GROUP 54Bb

SWS SYMPTOM PROCEDURES

CONTENTS

SYMPTOM CHART

M1549000800383

<ECU communication system>

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
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Communication with the column switch (column-ECU) is not possible.	A-2	P.54Bb-16
Communication with the ETACS-ECU is not possible.	A-3	P.54Bb-25
Communication with the front-ECU is not possible.	A-4	P.54Bb-32
Communication with the sunroof motor assembly (sunroof-ECU) is not possible.	A-5	P.54Bb-40
Communication with the RV meter is not possible.	A-6	P.54Bb-55

<Function system>

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Tone alarm	General description concerning the tone alarm function	–	P.54Bb-58
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Central door locking system	General description concerning the central door locking system	–	P.54Bb-74
	Central door locking system does not work.	C-1	P.54Bb-79
	Some doors do not lock or unlock.	C-2	P.54Bb-90
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SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Power windows	General description concerning the power windows function	–	P.54Bb-132
	Power windows do not work at all.	D-1	P.54Bb-136
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	Only the front power window (LH) does work normally by operating the power window main switch.	D-3	P.54Bb-151
	Power windows do not work normally by operating the passenger's and rear power window switches.	D-4	P.54Bb-154
	Passenger's and rear power windows do not work normally by operating the power window main switch.	D-5	P.54Bb-198
Keyless entry system	General description concerning keyless entry system	–	P.54Bb-200
	Keyless entry system does not work.	E-1	P.54Bb-205
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Sunroof	General description concerning the sunroof	–	P.54Bb-210
	Sunroof does not operate.	F-1	P.54Bb-212
	Any of the sunroof switch positions is defective.	F-2	P.54Bb-222
	Sunroof timer function does not work normally.	F-3	P.54Bb-223
	Safety mechanism does not function.	F-4	P.54Bb-226

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Windshield wiper and washer	General description concerning the windshield wiper and washer function	–	P.54Bb-227
	The windshield wipers do not work at all.	G-1	P.54Bb-231
	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."	G-2	P.54Bb-241
	The windshield wipers do not work normally.	G-3	P.54Bb-243
	The windshield wipers do not stop at the specified park position.	G-4	P.54Bb-249
	The windshield intermittent wiper interval is not changed by operating the windshield intermittent wiper interval adjusting knob or according to the vehicle speed.	G-5	P.54Bb-256
	The windshield washer does not work.	G-6	P.54Bb-258
Rear wiper and washer	General description concerning the rear wiper and washer function	–	P.54Bb-265
	Rear wiper does not work at all.	H-1	P.54Bb-268
	Rear wiper does not stop at the predetermined park position.	H-2	P.54Bb-277
	When the selector lever is moved to "R" position during the rear wiper operation, the rear wiper does not operate at the continuous mode.	H-3	P.54Bb-279
	Rear washer does not work.	H-4	P.54Bb-281
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	The seat belt warning light does not illuminate.	I-1	P.54Bb-290

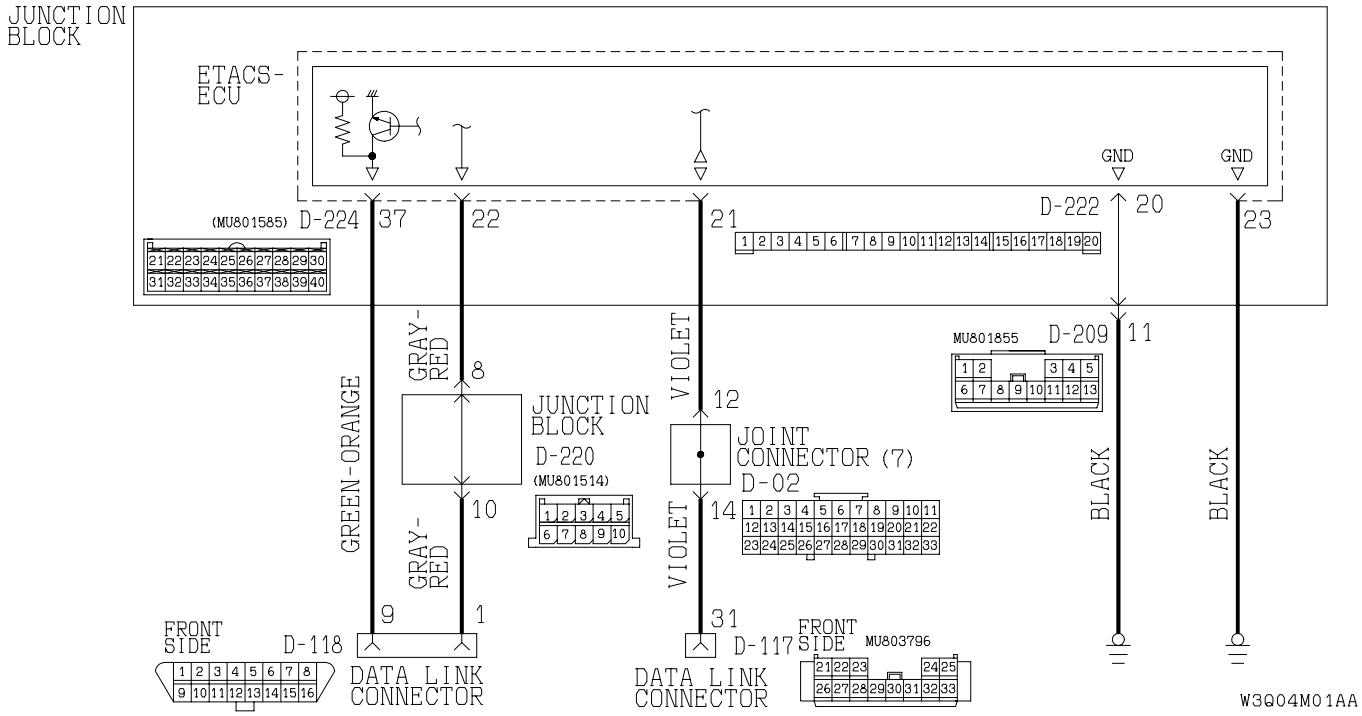
SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Headlight and taillight	General description concerning headlight and taillight function	–	P.54Bb-298
	Taillights do not illuminate.	J-1	P.54Bb-304
	Headlights (low-beam) do not illuminate.	J-2	P.54Bb-308
	Headlights (high-beam) do not illuminate.	J-3	P.54Bb-313
	Headlights do not illuminate when the passing switch is operated.	J-4	P.54Bb-317
	Headlights do not illuminate when the lighting switch is at "TAIL," and "PASSING" position, but illuminate at low-beam when the switch is at "HEAD" position. At this position, the headlights cannot be changed into high beam by operating the dimmer switch.	J-5	P.54Bb-318
	Any of taillights, position lights or license plate light does not illuminate.	J-6	P.54Bb-320
	One of the headlights does not illuminate.	J-7	P.54Bb-357
	The high-beam Indicator Light does not Illuminate.	J-8	P.54Bb-366
	Headlight automatic shutdown function does not work normally.	J-9	P.54Bb-373
	Headlight dimmer switch automatic resetting function does not work normally.	J-10	P.54Bb-375
	Daytime running light function does not work normally. <vehicles for Canada>	J-11	P.54Bb-376
	When the daytime running light function is operating, the headlights (low-beam) continue lighting in a reduced beam state even if the headlight switch turns on. <vehicles for Canada>	J-12	P.54Bb-385
	When the ignition switch is turned from on to off, the headlights darken significantly. <vehicles for Canada>	J-13	P.54Bb-386
Flasher timer	General description concerning the flasher timer function	–	P.54Bb-389
	Turn-signal lights do not flash when the turn signal light switch is operated.	K-1	P.54Bb-392
	Hazard warning lights do not illuminate.	K-2	P.54Bb-399
	One of the turn-signal lights do not illuminate.	K-3	P.54Bb-401

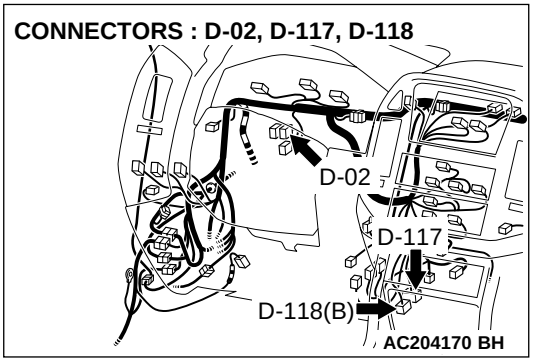
SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Fog light	General description concerning the fog light function	–	P.54Bb-425
	Fog lights do not illuminate when the fog light switch is operated.	L-1	P.54Bb-427
	Fog lights do not go out when the headlights (low-beam) are turned off while the fog lights are on.	L-2	P.54Bb-434
	One of the fog lights does not illuminate.	L-3	P.54Bb-435
Interior light	General description concerning the interior light function	–	P.54Bb-447
	The dome light do not illuminate or go out normally.	M-1	P.54Bb-450
	Dome light dimming function does not work normally.	M-2	P.54Bb-460
	The ignition key hole illumination light does not illuminate or go out normally.	M-3	P.54Bb-464
Theft-alarm system	General description concerning the theft-alarm system	–	P.54Bb-472
	Theft-alarm system is not armed (theft-alarm indicator light does not illuminate).	N-1	P.54Bb-475
	Horn does not sound when the theft-alarm system is triggered.	N-2	P.54Bb-484
	Headlights (high-beam) do not flash when the theft-alarm system is triggered.	N-3	P.54Bb-499
	Panic alarm function does not work.	N-4	P.54Bb-499

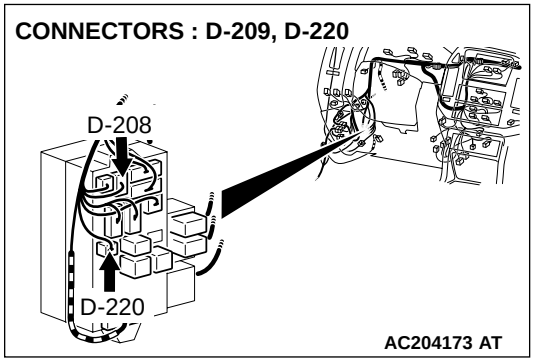
SYMPTOM PROCEDURES

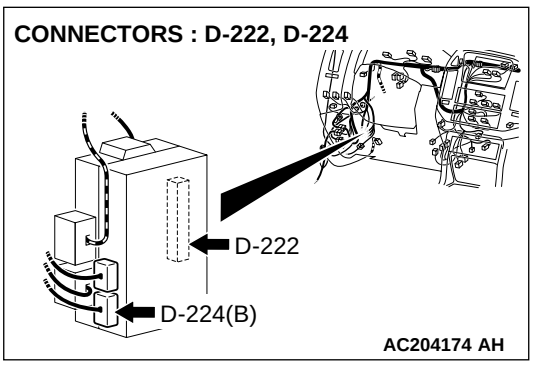
INSPECTION PROCEDURE A-1: Communication with the SWS monitor kit is not possible.

Scan Tool Communication and ETACS-ECU Ground Circuit









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TECHNICAL DESCRIPTION (COMMENT)
The SWS monitor kit may be connected improperly.

TROUBLESHOOTING HINTS
- The SWS monitor body (I/F cartridge) may be defective
- The SWS monitor harness 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
- MB991502: Scan Tool (MUT-II)

STEP 1. Verify SWS monitor kit MB991862 for proper connection.

Q: Is SWS monitor kit MB991862 connected with the column switch properly?

YES : Go to Step 2.
NO : Connect SWS monitor kit MB991862 to the column switch securely.

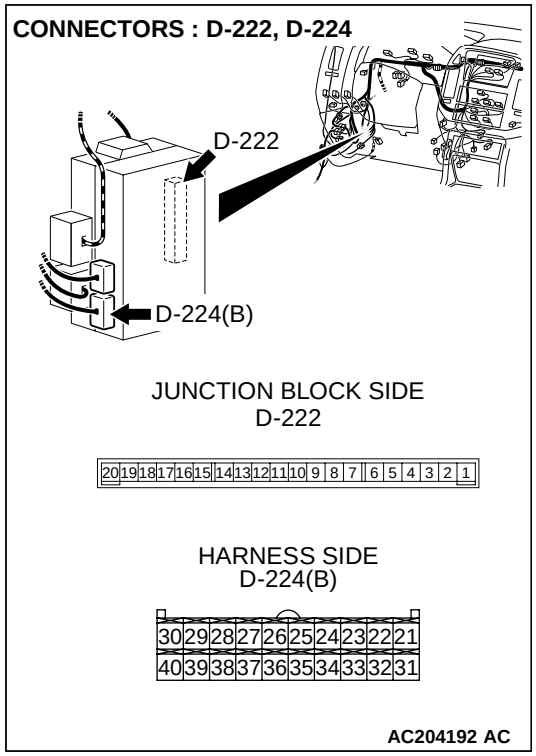
STEP 2. Verify the power supply circuit to the ETACS-ECU.

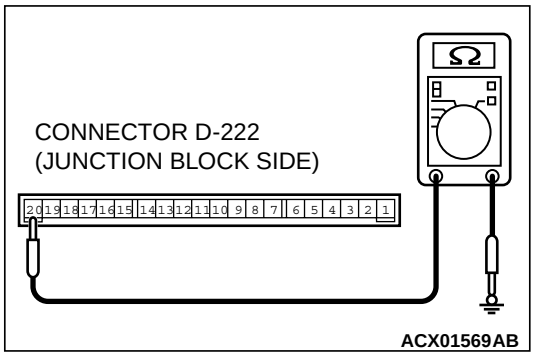
Q: Does the system communicate with scan tool MB991502 when the ignition switch is turned to the "ON" position?

YES : Go to Step 3.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54Bb-25."

STEP 3. Check the ground circuit to the ETACS-ECU. Test at ETACS-ECU connector D-222 and D-224.

(1) Disconnect ETACS-ECU connector D-222 and D-224, and measure the resistance available at the junction block side of the connector.

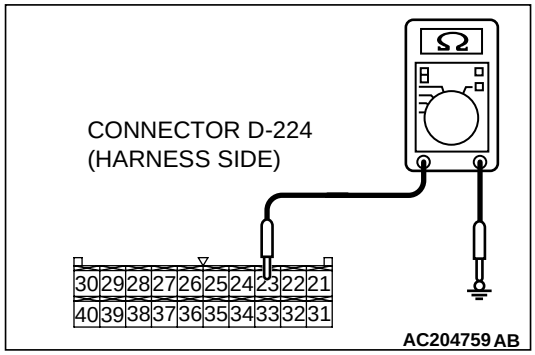


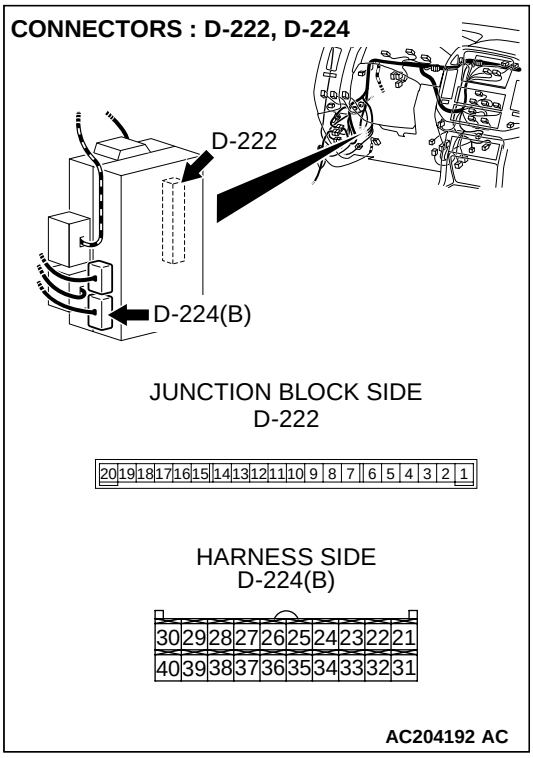


(2) Measure the resistance value between ETACS-ECU connector D-222 terminal 20 and ground, and also between ETACS-ECU connector D-224 terminal 23 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.
NO : Go to Step 4.





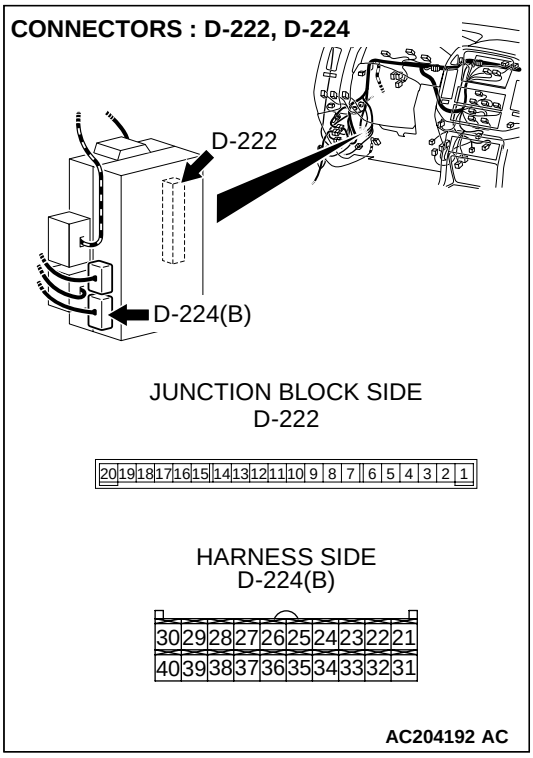
STEP 4. Check ETACS-ECU connector D-222 and D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

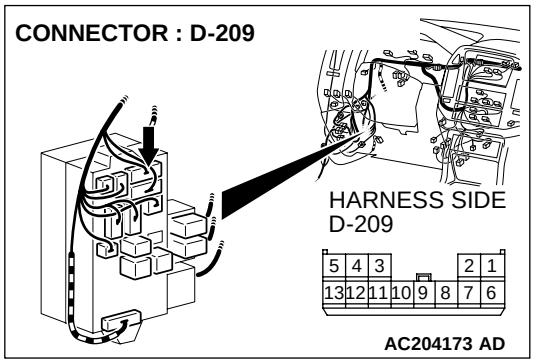
Q: Are ETACS-ECU connector D-222 and D-224 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the SWS monitor normally.

STEP 5. Check the wiring harness between ETACS-ECU connector D-222 (terminal 20) or D-224 (terminal 23) and the ground.



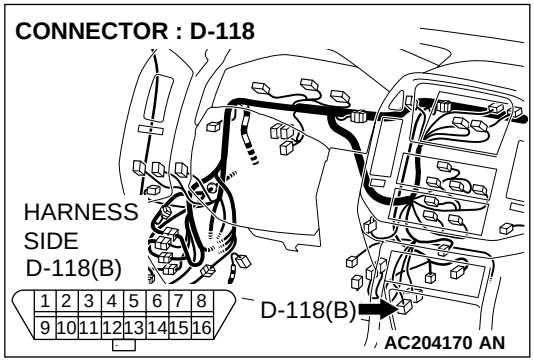


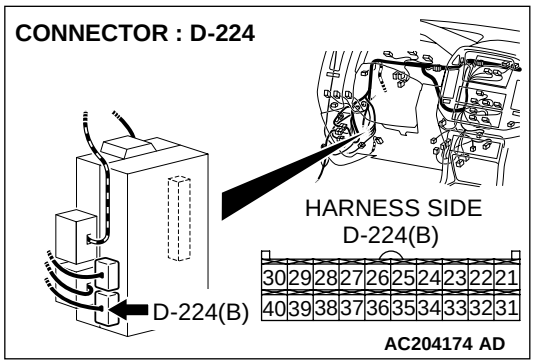
NOTE: Also check junction block connector D-209 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-209 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector D-222 (terminal 20) or D-224 (terminal 23) and the 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 system should communicate with the SWS monitor kit normally.





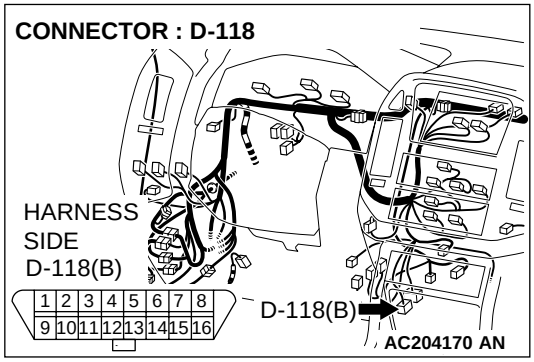
STEP 6. Check ETACS-ECU connector D-224 and data link connector D-118 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

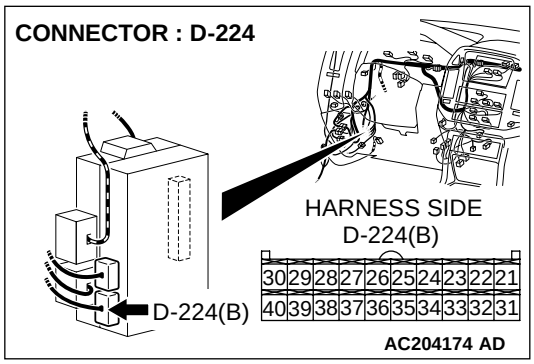
Q: Are ETACS-ECU connector D-224 and data link connector D-118 in good condition?

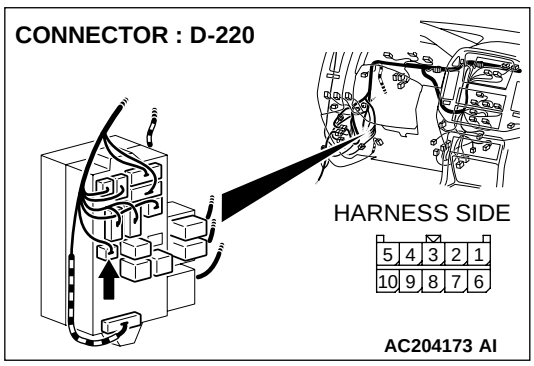
YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2.The system should communicate with the SWS monitor kit normally.

STEP 7. Check the wiring harness between ETACS-ECU connector D-224 (terminals 22 and 37) and data link connector D-118 (terminals 1 and 9).





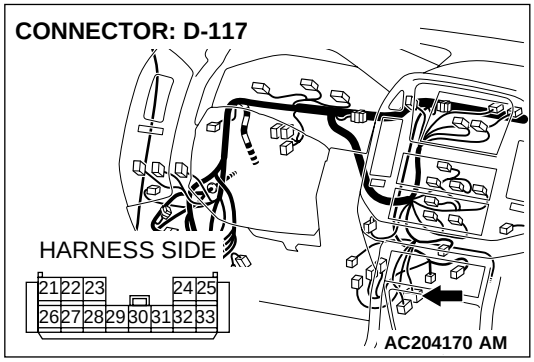


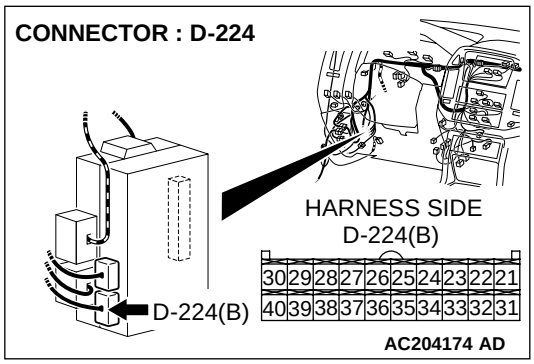
NOTE: Also check junction block connector D-220 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-220 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector D-224 (terminals 22 and 37) and data link connector D-118 (terminals 1 and 9) in good condition?

YES : Go to Step 8.

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 SWS monitor kit normally.



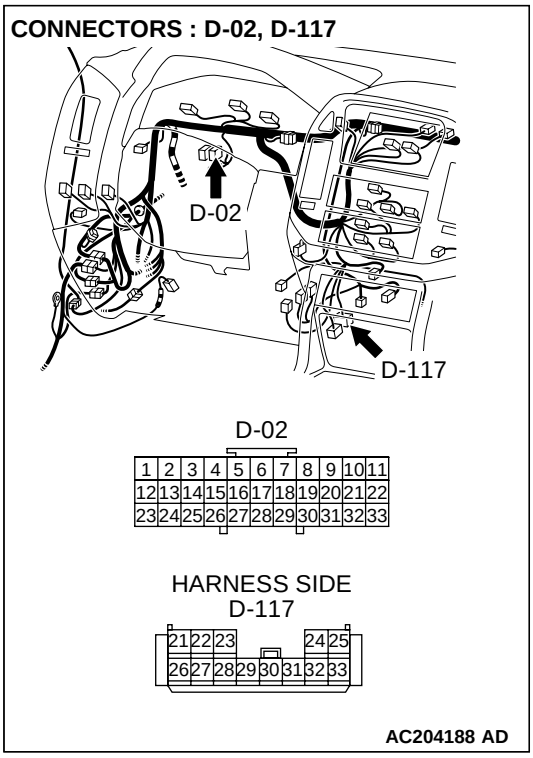


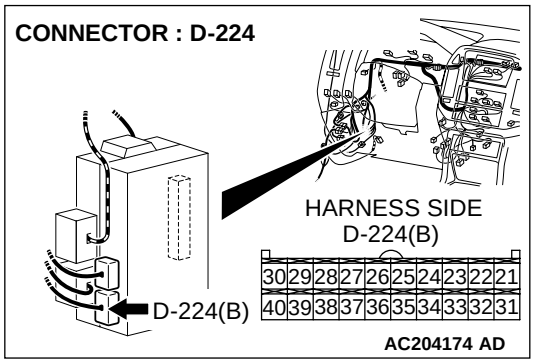
STEP 8. Check ETACS-ECU connector D-224 and data link connector D-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector D-224 and data link connector D-117 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. The system should communicate with the SWS monitor kit normally.





STEP 9. Check the wiring harness between ETACS-ECU connector D-224 (terminal 21) and data link connector D-117 (terminal 31).

NOTE: Also check joint connector D-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector D-02 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 D-224 (terminal 21) and data link connector D-117 (terminal 31) in good condition?

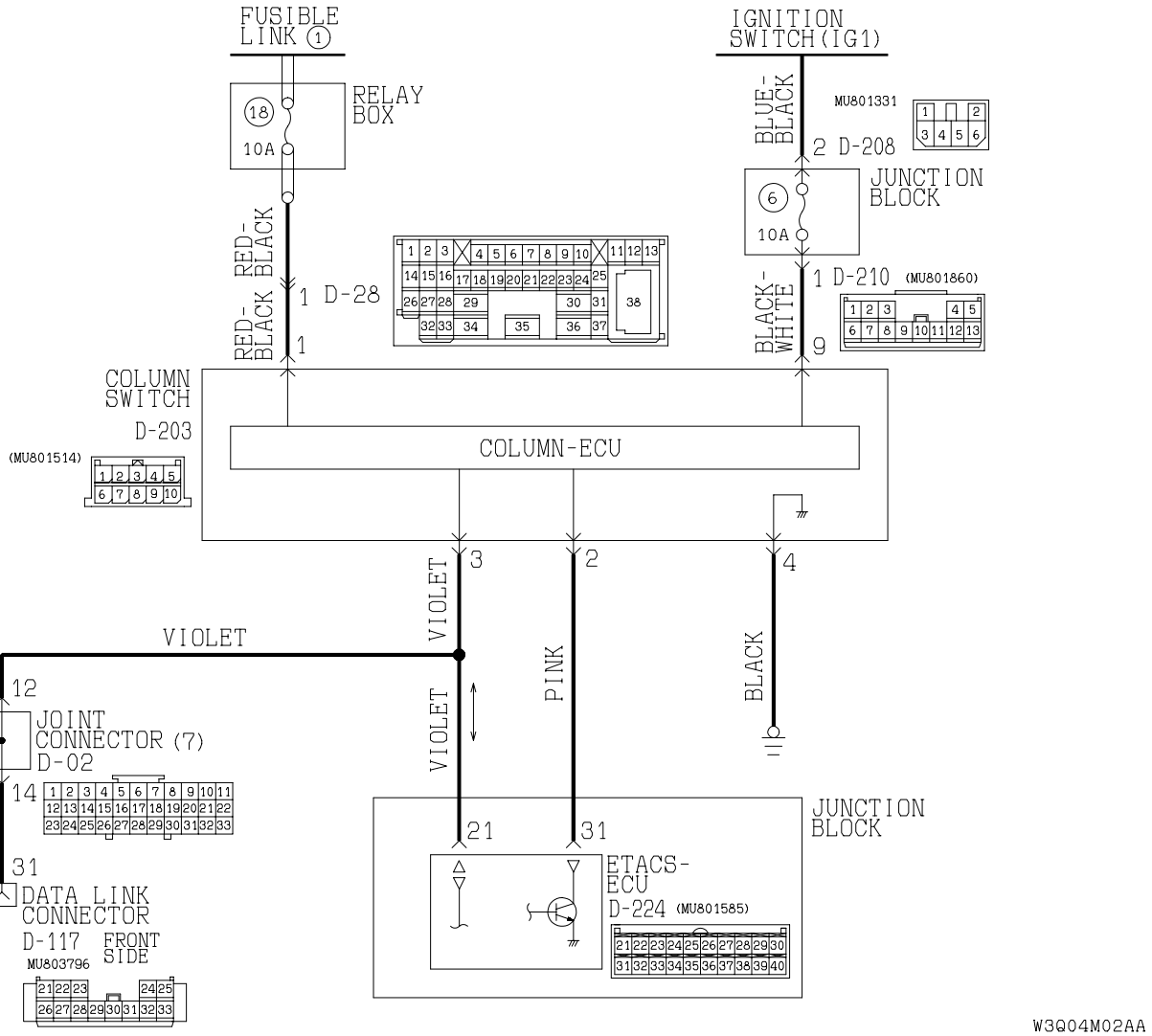
YES : Replace the ETACS-ECU. The system should communicate with the SWS monitor kit normally.

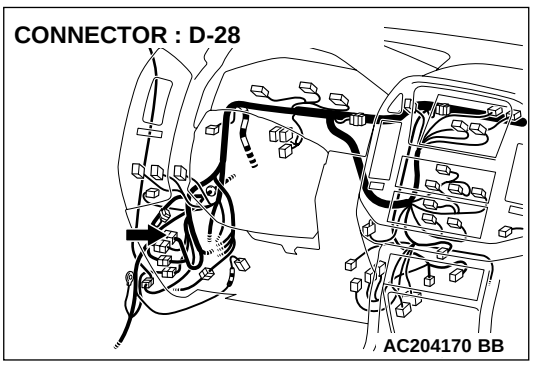
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the SWS monitor kit normally.

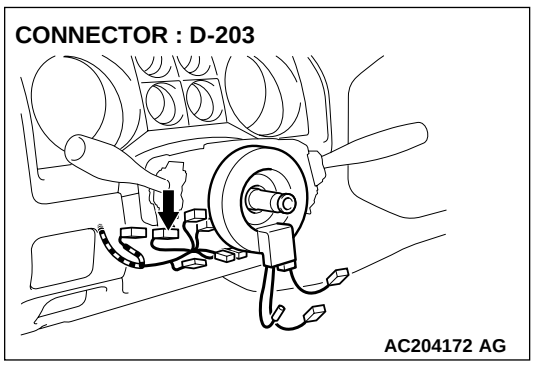
INSPECTION PROCEDURE A-2: Communication with the column switch (column-ECU) is not possible.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Column Switch Power Supply and SWS Communication Circuit







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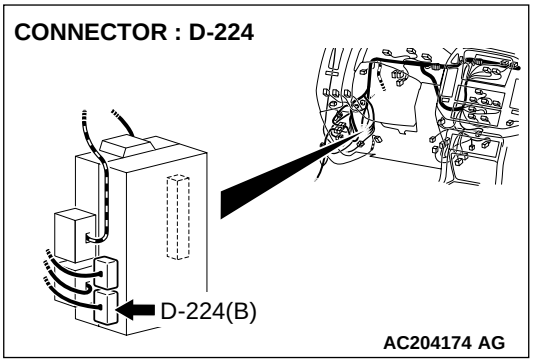


CIRCUIT OPERATION

- The power supply to the column switch is provided by the battery and the ignition switch (IG1).
- If the power supply system from the battery is defective, the system operates by the power supply from the ignition switch (IG1).

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit to the column switch (column-ECU) may be defective. If the battery power supply circuit (terminal 1 of the column switch) to the ECU is damaged, also check the power supply circuit from the ignition switch (IG1) (terminal 9 of the column switch), and repair if necessary.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

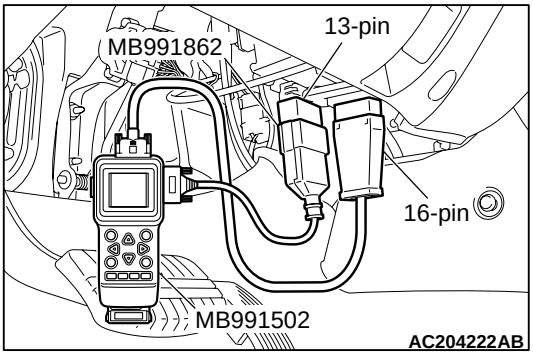
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:
- ETACS-ECU
- Column-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

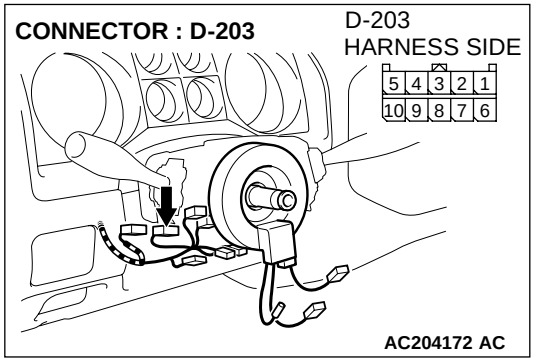


(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

Q: Is "OK" displayed on both the "ETACS ECU" and "COLUMN ECU" menus?

"OK" are displayed for all the items : Go to Step 2.
"NG" is displayed on the "COLUMN ECU" menu : Go to Step 6.
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."
"NG" are displayed for all the items : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."

STEP 2. Check column switch connector D-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

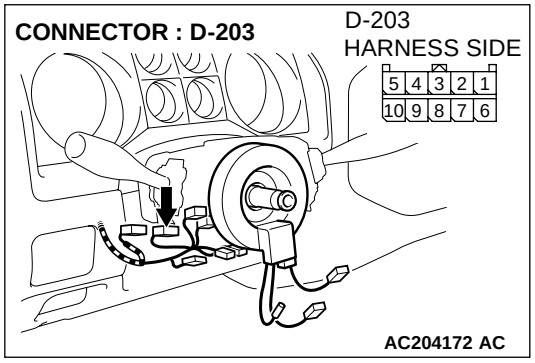


Q: Is column switch connector D-203 in good condition?

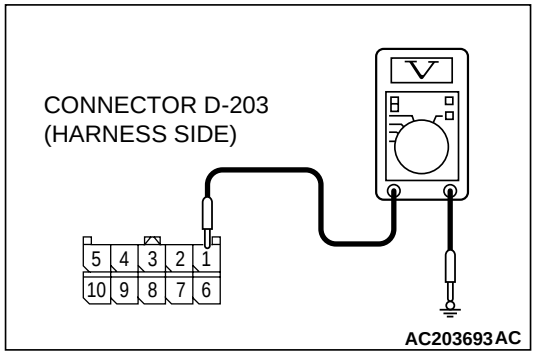
YES : Go to Step 3.

NO : Repair or replace the damaged component(s). The system should communicate with the column switch (column-ECU) normally.

STEP 3. Check the battery power supply circuit to the column switch. Test at column switch connector D-203.



(1) Disconnect column switch connector D-203 and measure the voltage available at the wiring harness side of the connector.



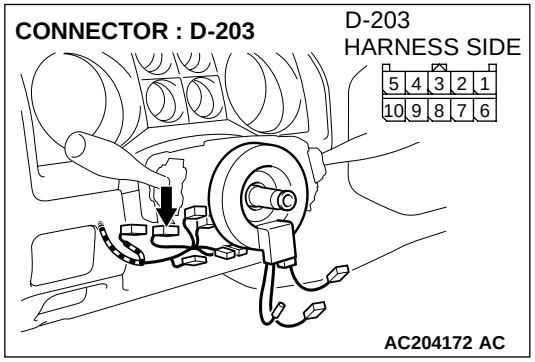
(2) Measure the voltage between terminal 1 and ground by backprobing.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 6.

NO : Go to Step 4.

STEP 4. Check column switch connector D-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

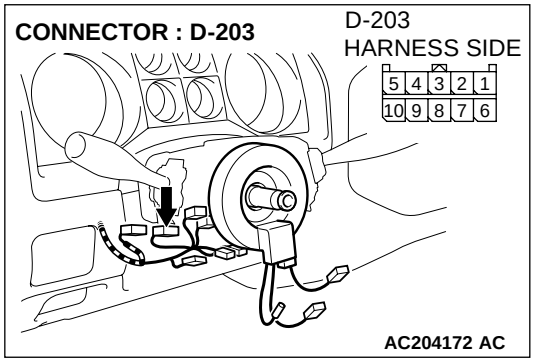


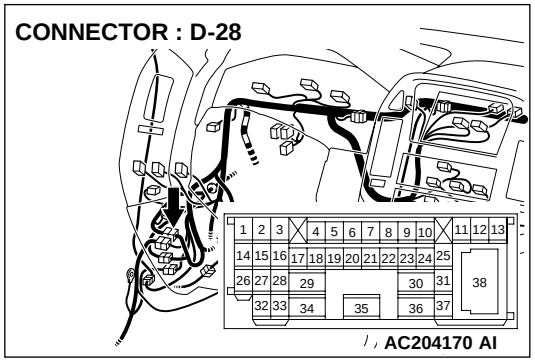
Q: Is column switch connector D-203 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the column switch (column-ECU) normally.

STEP 5. Check the wiring harness between column switch connector D-203 (terminal 1) and the battery.





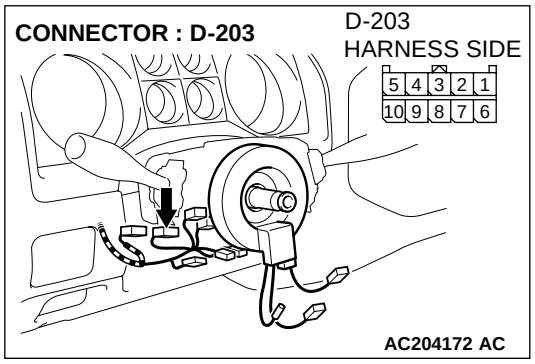
NOTE: Also check intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between column switch connector D-203 (terminal 1) and the battery in good condition?

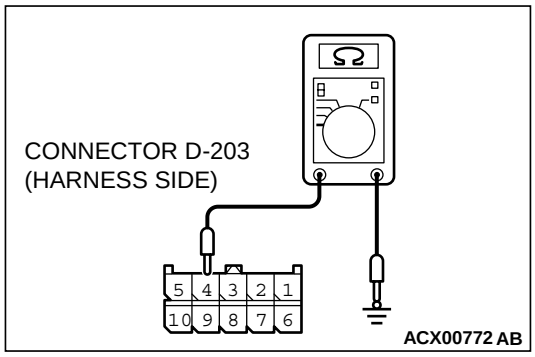
YES : No action is necessary and testing is complete.

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. The system should communicate with the column switch (column-ECU) normally.

STEP 6. Check the ground circuit to the column switch. Test at column switch connector D-203.



(1) Disconnect column switch connector D-203 and measure the resistance available at the wiring harness side of the connector.

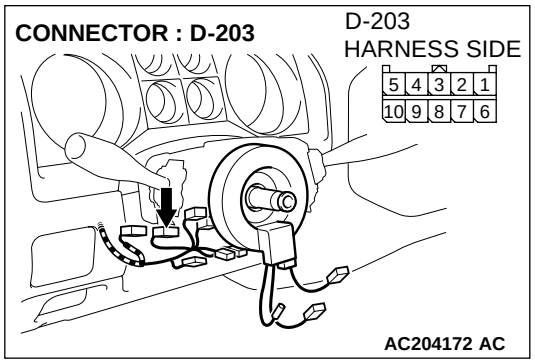


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 9.
NO : Go to Step 7.

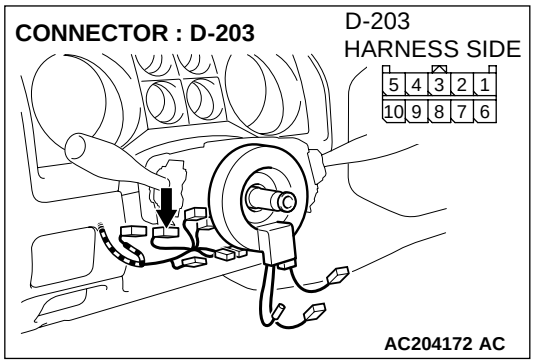
STEP 7. Check column switch connector D-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is column switch connector D-203 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. The system should communicate with the column switch (column-ECU) normally.

STEP 8. Check the wiring harness between column switch connector D-203 (terminal 4) and the ground.



Q: Is the wiring harness between column switch connector D-203 (terminal 4) and the 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 system should communicate with the column switch (column-ECU) normally.

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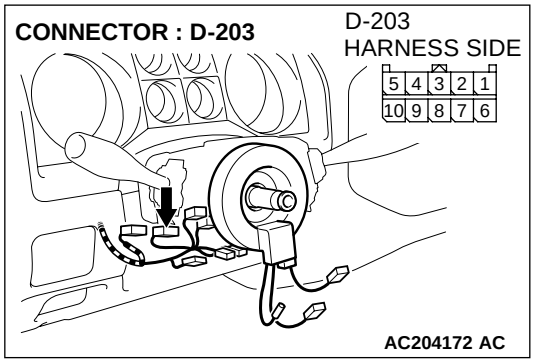
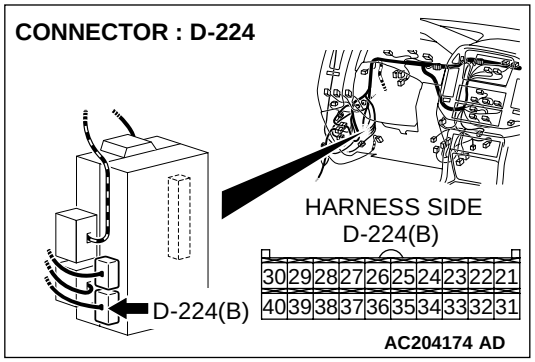
STEP 9. Check column switch connector D-203 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are column switch connector D-203 and ETACS-ECU connector D-224 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 system should communicate with the column switch (column-ECU) normally.



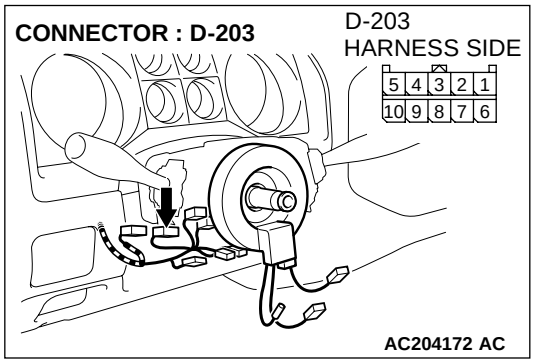


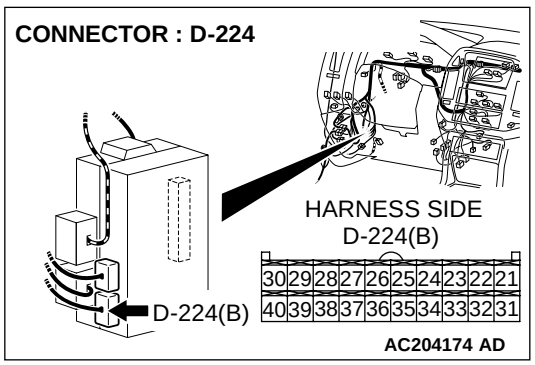
STEP 10. Check the wiring harness between column switch connector D-203 (terminal 3) and ETACS-ECU connector D-224 (terminal 21).

Q: Is the wiring harness between column switch connector D-203 (terminal 3) and ETACS-ECU connector D-224 (terminal 21) in good condition?

YES : Go to Step 11.

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 column switch (column-ECU) normally.



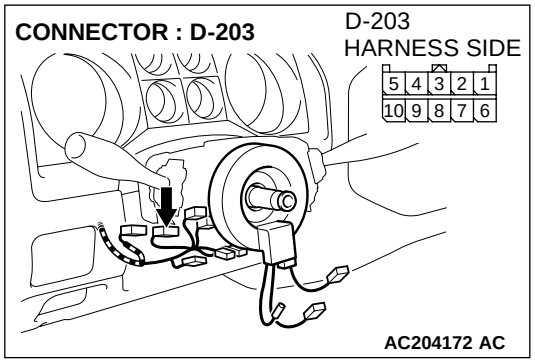


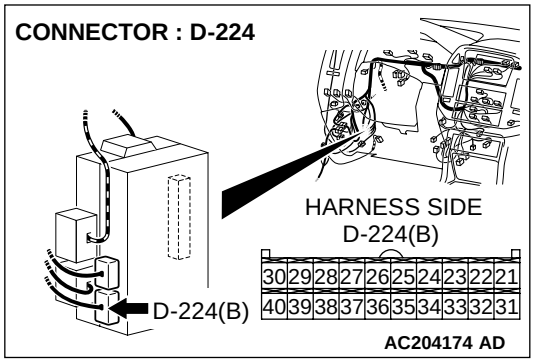
STEP 11. Check column switch connector D-203 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are column switch connector D-203 and ETACS-ECU connector D-224 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. The system should communicate with the column switch (column-ECU) normally.



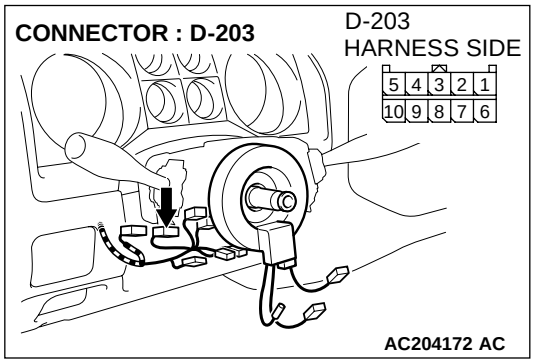


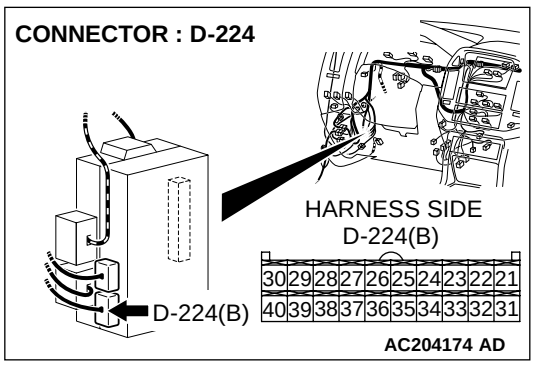
STEP 12. Check the wiring harness between column switch connector D-203 (terminal 2) and ETACS-ECU connector D-224 (terminal 31).

Q: Is the wiring harness between column switch connector D-203 (terminal 2) and ETACS-ECU connector D-224 (terminal 31) 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. The system should communicate with the column switch (column-ECU) normally.





STEP 13. Replace the ECU.

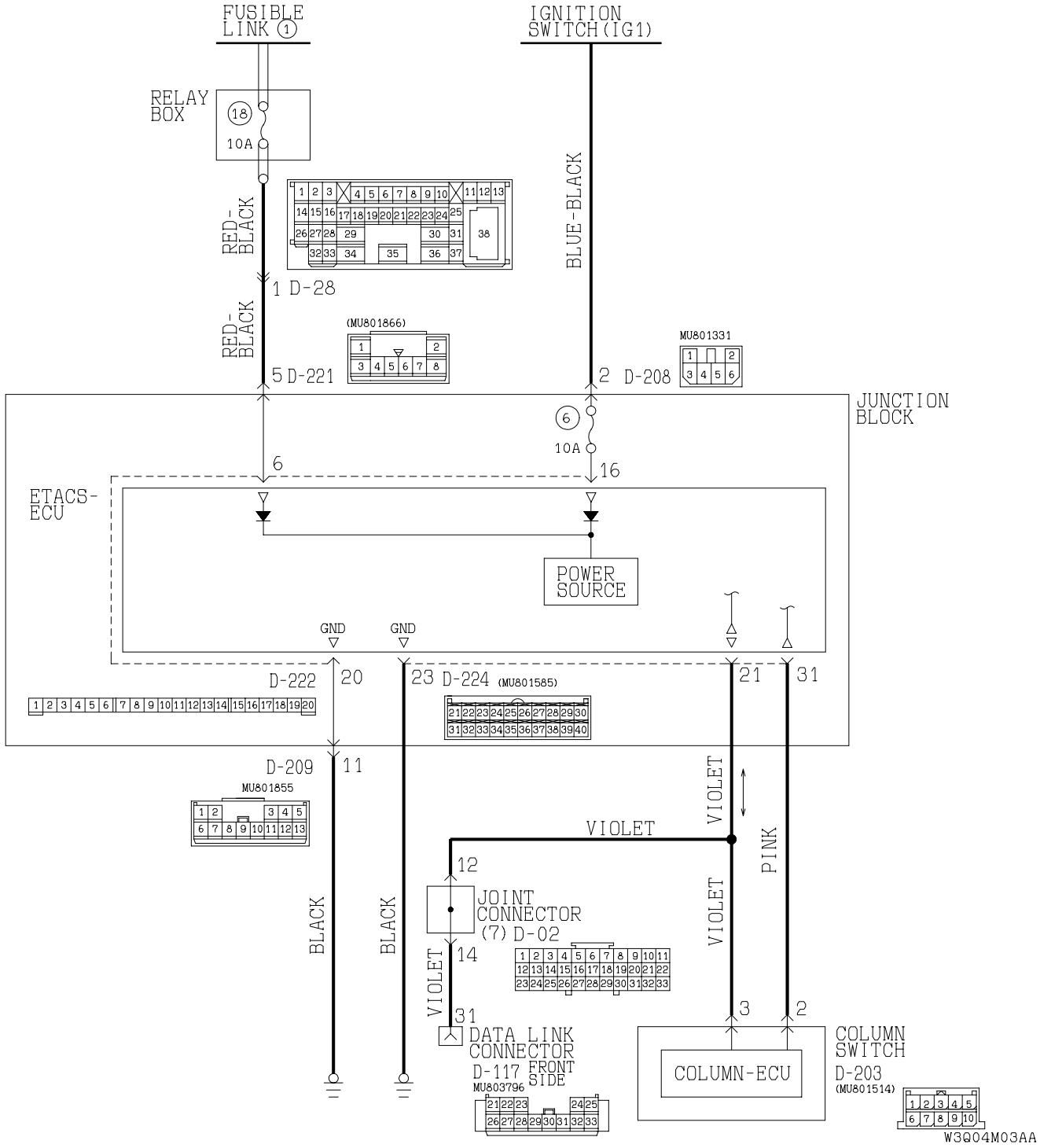
(1) Replace the column switch.
(2) The system should communicate with the column switch (column-ECU) normally.

Q: Can the system communicate with the column switch (column-ECU)?

YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU. The system should communicate with the column switch (column-ECU) normally.

INSPECTION PROCEDURE A-3: Communication with the ETACS-ECU is not possible.

ETACS-ECU Power Supply and SWS Communication Circuit



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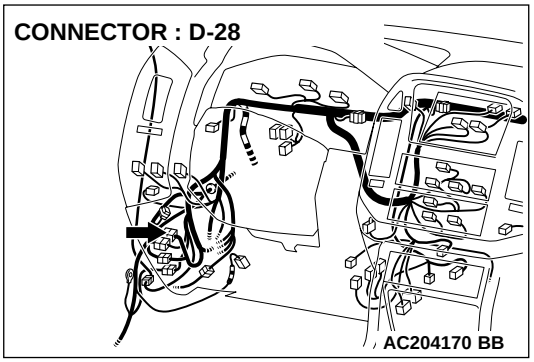
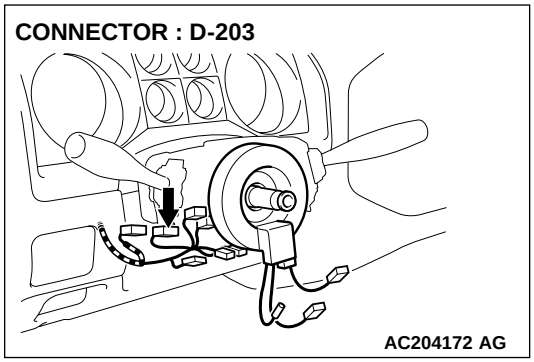
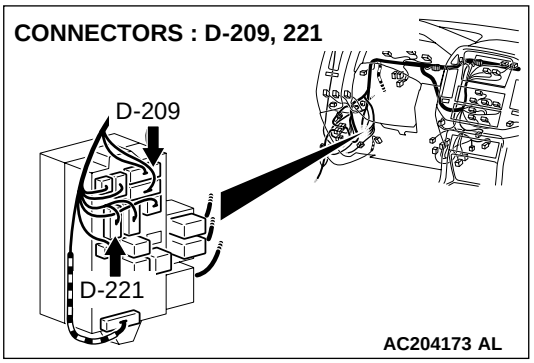
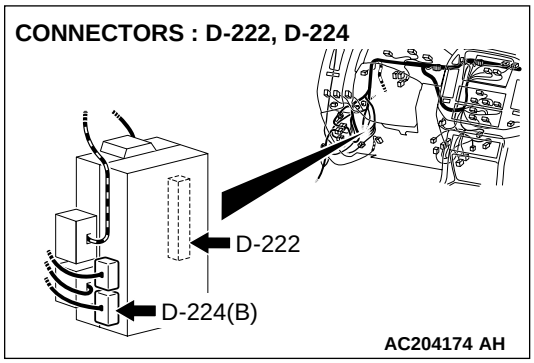








CIRCUIT OPERATION

- The power supply to the ETACS-ECU is provided by the battery and the ignition switch (IG1).
- If the power supply system from the battery is defective, the system operates by the power supply from the ignition switch (IG1).

TECHNICAL DESCRIPTION (COMMENT)

It is suspected that the power supply circuit to the ETACS-ECU is defective, or the wiring harness between the SWS monitor kit and the ETACS-ECU or their connector(s) is damaged. If the battery power supply circuit to the ECU (terminal 6 of the ETACS-ECU) is damaged, also check the power supply circuit from the ignition switch (IG1) (terminal 16 of the ETACS-ECU), and repair if necessary. If the ground circuit to the ECU (terminal 20 of the ETACS-ECU) is damaged, also check the ground circuit to the sensor (terminal 23 of the ETACS-ECU), and repair if necessary.

TROUBLESHOOTING HINTS

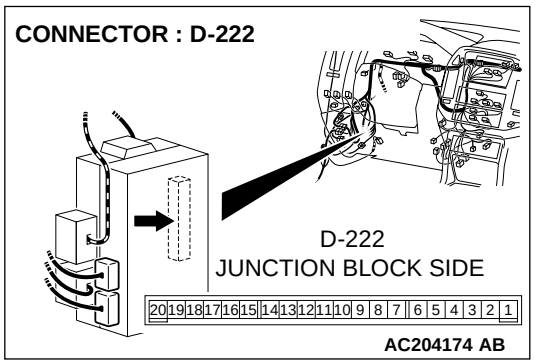
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

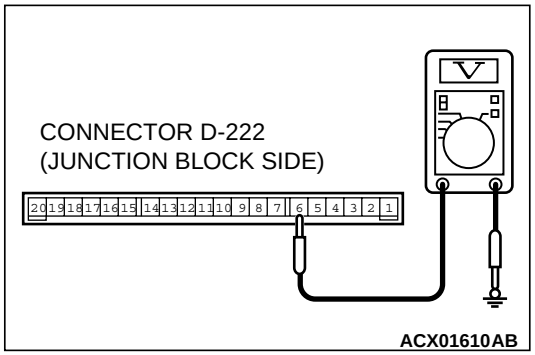
DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

STEP 1. Check the battery power supply circuit to the ETACS-ECU. Test at ETACS-ECU connector D-222.

(1) Disconnect ETACS-ECU connector D-222 and measure the voltage available at the junction block side of the connector.





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

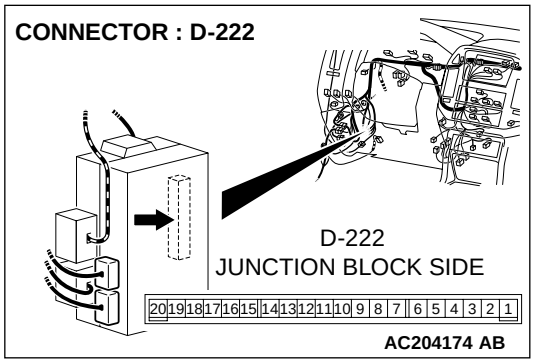
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 4.
NO : Go to Step 2.

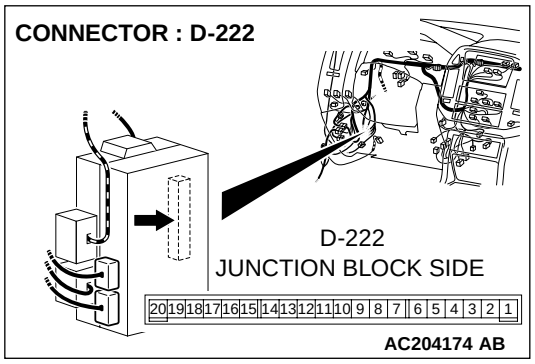
STEP 2. Check ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

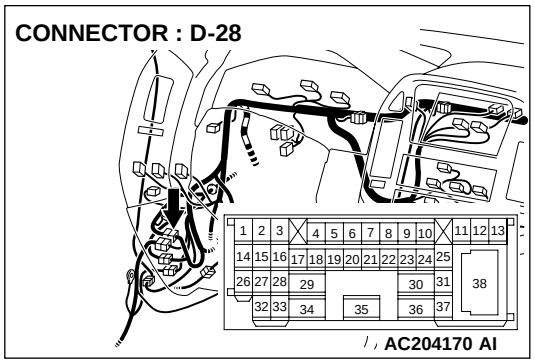
Q: Is ETACS-ECU connector D-222 in good condition?

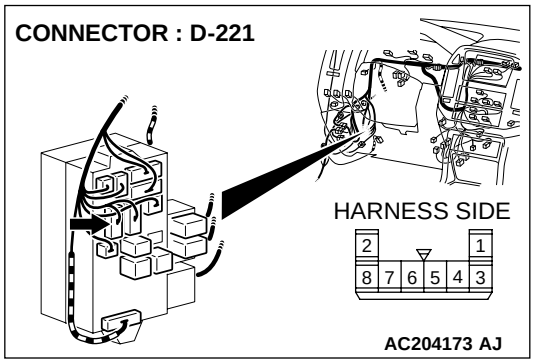
YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the ETACS-ECU normally.



STEP 3. Check the wiring harness between ETACS-ECU connector D-222 (terminal 6) and the battery.







NOTE: Also check intermediate connector D-28 and junction block connector D-221 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or junction block connector D-221 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

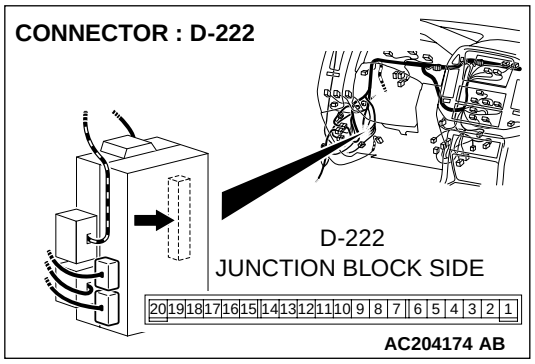
Q: Is the wiring harness between ETACS-ECU connector D-222 (terminal 6) and the battery in good condition?

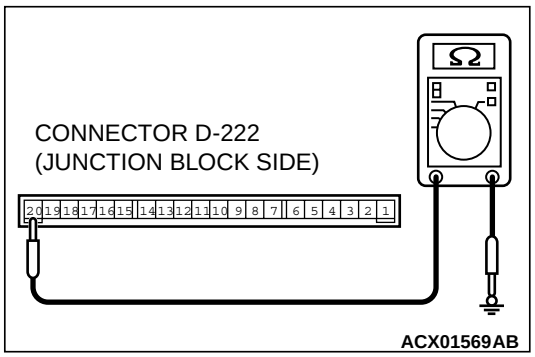
YES : No action is necessary and testing is complete.

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. The system should communicate with the ETACS-ECU normally.

STEP 4. Check the ground circuit to the ETACS-ECU. Test at ETACS-ECU connector D-222.

(1) Disconnect ETACS-ECU connector D-222 and measure the resistance available at the junction block side of the connector.





(2) Measure the resistance value between terminal 20 and ground.
- The resistance should equal 2 ohms or less.

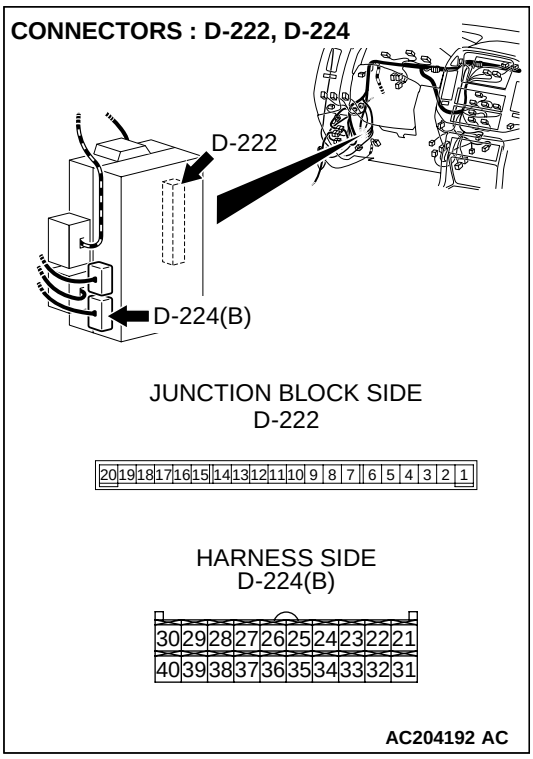
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.
NO : Go to Step 5.

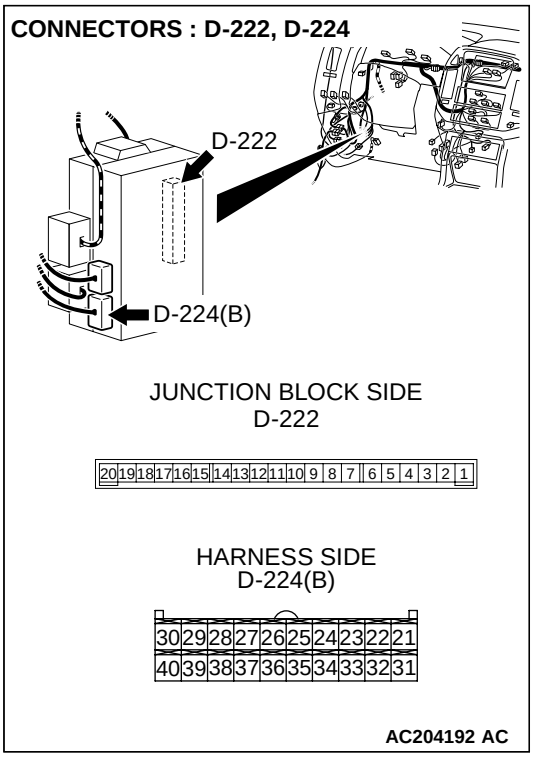
STEP 5. Check ETACS-ECU connectors D-222 and D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

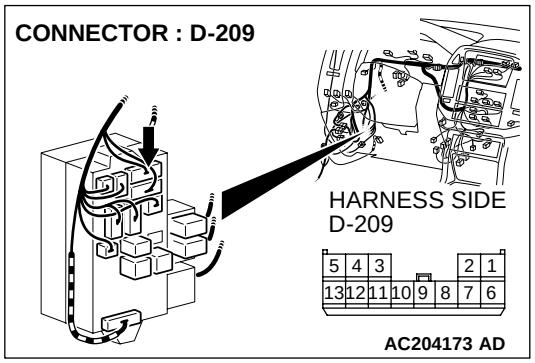
Q: Are ETACS-ECU connectors D-222 and D-224 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the ETACS-ECU normally.



STEP 6. Check the wiring harness between ETACS-ECU connector D-222 (terminal 20) and C-224 (terminal 23) and the ground.





NOTE: Also check junction block connector D-209 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-209 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 D-222 (terminal 20) and D-224 (terminal 23) and the ground in good condition?

YES : No action is necessary and testing is complete.

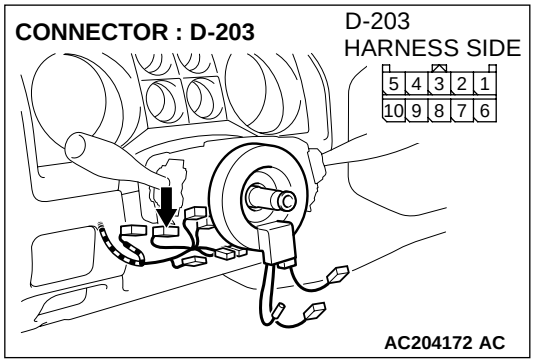
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the ETACS-ECU normally.

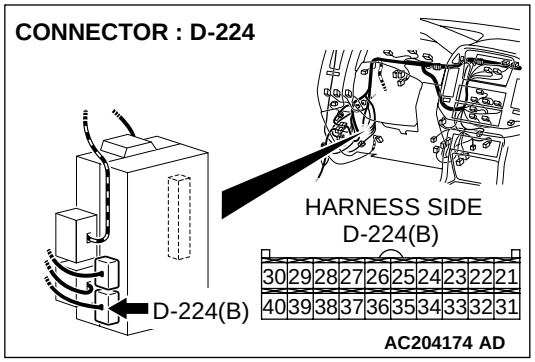
STEP 7. Check column switch connector D-203 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are column switch connector D-203 and ETACS-ECU connector D-224 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. The system should communicate with the ETACS-ECU normally.



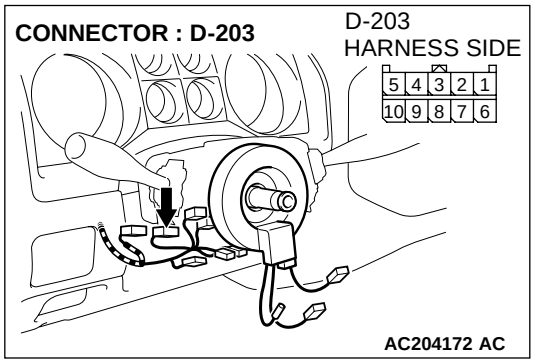


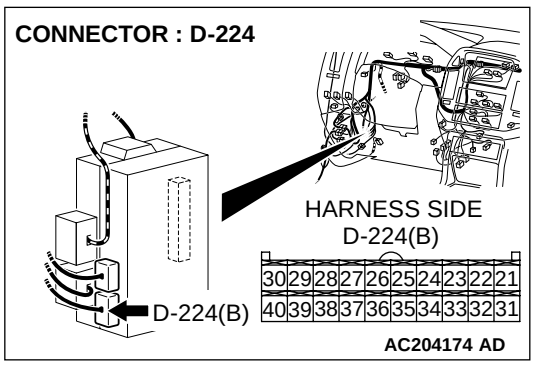
STEP 8. Check the wiring harness between column switch connector D-203 (terminals 2 and 3) and ETACS-ECU connector D-224 (terminals 31 and 21).

Q: Is the wiring harness between column switch connector D-203 (terminals 2 and 3) and ETACS-ECU connector D-224 (terminals 31 and 21) in good condition?

YES : Replace the ETACS-ECU. The system should communicate with the ETACS-ECU 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 system should communicate with the ETACS-ECU normally.

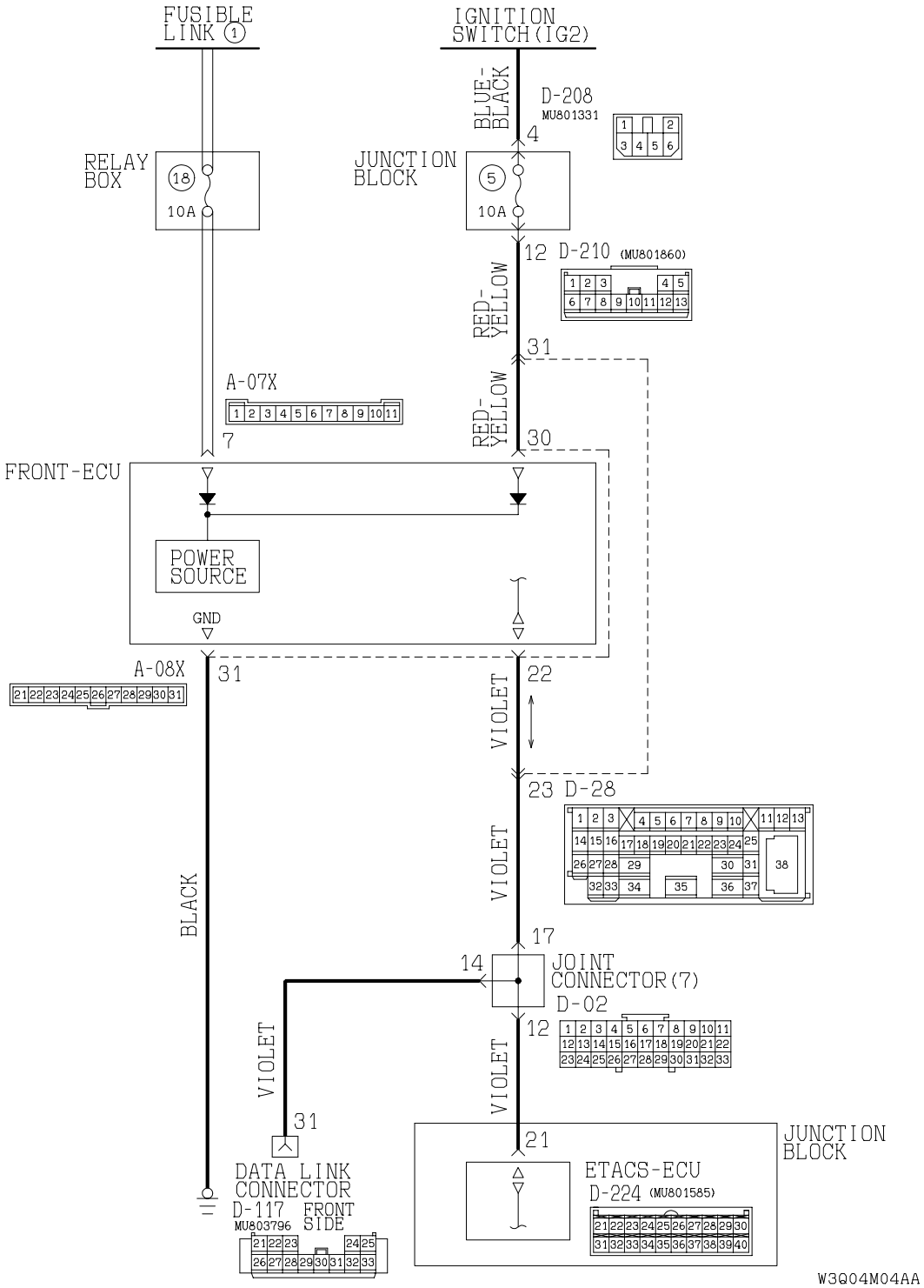




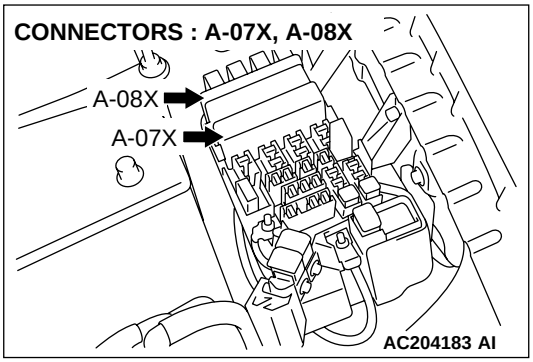
INSPECTION PROCEDURE A-4: Communication with the front-ECU is not possible.

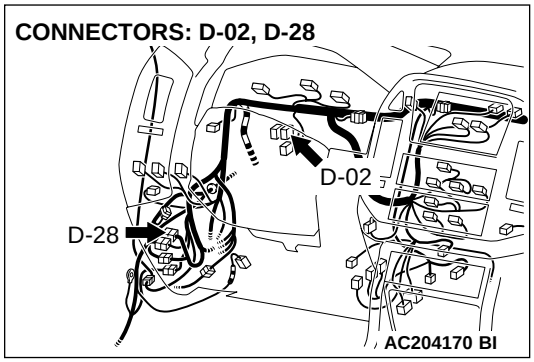
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

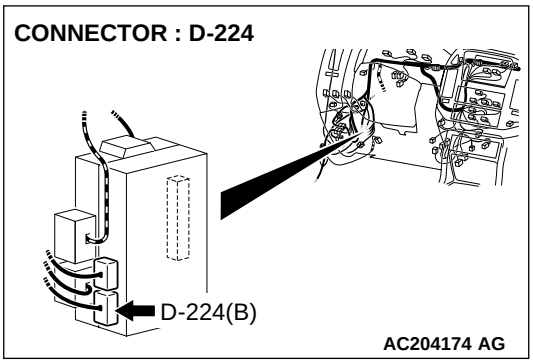
Front-ECU Power Supply and SWS Communication Circuit



TSB Revision







CIRCUIT OPERATION

- The power supply to the front-ECU is provided by the battery and the ignition switch (IG2).
- If the power supply system from the battery is defective, the system operates by the power supply from the ignition switch (IG2).

TECHNICAL DESCRIPTION (COMMENT)

It is suspected that the power supply circuit to the front-ECU is defective, or the wiring harness between the SWS monitor kit and the front-ECU or their connector(s) is damaged. If the battery power supply circuit to the ECU (terminal 7 of the front-ECU) is damaged, also check the power supply circuit from the ignition switch (IG2) (terminal 30 of the front-ECU), and repair if necessary.

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective
- The front-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:

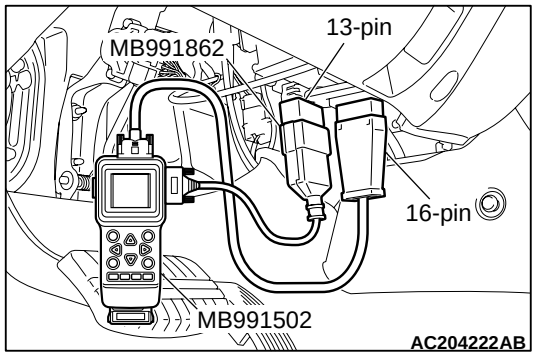
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



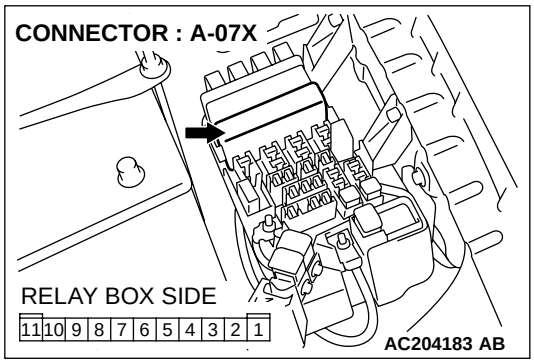
(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

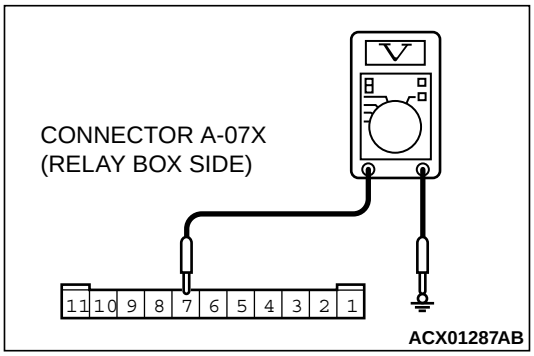
Q: Is "OK" displayed on the "ETACS ECU" menu?

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."

STEP 2. Check the battery power supply circuit to the front-ECU. Test at front-ECU connector A-07X.

(1) Disconnect front-ECU connector A-07X 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 be approximately 12 volts (battery positive voltage).

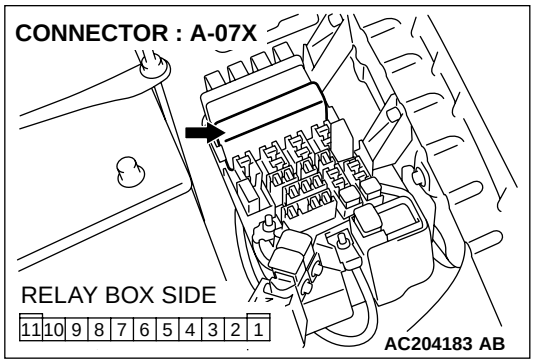
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 5.
NO : Go to Step 3.

STEP 3. Check the front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front-ECU connector A-07X in good condition?

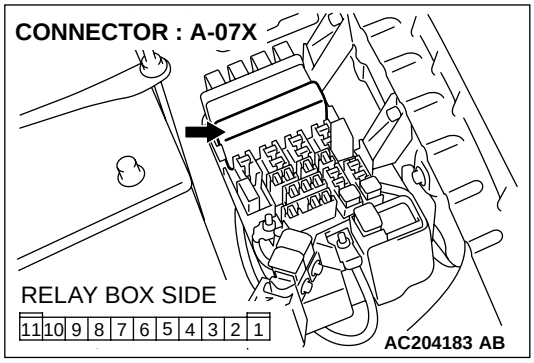
YES : Go to Step 4.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the front-ECU normally.



STEP 4. Check the wiring harness between front-ECU connector A-07X (terminal 7) and the battery.

Q: Is the wiring harness between front-ECU connector A-07X (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. The system should communicate with the front-ECU normally.



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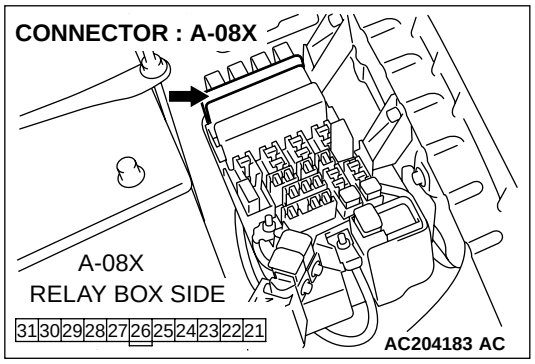
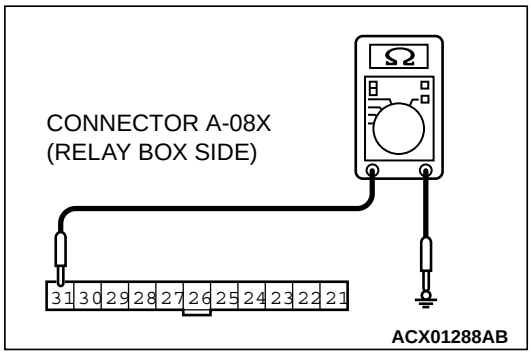
STEP 5. Check the ground circuit to the front-ECU. Test at front-ECU connector A-08X.



(1) Disconnect front-ECU connector A-08X and measure the resistance available at the relay box side of the connector.

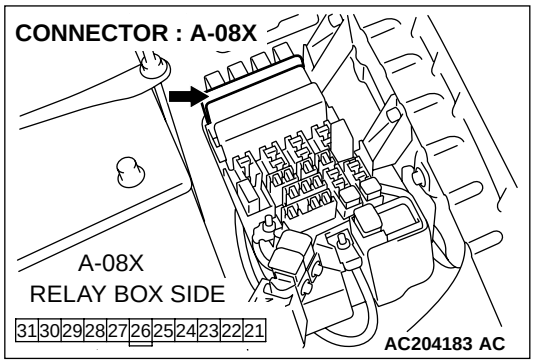


(2) Measure the resistance value between terminal 31 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.
NO : Go to Step 6.

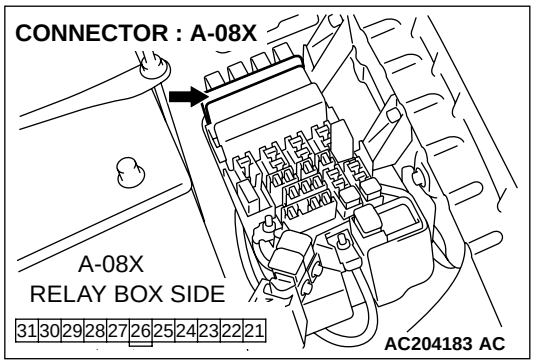
STEP 6. Check the front-ECU connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is front-ECU connector A-08X 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 system should communicate with the front-ECU normally.

STEP 7. Check the wiring harness between front-ECU connector A-08X (terminal 31) and the ground.



Q: Is the wiring harness between front-ECU connector A-08X (terminal 31) 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 system should communicate with the front-ECU normally.

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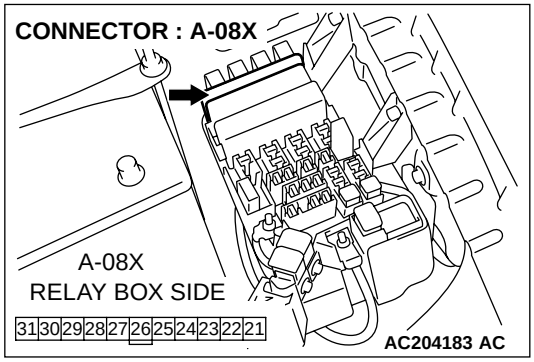
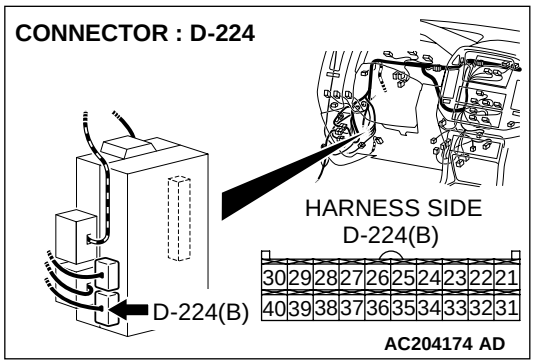




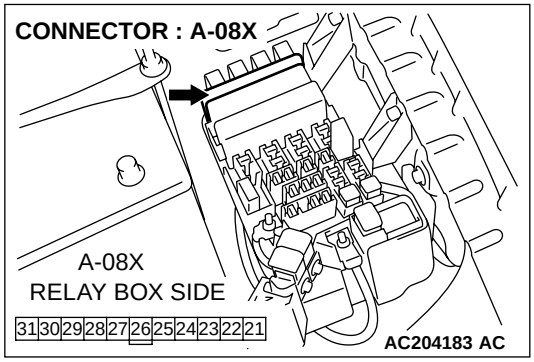
STEP 8. Check the front-ECU connector A-08X and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

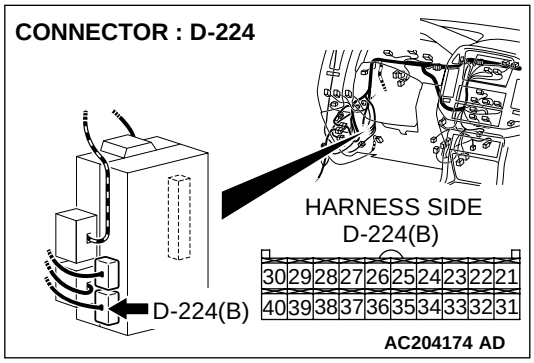
Q: Are front-ECU connector A-08X and ETACS-ECU connector D-224 in good condition?

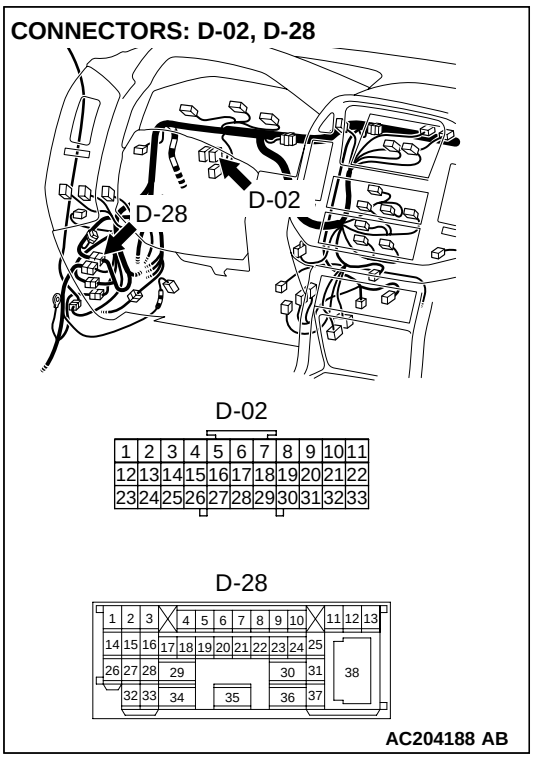
YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the front-ECU normally.

STEP 9. Check the wiring harness between front-ECU connector A-08X (terminal 22) and ETACS-ECU connector D-224 (terminal 21).







NOTE: Also check intermediate connector D-28 and joint connector D-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or joint connector D-02 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-08X (terminal 22) and ETACS-ECU connector D-224 (terminal 21) in good condition?

YES : Go to Step 10.

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

STEP 10. Replace the ECU.

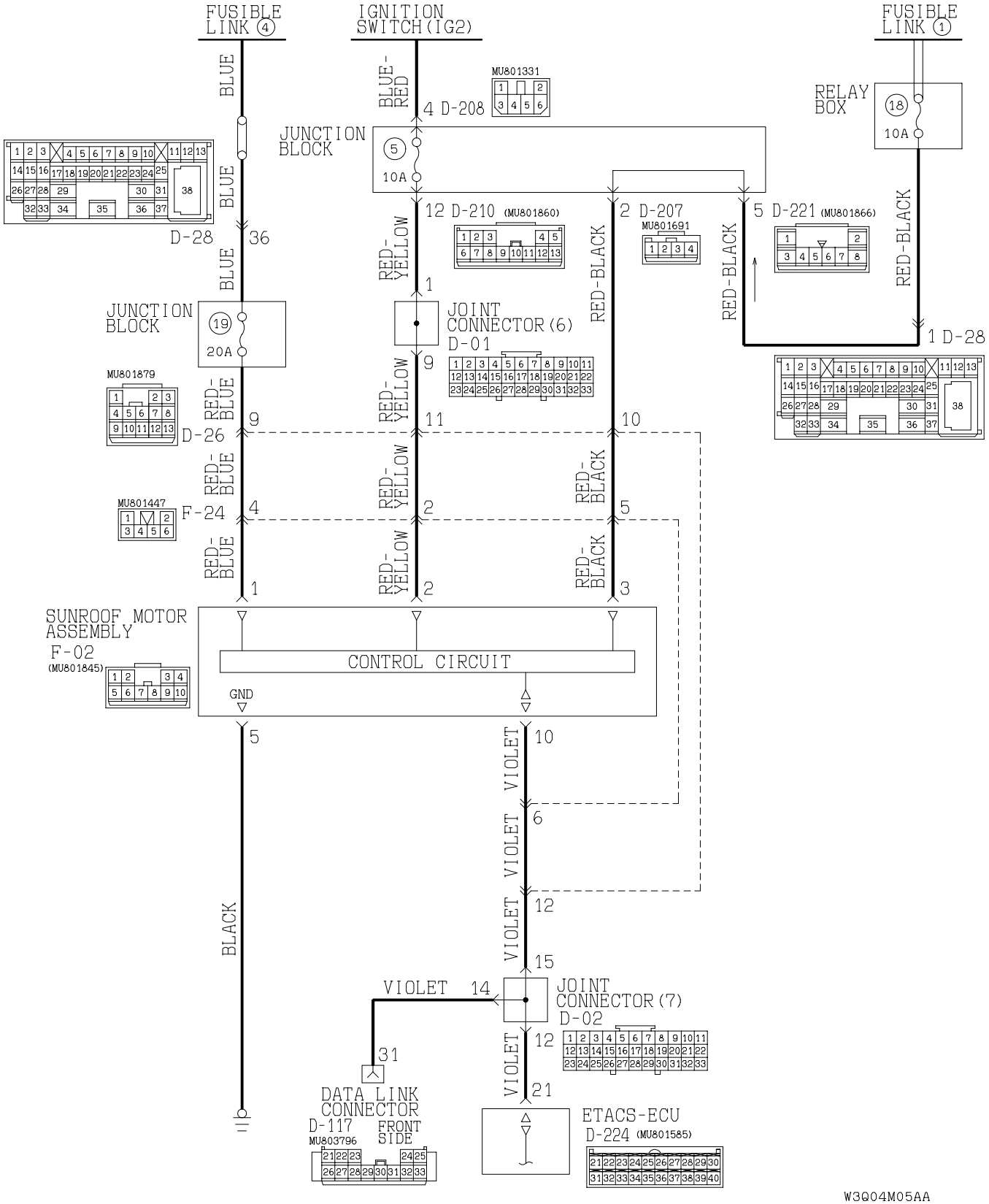
(1) Replace the front-ECU.
(2) The system should communicate with the front-ECU normally.

Q: Can the system communicate with the front-ECU?

YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU. The system should communicate with the front-ECU normally.

INSPECTION PROCEDURE A-5: Communication with the sunroof motor assembly (sunroof-ECU) is not possible.

Sunroof Motor Assembly (Sunroof-ECU) and SWS Communication Circuit



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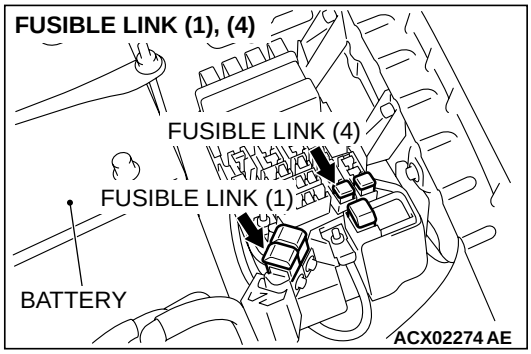
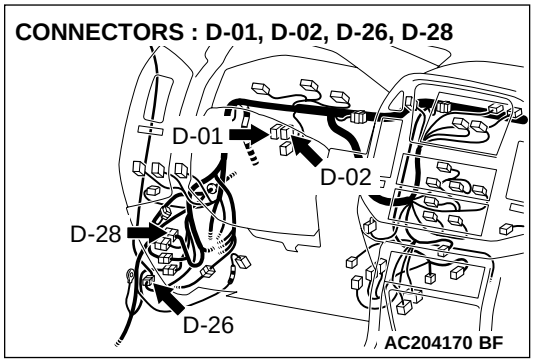
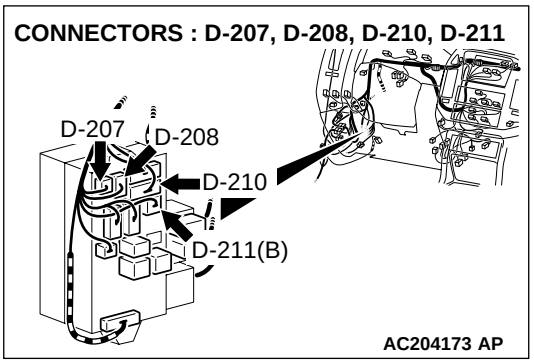
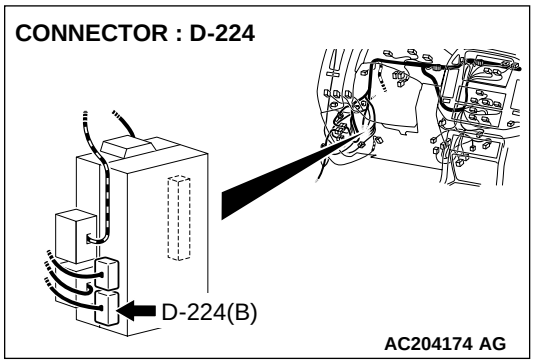
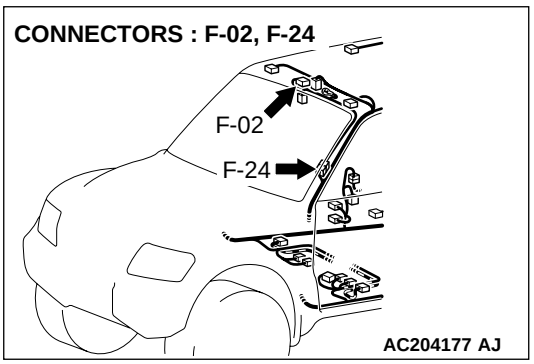










CIRCUIT OPERATION

- Power to the sunroof motor assembly is supplied through fusible links (1) and (4).
- When the ignition switch (IG2) signal is on, the sunroof motor assembly is ready to operate.

TECHNICAL DESCRIPTION (COMMENT)

The power supply circuit or the communication circuit to the sunroof motor assembly or the sunroof motor assembly may be defective.

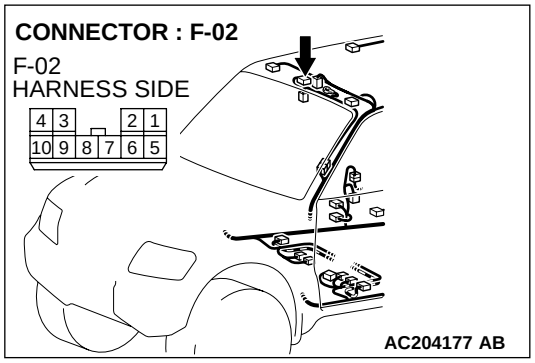
TROUBLESHOOTING HINTS

- 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

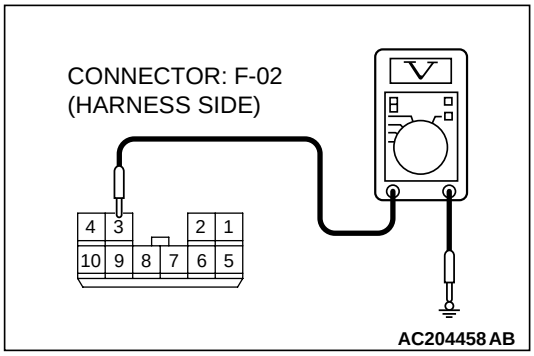
DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

STEP 1. Check the fusible link (1) line of power supply circuit to the sunroof motor assembly. Test at sunroof motor assembly connector F-02.



(1) Disconnect sunroof motor assembly connector F-02 and measure the voltage available at the wiring harness side of the connector.

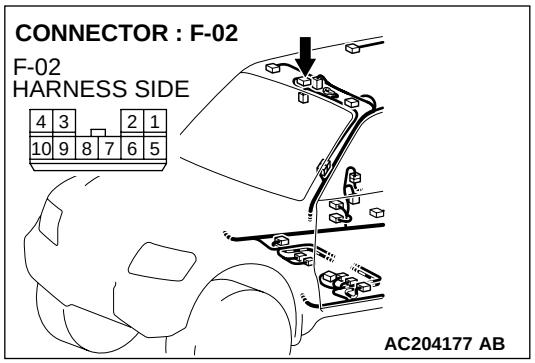


(2) Measure the voltage between terminal 3 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 4.
NO : Go to Step 2.

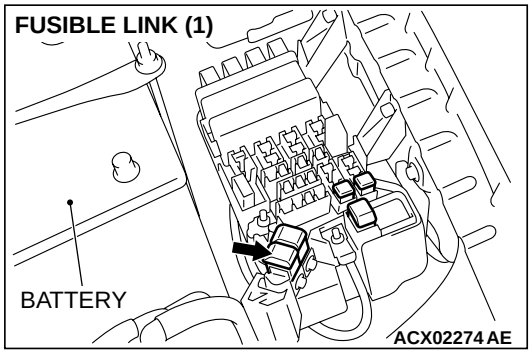
STEP 2. Check sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

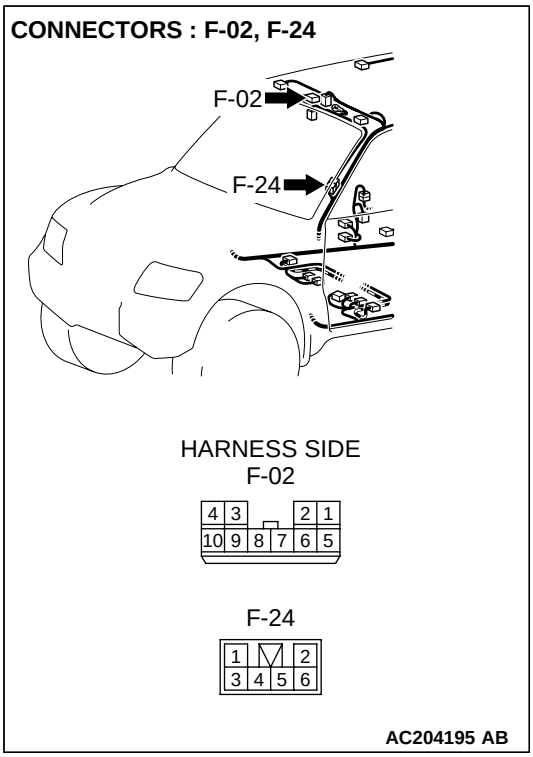


Q: Is sunroof motor assembly connector F-02 in good condition?

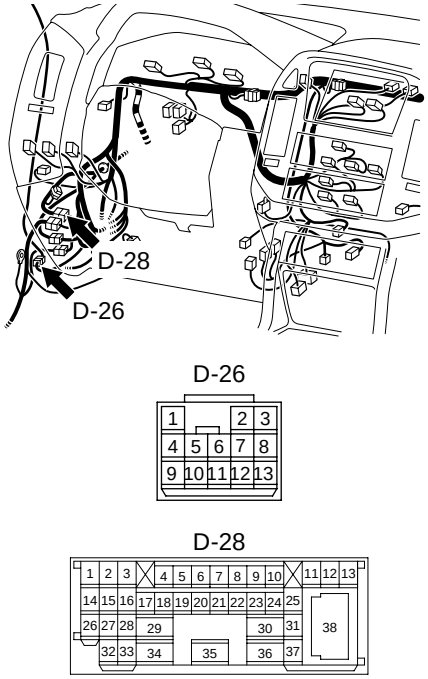
YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

STEP 3. Check the wiring harness between sunroof motor assembly connector F-02 (terminal 3) and fusible link (1).





CONNECTORS : D-26, D-28



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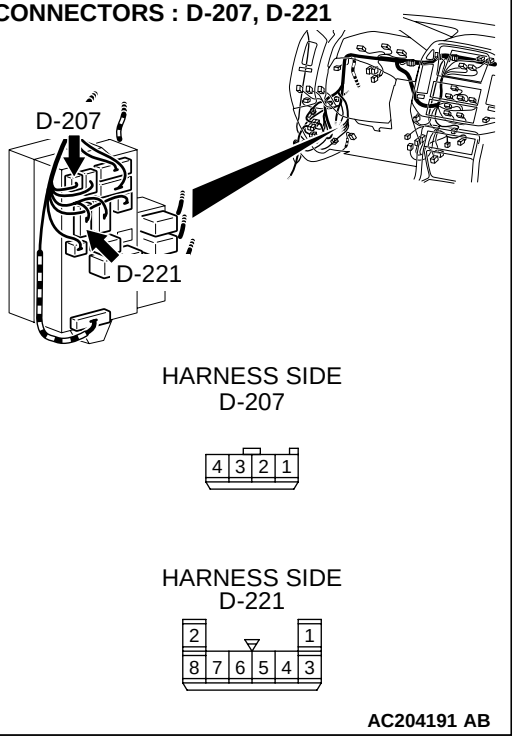
CONNECTORS : D-207, D-221



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NOTE: Also check junction block connectors D-207, D-221, intermediate connectors D-26, D-28 and F-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors D-207, D-221, intermediate connectors D-26, D-28 or F-24 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

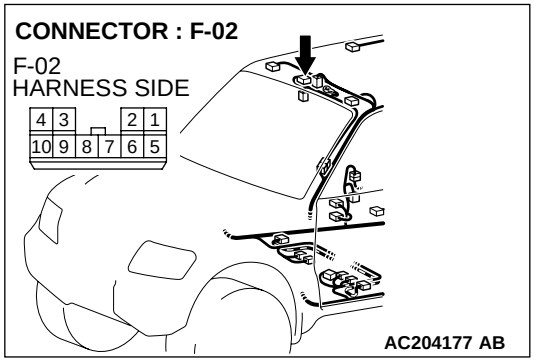
Q: Is the wiring harness between sunroof motor assembly connector F-02 (terminal 3) and fusible link (1) in good condition?

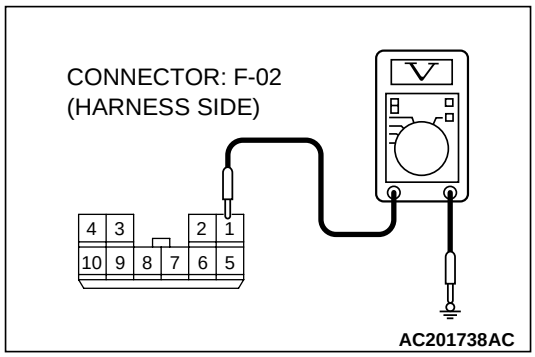
YES : No action is necessary and testing is complete.

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

STEP 4. Check the fusible link (4) line of power supply circuit to the sunroof motor assembly. Test at sunroof motor assembly connector F-02.

(1) Disconnect sunroof motor assembly connector F-02 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 be approximately 12 volts (battery positive voltage).

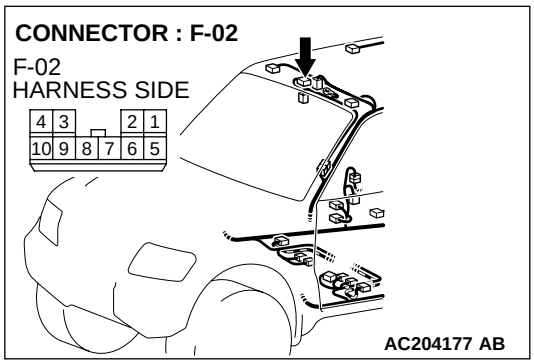
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 7.
NO : Go to Step 5.

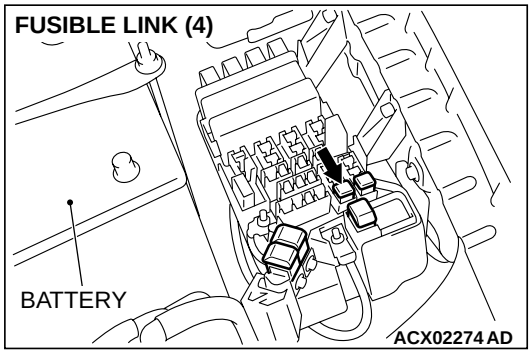
STEP 5. Check sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

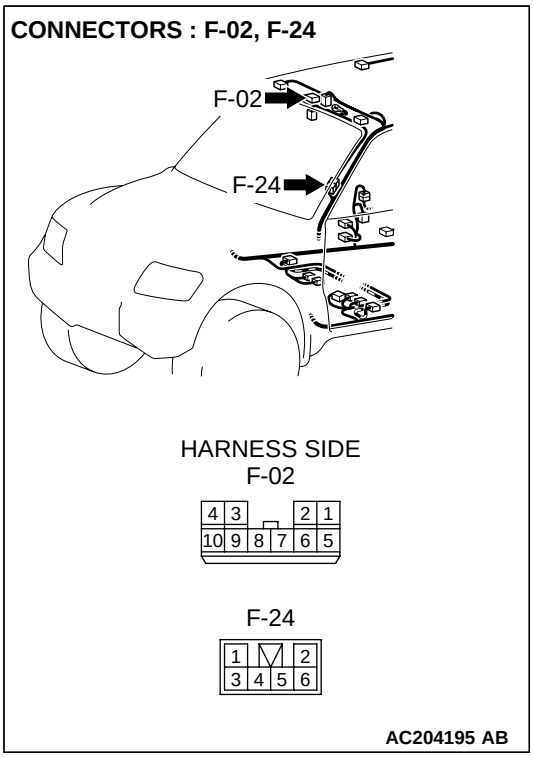
Q: Is sunroof motor assembly connector F-02 in good condition?

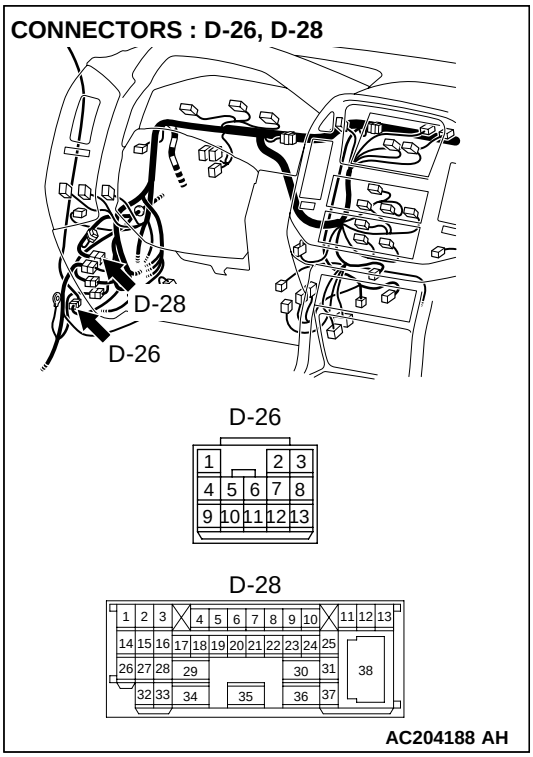
YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.



STEP 6. Check the wiring harness between sunroof motor assembly connector F-02 (terminal 1) and fusible link (4).







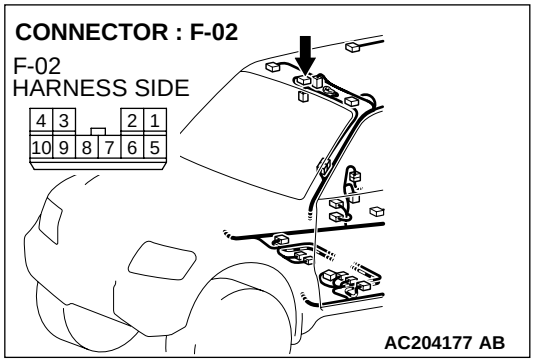
NOTE: Also check intermediate connectors D-26, D-28 and F-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-26, D-28 or F-24 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector F-02 (terminal 1) and fusible link (4) in good condition?

YES : No action is necessary and testing is complete.

