GROUP 42

BODY

CONTENTS

Continued on next page

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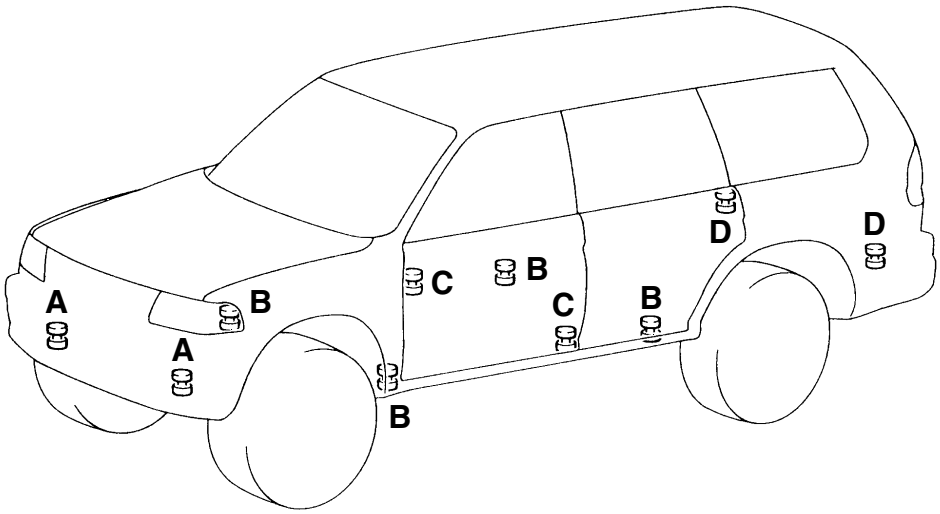
BODY MOUNTING

REMOVAL AND INSTALLATION

M1421003700069



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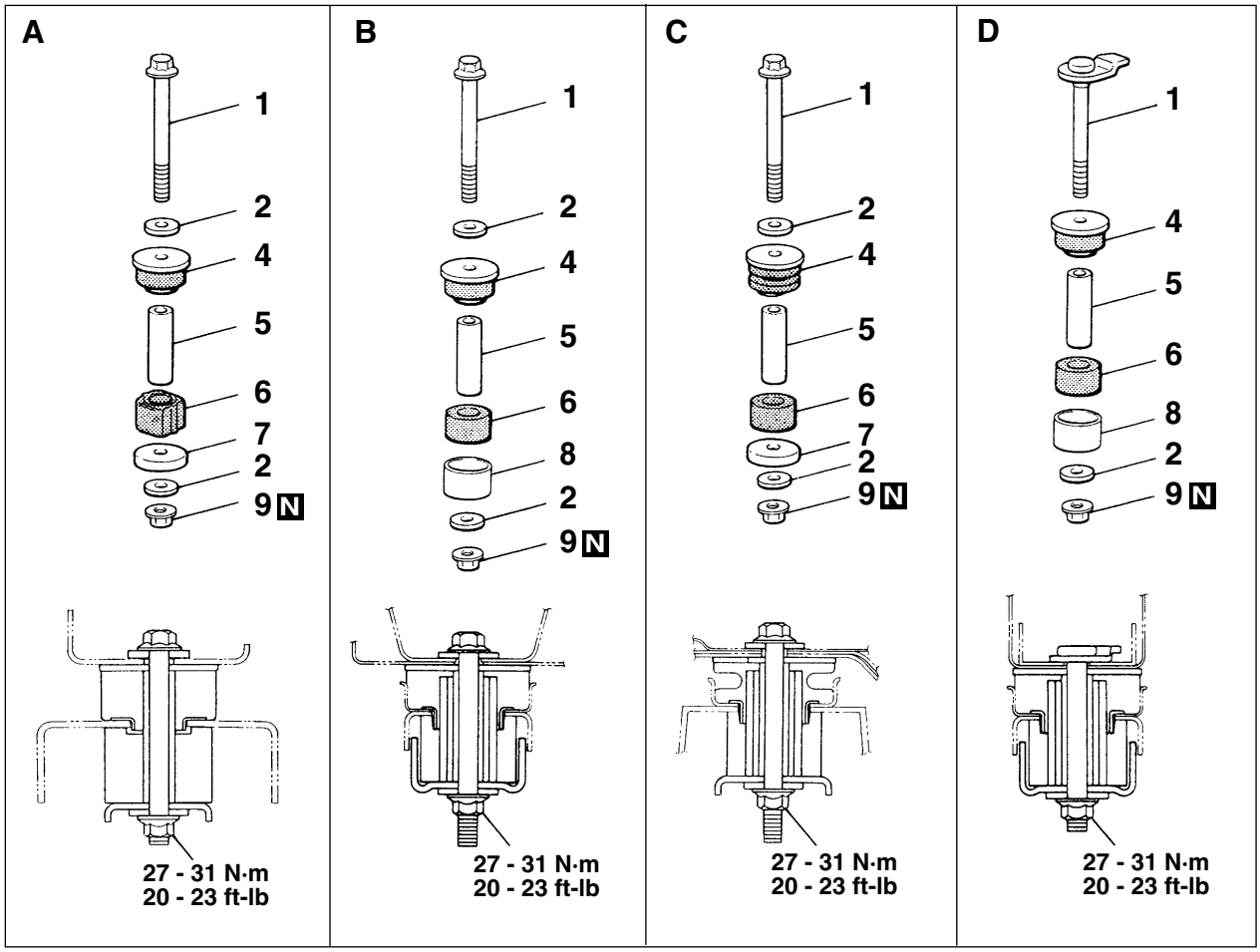

1. MOUNTING BOLT
2. PLAIN WASHER
3. BODY MOUNTING RUBBER
4. BODY MOUNTING RUBBER A
5. SPACER
6. BODY MOUNTING RUBBER B
7. BODY MOUNT WASHER
8. BODY MOUNT STOPPER
9. SELF JAM NUT

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HOOD

BODY DIAGNOSIS

INTRODUCTION TO HOOD DIAGNOSIS

M1421005800299

Wind noise at the hood may be caused by improper hood adjustment.

HOOD DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1421005900263

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a hood fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

SYMPTOM CHART

M1421006000241

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Difficult locking and unlocking	1	P.42-5
Uneven body clearance	2	P.42-6
Uneven height	3	P.42-6

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Difficult Locking and Unlocking

DIAGNOSIS

STEP 1. Check the release cable routing condition.

Q: Is the release cable routing condition good?
YES : Go to Step 2.
NO : Repair release cable, then go to Step 4.

STEP 2. Check the engagement of the hood latch and hood striker.

Q: Are the hood latch and hood striker engaged correctly?
YES : Go to Step 3.
NO : Adjust hoodlatch and hood striker. Refer to P.42-7. Then go to Step 4.

STEP 3. Check for proper lubrication of release cable.

Q: Is the release cable properly lubricated?
YES : Go to Step 4.
NO : Lubricate, then go to Step 4.

STEP 4. Retest the system.

Q: Does the hood lock operate easily?
YES : The procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 2: Uneven Body Clearance

DIAGNOSIS

STEP 1. Check the hood installation condition.

Q: Is the hood installation in good condition?
YES : Go to Step 2.
NO : Adjust hood latch and hood striker. Refer to P.42-7. Then go to Step 2.

STEP 2. Retest the system.

Q: Is the clearance with the body even?
YES : The procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 3 : Uneven Height

DIAGNOSIS

STEP 1. Check the hood bumper height.

Q: Is the hood bumper height proper?
YES : Go to Step 2.
NO : Adjust hood bumper height. Refer to P.42-7. Then go to Step2.

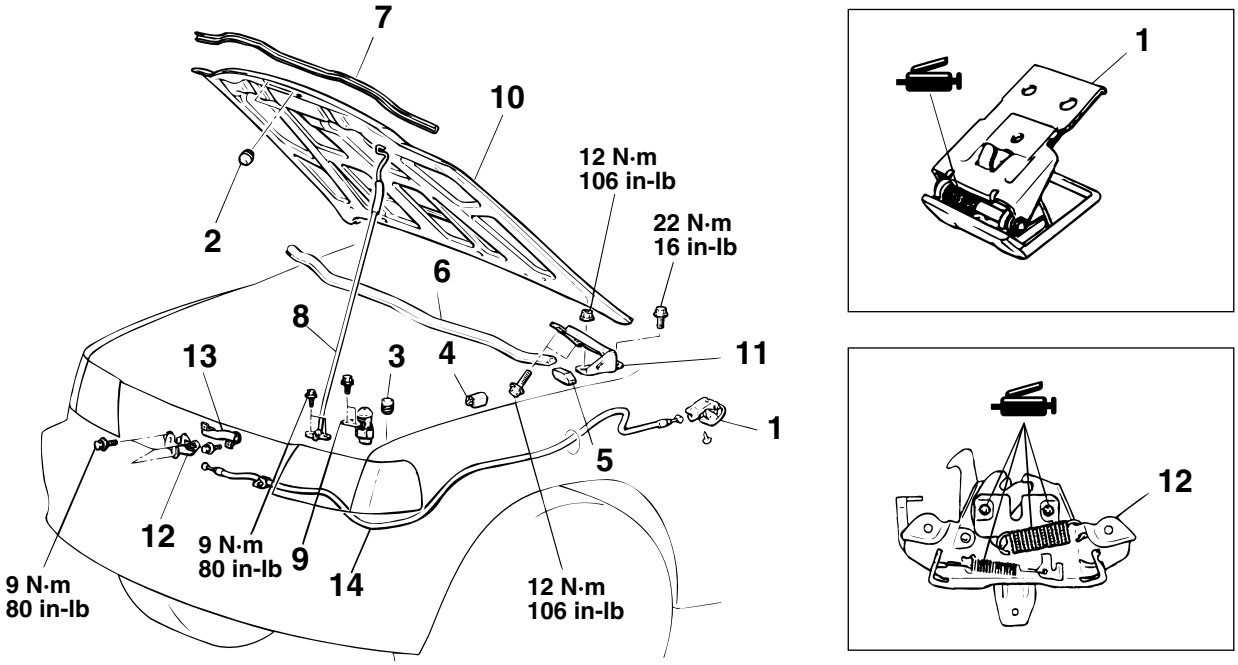
STEP 2. Retest the system.

Q: Are the hood and body height even?
YES : The procedure is complete.
NO : Return to Step 1.

HOOD

REMOVAL AND INSTALLATION

M1421001600185



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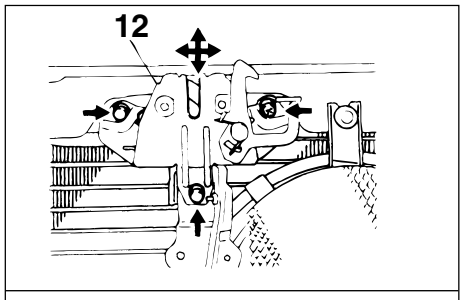
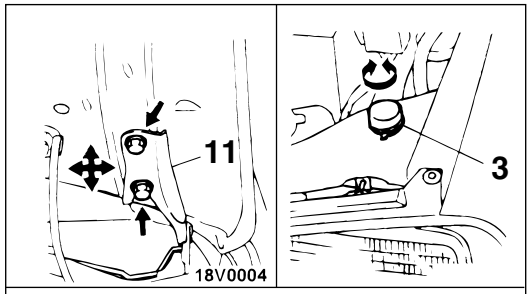


ADJUSTMENT OF HOOD STEP AND HOOD STRIKER LINKAGE



ADJUSTMENT OF CLEARANCE AND HIGHT AROUND HOOD

1. HOOD LOCK RELEASE HANDLE
2. HOOD BUMPER
3. HOOD BUMPER
4. HOOD DAMPER
5. HOOD SIDE WEATHERSTRIP
6. HOOD WEATHERSTRIP
7. FRONT HOOD WEATHERSTRIP
8. HOOD SUPPORT ROD
9. HOOD SWITCH <VEHICLES WITH THEFT-ALARM SYSTEM>

HOOD AND HOOD HINGE REMOVAL STEPS

- WASHER HOSE CONNECTION

10. HOOD

HOOD AND HOOD HINGE REMOVAL STEPS (Continued)

- FRONT DECK GARNISH (REFER TO GROUP 51, WINDSHIELD WIPER AND WASHER P.51-16.)

11. HOOD HINGE

HOOD LATCH AND HOOD LOCK RELEASE CABLE REMOVAL STEPS

- RADIATOR GRILL

12. HOOD LATCH
13. CABLE PROTECTOR

- JUNCTION BLOCK

14. HOOD LOCK RELEASE CABLE

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INSPECTION

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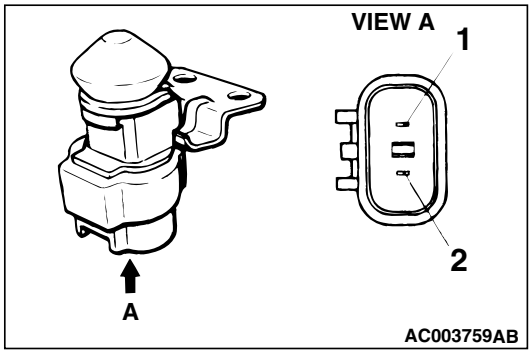
HOOD SWITCH CONTINUITY CHECK <VEHICLES WITH THEFT-ALARM SYSTEM>



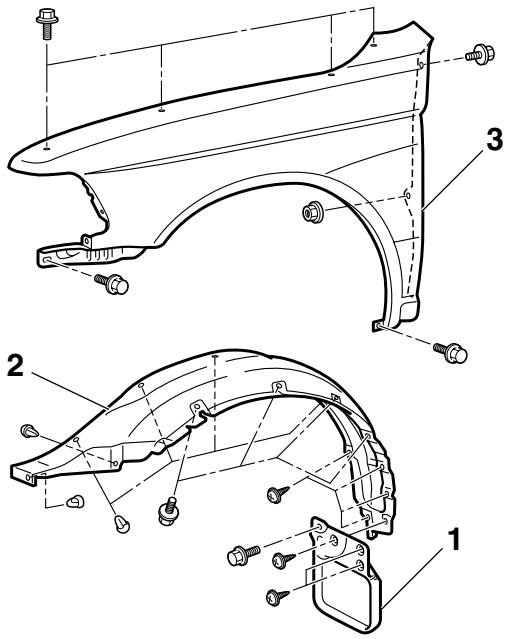
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Hood switch unpressed	1 – 2	Less than 2 ohms
Hood switch depressed	1 – 2	Open circuit

FENDER

REMOVAL AND INSTALLATION

M1421001900368

Pre-removal and Post-installation Operation
- Front Bumper Removal and Installation (Refer to GROUP 51, Front Bumper P.51-2.)
- Front Deck Garnish Removal and Installation (Refer to GROUP 51, Windshield Wiper and Washer P.51-16.)
- Headlight Removal and Installation (Refer to GROUP 54, Lighting System P.54-152.)
- Wide Fender Removal and Installation (Refer to GROUP 51, Wide Fender P.51-10.)



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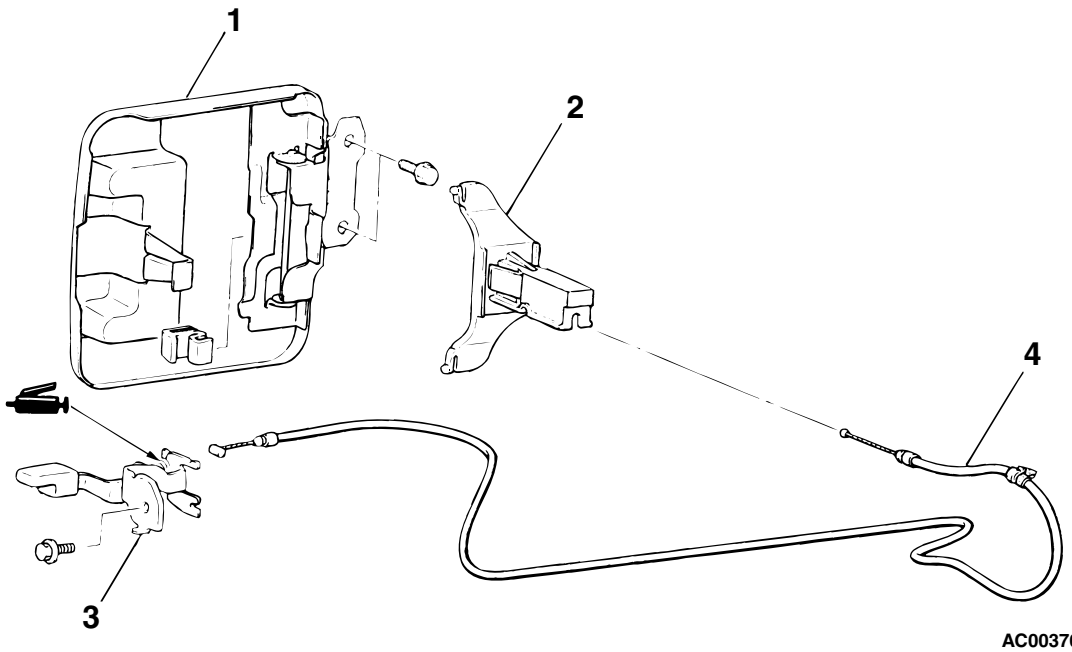
REMOVAL STEPS
1. MUD GUARD
2. SPLASH SHIELD
3. FENDER

FUEL FILLER LID

REMOVAL AND INSTALLATION

M1421002500192

Pre-removal and Post-installation Operation
- Driver's Seat and Rear Seat Removal and Installation (Refer to GROUP 52A, Front Seat P.52A-44 and Rear Seat P.52A-49.)
- Quarter Trim Lower Removal and Installation (Refer to GROUP 52A, Trims P.52A-41.)



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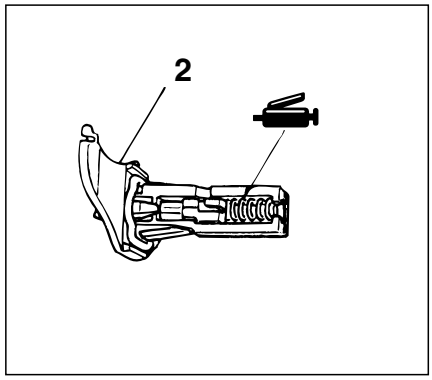

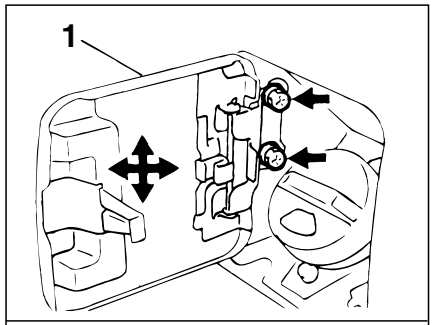

FUEL FILLER DOOR HEIGHT AND CLEARANCE ADJUSTMENT

REMOVAL STEPS
1. FUEL FILLER DOOR PANEL ASSEMBLY
2. FUEL FILLER DOOR HOOK ASSEMBLY

REMOVAL STEPS (Continued)
3. LID LOCK RELEASE HANDLE
4. FUEL FILLER DOOR LOCK RELEASE CABLE

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WINDOW GLASS

WINDOW GLASS DIAGNOSIS

INTRODUCTION TO WINDOW GLASS DIAGNOSIS

M1422006700209

If water leaks from the windshield, the quarter window glass, the liftgate glass, or the seal or body flange may be faulty.

WINDOW GLASS DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1422006800206

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a window glass fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

SYMPTOM CHART

M1422006900214

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Water leak through windshield	1	P.42-11
Water leak through quarter window glass		
Water leak through back glass		

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Water Leak Through Windshield/Water Leak Through Quarter Window Glass/Water Leak Through Liftgate Glass

DIAGNOSIS

STEP 1. Check if the seal is faulty.

Q: Is the seal faulty?
YES : Repair the seal, then go to Step 3.
NO : Go to Step 2.

STEP 2. Check if the body flange is deformed.

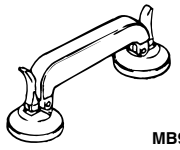
Q: Is the body flange deformed?
YES : Repair the body flange, then go to Step 3.
NO : Go to Step 3.

STEP 3. Retest the system.

Q: Is any water leaking?
YES : Return to Step 1.
NO : This procedure is complete.

SPECIAL TOOL

M1422000600204

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 MB990480	MB990480 Glass holder	General service tool	Removal and installation of window glass

WINDOW GLASS

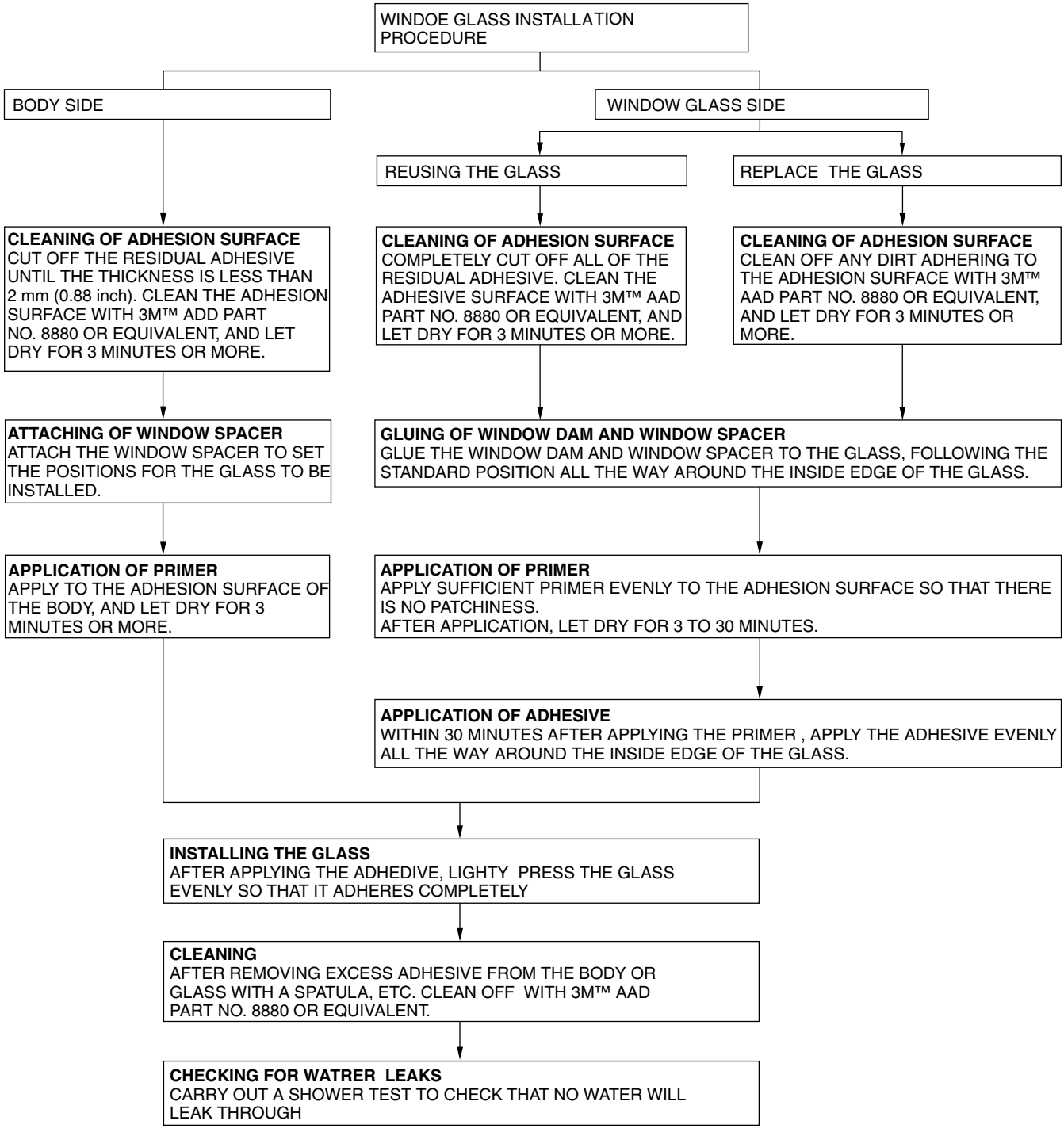
GENERAL INFORMATION

M1422000100243

The windshield, quarter window and liftgate glass are attached by an urethane-base adhesive to the window frame. This adhesive provides improved glass holding and sealing, and also permits use of body openings having a greater structural strength.

ITEM	APPLICATION	QUANTITY
Wire (dia. × length)	For cutting adhesive	Five pieces of wire 0.6 mm × 1 m (0.02 in × 3.3 ft)
Sealant gun	For adhesive application	One
Wiping shop towels	–	As required
Sealer	For prevention of water leaks and gathering after adhesive application	As required
3M™ AAD Part No. 8880 or equivalent	For cleaning	As required
Glass holder MB990480	–	2
Windshield molding (service part)	–	1
Dam (service part)	–	As required
Tectyl 506T (Valvoline oil company)	–	As required

WINDOW GLASS INSTALLATION



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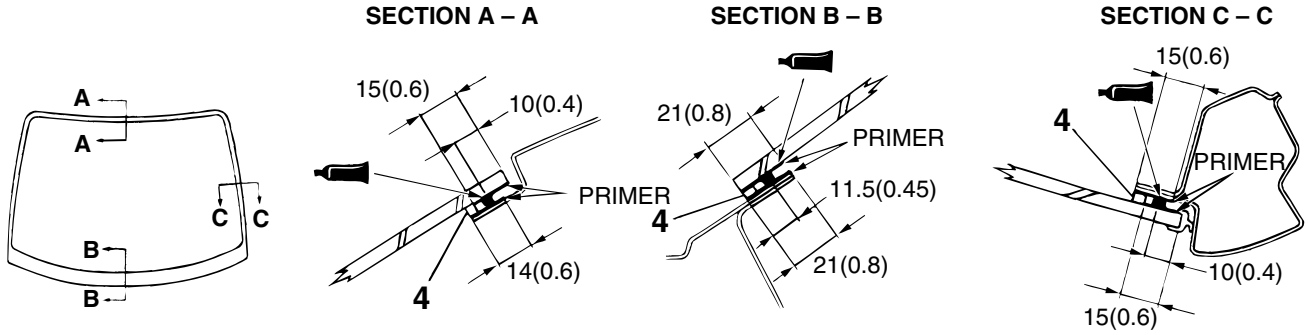
WINDSHIELD

REMOVAL AND INSTALLATION

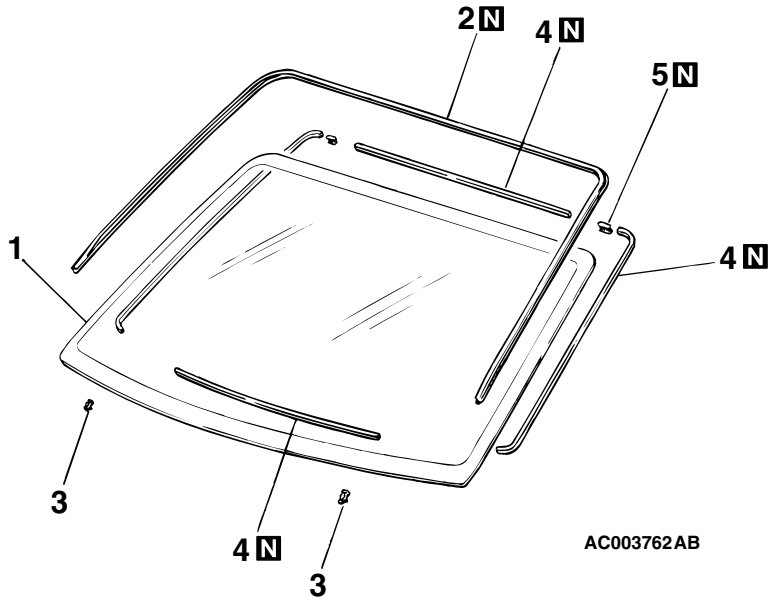
M1422001000380

Pre-removal and Post-installation Operation
- Front Deck Garnish Removal and Installation (Refer to GROUP 51, Windshield Wiper and Washer P.51-16.)
- Front Pillar Trim Removal and Installation (Refer to GROUP 52A, Trims P.52A-41.)
- Headlining Removal and Installation (Refer to GROUP 52A, Headlining P.52A-42.)
- Inside Rear Vew Mirror Removal and Instllation(Refer to GROUP 52A,Insaide Rear Vew Mirror P.52A-43.)

UNIT: mm(in)



ADHESIVE: 3M™ AAD PART NO. 8609 SUPER FAST URETHANE AND 3M™ AAD PART NO. 8608 SUPER FAST URETHANE PRIMER OR EQUIVALENT



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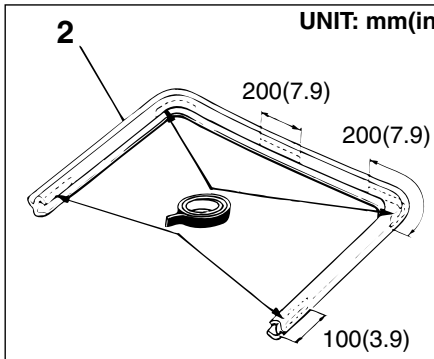

ADHESIVE TAPE:
DOUBLE-SIDED TAPE[6 mm (0.24 in) WIDE AND 0.125 mm (0.0040 in) THICK]

REMOVAL STEPS

<<A>> >>A<< 1. WINDSHIELD
2. WINDSHIELD MOLDING
3. WINDOW SPACER
4. GLASS STOPPER
>>A<< 5. DUAL LOCK FASTENER

Required Special Tools:
- MB990449: Window Molding Remover
- MB990480: Glass Holder

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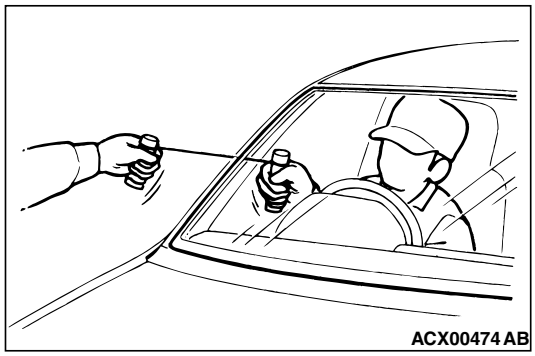
REMOVAL SERVICE POINT

<<A>> WINDSHIELD REMOVAL

1. To protect the body (paint surface), apply cloth tape to all body areas around the installed windshield.
2. Make mating marks on the windshield and body.
3. Using a sharp-point drill, make a hole in the windshield adhesive.
4. Pass the piano wire from the inside of the vehicle through the hole.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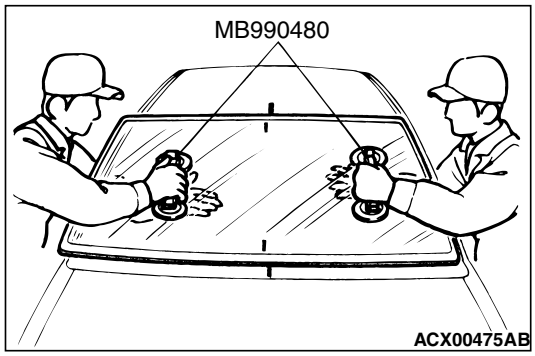
⚠ CAUTION

Do not let the piano wire touch the edge of the windshield.

5. Pull the piano wire alternately from the inside and outside along the windshield to cut the adhesive.



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6. Use special tool MB990480 to remove the windshield.

⚠ CAUTION

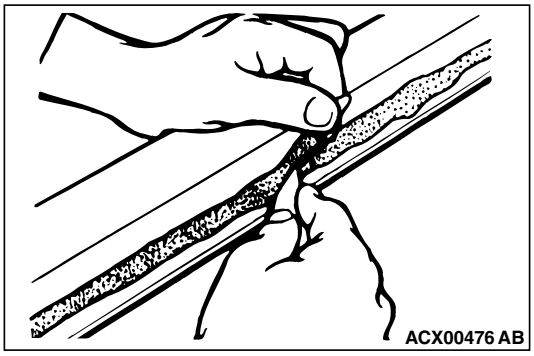
- **Be careful not to remove more adhesive than is necessary.**
- **Be careful also not to damage the paintwork on the body surface with the knife. If the paintwork is damaged, repair the damaged area with repair paint or anti-rust agent.**

7. Use a knife to cut away the remaining adhesive so that the thickness is within 2 mm (0.08 inch) around the entire circumference of the body flange.
8. Finish the flange surfaces so that they are smooth.

⚠ CAUTION

Allow the cleaned area to dry for at least three minutes. Do not touch any surface that has been cleaned.

9. When reusing the windshield, remove the adhesive still adhering to the windshield, and clean with 3M™ AAD Part number 8906 or equivalent.
10. Clean the body side in the same way.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INSTALLATION SERVICE POINT

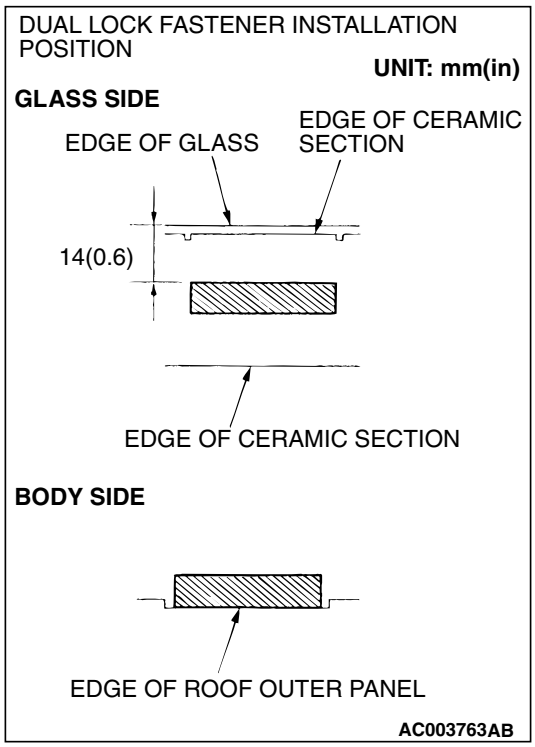
>>A<< DUAL LOCK FASTENER/WINDSHIELD INSTALLATION

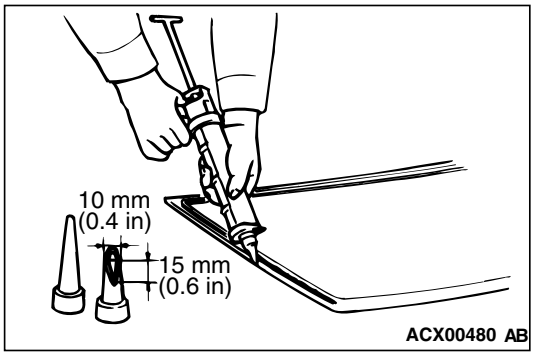
1. When replacing the windshield, temporarily set the windshield against the body, and place a mating mark on the windshield and body.
2. Use 3M™ AAD Part number 8906 or equivalent to degrease the inside and outside of the windshield and the body flanges.

⚠ CAUTION

- **The primer strengthens the adhesive, so be sure to apply it evenly around the entire circumference. However, a too thick application will weaken the adhesive.**
- **Do not touch the coated surface.**

3. Soak a sponge in the primer, and apply evenly to the windshield and the body in the specified places.
4. Allow the windshield to dry for at least three minutes after applying primer.
5. Install the dual lock fasteners to the windshield in the position shown in the illustration.
6. Install the dual lock fasteners to the body flange in the positions that are corresponding to those on the windshield.





7. Fill a sealant gun with adhesive. Then apply the adhesive evenly around the windshield within 30 minutes after applying the primer.

   NOTE: Cut the tip of the sealant gun nozzle into a V shape to simplify adhesive application.
8. Align the mating marks on the windshield and the body, and lightly press the windshield evenly so that it adheres completely.
9. Use a spatula or similar tool to remove any excessive adhesive. Clean the surface with 3M™ AAD Part number 8906 or equivalent. Avoid moving the vehicle until the adhesive sets.

⚠ CAUTION

- **Do not move the vehicle unless absolutely necessary.**
- **When testing for water leakage, do not pinch the end of the hose to spray the water.**

10. Wait 30 minutes or more, and then test for water leakage.

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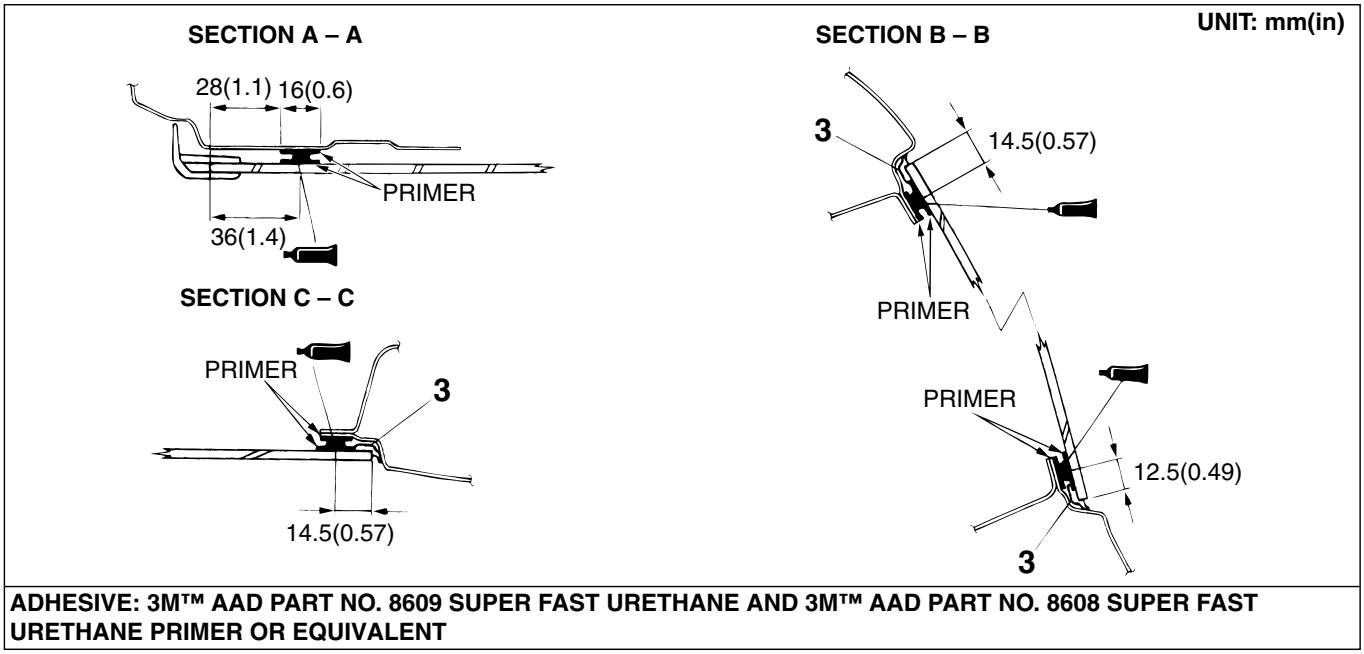
QUARTER WINDOW GLASS

REMOVAL AND INSTALLATION

M1422002500281

Pre-removal and Post-installation Operation
- Quarter Trim Upper Removal and Installation (Refer to GROUP 52A, Trims P.52A-41.)

UNIT: mm(in)



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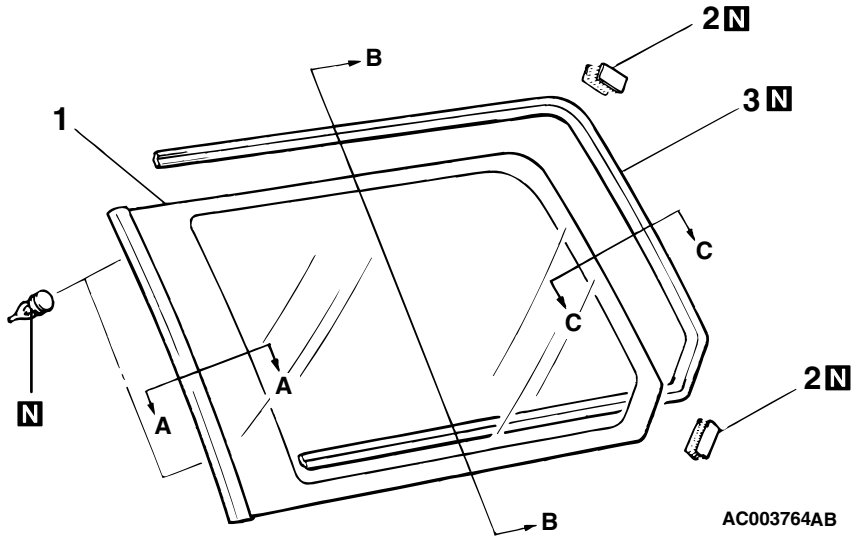

REMOVAL STEPS

<<A>> >>A<< 1. QUARTER WINDOW GLASS ASSEMBLY

REMOVAL STEPS (Continued)

>>A<< 2. DUAL LOCK FASTENER

>>A<< 3. WINDOW DAM

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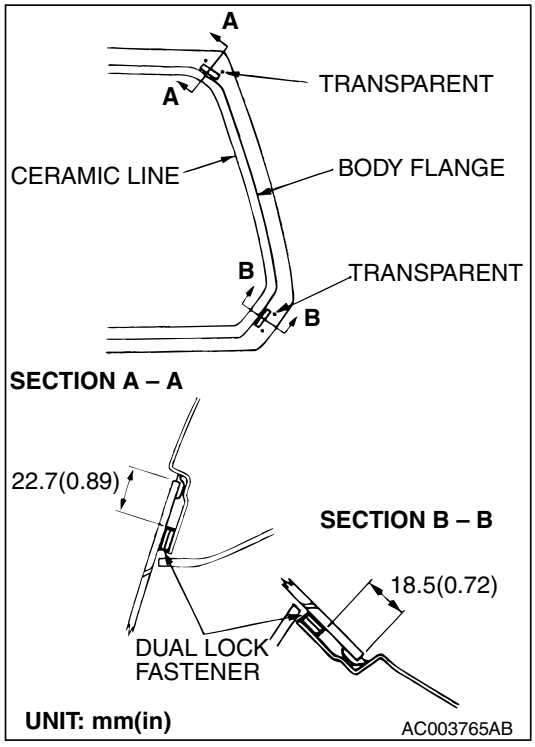


REMOVAL SERVICE POINT

<<A>> QUARTER WINDOW GLASS REMOVAL

Remove the quarter window glass by the same procedure as for the windshield. (Refer to P.42-14.)

INSTALLATION SERVICE POINT

>>A<< WINDOW DAM/DUAL LOCK FASTENER/QUARTER WINDOW GLASS INSTALLATION

1. Use 3M™ AAD Part number 8880 or equivalent to degrease the window dam and dual lock fastener mounting surface on both the glass and the body.

⚠ CAUTION

Allow the degreased portion to dry for at least three minutes before proceeding to the next procedure. Do not touch any surface that has been cleaned.

2. Attach the window dam.
3. Install the dual lock fastener to the shown position.
4. Apply primer and adhesive.
5. Install the glass in the same way as for the windshield.

LIFTGATE WINDOW GLASS

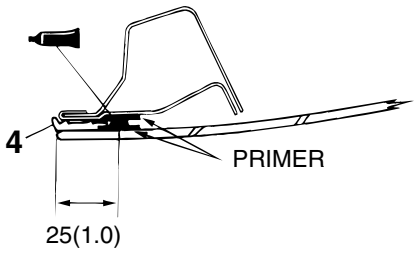
REMOVAL AND INSTALLATION

M1422003700192

Pre-removal and Post-installation Operation
- Liftgate Garnish Removal and Installation (Refer to GROUP 51, Grill, Molding and Garnish P.51-6.)
- High Mounted Stoplight Removal and Installation (Refer to GROUP 54, High-mounted Stoplight P.54-173.)
- Liftgate Trim Removal and Installation (Refer to P.52A-41.)

UNIT: mm(in)

SECTION A – A



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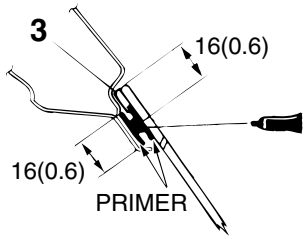

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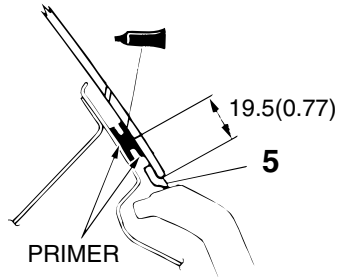

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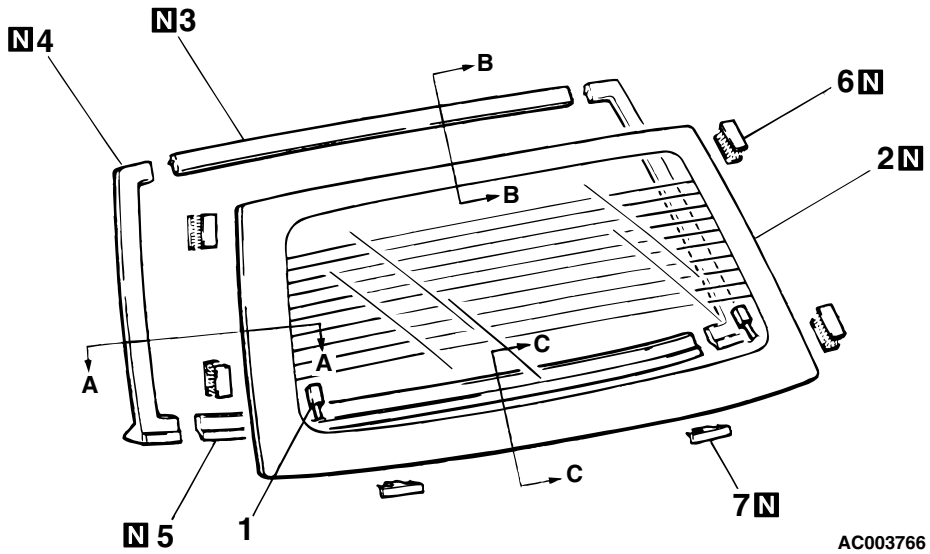

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REMOVAL STEPS

1. HARNESS CONNECTOR
<<A>> >>A<< 2. LIFTGATE WINDOW GLASS
>>A<< 3. LIFTGATE WINDOW GLASS UPPER DAM
>>A<< 4. LIFTGATE WINDOW GLASS SIDE DAM

REMOVAL STEPS (Continued)

>>A<< 5. LIFTGATE WINDOW GLASS LOWER DAM
>>A<< 6. DUAL LOCK FASTENER
>>A<< 7. CLIP

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REMOVAL SERVICE POINT

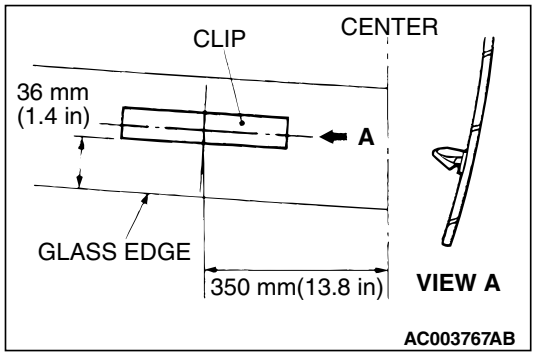
<<A>> LIFTGATE WINDOW GLASS REMOVAL

Remove the liftgate window glass using the same procedure as for the windshield. (Refer to P.42-14.)

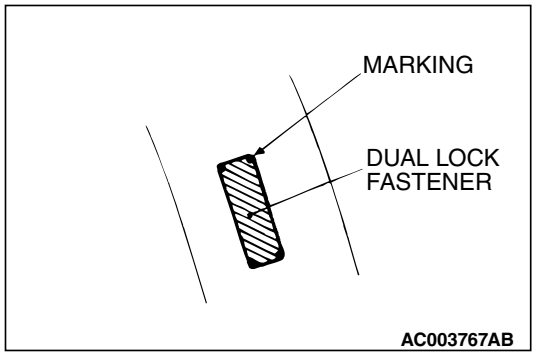
INSTALLATION SERVICE POINT

>>A<< CLIP/DUAL LOCK FASTENER/LIFTGATE WINDOW GLASS LOWER DAM/LIFTGATE WINDOW GLASS SIDE DAM/LIFTGATE WINDOW GLASS UPPER DAM/LIFTGATE WINDOW GLASS

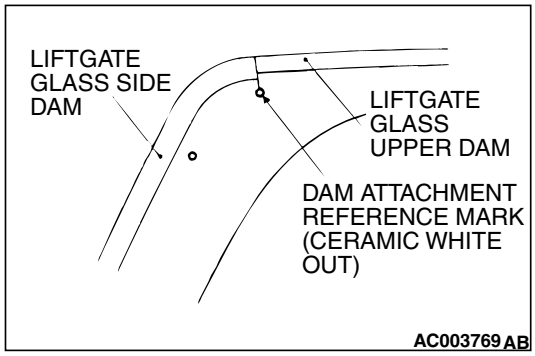
1. Use 3M™ AAD Part number 8906 or equivalent to degrease the inside and outside edges of the liftgate window glass and the surface of the body flange.
2. Face the clip's claws downward, and attach to the inner side of the liftgate window glass as shown in the illustration.



3. Align the dual lock fastener to the markings on the glass, and install. Then, install the liftgate outer panel so that it is aligned.



4. Attach the liftgate glass dam from the dam attachment reference mark to the edge of the glass.
5. Apply primer and adhesive. (Refer to .)
6. Install the glass in the same way as for the windshield. (Refer to P.42-14.)



DOOR

GENERAL DESCRIPTION

M1423000100172

OPERATION

CENTRAL DOOR LOCKING SYSTEM

The central door locking system operates the door lock actuator to lock or unlock the doors using the operation of the door lock switch or key built into the driver's side inside door lock knob and power window (main or sub) switch. The system has the following operations and features:

- All doors can be locked or unlocked using the door (LH or RH) key cylinder key operation.
- All doors can be locked using the driver's inside door lock knob.
- All doors can be locked using the door lock switch built into the power window (main or sub) switch.
- You cannot lock an open door if the key is in the ignition switch. The key reminder function automatically unlocks all doors when the door is locked.

POWER WINDOWS

Power windows are used in all vehicles. When the power window (main or sub) switch is operated, the door windows will open or close. This system has the following operations and features:

- When the power window (main or sub) switch is depressed (UP or DOWN) with the ignition switch in the "ON" position, current flows through fusible link number 4 to the power window motor. This energizes the power window motor, causing the door window glass to open or close.
- When all doors are closed and the ignition is turned off, the power windows can be operated for 30 seconds from the time the ignition is turned off.
- When the power window lock switch is placed in the "LOCK" (OFF) position, no switch other than the main switch at the driver's side window can operate the power window motor.
- The power window motor has a circuit breaker that protects the motor from damage caused by excessive current.

CENTRAL DOOR LOCKING SYSTEM DIAGNOSIS

INTRODUCTION TO CENTRAL DOOR LOCKING SYSTEM DIAGNOSIS

M1427002400052

The central door locking system is controlled by the ETACS-ECU. By operating the door key, inside door lock knob or door lock switch, the ETACS-ECU lock or unlock the door lock actuator. If the following type of symptom occurs, there may be a fault.

- None of the door lock functions operate.
- There is a door that does not lock or unlock when the door key, inside door lock knob or door lock switch is operated.

CENTRAL DOOR LOCKING SYSTEM TROUBLESHOOTING STRATEGY

M1427002100051

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a central door locking system fault.

- Gather information from the customer.
- Verify that the condition described by the customer exists.
- Follow the Symptom Chart and find the fault.

TROUBLE SYMPTOM CHART

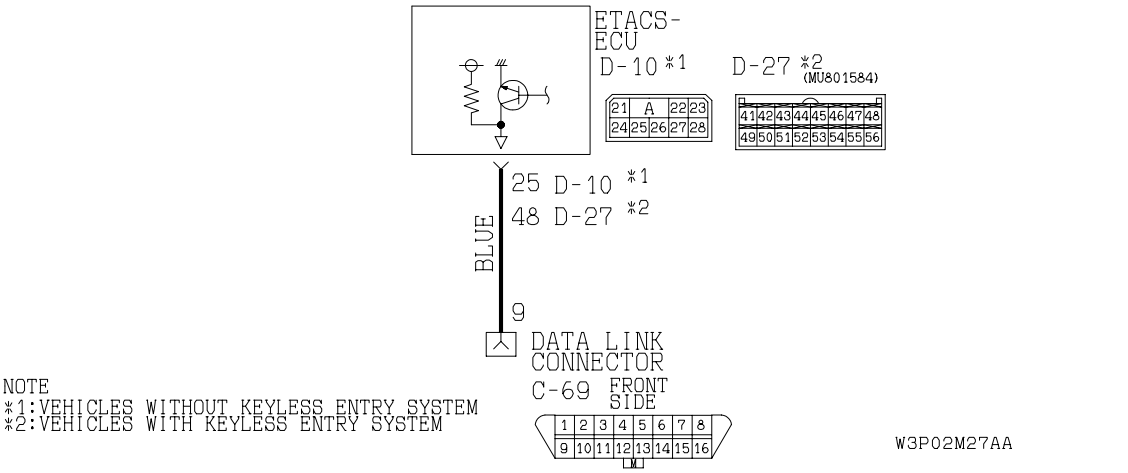
M1427001800057

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Only the ETACS-ECU input signal cannot be checked using the scan tool (MUT-III sub assembly).	1	P.42-23
None of the door lock functions operate.	2	P.42-25
The other door(s) do(es) not lock or unlock by the door lock switch or the front passenger's side door lock key cylinder. (However, they can be operated by the driver's inside door lock knob.)	3	P.42-30
The other door(s) do(es) not lock or unlock by the driver's inside door lock knob or driver's side door lock key cylinder.	4	P.42-45
Some doors do not lock or unlock.	5	P.42-56
Forgotten key prevention function does not operate (center door locking system function works normally) <Vehicles with keyless entry system>.	6	P.42-80

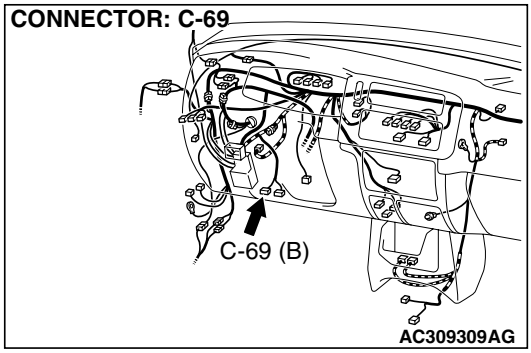
SYMPTOM PROCEDURES

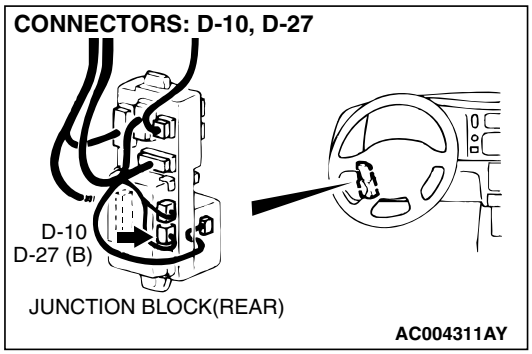
INSPECTION PROCEDURE 1: Only the ETACS-ECU Input Signal Cannot be Checked Using the Scan Tool (MUT-III Sub Assembly).

Data Link Connector Circuit



AC309340





CIRCUIT OPERATION

The ETACS-ECU signal is sent to the data link connector. A trouble can be diagnosed by connecting the scan tool to the data link connector.

TECHNICAL DESCRIPTION (COMMENT)

The cause may be a malfunction of the data link check circuit or of the scan tool.

TROUBLESHOOTING HINTS

- Malfunction of the ETACS-ECU
- Malfunction of the scan tool
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tool:
- MB991223: Harness Set

STEP 1. Check the harness wire between data link connector C-69 (terminal No.9) and ETACS-ECU connector D-10 (terminal No.25) or D-27(terminal No.48).

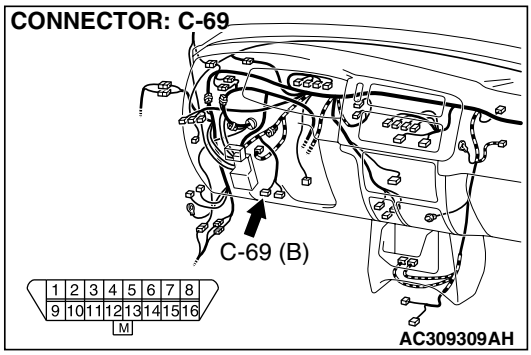
(1) Remove the instrument panel side cover <LH> (Refer to P.52A-37.).

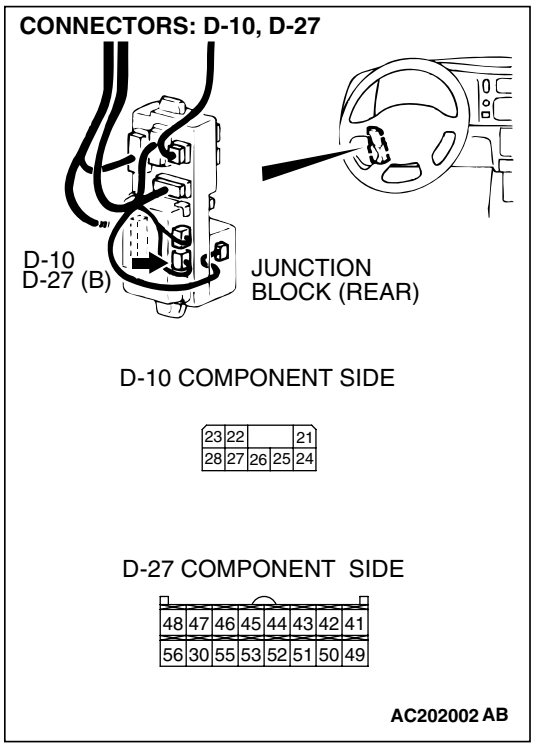
(2) Check the harness wire between data link connector C-69 and ETACS-ECU connector D-10 or D-27.

Q: Is the harness wire between data link connector C-69 (terminal No.9) and ETACS-ECU connector D-10 (terminal No.25) or D-27 (terminal No.48) is damaged?

YES : Repair or replace the harness wire. then go to Step 2. (Refer to GROUP 00E P.00E-2, Harness Connector Inspection.)

NO : Replace the ETACS-ECU. Then go to Step 2.





STEP 2. Retest the system

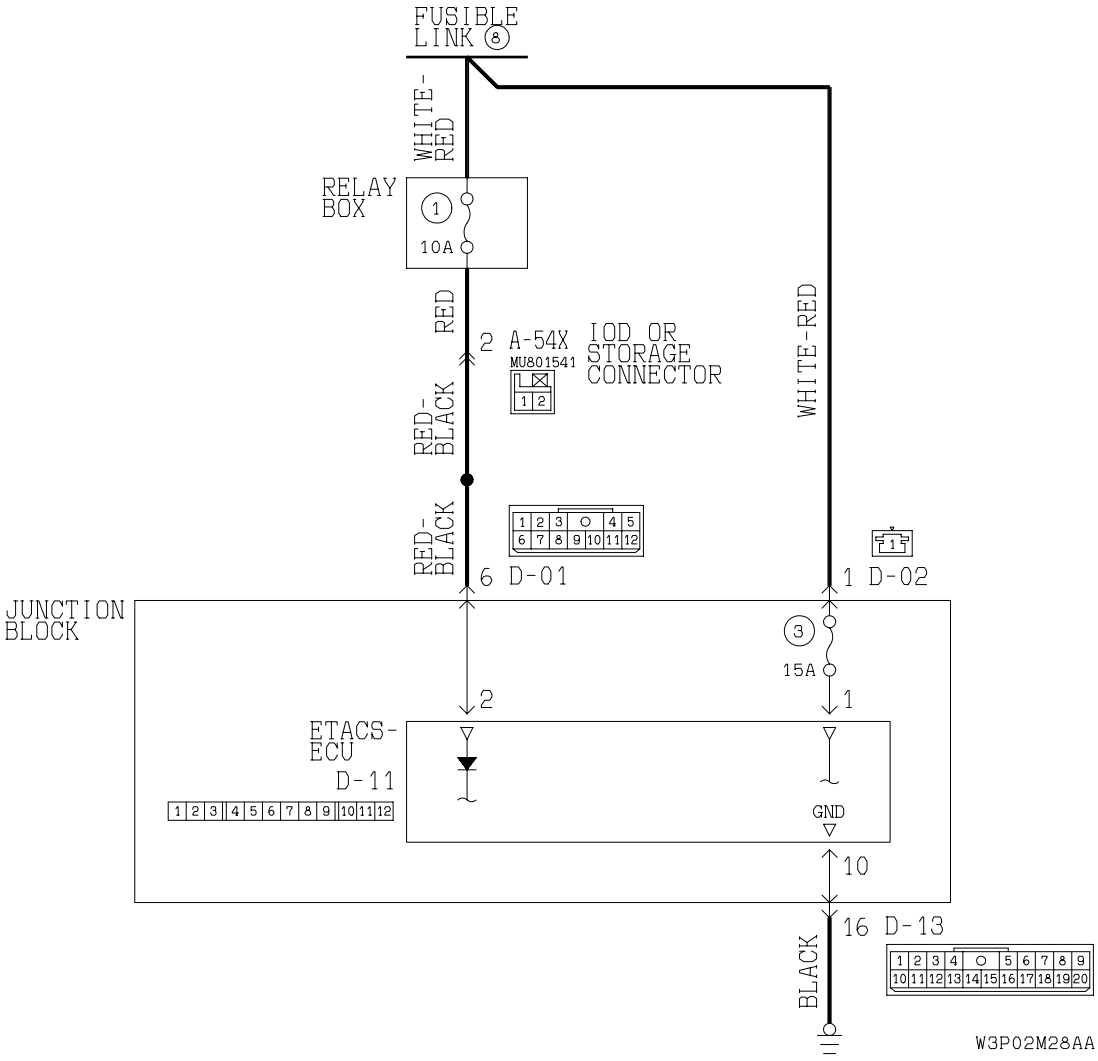
Q: Does the scan tool (MUT-III sub assembly) communicate normally?

YES : The procedure is complete.

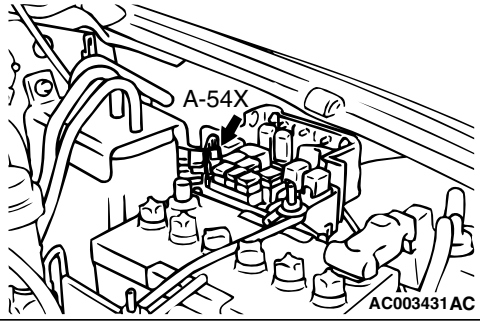
NO : Return to Step 1.

INSPECTION PROCEDURE 2: None of the Door Lock Function Operate.

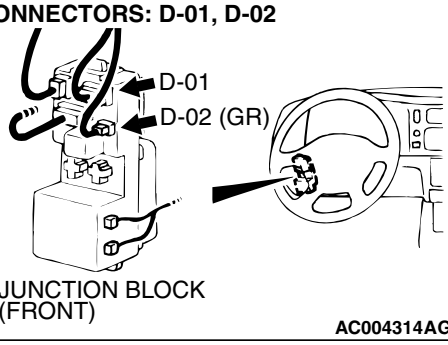
ECU Power Supply Circuit



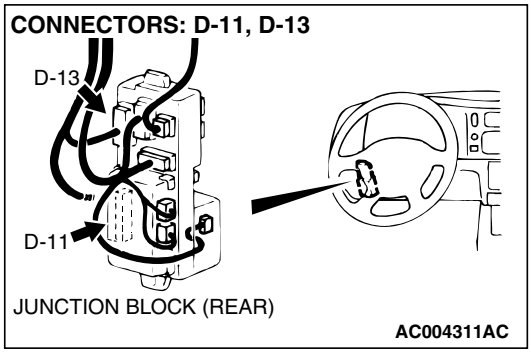
CONNECTOR: A-54X



CONNECTORS: D-01, D-02



TSB Revision



CIRCUIT OPERATION

The ETACS-ECU power is supplied from fusible link number 8.

TECHNICAL DESCRIPTION (COMMENT)

The cause may be a malfunction of the ETACS-ECU power supply circuit system or of the ground circuit system.

TROUBLESHOOTING HINTS

- Malfunction of the ETACS-ECU
- Damaged wiring harness or connector

DIAGNOSIS

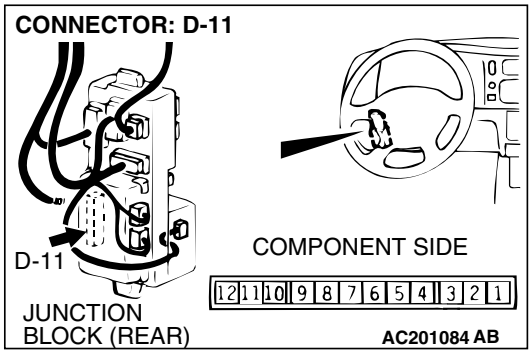
Required Special Tool:
- MB991223: Harness Set

STEP 1. Check ETACS-ECU connector D-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

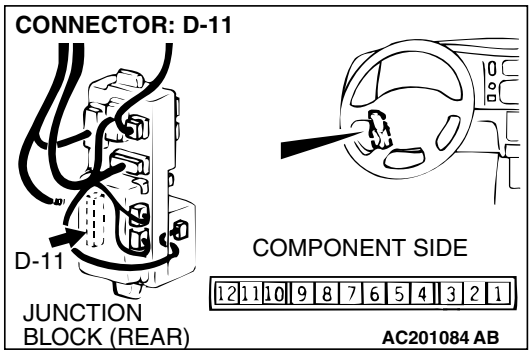
YES : Go to step 2.

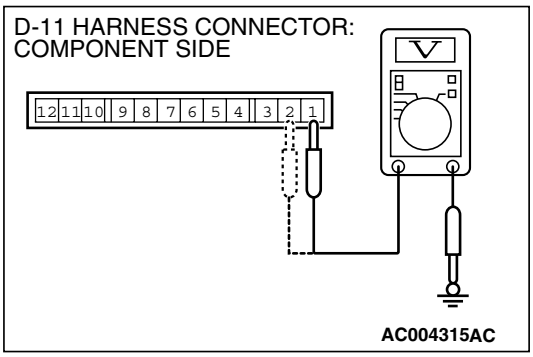
NO : Repair or replace damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 5.



STEP 2. Measure the power supply line voltage at junction block connector D-11.

(1) Remove the ETACS-ECU and measure at the junction block side.





