

GROUP 51

EXTERIOR

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FRONT BUMPER ASSEMBLY AND RADIATOR GRILLE

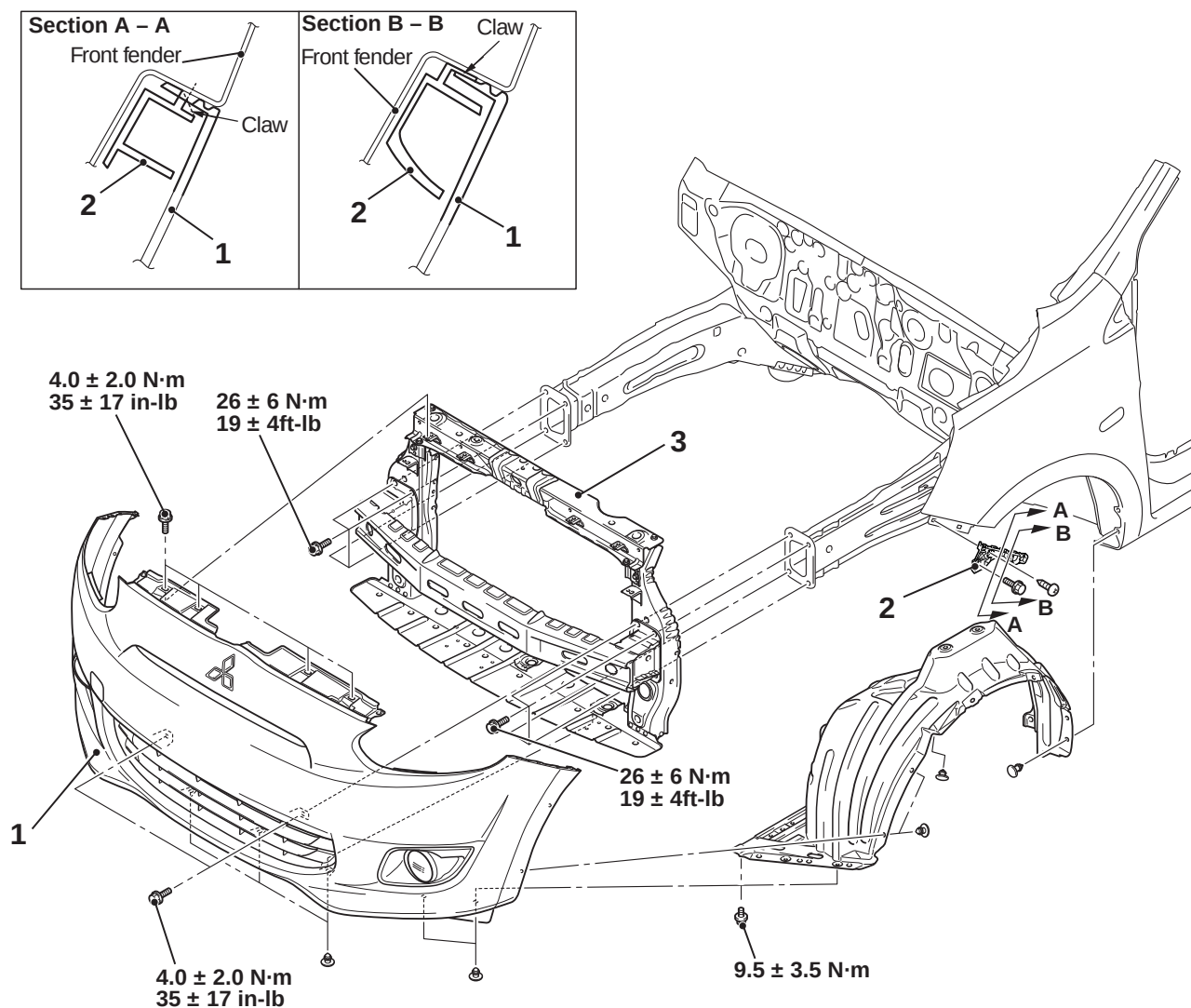
ADHESIVE

M1511000502789

Application	Specified adhesive
Front three-diamond mark	Double-sided tape: Generic products, 0.8 mm (0.03 in) thickness

REMOVAL AND INSTALLATION

M1511025400943



ACC06256 AC

Removal steps

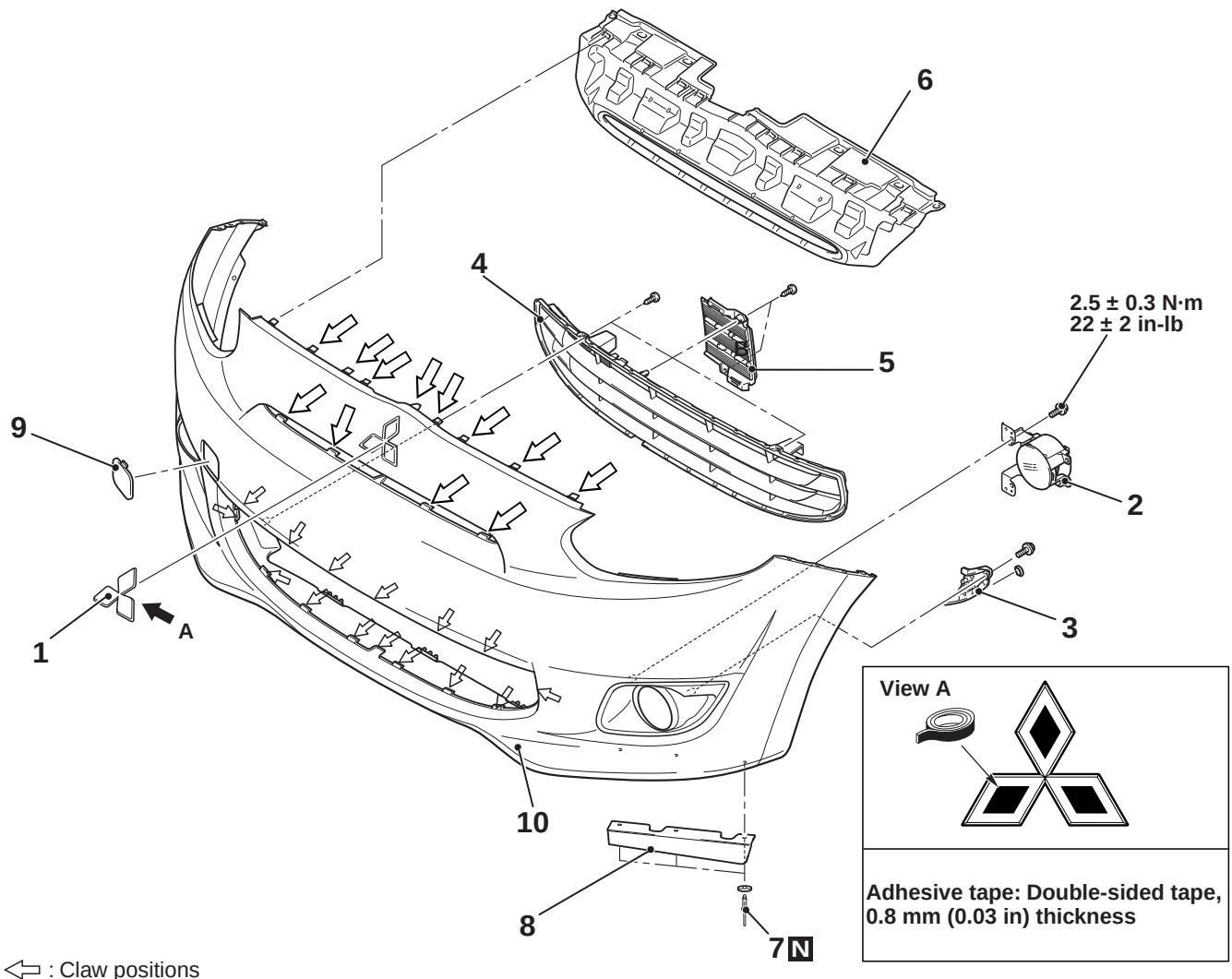
- Front bumper harness connector connection
- 1. Front bumper and radiator grille assembly
- 2. Front bumper side bracket

Removal steps (Continued)

- Horn (Refer to GROUP 54A, Horn [P.54A-141](#))
- Ambient temperature sensor (Refer to GROUP 55B, Ambient Temperature Sensor [P.55B-46](#))
- 3. Front bumper reinforcement

DISASSEMBLY AND ASSEMBLY

M1511025500940



ACB03331AB

Disassembly steps

1. Front-three diamond mark
2. Front fog light assembly <Vehicles with front fog light>
3. Front bumper extension
4. Front bumper under grille
5. Front bumper under grille cover

<<A>> >>A<<

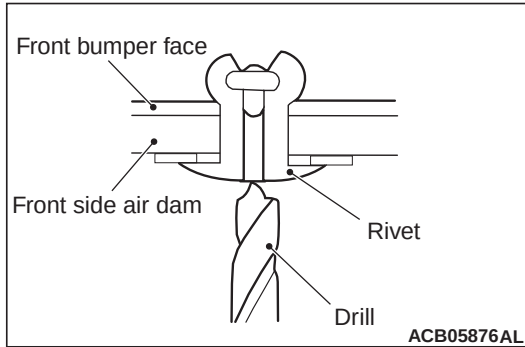
Disassembly steps (Continued)

6. Front bumper grille
7. Rivet
8. Front side air dam
9. Front bumper cover
10. Front bumper face

DISASSEMBLY SERVICE POINT

<<A>> RIVETS REMOVAL

Use a drill [ϕ 4.0 mm (0.16 in)] to make a hole in the rivet to break it, and remove the rivet.

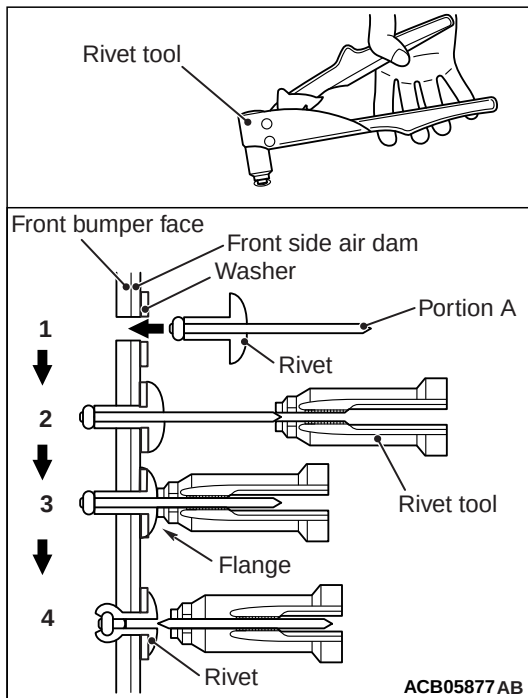


ASSEMBLY SERVICE POINT

>>A<< RIVETS INSTALLATION

Use a rivet tool shown in the illustration to connect the parts with rivets by the following procedures.

1. Insert the rivet into a corresponding location.
2. Set the rivet tool at a portion A of rivet.
3. While pushing the flange surface of the rivet onto parts to be fixed with the rivet tool, press the handle of the tool.
4. Thin part of portion A of the rivet will be cut off and the parts is fixed in position.



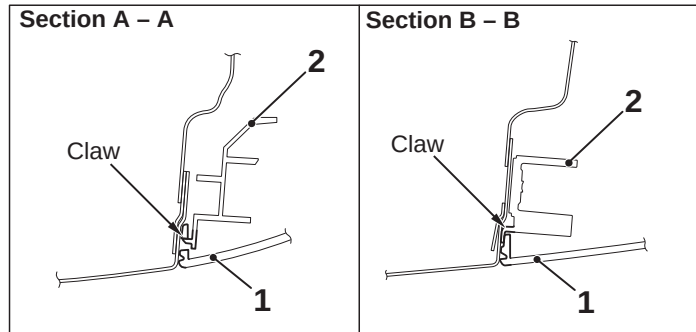
REAR BUMPER ASSEMBLY

REMOVAL AND INSTALLATION

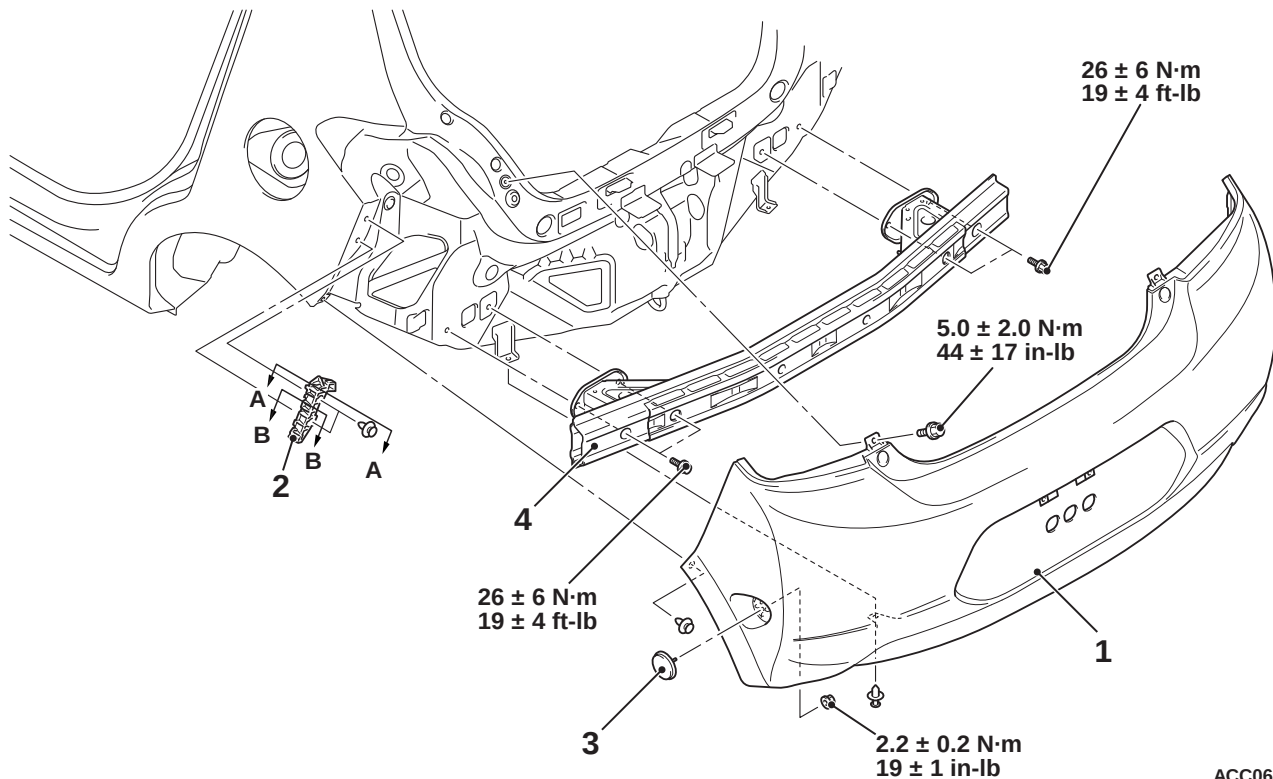
M1511001902832

Pre-removal and post-installation operation

- Rear combination light assembly (Refer to GROUP 54A, Rear Combination Light [P.54A-109](#))



ACC03228



ACC06257AB

Removal steps

- Rear wheelhouse splash shield (Refer to GROUP 42A, Splash Shield [P.42A-10](#))
- Rear bumper face

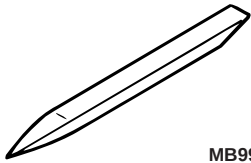
Removal steps (Continued)

- Rear bumper face support bracket
- Reflector
- Rear end crossmember

GARNISHES AND MOLDINGS

SPECIAL TOOL

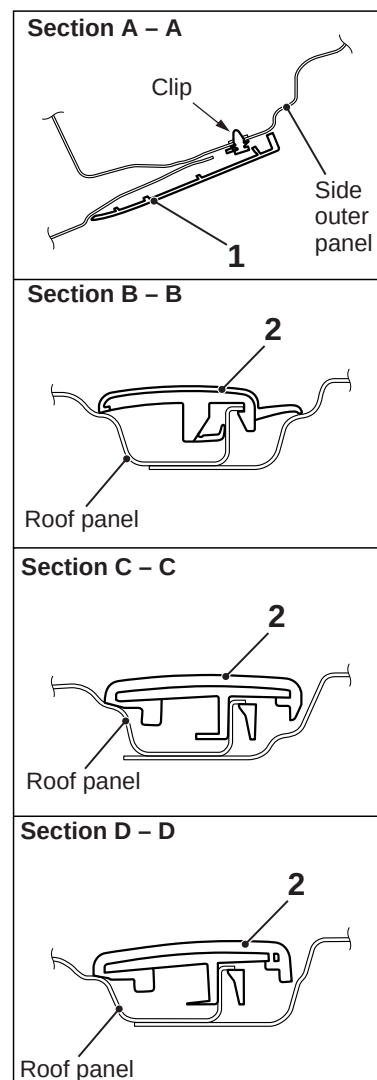
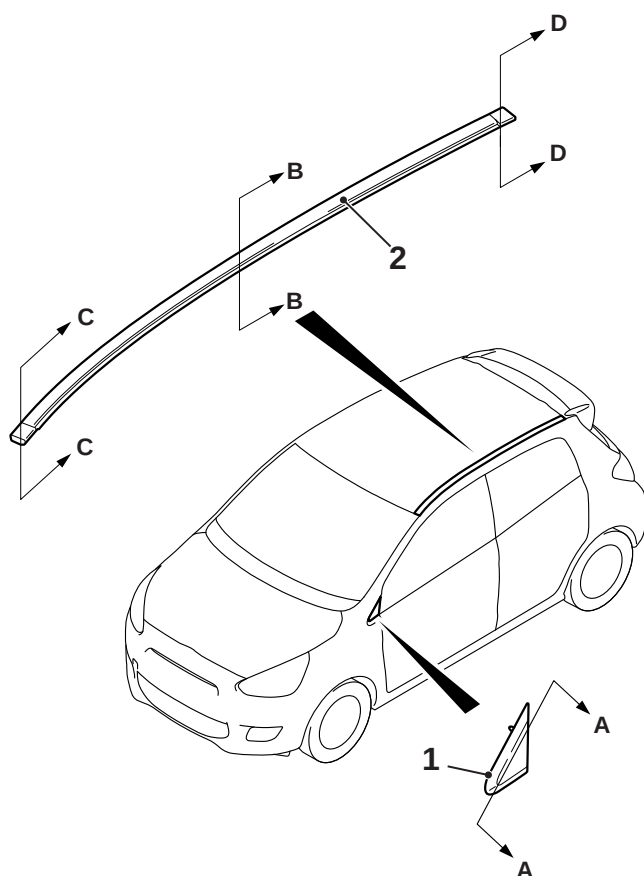
M1511000602452

Tool	Tool number and name	Supersession	Application
 MB990784	MB990784 Ornament remover	General service tool	Removal of front delta garnish

REMOVAL AND INSTALLATION

M1511004702097

<Front delta garnish and roof drip molding>



ACB03333AB

<<A>>

Front delta garnish removal
1. Front delta garnish

Roof drip molding removal steps
2. Roof drip molding

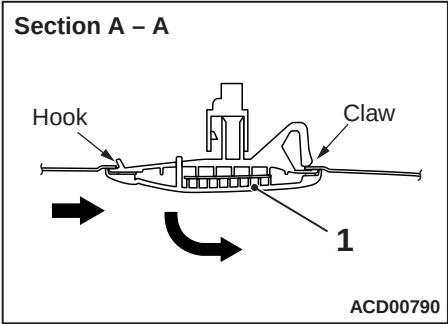
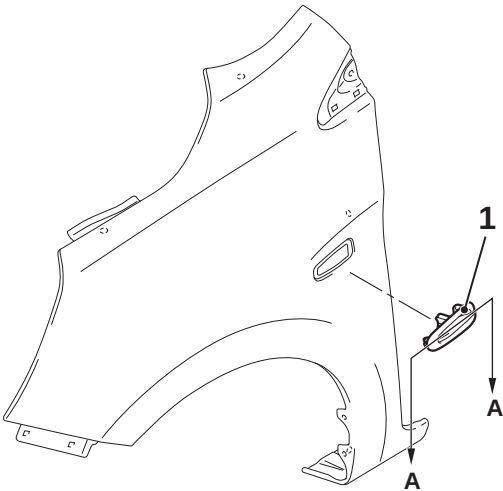
REMOVAL SERVICE POINT

TSB Revision

<<A>> FRONT DELTA GARNISH REMOVAL

Use the special tool ornament remover (MB990784) to pry out the front delta garnish.

