GROUP 42A

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HOOD

HOOD DIAGNOSIS

INTRODUCTION TO HOOD DIAGNOSIS

M1421005800460

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

HOOD DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1421005900423

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 malfunction is eliminated.

SYMPTOM CHART

M1421006000456

Symptom	Inspection procedure	Reference page
Difficult locking and unlocking	1	P.42A-4
Uneven body clearance	2	P.42A-5
Uneven height	3	P.42A-5

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Difficult Locking and Unlocking

DIAGNOSIS

STEP 1. Check that the release cable is routed correctly.

Q: Is the release cable routed correctly?
YES : Go to Step 2.
NO : Re-route the 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 the hood latch (Refer to P.42A-6). 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 clearance around the hood.

Q: Is the clearance around the hood even?
YES : Go to Step 2.
NO : Adjust the hood (Refer to P.42A-5). Then go to Step 2 .

STEP 2. Retest the system.

Q: Are the clearances between body panels even?
YES : The procedure is complete.
NO : Return to Step 1.

INSPECTION PROCEDURE 3: Uneven Height

DIAGNOSIS

STEP 1. Check the hood damper height.

Q: Is the hood damper height proper?
YES : Go to Step 2.
NO : Adjust the hood damper (Refer to P.42A-6). Then go to Step 2.

STEP 2. Retest the system.

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

ON-VEHICLE SERVICE

ADJUSTMENT OF CLEARANCE AROUND HOOD

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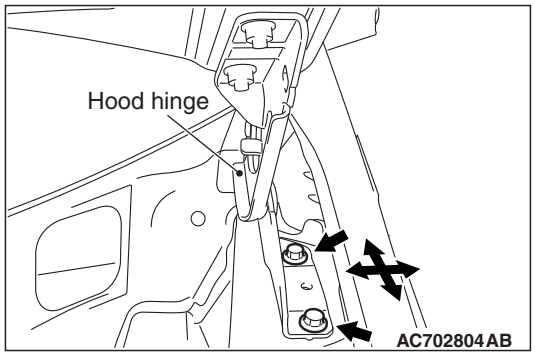
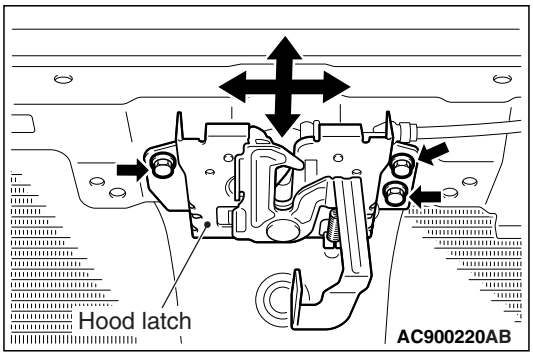


1. Remove the front deck garnish (Refer to GROUP 51, Windshield Wiper P.51-76).
2. Loosen the hood hinge mounting bolts but do not remove them. Move the hood hinge back/forth and left/right to align the hood level.
3. After the adjustment, tighten the hood hinge mounting bolts to 23 ± 6 N· m (17 ± 5 ft-lb).
4. Install the front deck garnish (Refer to GROUP 51, Windshield Wiper P.51-76).

ADJUSTMENT OF HOOD LEVEL AND HOOD STRIKER ENGAGEMENT

M1421007300643

1. Remove the headlamp support panel cover (Refer to GROUP 51 –Radiator Grille P.51-9).
2. Remove the front bumper assembly (Refer to GROUP 51 – Front Bumper P.51-4).
3. Remove the headlamp support upper panel cover (Refer to GROUP 51 –Radiator Grille P.51-9).
4. Loosen the hood latch mounting bolts but do not remove them. Move the hood latch up/down and left/right to align the hood level and adjust the hood striker engagement.
5. After the adjustment, tighten the hood latch mounting bolts to 9.0 ± 1.0 N · m (80 ± 9 in-lb).



ADJUSTMENT OF HOOD HEIGHT

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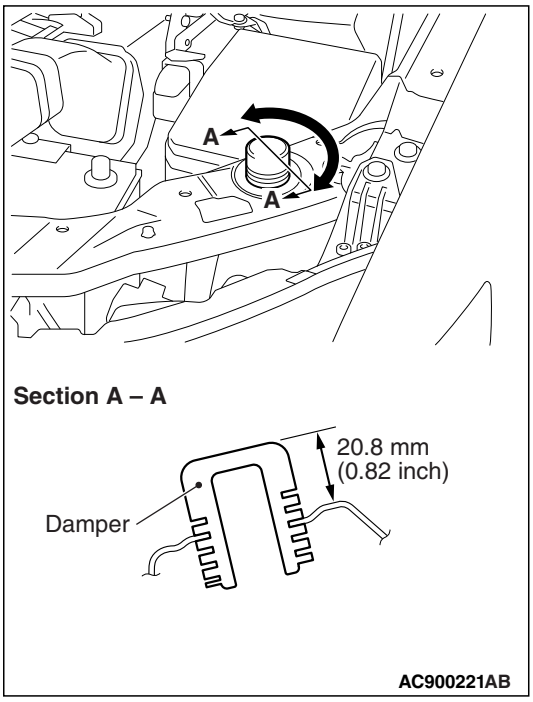
Turn the damper to the dimension shown in the figure to adjust the hood height. If the hood height is still not even, turn the damper again until the height is even. The damper height is altered by roughly 3 mm (0.12 inch) when the damper is rotated once.

NOTE: If a rattling noise is heard due to the vibration of the hood when the vehicle is being driven, adjust the damper height until the damper is seated on the hood.



HOOD

REMOVAL AND INSTALLATION

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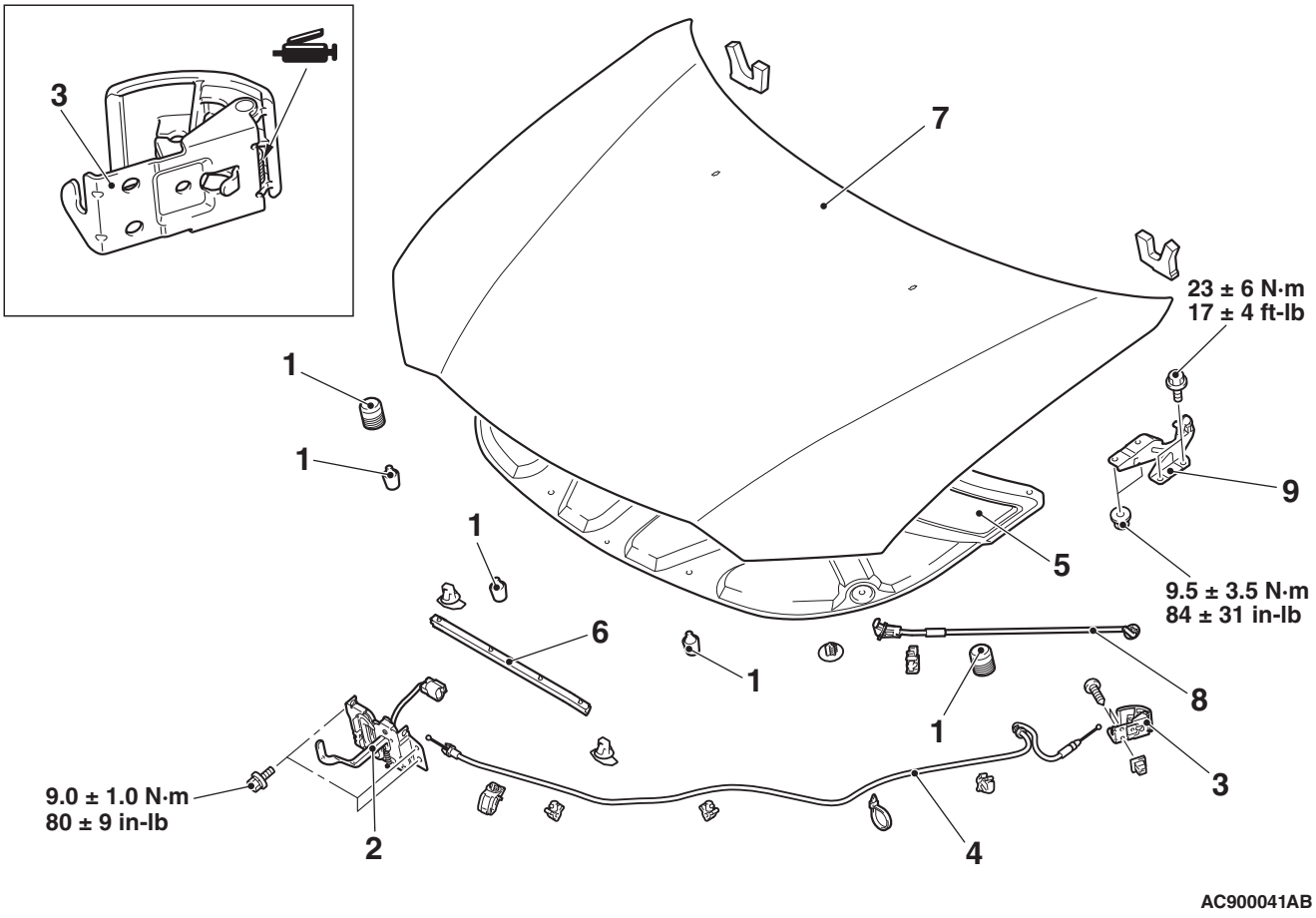
Post-installation operation
- Adjustment of clearance around hood (Refer to P.42A-5.)
- Adjustment of hood level and hood striker engagement (Refer to P.42A-6.)
- Adjustment of hood height (Refer to P.42A-6.)



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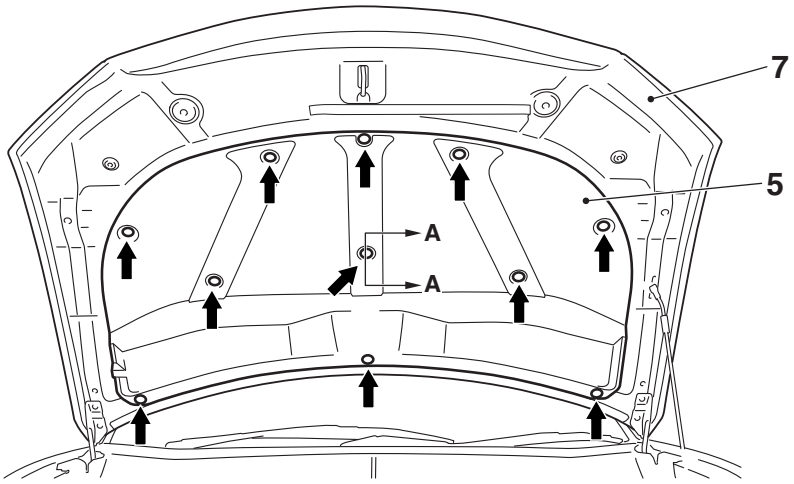

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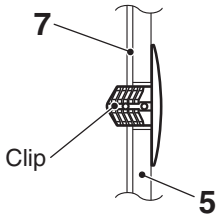

: Clip positions

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Damper removal

1. Damper

Removal steps for hood latch and hood lock release cable

- Headlamp support upper panel cover (Refer to GROUP 51 –Radiator Grille P.51-9.)

2. Hood latch
3. Hood lock release handle

- Front splash shield (Refer to P.42A-10.)
- Front bumper assembly (Refer to GROUP 51 –Front Bumper P.51-9.)

Removal steps for hood latch and hood lock release cable

- Headlamp assembly (Refer to GROUP 54A –Headlamp P.54A-217.)

4. Hood lock release cable

Hood removal steps

5. Hood insulator
6. Hood weatherstrip front

- Windshield washer hose and washer nozzles (Refer to GROUP 51 – Windshield Washer P.51-81.)

7. Hood
8. Hood support rod

- Front deck garnish (Refer to GROUP 51 –Windshield wiper P.51-76.)

9. Hood hinge

INSPECTION

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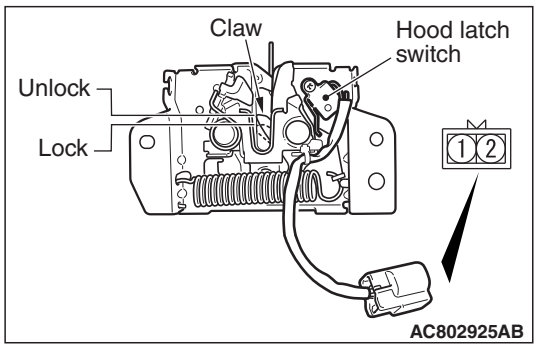
HOOD LATCH SWITCH CONTINUITY CHECK



Claw position	Terminal number	Normal value
Unlock (ON)	1 –2	Continuity exists (2 Ω or less)
Lock (OFF)	1 –2	Open circuit

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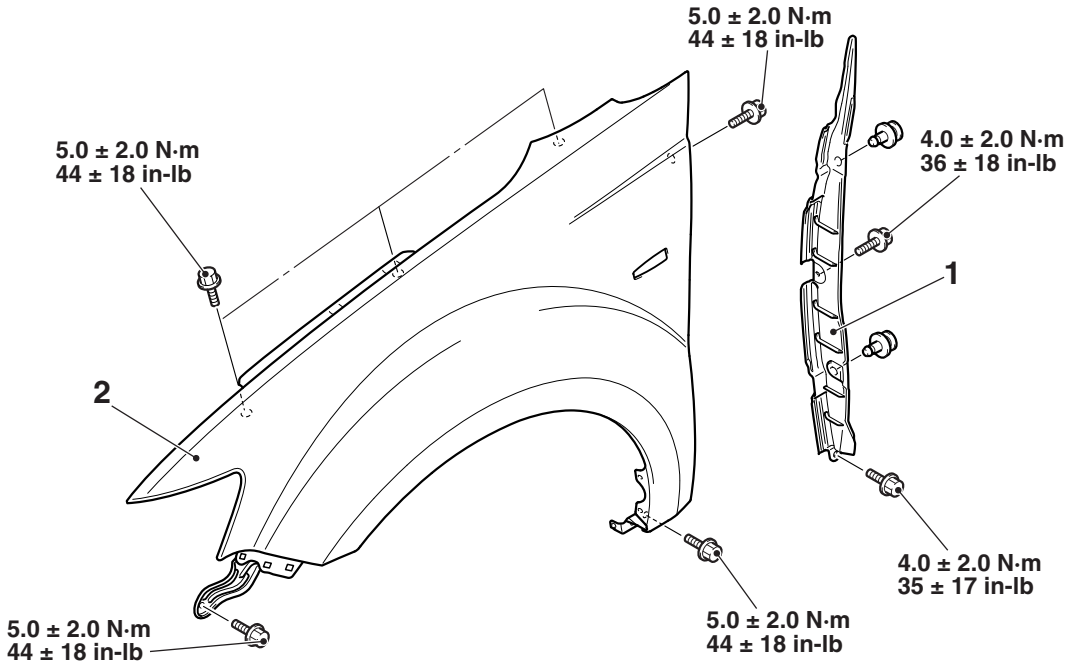
FENDER

REMOVAL AND INSTALLATION

M1421001901457

Pre-removal and post-installation operation
- Splash shield front removal and installation (Refer to P.42A-10).
- Front bumper side bracket removal and installation (Refer to GROUP 51, Front Bumper Assembly P.51-4).
- Headlight assembly removal and installation (Refer to GROUP 54A, Headlight P.54A-217).
- Side turn-signal lamp removal and installation (Refer to GROUP 54A –Side turn-signal lamp P.54A-279.)
- Front deck garnish removal and installation (Refer to GROUP 51, Windshield Wiper P.51-76).
- Side air dam removal and installation (Refer to GROUP 51, Side Air Dam P.51-20).



Removal steps
1. Fender protector rear
2. Fender

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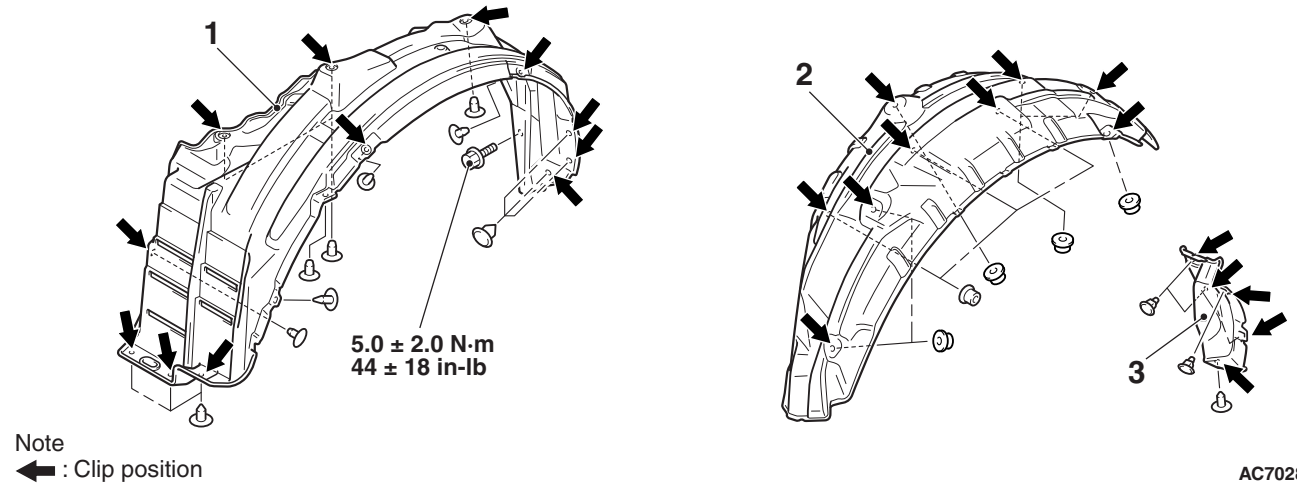
SPLASH SHIELD

REMOVAL AND INSTALLATION

M1421009700421



Note
◄ : Clip position

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Removal
1. Splash shield front

Removal (Continued)
2. Splash shield rear (body side)
3. Splash shield rear (rear bumper side)

FUEL FILLER LID

REMOVAL AND INSTALLATION

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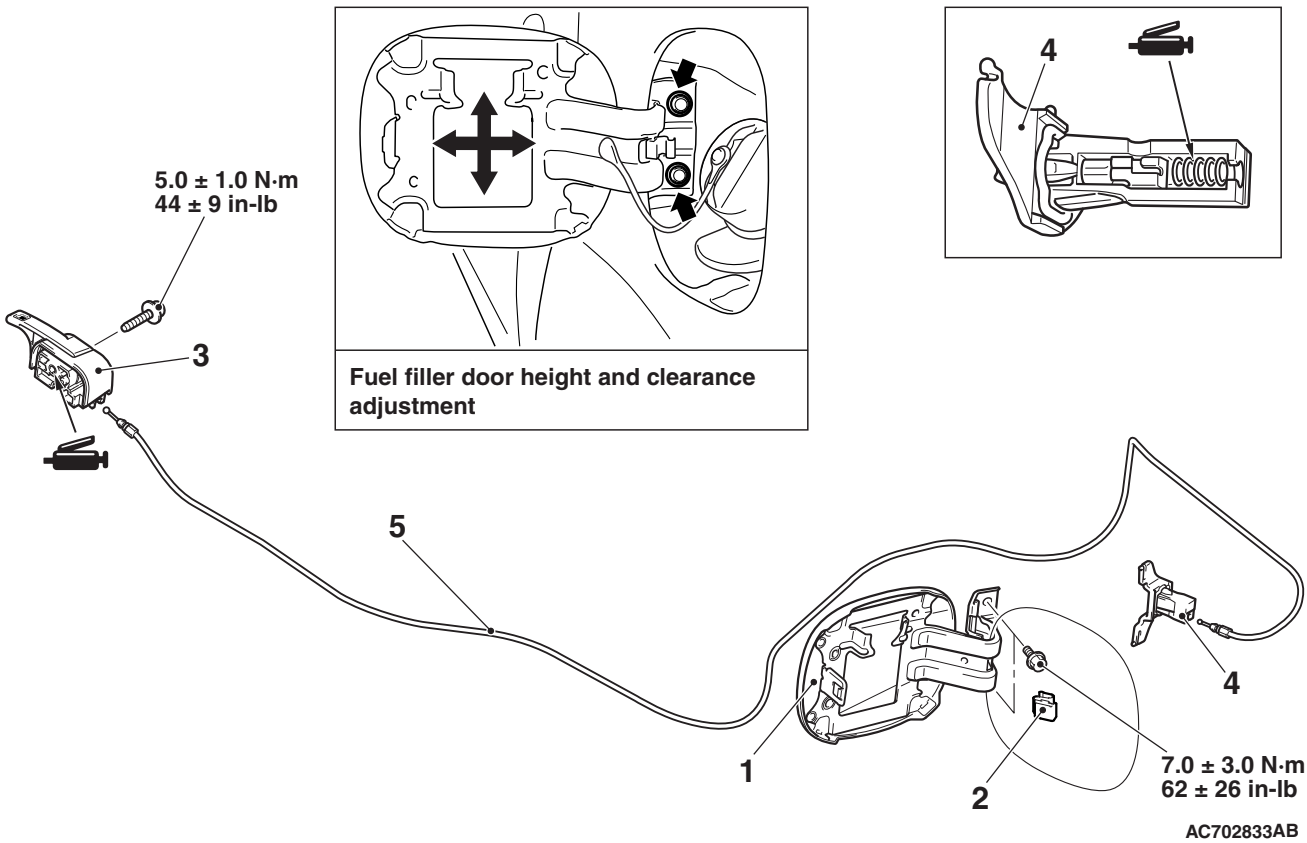

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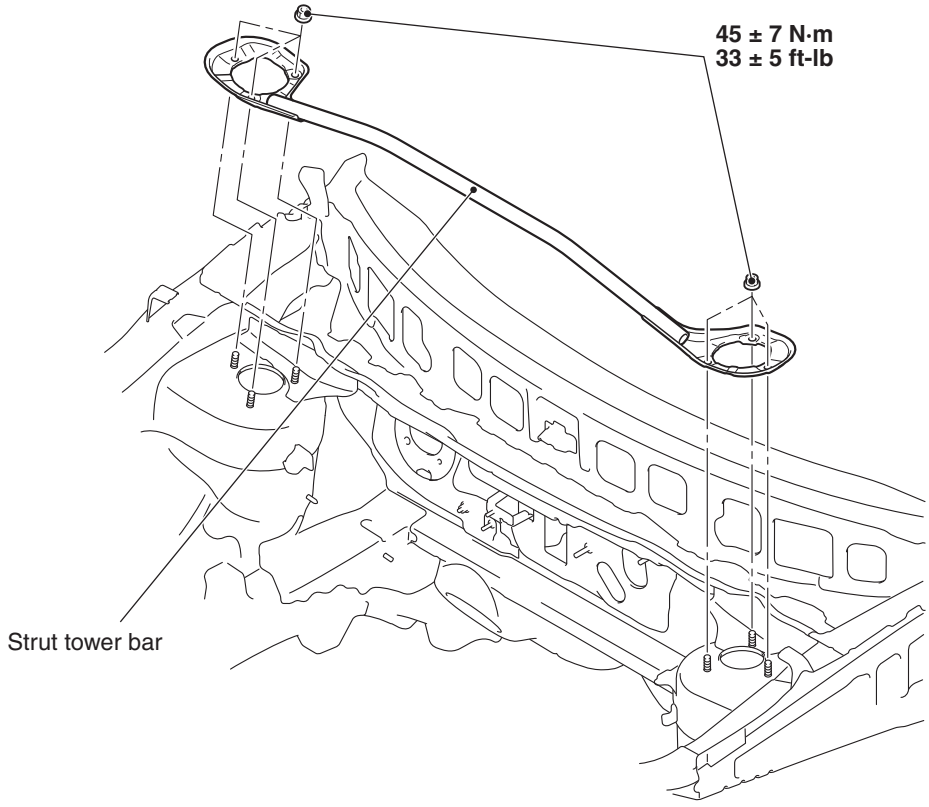
Removal steps
1. Fuel filler door
2. Fuel filler door damper spring
3. Fuel filler door lock release handle
- Front scuff plate, rear scuff plate, and center pillar trim lower, quarter trim lower (Refer to GROUP 52A, Interior Trim P.52A-9.)

Removal steps (Continued)
- Rear seat assembly (Refer to GROUP 52A, Rear Seat Assembly P.52A-24.)
4. Fuel filler door hook
5. Fuel filler door lock release cable

STRUT TOWER BAR

REMOVAL AND INSTALLATION

M1421005600262



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WINDOW GLASS

SPECIFICATION(S)

ADHESIVE

M1421000500475

Item	Specified adhesive
Windshield	3 M™ AAD part No. 8609 super fast urethane and 3 M™ AAD part No. 8608 super fast urethane primer or equivalent
Quarter window glass	
Liftgate window glass	
Liftgate dam lower and liftgate dam side	MITSUBISHI Genuine adhesive part No. MZ100920EX

Item	Specified adhesive tape
Windshield molding	Double-sided tape: Generic products [6.5 mm (0.25 in) width, 100 mm (3.93 in) length and 0.4 mm (0.015 in) thickness]
Quarter window glass	Double-sided tape: Generic products [8 mm (0.32 in) width, 25 mm (0.98 in) length and 1.2 mm (0.047 in) thickness]

LUBRICANT

M1421000400036

Item		Specified lubricant	Quantity
Degrease agent	Grease and dirt removal from parts surface	3M™ AAD Part No. 8906 or equivalent	As required

GENERAL

M1422000100997

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

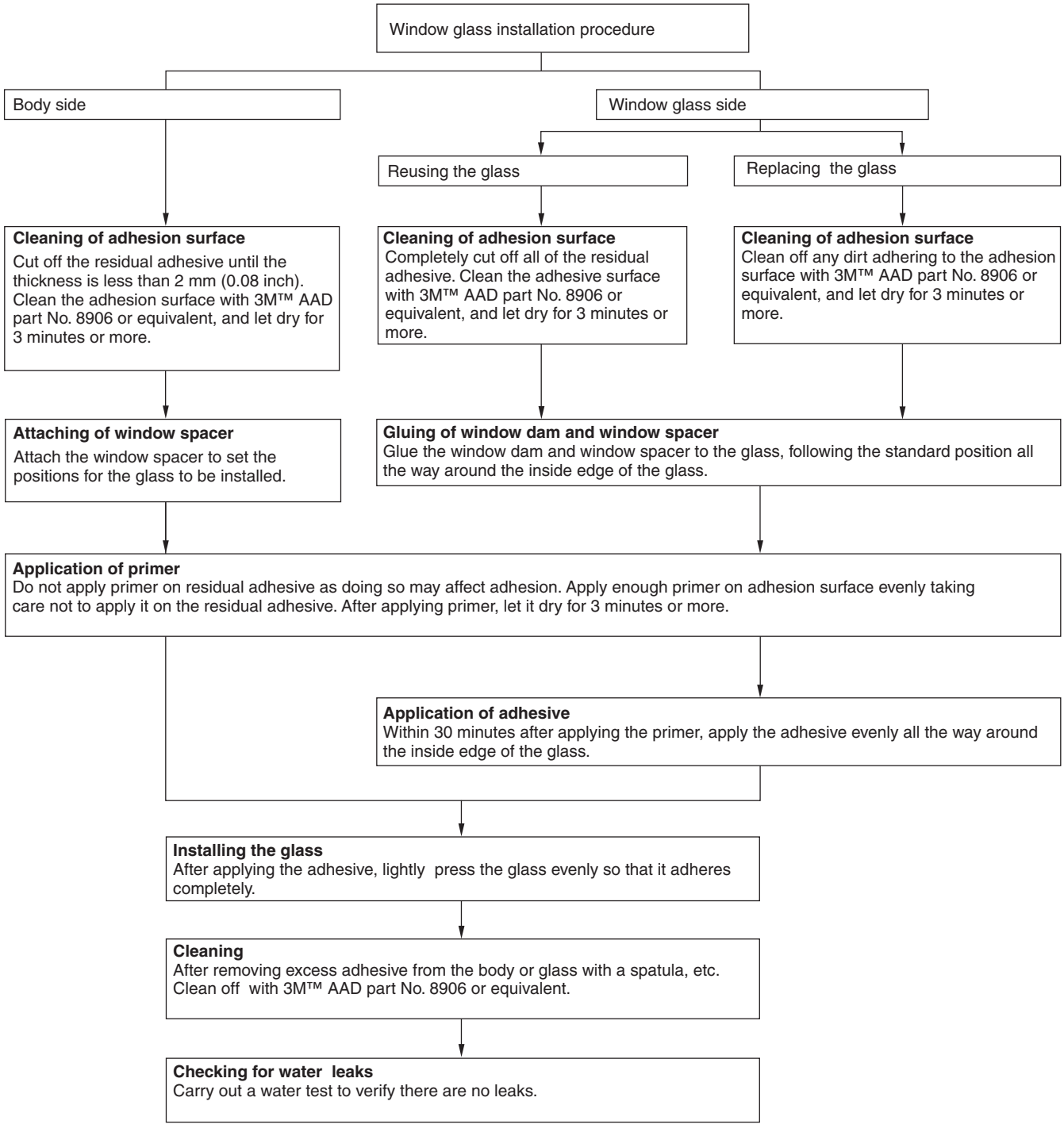
ITEMS

Item	Application	Quantity
Wire (diameter × length)	For cutting adhesive	Five pieces of wire 0.6 mm × 1 m (0.02 in × 3.3 ft)
Glass adhesive knife	For cutting adhesive	One
Sealant gun	For adhesive application	One
Wiping shop towels	–	As required
Sealer	For prevention of water and wind leaks after adhesive application	As required
3M™ AAD Part No. 8906 or equivalent	For cleaning or degreasing body parts and glasses	As required
Glass holder MB990480	For securing of window glass	Two

WINDOW GLASS INSTALLATION

⚠ CAUTION

Do not apply primer on the adhesion surface, as adhesion may be reduced.



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WINDOW GLASS DIAGNOSIS

INTRODUCTION TO WINDOW GLASS DIAGNOSIS

M1422006700306

If water emerges from the following points, there is a problem in the seal or body flange.

- Windshield
- Quarter window glass
- Liftgate window glass

WINDOW GLASS DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1422006800303

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 malfunction is eliminated.

WINDOW GLASS DIAGNOSTIC TROUBLE SYMPTOM CHART

M1422006900366

Symptom	Inspection procedure	Reference page
Water leak through windshield	1	P.42A-14
Water leak through quarter window glass		
Water leak through liftgate window glass		

SYMPTOM PROCEDURES

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

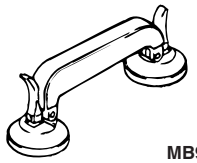
Q: Is the body flange deformed?
YES : Repair the body flange, then go to Step 3.
NO : Go to Step 3.

STEP 3. Retest the system.

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

SPECIAL TOOL

M1422000600550

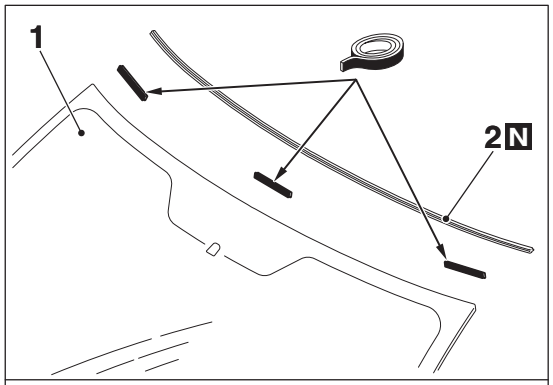
Tool	Tool number and name	Supersession	Application
 MB990480	MB990480 Glass holder	General service tool	Removal and installation of window glass

WINDSHIELD

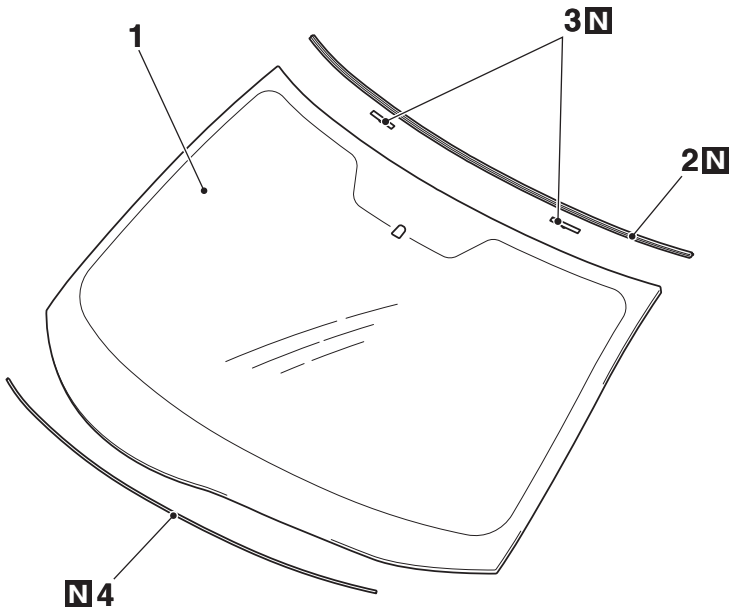
REMOVAL AND INSTALLATION

M1422001001446

Pre-removal and post-installation operation
- Front deck garnish removal and installation (Refer to GROUP 51, Windshield Wiper P.51-76).
- Roof drip molding removal and installation (Refer to GROUP 51, Molding P.51-10).
- Front pillar trim removal and installation (Refer to GROUP 52A, Interior Trim P.52A-9).
- Inside rear view mirror assembly removal and installation (Refer to GROUP 52A, Inside Rear View Mirror P.52A-16).



Double-sided tape: Generic products [6.5 mm (0.25 in) width, 100 mm (3.93 in) length and 0.4 mm (0.015 in) thickness.



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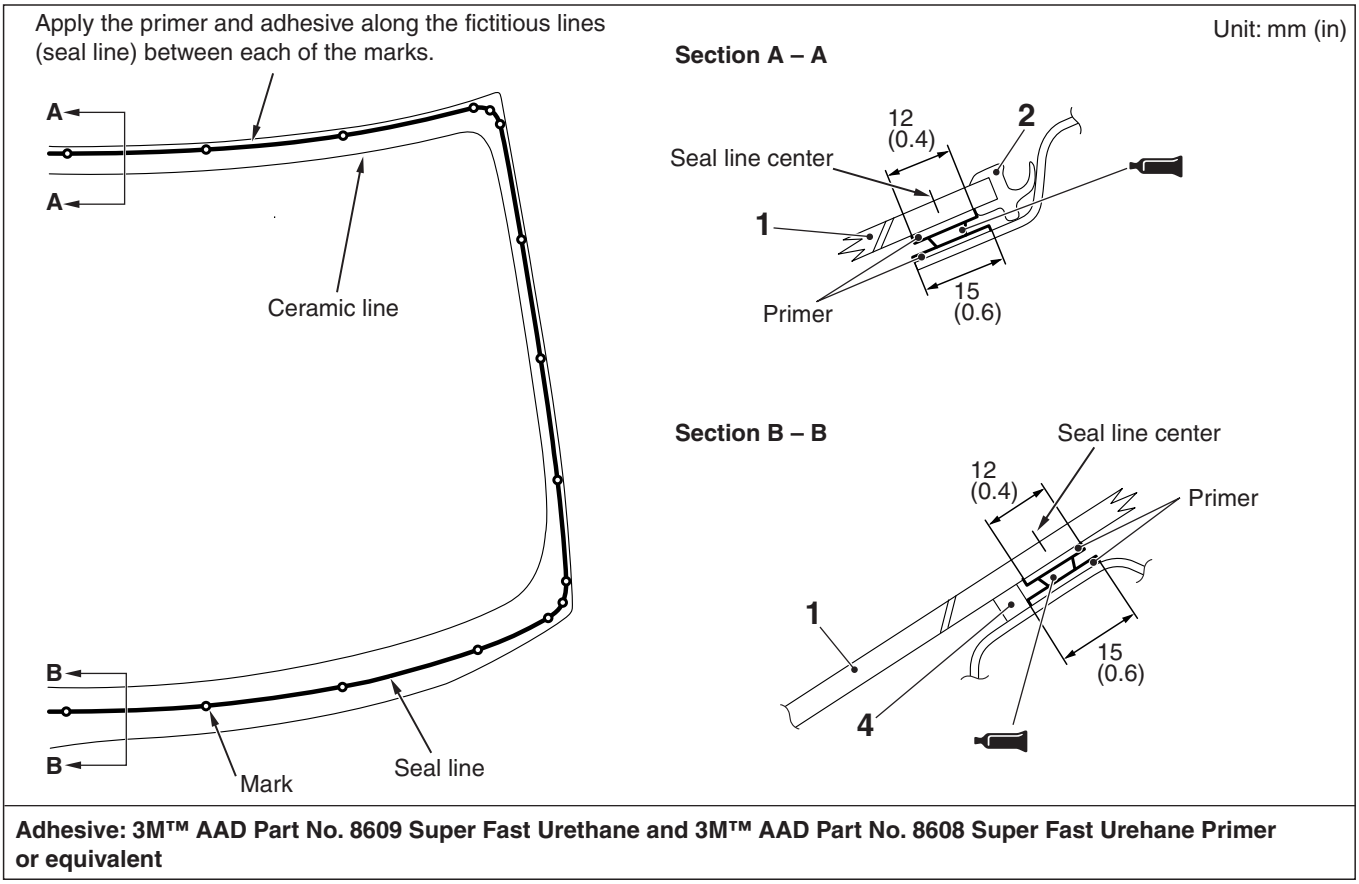

Adhesive: 3M™ AAD Part No. 8609 Super Fast Urethane and 3M™ AAD Part No. 8608 Super Fast Urehane Primer or equivalent

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Removal steps

<<A>> **>>B<<** 1. Windshield
2. Windshield molding
>>A<< 3. Glass stopper
>>A<< 4. Windshield spacer

Required Special Tool:
- MB990480: Glass Holder

REMOVAL SERVICE POINT

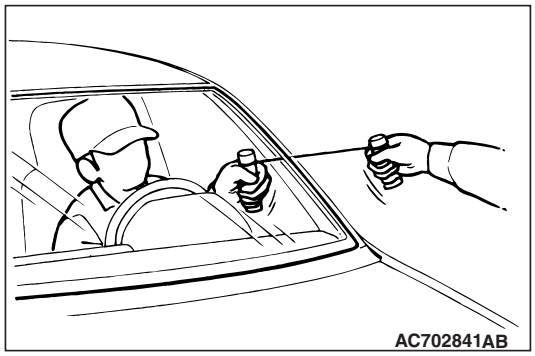
<<A>> WINDSHIELD REMOVAL

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 piano wire.
   (1) Using a sharp-point drill, make a hole in the windshield adhesive.
   (2) Pass the piano wire from the inside of the vehicle through the hole.

⚠ CAUTION

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

   (3) Pull the piano wire alternately from the inside and outside along the windshield to cut the adhesive.



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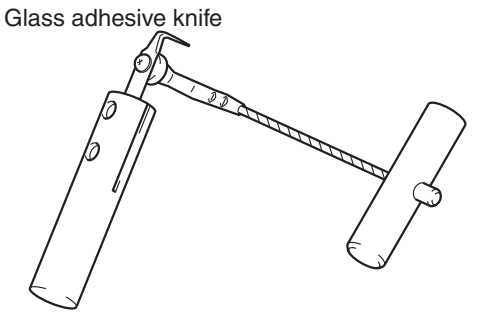
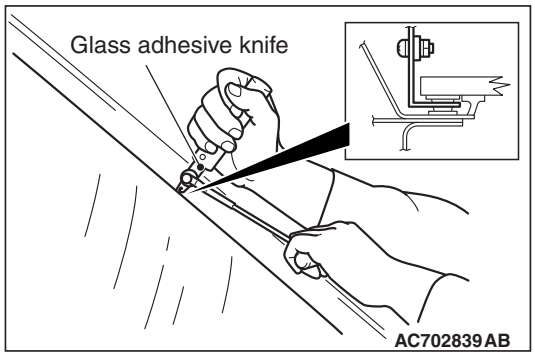
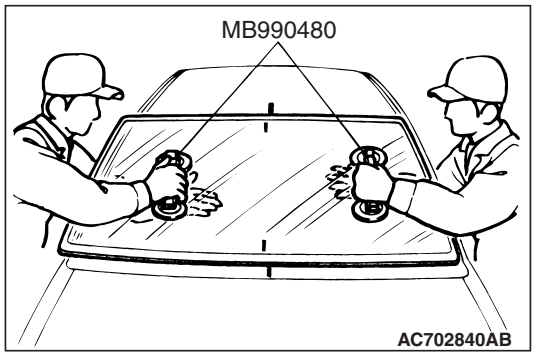
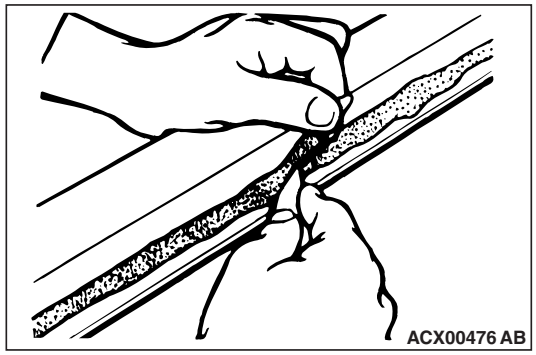








⚠ CAUTION

Inserting the glass adhesive knife too deeply into windshield adhesive may damage windshield.

4. Using glass adhesive knife
   Keep glass adhesive knife at right angles with the windshield edge, and put the blade at windshield edge and surface. Then cut away adhesive along the windshield edge.
5. 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 paint on the body surface with the knife. If the paint is damaged, repair the damaged area with touch-up paint.**

6. 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.
7. 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.

8. When reusing the windshield, remove the adhesive still adhering to the windshield, and clean with 3M™ AAD Part No. 8906 or equivalent
9. Clean the body side in the same way.

INSTALLATION SERVICE POINTS

>>A<< WINDSHIELD SPACER/GLASS STOPPER/WINDSHIELD MOLDING INSTALLATION

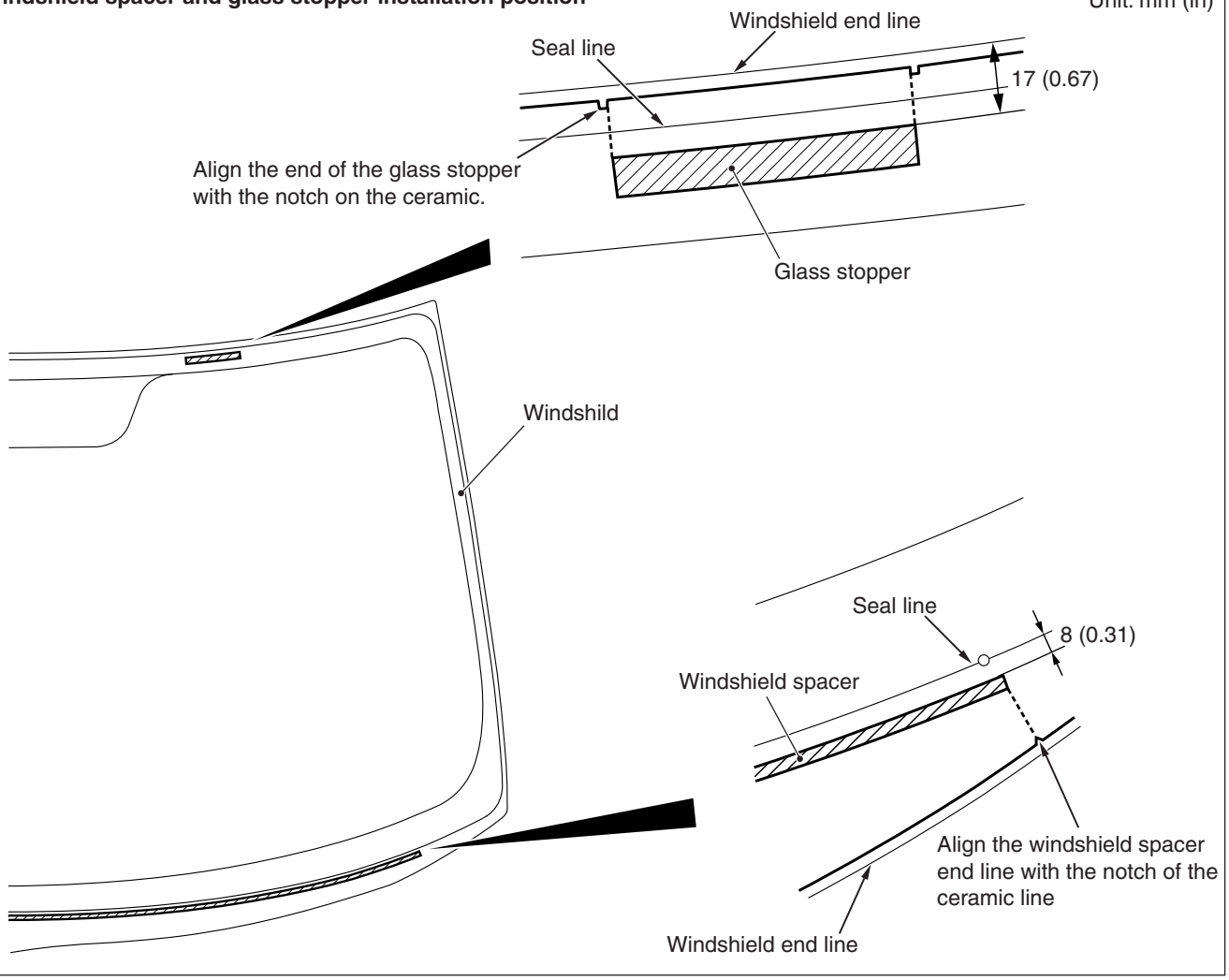
⚠ CAUTION

Leave the degreased parts for 3 or more minutes to dry well, before starting on the next step. Do not touch the degreased parts.

1. Use 3M™ AAD Part number 8906 or equivalent to degrease the inside and outside of the windshield and the body flanges.

Windshield spacer and glass stopper installation position

Unit: mm (in)



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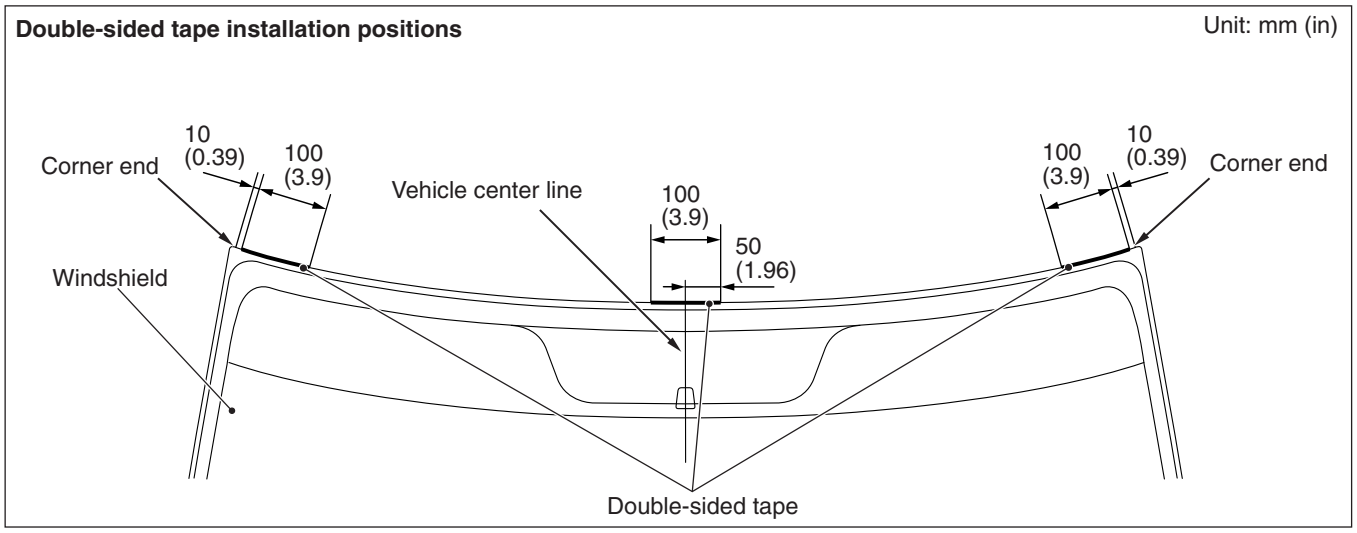
2. Install the windshield spacer and glass stoppers to the specified positions so that there are no adrift or warped surfaces inside the windshield.



3. Install the double-sided tape to the windshield.
4. Install the windshield molding to the windshield.

>>B<< WINDSHIELD INSTALLATION

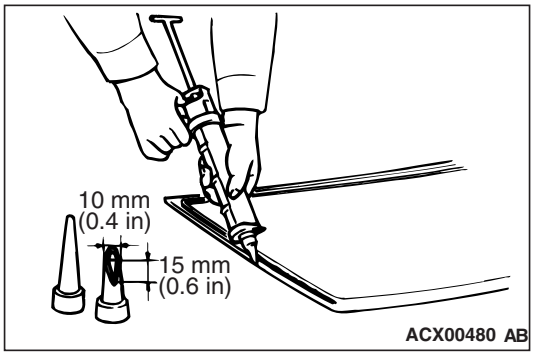
1. When replacing the windshield, temporarily set the windshield against the body, and place a mating mark on the windshield and body.

⚠ 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.**
- **Do not apply the primer on the remaining adhesive because of weakening the adhesive.**

2. Soak a sponge in the primer, and apply evenly to the windshield and the body in the specified places.
3. Allow the windshield to dry for at least three minutes after applying primer.
4. 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.
5. Align the mating marks on the windshield and the body, and lightly press the windshield evenly so that it adheres completely.
6. 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 apply strong water pressure.**

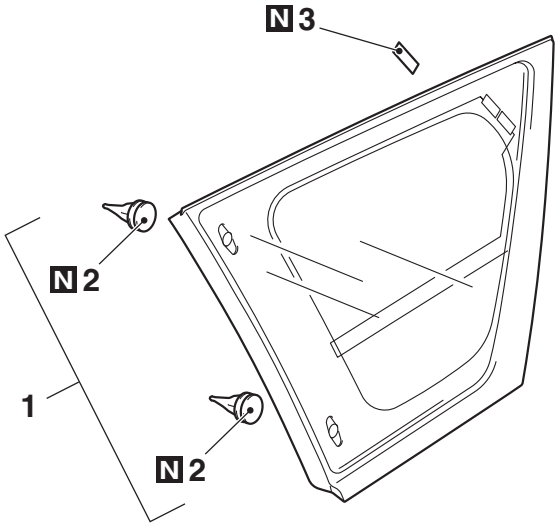
7. Wait 30 minutes or more, and then test for water leakage.

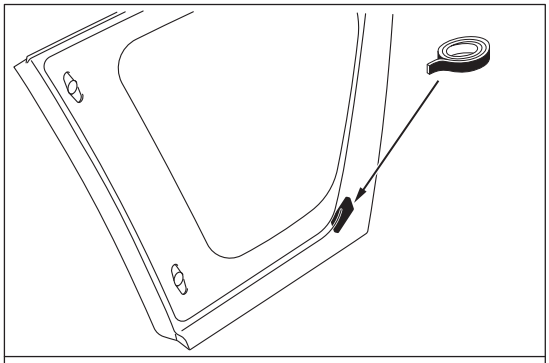
QUARTER WINDOW GLASS

REMOVAL AND INSTALLATION

M1422002500872

Pre-removal and post-installation operation
- Quarter trim upper removal and installation (Refer to GROUP 52A, Interior Trim P.52A-9).





Adhesive tape: Double-sided tape [8 mm (0.31 in) width, 25 mm (0.98 in) length and 1.2 mm (0.047 in) thickness.

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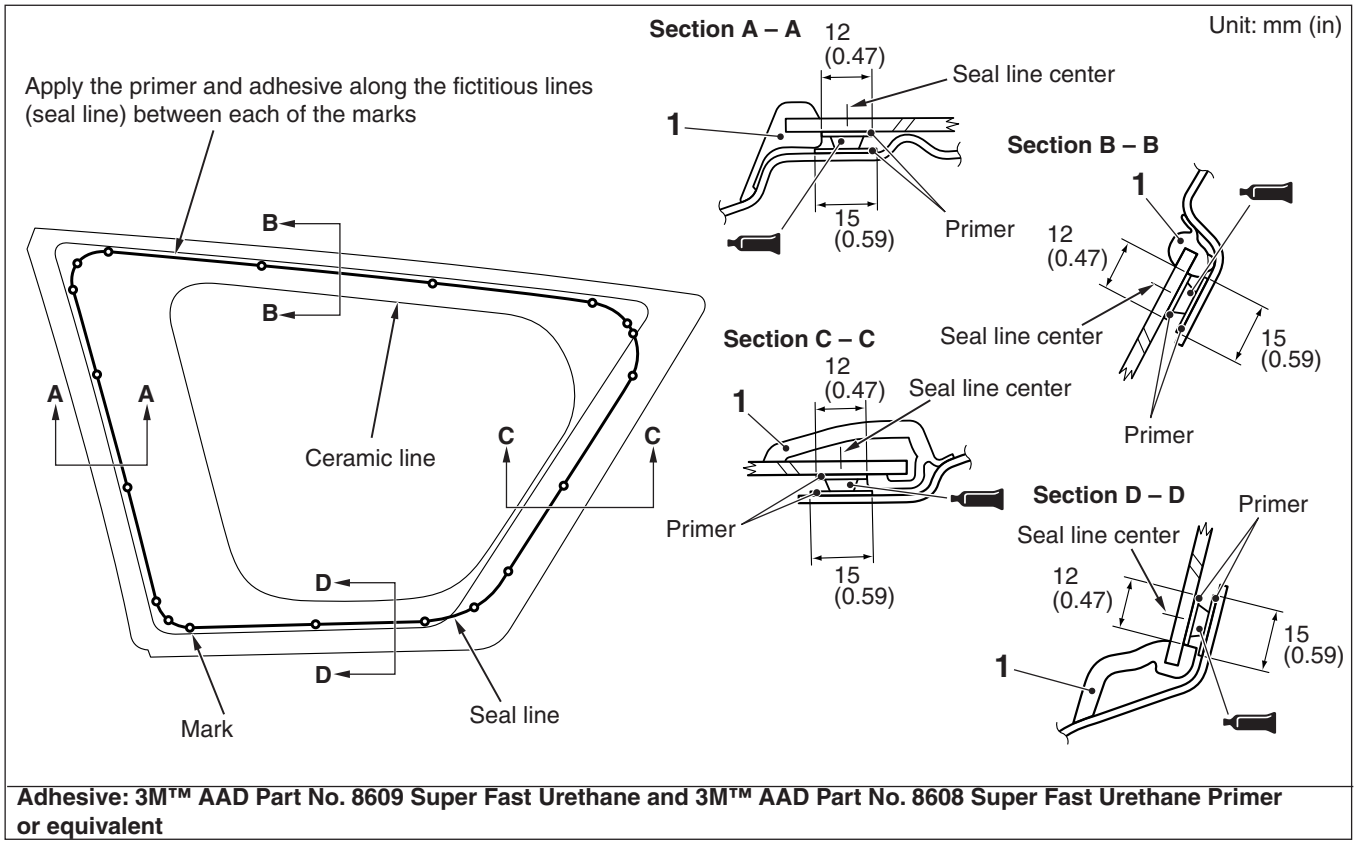


Adhesive: 3M™ AAD Part No. 8609 Super Fast Urethane and 3M™ AAD Part No. 8608 Super Fast Urethane Primer or equivalent

AC702863AB

Removal steps

<<A>> >>B<< 1. Quarter window glass assembly
>>A<< 2. Clip
>>A<< 3. Fastener

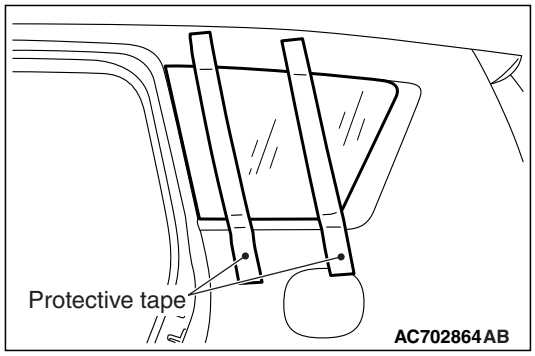
Required Special Tool:

- MB990480: Glass Holder

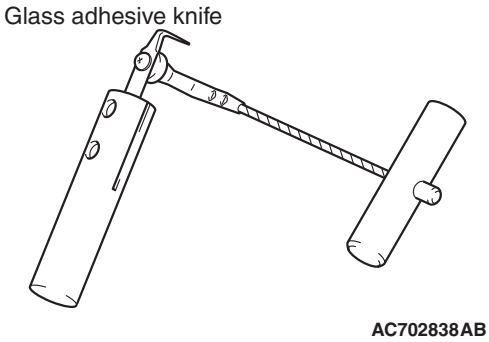
REMOVAL SERVICE POINT

<<A>> QUARTER WINDOW GLASS ASSEMBLY REMOVAL

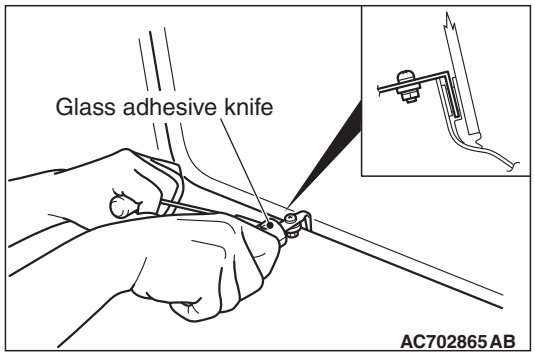
1. In order to protect the body (paint surface), apply the protective tape to all body areas around the installed quarter window glass assembly.
2. Stick the protective tape to avoid the quarter window glass assembly from dropping.



TSB Revision



3. Use glass adhesive knife to cut away adhesive.

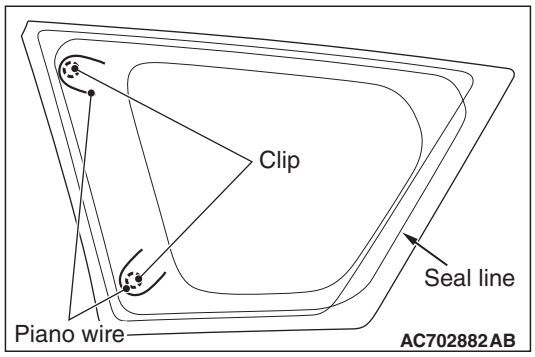


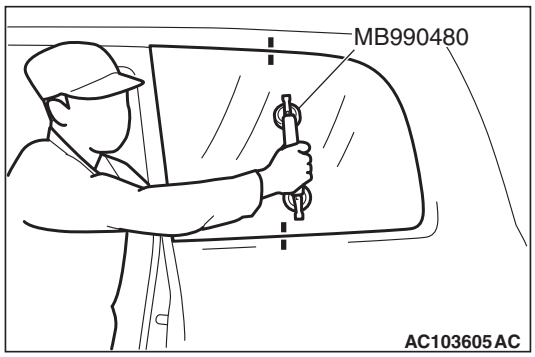
4. Working inside the vehicle, insert the tip of a windshield knife into the sealed part of the quarter window glass assembly.

⚠ CAUTION

If you lever the windshield knife, the quarter window glass assembly may be damaged.

5. Holding the tip of the windshield knife and the body flange at right angles, align the blade of the windshield knife with the body flange, and pull the blade parallel to the body flange to separate the adhesive.
6. Use a piano wire to separate the clips.



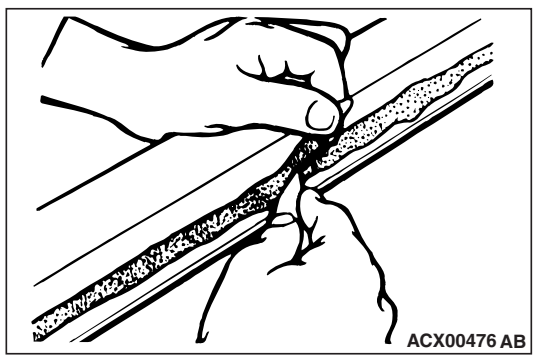


7. Make mating marks on the quarter window glass assembly and body, and use the special tool MB990480 to remove the quarter window glass assembly.

⚠ CAUTION

- **Be careful not to remove more adhesive than is necessary.**
- **Be careful also not to damage the paint on the body surface with the knife. If the paint is damaged, repair the damaged area with touch-up paint.**

8. 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.
9. 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.

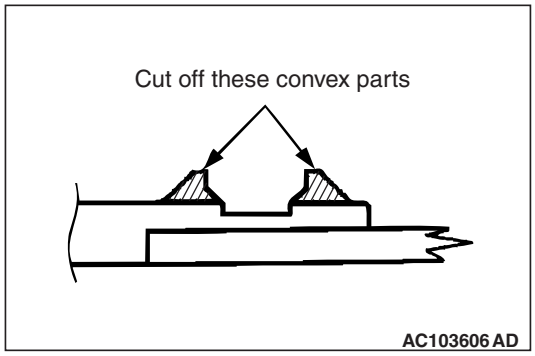
10. When reusing the quarter window glass, remove the adhesive still adhering to the quarter window glass, and clean with 3M™ AAD Part number 8906 or equivalent.
11. Clean the body side in the same way.

