

POWER WINDOWS

GENERAL DESCRIPTION CONCERNING THE POWER WINDOWS

M1549021900385

The following ECUs affect the functions and control of the power windows.

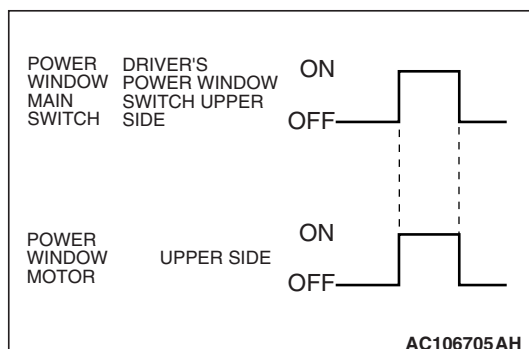
FUNCTION		CONTROL ECU
Power window main switch function	Raises the driver's power window	Power window main switch
	Lowers the driver's power window	Power window main switch
	Lowers the driver's power window by one-touch down function	Power window main switch
	Raises the passenger's power window	Power window main switch
	Lowers the passenger's power window	Power window main switch
Power window sub switch function	Raises the passenger's power window	Power window sub switch
	Lowers the passenger's power window	Power window sub switch
Power window timer function		ETACS-ECU

POWER WINDOW MAIN SWITCH FUNCTION

The main switch is located on the driver's door.

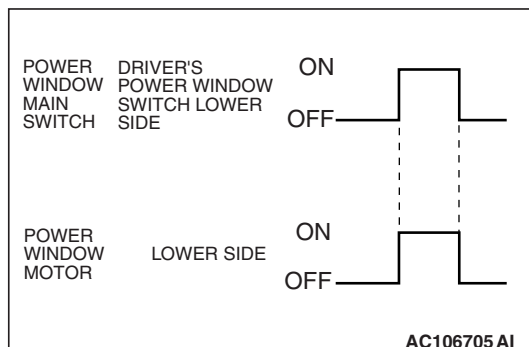
Raises the driver's power window

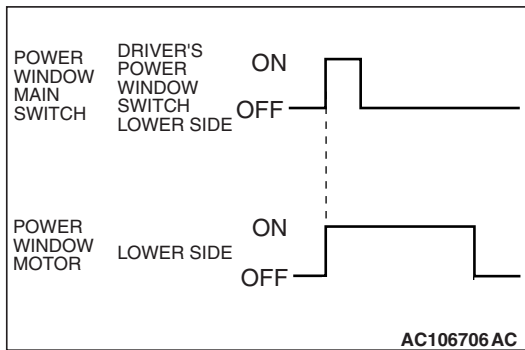
When the driver's power window switch on the power window main switch is pulled up, the system energizes its respective power window motor, and then the driver's window glass rises.



Lowers the driver's power window

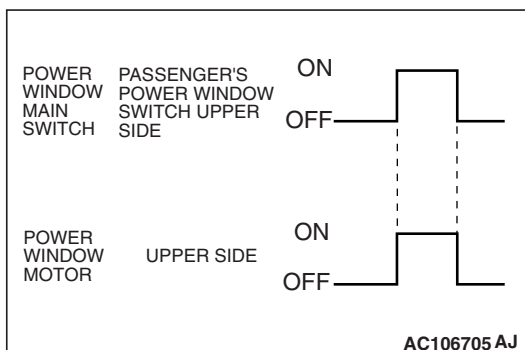
When the driver's power window switch on the power window main switch is pushed down, the system energizes its respective power window motor, and then the driver's window glass lowers.





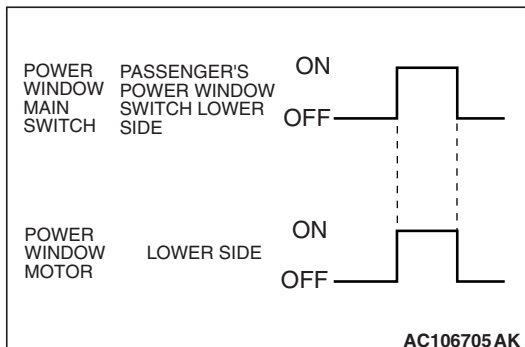
Lowers the driver's power window by one-touch down function

When the driver's power window switch on the power window main switch is pushed down fully, the system energizes its respective power window motor, and then the driver's window glass moves to its lowest position.



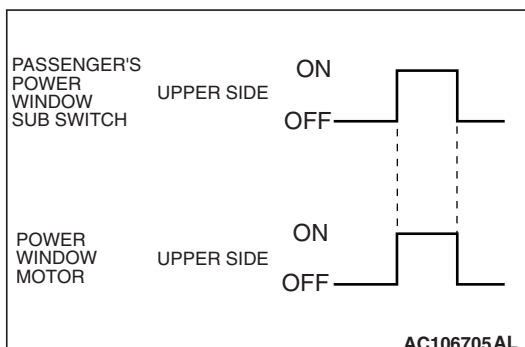
Raises the passenger's power window

When the passenger's power window switch on the power window main switch is pulled up, the system energizes its respective power window motor, and then the passenger's window glass rises.



Lowers the passenger's power window

When the passenger's power window switch on the power window main switch is pushed down, the system energizes its respective power window motor, and then the passenger's window glass lowers.

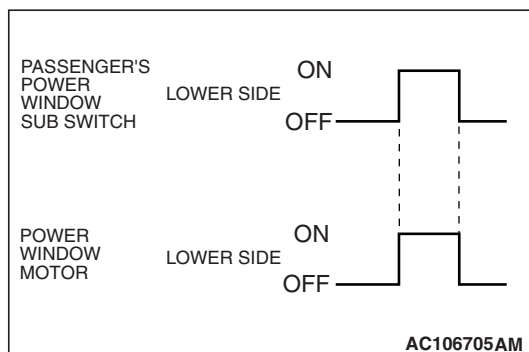


POWER WINDOW SUB SWITCH FUNCTION

The sub switches are located on the passenger's doors.

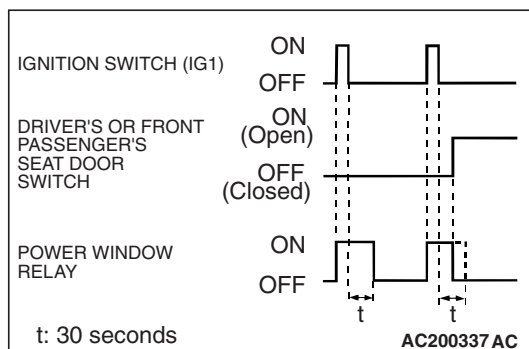
Raises the passenger's power window

When the power window sub switch is pulled up, the system energizes its respective power window motor, and then the passenger's window glass rises.



Lowest the passenger's power window

When the power window sub switch is pushed down, the system energizes its respective power window motor, and then the passenger's window glass lowers.

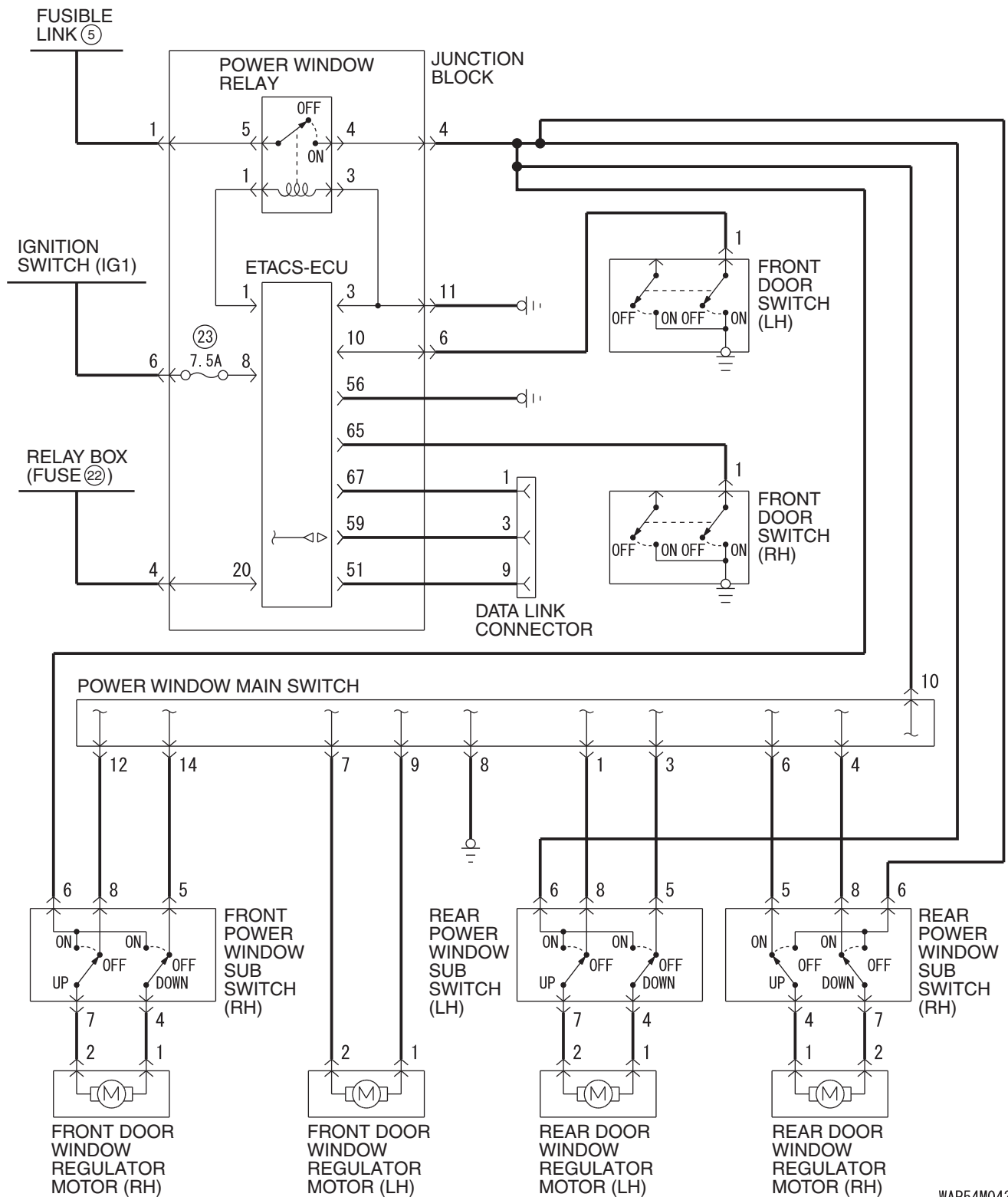


Power window timer function

Even after the ignition is switched off, the ETACS-ECU keeps the power window relay activated for approximately 30 seconds, enabling raising and lowering of the power windows by using the power window switches. After approximately 30 seconds, the power window relay is deactivated.

During this timed operation, if the driver or passenger doors are opened, the power window relay is deactivated from that moment.

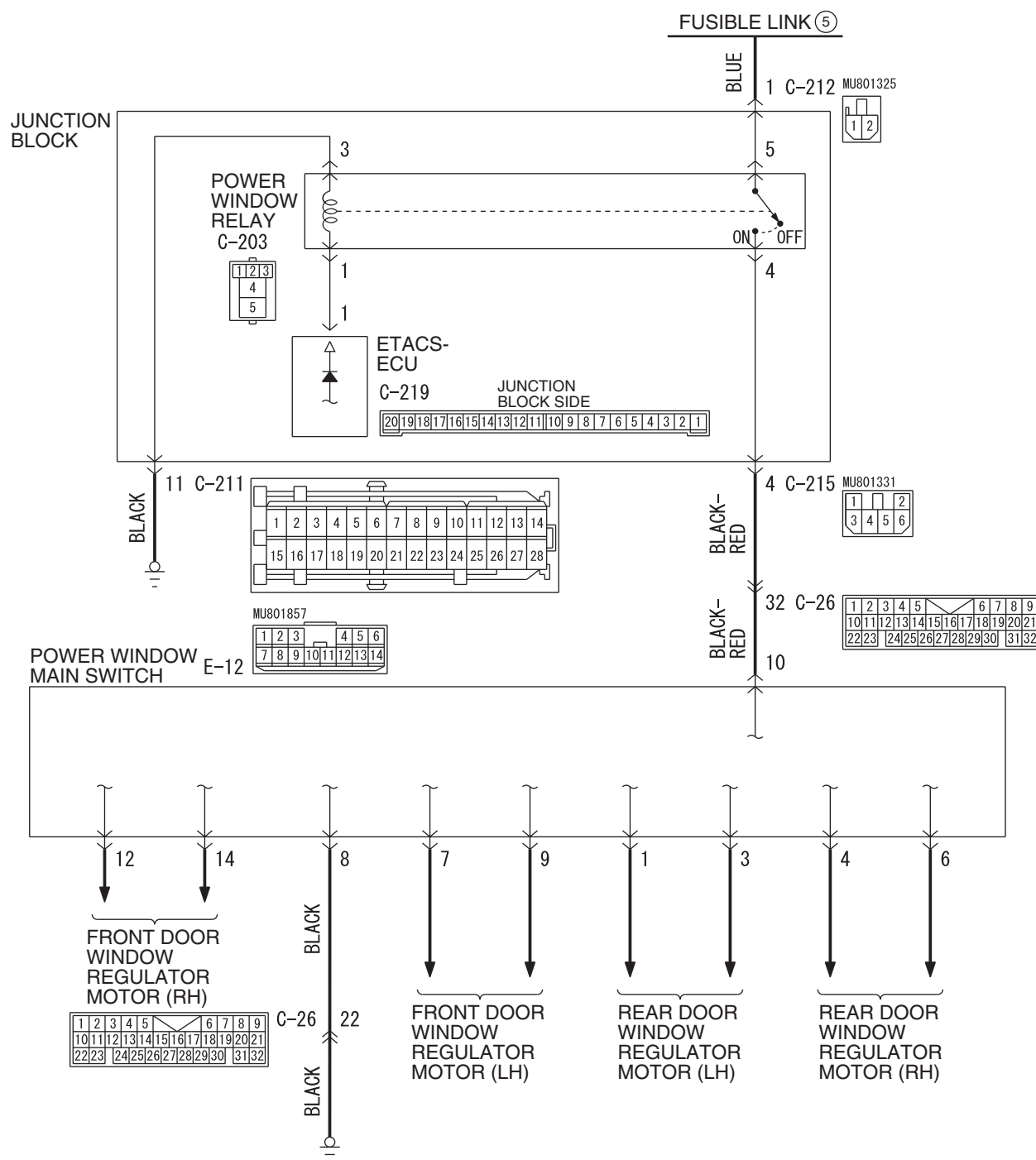
GENERAL CIRCUIT DIAGRAM FOR THE POWER WINDOWS

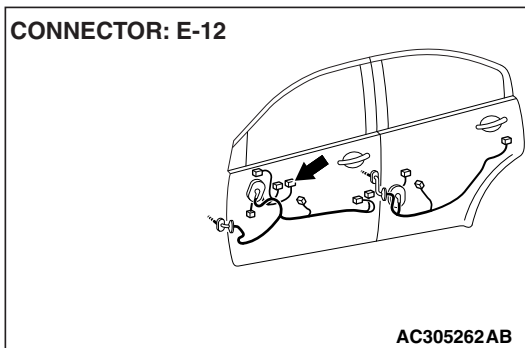
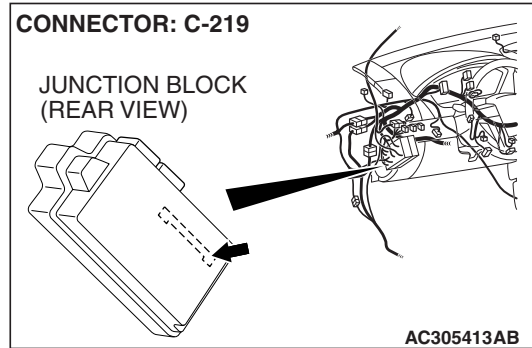
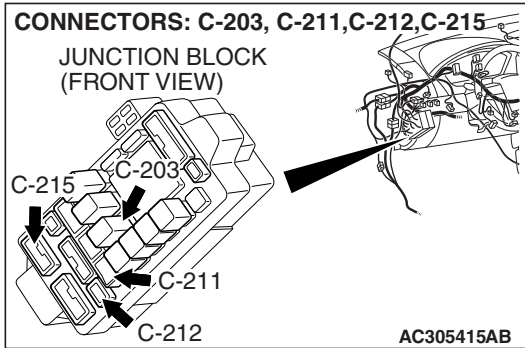
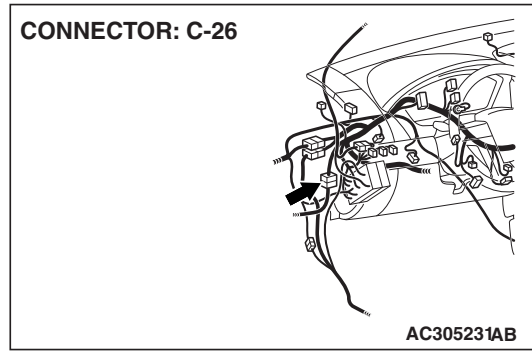
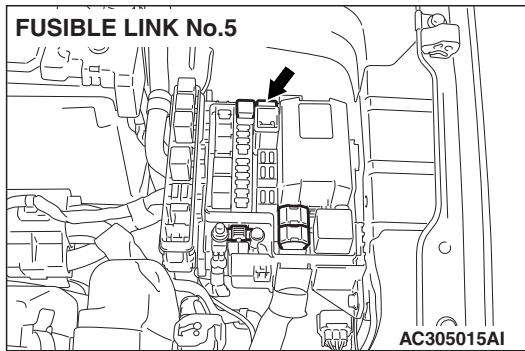


WAP54M043A

INSPECTION PROCEDURE D-1: Power Windows: Power windows do not work at all.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-15."

Power Window Relay Circuit



CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

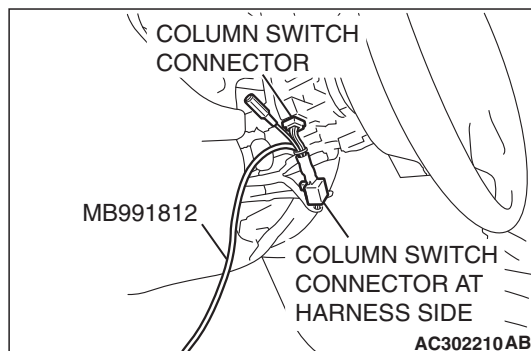
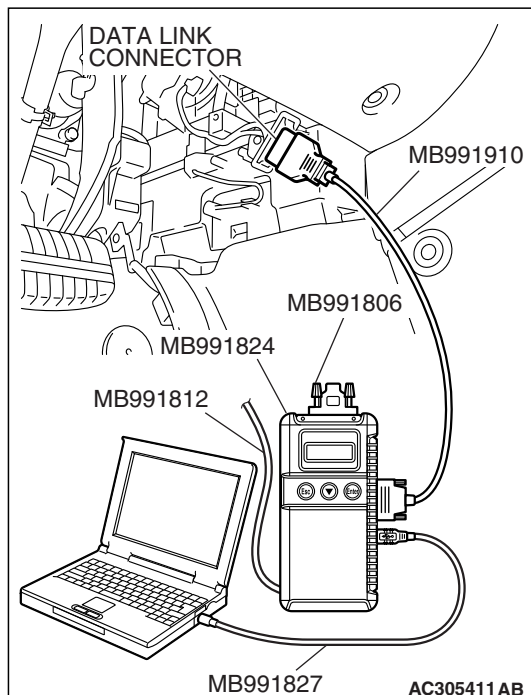
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

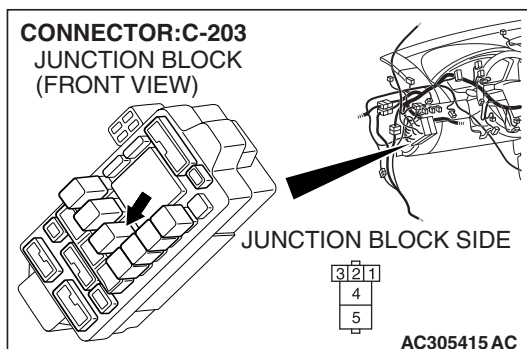
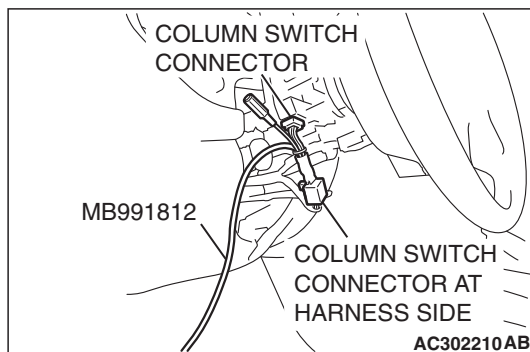
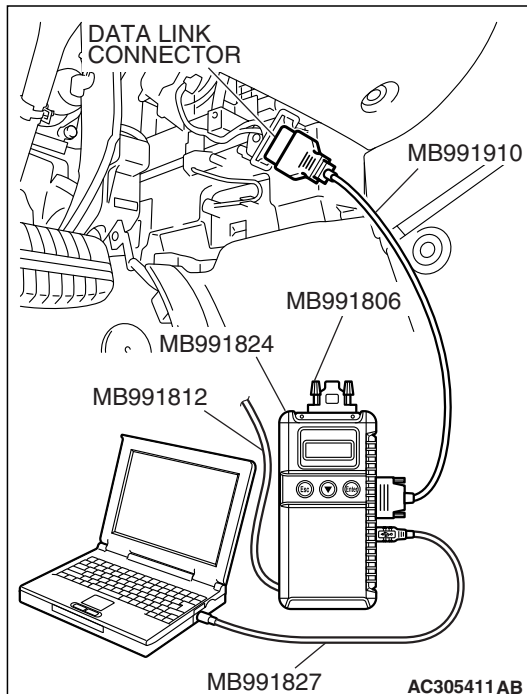
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-13."
- (2) Turn the ignition switch to the "ON" position.
- (3) Operate the scan tool MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System Select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-79."





STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Turn the ignition switch to the "ON" position before checking input signals from the ignition switch (IG1).

- (1) Operate the scan tool MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System Select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."

- (2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON

Q: Does the scan tool MB991958 display "IG SW (IG1)" as normal condition?

YES : Go to Step 3.

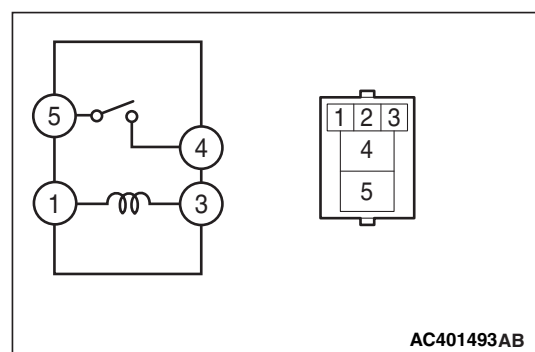
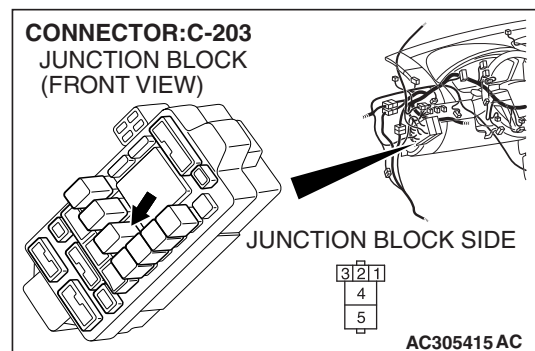
NO : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) [P.54B-500.](#)"

STEP 3. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window relay connector C-203 in good condition?

YES : Go to Step 4.

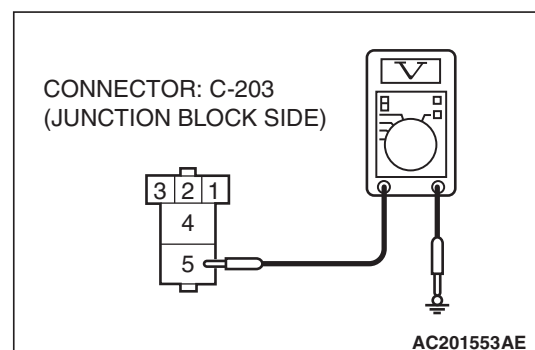
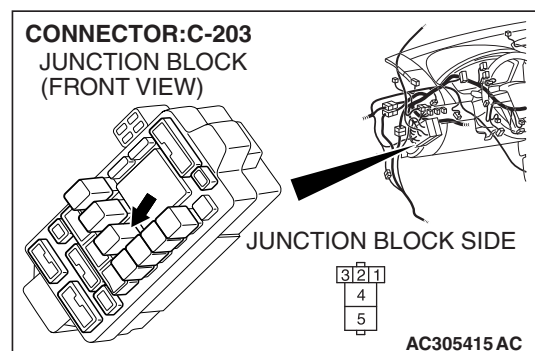
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The power windows function should now work normally.

**STEP 4. Check the power window relay.**

BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 -5	Open circuit
<ul style="list-style-type: none"> Connect terminal 1 to the positive battery terminal Connect terminal 3 to the negative battery terminal 	4 -5	Continuity exists (2 ohms or less)

Q: Is the power window relay normal?**YES :** Go to Step 5.**NO :** Replace the power window relay. Verify that the power windows work normally.**STEP 5. Check the battery power supply circuit to the power window relay. Measure the voltage at power window relay connector C-203.**

(1) Disconnect power window relay connector C-203 and measure the voltage available at the junction block side of the connector.



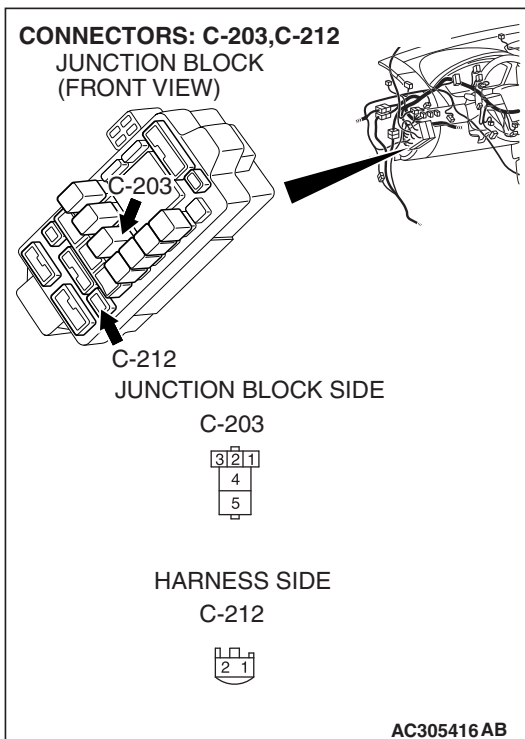
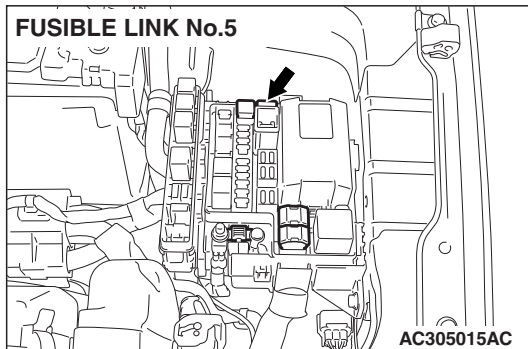
(2) Measure the voltage between terminal 5 and ground.

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

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?**YES :** Go to Step 7.**NO :** Go to Step 6.

STEP 6. Check the wiring harness between power window relay connector C-203 (terminal 5) and fusible link (5).

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

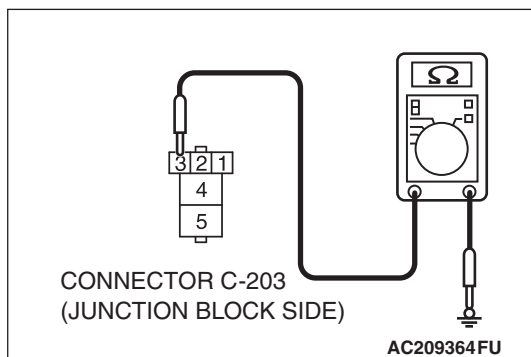
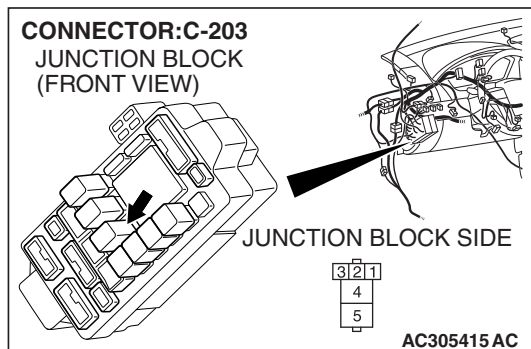


NOTE: Also check junction block connector C-212 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connector C-212 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between power window relay connector C-203 (terminal 5) and fusible link (5) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.



STEP 7. Check the ground circuit to the power window relay. Measure the resistance at power window relay connector C-203.

- (1) Disconnect power window relay connector C-203 and measure the resistance available at the junction block side of the connector.

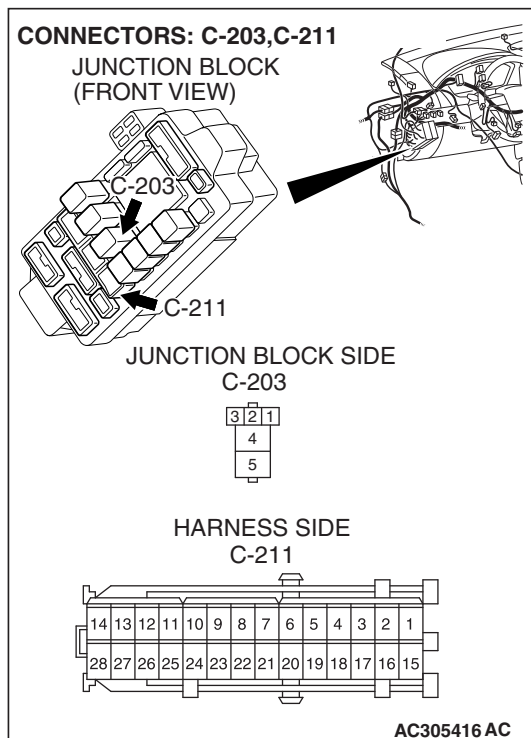
- (2) Measure the resistance value between terminal 3 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 9.

NO : Go to Step 8.



STEP 8. Check the wiring harness between power window relay connector C-203 (terminal 3) and ground.

- Check the ground wire for open circuit.

NOTE: Also check junction block connector C-211 for loose, corroded or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between power window relay connector C-203 (terminal 3) and ground in good condition?

YES : No action is necessary and testing is complete.

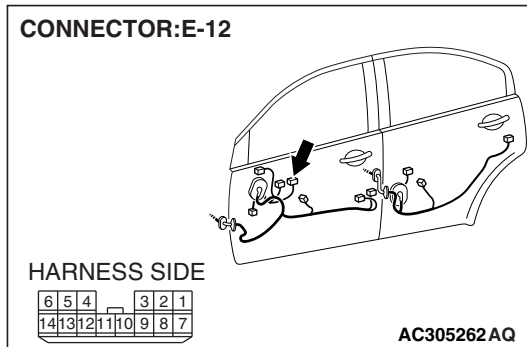
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.

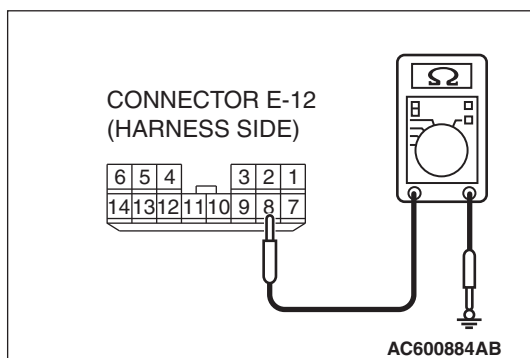
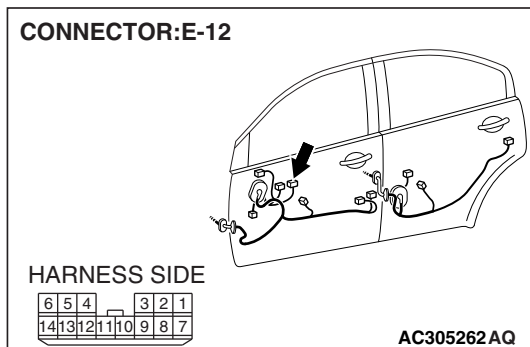
STEP 9. Check power window main switch connector E-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-12 in good condition?

YES : Go to Step 10.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The power windows function should now work normally.





STEP 10. Check the ground circuit to the power window main switch. Measure the resistance at power window main switch connector E-12.

(1) Disconnect power window main switch connector E-12 and measure the resistance available at the harness side of the connector.

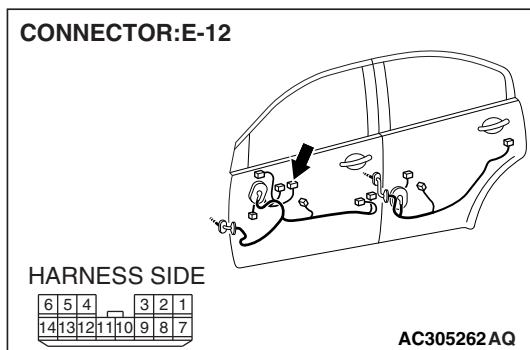
(2) Measure the resistance value between terminal 8 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

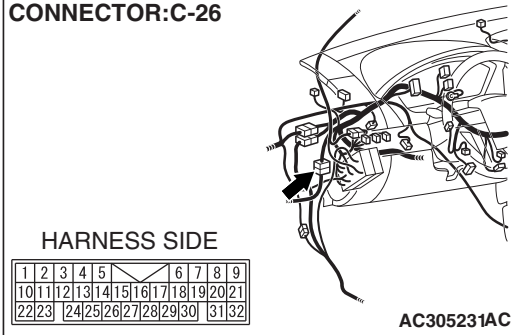
NO : Go to Step 11.



STEP 11. Check the wiring harness between power window main switch E-12 (terminal 8) and ground.

- Check the ground wire for open circuit.

CONNECTOR:C-26



NOTE: Also check intermediate connectors C-26 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connector C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between power window main switch connector E-12 (terminal 8) and ground in good condition?

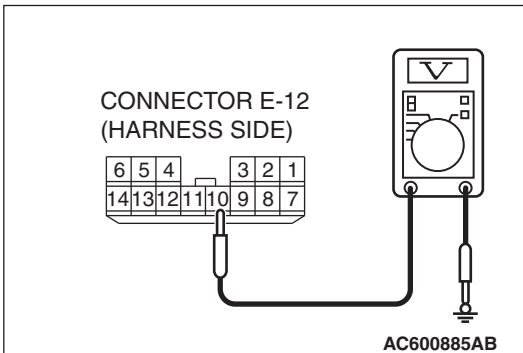
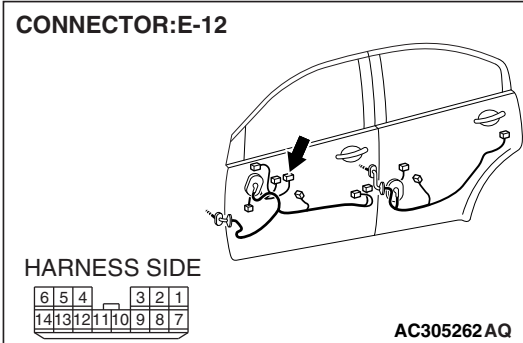
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.

STEP 12. Check the battery power supply circuit to the power window main switch. Measure the voltage at power window main switch connector E-12.

- (1) Disconnect power window main switch connector E-12 and measure the voltage available at the harness side of the connector.
- (2) Turn the ignition switch to "ON" position.

CONNECTOR:E-12

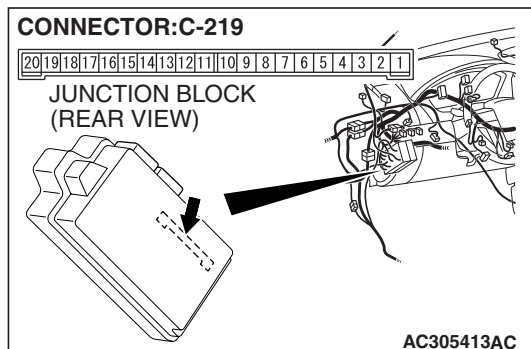


- (3) Measure the voltage between terminal 10 and ground.
 - The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Replace the power window main switch. The power windows function should now work normally.

NO : Go to Step 13.

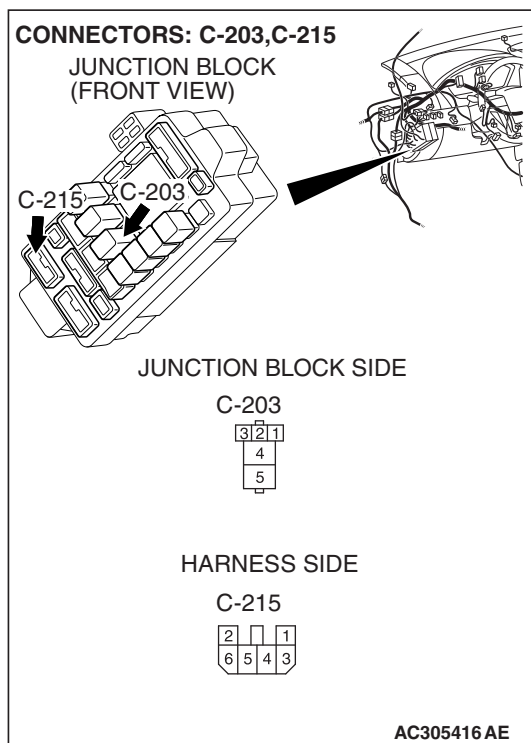


STEP 13. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-219 in good condition?

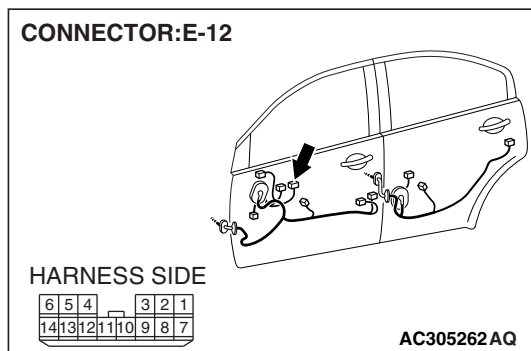
YES : Go to Step 14.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The power windows function should now work normally.

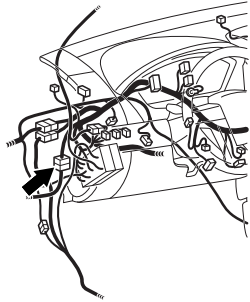


STEP 14. Check the wiring harness between power window relay connector C-203 (terminal 4) and power window main switch connector E-12 (terminal 10).

- Check the communication lines for open circuit and short circuit.



CONNECTOR:C-26



HARNESS SIDE

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32				

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NOTE: Also check junction block connector C-215 and intermediate connectors C-26 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connector C-215 or intermediate connector C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector C-203 (terminal 4) and power window main switch connector E-12 (terminal 10) in good condition?

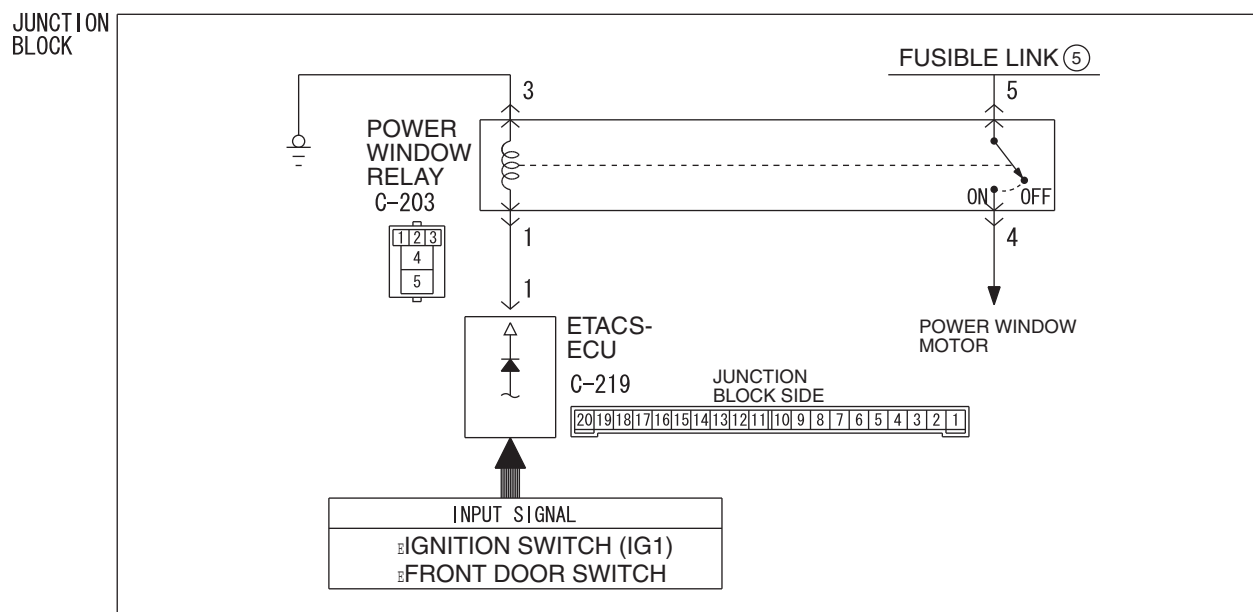
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-10. The power windows function should now work normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.

INSPECTION PROCEDURE D-2: Power Window: The power window timer function does not work normally.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

Power Window Timer Function Circuit



W4P54M37AA

CIRCUIT OPERATION

The ETACS-ECU operates the power window timer function according to the following signals:

- Ignition switch (IG1)
- Front door switch

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

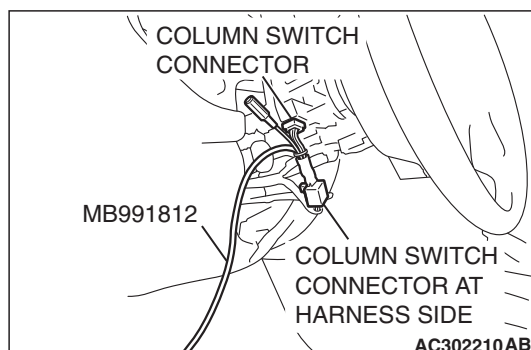
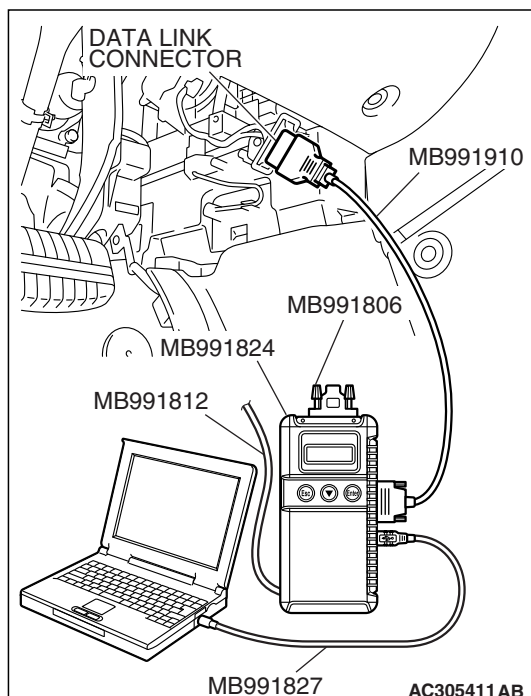
DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

Check the ETACS-ECU.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible [P.54B-79](#)."



STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Turn the ignition switch to the "ON" position before checking input signals from the ignition switch (IG1).

- (1) Operate scan tool MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	OFF
ITEM 32	DR DOOR SW	

Q: Does the scan tool MB991958 display the items "IG SW (IG1)", "DR DOOR SW" as normal condition?

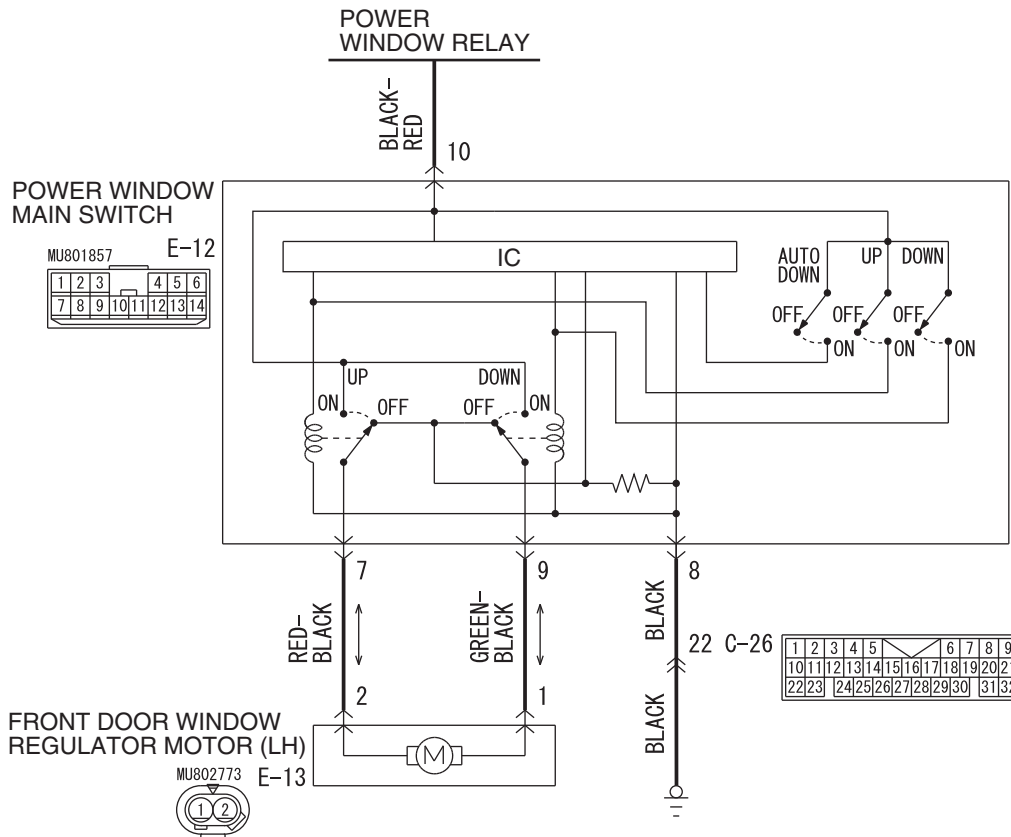
Normal condition displayed for all the items : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the power window timer works normally.

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) [P.54B-500](#)."

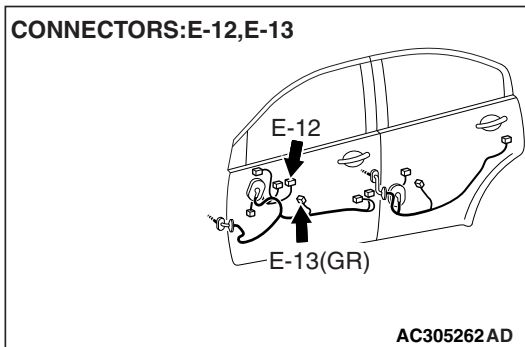
Normal condition is not displayed for "DR DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches [P.54B-507](#)."

INSPECTION PROCEDURE D-3: Power Window: Only the front door window (LH) does not work by operating power window main switch.

Power Window (front: LH) Circuit



W7P54M125A



CIRCUIT OPERATION

The front power window regulator motor (LH) lowers or raises the door window (LH) when the power window main switch is moved to "DOWN" or "UP" position.

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check power window main switch connector E-12 and front power window regulator motor (LH) connector E-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

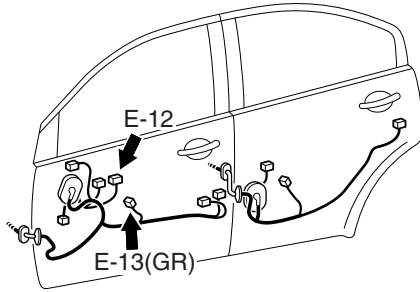
Q: Are power window main switch connector E-12 and front power window regulator motor (LH) connector E-13 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. When the power window main switch is operated, the front power window (LH) should lower or raise normally.

CONNECTORS: E-12, E-13



HARNESS SIDE

E-12

6	5	4		3	2	1
14	13	12	11	10	9	8

HARNESS SIDE

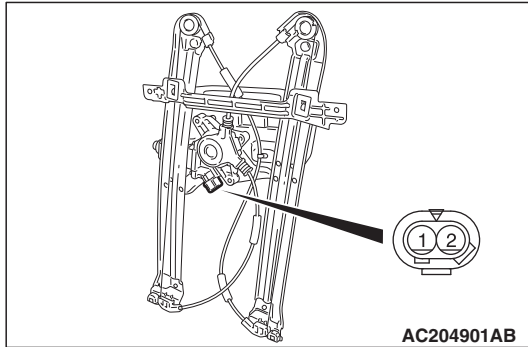
E-13



AC600886AB

STEP 2. Check the front power window regulator motor (LH).

- (1) Remove the front power window regulator motor (LH).
Refer to GROUP 42, Door, Door Glass and Regulator
[P.42-41](#).
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

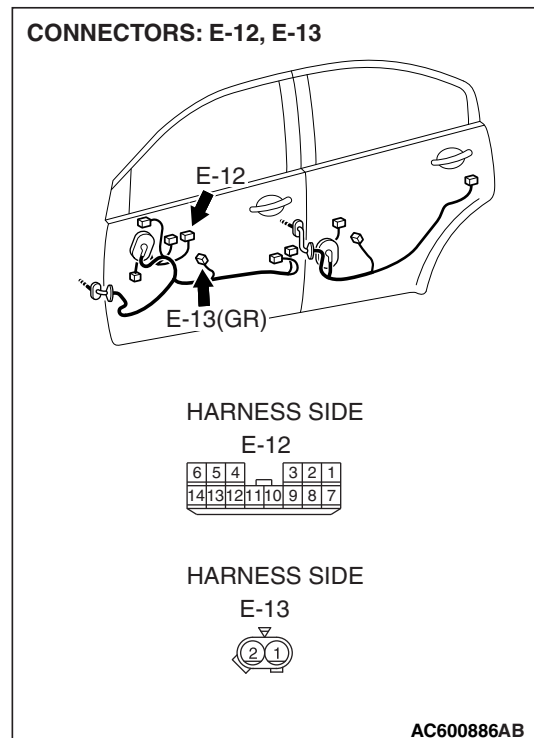


BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none"> Connect terminal 1 to the negative battery terminal Connect terminal 2 to the positive battery terminal 	UP
<ul style="list-style-type: none"> Connect terminal 2 to the negative battery terminal Connect terminal 1 to the positive battery terminal 	DOWN

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

YES : Go to Step 3.

NO : Replace the front power window regulator motor (LH).
When the power window main switch is operated, the front power window (LH) should lower or raise normally.



STEP 3. Check the wiring harness between power window main switch connector E-12 (terminals 7 and 9) and front power window regulator motor (LH) connector E-13 (terminals 2 and 1).

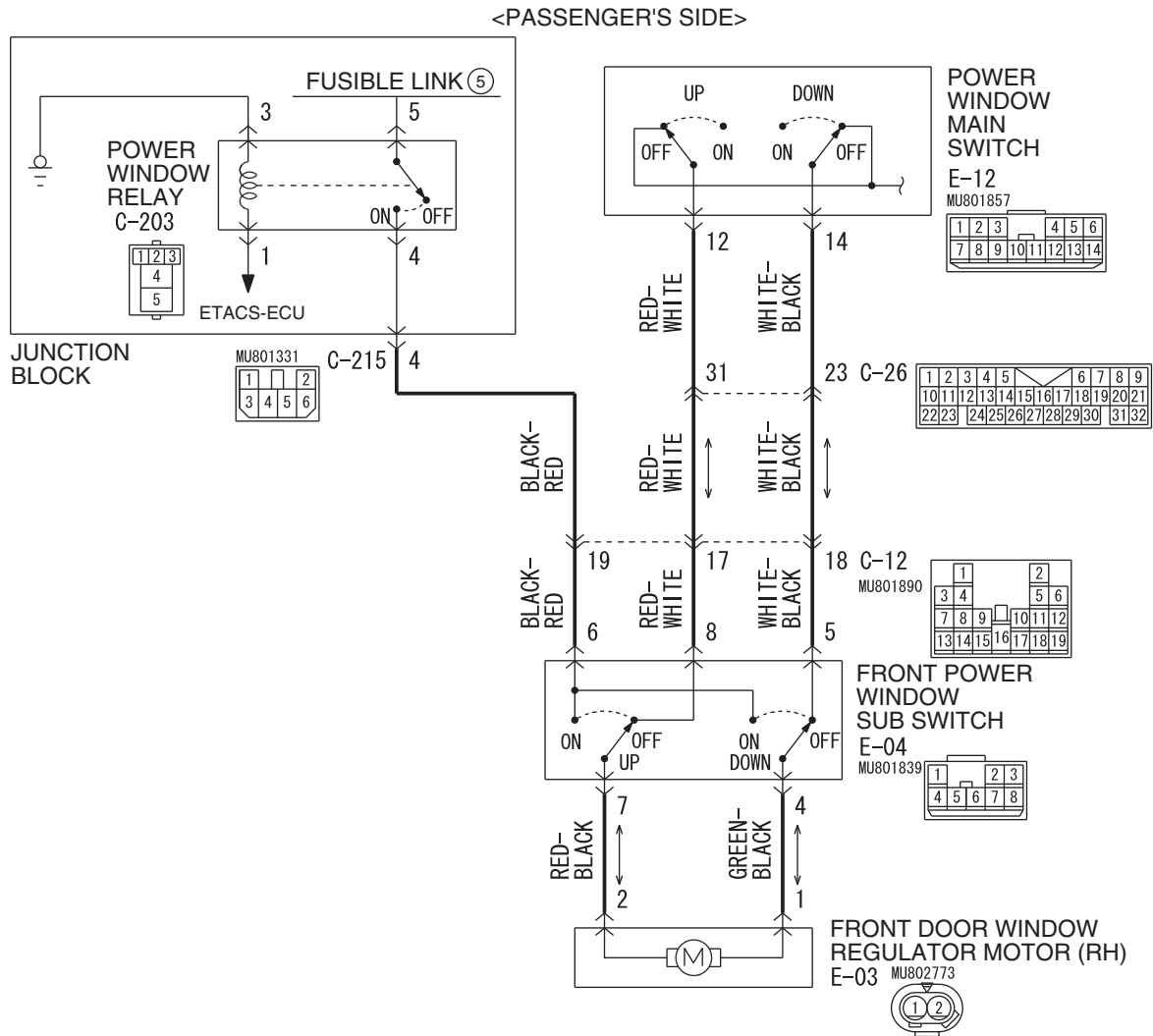
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between power window main switch connector E-12 (terminals 7 and 9) and front power window regulator motor (LH) connector E-13 (terminals 2 and 1) in good condition?

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

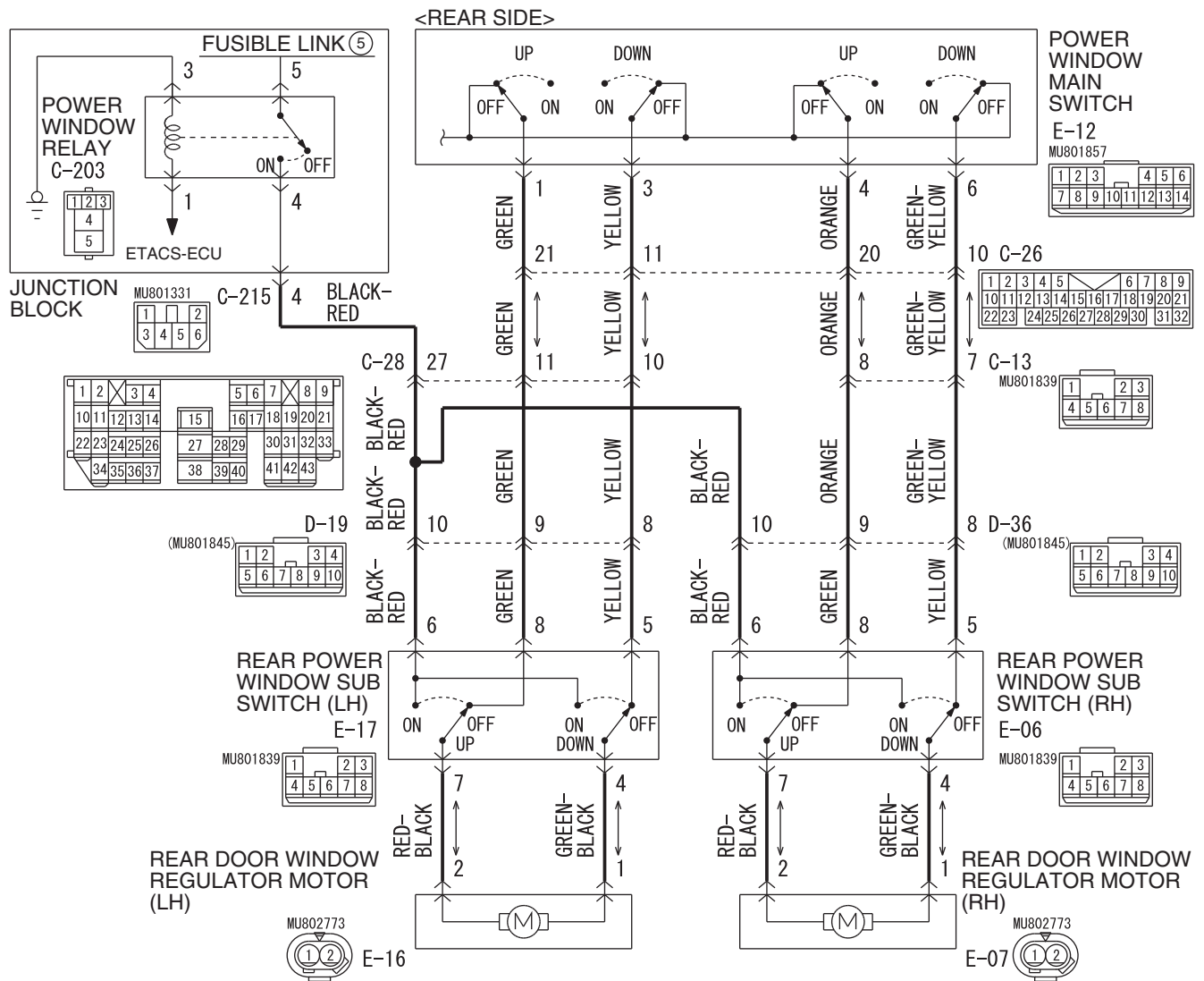
INSPECTION PROCEDURE D-4: Power Window: Power windows do not work normally by operating the front passenger's or rear passenger's sub switches.

Power Window (front: RH) Circuit

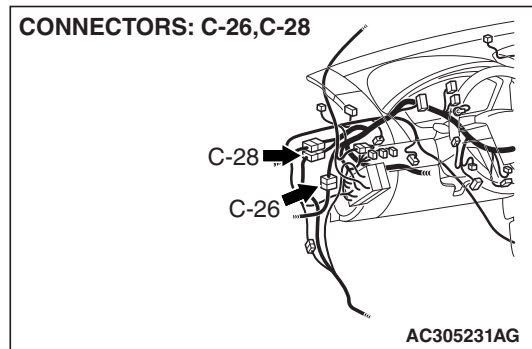
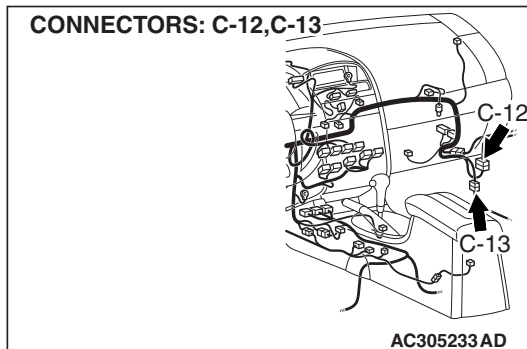


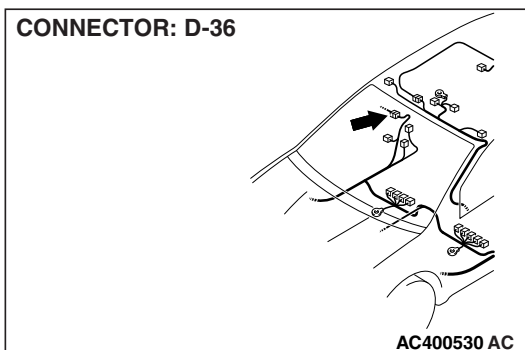
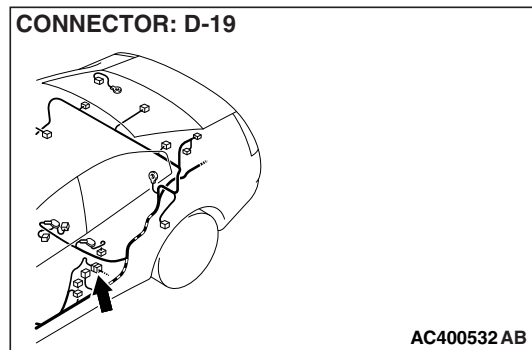
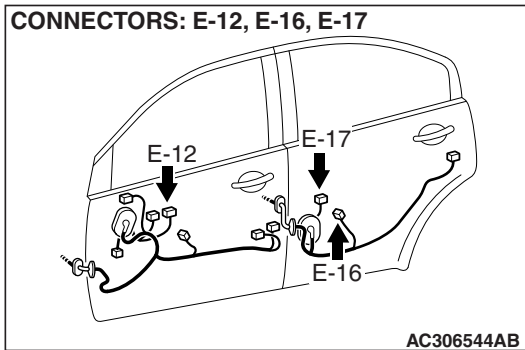
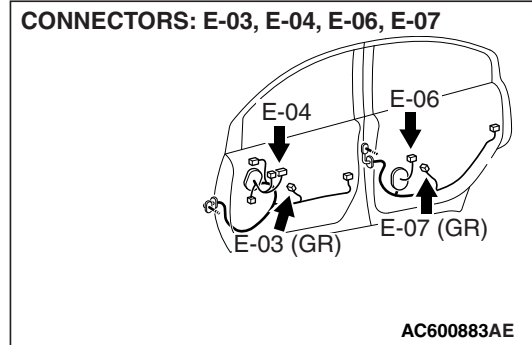
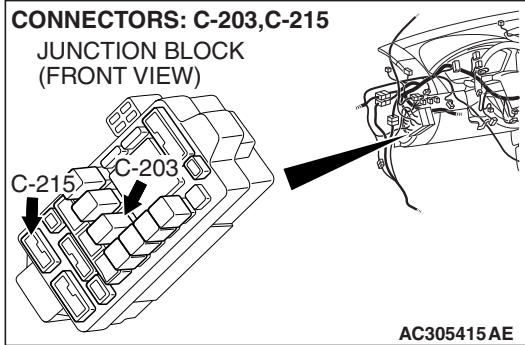
W7P54M126A

Power Window (rear) Circuit



W7P54M127A





CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

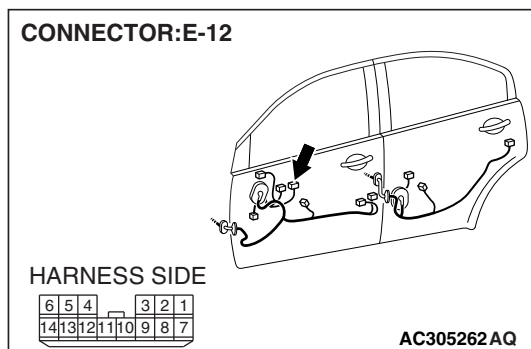
A power window sub switch or power window regulator motor may be defective. Or, the power window lock switch (incorporated in the power window main switch in the driver's door) may remain pressed in the "LOCK" position.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tool:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe



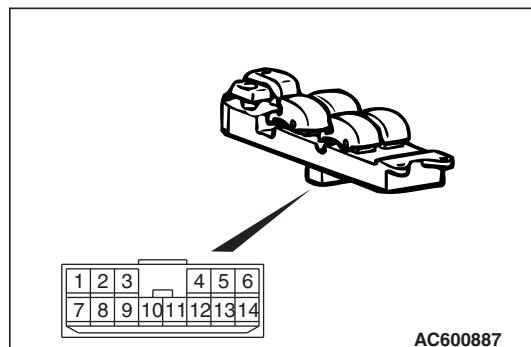
STEP 1. Check power window main switch connector E-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-12 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.



STEP 2. Check each switch on the power window main switch for continuity.

(1) Remove the power window main switch. Refer to GROUP 42, Door, Door Glass and Regulator **P.42-41**.

(2) Check continuity when each switch on the power window main switch is operated to "UP" or "DOWN" position.

SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
FRONT (RH)	UP	8 -14*, 10 -12	Continuity exists (2 ohms or less)
	OFF	8 -14*, 8 -12*, 12 -14	
	DOWN	8 -12*, 10 -14	
REAR (LH)	UP	1 -10, 3 -8*	
	OFF	1 -8*, 1 -3, 3 -8*	
	DOWN	1 -8*, 3 -10	
REAR (RH)	UP	4 -10, 6 -8*	
	OFF	4 -8*, 4 -6, 6 -8*	
	DOWN	4 -8*, 6 -10	

NOTE: *: Set the window lock switch to UNLOCK position.