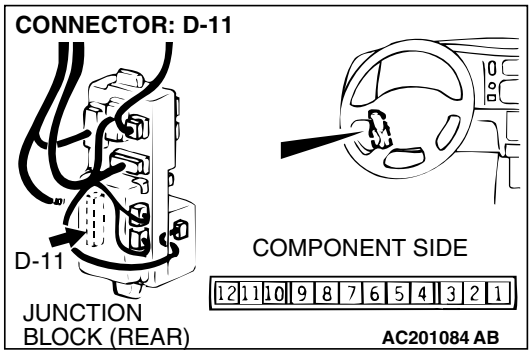
(2) Measure the voltage between terminal 1 and ground, and between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

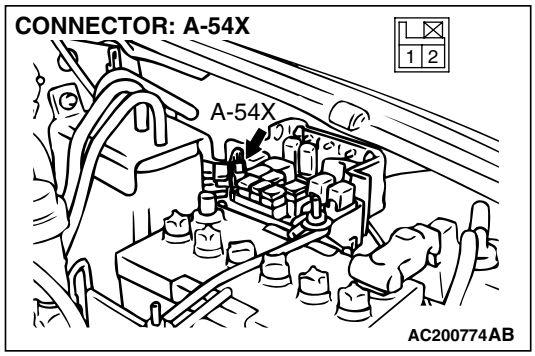
Q: Does the measured voltage correspond with this range?

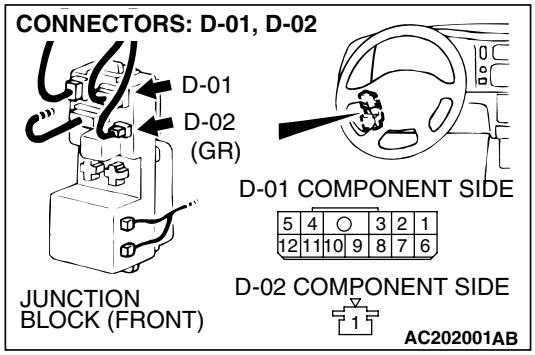
YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the harness wires between fusible link (8) and ETACS-ECU connector D-11 (terminal No.1 and 2).







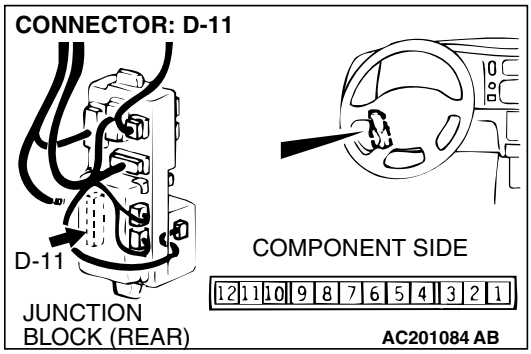
NOTE: After inspecting intermediate connector A-54X, junction block connector D-01 or D-02 inspect the wire. If intermediate connector A-54X, junction block connector D-01 or D-02 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 5.

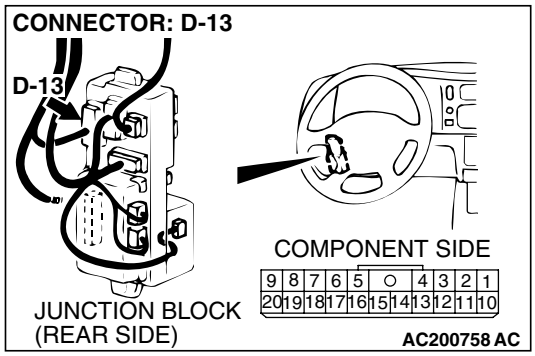
Q: Are there any damaged wires between fusible link (8) and ETACS-ECU connector D-11 (terminal No.1 and 2)?

YES : Repair or replace the harness wire, then go to Step 5.

NO : Replace the ETACS-ECU. Then go to Step 5.

STEP 4. Check the harness wires between ETACS-ECU connector D-11 and ground.





NOTE: After inspecting junction block connector D-13 inspect the wire. If junction block connector D-13 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 5.

Q: Is the harness wire between ETACS-ECU connector D-11 and ground damaged?

YES : Repair or replace the harness wire. Then go to Step 5.

NO : Replace the ETACS-ECU. Then go to Step 5.

STEP 5. Retest the system.

Q: Does the door lock function operate normally?

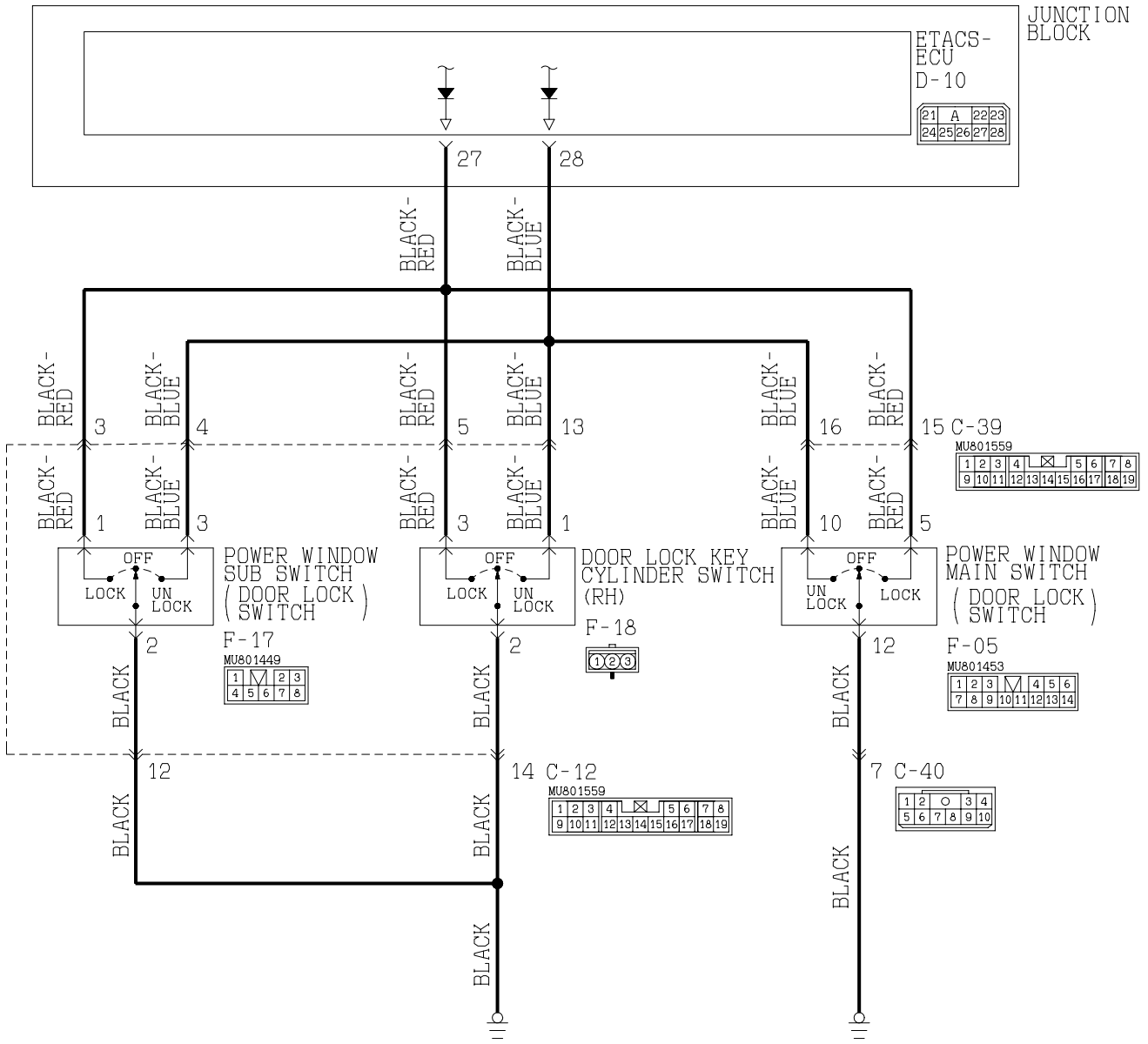
YES : The procedure is complete.

NO : Return to Step 1.

INSPECTION PROCEDURE 3: The other Door(s) do(es) not Lock or Unlock by the Door Switch or the Front Passenger's Side Door Lock Key Cylinder. (However, they can be Operated by the Driver's Inside Door Lock Knob.)

Door Lock Switch Circuit

<Vehicles without keyless entry system>



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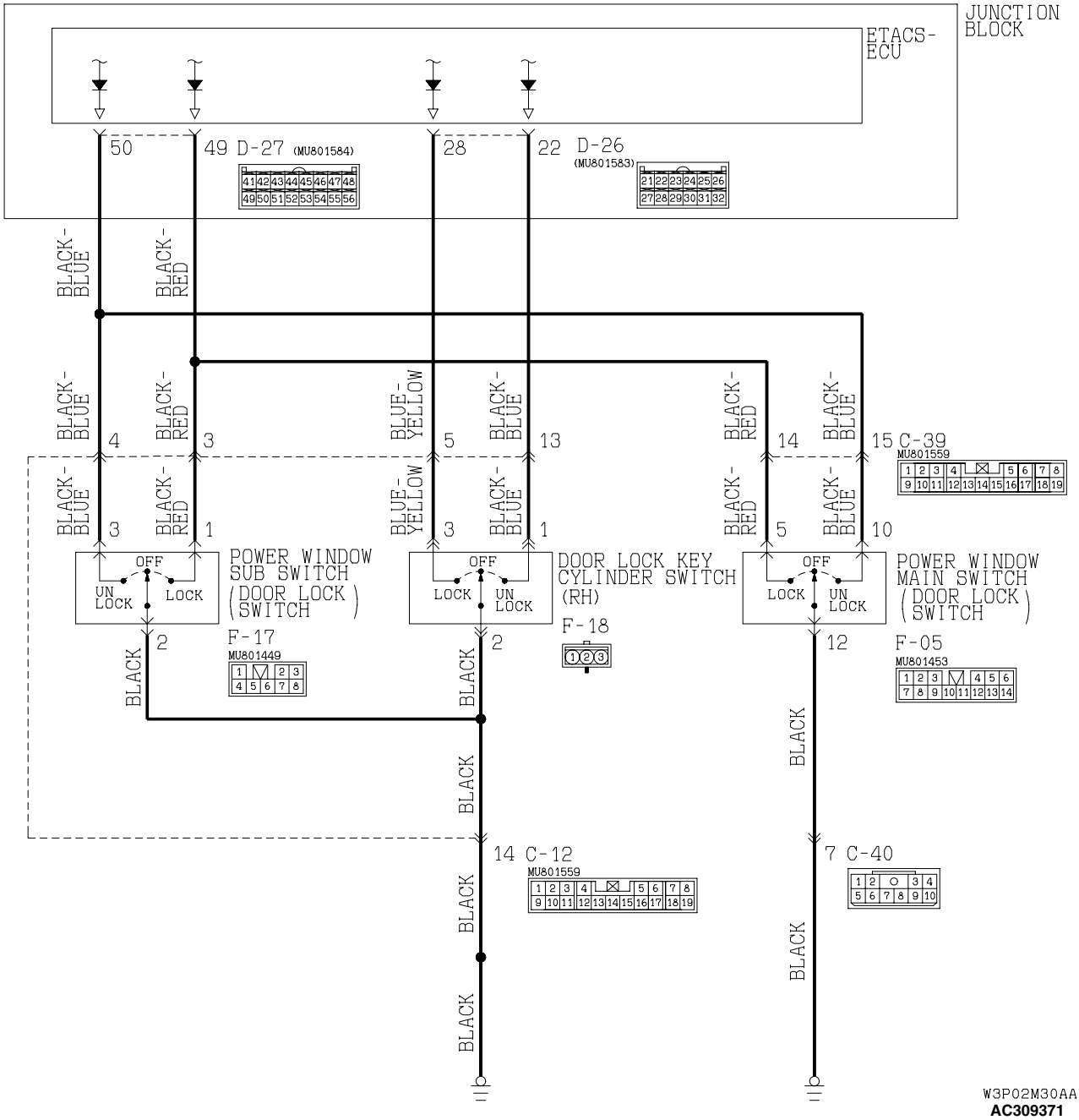
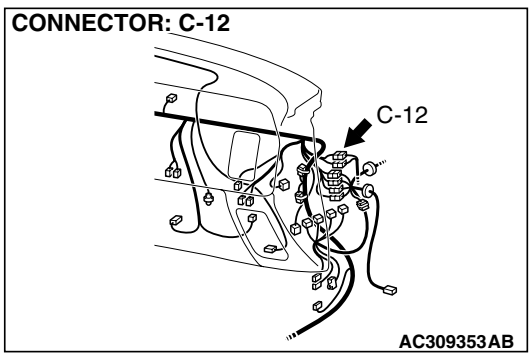
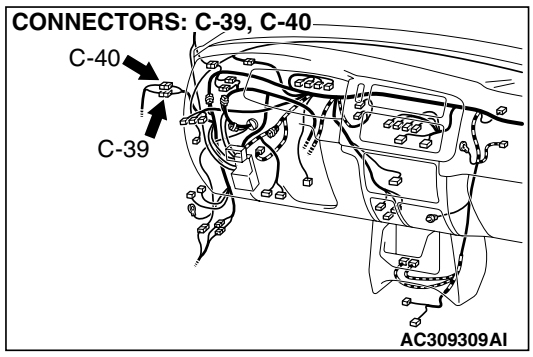
Door Lock Switch Circuit

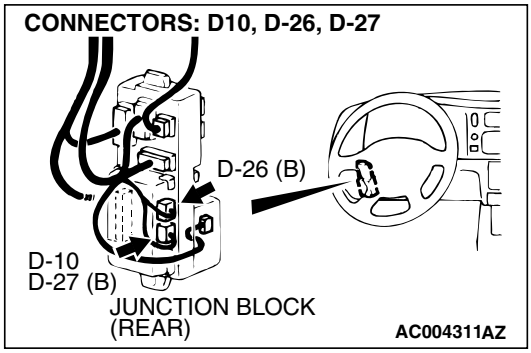
<Vehicles with keyless entry system>

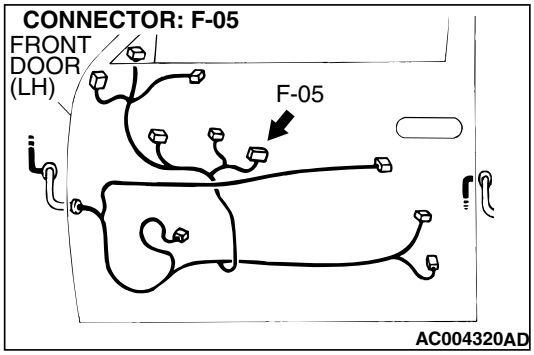


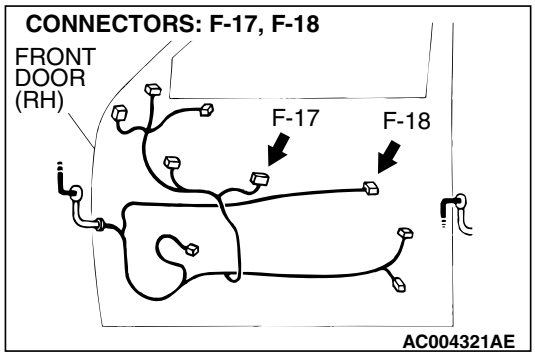




TSB Revision







CIRCUIT OPERATION

When the front power window switch (incorporated with door lock switch) or door lock key cylinder switch (RH) is locked or unlocked, the ETACS-ECU will lock or unlock the door lock actuator.

TECHNICAL DESCRIPTION (COMMENT)

The front power window switch (incorporated with door lock switch), the door lock key cylinder switch (RH), the ETACS-ECU, harness or connector may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the front power window switch
- Malfunction of the door lock key cylinder switch (RH)
- Malfunction of the ETACS-ECU
- Damaged wiring harness or connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991529: Diagnostic Trouble Code Check Harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1. Choose method of ETACS-ECU input signal check.

Q: Is the ETACS-ECU input signal check performed by scan tool MB991958 or a voltmeter?

By Scan tool MB991958 : Go to Step 2.
By a Voltmeter <Power window main switch (incorporated with Door lock switch) check> : Go to Step 3.
By a Voltmeter <Power window sub switch (incorporated with Door lock switch) check> : Go to Step 4.
By a Voltmeter <Door lock key cylinder switch (RH) check> : Go to Step 5.

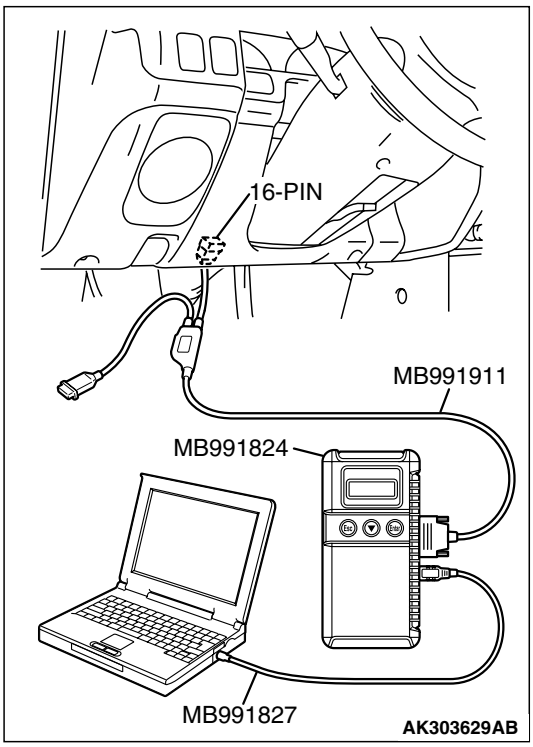
STEP 2. Check the input signal (by using the pulse check) (by using MB991958).

Check the input signal (door lock switch or door lock key cylinder switch) by using scan tool MB991958.

⚠ CAUTION

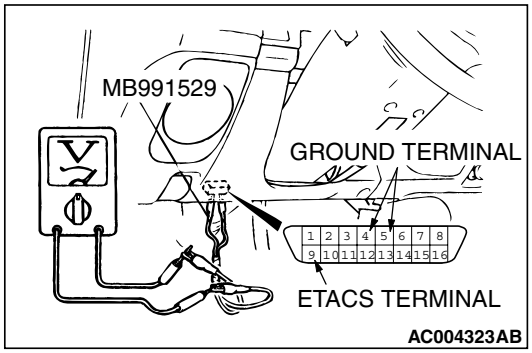
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.
(2) Operate scan tool MB991958 as follows:
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "PULSE CHECK."
(3) Move the driver's or the front passenger's door lock switch from "LOCK" to "UNLOCK" or vice versa.
(4) Use the passenger's door lock key cylinder to lock and unlock the doors.
(5) Check that scan tool MB991958 sounds



Q: Does the tone alarm of scan tool MB991958 sound when the input signal enters?

YES : Replace the ETACS-ECU and then go to Step 21.
NO <The power window main switch (incorporated with door lock switch) input signal> : Go to Step 6.
NO <The power window sub switch (incorporated with door lock switch) input signal> : Go to Step 11.
NO <The door lock key cylinder switch (RH) input signal> : Go to Step 16.

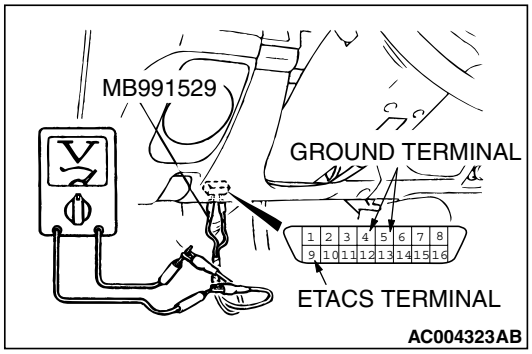


STEP 3. Check the ETACS-ECU input signal from the power window main switch (incorporated with door lock switch) (by using a voltmeter).

(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when the power window main switch (incorporated with door lock switch) is operated (lock/unlock).

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 21.
NO : Go to Step 6.

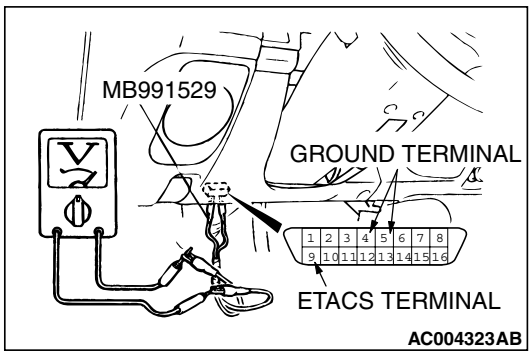


STEP 4. Check the input signal from the power window sub switch (incorporated with door lock switch) (by using a voltmeter).

(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when the power window sub switch (incorporated with door lock switch) is operated (lock/unlock).

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 21.
NO : Go to Step 11.

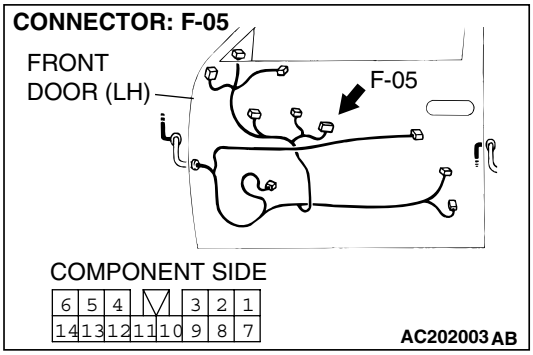


STEP 5. Check the input signal from the door lock key cylinder switch (RH) (by using a voltmeter).

(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when the door lock key cylinder (RH) is operated (lock/unlock).

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 21.
NO : Go to Step 16.

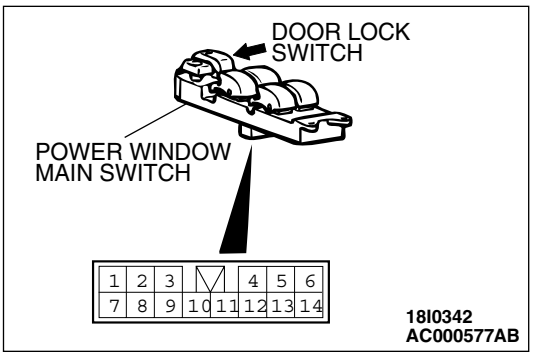


STEP 6. Check power window main switch connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector F-05 in good condition?

YES : Go to step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.



STEP 7. Check the power window main switch (incorporated with door lock switch) continuity.

(1) Remove the power window main switch (Refer to P.42-134).

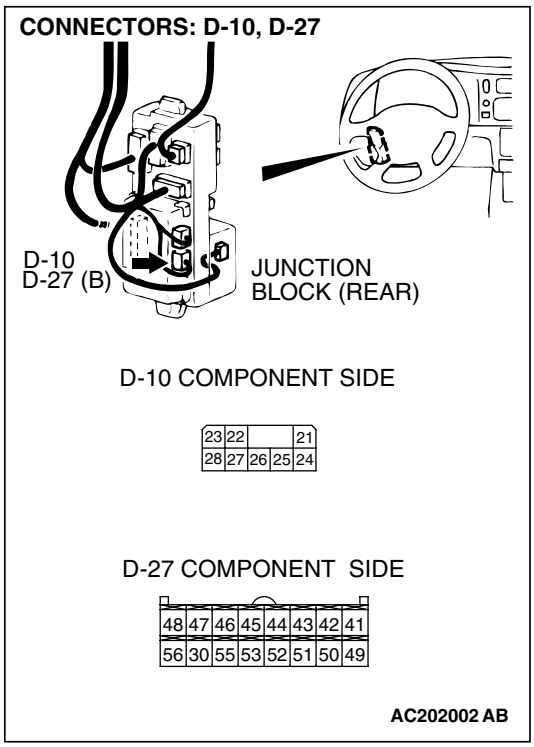
(2) Follow the table to check the resistance when the door lock switch is operated (lock/unlock).

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	5 – 12	Less than 2 ohms
OFF	5 – 12, 10 – 12	Open circuit
At the UNLOCK position	10 – 12	Less than 2 ohms

Q: Is the door lock switch damaged?

YES : Replace the power window main switch, then go to Step 21.

NO : Go to Step 8.



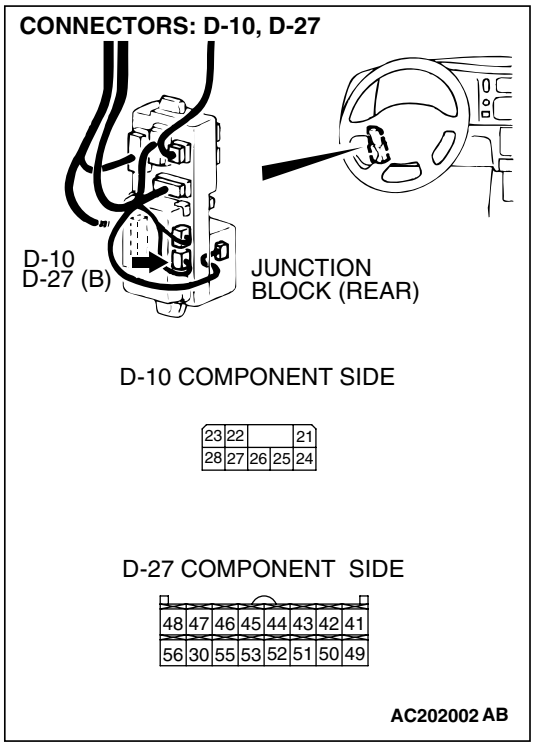
STEP 8. Check ETACS-ECU connector D-10 <Vehicles without keyless entry system> or D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

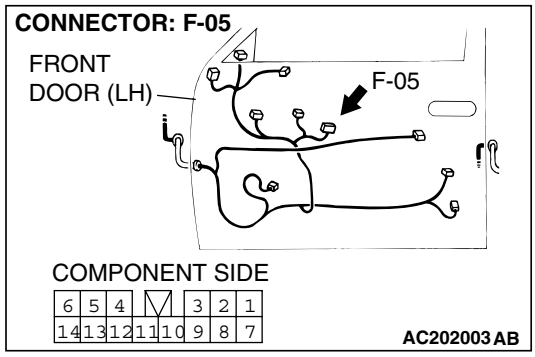
Q: Are ETACS-ECU connector D-10 <Vehicles without keyless entry system> or D-27 <Vehicles with keyless entry system> in good condition?

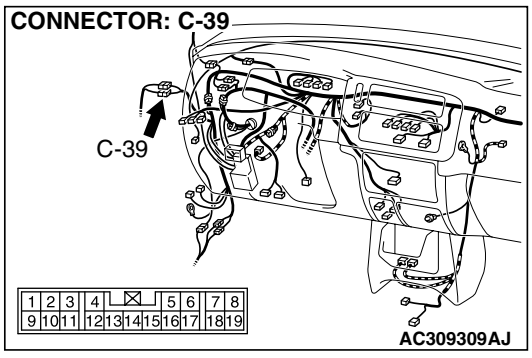
YES : Go to step 9.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.

STEP 9. Check the harness wire between ETACS-ECU connector D-10 (terminals No.27 and No.28) <Vehicles without keyless entry system> or D-27(terminals No.49 and No.50) <Vehicles with keyless entry system> and power window main switch connectors F-05 (terminals No.5 and No.10).







NOTE: After inspecting intermediate connector C-39 inspect the wires. If intermediate connector C-39 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

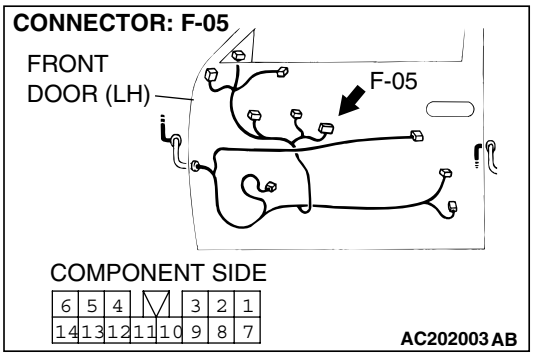
Q: Are there any damaged harness wires between ETACS-ECU connector D-10 (terminals No.27 and No.28) <Vehicles without keyless entry system> or D-27(terminals No.49 and No.50) <Vehicles with keyless entry system> and power window main switch connectors F-05 (terminals No.5 and No.10)?

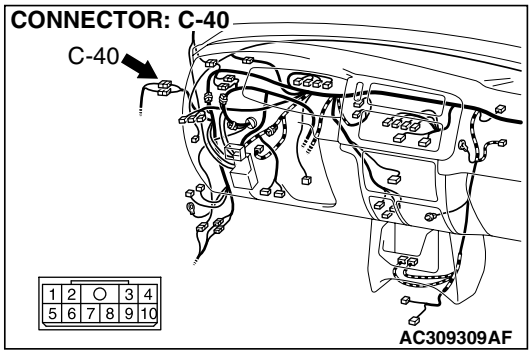
YES : Repair or replace the harness wire, then go to Step 21.

NO : Go to Step 10.

TSB Revision

STEP 10. Check the harness wire between power window main switch connector F-05 (terminal No.12) and ground.





NOTE: After inspecting intermediate connector C-40 inspect the wire. If intermediate connector C-40 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Are there any damaged harness wires between power window main switch connector F-05 (terminal No.12) and ground?

YES : Repair or replace the harness wire, then go to Step 21.

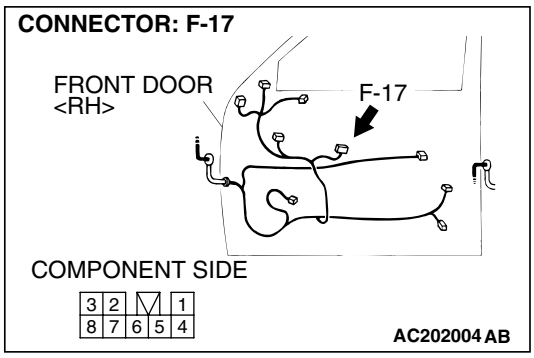
NO : Replace the ETACS-ECU then go to Step 21.

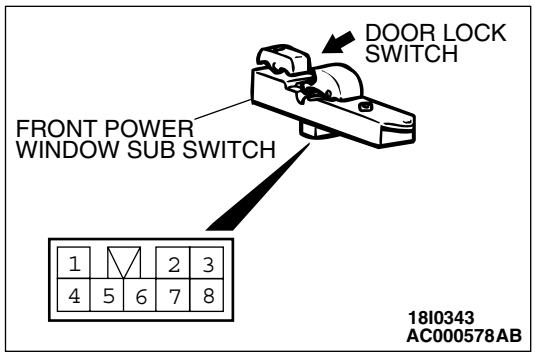
STEP 11. Check power window sub switch connector F-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window sub switch connector F-17 in good condition?

YES : Go to step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.





STEP 12. Check the power window sub switch (incorporated with door lock switch) continuity.

(1) Remove the power window sub switch (Refer to P.42-134).

(2) Follow the table to check the resistance when the door lock switch is operated (lock/unlock).

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	1 – 2	Less than 2 ohms
OFF	1 – 2, 2 – 3	Open circuit
At the UNLOCK position	2 – 3	Less than 2 ohms

Q: Is the door lock switch damaged?

YES : Replace the power window sub switch, then go to Step 21.

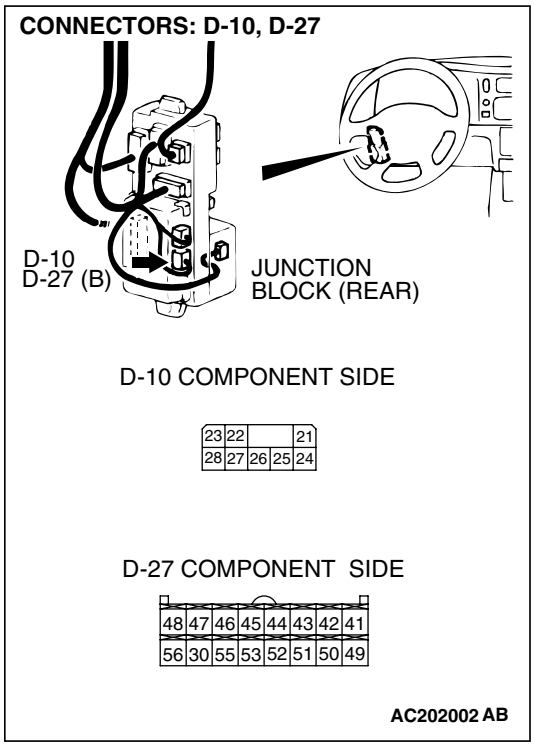
NO : Go to Step 13.

STEP 13. Check ETACS-ECU connector D-10 <Vehicles without keyless entry system> or D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

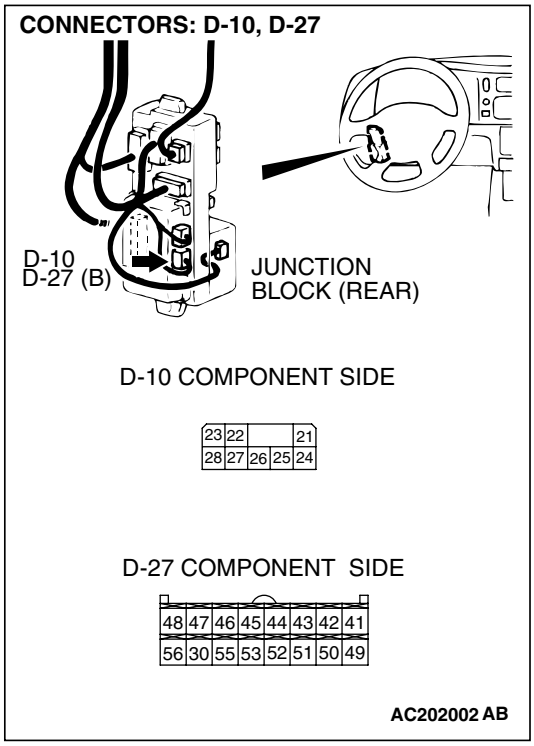
Q: Are ETACS-ECU connector D-10 <Vehicles without keyless entry system> or D-27 <Vehicles with keyless entry system> in good condition?

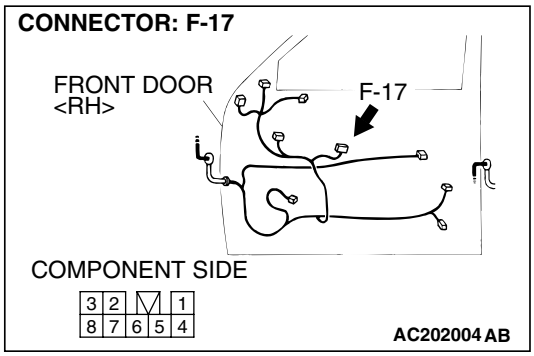
YES : Go to step 14.

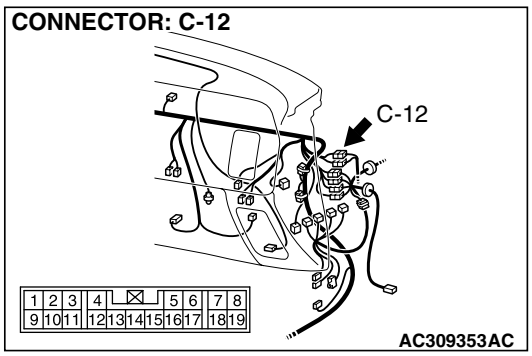
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.



STEP 14. Check the harness wire between ETACS-ECU connector D-10 (terminals No.27 and No.28) <Vehicles without keyless entry system> or D-27(terminals No.49 and No.50) <Vehicles with keyless entry system> and power window sub switch F-17(terminals No.1 and No.3).







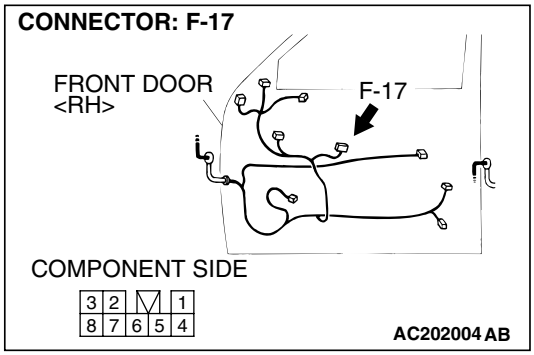
NOTE: After inspecting intermediate connector C-12 inspect the wires. If intermediate connector C-12 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

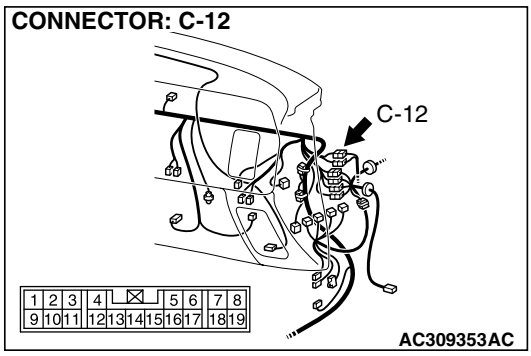
Q: Are there any damaged harness wires?

YES : Repair or replace the harness wire, then go to Step 21.

NO : Go to Step 21.

STEP 15. Check the harness wire between power window sub switch connector F-17 (terminal No.2) and ground.





NOTE: After inspecting intermediate connector C-12 inspect the wire. If intermediate connector C-12 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Is the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 21.

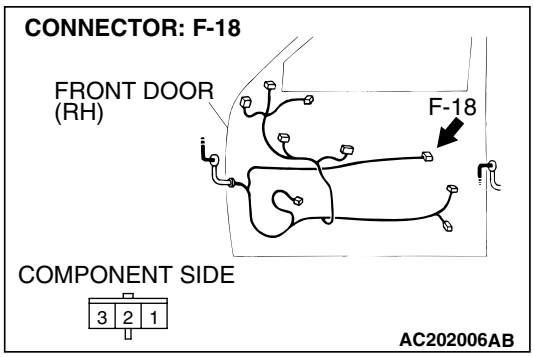
NO : Replace the ETACS-ECU then go to Step 21.

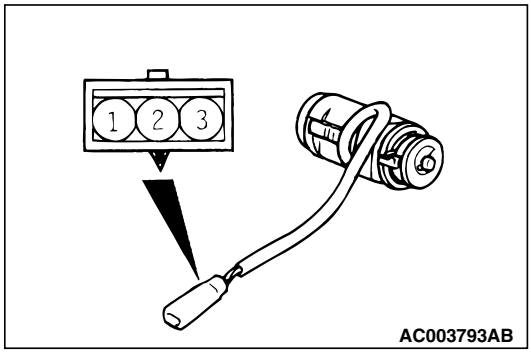
STEP 16. Check door lock key cylinder switch (RH) connector F-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock key cylinder switch (RH) connector F-18 in good condition?

YES : Go to step 17.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.





STEP 17. Check the door lock key cylinder switch (RH).

(1) Remove the door lock key cylinder switch (RH) (Refer to P.42-140).

(2) Follow the table to check the resistance when the door lock key cylinder switch is operated (lock/unlock).

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	2 – 3	Less than 2 ohms
OFF	1 – 2 2 – 3	Open circuit
At the UNLOCK position	1 – 2	Less than 2 ohms

Q: Is the door lock key cylinder switch damaged?

YES : Replace the door lock key cylinder switch (RH), then go to Step 21.

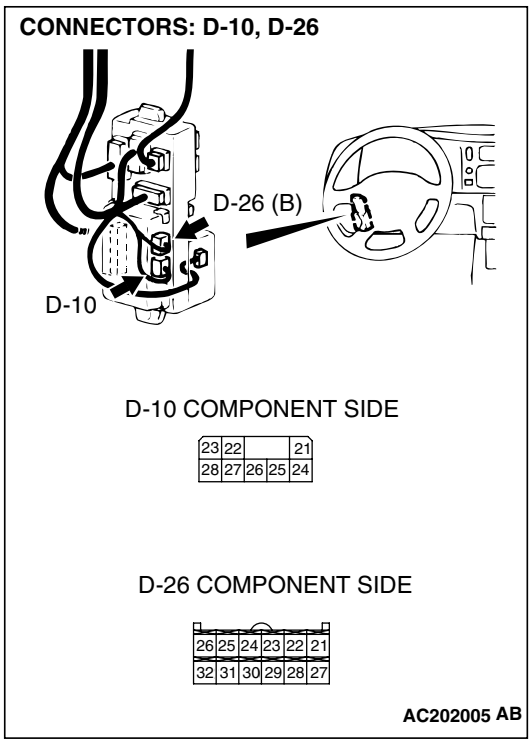
NO : Go to Step 18.

STEP 18. Check ETACS-ECU connector D-10 <Vehicles without keyless entry system> or D-26 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

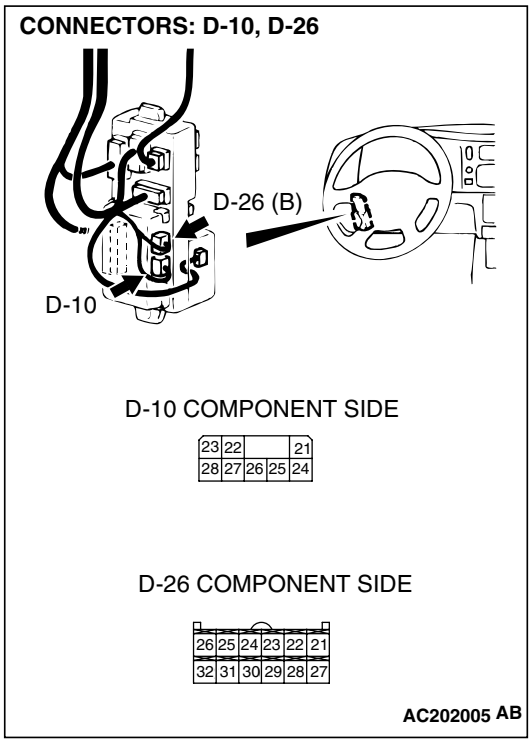
Q: Are ETACS-ECU connector D-10 <Vehicles without keyless entry system> or D-26 <Vehicles with keyless entry system> in good condition?

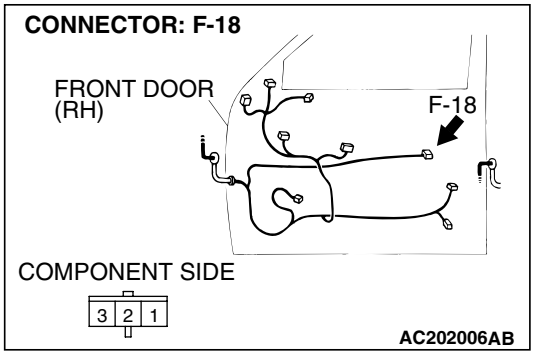
YES : Go to step 19.

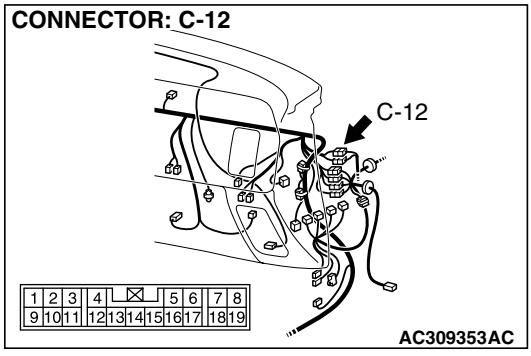
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.



STEP 19.Check the harness wire between ETACS-ECU connector D-10 (terminals No.27 and No.28) <Vehicles without keyless entry system> or D-26 (terminals No.22 and No.28) <Vehicles with keyless entry system> and door lock key cylinder switch (RH) connector F-18 (terminals No.1 and No.3)







NOTE: After inspecting intermediate connector C-12 inspect the wires. If intermediate connector C-12 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Are there any damaged harness wires between ETACS-ECU connector D-10 (terminals No.27 and No.28) <Vehicles without keyless entry system> or D-26 (terminals No.22 and No.28) <Vehicles with keyless entry system> and door lock key cylinder switch (RH) connector F-18 (terminals No. 1 and No.3)?

YES : Repair or replace the harness wire, then go to Step 21.

NO : Go to Step 20.

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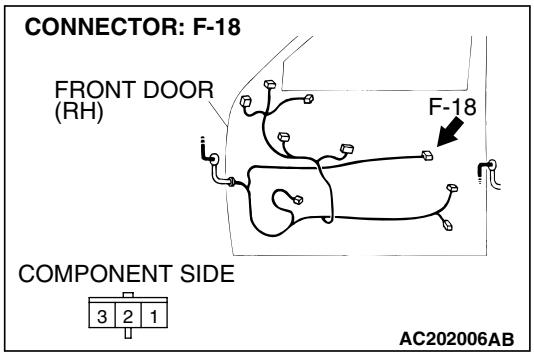
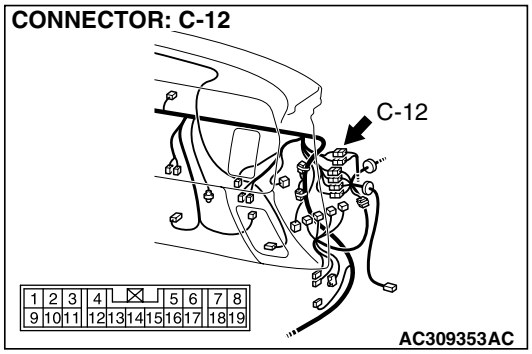
STEP 20. Check the harness wire between door lock key cylinder switch (RH) connector F-18 (terminal No.2) and ground.





NOTE: After inspecting intermediate connector C-12 inspect the wire. If intermediate connector C-12 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Is the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 21.

NO : Replace the ETACS-ECU then go to Step 21.

STEP 21. Retest the system.

Q: Does the door lock function operate normally?

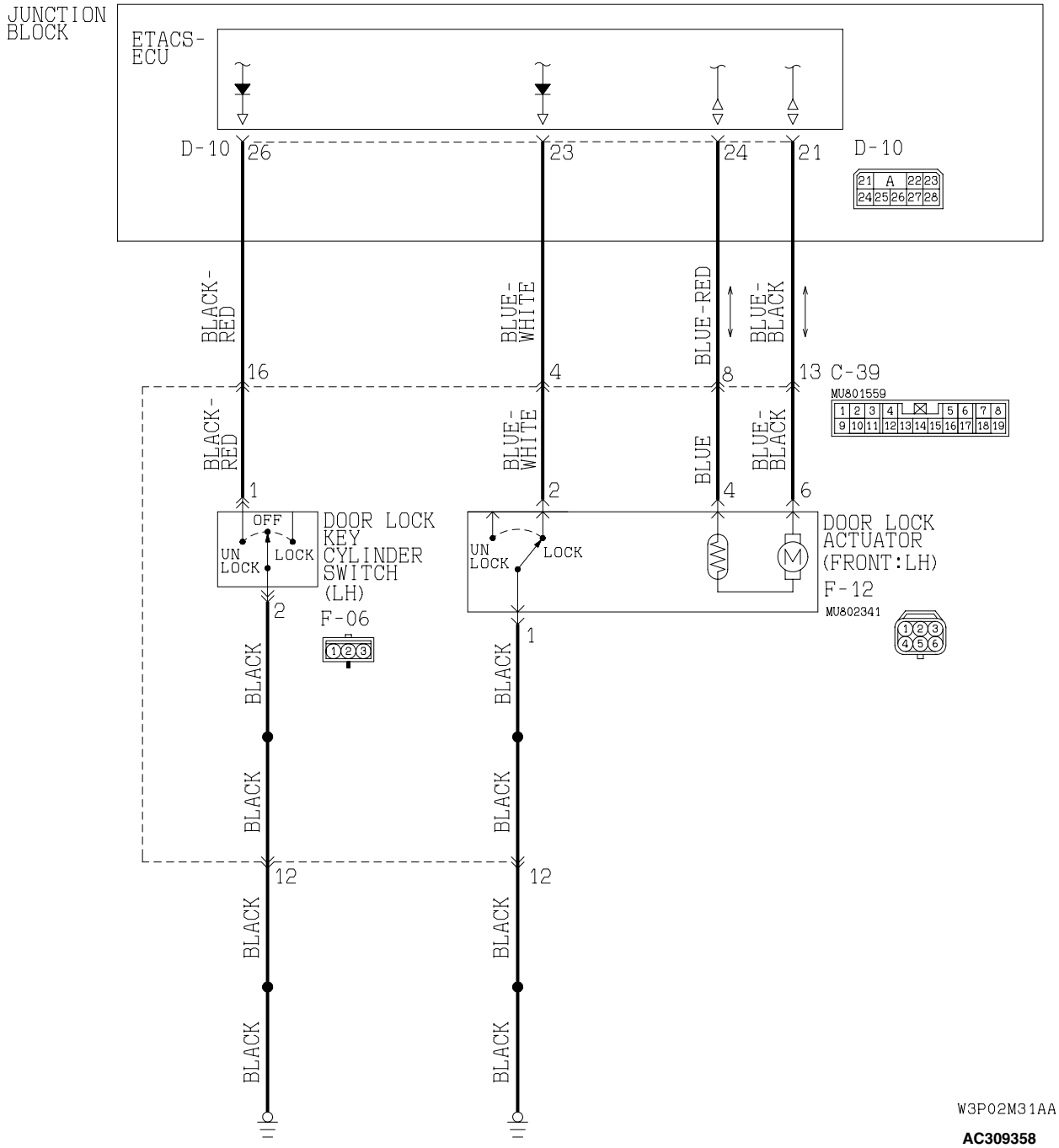
YES : The procedure is complete.

NO : Return to Step 1.

INSPECTION PROCEDURE 4: The Other Door(s) do(es) not Lock or Unlock by the Driver's Inside Door Lock Knob or Driver's Side Door Lock Key Cylinder.

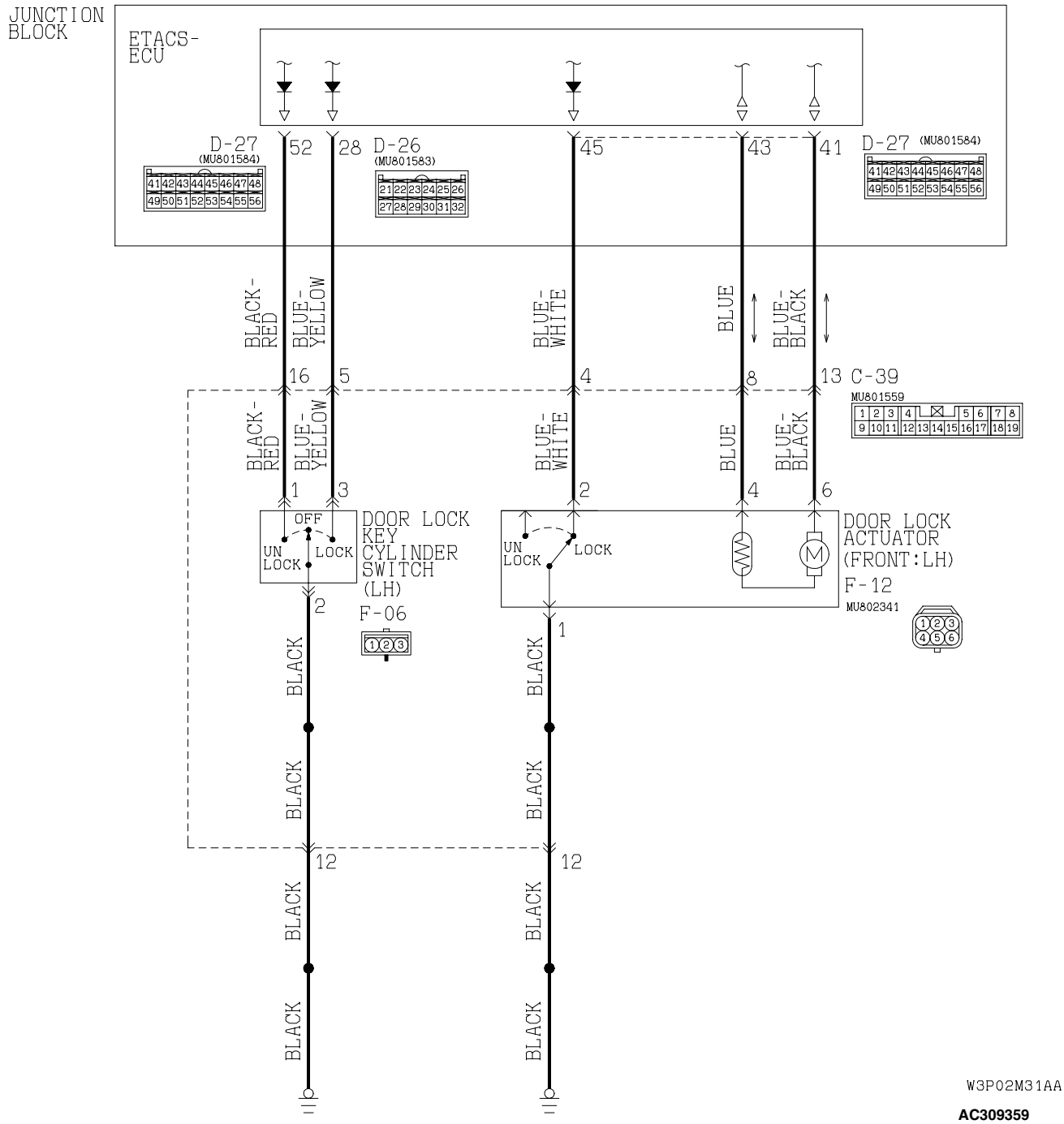
Door Lock Key Cylinder Switch Circuit

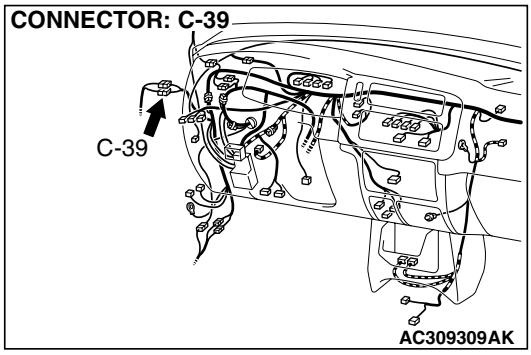
<Vehicles without keyless entry system>

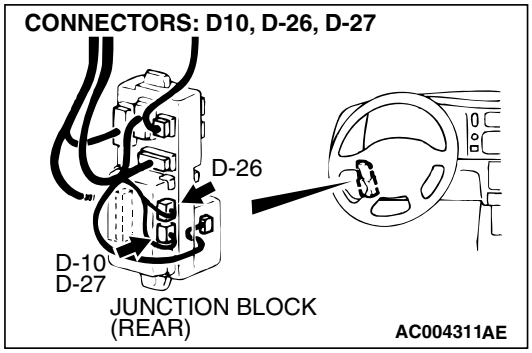


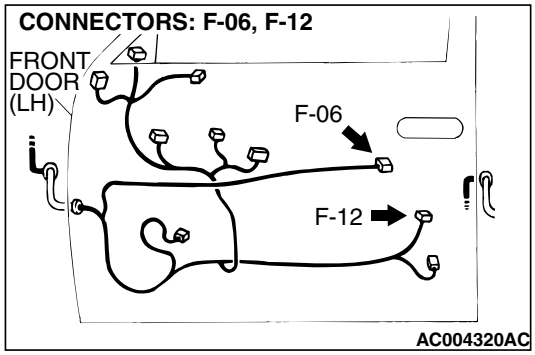
Door Lock Key Cylinder Switch Circuit

<Vehicles with keyless entry system>









CIRCUIT OPERATION

When the driver's inside door knob is operated to the lock side, the ETACS-ECU will output the door lock signal for 0.5 second. If the driver's door side door lock key cylinder is operated to the unlock side, the ETACS-ECU will output the unlock signal for 0.5 second.

TECHNICAL DESCRIPTION (COMMENT)

The front door lock actuator (LH), the door lock key cylinder (LH), the ETACS-ECU, harness or connector may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the front door lock actuator (LH)
- Malfunction of the door lock key cylinder switch (LH)
- Malfunction of the ETACS-ECU
- Damaged wiring harness or connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991529: Diagnostic Trouble Code Check Harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1. Choose method of ETACS-ECU input signal check

Q: Is the ETACS-ECU input signal check performed by scan tool MB991958 or a voltmeter?

By Scan tool MB991958 : Go to Step 2.
By a Voltmeter <The door lock actuator switch (front: LH) check> : Go to Step 3.
By a Voltmeter <The door lock key cylinder switch (LH) check> : Go to Step 4.

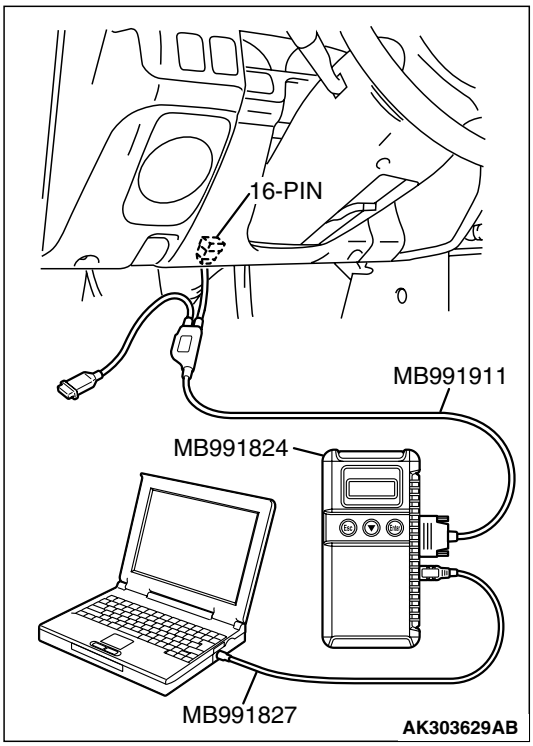
STEP 2. Check the input signal (by using the pulse check) (by using MB991958).

Check the ETACS-ECU input signal [door lock actuator (front: LH) or door lock key cylinder switch (LH)] by using scan tool MB991958.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

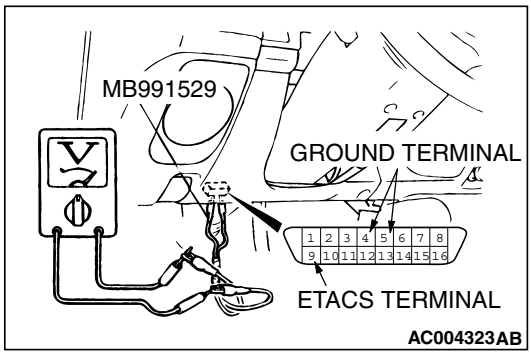
(1) Connect scan tool MB991958 to the data link connector.
(2) Operate scan tool MB991958 as follows:
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "PULSE CHECK."
(3) Move the driver's inside door lock knob from "LOCK" to "UNLOCK" or vice versa.
(4) Use the driver's door lock key cylinder to lock and unlock the doors.
(5) Check that scan tool MB991958 sounds



Q: Does the tone alarm of scan tool MB991958 sound when the input signal enters?

YES : Replace the ETACS-ECU and then go to Step 15.
NO <The door lock actuator (front: LH) input signal> : Go to Step 5.
NO <The door lock key cylinder switch (LH) input signal> : Go to Step 10.

TSB Revision



STEP 3. Check the ETACS-ECU input signal from the door lock actuator switch (front: LH) (by using a voltmeter).

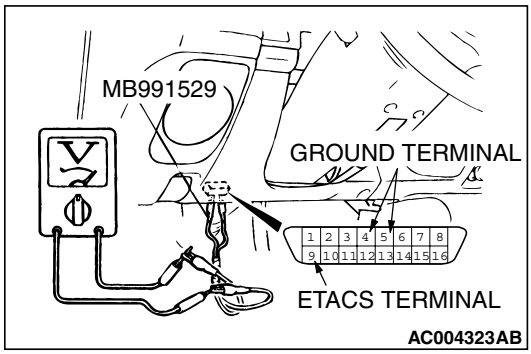
(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.

(2) Check that the voltmeter indicator deflects once when the door lock actuator switch (front: LH) is operated (lock/unlock).

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 15.

NO : Go to Step 5.



STEP 4. Check the input signal from the door lock key cylinder switch (LH) (by using a voltmeter).

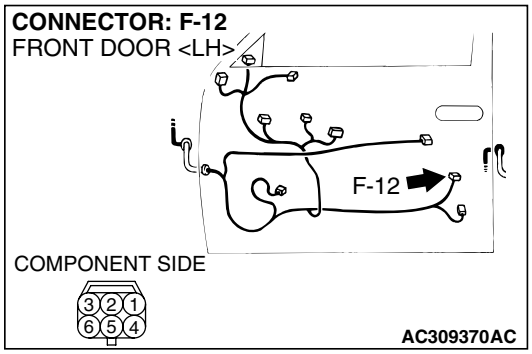
(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.

(2) Check that the voltmeter indicator deflects once when the door lock key cylinder switch (LH) is operated (lock/unlock).

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 15.

NO : Go to Step 10.

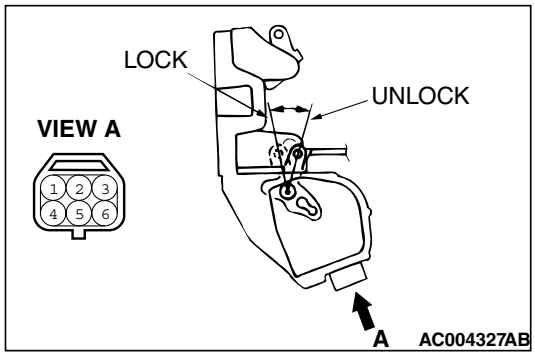


STEP 5. Check door lock actuator (front: LH) connector F-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors in good condition?

YES : Go to step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 15.



STEP 6. Check the front door lock actuator switch (front: LH).

(1) Remove the door latch assembly (Refer to P.42-140).

(2) Follow the table to check the resistance when the door lock actuator switch (front: LH) is operated (lock/unlock).

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	1 – 2	Less than 2 ohms
At the UNLOCK position	1 – 2	Open circuit

Q: Is the front door lock actuator switch (front: LH) damaged?

YES : Replace front door lock actuator assembly (front: LH), go to Step 15.

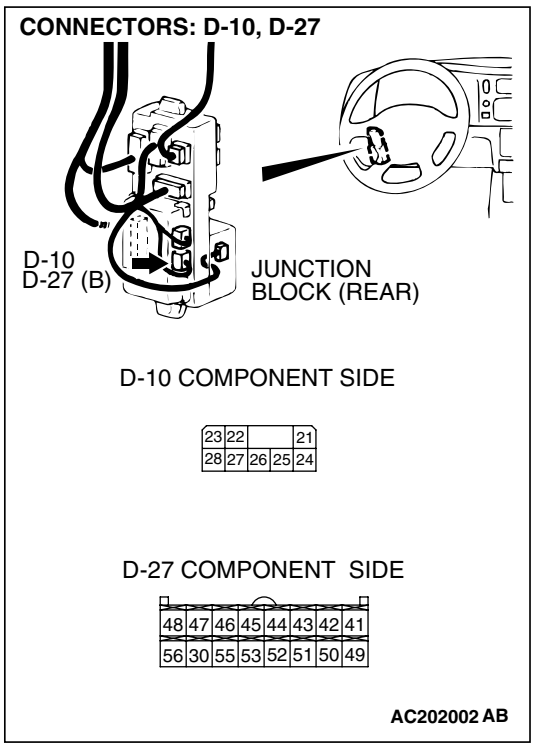
NO : Go to Step 7.

STEP 7. Check ETACS-ECU connector D-10 <Vehicles without keyless entry system> or D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

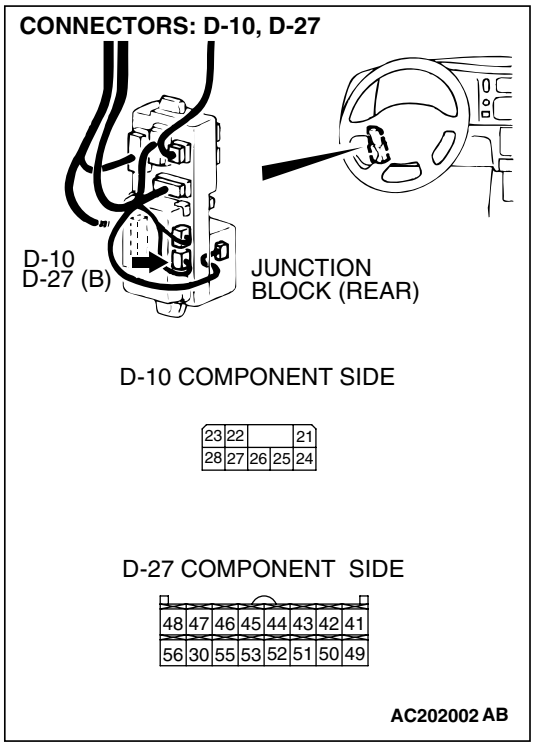
Q: Are the connectors in good condition?

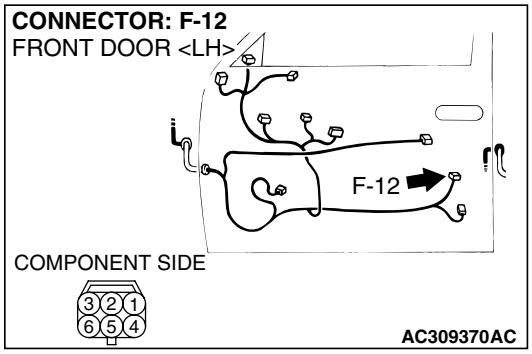
YES : Go to step 8.

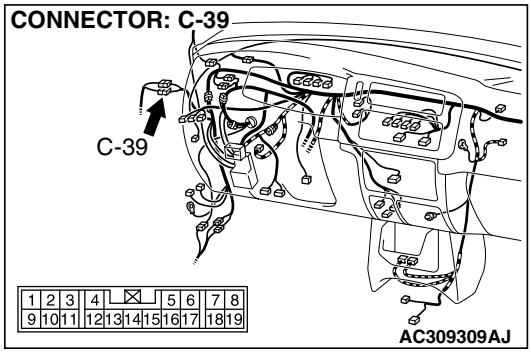
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 15.



STEP 8. Check the harness wires between ETACS-ECU connector D-10 (terminals No.21, No.23 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41, No.43 and No.45) <Vehicles with keyless entry system> and door lock actuator (front: LH) connector F-12 (terminals No.2, No.4 and No.6).







NOTE: After inspecting intermediate connector C-39 inspect the wire. If intermediate connector C-39 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 15.

Q: Are there any damaged harness wires between ETACS-ECU connector D-10 (terminals No.21, No.23 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41, No.43 and No.45) <Vehicles with keyless entry system> and door lock actuator (front: LH) connector F-12 (terminals No.2, No.4 and No.6)?

YES : Repair or replace the harness wire, then go to Step 15.

NO : Go to Step 9.