<Front fender garnish assembly>



ACE00764AB

Front fender garnish assembly
removal

- 1. Front fender garnish assembly
<Vehicles with side turn-signal light
integrated in door mirrors>

DOOR SASH TAPE

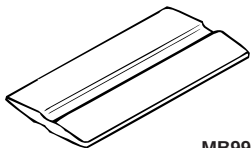
LUBRICANT

M1511000400366

Item		Specified lubricant	Quantity
Degrease agent	Grease and dirt removal from parts surface	Parts cleaner (MZ100387 or equivalent)	As required

SPECIAL TOOL

M1511000601846

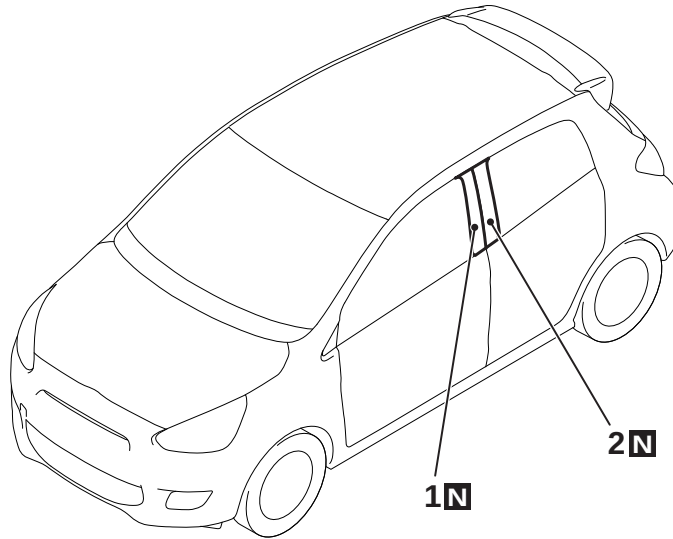
Tool	Tool number and name	Supersession	Application
 MB990528	MB990528 Stripe tape spatula	General service tool	Installation of door sash tape

REMOVAL AND INSTALLATION

M1511024101157

Pre-removal and post-installation operation

- Door Window Glass Runchannel Removal and Installation (Refer to GROUP 42A – Window Glass Runchannel and Door Opening Weatherstrip P.42A-77).
- Door Beltline Molding Removal and Installation (Refer to GROUP 42A – Window Glass Runchannel and Door Opening Weatherstrip P.42A-77).



ACB03334AB

Removal steps

- <<A>> >>A<< 1. Front door sash tape, rear
<<A>> >>A<< 2. Rear door sash tape, front

REMOVAL SERVICE POINT

<<A>> DOOR SASH TAPES REMOVAL

CAUTION

Pay attention to keep from getting burned by hot door panel or tapes.

1. Use a hair drier to warm the tape.
2. Peel the tip of the tape with your finger, and then peel off the tape in parallel with the application surface.

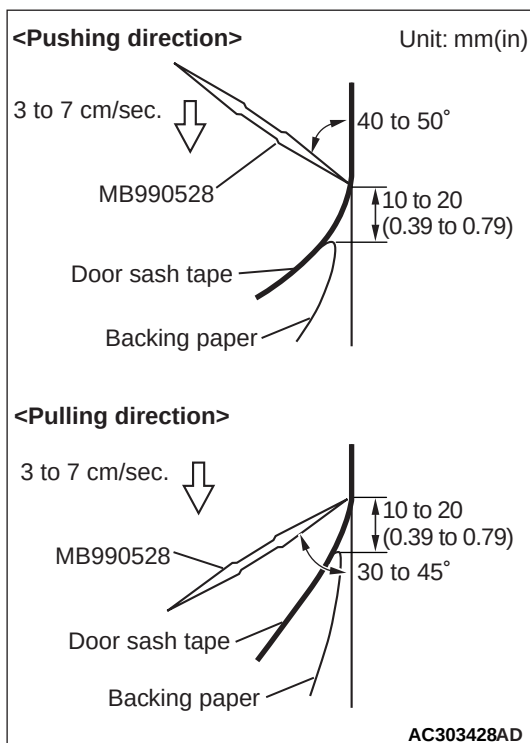
INSTALLATION SERVICE POINT

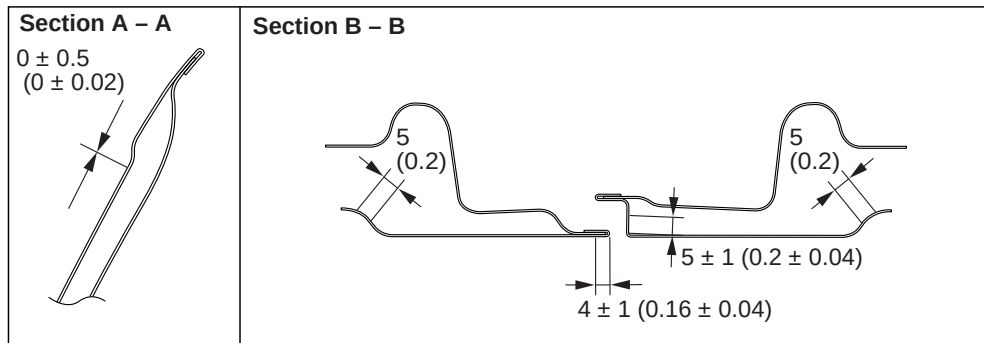
>>A<< DOOR SASH TAPES INSTALLATION

⚠ CAUTION

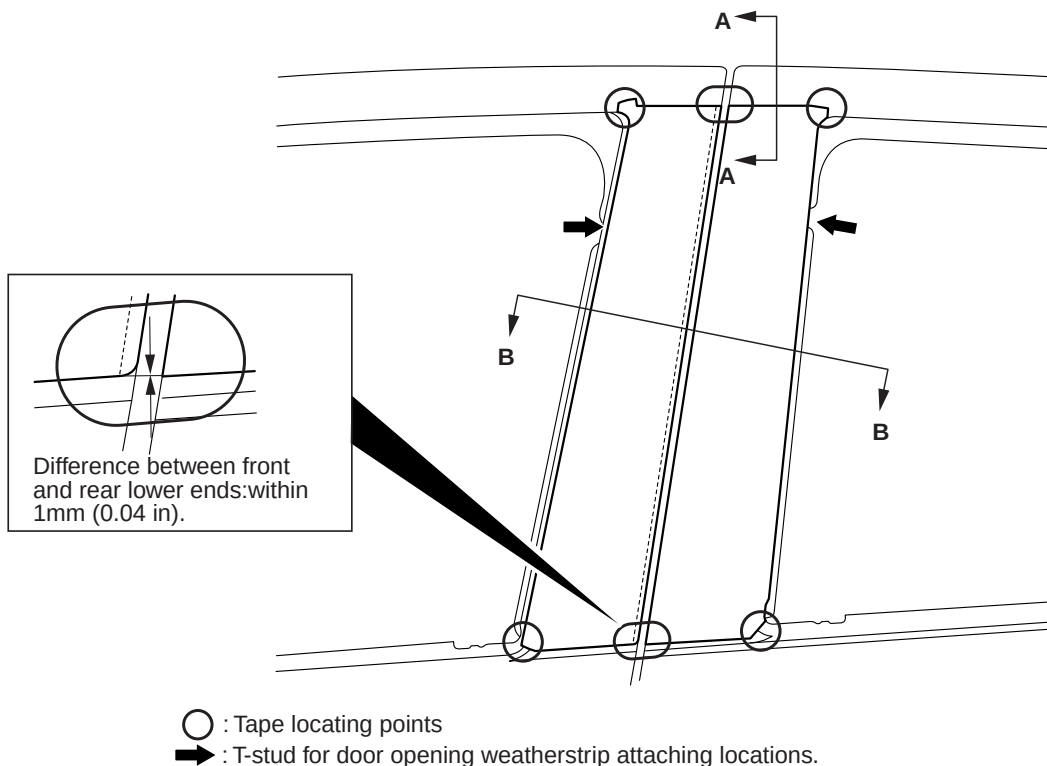
- The ambient temperature should be 20 to 30°C (68 to 86°F). Ensure that the working area is clean. Ideally, the tape application should be done at ambient temperature of 25°C (77°F).
- If ambient temperature is less than 15°C (59°F), heat the tape and application surface to a temperature of 20 to 30°C (68 to 86°F). If ambient temperature is 35°C (95°F) or higher, cool down them. The adhesive property of the tape is deteriorated at low temperature, so the tape may come adrift easily. Meanwhile, it gets softened at hot temperature.
- When beginning to apply the tape, pay particular attention. If the end of the tape cannot be applied to the specified position with an accuracy of less than 0.5 mm (0.02 in), it may cause the poor appearance or adhesion.
- Use the special tool MB990528 to apply the tape with a steady pace and pressure. If you do not apply the tape with a steady pace or pressure, or abort the application, a shallow groove (lateral groove called as "Shock line") may be present on the tape surface. Meanwhile, if you apply it too quickly, air bubbles may be formed under the tape.

1. Wrap a soft cloth (synthetic fiber) around the tip of the special tool.
2. Use Parts Cleaner (MZ100387 or equivalent) to degrease the tape application surface.
3. Wipe away dirt from the tape.



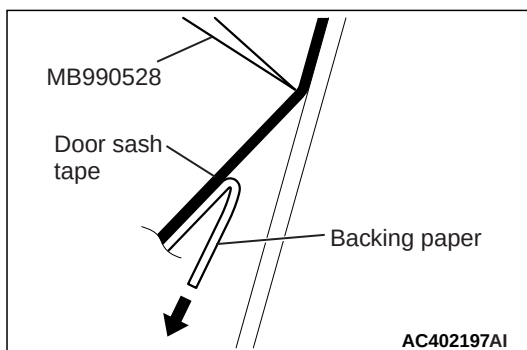


Unit: mm (in)

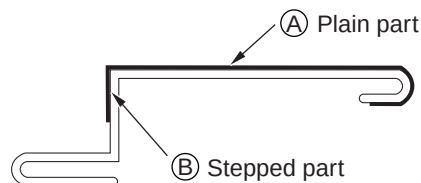


ACB03335AB

4. Apply the door sash tape according to the procedure below.
 - (1) Position the tape at the upper and lower locating points.
 - (2) Peel of backing strip from the top of the tape and attach it temporarily.
 - (3) Peel off the backing strip to the half length of the tape.
 - (4) Apply the tape using the special tool while peeling off the remaining backing strip.

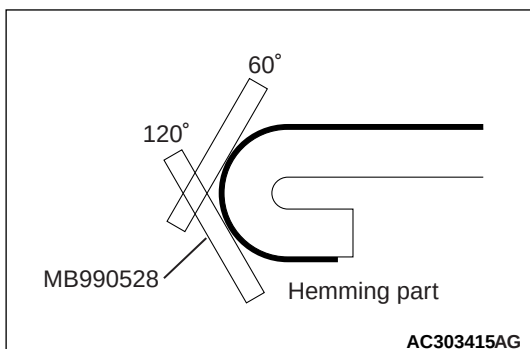


Rear door sash tape front



AC506860AB

- (5) For the rear door sash tape, apply it to plain surface (A). Then apply it to stepped surface (B).



AC303415AG

- (6) Press the folded area of the tape by three stages (60°, 120° and holding), rolling in toward the vehicle inside direction.

SIDE AIR DAM

ADHESIVE

M1511000501690

Application	Specified adhesive
Side air dam	Double-sided tape: Generic products 4.0 mm (0.16 in) width and 2.5 mm (0.10 in) thickness
	Specified primer: 3M™ K-500

LUBRICANT

M1511000400292

Item	Specified lubricant	Quantity
Degrease agent	Grease and dirt removal from parts surface	Parts cleaner (MZ100387 or equivalent)
		As required

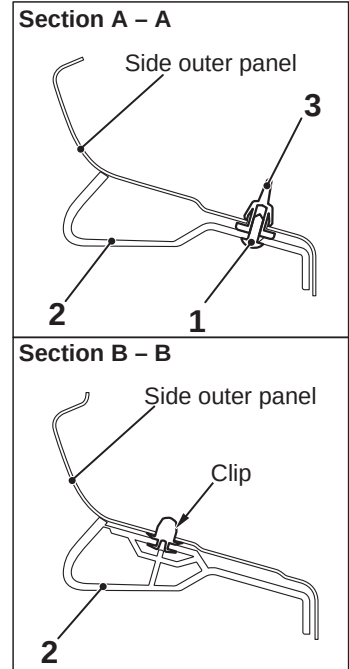
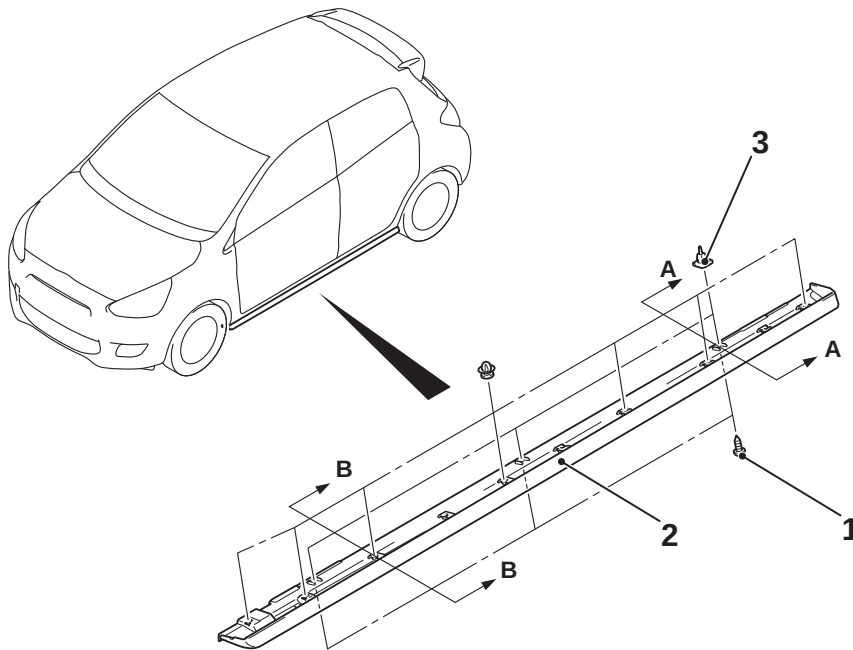
SPECIAL TOOL

M1511000603370

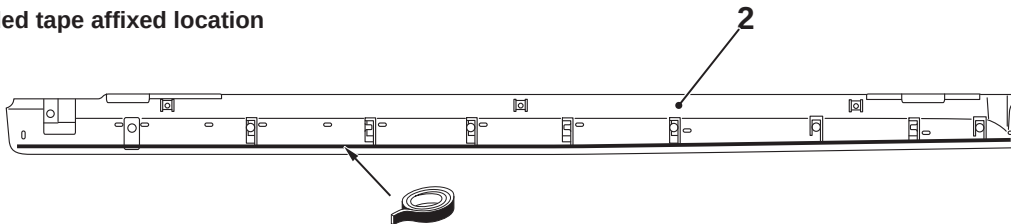
Tool	Tool number and name	Supersession	Application
MB990784	MB990784 Ornament remover	General service tool	Removal of side air dam

REMOVAL AND INSTALLATION

M1511005501576



Double-sided tape affixed location



Double-sided tape: Generic products 4.0 mm (0.16 in) width, 2.5 mm (0.10 in) thickness
Specified primer: 3M™ K-500

ACC02948AC

<<A>> >>A<< 1. Removal steps
Screw

<<A>> >>A<< 2. Removal steps (Continued)
Side air dam
<<A>> >>A<< 3. Grommet

REMOVAL SERVICE POINT

<<A>> SIDE AIR DAM REMOVAL

1. Use the special tool ornament remover (MB990784) to cut double-sided tape between the body side and the side air dam.

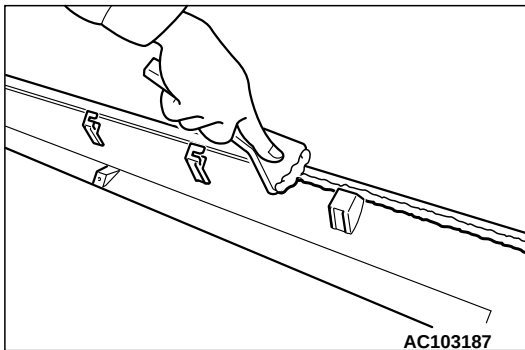
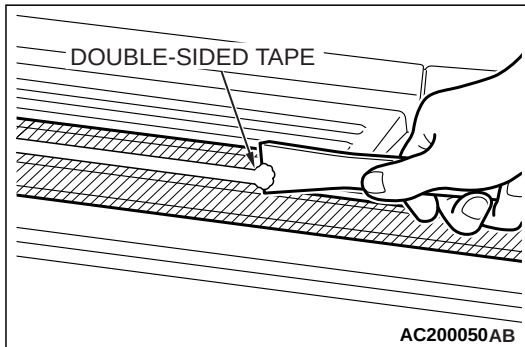
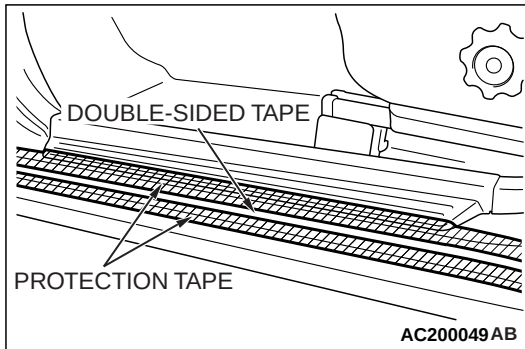
2. Remove the screw.

3. Remove the side air dam.

4. Remove the grommet.

If there is any double-sided tape remaining on the side air dam, remove according to the following instructions.

<Remove double-sided tape remaining on the body surface>



5. Attach protection tape all the way along the edges of the double-sided tape which is still adhering to the body.

6. Scrape off the double-sided tape with a resin spatula as much as possible.

7. Peel off the protection tape.

8. Wipe the body surface and clean it with a rag moistened with Parts Cleaner (MZ100387 or equivalent).

<Remove double-sided tape remaining on side air dam and adhere double-sided tape (when re-using side air dam)>

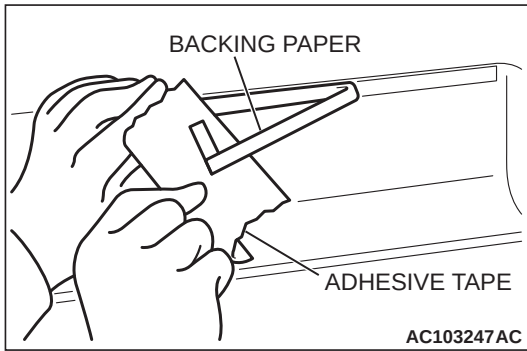
1. Scrape off the double-sided tape on the side air dam with a resin spatula as much as possible.
2. Wipe the side air dam surface and clean it with a rag moistened with Parts Cleaner (MZ100387 or equivalent).
3. Remove only a small portion of the residual adhesive.
4. Adhere the double-sided tape as specified on the side air dam.

INSTALLATION SERVICE POINT

>>A<< SIDE AIR DAM INSTALLATION

1. Use the parts cleaner (MZ100387 or equivalent) wipe off the adhesion surface to decrease it.
2. Apply the specified primer to the double-sided adhesive tape surface. Then dry it off sufficiently.

Specified primer: 3M™ K-500

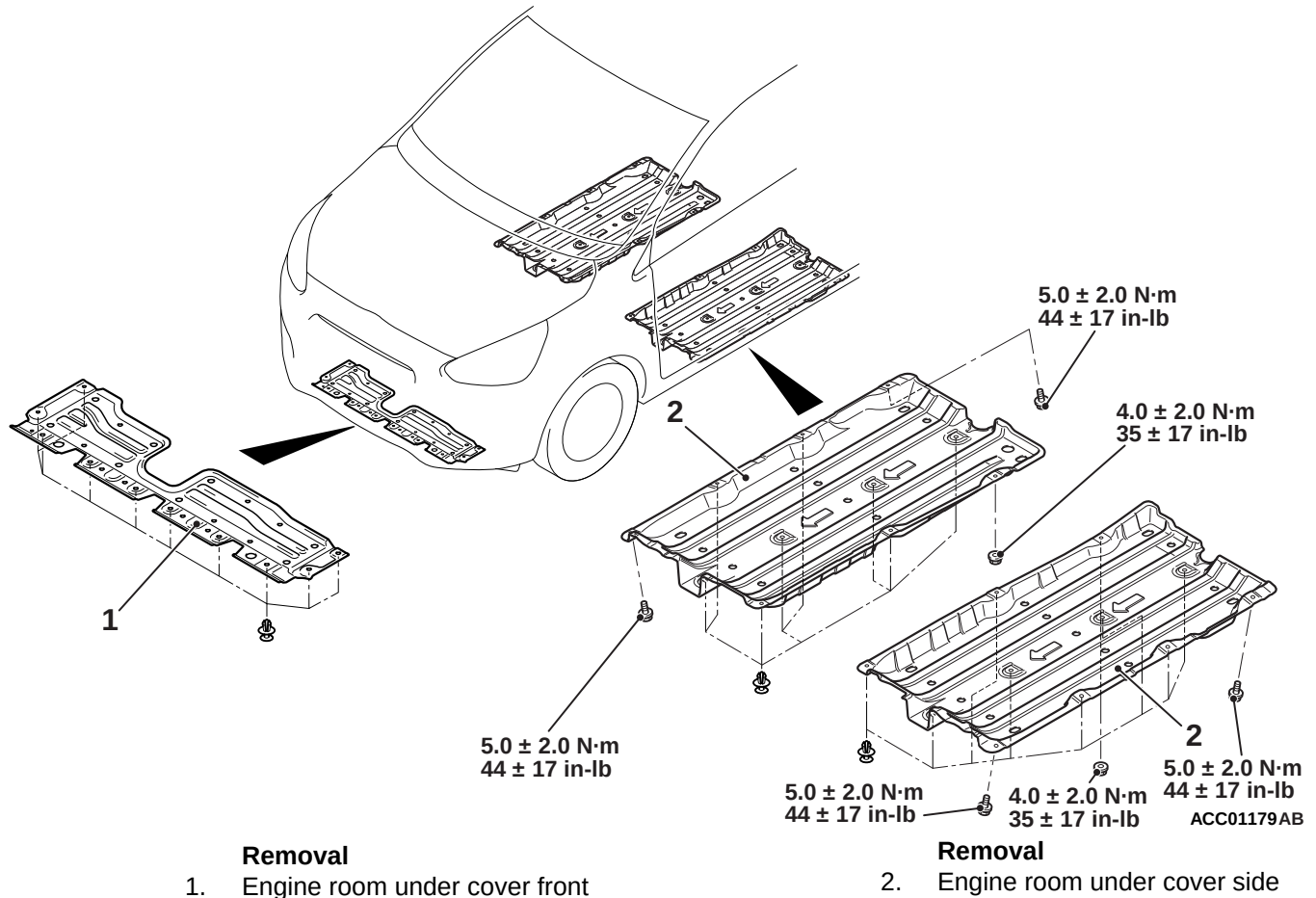


3. Tear off the double-sided tape backing paper.
NOTE: If attach the adhesive tape to the edge of the backing paper, it will be easy to tear off.
4. Install the side air dam.
NOTE: If the double-sided tape is difficult to affix in cold temperature, etc., warm the bonding surfaces of the body and side air dam to about 40–60 °C (104 – 140 °F) before affixing the tape.
5. Firmly press in the side air dam.