INSTALLATION SERVICE POINTS

>>A<< FASTENER/CLIP INSTALLATION

1. If the quarter window glass assembly is reused, follow the procedure below:
   (1) Engage the clip with the body.
   (2) Separate the convex portion of the quarter window glass assembly clip installation position.

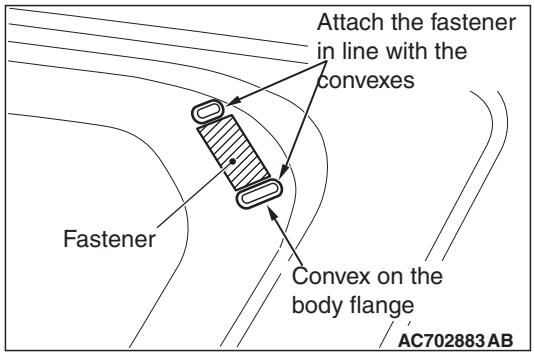
   NOTE: If the quarter window glass assembly is installed without separating the convex portion of the quarter window glass assembly clip installation position, improper installation may result.



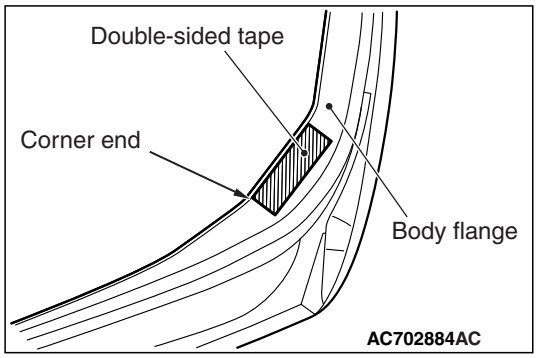
⚠ CAUTION

Before the next operation, leave the decreased parts for 3 minutes or more to dry. Do not touch the degreased parts.

2. Use 3M™AAD Part number 8906 or equivalent to degrease the inside circumference of the quarter window glass assembly and the body flanges.
3. Install the fasteners to the specified positions on the body flange.
4. Install the fasteners to the quarter window glass assembly at the positions which correspond to the fasteners on the body flange.



5. Apply the double-sided tape to the specified position on the body flange.



>>B<< QUARTER WINDOW GLASS ASSEMBLY INSTALLATION

⚠ CAUTION

Leave the degreased parts for 3 or more minutes to dry well, before starting on the next step. Do not touch the degreased parts.

1. Use 3M™ AAD Part number 8906 or equivalent to degrease the inside and outside of the quarter window glass and the body flanges.
2. Install the quarter window glass using the same procedure as for the windshield installation (Refer to P.42A-15).

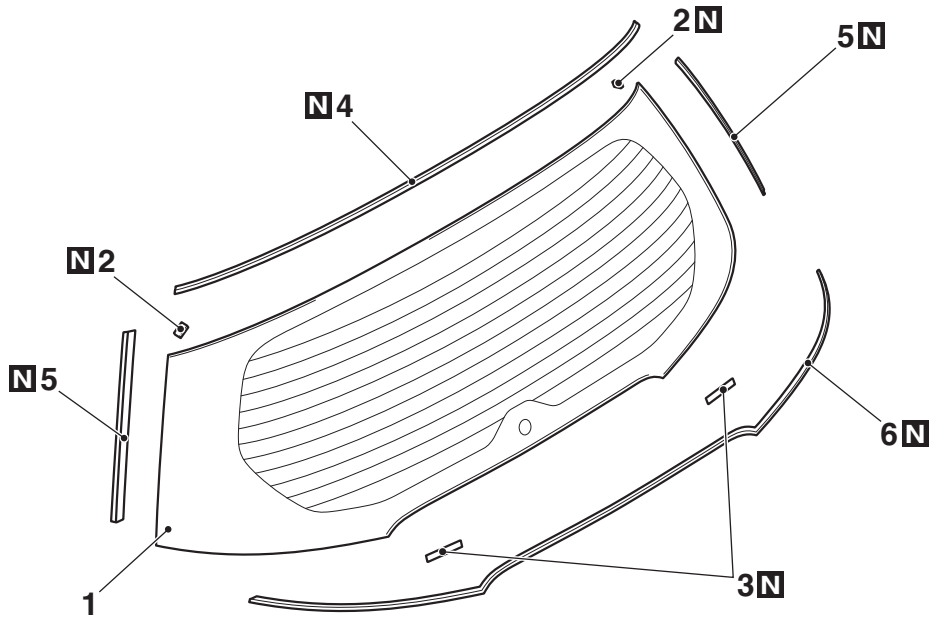
LIFTGATE WINDOW GLASS

REMOVAL AND INSTALLATION

M1422003700891

Pre-removal and post-installation operation

- Rear wiper blade and arm assembly removal and installation (Refer to GROUP 51, Rear Wiper and Washer P.51-101).
- Liftgate spoiler assembly removal and installation (Refer to GROUP 51, Liftgate Spoiler P.51-24).
- Liftgate trim removal and installation (Refer to GROUP 52A, Liftgate Trim P.52A-14).



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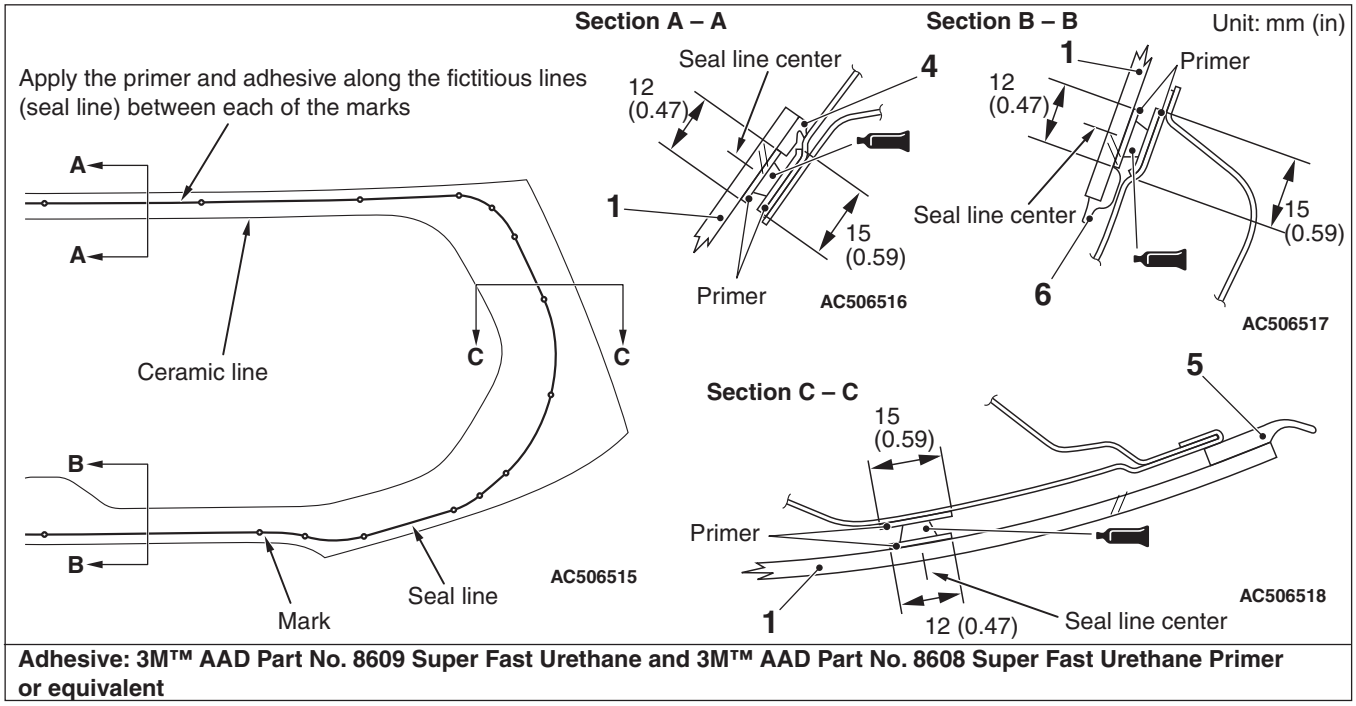


Adhesive: 3M™ AAD Part No. 8609 Super Fast Urethane and 3M™ AAD Part No. 8608 Super Fast Urethane Primer or equivalent

AC507084 AC

Removal steps

- Harness connector

<<A>> >>B<< 1. Liftgate window glass
>>A<< 2. Fastener

Removal steps (Continued)

>>A<< 3. Glass stopper
>>A<< 4. Liftgate dam upper
>>A<< 5. Liftgate dam side
>>A<< 6. Liftgate dam lower

REMOVAL SERVICE POINT

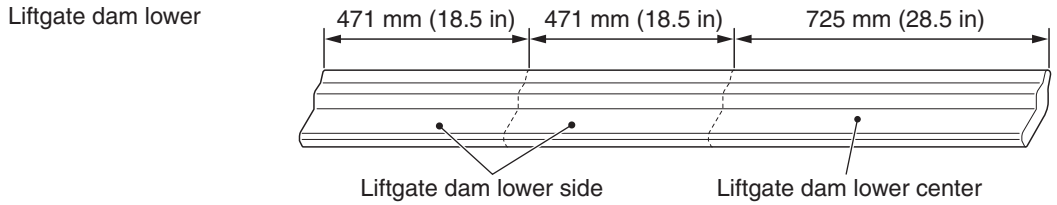
<<A>> LIFTGATE WINDOW GLASS REMOVAL

Remove the liftgate window glass by the same procedure as for the windshield. (Refer to P.42A-15.)

NOTE: Use a piano wire to remove the liftgate window glass.

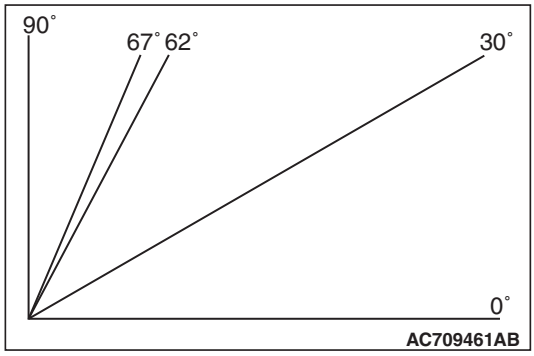
INSTALLATION SERVICE POINTS

>>A<< LIFTGATE DAM LOWER/LIFTGATE DAM SIDE/LIFTGATE DAM UPPER/GLASS STOPPER/FASTENER INSTALLATION



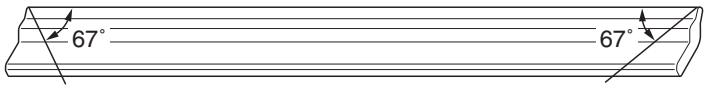
AC707890 AB

1. As shown in the figure, divide the liftgate dam lower into three pieces.
   - Liftgate dam lower center [725 mm (28.5 inches)]
   - Liftgate dam lower side (LH, RH) [471 mm (18.5 inches)]



2. By referring to the illustration, cut the end of the liftgate dam lower (liftgate dam lower center, liftgate dam lower side) and liftgate dam side.

Liftgate dam lower center



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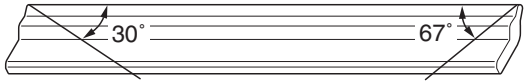
3. Cut both ends of the liftgate dam lower center to 67° .

Liftgate dam lower side (LH)



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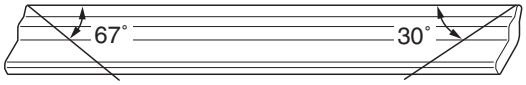
4. Cut both ends of the liftgate dam lower side (LH) to 30° and 67° .

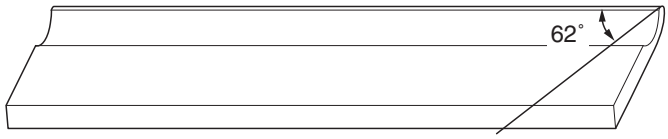
Liftgate dam lower side (RH)



AC707893AB

5. Cut both ends of the liftgate dam lower side (RH) to 67° and 30° .

Liftgate dam side (LH)



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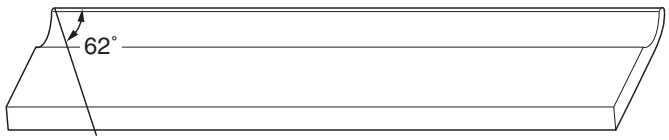
6. Cut one side of the liftgate dam side (LH) end to 62° .

Liftgate dam side (RH)



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7. Cut one side of the liftgate dam side (RH) end to 62° .

TSB Revision

⚠ CAUTION

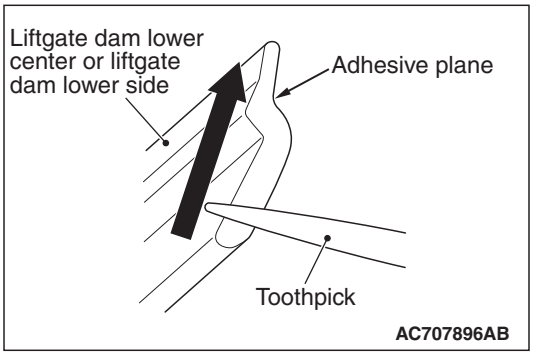
- **When adhering the liftgate dam lower center and the liftgate dam lower side, always use the adhesive of specified brand name (otherwise, a blushing occurs to the liftgate dam lower center and the liftgate dam lower side).**
- **When adhering, do not move the adhered objects for approximately 5 seconds.**
- **Do not apply excessive amount of adhesive to the application area (if excessive amount is applied, it takes longer for the adhesive to be hardened).**
- **Ensure that there is no level difference at the adhesion area.**
- **Ensure that the adhesive does not extrude on the adhesion area surface.**

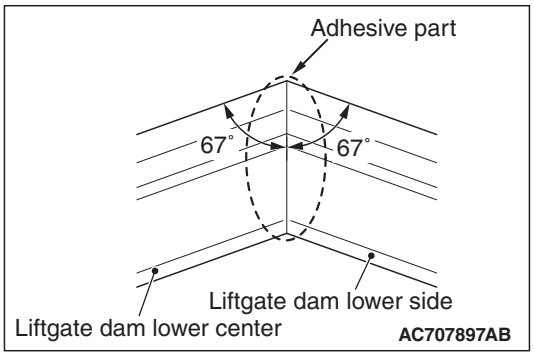
8. To both ends of the liftgate dam lower center, adhere the liftgate dam lower side (LH, RH) according to the procedure below.

   NOTE: When the liftgate dam lower center and the liftgate dam lower side (LH, RH) are attached together, the liftgate dam lower is complete.

   (1) To the 67° -end of the liftgate dam lower center and the 67° -end of the liftgate dam lower side, apply the adhesive.

   NOTE: When applying the adhesive to the adhesion surfaces of the liftgate dam lower center and the liftgate dam lower side (LH, RH), the task becomes easier if a tooth pick is used.





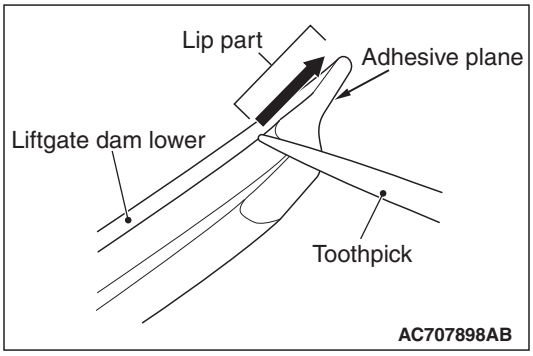
   (2) Attach the 67° -end of the liftgate dam lower center with the 67° -end of the liftgate dam lower side.

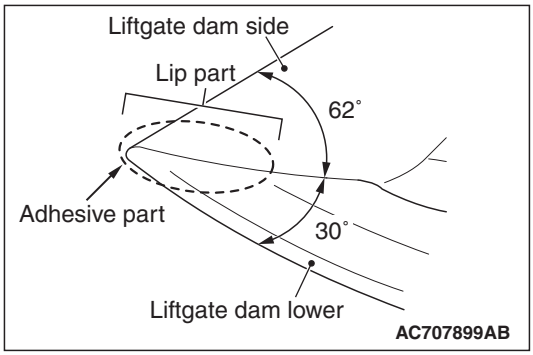
⚠ CAUTION

- **When adhering the liftgate dam lower and the liftgate dam side, always use the adhesive of specified brand name (otherwise, a blushing occurs to the liftgate dam lower and the liftgate dam side).**
- **When adhering, do not move the adhered objects for approximately 5 seconds.**
- **Do not apply excessive amount of adhesive to the application area (if excessive amount is applied, it takes longer for the adhesive to be hardened).**
- **Ensure that there is no level difference at the adhesion area.**
- **Ensure that the adhesive does not extrude on the adhesion area surface.**

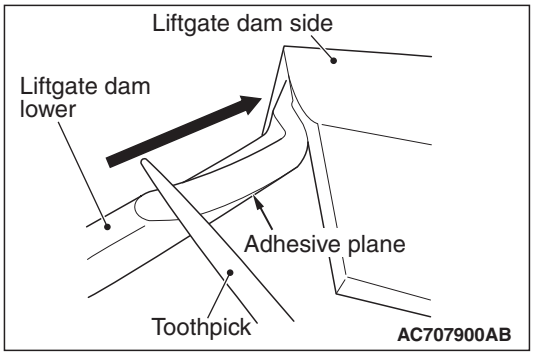
9. To both ends of the liftgate dam lower, adhere the liftgate dam side (LH, RH) according to the procedure below.
   (1) Apply the adhesive only to the lip of the liftgate dam lower 30° -end.

   NOTE: When applying the adhesive to the adhesion surfaces of the liftgate dam lower and the liftgate dam side (LH, RH), the task becomes easier if a tooth pick is used.

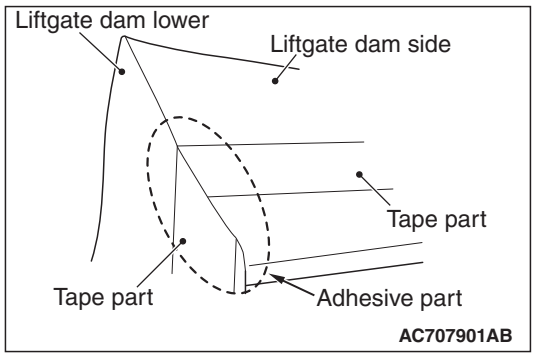




   (2) Attach together the lip of liftgate dam lower 30° -end with the lip of liftgate dam side 62° -end (ensure that there is no level difference at the lip adhesion area).



   (3) After adhering the lip of the liftgate dam lower 30° -end with the lip of the liftgate dam side 62° -end, apply the adhesive to the remaining area.

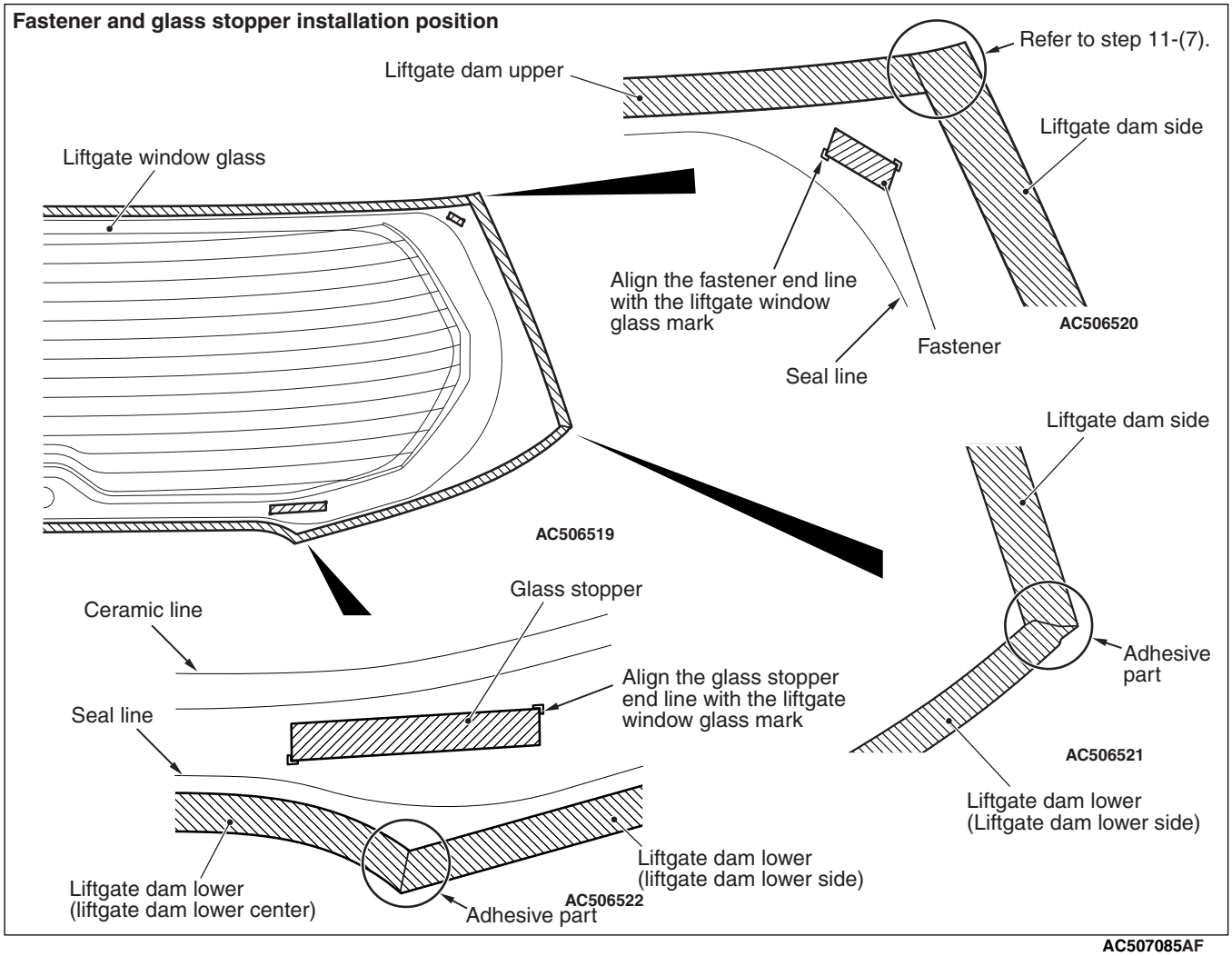


(4) Adhere the remaining area (ensure that there is no level difference at the tape part).

⚠ CAUTION

Before the next operation, leave the degreased parts for 3 minutes or more to dry. Do not touch the degreased parts.

10. Use 3M™AAD Part number 8906 or equivalent to degrease the inside circumference of the liftgate window glass and the liftgate flanges.



11. Install the liftgate dam lower, liftgate dam side, and liftgate dam upper according to the procedures below.
    (1) Peel the backing paper of the liftgate dam lower.
    (2) Adhere the liftgate dam lower to the liftgate window glass.

NOTE: The liftgate dam lower can be attached cleanly if the liftgate dam lower is attached to the liftgate window glass starting from the adhesion areas of the liftgate dam lower center and the liftgate dam lower side (LH, RH) located at the liftgate dam lower.

(3) Peel the backing paper of the liftgate dam side.

(4) Adhere the liftgate dam side to the liftgate window glass.

NOTE: The liftgate dam side can be attached cleanly if the liftgate dam side is attached to the liftgate window glass starting from the adhesion areas of the liftgate dam lower and the liftgate dam side (LH, RH) located at the liftgate dam lower.

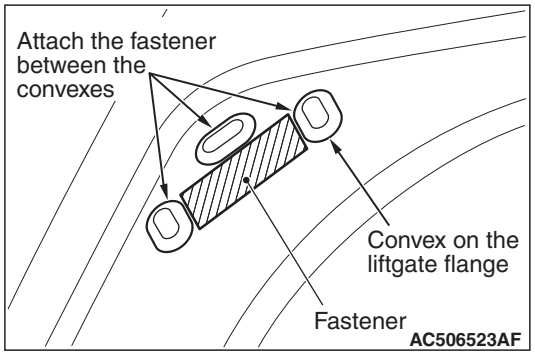
(5) Peel the backing paper of the liftgate dam upper.

(6) Adhere the liftgate dam upper to the liftgate window glass.

(7) When the liftgate dam side's upper end section is protruding from the liftgate dam upper's upper end section, cut off the upper end section of the liftgate dam side so that the liftgate dam side's upper end section becomes leveled with the liftgate dam upper's upper end section.

12. Install the glass stopper and fastener to the specified positions.

13. Correctly install the fasteners to the specified positions on the liftgate flange.



>>B<< LIFTGATE WINDOW GLASS ASSEMBLY INSTALLATION

1. Apply the primer and adhesive.
2. Install the liftgate window glass by the same procedure as for the windshield (Refer to P.42A-15).

DOOR

SPECIFICATIONS

SERVICE SPECIFICATION

M1421000300749

Item		Standard value
Door inside handle lock knob stroke mm (in) [Target value: mm (in)]		13.7 –15.0 (0.54 –0.59) [14.7 (0.58)]
Door inside handle play mm (in) [Target value: mm (in)]	Driver's side	10.0 –23.7 (0.39 –0.93) [17.0 (0.67)]
	Except for driver's side	5.0 –18.7 (0.2 –0.74) [12.0 (0.47)]
Door outside handle play mm (in) [Target value: mm (in)]		0.1 –5.2 (0.004 –0.2) [2.5 (0.1)]
Power window operation current A		7 ± 1 [Power supply voltage 14.5 ± 0.5V at 25° C (77° F)]

SEALANT

M1421000500312

Item	Specified sealant	Remark
Waterproof film	3 M™AAD Part No. 8633 or equivalent	Ribbon sealer

COMPONENT IDENTIFICATIONS

M1421005400343

<DOOR CHECK>

Applicable location		Identification mark
Front door	Left door	55L
	Right door	55R
Rear door	Left door	58L
	Right door	58R

<DOOR OPENING OUTER WEATHERSTRIP>

Applicable side	Identification clip color
Left door	White
Right door	Pink

GENERAL INFORMATION

M1423000100440

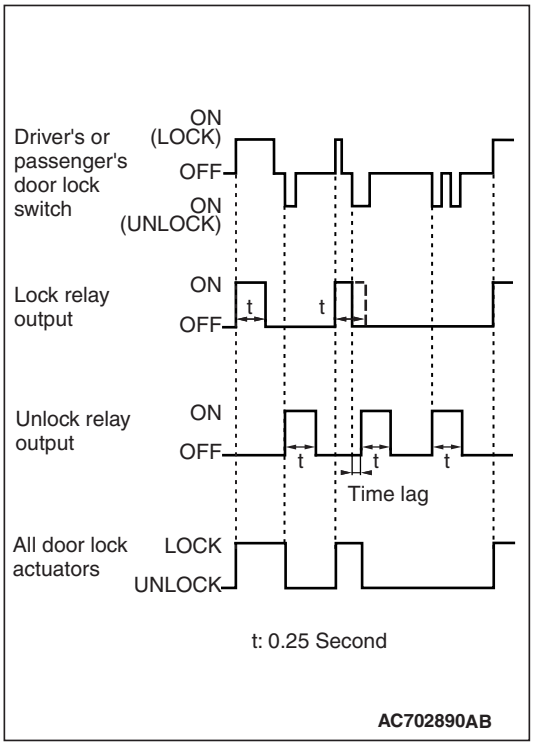
CENTRAL DOOR LOCKING SYSTEM

The central door locking system operates the door lock actuator to lock or unlock the doors and liftgate using the door lock switch built into the front power window (main or sub RH) switch. The system has the following operations and features:

- All doors and liftgate can be locked using the door lock switch built into the front power window (main or sub RH) switch.
- The key reminder function automatically unlocks all doors and liftgate when door lock operation is performed and the front doors are opened while the key is inserted into the ignition switch.

CENTRAL DOOR LOCKING OPERATION

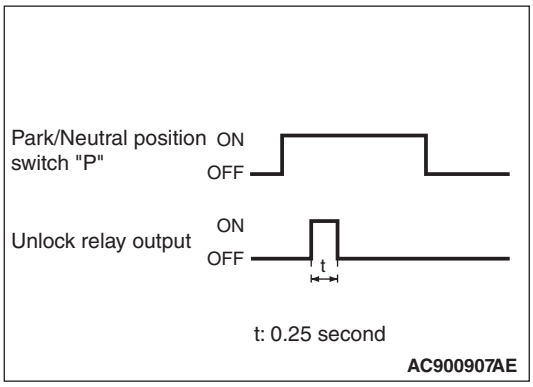
The function that allows the driver's door to be opened by pulling the driver's door inside handle even when the driver's door inside lock knob is in the lock position is called "override function".



When the door is locked by the driver's or passenger's door lock switch, the ETACS-ECU operates its door lock relay and passes a current through the door lock actuators of all the doors (including the liftgate) for 0.25 second to lock all the doors (including the liftgate).
When the door is unlocked by the driver's or passenger's door lock switch, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all the doors (including the liftgate) for 0.25 second to unlock all the doors (including the liftgate).
When the door is locked and unlocked by driver's or passenger's door lock switch consecutively, the ETACS-ECU operates its door lock relay and passes a current through the door lock actuators of all the doors (including the liftgate) for 0.25 second to lock all the doors (including the liftgate). Then, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all the doors (including the liftgate) for 0.25 second to unlock all the doors (including the liftgate). Due to this, there may be a time lag between the driver's or passenger's door lock switch actuation and the time when all the doors (including the liftgate) are unlocked.

SELECTOR "P" POSITION-LINKED DOOR UNLOCKING FUNCTION

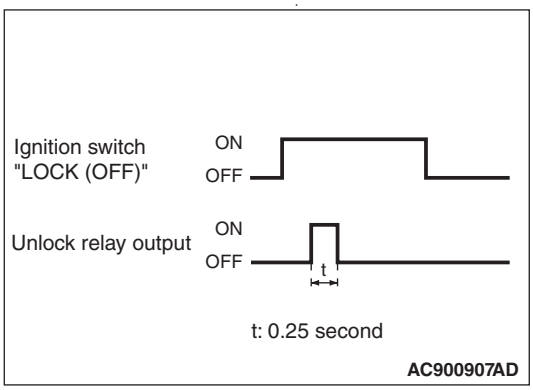
When the selector lever is shifted to the "P" (parking) position with the ignition switch turned ON, all the doors (including the liftgate) will be unlocked automatically, improving passengers' convenience for getting out. Using a customization function, the selector "P" position-linked door unlocking function can be switched (Refer to P.42A-138).



When the selector lever is shifted to the P position with the ignition switch turned ON, the transaxle range switch "P" turns ON, ETACS-ECU turns the unlock relay output ON for 0.25 seconds to unlock all the doors (including the liftgate).

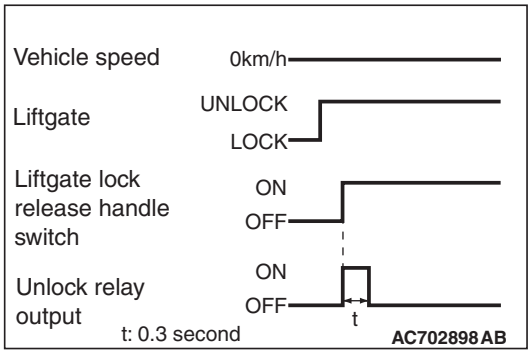
IGNITION SWITCH "LOCK (OFF)" POSITION-LINKED DOOR UNLOCKING FUNCTION

- When the ignition switch is turned to the " LOCK (OFF)" position, all the doors will be unlocked automatically, improving passengers' convenience for getting out. Using a customization function, the ignition switch " LOCK (OFF)" position-linked door unlocking function can be changed (Refer to P.42A-138).



When the ignition switch is turned to the " LOCK (OFF)" position, ETACS-ECU turns the unlock relay output ON for 0.25 second to unlock all the doors.

LIFTGATE OPENER CONTROL FUNCTION



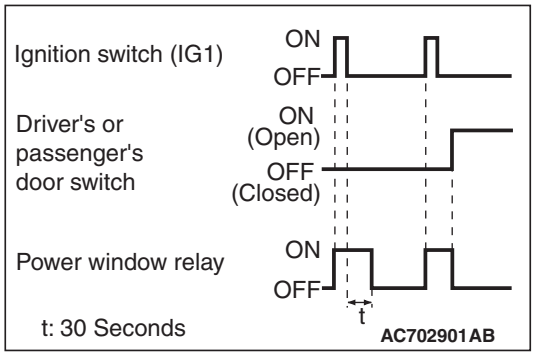
When the liftgate lock release handle is operated to open the liftgate (the liftgate lock release handle switch turns ON) while the vehicle is parked and the liftgate is unlocked, ETACS-ECU turns the unlock relay output ON for 0.3 seconds, thus the liftgate can be opened by the liftgate lock release handle.

POWER WINDOWS

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:

- A power window lock switch on the power window main switch prevents the door window glass from opening/closing with the front passenger's and rear power window sub switch.
- The power windows can be opened/closed for 30 seconds after the ignition switch is turned OFF (timer expires if the front door LH or RH is opened).
- The power window main switch contains a one-touch switch that will automatically open and close the driver's side door window only.
- With the safety mechanism, the power window main switch detects the pinching of obstacle such as a hand or a head when the driver's door window glass is raised. Then, the mechanism lowers the driver's door window glass for approximately 150 mm (6.0 inches). The safety mechanism is activated when the power window main switch is operated by auto-closing operation (the status when the hand is released from the switch knob after auto-closing operation). The safety mechanism operates as follows.
  - At the manual-closing operation or the continuous auto-closing operation (keep pulling up the switch knob) of the power window switch, the door window glass can be forcibly closed without safety mechanism activation even when the obstacle is detected to be pinched.
  - To secure the safety when the power window switch manual-closing or auto-closing operation is performed accidentally during the safety mechanism activation, the power window switch manual-closing and auto-closing operations are prohibited for 3 seconds after the activation of safety mechanism due to the obstacle pinching detection.

POWER WINDOW TIMER FUNCTION



Even after the ignition is switched off, the ETACS-ECU keeps the power window relay activated for approximately 30 seconds, enabling raising or lowering of the power windows by using the power window switches. After approximately 30 seconds, the power window relay is deactivated.
During this timed operation, if the driver’s or passenger’s doors are opened, the power window relay is deactivated from that moment..

CENTRAL DOOR LOCKING SYSTEM DIAGNOSIS

TROUBLESHOOTING STRATEGY

M1427002100084

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points, Troubleshooting Contents P.00-7.

TROUBLE SYMPTOM CHART <CENTRAL DOOR LOCKING SYSTEM>

M1427001800808

⚠ CAUTION

During diagnosis, a diagnostic trouble code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, check all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

Trouble symptom	Inspection procedure number	Reference page
Central door locking system does not work at all.	A-1	P.42A-35
Central door locking system does not operate even when door lock switch of power window main switch operated (door lock switch of front power window sub switch operate normally).	A-2	P.42A-38
Central door locking system does not operate even when door lock switch of front power window sub switch operated (door lock switch of power window main switch operate normally).	A-3	P.42A-42
A door or a liftgate cannot be locked or unlocked by the central door locking system.	A-4	P.42A-47
The liftgate does not open.	A-5	P.42A-61
Selector "P" position-linked door unlock function does not operate.	A-6	P.42A-67
Ignition "LOCK (OFF)" position-linked door unlock function does not operate.	A-7	P.42A-67

INPUT SIGNAL CHART <CENTRAL DOOR LOCKING SYSTEM>

M1427005100072

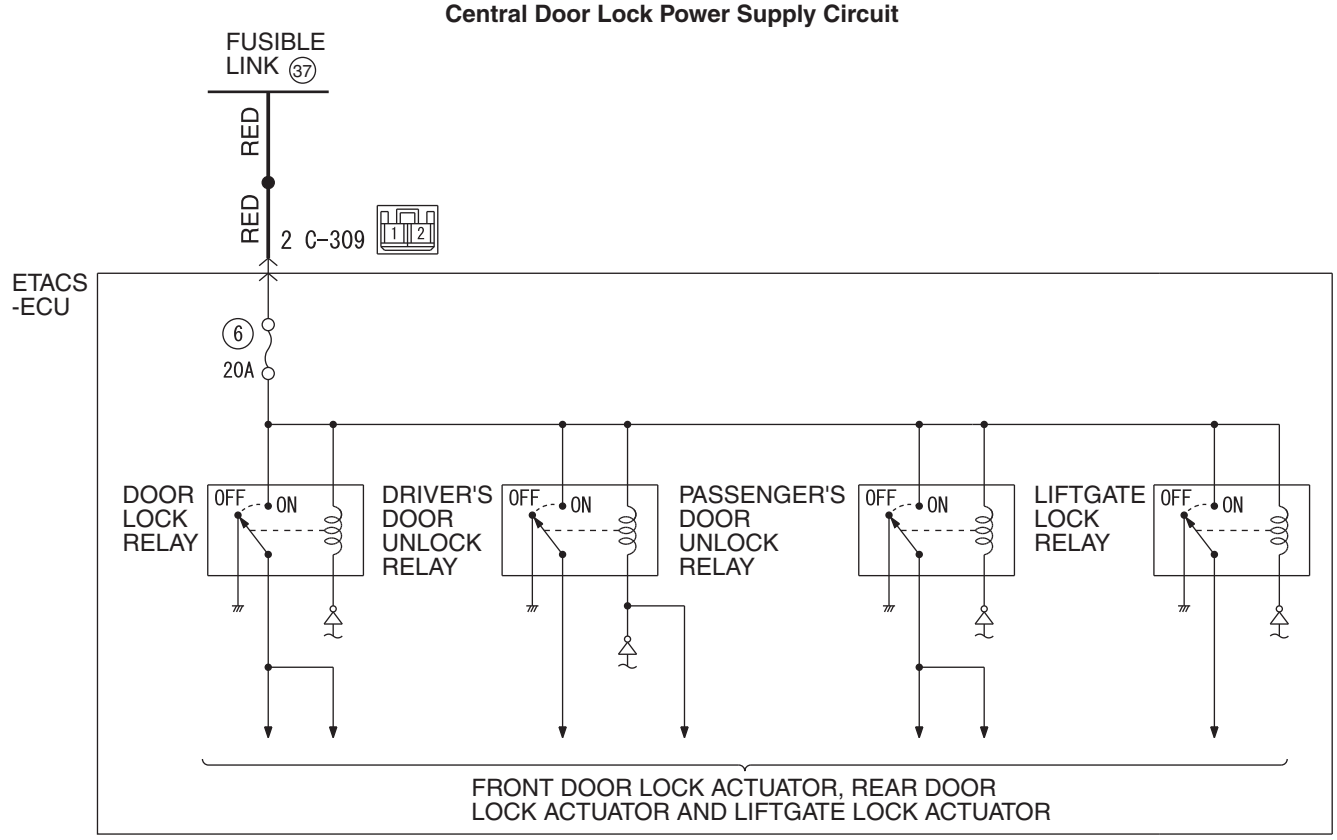
Trouble symptom	Inspection procedure number	Reference page
The liftgate lock release handle signal is not received.	B-1	P.42A-73

SYMPTOM PROCEDURES <CENTRAL DOOR LOCKING SYSTEM>

INSPECTION PROCEDURE A-1: Central Door Locking System does not Work at All.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Central Door Lock Power Supply Circuit



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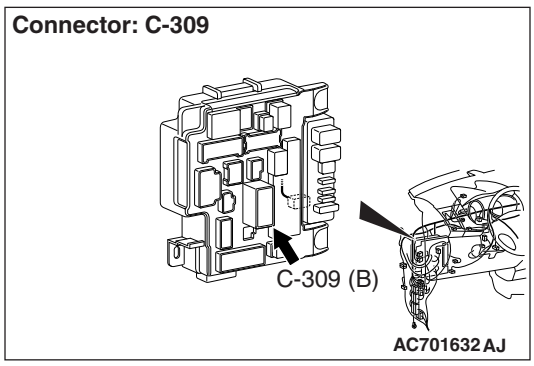

CIRCUIT OPERATION

- The ETACS-ECU controls the central door lock system, locking or unlocking all the doors by activating the central door lock relay (built into the ETACS-ECU). The ETACS-ECU uses inputs from the following components:
  - Door lock actuator
  - Door lock key cylinder switch
  - Door lock switch, which is incorporated in the power window main switch or power window sub switch

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

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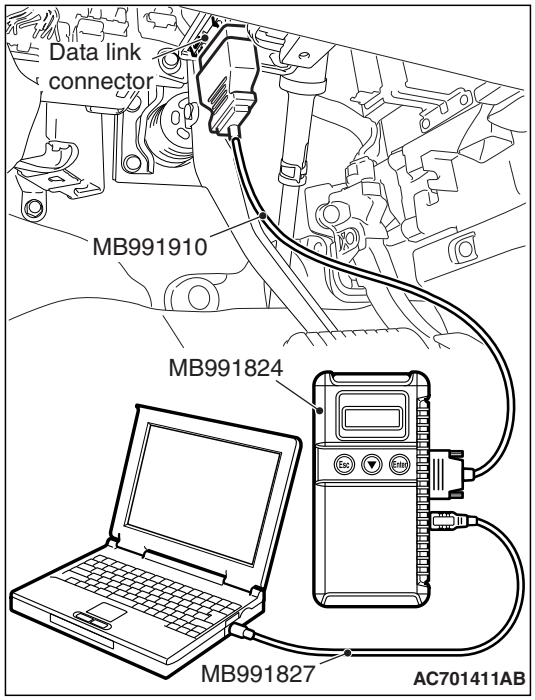
DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



STEP 1. Using scan tool MB991958, check data list.
Check the input signals from the front door lock actuators.

⚠ 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. Refer to GROUP 42B, Diagnosis "How to connect the Scan Tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check the ETACS data list.
- Set the driver's door to "UNLOCK."

Item No.	Item name	Normal condition
Item 271	Dr door unlock switch	Unlock

- Set the front passenger's door to "UNLOCK." <vehicles with KOS>

Item No.	Item name	Normal condition
Item 272	As door unlock switch	Unlock

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are normal conditions displayed on the "Dr door unlock switch" and "As door unlock switch"?
YES : Go to Step 2.
NO : Refer to GROUP 54A, Inspection Procedure 4: ETACS-ECU does not receive any signal from the front door lock actuator P.54A-806.

STEP 2. Check ETACS-ECU connector C-309 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-309 in good condition?
YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the central door locking system works normally.

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STEP 3. Check the wiring harness between ETACS-ECU connector C-309 (terminal 2) and fusible link (37).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-309 (terminal 2) and fusible link (37) in good condition?

YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the central door locking system works normally.

STEP 4. Retest the system.

Check that the central door locking system works normally.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

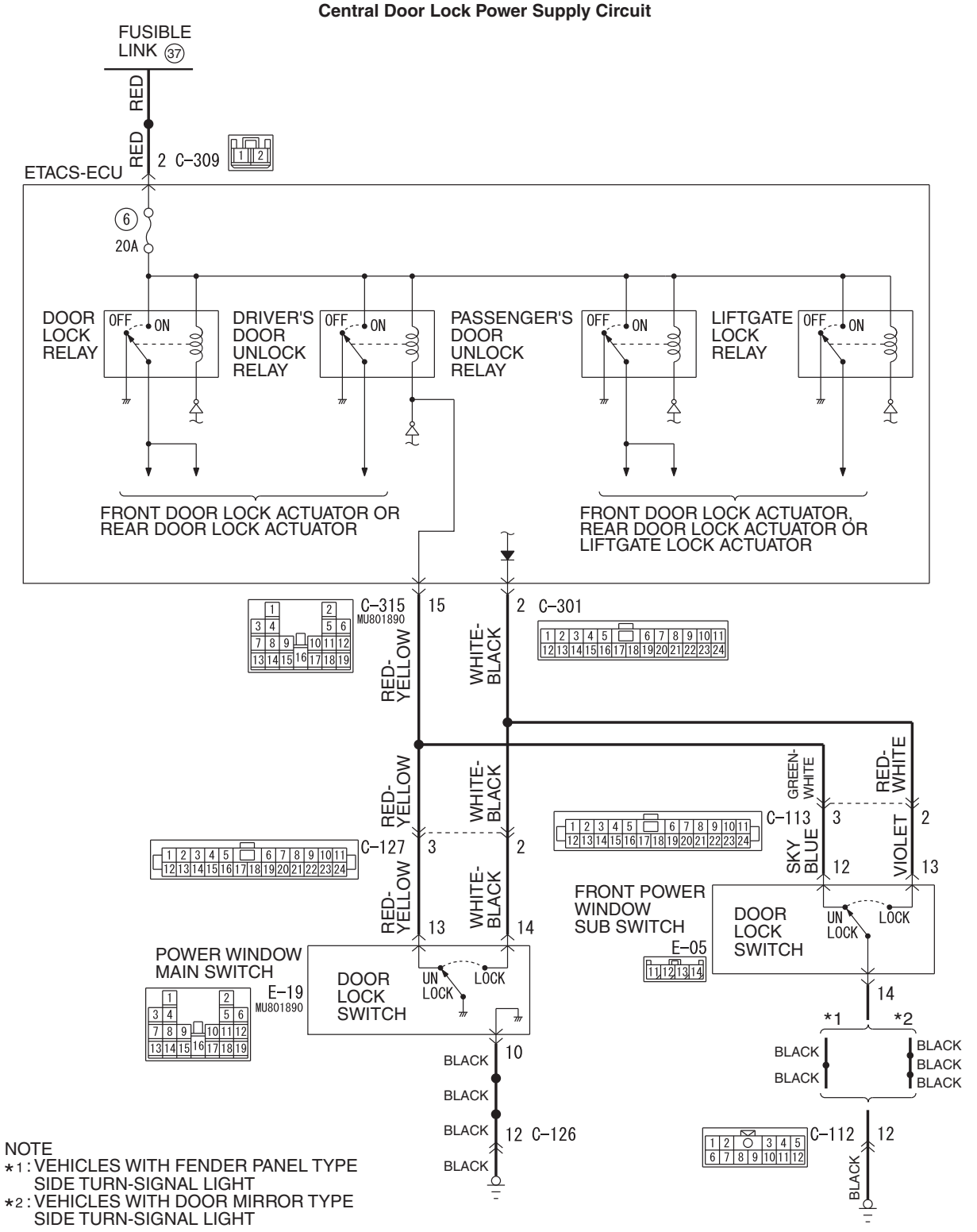
NO : Replace the ETACS-ECU. Check that the central door locking system normally.

INSPECTION PROCEDURE A-2: Central Door Locking System does not Operate even when Door Lock Switch of Power Window Main Switch Operated (Door Lock Switch of Front Power Window Sub Switch Operates Normally).

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Central Door Lock Power Supply Circuit



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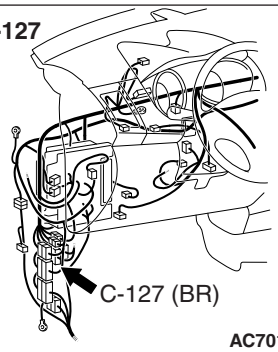
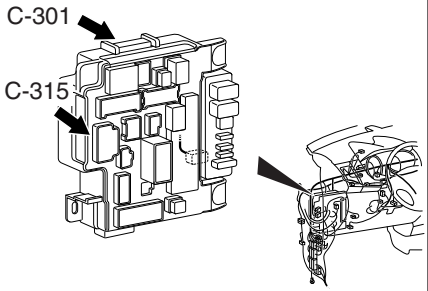
TSB Revision

Connector: C-127



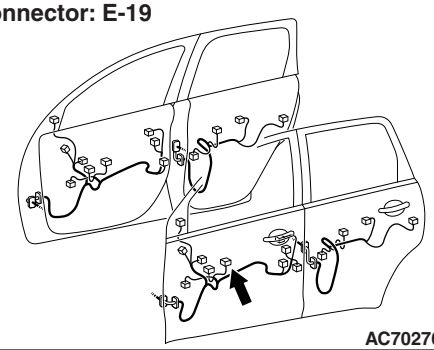
AC701918AC

Connectors: C-301, C-315



AC701632 AX

Connector: E-19



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CIRCUIT OPERATION

- The ETACS-ECU controls the central door lock system, locking or unlocking all the doors by activating the central door lock relay (built into the ETACS-ECU). The ETACS-ECU uses inputs from the following components:
  - Door lock actuator
  - Door lock switch, which is incorporated in the power window main switch or power window sub switch

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The power window main switch may be defective

DIAGNOSTIC PROCEDURE

STEP 1. Checking central door unlocking operation
Check that the central door locking system works normally.

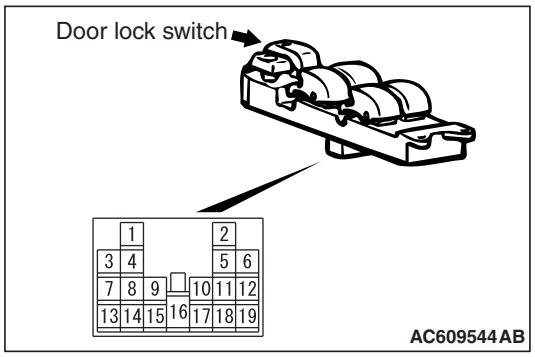
Q: Is the check result normal?

YES : Go to Step 2.
NO : Refer to Inspection procedure A-1 "Central door locking system does not work at all P.42A-35."

STEP 2. Check power window main switch connector E-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-19 in good condition?

YES : Go to Step 3.
NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.



STEP 3. Check the power window main switch (door lock switch).

Remove the power window main switch. Refer to P.42A-142.

Switch position	Tester connection	Specified condition
LOCK	14 –10	Continuity exists (2 Ω or less)
UNLOCK	13 –10	Continuity exists (2 Ω or less)

Q: Does the power window main switch work normally?

YES : Go to Step 4.

NO : Replace the power window main switch. Verify that all the doors can be locked and unlocked normally.

STEP 4. Check the wiring harness between power window main switch connector E-19 (terminal No. 10) and ground.

- Check the ground line for open circuit.

NOTE: Also check intermediate connector C-126 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-126 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection.

Q: Is the wiring harness between power window main switch connector E-19 (terminal No. 10) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 5. Check ETACS-ECU connector C-301, C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector C-301, C-315 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

STEP 6. Check the wiring harness between power window main switch connector E-19 (terminal No. 13) and ETACS-ECU connector C-315 (terminal No. 15), between power window main switch connector E-19 (terminal No. 14) and ETACS-ECU connector C-301 (terminal No. 2).

- Check the power supply line for open.

NOTE: Also check intermediate connector C-127 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-127 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness between power window main switch connector E-19 (terminal No. 13) and ETACS-ECU connector C-315 (terminal No. 15), between power window main switch connector E-19 (terminal No. 14) and ETACS-ECU connector C-301 (terminal No. 2) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the central door locking system works normally.

STEP 7. Retest the system.

Check that the central door locking system works normally.

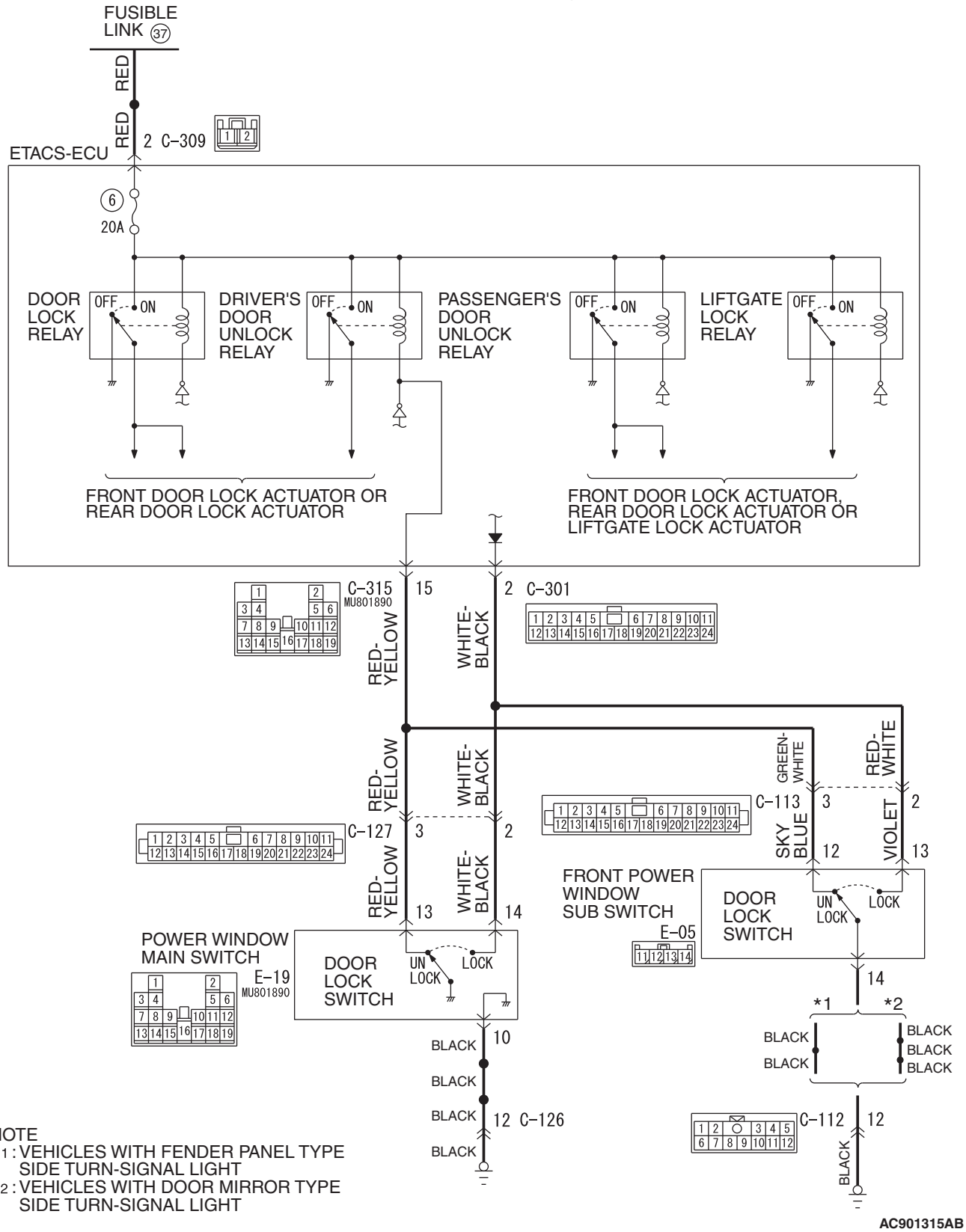
Q: Is the check result normal?

YES : No action is necessary and testing is complete.

NO : Replace the power window main switch. Check that the central door locking system normally.

INSPECTION PROCEDURE A-3: Central Door Locking System does not Operate even when Door Lock Switch of Front Power Window Sub Switch Operated (Door Lock Switch of Power Window Main Switch Operates Normally).

Central Door Lock Power Supply Circuit



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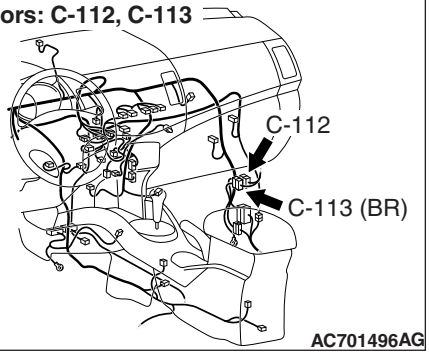
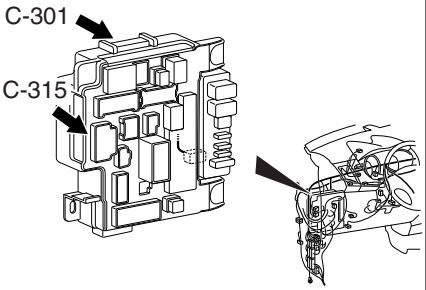
TSB Revision

Connectors: C-112, C-113



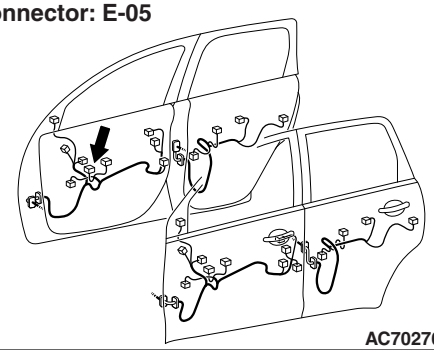
AC701496AG

Connectors: C-301, C-315



AC701632 AX

Connector: E-05



AC702763AG

CIRCUIT OPERATION

- The ETACS-ECU controls the central door lock system, locking or unlocking all the doors by activating the central door lock relay (built into the ETACS-ECU). The ETACS-ECU uses inputs from the following components:
  - Door lock actuator
  - Door lock switch, which is incorporated in the power window main switch or power window sub switch

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front power window sub switch may be defective

DIAGNOSTIC PROCEDURE

STEP 1. Checking central door unlocking operation

Check that the central door locking system works normally.

Q: Is the check result normal?

YES : Go to Step 2.

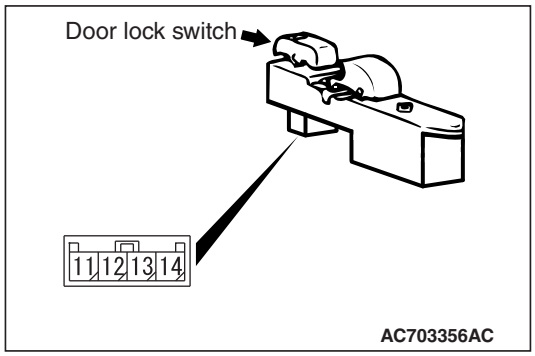
NO : Refer to Inspection procedure A-1 "Central door locking system does not work at all P.42A-35."

STEP 2. Check front power window sub switch connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front power window sub switch connector E-05 in good condition?

YES : Go to Step 3.

NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.



STEP 3. Check the front power window sub switch (door lock switch).

Remove the front power window sub switch. Refer to P.42A-142.

Switch position	Tester connection	Specified condition
LOCK	13 –14	Continuity exists (2 Ω or less)
UNLOCK	12 –14	Continuity exists (2 Ω or less)

Q: Does the front power window sub switch work normally?

YES : Go to Step 4.

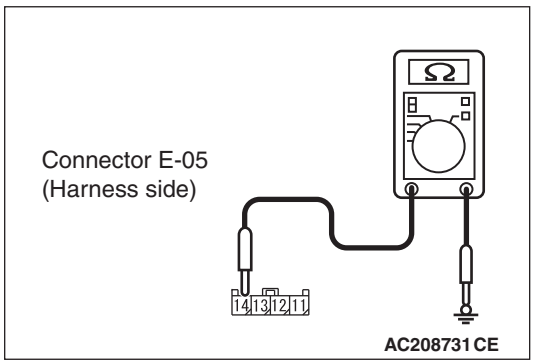
NO : Replace the front power window sub switch. Verify that all the doors can be locked and unlocked normally.

STEP 4. Check the ground circuit to the front power window sub switch. Measure the resistance at front power window sub switch connector E-05.

(1) Disconnect front power window sub switch connector E-05 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between terminal 14 and ground.

- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between front power window sub switch connector E-05 (terminal No. 14) and ground.

- Check the ground line for open circuit.

NOTE: Also check intermediate connector C-112 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-112 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front power window sub switch connector E-05 (terminal No. 14) and ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 6. Check ETACS-ECU connector C-301, C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector C-301, C-315 in good condition?

YES : Go to Step 7.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

STEP 7. Check the wiring harness between power window sub switch connector E-05 (terminal No. 12) and ETACS-ECU connector C-315 (terminal No. 15), between power window sub switch connector E-05 (terminal No. 13) and ETACS-ECU connector C-301 (terminal No. 2).

- Check the power supply line for open circuit.

NOTE: Also check intermediate connector C-113 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-113 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness between power window sub switch connector E-05 (terminal No. 12) and ETACS-ECU connector C-315 (terminal No. 15), between power window sub switch connector E-05 (terminal No. 13) and ETACS-ECU connector C-301 (terminal No. 2) in good condition?

YES : Go to Step 8.

NO : The wiring harness may be damaged or the connector may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the central door locking system works normally.

STEP 8. Retest the system.

