF: Mirror adjust switch not pressed right	Check with the mirror select switch in the R position

Mirror Position SW (L)	Mirror adjust switch signal (Left) / ON or OFF	ON: Mirror adjust switch pressed left OFF: Mirror adjust switch not pressed left	Check with the mirror select switch in the R position
Mirror Position SW (Up)	Mirror adjust switch signal (Up) / ON or OFF	ON: Mirror adjust switch pressed up OFF: Mirror adjust switch not pressed up	Check with the mirror select switch in the R position
Mirror Position SW (Dwn)	Mirror adjust switch signal (Down) / ON or OFF	ON: Mirror adjust switch pressed down OFF: Mirror adjust switch not pressed down	Check with the mirror select switch in the R position

OK

On the Techstream screen, ON or OFF is displayed for each item according to the table above.

NG --> See step 6

OK: Go to next step

3. **PERFORM ACTIVE TEST USING TECHSTREAM (POWER MIRROR CONTROL FUNCTION)**

- Enter the following menus: Body Electrical / Mirror R / Active Test.
- Perform the Active Test according to the display on the Techstream.

MIRROR R

Tester Display	Test Part	Control Range	Diagnostic Note
Mirror Up/Down	Mirror vertical operation	Up / Down	-
Mirror Right/Left	Mirror horizontal operation	Right / Left	-

OK

Mirror operates normally.

NG --> See step 4

OK --> See step 9

4. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY RH

- a. Remove the outer rear view mirror assembly RH. Refer to **REMOVAL** .

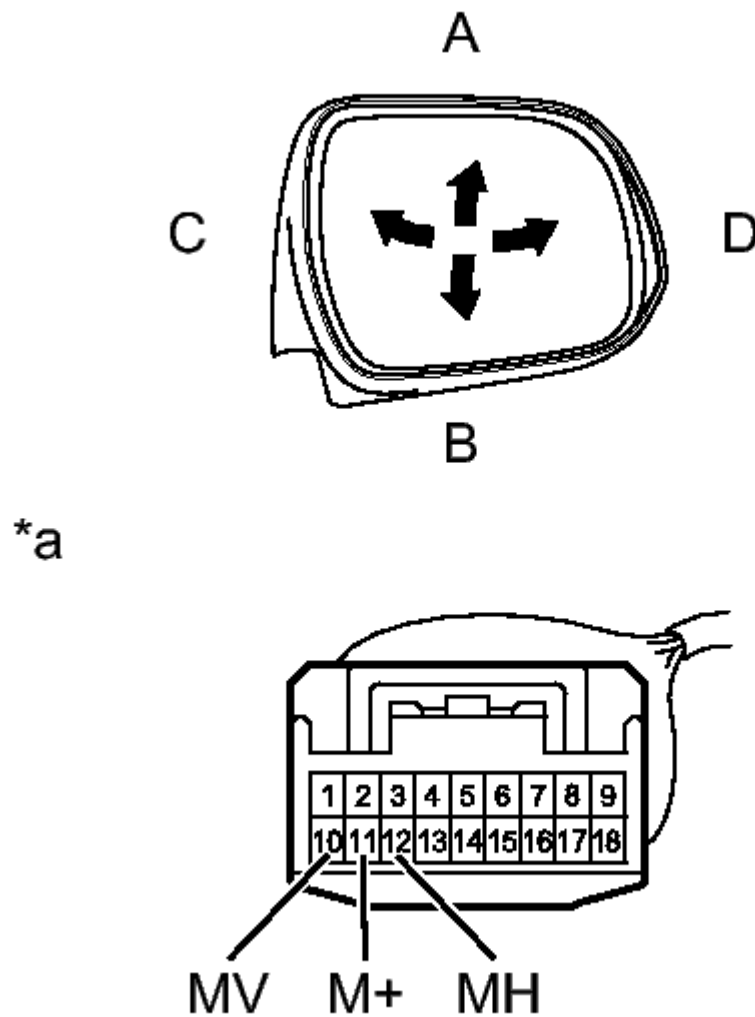


Fig. 5: Inspecting Outer Rear View Mirror Assembly RH
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Apply auxiliary battery voltage and check the operation of the outer rear view mirror assembly RH.

OK

Measurement Condition	Specified Condition
Auxiliary battery positive (+) -- > 10 (MV) Auxiliary battery negative (-) --	Turns upward (A)

> 11 (M+)	
Auxiliary battery negative (-) -- > 10 (MV) Auxiliary battery positive (+) -- > 11 (M+)	Turns downward (B)
Auxiliary battery positive (+) -- > 12 (MH) Auxiliary battery negative (-) -- > 11 (M+)	Turns left (C)
Auxiliary battery negative (-) -- > 12 (MH) Auxiliary battery positive (+) -- > 11 (M+)	Turns right (D)

TEXT IN ILLUSTRATION

*a	Component without harness connected (Outer Rear View Mirror Assembly RH)
----	--

NG --> See step 10

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY RH - OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE))

- Disconnect the G5 outer rear view mirror assembly RH connector.
- Disconnect the G2 outer mirror control ECU assembly (front passenger side) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
G5-10 (MV) - G2-1 (RMVR)	Always	Below 1 ohms
G5-11(M+) - G2-10 (RM+R)	Always	Below 1 ohms
G5-12 (MH) - G2-9 (RMHR)	Always	Below 1 ohms
G5-10 (MV) - Body ground	Always	10 kohms or higher
G5-11(M+) - Body ground	Always	10 kohms or higher
G5-12 (MH) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 11

6. INSPECT OUTER MIRROR SWITCH ASSEMBLY

- Remove the outer mirror switch assembly. Refer to **REMOVAL** .

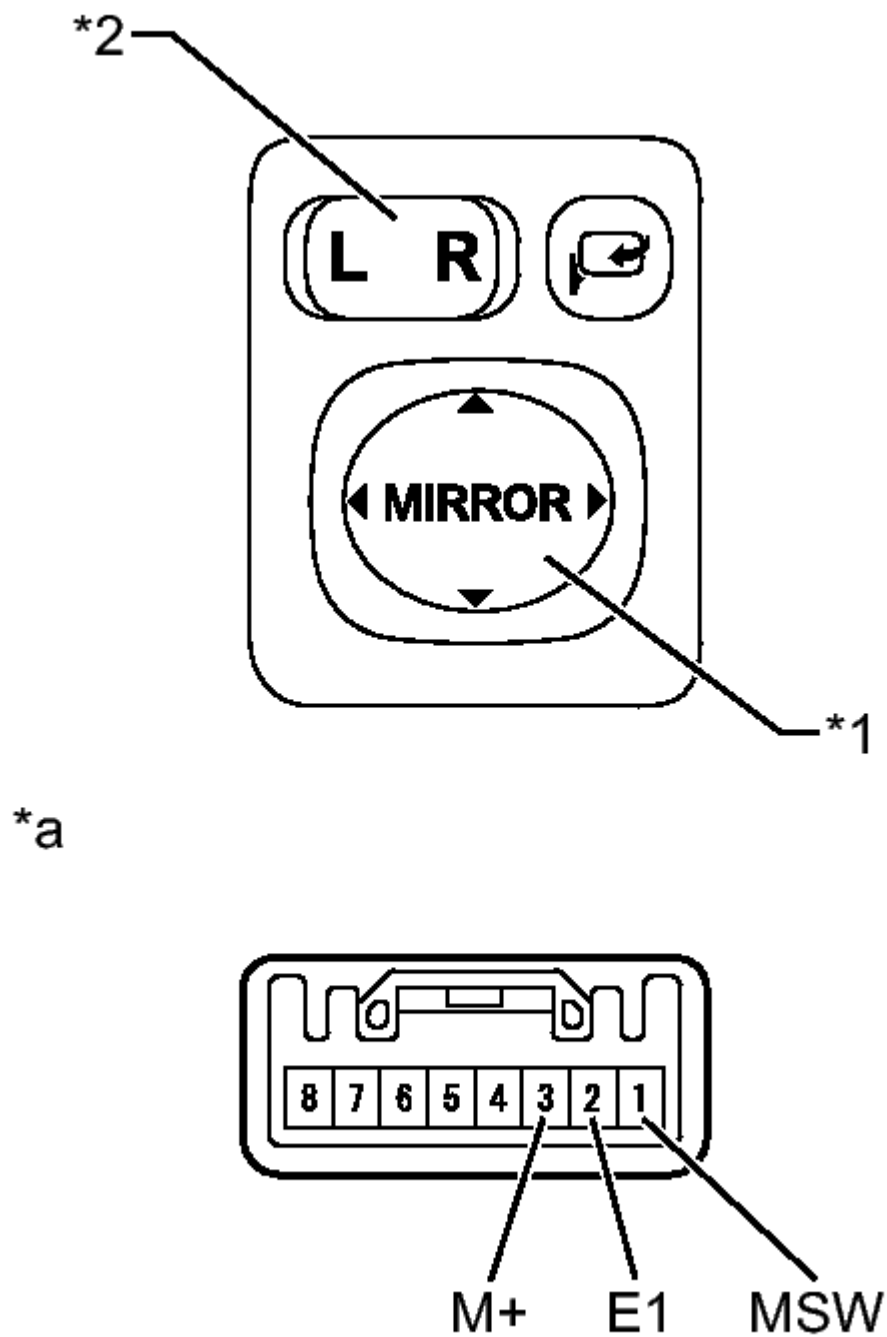


Fig. 6: Inspecting Outer Mirror Switch Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
3 (M+) - 2 (E1)	Mirror adjust switch pressed up	90 to 110 ohms
	Mirror adjust switch pressed down	437 to 503 ohms
	Mirror adjust switch pressed left	744 to 856 ohms
	Mirror adjust switch pressed right	225 to 275 ohms
1 (MSW) - 2 (E1)	Mirror select switch R	Below 10 ohms
	Mirror select switch off	10 kohms or higher

TEXT IN ILLUSTRATION

*1	Mirror Adjust Switch
*2	Mirror Select Switch
*a	Component without harness connected (Outer Mirror Switch Assembly)

NG --> See step 12

OK: Go to next step

7. CHECK HARNESS AND CONNECTOR (OUTER MIRROR SWITCH ASSEMBLY - MAIN BODY ECU)

- a. Disconnect the D7 outer mirror switch assembly connector.
- b. Disconnect the D14 main body ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D7-2 (E1) - D14-15 (MIRE)	Always	Below 1 ohms
D7-3 (M+) - D14-13 (MIRB)	Always	Below 1 ohms
D7-1 (MSW) - D14-14 (MIRS)	Always	Below 1 ohms
D7-2 (E1) - Body ground	Always	10 kohms or higher
D7-3 (M+) - Body ground	Always	10 kohms or higher
D7-1 (MSW) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 13

8. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
9. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE). Refer to REMOVAL**
10. **REPLACE OUTER REAR VIEW MIRROR ASSEMBLY RH. Refer to REMOVAL**
11. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE).**

Refer to **REMOVAL**

12. **REPLACE OUTER MIRROR SWITCH ASSEMBLY.** Refer to **REMOVAL**

13. **REPLACE MAIN BODY ECU.** Refer to **REMOVAL**

Power Mirror cannot be Adjusted with Power Mirror Switch

SYSTEM DESCRIPTION

The main body ECU detects the mirror adjust switch status and sends the signal to the outer mirror control ECU assembly via CAN communication. On receiving the signal, each outer mirror control ECU assembly operates the vertical and horizontal mirror motors to adjust the mirror surface position.

WIRING DIAGRAM

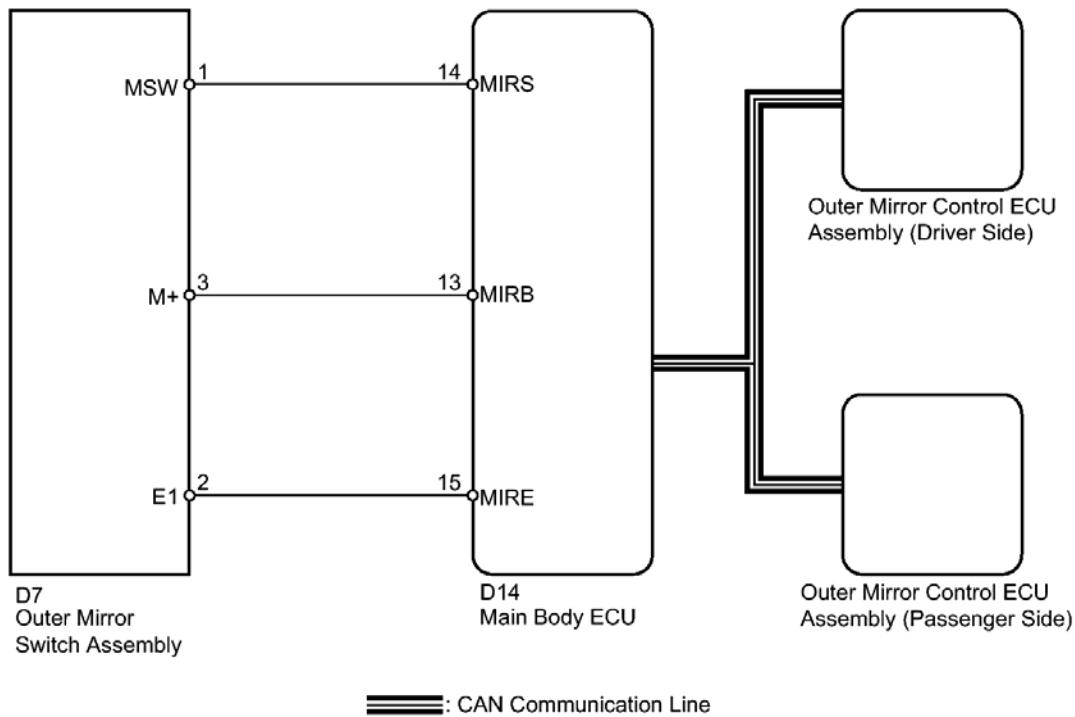


Fig. 7: Power Mirror And Power Mirror Switch - Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Use the Techstream to check if the CAN communication system is functioning normally. Refer to **DIAGNOSTIC TROUBLE CODE CHART** .

OK

CAN communication DTC is not output.

NG --> See step 5

OK: Go to next step

2. READ VALUE USING TECHSTREAM (OUTER MIRROR SWITCH ASSEMBLY)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mirror Selection SW (R)	Mirror select switch signal for RH mirror / ON or OFF	ON: Mirror select switch in R position OFF: Mirror select switch off or in L position	-
Mirror Selection SW (L)	Mirror select switch signal for LH mirror / ON or OFF	ON: Mirror select switch in L position OFF: Mirror select switch off or in R position	-
Mirror Position SW (R)	Mirror adjust switch signal (Right) / ON or OFF	ON: Mirror adjust switch pressed right OFF: Mirror	Check with the mirror select switch in any

		adjust switch not pressed right	position except neutral
Mirror Position SW (L)	Mirror adjust switch signal (Left) / ON or OFF	ON: Mirror adjust switch pressed left OFF: Mirror adjust switch not pressed left	Check with the mirror select switch in any position except neutral
Mirror Position SW (Up)	Mirror adjust switch signal (Up) / ON or OFF	ON: Mirror adjust switch pressed up OFF: Mirror adjust switch not pressed up	Check with the mirror select switch in any position except neutral
Mirror Position SW (Dwn)	Mirror adjust switch signal (Down) / ON or OFF	ON: Mirror adjust switch pressed down OFF: Mirror adjust switch not pressed down	Check with the mirror select switch in any position except neutral

OK

On the Techstream screen, ON or OFF is displayed for each item according to the table above.

NG --> See step 3

OK --> See step 6

3. INSPECT OUTER MIRROR SWITCH ASSEMBLY

- a. Remove the outer mirror switch assembly. Refer to **REMOVAL** .

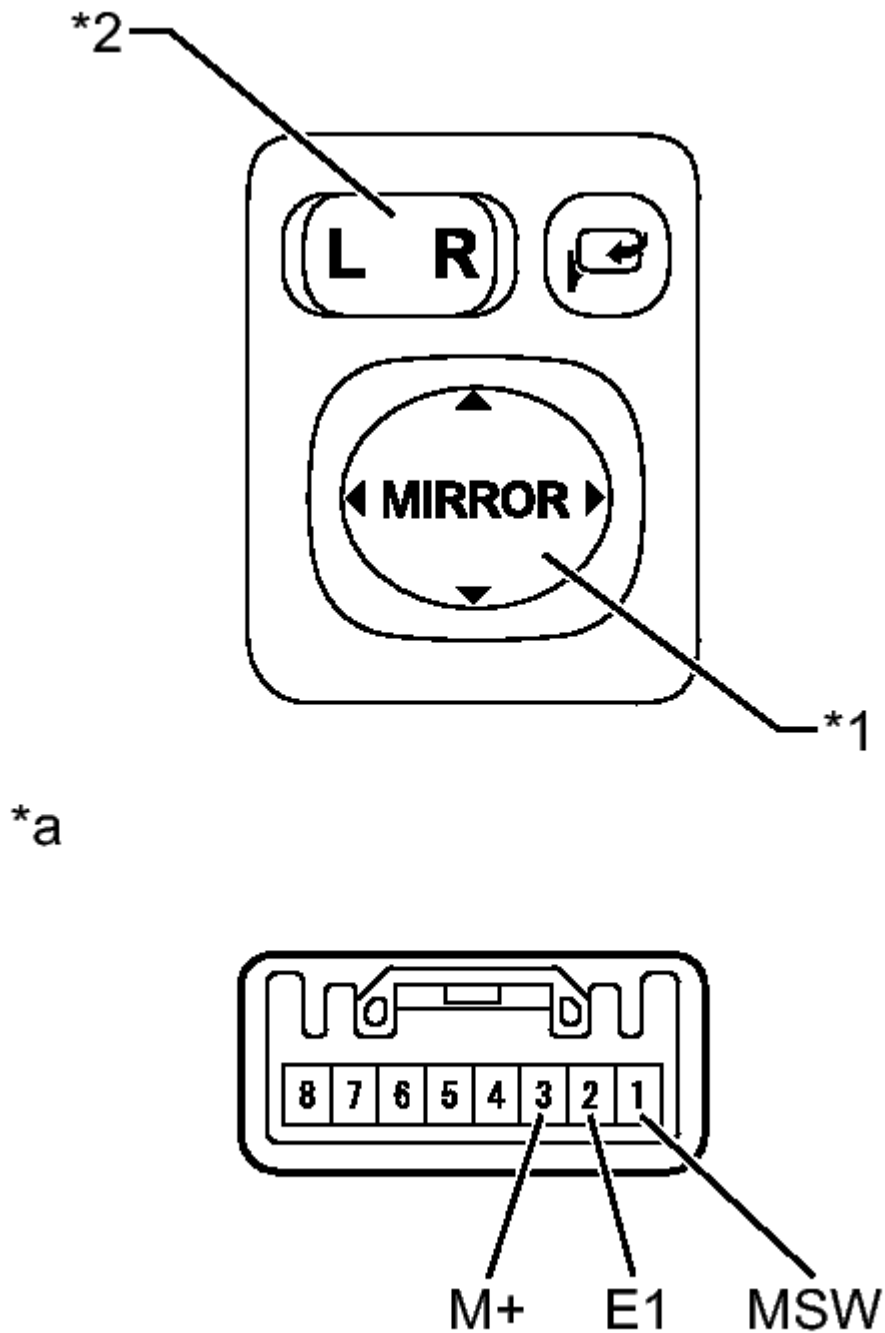


Fig. 8: Inspecting Outer Mirror Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
3 (M+) - 2 (E1)	Mirror adjust switch pressed up	90 to 110 ohms
	Mirror adjust switch pressed down	437 to 503 ohms
	Mirror adjust switch pressed left	744 to 856 ohms
	Mirror adjust switch pressed right	225 to 275 ohms
1 (MSW) - 2 (E1)	Mirror select switch R	Below 10 ohms
	Mirror select switch L	90 to 110 ohms
	Mirror select switch off	10 kohms or higher

TEXT IN ILLUSTRATION

*1	Mirror Adjust Switch
*2	Mirror Select Switch
	Component without harness connected

*a	(Outer Mirror Switch Assembly)
----	--------------------------------

NG --> See step 7

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (OUTER MIRROR SWITCH ASSEMBLY - MAIN BODY ECU)

- Disconnect the D7 outer mirror switch assembly connector.
- Disconnect the D14 main body ECU connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D7-2 (E1) - D14-15 (MIRE)	Always	Below 1 ohms
D7-3 (M+) - D14-13 (MIRB)	Always	Below 1 ohms
D7-1 (MSW) - D14-14 (MIRS)	Always	Below 1 ohms
D7-2 (E1) - Body ground	Always	10 kohms or higher
D7-3 (M+) - Body ground	Always	10 kohms or higher
D7-1 (MSW) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 8

5. GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH

TROUBLESHOOTING

6. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
7. **REPLACE OUTER MIRROR SWITCH ASSEMBLY. Refer to REMOVAL**
8. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

Mirror Heater does not Operate with Rear Defogger Switch

DESCRIPTION

When the rear window defogger switch on the air conditioning control panel assembly is pressed, the operation signal is transmitted to the air conditioning amplifier assembly through a LIN communication line. When the air conditioning amplifier assembly receives the signal, it turns on the integration relay to operate the mirror heater.

WIRING DIAGRAM

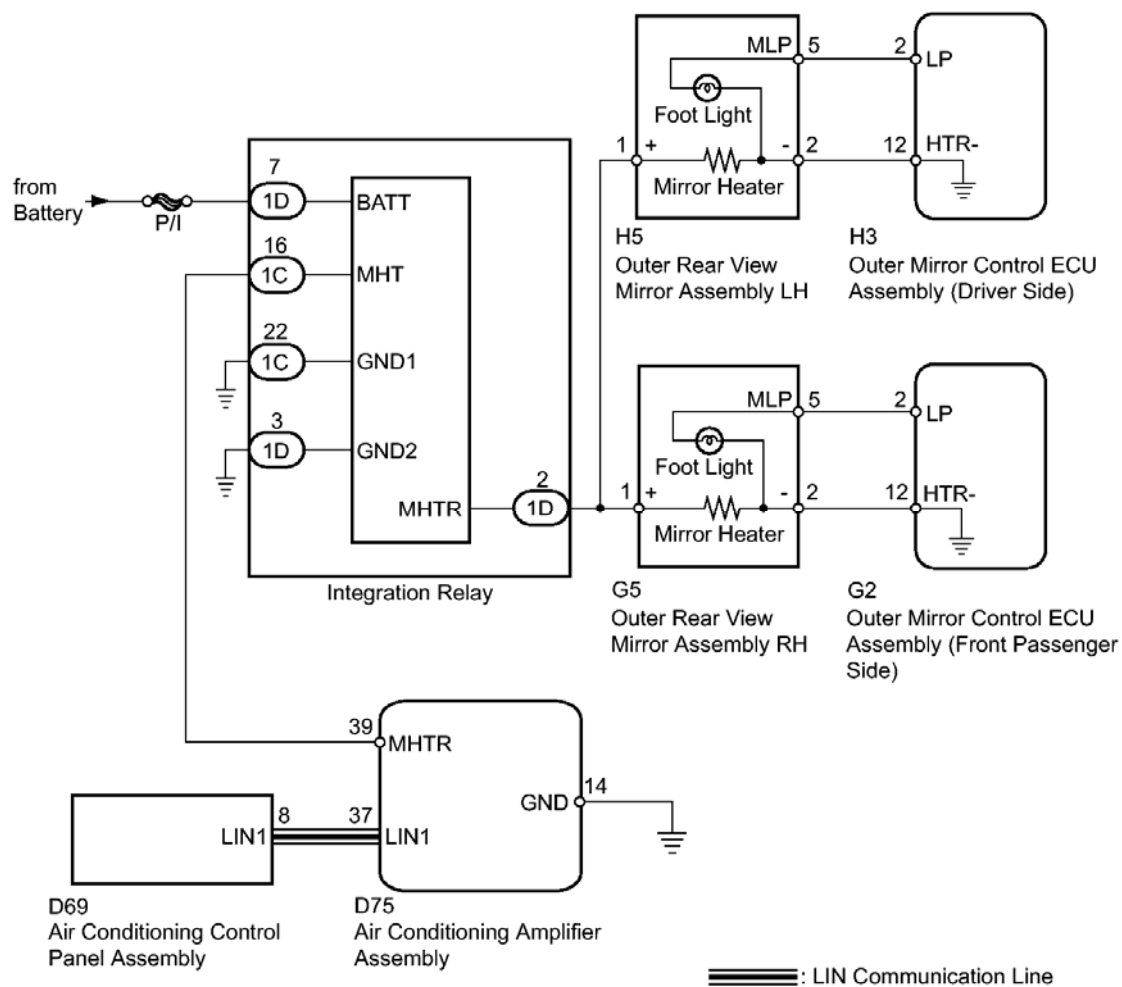


Fig. 9: Mirror Heater Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. CHECK MIRROR HEATER OPERATION

- a. Check the mirror heater operation. Refer to INSPECTION - Step 3.

RESULT

Result	Proceed to
Mirror heater operation on both mirrors is not normal	A
Mirror heater operation on RH side mirror is not normal	B
Mirror heater operation on LH side mirror is not normal	C

B --> See step 8

C --> See step 10

A: Go to next step

2. CHECK DEFOGGER SYSTEM

- a. Check the rear window defogger operation.