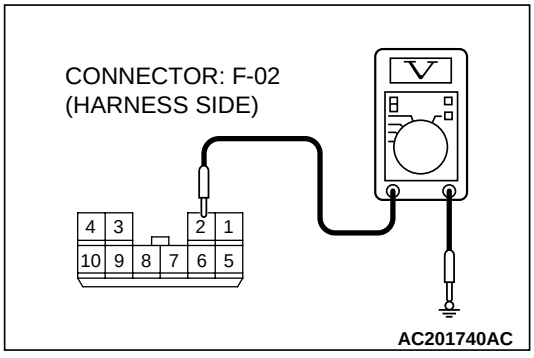
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

STEP 7. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Test at sunroof motor assembly connector F-02.



(1) Disconnect sunroof motor assembly connector F-02 and measure the voltage available at the wiring harness side of the connector.

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

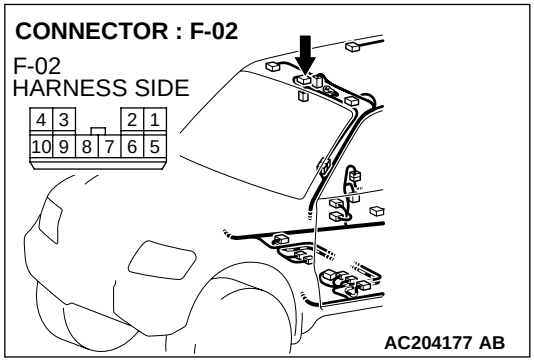


(3) Measure the voltage between terminal 2 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 10.

NO : Go to Step 8.



STEP 8. Check sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

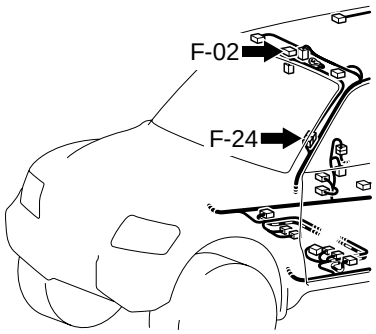
Q: Is sunroof motor assembly connector F-02 in good condition?

YES : Go to Step 9.

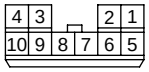
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

STEP 9. Check the wiring harness between sunroof motor assembly connector F-02 (terminal 2) and ignition switch (IG2).

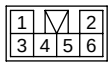
CONNECTORS : F-02, F-24



HARNESS SIDE
F-02

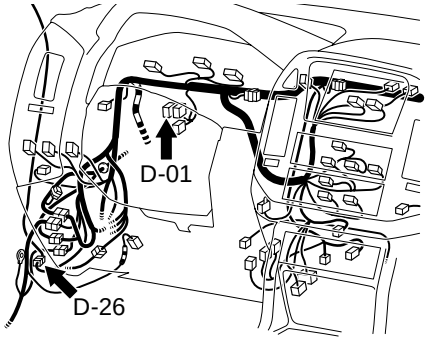


F-24



AC204195 AB

CONNECTORS : D-01, D-26



D-01

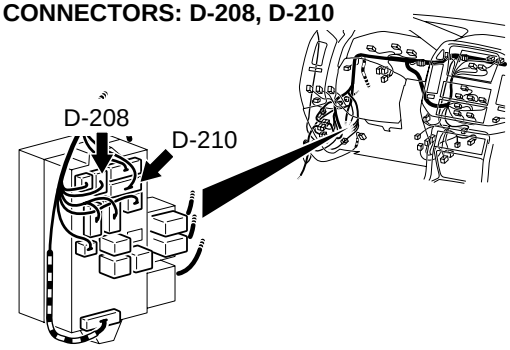
1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33

D-26

1			2	3
4	5	6	7	8
9	10	11	12	13

AC204188 AB

CONNECTORS: D-208, D-210



HARNESS SIDE
D-208

2			1
6	5	4	3

HARNESS SIDE
D-210

5	4	3						2	1	
13	12	11	10	9	8	7	6			

AC204191 AC

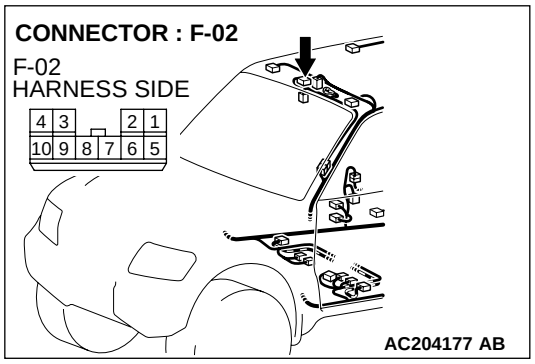
NOTE: Also check junction block connectors D-208, D-210, intermediate connectors D-01, D-26 and F-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-208, D-210, intermediate connectors D-01, D-26 or F-24 is damaged, repair or replace 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 F-02 (terminal 2) and the ignition switch (IG2) in good condition?

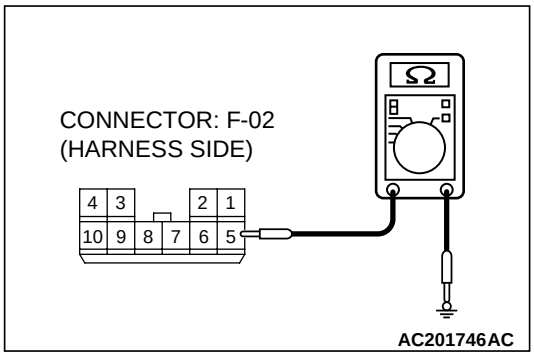
YES : No action is necessary and testing is complete.

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. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

STEP 10. Check the ground circuit to the sunroof motor assembly. Test at sunroof motor assembly connector F-02.



(1) Disconnect sunroof motor assembly connector F-02 and measure the resistance available at the wiring harness side of the connector.

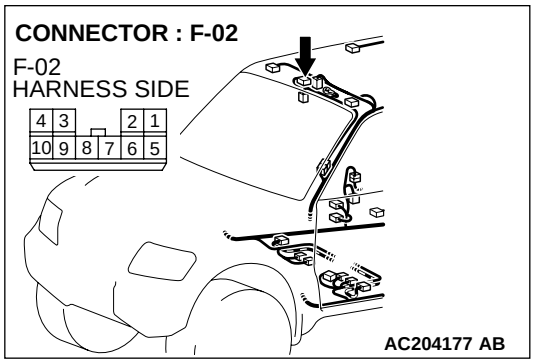


(2) Measure the resistance value between terminal 5 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 13.
NO : Go to Step 11.

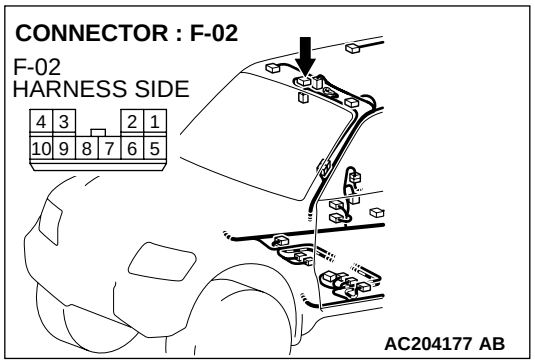
STEP 11. Check sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is sunroof motor assembly connector F-02 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. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

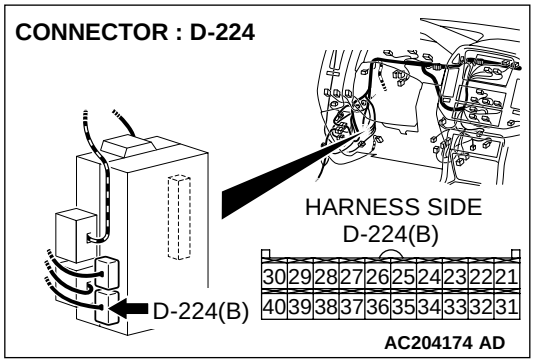
STEP 12. Check the wiring harness between sunroof motor assembly connector F-02 (terminal 5) and ground.

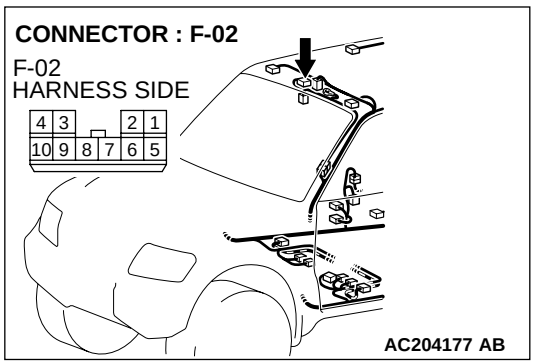


Q: Is the wiring harness between sunroof motor assembly connector F-02 (terminal 5) and ground in good condition?

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. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

TSB Revision





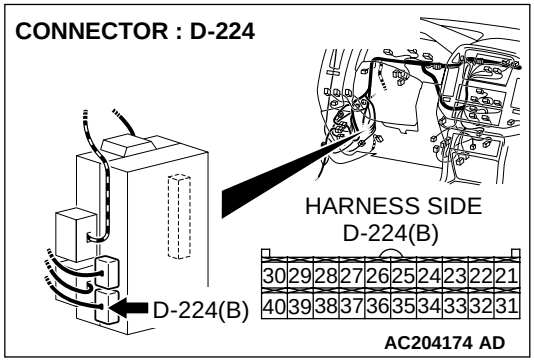
STEP 13. Check sunroof motor assembly connector F-02 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

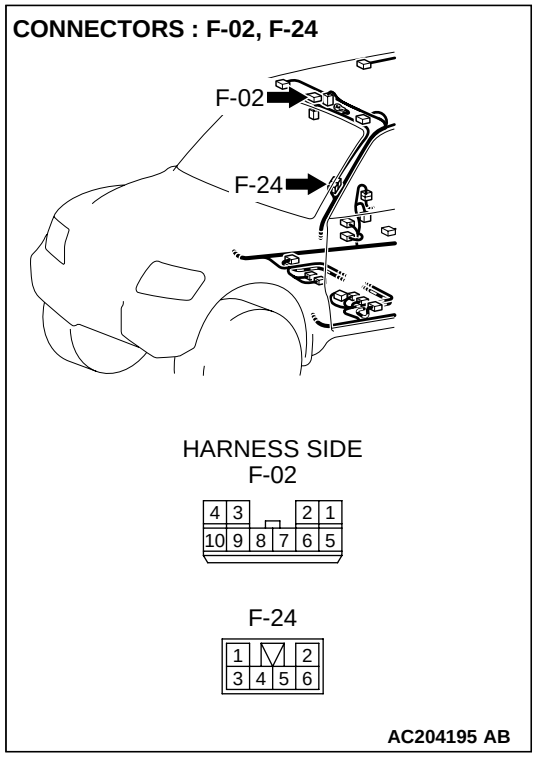
Q: Are sunroof motor assembly connector F-02 and ETACS-ECU connector D-224 in good condition?

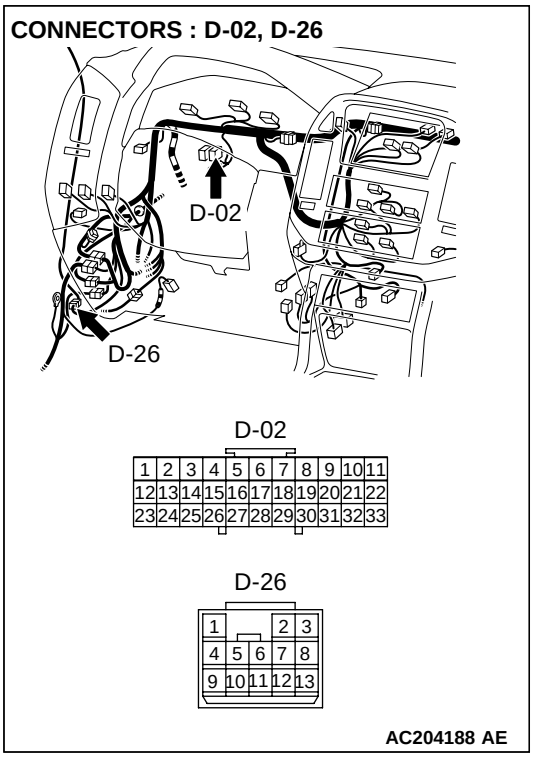
YES : Go to Step 14.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

STEP 14. Check the wiring harness between sunroof motor assembly connector F-02 (terminal 10) and ETACS-ECU connector D-224 (terminal 21).







NOTE: Also check intermediate connectors D-26, F-24 and joint connector D-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-26, F-24 or joint connector D-02 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 F-02 (terminal 10) and ETACS-ECU connector D-224 (terminal 21) 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. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

STEP 15. Replace the ECU.

(1) Replace the sunroof motor assembly.
(2) The system should communicate with the sunroof motor assembly normally.

Q: Can the system communicate with the sunroof motor assembly?

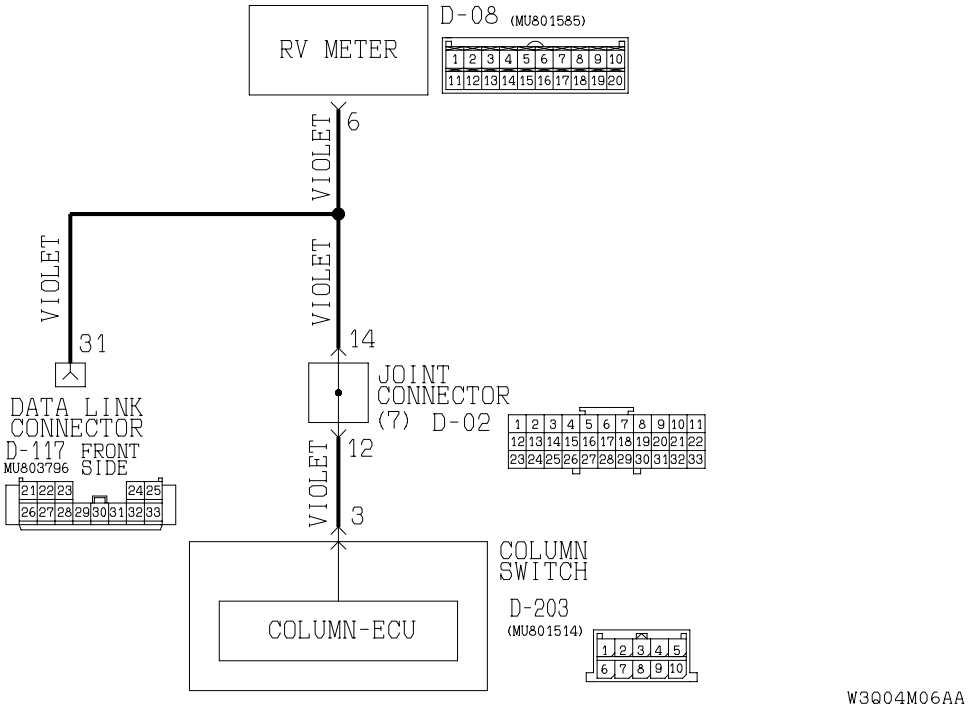
YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

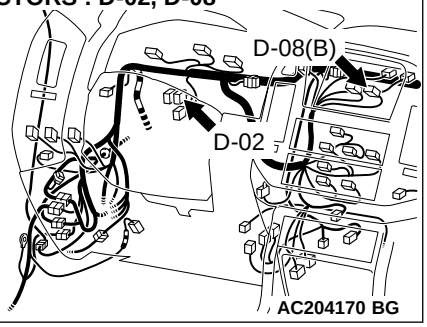
INSPECTION PROCEDURE A-6: Communication with the RV meter is not possible.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details of how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

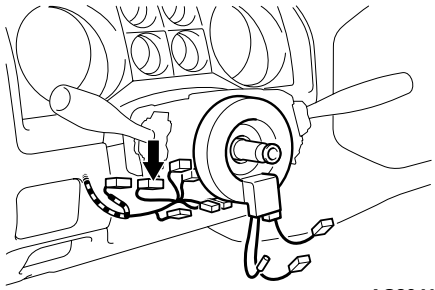
RV Meter and SWS Communication Circuit



CONNECTORS : D-02, D-08



CONNECTOR : D-203



TECHNICAL DESCRIPTION (COMMENT)

The RV meter or its power supply circuit or communication circuit may be defective.

TROUBLESHOOTING HINTS

- The RV meter 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:

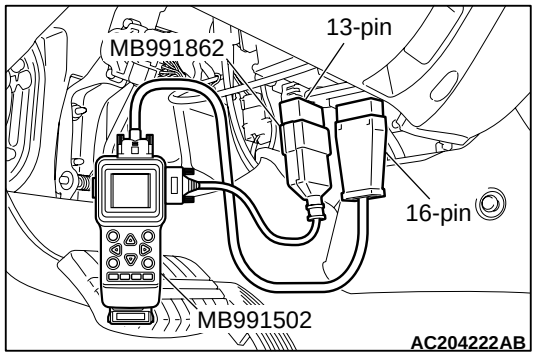
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the column-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "COLUMN ECU" menu.

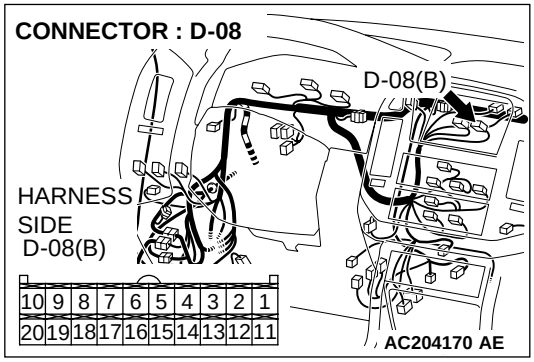
Q: Is "OK" displayed on the "COLUMN ECU" menu?

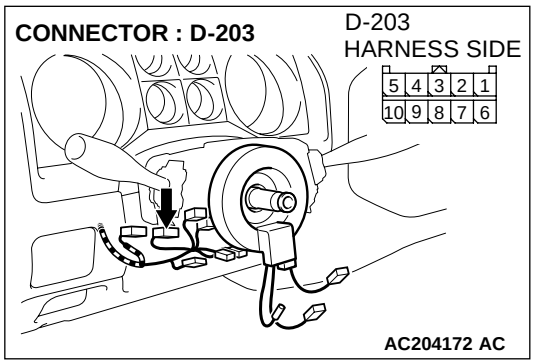
YES : Go to Step 2.
NO : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is impossible P.54Bb-25."

STEP 2. Check the RV meter.

Q: Does the RV meter work normally?

YES : Go to Step 3.
NO : Carry out troubleshooting for the RV meter first. Refer to GROUP 54A, RV meter P.54A-189.



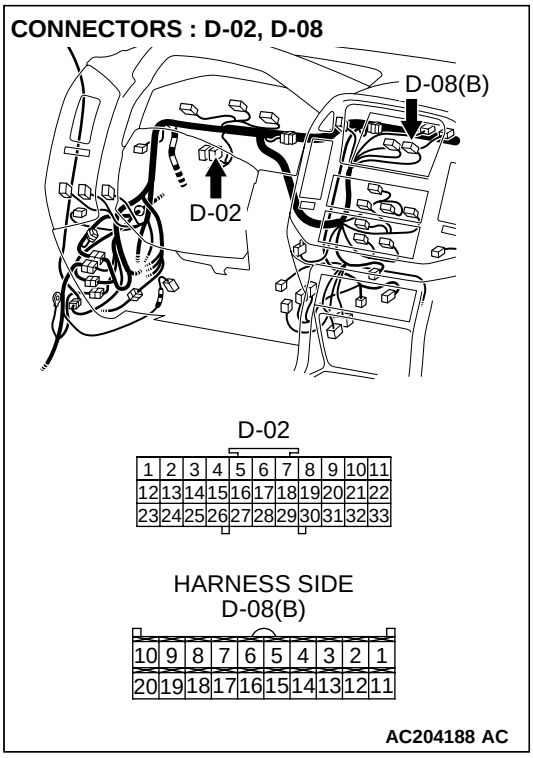


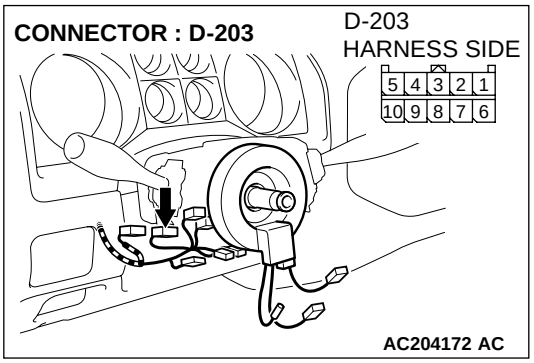
STEP 3. Check RV meter connector D-08 and column switch connector D-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are RV meter connector D-08 and column switch connector D-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 system should communicate with the RV meter normally.





STEP 4. Check the wiring harness between RV meter connector D-08 (terminal 6) and column switch connector D-203 (terminal 3).

NOTE: Also check joint connector D-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector D-02 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 RV meter connector D-08 (terminal 6) and column switch connector D-203 (terminal 3) in good condition?

YES : Replace the RV meter. The system should communicate with the RV meter 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 system should communicate with the RV meter normally.

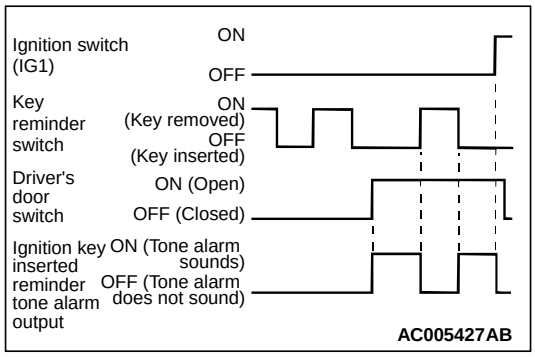
TONE ALARM

GENERAL DESCRIPTION CONCERNING TONE ALARM

M1549021000081

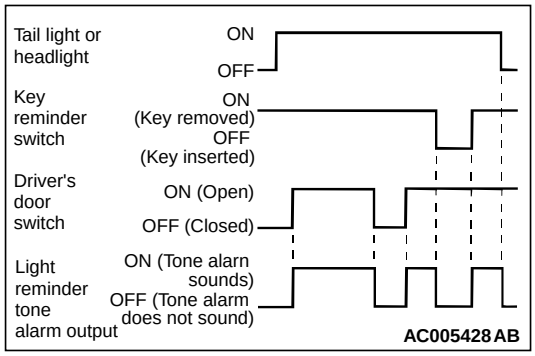
The ECU related to the alarm function types and various control functions are as follows.

FUNCTION	CONTROL ECU
Ignition key reminder tone alarm function	ETACS-ECU
Light reminder tone alarm function	ETACS-ECU, column switch
Seat belt tone alarm function	ETACS-ECU
RV meter operating sound function	ETACS-ECU, RV meter



Ignition key reminder tone alarm function

When the driver's door is opened with the ignition key inserted in the ignition key cylinder (ignition switch is in the OFF position) the tone alarm sounds intermittently (horning sound) to indicate that the ignition key has not been removed.

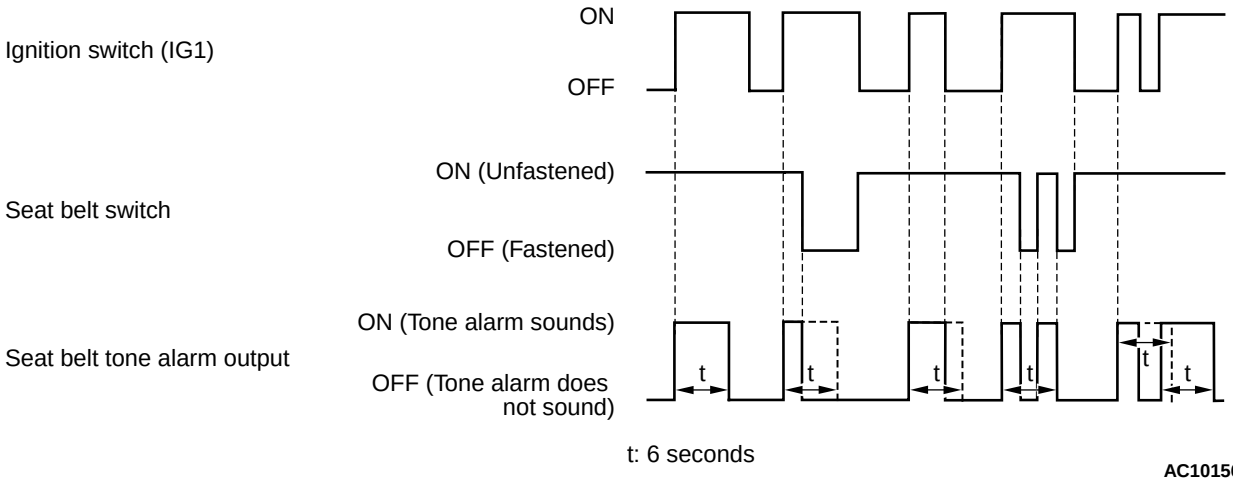


Light reminder tone alarm function

When the taillight or headlight is ON, if the ignition key is removed and the driver's door is opened, a tone alarm will sound continuously to warn that the light is illuminated. However, if the taillight or headlight has been turned off by the headlight automatic-shutdown function, the tone alarm will not sound.

Seat belt tone alarm function

When the ignition switch is turned to ON position without fastening the driver's seat belt (driver's seat belt switch off), the tone alarm will sound for approximately six seconds to warn the driver to fasten the seat belt. When the driver's seat belt are fastened or ignition switch is turned to OFF position, the tone alarm will stop sounding.

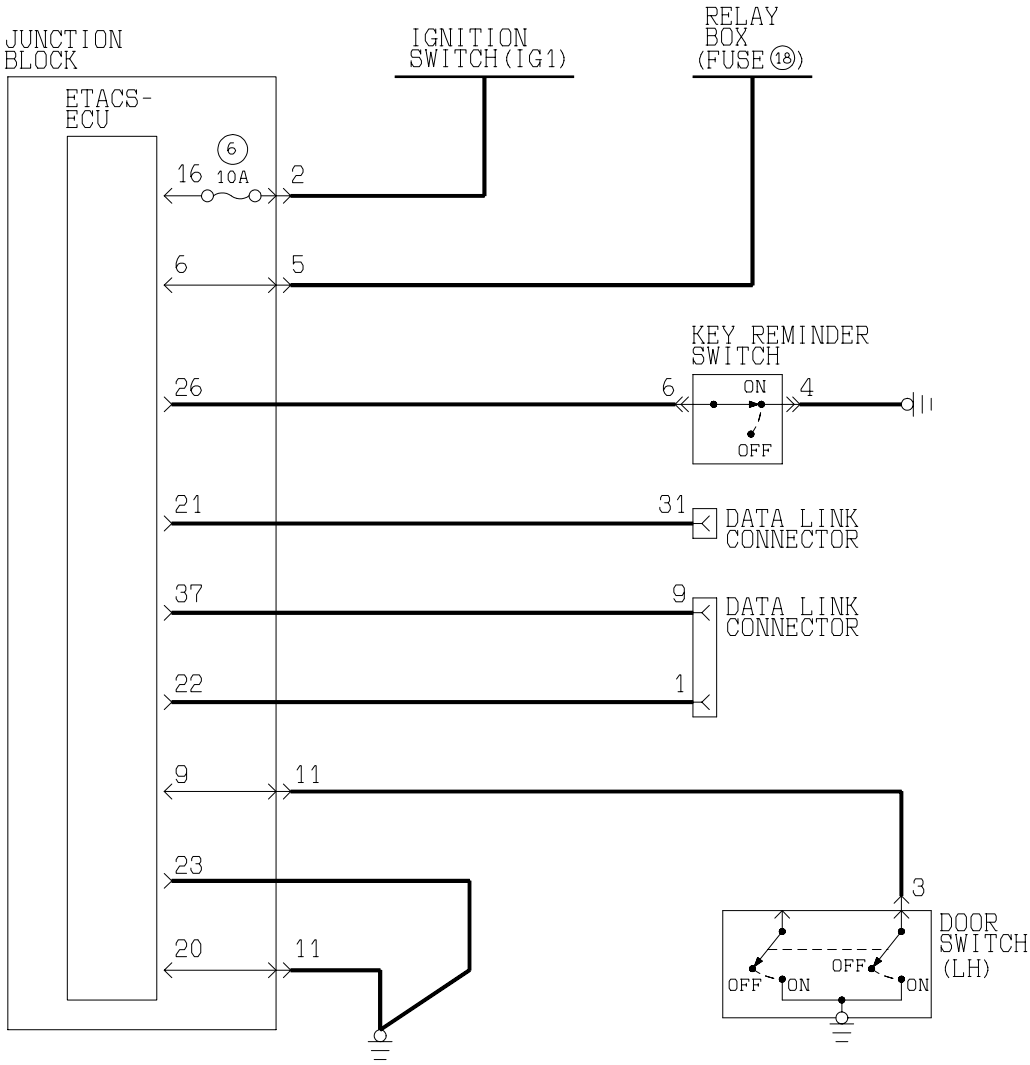


RV meter operating sound function

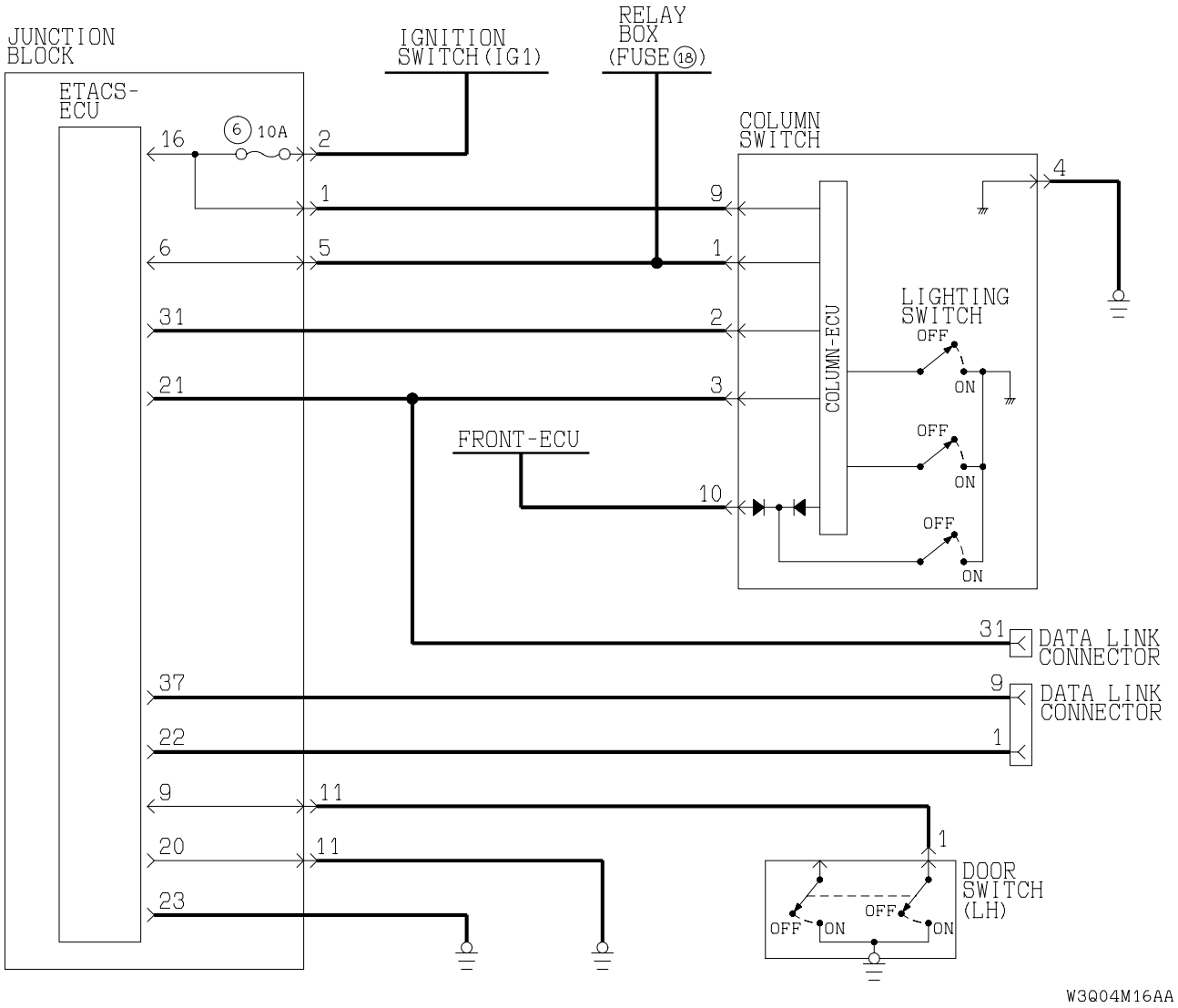
When tone alarm sounding is requested from the RV meter, the ETACS-ECU activates the built-in tone alarm. The RV meter will "beep" when adjusting the brightness level, only with the ignition key in the "ACC" position.

TSB Revision

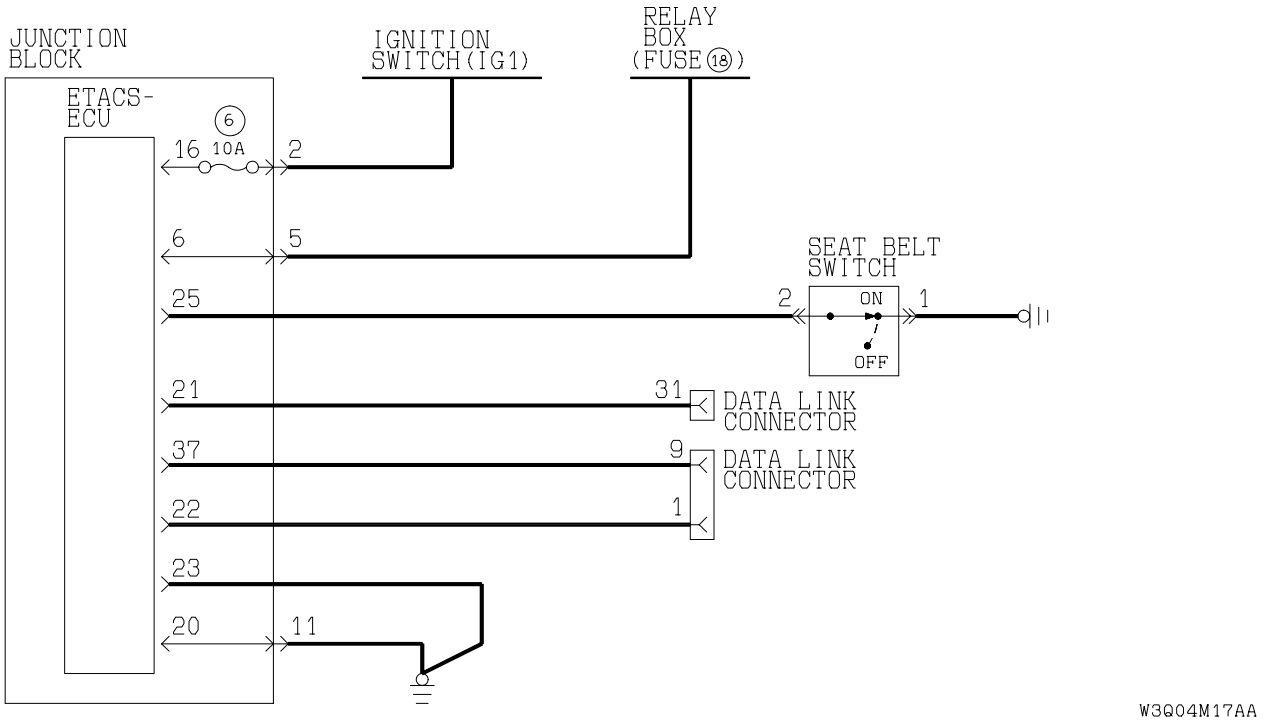
General circuit diagram for Ignition key reminder tone alarm function



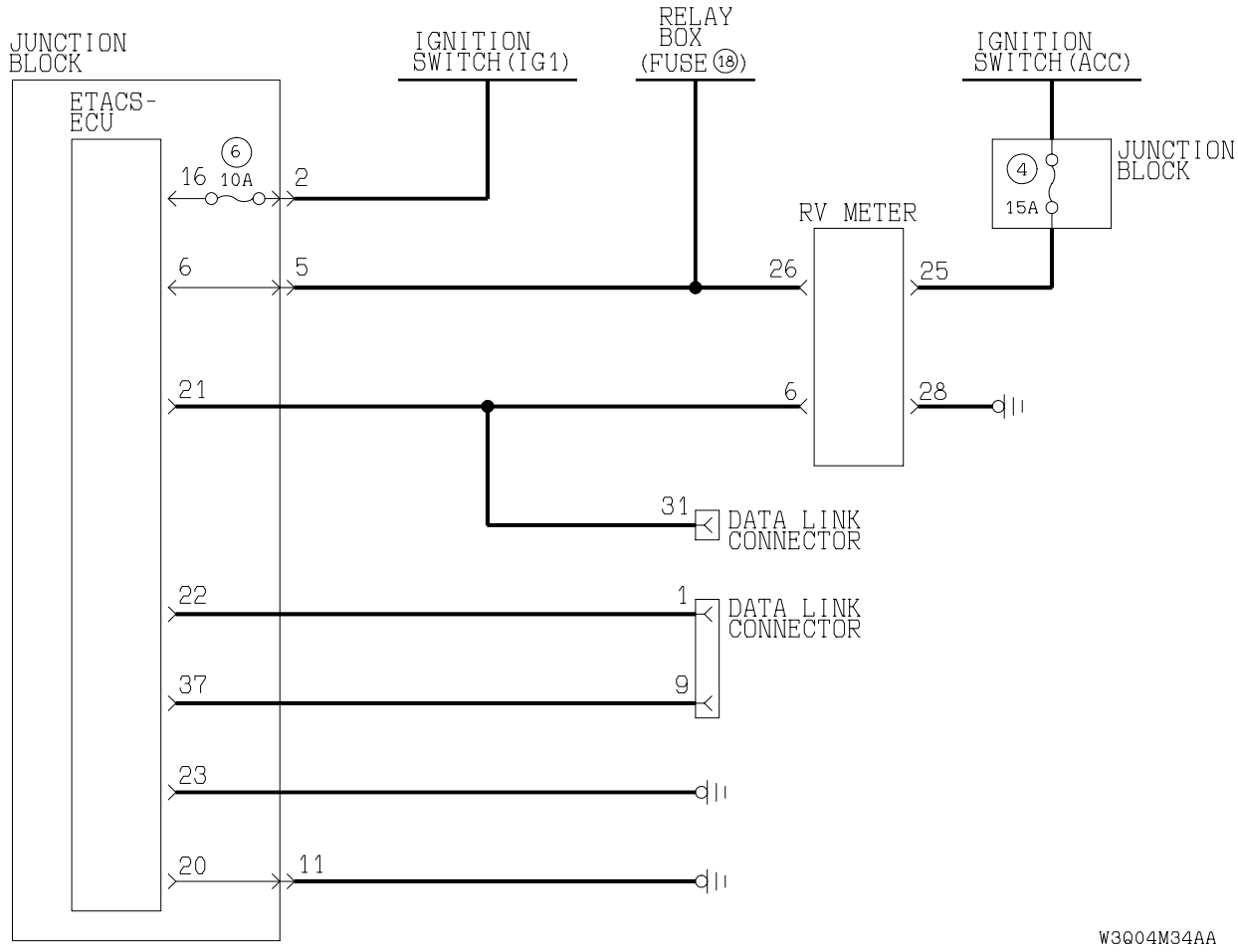
General circuit diagram for light reminder tone alarm function



General circuit diagram for seat belt tone alarm function



General circuit diagram for RV meter operating sound function

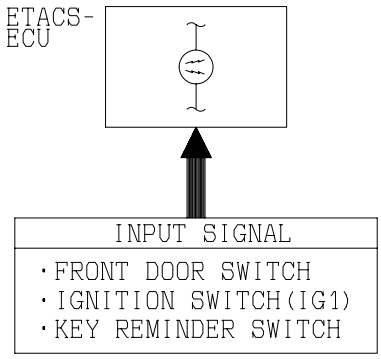


TSB Revision

INSPECTION PROCEDURE B-1: Tone Alarm: Ignition key reminder tone alarm function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Ignition Key Reminder Tone Alarm Function



CIRCUIT OPERATION

The ETACS-ECU operates the ignition key reminder tone alarm function (sounds the tone alarm intermittently), based on input signals from the following switches:

- Ignition switch (IG1): OFF
- Key reminder switch: OFF
- Driver's door switch: ON

The ETACS-ECU operates the ignition key reminder tone alarm function (sounds the tone alarm intermittently) if any of the following conditions are satisfied:

- Ignition switch: LOCK position (key inserted)
- Driver's door: OPEN

TECHNICAL DESCRIPTION (COMMENT)

If the function does not work normally, the input circuit system from the switches or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The front door switches may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

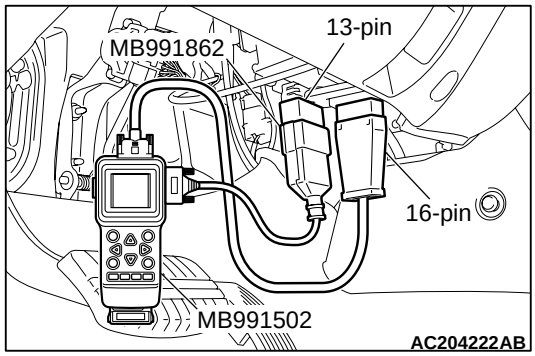
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

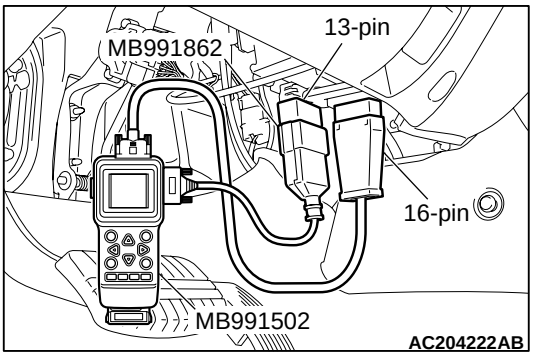
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



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: OFF (key inserted)
- Driver's door: open
- Front passenger's door: closed

Operate scan tool MB991502 according to the procedure below to display "KEY RMND. ALM."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "BUZZER."
6. Select "KEY RMND. ALM."

Check that normal conditions are displayed on the items described in the table below.

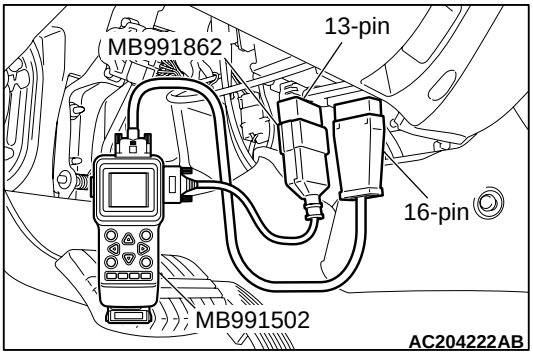
NOTE: The scan tool display changes when the driver's or the front passenger's door is opened. If any of the doors is open, the system can not be checked correctly.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	OFF
ITEM 32	FRONT DOOR SW	ON
ITEM 43	BUZZER	ON

Q: Are normal conditions displayed on the "IG SW (IG1)", "FRONT DOOR SW" and "BUZZER"?

YES : Replace the ETACS-ECU. The ignition key reminder tone alarm function should now work normally.

NO :
- Normal condition is not displayed on the "IG SW (IG1)": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."
- Normal condition is not displayed on the "FRONT DOOR SW": Refer to Inspection Procedure O-5 "ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch P.54Bc-23."
- Normal condition is not displayed on the "BUZZER": Go to Step 3.



STEP 3. Check the input signal (by using the pulse check mode of the monitor.)

Check the input signals from the key reminder switch.
Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

- Check whether scan tool MB991502 sounds or not when the ignition key is removed and reinserted.

Q: Does scan tool MB991502 sound when the ignition key is removed and reinserted?

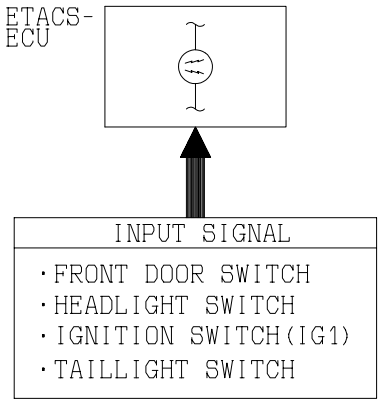
Yes : Replace the ETACS-ECU. The ignition key reminder tone alarm function should now work normally.

No : Refer to Inspection Procedure P-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54Bc-49."

INSPECTION PROCEDURE B-2: Tone Alarm: Light reminder tone alarm function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Light Reminder Tone Alarm Function



CIRCUIT OPERATION

The ETACS-ECU operates the light reminder tone alarm function intermittently according to the following signals:

- Ignition switch (IG1): OFF
- Front door switch (LH): ON
- Taillight switch: ON
- Headlight switch: ON

The ETACS-ECU operates the light reminder tone alarm function intermittently under the following conditions.

- Ignition switch: LOCK position (key removed)
- Driver's door: OPEN
- Lighting Switch: Tail or Head position

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TECHNICAL DESCRIPTION (COMMENT)
If the function does not work normally, the input circuit system from the switches or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

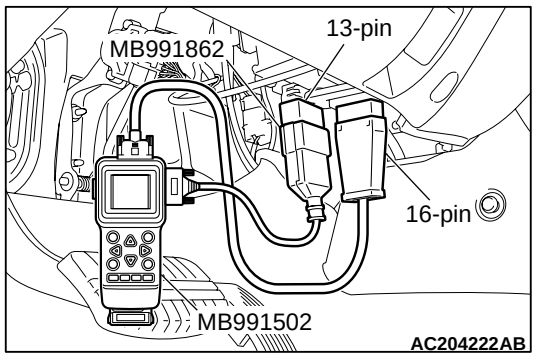
TROUBLESHOOTING HINTS
- The front door switches may be defective
- The column switch (turn-signal light and lighting switch) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

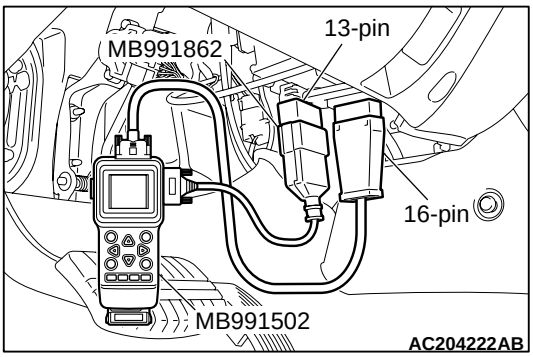
STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.
Check the following ECUs:
- ETACS-ECU
- Column-ECU

⚠ CAUTION
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

Q: Is "OK" displayed on both the "ETACS ECU" and "COLUMN ECU" menus?
"OK" are displayed for all the items : Go to Step 2.
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-16."



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: OFF (key removed)
- Lighting switch: TAIL or HEAD
- Driver's door: open
- Front passenger's door: closed

Operate scan tool MB991502 according to the procedure below to display "LGT MONI. ALRM."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "BUZZER."
6. Select "LGT MONI. ALRM."

Check that normal conditions are displayed on the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 00	HEADLIGHT SW	Either of items is ON
ITEM 01	TAILLIGHT SW	
ITEM 30	IG SW (IG1)	OFF
ITEM 32	FRONT DOOR SW	ON
ITEM 35	H/L AUTO-CUT	OFF
ITEM 43	BUZZER	ON

Q: Are normal conditions displayed for "HEADLIGHT SW", "TAILLIGHT SW", "IG SW IG1", "FRONT DOOR SW", "H/L AUTO-CUT" and "BUZZER"?

YES : Replace the ETACS-ECU. The light reminder tone alarm function should now work normally.

NO :

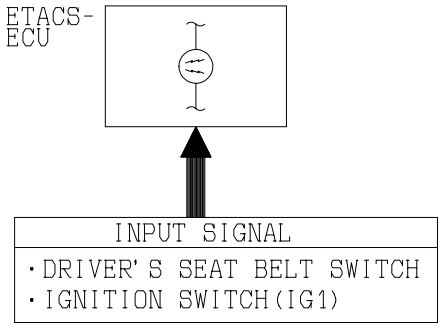
- Normal condition is not displayed on the "HEADLIGHT SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the headlight switch P.54Bc-31."
- Normal condition is not displayed on the "TAILLIGHT SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the taillight switch P.54Bc-31."
- Normal condition is not displayed on the "IG SW IG1": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."
- Normal condition is not displayed on the "FRONT DOOR SW": Refer to Inspection Procedure O-5 "ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch P.54Bc-23."
- Normal condition is not displayed on the "H/L

AUTO-CUT": Refer to Inspection Procedure J-9 "Headlight automatic shutdown function does not work normally P.54Bb-373."
- Normal condition is not displayed on the "BUZZER": Replace the ETACS-ECU. The light reminder tone alarm function should now work normally.

INSPECTION PROCEDURE B-3: Tone Alarm: Seat belt tone alarm function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Seat Belt Tone Alarm Function



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CIRCUIT OPERATION

The ETACS-ECU operates the seat belt tone alarm function intermittently according to signals from the following switches:
- Ignition switch (IG1): ON
- Driver's seat belt switch: ON

The ETACS-ECU operates the seat belt tone alarm function intermittently under the following conditions:
- Ignition switch: ON or START
- Driver’s seat belt: UNFASTENED

TECHNICAL DESCRIPTION (COMMENT)

If the function does not work normally, the input circuit system from the switches or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- The driver's seat belt switch 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:

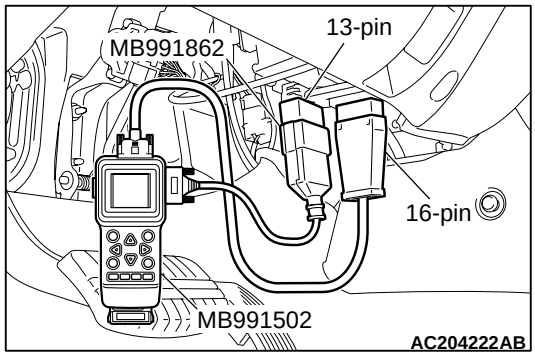
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

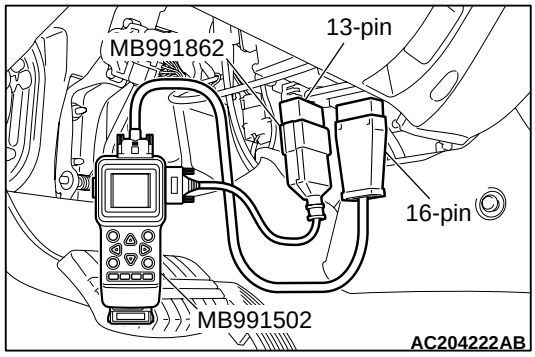
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) When the ignition switch is turned to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



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).

Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "DATA LIST."
5. Select "ETACS ECU."

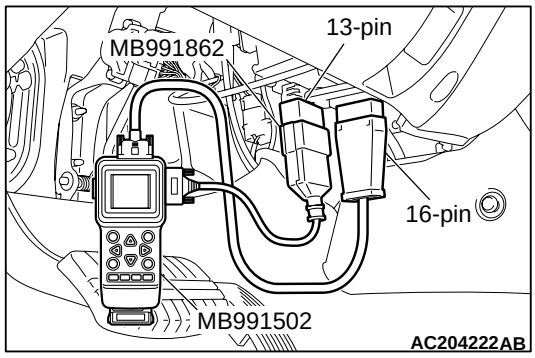
Check that normal conditions are displayed on the items described in the table below.

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

Q: Is normal condition displayed on the "IG SW (IG1)"?

YES : Go to Step 3.

NO : Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."



STEP 3. Check the input signal (by using the pulse check mode of the monitor.)

Check input signal from the driver's side seat belt switch.

Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

- When the driver's seat belt is unfastened, check if scan tool MB991502 sounds or not.

Q: Does scan tool MB991502 sound when the driver's side seat belt is unfastened?

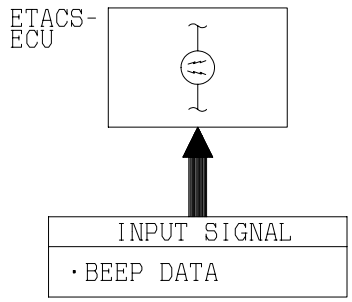
Yes : Replace the ETACS-ECU. Verify that the seat belt tone alarm function now works normally.

No : Refer to Inspection Procedure P-3 "ETACS-ECU does not receive any signal from the driver's side seat belt switch P.54Bc-57."

INSPECTION PROCEDURE B-4: Tone Alarm: RV meter operating sound function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

RV Meter Annunciation Function



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CIRCUIT OPERATION
The ETACS-ECU sound a tone alarm when the RV meter sends a sound request signal to the ECU.

TECHNICAL DESCRIPTION (COMMENT)
If this function does not work normally, the RV meter, the ETACS-ECU or their communication circuit may be defective.

TROUBLESHOOTING HINTS
- The RV meter 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

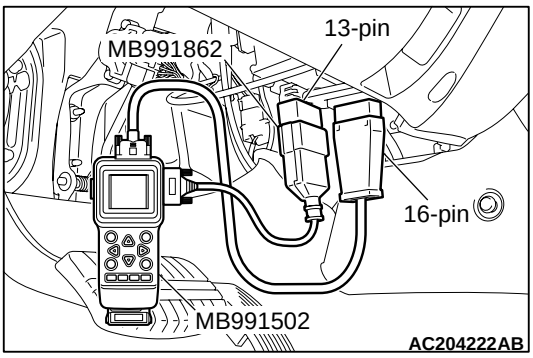
DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Check the RV meter.

Q: Does the RV meter work normally?

YES : Go to Step 2.
NO : Check the RV meter. Refer to GROUP 54A, RV meter P.54A-199.



STEP 2. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- RV meter

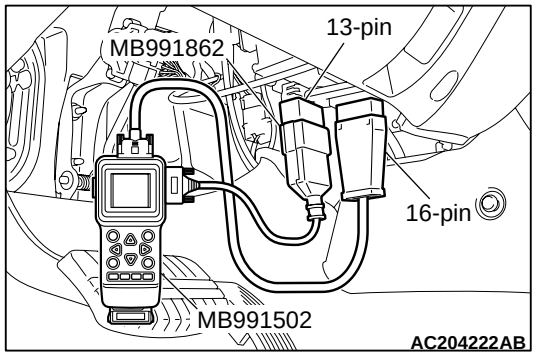
⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "ETACS ECU" and the "CENTER DISP." menus.

Q: Is "OK" displayed on both the "ETACS ECU" and "CENTER DISP." menu?

"OK" are displayed for all the items : Go to Step 3.
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."
"NG" is displayed on the "CENTER DISP." menu : Refer to Inspection procedure A-6 "Communication with RV meter is not possible P.54Bb-40."



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

Turn the ignition switch to the "ON" position to check the input signals from the following switches.

Operate scan tool MB991502 according to the procedure below to display "CENTR. DIS. ALM."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "BUZZER."
6. Select "CENTR. DIS. ALM."

When the RV meter display switch is operated, check that normal conditions are displayed on the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 43	BUZZER	ON
ITEM 60	beep data	ON (2 kHz)

Q: Are normal conditions displayed on the "BUZZER" and "beep data"?

YES : Replace the ETACS-ECU. Verify that the RV meter operating sound function works normally.

NO :
- Normal condition is not displayed on the "BUZZER": Replace the ETACS-ECU. Verify that the RV meter operating sound function works normally.
- Normal condition is not displayed on the "beep data": Refer to Inspection Procedure O-10 "ETACS-ECU does not receive signals from any control switches P.54Bc-46."

CENTRAL DOOR LOCKING SYSTEM

GENERAL DESCRIPTION CONCERNING THE CENTRAL DOOR LOCKING SYSTEM

M1549021100088

The following ECUs affect the functions and control of the central door locking system.

FUNCTION		CONTROL ECU
Door lock function	Operating the driver's or front passenger's door lock key cylinder	ETACS-ECU
	Operating the driver's or front passenger's door lock switch	
	Operating the driver's door inside lock knob	
Door unlock function	Operating the driver's door lock key cylinder	
	Operating the front passenger's door lock key cylinder	
	Operating the driver's or front passenger's door lock switch	
Forgotten key prevention function		

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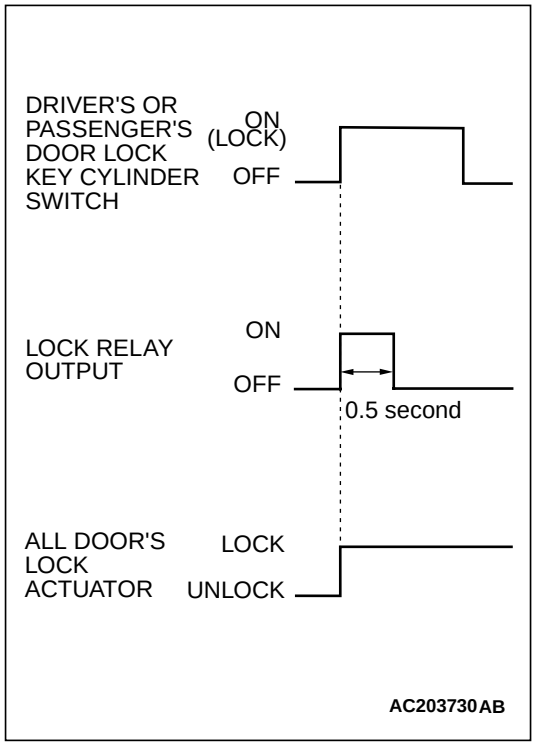
Door lock function

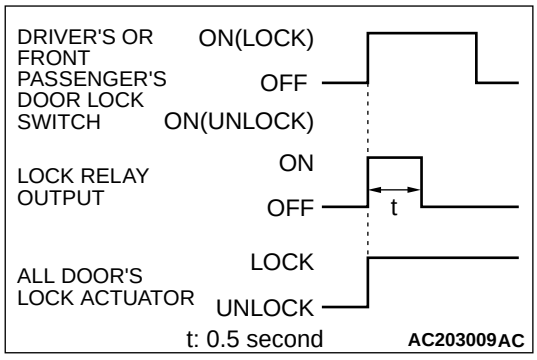
Operating the driver's or front passenger's door lock key cylinder

When you insert the ignition key to the driver's or front passenger's door lock key cylinder and turn the key clockwise to lock the door, the ETACS-ECU energizes its door lock relay for 0.5 second to activate all the door lock actuators. Then all the doors will be locked.



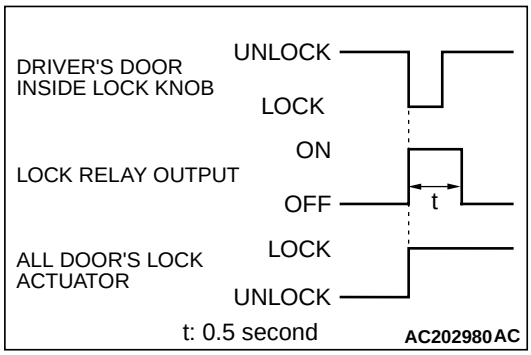
Operating the driver's or front passenger's door lock switch

When the door is locked by driver's or front passenger's door lock switch, the ETACS-ECU energizes its door lock relay for 0.5 second to activate all the door lock actuators. Then all the doors will be locked.

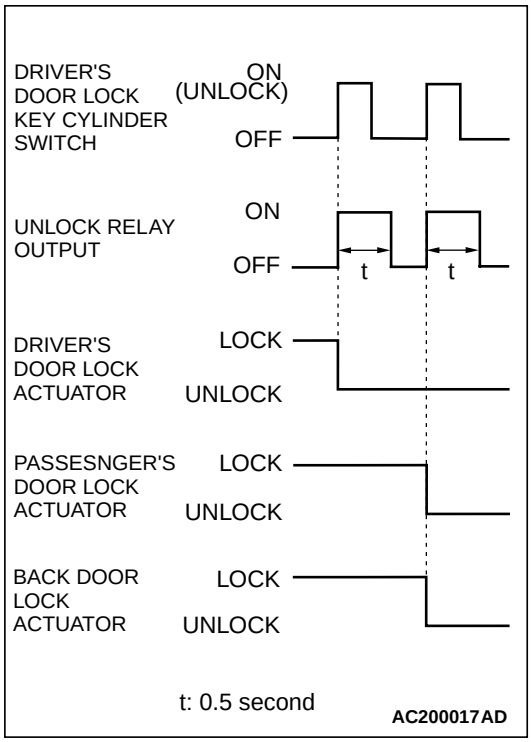


Operating the driver's door inside lock knob

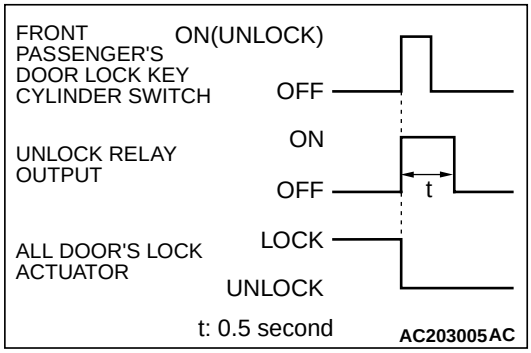
When the door is locked by driver's door inside lock knob, the ETACS-ECU energizes its door lock relay for 0.5 second to activate all the door lock actuators. Then all the doors will be locked.



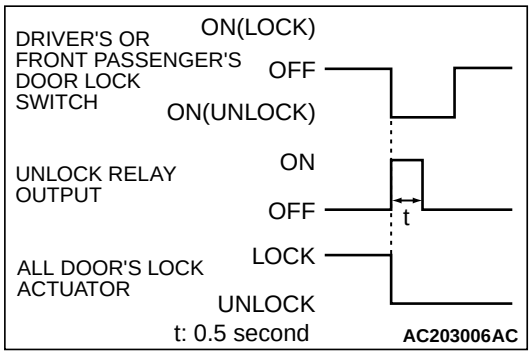
Door unlock function



Operating the driver's door lock key cylinder
When you insert the ignition key to the driver's door lock key cylinder and turn the key counterclockwise to unlock the door, the ETACS-ECU energizes its door unlock relay for 0.5 second to activate only the driver's door lock actuator. Then only the driver's door will be unlocked.
When you turn the key counterclockwise again, the ETACS-ECU energizes its door unlock relay for 0.5 second to activate all the door lock actuator. Then all the doors will be unlocked.



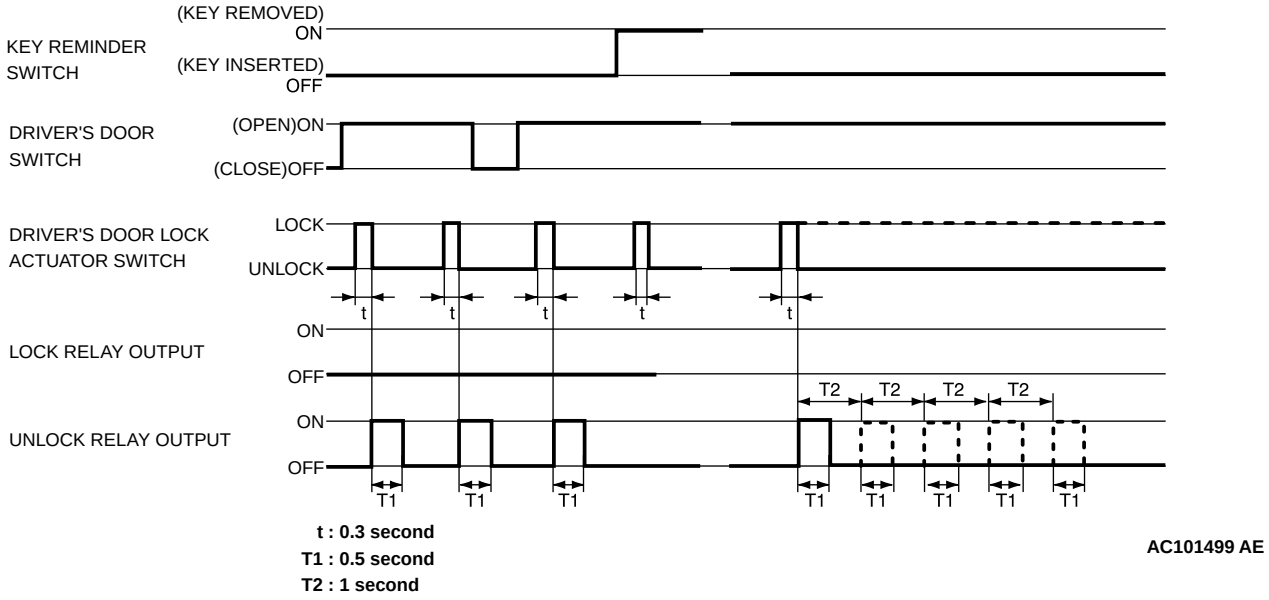
Operating the front passenger's door lock key cylinder
When you insert the ignition key to the front passenger's door lock key cylinder and turn the key counterclockwise to unlock the door, the ETACS-ECU energizes its door unlock relay for 0.5 second to activate all the door lock actuators. Then all the doors will be unlocked.



Operating the driver's or front passenger's door lock switch
When the door is unlocked by driver's or front passenger's door lock switch, the ETACS-ECU energizes its door unlock relay for 0.5 second to activate all the door lock actuators. Then all the doors will be unlocked.

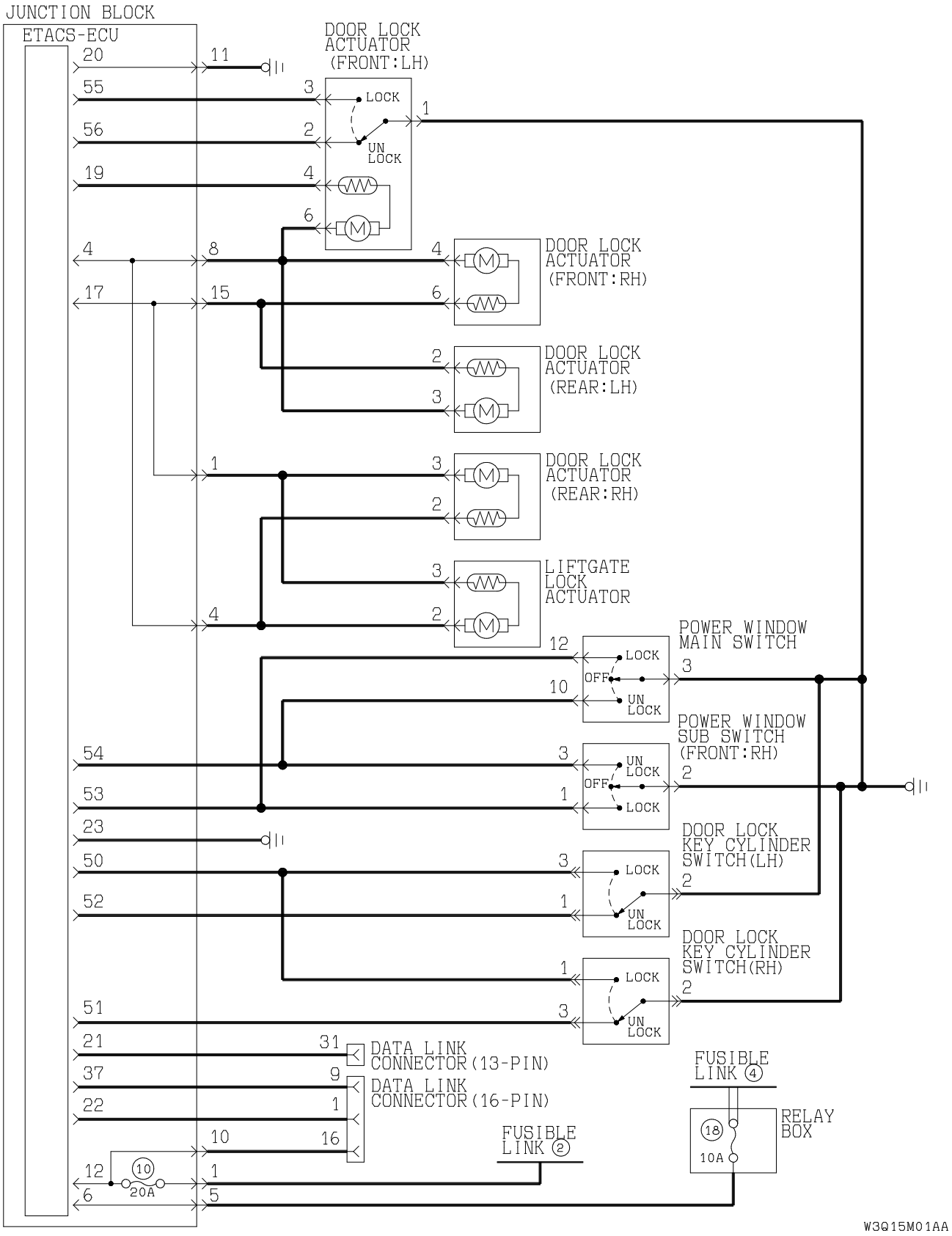
Forgotten Key Prevention Function

If the driver's door is opened with the ignition key inserted in the ignition key cylinder and then locked (i.e., the unlock switch integrated in the driver's door lock actuator is off, and the lock switch is on), the ETACS-ECU turns on the unlock relay for 0.5 second after approximately 0.3 second. This prevents the door from being locked unintentionally. If the system fails to unlock the door, the ETACS-ECU try to turn on the unlock relay five times in maximum for 0.5 second every one second.



NOTE: The dotted line indicates that the system is trying to turn on the unlock relay if the door can not be unlocked.

General circuit diagram for the central door locking system



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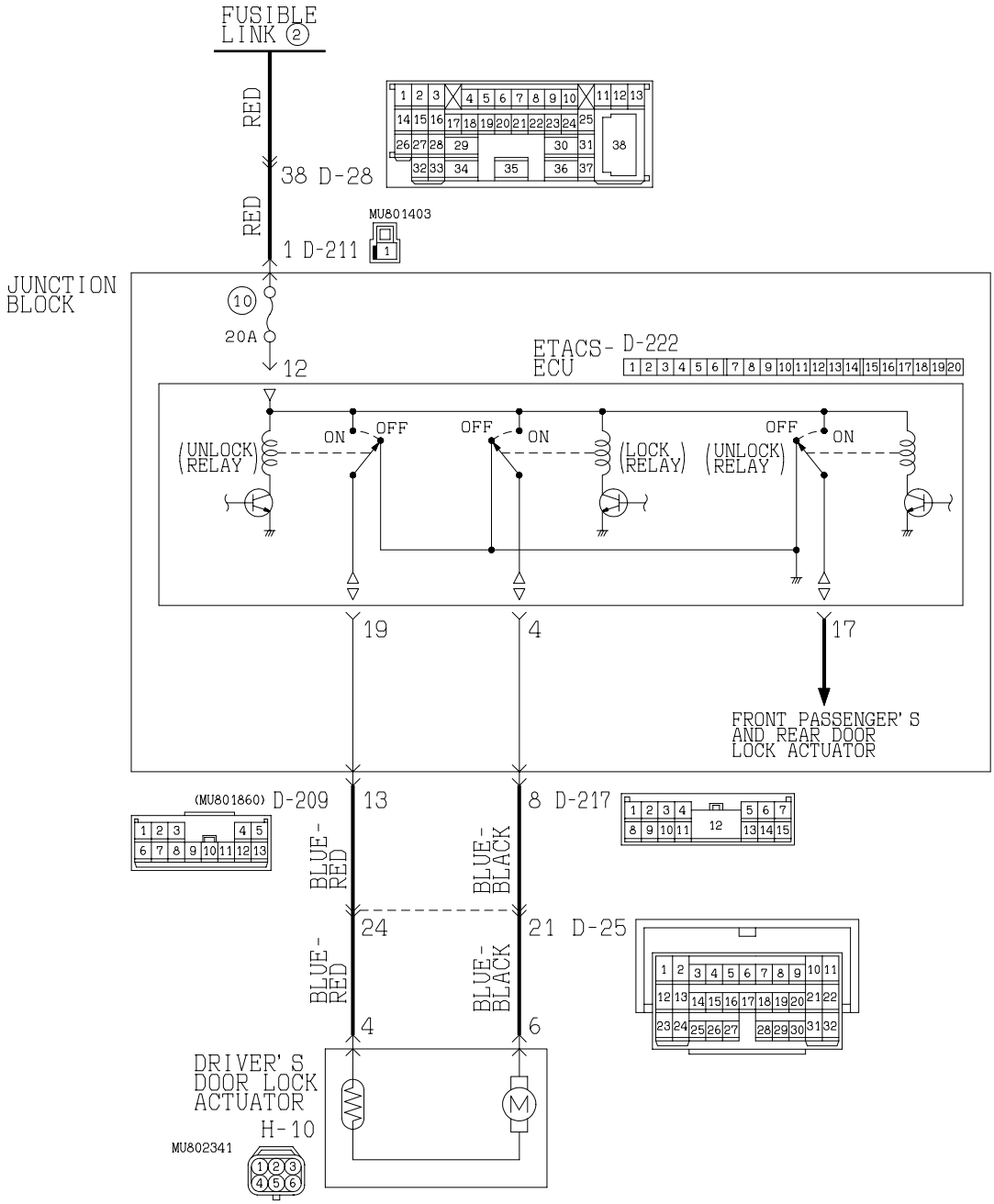
INSPECTION PROCEDURE C-1: Central Door Locking System: The central door lock system does not work at all.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Central Door Lock Power Supply Circuit



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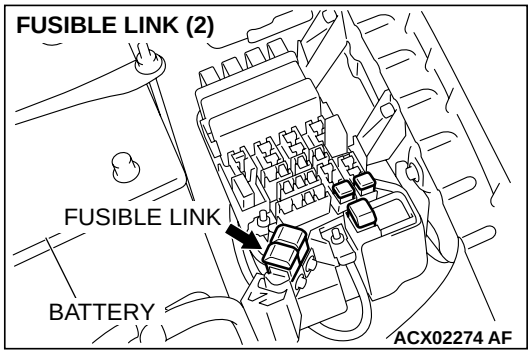
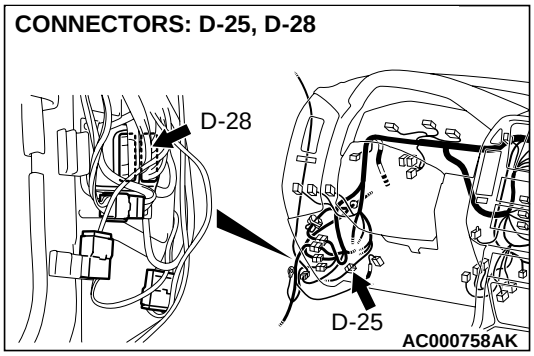
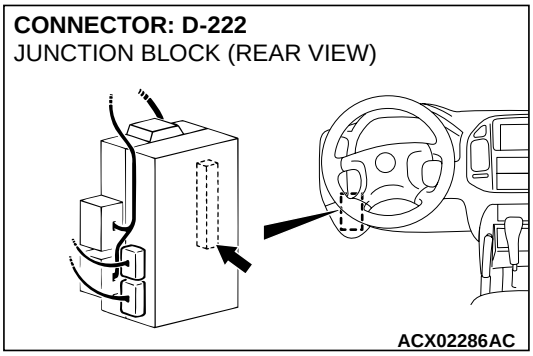
FUSIBLE LINK (2)



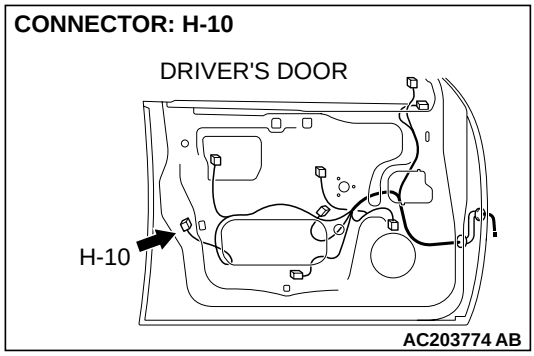
CONNECTORS: D-25, D-28



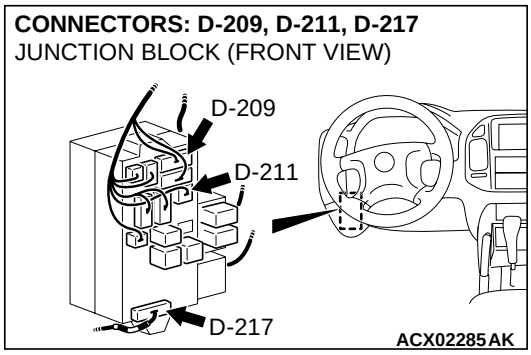
CONNECTOR: D-222
JUNCTION BLOCK (REAR VIEW)



CONNECTOR: H-10



CONNECTORS: D-209, D-211, D-217
JUNCTION BLOCK (FRONT VIEW)



CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

- 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:

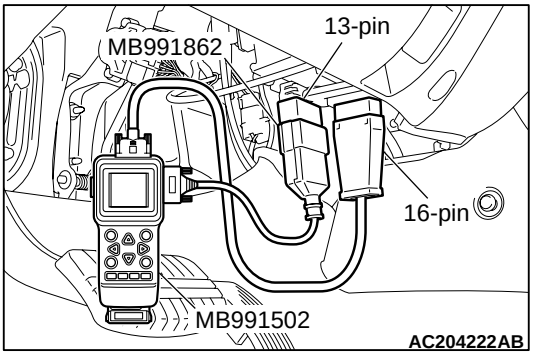
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502. Also connect SWS monitor kit MB991862 after turning on scan tool MB991502.



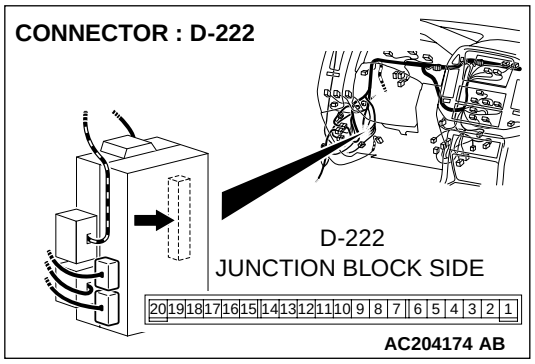
(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK".
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

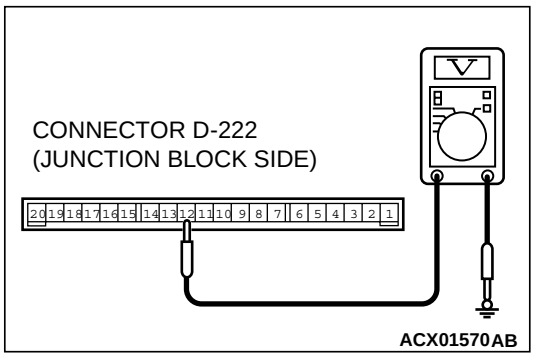
Q: Is "OK" displayed on the "ETACS ECU" menu?

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."

STEP 2. Check the battery power supply circuit to the ETACS-ECU. Test at ETACS-ECU connector D-222.

(1) Disconnect ETACS-ECU connector D-222, and measure at the junction block side.





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

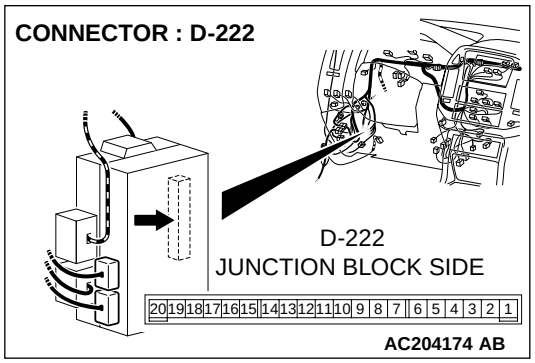
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 5.
NO : Go to Step 3.

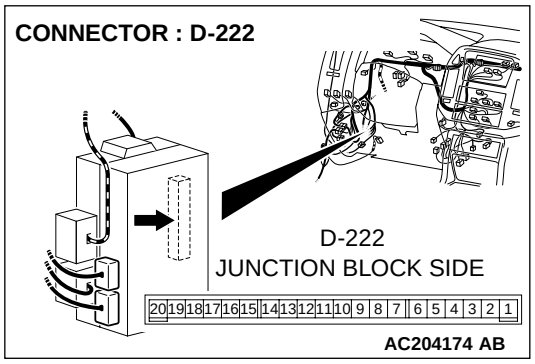
STEP 3. Check the ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

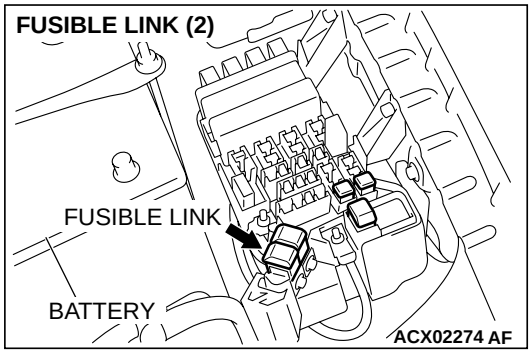
Q: Is the ETACS-ECU connector D-222 in good condition?

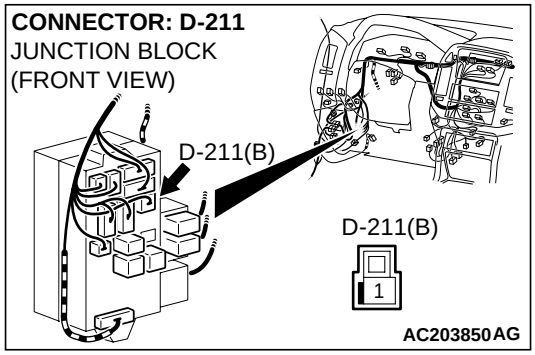
YES : Go to Step 4.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the central door locking system should now works normally.

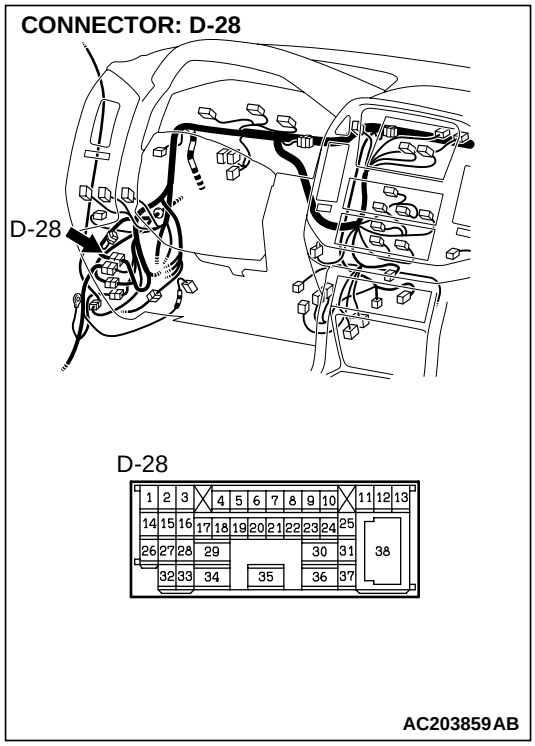


STEP 4. Check the wiring harness between the ETACS-ECU connector D-222 (terminal 12) and fusible link (2).







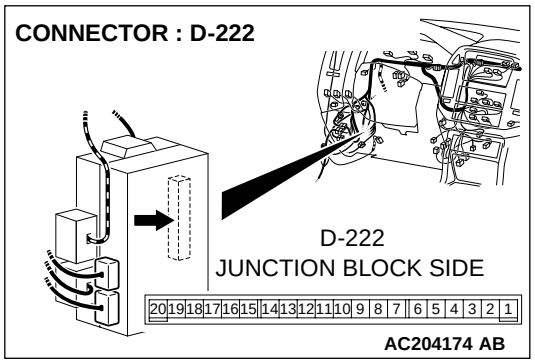


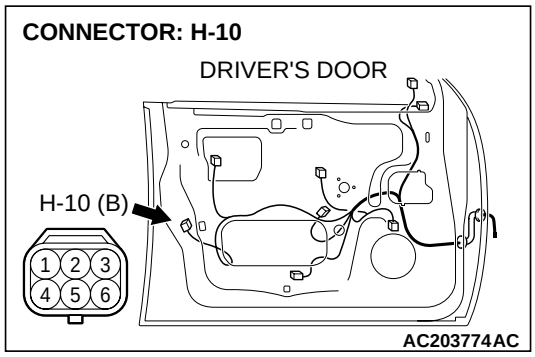
*NOTE: Also check junction block connector D-211 and intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-211 or intermediate connector D-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2**.*

Q: Is the wiring harness between ETACS-ECU connector D-222 (terminal 12) and fusible link (2) in good condition?

YES : No action is necessary and testing is complete.

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





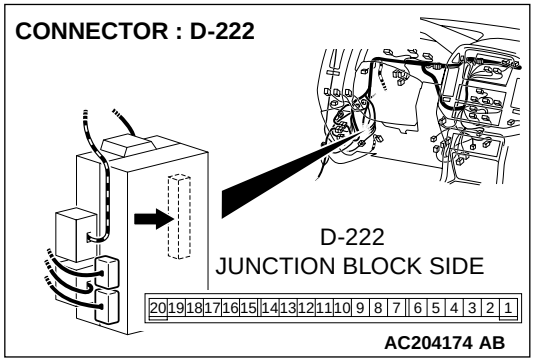
STEP 5. Check the ETACS-ECU connector D-222 and driver's door lock actuator connector H-10.

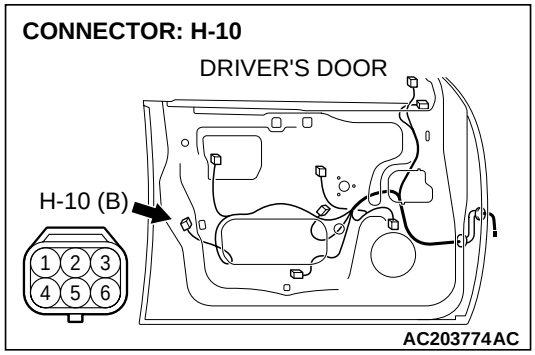
Q: Are ETACS-ECU connector D-222 and driver's door lock actuator connector H-10 in good condition?

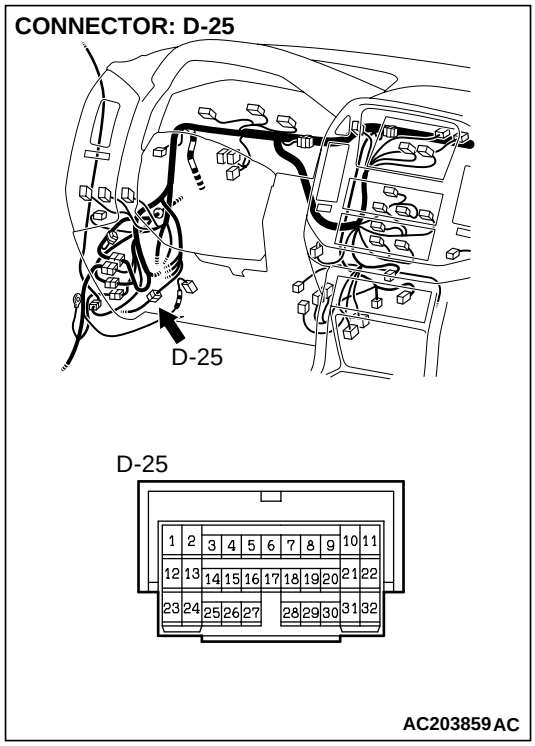
YES : Go to Step 6.

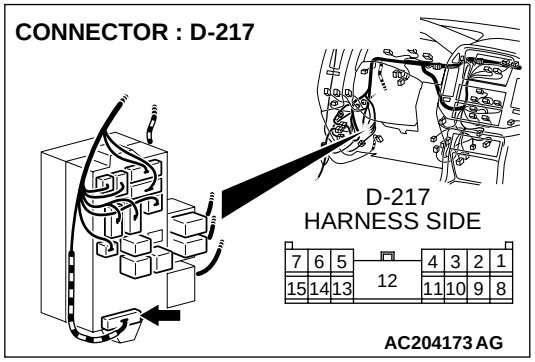
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the central door locking system should now works normally.

STEP 6. Check the wiring harness from the ETACS-ECU connector D-222 (terminal 4) to driver's door lock actuator connector H-10 (terminal 6).









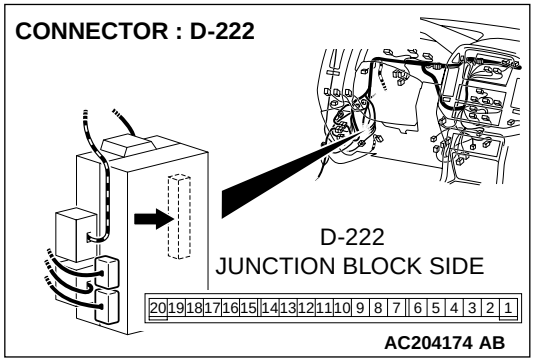
*NOTE: Also check intermediate connector D-25 and junction block connector D-217 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-25 or junction block connector D-217 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2**.*

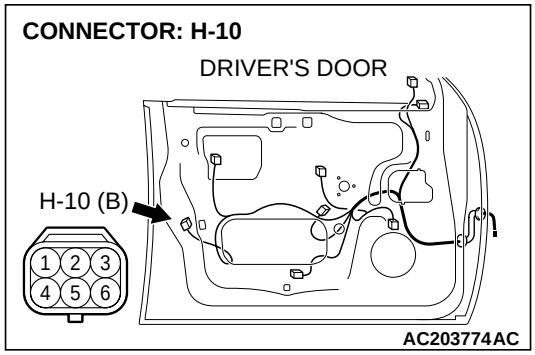
Q: Is the wiring harness from the ETACS-ECU connector D-222 (terminal 4) to driver's door lock actuator connector H-10 (terminal 6) in good condition?

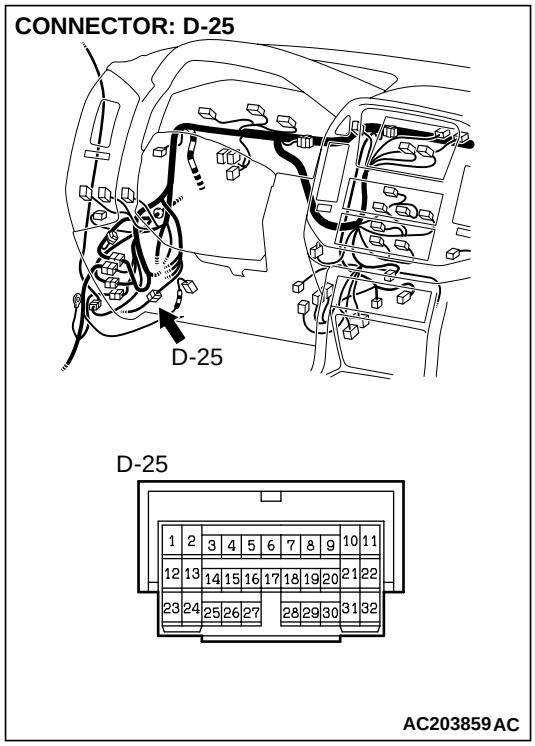
YES : Go to Step 7.

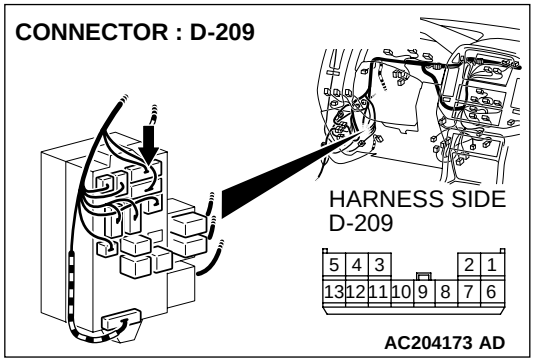
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Verify that the central door locking system should now works normally.

STEP 7. Check the wiring harness from the ETACS-ECU connector D-222 (terminal 19) to driver's door lock actuator connector H-10 (terminal 4).









*NOTE: Also check intermediate connector D-25 and junction block connector D-209 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-25 or junction block connector D-209 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2**.*

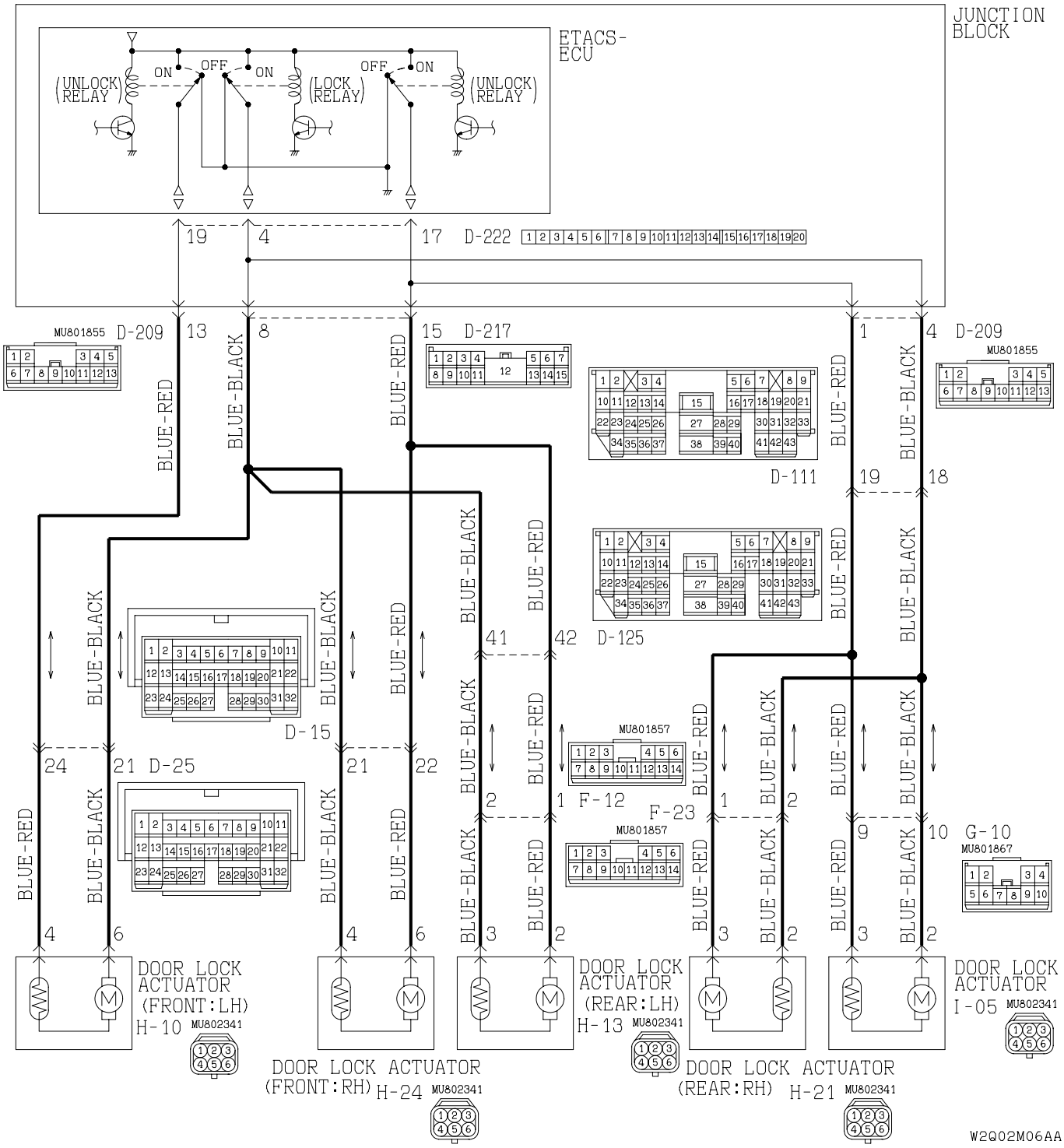
Q: Is the wiring harness from the ETACS-ECU connector D-222 (terminal 19) to driver's door lock actuator connector H-10 (terminal 4) in good condition?

YES : Replace the ETACS-ECU. Verify that the central door locking system should now works normally.

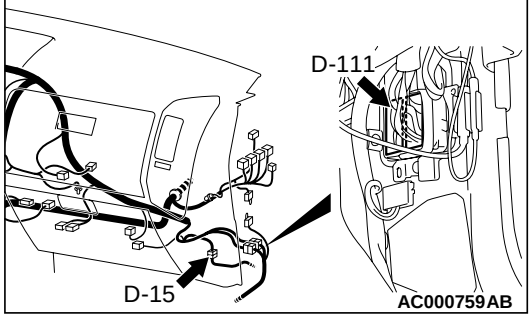
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Verify that the central door locking system should now works normally.

INSPECTION PROCEDURE C-2: Central Door Locking System: Some doors do not lock or unlock.

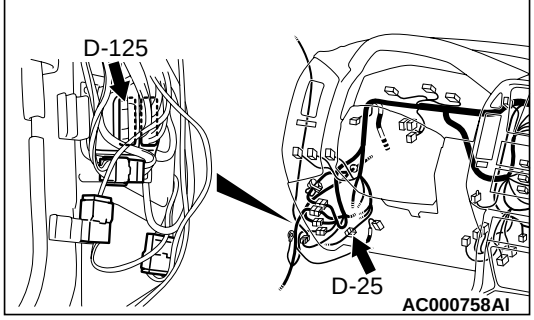
Central Door Lock Circuit



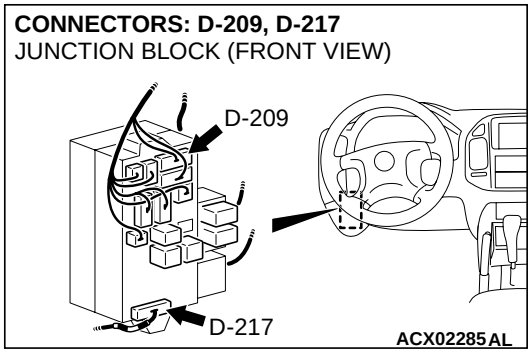
CONNECTORS: D-15, D-111



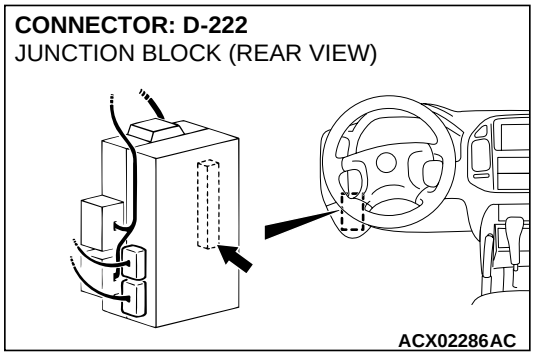
CONNECTORS: D-25, D-125



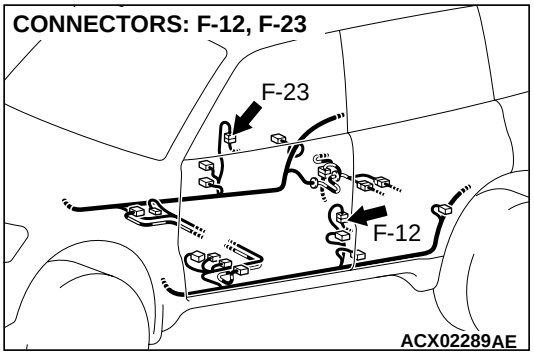
CONNECTORS: D-209, D-217
JUNCTION BLOCK (FRONT VIEW)



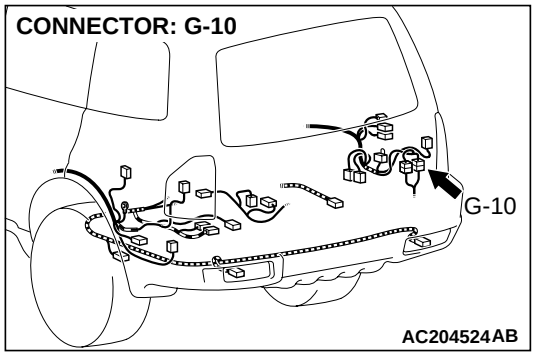
CONNECTOR: D-222
JUNCTION BLOCK (REAR VIEW)



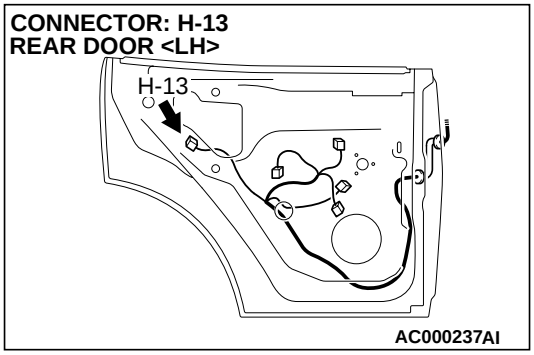
CONNECTORS: F-12, F-23



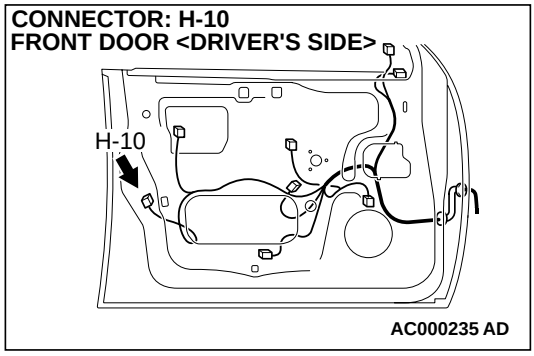
CONNECTOR: G-10

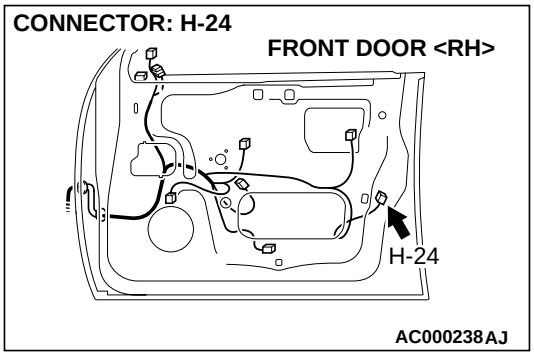


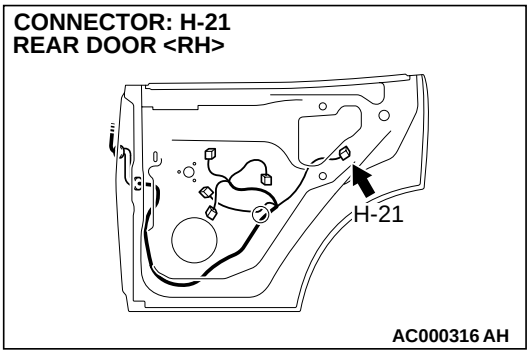
CONNECTOR: H-13
REAR DOOR <LH>

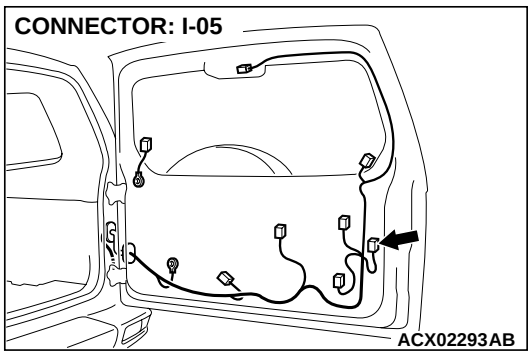


CONNECTOR: H-10
FRONT DOOR <DRIVER'S SIDE>









CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

If only some doors do not lock or unlock, the harness wiring between the door lock actuator or the ETACS-ECU and the door lock actuator may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

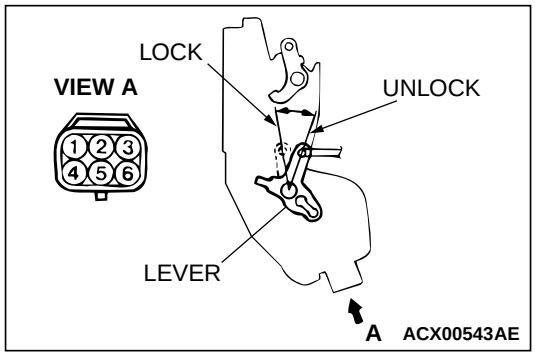
Required Special Tool:

- MB991223: Harness Set

STEP 1. Check which door lock is defective.

Q: Which of the door locks is defective?

Driver's door : Go to Step 2.
Front passenger's door : Go to Step 6.
Rear passenger's door (LH) : Go to Step 10.
Rear passenger's door (RH) : Go to Step 14.
Back door : Go to Step 18.



STEP 2. Check the driver's door lock actuator.

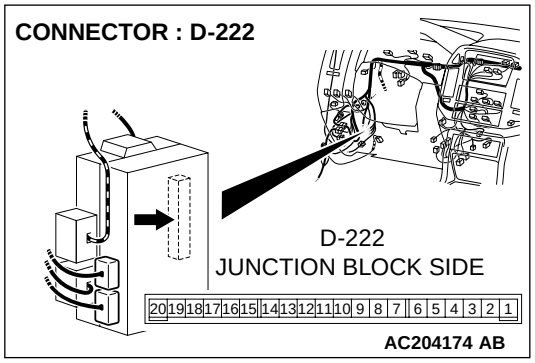
1. Remove the driver's door lock actuator, and check it. Refer to GROUP 42 – Door Handle and Latch P.42-40.
2. Follow the table below to check the driver's door lock actuator for correct operation.

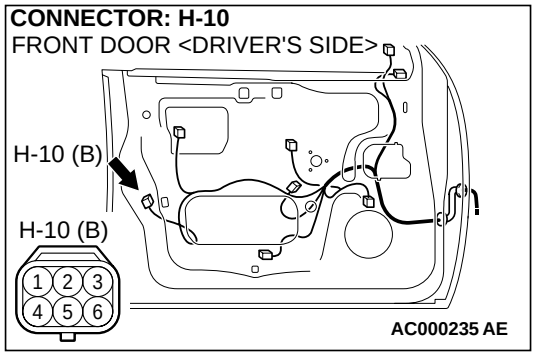
LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal 4 to the positive battery terminal • Connect terminal 6 to the negative battery terminal	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal 6 to the positive battery terminal • Connect terminal 4 to the negative battery terminal	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Does the driver's door lock actuator work normally?

YES : Go to Step 3.

NO : Replace the driver's door lock actuator. Verify that all the doors can be locked and unlocked function should now work normally.