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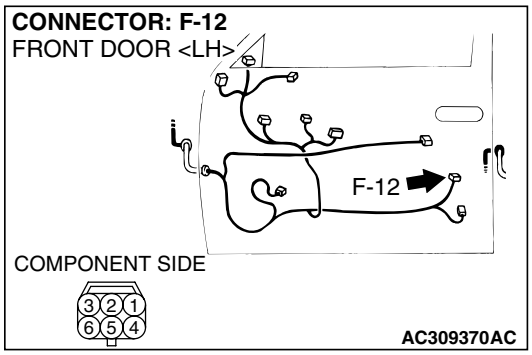
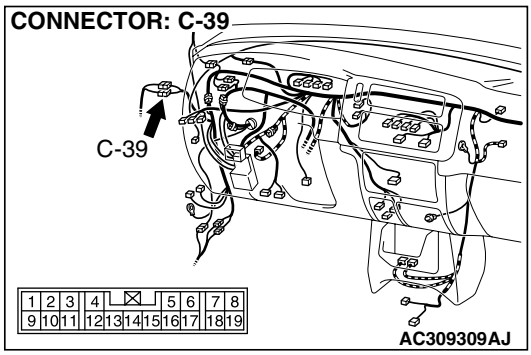
STEP 9. Check the harness wire between door lock actuator (front: LH) connector F-12 (terminal No.1) and ground.





NOTE: After inspecting intermediate connector C-39 inspect the wire. If intermediate connector C-39 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 15.

Q: Is the harness wire between door lock actuator (front: LH) connector F-12 (terminal No.1) and ground?

YES : Repair or replace the harness wire, then go to Step 15.

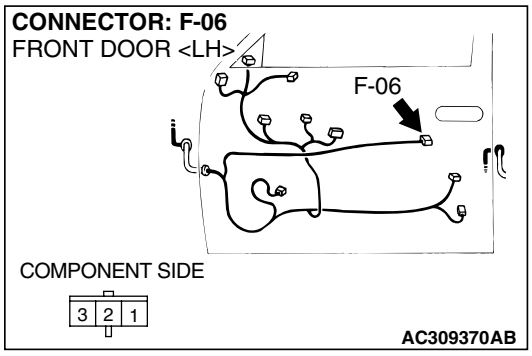
NO : Replace the ETACS-ECU then go to Step 15.

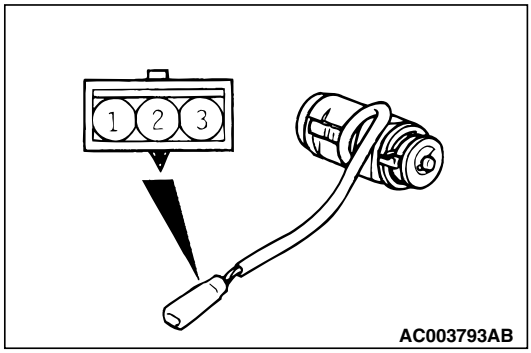
STEP 10. Check door lock key cylinder switch (LH) connector F-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors in good condition?

YES : Go to step 11.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 15.





STEP 11. Check the door lock key cylinder switch (LH).

(1) Remove the door lock key cylinder switch (Refer to P.42-140).

(2) Follow the table to check the resistance when the door lock key cylinder switch (LH) is operated (lock/unlock).

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	2 – 3	Less than 2 ohms
OFF	1 – 2, 2 – 3	Open circuit
At the UNLOCK position	1 – 2	Less than 2 ohms

Q: Is the door lock key cylinder switch (LH) damaged?

YES : Replace the door lock key cylinder switch (LH), go to Step 15.

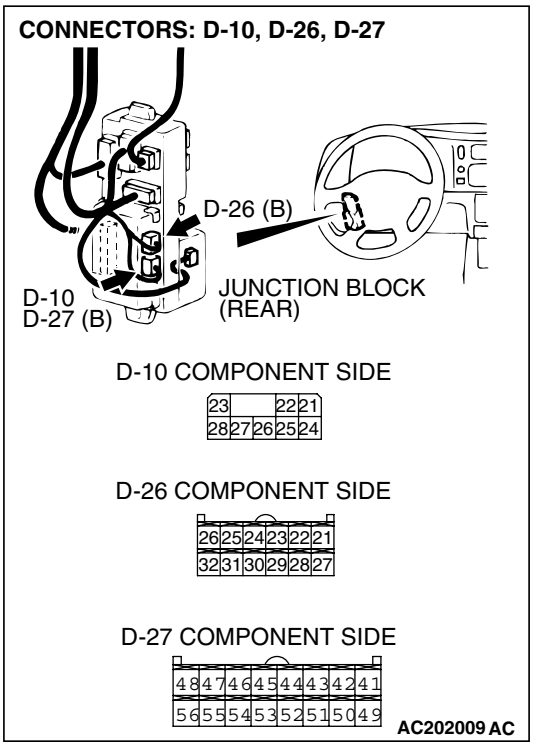
NO : Go to Step 12.

STEP 12. Check ETACS-ECU connector D-10 <Vehicles without keyless entry system>, D-26 <Vehicles with keyless entry system> or D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

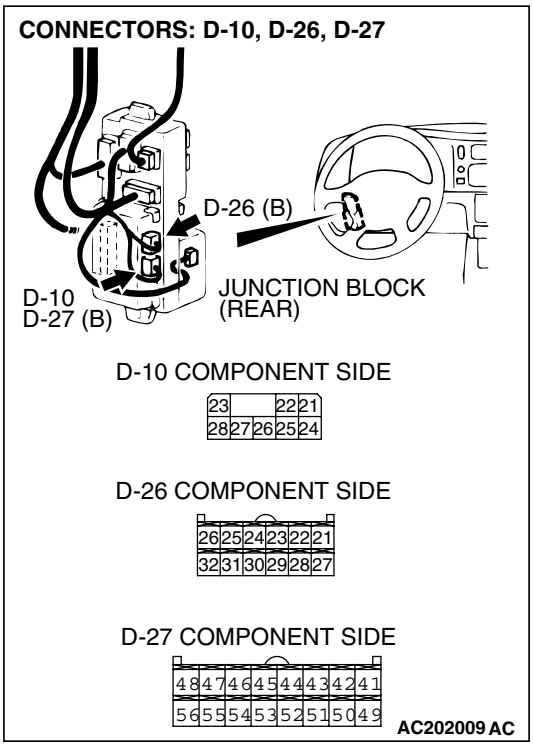
Q: Are the connectors in good condition?

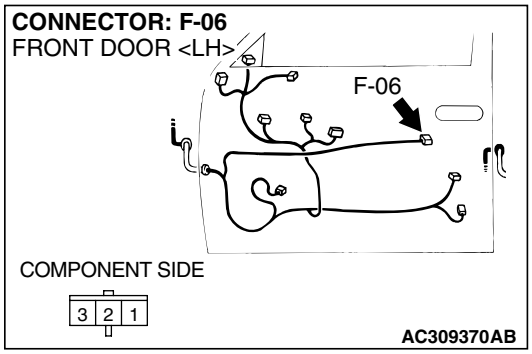
YES : Go to step 13.

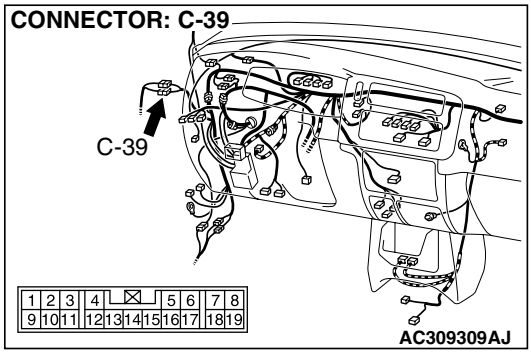
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 15.



STEP 13. Check the harness wires between ETACS-ECU connector D-10 (terminal No.26) <Vehicles without keyless entry system>, D-26 (terminal No.28) <Vehicles with keyless entry system> or D-27 (terminal No.52) <Vehicles with keyless entry system> and door lock key cylinder switch (LH) connector F-06 (terminals No.1 and No.3 <Vehicles with keyless entry system>).







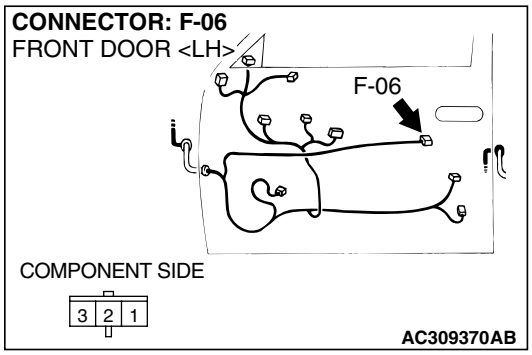
NOTE: After inspecting intermediate connector C-39 inspect the wire. If intermediate connector C-39 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 15.

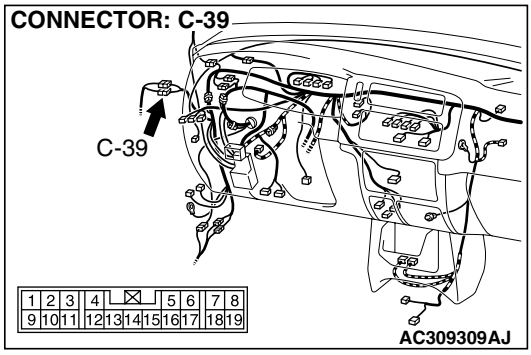
Q: Are there any damaged harness wires between ETACS-ECU connector D-10 (terminal No.26) <Vehicles without keyless entry system>, D-26 (terminal No.28) <Vehicles with keyless entry system> or D-27 (terminal No.52) <Vehicles with keyless entry system> and door lock key cylinder switch (LH) connector F-06 (terminals No.1 and No.3 <Vehicles with keyless entry system>)?

YES : Repair or replace the harness wire, then go to Step 15.

NO : Go to Step 14.

STEP 14. Check the harness wire between door lock key cylinder switch connector F-06 and ground.





NOTE: After inspecting intermediate connector C-39 inspect the wire. If intermediate connector C-39 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 15.

Q: Is the harness wire between door lock key cylinder switch connector F-06 and ground damaged?

YES : Repair or replace the harness wire, then go to Step 15.

NO : Replace the ETACS-ECU then go to Step 15.

STEP 15. Retest the system.

Q: Does the door lock function operate normally?

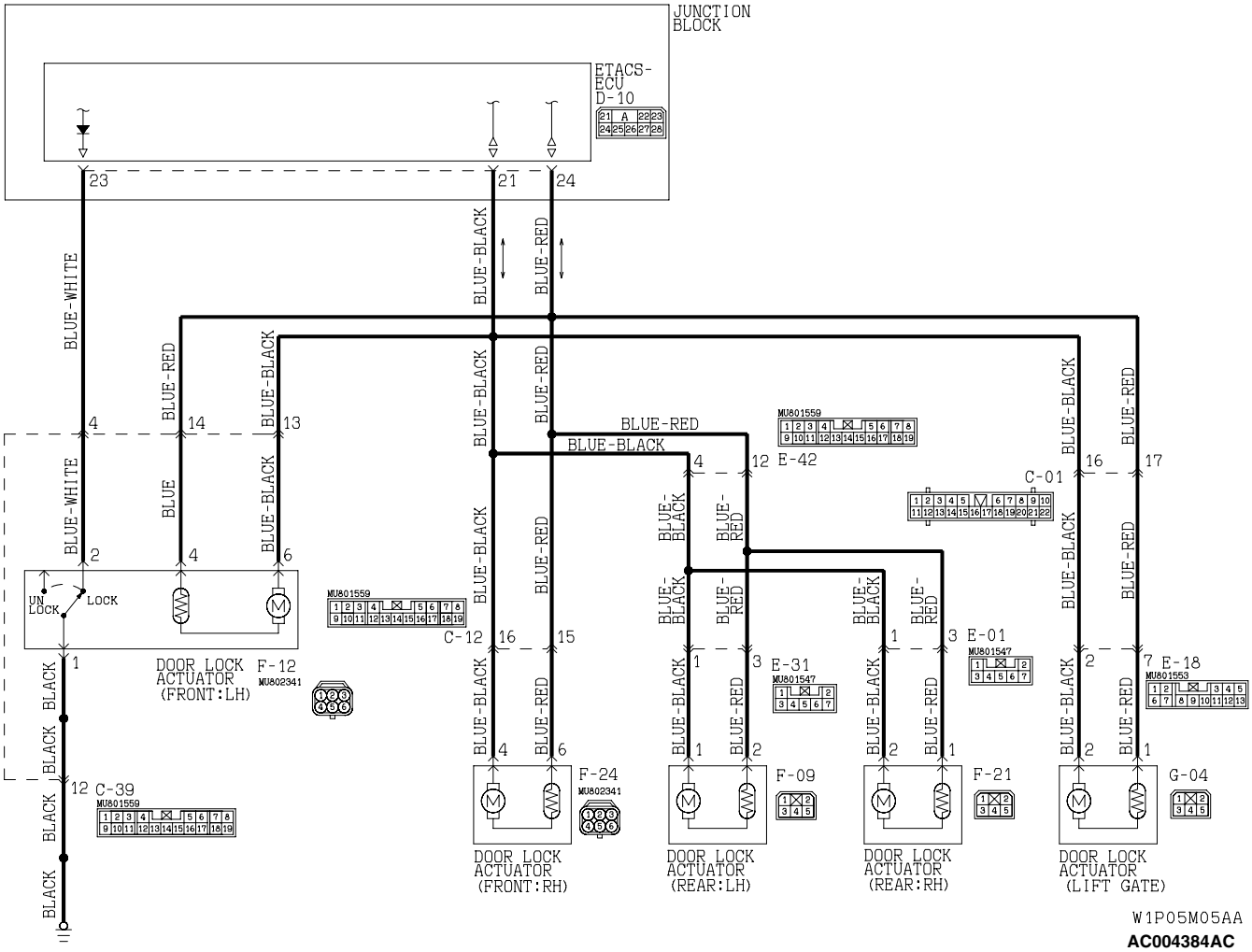
YES : The procedure is complete.

NO : Return to Step 1.

INSPECTION PROCEDURE 5: Some Doors do not Lock or Unlock.

Door Lock Actuator Circuit

<Vehicles without keyless entry system>



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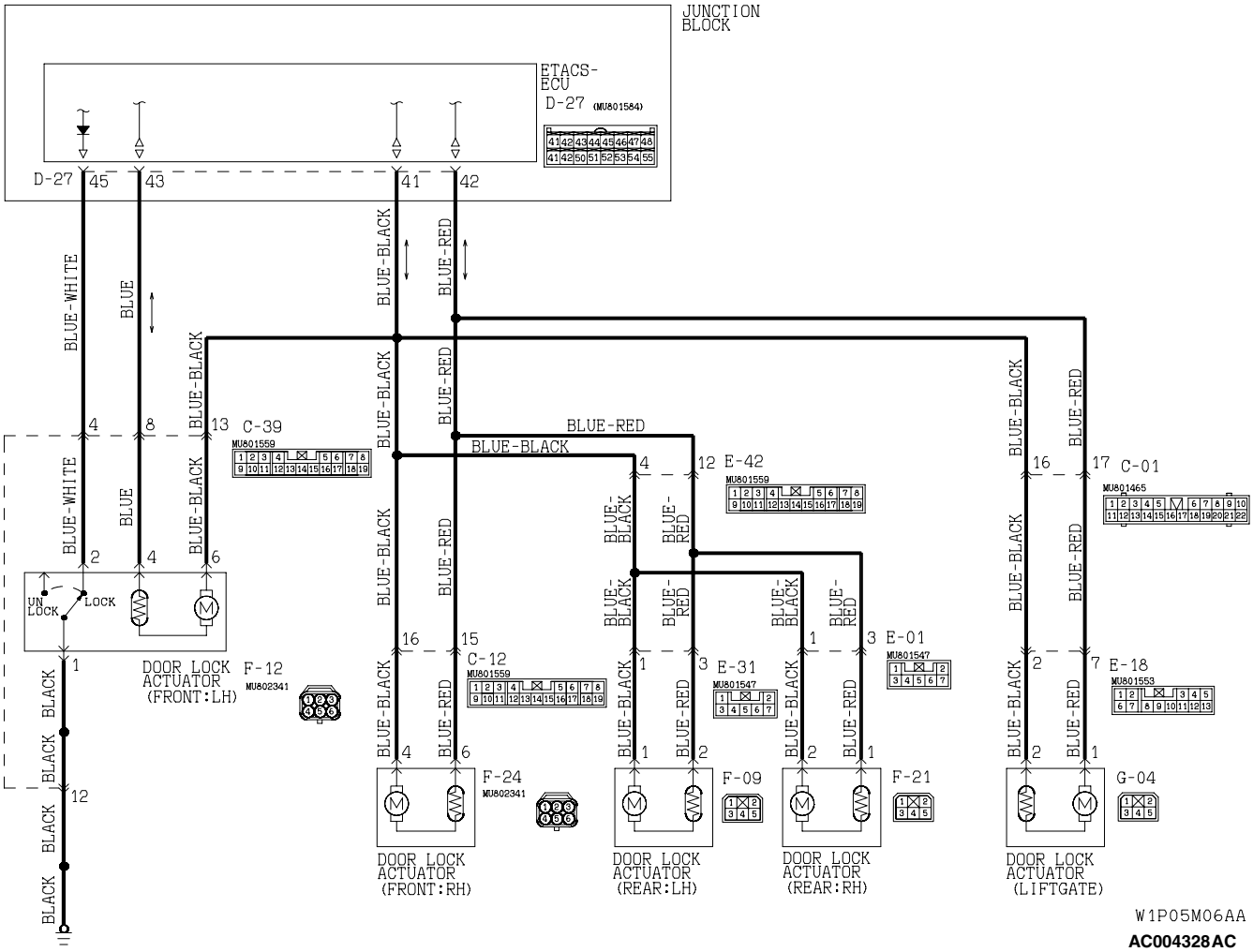
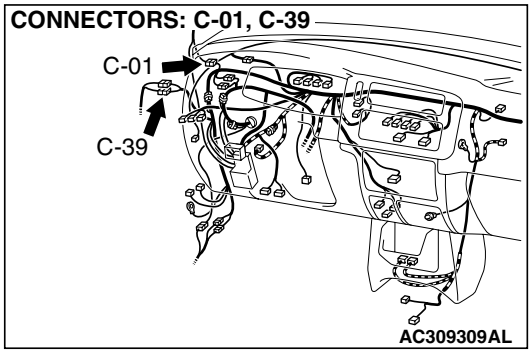
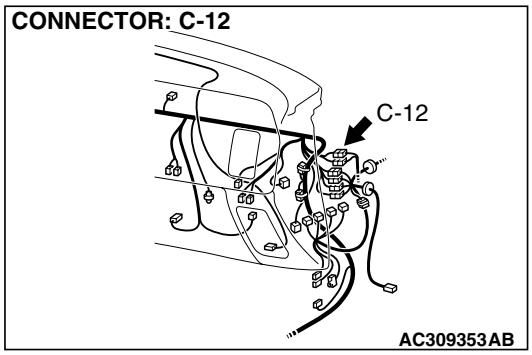
<Vehicles with keyless entry system>



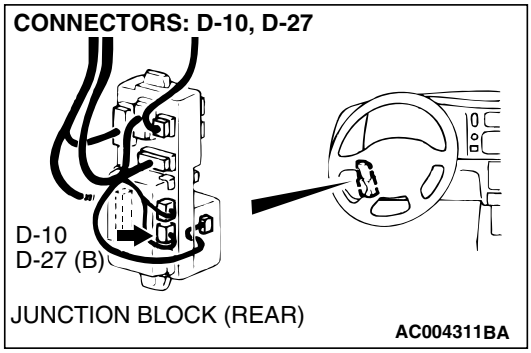
CONNECTORS: C-01, C-39

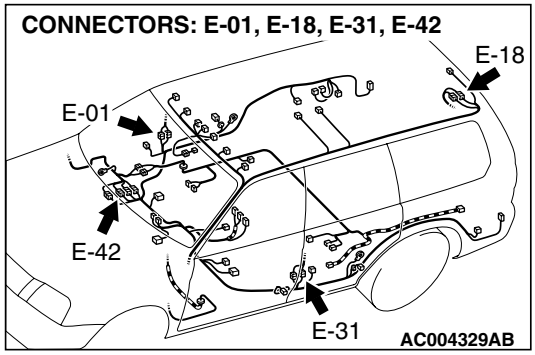


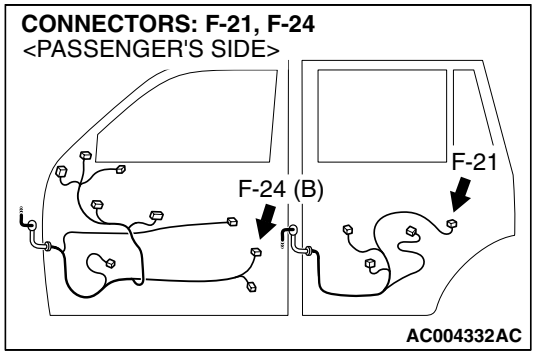
CONNECTOR: C-12

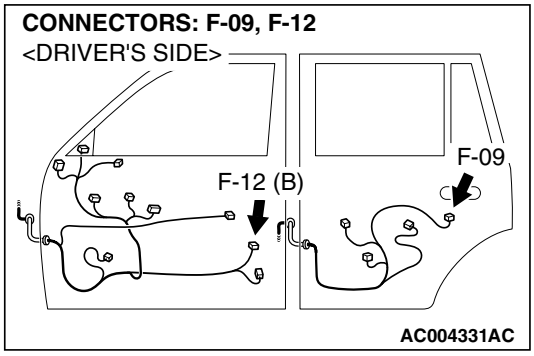


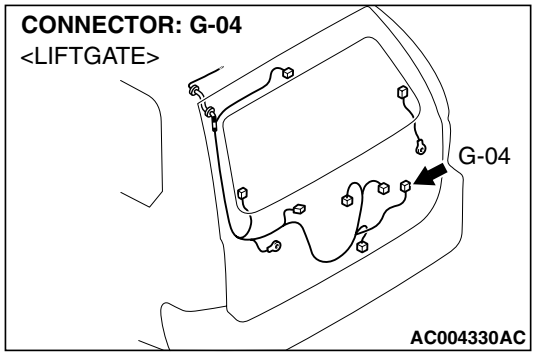
TSB Revision











COMMENT ON TROUBLE SYMPTOM

If a door or the liftgate can not be locked or unlocked by the central door locking system, the door lock actuator may be defective.

CIRCUIT OPERATION

When the door lock actuator receives the lock or unlock signal from the ETACS-ECU, the actuator will lock or unlock the door.

TECHNICAL DESCRIPTION (COMMENT)

The cause may be a malfunction of the door lock actuator or of a wiring harness or connector.

TROUBLESHOOTING HINTS

- Malfunction of the door lock actuator
- Damaged wiring harness or connector

DIAGNOSIS

STEP 1. Confirm which door lock actuator is defective.

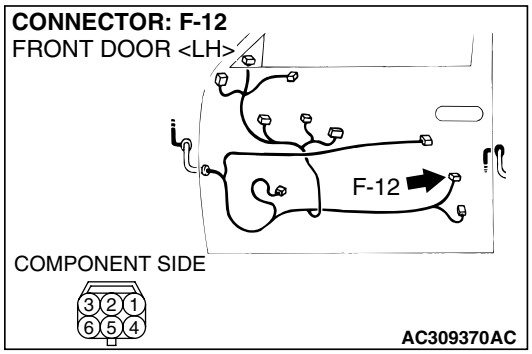
Q: Which door fails to lock correctly?

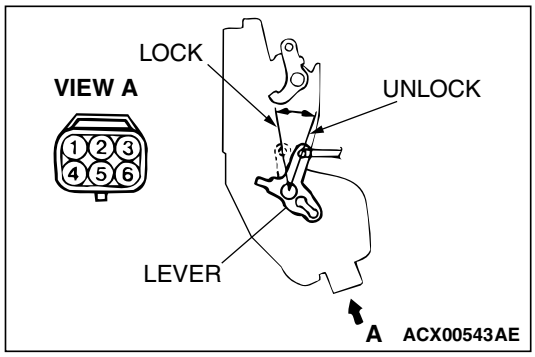
Front driver's door : Go to Step 2.
Front passenger's door : Go to Step 6.
Rear right door : Go to Step 10.
Rear left door : Go to Step 14.
Liftgate : Go to Step 18.

STEP 2. Check door lock actuator (front: LH) connector F-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connector in good condition?

YES : Go to step 3.
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.





STEP 3. Check the front door lock actuator switch (front: LH).

(1) Remove the door latch assembly (Refer to P.42-140).

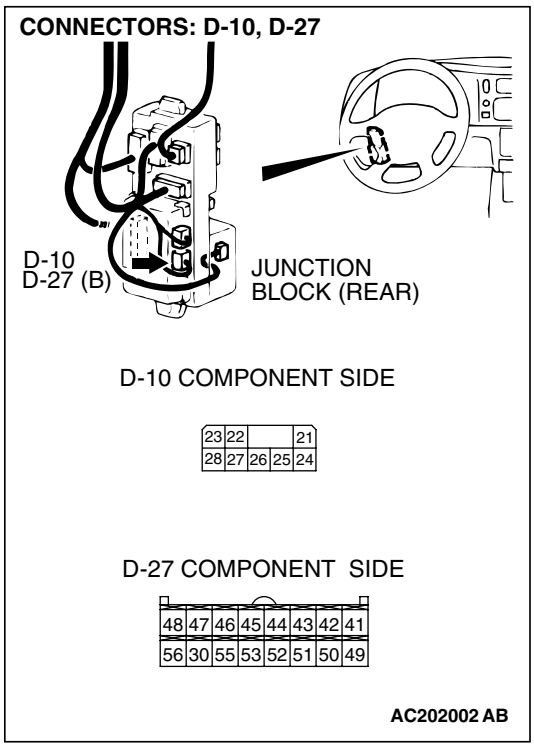
(2) Follow the table to check the resistance when the door lock actuator (front: LH) is operated (lock/unlock).

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "UNLOCK" position	• Connect terminal No. 6 and the positive battery terminal. • Connect terminal No. 4 and the negative battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.
At the "LOCK" position	• Connect terminal No. 4 and the positive battery terminal. • Connect terminal No. 6 and the negative battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.

Q: Is the front door lock actuator switch (front: LH) damaged?

YES : Replace front door lock actuator assembly (front: LH), go to Step 22.

NO : Go to Step 4.



STEP 4. Check ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

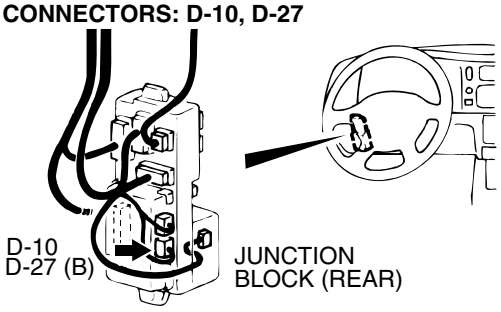
Q: Are ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> in good condition?

YES : Go to Step 5.

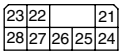
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

STEP 5. Check the harness wire between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (front: LH) connector F-12 (terminals No.4 and No.6).

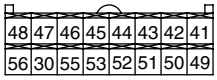
CONNECTORS: D-10, D-27



D-10 COMPONENT SIDE



D-27 COMPONENT SIDE



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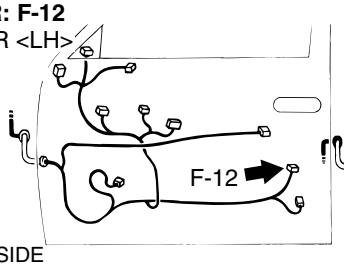
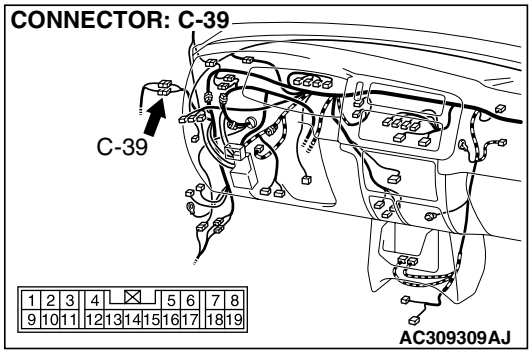
CONNECTOR: F-12
FRONT DOOR <LH>



COMPONENT SIDE

AC309370AC



NOTE: After inspecting intermediate connector C-39 inspect the wire. If intermediate connector C-39 is damaged, repair or replace damaged component. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 22.

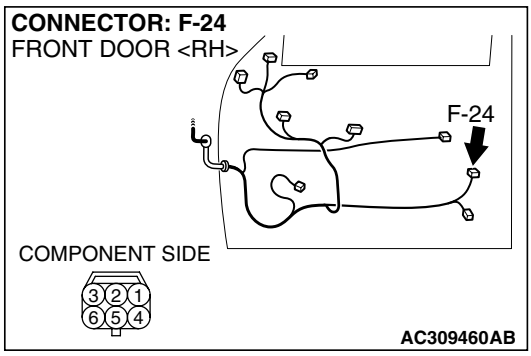
Q: Are there any damaged harness wires between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (front: LH) connector F-12 (terminals No.4 and No.6)?

YES : Replace the ETACS-ECU and then go to Step 22.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

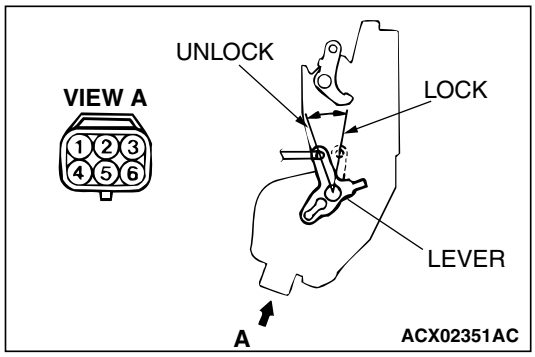
STEP 6. Check door lock actuator (front: RH) connector F-24 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connector in good condition?



YES : Go to step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.



STEP 7. Check the front door lock actuator switch (front: RH).

(1) Remove the door latch assembly (Refer to P.42-140).

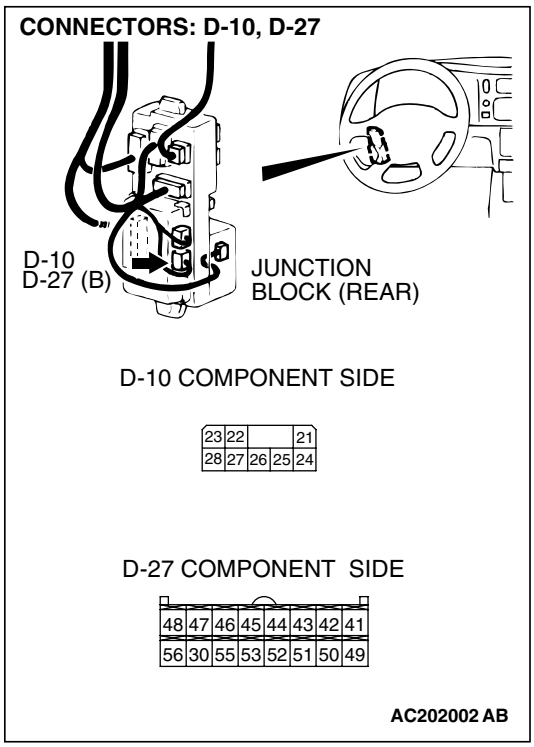
(2) Follow the table to check the resistance when the door lock actuator (front: RH) is operated (lock/unlock).

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "UNLOCK" position	• Connect terminal No. 4 and the positive battery terminal. • Connect terminal No. 6 and the negative battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.
At the "LOCK" position	• Connect terminal No. 6 and the positive battery terminal. • Connect terminal No. 4 and the negative battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.

Q: Is the front door lock actuator switch (front: RH) damaged?

YES : Replace front door lock actuator assembly (front: RH), go to Step 22.

NO : Go to Step 8.



STEP 8. Check ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

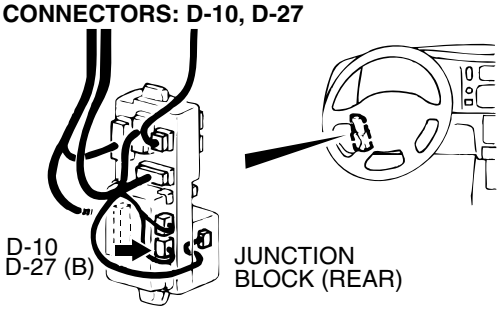
Q: Are ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> in good condition?

YES : Go to Step 9.

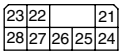
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

STEP 9. Check the harness wire between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (front: RH) connector F-24 (terminals No.4 and No.6).

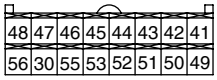
CONNECTORS: D-10, D-27



D-10 COMPONENT SIDE



D-27 COMPONENT SIDE



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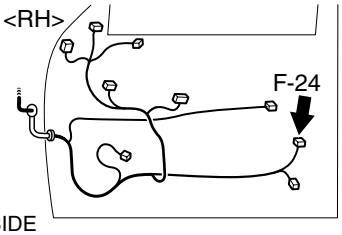
CONNECTOR: F-24

FRONT DOOR <RH>



COMPONENT SIDE

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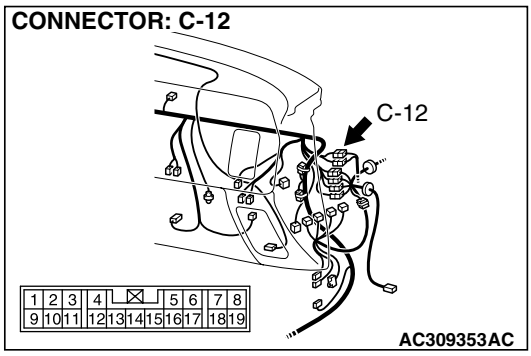


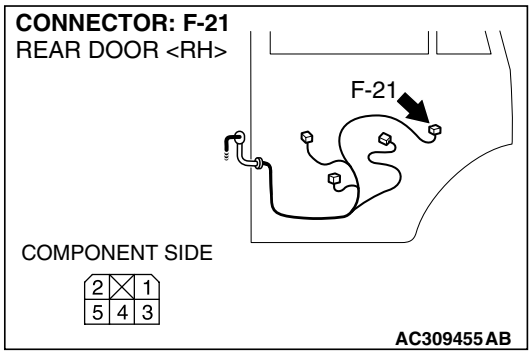
NOTE: After inspecting intermediate connector C-12 inspect the wire. If intermediate connector C-12 is damaged, repair or replace damaged component. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 22.

Q: Are there any damaged harness wires between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (front: RH) connector F-24 (terminals No.4 and No.6)?

YES : Replace the ETACS-ECU and then go to Step 22.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

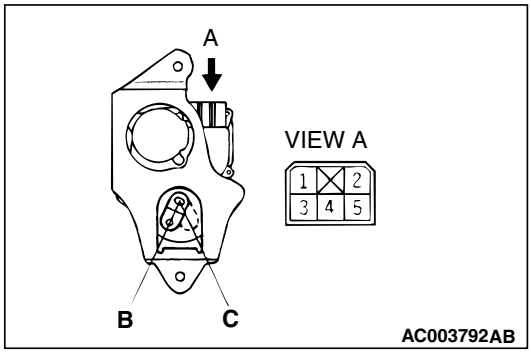
STEP 10. Check door lock actuator (rear: RH) connector F-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is the connector in good condition?

YES : Go to step 11.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.



STEP 11. Check the rear door lock actuator (rear: RH).

(1) Remove the door latch assembly (Refer to P.42-140).

(2) Follow the table to check the rear door lock actuator (lock/unlock).

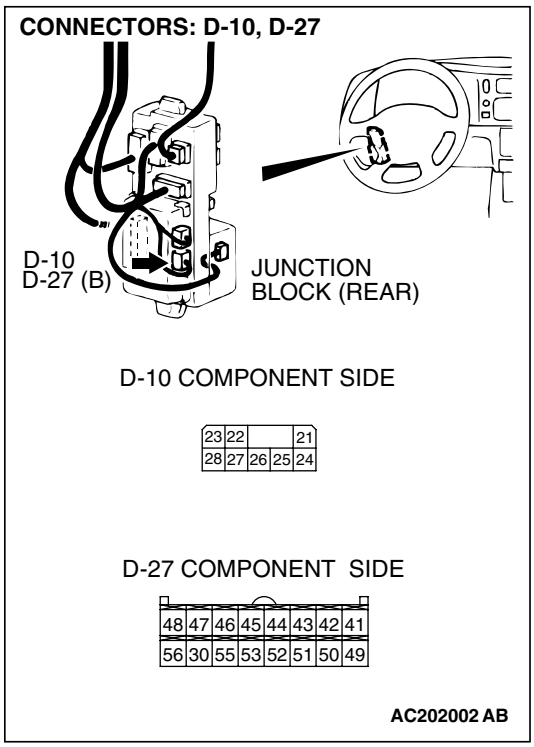
Actuator Operation Check

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "B" position	• Connect terminal No. 1 and the positive battery terminal. • Connect terminal No. 2 and the negative battery terminal.	The lever moves from the "B" position to the "C" position.
At the "C" position	• Connect terminal No. 2 and the positive battery terminal. • Connect terminal No. 1 and the negative battery terminal.	The lever moves from the "C" position to the "B" position.

Q: Is the rear door lock actuator damaged?

YES : Replace the door lock actuator assembly (rear: RH), go to Step 22.

NO : Go to Step 12.



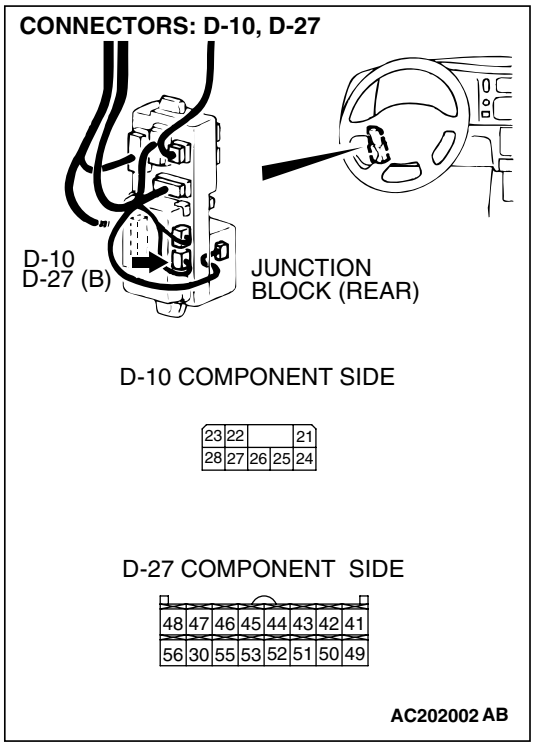
STEP 12. Check ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

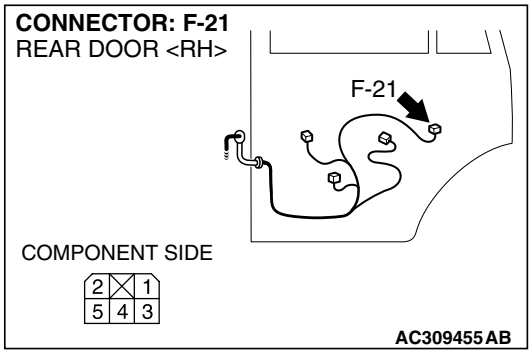
Q: Are ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry systerm> in good condition?

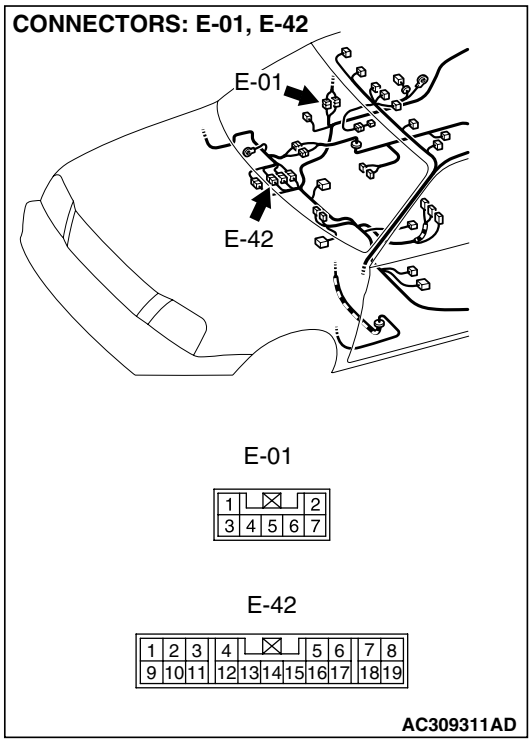
YES : Go to Step 13.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

STEP 13. Check the harness wire between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (rear: RH) connector F-21 (terminals No.1 and No.2).







NOTE: After inspecting intermediate connectors E-01 and E-42 inspect the wire. If intermediate connectors E-01 or E-42 is damaged, repair or replace damaged component. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 22.

Q: Are there any damaged harness wires between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (reart: RH) connector F-21 (terminals No.1 and No.2)?

YES : Replace the ETACS-ECU and then go to Step 22.

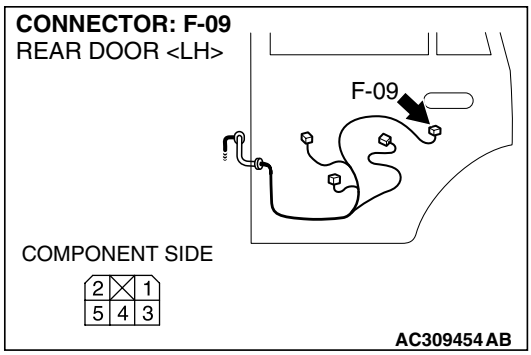
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step22.

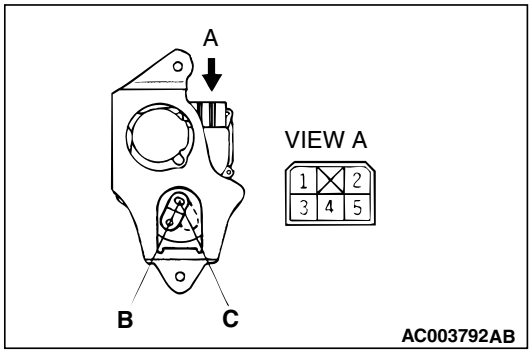
STEP 14. Check door lock actuator (rear: LH) connector F-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connector in good condition?

YES : Go to step 15.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.





STEP 15. Check the rear door lock actuator (rear: LH).

(1) Remove the door latch assembly (Refer to P.42-140).

(2) Follow the table to check the rear door lock actuator (lock/unlock).

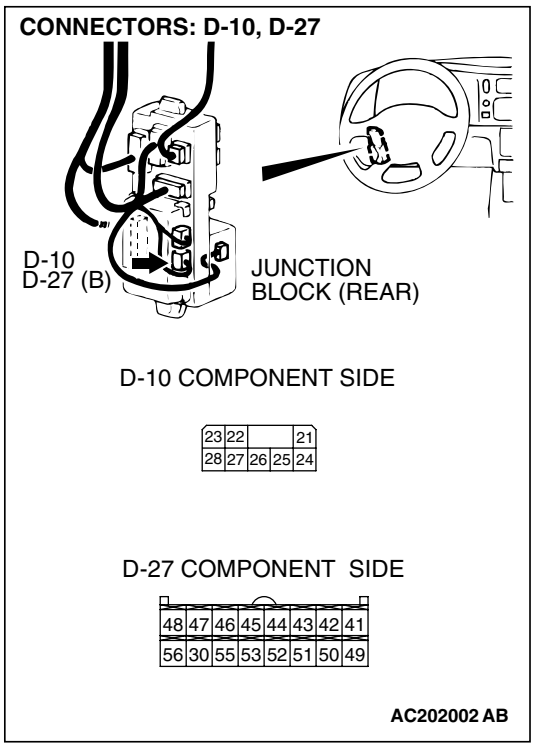
Actuator Operation Check

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "B" position	• Connect terminal No. 1 and the positive battery terminal. • Connect terminal No. 2 and the negative battery terminal.	The lever moves from the "B" position to the "C" position.
At the "C" position	• Connect terminal No. 2 and the positive battery terminal. • Connect terminal No. 1 and the negative battery terminal.	The lever moves from the "C" position to the "B" position.

Q: Is the rear door lock actuator damaged?

YES : Replace the door lock actuator assembly (rear: LH), go to Step 22.

NO : Go to Step 16.



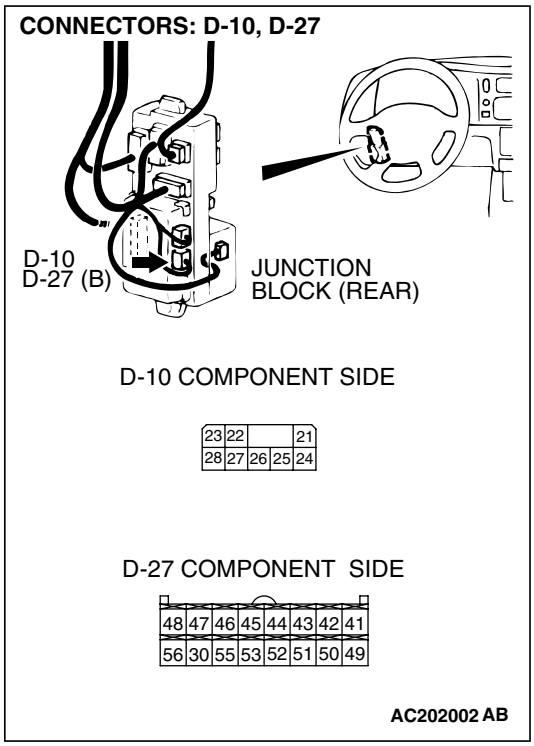
STEP 16. Check ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

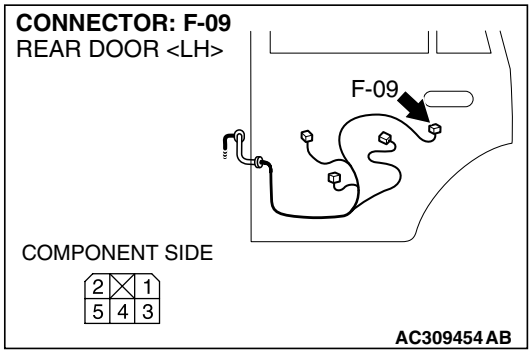
Q: Are ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry systerm> in good condition?

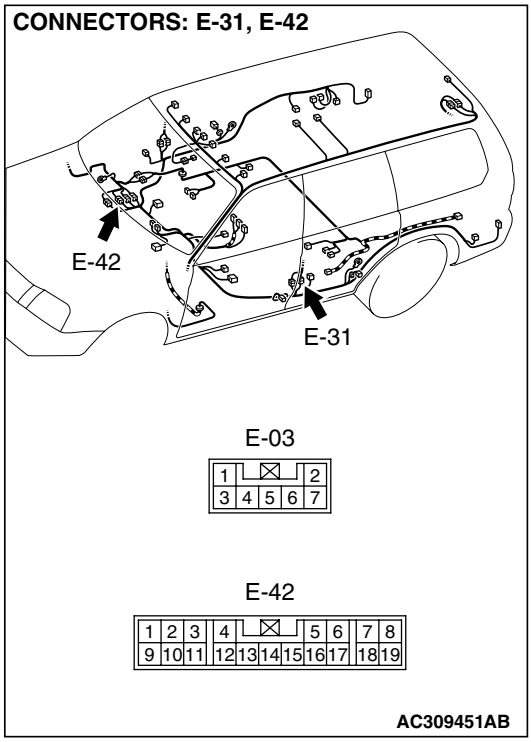
YES : Go to Step 17.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

STEP 17. Check the harness wire between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (rear: LH) connector F-09 (terminals No.1 and No.2).





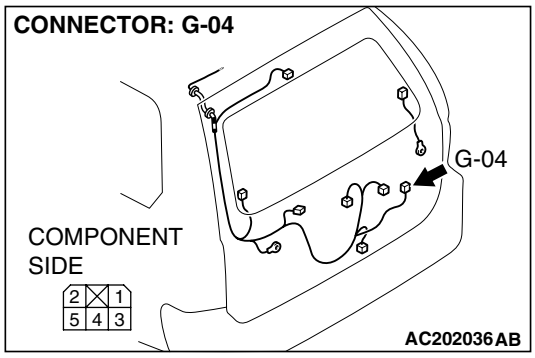


NOTE: After inspecting intermediate connectors E-31 and E-42 inspect the wire. If intermediate connectors E-31 or E-42 is damaged, repair or replace damaged component. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 22.

Q: Are there any damaged harness wires between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (reart: LH) connector F-09 (terminals No.1 and No.2)?

YES : Replace the ETACS-ECU and then go to step 22.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

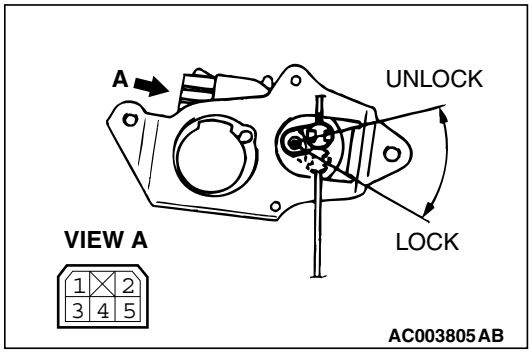


STEP 18. Check door lock actuator (liftgate) connector G-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connector in good condition?

YES : Go to step 19.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.



STEP 19. Check the door lock actuator (liftgate).

(1) Remove the liftgate lock key cylinder (Refer to P.42-152).

(2) Follow the table to check the liftgate lock actuator operation (lock/unlock).

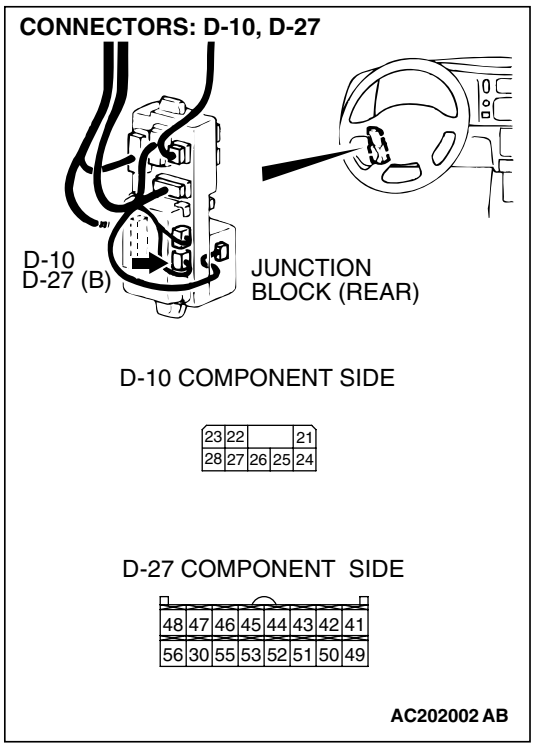
Actuator Operation Check

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal No. 1 and the positive battery terminal. • Connect terminal No. 2 and the negative battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No. 2 and the positive battery terminal. • Connect terminal No. 1 and the negative battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Is the liftgate lock actuator damaged?

YES : Replace liftgate lock actuator, then go to Step 22 .

NO : Go to Step 20.



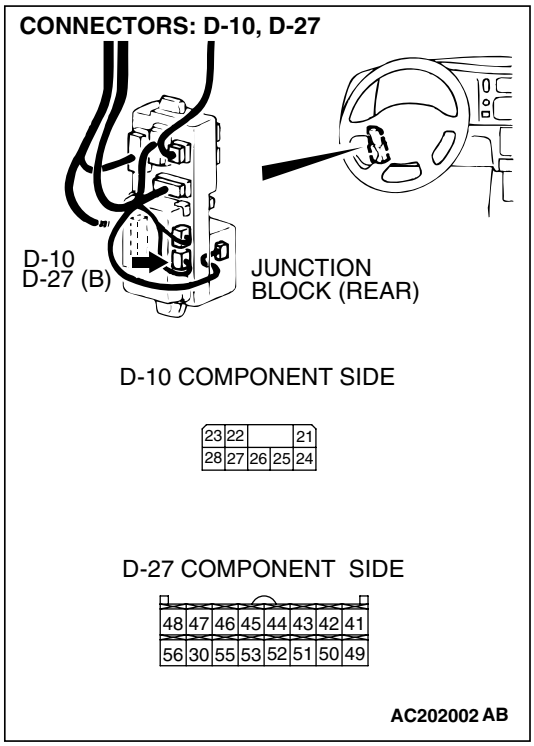
STEP 20. Check ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

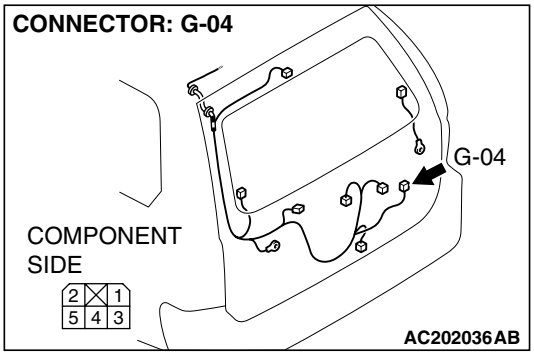
Q: Are ETACS-ECU connectors D-10 <Vehicles without keyless entry system> and D-27 <Vehicles with keyless entry system> in good condition?

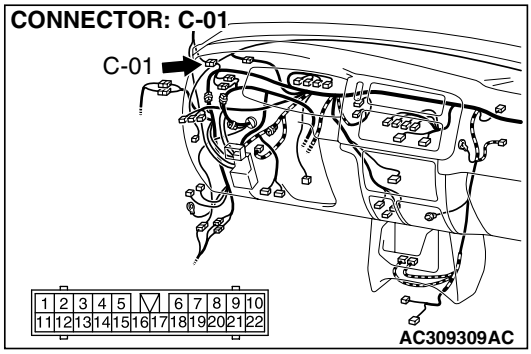
YES : Go to Step 21.

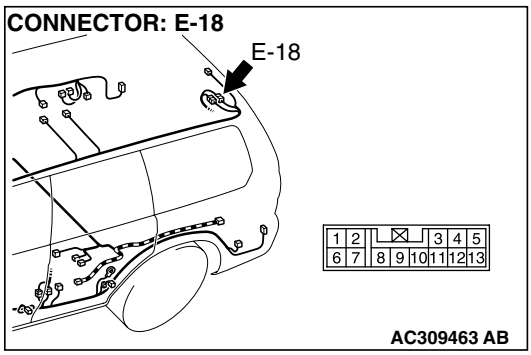
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

STEP 21. Check the harness wire between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (liftgate) connector G-04 (terminals No.1 and No.2).









NOTE: After inspecting intermediate connectors C-01 and E-18 inspect the wire. If intermediate connectors C-01 or E-18 is damaged, repair or replace damaged component. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 22.

Q: Are there any damaged harness wires between ETACS-ECU connectors D-10 (terminals No.21 and No.24) <Vehicles without keyless entry system> or D-27 (terminals No.41 and No.42) <Vehicles with keyless entry system> and door lock actuator (liftgate) connector G-04 (terminals No.1 and No.2)?

YES : Replace the ETACS-ECU and then go to step 22.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 22.

STEP 22. Retest the system.

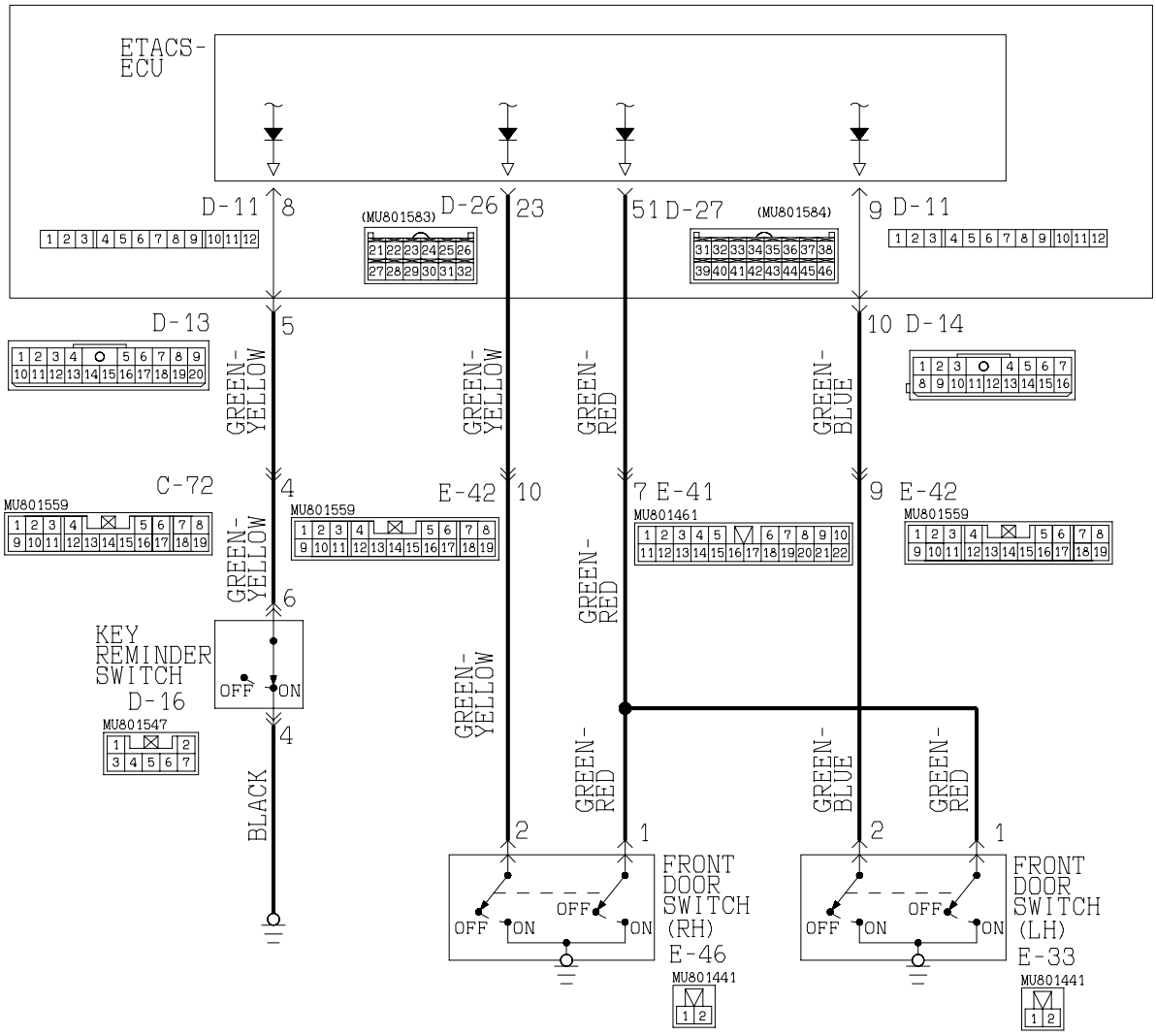
Q: Does the door lock function operate normally?

YES : The procedure is complete.

NO : Return to Step 1.

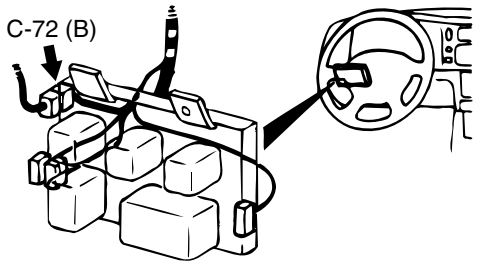
INSPECTION PROCEDURE 6: Forgotten Key Prevention Function does not Operate (Center Door Locking System Function Works Normally) <Vehicles with keyless entry system>.

Key Reminder Switch Circuit



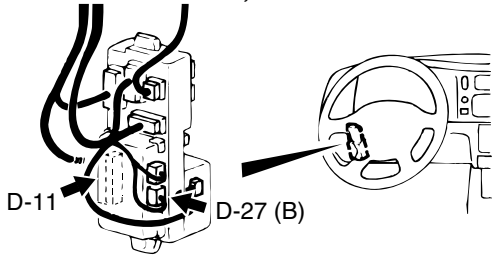
W1P12M05AA
AC004333AB

CONNECTOR: C-72



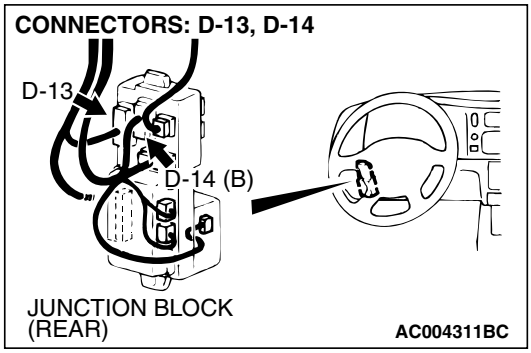
AC004969 AC

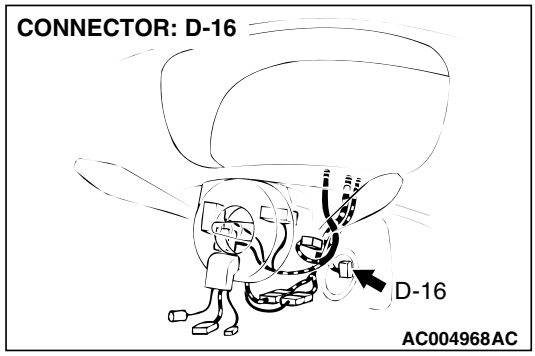
CONNECTORS: D-11, D-27

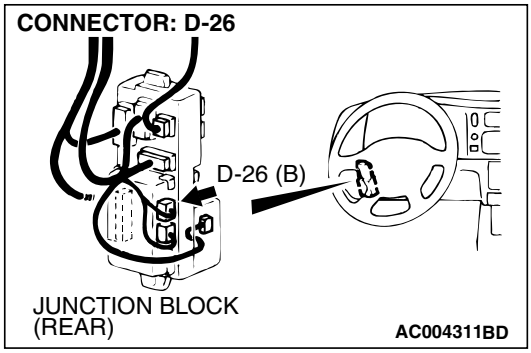


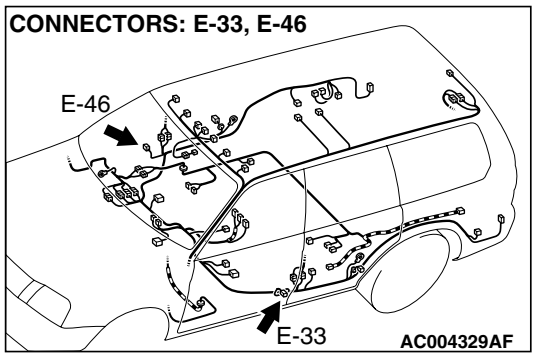
AC004311BB

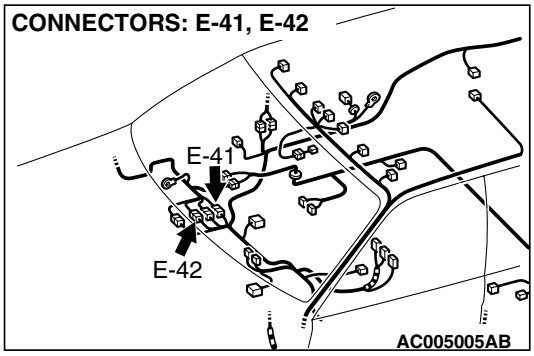
TSB Revision











TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU operates the forgotten key prevention function, based on the input signals from the following switches:

- Key reminder switch
- Driver's or front passenger's door switch

If the function does not work normally, a defect on the relevant circuit or the ETACS-ECU may be suspected.

TROUBLESHOOTING HINTS

- Malfunction of the key reminder switch
- Malfunction of the driver's or front passenger's door switch
- Malfunction of the ETACS-ECU
- Damaged harness wires or connectors

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DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991529: Diagnostic Trouble Code Check Harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1.Choose method of ETACS-ECU input signal check.

Q: Is the ETACS-ECU input signal check performed by scan tool MB991958 or a voltmeter?

By Scan tool MB991958 : Go to Step 2.
By a Voltmeter <Key reminder switch input signal check> : Go to Step 3.
By a Voltmeter <Front driver's door switch input signal check> : Go to Step 4.
By a Voltmeter <Front passenger's door switch input signal check> : Go to Step 5.

STEP 2. Check the input signal (by using the pulse check) (by using MB991958).

Check the ETACS-ECU input signal (key reminder switch or front door switches) by using scan tool MB991958.

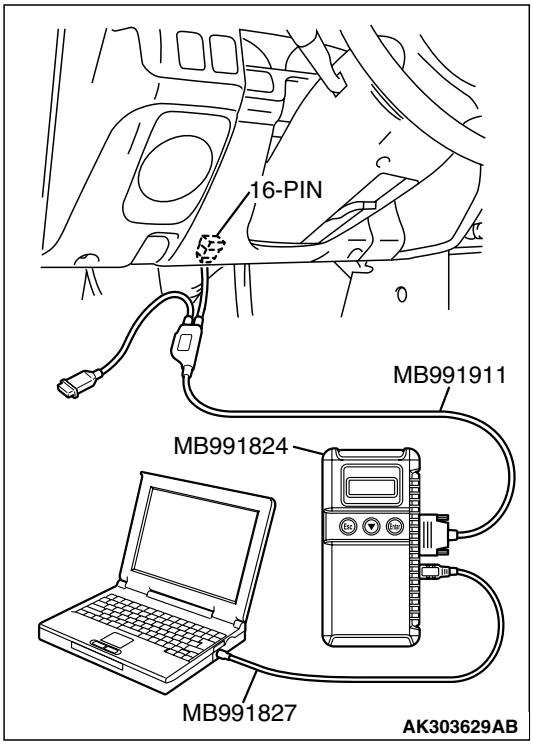
⚠ CAUTION

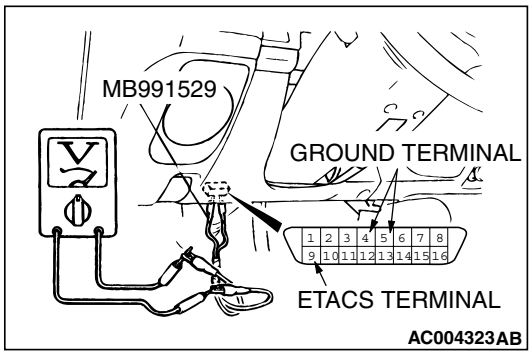
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.
(2) Operate scan tool MB991958 as follows:
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "PULSE CHECK."
(3) Insert the key to the ignition switch.
(4) Open the front driver's door or front passenger's door.
(5) Check that scan tool MB991958 sounds

Q: Does the tone alarm of scan tool MB991958 sound when the input signal enters?

YES : Replace the ETACS-ECU and then go to Step 19.
NO <Key reminder switch input signal> : Go to Step 6.
NO <Front driver's door switch input signal> : Go to Step 11.
NO <Front passenger's door switch input signal> : Go to Step 15.