Q: Is the power window main switch normal?

YES : Go to Step 3.

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

STEP 3. Check the power window lock switch.

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

YES : Go to Step 4.

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

STEP 4. Check which door window does not move.

Q: Which door window does not move?

Front passenger's side : Go to Step 5.

Rear passenger (LH) : Go to Step 14.

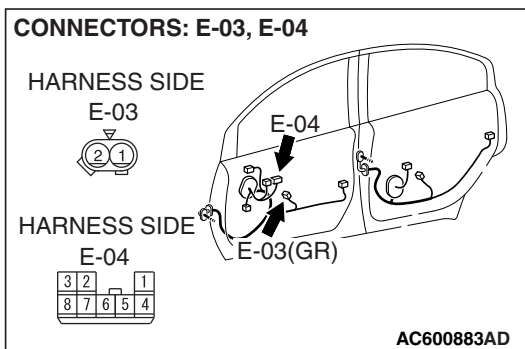
Rear passenger (RH) : Go to Step 23.

STEP 5. Check front power window sub switch connector E-04 and front power window regulator motor (RH) connector E-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are front power window sub switch connector E-04 and front power window regulator motor (RH) connector E-03 in good condition?

YES : Go to Step 6.

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



STEP 6. Check the front power window sub switch for continuity.

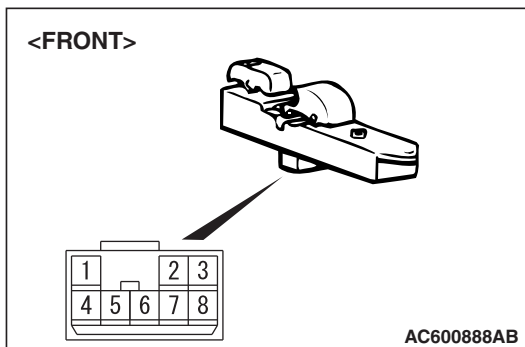
- (1) Remove the front power window sub switch. Refer to GROUP 42, Door, Door Glass and Regulator [P.42-41](#).
- (2) Check continuity when the front power window sub switch is operated to "UP" or "DOWN" position.

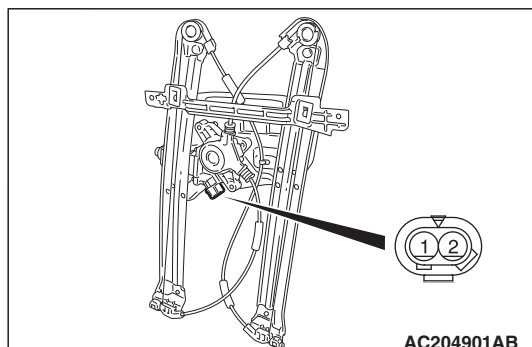
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	4 -5, 6 -7	Continuity exists (2 ohms or less)
OFF	4 -5, 7 -8	
DOWN	4 -6, 7 -8	

Q: Is the front power window sub switch normal?

YES : Go to Step 7.

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



**STEP 7. Check the front power window regulator motor (RH).**

- (1) Remove the front power regulator assembly (RH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-41.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

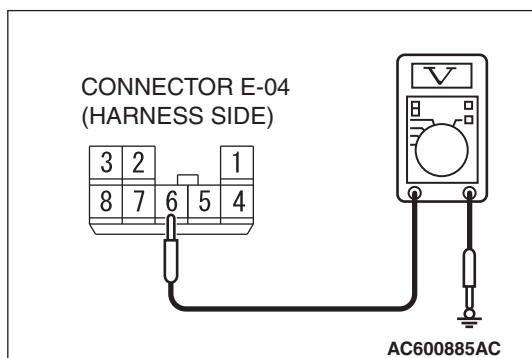
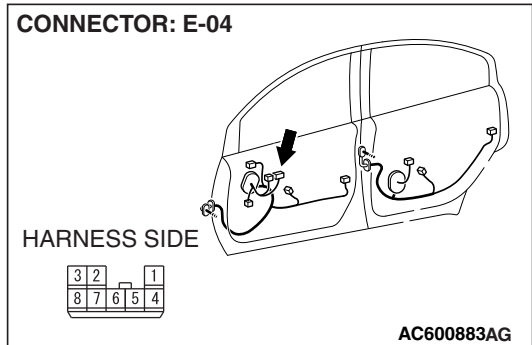
BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none"> Connect terminal 1 to the negative battery terminal Connect terminal 2 to the positive battery terminal 	UP
<ul style="list-style-type: none"> Connect terminal 2 to the negative battery terminal Connect terminal 1 to the positive battery terminal 	DOWN

Q: Is the front power window regulator motor (RH) normal?**YES :** Go to Step 8.

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

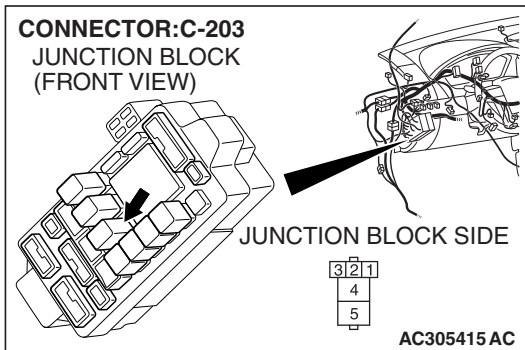
STEP 8. Check the battery power supply circuit to the front power window sub switch. Measure the voltage at front power window sub switch connector E-04.

- (1) Disconnect front power window sub switch connector E-04 and measure the voltage available at the wiring harness side of the connector.



- (2) Measure the voltage between terminal 6 and ground.
 - The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?**YES :** Go to Step 11.**NO :** Go to Step 9.



STEP 9. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

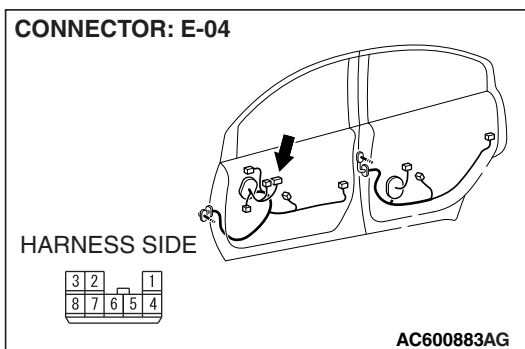
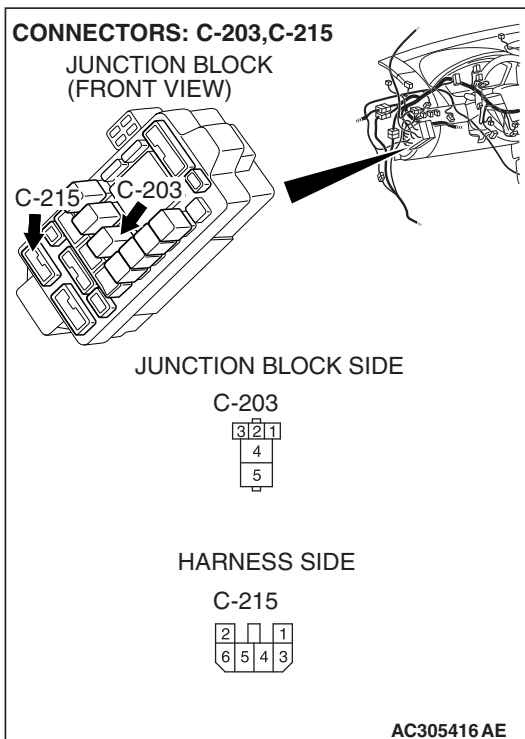
Q: Is power window relay connector C-203 in good condition?

YES : Go to Step 10.

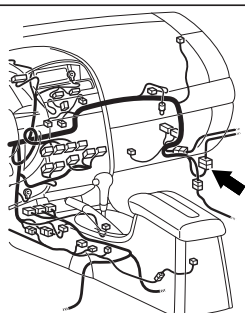
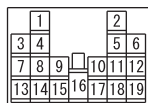
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.

STEP 10. Check the wiring harness between power window relay connector C-203 (terminal 4) and front power window sub switch connector E-04 (terminal 6).

- Check the communication lines for open circuit and short circuit.



CONNECTOR: C-12



AC305233AB

NOTE: Also check junction block connector C-215 and intermediate connector C-12. If junction block connector C-215 or intermediate connectors C-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between power window relay connector C-203 (terminal 4) and front power window sub switch connector E-04 (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

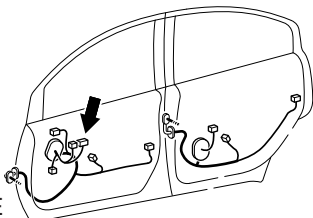
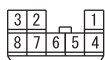
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the front power window sub switch is operated, the front power window (RH) should raise and lower normally.

STEP 11. Check the ground circuit to the front power window sub switch. Measure the resistance at front power window sub switch connector E-04.

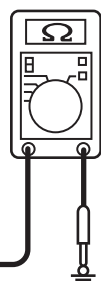
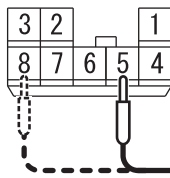
(1) Disconnect front power window sub switch connector E-04 and measure the resistance available at the wiring harness side of the connector.

CONNECTOR: E-04

HARNESS SIDE



AC600883AG

CONNECTOR E-04
(HARNESS SIDE)

AC600884AC

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

- The resistance should be 2 ohms or less.

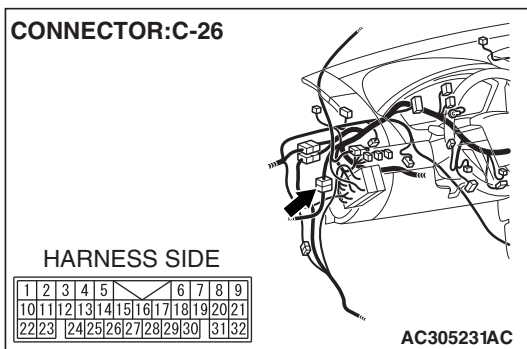
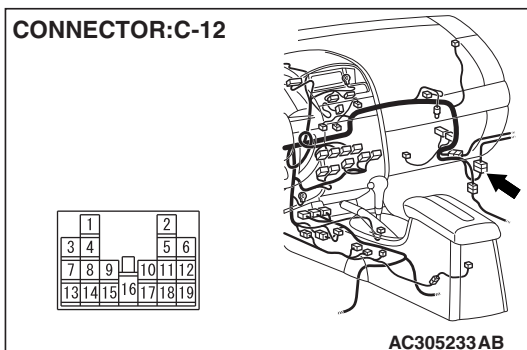
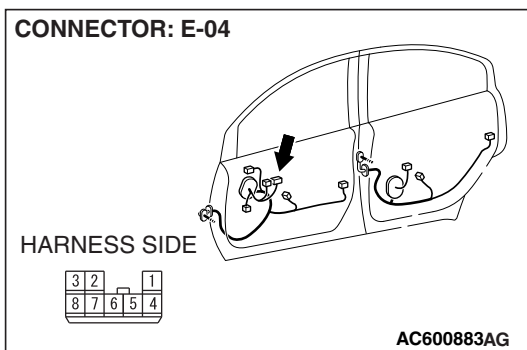
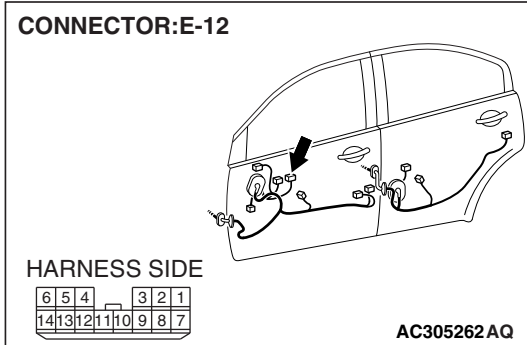
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 13.

NO : Go to Step 12.

STEP 12. Check the wiring harness between power window main switch connector E-12 (terminals 12 and 14) and front power window sub switch connector E-04 (terminals 8 and 5).

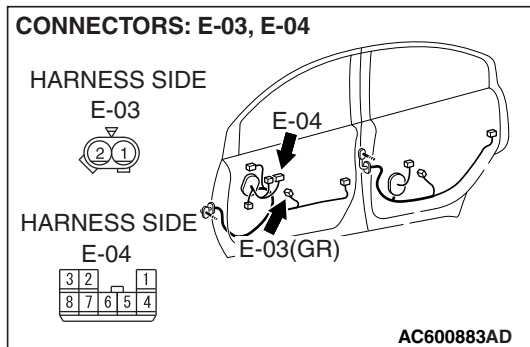
- Check the communication lines for open circuit and short circuit.



NOTE: Also check intermediate connectors C-12 and C-26. If intermediate connector C-12 or C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between power window main switch connector E-12 (terminals 12 and 14) and front power window sub switch connector E-04 (terminals 8 and 5) in good condition?

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



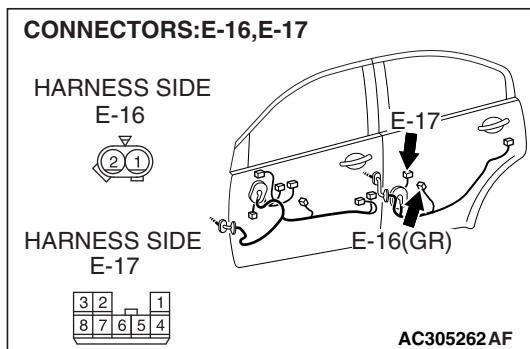
STEP 13. Check the wiring harness between front power window sub switch connector E-04 (terminals 4 and 7) and front power window regulator motor (RH) connector E-03 (terminals 1 and 2).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between front power window sub switch connector E-04 (terminals 4 and 7) and front power window regulator motor (RH) connector E-03 (terminals 1 and 2) in good condition?

YES : No action is necessary and testing is complete.

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

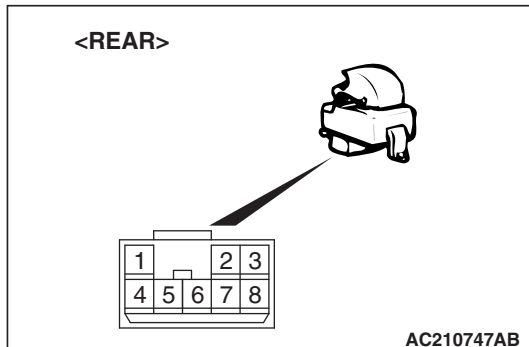


STEP 14. Check rear power window sub switch (LH) connector E-17 and rear power window regulator motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear power window sub switch (LH) connector E-17 and rear power window regulator motor (LH) connector E-16 in good condition?

YES : Go to Step 15.

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



STEP 15. Check the rear power window sub switch (LH) for continuity.

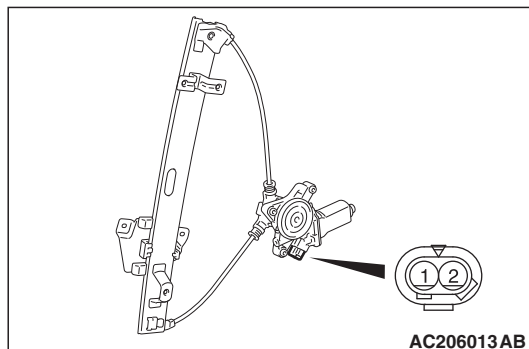
- (1) Remove the rear power window sub switch (LH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-41.
- (2) Check continuity when the rear power window sub switch (LH) is operated to "UP" or "DOWN" position.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	4 -5, 6 -7	Continuity exists (2 ohms or less)
OFF	4 -5, 7 -8	
DOWN	4 -6, 7 -8	

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

YES : Go to Step 16.

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



STEP 16. Check the rear power window regulator motor (LH).

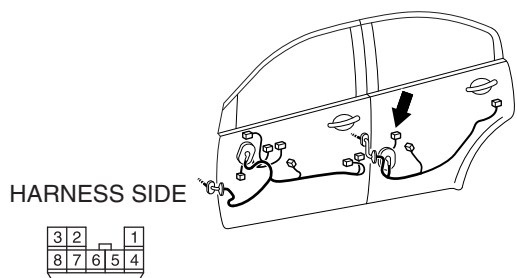
- (1) Remove the rear power window regulator assembly (LH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-41.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none"> Connect terminal 1 to the negative battery terminal Connect terminal 2 to the positive battery terminal 	UP
<ul style="list-style-type: none"> Connect terminal 2 to the negative battery terminal Connect terminal 1 to the positive battery terminal 	DOWN

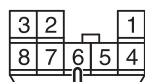
Q: Is the rear power window regulator motor (LH) normal?

YES : Go to Step 17.

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

CONNECTOR:E-17

AC305262AG

**CONNECTOR E-17
(HARNESS SIDE)**

AC209365EI

STEP 17. Check the battery power supply circuit to the rear power window sub switch (LH). Measure the voltage at rear power window sub switch (LH) connector E-17.

(1) Disconnect rear power window sub switch (LH) connector E-17 and measure the voltage available at the wiring harness side of the connector.

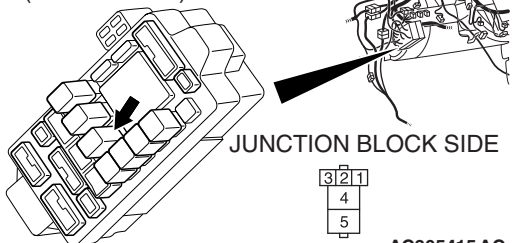
(2) Measure the voltage between terminal 6 and ground.

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

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

YES : Go to Step 20.

NO : Go to Step 18.

**CONNECTOR:C-203
JUNCTION BLOCK
(FRONT VIEW)**

AC305415 AC

STEP 18. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

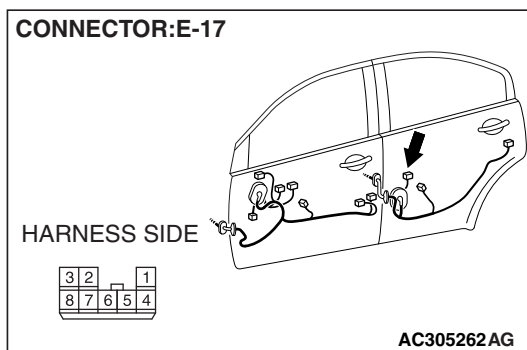
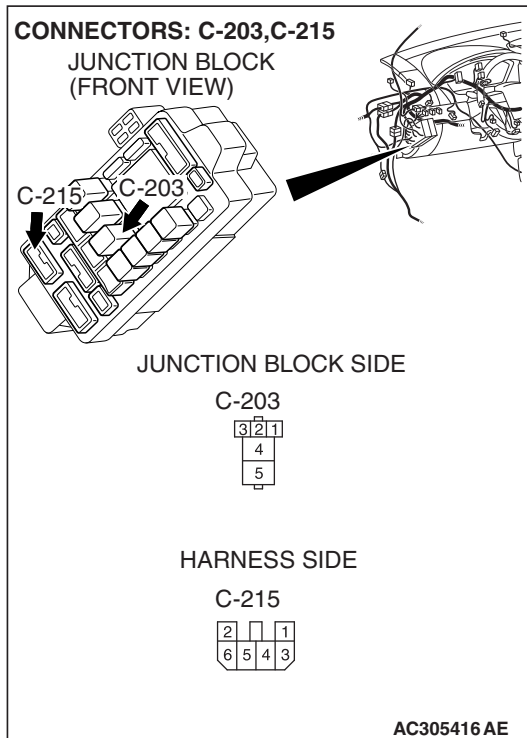
Q: Is power window relay connector C-203 in good condition?

YES : Go to Step 19.

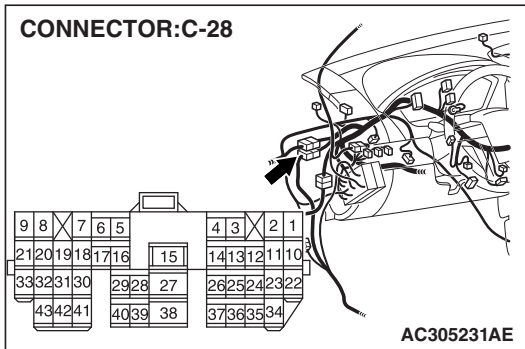
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

STEP 19. Check the wiring harness between power window relay connector C-203 (terminal 4) and rear power window sub switch (LH) connector E-17 (terminal 6).

- Check the communication lines for open circuit and short circuit.



CONNECTOR: C-28



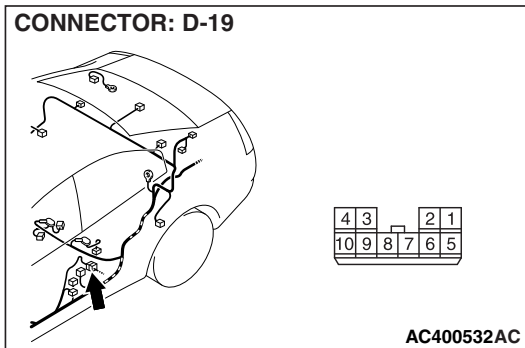
NOTE: Also check junction block connector C-215, intermediate connectors C-28 and D-19. If junction block connector C-215, intermediate connector C-28 or D-19 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between power window relay connector C-203 (terminal 4) and rear power window sub switch (LH) connector E-17 (terminal 6) in good condition?

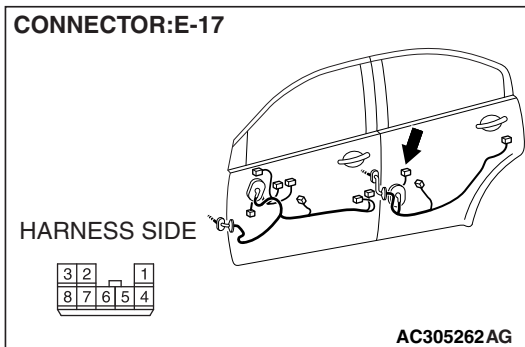
YES : No action is necessary and testing is complete.

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

CONNECTOR: D-19

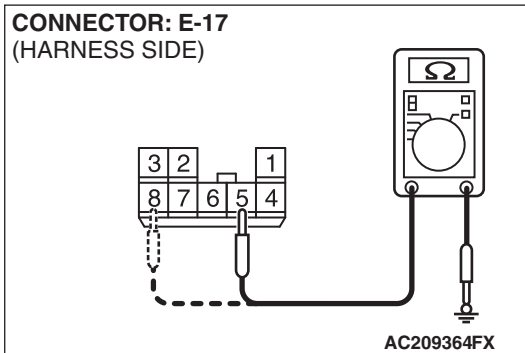


CONNECTOR: E-17



STEP 20. Check the ground circuit to the rear power window sub switch (LH). Measure the resistance at rear power window sub switch (LH) connector E-17.

(1) Disconnect rear power window sub switch (LH) connector E-17 and measure the resistance available at the wiring harness side of the connector.

CONNECTOR: E-17
(HARNESS SIDE)

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

- The resistance should be 2 ohms or less.

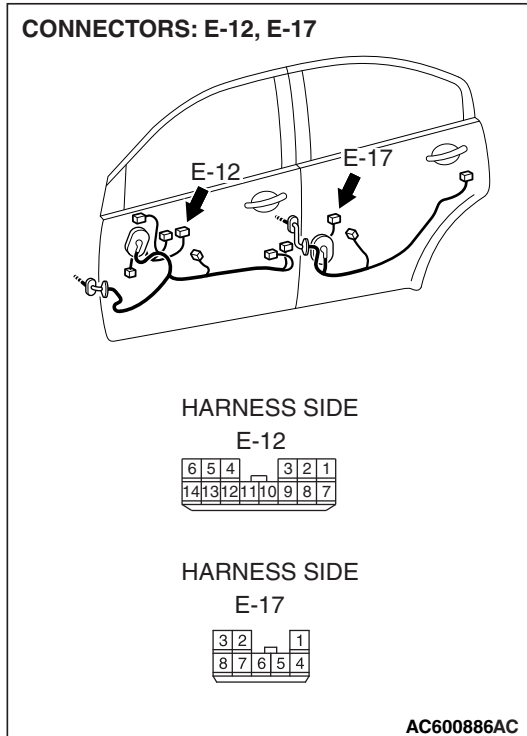
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 22.

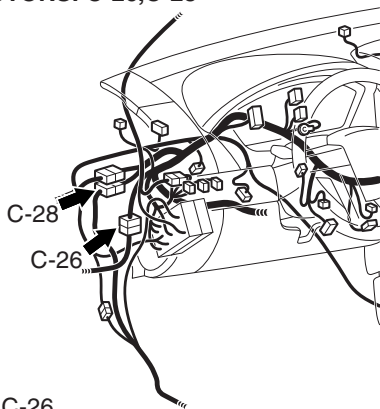
NO : Go to Step 21.

STEP 21. Check the wiring harness between power window main switch connector E-12 (terminals 1 and 3) and rear power window sub switch (LH) connector E-17 (terminals 8 and 5).

- Check the communication lines for open circuit and short circuit.



CONNECTORS: C-26,C-28



1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32				

C-28

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43		

AC305232AB

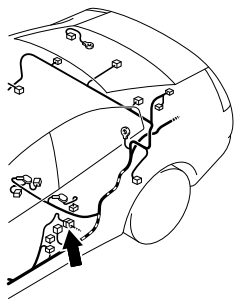
NOTE: Also check intermediate connectors C-26, C-28 and D-19. If intermediate connector C-26, C-28 or D-19 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-12 (terminals 1 and 3) and rear power window sub switch (LH) connector E-17 (terminals 8 and 5) in good condition?

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

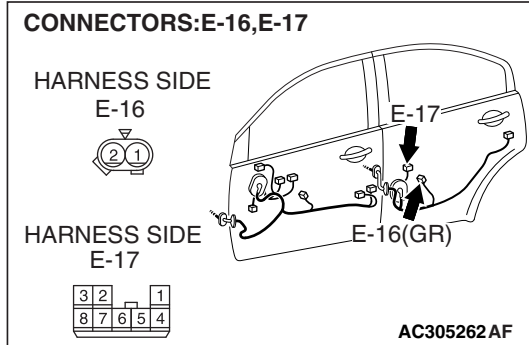
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

CONNECTOR: D-19



4	3	2	1
10	9	8	7
6	5		

AC400532AC

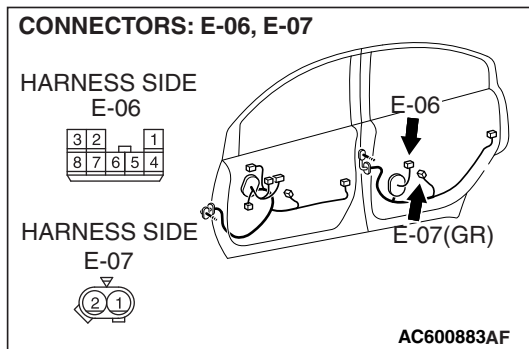


STEP 22. Check the wiring harness between rear power window sub switch (LH) connector E-17 (terminals 4 and 7) and rear power window regulator motor (LH) connector E-16 (terminals 1 and 2).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between rear power window sub switch (LH) connector E-17 (terminals 4 and 7) and rear power window regulator motor (LH) connector E-16 (terminals 1 and 2) in good condition?

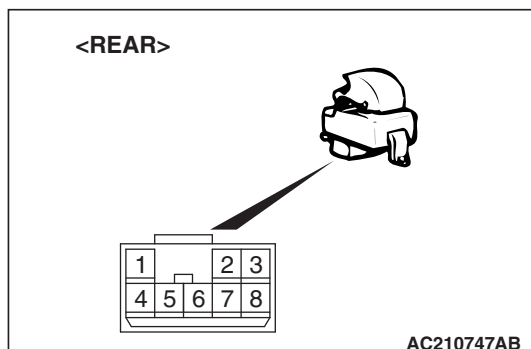
- YES :** Replace the power window main switch. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in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



STEP 23. Check rear power window sub switch (RH) connector E-06 and rear power window regulator motor (RH) connector E-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear power window sub switch (RH) connector E-06 and rear power window regulator motor (RH) connector E-07 in good condition?

- YES :** Go to Step 24.
- NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

**STEP 24. Check the rear power window sub switch (RH) for continuity.**

- (1) Remove the rear power window sub switch (RH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-41.
- (2) Check continuity when the rear power window sub switch (RH) is operated to "UP" or "DOWN" position.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	4 -5, 6 -7	Continuity exists (2 ohms or less)
OFF	4 -5, 7 -8	
DOWN	4 -6, 7 -8	

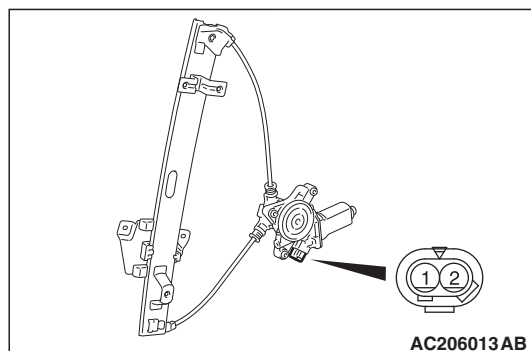
Q: Is the rear power window sub switch (RH) normal?

YES : Go to Step 25.

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

STEP 25. Check the rear power window regulator motor (RH).

- (1) Remove the rear power window regulator assembly (RH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-41.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.



BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none">• Connect terminal 1 to the negative battery terminal• Connect terminal 2 to the positive battery terminal	UP
<ul style="list-style-type: none">• Connect terminal 2 to the negative battery terminal• Connect terminal 1 to the positive battery terminal	DOWN

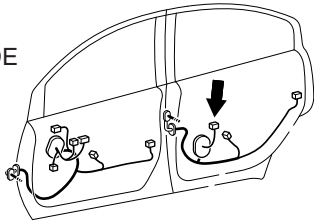
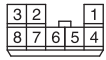
Q: Is the rear power window regulator motor (RH) normal?

YES : Go to Step 26.

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

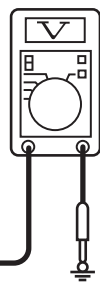
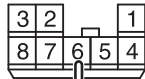
CONNECTOR: E-06

HARNESS SIDE



AC600883AH

CONNECTOR E-06
(HARNESS SIDE)



AC209365EJ

STEP 26. Check the battery power supply circuit to the rear power window sub switch (RH). Measure the voltage at rear power window sub switch (RH) connector E-06.

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

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

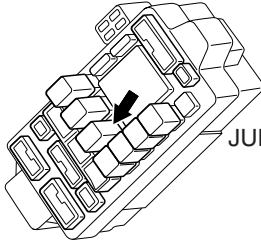
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 29.

NO : Go to Step 27.

CONNECTOR: C-203
JUNCTION BLOCK
(FRONT VIEW)



JUNCTION BLOCK SIDE



AC305415 AC

STEP 27. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

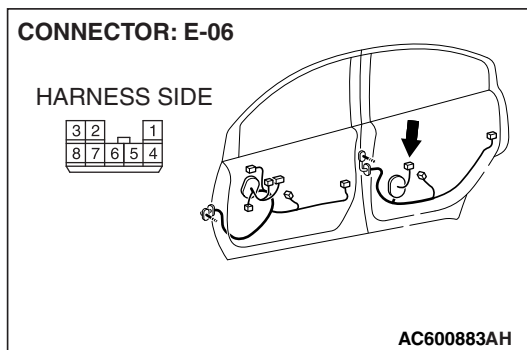
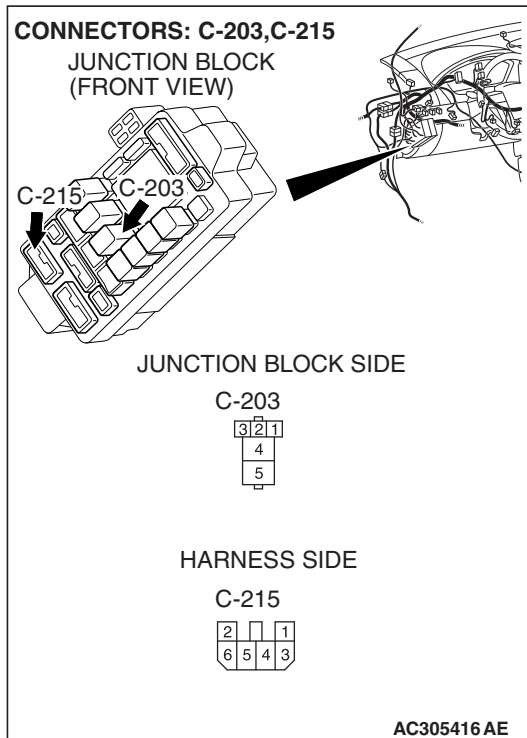
Q: Is power window relay connector C-203 in good condition?

YES : Go to Step 28.

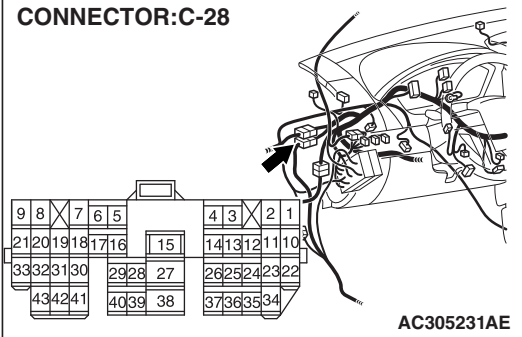
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

STEP 28. Check the wiring harness between power window relay connector C-203 (terminal 4) and rear power window sub switch (RH) connector E-06 (terminal 6).

- Check the communication lines for open circuit and short circuit.



CONNECTOR: C-28



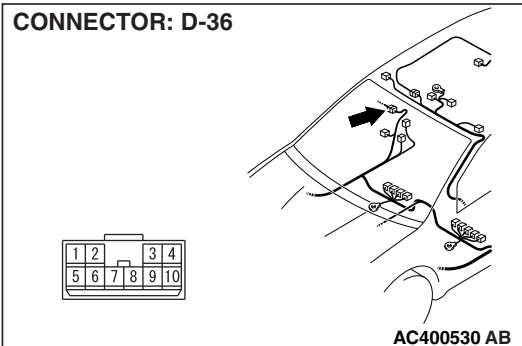
NOTE: Also check junction block connector C-215, intermediate connectors C-28 and D-36. If junction block connector C-215, intermediate connector C-28 or D-36 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between power window relay connector C-203 (terminal 4) and rear power window sub switch (RH) connector E-06 (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

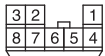
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

CONNECTOR: D-36



CONNECTOR: E-06

HARNESS SIDE



STEP 29. Check the ground circuit to the rear power window sub switch (RH). Measure the resistance at rear power window sub switch (RH) connector E-06.

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

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

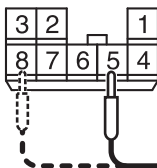
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 31.

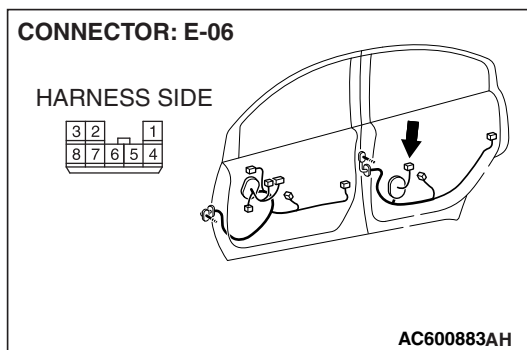
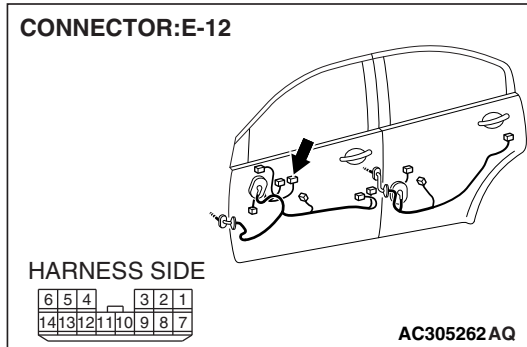
NO : Go to Step 30.

**CONNECTOR E-06
(HARNESS SIDE)**

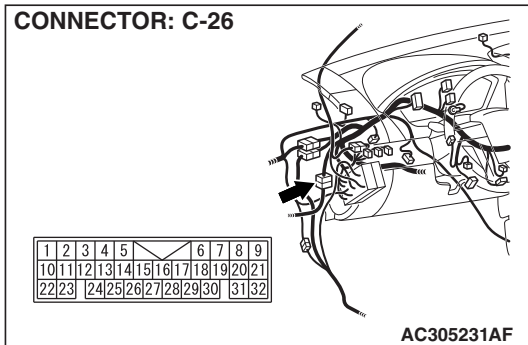


STEP 30. Check the wiring harness between power window main switch connector E-12 (terminals 6 and 4) and rear power window sub switch (RH) connector E-06 (terminals 5 and 8).

- Check the communication lines for open circuit and short circuit.



CONNECTOR: C-26



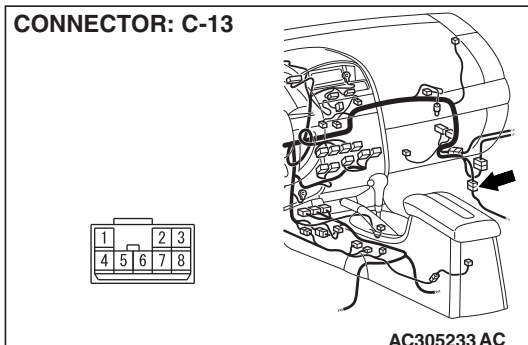
NOTE: Also check intermediate connectors C-26, C-13 and D-36. If intermediate connector C-26, C-13 or D-36 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-12 (terminals 6 and 4) and rear power window sub switch (RH) connector E-06 (terminals 5 and 8) in good condition?

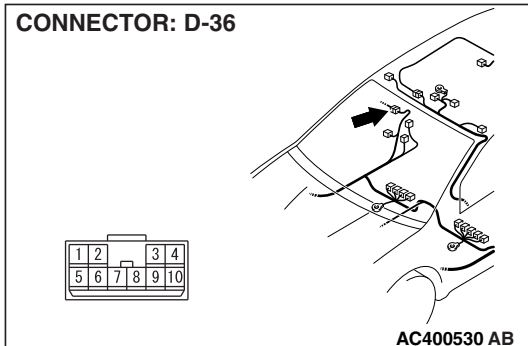
YES : Replace the power window main switch. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.

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

CONNECTOR: C-13



CONNECTOR: D-36



STEP 31. Check the wiring harness between rear power window sub switch (RH) connector E-06 (terminals 4 and 7) and rear power window regulator motor (RH) connector E-07 (terminals 1 and 2).

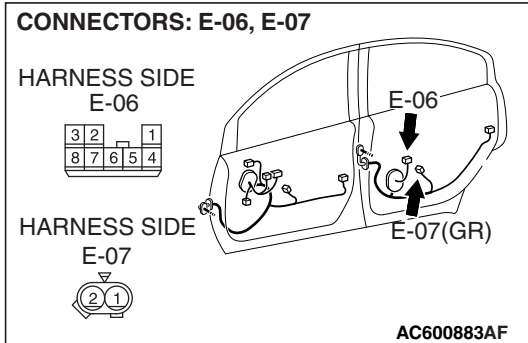
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between rear power window sub switch (RH) connector E-06 (terminals 4 and 7) and rear power window regulator motor (RH) connector E-07 (terminals 1 and 2) in good condition?

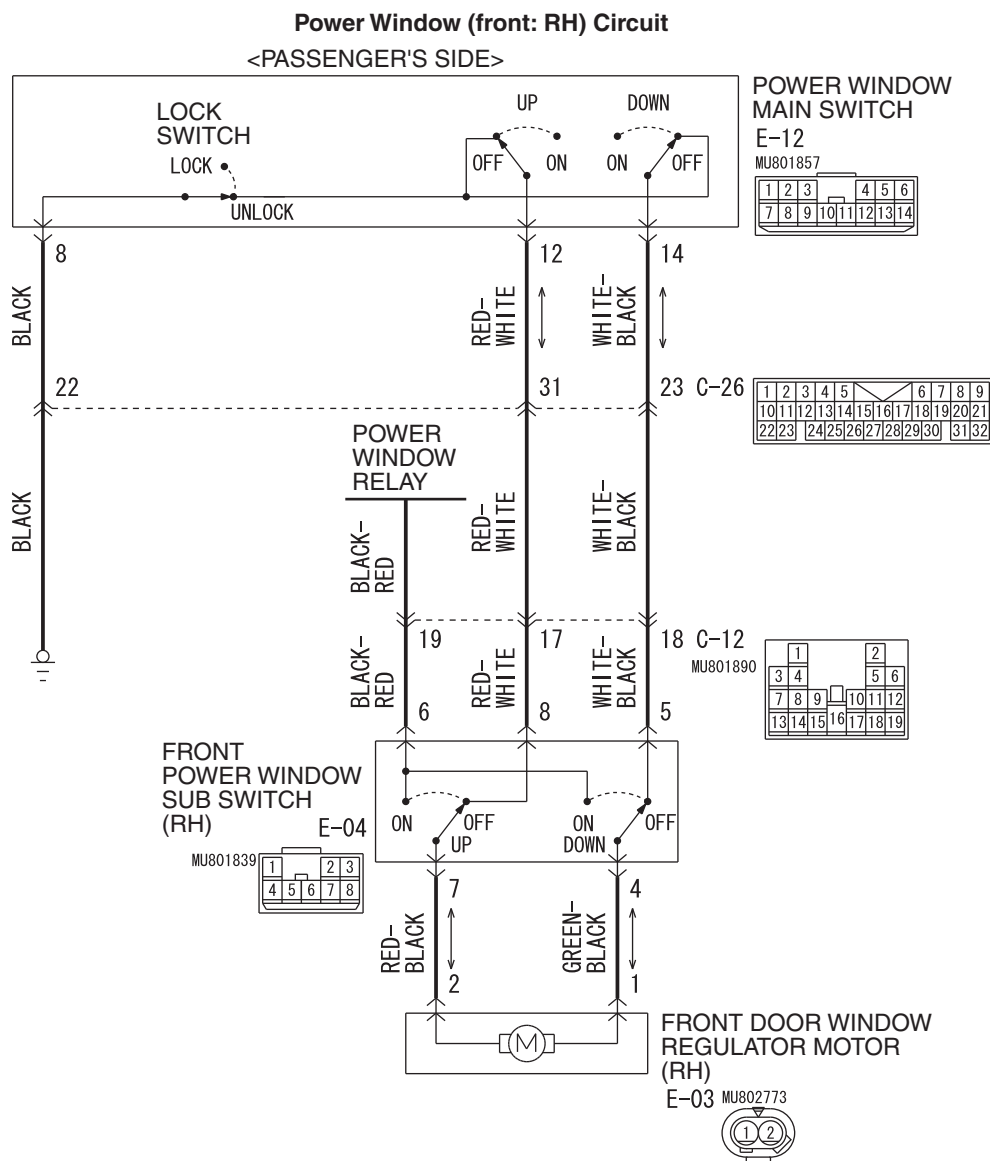
YES : No action is necessary and testing is complete.

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

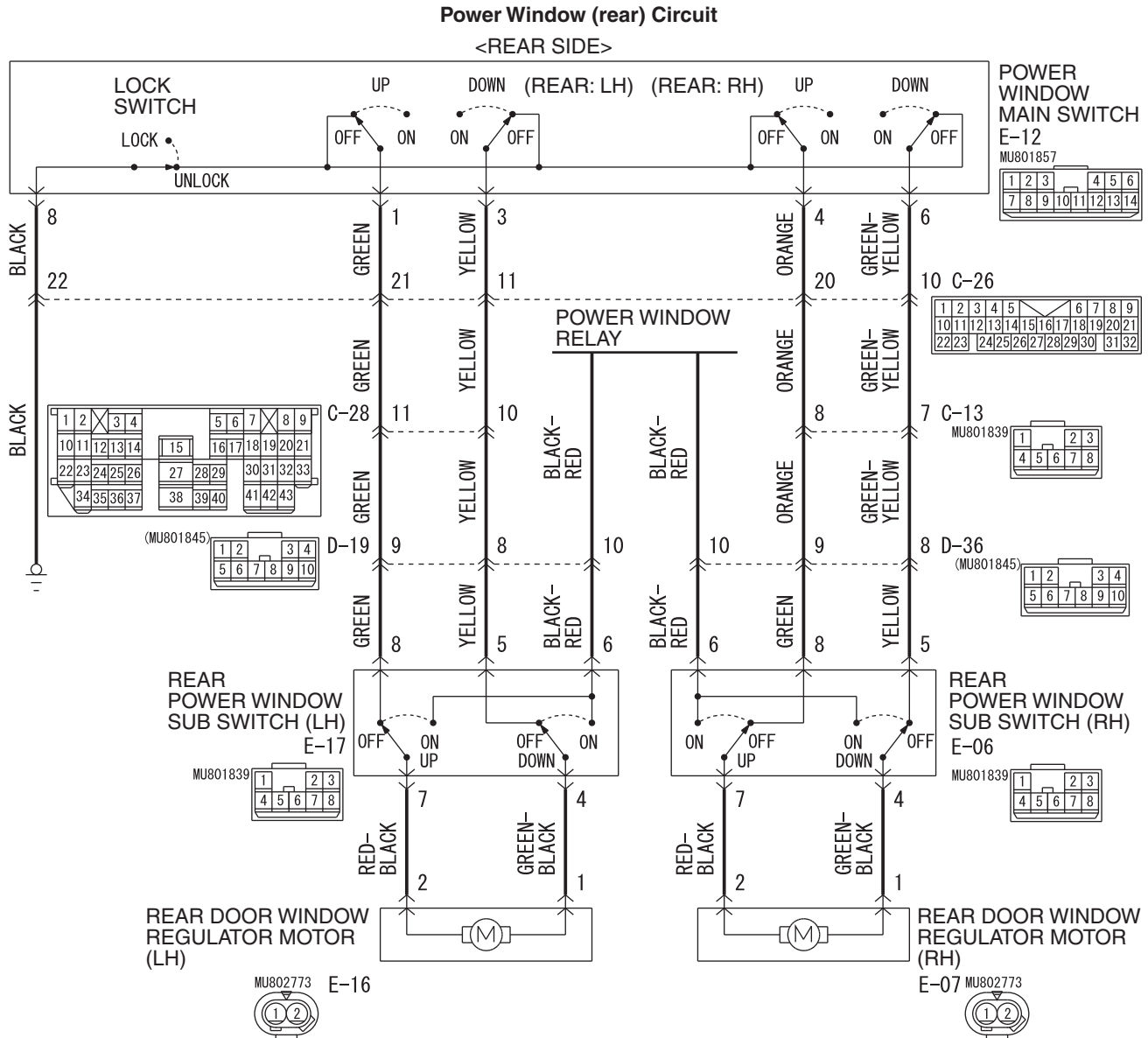
CONNECTORS: E-06, E-07



INSPECTION PROCEDURE D-5: Power Window: Front or rear passenger's power windows do not work at all by operating the power window main switch.



W9P54M042A



W9P54M043A

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINT

The power window main switch may be defective

DIAGNOSIS

Check that power window sub switches operate normally.

Q: A power window cannot work by using the power window main switch. Can you operate the power window by using the corresponding power window sub switch?

YES : Replace the power window main switch. Check that the front or rear passenger's power window can work normally by means of power window main switch.

NO : Refer to Symptom Chart [P.54B-57](#) before resolving this trouble.

KEYLESS ENTRY SYSTEM

GENERAL DESCRIPTION CONCERNING THE KEYLESS ENTRY SYSTEM

M1549022000404

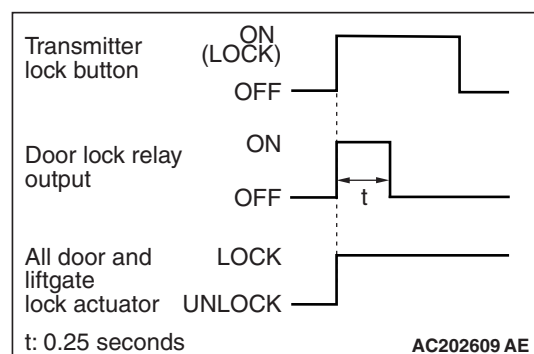
The following ECUs affect the functions and control of the keyless entry system.

FUNCTION		CONTROL ECU
All door lock function	Pressing the transmitter lock button	ETACS-ECU
Driver's door unlock function	Pressing the transmitter unlock button once	ETACS-ECU
All door unlock function	Pressing the transmitter unlock button twice	ETACS-ECU
Trunk unlock function	Pressing the transmitter trunk button	ETACS-ECU
Keyless entry hazard answerback and horn answerback function		ETACS-ECU
Timed locking mechanism		ETACS-ECU

ALL DOOR LOCK FUNCTION

PRESSING THE TRANSMITTER LOCK BUTTON

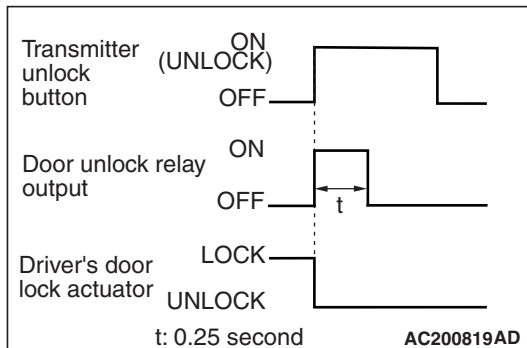
When the transmitter lock button is pressed, the ETACS-ECU energizes its door lock relay to operate all the door lock actuators for 0.25 second, locking all doors.



DRIVER'S DOOR UNLOCK FUNCTION

PRESSING THE TRANSMITTER UNLOCK BUTTON ONCE

When the transmitter unlock button is pressed once, the ETACS-ECU energizes its door unlock relay to operate the door lock actuator of the driver's door for 0.25 second, thus unlocking only the driver's door.

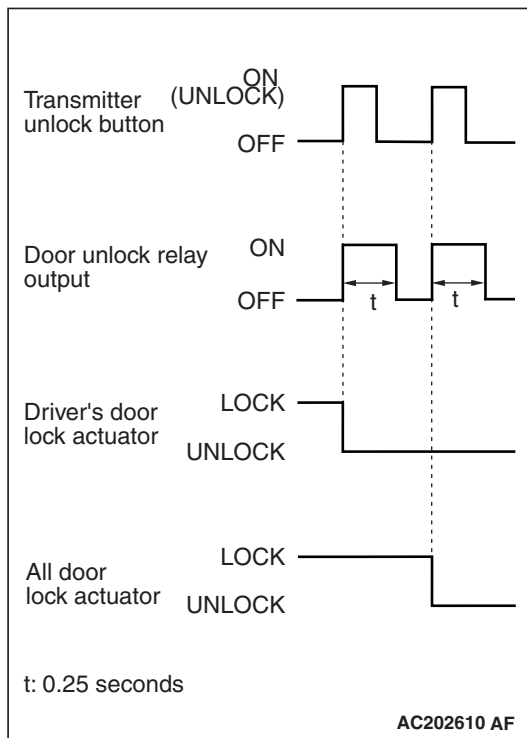


ALL DOOR UNLOCK FUNCTION

PRESSING THE TRANSMITTER UNLOCK BUTTON TWICE

When the transmitter unlock button is pressed twice, the ETACS-ECU energizes its door unlock relay to operate the driver's door lock actuator and the other door lock actuators for 0.25 second each in succession. All the doors will be unlocked.

NOTE: If the timed locking function is available, the doors will be locked in 30 seconds after the initial unlocking. Therefore, the second door unlocking should be done within 30 seconds after that initial unlocking.



TRUNK UNLOCK FUNCTION

PRESSING THE TRANSMITTER TRUNK BUTTON

Press the "TRUNK" button twice within 5 seconds and the trunk lid will be unlocked.

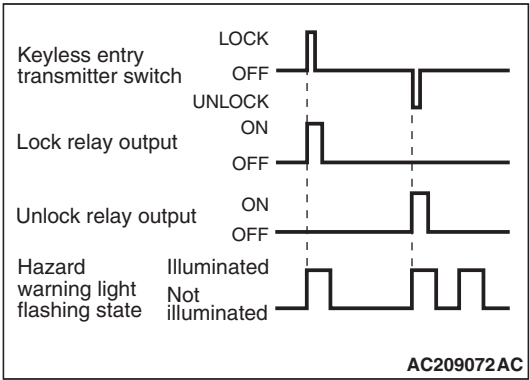
KEYLESS ENTRY HAZARD ANSWERBACK AND
HORN ANSWERBACK FUNCTION

KEYLESS ENTRY HAZARD ANSWERBACK
FUNCTION*1

If the keyless entry transmitter is used to send a lock signal to the ETACS-ECU, all doors are locked and the hazard warning lights flash once. If an unlock signal is sent, the driver's door is unlocked first,*2 and if a second signal is sent, all doors are unlocked. Each time the unlock signal is sent, the hazard warning lights flash twice.

NOTE: *1: The hazard answerback function can be customized using the keyless entry transmitter (Refer to Group 42 P.42-73, Keyless Entry System) or by using the multi center display (middle grade type). Refer to P.54B-586.

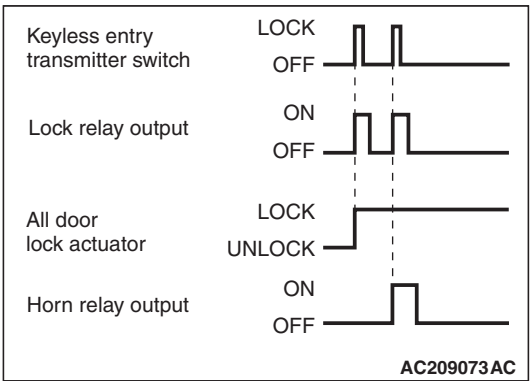
NOTE: *2: Vehicles with a multi center display (middle grade type) can be customized so that a single unlock operation will unlock all doors. Refer to P.54B-586.



KEYLESS ENTRY HORN ANSWERBACK
FUNCTION

If the keyless entry transmitter is used to send a lock signal to the ETACS-ECU, the first signal locks all doors while the second signal sounds the horn once.

NOTE: : The horn answerback function can be customized by using the keyless entry transmitter (Refer to Group 42 P.42-73, Keyless Entry System) or by using the multi center display (middle grade type). Refer to P.54B-586.

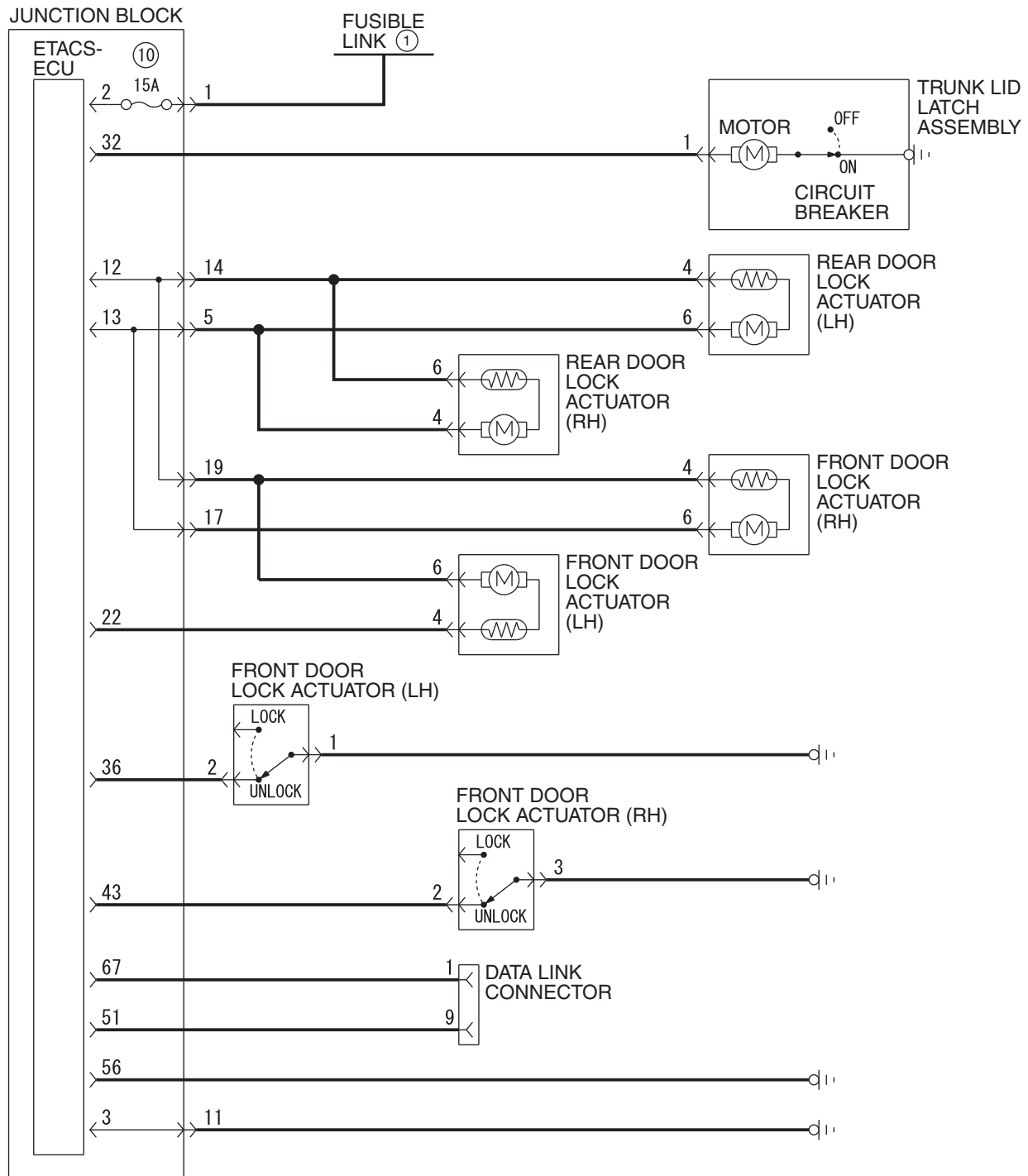


TIMED LOCKING MECHANISM

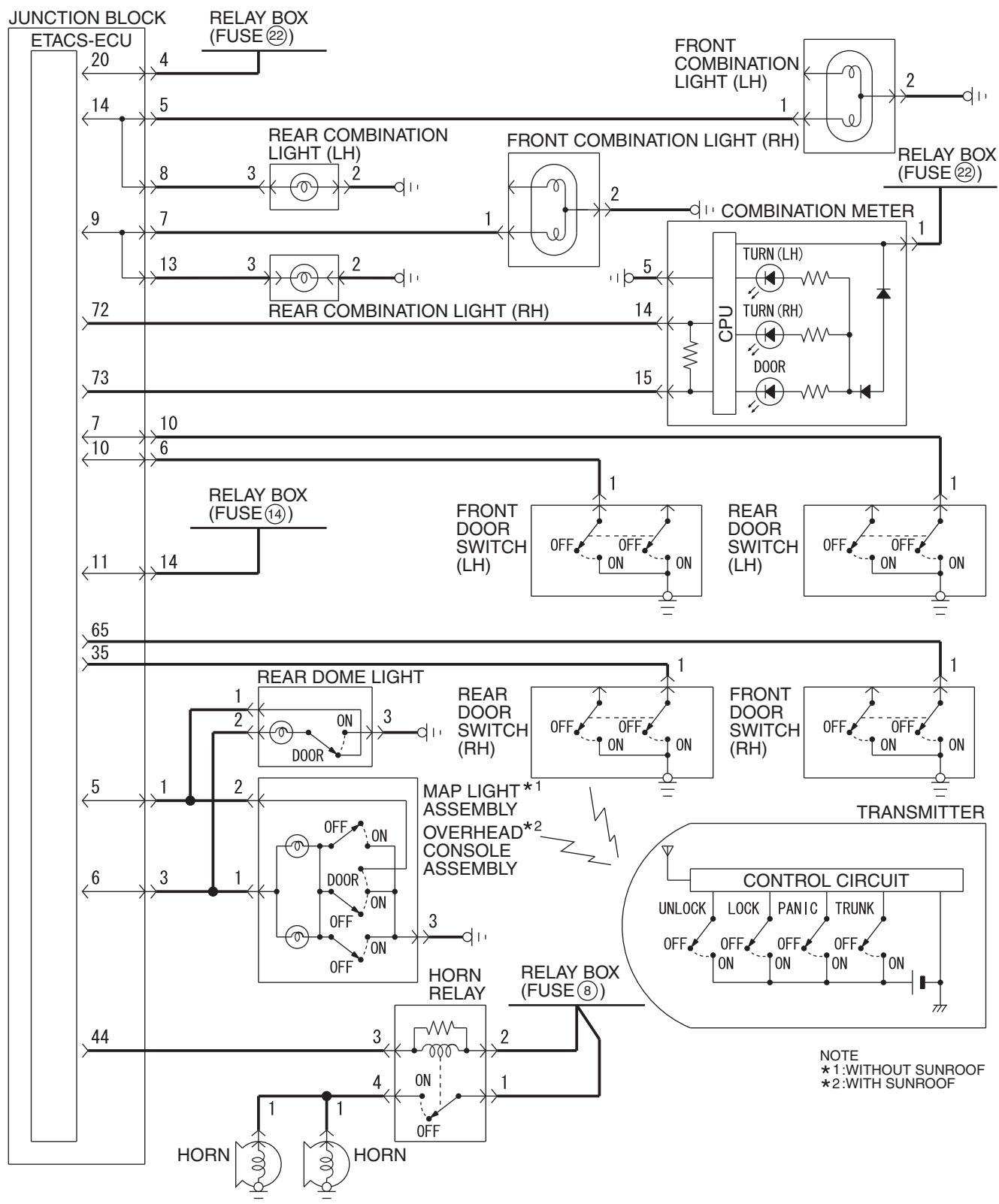
After unlocking the doors with the keyless entry transmitter, if no doors are opened, if the ignition key is not inserted or if the locking function is not operated, the ETACS-ECU automatically locks the doors in 30 seconds.

NOTE: The timed locking function can be customized on vehicles equipped with a multi center display (middle grade type). Refer to P.54B-586.

GENERAL CIRCUIT DIAGRAM FOR THE KEYLESS ENTRY SYSTEM



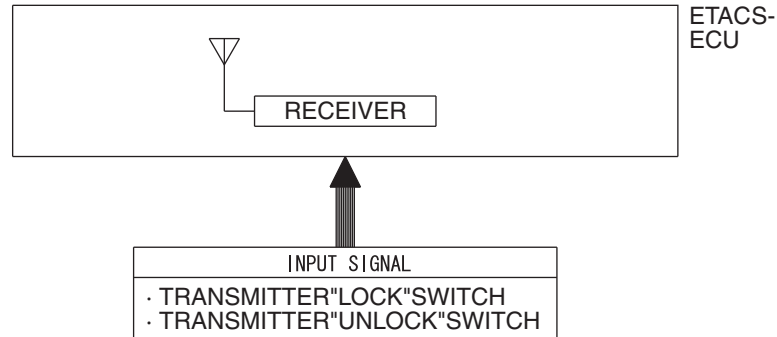
WAP54M044A



WAP54M045A

INSPECTION PROCEDURE E-1: Keyless Entry System: Keyless entry system does not operate.

Transmitter ("LOCK"/"UNLOCK") Input Signal



W4P54M44AA

CIRCUIT OPERATION

A receiver is incorporated in the ETACS-ECU. This receiver receives a lock or unlock signal from the transmitter.

TROUBLESHOOTING HINTS

- The RKE transmitter may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

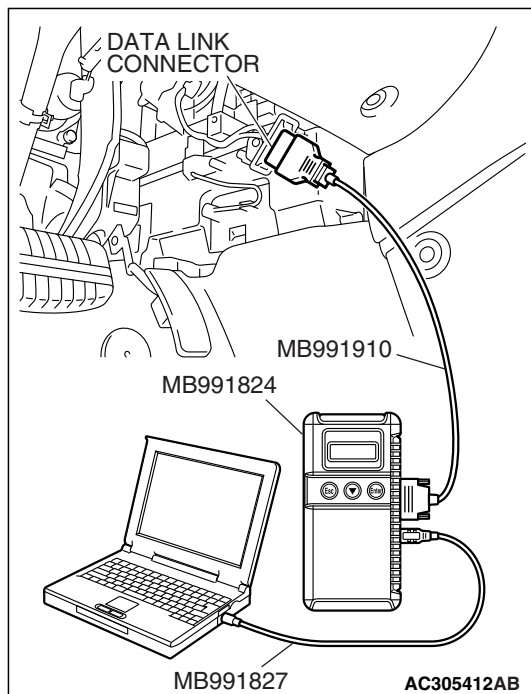
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A

STEP 1. Verify the central door locking system.

Q: Does the central door locking system work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure C-1 "The central door locking system does not work at all [P.54B-140](#)."

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

Check input signals from the transmitter.