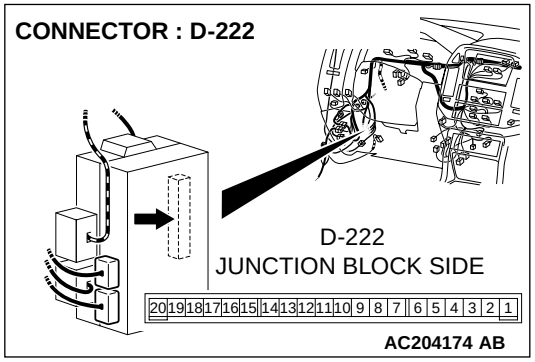
STEP 3. Check ETACS-ECU connector D-222 and driver's door lock actuator connector H-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

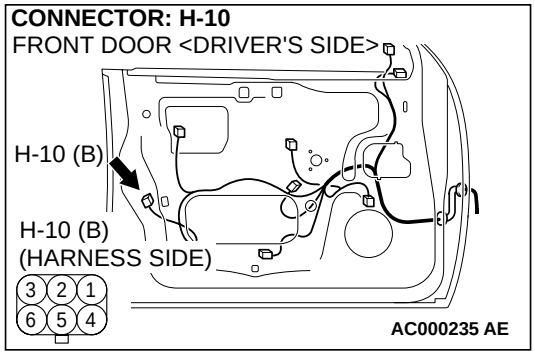
Q: Are ETACS-ECU connector D-222 and driver's door lock actuator connector H-10 in good condition?

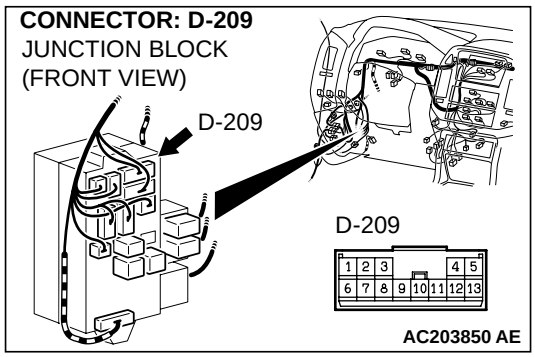
YES : Go to Step 4.

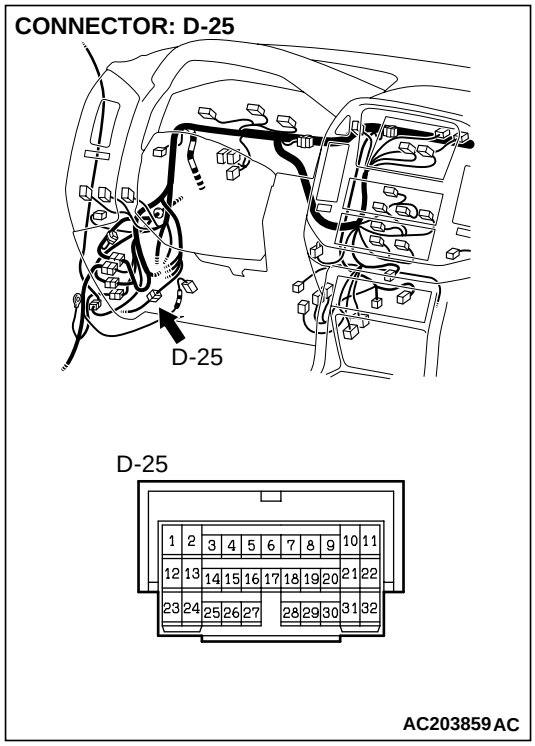
NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

STEP 4. Check the harness wiring from ETACS-ECU connector D-222 (terminal 19) to driver's door lock actuator connector H-10 (terminal 4).









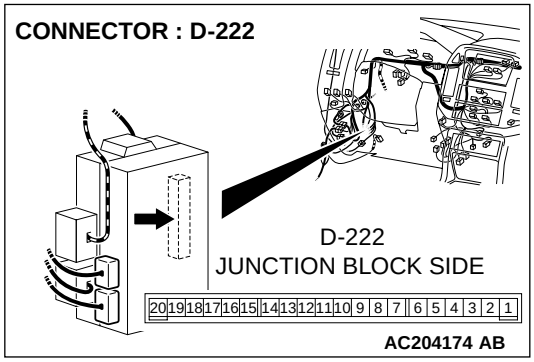
NOTE: Also check junction block connector D-209 and intermediate connector D-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-209 or intermediate connector D-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector InspectionP.00E-2.

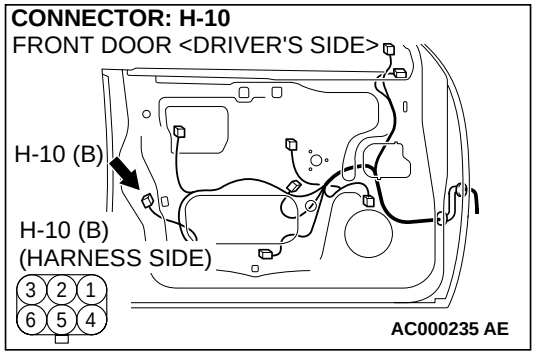
Q: Is the harness wiring from ETACS-ECU connectors D-222 (terminal 19) to driver's door lock actuator connector H-10 (terminal 4) in good condition?

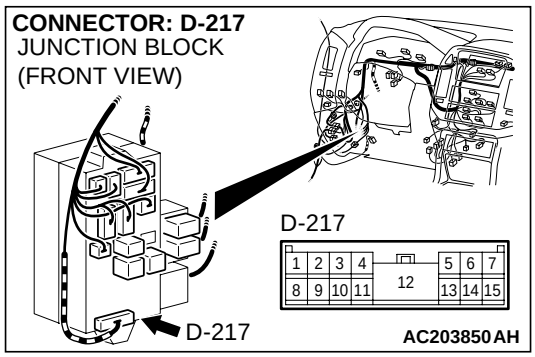
YES : Go to Step 5.

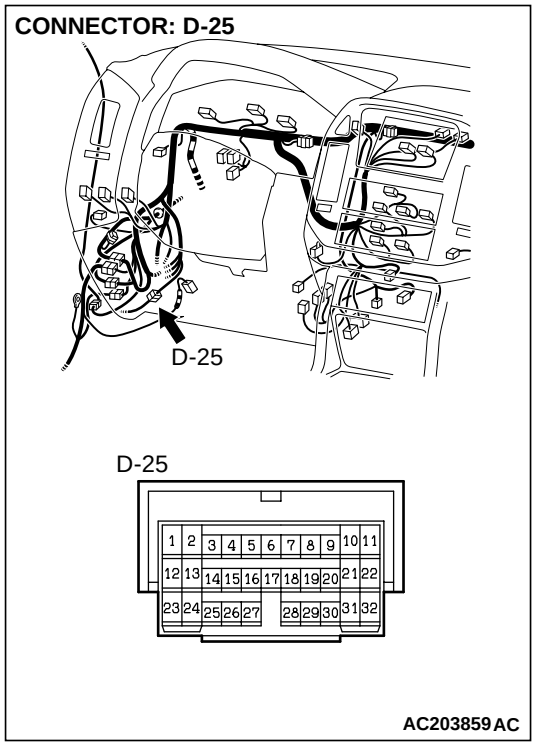
NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

STEP 5. Check the harness wiring from ETACS-ECU connector D-222 (terminal 4) to driver's door lock actuator connector H-10 (terminal 6).







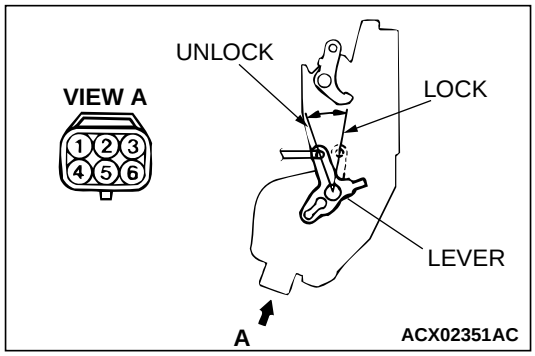


*NOTE: Also check junction block connector D-217 and intermediate connector D-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-217 or intermediate connector D-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2**.*

Q: Is the harness wiring from ETACS-ECU connectors D-222 (terminal 4) to driver's door lock actuator connector H-10 (terminal 6) in good condition?

YES : Replace the ETACS-ECU. Verify that all the doors can be locked and unlocked normally.

NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.



STEP 6. Check the front passenger's door lock actuator.

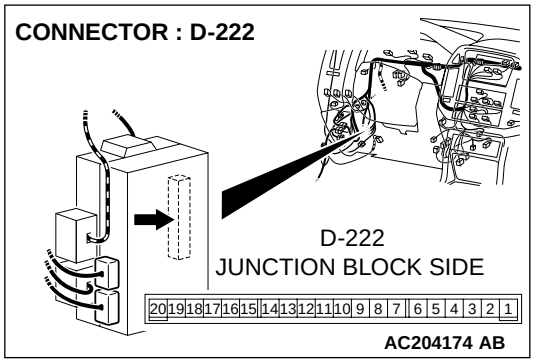
1. Remove the passenger's door lock actuator, and check it. Refer to GROUP 42 – Door Handle and Latch P.42-40.
2. Follow the table below to check the passenger's door lock actuator for correct operation.

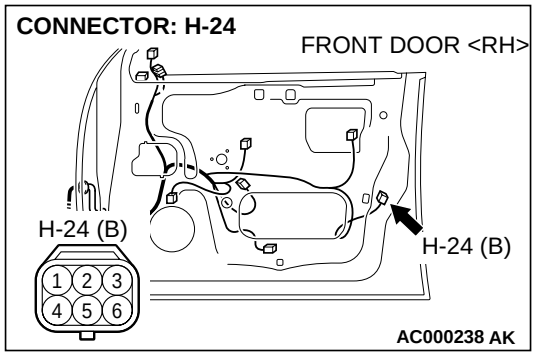
LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal 6 to the positive battery terminal • Connect terminal 4 to the negative battery terminal	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal 4 to the positive battery terminal • Connect terminal 6 to the negative battery terminal	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Does the front passenger's door lock actuator work normally?

YES : Go to Step 7.

NO : Replace the front passenger's door lock actuator. Verify that all the doors can be locked and unlocked normally.





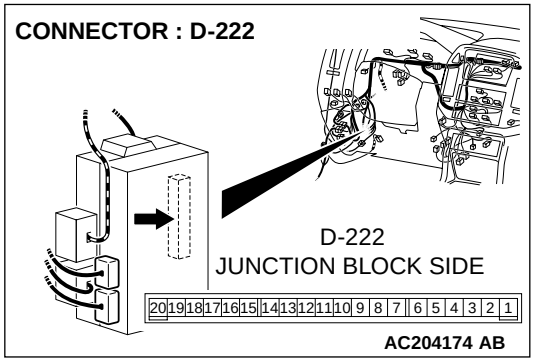
STEP 7. Check ETACS-ECU connector D-222 and front passenger's door lock actuator connector H-24 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

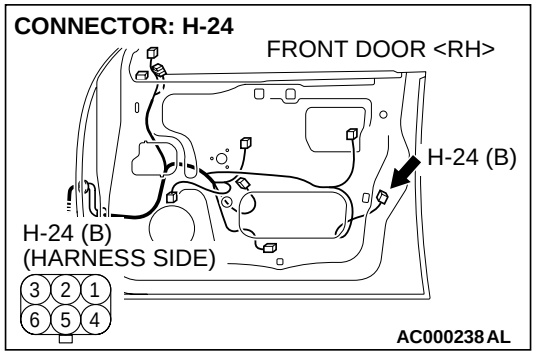
Q: Are ETACS-ECU connector D-222 and passenger's seat door lock actuator connector H-24 in good condition?

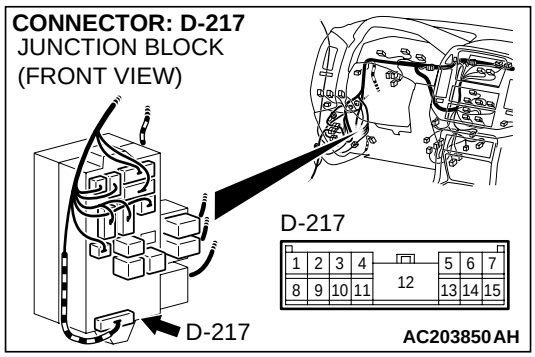
YES : Go to Step 8.

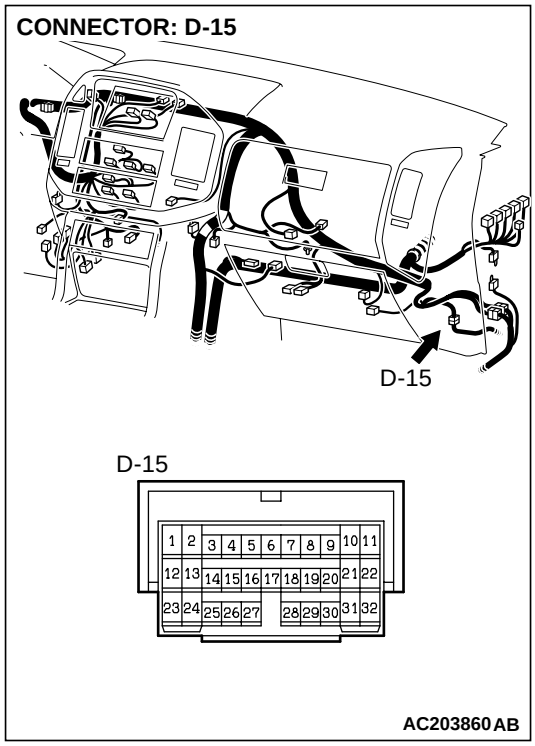
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

STEP 8. Check the harness wiring from ETACS-ECU connector D-222 (terminal 4) to front passenger's door lock actuator connector H-24 (terminal 4).









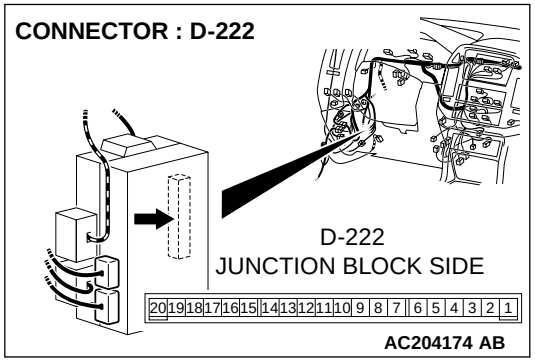
*NOTE: Also check junction block connector D-217 and intermediate connector D-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-217 or intermediate connector D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2**.*

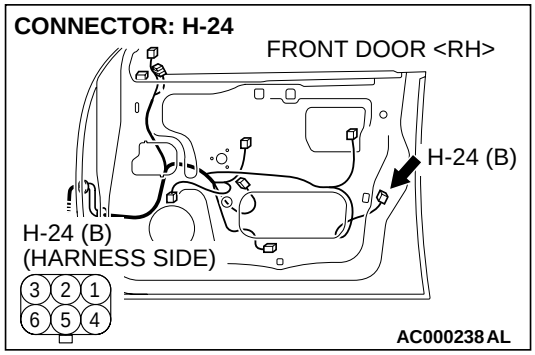
Q: Is the harness wiring from ETACS-ECU connector D-222 (terminal 4) to front passenger's door lock actuator connector H-24 (terminal 4) in good condition?

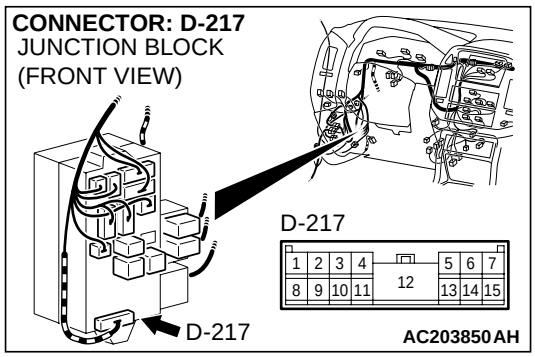
YES : Go to Step 9.

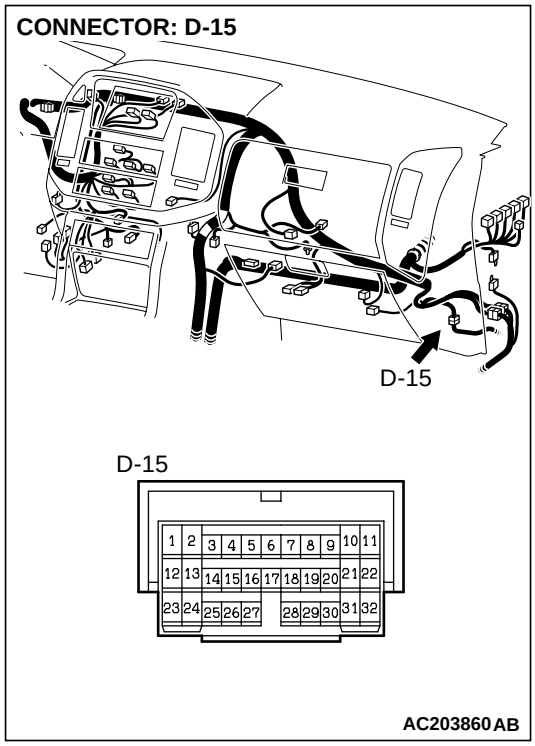
NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

STEP 9. Check the harness wiring from ETACS-ECU connector D-222 (terminal 17) to front passenger's door lock actuator connector H-24 (terminal 6).







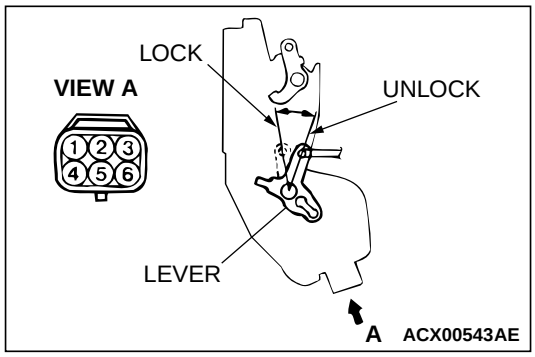


*NOTE: Also check junction block connector D-217 and intermediate connector D-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-217 or intermediate connector D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2**.*

Q: Is the harness wiring from ETACS-ECU connector D-222 (terminal 17) to front passenger's door lock actuator connector H-24 (terminal 6) in good condition?

YES : Replace the ETACS-ECU. Verify that all the doors can be locked and unlocked normally.

NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.



STEP 10. Check the rear passenger's door lock actuator (LH).

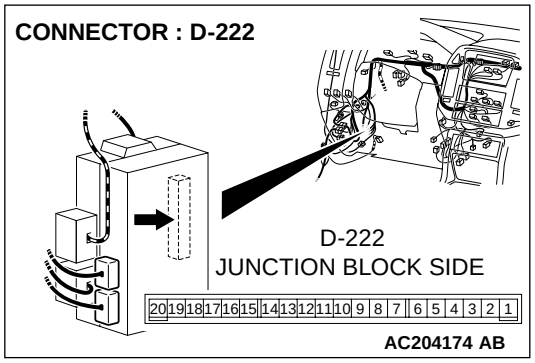
1. Remove the rear passenger's door lock actuator (LH), and check it. Refer to GROUP 42 – Door Handle and Latch P.42-40.
2. Follow the table below to check the rear passenger's door lock actuator (LH) for correct operation.

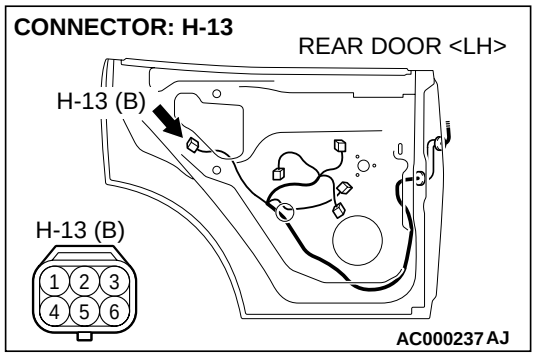
LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal 3 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Does the rear passenger's door lock actuator (LH) work normally?

YES : Go to Step 11.

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





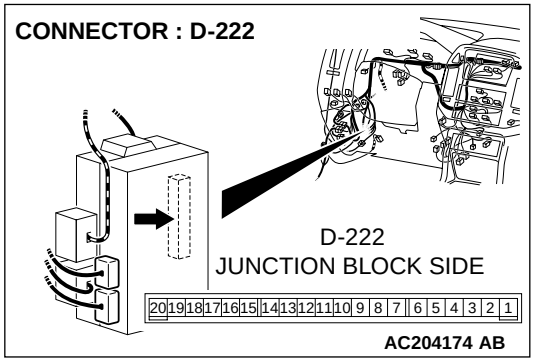
STEP 11. Check ETACS-ECU connector D-222 and rear passenger's door lock actuator (LH) connector H-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

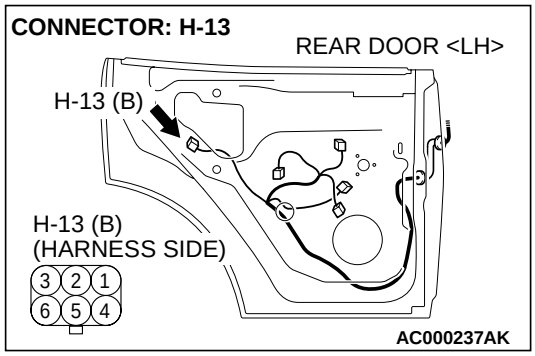
Q: Are ETACS-ECU connector D-222 and rear passnger's door lock actuator (LH) connector H-13 in good condition?

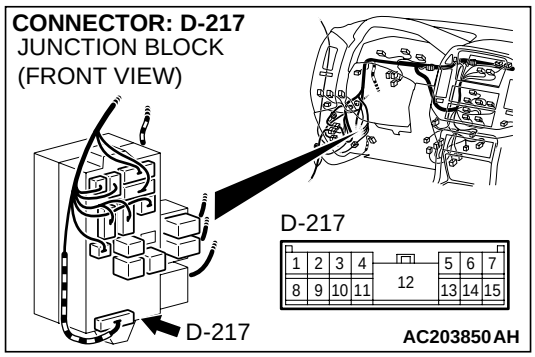
YES : Go to Step 12.

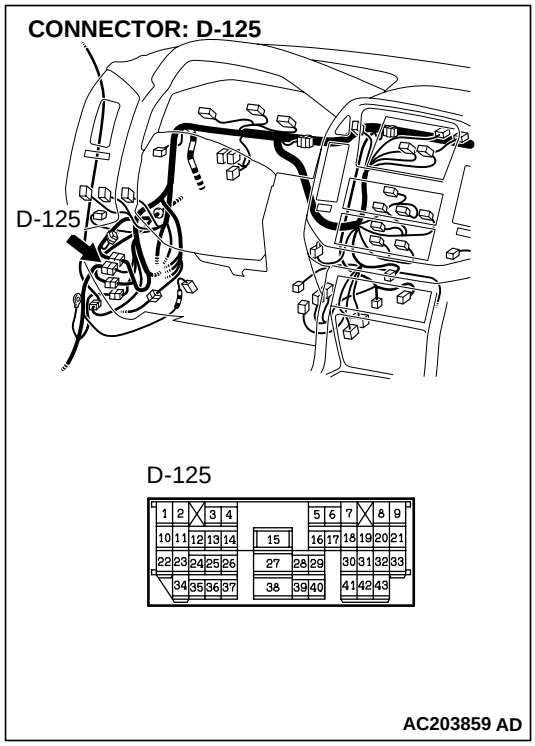
NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

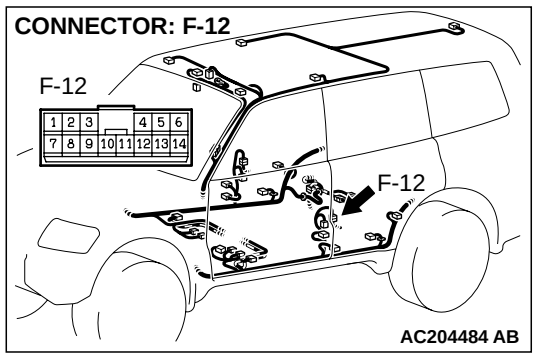
STEP 12. Check the harness wiring from ETACS-ECU connector D-222 (terminal 4) to rear passenger's door lock actuator (LH) connector H-13 (terminal 3).











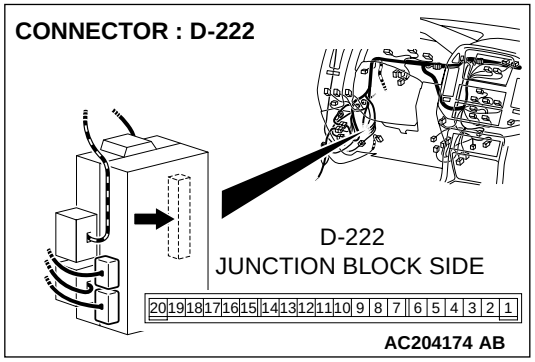
*NOTE: Also check junction block connector D-217 and intermediate connector D-125 and F-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-217, intermediate connector D-125 or F-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2**.*

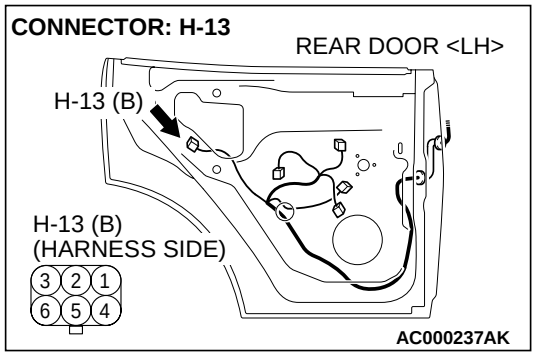
Q: Is the harness wiring from ETACS-ECU connectors D-222 (terminal 4) to rear passenger's door lock actuator (LH) connector H-13 (terminal 3) in good condition?

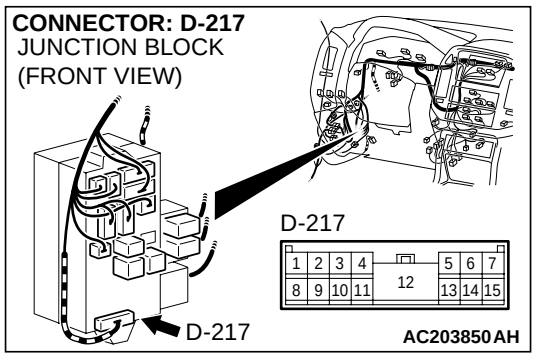
YES : Go to Step 13.

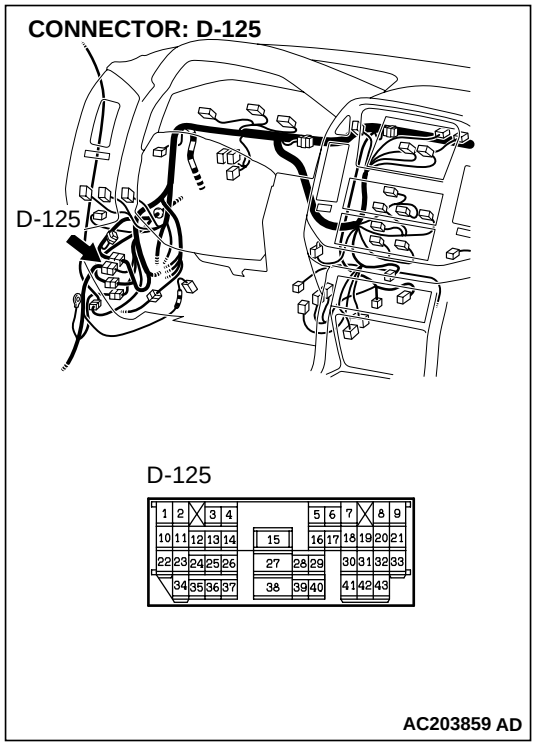
NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

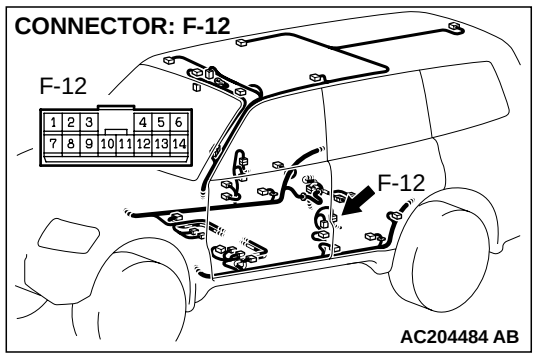
STEP 13. Check the harness wiring from ETACS-ECU connector D-222 (terminal 17) to rear passenger's door lock actuator (LH) connector H-13 (terminal 2).









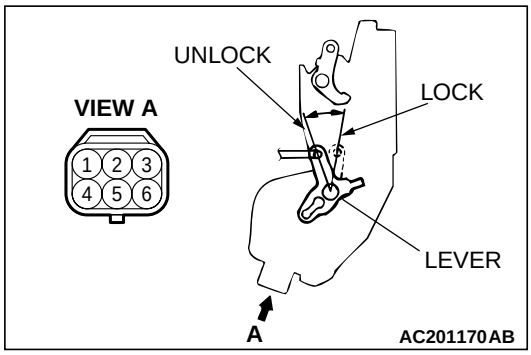


NOTE: Also check junction block connector D-217 and intermediate connectors D-125 and F-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-217 or intermediate connector D-125 or F-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector InspectionP.00E-2.

Q: Is the harness wiring from ETACS-ECU connectors D-222 (terminal 17) to rear passenger's door lock actuator (LH) connector H-13 (terminal 2) in good condition?

YES : Go to Step 14.

NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.



STEP 14. Check the rear passenger's door lock actuator (RH).

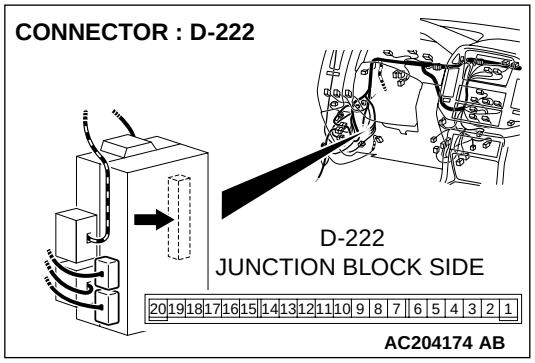
1. Remove the rear passenger's door lock actuator (RH), and check it. Refer to GROUP 42 – Door Handle and Latch P.42-40.
2. Follow the table below to check the rear passenger's door lock actuator (RH) for correct operation.

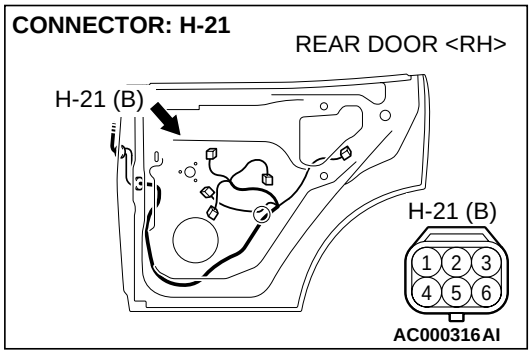
LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal 3 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Is the rear passenger's seat door lock actuator (RH) normal?

YES : Go to Step 15.

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





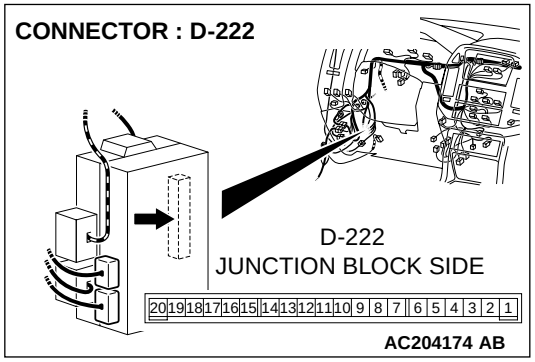
STEP 15. Check ETACS-ECU connector D-222 and rear passenger's door lock actuator (RH) connector H-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

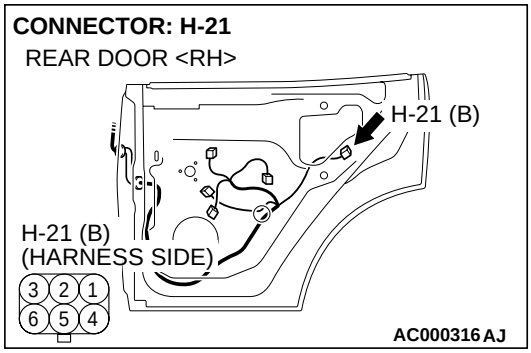
Q: Are ETACS-ECU connector D-222 and rear passenger's seat door lock actuator (RH) connector H-21 in good condition?

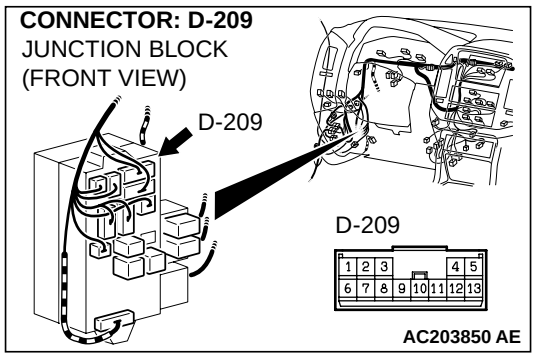
YES : Go to Step 16.

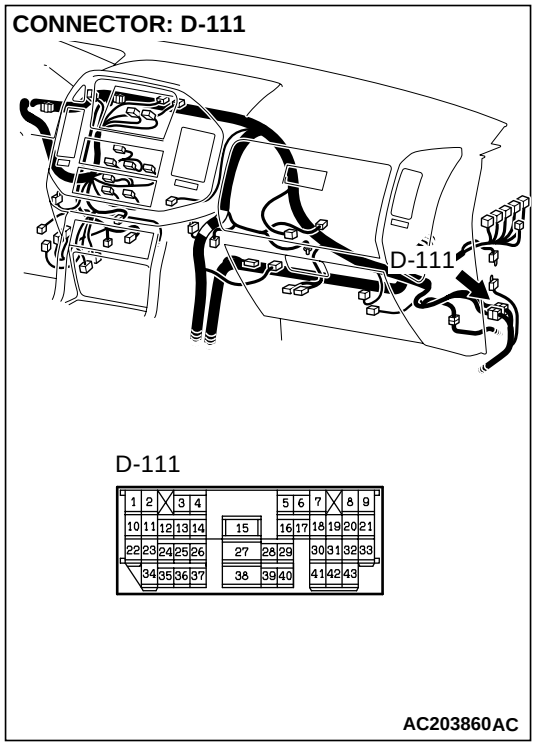
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

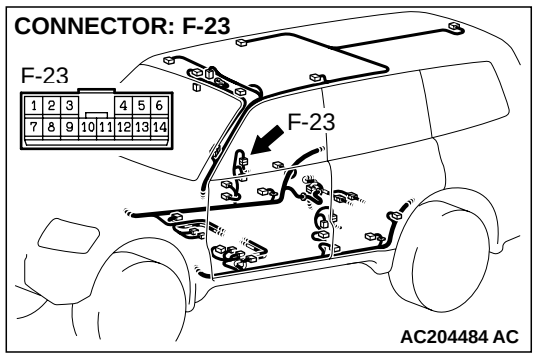
STEP 16. Check the harness wiring from ETACS-ECU connector D-222 (terminal 4) to rear passenger's door lock actuator (RH) connector H-21 (terminal 3).











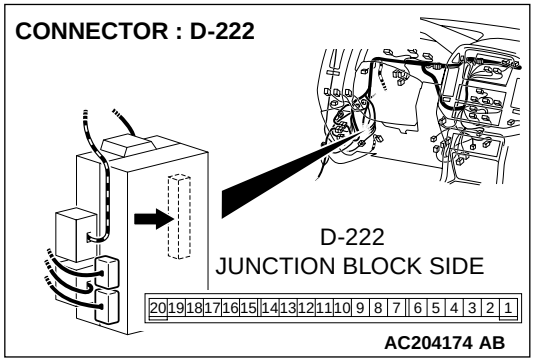
*NOTE: Also check junction block connector D-209 and intermediate connector D-111 and F-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-209 or intermediate connector D-111 or F-23 are damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2.*

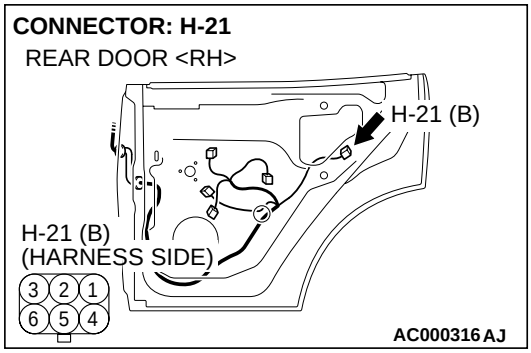
Q: Is the harness wiring from ETACS-ECU connector D-222 (terminal 4) to rear passenger's door lock actuator (RH) connector H-21 (terminal 3) in good condition?

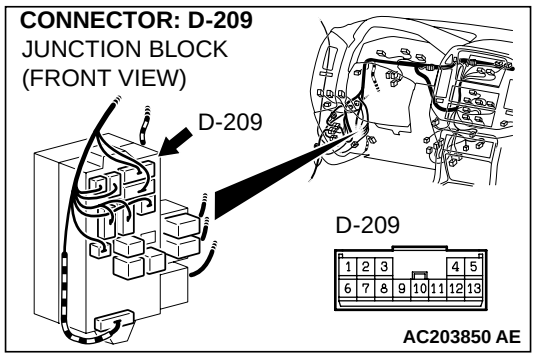
YES : Replace the ETACS-ECU. Verify that all the doors can be locked and unlocked normally.

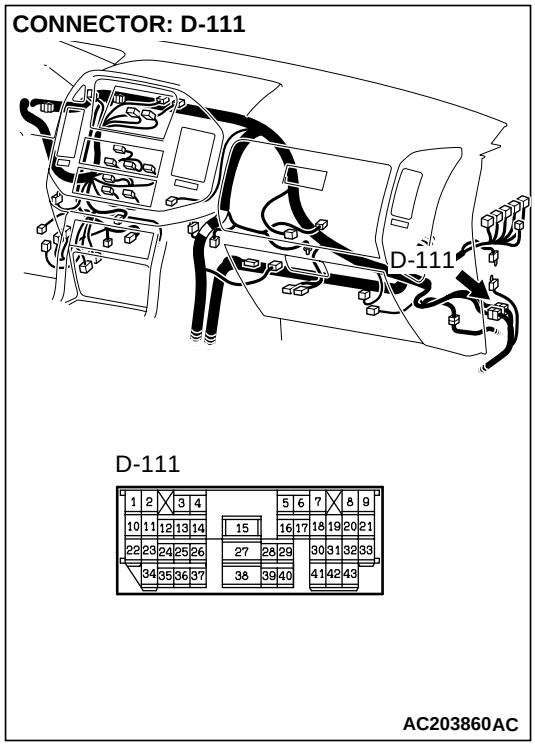
NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.

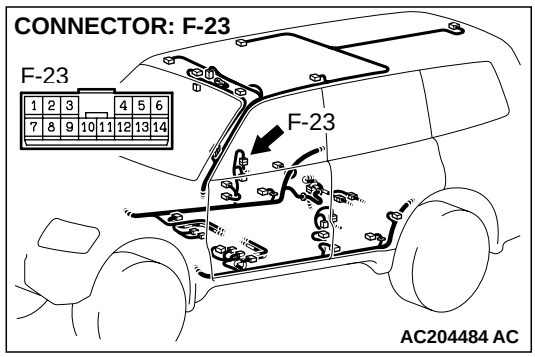
STEP 17. Check the harness wiring from ETACS-ECU connector D-222 (terminal 17) to rear passenger's door lock actuator (RH) connector H-21 (terminal 2).









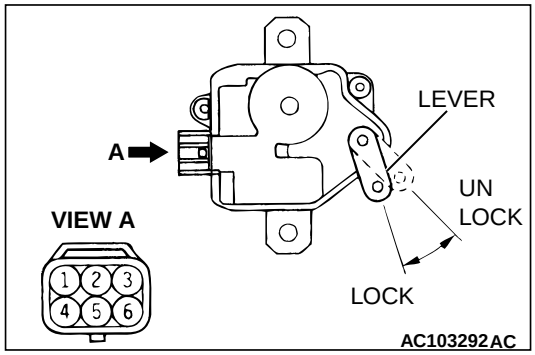


*NOTE: Also check junction block connector D-209 and intermediate connector D-111 and F-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-209 or intermediate connector D-111 or F-23 are damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection**P.00E-2.*

Q: Is the harness wiring from ETACS-ECU connector D-222 (terminal 17) to rear passenger's door lock actuator (RH) connector H-21 (terminal 2) in good condition?

YES : Replace the ETACS-ECU. Verify that all the doors can be locked and unlocked normally.

NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. After repairs have been made, verify that all the doors can now be locked and unlocked normally.



STEP 18. Check the back door lock actuator.

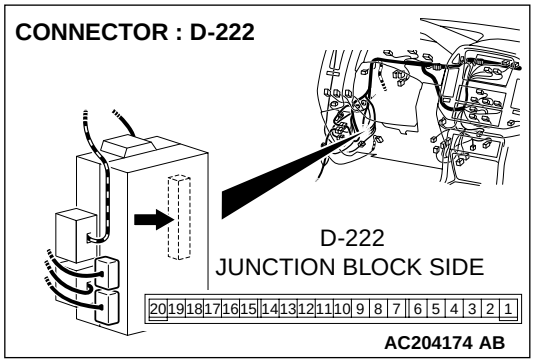
1. Remove the back door lock actuator, and check it. Refer to GROUP 42 – Back door Handle and Latch P.42-53.
2. Follow the table below to check the back door lock actuator for correct operation.

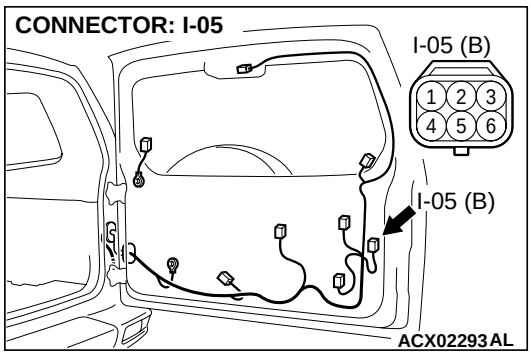
LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal 3 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Is the back door lock actuator normal?

YES : Go to Step 19.

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





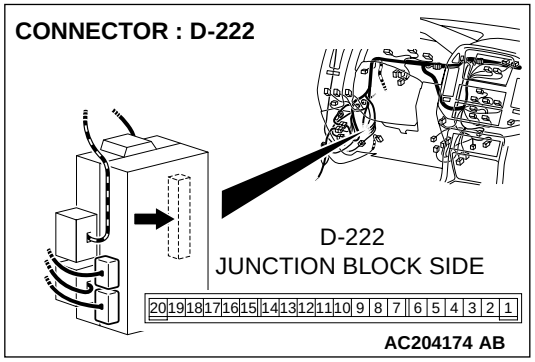
STEP 19. Check ETACS-ECU connector D-222 and back door lock actuator connector I-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

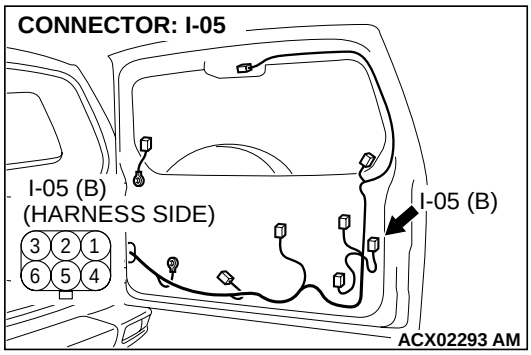
Q: Are ETACS-ECU connector D-222 and back door lock actuator connector I-05 in good condition?

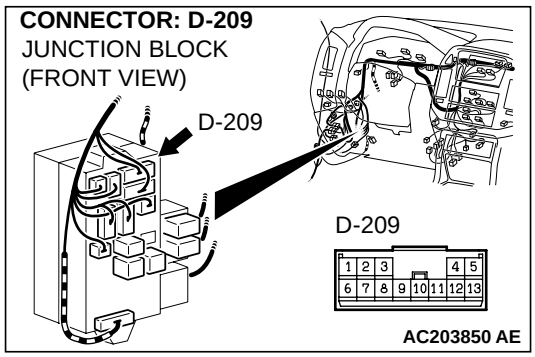
YES : Go to Step 20.

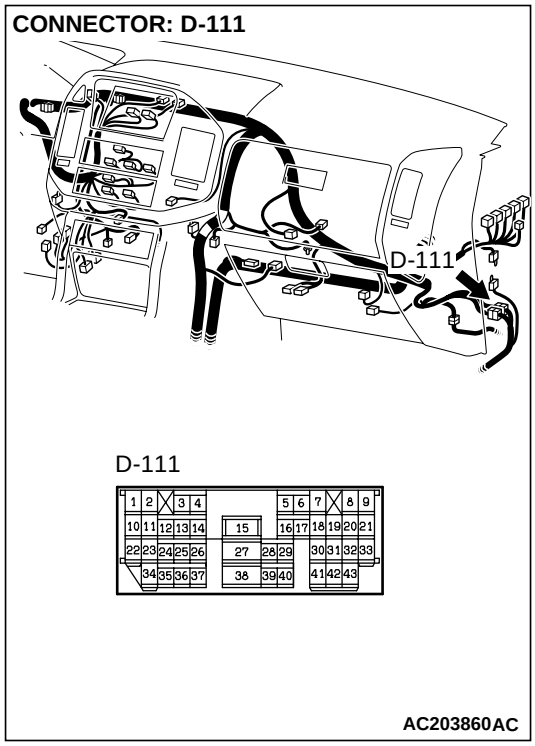
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors (including the back door) can be locked and unlocked normally.

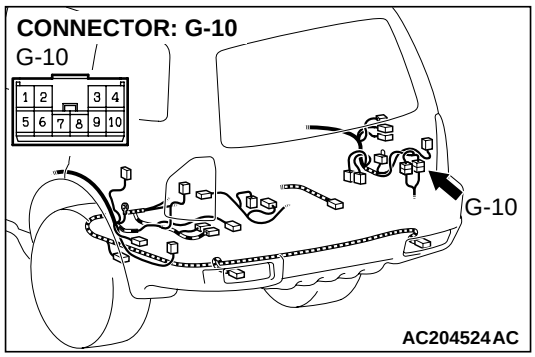
STEP 20. Check the harness wiring from ETACS-ECU connector D-222 (terminal 17) to back door lock actuator connector I-05 (terminal 3).











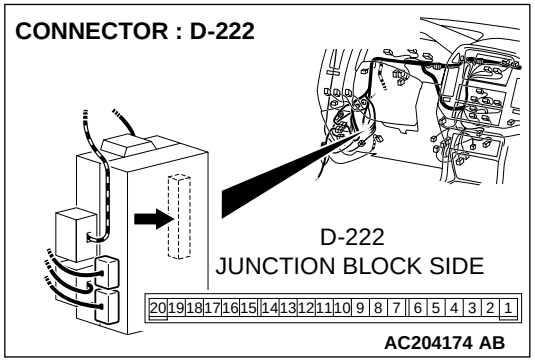
NOTE: Also check junction block connector D-209 and intermediate connector D-111 and G-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-209 or intermediate connector D-111 or G-10 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

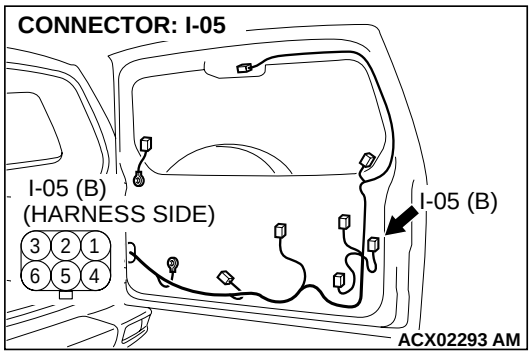
Q: Is the harness wiring from ETACS-ECU connector D-222 (terminal 17) to back door lock actuator connector I-05 (terminal 3) in good condition?

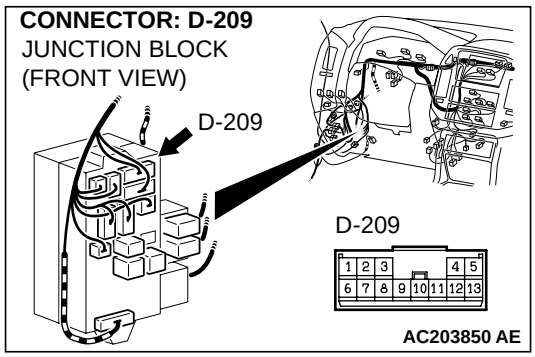
YES : Go to Step 21.

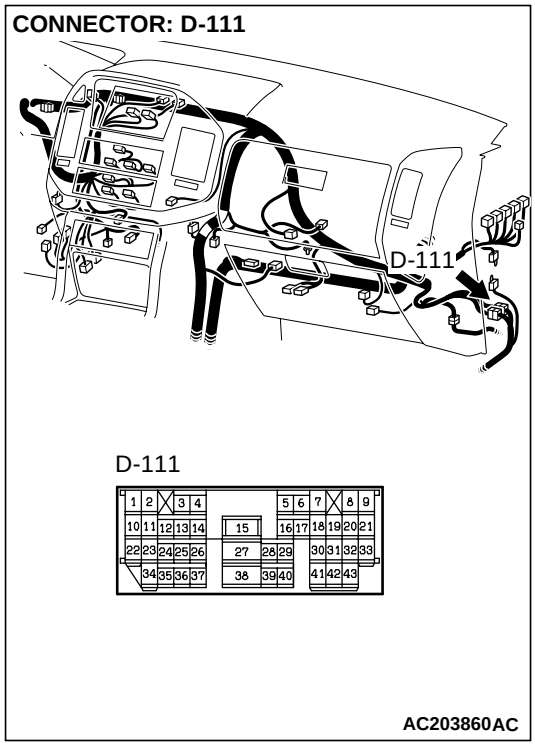
NO : The harness wiring may be damaged or the connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the harness wiring as necessary. Verify that all the doors (including the back door) can be locked and unlocked normally.

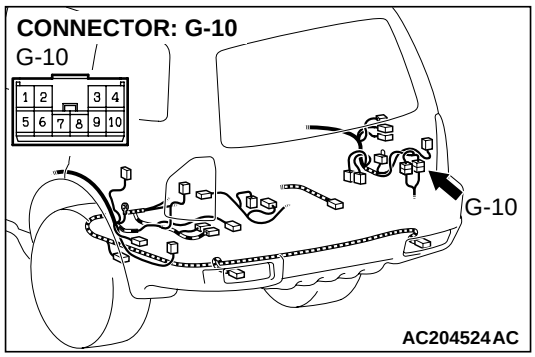
STEP 21. Check the harness wiring from ETACS-ECU connector D-222 (terminal 4) to back door lock actuator connector I-05 (terminal 2).











NOTE: Also check junction block connector D-209 and intermediate connector D-111 and G-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-209 or intermediate connector D-111 or G-10 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

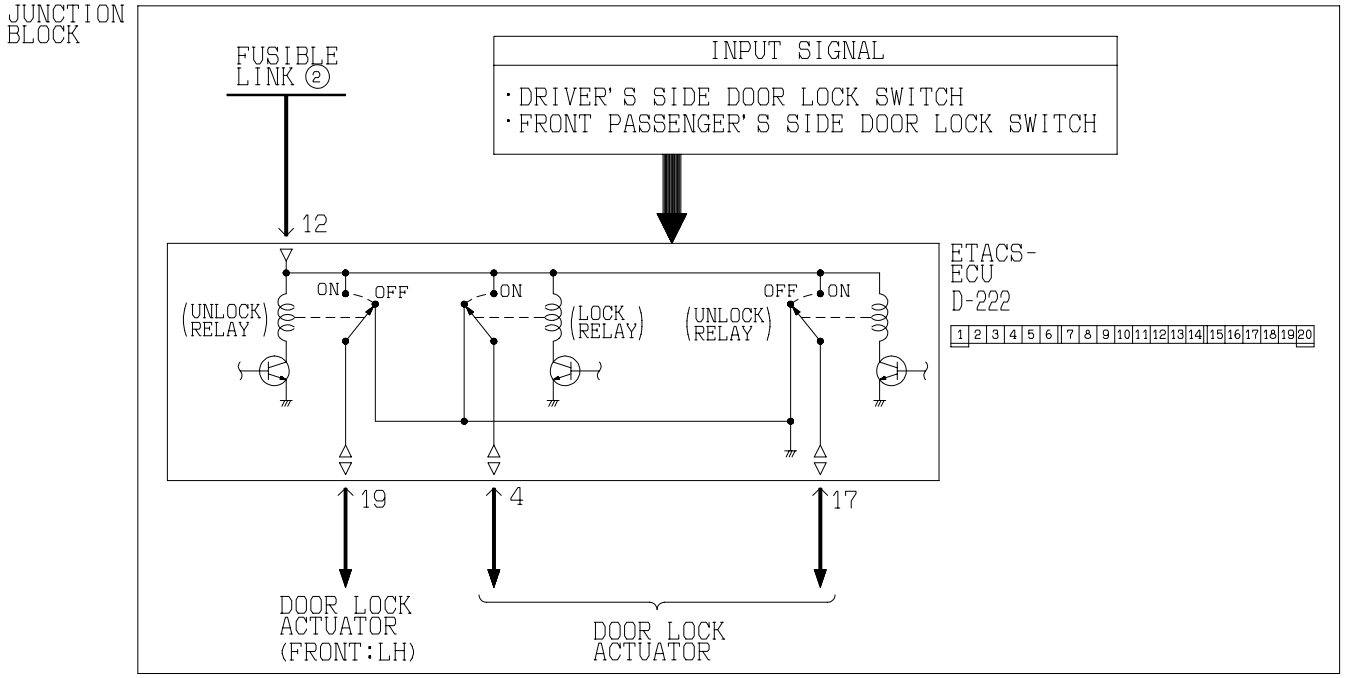
Q: Is the harness wiring from ETACS-ECU connector D-222 (terminal 4) to back door lock actuator connector I-05 (terminal 2) in good condition?

YES : Replace the ETACS-ECU. Verify that all the doors (including the back door) can be locked and unlocked normally.

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

INSPECTION PROCEDURE C-3: Central Door Locking System: All the doors do not lock or unlock with the door lock switch operation.

Central Door Lock (Door Lock Switch) Circuit



TECHNICAL DESCRIPTION (COMMENT)

The door lock switch (built into the power window switch) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The power window switch (door lock switch) 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:

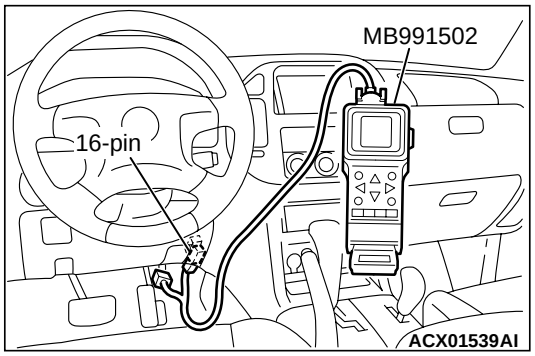
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

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

Check the input signals from the door lock switch:

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).

(2) Operate scan tool MB991502 as follows:

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

(3) Move the driver's or the front passenger's door lock switch from "LOCK" to "UNLOCK" or vice versa.

(4) Check scan tool MB991502 sounds or not.

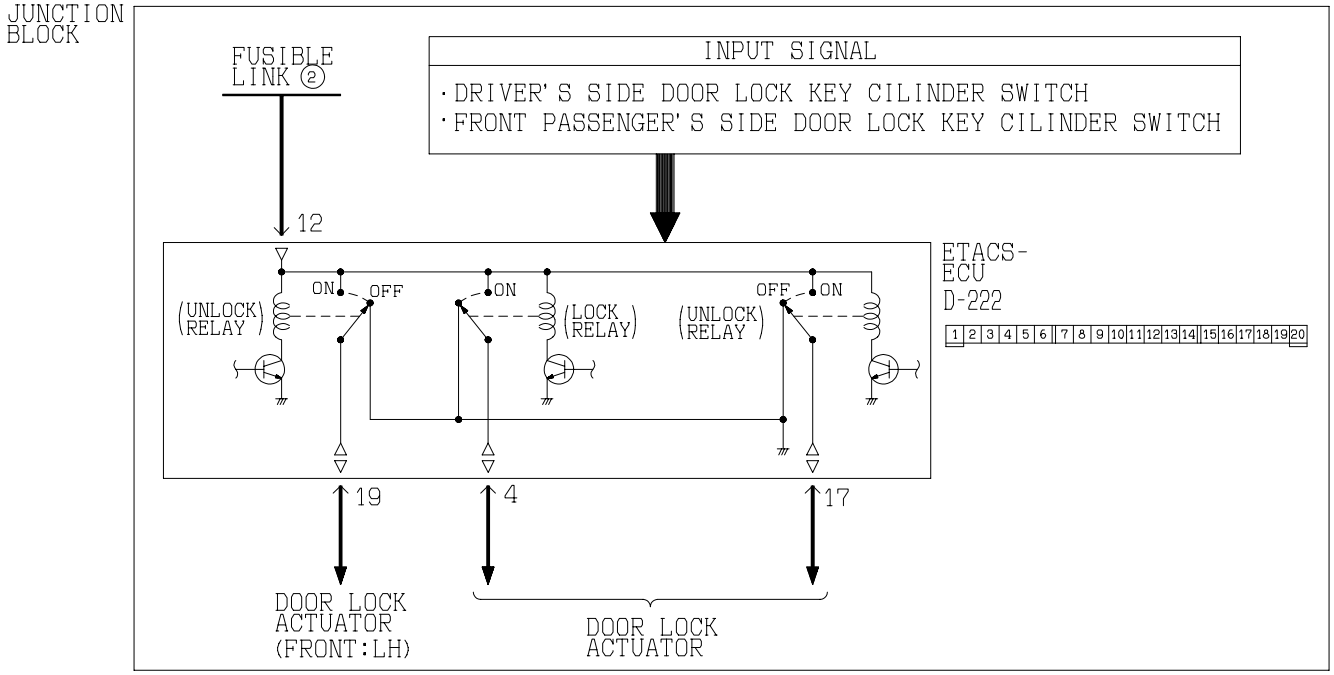
Q: Does scan tool MB991502 sound when operating the door lock switches as described?

YES : Replace the ETACS-ECU. Verify that all the doors can now be locked and unlocked by the door lock switch.

NO : Refer to Inspection Procedure O-7 "ETACS-ECU does not receive a signal from the door lock switch (incorporated in the power window main switch) P.54Bc-119."

INSPECTION PROCEDURE C-4: Central Door Locking System: All the doors do not lock or unlock with just the door lock key cylinder key operation.

Central Door Lock (Door Lock Key Cylinder Switch) Circuit



TECHNICAL DESCRIPTION (COMMENT)

The door lock switch (built into the power window switch) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The door lock key cylinder switch 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:

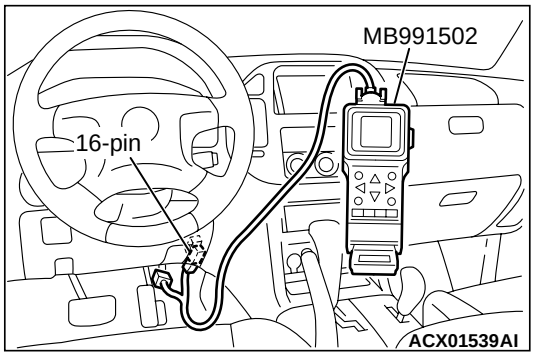
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

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

Check the input signals from the door lock key cylinder switch.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Operate scan tool MB991502 as follows:
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "PULSE CHECK."
(3) Use the driver's or passenger's door lock key cylinder to lock and unlock the doors.
(4) Check that scan tool MB991502 sounds.

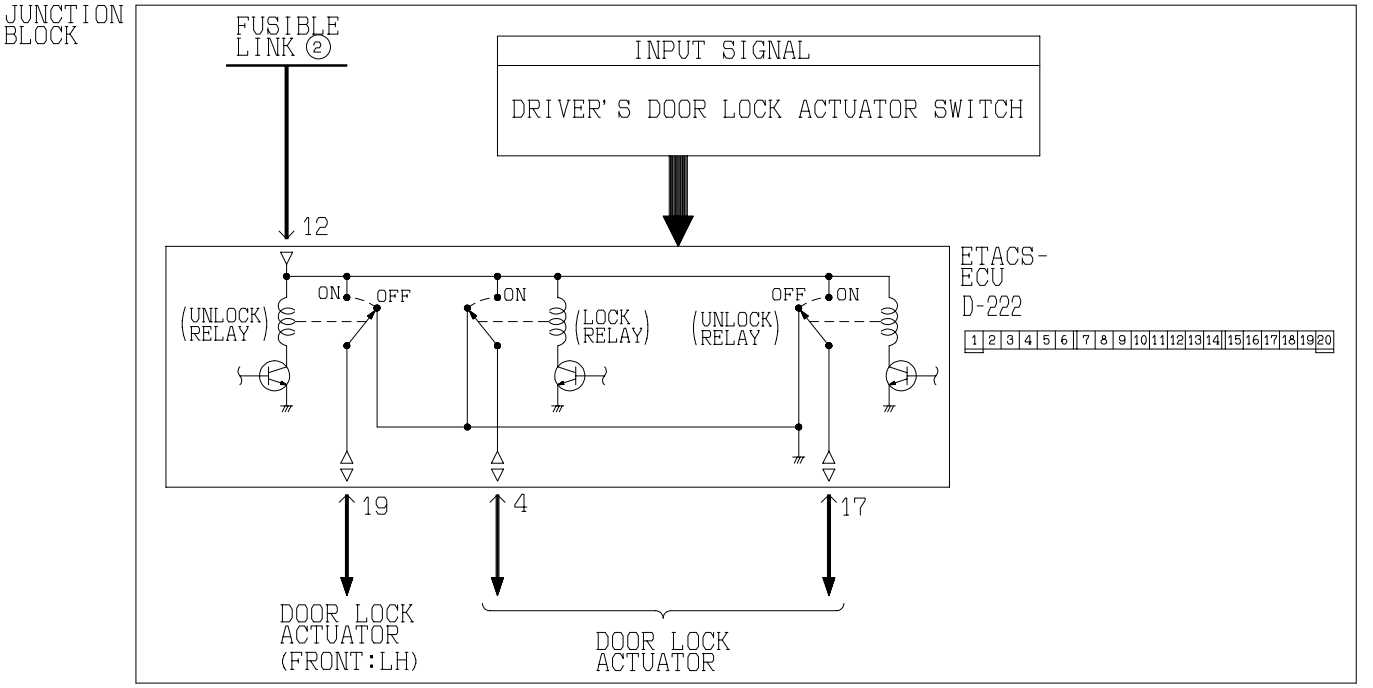
Q: Does scan tool MB991502 sound when operating the door locks as described?

YES : Replace the ETACS-ECU. Verify that all the doors can now be locked and unlocked by using each door lock key cylinder switch.

NO : Refer to Inspection Procedure O-5 "ETACS-ECU does not receive a signal from the driver's door, front passenger's door lock key cylinder switch P.54Bc-75."

INSPECTION PROCEDURE C-5: Central Door Locking System: All the doors do not lock with just the driver's inside lock knob operation.

Central Door Lock (Door Lock Actuator Switch) Circuit



W3Q21M05AA

TECHNICAL DESCRIPTION

The driver's door lock actuator switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

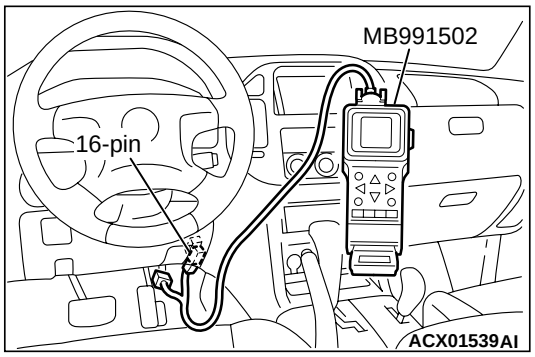
- The driver's door lock actuator switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

Check the input signal (by using the pulse check mode of the monitor.)
Check the input signals from the driver's door lock actuator switch.

⚠ CAUTION
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Operate scan tool MB991502 as follows:
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "PULSE CHECK."
(3) Lock or unlock the driver's inside lock knob.
(4) Check scan tool MB991502 sounds or not.

Q: Does scan tool MB991502 sound when the driver's inside lock knob is locked or unlocked, or the passenger's side lock knob is moved from the lock to the unlock position?

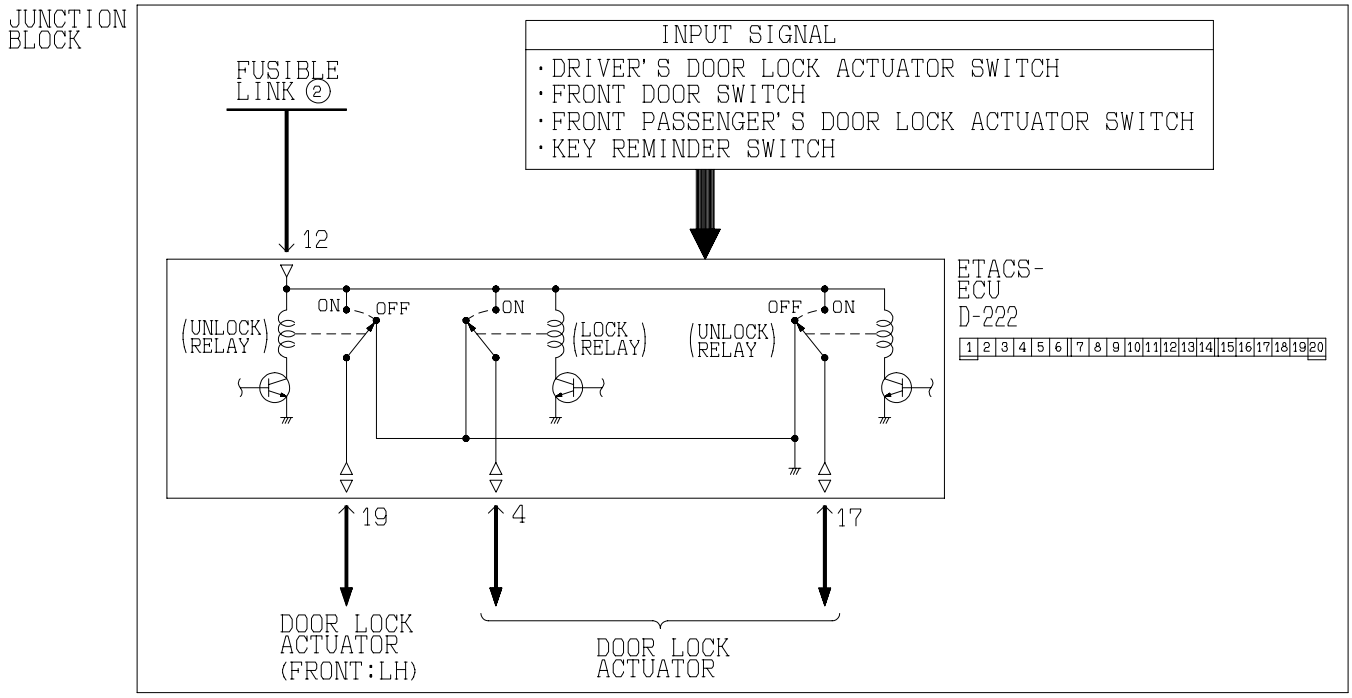
YES : Replace the ETACS-ECU. Verify that all the doors can be locked or unlocked by operating the driver's inside lock knob.

NO : Refer to Inspection Procedure O-6 "ETACS-ECU does not receive a signal from the driver's door lock actuator switch P.54Bc-93."

INSPECTION PROCEDURE C-6: Central Door Locking System: Forgotten key prevention function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Forgotten Key Prevention Circuit



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CIRCUIT OPERATION

The ETACS-ECU operates the forgotten key prevention function according to the following switches:

- Key reminder switch: OFF
- Driver's or front passenger's door switch: ON
- Driver's door lock actuator switch: being turned ON

The ETACS-ECU activates the forgotten key prevention function under the following conditions:

- Ignition key: inserted into the ignition key cylinder
- Driver's or front passenger's door: open
- Driver's or front passenger's door lock: being locked electrically
- Driver's door lock: being locked manually

TECHNICAL DESCRIPTION (COMMENT)

If the forgotten key prevention function does not work normally, the input circuit from the switches or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The driver's or front passenger's door switch may be defective
- The driver's door lock actuator switch 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:

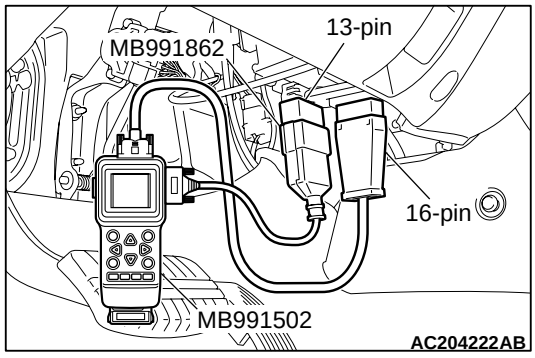
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

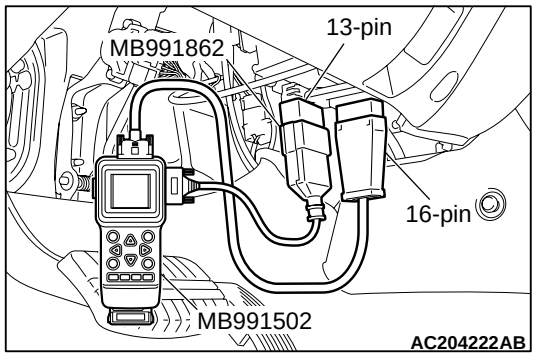
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect the SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 as follows:
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK".
(5) Check scan tool MB991502 should show "OK" on the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



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

Check the input signals from the following switches:

- Driver's door: open
- Front passenger's door: close

(1) Operate scan tool MB991502 as follows:

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "DATA LIST."
5. Select "ETACS ECU."

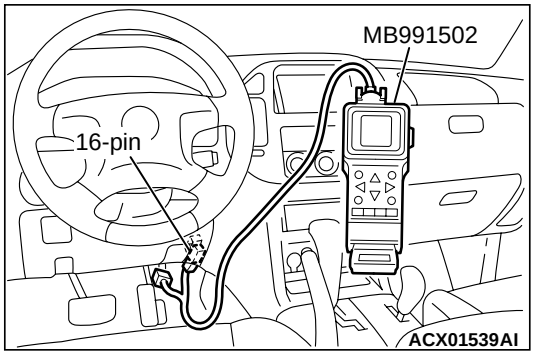
(2) Check that normal conditions are displayed on the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 32	FRONT DOOR SW	ON

Q: The scan tool show the respective normal condition for item "FRONT DOOR SW."

YES : Go to Step 3.

NO : Refer to Inspection Procedure O-5 "ETACS-ECU does not receive signals from the front door switches P.54Bc-23."



STEP 3. Check the input signal (by using the pulse check mode of the monitor.)

Check the input signals from the following switches:

- Key reminder switch
- Driver's door lock actuator switch

(1) Operate scan tool MB991502 as follows:

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

(2) If the switches (see table below), which are applicable for the input signal check, are operated, verify if scan tool MB991502 sounds or not.

ITEM NAME	CHECK CONDITIONS
Key reminder switch	Remove
Driver's door lock actuator switch	Turn on and off the driver's door lock actuator switch.

Q: Does scan tool MB991502 sound whenever the key reminder switch and the driver's door lock actuator switch are operated?

YES : Replace the ETACS-ECU. Verify that the forgotten key prevention function works normally.

NO :

- Scan tool MB991502 does not sound when the key reminder switch is operated: Refer to Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch P.54Bc-49."
- Scan tool MB991502 does not sound when the driver's door lock actuator switch is operated Refer to Inspection Procedure P-6 "ETACS-ECU does not receive a signal from the driver's door lock actuator switch P.54Bc-93."

POWER WINDOWS

GENERAL DESCRIPTION CONCERNING THE POWER WINDOWS

M1549021900073

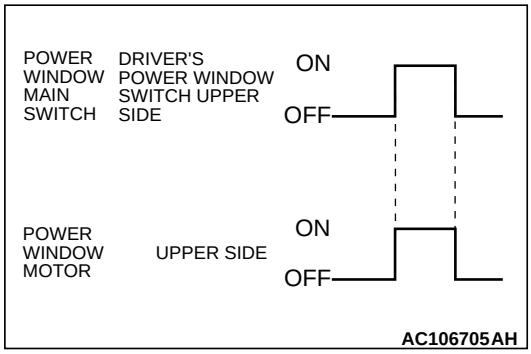
The following ECUs affect the functions and control of the power windows.

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

TSB Revision

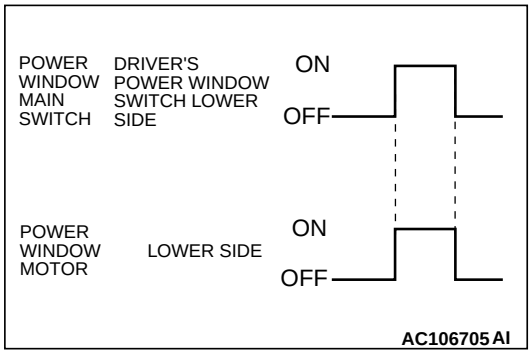
Power window main switch function

Raises the driver's power window



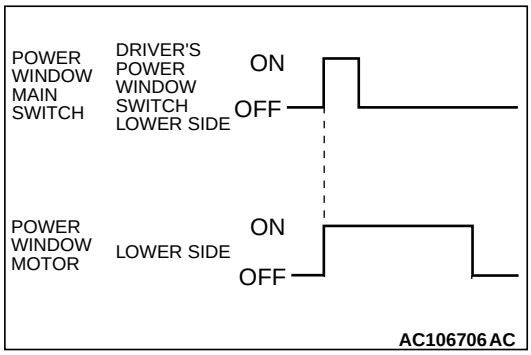
When the driver's power window switch on the power window main switch is pulled up, the system energizes its respective power window motor, and then driver's window glass rises.

Lowers the driver's power window



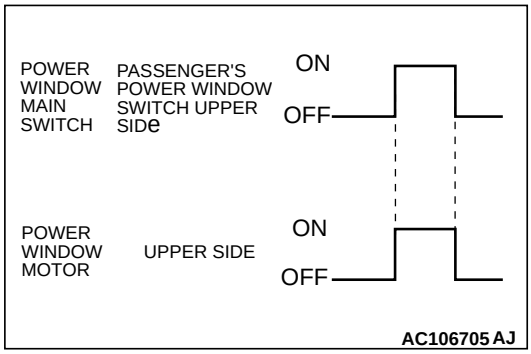
When the driver's power window switch on the power window main switch is pushed down, the system energizes its respective power window motor, and then driver's window glass lowers.

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

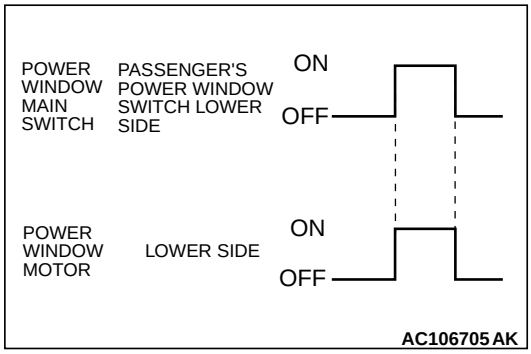


When the driver's power window switch on the power window main switch is pushed down fully, the system energizes its respective power window motor, and then driver's window glass moves to its lowest position.

Raises the passenger's power window



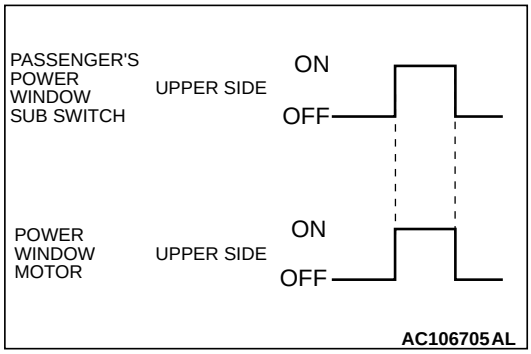
When the passenger's power window switch on the power window main switch is pulled up, the system energizes its respective power window motor, and then passenger's window glass rises.



Lowers the passenger's power window

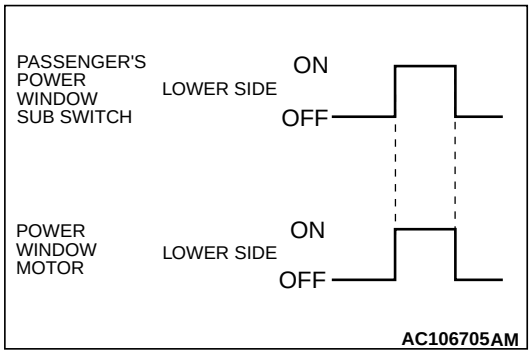
When the passenger's power window switch on the power window main switch is pushed down, the system energizes its respective power window motor, and then passenger's window glass lowers.

Power window sub switch function



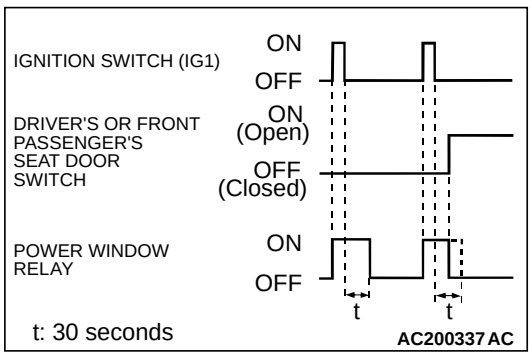
Raises the passenger's power window

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



Lowers the passenger's power window

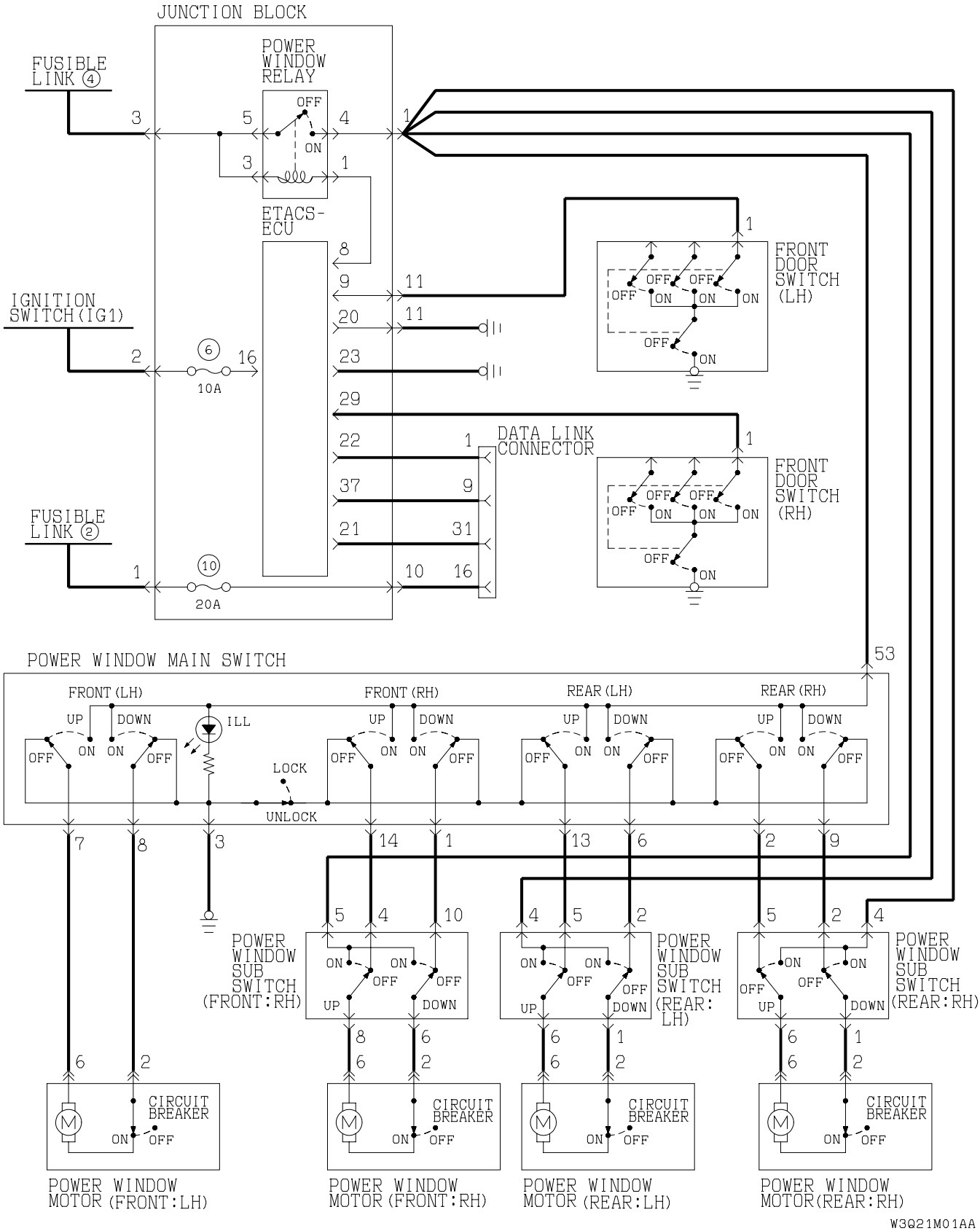
When the power window sub switch is pushed down, the system energizes its respective power window motor, and then passenger's window glass lowers.



Power window timer function

When the ignition switch is turned to the "ON" position, the power window relay is turned ON. After the ignition switch is turned OFF, the system continues to turn ON the power window relay for about 30 seconds and to enable the opening and closing of the door window by the power window switch. When the driver's or front passenger's door is opened while the timer is in operation, the power window relay will be turned OFF.

General circuit diagram for the power windows

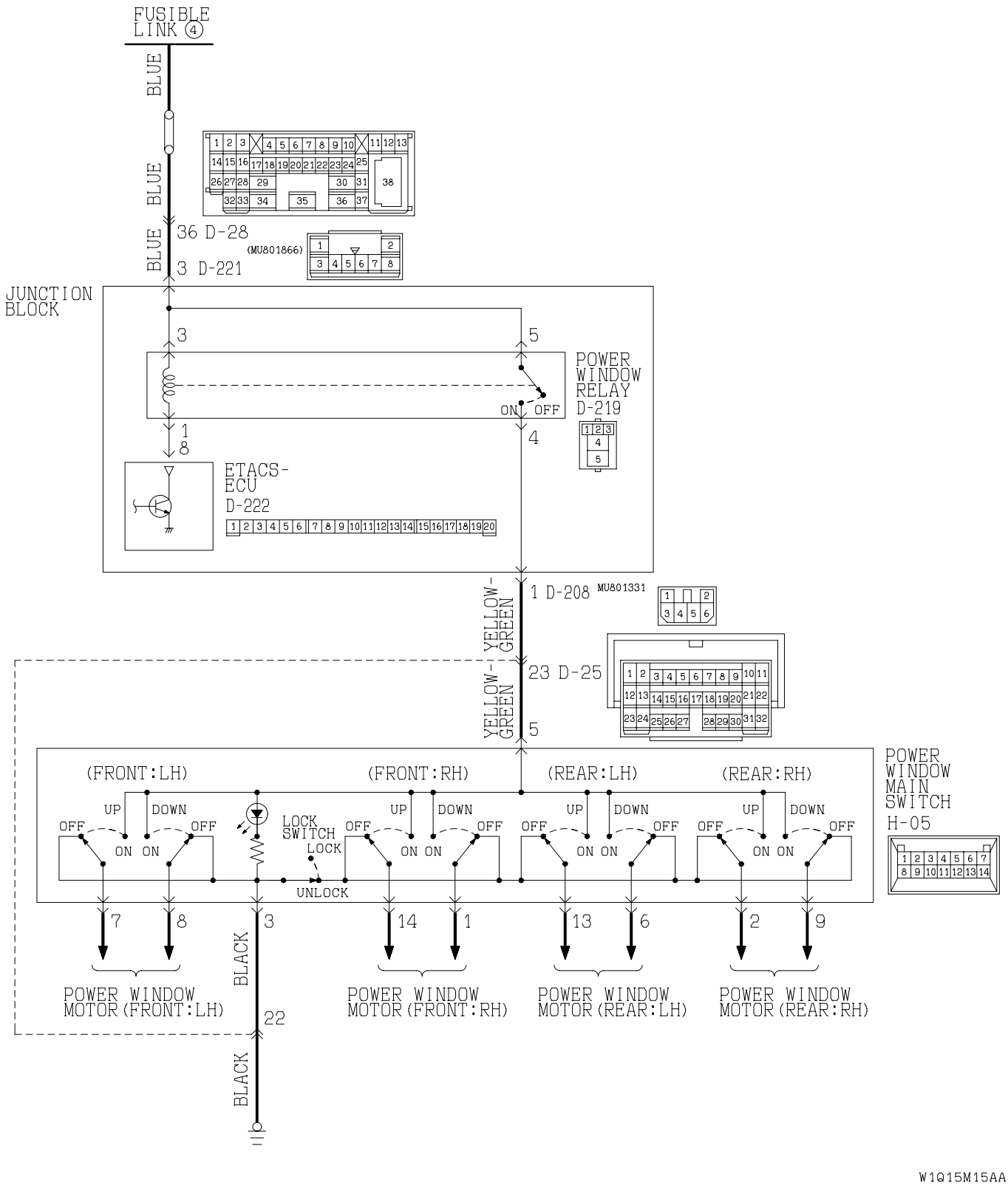


TSB Revision

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Power Window Relay Circuit



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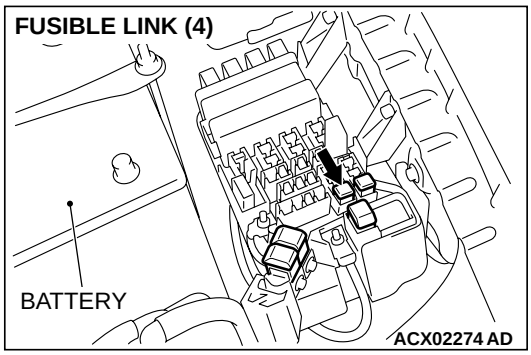
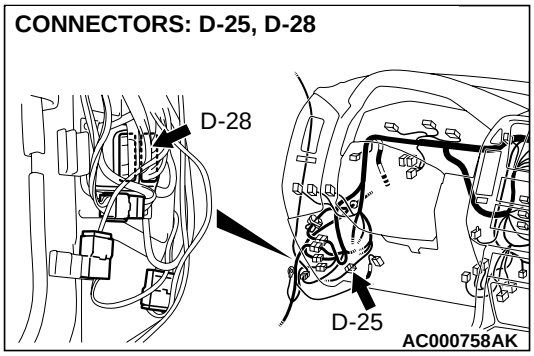
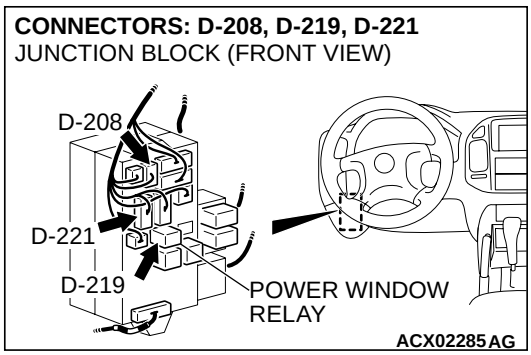
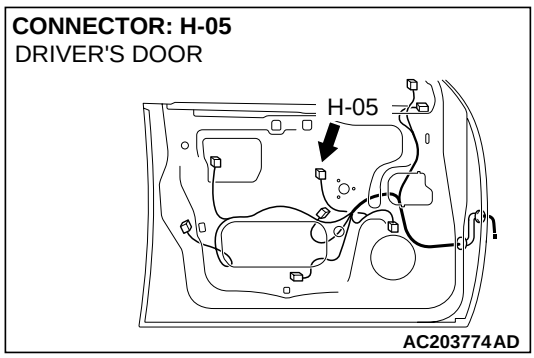
TSB Revision









CIRCUIT OPERATION

The ETACS-ECU turns on the power window relay to activate the power windows when the ignition switch (IG1) is in the "ON" position. The power window relay is located in the under-dash junction block, to the left of the steering column. It plugs into connector D-219.

TROUBLESHOOTING HINTS

- The power window relay 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:

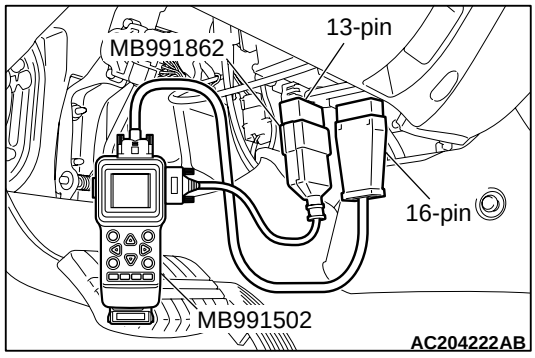
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

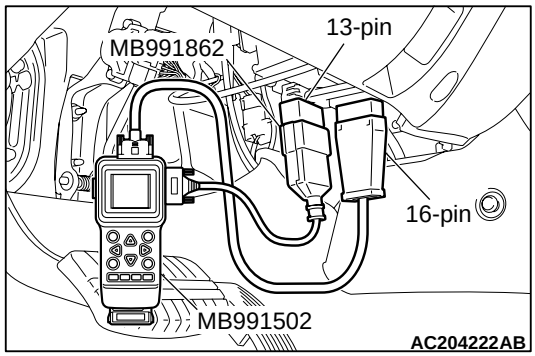
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM ECU" menu for the ETACS ECU menu.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



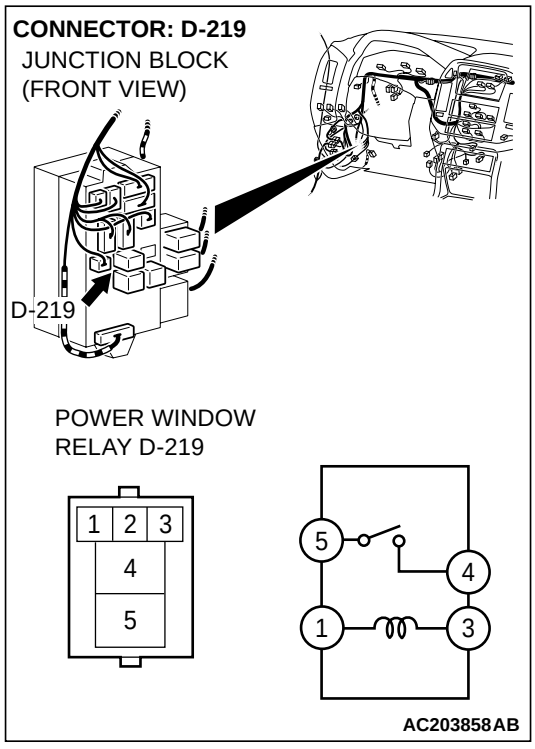
STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

(1) Turn the ignition switch to the "ON" position before checking input signals from the ignition switch (IG1).
(2) Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "DATA LIST."
   5. Select "ETACS ECU."
(3) Check that normal conditions are displayed on the item described in the table below.

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

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

YES : Go to Step 3.
NO : Refer to Inspection Procedure O-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) P.54Bc-7."



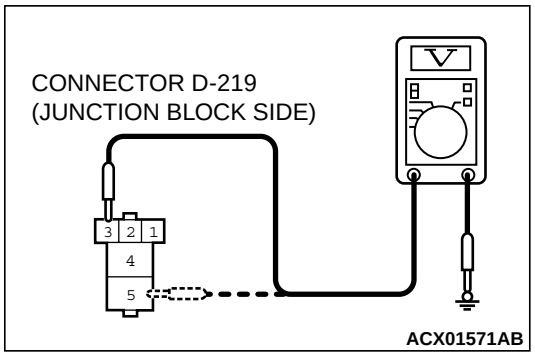
STEP 3. Check the power window relay.

Properly identify and remove the relay from the under-dash junction block and test the relay using the chart as a guide.

BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal No.3 and the positive battery terminal • Connect terminal No.1 and the negative battery terminal		Less than 2 ohms

Q: Is the power window relay in good condition?

YES : Go to Step 4.
NO : Replace the power window relay. Verify that the power windows function should now work normally.



STEP 4. Measure at power window relay connector D-219 in order to check the fusible link (4) line of power supply system to power window relay.

(1) Disconnect power window relay connector D-219, and measure at the junction block side.

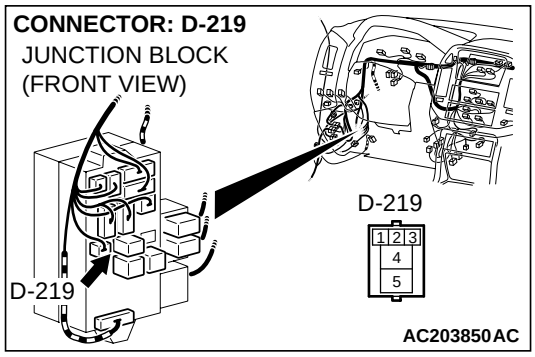
(2) Measure the voltage between terminal numbers 3, 5 and ground.

- The voltage should be 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 5.



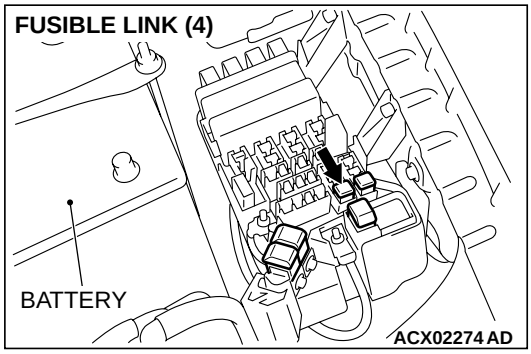
STEP 5. Check power window relay connector D-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

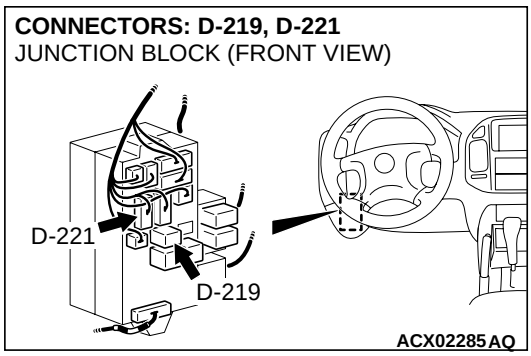
Q: Is power window relay connector D-219 in good condition?

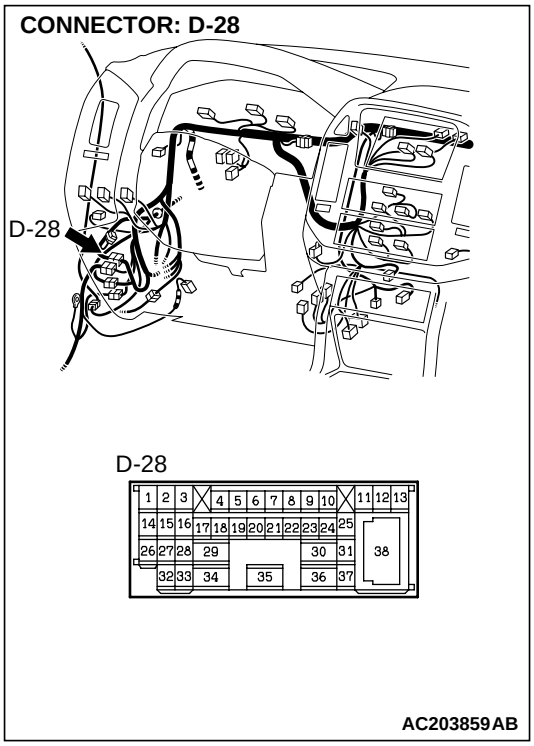
YES : Go to Step 6.

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

STEP 6. Check the wiring harness between power window relay connector D-219 (terminal 5) and fusible link (4).







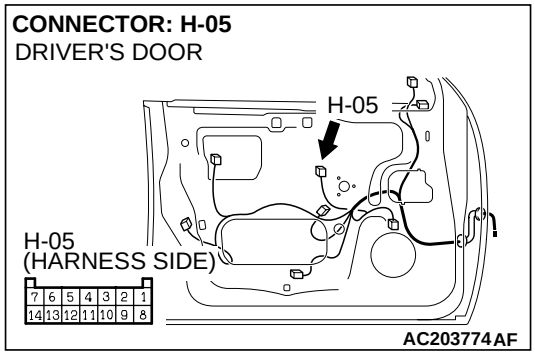
NOTE: Also check junction block connector D-221 and intermediate connector D-28 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connector D-221 or intermediate connector D-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector D-219 (terminal 5) and fusible link (4) in good condition?

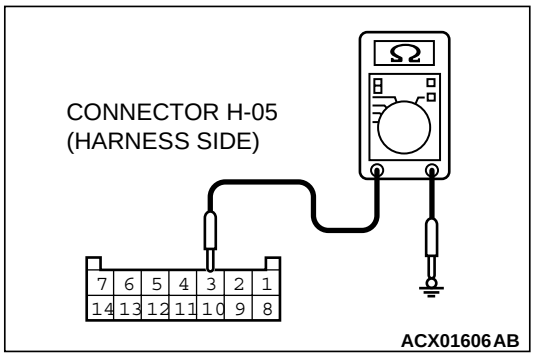
YES : No action is necessary and testing is complete.

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. Verify that the power windows function should now work normally.

STEP 7. Check the ground circuit to the power window main switch. Test at power window main switch connector H-05.



(1) Disconnect power window main switch connector H-05 and measure the resistance available at the harness side.

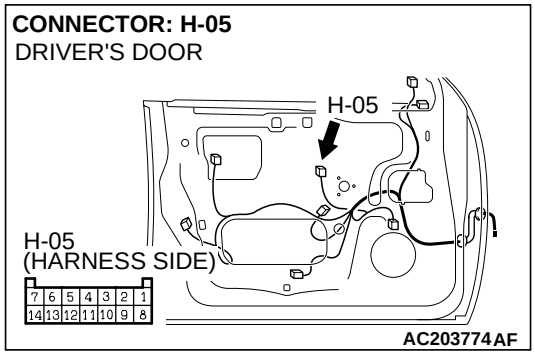


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.
NO : Go to Step 8.

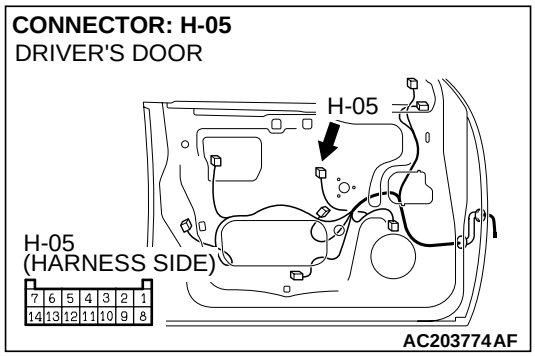
STEP 8. Check power window main switch connector H-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

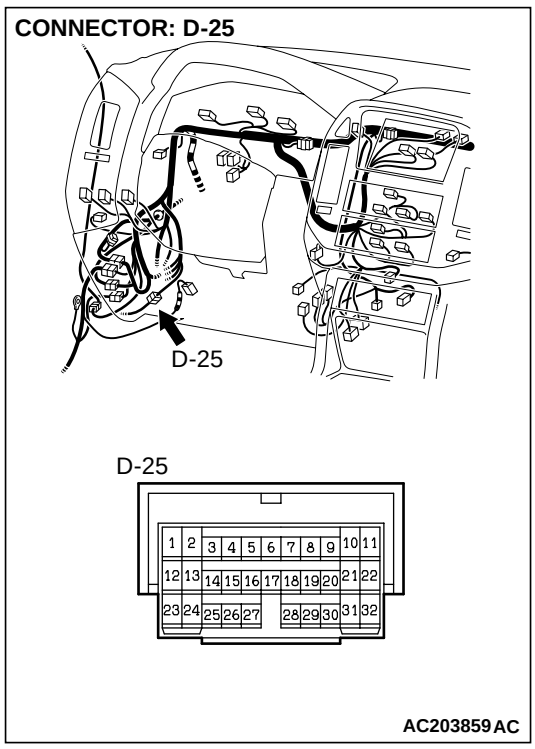


Q: Is power window main switch connector H-05 in good condition?

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 power windows function should now work normally.

STEP 9. Check the wiring harness between power window main switch connector H-05 (terminal 3) and ground.





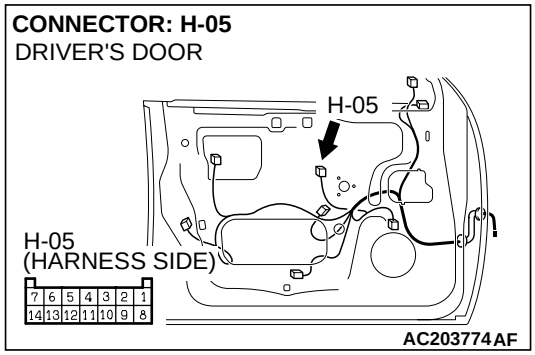
NOTE: Also check intermediate connector D-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector H-05 (terminal 3) and ground in good condition?

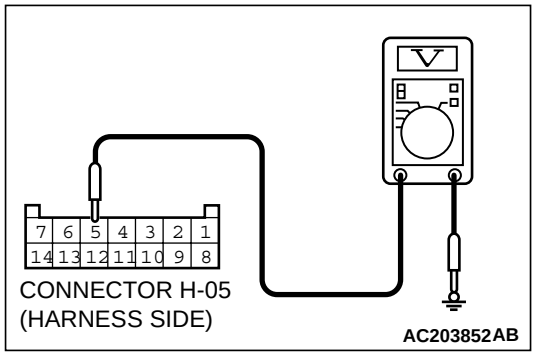
YES : No action is necessary and testing is complete.

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. Verify that the power windows function should now work normally.

STEP 10. Check the battery power supply circuit to the power window main switch. Test at power window main switch connector H-05.



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

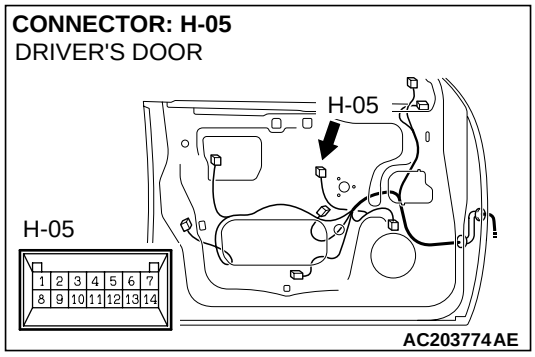


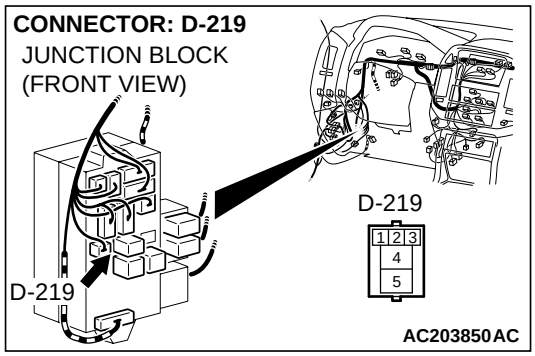
(3) Measure the voltage between terminal 5 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 13.
NO : Go to Step 11.

STEP 11. Check power window main switch connector H-05 and power window relay connector D-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

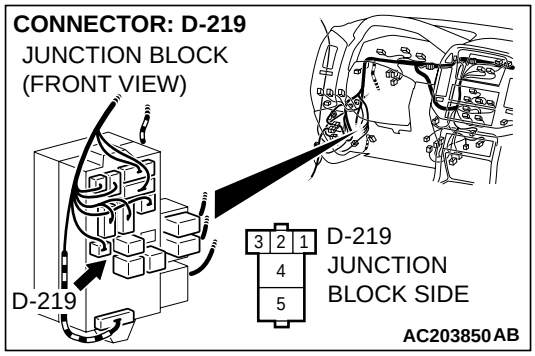


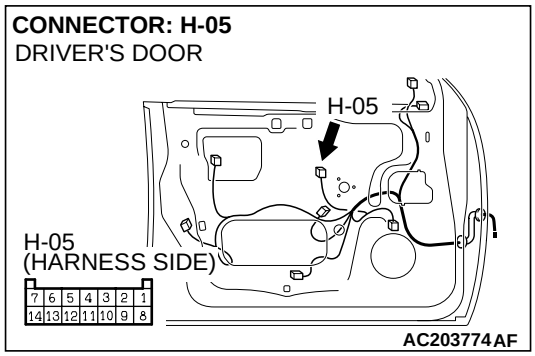


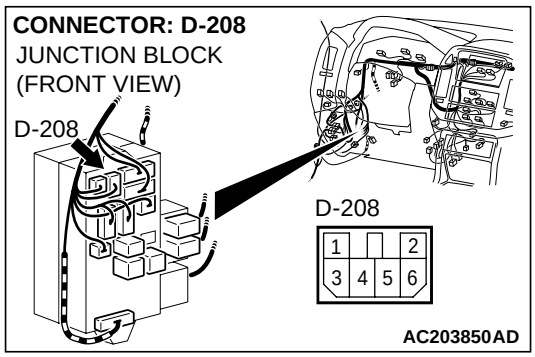
Q: Are power window main switch connector H-05 and power window relay connector D-219 in good condition?

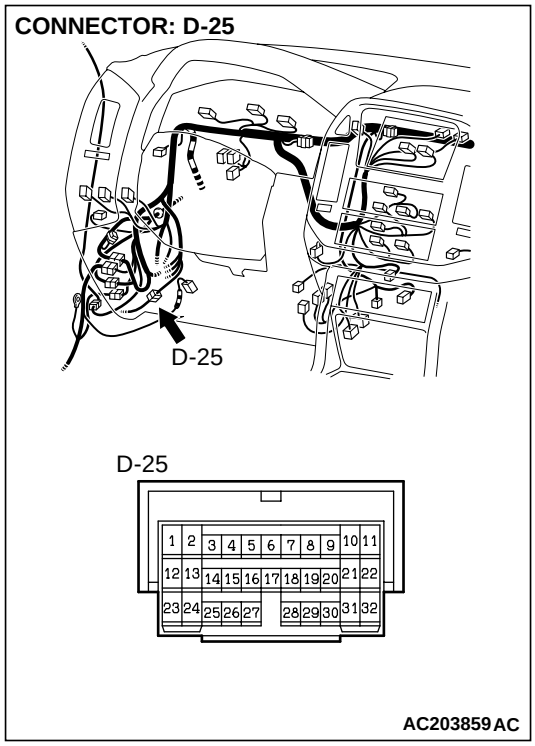
YES : Go to Step 12.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power windows function should now work normally.