OK

The rear window defogger operates normally.

NG --> See step 12

OK: Go to next step

3. INSPECT INTEGRATION RELAY (POWER SOURCE)

*a

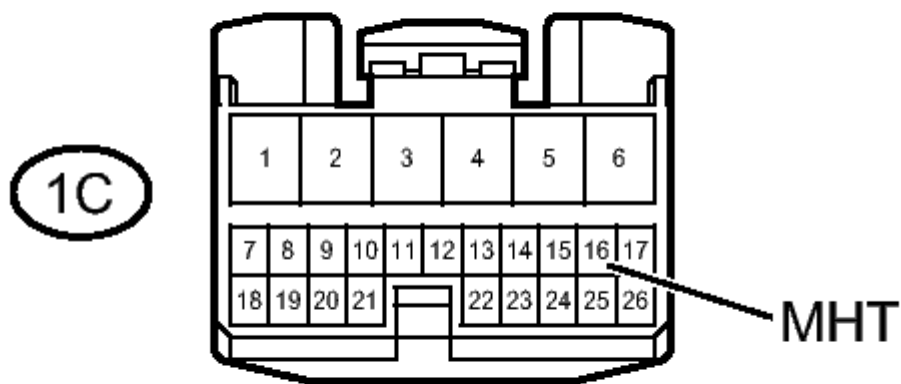


Fig. 10: Inspecting Integration Relay (Power Source)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Remove the integration relay from the engine room relay block.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
1C-16 (MHT) - Body ground	Engine switch on (IG) Rear window defogger switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Integration Relay)
----	---

NG --> See step 7

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY - BODY GROUND)

- Remove the integration relay from the engine room relay block.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
1D-3 (GND2) - Body ground	Always	Below 1 ohms
1C-22 (GND1) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY RH - INTEGRATION RELAY)

- Disconnect the G5 outer rear view mirror assembly RH connector.
- Remove the integration relay from the engine room relay block.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
1D-2		

(MHTR) - G5-1 (+)	Always	Below 1 ohms
1D-2 (MHTR) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

6. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY LH - INTEGRATION RELAY)

- Disconnect the H5 outer rear view mirror assembly LH connector.
- Remove the integration relay from the engine room relay block.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
1D-2 (MHTR) - H5-1 (+)	Always	Below 1 ohms
1D-2 (MHTR) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> REPLACE INTEGRATION RELAY

7. CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY - AIR CONDITIONING AMPLIFIER ASSEMBLY)

- Remove the integration relay from the engine room relay block.
- Disconnect the D75 air conditioning amplifier assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
1C-16		

(MHT) - D75-39 (MHTR)	Always	Below 1 ohms
1C-16 (MHT) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 13

8. PERFORM ACTIVE TEST USING TECHSTREAM

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Mirror R / Active Test.
- Perform the Active Test according to the display on the Techstream.

MIRROR R

Tester Display	Test Part	Control Range	Diagnostic Note
Foot Light	Foot light illumination operation	ON / OFF	-

OK

Foot light operates normally

NG --> See step 14

OK: Go to next step

9. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY RH

- Remove the outer mirror rear view mirror assembly RH. Refer to **REMOVAL** .

*a

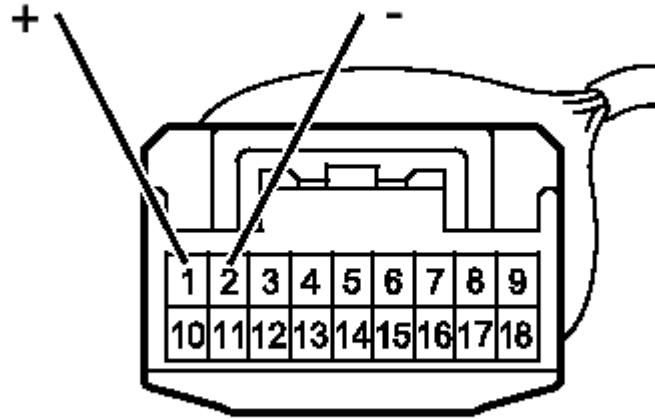


Fig. 11: Inspecting Outer Rear View Mirror Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
1 (+) - 2 (-)	25°C (77°F)	7.6 to 11.4 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Outer Rear View Mirror Assembly RH)
----	--

NG --> See step 15

OK --> REPAIR OR REPLACE HARNESS OR CONNECTOR (INTEGRATION RELAY - OUTER REAR VIEW MIRROR ASSEMBLY RH)

10. PERFORM ACTIVE TEST USING TECHSTREAM

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Mirror L / Active Test.
- Perform the Active Test according to the display on the Techstream.

MIRROR L

Tester Display	Test Part	Control Range	Diagnostic Note
Foot Light	Foot light illumination operation	ON / OFF	-

OK

Foot light operates normally

NG --> See step 14

OK: Go to next step

11. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY LH

- Remove the outer mirror rear view mirror assembly LH. Refer to **REMOVAL** .

*a

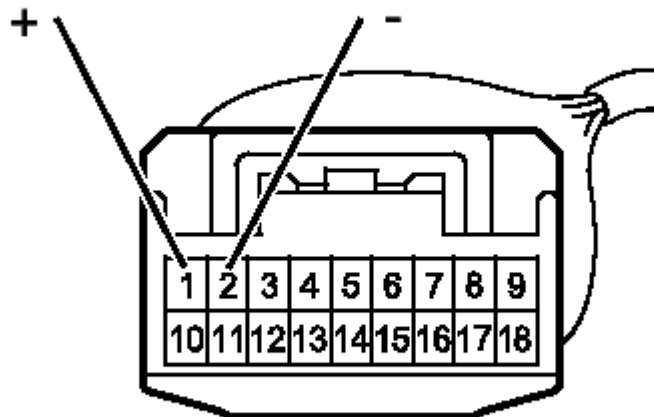


Fig. 12: Inspecting Outer Rear View Mirror Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
1 (+) - 2 (-)	25°C (77°F)	7.6 to 11.4 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Outer Rear View Mirror Assembly LH)
----	--

NG --> See step 16

OK --> REPAIR OR REPLACE HARNESS OR CONNECTOR (INTEGRATION RELAY - OUTER REAR VIEW MIRROR ASSEMBLY LH)

12. GO TO WINDOW DEFOGGER SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING
13. REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY. Refer to REMOVAL
14. GO TO LIGHTING SYSTEM. Refer to PROBLEM SYMPTOMS TABLE
15. REPLACE OUTER REAR VIEW MIRROR ASSEMBLY RH. Refer to REMOVAL
16. REPLACE OUTER REAR VIEW MIRROR ASSEMBLY LH. Refer to REMOVAL

Power Retractable Mirrors do not Operate with Power Retract Mirror Switch

SYSTEM DESCRIPTION

The main body ECU receives the outer mirror retract switch signal from the outer mirror switch assembly. The main body ECU then sends the mirror retract/return signal to each outer mirror control ECU assembly via CAN communication. Based on the signal, each outer mirror control ECU assembly retracts or returns the outer rear view mirror assembly.

WIRING DIAGRAM

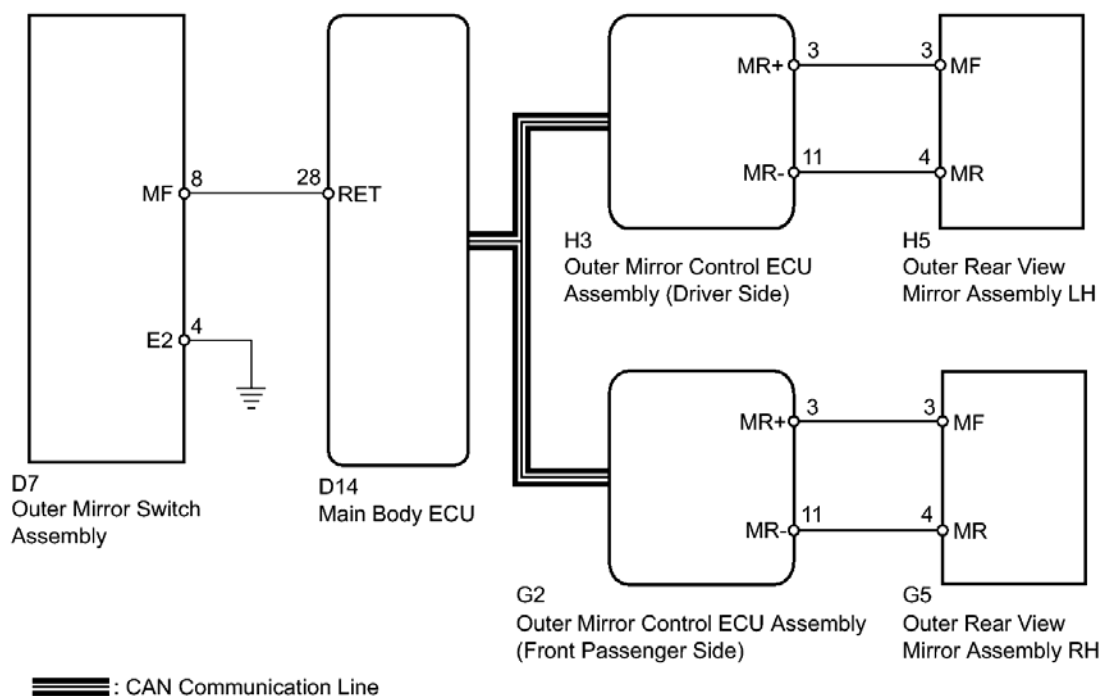


Fig. 13: Power Retract Mirror Switch - Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Use the Techstream to check if the CAN communication system is functioning normally. Refer to **DIAGNOSTIC TROUBLE CODE CHART**.

OK

CAN communication DTC is not output.

NG --> See step 10

OK: Go to next step

2. READ VALUE USING TECHSTREAM (OUTER MIRROR RETRACT SWITCH)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Outer Mirror Fold SW	Mirror retract switch signal / ON or OFF	ON: Retract switch in retract position OFF: Retract switch in driving position	-

OK

On the Techstream screen, ON or OFF is displayed for each item according to the above.

NG --> See step 8

OK: Go to next step

3. PERFORM ACTIVE TEST USING TECHSTREAM (MIRROR RETRACT FUNCTION)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Mirror L or Mirror R / Active Test.
- Perform the Active Test according to the display on the Techstream.

MIRROR L / MIRROR R

Tester Display	Test Part	Control Range	Diagnostic Note
Mirror Fold/Return	Mirror retract operation	Fold / Return	-

OK

Mirror operates normally.

RESULT

Result	Proceed to
Outer rear view	

mirror LH does not operate normally	A
Outer rear view mirror LH operates normally	B
Outer rear view mirror RH does not operate normally	C
Outer rear view mirror RH operates normally	D

B --> See step 11

C --> See step 6

D --> See step 12

A: Go to next step

4. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY LH

- a. Remove the outer rear view mirror assembly LH. Refer to **REMOVAL** .

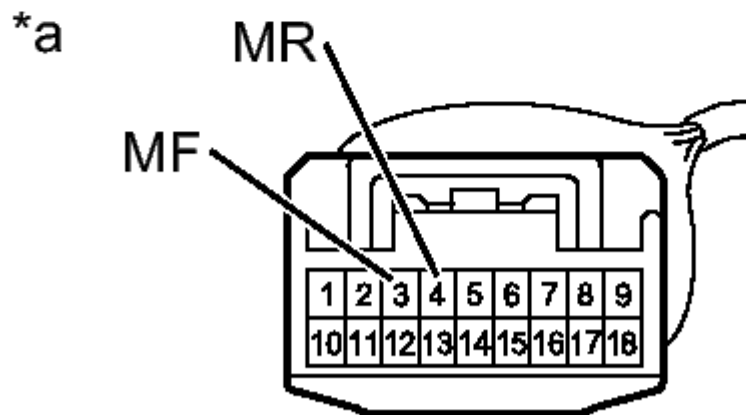
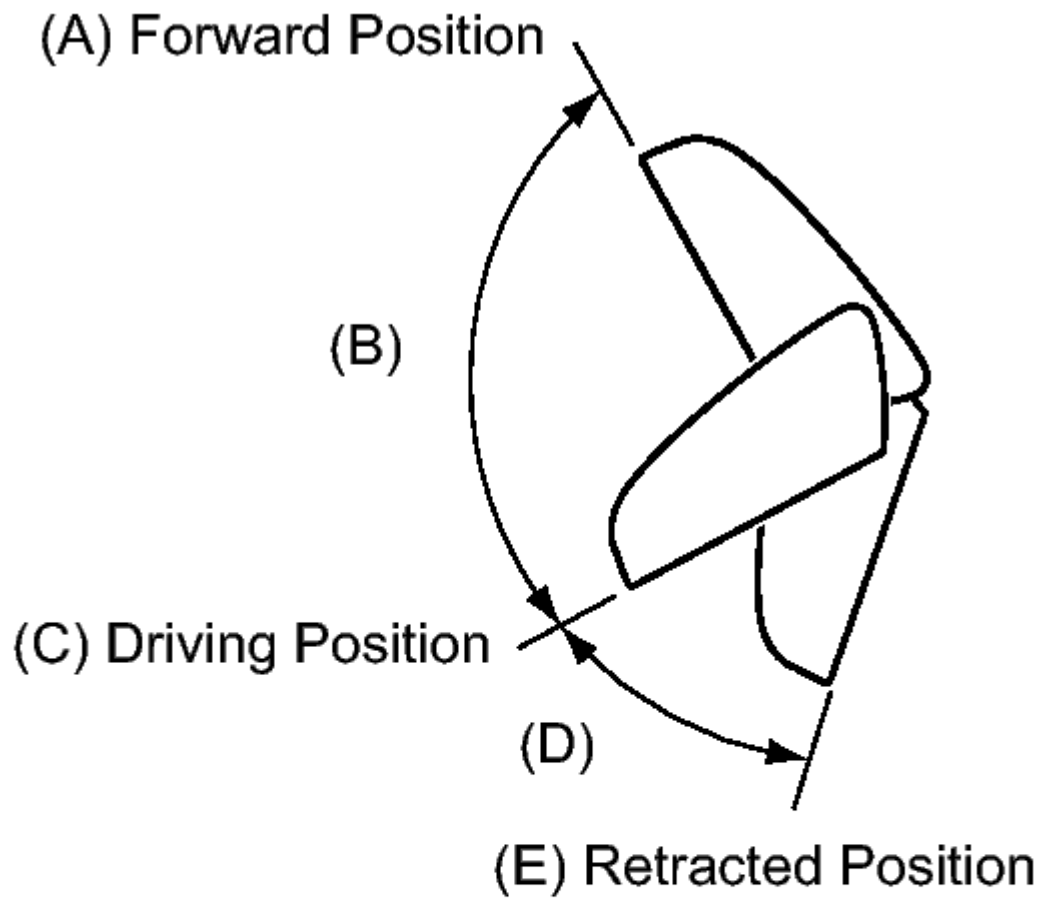


Fig. 14: Inspecting Outer Rear View Mirror Assembly LH
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. When checking each mirror position, set the mirror position by hand. Apply battery voltage and check the mirror movement.

NOTE:

- **Disconnect and reconnect the battery once between each mirror position check.**
- **The mirror position cannot be changed manually when the battery is connected. To change the mirror position manually, the battery must be disconnected first.**

OK

Measurement Condition	Mirror Position	Specified Condition
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Forward position (A)	Moves from (A) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Forward position (A)	Does not move
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Between forward position (A) and driving position (C)	Moves from (B) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Between forward position (A) and driving position (C)	Moves from (B) to forward position (A)
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Driving position (C)	Moves from (C) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery	Driving position	Does not move

positive (+) -- > 4 (MR)	(C)	
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Between driving position (C) and retracted position (E)	Moves from (D) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Between driving position (C) and retracted position (E)	Moves from (D) to driving position (C)
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Retracted position (E)	Does not move
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Retracted position (E)	Moves from (E) to driving position (C)

TEXT IN ILLUSTRATION

	Component without harness connected
*a	(Outer Rear View Mirror Assembly LH)

NG --> See step 13

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY LH - OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE))

- a. Disconnect the H5 outer rear view mirror assembly LH connector.
- b. Disconnect the H3 outer mirror control ECU assembly (driver side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
H5-3 (MF) - H3-3 (MR+)	Always	Below 1 ohms
H5-4 (MR) - H3-11 (MR-)	Always	Below 1 ohms
H5-3 (MF) - Body ground	Always	10 kohms or higher
H5-4 (MR) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 11

6. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY RH

- a. Remove the outer rear view mirror assembly RH. Refer to **REMOVAL** .

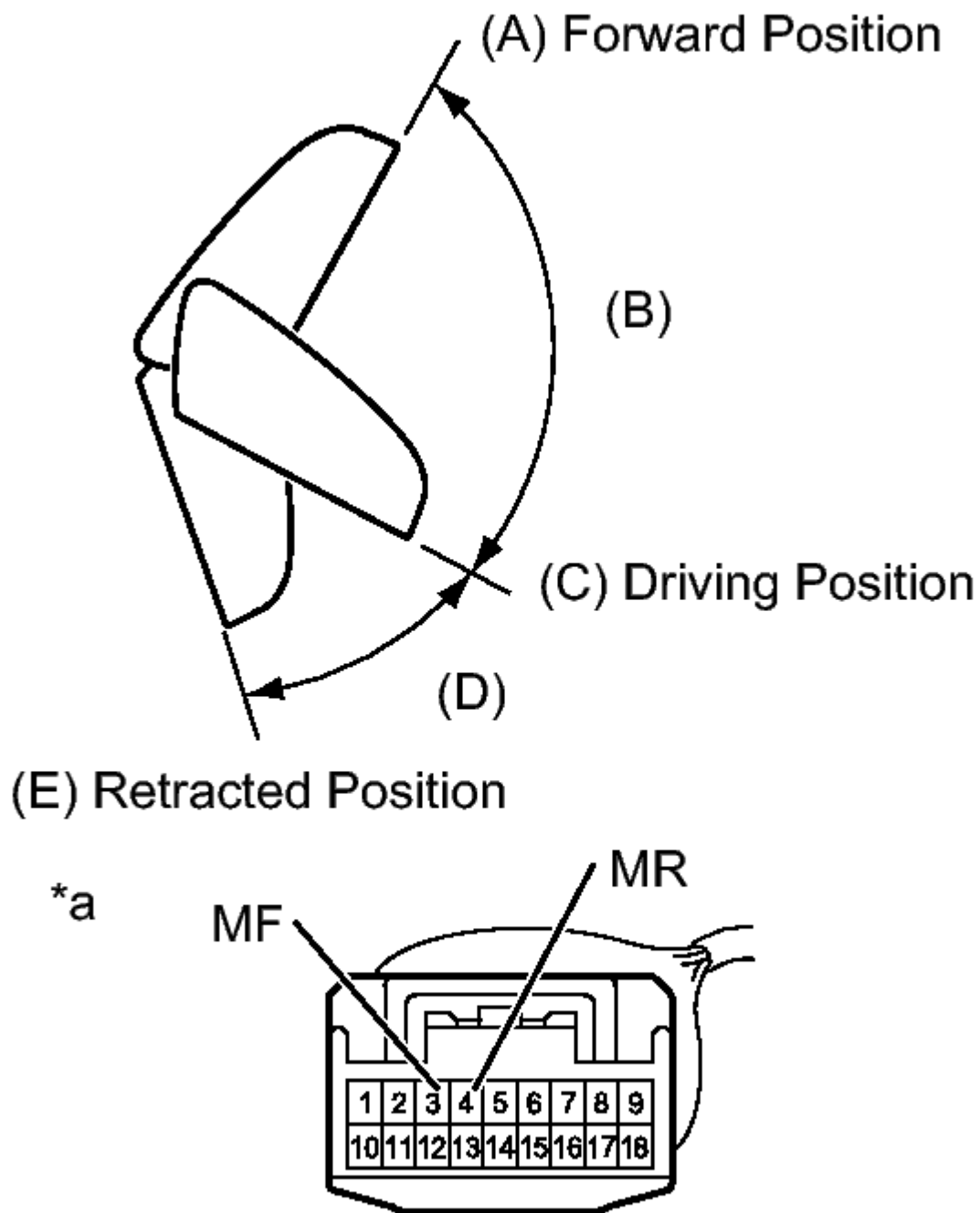


Fig. 15: Inspecting Outer Rear View Mirror Assembly RH
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. When checking each mirror position, set the mirror position by hand. Apply battery voltage and check the mirror movement.

NOTE:

- **Disconnect and reconnect the battery once between each mirror position check.**
- **The mirror position cannot be changed manually when the battery is connected. To change the mirror position manually, the battery must be disconnected first.**

OK

Measurement Condition	Mirror Position	Specified Condition
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Forward position (A)	Moves from (A) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Forward position (A)	Does not move
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Between forward position (A) and driving position (C)	Moves from (B) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Between forward position (A) and driving position (C)	Moves from (B) to forward position (A)
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Driving position (C)	Moves from (C) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery	Driving position	Does not move

positive (+) -- > 4 (MR)	(C)	
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Between driving position (C) and retracted position (E)	Moves from (D) to retracted position (E)
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Between driving position (C) and retracted position (E)	Moves from (D) to driving position (C)
Battery positive (+) -- > 3 (MF) Battery negative (-) -- > 4 (MR)	Retracted position (E)	Does not move
Battery negative (-) -- > 3 (MF) Battery positive (+) -- > 4 (MR)	Retracted position (E)	Moves from (E) to driving position (C)

TEXT IN ILLUSTRATION

	Component without harness connected
*a	(Outer Rear View Mirror Assembly RH)

NG --> See step 14

OK: Go to next step

7. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY RH - OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE))

- a. Disconnect the G5 outer rear view mirror assembly RH connector.
- b. Disconnect the G2 outer mirror control ECU assembly (front passenger side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
G5-3 (MF) - G2-3 (MR+)	Always	Below 1 ohms
G5-4 (MR) - G2-11 (MR-)	Always	Below 1 ohms
G5-3 (MF) - Body ground	Always	10 kohms or higher
G5-4 (MR) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 12

8. INSPECT OUTER MIRROR SWITCH ASSEMBLY

- a. Remove the outer mirror switch assembly. Refer to **REMOVAL** .

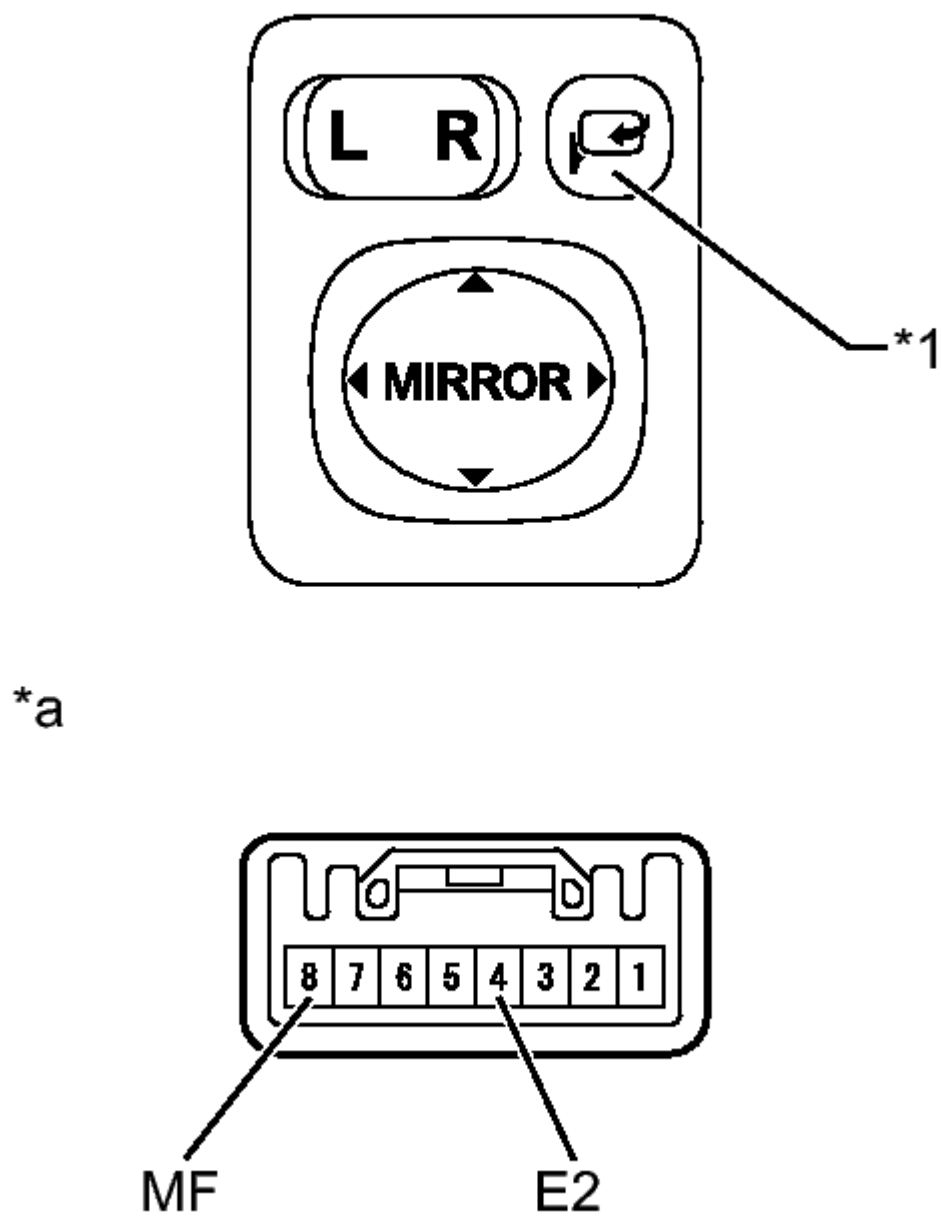


Fig. 16: Inspecting Outer Mirror Switch Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
8 (MF) - 4 (E2)	Retract switch in retract position	Below 10 ohms
	Retract switch in driving position	10 kohms or higher

TEXT IN ILLUSTRATION

*1	Mirror Retract Switch
*a	Component without harness connected (Outer Mirror Switch Assembly)

NG --> See step 16

OK: Go to next step

9. CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - OUTER MIRROR SWITCH ASSEMBLY)

- Disconnect the D14 main body ECU connector.
- Disconnect the D7 outer mirror switch assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D14-28 (RET) - D7-8 (MF)	Always	Below 1 ohms
D7-4 (E2) - Body	Always	Below 1 ohms

ground		
D14-28 (RET) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 15

10. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
11. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE). Refer to REMOVAL**
12. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE). Refer to REMOVAL**
13. **REPLACE OUTER REAR VIEW MIRROR ASSEMBLY LH. Refer to REMOVAL**
14. **REPLACE OUTER REAR VIEW MIRROR ASSEMBLY RH. Refer to REMOVAL**
15. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
16. **REPLACE OUTER MIRROR SWITCH ASSEMBLY. Refer to REMOVAL**

Power Mirror Surface Position is not Memorized

SYSTEM DESCRIPTION

If any of the M1 or M2 seat memory switches is pressed, the outer mirror control ECU assembly (driver side) detects the switch operation and sends the seat memory switch signal to the main body ECU via CAN communication. On receiving the seat memory switch signal, the main body ECU sends the memory request signal to each outer mirror control ECU assembly via CAN communication. When receiving this signal, each outer mirror control ECU assembly stores the mirror surface position based on information from the mirror position sensor, which is built into the outer rear view mirror assembly.