⚠ CAUTION

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

- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) Push the transmitter "LOCK" or "UNLOCK" button.
- (4) Check that scan tool MB991958 sounds

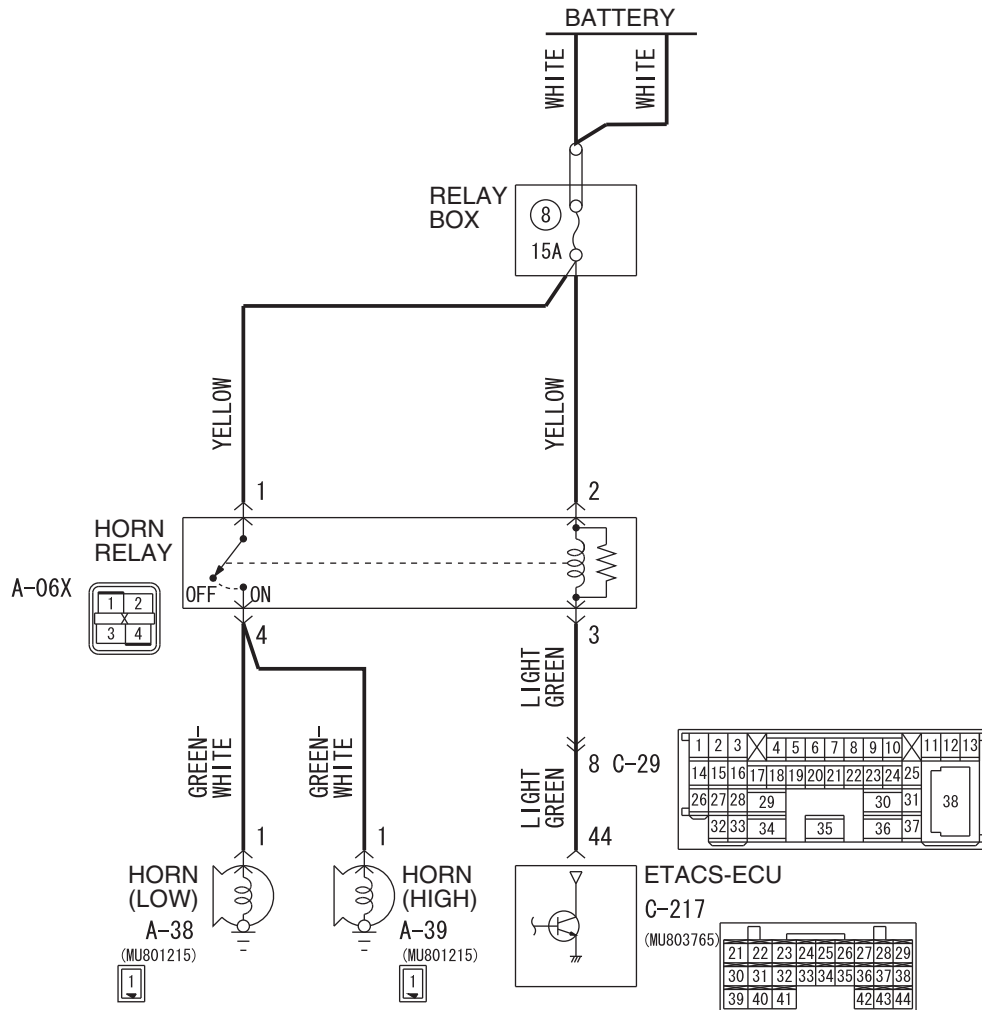
Q: When the transmitter "LOCK" or "UNLOCK" button is turned ON, does scan tool MB991958 sound?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). All the doors can be locked or unlocked by means of the transmitter.

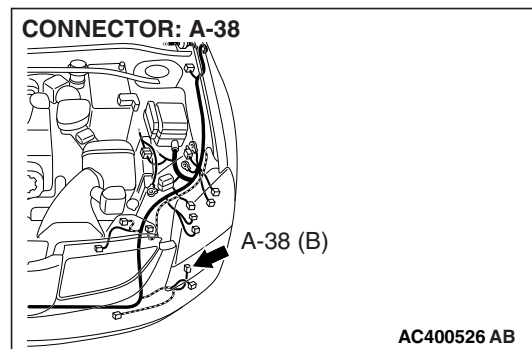
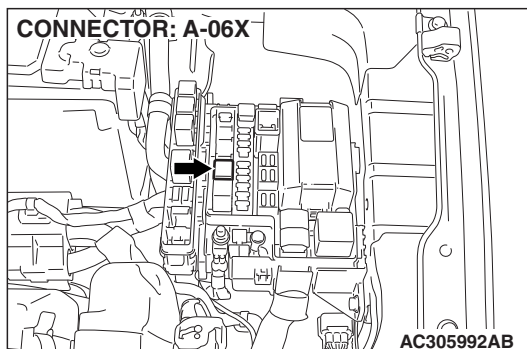
NO : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive any signal from the lock, unlock, trunk or panic switch [P.54B-568](#)."

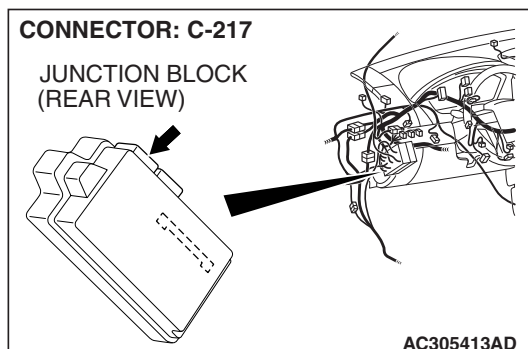
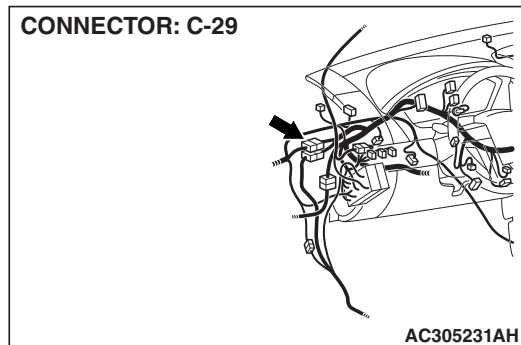
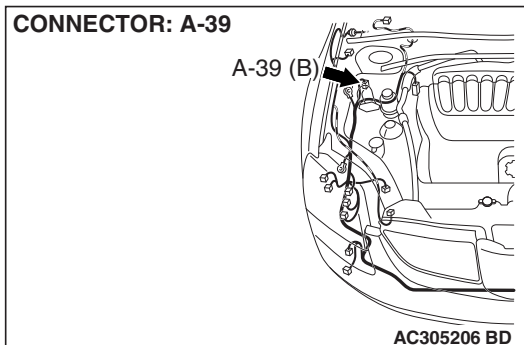
INSPECTION PROCEDURE E-2: Keyless Entry System: The dome light, the turn-signal lights and the horn do not operate through the answerback function.

Horn Drive Circuit



W5P54M010A





CIRCUIT OPERATION

The ETACS-ECU operates the following functions when it receives lock or unlock signal from the transmitter:

- Dome light answerback function
- Turn-signal light answerback function
- Horn answerback function

TECHNICAL DESCRIPTION (COMMENT)

The turn-signal lights and horn answerback functions can be disabled or enabled. However, the dome light answerback function cannot be disabled.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Verify the keyless entry system.

Q: Does the keyless entry system work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate [P.54B-223](#)."

STEP 2. Check the configuration function.

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

YES : Go to Step 3.

NO : Enable the answerback function by means of the adjustment function. Verify that the answerback functions work normally.

STEP 3. Verify trouble symptom.

Q: Which answerback function is defective?

Only the dome light : Go to Step 4.

Only the turn-signal lights : Go to Step 5.

Only the horn : Go to Step 6.

Dome light, turn-signal lights and horn : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the answerback functions work normally.

STEP 4. Verify the dome light.

Q: Does the dome light illuminate normally?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the answerback functions work normally.

NO : Refer to Inspection Procedure K-1 "The dome light do not illuminate and go out normally [P.54B-428](#)."

STEP 5. Verify the hazard warning light.

Q: Does the hazard warning light work normally?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the answerback functions work normally.

NO : Refer to Inspection Procedure I-2 "Hazard warning lights do not flash when the hazard warning light switch is turned on [P.54B-382](#)."

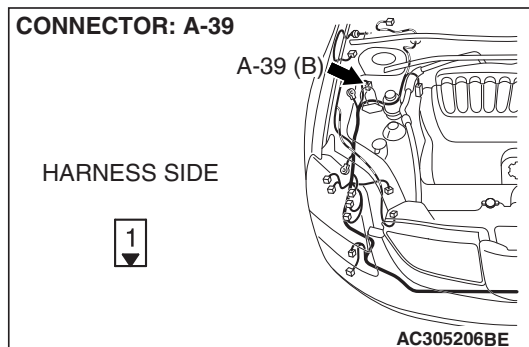
STEP 6. Verify which horn is defective.

Q: Which horn does not sound?

Horn (HIGH) : Go to Step 7.

Horn (LOW) : Go to Step 11.

Both horns : Go to Step 15.

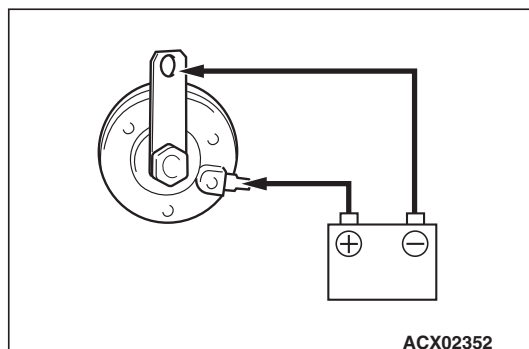


STEP 7. Check horn connector A-39 (HIGH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn (HIGH) connector A-39 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the horn sounds normally.



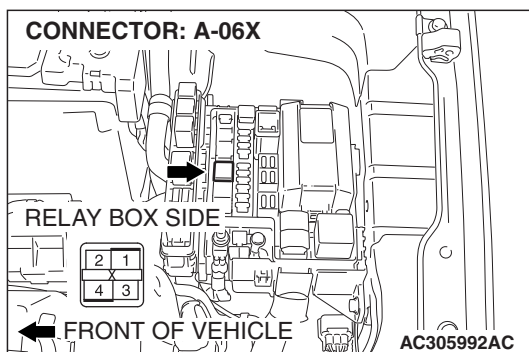
STEP 8. Check the horn (HIGH).

Connect the battery as shown, and verify that the horn sounds.

Q: Is the horn normal?

YES : Go to Step 9.

NO : Replace the horn (HIGH). Verify that the horn sounds normally.

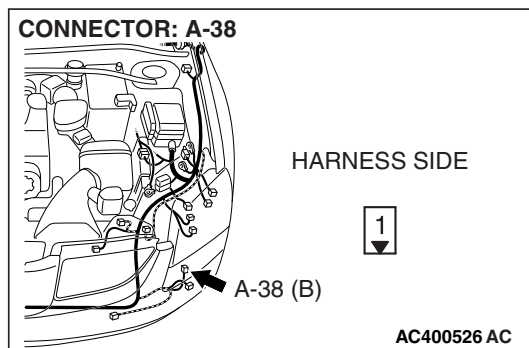
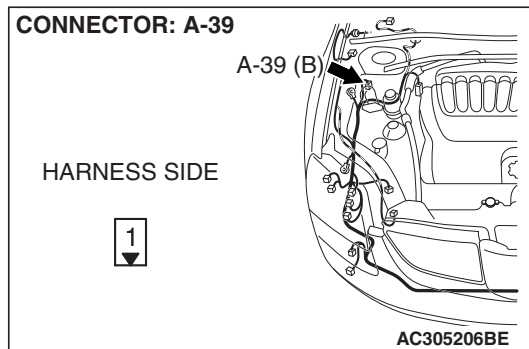
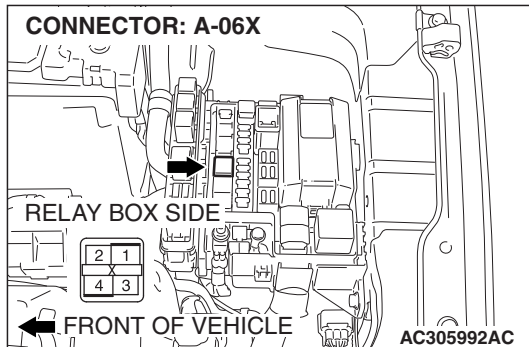


STEP 9. Check horn relay connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-06X in good condition?

YES : Go to Step 10.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the horn sounds normally.



STEP 10. Check the wiring harness between horn relay connector A-06X (terminal 4) and horn (HIGH) connector A-39 (terminal 1).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between horn relay connector A-06X (terminal 4) and horn (HIGH) connector A-39 (terminal 1) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the horn sounds normally.

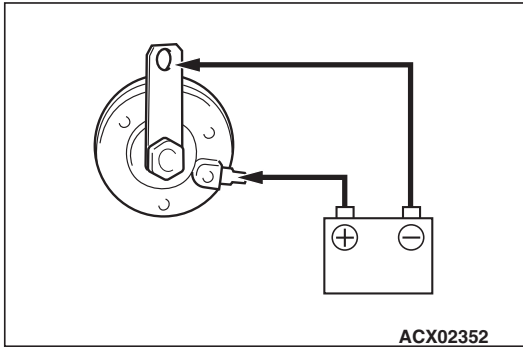
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the horn sounds normally.

STEP 11. Check horn connector A-38 (LOW) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn (LOW) connector A-38 in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the horn sounds normally.

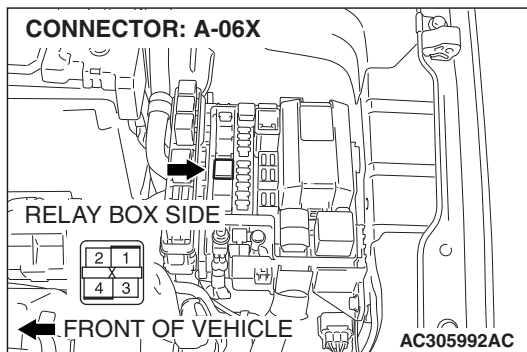
**STEP 12. Check the horn (LOW).**

Connect the battery as shown, and verify that the horn sounds.

Q: Is the horn normal?

YES : Go to Step 13.

NO : Replace the horn (LOW). Verify that the horn sounds normally.

**STEP 13. Check horn relay connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Is horn relay connector A-06X in good condition?**

YES : Go to Step 14.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the horn sounds normally.

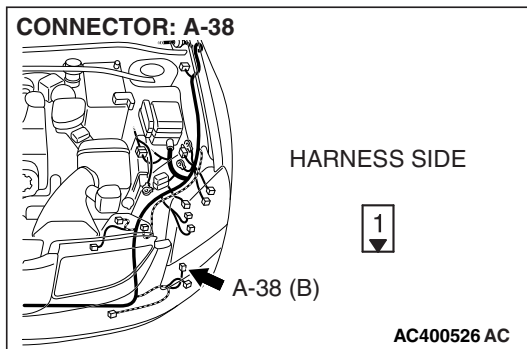
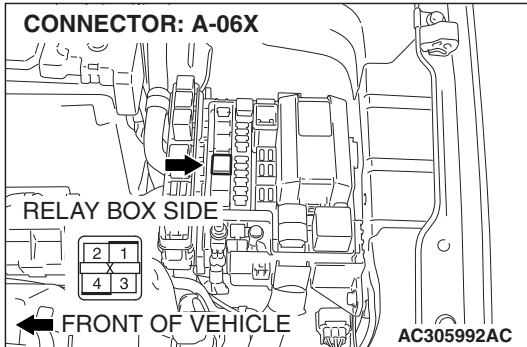
STEP 14. Check the wiring harness between horn relay connector A-06X (terminal 4) and horn (LOW) connector A-38 (terminal 1).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between horn relay connector A-06X (terminal 4) and horn (LOW) connector A-38 (terminal 1) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the horn sounds normally.

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

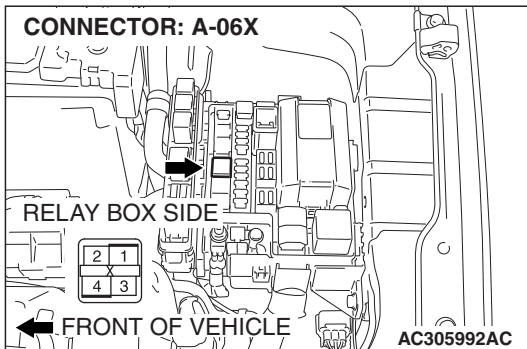


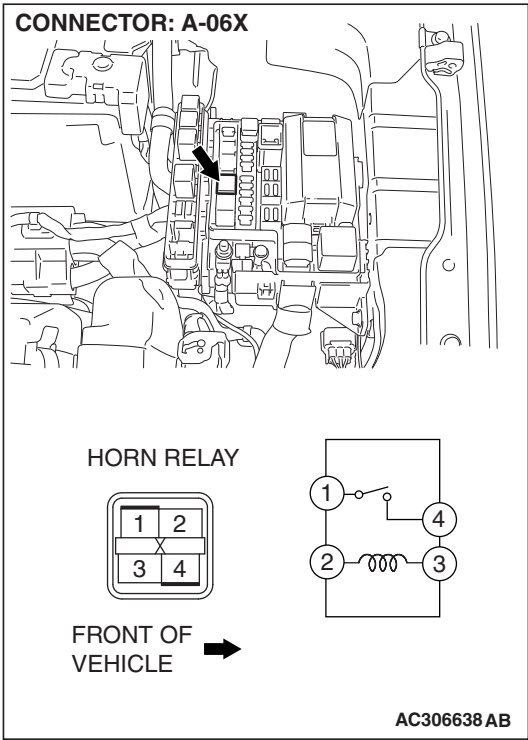
STEP 15. Check horn relay connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-06X in good condition?

YES : Go to Step 16.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the horn sounds normally.





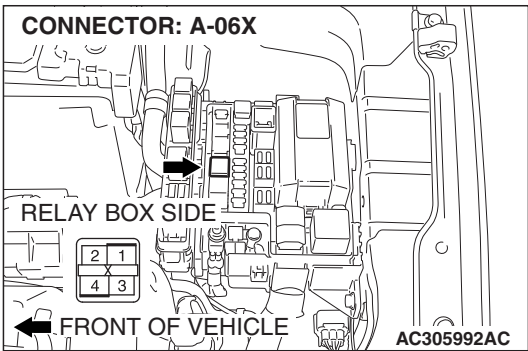
STEP 16. Check the horn relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 –4	Open circuit
<ul style="list-style-type: none">Connect terminal 2 to the positive battery terminalConnect terminal 3 to the negative battery terminal	1 –4	Continuity exists (2 ohms or less)

Q: Is the horn relay normal?

YES : Go to Step 17.

NO : Replace the horn relay. Verify that the horn sounds normally.



STEP 17. Check the battery power supply circuit to the horn relay. Measure the voltage at horn relay connector A-06X.

(1) Disconnect horn relay connector A-06X and measure the voltage available at the relay box side of the connector.

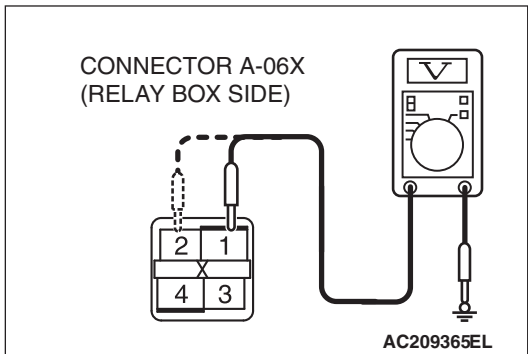
(2) Measure the voltage between terminal 1 and ground, and also between terminal 2 and ground.

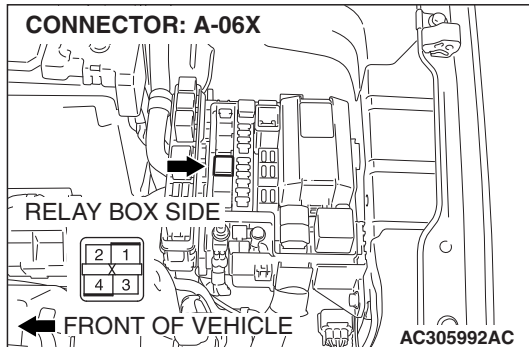
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 19.

NO : Go to Step 18.





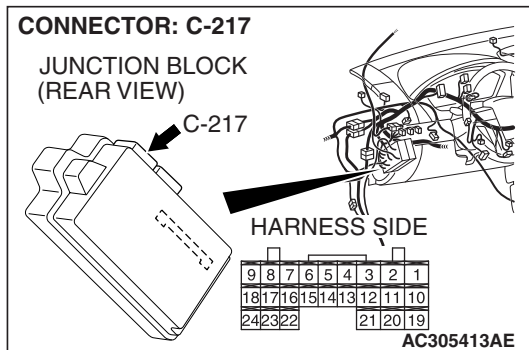
STEP 18. Check the wiring harness between horn relay connector A-06X (terminals 1 and 2) and the battery.

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

Q: Is the wiring harness between horn relay connector A-06X (terminals 1 and 2) and the battery in good condition?

YES : No action is necessary and testing is complete.

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



STEP 19. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

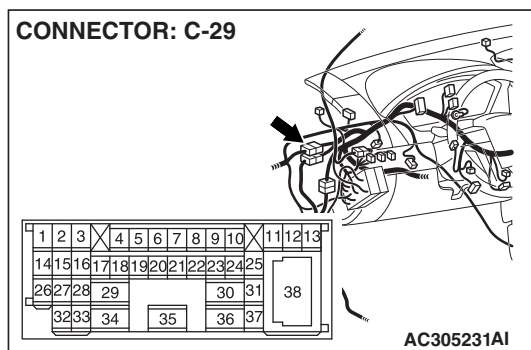
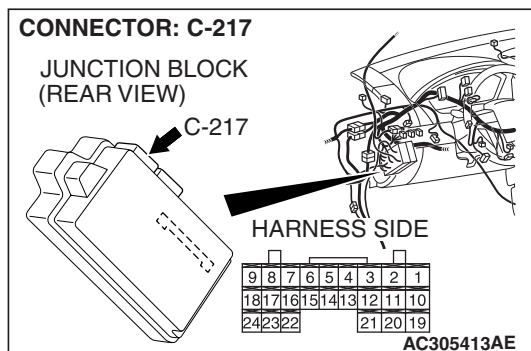
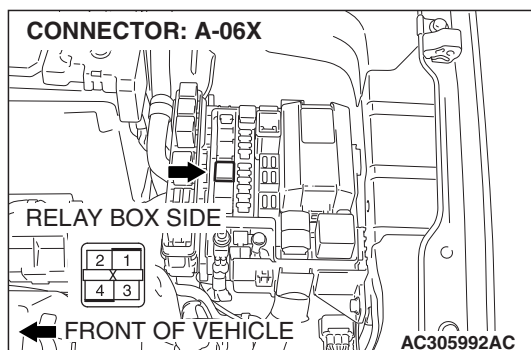
Q: Is ETACS-ECU connector C-217 in good condition?

YES : Go to Step 20.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the horn sounds normally.

STEP 20. Check the wiring harness between horn relay connector A-06X (terminal 3) and ETACS-ECU connector C-217 (terminal 44).

- Check the communication lines for open circuit and short circuit.



NOTE: Also check intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between horn relay connector A-06X (terminal 3) and ETACS-ECU connector C-217 (terminal 44) in good condition?

YES : Go to Step 21.

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

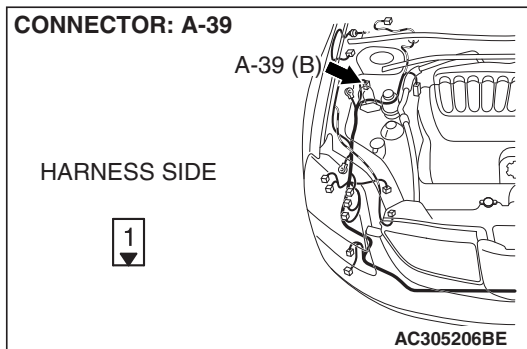
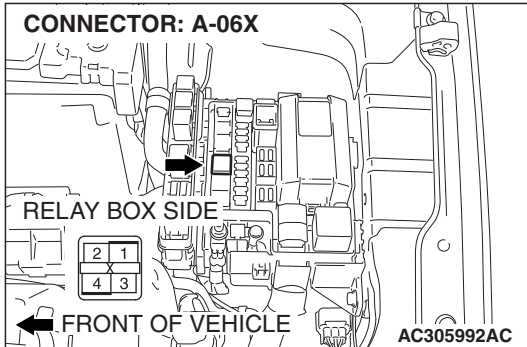
STEP 21. Check the wiring harness between horn relay connector A-06X (terminal 4) and horn (HIGH) connector A-39 (terminal 1).

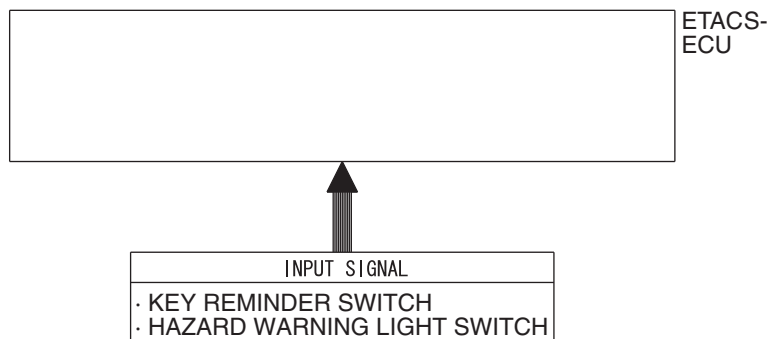
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between horn relay connector A-06X (terminal 4) and horn (HIGH) connector A-39 (terminal 1) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the horn sounds normally.

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



INSPECTION PROCEDURE E-3: Keyless Entry System: Encrypted code cannot be registered.**Encrypted Transmitter Code Register Mode**

W4P54M46AA

CIRCUIT OPERATION

The ETACS-ECU operates the encrypted code register mode according to the following signals:

- Key reminder switch
- Hazard warning light switch

TECHNICAL DESCRIPTION (COMMENT)

If the encrypted code register mode cannot be set, the input circuits from the switches described in "CIRCUIT OPERATION" or the ETACS-ECU may be defective.

If the encrypted code register mode can be set but the transmitter cannot be registered, the transmitter or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The hazard warning light switch may be defective
- The transmitter may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

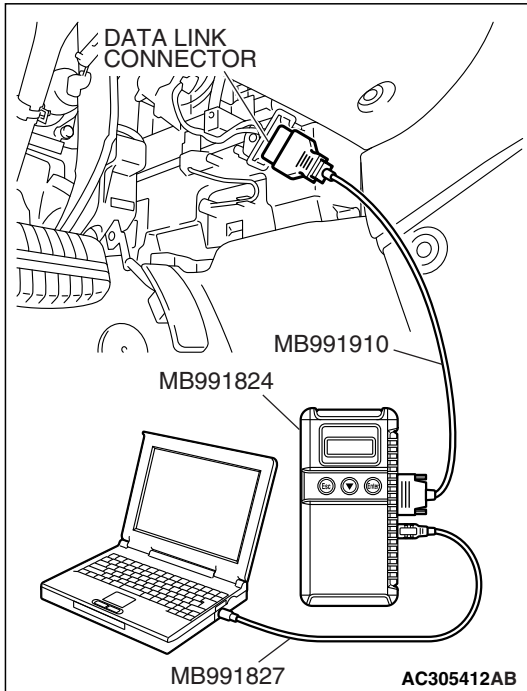
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A

STEP 1. Verify trouble symptom.

Q: Can the encrypted code register mode be set?

YES : Go to Step 3.

NO : Go to Step 2.



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

Check the input signals from the following switches:

- Key reminder switch
- Hazard warning light switch

⚠ CAUTION

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

- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) Check the switches (see table below) applicable for the input signal check are operated.
- (4) Check scan tool MB991958 sounds or not.

ITEM NAME	CHECK CONDITION
Key reminder switch	Remove and reinsert the ignition key
Hazard warning light switch	Turn the hazard warning light switch from "OFF" to "ON" position.

Q: When the key reminder switch and the hazard warning light switch are operated, does scan tool MB991958 sound in each case?

Buzzer of scan tool MB991958 sounds normally. :

Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the encrypted code can be registered in the transmitter.

Scan tool MB991958 does not sound when the ignition key is removed and reinserted : Refer to Inspection

Procedure N-1 "ETACS-ECU does not receive any signal from the key reminder switch [P.54B-530](#)."

Scan tool MB991958 does not sound when the hazard warning light switch is turned from "OFF" to "ON" :

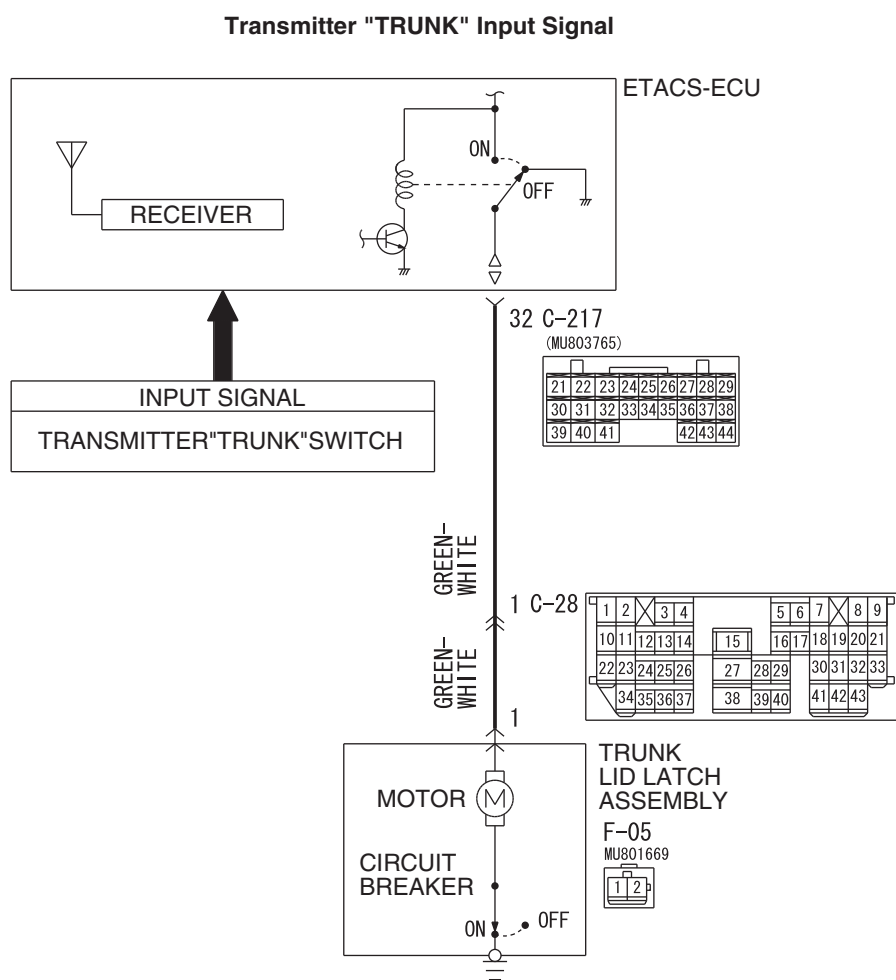
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive any signal from the hazard warning light switch [P.54B-534](#)."

STEP 3. Check the transmitter.

Q: When the transmitter's battery is replaced, can the encrypted code be registered?

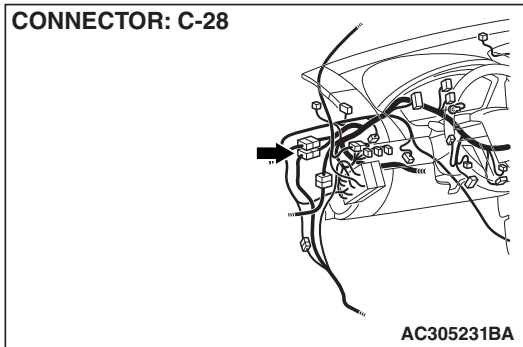
YES : No action is necessary and testing is complete.

NO : Replace the transmitter. If the encrypted code cannot be registered using the new transmitter, replace the ETACS-ECU. Verify that the encrypted code can be registered in the transmitter.

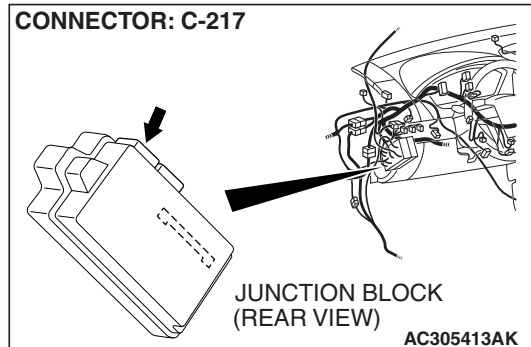
INSPECTION PROCEDURE E-4: Keyless Entry System: The trunk is not opened when the keyless entry transmitter "TRUNK" button is operated.


W7P54M136A

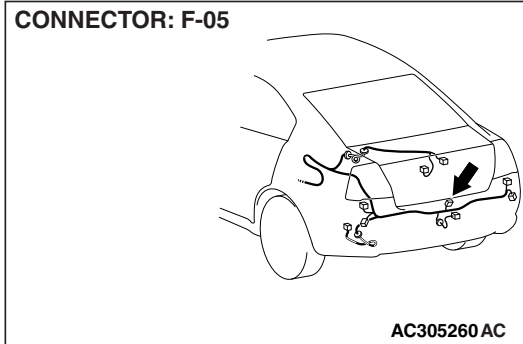
CONNECTOR: C-28



CONNECTOR: C-217



CONNECTOR: F-05



CIRCUIT OPERATION

A receiver is incorporated in the ETACS-ECU. This receiver receives a lock or unlock signal from the transmitter.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check that the doors can be locked and unlocked by using the keyless entry transmitter.

Q: Can the doors be locked and unlocked normally when the keyless entry transmitter is operated?

YES : Go to Step 2.

NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate [P.54B-223](#)."

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

Check input signals from the transmitter.

⚠ CAUTION

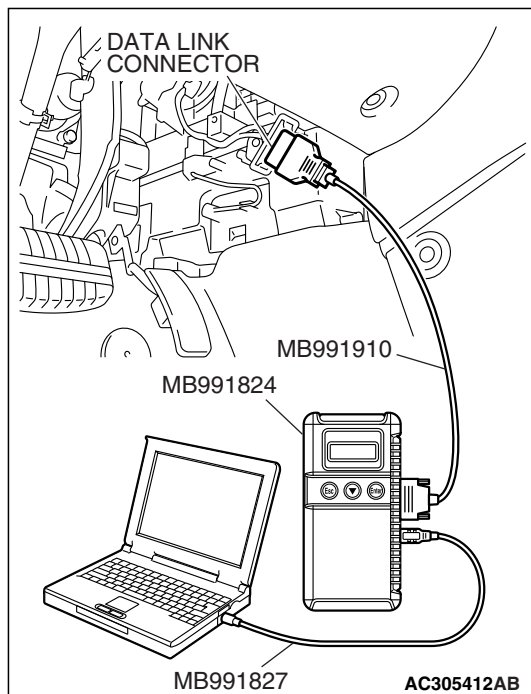
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

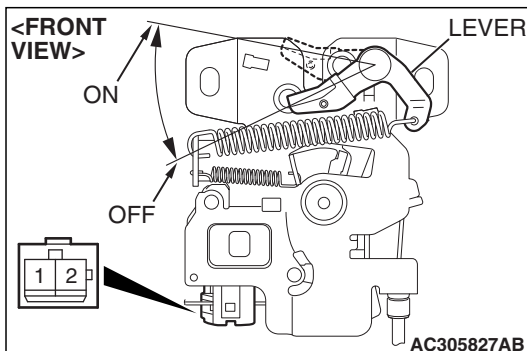
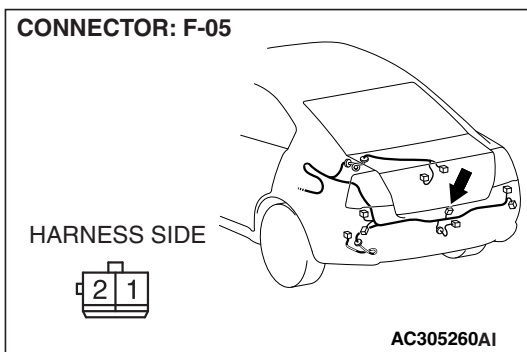
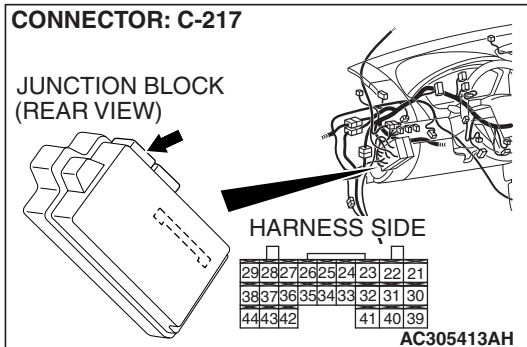
- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) Push the transmitter "TRUNK" button.
- (4) Check that scan tool MB991958 sounds

Q: When the transmitter "TRUNK" button is turned ON, does scan tool MB991958 sound?

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive any signal from the lock, unlock, trunk or panic switch [P.54B-568](#)."





STEP 3. Check trunk lid latch assembly connector F-05 and ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is trunk lid latch assembly connector F-05 and ETACS-ECU connector C-217 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. Check that the headlights illuminate normally.

STEP 4. Check the trunk lid latch assembly.

Remove the trunk lid latch assembly. Refer to GROUP 42, Trunk lid, Trunk lid latch inspection **P.42-68**.

LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
ON (Latch open)	2 –Switch body	Continuity exists (2 ohms or less)
OFF (Latch shut)	2 –Switch body	Open circuit

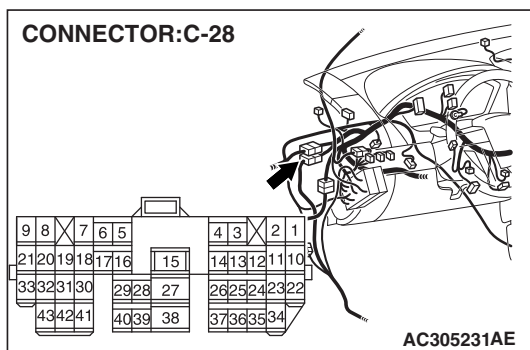
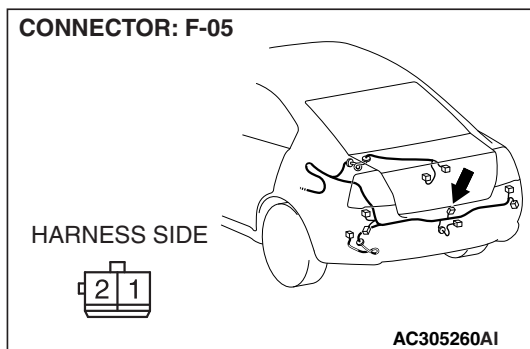
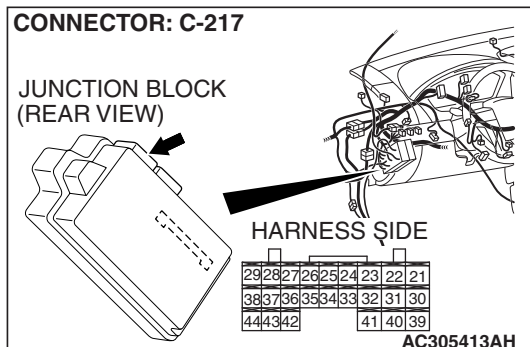
Q: Does the windshield washer motor operate normally?

YES : Go to Step 5.

NO : Replace the trunk lid latch assembly. Verify that the windshield washer works normally.

STEP 5. Check the wiring harness between trunk lid latch assembly connector F-05 (terminal 1) and ETACS-ECU connector C-217.

- Check the communication lines for open circuit and short circuit.



NOTE: Also check intermediate connector C-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between trunk lid latch assembly connector F-05 (terminal 1) and ETACS-ECU connector C-217 in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). All the doors can be locked or unlocked by means of the transmitter.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the sunroof-ECU normally.

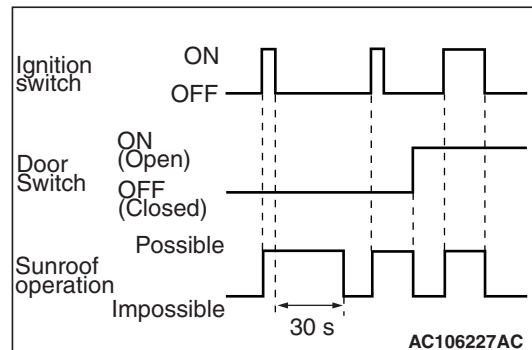
SUNROOF

GENERAL DESCRIPTION CONCERNING THE SUNROOF

M1549021200319

The following ECU affects the functions and control of the sunroof.

FUNCTION	CONTROL ECU
Sunroof timer function	ETACS-ECU, sunroof motor assembly

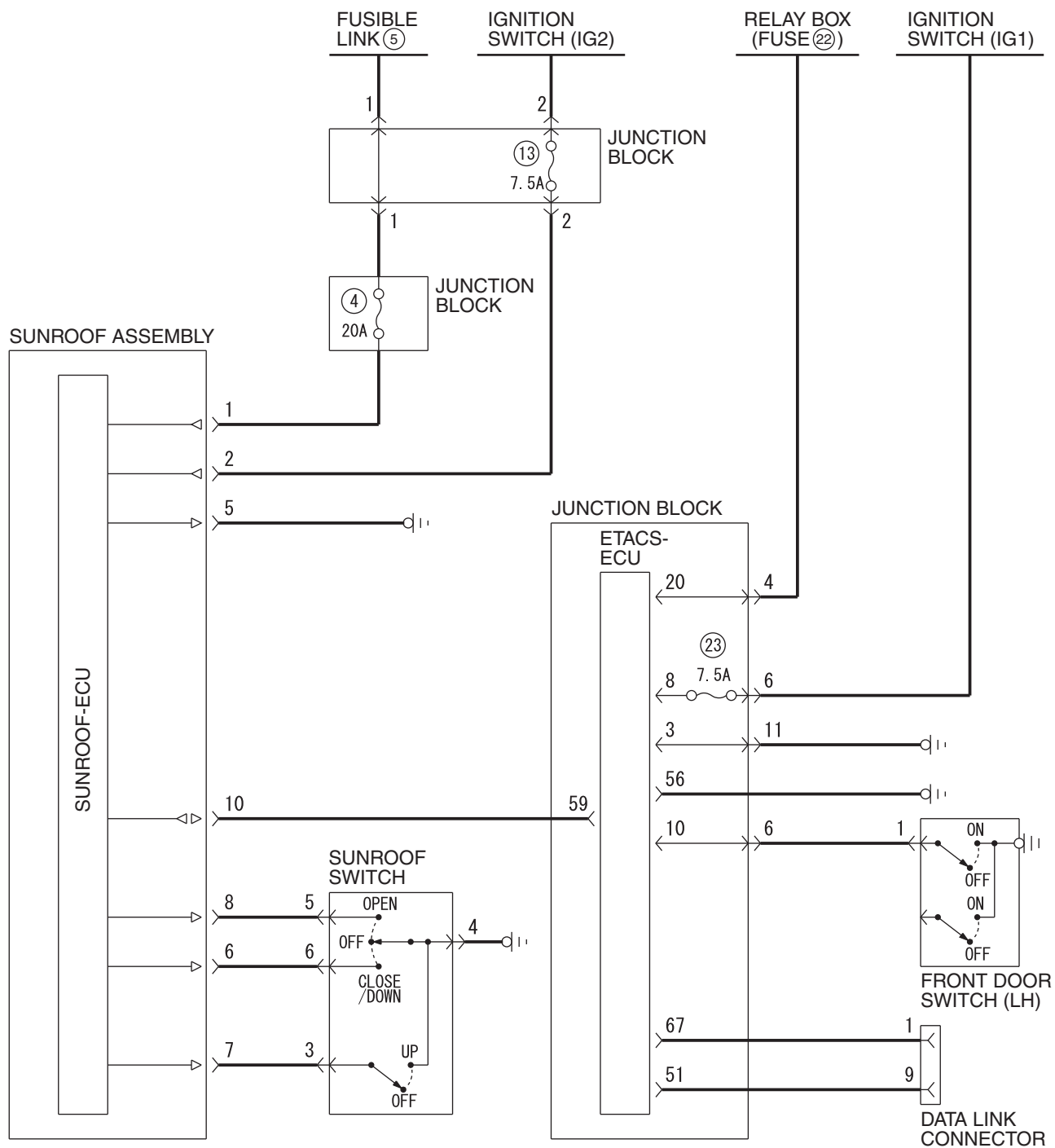


Sunroof timer function

The ETACS-ECU enables opening and closing of the sunroof for 30 seconds after the ignition is switched off.

During this timed operation, if the driver's door or passenger's door is opened, the sunroof timer function is deactivated from that moment.

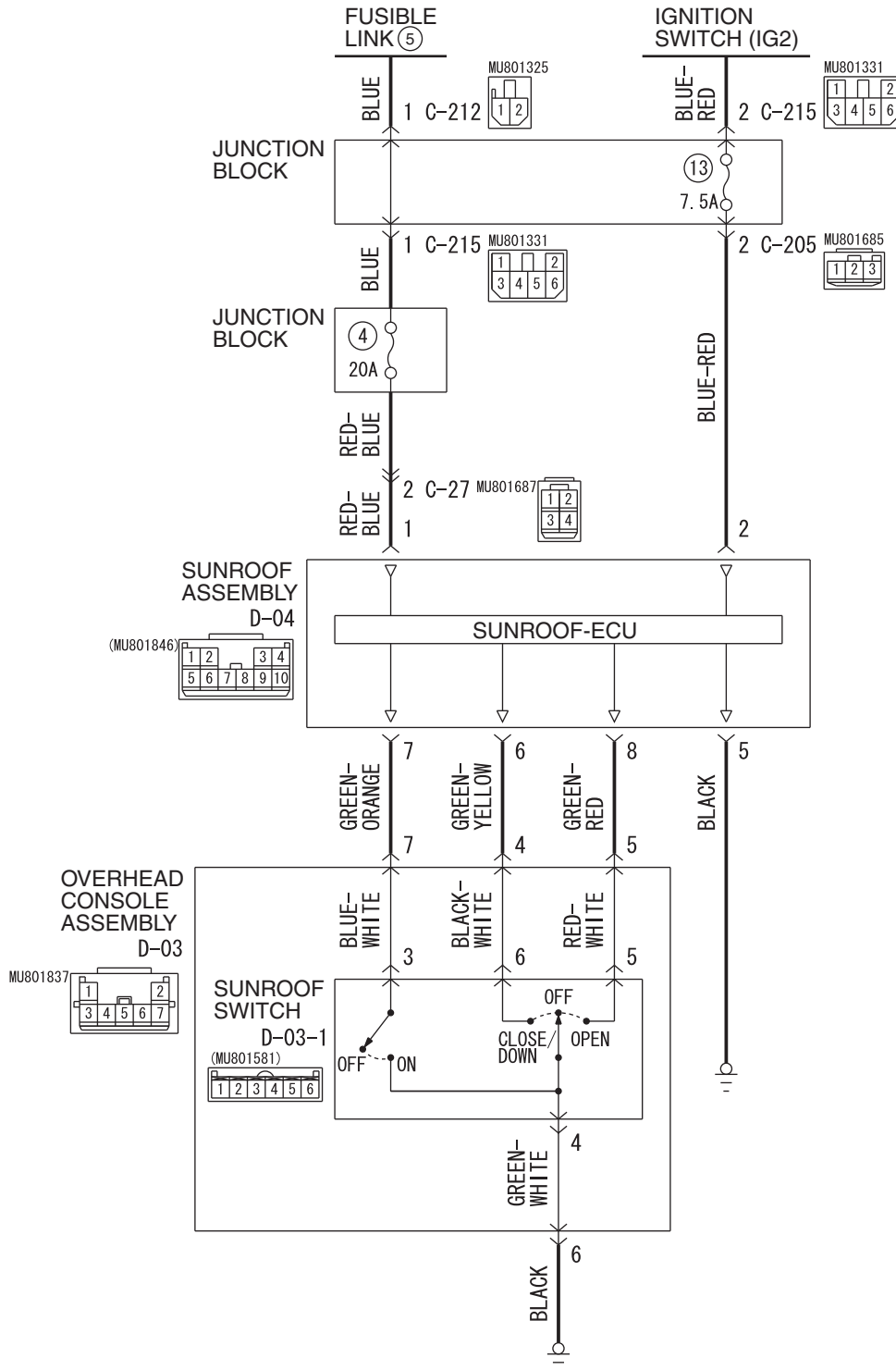
GENERAL CIRCUIT DIAGRAM REGARDING THE SUNROOF



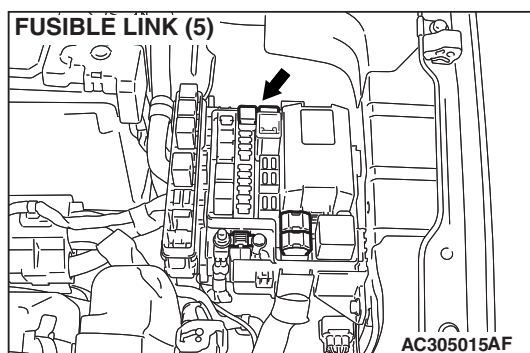
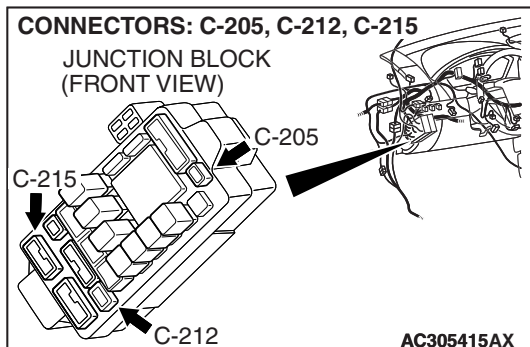
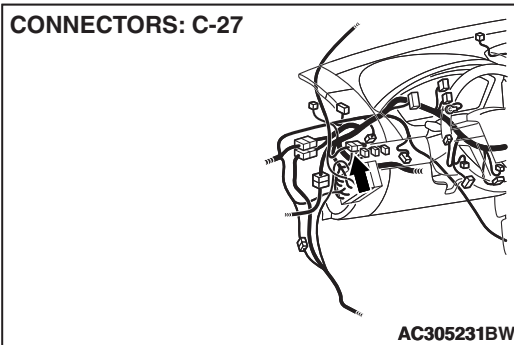
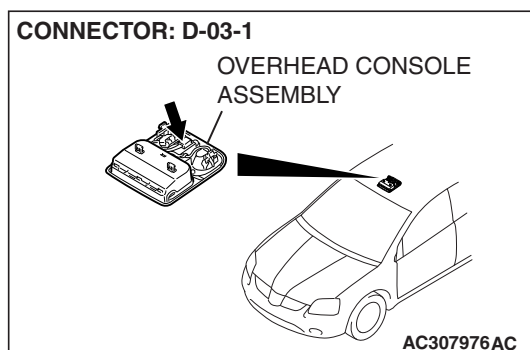
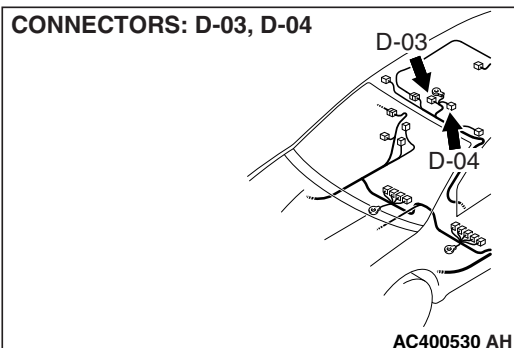
W9P54M044A

INSPECTION PROCEDURE F-1: Sunroof: Sunroof does not operate.

Sunroof Motor Assembly Power Supply Circuit



W9P54M045A

**CONNECTORS: C-27****CONNECTORS: D-03, D-04**

CIRCUIT OPERATION

- The sunroof motor assembly is energized through fusible link (5) by the battery.
- When the ignition switch (IG2) signal is on, the sunroof motor assembly is ready to operate.

TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

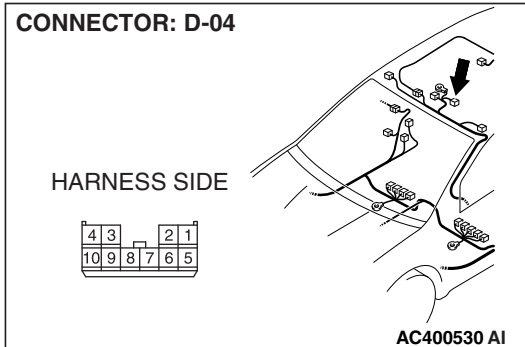
STEP 1. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-04 in good condition?

YES : Go to Step 2.

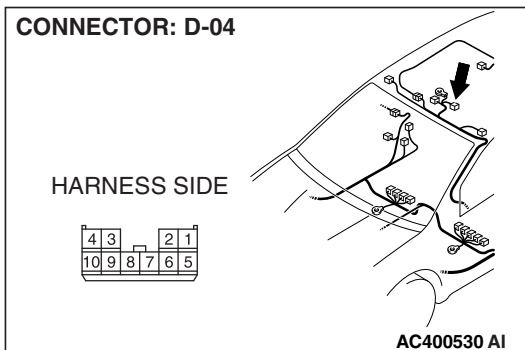
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. Check that the sunroof works normally.



STEP 2. Check the fusible link (5) line of power supply circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-04.

(1) Disconnect sunroof motor assembly connector D-04 and measure the voltage available at the wiring harness side of the connector.



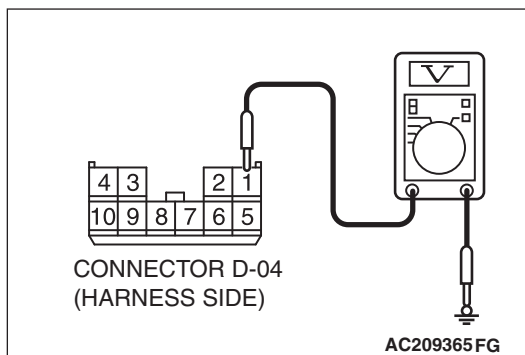
(2) Measure the voltage between terminal 1 and ground.

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

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

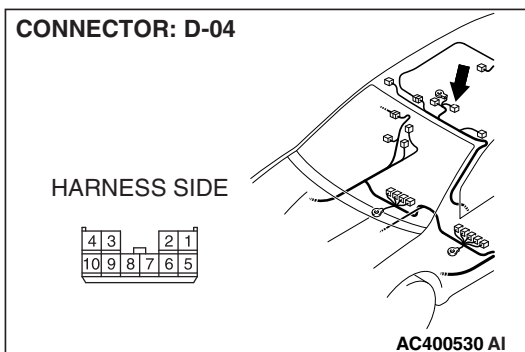
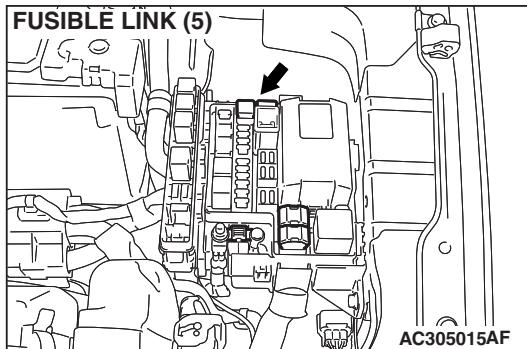
YES : Go to Step 4.

NO : Go to Step 3.

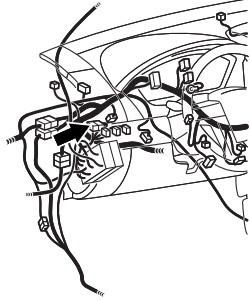


STEP 3. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 1) and fusible link (5).

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



CONNECTOR: C-27



AC305231BT

NOTE: Also check junction block connectors C-212, C-215 and intermediate connector C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-212, C-215 or intermediate connector C-27 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

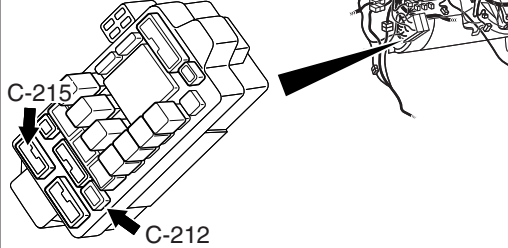
Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 1) and fusible link (5) in good condition?

YES : No action is necessary and testing is complete.

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

CONNECTORS: C-212, C-215

JUNCTION BLOCK
(FRONT VIEW)



HARNESS SIDE
C-212



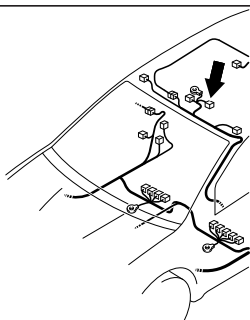
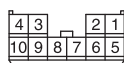
HARNESS SIDE
C-215



AC305416 AI

CONNECTOR: D-04

HARNESS SIDE



AC400530 AI

STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-04.

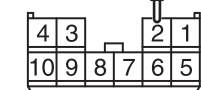
- (1) Disconnect sunroof motor assembly connector D-04 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 2 and ground.
 - The voltage should measure approximately 12 volts (battery positive voltage).

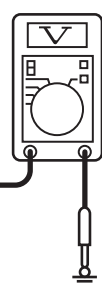
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 6.

NO : Go to Step 5.



CONNECTOR D-04
(HARNESS SIDE)



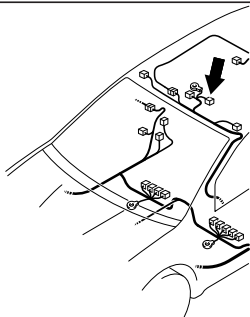
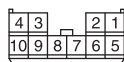
AC209365 FH

STEP 5. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 2) and ignition switch (IG2).

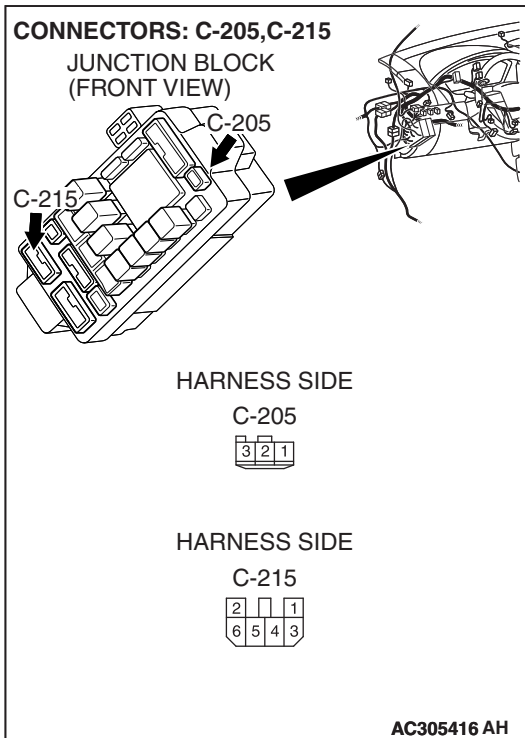
- Check the power supply line for open circuit and short circuit.

CONNECTOR: D-04

HARNESS SIDE



AC400530 AI

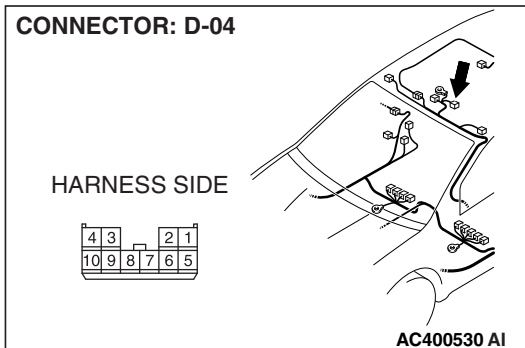


NOTE: Also check junction block connectors C-215 and C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 or C-205 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 2) and the ignition switch (IG2) in good condition?

YES : No action is necessary and testing is complete.

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



STEP 6. Check the ground circuit to the sunroof motor assembly. Measure the resistance at sunroof motor assembly connector D-04.

(1) Disconnect sunroof motor assembly connector D-04 and measure the resistance available at the wiring harness side of the connector.

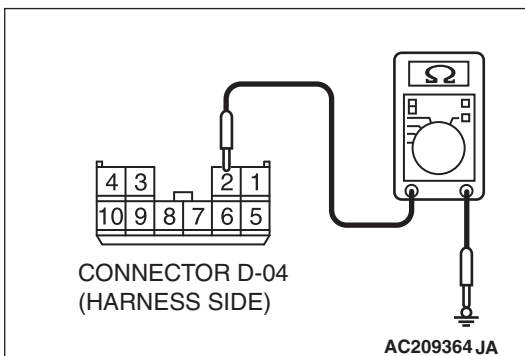
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

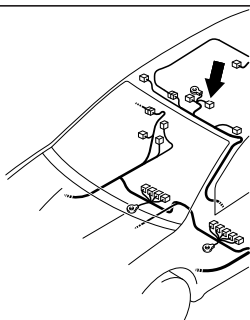
NO : Go to Step 7.



CONNECTOR: D-04

HARNESS SIDE

4	3			2	1
10	9	8	7	6	5



AC400530 AI

STEP 7. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 5) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 5) and ground in good condition?

YES : No action is necessary and testing is complete.

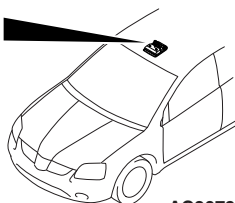
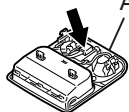
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

CONNECTOR: D-03-1

OVERHEAD CONSOLE
ASSEMBLY

HARNESS SIDE

6	5	4	3	2	1
---	---	---	---	---	---



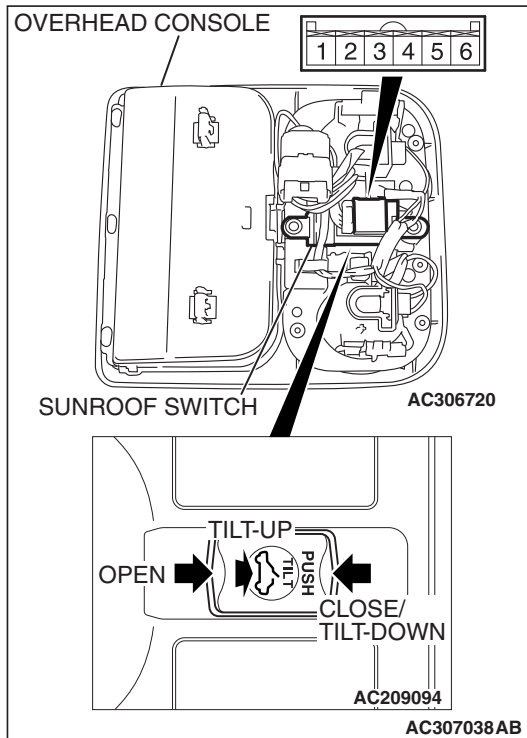
AC307976 AB

STEP 8. Check the sunroof switch connector D-03-1 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof switch connector D-03-1 in good condition?

YES : Go to Step 9.

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



STEP 9. Check the sunroof switch.

- (1) Remove the sunroof switch. Refer to GROUP 42, Sunroof Assembly P.42-85.
- (2) Check continuity when the sunroof switch is operated to "OPEN", "TILT UP" or "CLOSE/TILT DOWN" positions.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OPEN	4 -5	Continuity exists (2 ohms or less)
OFF	3 -4, 3 -5, 3 -6, 4 -5, 4 -6, 5 -6	Open circuit
TILT UP	3 -4	Continuity exists (2 ohms or less)
CLOSE/TILT-DOWN	4 -6	Continuity exists (2 ohms or less)

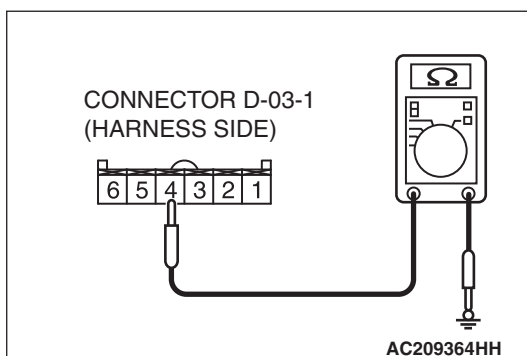
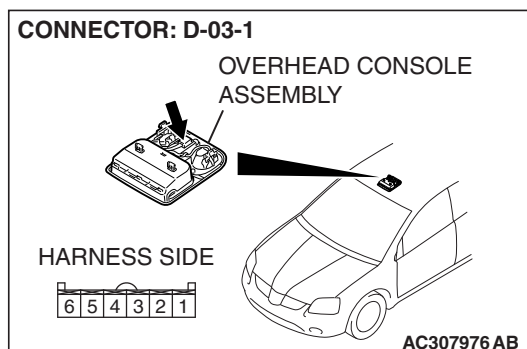
Q: Does the check meet the specified conditions?

YES : Go to Step 10.

NO : Replace the sunroof switch. Check that the sunroof works normally.

STEP 10. Check the ground circuit to the sunroof switch. Measure the resistance at sunroof switch connector D-03-1.

- (1) Disconnect sunroof switch connector D-03-1 and measure the resistance available at the wiring harness side of the connector.

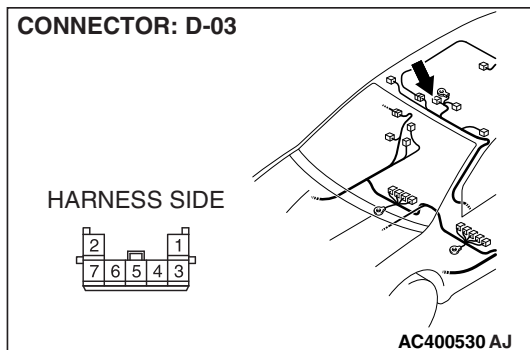


- (2) Measure the resistance between terminal 4 and ground.
 - The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 14.