STEP 12. Check the wiring harness between power window relay connector D-219 (terminal 4) and power window main switch connector H-05 (terminal 5).







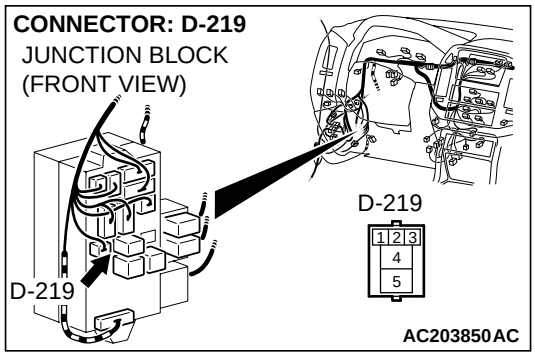


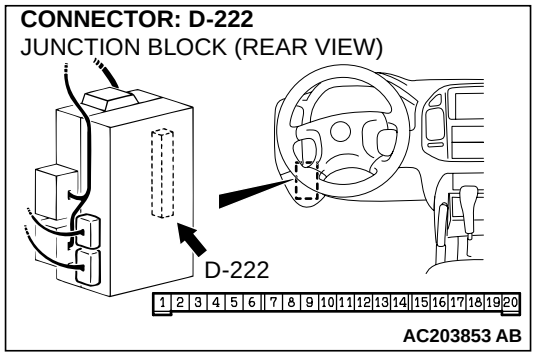
NOTE: Also check junction block connector D-208 and intermediate connector D-25 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connector D-208 or intermediate connector D-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2**.*

Q: Is the wiring harness between power window relay connector D-219 (terminal 4) and power window main switch connector H-05 (terminal 5) in good condition?

YES : No action is necessary and testing is complete.

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



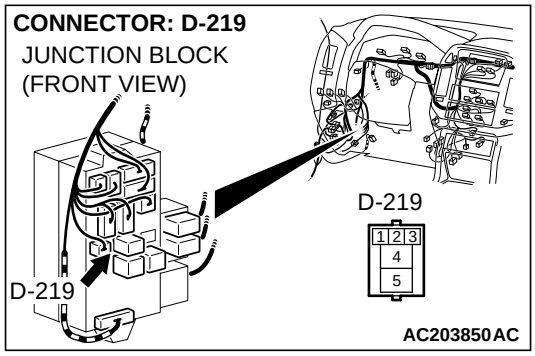


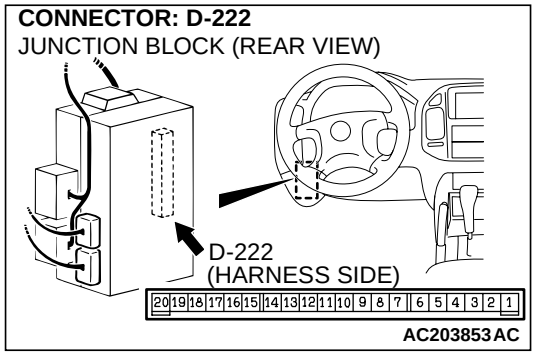
STEP 13. Check power window relay connector D-219 and ETACS-ECU connector D-222 for damage.

Q: Are power window relay connector D-219 and ETACS-ECU connector D-222 in good condition?

YES : Go to Step 14.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the power windows function should now work normally.





STEP 14. Check the wiring harness between power window relay connector D-219 (terminal 1) and ETACS-ECU connector D-222 (terminal 8).

Q: Is the wiring harness between power window relay connector D-219 (terminal 1) and ETACS-ECU connector D-222 (terminal 8) in good condition?

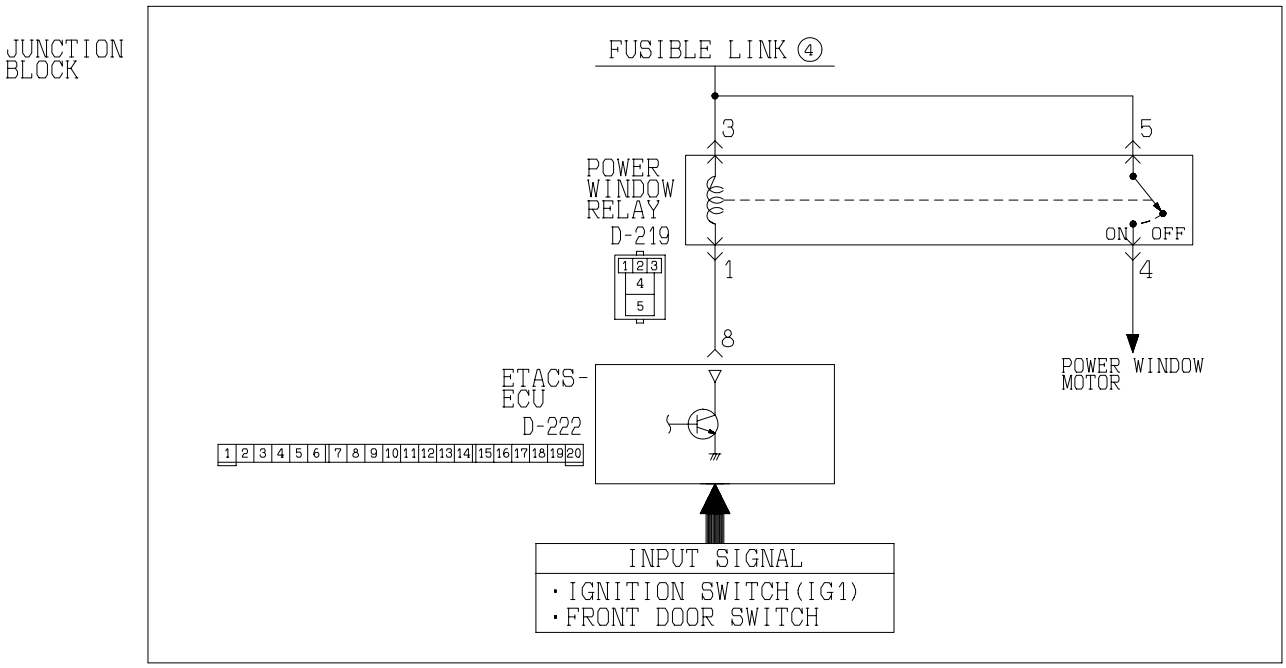
YES : Replace the ETACS-ECU. Verify that the power windows function should now work normally.

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. Verify that the power windows function should now work normally.

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Power Window Timer Function Circuit



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CIRCUIT OPERATION

The ETACS-ECU activates the power window timer function with input signals from the followings:

- Ignition switch (IG1)
- Front door switch

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

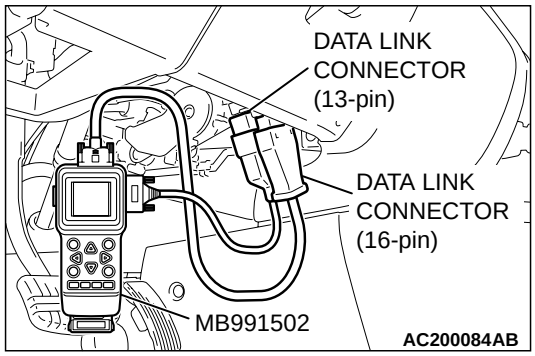
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

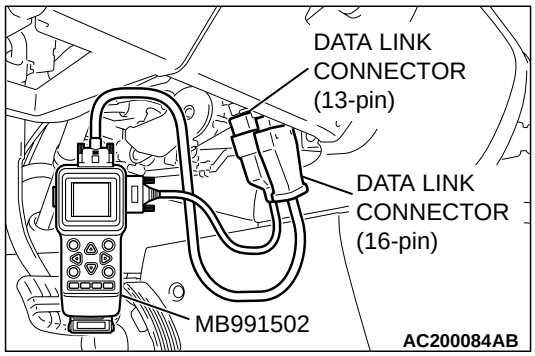
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM ECU" menu for the "ETACS ECU" menu.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



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

(1) Check the input signals from the following switches:
- Ignition switch: ON to OFF
- Driver's and front passenger's doors: closed

(2) Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."
1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "DATA LIST."
5. Select "ETACS ECU."

(3) Check that normal conditions are displayed on the items described in the table below.

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

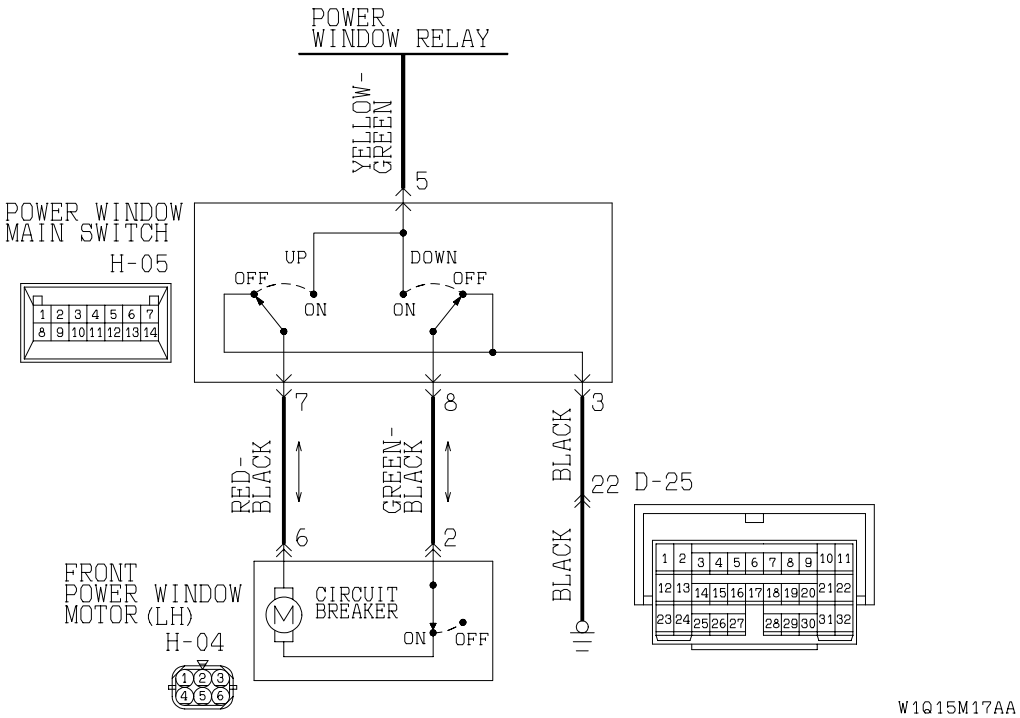
Q: Does the scan tool display the items "IG SW (IG1)" and "FRONT DOOR SW" as normal condition?

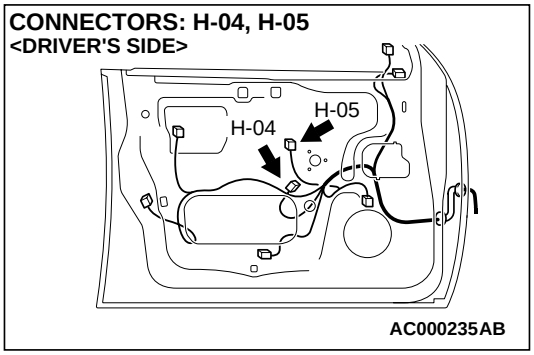
YES : Replace the ETACS-ECU. Verify that the power window timer should now works normally.

NO :
- The scan tool does not show the respective normal condition for item "IG SW (IG1)." Refer to Inspection Procedure O-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) P.54Bc-7."
- The scan tool does not show the respective normal condition for item "FRONT DOOR SW." Refer to Inspection Procedure O-5 "ETACS-ECU does not receive any signal from the driver's or front passenger's door switchP.54Bc-23."

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

Power Window (front: LH) Circuit





CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

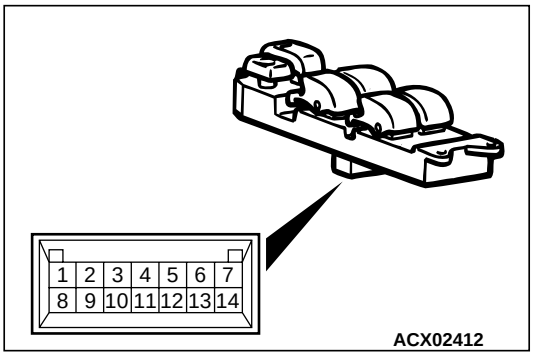
DIAGNOSIS

Required Special Tool:
- MB991223: Harness Set

STEP 1. Check the power window main switch.

(1) Remove the power window main switch. Refer to GROUP 52A, Door Trim P.42-30.

(2) Check continuity while power window main switch is moved to "UP" and "DOWN" position.



FRONT (LH) SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	3 – 8, 5 – 7	Less than 2 ohms
OFF	3 – 7, 3 – 8, 7 – 8	
DOWN	3 – 7, 5 – 8	

Q: Is the power window main switch in good condition?

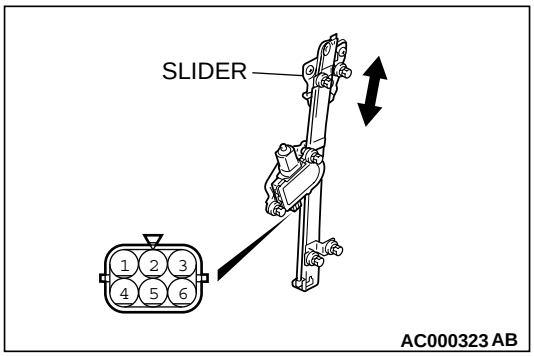
YES : Go to Step 2.

NO : Replace the power window main switch. Verify that the front power window (LH) function should now work normally.

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

(1) Remove the front power window motor (LH). Refer to GROUP 42, Door – Door Glass and Regulator P.42-37.

(2) Follow the table below to check the front power window motor (LH) for correct operation.



BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 6 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The slider moves up
• Connect terminal 2 to the positive battery terminal • Connect terminal 6 to the negative battery terminal	The slider moves down

Q: Is the power window motor (LH) in good condition?

YES : Go to Step 3.

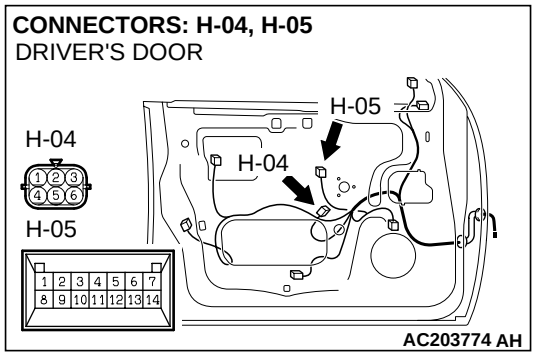
NO : Replace the front power window motor (LH). Verify that the front power window (LH) function should now work normally.

STEP 3. Check power window main switch connector H-05 and front power window motor (LH) connector H-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector H-05 and front power window motor (LH) connector H-04 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 front power window (LH) function should now work normally.

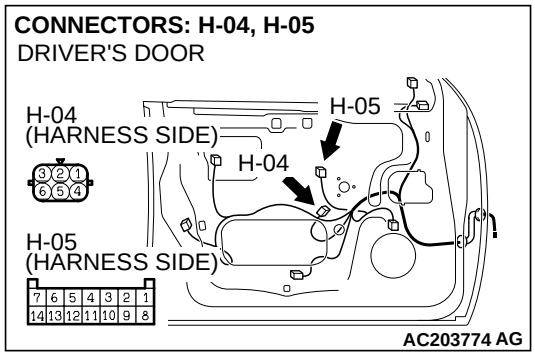


STEP 4. Check the wiring harness between power window main switch connector H-05 (terminal 7) and front power window motor (LH) connector H-04 (terminal 6).

Q: Is the wiring harness between power window main switch connector H-05 (terminal 7) and front power window motor (LH) connector H-04 (terminal 6) in good condition?

YES : Go to Step 5.

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

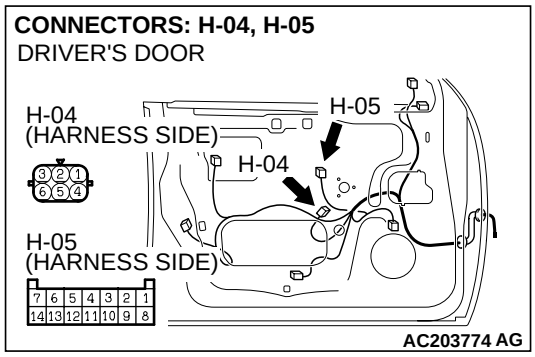


STEP 5. Check the wiring harness between power window main switch connector H-05 (terminal 8) and front power window motor (LH) connector H-04 (terminal 2).

Q: Is the wiring harness between power window main switch connector H-05 (terminal 8) and front power window motor (LH) connector H-04 (terminal 2) in good condition?

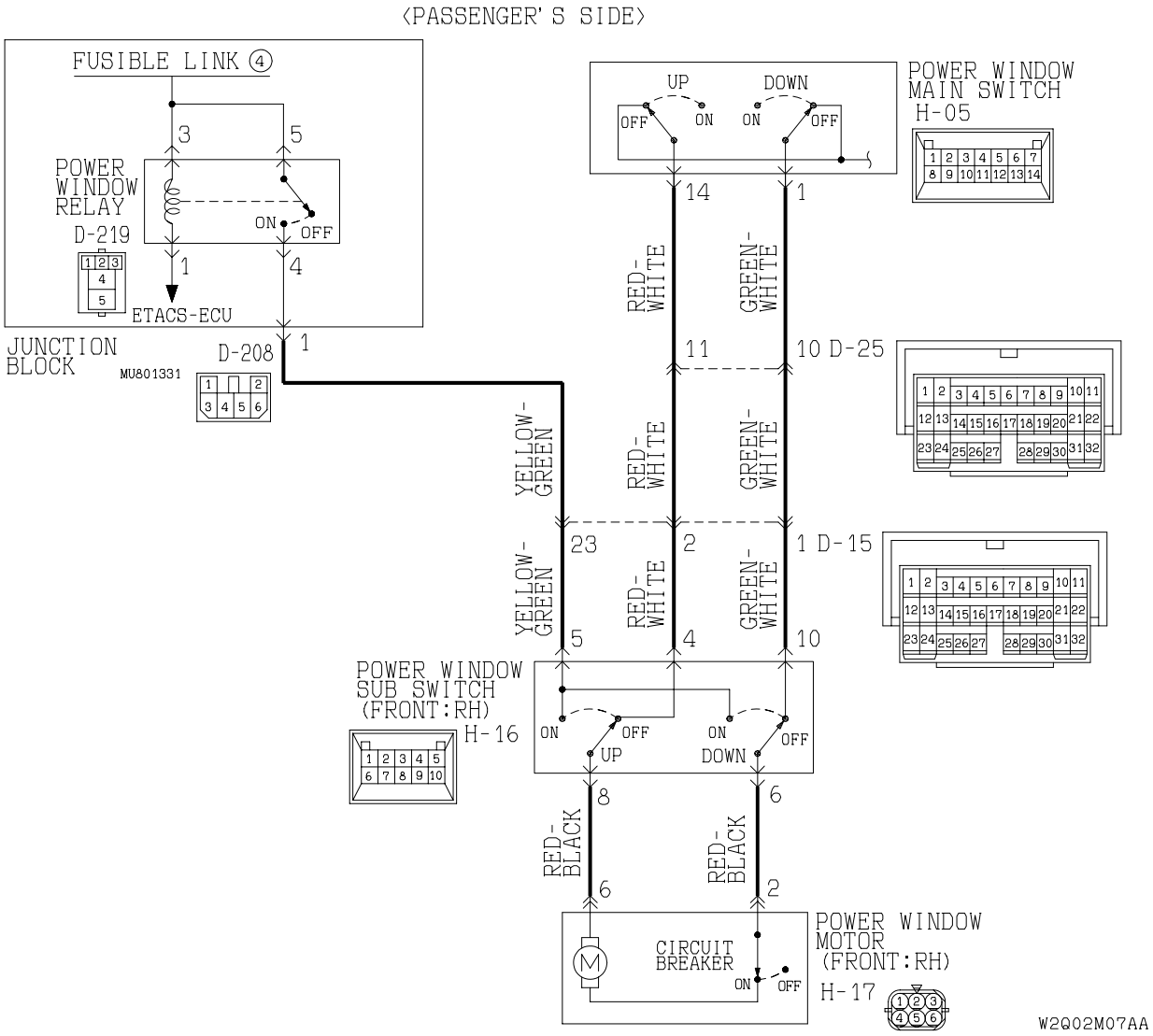
YES : No action is necessary and testing is complete.

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 power window (LH) function should now work normally.

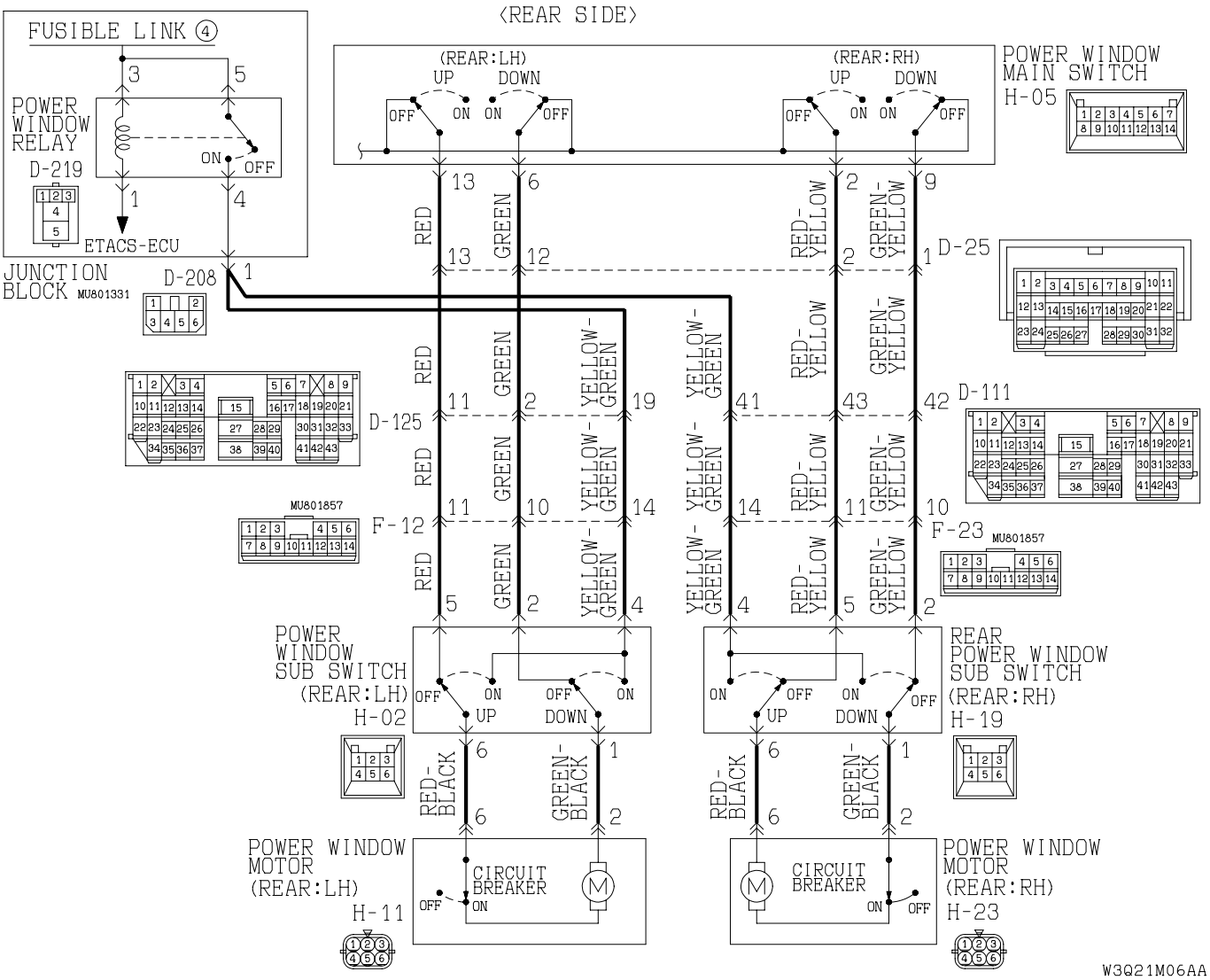


INSPECTION PROCEDURE D-4: Power Window: Power windows do not work normally by operating the front passenger's and rear power window sub-switches.

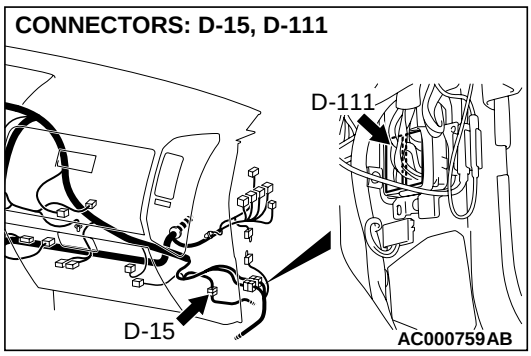
Power Window Sub Switch Circuit



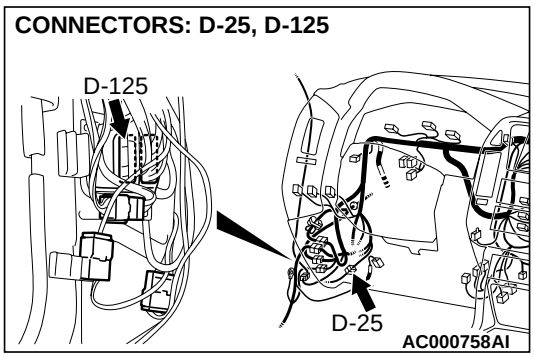
Power Window Sub Swich Circuit



CONNECTORS: D-15, D-111

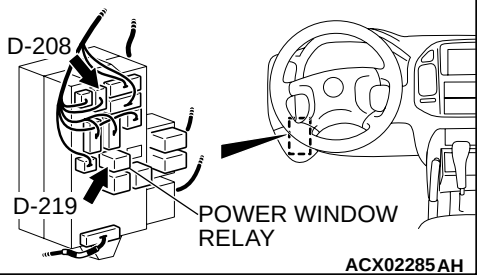


CONNECTORS: D-25, D-125



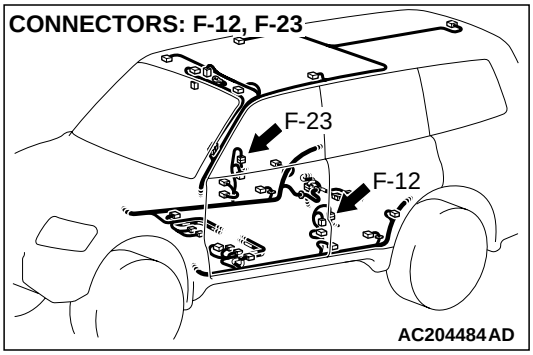
TSB Revision

CONNECTORS: D-208, D-219
JUNCTION BLOCK (FRONT VIEW)



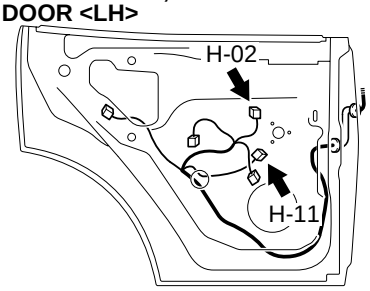
ACX02285AH

CONNECTORS: F-12, F-23



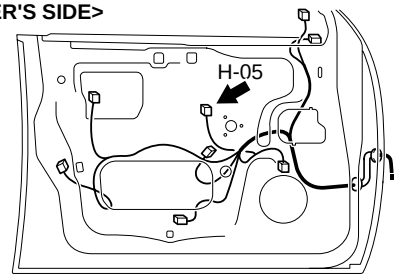
AC204484AD

CONNECTORS: H-02, H-11
REAR DOOR <LH>



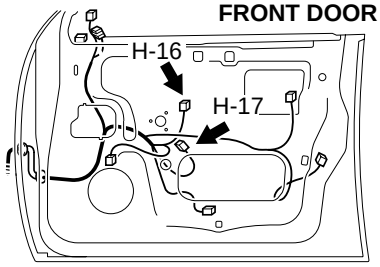
AC000237AH

CONNECTOR: H-05
<DRIVER'S SIDE>



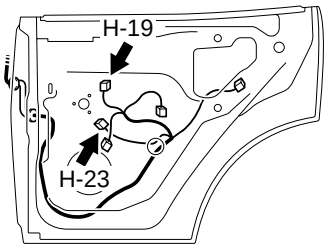
AC000235AC

CONNECTORS: H-16, H-17
FRONT DOOR <RH>



AC000238AI

CONNECTORS: H-19, H-23
REAR DOOR <RH>



AC000316AG

CIRCUIT OPERATION

Power window motors open or close the door windows when the front passenger's or rear passenger's sub switch is moved to "UP" or "DOWN" position.

TECHNICAL DESCRIPTION (COMMENT)

A power window sub-switch or power window motor may be defective. Alternatively, the power window lock switch (incorporated in the power window main switch) may remain pressed to "LOCK" position.

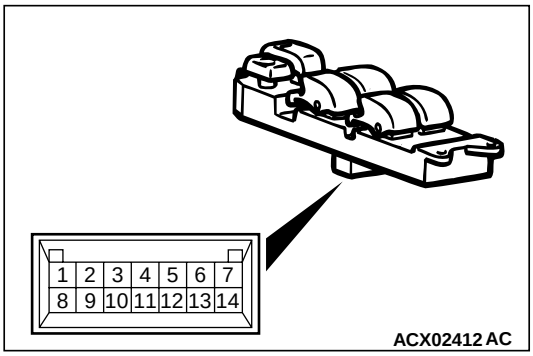
TROUBLESHOOTING HINTS

- The power window main switch may be defective
- The front power window sub-switch (RH) may be defective
- The rear power window sub-switch (LH) may be defective
- The rear power window sub-switch (RH) may be defective
- The front power window motor (RH) may be defective
- The rear power window motor (LH) may be defective
- The rear power window motor (RH) 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

TSB Revision



STEP 1. Check each switch on the power window main switch for continuity.

(1) Remove the power window main switch. Refer to P.42-30.

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

SWITCHES TO BE CHECKED	SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
	Power window lock switch	Power window switches to be checked		
Front power window (RH)	Lock	UP	5 – 14	Less than 2 ohms
		OFF	1 – 14	
		DOWN	1 – 5	
	Unlock	UP	1 – 3, 5 – 14	
		OFF	1 – 3, 1 – 14, 3 – 14	
		DOWN	1 – 5, 3 – 14	
Rear power window (LH)	Lock	UP	5 – 13	Less than 2 ohms
		OFF	6 – 13	
		DOWN	5 – 6	
	Unlock	UP	3 – 6, 5 – 13	
		OFF	3 – 6, 3 – 13, 6 – 13	
		DOWN	3 – 13, 5 – 6	
Rear power window (RH)	Lock	UP	2 – 5	Less than 2 ohms
		OFF	2 – 9	
		DOWN	5 – 9	
	Unlock	UP	2 – 5, 3 – 9	
		OFF	2 – 3, 2 – 9, 3 – 9	
		DOWN	2 – 3, 5 – 9	

Q: Is the power window main switch normal?

YES : Go to Step 2.

TSB Revision

NO : Replace the power window main switch. When the power window sub-switch is operated, the power windows should open or close normally.

STEP 2. Check the power window lock switch.

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

YES : Go to Step 3.

NO : Operate the power window lock switch to the "UNLOCK" position. When the power window sub-switch is operated, the power windows should open or close normally.

STEP 3. Check which door window is not opened or closed

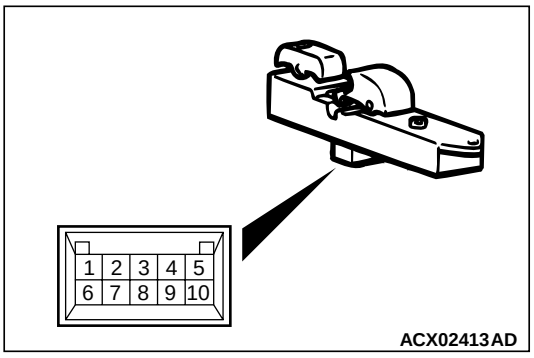
Q: Which door window is not opened or closed?

Front passenger's side : Go to Step 4.
Rear passenger (LH) : Go to Step 20.
Rear passenger (RH) : Go to Step 37.

STEP 4. Check the front power window sub-switch (RH) for continuity.

(1) Remove the front power window sub-switch (RH). Refer to GROUP 42, Door-Door Trim and Waterproof Film P.42-30.

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

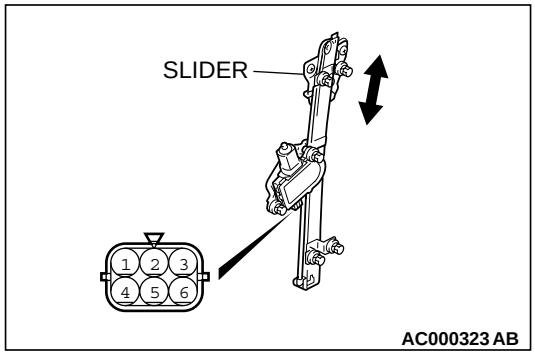


SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	5 – 8, 6 – 10	Less than 2 ohms
OFF	4 – 8, 6 – 10	
DOWN	4 – 8, 5 – 6	

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

YES : Go to Step 5.

NO : Replace the front power window sub-switch (RH). Verify that the front power window sub-switch (RH) should now work normally.



STEP 5. Check the front power window motor (RH).

(1) Remove the front power regulator assembly (RH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-37.

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

BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 2 to the negative battery terminal • Connect terminal 6 to the positive battery terminal	The slider moves up
• Connect terminal 6 to the negative battery terminal • Connect terminal 2 to the positive battery terminal	The slider moves down

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

YES : Go to Step 6.

NO : Replace the front power regulator assembly (RH). Verify that the front power window sub-switch (RH) should now work normally.

STEP 6. Check at front power window sub-switch connector H-16 in order to check the power window relay circuit of the power supply to the front power window sub-switch (RH).

(1) Disconnect front power window sub-switch (RH) connector H-16, and measure at the harness side.

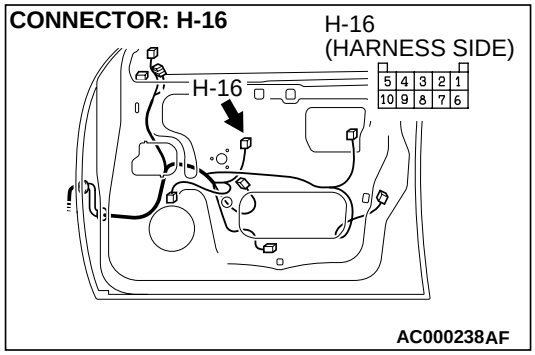
(2) Measure the voltage between terminal 5 and ground.

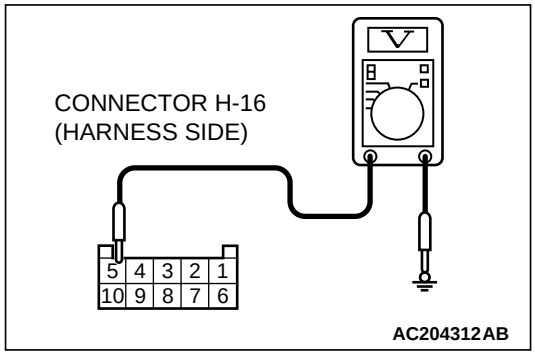
- The voltage should measure approximately 12 volts (battery positive voltage).

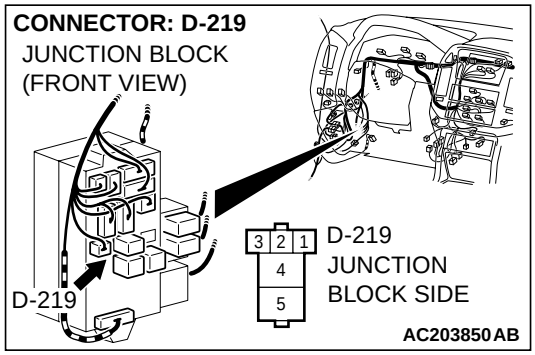
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

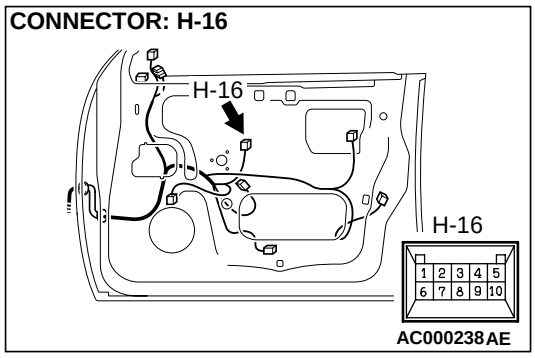
YES : Go to Step 9.

NO : Go to Step 7.









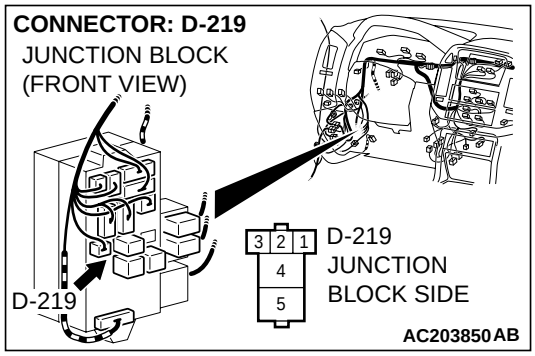
STEP 7. Check power window relay connector D-219 and front power window sub-switch connector H-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

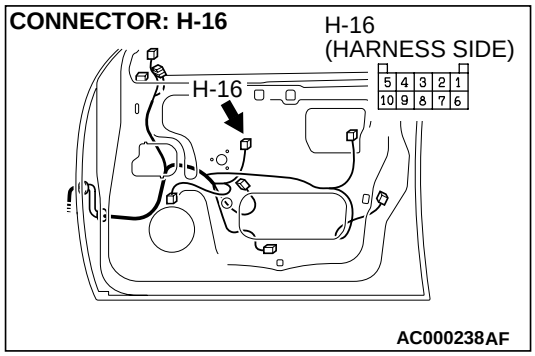
Q: Are power window relay connector D-219 and front power window sub-switch (RH) connector H-16 in good condition?

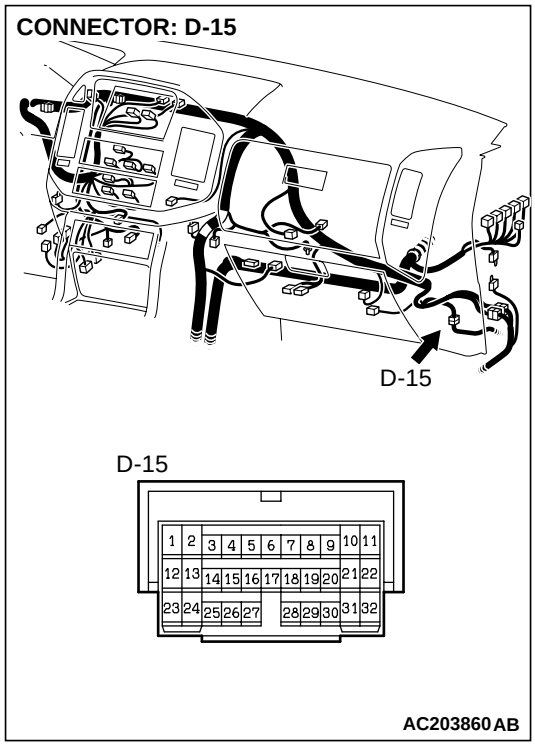
YES : Go to Step 8.

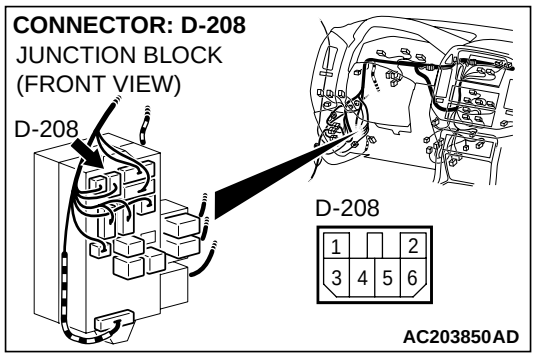
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the front power window sub-switch (RH) should now work normally.

STEP 8. Check the harness wiring between power window relay connector D-219 (terminal 4) and front power window sub-switch (RH) connector H-16 (terminal 5).









NOTE: Also check junction block connector D-208 and intermediate connector D-15. If junction block connector D-208 or intermediate connectors D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

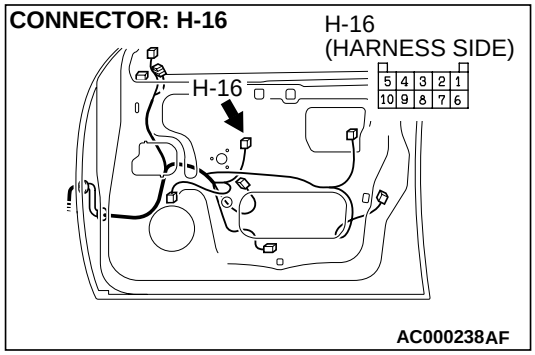
Q: Is the harness wiring between power window relay connector D-219 (terminal 4) and front power window sub-switch (RH) connector H-16 (terminal 5) in good condition?

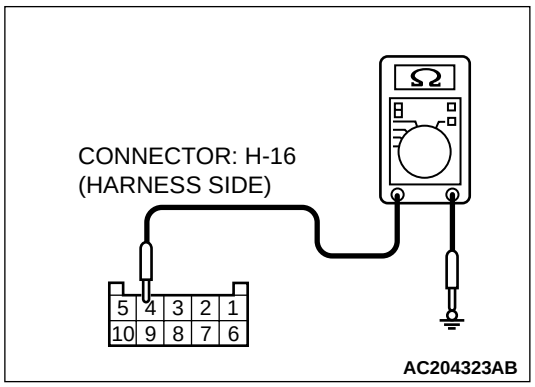
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front power window sub-switch (RH) should now work normally.

STEP 9. Check at front power window sub-switch (RH) connector H-16 in order to check the ground circuit to the front power window sub-switch (RH).

(1) Disconnect front power window sub-switch (RH) connector H-16, and measure at the harness side.





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

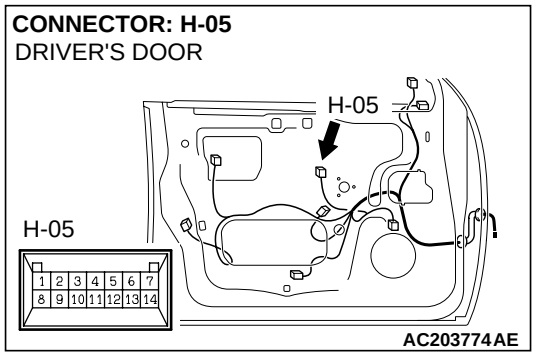
Q: Is the measured resistance 2 ohms or less?

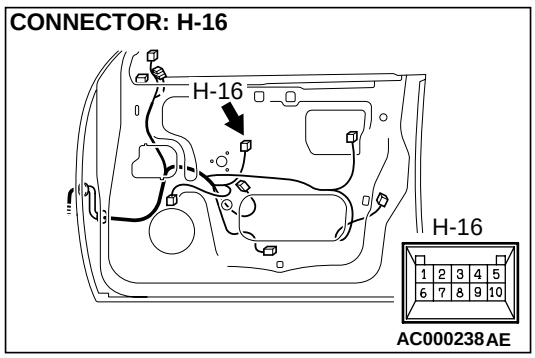
YES : Go to Step 13.
NO : Go to Step 10.

STEP 10. Check power window main switch connector H-05 and front power window sub-switch (RH) connector H-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

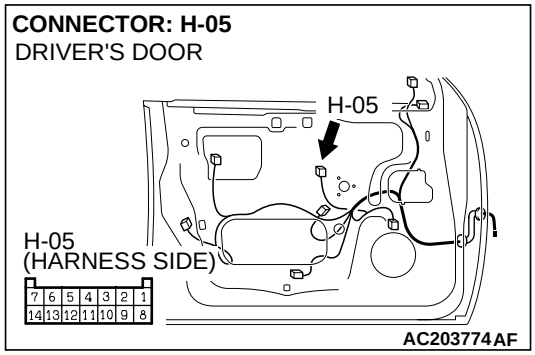
Q: Are power window main switch connector H-05 and front power window sub-switch (RH) connector H-16 in good condition?

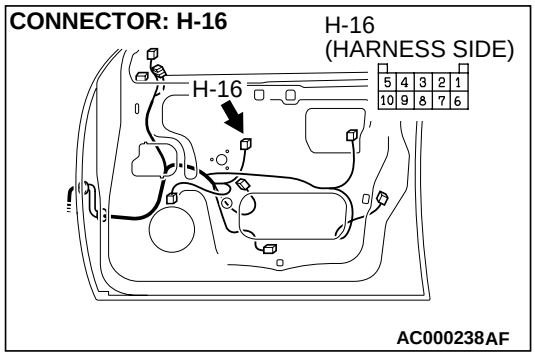
YES : Go to Step 11.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the front power window sub-switch (RH) should now work normally.



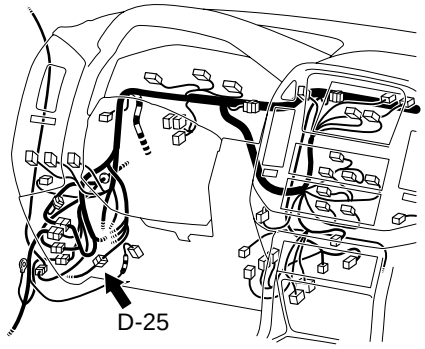


STEP 11. Check the harness wiring between power window main switch connector H-05 (terminal 14) and front power window sub-switch (RH) connector H-16 (terminal 4).

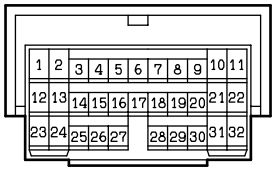




CONNECTOR: D-25



D-25



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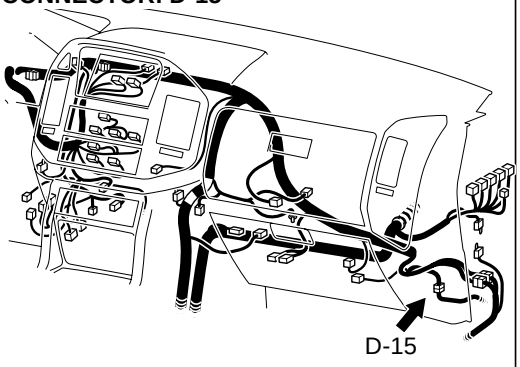
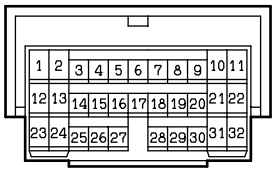
CONNECTOR: D-15



D-15



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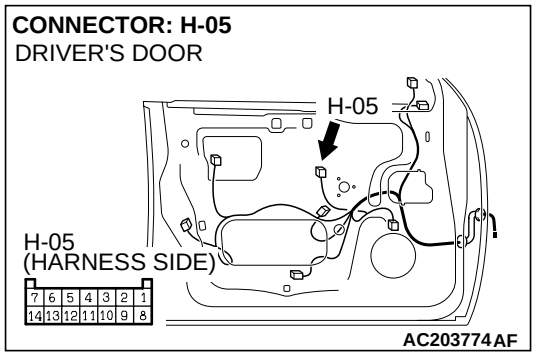
NOTE: Also check intermediate connectors D-25 and D-15. If intermediate connectors D-25 or D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

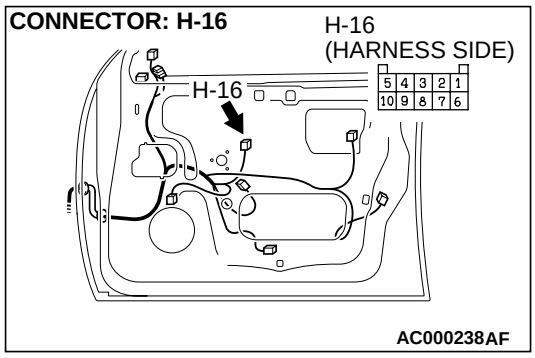
Q: Is the harness wiring between power window main switch connector H-05 (terminal 14) and front power window sub-switch (RH) connector H-16 (terminal 4) in good condition?

YES : Go to Step 12.

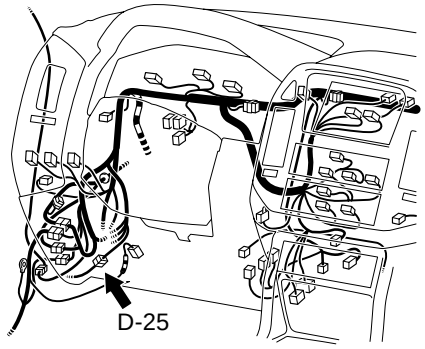
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front power window sub-switch (RH) should now work normally.

STEP 12. Check the harness wiring between power window main switch connector H-05 (terminal 1) and front power window sub-switch (RH) connector H-16 (terminal 10).

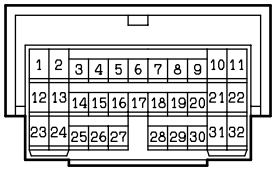




CONNECTOR: D-25



D-25



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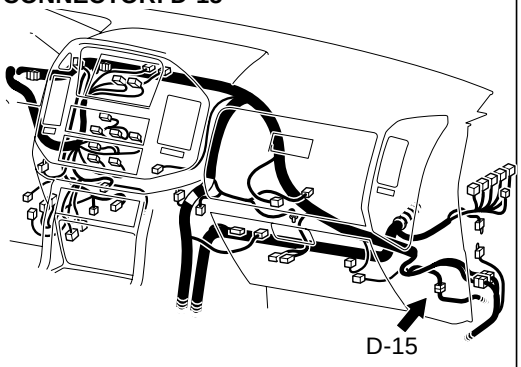
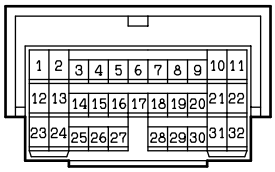
CONNECTOR: D-15



D-15



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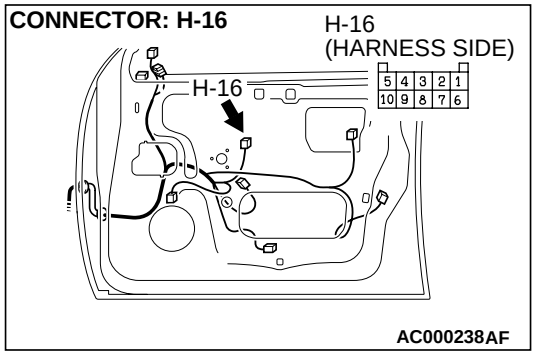
NOTE: Also check intermediate connectors D-25 and D-15. If intermediate connectors D-25 or D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the harness wiring between power window main switch connector H-05 (terminal 1) and front power sub-switch (RH) connector H-16 (terminal 10) in good condition?

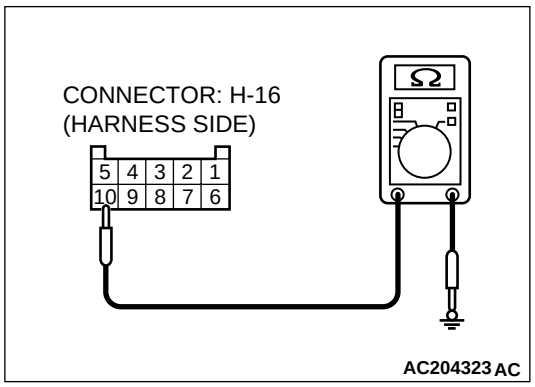
YES : Replace the power window main switch. Verify that the front power window sub-switch (RH) should now work normally.

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. Verify that the front power window sub-switch (RH) should now work normally.

STEP 13. Check at front power window sub-switch (RH) connector H-16 in order to check the ground circuit to the front power window sub-switch (RH).



(1) Disconnect front power window sub-switch (RH) connector H-16, and measure at the harness side.



(2) Measure the resistance value between terminal 10 and ground.
- The resistance should measure 2 ohms or less.

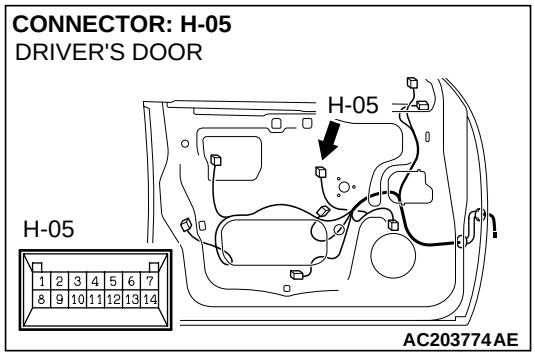
Q: Is the measured resistance 2 ohms or less?

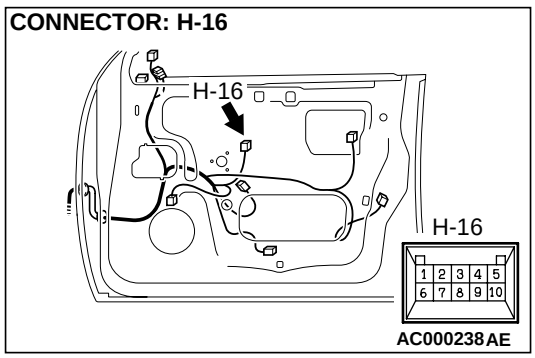
YES : Go to Step 17.
NO : Go to Step 14.

STEP 14. Check power window main switch connector H-05 and front power window sub-switch (RH) connector H-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector H-05 and front power window sub-switch (RH) connector H-16 in good condition?

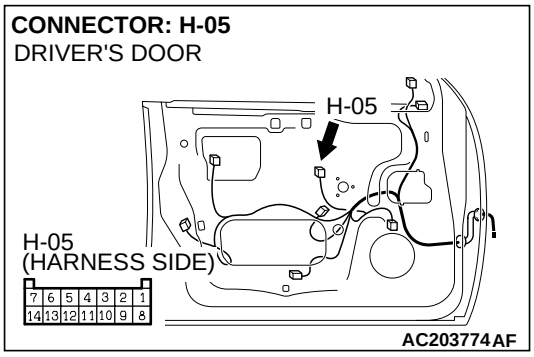
YES : Go to Step 15.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the front power window sub-switch (RH) should now work normally.



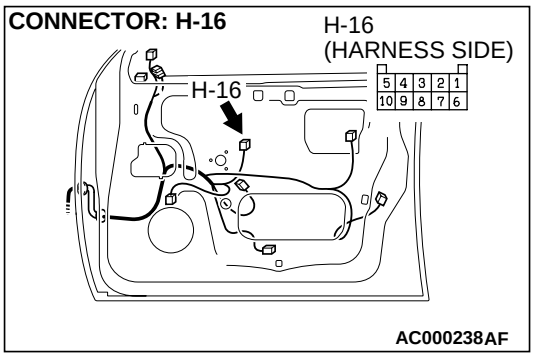


STEP 15. Check the harness wiring between power window main switch connector H-05 (terminal 14) and front power window sub-switch (RH) connector H-16 (terminal 4).

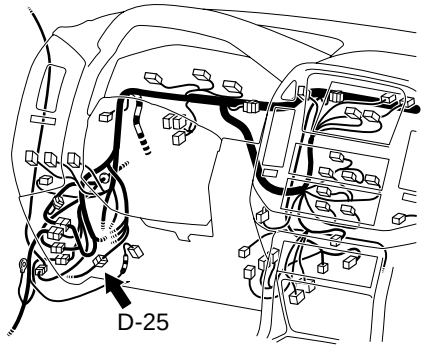
CONNECTOR: H-05
DRIVER'S DOOR



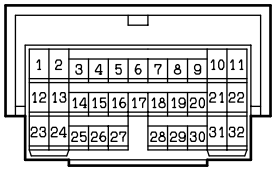
CONNECTOR: H-16



CONNECTOR: D-25



D-25



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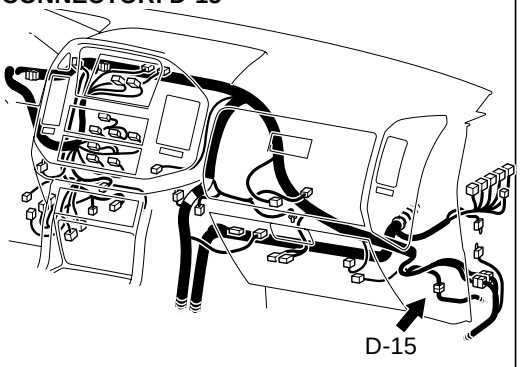
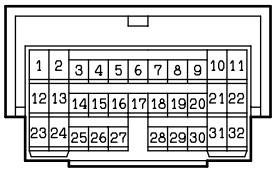
CONNECTOR: D-15



D-15



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NOTE: Also check intermediate connectors D-25 and D-15. If intermediate connectors D-25 or D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

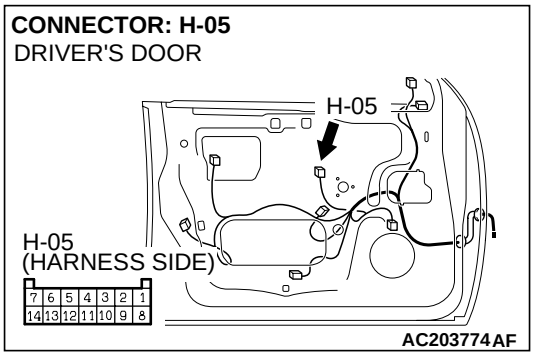
Q: Is the harness wiring between power window main switch connector H-05 (terminal 14) and front power window sub-switch (RH) connector H-16 (terminal 4) in good condition?

YES : Go to Step 16.

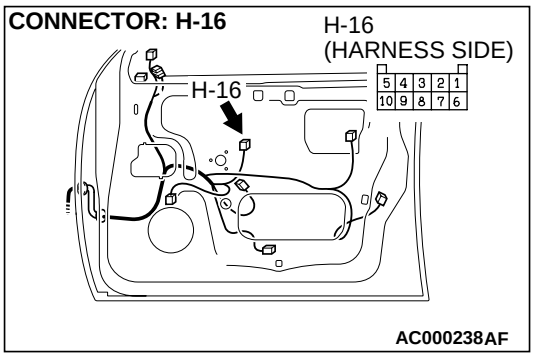
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front power window sub-switch (RH) should now work normally.

STEP 16. Check the harness wiring between power window main switch connector H-05 (terminal 1) and front power window sub-switch (RH) connector H-16 (terminal 10).

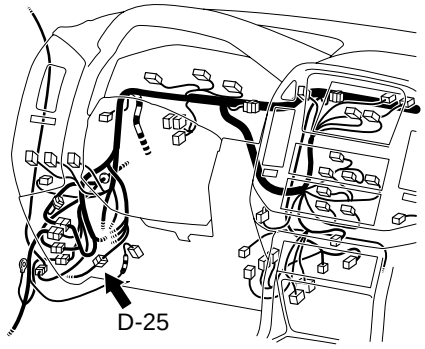
CONNECTOR: H-05
DRIVER'S DOOR



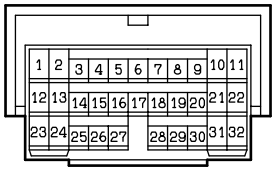
CONNECTOR: H-16



CONNECTOR: D-25



D-25



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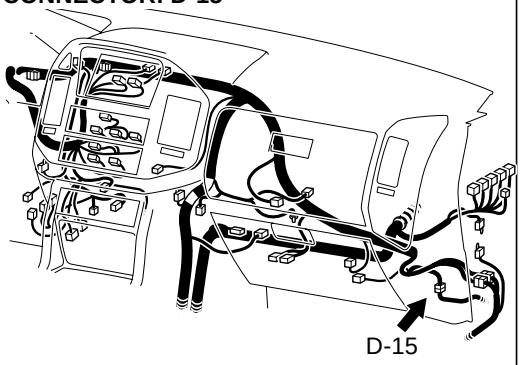
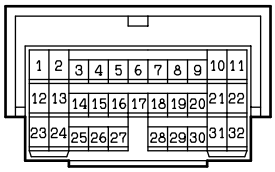
CONNECTOR: D-15



D-15



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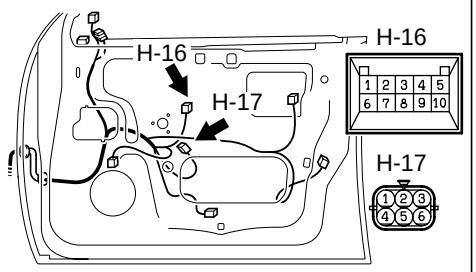
NOTE: Also check intermediate connectors D-25 and D-15. If intermediate connectors D-25 or D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the harness wiring between power window main switch connector H-05 (terminal 1) and front power window sub-switch (RH) connector H-16 (terminal 10) in good condition?

YES : Replace the power window main switch. Verify that the front power window sub-switch (RH) 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. Verify that the front power window sub-switch (RH) should now work normally.

CONNECTORS: H-16, H-17



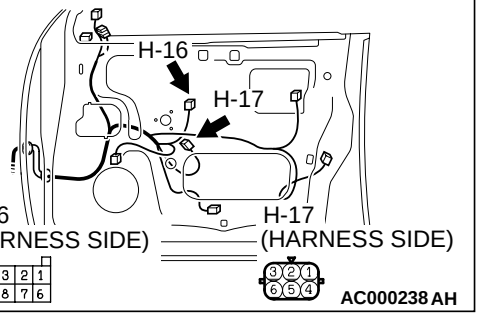
STEP 17. Check front power window sub-switch (RH) connector H-16 and front power window motor (RH) connector H-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are front power window sub-switch (RH) connector H-16 and front power window motor (RH) connector H-17 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 front power window sub-switch (RH) should now work normally.

CONNECTORS: H-16, H-17



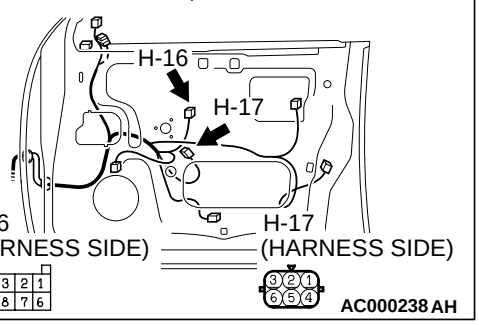
STEP 18. Check the harness wiring between front power window sub-switch (RH) connector H-16 (terminal 8) and front power window motor (RH) connector H-17 (terminal 6).

Q: Is the harness wiring between front power window main switch (RH) connector H-16 (terminal 8) and front power window motor (RH) connector H-17 (terminal 6) in good condition?

YES : Go to Step 19.

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 power window sub-switch (RH) should now work normally.

CONNECTORS: H-16, H-17

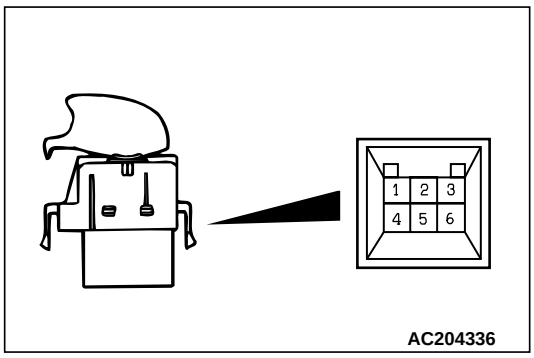


STEP 19. Check the harness wiring between front power window sub-switch (RH) connector H-16 (terminal 6) and front power window motor (RH) connector H-17 (terminal 2).

Q: Is the harness wiring between front power window main switch (RH) connector H-16 (terminal 6) and front power window motor (RH) connector H-17 (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 power window sub-switch (RH) should now work normally.



STEP 20. 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 Trim and Waterproof Film P.42-30.

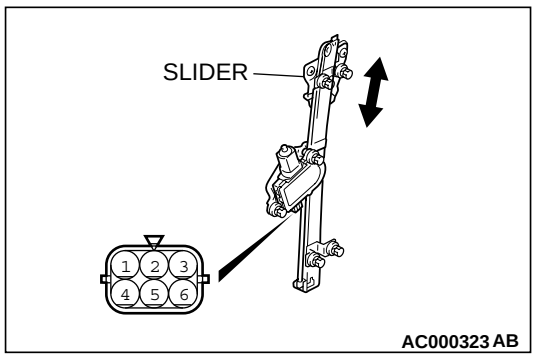
(2) Check continuity when the rear power window sub-switch (LH) is operated to "UP" or "DOWN" position.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	1 – 2, 4 – 6	Less than 2 ohms
OFF	1 – 2, 5 – 6	
DOWN	1 – 4, 5 – 6	

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

YES : Go to Step 21.

NO : Replace the rear power window sub-switch (LH). Verify that the rear power window sub-switch (LH) should now work normally.



STEP 21. Check the rear power window motor (LH).

(1) Remove the rear power regulator assembly (LH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-37.

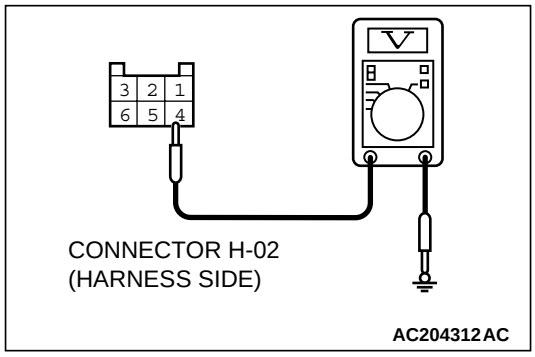
(2) Connect a battery to the motor terminal, and check that the motor runs freely.

BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 2 to the negative battery terminal • Connect terminal 6 to the positive battery terminal	The slider moves up
• Connect terminal 6 to the negative battery terminal • Connect terminal 2 to the positive battery terminal	The slider moves down

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

YES : Go to Step 22.

NO : Replace the rear power regulator assembly (LH). Verify that the rear power window sub-switch (LH) should now work normally.

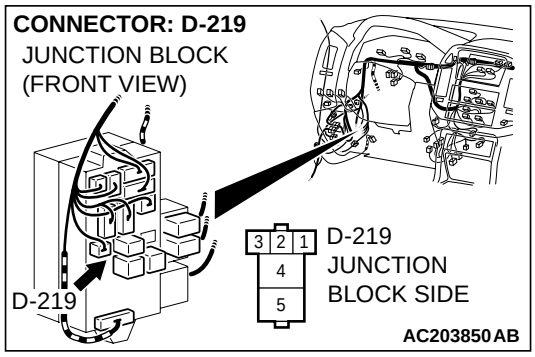


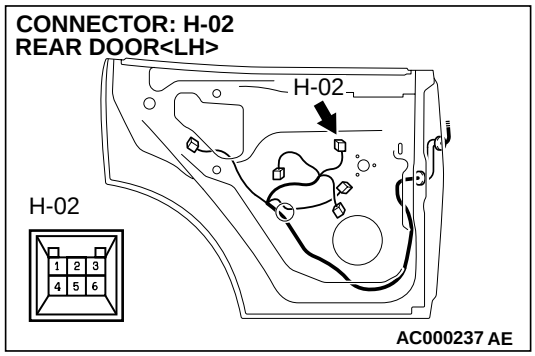
STEP 22. Check at rear power window sub-switch connector H-02 in order to check the power window relay circuit of the power supply to the rear power window sub-switch (LH).

(1) Disconnect rear power window sub-switch (LH) connector H-02, and measure at the harness side.
(2) Measure the voltage between terminal 4 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 26.
NO : Go to Step 23.



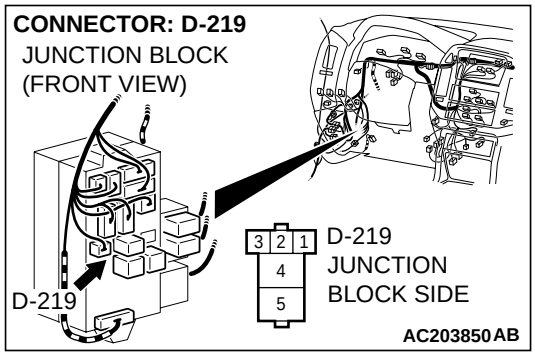


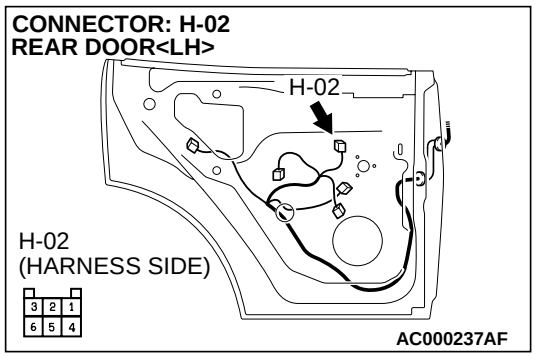
STEP 23. Check power window relay connector D-219 and rear power window sub-switch (LH) connector H-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

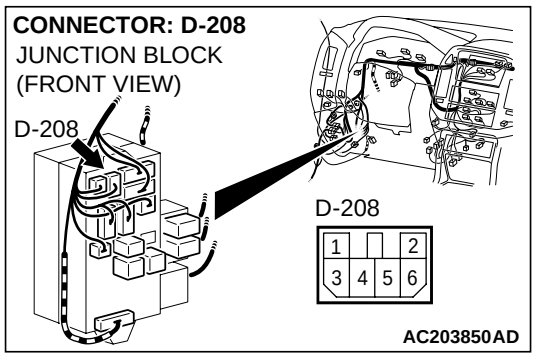
Q: Are power window relay connector D-219 and rear power window sub-switch (LH) connector H-02 in good condition?

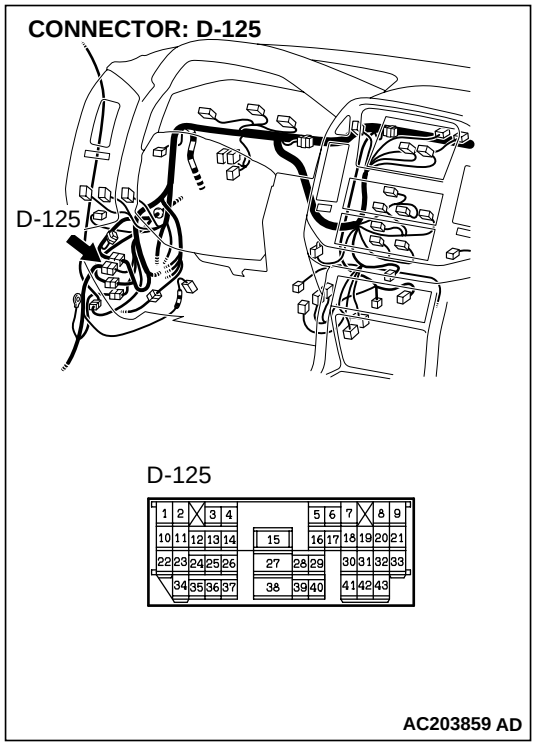
YES : Go to Step 24.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (LH) should now work normally.

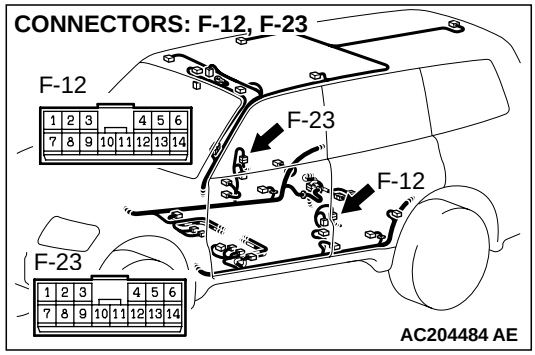
STEP 24. Check the harness wiring between power window relay connector D-219 (terminal 4) and rear power window sub-switch (LH) connector H-02 (terminal 4).











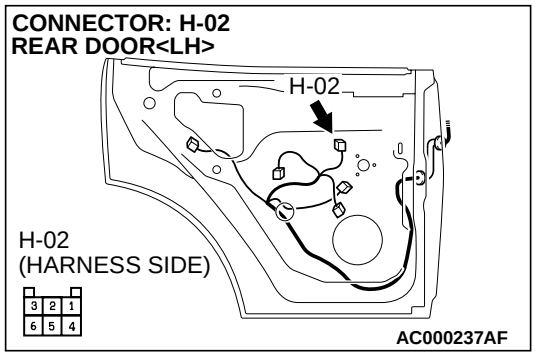
NOTE: Also check junction block connector D-208 and intermediate connectors D-125 and F-12. If junction block connector D-208, intermediate connector D-125 or F-12 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the harness wiring between power window relay connector D-219 (terminal 4) and rear power window sub-switch (LH) connector H-02 (terminal 4) in good condition?

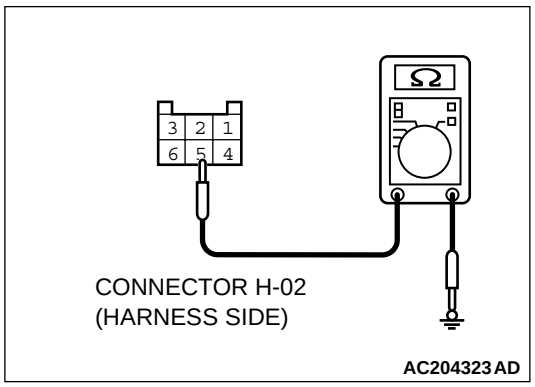
YES : No action is necessary and testing is complete.

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. Verify that the rear power window sub-switch (LH) should now work normally.

STEP 25. Check at rear power window sub-switch (LH) connector H-02 in order to check the ground circuit to the rear power window sub-switch (LH).



(1) Disconnect rear power window sub-switch (LH) connector H-02, and measure at the harness side.

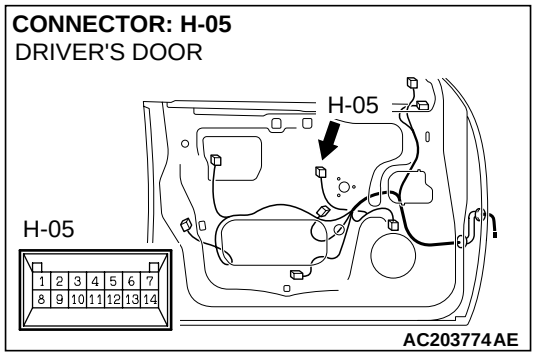


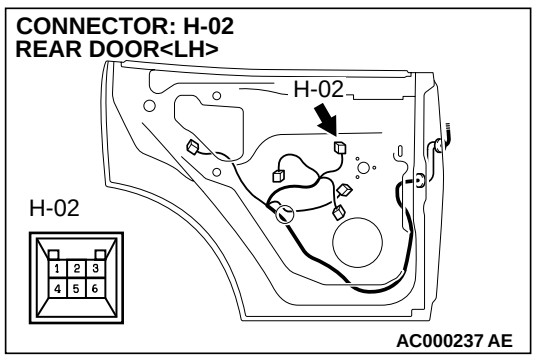
(2) Measure the resistance value between terminal 5 and ground.
- The resistance should measure 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 29.
NO : Go to Step 26.

STEP 26. Check power window main switch connector H-05 and rear power window sub-switch (LH) connector H-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



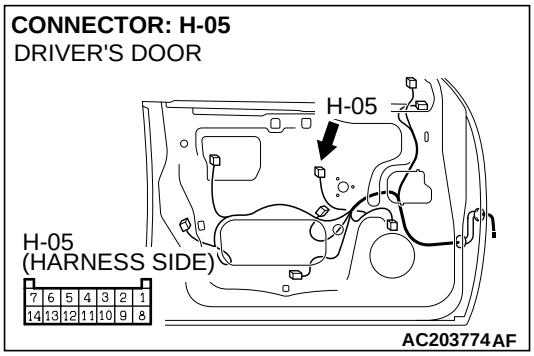


Q: Are power window main switch connector H-05 and rear power window sub-switch (LH) connector H-02 in good condition?

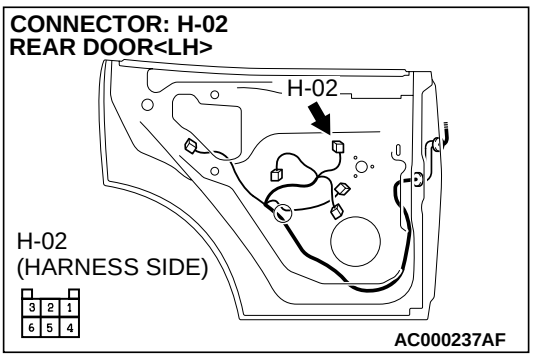
YES : Go to Step 27.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (LH) should now work normally.

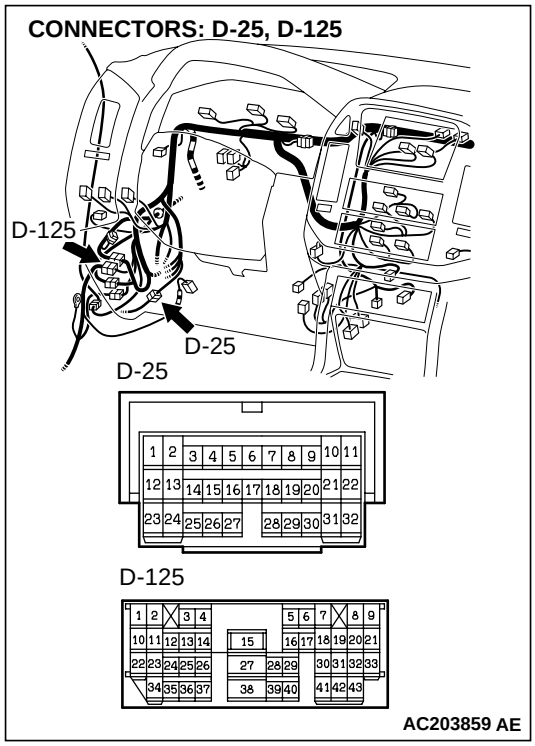
STEP 27. Check the harness wiring between power window main switch connector H-05 (terminal 1) and rear power window sub-switch (LH) connector H-02 (terminal 8).

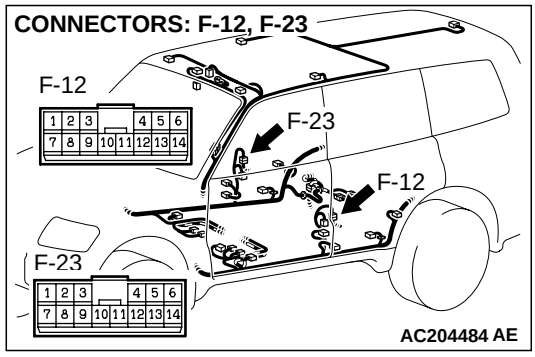
CONNECTOR: H-05
DRIVER'S DOOR



CONNECTOR: H-02
REAR DOOR<LH>







NOTE: Also check intermediate connectors, D-125, D-25 and F-12. If intermediate connector F-12, D-125 or D-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

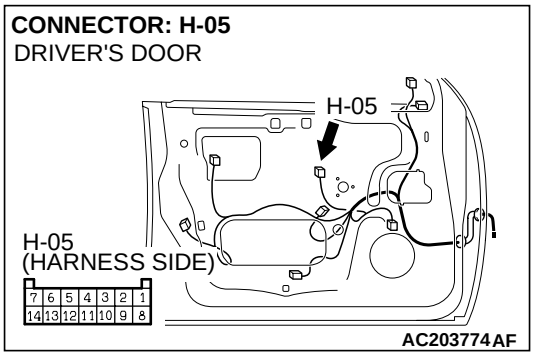
Q: Is the harness wiring between power window main switch connector H-05 (terminal 1) and rear power window sub-switch (LH) connector H-02 (terminal 8) in good condition?

YES : Go to Step 29.

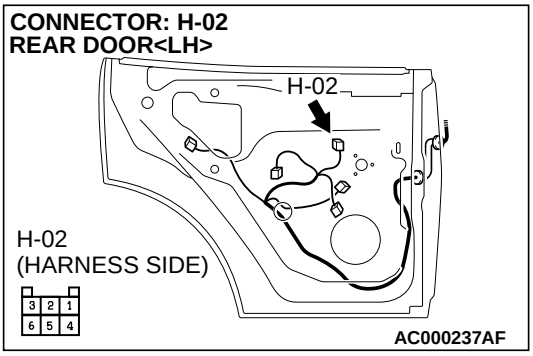
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the rear power window sub-switch (LH) should now work normally.

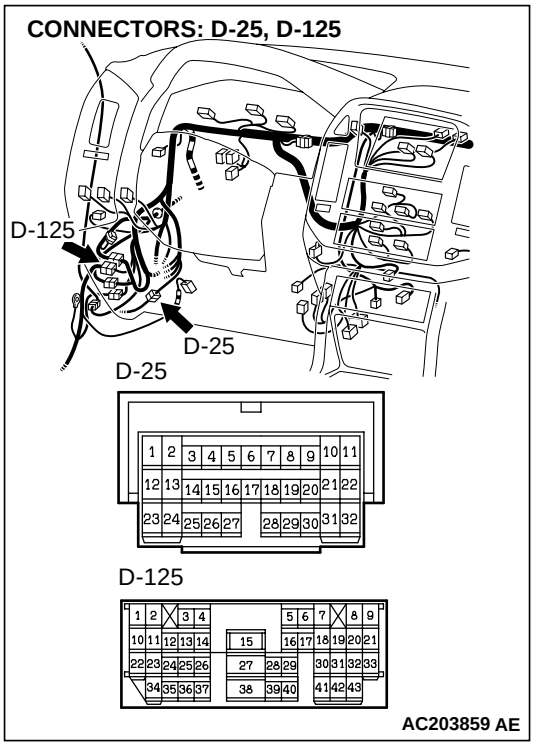
STEP 28. Check the harness wiring between power window main switch connector H-05 (terminal 2) and rear power window sub-switch (LH) connector H-02 (terminal 5).

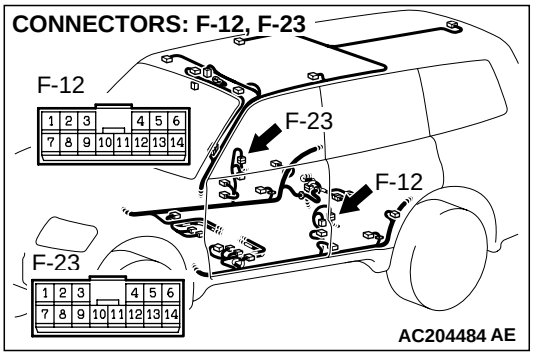
CONNECTOR: H-05
DRIVER'S DOOR



CONNECTOR: H-02
REAR DOOR<LH>







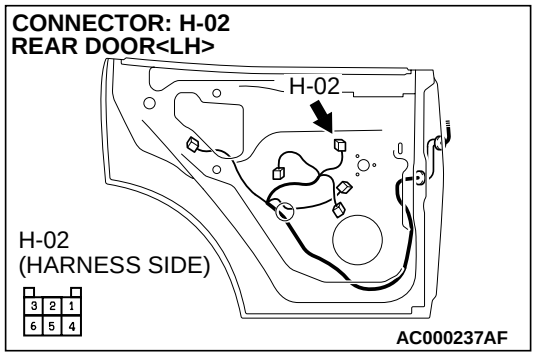
NOTE: Also check intermediate connectors, D-125, D-25 and F-12. If intermediate connector F-12, D-125 or D-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the harness wiring between power window main switch connector H-05 (terminal 2) and rear power window sub-switch (LH) connector H-02 (terminal 5) in good condition?

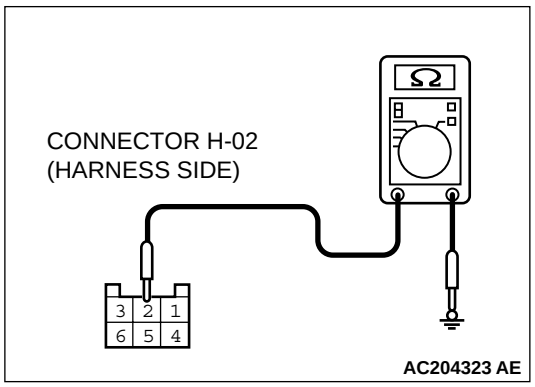
YES : Replace the power window main switch. Verify that the rear power window sub-switch (LH) should now work normally.

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. Verify that the rear power window sub-switch (LH) should now work normally.

STEP 29. Check at rear power window sub-switch (LH) connector H-02 in order to check the ground circuit to the rear power window sub-switch (LH).



(1) Disconnect rear power window sub-switch (LH) connector H-02, and measure at the harness side.

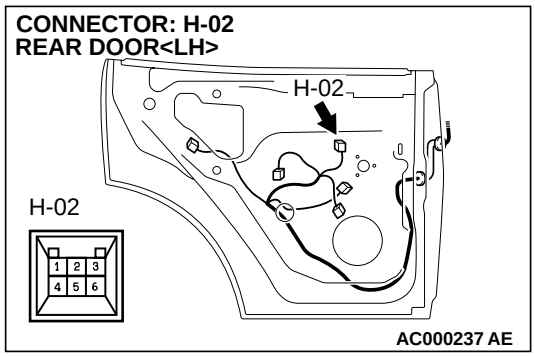


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should measure 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

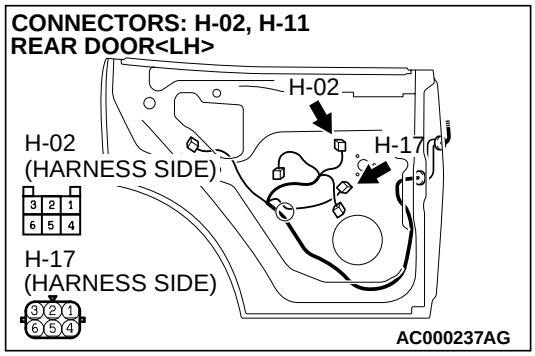
YES : Go to Step 34.
NO : Go to Step 30.

STEP 30. Check power window main switch connector H-05 and rear power window sub-switch (LH) connector H-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Are power window main switch connector H-05 and rear power window sub-switch (LH) connector H-02 in good condition?

YES : Go to Step 31.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (LH) should now work normally.

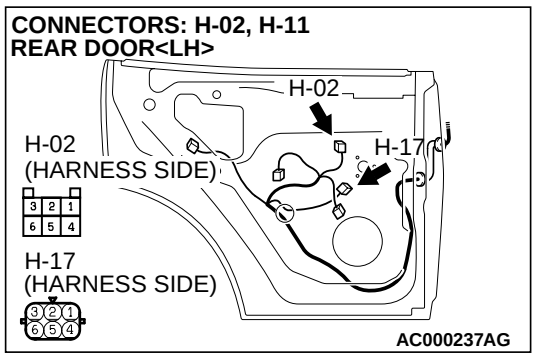


STEP 31. Check the harness wiring between rear power window sub-switch (LH) connector H-02 (terminal 6) and rear power window motor (LH) connector H-11 (terminal 6).

Q: Is the harness wiring between rear power window sub-switch (LH) connector H-02 (terminal 6) and rear power window motor (LH) connector H-11 (terminal 6) in good condition?

YES : Go to Step 32.

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 rear power window sub-switch (LH) should now work normally.

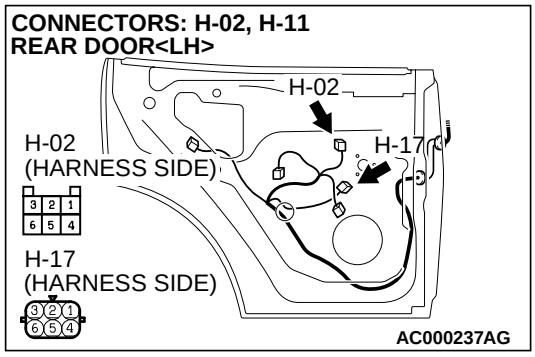


STEP 32. Check the harness wiring between rear power window sub-switch (LH) connector H-02 (terminal 1) and rear power window motor (LH) connector H-11 (terminal 2).

Q: Is the harness wiring between rear power window sub-switch (LH) connector H-02 (terminal 1) and rear power window motor (LH) connector H-11 (terminal 2) in good condition?

YES : Replace the power window main switch. Verify that the rear power window sub-switch (LH) 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. Verify that the rear power window sub-switch (LH) should now work normally.

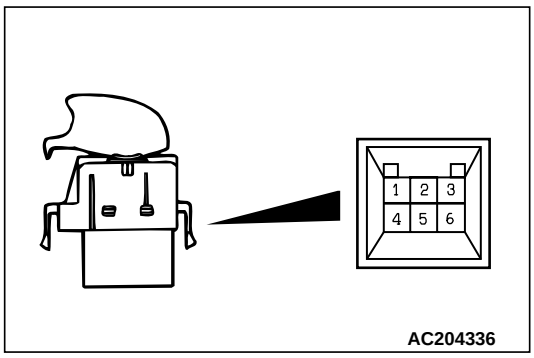


STEP 33. Check rear power window sub-switch (LH) connector H-02 and rear power window motor (LH) connector H-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear power window sub-switch (LH) connector H-02 and rear power window motor (LH) connector H-11 in good condition?

YES : Go to Step 34.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (LH) should now work normally.



STEP 34. 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 Trim and Waterproof Film P.42-30.

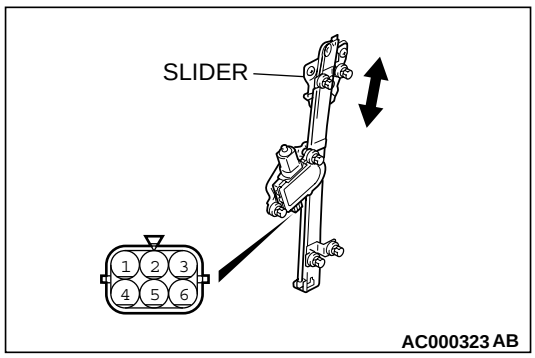
(2) Check continuity when the rear power window sub-switch (RH) is operated to "UP" or "DOWN" position.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	1 – 2, 4 – 6	Less than 2 ohms
OFF	1 – 2, 5 – 6	
DOWN	1 – 4, 5 – 6	

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

YES : Go to Step 35.

NO : Replace the rear power window sub-switch (RH). Verify that the rear power window sub-switch (RH) should now work normally.



STEP 35. Check the rear power window motor (RH).

(1) Remove the rear power regulator assembly (RH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-37.

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

BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 2 to the negative battery terminal • Connect terminal 6 to the positive battery terminal	The slider moves up
• Connect terminal 6 to the negative battery terminal • Connect terminal 2 to the positive battery terminal	The slider moves down

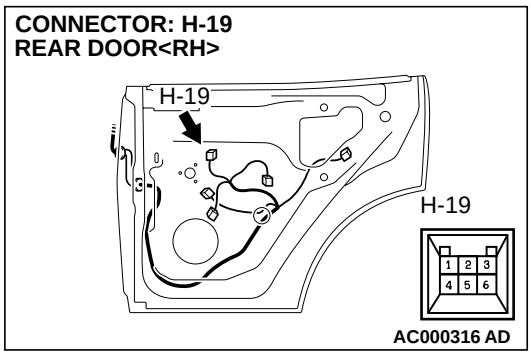
Q: Is the rear power window motor (RH) normal?

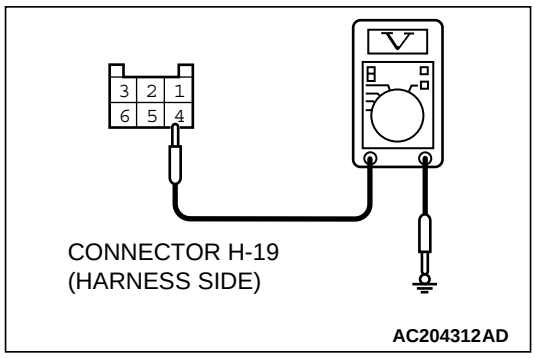
YES : Go to Step 36.

NO : Replace the rear power regulator assembly (RH). Verify that the rear power window (RH) function should now work normally.

STEP 36. Check at rear power window sub-switch (RH) connector H-19 in order to check the power window relay circuit of the power supply to the rear power window sub-switch (RH).

(1) Disconnect rear power window sub-switch (RH) connector H-19, and measure at the harness side.





(2) Measure the voltage between terminal 4 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

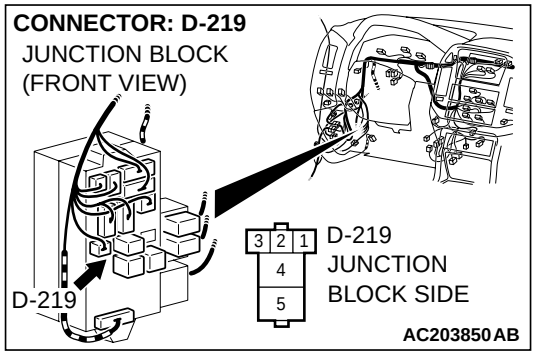
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

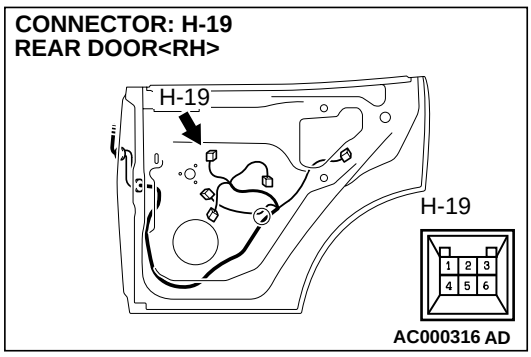
YES : Go to Step 40.
NO : Go to Step 37.

STEP 37. Check power window relay connector D-219 and rear power window sub-switch (RH) connector H-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

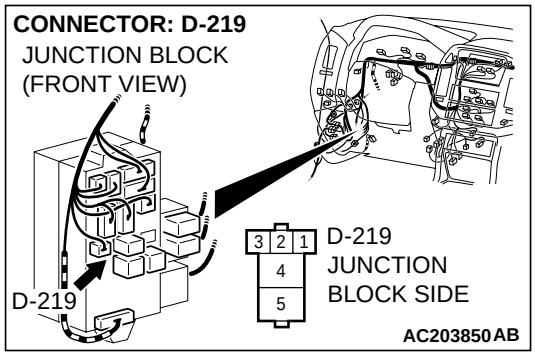
Q: Are power window relay connector D-219 and rear power window sub-switch (RH) connector H-19 in good condition?

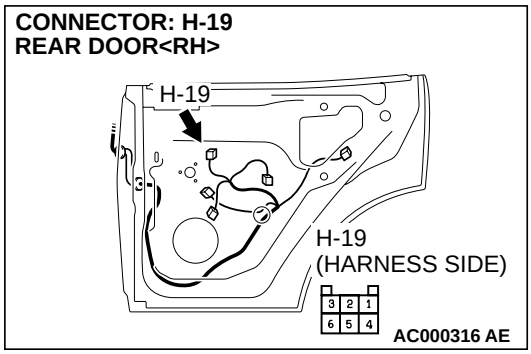
YES : Go to Step 38.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (RH) should now work normally.

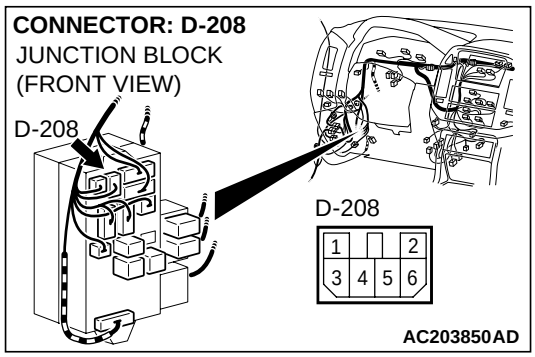


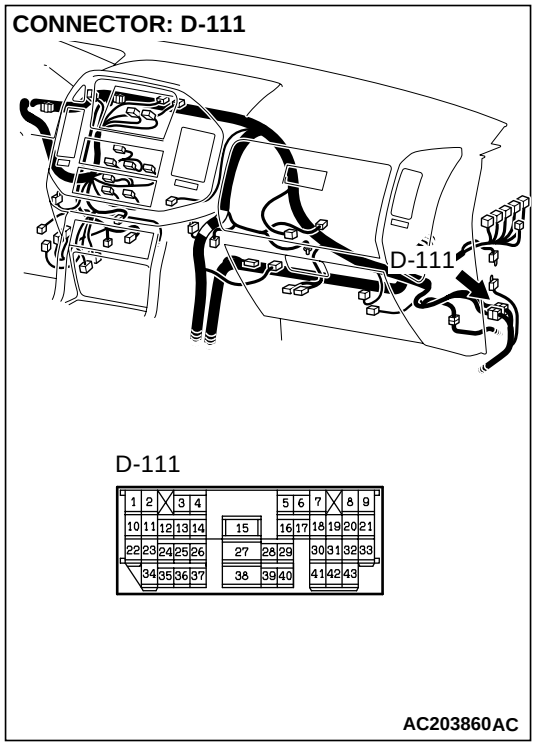


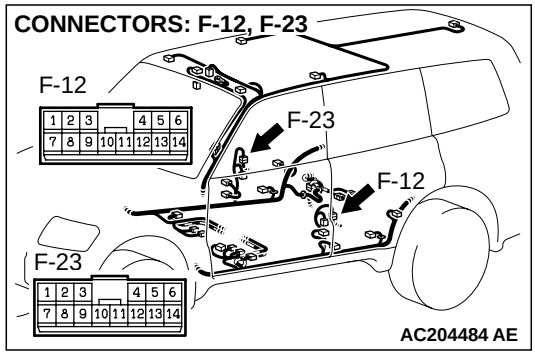
STEP 38. Check the harness wiring between power window relay connector D-219 (terminal 4) and rear power window sub-switch (RH) connector H-19 (terminal 4).









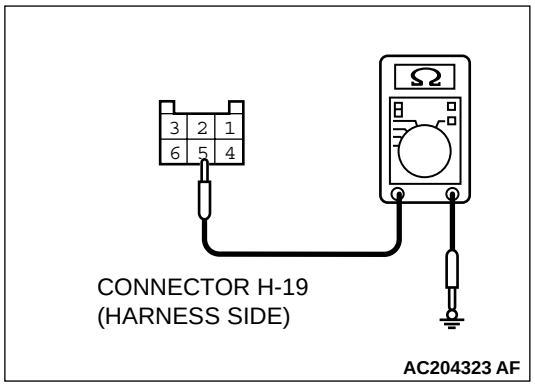


NOTE: Also check junction block connector D-208 and intermediate connectors D-111 and F-23. If junction block connector D-208, intermediate connector D-111 or F-23 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the harness wiring between power window relay connector (terminal 4) and rear power window sub-switch (RH) connector H-19 (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. Verify that the rear power window sub-switch (RH) should now work normally.



STEP 39. Check at rear power window sub-switch (RH) connector H-19 in order to check the ground circuit to the rear power window sub-switch (RH).

(1) Disconnect rear power window sub-switch (RH) connector H-19, and measure at the harness side.

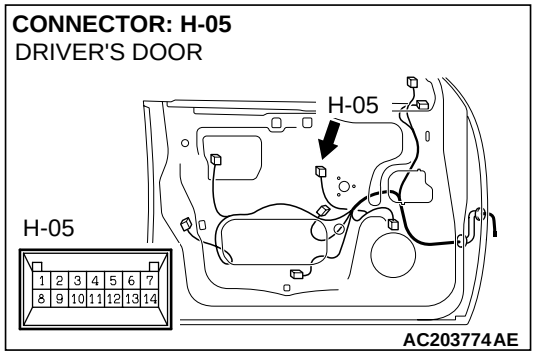
(2) Measure the resistance value between terminal 5 and ground.

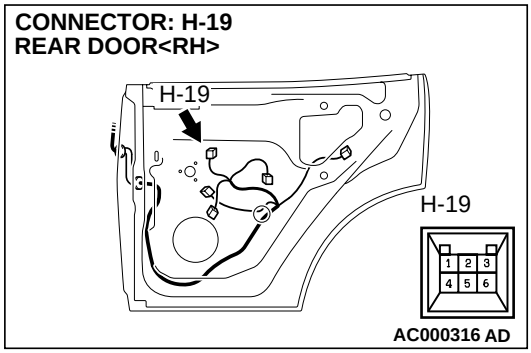
- The resistance should measure 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 43.

NO : Go to Step 40.





STEP 40. Check power window main switch connector H-05 and rear power window sub-switch (RH) connector H-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

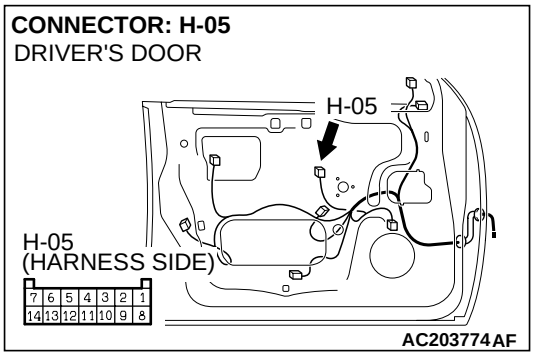
Q: Are power window main switch connector H-05 and rear power window sub-switch (RH) connector H-19 in good condition?

YES : Go to Step 41.

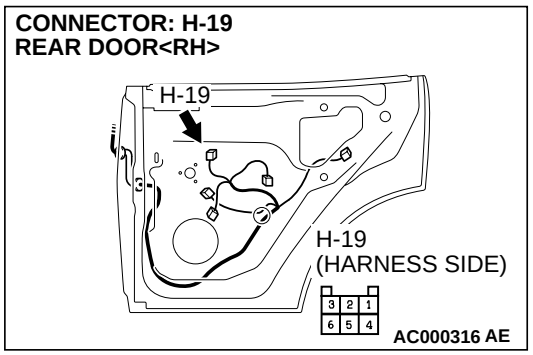
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (RH) should now work normally.

STEP 41. Check the harness wiring between power window main switch connector H-05 (terminal 2) and rear power window sub-switch (RH) connector H-19 (terminal 5).

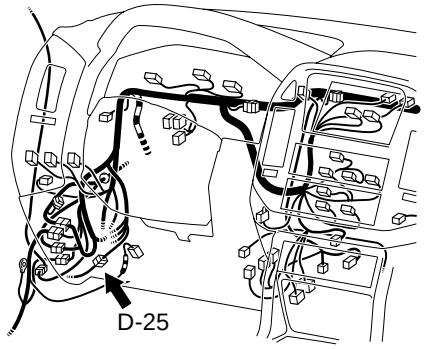
CONNECTOR: H-05
DRIVER'S DOOR



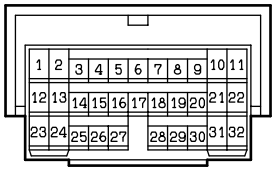
CONNECTOR: H-19
REAR DOOR<RH>



CONNECTOR: D-25



D-25



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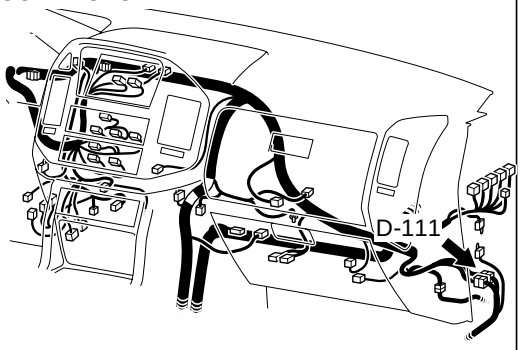
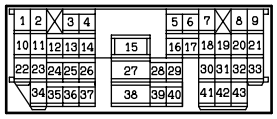
CONNECTOR: D-111

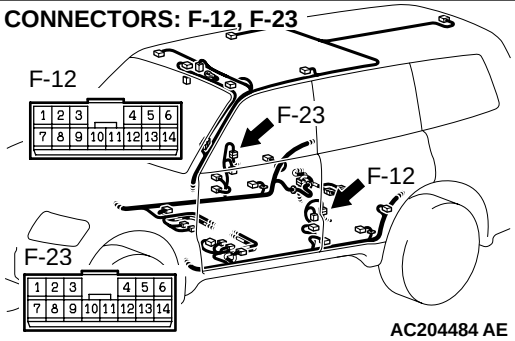


D-111



AC203860AC

CONNECTORS: F-12, F-23



AC204484 AE

TSB Revision

NOTE: Also check intermediate connectors D-25, D-111 and F-23. If intermediate connector D-25, D-111 or F-23 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

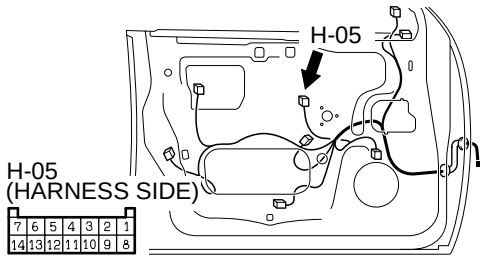
Q: Is the harness wiring between power window main switch connector H-05 (terminal 2) and rear power window sub-switch (RH) connector H-19 (terminal 5) in good condition?

YES : Go to Step 42.

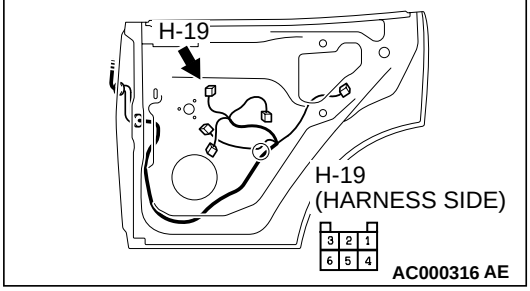
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the rear power window sub-switch (RH) should now work normally.

STEP 42. Check the harness wiring between power window main switch connector H-05 (terminal 9) and rear power window sub-switch (RH) connector H-19 (terminal 2).