HINT:

Each outer rear view mirror assembly has a built-in mirror vertical position sensor and mirror horizontal position sensor.

NOTE:

- **The mirror surface position will not be memorized if the engine switch is not on (IG).**
- **The mirror surface position will not be stored if the seat memory SET switch and 2 or more of the seat memory switches (for example, M1 switch and M2 switch) are pressed simultaneously.**
- **If the operation fails, the mirror surface position will not be memorized until the seat memory SET switch is turned off.**

- The mirror surface position will not be memorized when the mirror is operated manually.

WIRING DIAGRAM

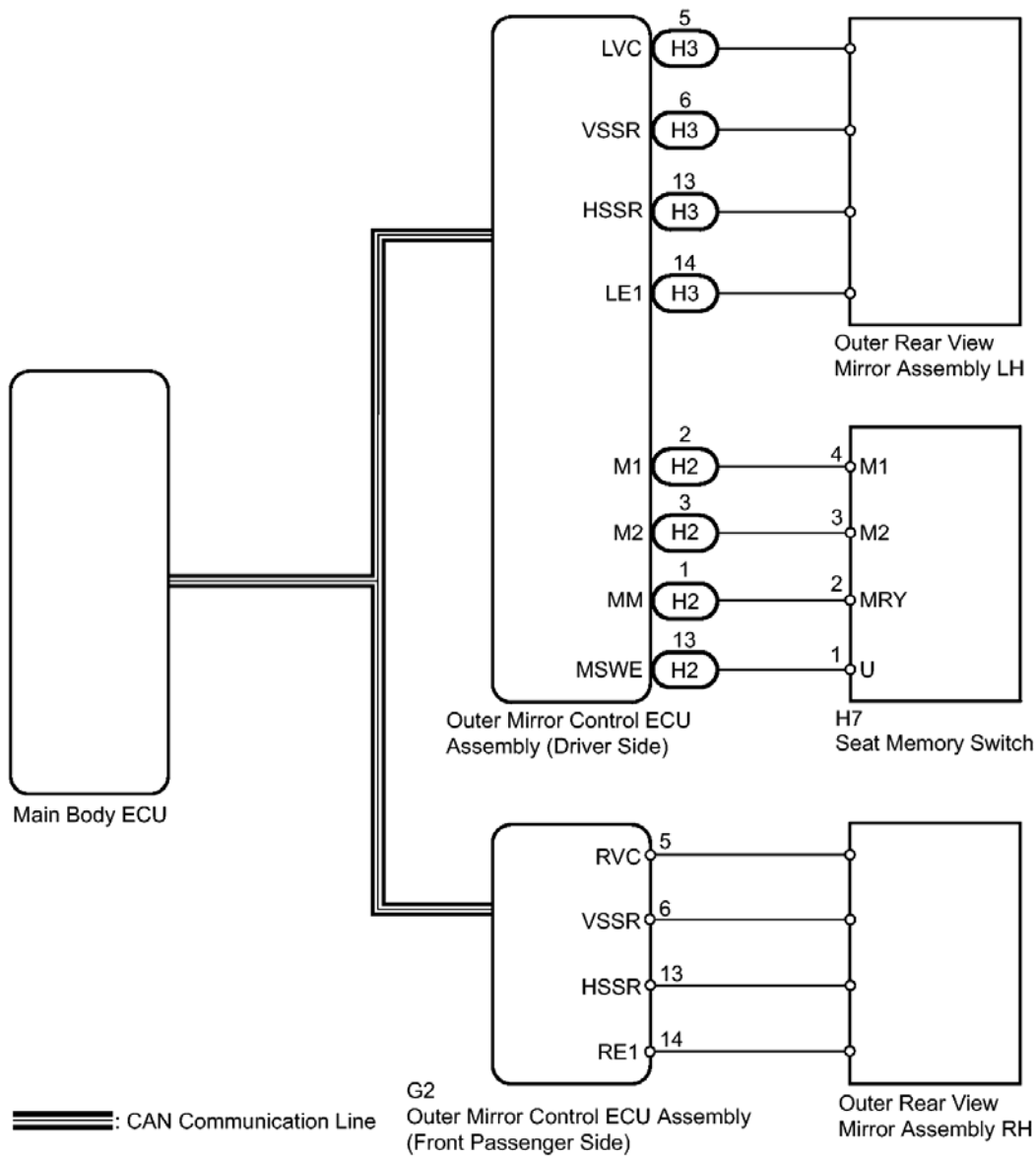


Fig. 17: Seat Memory Switch - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- a. Use the Techstream to check if the CAN communication system is functioning normally. Refer to **DIAGNOSTIC TROUBLE CODE CHART** .

OK

CAN communication DTC is not output.

NG --> See step 11

OK: Go to next step

2. READ VALUE USING TECHSTREAM (SEAT MEMORY SWITCH)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Mirror L / Data List.
- e. Read the Data List according to the display on the Techstream.

MIRROR L

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Seat Memory Switch1	Seat memory switch M1 signal/ ON or OFF	ON: Seat memory switch M1 on OFF: Seat memory switch M1 off	-
Seat Memory Switch2	Seat memory switch M2 signal/ ON or OFF	ON: Seat memory switch M2 on OFF: Seat memory switch M2 off	-
Seat Memory Set SW	Seat memory switch SET signal/ ON or OFF	ON: Seat memory switch SET on OFF: Seat memory switch SET off	-

OK

The Techstream display changes between ON and OFF according to the switch operations.

NG --> See step 5

OK: Go to next step

3. CHECK SEAT MEMORY SWITCH FUNCTION

- a. When any seat memory switch (M1 or M2 switch) is pressed, check that the driver side seat moves to the memorized position.

OK

The driver side seat moves to the memorized position.

NG --> See step 12

OK: Go to next step

4. CHECK MEMORY AND REACTIVATION FUNCTION

- a. Turn the engine switch on (IG).

*a

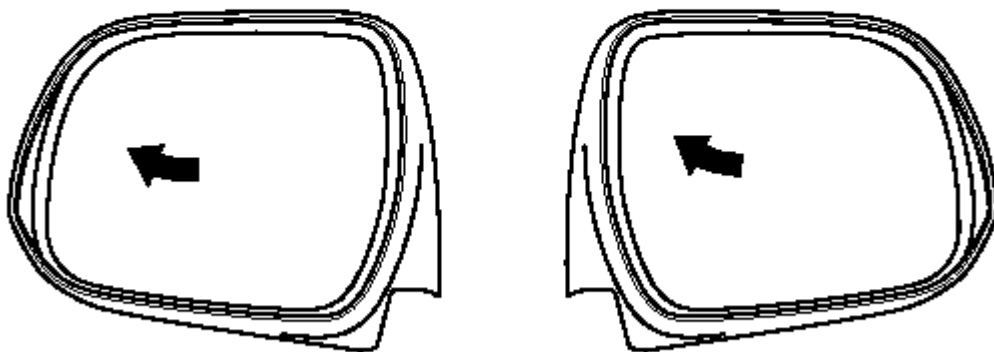


Fig. 18: View Of Turning The Mirror Surface To The Fully Left Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION

*a	Turn to left fully
----	-----------------------------

- c. Press the M1 switch while the SET switch is being pressed.
- d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
- e. Using the outer mirror switch assembly, turn the mirror surface to the fully right position.

*a

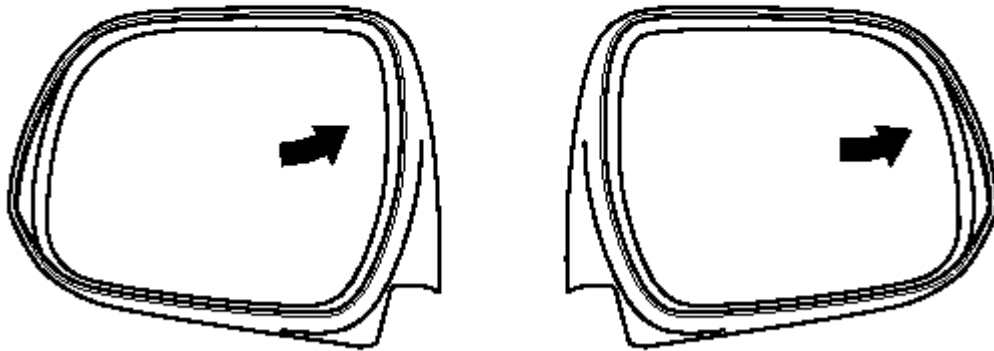


Fig. 19: View Of Turning The Mirror Surface To The Fully Right Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

RESULT

Result	Proceed to
Memory	

and reactivation functions on both mirrors are not normal	A
Memory and reactivation function on RH side mirrors is not normal	B
Memory and reactivation function on LH side mirror is not normal	C

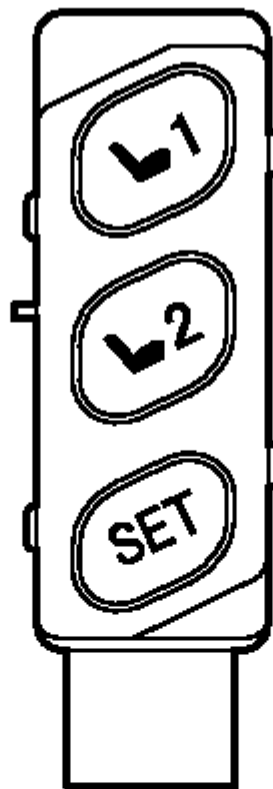
B --> See step 7

C --> See step 9

A --> See step 13

5. INSPECT SEAT MEMORY SWITCH

- a. Remove the seat memory switch. Refer to REMOVAL .



*a

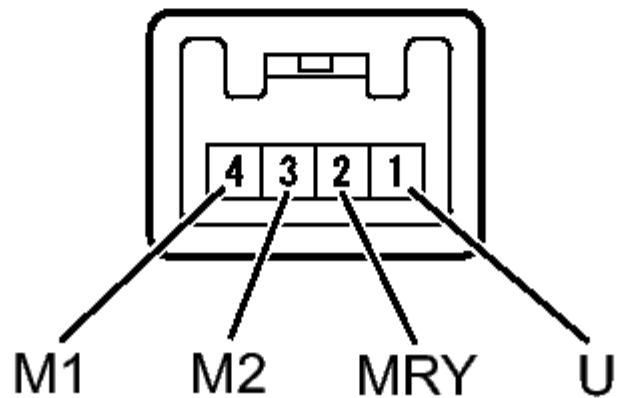


Fig. 20: Inspecting Seat Memory Switch
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
4 (M1) - 1 (U)	M1 Switch off --> on	10 kohms or higher - -> Below 1 ohms
3 (M2) - 1 (U)	M2 Switch off --> on	10 kohms or higher - -> Below 1 ohms
2 (MRY) - 1 (U)	SET Switch off --> on	10 kohms or higher - -> Below 1 ohms

TEXT IN ILLUSTRATION

	Component without harness
*a	connected (Seat Memory Switch)

NG --> See step 14

OK: Go to next step

6. CHECK HARNESS AND CONNECTOR (SEAT MEMORY SWITCH - OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE))

- Disconnect the H7 seat memory switch connector.
- Disconnect the H2 outer mirror control ECU assembly (driver side) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
H7-2 (MRY) - H2-1 (MM)	Always	Below 1 ohms
H7-4 (M1) - H2-2	Always	Below 1 ohms

(M1)		
H7-3 (M2) - H2-3 (M2)	Always	Below 1 ohms
H7-1 (U) - H2-13 (MSWE)	Always	Below 1 ohms
H7-2 (MRY) - Body ground	Always	10 kohms or higher
H7-4 (M1) - Body ground	Always	10 kohms or higher
H7-3 (M2) - Body ground	Always	10 kohms or higher
H7-1 (U) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 15

7. REPLACE OUTER REAR VIEW MIRROR ASSEMBLY RH

- a. Replace the outer rear view mirror assembly RH. Refer to **REMOVAL** .

NEXT: Go to next step

8. CHECK MEMORY AND REACTIVATION FUNCTION

- a. Turn the engine switch on (IG).

*a

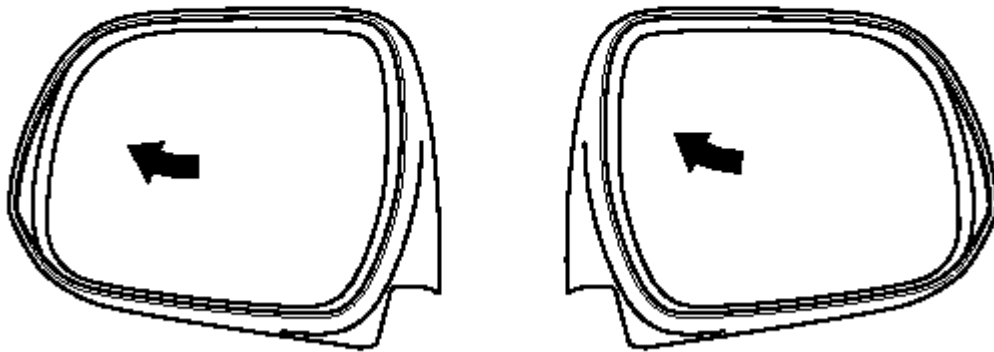


Fig. 21: View Of Turning The Mirror Surface To The Fully Left Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION

*a	Turn to left fully
----	-----------------------------

- c. Press the M1 switch while the SET switch is being pressed.
d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
e. Using the outer mirror switch assembly, turn the mirror surface to the fully right position.

*a

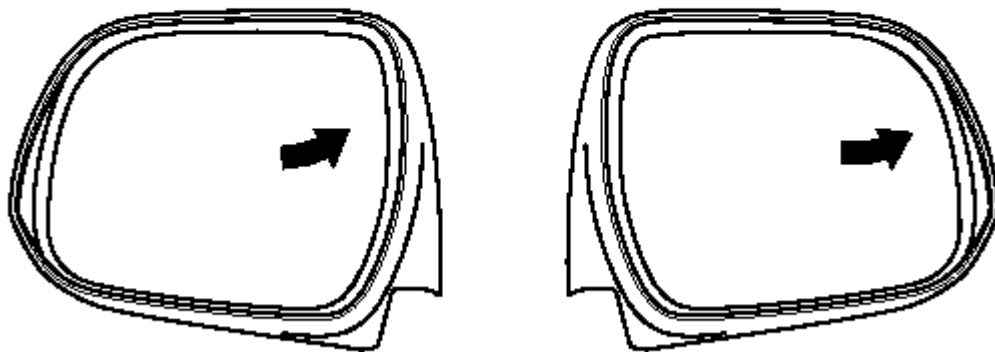


Fig. 22: View Of Turning The Mirror Surface To The Fully Right Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

OK

Memory and reactivation function is normal.

NG --> See step 16

OK --> END (OUTER REAR VIEW MIRROR ASSEMBLY RH WAS DEFECTIVE)

9. REPLACE OUTER REAR VIEW MIRROR ASSEMBLY LH

- a. Replace the outer rear view mirror assembly LH. Refer to **REMOVAL** .

NEXT: Go to next step

10. CHECK MEMORY AND REACTIVATION FUNCTION

- a. Turn the engine switch on (IG).

*a

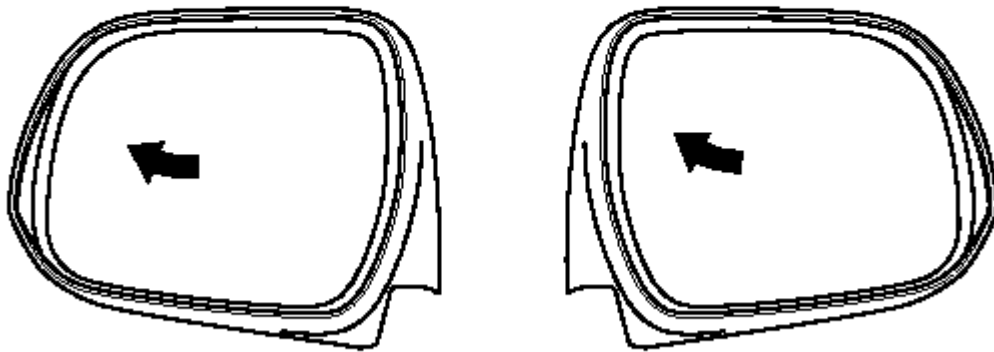
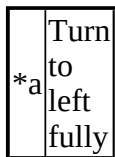


Fig. 23: View Of Turning The Mirror Surface To The Fully Left Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION



- c. Press the M1 switch while the SET switch is being pressed.
- d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
- e. Using the outer mirror switch assembly, turn the mirror surface to the fully right position.

*a

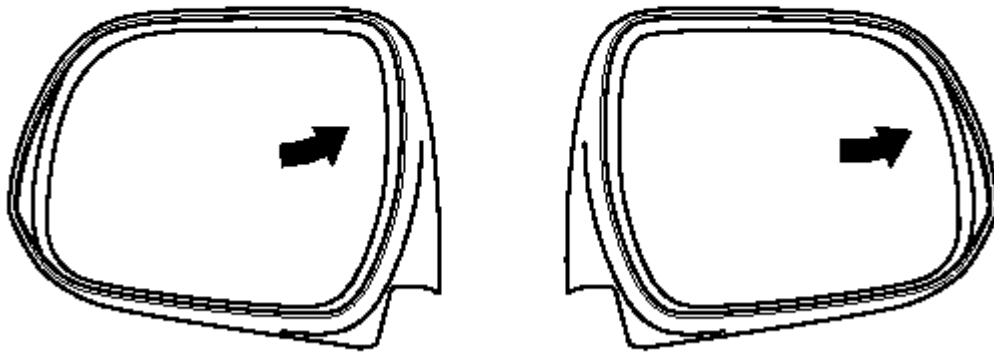


Fig. 24: View Of Turning The Mirror Surface To The Fully Right Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

OK

Memory and reactivation function is normal.

NG --> See step 17

OK --> END (OUTER REAR VIEW MIRROR ASSEMBLY LH WAS DEFECTIVE)

- 11. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
- 12. **GO TO POWER SEAT CONTROL SYSTEM. Refer to PROBLEM SYMPTOMS TABLE**
- 13. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
- 14. **REPLACE SEAT MEMORY SWITCH. Refer to REMOVAL**

15. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE). Refer to REMOVAL**
16. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE). Refer to REMOVAL**
17. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE). Refer to REMOVAL**

Power Mirrors do not Return to Memorized Position

SYSTEM DESCRIPTION

If any of the M1 or M2 seat memory switches is pressed, the outer mirror control ECU assembly (driver side) detects the seat memory switch status and sends the switch signal to the main body ECU via CAN communication. The main body ECU sends back reproduction signals to each outer mirror control ECU assembly via CAN communication. When receiving the reproduction signals, each outer mirror control ECU assembly operates the vertical and horizontal mirror motors, which are built into the outer rear view mirror assembly, to adjust the mirror surface to the stored position.

WIRING DIAGRAM

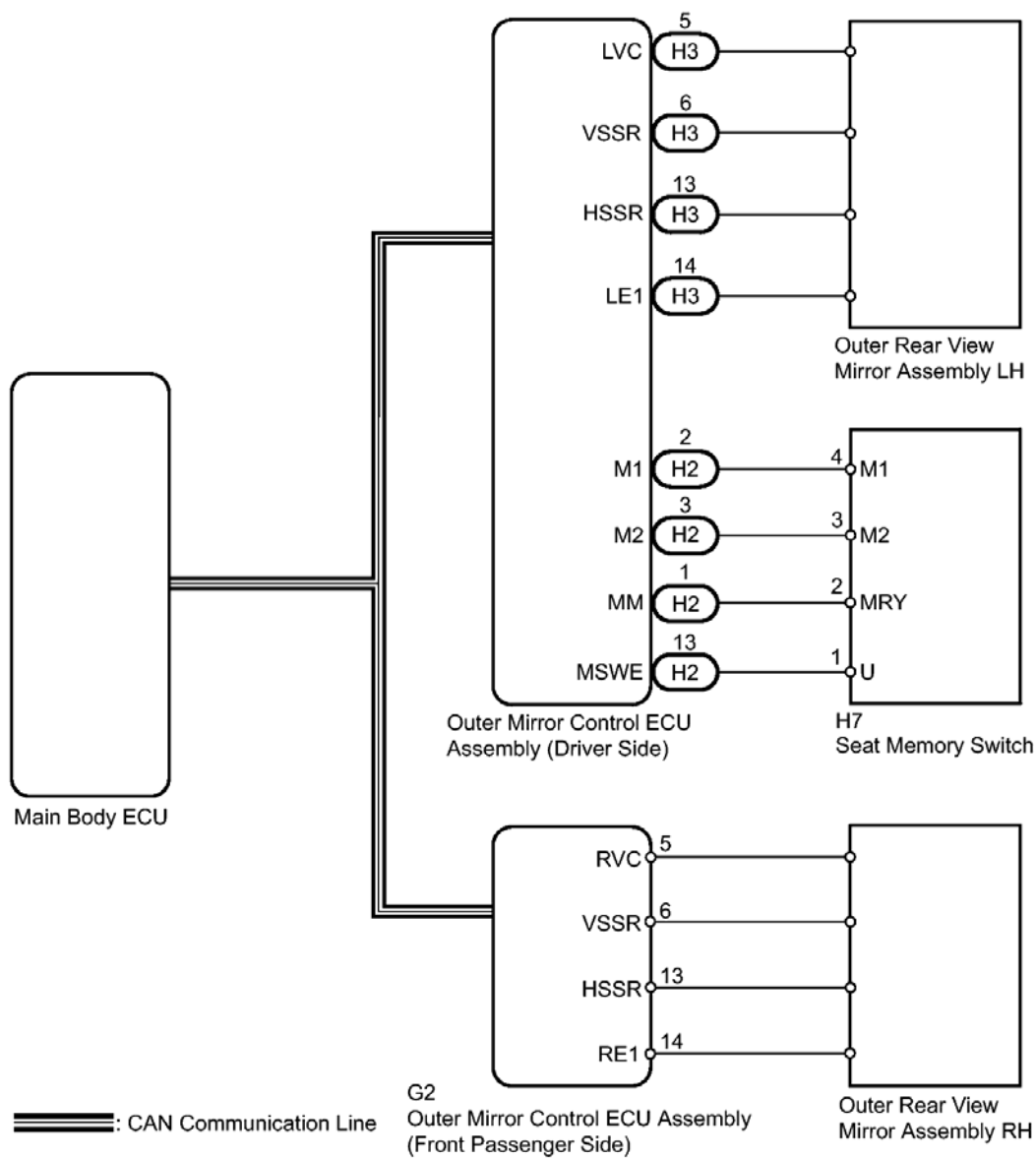


Fig. 25: Seat Memory Switch - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Use the Techstream to check if the CAN communication system is functioning normally. Refer to **DIAGNOSTIC TROUBLE CODE CHART**.

OK

CAN communication DTC is not output.

NG --> See step 10

OK: Go to next step

2. CHECK POWER MIRROR CONTROL FUNCTION (ELECTRICAL REMOTE CONTROL MIRROR FUNCTION)

- a. Check the electrical remote control mirror function. Refer to **OPERATION CHECK** .