UNDER COVER

REMOVAL AND INSTALLATION

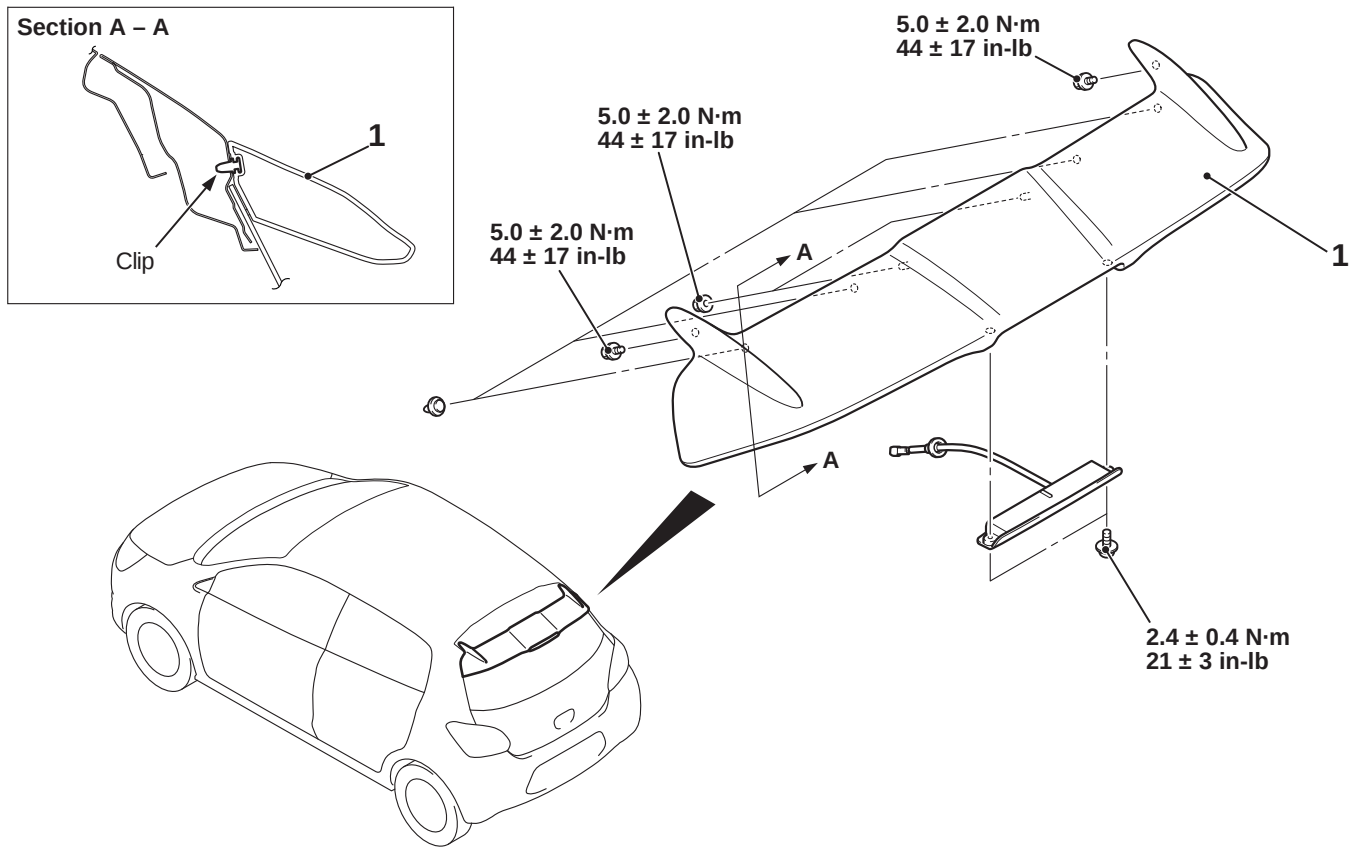
M1511019601305



LIFTGATE SPOILER

REMOVAL AND INSTALLATION

M1511019900671



ACB03337 AB

Removal steps

- Liftgate upper trim cap (Refer to GROUP 52A, Liftgate Trim [P.52A-14.](#))
1. Liftgate spoiler

WINDSHIELD WIPER AND WASHER

SERVICE SPECIFICATION

M1511000301511

Item	Standard value
Stop position of the windshield wiper arm/blade assembly mm (in)	A: ϕ 2 marking $\pm$ 5 (0.2)

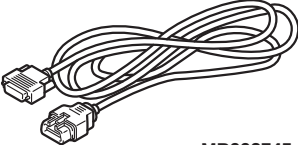
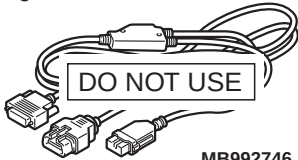
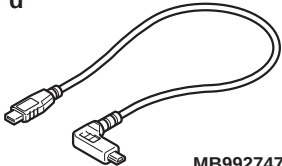
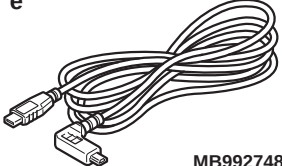
LUBRICANT

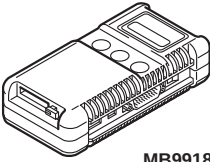
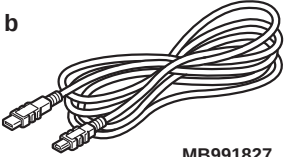
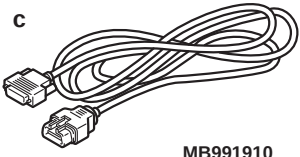
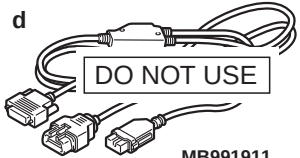
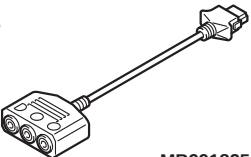
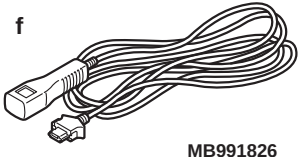
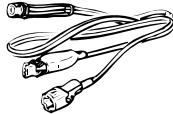
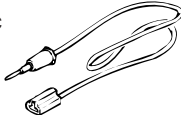
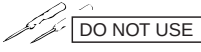
M1511000400247

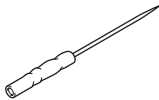
Item	Specified lubricant	Quantity
Wiper motor link rod	Contact joint between link rod and wiper motor link plate	As required

SPECIAL TOOLS

M1511000603240

Tool	Tool number and name	Supersession	Application
 MB992326	MB992326 Washer nozzle adjustment tool	General service tool	Injection angle adjustment of the washer nozzle
a  MB992744 b  MB992745 c  MB992746 d  MB992747 e  MB992748 ACB05421AB	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748 a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication) c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long	—	• Checking windshield wiper intermittent time • Diagnosis trouble code, service data check

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991825 f  MB991826 MB991955	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 the M.U.T.-III main harness A to send simulated vehicle speed. If you connect the M.U.T.-III main harness B instead, the CAN communication does not function correctly. • Checking windshield wiper intermittent time • Diagnosis trouble code, service data check
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	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester

Tool	Tool number and name	Supersession	Application
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1511014600318

Refer to GROUP 00 – Contents of Troubleshooting

[P.00-6.](#)

TROUBLE SYMPTOM CHART

M1511015002218

Trouble symptom	Inspection procedure No.	Reference page
The windshield wipers do not work at all.	1	P.51-19
The windshield wipers do not work when the wiper switch is at the "INT", "Washer" or "Mist" position. However, the wipers work at low speed when the switch is at the "Lo" and "Hi" position.	2	P.51-22
The windshield wipers do not stop at the specified park position.	3	P.51-23
The windshield wipers do not work normally.	4	P.51-24
The windshield intermittent wiper interval cannot be adjusted by operating the windshield intermittent wiper volume control.	5	P.51-28
The intermittent wiper interval is not changed according to the vehicle speed.	6	P.51-29
The windshield washer does not work normally	7	P.51-31

NOTE: If the ETACS-ECU failed, the windshield wiper will operate only at low speed as a fail-safe measure.

Inspection Procedure 1: Windshield wipers do not work at all.

CAUTION

Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The windshield wiper motor, the column switch (column-ECU) or ETACS-ECU may be defective. Check the wiper backup circuit (between the column switch WB/U and the ETACS-ECU WB/U), and repair if necessary.

TROUBLESHOOTING HINTS

- Malfunction of the windshield wiper motor
- Defective column switch (column-ECU)
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.** CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Check if an ETACS-related diagnosis trouble code is set.
- (4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the ETACS-ECU. (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart [P.54A-218](#).)

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list.** CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to OFF.
- (3) Check the input signal related to the windshield wiper operation.
 - Set the ignition switch to the ACC position.

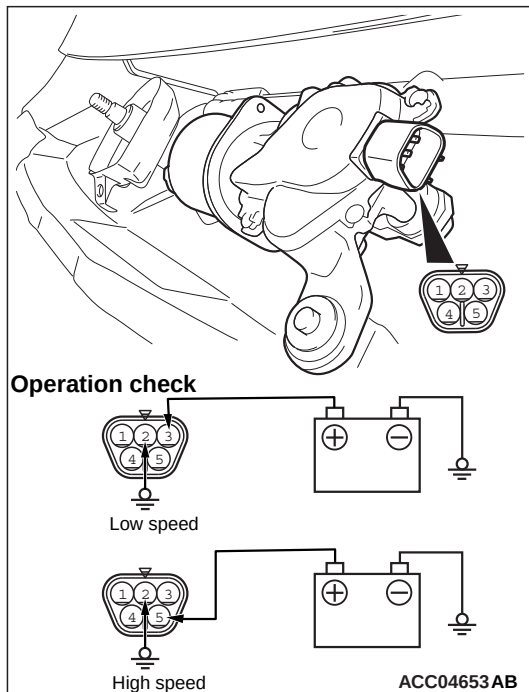
Item No.	Item name	Normal conditions
Item 29	Ignition Switch (ACC)	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to GROUP 54A – ETACS, Inspection Procedure 1 "The ignition switch (ACC) signal is not received [P.54A-240](#)."



STEP 3. Check the windshield wiper motor.

- (1) Disconnect windshield wiper motor connector.
- (2) Connect a battery to the windshield wiper motor as shown. Then check that the windshield wiper motor operates normally at high and low speeds.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the windshield wiper motor.

STEP 4. Measure the resistance at windshield wiper motor connector.

- (1) Disconnect the connector, and measure the resistance at the wiring harness.
- (2) Measure the resistance between the windshield wiper motor connector ground terminal and the body ground.

OK: Continuity exists (2Ω or less)

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check of open circuit in ground lines between windshield wiper motor connector and body ground.

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 Malfunctions [P.00-13](#).

NO : Repair the connector(s) or wiring harness.

STEP 6. Measure the voltage at ETACS-ECU connector (+B terminal).

- (1) Disconnect the connector, and measure the voltage at the wiring harness side.
- (2) Measure the voltage between the ETACS-ECU(+B terminal) and the body ground.

OK: System voltage

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check of short to power supply, short to ground, and open circuit in power supply line between fusible link and ETACS-ECU connector (+B terminal).

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 Malfunctions [P.00-13](#).

NO : Repair the connector(s) or wiring harness.

STEP 8. Check of short to power supply, short to ground, and open circuit in F/WIP LO,HI line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the connector(s) or wiring harness.

STEP 9. Check the trouble symptom.

Check that the windshield wipers work 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 Malfunctions [P.00-13](#).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: The windshield wipers do not work when the wiper switch is at the "INT", "Washer" or "Mist" position. However, the wipers work at low speed when the switch is at the "Lo" and "Hi" position.

** CAUTION**

Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

It is assumed that the windshield wipers are at fail-safe mode due to a failure of the LIN bus lines.

TROUBLESHOOTING HINTS

- Malfunction of the LIN bus line
- The ETACS-ECU may be defective

DIAGNOSIS

1. Use the scan tool (M.U.T.-III) to check if an ETACS-related diagnostic trouble code is set.
2. Retest the system.

Inspection Procedure 3: The windshield wipers do not stop at the specified position.

CAUTION

Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The windshield wiper motor or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the windshield wiper motor
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

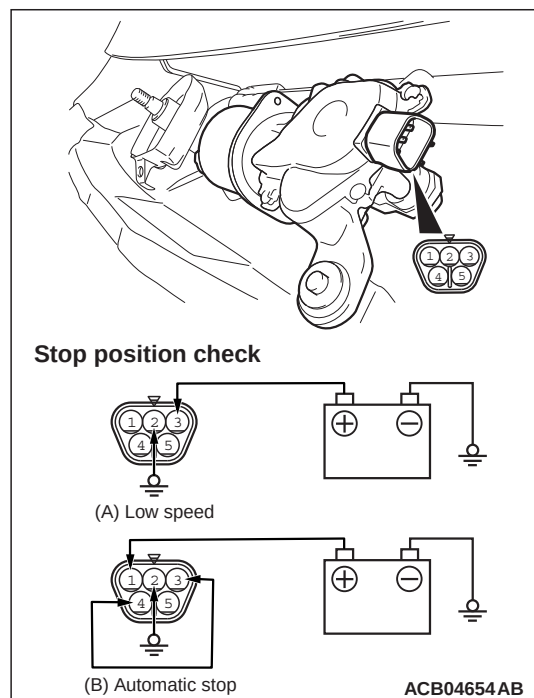
STEP 1. Check the windshield wiper motor.

- (1) Disconnect windshield wiper motor connector.
- (2) Connect the battery to the windshield wiper motor as shown in the illustration (A).
- (3) Run the windshield wiper motor at low speed, then disconnect the battery in the middle of the motor rotation and check to see that the motor stops.
- (4) Connect the battery to the windshield wiper motor as shown in the illustration (B).
- (5) Connect the terminals of the windshield wiper motor connector as shown in the illustration (B).
- (6) Check to see that the windshield wiper motor runs at low speed and then stops at the automatic stop position.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the windshield wiper motor.



STEP 2. Measure the voltage at windshield wiper motor connector.

- (1) Disconnect the connector, and measure the voltage at the wiring harness side.
- (2) Set the ignition switch to the ACC position.
- (3) Measure the voltage between the windshield wiper motor connector (ACC terminal) and the body ground.

OK: System voltage

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check of short to power supply, short to ground, and open circuit in power supply line between windshield wiper motor connector and ignition switch (ACC).

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.00-13](#)).

NO : Repair the connector(s) or wiring harness

STEP 4. Check of short to power supply, short to ground, and open circuit in F/WIP AS, F/WIP ACC line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the connector(s) or wiring harness

STEP 5. Retest the system.

Check that the windshield wipers stop at the specified park position.

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 Malfunctions [P.00-13](#).

NO : Replace the ETACS-ECU.

Inspection Procedure 4: The windshield wipers do not work normally.

** CAUTION**

Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The windshield wiper motor, the column switch or ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the windshield wiper motor
- Malfunction of the column switch
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Check if an ETACS-related diagnosis trouble code is set.
- (4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the ETACS. (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart [P.54A-218](#).)

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to OFF.
- (3) Check the input signal related to the windshield wiper operation.
 - Ignition switch: ACC
 - Operate the windshield wiper switch.

Item No.	Item name	Normal conditions
Item 65	Front wiper output	ON
Item 66	Front wiper HI output	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to GROUP 54A – ETACS, Inspection Procedure 9 "The column switch signal is not received [P.54A-249](#)."

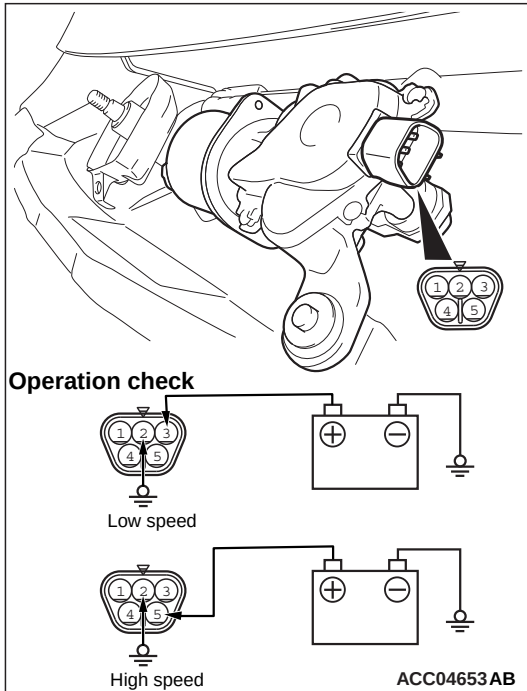
STEP 3. Check that the windshield wipers work.

Check that the windshield wipers work at high speed and the mist mode.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 7.

**STEP 4. Check the windshield wiper motor.**

- (1) Disconnect windshield wiper motor connector.
- (2) Connect a battery to the windshield wiper motor as shown. Then check that the windshield wiper motor operates normally at high and low speeds.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the windshield wiper motor.

STEP 5. Check of short to power supply, short to ground, and open circuit in F/WIP LO line between windshield wiper motor connector and ETACS-ECU connector**Q: Is the check result normal?**

YES : Go to Step 6.

NO : Repair the connector(s) or wiring harness.

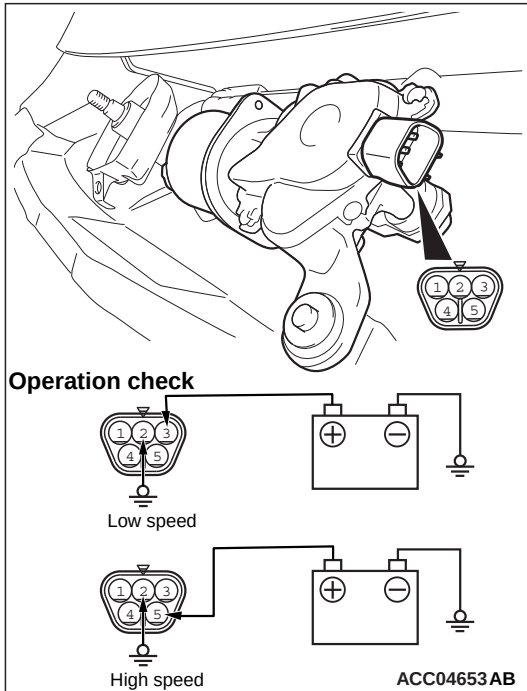
STEP 6. System retest

Check that the windshield wipers work normally by moving the switch to each position.

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 Malfunctions [P.00-13](#).

NO : Replace the ETACS-ECU.



STEP 7. Check the windshield wiper motor.

- (1) Disconnect windshield wiper motor connector.
- (2) Connect a battery to the windshield wiper motor as shown. Then check that the windshield wiper motor operates normally at high and low speeds.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Replace the windshield wiper motor.

STEP 8. Measure the voltage at windshield wiper motor connector.

- (1) Disconnect the connector, and measure the voltage at the wiring harness side.
- (2) Ignition switch: ACC
- (3) Windshield wiper switch: HI
- (4) Measure the voltage between the windshield wiper motor connector power supply terminal and the body ground.

OK: System voltage

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 Malfunctions [P.00-13](#).

NO : Go to Step 9.

STEP 9. Check of short to power supply, short to ground, and open circuit in F/WIP HI line between windshield wiper motor connector and ETACS-ECU connector.

Q: Is the check result normal?

YES : Go to Step 10.

NO : Repair the connector(s) or wiring harness.

STEP 10. System retest

Check that the windshield wipers work normally by moving the switch to each position.

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 Malfunctions [P.00-13](#).

NO : Replace the ETACS-ECU.

Inspection Procedure 5: The windshield intermittent wiper interval cannot be adjusted by operating the windshield intermittent wiper volume control.

** CAUTION**

Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The column switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the column switch
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.

** CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

(1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III)" [P.54A-215](#)."

(2) Turn the ignition switch to ON.

(3) Check if an ETACS-related diagnosis trouble code is set.

(4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the ETACS. (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart [P.54A-218](#).)

NO : Go to Step 2.

STEP 2. Check the ETACS customization function.

By the ETACS customization function, confirm that "vehicle speed dependent wiper function" has been enabled.