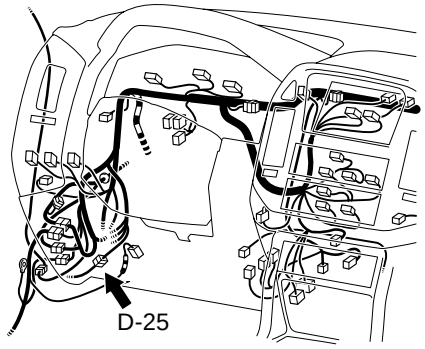
CONNECTOR: H-05
DRIVER'S DOOR



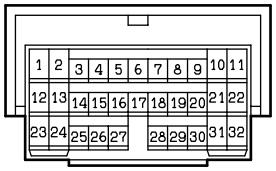
CONNECTOR: H-19
REAR DOOR<RH>



CONNECTOR: D-25

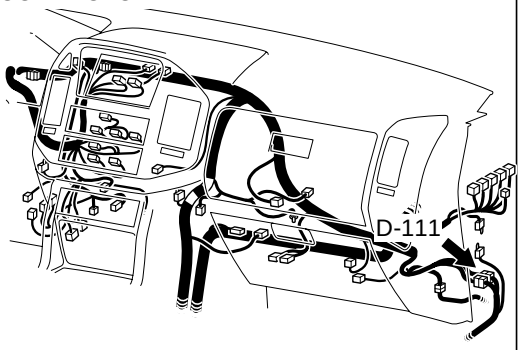


D-25

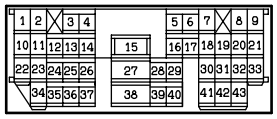


AC203859AC

CONNECTOR: D-111

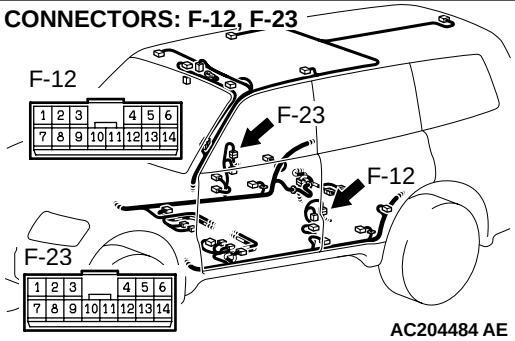


D-111



AC203860AC

CONNECTORS: F-12, F-23



AC204484 AE

TSB Revision

NOTE: Also check intermediate connectors D-25, D-111 and F-23. If intermediate connector D-25, D-111 or F-23 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

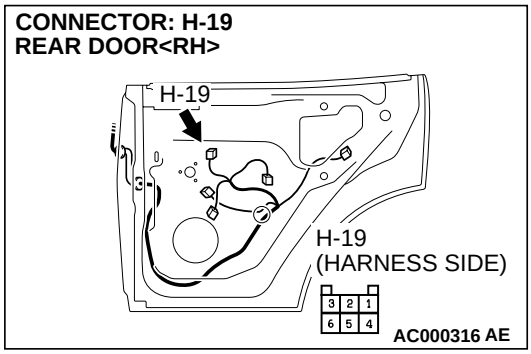
Q: Is the harness wiring between power window main switch connector H-05 (terminal 6) and rear power window sub-switch (RH) connector H-19 (terminal 5) in good condition?

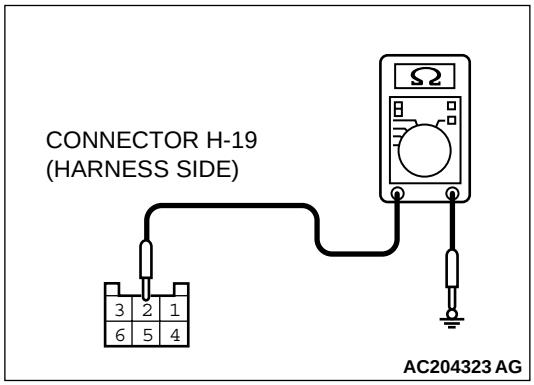
YES : Replace the power window main switch. Verify that the rear power window sub-switch (RH) should now work normally.

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. Verify that the rear power window sub-switch (RH) should now work normally.

STEP 43. Check at rear power window sub-switch (RH) connector H-19 in order to check the ground circuit to the rear power window sub-switch (RH).

(1) Disconnect rear power window sub-switch (RH) connector H-19, and measure at the harness side.





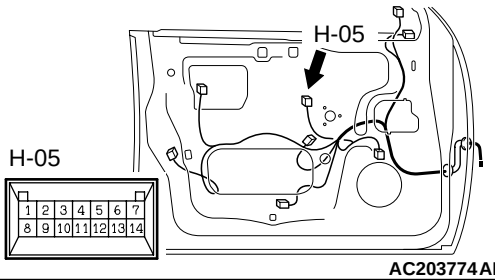
(2) Measure the resistance value between terminal 2 and ground.
- The resistance should measure 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 47.

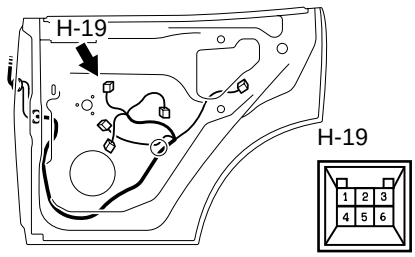
NO : Go to Step 44.

CONNECTOR: H-05
DRIVER'S DOOR



AC203774AE

CONNECTOR: H-19
REAR DOOR<RH>



AC000316 AD

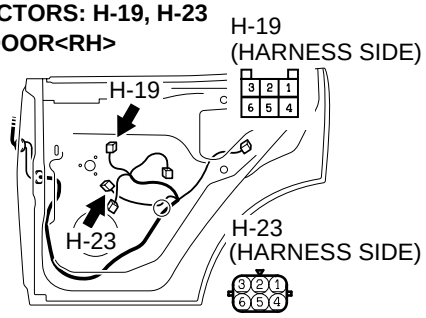
STEP 44. Check power window main switch connector H-05 and rear power window sub-switch (RH) connector H-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector H-05 and rear power window sub-switch (RH) connector H-19 in good condition?

YES : Go to Step 45.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (RH) should now work normally.

CONNECTORS: H-19, H-23
REAR DOOR<RH>



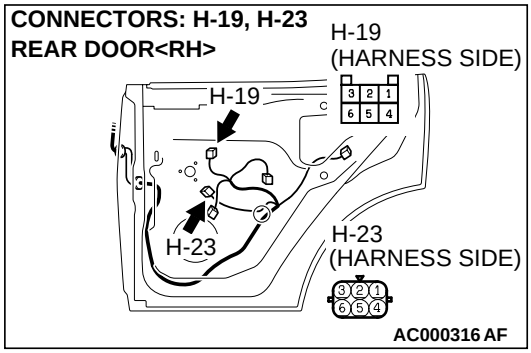
AC000316 AF

STEP 45. Check rear power window sub-switch (RH) connector H-19 and rear power window motor (RH) connector H-23 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear power window sub-switch (RH) connector H-19 and rear power window motor (RH) connector H-23 in good condition?

YES : Go to Step 46.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear power window sub-switch (RH) should now work normally.

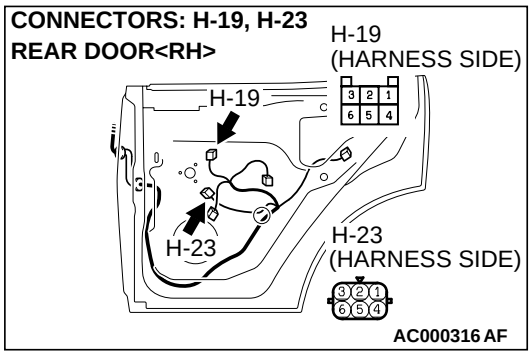


STEP 46. Check the harness wiring between rear power window sub-switch (RH) connector H-19 (terminal 6) and rear power window motor (RH) connector H-23 (terminal 6).

Q: Is the harness wiring between rear power window sub-switch (RH) connector H-19 (terminal 6) and rear power window motor (RH) connector H-23 (terminal 6) in good condition?

YES : Go to Step 47.

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 rear power window sub-switch (RH) should now work normally.



STEP 47. Check the harness wiring between rear power window sub-switch (RH) connector H-19 (terminal 1) and rear power window motor (RH) connector H-23 (terminal 2).

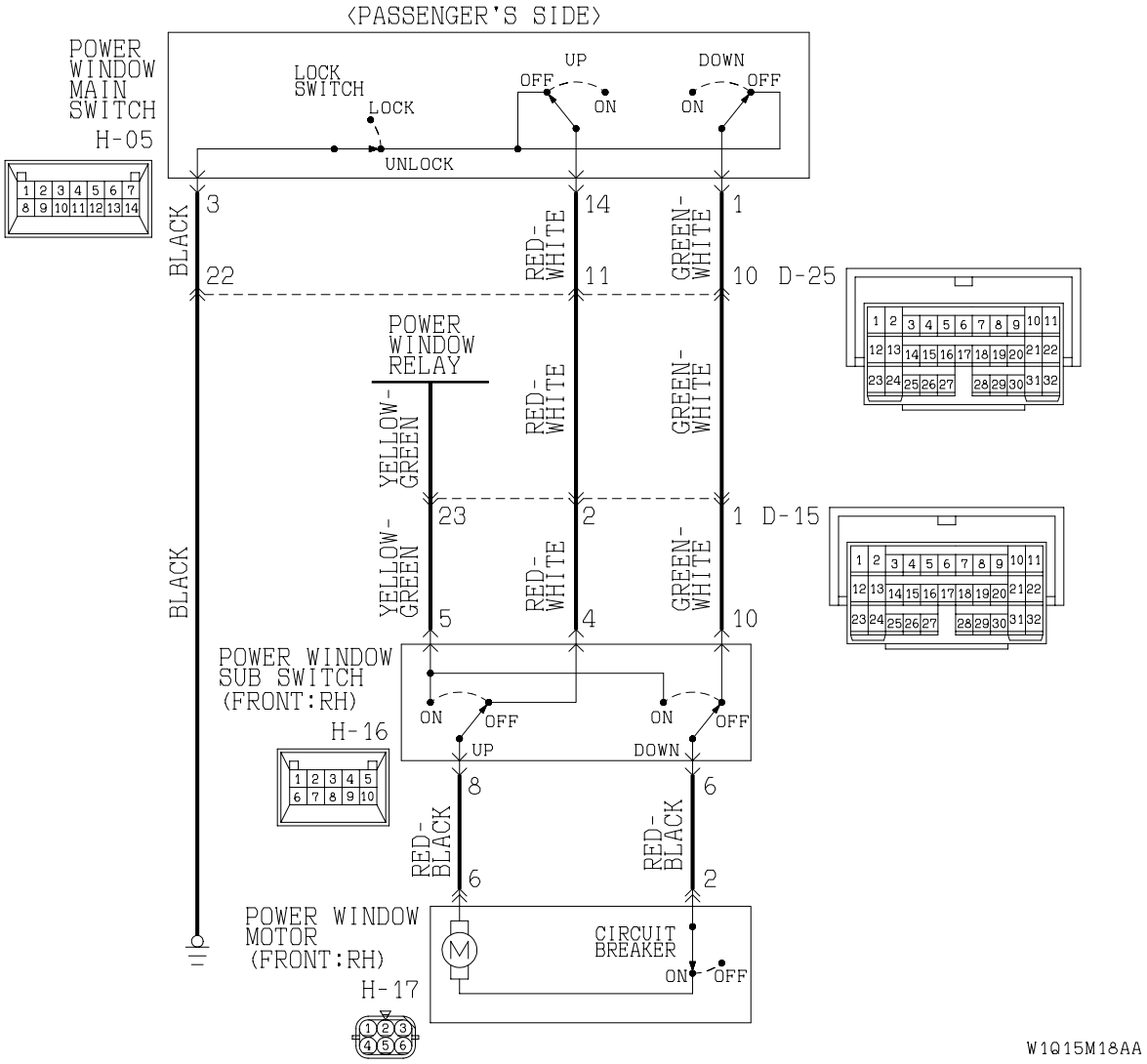
Q: Is the harness wiring between rear power window sub-switch (RH) connector H-19 (terminal 1) and rear power window motor (RH) connector H-23 (terminal 2) in good condition?

YES : No action is necessary and testing is complete.

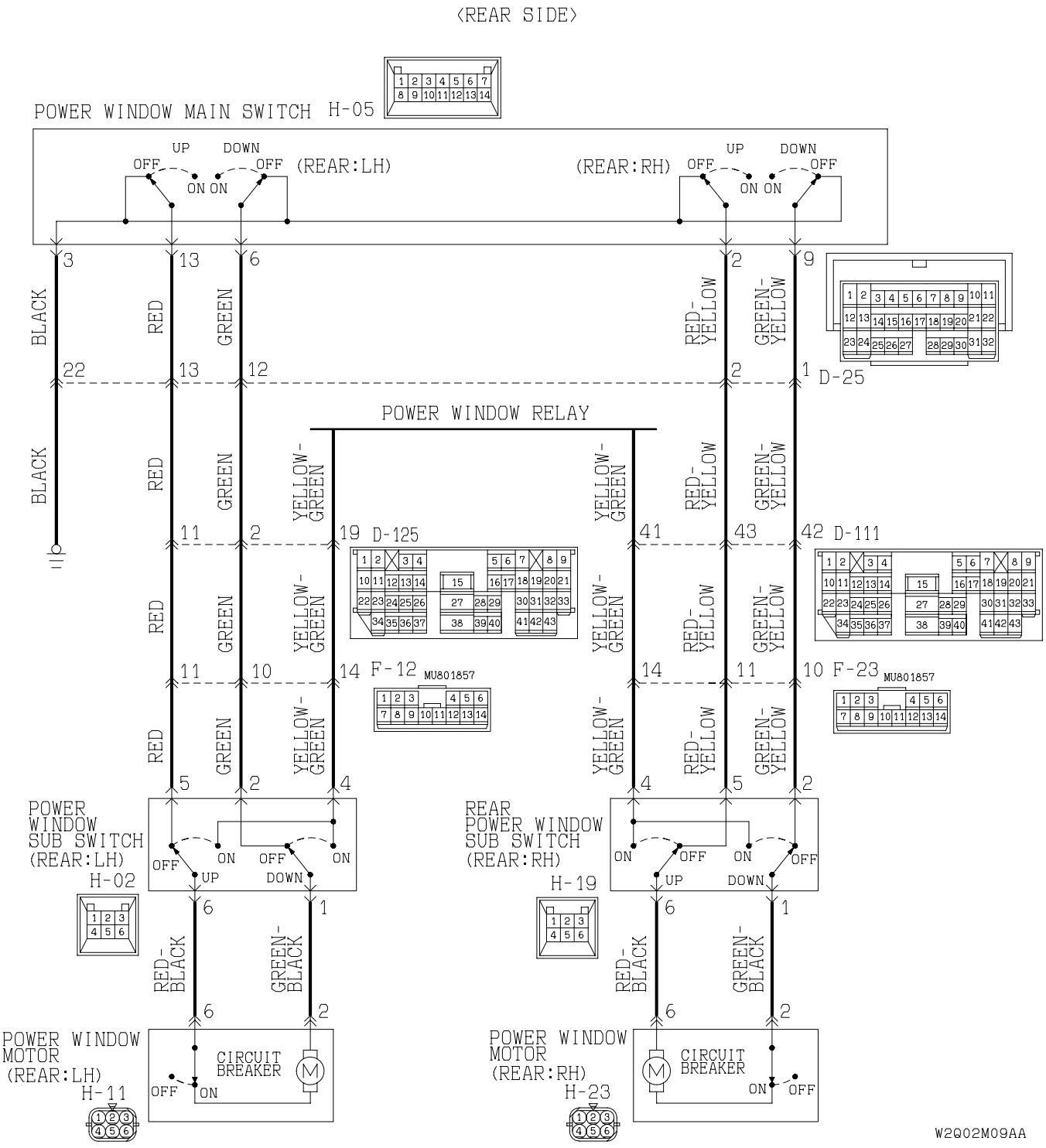
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the rear power window sub-switch (RH) should now work normally.

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

Power Window (front: RH) Circuit



Power Window (rear) Circuit



CIRCUIT OPERATION

When you operate each power window sub-switch for front passenger's or rear (incorporated in the power window main switch), the corresponding power window motor operates, thus causing each power window to close or open.

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

The power window main switch may be defective

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DIAGNOSIS

Check that power window sub-switches operate normally.

Q: A power window can not work by means of the power window main switch. Can you operate the power window by means of the corresponding power window sub-switch?

YES : Replace the power window main switch. The power window main switch is operated, the front passenger's or rear power window function should now work normally.

NO : Refer to Inspection Procedure D-4 "Power windows do not work normally by operating the passenger's and rear power window switches P.54Bb-154."

KEYLESS ENTRY SYSTEM

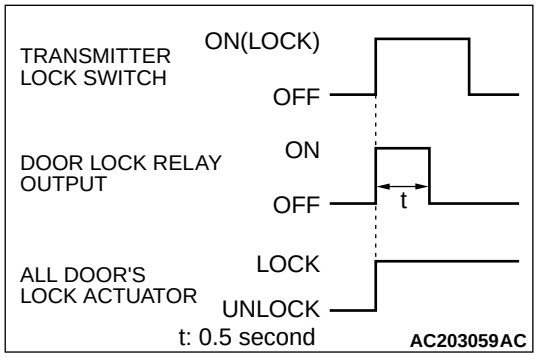
GENERAL DESCRIPTION CONCERNING THE KEYLESS ENTRY SYSTEM

M1549022000073

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

FUNCTION		CONTROL ECU
All door lock function	Operate the transmitter lock switch	ETACS-ECU
Driver's door unlock function	Press the transmitter unlock switch once	
All door unlock function	Press the transmitter unlock switch twice	
Keyless entry hazard answerback and horn answerback function		

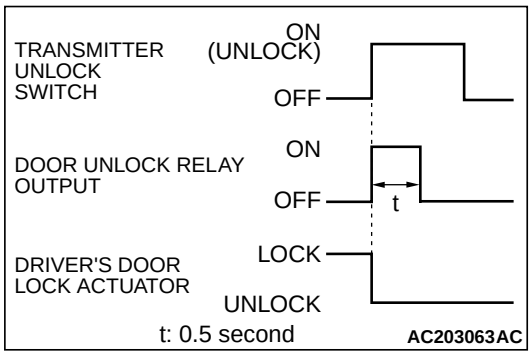
All door lock function



Operate the transmitter lock switch

When the transmitter lock switch is pressed, the ETACS-ECU energizes its door lock relay to operate all the door lock actuators for 0.5 second thus causing all doors to be locked.

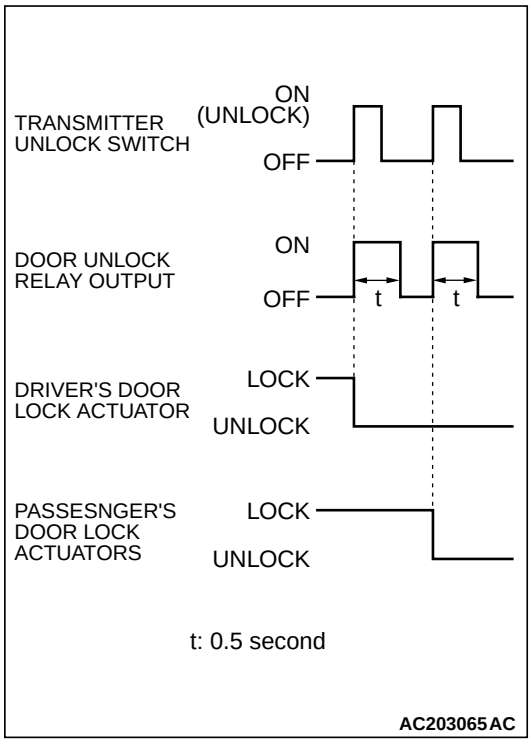
Driver's door unlock function



Press the transmitter unlock switch once

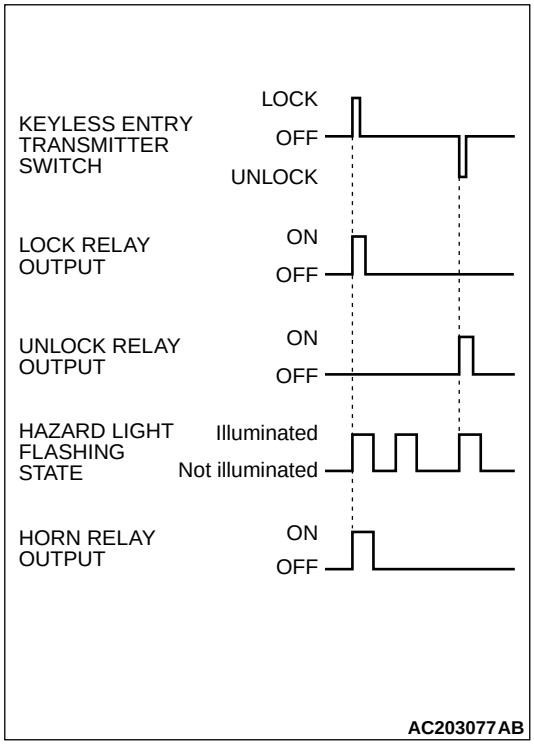
When the transmitter unlock switch is pressed once, the ETACS-ECU energizes its door unlock relay to operate the door lock actuator of the driver's door for 0.5 second thus causing only the driver's door to be unlocked.

All door unlock function



Press the transmitter unlock switch twice

When the transmitter unlock switch 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 0.5 second each in succession. Then, the doors will be unlocked.

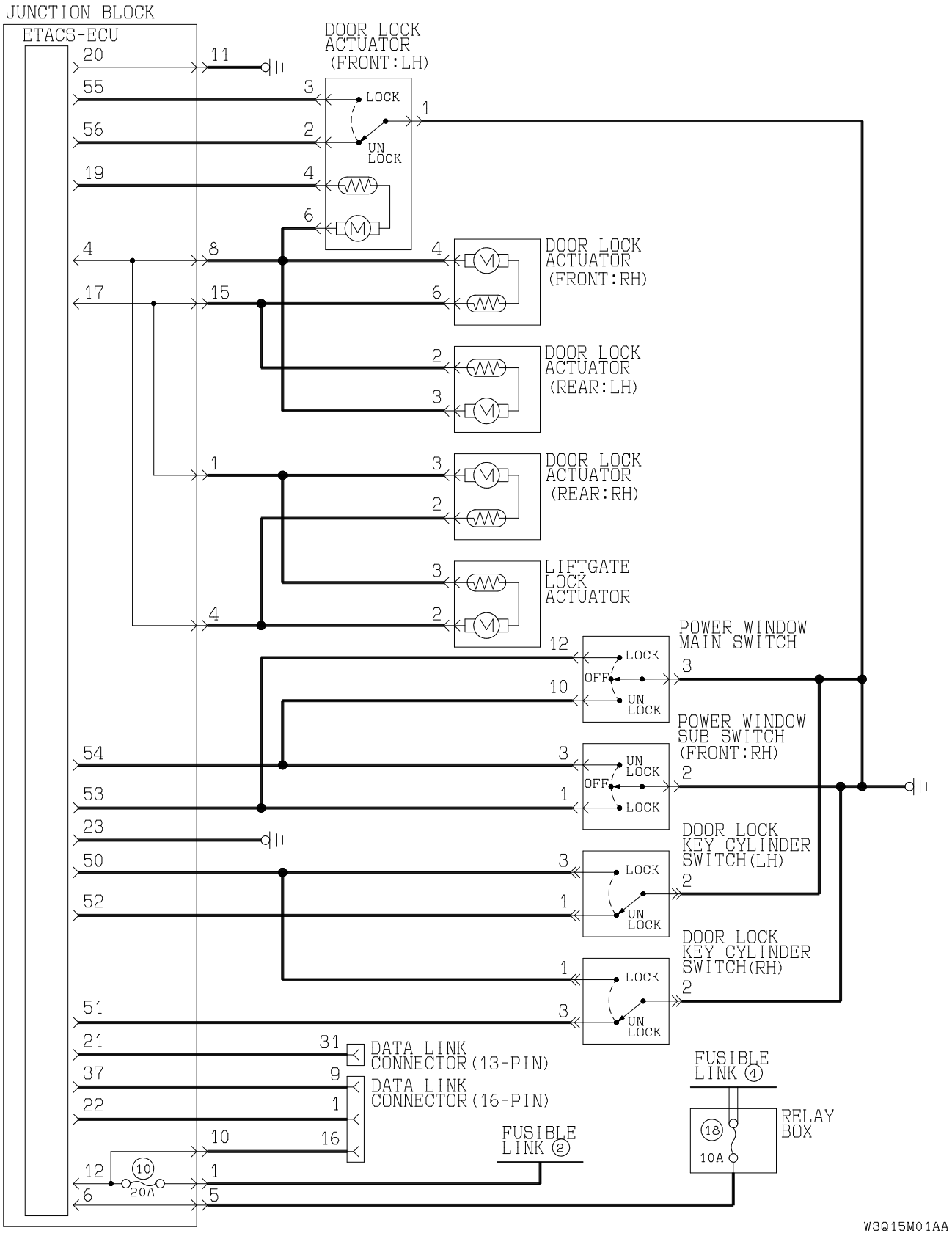


Keyless entry hazard answerback and horn answerback function

The hazard answerback and horn answerback function which facilities checking of lock or unlock operations even during daytime is provided. When the lock signal is input from the keyless entry transmitter to the ETACS-ECU, the hazard light flashes twice and horn sounds once. When the unlock signal is input, hazard light flashes once.

NOTE: Hazard answerback function can be disabled by the configuration function (Refer to GROUP 54B P.54Ba-26.)

General circuit diagram for the keyless entry system



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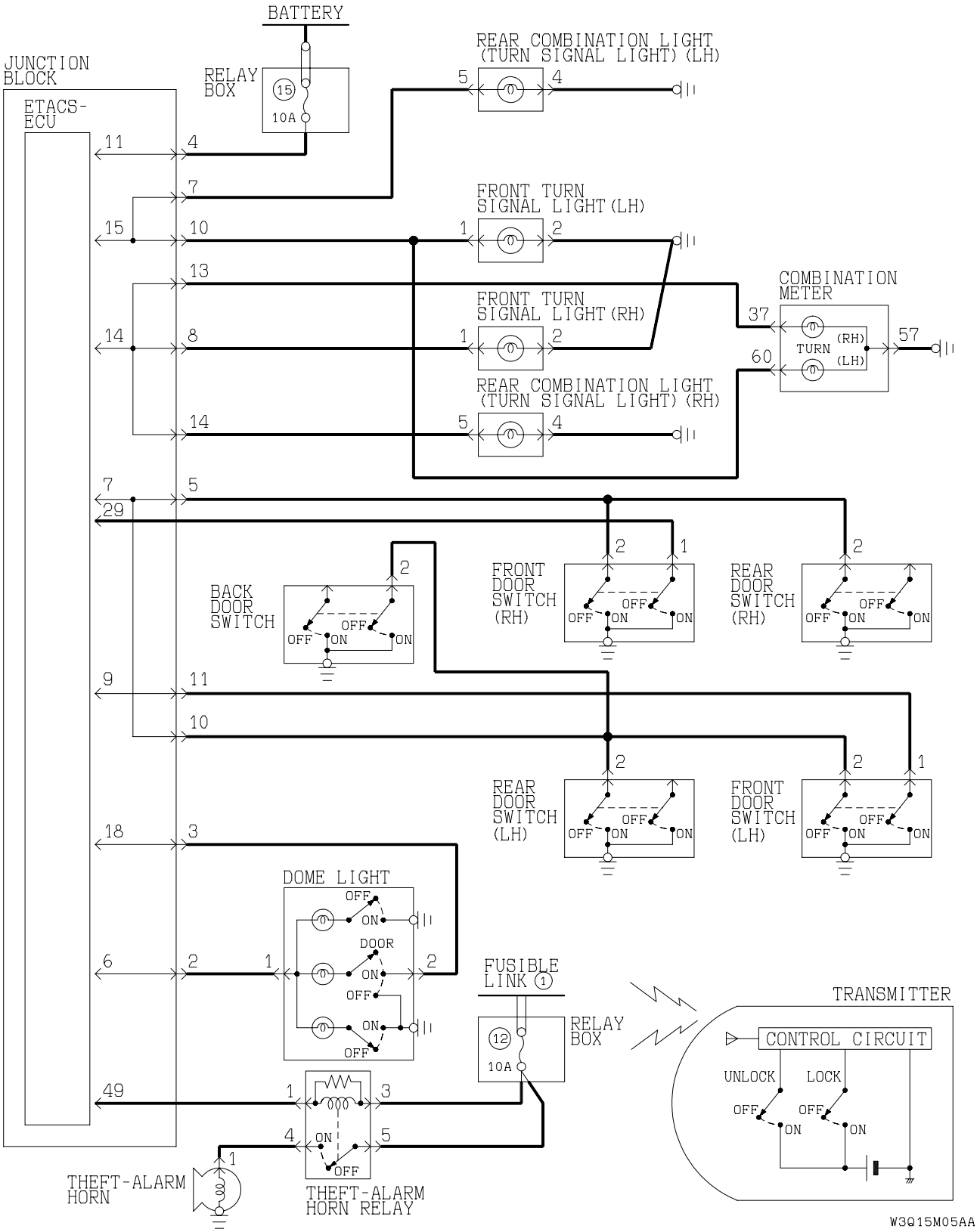
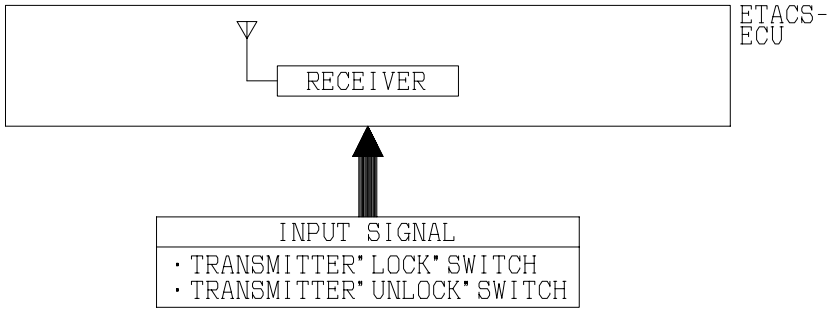


TSB Revision

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor" P.54Ba-8.

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



CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

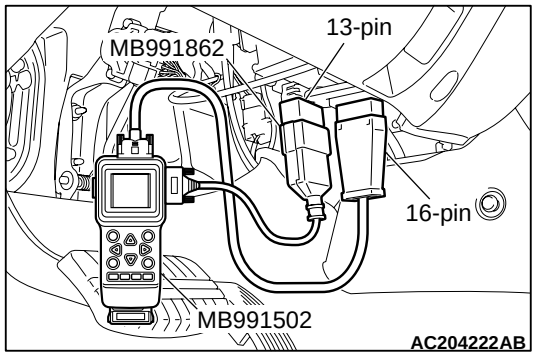
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



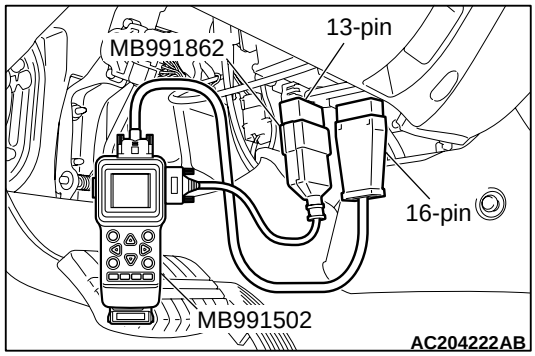
(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."

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

Check the input signals from the transmitter.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Operate scan tool MB991502 as follows:
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "PULSE CHECK."
(3) Push the transmitter "LOCK" or "UNLOCK" switch.
(4) Check that scan tool MB991502 sounds.

Q: When the transmitter "LOCK" or "UNLOCK" switch is pushed, does scan tool MB991502 sound?

YES : Replace the ETACS-ECU. Verify that all the doors can be locked or unlocked by using the transmitter.
NO : Refer to Inspection Procedure P-10 "The ETACS-ECU does not receive a signal from the lock, unlock switch or panic switch P.54Bc-145".

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

CIRCUIT OPERATION

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

- Dome light answerback function
- Hazard warning lights answerback function
- Horn answerback function

TECHNICAL DESCRIPTION (COMMENT)

The hazard warning lights or horn answerback functions can be disabled. However, the dome light answerback function can be disabled.

TROUBLESHOOTING HINTS

- The hazard warning lights (turn-signal lights) may be defective
- The horn may be defective
- The dome light may be defective
- The ETACS-ECU may be defective
- The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

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 work P.54Bb-205."

STEP 2. Verify the answerback adjustment function.

Check the answerback functions. (Refer to GROUP 42, Keyless Entry System – On-vehicle Service – Enabling/disabling the Answerback Function P.42-55.)

Q: Does the answerback function work normally?

YES : No action is necessary and testing is complete.
NO : Go to Step 3.

STEP 3. Verify the trouble symptom.

Q: Which answerback function is defective?

Only the dome light : Go to Step 4.
Only the hazard warning lights (turn-signal lights) : Go to Step 5.
All functions do not work [dome light, hazard warning lights (turn-signal lights) and horn]. : Replace the ETACS-ECU. 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. Verify that the answerback functions work normally.

NO : Refer to Inspection Procedure M-1 "The dome light do not illuminate or go out normally."P.54Bb-450

STEP 5. Verify the hazard warning light.

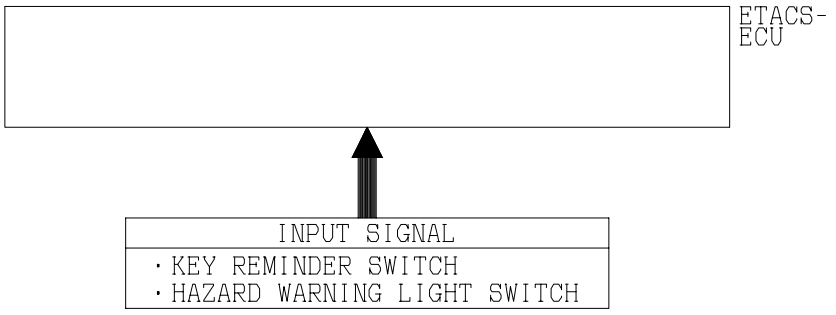
Q: Do the hazard warning lights work normally?

YES : Replace the ETACS-ECU. Verify that the answerback functions work normally.

NO : Refer to Inspection Procedure K-2 "Hazard warning lights do not illuminate P.54Bb-399."

INSPECTION PROCEDURE E-3: Keyless Entry System: Encrypted code cannot be registered

Encrypted Transmitter Code Circuit



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 can not be set, the input circuits from the key reminder switch, hazard warning light switch or the ETACS-ECU may be defective.

If the encrypted code register mode can be set but the transmitter can not 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 may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

STEP 1. Verify the trouble symptom.

Q: Can the encrypted code register mode be set?

YES : Refer to Inspection Procedure P-10 "ETACS-ECU does not receive a signal from the lock, unlock switch or panic switchP.54Bc-145."

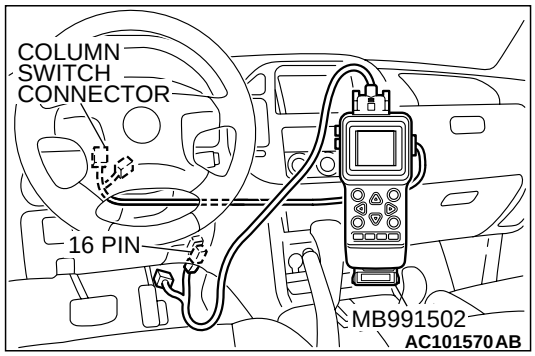
NO : Go to Step 2.

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 MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector.
(2) Operate scan tool MB991502 as follows:
  1. Select "SYSTEM SELECT."
  2. Select "SWS."
  3. Select "PULSE CHECK."
(3) Verify scan tool MB991502 sounds or not.
(4) If the switches (see table below), which are applicable for the input signal check, are operated.

ITEM NAME	CHECK CONDITIONS
Key reminder switch	Insert and remove the ignition key
Hazard warning light switch	Turn the hazard warning light switch from the "OFF" to "ON" position.

Q: When the key reminder switch and the hazard warning light switch are operated, does scan tool MB991502 sound?

YES : Replace the ETACS-ECU. Verify that the encrypted code can be registered in the transmitter.

NO :
- Scan tool MB991502 does not sound when the ignition key is removed and reinserted: Refer to Inspection Procedure P-1 "ETACS-ECU does not receive a signal from the key reminder switch P.54Bc-49."
- Scan tool MB991502 does not sound when the hazard warning light switch is turned from "OFF" to "ON": Refer to Inspection Procedure P-2 "ETACS-ECU does not receive a signal from the hazard warning light switch P.54Bc-53."

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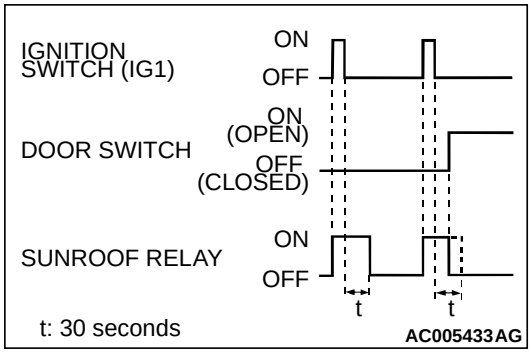
SUNROOF

GENERAL DESCRIPTION CONCERNING THE SUNROOF

M1549021200074

The following ECUs affect the functions and control of the sunroof.

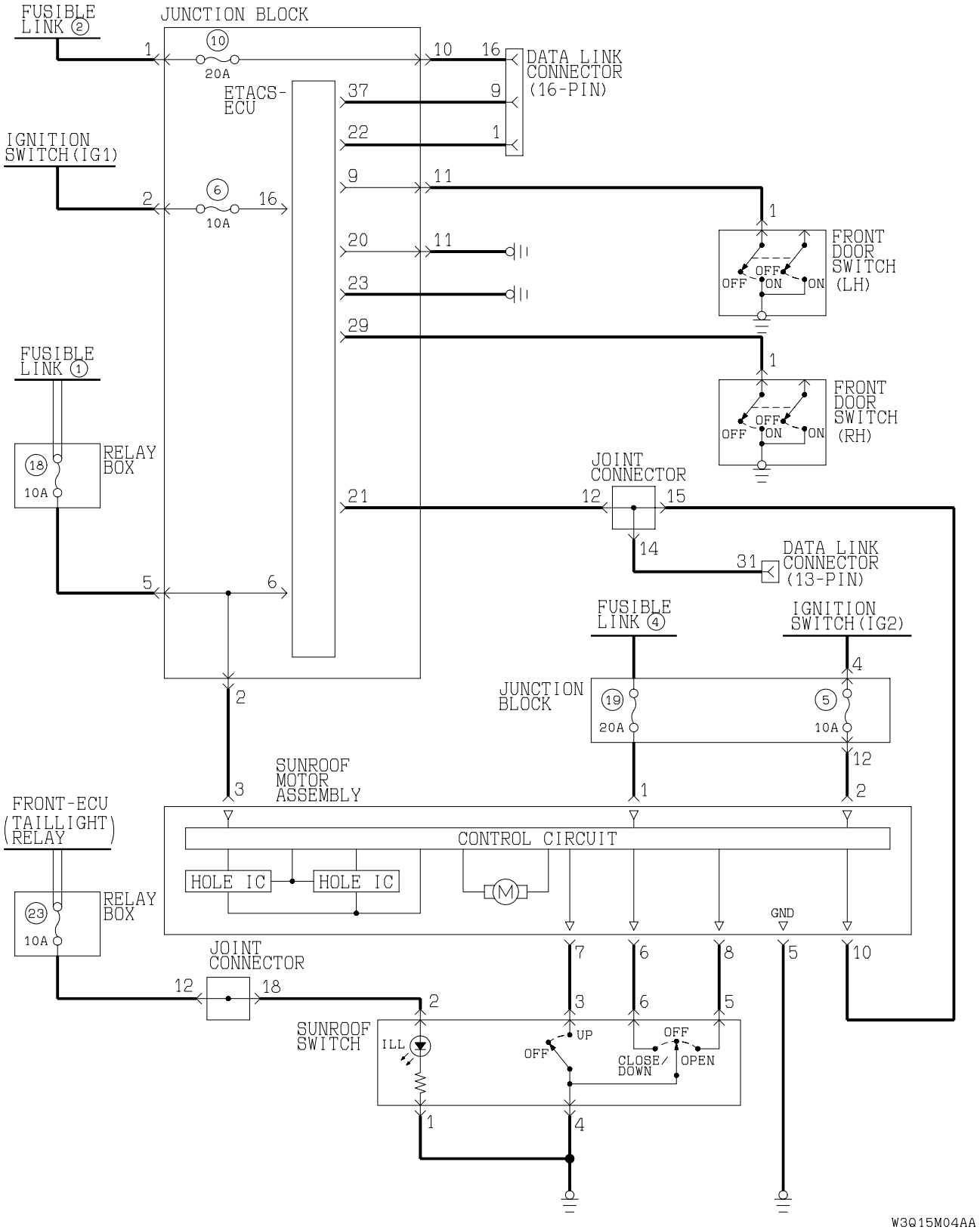
FUNCTION	CONTROL ECU
Sunroof timer function	ETACS-ECU, sunroof motor assembly



Sunroof timer function

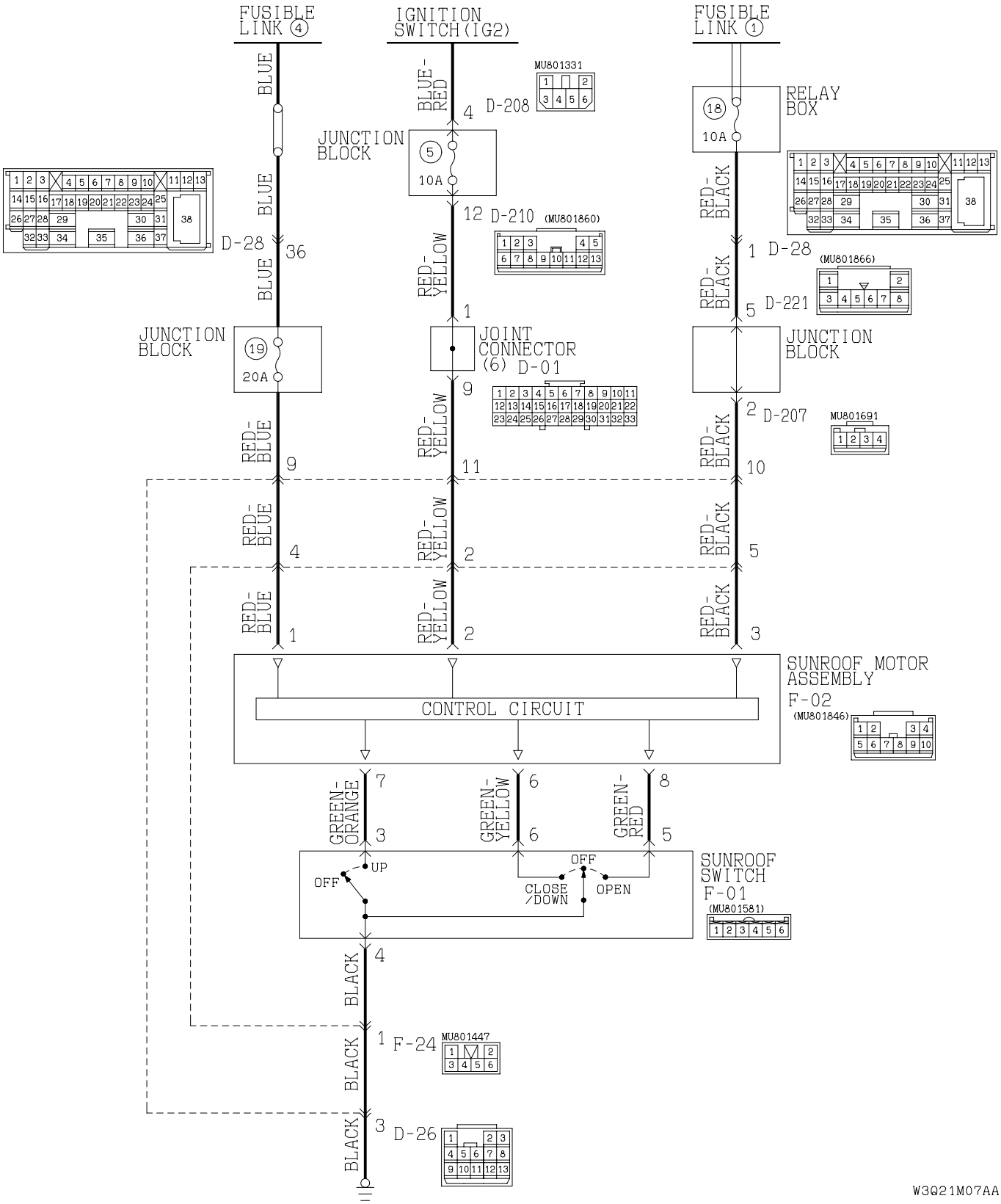
After the ignition switch is turned OFF, the system continues to turn ON the sunroof relay for about 30 seconds and to enable the opening and closing of the sunroof by the sunroof switch. When the driver's or front passenger's door is opened while the timer is in operation, the sunroof relay will be turned OFF and the sunroof timer function will be finished. As for the sunroof functions, refer to GROUP 42 – Sunroof P.42-58.

General circuit diagram regarding the sunroof



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

Sunroof Motor Assembly Power Supply Circuit



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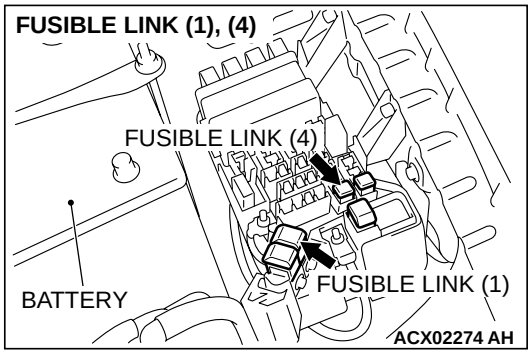
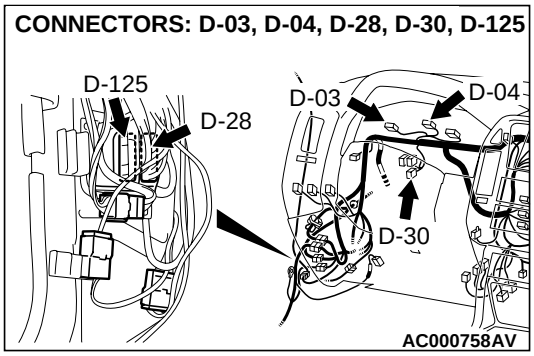
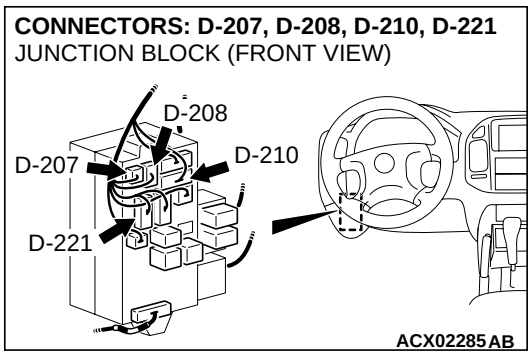
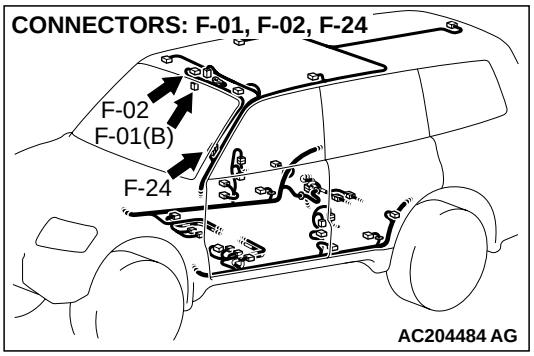








CIRCUIT OPERATION

- The sunroof motor assembly is energized through fusible link (1) and (4).
- When the ignition switch (IG2) signal is on, the sunroof motor assembly is ready to operate.

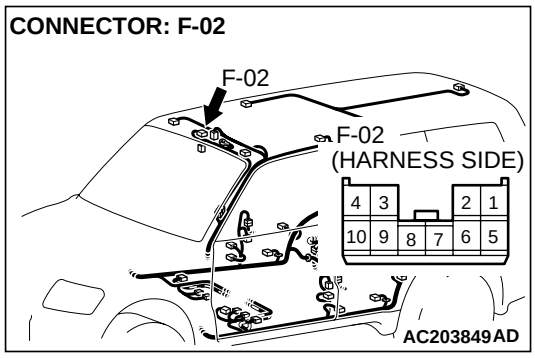
TROUBLESHOOTING HINTS

- 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

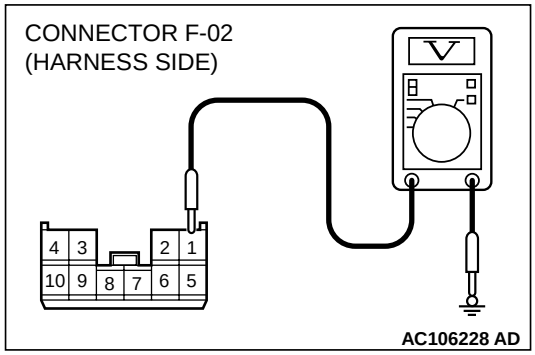
DIAGNOSIS

Required Special Tool:
- MB991223: Harness Set

STEP 1. Check the fusible link (4) line of power supply circuit to the sunroof motor assembly. Test at sunroof motor assembly connector F-02.



(1) Disconnect sunroof motor assembly connector F-02 and measure the voltage available at the wiring harness side of the connector.

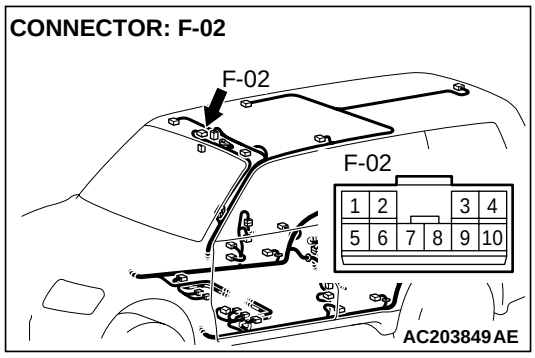


(2) Measure the voltage between terminal 1 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 4.
NO : Go to Step 2.

STEP 2. Check the sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

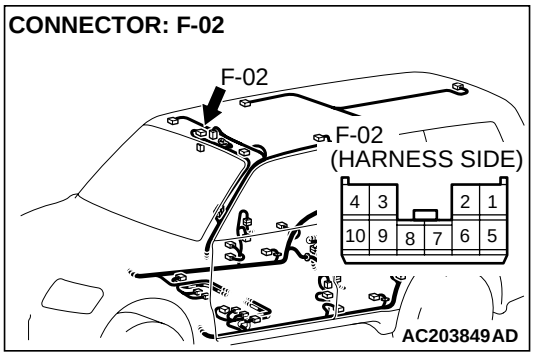


Q: Is sunroof motor assembly connector F-02 in good condition?

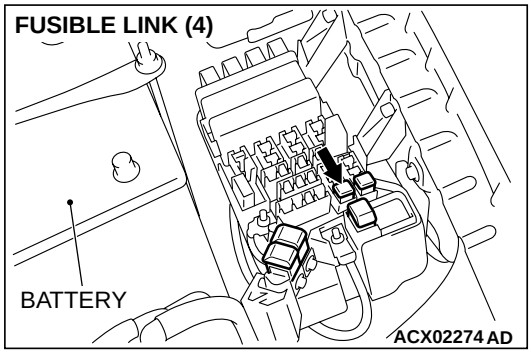
YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The sunroof should now work normally.

STEP 3. Check the harness wires between sunroof motor assembly connector F-02 (terminal 1) and fusible link (4).

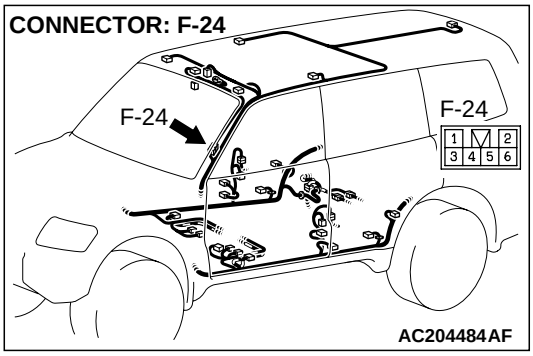
CONNECTOR: F-02



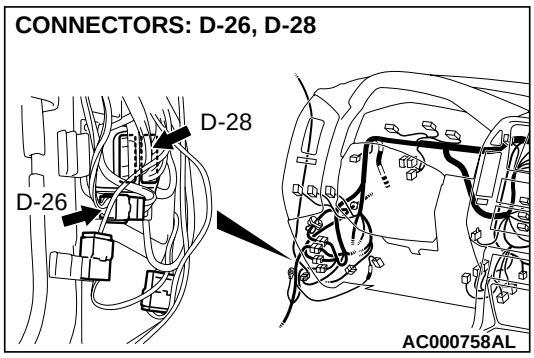
FUSIBLE LINK (4)



CONNECTOR: F-24



CONNECTORS: D-26, D-28



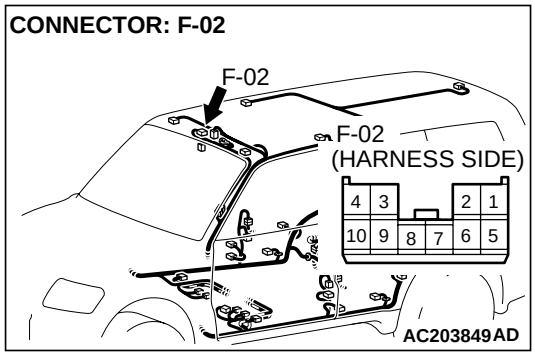
NOTE: Also check intermediate connectors F-24, D-26 and D-28 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connector F-24, D-26 or D-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector F-02 (terminal 1) and fusible link (4) in good condition?

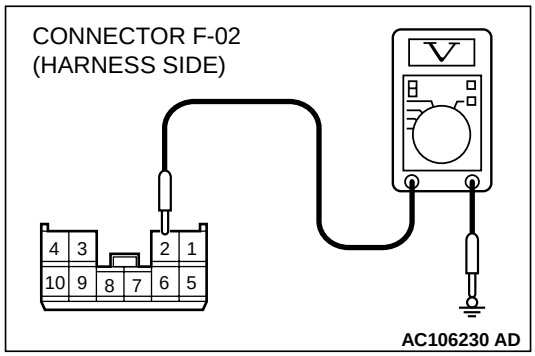
YES : No action is necessary and testing is complete.

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 sunroof function should now work normally.

STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Test at sunroof motor assembly connector F-02.



(1) Disconnect sunroof motor assembly connector F-02 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to “ON” position.

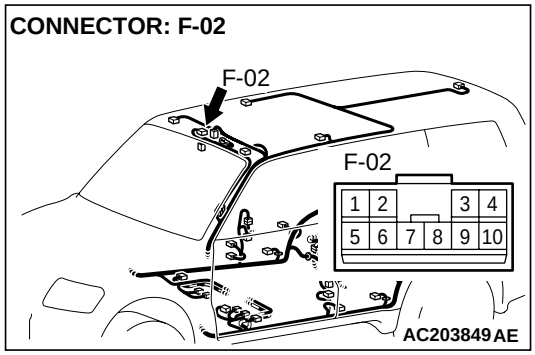


(3) Measure the voltage between terminal 2 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 7.
NO : Go to Step 5.

STEP 5. Check sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

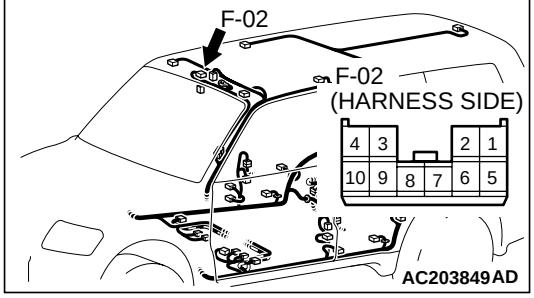


Q: Is sunroof motor assembly connector F-02 in good condition?

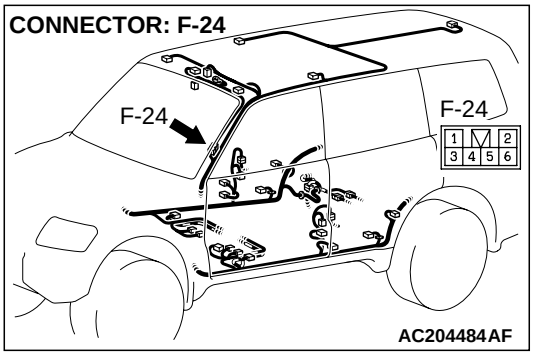
YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The sunroof function should now work normally.

STEP 6. Check the harness wires between sunroof motor assembly connector F-02 (terminal 2) and ignition switch (IG2).

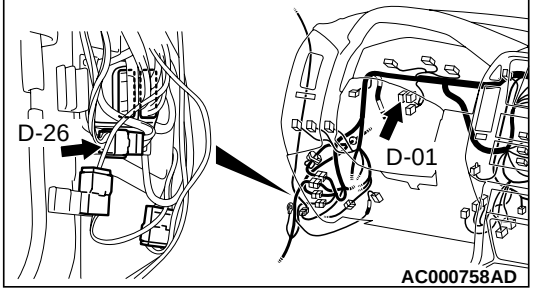
CONNECTOR: F-02



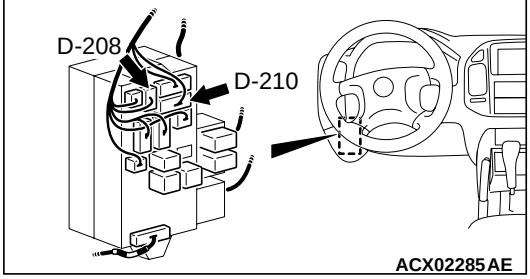
CONNECTOR: F-24



CONNECTORS: D-01, D-26



CONNECTORS: D-208, D-210
JUNCTION BLOCK (FRONT VIEW)



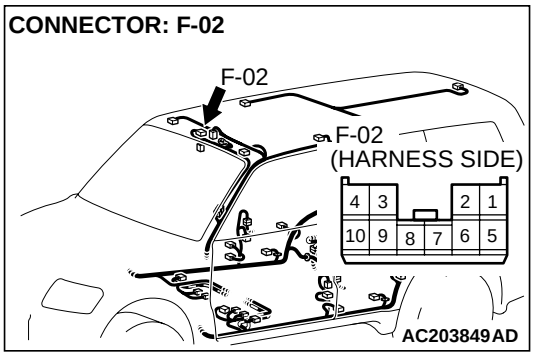
NOTE: Also check junction block connectors D-208, D-210, intermediate connectors F-24, D-26 and joint connector D-01 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connectors D-208, D-210, intermediate connectors F-24, D-26 and joint connector D-01 are 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 F-02 (terminal 2) and ignition switch (IG2) in good condition?

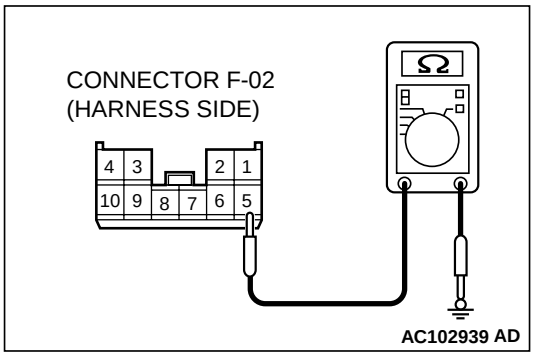
YES : No action is necessary and testing is complete.

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 function should now work normally.

STEP 7. Check the ground circuit to the sunroof motor assembly. Test at sunroof motor assembly connector F-02.



(1) Disconnect sunroof motor assembly connector F-02 and measure the resistance available at the wiring harness side of the connector.

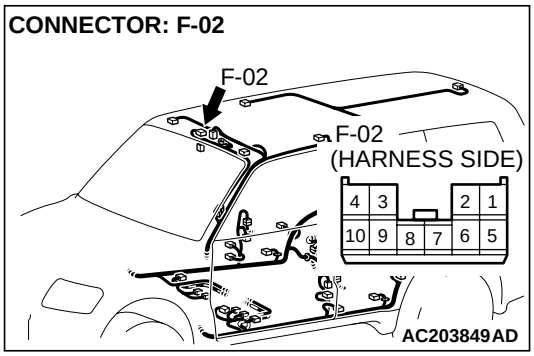


(2) Measure the resistance between terminal 5 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.
NO : Go to Step 8.

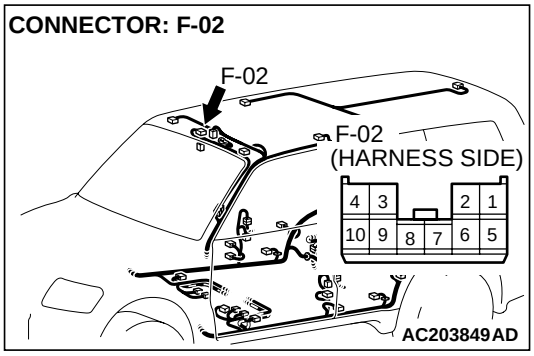
STEP 8. Check sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is sunroof motor assembly connector F-02 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. The sunroof should now work normally.

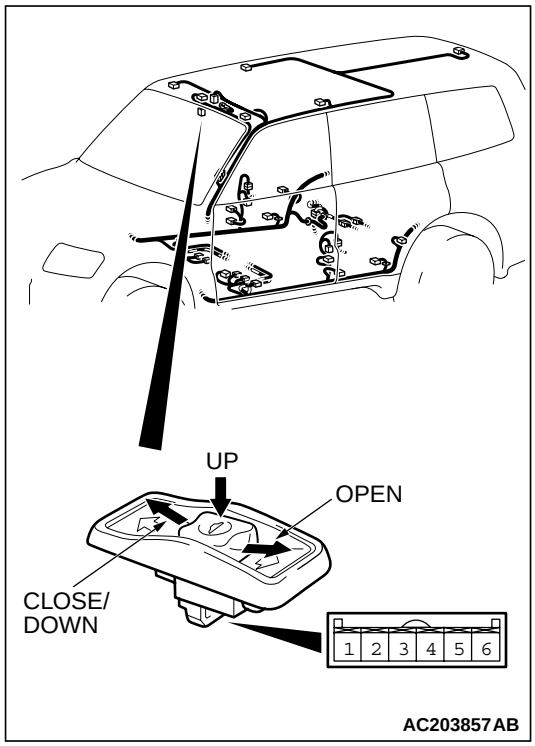
STEP 9. Check the harness wire between sunroof motor assembly connector F-02 (terminal 5) and ground.



Q: Is the harness wire between sunroof motor assembly connector F-02 (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. The sunroof should now work normally.

STEP 10. Check the sunroof switch.



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	3 – 4, 4 – 5, 4 – 6	Open circuit
UP	3 – 4	Less than 2 ohms
OPEN	4 – 5	
CLOSE/DOWN	4 – 6	

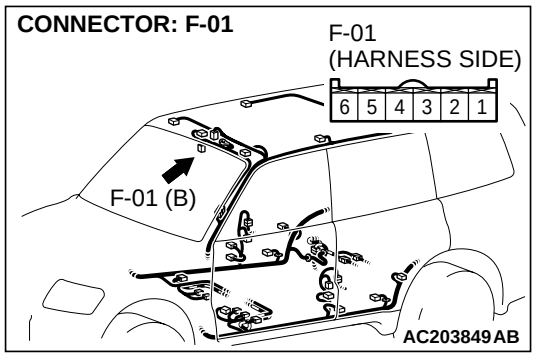
Q: Does the check above meet the values in the table?

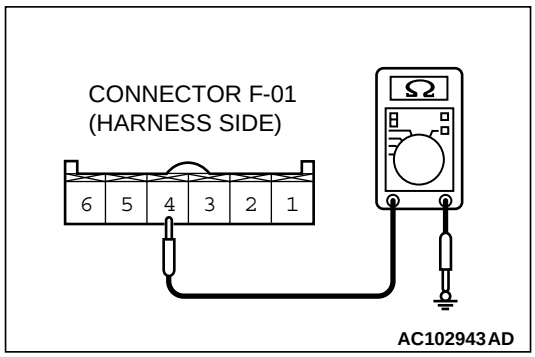
YES : Go to Step 11.

NO : Replace the sunroof switch. The sunroof function should now work normally.

STEP 11. Check the ground circuit to the sunroof switch.
Test at sunroof switch connector F-01.

(1) Disconnect the sunroof switch connector F-01 and measure at the harness side.





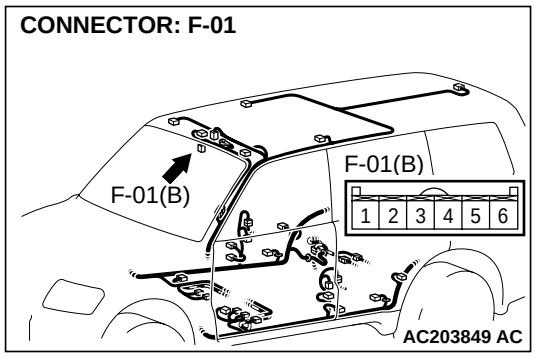
(2) Measure the resistance between terminal 4 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 14.

NO : Go to Step 12.

STEP 12. Check sunroof switch connector F-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



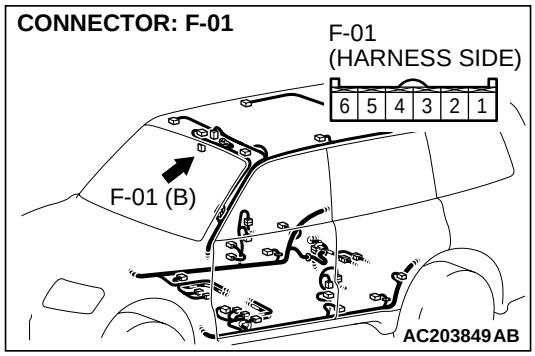
Q: Is sunroof switch connector F-01 in good condition?

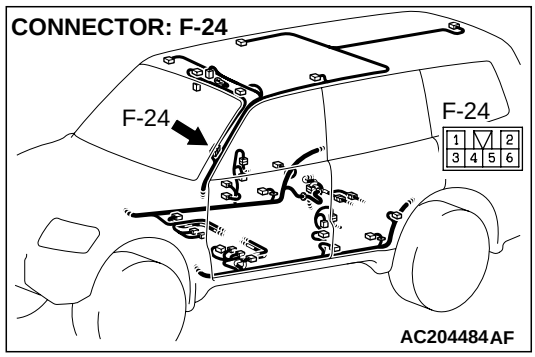
YES : Go to Step 13.

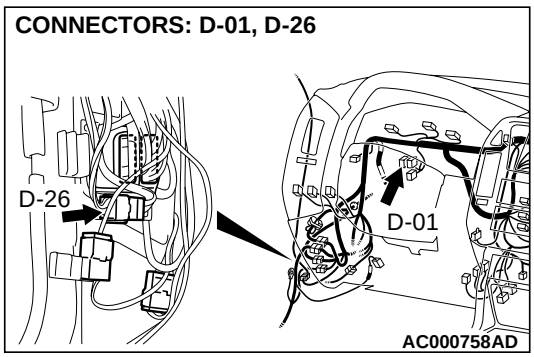
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The sunroof function should now work normally.

STEP 13. Check the harness wire between sunroof switch connector F-01 (terminal 4) and ground.

NOTE:







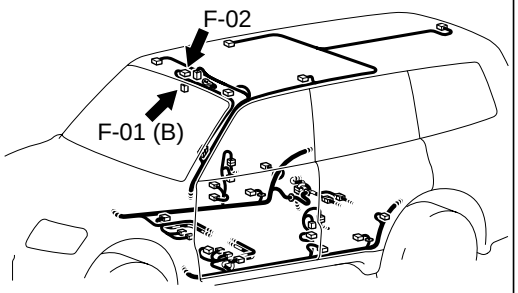
Also check intermediate connectors F-24 and D-26 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connectors F-24 and D-26 are damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

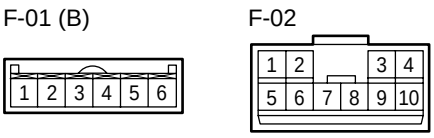
Q: Is the harness wire between sunroof switch connector F-01 (terminal 4) and ground in good condition?

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 sunroof function should now work normally.

CONNECTORS: F-01, F-02





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STEP 14. Check the sunroof switch connector F-01 and sunroof motor assembly connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

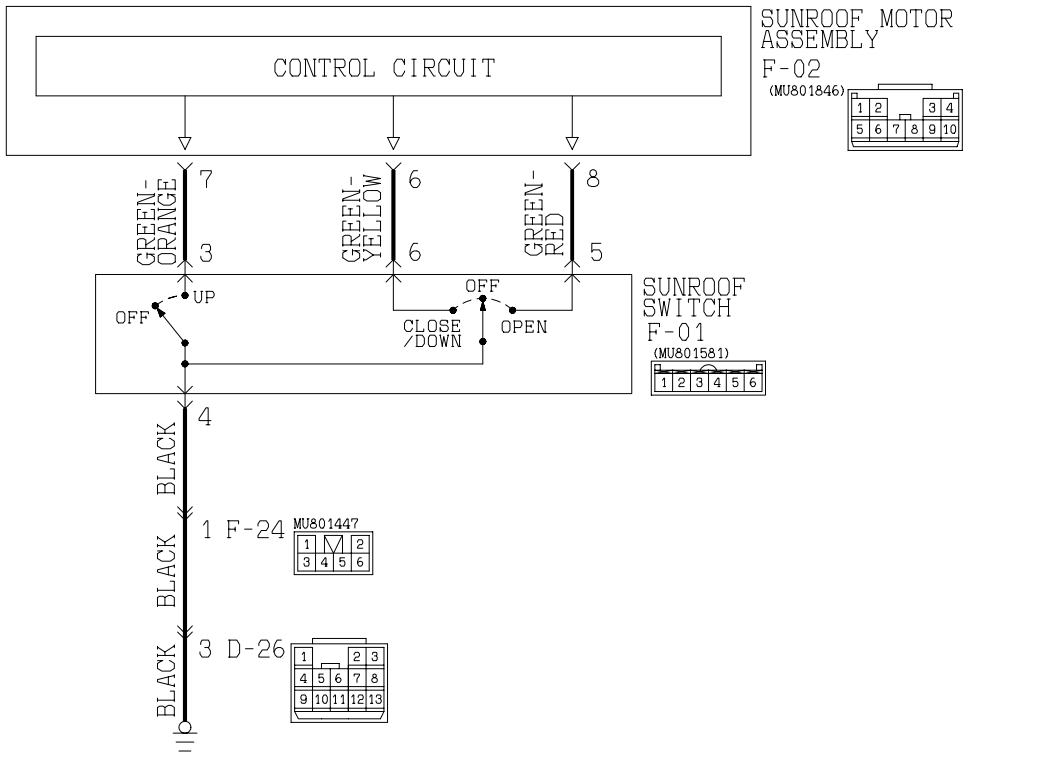
Q: Is sunroof switch connector F-02 and sunroof motor assembly connector F-01 in good condition?

YES : Replace the sunroof motor assembly. The sunroof function should now work normally.

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

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

Sunroof Switch Circuit



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TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

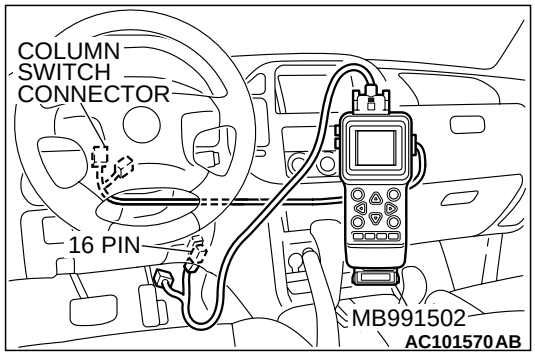
- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

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 MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



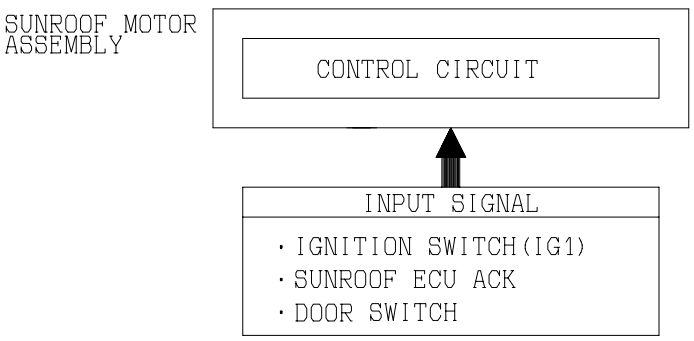
(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "PULSE CHECK."
(3) When each function of the sunroof switch is operated (turned on), check that scan tool MB991502 sounds.

Q: Does scan tool MB991502 sound when the sunroof switch is operated?
YES : Replace the sunroof motor assembly. The sunroof function should now work normally.
NO : Refer to Inspection Procedure O-9 "ETACS-ECU does not receive a signal from "UP, ""OPEN" or "CLOSE/DOWN" switch P.54Bc-41."

INSPECTION PROCEDURE F-3: Sunroof: Sunroof timer function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Sunroof Timer Function



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TSB Revision

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

If 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 driver's or passenger's 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
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

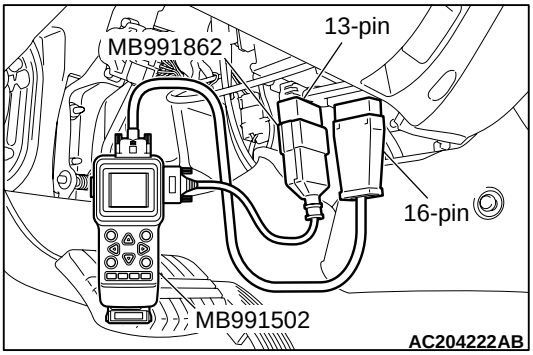
STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Sunroof motor assembly (sunroof-ECU)

⚠ CAUTION

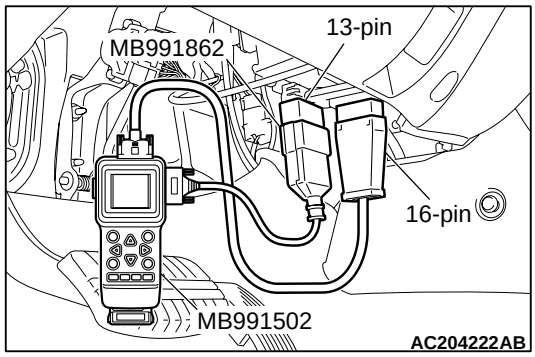
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for the "ETACS ECU" and "SUNROOF ECU" menus.

Q: Is "OK" displayed on the "ETACS ECU" and "SUNROOF ECU" menus?

"OK" are displayed for all the items : Go to Step 2.
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."
"NG" is displayed on the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "Communication with sunroof motor (sunroof-ECU) is not possible P.54Bb-40."



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

(1) Turn the ignition switch to the "OFF" position to check the input signals from the following switches.
(2) Operate scan tool MB991502 according to the procedure below to display "SUNROOF-OPE."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "FUNCTION DIAG."
   5. Select "SUNROOF."
   6. Select "SUNROOF-OPE."
(3) Check that normal conditions are displayed on 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: Are normal conditions displayed on the "IG SW (IG1)" and "S/R ECU ACK"?

YES : Replace the sunroof motor assembly. The sunroof timer function should now work normally.

NO :
- Normal condition is not displayed on the "IG SW(IG1)": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) P.54Bc-7."
- Normal condition is not displayed on the "S/R ECU ACK": Replace the sunroof motor assembly. The sunroof timer function should now work normally.

INSPECTION PROCEDURE F-4: Sunroof: Safety mechanism does not function.

TECHNICAL DESCRIPTION (COMMENT)

The sunroof motor assembly monitors load condition according to the current, which runs in the motor. If a predetermined current is exceeded, the sunroof motor reverses due to safety mechanism. If the sunroof motor does not reverse when an excessive load is applied, the sunroof motor assembly may be defective.

TROUBLESHOOTING HINT

The sunroof motor assembly may be defective

DIAGNOSIS

Replace the sunroof motor assembly.
Verify the sunroof safety mechanism should now work normally.

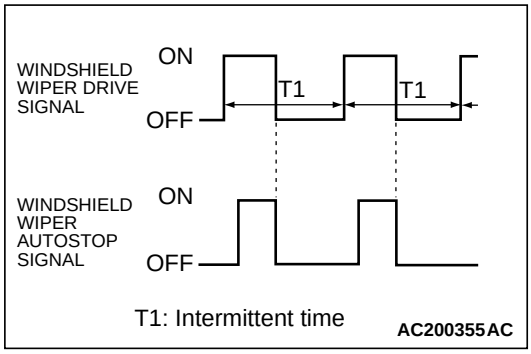
WINDSHIELD WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE WINDSHIELD WIPER AND WASHER

M1549021500075

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

FUNCTION	CONTROL ECU
Intermittent control	ETACS-ECU, front-ECU, column switch
Mist wiper control	front-ECU, column switch
Low speed wiper, high speed wiper control	front-ECU, column switch
Washer control	front-ECU, column switch



Windshield wiper and washer control function

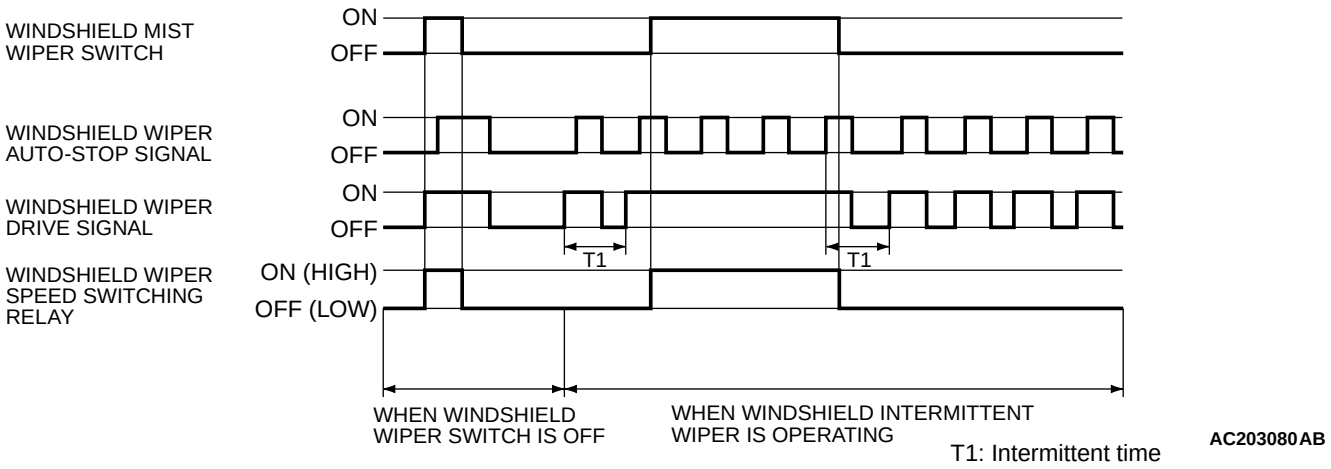
Intermittent control

The ETACS-ECU calculates the intermittent time from the windshield wiper intermittent time adjusting knob at the column switch and sends it to the front-ECU as SWS data.
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 to turn OFF the windshield wipe 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.

Mist wiper control

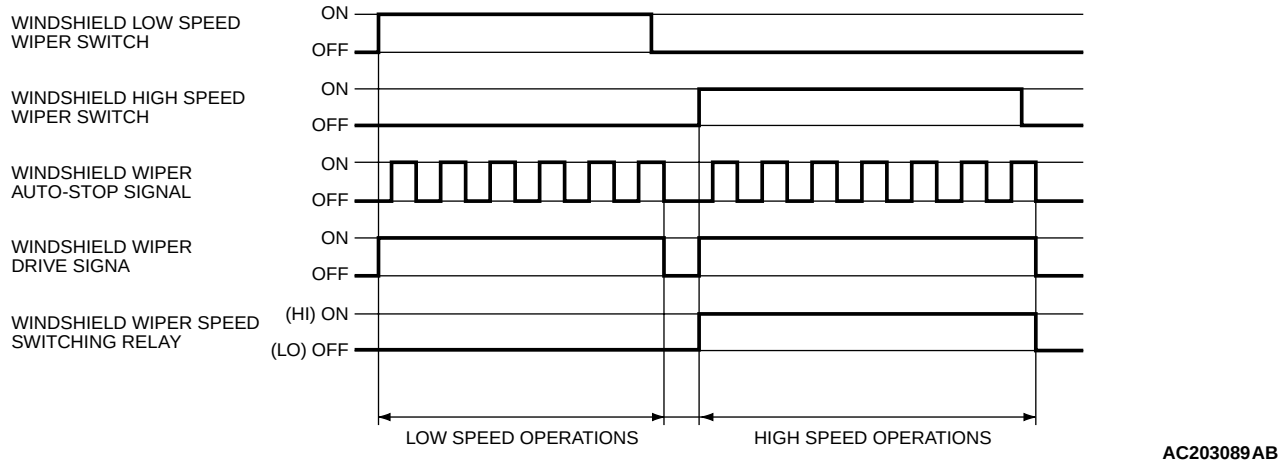
When the ignition switch is at the ACC or ON position, if the windshield mist wiper switch of the column switch is turned ON, the front-ECU turns ON the windshield wiper drive signal. At the same time, the wiper speed switching relay is turned ON (HIGH-SPEED). While the windshield mist wiper switch is 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 at low speed once.
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 windshield wiper auto-stop signal is turned ON last.



Low speed wiper, high speed wiper control

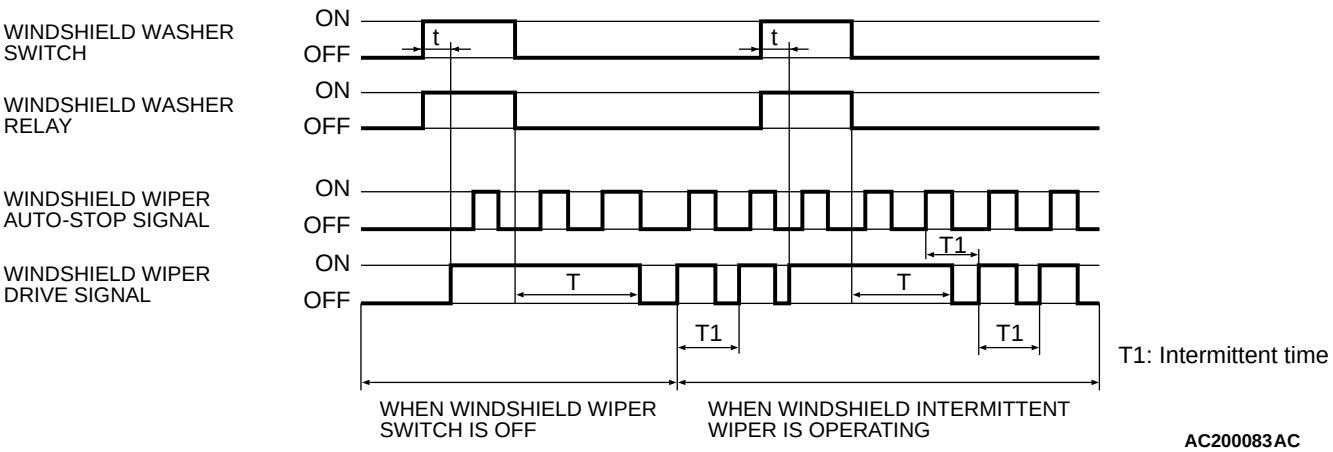
When the ignition switch is at the ACC or ON position, if the windshield low speed wiper switch of the column switch is turned ON, the front-ECU turns ON the windshield wiper drive signal, turns OFF (LO) the windshield wiper speed switching relay, and operates the windshield wiper at low speed. Next,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

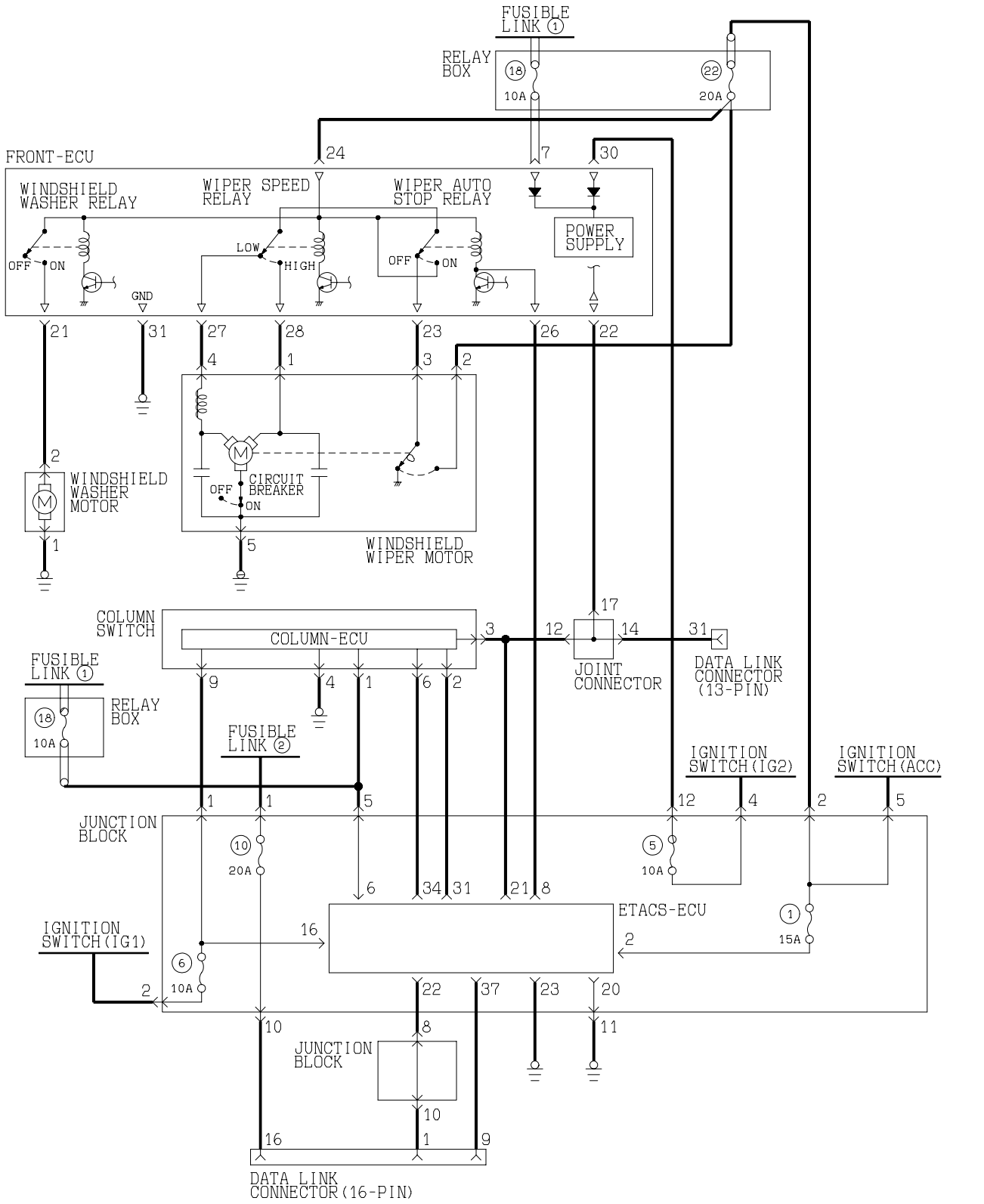
When the ignition switch is at the ACC or ON position, if the windshield washer switch of the column switch is turned ON, the front-ECU turns ON the windshield washer relay. The windshield wiper drive signal is turned ON in 0.3 second until 3 seconds after the windshield washer switch goes OFF to operate 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 INT				WHEN WIPER SWITCH IS LO OR HI
t	0.3 second or less	0.3 - 0.5 second	0.5 - 0.7 second	0.7 second	Less than 0.2 second	0.3 - 0.5 second	0.5 - 0.7 second	0.7 second	–
T	0 second	1 second	2 seconds	3 seconds	0 second	1 second	2 seconds	3 seconds	3 seconds

General circuit diagram for the windshield wiper and washer



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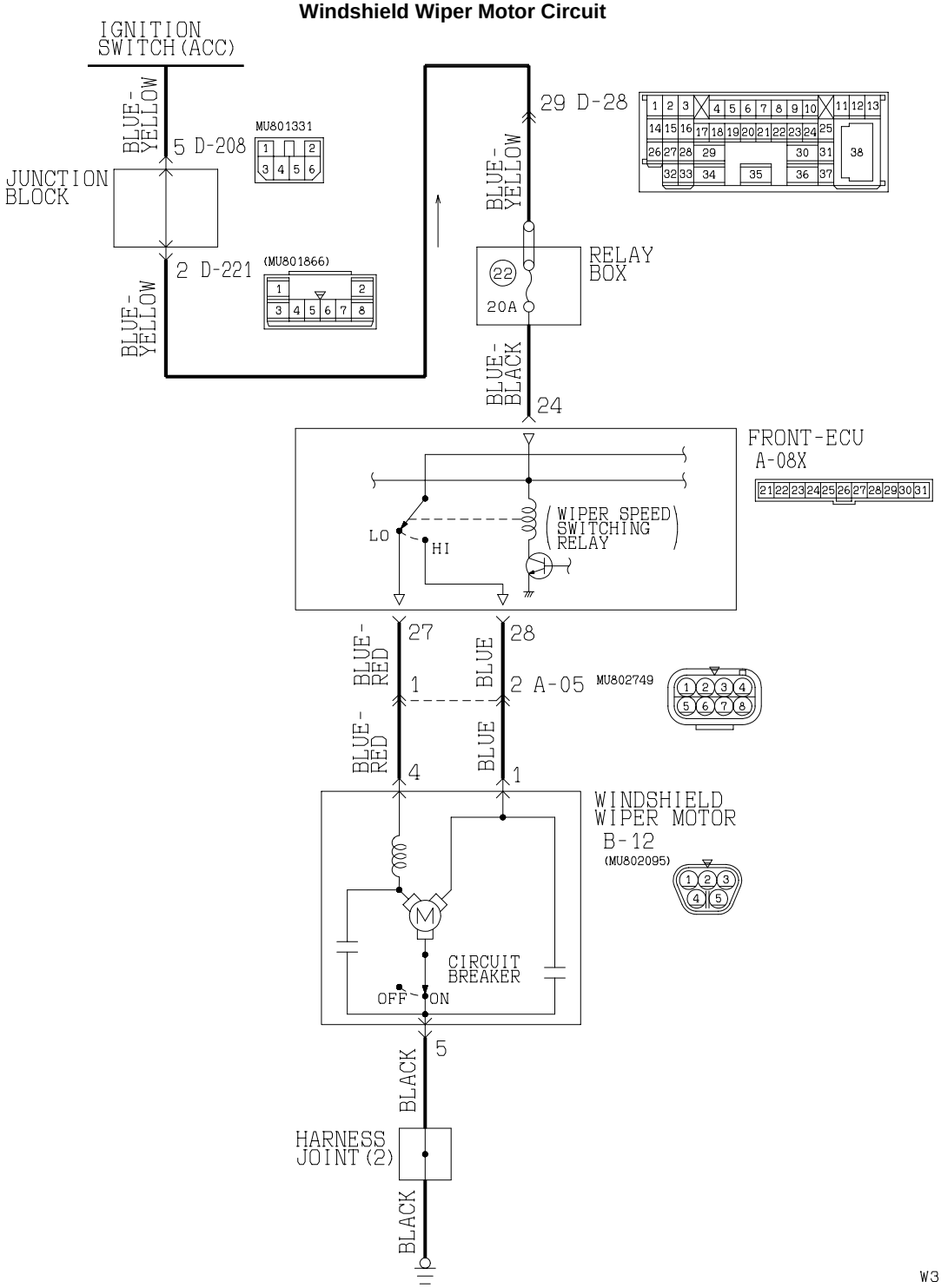
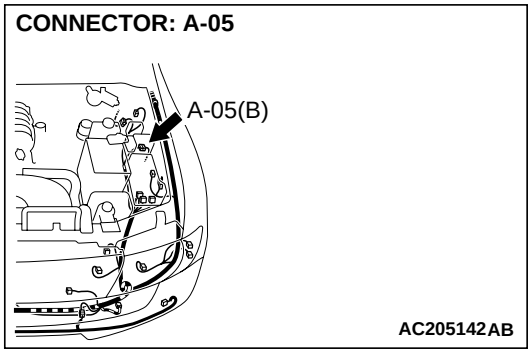
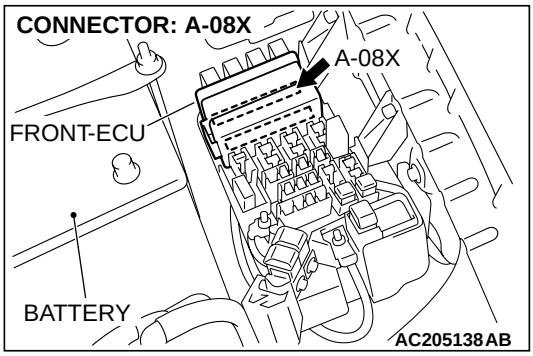
INSPECTION PROCEDURE G-1: Windshield Wiper and Washer: The windshield wiper does not work at all.

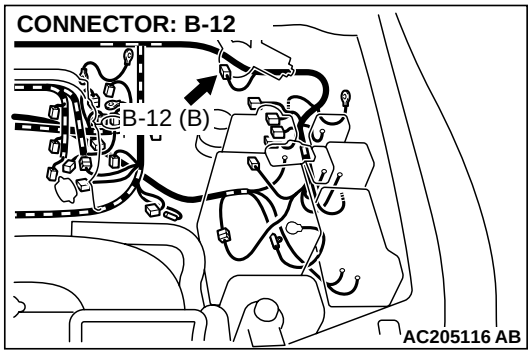
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

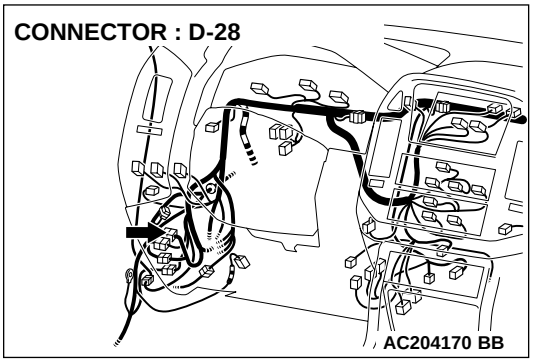
Windshield Wiper Motor Circuit

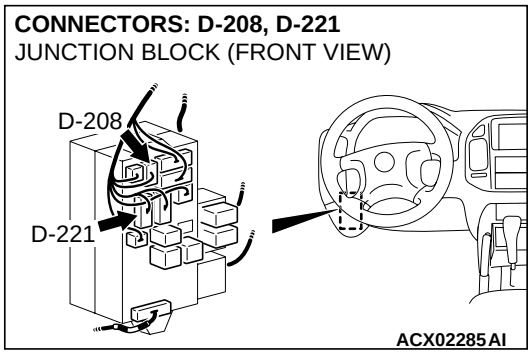












CIRCUIT OPERATION

- 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

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

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DIAGNOSIS

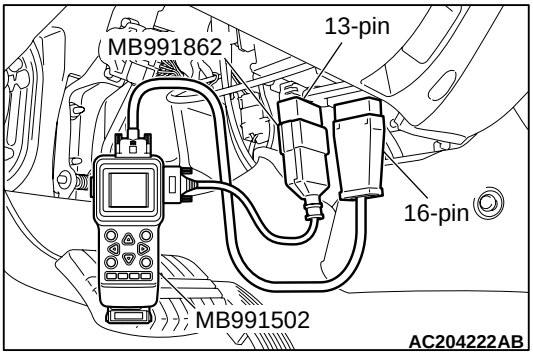
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:
- Column-ECU
- Front-ECU

⚠ CAUTION

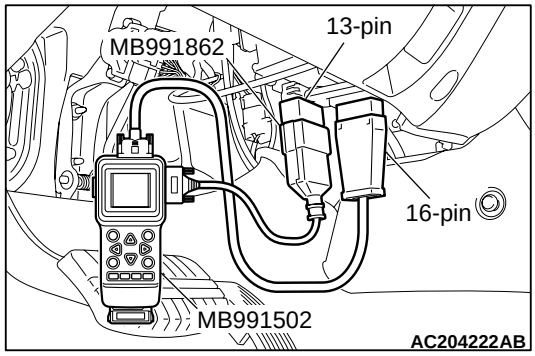
To prevent damage to scan tool MB991502, always turn the ignition switch to the "lock" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHECK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK".
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-16."
"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54Bb-32."



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

Operate the scan tool according to the procedure below to display "F.WIPER INT."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "WIPER."
6. Select "F.WIPER INT."

Check that normal conditions are displayed on 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"?

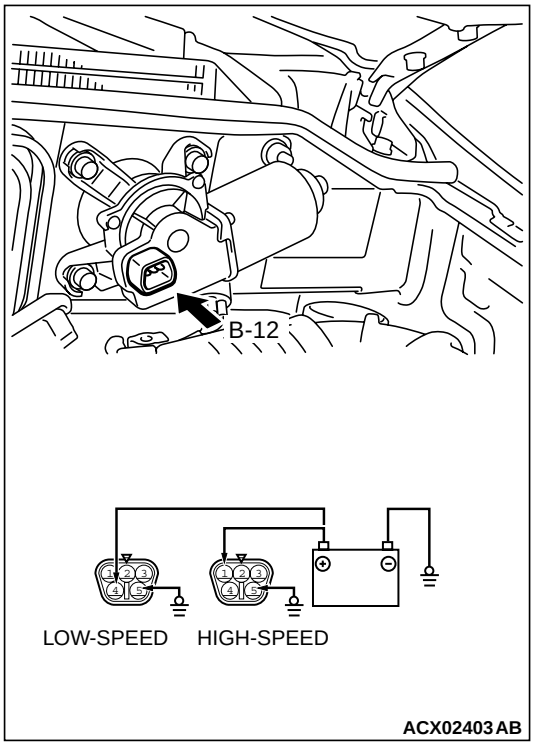
YES : Go to Step 3.

NO :
- Normal condition is not displayed on the "INT WIPER SW." Replace the column switch. Verify that the windshield wiper works normally.
- Normal condition is not displayed on the "FRONT ECU SW." Replace the front-ECU. Verify that the windshield wiper works normally.

STEP 3. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector B-12.

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



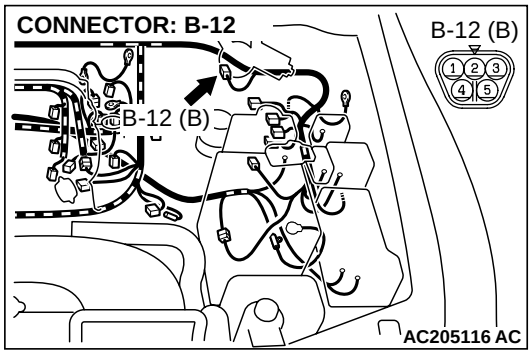
Q: Does the windshield wiper motor operate normally?

YES : Go to Step 4.

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

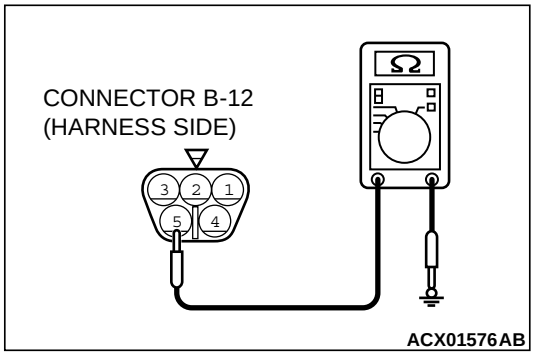
STEP 4. Check the ground circuit to the windshield wiper motor. Test at windshield wiper motor connector B-12.

(1) Disconnect windshield wiper motor connector B-12 and measure the resistance available at the wiring harness side of the connector.



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

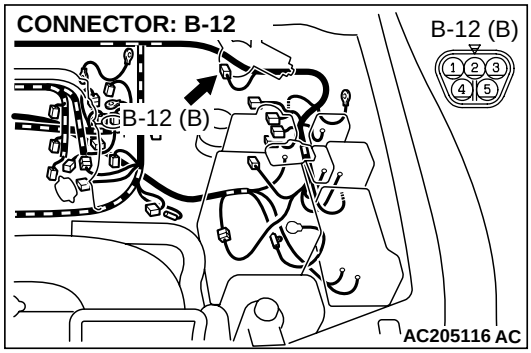
- The resistance should equal 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 5.

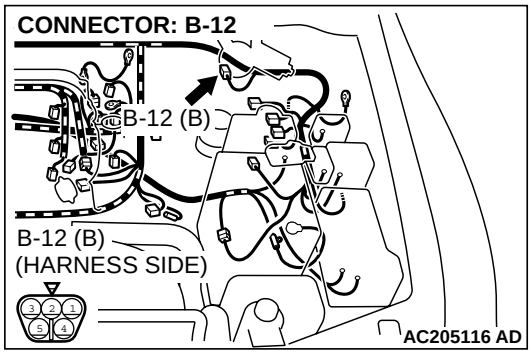


STEP 5. Check windshield wiper motor connector B-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector B-12 in good condition?

YES : Go to Step 6.

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

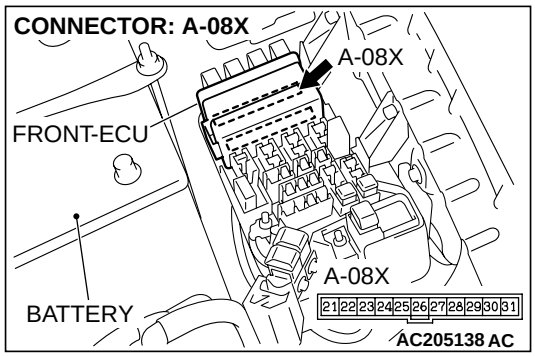


STEP 6. Check the wiring harness between windshield wiper motor connector B-12 (terminal 5) and ground.

Q: Is the wiring harness between windshield wiper motor connector B-12 (terminal 5) and ground in good condition?

YES : No action is necessary and testing is complete.

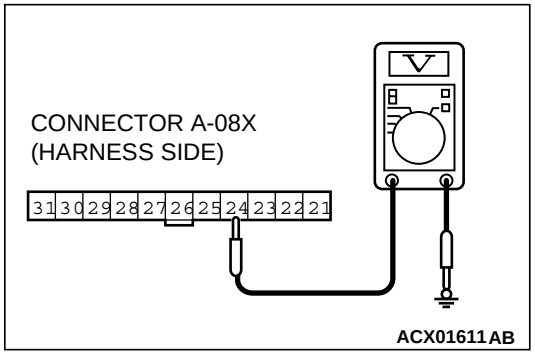
NO : The wiring harness may be damaged or the connector may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper works normally.



STEP 7. Check the ignition switch (ACC) circuit to the front-ECU. Test at front-ECU connector A-08X.

(1) Disconnect front-ECU connector A-08X, and measure at the relay box side.

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



(3) Measure the voltage between terminal 24 and ground.

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

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

YES : Go to Step 10.

NO : Go to Step 8.

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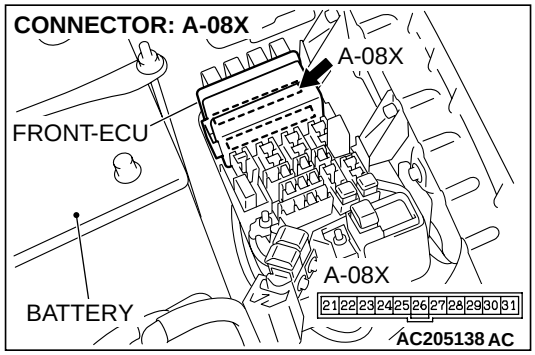
STEP 8. Check front-ECU connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

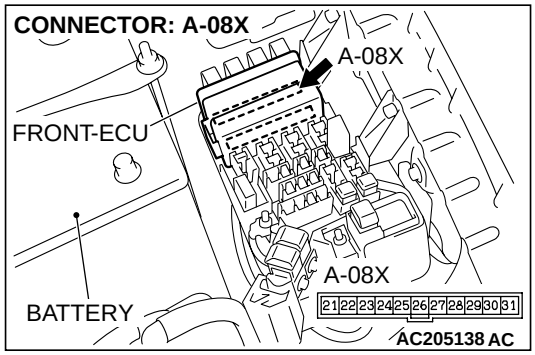
Q: Is front-ECU connector A-08X in good condition?

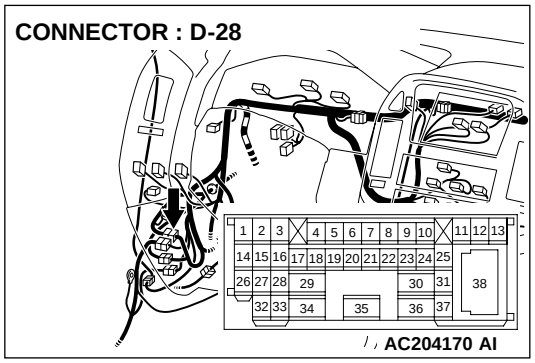
YES : Go to Step 9.

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



STEP 9. Check the wiring harness between front-ECU connector A-08X (terminal 24) and the ignition switch (ACC).



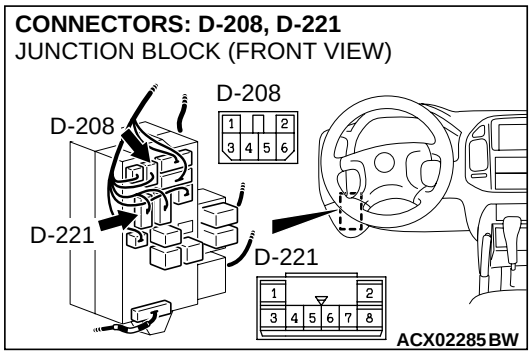


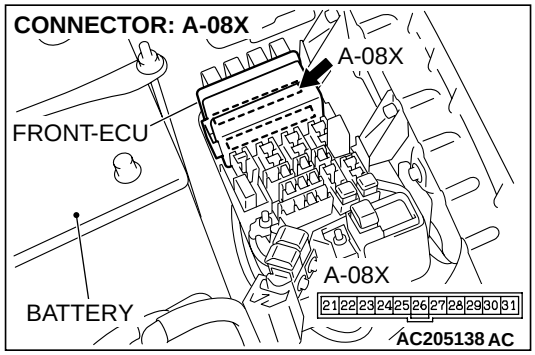
NOTE: Also check intermediate connector D-28, junction block connectors D-208 and D-221 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, junction block connector D-208 or D-221 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front-ECU connector A-08X (terminal 24) 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 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.