OK

Electrical remote control mirror function is normal.

NG --> See step 12

OK: Go to next step

3. CHECK SEAT MEMORY SWITCH FUNCTION

- a. When any seat memory switch (M1 or M2 switch) is pressed, check that the driver side seat moves to the memorized position.

OK

The driver side seat moves to the memorized position.

NG --> See step 11

OK: Go to next step

4. READ VALUE USING TECHSTREAM (MIRROR POSITION MEMORY)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Mirror L or Mirror R / Data List.
- e. Read the Data List according to the display on the Techstream.

MIRROR L / MIRROR R

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mirror Memory No. 1	Mirror position memorized in seat memory switch M1 /	ON: Memorized OFF: Not memorized	-

	ON or OFF		
Mirror Memory No. 2	Mirror position memorized in seat memory switch M2 / ON or OFF	ON: Memorized OFF: Not memorized	-

OK

ON (Memorized) appears on the screen.

NG --> See step 13

OK: Go to next step

5. CHECK MEMORY AND REACTIVATION FUNCTION

- Turn the engine switch on (IG).

***a**

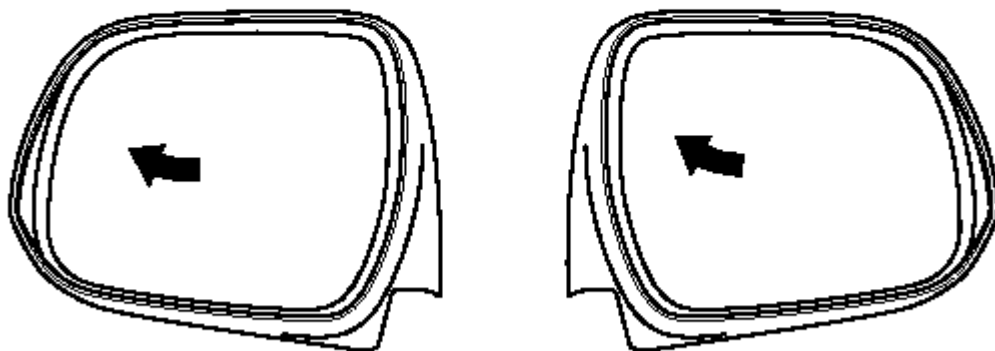
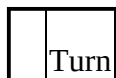


Fig. 26: View Of Turning The Mirror Surface To The Fully Left Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION



*a	to left fully
----	---------------------

- c. Press the M1 switch while the SET switch is being pressed.
- d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
- e. Using the outer mirror switch assembly, turn the mirror surface to the fully right position.

*a

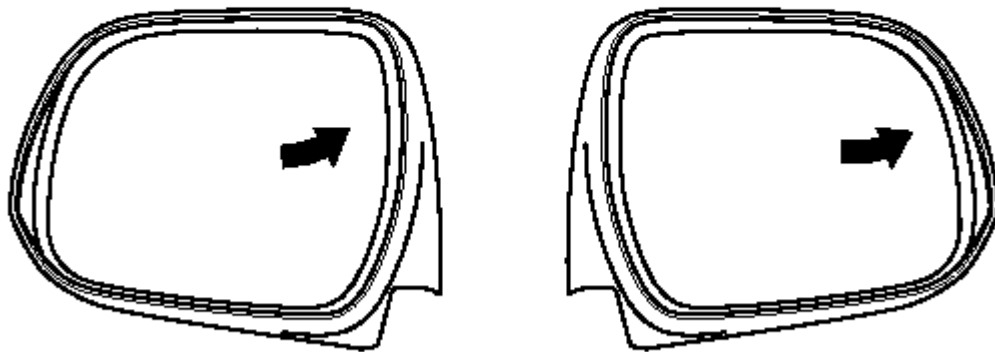


Fig. 27: View Of Turning The Mirror Surface To The Fully Right Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

RESULT

Result	Proceed to
Memory and reactivation	

functions on both mirrors are not normal	A
Memory and reactivation function on RH side mirror is not normal	B
Memory and reactivation function on LH side mirror is not normal	C

B --> See step 6

C --> See step 8

A --> See step 14

6. REPLACE OUTER REAR VIEW MIRROR ASSEMBLY RH

- a. Replace the outer rear view mirror assembly RH. Refer to **REMOVAL** .

NEXT: Go to next step

7. CHECK MEMORY AND REACTIVATION FUNCTION

- a. Turn the engine switch on (IG).

*a

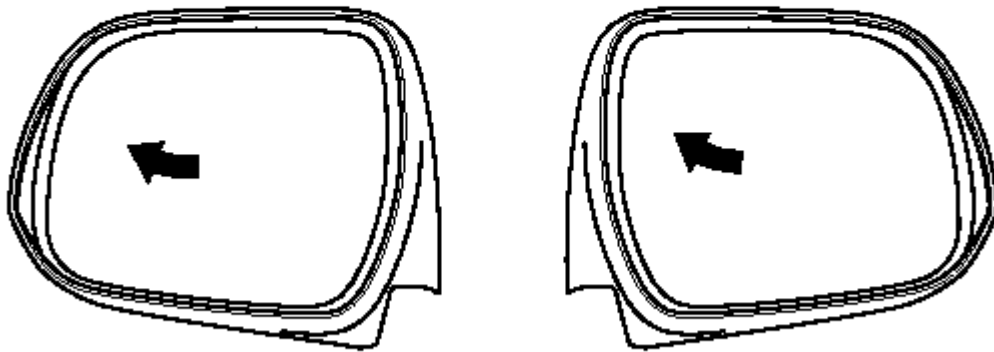


Fig. 28: View Of Turning The Mirror Surface To The Fully Left Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION

*a	Turn to left fully
----	-----------------------------

- c. Press the M1 switch while the SET switch is being pressed.
d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
e. Using the outer mirror switch assembly, turn the mirror surface to the fully right position.

*a

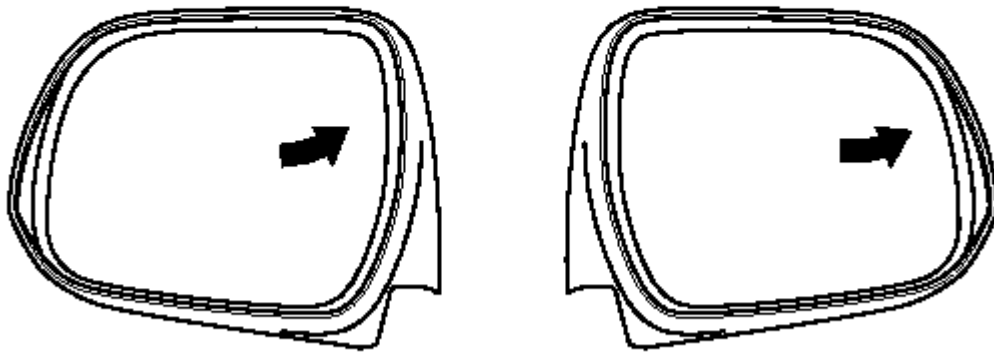


Fig. 29: View Of Turning The Mirror Surface To The Fully Right Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

OK

Memory and reactivation function is normal.

NG --> See step 15

OK --> END (OUTER REAR VIEW MIRROR ASSEMBLY RH WAS DEFECTIVE)

8. REPLACE OUTER REAR VIEW MIRROR ASSEMBLY LH

- a. Replace the outer rear view mirror assembly LH. Refer to **REMOVAL** .

NEXT: Go to next step

9. CHECK MEMORY AND REACTIVATION FUNCTION

- a. Turn the engine switch on (IG).

*a

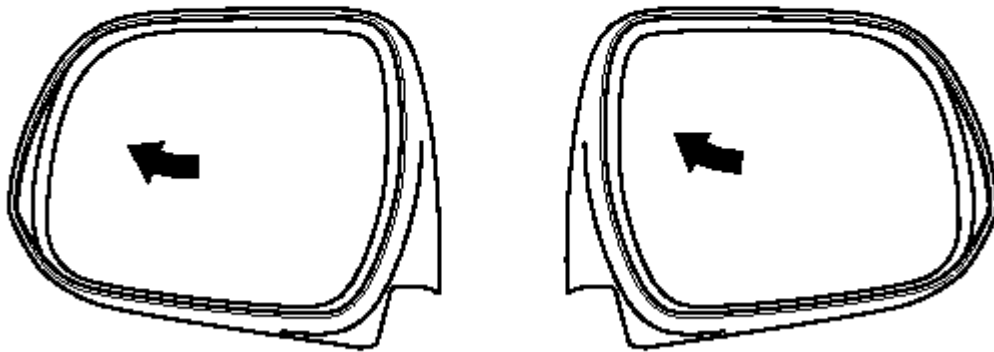
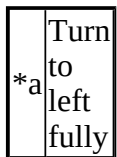


Fig. 30: View Of Turning The Mirror Surface To The Fully Left Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION



- c. Press the M1 switch while the SET switch is being pressed.
- d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
- e. Using the outer mirror switch assembly, turn the mirror surface to the fully right position.

*a

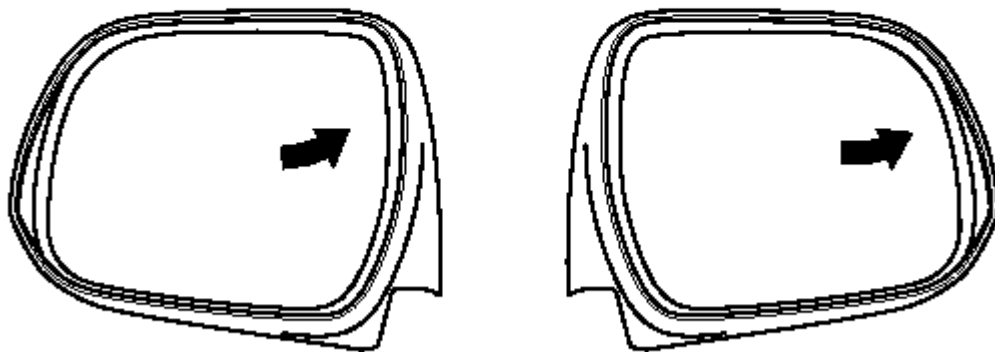


Fig. 31: View Of Turning The Mirror Surface To The Fully Right Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

OK

Memory and reactivation function is normal.

NG --> See step 16

OK --> END (OUTER REAR VIEW MIRROR ASSEMBLY LH WAS DEFECTIVE)

- 10. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
- 11. **GO TO POWER SEAT CONTROL SYSTEM. Refer to PROBLEM SYMPTOMS TABLE**
- 12. **GO TO OTHER FLOW CHART (Power Mirror cannot be Adjust with Power Mirror Switch). Refer to Power Mirror cannot be Adjusted with Power Mirror Switch**

13. **GO TO OTHER FLOW CHART (Power Mirror Surface Position is not Memorized). Refer to Power Mirror Surface Position is not Memorized**
14. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
15. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE). Refer to REMOVAL**
16. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE). Refer to REMOVAL**

Reverse Shift-linked Function of Power Mirrors does not Operate

SYSTEM DESCRIPTION

ECM sends the reverse signal to the main body ECU via CAN communication. When receiving the reverse signal, the main body ECU sends the reverse request signal to each outer mirror control ECU assembly. Each outer mirror control ECU assembly then performs control in response to the reverse signal.

WIRING DIAGRAM

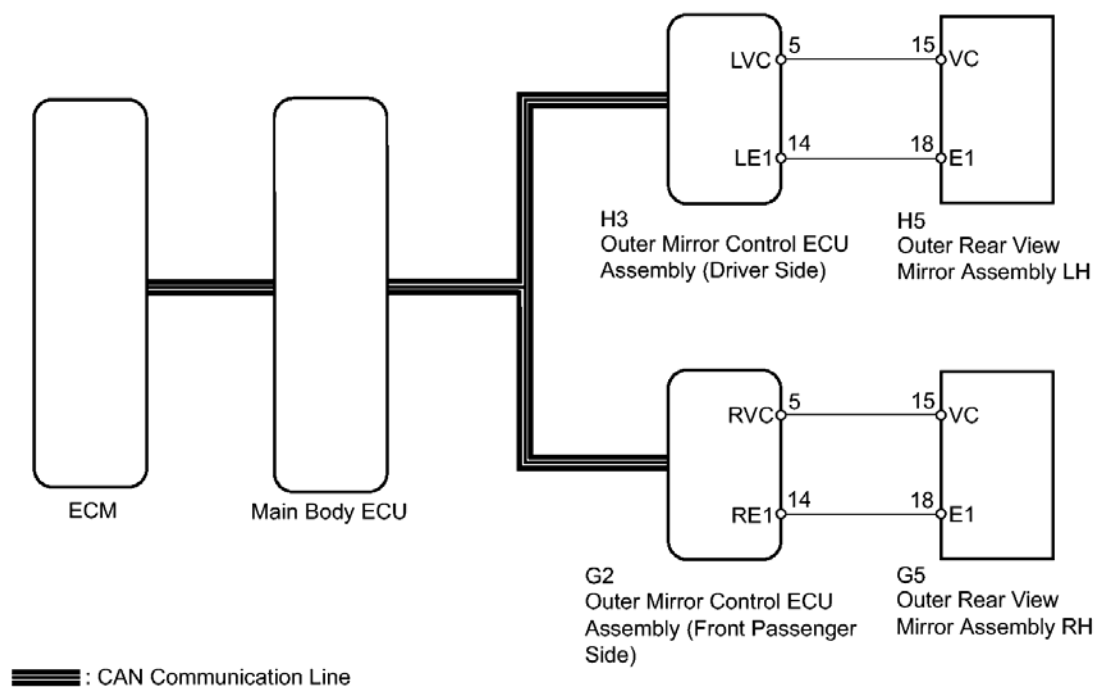


Fig. 32: Reverse Shift-Linked Function Of Power Mirrors - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

HINT:

The reverse shift-linked function will not activate when the mirror select switch is in the neutral position (off).

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- a. Use the Techstream to check if the CAN communication system is functioning normally. Refer to DIAGNOSTIC TROUBLE CODE CHART .

OK

CAN communication DTC is not output.

NG --> See step 9

OK: Go to next step

2. CHECK POWER MIRROR CONTROL FUNCTION (ELECTRICAL REMOTE CONTROL MIRROR FUNCTION)

- a. Check the electrical remote control mirror function. Refer to OPERATION CHECK .

OK

Electrical remote control mirror function is normal.

NG --> See step 10

OK: Go to next step

3. CHECK COMBINATION METER ASSEMBLY

- a. Check if the shift position indicator light in the combination meter assembly operates normally.

OK

Shift position indicator light indicates actual shift position correctly.

NG --> See step 11

OK: Go to next step

4. READ VALUE USING TECHSTREAM (MIRROR POSITION SENSOR)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Mirror L / Mirror R / Data List.
- e. Read the Data List according to the display on the Techstream.

MIRROR L / MIRROR R

--	--	--	--	--

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mirror Vertical Sensor Vol	Vertical mirror position/MIN: 0, MAX: 4.98 V	Within range from 0 to 4.98 V	-
Mirror Horizontal Sensor Vol	Horizontal mirror position/MIN: 0, MAX: 4.98 V	Within range from 0 to 4.98 V	-

ON

Output voltage is as shown in table above.

RESULT

Result	Proceed to
Driver side mirror does not operate normally	A
Driver side mirror operates normally	B
Passenger side mirror does not operate normally	C
Passenger side mirror operates normally	D

B --> See step 12

C --> See step 7

D --> See step 13

A: Go to next step

5. INSPECT OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE)

- a. Remove the outer mirror control ECU assembly (driver side) with its connectors still connected. Refer to **REMOVAL** .

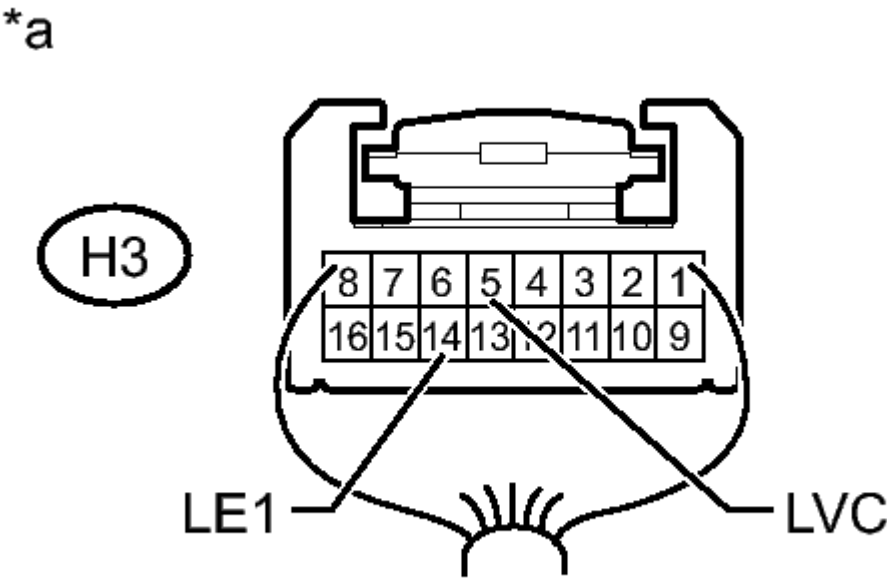


Fig. 33: Inspecting Outer Mirror Control ECU Assembly (Driver Side)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
H3-5 (LVC) - H3-14 (LE1)	Engine switch on (IG)	4.7 to 5.3 V

- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

--	--	--

Tester Connection	Condition	Specified Condition
H3-14 (LE1) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component with harness connected (Outer Mirror Control ECU Assembly (Driver Side))
----	--

NG --> See step 12

OK --> See step 6

- 6. REPLACE OUTER REAR VIEW MIRROR ASSEMBLY LH. Refer to REMOVAL**
- 7. INSPECT OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE)**
 - a. Remove the outer mirror control ECU assembly (front passenger side) with its connectors still connected. Refer to REMOVAL .

*a

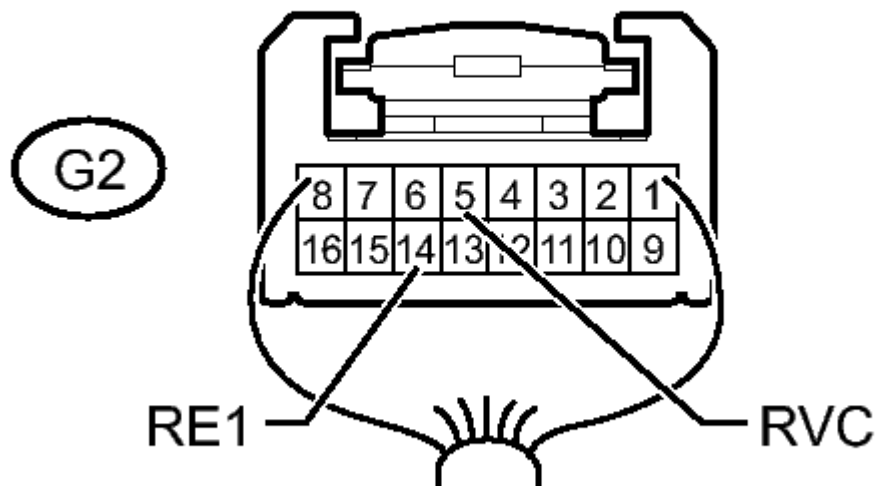


Fig. 34: Inspecting Outer Mirror Control ECU Assembly (Front Passenger Side)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the voltage according to the value(s) in the table below.

Standard Voltage

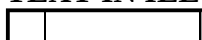
Tester Connection	Condition	Specified Condition
G2-5 (RVC) - G2-14 (RE1)	Engine switch on (IG)	4.7 to 5.3 V

- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
G2-14 (RE1) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION



*a	Component with harness connected (Outer Mirror Control ECU Assembly (front passenger side))
----	--

NG --> See step 13

OK --> See step 8

8. **REPLACE OUTER REAR VIEW MIRROR ASSEMBLY RH. Refer to REMOVAL**
9. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
10. **GO TO OTHER FLOW CHART (Power Mirror cannot be adjusted with Power Mirror Switch). Refer to Power Mirror cannot be Adjusted with Power Mirror Switch**
11. **GO TO METER / GAUGE SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
12. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE). Refer to REMOVAL**
13. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE). Refer to REMOVAL**

Wireless Transmitter Memory Function does not Operate

DESCRIPTION

The key ID can be registered to be linked with each of the M1 or M2 seat memory switches. The key ID registration procedure should be performed while the electrical key transmitter is in the vehicle, the engine switch is on (IG), and the driver door is closed. When the registration is completed, the buzzer will sound as an answerback.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- a. Check the power door lock operation. Refer to OPERATION CHECK .

OK

Power door lock operation is normal.

NG --> See step 12

OK: Go to next step

2. CHECK SMART KEY SYSTEM (ENTRY FUNCTION)

- a. Check the smart key system (entry function). Refer to OPERATION CHECK .

OK

Smart key system (entry function) in normal.

NG --> See step 13

OK: Go to next step

3. CHECK MEMORY AND REACTIVATION FUNCTION

- a. Turn the engine switch on (IG).

*a

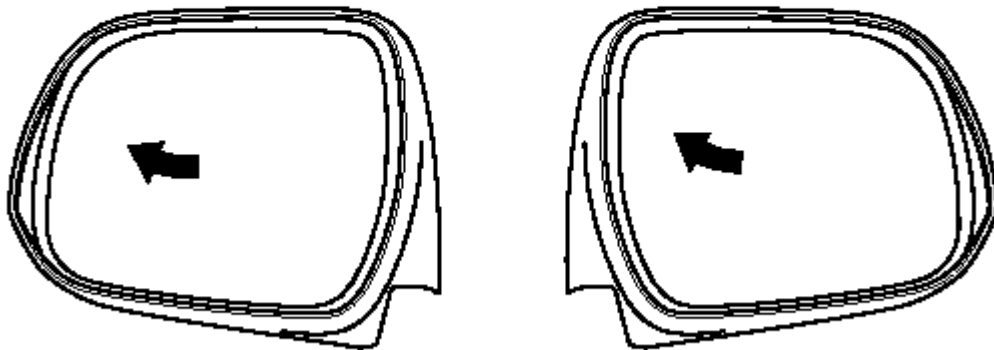


Fig. 35: Checking Memory And Reactivation Function LH
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION



*a	Turn to left fully
----	-----------------------------

- c. Press the M1 switch while the SET switch is being pressed.
- d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
- e. Using the outer mirror assembly, turn the mirror surface to the fully right position.

*a

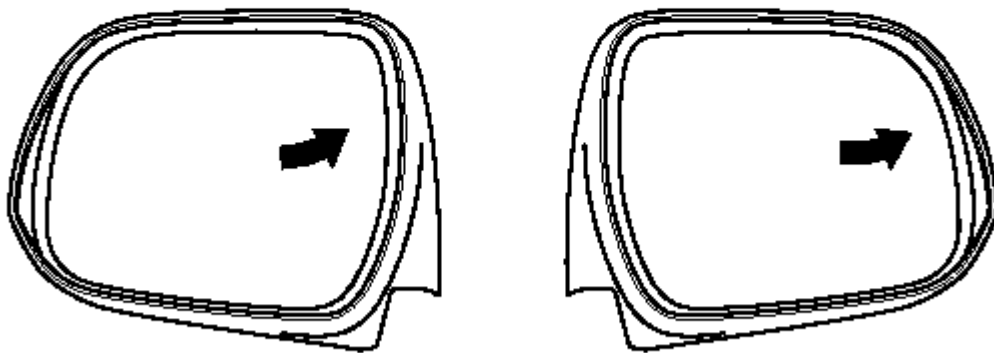


Fig. 36: Checking Memory And Reactivation Function RH
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

RESULT

Result	Proceed to
Memory and	

reactivation function is normal	A
Memory function is not normal	B
Reactivation function is not normal	C

B --> See step 14

C --> See step 15

A: Go to next step

4. READ VALUE USING TECHSTREAM (DOOR COURTESY SWITCH)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FL Door Courtesy	Front door courtesy light switch LH signal/ON or OFF	ON: Driver door open OFF: Driver door closed	-

OK

ON or OFF appears on the screen.

NG --> See step 16

OK: Go to next step

5. PERFORM TRANSMITTER KEY RECOGNITION CODE REGISTRATION

- With the engine switch on (IG) and the driver door closed, press and hold the M1 or M2 switch. The main body ECU will enter transmitter key recognition code registration mode to allow a key to

be linked to mirror surface memory position.

HINT:

If the memory switch is released before entering registration mode, the memory switch will not enter registration mode.

- b. When the manual door lock switch is pressed, check that the buzzer of the front power seat switch LH sounds once (0.5 seconds).

OK

The buzzer sounds when the registration is completed.

NG --> See step 9

OK: Go to next step

6. PERFORM MEMORY DELETION

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. After performing any of the following procedures to cut the link between the key and switch, check that the Data List for the applicable key changes to NONE.
- f. With the engine switch on (IG) and the driver door closed, press and hold the SET switch. The main body ECU will enter transmitter key recognition code deletion mode.

HINT:

If the memory switch is released before entering deletion mode, the memory switch will not enter deletion mode.

- g. When the manual door lock switch is pressed, check that the buzzer of the front power seat switch LH sounds twice (0.1 seconds each time).