NO : Go to Step 11.



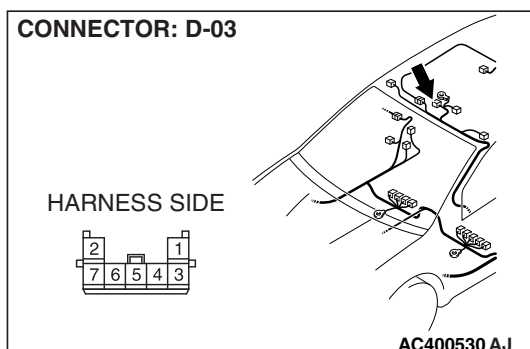
STEP 11. Check overhead console assembly connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is overhead console assembly connector D-03 in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2](#). Check that the sunroof works normally.



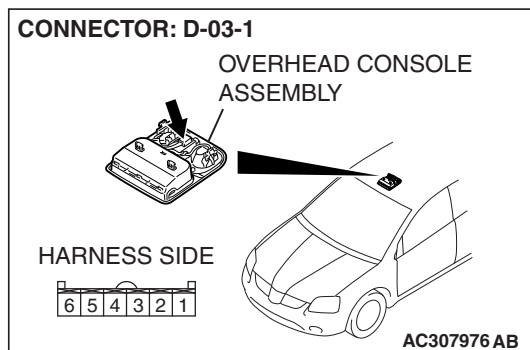
STEP 12. Check the wiring harness between sunroof switch connector D-03-1 (terminal 4) and overhead console assembly connector D-03 (terminal 6).

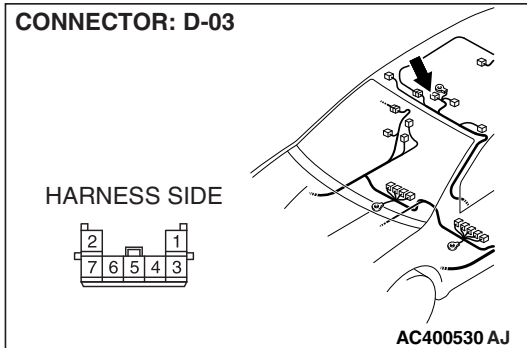
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03-1 (terminal 4) and overhead console assembly connector D-03 (terminal 6) in good condition?

YES : Go to Step 13.

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





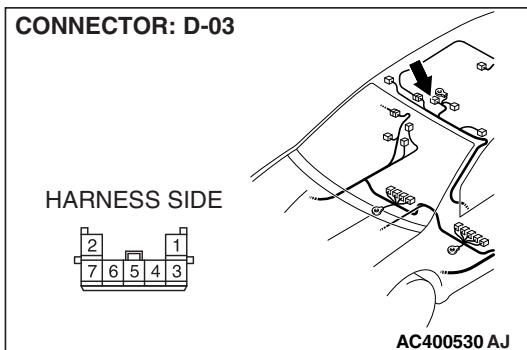
STEP 13. Check the wiring harness between overhead console assembly connector D-03 (terminal 6) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between overhead console assembly connector D-03 (terminal 6) and ground in good condition?

YES : No action is necessary and testing is complete.

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



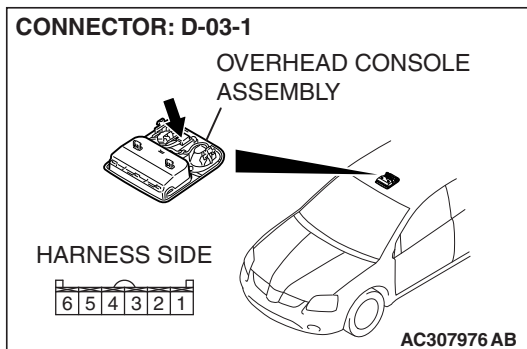
STEP 14. Check the wiring harness between sunroof switch connector D-03-1 (terminals 3, 5 and 6) and overhead console assembly connector D-03 (terminals 7, 5 and 4).

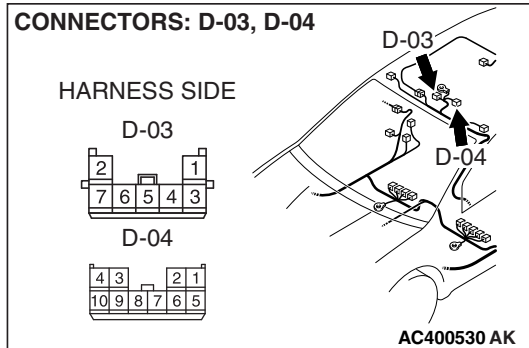
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between sunroof switch connector D-03-1 (terminals 3, 5 and 6) and overhead console assembly connector D-03 (terminals 7, 5 and 4) in good condition?

YES : Go to Step 15.

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





STEP 15. Check the wiring harness between sunroof motor assembly connector D-04 (terminals 6, 7 and 8) and overhead console assembly connector D-03 (terminals 4, 7 and 5).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminals 6, 7 and 8) and overhead console assembly connector D-03 (terminals 4, 7 and 5) in good condition?

YES : Go to Step 16.

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

STEP 16. Replace the sunroof switch.

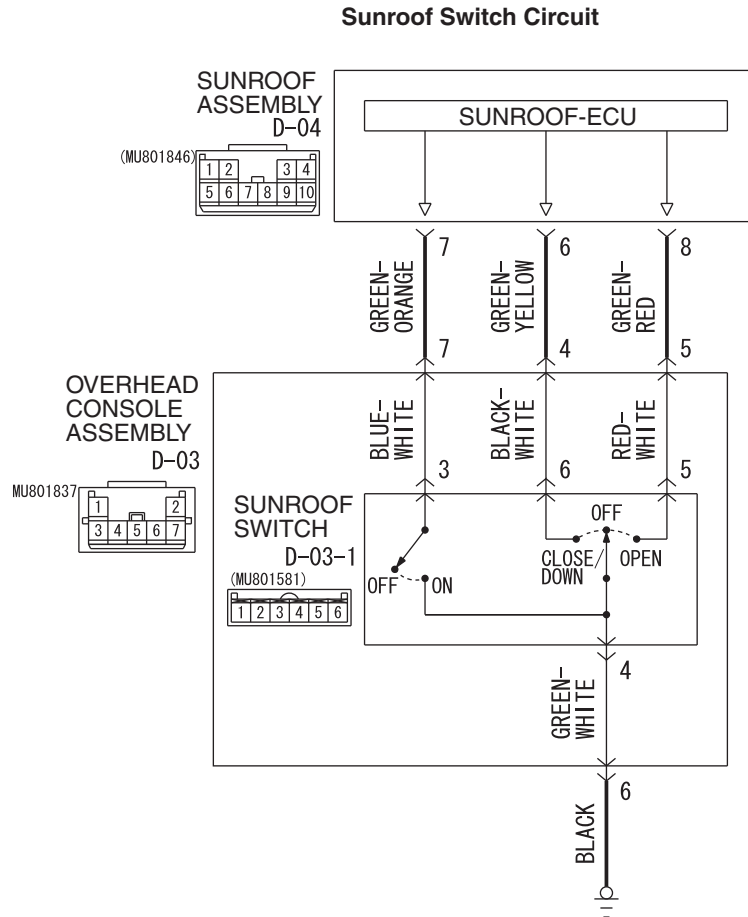
- (1) Replace the sunroof switch.
- (2) Check that the sunroof works normally.

Q: Does the sunroof works normally?

YES : No action is necessary and testing is complete.

NO : Replace the sunroof motor assembly. Check that the sunroof works normally.

INSPECTION PROCEDURE F-2: Sunroof: One of the sunroof switch positions is defective.



W9P54M046A

TECHNICAL DESCRIPTION (COMMENT)

The sunroof switch or the sunroof motor assembly may be defective.

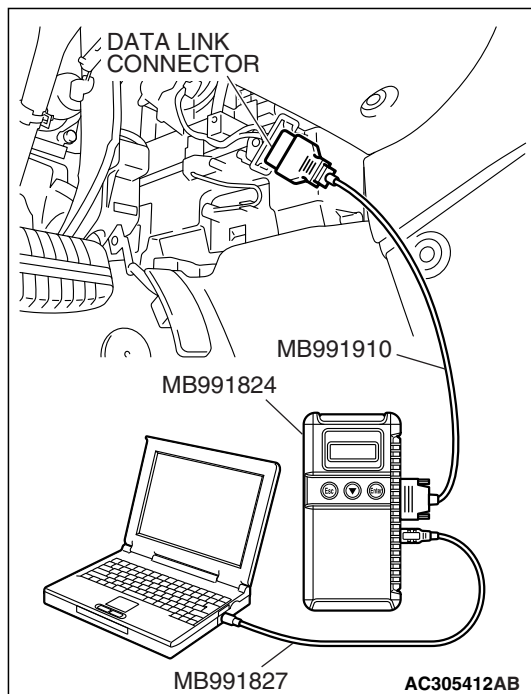
TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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



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

Check the input signals from the sunroof switch.

⚠ CAUTION

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

- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Operate the scan tool MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) When each function of the sunroof switch is operated (turned on), check that scan tool MB991958 sounds.

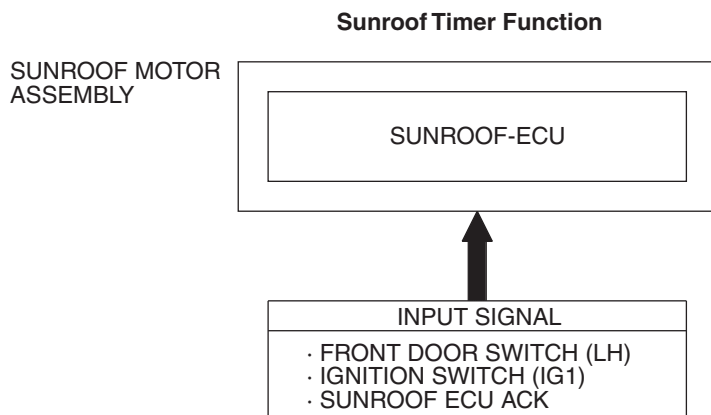
Q: Does scan tool MB991958 sound when the sunroof switch is operated?

YES : Replace the sunroof motor assembly. Check that the sunroof works at all positions normally.

NO : Refer to Inspection Procedure M-8 "ETACS-ECU does not receive any signal from the up, open or close/down switch [P.54B-526](#)."

INSPECTION PROCEDURE F-3: Sunroof: Sunroof Timer Function does not Work Normally.

NOTE: This troubleshooting requires use of scan tool MB991958 and SWS monitor kit MB991813. For details of how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."



W4P54M50AA

CIRCUIT OPERATION

- The sunroof timer function works according to the signals from the following switches:
 - Ignition switch (IG1): OFF
 - Front door switch: OFF
- Vehicle condition
 - Ignition switch: LOCK position
 - Front door: Closed
- When the driver's door is opened and closed while the sunroof timer function is on, the sunroof operative duration will be changed.

TECHNICAL DESCRIPTION (COMMENT)

Is the sunroof timer function does not work normally, the input circuits from the switches described in "CIRCUIT OPERATION", the sunroof motor assembly, the ETACS-ECU or the SWS communication line may be defective.

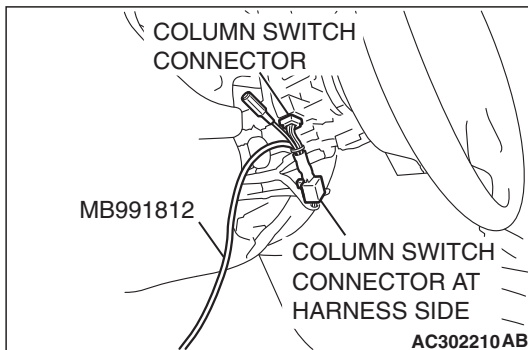
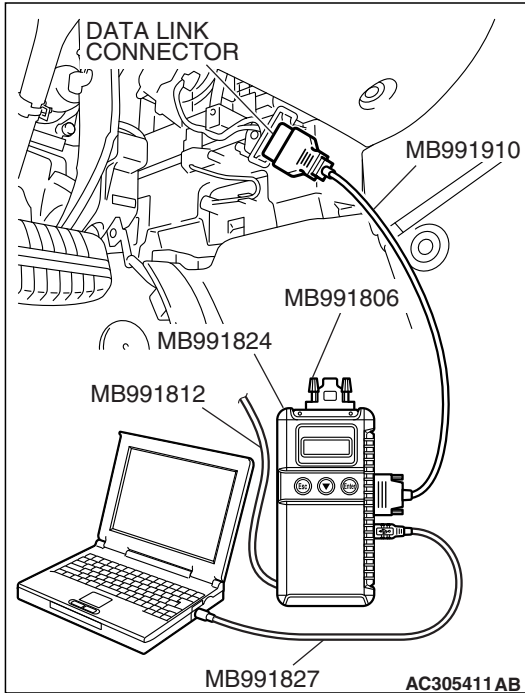
TROUBLESHOOTING HINTS

- The front door switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness



STEP 2. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Observe how the input signal is changed when the ignition switch is turned from the ON position to the "LOCK" (OFF) position.

- (1) Operate the M.U.T.-III according to the procedure below to display "SUNROOF-OPE."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "SUNROOF."
 - g. Select "SUNROOF-OPE."
- (2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	OFF
ITEM 72	S/R ECU ACK	NORMAL ACK

Q: Does the M.U.T.-III display the items "IG SW (IG1)" and "S/R ECU ACK" as normal condition?

Normal conditions displayed for all the items : Replace the sunroof motor assembly. Check that the sunroof timer function works normally.

Normal condition is not displayed for the "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-500.](#)"

Normal condition is not displayed for the "S/R ECU ACK" : Replace the sunroof motor assembly. Check that the sunroof timer function works normally.

WINDSHIELD WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE WINDSHIELD WIPER AND WASHER

M1549021500376

The following ECUs affect the functions and control of the windshield wiper and washer.

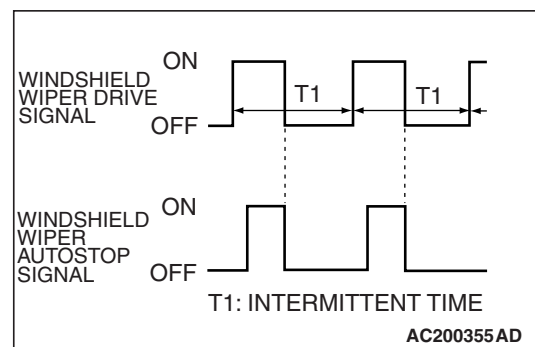
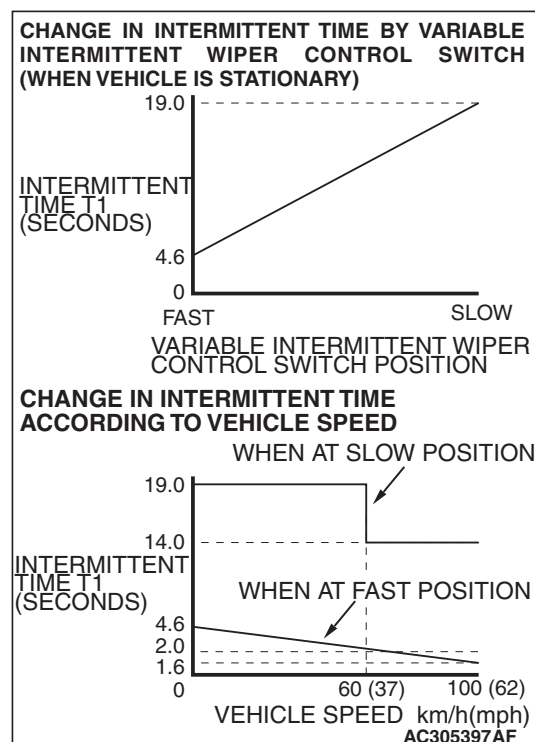
FUNCTION	CONTROL ECU	
Windshield wiper and washer control function	Intermittent control (Vehicle speed-dependent variable type)	ETACS-ECU, front-ECU, column switch
	Mist wiper control	ETACS-ECU, column switch
	Low speed wiper and high speed wiper control	ETACS-ECU, column switch
	Washer control	ETACS-ECU, column switch

Windshield wiper and washer control function

INTERMITTENT CONTROL (VEHICLE SPEED-DEPENDENT VARIABLE TYPE)

ETACS-ECU uses the dial position of the variable intermittent wiper control switch and the vehicle speed signal sent by the combination meter to calculate the interval to be sent to the front-ECU.

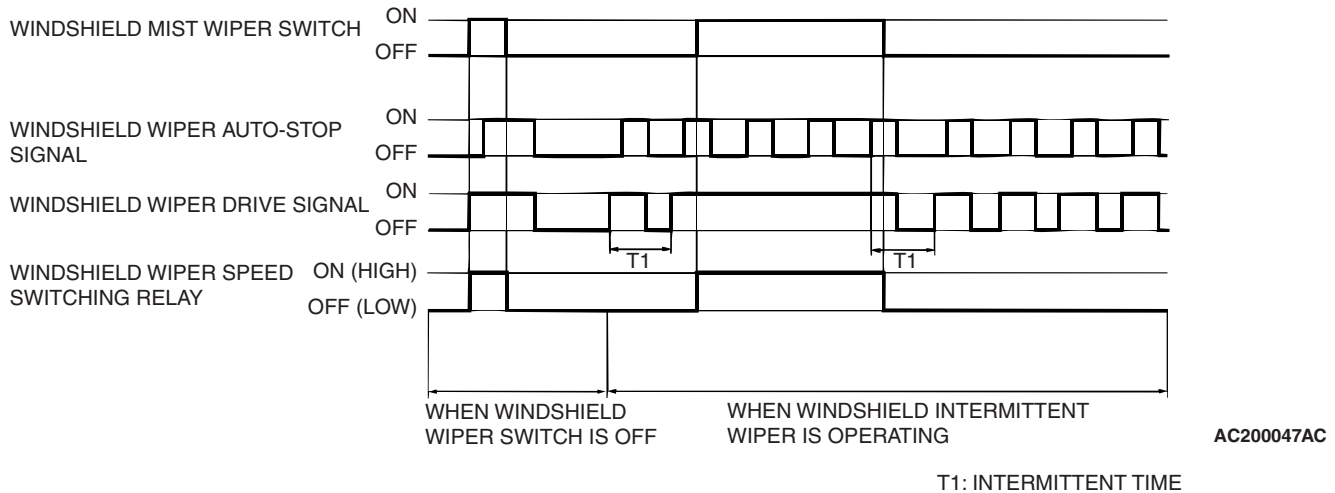
NOTE: The speed-sensitive wiper can be customized on vehicles equipped with a multi center display (middle grade type). Refer to [P.54B-586](#).



The front-ECU determines the intermittent time T1 from the input SWS data signal, and turns ON the windshield wiper drive signal. When the wiper is at the STOP position, the windshield wiper auto-stop signal goes OFF, then turns OFF the windshield wiper drive signal. After the intermittent time T1 seconds from when the windshield wiper drive signal turned ON, the windshield wiper drive signal is turned ON again and the above operation is repeated.

NOTE: If the intermittent time T1 is within 2 seconds, the wiper is operated consecutively at LOW-speed by the front-ECU.

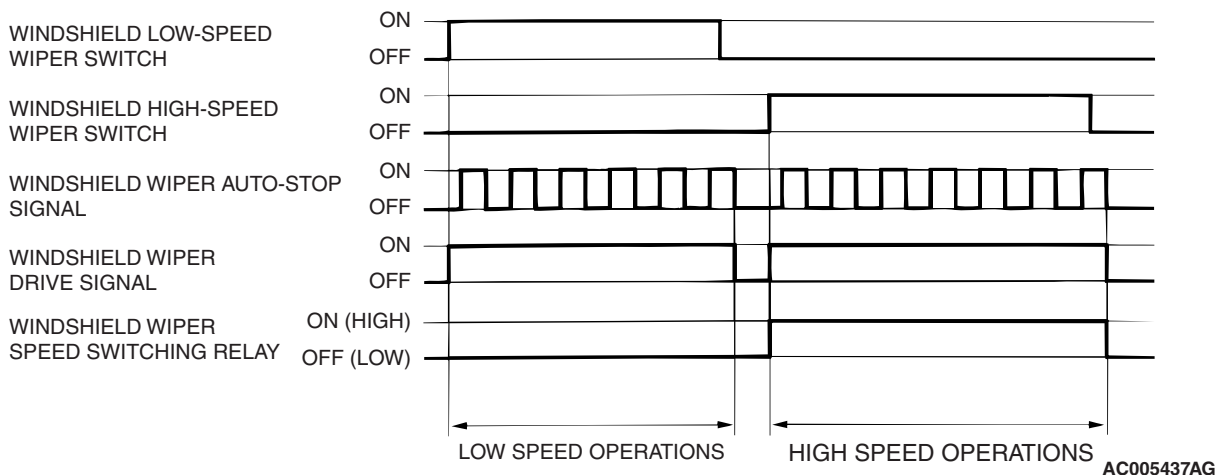
Mist wiper control



When the ignition switch is in the ACC or ON position, and the windshield mist wiper switch is turned ON, the front-ECU turns ON the windshield wiper drive signal. At the same time, the wiper speed switching relay is turned ON (HIGH-SPEED). While the windshield mist wiper switch is ON, the windshield wiper will operate at high speed. Then, if the windshield mist wiper switch is turned off, the wiper operates at low speed until it stops at the predetermined park position.

When the windshield mist switch is turned on briefly, the wiper operates once at low speed. At the point the windshield mist switch is turned ON, if the windshield wiper has been operating intermittently, the same operations as the above will be performed while the windshield mist wiper switch is ON. After the windshield mist wiper switch goes OFF, the intermittent operations will be set again T1 seconds after the last windshield wiper auto-stop signal turning ON.

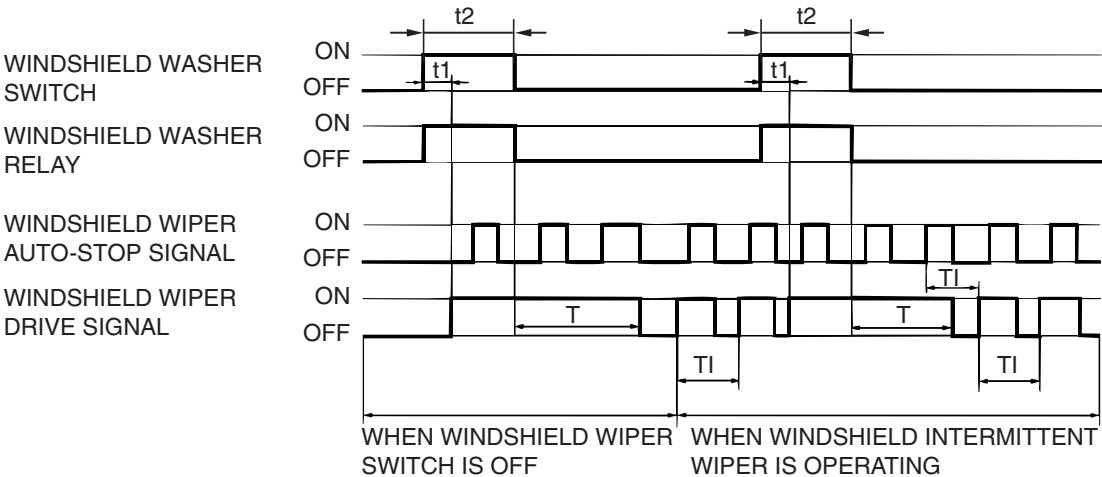
Low speed wiper and high speed wiper control



When the ignition switch is at the ACC or ON position, and the windshield low speed wiper switch of the column switch is turned ON, the front-ECU turns ON the windshield wiper drive signal, turns OFF (LO) the windshield wiper speed relay, and operates the

windshield wiper at low speed. Next, when the windshield high speed wiper switch is turned ON, the windshield wiper drive signal is turned ON, the windshield wiper speed switching relay is turned ON (HI), and the windshield wiper is operated at high speed.

Washer control



T: WIPER OPERATING TIME AFTER WINDSHIELD WASHER SWITCH IS OFF
TI: INTERMITTENT TIME t1: 0.15 SECONDS t2: WINDSHIELD WASHER OPERATING TIME AC306460 AB

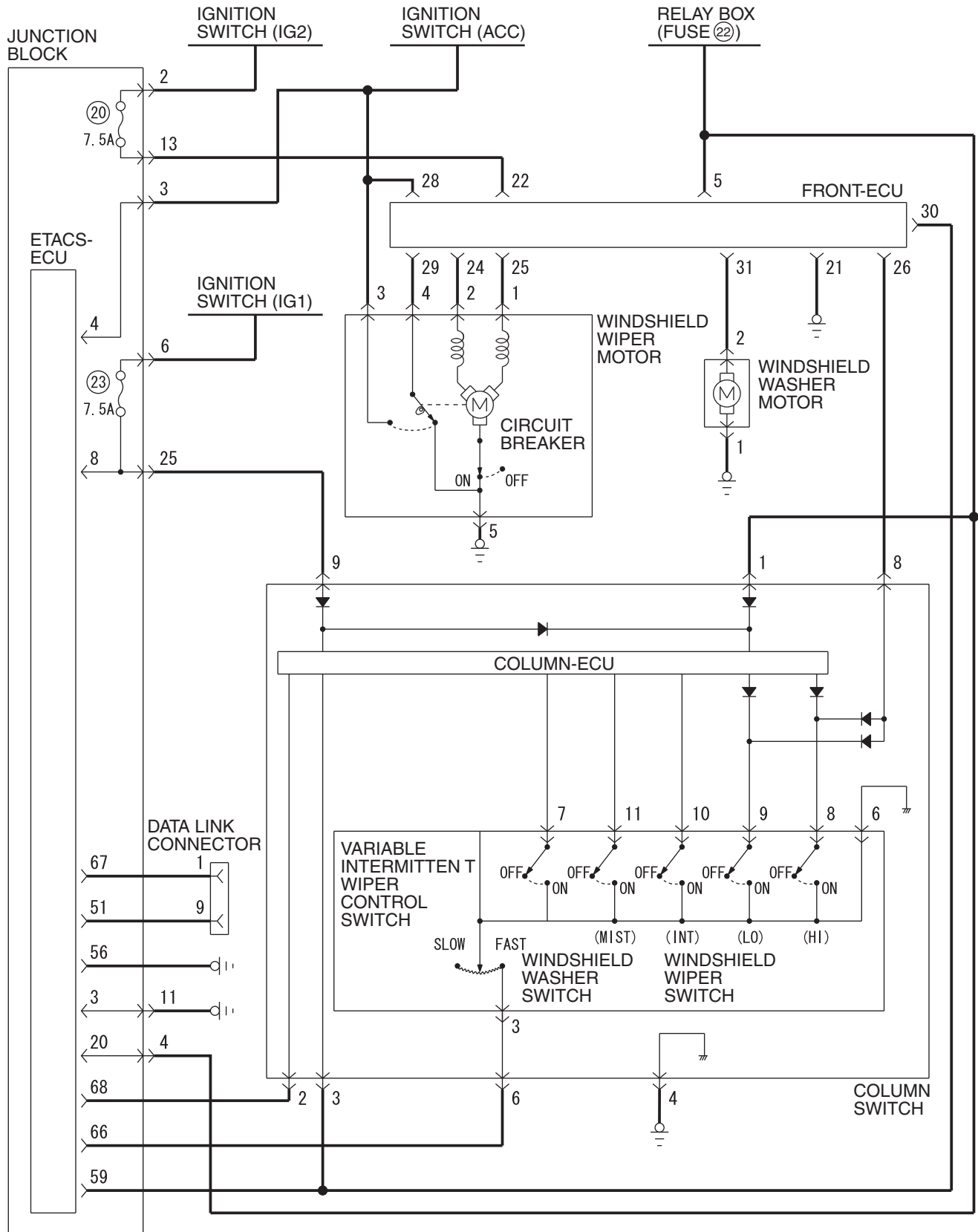
When the ignition switch is in the ACC or ON position, and the windshield washer switch is turned ON, the front-ECU turns ON the windshield washer relay. The windshield wiper drive signal is turned ON after 0.15 second until 2 seconds after the windshield

washer switch goes OFF to operate the windshield wiper continuously. When the windshield washer switch is turned ON, if the windshield wiper is operating intermittently, intermittent operations will be continued after continuous operations.

NOTE: The wiper drive signal output time varies according to the conditions. Refer to the following table for details.

	WHEN WIPER SWITCH IS OFF			WHEN WIPER SWITCH IS SET TO INT			WHEN WIPER SWITCH IS SET TO LO OR HI		
t2	0.15 second or less	0.15 - 0.8 second	0.8 second or more	0.15 second or less	0.15 - 0.8 second	0.8 second or more	0.15 second or less	0.15 - 0.8 second	0.8 second or more
T	0 second	1.2 seconds	2 seconds	0 second	1.2 seconds	2 seconds	0 second	1.2 seconds	2 seconds

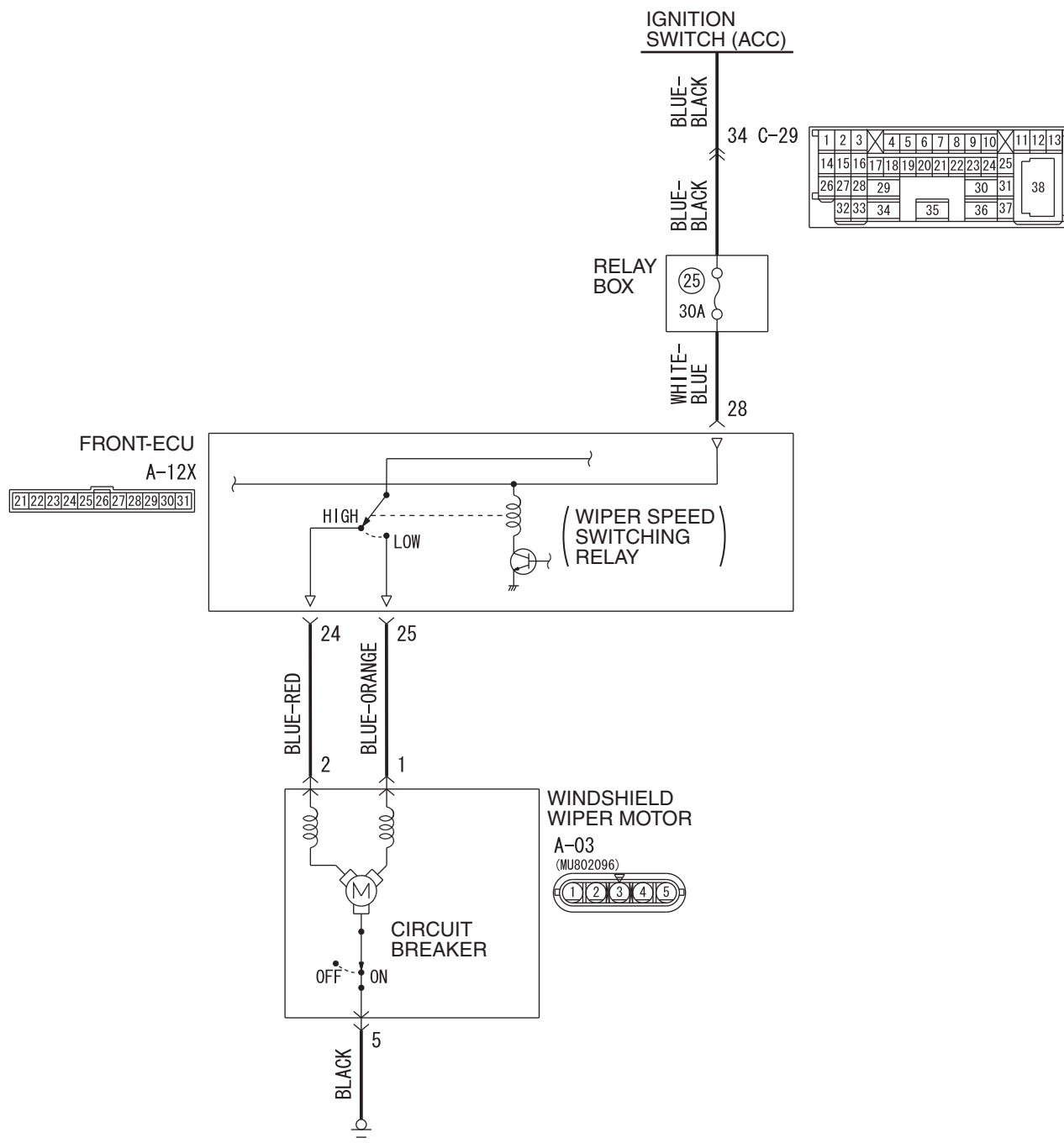
GENERAL CIRCUIT DIAGRAM FOR THE WINDSHIELD WIPER AND WASHER

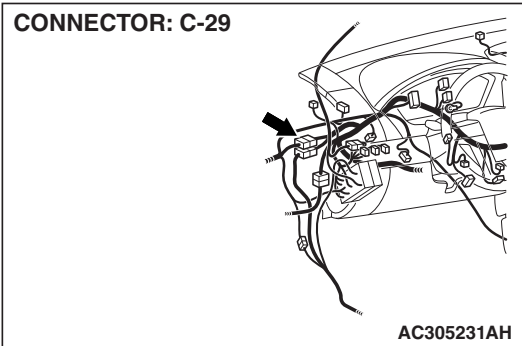
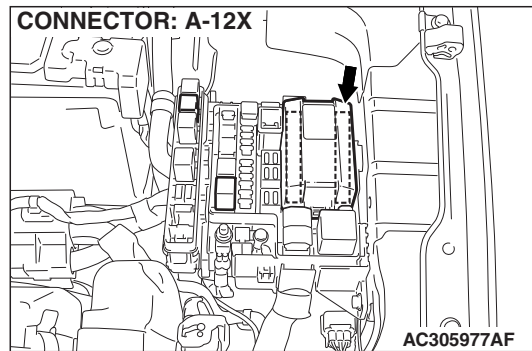
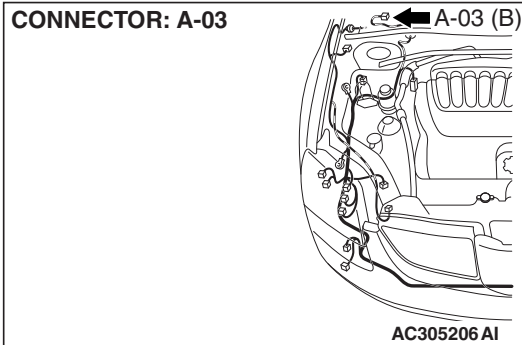


WAP54M046A

INSPECTION PROCEDURE G-1: Windshield Wiper and Washer: The windshield wiper do not work at all.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-15."





CIRCUIT OPERATION

- The windshield wiper and washer switch sends a signal through the column-ECU (incorporated in the column switch) to the front-ECU. If the column-ECU sends a windshield wiper and washer switch "ON" signal to the front-ECU, the front-ECU turns on the relay (incorporated in the front-ECU), thus causing the windshield wiper and washer motor to be turned on.
- If the SWS communication line is defective, the front-ECU operates windshield wiper motor by using the other communication lines (wiper backup circuit) instead of that line. In this case, the windshield wiper works at low speed regardless of the windshield wiper and washer switch positions ("LO" or "HIGH").

TECHNICAL DESCRIPTION (COMMENT)

If the windshield wiper does not work at all, the windshield wiper motor, column switch (windshield wiper and washer switch) or the front-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The wiper motor may be defective
- The column switch may be defective
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

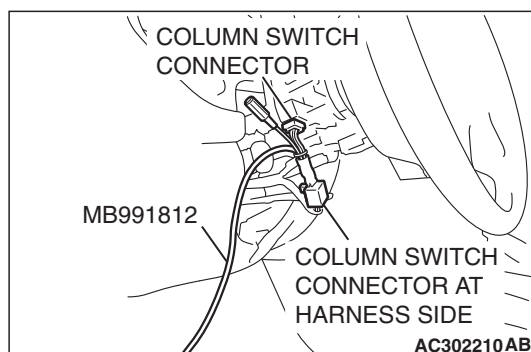
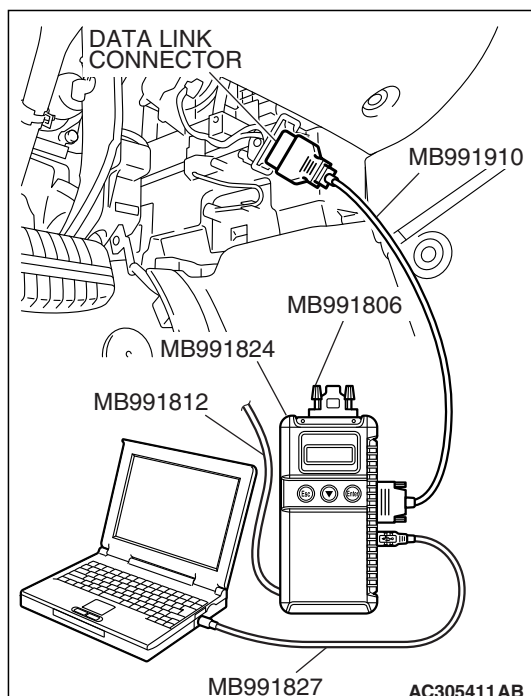
- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

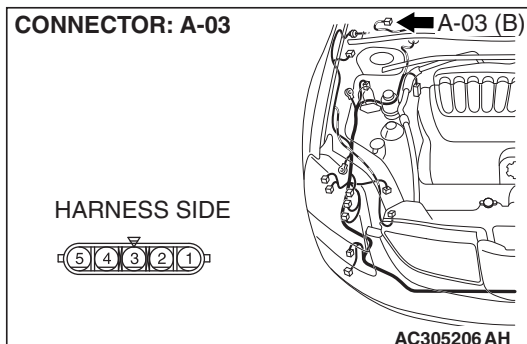
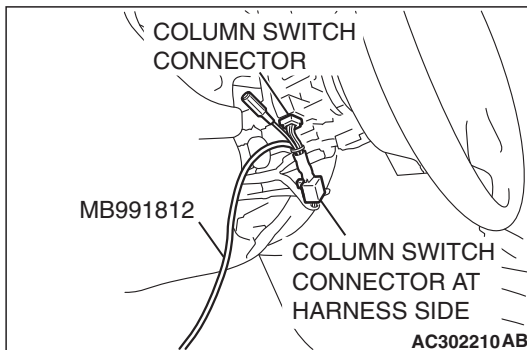
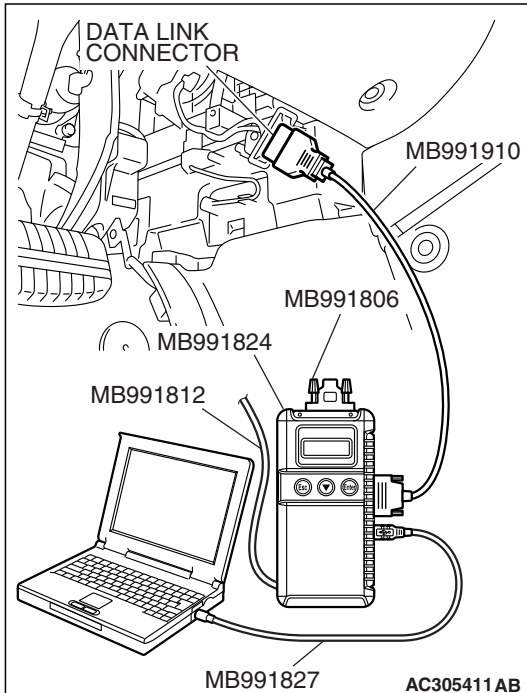
Q: Is "OK" displayed for the "COLUMN ECU" and "FRONT ECU" menu?

"OK" is displayed for all the items : Go to Step 2.

"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible [P.54B-71](#)."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible [P.54B-87](#)."





STEP 2. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield wiper switch: INT

- (1) Operate the M.U.T.-III according to the procedure below to display "F.WIPER INT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "WIPER."
 - g. Select "F.WIPER INT."
- (2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 05	INT WIPER SW	ON
ITEM 70	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

Q: Are normal conditions displayed for "INT WIPER SW" and "FRONT ECU ACK"?

Normal conditions displayed for all the items : Go to Step 3.

Normal condition is not displayed for the "INT WIPER SW" : Replace the column switch. Verify that the windshield wiper works normally.

Normal condition is not displayed for the "FRONT ECU ACK" : Replace the front-ECU. Verify that the windshield wiper works normally.

STEP 3. Check windshield wiper motor connector A-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

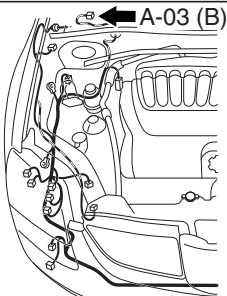
Q: Is windshield wiper motor connector A-03 in good condition?

YES : Go to Step 4.

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

CONNECTOR: A-03

HARNESS SIDE

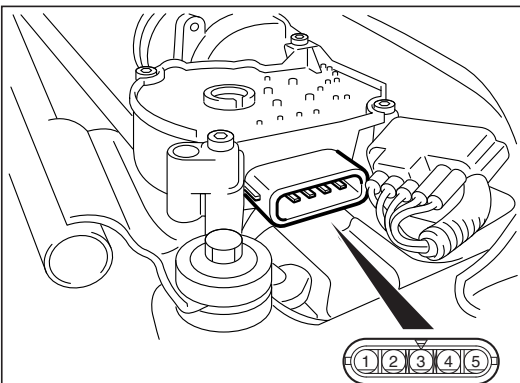
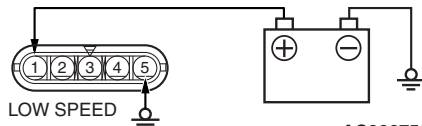
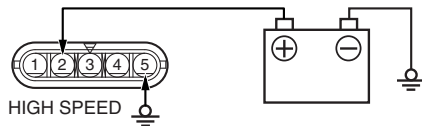


AC305206 AH

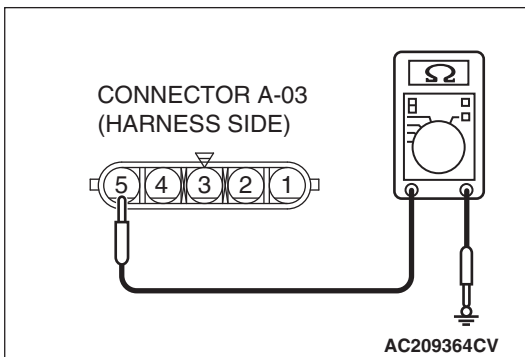
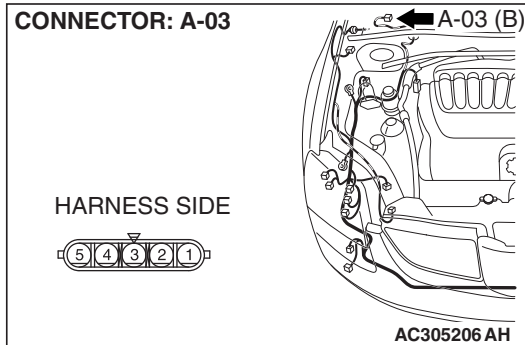
STEP 4. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector A-03.

(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: Does the windshield wiper motor operate normally?**YES :** Go to Step 5.**NO :** Replace the windshield wiper motor. Verify that the windshield wiper works normally.**CHECK OPERATION**

AC306750 AB



STEP 5. Check the ground circuit to the windshield wiper motor. Measure the resistance at the windshield wiper motor connector A-03.

(1) Disconnect windshield wiper motor connector A-03 and measure the resistance available at the wiring harness side of the connector.

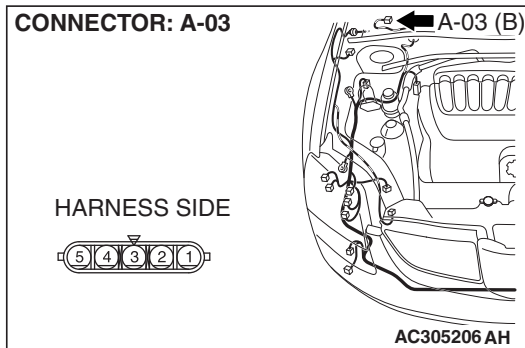
(2) Measure the resistance value between terminal 5 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.



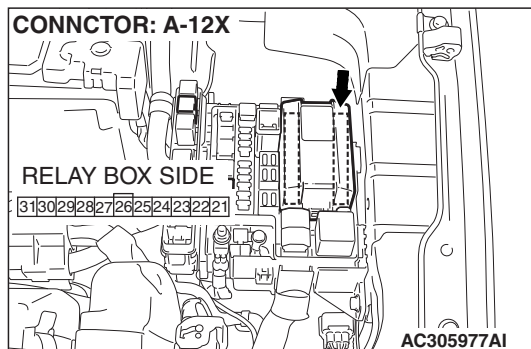
STEP 6. Check the wiring harness between windshield wiper motor connector A-03 (terminal 5) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between windshield wiper motor connector A-03 (terminal 5) and ground in good condition?

YES : No action is necessary and testing is complete.

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

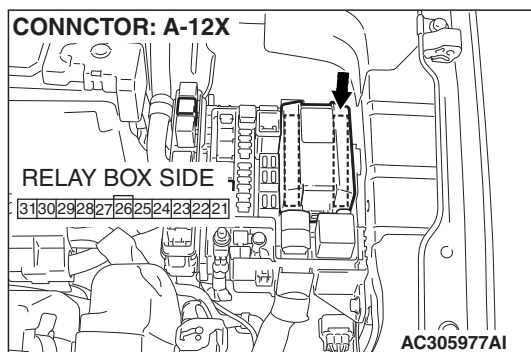


STEP 7. Check front-ECU connector A-12X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-12X in good condition?

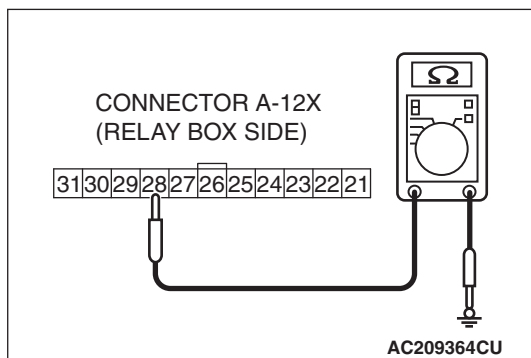
YES : Go to Step 8.

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



STEP 8. Check the ignition switch (ACC) circuit to the front-ECU. Measure the voltage at front-ECU connector A-12X.

- (1) Disconnect front-ECU connector A-12X and measure the resistance available at the relay box side of the connector.
- (2) Turn the ignition switch to the "ON" position.



- (3) Measure the voltage between terminal 28 and ground.
 - The voltage should measure approximately 12 volts (battery positive voltage).

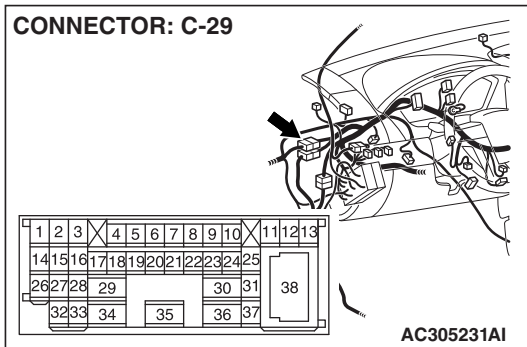
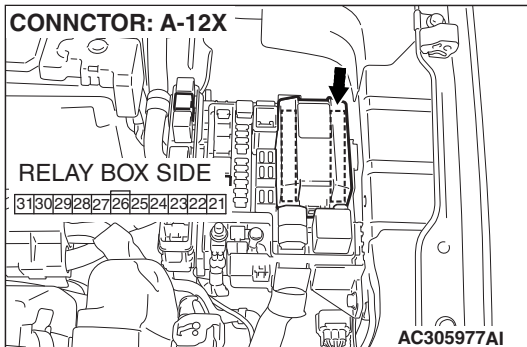
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Replace the front-ECU. Verify that the windshield wiper works normally.

NO : Go to Step 9.

STEP 9. Check the wiring harness between front-ECU connector A-12X (terminal 28) and the ignition switch (ACC).

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



NOTE: Also check intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

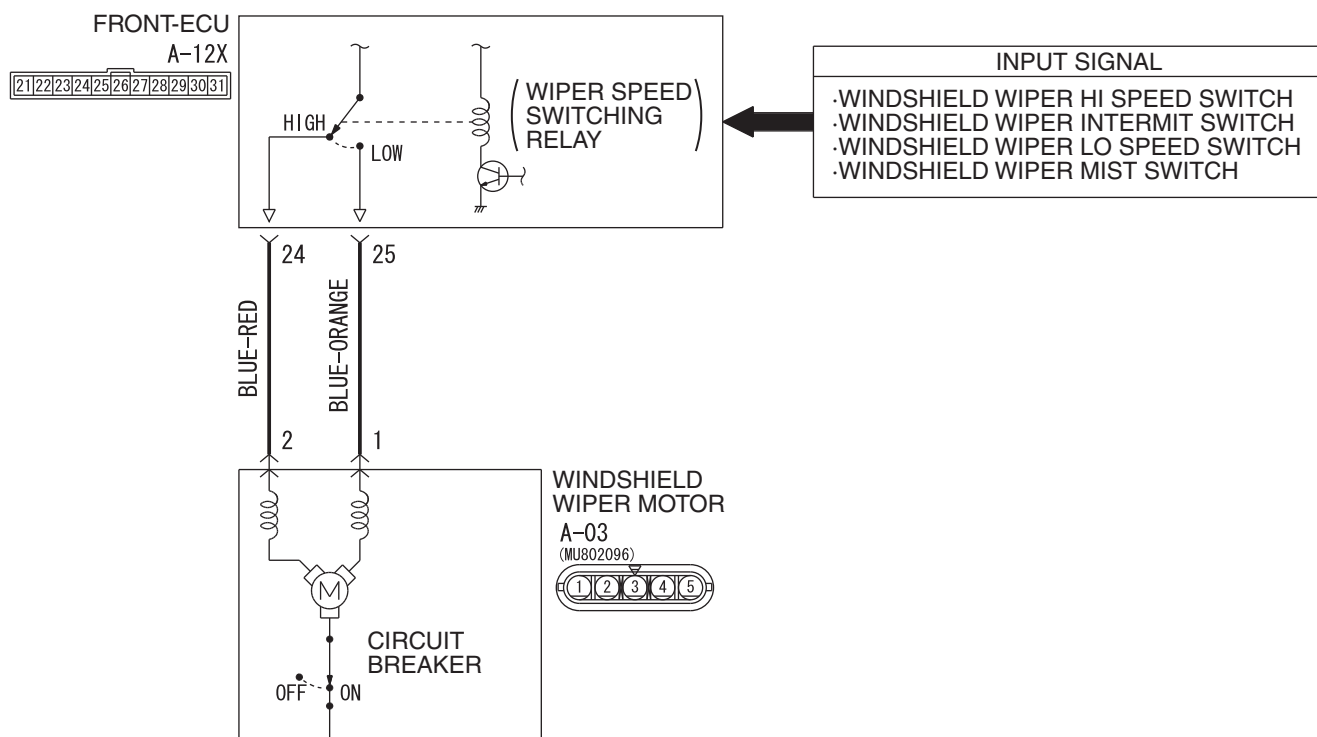
Q: Is the wiring harness between front-ECU connector A-12X (terminal 28) and the ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

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

INSPECTION PROCEDURE G-2: Windshield Wiper and Washer: The windshield wipers do not work when the windshield wiper switch is at "INT" or "MIST" position or the windshield washer switch is at "ON" position. However, the wipers work at low speed when the windshield wiper switch is at "LO" or "HI."

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-15."



WAP54M048A

TECHNICAL DESCRIPTION (COMMENT)

This system may be at fail-safe mode as the SWS communication line is defective. If the system cannot receive any signal from the column switch (windshield wiper and washer switch) due to an open circuit in the SWS communication line or other reasons, the system will enter the fail-safe mode when the ignition switch is at the "ACC" position.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

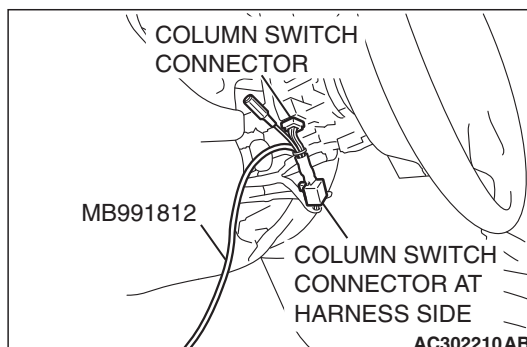
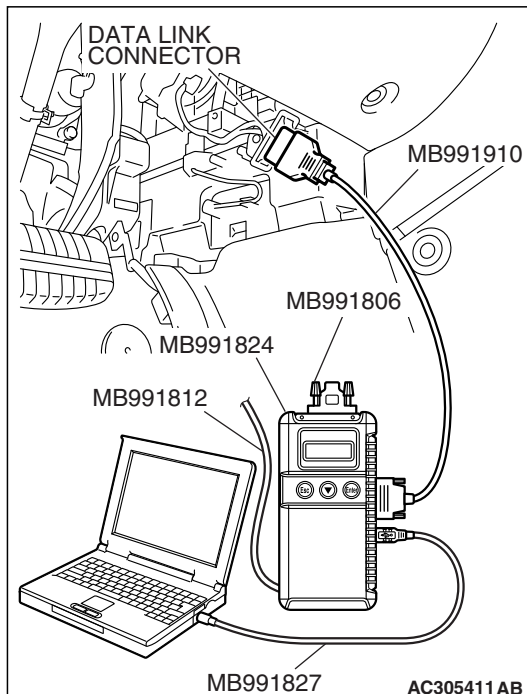
- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHECK."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

Q: Is "OK" displayed for the "COLUMN ECU" and "FRONT ECU" menu?

"OK" is displayed for all the items : Replace the front-ECU. Verify that the windshield wiper works normally.

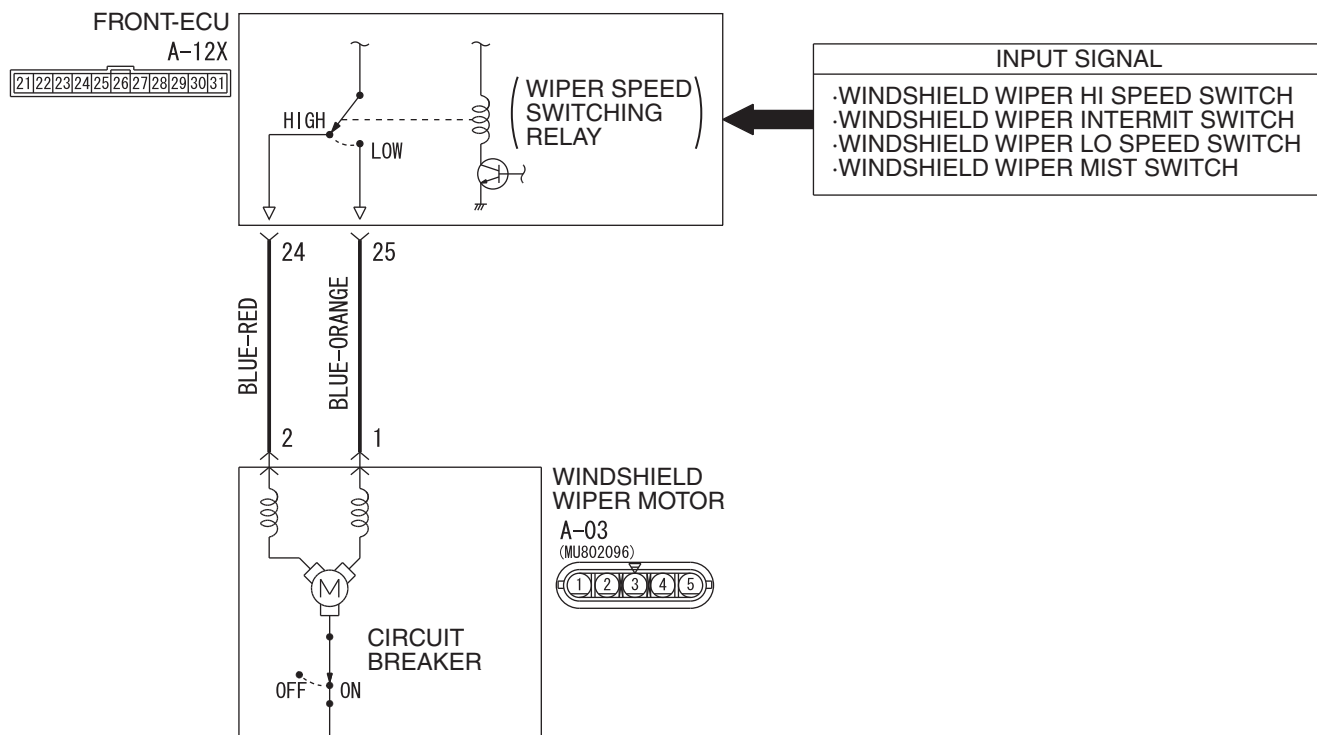
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible [P.54B-71](#)."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible [P.54B-87](#)."

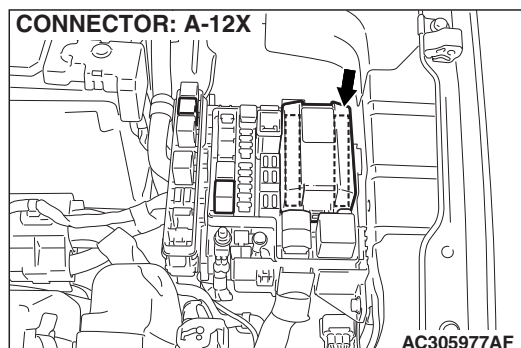
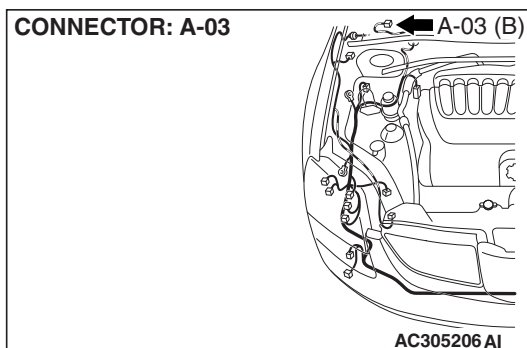


INSPECTION PROCEDURE G-3: Windshield Wiper and Washer: All of the windshield wiper switch positions are defective.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-15."



WAP54M048A

**TECHNICAL DESCRIPTION (COMMENT)**

If either of the windshield wiper switch positions is defective, the windshield wiper motor, column switch (windshield wiper and washer switch) or the front-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The wiper motor may be defective
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Check the input signal by using "DATA LIST" menu of the SWS monitor.

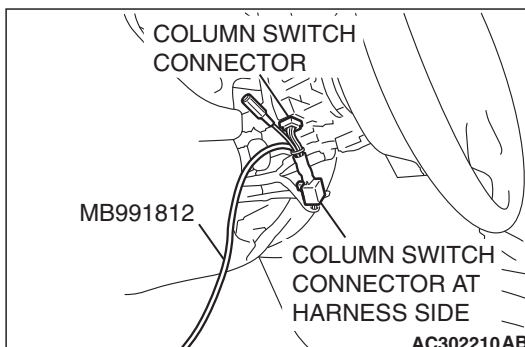
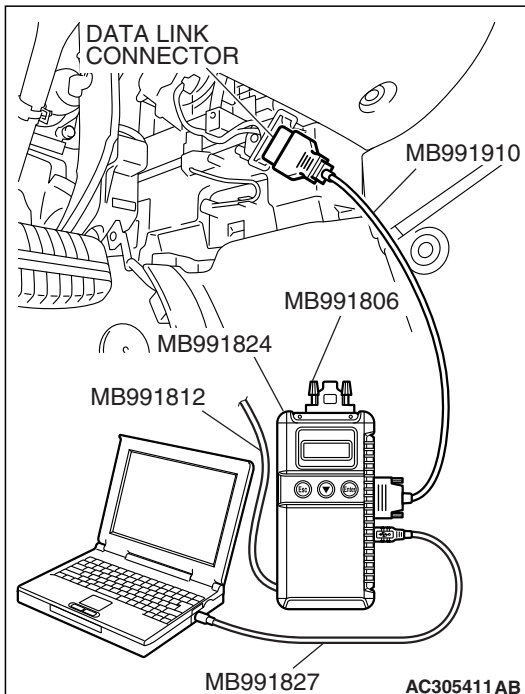
Turn the ignition switch to the ACC position before checking input signals from the windshield wiper switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Operate scan tool MB991958 according to the procedure below to display "COLUMN ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "COLUMN ECU."
- (3) Check that normal conditions are displayed for the items described in the table below.

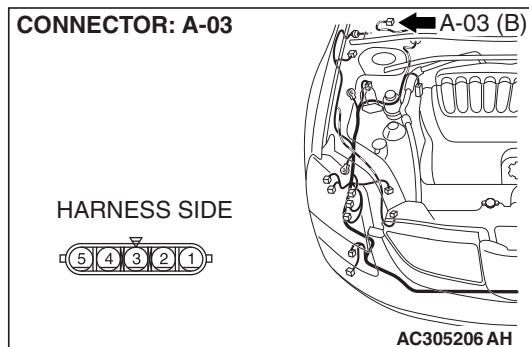
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 05	INT WIPER SW	ON
ITEM 06	LO WIPER SW	ON
ITEM 07	HI WIPER SW	ON
ITEM 08	MIST WIPER SW	ON



Q: Are normal conditions displayed for "INT WIPER SW", "LO WIPER SW", "HI WIPER SW" and "MIST WIPER SW"?

YES : Go to Step 2.

NO : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the windshield mist wiper switch [P.54B-518](#)."



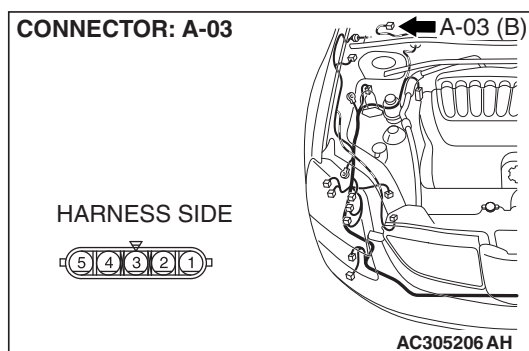
STEP 2. Check windshield wiper motor connector A-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector A-03 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.



STEP 3. Check the windshield wiper motor.

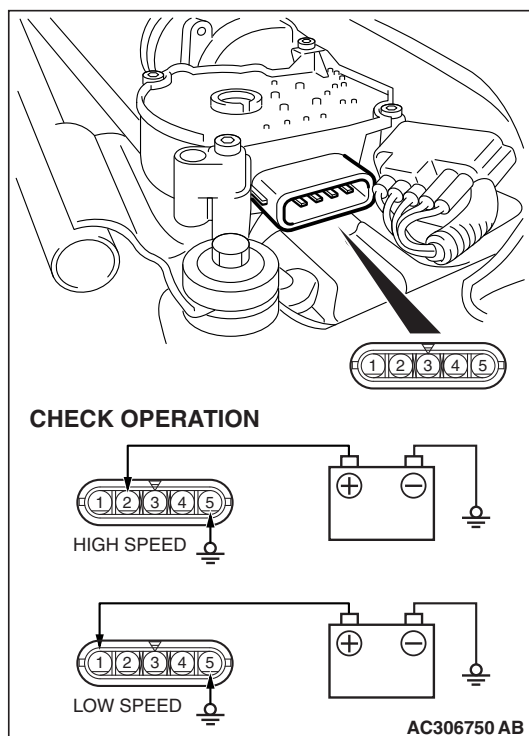
(1) Disconnect windshield wiper motor connector A-03.

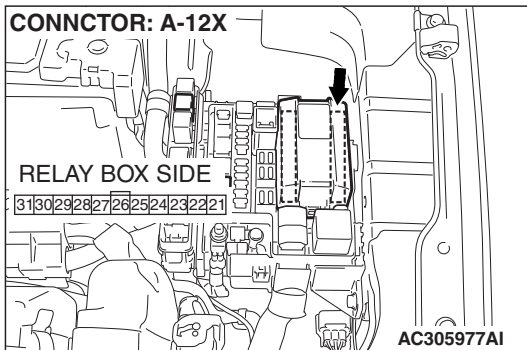
(2) Connect a battery to the windshield wiper motor as shown. Then check the windshield wiper motor operates normally at high and low speeds.

Q: Does the windshield wiper motor operate normally?

YES : Go to Step 4.

NO : Replace the windshield wiper motor. Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.



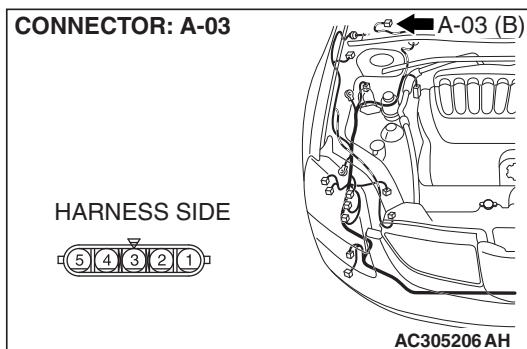


STEP 4. Check front-ECU connector A-12X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-12X in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.