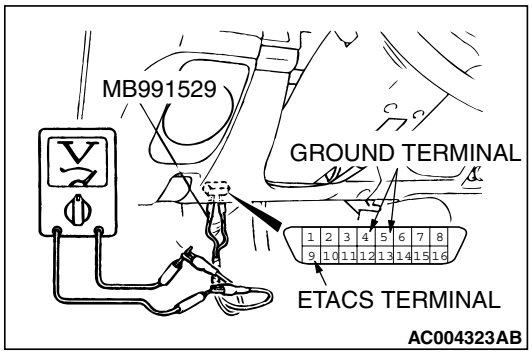


STEP 3. Check the ETACS-ECU input signal from the key reminder switch (by using a voltmeter).

(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when the key reminder switch is operated <key in (off)/key out (on)>.

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 19.
NO : Go to Step 6.

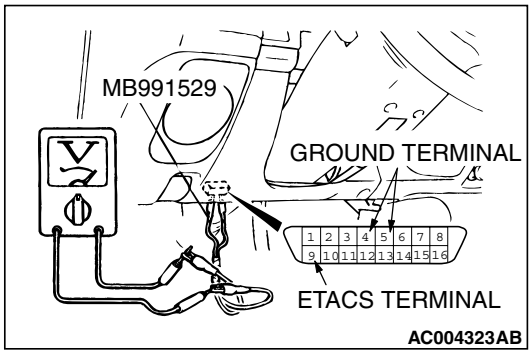


STEP 4. Check the input signal from the front driver's door switch (by using a voltmeter).

(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when the front driver's door switch is operated <open (on)/depressed (off)>.

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 19.
NO : Go to Step 11.

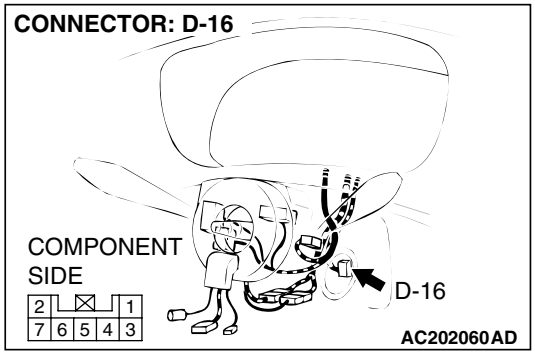


STEP 5. Check the input signal from the Front passenger's door switch (by using a voltmeter).

(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when the front passenger's door switch is operated <open (on)/depressed (off)>.

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 19.
NO : Go to Step 15.

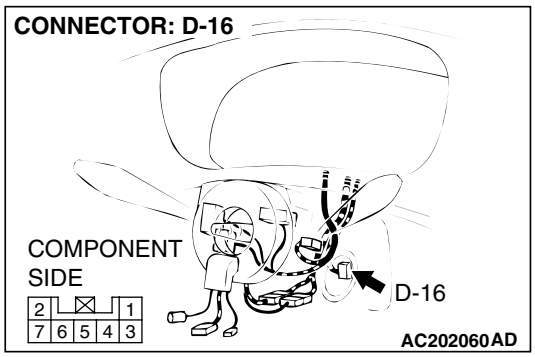


STEP 6. Check key reminder switch connector D-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is key reminder switch connector D-16 in good condition?

YES : Go to step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 19.



STEP 7. Check the key reminder switch.

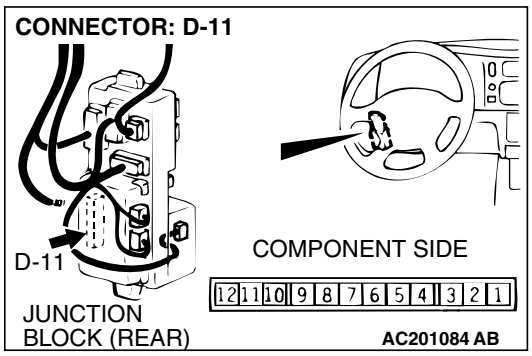
(1) Remove the driver's side under cover.
(2) Remove the column cover, lower and upper.
(3) Disconnect the key reminder switch connector and measure at the key reminder switch side.
(4) Measure the resistance between terminal numbers 4 and 6.
(5) Follow the table below to check the key reminder switch continuity.

STATUS OF IGNITION KEY	TESTER CONNECTION	SPECIFIED CONDITION
Key removed	4 – 6	Less than 2 ohms
Key inserted	4 – 6	Open circuit

Q: Is the key reminder switch damaged?

YES : Replace the key reminder switch, then go to Step 19.

NO : Go to Step 8.



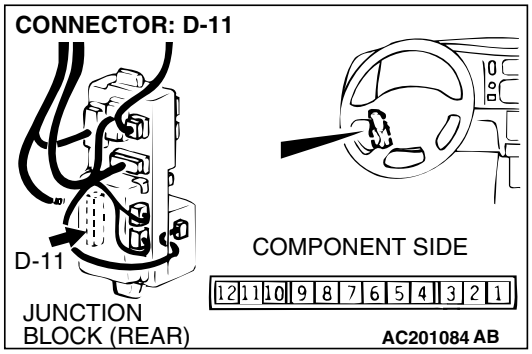
STEP 8. Check ETACS-ECU connector D-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

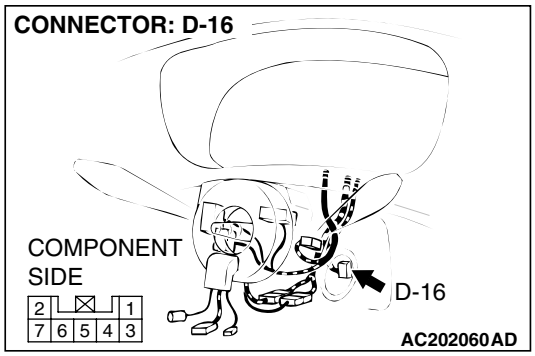
Q: Is ETACS-ECU connector D-11 in good condition?

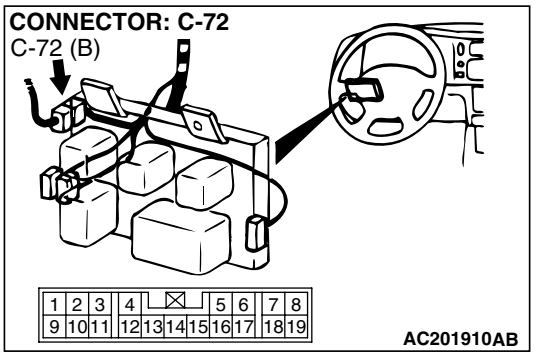
YES : Go to step 9.

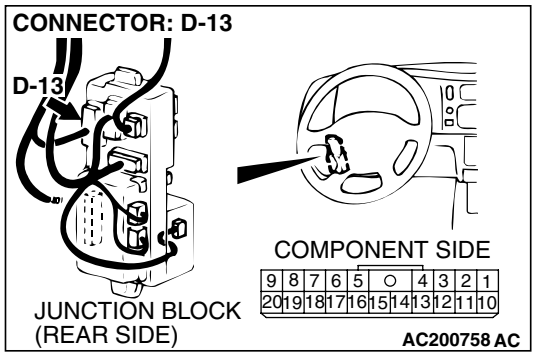
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 19.

STEP 9. Check the harness wire between ETACS-ECU connector D-11 (terminal No.8) and key reminder switch connectors D-16 (terminalNo.6).







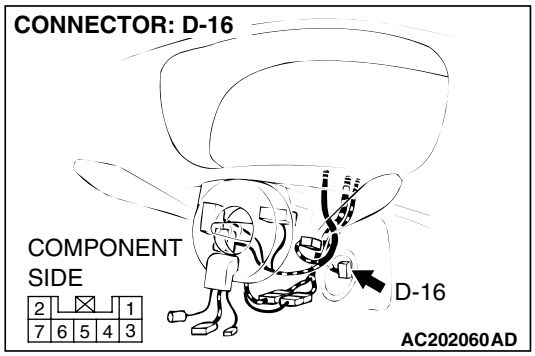


NOTE: After inspecting intermediate connector C-72, junction block connector D-13 inspect the wires. If intermediate connector C-72, junction block connector D-13 is damaged, repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 19.

Q: Are there any damaged harness wires?

YES : Repair or replace the harness wire, then go to Step 19.

NO : Go to Step 10.

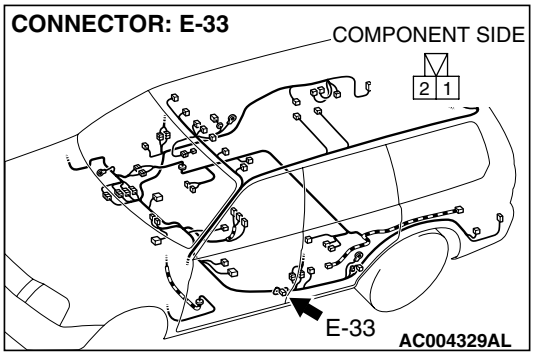


STEP 10. Check the harness wire between key reminder switch connector D-16 (terminal No.4) and ground.

Q: Is the harness wire between key reminder switch connector D-16 (terminal No.4) and ground damaged?

YES : Repair or replace the harness wire, then go to Step 19.

NO : Replace the ETACS-ECU and then go to Step 19.

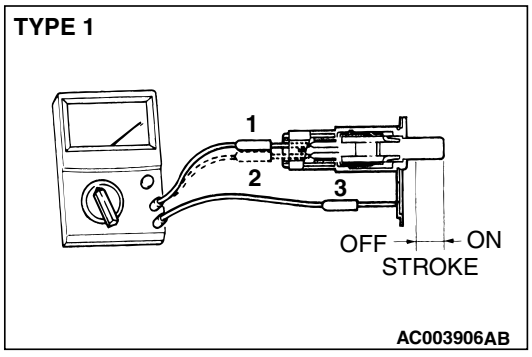


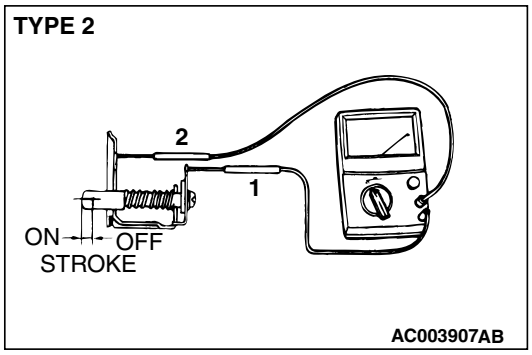
STEP 11. Check front driver's door switch connector E-33 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front driver's door switch connector E-33 in good condition?

YES : Go to step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 19.





STEP 12. Check the front driver's door switch.

(1) Remove the front driver's door switch (Refer to P.42-132).

(2) Follow the table to check the front driver's door switch continuity.

TYPE1

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2, 1 – 3, 2 – 3	Less than 2 ohms
Depressed (OFF)	1 – 2, 1 – 3, 2 – 3	Open circuit

TYPE2

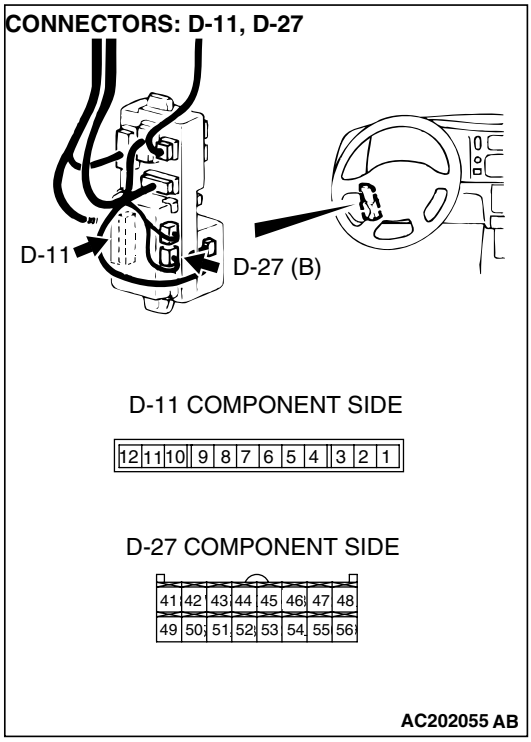
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2	Less than 2 ohms
Depressed (OFF)	1 – 2	Open circuit

Q: Is the front driver's door switch in good condition?

YES : Go to Step 13 .

NO : Replace front driver's door switch, then go to Step 19.

TSB Revision



STEP 13. Check ETACS-ECU connector D-11 and D-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

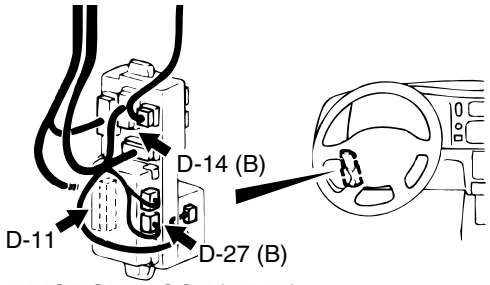
Q: Are ETACS-ECU connector D-11 and D-27 in good condition?

YES : Go to step 14.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 19.

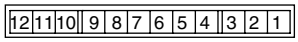
STEP 14. Check the harness wire between ETACS-ECU connector D-11 (terminal No.9), D-27 (terminal No.51) and front driver's door switch connectors E-33 (terminals No.1 and No.2).

CONNECTORS: D-11, D-14, D-27

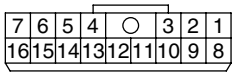


JUNCTION BLOCK (REAR)

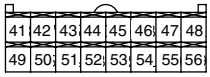
D-11 COMPONENT SIDE



D-14 COMPONENT SIDE



D-27 COMPONENT SIDE



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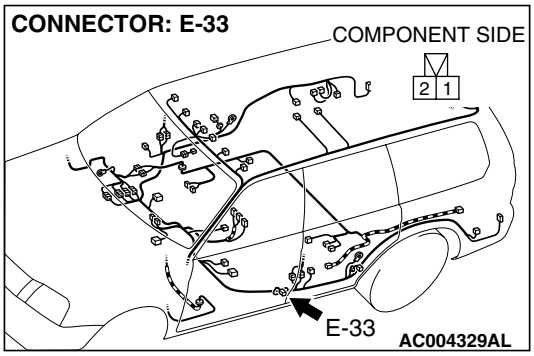
CONNECTOR: E-33



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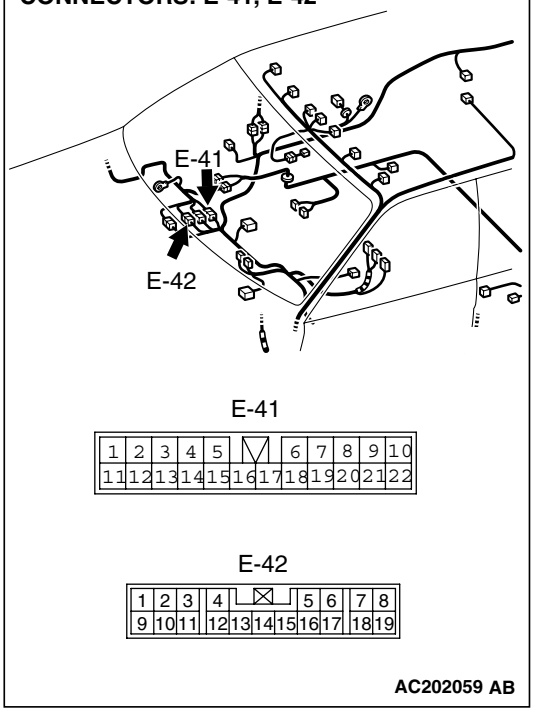
CONNECTORS: E-41, E-42



NOTE: After inspecting junction block connector D-14, intermediate connector E-41 and E-42 inspect the wire. If junction block connector D-14, intermediate connector E-41 or E-42 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 19.

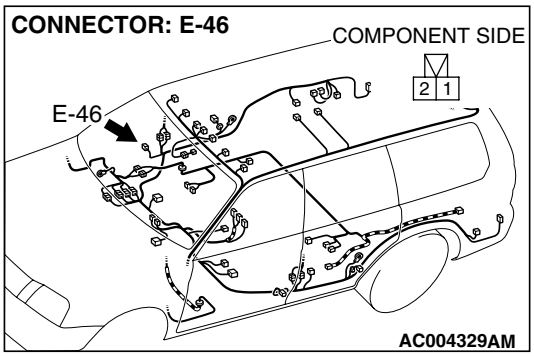
Q: Are there any damaged harness wires between ETACS-ECU connector D-11 (terminal No.9), D-27 (terminal No.51) and front driver's door switch connectors E-33 (terminals No.1 and No.2)?

YES : Repair or replace the harness wire, then go to Step19.

NO : Replace the ETACS-ECU and then go to Step19.

STEP 15. Check front passenger's door switch connector E-46 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CONNECTOR: E-46

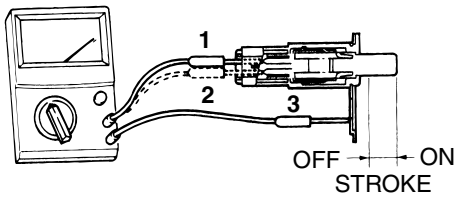


Q: Is front passenger's door switch E-46 in good condition?

YES : Go to step 16.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 19.

TYPE 1



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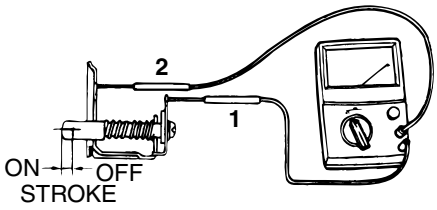
TYPE 2



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STEP 16. Check the front passenger's door switch.

(1) Remove the fornt passenger's door switch (Refer to P.42-132).

(2) Follow the table to check the front passenger's door switch continuity.

TYPE1

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2, 1 – 3, 2 – 3	Less than 2 ohms
Depressed (OFF)	1 – 2, 1 – 3, 2 – 3	Open circuit

TYPE2

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2	Less than 2 ohms
Depressed (OFF)	1 – 2	Open circuit

Q: Is the front passenger's door switch in good condition?

YES : Go to Step 17 .

NO : Replace front passenger's door switch, then go to Step 19.

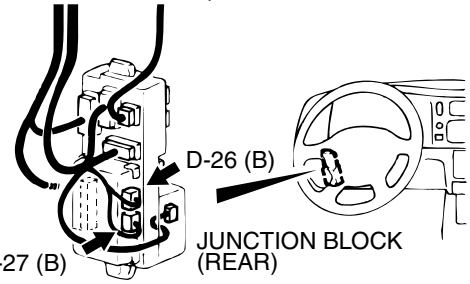
STEP 17. Check ETACS-ECU connector D-26 and D-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector D-26 and D-27 in good condition?

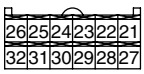
YES : Go to step 18.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 19.

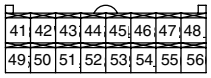
CONNECTORS: D-26, D-27



D-26 COMPONENT SIDE



D-27 COMPONENT SIDE



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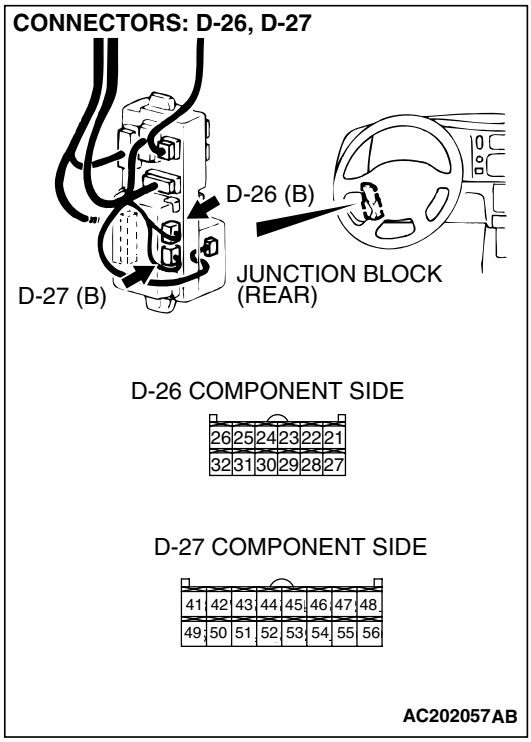
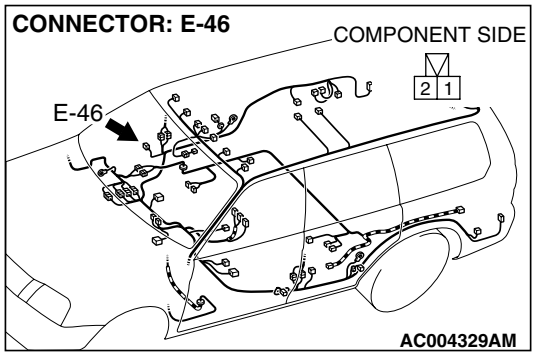
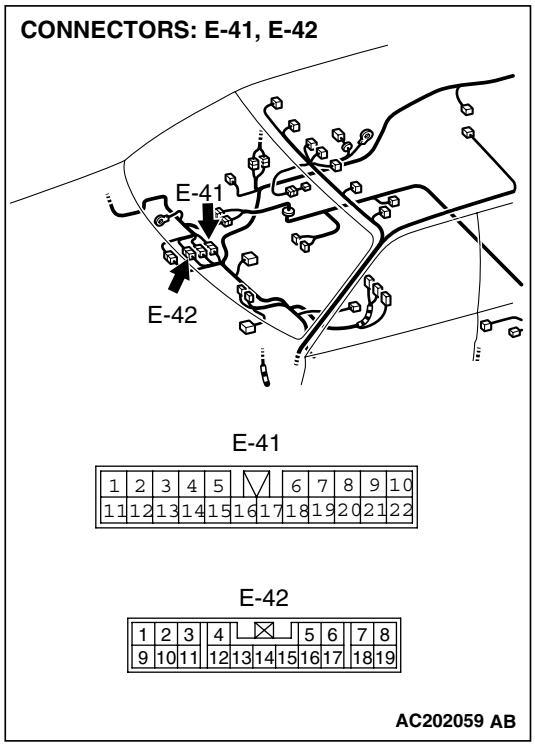
STEP 18. Check the harness wire between ETACS-ECU connector D-26 (terminal No.23), D-27 (terminal No.51) and front passenger's side door switch connector E-46 (terminals No.1 and No.2).







NOTE: After inspecting intermediate connector E-41 and E-42 inspect the wire. If intermediate connector E-41 or E-42 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 19.

Q: Are there any damaged harness wires between ETACS-ECU connector D-26 (terminal No.23), D-27 (terminal No.51) and front passenger's side door switch connector E-46 (terminals No.1 and No.2)?

YES : Repair or replace the harness wire, then go to Step19.

NO : Replace the ETACS-ECU and then go to Step19.

STEP 19.Retest the system.

Q: Does the door lock function operate normally?

YES : The procedure is complete.

NO : Return to Step 1.

POWER WINDOW DIAGNOSIS

INTRODUCTION TO POWER WINDOWS DIAGNOSIS

M1429002600148

If the power windows cannot be operated, the fuse, relay, main switch, sub switch, ETACS-ECU or motor may be faulty.

When the power window switch (main or sub) is operated, the power window motor operates and opens or closes the door window.

A timer function has been provided to allow the door windows to be opened or closed in 30 seconds after the ignition switch is turned from "ON" to "LOCK" (OFF) position when a front door <LH> and <RH> is closed (door switch is OFF). When the lock switch is changed from unlock to lock, the door windows can only be opened or closed by the power window main switch on the driver's side.

If the following types of symptom occur, there may be a fault.

- None of the door windows open or close.
- There are door windows that do not open or close using the power window (main or sub) switch.
- The windows cannot be opened or closed using the power window (main or sub) switch within 30 seconds after the ignition switch is turned from "ON" to "LOCK" (OFF) position.

POWER WINDOWS DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1429002700145

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a power windows fault.

1. Gather information from customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

SYMPTOM CHART

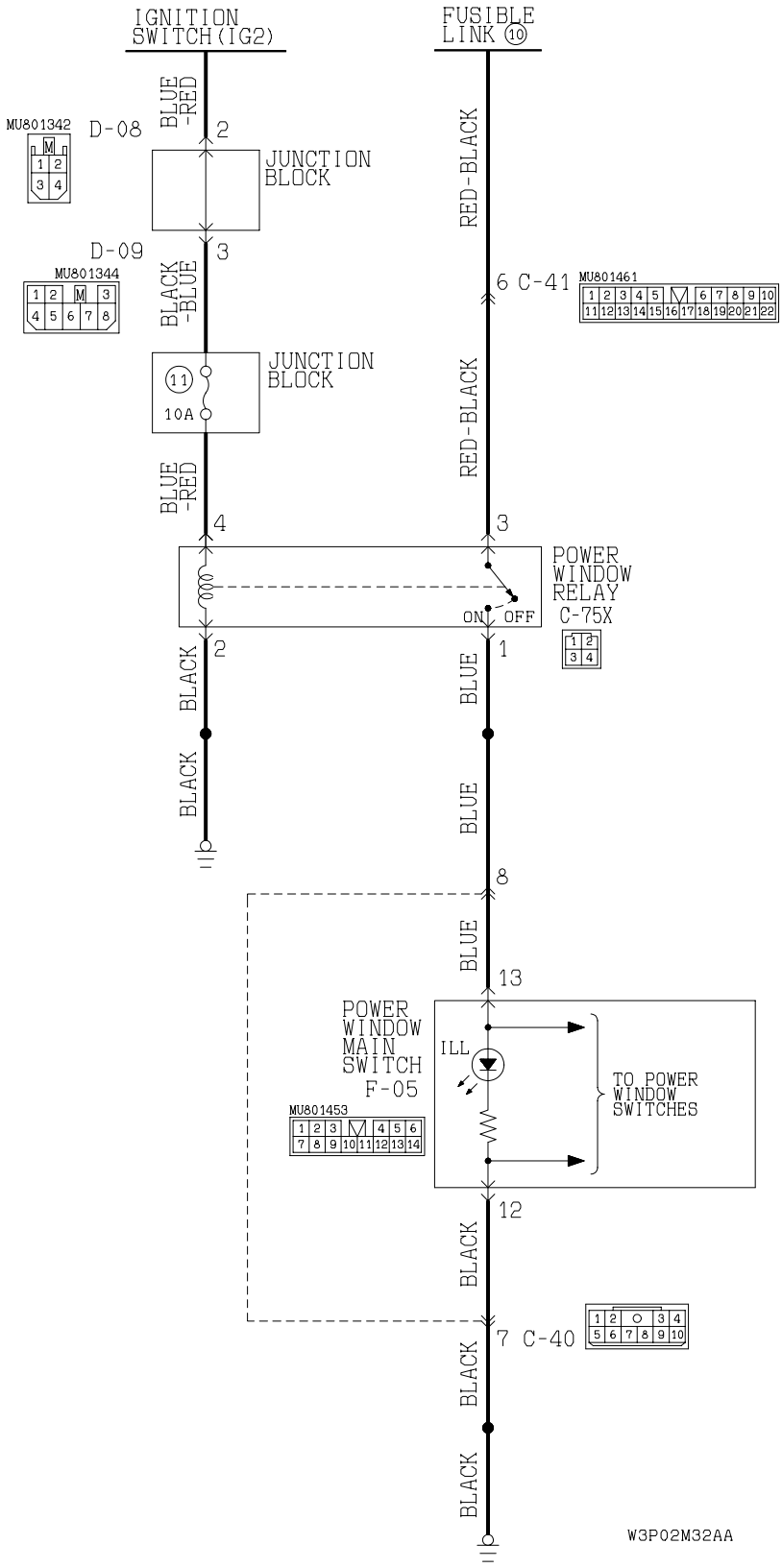
M1429002800197

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
All windows does not open or close using the power window main/sub switch <Vehicles without keyless entry system>.	1	P.42-94
All windows does not open or close using the power window main/sub switch <Vehicles with keyless entry system>.	2	P.42-103
Power window timer function does not work normally. (power window operates) <vehicles with keyless entey system>	3	P.42-115

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: All Windows does not Open or Close Using the Power Window Main/Sub Switch <Vehicles without keyless entry system>.

Power Window Switch Circuit



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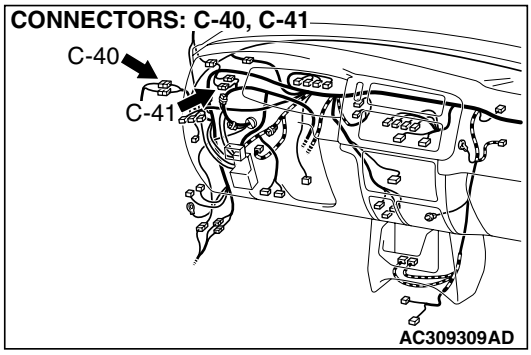
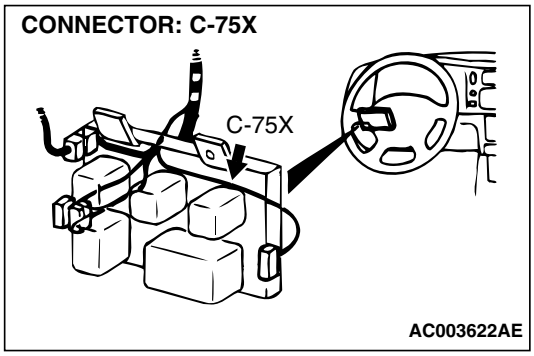
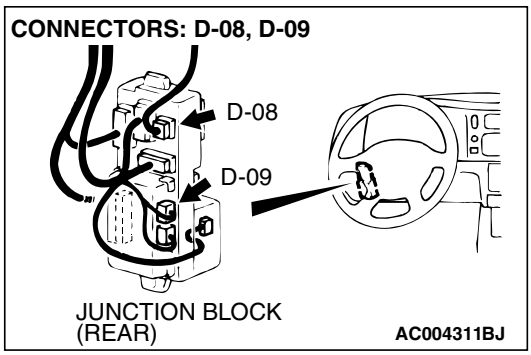
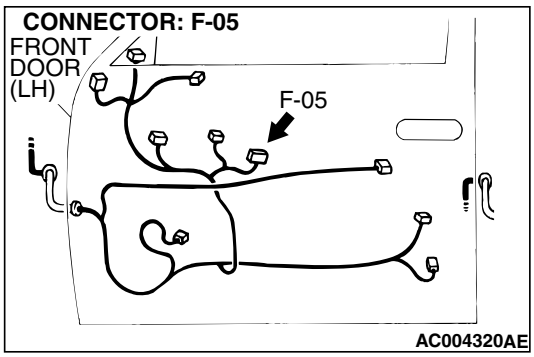
TSB Revision









CIRCUIT OPERATION

The power window relay turn ON when the ignition switch (IG1) is turned ON.

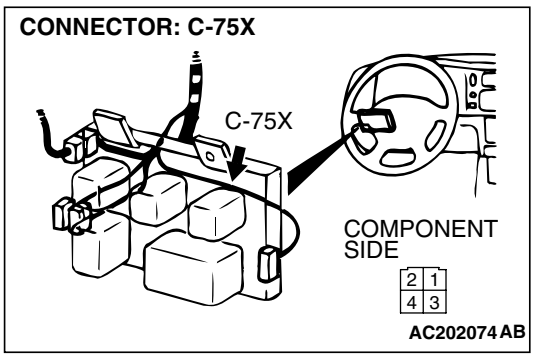
TECHNICAL DESCRIPTION (COMMENT)

The power window relay may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the power window relay
- Malfunction of the power window main switch
- Damaged harness wires or connectors

DIAGNOSIS

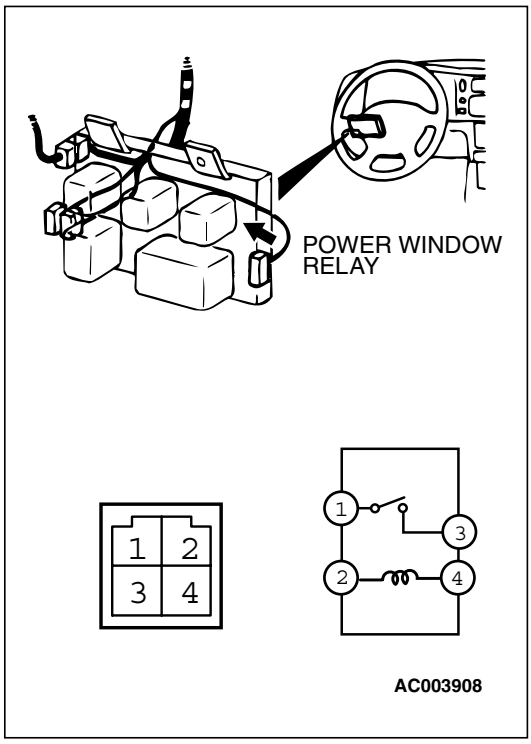


STEP 1. Check power window relay connector C-75X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 14.



STEP 2. Measure the power window relay continuity.

(1) Remove the power window relay. (Refer to P.42-137.)

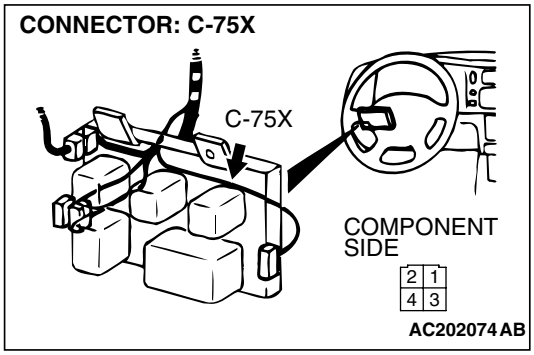
(2) Follow the table to check the power window relay continuity.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 3	Open circuit
• Connect terminal No. 4 to the positive battery terminal • Connect terminal No. 2 to the negative battery terminal	1 – 3	Less than 2 ohms

Q: Does the measured resistance value correspond with this range?

YES : Go to Step 3.

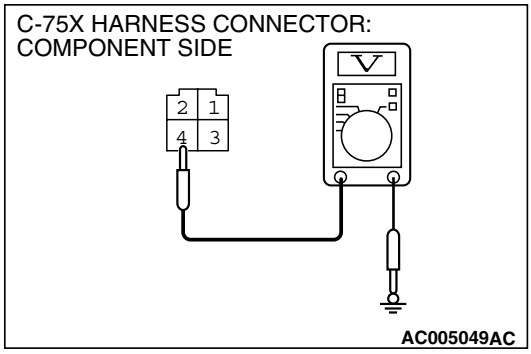
NO : Replace power window relay, then go to Step 14.



STEP 3. Measure the power window relay supply circuit [ignition switch (IG2)] at the power window relay connector C-75X.

(1) Remove the power window relay, and measure at the power window relay connector C-75X (relay box side).

(2) Turn the ignition switch to "ON" position.



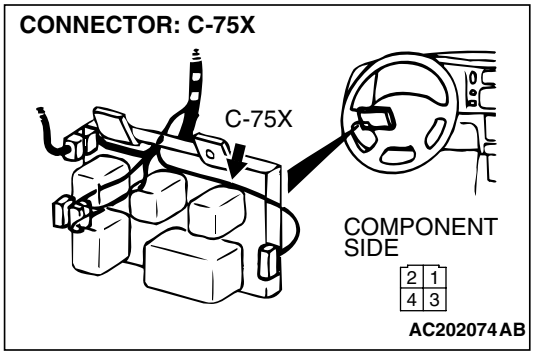
(3) Measure the voltage between terminal 4 and ground.

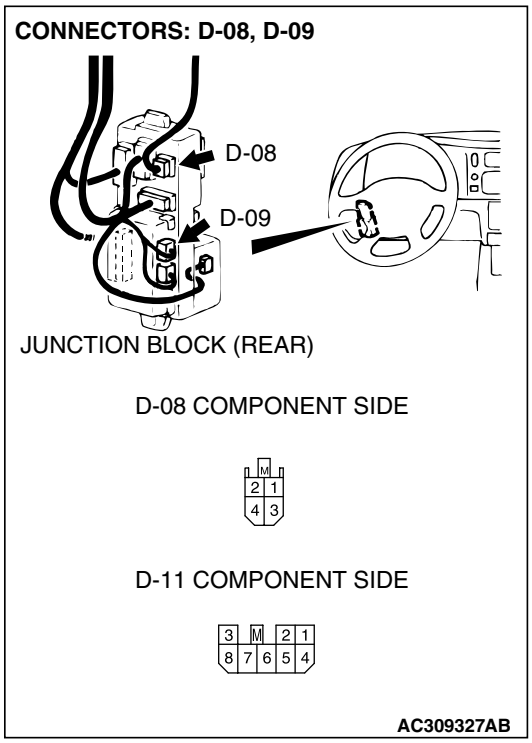
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the harness wire between ignition switch (IG2) and power window relay connector C-75X (terminal No.4).





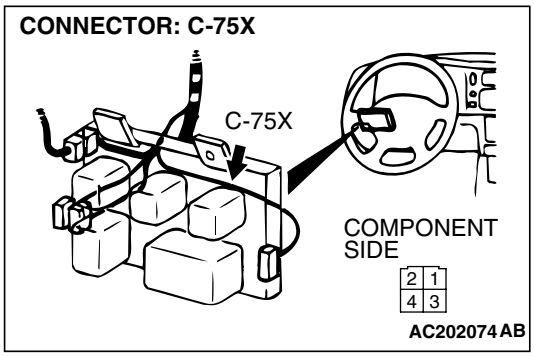
NOTE: After inspecting junction block connector D-08 and D-09 inspect the wires. If junction block connector D-08 or D-09 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 14.

Q: Are the harness wire damaged?

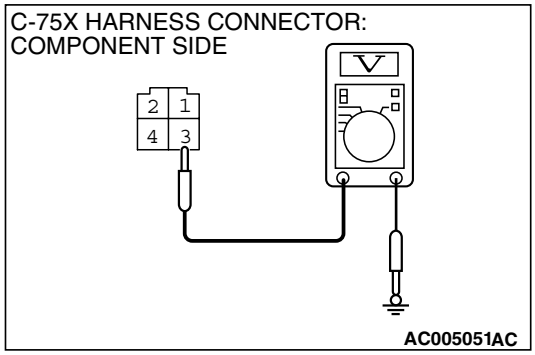
YES : Repair or replace the harness wire, then go to Step 14.

NO : Go to Step 14.

STEP 5. Check the power window relay supply circuit [fusible link (10)] at power window relay connector C-75X.



(1) Remove the power window relay, and measure at power window relay connector C-75X (relay box side).

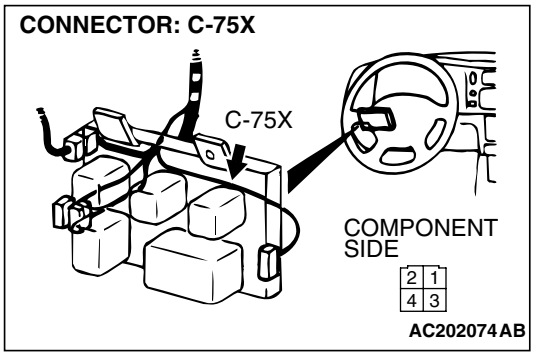


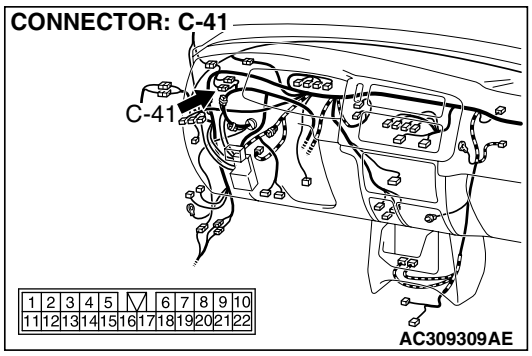
(2) Measure the voltage between terminal 3 and ground.

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Check the harness wire between fusible link (10) and power window relay connector C-75X (terminal No.3).





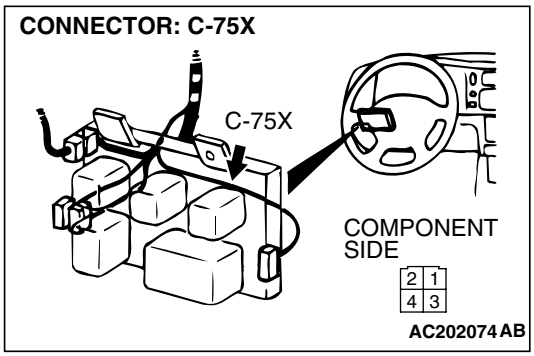
NOTE: After inspecting intermediate connector C-41 inspect the wires. If intermediate connector C-41 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 14.

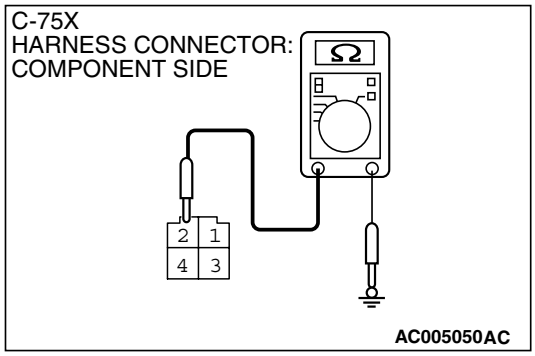
Q: Is the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 14.
NO : Go to Step 14.

STEP 7. Measure the power window relay supply circuit at power window relay connector C-75X.

(1) Remove the power window relay, and measure at power window relay connector C-75X (relay box side).





(2) Measure the resistance between terminal 2 and ground.

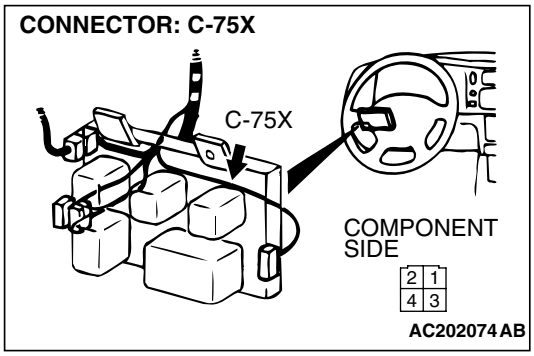
Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 9.
NO : Go to Step 8.

STEP 8. Check the harness wire between power window relay connector C-75X (terminal No.2) and ground.

Q: Is the harness wire damaged?

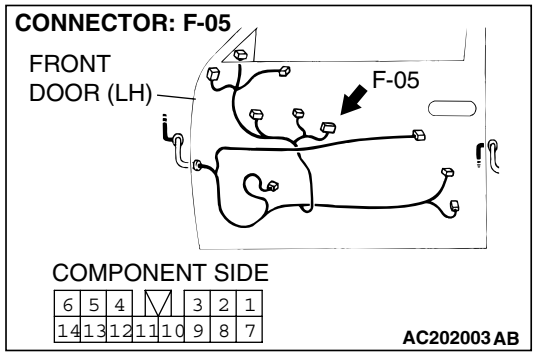
YES : Repair or replace the harness wire, then go to Step 14.
NO : Go to Step 14.



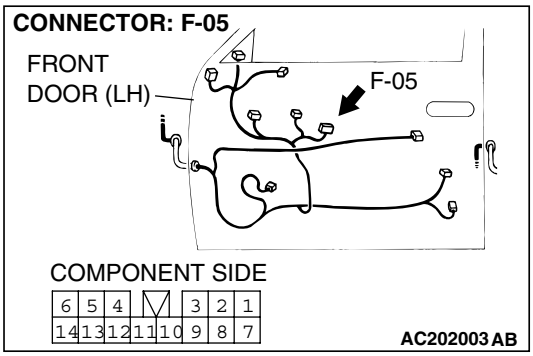
STEP 9. Check power window main switch connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector in good condition?

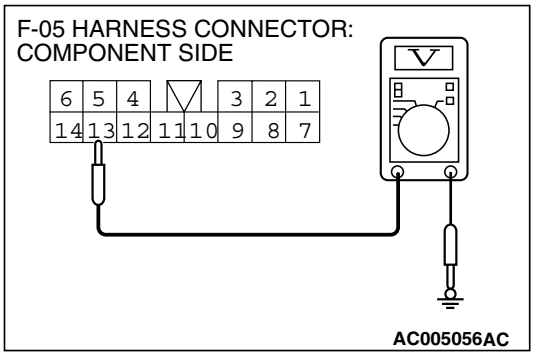
YES : Go to Step 10.
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 14.



STEP 10. Check the power supply circuit [power window relay] at power window main switch connector F-05.



(1) Disconnect power window main switch connector F-05, and measure at the harness side.
(2) Turn the ignition switch to "ON" position.

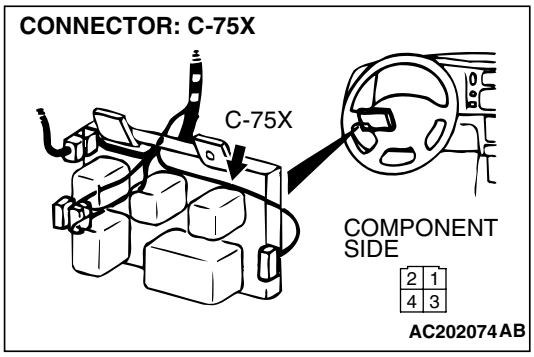


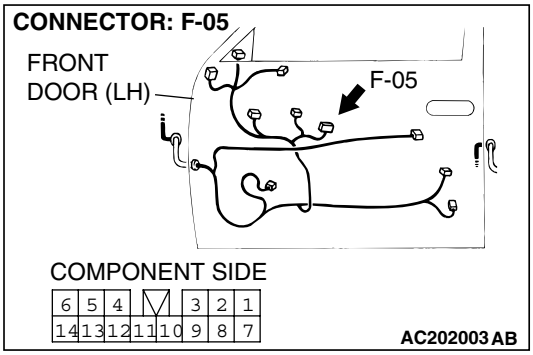
(3) Measure the voltage between terminal 13 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

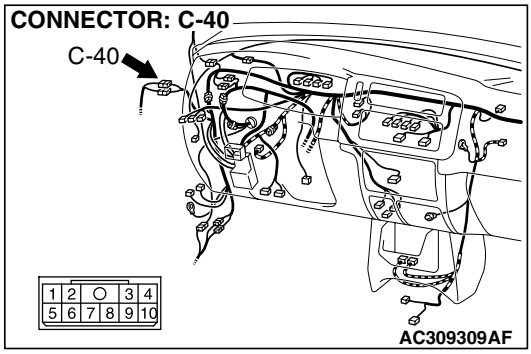
Q: Does the measured voltage correspond with this range?

YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the harness wire between power window relay connector C-75X (terminal No.1) and power window main switch connector F-05 (terminal No.13).







NOTE: After inspecting intermediate connector C-40 inspect the wires. If intermediate connector C-40 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 14.

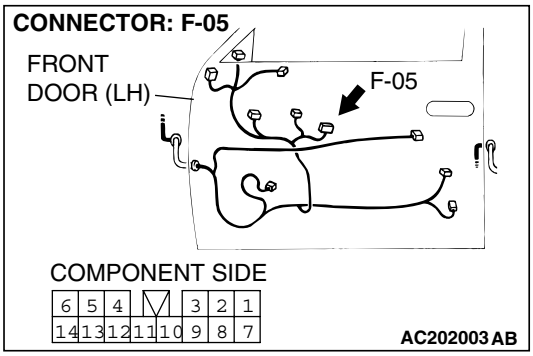
Q: Is the harness wire damaged?

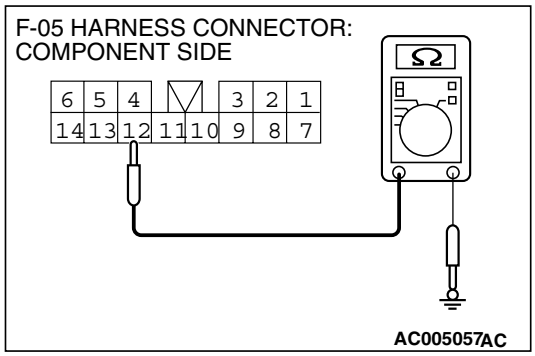
YES : Repair or replace the harness wire, then go to Step 14.

NO : Go to Step 14.

STEP 12. Measure the power window main switch ground circuit at power window main switch connector F-05.

(1) Disconnect power window main switch connector F-05, and measure at the harness side.





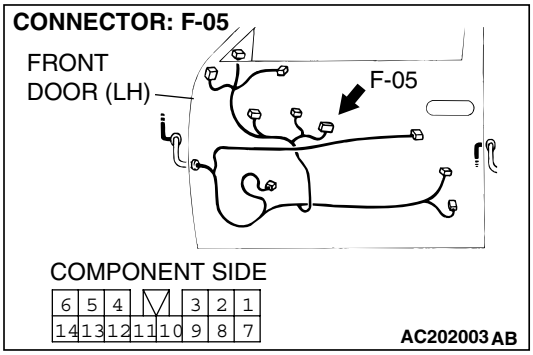
(2) Measure the resistance between terminal 12 and ground.

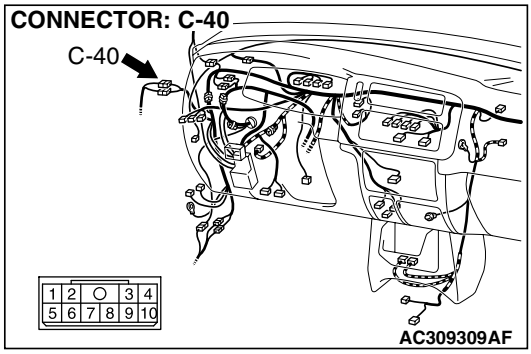
Q: Is the measured resistance less than 2 ohms?

YES : Replace the power window main switch then go to Step 14.

NO : Go to Step 13.

STEP 13. Check the harness wire between power window main switch connector F-05 (terminal No.12) and ground.





NOTE: After inspecting intermediate connector C-40 inspect the wires. If intermediate connector C-40 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 14.

Q: Is the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 14.

NO : Go to Step 14.

STEP 14. Retest the system.

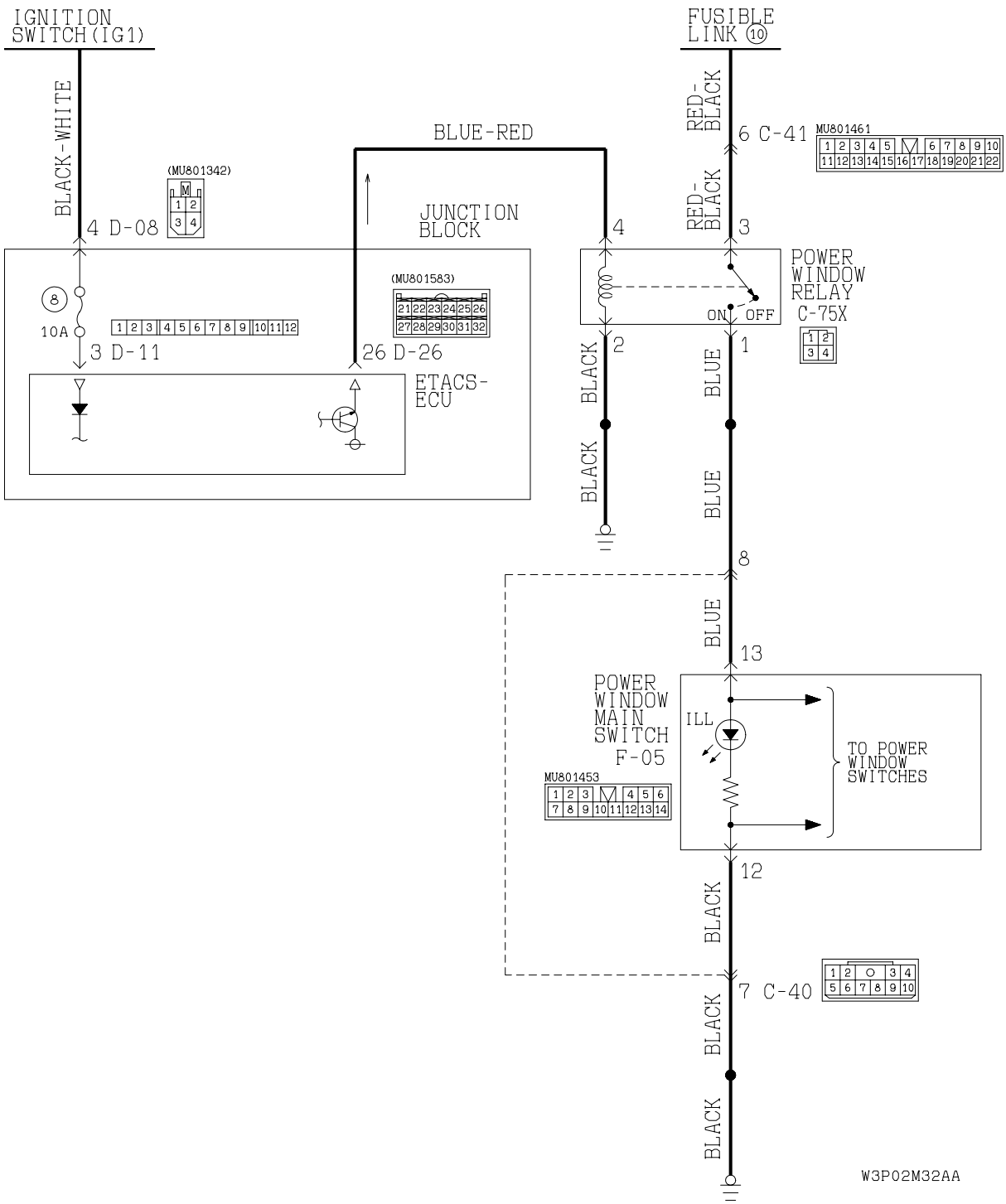
Q: Does the power window function operate normally?

YES : The procedure is complete.

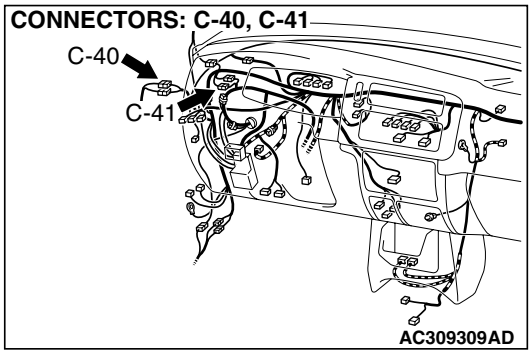
NO : Return to Step 1.

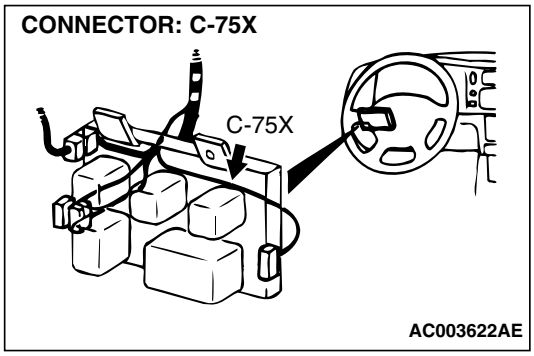
INSPECTION PROCEDURE 2: All Windows does not Open or Close Using the Power Window Main/Sub Switch <Vehicles with keyless entry system>.

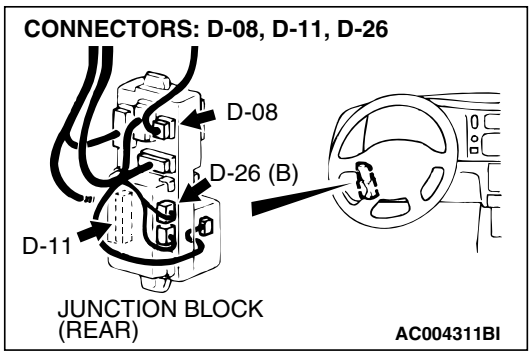
Power Window Switch Circuit

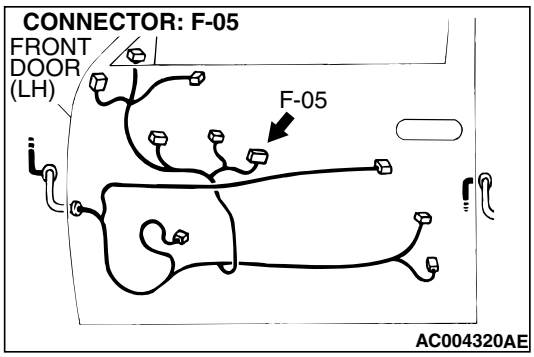


TSB Revision









CIRCUIT OPERATION

The ETACS-ECU turns ON the power window relay when the ignition switch (IG1) is turned ON.

TECHNICAL DESCRIPTION (COMMENT)

The power window relay or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the power window relay
- Malfunction of the ETACS-ECU
- Malfunction of the power window main switch
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991529: Diagnostic Trouble Code Check Harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1. Choose method of ETACS-ECU input signal check.

Q: Is the ETACS-ECU input signal check performed by scan tool MB991958 or a voltmeter?

By Scan tool MB991958 : Go to Step 2.
By a Voltmeter : Go to Step 3.

TSB Revision

STEP 2. Check the ETACS-ECU input signal from the ignition switch (by using the pulse check) (by using MB991958).

Check the ETACS-ECU input signal ignition switch (IG1) by using scan tool MB991958.

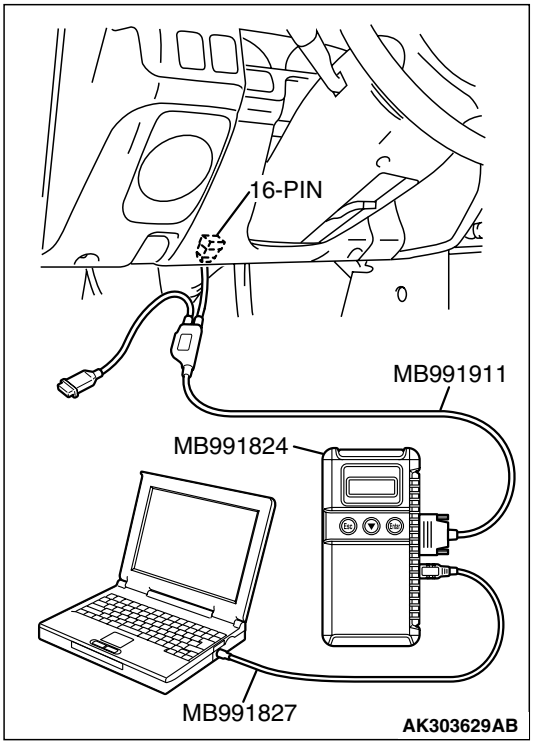
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.
(2) Operate scan tool MB991958 as follows:
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "PULSE CHECK."
(3) Turn the ignition switch (IG1) to "ON" position.
(4) Check that scan tool MB991958 sounds

Q: Does the tone alarm of scan tool MB991958 sound when the input signal enters?

YES : Replace the ETACS-ECU and then go to Step 7.
NO : Go to Step 4.

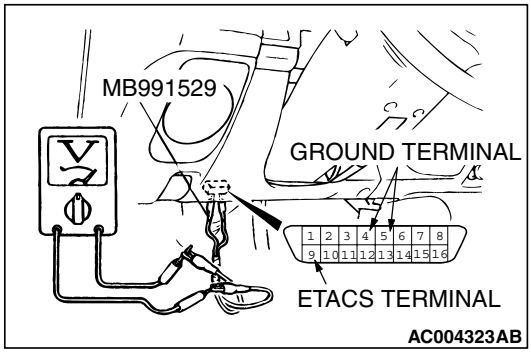


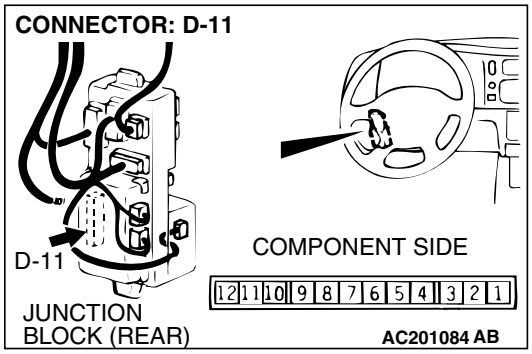
STEP 3. Check the ETACS-ECU input signal from the ignition switch (by using a voltmeter).

(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when the ignition switch (IG1) is turned to "ON" position.

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 7.
NO : Go to Step 4.



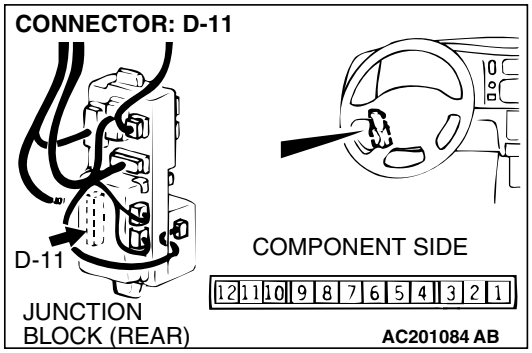


STEP 4. Check ETACS-ECU connector D-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connector in good condition?

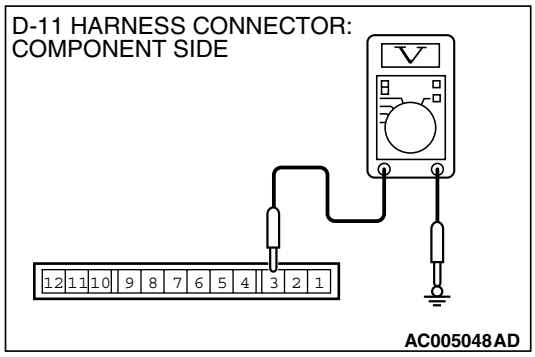
YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.



STEP 5. Measure the ETACS-ECU power supply circuit ignition switch (IG1) at ETACS- ECU connector D-11.

(1) Remove the ETACS-ECU, and measure at ETACS-ECU connector D-11 (junction block side).



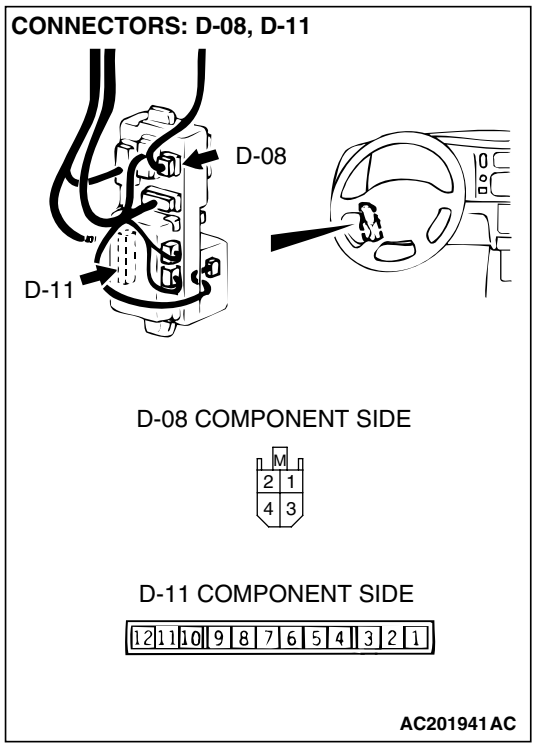
(2) Measure the voltage between terminal 3 and ground.

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Check the harness wire between ignition switch (IG1) and ETACS-ECU connector D-11.



NOTE: After inspecting junction block connector D-08 inspect the wires. If junction block connector D-08 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Are the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 21.

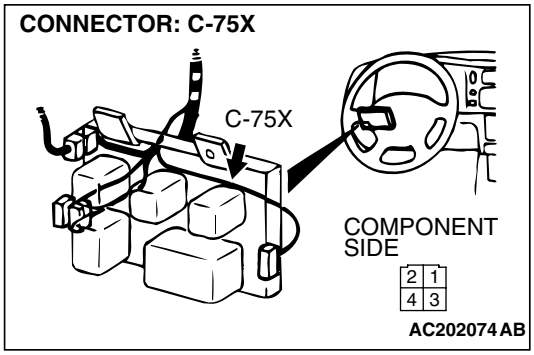
NO : Replace the ETACS-ECU and then go to Step 21.

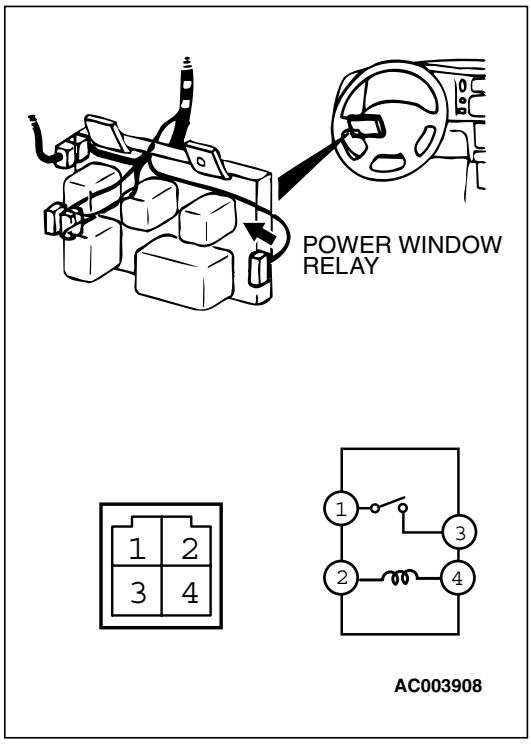
STEP 7. Check power window relay connector C-75X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connector in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.





STEP 8. Measure the power window relay continuity.

(1) Remove the power window relay (Refer to P.42-137).

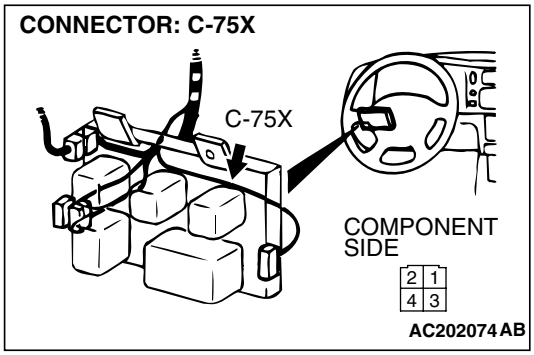
(2) Follow the table to check the power window relay continuity.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 3	Open circuit
• Connect terminal No. 4 to the positive battery terminal • Connect terminal No. 2 to the negative battery terminal	1 – 3	Less than 2 ohms

Q: Does the measured resistance value correspond with this range?

YES : Go to Step 9.

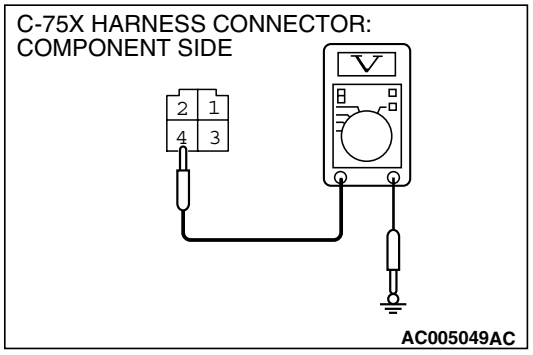
NO : Replace power window relay, then go to Step 21.