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		NONE: No switches linked with key ID1	

Mem SW No. w/KeyID1	Switch linked with key ID1 / NONE, MEM SW1, MEM SW2, or MEM SW3	MEM SW1: M1 linked with key ID1 MEM SW2: M2 linked with key ID1 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID2	Switch linked with key ID2 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID2 MEM SW1: M1 linked with key ID2 MEM SW2: M2 linked with key ID2 MEM SW3: Related switch does not exist	-
	Switch linked with key ID3 /	NONE: No switches linked with key ID3 MEM SW1: M1 linked with key	

Mem SW No. w/KeyID3	NONE, MEM SW1, MEM SW2, or MEM SW3	ID3 MEM SW2: M2 linked with key ID3 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID4	Switch linked with key ID4 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID4 MEM SW1: M1 linked with key ID4 MEM SW2: M2 linked with key ID4 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID5	Switch linked with key ID5 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID5 MEM SW1: M1 linked with key ID5 MEM SW2: M2 linked	-

		with key ID5 MEM SW3: Related switch does not exist	
Mem SW No. w/KeyID6	Switch linked with key ID6 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID6 MEM SW1: M1 linked with key ID6 MEM SW2: M2 linked with key ID6 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID7	Switch linked with key ID7 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID7 MEM SW1: M1 linked with key ID7 MEM SW2: M2 linked with key ID7 MEM SW3:	-

		Related switch does not exist	
--	--	-------------------------------	--

OK

The Data List display for the applicable key changes to NONE.

NG --> See step 17

OK: Go to next step

7. PERFORM MEMORY REGISTRATION

- After performing any of the following procedures to link the key and a switch, check the Data List to confirm that the key and switch have been linked.
- With the engine switch on (IG) and the driver door closed, press and hold the M1 or M2 switch. The main body ECU will enter transmitter key recognition code registration mode to allow a key to be linked to mirror surface memory position.

HINT:

If the memory switch is released before entering registration mode, the memory switch will not enter registration mode.

- When the manual door lock switch is pressed, check that the buzzer of the front power seat switch LH sounds once (0.5 seconds).

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mem SW No. w/KeyID1	Switch linked with key ID1 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID1 MEM SW1: M1 linked with key ID1 MEM SW2: M2 linked with key	-

		ID1 MEM SW3: Related switch does not exist	
Mem SW No. w/KeyID2	Switch linked with key ID2 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID2 MEM SW1: M1 linked with key ID2 MEM SW2: M2 linked with key ID2 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID3	Switch linked with key ID3 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID3 MEM SW1: M1 linked with key ID3 MEM SW2: M2 linked with key ID3 MEM SW3: Related	-

		switch does not exist	
Mem SW No. w/KeyID4	Switch linked with key ID4 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID4 MEM SW1: M1 linked with key ID4 MEM SW2: M2 linked with key ID4 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID5	Switch linked with key ID5 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID5 MEM SW1: M1 linked with key ID5 MEM SW2: M2 linked with key ID5 MEM SW3: Related switch does not exist	-

Mem SW No. w/KeyID6	Switch linked with key ID6 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID6 MEM SW1: M1 linked with key ID6 MEM SW2: M2 linked with key ID6 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID7	Switch linked with key ID7 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID7 MEM SW1: M1 linked with key ID7 MEM SW2: M2 linked with key ID7 MEM SW3: Related switch does not exist	-

OK

Data List shows that the key ID has been linked to a switch (M1 or M2).

NG --> See step 10

OK: Go to next step

8. CHECK AUTOMATIC MEMORY CALL REACTIVATION FUNCTION

- a. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 17

OK --> See step 18

9. PERFORM ACTIVE TEST USING TECHSTREAM

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Driver Seat / Active Test.
- e. Perform Active Test according to the display on the Techstream.

DRIVER SEAT

Tester Display	Test Part	Control Range	Diagnostic Note
Buzzer	Buzzer built into the front power seat switch LH	ON or OFF	-

OK

The buzzer sounds.

NG --> See step 19

OK: Go to next step

10. REPLACE MAIN BODY ECU

- Replace the main body ECU. Refer to **REMOVAL** .

NEXT: Go to next step

11. PERFORM MEMORY REGISTRATION

- After performing any of the following procedures to link the key and a switch, check the Data List to confirm that the key and switch have been linked.
- With the engine switch on (IG) and the driver door closed, press and hold the M1 or M2 switch. The main body ECU will enter transmitter key recognition code registration mode to allow a key to be linked to mirror surface memory position.

HINT:

If the memory switch is released before entering registration mode, the memory switch will not enter registration mode.

- When the manual door lock switch is pressed, check that the buzzer of the front power seat switch LH sounds once (0.5 seconds).

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mem SW No. w/KeyID1	Switch linked with key ID1 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID1 MEM SW1: M1 linked with key ID1 MEM SW2: M2 linked with key ID1 MEM SW3: Related switch does not exist	-
		NONE:	

Mem SW No. w/KeyID2	Switch linked with key ID2 / NONE, MEM SW1, MEM SW2, or MEM SW3	No switches linked with key ID2 MEM SW1: M1 linked with key ID2 MEM SW2: M2 linked with key ID2 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID3	Switch linked with key ID3 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID3 MEM SW1: M1 linked with key ID3 MEM SW2: M2 linked with key ID3 MEM SW3: Related switch does not exist	-
		NONE: No switches linked with key	

Mem SW No. w/KeyID4	Switch linked with key ID4 / NONE, MEM SW1, MEM SW2, or MEM SW3	ID4 MEM SW1: M1 linked with key ID4 MEM SW2: M2 linked with key ID4 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID5	Switch linked with key ID5 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID5 MEM SW1: M1 linked with key ID5 MEM SW2: M2 linked with key ID5 MEM SW3: Related switch does not exist	-
	Switch linked	NONE: No switches linked with key ID6 MEM SW1: M1 linked	

Mem SW No. w/KeyID6	with key ID6 / NONE, MEM SW1, MEM SW2, or MEM SW3	with key ID6 MEM SW2: M2 linked with key ID6 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID7	Switch linked with key ID7 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID7 MEM SW1: M1 linked with key ID7 MEM SW2: M2 linked with key ID7 MEM SW3: Related switch does not exist	-

OK

The Data List shows that the key ID has been linked to a switch (M1 or M2).

NG --> **See step 20**

OK --> **END (MAIN BODY ECU WAS DEFECTIVE)**

12. **GO TO POWER DOOR LOCK CONTROL SYSTEM. Refer to PROBLEM SYMPTOMS TABLE**
13. **GO TO SMART KEY SYSTEM. Refer to PROBLEM SYMPTOMS TABLE**
14. **GO TO OTHER FLOW CHART (Power Mirror Surface Position is not Memorized). Refer to**

Power Mirror Surface Position is not Memorized

15. **GO TO OTHER FLOW CHART (Power Mirrors do not Return to Memorized Position). Refer to Power Mirrors do not Return to Memorized Position**
16. **GO TO LIGHTING SYSTEM. Refer to Door Courtesy Switch Circuit**
17. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
18. **GO TO OTHER FLOW CHART (Wireless-linked Return Function does not Operate). Refer to Wireless-linked Return Function does not Operate**
19. **REPLACE FRONT POWER SEAT SWITCH LH. Refer to DISASSEMBLY**
20. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**

Wireless-linked Return Function does not Operate

DESCRIPTION

When the vehicle doors are unlocked through wireless unlock or entry unlock operation, the certification ECU (smart key ECU assembly) sends the key ID signal and smart memory call request signal to the main body ECU. When the main body ECU receives the signal and the driver door is opened, the ECU sends the memory call command signal for the received key ID to each outer mirror control ECU assembly. On receiving the memory call command signal, each outer mirror control ECU assembly moves the mirror surface to the stored position.

INSPECTION PROCEDURE

PROCEDURE

1. **CHECK AUTOMATIC MEMORY CALL FUNCTION CHECK (MEMORY REGISTRATION)**
 - a. After performing any of the following procedures to link the key and a switch, check the Data List to confirm that the key and switch have been linked.
 - b. With the engine switch on (IG) and the driver door closed, press and hold the M1 or M2 switch. The main body ECU will enter transmitter key recognition code registration mode to allow a key to be linked to mirror surface memory position.

HINT:

If the memory switch is released before entering registration mode, the memory switch will not enter registration mode.

- c. When the manual door lock switch is pressed, check that the buzzer of the position control ECU and switch sounds once (0.5 seconds).

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		NONE: No switches	

Mem SW No. w/KeyID1	Switch linked with key ID1 / NONE, MEM SW1, MEM SW2, or MEM SW3	linked with key ID1 MEM SW1: M1 linked with key ID1 MEM SW2: M2 linked with key ID1 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID2	Switch linked with key ID2 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID2 MEM SW1: M1 linked with key ID2 MEM SW2: M2 linked with key ID2 MEM SW3: Related switch does not exist	-
		NONE: No switches linked with key ID3 MEM	

Mem SW No. w/KeyID3	Switch linked with key ID3 / NONE, MEM SW1, MEM SW2, or MEM SW3	SW1: M1 linked with key ID3 MEM SW2: M2 linked with key ID3 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID4	Switch linked with key ID4 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID4 MEM SW1: M1 linked with key ID4 MEM SW2: M2 linked with key ID4 MEM SW3: Related switch does not exist	-
Mem SW	Switch linked with key ID5 / NONE, MEM	NONE: No switches linked with key ID5 MEM SW1: M1 linked with key ID5	

No. w/KeyID5	SW1, MEM SW2, or MEM SW3	MEM SW2: M2 linked with key ID5 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID6	Switch linked with key ID6 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID6 MEM SW1: M1 linked with key ID6 MEM SW2: M2 linked with key ID6 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID7	Switch linked with key ID7 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID7 MEM SW1: M1 linked with key ID7 MEM SW2: M2 linked with key	-

		ID7 MEM SW3: Related switch does not exist	
--	--	--	--

OK

The Data List shows that the key ID has been linked to a switch (M1 or M2).

NG --> See step 24

OK: Go to next step

2. CHECK AUTOMATIC MEMORY CALL FUNCTION

- Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

RESULT

Result	Proceed to
The automatic memory call function does not operate together with wireless door unlock operation only.	A
The automatic memory call function does not operate together	B

with entry unlock operation only.	
The automatic memory call function does not operate at all.	C

B --> See step 10

C --> See step 17

A: Go to next step

3. CHECK WIRELESS DOOR LOCK CONTROL FUNCTIONS

- a. Check wireless door lock control operation. Refer to OPERATION CHECK .

OK

Wireless door lock control operation is normal.

NG --> See step 25

OK: Go to next step

4. CHECK MEMORY AND SEAT RESTORING OPERATION (POWER SEAT CONTROL SYSTEM)

- a. Check memory and seat restoring operation. Refer to OPERATION CHECK .

OK

Memory and seat restoring operation is normal.

NG --> See step 7

OK: Go to next step

5. REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE)

- a. Replace the outer mirror control ECU assembly (driver side). Refer to REMOVAL .

NEXT: Go to next step

6. CHECK AUTOMATIC MEMORY FUNCTION

- a. Perform registration for automatic memory call function. Refer to **OPERATION CHECK** .
- b. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 26

OK --> END (OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE) WAS DEFECTIVE)

7. READ VALUE USING TECHSTREAM (DOOR COURTESY SWITCH)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FL Door Courtesy	Front door courtesy switch light LH signal/ON or OFF	ON: Driver door open OFF: Driver door closed	-

OK

ON or OFF appears on the Techstream.

NG --> See step 27

OK: Go to next step

8. REPLACE MAIN BODY ECU

- a. Replace the main body ECU. Refer to **REMOVAL** .

NEXT: Go to next step

9. CHECK AUTOMATIC MEMORY CALL FUNCTION

- a. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 28

OK --> END (MAIN BODY ECU WAS DEFECTIVE)

10. CHECK SMART KEY SYSTEM (ENTRY FUNCTION)

- a. Check the smart key system operation. Refer to **OPERATION CHECK** .

OK

Smart key system operation is normal.

NG --> See step 29

OK: Go to next step

11. CHECK MEMORY AND SEAT RESTORING OPERATION (POWER SEAT CONTROL SYSTEM)

- a. Check memory and seat restoring operation. Refer to **OPERATION CHECK** .

OK

Memory and seat restoring operation is normal.

NG --> See step 14

OK: Go to next step

12. REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE)

- a. Replace the outer mirror control ECU assembly (driver side). Refer to **REMOVAL** .

NEXT: Go to next step

13. CHECK AUTOMATIC MEMORY CALL FUNCTION

- a. Perform registration for automatic memory call function. Refer to **OPERATION CHECK** .
- b. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 30

OK --> END (OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE) WAS DEFECTIVE)

14. READ VALUE USING TECHSTREAM (DOOR COURTESY SWITCH)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FL Door Courtesy	Front door courtesy light switch LH signal/ON or OFF	ON: Driver door open OFF: Driver door closed	-

OK

ON or OFF appears on the Techstream.

NG --> See step 31

OK: Go to next step

15. REPLACE MAIN BODY ECU

- a. Replace the main body ECU. Refer to **REMOVAL** .

NEXT: Go to next step

16. CHECK AUTOMATIC MEMORY CALL FUNCTION

- a. Perform registration for automatic memory call function. Refer to **OPERATION CHECK** .
- b. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 32

OK --> END (MAIN BODY ECU WAS DEFECTIVE)

17. CHECK AUTOMATIC MEMORY CALL FUNCTION (POWER SEAT)

- a. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 21

OK: Go to next step

18. CHECK MEMORY AND REACTIVATION FUNCTION

- a. Turn the engine switch on (IG).

*a

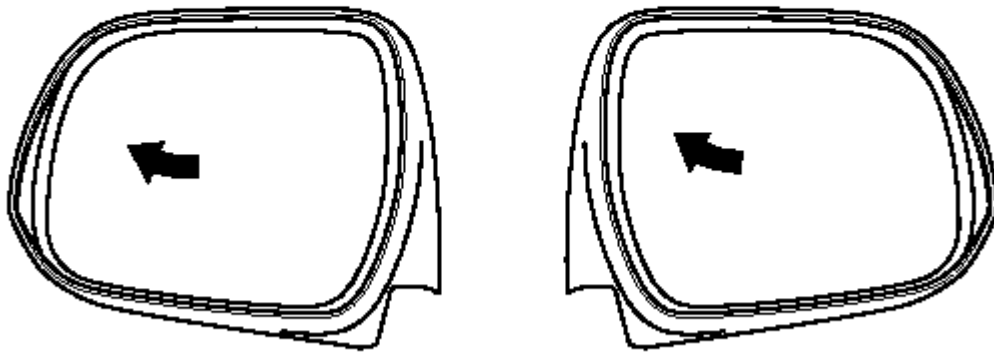


Fig. 37: Checking Memory And Reactivation Function
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using the outer mirror switch assembly, turn the mirror surface to the fully left position.

TEXT IN ILLUSTRATION

*a	Turn to left fully
----	-----------------------------

- c. Press the M1 switch while the SET switch is being pressed.
d. Check that the buzzer sounds for 0.5 seconds and the mirror surface position is memorized.
e. Using the outer mirror switch assembly, turn the mirror surface to the fully right position.

*a

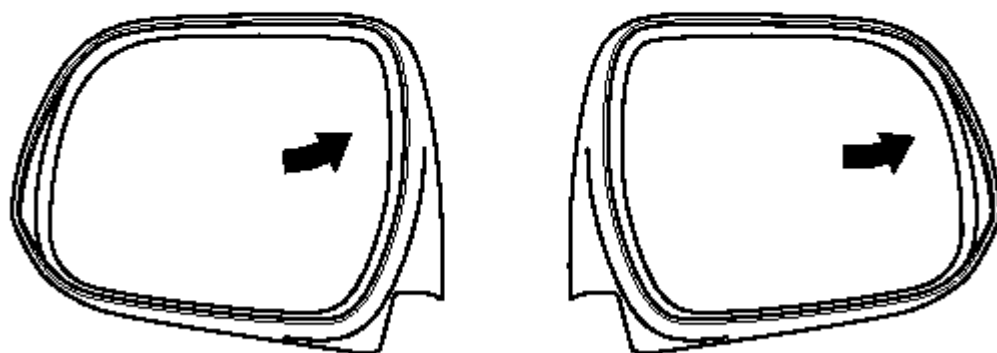


Fig. 38: Checking Memory And Reactivation Function RH
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn to right fully
----	------------------------------

- f. Press the M1 switch.
- g. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded fully left position.

RESULT

Result	Proceed to
Memory and reactivation function is normal	A
Memory function is normal	B
Reactivation function is normal	C

B --> See step 33

C --> See step 34

A: Go to next step

19. REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE)

- a. Replace the outer mirror control ECU assembly (driver side). Refer to **REMOVAL** .

NEXT: Go to next step

20. CHECK AUTOMATIC MEMORY CALL FUNCTION

- a. Perform registration for automatic memory call function. Refer to **OPERATION CHECK** .
- b. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 35

OK --> END (OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE) WAS DEFECTIVE)

21. READ VALUE USING TECHSTREAM (DOOR COURTESY SWITCH)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.
- e. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FL Door Courtesy	Front door courtesy light switch LH signal/ON or OFF	ON: Driver door open OFF: Driver door closed	-

OK

ON or OFF appears on the Techstream.

NG --> See step 36

OK: Go to next step

22. REPLACE MAIN BODY ECU

- a. Replace the main body ECU. Refer to REMOVAL .

NEXT: Go to next step

23. CHECK AUTOMATIC MEMORY CALL FUNCTION

- a. Perform registration for automatic memory call function. Refer to OPERATION CHECK .
- b. Perform a wireless door unlock operation and check that opening the driver door causes the following:
 - The buzzer sounds for 0.1 seconds.
 - The mirror surface position automatically moves to a stored position.

OK

Automatic memory call reactivation function is normal.

NG --> See step 37

OK --> END (MAIN BODY ECU WAS DEFECTIVE)

24. GO TO OTHER FLOW CHART (Wireless Transmitter Memory Function does not Operate). Refer to Wireless Transmitter Memory Function does not Operate

25. GO TO WIRELESS DOOR LOCK CONTROL SYSTEM. Refer to PROBLEM SYMPTOMS TABLE

26. REPLACE MAIN BODY ECU. Refer to REMOVAL

27. GO TO LIGHTING SYSTEM. Refer to Door Courtesy Switch Circuit

28. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL

29. GO TO SMART KEY SYSTEM. Refer to PROBLEM SYMPTOMS TABLE

30. REPLACE MAIN BODY ECU. Refer to REMOVAL

31. GO TO LIGHTING SYSTEM. Refer to Door Courtesy Switch Circuit

32. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL

33. GO TO OTHER FLOW CHART (Power Mirror Surface Position is not Memorized). Refer to Power Mirror Surface Position is not Memorized

34. GO TO OTHER FLOW CHART (Power Mirror do not Return to Memorized Position). Refer to Power Mirrors do not Return to Memorized Position

35. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
36. **GO TO LIGHTING SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
37. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**

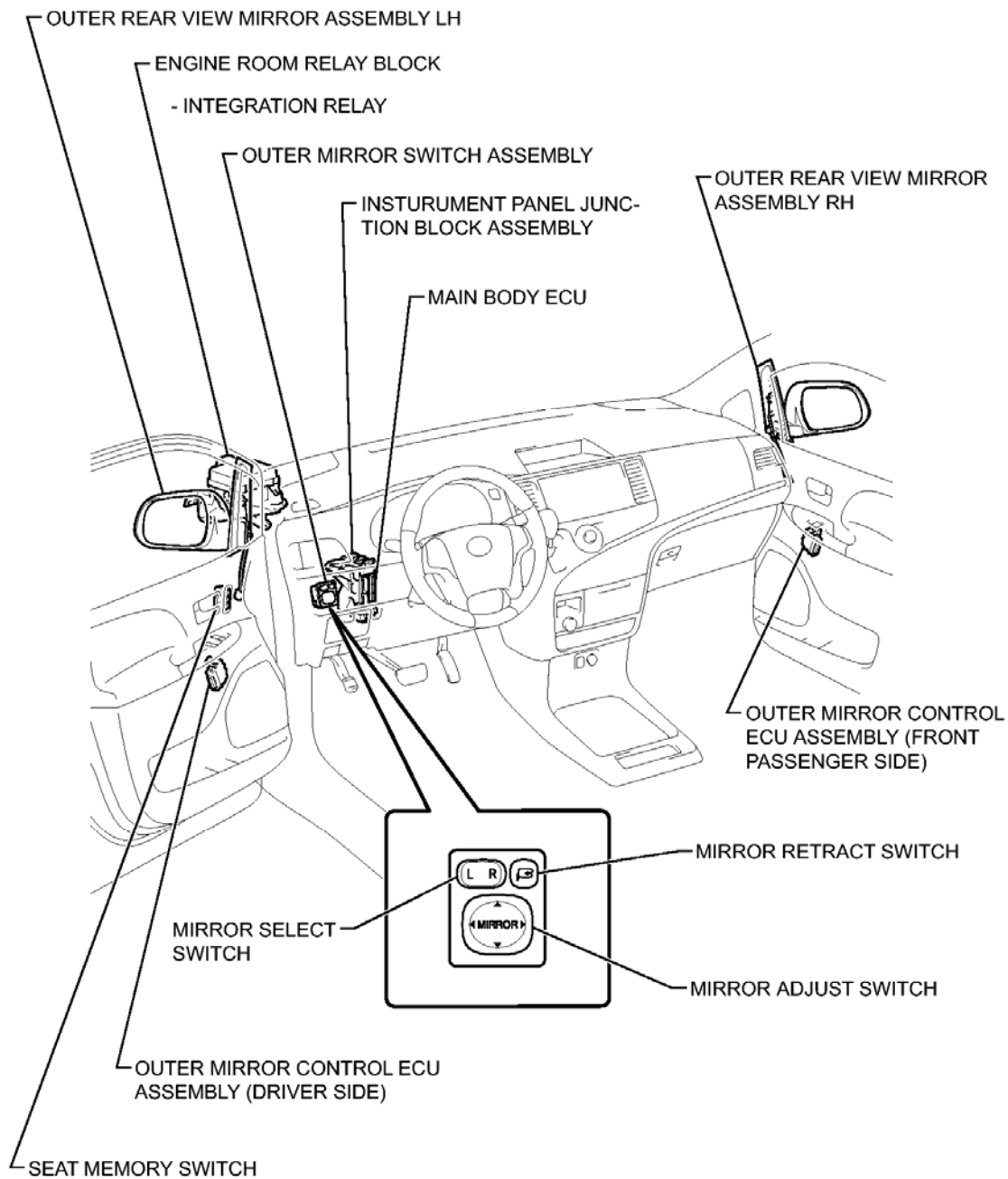
ACCESSORIES & EQUIPMENT

Power Mirror Control (w/Memory) (Diagnostics - Introduction) - Sienna

POWER MIRROR CONTROL SYSTEM (W/ MEMORY)

PARTS LOCATION

ILLUSTRATION



P

Fig. 1: Power Mirror Control System (w/ Memory) Components Location (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

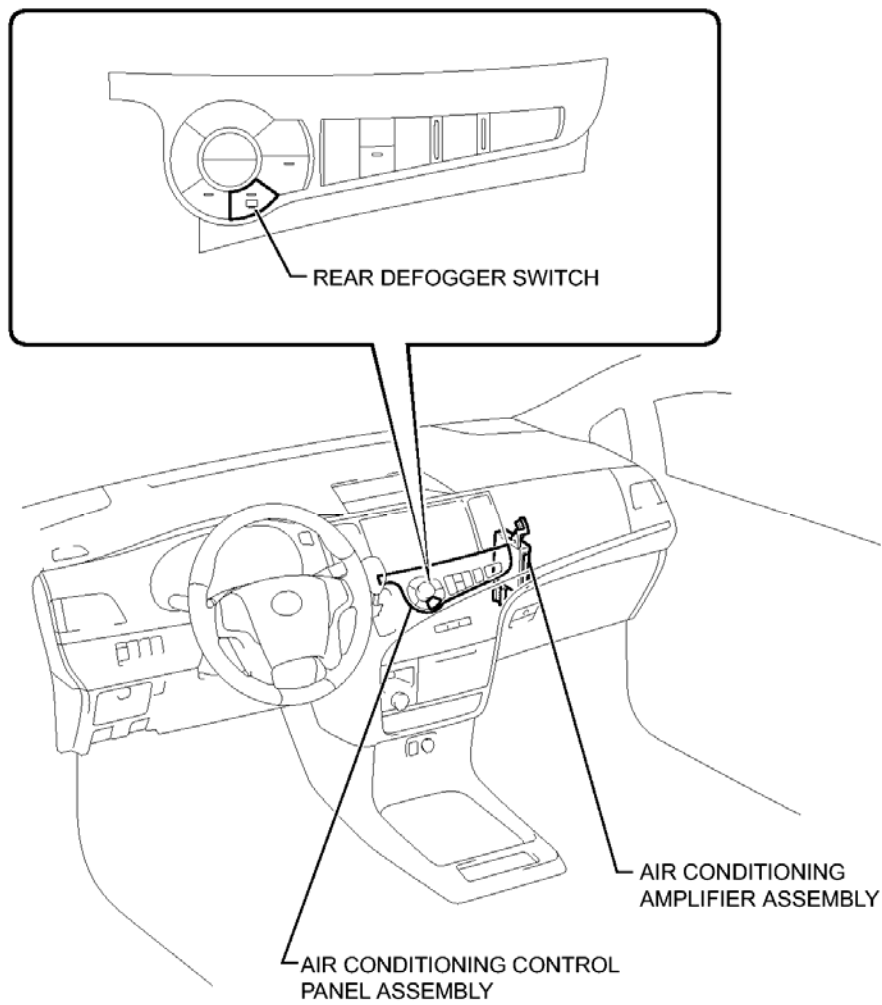


Fig. 2: Power Mirror Control System (w/ Memory) Components Location (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