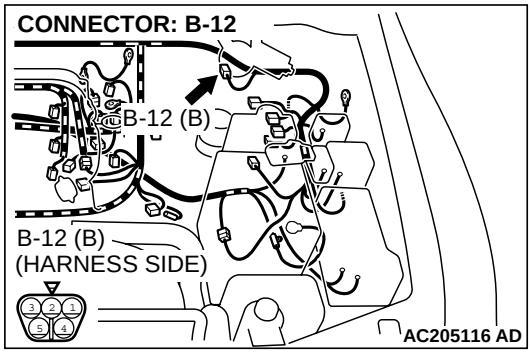
STEP 10. Check front-ECU connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

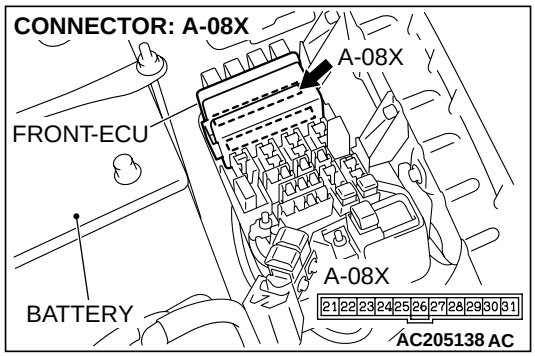
Q: Is front-ECU connector A-08X in good condition?

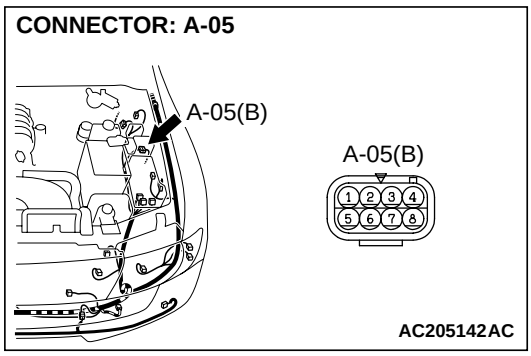
YES : Go to Step 11.

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

STEP 11. Check the wiring harness between windshield wiper motor connector B-12 (terminal 1) and front-ECU connector A-08X (terminal 28).





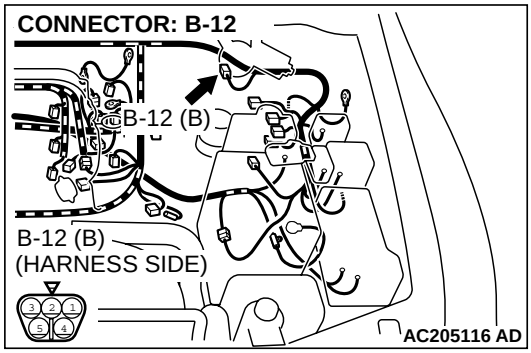


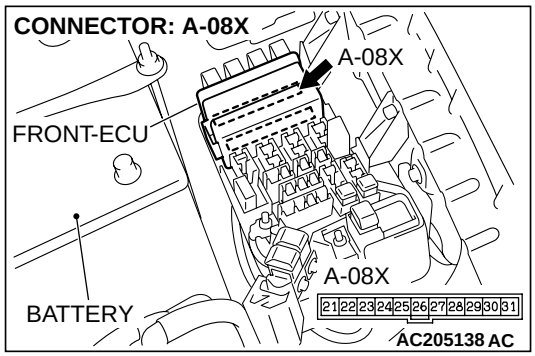
NOTE: Also check intermediate connector A-05 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-05 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between windshield wiper motor connector B-12 (terminal 1) and front-ECU connector A-08X (terminal 28) in good condition?

YES : Go to Step 12.

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.





STEP 12. Check the wiring harness between windshield wiper motor connector B-12 (terminal 4) and front-ECU connector A-08X (terminal 27).

Q: Is the wiring harness between windshield wiper motor connector B-12 (terminal 4) and front-ECU connector A-08X (terminal 27) in good condition?

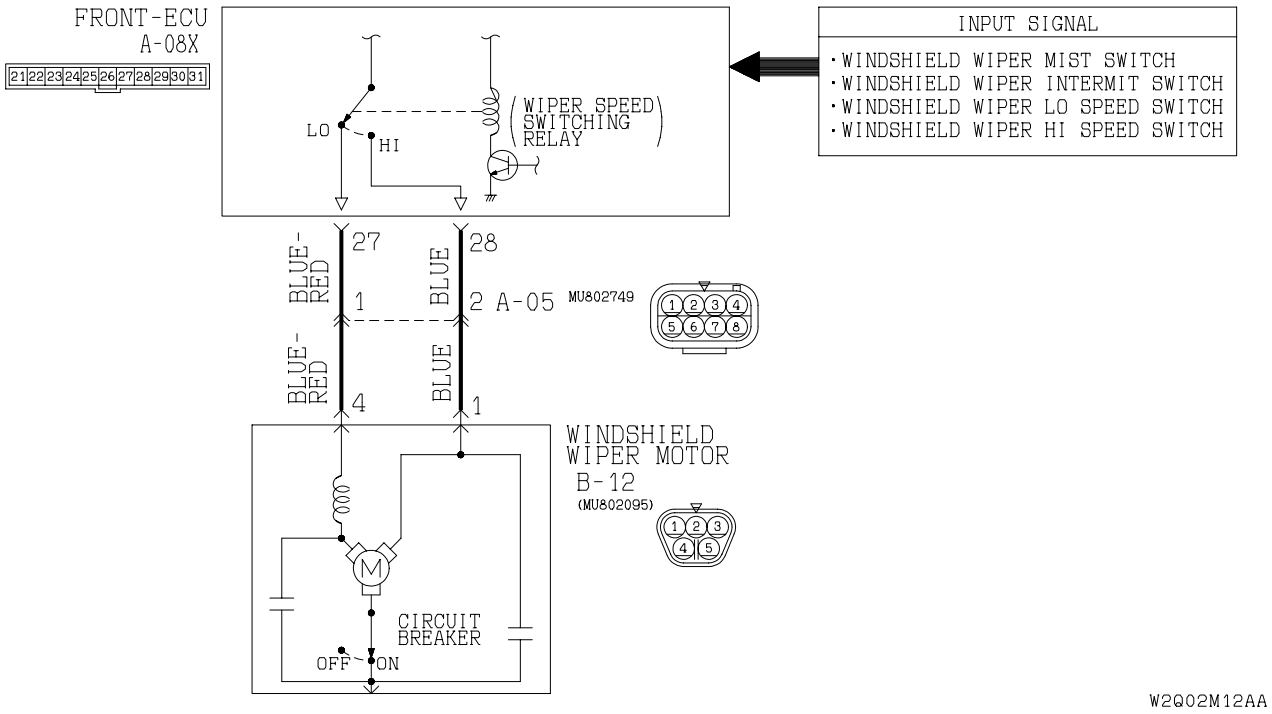
YES : No action is necessary and testing is complete.

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-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 the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Windshield Wiper Motor Drive Circuit



TECHNICAL DESCRIPTION (COMMENT)

The system may be at fail-safe mode as the SWS communication line is defective.
If the system can not receive any signal from the column switch (windshield wiper and washer switch) due to a 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 column switch (windshield wiper and washer switch) may be defective
- The front-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

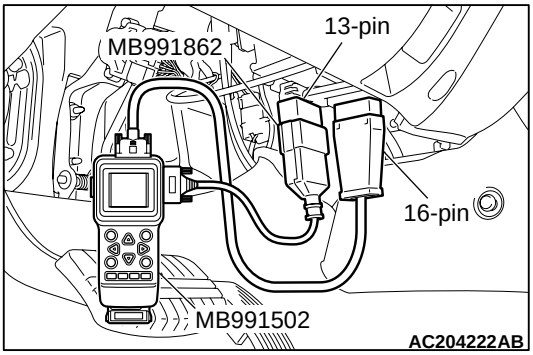
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:
- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHECK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK".
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

Q: Is "OK" displayed on 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.

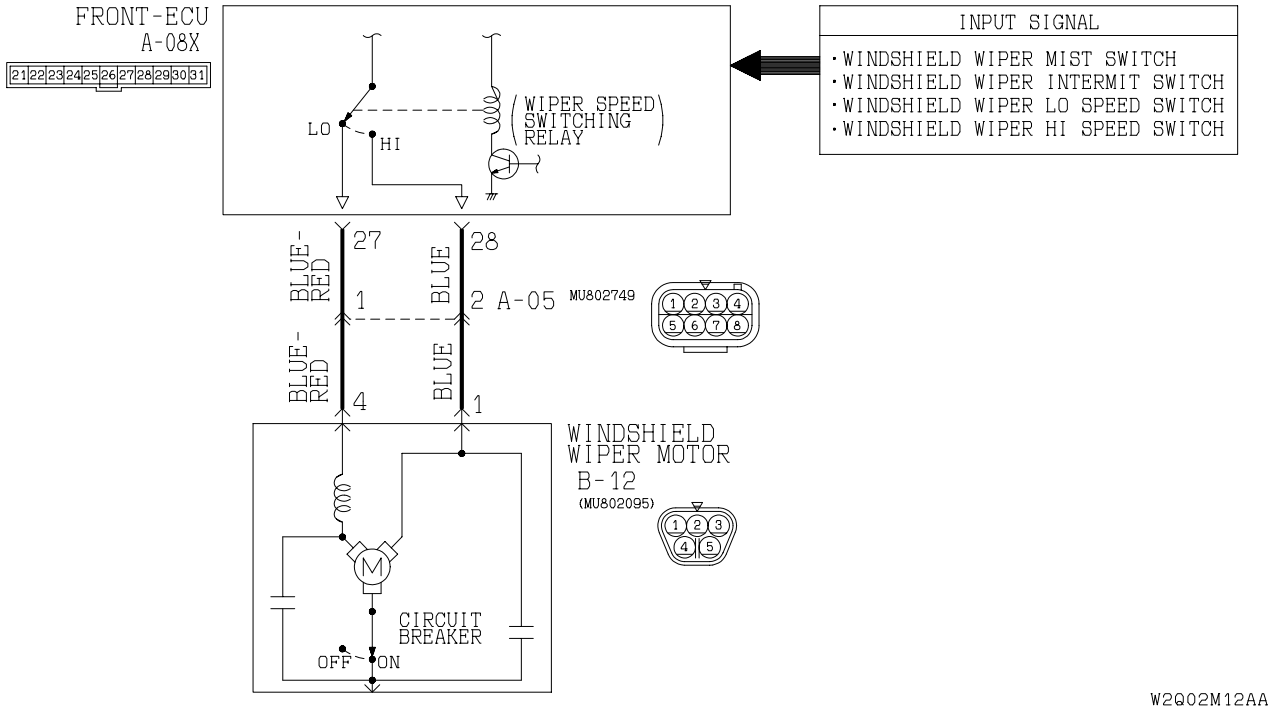
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possibleP.54Bb-16."

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possibleP.54Bb-32."

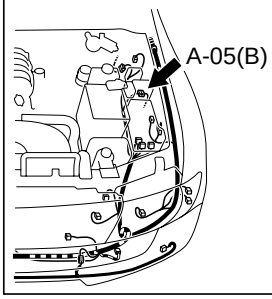
INSPECTION PROCEDURE G-3: Windshield Wiper and Washer: Any of the windshield wiper switch positions is defective.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Windshield Wiper Motor Drive Circuit



CONNECTOR: A-05



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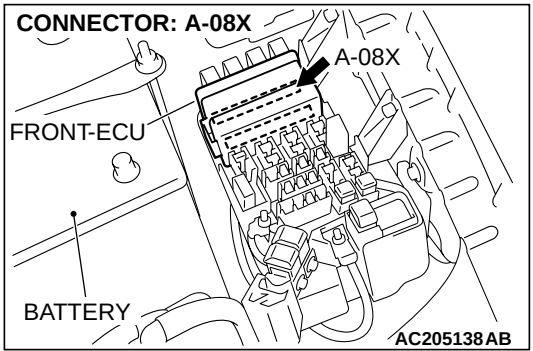
CONNECTOR: A-08X



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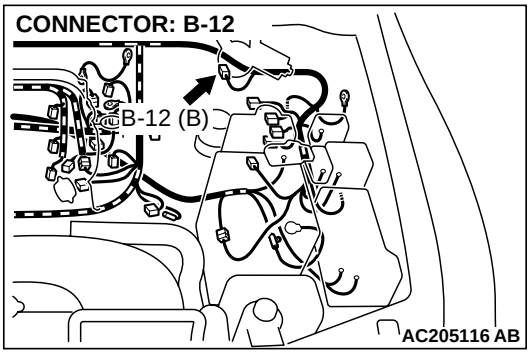
CONNECTOR: B-12



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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

- The windshield wiper motor may be defective
- The column switch (windshield wiper and washer switch) may be defective
- The front-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:

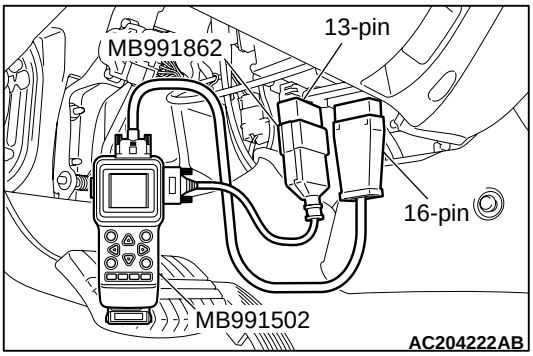
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

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 MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Operate scan tool MB991502 according to the procedure below to display "COLUMN ECU."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "DATA LIST."
    5. Select "COLUMN ECU."
(4) Check that normal conditions are displayed on 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 O-7 "ETACS-ECU does not receive a signal from the windshield mist wiper switch P.54Bc-31."

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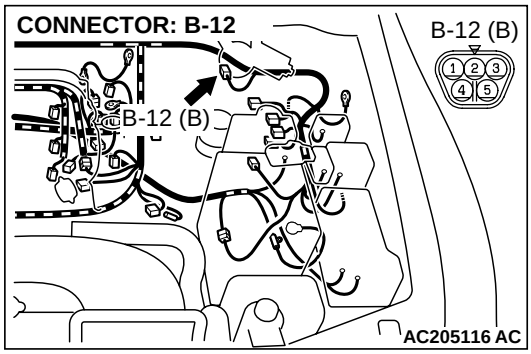
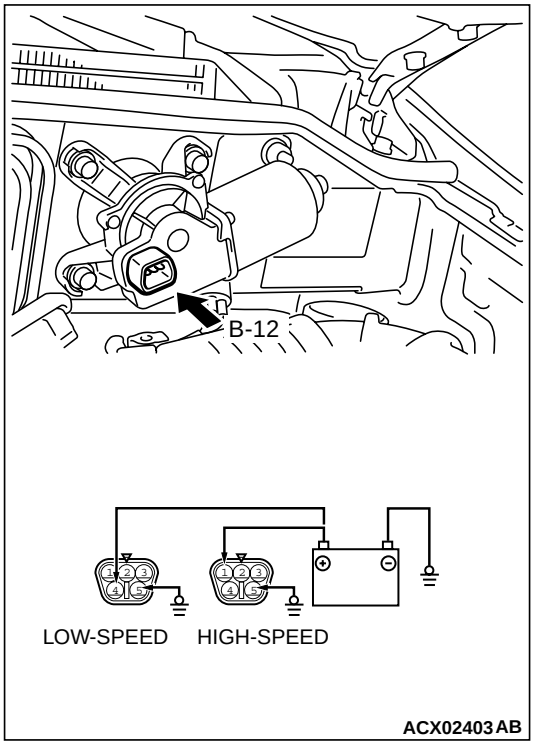


STEP 2. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector B-12.

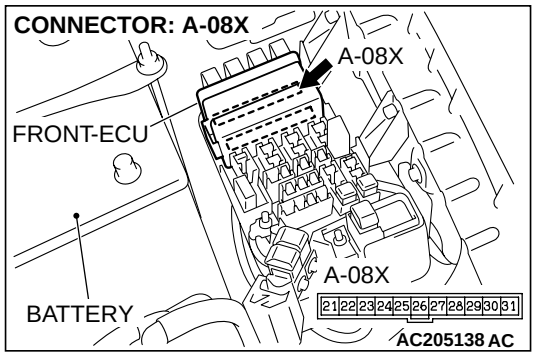


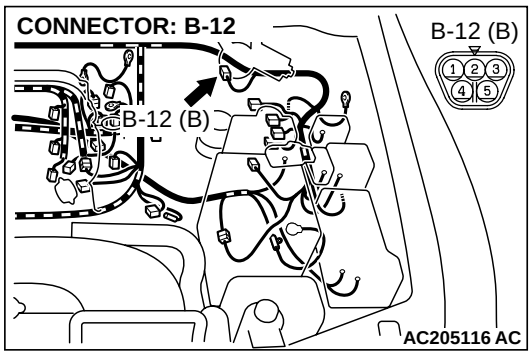
(2) Connect a battery to the windshield wiper motor as shown. Then check the windshield wiper motor operates normally at high and low speeds.

Q: Does the windshield wiper motor operate normally?

YES : Go to Step 3.

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





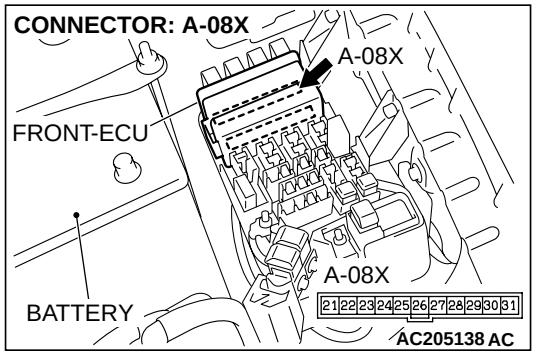
STEP 3. Check windshield wiper motor connector B-12 and front-ECU connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

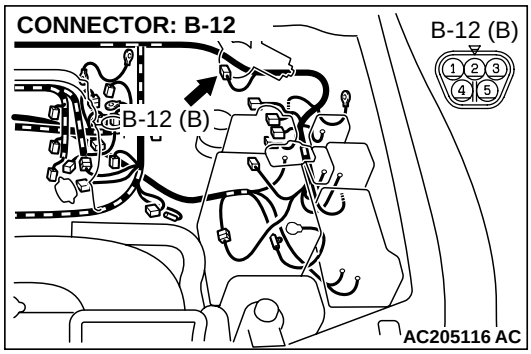
Q: Are windshield wiper motor connector B-12 and front-ECU connector A-08X in good condition?

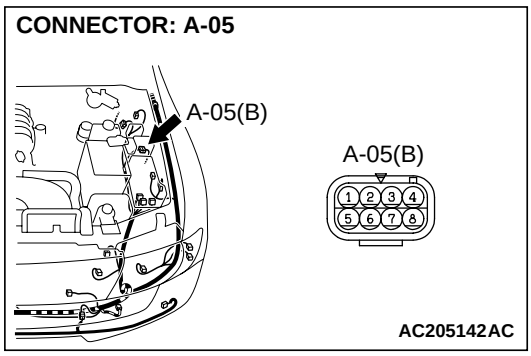
YES : Go to Step 4.

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

STEP 4. Check the wiring harness between windshield wiper motor connector B-12 (terminal 1) and front-ECU connector A-08X (terminal 28).





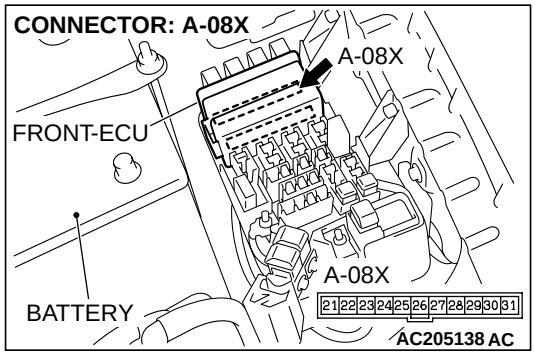


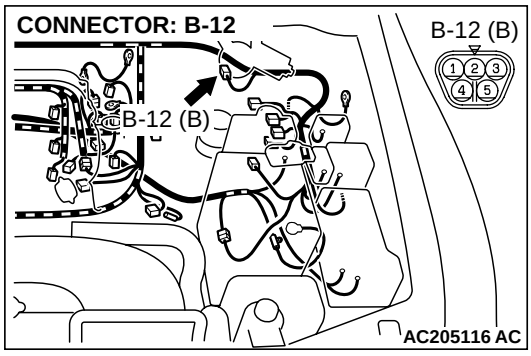
NOTE: Also check intermediate connector A-05 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-05 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between windshield wiper motor connector B-12 (terminal 1) and front-ECU connector A-08X (terminal 28) in good condition?

YES : Go to Step 5.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the 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 B-12 (terminal 4) and front-ECU connector A-08X (terminal 27).

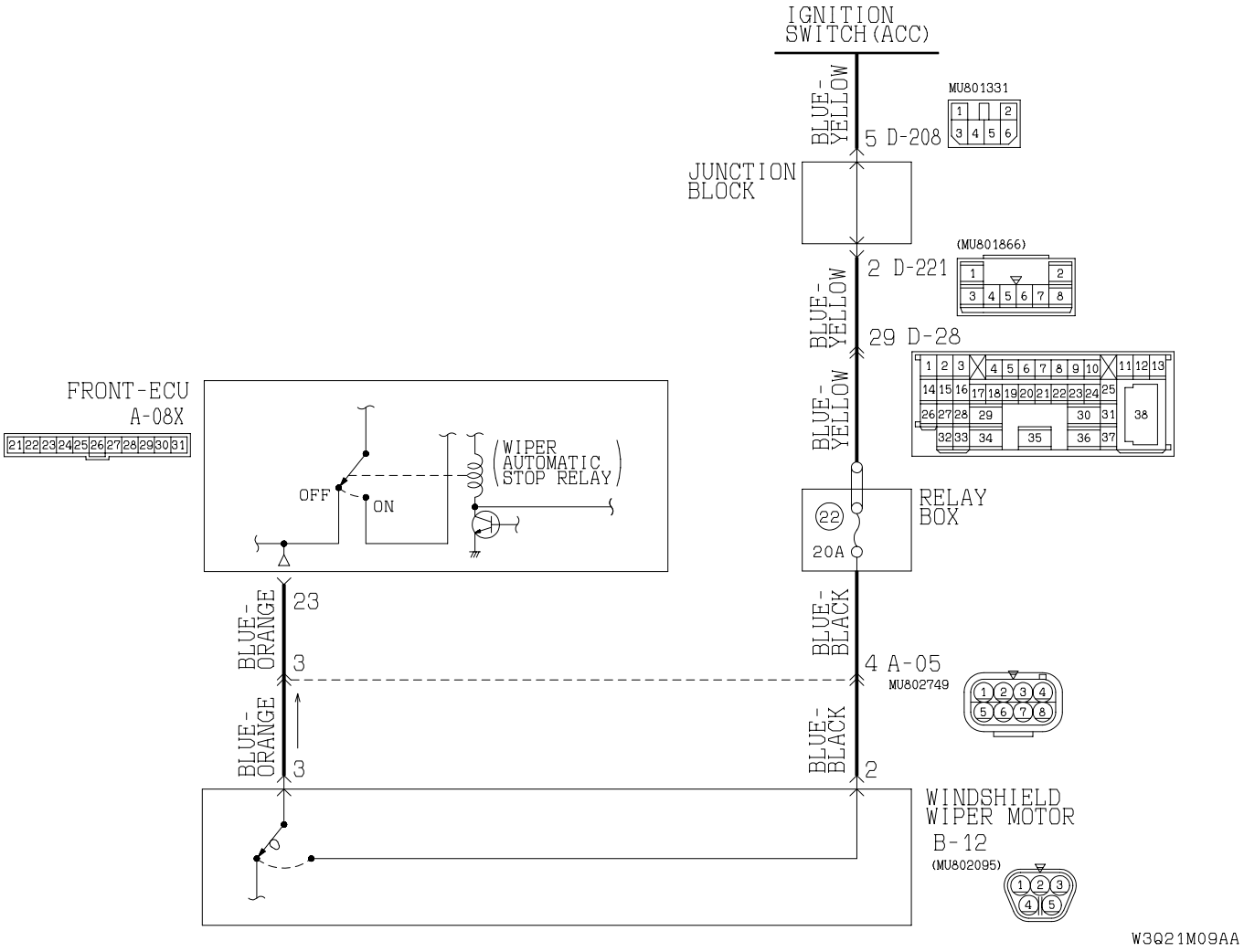
Q: Is the wiring harness between windshield wiper motor connector B-12 (terminal 4) and front-ECU connector A-08X (terminal 27) in good condition?

YES : No action is necessary and testing is complete.

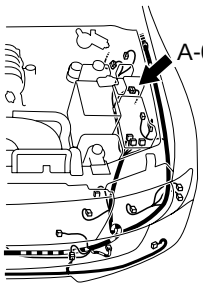
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.

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

Windshield Wiper Automatic Stop Relay Circuit



CONNECTOR: A-05



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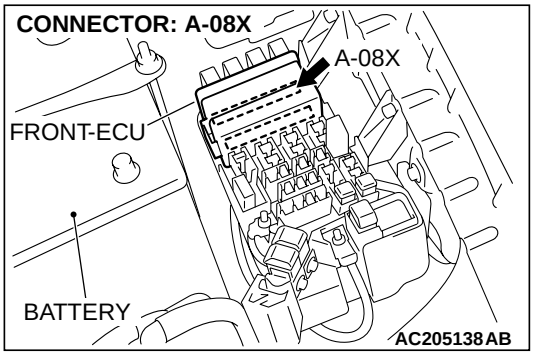
CONNECTOR: A-08X



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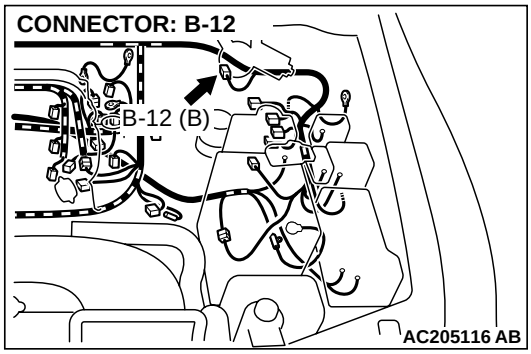
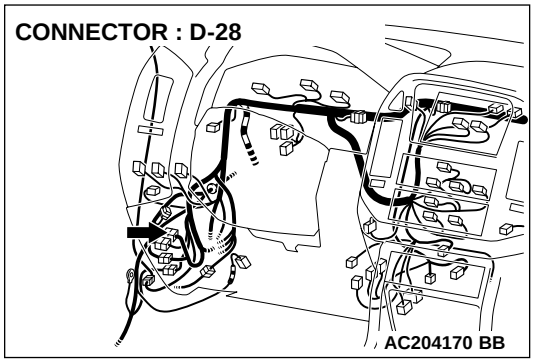
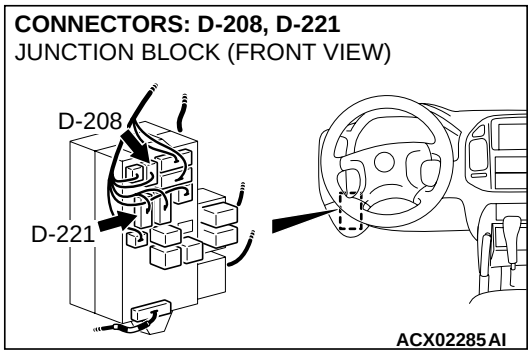






TECHNICAL DESCRIPTION (COMMENT)

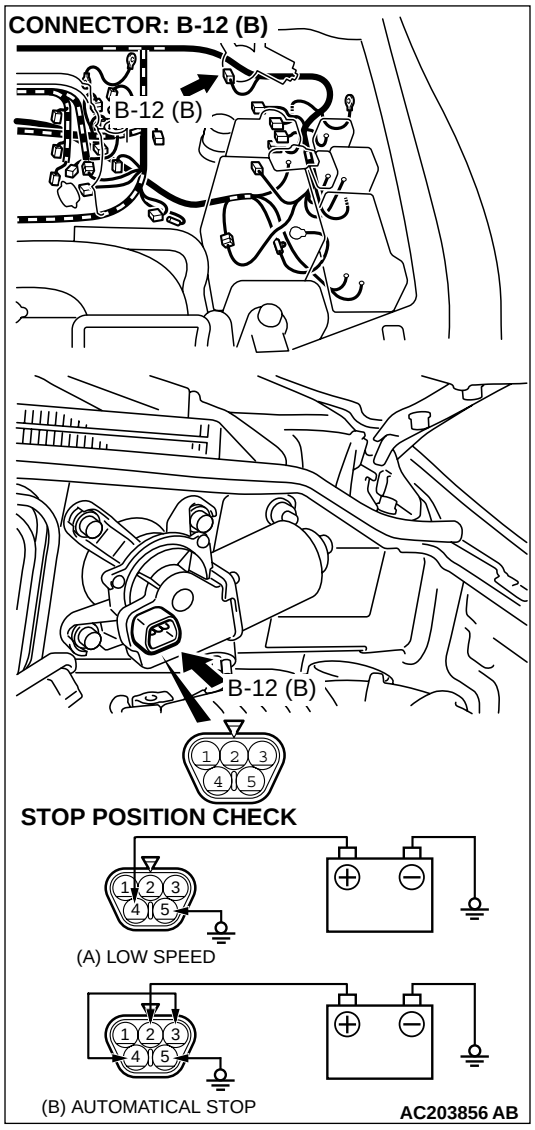
If the windshield wiper does not stop at predetermined park position, the windshield wiper motor or the front-ECU may be defective.

TROUBLESHOOTING HINTS

- The windshield wiper motor may be defective
- The front-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 Tool:
- MB991223: Harness Set

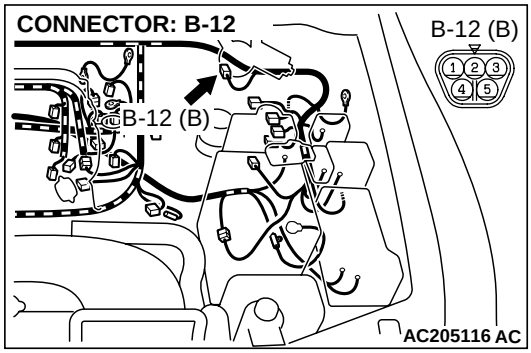


STEP 1. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector B-12.
(2) Connect the windshield wiper motor connector terminal 4 to the positive battery terminal and terminal 5 to the ground as shown in the illustration (A), 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 connect the windshield wiper motor connector terminal 2 to the positive battery terminal, terminal 5 to the ground and terminal 3 to terminal 4 as shown in the illustration (B), the motor should run at low speed, and then stop at the predetermined park position.

Q: Does the windshield wiper motor operate normally?

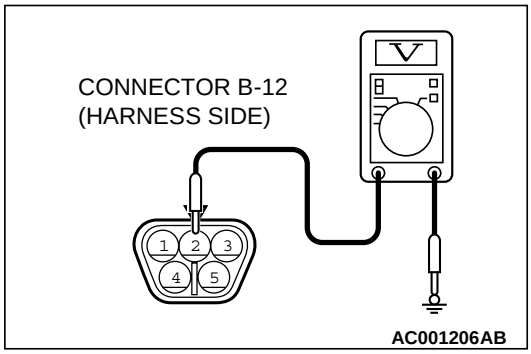
YES : Go to Step 2.
NO : Replace the windshield wiper motor. Verify the windshield wiper should now stop at the predetermined park position.



STEP 2. Check the battery power supply circuit to the windshield wiper motor. Test at the windshield wiper motor connector B-12.

(1) Disconnect windshield wiper motor connector B-12 and measure the voltage available at the wiring harness side of the connector.

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

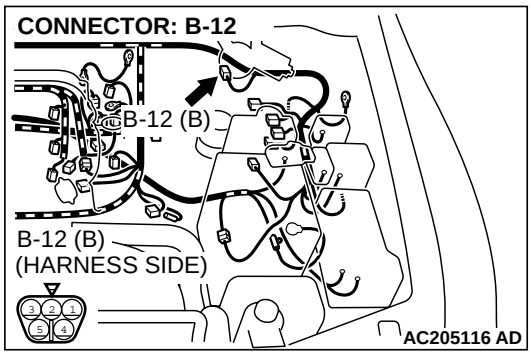


(3) Measure the voltage between terminal 2 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 5.

NO : Go to Step 3.



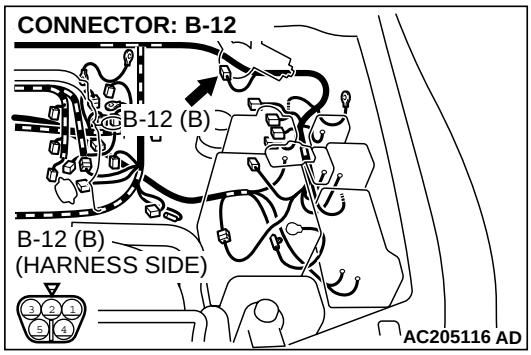
STEP 3. Check windshield wiper motor connector B-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

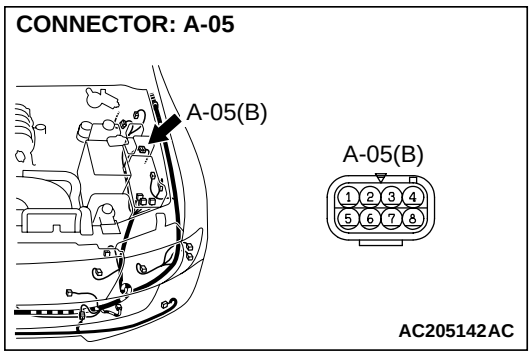
Q: Is windshield wiper motor connector B-12 in good condition?

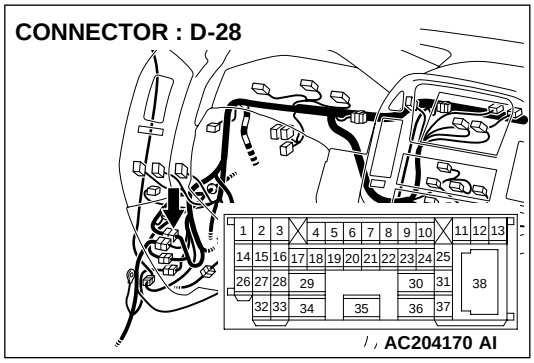
YES : Go to Step 4.

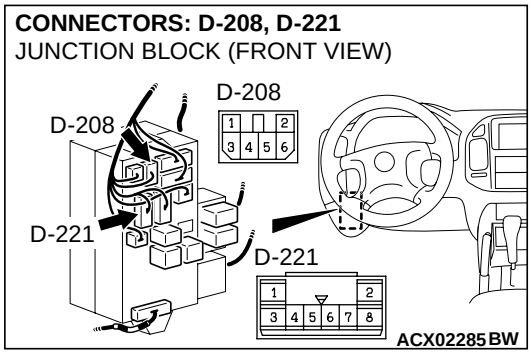
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The windshield wiper should now stop at the predetermined park position.

STEP 4. Check the wiring harness between windshield wiper motor connector B-12 and the ignition switch (ACC).







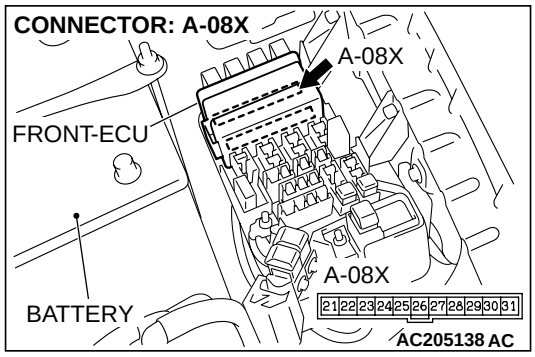


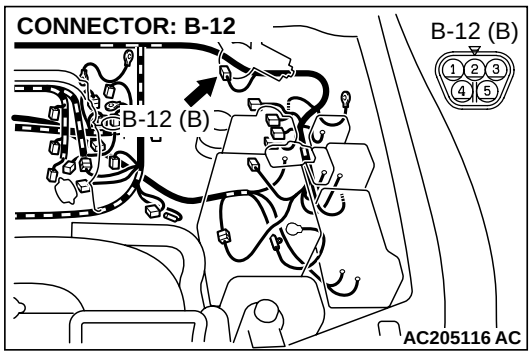
NOTE: Also check intermediate connector A-05, D-28, junction block connectors D-208 and D-221 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-05, D-28, junction block connector D-208 and D-221 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between windshield wiper motor connector B-12 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. The windshield wiper should now stop at the predetermined park position.





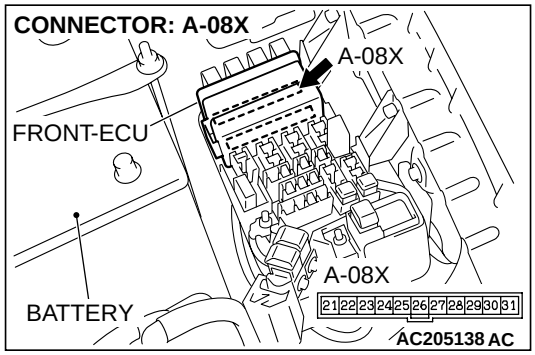
STEP 5. Check windshield wiper motor connector B-12 and front-ECU connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

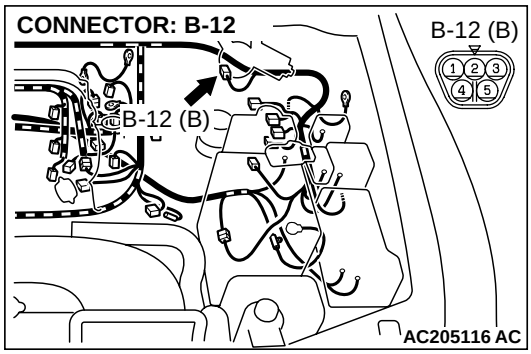
Q: Are windshield wiper motor connector B-12 and front-ECU connector A-08X in good condition?

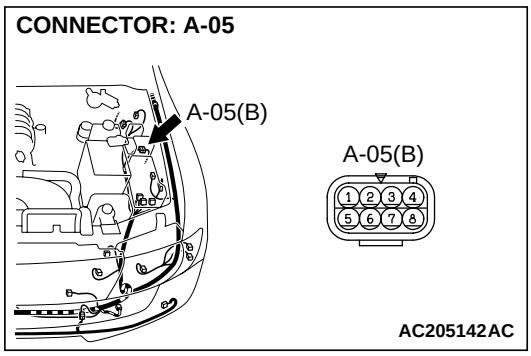
YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The windshield wiper should now stop at the predetermined park position.

STEP 6. Check the wiring harness between windshield wiper motor connector B-12 (terminal 3) and front-ECU connector A-08X (terminal 23).







NOTE: Also check intermediate connector A-05 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector A-05 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 B-12 (terminal 3) and front-ECU connector A-08X (terminal 23) in good condition?

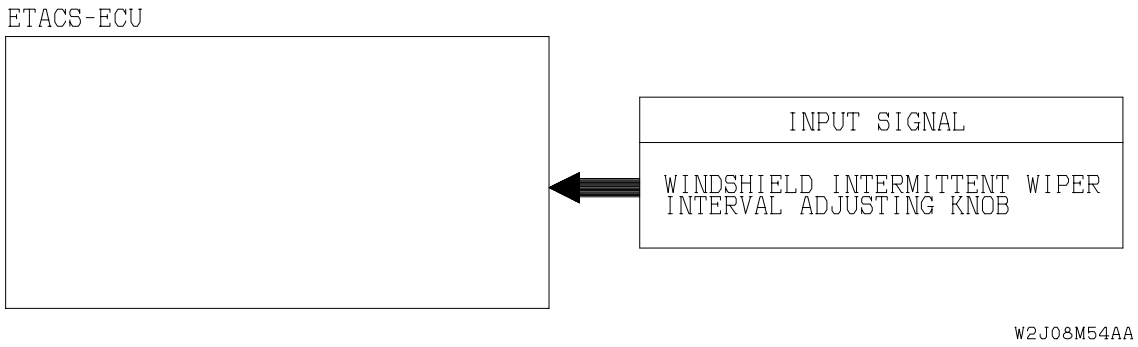
YES : Replace the front-ECU. The windshield wiper should stop at the predetermined park position.

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. The windshield wiper should now stop at the predetermined park position.

INSPECTION PROCEDURE G-5: Windshield Wiper and Washer: Windshield intermittent wiper interval can not be adjusted by means of windshield intermittent wiper interval adjusting knob.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Windshield Intermittent Wiper Interval Adjusting Knob Input Signal



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

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

DIAGNOSIS

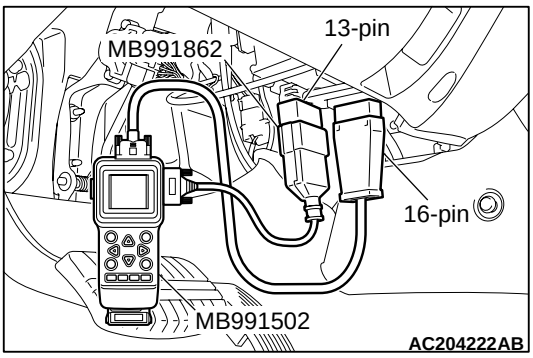
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Set each switch to the following condition to check input signals from the windshield intermittent wiper interval adjusting knob:
- Ignition switch: ACC
- Windshield wiper switch: INT

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Operate scan tool MB991502 according to the procedure below to display "F.WIPER INT."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "FUNCTION DIAG."
   5. Select "WIPER."
   6. Select "F.WIPER INT."
(4) Check that normal conditions are displayed on the items described in the table below.

NOTE: Also check that the windshield wiper interval changes smoothly when the windshield intermittent wiper interval adjusting knob is rotated from "SLOW" to "FAST" positions.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 37	INT WIPER TIME	2.4 – 18.0 s

Q: Does the value change within the normal range when the windshield intermittent wiper interval adjusting knob is rotated?

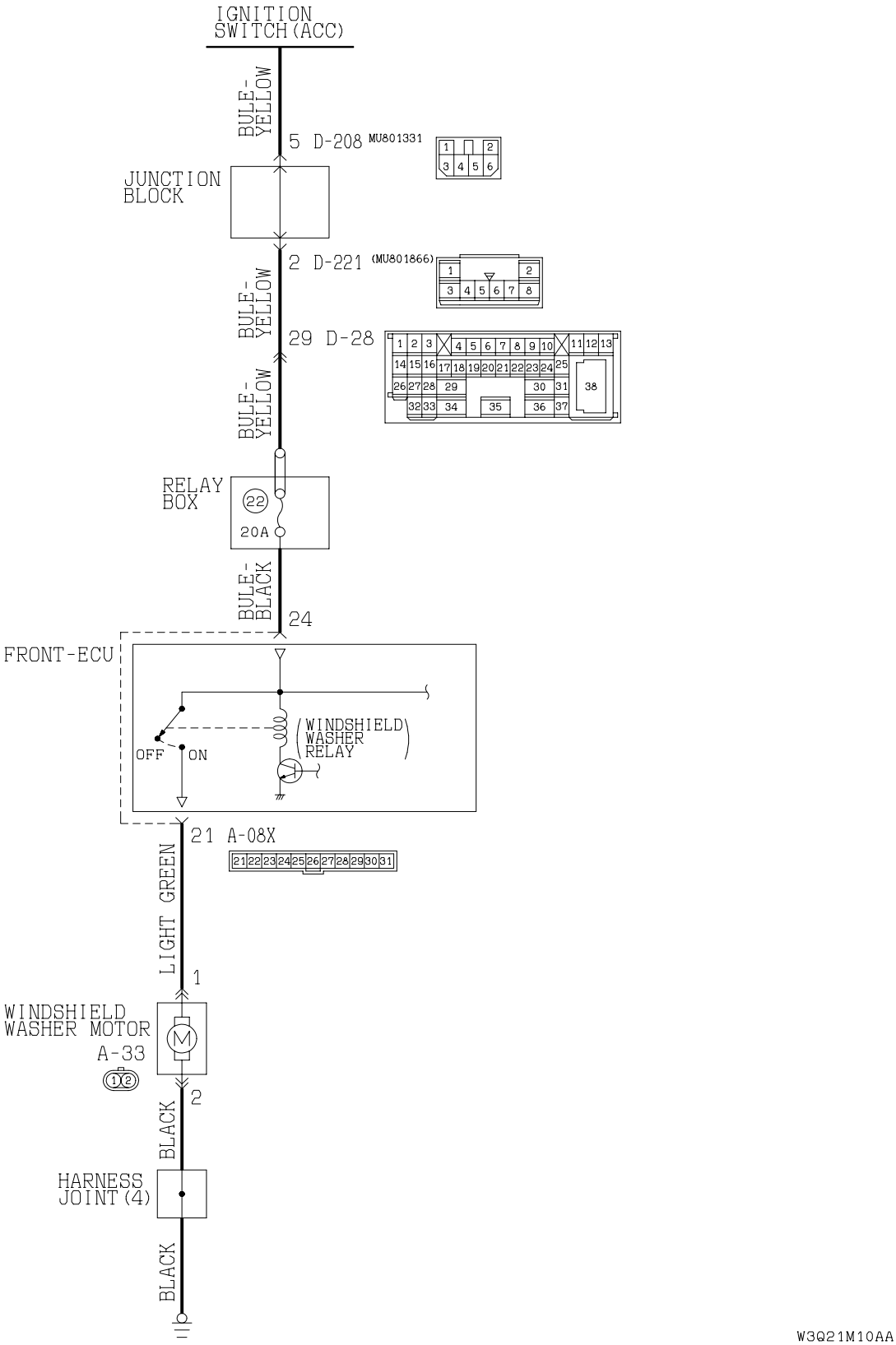
YES : Replace the front-ECU. Check that the windshield intermittent wiper interval changes according to the vehicle speed or while the windshield intermittent wiper interval adjusting knob is rotated.

NO : Refer to Inspection Procedure O-7 "ETACS-ECU does not receive a signal from the windshield mist wiper switch P.54Bc-31."

INSPECTION PROCEDURE G-6: Windshield Wiper and Washer: The windshield washer does not work.

NOTE: This troubleshooting procedure requires use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Windshield Washer Motor Circuit



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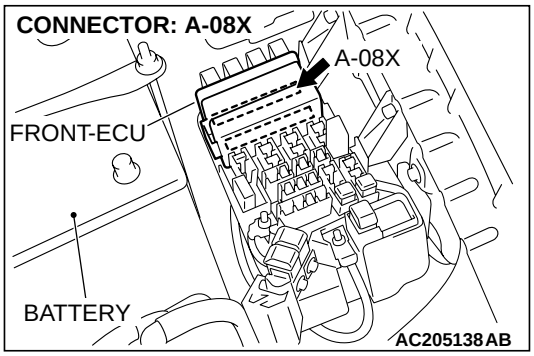
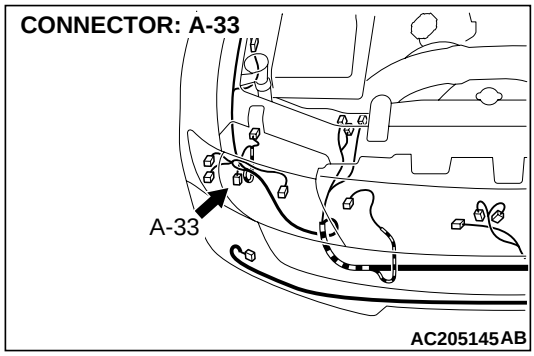




CIRCUIT OPERATION
The windshield washer switch sends a signal through the column-ECU (incorporated in the column switch) to the front-ECU. If the column-ECU sends a windshield washer switch "ON" signal to the front-ECU, the front-ECU turns on the relay (incorporated in the front-ECU), thus causing the 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 windshield washer motor may be defective
- The column switch (windshield wiper and washer switch) may be defective
- The front-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

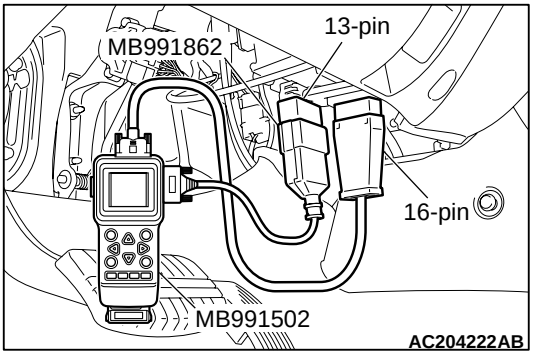
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Verify the windshield wiper.

Q: Does the windshield wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure G-1 "Windshield wiper does not work at all P.54Bb-231."



STEP 2. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

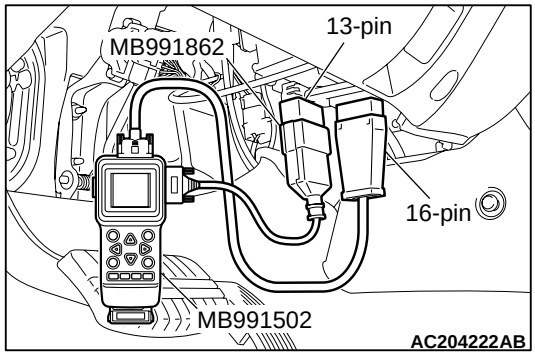
⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991502.

(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHECK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK".
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" is displayed for all the items : Go to Step 3.
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-16."
"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54Bb-32."



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: ON
- Windshield washer switch: ON

Operate scan tool MB991502 according to the procedure below to display "F.WIPER WASH."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "WIPER."
6. Select "F.WIPER WASH."

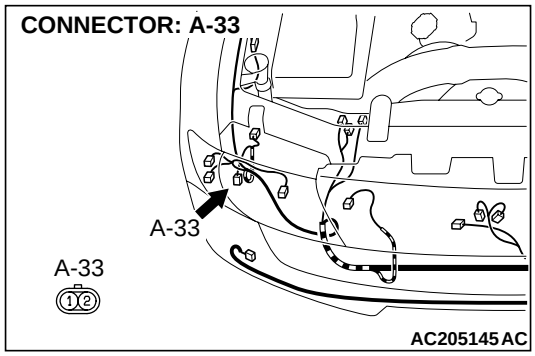
Check that normal conditions are displayed on the items described in the table below.

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"?

YES : Go to Step 4.

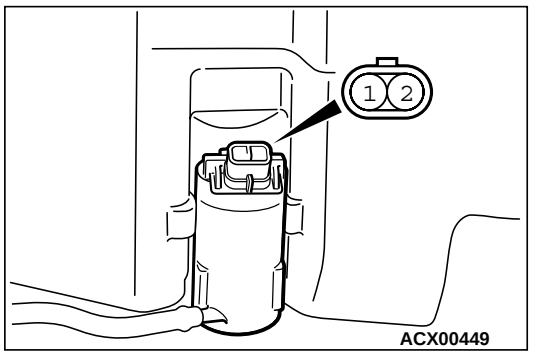
NO :
- Normal condition is not displayed on the "FRONT WASH. SW." Replace the column switch. Verify that the windshield washer works normally.
- Normal condition is not displayed on the "FRONT ECU SW." Replace the front-ECU. Verify that the windshield washer works normally.



STEP 4. Check the windshield washer motor.

(1) Disconnect windshield washer motor connector A-33, and check at windshield washer motor connector side.

(2) Fill the windshield washer tank with washer fluid.



(3) Connect windshield washer motor connector terminal 1 to the positive battery terminal, and terminal 2 to the negative battery terminal, respectively. Washer fluid should spray out.

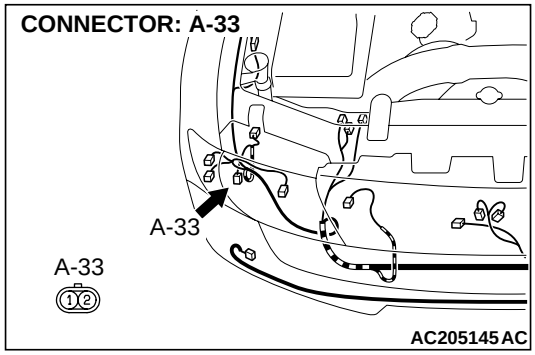
Q: Does the windshield washer motor operate normally?

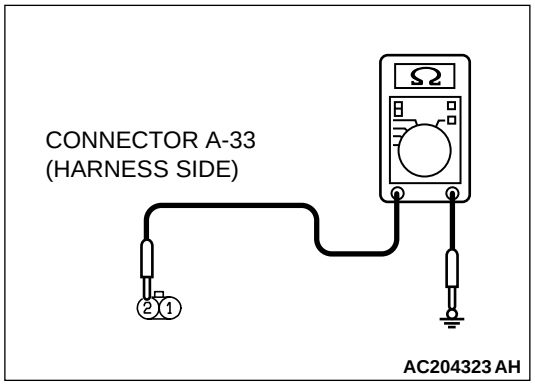
YES : Go to Step 5.

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

STEP 5. Check the ground circuit to the windshield washer motor. Test at connector A-33.

(1) Disconnect windshield washer motor connector A-33 and measure the resistance available at the wiring harness side of the connector.





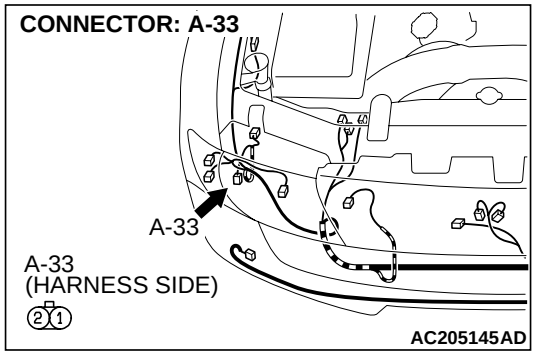
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 6.

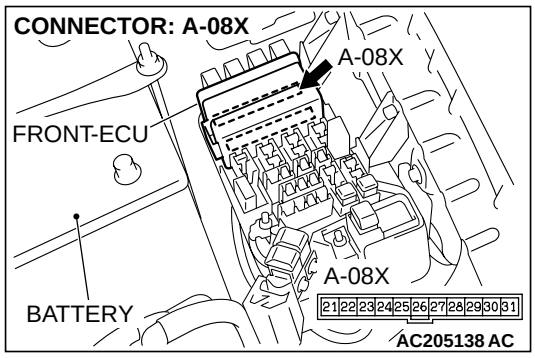


STEP 6. Check windshield washer motor connector A-33 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield washer motor connector A-33 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 windshield washer works normally.

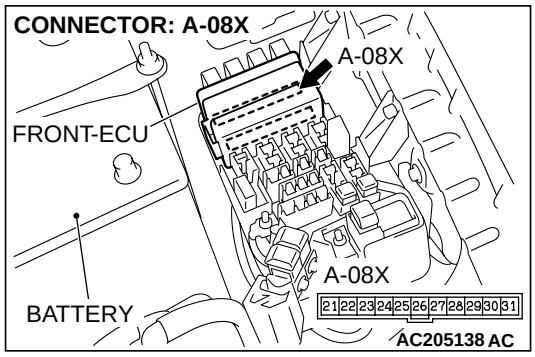


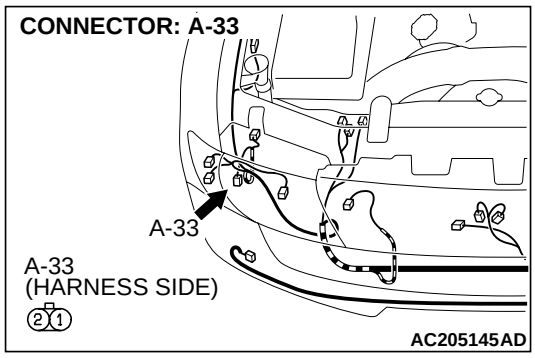
STEP 7. Check the wiring harness between windshield washer motor connector A-08X (terminal 1) and ground.

Q: Is the wiring harness between windshield washer motor connector A-08X (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.



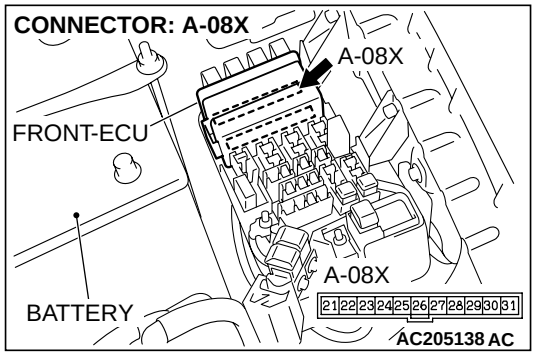


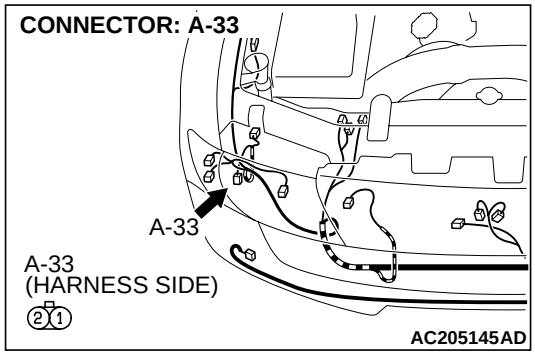
STEP 8. Check windshield washer motor connector A-33 and front-ECU connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are windshield washer motor connector A-33 and front-ECU connector A-08X 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-33 (terminal 1) and front-ECU connector A-08X (terminal 21).

Q: Is the wiring harness between windshield washer motor connector A-33 (terminal 1) and front-ECU connector A-08X (terminal 21) 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.

REAR WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE REAR WIPER AND WASHER

M1549021600072

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

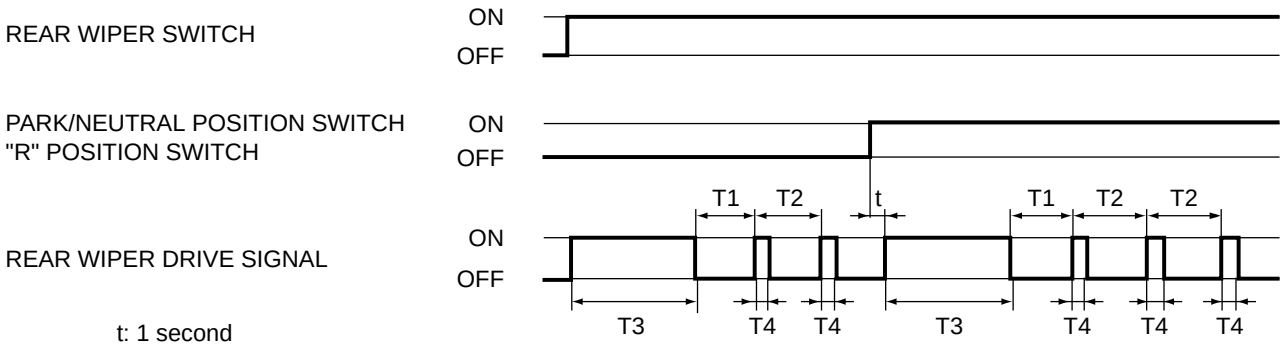
FUNCTION	CONTROL ECU
Rear wiper control	ETACS-ECU, column switch
Rear washer control	

Rear wiper and washer control function

Rear wiper control

If the rear wiper switch of the column switch assembly is turned ON with the ignition switch in the ACC or ON position, the ETACS-ECU will turn the rear wiper drive signal ON for 3 seconds (approximately 2 operations), and then will carry out intermittent operation in a 7.4 to 8 seconds cycle.

If the selector lever is moved to the "R" position when the rear wiper switch of the column switch assembly is turned ON and the ignition switch is in any position other than OFF, the transmission range switch "R" position switch turns ON. One second later, the ETACS-ECU turns the rear wiper drive signal ON for 3 seconds (approximately 2 operations), to clear the rear view, and then returns to intermittent operation at a 7.4 to 8 seconds cycle.



t: 1 second
T1: 7.4 seconds T3: 3 seconds
T2: 8 seconds T4: 0.6 second

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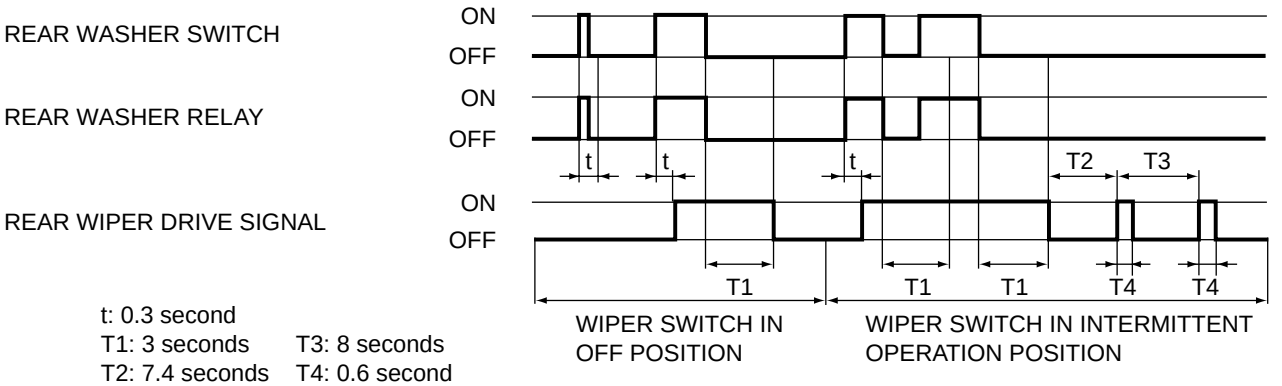
Rear washer control

When the ignition switch is at the ACC or ON position, if the rear washer switch of the column switch is turned ON, the ETACS-ECU turns ON the rear washer relay. The rear wiper drive signal is turned ON in 0.3 second until 3 seconds after the rear washer switch goes OFF to operate the rear wiper continuously.

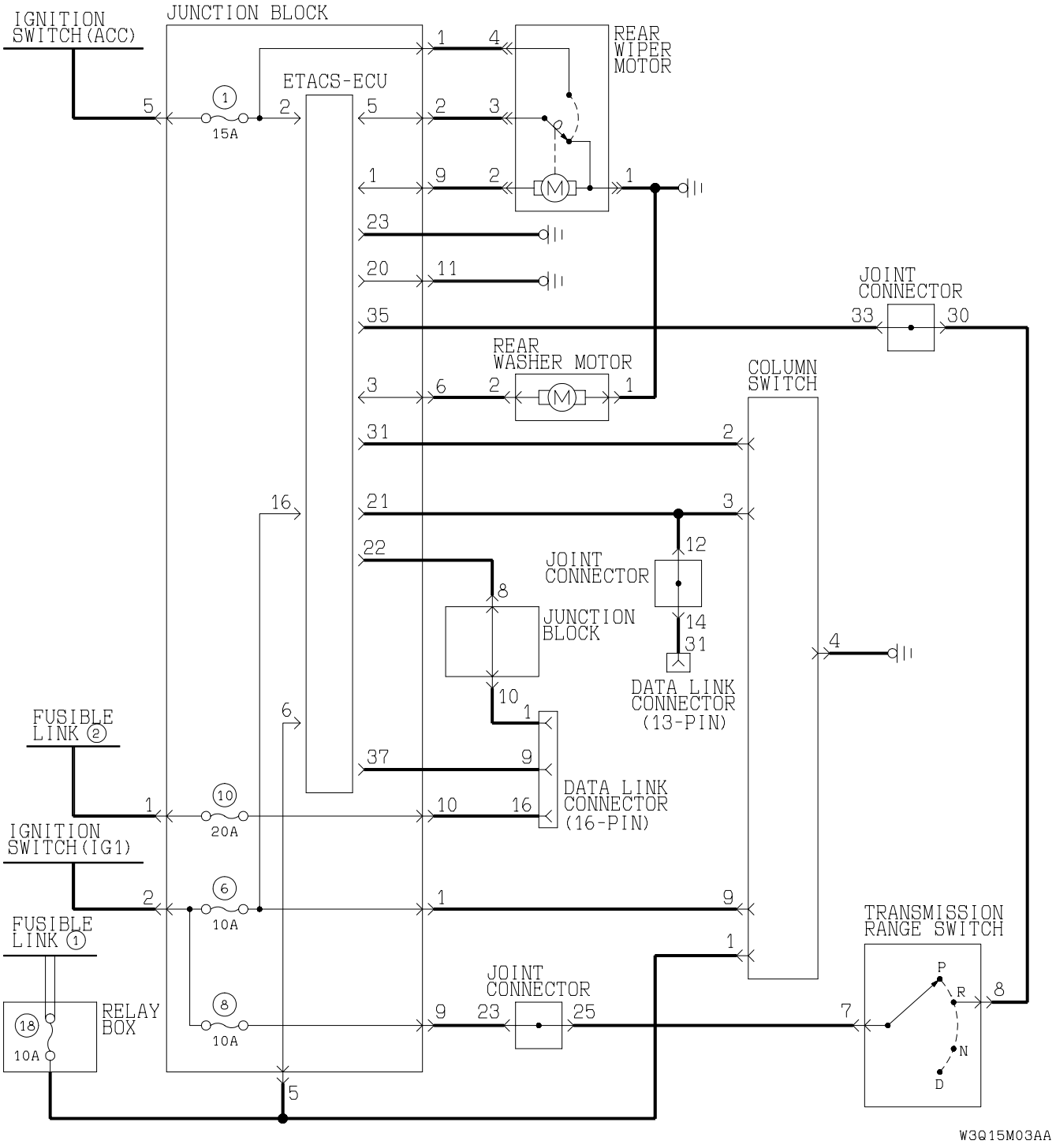
If the rear wiper is in intermittent operation when the rear washer switch is turned ON, 7.4 seconds after the rear wiper drive signal turns OFF, the 8 seconds cycle intermittent operation will continue.



t: 0.3 second
T1: 3 seconds T3: 8 seconds
T2: 7.4 seconds T4: 0.6 second

AC101554AD

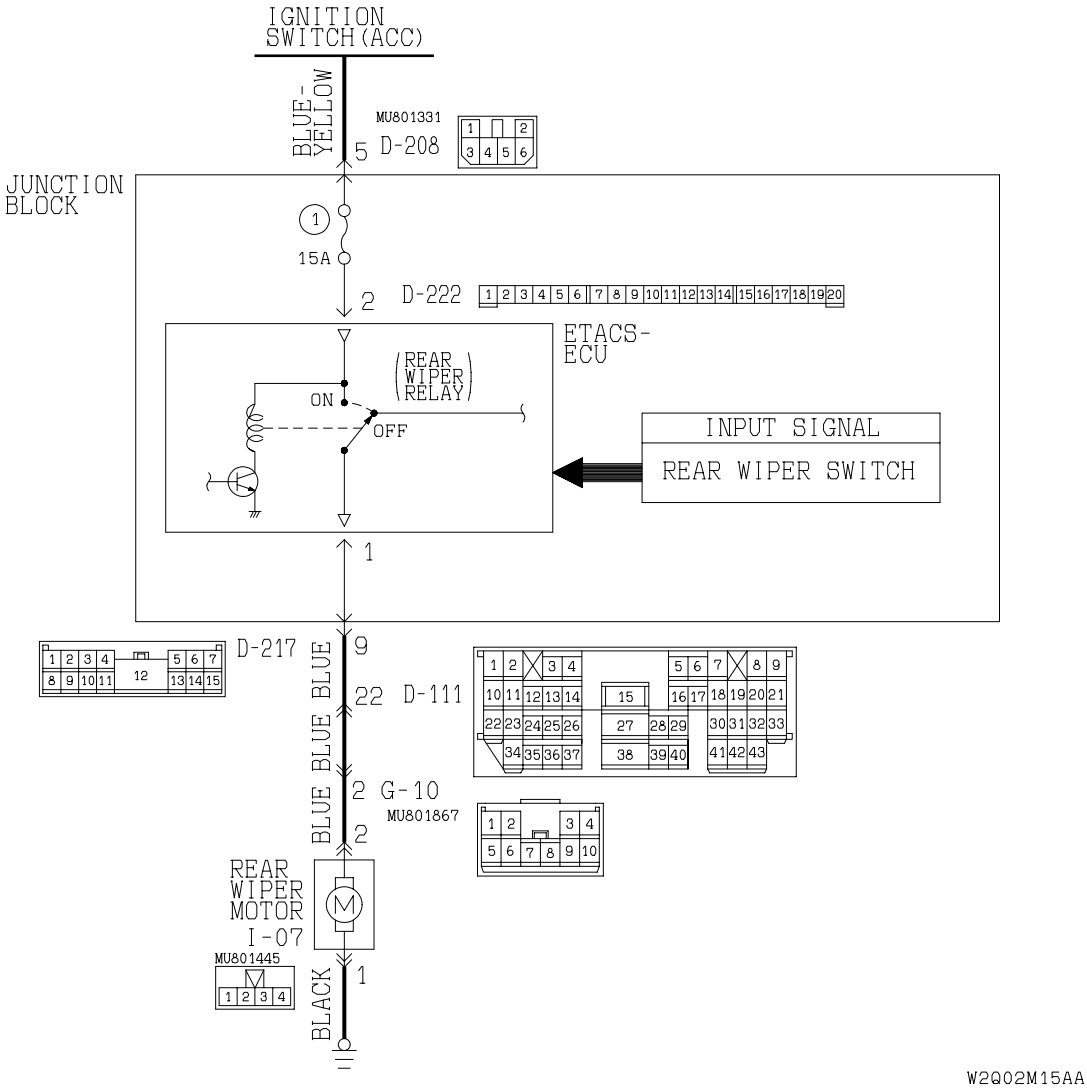
General circuit diagram for the rear wiper and washer



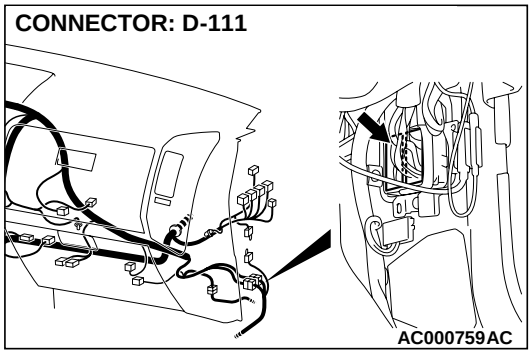
INSPECTION PROCEDURE H-1: Rear Wiper and Washer: Rear wiper does not work at all.

NOTE: This troubleshooting procedure requires use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

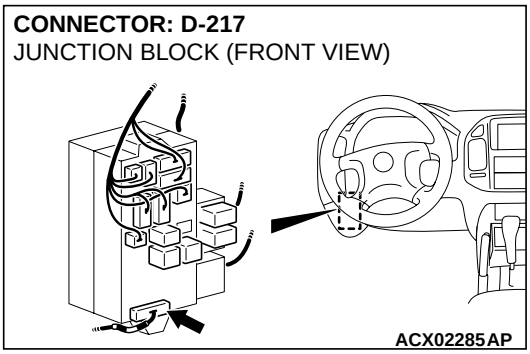
Rear Wiper Drive Circuit



CONNECTOR: D-111



CONNECTOR: D-217
JUNCTION BLOCK (FRONT VIEW)



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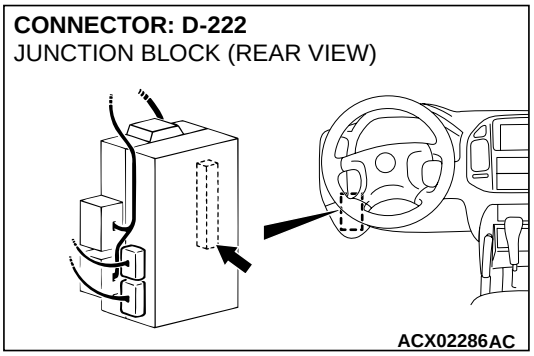
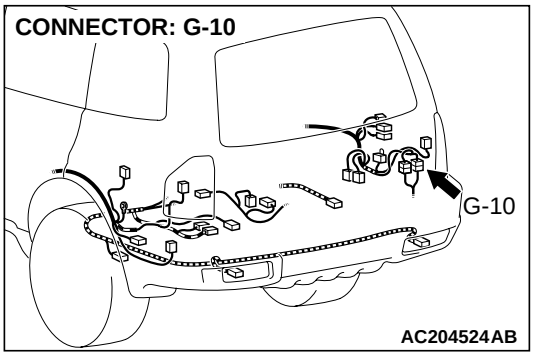
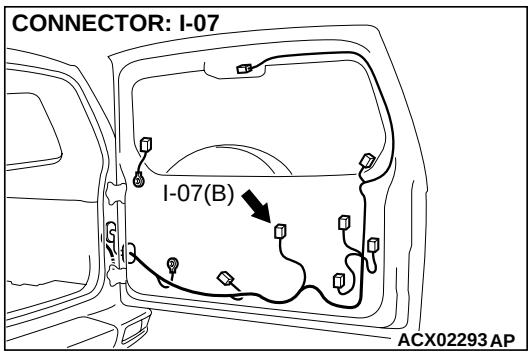






CIRCUIT OPERATION

- The rear wiper switch sends a signal through the column-ECU (incorporated in the column switch) to the ETACS-ECU. If the column-ECU sends a rear wiper switch "ON" signal to the ETACS-ECU, the ETACS-ECU turns on the relay (incorporated in the ETACS-ECU), thus causing the rear wiper motor to be turned on.
- The ETACS-ECU operates the rear wiper according to the following switches:
  - Ignition switch (ACC)
  - Rear wiper switch

TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not work normally, the input circuit system from the switches, the rear wiper motor, the column switch (windshield wiper and windshield washer switch) or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- The rear wiper motor may be defective
- The column switch may be defective (windshield wiper and washer switch)
- The ETACS-ECU may be defective
- The wiring harness may be damaged or the connectors may have loose, corroded or damaged terminals, pushed back in the connector

DIAGNOSIS

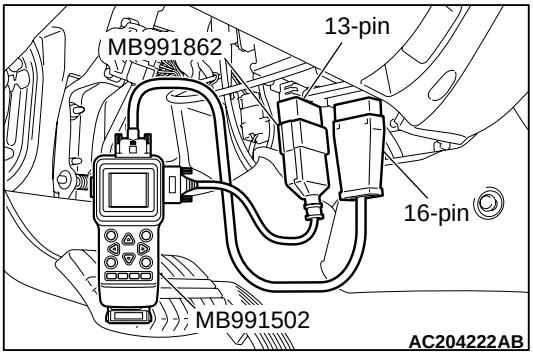
Required Special Tools:
- MB991223: Harness Set
- MB991223: Scan Tool (MUT-II)
- MB991223: SWS Monitor Kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:
- ETACS-ECU
- Column-ECU

⚠ CAUTION

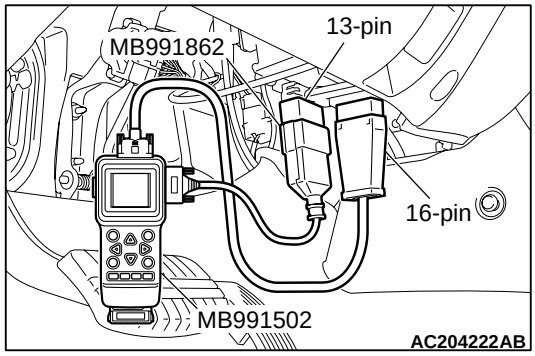
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHECK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK".
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU", and the "ETACS ECU" menus.

Q: Is "OK" displayed on both the "ETACS ECU" and "COLUMN ECU" menus?

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-16."



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
- Rear wiper switch: INT

Operate scan tool MB991502 according to the procedure below to display "REAR WIPER."

1. Select "SWS."
2. Select "SYSTEM SELECT."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "REAR WIPER."

Check that normal conditions are displayed on the items described in the table below.

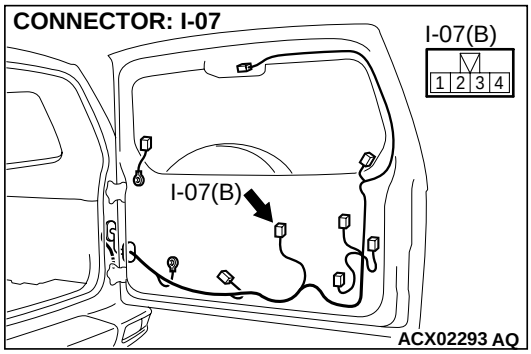
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 13	REAR WIPER SW	ON
ITEM 31	IG SW (ACC)	ON

Q: Are normal conditions displayed for "REAR WIPER SW" and "IG SW (ACC)"?

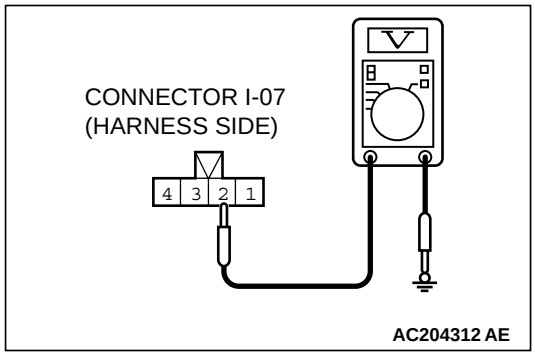
YES : Go to Step 3.

NO :
- Normal condition is not displayed on the "REAR WIPER SW": Refer to Inspection Procedure O-7 "ETACS-ECU does not receive a signal from the rear wiper switch P.54Bc-33."
- Normal condition is not displayed on the "IG SW (ACC)": Refer to Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the ignition switch (ACC) P.54Bc-4."

STEP 3. Check the battery power supply circuit to the rear wiper motor. Test at rear wiper motor connector I-07.



(1) Disconnect rear wiper motor connector I-07 and measure the voltage available at the harness side of the connector.
(2) Turn the rear wiper switch to the "ON" position.

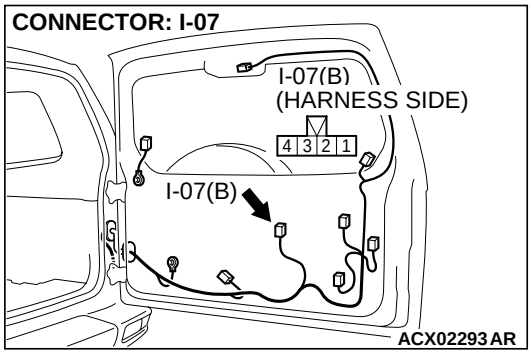


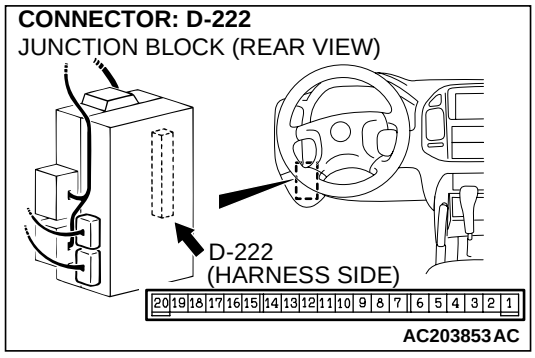
(3) Measure the voltage between terminal 2 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 7.
NO : Go to Step 4.

STEP 4. Check the rear wiper motor connector I-07 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.





Q: Are rear wiper motor connector I-07 and ETACS-ECU connector D-222 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 rear wiper works normally.

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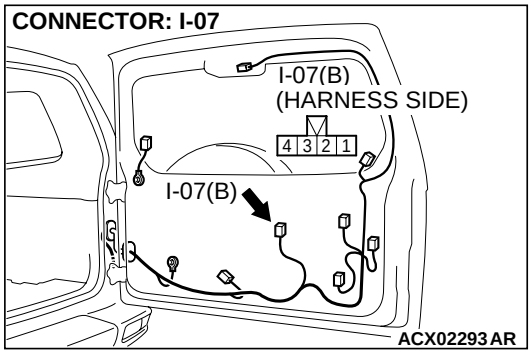
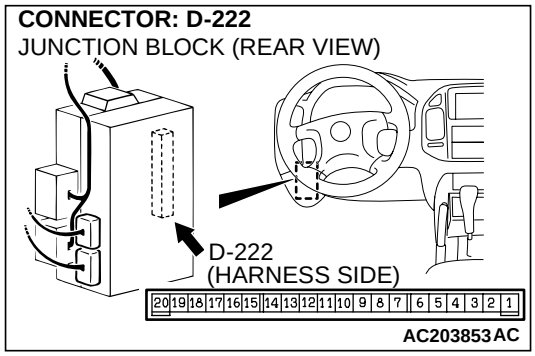
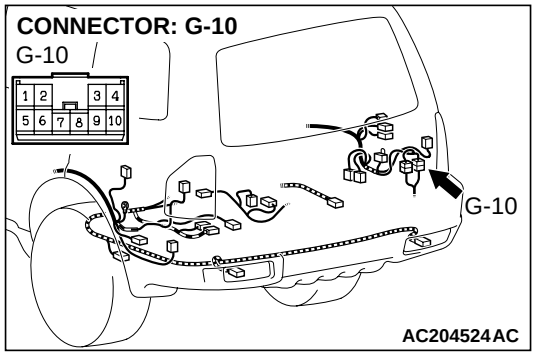
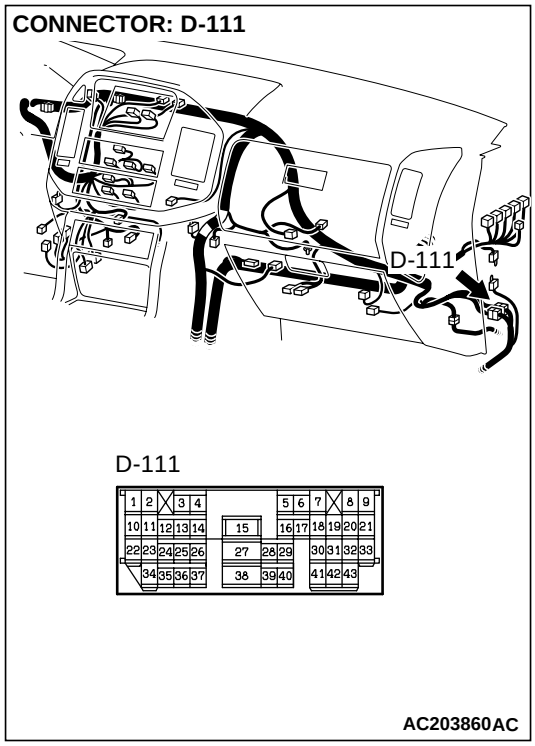
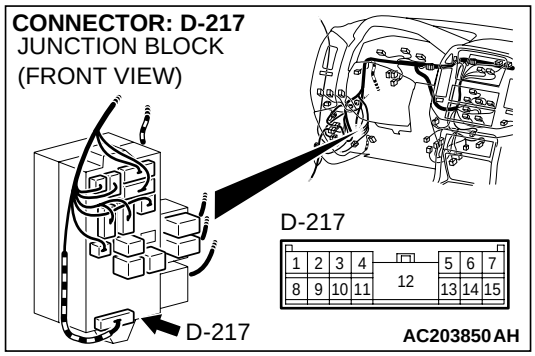
STEP 5. Check the harness wires between rear wiper motor connector I-07 (terminal 2) and ETACS-ECU connector D-222 (terminal 1).









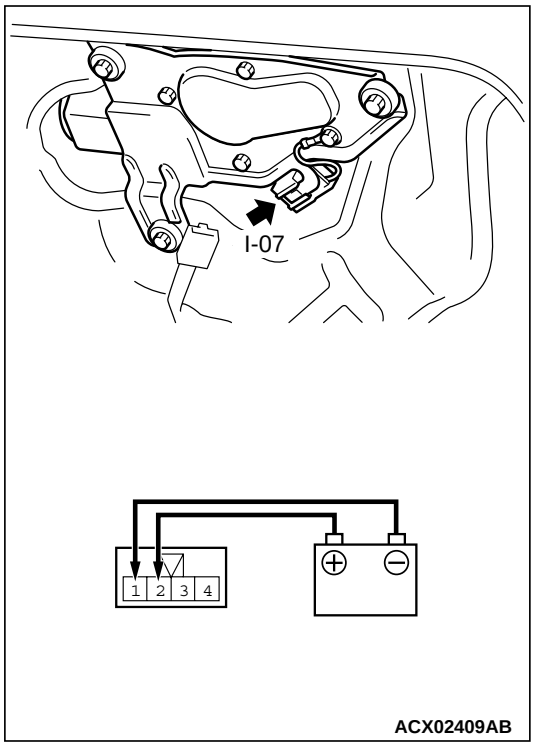


NOTE: Also check intermediate connectors G-10, D-111 and junction block connector D-217. If intermediate connectors G-10, D-111 or junction block connector D-217 are damaged, repair or replace damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the harness wires between rear wiper motor connector I-07 (terminal 2) and ETACS-ECU connector D-222 (terminal 1) in good condition?

YES : Go to step 6.

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

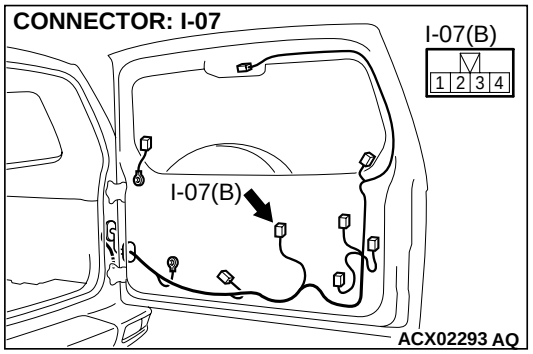


STEP 6. Check the rear wiper motor.

(1) Disconnect the rear wiper motor connector I-07.
(2) Connect a battery to the wiper motor as shown in the illustration and inspect the motor operation.

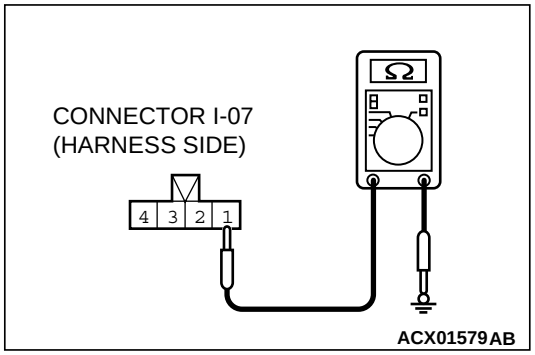
Q: Is the rear wiper motor in good condition?

YES : No action is necessary and testing is complete.
NO : Replace the rear wiper motor. Verify that the rear wiper works normally.



STEP 7. Check the ground circuit to the rear wiper motor. Test at rear wiper motor connector I-07.

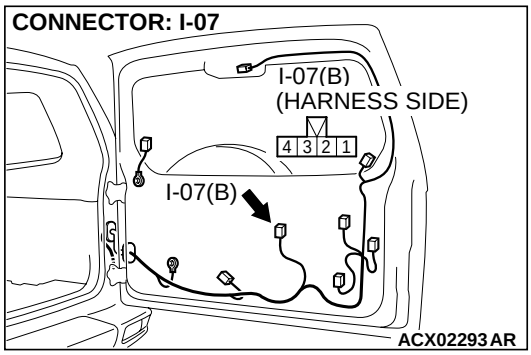
(1) Disconnect rear wiper motor connector I-07 and measure the resistance available at the harness side of the connector.



(2) Measure the resistance value between terminal 1 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.
NO : Go to Step 8.

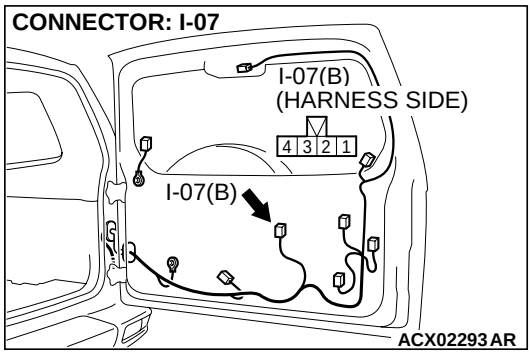


STEP 8. Check rear wiper motor connector I-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear wiper motor connector I-07 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 wiper works normally.



STEP 9. Check the wiring harness between rear wiper motor connector I-07 (terminal 1) and ground.

Q: Is the wiring harness between rear wiper motor connector I-07 (terminal 1) and ground in good condition?

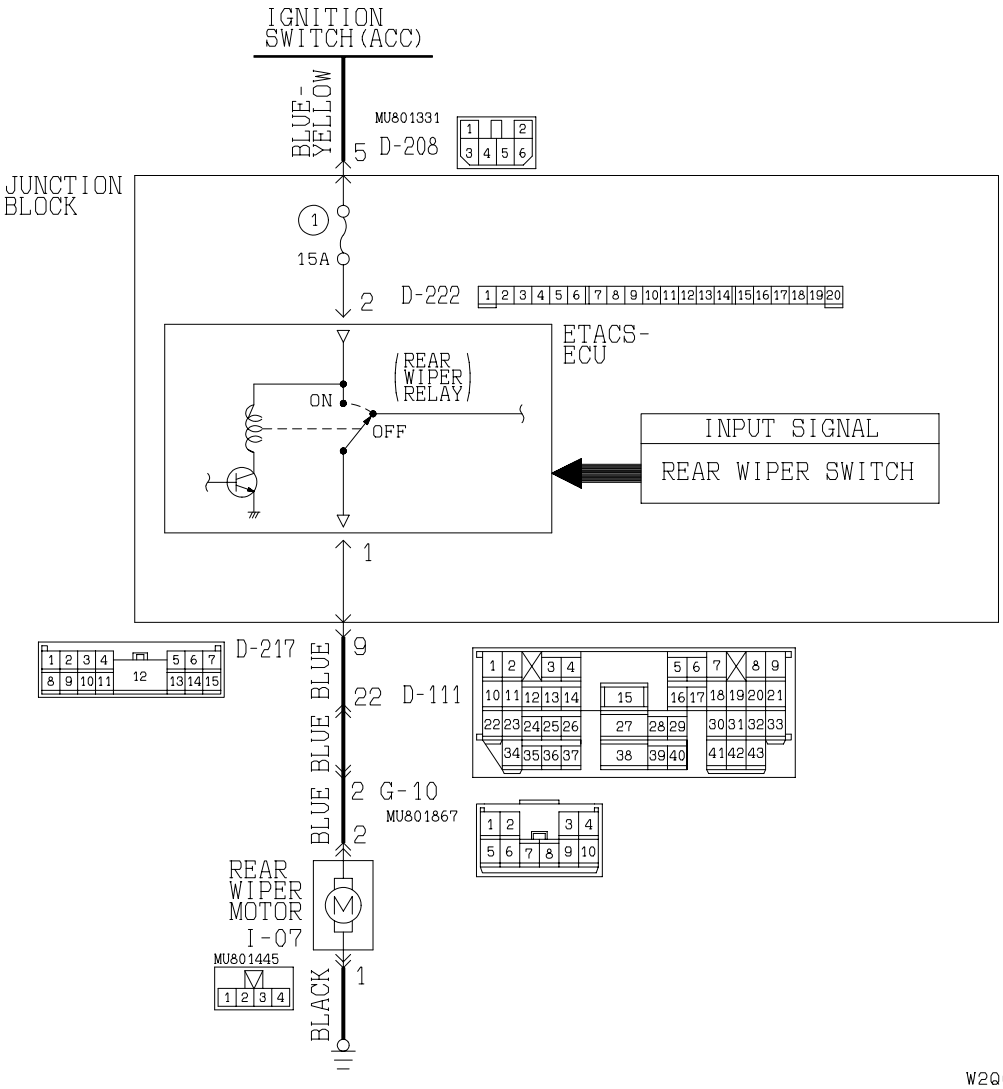
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector 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 H-2: Rear Wiper and Washer: Rear wiper does not stop at the predetermined park position.

NOTE: This troubleshooting requires use of scan tool MB991502 and SWS monitor kit MB991862. For details of how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Rear Wiper Drive Circuit



TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not stop at predetermined park position, the rear wiper motor or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)

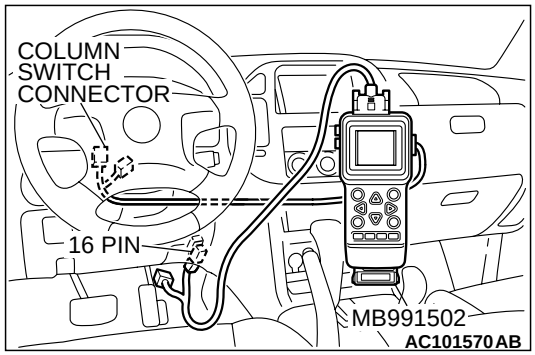
Check the input signal (by using the pulse check mode of the monitor.)

Check the automatic stop signal, which the rear wiper motor sends to the ETACS-ECU.

NOTE: When the rear wiper is operated, a signal is sent to the ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector.

(2) Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

(3) Check that scan tool MB991502 sounds.

Q: Does scan tool MB991502 sound when the rear wiper switch is operated?

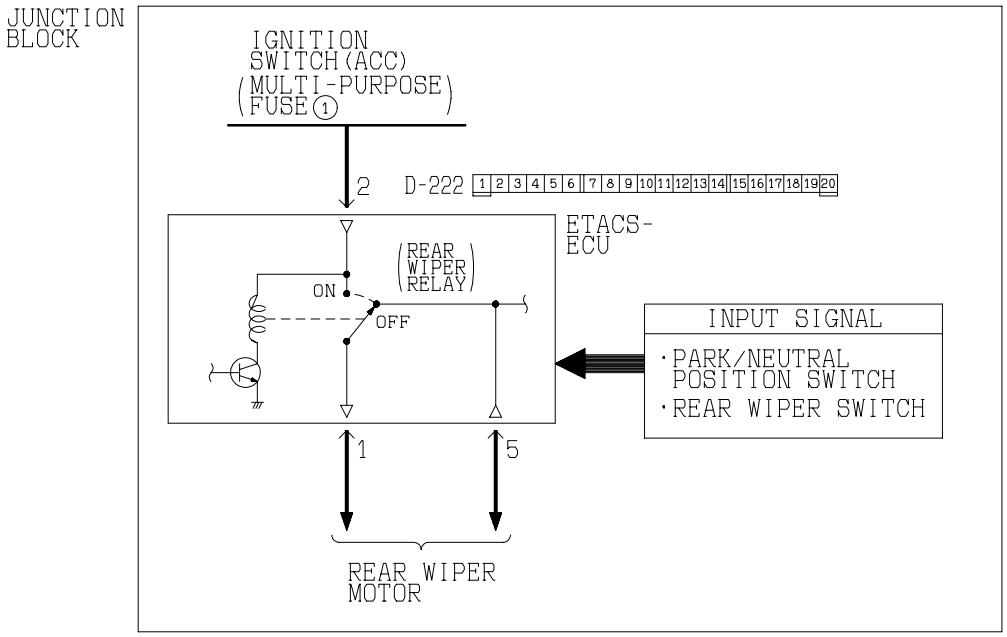
YES : Replace the ETACS-ECU. The rear wiper should stop automatically at the predetermined park position.

NO : Refer to Inspection Procedure P-8 "ETACS-ECU does not receive an automatic stop signal from the wiper motor P.54Bc-131."

INSPECTION PROCEDURE H-3: Rear Wiper and Washer: When the selector lever is moved to "R" position during the rear wiper operation, the rear wiper does not operate at the continuous mode.

NOTE: This troubleshooting procedure requires use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

"R" Position during Rear Wiper Operation Circuit



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CIRCUIT OPERATION

The ETACS-ECU operates the rear wiper consecutively approximately twice when the selector lever is moved to "R" position while the rear wiper is turned on.

TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not work consecutively approximately twice, the transmission range switch ("R" position) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Verify the rear wiper operation.

Q: Does the rear wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure H-1 "Rear wiper does not work at all P.54Bb-268."

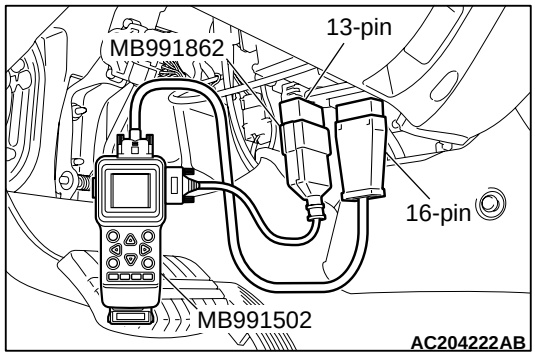
STEP 2. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Set each switch to the following condition before checking input signal from the transmission range switch ("R" position).

- Ignition switch: ON
- Rear wiper switch: ON
- Shift position: "R" position

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).

(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).

(3) Operate scan tool MB991502 according to the procedure below to display "REV. INTERLOCK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "REAR WIPER."
6. Select "REV. INTERLOCK."

(4) Check that normal conditions are displayed on the item described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 41	PNP SW (R)	ON

Q: Are normal conditions displayed?

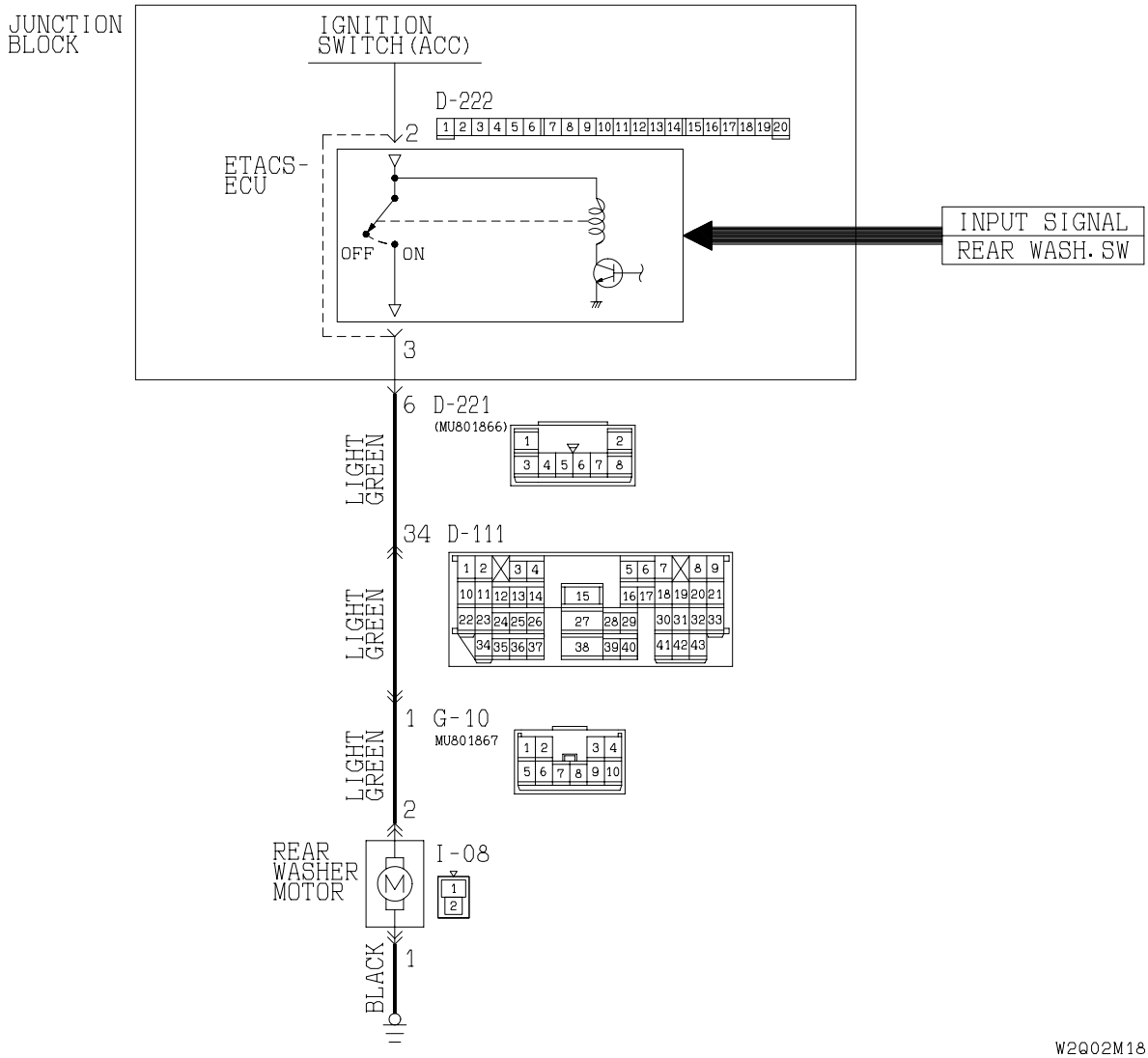
YES : Replace the ETACS-ECU. When the selector lever is moved to the "R" position, the rear wiper should operate consecutively approximately twice.

NO : Refer to Inspection Procedure O-4 "ETACS-ECU does not receive "R" position signal from the transmission range switch P.54Bc-14."

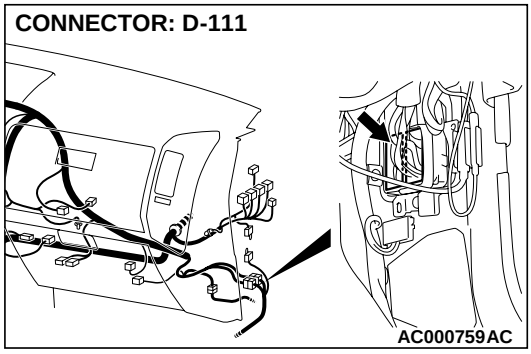
INSPECTION PROCEDURE H-4: Rear Wiper and Washer: Rear washer does not operate.

NOTE: This troubleshooting procedure requires use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

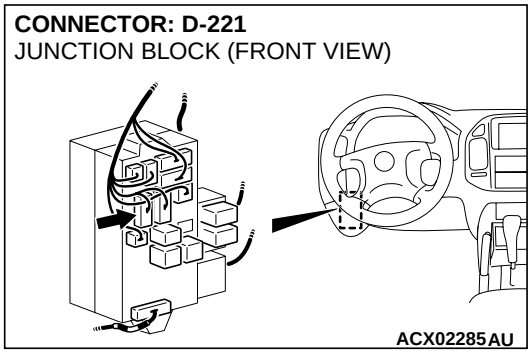
Rear Washer Drive Circuit



CONNECTOR: D-111



CONNECTOR: D-221
JUNCTION BLOCK (FRONT VIEW)



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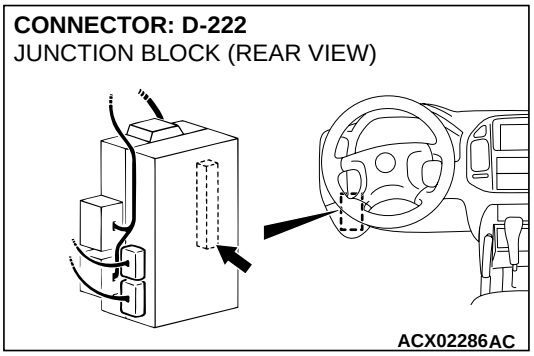
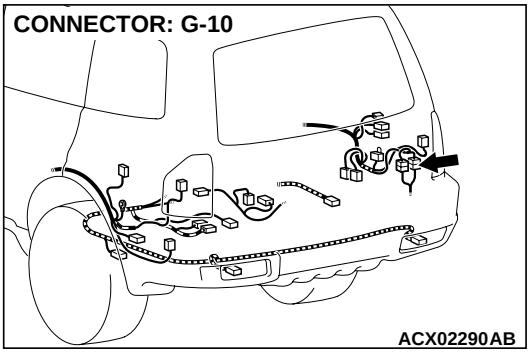
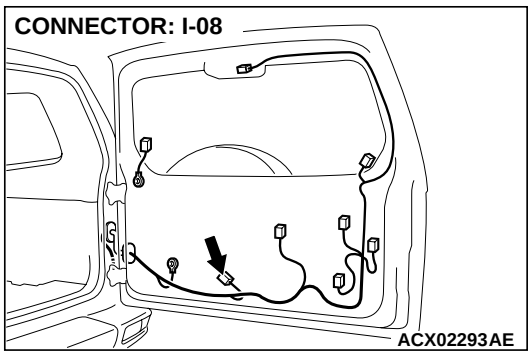






CIRCUIT OPERATION
The rear washer switch sends a signal through the column-ECU (incorporated in the column switch) to the ETACS-ECU. If the column-ECU sends a rear washer switch "ON" signal to the ETACS-ECU, the ETACS-ECU turns on the relay (incorporated in the ETACS-ECU), thus causing the rear washer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

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

TROUBLESHOOTING HINTS
- The rear washer motor may be defective
- The column switch (windshield wiper and washer switch) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

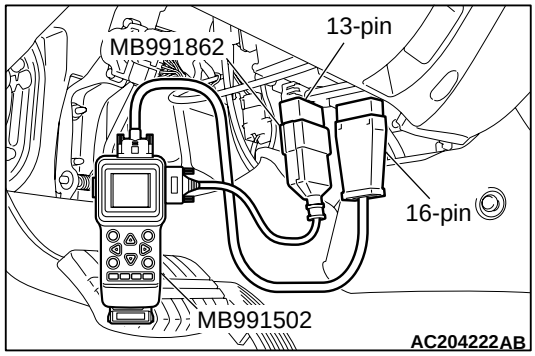
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS Monitor Kit

STEP 1. Verify the rear wiper operation.

Q: Does the rear wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure H-1 "Rear wiper does not work at all P.54Bb-268."



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

Set each switch to the following condition before checking input signals from the rear washer switch:

- Ignition switch: ACC
- Rear washer switch: ON

⚠ CAUTION

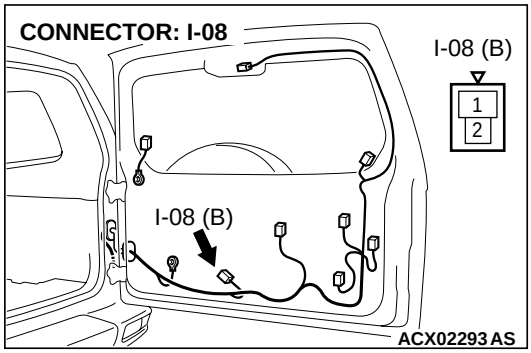
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Operate scan tool MB991502 according to the procedure below to display "REAR WASHER."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "FUNCTION DIAG."
   5. Select "REAR WIPER."
   6. Select "REAR WASHER."
(4) Check that normal conditions are displayed on the item described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 14	REAR WASH.SW	ON

Q: Are normal conditions displayed?

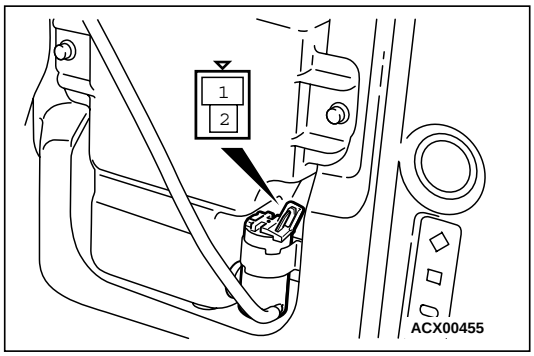
YES : Go to Step 3.
NO : Refer to Inspection Procedure O-7 "ETACS-ECU does not receive a signal from the rear washer switch P.54Bc-33."



STEP 3. Check the rear washer motor.

(1) Disconnect rear washer motor connector I-08.

(2) Fill the washer tank with washer fluid.