STEP 9. Measure the power window relay supply circuit [ETACS-ECU] at the power window relay connector C-75X.

(1) Remove the power window relay, and measure at the power window relay connector C-75X (relay box side).

(2) Turn the ignition switch to "ON" position.

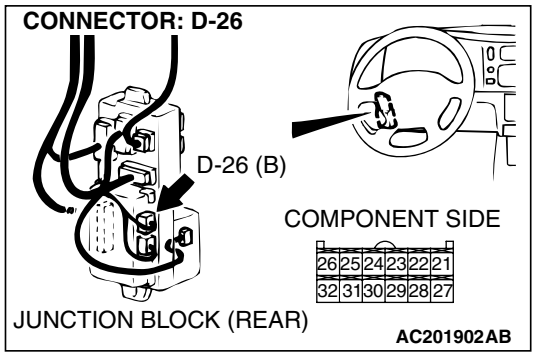


(3) Measure the voltage between terminal 4 and ground.

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 12.

NO : Go to Step 10.

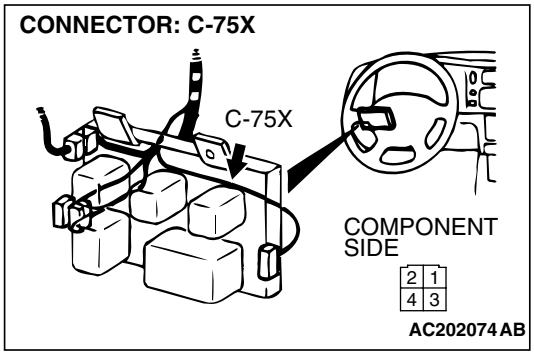


STEP 10. Check ETACS-ECU connector D-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connectors in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.

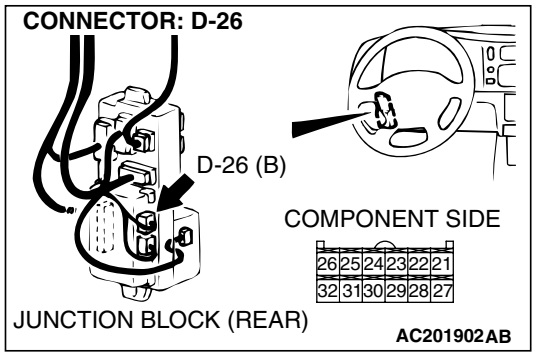


STEP 11. Check the harness wire between ETACS-ECU connector D-26 (terminal No.26) and power window relay connector C-75X (terminal No.4).

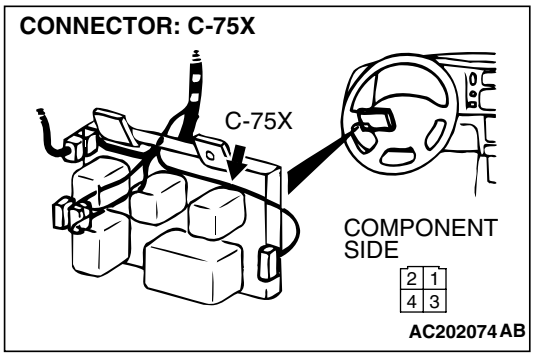
Q: Are the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 21.

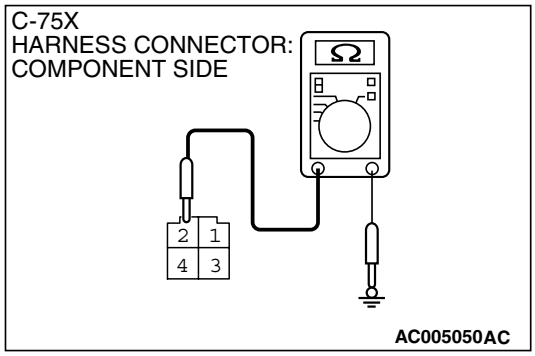
NO : Replace the ETACS-ECU and then go to Step 21.



STEP 12. Measure the power window relay supply circuit at power window relay connector C-75X.



(1) Remove the power window relay, and measure at power window relay connector C-75X (relay box side).



(2) Measure the resistance between terminal 2 and ground.

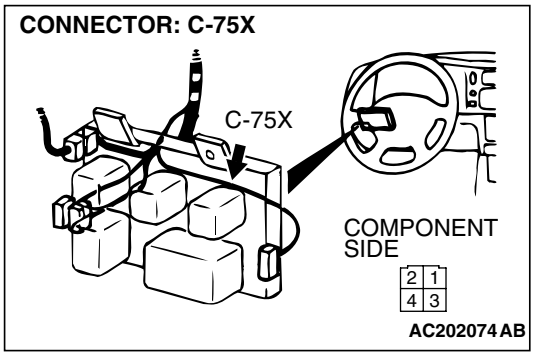
Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 14.

NO : Go to Step 13.

STEP 13. Check the harness wire between power window relay connector C-75X (terminal No.2) and ground.

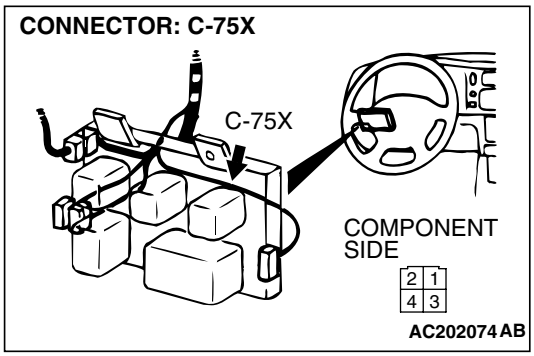
Q: Is the harness wire damaged?



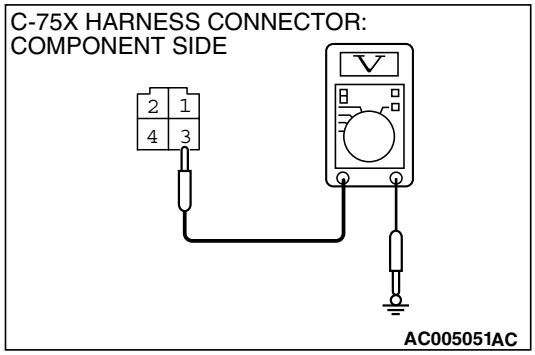
YES : Repair or replace the harness wire, then go to Step 21.

NO : Replace the power window relay and then go to Step 21.

STEP 14. Check the power window relay supply circuit [fusible link (10)] at power window relay connector C-75X.



(1) Remove the power window relay, and measure at power window relay connector C-75X (relay box side).

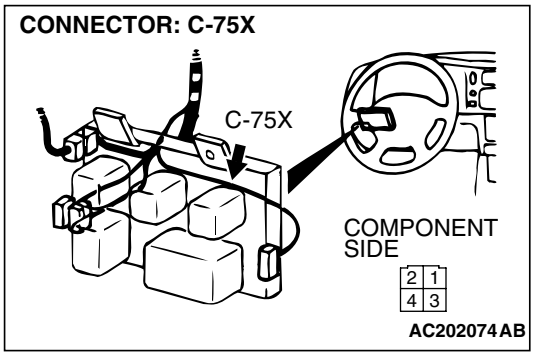


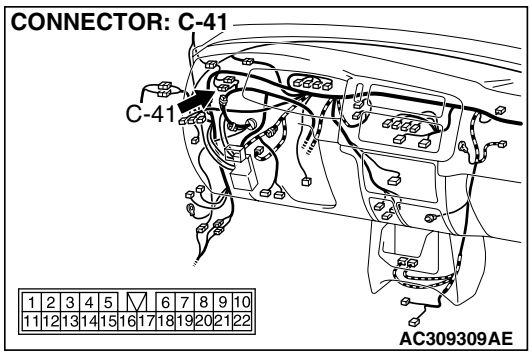
(2) Measure the voltage between terminal 3 and ground.

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 16.
NO : Go to Step 15.

STEP 15. Check the harness wire between fusible link (10) and power window relay connector C-75X (terminal No.3).

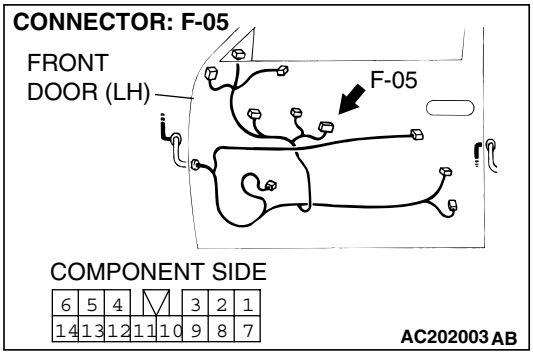




NOTE: After inspecting intermediate connector C-41 inspect the wires. If intermediate connector C-41 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Is the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 21.
NO : Replace the power window relay and then go to Step 21.

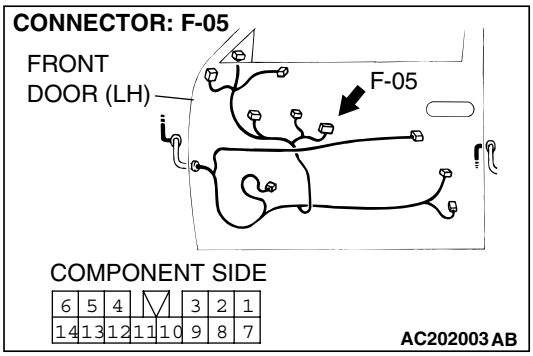


STEP 16. Check power window main switch connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connectors in good condition?

YES : Go to Step 17.

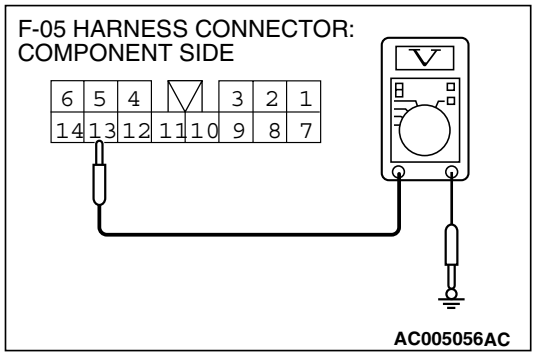
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 21.



STEP 17. Check the power supply circuit [power window relay] at power window main switch connector F-05.

(1) Disconnect power window main switch connector F-05, and measure at the harness side.

(2) Turn the ignition switch to "ON" position.



(3) Measure the voltage between terminal 13 and ground.

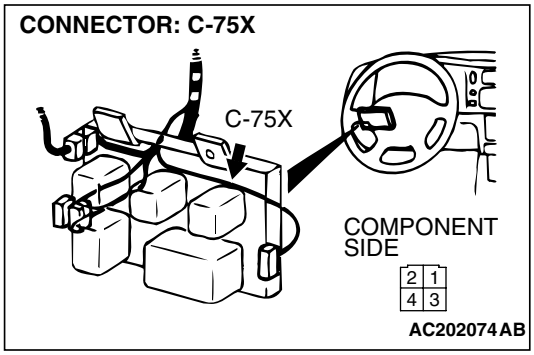
- The measured value should be approximately 12 volts (battery positive voltage).

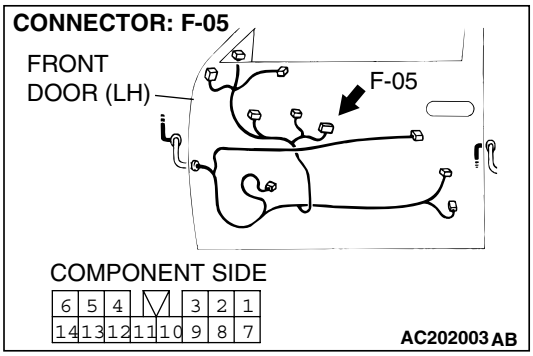
Q: Does the measured voltage correspond with this range?

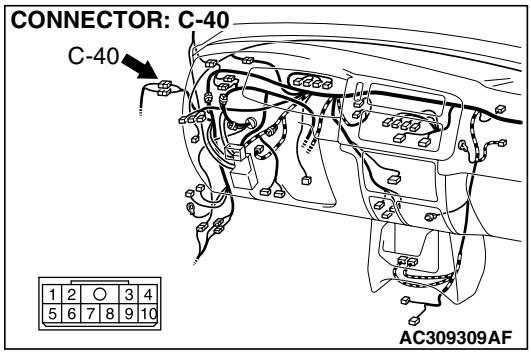
YES : Go to Step 19.

NO : Go to Step 18.

STEP 18. Check the harness wire between power window relay connector C-75X (terminal No.1) and power window main switch connector F-05 (terminal No.13).







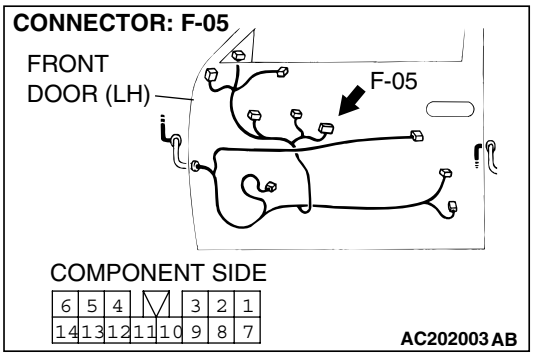
NOTE: After inspecting intermediate connector C-40 inspect the wires. If intermediate connector C-40 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Is the harness wire damaged?

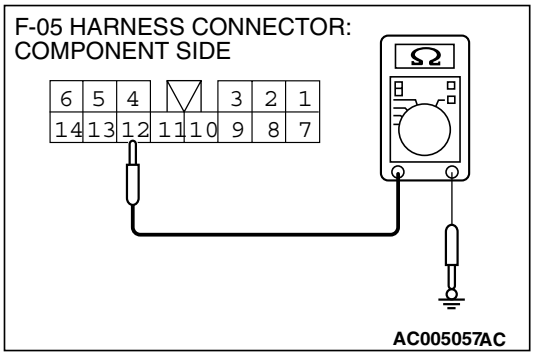
YES : Repair or replace the harness wire, then go to Step 21.

NO : Replace the power window main switch and then go to Step 21.

STEP 19. Measure the power window main switch ground circuit at power window main switch connector F-05.



(1) Disconnect power window main switch connector F-05, and measure at the harness side.

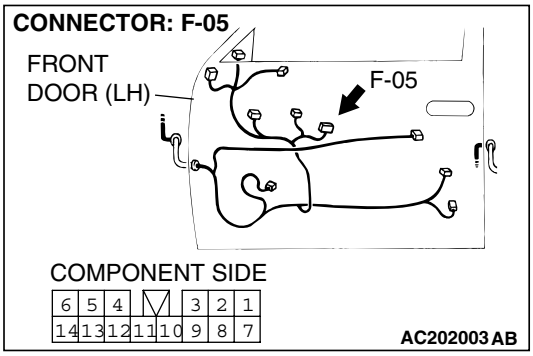


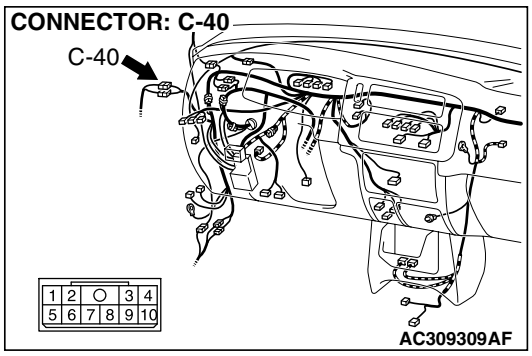
(2) Measure the resistance between terminal 12 and ground.

Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 21.
NO : Go to Step 20.

STEP 20. Check the harness wire between power window main switch connector F-05 (terminal No.12) and ground.





NOTE: After inspecting intermediate connector C-40 inspect the wires. If intermediate connector C-40 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 21.

Q: Is the harness wire damaged?

YES : Repair or replace the harness wire, then go to Step 21.
NO : Replace the power window main switch and then go to Step 21.

STEP 21. Retest the system.

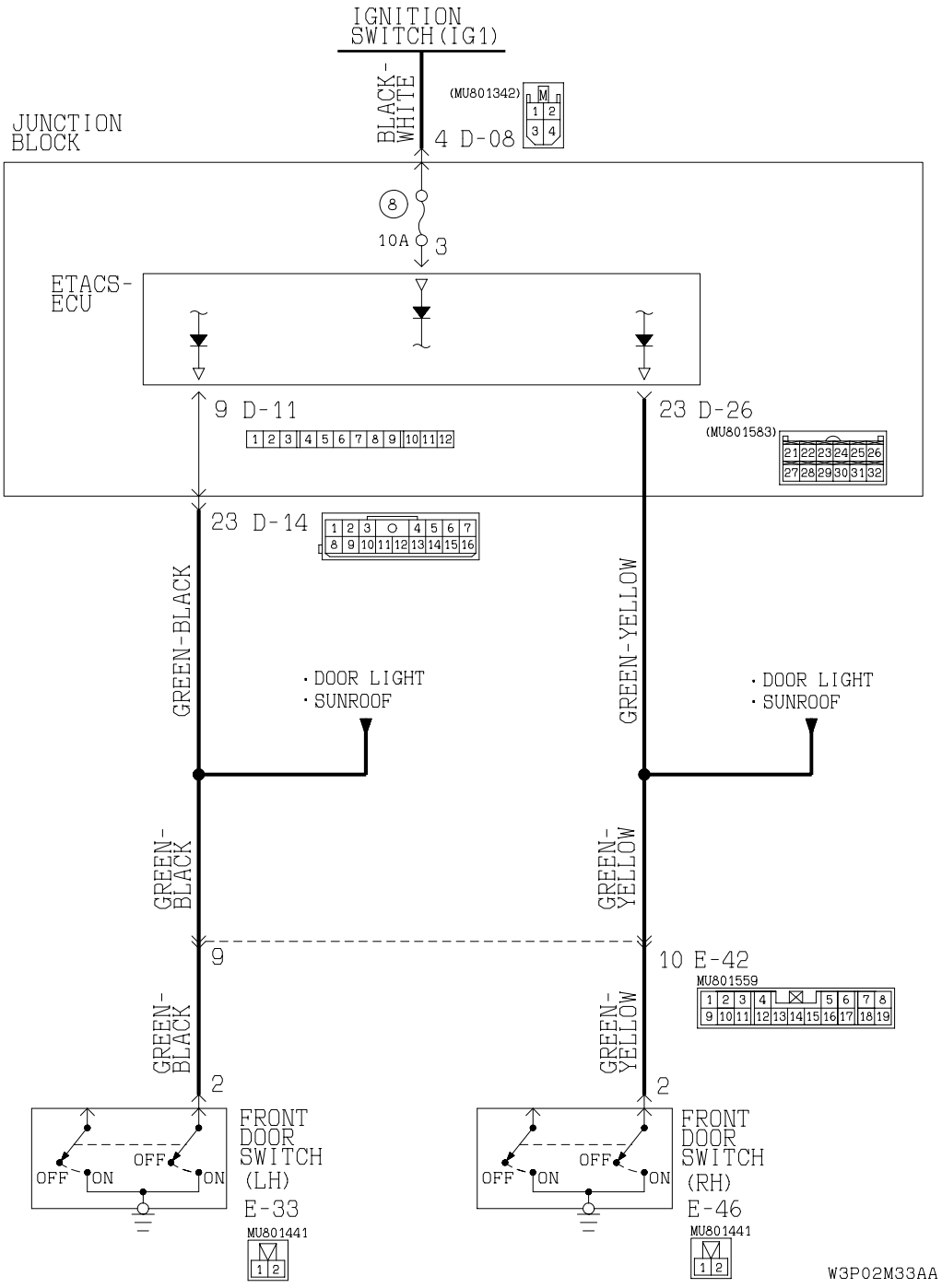
Q: Does the power window function operate normally?

YES : The procedure is complete.

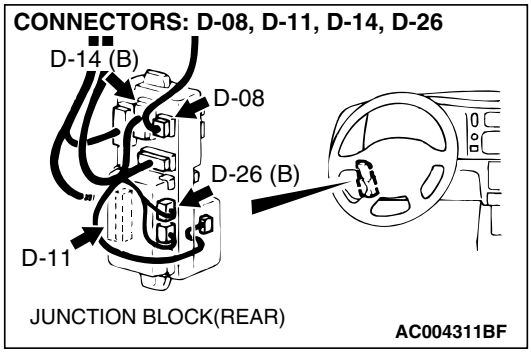
NO : Return to Step 1.

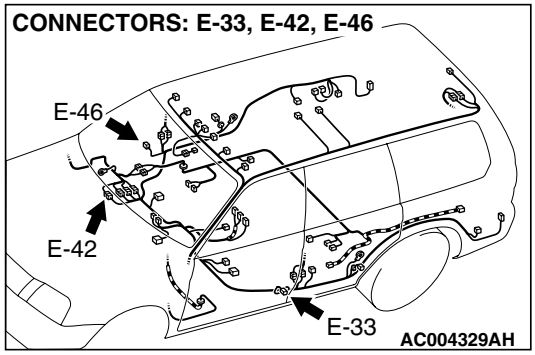
INSPECTION PROCEDURE 3: Power Window Timer Function does not Work Normally. (Power Window Operates) <Vehicles with keyless entry system>

Front Door Switch Circuit



TSB Revision





TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU operates the power window timer function, based on input signals from the following switches:

- Ignition switch (IG1)
- Driver's or front passenger's door switch

If the power window timer function do not work normally, the input signal circuit or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the front door switch
- Malfunction of the ignition switch
- Malfunction of the ETACS-ECU
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991529: Diagnostic Trouble Code Check Harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1. Choose method of the ETACS-ECU input signal check.

Q: Is the ETACS-ECU input signal check performed by scan tool MB991958 or a voltmeter?

By scan tool MB991958 : Go to Step 2.
By a voltmeter : Go to Step 3.

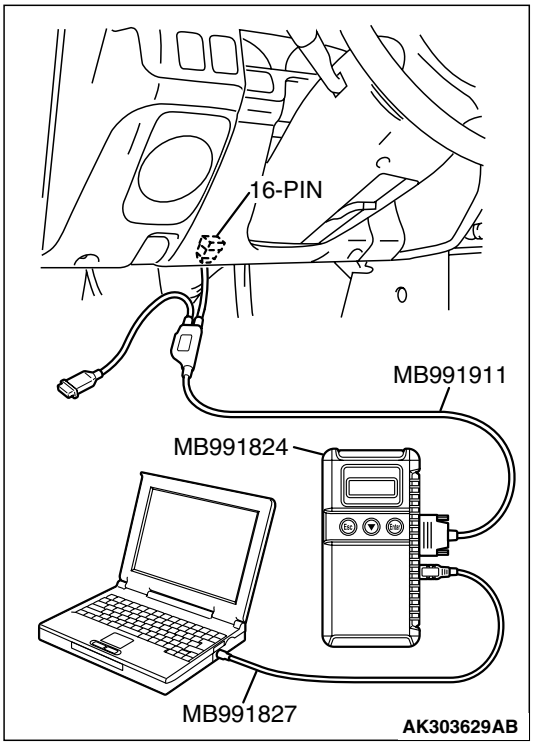
STEP 2. Check the ETACS-ECU input signal from the ignition switch (by using the pulse check) (by using MB991958).

Check the ETACS-ECU input signal [front door switches and ignition switch (IG1)] by using scan tool MB991958.
Check the input signals from the following switches:

- Driver's door switch
- Front passenger's door switch
- ignition switch

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

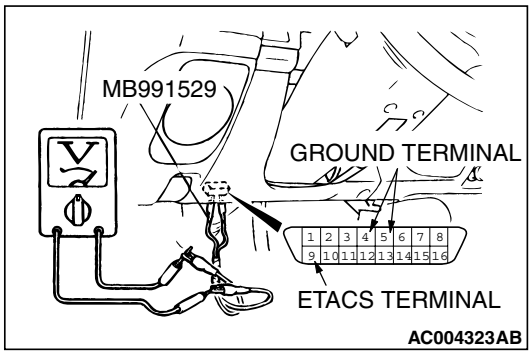


(1) Connect scan tool MB991958 to the data link connector.
(2) Operate scan tool MB991958 as follows:
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "PULSE CHECK."
(3) Open the driver's door or front passenger's door.
(4) Turn the ignition switch (IG1) to "ON" position.
(5) Check that scan tool MB991958 sounds

Q: Does the tone alarm of scan tool MB991958 sound when the input signal enters?

YES : Replace the ETACS-ECU and then go to Step 11.
NO <Driver's door switch and passenger's door switch input signal> : Go to Step 5.
NO <Ignition switch input signal> : Go to Step 7.

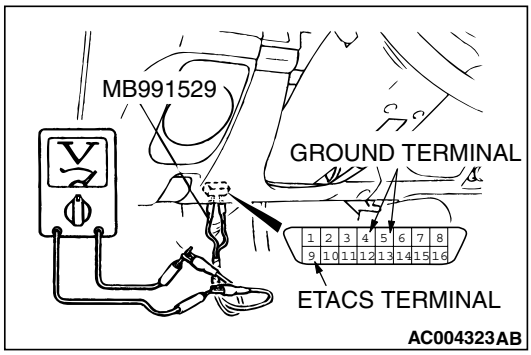
STEP 3. Check the ETACS-ECU input signal from the driver's door switch and passenger's door switch (by using a voltmeter).



(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when driver's door switch or passenger's door switch operated <open (on)/depressed (off)>.

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 4.
NO : Go to Step 5.



STEP 4. Check the input signal from the ignition switch (by using a voltmeter).

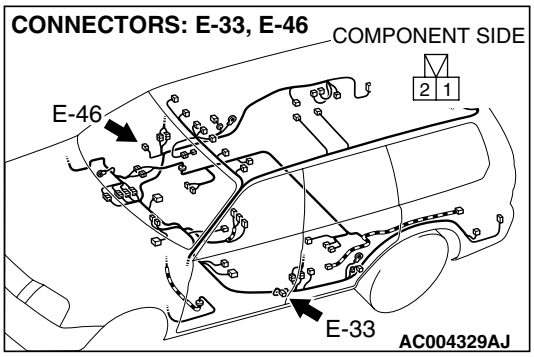
(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.

(2) Check that the voltmeter indicator deflects once when the ignition switch is operated <ACC - ON>.

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 11.

NO : Go to Step 7.



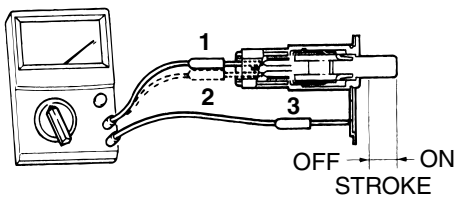
STEP 5. Check driver's door switch connector E-33 and front passenger's door switch connector E-46 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are driver's door switch connector E-33 and front passenger's door switch E-46 in good condition?

YES : Go to step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 11.

TYPE 1



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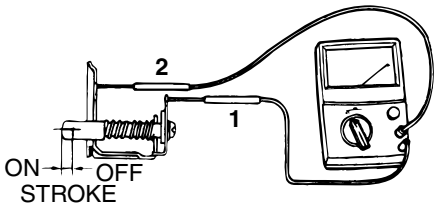
TYPE 2



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STEP 6. Check the front door switch.

(1) Remove the driver's door or fornt passenger's door switch (Refer to P.42-132).

(2) Follow the table to check the front door switches continuity.

TYPE1

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2, 1 – 3, 2 – 3	Less than 2 ohms
Depressed (OFF)	1 – 2, 1 – 3, 2 – 3	Open circuit

TYPE2

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2	Less than 2 ohms
Depressed (OFF)	1 – 2	Open circuit

Q: Is the front door switch in good condition?

YES : Go to Step 7 .

NO : Replace front door switch, then go to Step 11.

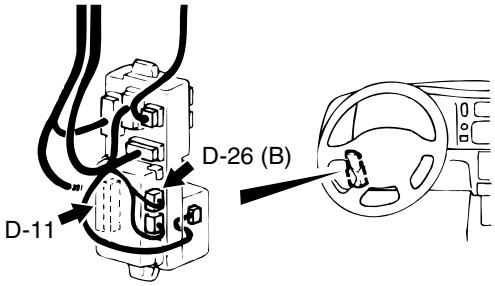
STEP 7. Check ETACS-ECU connector D-11 and D-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector D-11 and D-26 in good condition?

YES : Go to step 8.

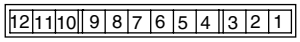
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 11.

CONNECTOR: D-11, D-26

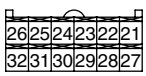


JUNCTION BLOCK (REAR)

D-11 COMPONENT SIDE



D-26 COMPONENT SIDE



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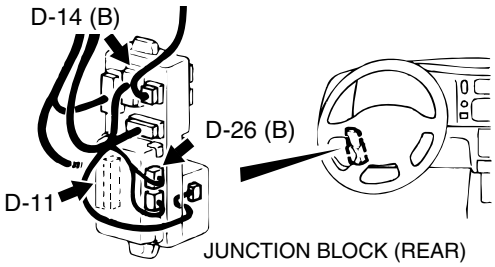
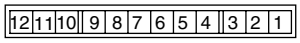
STEP 8. Check the harness wire between ETACS-ECU connector D-11 (terminal No.9), D-26 (terminal No.26) and driver's door switch connectors E-33 (terminal No.2), front passenger's side door switch connector E-46 (terminal No.2).

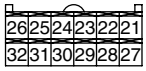
CONNECTORS: D-11, D-14, D-26



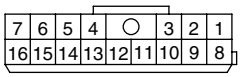
D-11 COMPONENT SIDE



D-26 COMPONENT SIDE



D-14 COMPONENT SIDE



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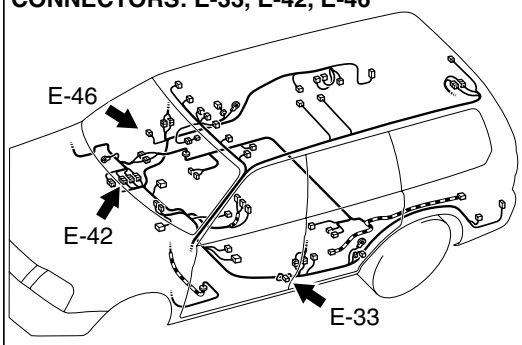
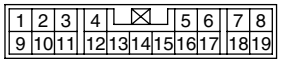
CONNECTORS: E-33, E-42, E-46



E-33, E-46 COMPONENT SIDE

E-42



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NOTE: After inspecting junction block connector D-14 and intermediate connector E-42 inspect the wire. If junction block connector D-14 or intermediate connector E-42 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 11.

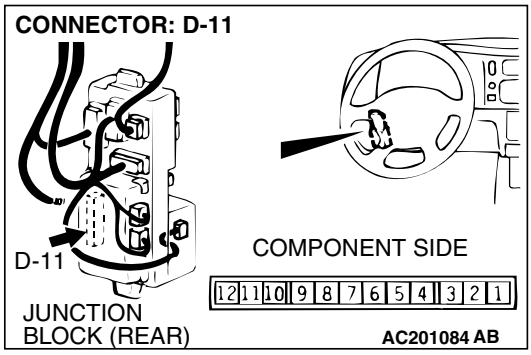
Q: Are there any damaged harness wires between ETACS-ECU connector D-11 (terminal No.9), D-26 (terminal No.23) and driver's door switch connectors E-33 (terminal No.2), front passenger's side door switch connector E-46 (terminal No.2)?

YES : Repair or replace the harness wire, then go to Step11.
NO : Replace the ETACS-ECU and then go to Step11.

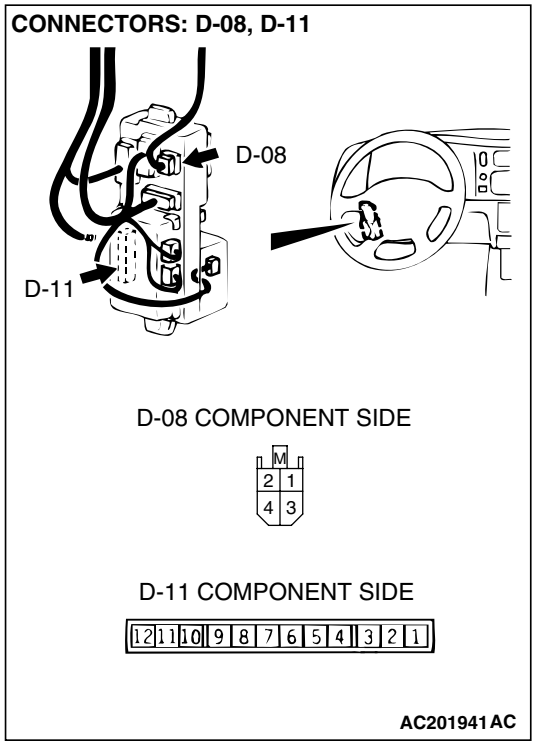
STEP 9. Check ETACS-ECU connector D-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector D-11 good condition?

YES : Go to Step 10.
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection.Then go to Step 11.



STEP 10. Check the harness wire between ETACS-ECU connector D-11 (terminal No.3) and ignition switch.



NOTE: After inspecting junction block connector D-08 inspect the wire. If junction block connector D-08 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 11.

Q: Are ETACS-ECU connector D-11 and ignition switch in good condition?

YES : Replace the ETACS-ECU and then go to step 11.
NO : Repair or replace the harness wire. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 11.

STEP 11. Retest the system.

Q: Does the power window timer function operate normally?

YES : The procedure is complete.
NO : Return to Step 1.

DOOR DIAGNOSIS

INTRODUCTION TO GLASS AND DOOR DIAGNOSIS

M1423007300207

Glass and door faults include water leaks and improper opening and closing. Causes for these faults can include faults in the glass, weatherstrip, drain hole, waterproof film or door installation.

GLASS AND DOOR DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1423006700202

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a glass and door fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

SYMPTOM CHART

M1423007000228

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Water leak through door window glass	1	P.42-123
Door window malfunction	2	P.42-123
Water leak through door edge	3	P.42-124
Water leak from door center	4	P.42-124
Door hard to open	5	P.42-124
Door does not open or close completely.	6	P.42-125
Uneven gap between body	7	P.42-125
Wind noise around door	8	P.42-125

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Water Leak Through Door Window Glass

DIAGNOSIS

STEP 1. Check the door window glass installation.

Q: Is the door window glass installed correctly?
YES : Go to Step 2.
NO : Adjust the door window glass. (Refer to P.42-129.) Then go to Step 3.

STEP 2. Check the clearance at the top of the window glass.

Q: Is the clearance at the top of the window glass correct?
YES : Go to Step 3.
NO : Adjust the door window glass. (Refer to P.42-129.) Then go to Step 3.

STEP 3. Retest the system.

Q: Is any water leaking?
YES : Return to Step 1.
NO : This procedure is complete.

INSPECTION PROCEDURE 2: Door Window Malfunction

DIAGNOSIS

STEP 1. Check the door window installation condition.

Q: Is the door window installation condition good?
YES : Go to Step 2.
NO : Adjust door window glass. (Refer to P.42-129.) Then go to Step 4.

STEP 2. Check the door sash.

Q: Is the door sash in good condition?
YES : Go to Step 3.
NO : Repair or replace door sash, then go to Step 4.

STEP 3. Inspect the window regulator assembly.

Q: Is the window regulator assembly in good condition?
YES : Go to Step 4.
NO : Replace door window regulator assembly, then go to Step 4.

STEP 4. Retest the system.

Q: Does the door window operate correctly?
YES : This procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 3: Water Leak through Door Edge

DIAGNOSIS

STEP 1. Check the weatherstrip.

Q: Is the weatherstrip in good condition?
YES : Go to Step 2.
NO : Replace weatherstrip, then go to Step 3.

STEP 2. Check door fit (alignment).

Q: Is the door fit (alignment) correct?
YES : Go to Step 3.
NO : Adjust door fit. (Refer to P.42-129.) Then go to Step 3.

STEP 3. Retest the system.

Q: Is any water leaking?
YES : Return to Step 1.
NO : This procedure is complete.

INSPECTION PROCEDURE 4: Water Leak From Door Center

DIAGNOSIS

STEP 1. Check the drain hole.

Q: Is the drain hole clogged?
YES : Cleaning door hole, then go to Step 3.
NO : Go to Step 2.

STEP 2. Check the waterproof film.

Q: Is the waterproof film in good condition?
YES : Go to Step 3.
NO : Repair or replace waterproof, then go to Step 3.

STEP 3. Retest the system.

Q: Is any water leaking?
YES : Return to Step 1.
NO : This procedure is complete.

INSPECTION PROCEDURE 5: Door Hard to Open

DIAGNOSIS

STEP 1. Adjust the latch and striker engagement.
(Refer to P.42-129.)

Q: Is the latch and striker engagement adjusted?
YES : Go to Step 2.
NO : Adjust the door fit. (Refer to P.42-129.) Then go to Step 4.

STEP 2. Check for possible lock rod damage.

Q: Is the possible lock rod damaged?
YES : Repair or replace the possible lock rod, then go to Step 4.
NO : Go to Step 3.

STEP 3. Check door handle flexibility (amount of movement of handle required to open door).

Q: Is the door handle flexibility good?
YES : Go to Step 4.
NO : Adjust inside handle play (Refer to P.42-131) and adjust outside handle play P.42-131). Then go to Step 4.

STEP 4. Retest the system.

Q: Does the door open easily?
YES : This procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 6: Door does not Open or Close Completely.

DIAGNOSIS

STEP 1. Check the door hinge position.

Q: Is the door hinge position correct?
YES : Go to Step 2.
NO : Adjust door hinge position. (Refer to P.42-129.) Then go to Step 4.

STEP 2. Check the door.

Q: Is the door in good condition?
YES : Go to Step 3.
NO : Repair or replace door assembly, then go to Step 4.

STEP 3. Check the grease.

Q: Is the door check or door hinge grease sufficient?
YES : Go to Step 4.
NO : Apply the grease, then go to Step 4.

STEP 4. Retest the system.

Q: Does the door open and close correctly?
YES : This procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 7: Uneven Gap Between Body

DIAGNOSIS

Adjust the door fit. (Refer to P.42-130.) Then check that the gap has been improved.

INSPECTION PROCEDURE 8: Wind Noise Around Door

DIAGNOSIS

STEP 1. Check the weatherstrip for holding condition.

Q: Is the weatherstrip and molding installed properly?
YES : Go to Step 2.
NO : Replace the weatherstrip and molding. Then go to Step 5.

STEP 2. Check the weatherstrip and molding for installation condition.

Q: Is the weatherstrip installed properly?
YES : Go to Step 3.
NO : Replace the weatherstrip and molding. Then go to Step 5.

STEP 3. Check the clearance.

Q: Is the clearance between the door glass and the door weatherstrip holder proper?
YES : Go to Step 4.
NO : Go to Step 5.

STEP 4. Check the door.

Q: Is the door deformed?
YES : Repair or replace door assembly. Then go to Step 5.
NO : Go to Step 5.

STEP 5. Retest the system.

Q: Has the wind noise been improved?
YES : Return to Step 1.
NO : This procedure is complete.

HOW TO LOCATE WIND NOISES

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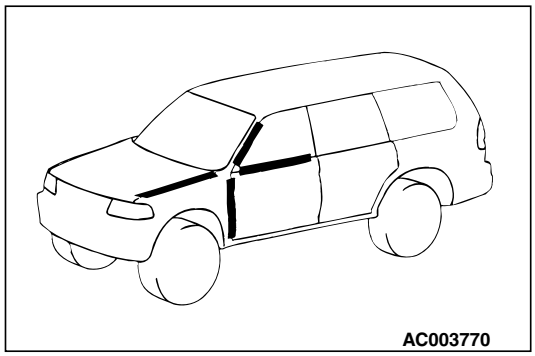
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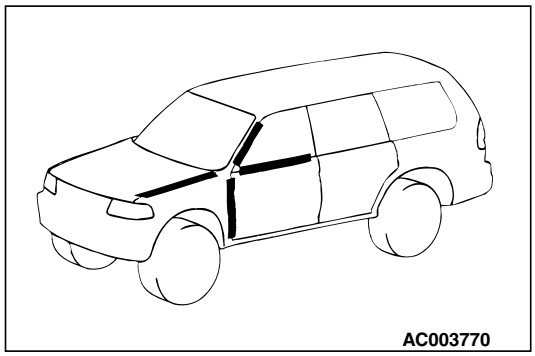
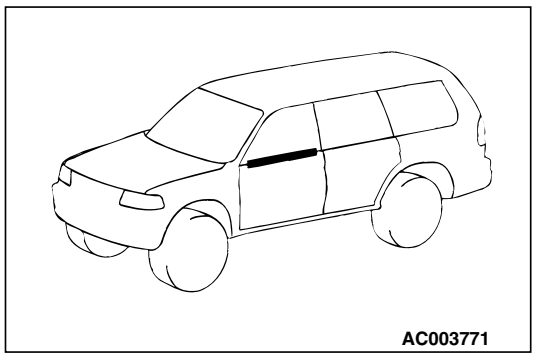
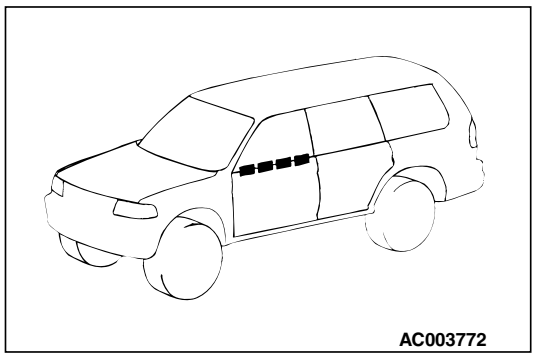
1. Attach cloth tape to every place, such as panel seams, projections, molding seams, glass and body seams, etc. which might conceivably be the source of wind noise.
2. Then make a road test to check that the places not covered by tape are not sources of wind noise.


AC003770

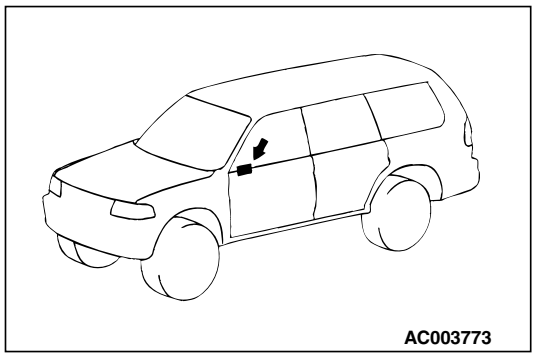
3. Remove the strips of tape one by one, making a road test after each is removed, until a wind noise source is discovered.


AC003771

4. When such a place is found, cover it again and repeat the procedure to check if there are any other noise source.
5. If no others are found, the last remaining tape is the only source.


AC003772

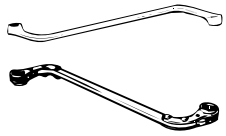
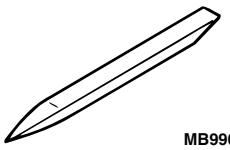
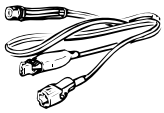
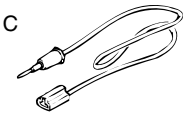
6. Cut the remaining piece of tape into smaller pieces, attach it again as it was before, and then remove the pieces one by one to narrow down the source.

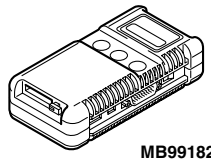
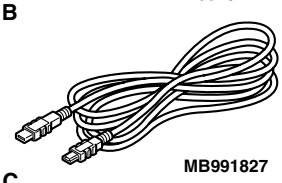
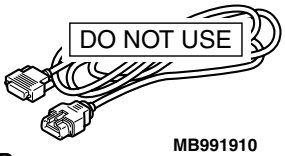
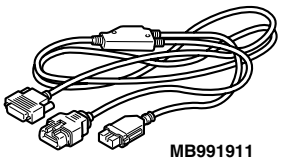
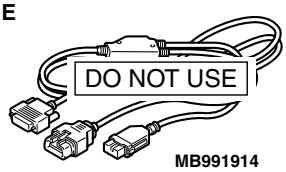
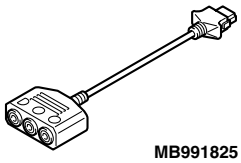
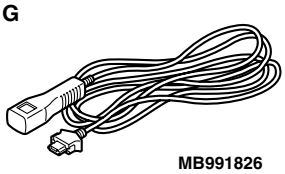

AC003773

7. Check that wind noise occurs when the last remaining tape is removed, and that noise does not occur when it is re-attached.
8. When the sources of the wind noise is finally located, attach butyl tape, body sealer or similar material to obstruct this source as much as possible.

SPECIAL TOOLS

M1423000600382

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 MB990900	MB990900 or MB991164 Door adjusting wrench	MB990900-01	Adjustment of door fit
 MB990784	MB990784 Ornament remover	General service tool	Removal of trim, etc.
A  B  C  D  MB991223AD	MB991223 Harness set A: MB991219 Test harness B: MB991220 LED harness C: MB991221 LED harness adapter D: MB991222 Probe	MB991223	Measurement of terminal voltage A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991914 F  MB991825 G  MB991826 MB991958	MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826 MUT-III sub Assembly A: Vehicle communication interface (V.C.I) B: MUT-III USB cable C: MUT-III main harness A (Vehicles with CAN communication system) D: MUT-III main harness B (Vehicles without CAN communication system) E: MUT-III main harness C (for Daimler Chrysler models only) F: MUT-III measurement adapter G: MUT-III trigger harness	MB991824-KIT *NOTE: . G: MB991826 MUT-III trigger harness is not necessary when pushing V.C.I. ENTER key.*	SWS communication line check (ECU check and service data) **⚠ CAUTION** **MUT-III Main Harness B (MB991911) should be used. MUT-III main harness A and C should not be used for this vehicle.**

ON-VEHICLE SERVICE

DOOR FIT ADJUSTMENT

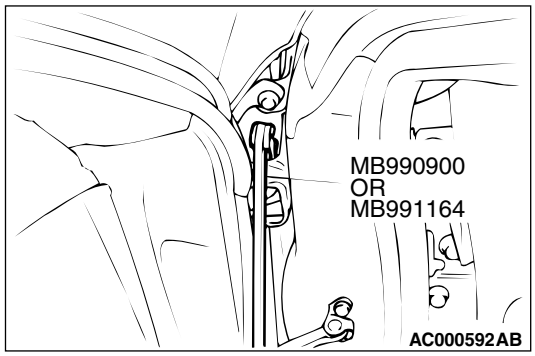
M1423001100249

Required Special Tools:

- MB990900 or MB991164: Door adjusting Wrench

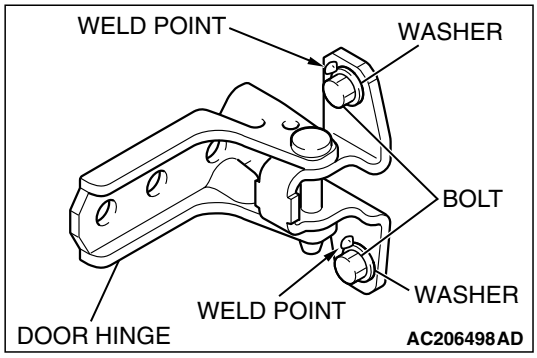
⚠ CAUTION

- **Attach protection tape to the fender and door edges where the hinge is installed.**
- **Do not rotate special tool MB991164 with a torque of over 98 N·m (72 ft-lb).**



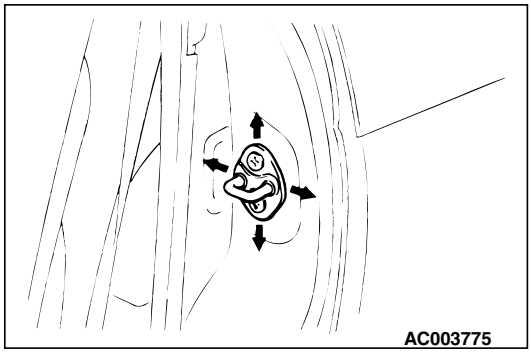
1. Use special tool MB990900 or MB991164 to loosen the hinge mounting bolts on the body side, and then adjust the clearance around the door so that it is uniform on all sides.
2. If a door is not flush with its surrounding panels, loosen the door-side door hinge mounting bolts and adjust the door as necessary.

   NOTE:



If the door hinge mounting bolt washers are welded, grind off the welding according to the procedure below beforehand.

1. *Remove the door hinge. (Refer P.42-132.)*
2. *Use a chisel or grinder to release the door hinge mounting bolt washer, which is welded to the door hinge.*
3. *On completion, paint the affected area with touch-up paint to prevent corrosion.*
4. *Install the door hinge. (Refer P.42-132.)*



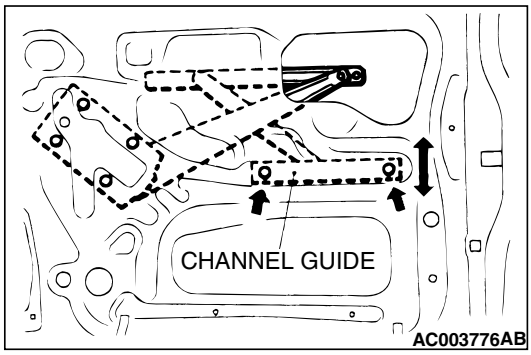
3. If the striker and latch do not engage properly, move the striker up and down or to the left and right.

DOOR WINDOW GLASS ADJUSTMENT

M1423001000190

Check that the door glass moves while contacting the door glass channel when it is raised and lowered fully. If not, adjust the door window according to the following procedures.

1. Remove the door trim and waterproof film. (Refer to P.42-134.)
2. Raise the window glass, loosen the channel guide mounting bolts and adjust the vertical tilt of the glass.



ADJUSTMENT AND REPLACEMENT WHEN THERE IS A MALFUNCTION OF THE POWER WINDOWS

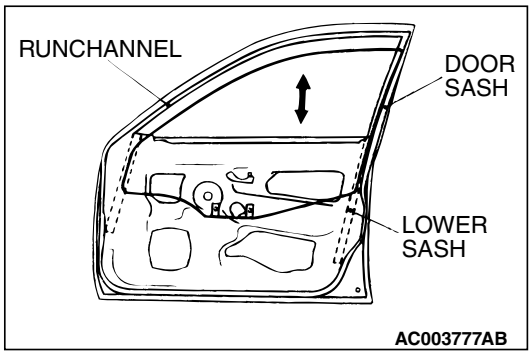
M1429000900057

If the window glass automatically starts moving downwards at the wrong time while it is being raised, carry out the following adjustment or replacement procedures.

1. Remove the door trim and waterproof film. (Refer to P.42-134.)

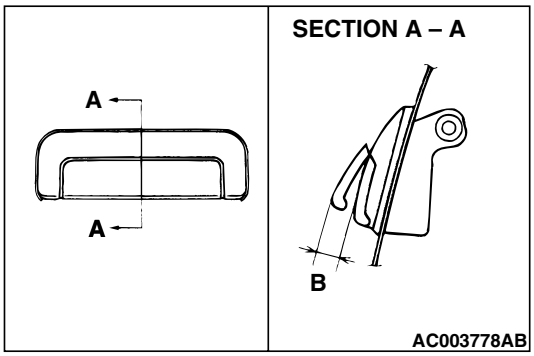
   NOTE: Insert a cushion or similar object to prevent damage to the glass if it should happen to fall down.
2. Remove the window regulator assembly from the door window glass, and then raise and lower the door window glass by hand to check the operation force.
3. If the door window glass does not move up and down smoothly, check or repair the following points.
   - Check the installation condition of the runchannel.
   - Repair any twisting in the door sash.
   - Check the installation condition of the lower sash or the center sash.

   NOTE: The lower sash cannot normally be adjusted, but it may be possible to adjust the sash span slightly within the range allowed by manufacturing tolerances by pushing the lower sash outwards while re-installing it.
4. If repair or adjustment is not possible, replace the door assembly.



DOOR OUTSIDE HANDLE PLAY CHECK

M1423001600170



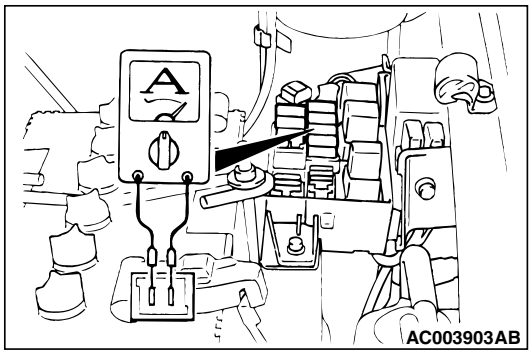
1. Check that the door outside handle play is within the standard value range.

   Standard value (B): 2.8 mm (0.11 inch) or more

2. If the door outside handle play is not within the standard value range, check the door outside handle or the door latch assembly. Replace if necessary.

POWER WINDOW OPERATING CURRENT CHECK

M1429001100098



1. Remove the power window fuse and connect an ammeter as shown in the illustration.
2. When the power window switch is pressed to the "UP" position, a large amount of current flows at the time the window starts to close and when it is fully closed, so measure the operation current in the interval between these two points.

   Standard value: 7 A or more [at 20°C (68°F)]

3. If the operation current is outside the standard value, refer to Power Window Diagnosis P.42-93.

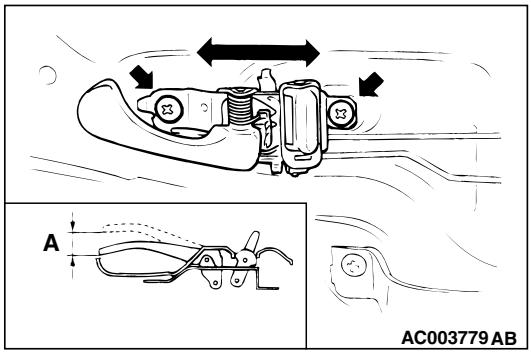
CIRCUIT BREAKER (INCORPORATED IN THE POWER WINDOW MOTOR) CHECK

M1429001000165

1. Pull the power window switch to the UP position to fully close the door window glass, and keep pulling the switch for 10 additional seconds.
2. Release the power window switch from the UP position and immediately press it to the DOWN position. The condition of the circuit breaker is good if the door window glass starts to move downwards within 60 seconds.

DOOR INSIDE HANDLE PLAY CHECK AND ADJUSTMENT

M1423001500173



1. Check that the door inside handle play is within the standard value range.

   Standard value (A): 7.3 mm (0.29 inch) or more

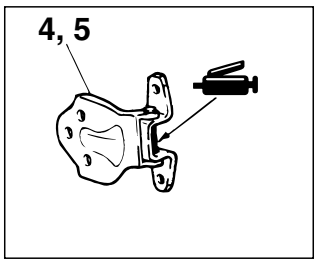
2. If the door inside handle play is outside the standard value range, remove the door trim. (Refer to P.42-134).
3. Loosen the inside handle mounting screws, and then move the inside handle back and forth to adjust the play.

DOOR ASSEMBLY

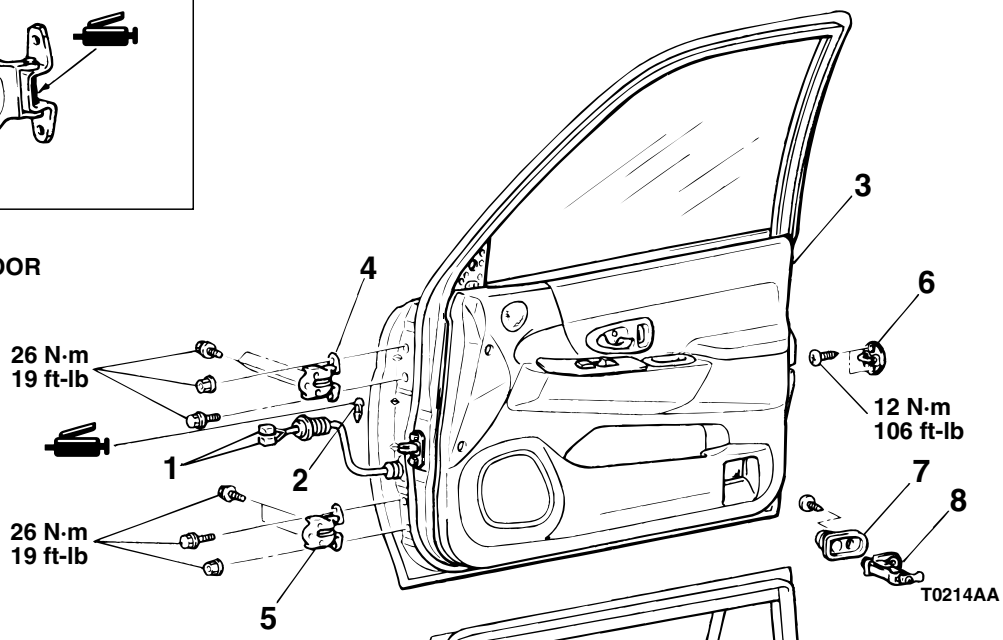
REMOVAL AND INSTALLATION

M1423002200175

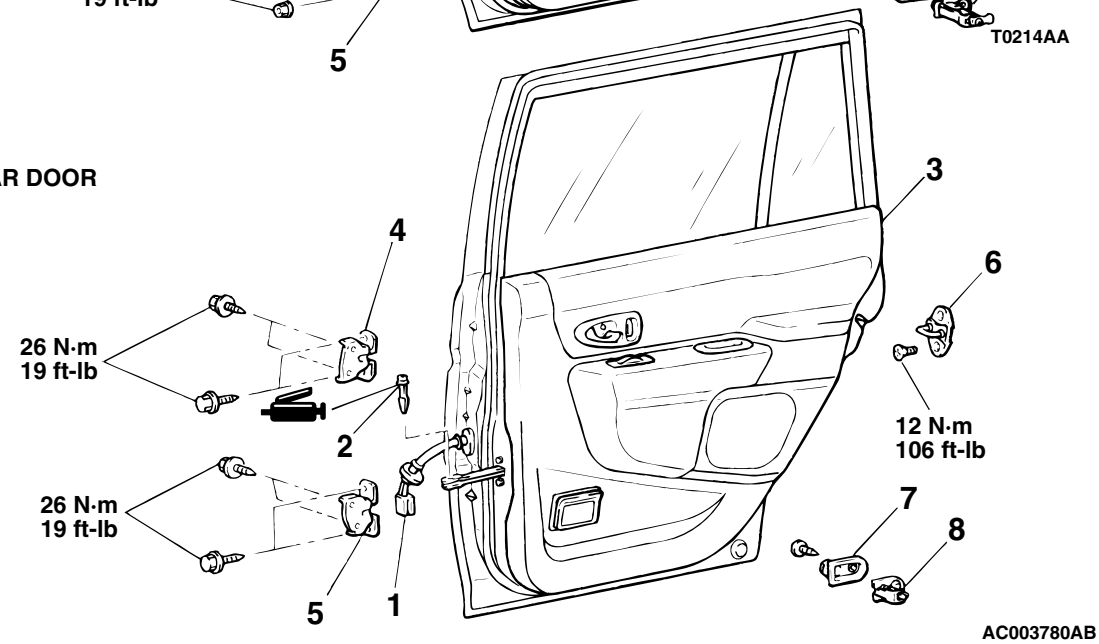
Post-installation Operation
- Door Fit Adjustment (Refer to P.42-129.)



FRONT DOOR



REAR DOOR



DOOR ASSEMBLY REMOVAL STEPS
1. HARNESS CONNECTOR
2. SPRING PIN
3. DOOR ASSEMBLY
>>A<< 4. DOOR UPPER HINGE
>>A<< 5. DOOR LOWER HINGE

STRIKER REMOVAL STEPS
6. STRIKER

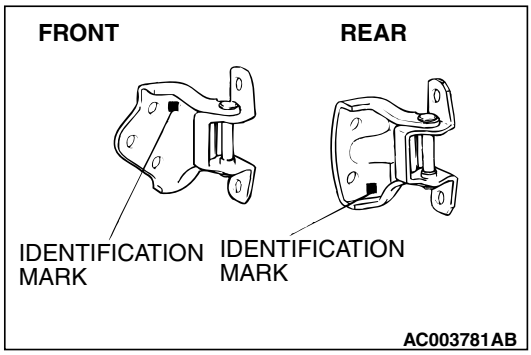
DOOR SWITCH REMOVAL STEPS
7. DOOR SWITCH CAP
8. DOOR SWITCH

TSB Revision

INSTALLATION SERVICE POINT

>>A<< DOOR LOWER HINGE/DOOR UPPER HINGE INSTALLATION

The door hinges differ according to where they are used, so check the identification marks before installation.



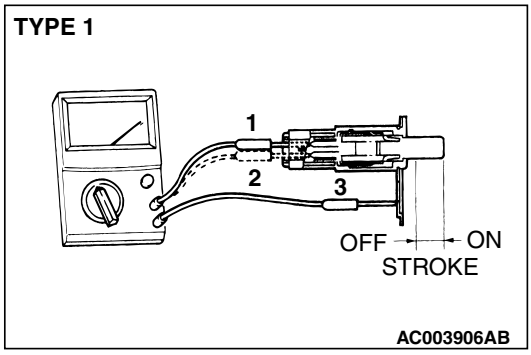
APPLICABLE LOCATION		IDENTIFICATION MARK
Front left side door	Upper hinge	F1
	Lower hinge	E1
Front right side door	Upper hinge	E1
	Lower hinge	F1
Rear left side door	Upper hinge	A1
	Lower hinge	B1
Rear right side door	Upper hinge	B1
	Lower hinge	A1

INSPECTION

M1423006000366

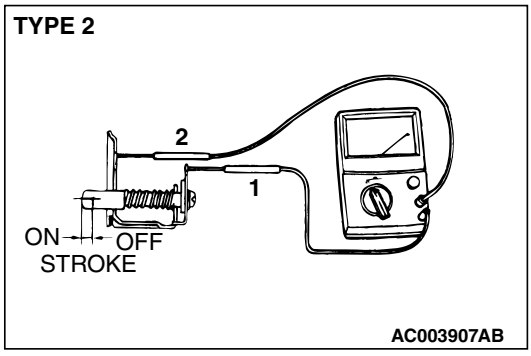
DOOR SWITCH CONTINUITY CHECK

TYPE1



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2, 1 – 3, 2 – 3	Less than 2 ohms
Depressed (OFF)	1 – 2, 1 – 3, 2 – 3	Open circuit

TYPE2

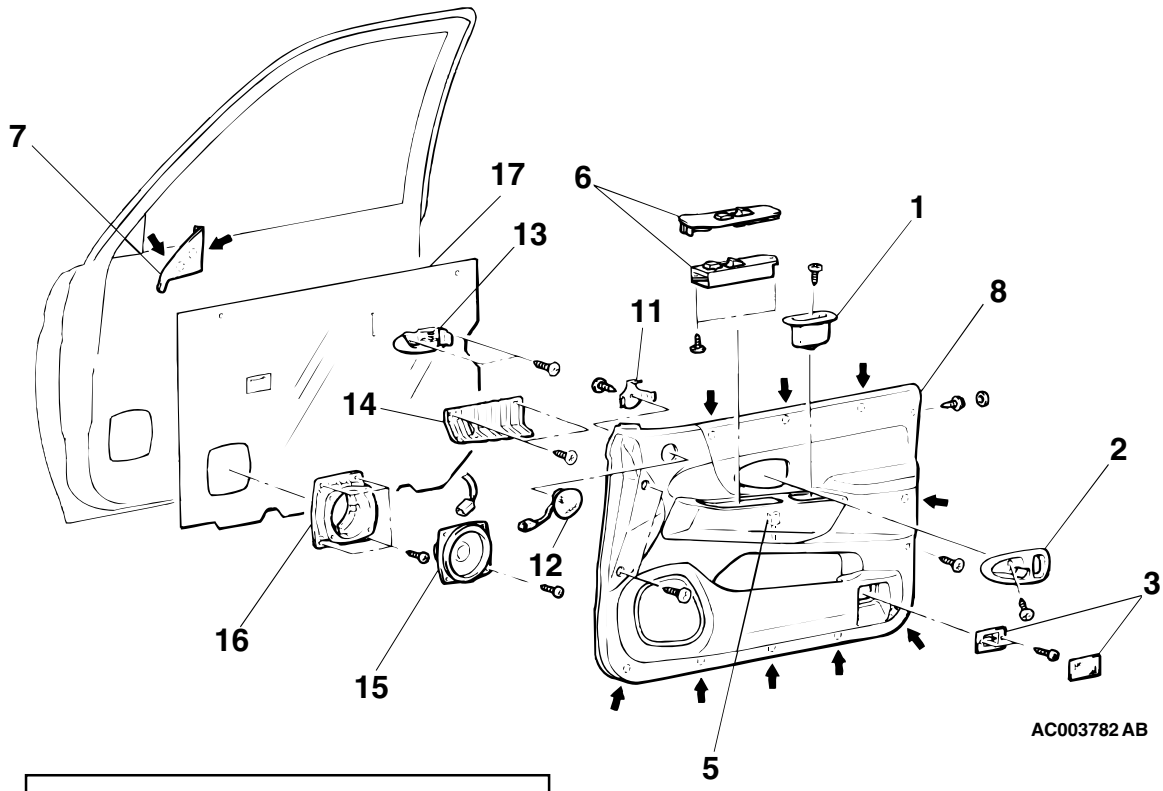


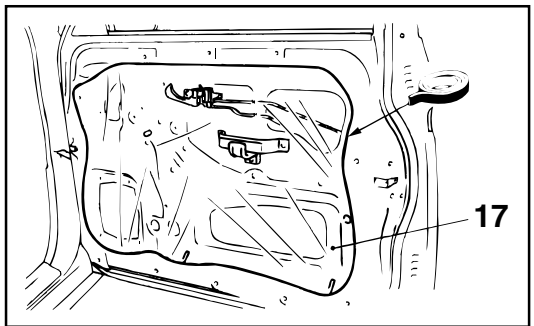
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2	Less than 2 ohms
Depressed (OFF)	1 – 2	Open circuit

DOOR TRIM AND WATERPROOF FILM

REMOVAL AND INSTALLATION

M1423004300189





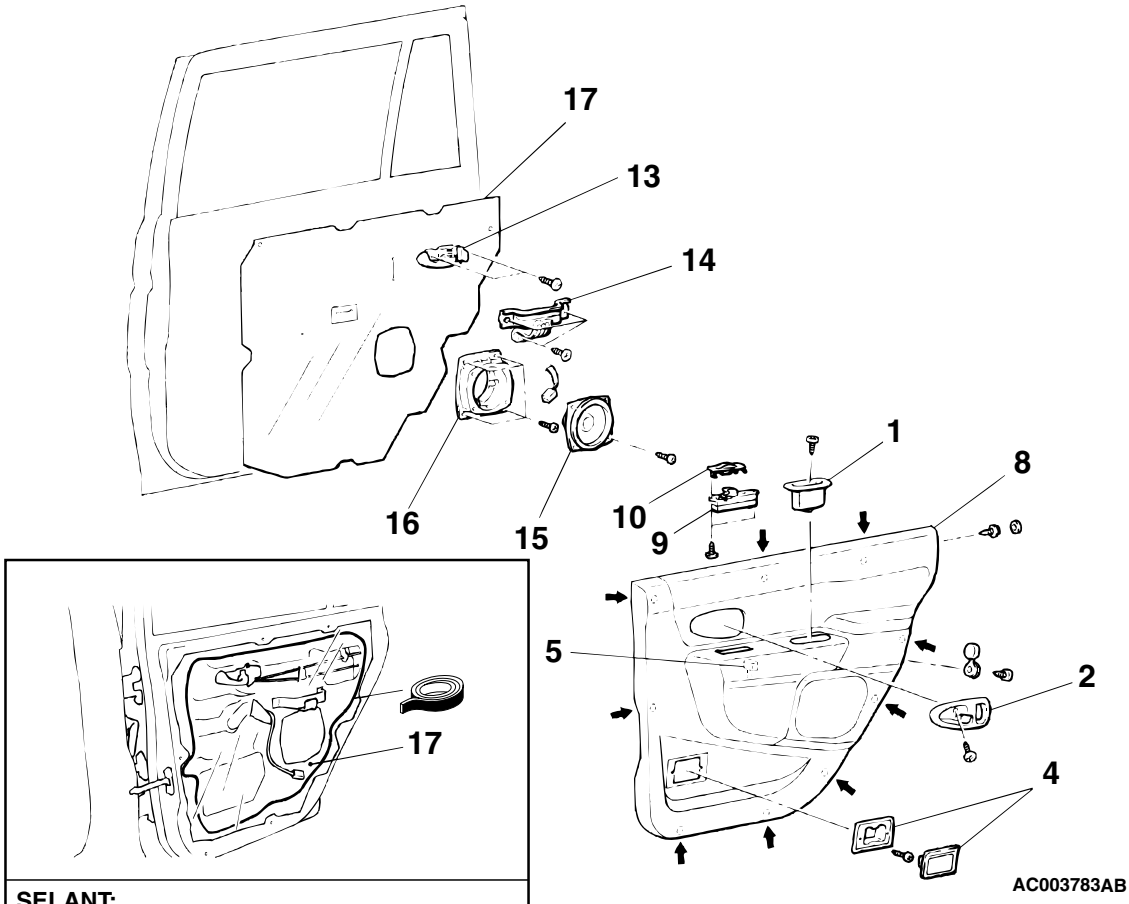
SELANT:
3M™ AAD PART NO. 8625 OR EQUIVALENT

NOTE
⬅ : Resin clip position

REMOVAL STEPS
1. PULL HANDLE BOX
2. COVER
3. DOOR LIGHT
5. HARNESS CONNECTOR
<<A>> 6. POWER WINDOW SWITCH ASSEMBLY
7. INNER DELTA COVER
8. DOOR TRIM

REMOVAL STEPS (Continued)
11. SPEAKER BRACKET
12. TWEETER
13. DOOR INSIDE HANDLE
14. PULL HANDLE BRACKET
15. SPEAKER
16. SPEAKER COVER
17. WATERPROOF FILM

TSB Revision



SELANT:
3M™ AAD PART NO. 8625 OR EQUIVALENT

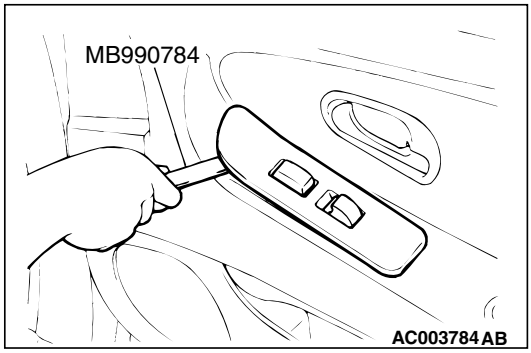
NOTE
⬅ : Resin clip position

REMOVAL STEPS
1. PULL HANDLE BOX
2. COVER
4. ASHTRAY
5. HARNESS CONNECTOR
8. DOOR TRIM
9. POWER WINDOW SWITCH
10. POWER WINDOW SWITCH COVER
13. DOOR INSIDE HANDLE

REMOVAL STEPS (Continued)
14. PULL HANDLE BRACKET
15. SPEAKER
16. SPEAKER COVER
17. WATERPROOF FILM

Required Special Tool:
- MB990784: Ornament Remover

REMOVAL SERVICE POINT



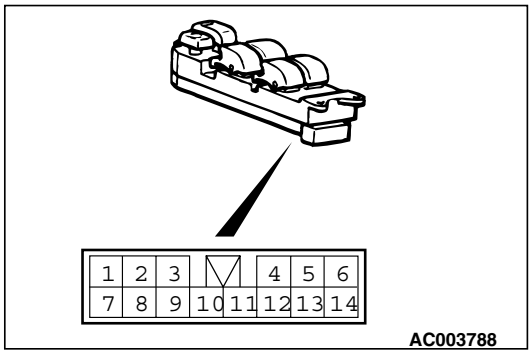
<<A>> POWER WINDOW SWITCH ASSEMBLY
There is a clip (driver's side) or a claw (other sides) on the front of the power window switch assembly. Work from the front side using special tool MB990784.