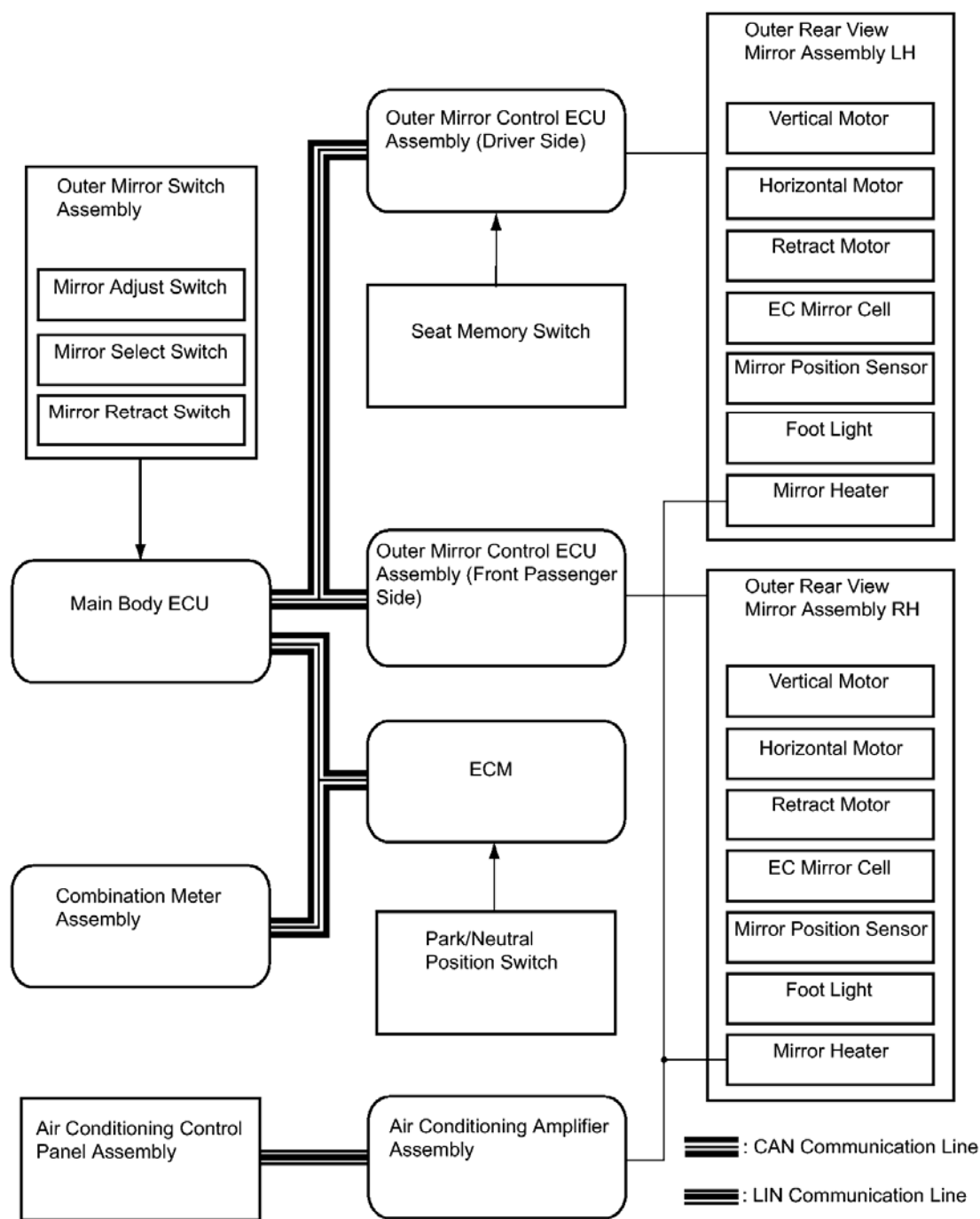


Fig. 3: Power Mirror Control System (w/ Memory) - System Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMMUNICATION TABLE

Sender	Receiver	Signal / Signal Condition	Line
Main Body ECU	Outer mirror control ECU assembly (driver	Engine switch signal / on (IG) or off	CAN

	side)		
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Engine switch signal / on (IG) or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Engine switch on (ACC) signal / on (ACC) or off	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Engine switch on (ACC) signal / on (ACC) or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Right outside mirror select switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Right outside mirror select switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Left outside mirror select switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Left outside mirror select switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Outside mirror rightward switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Outside mirror rightward switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Outside mirror leftward switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Outside mirror leftward switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Outside mirror upward switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Outside mirror upward switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Outside mirror downward switch signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Outside mirror downward switch signal / on or off	CAN

	passenger side)	signal / on or off	
Main Body ECU	Outer mirror control ECU assembly (driver side)	Steering wheel signal	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Steering wheel signal	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Mirror position request signal / memory request, reverse memory request, memory call request, reverse request or return request	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Mirror position request signal / memory request, reverse memory request, memory call request, reverse request or return request	CAN
ECM	Outer mirror control ECU assembly (driver side)	Starter signal / on or off	CAN
ECM	Outer mirror control ECU assembly (front passenger side)	Starter signal / on or off	CAN
Main Body ECU	Outer mirror control ECU assembly (driver side)	Mirror retract/return request signal / stop request, retract request or return request	CAN
Main Body ECU	Outer mirror control ECU assembly (front passenger side)	Mirror retract/return request signal / stop request, retract request or return request	CAN
Outer mirror control ECU assembly (driver side)	Main Body ECU	LH mirror state signal / Manual operation, memory operation, reverse operation or return operation	CAN
Outer mirror control ECU assembly (front passenger side)	Main Body ECU	RH mirror state signal / Manual operation, memory operation, reverse operation or return operation	CAN
Air Conditioning Control Panel Assembly	Air Conditioning Amplifier Assembly	Rear defogger Switch Signal	LIN
	Outer mirror control		

Seat memory switch (driver side)	ECU assembly (driver side)	Driver side M1 switch signal	Local communication
Seat memory switch (driver side)	Outer mirror control ECU assembly (driver side)	Driver side M2 switch signal	Local communication
Seat memory switch (driver side)	Outer mirror control ECU assembly (driver side)	Driver side SET switch signal	Local communication

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. POWER MIRROR CONTROL SYSTEM DESCRIPTION

- a. This system has the following functions: automatic glare-resistant electrochromic (EC) mirror function, reverse shift-linked function, electrical remote control function, memory function, and mirror heater function.

2. FUNCTION OF MAIN COMPONENTS

Component	Function
Vertical mirror motor	Receives a signal from the outer mirror control ECU assembly and adjusts the mirror surface position vertically.
Horizontal mirror motor	Receives a signal from the outer mirror control ECU assembly and adjusts the mirror surface position horizontally.
Power retract mirror motor	Receives a signal from the outer mirror control ECU assembly, and retracts and returns the outer rear view

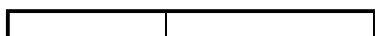
	mirrors.
Mirror heater	When the rear defogger switch on the air conditioning control panel assembly is operated, the A/C amplifier detects the switch operation via LIN communication. The A/C amplifier operates the integration relay and mirror heater in accordance with the switch operation.
EC mirror cell	Varies reflection rate of the mirror through function of EC elements.
Outer mirror retract switch	Retracts and returns the outer rear view mirrors. Mirror retract and return signals are sent to each outer mirror control ECU assemblies from the main body ECU.
Mirror select switch	Consists of R and L switches. One must be chosen to operate the outer mirror

	switch assembly.
Mirror adjust switch	Mirror R and L signals are sent to each outer mirror control ECU assemblies from the outer mirror switch assembly. After selecting the R or L switch, the right, left, up and down control switches can be operated to change the angle of the mirror.
Mirror position sensor	Detects the mirror surface position. This data is detected by the outer mirror control ECU assembly.
Seat	When the seat memory M1 or M2 switch are pressed while the SET switch is being pressed, or M1 or M2 switch is pressed within 3 seconds after the SET switch being pressed, a signal is input to the outer mirror control ECU assembly (driver side), which records

memory switch	the mirror surface position. When the seat memory switch is pressed, a signal is input to the outer mirror control ECU assembly (driver side) and sent to main body ECU, which changes the mirror surface position to the recorded position.
Outer mirror control ECU assembly	Operates each mirror motor based on signals from the outer mirror retract switch, mirror select switch and mirror adjust switch. Based on information from the mirror position sensor, 2 different mirror surface positions can be stored. By operating a seat memory switch, the mirror surface moves to the stored position.

3. SYSTEM OPERATION

- a. The remote control mirror has the following features.



Function	Outline
Power retract mirror function	Retracts and returns the outer rear view mirrors when the outer mirror retract switch is pressed.
Reverse shift-linked function of mirrors	Directs the mirror surface downward to improve visibility when driving in reverse and all the conditions below are met: • Engine switch on (IG). • Shift lever is moved to R. • The mirror select switch is in the R or L position.
Electrical remote control mirror function	When the outer mirror switch assembly is operated, this function moves the mirror surface vertically or horizontally to enable the driver to attain an optimal mirror angle. Setting the mirror select

	switch to the R position operates the right mirror, and setting it to the L position operates the left mirror.
Memory and reactivation function	Stores the adjusted mirror position in the outer mirror control ECU assembly.
Automatic glare-resistant EC mirror function	Reduces glare/reflection in the mirror during nighttime driving for safe driving conditions. Glare/reflection from vehicle headlights behind could blind driver and cause dangerous driving conditions.
Mirror heater function	Automatically turns on mirror heater when the rear window defogger switch is turned on. The rear window defogger and mirror heaters automatically turn off after 15 min.

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedure to troubleshoot the power mirror control system.
- *: Use the Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. CUSTOMER PROBLEM ANALYSIS

HINT:

- In troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgment. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.
- Gather as much information as possible for reference.

Past problems that seem unrelated may also help in some cases.

- The following 5 items are important points in the problem analysis:

What	Vehicle model, system name
When	Date, time, occurrence frequency
Where	Road conditions
Under what conditions?	Running conditions, driving conditions, weather conditions
How did it happen?	Problem symptoms

NEXT: Go to next step

3. INSPECT BATTERY VOLTAGE

Standard voltage

11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

NEXT: Go to next step

4. CHECK COMMUNICATION FUNCTION OF LIN COMMUNICATION SYSTEM*

- a. Use the Techstream to check if the LIN communication system is functioning normally.

RESULT

Result	Proceed to
LIN DTC is not output	A
LIN DTC is output	B

B --> GO TO LIN COMMUNICATION SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

5. CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM*

- a. Use the Techstream to check if the CAN communication system is functioning normally.

RESULT

Result	Proceed to
CAN DTC is not output	A
CAN DTC is output	B

B --> GO TO CAN COMMUNICATION SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

6. PROBLEM SYMPTOMS TABLE

- a. Refer to **PROBLEM SYMPTOMS TABLE**.

RESULT

Result	Proceed to
Fault is not listed in Problem Symptoms Table	A
Fault is listed in Problem Symptoms Table	B

B --> Go to step 8

A: Go to next step

7. OVERALL ANALYSIS AND TROUBLESHOOTING*

- a. Operation Check. Refer to **OPERATION CHECK**
- b. Data List / Active Test. Refer to **DATA LIST / ACTIVE TEST**
- c. Terminals of ECU. Refer to **TERMINALS OF ECU**

NEXT: Go to next step

8. REPAIR OR REPLACE

NEXT: Go to next step

9. CONFIRMATION TEST

NEXT --> END

OPERATION CHECK

OPERATION CHECK

1. CHECK REMOTE CONTROL MIRROR FUNCTION

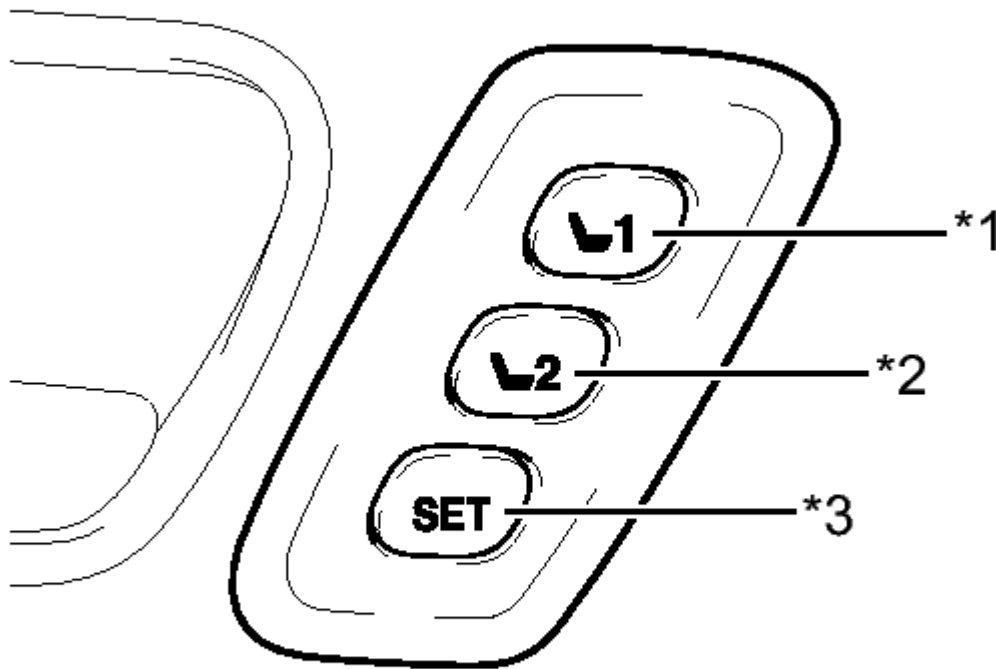
- a. Turn the engine switch on (IG).

- b. With the mirror select switch set to L, check that the mirror surface moves up, down, left and right normally.
- c. With the mirror select switch set to R, check that the mirror surface moves up, down, left and right normally.

2. CHECK POWER RETRACT MIRROR FUNCTION

- a. Turn the engine switch on (IG).
- b. While both mirrors are in the driving position, press the mirror retract switch.
- c. Check that both mirrors move to the retracted position.
- d. After both mirrors are retracted, press the mirror retract switch.
- e. Check that both mirrors move to the driving position.

3. CHECK MEMORY AND REACTIVATION FUNCTION



P

Fig. 4: Checking Memory And Seat Restoring Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The SET, M1 and M2 seat memory switches are shown in the illustration.

- a. Turn the engine switch on (IG) and move the shift lever to P.

TEXT IN ILLUSTRATION

*1	M1 Switch
*2	M2 Switch
*3	SET switch

- b. Check the M1 switch.

***a**

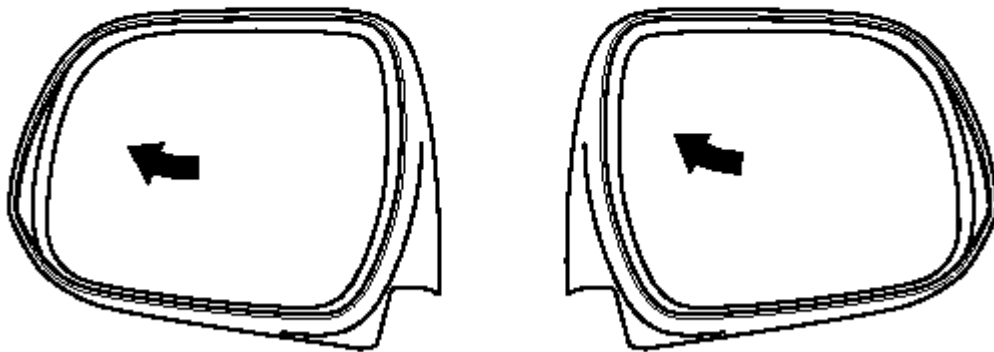


Fig. 5: View Of Turning The Mirror Surface To The Fully Left Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Using the mirror adjust switch assembly, turn the mirror surface to the full left position.

TEXT IN ILLUSTRATION

*a	Turn to left fully
----	-----------------------------

2. Check that the buzzer sounds for 0.5 seconds and the seat position is memorized when the M1 switch is pressed within 3 seconds after the SET switch is pressed.

NOTE:

- The mirror surface position will also be stored when the M1 switch is pressed after first pressing and holding the SET switch.
- The mirror surface position will not be stored when the SET switch and M1 switch are pressed simultaneously.
- The mirror surface position will not be stored when 2 or more of the memory switches are pressed simultaneously (for example, M1 and M2) after first pressing the SET switch.

3. Using the outer mirror switch assembly, turn the mirror surface to the full right position.
 4. Press the M1 switch.
 5. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded full left position.
- c. Check the M2 switch.

*a

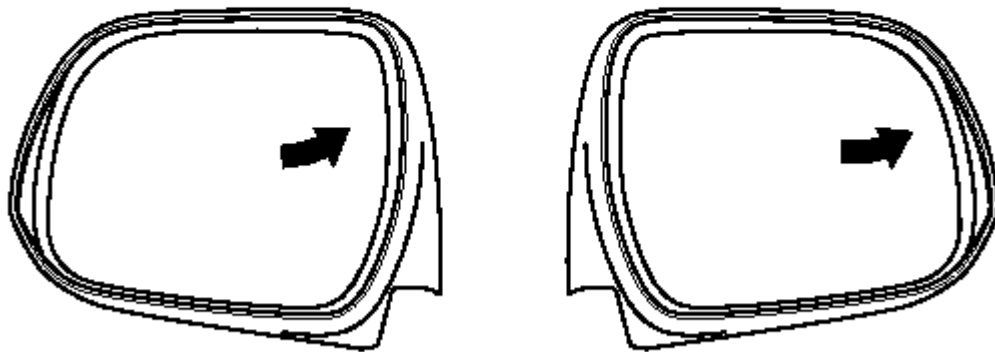


Fig. 6: View Of Turning The Mirror Surface To The Fully Right Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Using the mirror adjust switch assembly, turn the mirror surface to the full right position.

TEXT IN ILLUSTRATION



*a	Turn to right fully
----	------------------------------

2. Check that the buzzer sounds for 0.5 seconds and the seat position is memorized when the M2 switch is pressed within 3 seconds after the SET switch is pressed.

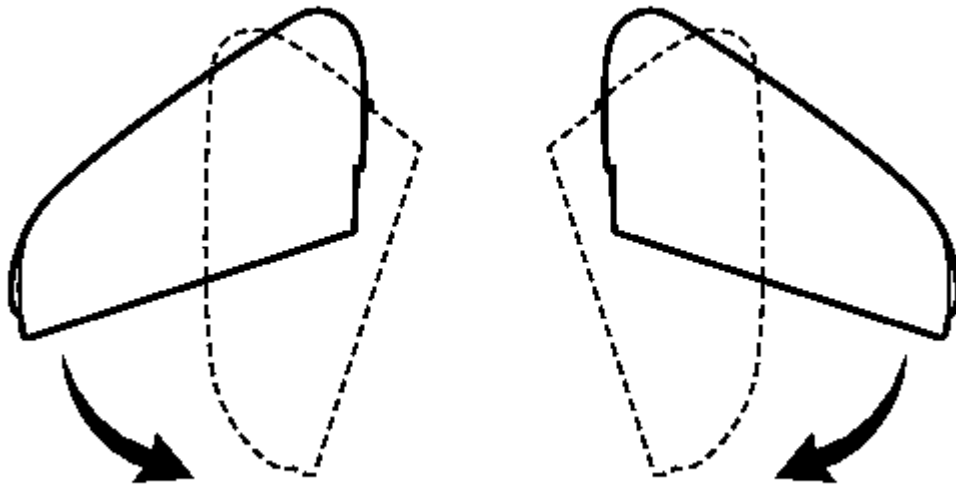
NOTE:

- The mirror surface position will also be stored when the M2 switch is pressed after first pressing and holding the SET switch.
- The mirror surface position will not be stored when the SET switch and M2 switch are pressed simultaneously.
- The mirror surface position will not be stored when 2 or more of the memory switches are pressed simultaneously (for example, M1 and M2) after first pressing the SET switch.

3. Using the outer mirror switch assembly, turn the mirror surface to the full left position.
4. Press the M2 switch.
5. Check that the buzzer sounds for 0.1 seconds and the outer mirror automatically moves to the recorded full right position.

4. CHECK POWER RETRACTABLE MIRROR FUNCTION

- a. Turn the engine switch on (IG).
- b. At each outer rear view mirror position, check the retractable mirror operation when operating the outer mirror retract switch.
 1. Move the mirrors to the driving position.



H

Fig. 7: Checking Power Retractable Mirror Function (1 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Turn the outer mirror retract switch to the retract position.
3. Check that the right and left outer rear view mirrors move from the driving position to the retracted position.
4. Move the mirrors to the driving position.

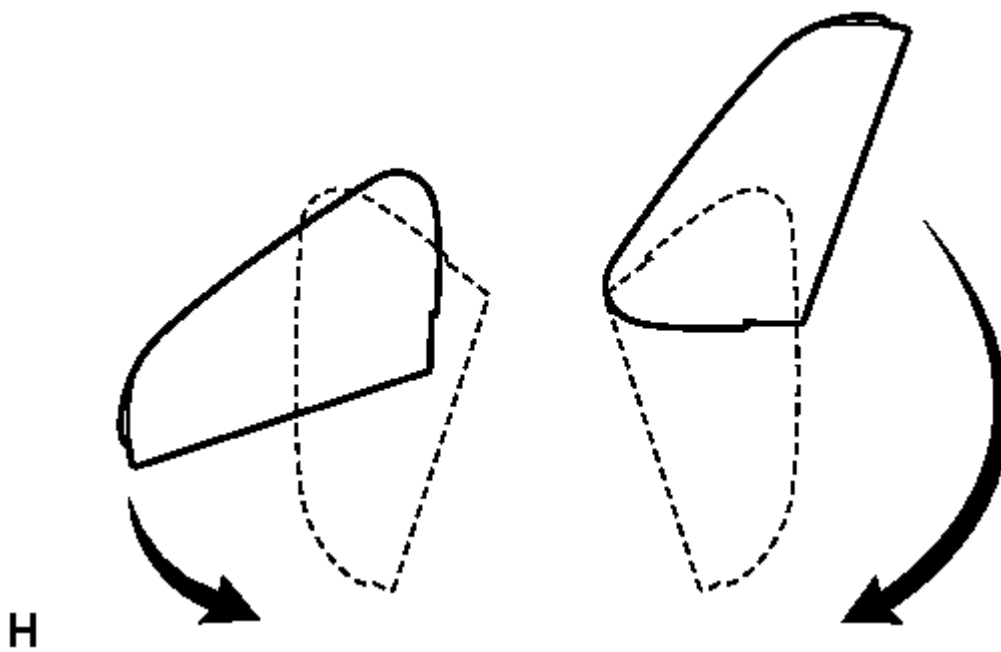
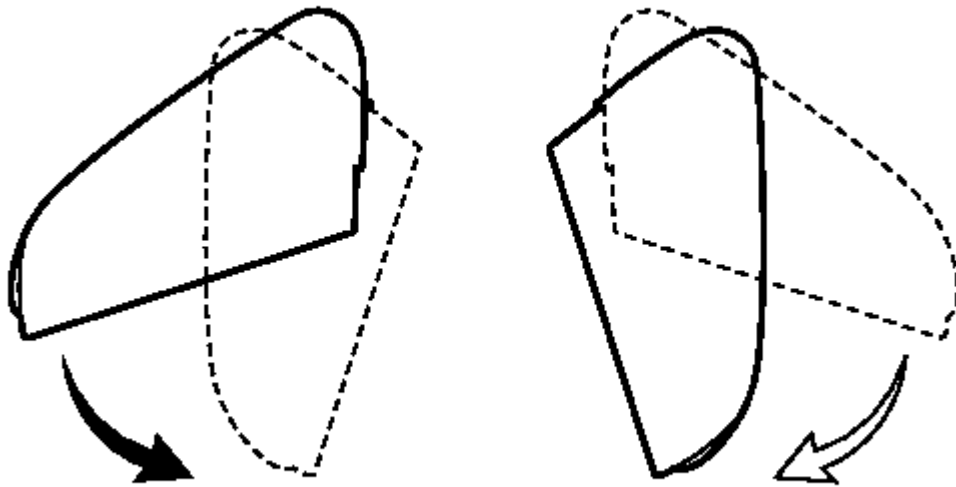


Fig. 8: Checking Power Retractable Mirror Function (2 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

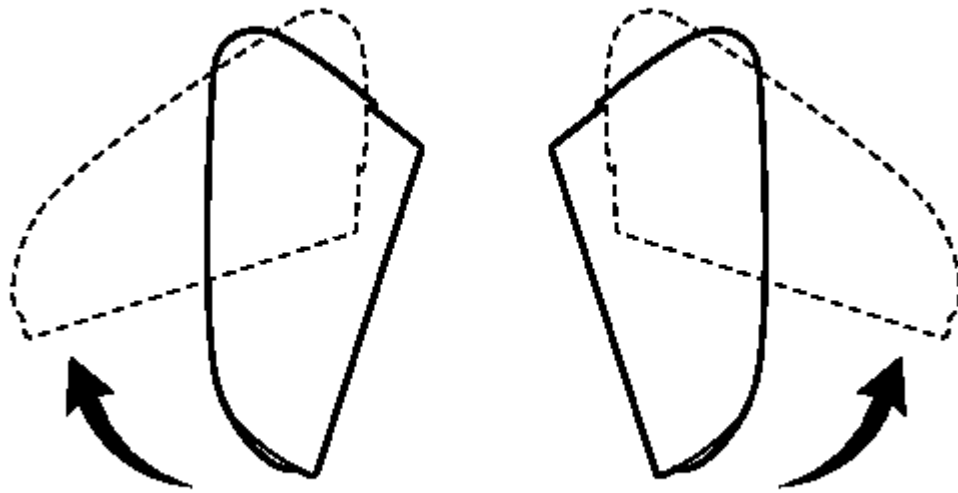
5. Move one of the outer rear view mirrors to the forward position by hand.
6. Turn the outer mirror retract switch to the retract position.
7. Check that the outer rear view mirror in the forward position moves to the retracted position, and check that the other mirror moves to the retracted position.
8. Move the outer rear view mirrors to driving position.