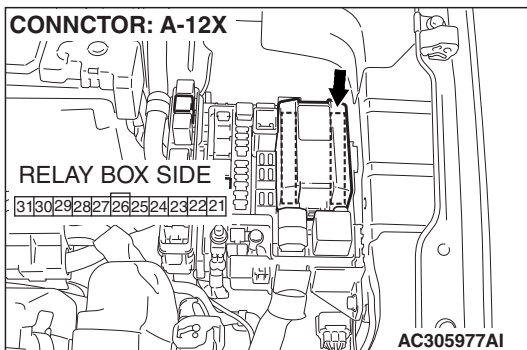
STEP 5. Check the wiring harness between windshield wiper motor connector A-03 (terminals 1 and 2) and front-ECU connector A-12X (terminals 25 and 24).

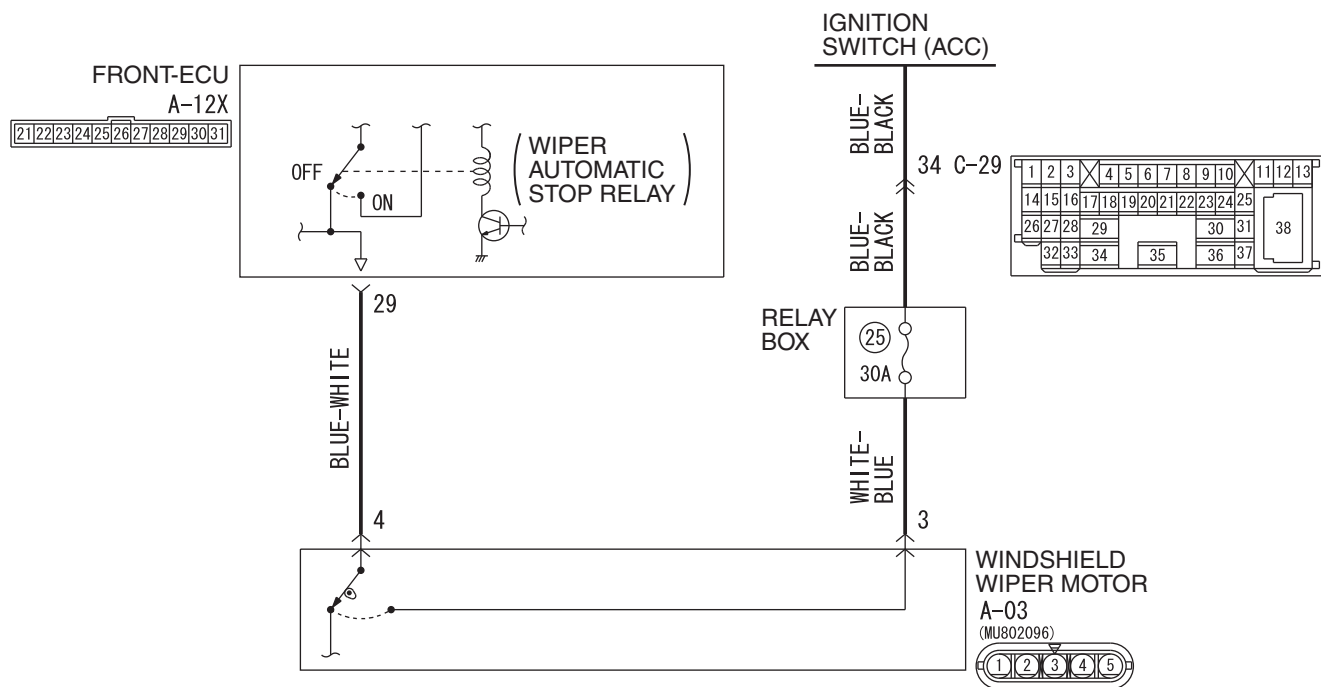
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between windshield wiper motor connector A-03 (terminals 1 and 2) and front-ECU connector A-12X (terminals 25 and 24) in good condition?

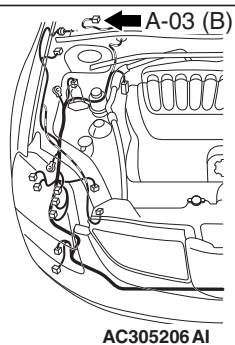
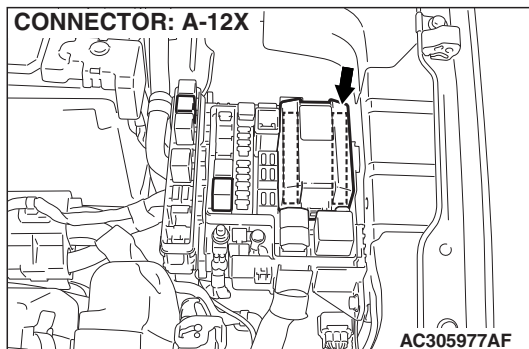
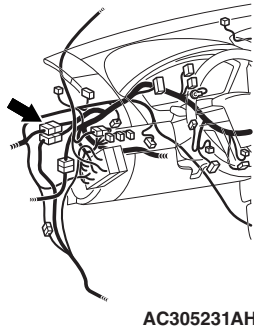
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.



INSPECTION PROCEDURE G-4: Windshield Wiper and Washer: Windshield wipers does not stop at the predetermined park position.

WAP54M049A

CONNECTOR: A-03**CONNECTOR: A-12X****CONNECTOR: C-29**

TECHNICAL DESCRIPTION (COMMENT)

If the windshield wipers do not stop at predetermined park position, the windshield wiper motor or the front-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tool:

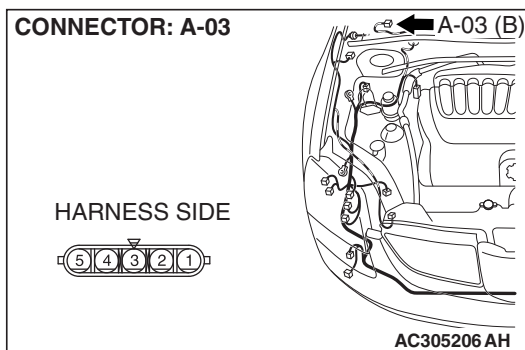
- MB991223: Harness Set
- MB992006: Extra Fine Probe

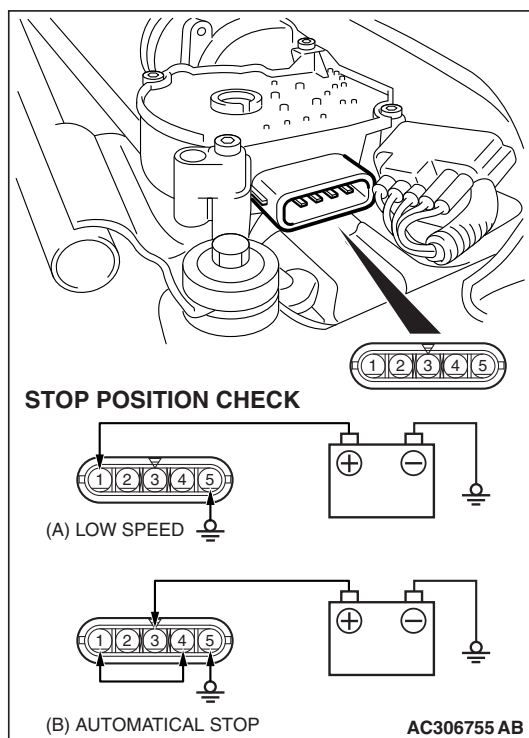
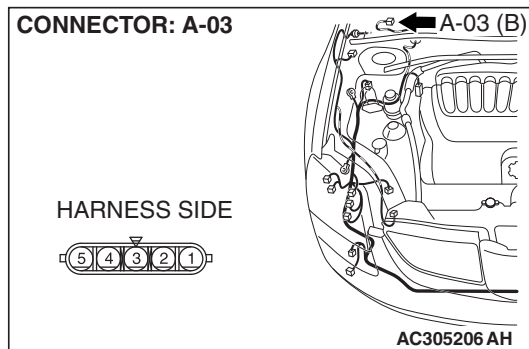
STEP1. Check windshield wiper motor connector A-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector A-03 in good condition?

YES : Go to Step 2.

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



**STEP 2. Check the windshield wiper motor.**

(1) Disconnect windshield wiper motor connector A-03.

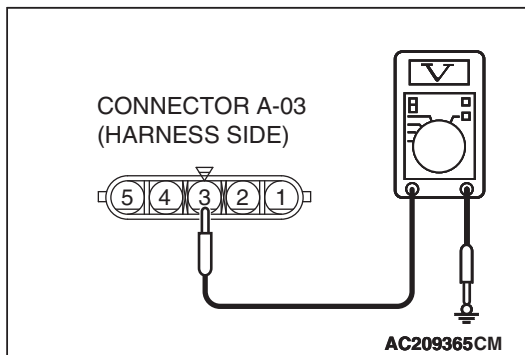
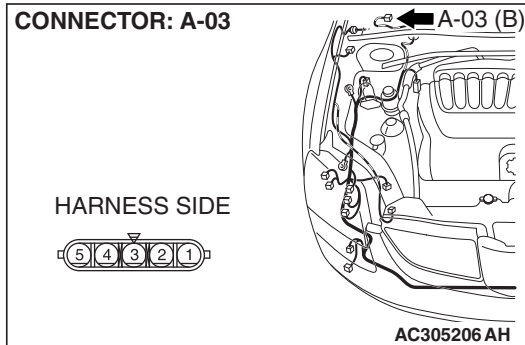
(2) Connect the vehicle battery to the windshield wiper motor connector as shown, and operate the windshield wiper at low speed. While the windshield wiper is working, disconnect the battery at positions other than the predetermined park position to stop the windshield wiper motor.

(3) When the battery is connected as shown, the motor should run at low speed, and then stop at the predetermined park position.

Q: Does the windshield wiper motor operate normally?

YES : Go to Step 3.

NO : Replace the windshield wiper motor. The windshield wiper should now stop at the predetermined park position.



STEP 3. Check the ignition switch (ACC) circuit to the windshield wiper motor. Measure the voltage at windshield wiper motor connector A-03.

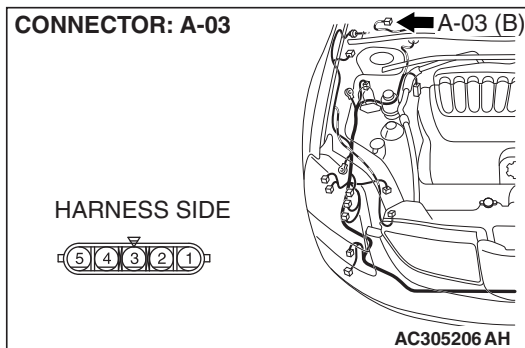
- (1) Disconnect windshield wiper motor connector A-03 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ACC" position.

- (3) Measure the voltage between terminal 3 and ground.
 - The voltage should measure approximately 12 volts (battery positive voltage).

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

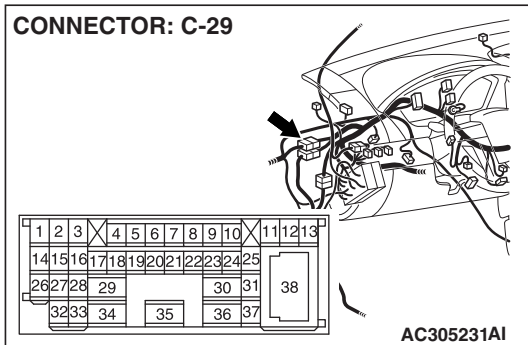
YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between windshield wiper motor connector A-03 (terminal 3) and the ignition switch (ACC).

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

CONNECTOR: C-29

NOTE: Also check intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between windshield wiper motor connector A-03 (terminal 3) and the ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

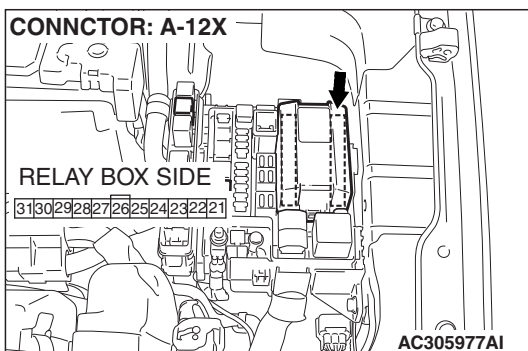
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper works normally.

STEP 5. Check front-ECU connector A-12X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-12X in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The windshield wiper should stop at the predetermined park position.

CONNECTOR: A-12X

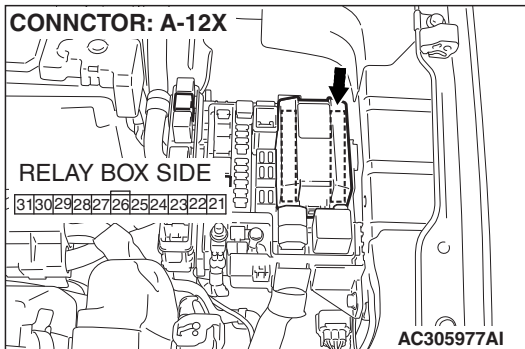
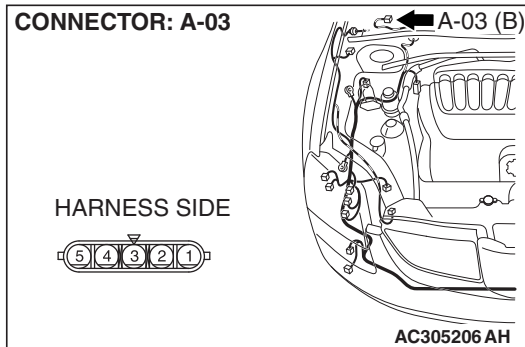
STEP 6. Check the wiring harness between windshield wiper motor connector A-03 (terminal 4) and front-ECU connector A-12X (terminal 29).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between windshield wiper motor connector A-03 (terminal 4) and front-ECU connector A-12X (terminal 29) in good condition?

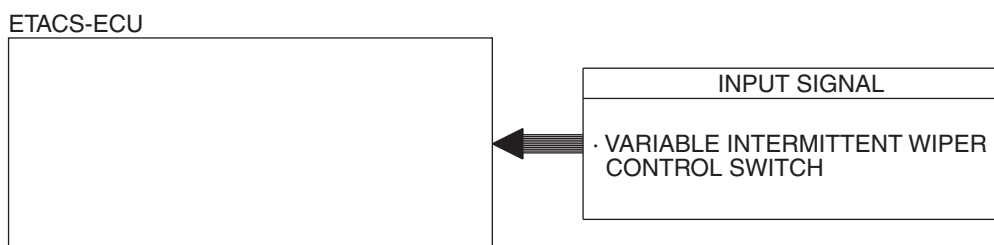
YES : Replace the front-ECU. The windshield wiper should stop at the predetermined park position.

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



INSPECTION PROCEDURE G-5: Windshield Wiper and Washer: The windshield intermittent wiper interval cannot be adjusted by using the variable intermittent wiper control switch.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-15."

Variable Intermittent Wiper Control Switch Input Signal

W4P54M56AA

TECHNICAL DESCRIPTION (COMMENT)

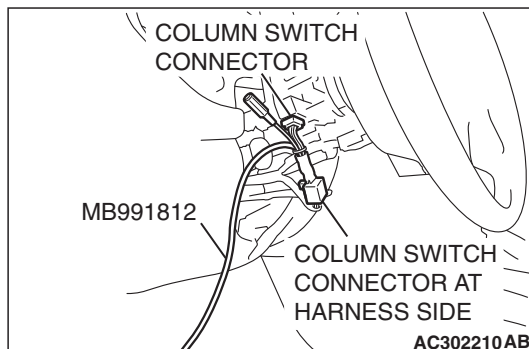
If the windshield intermittent wiper interval is not changed by operating the windshield intermittent wiper interval adjusting knob or according to the vehicle speed, the column switch, the ETACS-ECU or the front-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness



ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 37	INT WIPER TIME	1.6 –19.0 s

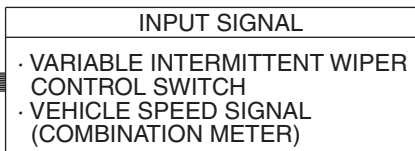
NO : Refer to Inspection Procedure M-7 "ETACS-ECU does not receive any signal from the variable intermittent wiper control switch P.54B-522."

INSPECTION PROCEDURE G-6: Windshield Wiper and Washer: The windshield intermittent wiper interval is not changed according to the vehicle speed.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-15."

Variable Intermittent Wiper Control Switch Input Signal

ETACS-ECU



W4P54M57AA

TECHNICAL DESCRIPTION (COMMENT)

If the windshield intermittent wiper interval does not change according to the vehicle speed, the ETACS-ECU or the front-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

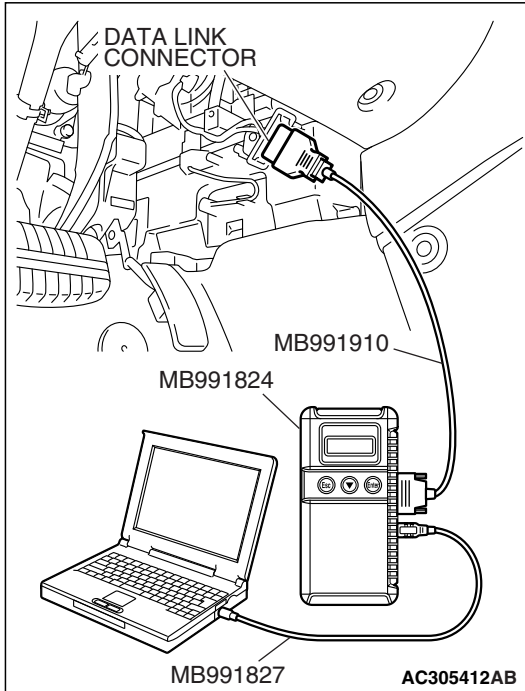
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-13](#)).



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

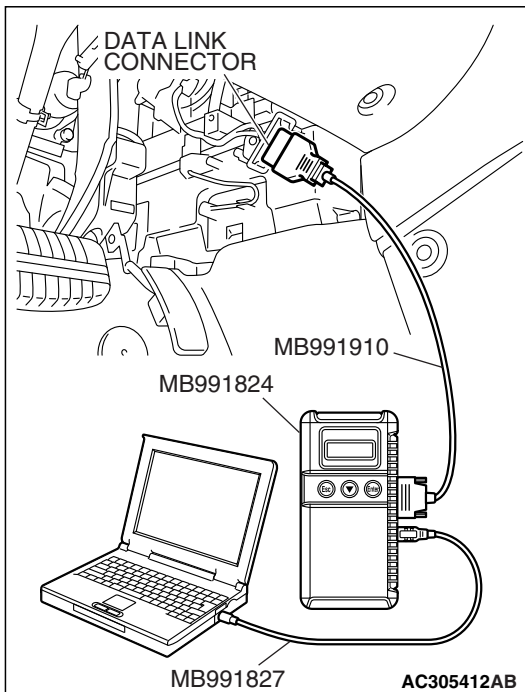
Check whether the combination meter-related DTC is set.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the combination meter-related DTC is set.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to [P.54A-57](#).

NO : Go to Step 3.



STEP 3. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield wiper switch: INT
- Intermittent wiper control: slow side

⚠ CAUTION

Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

- (1) Operate the scan tool MB991958 according to the procedure below to display "F.WIPER INT."
 - a. Select "System select."
 - b. Select "SWS."
 - c. Select "SWS MONITOR."
 - d. Select "Function Diag."
 - e. Select "WIPER."
 - f. Select "F.WIPER INT."

- (2) Check that normal conditions are displayed for the items described in the table below.

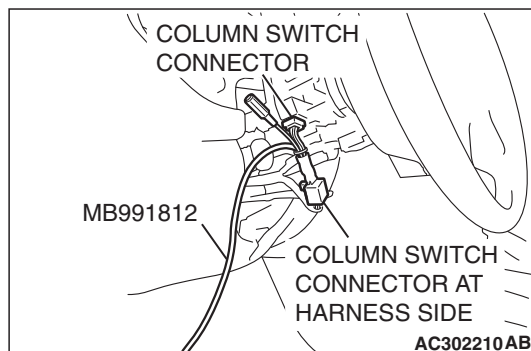
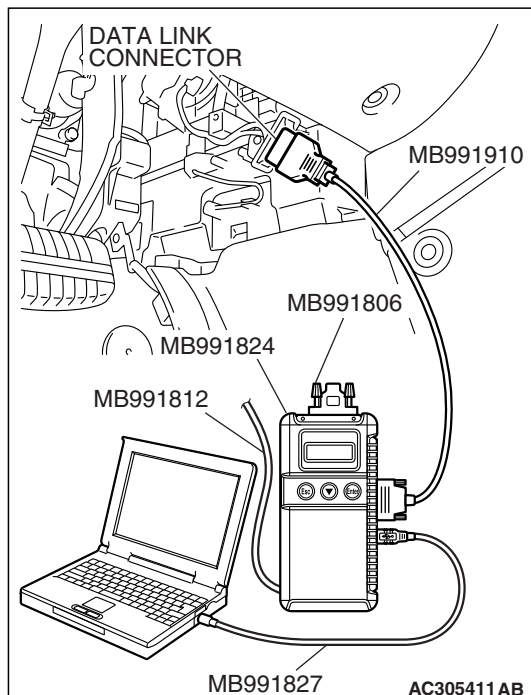
NOTE: Also check that the wiper interval changes smoothly when the vehicle is accelerated from 0 km/h (0 mph) to 60 km/h (37.5 mph).

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 37	INT WIPER TIME	14.0 –19.0 s

Q: Does the value change within the normal range when the variable intermittent wiper control switch is rotated?

YES : Replace the front-ECU. The windshield intermittent wiper interval should change according to the vehicle speed.

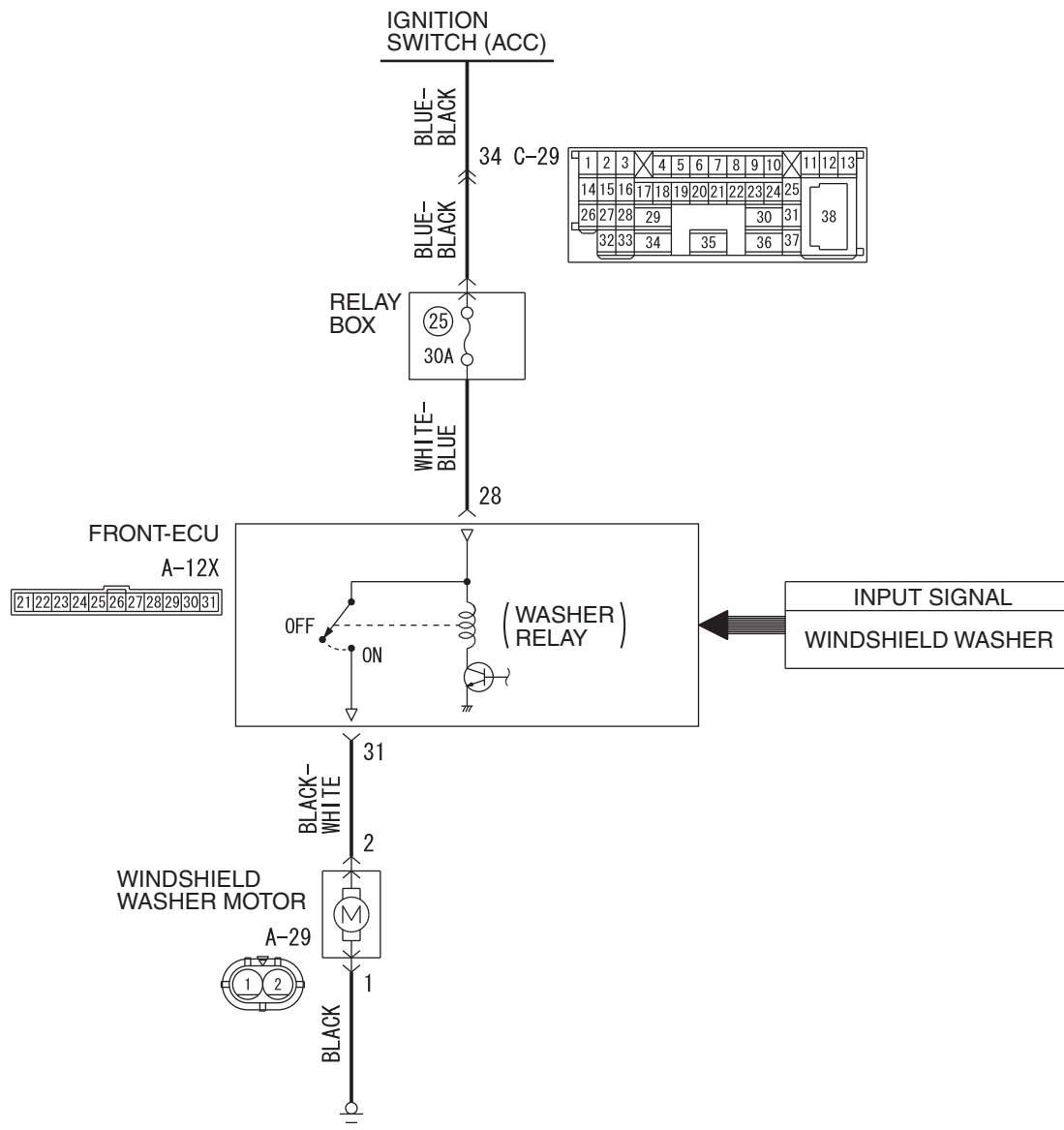
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). The windshield intermittent wiper interval should change according to the vehicle speed.



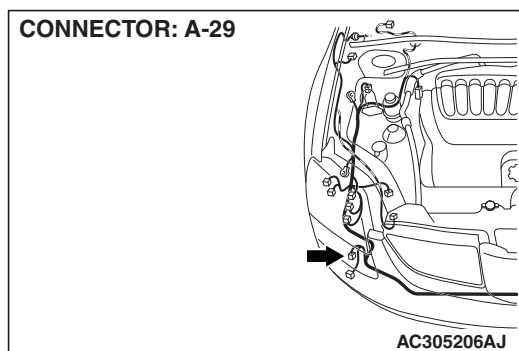
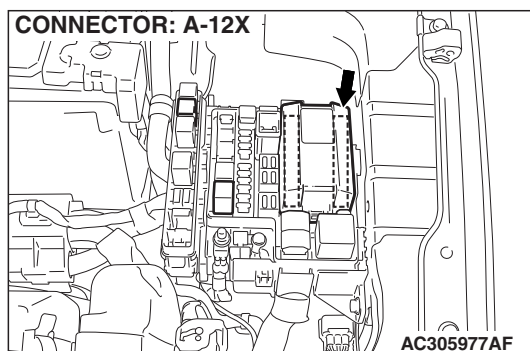
INSPECTION PROCEDURE G-7: Windshield Wiper and Washer: The windshield washer does not work.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

Windshield Washer Motor Circuit



W4P54M58AA



CIRCUIT OPERATION

The windshield washer switch sends a signal through the column-ECU (incorporated in the column switch) to the front-ECU. If the column-ECU sends a windshield washer switch "ON" signal to the front-ECU, the front-ECU turns on the relay (incorporated in the front-ECU), thus causing the windshield washer motor to be turned on.

TECHNICAL DESCRIPTION (COMMENT)

If the windshield washer does not work normally, the windshield washer motor, the column switch (windshield wiper and washer switch) or the front-ECU may be defective.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The windshield washer motor may be defective
- The column switch may be defective
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Verify the windshield wiper operation.

Q: Does the windshield wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure G-1 "The windshield wiper do not work at all [P.54B-266](#)."

STEP 2. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

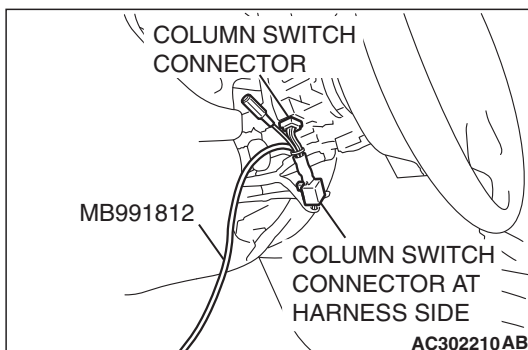
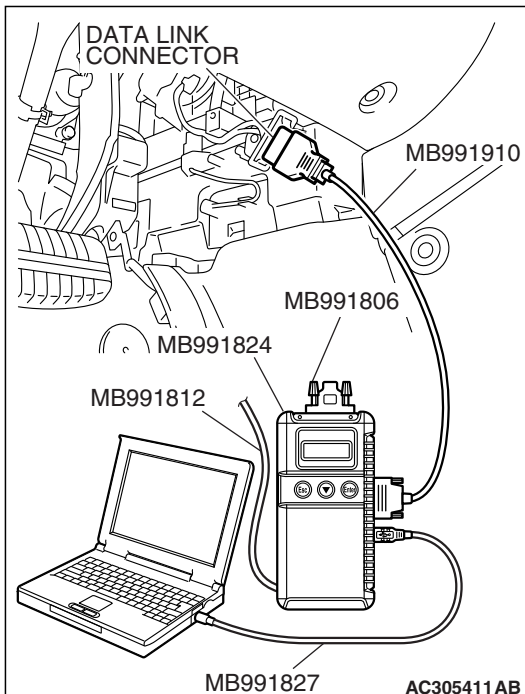
- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

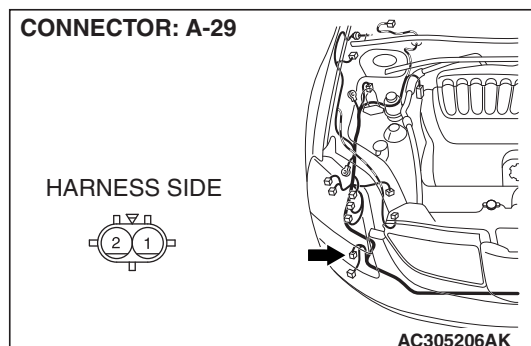
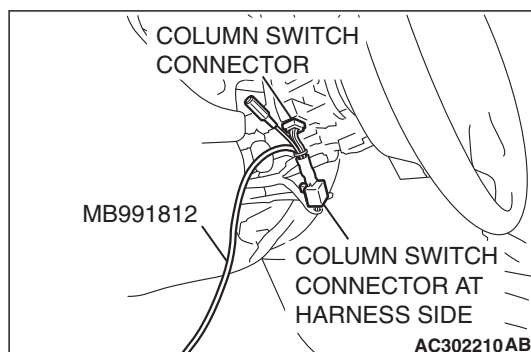
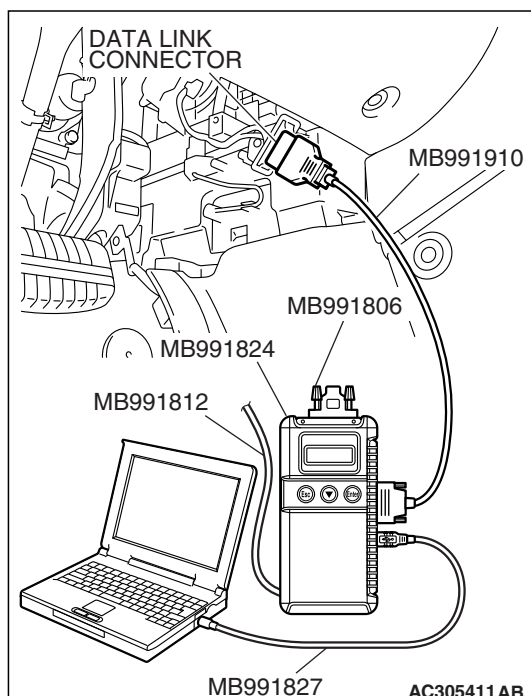
Q: Is "OK" displayed for the "COLUMN ECU" and "FRONT ECU" menu?

"OK" is displayed for all the items : Go to Step 3.

"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible [P.54B-71](#)."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible [P.54B-87](#)."





STEP 3. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield washer switch: ON

- (1) Operate the scan tool MB991958 according to the procedure below to display "F.WIPER WASH."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "WIPER."
 - g. Select "F.WIPER WASH."
- (2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 09	FRONT WASH.SW	ON
ITEM 70	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

Q: Are normal conditions displayed for "FRONT WASH.SW" and "FRONT ECU ACK"?

Normal conditions displayed for all the items : Go to Step 4.

Normal condition is not displayed for the "FRONT WASH.SW" : Replace the column switch. Verify that the windshield washer works normally.

Normal condition is not displayed for the "FRONT ECU ACK" : Replace the front-ECU. Verify that the windshield washer works normally.

STEP 4. Check windshield washer motor connector A-29 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

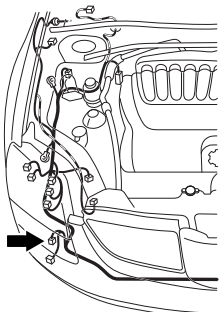
Q: Is windshield washer motor connector A-29 in good condition?

YES : Go to Step 5.

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

CONNECTOR: A-29

HARNESS SIDE



AC305206AK

STEP 5. Check the windshield washer motor.

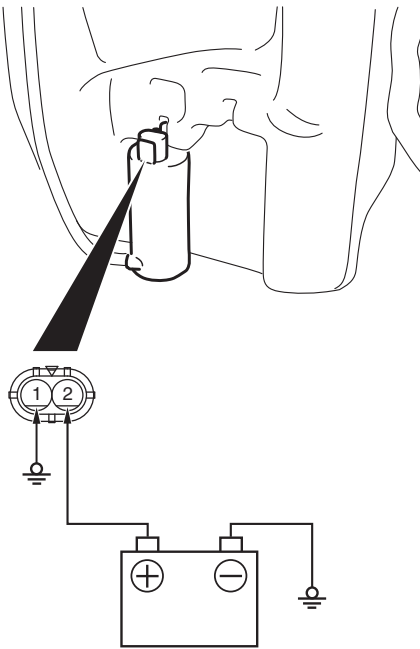
- (1) Disconnect windshield washer motor connector A-29, and check at windshield washer motor connector side.
- (2) Fill the windshield washer tank with washer fluid.

- (3) When battery voltage is applied between terminals 1 and 2, washer fluid should spray out.

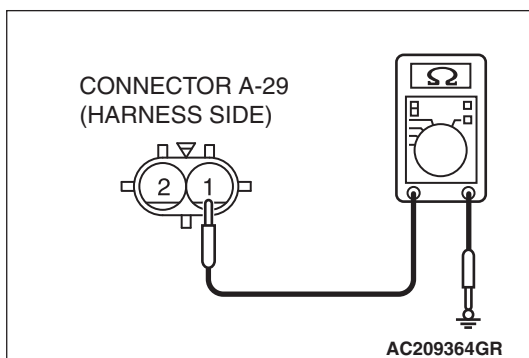
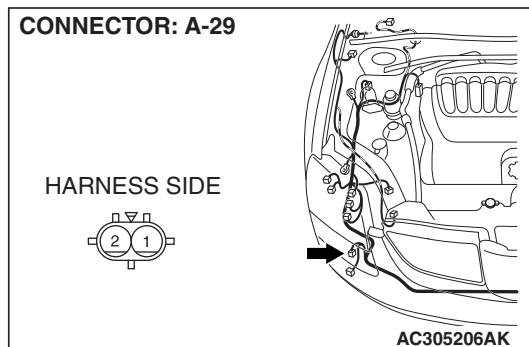
Q: Does the windshield washer motor operate normally?

YES : Go to Step 6.

NO : Replace the windshield washer motor. Verify that the windshield washer works normally.



AC307196



STEP 6. Check the ground circuit to the windshield washer motor. Measure the resistance at the windshield washer motor connector A-29.

- (1) Disconnect windshield washer motor connector A-29 and measure the resistance available at the wiring harness side of the connector.

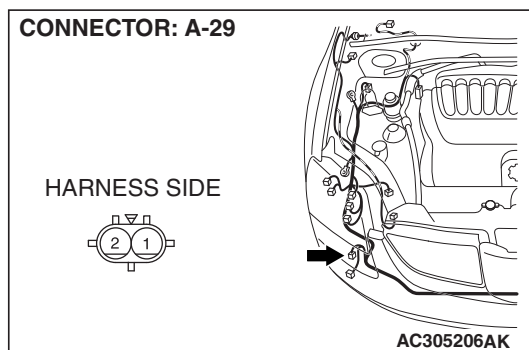
- (2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.



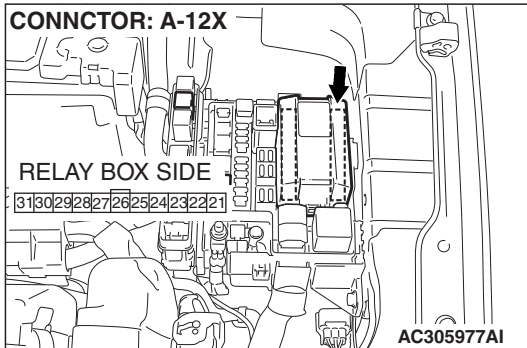
STEP 7. Check the wiring harness between windshield washer motor connector A-29 (terminal 1) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between windshield washer motor connector A-29 (terminal 1) and ground in good condition?

YES : No action is necessary and testing is complete.

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

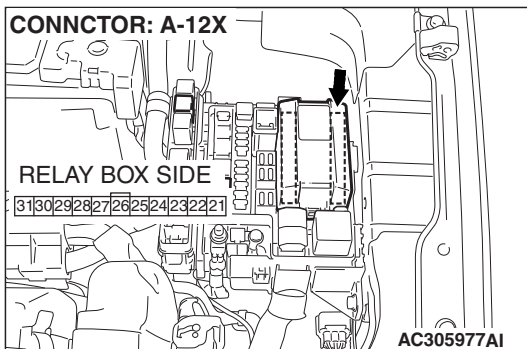


STEP 8. Check front-ECU connector A-12X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-12X in good condition?

YES : Go to Step 9.

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



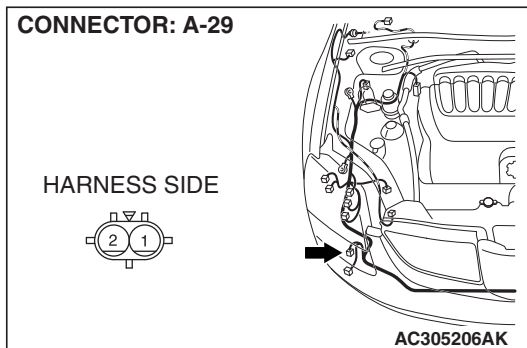
STEP 9. Check the wiring harness between windshield washer motor connector A-29 (terminal 2) and front-ECU connector A-12X (terminal 31).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between windshield washer motor connector A-29 (terminal 2) and front-ECU connector A-12X (terminal 31) in good condition?

YES : No action is necessary and testing is complete.

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



HEADLIGHT AND TAILLIGHT

GENERAL DESCRIPTION CONCERNING THE HEADLIGHTS AND TAILLIGHTS

M1549021300424

The following ECUs affect the functions and control of the headlights and the taillights.

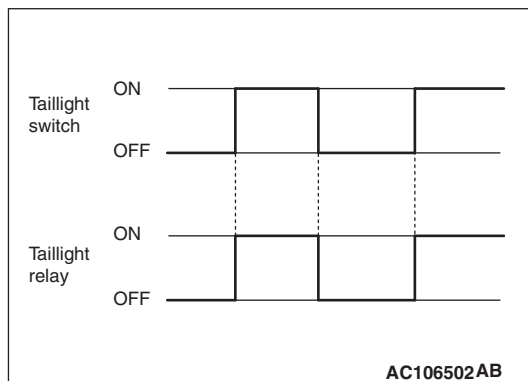
FUNCTION	CONTROL ECU
Taillights	Front-ECU, column switch
Headlights	ETACS-ECU, front-ECU, column switch
High-beam indicator light	ETACS-ECU, column switch
Headlight automatic-shutoff function	ETACS-ECU, front-ECU, column switch
Dimmer automatic reset function	Front-ECU, column switch
Daytime running light function	ETACS-ECU, front-ECU, column switch

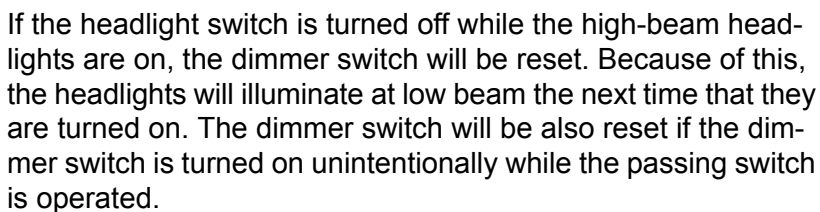
Taillights and headlights illumination

TAILLIGHTS

If the column switch sends a taillight switch "ON" signal to the front-ECU, the front-ECU turns on its taillight relay, causing the taillights to illuminate.

NOTE: This description covers the taillights only. In actual driving, the taillights may be turned off due to the headlight automatic shut-off function. For the details of the headlight automatic shut-off function, refer to .

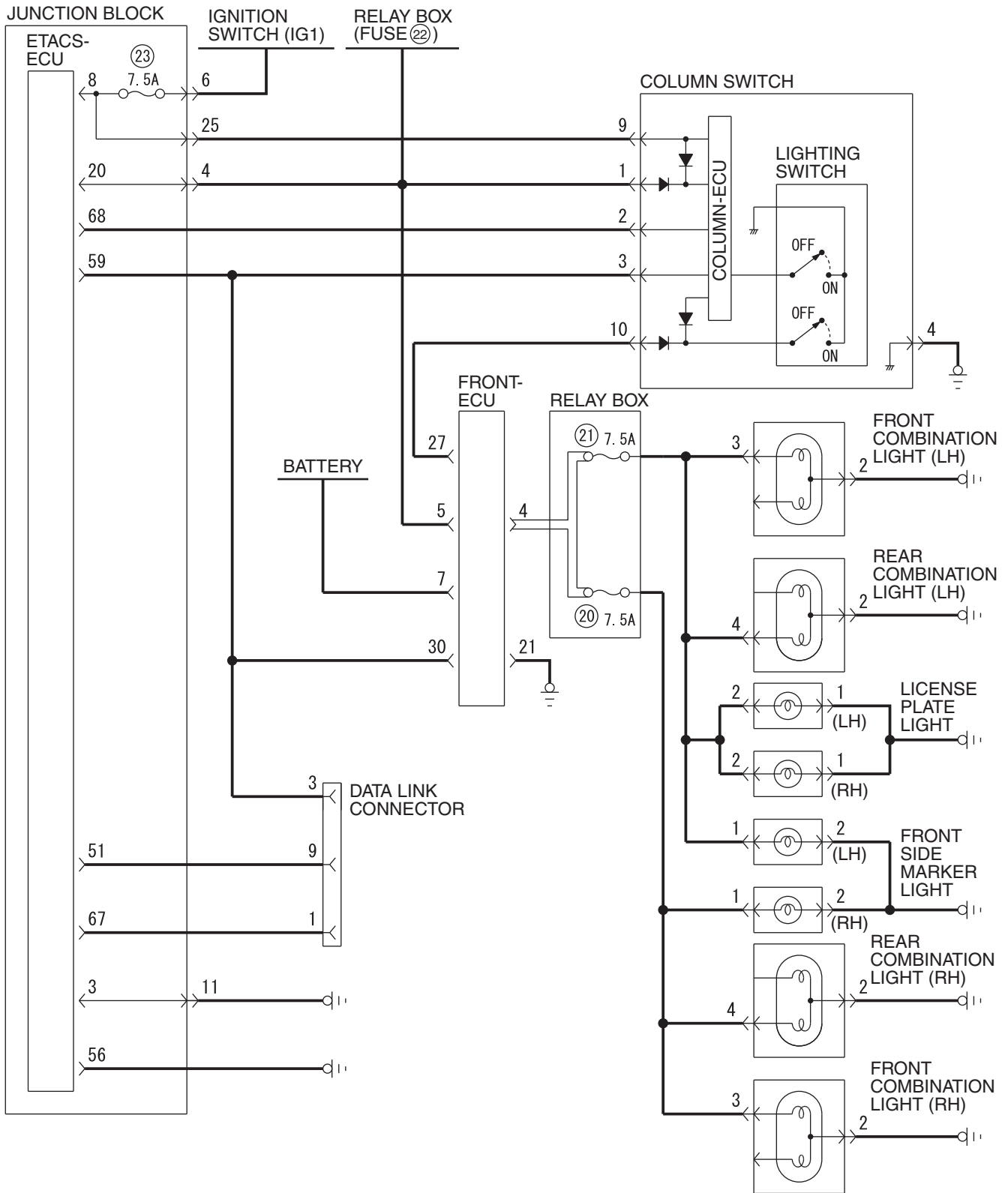




AC404726AB

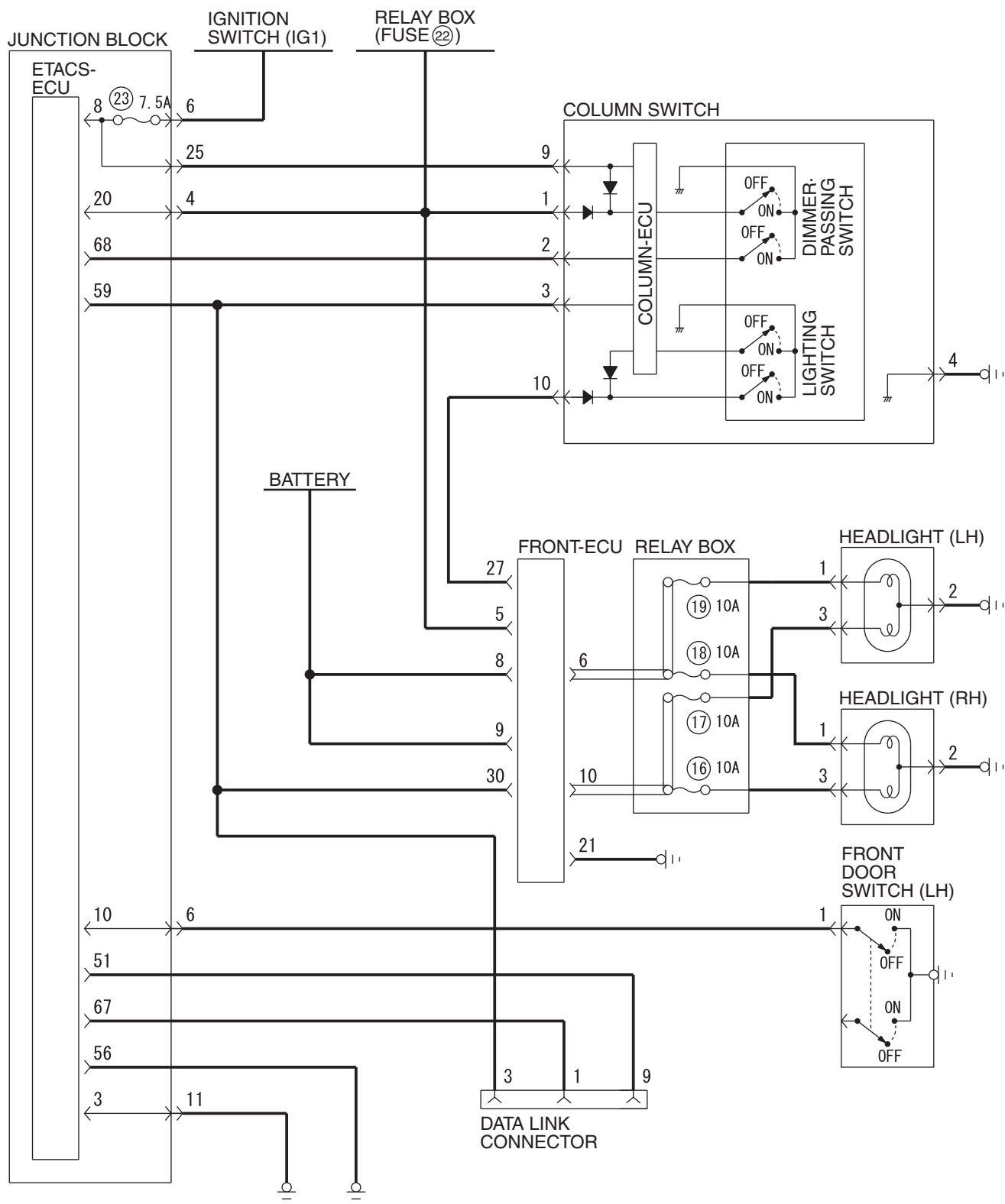
- If the engine is started when the parking brake is not pulled, the headlights illuminate with the brightness reduced.
- If the engine is started while the parking brake is pulled, the daytime running light function OFF mode is entered and the headlights do not illuminate. If the parking brake is released, the OFF mode is cancelled and the headlights illuminate.

General circuit diagram for the taillights

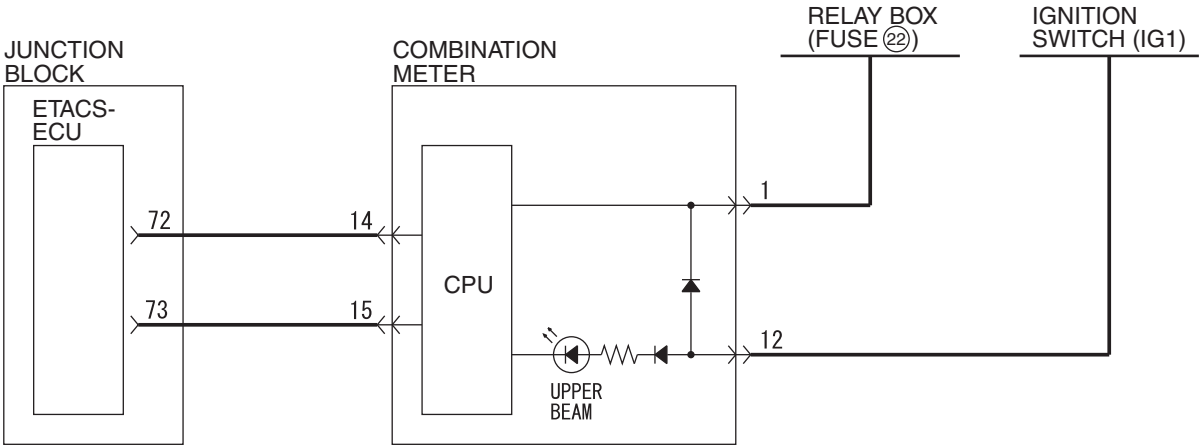


WAP54M050A

General circuit diagram for the headlights



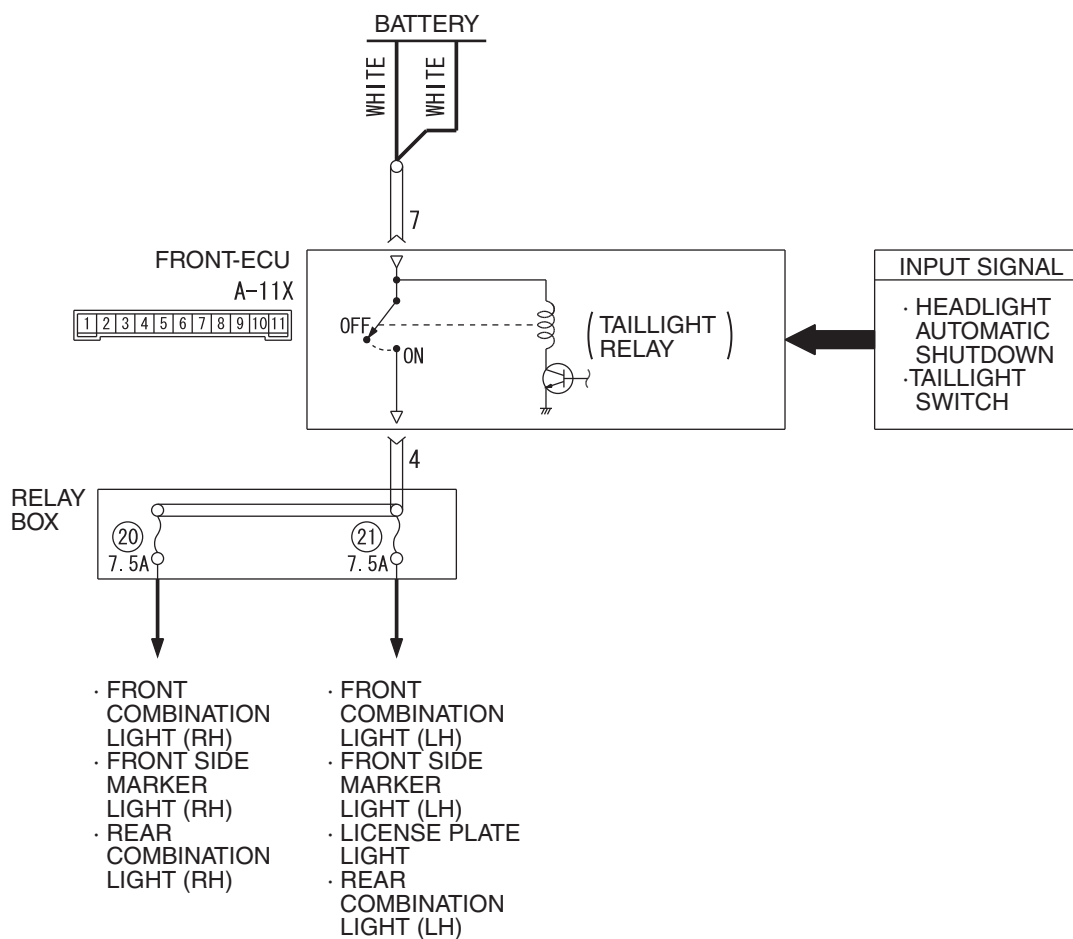
WAP54M051A



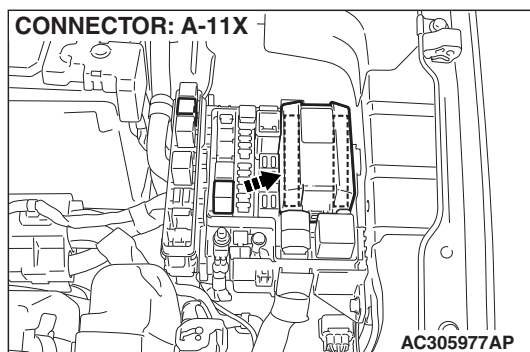
W4P54M63AA

INSPECTION PROCEDURE H-1: Headlight and Taillight: The taillights do not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

Taillight Relay Circuit

W4P54M64AA



CIRCUIT OPERATION

When the lighting switch is set to "TAIL" position, the "TAIL" signal is sent through the column-ECU (incorporated in the column switch) to the front-ECU. If the front-ECU receives the "TAIL" signal through the column-ECU, the front-ECU turns on the taillight relay (incorporated in the front-ECU), thus causing the taillights to illuminate.

TECHNICAL DESCRIPTION (COMMENT)

If the taillights do not illuminate normally, the column switch or the front-ECU may be defective.

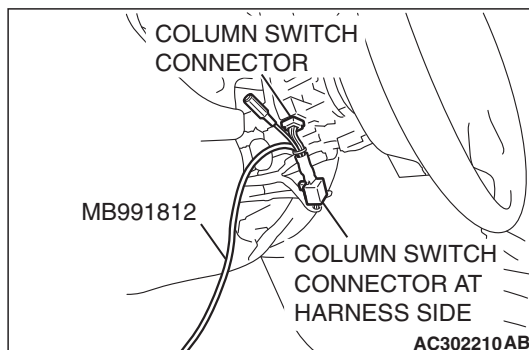
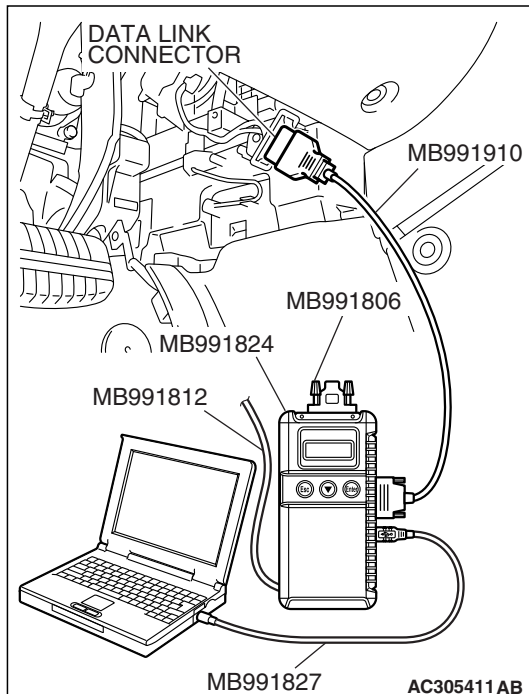
TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness



STEP 2. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ON
- Lighting switch: TAIL

NOTE: Turn the ignition switch to the "ON" position in order to disable the headlight automatic shutdown function.

- (1) Operate scan tool MB991958 according to the procedure below to display "TAILLIGHT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "TAILLIGHT."
- (2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 01	TAILLIGHT SW	ON
ITEM 35	H/L AUTO-CUT	OFF
ITEM 70	FRONT ECU ACK	NORMAL ACK

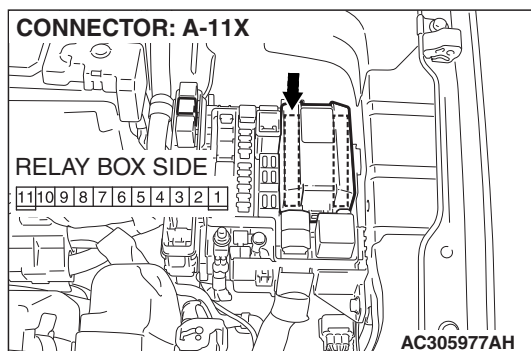
Q: Does the scan tool MB991958 display the items "TAILLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

Normal conditions are displayed for all the items : Go to Step 3.

Normal condition is not displayed for "TAILLIGHT SW" :
Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the taillight switch [P.54B-515.](#)"

Normal condition is not displayed for "H/L AUTO-CUT" :
Refer to Inspection Procedure H-9 "Headlight automatic shutoff function does not work normally [P.54B-366.](#)"

Normal condition is not displayed for "FRONT ECU ACK" :
Replace the front-ECU. Verify that the taillights illuminate normally.

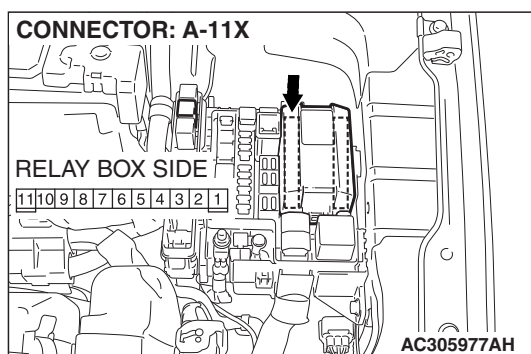


STEP 3. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-11X in good condition?

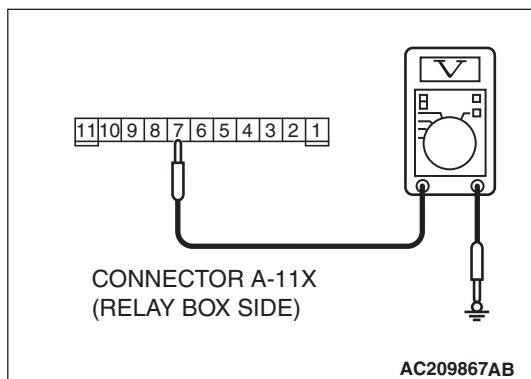
YES : Go to Step 4.

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



STEP 4. Check the battery power supply circuit to the front-ECU. Measure the voltage at front-ECU connector A-11X.

(1) Disconnect front-ECU connector A-11X and measure the voltage available at the relay box side of the connector.



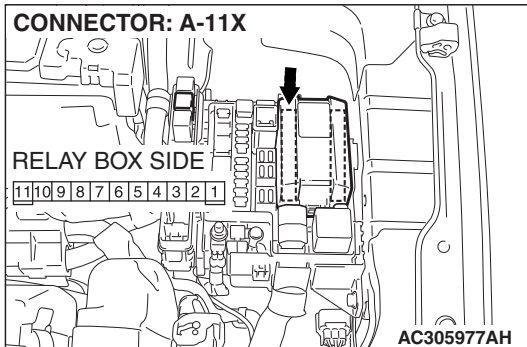
(2) Measure the voltage between terminal 7 and ground.

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

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

YES : Replace the front-ECU. Verify that the taillights illuminate normally.

NO : Go to Step 5.



STEP 5. Check the wiring harness between front-ECU connector A-11X (terminal 7) and the battery.

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

Q: Is the wiring harness between front-ECU connector A-11X (terminal 7) and the battery in good condition?

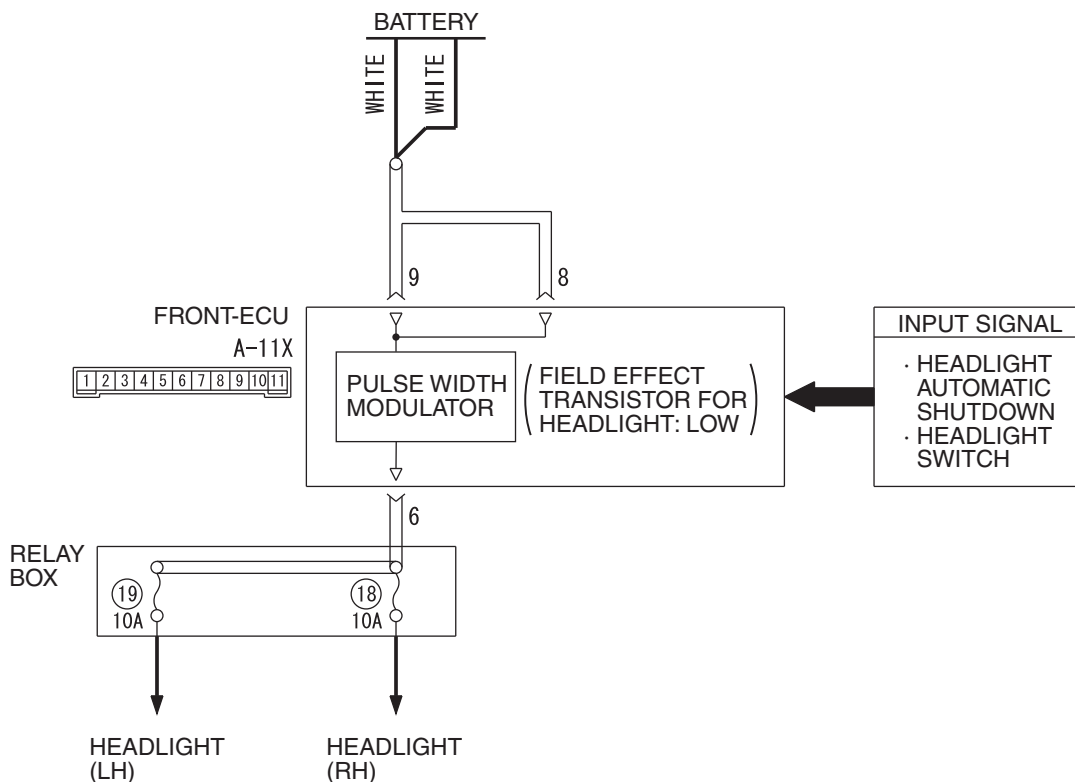
YES : No action is necessary and testing is complete.

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

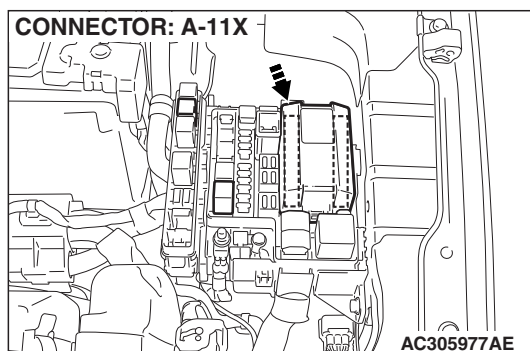
INSPECTION PROCEDURE H-2: Headlight and Taillight: The headlights (low-beam) do not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

Headlight Relay (Low-Beam) Circuit



W4P54M65AA



CIRCUIT OPERATION

- When the lighting switch is set to "HEAD" position, the "HEAD" signal is sent through the column-ECU (incorporated in the column switch) to the front-ECU. If the front-ECU receives the "HEAD" signal through the column-ECU, the front-ECU turns on the headlight relay (incorporated in the front-ECU), thus causing the headlights to illuminate. The headlights always illuminate at low-beam by the headlight dimmer switch automatic resetting function.
- If the SWS communication line is defective, the front-ECU operates the headlights by using the other communication lines (headlight backup circuit) instead of that line.

TECHNICAL DESCRIPTION (COMMENT)

If the headlights (low-beam) do not illuminate normally, the column switch or the front-ECU may be defective.

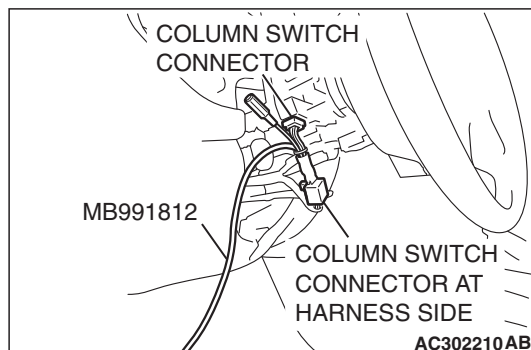
TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

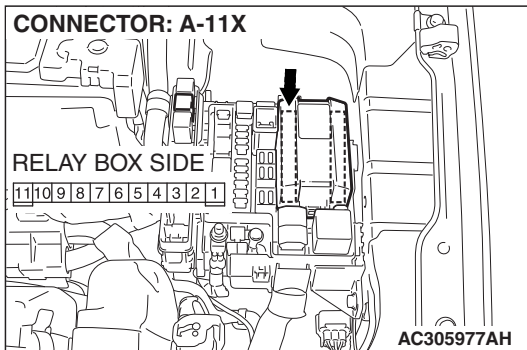
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness



- Ignition switch: ON
- Lighting switch: HEAD

- | ITEM NO. | ITEM NAME | NORMAL
CONDITION |
|----------|---------------|---------------------|
| ITEM 00 | HEADLIGHT SW | ON |
| ITEM 35 | H/L AUTO-CUT | OFF |
| ITEM 70 | FRONT ECU ACK | NORMAL ACK |

Normal condition is not displayed for "FRONT ECU ACK" : Replace the front-ECU. Verify that the headlights (low-beam) illuminate normally.