Check that the central door locking system works normally.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

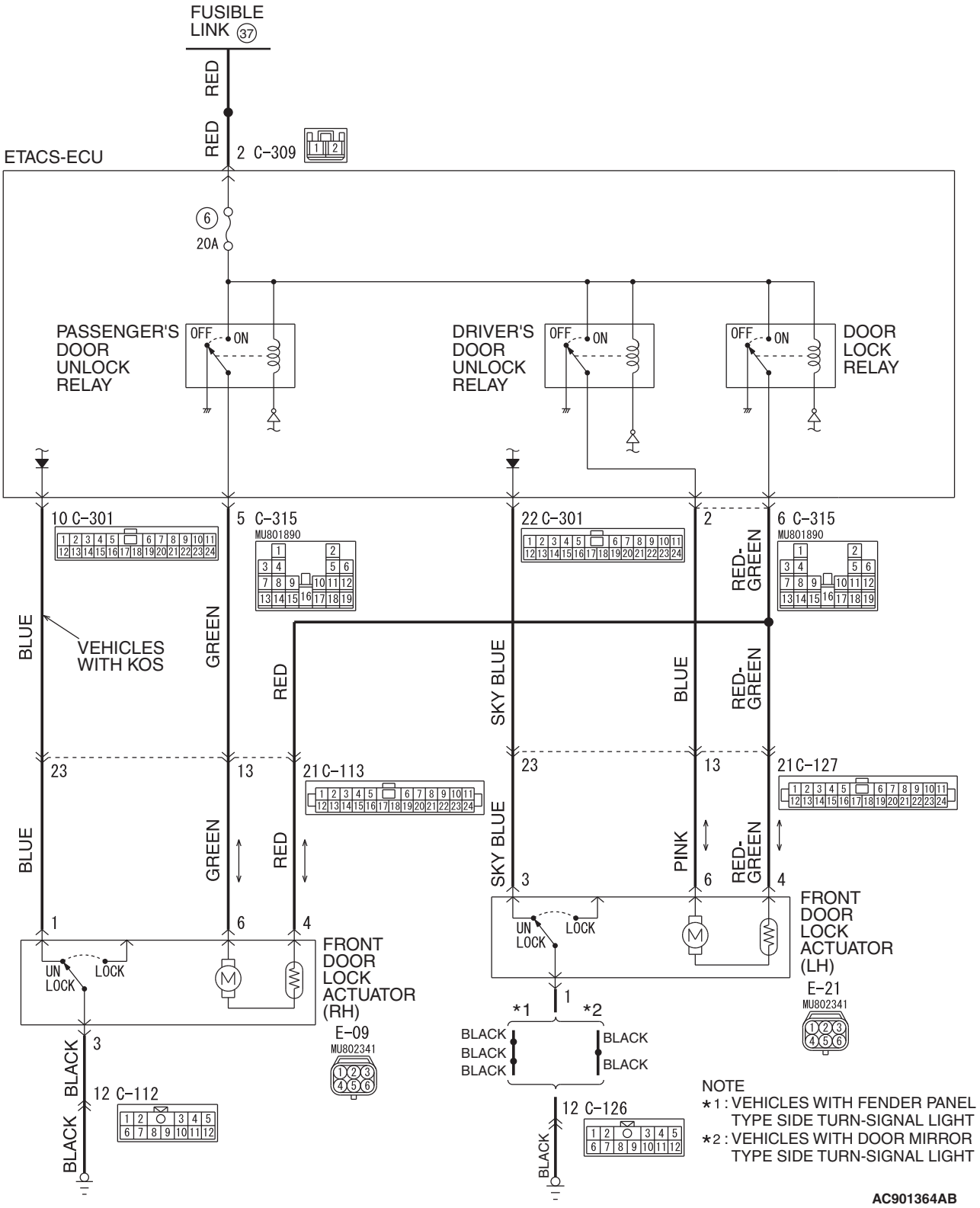
NO : Replace the front power window sub switch. Check that the central door locking system normally.

INSPECTION PROCEDURE A-4: A Door or a Liftgate cannot be Locked or Unlocked by the Central Door Locking System.

⚠ CAUTION

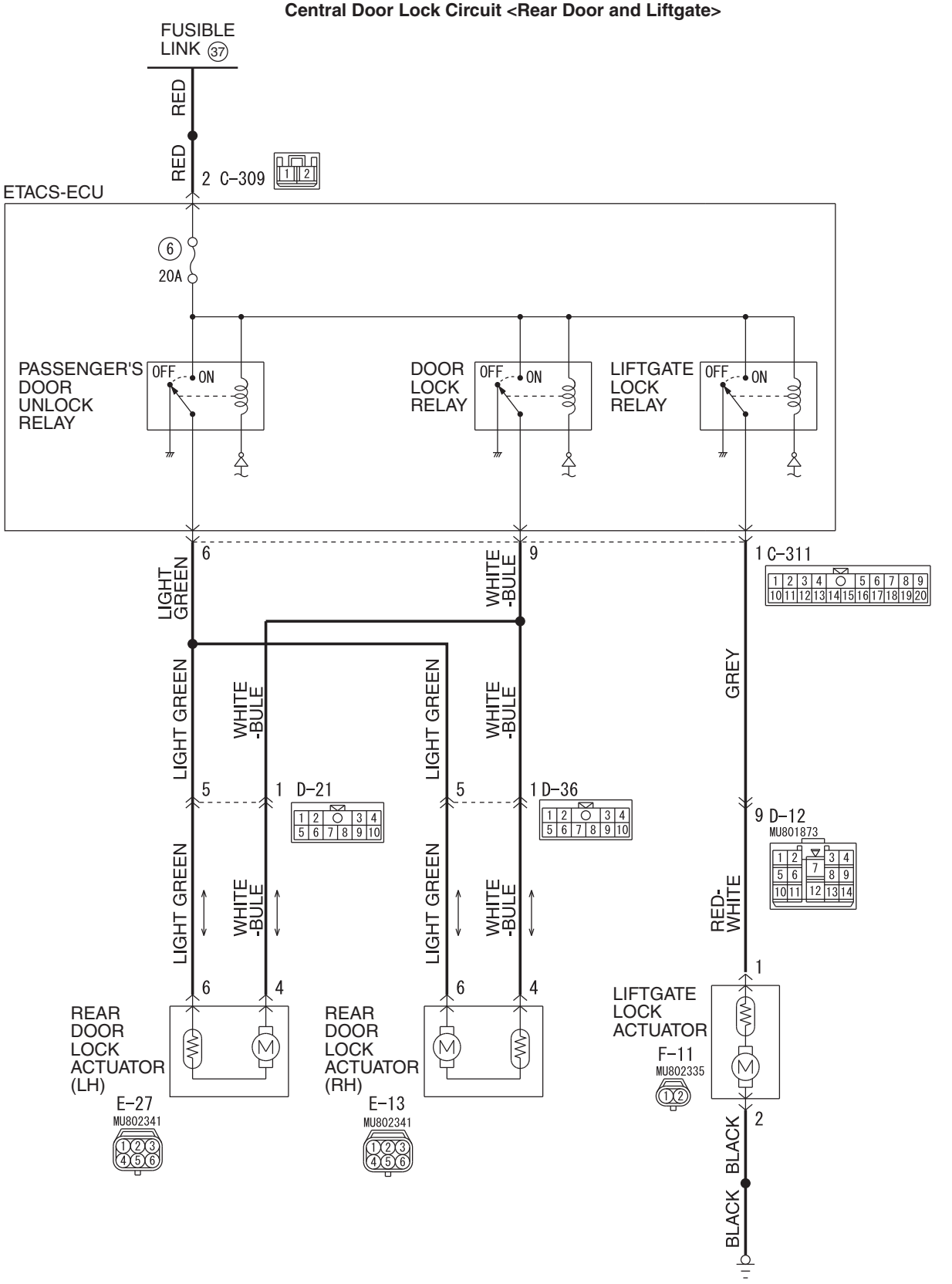
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Central Door Lock Circuit <Front Door>



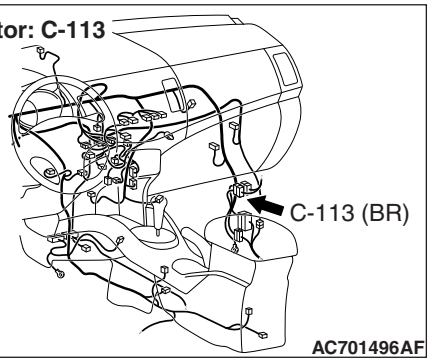
TSB Revision

Central Door Lock Circuit <Rear Door and Liftgate>



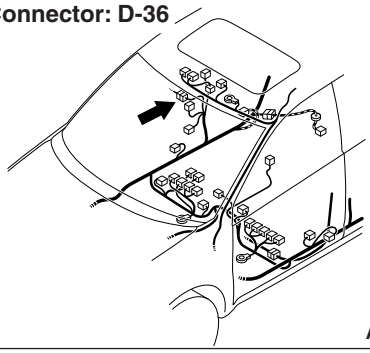
TSB Revision

Connector: C-113



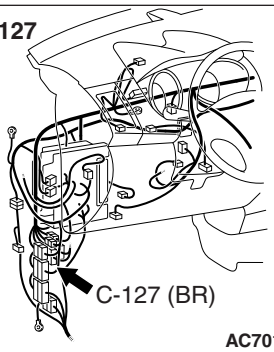
AC701496AF

Connector: D-36



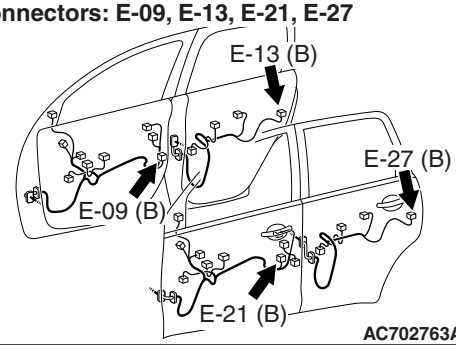
AC701619AS

Connector: C-127



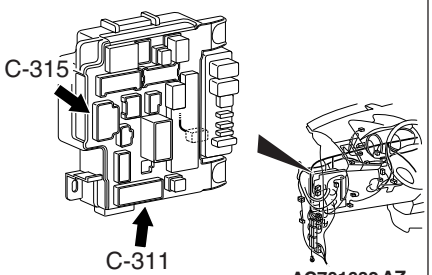
AC701918AC

Connectors: E-09, E-13, E-21, E-27



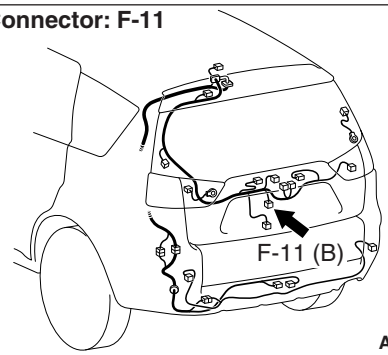
AC702763AC

Connectors: C-311, C-315



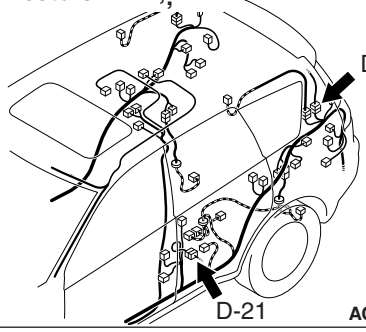
AC701632AZ

Connector: F-11



AC702498AC

Connectors: D-12, D-21



AC701558AD

CIRCUIT OPERATION

- The ETACS-ECU operates the central door lock system according to the following signals:
  - Door lock actuator switch
  - Door lock key cylinder switch
  - Door lock switch, which is incorporated in the power window main switch or power window sub switch
- The ETACS-ECU locks or unlocks all the doors by operating the central door lock relay (incorporated in the ECU) in response to input signals.

TECHNICAL DESCRIPTION (COMMENT)

The wiring harness between the ETACS-ECU and the door lock actuator may be defective.

TSB Revision

TROUBLESHOOTING HINTS

- The door lock actuator may be defective
- The liftgate lock actuator may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSTIC PROCEDURE

STEP 1. Confirmation of the defective door lock actuator or liftgate lock actuator.

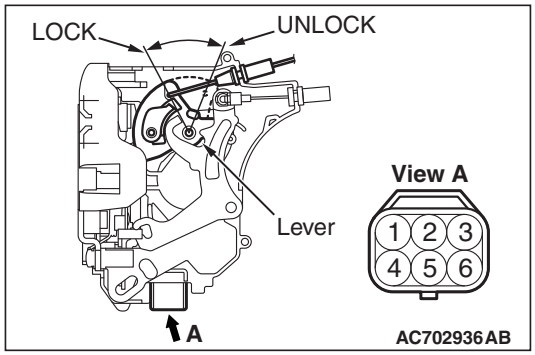
Q: Which door or liftgate is not operating normally?

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 front door lock actuator (LH) connector E-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front door lock actuator (LH) connector E-21 in good condition?

YES : Go to Step 3.
NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.



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

Remove the front door lock actuator (LH). The illustration shows when the door lock actuator is viewed from inside the door. Refer to P.42A-147.

Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No.4 to the negative battery terminal. • Connect terminal No.6 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 to the negative battery terminal. • Connect terminal No.4 to the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Does the front door lock actuator (LH) work normally?

YES : Go to Step 4.

NO : Replace the front door lock actuator (LH). Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 4. Check ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-315 in good condition?

YES : Go to Step 5.

NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 5. Check the wiring harness between ETACS-ECU connector C-315 (terminals No. 2 and 6) and front door lock actuator (LH) connector E-21 (terminals No. 6 and 4).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-127 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-127 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-315 (terminals No. 2 and 6) and front door lock actuator (LH) connector E-21 (terminals No. 6 and 4) in good condition?

YES : Go to Step 24.

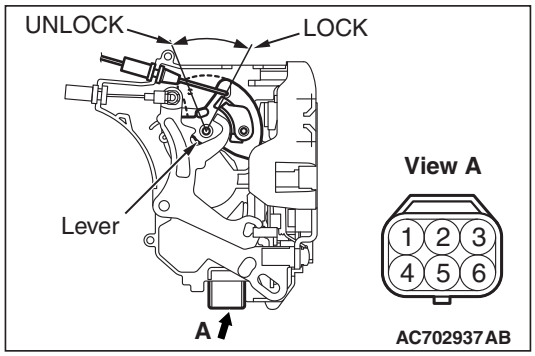
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 6. Check front door lock actuator (RH) connector E-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door lock actuator (RH) connector E-09 in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.



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

Remove the front door lock actuator (RH). The illustration shows when the door lock actuator is viewed from inside the door. Refer to P.42A-147.

Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No.4 to the negative battery terminal. • Connect terminal No.6 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 to the negative battery terminal. • Connect terminal No.4 to the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

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

YES : Go to Step 8.

NO : Replace the front door lock actuator (RH). Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 8. Check ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-315 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 9. Check the wiring harness between ETACS-ECU connector C-315 (terminals No. 5 and 6) and front door lock actuator (RH) connector E-09 (terminals No. 6 and 4).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-113 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-113 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-315 (terminals No. 5 and 6) and front door lock actuator (RH) connector E-09 (terminals No. 6 and 4) in good condition?

YES : Go to Step 24.

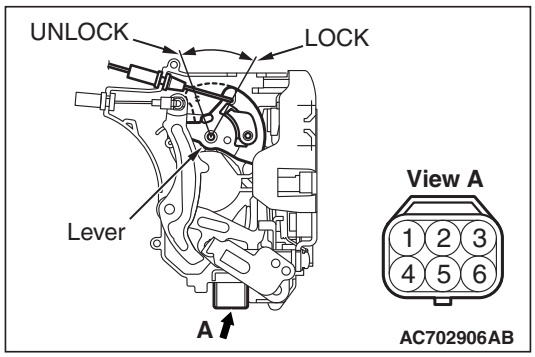
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 10. Check rear door lock actuator (RH) connector E-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door lock actuator (RH) connector E-13 in good condition?

YES : Go to Step 11.

NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.



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

Remove the rear door lock actuator (RH). The illustration shows when the door lock actuator is viewed from inside the door. Refer to P.42A-147.

Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No.4 to the negative battery terminal. • Connect terminal No.6 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 to the negative battery terminal. • Connect terminal No.4 to the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Is the rear door lock actuator (RH) normal?

YES : Go to Step 12.

NO : Replace the rear door lock actuator (RH). Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 12. Check ETACS-ECU connector C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-311 in good condition?

YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 13. Check the wiring harness between ETACS-ECU connector C-311 (terminals No. 6 and 9) and rear door lock actuator (RH) connector E-13 (terminals No. 6 and 4).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector D-36 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-36 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-311 (terminals No. 6 and 9) and rear door lock actuator (RH) connector E-13 (terminals No. 6 and 4) in good condition?

YES : Go to Step 24.

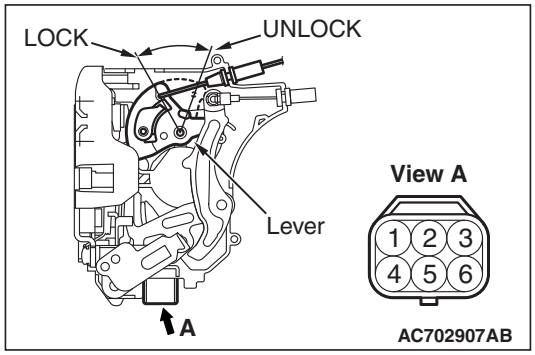
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 14. Check rear door lock actuator (LH) connector E-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door lock actuator (LH) connector E-27 in good condition?

YES : Go to Step 15.

NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.



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

Remove the rear door lock actuator (LH). The illustration shows when the door lock actuator is viewed from inside the door. Refer to P.42A-147.

Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No.4 to the negative battery terminal. • Connect terminal No.6 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 to the negative battery terminal. • Connect terminal No.4 to the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Is the rear door lock actuator (LH) normal?

YES : Go to Step 16.

NO : Replace the rear door lock actuator (LH). Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 16. Check ETACS-ECU connector C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-311 in good condition?

YES : Go to Step 17.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 17. Check the wiring harness between ETACS-ECU connector C-311 (terminals No. 6 and 9) and rear door lock actuator (LH) connector E-27 (terminals No. 6 and 4).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector D-21 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-21 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-311 (terminals No. 6 and 9) and rear door lock actuator (LH) connector E-27 (terminals No. 6 and 4) in good condition?

YES : Go to Step 24.

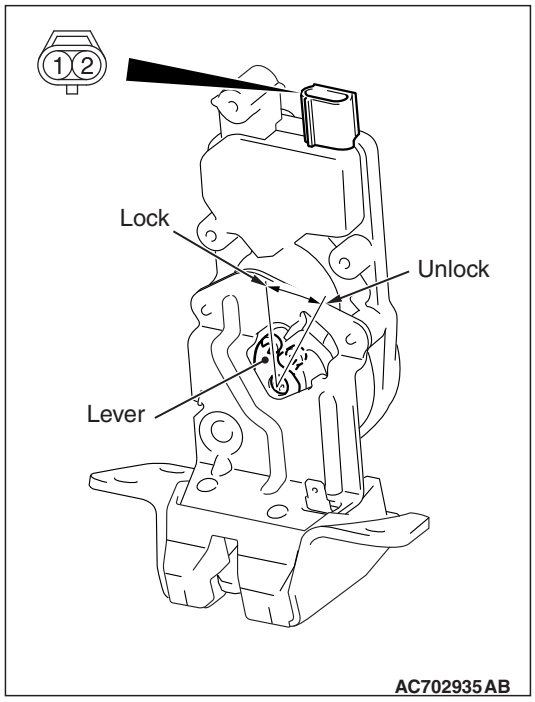
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 18. Check liftgate lock actuator connector F-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is liftgate lock actuator connector F-11 in good condition?

YES : Go to Step 19.

NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.



STEP 19. Check the liftgate lock actuator.

Remove the liftgate lock actuator. The illustration shows when the liftgate lock actuator is viewed from inside the liftgate. Refer to GROUP 42A, Liftgate Handle and Latch P.42A-166.

Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No. 2 to the negative battery terminal. • Connect terminal No. 1 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.

Q: Is the liftgate lock actuator normal?

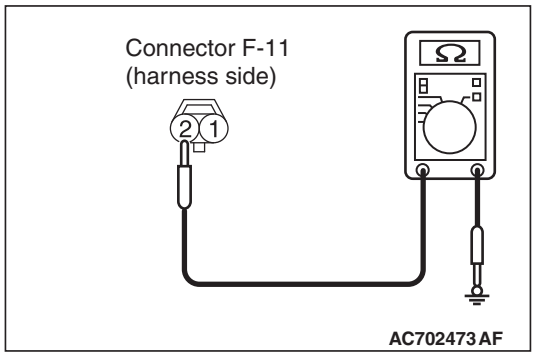
YES : Go to Step 20.

NO : Replace the liftgate lock actuator. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 20. Check the ground circuit to the liftgate lock actuator. Measure the resistance at liftgate lock actuator connector F-11.

(1) Disconnect liftgate lock actuator connector F-11 and measure the resistance on the wiring harness side of the connector.

(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 22.

NO : Go to Step 21.

STEP 21. Check the wiring harness between liftgate lock actuator connector F-11 (terminal No. 2) and ground.

- Check the ground line for open circuit.

Q: Is the wiring harness between liftgate lock actuator connector F-11 (terminal No. 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 22. Check ETACS-ECU connector C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-311 in good condition?

YES : Go to Step 23.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 23. Check the wiring harness between ETACS-ECU connector C-311 (terminal No. 1) and liftgate lock actuator connector F-11 (terminal No. 1).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector D-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-311 (terminal No. 1) and liftgate lock actuator connector F-11 (terminal No. 1) in good condition?

YES : Go to Step 24.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that all the doors and the liftgate can be locked and unlocked normally.

STEP 24. Retest the system.

Check that the central door locking system works normally.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

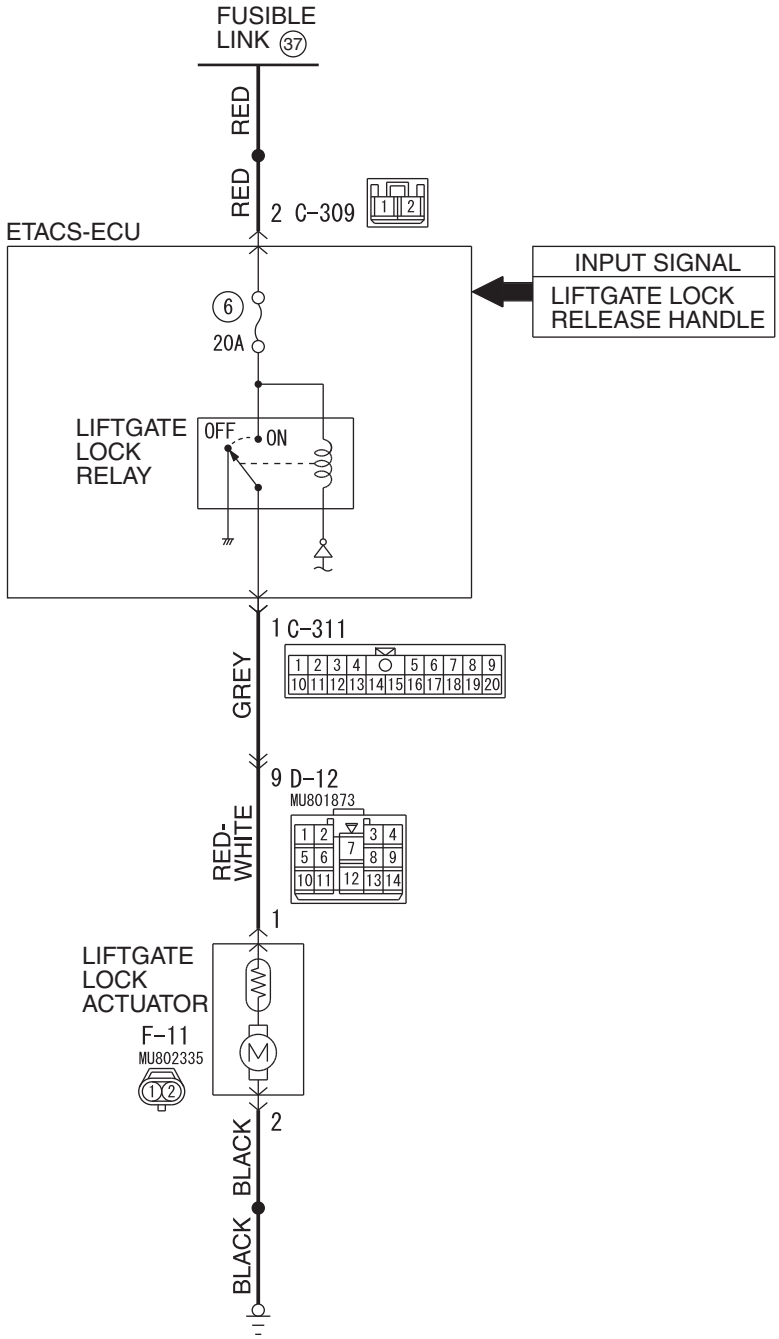
NO : Replace the ETACS-ECU. Check that the central door locking system normally.

TSB Revision

INSPECTION PROCEDURE A-5: The Liftgate does not Open.

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

Liftgate Open Circuit



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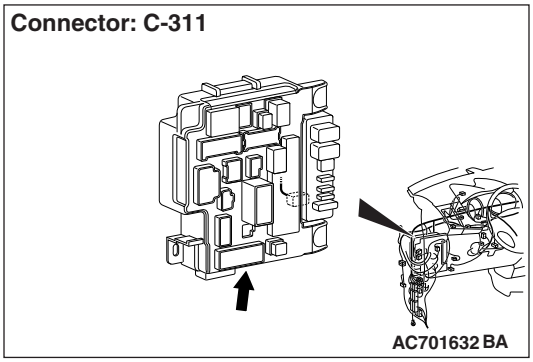
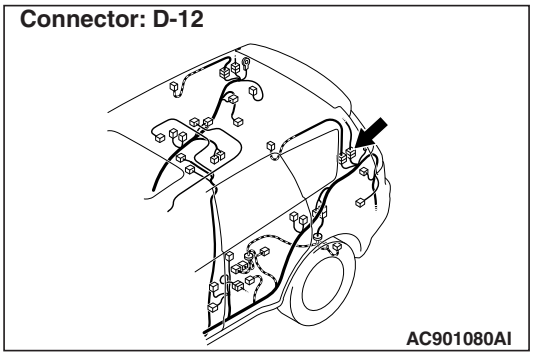
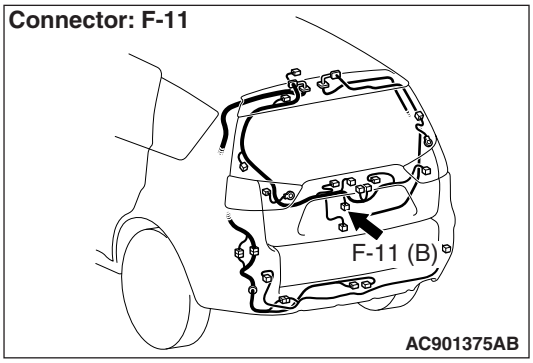






CIRCUIT OPERATION

The ETACS-ECU operates this function in accordance with the input signals below.

- Vehicle speed signal (ASC-ECU)
- Liftgate lock release handle
- Liftgate lock actuator

TECHNICAL DESCRIPTION (COMMENT)

If this function does not work normally, a malfunction of the input signal circuit(s) mentioned above or ETACS-ECU is suspected.

TROUBLESHOOTING HINTS

- Vehicle speed signal ((ASC-ECU) error
- Malfunction of the liftgate lock release handle
- Malfunction of the liftgate lock actuator
- Malfunction of ETACS-ECU
- Damaged wiring harness and connectors

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

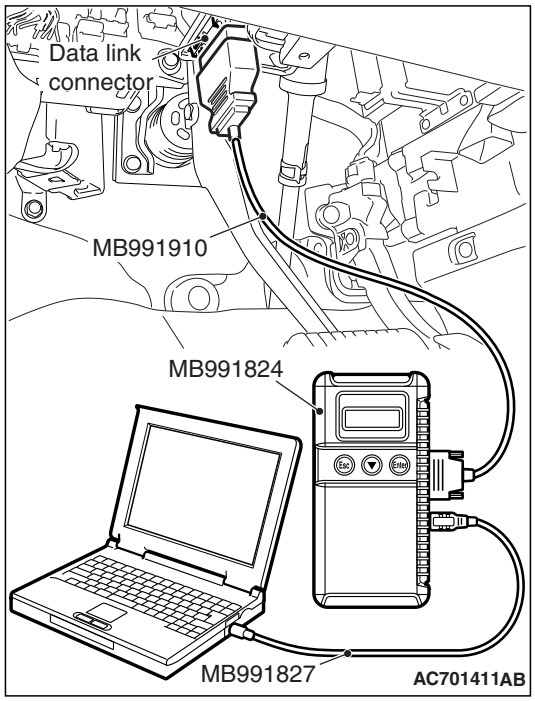
STEP 1. Checking central door unlocking operation

Check that the central door locking system works normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to P.42A-34.



STEP 2. Using scan tool MB991958, read the CAN bus diagnostic trouble code.

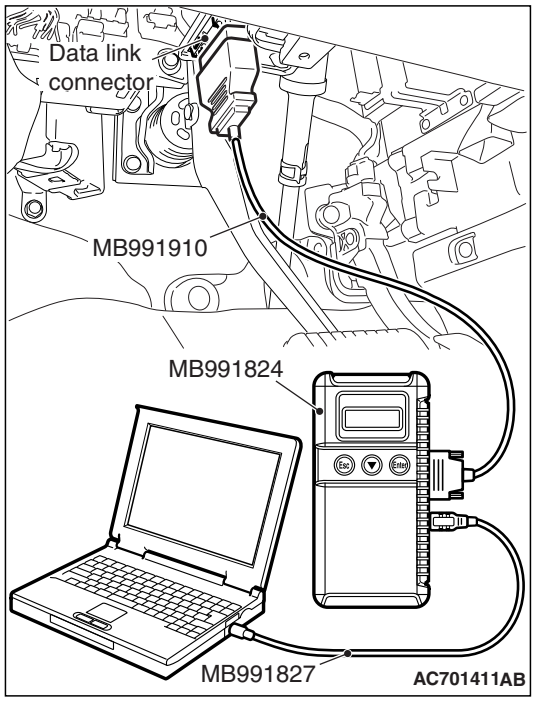
⚠ CAUTION

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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the CAN bus lines related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Repair the CAN bus line (Refer to GROUP 54C, CAN bus diagnostics table P.54C-10).
NO : Go to Step 3.



STEP 3. Using scan tool MB991958, read the ASC-ECU diagnostic trouble code.

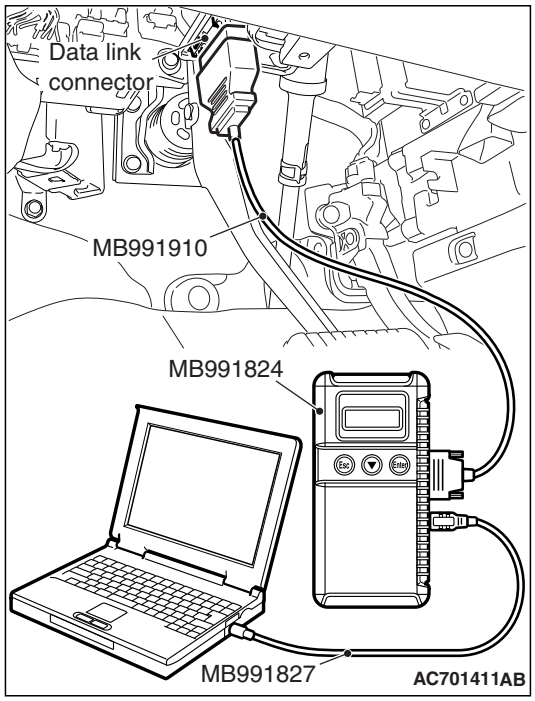
⚠ CAUTION

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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check that the ASC-ECU sets a diagnostic trouble code.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose ASC-ECU (Refer to GROUP 35C, Diagnostic Trouble Code Chart P.35C-24).
NO : Go to Step 4.



STEP 4. Using scan tool MB991958, check data list.

Check the input signals from the liftgate lock release handle.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check the data list of the ETACS.
- Liftgate lock release handle: from OFF to ON

Item No.	Item name	Normal condition
Item 230	Trunk / gate opener	from OFF to ON

(4) Turn the ignition switch to the "LOCK" (OFF) position.

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Refer to P.42A-34.

TSB Revision

STEP 5. Check ETACS-ECU connector C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

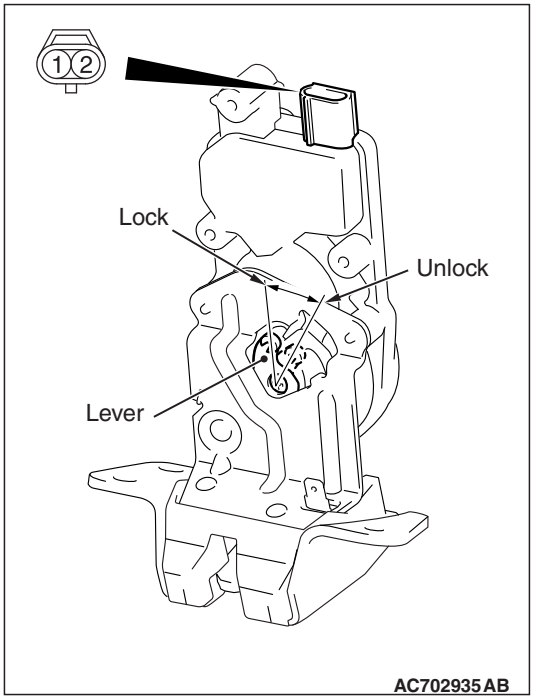
Q: Is ETACS-ECU connector C-311 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the liftgate can be locked and unlocked normally.

STEP 6. Check the liftgate lock actuator.

Remove the liftgate lock actuator. The illustration shows when the liftgate lock actuator is viewed from inside the liftgate. Refer to GROUP 42A, Liftgate Handle and Latch P.42A-166.



Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No. 2 to the negative battery terminal. • Connect terminal No. 1 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.

Q: Is the liftgate lock actuator normal?

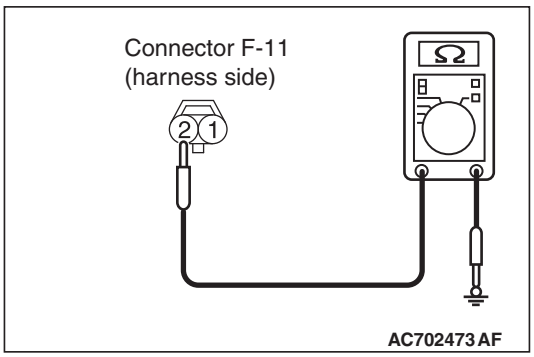
YES : Go to Step 7.

NO : Replace the liftgate lock actuator. Verify that the liftgate can be locked and unlocked normally.

STEP 7. Check the ground circuit to the liftgate lock actuator. Measure the resistance at liftgate lock actuator connector F-11.

(1) Disconnect liftgate lock actuator connector F-11 and measure the resistance on the wiring harness side of the connector.

(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 9.

NO : Go to Step 8.

STEP 8. Check the wiring harness between liftgate lock actuator connector F-11 (terminal 2) and ground.

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between liftgate lock actuator connector F-11 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the liftgate can be locked and unlocked normally.

STEP 9. Check the wiring harness between ETACS-ECU connector C-311 (terminal 1) and liftgate lock actuator connector F-11 (terminal 1).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector D-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-311 (terminal 1) and liftgate lock actuator connector F-11 (terminal 1) in good condition?

YES : Go to Step 10.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the liftgate can be locked and unlocked normally.

STEP 10. Retest the system.

Check that the liftgate can be locked and unlocked normally.

Q: Is the check result normal?

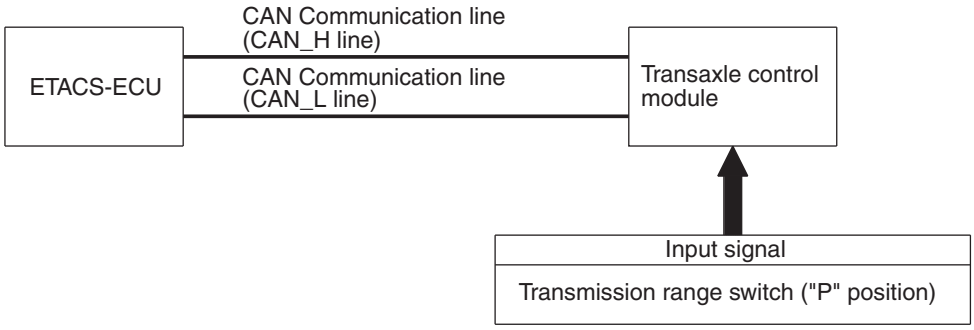
YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. Check that the liftgate can be locked and unlocked normally.

INSPECTION PROCEDURE A-6: Selector "P" Position-linked Door Unlock Function does not Operate.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Selector "P" Position-linked Door Unlock Function



AC702939AD

OPERATION
ETACS-ECU determines whether the shift position is "P" or not according to the shift position signal sent by transaxle control module.

TECHNICAL DESCRIPTION (COMMENT)
If the doors are not unlocked when the selector lever is shifted to the "P" position, a malfunction of the shift position signal input circuit(s) or ETACS-ECU is suspected. Also, the selector "P" position-linked door unlock function may have been set to "Disabled" with the customization function.

TROUBLESHOOTING HINTS
- Malfunction of ETACS-ECU
- Damaged wiring harness and connectors

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Checking central door unlocking operation
Check that the central door locking system works normally.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Refer to P.42A-34.

STEP 2. Check the customization function.

Check that the following other than "Disabled" is set for "Auto door unlock by P position" with the customization function.

- Always (P pos)

Q: Is the check result normal?

YES : Go to Step 3.

NO : Set the function "Always (P pos)" for "Auto door unlock by P position" with the customization function (Refer to P.42A-138).

STEP 3. Using scan tool MB991958, check CAN bus for diagnostic trouble code.

⚠ CAUTION

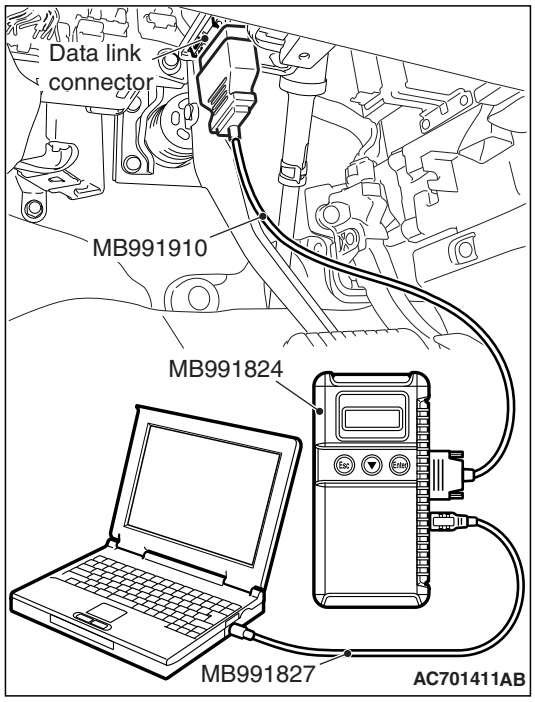
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

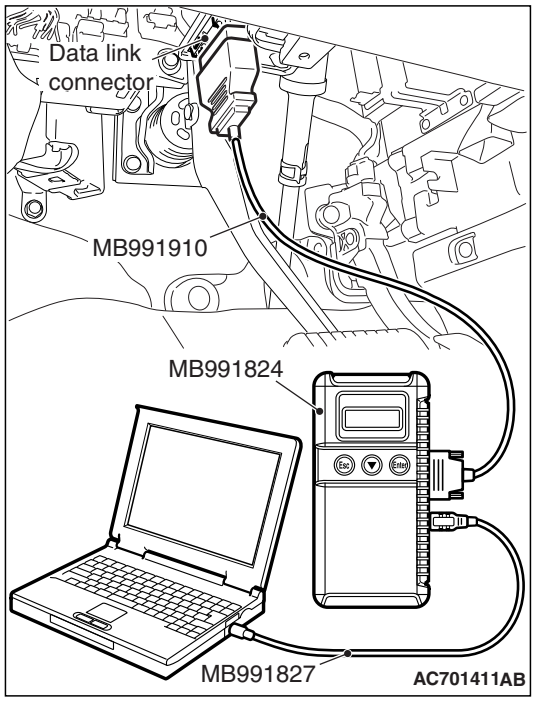
(1) Connect scan tool MB991958. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether CAN bus lines related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Repair the CAN bus line (Refer to GROUP 54C, CAN bus diagnostics table P.54C-10).

NO : Go to Step 4.





STEP 4. Using scan tool MB991958, read the diagnostic trouble code.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check the transaxle control module for diagnostic trouble code.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES <2.4L> : Diagnose transaxle control module (Refer to GROUP 23A, Diagnostic Trouble Code Chart P.23A-28).
YES <3.0L> : Diagnose transaxle control module (Refer to GROUP 23C, Diagnostic Trouble Code Chart P.23C-164).
NO : Go to Step 5.

STEP 5. Retest the system.

Check that shifting the selector lever to the "P" position unlocks the doors.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU. Check that the selector lever to the P position unlocks the doors normally.

INSPECTION PROCEDURE A-7: Ignition "LOCK (OFF)" Position-linked Door Unlock Function does not Operate.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

If a door is not unlocked when the ignition switch is turned to the LOCK position, a malfunction of the CAN bus line, ignition switch or ETACS-ECU is suspected. Also, the ignition "LOCK" position-linked door unlock function may have been set to "Disabled" with the customization function.

TROUBLESHOOTING HINTS

- Malfunction of CAN bus line
- Malfunction of ETACS-ECU
- Malfunction of ignition switch
- Damaged wiring harness and connectors

DIAGNOSIS PROCEDURE

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Checking central door unlocking operation
Check that the central door locking system works normally.

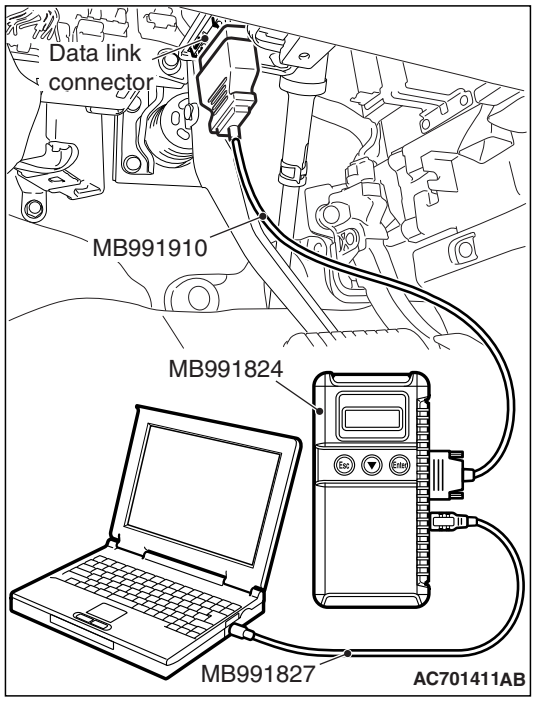
Q: Is the check result normal?

YES : Go to Step 2.
NO : Refer to trouble symptom chart P.42A-34.

STEP 2. Check the customization function.
Check that the following other than "Disabled" is set for "Auto door unlock by ignition LOCK position" with the customization function.
- Always (LOCK pos)

Q: Is the check result normal?

YES : Go to Step 3.
NO : Set the function "Always (LOCK pos)" for "Auto door unlock by ignition LOCK position" with the customization function (Refer to P.42A-138).



STEP 3. Using scan tool MB991958, check CAN bus for diagnostic trouble code.

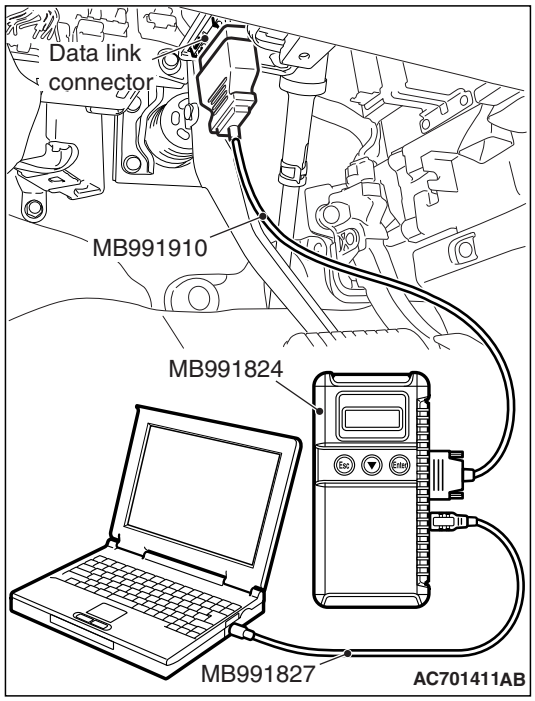
⚠ CAUTION

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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether CAN bus lines related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Repair the CAN bus line (Refer to GROUP 54C, CAN bus diagnostics table P.54C-10).
NO : Go to Step 4.



STEP 4. Using scan tool MB991958, read the diagnostic trouble code.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether any DTC is set to ETACS-ECU.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.42A-172.
NO : Go to Step 5.

STEP 5. Using scan tool MB991958, check data list.

- Ignition switch: ON→LOCK(OFF)

Item No.	Item name	Normal condition
Item 254	IG voltage	Battery positive voltage

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00 –How to use Troubleshooting/inspection Service Points, How to Cope with Intermittent Malfunction P.00-15).
NO : Refer to GROUP 54A –Inspection Procedure 2 "Defective power supply system of the ignition switch" P.54A-19

STEP 6. Retest the system.

Check that turning the ignition switch to the "LOCK" position unlocks the doors.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU.

TSB Revision

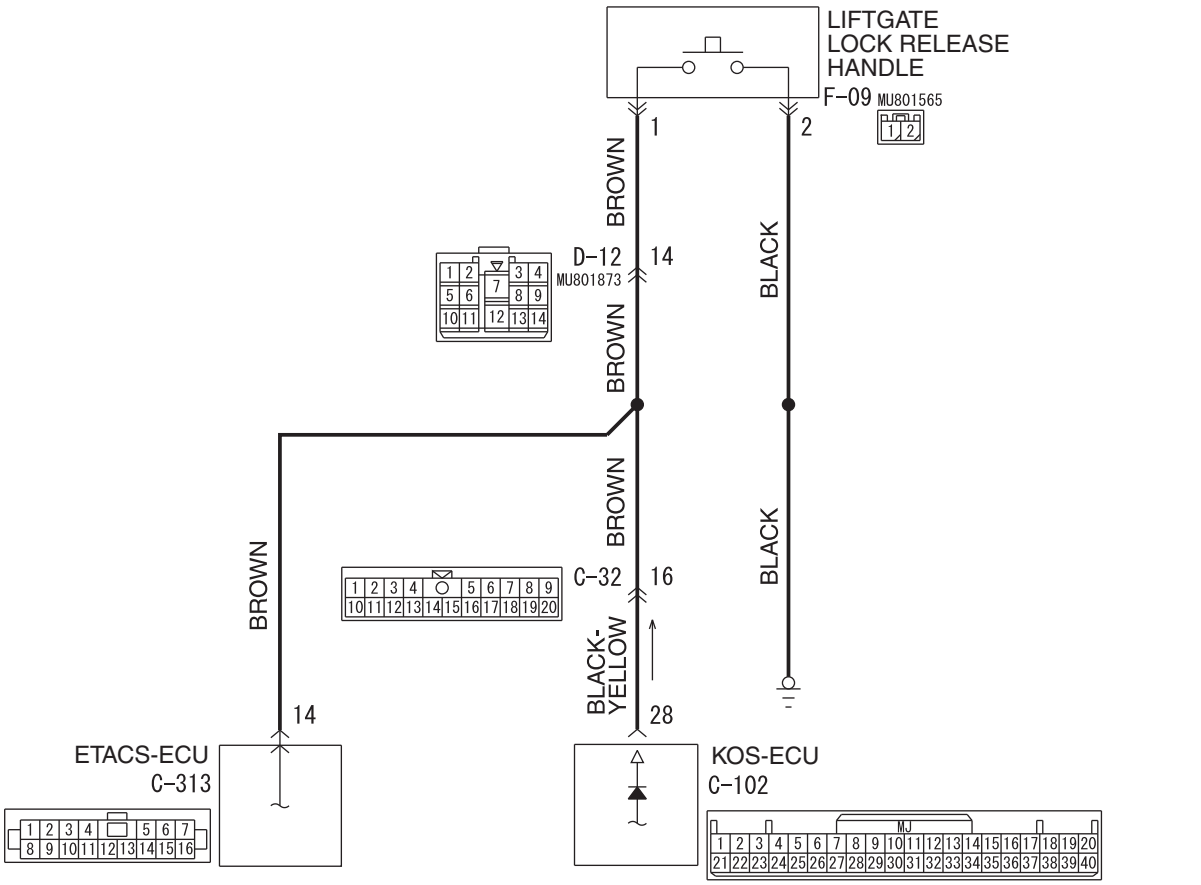
INPUT SIGNAL PROCEDURES <CENTRAL DOOR LOCKING SYSTEM>

INSPECTION PROCEDURE B-1: The Liftgate Lock Release Handle Signal is not Received.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Liftgate Lock Release Handle Circuit



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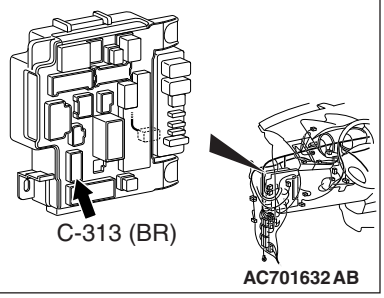
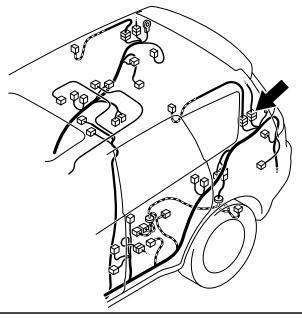
Connector: C-313



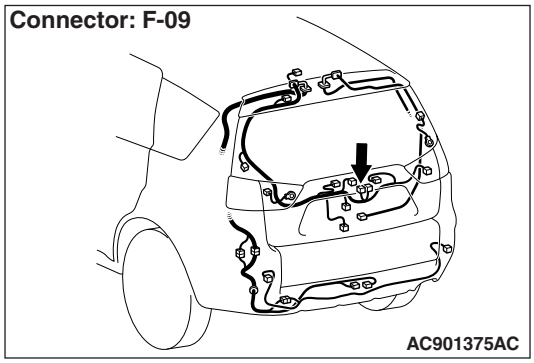
AC701632AB

Connector: D-12



AC901080AI

TSB Revision



CIRCUIT OPERATION

The ETACS-ECU operates the liftgate according to signal from the liftgate lock release handle.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the liftgate will not work normally. If the signal is not normal, the liftgate lock release handle or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The liftgate lock release handle may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Check liftgate lock release handle connector F-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is liftgate lock release handle connector F-09 in good condition?

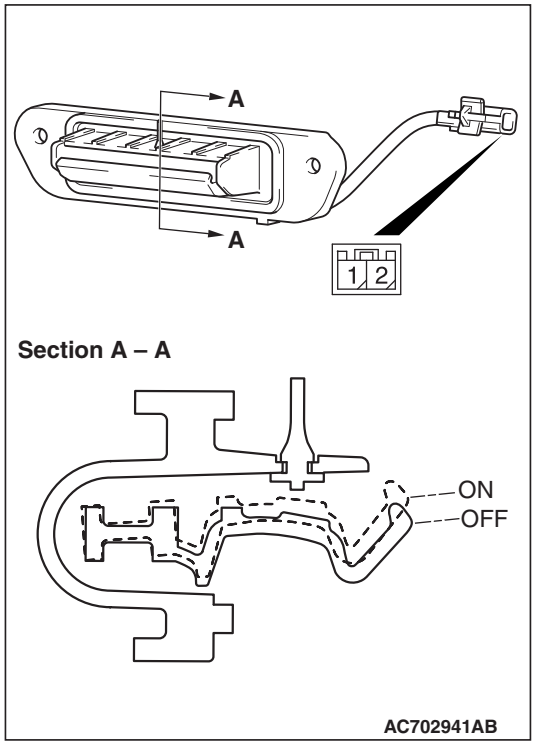
YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Repair the liftgate lock release handle. If the liftgate lock release handle operates normally, a correct signal is sent from the liftgate lock release handle.

STEP 2. Check the liftgate lock release handle.
Remove the liftgate lock release handle. Refer to GROUP 42A, Liftgate Handle and Latch P.42A-166. Then check continuity between the switch terminals.

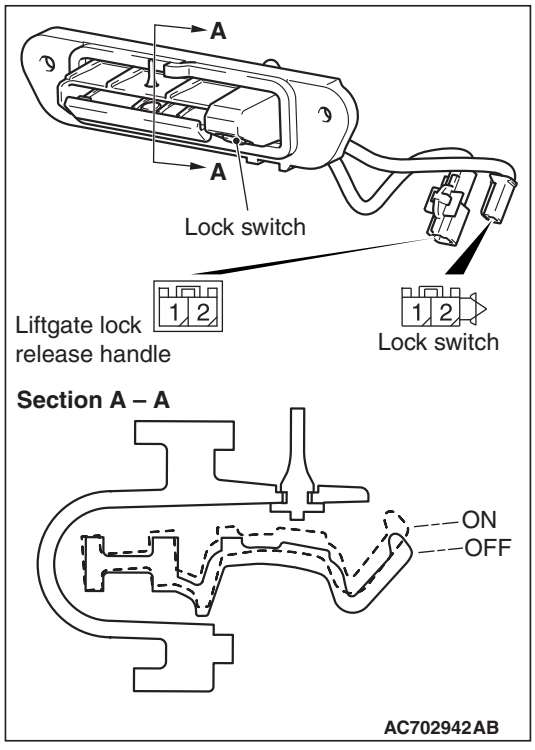
<VEHICLES WITHOUT KEYLESS OPERATION SYSTEM (KOS)>

Handle position	Terminal number	Normal value
ON	1 –2	Continuity exists (2 Ω or less)
OFF	1 –2	Open circuit



<VEHICLES WITH KEYLESS OPERATION SYSTEM (KOS)>

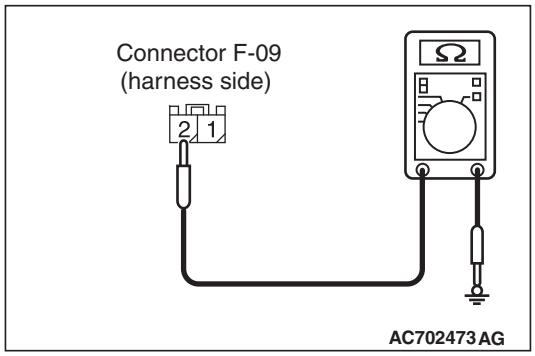
Handle position	Terminal number	Normal value
ON	1 –2	Continuity exists (2 Ω or less)
OFF	1 –2	Open circuit



Q: Is the liftgate lock release handle in good condition?

YES : Go to Step 3.

NO : Repair the liftgate lock release handle. If the liftgate lock release handle operates normally, a correct signal is sent from the liftgate lock release handle.



STEP 3. Check the ground circuit to the liftgate lock release handle. Measure the resistance at liftgate lock release handle connector F-09.

(1) Disconnect liftgate lock release handle connector F-09 and measure the resistance on the wiring harness side of the connector.

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

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between liftgate lock release handle connector F-09 (terminal 2) and ground.

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between liftgate lock release handle connector F-09 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the liftgate lock release handle operates normally, a correct signal is sent from the liftgate lock release handle.

STEP 5. Check ETACS-ECU connector C-313 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-313 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the liftgate lock release handle operates normally, a correct signal is sent from the liftgate lock release handle.

STEP 6. Check the wiring harness between liftgate lock release handle connector F-09 (terminal 1) and ETACS-ECU connector C-313 (terminal 14).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector D-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between liftgate lock release handle connector F-09 (terminal 1) and ETACS-ECU connector C-313 (terminal 14) in good condition?

YES : Go to Step 7.

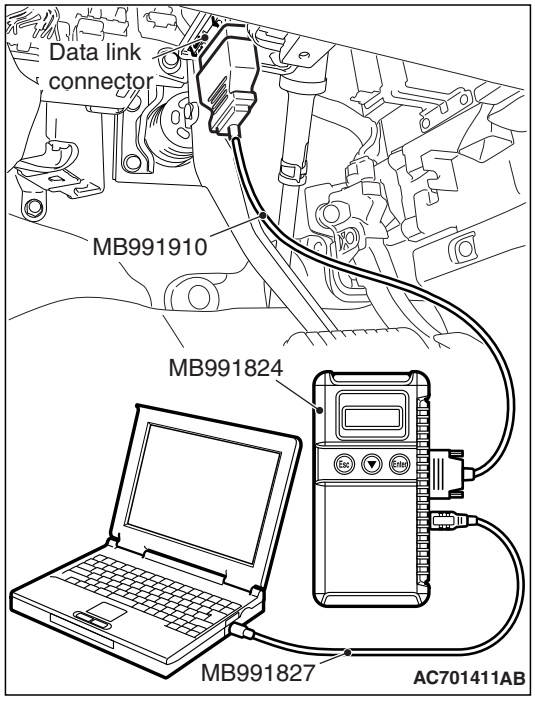
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the liftgate lock release handle operates normally, a correct signal is sent from the liftgate lock release handle.

STEP 7. Using scan tool MB991958, check data list.

Check the signals related to the liftgate lock release handle operation.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."

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

(3) Check the data list of the ETACS.

- Liftgate lock release handle: from OFF to ON

Item No.	Item name	Normal condition
230	Trunk / gate opener	from OFF to ON

(4) Turn the ignition switch to the "LOCK" (OFF) position.

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. If the liftgate lock release handle operates normally, a correct signal is sent from the liftgate lock release handle.

POWER WINDOW DIAGNOSIS

TROUBLESHOOTING STRATEGY

M1429002700231

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points, Troubleshooting Contents P.00-7.

DIAGNOSTIC TROUBLE CODE CHART POWER WINDOW

M1429006000148

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, check all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
L0730	P/W (DR) SW pulse1 disconnection	P.42A-79
L0732	P/W (DR) SW pulse2 disconnection	P.42A-81
L0734	P/W (DR) Above window position	P.42A-83
L0736	P/W (DR) Sensor fail (ground)	P.42A-84
L0740	P/W (DR) 3 times jam - protection	P.42A-86
L0746	P/W (DR) Parameter read fail	P.42A-87
L0750	P/W (DR) Position read fail	

NOTE: P/W: Abbreviation of power Window

TROUBLE SYMPTOM CHART <POWER WINDOW>

M1429002800539

⚠ CAUTION

During diagnosis, a diagnostic trouble code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, check all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

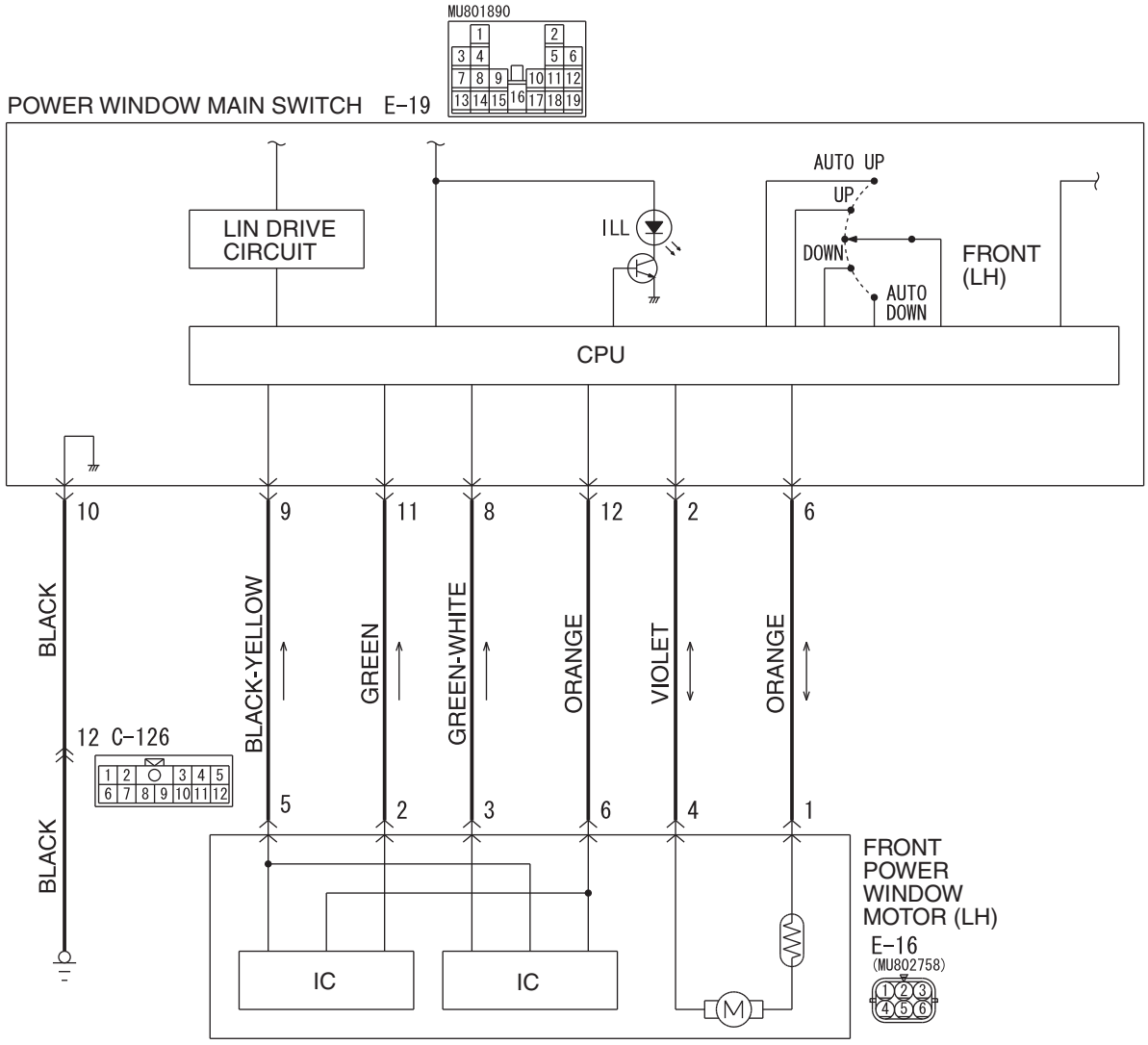
Trouble symptom	Inspection procedure number	Reference page
Power windows do not work at all.	C-1	P.42A-88
Driver's power window does not work by means of the power window main switch.	C-2	P.42A-96
Relevant power window(s) does not work by means of the front and rear passenger's power window sub switches.	C-3	P.42A-99
Front and/or rear passenger's power window(s) do not work by means of the power window main switch.	C-4	P.42A-114
The power window timer function does not work normally.	C-5	P.42A-116
Power window anti-trap function does not work normally.	C-6	P.42A-118
The window glass lowers automatically while it is rising.	C-7	P.42A-120

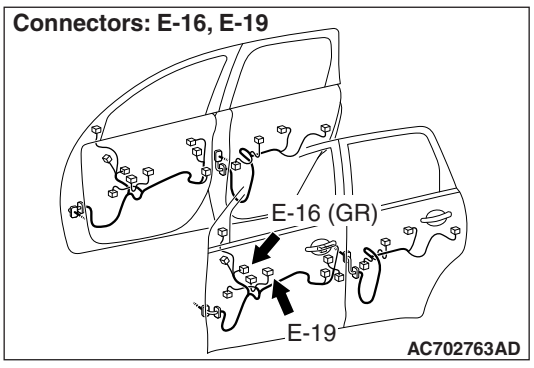
DIAGNOSTIC TROUBLE CODE PROCEDURES <POWER WINDOW>

CODE NO. L0730: P/W (DR) SW pulse 1 disconnection

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

Driver's Power Window Circuit





COMMENTS ON TROUBLE SYMPTOM

If the pulse 1 signal from the front power window motor (LH) cannot be received, the power window main switch sets the diagnosis trouble code No. L0730.