H

Fig. 9: Checking Power Retractable Mirror Function (3 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

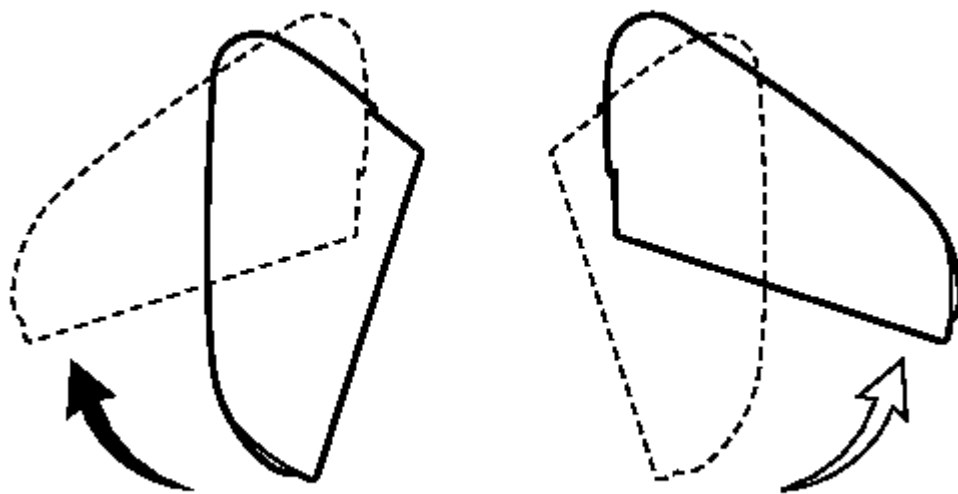
9. Move one of the outer rear view mirrors to the retracted position by hand.
10. Turn the outer mirror retract switch to the retract position.
11. Check that the outer rear view mirror in the driving position moves to the retracted position.
12. Move the mirrors to the retracted position.



H

Fig. 10: Checking Power Retractable Mirror Function (4 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

13. Turn the outer mirror retract switch to the driving position.
14. Check that the right and left mirrors move from the retracted position to the driving position.
15. Move the mirrors to the retracted position.



H

Fig. 11: Checking Power Retractable Mirror Function (5 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

16. Move one of the outer rear view mirrors to the driving position by hand.
17. Turn the outer mirror retract switch to the driving position.
18. Check that the retracted outer rear view mirror moves to the driving position.
- c. Check the operation of the outer rear view mirror according to retract switch operations and engine switch condition.
 1. When the outer rear view mirror is operating, turn the engine switch off and check that the mirror operation stops immediately.
 2. This time, turn the engine switch on (ACC) and press the retract switch. Check that the outer rear view mirror operates in the opposite direction.
- d. Check the operation of the outer rear view mirror when it is blocked by an obstacle.
 1. When the outer rear view mirror is moving to the retracted or driving position, block the outer rear view mirror by hand. Check that the mirror stops moving.
 2. With the outer rear view mirror stopped partway, push the retract switch. Check that the outer rear view mirror moves in the opposite direction.

5. CHECK REVERSE SHIFT-LINKED OPERATION OF MIRRORS

- a. Turn the engine switch on (IG).

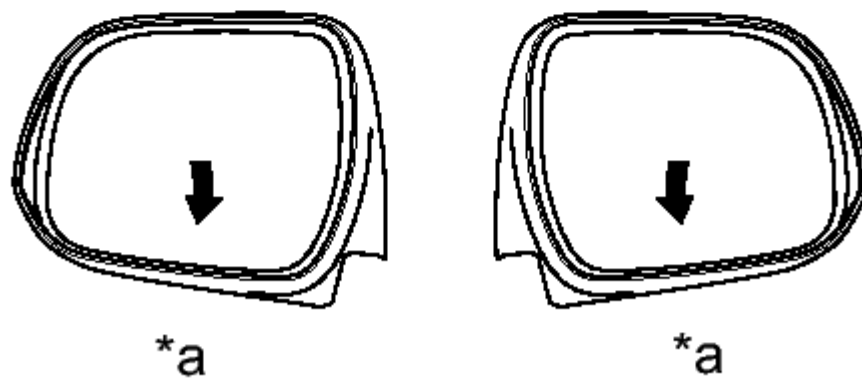
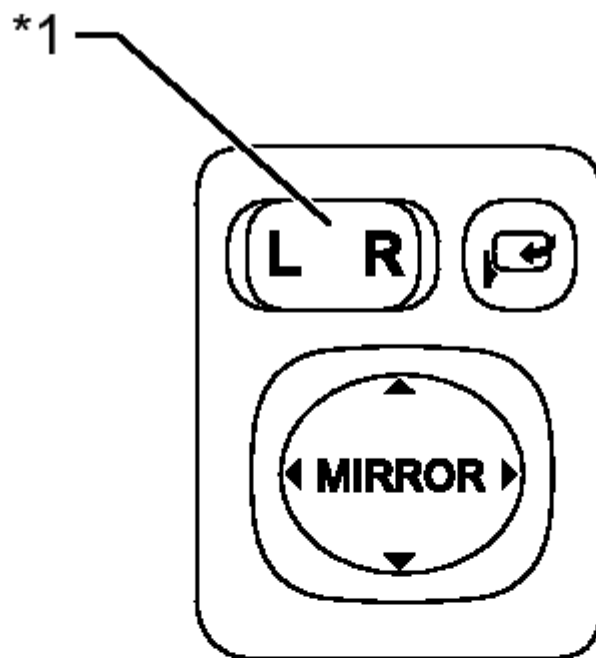


Fig. 12: Checking Reverse Shift-Linked Operation Of Mirrors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Set the mirror select switch to L or R.

TEXT IN ILLUSTRATION

*1	Mirror Select Switch
*a	Downward

- c. Check that the mirror surface turns downward when the shift lever is moved to R.
- d. Check that the mirror surface position returns to the original position when one of the following conditions is met:
 - Shift lever is moved to any position other than R.
 - Mirror select switch is in the neutral position (off).
 - Engine switch is turned off.

6. CHECK MEMORY CALL FUNCTION

- a. Automatic memory call function check
 - 1. With a transmitter key recognition code registered:

Perform a wireless door unlock operation and check that opening the driver side door causes the following:

- The buzzer sounds for 0.1 seconds.
- The front seat and outer mirror surface position automatically move to stored positions.

HINT:

- The registered transmitter key recognition code is recalled automatically.
- If the automatic memory call function is not operated, the buzzer will not sound.
- b. With the engine switch off and the driver side door closed, press and hold the M1 or M2 switch while carrying the transmitter key. The main body ECU will enter transmitter key recognition code registration mode to allow a key to be linked to mirror surface memory position.

HINT:

If the memory switch is released before entering registration mode, the memory switch will not enter registration mode.

- c. When the manual door lock switch is pressed, check that the buzzer of the position control ECU and switch assembly sounds once (0.5 seconds).
- d. With the engine switch off and the driver side door closed, press and hold the SET switch while carrying the transmitter key. The main body ECU will enter transmitter key recognition code deletion mode.

HINT:

If the memory switch is released before entering deletion mode, the memory switch will not enter

deletion mode.

- e. When the manual door lock switch is pressed, check that the buzzer of the position control ECU and switch assembly sounds twice (0.1 seconds each time).

7. EMERGENCY STOP FUNCTION

- a. While a memory call function is operating, check that any one of the following actions will stop the memory call operation: 1) pressing the SET, M1 or M2 switch, 2) moving the shift lever to R, 3) moving the mirror surface manually, or 4) moving the mirror surface to the uppermost, lowermost, leftmost or rightmost position.

8. CHECK MIRROR HEATER

- a. Turn the engine switch on (IG).
- b. Check that pressing the rear window defogger switch illuminates the indicator and warms the mirror surface.
- c. Check that after approximately 15 minutes, the indicator light turns off and the mirror heater deactivates.

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

POWER MIRROR CONTROL SYSTEM

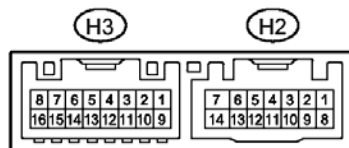
Symptom	Suspected Area	See
Driver Side Power Mirror cannot be adjusted with Power Mirror Switch	Proceed to Driver Side Power Mirror cannot be adjusted with Power Mirror Switch	Refer to <u>Driver Side Power Mirror cannot be Adjusted with Power Mirror Switch</u>
Front Passenger Side Power Mirror cannot be adjusted with Power Mirror Switch	Proceed to Front Passenger Side Power Mirror cannot be adjusted with Power Mirror Switch	Refer to <u>Front Passenger Side Power Mirror cannot be Adjusted with Power Mirror Switch</u>
Power Mirror cannot be adjusted with Power Mirror Switch	Proceed to Power Mirror cannot be adjusted with Power Mirror Switch	Refer to <u>Power Mirror cannot be Adjusted with Power Mirror Switch</u>
Mirror Heater does not operate with Rear Defogger Switch	Proceed to Mirror Heater does not operate with Rear Defogger Switch	Refer to <u>Mirror Heater does not Operate with Rear Defogger Switch</u>
Power Retract Mirrors do not operate with Power Retract	Proceed to Power Retract Mirrors do not operate with	Refer to <u>Power Retractable Mirrors do not Operate with Power Retract</u>

Mirror Switch	Power Retract Mirror Switch	<u>Mirror Switch</u>
Power Mirror Surface Position is not memorized (The registration operation that does not use the wireless or smart key is not functioning)	Proceed to Power Mirror Surface Position is not memorized	Refer to <u>Power Mirror Surface Position is not Memorized</u>
Power Mirrors do not return to memorized position (The recall operation that does not use the wireless or smart key is not functioning)	Proceed to Power Mirrors do not return to memorized position	Refer to <u>Power Mirrors do not Return to Memorized Position</u>
Reverse Shift-linked Function of Power Mirrors does not operate	Proceed to Reverse Shift-linked Function of Power Mirrors does not operate	Refer to <u>Reverse Shift-linked Function of Power Mirrors does not Operate</u>
Wireless Transmitter Memory Function does not operate (The registration operation that does not use the wireless or smart key is not functioning)	Proceed to Wireless Transmitter Memory Function does not operate	Refer to <u>Wireless Transmitter Memory Function does not Operate</u>
Wireless-linked Return Function does not operate (The recall operation that does not use the wireless or smart key is not functioning)	Proceed to Wireless-linked Return Function does not operate	Refer to <u>Wireless-linked Return Function does not Operate</u>
Automatic glare-resistant EC mirror does not operate	Inner rear view mirror	Refer to <u>INSPECTION</u>
	Outer rear view mirror assembly LH	Refer to <u>INSPECTION - Step 3</u>
	Outer rear view mirror assembly RH	Refer to <u>INSPECTION - Step 4</u>

TERMINALS OF ECU

TERMINALS OF ECU

1. CHECK OUTER MIRROR CONTROL ECU ASSEMBLY (DRIVER SIDE)



H

Fig. 13: Outer Mirror Control ECU Assembly (Driver Side) Connector Terminal Identification
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Disconnect the H2 outer mirror control ECU assembly (driver side) connector.
- b. Measure the voltage according to the value(s) in the table below.

HINT:

Measure the values on the wire harness side with the connector disconnected.

STANDARD VOLTAGE

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
H2-5 (SIG) - Body ground	L - Body ground	Ignition power supply	Engine switch off --> on (IG)	0 V --> 11 to 14 V
H2-6 (CPUB) - Body ground	LG - Body ground	+B power supply	Always	11 to 14 V
H2-14 (BDR) - Body ground	V - Body ground	+B power supply	Always	11 to 14 V

If the result is not as specified, there may be a malfunction on the wire harness side.

- c. Measure the resistance according to the value(s) in the table below.

HINT:

Measure the values on the wire harness side with the connector disconnected.

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
H2-7 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

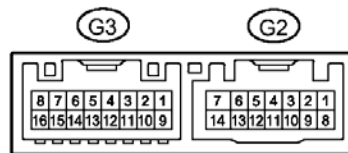
- d. Reconnect the H2 outer mirror control ECU assembly (driver side) connector.
- e. Measure the voltage according to the value(s) in the table below.

STANDARD VOLTAGE

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
H3-1 (LMVR) - H3-9 (LMHR)	LG - P	Vertical mirror motor drive voltage	LH mirror surface moving upward --> stopped	11 to 14 V --> 0 V
H3-10 (LM+R) - H3-1 (LMVR)	R - LG	Vertical mirror motor drive voltage	LH mirror surface moving downward --> stopped	11 to 14 V --> 0 V
H3-10 (LM+R) - H3-9 (LMHR)	R - P	Horizontal mirror motor drive voltage	LH mirror surface moving right --> stopped	11 to 14 V --> 0 V
H3-9 (LMHR) - H3-1 (LMVR)	P - LG	Horizontal mirror motor drive voltage	LH mirror surface moving left --> stopped	11 to 14 V --> 0 V
H3-3 (MR+) - Body ground	B - Body ground	Power retract mirror motor drive voltage	Outer rear view mirror LH being retracted -> stopped	11 to 14 V --> 0 V
H3-11 (MR-) - Body ground	W - Body ground	Power retract mirror motor drive voltage	Outer rear view mirror LH returning -> stopped	11 to 14 V --> 0 V
H3-5 (LVC) - H3-14 (LE1)	Y - GR	Mirror position sensor power supply	Engine switch on (IG)	4.55 to 5.45 V
H3- 6 (VSSR) - H3-14 (LE1)	G - GR	Mirror position sensor signal	Engine switch on (IG)	0.96 to 4.04 V
H3- 13		Mirror	Engine	

(HSSR) - H3-14 (LE1)	L - GR	position sensor signal	switch on (IG)	0.96 to 4.04 V
----------------------------	--------	------------------------------	-------------------	-------------------

2. CHECK OUTER MIRROR CONTROL ECU ASSEMBLY (FRONT PASSENGER SIDE)



H

Fig. 14: Outer Mirror Control ECU Assembly (Front Passenger Side) Connector Terminal Identification

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Disconnect the G3 outer mirror control ECU assembly (front passenger side) connector.
- Measure the voltage and resistance according to the value(s) in the table below.

HINT:

Measure the values on the wire harness side with the connector disconnected.

STANDARD VOLTAGE

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
G3-5 (SIG) - Body ground	L - Body ground	Ignition power supply	Engine switch off --> on (IG)	0 V --> 11 to 14 V
G3-6 (CPUB) - Body ground	B - Body ground	+B power supply	Always	11 to 14 V
G3-14 (BDR) - Body ground	R - Body ground	+B power supply	Always	11 to 14 V

If the result is not as specified, there may be a malfunction on the wire harness side.

- Measure the resistance according to the value(s) in the table below.

HINT:

Measure the values on the wire harness side with the connector disconnected.

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
G3-7 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

- d. Reconnect the G3 outer mirror control ECU assembly (front passenger side) connector.
- e. Measure the voltage according to the value(s) in the table below.

STANDARD VOLTAGE

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
G2-1 (RMVR) - G2-9 (RMHR)	LG - P	Vertical mirror motor drive voltage	RH mirror surface moving upward -- > stopped	11 to 14 V --> 0 V
G2-10 (RM+R) - G2-1 (RMVR)	R - LG	Vertical mirror motor drive voltage	RH mirror surface moving downward --> stopped	11 to 14 V --> 0 V
G2-10 (RM+R) - G2-9 (RMHR)	R - P	Horizontal mirror motor drive voltage	RH mirror surface moving right --> stopped	11 to 14 V --> 0 V
G2-9 (RMHR) - G2-1 (RMVR)	P - LG	Horizontal mirror motor drive voltage	RH mirror surface moving left --> stopped	11 to 14 V --> 0 V
G2-3 (MR+) -	B - Body	Power retract mirror	Outer rear view mirror RH	11 to 14 V

Body ground	ground	motor drive voltage	being retracted -> stopped	--> 0 V
G2-11 (MR-) - Body ground	W - Body ground	Power retract mirror motor drive voltage	Outer rear view mirror RH returning -> stopped	11 to 14 V --> 0 V
G2-5 (RVC) - G2-14 (RE1)	Y - GR	Mirror position sensor power supply	Engine switch on (IG)	4.55 to 5.45 V
G2- 6 (VSSR) - G2-14 (RE1)	G - GR	Mirror position sensor signal	Engine switch on (IG)	0.96 to 4.04 V
G2- 13 (HSSR) - G2-14 (RE1)	L - GR	Mirror position sensor signal	Engine switch on (IG)	0.96 to 4.04 V

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. DESCRIPTION

- Data of the system can be read from the Data Link Connector 3 (DLC3) of the vehicle. Therefore, when the system seems to be malfunctioning, use Techstream to check for a malfunction and repair it.

2. CHECK DLC3

- Check the DLC3. Refer to **GENERAL INFORMATION** .

3. INSPECT BATTERY VOLTAGE

- Measure the battery voltage.

Standard voltage

11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

DTC CHECK / CLEAR

DTC CHECK / CLEAR

1. CHECK DTC

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Mirror L or Mirror R / Trouble Codes.
- e. Check for DTCs.

2. CLEAR DTC

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Mirror L or Mirror R / Trouble Codes.
- e. Clear the DTCs.

DATA LIST / ACTIVE TEST

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTE: In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Mirror L or Mirror R / Data List.
- e. Read the Data List according to the display on the Techstream.

MIRROR L / MIRROR R

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Seat Memory	Seat memory switch M1 signal/ON or	ON: Seat memory switch M1 on OFF: Seat	-

Switch1	OFF	memory switch M1 off	
Seat Memory Switch2	Seat memory switch M2 signal/ON or OFF	ON: Seat memory switch M2 on OFF: Seat memory switch M2 off	-
Seat Memory Switch3	Seat memory switch M3 signal/ON or OFF	ON: Seat memory switch M3 on OFF: Seat memory switch M3 off	-
Seat Memory Set SW	Seat memory switch SET signal/ON or OFF	ON: Seat memory switch SET on OFF: Seat memory switch SET off	-
Mirror Memory No. 1	Mirror position memorized in memory switch M1/OFF or ON	ON: Memorized OFF: Not memorized	-
Mirror Memory No. 2	Mirror position memorized in memory switch M2/OFF or ON	ON: Memorized OFF: Not memorized	-
Mirror Memory No. 3	Mirror position memorized in memory switch M3/OFF or ON	ON: Memorized OFF: Not memorized	-
Mirror Vertical Sensor Vol	Vertical mirror position/MIN: 0, MAX 4.98 V	Within range from 0 to 4.98 V	-
	Horizontal		

Mirror Horizontal Sensor Vol	mirror position/MIN: 0, MAX 4.98 V	Within range from 0 to 4.98 V	-
+B Voltage Input Value	Power supply for Outer mirror control ECU assembly/MIN: 0 V, MAX. 19.98 V	Within range from 11 to 14 V	-
# Codes	Number of DTC recorded/MIN.:0, MAX. :255	Number of DTCs displayed	-

- f. Enter the following menus: Body Electrical / Master Switch / Data List.
- g. Read the Data List according to the display on the Techstream.

MASTER SWITCH

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Door Lock Switch Status	Door lock switch Status/ON or OFF	ON: Door lock switch on OFF: Door lock switch status off	-
Door unlock Switch Status	Door unlock switch status/ON or OFF	ON: Door unlock switch on OFF: Door unlock switch off	-

- h. Enter the following menus: Body Electrical / Main Body / Data List.
- i. Read the Data List according to the display on the Techstream.

MAIN BODY

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	Front door courtesy light	ON: Driver door open	

FL Door Courtesy	switch LH signal/ON or OFF	OFF: Driver door closed	-
Mirror Selection SW (R)	Mirror selection switch signal for RH mirror / ON or OFF	ON: Switch in R position OFF: Switch off or in L position	-
Mirror Selection SW (L)	Mirror select switch signal for LH mirror / ON or OFF	ON: Switch in L position OFF: Switch off or in R position	-
Mirror Position SW (R)	Mirror position switch signal (Right) / ON or OFF	ON: Switch R on OFF: Any switch except R is on or all switches off	Check with the mirror select switch in the L or R position
Mirror Position SW (L)	Mirror position switch signal (Left) / ON or OFF	ON: Switch L on OFF: Any switch except L is on or all switches OFF	Check with the mirror select switch in the L or R position
Mirror Position SW (Up)	Mirror position switch signal (Up) / ON or OFF	ON: Switch UP on OFF: Any switch except UP is on or all switches off	Check with the mirror select switch in the L or R position
		ON: Switch	

Mirror Position SW (Dwn)	Mirror position switch signal (Down) / ON or OFF	DOWN on OFF: Any switch except DOWN is on or all switches off	Check with the mirror select switch in the L or R position
Outer Mirror Fold SW	Mirror retract switch signal / ON or OFF	ON: Retract switch in retract position OFF: Retract switch in driving position	-
Mem SW No. w/KeyID1	Switch linked with key ID1 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID1 MEM SW1: M1 linked with key ID1 MEM SW2: M2 linked with key ID1 MEM SW3: Related switch does not exist	-
		NONE: No switches linked with key ID2	

Mem SW No. w/KeyID2	Switch linked with key ID2 / NONE, MEM SW1, MEM SW2, or MEM SW3	MEM SW1: M1 linked with key ID2 MEM SW2: M2 linked with key ID2 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID3	Switch linked with key ID3 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID3 MEM SW1: M1 linked with key ID3 MEM SW2: M2 linked with key ID3 MEM SW3: Related switch does not exist	-
	Switch linked with key ID4 /	NONE: No switches linked with key ID4 MEM SW1: M1 linked with key	

Mem SW No. w/KeyID4	NONE, MEM SW1, MEM SW2, or MEM SW3	ID4 MEM SW2: M2 linked with key ID4 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID5	Switch linked with key ID5 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID5 MEM SW1: M1 linked with key ID5 MEM SW2: M2 linked with key ID5 MEM SW3: Related switch does not exist	-
Mem SW No. w/KeyID6	Switch linked with key ID6 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID6 MEM SW1: M1 linked with key ID6 MEM SW2: M2 linked	-

		with key ID6 MEM SW3: Related switch does not exist	
Mem SW No. w/KeyID7	Switch linked with key ID7 / NONE, MEM SW1, MEM SW2, or MEM SW3	NONE: No switches linked with key ID7 MEM SW1: M1 linked with key ID7 MEM SW2: M2 linked with key ID7 MEM SW3: Related switch does not exist	-

2. ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Mirror L or Mirror R / Active Test.
- Perform the Active Test according to the display on the Techstream.

MIRROR L / MIRROR R

Tester Display	Test Part	Control Range	Diagnostic Note
Foot Light	Foot light illumination operation	ON / OFF	-
Mirror Up/Down	Mirror vertical operation	Up / Down	-
Mirror Right/Left	Mirror horizontal operation	Right / Left	-
Mirror Fold/Return	Mirror retract operation	Fold / Return	-

- f. Enter the following menus: Body Electrical / Main Body / Active Test.
- g. Perform the Active Test according to the display on the Techstream.

DRIVER SEAT

Tester Display	Test Part	Control Range	Diagnostic Note
Buzzer	Buzzer built into the position control ECU and switch	ON/OFF	-

DIAGNOSTIC TROUBLE CODE CHART**DIAGNOSTIC TROUBLE CODE CHART****HINT:**

If a trouble code is output during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the appropriate information below.