TSB Revision

INSPECTION

M1429001600178

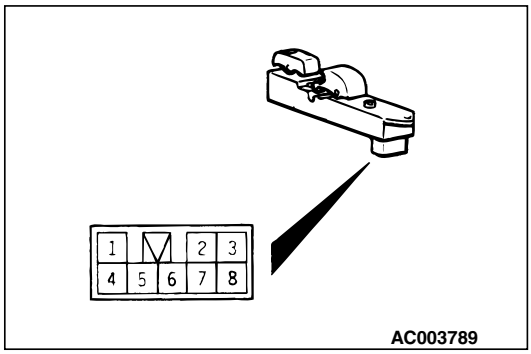
POWER WINDOW SWITCH CONTINUITY CHECK



POWER WINDOW MAIN SWITCH CHECK

SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
FRONT (LH)	UP	8 – 13 9 – 12	Less than 2 ohms
	OFF	8 – 12 9 – 12	Less than 2 ohms
	DOWN	8 – 12 9 – 13	Less than 2 ohms
FRONT (RH)	UP	11 – 12* 3 – 13	Less than 2 ohms
	OFF	11 – 12* 3 – 12	Less than 2 ohms
	DOWN	11 – 13 3 – 12*	Less than 2 ohms
REAR (LH)	UP	1 – 13 2 – 12*	Less than 2 ohms
	OFF	2 – 12* 1 –12*	Less than 2 ohms
	DOWN	2 – 13 1 – 12*	Less than 2 ohms
REAR (RH)	UP	13 – 14 6 – 12*	Less than 2 ohms
	OFF	6 – 12* 12 – 14	Less than 2 ohms
	DOWN	6 – 13, 12 – 14*	Less than 2 ohms

*NOTE: *:Set switch to UNLOCK position.*



POWER WINDOW SUB SWITCH CHECK

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	5 – 7 6 – 8	Less than 2 ohms
OFF	4 – 7 6 – 8	Less than 2 ohms
DOWN	4 – 7 5 – 6	Less than 2 ohms

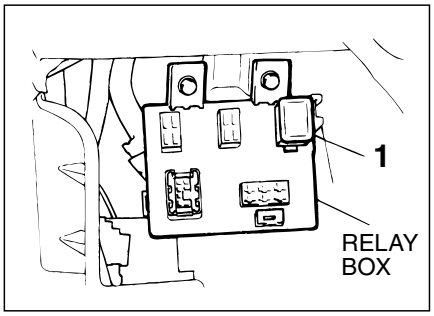
DOOR GLASS AND REGULATOR

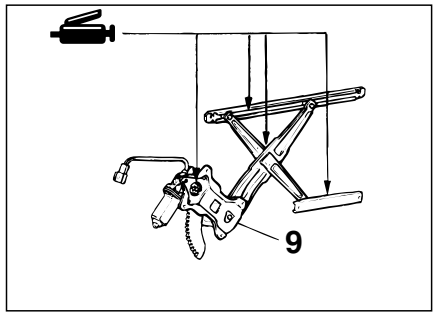
REMOVAL AND INSTALLATION

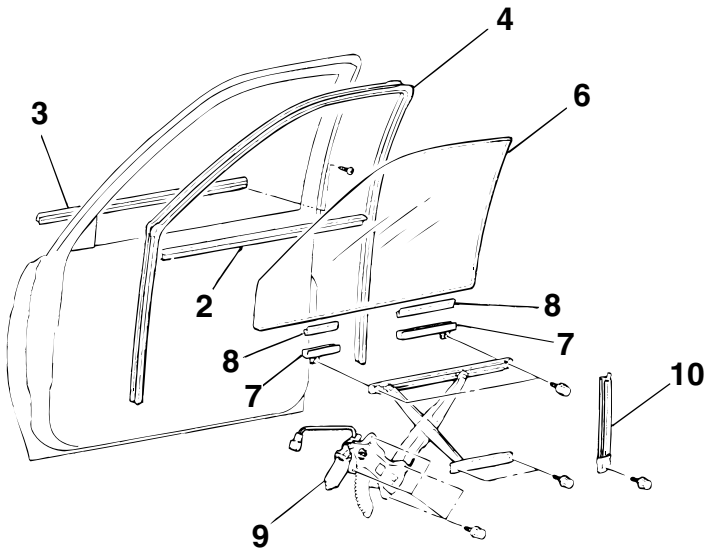
M1429001300371

<FRONT DOOR>

Pre-removal Operation	Post-installation Operation
• Door Trim and Waterproof Film Removal (Refer to P.42-134.) • Door Mirror Removal (Refer to P.51-26.)	• Door Trim and Waterproof Film Installation (Refer to P.42-134.) • Door Mirror Installation (Refer to P.51-26.) • Door Window Glass Adjustment (Refer to P.42-130.)







AC003785AB

POWER WINDOW RELAY REMOVAL STEPS

- DRIVER'S SIDE UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-37.)

1. POWER WINDOW RELAY <VEHICLES WITH POWER WINDOWS>

FRONT WINDOW REGULATOR ASSEMBLY REMOVAL STEPS

2. DOOR BELTLINE INNER WEATHERSTRIP
3. DOOR BELTLINE MOLDING ASSEMBLY
4. DOOR WINDOW GLASS RUNCHANNEL
6. DOOR WINDOW GLASS

>>B<< 7. DOOR GLASS HOLDER

8. DOOR GLASS PAD
9. WINDOW REGULATOR ASSEMBLY

>>A<< 10. REAR LOWER SASH

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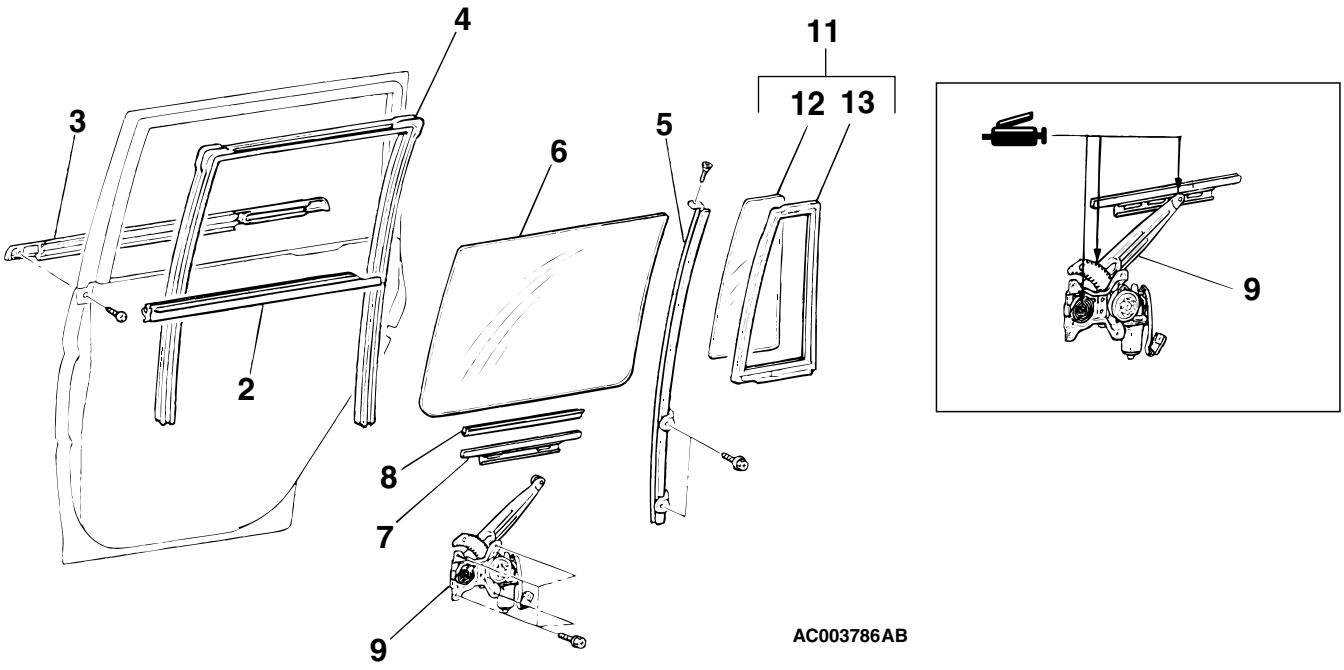
<REAR DOOR>

Pre-removal Operation	Post-installation Operation
• Door Trim and Waterproof Film Removal (Refer to P.42-134.)	• Door Trim and Waterproof Film Installation (Refer to P.42-134.) • Door Window Glass Adjustment (Refer to P.42-130.)



REMOVAL STEPS

2. DOOR BELTLINE INNER WEATHERSTRIP
3. DOOR BELTLINE MOLDING ASSEMBLY
4. DOOR WINDOW GLASS RUNCHANNEL

<<A>> 5. DOOR CENTER SASH

6. DOOR WINDOW GLASS

>>B<< 7. DOOR GLASS HOLDER

8. DOOR GLASS PAD

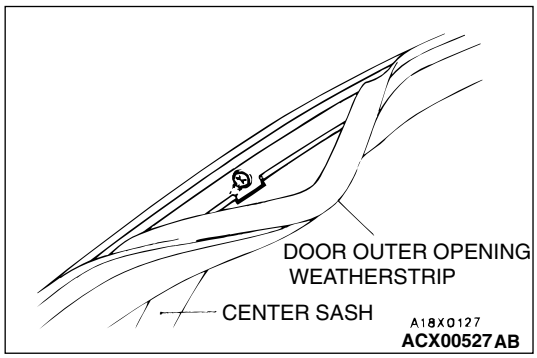
REMOVAL STEPS (Continued)

9. POWER WINDOW REGULATOR ASSEMBLY
9. WINDOW REGULATOR ASSEMBLY
11. STATIONARY WINDOW GLASS AND WEATHERSTRIP ASSEMBLY
12. STATIONARY WINDOW GLASS AND WEATHERSTRIP ASSEMBLY
13. STATIONARY WINDOW WEATHERSTRIP

REMOVAL SERVICE POINT

<<A>> DOOR CENTER SASH REMOVAL (REAR DOOR)

1. Remove the door outer opening weatherstrip from the door center sash section only.
2. Remove the mounting screw for the door center sash, and remove the door center sash from the door panel.



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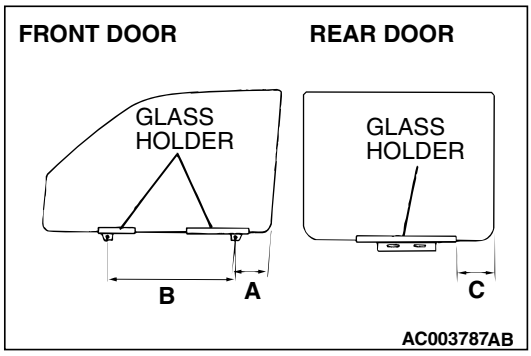
INSTALLATION SERVICE POINTS

>>A<< REAR LOWER SASH INSTALLATION
Securely insert the rear lower sash into the window rear sash.

>>B<< DOOR GLASS HOLDER INSTALLATION
Install the glass pad and the glass holders to the window glass as shown in the illustration.

Standard value: (A) 106.7 – 108.2 mm (4.20 – 4.26 inches) (B) 417.5 – 420.5 mm (16.44 – 16.56 inches) (C) 127 – 131 mm (5.0 – 5.2 inches)



INSPECTION

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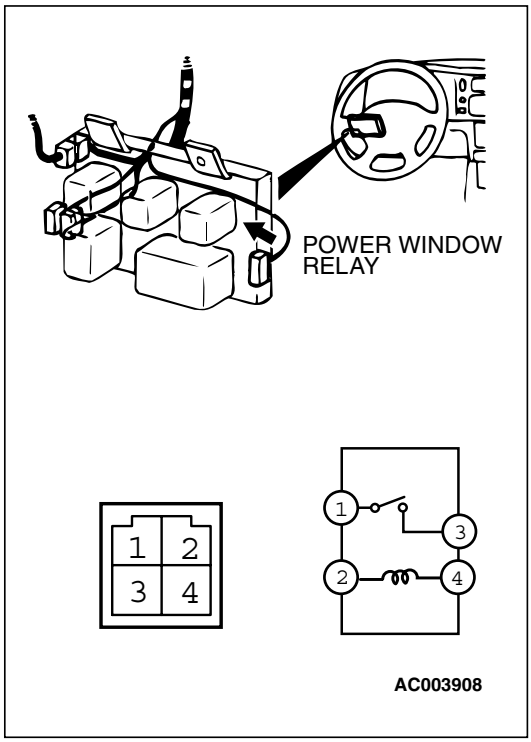
POWER WINDOW RELAY CONTINUITY CHECK



BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 3	Open circuit
• Connect terminal 2 to the positive battery terminal • Connect terminal 4 to the positive battery terminal	1 – 3	Less than 2 ohms

POWER WINDOW MOTOR CHECK

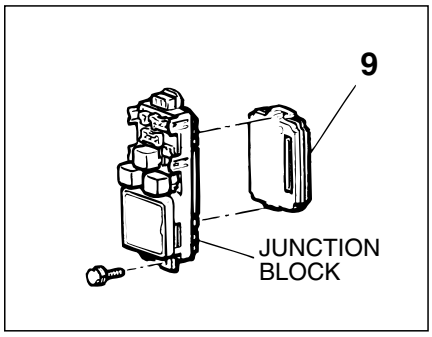
1. Connect a battery directly to the motor terminals and check that the motor runs smoothly.
2. Check that the motor runs in the opposite direction when the battery is connected with the polarity reversed.
3. If defect is found, replace the window regulator as an assembly.

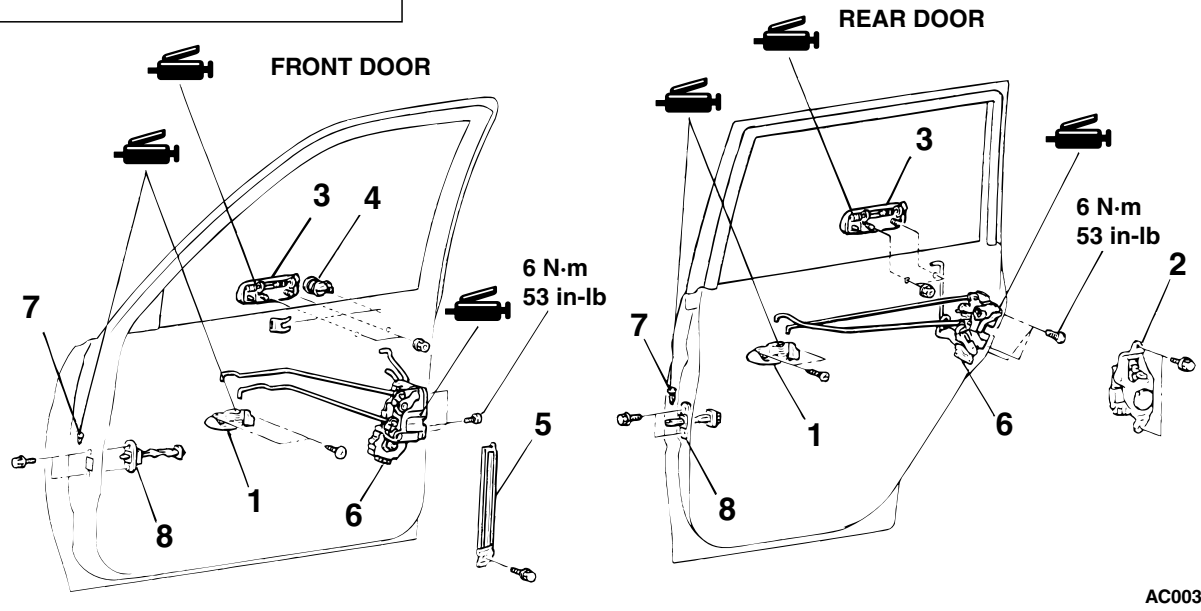
DOOR HANDLE AND LATCH

REMOVAL AND INSTALLATION

M1423004600384

Pre-removal Operation	Post-installation Operation
• Door Trim Removal (Refer to P.42-134.)	• Door Inside Handle Play Check (Refer to P.42-131.) • Door Outside Handle Play Check (Refer to P.42-131.) • Door Trim Installation (Refer to P.42-134.) • Door Fit Adjustment (Refer to P.42-129.)





DOOR HANDLE AND DOOR LATCH ASSEMBLY REMOVAL STEPS

1. DOOR INSIDE HANDLE
   - WATERPROOF FILM (REFER P.42-134.)
3. DOOR OUTSIDE HANDLE
4. DOOR LOCK KEY CYLINDER

>>B<< 5. REAR LOWER SASH

6. DOOR LATCH ASSEMBLY

REAR DOOR HANDLE AND DOOR LATCH ASSEMBLY REMOVAL STEPS

1. DOOR INSIDE HANDLE
   - WATERPROOF FILM (REFER P.42-134.)

>>C<< 2. REAR DOOR LOCK ACTUATOR ASSEMBLY

3. DOOR OUTSIDE HANDLE
6. DOOR LATCH ASSEMBLY

DOOR CHECK REMOVAL STEPS

7. SPRING PIN

>>A<< 8. DOOR CHECK

ETACS-ECU REMOVAL

9. ETACS-ECU

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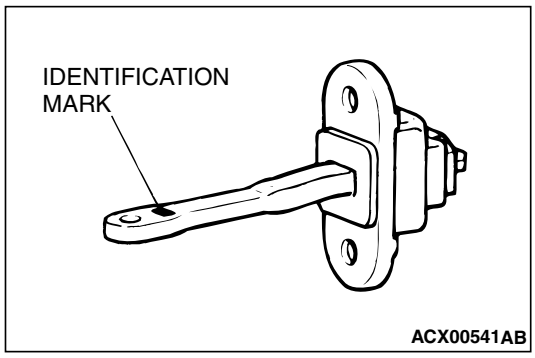
INSTALLATION SERVICE POINTS



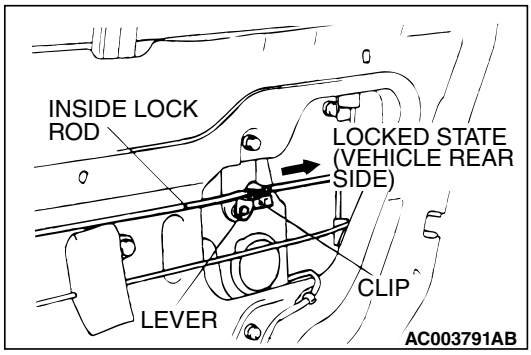
>>A<< DOOR CHECK INSTALLATION

Install the door check so that the identification mark faces upwards.

ITEM		IDENTIFICATION MARK
Front Door	Left door	19L
	Right door	19L
Rear Door	Left door	25L
	Right door	25R

>>B<< REAR LOWER SASH INSTALLATION

Securely insert the rear lower sash into the window rear sash.



>>C<< REAR DOOR LOCK ACTUATOR INSTALLATION

1. Lock the inside lock knob.
2. Lock the actuator lever and install.
3. Fit the clip into the inside lock rod.

INSPECTION

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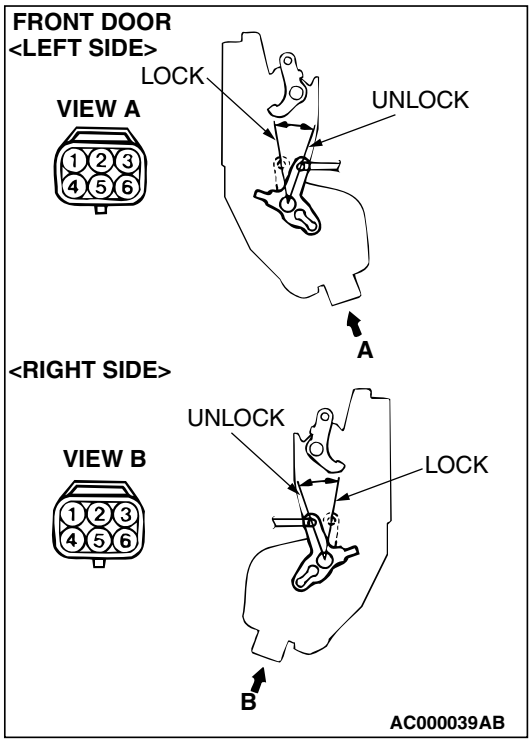
FRONT DOOR LOCK ACTUATOR CHECK



Actuator Operation Check <Left side>

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "UNLOCK" position	• Connect terminal No. 6 and the positive battery terminal. • Connect terminal No. 4 and the negative battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.
At the "LOCK" position	• Connect terminal No. 4 and the positive battery terminal. • Connect terminal No. 6 and the negative battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.

Actuator Switch Continuity Check <Left side>

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "UNLOCK" position	1 – 3	Less than 2 ohms
At the "LOCK" position	1 – 2	Less than 2 ohms

Actuator Operation Check <Right side>

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "UNLOCK" position	• Connect terminal No. 4 and the positive battery terminal. • Connect terminal No. 6 and the negative battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.
At the "LOCK" position	• Connect terminal No. 6 and the positive battery terminal. • Connect terminal No. 4 and the negative battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.

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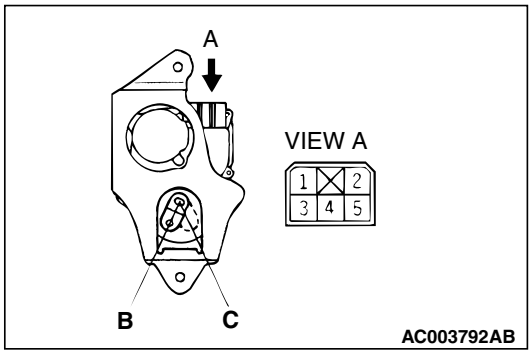
Actuator Switch Continuity Check <Right side – Vehicles with keyless entry system only>

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	2 – 3	Less than 2 ohms
At the UNLOCK position	1 – 3	Less than 2 ohms

REAR DOOR LOCK ACTUATOR CHECK



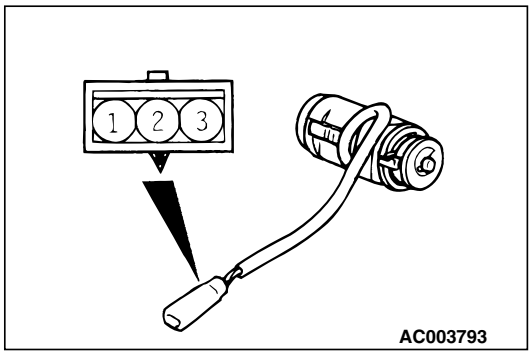
Actuator Operation Check

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "B" position	• Connect terminal No. 1 and the positive battery terminal. • Connect terminal No. 2 and the negative battery terminal.	The lever moves from the "B" position to the "C" position.
At the "C" position	• Connect terminal No. 2 and the positive battery terminal. • Connect terminal No. 1 and the negative battery terminal.	The lever moves from the "C" position to the "B" position.

Actuator Switch Continuity Check <Vehicles with keyless entry system>

ACTUATOR	SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
LH side	At the C position	3 – 4	Less than 2 ohms
RH side	At the B position	3 – 5	Less than 2 ohms

DOOR LOCK KEY CYLINDER SWITCH CONTINUITY CHECK



<DRIVER'S SIDE>

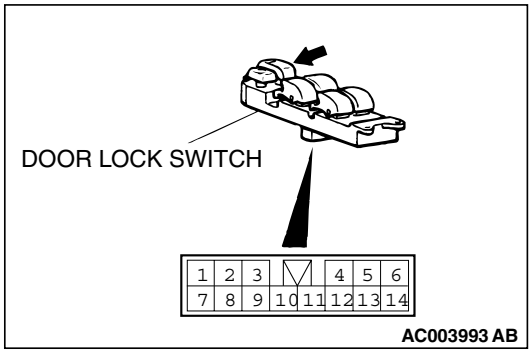
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	2 – 3	Less than 2 ohms
At the NEUTRAL (OFF) position	1 – 2 2 – 3	Open circuit
At the UNLOCK position	1 – 2	Less than 2 ohms

<PASSENGER'S SIDE>

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	2 – 3	Less than 2 ohms
At NEUTRAL (OFF) position	1 – 2 2 – 3	Open circuit
At the UNLOCK position	1 – 2	Less than 2 ohms

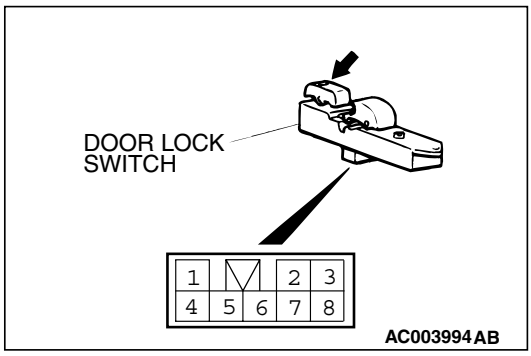
CENTER DOOR LOCK SWITCH CONTINUITY CHECK

Remove the power window switch. (Refer to P.42-134.)



Driver's side

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	5 – 12	Less than 2 ohms
At the OFF position	5 – 12 10 – 12	Open circuit
At the UNLOCK position	10 – 12	Less than 2 ohms



Passenger's side

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the LOCK position	1 – 2	Less than 2 ohms
At the OFF position	1 – 2 2 – 3	Open circuit
At the UNLOCK position	2 – 3	Less than 2 ohms

WINDOW GLASS RUNCHANNEL AND DOOR OPENING WEATHERSTRIP

REMOVAL AND INSTALLATION

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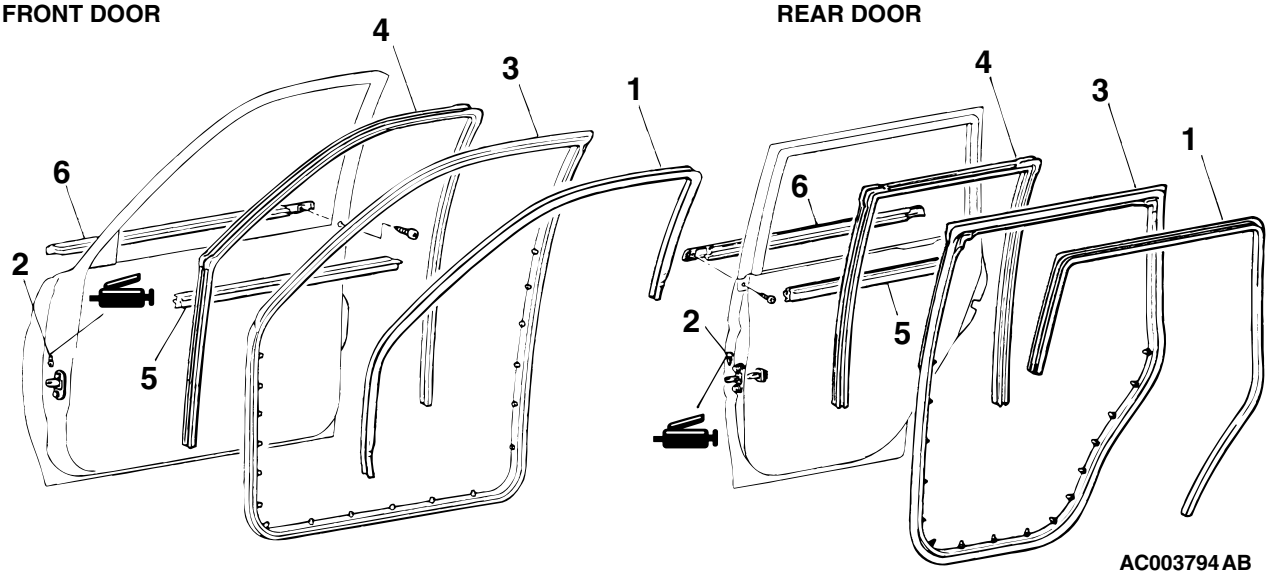
FRONT DOOR

REAR DOOR



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DOOR INNER OPENING WEATHERSTRIP REMOVAL STEPS

- FRONT SCUFF PLATE, REAR SCUFF PLATE, CENTER PILLAR LOWER TRIM AND COWL SIDE TRIM (REFER TO GROUP 52A, TRIMS P.52A-41.)

1. DOOR INNER OPENING WEATHERSTRIP

DOOR OUTER OPENING WEATHERSTRIP REMOVAL

2. SPRING PIN

<<A>> >>A<< 3. DOOR OUTER OPENING WEATHERSTRIP

DOOR WINDOW GLASS RUNCHANNEL REMOVAL STEPS

4. DOOR WINDOW GLASS RUNCHANNEL

DOOR BELTLINE INNER WEATHERSTRIP REMOVAL STEPS

- DOOR TRIM (REFER TO P.42-134.)

5. DOOR BELTLINE INNER WEATHERSTRIP

DOOR BELTLINE INNER WEATHERSTRIP REMOVAL STEPS

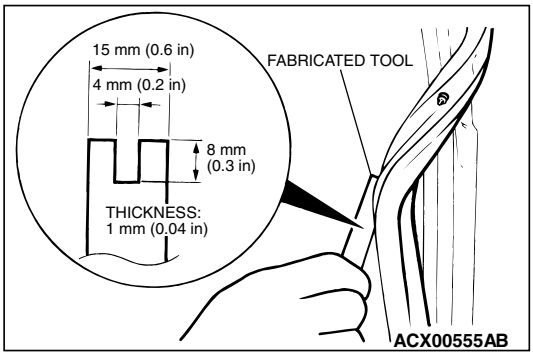
- DOOR MIRROR (REFER TO GROUP 51, DOOR MIRROR P.51-26.)

6. DOOR BELTLINE OUTER WEATHERSTRIP

REMOVAL SERVICE POINT

<<A>> DOOR OUTER OPENING WEATHERSTRIP REMOVAL

Make a tool as shown and remove the door opening weather-strip.



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INSTALLATION SERVICE POINT

>>A<< DOOR OUTER OPENING WEATHERSTRIP INSTALLATION

The clip color identifies the left and right weatherstrips, so be sure to use the colors so as to install correctly.

APPLICABLE SIDE	IDENTIFICATION COLOR
Left door	Brown or yellow
Right door	Natural (White)

LIFTGATE

LIFTGATE DIAGNOSIS

INTRODUCTION TO LIFTGATE DIAGNOSIS

M1424002500094

Refer to P.42-93.

LIFTGATE DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1424002600091

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a liftgate fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

SYMPTOM CHART

M1424002700106

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Liftgate hard to open	1	P.42-124
Liftgate does not open or close completely.	2	P.42-125
Uneven gap between body	3	P.42-125

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Liftgate Hard to Open

DIAGNOSIS

STEP 1. Adjust the latch and striker engagement.
(Refer to P.42-148.)

Q: Is the latch and striker engagement adjusted?
YES : Go to Step 2.
NO : Adjust lift gate. (Refer to P.42-148.) Then go to Step 4.

STEP 2. Check for possible lock rod damage.

Q: Is the possible lock rod damaged?
YES : Repair or replace possible lock rod, then go to Step 4.
NO : Go to Step 3.

STEP 3. Check liftgate handle flexibility (amount of movement of handle required to open liftgate).

Q: Is the liftgate handle flexibility good?
YES : Go to Step 4.
NO : Adjust lift gate handle play. (Refer to P.42-148.) Then go to Step 4.

STEP 4. Retest the system.

Q: Does the liftgate open easily?
YES : This procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 2: Liftgate does not Open or Close Completely.

DIAGNOSIS

STEP 1. Check the liftgate hinge position.

Q: Is the liftgate hinge position correct?
YES : Go to Step 2.
NO : Adjust lift gate position. (Refer to P.42-148.) Then go to Step 4.

STEP 2. Check the liftgate.

Q: Is the liftgate in good condition?
YES : Go to Step 3.
NO : Repair or replace lift gate assembly, then go to Step 4.

STEP 3. Check the grease.

Q: Is the door hinge grease sufficient?
YES : Go to Step 4.
NO : Apply the grease, then go to Step 4.

STEP 4. Retest the system.

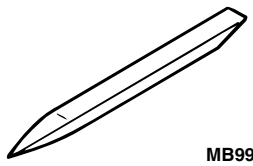
Q: Does the liftgate open and close correctly?
YES : This procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 3: Uneven Gap between Body

DIAGNOSIS
Adjust the liftgate fit. (Refer to P.42-148.) Then check that the gap has been improved.

SPECIAL TOOL

M1424000600103

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 MB990784	MB990784 Ornament remover	General service tool	Removal of liftgate trim

ON-VEHICLE SERVICE

LIFTGATE FIT ADJUSTMENT

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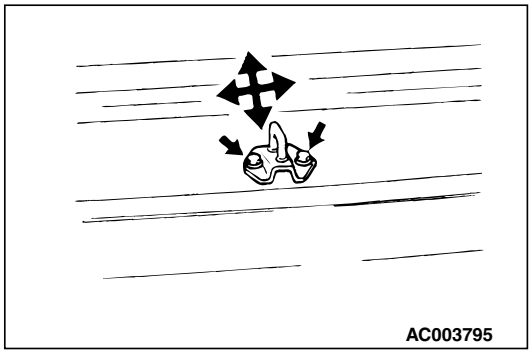
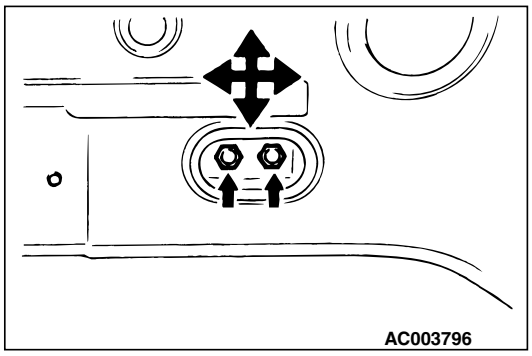

AC003795

1. If the striker and latch do not mesh properly, move the striker up and down and to the left and right.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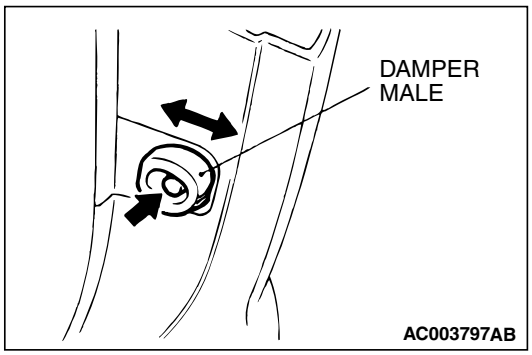
2. If the clearance around the liftgate is not even when the liftgate is closed, move the liftgate hinge forward and back or to the left and right.



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3. Check the fitting of the damper male when the liftgate is closed. If the position is not correct, move the damper male forward and back.

LIFTGATE HANDLE PLAY CHECK

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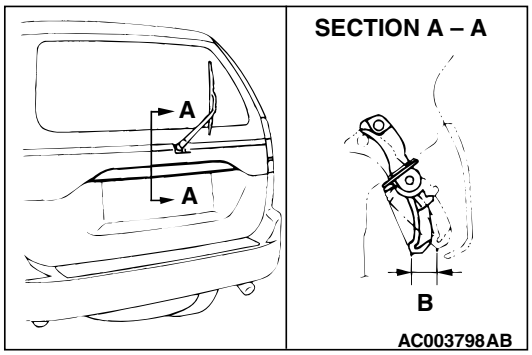

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1. Check the back boor handle play.

   Standard value (B): 1.5 – 5.5 mm (0.06 – 0.22 inches)

2. If the play is not within the standard value range, check and replace the liftgate handle or the liftgate latch assembly.

LIFTGATE

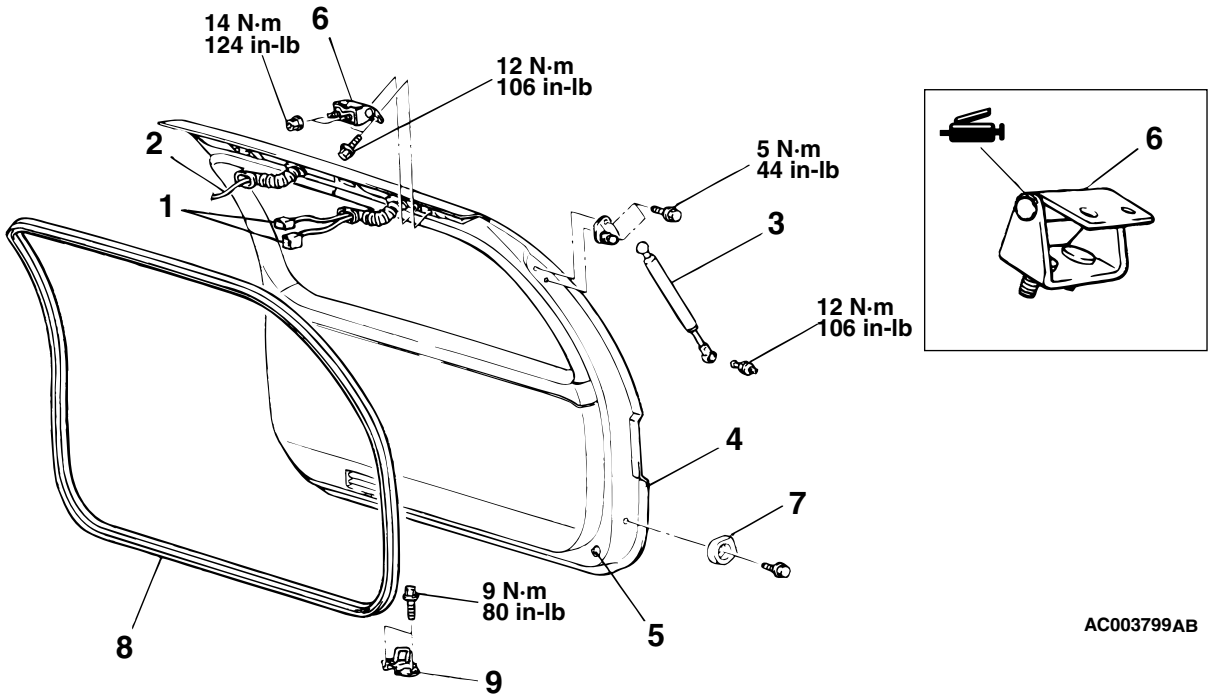
REMOVAL AND INSTALLATION

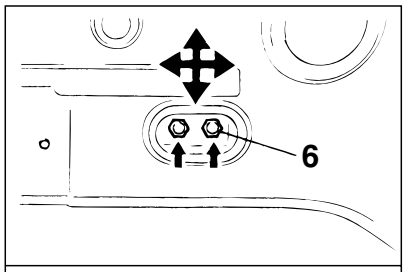
M1424001100101

⚠ CAUTION

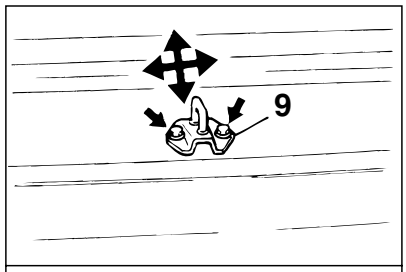
- **Do not disassemble or throw the liftgate gas spring into fire.**
- **Punch a hole in the gas spring before disposal to release the gas inside.**
- **Ensure the liftgate gas spring piston rod does not come into contact with foreign material.**

Pre-removal Operation	Post-installation Operation
• Rear Headlining Removal (Refer to GROUP 52A, Headlining P.52A-42.)	• Rear Headlining Installation (Refer to GROUP 52A, Headlining P.52A-42.) • Liftgate Fit Adjustment (Refer to P.42-148.)

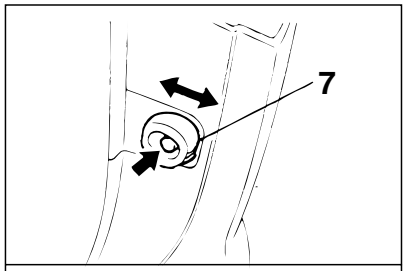




LIFTGATE CLEARANCE ADJUSTMENT



LIFTGATE HEIGHT AND LIFTGATE STRIKER MESHING ADJUSTMENT



LIFTGATE FIT ADJUSTMENT

REMOVAL STEPS

1. HARNESS CONNECTOR
2. REAR WINDOW WASHER TUBE CONNECTION
3. LIFTGATE GAS SPRING
4. LIFTGATE ASSEMBLY
5. LIFTGATE BUMPER

REMOVAL STEPS (Continued)

6. LIFTGATE HINGE
7. DAMPER MALE

>>A<< 8. DAMPER MALE

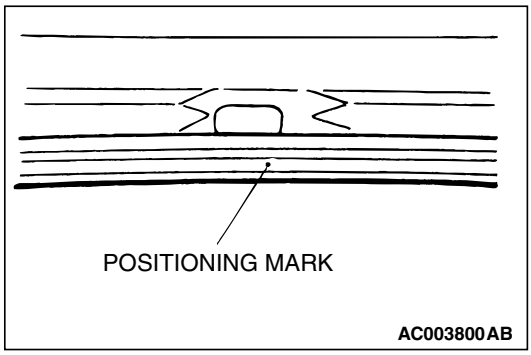
STRIKER REMOVAL

9. STRIKER

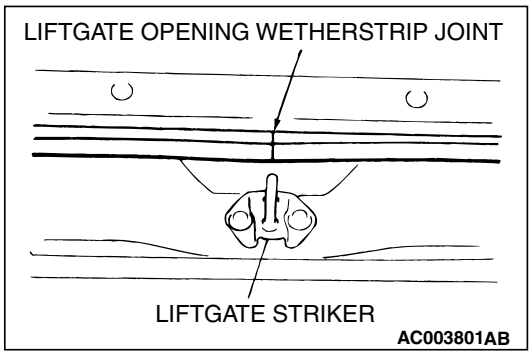
TSB Revision

INSTALLATION SERVICE POINT

>>A<< LIFTGATE OPENING WEATHERSTRIP INSTALLATION



1. Check the identification color, and then align the positioning mark with the top center of the liftgate to install the weatherstrip.



2. Check that the liftgate opening weatherstrip joint is centered.

LIFTGATE TRIM AND WATERPROOF FILM

REMOVAL AND INSTALLATION

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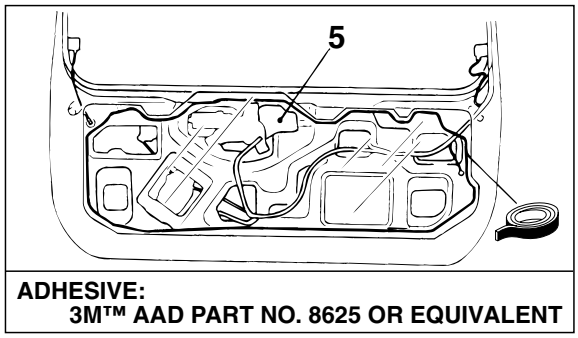

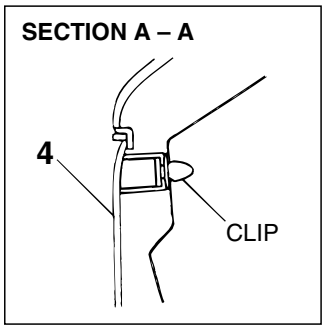

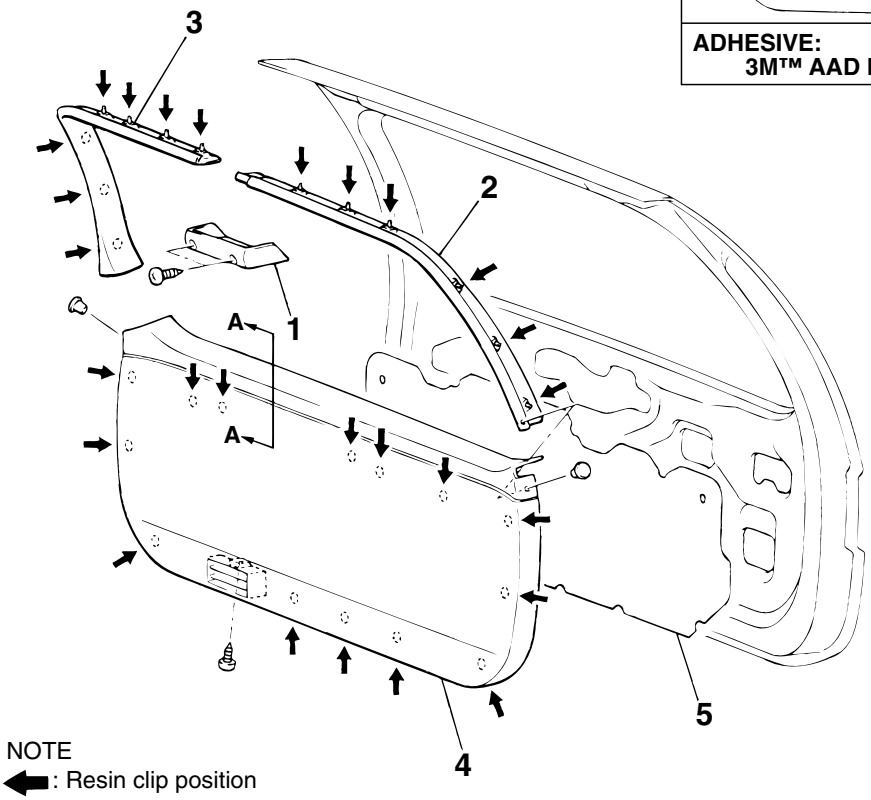

NOTE
◀: Resin clip position

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REMOVAL STEPS

1. COVER <VEHICLES WITH HIGH-MOUNTED STOPLIGHT>
2. LIFTGATE UPPER TRIM <LH>

REMOVAL STEPS (Continued)

3. LIFTGATE UPPER TRIM <RH>
4. LIFTGATE LOWER TRIM
5. WATERPROOF FILM

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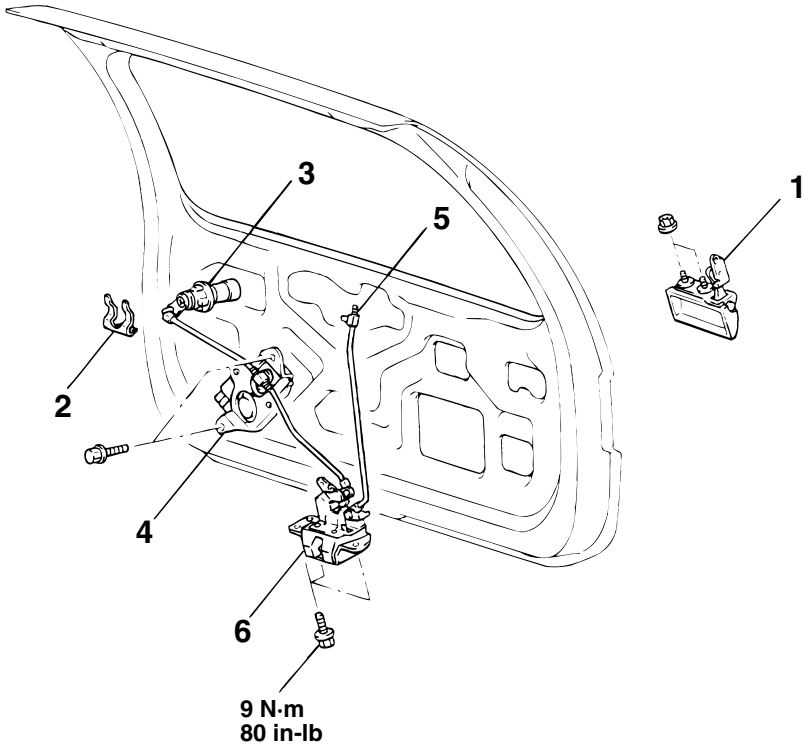
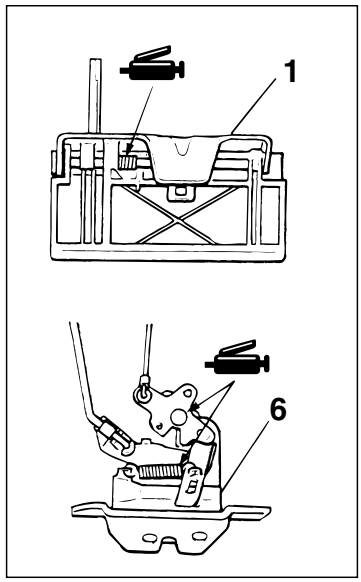
LIFTGATE HANDLE AND LATCH

REMOVAL AND INSTALLATION

M1424001700095

Pre-removal Operation	Post-installation Operation
• Liftgate Garnish Removal (Refer to GROUP 51, Grill, Molding and Garnish P.51-6.) • Liftgate Trim and Waterproof Film Removal (Refer to P.42-151.)	• Liftgate Handle Play Inspection (Refer to P.42-148.) • Liftgate Trim and Waterproof Film Installation (Refer to P.42-151.) • Liftgate Garnish Installation (Refer to GROUP 51, Grill, Molding and Garnish P.51-6.)





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LIFTGATE LOCK KEY CYLINDER REMOVAL STEPS
1. LIFTGATE HANDLE
2. CYLINDER LOCK RETAINER
3. LIFTGATE LOCK KEY CYLINDER

LIFTGATE LATCH REMOVAL STEPS
4. LIFTGATE LOCK ACTUATOR
5. HOLDER
6. LIFTGATE LATCH ASSEMBLY

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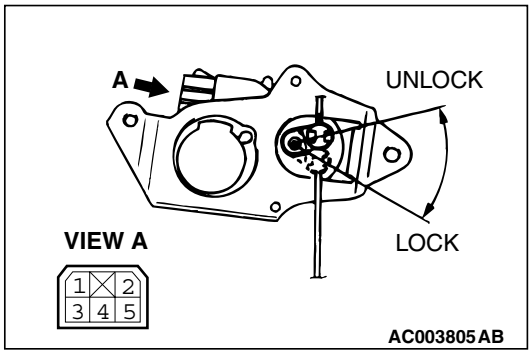
INSPECTION

M1424001200108

LIFTGATE LOCK ACTUATOR CHECK



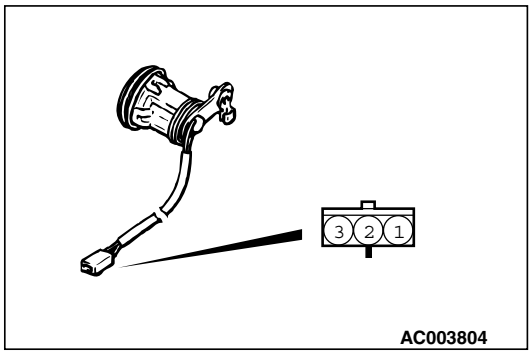
Actuator Operation Check

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal No. 1 to the positive battery terminal • Connect terminal No. 2 to the negative battery terminal	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No. 2 to the positive battery terminal • Connect terminal No. 1 to the negative battery terminal	The lever moves from the "UNLOCK" position to the "LOCK" position.

Actuator Switch Check <Vehicles with keyless entry system>

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "LOCK" position	3 – 5	Less than 2 ohms
At the "UNLOCK" position	4 – 5	Less than 2 ohms

LIFTGATE LOCK KEY CYLINDER SWITCH CHECK



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "LOCK" position	1 – 2	Less than 2 ohms
NEUTRAL (OFF)	1 – 2 2 – 3	Open circuit
At the "UNLOCK" position	2 – 3	Less than 2 ohms

KEYLESS ENTRY SYSTEM

GENERAL INFORMATION

M1428000100315

Some models are equipped with a keyless entry system. The main features are:

- The antenna is incorporated in the keyless entry receiver-ECU.
- ID code can be registered by using the scan tool MB991958 (MUT-III sub assembly).
- Transmitter is a key holder type, which incorporates lock switch, unlock switch, and panic switch.
- The locking is answered back by two times' flashing of the doom light, two times' flashing of the turn signal lights and one time sounding of the horn answerback.
- The unlocking is answered back by illuminating of the doom light for 15 seconds and one time flashing of the turn signal lights.

KEYLESS ENTRY SYSTEM DIAGNOSIS

INTRODUCTION TO KEYLESS ENTRY SYSTEM DIAGNOSIS

M1428002600037

A signal is transmitted from the transmitter to the keyless entry receiver-ECU. If the signal corresponds with that stored in the keyless entry receiver-ECU, the ECU send a signal to the ETACS-ECU. Then the door lock/unlock control is operated. When doors are locked, the dome light, the cargo space light and hazard warning lights will flash twice when doors are unlock, the dome light, the cargo space light will come on and dim after 15 seconds, and the hazard warning lights flash once.

If the following type of symptom occurs, there may be a fault.

- All the doors cannot be locked or unlocked when the transmitter is operated.
- The secret code cannot de registered.
- The dome light, the cargo space light and the hazard warning lights do not operate through the answerback function.

KEYLESS ENTRY SYSTEM DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1428001500037

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a keyless entry system fault.

1. Gather information from customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

SYMPTOM CHART

M1428001800050

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
Communication with scan tool is not possible.	Communication with all system is not possible.	–	Refer to GROUP 13A, Symptom Procedure P.13A-716
	The ETACS-ECU input signal can not be detected by the scan tool.	–	P.42-23
All of the doors can not be locked or unlocked using the transmitter. (However, the central door lock system operates normally.)		1	P.42-155
The secret code cannot be registered.		2	P.42-157
The dome light, the cargo space light and the hazard warning lights do not operate through the answerback function. (However, the dome light, the cargo space light and the hazard warning lights operates normally.)		3	P.42-158
The horn do not operate through the answerback function.		–	Refer to GROUP 54 P.54-176

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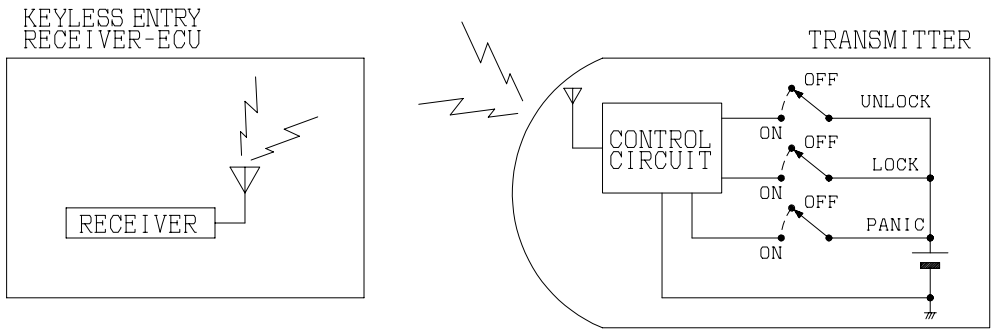
SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: All of the Doors can not be Locked or Unlocked Using the Transmitter. (However, the Central Door Lock System Operates Normally.)

Receiver and Transmitter Communication Circuit



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CIRCUIT OPERATION
The keyless entry receiver-ECU receives the lock/unlock signal from the transmitter.

TECHNICAL DESCRIPTION (COMMENT)
The cause may be a malfunction of the receiver and transmitter communication system.

TROUBLESHOOTING HINTS
- Malfunction of the keyless entry receiver-ECU
- Malfunction of the transmitter

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991529: Diagnostic Trouble Code Check Harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1. Select a tester.

Q: Do you use scan tool MB991958?

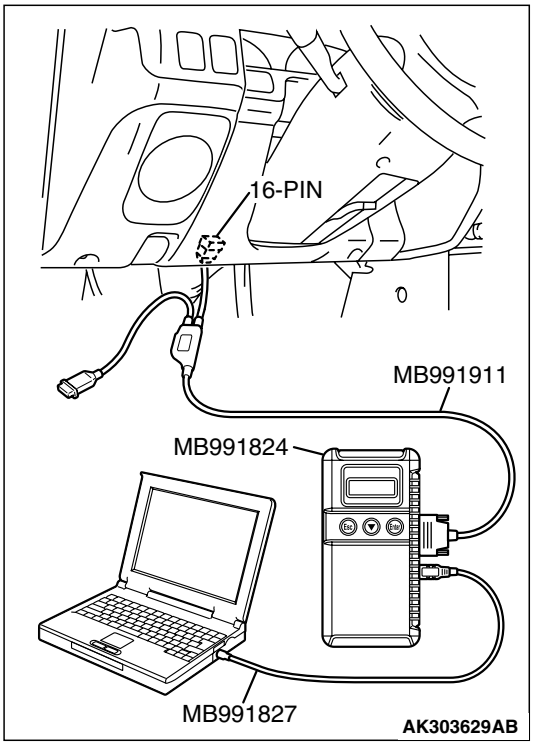
YES : Go to Step 2.
NO : Go to Step 3.

STEP 2. Check the input signal (by using the pulse check mode of the monitor) (by using MB991958).

Check input signals from the transmitter.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

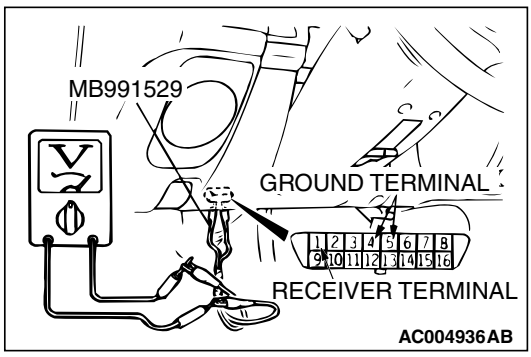


(1) Connect scan tool MB991958 to the data link connector.
(2) Operate scan tool MB991958 as follows:
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "PULSE CHECK."
(3) Push the transmitter "LOCK" or "UNLOCK" switch.
(4) Check that scan tool MB991958 sounds

Q: When the transmitter "LOCK" or "UNLOCK" switch is turned ON, does scan tool MB991958 sound?

YES : Replace the keyless entry receiver-ECU. All the doors can be locked or unlocked by means of the transmitter. Go to Step 5.
NO : Go to Step 4.

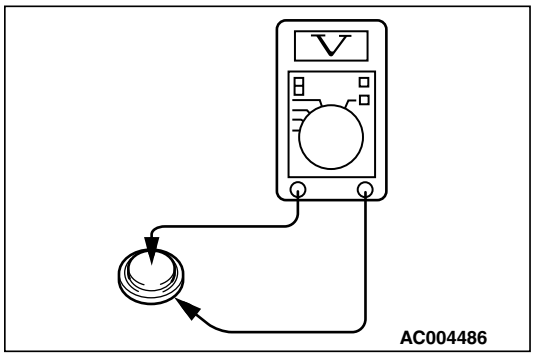
STEP 3. Check the keyless entry receiver-ECU input signal (by using a voltmeter).



(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and the keyless entry receiver-ECU terminal 1 of the data link connector.
(2) If a voltmeter indicator deflects once when transmitter's lock/unlock switches are operated, the keyless entry receiver-ECU input signal for that switch circuit system is normal.

Q: Is the input signal of transmitter normal?

YES : Replace the keyless entry receiver-ECU. All the doors can be locked or unlocked by means of the transmitter. Go to Step 5.
NO : Go to Step 4.



STEP 4. Measure the voltage at transmitter battery.
(1) Remove the transmitter battery. (Refer to P.42-163.)
(2) Measure the transmitter battery's voltage.
- Voltage should be approximately 2.5 – 3.2 volts (battery positive voltage).

Q: Is the measured voltage approximately 2.5 – 3.2 volts?
YES : Go to Step 6.
NO : Replace transmitter battery (Refer to P.42-163.), then go to Step 5.

STEP 5. Check the transmitter.
Use other transmitter to register the secret code. (Refer to P.42-163.)

Q: Does the lock/unlock switch operate normally?
YES : Replace the transmitter. Then go to Step 6.
NO : Replace the keyless entry receiver-ECU. Then go to Step 6.

STEP 6. Retest the system.

Q: Does the transmitter operate normally?
YES : The procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 2: The Secret Code cannot be Registered.

NOTE: If the transmitter battery has been changed (Refer to P.42-163.) but the secret code cannot be registered, the keyless entry receiver-ECU may be faulty. Check the following circuits, replace the keyless entry receiver-ECU if necessary.

CIRCUIT OPERATION
- Refer to GROUP 13A, Symptom procedure P.13A-716.

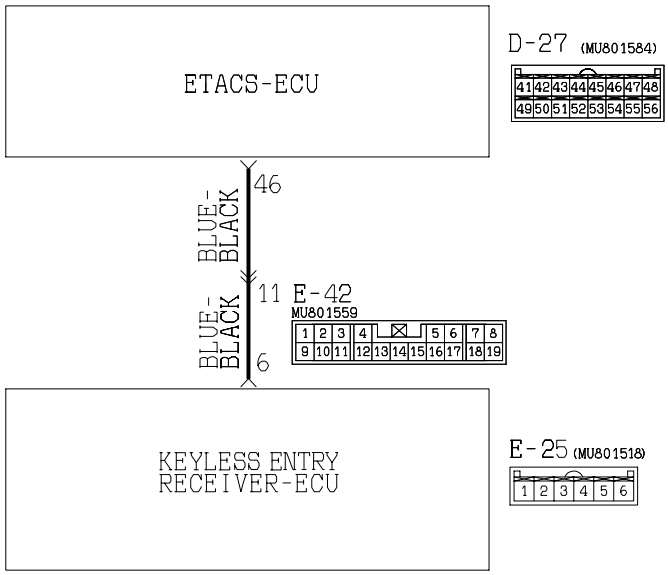
TECHNICAL DESCRIPTION (COMMENT)
The cause may be a malfunction of the keyless entry receiver-ECU or data link circuit.

TROUBLESHOOTING HINTS
- Malfunction of the keyless entry receiver-ECU
- Damaged harness wire or connector

Data Link Power Supply and Ground Circuit
Refer to GROUP 13A, Symptom procedure P.13A-716.

INSPECTION PROCEDURE 3: The Dome Light, the Cargo Space Light and the Hazard Warning Lights do not Operate through the Answerback Function. (However, the Dome Light, the Cargo Space Light and the Hazard Warning Lights Operates Normally.)