Q: Is the check result normal?

YES : Go to Step 3.

NO : By the ETACS customization function, enable the "vehicle speed dependent wiper function." Refer to [P.51-33](#).

STEP 3. System retest

Check that the windshield wiper interval changes when the windshield wiper volume control is rotated.

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 Malfunctions [P.00-13](#).

NO : Replace the ETACS-ECU.

Inspection Procedure 6: The intermittent wiper interval is not changed according to the vehicle speed.

** CAUTION**

Whenever ECU is replaced, ensure that the input and output signal circuits are normal.

CIRCUIT OPERATION

The ETACS-ECU calculates the intermittent wiper interval according to the vehicle speed signal which is sent by the engine control module.

TECHNICAL DESCRIPTION (COMMENT)

If the intermittent wiper interval does not depend on the vehicle speed, the input circuit of the vehicle speed signal (engine control module) and the ETACS-ECU may be defective. Alternatively, the vehicle speed-dependent wiper may be set to "disabled" by using the customization function.

TROUBLESHOOTING HINTS

- Malfunction of the CAN bus line
- Defective engine control module
- Malfunction of ETACS-ECU
- Damaged wiring harness and connectors

DIAGNOSIS

STEP 1. Check the operation of windshield intermittent wiper volume control.

Check that the windshield intermittent wiper interval can be adjusted by operating the windshield intermittent wiper volume control.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 5 "The windshield intermittent wiper interval cannot be adjusted by operating the windshield intermittent wiper volume control" [P.51-28](#).

STEP 2. Check the ETACS customization function.

Use the ETACS customization function to confirm that "front wiper operation" is set to "vehicle speed dependent".

Q: Is the check result normal?

YES : Go to Step 3.

NO : Use the ETACS customization function to set "front wiper operation" to "vehicle speed dependent" (Refer to [P.51-33](#)).

STEP 3. Using scan tool (M.U.T.-III), diagnose the CAN bus line.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to OFF.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 4.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-12](#)).

STEP 4. Using scan tool (M.U.T.-III), read the diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Check if an ETACS-related diagnosis trouble code is set.
- (4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the ETACS (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart [P.54A-218](#)).

NO : Go to Step 5.

STEP 5. Using scan tool (M.U.T.-III), read the other system diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Check if the DTC is set to the engine control module.
- (4) Turn the ignition switch to OFF.

Q: Is the DTC set?

YES : Diagnose the engine control module (Refer to GROUP 13A, Diagnosis Trouble Code Chart [P.13A-47](#)).

NO : Go to Step 6.

STEP 6. Retest the system.

Check that the intermittent wiper interval depends on the vehicle speed.

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.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 7: The windshield washer does not work normally.

** CAUTION**

Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The windshield washer motor, the column switch or ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Defective windshield washer motor
- Malfunction of the column switch
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Check the operation of the windshield wipers.

Check that the windshield wipers work.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 1 "Windshield wipers do not work at all [P.51-19](#)."

STEP 2. Using scan tool (M.U.T.-III), read the diagnostic trouble code.** CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

(1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."

(2) Turn the ignition switch to ON.

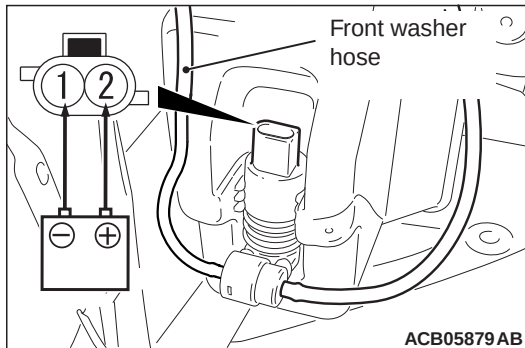
(3) Check if an ETACS-related diagnosis trouble code is set.

(4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the ETACS. (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart [P.54A-218](#).)

NO : Go to Step 3.

**STEP 3. Check the washer motor.**

- (1) Remove the washer tank assembly with the washer hose attached. Then fill the washer tank with water.
- (2) Check to see that the washer fluid is vigorously sprayed when connecting the positive battery terminal to terminal number 2 and terminal number 1 to ground.

Q: Is the check result normal?**YES :** Go to Step 4.**NO :** Replace the washer motor.**STEP 4. Using scan tool (M.U.T.-III), check data list.****⚠ CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215.](#)"
- (2) Turn the ignition switch to OFF.
- (3) Check the input signal related to the windshield washer operation.
 - Ignition switch: ACC
 - Windshield washer switch: ON

Item No.	Item name	Normal conditions
Item 67	Front washer output	ON

OK: Normal condition is displayed.**Q: Is the check result normal?****YES :** Go to Step 5.

NO : Refer to GROUP 54A – ETACS, Inspection Procedure 9 "The column switch signal is not received [P.54A-249.](#)"

STEP 5. Measure the voltage at the ETACS-ECU connector (FWIP-WASH terminal).

- (1) Disconnect the connector, and measure the voltage at the wiring harness-side.
- (2) Ignition switch: ACC
- (3) Windshield washer switch: ON
- (4) Measure the voltage between ETACS-ECU connector (F/ WIP-WASH terminal) and body ground.

OK: System voltage**Q: Is the check result normal?****YES :** Go to Step 8.**NO :** Go to Step 6.

STEP 6. Check of short to power supply, short to ground, and open circuit in F/WIP WASH line between windshield washer motor connector and ETACS-ECU connector

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector(s) or wiring harness.

STEP 7. Check of short to power supply, short to ground, and open circuit in R/WIP WASH line between windshield washer motor connector and ETACS-ECU connector

Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the connector(s) or wiring harness.

STEP 8. Check the trouble symptom.

Check that the windshield washers work 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 Malfunctions [P.00-13](#).

NO : Replace the ETACS-ECU.

ON-VEHICLE SERVICE

WINDSHIELD INTERMITTENT WIPER INSPECTION

M1511023600220

1. Check that the intermittent wiper interval is changed as the windshield intermittent wiper volume is operated.
2. Turn the windshield intermittent wiper switch to the intermittent operation position. Use the M.U.T.-III to set a simulated vehicle speed with the wiper volume held. The intermittent wiper interval should be changed as the simulated vehicle speed is changed.
3. If either of above is defective, carry out the troubleshooting (Refer to [P.51-28](#)).

CUSTOMIZATION FUNCTION

M1511027402417

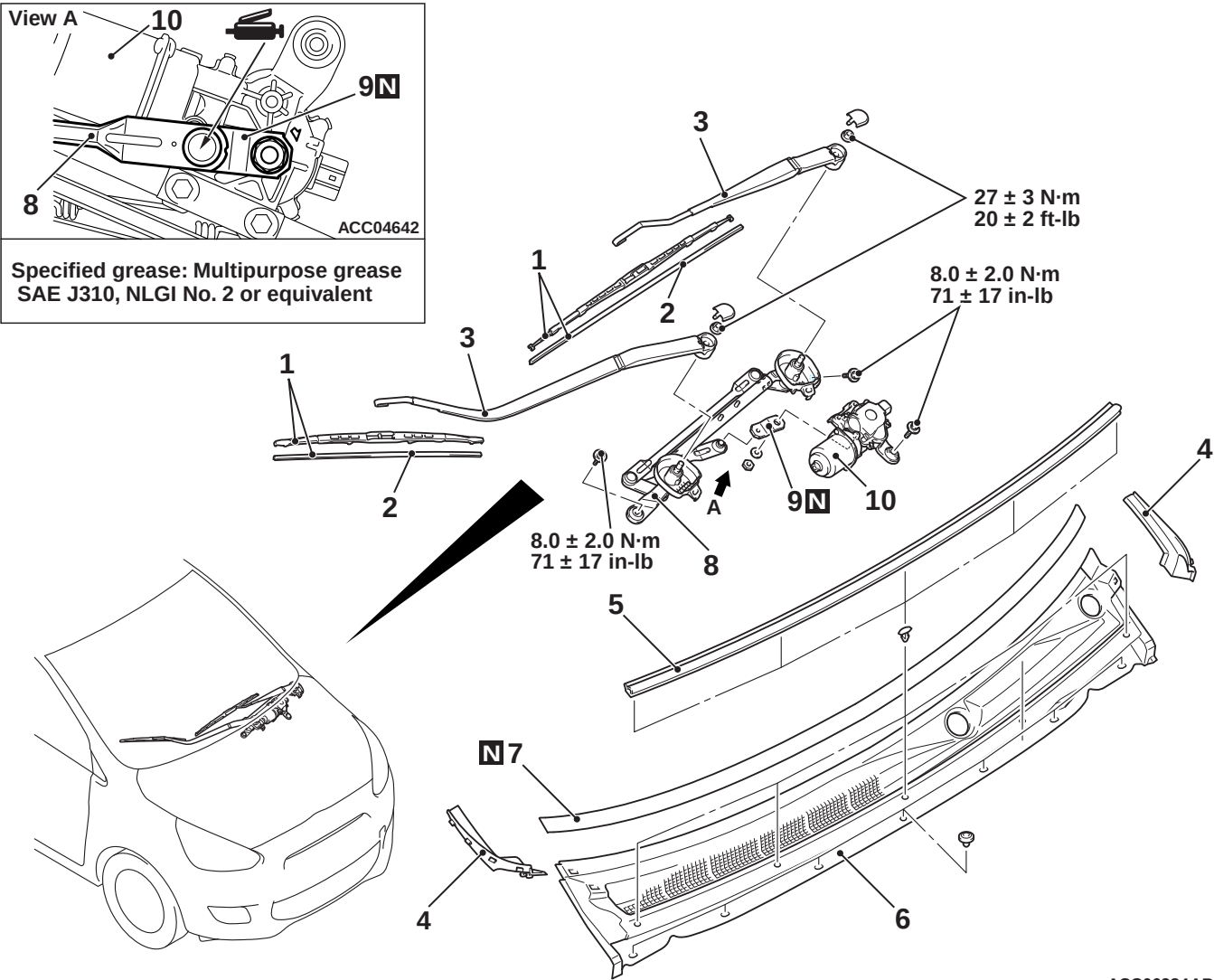
Using the ETACS system of scan tool (M.U.T.-III), the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Vehicle speed-dependent wiper	Disabling or enabling vehicle speed-dependent wiper function	inhibit	No function
		operation	With function (Initial condition)
Wiper synchronized washer	Disabling or enabling washer-linked wiper function	inhibit	No function (Only washer operation)
		operation	With function (Initial condition)

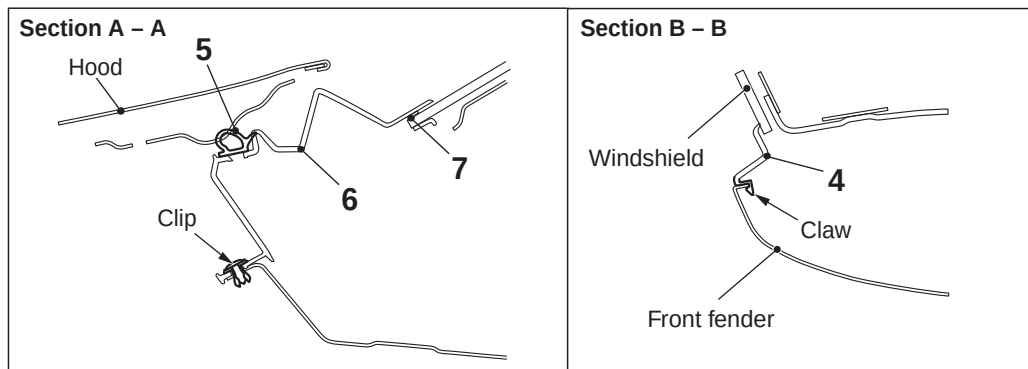
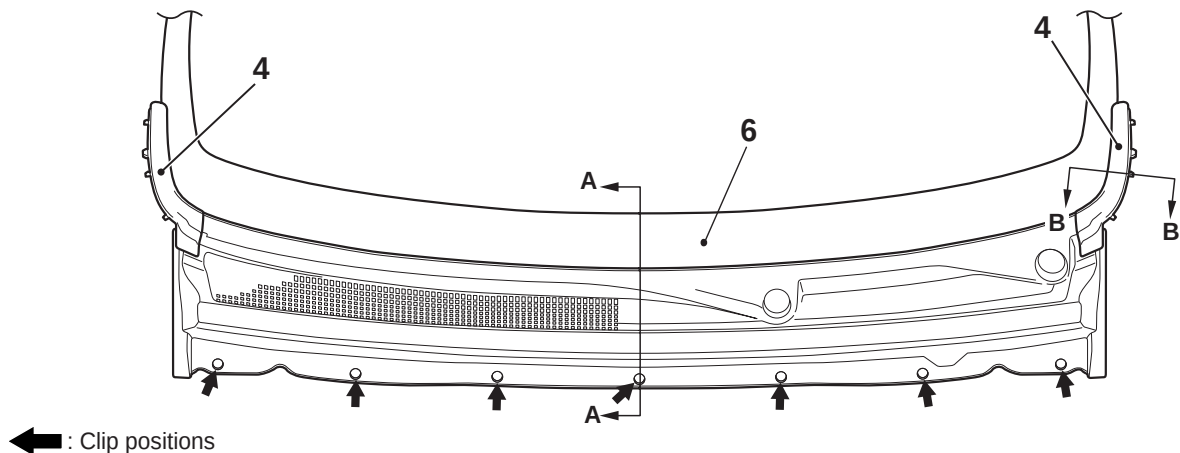
Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Intermittent time of rear wiper	Adjustment of rear wiper interval	8 sec.	8 second (Initial condition)
		4sec/continuous	4 second (With low speed mode)
		8sec/continuous	8 second (With low speed mode)
		16sec/continuous	16 second (With low speed mode)
		0 sec.	0second (Continuous operation)
		4 sec.	4 second
		16 sec.	16 second

WINDSHIELD WIPER
REMOVAL AND INSTALLATION

M1511007901558



ACC06284AB



ACC04643
ACD00001AB

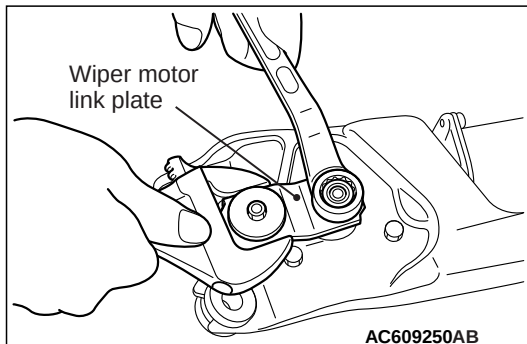
- Wiper blade removal steps**
- >>C<< 1. Wiper blade assembly
- >>A<< 2. Wiper blade
- Windshield wiper motor and wiper link assembly removal steps**
- >>C<< 3. Wiper arm
4. Front deck garnish cover
5. Hood weatherstrip
6. Front deck garnish

- Windshield wiper motor and wiper link assembly removal steps (Continued)**
7. Front deck garnish edge protector
- >>B<< 8. Wiper link assembly
- <<A>> >>B<< 9. Wiper motor link plate
- <<A>> >>B<< 10. Windshield wiper motor
- NOTE: For removal and installation of the wiper and washer switch, refer to GROUP 54A, Column Switch P.54A-152.*

REMOVAL SERVICE POINT

<<A>> WIPER MOTOR LINK PLATE/WINDSHIELD WIPER MOTOR REMOVAL

1. To disconnect the wiper motor link plate from the wiper motor shaft, use an appropriate tool to counter-hold the plate to prevent it from turning.
2. Remove the wiper motor from the wiper link assembly.

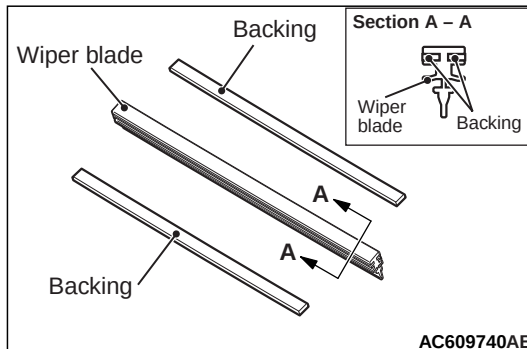


INSTALLATION SERVICE POINTS

>>A<< WIPER BLADE INSTALLATION

⚠ CAUTION

For good windshield wiper wiping performance, use windshield wipers without a curve in the backing of the wiper blade.

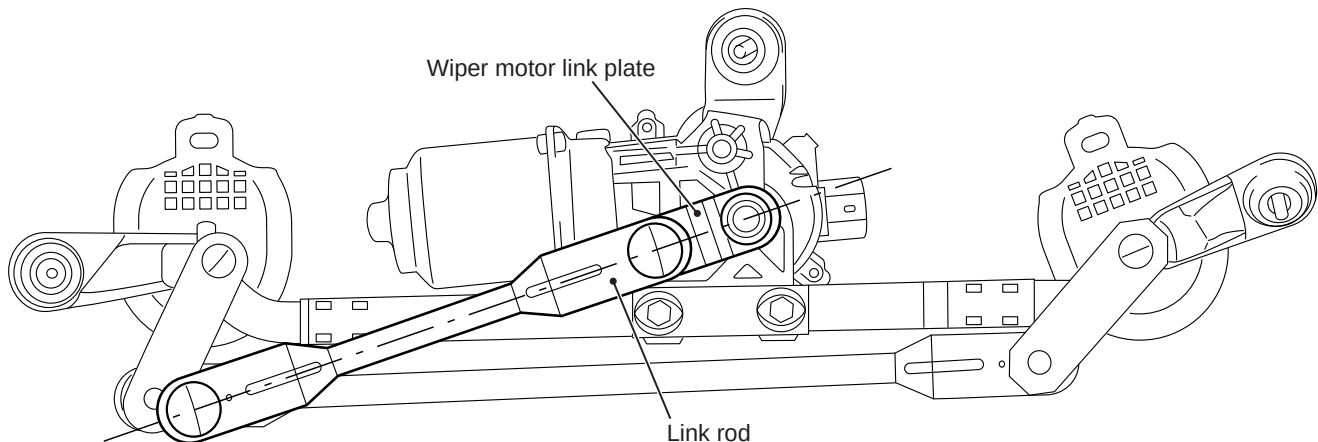


>>B<< WIPER LINK ASSEMBLY/WIPER MOTOR LINK PLATE/WINDSHIELD WIPER MOTOR INSTALLATION

1. Confirm that the wiper motor has set to automatic stop position (Refer to [P.51-38](#)).

⚠ CAUTION

Always replace the wiper motor link plate with new one.



ACC04644 AB

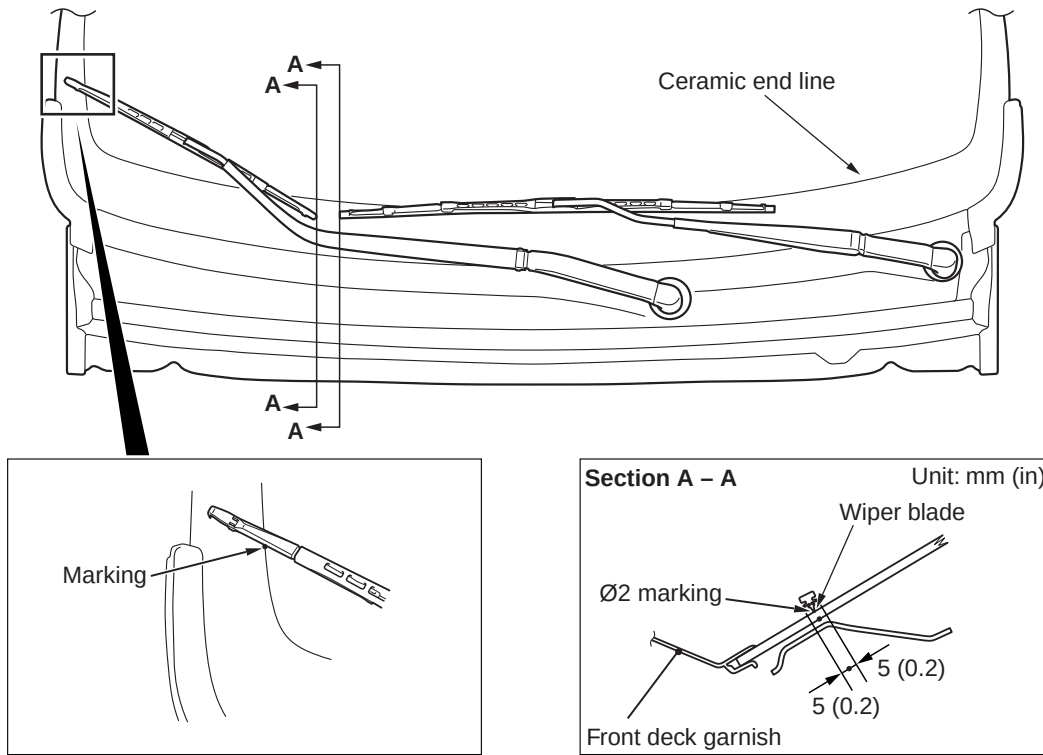
2. Set the wiper motor link plate onto the wiper motor shaft. When doing this, the wiper motor link plate and the wiper link rod should be in line as shown.

NOTE: When the wiper motor link plate has slipped by even only one tooth on the wiper motor assembly, they cannot be in line.

3. Tighten the attaching nut of wiper motor link plate and wiper motor shaft. Use an appropriate tool to counter-hold the plate to prevent it from turning.
4. Apply grease to the inside of link rod joint (as required) and connect the link rod to wiper motor link plate.