PROBABLE CAUSES

- Malfunction of the front power window motor (LH)
- Malfunction of the power window main switch
- Damaged wiring harness and connectors

TSB Revision

DIAGNOSTIC PROCEDURE

STEP 1. Check power window main switch connector E-19, front power window motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector E-19, front power window motor (LH) connector E-16 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.

STEP 2. Check the wiring harness between power window main switch connector E-19 (terminals 8, 9, 12) and front power window motor (LH) connector E-16 (terminals 3, 5, 6).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between power window main switch connector E-19 (terminals 8, 9, 12) and front power window motor (LH) connector E-16 (terminals 3, 5, 6) in good condition?

YES : Go to Step 3.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the power window works normally.

STEP 3. Diagnostic trouble code recheck

Replace the front power window motor (LH). Recheck if the diagnostic trouble code is set.

(1) Erase the diagnostic trouble code.
(2) Operate the driver's door window switch on the power window main switch.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

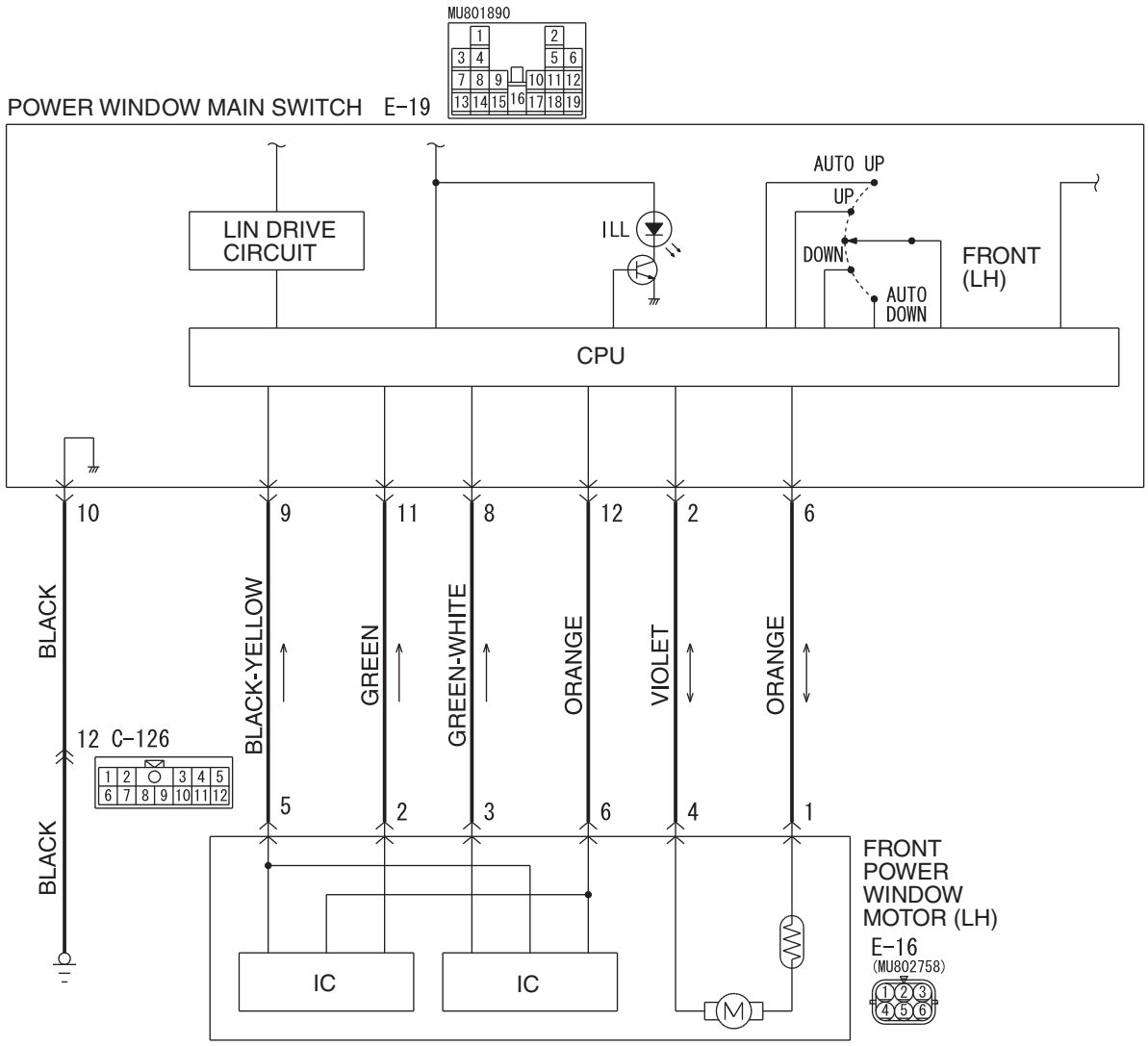
YES : Replace the power window main switch.

NO : The procedure is complete. Verify that the power window works normally.

CODE NO. L0732: P/W (DR) SW pulse 2 disconnection

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

Driver's Power Window Circuit



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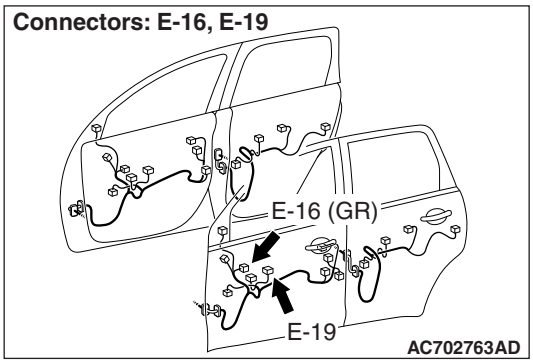


COMMENTS ON TROUBLE SYMPTOM

If the pulse 2 signal from the front power window motor (LH) cannot be received, the power window main switch sets the diagnosis trouble code No. L0732.

PROBABLE CAUSES

- Malfunction of the front power window motor (LH)
- Malfunction of the power window main switch
- Damaged wiring harness and connectors

TSB Revision

DIAGNOSTIC PROCEDURE

STEP 1. Check power window main switch connector E-19, front power window motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector E-19, front power window motor (LH) connector E-16 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.

STEP 2. Check the wiring harness between power window main switch connector E-19 (terminals 9, 11, 12) and front power window motor (LH) connector E-16 (terminals 5, 2, 6).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between power window main switch connector E-19 (terminals 9, 11, 12) and front power window motor (LH) connector E-16 (terminals 5, 2, 6) in good condition?

YES : Go to Step 3.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the power window works normally.

STEP 3. Diagnostic trouble code recheck

Replace the front power window motor (LH). Recheck if the diagnostic trouble code is set.

(1) Erase the diagnostic trouble code.
(2) Operate the driver's door window switch on the power window main switch.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

YES : Replace the power window main switch.

NO : The procedure is complete. Verify that the power window works normally.

CODE NO. L0734: P/W (DR) Above window position

COMMENTS ON TROUBLE SYMPTOM

If the driver's door window glass exceeds the fully closed position, power window main switch sets the diagnostic trouble code No. L0734.

PROBABLE CAUSES

- Malfunction of the front power window motor (LH)
- Malfunction of the power window main switch

DIAGNOSTIC PROCEDURE

STEP 1. Check the power window fully closed position

(1) Carry out the learning procedures of the power window fully closed position. Refer to P.42A-134.
(2) Recheck if the diagnostic trouble code is set.
  a. Erase the diagnostic trouble code.
  b. Press the driver’s door window switch (on the power window main switch) down to open the window, and pull up the driver’s door window switch to fully does the window.
  c. Check if the diagnostic trouble code is set.

Q: Is the check result normal?

YES : The procedure is complete.
NO : Go to Step 2.

STEP 2. Diagnostic trouble code recheck

Replace the front power window motor (LH). Recheck if the diagnostic trouble code is set.
(1) Erase the diagnostic trouble code.
(2) Press the driver’s door window switch (on the power window main switch) down to open the window, and pull up the driver’s door window switch to fully does the window.
(3) Check if the diagnostic trouble code is set.

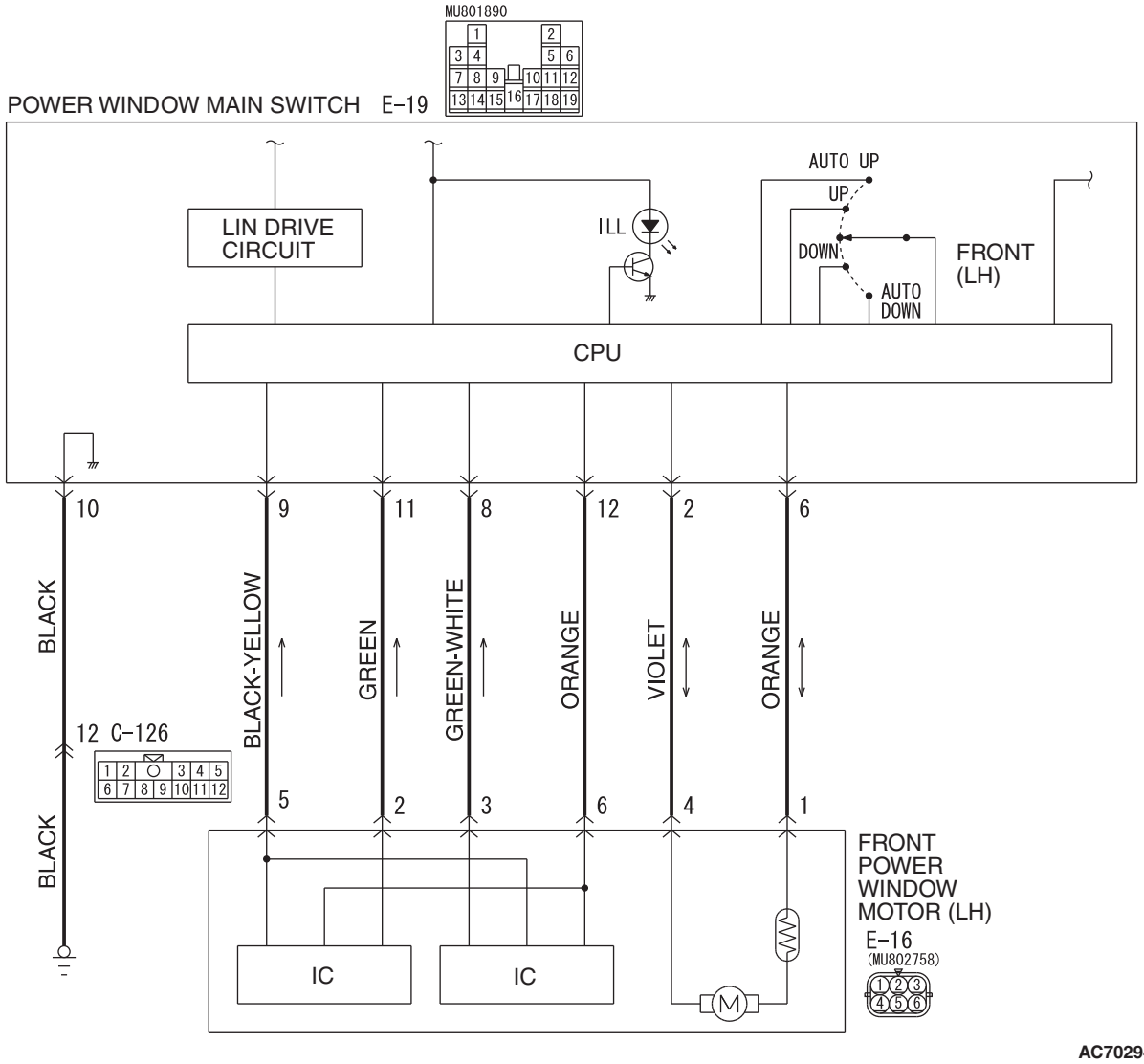
Q: Is the diagnostic trouble code set?

YES : Replace the power window main switch.
NO : The procedure is complete. Verify that the power window works normally.

CODE NO. L0736: P/W (DR) Sensor fail (ground)

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

Driver's Power Window Circuit



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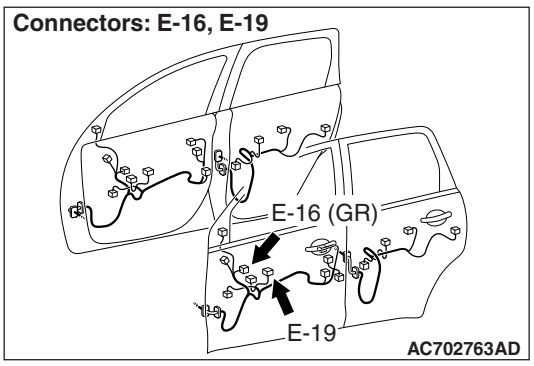


COMMENTS ON TROUBLE SYMPTOM

If the ground fault of the front power window motor (LH) sensor power supply is detected, power window main switch sets the diagnosis trouble code No. L0736

PROBABLE CAUSES

- Malfunction of the front power window motor (LH)
- Malfunction of the power window main switch
- Damaged wiring harness and connectors

TSB Revision

DIAGNOSTIC PROCEDURE

STEP 1. Check power window main switch connector E-19, front power window motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector E-19, front power window motor (LH) connector E-16 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.

STEP 2. Check the wiring harness between power window main switch connector E-19 (terminal 12) and front power window motor (LH) connector E-16 (terminal 6).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between power window main switch connector E-19 (terminal 12) and front power window motor (LH) connector E-16 (terminal 6) in good condition?

YES : Go to Step 3.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the power window works normally.

STEP 3. Diagnostic trouble code recheck

Replace the front power window motor (LH). Recheck if the diagnostic trouble code is set.

(1) Erase the diagnostic trouble code.
(2) Operate the driver's door window switch on the power window main switch.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

YES : Replace the power window main switch.

NO : The procedure is complete. Verify that the power window works normally.

CODE NO. L0740: P/W (DR) 3 times jam - protection

COMMENTS ON TROUBLE SYMPTOM

If the anti-trap function is activated consecutively three times or more, power window main switch sets the diagnostic trouble code No. L0740.

PROBABLE CAUSES

- Malfunction of the front power window motor (LH)
- Malfunction of the power window main switch

DIAGNOSTIC PROCEDURE

STEP 1. Check the power window fully closed position

(1) Carry out the learning procedures of the power window fully closed position. Refer to P.42A-134.
(2) Recheck if the diagnostic trouble code is set.
  a. Erase the diagnostic trouble code.
  b. Turn the ignition switch from the LOCK (OFF) position to the ON position.
  c. Check if the diagnostic trouble code is set.

Q: Is the check result normal?

YES : The procedure is complete.
NO : Go to Step 2.

STEP 2. Diagnostic trouble code recheck

Replace the front power window motor (LH). Recheck if the diagnostic trouble code is set.
(1) Erase the diagnostic trouble code.
(2) Operate the driver's door window switch on the power window main switch.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

YES : Replace the power window main switch.
NO : The procedure is complete. Verify that the power window works normally.

CODE NO. L0746: P/W (DR) Parameter read fail
CODE NO. L0750: P/W (DR) Position read fail

COMMENTS ON TROUBLE SYMPTOM

- If the power window main switch information signals cannot be read, power window main switch sets the diagnostic trouble code No. L0746.
- If the driver's door window glass position cannot be read, power window main switch sets the diagnostic trouble code No. L0750.

PROBABLE CAUSES

- Malfunction of the power window main switch

DIAGNOSTIC PROCEDURE

Diagnostic trouble code recheck
Recheck if the diagnostic trouble code is set.
(1) Erase the diagnostic trouble code.
(2) Operate the driver's door window switch on the power window main switch.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

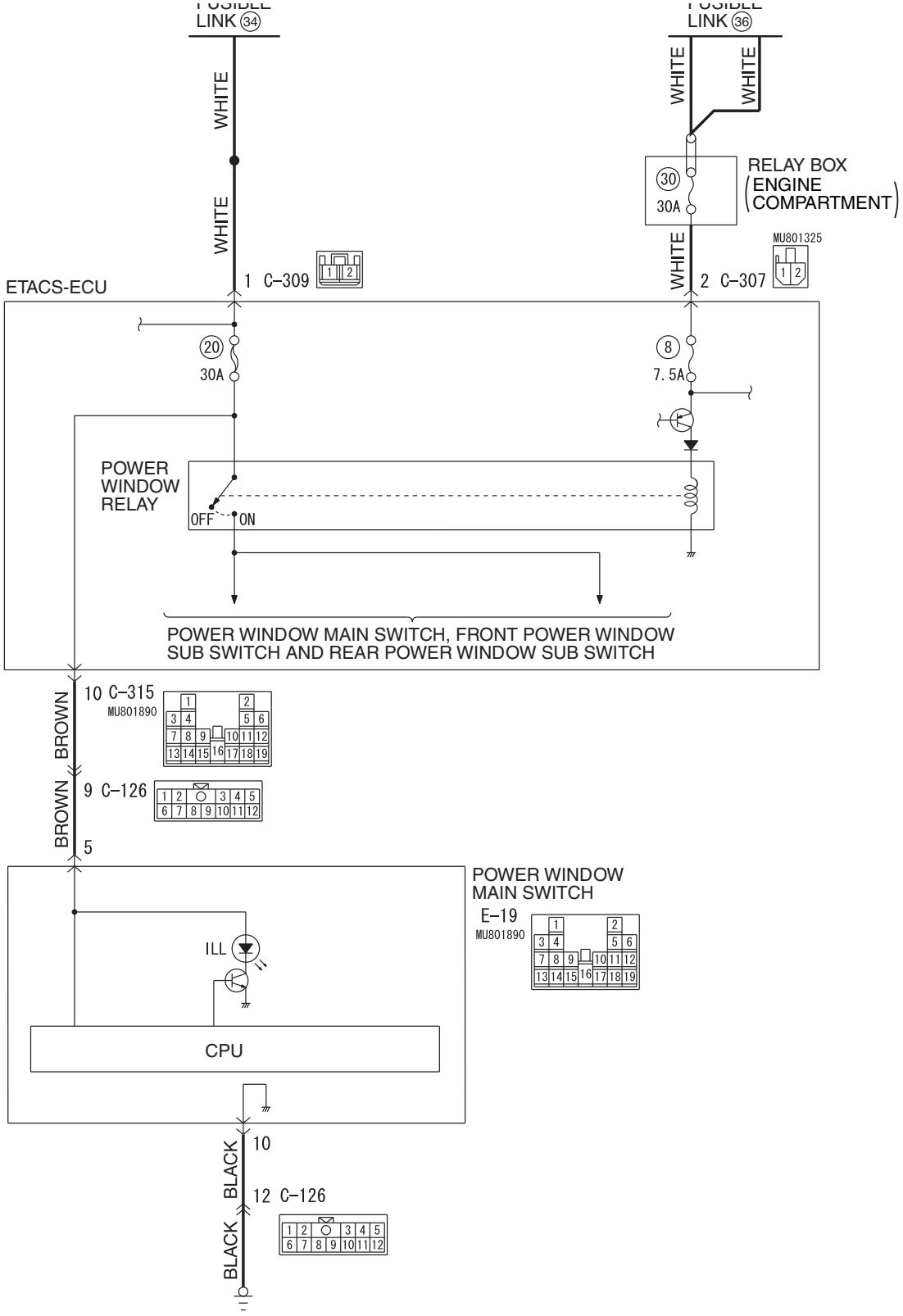
YES : Replace the power window main switch.
NO : The procedure is complete. Verify that the power window works normally.

SYMPTOM PROCEDURES <POWER WINDOW>

INSPECTION PROCEDURE C-1: Power Windows do not Work at All.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.



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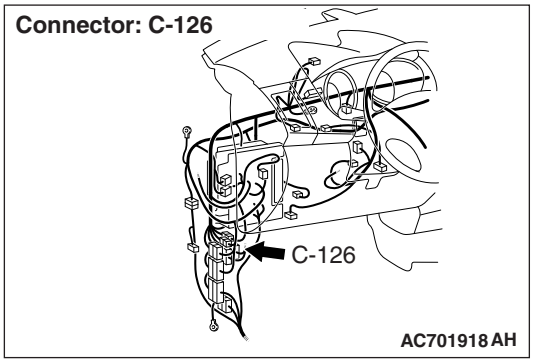
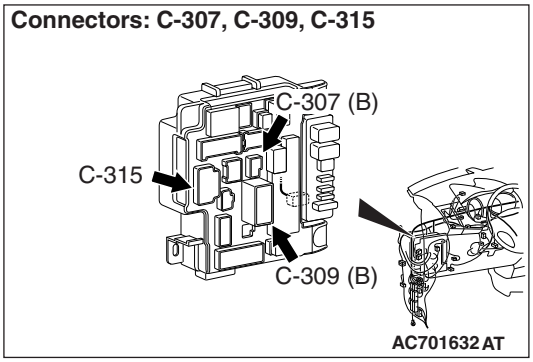
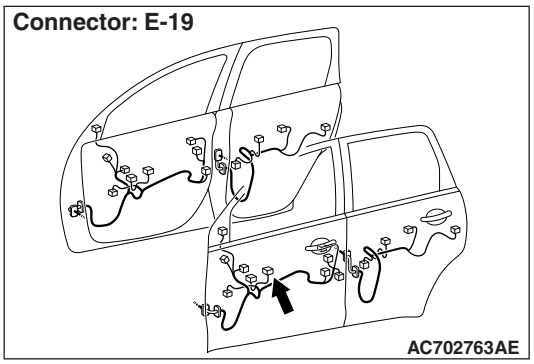
Connector: C-126



Connectors: C-307, C-309, C-315



Connector: E-19



CIRCUIT OPERATION

The ETACS-ECU turns on the power window relay to activate the power windows when the ignition switch (IG1) is turned to the "ON" position.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The power main switch may be defective
- The ETACS-ECU may be defective

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check the power supply system.

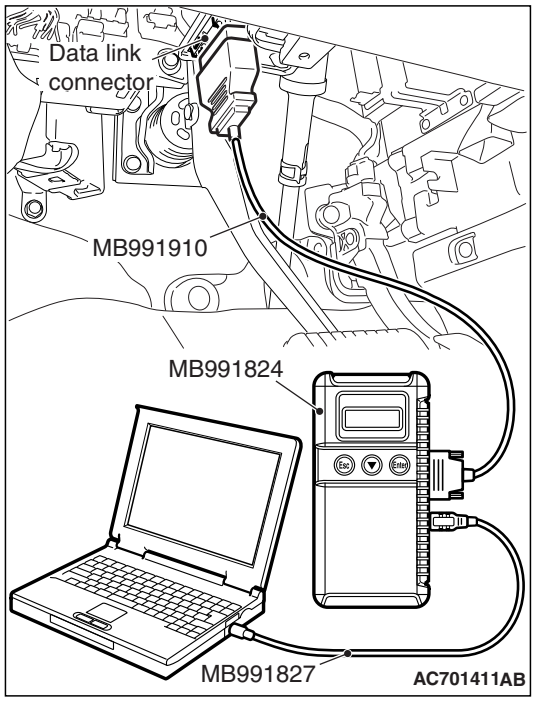
With the ignition switch in the LOCK (OFF) position, check if the following function operates normally:

- Hazard warning light
- Central door locking system

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to GROUP 54A, Malfunction of ETACS-ECU power supply circuit P.54A-793.



STEP 2. Using scan tool MB991958, read the diagnostic trouble code.

⚠ CAUTION

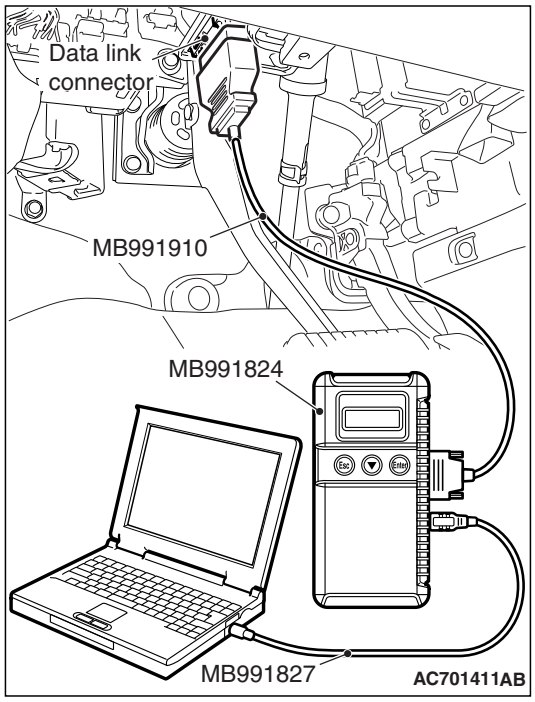
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to GROUP 54A, Diagnosis P.54A-742.

NO : Go to Step 3.



STEP 3. Using scan tool MB991958, check data list.

Check the signals related to the power window operation.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."

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

(3) Check the data list of the ETACS.

- Turn the ignition switch to the LOCK (OFF) position.

Item No.	Item name	Normal condition
254	IG voltage	Battery positive voltage

(4) Turn the ignition switch to the "LOCK" (OFF) position.

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 4.

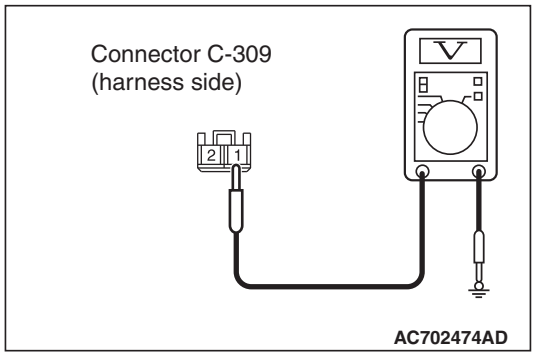
NO : Refer to GROUP 54A, Inspection Procedure 2: ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54A-800.

STEP 4. Check ETACS-ECU connector C-309 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-309 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.



STEP 5. Check the fusible link (34) line of power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-309.

(1) Disconnect ETACS-ECU connector C-309 and measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between terminal 1 and ground.

- The voltage should measure approximately 12 volts (battery positive voltage).

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 wiring harness between ETACS-ECU connector C-309 (terminal 1) and fusible link (34).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-309 (terminal 1) and fusible link (34) in good condition?

YES : No action is necessary and testing is complete.

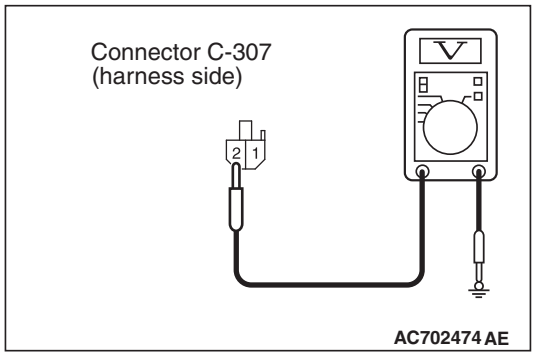
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the power window works normally.

STEP 7. Check ETACS-ECU connector C-307 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-307 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.



STEP 8. Check the fusible link (36) line of power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-307.

(1) Disconnect ETACS-ECU connector C-307 and measure the voltage available at the wiring harness side of the connector.

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

- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 10.

NO : Go to Step 9.

STEP 9. Check the wiring harness between ETACS-ECU connector C-307 (terminal 2) and fusible link (36).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-307 (terminal 2) and fusible link (36) in good condition?

YES : No action is necessary and testing is complete.

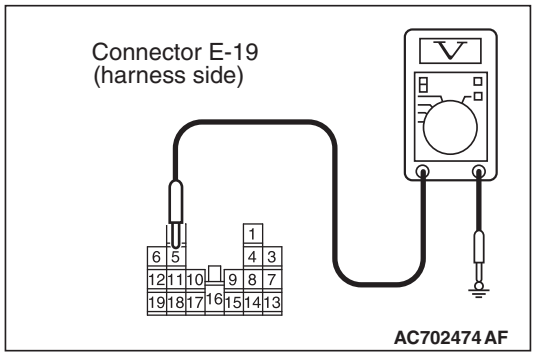
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the power window works normally.

STEP 10. Check power window main switch connector E-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-19 in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.



STEP 11. Check the ETACS-ECU connector C-315 line circuit to the power window main switch. Measure the voltage at power window main switch connector E-19.

(1) Disconnect power window main switch connector E-19 and measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between terminal 5 and ground.

- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 14.

NO : Go to Step 12.

STEP 12. Check ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-315 in good condition?

YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.

STEP 13. Check the wiring harness between ETACS-ECU connector C-315 (terminal 10) and power window main switch connector E-19 (terminal 5).

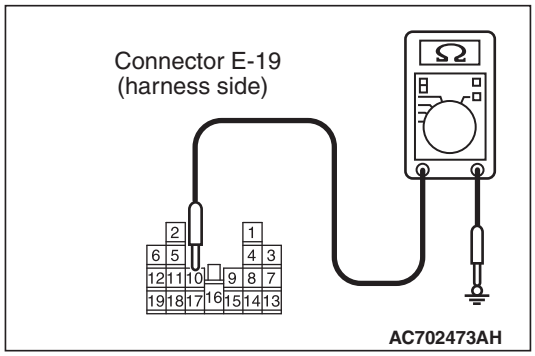
- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-126 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-126 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-315 (terminal 10) and power window main switch connector E-19 (terminal 5) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the power window works normally.



STEP 14. Check the ground circuit to the power window main switch. Measure the resistance at power window main switch connector E-19.

(1) Disconnect power window main switch connector E-19 and measure the resistance available at the wiring harness side of the connector.
(2) Measure the resistance value between terminal 10 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

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

STEP 15. Check the wiring harness between power window main switch connector E-19 (terminal 10) and ground.

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between power window main switch connector E-19 (terminal 10) and ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 16. Retest the system.

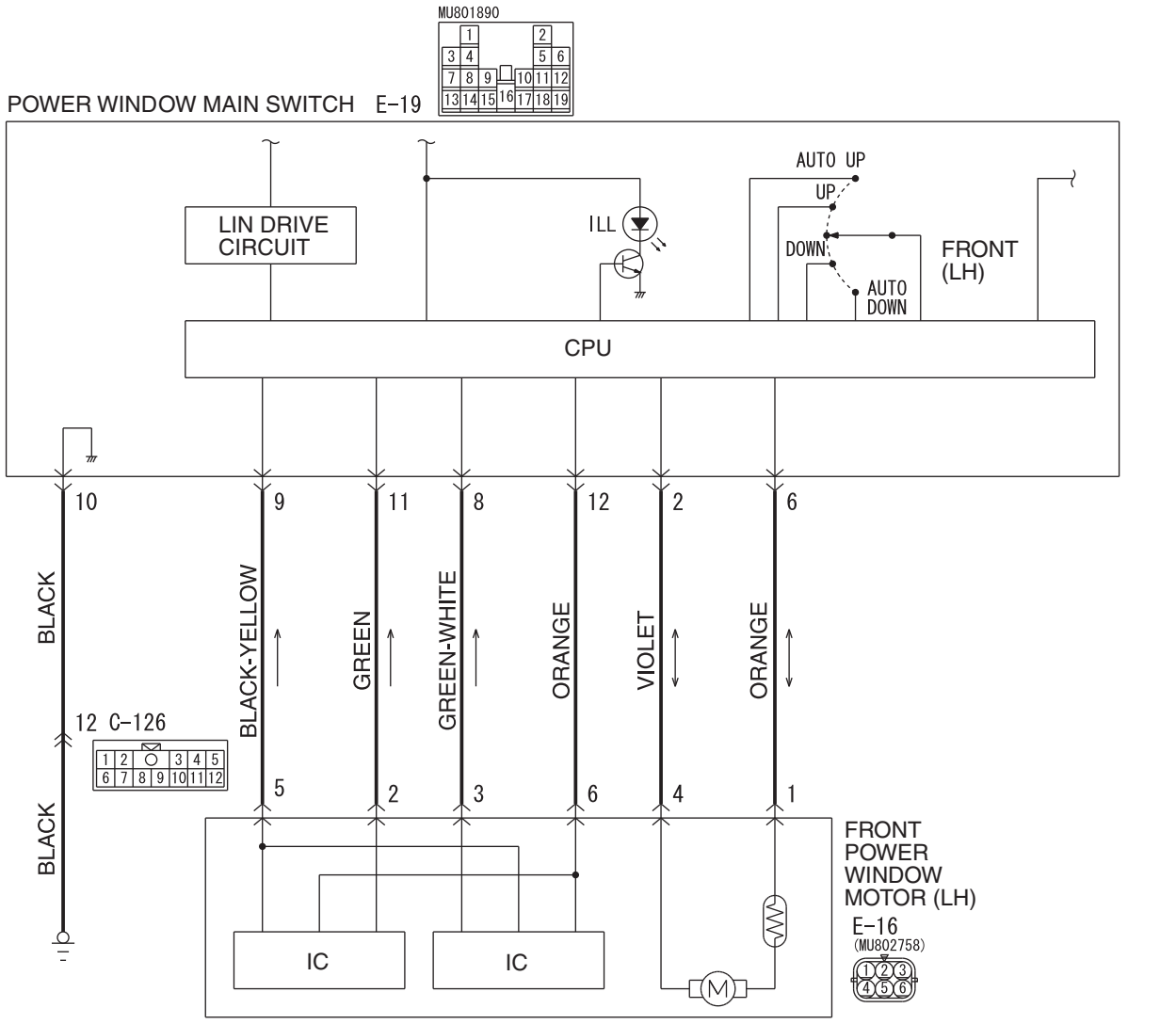
Check that the all the power windows work.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.
NO : Replace ETACS-ECU. Check that the power window works normally.

INSPECTION PROCEDURE C-2: Driver's Power Window does not Work by means of The Power Window Main Switch.

Driver's Power Window Circuit



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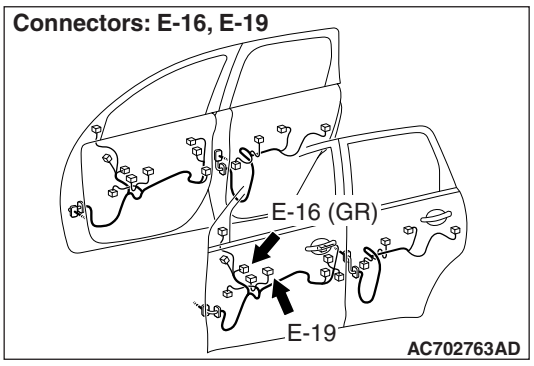


TSB Revision

CIRCUIT OPERATION

The front power window motor (LH) receives a signal ("UP", "DOWN", "AUTO UP" or "AUTO DOWN") from the front power window main switch and controls the driver's power window.

TECHNICAL DESCRIPTION (COMMENT)

The power window main switch or the front power window motor (LH) may be defective.

TROUBLESHOOTING HINTS

- The power window main switch may be defective
- The front power window motor (LH) may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

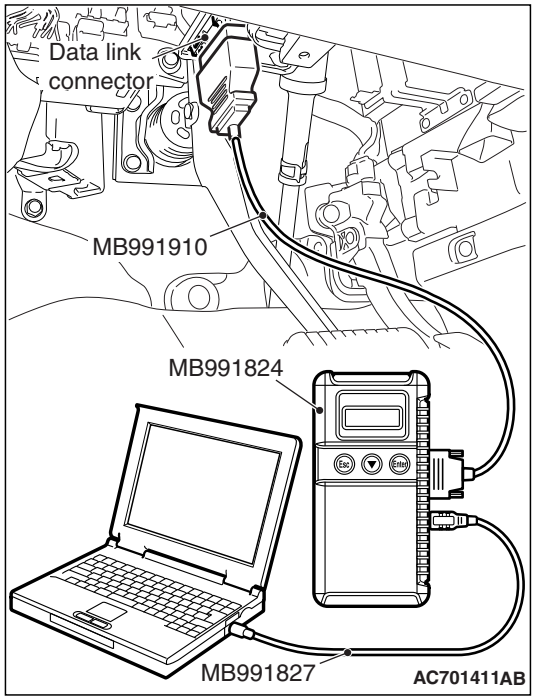
⚠ CAUTION

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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.42A-78.
NO : Go to Step 2.



STEP 2. Check the power window main switch.
Check that the passenger's or rear power window works by means of the power window main switch.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Refer to P.42A-78.

STEP 3. Check power window main switch connector E-19, front power window motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector E-19, front power window motor (LH) connector E-16 in good condition?

YES : Go to Step 4.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window works normally.

STEP 4. Check the wiring harness between power window main switch connector E-19 (terminals 2, 6) and front power window motor (LH) connector E-16 (terminals 4, 1).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between power window main switch connector E-19 (terminals 2, 6) and front power window motor (LH) connector E-16 (terminals 4, 1) in good condition?

YES : Go to Step 5.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the power works normally.

STEP 5. Retest the system.
Check that the driver's power window works by means of the power window main switch.

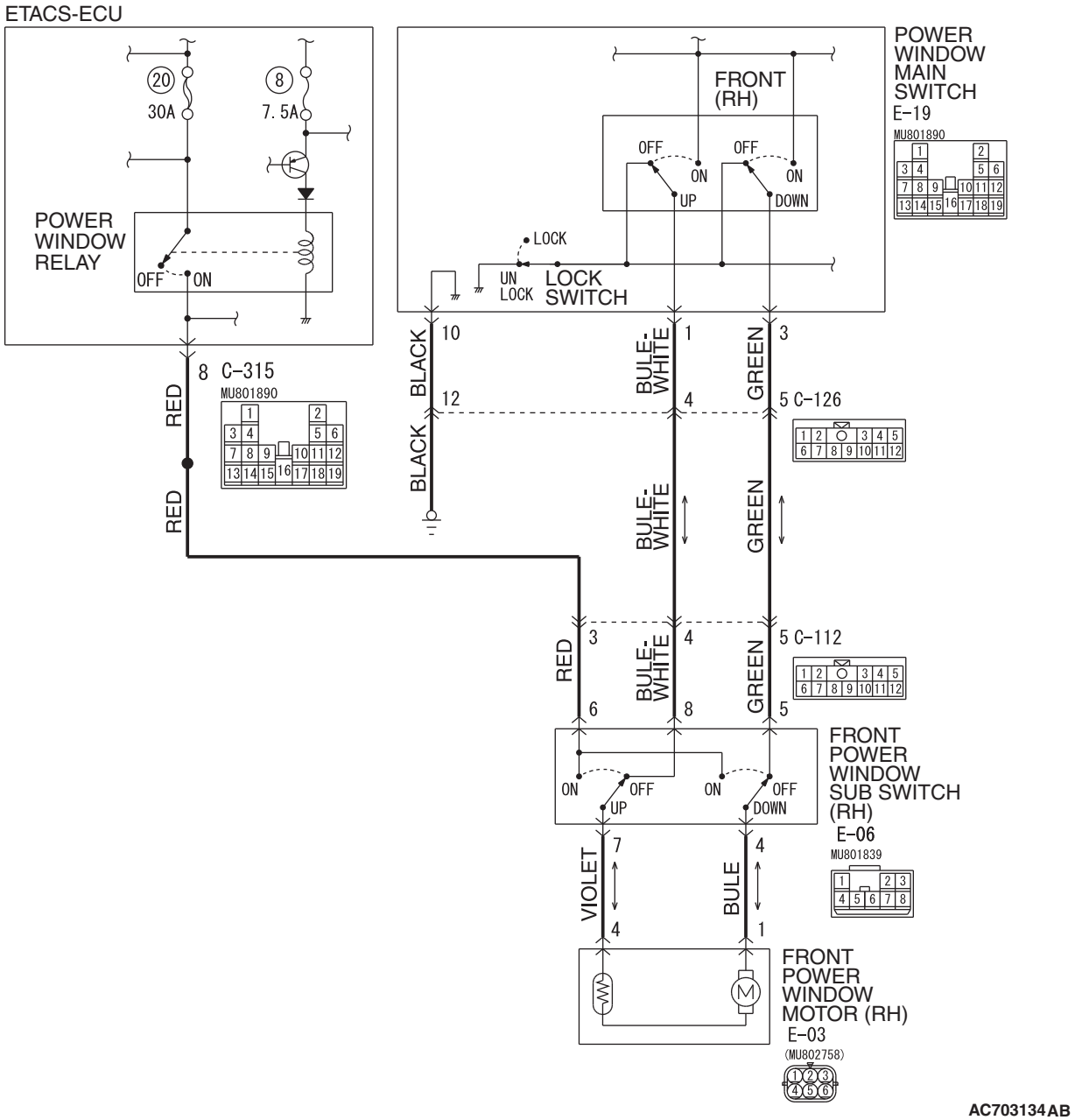
Q: Is the check result normal?

YES : No action is necessary and testing is complete.
NO : Replace the front power window motor (LH). Check that the power works normally.

INSPECTION PROCEDURE C-3: Relevant Power Window(s) does not Work by means of The Front and Rear Passenger's Power Window Sub Switches.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Power Window (Passenger) Circuit



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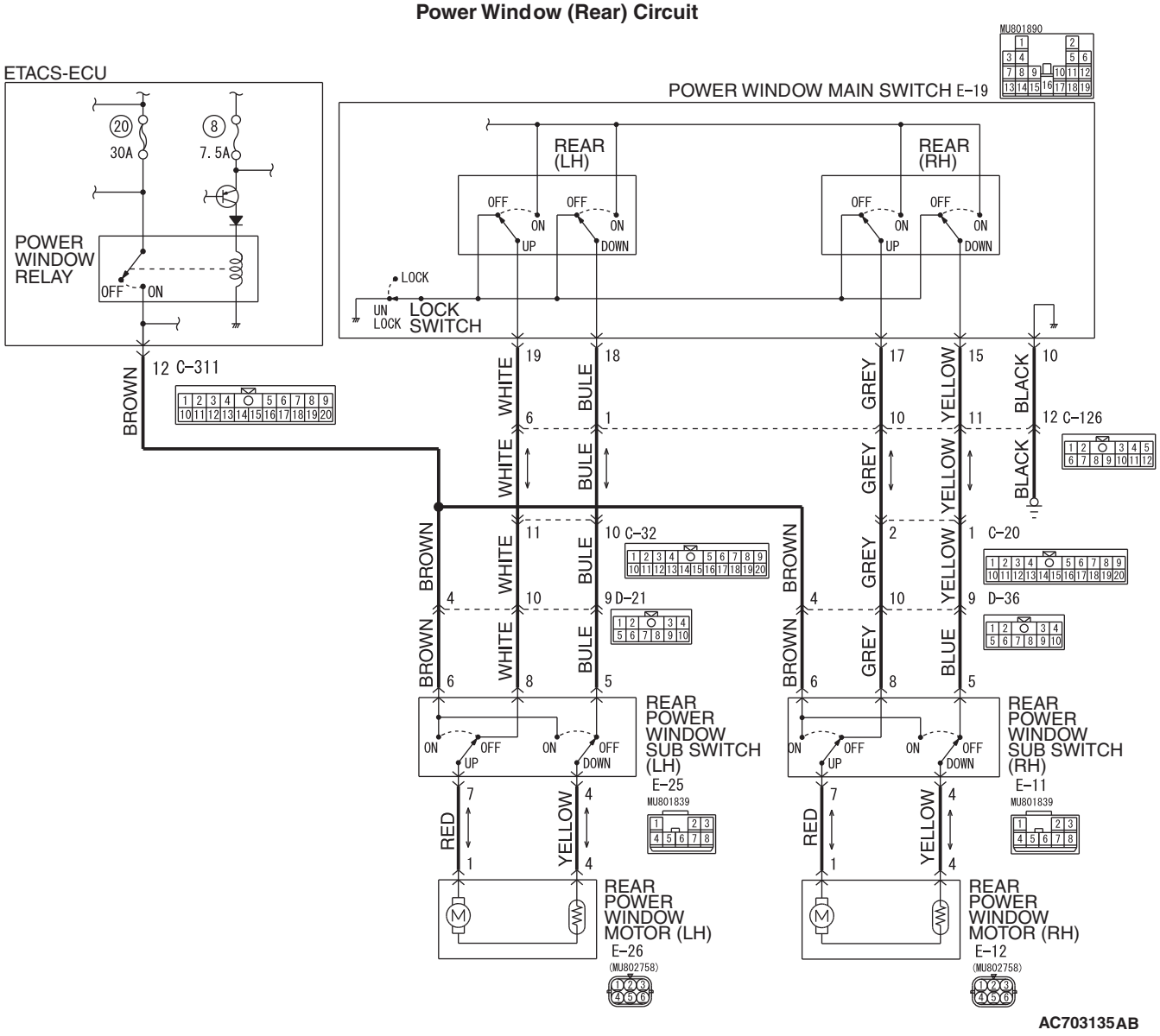
TSB Revision

Power Window (Rear) Circuit



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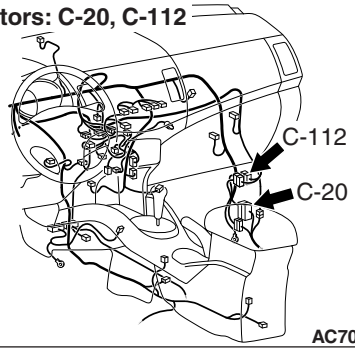
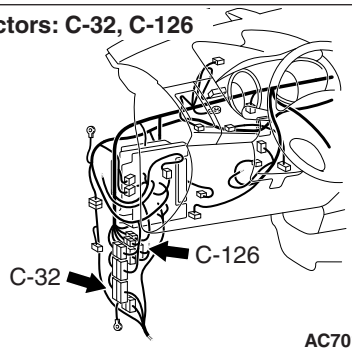
Connectors: C-20, C-112



AC701496AK

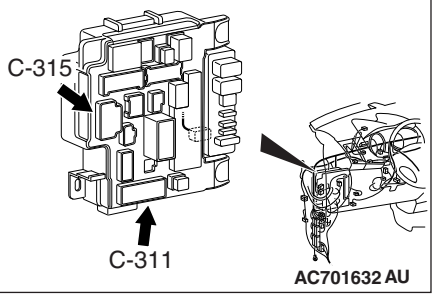
Connectors: C-32, C-126



AC701918AF

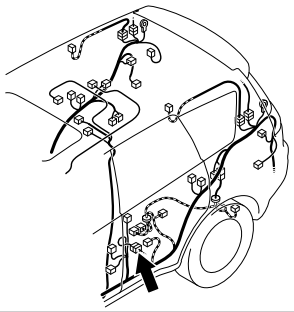
TSB Revision

Connectors: C-311, C-315



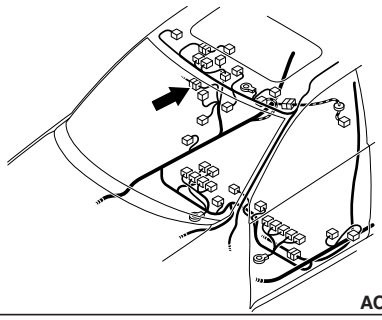
AC701632 AU

Connector: D-21



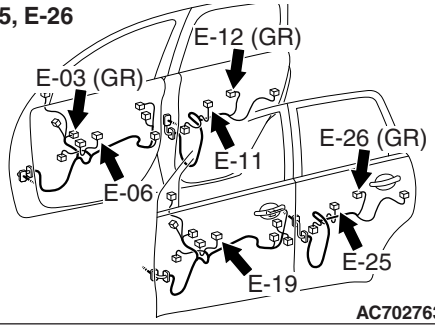
AC901080AH

Connector: D-36



AC901079AT

Connectors: E-03, E-06, E-11, E-12, E-19, E-25, E-26



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CIRCUIT OPERATION

power window motors raise and lower the door windows when the front passenger's or rear passenger's sub switch is moved to "UP" or "DOWN" position.

TECHNICAL DESCRIPTION (COMMENT)

A power window sub switch or power window motor may be defective. Or, the power window lock switch (incorporated in the power window main switch in the driver’s door) may remain pressed in the "LOCK" position.

TROUBLESHOOTING HINTS

- The power window main switch may be defective
- The front power window sub switch may be defective
- The rear power window sub switches may be defective
- The front power window motor (RH) may be defective
- The rear power window motors may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSTIC PROCEDURE

STEP 1. Check the power window lock switch.

Q: Is the power window lock switch in the "UNLOCK" position?

YES : Go to Step 2.

NO : Operate the power window lock switch to the "UNLOCK" position. When the power window sub switch is operated, the power windows should raise and lower normally.

STEP 2. Check power window main switch connector E-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-19 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

STEP 3. Check which door window does not move.

Q: Which door window does not move?

Front passenger's door : Go to Step 4.

Rear left door : Go to Step 13.

Rear right door : Go to Step 22.

STEP 4. Check front power window sub switch connector E-06 and front power window motor (RH) connector E-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are front power window sub switch connector E-06 and front power window motor (RH) connector E-03 in good condition?

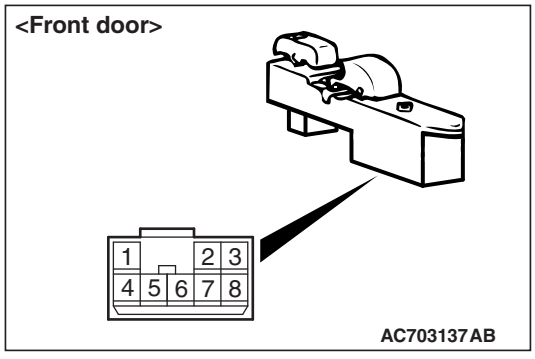
YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

STEP 5. Check the front power window sub switch for continuity.

(1) Remove the front power window sub switch. Refer to GROUP 42A, Door, Door Glass and Regulator P.42A-142.

(2) Check continuity when the front power window sub switch is operated to "UP" or "DOWN" position.



Switch position	Tester connection	Specified condition
UP	4 –5, 6 –7	Continuity exists (2 Ω or less)
OFF	4 –5, 7 –8	
DOWN	4 –6, 7 –8	

Q: Is the front power window sub switch normal?

YES : Go to Step 6.

NO : Replace the front power window sub switch. When the front power window sub switch is operated, the front power window should raise and lower normally.

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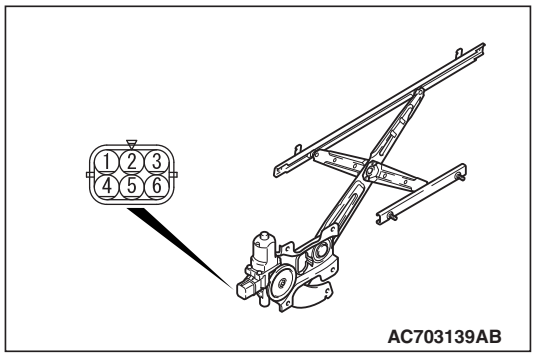


STEP 6. Check the front power window motor (RH).

(1) Remove the front power regulator assembly (RH). Refer to GROUP 42A, Door, Door Glass and Regulator P.42A-142.

(2) Connect a battery to the motor terminal, and check that the motor runs freely.

Battery connection	Slider position
• Connect terminal 1 to the negative battery terminal • Connect terminal 4 to the positive battery terminal	UP
• Connect terminal 4 to the negative battery terminal • Connect terminal 1 to the positive battery terminal	DOWN

Q: Is the front power window motor (RH) normal?

YES : Go to Step 7.

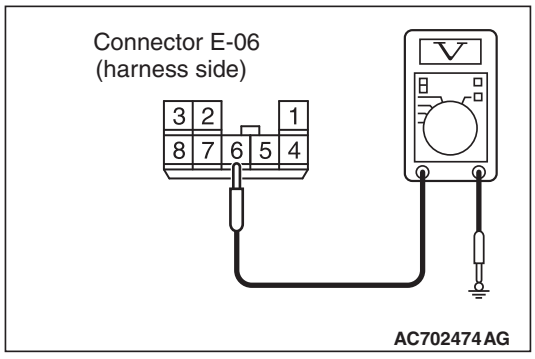
NO : Replace the front power assembly (RH). When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

STEP 7. Check the battery power supply circuit to the front power window sub switch. Measure the voltage at front power window sub switch connector E-06.

(1) Disconnect front power window sub switch connector E-06 and measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between terminal 6 and ground.

- The voltage should measure approximately 12 volts (battery positive voltage).



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

YES : Go to Step 10.

NO : Go to Step 8.

STEP 8. Check ETACS-ECU connector C-315 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-315 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

STEP 9. Check the wiring harness between ETACS-ECU connector C-315 (terminal 8) and front power window sub switch connector E-06 (terminal 6).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-112. If intermediate connectors C-112 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-315 (terminal 8) and front power window sub switch connector E-06 (terminal 6 in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the front power window sub switch is operated, the front power window (RH) should raise and lower normally.

STEP 10. Check the ground circuit to the front power window sub switch. Measure the resistance at front power window sub switch connector E-06.

(1) Disconnect front power window sub switch connector E-19 and measure the resistance available at the wiring harness side of the connector.

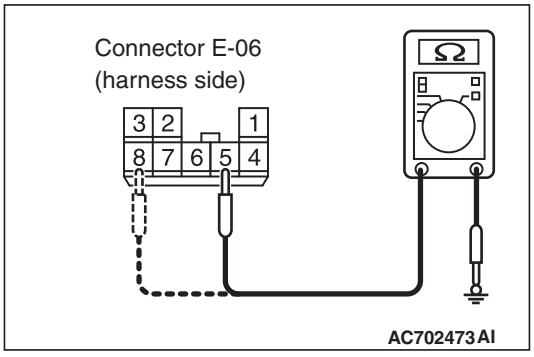
(2) Measure the resistance value between terminal 5 and ground, and also between terminal 8 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.



STEP 11. Check the wiring harness between power window main switch connector E-19 (terminals 1, 3) and front power window sub switch connector E-06 (terminals 8, 5).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connectors C-112 and C-126. If intermediate connector C-112 or C-126 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-19 (terminals 1, 3) and front power window sub switch connector E-06 (terminals 8, 5) in good condition?

YES : Replace the power window main switch. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

STEP 12. Check the wiring harness between front power window sub switch connector E-06 (terminals 4, 7) and front power window motor (RH) connector E-03 (terminals 1, 4).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between front power window sub switch connector E-06 (terminals 4, 7) and front power window motor (RH) connector E-03 (terminals 1, 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

STEP 13. Check rear power window sub switch (LH) connector E-25 and rear power window motor (LH) connector E-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear power window sub switch (LH) connector E-25 and rear power window motor (LH) connector E-26 in good condition?

YES : Go to Step 14.

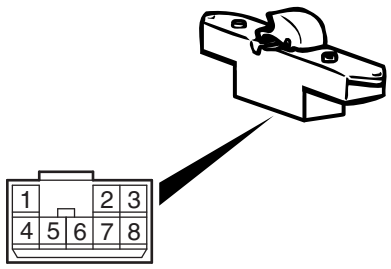
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

STEP 14. Check the rear power window sub switch (LH) for continuity.

(1) Remove the rear power window sub switch (LH). Refer to GROUP 42A, Door, Door Glass and Regulator P.42A-142.

(2) Check continuity when the rear power window sub switch (LH) is operated to "UP" or "DOWN" position.

<Rear door>



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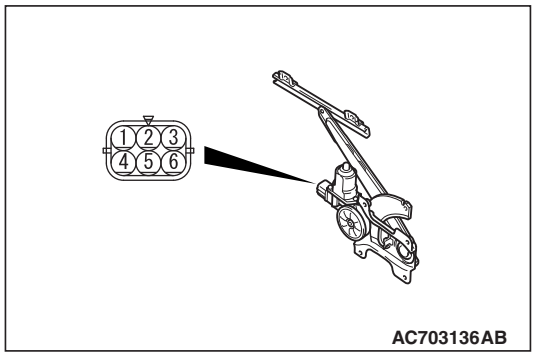
Switch position	Tester connection	Specified condition
UP	4 –5, 6 –7	Continuity exists (2 Ω or less)
OFF	4 –5, 7 –8	
DOWN	4 –6, 7 –8	

Q: Is the rear power window sub switch (LH) normal?

YES : Go to Step 15.

NO : Replace the rear power window sub switch (LH). When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.



STEP 15. Check the rear power window motor (LH).

(1) Remove the rear power window regulator assembly (LH). Refer to GROUP 42A, Door, Door Glass and Regulator P.42A-142.

(2) Connect a battery to the motor terminal, and check that the motor runs freely.

Battery connection	Slider position
• Connect terminal 1 to the negative battery terminal • Connect terminal 4 to the positive battery terminal	UP
• Connect terminal 4 to the negative battery terminal • Connect terminal 1 to the positive battery terminal	DOWN

Q: Is the rear power window motor (LH) normal?

YES : Go to Step 16.

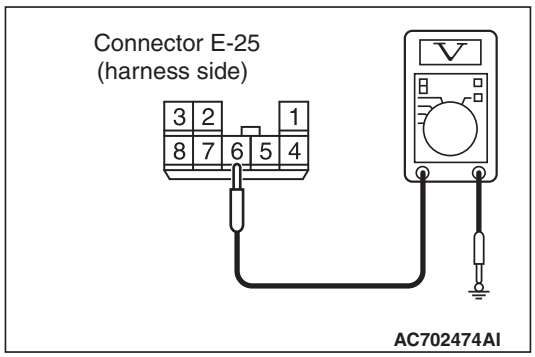
NO : Replace the rear power window motor (LH). When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

STEP 16. Check the battery power supply circuit to the rear power window sub switch (LH). Measure the voltage at rear power window sub switch (LH) connector E-25.

(1) Disconnect rear power window sub switch (LH) connector E-25 and measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between terminal 6 and ground.

- The voltage should measure approximately 12 volts (battery positive voltage).



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

YES : Go to Step 19.

NO : Go to Step 17.

STEP 17. Check ETACS-ECU connector C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-311 in good condition?

YES : Go to Step 18.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

STEP 18. Check the wiring harness between ETACS-ECU connector C-311 (terminal 12) and rear power window sub switch (LH) connector E-25 (terminal 6).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connectors D-21. If intermediate connector D-21 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-311 (terminal 12) and rear power window sub switch (LH) connector E-25 (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

STEP 19. Check the ground circuit to the rear power window sub switch (LH). Measure the resistance at rear power window sub switch (LH) connector E-25.

(1) Disconnect rear power window sub switch (LH) connector E-25 and measure the resistance available at the wiring harness side of the connector.

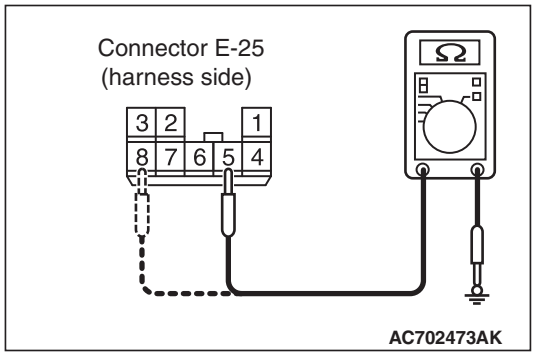
(2) Measure the resistance value between terminal 5 and ground, and also between terminal 8 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 21.

NO : Go to Step 20.