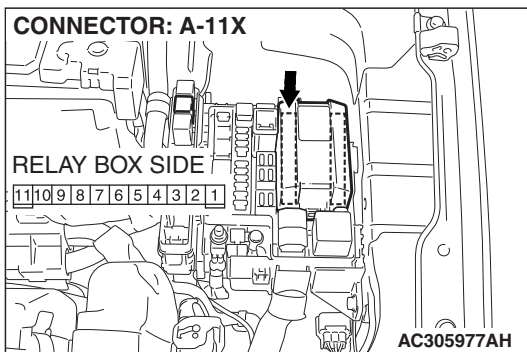


STEP 3. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-11X in good condition?

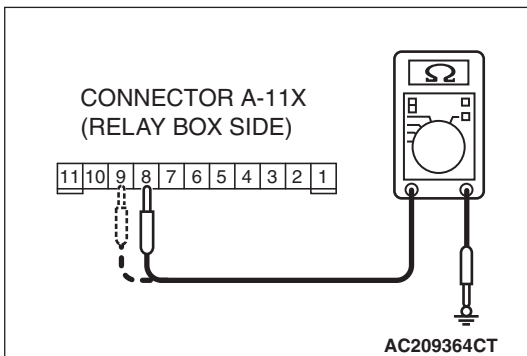
YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the headlights (low-beam) illuminate normally.



STEP 4. Check the battery power supply circuit to the front-ECU. Measure the voltage at front-ECU connector A-11X.

(1) Disconnect front-ECU connector A-11X and measure the voltage available at the relay box side of the connector.



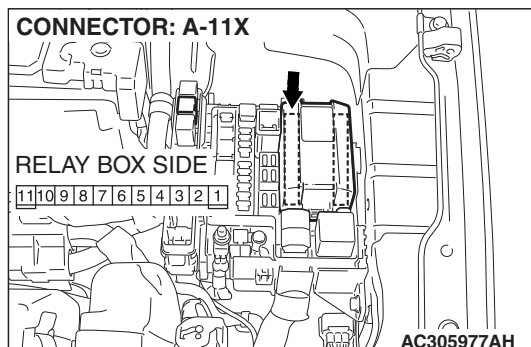
(2) Measure the voltage between terminal numbers 8 and ground, and also between terminal 9 and ground.

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

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

YES : Replace the front-ECU. Verify that the headlights (low-beam) illuminate normally.

NO : Go to Step 5.



STEP 5. Check the wiring harness between front-ECU connector A-11X (terminals 8 and 9) and the battery.

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

Q: Is the wiring harness between front-ECU connector A-11X (terminals 8 and 9) and the battery in good condition?

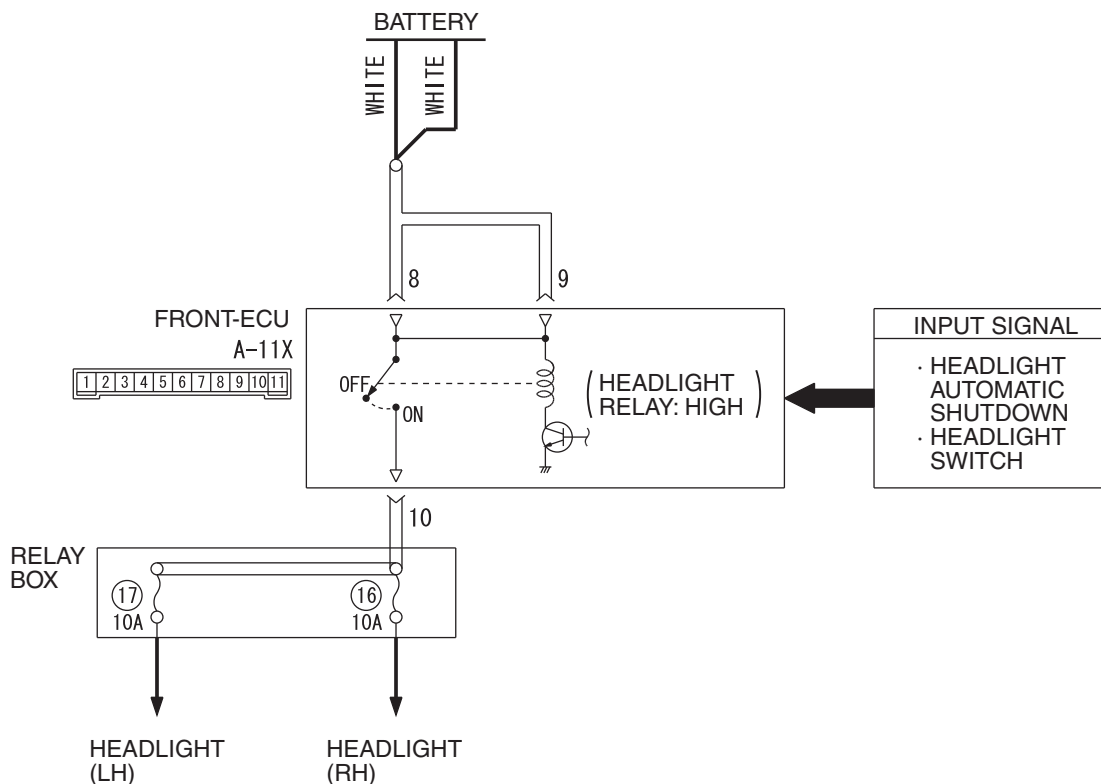
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights (low-beam) illuminate normally.

INSPECTION PROCEDURE H-3: Headlight and Taillight: The headlights (high-beam) do not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

Headlight Relay (High-Beam) Circuit



W4P54M66AA

CIRCUIT OPERATION

When the dimmer switch is turned on, the column switch sends a signal to the front-ECU. Then the front-ECU switches the headlights from low-beam to high beam or vice versa.

TECHNICAL DESCRIPTION (COMMENT)

If the headlights (high beam) do not illuminate normally, the column switch or the front-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

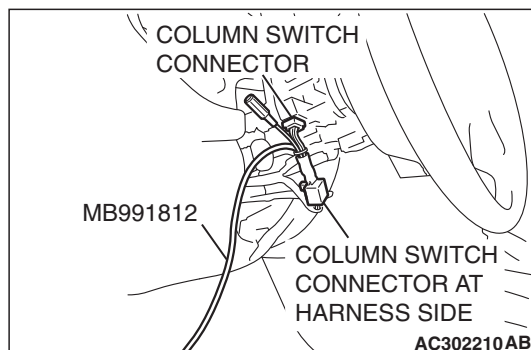
DIAGNOSIS

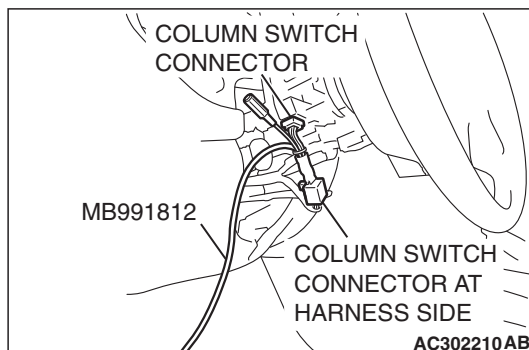
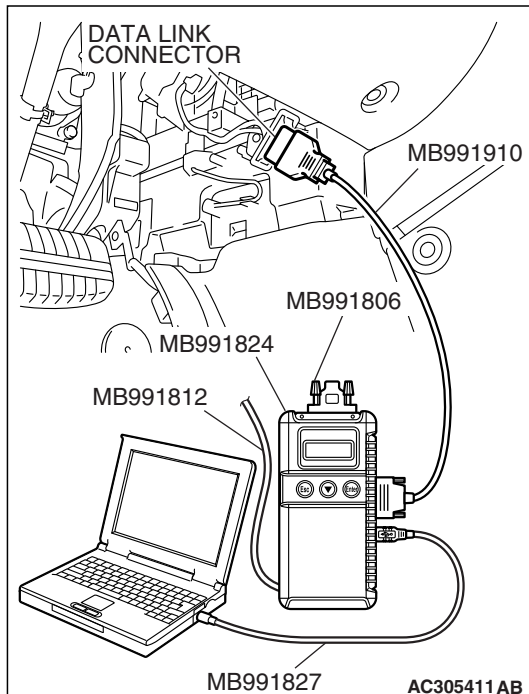
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

- Column switch (column-ECU)
- Front-ECU

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-87."





STEP 2. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ON
- Lighting switch: HEAD
- Dimmer switch: ON

- (1) Operate scan tool MB991958 according to the procedure below to display "HEADLIGHT HI."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "HEADLIGHT HI."
- (2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 00	HEADLIGHT SW	ON
ITEM 02	DIMMER SW	OFF (should turn "ON" momentarily when the dimmer switch is operated)
ITEM 35	H/L AUTO-CUT	OFF
ITEM 70	FRONT ECU ACK	HI-BEAM ACK

Q: Does the scan tool MB991958 display the items "HEADLIGHT SW", "DIMMER SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

Normal conditions are displayed for all the items :

Replace the front-ECU. Verify that the headlights (high-beam) illuminate normally.

Normal condition is not displayed for "HEADLIGHT SW" :

Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the headlight switch [P.54B-515.](#)"

Normal condition is not displayed for "DIMMER SW" :

Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the dimmer switch [P.54B-515.](#)"

Normal condition is not displayed for "H/L AUTO-CUT" :

Refer to Inspection Procedure H-9 "Headlight automatic shutoff function does not work normally [P.54B-366.](#)"

Normal condition is not displayed for "FRONT ECU ACK" :

Replace the front-ECU. Verify that the headlights (high-beam) illuminate normally.

INSPECTION PROCEDURE H-4: Headlight and Taillight: When the passing switch is turned "ON," the headlights (low-beam and high-beam) do not illuminate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

TECHNICAL DESCRIPTION (COMMENT)

If either of the headlights (low-beam and high-beam) do not illuminate, the input circuit from the passing switch or the front-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Check the headlights.

Q: Do the headlights (low-beam and high-beam) illuminate normally?

The headlights illuminate normally. : Go to Step 2.

Headlights (low-beam) do not illuminate normally :

Refer to Inspection Procedure H-2 "The headlights (low-beam) do not illuminate normally [P.54B-309](#)."

Headlights (high-beam) do not illuminate normally :

Refer to Inspection Procedure H-3 "The headlights (high-beam) do not illuminate normally [P.54B-314](#)."

STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Turn the passing switch to the "ON" position before checking input signals from the passing switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

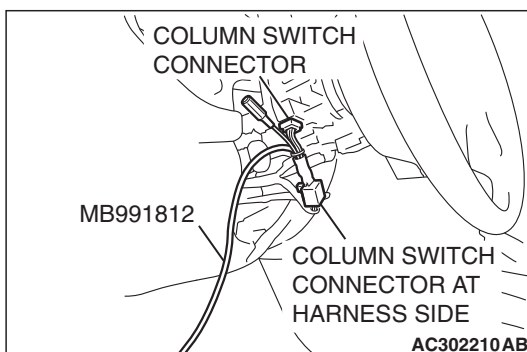
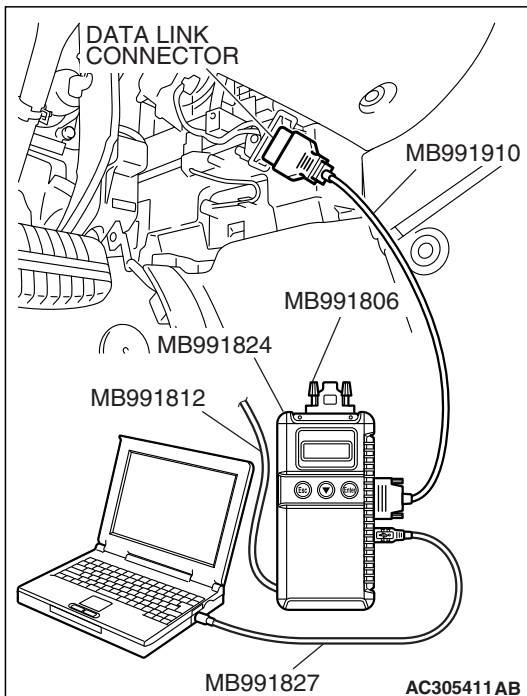
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-13."
- (2) Operate scan tool MB991958 according to the procedure below to display "COLUMN ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "COLUMN ECU."
- (3) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 03	PASSING SW	ON

Q: Does the scan tool MB991958 display "PASSING SW" as normal condition?

YES : Replace the front-ECU. When the passing switch is turned "ON", the headlights (low-beam and high-beam) should illuminate normally.

NO : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the passing switch P.54B-515."



INSPECTION PROCEDURE H-5: Headlight and Taillight: The headlamps illuminate at low-beam (high-beam does not illuminate) regardless of the lighting switch positions.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

TECHNICAL DESCRIPTION (COMMENT)

If the headlights illuminate at low-beam regardless of the lighting switch positions, the headlight operation is in fail-safe mode.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Column-ECU
- Front-ECU

CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "System select."
 - b. Select "SWS."
 - c. Select "SWS MONITOR."
 - d. Select "ECU COMM Check."
- (4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for the "ETACS ECU", "COLUMN ECU" and "FRONT ECU" menus.

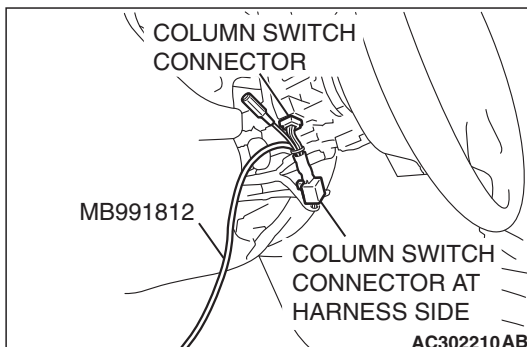
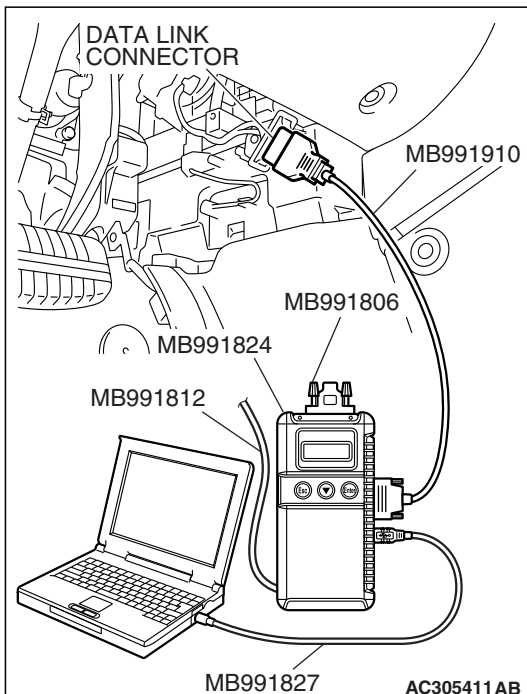
Q: Is "OK" displayed for both the "ETACS ECU", "COLUMN ECU" and "FRONT ECU" menus?

"OK" is displayed for all the items : Replace the front-ECU. Verify that the headlights and the taillights illuminate normally.

"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible [P.54B-79](#)."

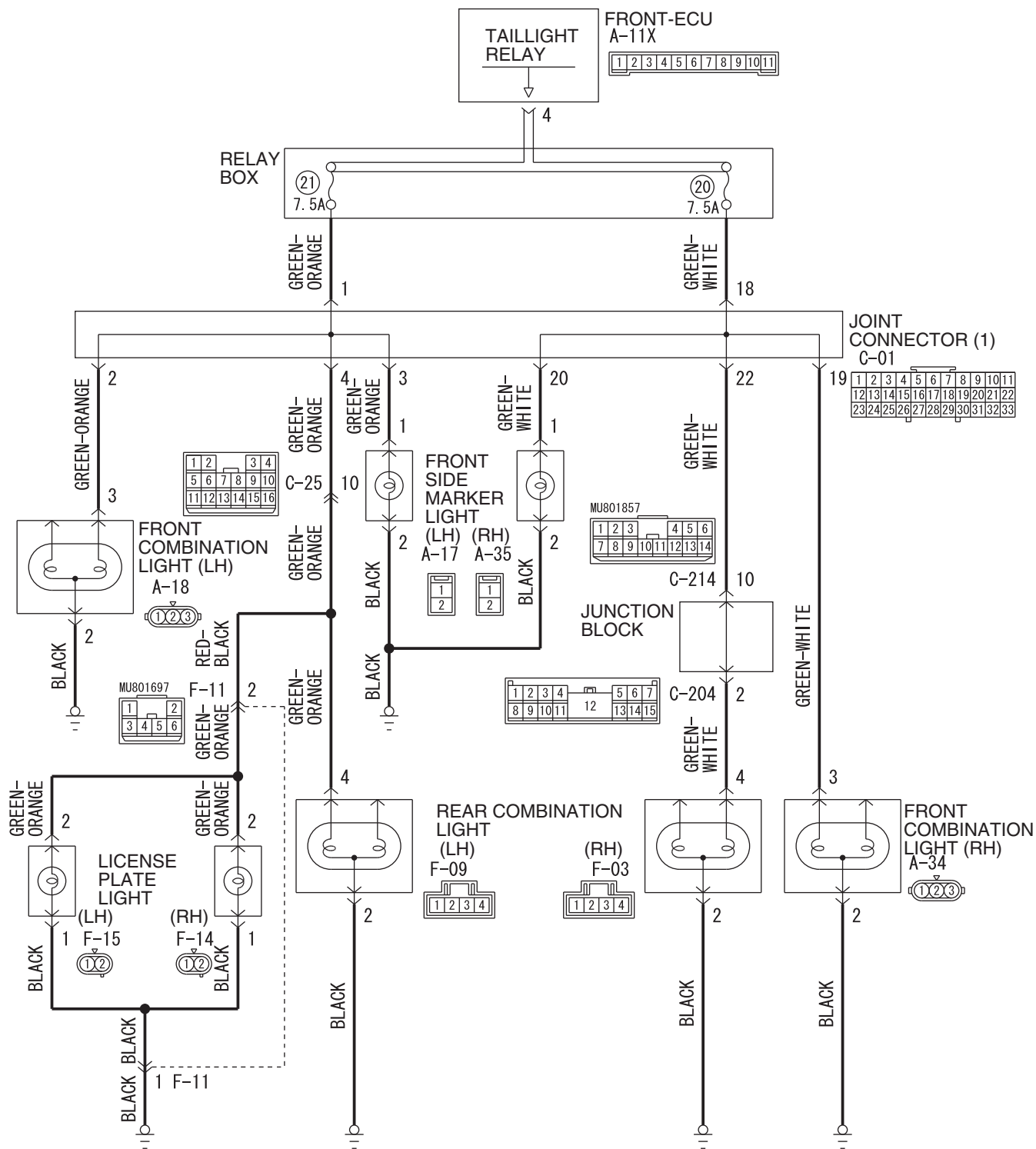
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible [P.54B-71](#)."

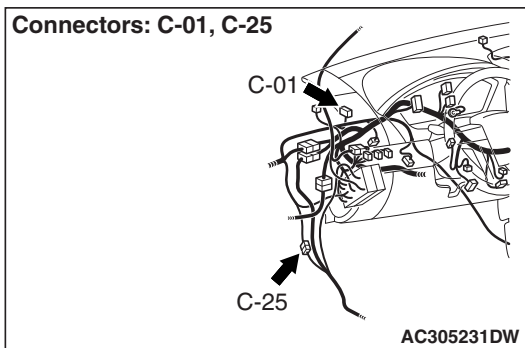
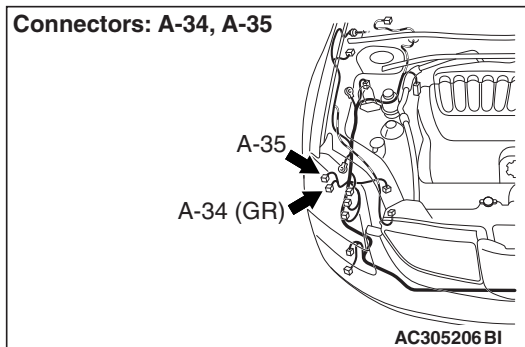
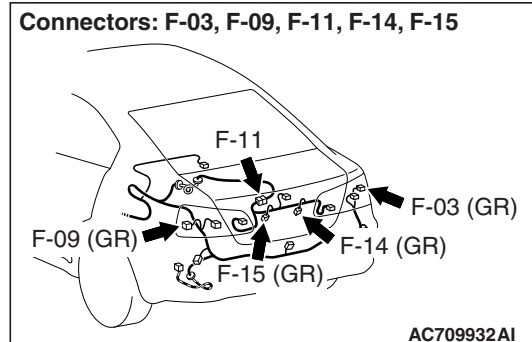
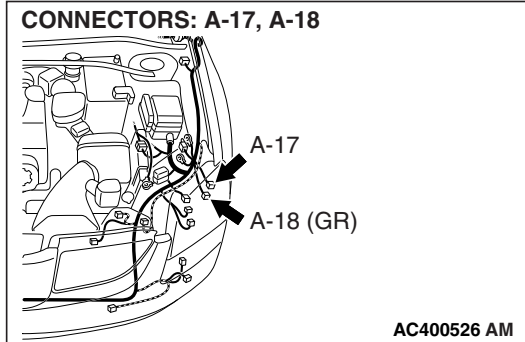
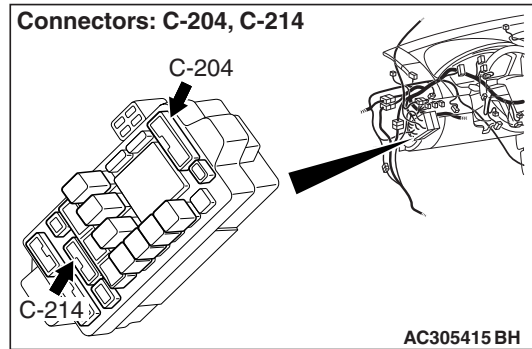
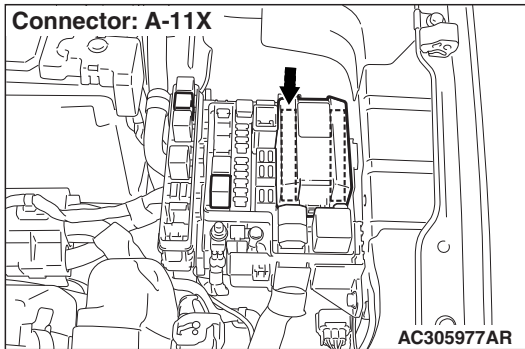
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible [P.54B-87](#)."



INSPECTION PROCEDURE H-6: Headlight and Taillight: The taillights, the front parking lights, the front side marker lights or the license plate light do not illuminate.

Taillights, Front Parking Lights, Front Side Marker Lights and License Plate Lights Circuit





TECHNICAL DESCRIPTION (COMMENT)

If the front parking lights the front side marker lights, the taillights or the license plate lights do not illuminate, their bulb may be defective.

TROUBLESHOOTING HINTS

- The front parking light bulb may be defective
- The front side marker light bulb may be defective
- The stop/taillight bulb may be defective
- The license plate light bulb may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tool:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the operation of each light.**Q: Which light does not illuminate?**

front parking light (LH), taillight (LH), front side marker light (LH) and license plate light : Go to Step 2.

front parking light (RH), taillight (RH) and front side marker light (RH) : Go to Step 4.

taillight (LH) and license plate light : Go to Step 6.

taillight (LH) : Go to Step 8.

taillight (RH) : Go to Step 13.

front parking light (LH) : Go to Step 19.

front parking light (RH) : Go to Step 25.

license plate light : Go to Step 31.

license plate light (LH) : Go to Step 36.

license plate light (RH) : Go to Step 42.

front side marker lights : Go to Step 48.

front side marker light (LH) : Go to Step 49.

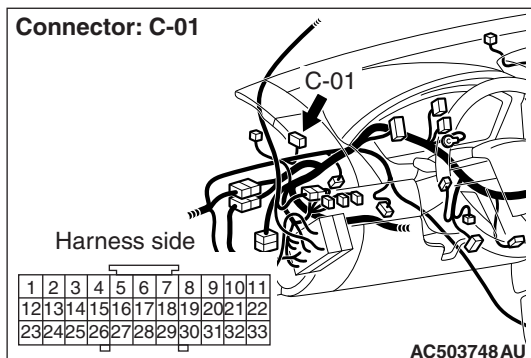
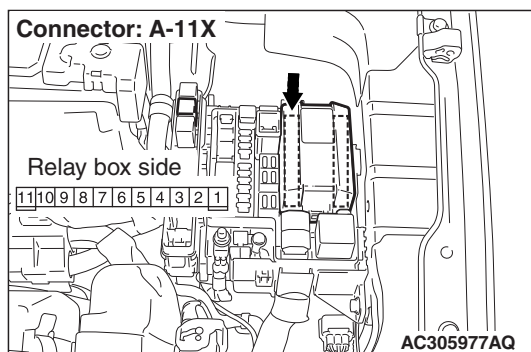
front side marker light (RH) : Go to Step 55.

All lights : Refer to Inspection Procedure H-1 "The taillights do not illuminate normally [P.54B-304](#)."

STEP 2. Check joint connector C-01 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Are joint connector C-01 and front-ECU connector A-11X in good condition?**

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The front parking light (LH), taillight (LH), front side marker light (LH) and the license plate light should illuminate normally.



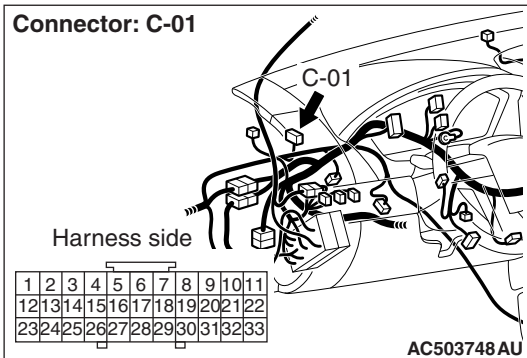
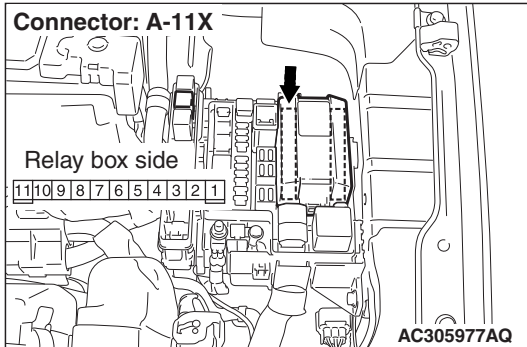
STEP 3. Check the wiring harness between joint connector C-01 (terminal 1) and front-ECU connector A-11X (terminal 4).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between joint connector C-01 (terminal 1) and front-ECU connector A-11X (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The front parking light (LH), taillight (LH), front side marker light (LH) and the license plate light should illuminate normally.

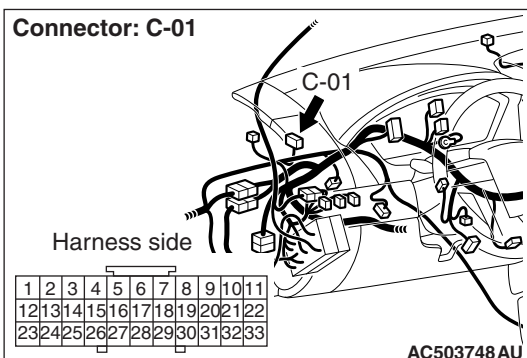
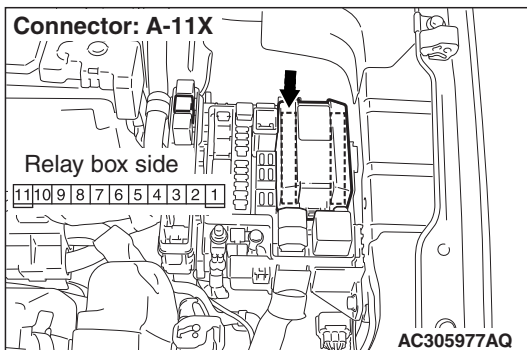


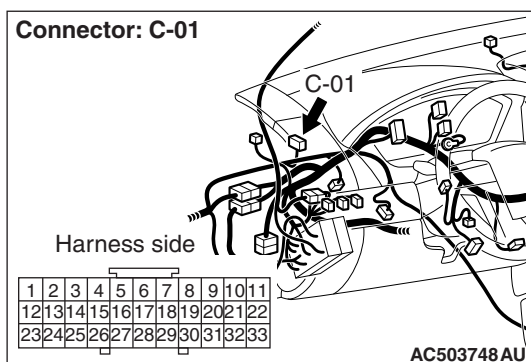
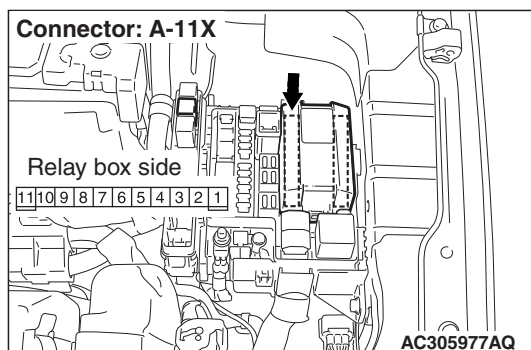
STEP 4. Check joint connector C-01 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are joint connector C-01 and front-ECU connector A-11X in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The front parking light (RH), the front side marker light (RH) and the taillight (RH) should illuminate normally.





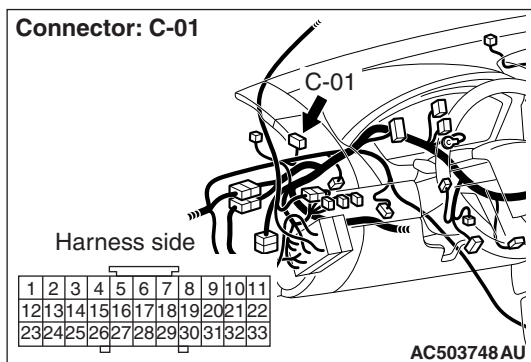
STEP 5. Check the wiring harness between joint connector C-01 (terminal 18) and front-ECU connector A-11X (terminal 4).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between joint connector C-01 (terminal 18) and front-ECU connector A-11X (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The front parking light (RH), the front side marker light (RH) and the taillight (RH) should illuminate normally.



STEP 6. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

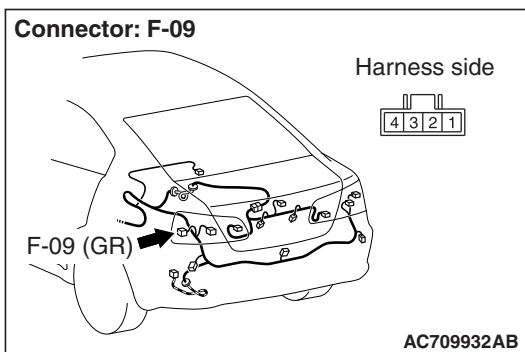
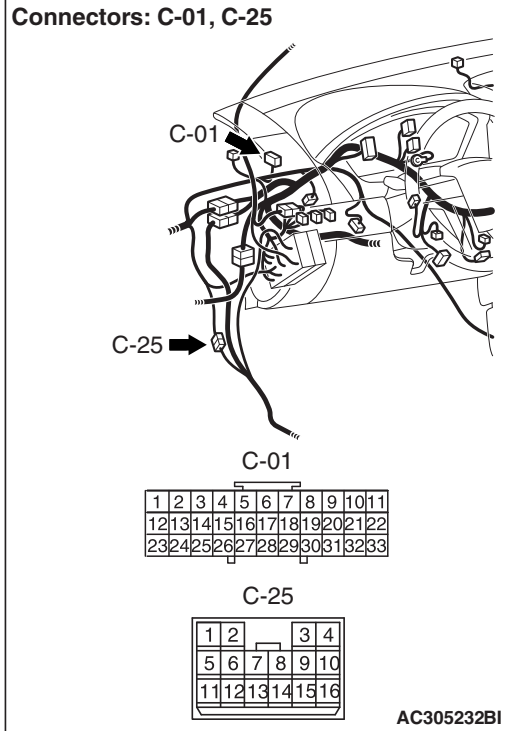
Q: Is joint connector C-01 in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The taillight (LH) and the license plate light should illuminate normally.

STEP 7. Check the wiring harness between joint connector C-01 (terminal 4) and rear combination light (LH) connector F-09 (terminal 4).

- Check the communication lines for open circuit and short circuit.



NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between joint connector C-01 (terminal 4) and rear combination light (LH) connector F-09 (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

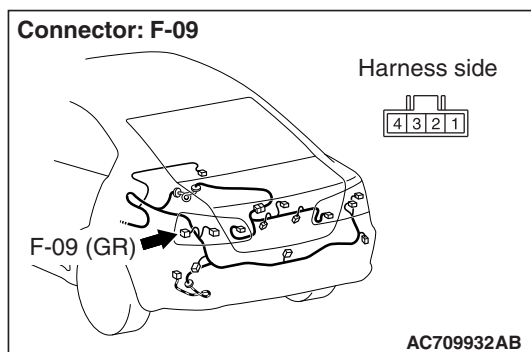
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The taillight (LH) and the license plate light should illuminate normally.

STEP 8. Check rear combination light (LH) connector F-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (LH) connector F-09 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the taillight (LH) illuminates normally.



STEP 9. Check the stop/taillight bulb (LH).

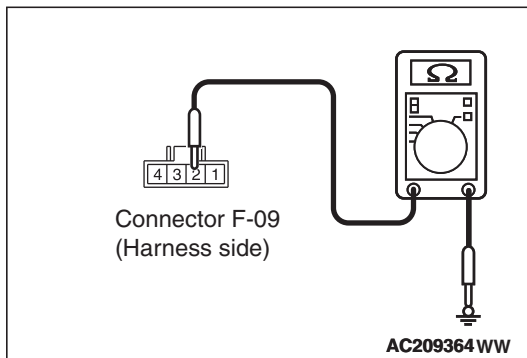
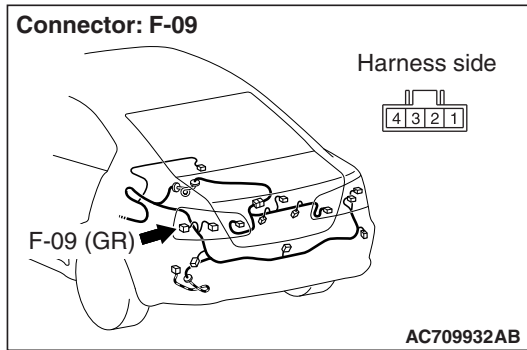
(1) Remove the stop/taillight bulb (LH).

(2) Verify that the stop/taillight bulb (LH) is not damaged or burned out.

Q: Is the stop/taillight bulb (LH) in good condition?

YES : Go to Step 10.

NO : Replace the stop/taillight bulb (LH). Verify that the taillight (LH) illuminates normally.



STEP 10. Check the ground circuit to the rear combination light (LH). Measure the resistance at rear combination light (LH) connector F-09.

(1) Disconnect rear combination light (LH) connector F-09 and measure the resistance available at the wiring harness side of the connector.

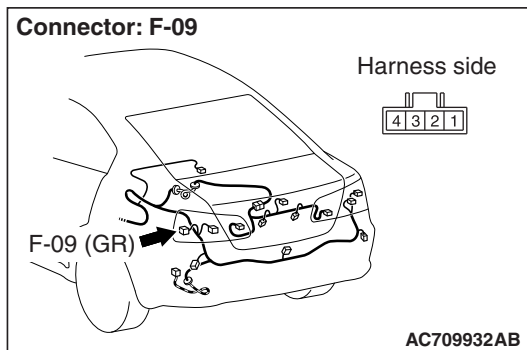
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.



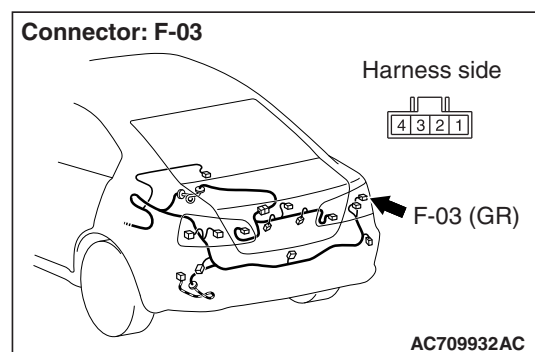
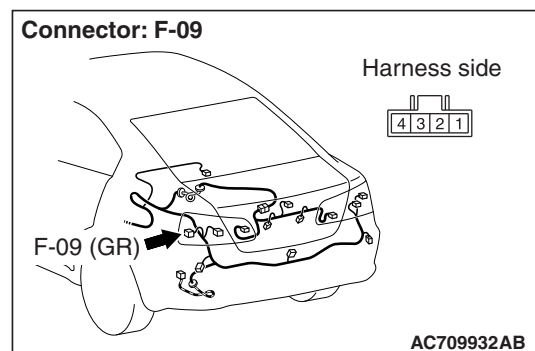
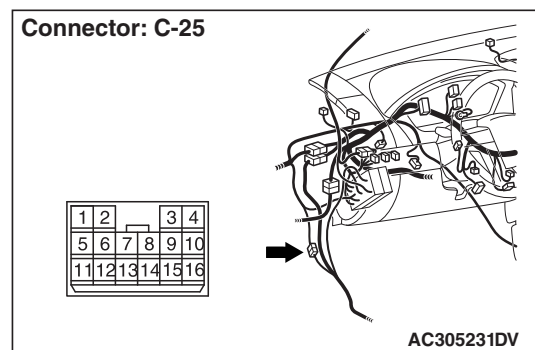
STEP 11. Check the wiring harness between rear combination light (LH) connector F-09 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between rear combination light (LH) connector F-09 (terminal 2) and ground in good condition?

YES : Replace the rear combination light socket (LH). Verify that the taillight (LH) illuminates normally.

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



STEP 12. Check the wiring harness between rear combination light (LH) connector F-09 (terminal 4) and intermediate connector C-25 (terminal 10).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between rear combination light (LH) connector F-09 (terminal 4) and intermediate connector C-25 (terminal 10) in good condition?

YES : Replace the rear combination light socket (LH). Verify that the taillight (LH) illuminates normally.

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

STEP 13. Check rear combination light (RH) connector F-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (RH) connector F-03 in good condition?

YES : Go to Step 14.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the taillight (RH) illuminates normally.

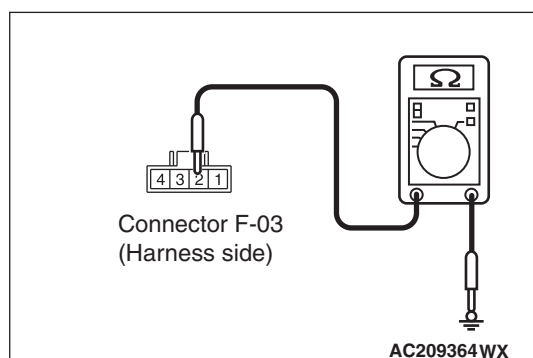
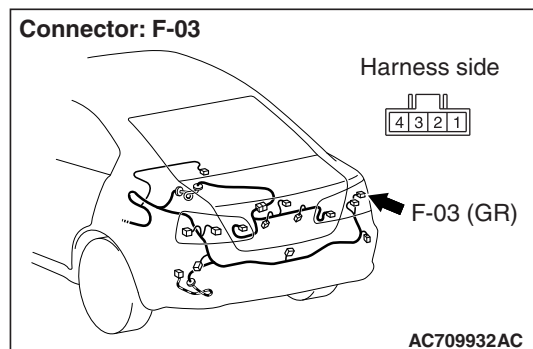
STEP 14. Check the stop/taillight bulb (RH).

- (1) Remove the stop/taillight bulb (RH).
- (2) Verify that the stop/taillight bulb (RH) is not damaged or burned out.

Q: Is the stop/taillight bulb (RH) in good condition?

YES : Go to Step 15.

NO : Replace the stop/taillight bulb (RH). Verify that the taillight (RH) illuminates normally.



STEP 15. Check the ground circuit to the rear combination light (RH). Measure the resistance at rear combination light (RH) connector F-03.

(1) Disconnect rear light (RH) connector F-03 and measure the resistance available at the wiring harness side of the connector.

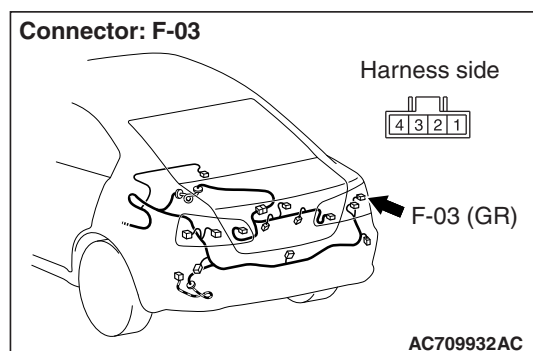
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 17.

NO : Go to Step 16.



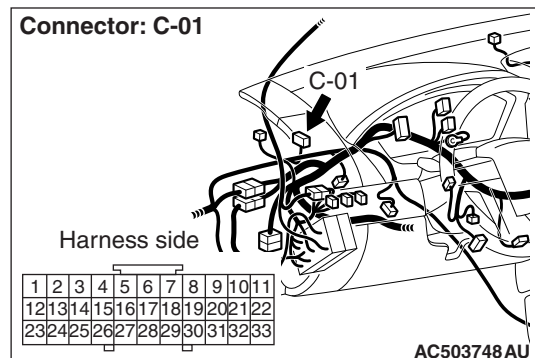
STEP 16. Check the wiring harness between rear combination light (RH) connector F-03 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between rear combination light (RH) connector F-03 (terminal 2) and ground in good condition?

YES : Replace the rear combination light socket (RH). Verify that the taillight (RH) illuminates normally.

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



STEP 17. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

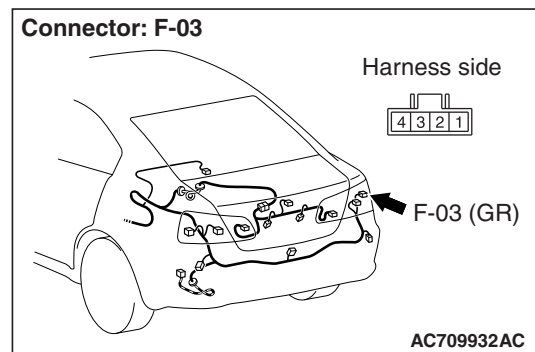
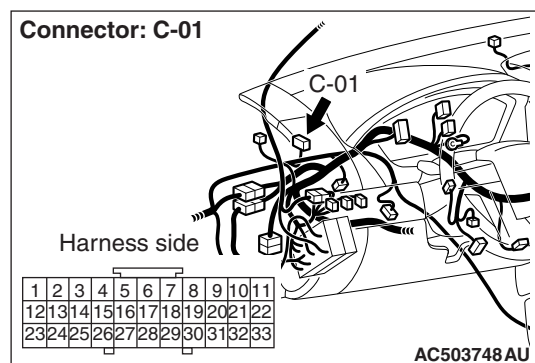
Q: Is joint connector C-01 in good condition?

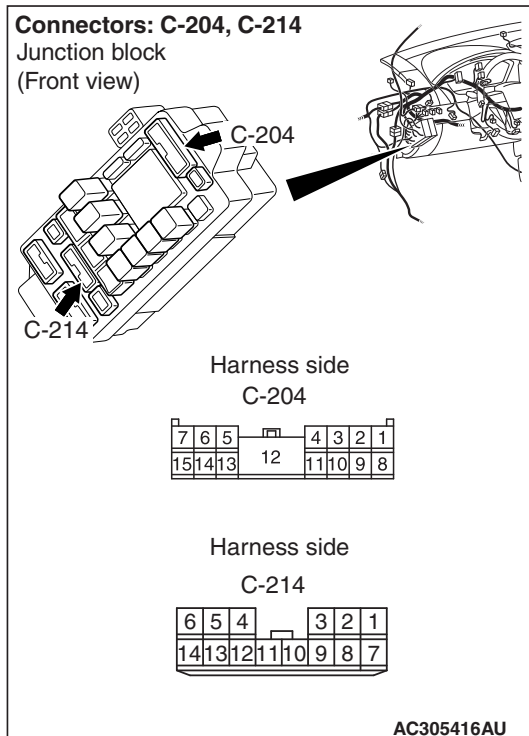
YES : Go to Step 18.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the taillight (RH) illuminates normally.

STEP 18. Check the wiring harness between rear combination light (RH) connector F-03 (terminal 4) and joint connector C-01 (terminal 22).

- Check the communication lines for open circuit and short circuit.



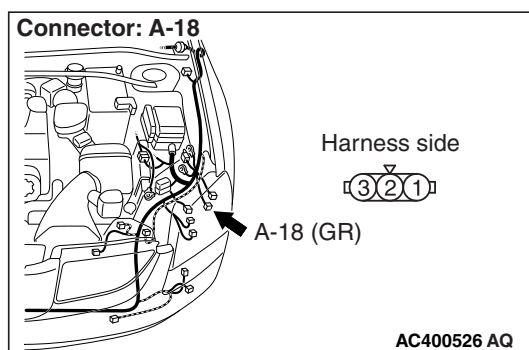


NOTE: Also check junction block connectors C-214 and C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between rear combination light (RH) connector F-03 (terminal 4) and joint connector C-01 (terminal 22) in good condition?

YES : Replace the rear combination light socket (RH). Verify that the taillight (RH) illuminates normally.

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



STEP 19. Check front combination light (LH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light (LH) connector A-18 in good condition?

YES : Go to Step 20.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the front parking light (LH) illuminates normally.

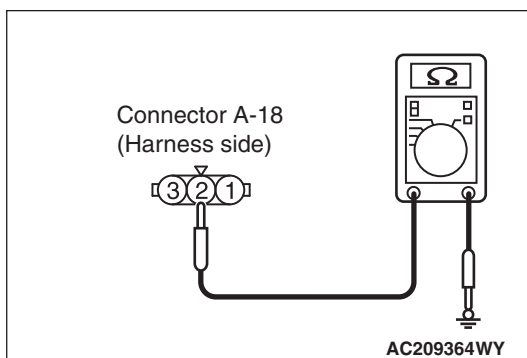
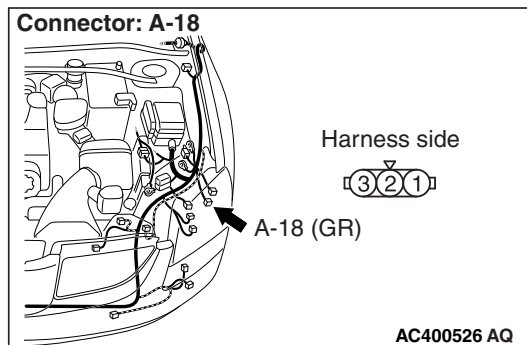
STEP 20. Check the front parking light bulb (LH).

- (1) Remove the front parking light bulb (LH).
- (2) Verify that the front parking light bulb (LH) is not damaged or burned out.

Q: Is the front parking light bulb (LH) in good condition?

YES : Go to Step 21.

NO : Replace the front parking light bulb (LH). Verify that the front parking light (LH) illuminates normally.



STEP 21. Check the ground circuit to the front parking light (LH). Measure the resistance at front combination light (LH) connector A-18.

(1) Disconnect front combination light (LH) connector A-18 and measure the resistance available at the wiring harness side of the connector.

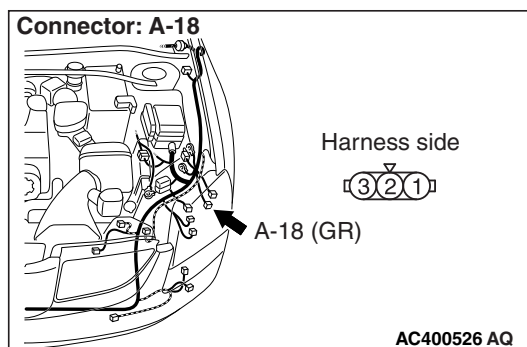
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 23.

NO : Go to Step 22.



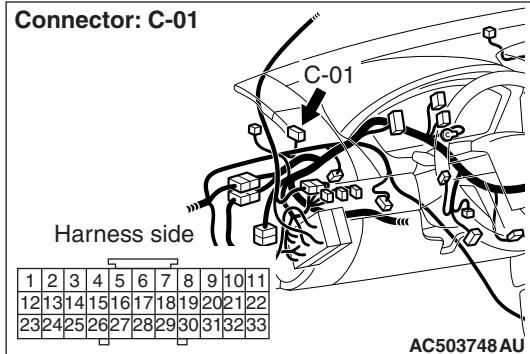
STEP 22. Check the wiring harness between front combination light (LH) connector A-18 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the front parking light (LH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (LH) illuminates normally.

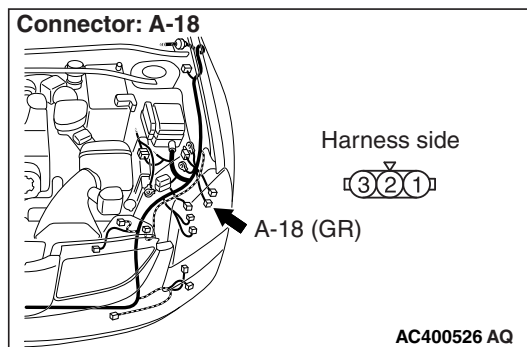


STEP 23. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-01 in good condition?

YES : Go to Step 24.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the front parking light (LH) illuminates normally.



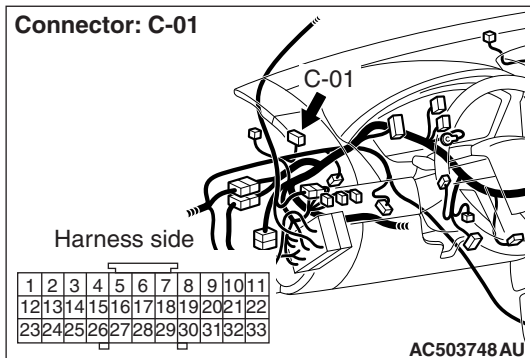
STEP 24. Check the wiring harness between front combination light (LH) connector A-18 (terminal 3) and joint connector C-01 (terminal 2).

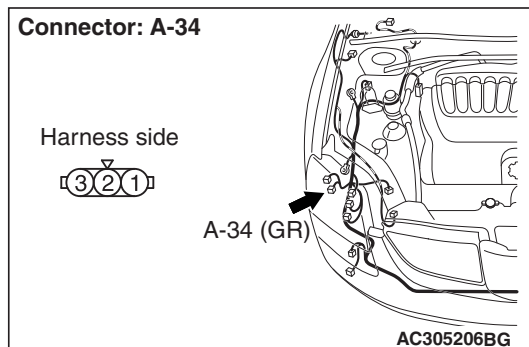
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 3) and joint connector C-01 (terminal 2) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (LH) illuminates normally.





STEP 25. Check front combination light (RH) connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light (RH) connector A-34 in good condition?

YES : Go to Step 26.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the front parking light (RH) illuminates normally.

STEP 26. Check the front parking light bulb (RH).

- (1) Remove the front parking light bulb (RH).
- (2) Verify that the front parking light bulb (RH) is not damaged or burned out.

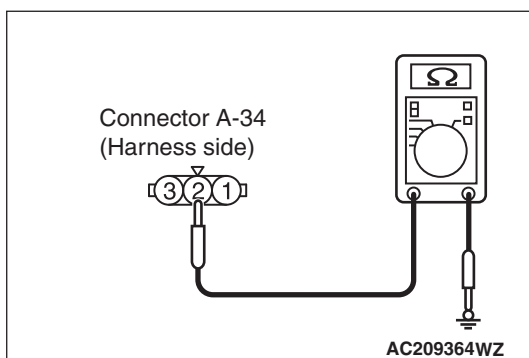
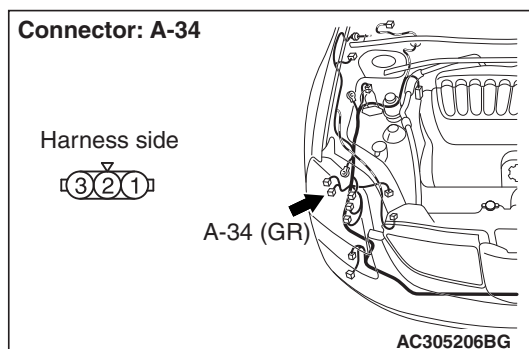
Q: Is the front parking light bulb (RH) in good condition?

YES : Go to Step 27.

NO : Replace the front side marker light bulb (RH). Verify that the front parking light (RH) illuminates normally.

STEP 27. Check the ground circuit to the front parking light (RH). Measure the resistance at front combination light (RH) connector A-34.

- (1) Disconnect front combination light (RH) connector A-34, and measure the resistance available at the harness side of the connector.



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

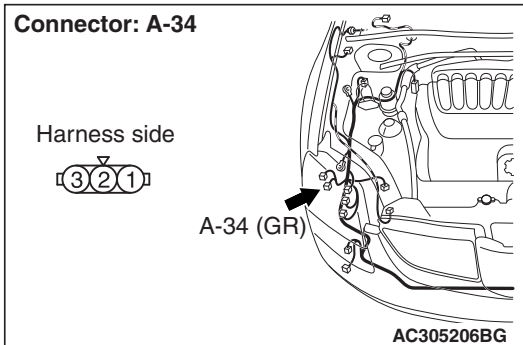
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 29.

NO : Go to Step 28.

Connector: A-34



STEP 28. Check the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (RH). Verify that the front parking light (RH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (RH) illuminates normally.

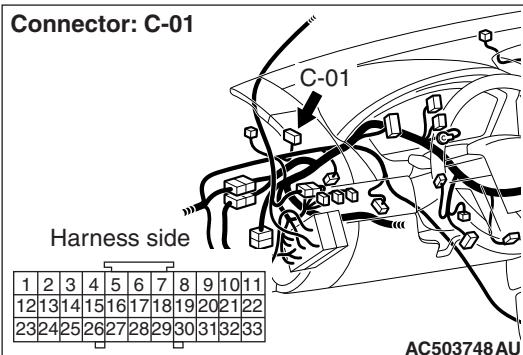
STEP 29. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

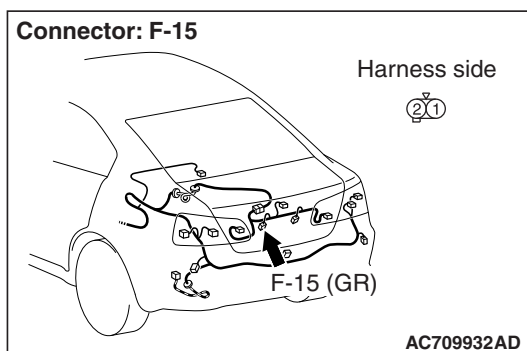
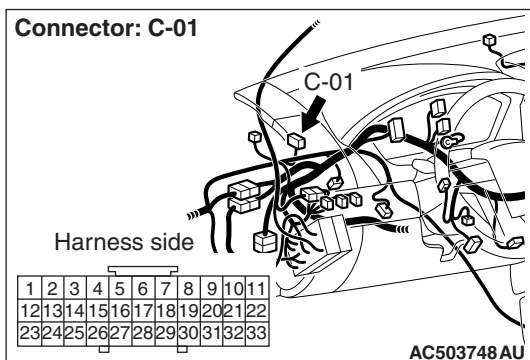
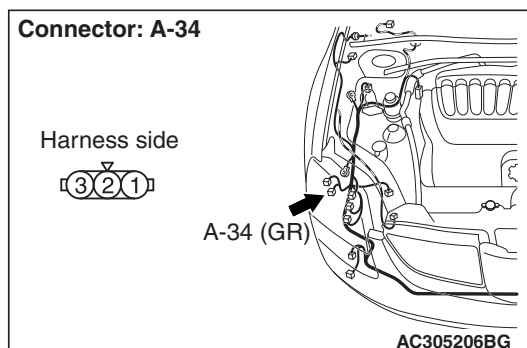
Q: Is joint connector C-01 in good condition?

YES : Go to Step 30.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the front parking light (RH) illuminates normally.

Connector: C-01





STEP 30. Check the wiring harness between front combination light (RH) connector A-34 (terminal 3) and joint connector C-01 (terminal 19).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 3) and joint connector C-01 (terminal 19) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (RH) illuminates normally.

STEP 31. Check license plate light (LH) connector F-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is license plate light (LH) connector F-15 in good condition?

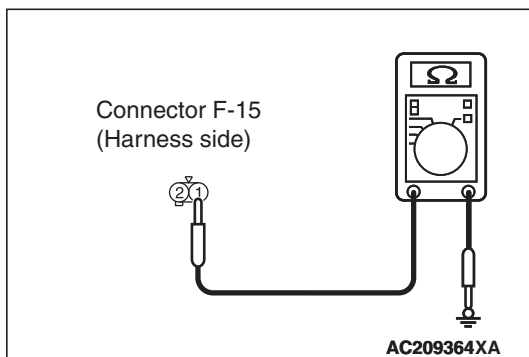
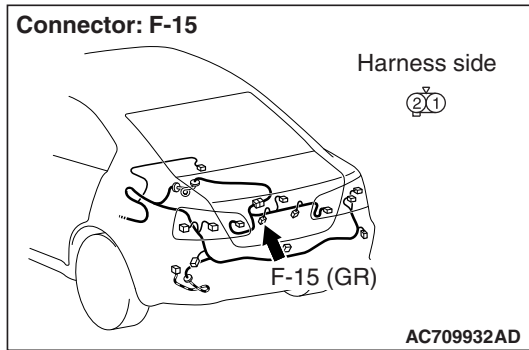
YES : Go to Step 32.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2](#). Check that the license plate light illuminate normally.

STEP 32. Check the ground circuit to the license plate light (LH). Measure the resistance at license plate light (LH) connector F-15.

- (1) Disconnect license plate light (LH) connector F-15 and measure the resistance available at the wiring harness side of the connector.



- (2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

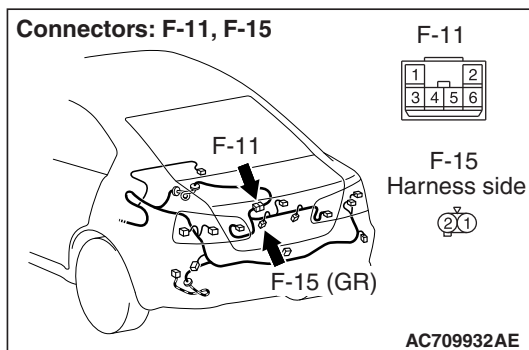
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 34.

NO : Go to Step 33.

STEP 33. Check the wiring harness between license plate light (LH) connector F-15 (terminal 1) and ground.

- Check the ground wire for open circuit.



NOTE: Also check intermediate connector F-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-11 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between license plate light (LH) connector F-15 (terminal 1) and ground in good condition?

YES : Go to Step 34.

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

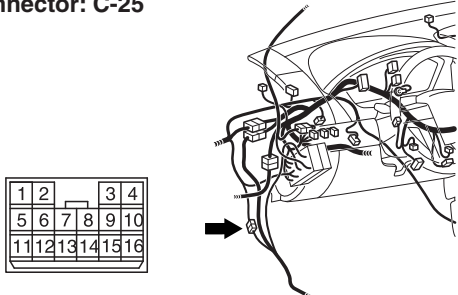
STEP 34. Check intermediate connector C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is intermediate connector C-25 in good condition?

YES : Go to Step 35.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the license plate light illuminate normally.

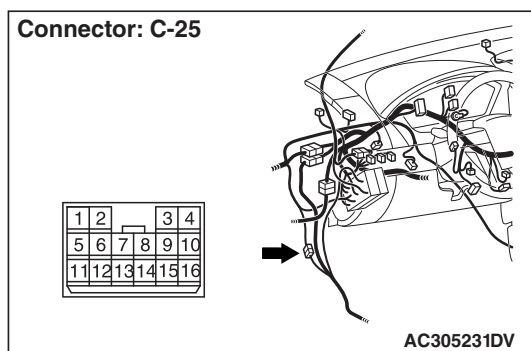
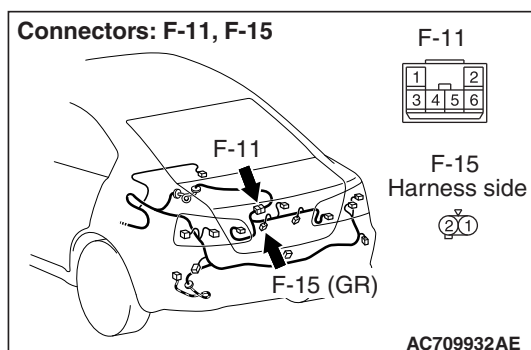
Connector: C-25



AC305231DV

STEP 35. Check the wiring harness between license plate light (LH) connector F-15 (terminal 2) and intermediate connector C-25 (terminal 10).

- Check the communication lines for open circuit and short circuit.

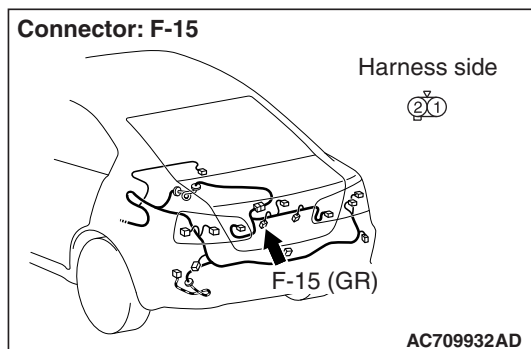


NOTE: Also check intermediate connector F-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-11 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between license plate license plate light (LH) connector F-15 (terminal 2) and intermediate connector C-25 (terminal 10) in good condition?

YES : No action is necessary and testing is complete.

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



STEP 36. Check license plate light (LH) connector F-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is license plate light (LH) connector F-15 in good condition?

YES : Go to Step 37.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. Check that the license plate light (LH) illuminate normally.

STEP 37. Check the license plate light (LH) bulb.

- (1) Remove the license plate light (LH) bulb.
- (2) Verify that the license plate light (LH) bulb is not damaged or burned out.

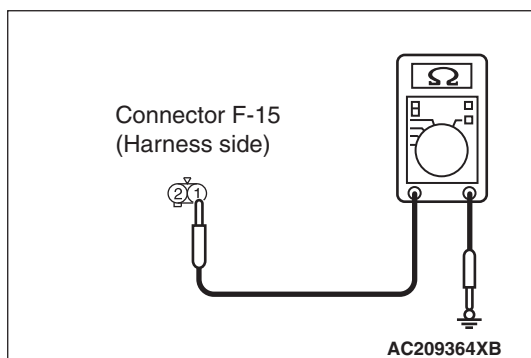
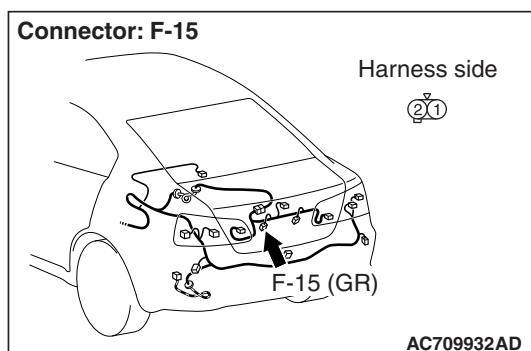
Q: Is the license plate light (LH) bulb in good condition?

YES : Go to Step 38.

NO : Replace the license plate light (LH) bulb. Verify that the license plate light (LH) illuminate normally.

STEP 38. Check the ground circuit to the license plate light (LH). Measure the resistance at license plate light (LH) connector F-15.

- (1) Disconnect license plate light (LH) connector F-15 and measure the resistance available at the wiring harness side of the connector.



- (2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

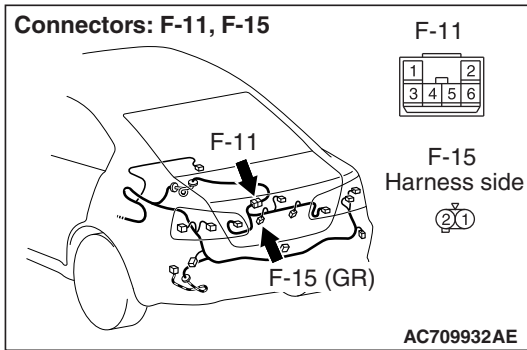
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 40.

NO : Go to Step 39.

STEP 39. Check the wiring harness between license plate light (LH) connector F-15 (terminal 1) and ground.

- Check the ground wire for open circuit.



NOTE: Also check intermediate connector F-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-11 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

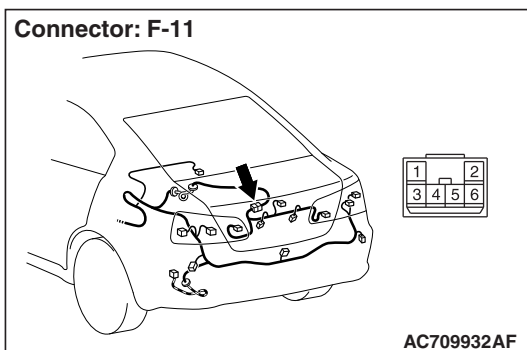
Q: Is the wiring harness between license plate light (LH) connector F-15 (terminal 1) and ground in good condition?