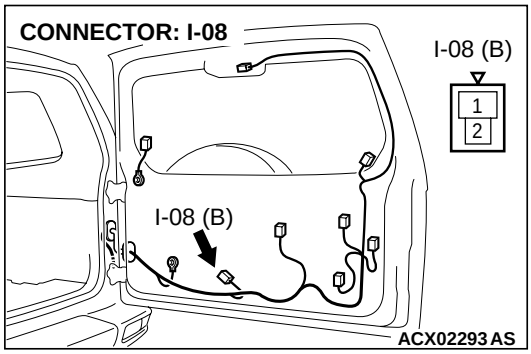
(3) Connect rear washer motor connector terminal 2 to the positive battery terminal, and terminal 1 to the negative battery terminal, respectively. Washer fluid should spray out.

Q: Does the rear washer motor operate normally?

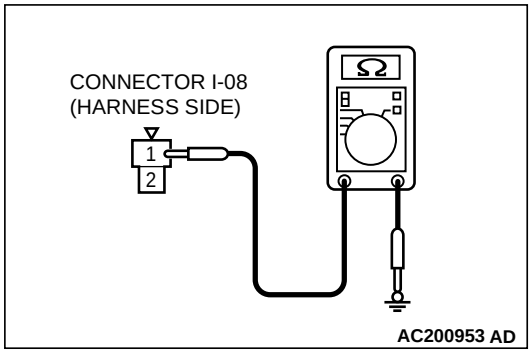
YES : Go to Step 4.

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

STEP 4. Check the ground circuit to the rear washer motor. Test at rear washer motor connector I-08.



(1) Disconnect rear washer motor connector I-08 and measure the resistance available at the wiring harness side of the connector.



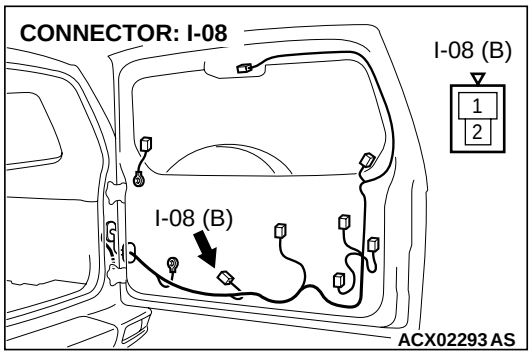
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohm or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 5.

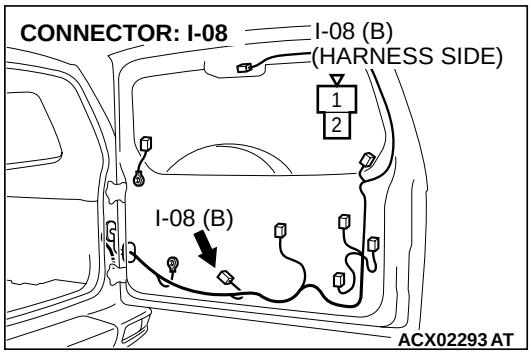


STEP 5. Check rear washer motor connector I-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear washer motor connector I-08 in good condition?

YES : Go to Step 6.

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

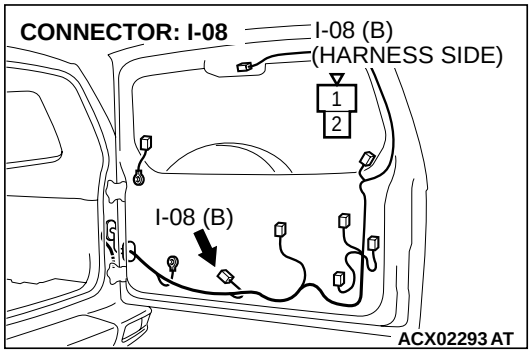


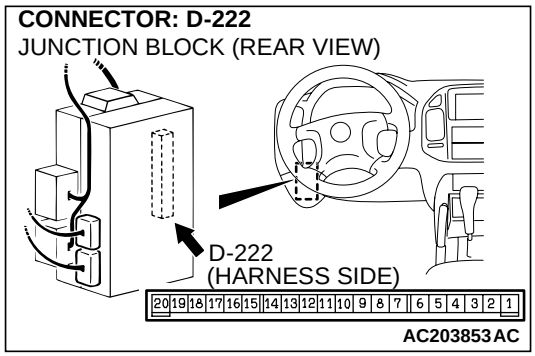
STEP 6. Check the wiring harness between rear washer motor connector I-08 (terminal 1) and ground.

Q: Is the wiring harness between rear washer motor connector I-08 (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 may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the rear washer works normally.





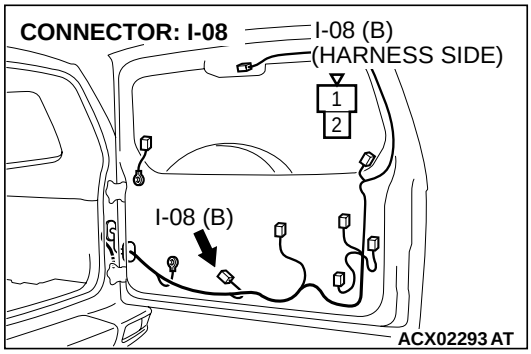
STEP 7. Check rear washer motor connector I-08 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

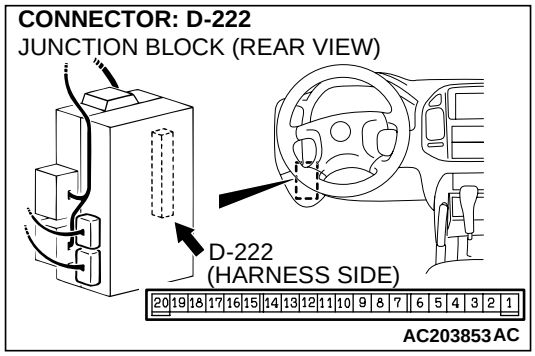
Q: Are rear washer motor connector I-08 and ETACS-ECU connector D-222 in good condition?

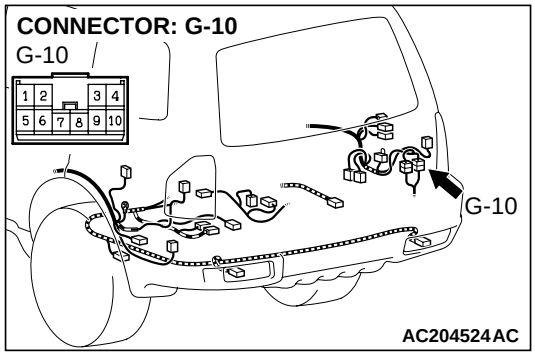
YES : Go to Step 8.

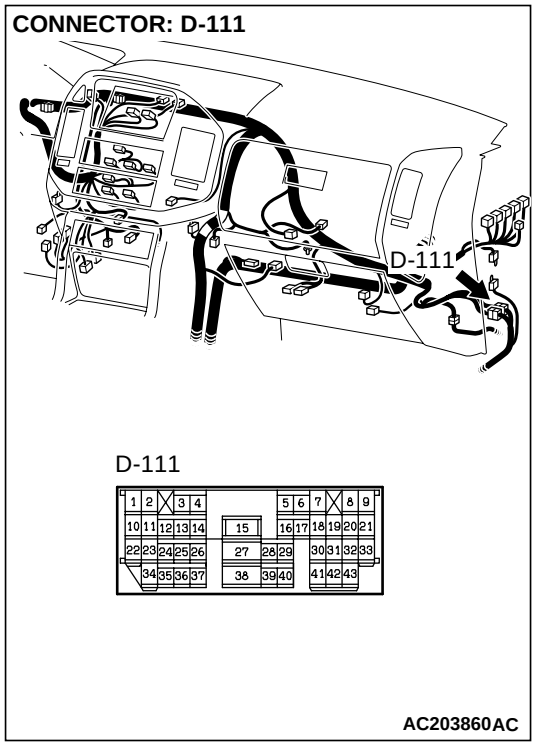
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear washer works normally.

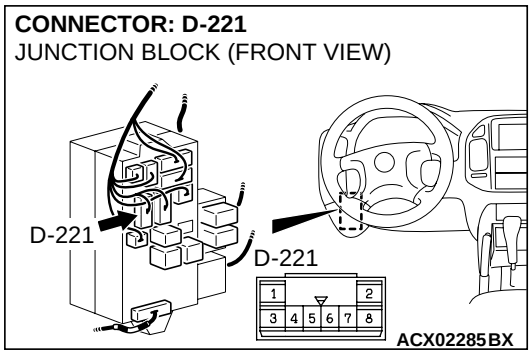
STEP 8. Check the wiring harness between rear washer motor connector I-08 (terminal 2) and ETACS-ECU connector D-222 (terminal 3).











NOTE: Also check intermediate connectors D-111,G-10 and junction block connector D-221 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors D-111,G-10 and junction block connector D-221 is damaged, repair or replace damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear washer motor connector I-08 (terminal 2) and ETACS-ECU connector D-222 (terminal 3) in good condition?

YES : Replace the ETACS-ECU. Verify that the rear washer works normally.

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

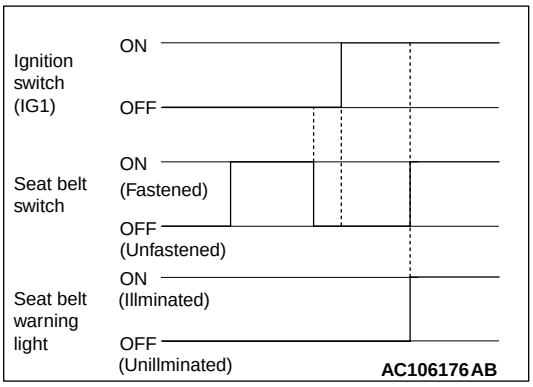
SEAT BELT WARNING LIGHT

GENERAL DESCRIPTION CONCERNING SEAT BELT WARNING LIGHT

M1549023900068

The ECU related to the seat belt warning light function is as follows.

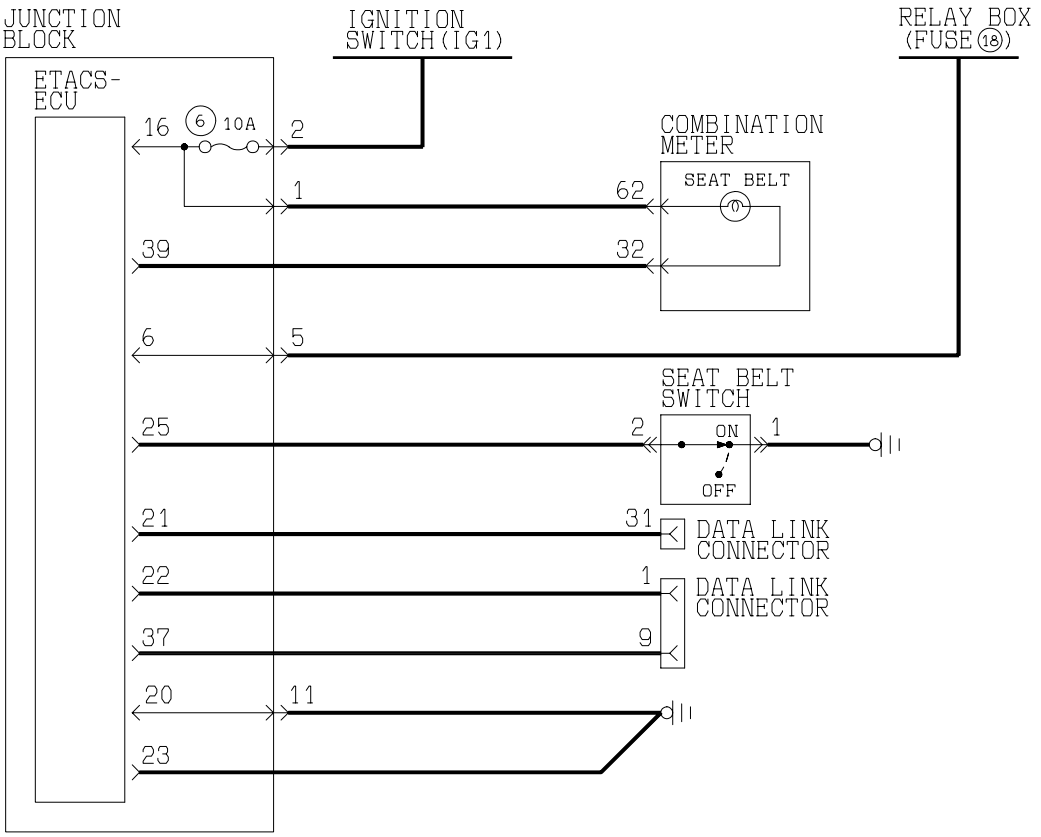
FUNCTION	CONTROL ECU
Seat belt warning light function	ETACS-ECU



Seat belt warning light function

The seat belt warning light lights up and makes seat belt buckling easier when the ignition switch is ON and the driver's seat belt switch is ON (seat belt is not fastened).

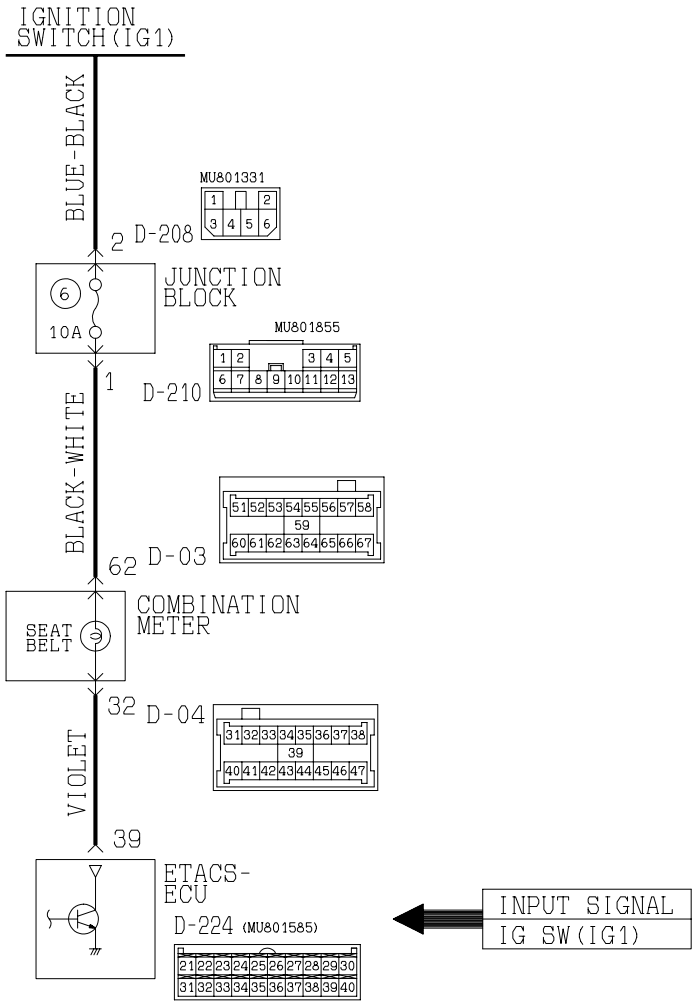
General circuit diagram for the seat belt warning light function



INSPECTION PROCEDURE I-1: Seat Belt Warning Light: Seat belt warning light does not illuminate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Seat Belt Warning Light Circuit



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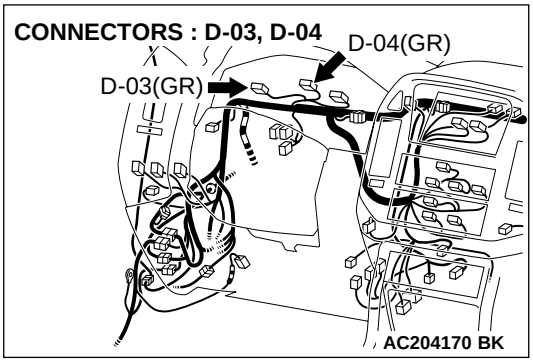
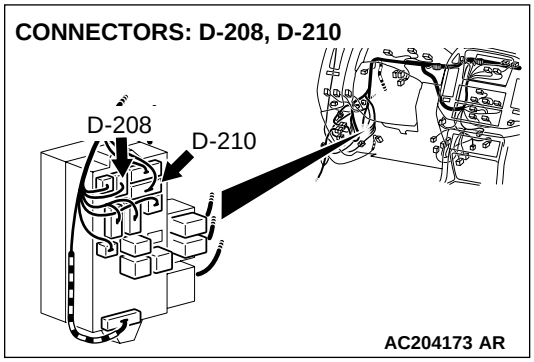
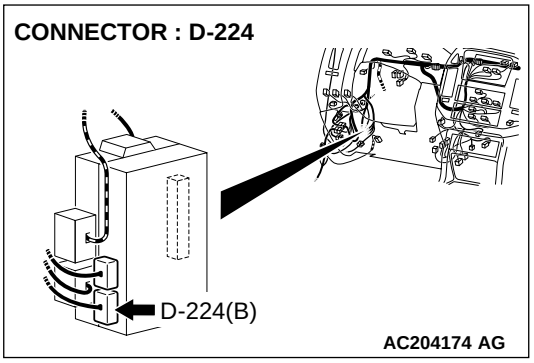




TSB Revision



CIRCUIT OPERATION

- The ETACS-ECU operates the seat belt warning light according to the following switch signals:
  - Ignition switch (IG1)
  - Driver's seat belt switch
- If the driver turn the ignition switch to the "ON" position without fastening the seat belt, the seat belt warning light illuminates.

TECHNICAL DESCRIPTION (COMMENT)

If the seat belt warning light does not illuminate, the input circuit, the combination meter (seat belt warning light bulb or printed-circuit board) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The driver's side seat belt switch may be defective
- The combination meter (seat belt warning light bulb or printed-circuit board) 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:

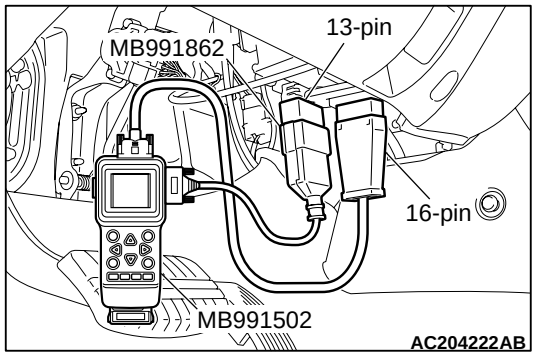
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

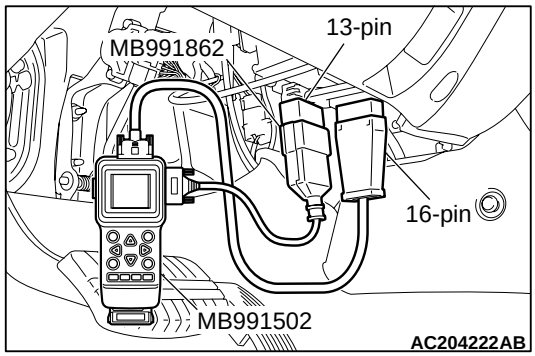
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) When the ignition switch is turned to the "ON" position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



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).

Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "DATA LIST."
5. Select "ETACS ECU."

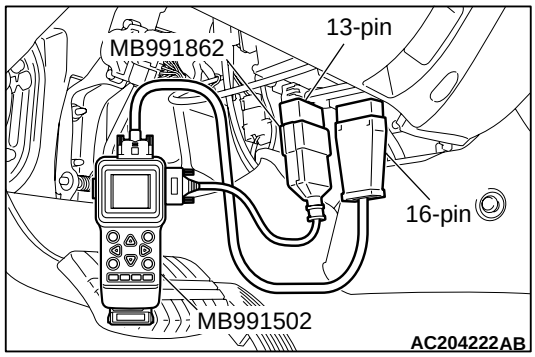
Check that normal conditions are displayed on the items described in the table below.

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

Q: Is normal condition displayed "IG SW (IG1)"?

YES : Go to Step 3.

NO : Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."



STEP 3. Check the input signal (by using the pulse check mode of the monitor.)

Check input signal from the driver's side seat belt switch.

Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

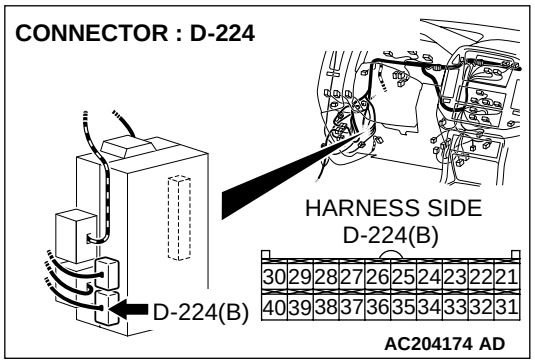
- When the driver's seat belt is fastened, check if scan tool MB991502 sounds or not.

Q: Does scan tool MB991502 sound when the driver's side seat belt is fastened?

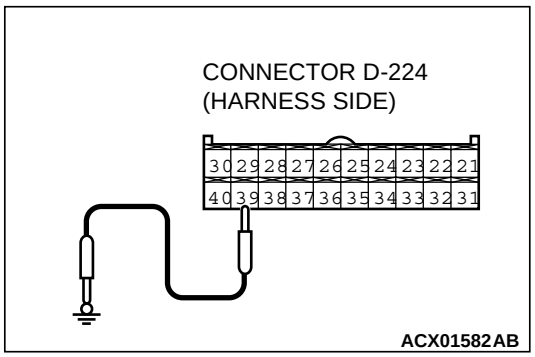
Yes : Go to Step 4.

No : Refer to Inspection Procedure P-3 "ETACS-ECU does not receive any signal from the driver's side seat belt switch P.54Bc-57."

STEP 4. Check at ETACS-ECU connector D-224 in order to check the ground circuit to the seat belt warning light.



(1) Disconnect ETACS-ECU connector D-224, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.

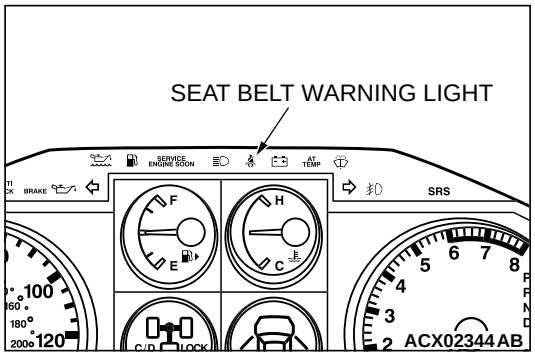


(3) Connect terminal 39 to ground.

Q: Does the seat belt warning light illuminate?

YES : Replace the ETACS-ECU. Verify that the seat belt warning light illuminates normally.
NO : Go to Step 5.

STEP 5. Check the seat belt warning light bulb.

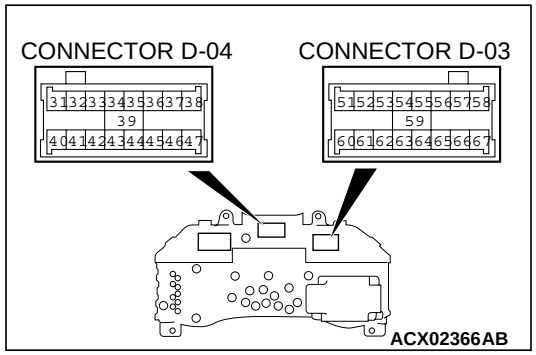


Q: Is the seat belt warning light bulb in good condition?

YES : Go to Step 6.
NO : Replace the bulb. Verify that the seat belt warning light illuminates normally.

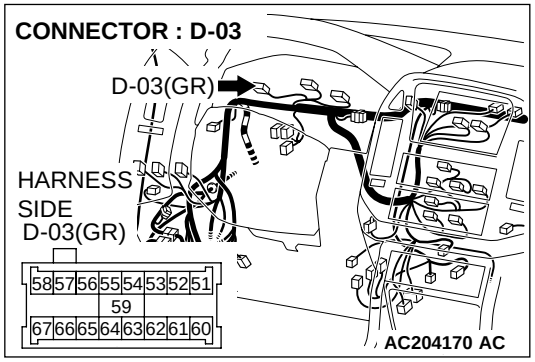
STEP 6. Check the combination meter (printed-circuit board).

(1) Remove the combination meter.
(2) Remove the seat belt warning light bulb. Then measure the resistance value between the bulb terminals.
(3) Install the bulb to the combination meter, and then measure the resistance value between connector D-04 terminal 32 and connector D-03 terminal 62. The measured resistance value should be roughly the same as the value measured in Step (2).



Q: Are these two resistance values extremely different?

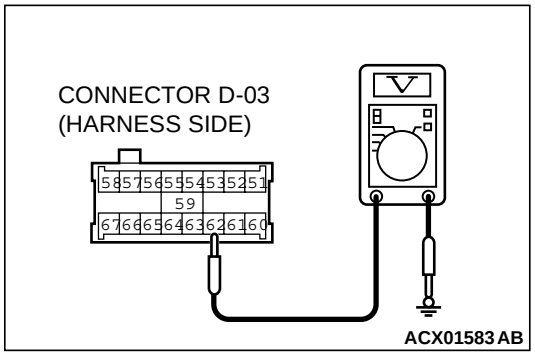
YES : Repair or replace the combination meter (printed circuit board). Verify that the seat belt warning light illuminates normally.
NO (much the same) : Go to Step 7.



STEP 7. Measure at combination meter connector D-03 in order to check the ignition switch (IG1) line of the power supply to the combination meter.

(1) Disconnect combination meter connector D-03, and measure at the wiring harness side.

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



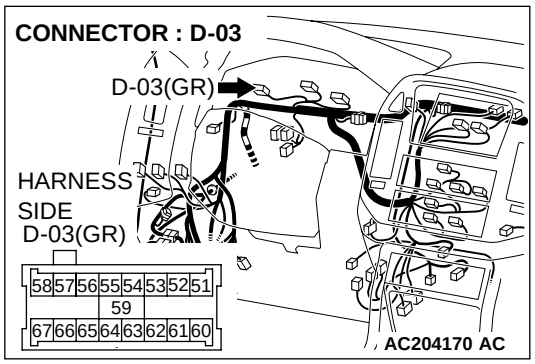
(3) Measure the voltage between terminal 62 and ground.

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

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

YES : Go to Step 10.

NO : Go to Step 8.



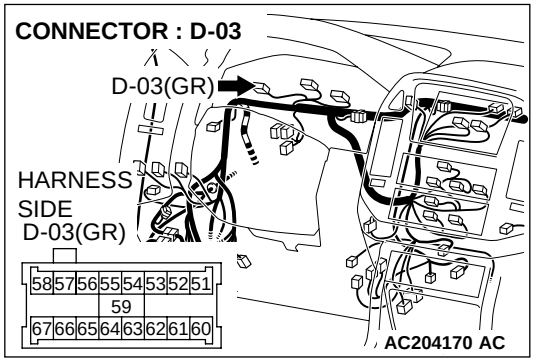
STEP 8. Check combination meter connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

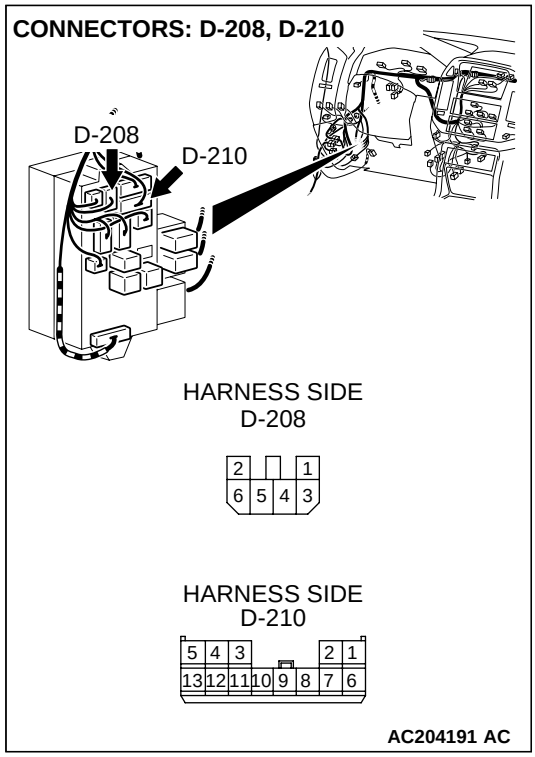
Q: Is combination meter connector D-03 in good condition?

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 seat belt warning light illuminates normally.

STEP 9. Check the wiring harness between combination meter connector D-03 (terminal 62) and the ignition switch (IG1).



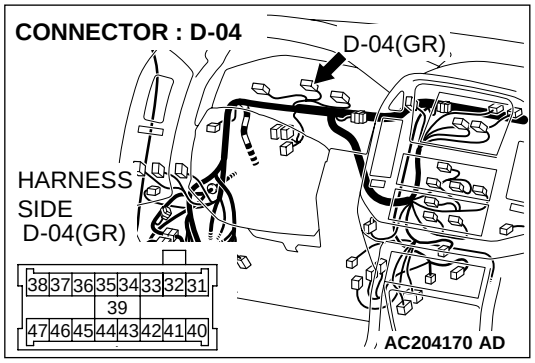


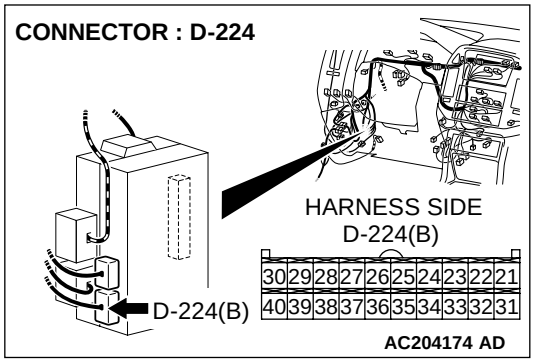
NOTE: Also check junction block connectors D-208 and D-210 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-208 or D-210 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2**.*

Q: Is the wiring harness between combination meter connector D-03 (terminal 62) and the ignition switch (IG1) 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 seat belt warning light illuminates normally.



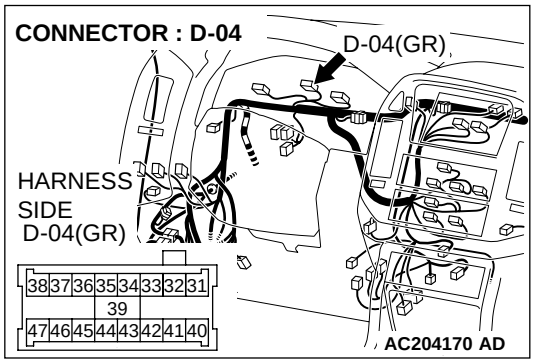


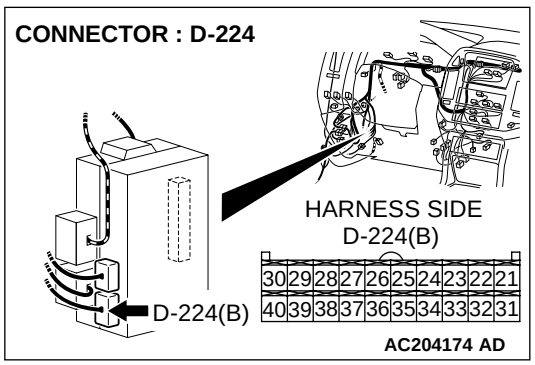
STEP 10. Check combination meter connector D-04 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are combination meter connector D-04 and ETACS-ECU connector D-224 in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the seat belt warning light illuminates normally.





STEP 11. Check the wiring harness between combination meter connector D-04 (terminal 32) and ETACS-ECU connector D-224 (terminal 39).

Q: Is the wiring harness between combination meter connector D-04 (terminal 32) and ETACS-ECU connector D-224 (terminal 39) 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 seat belt warning light illuminates normally.

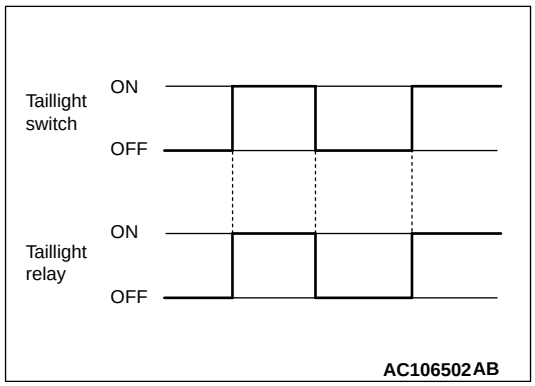
HEADLIGHT AND TAILLIGHT

GENERAL DESCRIPTION CONCERNING HEADLIGHT AND TAILLIGHT

M1549021300060

The ECU related to the headlight and taillight types and various control functions are as follows.

FUNCTION	CONTROL ECU
Taillight	Front-ECU, column switch
Headlights and high-beam indicator light	ETACS-ECU, front-ECU, column switch
Headlight automatic-shutdown function	ETACS-ECU, front-ECU, column switch
Dimmer automatic reset function	Front-ECU, column switch
Daytime running light function	Daytime running light-ECU



Taillights and headlights illumination

Taillight

The front ECU will light up the taillight when the taillight switch signal from the column switch is in the "ON" state and the built-in taillight replay is in the "ON" state.

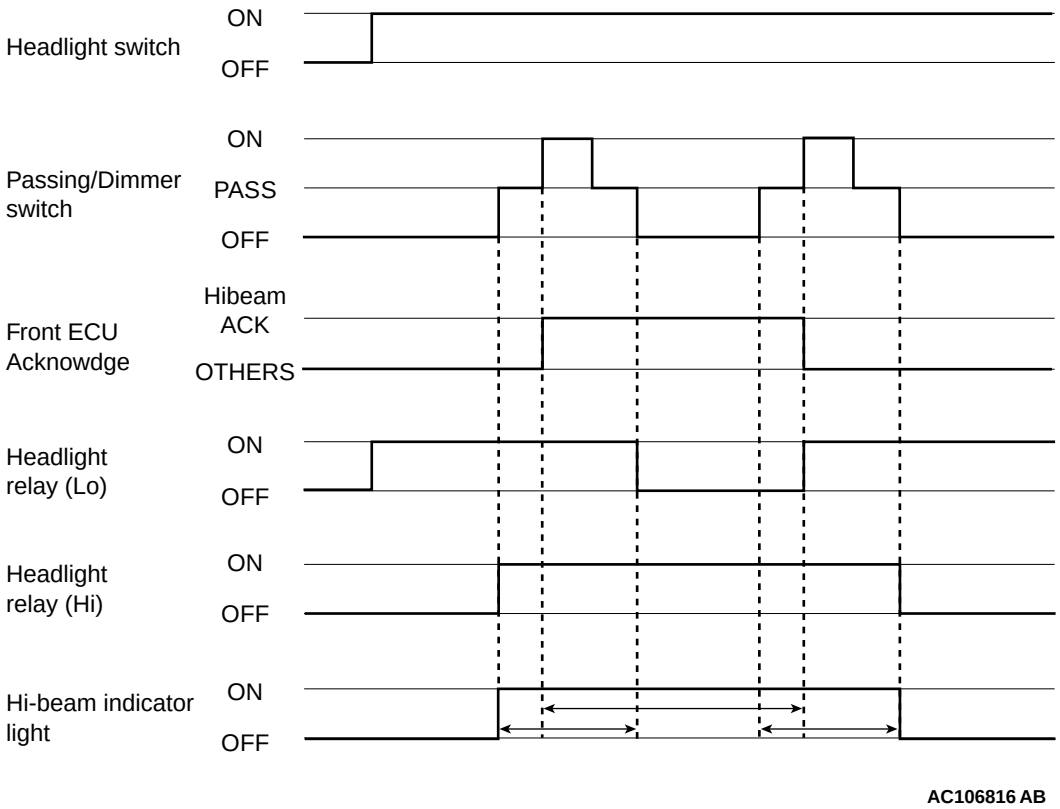
NOTE: This item only considers the taillight lightup function and does not take into consideration the other functions. In actual driving, the taillights may be turned off due to the headlight automatic shut-down function. For the details of the headlight automatic shut-down function, refer to its Section.

Headlights and high-beam indicator light

The front ECU lights up the headlight (LO) when the signal from the column switch to the headlight switch is in the "ON" state and the built-in head light relay (LO) is in the "ON" state. If the dimmer switch is turned on while the headlight relay (LO) is on, the front-ECU turns on the headlight relay (HI), causing the high-beam headlights to illuminate.

What's more, ETACS-ECU lights up the high beam indicator light when the acknowledgment signal from the front ECU is in the "HI-BEAM ACK" state or the head light switch signal from the column switch is in the "PASS" state.

NOTE: This item only considers the headlight lightup function and doesn't take into consideration the other functions. In actual driving, the headlights may be turned off due to the headlight automatic shut-down function. For the details of the headlight automatic shut-down function, refer to its Section.



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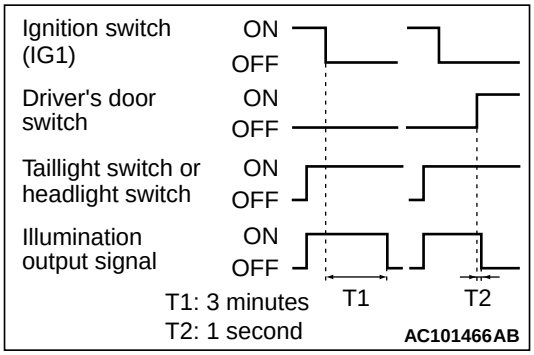

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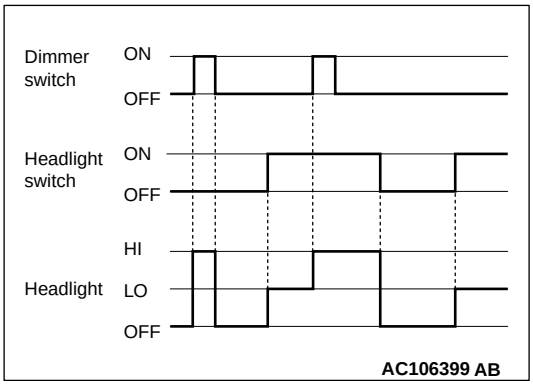
Headlight automatic-shutdown function

Even if the lighting switch (taillight switch or headlight switch) is ON, the head light (including the taillights) will automatically go off in the following conditions to prevent the battery from discharging as a result of forgetting to turn off lights.
When the ignition key is turned from "ON" to "LOCK" (OFF) or "ACC" position with the lighting switch turned ON, and this state continues for three minutes, the light will automatically be turned off. If the driver's door is opened during these three minutes, the light will go off one second later.

NOTE: This function can be disabled by the adjustment procedures of SWS function (Refer to P.54Ba-26.)



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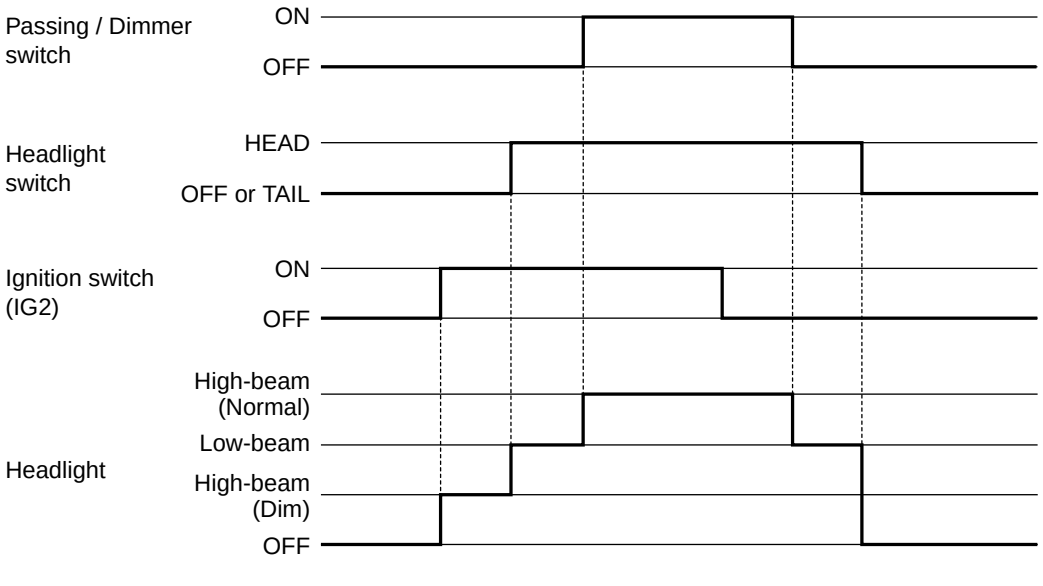
Dimmer automatic reset function

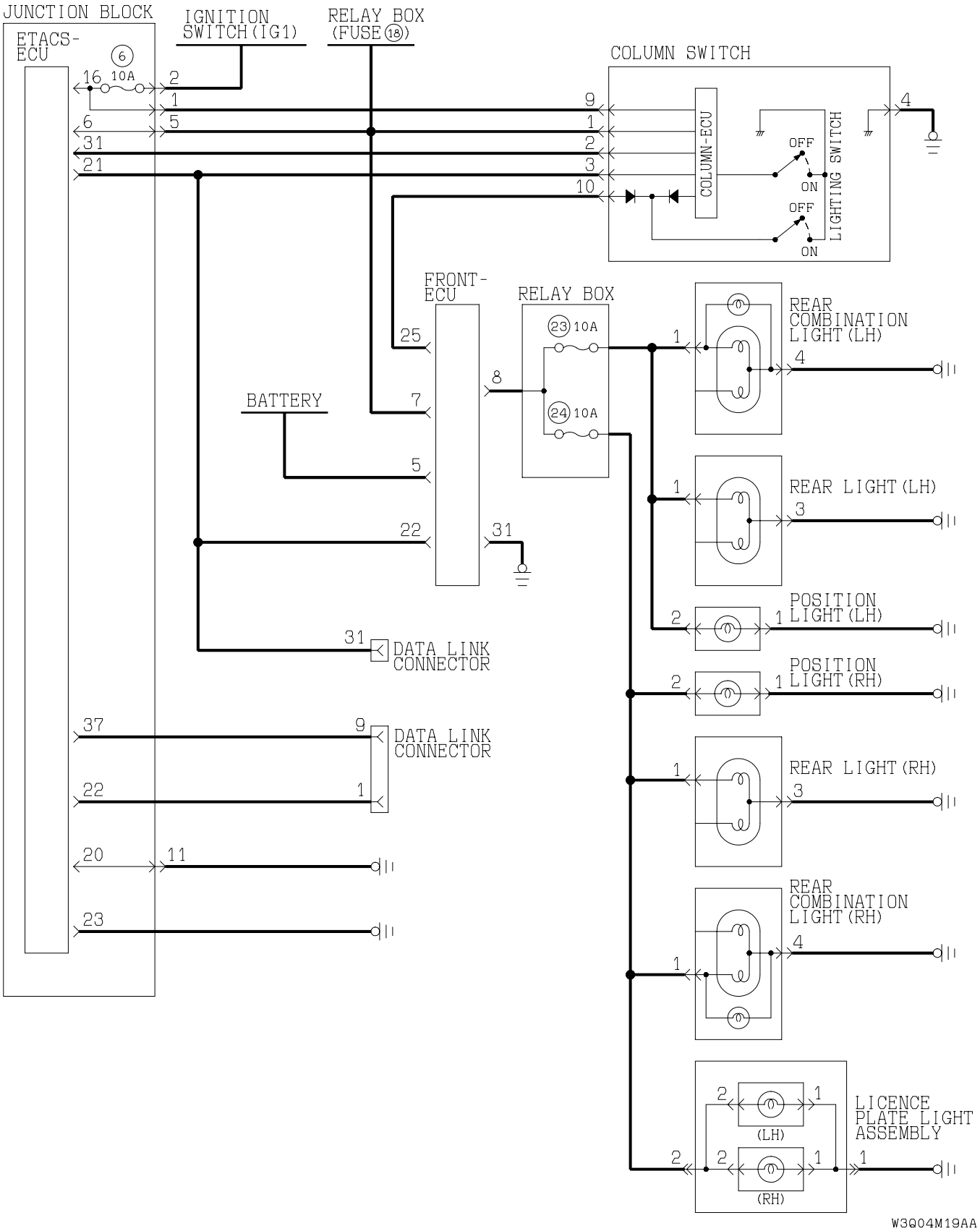
The column switch (column ECU) resets the dimmer switch and prevents the high beam from lighting up when turning on the headlight again if the headlight switch is put in the "OFF" position while the high beam of the headlight is on (including the instance when the dimmer switch is erroneously put in the "ON" state upon passing operations) and resets the dimmer switch.

Daytime running light function

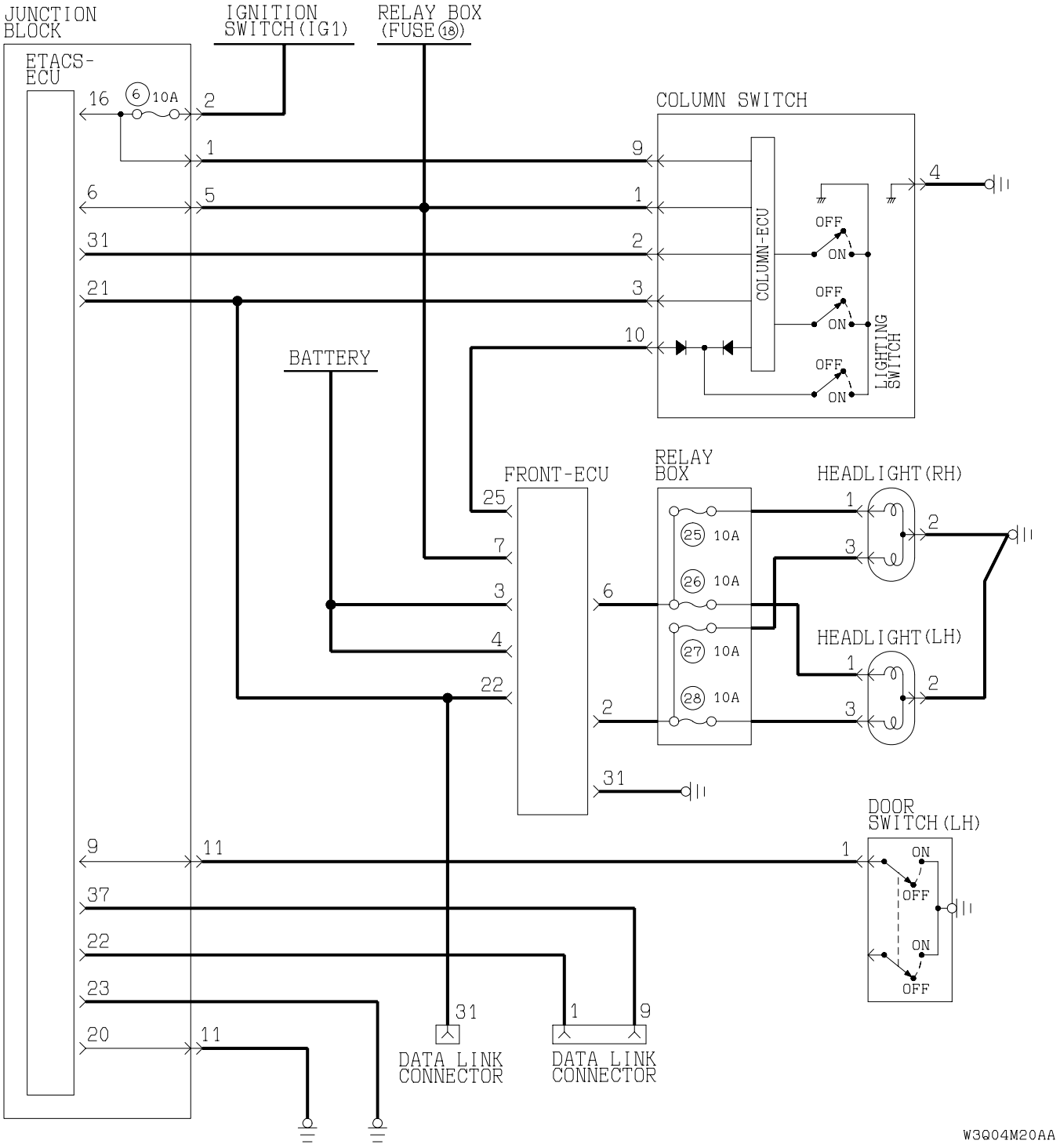
The daytime running light-ECU constantly lights up the high beam in a reduced beam state if the ignition switch is in the "ON" position when the headlight switch is in the "OFF" or "TAIL" position. If the headlights illuminate while the daytime running light function operates, the daytime running light-ECU shut the high-beam down.

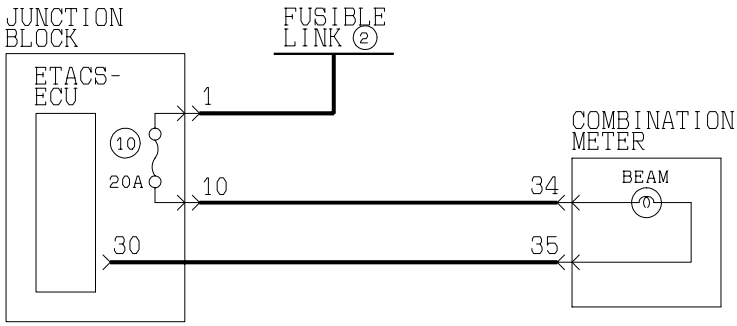


General circuit diagram for the taillights



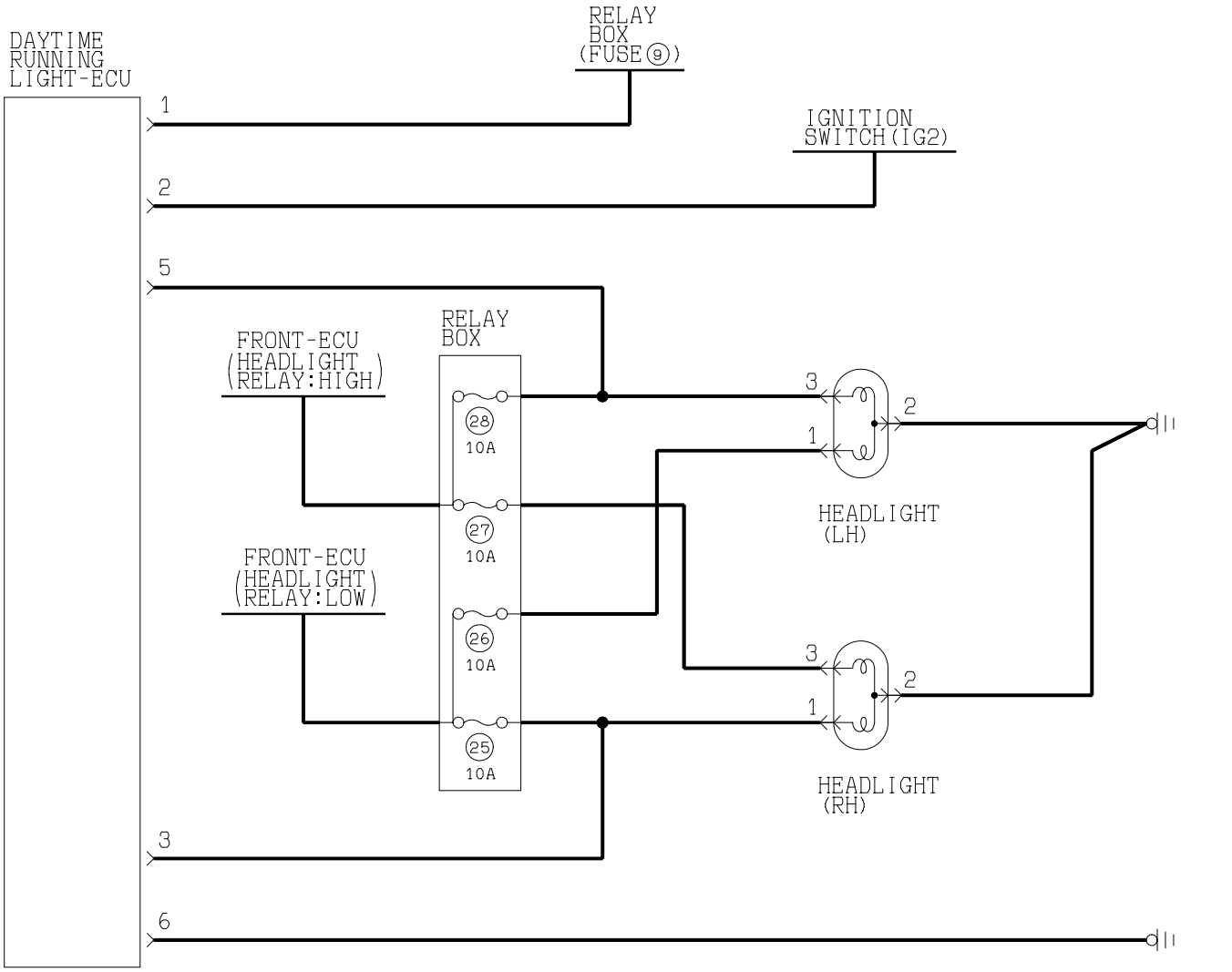
General circuit diagram for the headlights





W3Q04M35AA

General circuit diagram for the daytime running lights

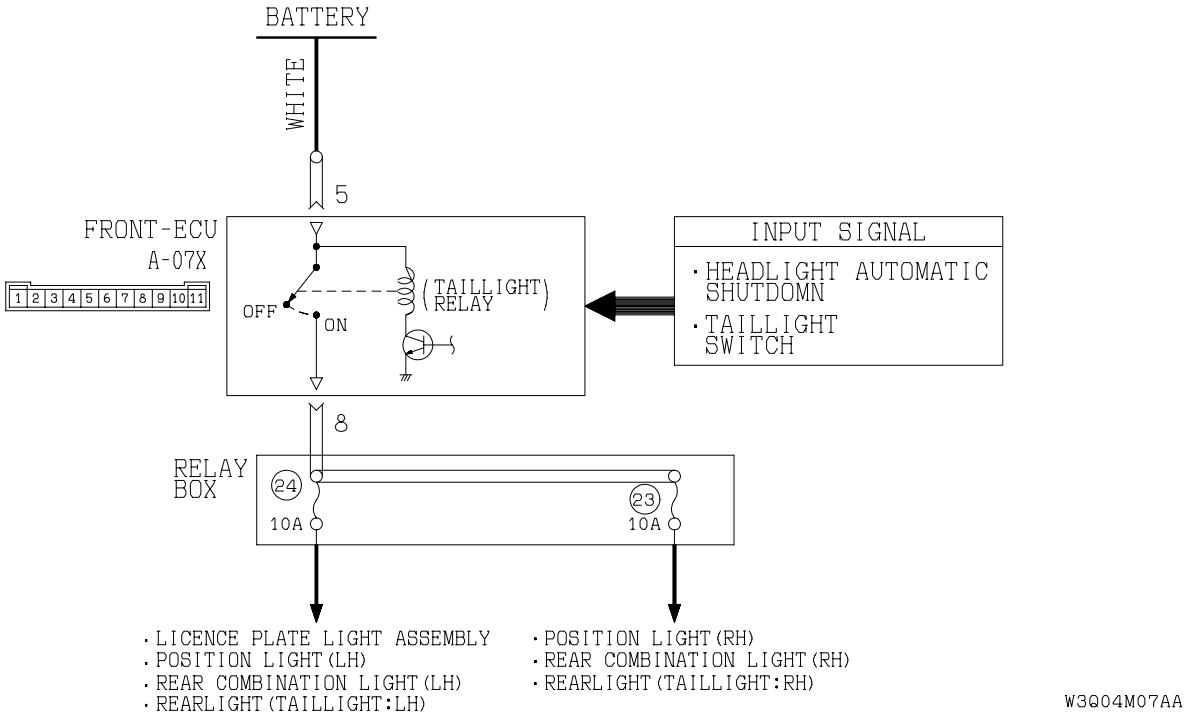


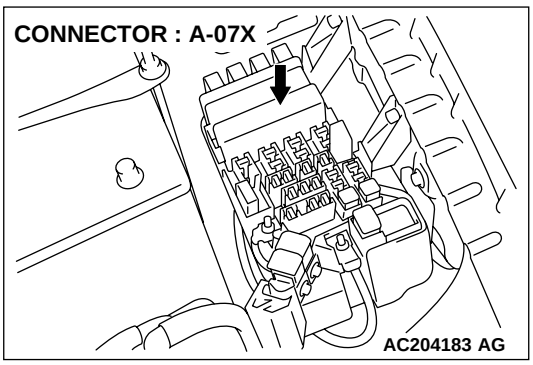
W3Q04M21AA

INSPECTION PROCEDURE J-1: Headlight and Taillight: Taillights does not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Taillight Relay Circuit





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

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DIAGNOSIS

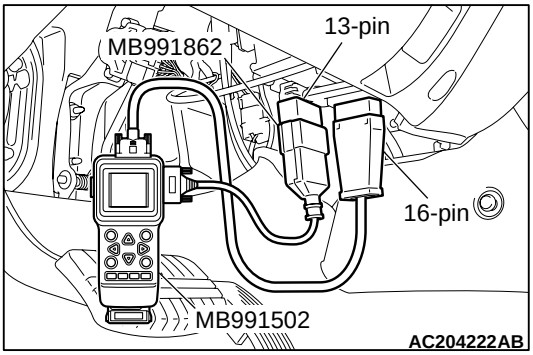
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:
- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

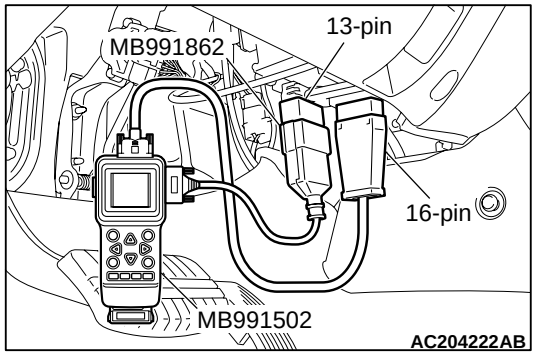
Q: Is "OK" displayed on both the "COLUMN ECU" and "FRONT ECU" menus?

"OK" are displayed for all the items : Go to Step 2.
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-16."
"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54Bb-32."

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.



Operate scan tool MB991502 according to the procedure below to display "TAILLIGHT."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "LIGHTING."
6. Select "TAILLIGHT."

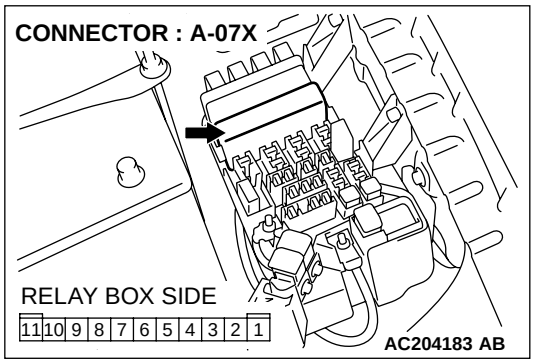
Check that normal conditions are displayed on the items described in the table below.

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: Are normal conditions displayed on the "TAILLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK"?

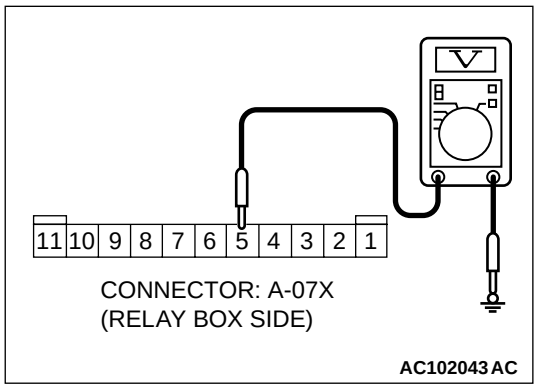
YES : Go to Step 3.

NO :
- Normal condition is not displayed on the "TAIL LIGHT SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the taillight switch P.54Bc-31."
- Normal condition is not displayed on the "H/L AUTO-CUT": Refer to Inspection Procedure J-9 "The headlight automatic shutdown function does not work normally P.54Bb-373."
- Normal condition is not displayed on the "FRONT ECU ACK": Replace the front-ECU. Verify that the taillights illuminate normally.



STEP 3. Check the battery power supply circuit to the front-ECU. Test at front-ECU connector A-07X.

(1) Disconnect front-ECU connector A-07X and measure the voltage available at the relay box side of the connector.



(2) Measure the voltage between terminal 5 and ground.
- The voltage should be 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.

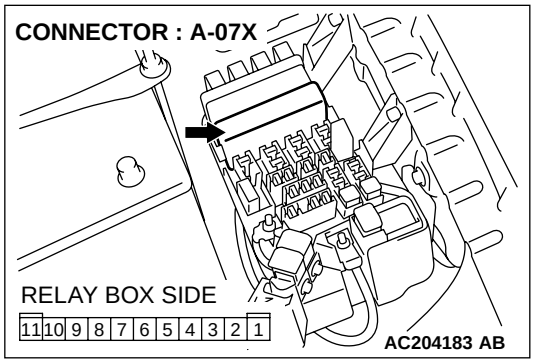
NO : Go to Step 4.

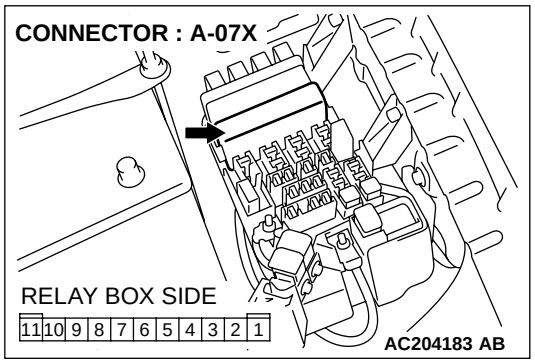
STEP 4. Check the front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front-ECU connector A-07X 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 taillights illuminate normally.





STEP 5. Check the wiring harness between front-ECU connector A-07X (terminal 5) and the battery.

Q: Is the wiring harness between front-ECU connector A-07X (terminal 5) and the battery in good condition?

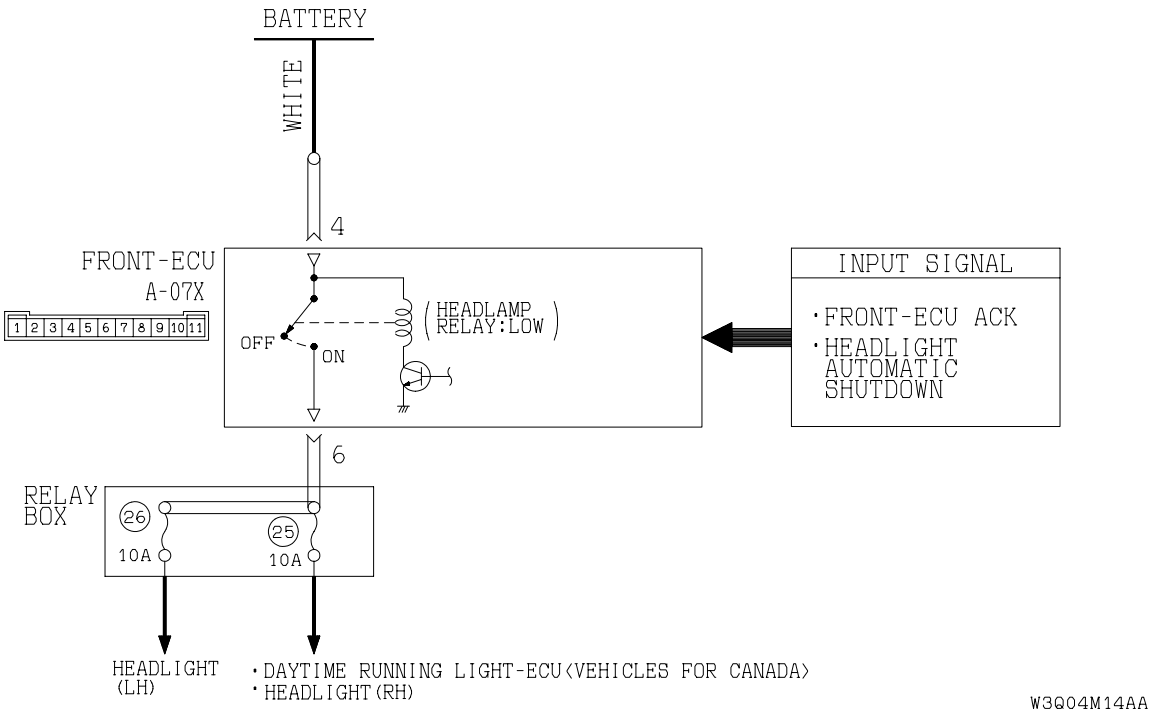
YES : No action is necessary and testing is complete.

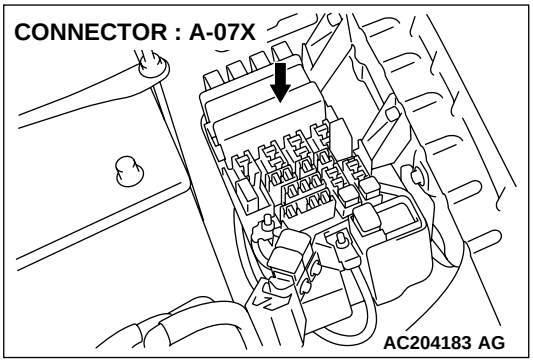
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the taillights illuminate normally.

INSPECTION PROCEDURE J-2: Headlight and Taillight: Headlights (low-beam) do not illuminate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Headlight Relay (Low-beam) Circuit





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

- The column switch (turn-signal light and lighting switch) may be defective
- The front-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

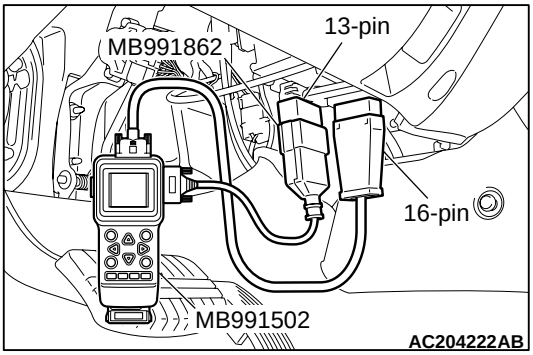
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:
- Column-ECU
- Front-ECU

⚠ CAUTION

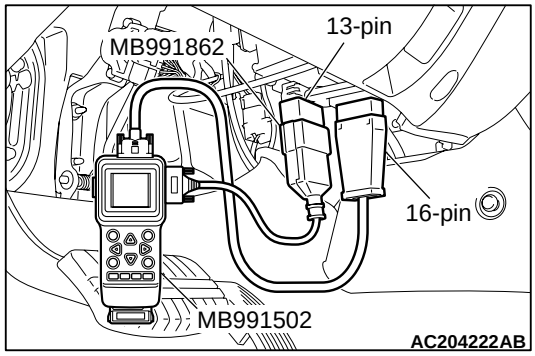
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

Q: Is "OK" displayed on both the "COLUMN ECU" and "FRONT ECU" menus?

"OK" are displayed for all the items : Go to Step 2.
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-16."
"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54Bb-32."



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

Operate scan tool MB991502 according to the procedure below to display "HEADLIGHT LO."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "LIGHTING."
6. Select "HEADLIGHT LO."

Check that normal conditions are displayed on the items described in the table below.

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

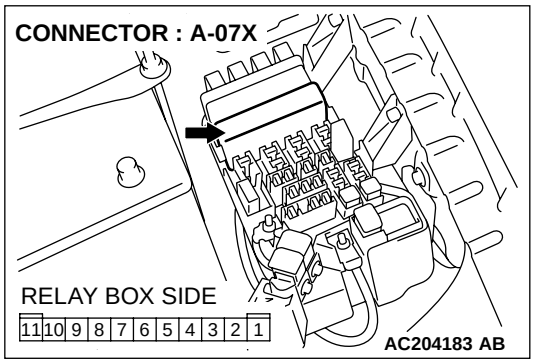
Q: Are normal conditions displayed on the "HEADLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK"?

YES : Go to Step 3.

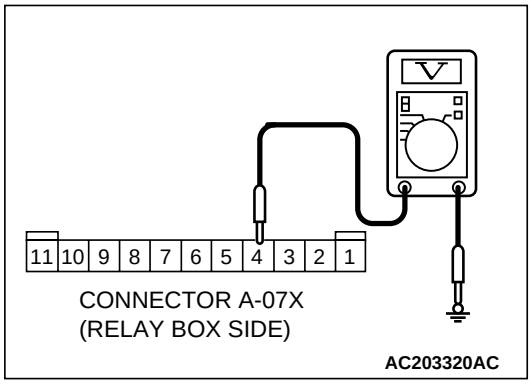
NO :

- Normal condition is not displayed on the "HEADLIGHT SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the headlight switch P.54Bc-31."
- Normal condition is not displayed on the "H/L AUTO-CUT": Refer to Inspection Procedure J-9 "Headlight automatic shutdown function does not work normally P.54Bb-373."
- Normal condition is not displayed on the "FRONT ECU ACK": Replace the front-ECU. Verify that the headlights (low-beam) illuminate normally.

STEP 3. Check the battery power supply circuit to the front-ECU. Test at front-ECU connector A-07X.



(1) Disconnect front-ECU connector A-07X and measure the voltage available at the relay box side of the connector.



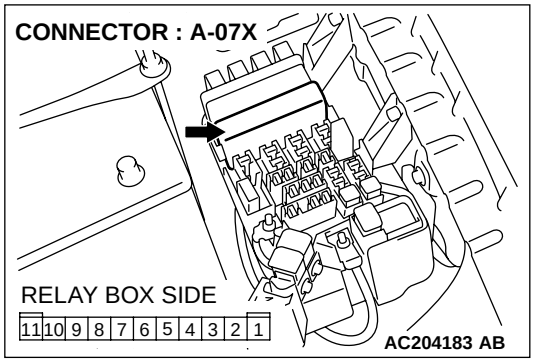
(2) Measure the voltage between terminal 4 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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 4.

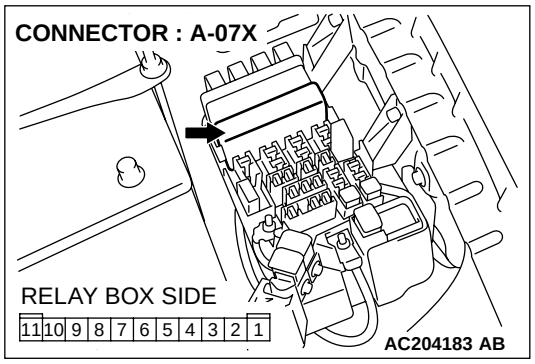
STEP 4. Check the front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is the front-ECU connector A-07X 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 headlights (low-beam) illuminate normally.



STEP 5. Check the wiring harness between front-ECU connector A-07X (terminal 4) and the battery.

Q: Is the wiring harness between front-ECU connector A-07X (terminal 4) and the battery in good condition?

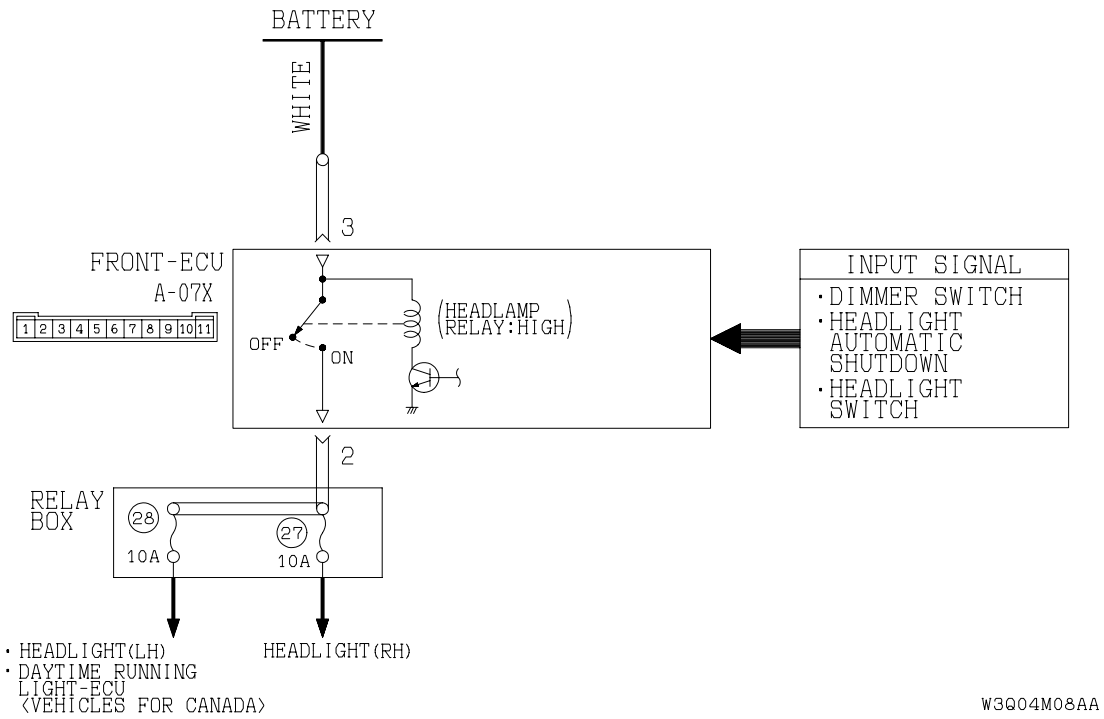
YES : No action is necessary and testing is complete.

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 J-3: Headlight and Taillight: Headlights (high-beam) do not illuminate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Headlight Relay (High-beam) Circuit



CIRCUIT OPERATION

When the dimmer switch is turned on, the column switch sends any 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

- The column switch (turn-signal light and lighting switch) may be defective

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

DIAGNOSIS

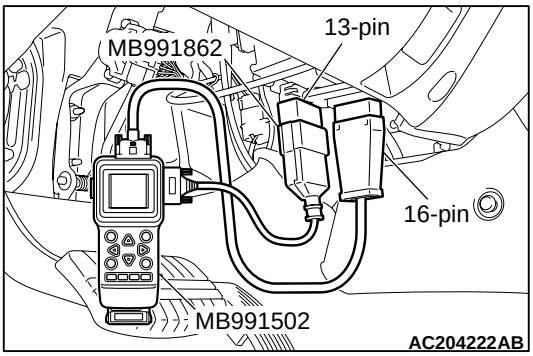
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:
- Column-ECU
- Front-ECU

⚠ CAUTION

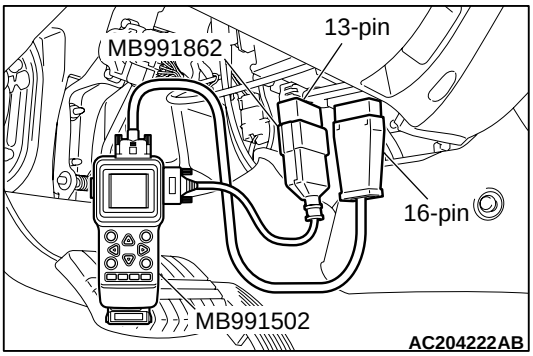
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

Q: Is "OK" displayed on both the "COLUMN ECU" and "FRONT ECU" menus?

"OK" are displayed for all the items : Go to Step 2.
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-16."
"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54Bb-32."



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

Operate scan tool MB991502 according to the procedure below to display "HEADLIGHT HI."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "LIGHTING."
6. Select "HEADLIGHT HI."

Check that normal conditions are displayed on 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

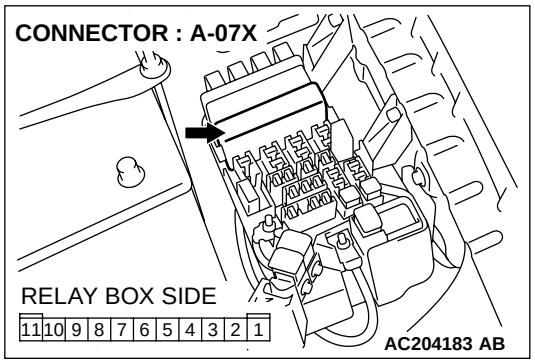
Q: Are normal conditions displayed on the "HEADLIGHT SW", "DIMMER SW", "H/L AUTO-CUT" and "FRONT ECU ACK"?

YES : Go to Step 3.

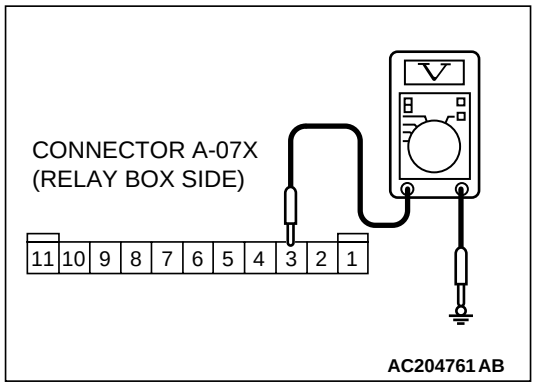
NO :

- Normal condition is not displayed on the "HEADLIGHT SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the headlight switch P.54Bc-31."
- Normal condition is not displayed on the "DIMMER SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the dimmer switch P.54Bc-31."
- Normal condition is not displayed on the "H/L AUTO-CUT": Refer to Inspection Procedure J-9 "Headlight automatic shutdown function does not work normally P.54Bb-373."
- Normal condition is not displayed on the "FRONT ECU ACK": Replace the front-ECU. Verify that the headlights (high-beam) illuminate normally.

STEP 3. Check the battery power supply circuit to the front-ECU. Test at front-ECU connector A-07X.



(1) Disconnect front-ECU connector A-07X and measure the voltage available at the relay box side of the connector.



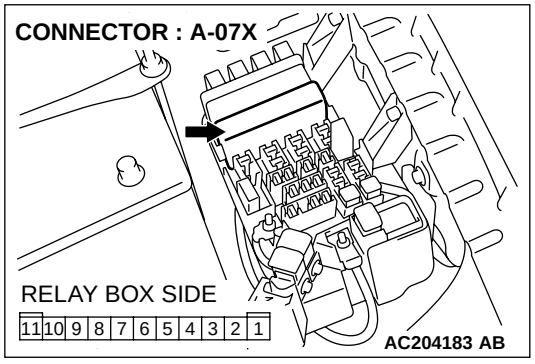
(2) Measure the voltage between terminal 3 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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 4.

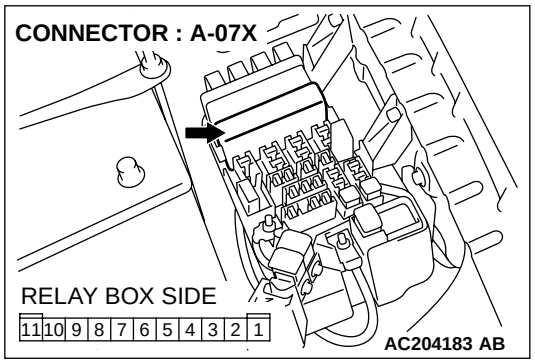
STEP 4. Check the front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is the front-ECU connector A-07X 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 headlights (low-beam) illuminate normally.



STEP 5. Check the wiring harness between front-ECU connector A-07X (terminal 3) and the battery.

Q: Is the wiring harness between front-ECU connector A-07X (terminal 3) 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 J-4: Headlight and Taillight: Headlights do not illuminate when the passing switch is operated.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

TECHNICAL DESCRIPTION (COMMENT)

If both 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

- The column switch may be defective
- The front-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
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

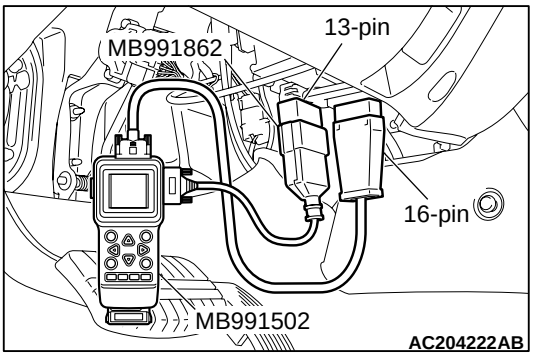
STEP 1. Verify the headlight operation.

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

YES : Go to Step 2.

Headlights (low-beam) do not illuminate normally : Refer to Inspection Procedure J-2 "Headlights (low-beam) do not illuminate normally P.54Bb-308."

Headlights (high-beam) do not illuminate normally : Refer to Inspection Procedure J-3 "Headlights (high-beam) do not illuminate normally P.54Bb-313."



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 MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Operate scan tool MB991502 according to the procedure below to display "COLUMN ECU."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "DATA LIST."
   5. Select "COLUMN ECU."
(4) Check that normal conditions are displayed on the items described in the table below.

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

Q: Is normal condition displayed on the "PASSING SW"?

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

NO : Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the passing switch P.54Bc-31."

INSPECTION PROCEDURE J-5: Headlight and Taillight: Headlights do not illuminate when the lighting switch is at "TAIL," and "PASSING" position, but illuminate at low-beam when the switch is at "HEAD" position. At this position, the headlights cannot be changed into high beam by operating the dimmer switch.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor" P.54Ba-8.

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 column switch may be defective
- The front-ECU 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

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

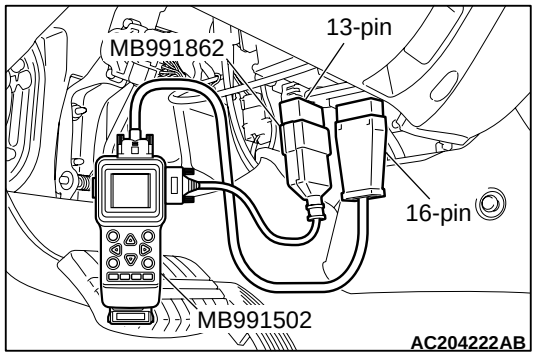
Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:

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

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menus for the "ETACS ECU", "COLUMN ECU" and "FRONT ECU" menus.

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

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

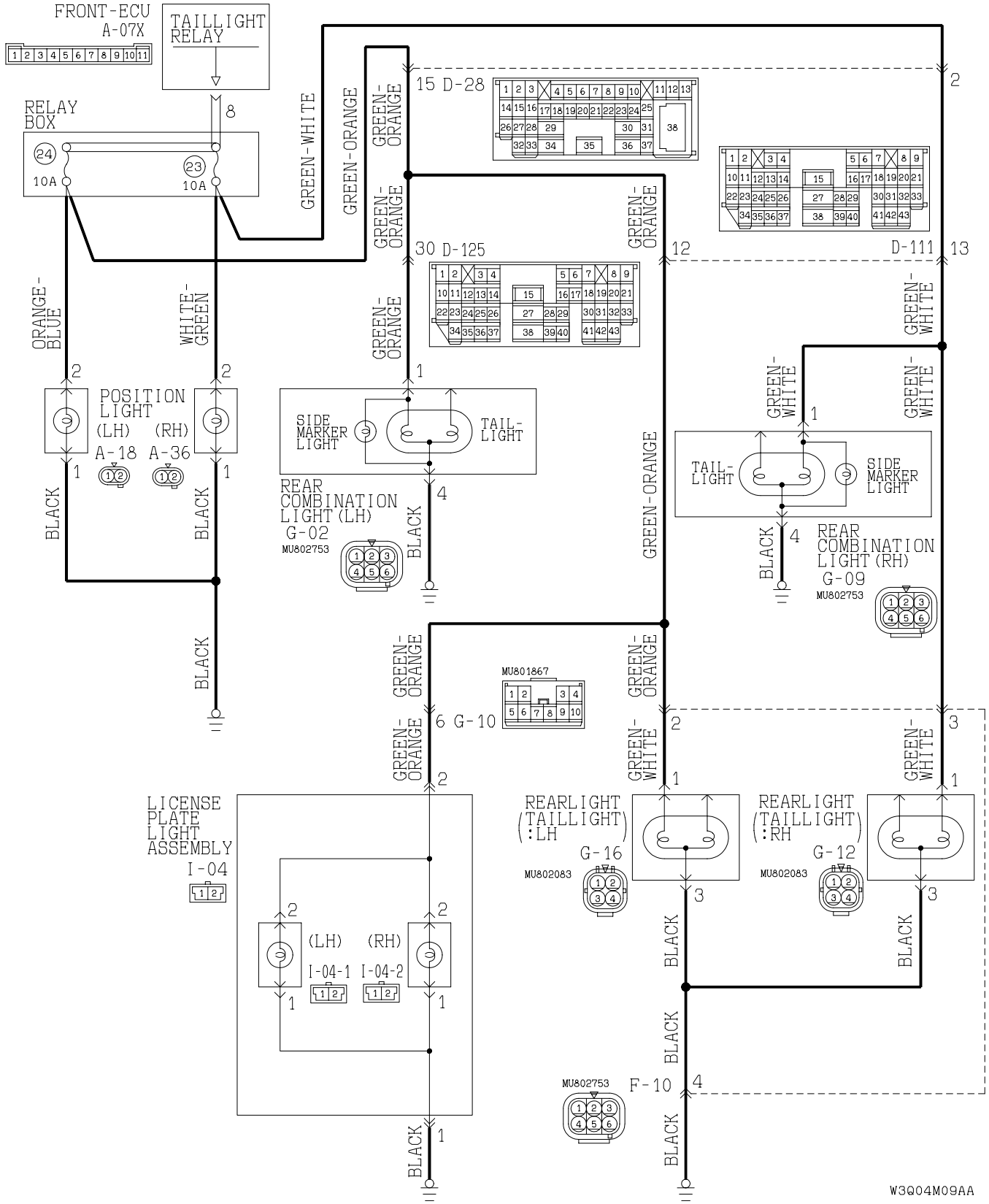
"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."

"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54Bb-25."

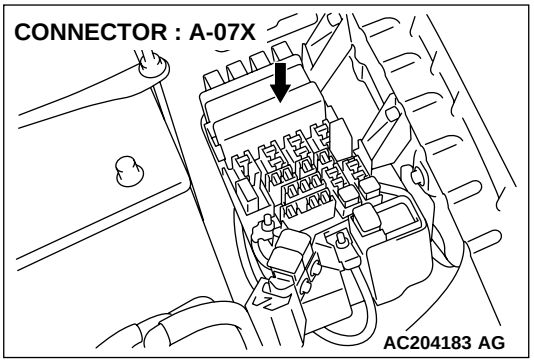
"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54Bb-32."

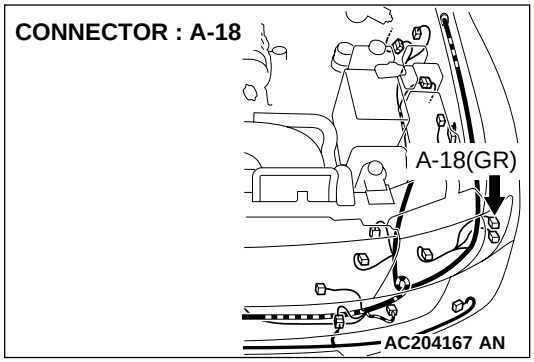
INSPECTION PROCEDURE J-6: Headlight and Taillight: Any of taillights, the position lights, the side marker light or the license plate lights do not illuminate.

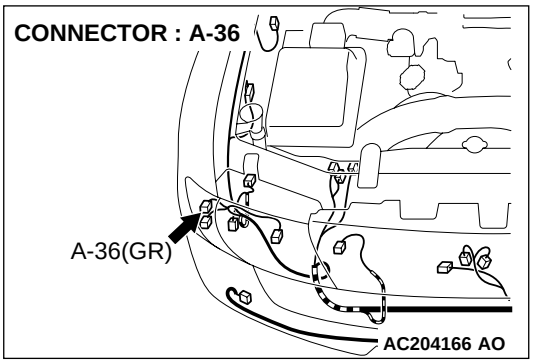
Taillights, Position Lights and License Plate Lights Circuit

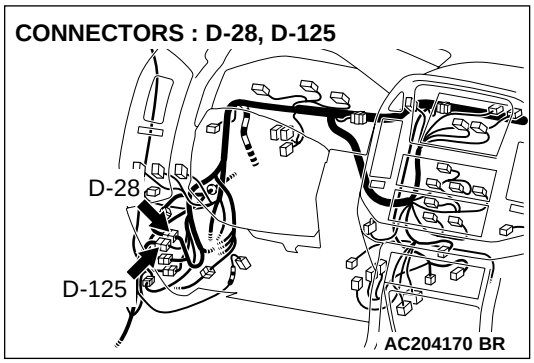


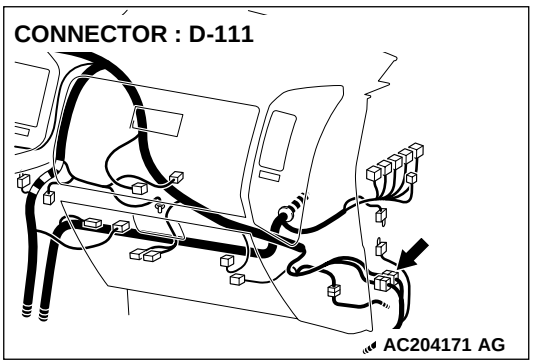
TSB Revision

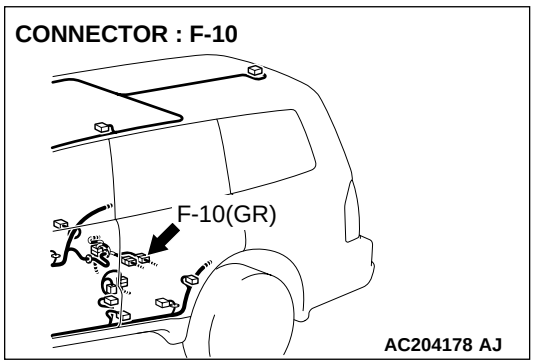


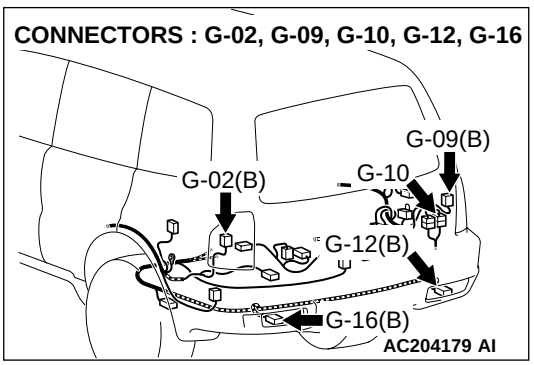


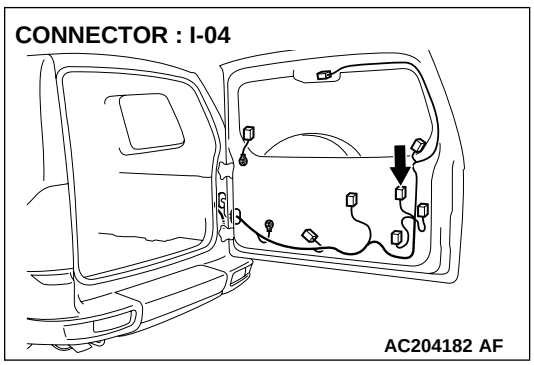












TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The position light bulb may be defective
- The stop/taillight bulb may be defective
- The side marker light 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

TSB Revision

DIAGNOSIS

Required Special Tool:
- MB991223: Harness Set

STEP 1. Verify the operation of each light.

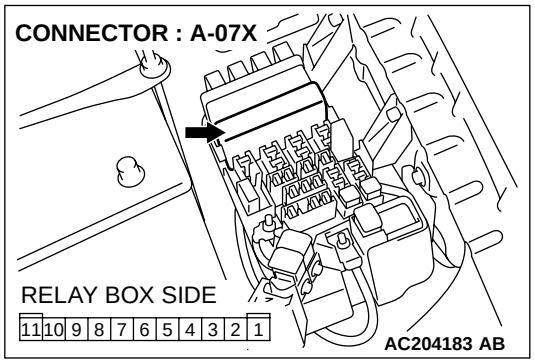
Q: Which light does not illuminate?

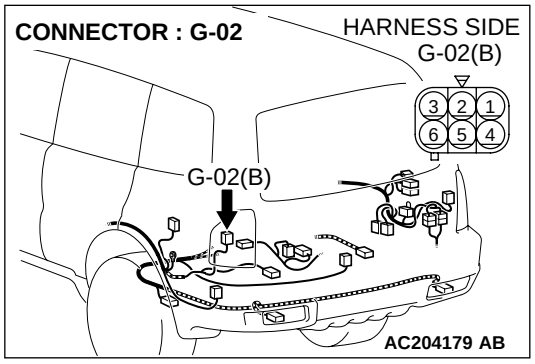
taillight (LH), license plate light and side marker light (LH) : Go to Step 2.
taillight (RH) and side marker light (RH) : Go to Step 4.
taillight (LH) and license plate : Go to Step 6.
position light : Go to Step 8.
position light (LH) : Go to Step 11.
position light (RH) : Go to Step 17.
taillight : Go to Step 23.
taillight (LH) : Go to Step 26.
taillight (RH) : Go to Step 32.
license plate lights : Go to Step 38.
side marker light (LH) : Go to Step 44.
side marker light (RH) : Go to Step 50.
All lights : Refer to Inspection Procedure J-1 "Tail lights do not illuminate P.54Bb-304."

STEP 2. Check rear combination light (LH) connector G-02 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

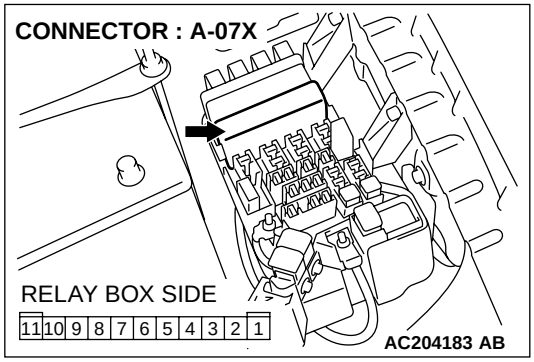
Q: Are rear combination light (LH) connector G-02 and front-ECU connector A-07X in good condition?

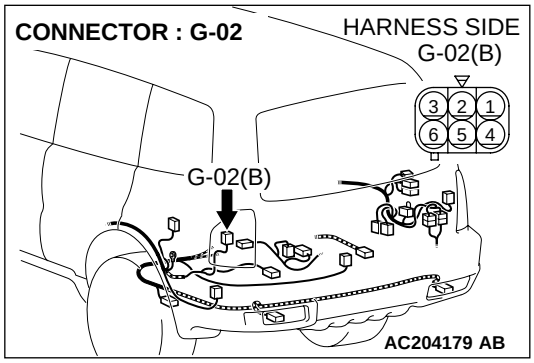
YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the taillight (LH), license plate light and side marker light (LH) illuminates normally.

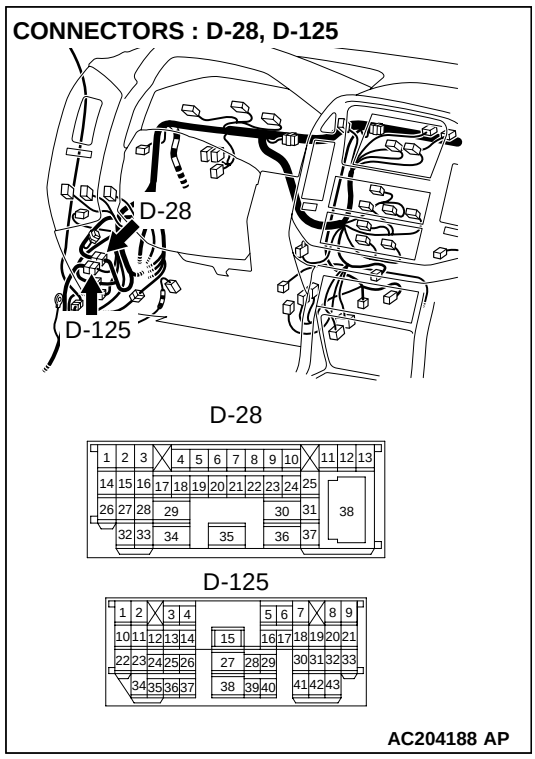




STEP 3. Check the wiring harness between rear combination light (LH) connector G-02 (terminal 1) and front-ECU connector A-07X (terminal 8).





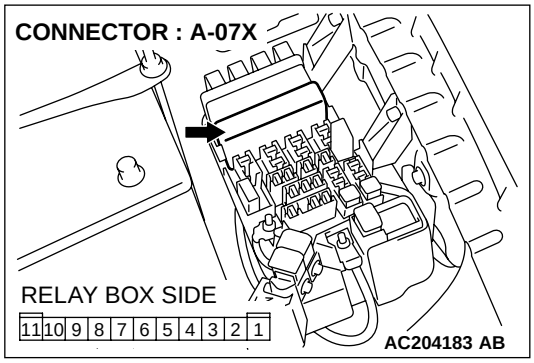


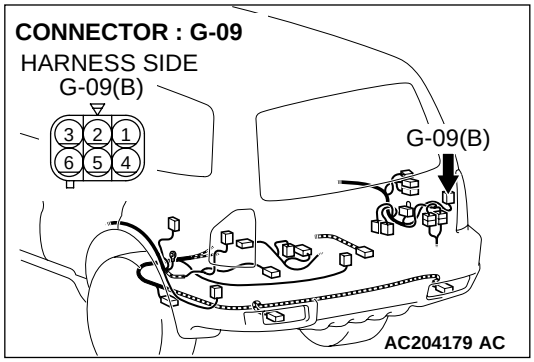
NOTE: Also check intermediate connectors D-28 and D-125 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or D-125 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light (LH) connector G-02 (terminal 1) and front-ECU connector A-07X (terminal 8) 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 taillight (LH), license plate light and side marker light (LH) illuminates normally.





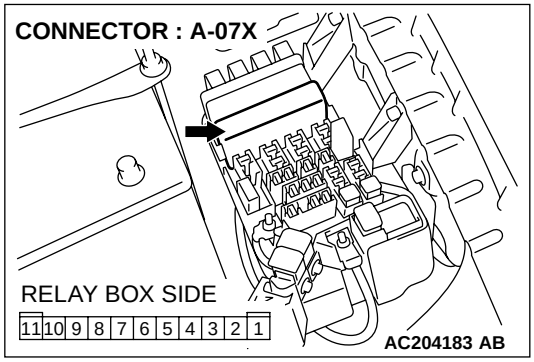
STEP 4. Check rear combination light (RH) connector G-09 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

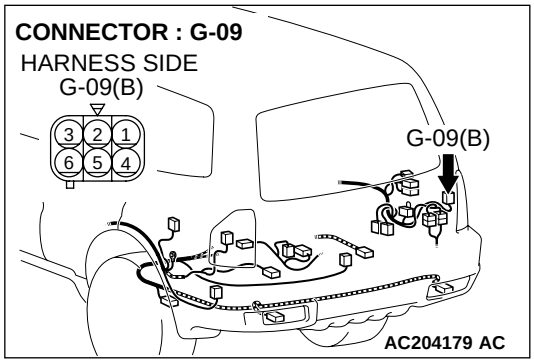
Q: Are rear combination light (RH) connector G-09 and front-ECU connector A-07X in good condition?

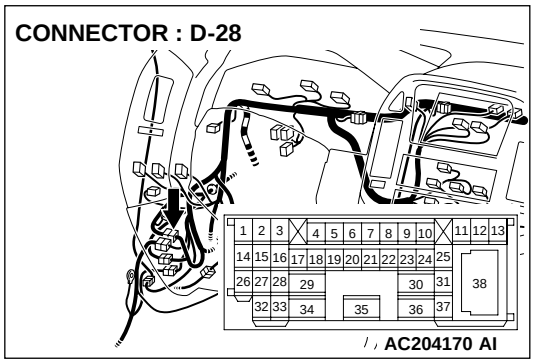
YES : Go to Step 5.

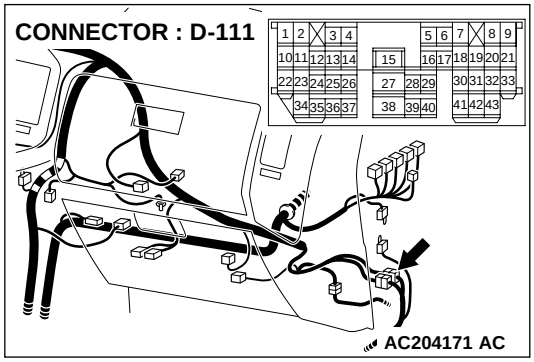
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the taillight (RH) and side marker light (RH) illuminates normally.

STEP 5. Check the wiring harness between rear combination light (RH) connector G-09 (terminal 1) and front-ECU connector A-07X (terminal 8).







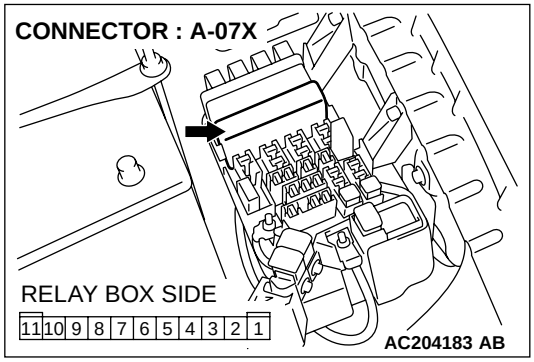


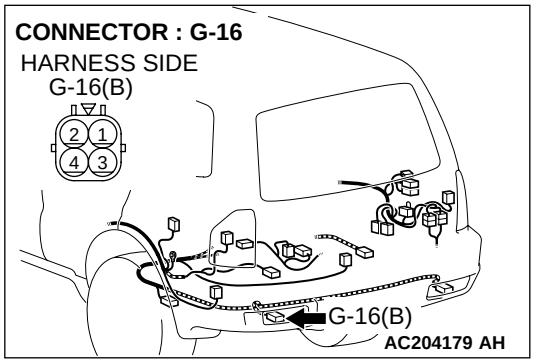
NOTE: Also check intermediate connectors D-28 and D-111 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or D-111 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2**.*

Q: Is the wiring harness between rear combination light (RH) connector G-09 (terminal 1) and front-ECU connector A-07X (terminal 8) 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 taillight (RH) and side marker light (RH) illuminates normally.





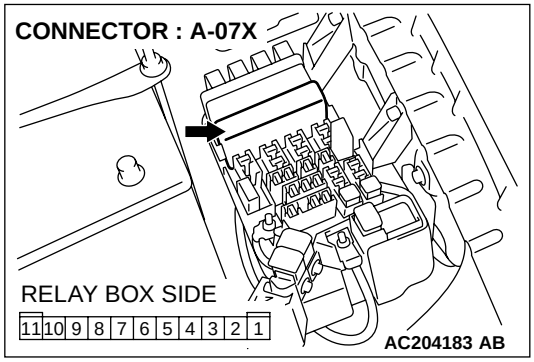
STEP 6. Check taillight (LH) connector G-16 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

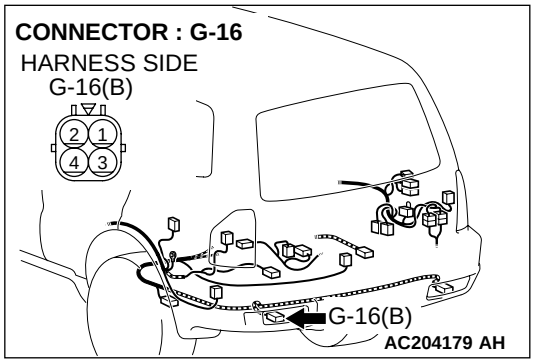
Q: Are taillight (LH) connector G-16 and front-ECU connector A-07X in good condition?

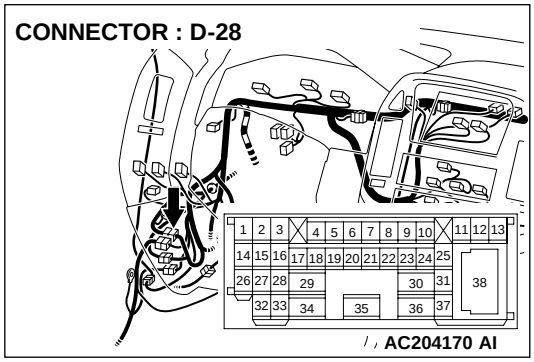
YES : Go to Step 7.

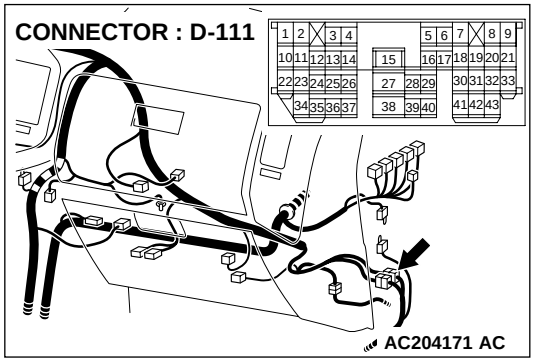
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the taillight (RH) and side marker light (RH) illuminates normally.

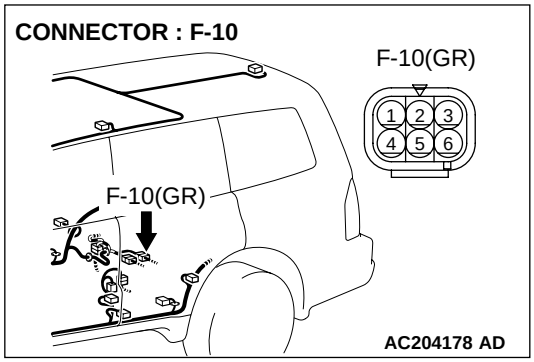
STEP 7. Check the wiring harness between taillight (LH) connector G-16 (terminal 1) and front-ECU connector A-07X (terminal 8).











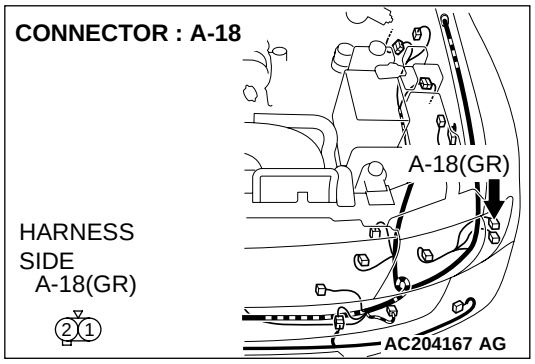
NOTE: Also check intermediate connectors D-28, D-111 and F-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, D-111 or F-10 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between taillight (LH) connector G-16 (terminal 1) and front-ECU connector A-07X (terminal 8) in good condition?

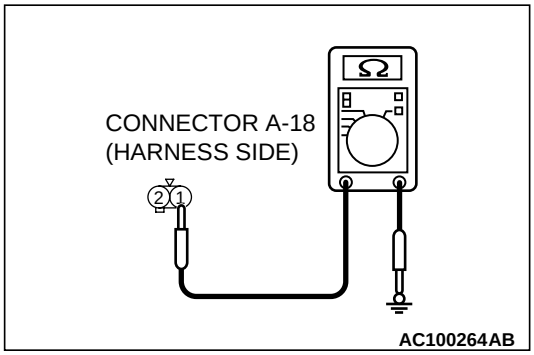
YES : No action is necessary and testing is complete.

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 taillight (RH) and side marker light (RH) illuminates normally.

STEP 8. Check the ground circuit to the position light (LH). Test at position light (LH) connector A-18.