DTC Code	Detection Item	Trouble Area	See
U0142	Lost Communication with Main Body ECU	CAN communication system	Refer to <u>DTC U0142: Lost Communication with Main Body ECU</u>

ACCESSORIES & EQUIPMENT

Power Mirror Control (w/o Memory) (Diagnostics & Symptom Tests) - Sienna

POWER MIRROR CONTROL SYSTEM (W/O MEMORY)

PRECAUTION

PRECAUTION

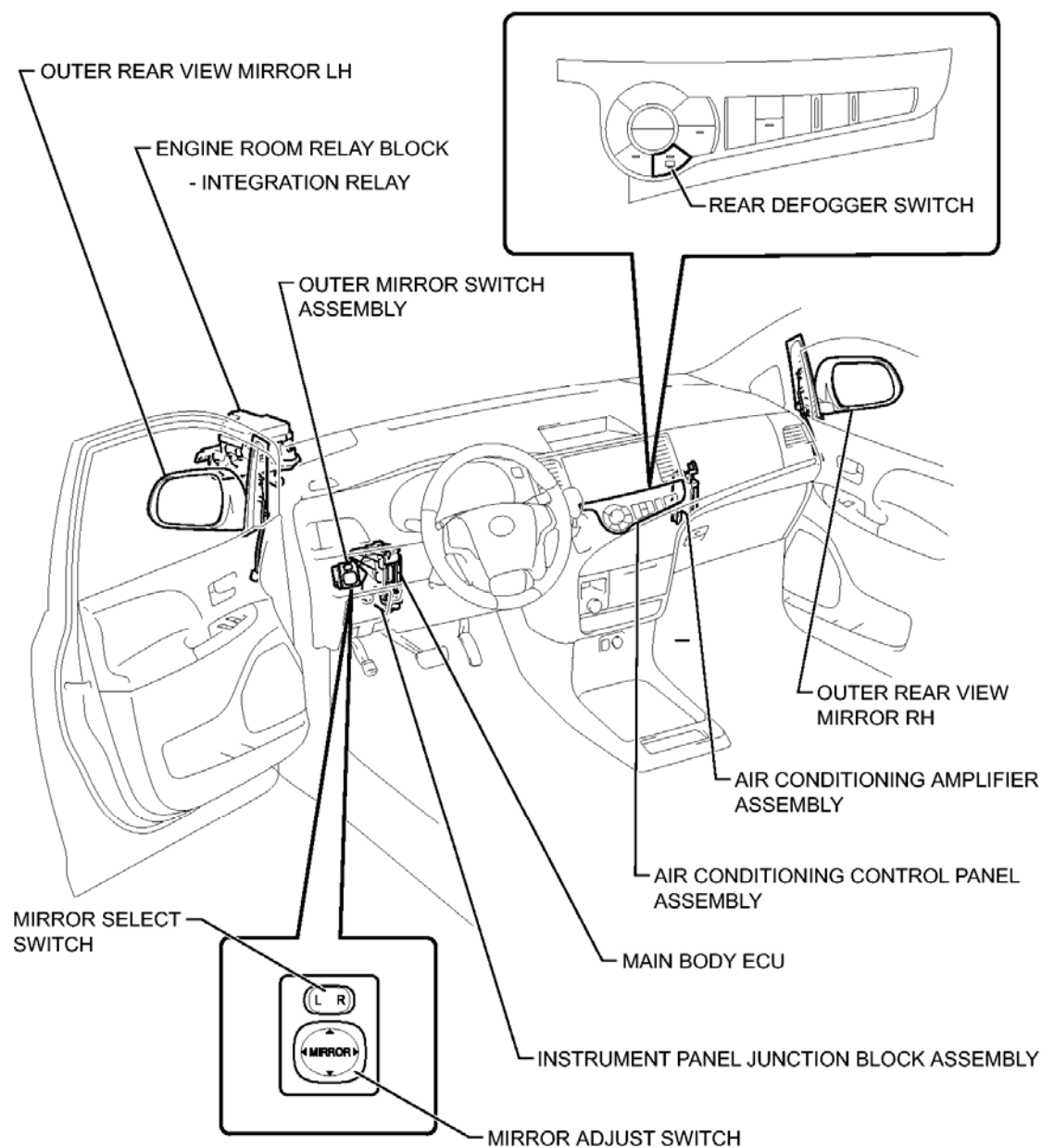
1. IGNITION SWITCH EXPRESSIONS

- a. The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this information.

Expression	Ignition Switch (Position)	Engine Switch (Condition)
Ignition switch off	LOCK	Off
Ignition switch ACC	ACC	On (ACC)
Ignition switch ON	ON	On (IG)
Engine start	START	Start

PARTS LOCATION

ILLUSTRATION



P

Fig. 1: Power Mirror Control System Components Location
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

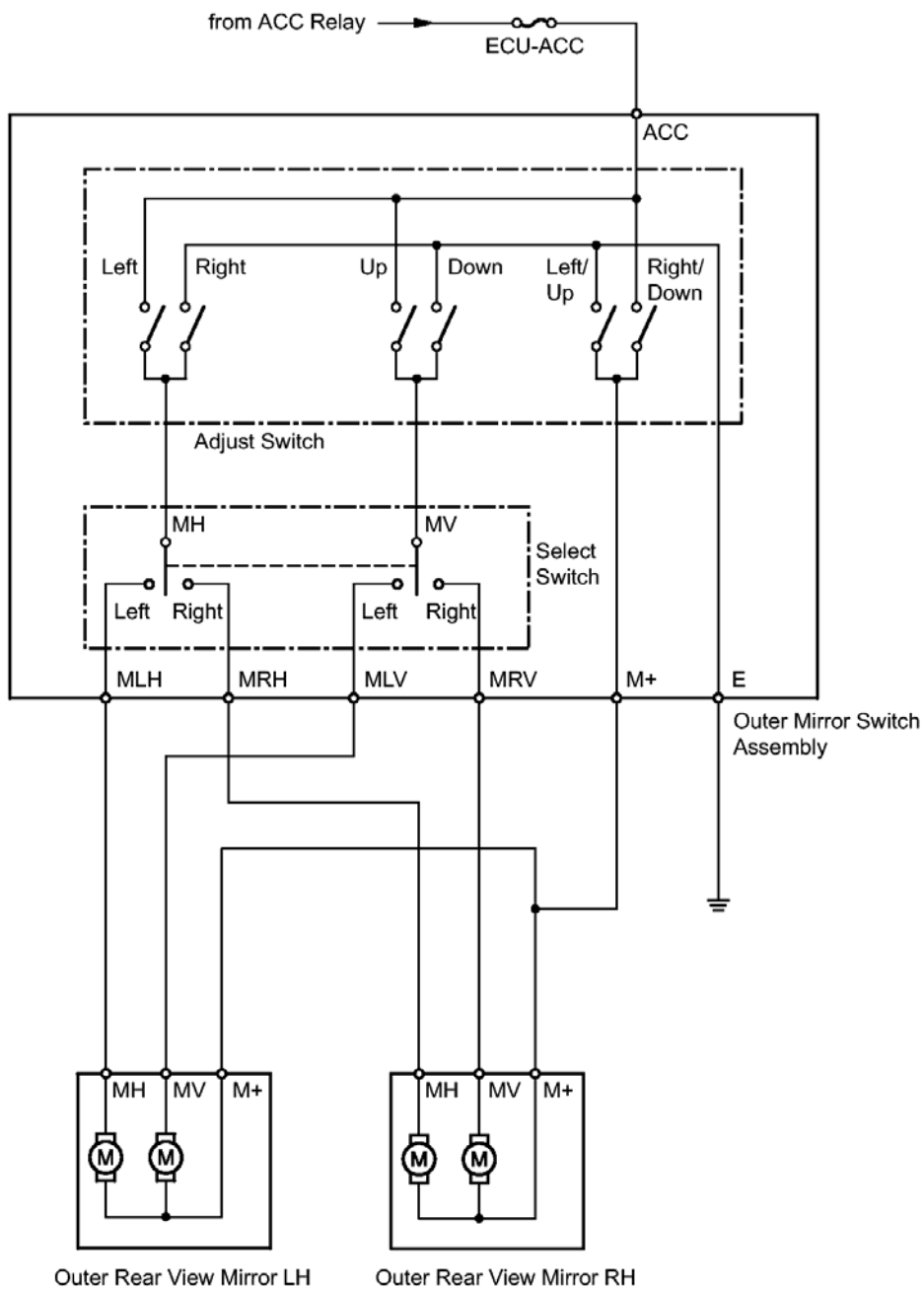


Fig. 2: Power Mirror Control System Diagram (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

w/ Mirror Heater:

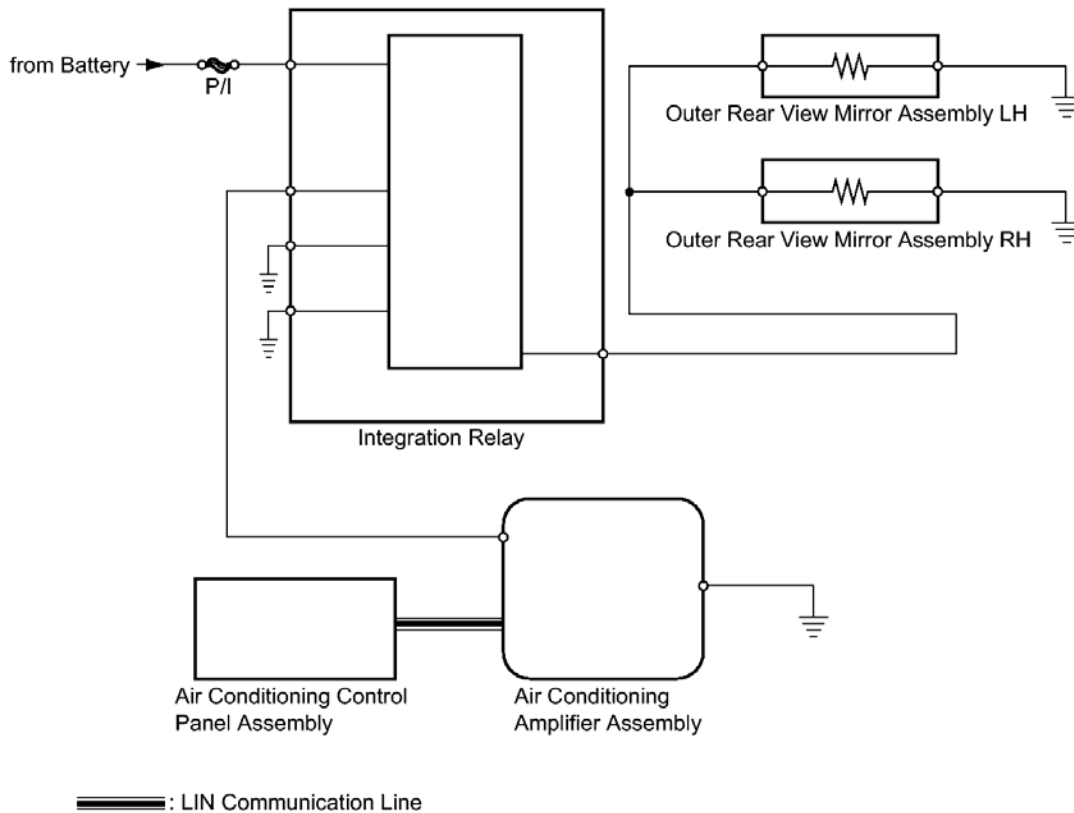


Fig. 3: Power Mirror Control System Diagram (w/ Mirror Heater) (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMMUNICATION TABLE

Sender	Receiver	Signal / Signal Condition	Line
Air Conditioning Control Panel Assembly	Air Conditioning Amplifier Assembly	Rear defogger Switch Signal	LIN

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. FUNCTION OF MAIN COMPONENTS

Component	Function
Vertical mirror	Moves the mirror surface vertically in accordance with the vertical mirror

motor	motor outer mirror switch assembly operation.
Horizontal mirror motor	Moves the mirror surface horizontally in accordance with the horizontal mirror motor outer mirror switch assembly operation.
Mirror heater*1	When the rear defogger switch on the air conditioning control panel assembly is operated, the A/C amplifier detects the switch operation via LIN communication. The A/C amplifier operates the integration relay and mirror heater in accordance with the switch operation.
Mirror select switch	Consists of R and L switches. One must be chosen to operate the outer mirror switch assembly.
	After selecting the R or L

Mirror adjust switch	switch, the right, left, up and down control switches can be operated to change the angle of the mirror.
----------------------------	--

*1: w/ Mirror heater

2. SYSTEM OPERATION

- a. The remote control mirror has the following features:

Function	Outline
Electrical remote control mirror function	When the outer mirror switch assembly is operated, this function moves the mirror surface vertically or horizontally to enable the driver to attain an optimal mirror angle. Setting the mirror select switch to the R position operates the right mirror, and setting it to the L position operates the left mirror.
	Turns on the mirror heaters when the rear window

Mirror heater function*1	defogger is turned on. The rear window defogger and mirror heaters automatically turn off after 15 min.
--------------------------	---

*1: w/ Mirror heater

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

POWER MIRROR CONTROL SYSTEM

Symptom	Suspected Area	See
Driver Side Power Mirror cannot be Adjusted with Power Mirror Switch	Outer mirror switch	Refer to <u>INSPECTION</u>
	Outer rear view mirror LH	Refer to <u>INSPECTION</u>
Front Passenger Side Power Mirror cannot be Adjusted with Power Mirror Switch	Outer mirror switch	Refer to <u>INSPECTION</u>
	Outer rear view mirror RH	Refer to <u>INSPECTION</u>
Mirror Heater does not operate with Mirror Heater Switch*1	Proceed to Mirror Heater does not operate with Mirror Heater Switch	Refer to <u>Mirror Heater does not Operate with Rear Defogger Switch</u>

*1: w/ Mirror heater

SYMPTOM TESTS

Mirror Heater does not Operate with Rear Defogger Switch

DESCRIPTION

When the rear window defogger switch on the air conditioning control panel assembly is pressed, the operation signal is transmitted to the air conditioning amplifier assembly through a LIN communication line. When the air

conditioning amplifier assembly receives the signal, it turns on the integration relay to operate the mirror heater.

WIRING DIAGRAM

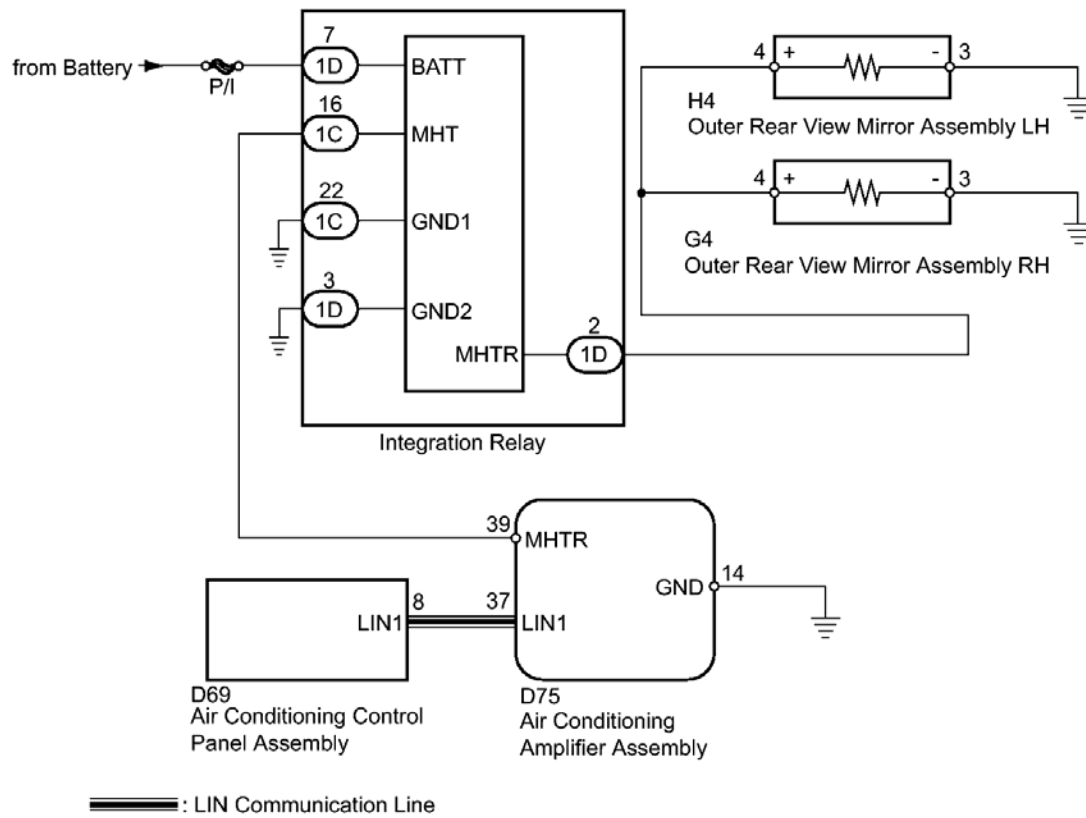


Fig. 4: Mirror Heater Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. CHECK MIRROR HEATER OPERATION

- Check the mirror heater operation. Refer to INSPECTION.

RESULT

Result	Proceed to
Mirror heater	

operation on both mirrors is not normal	A
Mirror heater operation on RH side mirror is not normal	B
Mirror heater operation on LH side mirror is not normal	C

B --> See step 8

C --> See step 10

A: Go to next step

2. CHECK DEFOGGER SYSTEM

- a. Check the rear window defogger operation.

OK

The rear window defogger operated normally.

NG --> See step 12

OK: Go to next step

3. INSPECT INTEGRATION RELAY (POWER SOURCE)

*a

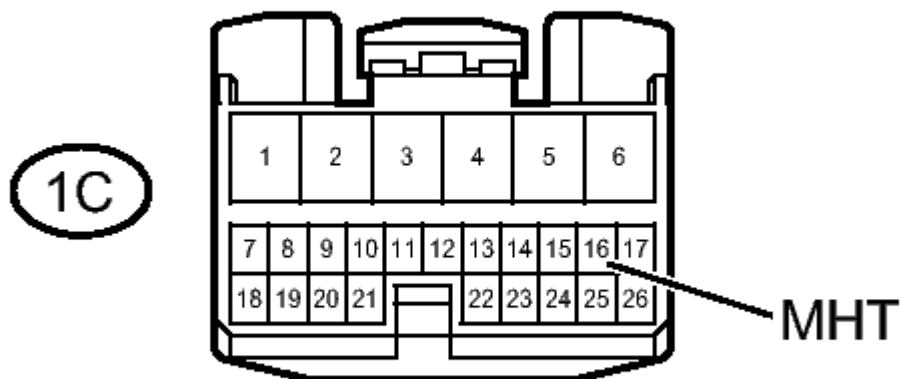


Fig. 5: Inspecting Integration Relay (Power Source)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Remove the integration relay from the engine room relay block.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
1C-16 (MHT) - Body ground	Ignition switch ON Rear window defogger switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Integration Relay)
----	---

NG --> See step 7

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY - BODY GROUND)

- a. Remove the integration relay from the engine room relay block.
- b. Measure the resistance according to the value(s) in the table below

Standard Resistance

Tester Connection	Condition	Specified Condition
1D-3 (GND2) - Body ground	Always	Below 1 ohms
1C-22 (GND1) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY RH - INTEGRATION RELAY)

- a. Disconnect the G4 outer rear view mirror assembly RH connector.
- b. Remove the integration relay from the engine room relay block.
- c. Measure the resistance according to the value(s) in the table below

Standard Resistance

Tester Connection	Condition	Specified Condition
1D-2 (MHTR) - G4-4 (+)	Always	Below 1 ohms
1D-2 (MHTR) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

6. CHECK HARNESS AND CONNECTOR (OUTER REAR VIEW MIRROR ASSEMBLY LH - INTEGRATION RELAY)

- a. Disconnect the H4 outer rear view mirror assembly LH connector.
- b. Remove the integration relay from the engine room relay block.
- c. Measure the resistance according to the value(s) in the table below

Standard Resistance

Tester Connection	Condition	Specified Condition
1D-2 (MHTR) - H4-4 (+)	Always	Below 1 ohms
1D-2 (MHTR) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> REPLACE INTEGRATION RELAY

7. CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY - AIR CONDITIONING AMPLIFIER ASSEMBLY)

- a. Remove the integration relay from the engine room relay block.
- b. Disconnect the D75 air conditioning amplifier assembly connector.
- c. Measure the resistance according to the value(s) in the table below

Standard Resistance

Tester Connection	Condition	Specified Condition
1C-16 (MHT) - D75-39 (MHTR)	Always	Below 1 ohms
1C-16 (MHT) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 13

8. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY RH (POWER SOURCE)

*a

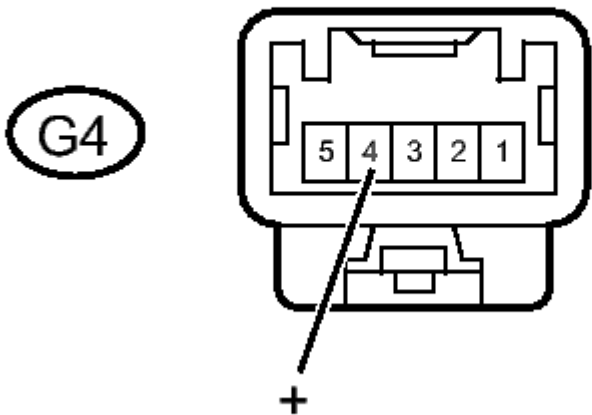


Fig. 6: Inspecting Outer Rear View Mirror Assembly RH (Power Source)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Disconnect the G4 outer rear view mirror assembly RH connector.
- b. Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
G4-4 (+) - Body ground	Ignition switch ON Rear window defogger switch ON	11 to 14 V

TEXT IN ILLUSTRATION

Front view of

	wire
	harness
	connector
	(to Outer
*a	Rear
	View
	Mirror
	Assembly
	RH)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR (OUTER REAR VIEW MIRROR RH - INTEGRATION RELAY)

OK: Go to next step

9. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY RH

*a

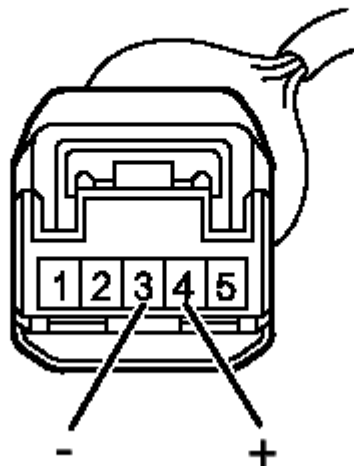


Fig. 7: Outer Rear View Mirror Assembly Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Disconnect the G4 outer rear view mirror assembly RH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
----------------------	-----------	------------------------

4 (+) - 3 (-)	25°C (77°F)	7.6 to 11.4 ohms
---------------	-------------	------------------

TEXT IN ILLUSTRATION

Component without harness connected
*a (Outer Rear View Mirror Assembly RH)

NG --> See step 14

OK --> REPAIR OR REPLACE HARNESS OR CONNECTOR (OUTER REAR VIEW MIRROR RH - BODY GROUND)

10. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY LH (POWER SOURCE)

*a

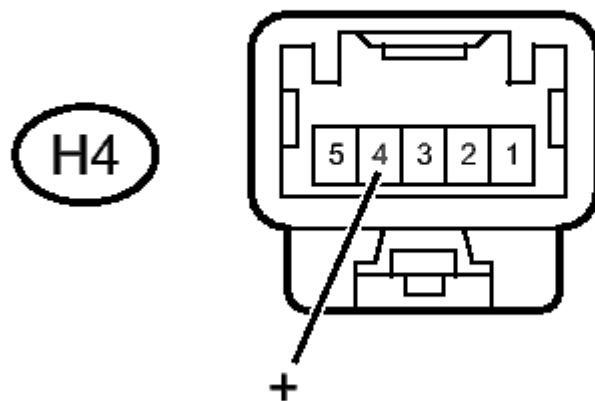


Fig. 8: Inspecting Outer Rear View Mirror Assembly LH (Power Source)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Disconnect the H4 outer rear view mirror assembly LH connector.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
H4-4 (+) - Body ground	Ignition switch ON Rear window defogger switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Outer Rear View Mirror Assembly LH)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR (OUTER REAR VIEW MIRROR LH - INTEGRATION RELAY)

OK: Go to next step

11. INSPECT OUTER REAR VIEW MIRROR ASSEMBLY LH

*a

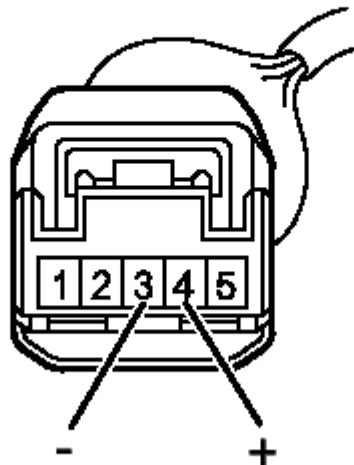


Fig. 9: Outer Rear View Mirror Assembly Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Disconnect the H4 outer rear view mirror assembly LH connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
4 (+) - 3 (-)	25°C (77°F)	7.6 to 11.4 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Outer Rear View Mirror Assembly LH)
----	--

NG --> See step 15

OK --> REPAIR OR REPLACE HARNESS OR CONNECTOR (OUTER REAR VIEW MIRROR LH - BODY GROUND)

12. **GO TO WINDOW DEFOGGER SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
13. **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY. Refer to REMOVAL**
14. **REPLACE OUTER REAR VIEW MIRROR ASSEMBLY RH (FRONT PASSENGER SIDE). Refer to REMOVAL**
15. **REPLACE OUTER REAR VIEW MIRROR ASSEMBLY LH (DRIVER SIDE). Refer to REMOVAL**