Specified grease: Multipurpose grease SAE J310, NLGI No.2 or equivalent

>>C<< WIPER ARM AND BLADE ASSEMBLY
INSTALLATION



ACC06285AB

Set the wiper arm and blade assembly at the specified positions.

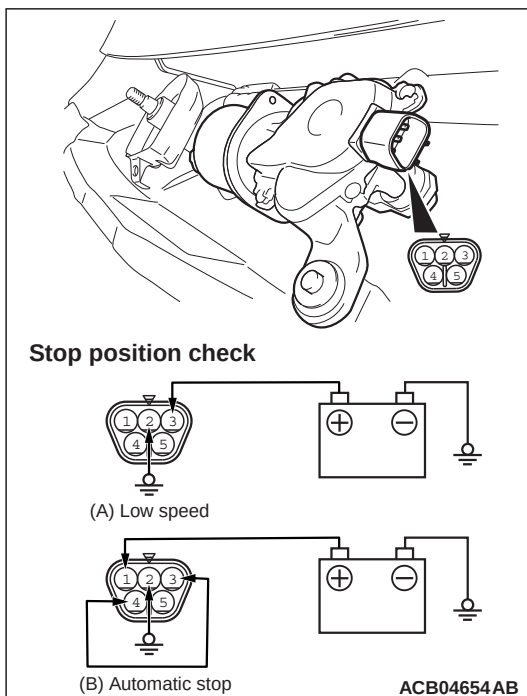
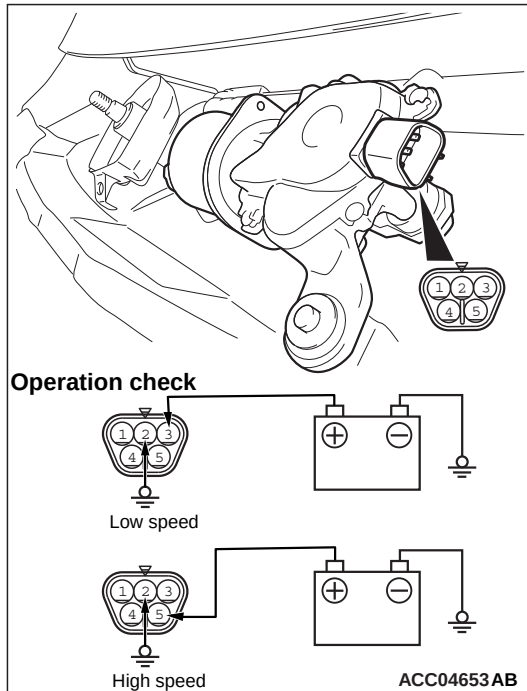
A: ϕ 2 marking $\pm$ 5 mm (0.2 inch)

INSPECTION**WINDSHIELD WIPER MOTOR CHECK**

The windshield wiper motor assembly should be installed to the vehicle body and the harness connector should be disconnected when checking the wiper motor.

WINDSHIELD WIPER MOTOR AT LOW OR HIGH SPEED OPERATION

Connect the battery to the windshield wiper motor to inspect the operation of motor rotation at low or high speed.

WINDSHIELD WIPER MOTOR AT STOP POSITION OPERATION

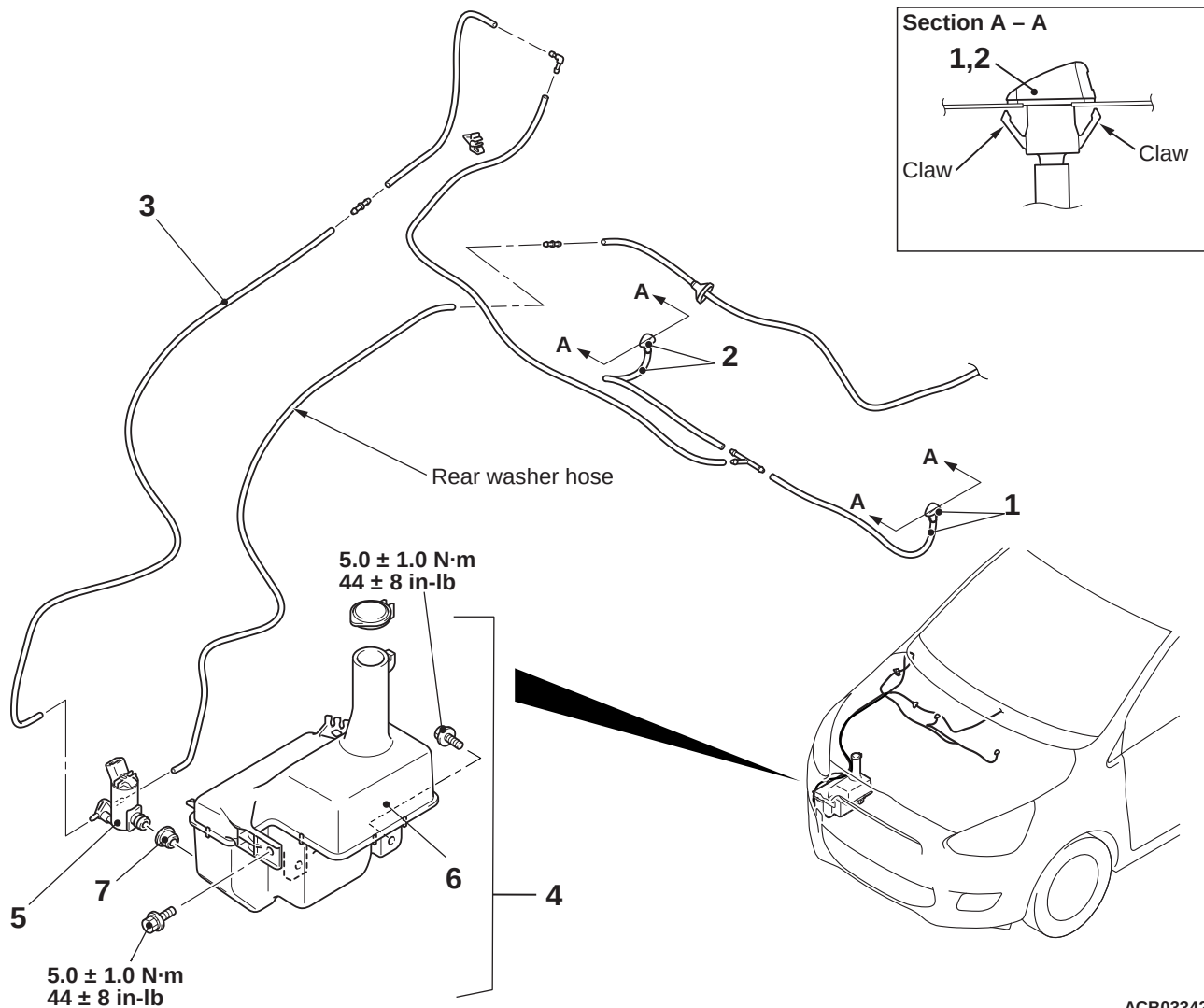
1. Connect the battery to the windshield wiper motor as shown in the illustration (A).
2. Run the windshield wiper motor at low speed, then disconnect the battery in the middle of the motor rotation and check to see that the motor stops.
3. Connect the battery to the windshield wiper motor as shown in the illustration (B).
4. Connect the terminals of the windshield wiper motor connector as shown in the illustration (B).
5. Check to see that the windshield wiper motor runs at low speed and then stops at the automatic stop position.

WINDSHIELD WIPER SWITCH CHECK

Check the windshield wiper switch (mist, intermittent, low speed and high speed) from the ETACS diagnostic trouble codes for proper operations (Refer to GROUP 54A, ETACS [P.54A-218](#)).

WINDSHIELD WASHER REMOVAL AND INSTALLATION

M1511008201615



ACB03342AB

Windshield washer nozzle removal steps

- Connection of windshield washer hose
1. Windshield washer nozzle assembly (LH)
 2. Windshield washer nozzle assembly (RH)

Washer hose removal steps

- Front wheelhouse splash shield (Refer to GROUP 42A, Splash Shield P.42A-10.)
 - Connection of washer nozzle/washer motor
3. Windshield washer hose

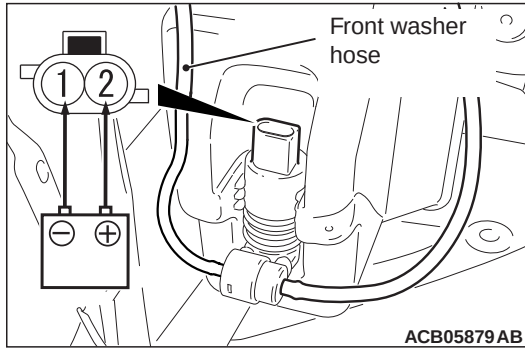
Washer tank removal steps

- Front wheelhouse splash shield (Refer to GROUP 42A, Splash Shield P.42A-10.)
 - Connection of windshield washer hose
4. Windshield washer tank assembly
 5. Windshield washer motor
 6. Windshield washer tank

Washer motor removal steps

- Front wheelhouse splash shield (Refer to GROUP 42A, Splash Shield P.42A-10.)
 - Connection of windshield washer hose
5. Windshield washer motor
 7. Grommet

NOTE: For removal and installation of the wiper and washer switch, refer to GROUP 54A, Column Switch P.54A-152.



INSPECTION

M1511008300879

WINDSHIELD WASHER MOTOR CHECK

1. Remove the washer tank assembly with the washer hose attached. Then fill the washer tank with water.
2. Check to see that the washer fluid is vigorously sprayed when connecting the positive battery terminal to terminal number 2 and terminal number 1 to ground.

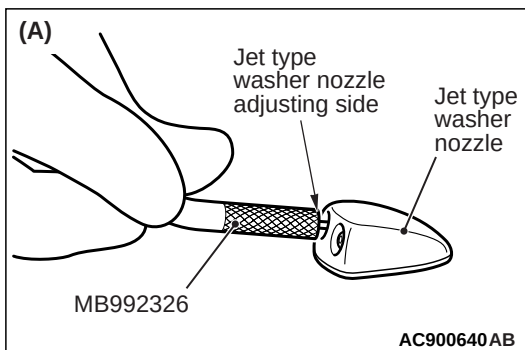
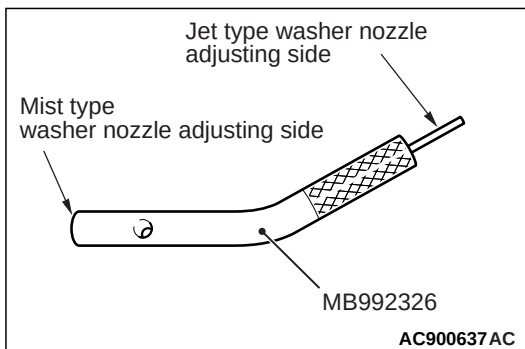
WINDSHIELD WASHER SWITCH CHECK

Check the windshield washer switch from the ETACS diagnostic trouble codes for proper operation (Refer to GROUP 54A, ETACS P.54A-218).

WINDSHIELD WASHER FLUID EJECTION CHECK

NOTE: Use special tool Adjustment tool, washer nozzle (MB992326) to adjust the splashing points of the nozzle.

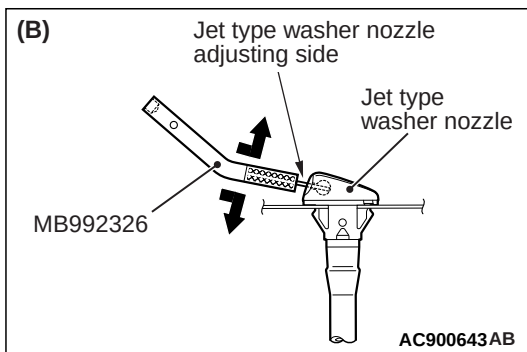
Adjustment of the jet type washer nozzle injection position



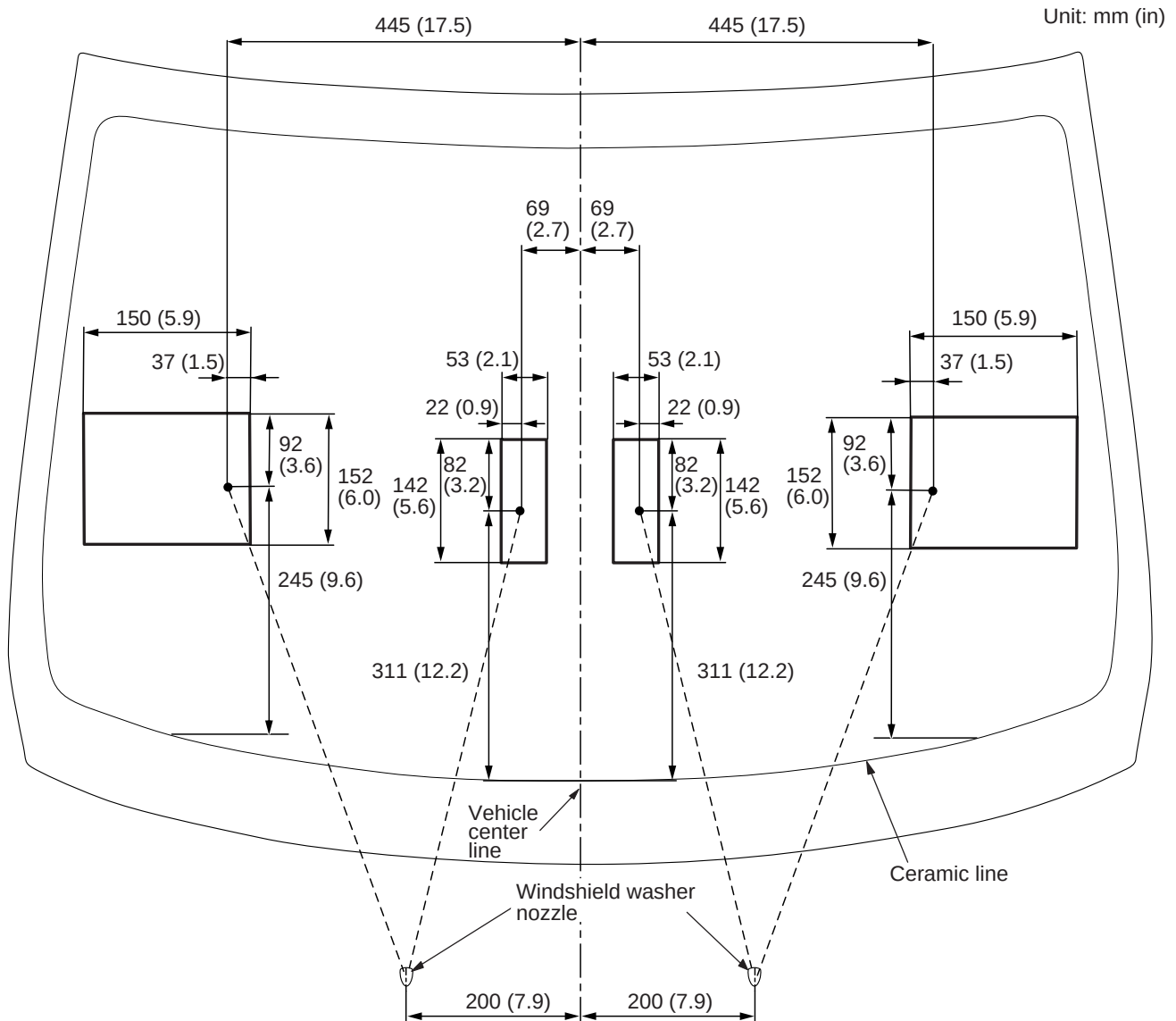
CAUTION

Adjust the splashing position within the specified adjustment range, otherwise the windshield cannot be washed properly.

1. Use special tool Adjustment tool, washer nozzle (MB992326) to adjust the splashing points of the nozzle.
2. Insert the jet type washer nozzle adjusting side of the special tool Adjustment tool, washer nozzle (MB992326) into the injection part of the washer nozzle as shown in figure (A).



3. Move the special tool Adjustment tool, washer nozzle (MB992326) up and down to adjust the angle of the washer nozzle as shown in figure (B).



REAR WIPER AND WASHER

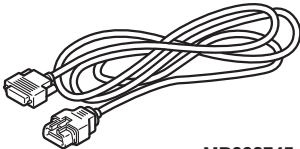
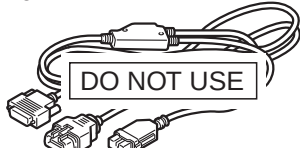
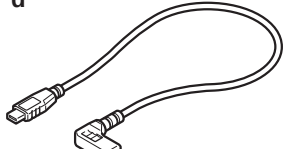
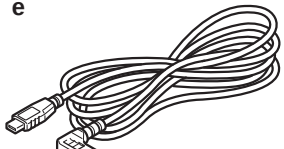
SERVICE SPECIFICATION

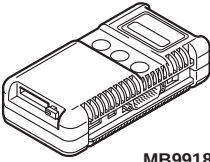
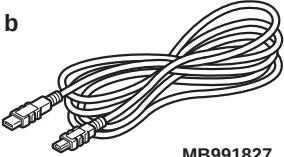
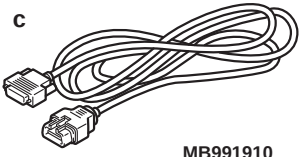
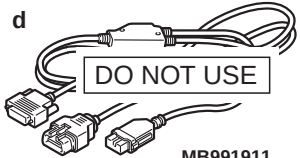
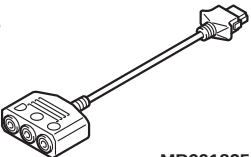
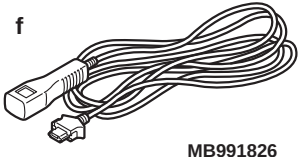
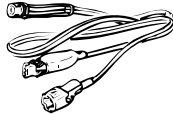
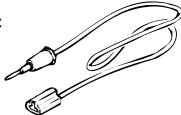
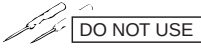
M1511000301522

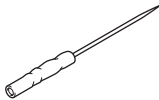
Item	Standard value
Stop position of rear wiper arm/blade assembly (Distance from the edge of the wiper blade to the edge of the ceramic line on the liftgate glass) mm (in)	15 to 35 (0.6 to 1.4) from liftgate window glass end

SPECIAL TOOLS

M1511000603444

Tool	Tool number and name	Supersession	Application
 MB992326	MB992326 Washer nozzle adjustment tool	General service tool	Injection angle adjustment of the washer nozzle
a  MB992744 b  MB992745 c  MB992746 d  MB992747 e  MB992748 ACB05421AB	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748 a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication) c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long	—	Diagnosis trouble code, service data check

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991825 f  MB991826 MB991955	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 <i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i>	⚠ CAUTION For vehicles with CAN communication, use the M.U.T.-III main harness A to send simulated vehicle speed. If you connect the M.U.T.-III main harness B instead, the CAN communication does not function correctly. Diagnosis trouble code, service data check
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	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester

Tool	Tool number and name	Supersession	Application
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

EXTERIOR DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1511014600329

Refer to GROUP 00 – Contents of Troubleshooting

[P.00-6.](#)

TROUBLE SYMPTOM CHART

M1511015001516

TROUBLE SYMPTOM	Inspection procedure No.	Reference page
Rear wiper does not work at all.	1	P.51-44
The rear wiper does not stop at the specified park position.	2	P.51-47
When the selector lever is moved to "R" position during the rear wiper operation, the rear wiper does not operate at the continuous mode.	3	P.51-49
The rear washer does not work normally.	4	P.51-50

Inspection Procedure 1: Rear wiper does not work at all.

CAUTION

Whenever ECU is replaced, ensure that the input and output signal circuits are normal.

CIRCUIT OPERATION

The ETACS-ECU operates the rear wiper in accordance with the input signals below.

- Ignition switch (ACC)
- Rear wiper switch

TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not work normally, the input signal circuits from the ignition switch (ACC), the column switch (column-ECU), the rear wiper motor or ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Defective rear wiper motor
- Defective column switch (column-ECU)
- Malfunction of ETACS-ECU
- Malfunctions of the wiring harness and connectors

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Check if an ETACS-related diagnosis trouble code is set.
- (4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the ETACS. (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart [P.54A-218](#).)

NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to OFF.
- (3) Check the input signal related to the rear wiper operation.
 - Turn the ignition switch to the ACC position.

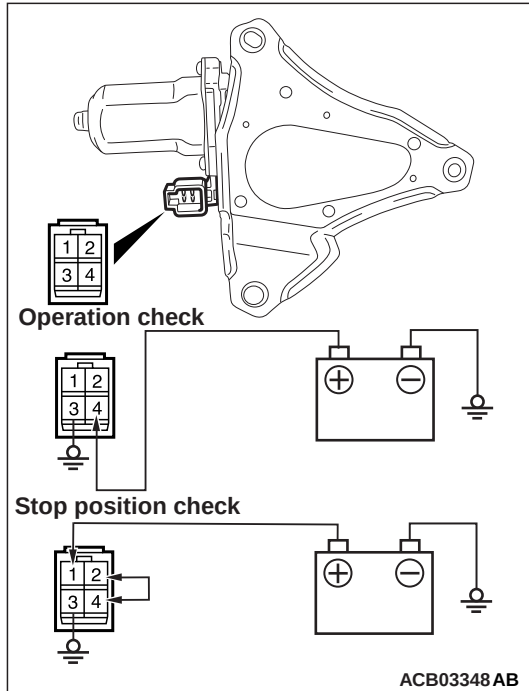
Item No.	Item name	Normal conditions
Item 29	Ignition switch (ACC)	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to GROUP 54A – ETACS, Inspection Procedure 1 "The ignition switch (ACC) signal is not received. [P.54A-240](#)."