STEP 20. Check the wiring harness between power window main switch connector E-19 (terminals 18, 19) and rear power window sub switch (LH) connector E-25 (terminals 5, 8).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connectors C-32, C-126 and D-21. If intermediate connector C-32, C-126 or D-21 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

Q: Is the wiring harness between power window main switch connector E-19 (terminals 18, 19) and rear power window sub switch (LH) connector E-25 (terminals 5, 8) in good condition?

YES : Replace the power window main switch. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

STEP 21. Check the wiring harness between rear power window sub switch (LH) connector E-25 (terminals 4, 7) and rear power window motor (LH) connector E-26 (terminals 4, 1).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between rear power window sub switch (LH) connector E-25 (terminals 4, 7) and rear power window motor (LH) connector E-26 (terminals 4, 1) in good condition?

YES : Replace the power window main switch. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

STEP 22. Check rear power window sub switch (RH) connector E-11 and rear power window motor (RH) connector E-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear power window sub switch (RH) connector E-11 and rear power window motor (RH) connector E-12 in good condition?

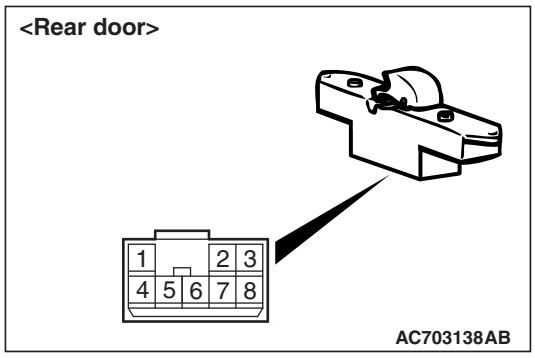
YES : Go to Step 23.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

STEP 23. Check the rear power window sub switch (RH) for continuity.

(1) Remove the rear power window sub switch (RH). Refer to GROUP 42A, Door, Door Glass and Regulator P.42A-142.

(2) Check continuity when the rear power window sub switch (RH) is operated to "UP" or "DOWN" position.

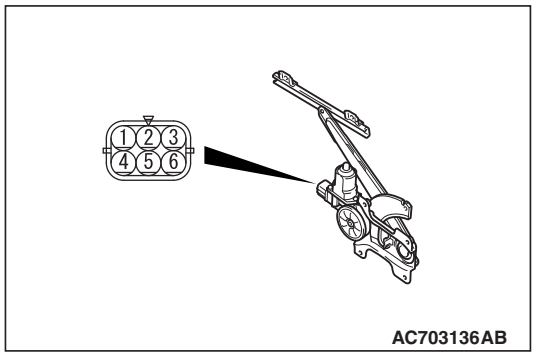


Switch position	Tester connection	Specified condition
UP	4 –5, 6 –7	Continuity exists (2 Ω or less)
OFF	4 –5, 7 –8	
DOWN	4 –6, 7 –8	

Q: Is the rear power window sub switch (RH) normal?

YES : Go to Step 24.

NO : Replace the rear power window sub switch (RH). When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.



STEP 24. Check the rear power window motor (RH).

(1) Remove the rear power window regulator assembly (RH). Refer to GROUP 42A, Door, Door Glass and Regulator P.42A-142.

(2) Connect a battery to the motor terminal, and check that the motor runs freely.

Battery connection	Slider position
• Connect terminal 1 to the negative battery terminal • Connect terminal 4 to the positive battery terminal	UP
• Connect terminal 4 to the negative battery terminal • Connect terminal 1 to the positive battery terminal	DOWN

Q: Is the rear power window motor (RH) normal?

YES : Go to Step 25.

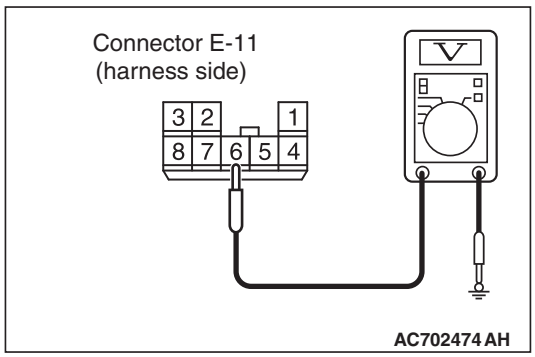
NO : Replace the rear power window motor (RH). When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

STEP 25. Check the battery power supply circuit to the rear power window sub switch (RH). Measure the voltage at rear power window sub switch (RH) connector E-11.

(1) Disconnect rear power window sub switch (RH) connector E-11 and measure the voltage available at the wiring harness side of the connector.

(2) Measure the voltage between terminal 6 and ground.

- The voltage should measure approximately 12 volts (battery positive voltage).



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

YES : Go to Step 28.

NO : Go to Step 26.

STEP 26. Check ETACS-ECU connector C-311 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-311 in good condition?

YES : Go to Step 27.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

STEP 27. Check the wiring harness between ETACS-ECU connector C-311 (terminal 12) and rear power window sub switch (RH) connector E-11 (terminal 6).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connectors D-36. If intermediate connector D-36 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-311 (terminal 12) and rear power window sub switch (RH) connector E-11 (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

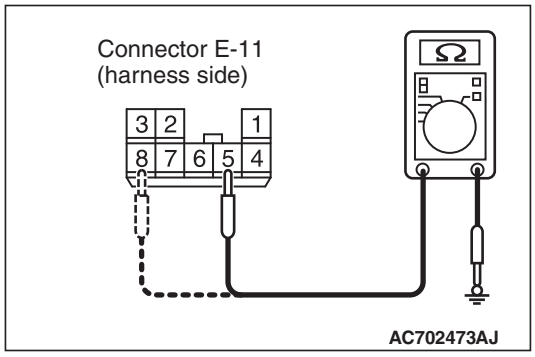
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

STEP 28. Check the ground circuit to the rear power window sub switch (RH). Measure the resistance at rear power window sub switch (RH) connector E-11.

(1) Disconnect rear power window sub switch (RH) connector E-11 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between terminal 5 and ground, and also between terminal 8 and ground.

- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 30.

NO : Go to Step 29.

STEP 29. Check the wiring harness between power window main switch connector E-19 (terminals 15, 17) and rear power window sub switch (RH) connector E-11 (terminals 5, 8).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connectors C-20, C-126 and D-36. If intermediate connector C-20, C-126 or D-36 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

Q: Is the wiring harness between power window main switch connector E-19 (terminals 15, 17) and rear power window sub switch (RH) connector E-11 (terminals 5, 8) in good condition?

YES : Replace the power window main switch. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

STEP 30. Check the wiring harness between rear power window sub switch (RH) connector E-11 (terminals 4, 7) and rear power window motor (RH) connector E-12 (terminals 4, 1).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between rear power window sub switch (RH) connector E-11 (terminals 4, 7) and rear power window motor (RH) connector E-12 (terminals 4, 1) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

INSPECTION PROCEDURE C-4: Front and/or Rear Passenger's Power Window(s) do not Work by means of The Power Window Main Switch.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

CIRCUIT OPERATION

When you operate each power window switch for front or rear passengers (incorporated in the power window main switch), the corresponding power window motor operates, opening or closing each power window.

TECHNICAL DESCRIPTION (COMMENT)

If the corresponding power window opens and closes normally when each power window sub-switch is operated, the power window main switch may be defective.

TROUBLESHOOTING HINT

- The power window main switch may be defective
- The front power window sub switch may be defective
- The rear power window sub switches may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check the power window main switch.
Check that the driver's power window works by means of the power window main switch.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Refer to inspection procedure 2 "Driver's power window does not work by means of the power window main switch P.42A-96."

STEP 2. Check the power window sub switch.
Check that each power window works by means of the respective power window sub switch when the power window lock switch is turned off.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Refer to inspection procedure 3 "Relevant power window(s) does not work by means of the front and rear passenger's power window sub switches P.42A-99."

STEP 3. Check the power supply system.

With the ignition switch in the LOCK (OFF) position, check if the following function operates normally:

- Hazard warning light

Q: Is the check result normal?

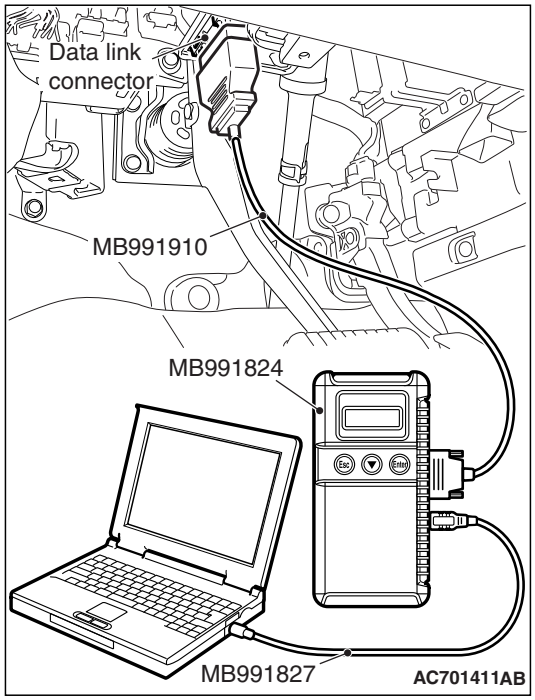
YES : Go to Step 4.

NO : Refer to GROUP 54A –Malfunction of ETACS-ECU power supply circuit P.54A-793.

STEP 4. Using scan tool MB991958, read the diagnostic trouble code.

⚠ 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. Refer to "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to GROUP 54A, Diagnosis P.54A-742.

NO : Go to Step 5.

STEP 5. Retest the system.

Check that the front and/or rear passenger's power windows work by means of the power window main switch.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

NO : Replace ETACS-ECU. Check that the power window works normally.

INSPECTION PROCEDURE C-5: The Power Window Timer Function does not Work Normally.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

COMMENTS ON TROUBLE SYMPTOM

If the power window timer does not work normally, a malfunction of the power window main switch or ETACS-ECU is suspected.

PROBABLE CAUSES

- Malfunction of the door switch (Front: RH)
- Malfunction of the power window main switch
- Malfunction of ETACS-ECU
- Damaged wiring harness and connectors

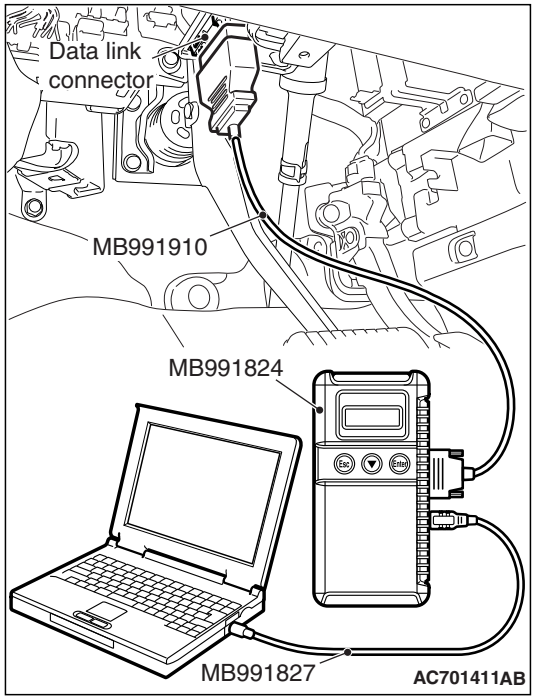
DIAGNOSTIC PROCEDURE

STEP 1. Check the power supply system.
With the ignition switch in the LOCK (OFF) position, check if the following function operates normally:

- Hazard warning light
- Central door locking system

Q: Is the check result normal?

YES : Go to Step 2.
NO : Refer to GROUP 54A, Malfunction of ETACS-ECU power supply circuit P.54A-793.



STEP 2. Using scan tool MB991958, check data list.
Check the signals related to the power window timer function operation.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check the data list of the ETACS.
- Turn the ignition switch to the LOCK (OFF) position.
- Close the driver's door.
- Close the passenger's door.

Item No.	Item name	Normal condition
254	IG voltage	Battery voltage
256	Dr door ajar switch	Close
257	As door ajar switch	Close

(4) Turn the ignition switch to the "LOCK" (OFF) position.

OK: Normal condition is displayed.

Q: Is the check result normal?

Normal conditions are displayed for all the items. : Go to Step 3.
Normal condition is not displayed for item No. 254. : Refer to GROUP 54A, Inspection Procedure 2: ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54A-800.
Normal condition is not displayed for item No. 256. : Refer to GROUP 54A, Inspection Procedure 5: ETACS-ECU does not receive any signal from the front door switch (LH) P.54A-813.
Normal condition is not displayed for item No. 257. : Refer to GROUP 54A, Inspection Procedure 6: ETACS-ECU does not receive any signal from the front door switch (RH) P.54A-816.

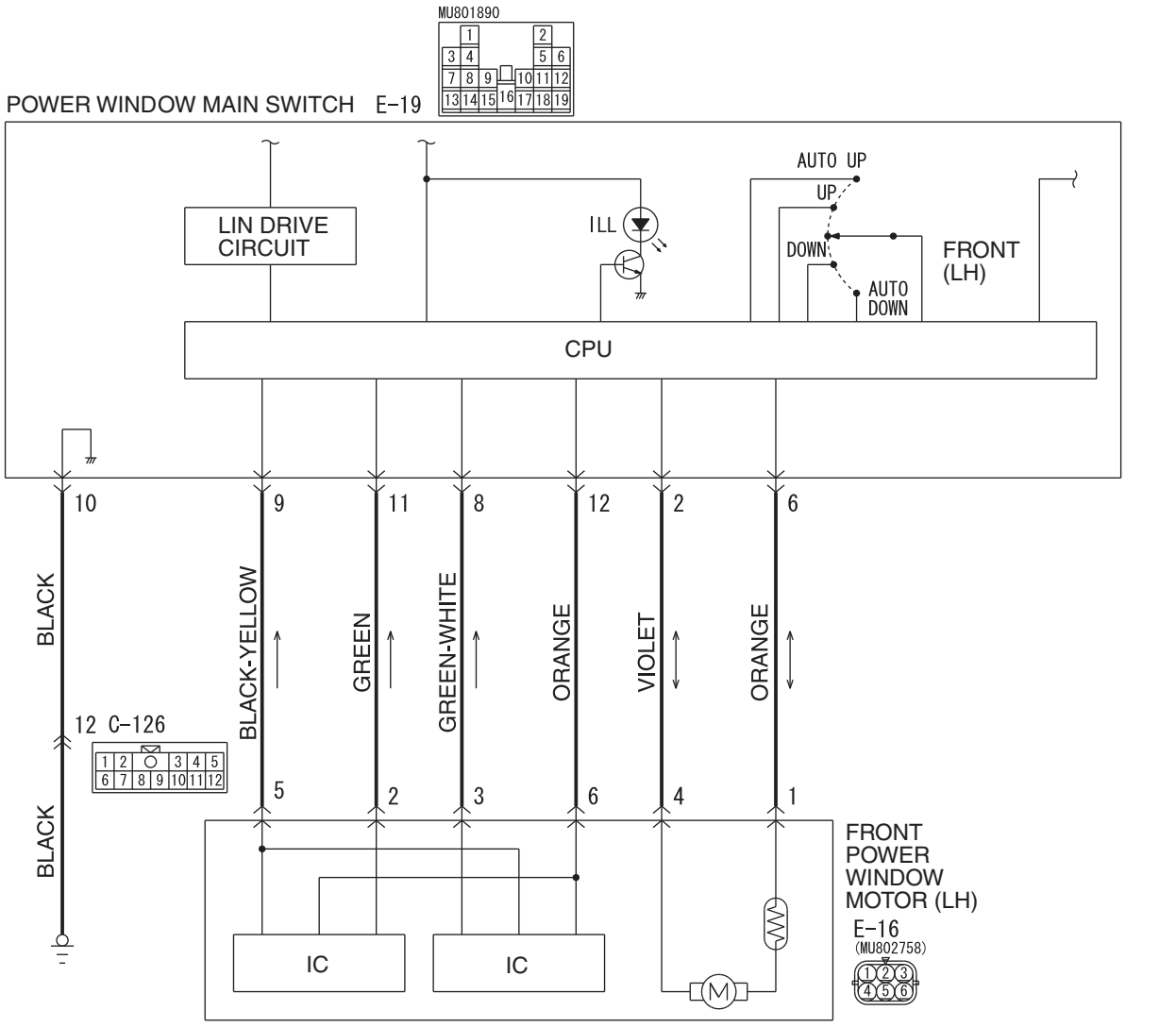
STEP 3. Retest the system.
Check that the power window timer function works normally.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 –How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction P.00-15).
NO : Replace the power window main switch.

INSPECTION PROCEDURE C-6: Power Window Anti-trap Function does not Work Normally <Driver's Side Only>.

Driver's Power Window Circuit



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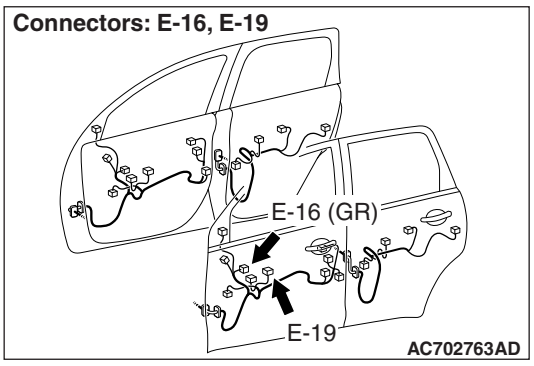

CIRCUIT OPERATION

Malfunction of the power window motor revolution detection sensor is suspected.

TROUBLESHOOTING HINTS

- Malfunction of the power window motor
- Damaged wiring harness and connectors

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DIAGNOSTIC PROCEDURE

STEP 1. Check the power window operating current.
Check that the power window operating current is normal. (Refer to P.42A-134).

Q: Is the check result normal?

YES : Door window glass adjustment (Refer to P.42A-132). Then go to Step 2.

NO : Replace the power window motor. Verify that the power window anti-trap function works normally.

STEP 2. Confirm the power window learning function.
Check that the power window switch has learned the fully closed position of the windows.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Make the power window switch learn the fully closed position of the windows (Refer to P.42A-134). Verify that the power window anti-trap function works normally.

STEP 3. Check power window main switch connector E-19, front power window motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector E-19, front power window motor (LH) connector E-16 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power window anti-trap function works normally.

STEP 4. Check the wiring harness between power window main switch connector E-19 (terminals 8, 9, 11, 12) and front power window motor (LH) connector E-16 (terminals 3, 5, 2, 6).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between power window main switch connector E-19 (terminals 8, 9, 11, 12) and front power window motor (LH) connector E-16 (terminals 3, 5, 2, 6) in good condition?

YES : Go to Step 5.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the power window anti-trap function works normally.

STEP 5. Retest the system.
Check that the power window anti-trap function works normally.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 –How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the front power window motor (LH). Verify that the power window anti-trap function works normally.

INSPECTION PROCEDURE C-7: The Window Glass Lowers Automatically while it is Rising <Driver's Side Only>.

CIRCUIT OPERATION

If the sliding resistance is too great when the window is being raised or the window glass encounters an object, the window glass will lower by approximately 150 mm (5.9 inches).

TROUBLESHOOTING HINTS

- Improper adjusted door window glass
- Incorrectly installed or warped glass slider
- Malfunction of the power window motor
- Malfunction of the window regulator

DIAGNOSTIC PROCEDURE

STEP 1. Check the power window anti-trap function.
Check that the power window anti-trap function works normally. Refer to P.42A-133.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to P.42A-78.

STEP 2. Check that the door window glasses are installed correctly.

Check that the door window glasses are installed correctly.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Adjust the door window glass (Refer to P.42A-132). Verify that the power window works normally.

STEP 3. Retest the system.

Check that the power window does not lower while it is being raised.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction P.00-15).

NO : Replace the power window motor of the defective window. Verify that the power window works normally.

CHECK AT ECU TERMINAL

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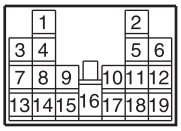
POWER WINDOW SWITCH TERMINAL CHECK

POWER WINDOW MAIN SWITCH

E-19



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Terminal No.	Check items	Check conditions	Normal conditions
1	Output to power window motor (Passenger's side)	–	–
2	Output to power window motor (Driver's side)	–	–
3	Output to power window motor (Passenger'side)	–	–
4	Power supply	Power window relay: ON	Battery positive voltage
5	Power supply	Always	Battery positive voltage
6	Output to power window motor (Driver's side)	–	–
7	LIN communication line (between ETACS-ECUs)	Always	0 to 12 V (pulse signal)
8	Input from power window motor (pulse sensor signal)	When the power windows are operating	0 to 5 V (pulse signal)
9	Input from power window motor (pulse sensor ground)	–	0.5 V or less
10	Ground	Always	1 V or less
11	Input from power window motor (pulse sensor signal)	When the power windows are operating	0 to 5 V (pulse signal)
12	Input from power window motor (power supply to pulse sensor)	When the power windows are operating	5 V
13	–	–	–
14	–	–	–
15	Output to power window motor (Rear right side)	–	–
16	–	–	–
17	Output to power window motor (Rear right side)	–	–
18	Output to power window motor (Rear left side)	–	–
19	Output to power window motor (Rear left side)	–	–

TSB Revision

DOOR DIAGNOSIS

INTRODUCTION TO GLASS AND DOOR DIAGNOSIS

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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 or door installation.

GLASS AND DOOR DIAGNOSTIC TROUBLESHOOTING STRATEGY

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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 malfunction is eliminated.

SYMPTOM CHART

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Symptom	Inspection procedure	Reference page
Water leak through door window glass	1	P.42A-123
Door window glass malfunction	2	P.42A-124
Water leak through door edge	3	P.42A-124
Water leak from door center	4	P.42A-124
Door hard to open	5	P.42A-125
Door does not open or close completely	6	P.42A-125
Uneven gap between body	7	P.42A-125
Wind noise around door	8	P.42A-126

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Water Leak Through Door Window Glass

DIAGNOSIS

STEP 1. Check the window glass runchannel.

Q: Is the window glass runchannel in good condition?
YES : Go to Step 2.
NO : Replace the runchannel, then go to Step 4.

STEP 2. Check the door window glass installation.

Q: Is the door window glass installed correctly?
YES : Go to Step 3.
NO : Reinstall the door window glass (Refer to P.42A-142). Then go to Step 4.

STEP 3. Check the clearance at the top of the door window glass.

Q: Is the clearance at the top of the door window glass correct?
YES : Go to Step 4.
NO : Adjust the door window glass (Refer to P.42A-142). Then go to Step 4.

STEP 4. Retest the system.

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

INSPECTION PROCEDURE 2: Door Window Glass Malfunction

DIAGNOSIS

STEP 1. Check the door window glass installation condition.

Q: Is the door window installed correctly?
YES : Go to Step 2.
NO : Reinstall the door window glass (Refer to P.42A-142). Then go to Step 4.

STEP 2. Check the delta window glass.

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

STEP 4. Retest the system.

Q: Does the door window operate correctly?
YES : The 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 the weatherstrip, then go to Step 3.

STEP 2. Check the door fit (alignment).

Q: Is the door fit (alignment) correct?
YES : Go to Step 3.
NO : Adjust the door fit (Refer to P.42A-130). Then go to Step 3 .

STEP 3. Retest the system.

Q: Is any water leaking?
YES : Return to Step 1.
NO : The 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 : Clean the drain hole, then go to Step 3.
NO : Go to Step 2.

STEP 2. Check the weatherstrip.

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

STEP 3. Retest the system.

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

INSPECTION PROCEDURE 5: Door Hard to Open

DIAGNOSIS

STEP 1. Adjust the latch and striker engagement.

Q: Is the latch and striker engagement adjusted?
YES : Go to Step 2.
NO : Adjust the latch and striker (Refer to P.42A-130). Then go to Step 4.

STEP 2. Check for lock cable and lock rod damage.

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

STEP 3. Check the 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 : Check the door outside handle and inside handle (Refer to P.42A-136 and P.42A-136). Then go to Step 4.

STEP 4. Retest the system.

Q: Does the door open easily?
YES : The 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 correct?
YES : Go to Step 2.
NO : Adjust the door hinge (Refer to P.42A-130). Then go to Step 4 .

STEP 2. Check the door for damage.

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

STEP 3. Check lubrication.

Q: Are the door check and door hinge sufficiently lubricated?
YES : Go to Step 4.
NO : Apply grease, then go to Step 4.

STEP 4. Retest the system.

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

INSPECTION PROCEDURE 7: Uneven Gap Between Body

DIAGNOSIS

Adjust the door fit (Refer to P.42A-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 holding firmly?
YES : Go to Step 2.
NO : Adjust fit of weatherstrip. Then go to Step 5.

STEP 2. Check the weatherstrip for installation condition.

Q: Is the weatherstrip installed properly?
YES : Go to Step 3.
NO : Repair or replace the weatherstrip. Then go to Step 5.

STEP 3. Check the clearance.

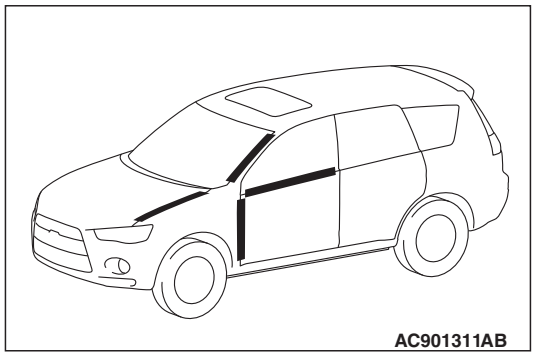
Q: Are the door glass and door weatherstrip holder installed properly?
YES : Go to Step 4.
NO : Adjust the door glass and the weatherstrip holder (Refer to P.42A-130). Then go to Step 5.

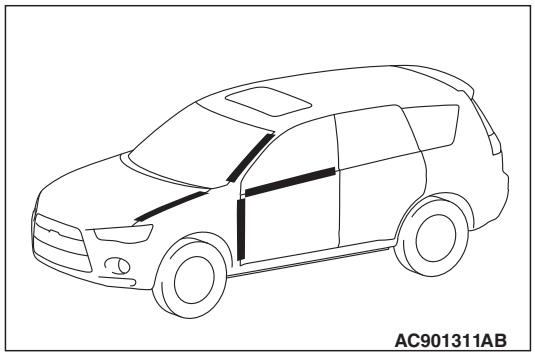
STEP 4. Check the door for deformation.

Q: Is the door deformed?
YES : Replace the door. 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 diagnosis complete.





HOW TO LOCATE WIND NOISE

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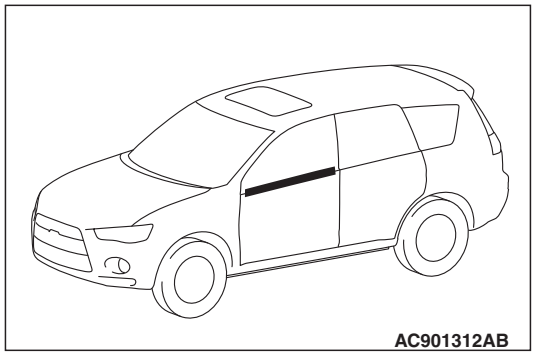
1. Attach cloth tape to every place, such as panel seams, projections, molding seams, glass and body seams, etc. which might conceivably be the source of wind noise.
2. Then make a road test to check that the places not covered by tape are not sources of wind noise.
3. Remove the strips of tape one by one, making a road test after each is removed, until a wind noise source is discovered.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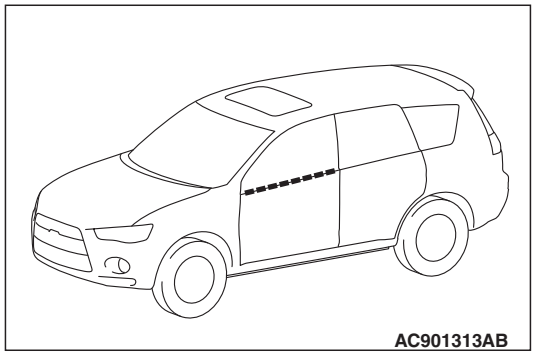
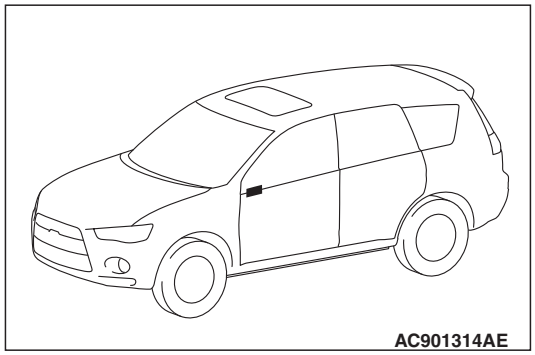
4. When such a place is found, cover it again and repeat the procedure to check if there are any other noise source.
5. If no others are found, the last remaining tape is the only source.


AC901313AB

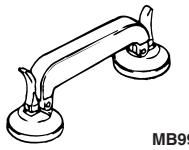
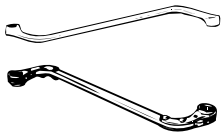
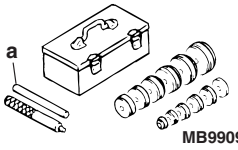
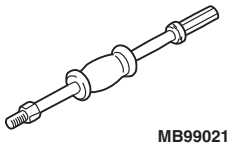
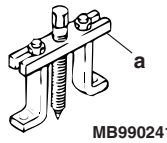
6. Cut the remaining piece of tape into smaller pieces, attach it again as it was before, and then remove the pieces one by one to narrow down the source.

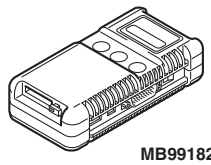
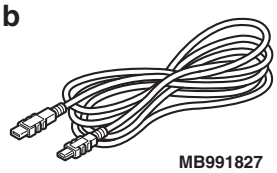
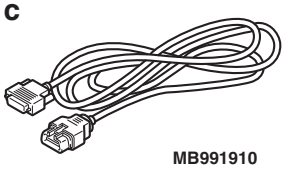
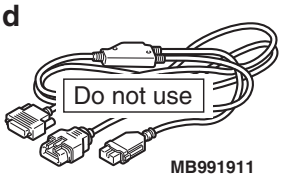
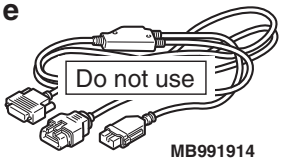
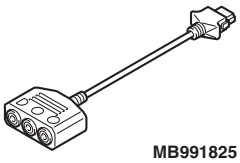
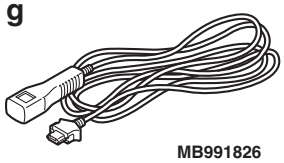

AC901314AE

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 source(s) of the wind noise is finally located, attach butyl tape, body sealer or similar material to obstruct this source as much as possible.

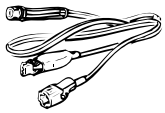
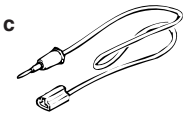
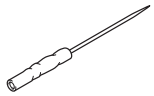
SPECIAL TOOLS

M1423000601073

Tool	Tool number and name	Supersession	Application
 MB990480	MB990480 Glass holder	General service tool	Removal and installation of power window regulator
 MB990900	MB990900 or MB991164 Door adjusting wrench	MB990900-01	Adjustment of door fit
 MB990925AI	MB990925 Bearing and oil seal installer set a: MB990939 Remover bar	MB990925-01 or General service tool	Adjustment of door striker
 MB990211	MB990211 Slider hammer	MB990211-01	
 MB990241AI	MB990241 Axle shaft puller a: MB990243 Body puller	MB990241-01 or General service tool	

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 Scan tool (M.U.T.-III sub assembly) a: Vehicle communication interface (V.C.I.) b: M.U.T.-III USB cable c: M.U.T.-III main harness A (Vehicles with CAN communication system) d: M.U.T.-III main harness B (Vehicles without CAN communication system) e: M.U.T.-III main harness C (for Daimler Chrysler models only) f: M.U.T.-III measurement adapter g: M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.** Communication line check (ECU check and service data)

TSB Revision

Tool	Tool number and name	Supersession	Application
a b  c  d MB991223	MB991223 Harness set a: MB991219 Test harness b: MB991220 LED harness c: MB991221 LED harness adapter d: MB991222 Probe	General service tools	Making voltage and resistance measurement during troubleshooting a: Connector pin contact pressure inspection b: Power circuit inspection c: Power circuit inspection d: Commercial tester connection
 MB992006	MB992006 Extra fine probe	–	Making voltage and resistance measurement during troubleshooting

ON-VEHICLE SERVICE

DOOR FIT ADJUSTMENT

M1423001100487

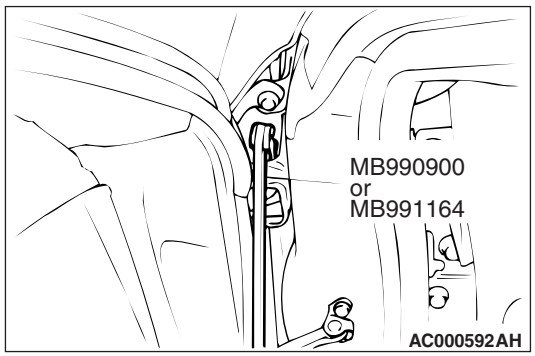
Required Special Tools:

- MB990211: Slide Hammer
- MB990243: Body Puller
- MB990900 or MB991164: Door Adjusting Wrench
- MB990939: Brass Bar

⚠ CAUTION

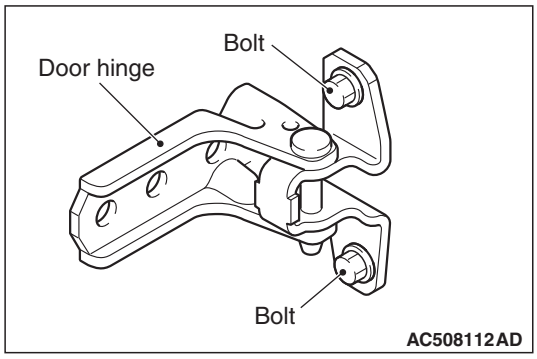
- **Do not rotate special tool MB991164 with a torque of over 98 N· m (72 ft-lb).**

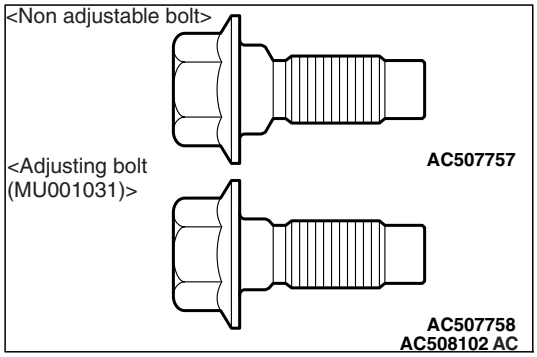
1. When the clearance between the door and the body is uneven
   (1) Apply protective tape to the fender around the hinge installation position and door edge.
   (2) Remove the splash shield front <Front door only> (Refer to GROUP 42A, Splash Shield P.42A-10).
   (3) Remove the center pillar trim, lower <Rear door only> (Refer to GROUP 52A, Interior Trim P.52A-9).



(4) 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.
(5) Move the door to adjust until the clearance around the door is even.

2. When the door is not flush with the vehicle body surface.
(1) Loosen the door-side hinge mounting bolts.
(2) Move the door to adjust so that the door is flush with the vehicle body.

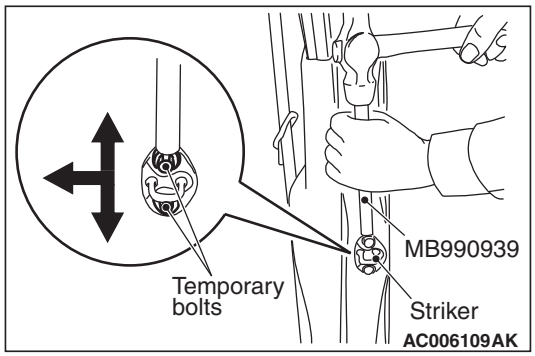


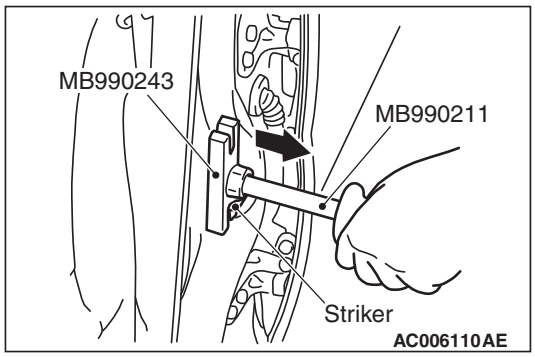


(3) If adjustment is not possible, replace the door-side door hinge mounting bolt with the adjustment bolt (MU001031).
(4) Move the door to adjust so that the door is flush with the vehicle body.
(5) Tighten the door-side door hinge mounting bolt to the specified torque.

Tightening torque: 26 ± 6 N· m (19 ± 5 ft-lb)

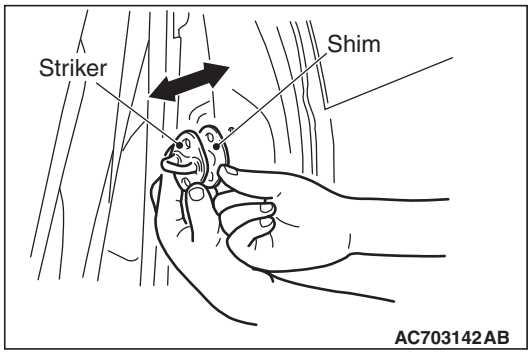
3. When the door is stiff to close and open
(1) Adjustment using the striker (toward the inside of the vehicle and vertical direction)
Install a temporary bolt instead of the striker mounting bolt, and use special tool MB990939 and a hammer to tap the bolt in the desired direction.





(2) Adjustment by using the striker (toward the outside of the vehicle)

Use special tools MB990211 and MB990243 to pull the striker toward the outside of the vehicle.



(3) Adjustment using shims (forward and rearward)

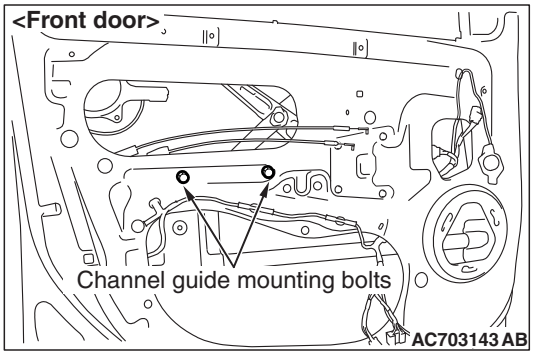
Increase or decrease the number of shims so that the striker engages with the door latch properly.

DOOR WINDOW GLASS ADJUSTMENT

M1423001000781

Check that the door glass operates smoothly and moves along the door glass runchannel when the door window glass is fully raised and fully lowered. If there is a problem, adjust by the following procedure.

1. Remove the door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11).
2. Remove the waterproof film (Refer to P.42A-152).
3. Raise the door window glass and loosen the channel guide mounting bolts to adjust tilting up/down of the glass.



POWER WINDOW CHECK

M1429004400708

Check the power window as described below. If it does not work, perform troubleshooting (Refer to P.42A-78).

- Turn off the power window lock switch of the power window main switch, and operate each of the power window switches to check that each power window operates.
- Turn on the power window lock switch of the power window main switch, and operate the front and rear passenger's power window sub switches to check that the power windows do not work.

- Turn on the power window lock switch of the power window main switch, and operate the power window main switch to check that each power window operates.

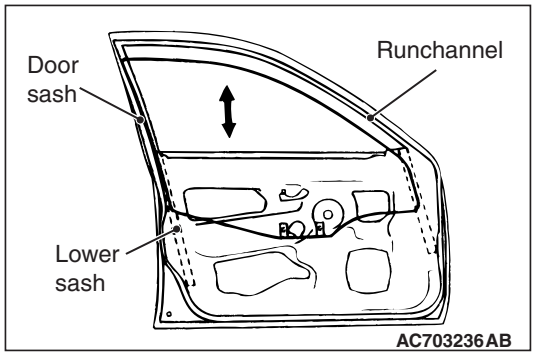
  NOTE: The power window lock switch function can be adjusted with the customization feature, confirm it before check (Refer to P.42A-138).

ADJUSTMENT OF FAULTY POWER WINDOW

M1429000900400

If the door window glass wrongly, automatically lowers while being raised, adjust or replace as follows:

1. Remove the door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11).
2. Remove waterproof film (Refer to P.42A-152).
3. 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.
4. If the door window glass does not move up and down smoothly, check and repair as follows:
   - Check the installation condition of the runchannel.
   - Straighten twist in the door sash.
   - Check the installation condition of the lower sash.
5. If repair or adjustment is impossible, replace the door assembly.

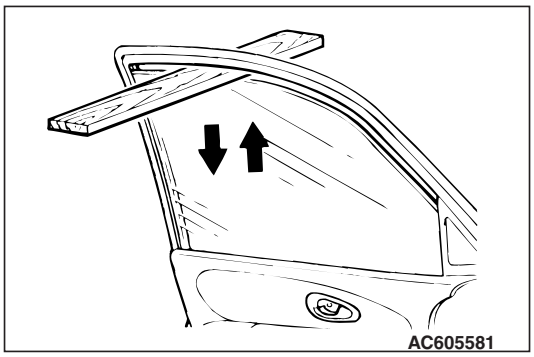


POWER WINDOW SAFETY MECHANISM CHECK <Driver's side only>

M1429013700020

1. Place an approximately 10 mm (0.39 inch) thick wood chip as shown. Then, raise the window glass.
2. Check that the window lowers by about 150 mm (5.9 inches) when the window clamps the board. If this doesn't happen, do troubleshooting. Refer to P.42A-123.

   NOTE: If the anti-trap function (safety mechanism) is activated consecutively three times or more, carry out the learning procedures of the power window fully closed position (Refer to P.42A-132).



POWER WINDOW TIMER FUNCTION CHECK

M1429004300659

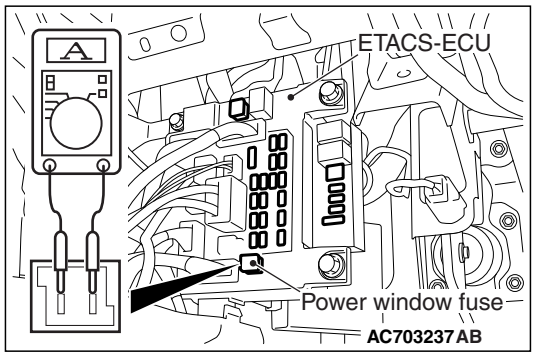
Check the power window timer as described below. If it does not work, perform troubleshooting (Refer to P.42A-123).

- Close the door and turn the ignition switch to the LOCK (OFF) position, and then check that the power windows operate for 30 seconds.

- Close the door and turn the ignition switch to the LOCK (OFF) position. While the timer is on, open the driver's door or front passenger's door, and check that the timer is cancelled.

POWER WINDOW OPERATING CURRENT CHECK

M1429001100827



1. Remove the power window fuse to check that it is normal, and connect a multimeter as shown in the illustration.
2. Raise the power window to measure the current during operation.

   Standard value: 7 ± 1 A [Power supply voltage 14.5 ± 0.5 V, at 25° C (77° F)]

   NOTE: If the power supply voltage does not meet the standard value, check and repair the generator and the battery. Then carry out this check again.
3. If the operation current is outside the standard value, refer to P.42A-78.

LEARNING PROCEDURES OF THE POWER WINDOW FULLY CLOSED POSITION

M1429004600177

LEARNING PROCEDURES OF THE FULLY CLOSED POSITION WHEN THE POWER WINDOW SWITCH IS REMOVED, OR THE POWER WINDOW REGULATOR ASSEMBLY IS REMOVED OR REPLACED

1. If the anti-trap function (safety mechanism) is activated consecutively three times or more, the fully closed position that the power window switch has learned will be erased (initialized).
2. Operate the power window switch and fully open the door window glass.

⚠ CAUTION

The anti-trap function will not activated until the learning procedures of the fully closed position have been completed (because the anti-trap function was reset).

3. Operate the power window switch and fully close the door window glass. The power window activates for 0.7 seconds and stops automatically when the power window switch is pressed once. Repeat this operation until the door window glass fully closes and release the switch once. Then, hold the power window switch to the fully closed side again for one second so that the power window switch completes learning the fully closed position.

   NOTE: If the power window switch is operated to open the door window glass while the switch is learning, the learning will be cancelled. If this happens, return to step 2.

LEARNING PROCEDURES WHEN THE POWER WINDOW SWITCH IS REPLACED WITH A NEW ONE

⚠ CAUTION

The anti-trap function will not activated until the learning procedures of the fully closed position have been completed (because the anti-trap function was reset).

Operate the power window switch to fully close the door window glass by one-shot up action so that the power window switch will complete learning (no initialization is required).

CENTRAL DOOR LOCKING SYSTEM CHECK

M1427001100683

- Check that the central door locking system works by operating the door lock switches. If it does not operate, perform troubleshooting. Refer to P.42A-34.

  NOTE: When the inside lock knob is operated with the driver's door opened, the driver's door is not locked.
- Check whether the driver's door is opened when the driver's door inside handle is pulled with all the doors locked. If it does not operate, replace the driver's door latch assembly. Refer to P.42A-147.

KEY-IN PREVENTION FUNCTION CHECK

M1427003300326

Check that the driver's door is not locked when the key cylinder or door lock switch is operated with the driver's door opened. If it is locked, replace the door latch. Refer to P.42A-147.

SELECTOR "P" POSITION-LINKED DOOR UNLOCKING FUNCTION CHECK

M1427003400204

When the selector is moved to the P (parking) position with the ignition switch on, all the doors and the liftgate will be unlocked. Carry out troubleshooting if the door is unlocked. Refer to P.42A-34.

NOTE: The selector "P" position-linked door unlocking function can be switched with the customization function. Confirm it before check. Refer to P.42A-138.

IGNITION "LOCK (OFF)" POSITION-LINKED DOOR UNLOCKING FUNCTION CHECK

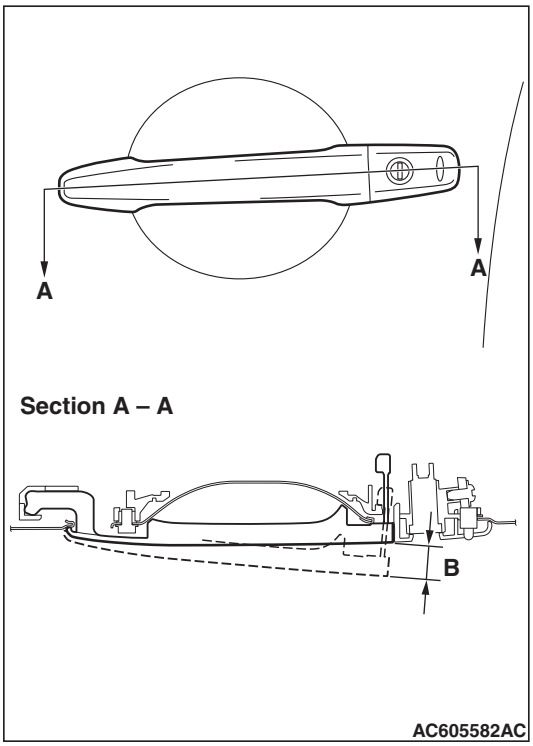
M1427006200061

When the ignition switch is moved to the LOCK (OFF) position, all the doors and the liftgate will be unlocked. Carry out the troubleshooting if a door does not operate. Refer to P.42A-138.

NOTE: The ignition "LOCK" position-linked door unlocking function can be switched with the customize function. Confirm it before check. Refer to P.42A-138.

DOOR OUTSIDE HANDLE PLAY CHECK

M1423001600653



1. Check that the door inside handle assembly play meets the standard value.

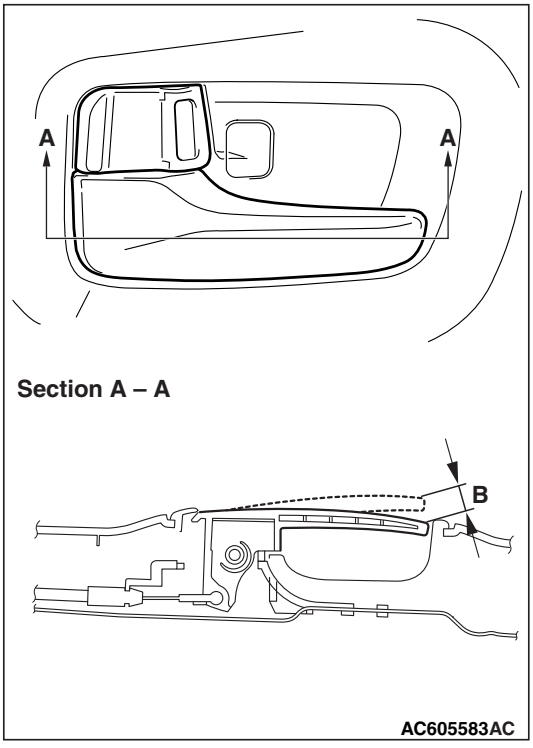
   Standard value (B): 0.1 –5.2 mm (0.004 –0.2 inch) [Target value: 2.5 mm (0.1 inch)]

2. Check the door outside handle assembly and door latch assembly, and replace them if they are out of the standard value.

DOOR INSIDE HANDLE CHECK

M1423001500719

DOOR INSIDE HANDLE KNOB PLAY CHECK



1. Check that the door inside handle knob play meets the standard value.

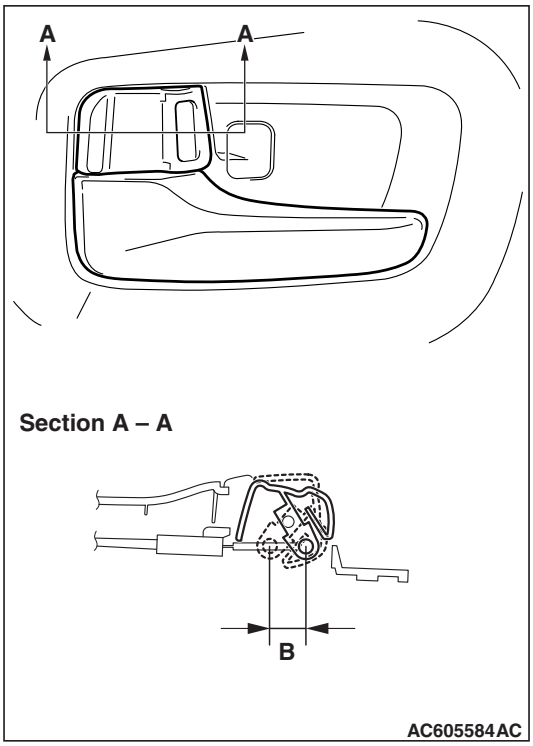
   Standard value (B):
   Front driver's side: 10.0 –23.7 mm (0.39 –0.93 inch) [Target value: 17.0 mm (0.67 inch)]
   Except Front driver's side: 5.0 –18.7 mm (0.2 –0.74 inch) [Target value: 12.0 mm (0.47 inch)]

2. Check the door inside handle and door latch assembly, and replace them if they are out of the standard value.

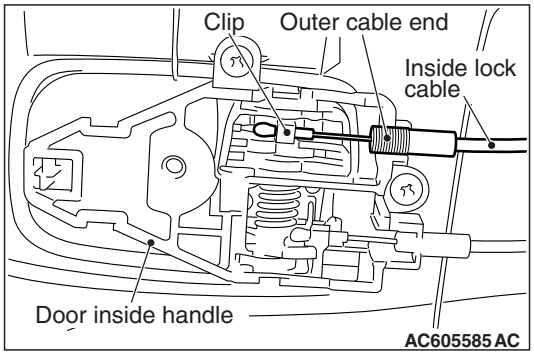
DOOR INSIDE HANDLE LOCK KNOB STROKE CHECK

1. Remove the door trim assembly (Refer to GROUP 52A – Door Trim P.52A-11).
2. Check that the stroke of the door inside handle lock knob meets the standard value.

   Standard value (B): 13.7 –15.0 mm (0.54 –0.59 inch)
   [Target value: 14.7 mm (0.58 inch)]



3. If it is outside the standard value, adjust the stroke of the inside handle lock knob by using the outer cable end, which connects the inside handle lock knob to the inside lock cable.



CUSTOMIZATION FUNCTION

M1429007800493

Using the ETACS system of scan tool MB991958, the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool MB991958 display)	Adjustment item	Adjusting contents (scan tool MB991958 display)	Adjusting contents
Door unlock mode	Adjustment of power door locks with selective unlocking	All doors unlock	Without function: The first operation of keyless entry system or unlock operation by KOS unlocks all doors.
		Dr door unlock	With function: The first operation of keyless entry system or unlock operation by KOS unlocks the driver's door only, and the second unlock operation within 2 seconds after that unlocks all doors. (initial condition)
Auto door unlock	Adjustment of the auto door unlock function	Disabled	Without function (initial condition)
		Always (P pos)	With function: Operates when the shift lever or the selector lever is moved to the P position.
		P/W unlock (P)	With function: Operates when the shift lever or the selector lever is moved to the P position with the power window lock switch in the OFF position.
		Always (Lock pos)	With function: Operates when the ignition switch is moved to the LOCK (OFF) position.
		P/W unlock (Lock)	With function: Operates when the ignition switch is turned to the LOCK (OFF) position with the power window lock switch in the OFF position.

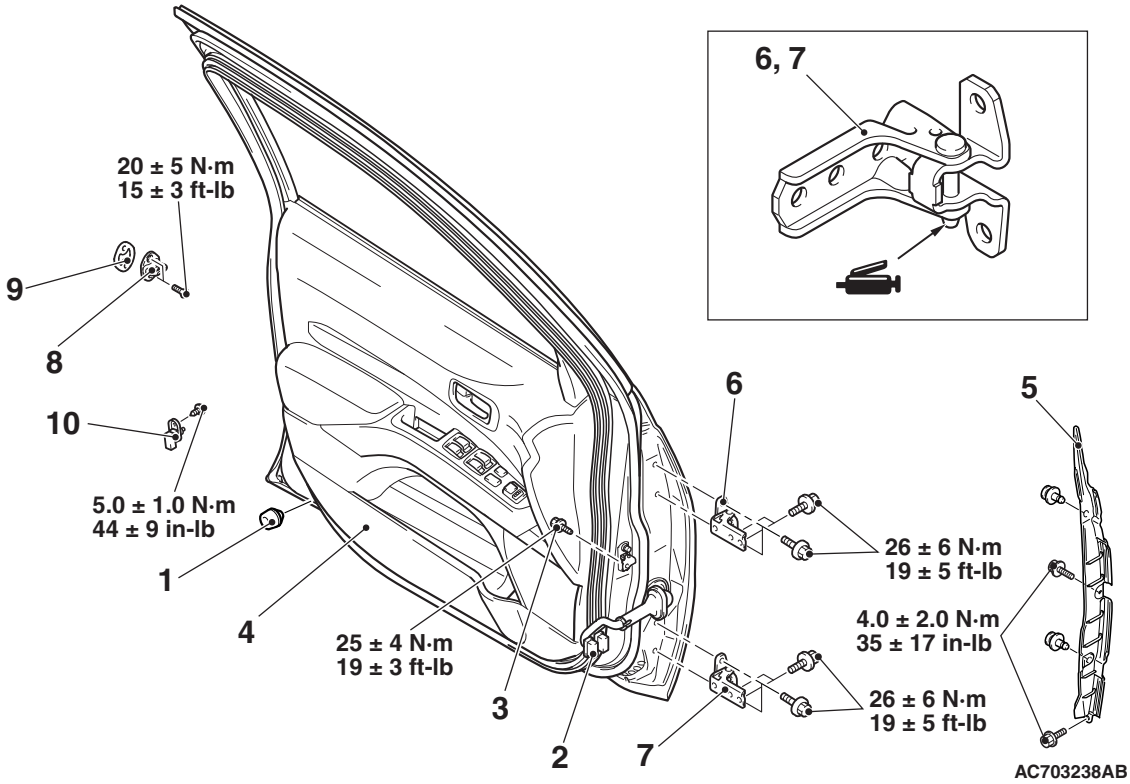
DOOR ASSEMBLY

REMOVAL AND INSTALLATION

M1423002200841

Post-installation operation
- Door adjustment (Refer to P.42A-130.)

<Front door>



Damper removal
1. Damper

Door assembly and front door hinge removal steps
- Front scuff plate, cowl side trim (Refer to GROUP 52A - Interior Trim P.52A-9.)
2. Wiring harness connector connection
3. Door check connecting bolt
4. Door assembly

Door assembly and front door hinge removal steps (Continued)
- Side air dams (Refer to GROUP 51, Side Air Dams P.51-20.)
5. Fender rear protector
6. Front door upper hinge
7. Front door lower hinge

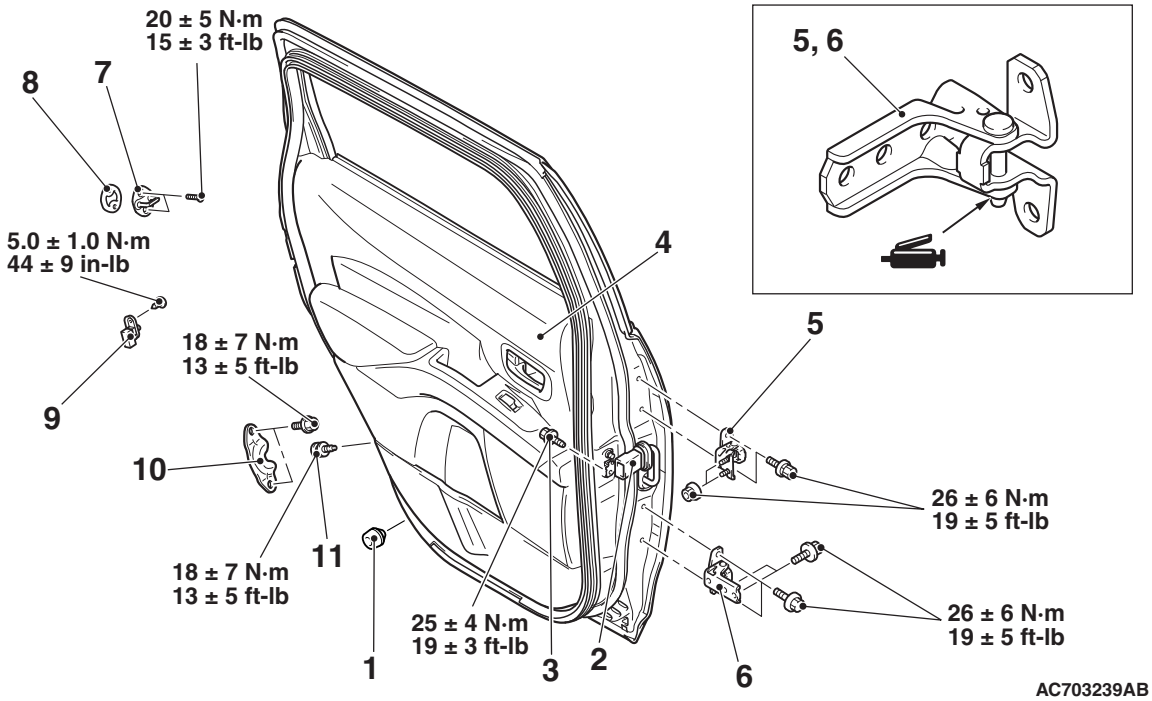
Striker removal steps

>>A<<
8. Striker
9. Striker shim

Door switch removal
10. Door switch

TSB Revision

<Rear door>



Damper removal
1. Damper

Door assembly removal steps
2. Wiring harness connector connection
3. Door check connecting bolt
4. Door assembly

Rear door hinge removal steps
- Center pillar trim (Refer to GROUP 52A, Interior Trim P.52A-9.)

5. Rear door upper hinge
6. Rear door lower hinge

>>A<<

Striker removal steps
7. Striker
8. Striker shim

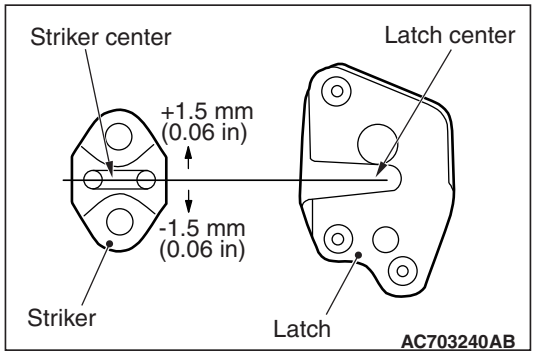
Door switch removal
9. Door switch

Rear door catch removal
10. Rear door catch

Rear door lock hook removal
11. Rear door lock hook

INSTALLATION SERVICE POINT

>>A<< STRIKER INSTALLATION

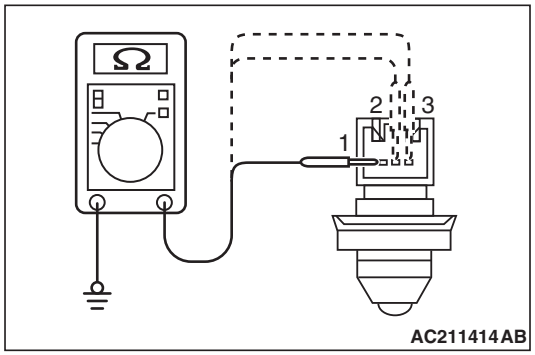


Install the striker so that the striker center does not deviate more than ±1.5 mm (0.06 inch) from the latch center.