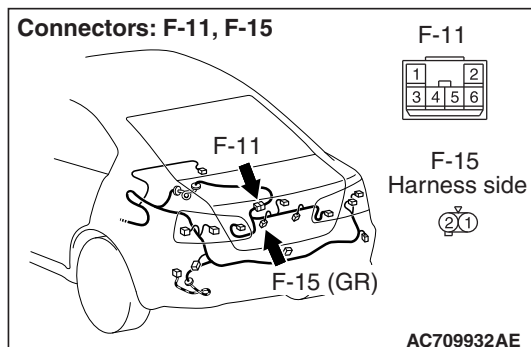
- YES :** Replace the license plate light (LH) socket. Verify that the license plate light (LH) illuminate normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the license plate light (LH) illuminate normally.

STEP 40. Check intermediate connector F-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is intermediate connector F-11 in good condition?

- YES :** Go to Step 41.
- NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the license plate light (LH) illuminate normally.





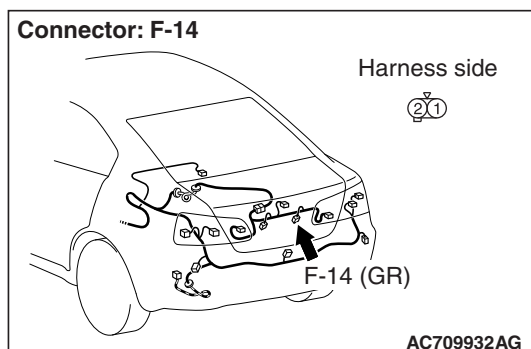
STEP 41. Check the wiring harness between license plate light (LH) connector F-15 (terminal 2) and intermediate connector F-11 (terminal 2).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between license plate light (LH) connector F-15 (terminal 2) and intermediate connector F-11 (terminal 2) in good condition?

YES : Replace the license plate light (LH) socket. Verify that the license plate light (LH) illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the license plate light (LH) illuminate normally.



STEP 42. Check license plate light (RH) connector F-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is license plate light (RH) connector F-14 in good condition?

YES : Go to Step 43.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the license plate light (LH) illuminate normally.

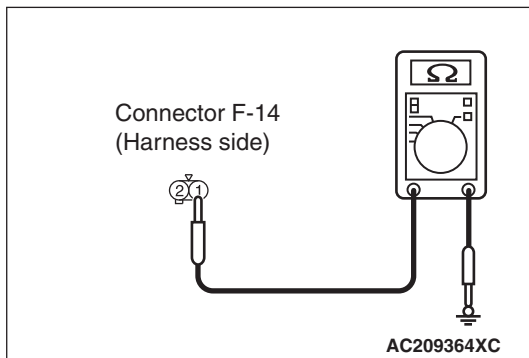
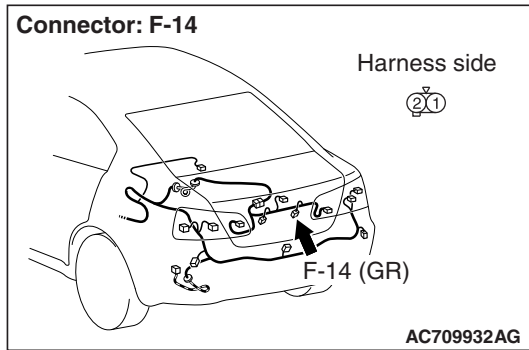
STEP 43. Check the license plate light (RH) bulb.

- (1) Remove the license plate light (RH) bulb.
- (2) Verify that the license plate light (RH) bulb is not damaged or burned out.

Q: Is the license plate light (RH) bulb in good condition?

YES : Go to Step 44.

NO : Replace the license plate light (RH) bulb. Verify that the license plate light (RH) illuminate normally.



STEP 44. Check the ground circuit to the license plate light (RH). Measure the resistance at license plate light (RH) connector F-14.

(1) Disconnect license plate light (RH) connector F-14 and measure the resistance available at the wiring harness side of the connector.

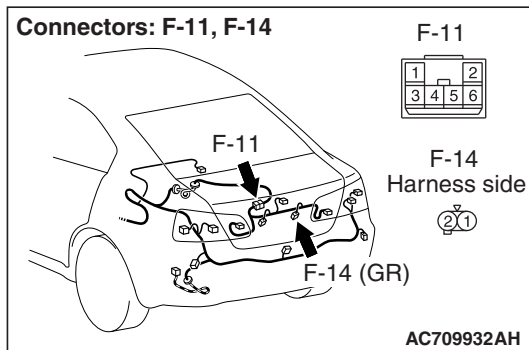
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 46.

NO : Go to Step 45.



STEP 45. Check the wiring harness between license plate light (RH) connector F-14 (terminal 1) and ground.

- Check the ground wire for open circuit.

NOTE: Also check intermediate connector F-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-11 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between license plate light (RH) connector F-14 (terminal 1) and ground in good condition?

YES : Replace the license plate light (RH) socket. Verify that the license plate light (RH) illuminate normally.

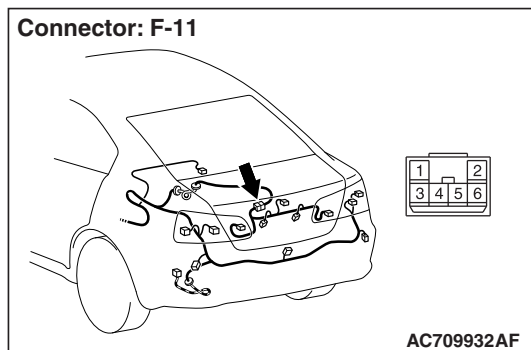
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the license plate light (RH) illuminate normally.

STEP 46. Check intermediate connector F-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is intermediate connector F-11 in good condition?

YES : Go to Step 47.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the license plate light (LH) illuminate normally.



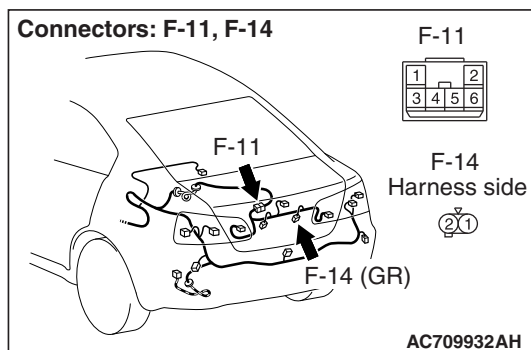
STEP 47. Check the wiring harness between license plate light (RH) connector F-14 (terminal 2) and intermediate connector F-11 (terminal 2).

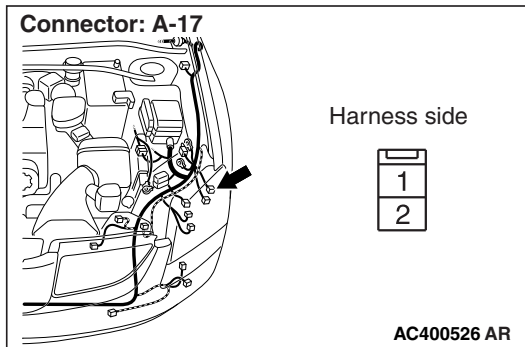
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between license plate light (RH) connector F-14 (terminal 2) and intermediate connector F-11 (terminal 2) in good condition?

YES : Replace the license plate light (LH) socket. Verify that the license plate light (LH) illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the license plate light (LH) illuminate normally.



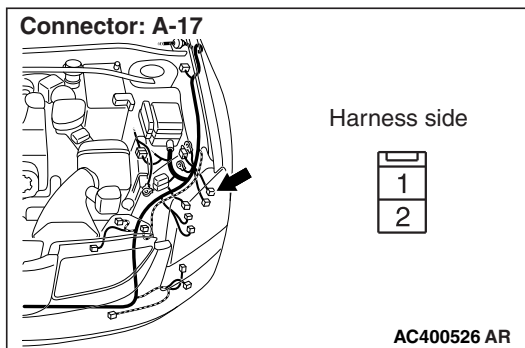


STEP 48. Check the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground in good condition?

- YES :** Replace the side marker light socket. Verify that the side marker light illuminate normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the side marker light illuminate normally.



STEP 49. Check front side marker light (LH) connector A-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front side marker light (LH) connector A-17 in good condition?

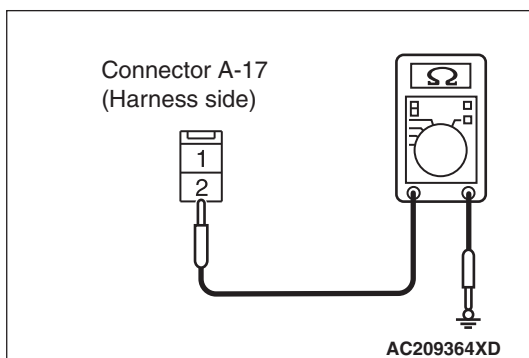
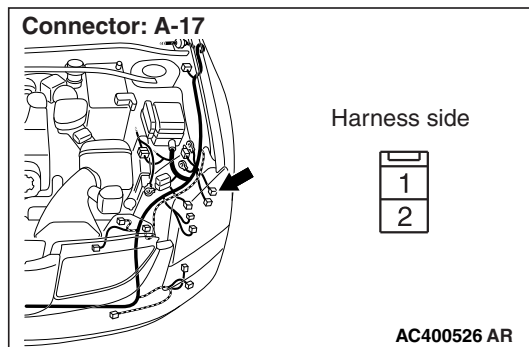
- YES :** Go to Step 50.
- NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the front side marker light (LH) illuminates normally.

STEP 50. Check the front side marker light bulb (LH).

- (1) Remove the front side marker light bulb (LH).
- (2) Verify that the front side marker light bulb (LH) is not damaged or burned out.

Q: Is the front side marker light bulb (LH) in good condition?

- YES :** Go to Step 51.
- NO :** Replace the front side marker light bulb (LH). Verify that the front side marker light (LH) illuminates normally.



STEP 51. Check the ground circuit to the front side marker light (LH). Measure the resistance at front side marker light (LH) connector A-17.

(1) Disconnect front side marker light (LH) connector A-17 and measure the resistance available at the wiring harness side of the connector.

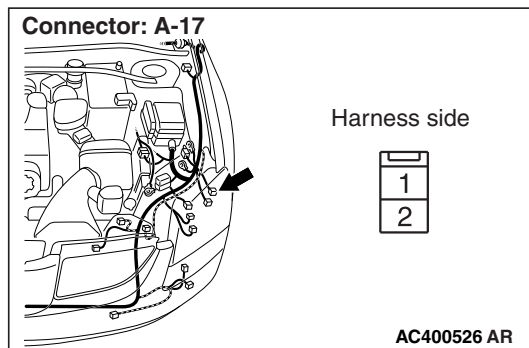
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 53.

NO : Go to Step 52.



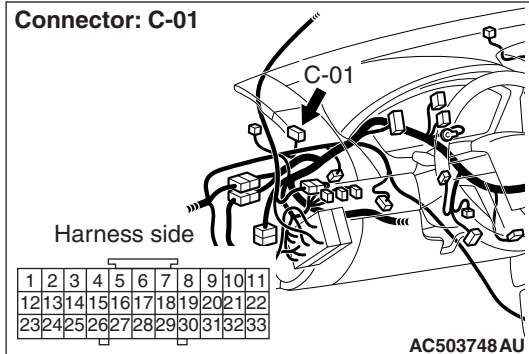
STEP 52. Check the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the front side marker light (LH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (LH) illuminates normally.

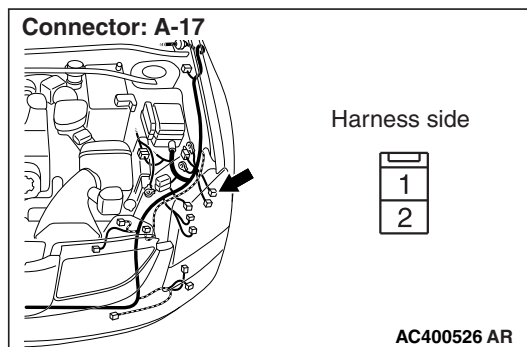


STEP 53. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-01 in good condition?

YES : Go to Step 54.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the front side marker light (LH) illuminates normally.



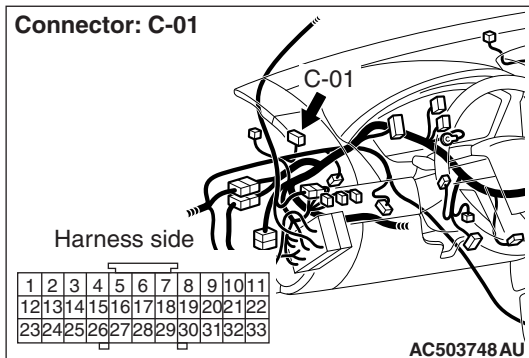
STEP 54. Check the wiring harness between front side marker light (LH) connector A-17 (terminal 1) and joint connector C-01 (terminal 3).

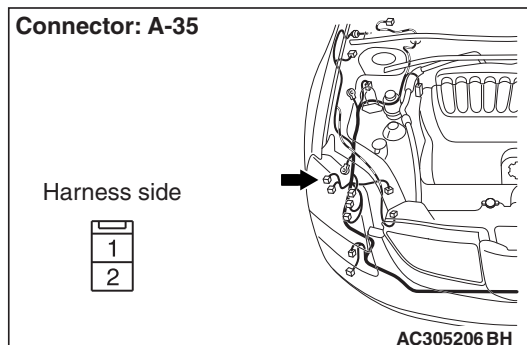
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between front side marker light (LH) connector A-17 (terminal 1) and joint connector C-01 (terminal 3) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (LH) illuminates normally.





STEP 55. Check front side marker light (RH) connector A-35 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front side marker light (RH) connector A-35 in good condition?

YES : Go to Step 56.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. Check that the front side marker light (RH) illuminates normally.

STEP 56. Check the front side marker light bulb (RH).

(1) Remove the front side marker light bulb (RH).

(2) Verify that the front side marker light bulb (RH) is not damaged or burned out.

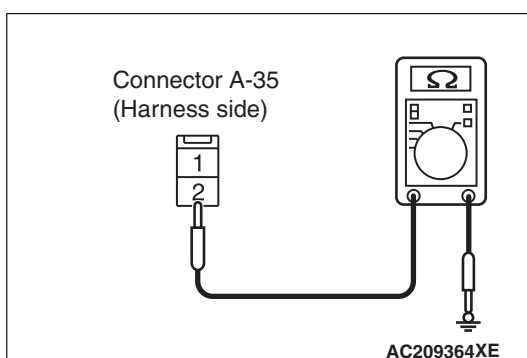
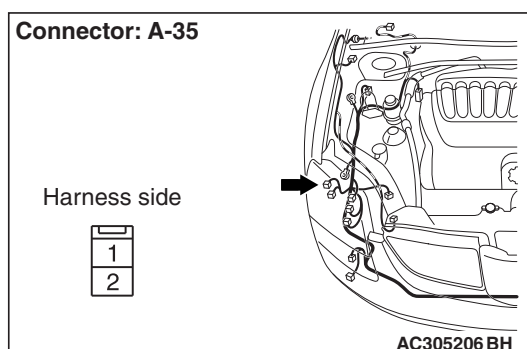
Q: Is the front side marker light bulb (RH) in good condition?

YES : Go to Step 57.

NO : Replace the front side marker light bulb (LH). Verify that the front side marker light (LH) illuminates normally.

STEP 57. Check the ground circuit to the front side marker light (RH). Measure the resistance at front side marker light (RH) connector A-35.

(1) Disconnect front side marker light (RH) connector A-35 and measure the resistance available at the wiring harness side of the connector.



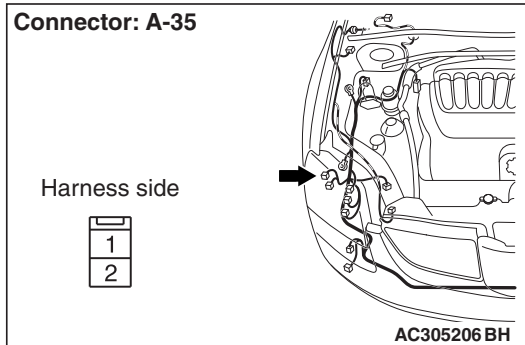
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 59.

NO : Go to Step 58.

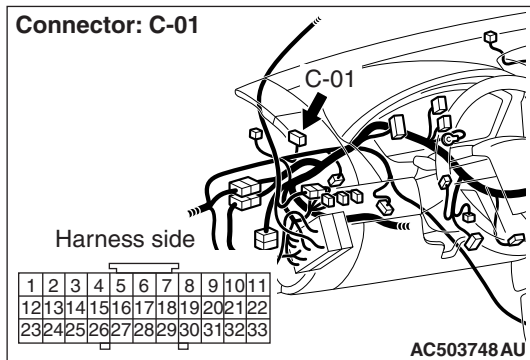


STEP 58. Check the wiring harness between front side marker light (RH) connector A-35 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between front side marker light (RH) connector A-35 (terminal 2) and ground in good condition?

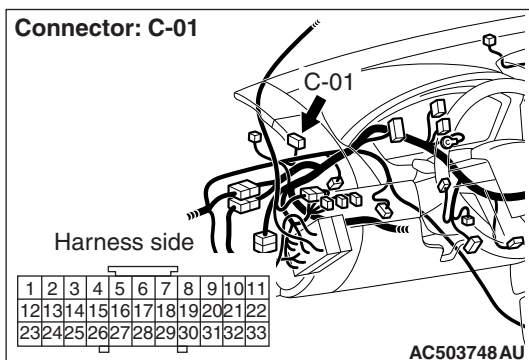
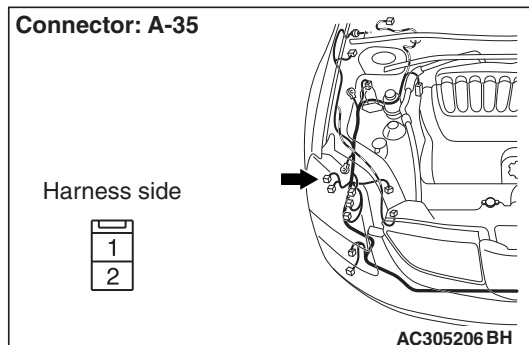
- YES :** Replace the front combination light socket (RH).
Verify that the front side marker light (RH) illuminates normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (RH) illuminates normally.



STEP 59. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-01 in good condition?

- YES :** Go to Step 60.
- NO :** Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the front side marker light (RH) illuminates normally.



STEP 60. Check the wiring harness between front side marker light (RH) connector A-35 (terminal 1) and joint connector C-01 (terminal 20).

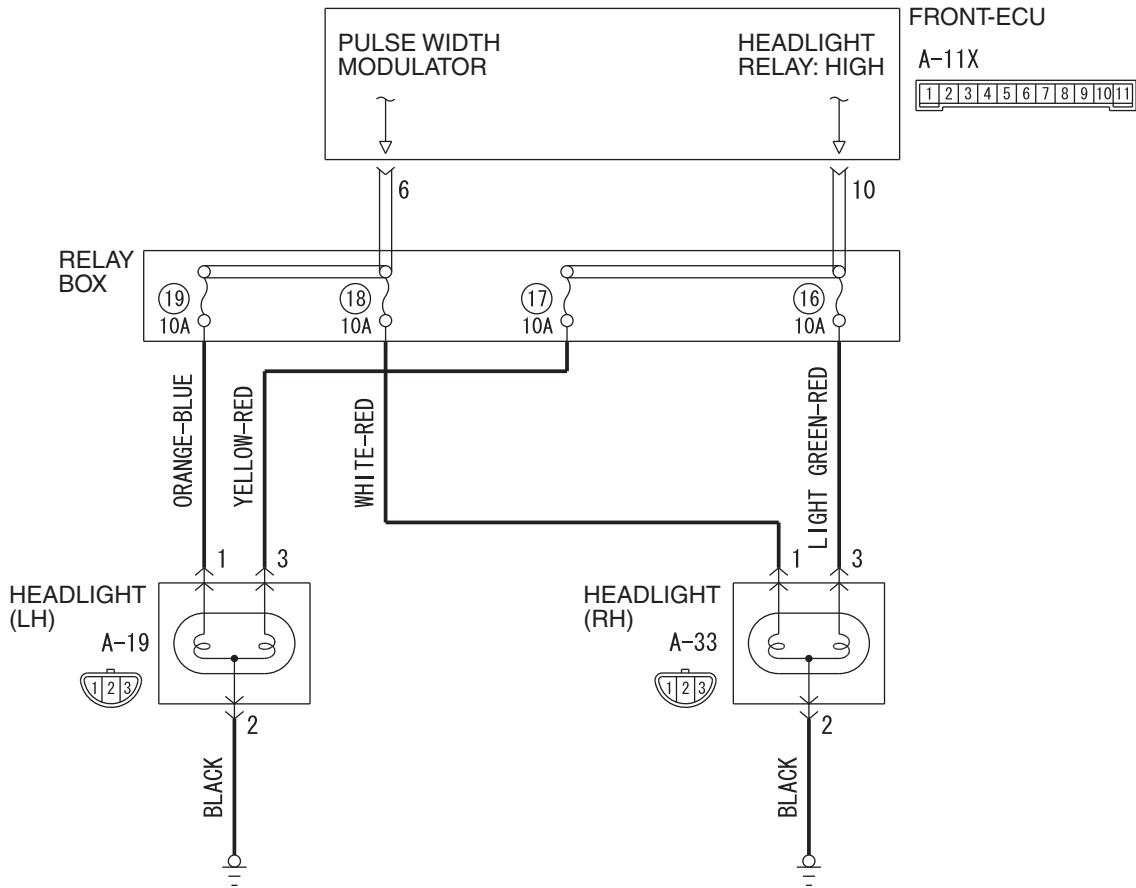
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between front side marker light (RH) connector A-35 (terminal 1) and joint connector C-01 (terminal 20) in good condition?

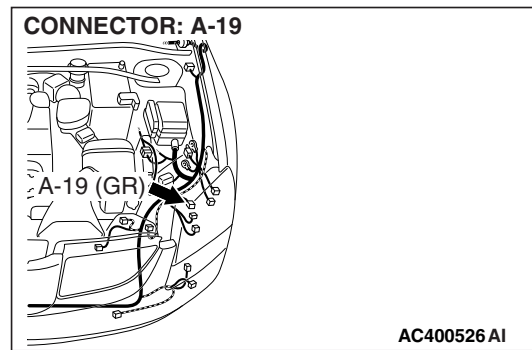
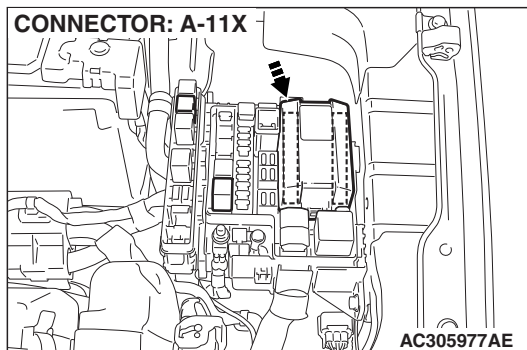
YES : No action is necessary and testing is complete.

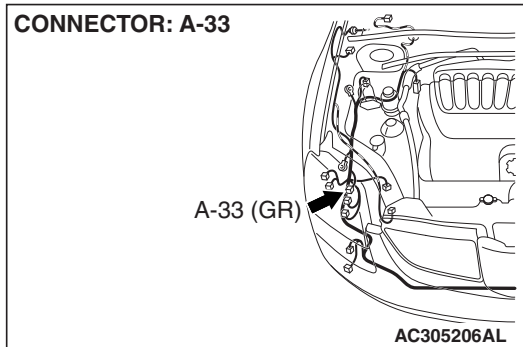
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (RH) illuminates normally.

INSPECTION PROCEDURE H-7: Headlight and Taillight: One of the headlights does not illuminate.



WAP54M071A



**TECHNICAL DESCRIPTION (COMMENT)**

If one of the headlights does not illuminate, a headlight bulb may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tool:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the headlight operation.**Q: Which of the headlights does not illuminate?**

LH (low and high beam) : Go to Step 2.

RH (low and high beam) : Go to Step 5.

LH (only low-beam) : Go to Step 8.

RH (only low-beam) : Go to Step 11.

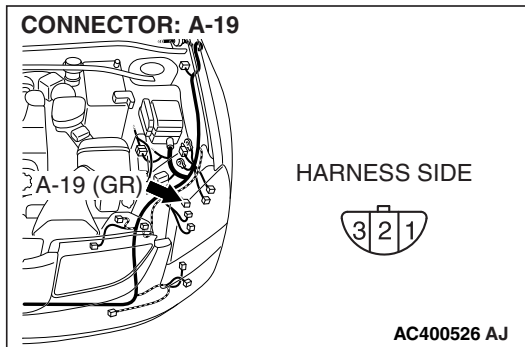
LH (only high beam) : Go to Step 14.

RH (only high beam) : Go to Step 17.

Low beam only (both RH and LH) : Refer to Inspection Procedure H-2 "The headlights (low-beam) do not illuminate normally [P.54B-309](#)."

High beam only (both RH and LH) : Refer to Inspection Procedure H-3 "The headlights (high-beam) do not illuminate normally [P.54B-314](#)."

High beam indicator light : Refer to Inspection Procedure H-8 "The high-beam indicator light does not illuminate [P.54B-362](#)."



STEP 2. Check headlight (LH) connector A-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (LH) connector A-19 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the headlights illuminate normally.

STEP 3. Check headlight (LH) bulb.

(1) Remove the headlight (LH) bulb.

(2) Verify that the headlight (LH) bulb is not damaged or burned out.

Q: Is headlight (LH) bulb normal?

YES : Go to Step 4.

NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

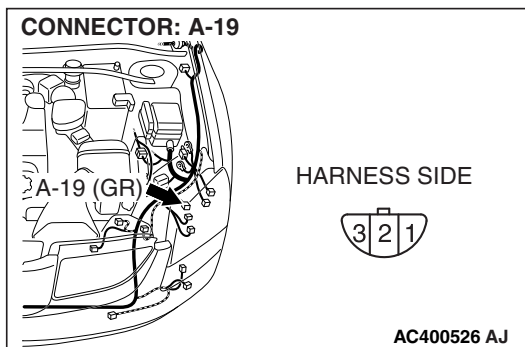
STEP 4. Check the wiring harness between headlight (LH) connector A-19 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between headlight (LH) connector A-19 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

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

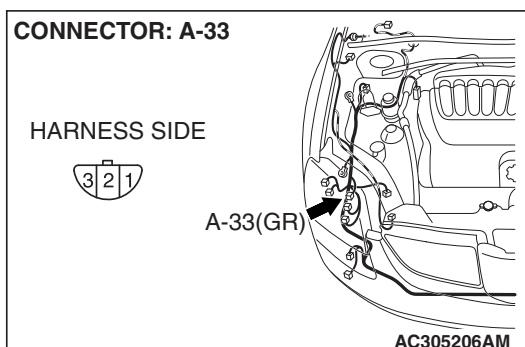


STEP 5. Check headlight (RH) connector A-33 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (RH) connector A-33 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the headlights illuminate normally.

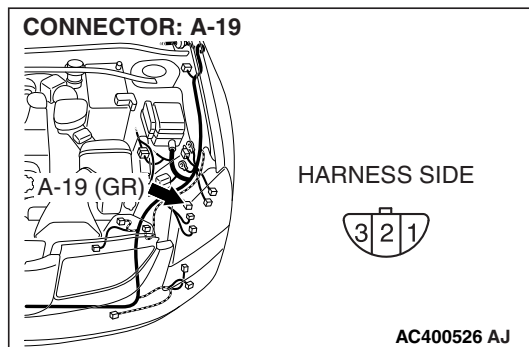
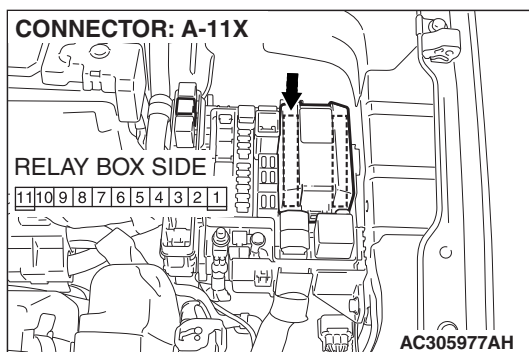
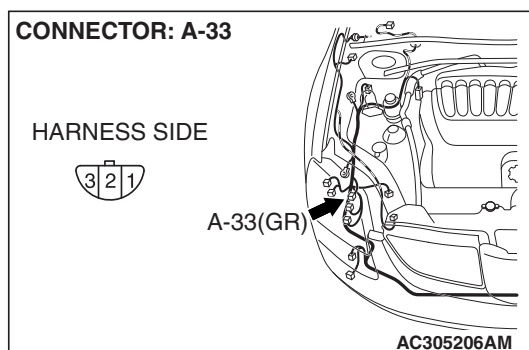


STEP 6. Check the headlight (RH) bulb.

- (1) Remove the headlight (RH) bulb.
- (2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?**YES** : Go to Step 7.**NO** : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.**STEP 7. Check the wiring harness between headlight (RH) connector A-33 (terminal 2) and ground.**

- Check the ground wire for open circuit.

Q: Is the wiring harness between headlight (RH) connector A-33 (terminal 2) and ground in good condition?**YES** : No action is necessary and testing is complete.**NO** : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.**STEP 8. Check headlight (LH) connector A-19 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are headlight (LH) connector A-19 and front-ECU connector A-11X in good condition?****YES** : Go to Step 9.**NO** : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the headlights illuminate normally.

STEP 9. Check headlight (LH) bulb.

- (1) Remove the headlight (LH) bulb.
- (2) Verify that the headlight (LH) bulb is not damaged or burned out.

Q: Is headlight (LH) bulb normal?

YES : Go to Step 10.

NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

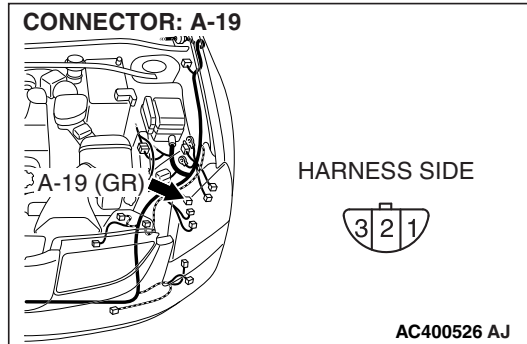
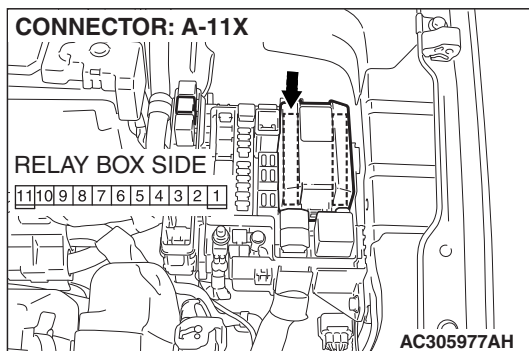
STEP 10. Check the wiring harness between headlight (LH) connector A-19 (terminal 1) and front-ECU connector A-11X (terminal 6).

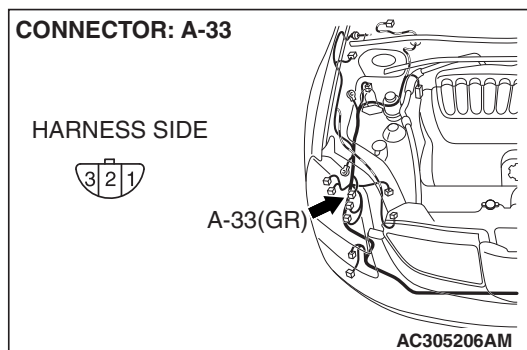
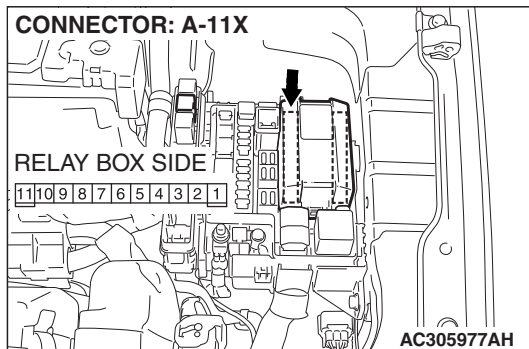
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between headlight (LH) connector A-19 (terminal 1) and front-ECU connector A-11X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

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





STEP 11. Check headlight (RH) connector A-33 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-33 and front-ECU connector A-11X in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. Check that the headlights illuminate normally.

STEP 12. Check the headlight (RH) bulb.

- (1) Remove the headlight (RH) bulb.
- (2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 13.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.

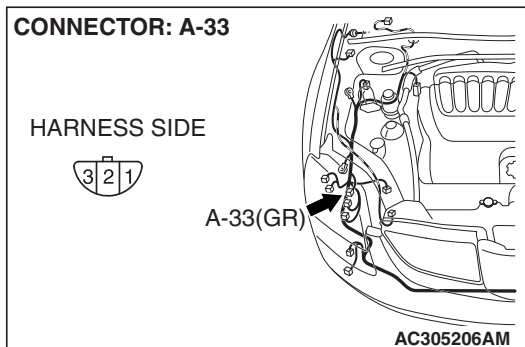
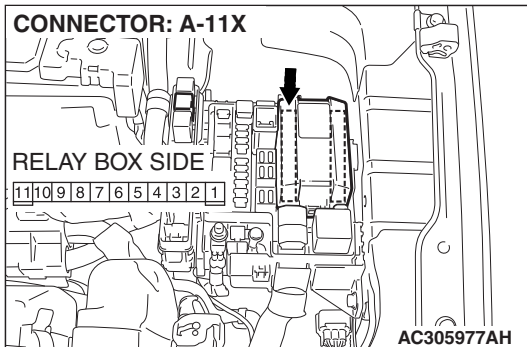
STEP 13. Check the wiring harness between headlight (RH) connector A-33 (terminal 1) and front-ECU connector A-11X (terminal 6).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between headlight (RH) connector A-33 (terminal 1) and front-ECU connector A-11X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

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

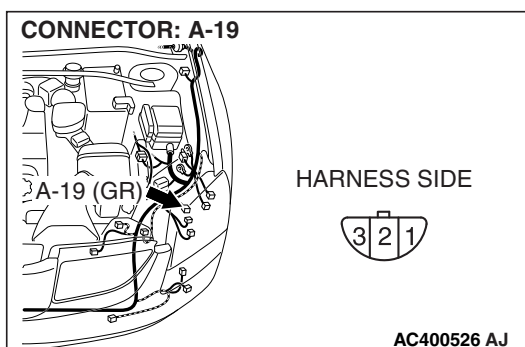
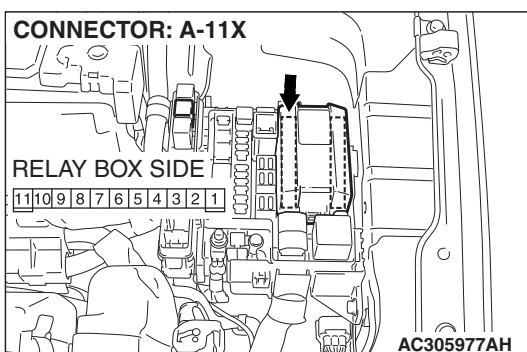


STEP 14. Check headlight (LH) connector A-19 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (LH) connector A-19 and front-ECU connector A-11X in good condition?

YES : Go to Step 15.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the headlights illuminate normally.



STEP 15. Check headlight (LH) bulb.

- (1) Remove the headlight (LH) bulb.
- (2) Verify that the headlight (LH) bulb is not damaged or burned out.

Q: Is headlight (LH) bulb normal?

YES : Go to Step 16.

NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

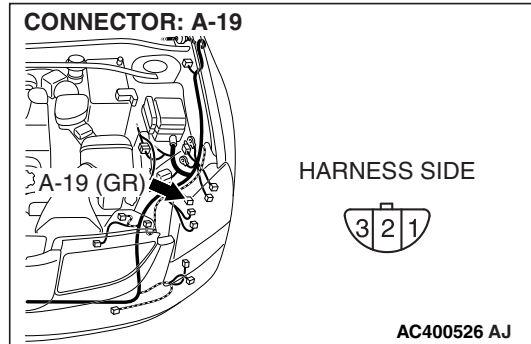
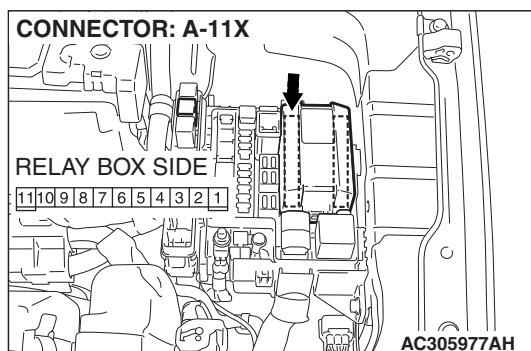
STEP 16. Check the wiring harness between headlight (LH) connector A-19 (terminal 3) and front-ECU connector A-11X (terminal 10).

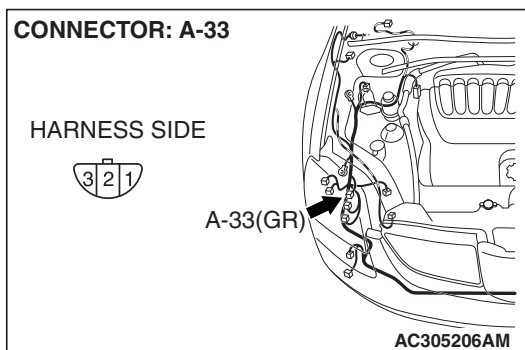
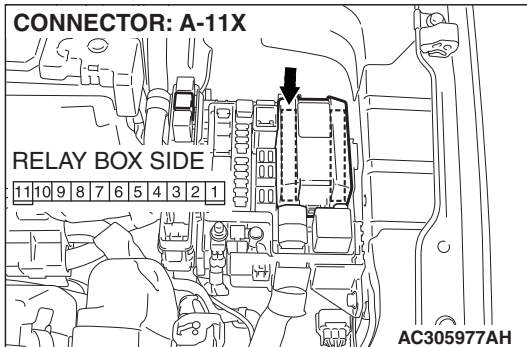
- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between headlight (LH) connector A-19 (terminal 3) and front-ECU connector A-11X (terminal 10) in good condition?

YES : No action is necessary and testing is complete.

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





STEP 17. Check headlight (RH) connector A-33 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-33 and front-ECU connector A-11X in good condition?

YES : Go to Step 18.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2](#). Verify that the headlights illuminate normally.

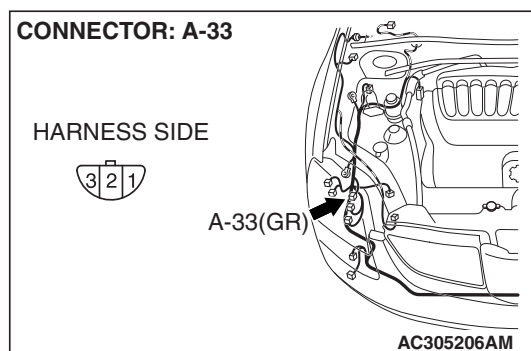
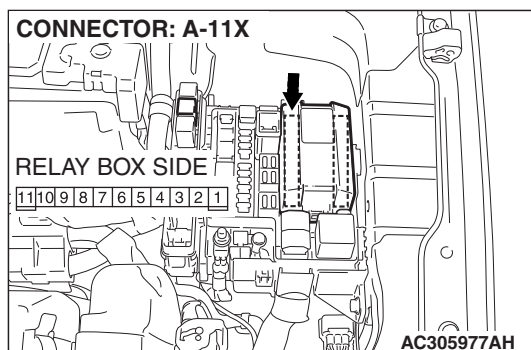
STEP 18. Check the headlight (RH) bulb.

- (1) Remove the headlight (RH) bulb.
- (2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 19.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.



STEP 19. Check the wiring harness between headlight (RH) connector A-33 (terminal 3) and front-ECU connector A-11X (terminal 10).

- Check the communication lines for open circuit and short circuit.

Q: Is the wiring harness between headlight (RH) connector A-33 (terminal 3) and front-ECU connector A-11X (terminal 10) in good condition?

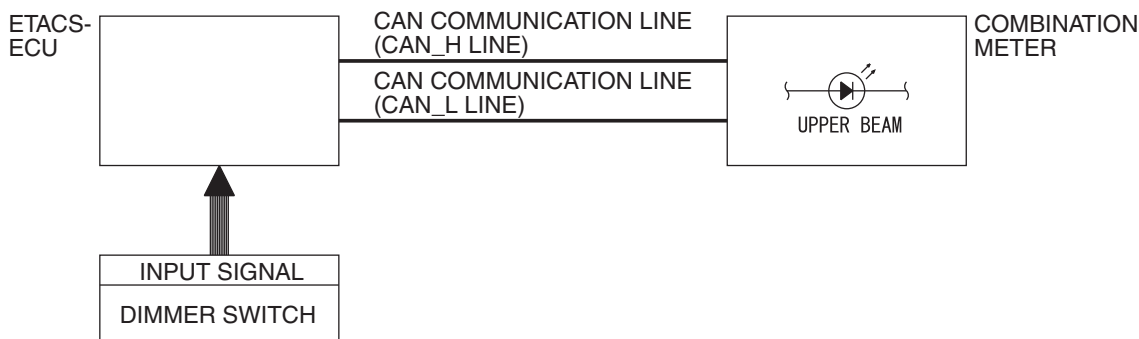
YES : No action is necessary and testing is complete.

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

INSPECTION PROCEDURE H-8: Headlight and Taillight: The High-beam indicator light does not illuminate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

High-Beam Indicator Light Circuit



W4P54M70AA

CIRCUIT OPERATION

At the same time that the high beams are illuminated, the ETACS-ECU sends a signal to illuminate the high beam indicator via the CAN bus line.

TECHNICAL DESCRIPTION (COMMENT)

If the high beam indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Check the headlights.

When the lighting switch is operated, check that the headlights illuminate/go off normally.

Q: Are the headlights in good condition?

YES : Go to Step 2.

NO : First, repair the headlights. Refer to Inspection Procedure H-7 "One of the headlights does not illuminate <2-bulb type>[P.54B-353](#) " or "One of the headlights does not illuminate <4-bulb type>[P.54B-353](#)."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

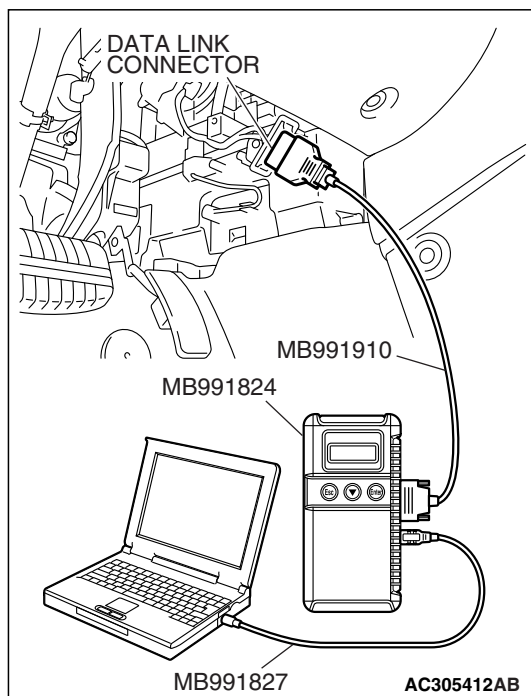
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-13](#)).



STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

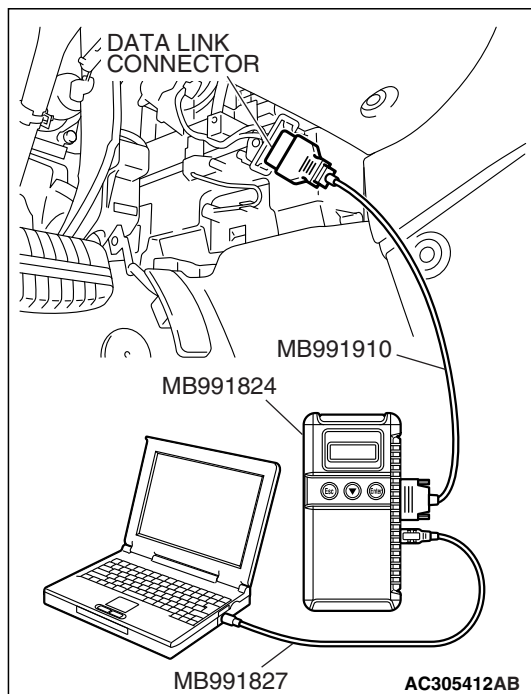
Check whether a combination meter-related DTC is set.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the combination meter-related DTC is set.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to [P.54A-57](#).

NO : Go to Step 4.



STEP 4. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

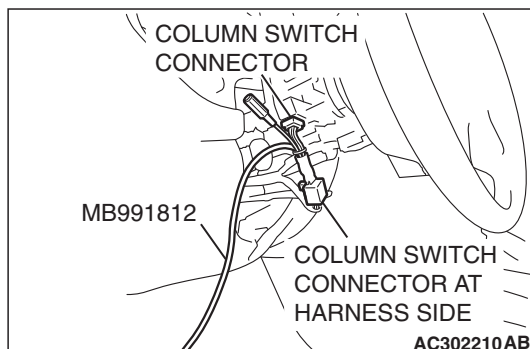
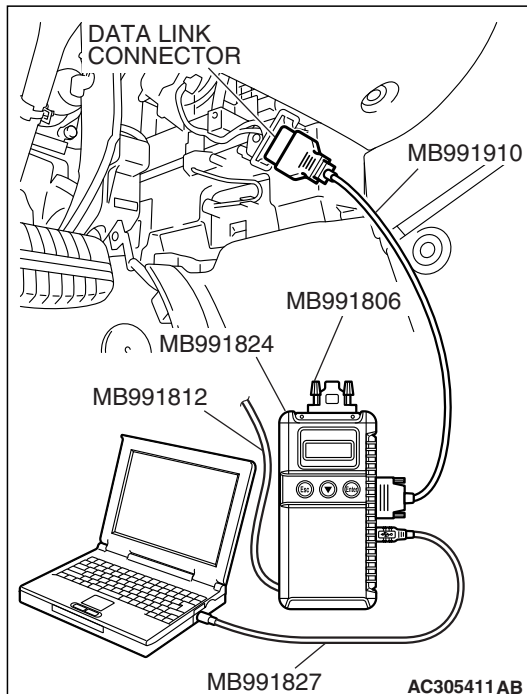
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

- (1) Connect the SWS monitor. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 5.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible [P.54B-79](#)."



STEP 5. Replace the combination meter.

- (1) Replace the combination meter.
- (2) Check that the high beam indicator light illuminates normally.

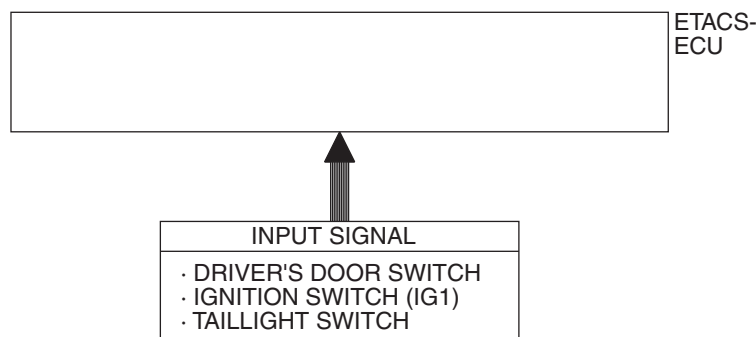
Q: Does the high beam indicator light illuminate normally?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Check that the high beam indicator light illuminates normally.

INSPECTION PROCEDURE H-9: Headlight and Taillight: Headlight automatic shutoff function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-15."

Headlight Automatic Shutt-Down Function

W4P54M71AA

CIRCUIT OPERATION

The ETACS-ECU operates the headlight automatic shutdown function according to the following signals:

- Ignition switch (IG1): OFF
- Driver's door switch: ON
- Taillight switch: ON
- Headlight switch: ON

The ETACS-ECU operates the headlight automatic shutdown function under the following conditions:

- Ignition key: Other than "ON" position
- Driver's door: open
- Taillights or headlights: on

TECHNICAL DESCRIPTION (COMMENT)

If the function does not work normally, the input circuit system from the switches, the ETACS-ECU or the front-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Check the adjustment function.

Q: Has a setting other than "No auto-shutoff" been selected for the headlight automatic shutdown function?

YES : Go to Step 2.

NO : Set the headlight automatic shutdown function to another setting other than "No auto-shutoff".

STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: "ON" to "OFF"
- Lighting switch: "TAIL" or "HEAD"

⚠ CAUTION

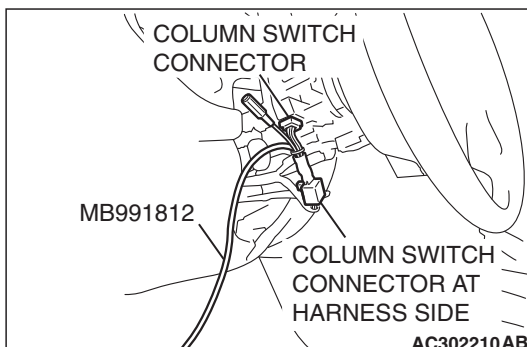
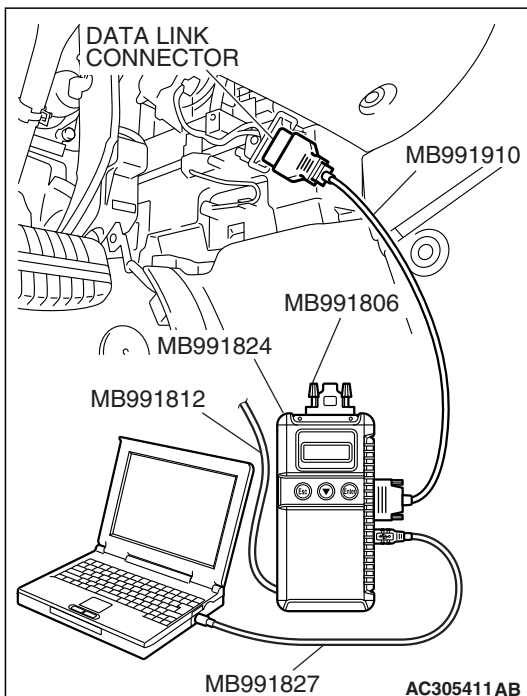
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991958 according to the procedure below to display "H/L AUTO-CUT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "H/L AUTO-CUT."
- (4) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 01	TAILLIGHT SW	ON
ITEM 30	IG SW (IG1)	OFF

- (5) When the driver's door is opened, check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 32	FRONT DOOR SW	ON
ITEM 35	H/L AUTO-CUT	ON



Q: Does the scan tool MB991958 display the items "TAILLIGHT SW", "IG SW IG1", "FRONT DOOR SW" and "H/L AUTO-CUT" as normal condition?

Normal conditions are displayed for all the items :

Replace the front-ECU. Verify that the headlight automatic shutdown function works normally.

Normal condition is not displayed for "TAILLIGHT SW" :

Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the taillight switch [P.54B-515.](#)"

Normal condition is not displayed for "IG SW (IG1)" :

Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) [P.54B-500.](#)"

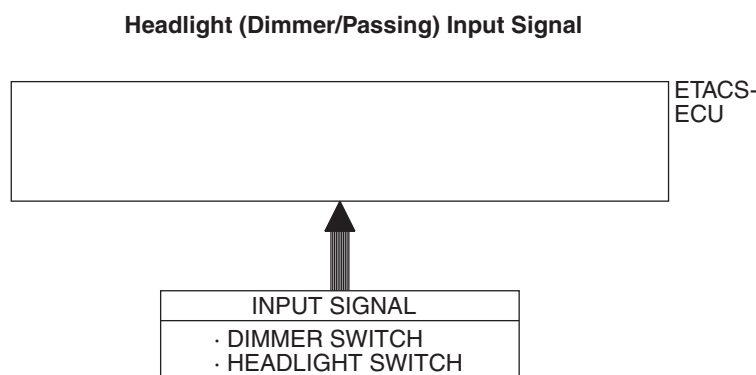
Normal condition is not displayed for "FRONT DOOR SW" :

Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches [P.54B-507.](#)"

Normal condition is not displayed for "H/L AUTO-CUT" :

Replace the front-ECU. Check that the headlight automatic shutdown function works normally.

INSPECTION PROCEDURE H-10: Headlight and Taillight: Headlight dimmer switch automatic resetting function does not work normally.



W4P54M72AA

CIRCUIT OPERATION

The headlight dimmer switch automatic resetting function is controlled by the front-ECU.

TECHNICAL DESCRIPTION (COMMENT)

If the headlight dimmer switch automatic resetting function does not work normally, the front-ECU may be defective.

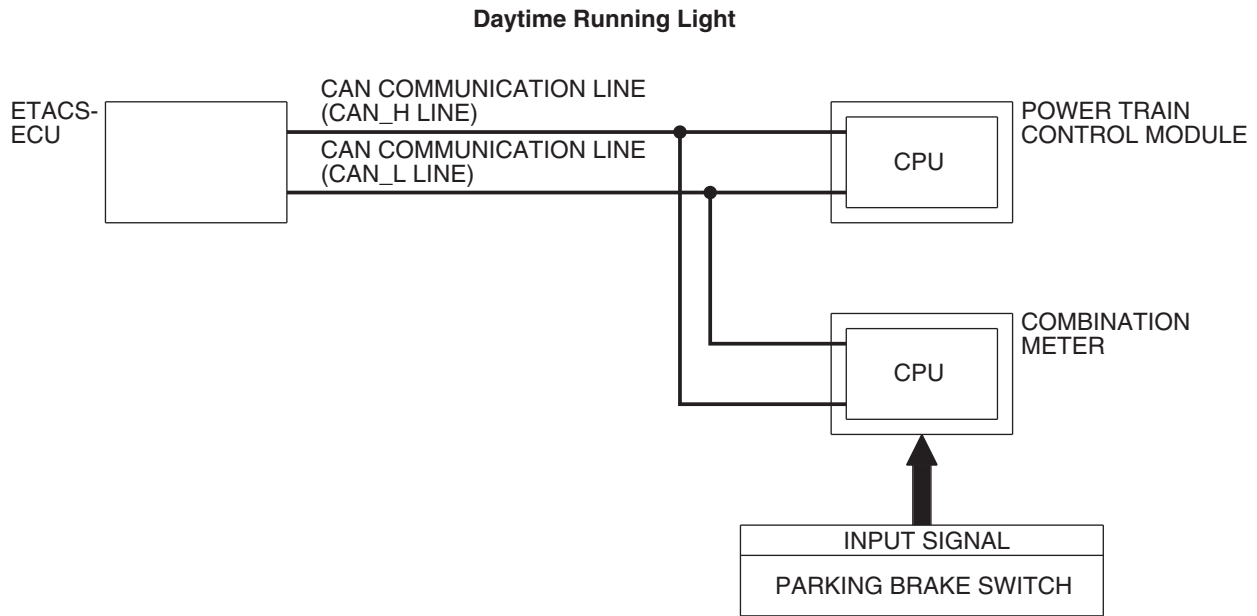
TROUBLESHOOTING HINT

The front-ECU may be defective

DIAGNOSIS

Replace the front-ECU.
Check that the headlight dimmer switch automatic resetting function works normally.

INSPECTION PROCEDURE H-11: Headlight and Taillight: Daytime running light function does not work normally.



W6P54M119A

TECHNICAL DESCRIPTION (COMMENT)

If the daytime running light function does not work, connector(s), wiring harness in the CAN bus lines, the powertrain control module, the combination meter, the ETACS-ECU or the input signal circuit may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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

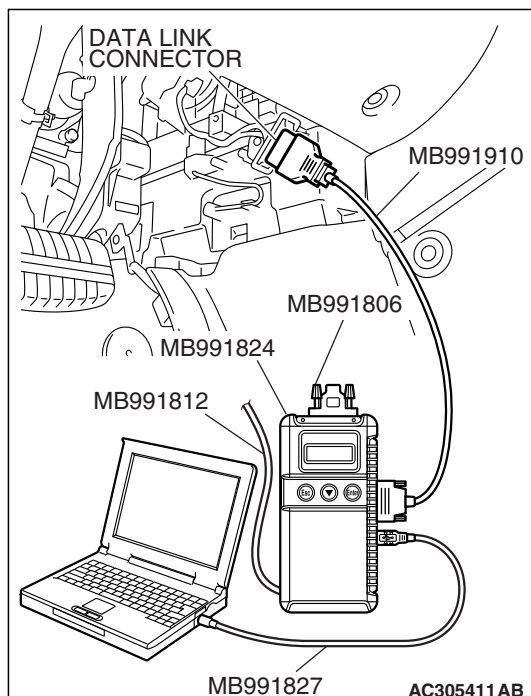
STEP 1. Verify the headlight (low-beam) operation.

Check to see that the headlight (low-beam) lights up properly when operating the dimmer switch while the headlight switch is ON.

Q: Do the headlights (low-beam) illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure H-2 "Headlights (low-beam) do not illuminate normally [P.54B-309](#)."



STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

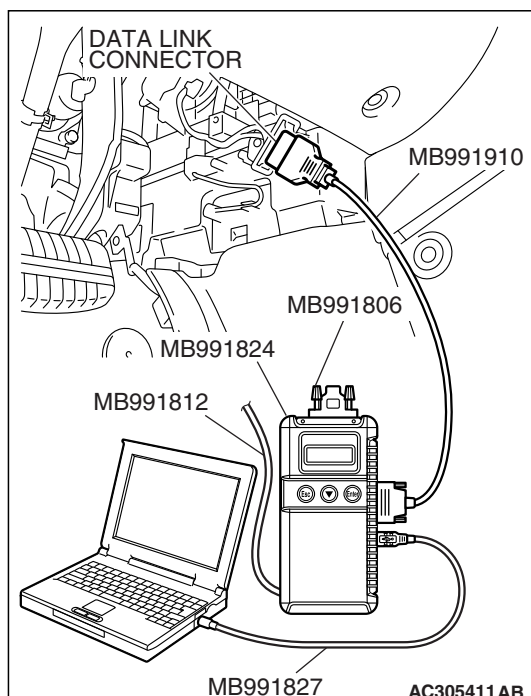
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-13."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-13).



STEP 3. Using scan tool MB991958, read the MFI system diagnostic trouble code.

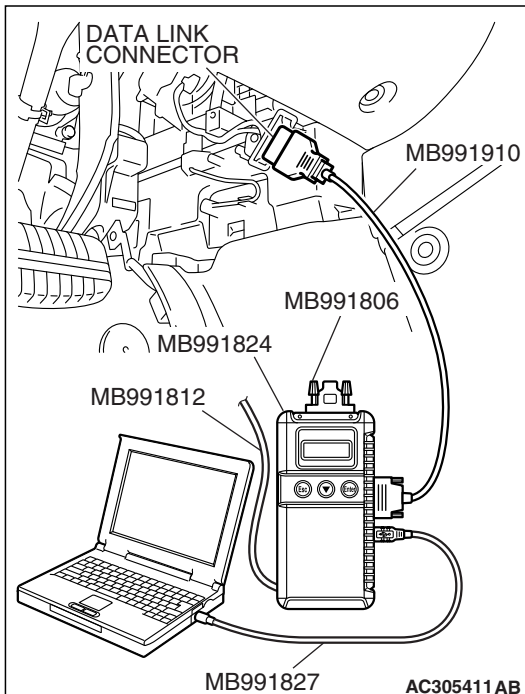
Check whether engine and transaxle DTCs are set or not.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for engine and transaxle DTCs.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis –Diagnostic Trouble Code Chart P.13A-46 or GROUP 13B, MFI Diagnosis –Diagnostic Trouble Code Chart P.13B-46.

NO : Go to Step 4.



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

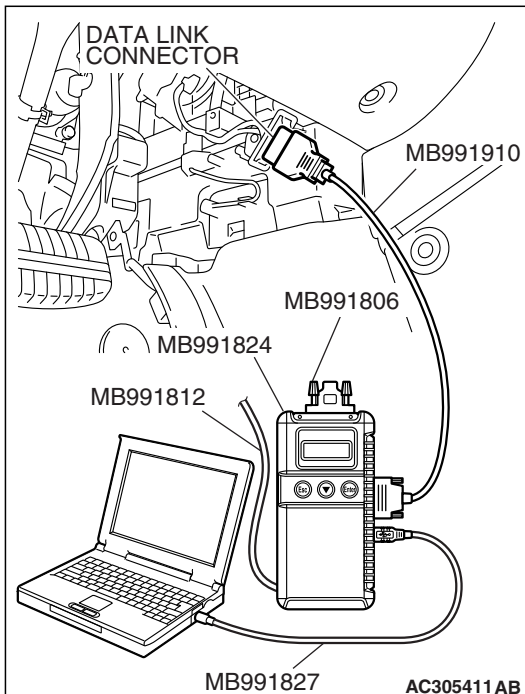
Check whether the combination meter-related DTC is set.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether the combination meter-related DTC is set.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnostic trouble code chart [P.54A-57](#)).

NO : Go to Step 5.



STEP 5. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the parking brake switch.

- Check that scan tool MB991958 sounds when the parking brake lever is pulled.

- (1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System Select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."

Q: Does scan tool MB991958 sound when the parking brake lever is pulled?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). The ignition key reminder tone alarm function should now work normally.

NO : Refer to GROUP 36, troubleshooting [P.36-2](#).

FLASHER TIMER**GENERAL DESCRIPTION CONCERNING THE FLASHER TIMER**

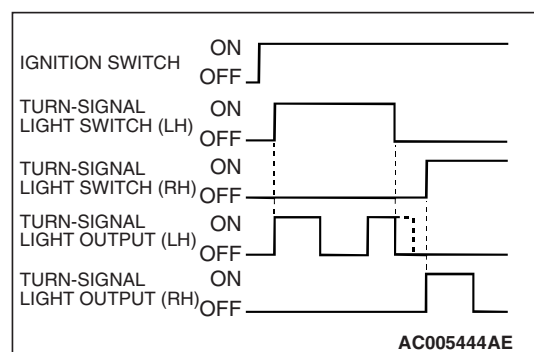
M1549023600324

The following ECUs affect the functions and control of the flasher timer.

FUNCTION	CONTROL ECU
Turn-signal light	ETACS-ECU, column switch
Turn-signal indicators	ETACS-ECU, column switch
Hazard warning light	ETACS-ECU

FLASHER TIMER FUNCTION**TURN-SIGNAL LIGHT**

The turn-signal light output (flashing signal) is turned ON when the ignition switch is ON and the turn-signal light switch is ON (LH or RH). If the front turn-signal light or rear turn-signal light bulb has burned out, the flashing speed increases to indicate that the bulb has burned out.

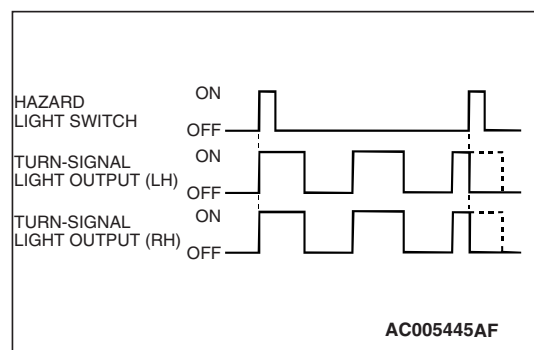
**TURN-SIGNAL INDICATORS**

At the same time that the turn-signal lights are illuminated, the ETACS-ECU sends a signal to illuminate the turn-signal light indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the turn-signal light indicator on and off.

HAZARD WARNING LIGHT

Detects the signal where the hazard warning light switch input changes from OFF to ON, and reverse the flashing state according to this signal. The hazard warning lights toggle on and off whenever the hazard warning light switch is operated.