**STEP 3. Check the rear wiper motor.**

- (1) Disconnect rear wiper motor connector.
- (2) Connect a battery to the wiper motor as shown in the illustration and inspect the motor operation.

Q: Is the rear wiper motor normal?**YES :** Go to Step 4.**NO :** Replace the rear wiper motor.**STEP 4. Measure the resistance at the rear wiper motor connector (ground terminal).**

- (1) Disconnect the connector, and measure the resistance at the wiring harness.
- (2) Measure the resistance between rear wiper motor connector (ground terminal) and body ground.

OK: Continuity (2Ω or less)**Q: Is the check result normal?****YES :** Go to Step 6.**NO :** Go to Step 5.**STEP 5. Check of open circuit in ground line between rear wiper motor connector and body ground.****Q: Is the check result normal?****YES :** Go to Step 6.**NO :** Repair the connector(s) or wiring harness**STEP 6. Check of short to power supply, short to ground, and open circuit in RR WIP MTR line between rear wiper motor connector and ETACS-ECU connector.****Q: Is the check result normal?****YES :** Go to Step 7.**NO :** Repair the connector(s) or wiring harness

STEP 7. Retest the system.

Check that the rear wiper 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.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 2: The rear wiper does not stop at the specified park position.

⚠ CAUTION

Whenever ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The rear wiper motor or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Defective rear wiper motor
- Malfunction of ETACS-ECU
- Damaged wiring harness and connectors

DIAGNOSIS

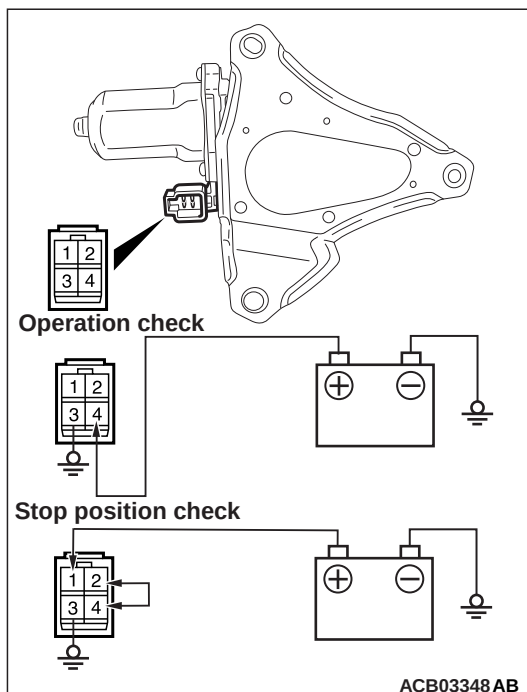
STEP 1. Check the rear wiper motor.

- (1) Disconnect rear wiper motor connector.
- (2) Connect the battery to the rear wiper motor as shown in the illustration.
- (3) Disconnect the battery in the middle of the motor rotation and check to see that the motor stops.
- (4) Reconnect the battery.
- (5) Check to see that the rear wiper motor runs and then stops at the automatic stop position.

Q: Is the rear wiper motor normal?

YES : Go to Step 2.

NO : Replace the rear wiper motor.



STEP 2. Measure the voltage at the rear wiper motor connector (ACC terminal).

- (1) Disconnect the connector, and measure the voltage at the wiring harness-side connector.
- (2) Measure the voltage between rear wiper motor connector (ACC terminal) and body ground.

OK: System voltage**Q: Is the check result normal?****YES :** Go to Step 4.**NO :** Go to Step 3.**STEP 3. Check of short to power supply, short to ground, and open circuit in RR WIP AUTO STP, RR WIP ACC line between rear wiper motor connector and ETACS-ECU connector.****Q: Is the check result normal?****YES :** Go to Step 4.**NO :** Repair the connector(s) or wiring harness.**STEP 4. Using scan tool (M.U.T.-III), check data list.****⚠ CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to OFF.
- (3) Check the input signal related to the rear wiper operation.
 - Ignition switch: ACC or ON
 - When rear wiper is operating

Item No.	Item name	Normal conditions
Item 27	Rear wiper auto stop switch	ON

NOTE: Confirm that the scan tool (M.U.T.-III) displays from "ON" to "OFF" when rear wiper stops at the predetermined park position.

OK: Normal condition is displayed.**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.00-13](#)).**NO :** Replace the ETACS-ECU.

Inspection Procedure 3: When the selector lever is moved to "R" position during the rear wiper operation, the rear wiper does not operate at the continuous mode.

 CAUTION

Whenever ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not operate continuously when the selector lever <CVT> is moved to the R position during the rear wiper operation, the shift position signal input circuit or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the transmission range switch <CVT>
- Malfunction of ETACS-ECU
- Malfunctions of the wiring harness and connectors

DIAGNOSIS

STEP 1. Check the operation of the rear wiper.

Check that the rear wiper system works normally by operating the rear wiper switch.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 1 "Rear wiper does not work at all [P.51-44](#)."

STEP 2. Using scan tool (M.U.T.-III), read the diagnostic trouble code for other system.

 CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Check that the CVT-ECU sets a diagnosis trouble code.
- (4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the CVT-ECU (Refer to GROUP 23A – Diagnosis Trouble Code Chart [P.23A-16](#))

NO : Go to Step 3.

STEP 3. Retest the system.

Check that the rear wiper operates continuously when the selector lever is moved to the R position during the rear wiper operation.

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.00-13](#)).

NO : Replace the ETACS-ECU.

Inspection Procedure 4: The rear washer does not work normally.

** CAUTION**

Whenever ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The input circuit from the rear washer switch, the washer motor or ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Defective washer motor
- Defective column switch
- Malfunction of ETACS-ECU
- Malfunctions of the wiring harness and connectors

DIAGNOSIS

STEP 1. Check that the windshield washers work.

Check that the windshield washers work normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to Inspection Procedure 7 "Windshield washers do not work normally [P.51-31](#)."

STEP 2. Using scan tool (M.U.T.-III), read the diagnostic trouble code.** CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215](#)."
- (2) Turn the ignition switch to ON.
- (3) Check if an ETACS-related diagnosis trouble code is set.
- (4) Turn the ignition switch to OFF.

Q: Is the DTC is set?

YES : Diagnose the ETACS. (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart [P.54A-218](#).)

NO : Go to Step 3.

STEP 3. Using scan tool (M.U.T.-III), check data list.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

- (1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) [P.54A-215.](#)"
- (2) Turn the ignition switch to OFF.
- (3) Check the input signal related to the rear washer operation.
 - Ignition switch: ACC
 - Rear washer switch: ON

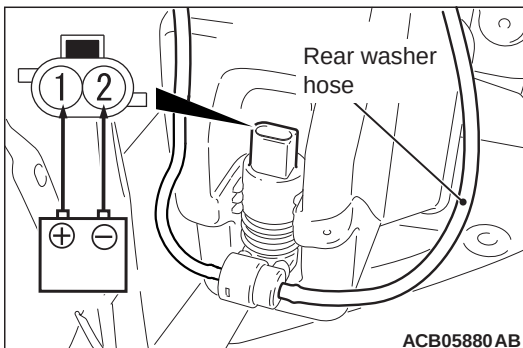
Item No.	Item name	Normal conditions
Item 83	Rear washer	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Refer to GROUP 54A – ETACS, Inspection Procedure 1 "The column switch signal is not received [P.54A-249.](#)"



STEP 4. Check the rear washer motor.

- (1) Disconnect rear washer motor connector.
- (2) The rear washer motor must be checked with the washer tank installed and the washer fluid filled.
- (3) Connect the battery to the washer motor connector as shown. Check that the washer motor delivers washer strongly to the rear washer hose side.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the rear washer motor.

STEP 5. Retest the system.

Check that the rear washer 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.00-13](#)).

NO : Replace the ETACS-ECU.

ON-VEHICLE SERVICE

OPERATION CHECK OF REVERSE GEAR-LINKED OPERATION OF REAR WIPER

M1511022100158

1. When the selector lever is moved to the "R" position with the rear wiper switch at the "INT" position, the wiper should operate two or three times at low speed after approximately one second.

2. If not, carry out the troubleshooting. (Refer to [P.51-49](#))

CUSTOMIZATION FUNCTION

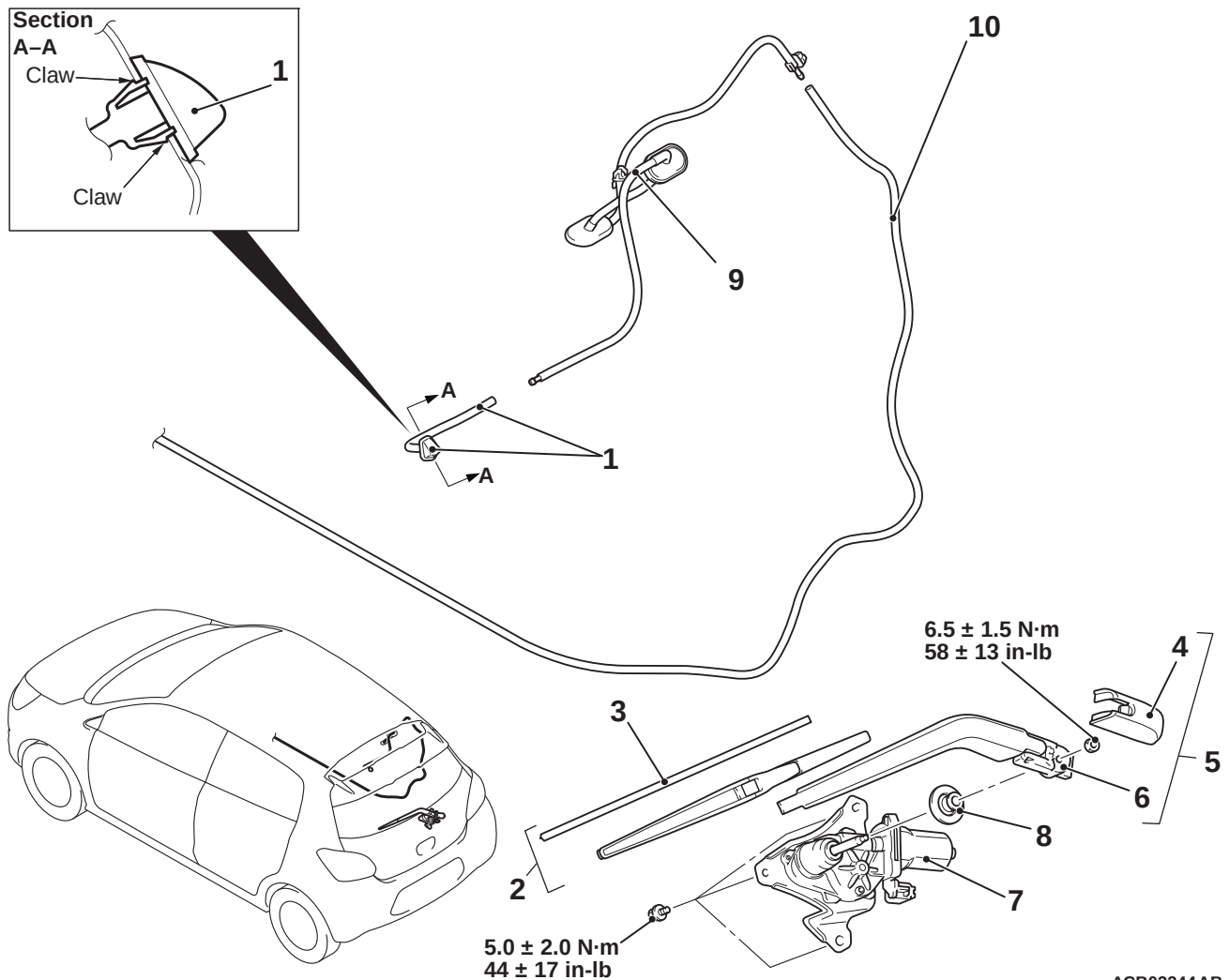
M1511027402268

Using the ETACS system of scan tool (M.U.T.-III), the following functions can be programmed. The programmed information is held even when the battery is disconnected.

Adjustment item (scan tool display)	Adjustment item	Adjusting content (scan tool display)	Adjusting content
Intermittent time of rear wiper	Adjustment of rear wiper interval	8 sec.	8 second (Initial condition)
		4sec/continuous	4 second (With low speed mode)
		8sec/continuous	8 second (With low speed mode)
		16sec/continuous	16 second (With low speed mode)
		0 sec.	0second (Continuous operation)
		4 sec.	4 second
		16 sec.	16 second

REAR WIPER AND WASHER REMOVAL AND INSTALLATION

M1511008501047



ACB03344AB

- Washer tank (Refer to [P.51-39](#))
- Washer motor (Refer to [P.51-39](#))

Rear washer nozzle removal steps

- Liftgate trim upper cap (Refer to GROUP 52A, Liftgate Trim [P.52A-14](#))
- Liftgate spoiler (Refer to [P.51-16](#))

1. Rear washer nozzle assembly

Rear wiper blade removal steps

- >>B<< 2. Rear wiper blade assembly
- >>A<< 3. Rear wiper blade

Rear wiper motor removal steps

- >>B<< 4. Cover
- 5. Rear wiper arm assembly
- 6. Rear wiper arm

Rear wiper motor removal steps (Continued)

- Liftgate trim (Refer to GROUP 52A, Liftgate Trim [P.52A-14](#))
- 7. Rear wiper motor assembly
- 8. Grommet

Rear washer hose removal steps

- Front wheelhouse splash shield (Refer to GROUP 42A, Splash shield [P.42A-10](#))
- Front/rear scuff plate, cowl side trim, quarter trim, rear pillar trim (Refer to GROUP 52A, Interior Trim [P.52A-9](#))
- Liftgate trim upper cap (Refer to GROUP 52A, Liftgate Trim [P.52A-14](#))

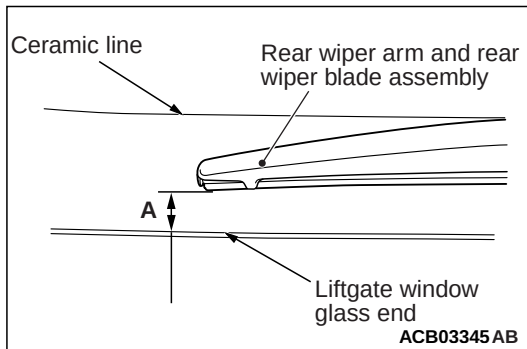
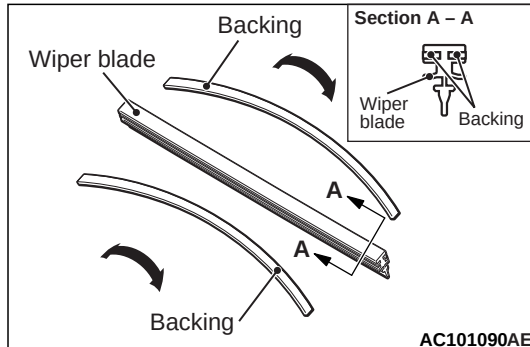
Rear washer hose removal steps (Continued)

9. Rear washer hose (Liftgate side)
10. Rear washer hose (Body side)

NOTE: For removal and installation of the wiper and washer switch, refer to GROUP 54A, Column Switch P.54A-152.

INSTALLATION SERVICE POINTS**>>A<< REAR WIPER BLADE INSTALLATION****⚠ CAUTION**

Use a curved backing like that shown for the backing of a wiper blade to ensure sustained wiper wiping performance.

>>B<< REAR WIPER ARM AND REAR WIPER BLADE ASSEMBLY INSTALLATION

Set the wiper blade so that it stops at the specified position.

(A): 15 to 35mm (0.6 to 1.4 in) from the Liftgate window glass end

M1511019103663

INSPECTION

REAR WIPER MOTOR CHECK

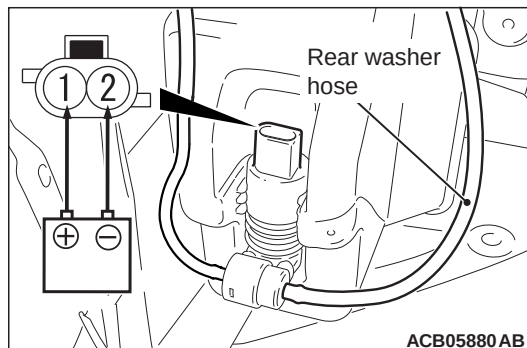
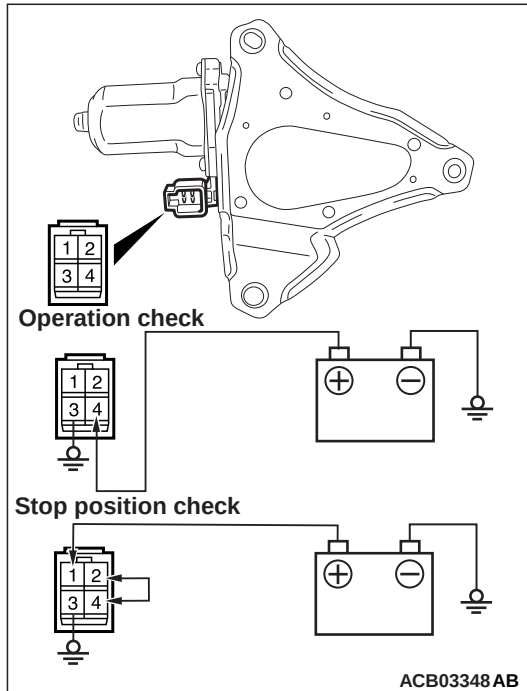
Inspect the rear wiper motor by disconnecting the harness connector with the motor attached to the vehicle.

REAR WIPER MOTOR OPERATION CHECK

Connect the battery to the rear wiper motor to inspect the motor operation as shown in the illustration.

REAR WIPER MOTOR STOP POSITION CHECK

1. Connect the battery to the rear wiper motor as shown in the illustration.
2. Disconnect the battery in the middle of the motor rotation and check to see that the motor stops.
3. Reconnect the battery.
4. Check to see that the rear wiper motor runs and then stops at the automatic stop position.



REAR WASHER MOTOR INSPECTION

1. The rear washer motor must be checked with the washer tank installed and the washer fluid filled.
2. Connect the battery to the washer motor connector as shown. Check that the washer motor delivers washer strongly to the rear washer hose side.

CHECKING THE REAR WASHER NOZZLE INJECTION DIRECTION

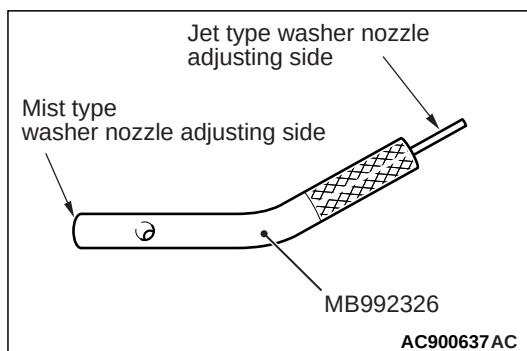
NOTE: Use special tool Adjustment tool, washer nozzle (MB992326) to adjust the splashing points of the nozzle.

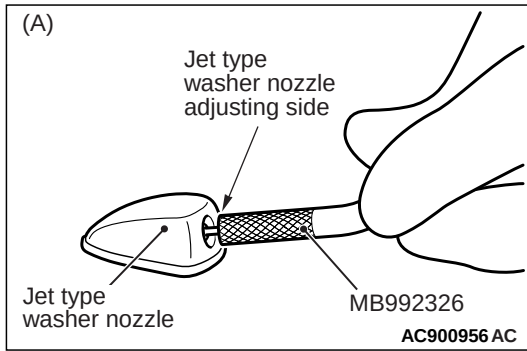
ADJUSTMENT OF THE JET TYPE WASHER NOZZLE INJECTION POSITION

⚠ CAUTION

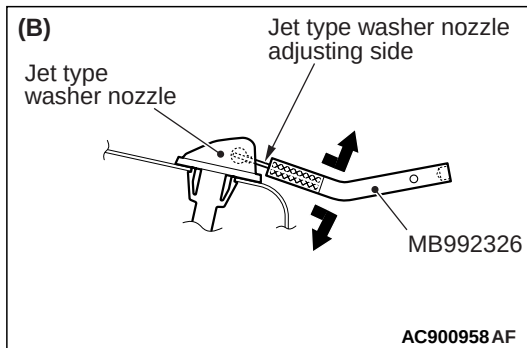
Adjust the splashing position within the specified adjustment range, otherwise the windshield cannot be washed properly.