Answerback Circuit



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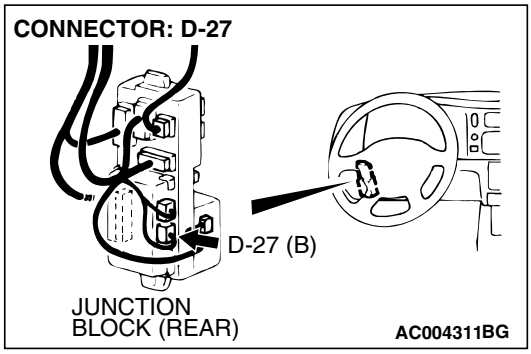

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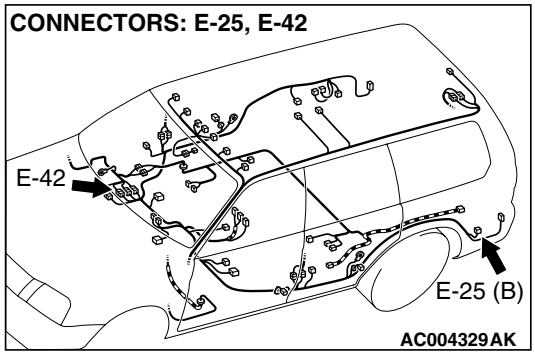

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CIRCUIT OPERATION

The keyless entry receiver-ECU sends a keyless entry system answerback signal to the ETACS-ECU.

TECHNICAL DESCRIPTION (COMMENT)

It is suspected that the keyless entry receiver-ECU does not send any signal to the ETACS-ECU, or the ETACS-ECU is defective.

TROUBLESHOOTING HITS

- Malfunction of the keyless entry receiver-ECU
- Malfunction of the ETACS-ECU
- Damaged harness wires or connectors

DIAGNOSIS

STEP 1. Verify the keyless entry system.

Q: Does the keyless entry system work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 1 "All of the doors can not be locked or unlocked using the transmitter P.42-155."

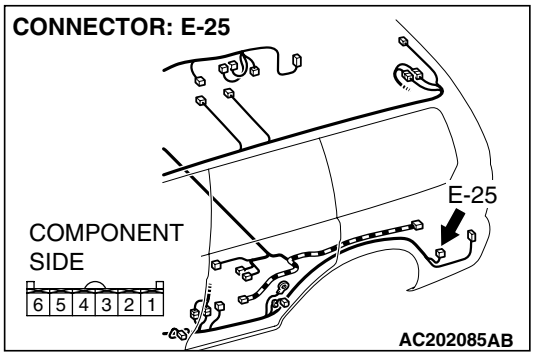
STEP 2. Check the configuration function.

Q: Has the answerback function been enabled by means of the adjustment function?

YES : Go to Step 3.

NO : Enable the answerback function by means of the adjustment function. Verify that the answerback functions work normally. Rrfer to ETACS-ECU function adjustment procedure P.42-166.

STEP 3. Check keyless entry receiver-ECU connector E-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is keyless entry receiver-ECU connector E-25 damaged?

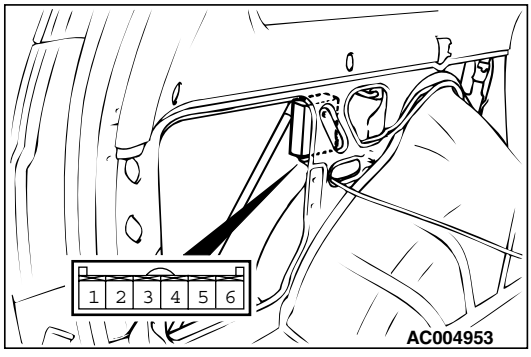
YES : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector Inspection.

NO : Go to Step 4.

STEP 4. Measure the resistance at keyless entry receiver-ECU.

(1) Remove the keyless entry receiver-ECU. (Refer to P.42-167.)

(2) Follow the table to check the keyless entry receiver-ECU continuity.

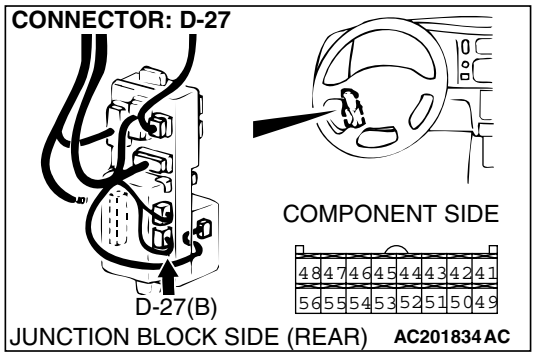


TESTER CONNECTION	SPECIFIED CONDITION
2 – 4	Less than 2 ohms

Q: Is the measured resistance less than 2 ohms?

YES : Replace keyless entry receiver-ECU, then go to Step 7.

NO : Go to Step 5.

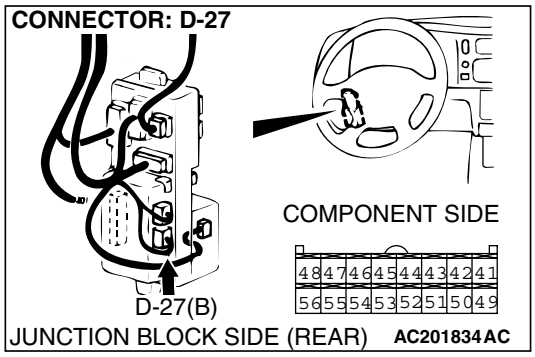


STEP 5. Check ETACS-ECU connector D-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

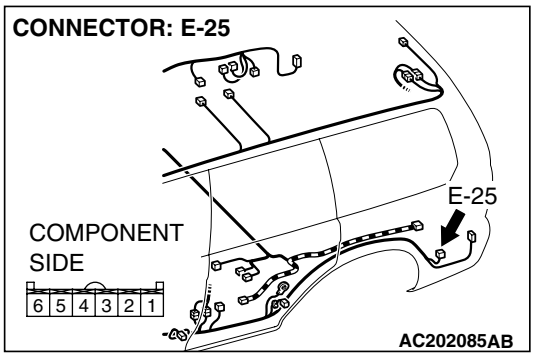
Q: Is ETACS-ECU connector D-27 damaged?

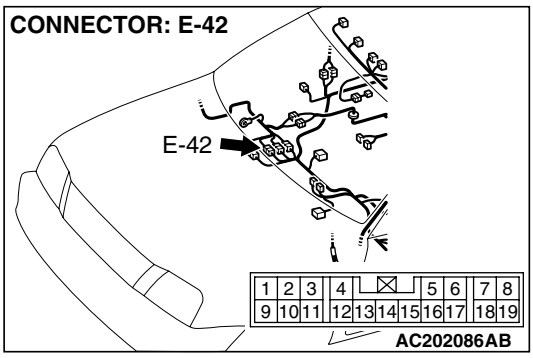
YES : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector Inspection.

NO : Go to Step 6.



STEP 6. Check the harness wire between keyless entry receiver-ECU connector E-25 (terminal No. 6) and ETACS-ECU connector D-27 (terminal No.46).





NOTE: After inspecting intermediate connector E-42 inspect the wire. If intermediate connector E-42 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 7.

Q: Are there any damaged harness wires between keyless entry receiver-ECU connector E-25 (terminal No. 6) and ETACS-ECU connector D-27 (terminal No. 46)?

YES : Repair or replace the harness wire, then go to Step 7.

NO : Replace the ETACS-ECU. Then go to Step 7.

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STEP 7. Retest the system.

Q: Does the answerback operate normally?

YES : The procedure is complete. (This malfunction is intermittent. Refer to GROUP 00 P.00-7, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction.

NO : Return to Step 1.

MEASUREMENT AT THE RECEIVER TERMINALS

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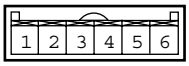

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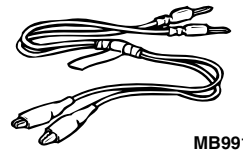
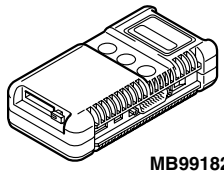
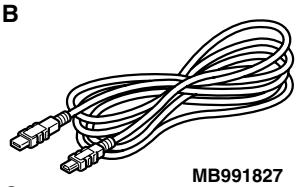
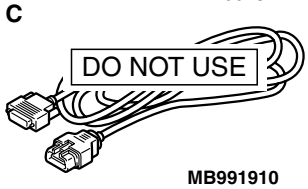
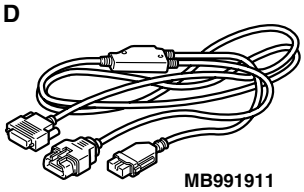
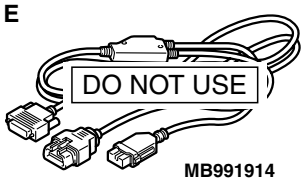
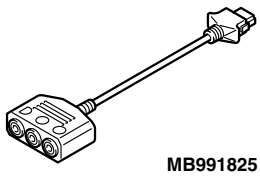
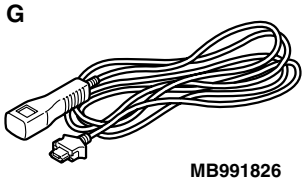
TERMINAL	SIGNAL	REQUIREMENT	TERMINAL VOLTAGE
1	Receiver power supply	Always	Battery positive voltage
2	Ignition switch (ACC) signal	Ignition switch: "ACC" or "ON"	Battery positive voltage
		Ignition switch: "OFF"	0V
4	Ground	Always	0V
5	Data link switching input	Connect scan tool MB991958 (MUT-III sub assembly).	0V
		Disconnect scan tool MB991958 (MUT-III sub assembly).	Battery positive voltage
6	Multiplex communication	Always	0 – 5V (pulse signal)

SPECIAL TOOLS

M1428000600398

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 MB991529	MB991529 Diagnostic trouble code check harness	Tool not necessary if scan tool (MUT-III) is available	• For registration of secret code • For setting of answerback function
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991914 F  MB991825 G  MB991826 MB991958	MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826 MUT-III sub assembly A: Vehicle communication interface (V.C.I.) B: MUT-III USB cable C: MUT-III main harness A (Vehicles with CAN communication system) D: MUT-III main harness B (Vehicles without CAN communication system) E: MUT-III main harness C (for Daimler Chrysler models only) F: MUT-III measurement adapter G: MUT-III trigger harness	MB991824-KIT *NOTE: G: MB991826 MUT-III trigger harness is not necessary when pushing V.C.I. ENTER key.*	SWS communication line check (ECU check and service data) **⚠ CAUTION** **MUT-III main harness B (MB991911) should be used. MUT-III main harness A and C should not be used for this vehicle.**

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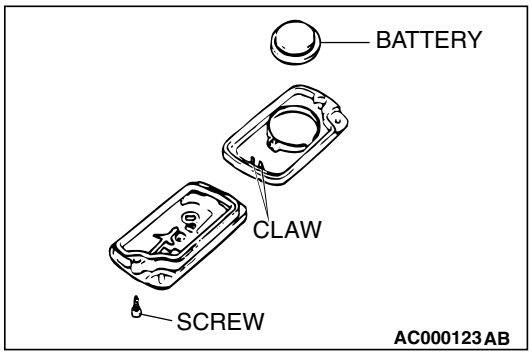
ON-VEHICLE SERVICE

HOW TO REPLACE THE TRANSMITTER BATTERY

M1428000900140

⚠ CAUTION

Do not allow water or dust to enter the inside of the transmitter when it is open. Also, do not touch the electronic device inside.



1. Remove the set screw to remove the battery from the transmitter.
2. Install a battery with its (+) side face-down.

   Battery required for replacement: Coin type battery CR2032
3. Insert the claw first, and assemble the transmitter.
4. Verify that the keyless entry system operates.

SECRET CODE REGISTRATION METHOD

M1428001000407

Required Special Tools:

- MB991529: Diagnostic trouble code check harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991911: MUT-III Main Harness B

Each individual secret code is registered inside the transmitter, and so it is necessary to resister these codes with the EEPROM inside the keyless entry receiver-ECU in the following cases.

- When the transmitter or keyless entry receiver-ECU is replaced.
- If more transmitters are to be used.
- If it appears that a problem is occurring because of faulty registration of a code.

A maximum of two different code can be stored in the memory area of the EEPROM (two different transmitters can be used). When the code for the first transmitter is registered, the previously registered codes for two transmitters are cleared. Therefore, if you are using more than two transmitters or are adding a second transmitter, the codes for all the transmitters must be registered at the same time.

WHEN SPECIAL TOOL MB991529 IS USED

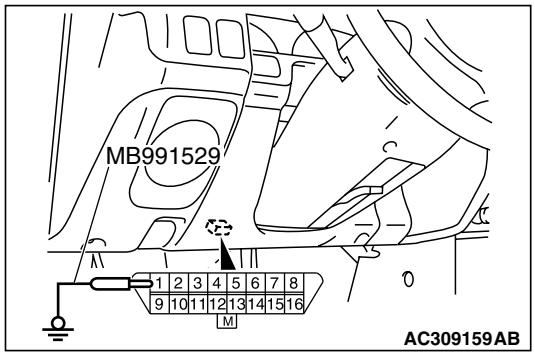
⚠ CAUTION

When the equipment, which operates from the other makes of audio or cigarette lighter has been installed, the power supply (ACC) may not be switched off for a while even if the ignition switch is turned to the "OFF" position. Therefore, if the encrypted code registration mode of transmitter is not entered, remove the power supply of the equipment, which operates from the other makes of audio or cigarette lighter and register it.

1. Check that the doors lock normally when the key is used.

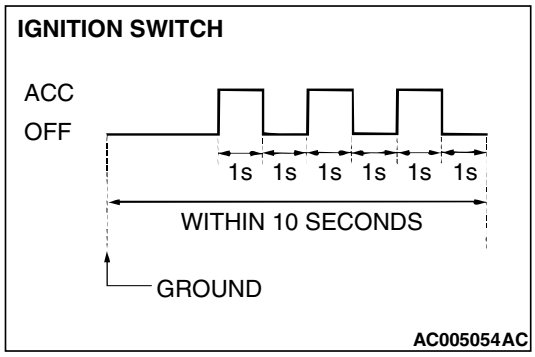
⚠ CAUTION

Turn the ignition switch to the "LOCK" (OFF) position and then connect data link connector terminal 1 to ground.



2. Connect the data link connector terminal 1 to ground.

   NOTE: Connecting terminal 1 of the data link connector to ground will put the system in secret code registration standby mode.



3. Within 10 seconds after connecting data link connector terminal 1 to ground turn the ignition switch to "ACC" for 1 second and then to "OFF" for 1 second; repeat this procedure three times.

   NOTE: The doors will lock and unlock once at this time and the system will switch to registration mode.

4. Press the transmitter switch, and then press it two times within 10 seconds of the first press. This will register the code.
5. After registration is completed, the code will be automatically locked and unlocked once.
6. If you are using two transmitters or have added a second transmitter, the same registration procedure should be carried out for the second transmitter, and it should be carried out within one minute after registration of the code for the first transmitter has been completed. After the second registration is completed, the doors will be automatically locked and unlocked once.
7. Registration mode will be terminated under the following condition:
   - When the secret codes for two transmitters have been registered.
   - When one minute has passed after registration mode started.
   - When the data link connector terminal 1 to ground is disconnected.
   - If the ignition switch is turned to "ON".

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8. After registration mode has been completed, carry out the following to make sure that the keyless entry system operations.
   - Pull the ignition key out.
   - Close the all doors.

WHEN SPECIAL TOOL MB991824 (V.C.I.) IS USED

⚠ CAUTION

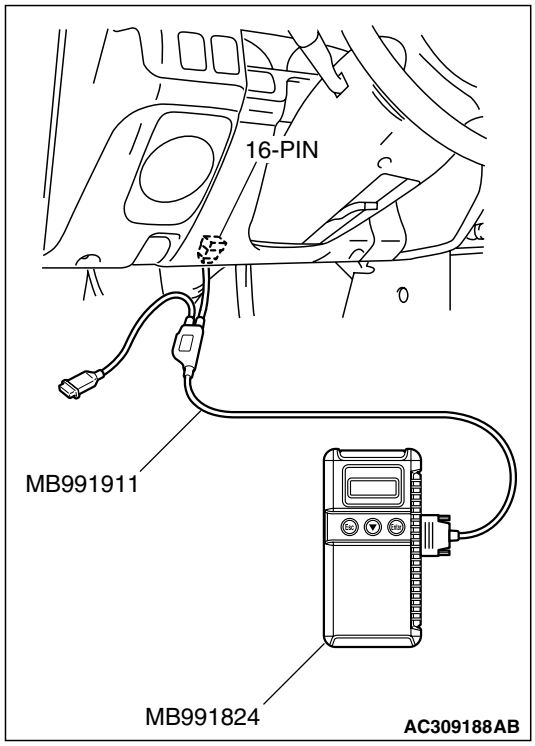
When the equipment, which operates from the other makes of audio or cigarette lighter has been installed, the power supply (ACC) may not be switched off for a while even if the ignition switch is turned to the "OFF" position. Therefore, if the encrypted code registration mode of transmitter is not entered, remove the power supply of the equipment, which operates from the other makes of audio or cigarette lighter and register it.

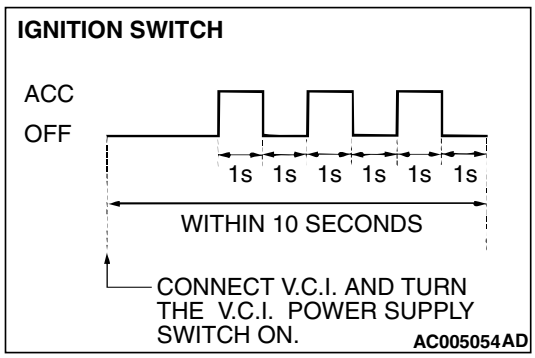
1. Check that the doors lock normally when the key is used.

⚠ CAUTION

Turn the ignition switch to the "LOCK" (OFF) position and then connect special tool MB991824 (V.C.I.) to the data link connector.

2. Connect special tool MB991824 (V.C.I.) to the data link connector.





3. Within 10 seconds after turning the V.C.I. power supply switch to the "ON" position, turn the ignition switch to "ACC" for 1 second and then to "OFF" for 1 second; repeat this procedure three times.

   NOTE: The doors will lock and unlock once at this time and the system will switch to registration mode.

4. Press the transmitter switch, and then press it two times within 10 seconds of the first press. This will register the code.
5. After registration is completed, the code will be automatically locked and unlocked once.

6. If you are using two transmitters or have added a second transmitter, the same registration procedure should be carried out for the second transmitter, and it should be carried out within one minute after registration of the code for the first transmitter has been completed. After the second registration is completed, the doors will be automatically locked and unlocked once.
7. Registration mode will be terminated under the following condition:
   - When the secret codes for two transmitters have been registered.
   - When one minute has passed after registration mode started.
   - When special tool MB991824 (V.C.I.) is disconnected from the data link connector.
   - If the ignition switch is turned to "ON".
8. After registration mode has been completed, carry out the following to make sure that the keyless entry system operations.
   - Pull the ignition key out.
   - Close the all doors.

ETACS-ECU FUNCTION ADJUSTMENT PROCEDURE

M1428003700037

The following functions can be adjusted by operating input swatches. The adjustments will be stored in the ECU memory even after a battery cable is disconnected:

- Switching of keyless entry answerback function. (From activation to deactivation, or vice versa)
- Initialization the above function (From deactivation to activation)

1. Entry conditions the adjustment mode

   The ETACS-ECU sounds a tone alarm once when all of the following conditions are satisfied, and then enters the adjustment mode:

   - Data link control: "ON" [Connect scan tool MB991958 (MUT-III sub assembly) or ground the data link connector No.1 terminal.]
   - Key reminder switch: "OFF"
   - Ignition switch: "OFF"
   - Door switch: "OFF" (Close the door.)
   - If all of the conditions above are satisfied, the tail-light switch will be turned on for more than 10 seconds.

2. Exit conditions from the adjustment mode

   The ETACS-ECU cancels the adjustment mode when any of the following conditions is satisfied:

   - Diagnosis control: "OFF" [Disconnect scan tool MB991958 (MUT-III sub assembly) or disconnect the data link connector No.1 terminal from the ground.]
   - Key reminder switch: "ON" (Pull out the ignition key.)
   - Ignition switch: Other than "OFF"
   - Door switch: "ON" (Open the door.)
   - After the ETACS-ECU has entered the adjustment mode, no adjustment is made within 3 minutes (If any adjustment is made within 3 minutes, the ETACS-ECU monitors a adjustment operation for other 3 minutes.)
   - Other warning tone alarm sounds

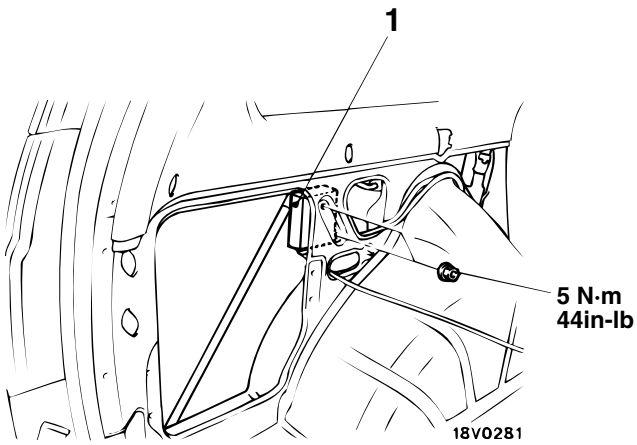
3. Adjustment of functions

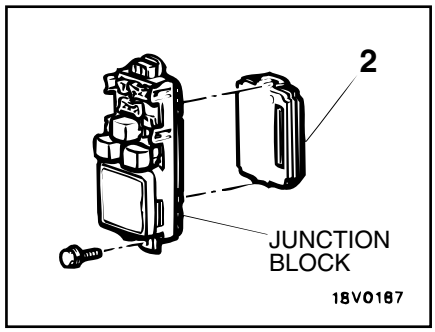
FUNCTION	ADJUSTMENT PROCEDURE
Keyless entry answerback function	When the transmitter lock switch is turned on twice continuously within 2 seconds, the lock answerback function toggles on and off. • If the function toggles on, the tone alarm sounds once (default condition). • If the function toggles off, the tone alarm sounds twice. When the transmitter unlock switch is turned on twice continuously within 2 seconds, the unlock answerback function toggles on and off. • If the function toggles on, the tone alarm sounds once (default condition). • If the function toggles off, the tone alarm sounds twice.
Initialization of all the ETACS-ECU functions (From deactivation to activation)	When the taillight switch remains on for more than 20 seconds, the tone alarm sounds twice and then the keyless entry system answerback. The tone alarm will sound in 10 seconds (indicating that the ETACS-ECU enters the adjustment mode), but the washer switch must remains off for 20 seconds in order to initialize all the functions. If the taillight switch remains on for more than 20 seconds without entering the adjustment mode, the system enters the adjustment mode in 10 seconds, but does not initialize all of the functions.

KEYLESS ENTRY SYSTEM

REMOVAL AND INSTALLATION

M1428001300107





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KEYLESS ENTRY RECEIVER-ECU REMOVAL STEPS

- QUARTER TRIM, LOWER (REFER TO GROUP 52A, TRIM P.52A-41.)

1. KEYLESS ENTRY RECEIVER-ECU

ETACS-ECU REMOVAL

2. ETACS-ECU

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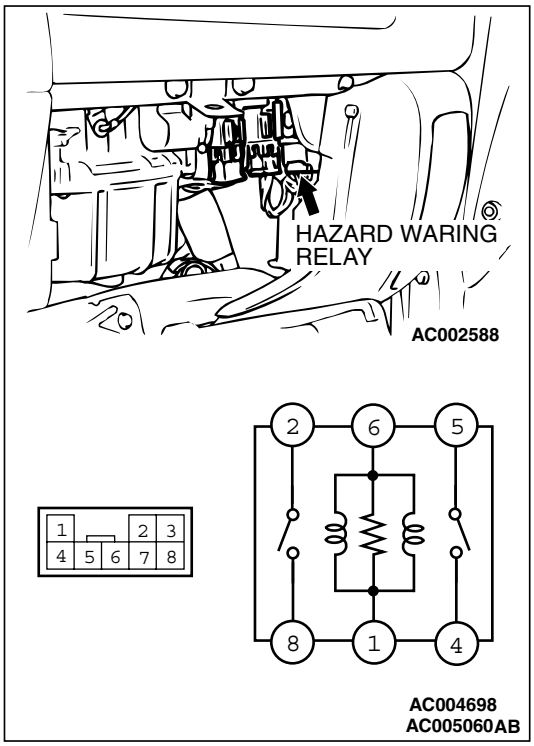
INSPECTION

M1428001400030

HAZARD WARNING RELAY CONTINUITY CHECK



BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	2 – 8 4 – 5	Open circuit
• Connect terminal 6 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	2 – 8 4 – 5	Less than 2 ohms

SUNROOF ASSEMBLY

GENERAL INFORMATION

M1426000100148

A motor-driven outer slide-type glass sunroof with a tilt-up mechanism is provided as an option. Even when the sunroof is fully closed, a sufficient amount of lighting and a feeling of openness can still be obtained by opening the sunroof sunshade.

SUNROOF DIAGNOSIS

INTRODUCTION TO SUNROOF DIAGNOSIS

M1426003100051

The operation of the sunroof is controlled by the sunroof-ECU. By operating the sunroof switch, the sunroof-ECU rotates the sunroof motor. If the following type of symptom occurs, there may be a fault

- The sunroof motor does not conduct load detection operation.
- The illumination light of the sunroof switch does not illuminate.
- The sunroof does not operate.

SUNROOF DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1426001700046

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a sunroof fault.

1. Gather information from customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

SYMPTOM CHART

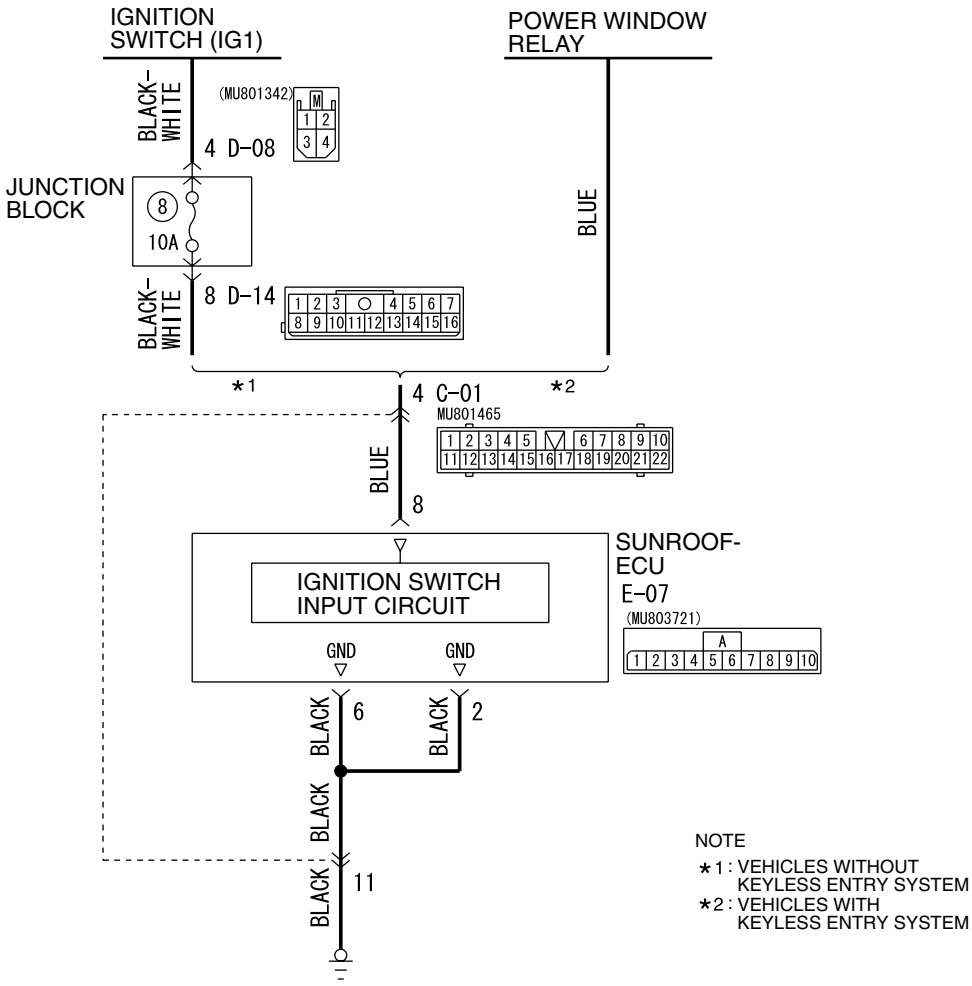
M1426002000125

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
The sunroof does not operate when the ignition switch is turned to "ON".	1	P.42-169
The sunroof does not operate when the sunroof switch is operated.	2	P.42-174
The sunroof motor does not operate.	3	P.42-178
Sunroof timer function does not work normally <Vehicles with keyless entry system>.	4	P.42-181
Safety mechanism does not function.	5	P.42-189

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The Sunroof does not Operate when the Ignition Switch is Turned to "ON".

Sunroof-ECU Power Supply and Ground Circuit



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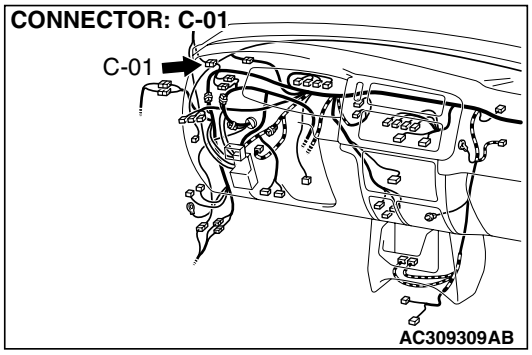
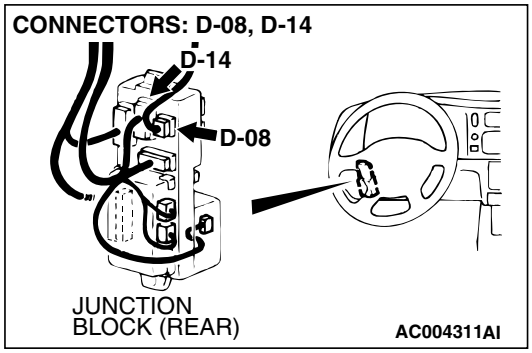
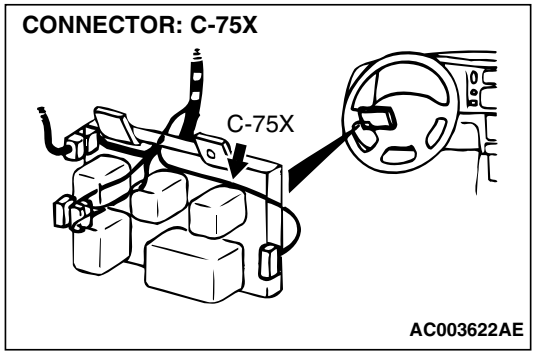
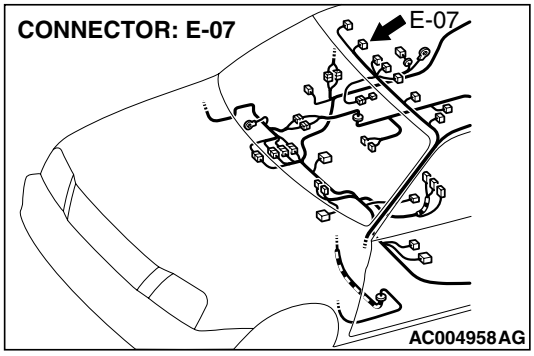






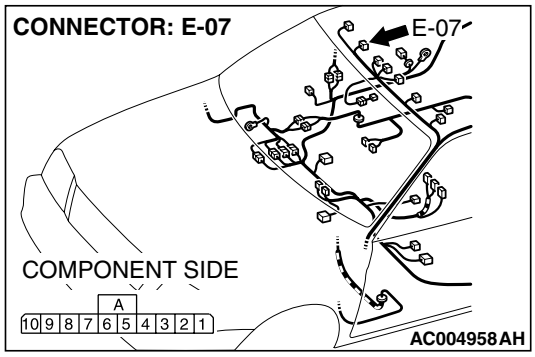


CIRCUIT OPERATION
The sunroof-ECU power is supplied from ignition switch (IG1).

TECHNICAL DESCRIPTION (COMMENT)
The cause may be a malfunction of the sunroof-ECU power supply circuit system or the ground circuit system.

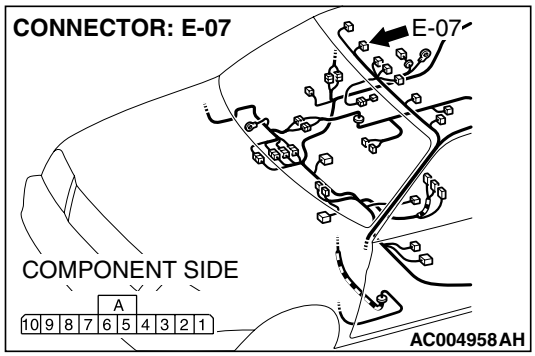
TROUBLESHOOTING HINTS
- Malfunction of the sunroof-ECU
- Damaged harness wires or connectors

DIAGNOSIS

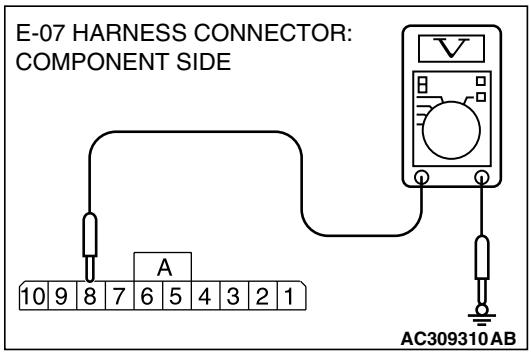


STEP 1. Check sunroof-ECU connector E-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector
Q: Is sunroof-ECU connector E-07 damaged?
YES : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 6.
NO : Go to Step 2.

STEP 2. Measure the power supply line voltage at sunroof-ECU connector E-07.



(1) Remove the headlining. (Refer to GROUP 52A, Headlining P.52A-42.)

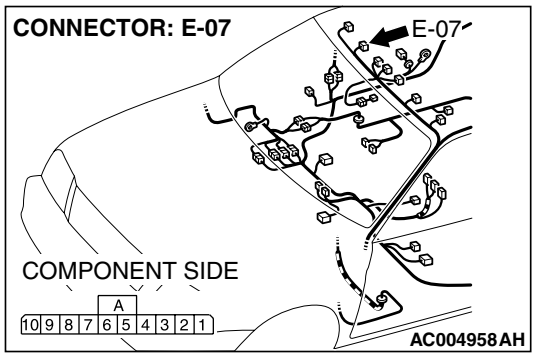


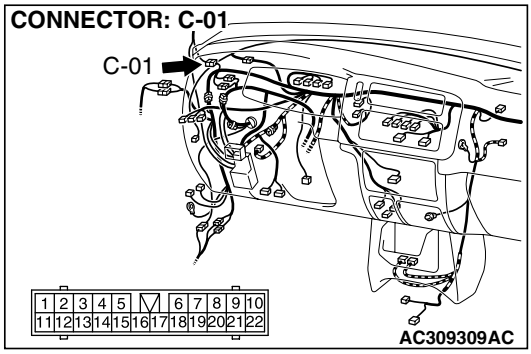
(2) Disconnect sunroof-ECU connector E-07 and measure at the harness side.
(3) Turn the ignition key "ON".
(4) Measure the voltage between terminal 8 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

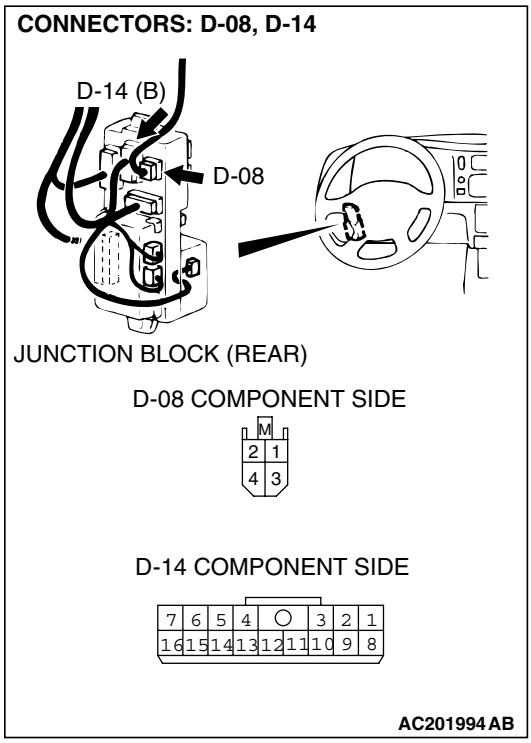
Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 5.
NO <Vehicles without keyless entry system> : Go to Step 3.
NO <vehicles with keyless entry system> : Go to Step 4.

STEP 3. Check the harness wires between ignition switch (IG1) and sunroof-ECU connector E-07 (terminal No.8).







NOTE: After inspecting intermediate connector C-01, junction block D-08 and D-14 inspect the wire. If intermediate connector C-01, junction block D-08 or D-14 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 4.

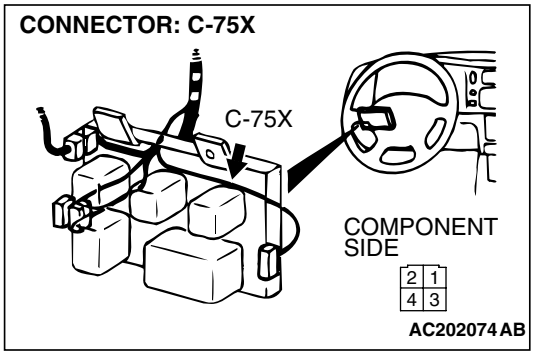
Q: Is the harness wire damaged?

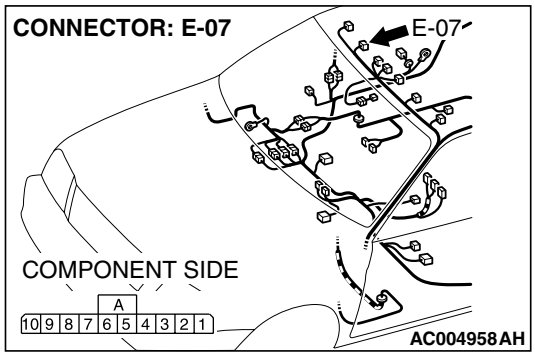
YES : Repair or replace the harness wire, then go to Step 4.
NO : Go to Step 5.

STEP 4. Check the harness wires between power window relay connector C-75X (terminal No.1) and sunroof-ECU connector E-07 (terminal No.8).

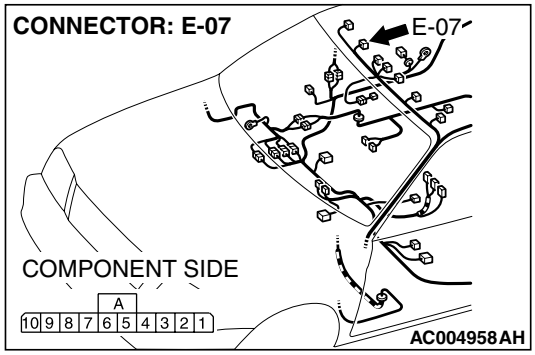
Q: Is the harness wire damaged?

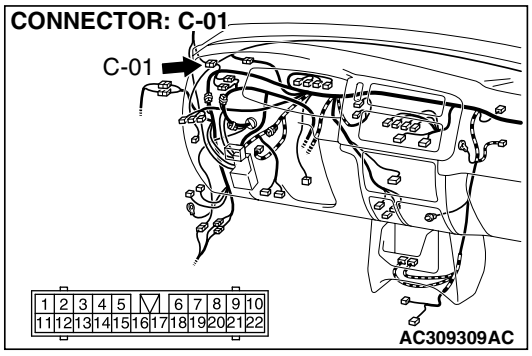
YES : Repair or replace the harness wire, then go to Step 5.
NO : Go to Step 6.





STEP 5. Check the harness wire between sunroof-ECU connector E-07 (terminals No.2 and No.6) and ground.





NOTE: After inspecting intermediate connector C-01, inspect the wire. If intermediate connector C-01 are damaged, repair or replace them. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 6.

Q: Is the harness wire between sunroof-ECU connector E-07 (terminal No.2) and ground damaged?

YES : Repair or replace the harness wire, then go to Step 6.
NO : Replace the sunroof-ECU. Then go to Step 6.

STEP 6. Retest the system

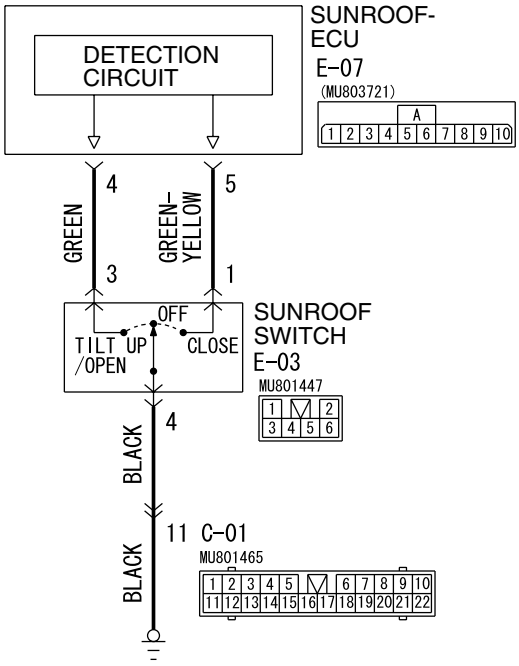
Q: Does the sunroof open and close normally?

YES : The procedure is complete.

NO : Return to Step 1.

INSPECTION PROCEDURE 2: The Sunroof does not Operate when the Sunroof Switch is Operated.

Sunroof Switch Circuit



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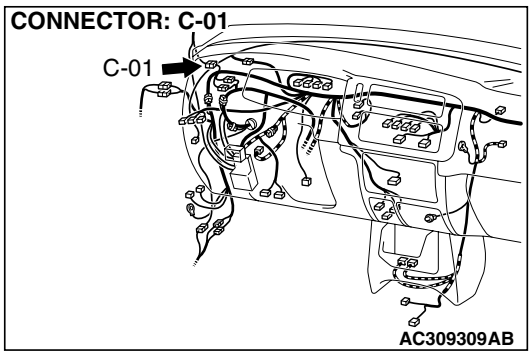

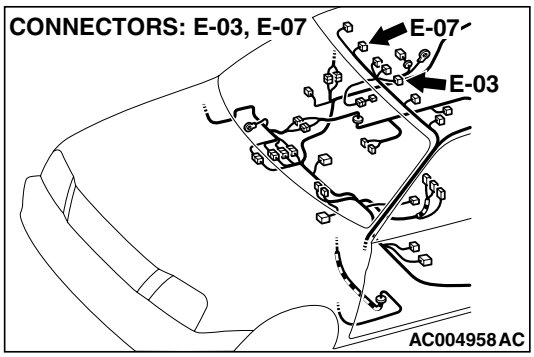

CIRCUIT OPERATION

The sunroof-ECU monitors the sunroof switch status (slide open, slide closed, tilt down, tilt up) and operates the sunroof motor.

TECHNICAL DESCRIPTION (COMMENT)

The cause may be a malfunction of the sunroof switch power supply circuit system or of the ground circuit system.

TROUBLESHOOTING HINTS

- Malfunction of the sunroof-ECU
- Malfunction of the sunroof switch
- Damaged harness wires or connectors

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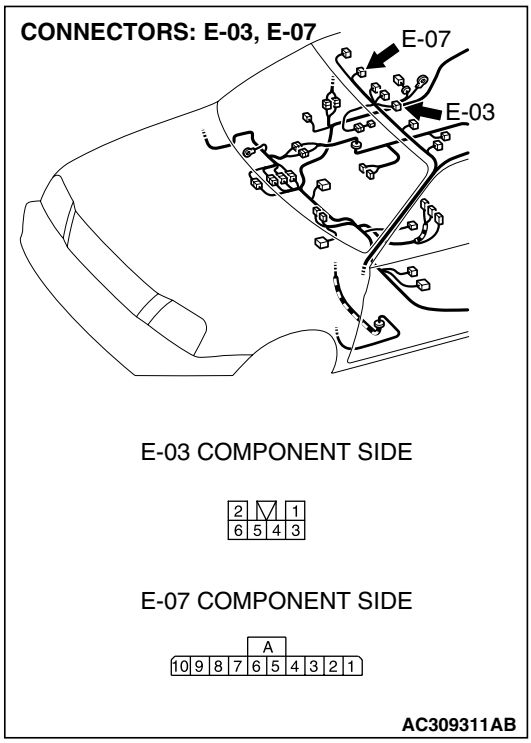
DIAGNOSIS



STEP 1. Check sunroof-ECU connector E-07 and sunroof switch connector E-03 for damage for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are sunroof-ECU connector E-07 and sunroof switch connector E-03 damaged?

YES : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 5.

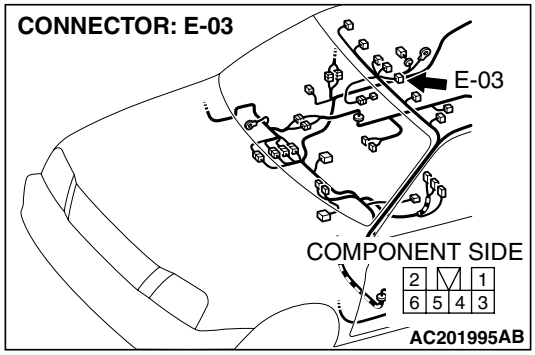
NO : Go to Step 2.

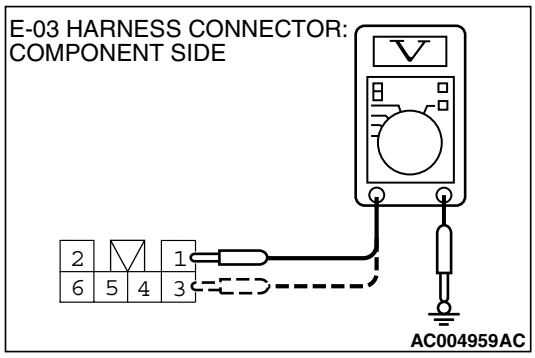
STEP 2. Measure the power supply voltage at sunroof switch connector E-03.

(1) Remove the headlining. (Refer to GROUP 52A, Headlining P.52A-42.)

(2) Disconnect sunroof switch connector E-03 and measure at the harness side.

(3) Turn the ignition key "ON".





(4) Measure the voltage between terminal 1 and ground, and between terminal 3 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 4.

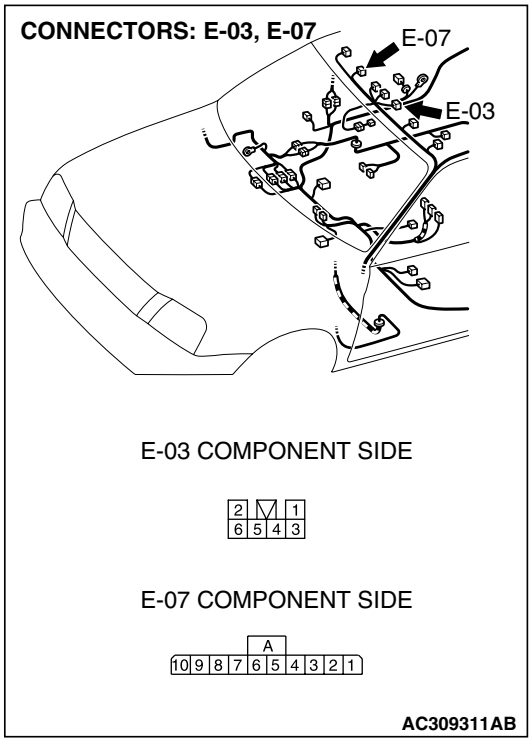
NO : Go to Step 3.

STEP 3. Check the harness wires between sunroof switch connector E-03 (terminal No.1 and 3) and sunroof-ECU connector E-07 (terminal No.4 and 5).

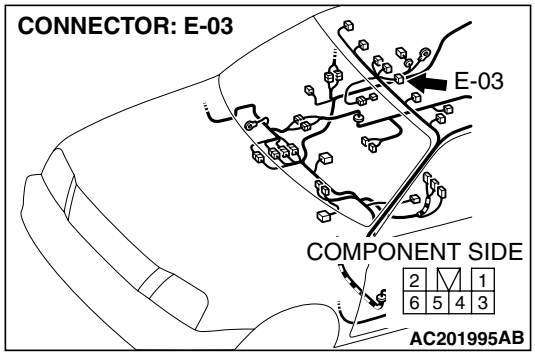
Q: Are there any damaged wires between sunroof switch connector E-03 (terminal No.1 and 3) and sunroof-ECU connector E-07 (terminal No.4 and 5)?

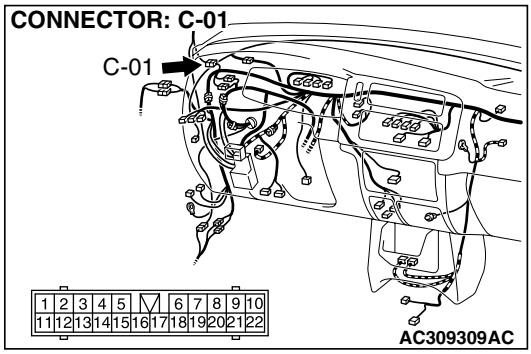
YES : Repair or replace the harness wire. Then go to Step 4.

NO : Replace the sunroof-ECU. Then go to Step 4.



STEP 4. Check the harness wire between sunroof switch connector E-03 (terminal No.4) and ground.





NOTE: After inspecting intermediate connector C-01 inspect the wire. If intermediate connector C-01 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 5.

Q: Is the harness wire between sunroof switch connector E-03 (terminal No.4) and ground damaged?

YES : Repair or replace the harness wire, then go to Step 5.
NO : Replace the sunroof switch. Then go to Step 5.

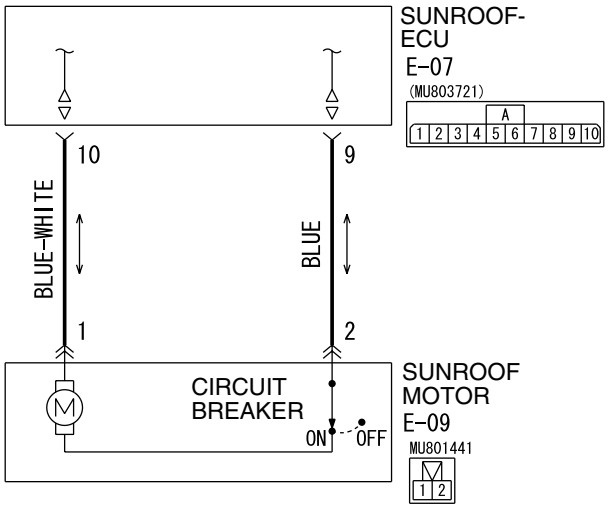
STEP 5. Retest the system.

Q: Does the sunroof open and close normally?

YES : The procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 3: The Sunroof Motor does not Operate.

Sunroof Motor Circuit



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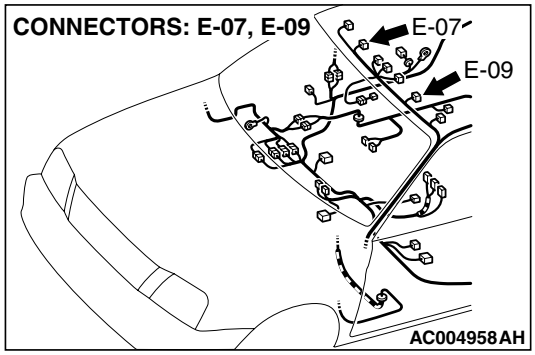


CIRCUIT OPERATION

The sunroof-ECU monitors the sunroof switch status (slide open, slide close, tilt down, tilt up) and operates the sunroof motor.

TECHNICAL DESCRIPTION (COMMENT)

The cause may be a malfunction of the sunroof motor power supply/ground circuit system.

TROUBLESHOOTING HINTS

- Malfunction of the sunroof-ECU
- Malfunction of the sunroof motor
- Damaged harness wires or connectors

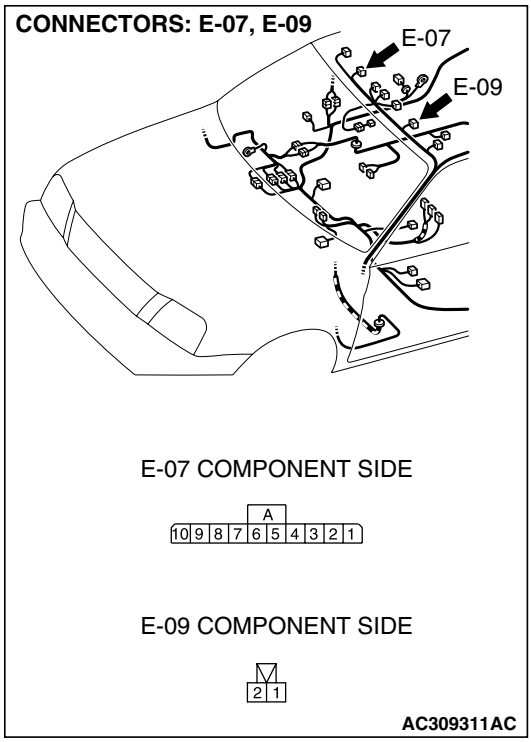
DIAGNOSIS

STEP 1. Check sunroof-ECU connector E-07 and sunroof motor connector E-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are sunroof connector E-07 and sunroof switch connector E-09 damaged?

YES : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 5.

NO : Go to Step 2.

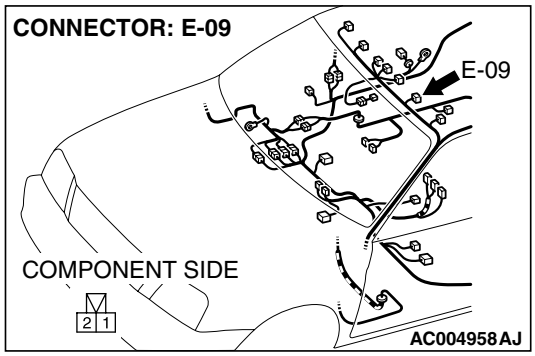


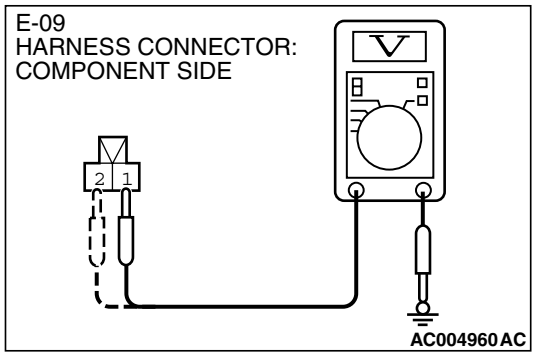
STEP 2. Measure the power supply/ground line at sunroof motor connector E-09.

(1) Remove the headlining. (Refer to GROUP 52A, Headlining P.52A-42.)

(2) Disconnect sunroof motor connector E-09 and measure at the harness side.

(3) Turn the ignition key "ON".





(4) Measure the voltage between terminal 1 and ground while the sunroof switch is depressing to the slide open/close position. And measure the voltage between terminal 2 and ground while the sunroof switch is depressing to the slide open/close position.

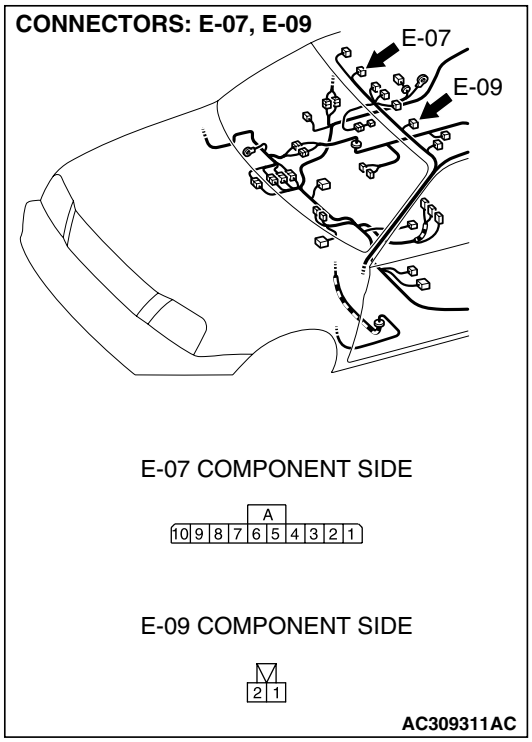
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 4.

NO : Go to Step 3.

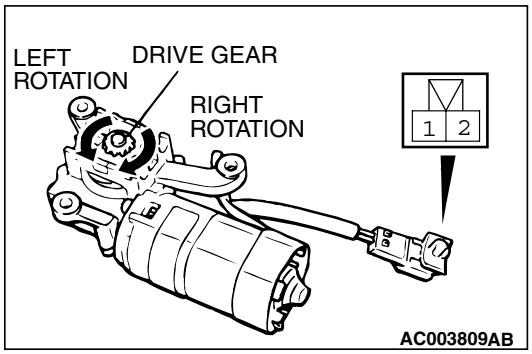
TSB Revision



STEP 3. Check the harness wires between sunroof-ECU connector E-07 (terminal No.9 and 10) and sunroof motor connector E-09 (terminal No.1 and 2).

Q: Are there any damaged wires between sunroof-ECU connector E-07 (terminal No.9 and 10) and sunroof motor connector E-09 (terminal No.1 and 2)?

YES : Repair or replace the harness wire, then go to Step 5.
NO : Replace the sunroof-ECU. Then go to Step 4.



STEP 4. Check the sunroof motor.

(1) Remove the sunroof motor. (Refer to P.42-200.)
(2) Follow the table below to check for the direction of rotation of the drive gear when the battery is connected to the connector.

BATTERY CONNECTION	DRIVE GEAR ROTATION DIRECTION
Connect terminal 1 to the positive battery terminal Connect terminal 2 to the negative battery terminal	The drive gear rotates counterclockwise
Connect terminal 2 to the positive battery terminal Connect terminal 1 to the negative battery terminal	The drive gear rotates clockwise

Q: Is the sunroof motor damaged?

YES : Replace sunroof motor, then go to Step 5.
NO : Go to Step 5.

STEP 5. Retest the system.

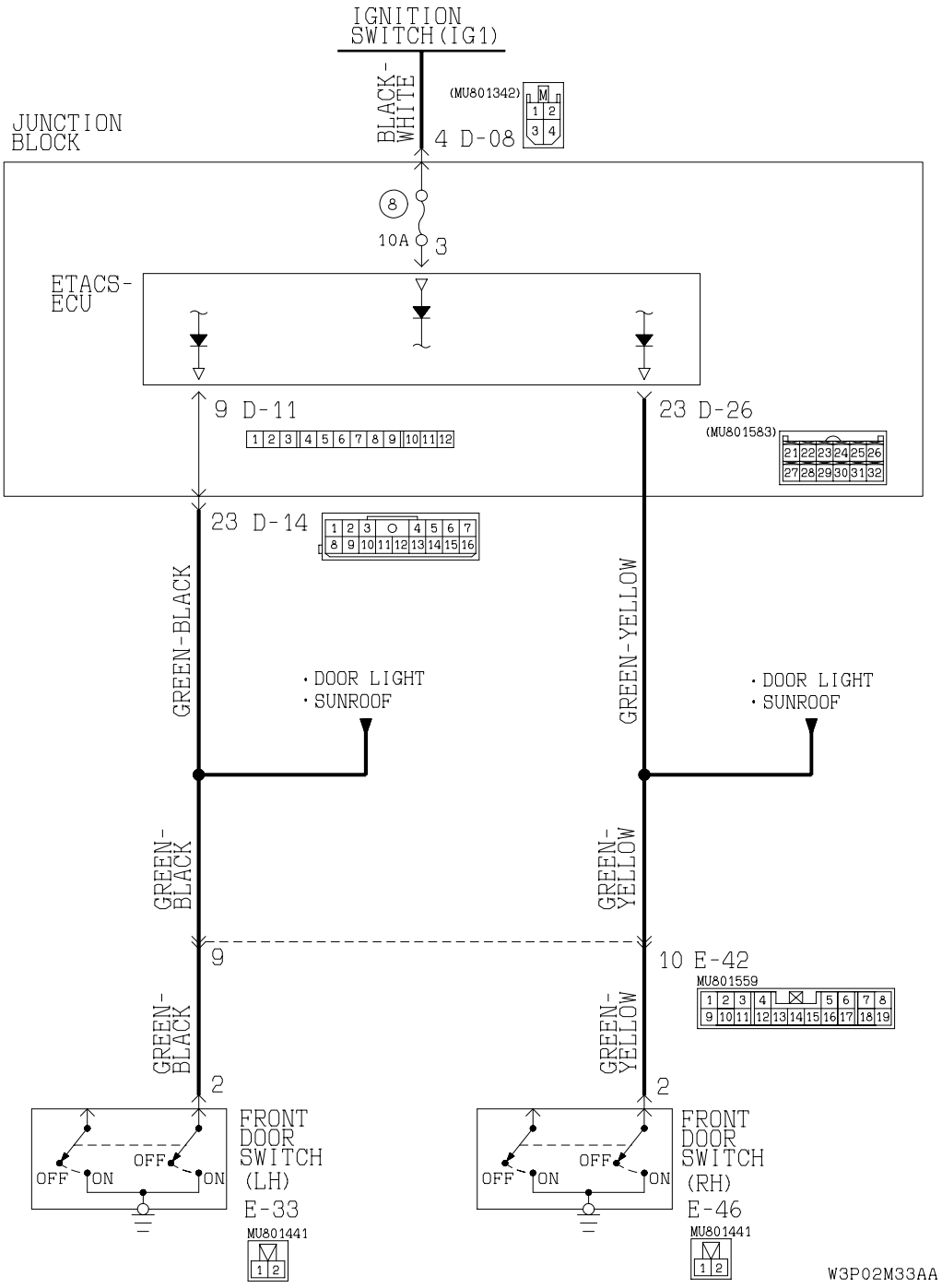
Q: Does the sunroof open and close normally?

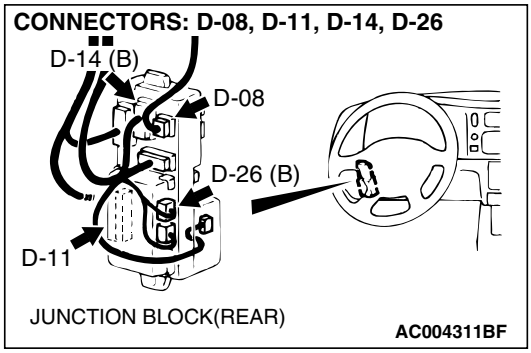
YES : The procedure is complete.
NO : Return to Step 1.

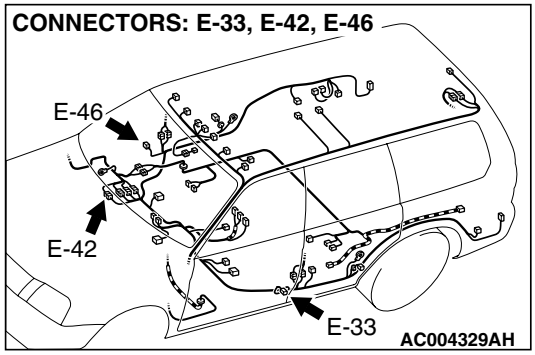
TSB Revision

INSPECTION PROCEDURE 4: Sunroof Timer Function does not Work Normally <Vehicles with keyless entry system>.

Front Door Switch Circuit







TECHNICAL DESCRIPTION (COMMENT)

The ETACS-ECU operates the sunroof timer function, based on input signals from the following switches:

- Ignition switch (IG1)
- Driver's or front passenger's door switch

If the sunroof timer function do not work normally, the input signal circuit or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the front door switch
- Malfunction of the ignition switch
- Malfunction of the ETACS-ECU
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991529: Diagnostic Trouble Code Check Harness
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1. Choose method of the ETACS-ECU input signal check.

Q: Is the ETACS-ECU input signal check performed by scan tool MB991958 or a voltmeter?

By scan tool MB991958 : Go to Step 2.
By a voltmeter : Go to Step 3.

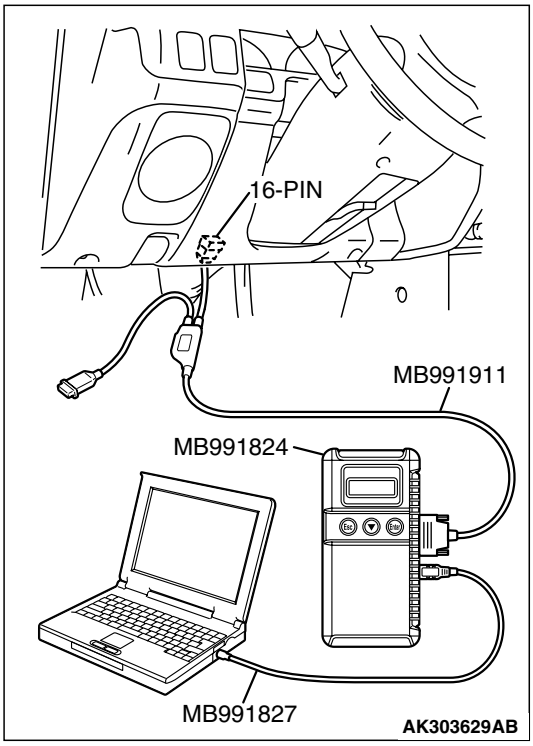
STEP 2. Check the ETACS-ECU input signal from the ignition switch (by using the pulse check) (by using MB991958).

Check the ETACS-ECU input signal [front door switches and ignition switch (IG1)] by using scan tool MB991958.
Check the input signals from the following switches:

- Driver's door switch
- Front passenger's door switch
- ignition switch

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

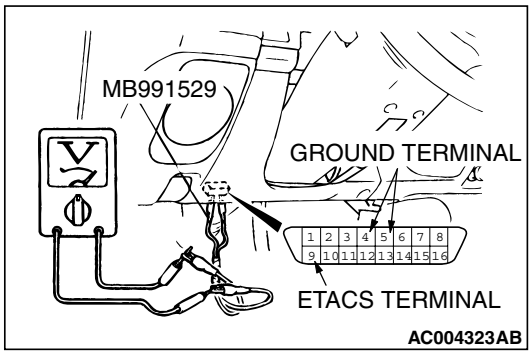


(1) Connect scan tool MB991958 to the data link connector.
(2) Operate scan tool MB991958 as follows:
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "PULSE CHECK."
(3) Open the driver's door or front passenger's door.
(4) Turn the ignition switch (IG1) to "ON" position.
(5) Check that scan tool MB991958 sounds

Q: Does the tone alarm of scan tool MB991958 sound when the input signal enters?