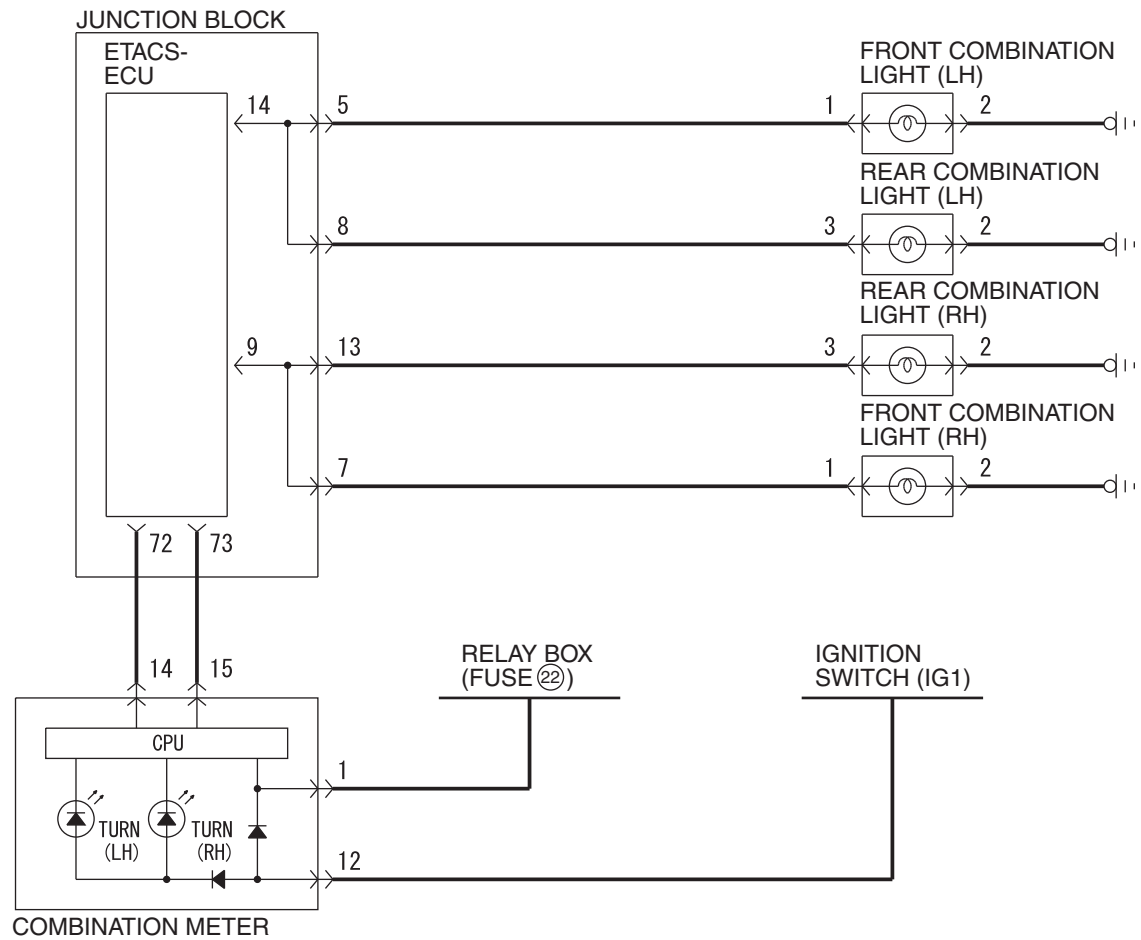
NOTE: The hazard warning light switch is a push-return type toggle switch.



The diagram illustrates the electrical connections for the ETACS-ECU. Key components and their connections include:

- ETACS-ECU:** The central control unit with multiple pins (11, 20, 59, 56, 3, 55, 8, 23, 6, 25, 68, 51, 67) connected to other components.
- RELAY BOX (FUSE 14):** Connected to ETACS-ECU pin 11 and 20. It also provides power to the FRONT-ECU (pin 7) and the RELAY BOX (pin 4).
- FRONT-ECU:** Receives power from the RELAY BOX (pin 7) and provides power to the RELAY BOX (pin 4) and the HAZARD WARNING LIGHT SWITCH (pin 21).
- HAZARD WARNING LIGHT SWITCH:** Includes a rheostat and is controlled by the ETACS-ECU (pin 55) and the RELAY BOX (pin 3). It has an ON/OFF switch and a RHEOSTAT output.
- RELAY BOX (FUSE 22):** Provides power to the ETACS-ECU (pin 59) and the COLUMN-ECU (pin 1).
- COLUMN-ECU:** Receives power from the RELAY BOX (pin 1) and provides power to the TURN-SIGNAL SWITCH (pin 2).
- TURN-SIGNAL SWITCH:** Includes an ON/OFF switch and is controlled by the COLUMN-ECU (pin 2) and the RELAY BOX (pin 4).
- DATA LINK CONNECTOR:** Connected to ETACS-ECU pins 51 and 67, and the COLUMN-ECU (pin 9).

TSB Revision

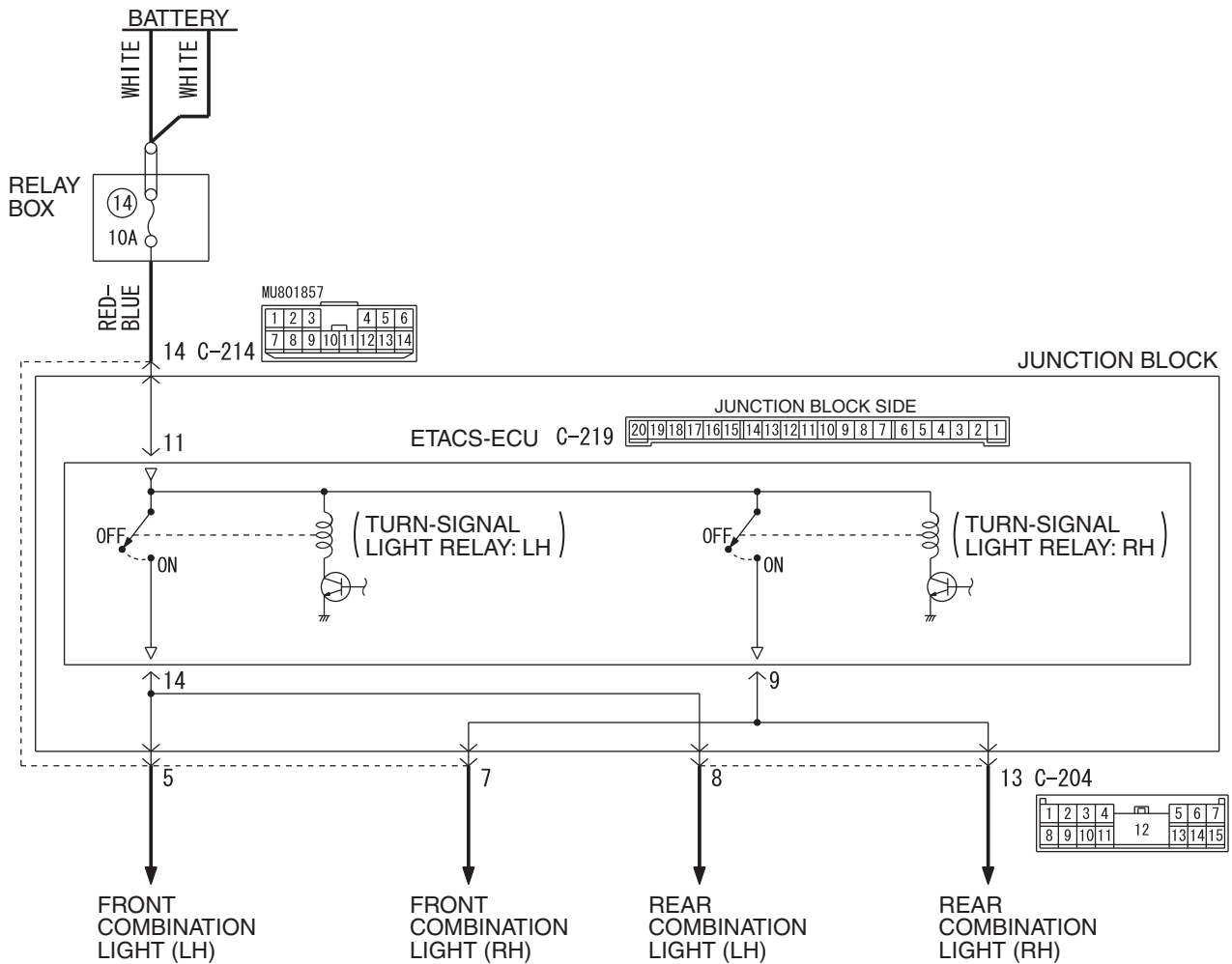


WAP54M053A

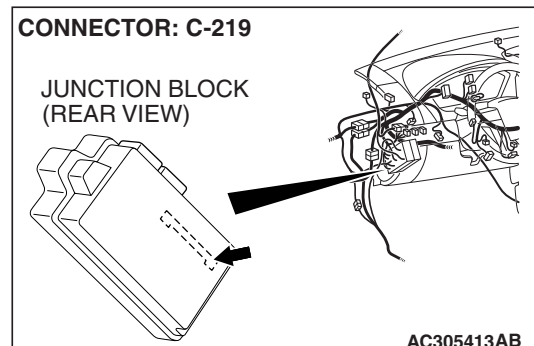
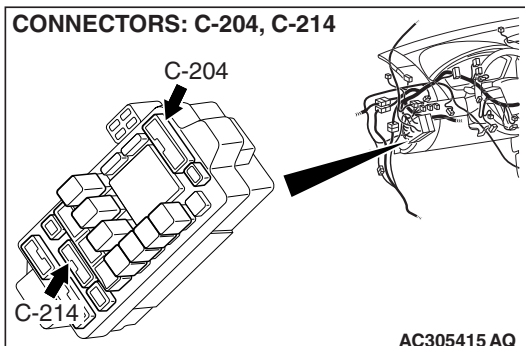
INSPECTION PROCEDURE I-1: Flasher Timer: Turn-signal lights do not flash when the turn-signal light switch is turned on.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

Turn-Signal Light Power Supply Circuit



W4P54M79AA



CIRCUIT OPERATION

- The turn-signal light switch sends a signal through the column-ECU (incorporated in the column switch) to the ETACS-ECU. If the column-ECU sends a turn-signal light switch "ON" signal to the ETACS-ECU, the ETACS-ECU turns on the flasher timer (incorporated in the ETACS-ECU), thus causing the turn-signal lights to flash.
- The ETACS-ECU operates the turn-signal lights according to the following signals:
 - Ignition switch (IG1): ON
 - Turn-signal light switch: ON
- The ETACS-ECU flashes the turn-signal lights under the following conditions:
 - Ignition key: "ON" position

- Turn-signal light switch: Left or right turn-signal position

TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal lights do not flash normally, the input circuits from the switches described in "CIRCUIT OPERATION" or the ETACS-ECU may be defective. If the hazard warning lights do not flash, the power supply line to the ETACS-ECU (dedicated to the turn-signal lights) may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Check the hazard warning light.

Q: Do the hazard warning lights work normally?

YES : Go to Step 7.

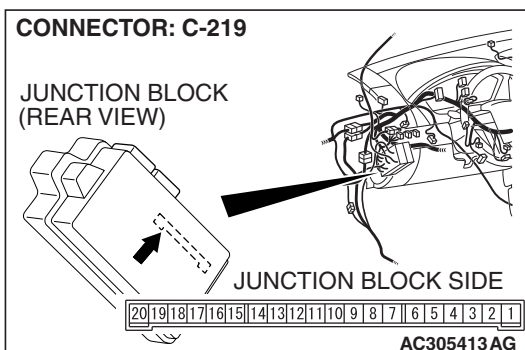
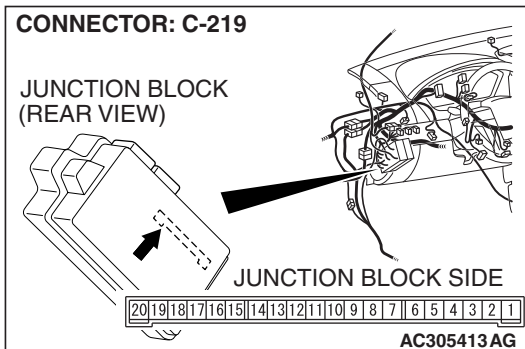
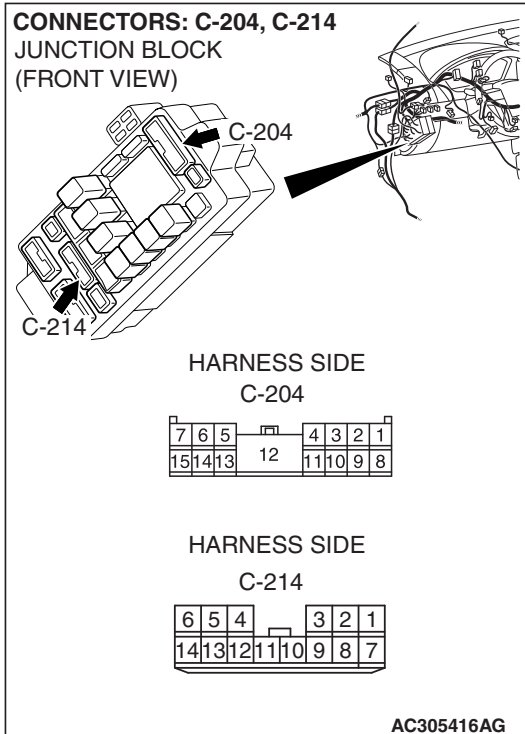
NO : Go to Step 2.

STEP 2. Check the turn-signal lights.

Q: Does either of the turn-signal lights illuminate?

Only right or left side light does not illuminate. : Go to Step 3.

Turn-signal lights do not illuminate at all : Go to Step 4.



STEP 3. Check ETACS-ECU connector C-219, junction block connectors C-214 and C-204 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector C-219, junction block connectors C-214 and C-204 in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the turn-signal lights illuminate normally.

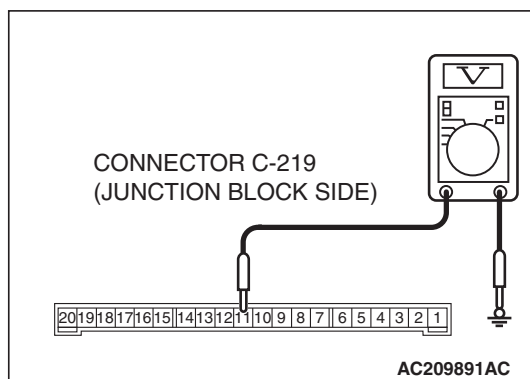
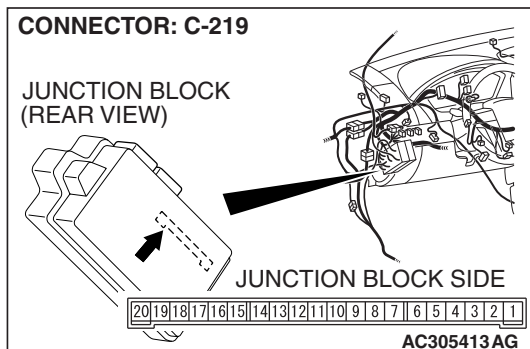
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.

STEP 4. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-219 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.



STEP 5. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-219.

(1) Disconnect ETACS-ECU connector C-219, and measure the voltage available at the junction block side of the connector.

(2) Measure the voltage between terminal 11 and ground.

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

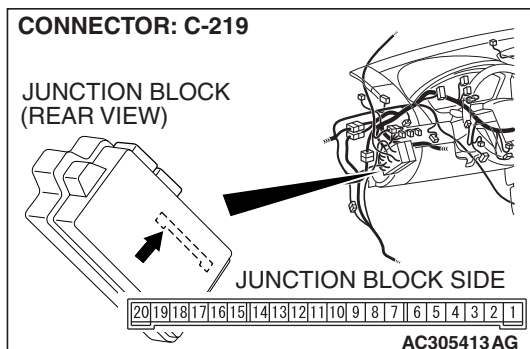
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

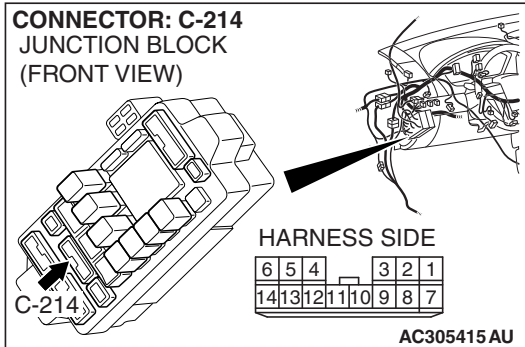
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the turn-signal lights illuminate normally.

NO : Go to Step 6.

STEP 6. Check the wiring harness between ETACS-ECU connector C-219 (terminal 11) and the battery.

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





NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 11) and the battery in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 7. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

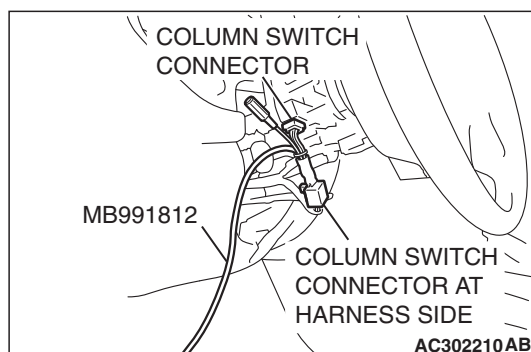
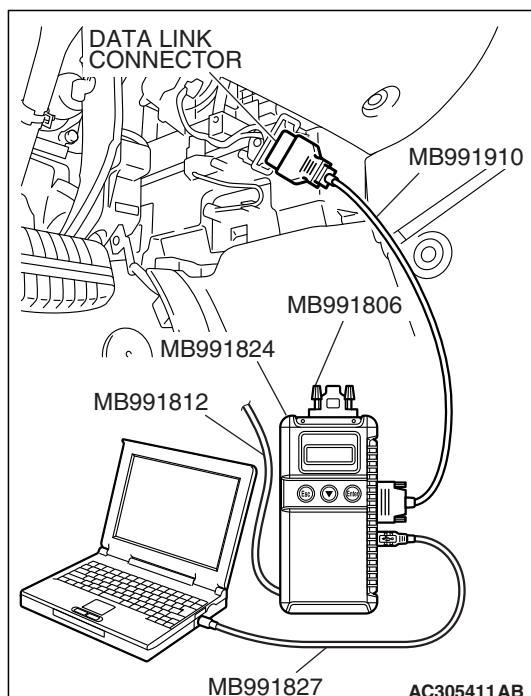
- Ignition switch: ON
- Turn-signal light switch: RH

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-13."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991958 according to the procedure below to display "TURN SIG.RH."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "TURN SIGNAL."
 - g. Select "TURN SIG.RH."
- (4) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 10	T/S RH SW	ON
ITEM 30	IG SW (IG1)	ON



Q: Does the scan tool MB991958 display the items "T/S RH SW" and "IG SW (IG1)" as normal condition?

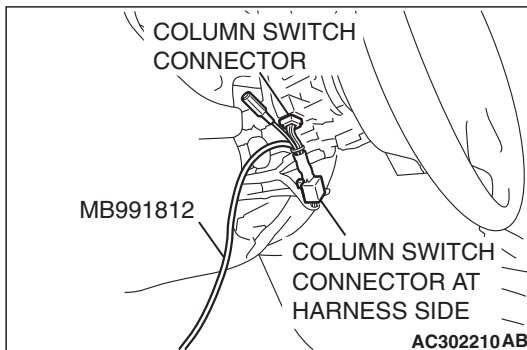
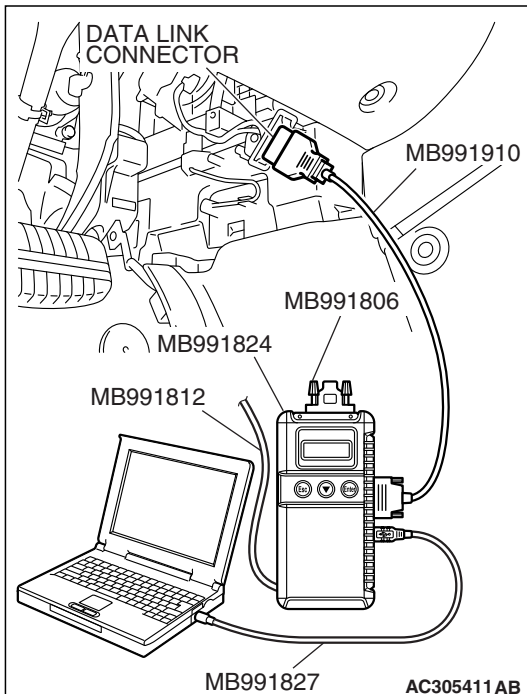
Normal conditions are displayed for all the items : Go to Step 8.

Normal condition is not displayed for "T/S RH SW" :

Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the turn-signal light switch P.54B-515."

Normal condition is not displayed for "IG SW (IG1)" :

Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-500."



STEP 8. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

If the Ignition switch is turned to the "ON" position and the turn-signal light switch (LH) is turned on, normal conditions should be displayed for the items described in the table below.

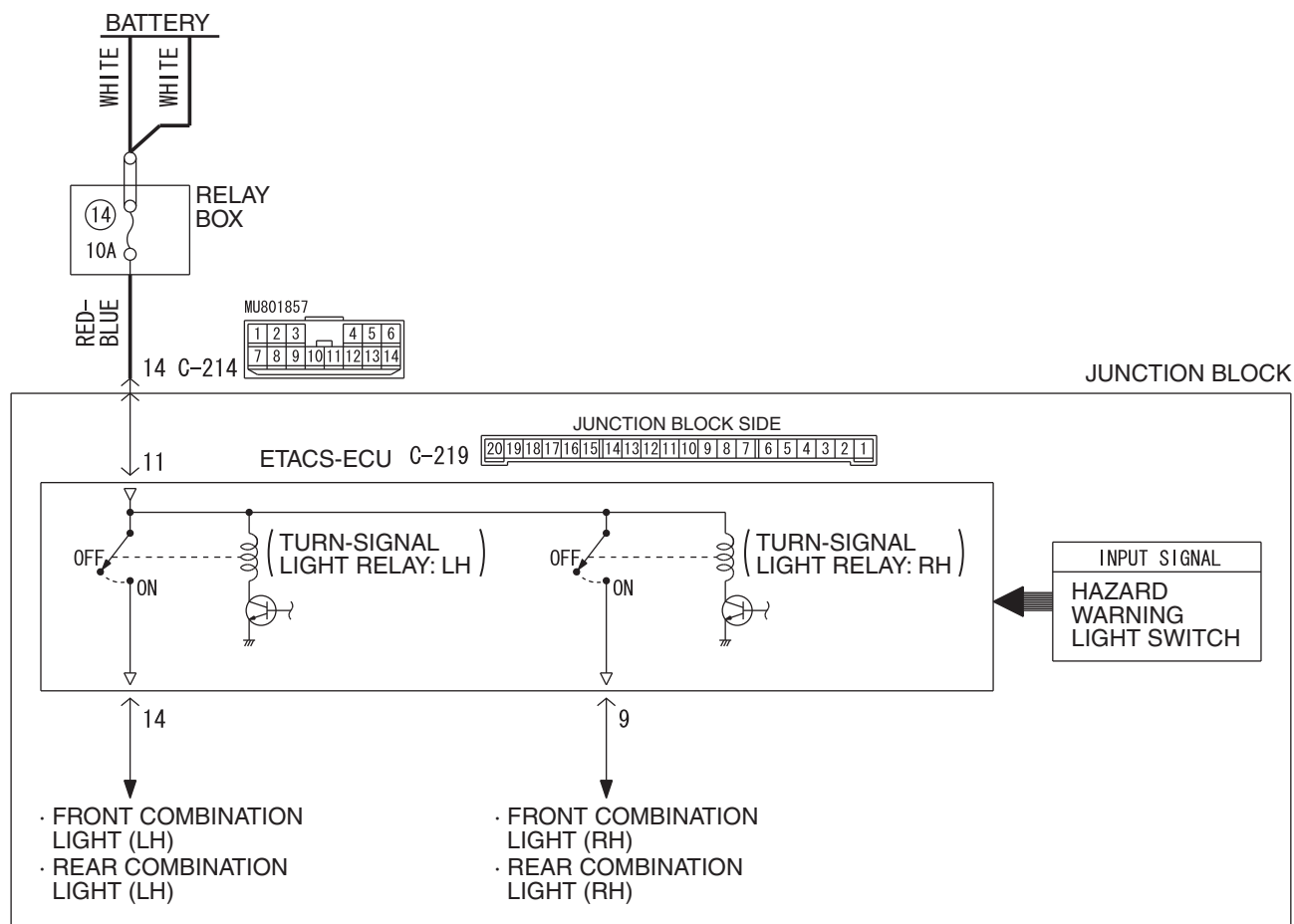
- (1) Operate scan tool MB991958 according to the procedure below to display "TURN SIG.LH."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "TURN SIGNAL."
 - g. Select "TURN SIG.LH."
- (2) Check that normal conditions are displayed for the item described in the table below.

ITEM No.	ITEM NAME	NORMAL CONDITION
ITEM 11	T/S LH SW	ON

Q: Do the scan tool display the item "T/S LH SW" as normal condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the turn-signal lights illuminate normally.

NO : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the turn-signal light switch [P.54B-515](#)."

INSPECTION PROCEDURE I-2: Flasher Timer: Hazard warning lights do not flash when the hazard warning light switch is turned on.**Hazard Warning Light Circuit**

W4P54M80AA

CIRCUIT OPERATION

If the ETACS-ECU receives "ON" signal from the hazard warning light switch, the ETACS-ECU turns on the flasher timer (incorporated in the ETACS-ECU), thus causing the turn-signal lights to flash.

TECHNICAL DESCRIPTION (COMMENT)

If the hazard warning lights do not flash, the power supply line to the ETACS-ECU (dedicated to the turn-signal lights) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the turn-signal lights.

Q: Do the turn-signal lights illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure I-1 "Turn-signal lights do not flash when the turn-signal light switch is turned on [P.54B-375](#)."

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

Check input signal from the hazard warning light switch.

CAUTION

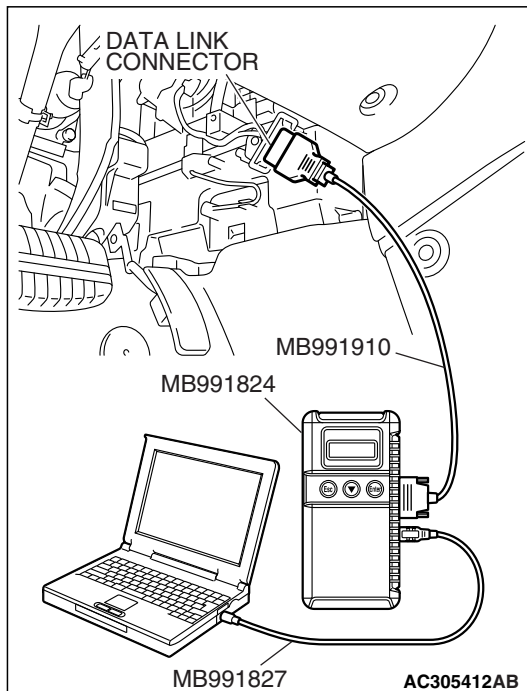
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) Check that scan tool MB991958 sounds when the hazard warning light switch is turned from "OFF" to "ON."

Q: Does scan tool MB991958 sound when the hazard warning light switch is turned from "OFF" to "ON"?

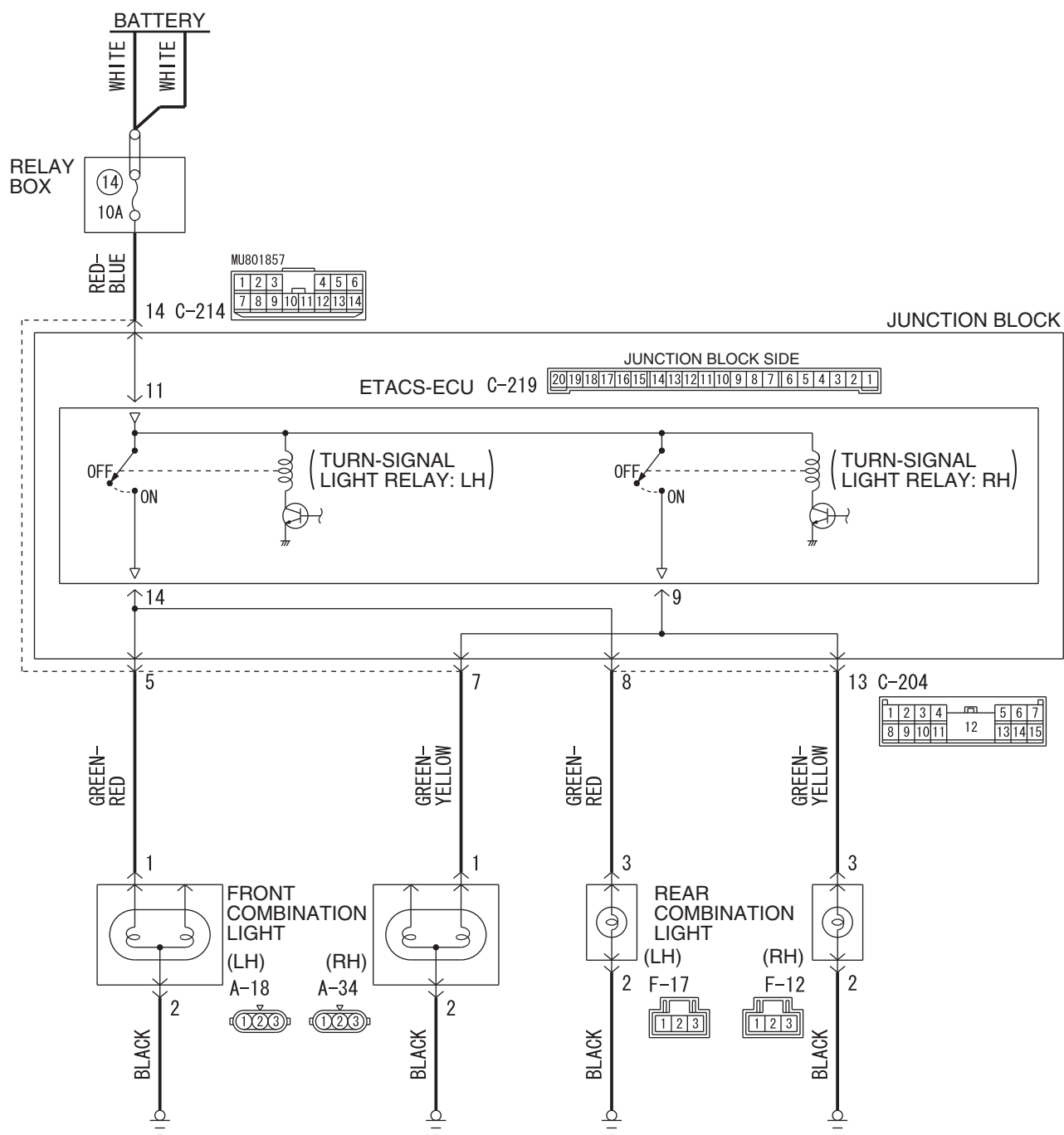
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Verify that the hazard warning lights illuminate normally.

NO : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive any signal from the hazard warning light switch [P.54B-534](#)."

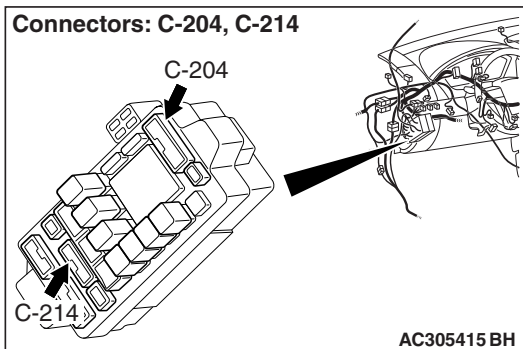
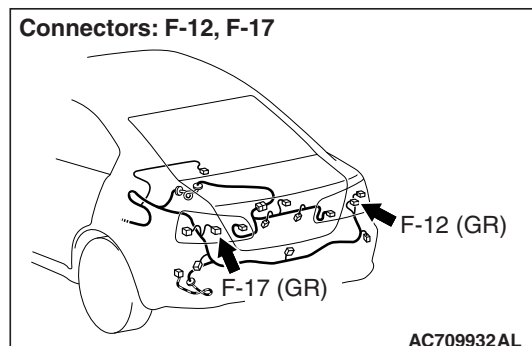
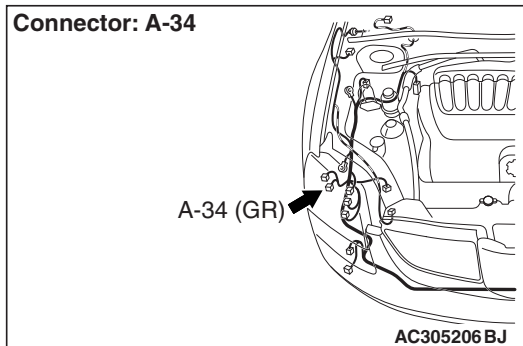
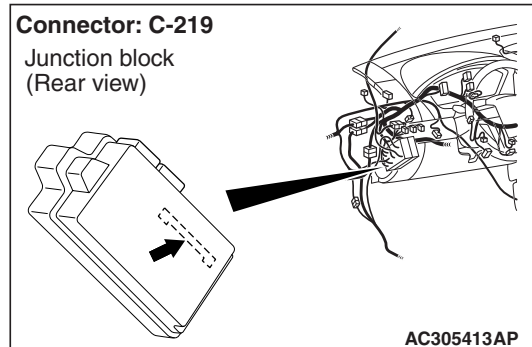
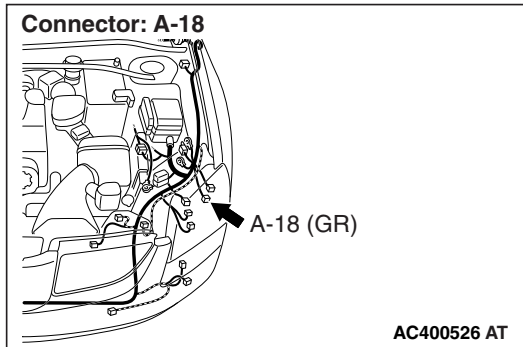


INSPECTION PROCEDURE I-3: Flasher Timer: One of the turn-signal lights does not illuminate.

Turn-Signal Light Circuit



W9P54M001A



TECHNICAL DESCRIPTION (COMMENT)

If the right or left turn-signal light does not illuminate, their bulb may be defective.

TROUBLESHOOTING HINTS

- The turn-signal light bulb may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tool:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the hazard warning light.**Q: Which turn-signal light does not illuminate?**

Front turn-signal light (LH) : Go to Step 2.

Front turn-signal light (RH) : Go to Step 8.

Rear combination light (LH) : Go to Step 14.

Rear combination light (RH) : Go to Step 20.

Turn-signal indicators : Refer to Inspection Procedure I-4

"The turn-signal light indicator does not illuminate normally [P.54B-398](#)."

LH side only : Refer to Inspection Procedure I-1

"Turn-signal lights do not flash when the turn-signal light switch is turned on [P.54B-375](#)."

RH side only : Refer to Inspection Procedure I-1

"Turn-signal lights do not flash when the turn-signal light switch is turned on [P.54B-375](#)."

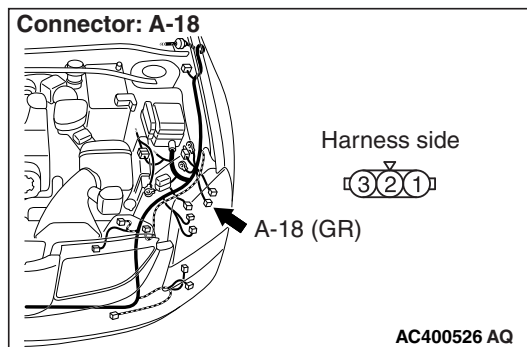
Both LH and RH sides : Refer to Inspection Procedure I-2

"Hazard warning lights do not flash when the hazard warning light switch is turned on [P.54B-382](#)."

STEP 2. Check front combination light (LH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Is front combination light (LH) connector A-18 in good condition?**

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.

**STEP 3. Check the front turn-signal light bulb (LH).**

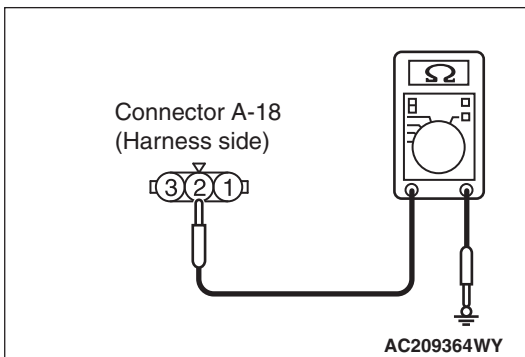
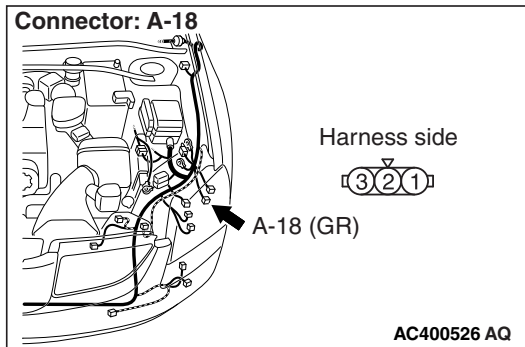
(1) Remove the front turn-signal (LH) light bulb.

(2) Verify that the front turn-signal light bulb (LH) is not damaged or burned out.

Q: Is the front turn-signal (LH) light bulb in good condition?

YES : Go to Step 4.

NO : Replace the front turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.



**STEP 4. Check the ground circuit to the ETACS-ECU.
Measure the resistance at front combination light (LH)
connector A-18.**

(1) Disconnect front combination light (LH) connector A-18 and measure the resistance available at the wiring harness side of the connector.

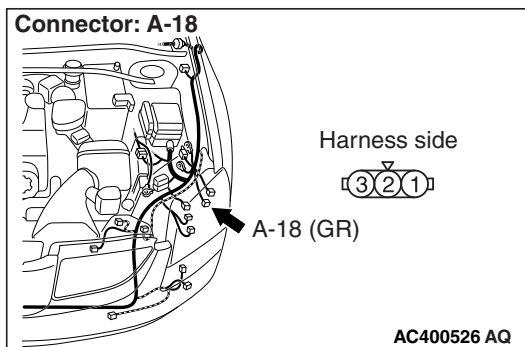
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.



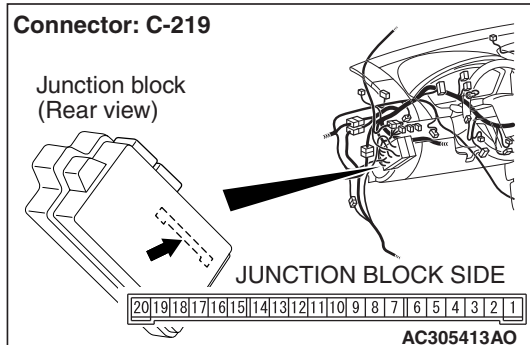
**STEP 5. Check the wiring harness between front
combination light (LH) connector A-18 (terminal 2) and
ground.**

- Check the ground wire for open circuit.

Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.



STEP 6. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

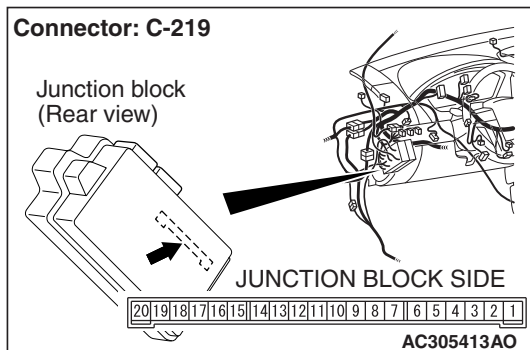
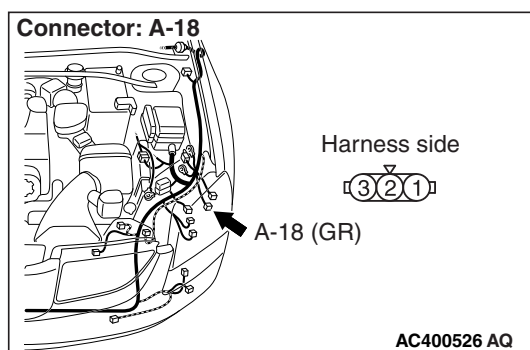
Q: Is ETACS-ECU connector C-219 in good condition?

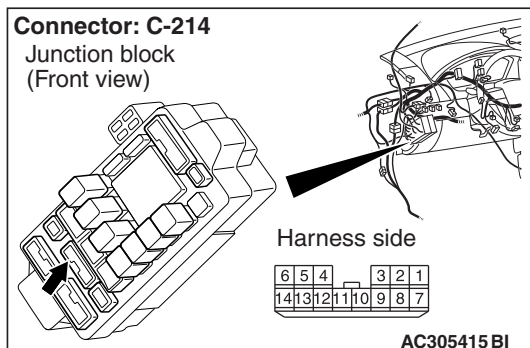
YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.

STEP 7. Check the wiring harness between front combination light (LH) connector A-18 (terminal 1) and ETACS-ECU connector C-219 (terminal 14).

- Check the communication lines for open circuit and short circuit.



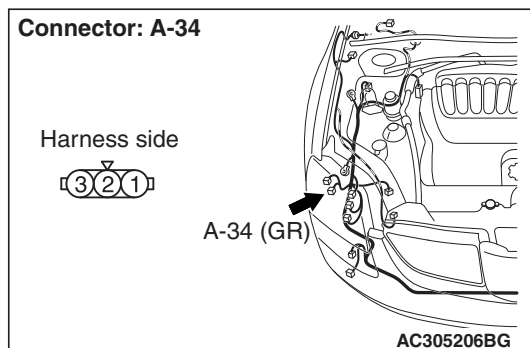


NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 1) and ETACS-ECU connector C-219 (terminal 14) in good condition?

YES : Replace the front combination light socket (LH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.



STEP 8. Check front combination light (RH) connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light (RH) connector A-34 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.

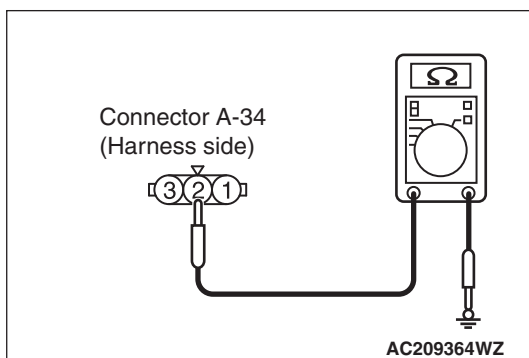
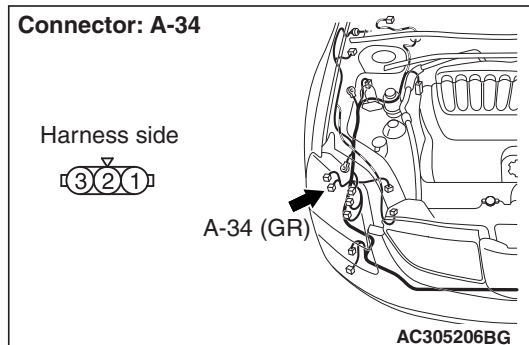
STEP 9. Check the front turn-signal light bulb (RH).

- (1) Remove the front turn-signal (RH) light bulb.
- (2) Verify that the front turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the front turn-signal (RH) light bulb in good condition?

YES : Go to Step 10.

NO : Replace the front turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.



STEP 10. Check the ground circuit to the front combination light (RH). Measure the resistance at front combination light (RH) connector A-34.

(1) Disconnect front combination light (RH) connector A-34 and measure the resistance available at the wiring harness side of the connector.

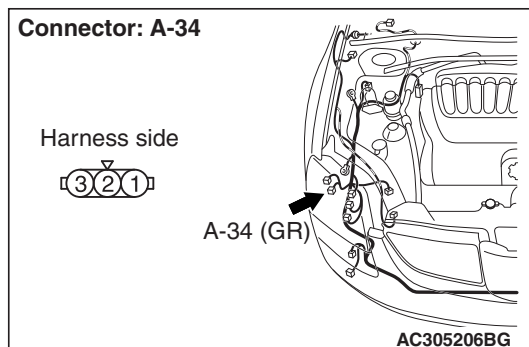
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.



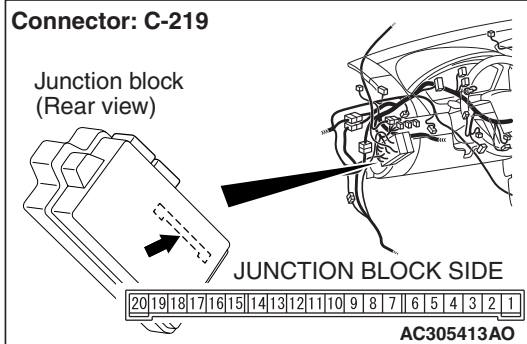
STEP 11. Check the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (RH).
Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.



STEP 12. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

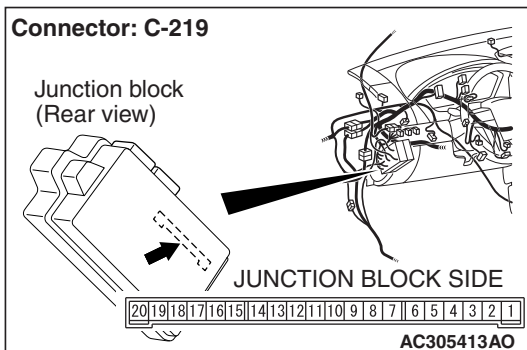
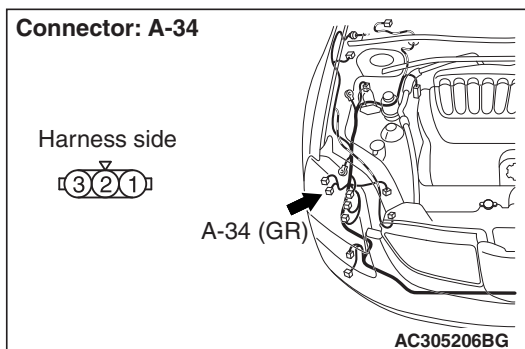
Q: Is ETACS-ECU connector C-219 in good condition?

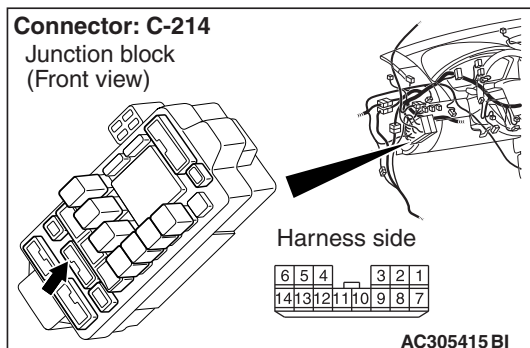
YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.

STEP 13. Check the wiring harness between front combination light (RH) connector A-34 (terminal 1) and ETACS-ECU connector C-219 (terminal 9).

- Check the communication lines for open circuit and short circuit.





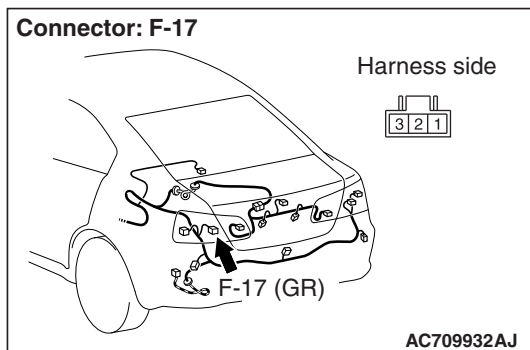
NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 1) and ETACS-ECU connector C-219 (terminal 9) in good condition?

YES : Replace the front combination light socket (RH).

Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.



STEP 14. Check rear combination light (LH) connector F-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (LH) connector F-17 in good condition?

YES : Go to Step 15.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.

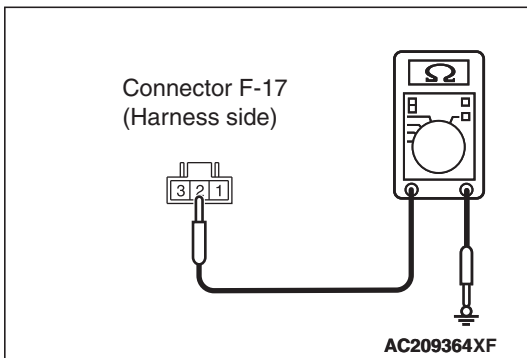
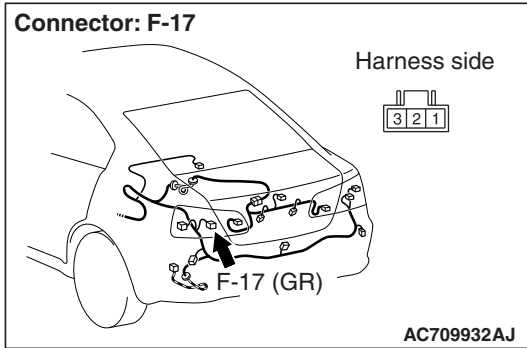
STEP 15. Check the rear turn-signal light bulb (LH).

- (1) Remove the rear turn-signal (LH) light bulb.
- (2) Verify that the rear turn-signal light bulb (LH) is not damaged or burned out.

Q: Is the rear turn-signal (LH) light bulb in good condition?

YES : Go to Step 16.

NO : Replace the rear turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.



STEP 16. Check the ground circuit to the rear combination light (LH). Measure the resistance at rear combination light (LH) connector F-17.

(1) Disconnect rear combination light (LH) connector F-17 and measure the resistance available at the wiring harness side of the connector.

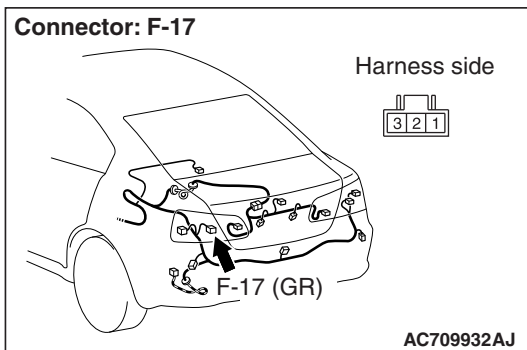
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 18.

NO : Go to Step 17.



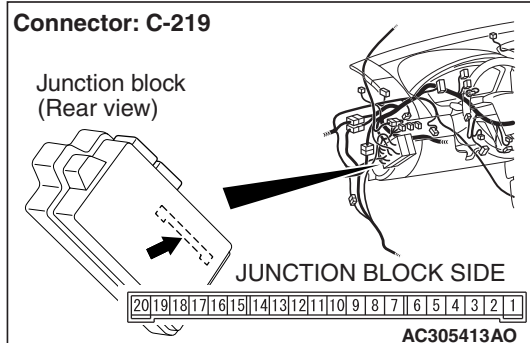
STEP 17. Check the wiring harness between rear combination light (LH) connector F-17 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between rear combination light (LH) connector F-17 (terminal 2) and ground in good condition?

YES : Replace the rear combination light socket assembly (LH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.



STEP 18. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

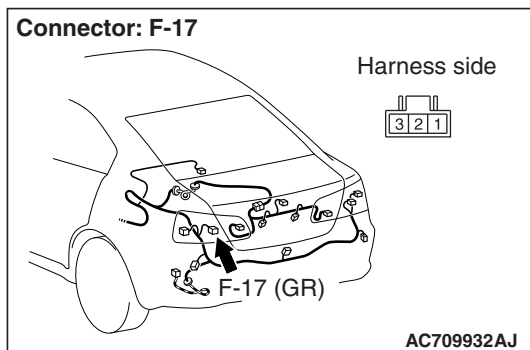
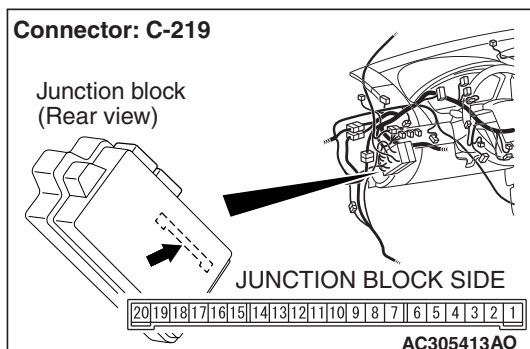
Q: Is ETACS-ECU connector C-219 in good condition?

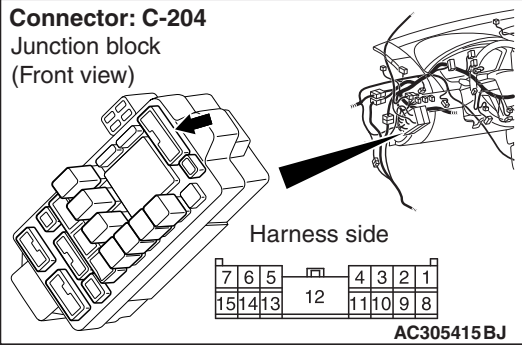
YES : Go to Step 19.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.

STEP 19. Check the wiring harness between rear combination light (LH) connector F-17 (terminal 3) and ETACS-ECU connector C-219 (terminal 14).

- Check the communication lines for open circuit and short circuit.





NOTE: Also check junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between rear combination light (LH) connector F-17 (terminal 3) and ETACS-ECU connector C-219 (terminal 14) in good condition?

YES : Replace the rear combination light socket assembly (LH). Verify that the turn-signal lights illuminate normally.

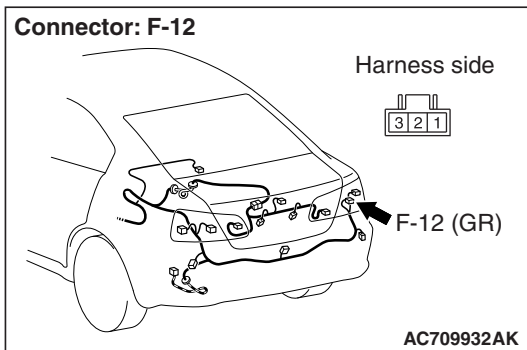
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 20. Check rear combination light (RH) connector F-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (RH) connector F-12 in good condition?

YES : Go to Step 21.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.



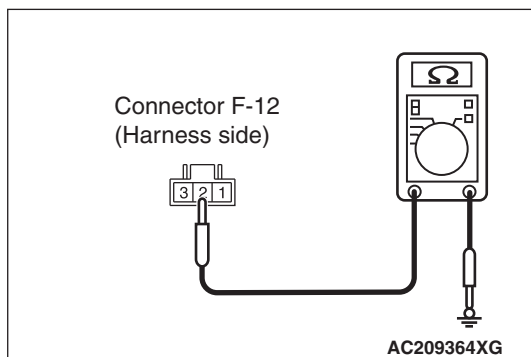
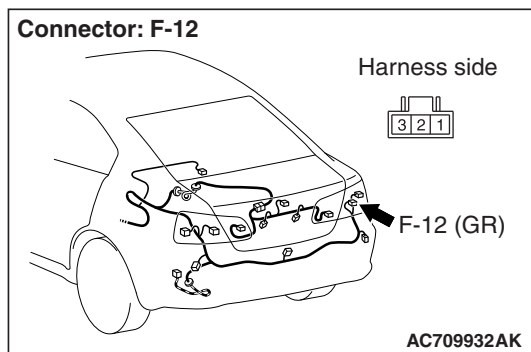
STEP 21. Check the rear turn-signal light bulb (RH).

- (1) Remove the rear turn-signal (RH) light bulb.
- (2) Verify that the rear turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the rear turn-signal (RH) light bulb in good condition?

YES : Go to Step 22.

NO : Replace the rear turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.



STEP 22. Check the ground circuit to the rear turn-signal light (RH). Measure the resistance at rear combination light (RH) connector F-12.

(1) Disconnect rear combination light (RH) connector F-12 and measure the resistance available at the harness side of the connector.

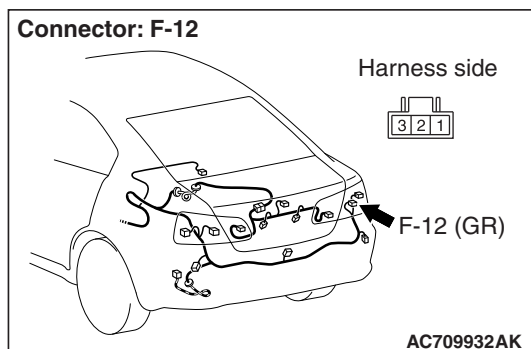
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 24.

NO : Go to Step 23.



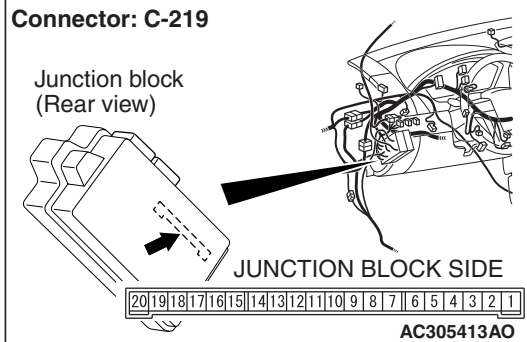
STEP 23. Check the wiring harness between rear combination light (RH) connector F-12 (terminal 2) and ground.

- Check the ground wire for open circuit.

Q: Is the wiring harness between rear combination light (RH) connector F-12 (terminal 2) and ground in good condition?

YES : Replace the rear combination light socket assembly (RH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

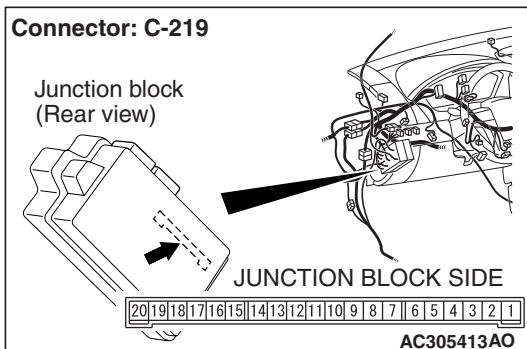


STEP 24. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-219 in good condition?

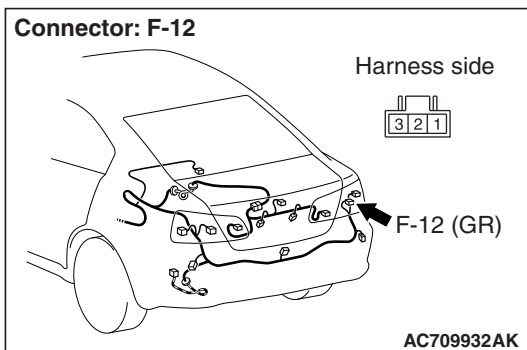
YES : Go to Step 25.

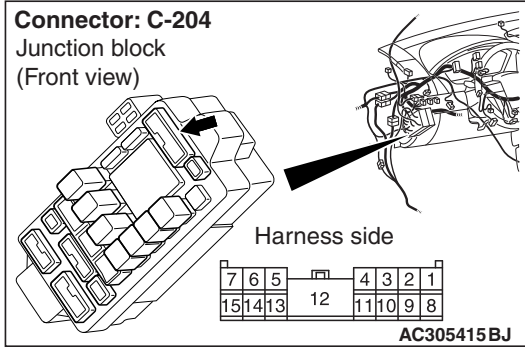
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the turn-signal lights illuminate normally.



STEP 25. Check the wiring harness between rear combination light (RH) connector F-12 (terminal 3) and ETACS-ECU connector C-219 (terminal 9).

- Check the communication lines for open circuit and short circuit.





NOTE: Also check junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between rear combination light (RH) connector F-12 (terminal 3) and ETACS-ECU connector C-219 (terminal 9) in good condition?

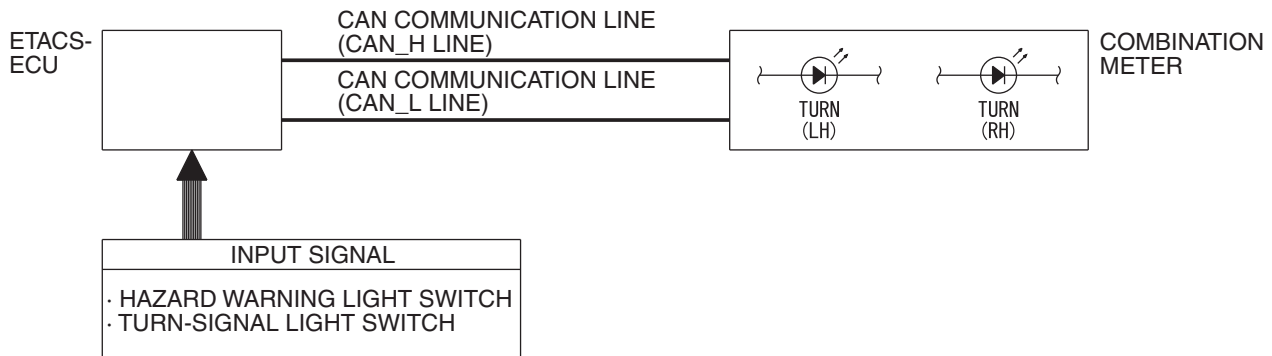
YES : Replace the rear combination light socket assembly (RH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

INSPECTION PROCEDURE I-4: Flasher Timer: The turn-signal light indicator does not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-15](#)."

Turn-signal Lights Indicator Light Circuit



W4P54M82AA

CIRCUIT OPERATION

At the same time that the turn-signal lights are illuminated, the ETACS-ECU sends a signal to illuminate the turn-signal light indicator via the CAN bus line.

TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

STEP 1. Check the turn-signal lights.

When the column switch or the hazard warning light switch are operated, check that the turn-signal lights illuminate and go off normally.

Q: Are the turn-signal lights in good condition?

YES : Go to Step 2.

NO : First, repair the turn-signal light(s). Refer to Inspection Procedure I-3 "One of the turn-signal lights does not illuminate [P.54B-384](#)."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

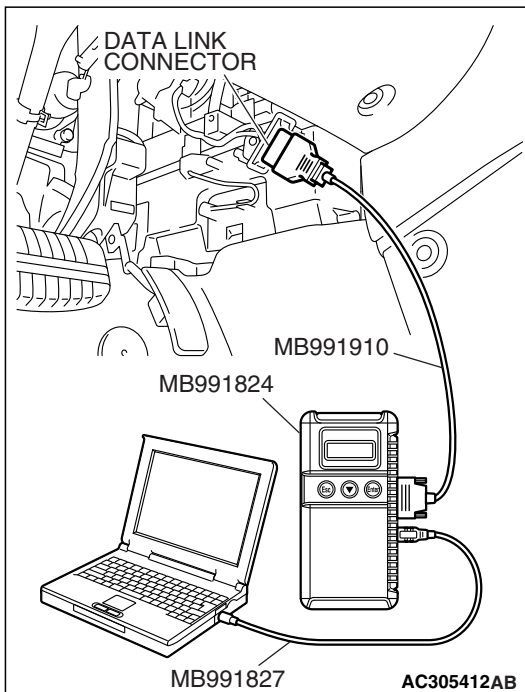
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

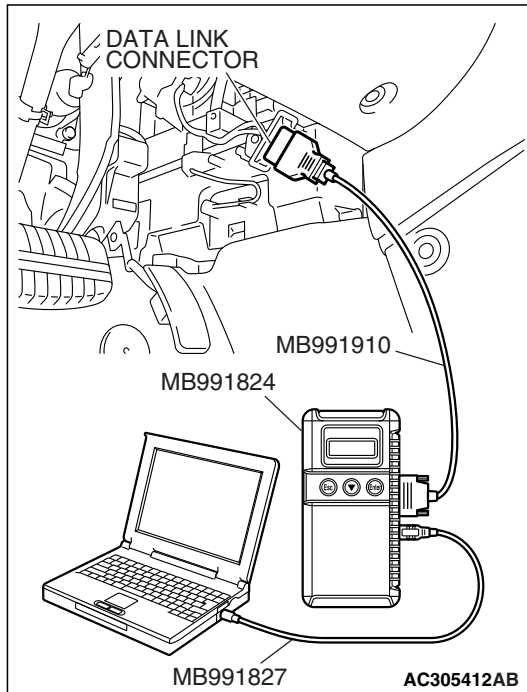
- (1) Connect scan tool MB991958. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Diagnose the CAN bus line.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis [P.54C-13](#)).



**STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.**

Check whether the combination meter-related DTC is set.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check whether a combination meter-related DTC is set.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to [P.54A-57](#).

NO : Go to Step 4.

STEP 4. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

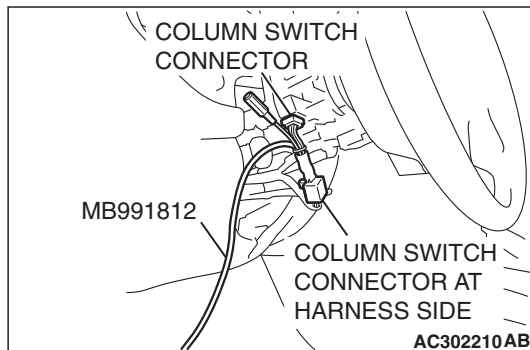
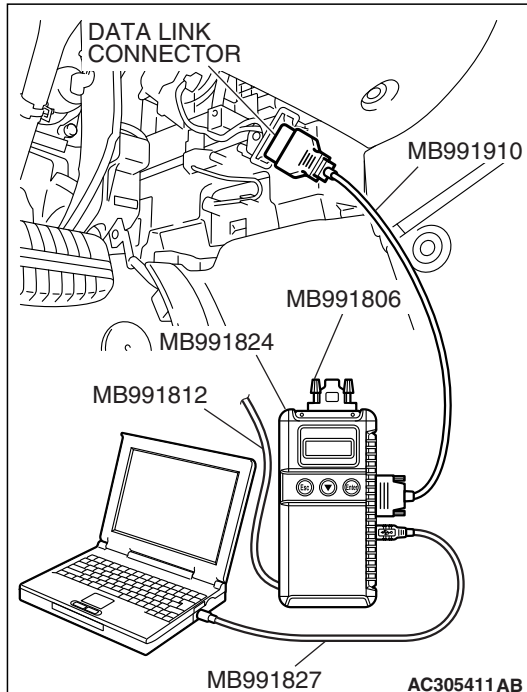
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

- (1) Connect the SWS monitor. Refer to "How to connect SWS monitor [P.54B-13](#)."
- (2) Turn the ignition switch to the "ON" position.
- (3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 5.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible [P.54B-79](#)."



STEP 5. Replace the combination meter.

- (1) Replace the combination meter.
- (2) Check that the turn-signal light indicator lights illuminate normally.

Q: Are the turn-signal indicator lights in good condition?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table [P.54A-10](#). Check that the turn-signal light indicator lights illuminate normally.