INSPECTION

M1423006000753

DOOR SWITCH CHECK



Switch position	Terminal number	Normal value
Release (ON)	1 –Ground, 2 – Ground, 3 – Ground	Continuity exists (2 Ω or less)
Depressed (OFF)	1 –Ground, 2 – Ground, 3 – Ground	Open circuit

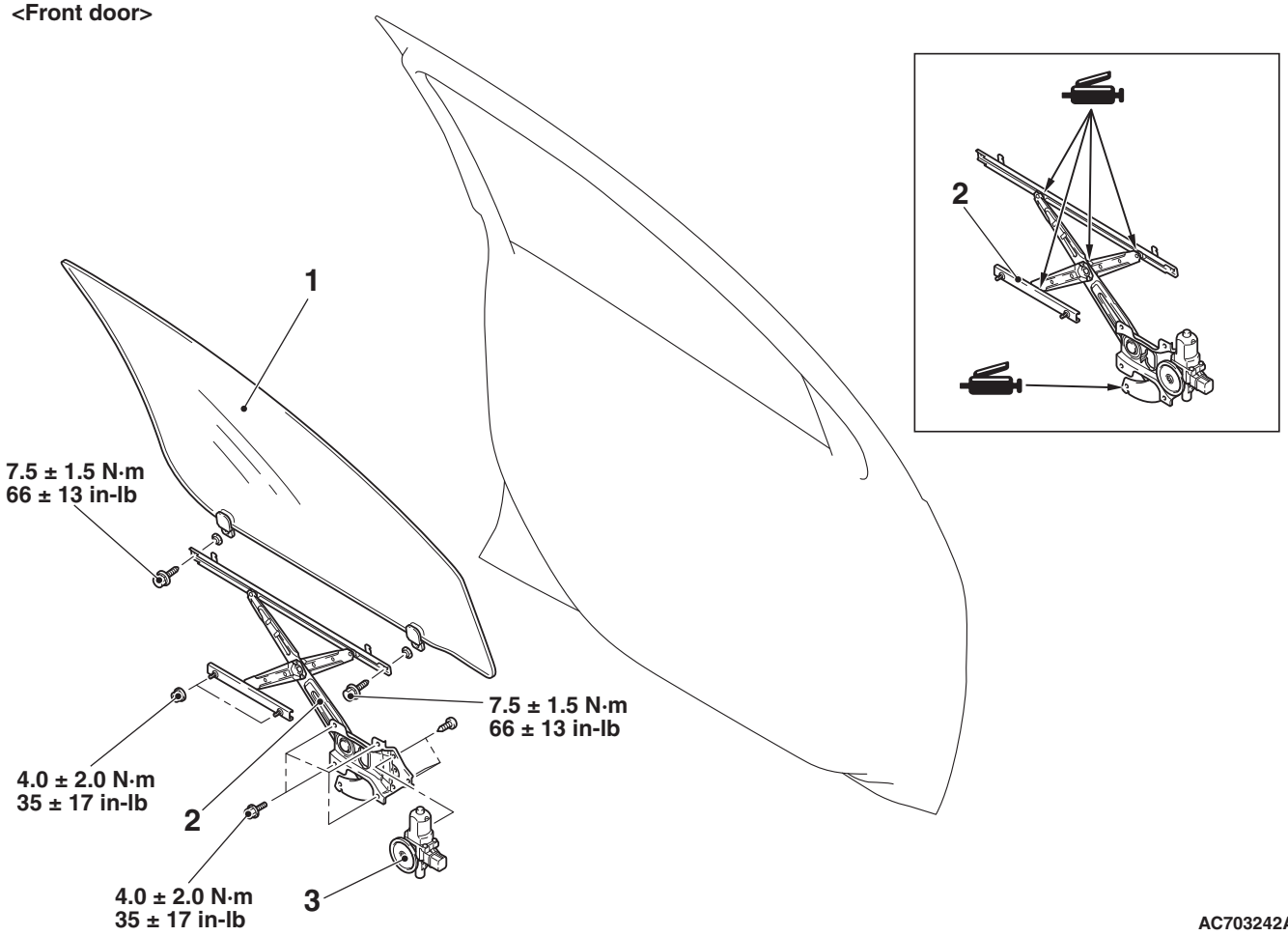
DOOR GLASS AND REGULATOR

REMOVAL AND INSTALLATION

M1429001301299

Post-installation operation
- Door window glass adjustment (Refer to P.42A-132.)

<Front door>



AC703242AC

Door window glass assembly removal steps
- Door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11.)
- Waterproof film, belt line molding, belt line weatherstrip inner, and speaker bracket (Refer to P.42A-152.)

1. Door window glass assembly

Power window regulator assembly removal steps

>>A<<
- Post-installation operation check <Driver's side only>
- Door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11.)
- Waterproof film and speaker bracket (Refer to P.42A-152.)

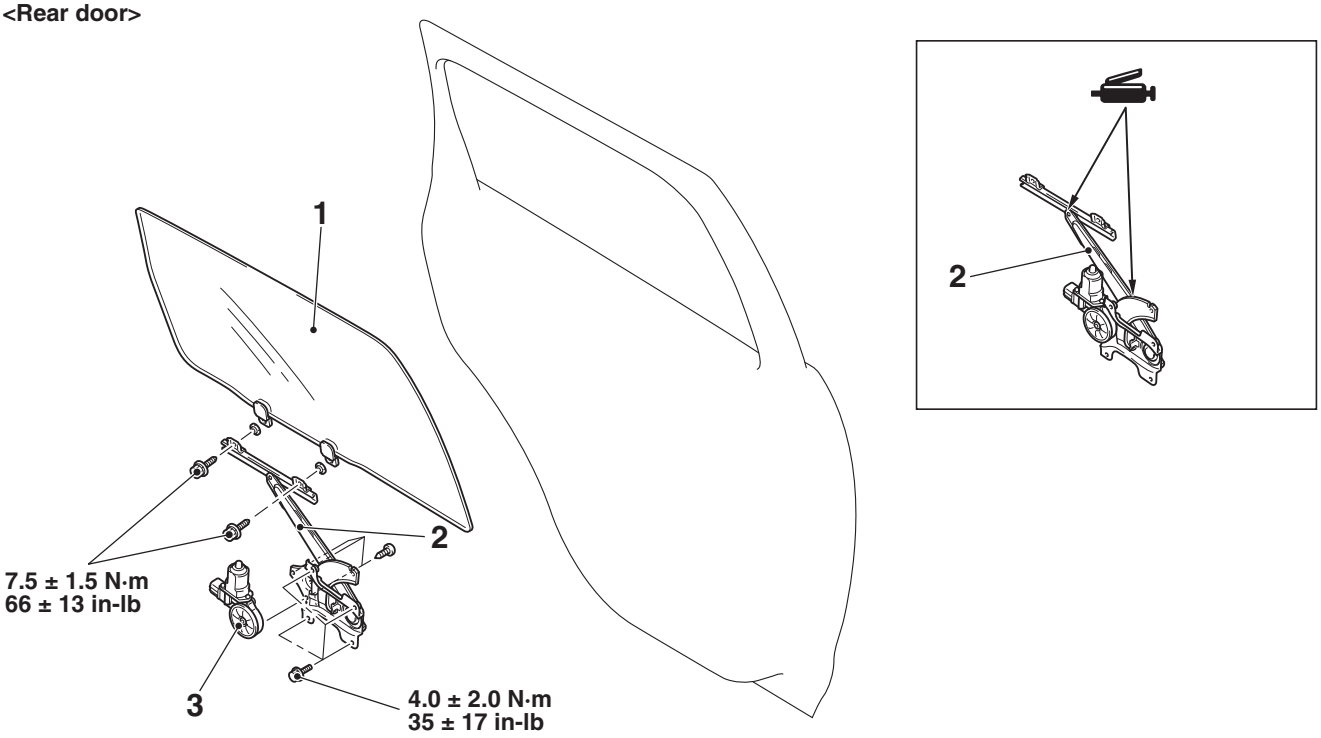
<<A>>

2. Power window regulator assembly
3. Power window motor

Required Special Tool:
- MB990480: Window Glass Holder

TSB Revision

<Rear door>



AC703241AC

Door window glass assembly removal steps

- Door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11.)
- Waterproof film, belt line molding, belt line weatherstrip inner, door window glass channel, and speaker bracket (Refer to P.42A-152.)
- Door latch assembly (Refer to P.42A-147.)

1. Door window glass assembly

<<A>>

Power window regulator assembly removal steps

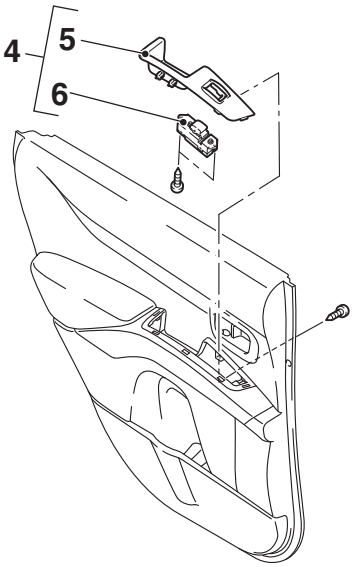
- Door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11.)
- Waterproof film and speaker bracket (Refer to P.42A-152.)

2. Power window regulator assembly
3. Power window motor

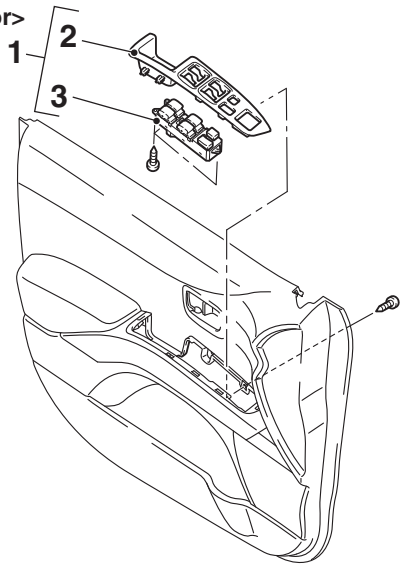
Required Special Tool:

- MB990480: Window Glass Holder

<Rear door>



<Front door>



AC703245AC

Power window switch <Front door> removal step

>>A<<
- Post-installation operation check <Driver's side only>
- Door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11.)

1. Power window switch panel assembly
2. Power window switch panel
3. Power window main switch <Driver's side>, power window sub switch <Front passenger's side>

Power window sub switch <Rear door> removal step

- Door trim assembly (Refer to GROUP 52A, Door Trim P.52A-11.)

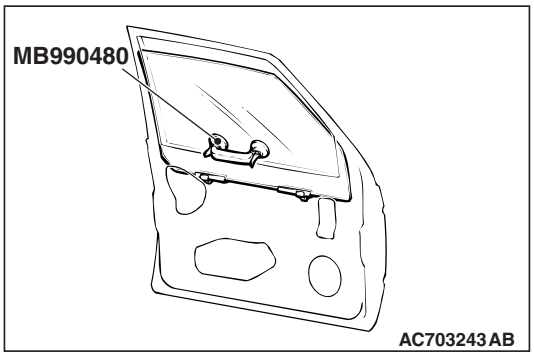
4. Power window switch panel assembly
5. Power window switch panel
6. Power window sub switch

TSB Revision

REMOVAL SERVICE POINT

<<A>> POWER WINDOW REGULATOR REMOVAL

1. Remove the door window glass installation bolts.



⚠ CAUTION

If tinting film is adhered to the door window glass, attach special tool MB990480 to the outside of the glass to prevent the film from peeling off.

2. Lift the door window glass, and attach special tool MB990480 to the glass as shown to prevent the glass from falling.
3. Remove the power window regulator.

INSTALLATION SERVICE POINT

>>A<< POST-INSTALLATION OPERATION CHECK <DRIVER'S SIDE ONLY>

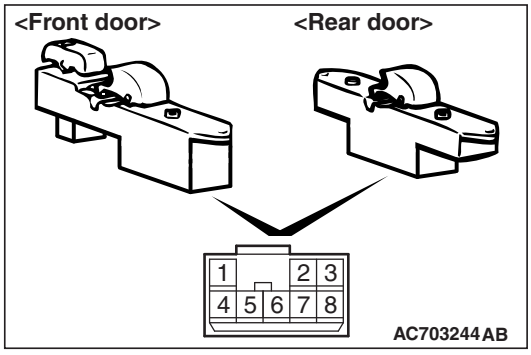
When the following procedures are carried out, carry out the learning procedures of the power window fully closed position (Refer to P.42A-134).

- Power window regulator removal or replacement
- Power window switch removal or replacement

INSPECTION

M1429001400884

POWER WINDOW SWITCH CONTINUITY CHECK

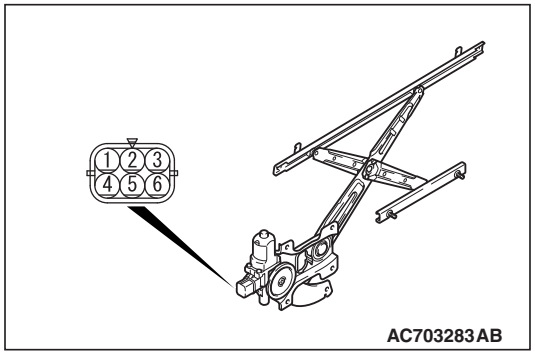


Sub switch

Switch position	Tester connection	Specified condition
UP	4 –5, 6 –7	Continuity exists (2 Ω or less)
OFF	4 –5, 7 –8	Continuity exists (2 Ω or less)
DOWN	4 –6, 7 –8	Continuity exists (2 Ω or less)

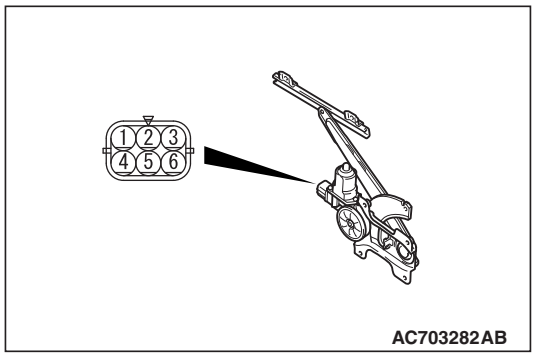
DOOR WINDOW REGULATOR CHECK

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 a defect is found, replace the window regulator as an assembly.



<Front door (passenger's side)>

Battery connection	Slider position
• Connect terminal No. 1 to the negative battery terminal. • Connect terminal No. 4 to the positive battery terminal.	UP
• Connect terminal No. 4 to the negative battery terminal. • Connect terminal No. 1 to the positive battery terminal.	DOWN



<Rear door>

Battery connection	Slider position
• Connect terminal No. 4 to the negative battery terminal. • Connect terminal No. 1 to the positive battery terminal.	UP
• Connect terminal No. 1 to the negative battery terminal. • Connect terminal No. 4 to the positive battery terminal.	DOWN

DOOR HANDLE AND LATCH

REMOVAL AND INSTALLATION

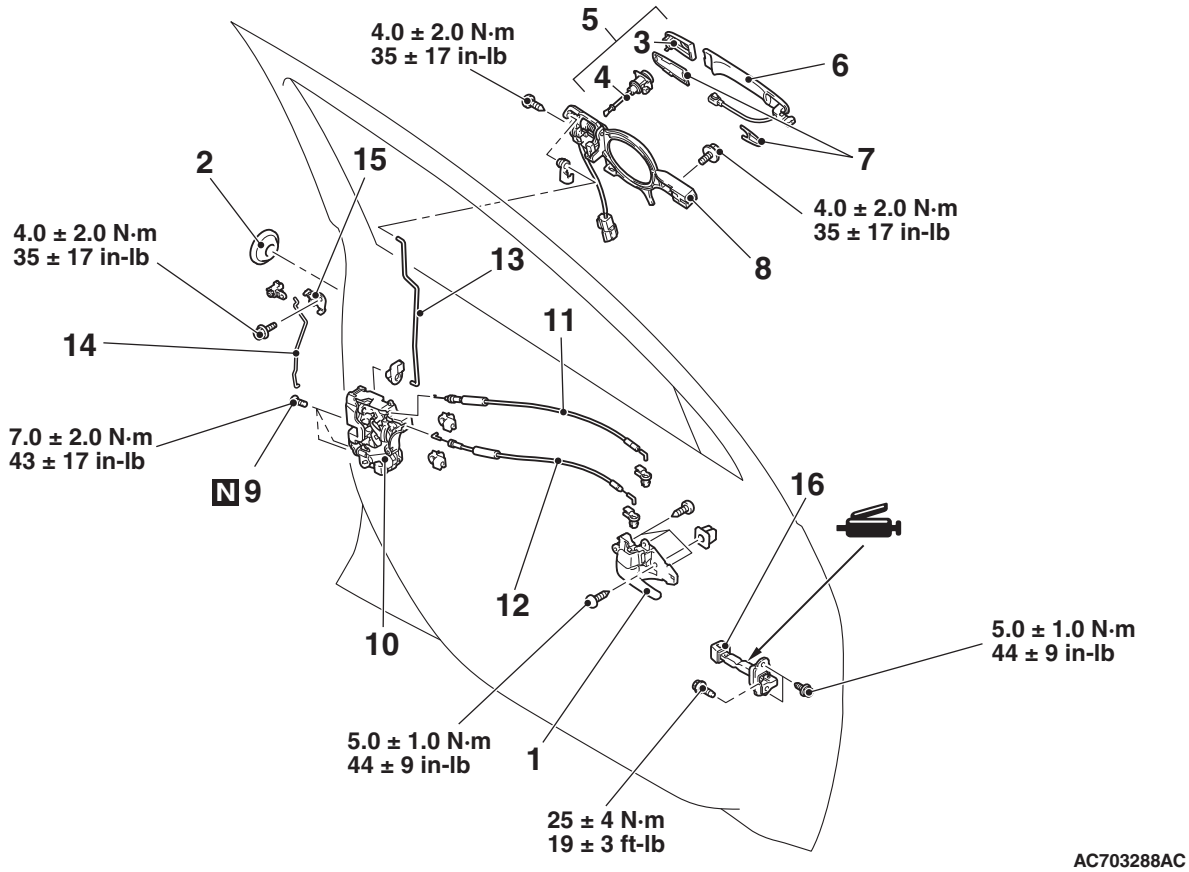
M1423004601677

⚠ CAUTION

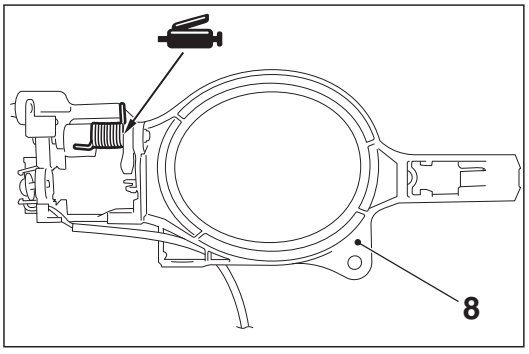
When the door lock cylinder of the vehicle with WCM is replaced as a full service key set, the key must be registered with the barcode No. attached to the ignition key. (Refer to GROUP 42C, ID Code Registration Judgment Table P.42C-10.)

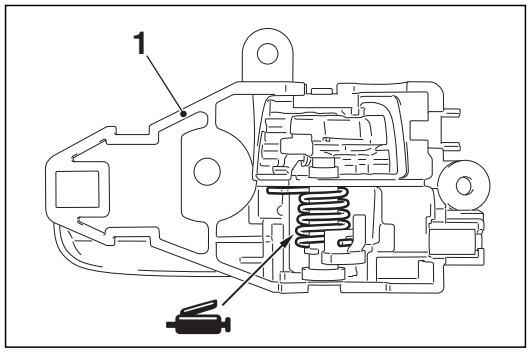
Pre-removal operation	Post-installation operation
• Door trim assembly removal (Refer to GROUP 52A, Door Trim P.52A-11).	• Door inside handle play check (Refer to P.42A-136). • Door outside handle play check (Refer to P.42A-136). • Door trim assembly installation (Refer to GROUP 52A, Door Trim P.52A-11.)

<Front door>



AC703288AC





AC703289AD

TSB Revision

Door inside handle removal

>>B<< 1. Door inside handle

Door lock key cylinder and door outside handle removal steps

- Rear lower sash (Refer to P.42A-152.)

2. Plug
3. Door outside handle cover assembly <driver's side only>
4. Door lock key cylinder <driver's side only>
5. Door outside handle cover
6. Door outside handle
7. Door outside handle gasket
8. Door outside handle base

Door handle and door latch removal steps

- Rear lower sash (Refer to P.42A-152.)

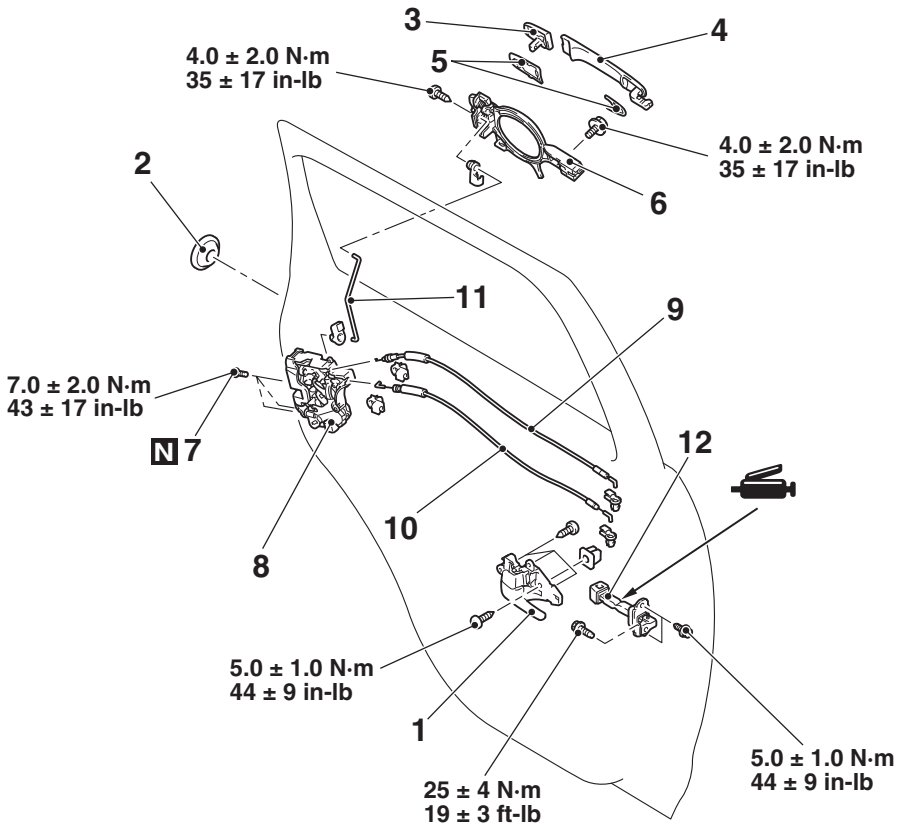
9. Screw
10. Door latch assembly
11. Inside lock cable
12. Inside handle cable
13. Outside handle rod
14. Front door outside lock rod
15. Front door panel bracket

Door check removal steps

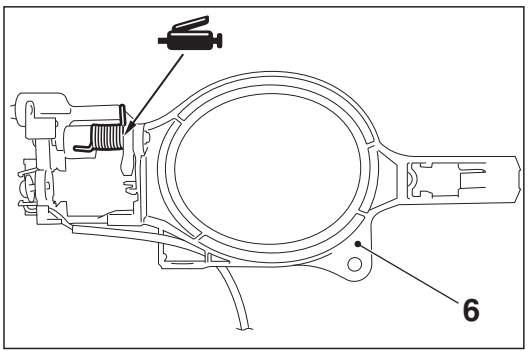
- Front door speaker (Refer to GROUP 54A, Speaker P.54A-700.)

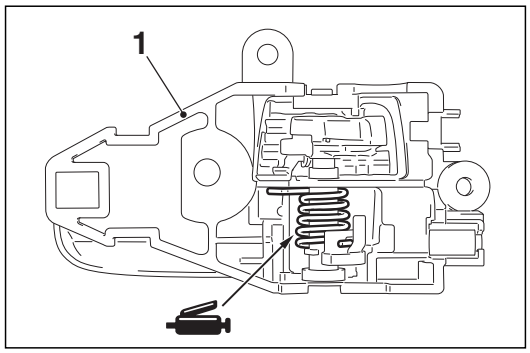
>>A<< 16. Door check

<Rear door>



AC703290AC





AC703289AE

TSB Revision

Door inside handle removal

>>B<< 1. Door inside handle

Door lock key cylinder and door outside handle removal steps

- Rear lower sash (Refer to P.42A-152.)

2. Plug
3. Door outside handle cover
4. Door outside handle
5. Door outside handle gasket
6. Door outside handle base

Door handle and door latch removal steps

- Rear lower sash (Refer to P.42A-152.)

7. Screw
8. Door latch assembly
9. Inside lock cable
10. Inside handle cable
11. Outside handle rod

Door check removal steps

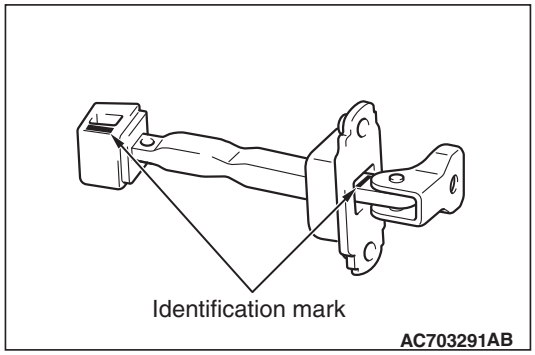
- Rear door speaker (Refer to GROUP 54A, Speaker P.54A-700.)

>>A<< 12. Door check

INSTALLATION SERVICE POINTS

>>A<< DOOR CHECK INSTALLATION

Install the door check with the following identification marks facing upward.



Applicable location		Identification mark
Front door	Left door	55L
	Right door	55R
Rear door	Left door	58L
	Right door	58R

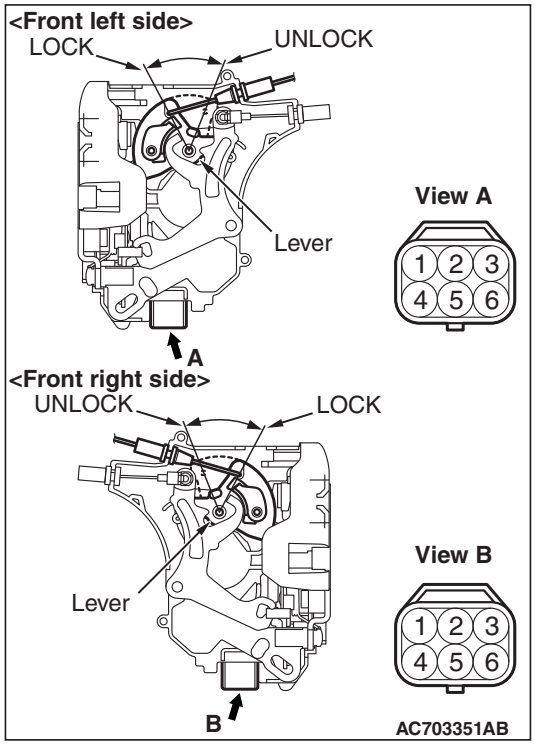
>>B<< DOOR INSIDE HANDLE INSTALLATION

When connecting the inside cable to the door inside handle, ensure that the door latch and the inside handle are unlocked.

INSPECTION

M1423004701276

FRONT DOOR LOCK ACTUATOR CHECK



ACTUATOR OPERATION CHECK

Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No.4 to the negative battery terminal. • Connect terminal No.6 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 to the negative battery terminal. • Connect terminal No.4 to the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

ACTUATOR SWITCH CHECK <DRIVER'S SIDE>

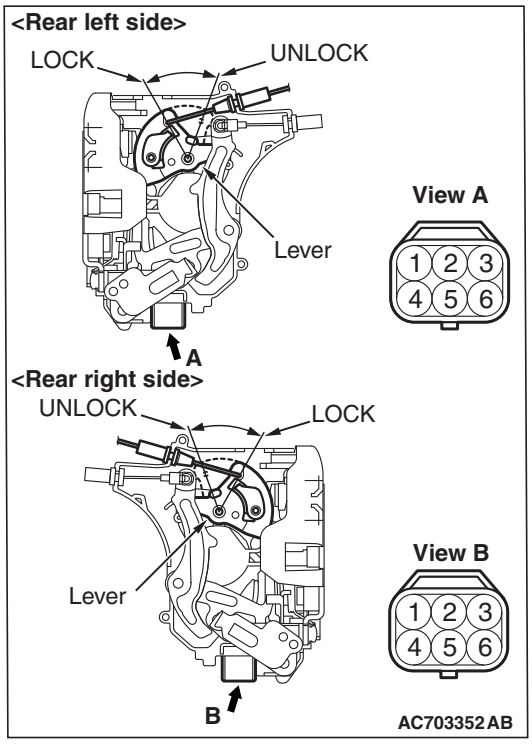
Lever position	Terminal number	Normal value
UNLOCK	1 –3	Continuity exists (2 Ω or less)

ACTUATOR SWITCH CHECK <PASSENGER'S SIDE [Vehicles with keyless operation system (KOS)]>

Lever position	Terminal number	Normal value
UNLOCK	1 –3	Continuity exists (2 Ω or less)

REAR DOOR LOCK ACTUATOR CHECK

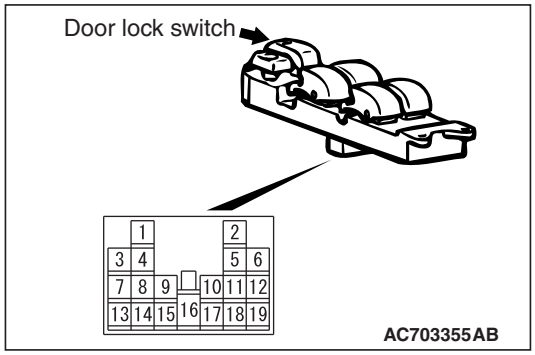
ACTUATOR OPERATION CHECK



Lever position	Battery connection	Lever operation
At the "LOCK" position	• Connect terminal No.4 to the negative battery terminal. • Connect terminal No.6 to the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 to the negative battery terminal. • Connect terminal No.4 to the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

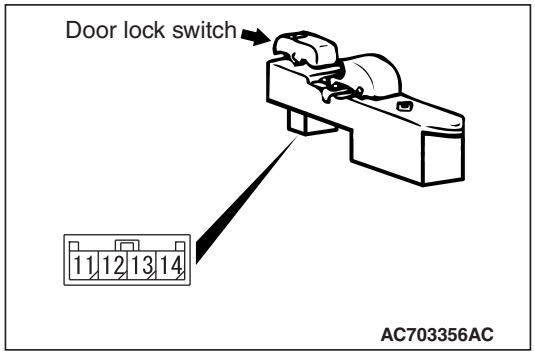
CENTRAL DOOR LOCK SWITCH CONTINUITY CHECK

Remove the power window switch (Refer to P.42A-142).



<DRIVER'S SIDE>

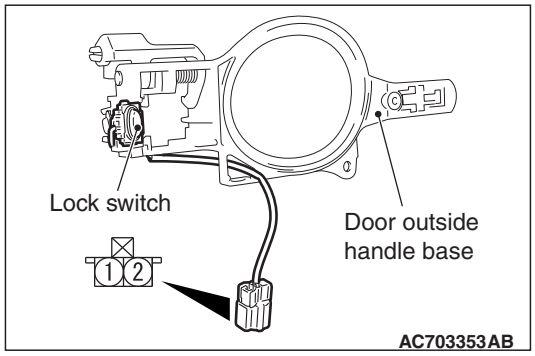
Switch position	Tester connection	Specified condition
LOCK	14 –Ground	Continuity exists (2 Ω or less)
UNLOCK	13 –Ground	Continuity exists (2 Ω or less)



<PASSENGER'S SIDE>

Switch position	Tester connection	Specified condition
LOCK	13 –14	Continuity exists (2 Ω or less)
OFF	13 –14, 12 –14	Open circuit
UNLOCK	12 –14	Continuity exists (2 Ω or less)

LOCK SWITCH CHECK <Vehicle with keyless operation system (KOS)>



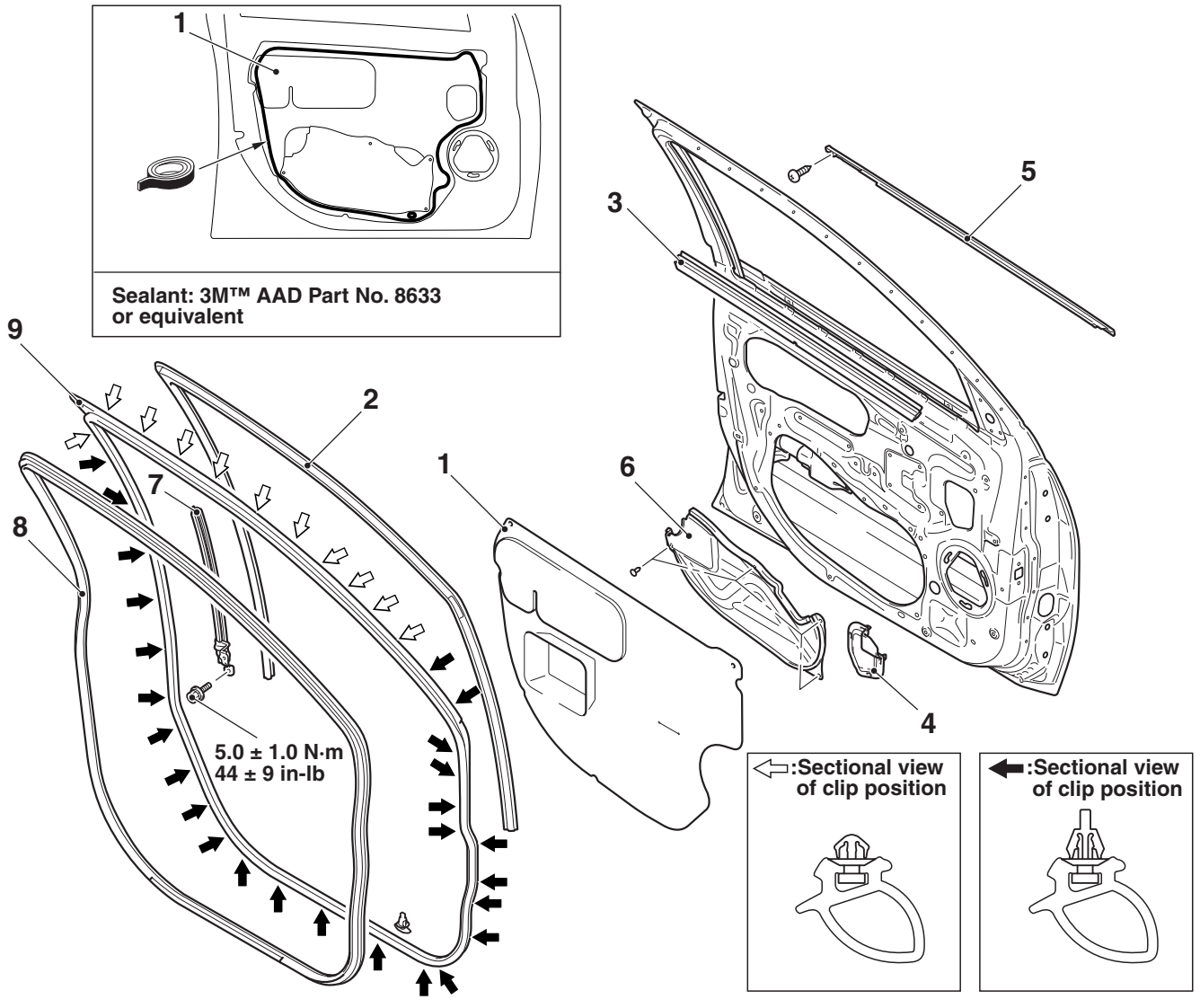
Switch position	Tester connection	Specified condition
ON	1 –2	Continuity exists (2 Ω or less)
OFF	1 –2	Open circuit

WINDOW GLASS RUNCHANNEL AND DOOR OPENING WEATHERSTRIP

REMOVAL AND INSTALLATION

M1423003101754

<Front door>



TSB Revision

Waterproof film removal steps
- Pull handle bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>**B**<< 1. Waterproof film

Door window glass runchannel removal steps

2. Door window glass runchannel

Door belt line weatherstrip inner removal steps
- Door trim assembly (Refer to GROUP 52A –Door Trim P.52A-11.)

3. Door belt line weatherstrip inner

Door belt line moulding removal steps <Standard>
- Door mirror assembly (Refer to GROUP 51 –Outside Mirror P.51-122.)

5. Door belt line moulding

Door beltline moulding removal steps <Bright>
- Door mirror assembly (Refer to GROUP 51 –Door Mirror P.51-122.)
- Door trim assembly (Refer to GROUP 52A –Door Trim P.52A-11.)

>>**B**<< 1. Waterproof film
3. Door beltline weatherstrip inner
4. Door speaker cover
<<**A**>> 5. Door beltline moulding

Speaker bracket removal steps <vehicles with Rockford Fosgate Premium Sound System>
- Pull handle bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>**B**<< 1. Waterproof film
6. Speaker bracket

Rear lower sash removal steps
- Pull handle bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>**B**<< 1. Waterproof film
6. Speaker bracket <vehicles with Rockford Fosgate Premium Sound System>
7. Rear lower sash

Speaker cover removal steps <vehicles with Rockford Fosgate Premium Sound System>
- Pull handle bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>**B**<< 1. Waterproof film
4. Door speaker cover

Door opening weatherstrip inner removal steps
- Cowl side trim and scuff plate (Refer to GROUP 52A - Interior Trim P.52A-9.)

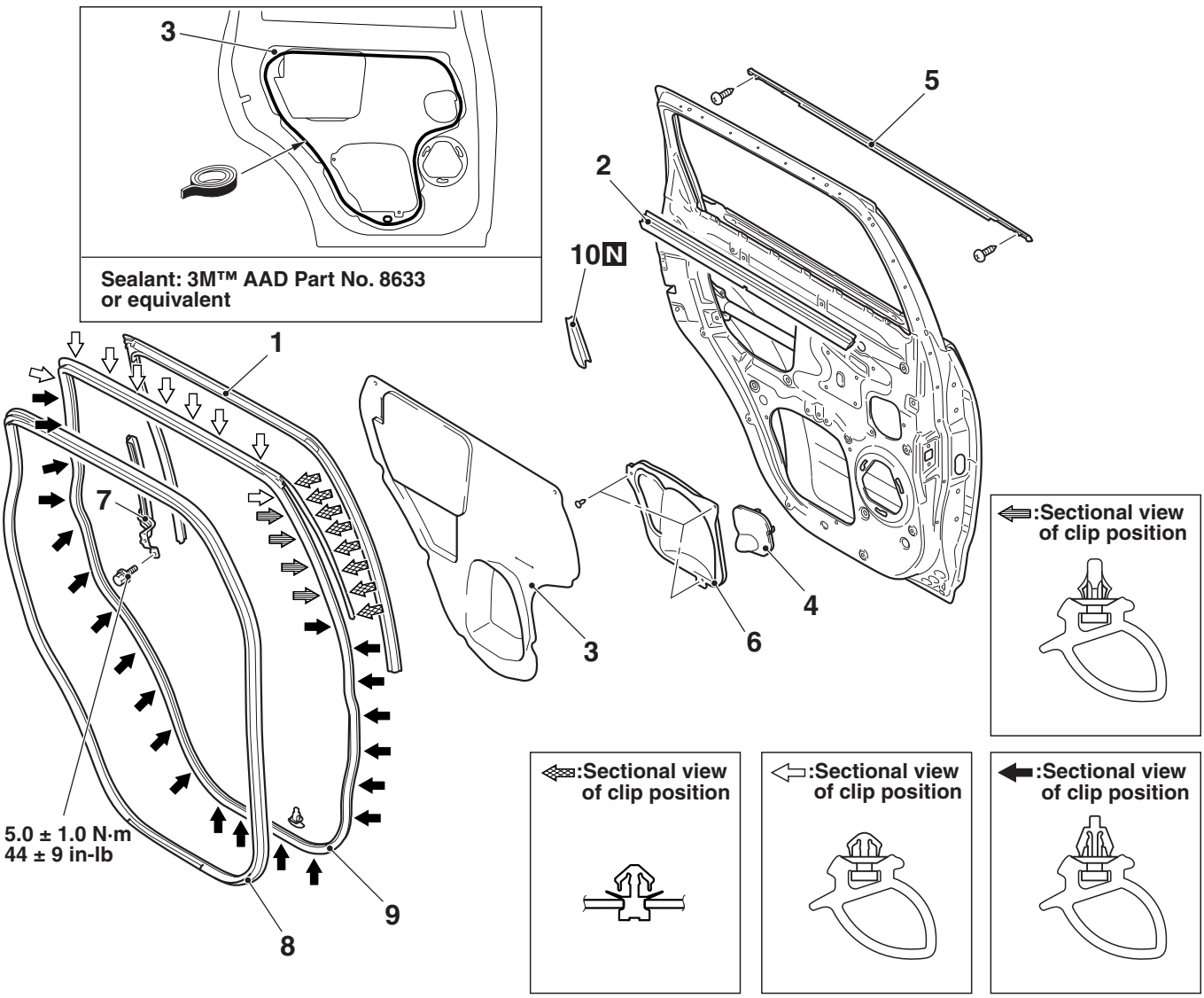
8. Door opening weatherstrip inner

Door opening weatherstrip outer removal steps
- Door channel mounting bolt (door-side) (Refer to P.42A-147.)

<<**B**>> 9. Door opening weatherstrip outer

TSB Revision

<Rear door>



AC605599AE

Door window glass runchannel removal

1. Door window glass runchannel

Door belt line weatherstrip inner removal steps <<A>>

- Door trim assembly (Refer to GROUP 52A –Door Trim P.52A-11.)

2. Door belt line weatherstrip inner

Door belt line moulding removal <Standard>

5. Door belt line moulding

Door beltline moulding removal steps <Bright>

- Door trim assembly (Refer to GROUP 52A –Door Trim P.52A-11.)

2. Door beltline weatherstrip inner

>>B<< 3. Waterproof film

Door beltline moulding removal steps <Bright> (Continued)

4. Door speaker cover
5. Door beltline moulding

Waterproof film removal steps

- Rear door arm rest bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>B<< 3. Waterproof film

Speaker bracket removal steps <vehicles with Rockford Fosgate Premium Sound System>

- Rear door arm rest bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>B<< 3. Waterproof film
6. Speaker bracket

TSB Revision

Rear lower sash removal steps
- Rear door arm rest bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>B<< 3. Waterproof film
6. Speaker bracket <vehicles with Rockford Fosgate Premium Sound System>
7. Rear lower sash

Speaker cover removal steps <vehicles with Rockford Fosgate Premium Sound System>
- Rear door arm rest bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>B<< 3. Waterproof film
4. Door speaker cover

<<B>>

Door opening weatherstrip inner removal steps
- Cowl side trim, scuff plate, centre pillar trim (Refer to GROUP 52A - Interior Trim P.52A-9.)

8. Door opening weatherstrip inner

Door opening weatherstrip outer removal
- Door check mounting bolt (body-side) (Refer to P.42A-147.)

9. Door opening weatherstrip outer

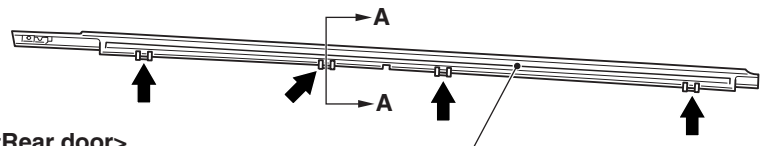
Door tape removal steps
1. Door window glass runchannel
2. Door belt line weatherstrip inner
- Rear door arm rest bracket (Refer to GROUP 52A –Door Trim P.52A-11.)

>>B<< 3. Waterproof film
>>A<< 10. Door tape

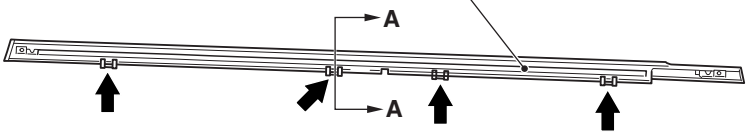
REMOVAL SERVICE POINTS

<<A>> DOOR BELTLINE MOULDING REMOVAL

<Front door>



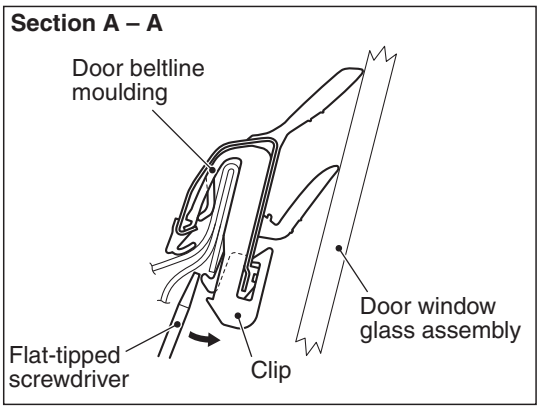
<Rear door>



Door beltline moulding

Front

NOTE
: Clip positions

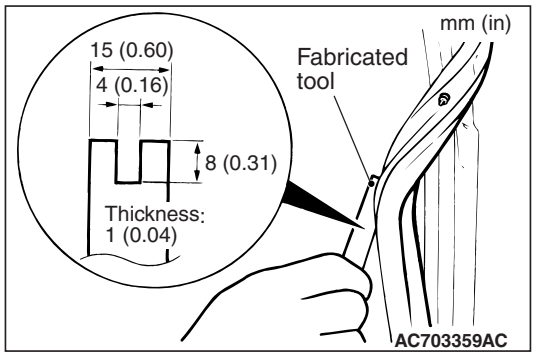


AC902560AB

Pry the door beltline moulding clip positions with a flat-tipped screwdriver and remove the door beltline moulding upward.

<<B>>DOOR OPENING WEATHERSTRIP OUTER REMOVAL

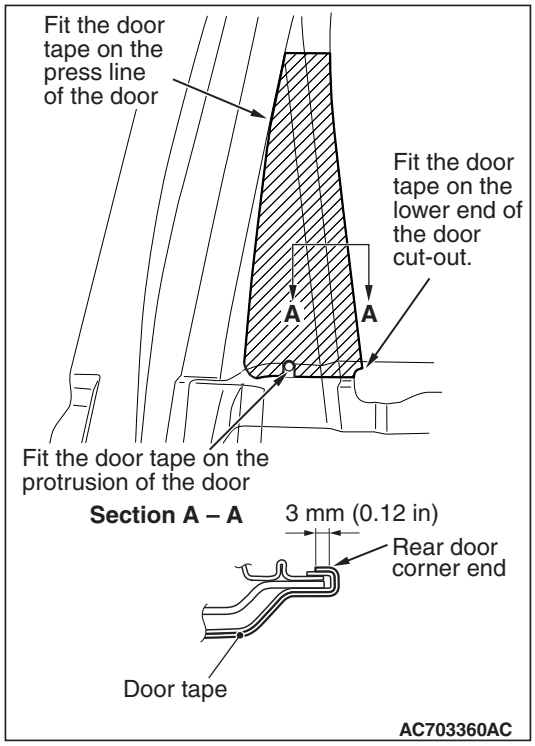
Make the tool as shown in the figure, and remove the weather-strip from the door panel.

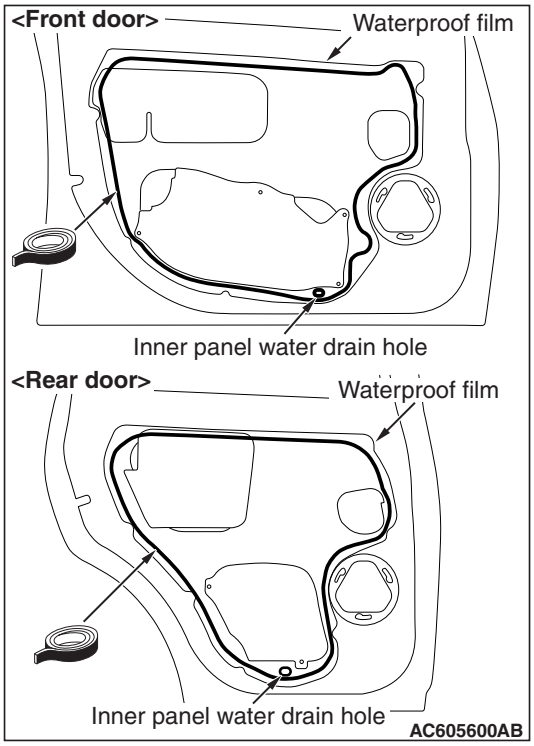


INSTALLATION SERVICE POINTS

>>A<< DOOR TAPE INSTALLATION

Apply the specified adhesive to the water-proof film as shown in the figure and stick the film.





>>B<< WATERPROOF FILM INSTALLATION

⚠ CAUTION

When a waterproof film is applied, guide the butyl rubber tape under the inner panel drain hole.

Apply the specified adhesive to the water-proof film as shown in the figure and stick the film.

Butyl rubber tape: 3M™ AAD Part number 8633 or equivalent

LIFTGATE

SEALANT

M1424002200026

Item	Specified sealant	Remark
Liftgate hinge	3M™ AAD Part No. 8531 Heavy drip check sealer, 3M™ AAD Part No. 8646 Automotive joint and seam sealer or equivalent	Body sealer

LIFTGATE DIAGNOSIS

INTRODUCTION TO LIFTGATE DIAGNOSIS

M1424002500146

Difficult locking/unlocking, uneven clearance, and wind noise from the liftgate may be due to improper adjustment of the liftgate.

LIFTGATE DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1424002600198

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 malfunction is eliminated.

SYMPTOM CHART

M1424002700162

Symptom	Inspection procedure	Reference page
Difficult locking and unlocking	1	P.42A-158
Uneven body clearance	2	P.42A-158
Uneven height	3	P.42A-158

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Difficult Locking and Unlocking

DIAGNOSIS

STEP 1. Check the release cable routing condition.

Q: Is the release cable routed correctly?
YES : Go to Step 3.
NO : Repair the release cable. Then go to Step 2.

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

Q: Are the liftgate latch and liftgate striker engaged correctly?
YES : Then go to Step 3.
NO : Align the liftgate latch and liftgate striker (Refer to P.42A-159).

STEP 3. Retest the system.

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

INSPECTION PROCEDURE 2: Uneven Body Clearance

DIAGNOSIS

STEP 1. Check the clearance around the liftgate.

Q: Is the liftgate installed correctly?
YES : Go to Step 2.
NO : Adjust clearance around liftgate (Refer to P.42A-159).

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 liftgate damper height.

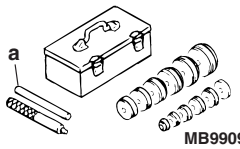
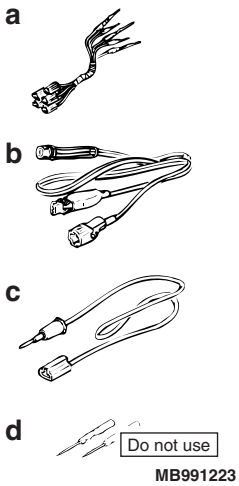
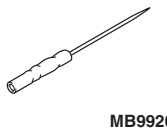
Q: Is the liftgate damper height proper?
YES : Go to Step 2.
NO : Adjust the liftgate damper (Refer to P.42A-161). Then go to Step2.

STEP 2. Retest the system.

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

SPECIAL TOOL

M1424000600556

Tool	Tool number and name	Supersession	Application
	MB990925 Bearing and oil seal installer set a: MB990939 Remover bar	MB990925-01 or General service tool	Adjustment of door striker
	MB991223 Harness set a. MB991219 Test harness b. MB991220 LED harness c. MB991221 LED harness adapter d. MB991222 Probe	General service tools	Measurement of terminal voltage and resistance a. Connector pin contact pressure inspection b. Power circuit inspection c. Power circuit inspection d. Commercial tester connection
	MB992006 Extra fine probe	–	Measurement of terminal voltage and resistance

ON-VEHICLE SERVICE

LIFTGATE ALIGNMENT

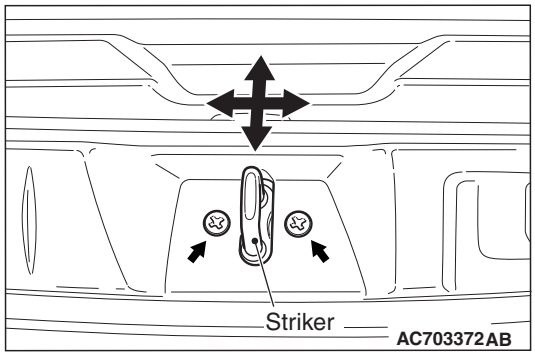
M1424000900535

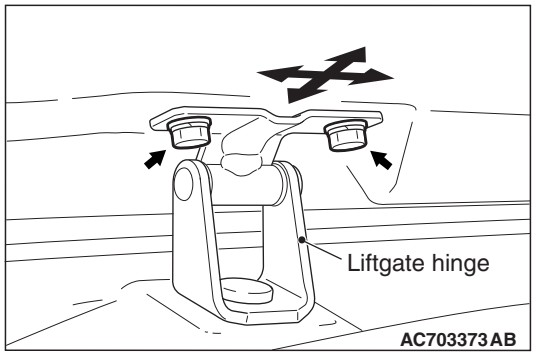
Required Special Tool:

- MB990939: Remover Bar

LIFTGATE UPPER ALIGNMENT

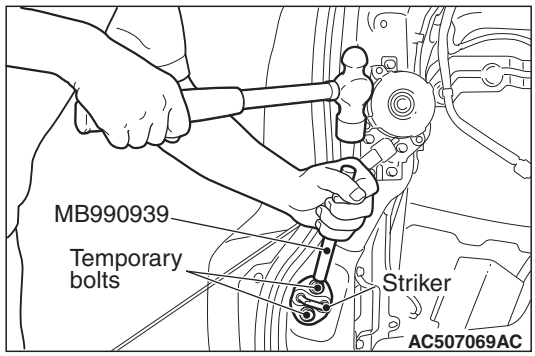
- If the striker is not engaged with the latch properly, adjust by loosening the striker mounting screws.



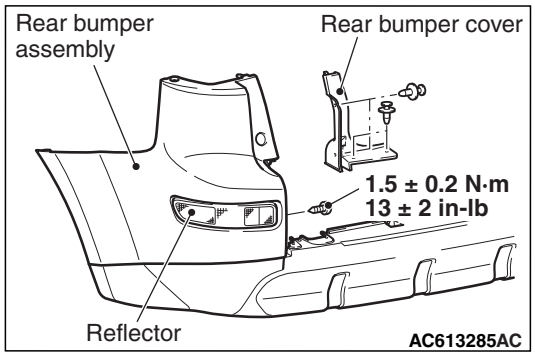


- If the clearance between the liftgate and the body is uneven, loosen the liftgate-side liftgate hinge mounting bolts to adjust it.

LIFTGATE LOWER ALIGNMENT

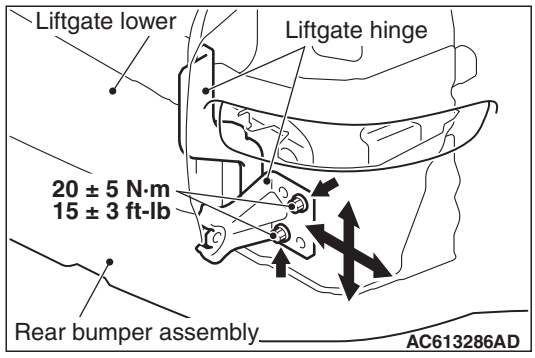


If the striker does not engage with the latch properly, remove the quarter trim lower (Refer to GROUP 52A - Interior Trim P.52A-9). Replace the striker mounting screws with temporary bolts, and use the special tool (remover bar MB990939) and a hammer to tap the bolt head in the desired direction to adjust the striker position.



If the clearances between the liftgate lower and the body (rear bumper assembly) at left and right are uneven, adjust the liftgate lower as follows.

1. Remove the rear bumper covers and reflectors located at left and right sides of the rear bumper assembly.



2. Loosen the liftgate hinge mounting bolts as shown in the illustration located at left and right sides of the body, and slide the liftgate lower to adjust its position so that the clearances between the liftgate lower and body (rear bumper assembly) at left and right become even.
3. Tighten the liftgate hinge mounting bolts to the specified torque.

ADJUSTMENT OF LIFTGATE HEIGHT

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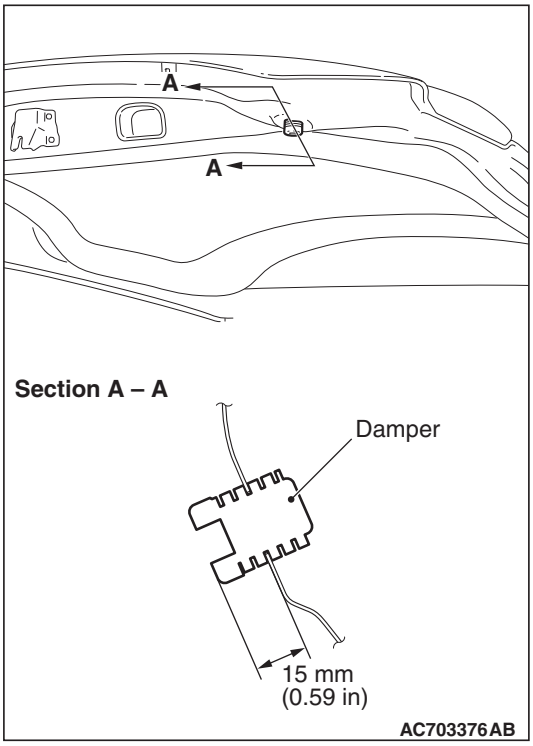


Rotate the damper by using the arrow mark on the damper as a guide to adjust the liftgate height. The damper height is altered by roughly 3 mm (0.12 inch) when the damper is rotated once.

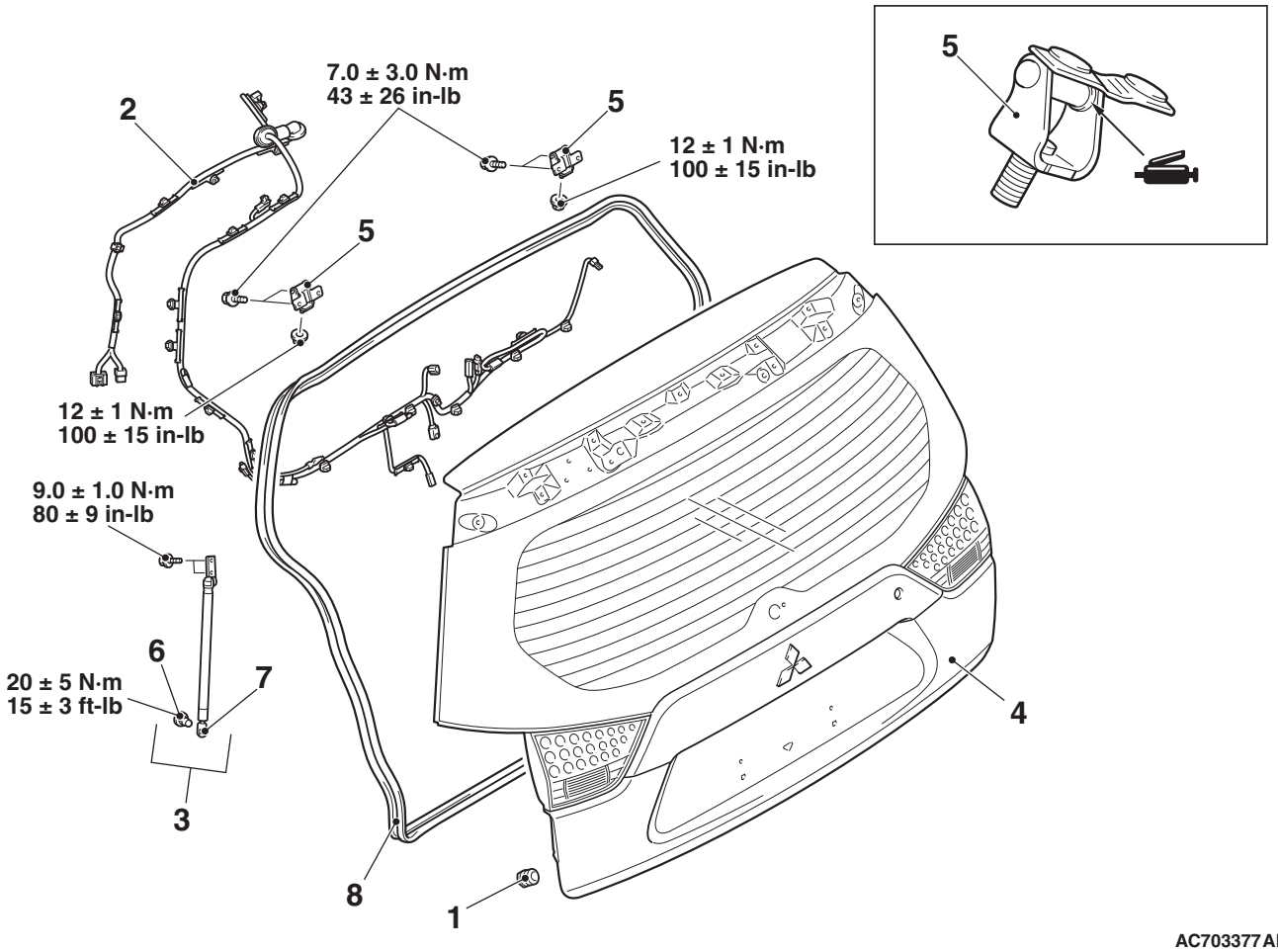
NOTE: If a rattling noise is heard due to the vibration of the liftgate when the vehicle is being driven, adjust the damper height until the damper is seated on the vehicle body. The damper should be seated on the vehicle body regardless of a rattling noise.