YES : Replace the ETACS-ECU and then go to Step 11.
NO <Driver's door switch and passenger's door switch input signal> : Go to Step 5.
NO <Ignition switch input signal> : Go to Step 7.

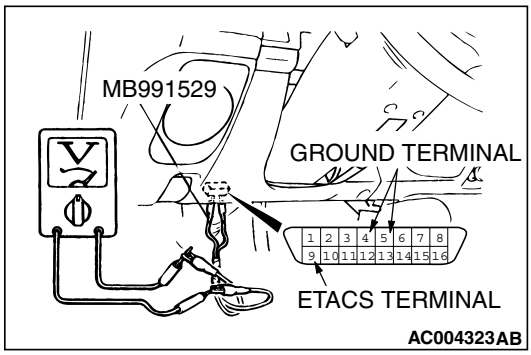
STEP 3. Check the ETACS-ECU input signal from the driver's door switch and passenger's door switch (by using a voltmeter).



(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.
(2) Check that the voltmeter indicator deflects once when driver's door switch or passenger's door switch operated <open (on)/depressed (off)>.

Q: Does the voltmeter indicator deflect?

YES : Go to Step 4.
NO : Go to Step 5.



STEP 4. Check the input signal from the ignition switch (by using a voltmeter).

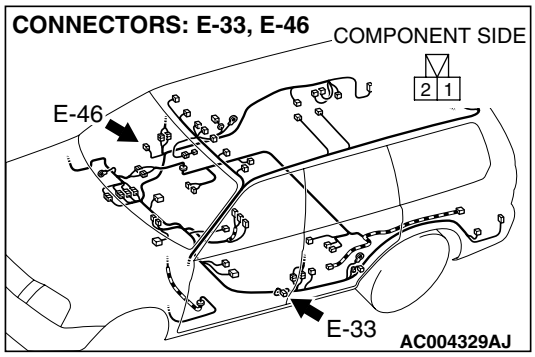
(1) Use special tool MB991529 to connect a voltmeter between ground terminal 4 or 5 and ETACS-ECU terminal 9 of the data link connector.

(2) Check that the voltmeter indicator deflects once when the ignition switch is operated <ACC - ON>.

Q: Does the voltmeter indicator deflect?

YES : Replace the ETACS-ECU and then go to Step 11.

NO : Go to Step 7.



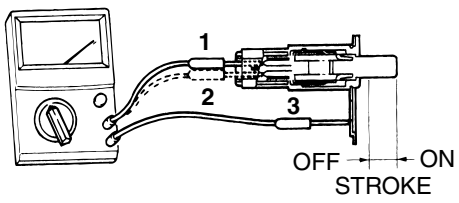
STEP 5. Check driver's door switch connector E-33 and front passenger's door switch connector E-46 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are driver's door switch connector E-33 and front passenger's door switch E-46 in good condition?

YES : Go to step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 11.

TYPE 1



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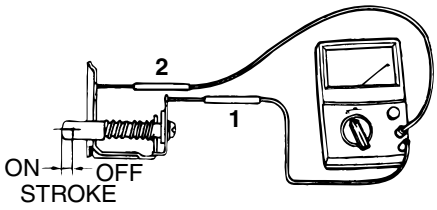
TYPE 2



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STEP 6. Check the front door switch.

(1) Remove the driver's door or fornt passenger's door switch (Refer to P.52A-42.).

(2) Follow the table to check the front door switches continuity.

TYPE1

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2, 1 – 3, 2 – 3	Less than 2 ohms
Depressed (OFF)	1 – 2, 1 – 3, 2 – 3	Open circuit

TYPE2

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – 2	Less than 2 ohms
Depressed (OFF)	1 – 2	Open circuit

Q: Is the front door switch in good condition?

YES : Go to Step 7 .

NO : Replace front door switch, then go to Step 11.

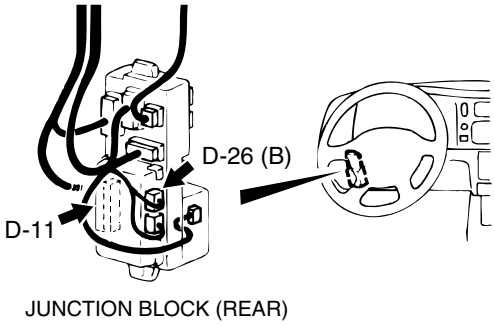
STEP 7. Check ETACS-ECU connector D-11 and D-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector D-11 and D-26 in good condition?

YES : Go to step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection. Then go to Step 11.

CONNECTOR: D-11, D-26



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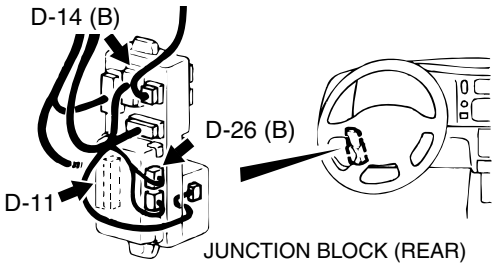
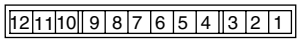
STEP 8. Check the harness wire between ETACS-ECU connector D-11 (terminal No.9), D-26 (terminal No.26) and driver's door switch connectors E-33 (terminal No.2), front passenger's side door switch connector E-46 (terminal No.2).

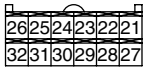
CONNECTORS: D-11, D-14, D-26



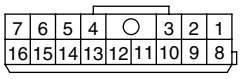
D-11 COMPONENT SIDE



D-26 COMPONENT SIDE



D-14 COMPONENT SIDE



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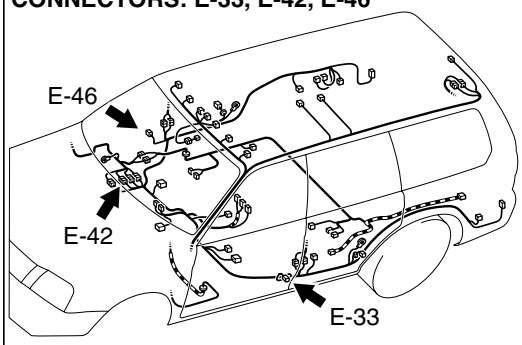
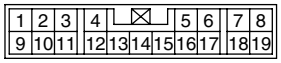
CONNECTORS: E-33, E-42, E-46



E-33, E-46 COMPONENT SIDE

E-42



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NOTE: After inspecting junction block connector D-14 and intermediate connector E-42 inspect the wire. If junction block connector D-14 or intermediate connector E-42 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 11.

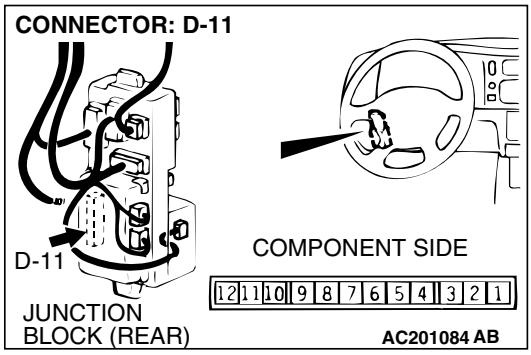
Q: Are there any damaged harness wires between ETACS-ECU connector D-11 (terminal No.9), D-26 (terminal No.23) and driver's door switch connectors E-33 (terminal No.2), front passenger's side door switch connector E-46 (terminal No.2)?

YES : Repair or replace the harness wire, then go to Step11.
NO : Replace the ETACS-ECU and then go to Step11.

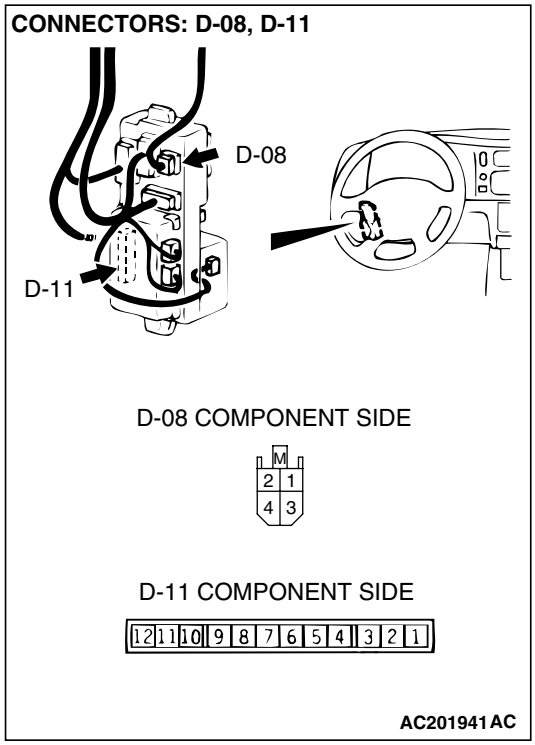
STEP 9. Check ETACS-ECU connector D-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector D-11 good condition?

YES : Go to Step 10.
NO : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector inspection.



STEP 10. Check the harness wire between ETACS-ECU connector D-11 (terminal No.3) and ignition switch.



NOTE: After inspecting junction block connector D-08 inspect the wire. If junction block connector D-08 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 11.

Q: Are ETACS-ECU connector D-11 and ignition switch in good condition?

YES : Go to step 11.

NO : Repair or replace the harness wire. Refer to GROUP 00E P.00E-2, Harness Connector inspection.

STEP 11. Retest the system.

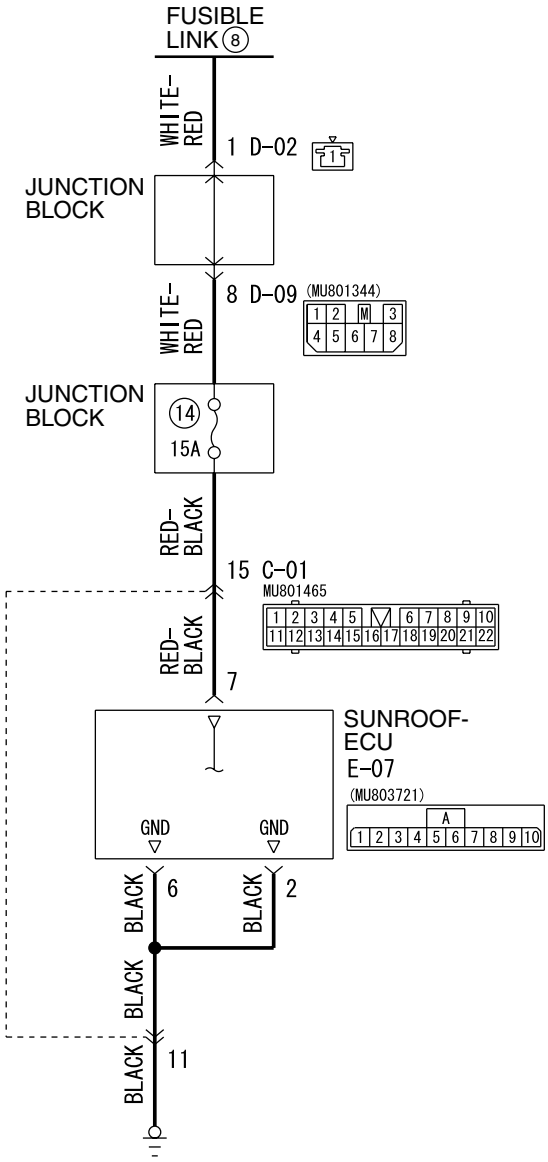
Q: Does the sunroof timer function operate normally?

YES : The procedure is complete.

NO : Return to Step 1.

INSPECTION PROCEDURE 5: Safety Mechanism does not Function.

Sunroof-ECU Power Supply for Safety Mechanism and Ground Circuit



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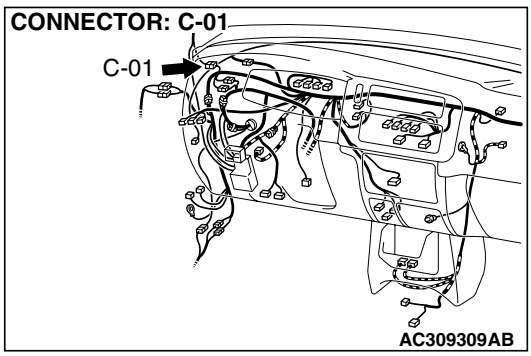
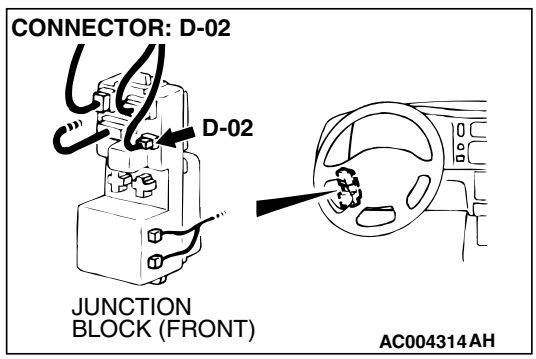
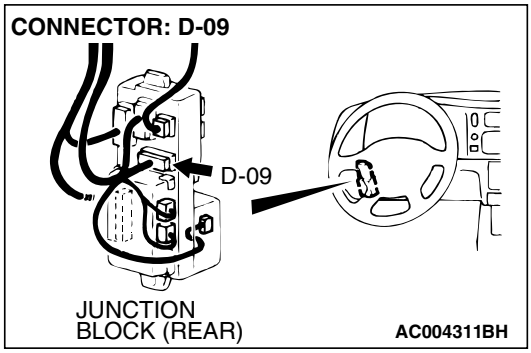
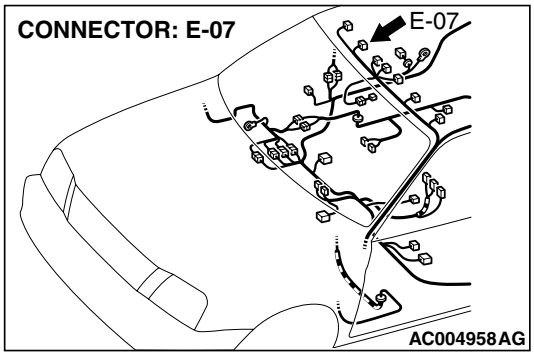




TSB Revision





CIRCUIT OPERATION

The power for the safety mechanism circuit in the sunroof-ECU is supplied from fusible link number 8.

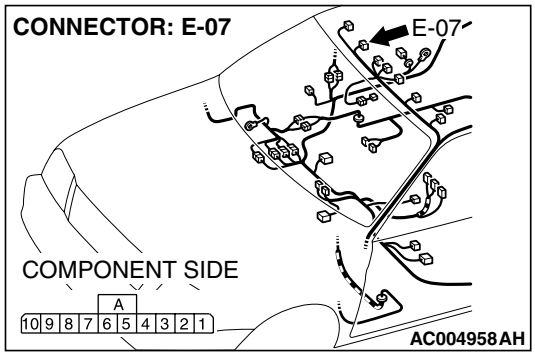
TECHNICAL DESCRIPTION (COMMENT)

The cause may be a malfunction of the sunroof-ECU power supply for safety mechanism circuit system or of the ground circuit system.

TROUBLESHOOTING HINTS

- Malfunction of the sunroof-ECU
- Damaged harness wires or connectors

DIAGNOSIS



STEP 1. Check sunroof-ECU connector E-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof-ECU connector E-07 damaged?

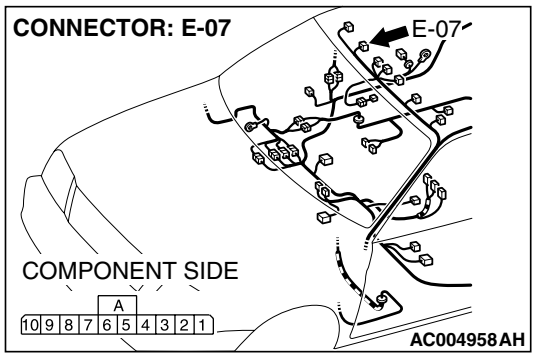
YES : Repair or replace the damaged components. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 5.

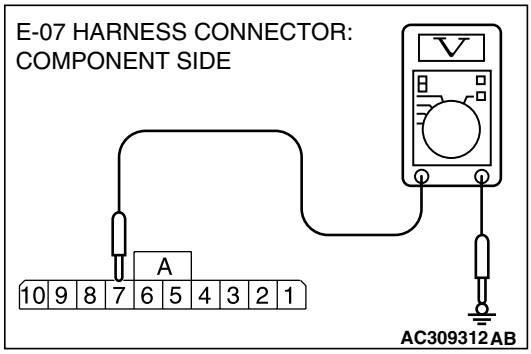
NO : Go to Step 2.

STEP 2. Measure the power supply line voltage at sunroof-ECU connector E-07.

(1) Remove the headlining. (Refer to GROUP 52A, Headlining P.52A-42.)

(2) Disconnect sunroof-ECU connector E-07 and measure at the harness side.



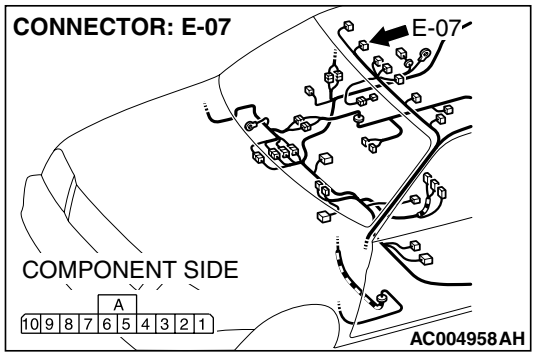


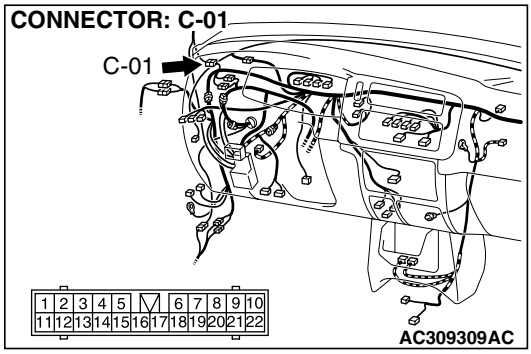
(3) Measure the voltage between terminal 7 and ground.
- Voltage should be approximately 12 volts (battery positive voltage).

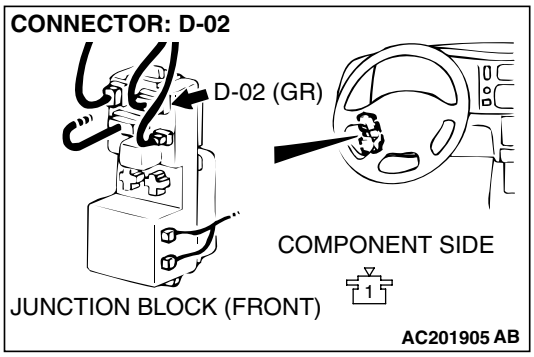
Q: Is measured the voltage approximately 12 volts?

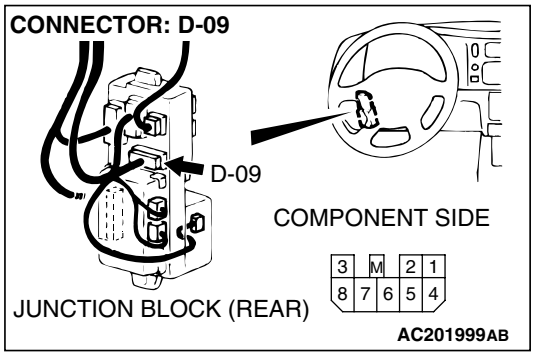
YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check the harness wires between fusible link number 8 and sunroof-ECU connector E-07 (terminal No. 7).







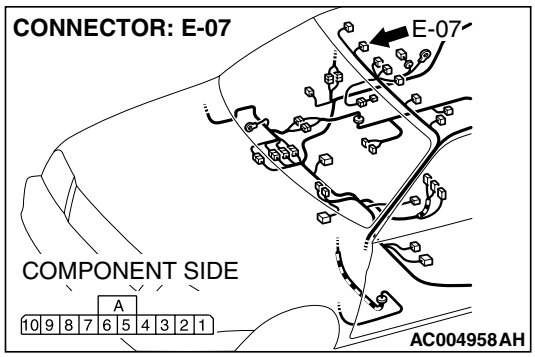


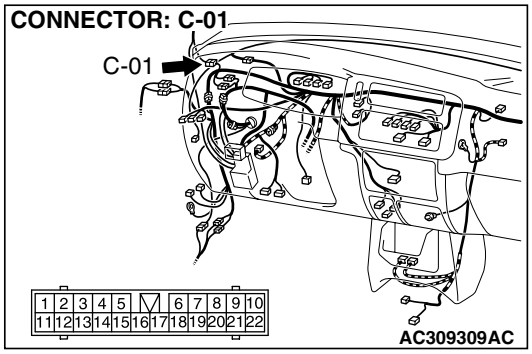
NOTE: After inspecting intermediate connectors C-01, D-02 and D-09, inspect the wire. If intermediate connectors C-01, D-02 or D-09 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 4.

Q: Are there any damaged wires between fusible link number 8 and sunroof-ECU connector E-07 (terminal No. 7)?

YES : Repair or replace the harness wire, then go to Step 4.
NO : Go to Step 5.

STEP 4. Check the harness wires between sunroof-ECU connector E-07 (terminals No.2 and No.6) and ground.





NOTE: After inspecting intermediate connectors C-01, inspect the wire. If intermediate connectors C-01 is damaged, repair or replace it. Refer to GROUP 00E P.00E-2, Harness Connector Inspection. Then go to Step 5.

Q: Are there any damaged wires between sunroof-ECU connector E-07 (terminals No.2 and No.6) and ground?

YES : Repair or replace the damaged components, then go to Step 5.

NO : Replace the sunroof-ECU. Then go to Step 5.

STEP 5. Retest the system.

Q: Does the safety mechanism work normally?

YES : The procedures is complete.

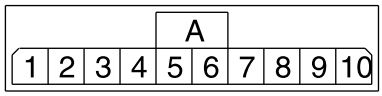
NO : Return to Step 1.

CHECKING AT THE SUNROOF-ECU

M1426002400071

TERMINAL VOLTAGE CHART

Sunroof-ECU Connector Terminal Arrangement



AC309355AB

TERMINAL NO.	CHECK ITEM	CHECK STATE		NORMAL STATE
2	Earth	Always		0V
3	Front door switch input	Front door switch	ON	0V
			OFF	Battery positive voltage
4	Sunroof switch (tilt up/open) input	Sunroof switch (tilt up/open position)	ON	0V
			OFF	Battery positive voltage
5	Sunroof switch (close) input	Sunroof switch (close position)	ON	0V
			OFF	Battery positive voltage
6	Ground	Always		0V
7	ECU power supply	Ignition switch: ON		Battery positive voltage
8	ECU power supply	Always		Battery positive voltage
9	Motor output	While sunroof is closing or moving up		Battery positive voltage
		Other then the above		0V
10	Motor output	While sunroof is opening or moving down		Battery positive voltage
		Other then the above		0V

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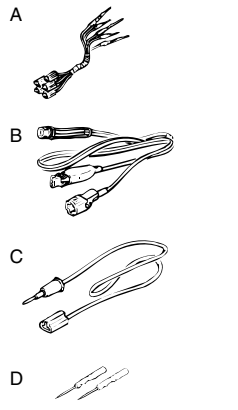
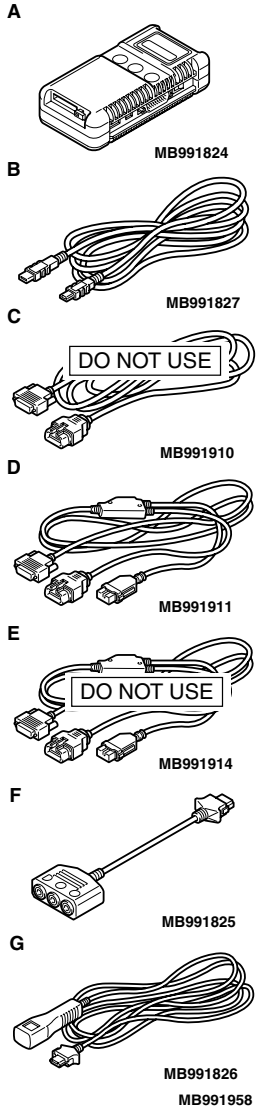
SPECIAL TOOLS

M1426000600240

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
	MB991223 Harness set A: MB991219 Test harness B: MB991220 LED harness C: MB991221 LED harness adapter D: MB991222 Probe	MB991223	Measurement of terminal voltage A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
	MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826 MUT-III Sub Assembly A: Vehicle communication interface (V.C.I) B: MUT-III USB cable C: MUT-III main harness A (Vehicles with CAN communication system) D: MUT-III main harness B (Vehicles without CAN communication system) E: MUT-III main harness C (for Daimler Chrysler models only) F: MUT-III measurement adapter G: MUT-III trigger harness	MB991824-KIT *NOTE: G: MB991826 MUT-III trigger harness is not necessary when pushing V.C.I. ENTER key.*	SWS communication line check (ECU check and service data) **⚠ CAUTION** **MUT-III Main Harness B (MB991911) should be used.** **MUT-III main harness A and C should not be used for this vehicle.**

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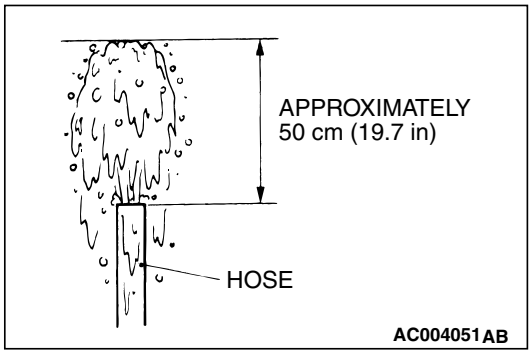
ON-VEHICLE SERVICE

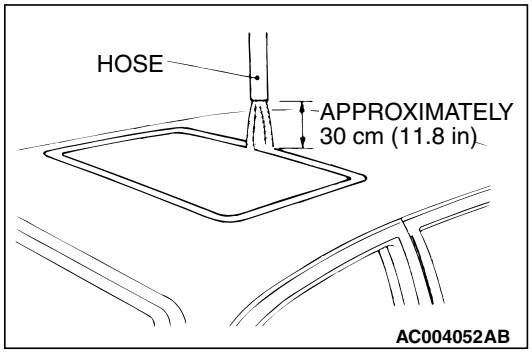
WATER TEST

M1426000900155

Check if there are any leaks in the sunroof by the following procedure.

1. Fully close the roof lid glass.
2. Adjust the water pressure so that water comes out of the hose to a height of approximately 50 cm (19.7 inches) when the hose is held vertically facing upwards.



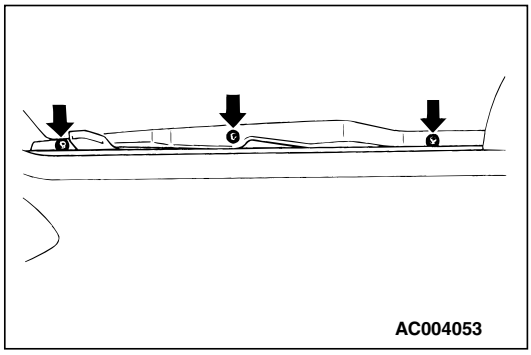


3. Hold the end of the hose approximately 30 cm (11.8 inches) above the roof and let the water run onto the weatherstrip for 5 minutes or more.
4. Check that there is no water leak while letting the water run onto the roof. Some water will leak around the roof lid glass, but do not judge this as a malfunction. If the water does not leak through the sunroof housing drip channel, it is normal.
5. In the event of leakage, check the drain pipe, weatherstrip contact and others.

SUNROOF FIT ADJUSTMENT

M1426001000155

With the sunroof in the closed position, adjust the sunroof glass to 1 mm (0.04 inch) below roof surface at front of the glass and 1 mm (0.04 inch) above roof surface at rear of the glass and tighten the sunroof glass attaching screws. Check that the clearance between the roof lid glass and body edge is even around the circumference.



OPERATION CHECK

M1426002600161

Check the following items. If defective, replace the sunroof control unit.

⚠ CAUTION

Check that the following items are normal before carrying out this operation check.

1. **Installation condition of the sunroof assembly**
2. **Installation, condition and foreign material of the sunroof drive cable**
3. **Improper fit of sunroof glass**
4. **Sunroof switch and sunroof motor assembly**

Basically operation

NO.	SUNROOF INITIAL POSITION	SWITCH OPERATION	JUDGMENT (NORMAL)
01	Fully closed	1. Ignition switch: "ON" 2. Sunroof switch: OPEN 3. Sunroof switch: Release the OPEN button (Before tilt-up finishes)	The sunroof tilts up by switch operation 2, and stops by switch operation 3
02	Fully closed	1. Ignition switch: "ON" 2. Sunroof switch: OPEN (Keep pressing the OPEN button)	The sunroof moves to the tilt-up position and stops.
03	Tilt up	1. Ignition switch: "ON" 2. Sunroof switch: OPEN	The sunroof slides back from the tilt-up position toward the fully-open position, and then stops.
04	Tilt up	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE	The sunroof closes from the tilt-up position.
05	Fully open	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE 3. Sunroof switch: CLOSE (Release the CLOSE button)	The sunroof moves forward by switch operation 2, and stops by switch operation 3.

Jam preventing mechanism

NO.	SUNROOF INITIAL POSITION	SWITCH OPERATION	JUDGMENT (NORMAL)
01	Fully closed	1. Ignition switch: "ON" 2. Sunroof switch: OPEN Block the sunroof between fully closed position and tilted position.	Sunroof moves until the blocking force reaches 98N (22 lb). At this time check the current to the sunroof motor. If the motor stops at more than 15 A, the motor is normal. [Approximately 15 A at 98 N (22 lb)]
02	Tilt	1. Ignition switch: "ON" 2. Sunroof switch: OPEN Block the sunroof between fully tilted position* and fully open position.	Sunroof moves until the blocking force reaches 98 N (22 lb). Sunroof stops when the force has reached 98 N (22 lb).
03	Fully open	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE Block the sunroof at 200 mm (7.9 in) before the sunroof is fully closed.	Sunroof moves until the blocking force reaches 98 N (22 lb). Sunroof stops in one seconds after the blocking force has reached 98 N (22 lb).
04	Fully open	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE Block the sunroof at 5 mm (0.2 in) before the sunroof is fully closed.	Sunroof moves toward closed until the blocking force reaches 98 N (22 lb). Then the sunroof moves back toward open when the blocking force reaches 98 N (22 lb) and stops after second.
05	Fully open	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE Block the sunroof at 3 mm (0.1 in) before the sunroof is fully closed.	Sunroof moves toward closed until the blocking force reaches 98 N (22 lb). Then the sunroof stops when the blocking force reaches 98 N (22 lb). (The sunroof does not move back toward open.)
06	Fully open	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE Block the sunroof at 18 mm (0.7 in) before the sunroof is fully closed.	Sunroof moves toward closed before the blocking force reaches 98 N (22 lb). Then the sunroof moves back toward open when the blocking force reaches 98 N (22 lb) and stops after one second.

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NO.	SUNROOF INITIAL POSITION	SWITCH OPERATION	JUDGMENT (NORMAL)
07	Fully open	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE Block the sunroof at 16 mm (0.6 in) before the sunroof is fully closed.	Sunroof moves toward closed until the blocking force reaches 98 N (22 lb). Then the sunroof stops when the blocking force reaches 98 N (22 lb). (The sunroof does not move back toward open.)
08	Fully closed	1. Ignition switch: "ON" 2. Sunroof switch: OPEN 3. Sunroof switch: Release the OPEN button	1. Sunroof tilts up. 2. Sunroof stops before tilt-up finishes.
09	Tilt up	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE 3. Ignition switch: OFF (Before the sunroof is fully open)	1. Sunroof moves toward open. 2. Sunroof stops.
10	Fully open	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE 3. Ignition switch: OFF (Before tilt-up finishes)	1. Sunroof tilts up. 2. Sunroof stops
11	Tilt up	• Ignition switch: "ON" • Sunroof switch: OPEN Block the sunroof between fully tilted position and fully open position.	Sunroof moves toward closed until the blocking force reaches 98 N (22 lb). Then the sunroof stops when the blocking force reaches 98 N (22 lb).

Sunroof timer mechanism

NO.	SUNROOF INITIAL POSITION	ACTION		JUDGMENT (NORMAL)
01	Fully closed	A	1. Ignition switch: "ON" 2. Ignition switch: "LOCK" (OFF) 3. Sunroof switch: OPEN [Within 30 seconds after the ignition switch is turned "LOCK" (OFF).]	The sunroof automatic opens 30 seconds after the ignition switch is turned "LOCK" (OFF).
		B	1. Ignition switch: "ON" 2. Sunroof switch: OPEN 3. Ignition switch: "LOCK" (OFF) [The ignition switch is turned "LOCK" (OFF) while the sunroof switch is automatically opening.]	The sunroof automatic opens only 30 seconds after the ignition switch is turned "LOCK" (OFF).
02	Fully opened or while closing	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE 3. Ignition switch: "LOCK" (OFF) 4. Sunroof switch: OPEN or CLOSE [Within 30 seconds after the ignition switch is turned "LOCK" (OFF).]		The sunroof closes while the sunroof switch is pushed to the CLOSE position. Then, the sunroof does not move when any switch is pushed.
03	Fully opened or while closing	1. Ignition switch: "ON" 2. Sunroof switch: CLOSE 3. Ignition switch: "LOCK" (OFF) [The ignition switch is turned "LOCK" (OFF) while the sunroof switch is pushed to the CLOSE position.]		The sunroof closes while the sunroof switch is pushed to the CLOSE position.
04	Fully closed	1. Ignition switch: "ON" 2. Ignition switch: "LOCK" (OFF) 3. Sunroof switch: OPEN [Within 30 seconds after the ignition switch is turned" LOCK" (OFF).] 4. Front door: OPEN [Within 30 seconds after the ignition switch is turned "LOCK" (OFF).]		The sunroof automatic opens and stops when the door is opened.
05	Fully closed	1. Ignition switch: ON 2. Ignition switch: LOCK (OFF) 3. Sunroof switch: OPEN [Within 30 seconds after the ignition switch is turned "LOCK" (OFF).] 4. Door switch: ON [Within 30 seconds after the ignition switch is turned "LOCK" (OFF).]		The sunroof closes while the sunroof switch is pushed to the CLOSE position. Then, the sunroof does not move when the door switch is opened.

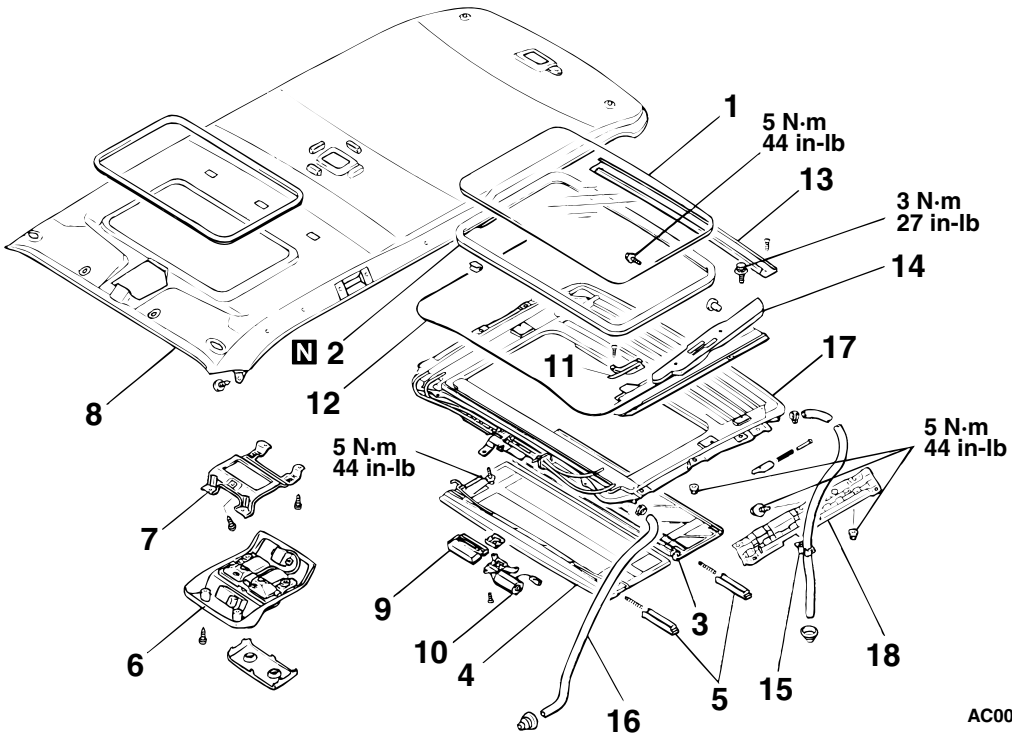
*NOTE: *: "Fully tilted position" is the position where the sunroof has tilted up and begins sliding.*

SUNROOF ASSEMBLY

REMOVAL AND INSTALLATION

M1426001200353

Post-installation Operation <Roof lid glass assembly, Sunroof assembly>
- Sunroof Fit Adjustment (Refer to P.42-195.)
- Sunroof Water Test (Refer to P.42-195.)



6. SUNROOF SWITCH DOME LIGHT ASSEMBLY

SUNROOF GLASS SEAL REMOVAL STEPS

<<A>> >>F<< 1. SUNROOF GLASS
<<B>> >>E<< 2. SUNROOF GLASS SEAL

SUNROOF SUNSHADE REMOVAL STEPS

<<A>> >>F<< 1. SUNROOF GLASS
<<C>> >>C<< 3. REAR SUNROOF SUNSHADE
<<C>> >>C<< 4. FRONT SUNROOF SUNSHADE
<<D>> 5. SUNSHADE SLIDE BLOCK

SUNROOF-ECU REMOVAL STEPS

6. SUNROOF SWITCH DOME LIGHT ASSEMBLY
7. BRACKET
8. HEADLINING (REFER TO GROUP 52A, HEADLINING P.52A-42.)
<<E>> >>D<< 9. SUNROOF-ECU

SUNROOF MOTOR REMOVAL STEPS

6. SUNROOF SWITCH DOME LIGHT ASSEMBLY
7. BRACKET

SUNROOF MOTOR REMOVAL STEPS (Continued)

8. HEADLINING (REFER TO GROUP 52A, HEADLINING P.52A-42.)
10. SUNROOF MOTOR

SUNROOF GUIDE ASSEMBLY REMOVAL STEPS

<<A>> >>F<< 1. SUNROOF GLASS
<<C>> >>C<< 3. REAR SUNROOF SUNSHADE
<<C>> >>C<< 4. FRONT SUNROOF SUNSHADE
11. LOCATOR
<<F>> >>B<< 12. SUNROOF DRIVE CABLE CONNECTION
13. DRAIN CHANNEL
<<G>> 14. SUNROOF GUIDE ASSEMBLY

SUNROOF ASSEMBLY REMOVAL STEPS

6. SUNROOF SWITCH DOME LIGHT ASSEMBLY
7. BRACKET
8. HEADLINING (REFER TO GROUP 52A, HEADLINING P.52A-42.)
15. CLIP
<<H>> >>A<< 16. DRAIN HOSE
17. SUNROOF ASSEMBLY
18. SET BRACKET

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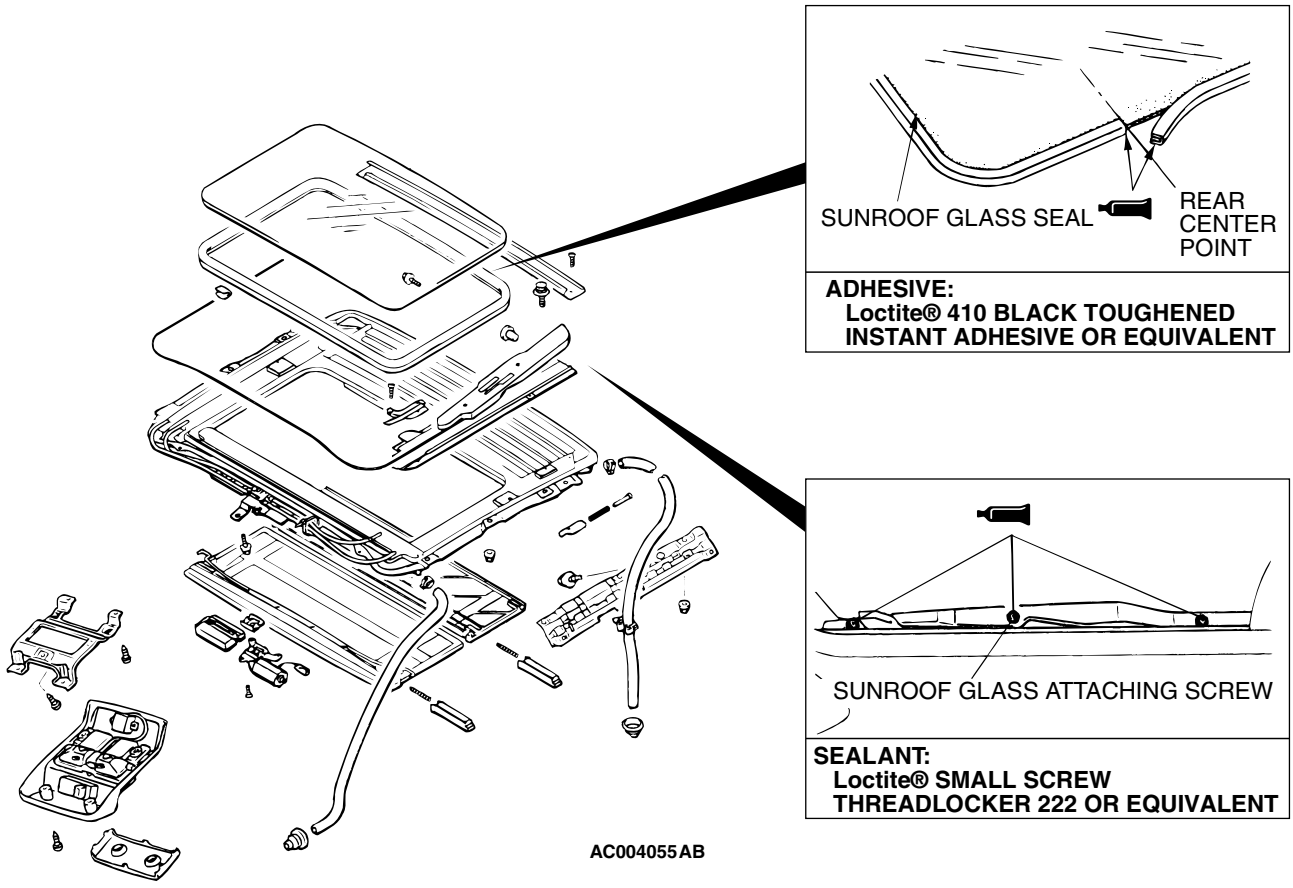
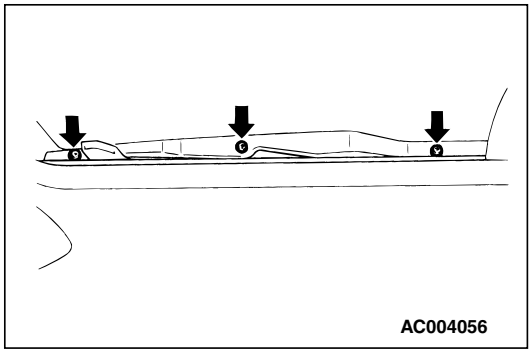
ADHESION POSITION

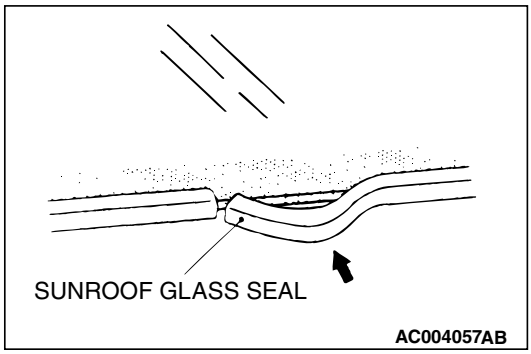


REMOVAL SERVICE POINTS

<<A>> SUNROOF GLASS REMOVAL

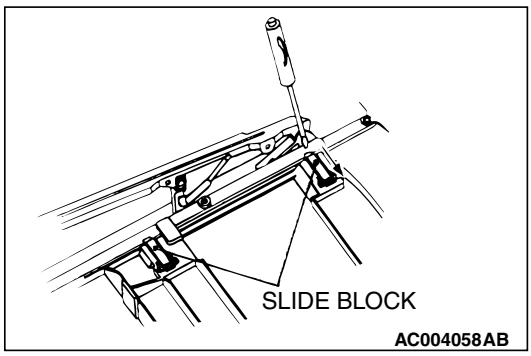
1. Tilt the sunroof.
2. Remove the screws attaching the sunroof glass to the guide assemblies, and then lift the glass out of roof opening.





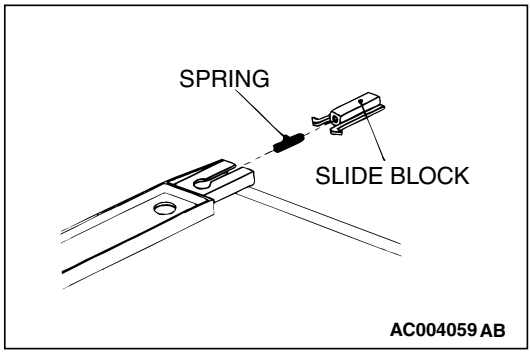
<<B>> SUNROOF GLASS SEAL REMOVAL

Remove the seal by pulling it off of the glass starting at the splice joint.



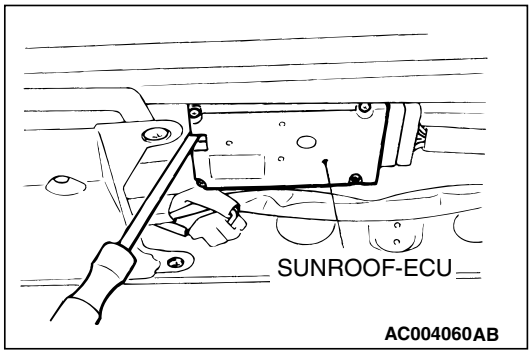
<<C>> REAR SUNROOF SUNSHADE/FRONT SUNROOF SUNSHADE REMOVAL

1. Remove the rear sunroof sunshade first by pushing in the slide blocks to release them from the sunroof guide assembly on one side of the sunshade. Remove the rear sunroof sunshade out of roof opening.
2. Repeat step (1) for the front sunroof sunshade.



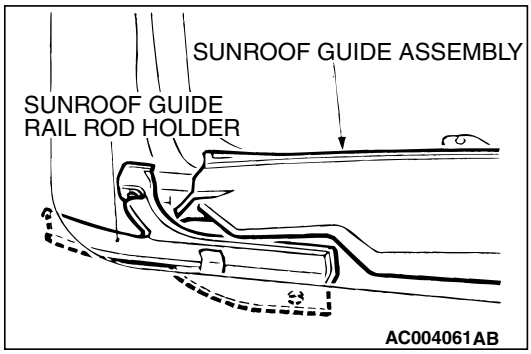
<<D>> SUNSHADE SLIDE BLOCK REMOVAL

Squeeze together the inboard end of the slide block with your fingers to allow the slide block to slide out of its channel, and then remove the slide block and spring.



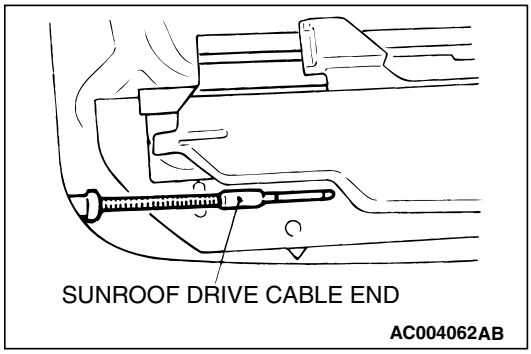
<<E>> SUNROOF-ECU REMOVAL

1. Close the sunroof glass fully.
2. Insert a flat-tipped screwdriver, place it on the tab, and then press it to the right.
3. Lower the sunroof-ECU and slide to left.

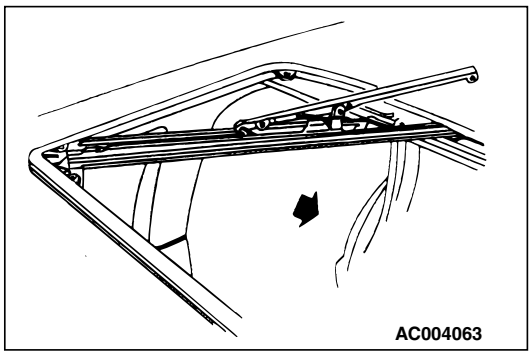


<<F>> SUNROOF DRIVE CABLES REMOVAL

1. Tilt the sunroof guide assembly and then remove the sunroof guide rail rod holder.

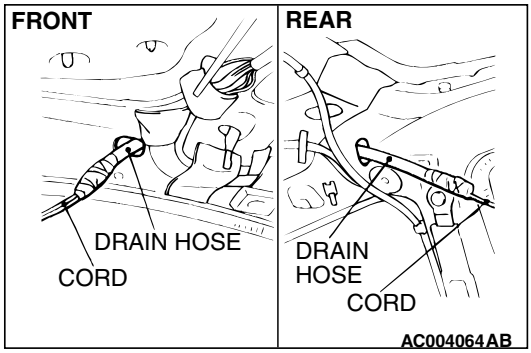


2. Close the sunroof guide assembly and disconnect the sunroof drive cable end from the sunroof guide assembly.



<<G>> SUNROOF GUIDE ASSEMBLY REMOVAL

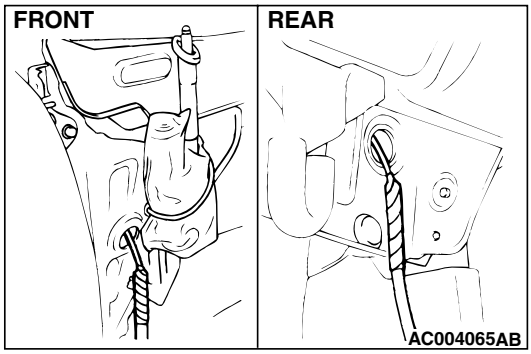
1. Slide the roof drip rear channel backward, and then remove the guide assembly screws, the rear screw and spacer.
2. Slide the rear of the guide assembly toward center of the vehicle and remove the guide assembly.



<<H>> DRAIN HOSE REMOVAL

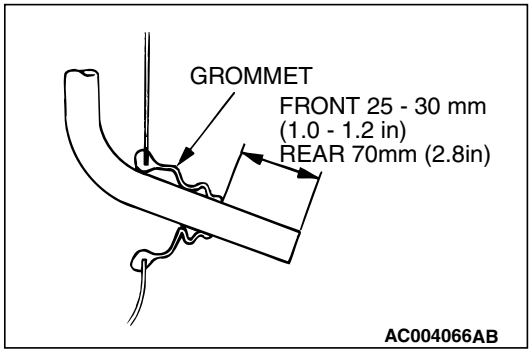
Remove the grommet. Tie a cord to the end of the drain hose, wind plastic tape around it so that there is no unevenness, and pull the drain hose out into the wheel house.

INSTALLATION SERVICE POINTS



>>A<< DRAIN HOSE INSTALLATION

1. Tie the cord that was used during removal to the end of the drain hose, and wind the plastic tape around it so that there is no unevenness.
2. Pull the cord to pull through the drain hose.



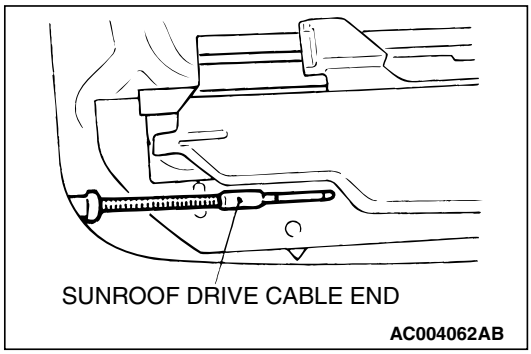
3. Make the protrusion from the drain hose grommet as shown in the illustration.

>>B<< SUNROOF DRIVE CABLES INSTALLATION

⚠ CAUTION

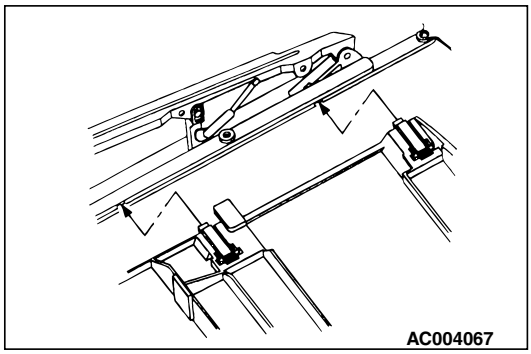
If cables are kinked, replace them. Always replace the cables in pair and grease them before installation.

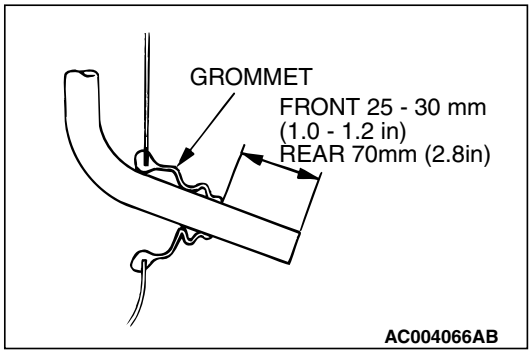
Close the sunroof guide assembly and install the sunroof drive cable end to the sunroof guide assembly.



>>C<< FRONT SUNROOF SUNSHADE/REAR SUNROOF SUNSHADE INSTALLATION

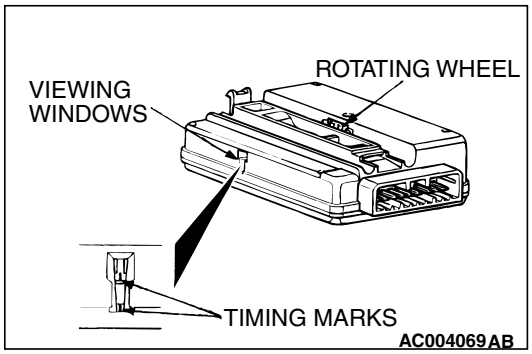
1. Install the front sunroof sunshade first by inserting the slide blocks on the right side of the sunshade into the lower slide position of the right guide assembly.
2. Push the sunshade slide blocks on the left side of the sunshade into the sunshade to allow the front sunroof sunshade to drop into position. Once in position, engage the slide blocks into the lower channel of the left guide assembly.



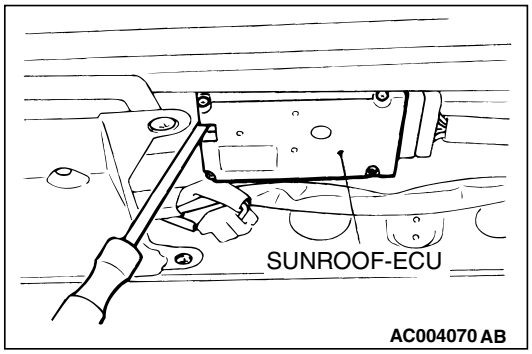


3. Push the front sunroof sunshade to full forward position.
4. Position the rear sunroof sunshade so that the stop tabs are against the stop bumpers on the guide assembly. Engage the right side slide blocks of the upper half of the sunshade into the upper channel on the right guide assembly. Engage the slide blocks on the left side of the sunshade into the upper channel in the left guide assembly.
5. Slide the sunshade back and forth to check that it functions smoothly.

>>D<< SUNROOF-ECU INSTALLATION

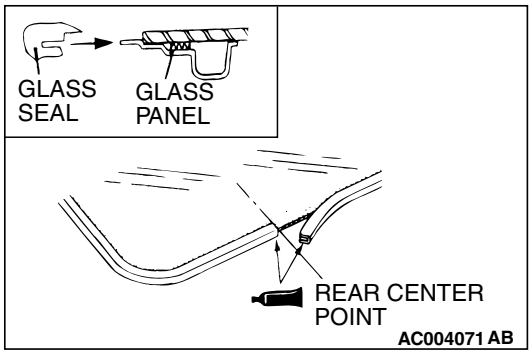


1. Look into the "viewing windows" while turning the rotating wheel. Turn the rotating wheel until the white timing marks appear. When the white timing marks appear in the "viewing windows" at the same time, stop turning the rotating wheel.
2. Close the sunroof fully. Install the timed sunroof control unit. Make sure that the sunroof cable is properly inserted into the control unit.

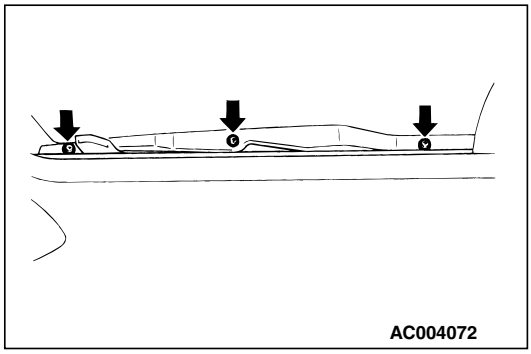


3. Insert a flat-tipped screwdriver, place it on the tab, and press it to the right, being careful not to pinch the wiring.

>>E<< SUNROOF GLASS SEAL INSTALLATION



1. Starting at the rear center of the sunroof glass, begin installing the seal by pushing it onto the edge of the glass panel and gently pulling on it while installing.
2. Approximately 102 mm (4.0 inches) before completing the installation, lay the end of the seal over top of the beginning of the seal. Cut the seal so there is an extra 3.18 mm (0.125 inch) of the seal past the point where the seal lines up with the beginning of the seal
3. Apply Loctite R 410 Black Toughened Instant Adhesive or equivalent to the splice joint area where two ends of the seal meet.
4. With the approximately 102 mm (4.0 inches) of the seal unattached, push two ends of the seal together at glue joint.
5. Install the remainder of the seal by pushing the seal onto the edge of the glass panel. The 3.18 mm (0.125 inch) of extra seal material should strengthen the seal at the splice joint.



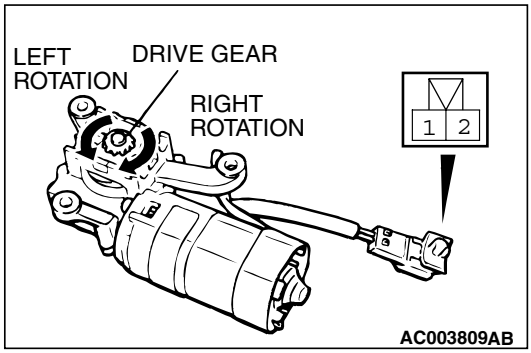
>>F<< SUNROOF GLASS INSTALLATION

1. Position the sunroof glass onto the guide assemblies and align the mounting holes.
2. Apply Loctite R Small Screw Thread locker 222 or equivalent to the sunroof glass attaching screws and install them, going to the next step before tightening.

SUNROOF MOTOR CHECK

M1426002500045

Check the rotation direction of the drive gear when the battery is connected to the connector.

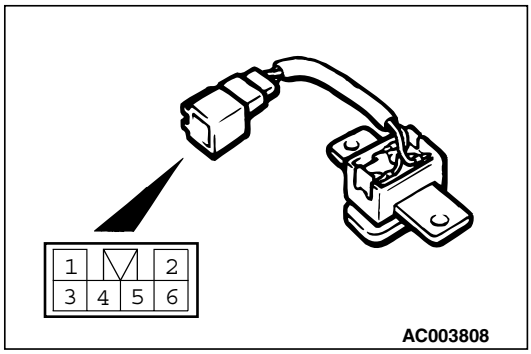


TESTER CONNECTION	DRIVE GEAR OPERATION
• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The drive gear rotates clockwise
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The drive gear rotates counterclockwise

SUNROOF SWITCH CONTINUITY CHECK

M1426001600094

Operate the sunroof switch and check for the continuity between each of the terminals.

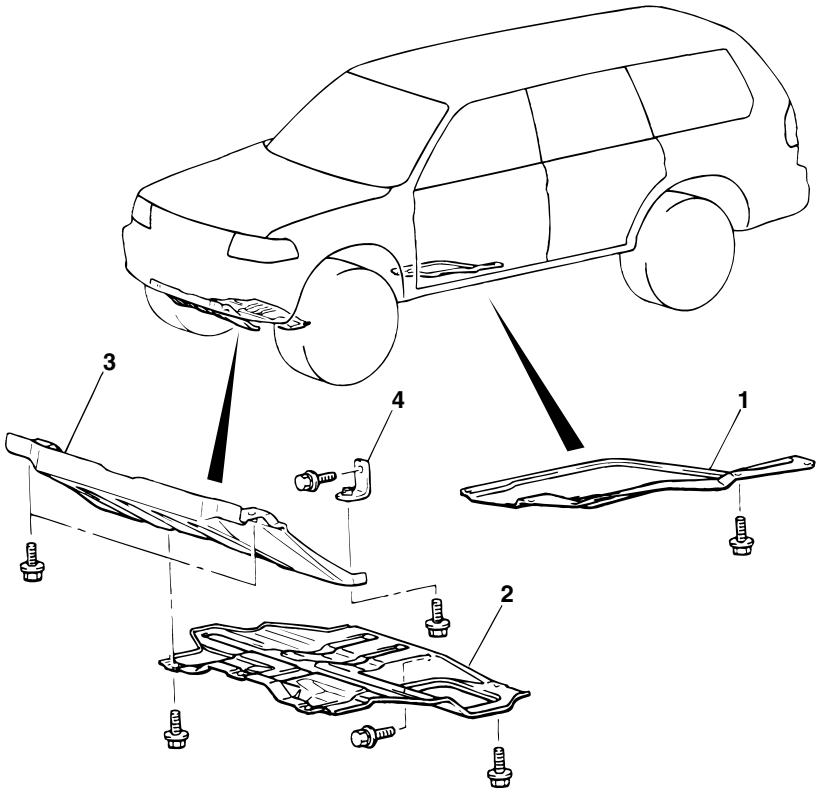


SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the Open position	3 – 4	Less than 2 ohms
At the Off position	1 – 4 3 – 4	Open circuit
At the Close position	1 – 4	Less than 2 ohms

UNDER COVER

REMOVAL AND INSTALLATION

M1421002800041



AC003810 AB

1. TRANSFER CASE PROTECTOR

UNDER SKID PLATE REMOVAL STEPS

2. UNDER COVER
3. UNDER SKID PLATE
4. SKID PLATE BRACKET

TSB Revision

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1426003000087

ITEM	SPECIFICATION
Body mounting	
Body mounting self jam nut	27 – 31 N·m (20 – 23 ft-lb)
Door	
Door hinge bolt	26 N·m (19 ft-lb)
Door hinge nut	26 N·m (19 ft-lb)
Power window motor bolt	5.4 ± 0.5 N·m (48 ± 4 in-lb)
Striker screw	12 N·m (106 in-lb)
Door latch assembly screw	6 N·m (53 in-lb)
Hood	
Hood latch bolt	9 N·m (80 in-lb)
Hood support rod bolt	9 N·m (80 in-lb)
Hood hinge bolt (hood side)	12 N·m (106 in-lb)
Hood hinge bolt (body side)	22 N·m (16 ft -lb)
Hood hinge nut (body side)	12 N·m (106 in-lb)
Keyless entry system	
Keyless entry receiver-ECU	5 N·m (44 in-lb)
Liftgate	
Liftgate hinge nut	14 N·m (124 in-lb)
Liftgate hinge bolt	12 N·m (106 in-lb)
Striker bolt	9 N·m (80 in-lb)
Joint ball	12 N·m (106 in-lb)
Liftgate gas spring bolt	5 N·m (44 in-lb)
Liftgate latch assembly bolt	9 N·m (80 in-lb)
Sunroof	
Sunroof assembly bolt	5 N·m (44 in-lb)
Sunroof assembly nut	5 N·m (44 in-lb)
Sunroof glass bolt	5 N·m (44 in-lb)
Sunroof guide assembly bolt	3 N·m (27 in-lb)
Set bracket bolt	5 N·m (44 in-lb)
Set bracket nut	5 N·m (44 in-lb)

SERVICE SPECIFICATIONS

M1426000300078

<DOOR>

ITEM		STANDARD VALUE
Door outside handle play mm (in)		2.8 (0.11)
Power window operation current A		7 or more [20°C (68°F)]
Door inside handle play mm (in)		7.3 (0.29) or more
Glass pad and glass holder installation position mm (in)	Distance (A) between glass holder and rear edge of glass	106.7 – 108.2 (4.20 – 4.26)
	Distance (B) between glass holders	417.5 – 420.5 (16.44 – 16.56)
	Distance (C) between glass holder and rear edge of glass	<Vehicles with power windows>127 – 131 (5.0 – 5.2) <Vehicles without power windows> 62 – 66 (2.4 – 2.6)

<LIFTGATE>

ITEM	STANDARD VALUE
Liftgate handle play mm (in)	1.5 – 5.5 (0.06 – 0.22)

SEALANTS AND ADHESIVES

M1426000500072

<DOOR>

ITEM	SPECIFIED SEALANT	REMARK
Waterproof film	3 M™ AAD8633 or equivalent	Ribbon sealer

<LIFTGATE>

ITEM	SPECIFIED SEALANT	REMARK
Waterproof film	3 M™ AAD8633 or equivalent	Ribbon sealer

<WINDOW GLASS>

ITEM	SPECIFIED SEALANT
Liftgate window glass	3 M™AAD8609 or equivalent
Quarter window glass	3 M™AAD8513 or equivalent
Windshield	3 M™AAD8609 or equivalent

<SUNROOF>

ITEM	SPECIFIED SEALANT
Sunroof glass attaching screws	Loctite® Small Screw Threadlocker 222 or equivalent
Sunroof glass sealing	Loctite® 410 Black Toughened Instant Adhesive or equivalent

COMPONENT IDENTIFICATION

M1421005400194

DOOR HINGES

APPLICABLE LOCATION		IDENTIFICATION MARK
Front left side door	Upper hinge	F1
	Lower hinge	E1
Front right side door	Upper hinge	E1
	Lower hinge	F1
Rear left side door	Upper hinge	A1
	Lower hinge	B1
Rear right side door	Upper hinge	B1
	Lower hinge	A1

DOOR CHECK

APPLICABLE LOCATION		IDENTIFICATION MARK
LH	Front door	19L
	Rear door	25L
RH	Front door	19R
	Rear door	25R

DOOR OUTER OPENING WEATHERSTRIP

APPLICABLE LOCATION	IDENTIFICATION COLOR
Right door	Brown or yellow
Left door	Natural (white)