1. Use special tool Adjustment tool, washer nozzle (MB992326) to adjust the splashing points of the nozzle.





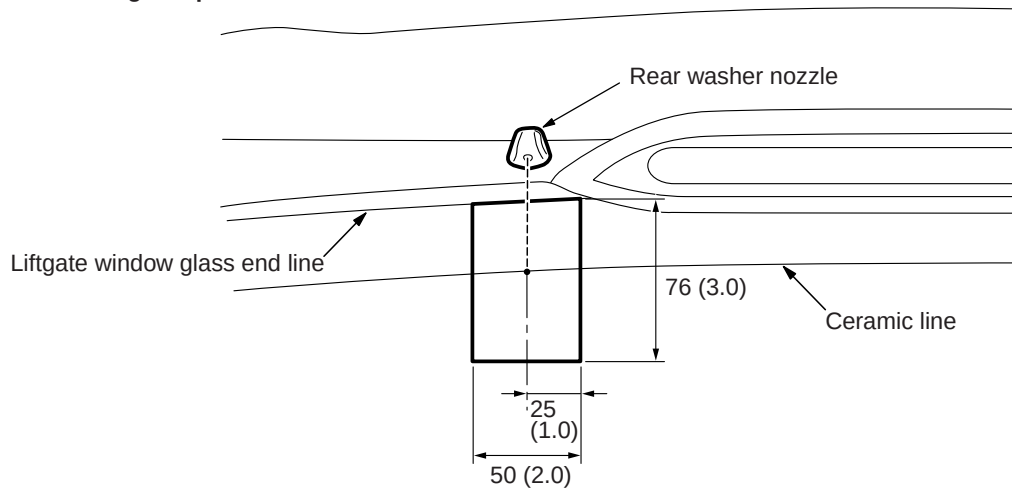
2. Insert the jet type washer nozzle adjusting side of the special tool Adjustment tool, washer nozzle (MB992326) into the injection part of the washer nozzle as shown in figure (A).



3. Move the special tool Adjustment tool, washer nozzle (MB992326) up and down to adjust the angle of the washer nozzle as shown in figure (B).

<Vehicles without Liftgate spoiler>

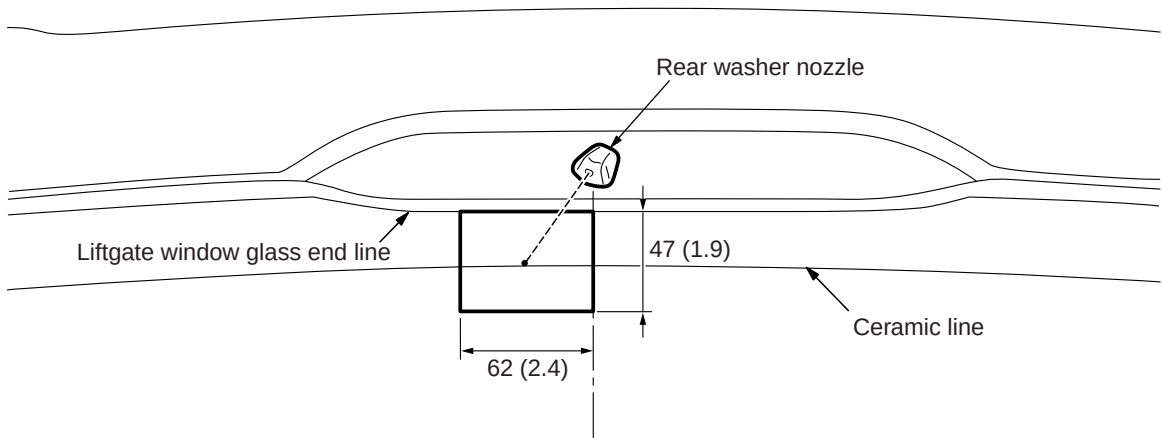
Unit: mm (in)



ACC06296 AB

<Vehicles with Liftgate spoiler>

Unit: mm (in)



ACC06297 AB

CHECKING THE REAR WIPER AND WASHER SWITCH

The rear wiper and washer switch can be checked for proper operation by confirming ETACS diagnostic trouble code. (Refer to GROUP 54A - ETACS [P.54A-218](#))

MARK

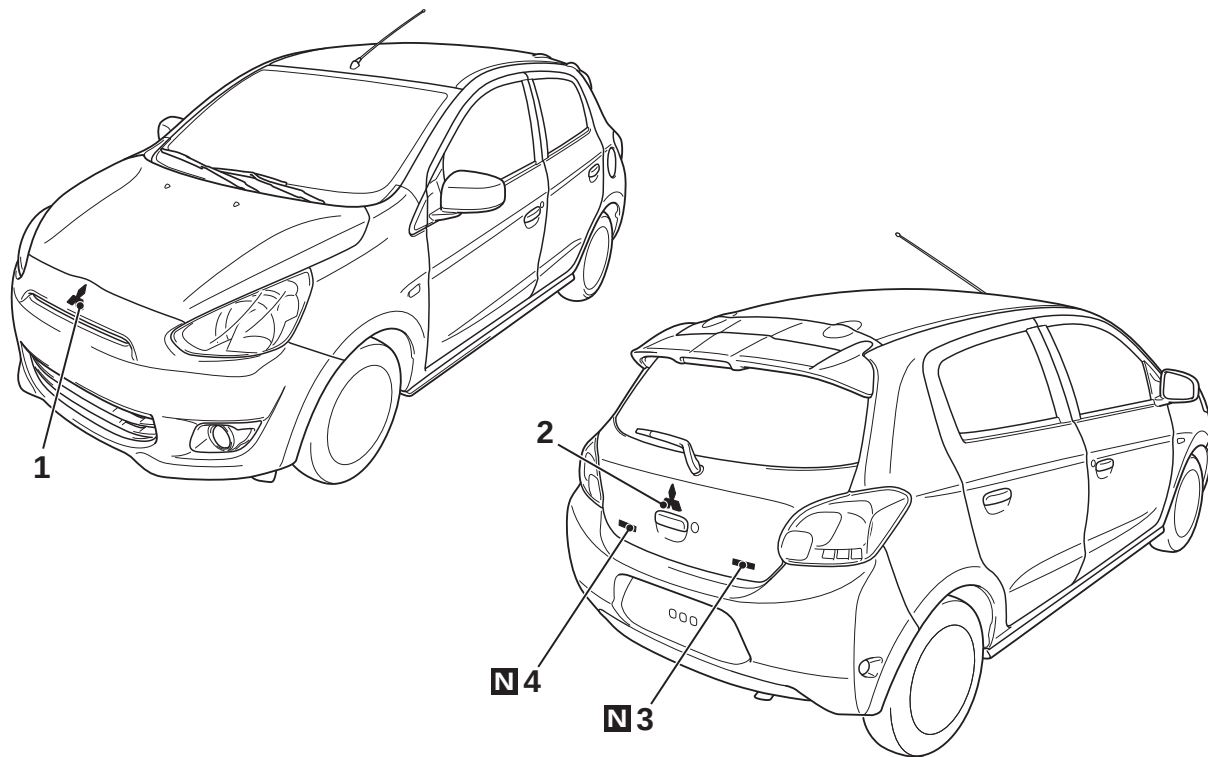
LUBRICANT

M1511000400355

Item		Specified lubricant	Quantity
Degrease agent	Grease and dirt removal from parts surface	Parts cleaner (MZ100387 or equivalent)	As required

REMOVAL AND INSTALLATION

M1511011803936



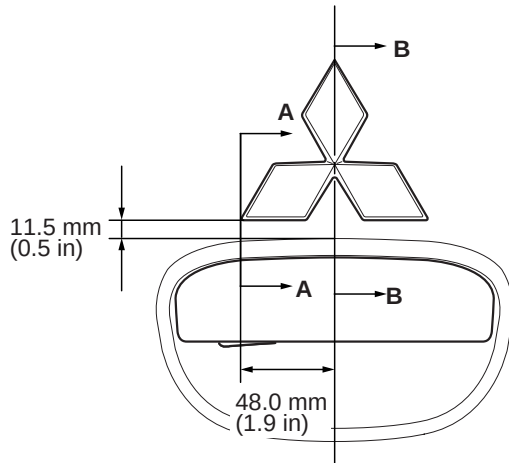
ACC06197AE

- | | | | | | |
|-------|----|------------------------------------|-------|----|---------------------------|
| | 1. | Front three-diamond mark (Refer to | | 3. | MIRAGE mark |
| | | P.51-4.) | >>A<< | 4. | MITSUBISHI mark or MIRAGE |
| >>A<< | 2. | Rear three-diamond mark | | | mark <option> |

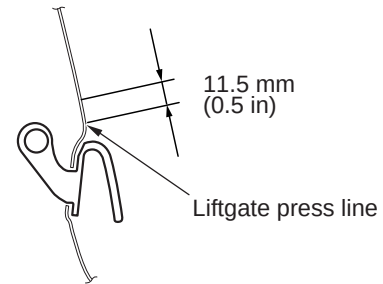
INSTALLATION SERVICE POINT

>>A<< MARK INSTALLATION

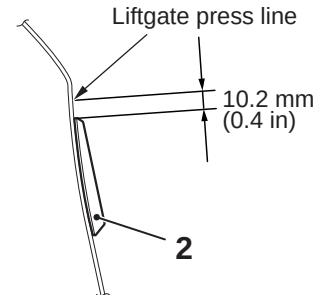
2. Rear three-diamond mark



Section A - A

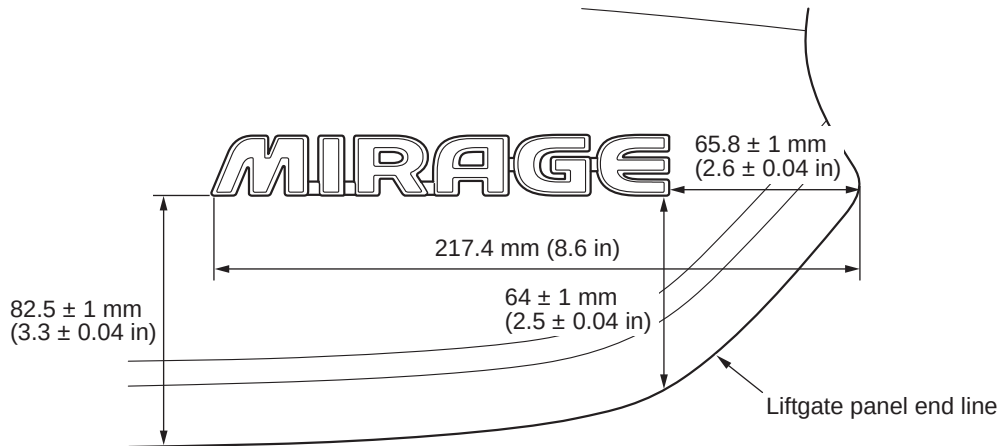


Section B - B



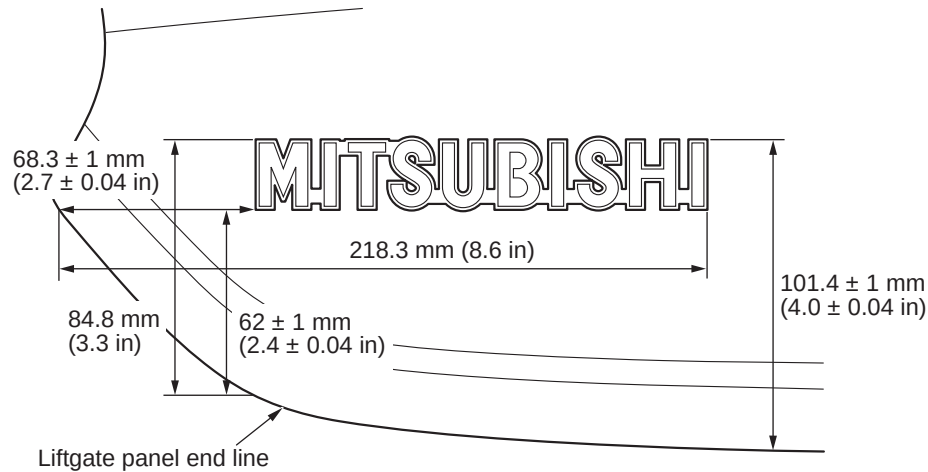
ACB04305 AB

3. MIRAGE mark



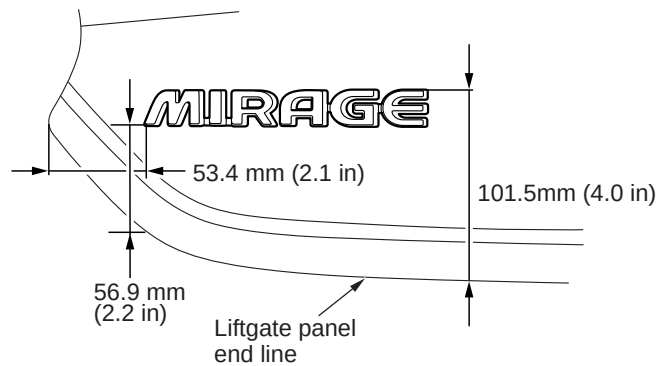
ACC03762 AB

4. MITSUBISHI mark



ACC03231AB

4. MIRAGE mark <option>



ACB04306AF

1. Installation position

Attach each mark to the position shown in the illustration.

2. Installation procedure

- (1) Use Parts Cleaner (MZ100387 or equivalent) to clean the mark installation surfaces on the liftgate.

⚠ CAUTION

When attaching the marks, the ambient temperature should be $20 - 38^{\circ}\text{C}$ ($68 - 100^{\circ}\text{F}$) and the air should be completely free of dust. If the ambient temperature is lower than 20°C (68°F), the marks and the places on the vehicle body where the marks are to be attached should be heated to $20 - 30^{\circ}\text{C}$ ($68 - 86^{\circ}\text{F}$).

- (2) Peel off the protection sheet on the back of the marks to affix it in position.

DOOR MIRROR

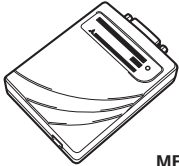
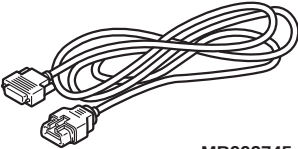
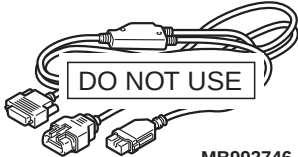
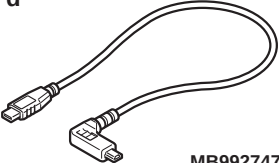
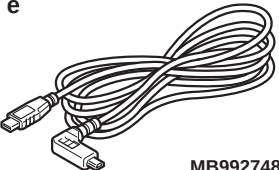
SERVICE SPECIFICATION

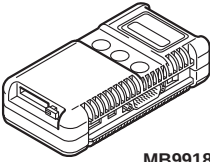
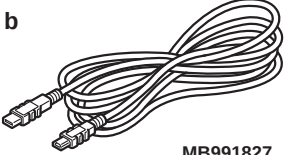
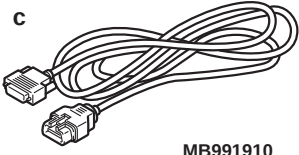
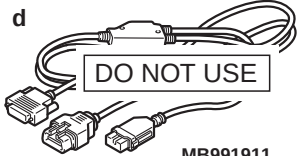
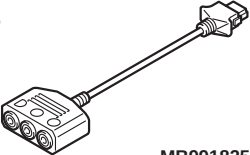
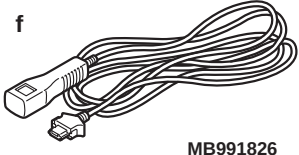
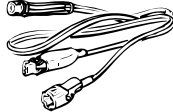
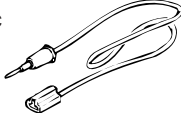
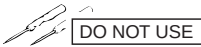
M1511000301629

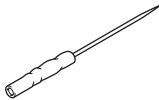
Item	Standard value
Heated door mirror line resistance Ω	10 ± 1.1 at 25°C(77°F)

SPECIAL TOOLS

M1511000603303

Tool	Tool number and name	Supersession	Application
a  MB992744	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	—	Check the vehicle speed-dependent automatic unfolding function of the outside rear-view mirrors
b  MB992745	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication)		
c  MB992746	c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long		
d  MB992747			
e  MB992748 ACB05421AB			

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991825 f  MB991826 MB991955	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 <i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i>	⚠ CAUTION For vehicles with CAN communication, use the M.U.T.-III main harness A to send simulated vehicle speed. If you connect the M.U.T.-III main harness B instead, the CAN communication does not function correctly. Check the vehicle speed-dependent automatic unfolding function of the outside rear-view mirrors
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	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester

Tool	Tool number and name	Supersession	Application
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING STRATEGY

M1511014600578

Diagnosis should be carried out by the following procedures.

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

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1511014600307

Refer to GROUP 00 – Contents of Troubleshooting

[P.00-6](#).

TROUBLE SYMPTOM CHART

M1511015002326

TROUBLE SYMPTOM	Inspection procedure No.	Reference page
None of the heated door mirrors operate.	1	P.51-63
Either of the door mirror heater elements does not work.	2	P.51-64

Inspection Procedure 1: None of the heated door mirrors operate

TECHNICAL DESCRIPTION (COMMENT)

The heated door mirrors should work when the rear defogger switch is turned on. If the mirror heater does not work for the specified period, the defogger relay circuit (heated door mirror power supply circuit) may be defective.

TROUBLESHOOTING HINTS

- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Check the rear window defogger.

Check that the rear window defogger system should work normally. (Refer to GROUP 54A, Printed heater check [P.54A-271.](#))

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 Malfunctions [P.00-13.](#)

NO : Carry out the troubleshooting for the rear window defogger. (Refer to GROUP 54A, Troubleshooting [P.54A-265.](#))

Inspection Procedure 2: Either of the door mirror heater elements does not work.

TECHNICAL DESCRIPTION (COMMENT)

If one of the door mirror heater elements does not work, the power supply or ground to the element, or the element itself may be defective.

TROUBLESHOOTING HINTS

- Door mirror heater elements failed
- Wiring harness or connector failure

DIAGNOSIS

STEP 1. Determine a trouble spot.**Q: Which of door mirror heater elements does not work?**

RH side door mirror : Go to Step 2.

LH side door mirror : Go to Step 8.

STEP 2. Check of the heater element of the door mirror (RH)

Check the heater element of the door mirror (RH).

⚠ CAUTION

When relocating the car between locations with extremely different temperatures (warm and cold), leave the car in the location for a while to adapt to the temperature prior to checking it.

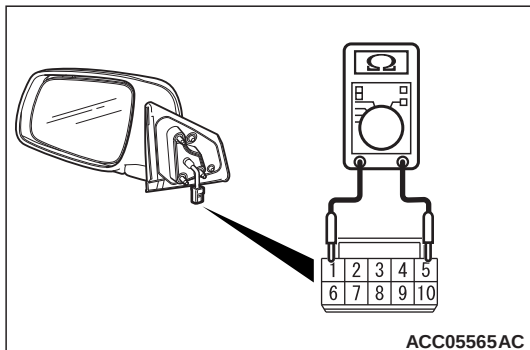
Check that the resistance value between the connector terminals is at the standard value.

Standard value: $10 \pm 1.1 \Omega$ at 25°C (77°F)

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the mirror glass of the door mirror assembly (RH).



STEP 3. Measure the resistance at the door mirror assembly (RH) connector (ground terminal).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Resistance between door mirror assembly (RH) connector (ground terminal) and body ground

OK: Continuity exists (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check of open circuit in ground line between the door mirror assembly (RH) connector and body ground.

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.00-13](#)).

NO : Repair the connector(s) or wiring harness.

STEP 5. Measure the voltage at the door mirror assembly (RH) connector (power supply terminal).

- (1) Turn the ignition switch to the ON position.
- (2) Turn on the rear window defogger switch.
- (3) Disconnect the connector, and measure at the wiring harness side.
- (4) Measure the voltage between door mirror assembly (RH) connector (power supply terminal) and body ground.

OK: System voltage

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.00-13](#)).

NO : Go to Step 6.

STEP 6. Check of short to power supply, short to ground, and open circuit in power supply line between door mirror assembly (RH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector(s) or wiring harness.

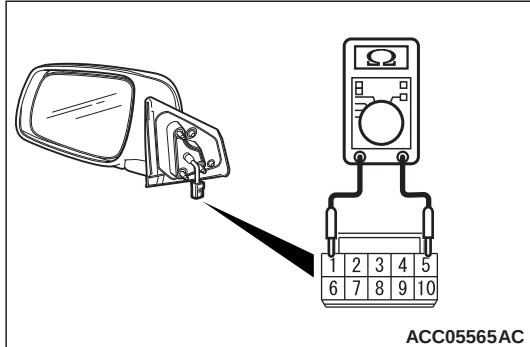
STEP 7. Retest the system.

Check that the heater element of the door mirror (RH) functions 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.00-13](#)).

NO : Replace the door mirror assembly (RH).

**STEP 8. Check of the heater element of the door mirror (LH)**

Check the heater element of the door mirror (LH).

⚠ CAUTION

When relocating the car between locations with extremely different temperatures (warm and cold), leave the car in the location for a while to adapt to the temperature prior to checking it.

Check that the resistance value between the connector terminals is at the standard value.

Standard value: $10 \pm 1.1 \Omega$ at 25°C (77°F)

Q: Is the check result normal?

YES : Go to Step 9.

NO : Replace the mirror glass of the door mirror assembly (LH).

STEP 9. Measure the resistance at the door mirror assembly (LH) connector (ground terminal).

- (1) Disconnect the connector, and measure at the wiring harness side.
- (2) Measure the resistance between door mirror assembly (LH) connector (ground terminal) and body ground.

OK: Continuity exists (2Ω or less)

Q: Is the check result normal?

YES : Go to Step 11.

NO : Go to Step 10.

STEP 10. Check of open circuit in ground line between the door mirror assembly (LH) connector and body ground.

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.00-13](#)).

NO : Repair the connector(s) or wiring harness.