LIFTGATE

REMOVAL AND INSTALLATION <LIFTGATE UPPER>

M1424001100800

Pre-removal operation	Post-installation operation
• Liftgate spoiler assembly removal (Refer to GROUP 51, Liftgate Spoiler P.51-24). • Liftgate trim assembly removal (Refer to GROUP 52A, Liftgate Trim P.52A-14). • Rear wiper motor removal (Refer to GROUP 51, Rear Wiper and Washer P.51-101).	• Liftgate alignment (Refer to P.42A-159). • Adjustment of liftgate height (Refer to P.42A-161). • Rear wiper motor installation (Refer to GROUP 51, Rear Wiper and Washer P.51-101). • Liftgate trim assembly installation (Refer to GROUP 52A, Liftgate Trim P.52A-14). • Liftgate spoiler assembly installation (Refer to GROUP 51, Liftgate Spoiler P.51-24).



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Liftgate upper assembly removal steps

1. Damper
2. Harness connector
   - Rear combination light assembly (Refer to GROUP 54A, Rear Combination Light P.54A-258.)

<<A>> 3. Liftgate gas spring assembly

4. Liftgate upper assembly
   - Headlining assembly (Refer to GROUP 52A, Headlining P.52A-15.)

Liftgate upper assembly removal steps (Continued)

>>B<< 5. Liftgate hinge

6. Ball joint

Liftgate opening weatherstrip removal steps

7. Liftgate gas spring ball joint connection

>>A<< 8. Liftgate opening weatherstrip

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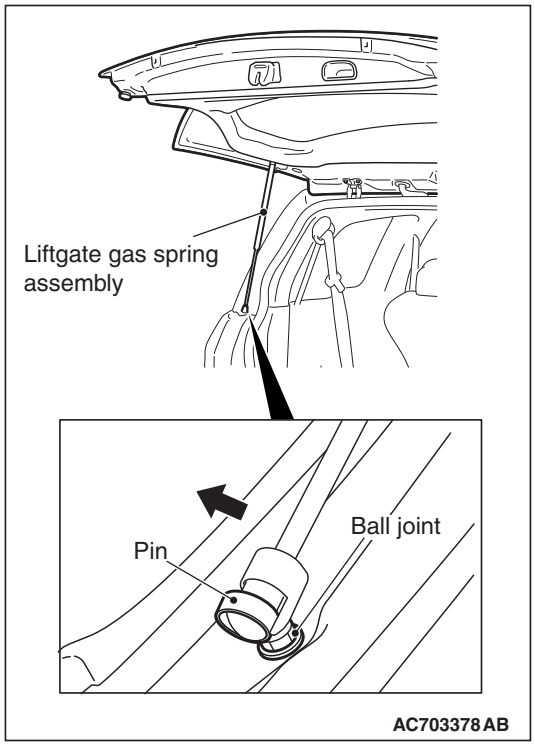
REMOVAL SERVICE POINT

<<A>> LIFTGATE GAS SPRING ASSEMBLY REMOVAL

⚠ CAUTION

- **Do not disassemble or throw the liftgate gas spring into the fire.**
- **Before disposal, make a hole to remove the gas.**
- **Make sure that the piston rod should not collect any foreign particles.**

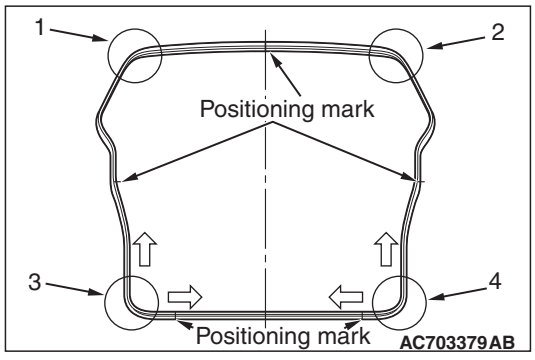
As shown in the figure, slide the pin and remove the liftgate gas spring assembly from the ball joint in the direction of the arrow.

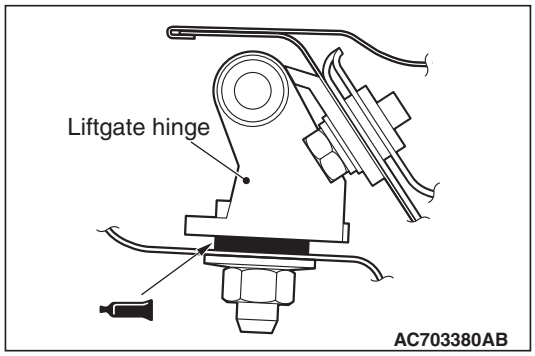


INSTALLATION SERVICE POINTS

>>A<< LIFTGATE OPENING WEATHERSTRIP INSTALLATION

1. The marking on the upper center of the liftgate opening weatherstrip should be positioned at the center of the vehicle body.
2. Install the weatherstrip according to the order shown in the figure.
3. Install the weatherstrip according to the direction shown by the arrow in the figure.





>>B<< LIFTGATE HINGE INSTALLATION

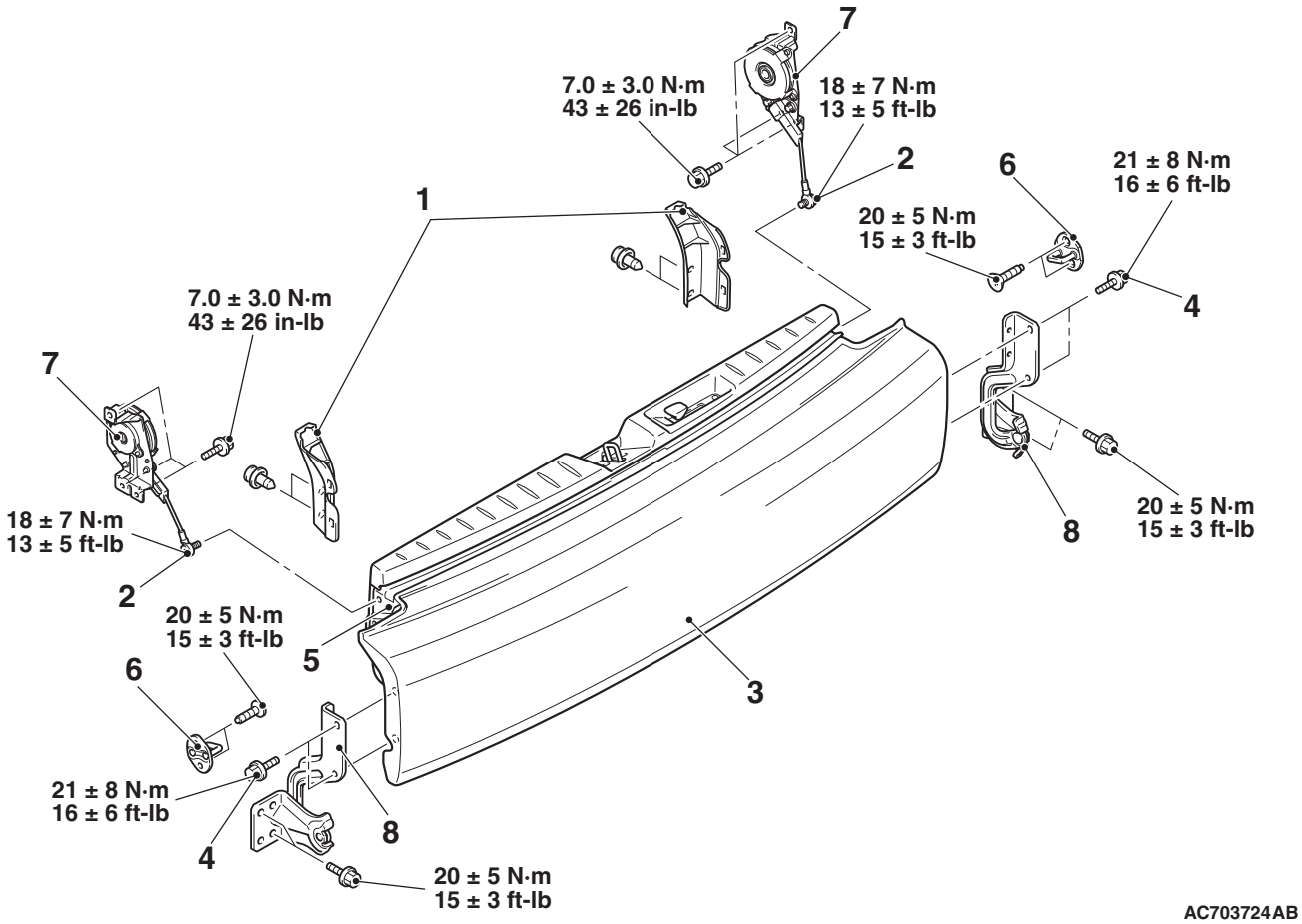
Apply the specified sealant to the liftgate hinge mounting surface, and install the liftgate hinge.

Specified Sealant: 3M™ AAD Part No. 8531 Heavy drip check sealer, 3M™ AAD Part No. 8646 Automotive joint and seam sealer or equivalent

REMOVAL AND INSTALLATION <LIFTGATE LOWER>

M1424001100747

Post-installation operation
- Liftgate alignment (Refer to P.42A-159).



Liftgate lower assembly removal steps
1. Cover
2. Liftgate cable mounting bolt
3. Liftgate lower garnish (Refer to GROUP 51, Garnish P.51-14.)
4. Liftgate hinge mounting bolt
5. Liftgate lower assembly

Striker removal steps
- Quarter trim lower (Refer to GROUP 52A, Interior Trim P.52A-9.)

>>A<< 6. Striker

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Liftgate cable removal steps

- Quarter trim lower (Refer to GROUP 52A, Interior Trim P.52A-9.)

7. Liftgate cable

Liftgate hinge removal steps

1. Cover

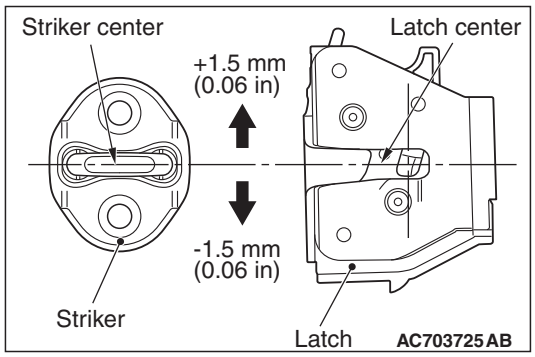
- Rear bumper assembly (Refer to GROUP 51, Rear Bumper P.51-7.)

8. Liftgate hinge

INSTALLATION SERVICE POINT

>>A<< STRIKER INSTALLATION

Install the striker so that the striker center does not deviate more than ±1.5 mm (0.06 inch) from the latch center.

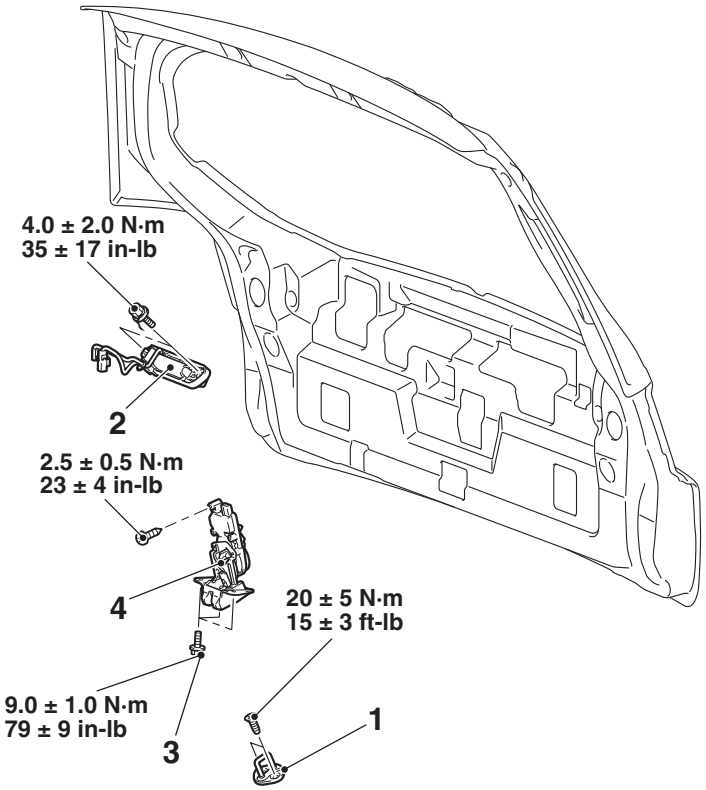


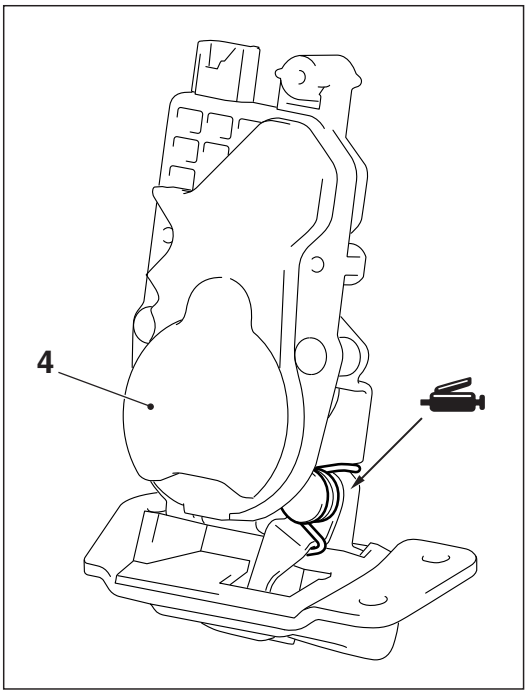
LIFTGATE HANDLE AND LATCH

REMOVAL AND INSTALLATION <LIFTGATE UPPER>

M1424001700761

Post-installation operation
- Liftgate alignment (Refer to P.42A-159.)





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Striker removal steps
- Liftgate trim (Refer to GROUP 52A, Liftgate Trim P.52A-14.)

>>A<< 1. Striker

Liftgate lock release handle removal steps
- Liftgate trim (Refer to GROUP 52A, Liftgate Trim P.52A-14.)

Liftgate lock release handle removal steps (Continued)
- Rear wiper motor assembly (Refer to GROUP 51, Rear Wiper and Washer P.51-101.)

2. Liftgate lock release handle

Liftgate latch removal steps
- Liftgate trim (Refer to GROUP 52A, Liftgate Trim P.52A-14.)

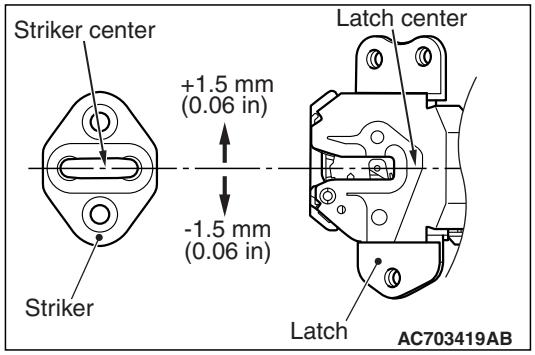
3. Ground bolt
4. Liftgate latch assembly

TSB Revision

INSTALLATION SERVICE POINT

>>A<< STRIKER INSTALLATION

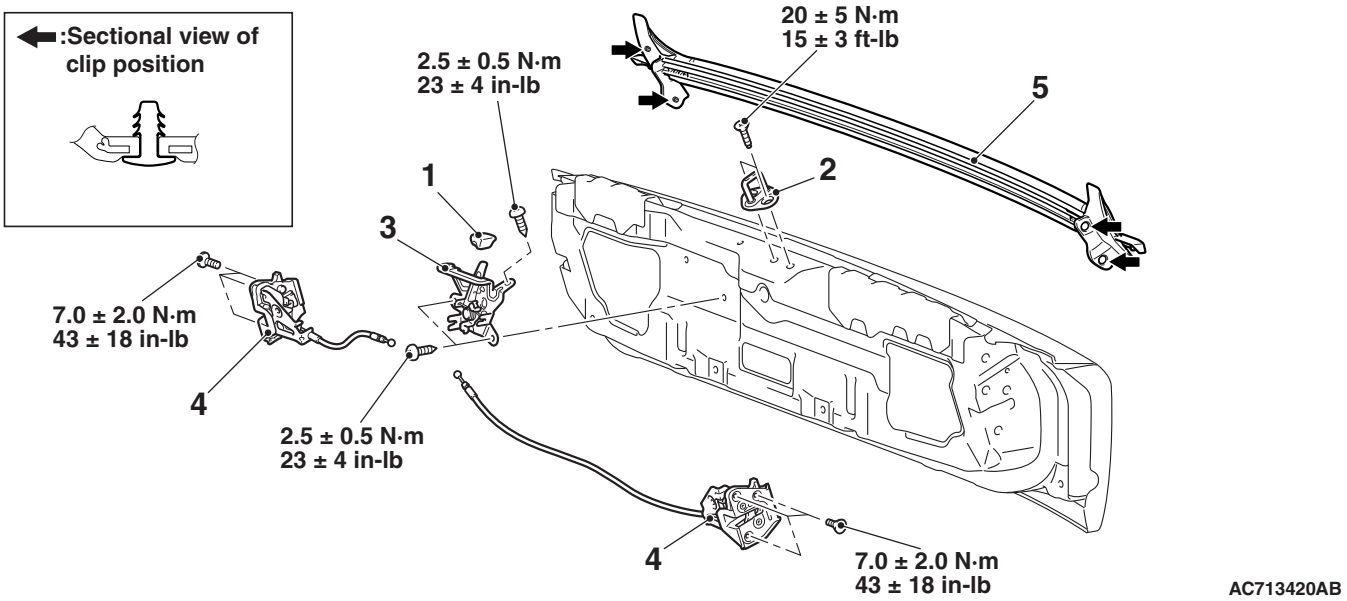
Install the striker so that the striker center does not deviate more than ±1.5 mm (0.06 inch) from the latch center.



REMOVAL AND INSTALLATION <LIFTGATE LOWER>

M1424001700772

Post-installation operation
- Liftgate alignment (Refer to P.42A-159).



Liftgate lock release handle knob removal
1. Liftgate lock release handle knob

Striker removal steps
1. Liftgate lock release handle knob
- Liftgate lower trim (Refer to GROUP 52A, Liftgate Trim P.52A-14.)

>>B<< 2. Striker

Liftgate latch removal steps
1. Liftgate lock release handle knob
- Liftgate lower trim (Refer to GROUP 52A, Liftgate Trim P.52A-14.)

3. Liftgate handle controller
4. Liftgate latch

Liftgate weatherstrip removal

>>A<< 5. Liftgate weatherstrip

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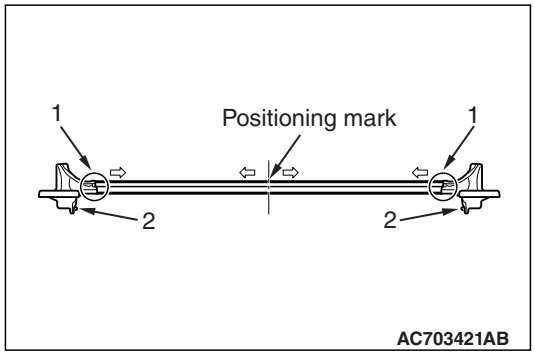
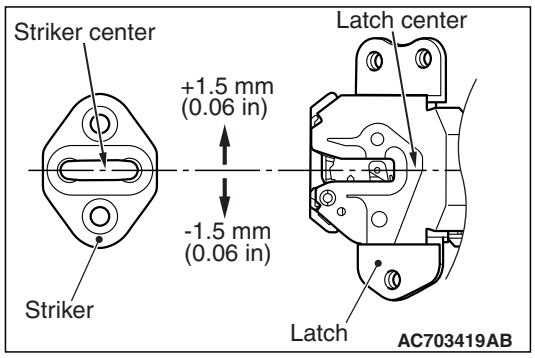
INSTALLATION SERVICE POINTS

>>A<< LIFTGATE WEATHERSTRIP INSTALLATION



1. The marking on the liftgate weatherstrip should be positioned at the center of the liftgate lower.
2. Install the weatherstrip according to the order shown in the figure.
3. Install the weatherstrip according to the direction shown by the arrow in the figure.

>>B<< STRIKER INSTALLATION

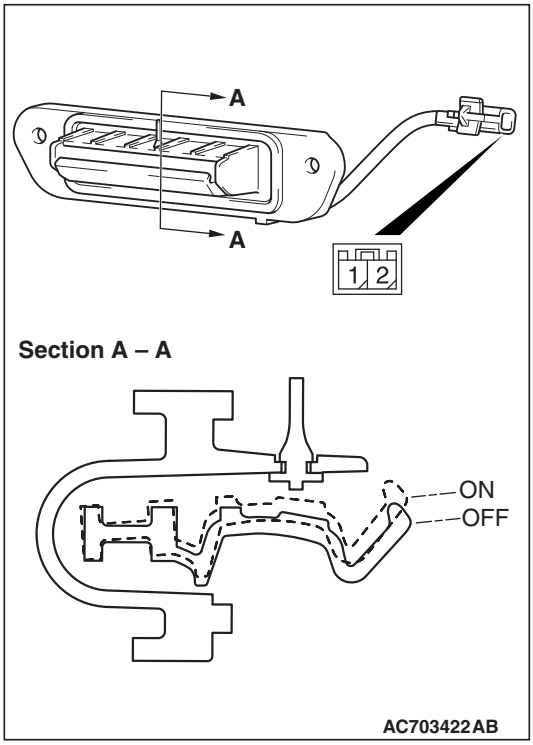


Install the striker so that the striker center does not deviate more than ±1.5 mm (0.06 in) from the latch center.

INSPECTION

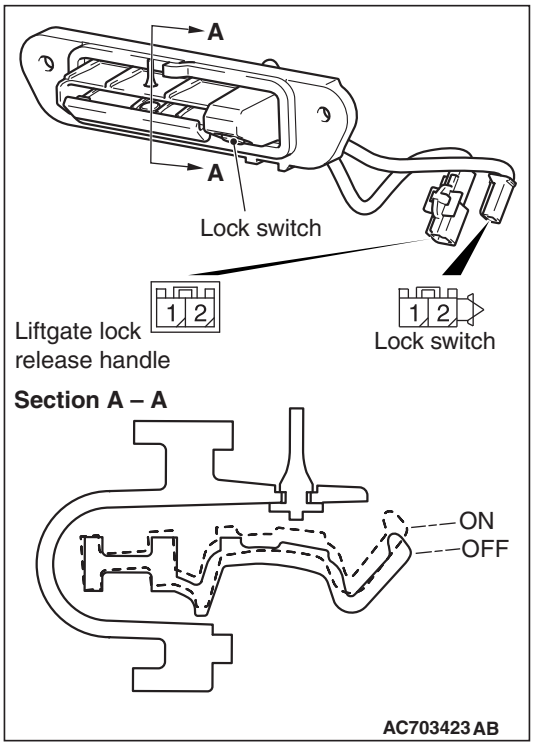
M1424002100256

LIFTGATE LOCK RELEASE HANDLE CHECK <VEHICLES WITHOUT KEYLESS OPERATION SYSTEM (KOS)>



Handle position	Terminal number	Normal value
ON	1 –2	Continuity exists (2 Ω or less)
OFF	1 –2	Open circuit

LIFTGATE LOCK RELEASE HANDLE CHECK <VEHICLES WITH KEYLESS OPERATION SYSTEM (KOS)>



LIFTGATE LOCK RELEASE HANDLE

Handle position	Terminal number	Normal value
ON	1 –2	Continuity exists (2 Ω or less)
OFF	1 –2	Open circuit

LOCK SWITCH

Switch position	Terminal number	Normal value
ON	1 –2	Continuity exists (2 Ω or less)
OFF	1 –2	Open circuit

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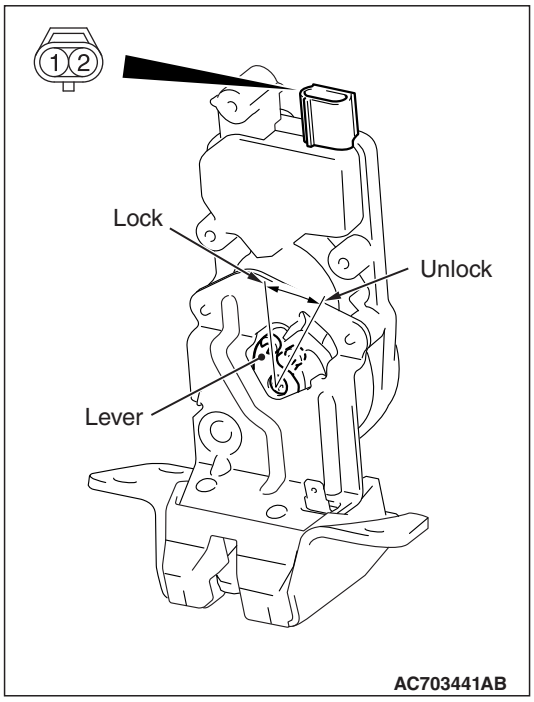
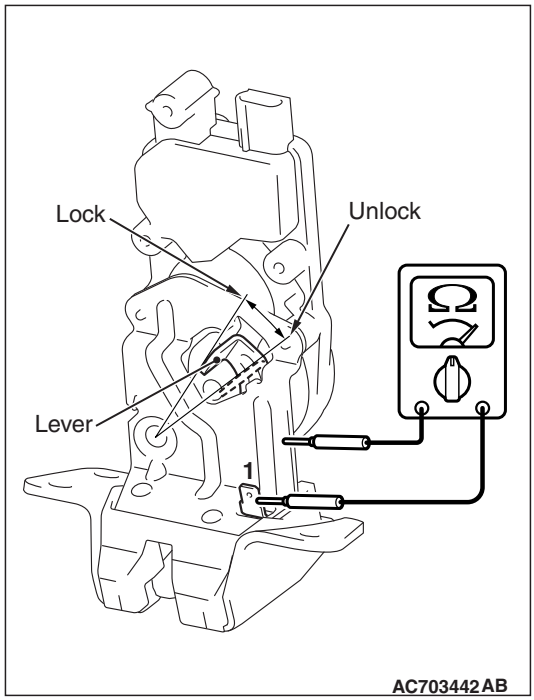
CHECK THE LIFTGATE LOCK ACTUATOR.



Lever position	Battery connecting terminal number	Lever operation
Lock	• Connect terminal No. 2 and the negative battery terminal. • Connect terminal No. 1 and the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.

LIFTGATE LATCH SWITCH CHECK



Lever position	Terminal number	Normal value
Lock	1 –Ground	Open circuit
Unlock	1 –Ground	Continuity exists (2 Ω or less)

TSB Revision

SUNROOF

SPECIFICATION(S)

SERVICE SPECIFICATION

M1421000300750

Item	Standard value
Sunroof lid glass operation current A	7 or less [at 20° C(68° F)]

SEALANT

M1421000500323

Item	Specified sealant
Sunroof assembly	Grease: Use resin –proof silicone grease

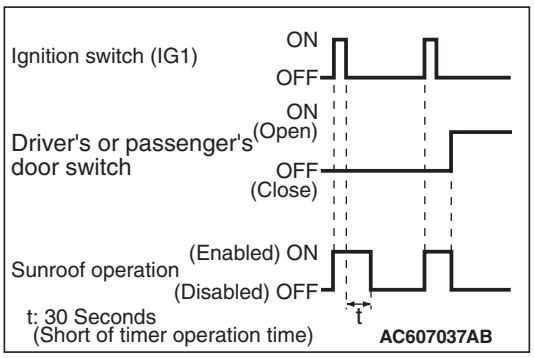
GENERAL INFORMATION

M1426000100353

SUNROOF FUNCTION

A motor-driven inner slide-type glass sunroof with a tilt-up mechanism is available in some models as optional equipment. 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 TIMER FUNCTION



The sunroof ECU (integrated into the sunroof motor assembly) receives the ignition switch (IG1) signal transmitted by ETACS-ECU. If the ignition switch (IG1) signal turns OFF, the sunroof ECU allows the sunroof switch to open/close (timer activation) the sunroof for approximately 30 seconds. During the timer operation, if the driver's or passenger's door open is detected from the door switch signal transmitted by ETACS-ECU, the sunroof timer function stops at this time.

SAFETY MECHANISM

Refer to P.42A-205.

SUNROOF DIAGNOSIS

TROUBLESHOOTING STRATEGY

M1426001700240

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points, Troubleshooting Contents P.00-7.

DIAGNOSTIC TROUBLE CODE CHART

M1426001900103

⚠ CAUTION

On troubleshooting, if the ignition switch is turned ON while disconnecting connector(s), diagnostic trouble code(s) associated with other system may be set. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
L0630	S/R Power supply	P.42A-173
L0632	S/R Switch fail	P.42A-175
L0634	S/R Sensor signal	P.42A-177
L0637	S/R Position	P.42A-177
L0640	S/R Over load	P.42A-178

NOTE: S/R: Abbreviation of sunroof

TROUBLE SYMPTOM CHART

M1426002000374

⚠ CAUTION

During diagnosis, a diagnostic trouble code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

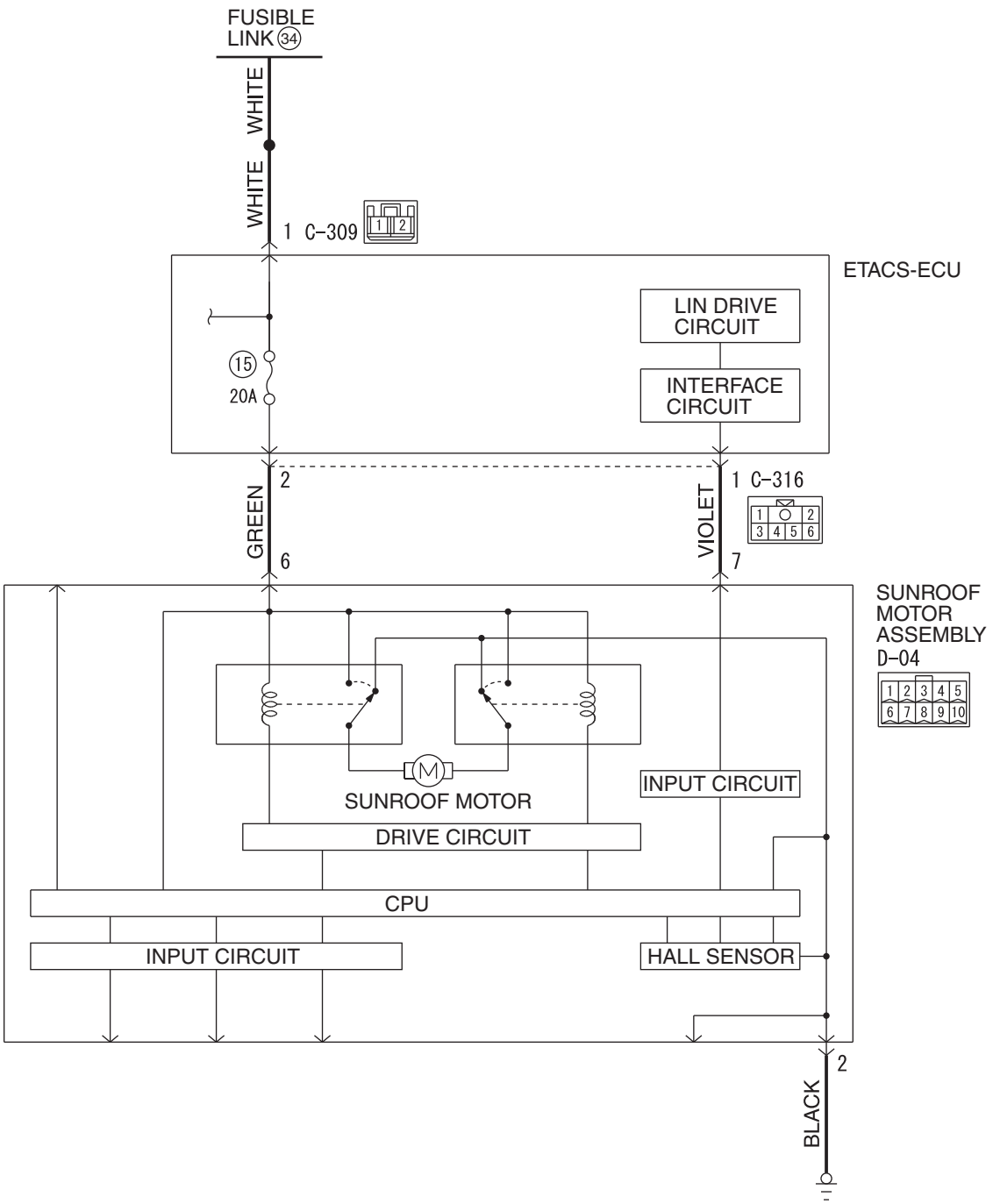
Trouble symptom	Inspection procedure number	Reference page
Sunroof does not work at all.	1	P.42A-179
The sunroof lid glass does not tilt-up (tilt-down, open, and close normally).	2	P.42A-187
The sunroof lid glass does not open (tilt-up, tilt-down, and close normally).	3	P.42A-190
The sunroof lid glass does not tilt-down or close (tilt-up and open normally).	4	P.42A-193
Sunroof safety function does not work normally.	5	P.42A-196
Sunroof timer lock function does not work normally.	6	P.42A-197

DIAGNOSTIC TROUBLE CODE PROCEDURES

Code No. L0630: S/R Power Supply

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

Sunroof Motor Assembly Power Supply Circuit



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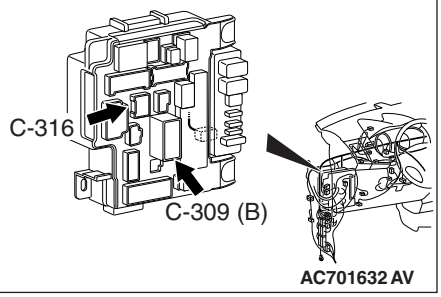
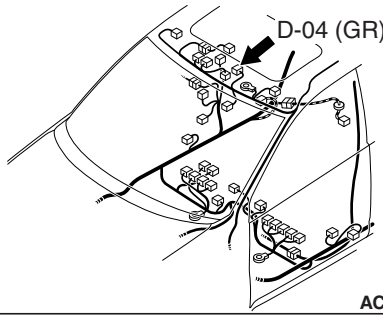
TSB Revision

Connectors: C-309, C-316



Connector: D-04



COMMENTS ON TROUBLE SYMPTOM

When the terminal voltage of the sunroof motor assembly is 8 V or less, or 18 V or more, and if it continues for 60 seconds, the sunroof motor assembly will set the diagnostic trouble code No. L0630.

PROBABLE CAUSES

- Malfunction of the sunroof motor assembly
- Damaged wiring harness and connectors

DIAGNOSTIC PROCEDURE

STEP 1. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof switch connector D-04 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

STEP 2. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 6) and fusible link (34).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check ETACS-ECU connectors C-309 and C-316 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If ETACS-ECU connectors C-309 and C-316 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 6) and fusible link (34) in good condition?

YES : Go to Step 3.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 3. Diagnostic trouble code recheck

Recheck if the diagnostic trouble code is set.
(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.
(3) Check if the diagnostic trouble code is set.

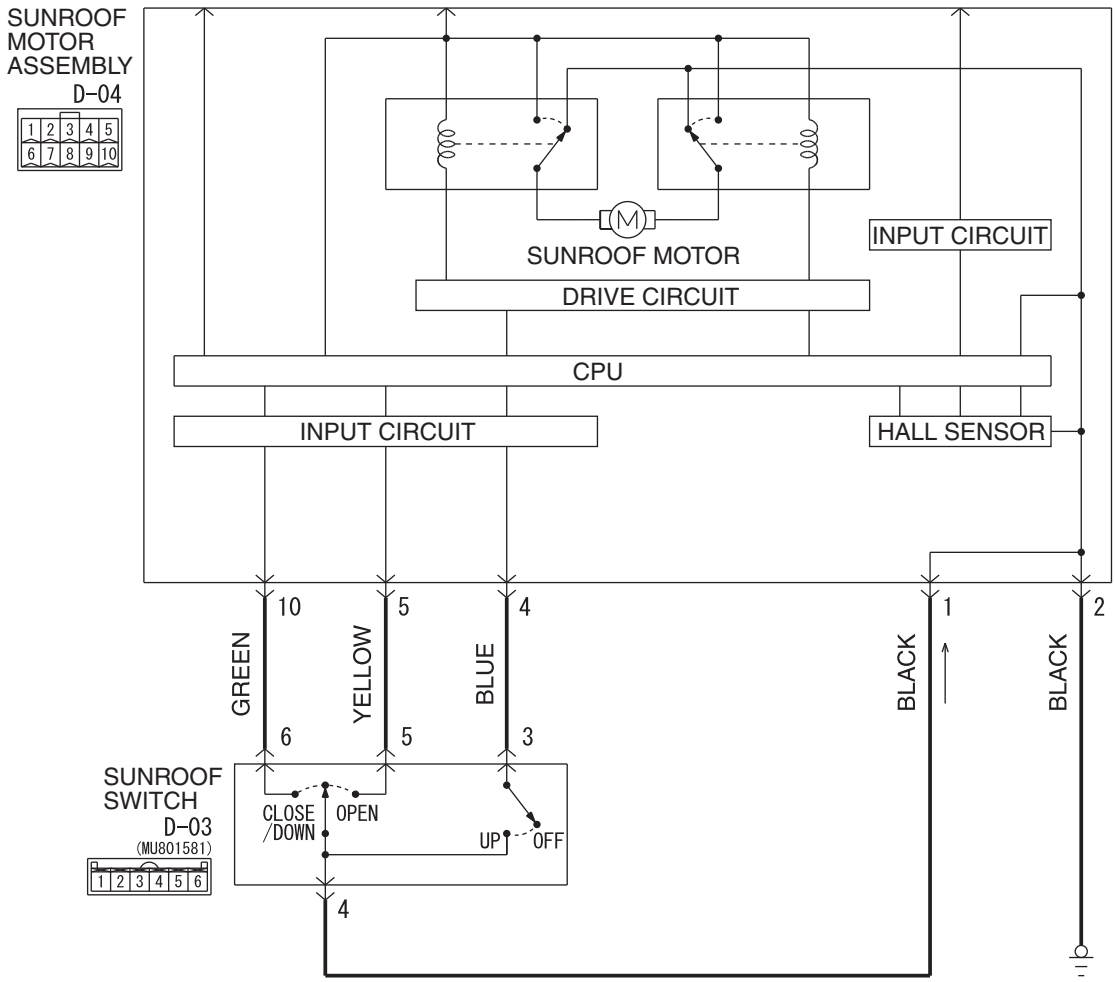
Q: Is the diagnostic trouble code set?

YES : Replace the sunroof motor assembly.
NO : The procedure is complete.

Code No. L0632: S/R Switch fall

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

Sunroof Switch Circuit



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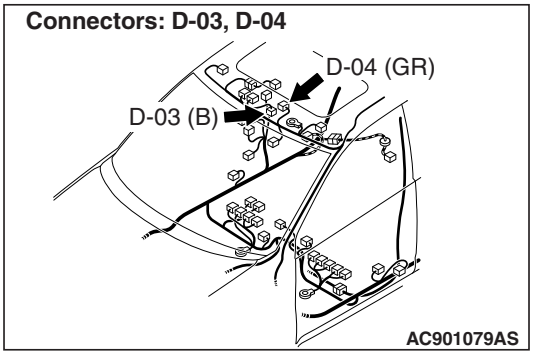
TSB Revision



COMMENTS ON TROUBLE SYMPTOM

If each switch (UP, OPEN, CLOSE/DOWN) of the sunroof switch is in the ON status for 60 seconds, the sunroof motor assembly will set the diagnostic trouble code No. L0632.

PROBABLE CAUSES

- Malfunction of the sunroof motor assembly
- Malfunction of the sunroof switch
- Damaged wiring harness and connectors

DIAGNOSTIC PROCEDURE

STEP 1. Check sunroof switch connector D-03 and sunroof motor assembly D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are sunroof switch connector D-03 and sunroof motor assembly D-04 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

STEP 2. Check the wiring harness between sunroof switch connector D-03 (terminals No. 3, 5, 6) and sunroof motor assembly connector D-04 (terminals No. 4, 5, 10).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03 (terminal 3, 5, 6) and sunroof motor assembly connector D-04 (terminal No. 4, 5, 10) in good condition?

YES : Go to Step 3.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 3. Diagnostic trouble code recheck

Replace the sunroof switch. Recheck if the diagnostic trouble code is set.

(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

YES : Replace the sunroof motor assembly.

NO : The procedure is complete.

TSB Revision

Code No. L0634: S/R Sensor signal

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

COMMENTS ON TROUBLE SYMPTOM
If one of two signals from the sunroof lid glass position detection sensor cannot be detected, the sunroof motor assembly will set the diagnostic trouble code No. L0634.

PROBABLE CAUSES
- Malfunction of the sunroof motor assembly

DIAGNOSTIC PROCEDURE

Diagnostic trouble code recheck
Recheck if the diagnostic trouble code is set.
(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?
YES : Replace the sunroof motor assembly.
NO : The procedure is complete.

Code No. L0637 S/R Position

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

COMMENTS ON TROUBLE SYMPTOM
If the roof lid glass position is out of the specified range, ETACS-ECU will set the diagnostic trouble code No. L0637.

PROBABLE CAUSES
- Malfunction of the sunroof motor assembly

DIAGNOSTIC PROCEDURE

STEP 1. Check the sunroof fully closed position
(1) Carry out the learning procedures of the sunroof fully closed position. Refer to P.42A-204.
(2) Recheck if the diagnostic trouble code is set.
  a. Erase the diagnostic trouble code.
  b. Turn the ignition switch from the LOCK (OFF) position to the ON position.
  c. Check if the diagnostic trouble code is set.

Q: Is the check result normal?
YES : The procedure is complete.
NO : Go to Step 2.

STEP 2. Diagnostic trouble code recheck

Recheck if the diagnostic trouble code is set.

(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

YES : Replace the sunroof motor assembly.
NO : The procedure is complete.

Code No. L0640 S/R Over load

⚠ CAUTION
Before replacing the ECU, ensure that the input and output signal circuits are normal.

COMMENTS ON TROUBLE SYMPTOM

If the over load (foreign material pinched) is detected consecutively five times during a sunroof operation, ETACS-ECU will set the diagnostic trouble code No. L0640.

PROBABLE CAUSES

- Malfunction of the sunroof motor assembly

DIAGNOSTIC PROCEDURE

STEP 1. Check the sunroof fully closed position

(1) Carry out the learning procedures of the sunroof fully closed position. Refer to P.42A-204.
(2) Recheck if the diagnostic trouble code is set.
  a. Erase the diagnostic trouble code.
  b. Turn the ignition switch from the LOCK (OFF) position to the ON position.
  c. Check if the diagnostic trouble code is set.

Q: Is the check result normal?

YES : The procedure is complete.
NO : Go to Step 2.

STEP 2. Diagnostic trouble code recheck

Recheck if the diagnostic trouble code is set.

(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.
(3) Check if the diagnostic trouble code is set.

Q: Is the diagnostic trouble code set?

YES : Replace the sunroof motor assembly.
NO : The procedure is complete.

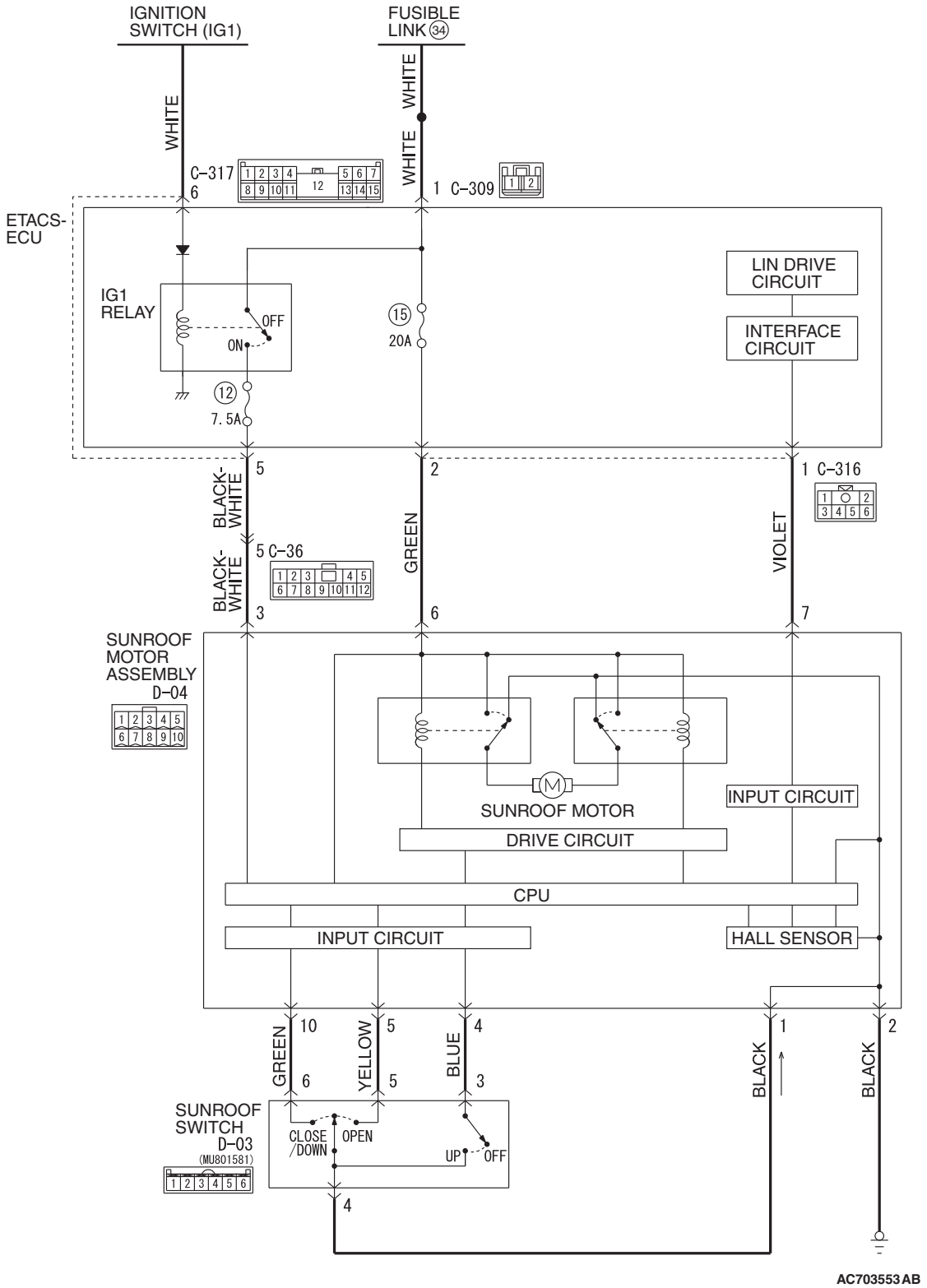
SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Sunroof does not Work at All.

⚠ CAUTION

Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Sunroof Motor Assembly Power Supply Circuit



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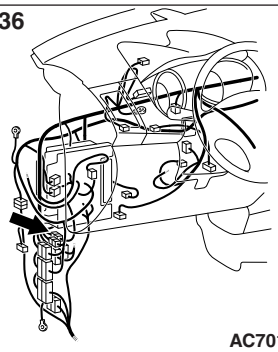
TSB Revision

Connector: C-36



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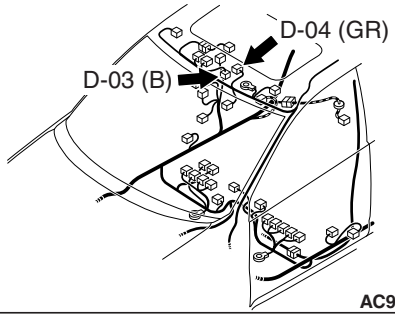
Connectors: D-03, D-04



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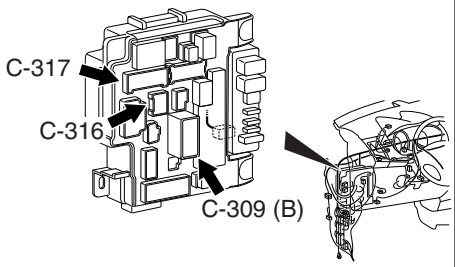
Connectors: C-309, C-316, C-317



AC701632AT

CIRCUIT OPERATION

- The sunroof motor assembly is energized through fusible link (34) by the battery.
- When the ignition switch (IG1) signal is on, the sunroof motor assembly is ready to operate.

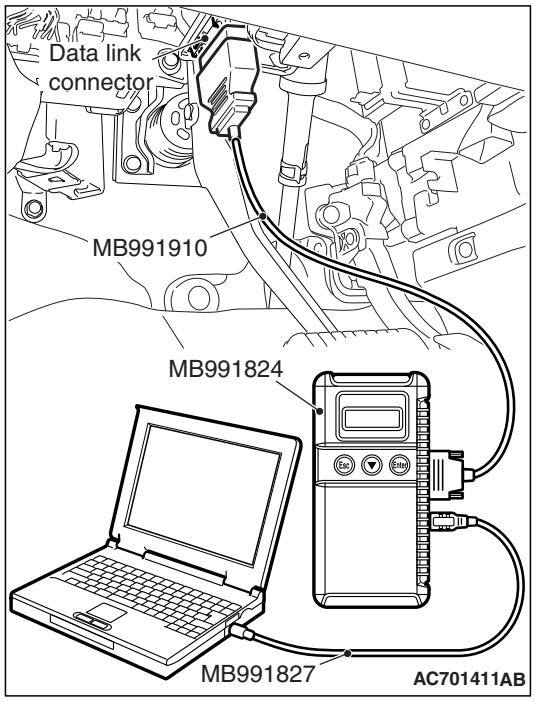
TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

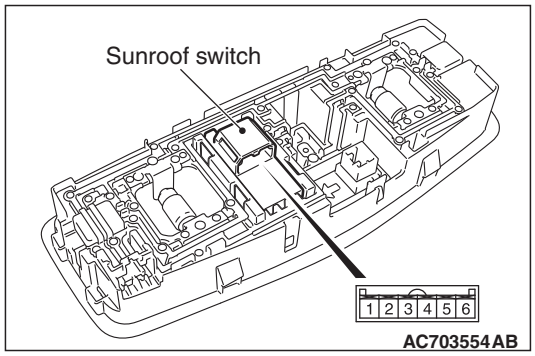
Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.42A-172.
NO : Go to Step 2.

STEP 2. Check sunroof switch connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof switch connector D-03 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.



STEP 3. Sunroof switch check

(1) Remove the sunroof switch. Refer to P.42A-208.

(2) Check continuity when the sunroof switch is operated to "OPEN", "TILT-UP" or "CLOSE/TILT-DOWN" position.

Switch position	Terminal No.	Normal value
Tilt-up	3 –4	Continuity exists (2 Ω or less)
OFF	3 –4, 4 –5, 4 –6	Open circuit
Open	4 –5	Continuity exists (2 Ω or less)
Close/tilt-down	4 –6	Continuity exists (2 Ω or less)

Q: Is the sunroof switch normal?

YES : Go to Step 4.

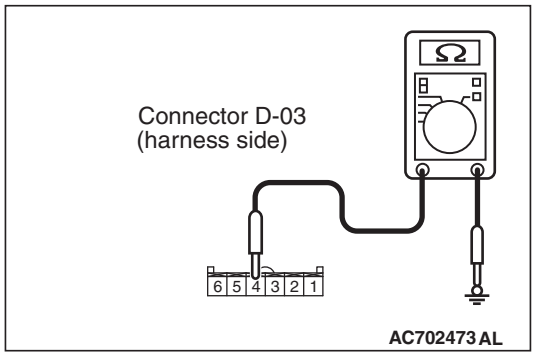
NO : Replace the sunroof switch. Check that the sunroof works normally.

STEP 4. Check the ground circuit to the sunroof motor assembly. Measure the resistance at sunroof switch connector D-03.

(1) Disconnect sunroof switch connector D-03 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the resistance value between terminal 4 and ground.

- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 5.

STEP 5. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-04 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

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STEP 6. Check the wiring harness between sunroof switch connector D-03 (terminal No. 4) and sunroof motor assembly connector D-04 (terminal No. 1).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03 (terminal 4) and sunroof motor assembly connector D-04 (terminal No. 1) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 7. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-04 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

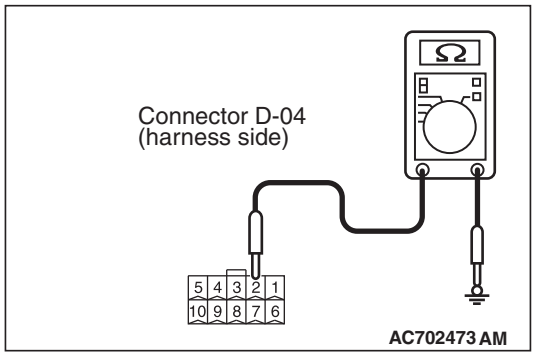
STEP 8. Check the wiring harness between sunroof switch connector D-03 (terminal No. 4) and sunroof motor assembly connector D-04 (terminal No. 1).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03 (terminal 4) and sunroof motor assembly connector D-04 (terminal No. 1) in good condition?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.



STEP 9. Check the ground circuit to the sunroof motor assembly. Measure the resistance at sunroof motor assembly connector D-04.

(1) Disconnect sunroof motor assembly connector D-04 and measure the resistance available at the wiring harness side of the connector.
(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 2) and ground.

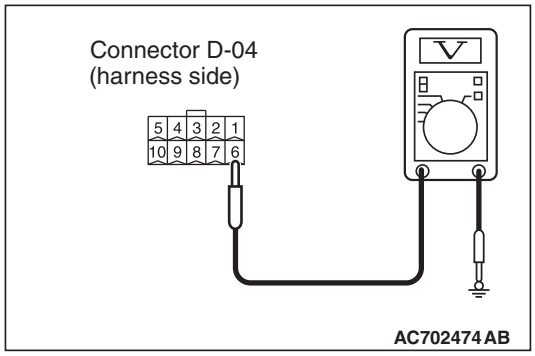
- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 11. Check the fusible link (34) line of power supply circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-04.

(1) Disconnect sunroof motor assembly connector D-04 and measure the voltage available at the wiring harness side of the connector.
(2) Measure the voltage between terminal 6 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



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

YES : Go to Step 13.
NO : Go to Step 12.

STEP 12. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 6) and fusible link (34).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check ETACS-ECU connectors C-309 and C-316 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If ETACS-ECU connectors C-309 and C-316 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

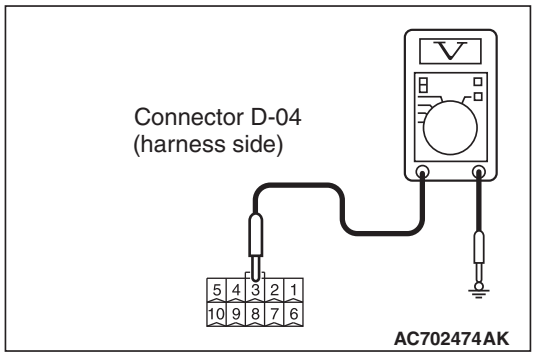
Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 6) and fusible link (34) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 13. Check the ignition switch (IG1) circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-04.

(1) Disconnect sunroof motor assembly connector D-04 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to the "ON" position.
(3) Measure the voltage between terminal 3 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).



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

YES : Go to Step 16.

NO : Go to Step 14.

STEP 14. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 3) and ETACS-ECU connector C-317 (terminal 5).

- Check the power supply line for open circuit and short circuit.

NOTE: Also check intermediate connector C-36 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-36 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 3) and ETACS-ECU connector C-317 (terminal 5) in good condition?

YES : Go to Step 15.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 15. Check the wiring harness between ETACS-ECU connector C-317 (terminal 6) and ignition switch (IG1).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 3) and the ignition switch (IG1) in good condition?

YES : Go to Step 16.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 16. Retest the system.

Check that the sunroof works normally.

Q: Is the check result normal?

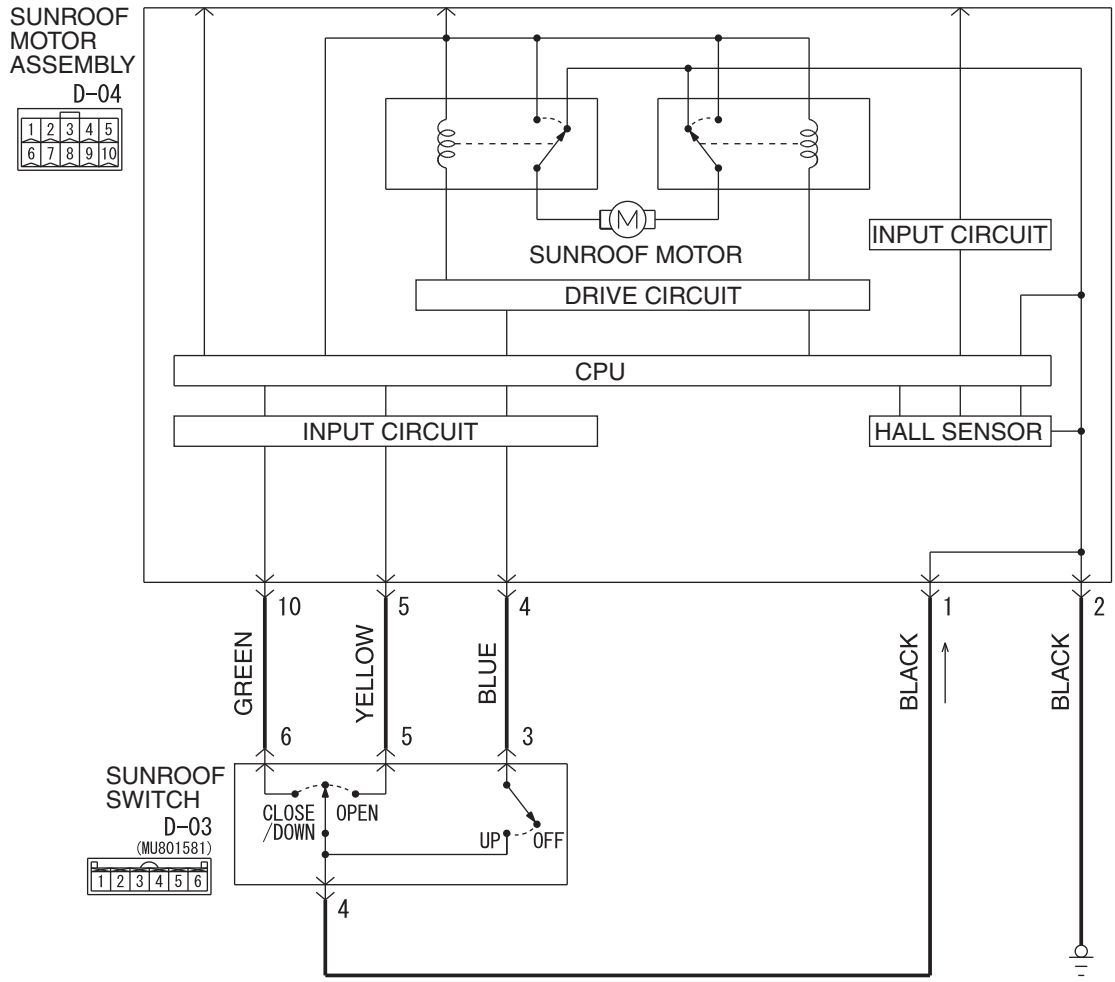
YES : No action is necessary and testing is complete.

NO : Replace the sunroof motor assembly. Check that the sunroof works normally.

INSPECTION PROCEDURE 2: The Sunroof Lid Glass does not Tilt-up (Tilt-down, Open and Close Normally).

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Sunroof Switch Circuit



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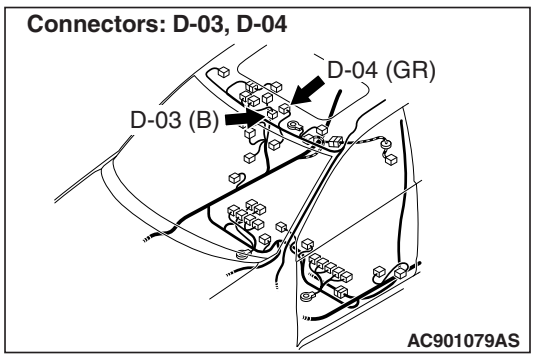


TECHNICAL DESCRIPTION (COMMENT)

The sunroof switch or the sunroof motor assembly may be defective.

TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

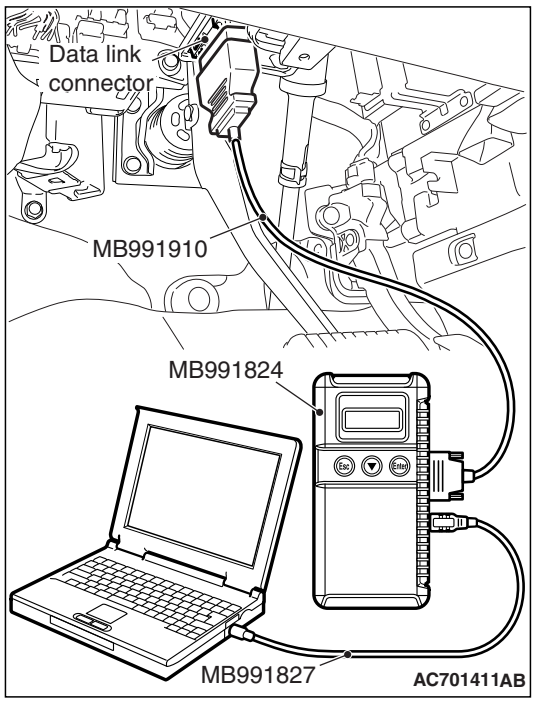
- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.



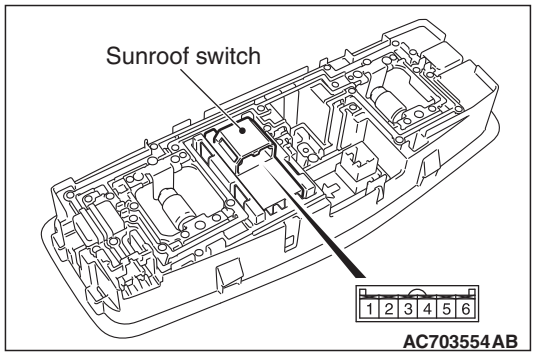
Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.42A-172.
NO : Go to Step 2.

STEP 2. Check sunroof switch connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof switch connector D-03 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.



STEP 3. Sunroof switch check

(1) Remove the sunroof switch. Refer to P.42A-208.

(2) Check continuity when the sunroof switch is operated to "TILT-UP" position.

Switch position	Terminal No.	Normal value
Tilt-up	3 –4	Continuity exists (2 Ω or less)
OFF	3 –4, 4 –5, 4 –6	Open circuit

Q: Is the sunroof switch normal?

YES : Go to Step 4.

NO : Replace the sunroof switch. Check that the sunroof works normally.

STEP 4. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-04 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

STEP 5. Check the wiring harness between sunroof switch connector D-03 (terminal 3) and sunroof motor assembly connector D-04 (terminal 4).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03 (terminal 3) and sunroof motor assembly connector D-04 (terminal No. 4) in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 6. Retest the system.

Check that the sunroof lid glass tilts up.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

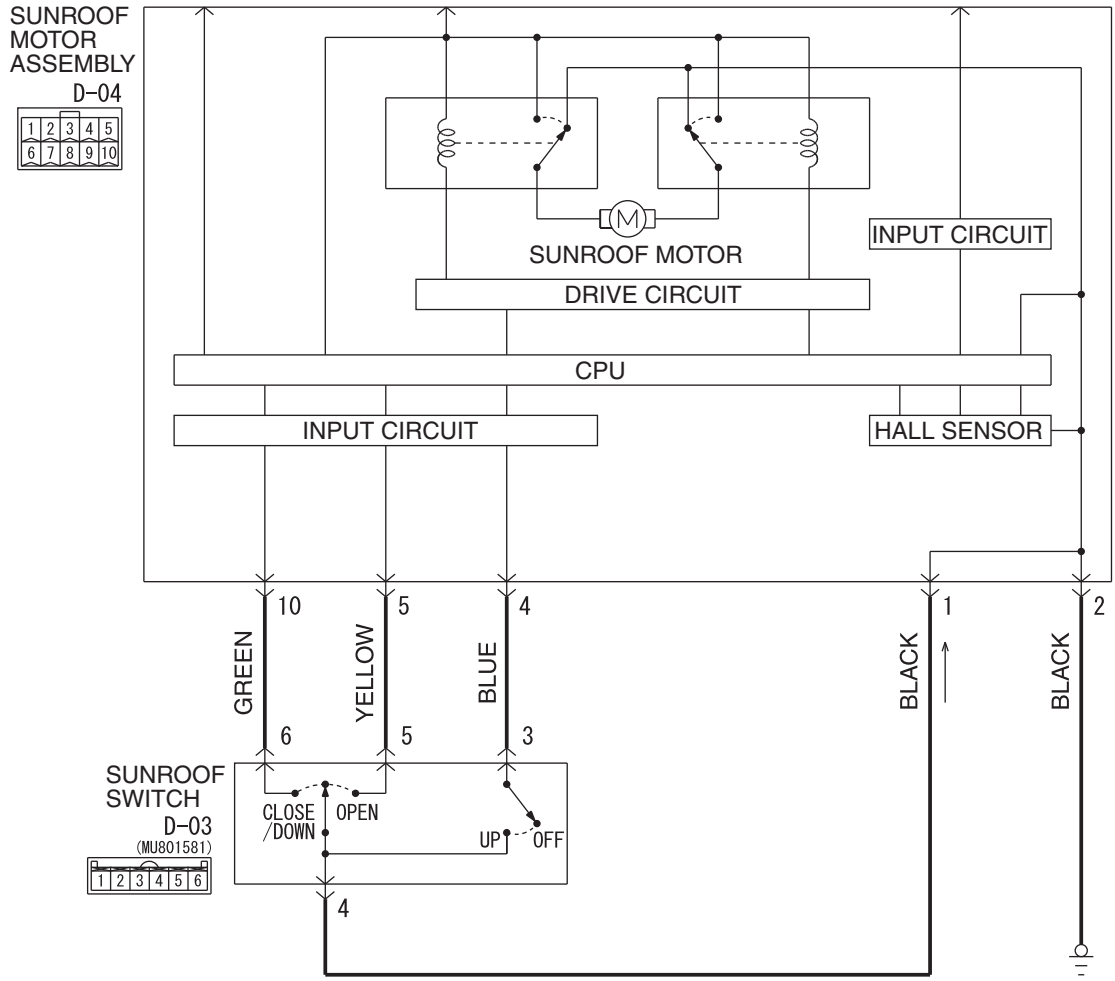
NO : Replace the sunroof motor assembly. Check that the sunroof works normally.

TSB Revision

INSPECTION PROCEDURE 3: The Sunroof Lid Glass does not Open (Tilt-up, Tilt-down and Close Normally).

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Sunroof Switch Circuit



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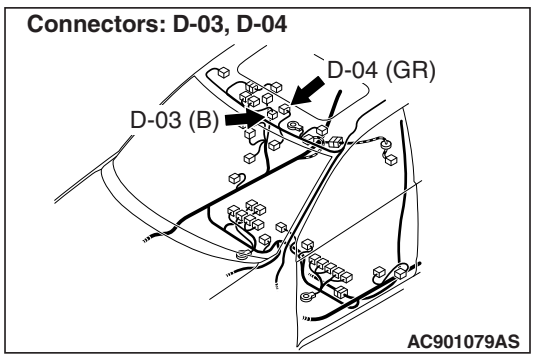


TECHNICAL DESCRIPTION (COMMENT)

The sunroof switch or the sunroof motor assembly may be defective.

TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

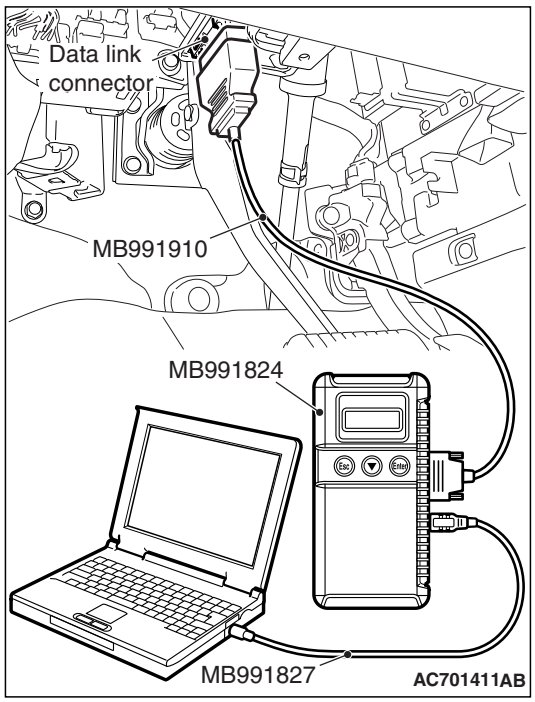
⚠ CAUTION

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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

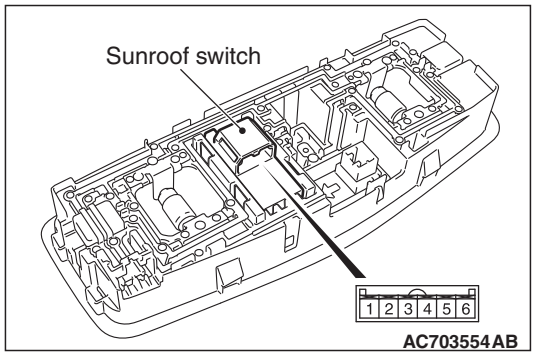
YES : Diagnose the ETACS-ECU. Refer to P.42A-172.
NO : Go to Step 2.



STEP 2. Check sunroof switch connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof switch connector D-03 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.



STEP 3. Sunroof switch check

(1) Remove the sunroof switch. Refer to P.42A-208.

(2) Check continuity when the sunroof switch is operated to "OPEN" position.

Switch position	Terminal No.	Normal value
Open	4 –5	Continuity exists (2 Ω or less)
OFF	3 –4, 4 –5, 4 –6	Open circuit

Q: Is the sunroof switch normal?

YES : Go to Step 4.

NO : Replace the sunroof switch.

STEP 4. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-04 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

STEP 5. Check the wiring harness between sunroof switch connector D-03 (terminal 5) and sunroof motor assembly connector D-04 (terminal 5).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03 (terminal 5) and sunroof motor assembly connector D-04 (terminal No. 5) in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 6. Retest the system.

Check that the sunroof lid glass opens.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

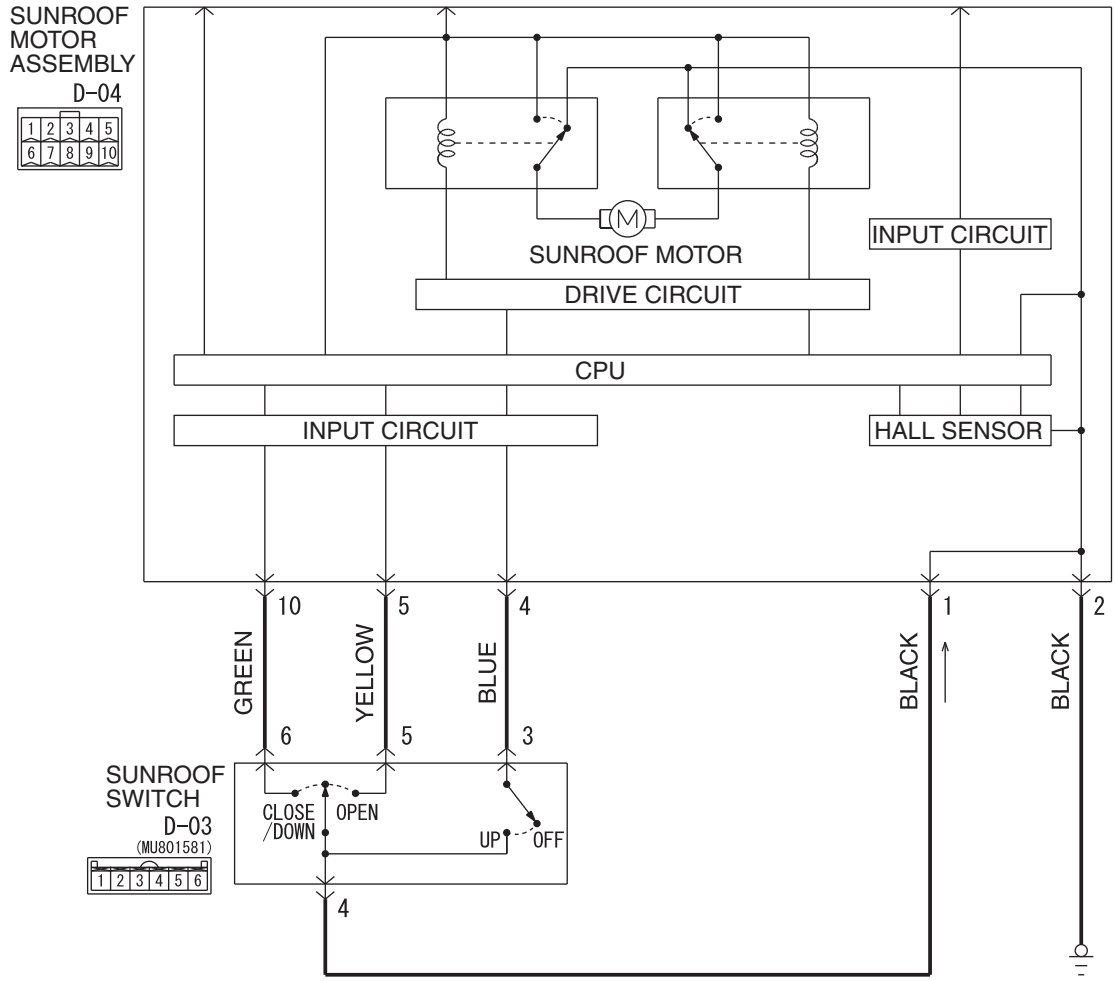
NO : Replace the sunroof motor assembly. Check that the sunroof works normally.

TSB Revision

INSPECTION PROCEDURE 4: The Sunroof Lid Glass does not Tilt-down or Close (Tilt-up and Open Normally).

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Sunroof Switch Circuit



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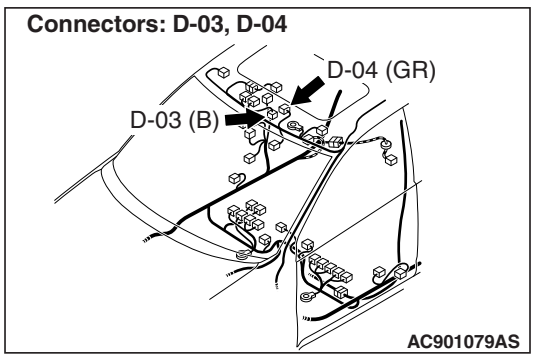


TECHNICAL DESCRIPTION (COMMENT)

The sunroof switch or the sunroof motor assembly may be defective.

TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

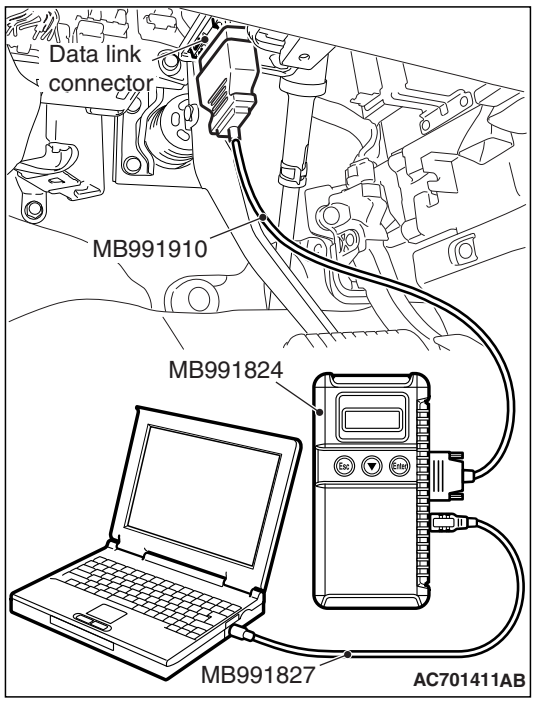
- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.



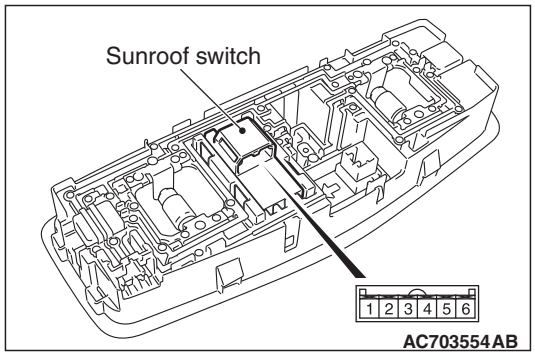
Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.42A-172.
NO : Go to Step 2.

STEP 2. Check sunroof switch connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof switch connector D-03 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.



STEP 3. Sunroof switch check

(1) Remove the sunroof switch. Refer to P.42A-208.

(2) Check continuity when the sunroof switch is operated to "CLOSE/TILT-DOWN" position.

Switch position	Terminal No.	Normal value
Close/tilt-down	4 –6	Continuity exists (2 Ω or less)
OFF	3 –4, 4 –5, 4 –6	Open circuit

Q: Is the sunroof switch normal?

YES : Go to Step 4.

NO : Replace the sunroof switch.

STEP 4. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-04 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the sunroof works normally.

STEP 5. Check the wiring harness between sunroof switch connector D-03 (terminal 6) and sunroof motor assembly connector D-04 (terminal 10).

- Check the power supply line for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03 (terminal 6) and sunroof motor assembly connector D-04 (terminal No. 10) in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 6. Retest the system.

Check that the sunroof lid glass tilts down or closes.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

NO : Replace the sunroof motor assembly. Check that the sunroof works normally.

INSPECTION PROCEDURE 5: Sunroof Safety Function does not Work Normally.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

CIRCUIT OPERATION
Malfunction of the sunroof motor assembly or incorrect learning of the sunroof fully closed position is suspected.

TROUBLESHOOTING HINTS
- Malfunction of the sunroof motor assembly
- Incorrect learning of the sunroof fully closed position

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

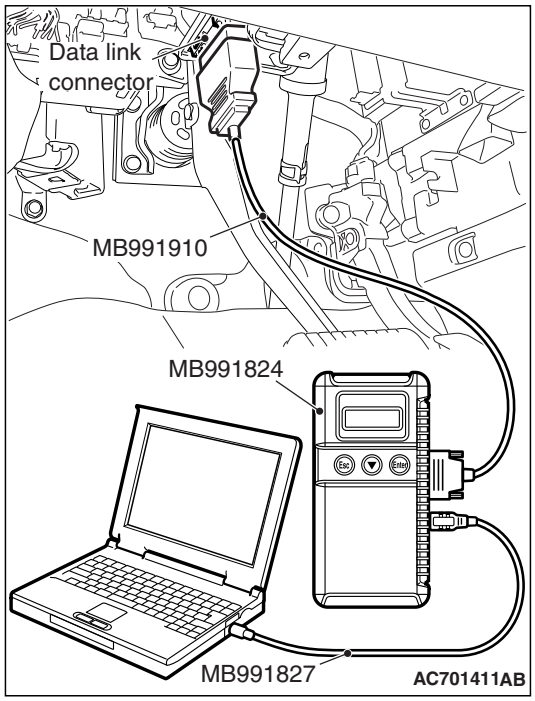
STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to P.42A-172.
NO : Go to Step 2.



STEP 2. Check the trouble symptom.
Check the sunroof trouble symptom according to the following procedures.
(1) Carry out the learning procedures of the sunroof fully closed position (Refer to P.42A-204).
(2) Check the trouble symptom.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.
NO : Replace the sunroof motor assembly. Check that the sunroof works normally.

INSPECTION PROCEDURE 6: Sunroof Timer Lock Function does not Work Normally.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

CIRCUIT OPERATION

- The sunroof timer function works according to the signals from the following switches:
  - Ignition switch (IG1): OFF
  - Front door switch (LH): OFF
  - Front door switch (RH): OFF
- Vehicle condition
  - Ignition switch: LOCK (OFF) position
  - Front door (LH): Closed
  - Front door (RH): Closed
- When the driver's door or the passenger's door are opened and closed while the sunroof timer function is on, the sunroof operative duration will be changed.

TECHNICAL DESCRIPTION (COMMENT)

Is the sunroof timer function does not work normally, the input circuits from the switches described in "CIRCUIT OPERATION", the sunroof motor assembly, the ETACS-ECU or the LIN communication line may be defective.

TROUBLESHOOTING HINTS

- The front door switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

COMMENTS ON TROUBLE SYMPTOM

If the sunroof timer function does not work normally, a malfunction of the communication circuit, the driver's door switch or the passenger's door switch input circuit, the sunroof motor assembly or ETACS-ECU is suspected.

PROBABLE CAUSES

- Malfunction of the driver's door switch
- Malfunction of the sunroof motor assembly
- Malfunction of ETACS-ECU
- Damaged wiring harness and connectors

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB992006: Extra fine probe
- MB991223: Harness set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check the power supply system.

With the ignition switch in the LOCK (OFF) position, check if the following function operates normally:

- Hazard warning light
- Central door locking system

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to GROUP 54A, Malfunction of ETACS-ECU power supply circuit P.54A-841?.

STEP 2. Using scan tool MB991958, read the diagnostic trouble code.

⚠ CAUTION

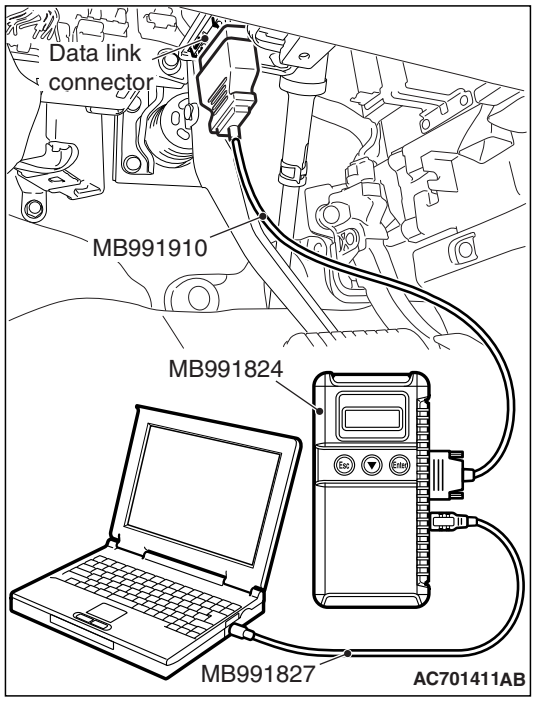
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

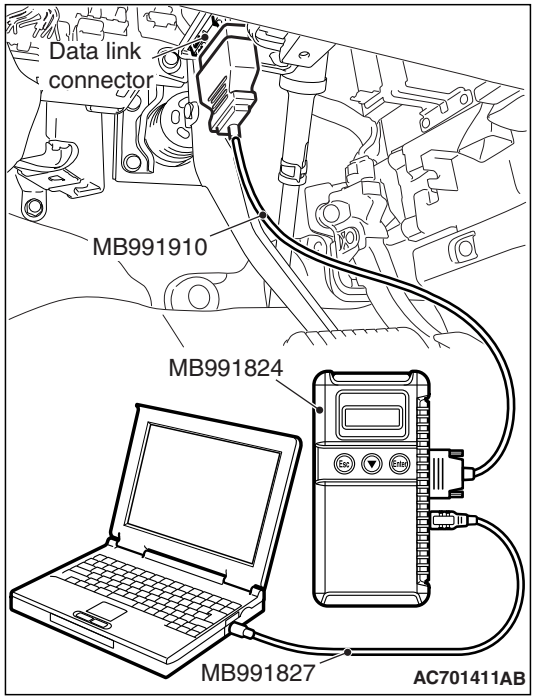
(1) Connect scan tool MB991958. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the ETACS-ECU related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to GROUP 54A, Diagnosis P.54A-841?.

NO : Go to Step 3.





STEP 3. Using scan tool MB991958, check data list.

Check the signals related to the sunroof timer function operation.

⚠ 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. Refer to GROUP 42B, "How to connect scan tool (M.U.T.-III) P.42B-9."

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

(3) Check the data list of the ETACS.

- Turn the ignition switch to the LOCK (OFF) position.
- Close the driver's door.
- Close the passenger's door.

Item No.	Item name	Normal condition
254	IG voltage	Battery positive voltage
256	Dr door ajar switch	Close
257	As door ajar switch	Close

(4) Turn the ignition switch to the "LOCK" (OFF) position.

OK: Normal condition is displayed.

Q: Is the check result normal?

Normal conditions are displayed for all the items. : Go to Step 4.

Normal condition is not displayed for item No. 254. : Refer to GROUP 54A, Inspection Procedure 2: ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54A-800.

Normal condition is not displayed for item No. 256. : Refer to GROUP 54A Inspection Procedure 5: ETACS-ECU does not receive any signal from the front door switch (LH) P.54A-813.

Normal condition is not displayed for item No. 257. : Refer to GROUP 54A, Inspection Procedure 6: ETACS-ECU does not receive any signal from the front door switch (RH) P.54A-816.

STEP 4. Retest the system.

Check that the sunroof timer function works normally.

Q: Is the check result normal?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. Check that the sunroof timer function works normally.

SUNROOF MOTOR ASSEMBLY TERMINAL CHECK

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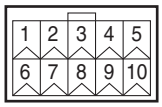
D-04



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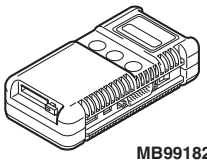
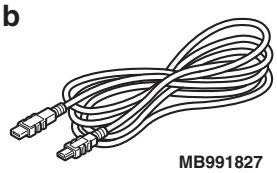
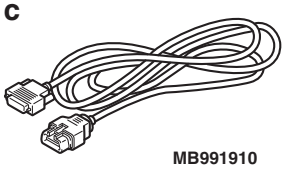
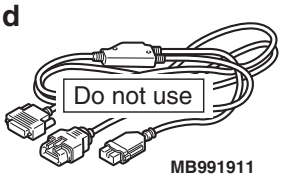
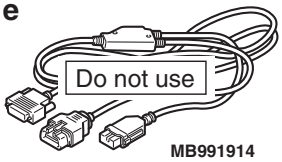
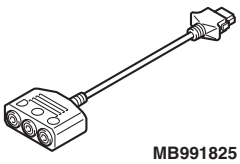
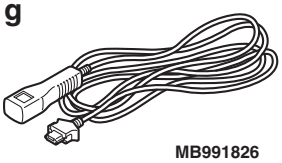
Terminal No.	Check item	Check condition	Normal condition
1	Ground	Always	1 V or less
2	Ground	Sunroof in operation	1 V or less
3	Power supply from ignition switch (IG1)	Ignition switch: ON	Battery positive voltage
4	Input from sunroof switch (open)	Sunroof switch: Open	1 V or less
5	Input from sunroof switch (tilt-up)	Sunroof switch: Tilt-up	1 V or less
6	Battery power supply (for motor)	Always	Battery positive voltage
7	LIN communication line (between ETACS-ECU)	Always	0 to 12 V (pulse signal)
8	–	–	–
9	–	–	–
10	Input from sunroof switch (close or tilt-down)	Sunroof switch: Close or tilt-down	1 V or less

SPECIAL TOOLS

M1426000600381

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 Scan tool (M.U.T.-III sub assembly) a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.** Communication line check (ECU check and service data)

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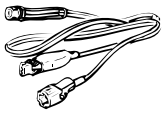
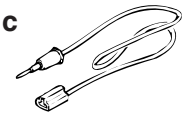
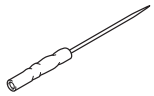
Tool	Tool number and name	Supersession	Application
a b  c  d MB991223	MB991223 Harness set a. MB991219 Test harness b. MB991220 LED harness c. MB991221 LED harness adapter d. MB991222 Probe	General service tools	Making voltage and resistance measurement during troubleshooting a. Connector pin contact pressure inspection b. Power circuit inspection c. Power circuit inspection d. Commercial tester connection
 MB992006	MB992006 Extra fine probe	–	Making voltage and resistance measurement during troubleshooting

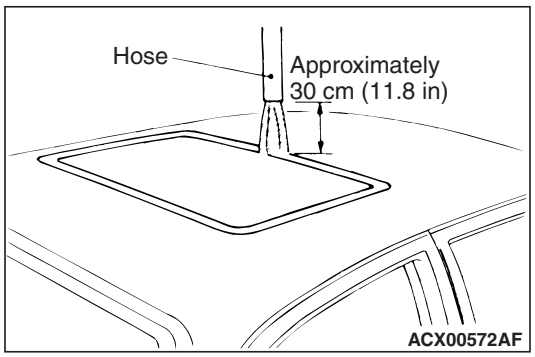
ON-VEHICLE SERVICE

WATER TEST

M1426000900520

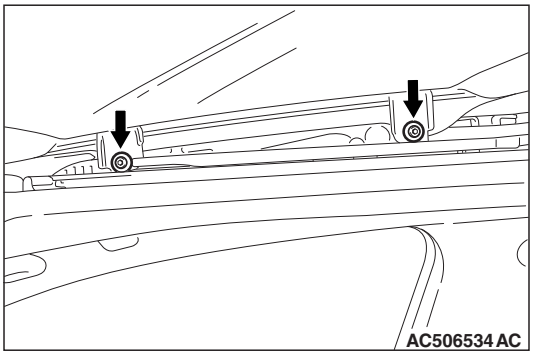
Check if there are any leaks in the sunroof by the following procedure.

1. Fully close the sunroof 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 if any water leaks can be found in the room while watering. Even though there are any water leaks around the sunroof lid glass, it can be acceptable as long as water is caught in the drip area.



SUNROOF FIT ADJUSTMENT

M1426001000519



1. Fully close the sunroof lid glass.
2. Fully open the sunshade.
3. Loosen the sunroof lid glass assembly mounting screws. Adjust the sunroof lid glass height by moving the sunroof lid glass assembly along the sunroof lid guide oblong hole so that the clearance between the sunroof lid glass and the vehicle body is even throughout the circumference.
4. After adjustment, check that the sunroof operates smoothly.

SUNROOF SAFETY FUNCTION CHECK

M1426004400431

1. Close the sunroof lid glass while placing an approximately 10 mm thick piece of wood at right angles with the sunroof lid glass.
2. Check to see if the sunroof motor assembly turns in the opposite direction and the sunroof lid glass opens when the sunroof lid glass touches the wood. If any problem occurs, perform troubleshooting. (Refer to P.42A-172.)

SUNROOF CHECK

M1426004700465

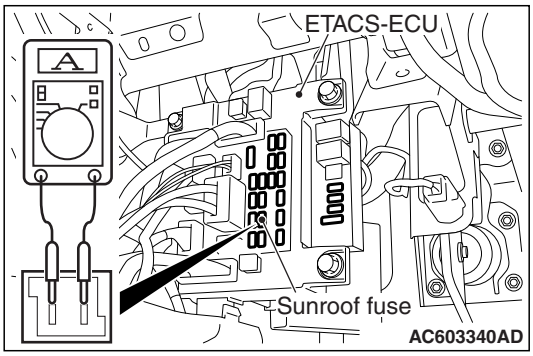
Check to see that the sunroof operates by pressing the sunroof switch. If it does not operate, perform troubleshooting. Refer to P.42A-172.

SUNROOF TIMER FUNCTION CHECK

M1426004300326

Check the system as described below. If the system does not work, carry out troubleshooting. Refer to P.42A-172.

- Close the door and turn the ignition switch to the LOCK (OFF) position, and then check that the sunroof operates for 30 seconds.
- Close the door and turn the ignition switch to the LOCK (OFF) position. While the timer is on, open the driver's door and front passenger's door, and check that the sunroof stays during the operation. (When the driver's door or front passenger's door is opened while the timer is on, the timer will be turned off.)



SUNROOF LID GLASS OPERATION CURRENT CHECK

M1426003200490

1. Remove the fuse of the sunroof to check that it is normal, then connect the circuit tester as shown in the Figure.
2. Turn ON the sunroof switch, then measure the operating current when the sunroof lid glass is halfway opened.

   Standard value: 7 A or less [at 20 °C (68 °F)]
3. Check the following areas if the operating current exceeds the standard value:
   - Sunroof installation, deformation and presence of any foreign substances.
   - Drive cable installation.
   - Tilting of sunroof lid glass.

LEARNING PROCEDURES OF THE SUNROOF FULLY CLOSED POSITION

M1426004600394

SHIFTING CONDITIONS FOR THE FULLY CLOSED POSITION ADJUSTMENT MODE

- When shifting to the forced fully closed position adjustment mode
  How to shift to the forced fully closed position adjustment mode
  1. Turn the ignition switch to the "ON" position.
  2. With the sunroof lid glass stopped (the position of the sunroof lid glass can be any position between fully opened and fully closed), press and hold the up switch for 10 seconds.
- When the anti-trap function (safety mechanism) is activated consecutively five times
- When the position information may be incorrect due to abnormal power supply during the sunroof operation

NOTE: When installing the sunroof assembly, or installing/replacing the sunroof motor assembly, operate the forced fully closed position adjustment mode to adjust the fully closed position.

HOW TO ADJUST THE FULLY CLOSED POSITION FORCED FULLY CLOSED POSITION ADJUSTMENT MODE

1. With the sunroof lid glass stopped (the position of the sunroof lid glass can be any position between fully opened and fully closed), press and hold the up switch.

   NOTE: If operating the up switch moves the sunroof normally, use the open switch to fully open the sunroof lid glass. After the sunroof lid glass stops, press and hold the up switch.

2. Use the up switch to set the sunroof lid glass to the tilt-up position. The sunroof lid glass activates for approximately 30 mm and stops automatically when the switch is pressed once. Repeat this operation until the tilt-up position is reached and hold there for 3 seconds so that the fully closed position learning is completed.

HOW TO ADJUST THE FULLY CLOSED POSITION SUCH AS WHEN THE SAFETY FUNCTION IS ACTIVATED CONSECUTIVELY FIVE TIMES

Use the up switch to set the sunroof lid glass to the tilt-up position. The sunroof lid glass activates for approximately 30 mm and stops automatically when the switch is pressed once. Repeat this operation until the tilt-up position is reached and hold there for 3 seconds so that the fully closed position learning is completed.

SUNROOF OPERATION CHECK

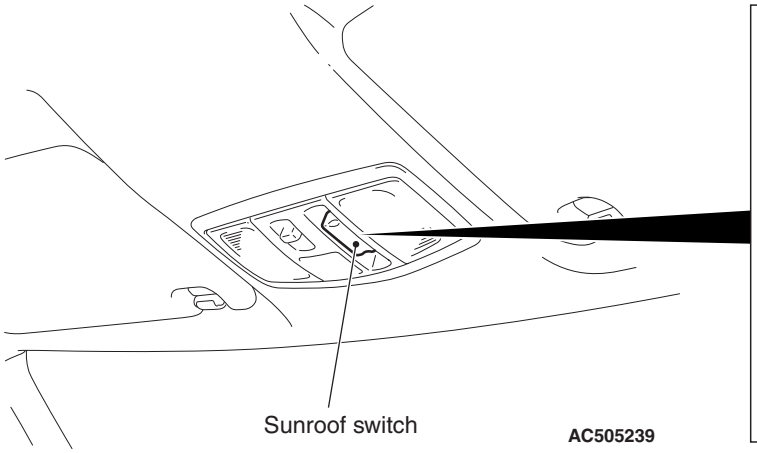
M1426002600569

⚠ CAUTION

Check that the following items are normal before carrying out this operation check.

- **Installation condition of the sunroof assembly**
- **Installation condition, deformation and contamination of the sunroof drive cable**
- **Installation of sunroof lid glass**
- **Sunroof switch and sunroof motor assembly**

Check that the following items. If faulty, replace the sunroof motor assembly.



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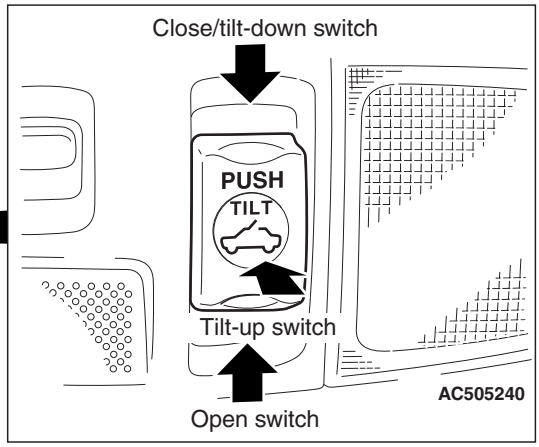

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BASIC OPERATION

No.	Sunroof function	Requirements for the sunroof to function		Normal operation
01	OPEN	1. Ignition switch: ON 2. Sunroof switch: OPEN		When the open switch is operated, the sunroof lid glass stops approximately 30 mm (1.2 inches) before the fully-open position. This position is called comfort position. The sunroof lid glass can be fully opened by operating the open switch again.
02	CLOSE	1. Ignition switch: ON 2. Sunroof switch: CLOSE/TILT-DOWN		Automatically the sunroof fully closes.
03	TILT-UP	1. Ignition switch: ON 2. Sunroof switch: TILT-UP		The sunroof tilts up fully and automatically.
04	TILT-DOWN	1. Ignition switch: ON 2. Sunroof switch: CLOSE/TILT-DOWN		The sunroof tilts down fully and automatically.
05	AUTOMATIC OPERATION INTERRUPTION (OPEN OR TILT-UP)	A	1. Ignition switch: ON 2. Sunroof switch: OPEN or TILT-UP	The sunroof stops the automatic opening operation.
		B	1. Ignition switch: ON 2. Sunroof switch: CLOSE/TILT-DOWN (Push the sunroof switch to the CLOSE/TILT-DOWN position while the sunroof is automatically opening and release the switch within two seconds)	The sunroof stops the automatic opening operation.
		C	1. Ignition switch: ON 2. Sunroof switch: CLOSE/TILT-DOWN (Push the sunroof switch to the CLOSE/TILT-DOWN position more than two seconds while the sunroof is automatically opening)	The sunroof stops the automatic opening operation, and the sunroof closes while the sunroof switch is pushed to the CLOSE/TILT-DOWN position.
06	AUTOMATIC OPERATION INTERRUPTION (CLOSE OR TILT-DOWN)	A	1. Ignition switch: ON 2. Sunroof switch: CLOSE/TILT-DOWN	The sunroof stops the automatic closing operation.
		B	1. Ignition switch: ON 2. Sunroof switch: OPEN or TILT-UP (Push the sunroof switch to the OPEN or TILT-UP position while the sunroof is automatically opening and release the switch within two seconds)	The sunroof stops the automatic closing operation.
		C	1. Ignition switch: ON 2. Sunroof switch: OPEN or TILT-UP (Push the sunroof switch to the OPEN or TILT-UP position more than two seconds while the sunroof is automatically opening)	The sunroof stops the automatic closing operation, and the sunroof opens while the sunroof switch is pushed to the OPEN or TILT-UP position.

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SUNROOF TIMER MECHANISM

In cases except the following, the basic operation and jam preventing mechanism will be maintained for thirty seconds after the ignition switch is turned to the "LOCK" (OFF) position (Sunroof timer function).

- If you open a door within that period (i.e. a door switch is on), the sunroof timer function will be cancelled immediately.

SAFETY MECHANISM

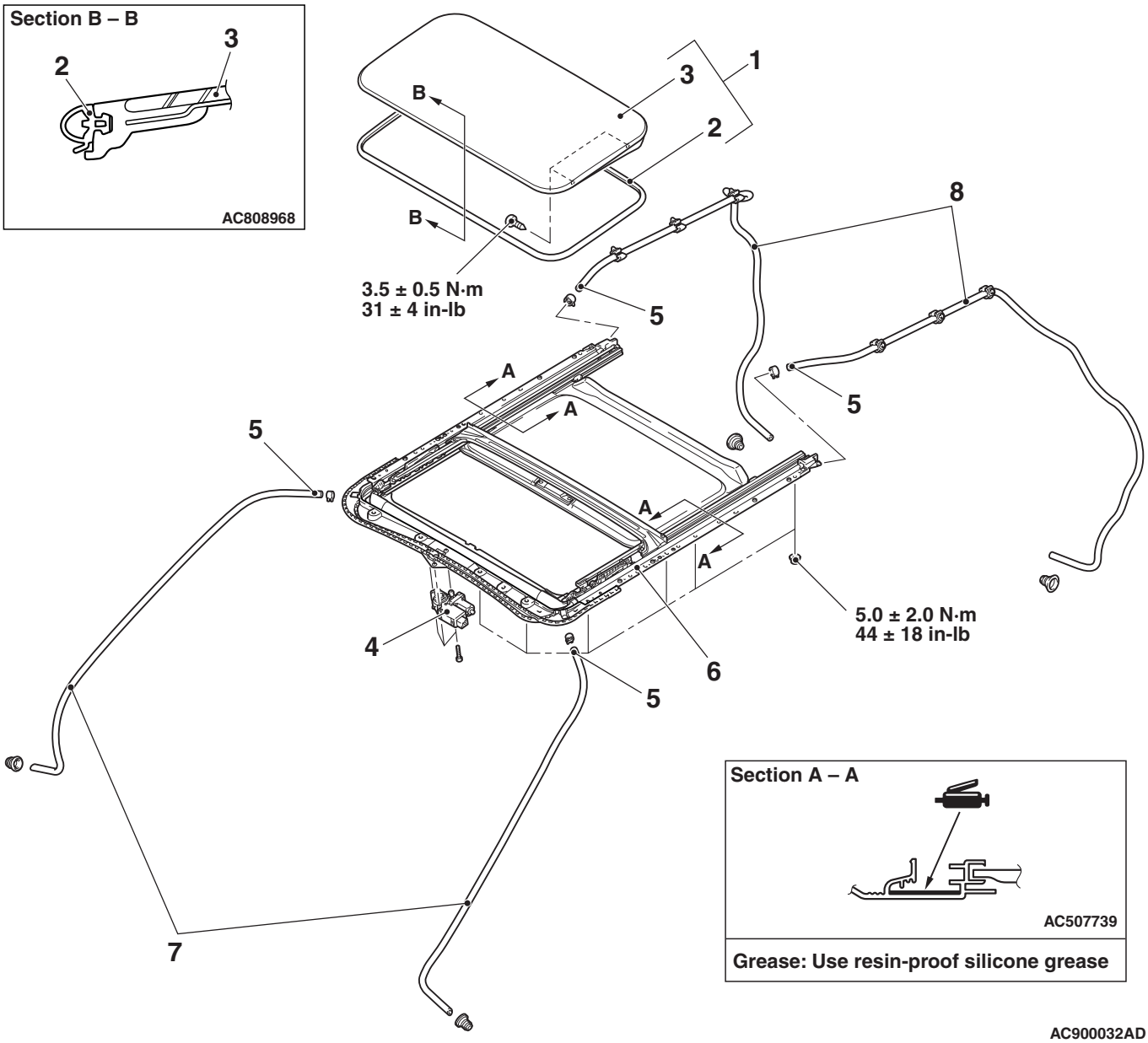
- If any obstacle such as a hand or a head is detected to be pinched during a sunroof lid glass closing operation, the sunroof lid glass is opened by approximately 200 mm (7.9 inches) or more. (Safety mechanism)
- During the sunroof lid glass closing operation, by continuing the sunroof close switch operation, the sunroof can be forcibly closed without activating the safety mechanism even when the obstacle is detected to be pinched.
- During the safety mechanism activation, when the sunroof close switch is operated, the sunroof lid glass stops. By continuing the close switch operation, the sunroof lid glass can be forcibly closed without activating the safety mechanism even when the obstacle is detected to be pinched.

SUNROOF

REMOVAL AND INSTALLATION

M1426001201107

Post-installation operation
Roof lid glass assembly and sunroof assembly
- Sunroof leakage check (Refer to P.42A-203.)
- Sunroof alignment (Refer to P.42A-203.)
- Learning procedures for sunroof fully closed position (Refer to P.42A-204.)



Sunroof switch removal
- Front dome light assembly (Refer to GROUP 52A, Headlining P.52A-15.)

Sunroof lid glass assembly removal
1. Sunroof lid glass assembly
2. Sunroof lid weatherstrip
3. Sunroof lid glass

Sunroof motor assembly removal steps
- Front dome light bracket (Refer to GROUP 52A, Headlining P.52A-15.)

4. Sunroof motor assembly

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Sunroof assembly removal steps

- Front energy absorber roof bracket vehicles with curtain air bag (Refer to GROUP 52A, Headlining P.52A-15.)
- Rear monitor bracket <Vehicles with rear monitor> (Refer to GROUP 54A, Rear Display Unit P.54A-732.)

5. Drain pipe connection

<<A>> 6. Sunroof assembly

Drain pipe removal steps

- Headlining (Refer to GROUP 52A, Headlining P.52A-15.)
- Splash shield front (Refer to P.42A-10.)

>>A<< 7. Front drain pipe

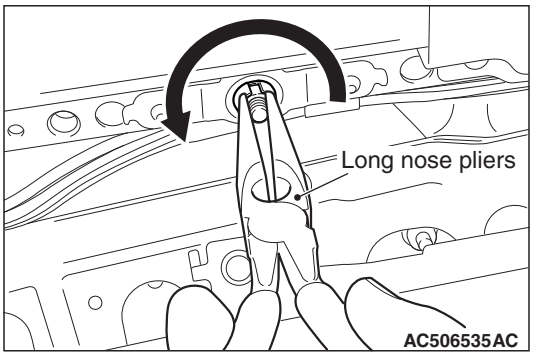
- Splash shield rear (rear bumper side) (Refer to P.42A-10.)

>>A<< 8. Rear drain pipe

REMOVAL SERVICE POINT

<<A>> SUNROOF ASSEMBLY REMOVAL

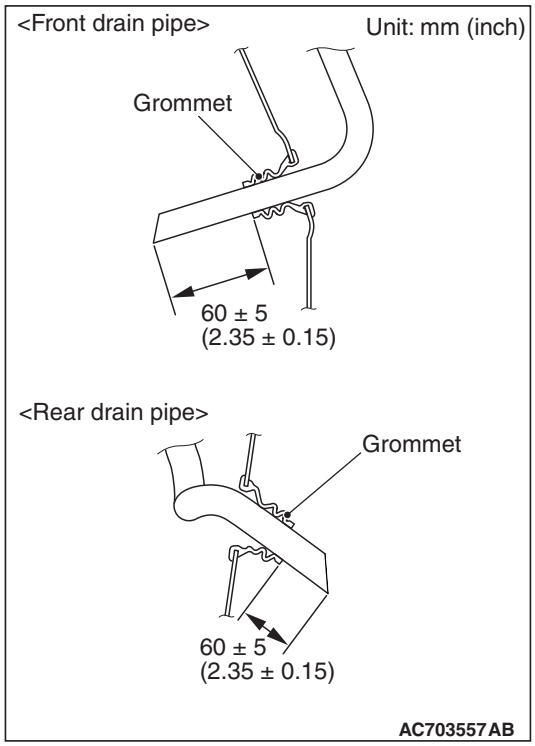
Use a pair of long nose pliers or the like to remove the sunroof assembly while turning it in the direction shown in the figure.



INSTALLATION SERVICE POINT

>>A<< FRONT DRAIN PIPE/REAR DRAIN PIPE INSTALLATION

Install the grommet, and adjust the drain pipe projection as shown.



INSPECTION

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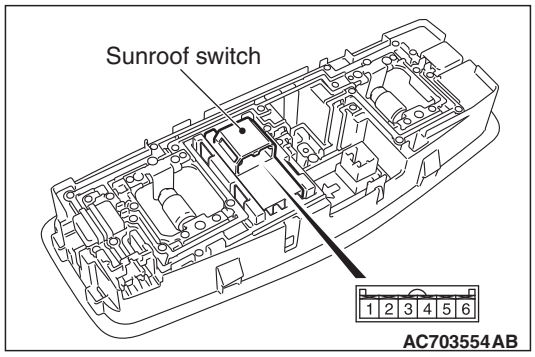
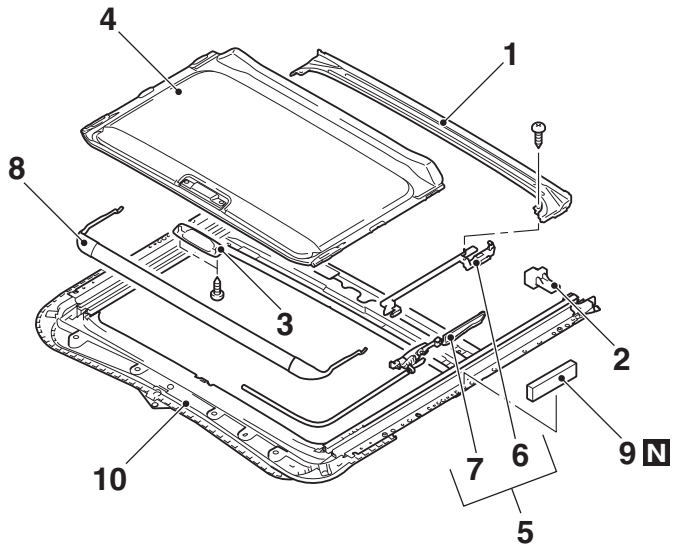
SUNROOF SWITCH CONTINUITY CHECK



Switch position	Terminal number	Normal value
Tilt-up	3 –4	Continuity exists (2 Ω or less)
OFF	3 –4, 4 –5, 4 –6	Open circuit
Open	4 –5	Continuity exists (2 Ω or less)
Close/tilt-down	4 –6	Continuity exists (2 Ω or less)

DISASSEMBLY AND ASSEMBLY

M1426001400528



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Disassembly steps

1. Sunroof drip rail
2. Sunroof sunshade stopper
3. Sunroof sunshade knob

<<A>> 4. Sunroof sunshade

<<B>> >>B<< 5. Sunroof drip plate and sunroof lid slide guide

Disassembly steps (Continued)

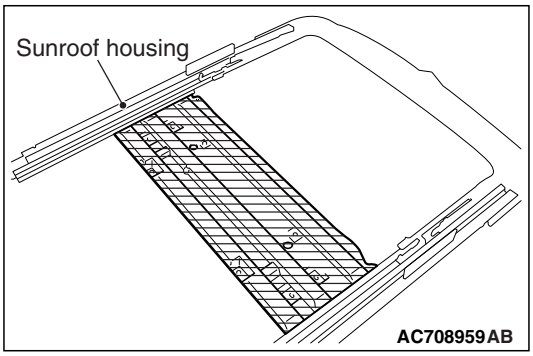
6. Sunroof drip plate
7. Sunroof lid slide guide
8. Sunroof deflector

>>A<< 9. Sunroof pad

10. Sunroof housing

REMOVAL SERVICE POINTS

<<A>> SUNROOF SUNSHADE REMOVAL



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⚠ CAUTION

Before removing the sunroof sunshade, clean the shaded area of the sunroof housing shown in the illustration. Otherwise, the sunroof sunshade may get dirty when it is removed.

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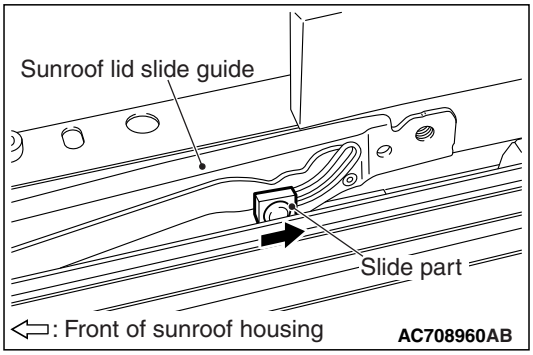
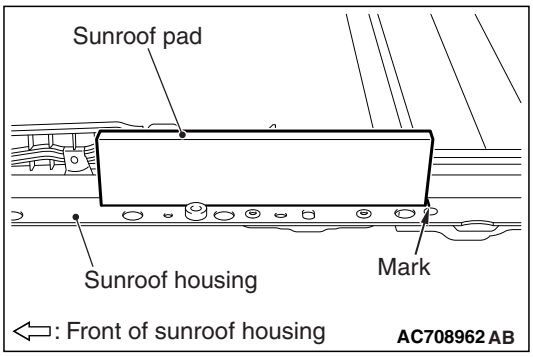
<<B>> SUNROOF DRIP PLATE AND SUNROOF LID SLIDE GUIDE REMOVAL



Slide the slide part of the sunroof lid slide guide to the rear of the sunroof housing, and then pull out the sunroof drip plate and sunroof lid slide guide.

INSTALLATION SERVICE POINTS

>>A<< SUNROOF PAD INSTALLATION



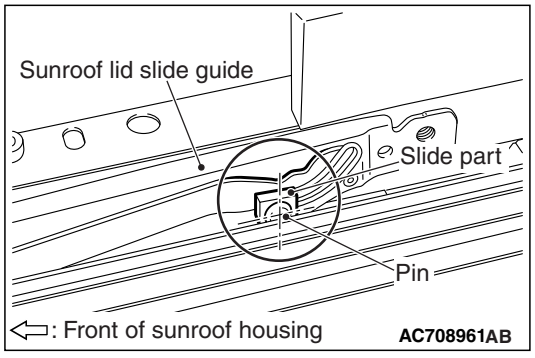
Align the sunroof pad with the mark on the sunroof housing, and then install it.

>>B<< SUNROOF DRIP PLATE AND SUNROOF LID SLIDE GUIDE INSTALLATION

1. Install the sunroof drip plate and sunroof lid slide guide to the sunroof housing.
2. Push the sunroof drip plate and sunroof lid slide guide toward the front of sunroof housing until they stop.

⚠ CAUTION

If the slide part of the sunroof lid slide guide is positioned incorrectly, the sunroof may not work normally.



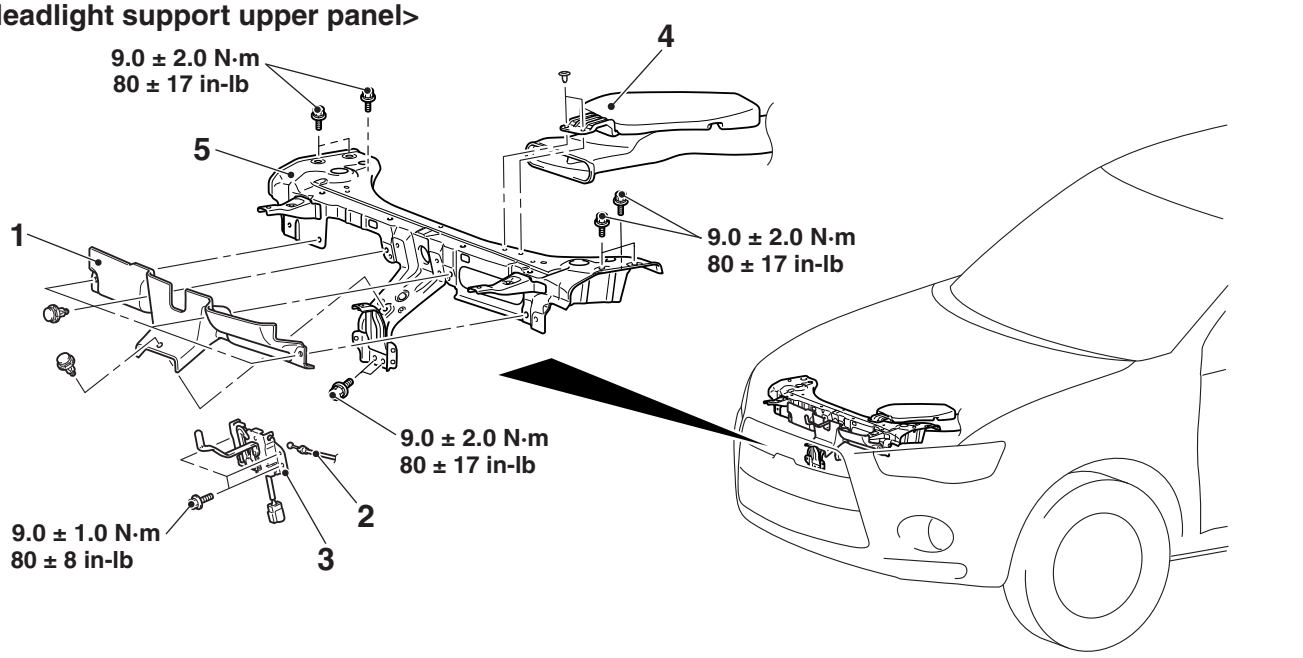
3. Push the slide part of the sunroof lid slide guide forward. Align the pin center of the slide part with the location shown in the illustration.

LOOSE PANEL

REMOVAL AND INSTALLATION

M1421003101071

<Headlight support upper panel>



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Headlight support upper panel removal steps

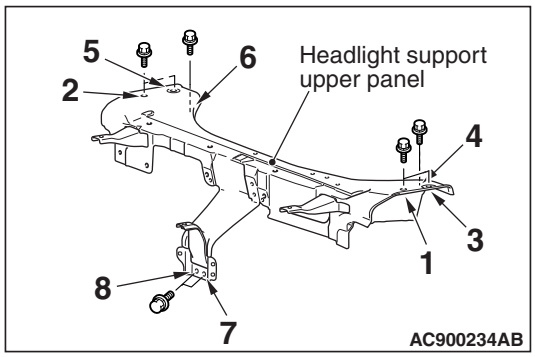
- Headlight support panel cover (Refer to GROUP 51 Radiator grille P.51-9.)
- Front bumper (Refer to GROUP 51 Front Bumper P.51-4.)
- Headlight (Refer to GROUP 54A Headlight P.54A-217.)

1. Headlight support upper panel cover
2. Hood lock release cable

Headlight support upper panel removal steps (Continued)

3. Hood latch
4. Air cleaner intake duct
   - Front impact sensor (Refer to GROUP 52B –Front impact sensor P.52B-437.)
   - Front harness

>>A<< 5. Headlight support upper panel



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INSTALLATION SERVICE POINT

>>A<< HEADLIGHT SUPPORT UPPER PANEL INSTALLATION

Install the mounting bolts of headlight support upper panel in the order shown in the illustration.

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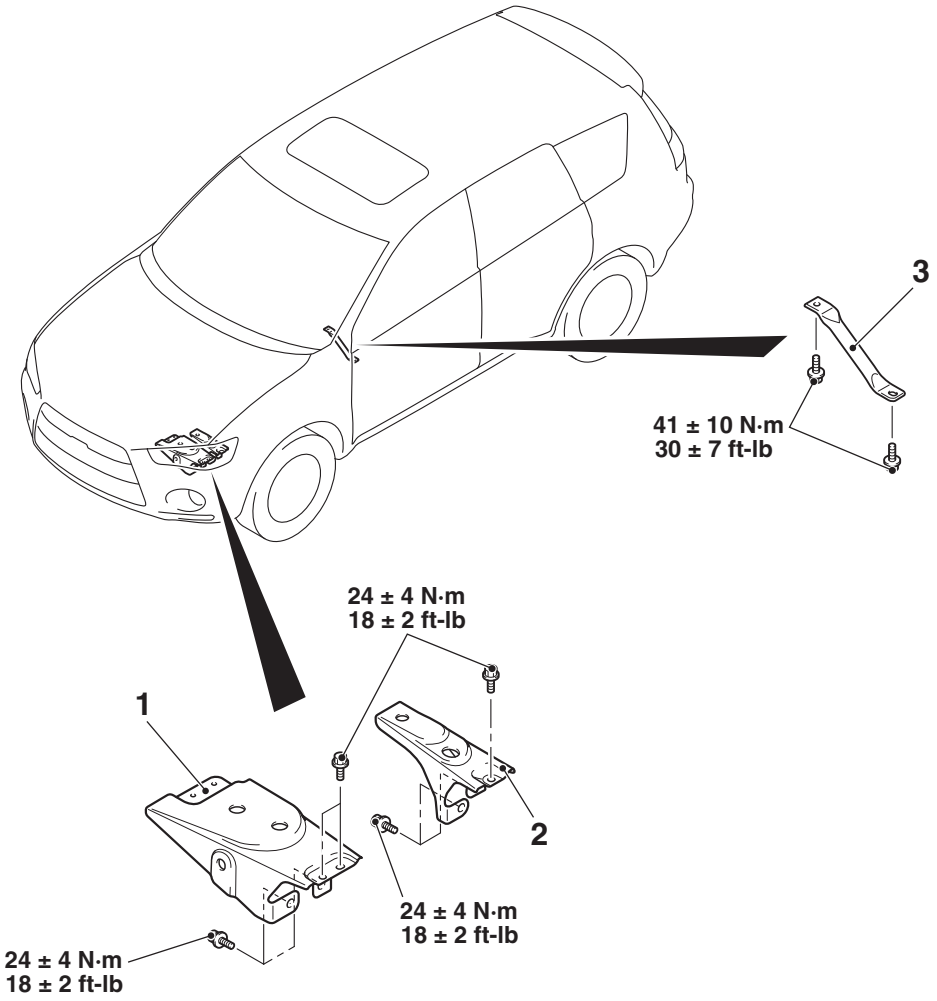

AC901160AB

Battery bracket removal steps <3000>

- Battery tray (Refer to GROUP 54A – Battery P.54A-10.)

1. Battery bracket (Front side)
2. Battery bracket (Rear side)

Front floor backbone brace removal

3. Front floor backbone brace <2WD>