STEP 11. Measure the voltage at the door mirror assembly (LH) connector (power supply terminal).

- (1) Turn the ignition switch to the ON position.
- (2) Turn on the rear window defogger switch.
- (3) Disconnect the connector, and measure at the wiring harness side.
- (4) Voltage between door mirror assembly (LH) connector (power supply terminal) and body ground.

OK: System voltage

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.00-13](#)).

NO : Go to Step 12.

STEP 12. Check of short to power supply, short to ground, and open circuit power supply line between door mirror assembly (LH) connector and ETACS-ECU connector.

Q: Is the check result normal?

YES : Go to Step 13.

NO : Repair the connector(s) or wiring harness.

STEP 13. Retest the system.

Check that the heater element 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.00-13](#)).

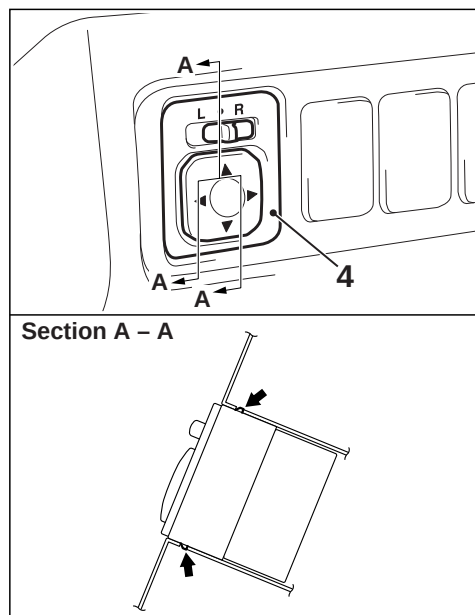
NO : Replace the door mirror assembly (LH).

DOOR MIRROR

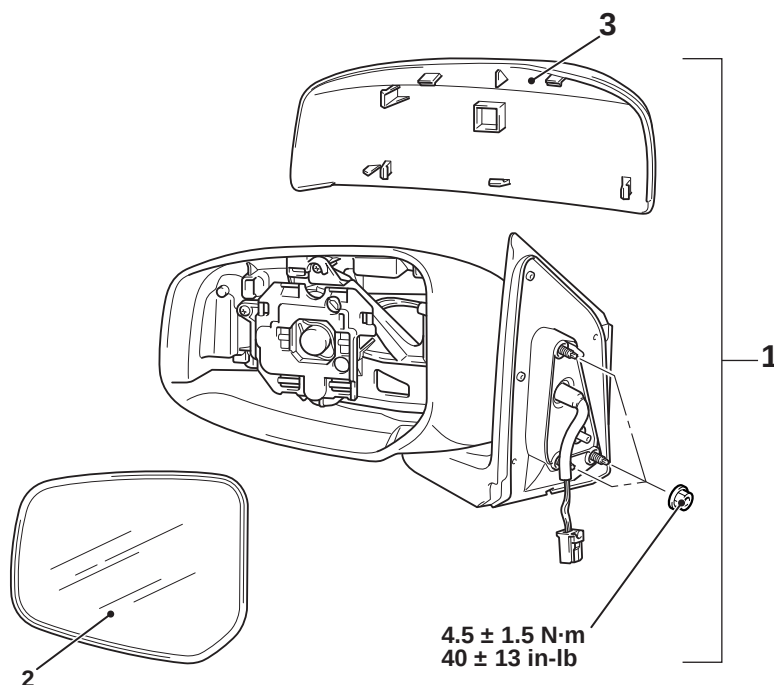
REMOVAL AND INSTALLATION

<Without side turn-signal light>

M1511006401754

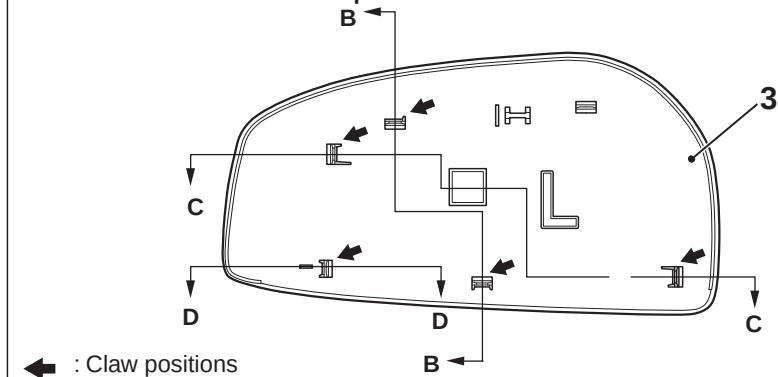


← : Claw positions

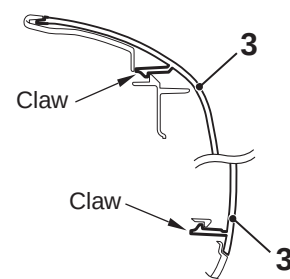


ACC03505AB

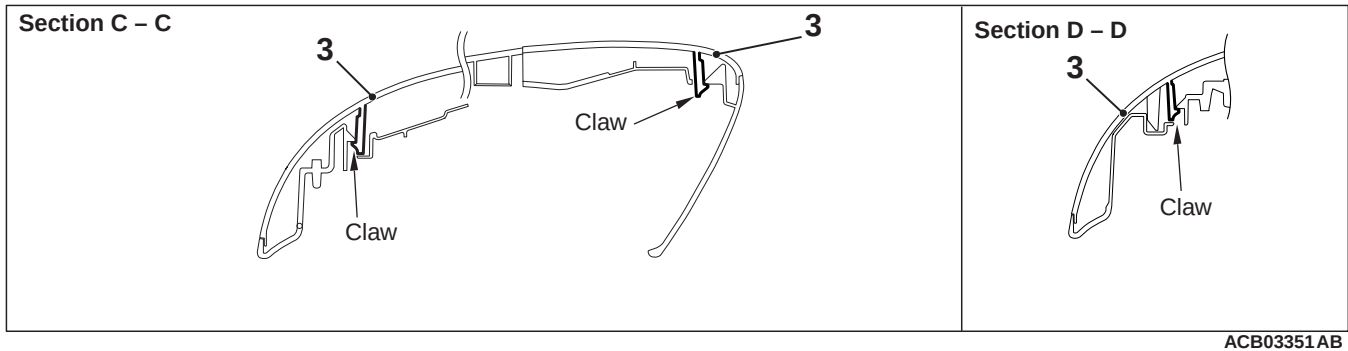
Door mirror outer cover claw positions



Section B - B



ACB03350AB



Door mirror assembly removal steps

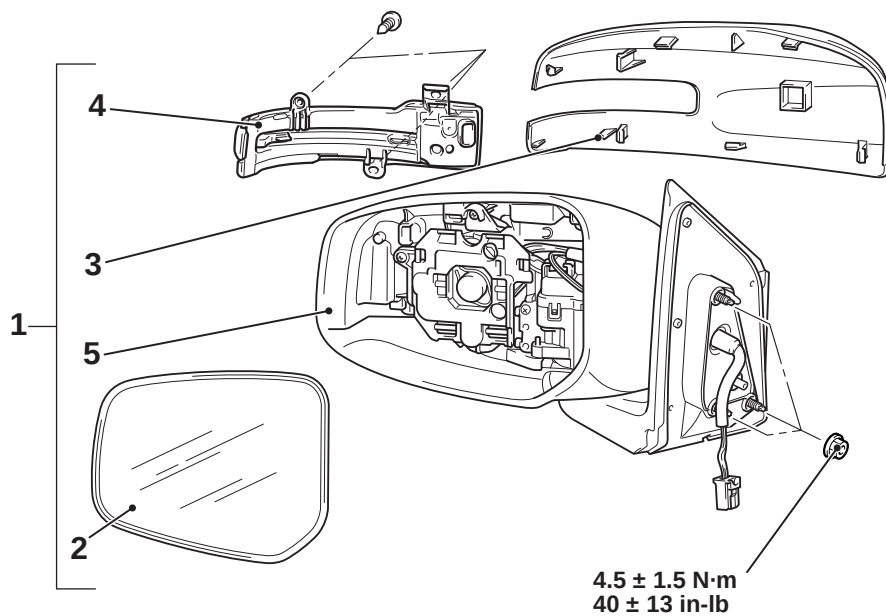
- Front door delta inner cover (Refer to GROUP 52A, Door Trim [P.52A-11](#))
 - Door mirror connector connection
1. Door mirror assembly
 2. Mirror
 3. Door mirror outer cover

Door mirror outer cover removal steps

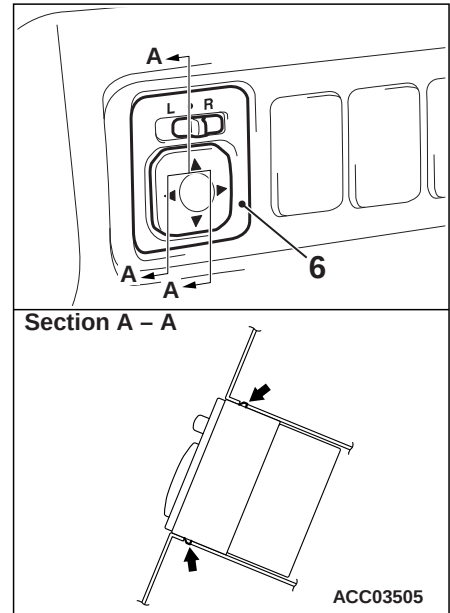
Remote controlled mirror switch removal steps

- Instrument panel under cover (Refer to group 52A, Instrument panel assembly [P.52A-2.](#))
4. Remote controlled mirror switch

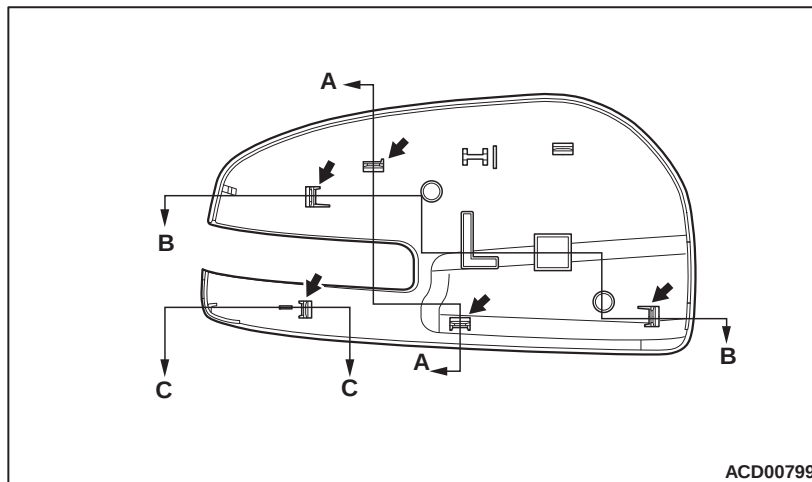
<With side turn-signal light>



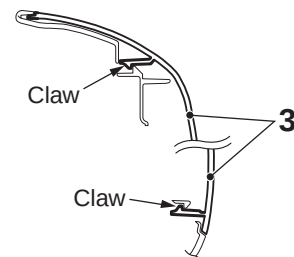
ACD00798



← : Claw positions



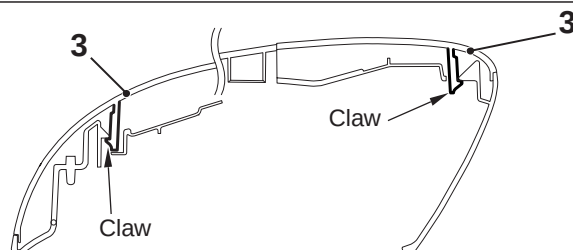
Section A - A



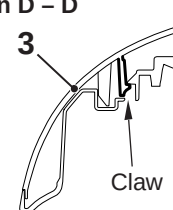
ACD00810

ACD03086AC

Section C - C



Section D - D



ACB03351AB

Door mirror assembly removal steps

- Front door delta inner cover (Refer to GROUP 52A, Door Trim [P.52A-11](#)) <<A>>

Door mirror assembly removal steps (Continued)

- Door mirror connector connection
1. Door mirror assembly

**Door mirror outer cover removal
steps**

- <>
<<C>> >>A<<
2. Mirror
 3. Door mirror outer cover
 4. Side turn-signal light assembly
 5. Door mirror housing

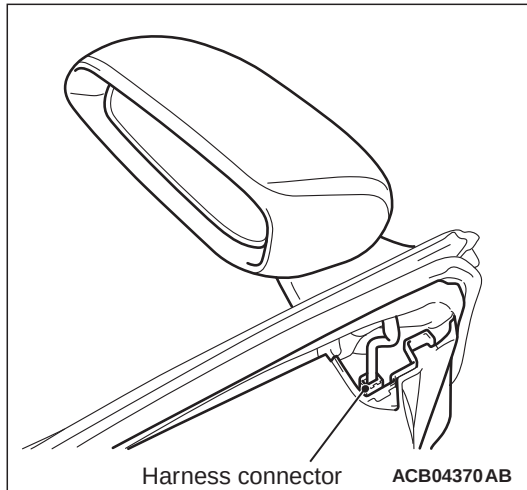
**Remote controlled mirror switch
removal steps**

- Instrument panel under cover
(Refer to group 52A, Instrument
panel assembly [P.52A-2](#))
- 6. Remote controlled mirror switch

REMOVAL SERVICE POINTS

**<<A>> DOOR MIRROR CONNECTOR CONNEC-
TION REMOVAL**

1. The door mirror can be removed and installed without removing the front door trim.
2. The front door delta inner cover must be removed to gain access to the door mirror connector as it is located inside the front door trim.

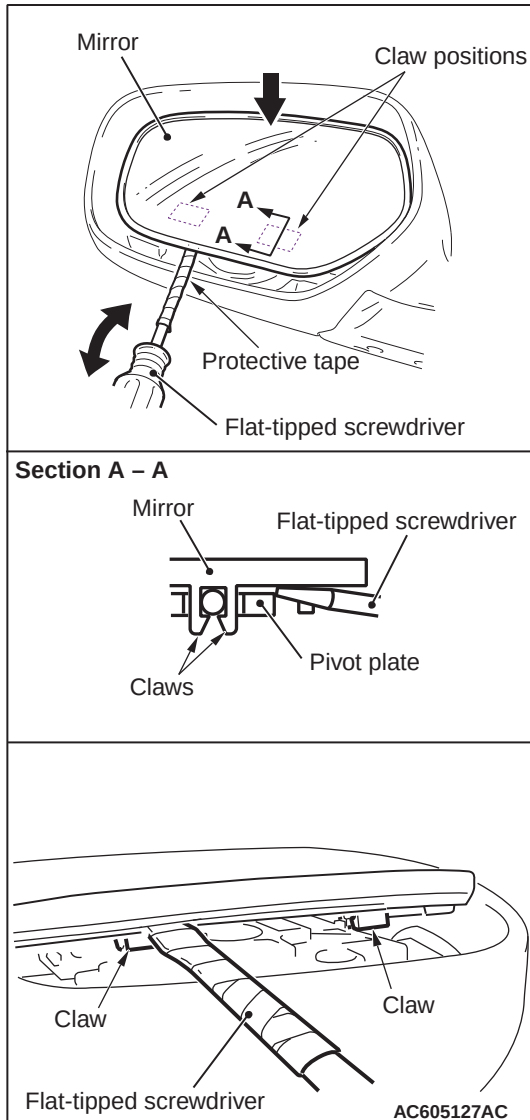


<> MIRROR REMOVAL

⚠ CAUTION

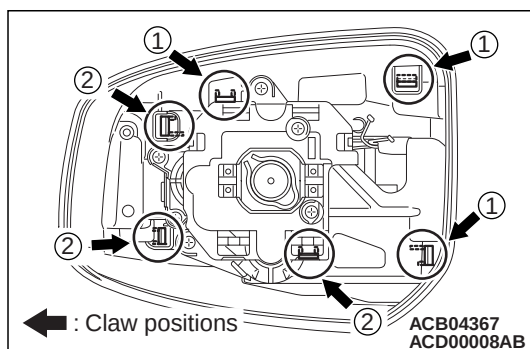
The tab of the mirror is prone to breakage when working in cold temperatures. Always use a hair drier or the like to warm up the mirror tab and its periphery to 20°C (68°F) or higher prior to works. When the mirror is heated too quickly from its cold state, it may be broken.

1. Slant the mirror upward with your hands. Then insert a flat-tipped screwdriver wrapped with protective tape between the pivot plate and mirror through the cut-out from behind the mirror. Now pry off the mirror tab and release the lower side of the mirror as shown in the illustration.
2. Release the upper side of the mirror from the tab as shown while pulling out the mirror.



<<C>> DOOR MIRROR OUTER COVER REMOVAL

Remove the door mirror outer cover by disengaging the claws in the numerical order of the illustration from the mirror body side.



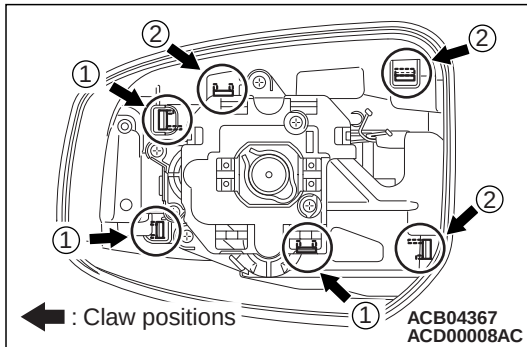
INSTALLATION SERVICE POINT

>>A<< DOOR MIRROR OUTER COVER INSTALLATION

⚠ CAUTION

Tap the claw positions securely to confirm that they are engaged securely.

Install the door mirror outer cover by engaging the claws in the numerical order of the illustration.

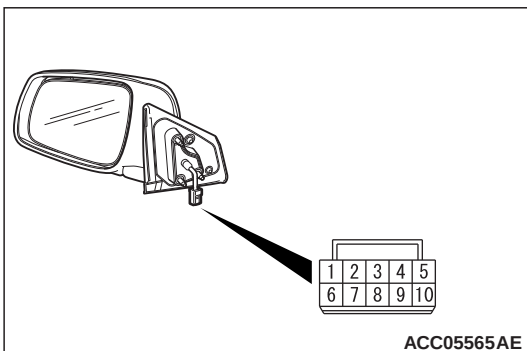


INSPECTION

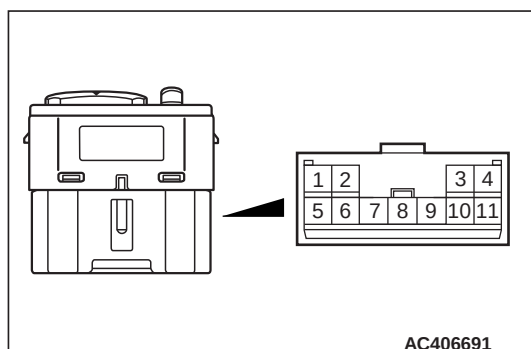
M1511006500866

DOOR MIRROR OPERATION CHECK

Check that the mirror moves as described in the table when each terminal is connected to the battery.



Battery connection	Direction operation
- Connect terminal 8 to the negative battery terminal. - Connect terminal 6 to the positive battery terminal.	Up
- Connect terminal 8 to the positive battery terminal. - Connect terminal 6 to the negative battery terminal.	Down
- Connect terminal 8 to the negative battery terminal. - Connect terminal 7 to the positive battery terminal.	Right
- Connect terminal 8 to the positive battery terminal. - Connect terminal 7 to the negative battery terminal.	Left

DOOR MIRROR CONTROL SWITCH CONTINUITY
CHECK

Switch position		Tester connection	Specified condition
OFF		9 – 2, 9 – 3, 9 – 6, 9 – 10, 9 – 11, 1 – 2, 1 – 3, 1 – 6, 1 – 10, 1 – 11	Open circuit
Left side	OFF	9 – 6, 9 – 10, 9 – 11, 1 – 6, 1 – 10, 1 – 11	Open circuit
	Up	1 – 6, 9 – 11	Continuity (Less than 2 ohms)
	Down	1 – 11, 6 – 9	
	Right	1 – 6, 9 – 10	
	Left	1 – 10, 6 – 9	
Right side	OFF	9 – 2, 9 – 3, 9 – 6, 1 – 2, 1 – 3, 1 – 6	Open circuit
	Up	1 – 6, 3 – 9	Continuity (Less than 2 ohms)
	Down	1 – 3, 6 – 9	
	Right	1 – 6, 2 – 9	
	Left	1 – 2, 6 – 9	

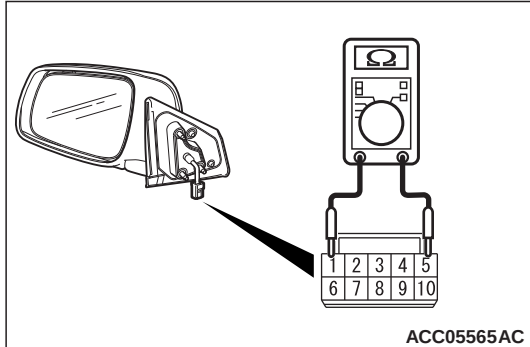
HEATED DOOR MIRROR CHECK

⚠ CAUTION

When relocating the car between locations with extremely different temperatures (warm and cold), leave the car in the location for a while to adapt to the temperature prior to checking it.

Check that the resistance value between the connector terminals is at the standard value.

Standard value: $10 \pm 1.1 \Omega$ at 25°C (77°F)



NOTES