(1) Disconnect position light (LH) connector A-18 and measure the resistance available at the wiring harness side of the connector.

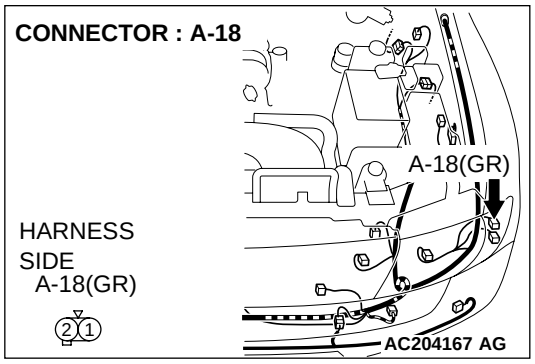


(2) Measure the resistance value between terminal 1 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : No action is necessary and testing is complete.
NO : Go to Step 9.

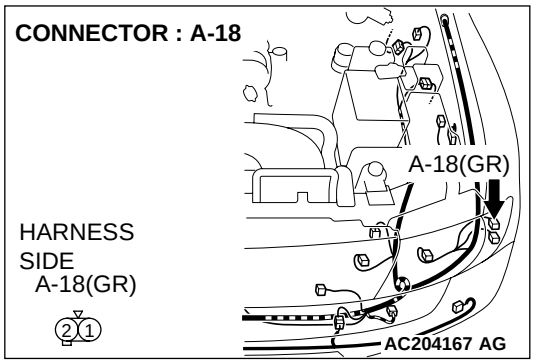
STEP 9. Check position light (LH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is position light (LH) connector A-18 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 position light illuminates normally.

STEP 10. Check the wiring harness between position light (LH) connector A-18 (terminal 1) and ground.



Q: Is the wiring harness between position light (LH) connector A-18 (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 position light illuminates normally.

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STEP 11. Check the position light bulb (LH).

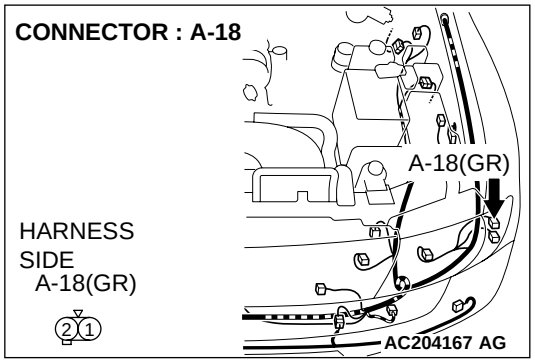
(1) Remove the position light bulb (LH).
(2) Verify that the position light bulb (LH) is not damaged or burned out.

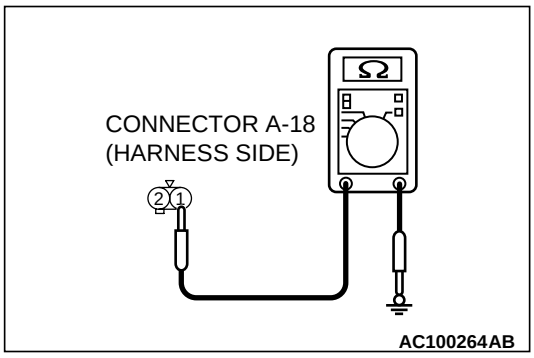
Q: Is the position light bulb (LH) in good condition?

YES : Go to Step 12.
NO : Replace the position light bulb (LH). Verify that the position light (LH) illuminates normally.

STEP 12. Check the ground circuit to the position light (LH). Test at position light (LH) connector A-18.

(1) Disconnect position 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 1 and ground.
- The resistance should equal 2 ohms or less.

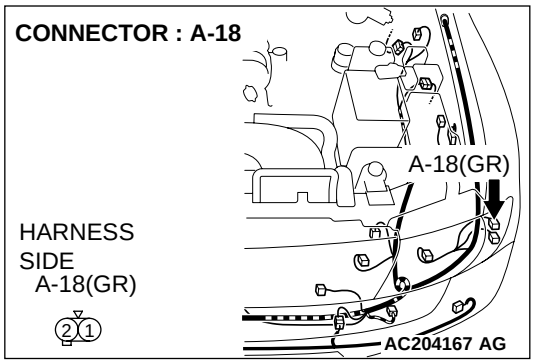
Q: Is the measured resistance 2 ohms or less?

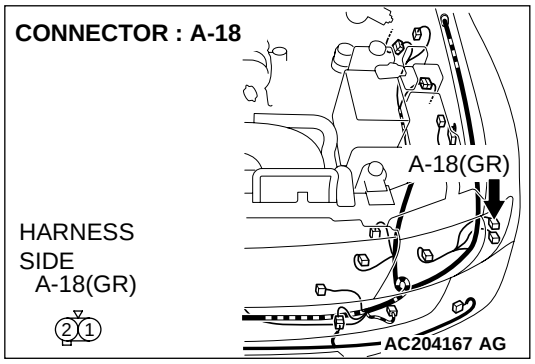
YES : Go to Step 15.
NO : Go to Step 13.

STEP 13. Check position light (LH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is position light (LH) connector A-18 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 position light (LH) illuminates normally.



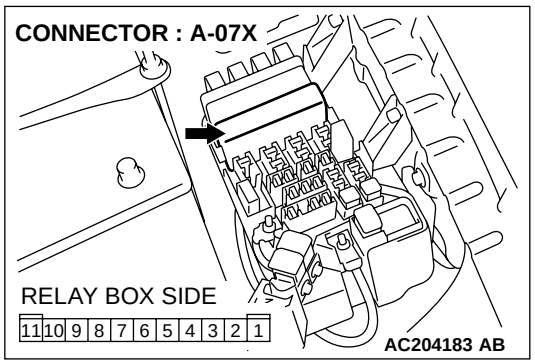


STEP 14. Check the wiring harness between position light (LH) connector A-18 (terminal 1) and ground.

Q: Is the wiring harness between position light (LH) connector A-18 (terminal 1) and ground in good condition?

YES : Replace the position light socket (LH). Verify that the position 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 position light (LH) illuminates normally.

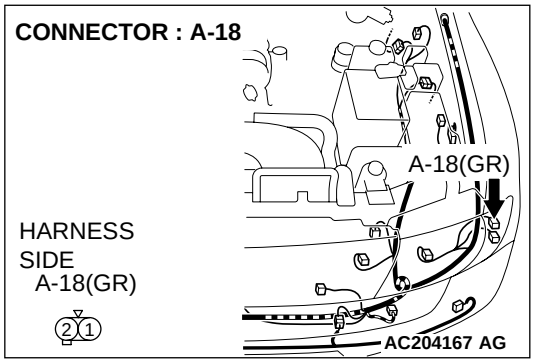


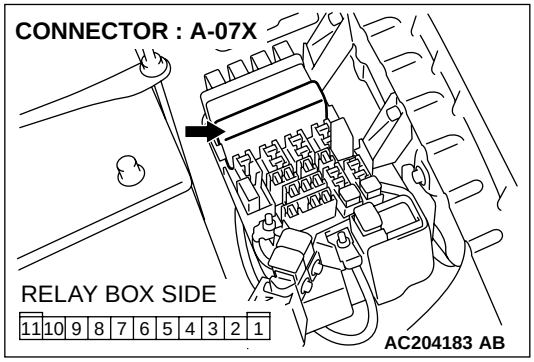
STEP 15. Check position light (LH) connector A-18 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

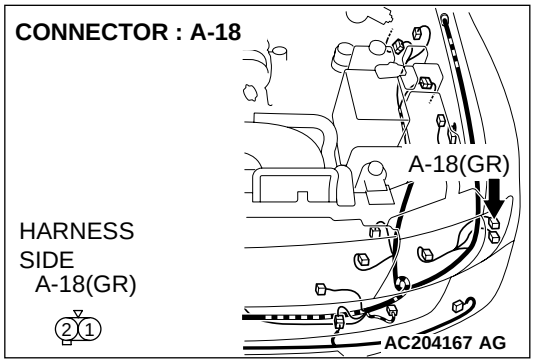
Q: Are position light (LH) connector A-18 and front-ECU connector A-07X in good condition?

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 position light (LH) illuminates normally.







STEP 16. Check the wiring harness between position light (LH) connector A-18 (terminal 2) and front-ECU connector A-07X (terminal 8).

Q: Is the wiring harness between position light (LH) connector A-18 (terminal 2) and front-ECU connector A-07X (terminal 8) 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 position light (LH) illuminates normally.

STEP 17. Check the position light bulb (RH).

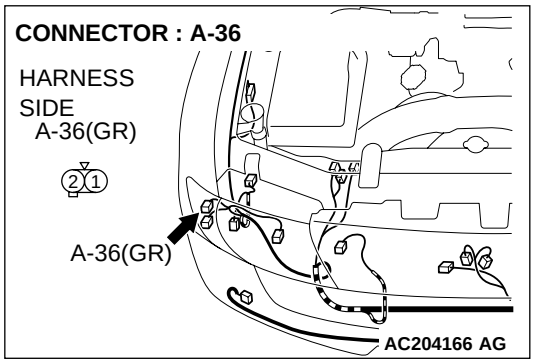
(1) Remove the position light bulb (RH).

(2) Verify that the position light bulb (RH) is not damaged or burned out.

Q: Is the position light bulb (RH) in good condition?

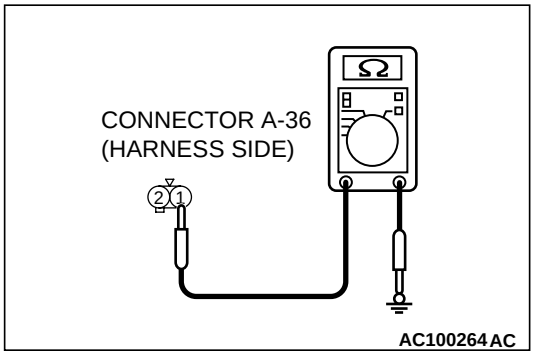
YES : Go to Step 18.

NO : Replace the position light bulb (RH). Verify that the position light (RH) illuminates normally.



STEP 18. Check the ground circuit to the position light (RH). Test at position light (RH) connector A-36.

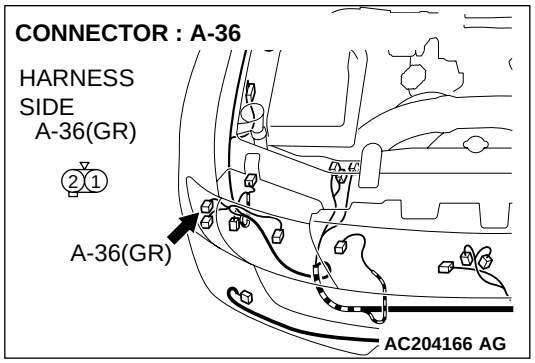
(1) Disconnect position light (RH) connector A-36 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 1 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

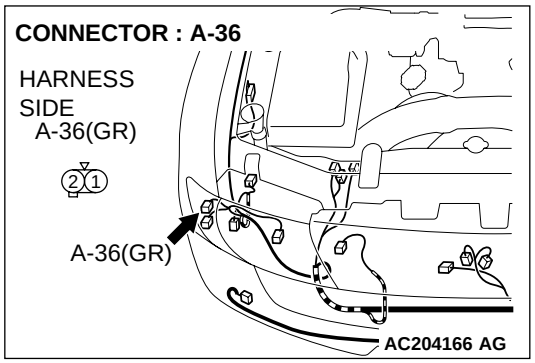
YES : Go to Step 21.
NO : Go to Step 19.



STEP 19. Check position light (RH) connector A-36 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is position light (RH) connector A-36 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 position light (RH) illuminates normally.



STEP 20. Check the wiring harness between position light (RH) connector A-36 (terminal 1) and ground.

Q: Is the wiring harness between position light (RH) connector A-36 (terminal 1) and ground in good condition?

YES : Replace the position light socket (RH). Verify that the position 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 position light (RH) illuminates normally.

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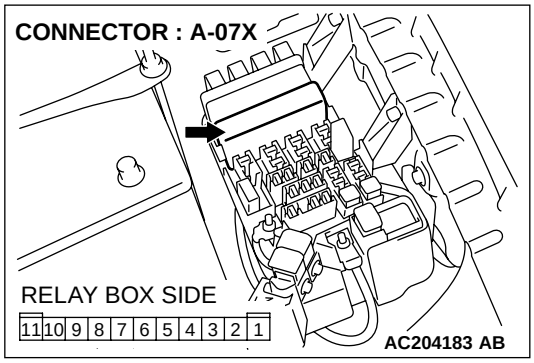
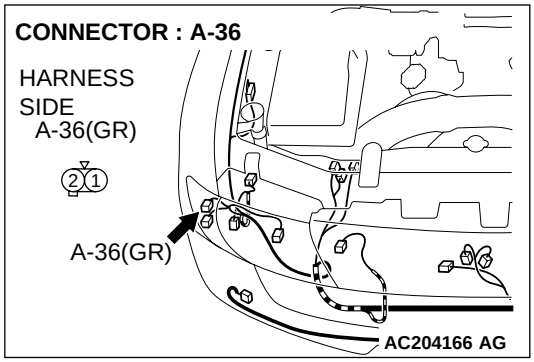


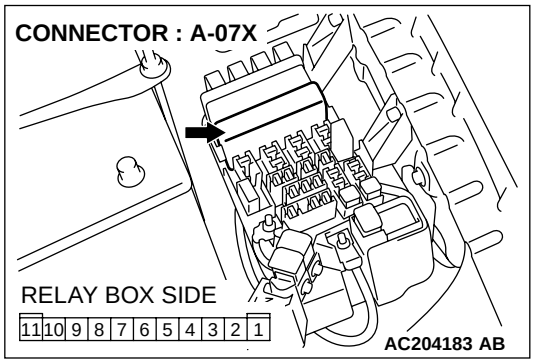


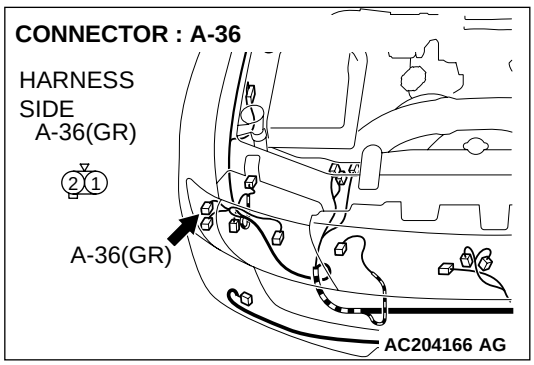
STEP 21. Check position light (RH) connector A-36 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are position light (RH) connector A-36 and front-ECU connector A-07X in good condition?

YES : Go to Step 22.

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





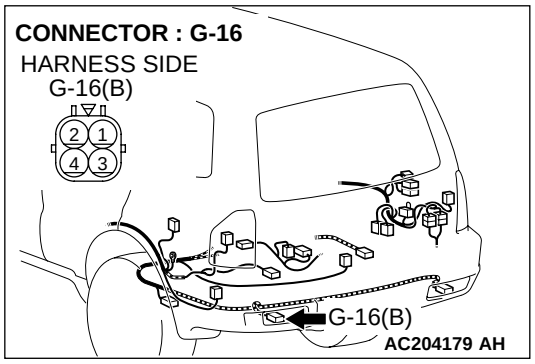
STEP 22. Check the wiring harness between position light (RH) connector A-36 (terminal 2) and front-ECU connector A-07X (terminal 8).

Q: Is the wiring harness between position light (RH) connector A-36 (terminal 2) and front-ECU connector A-07X (terminal 8) in good condition?

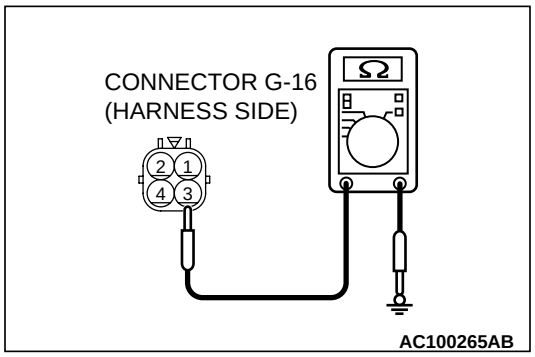
YES : No action is necessary and testing is complete.

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 position light (RH) illuminates normally.

STEP 23. Check the ground circuit to the taillight (LH). Test at rear light (LH) connector G-16.



(1) Disconnect rear light (LH) connector G-16 and measure the resistance available at the wiring harness side of the connector.

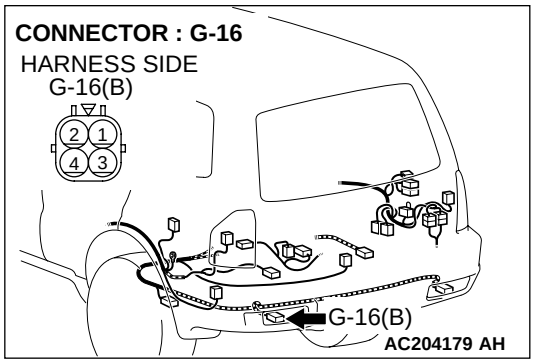


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : No action is necessary and testing is complete.
NO : Go to Step 24.

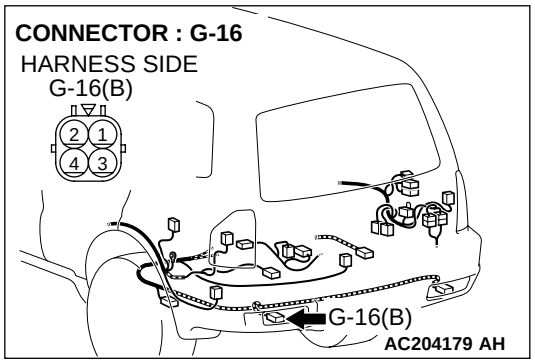
STEP 24. Check rear light (LH) connector G-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

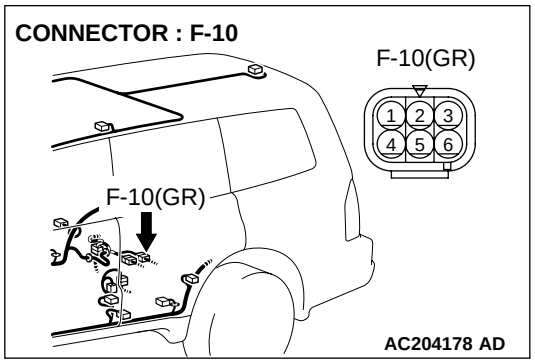


Q: Is rear light (LH) connector G-16 in good condition?

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 taillights illuminate normally.

STEP 25. Check the wiring harness between rear light (LH) connector G-16 (terminal 3) and ground.





NOTE: Also check intermediate connector F-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-10 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 light (LH) connector G-16 (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. Verify that the taillights illuminate normally.

STEP 26. Check the taillight bulb (LH).

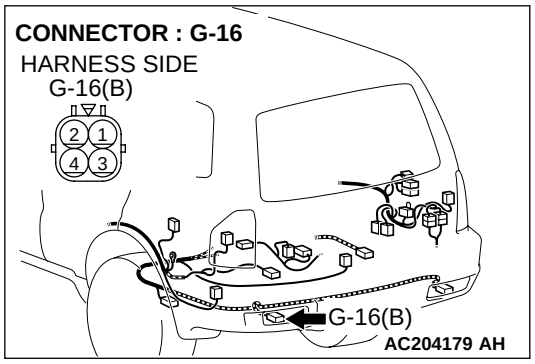
(1) Remove the taillight bulb (LH).
(2) Verify that the taillight bulb (LH) is not damaged or burned out.

Q: Is the taillight bulb (LH) in good condition?

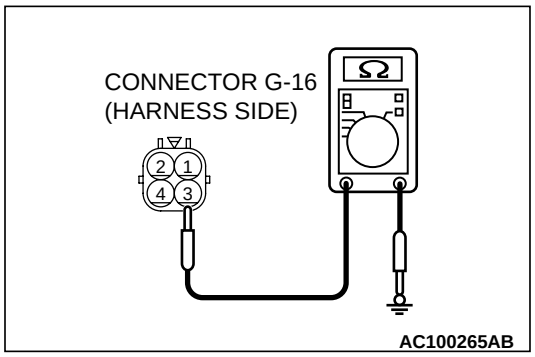
YES : Go to Step 27.

NO : Replace the taillight bulb (LH). Verify that the taillights (LH) illuminates normally.

STEP 27. Check the ground circuit to the taillight (LH). Test at rear light (LH) connector G-16.



(1) Disconnect rear light (LH) connector G-16 and measure the resistance available at the wiring harness side of the connector.

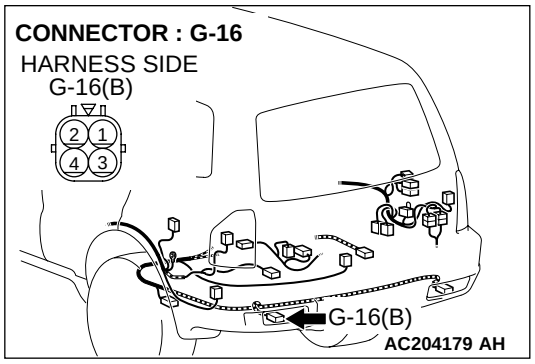


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 30.
NO : Go to Step 28.

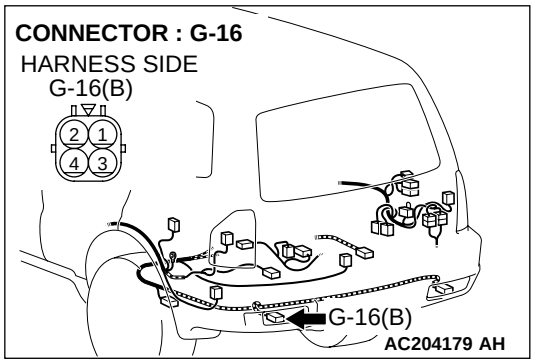
STEP 28. Check rear light (LH) connector G-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

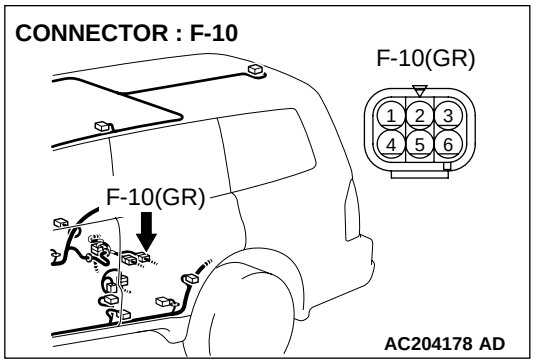


Q: Is rear light (LH) connector G-16 in good condition?

YES : Go to Step 29.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the taillights (LH) illuminates normally.

STEP 29. Check the wiring harness between rear light (LH) connector G-16 (terminal 3) and ground.



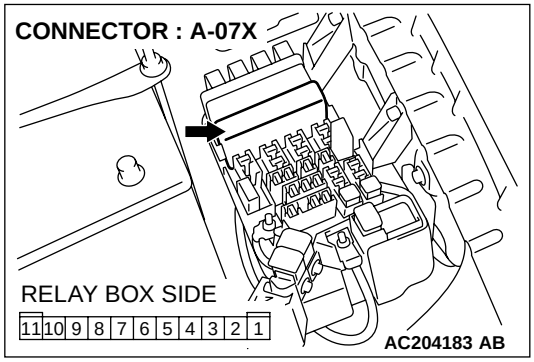


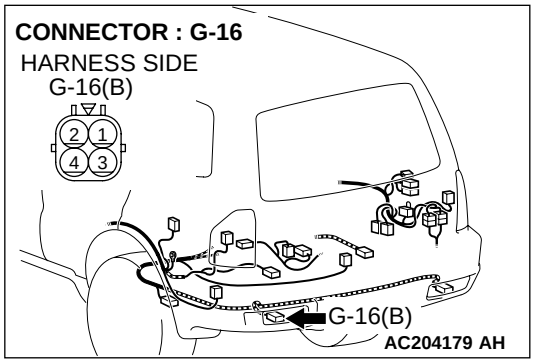
NOTE: Also check intermediate connector F-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-10 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear light (LH) connector G-16 (terminal 3) 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 taillights (LH) illuminates normally.





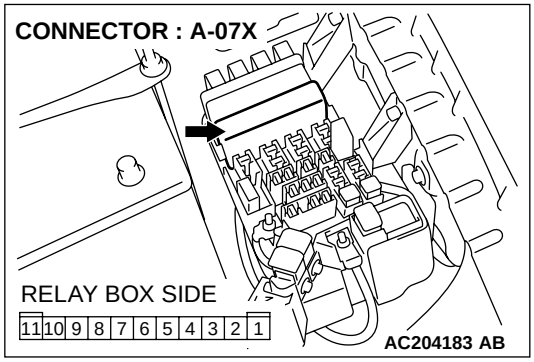
STEP 30. Check rear light (LH) connector G-16 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

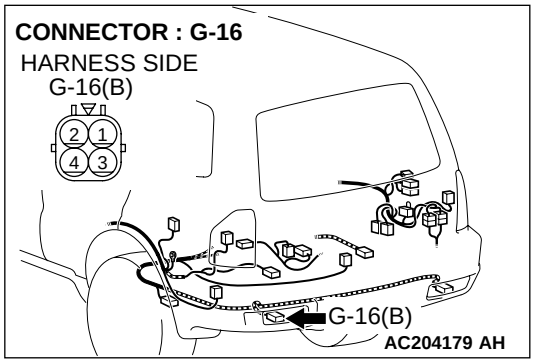
Q: Are rear light (LH) connector G-16 and front-ECU connector A-07X in good condition?

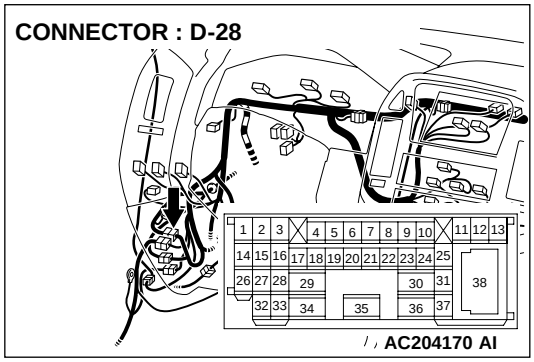
YES : Go to Step 31.

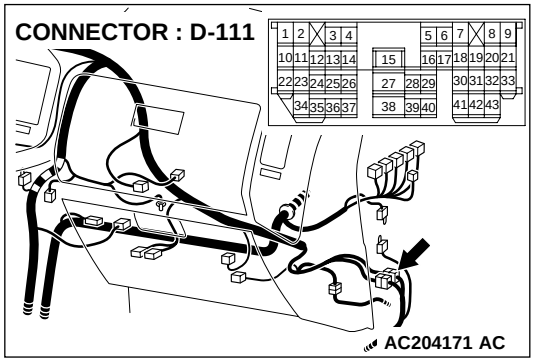
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the taillights (LH) illuminates normally.

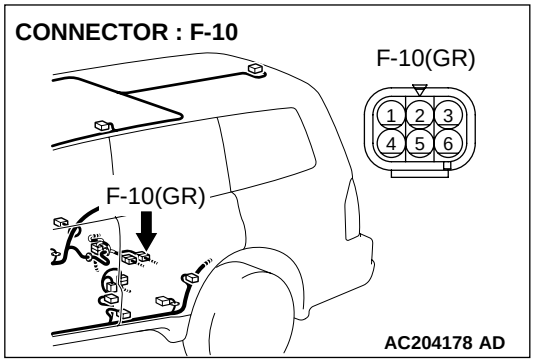
STEP 31. Check the wiring harness between rear light (LH) connector G-16 (terminal 1) and front-ECU connector A-07X (terminal 8).











NOTE: Also check intermediate connectors D-28, D-111 and F-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, D-111 or F-10 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 light (LH) connector G-16 (terminal 1) and front-ECU connector A-07X (terminal 8) in good condition?

YES : Replace the rear combination light socket (LH). Verify that the taillights (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 taillights (LH) illuminates normally.

STEP 32. Check the taillight bulb (RH).

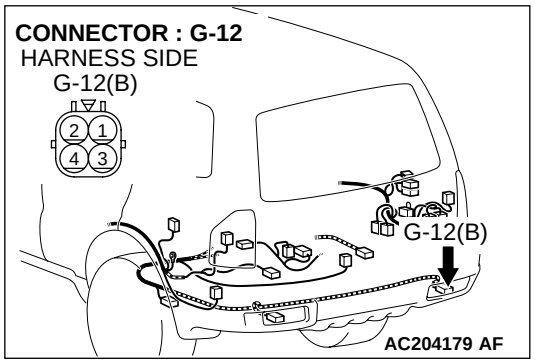
(1) Remove the taillight bulb (RH).
(2) Verify that the taillight bulb (RH) is not damaged or burned out.

Q: Is the taillight bulb (RH) in good condition?

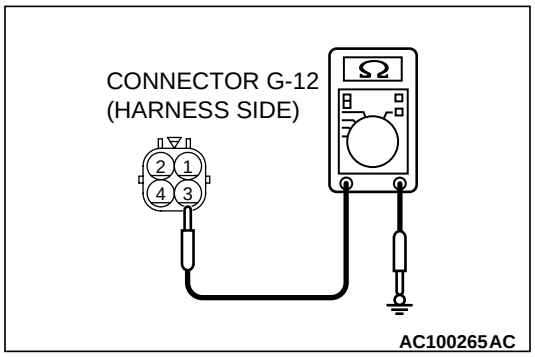
YES : Go to Step 33.

NO : Replace the taillight bulb (RH). Verify that the taillight (RH) illuminates normally.

STEP 33. Check the ground circuit to the taillight (RH). Test at rear light (RH) connector G-12.



(1) Disconnect rear light (RH) connector G-12 and measure the resistance available at the wiring harness side of the connector.

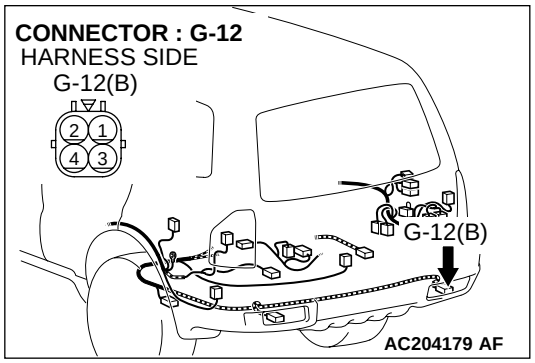


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 36.
NO : Go to Step 34.

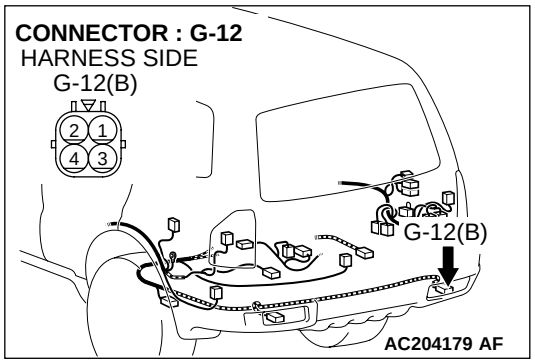
STEP 34. Check rear light (RH) connector G-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

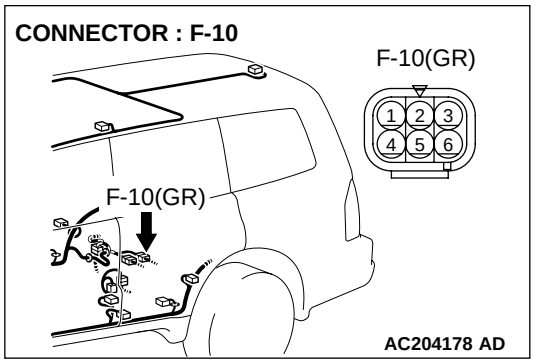


Q: Is rear light (RH) connector G-12 in good condition?

YES : Go to Step 35.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the taillight (RH) illuminates normally.

STEP 35. Check the wiring harness between rear light (RH) connector G-12 (terminal 3) and ground.



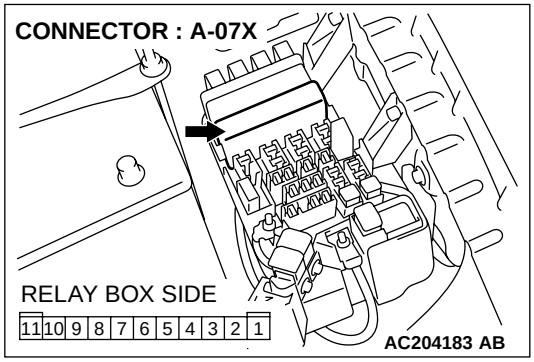


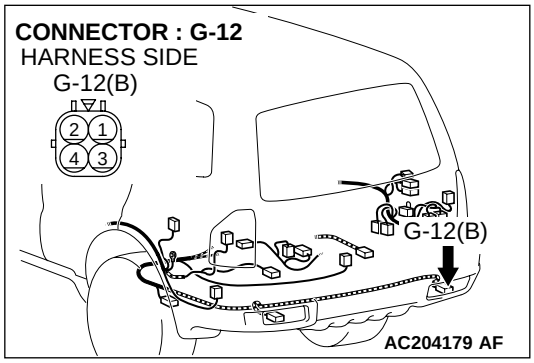
NOTE: Also check intermediate connector F-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-10 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear light (RH) connector G-12 (terminal 3) 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.





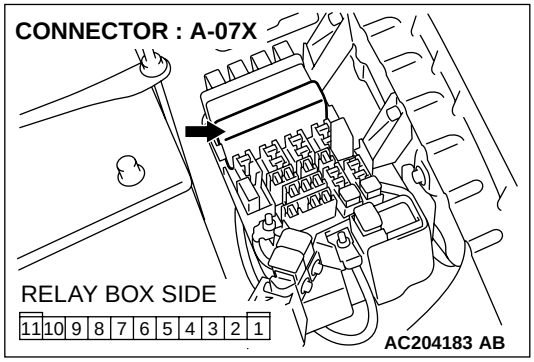
STEP 36. Check rear light (RH) connector G-12 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

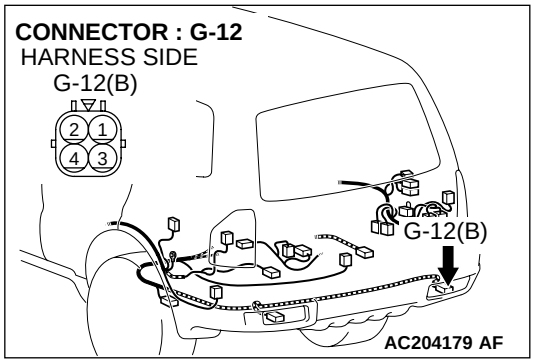
Q: Are rear light (RH) connector G-12 and front-ECU connector A-07X in good condition?

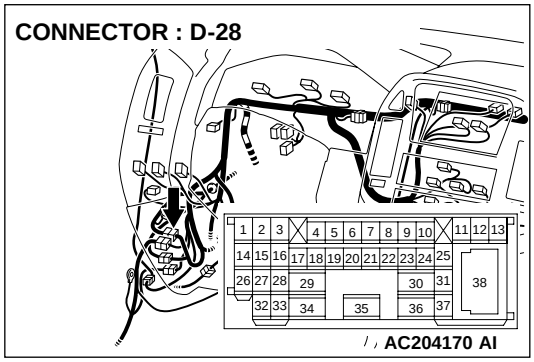
YES : Go to Step 37.

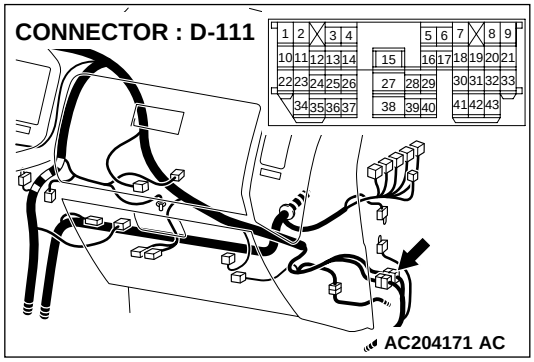
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the taillight (RH) illuminates normally.

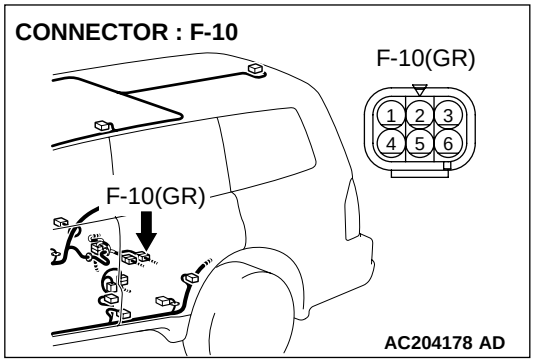
STEP 37. Check the wiring harness between rear light (RH) connector G-12 (terminal 1) and front-ECU connector A-07X (terminal 8).











NOTE: Also check intermediate connectors D-28, D-111 and F-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, D-111 or F-10 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 light (RH) connector G-12 (terminal 1) and front-ECU connector A-07X (terminal 8) in good condition?

YES : Replace the rear 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 38. Check the license plate light bulb.

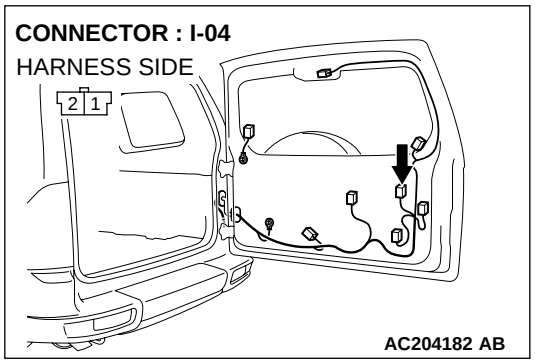
(1) Remove the license plate light bulb.
(2) Verify that the license plate light bulb is not damaged or burned out.

Q: Is the license plate light bulb in good condition?

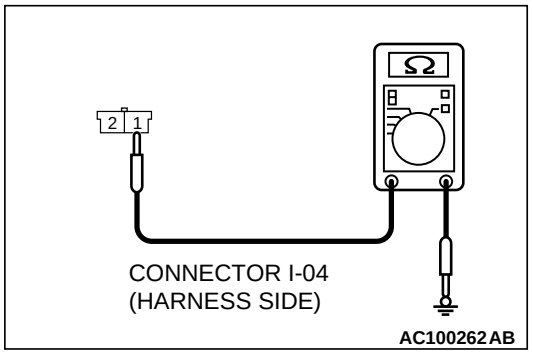
YES : Go to Step 39.

NO : Replace the license plate light bulb. Verify that the license plate light illuminate normally.

STEP 39. Check the ground circuit to the license plate light. Test at license plate light assembly connector I-04.



(1) Disconnect license plate light assembly connector I-04 and measure the resistance available at the wiring harness side of the connector.

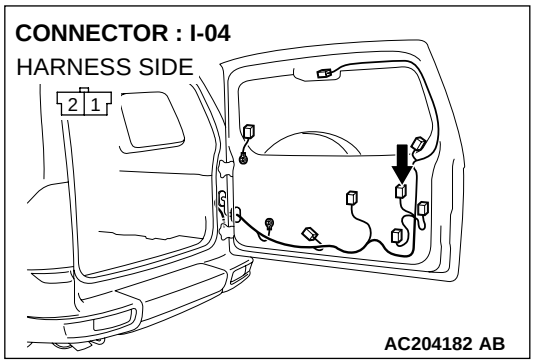


(2) Measure the resistance value between terminal 1 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 42.
NO : Go to Step 40.

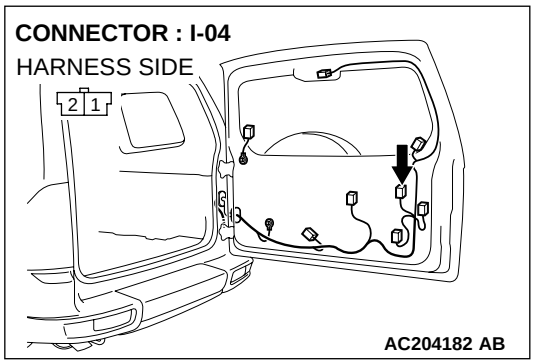
STEP 40. Check license plate light assembly connector I-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is license plate light assembly connector I-04 in good condition?

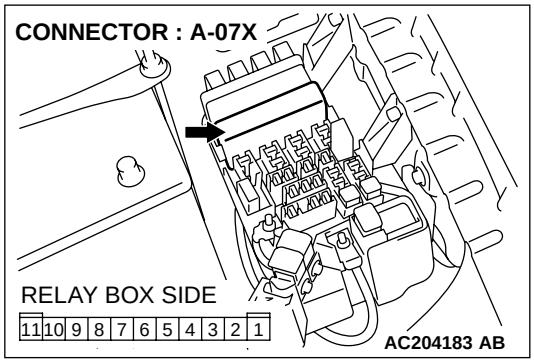
YES : Go to Step 41.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the license plate lights illuminate normally.

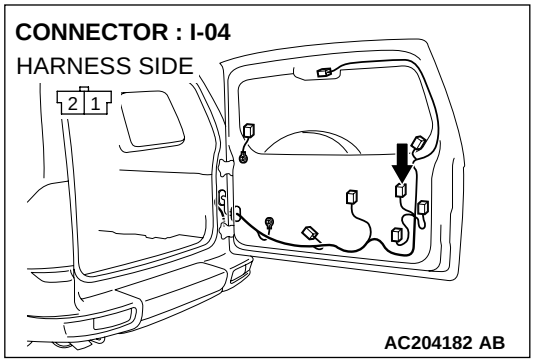
STEP 41. Check the wiring harness between license plate light assembly connector I-04 (terminal 1) and ground.



Q: Is the wiring harness between license plate light assembly connector I-04 (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 license plate lights illuminate normally.





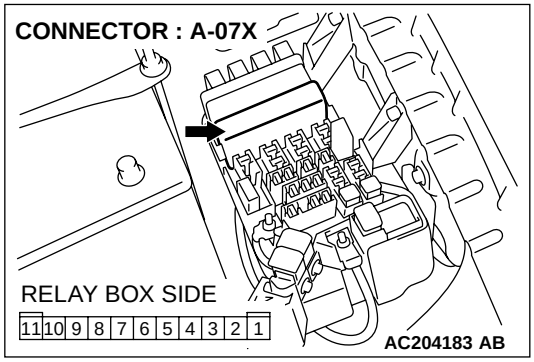
STEP 42. Check license plate light assembly connector I-04 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

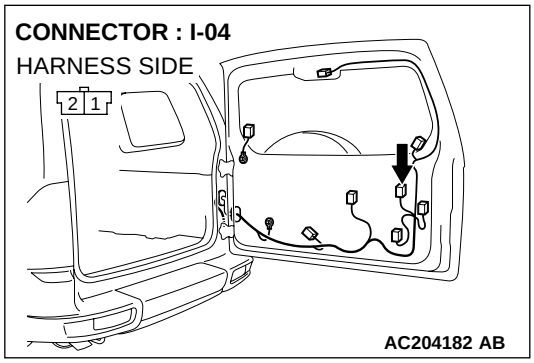
Q: Are license plate light assembly connector I-04 and front-ECU connector A-07X in good condition?

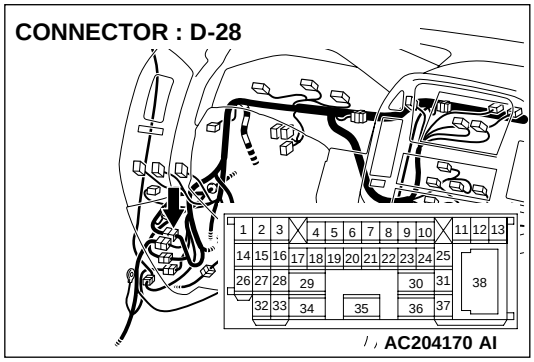
YES : Go to Step 43.

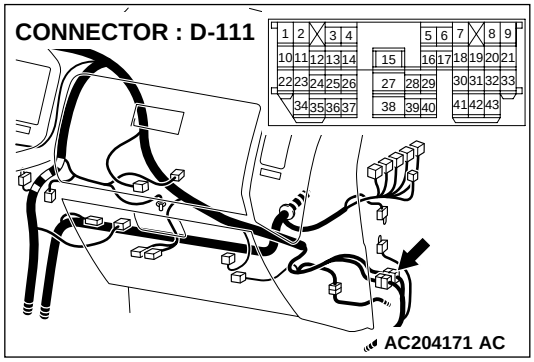
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the license plate lights illuminate normally.

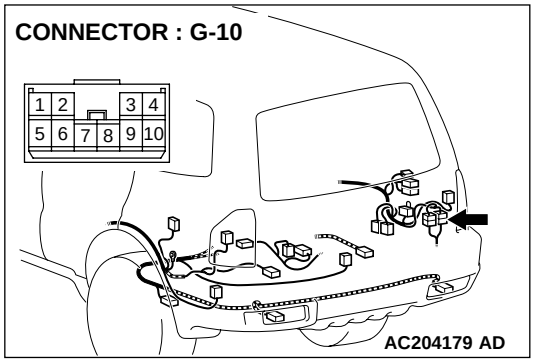
STEP 43. Check the wiring harness between license plate light assembly connector I-04 (terminal 2) and front-ECU connector A-07X (terminal 8).











NOTE: Also check intermediate connectors D-28, D-111 and G-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, D-111 or G-10 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 assembly connector l-04 (terminal 2) and front-ECU connector A-07X (terminal 8) 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 lights illuminate normally.

STEP 44. Check the side marker light bulb (LH).

(1) Remove the side marker light bulb (LH).

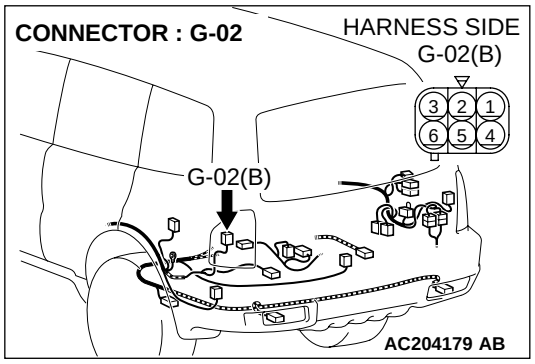
(2) Verify that the side marker light bulb (LH) is not damaged or burned out.

Q: Is the side marker light bulb (LH) in good condition?

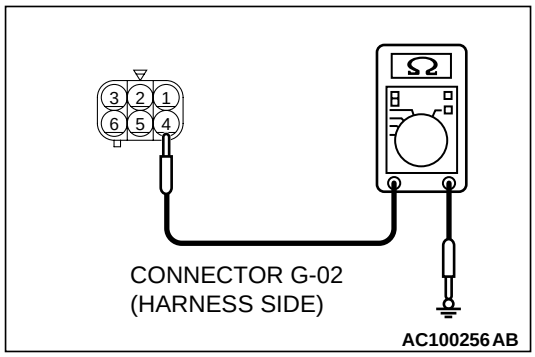
YES : Go to Step 45.

NO : Replace the side marker light bulb (LH). Verify that the side marker lights (LH) illuminates normally.

STEP 45. Check the ground circuit to the side marker light (LH). Test at side marker light (LH) connector G-02.



(1) Disconnect side marker light (LH) connector G-02 and measure the resistance available at the wiring harness side of the connector.

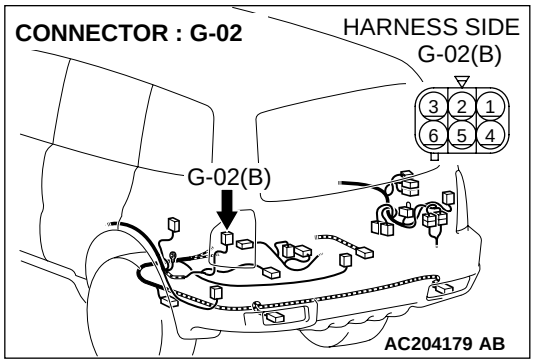


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 48.
NO : Go to Step 46.

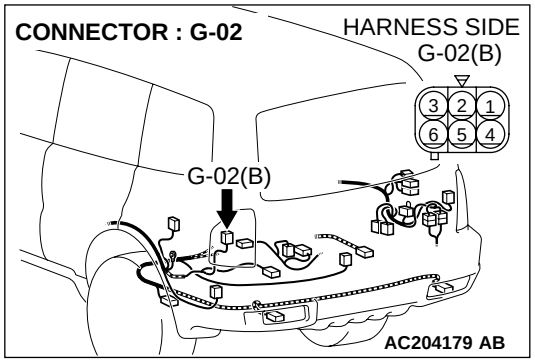
STEP 46. Check side marker light (LH) connector G-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is side marker light (LH) connector G-02 in good condition?

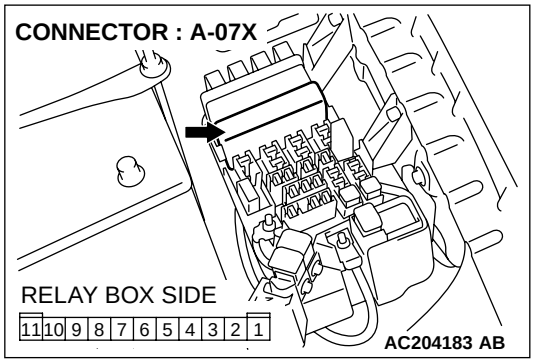
YES : Go to Step 47.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the side marker lights (LH) illuminates normally.

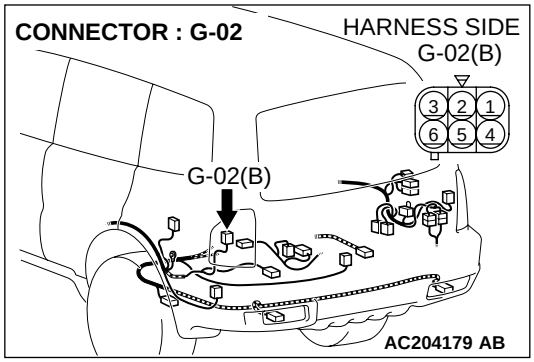
STEP 47. Check the wiring harness between side marker light (LH) connector G-02 (terminal 4) and ground.



Q: Is the wiring harness between side marker light (LH) connector G-02 (terminal 4) and ground in good condition?

YES : Replace the side marker light socket. Verify that the 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 side marker light (LH) illuminates normally.





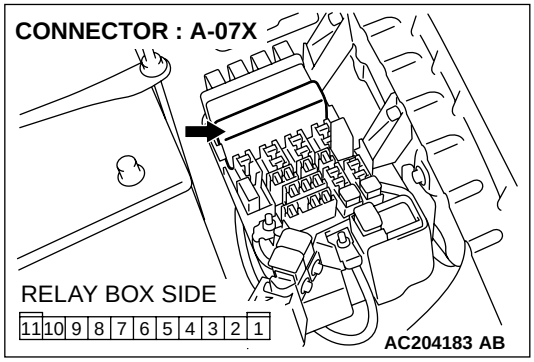
STEP 48. Check side marker light (LH) connector G-02 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

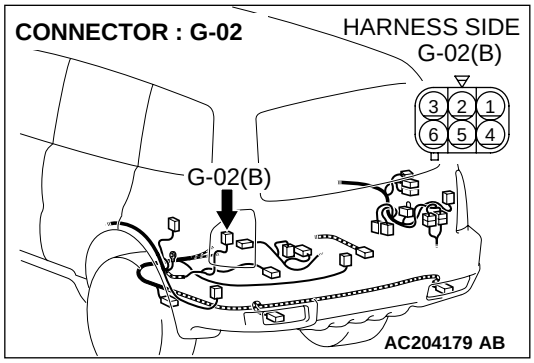
Q: Are side marker light (LH) connector G-02 and front-ECU connector A-07X in good condition?

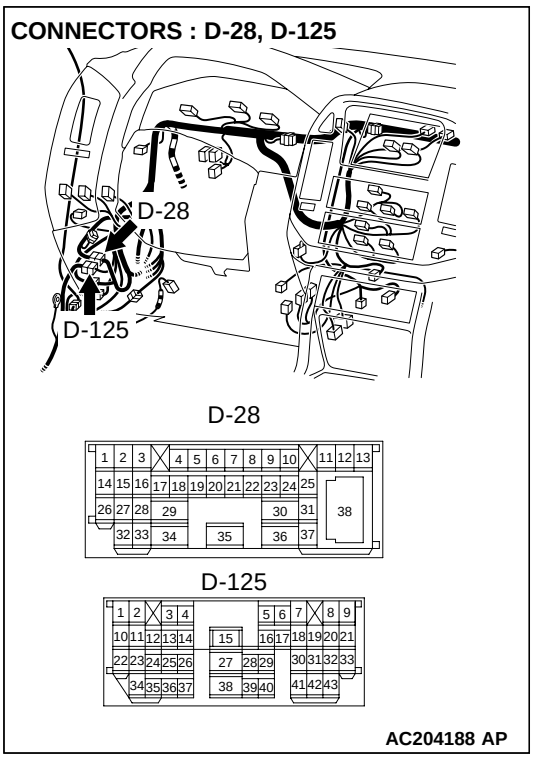
YES : Go to Step 49.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the side marker light (LH) illuminates normally.

STEP 49. Check the wiring harness between side marker light (LH) connector G-02 (terminal 1) and front-ECU connector A-07X (terminal 8).







NOTE: Also check intermediate connectors D-28 and D-125 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or D-125 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 side marker light (LH) connector G-02 (terminal 1) and front-ECU connector A-07X (terminal 8) in good condition?

YES : Replace the license plate light socket. Verify that the 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 side marker light (LH) illuminates normally.

STEP 50. Check the side marker light bulb (RH).

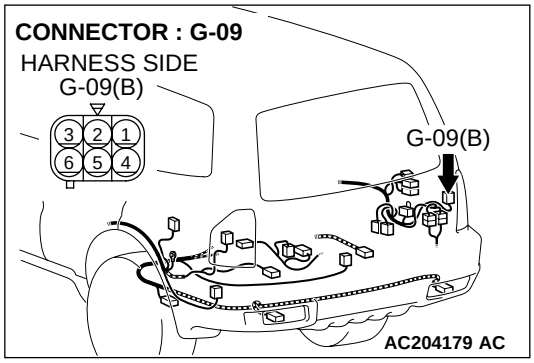
(1) Remove the side marker light bulb (RH).
(2) Verify that the side marker light bulb (RH) is not damaged or burned out.

Q: Is the side marker light bulb (RH) in good condition?

YES : Go to Step 51.
NO : Replace the side marker light bulb (RH). Verify that the side marker lights (RH) illuminates normally.

STEP 51. Check the ground circuit to the side marker light (RH). Test at side marker light (RH) connector G-09.

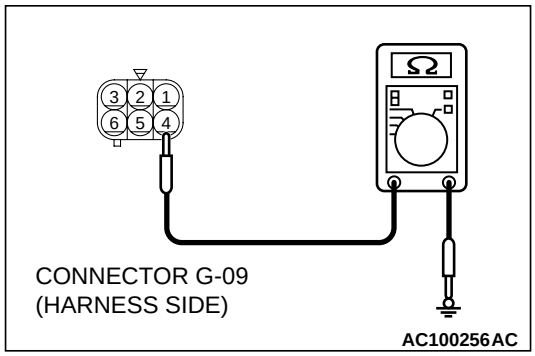
(1) Disconnect side marker light (RH) connector G-09 and measure the resistance available at the wiring harness side of the connector.



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

Q: Is the measured resistance 2 ohms or less?

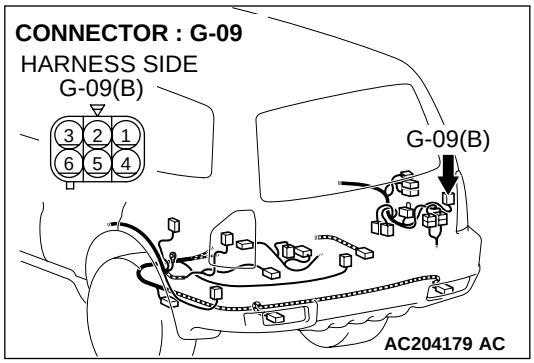
YES : Go to Step 54.
NO : Go to Step 52.

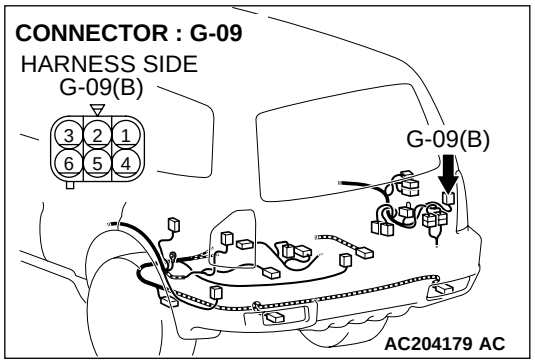


STEP 52. Check side marker light (RH) connector G-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is side marker light (RH) connector G-09 in good condition?

YES : Go to Step 53.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the side marker light (RH) illuminates normally.



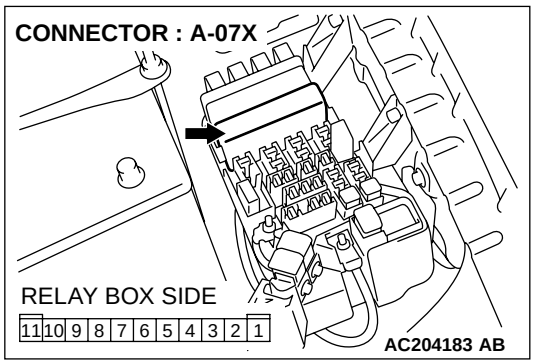


STEP 53. Check the wiring harness between side marker light (RH) connector G-09 (terminal 4) and ground.

Q: Is the wiring harness between side marker light (RH) connector G-09 (terminal 4) and ground in good condition?

YES : Replace the license plate light socket. Verify that the 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 side marker light (RH) illuminates normally.

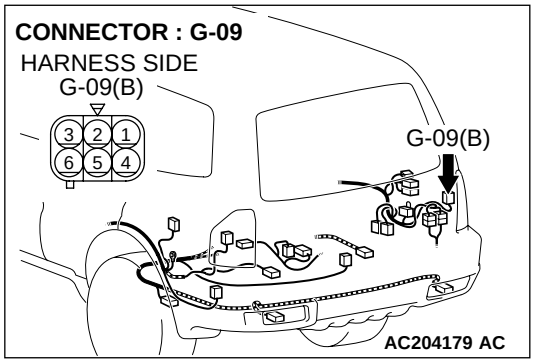


STEP 54. Check side marker light (RH) connector G-09 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

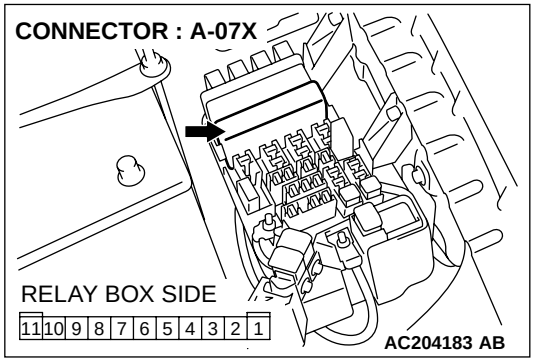
Q: Are side marker light (RH) connector G-09 and front-ECU connector A-07X in good condition?

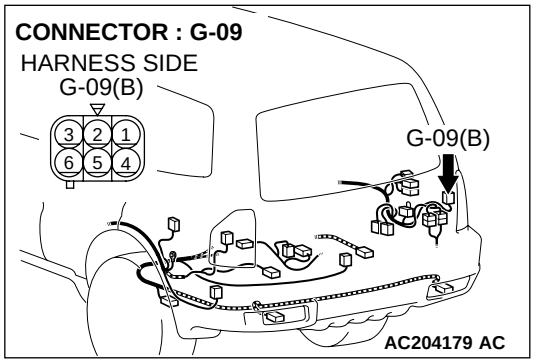
YES : Go to Step 55.

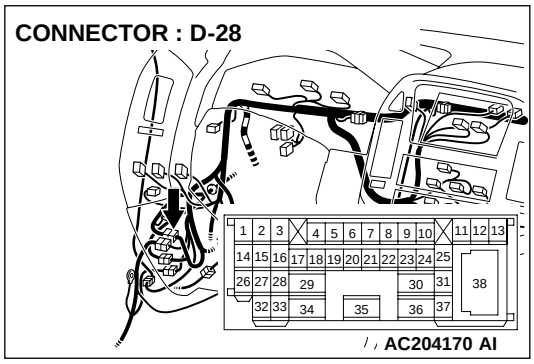
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the side marker light (RH) illuminates normally.

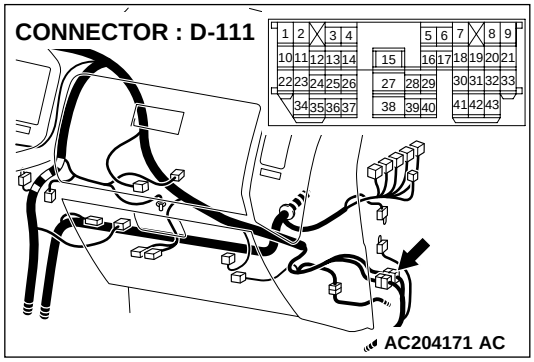


STEP 55. Check the wiring harness between side marker light (RH) connector G-09 (terminal 1) and front-ECU connector A-07X (terminal 8).









NOTE: Also check intermediate connectors D-28 and D-111 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or D-111 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2**.*

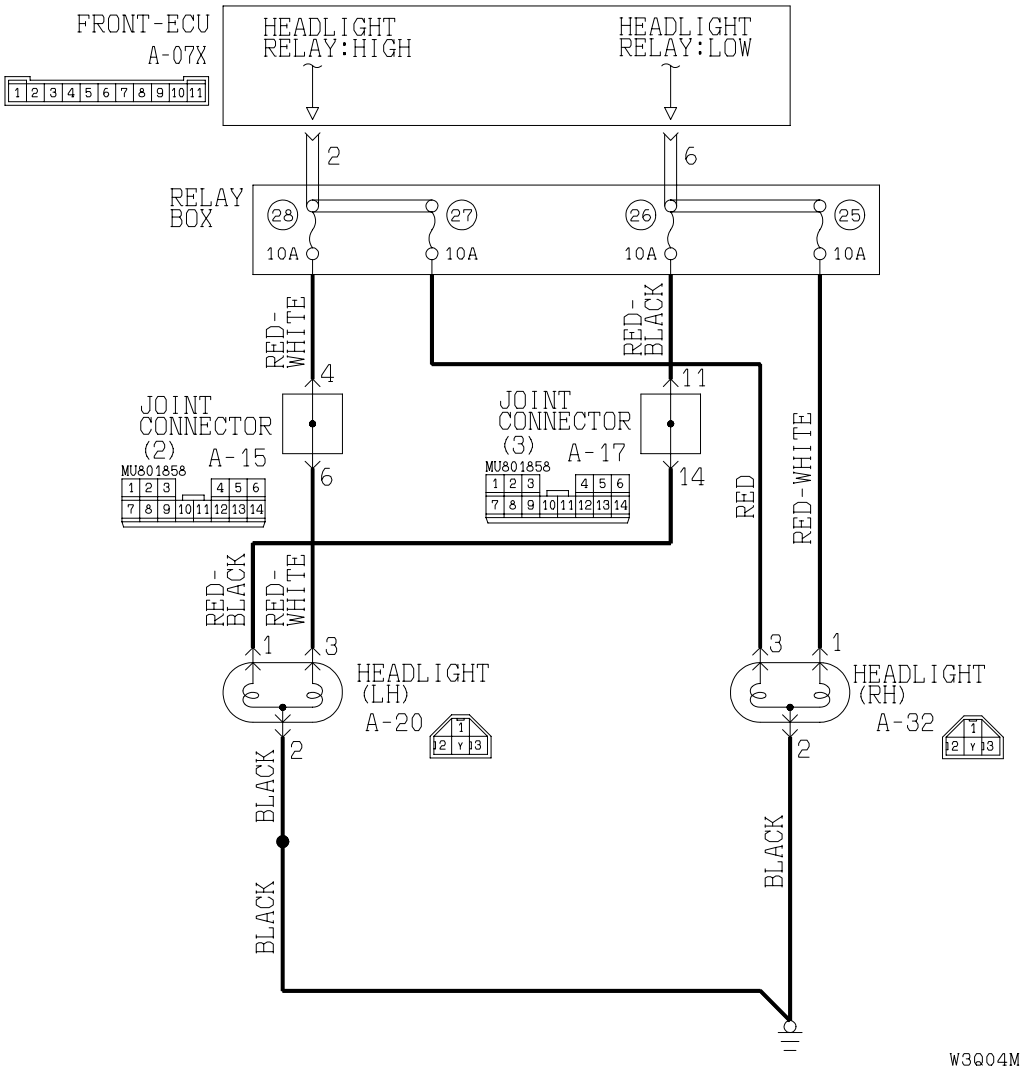
Q: Is the wiring harness between side marker light (RH) connector G-09 (terminal 1) and front-ECU connector A-07X (terminal 8) in good condition?

YES : Replace the license plate light socket. Verify that the 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 side marker light (RH) illuminates normally.

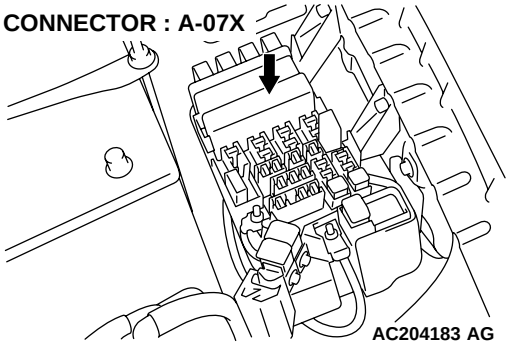
Inspection Procedure J-7: Headlight and Taillight: One of the headlights does not illuminate.

Headlights Circuit



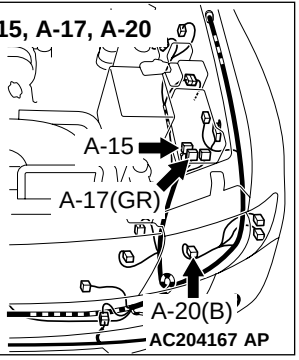
W3Q04M10AA

CONNECTOR : A-07X



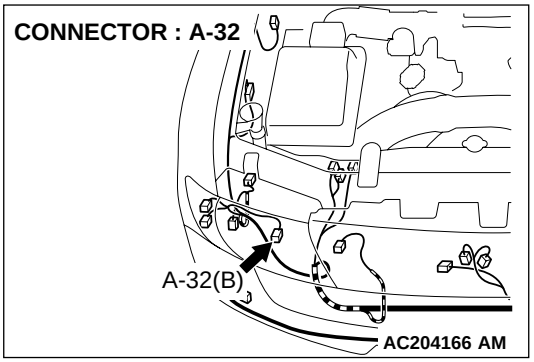
AC204183 AG

CONNECTORS : A-15, A-17, A-20



AC204167 AP

TSB Revision



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: Test Harness Set

STEP1. Check the headlight operation.

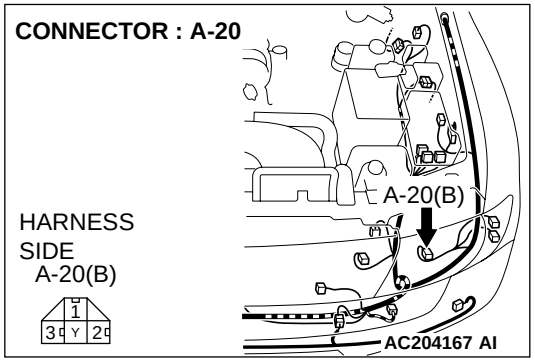
Q: Which of the headlights does not illuminate?

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 J-2 "headlights (low-beam) do not illuminate P.54Bb-308."
High beam only (both RH and LH) : Refer to Inspection Procedure J-3 "headlights (high-beam) do not illuminate P.54Bb-313."

STEP 2. 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 3.
NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

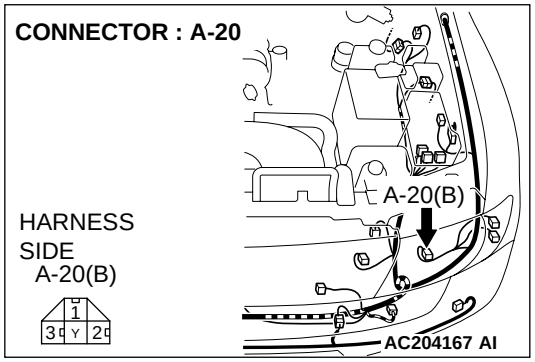


STEP 3. Check headlight (LH) connector A-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (LH) connector A-20 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 illuminate normally.



STEP 4. Check the wiring harness between headlight (LH) connector A-20 (terminal 2) and ground.

Q: Is the wiring harness between headlight (LH) connector A-20 (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) bulb.

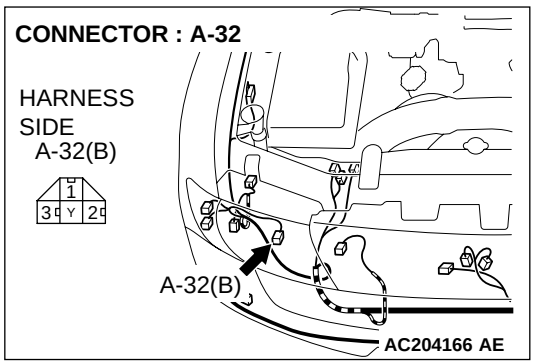
(1) Remove the headlight (RH) bulb.

(2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 6.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.

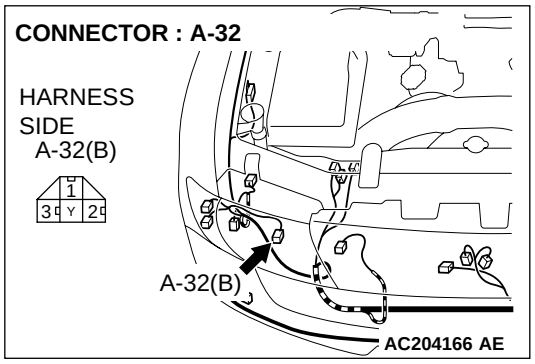


STEP 6. Check headlight (RH) connector A-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (RH) connector A-32 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 headlights illuminate normally.



STEP 7. Check the wiring harness between headlight (RH) connector A-32 (terminal 2) and ground.

Q: Is the wiring harness between headlight (RH) connector A-32 (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) 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 9.

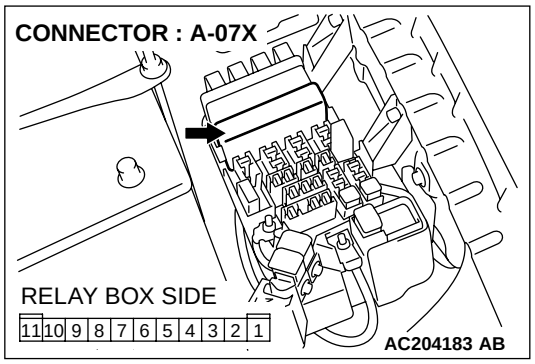
NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

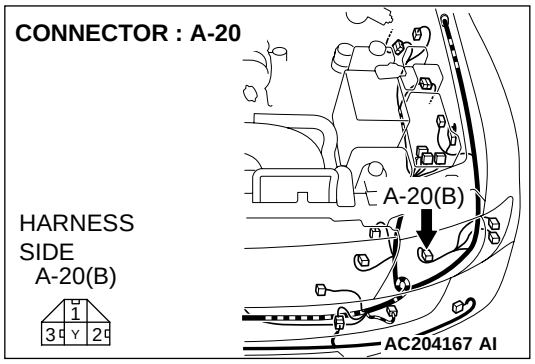
STEP 9. Check headlight (LH) connector A-20 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (LH) connector A-20 and front-ECU connector A-07X 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 headlights illuminate normally.





STEP 10. Check the wiring harness between headlight (LH) connector A-20 (terminal 1) and front-ECU connector A-07X (terminal 6).

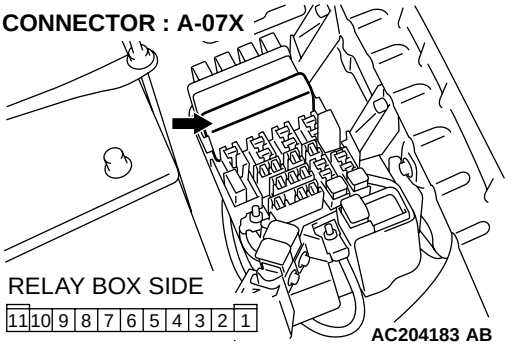
NOTE: Also check joint connector A-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector A-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between headlight (LH) connector A-20 (terminal 1) and front-ECU connector A-07X (terminal 6) in good condition?

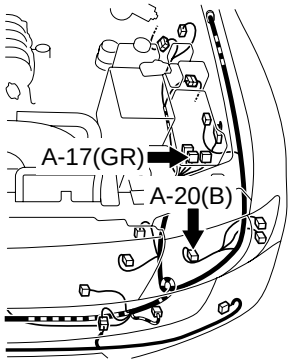
YES : No action is necessary and testing is complete.

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.

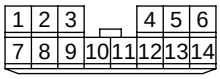
CONNECTOR : A-07X



CONNECTORS : A-17, A-20



A-17



HARNESS SIDE
A-20(B)

AC204185 AE

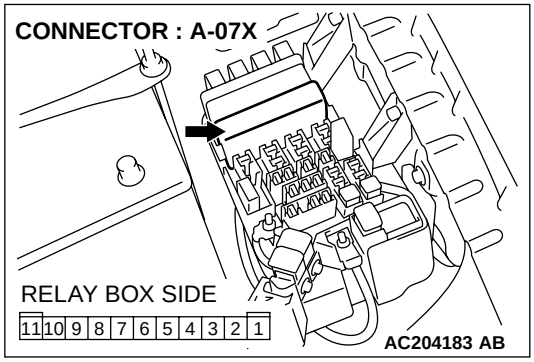
STEP 11. Check headlight (RH) bulb.

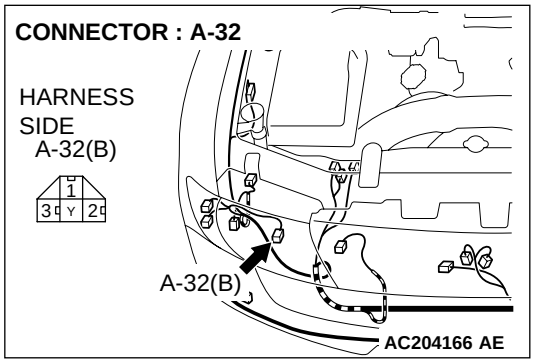
(1) Remove the headlight (RH) bulb.
(2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 12.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.



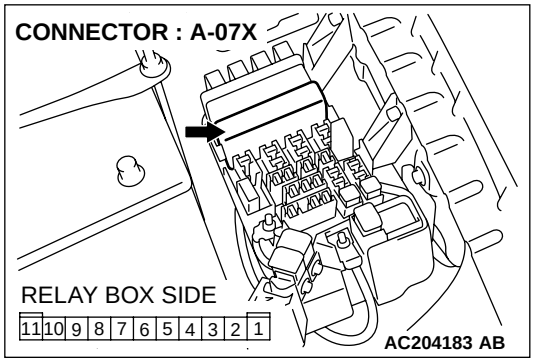


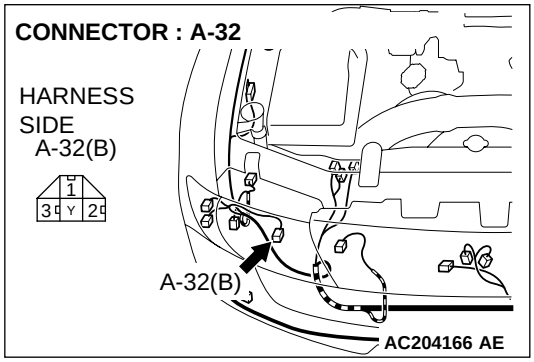
STEP 12. Check headlight (RH) connector A-32 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-32 and front-ECU connector A-07X 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 headlights illuminate normally.





STEP 13. Check the wiring harness between headlight (RH) connector A-32 (terminal 1) and front-ECU connector A-07X (terminal 6).

Q: Is the wiring harness between headlight (RH) connector A-32 (terminal 1) and front-ECU connector A-07X (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) bulb.

(1) Remove the headlight (LH) bulb.
(2) Verify that the headlight (LH) bulb is not damaged or burned out.

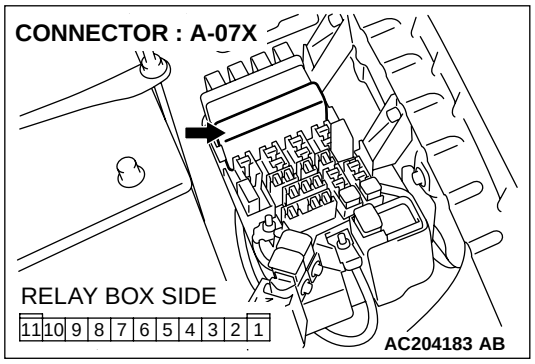
Q: Is headlight (LH) bulb normal?

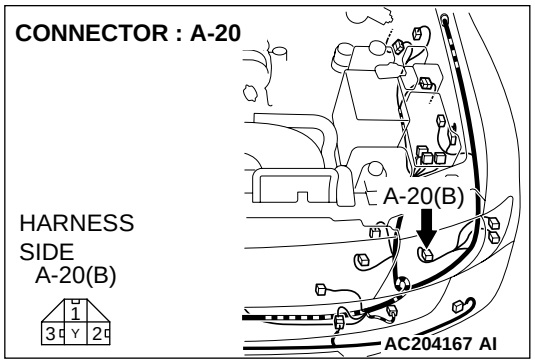
YES : Go to Step 15.
NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

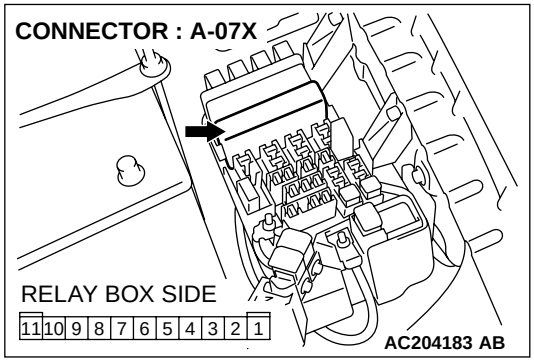
STEP 15. Check headlight (LH) connector A-20 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

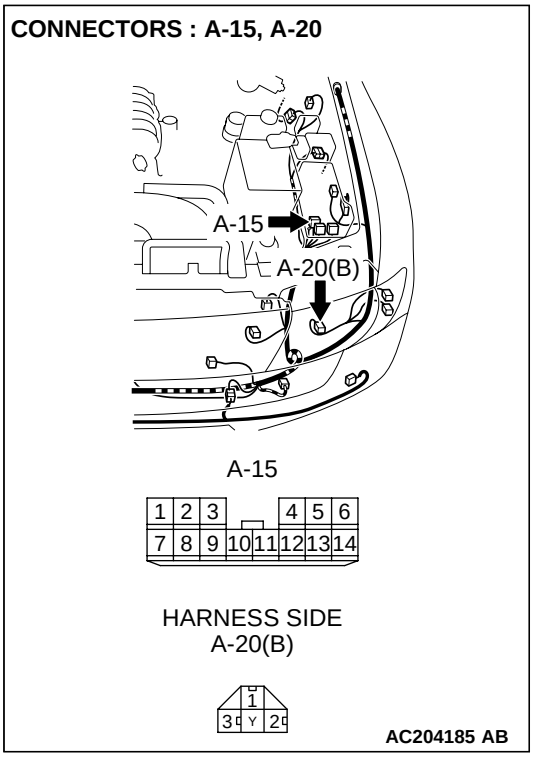
Q: Are headlight (LH) connector A-20 and front-ECU connector A-07X in good condition?

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 headlights illuminate normally.









STEP 16. Check the wiring harness between headlight (LH) connector A-20 (terminal 3) and front-ECU connector A-07X (terminal 2).

NOTE: Also check joint connector A-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector A-15 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 headlight (LH) connector A-20 (terminal 3) and front-ECU connector A-07X (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 headlights illuminate normally.

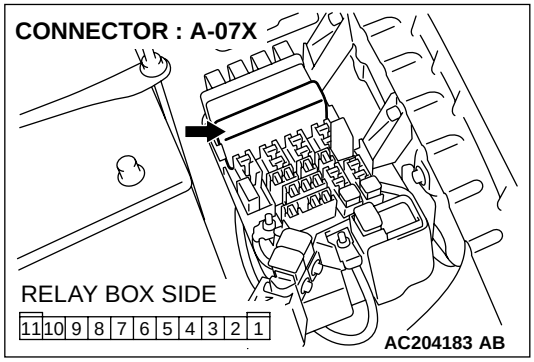
STEP 17. Check headlight (RH) bulb.

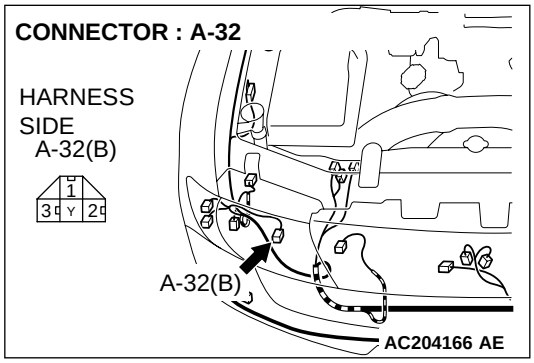
(1) Remove the headlight (RH) bulb.
(2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 18.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.



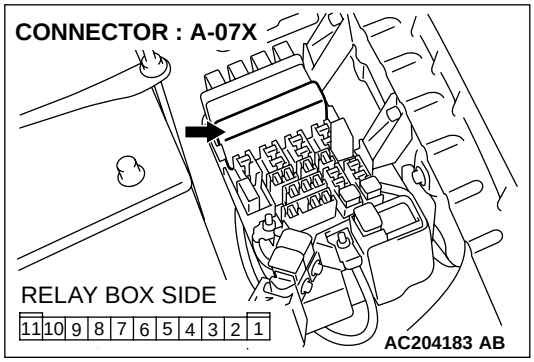


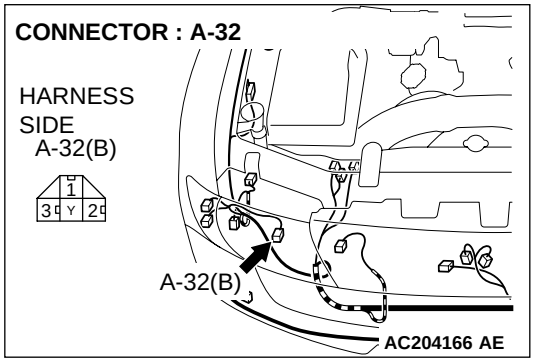
STEP 18. Check headlight (RH) connector A-32 and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-32 and front-ECU connector A-07X 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 headlights illuminate normally.





STEP 19. Check the wiring harness between headlight (RH) connector A-32 (terminal 3) and front-ECU connector A-07X (terminal 2).

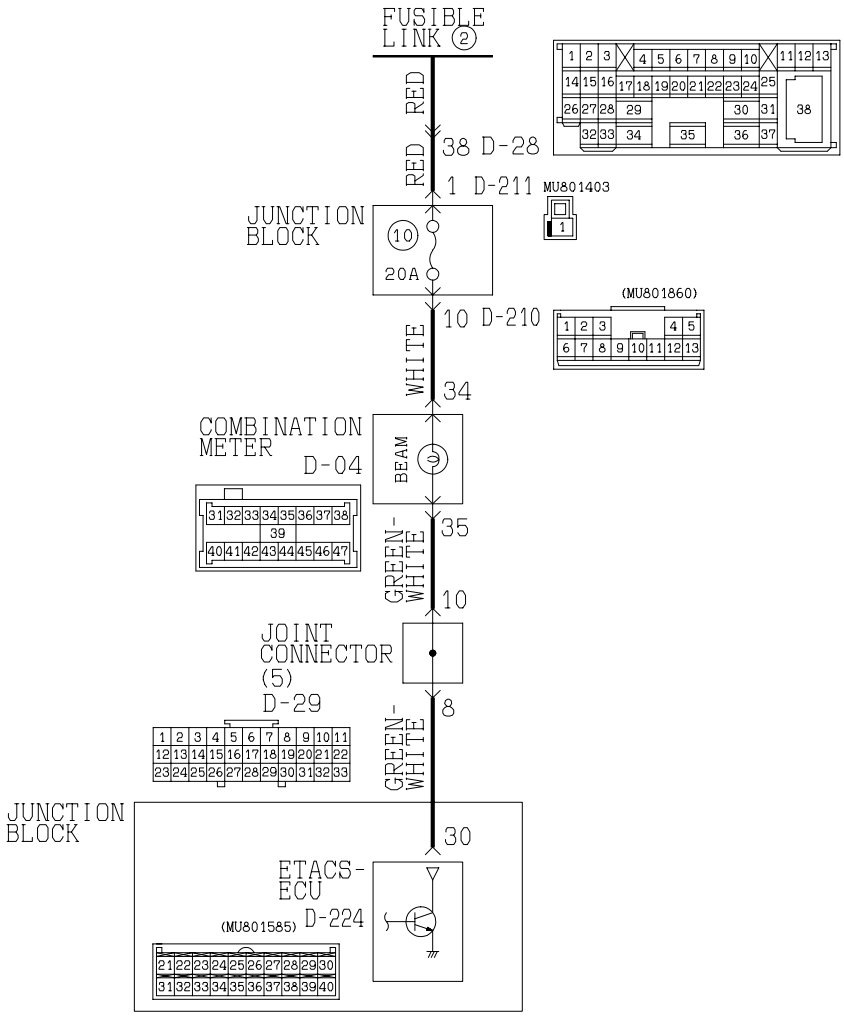
Q: Is the wiring harness between headlight (RH) connector A-32 (terminal 3) and front-ECU connector A-07X (terminal 2) in good condition?

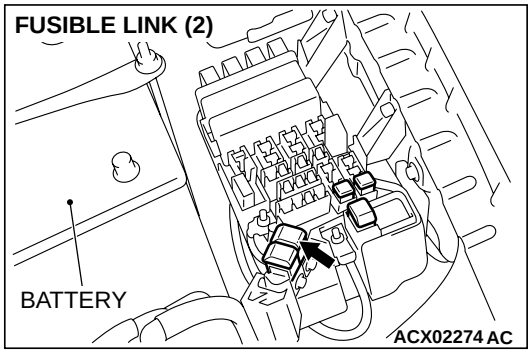
YES : No action is necessary and testing is complete.

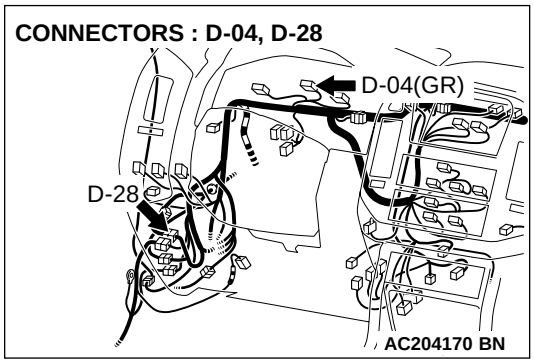
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.

Inspection Procedure J-8: Headlight and Taillight: The high-beam indicator light does not illuminate.

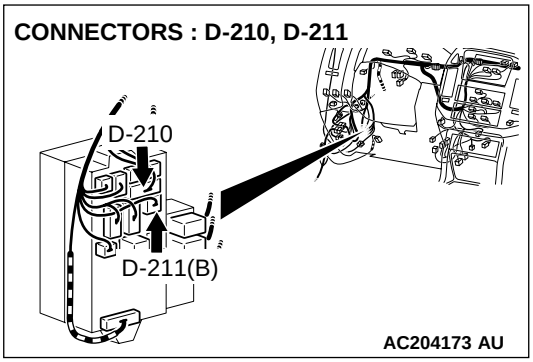
High-beam Indicator Light Circuit

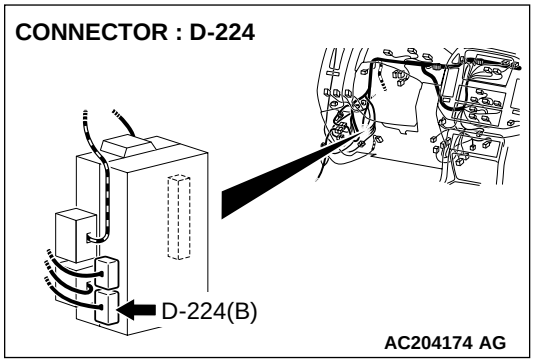






TSB Revision





TECHNICAL DESCRIPTION (COMMENT)

If the high-beam indicator light does not illuminate, the high-beam indicator light bulb or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The high-beam indicator light bulb 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 Tool:

- MB991223: Harness Set

STEP 1. Verify the headlight operation.

Q: Do the headlights illuminate?

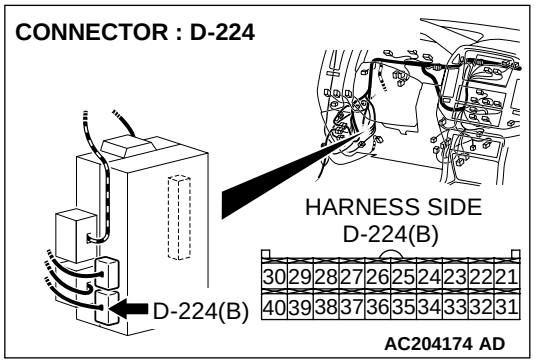
YES : Go to Step 2.

NO : Repair the headlights first (Refer to P.54Bb-2).

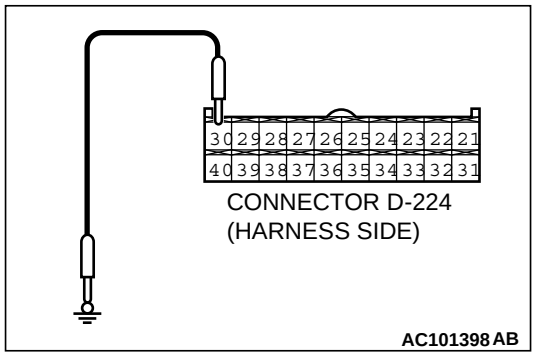
STEP 2. Check at ETACS-ECU connector D-224 in order to check the high-beam indicator light circuit.

(1) Disconnect ETACS-ECU connector D-224, and measure at the wiring harness side.

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



(3) Connect terminal 30 to ground.



Q: Does the high-beam indicator light illuminate?

YES : Replace the ETACS-ECU. Verify that the high-beam indicator light illuminates normally.

NO : Go to Step 3.

STEP 3. Check high-beam indicator light bulb.

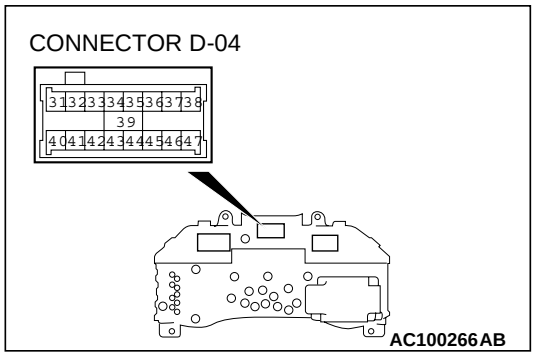
(1) Remove the high-beam indicator light bulb.
(2) Verify that the high-beam indicator light bulb is not damaged or burned out.

Q: Is the high-beam indicator light normal?

YES : Go to Step 4.
NO : Replace the bulb. Verify that the high-beam indicator light illuminates normally.

STEP 4. Check the combination meter (printed-circuit board).

(1) Remove the combination meter. Refer to GROUP 54A, Combination Meters Assembly And Vehicle Speed Sensor P.54A-65.
(2) Remove the high-beam indicator light bulb. Then measure the resistance value between the bulb terminals.
(3) Install the bulb to the combination meter, and then measure the resistance value between connector D-04 terminals 34 and 35. The measured resistance value should be roughly the same as the value measured in Step (2).

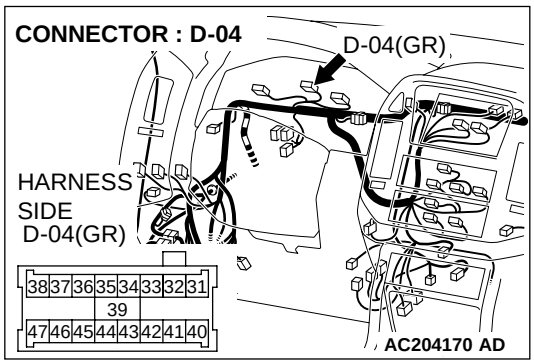


Q: Are these two resistance values extremely different?

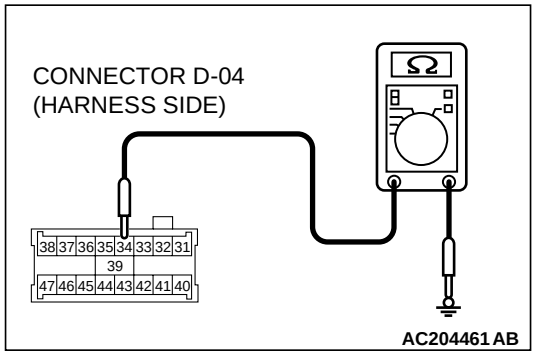
YES : Repair or replace the combination meter (printed circuit board). Verify that the headlight-beam indicator light illuminates normally.
NO (roughly the same) : Go to Step 5.

STEP 5. Check the fusible link (2) line of the power supply circuit to the combination meter. Test at combination meter connector D-04.

(1) Disconnect combination meter connector D-04 and measure the voltage available at the wiring harness side of the connector.



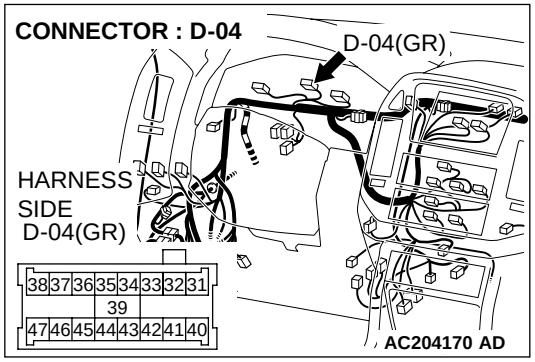
(2) Measure the voltage between terminal 34 and ground.
- The voltage should equal 12 volts (battery positive voltage).



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

YES : Go to Step 8.
NO : Go to Step 6.

TSB Revision



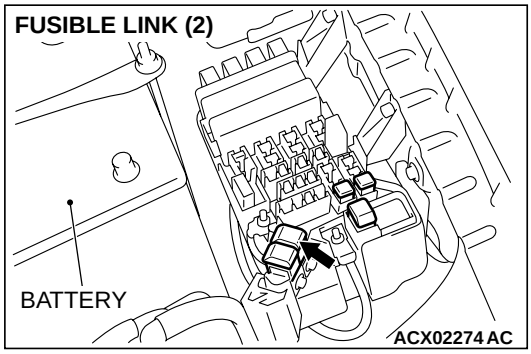
STEP 6. Check combination meter connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

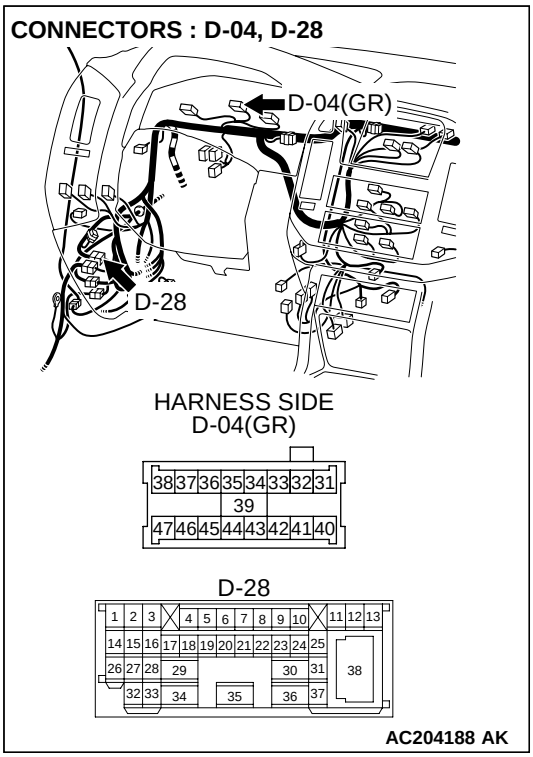
Q: Is combination meter connector D-04 in good condition?

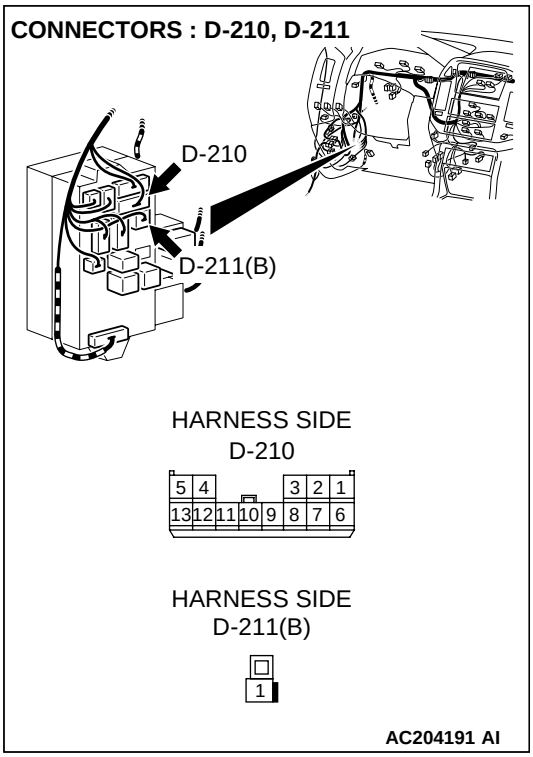
YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the high-beam indicator light illuminates normally.

STEP 7. Check the wiring harness between combination meter connector D-04 (terminal 34) and the fusible link (2).







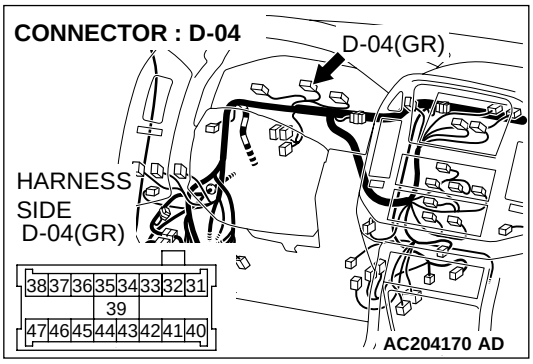
NOTE: Also check junction block connectors D-210, D-211 and intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-210, D-211 or intermediate connector D-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

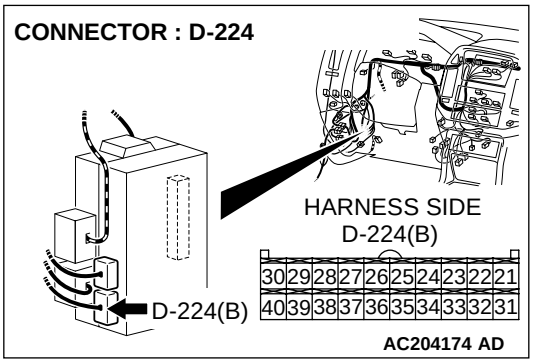
Q: Is the wiring harness between combination meter connector D-04 (terminal 34) and the fusible link (2) in good condition?

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 high-beam indicator light illuminates normally.

STEP 8. Check combination meter connector D-04 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

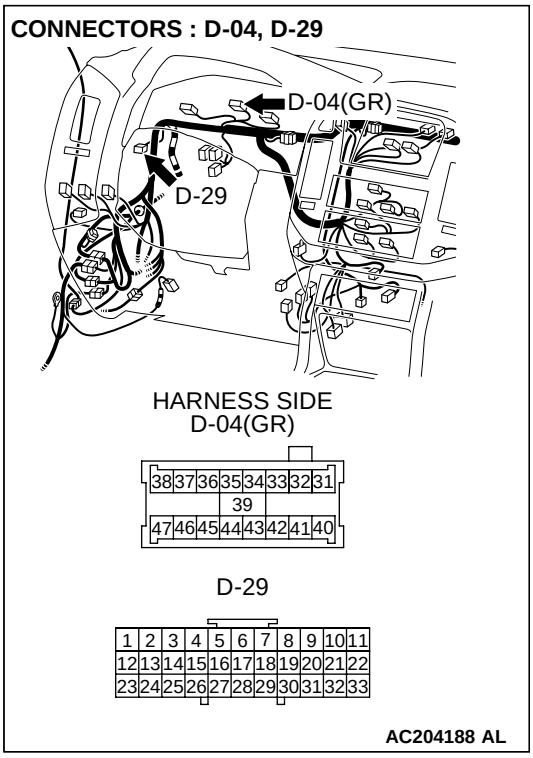


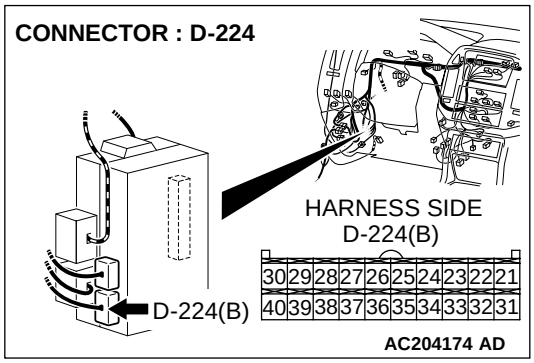


Q: Are combination meter connector D-04 and ETACS-ECU connector D-224 in good condition?

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 high-beam indicator light illuminates normally.





STEP 9. Check the wiring harness between combination meter connector D-04 (terminal 35) and ETACS-ECU connector D-224 (terminal 72).

NOTE: Also check joint connector D-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector D-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 combination meter connector D-04 (terminal 35) and ETACS-ECU connector D-224 (terminal 72) in good condition?

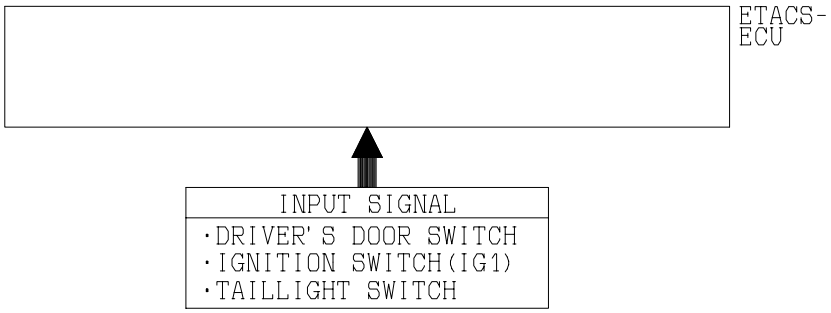
YES : No action is necessary and testing is complete.

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 high-beam indicator light illuminates normally.

INSPECTION PROCEDURE J-9: Headlight and Taillight: Headlight automatic shutdown function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Headlight Automatic Shutt-down Function



CIRCUIT OPERATION
The ETACS-ECU operates the headlight automatic shutdown function according to the following signals:
- Ignition switch (IG1)
- Driver's door switch
- Taillight switch
- Headlight switch

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
- The driver's door switch may be defective
- The column switch (lighting and turn-signal switch) may be defective
- The ETACS-ECU may be defective
- The front-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

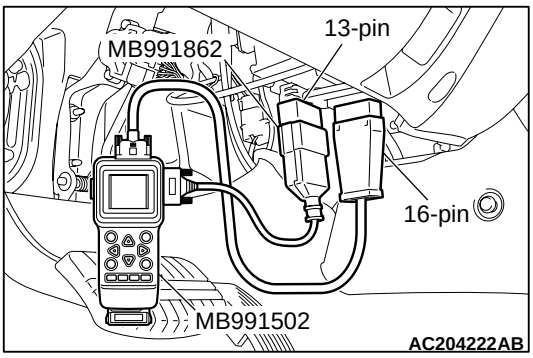
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Verify the configuration function operation.

Q: Has the headlight automatic shutdown function been enabled by means of the adjustment function?

YES : Go to Step 2.
NO : Enable the headlight automatic shutdown function been by means of the adjustment function. Refer to P.54Ba-26.

TSB Revision



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" to "OFF"
- Lighting switch: "TAIL" or "HEAD"

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

(1) Connect scan tool MB991502 to the data link connector (16-pin).

(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).

(3) Operate scan tool MB991502 according to the procedure below to display "H/L AUTO-CUT."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "LIGHTING."
6. Select "H/L AUTO-CUT."

(4) Check that normal conditions are displayed on 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 on 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: Are normal conditions displayed on the "TAILLIGHT SW", "IG SW (IG1)", "FRONT DOOR SW" and "H/L AUTO-CUT"?

YES : Replace the front-ECU. Verify that the headlight automatic shutdown function now works normally.

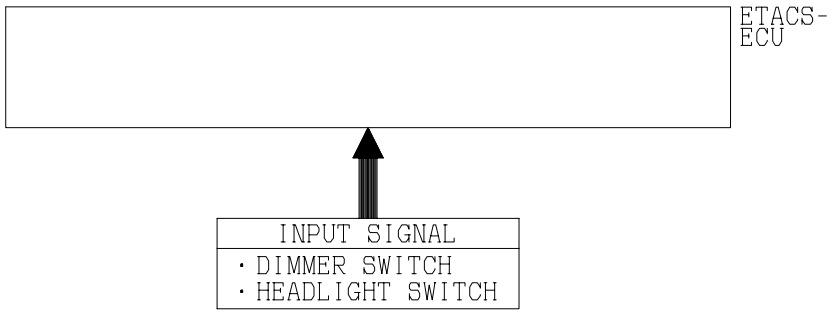
NO :
- Normal condition is not displayed on the "TAIL LIGHT SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the taillight switch P.54Bc-31."
- Normal condition is not displayed on the "IG SW (IG1)": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."
- Normal condition is not displayed on the "FRONT

DOOR SW": Refer to Inspection Procedure O-5 "ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch P.54Bc-23."

- Normal condition is not displayed on the "H/L AUTO-CUT": Replace the front-ECU. Verify that the headlight automatic shutdown function now works normally.

INSPECTION PROCEDURE J-10: Headlight and Taillight: Headlight dimmer switch automatic resetting function does not work normally.

Headlight (Dimmer/Passing) Input Signal



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CIRCUIT OPERATION
The headlight dimmer switch automatic resetting function is controlled by the front-ECU.

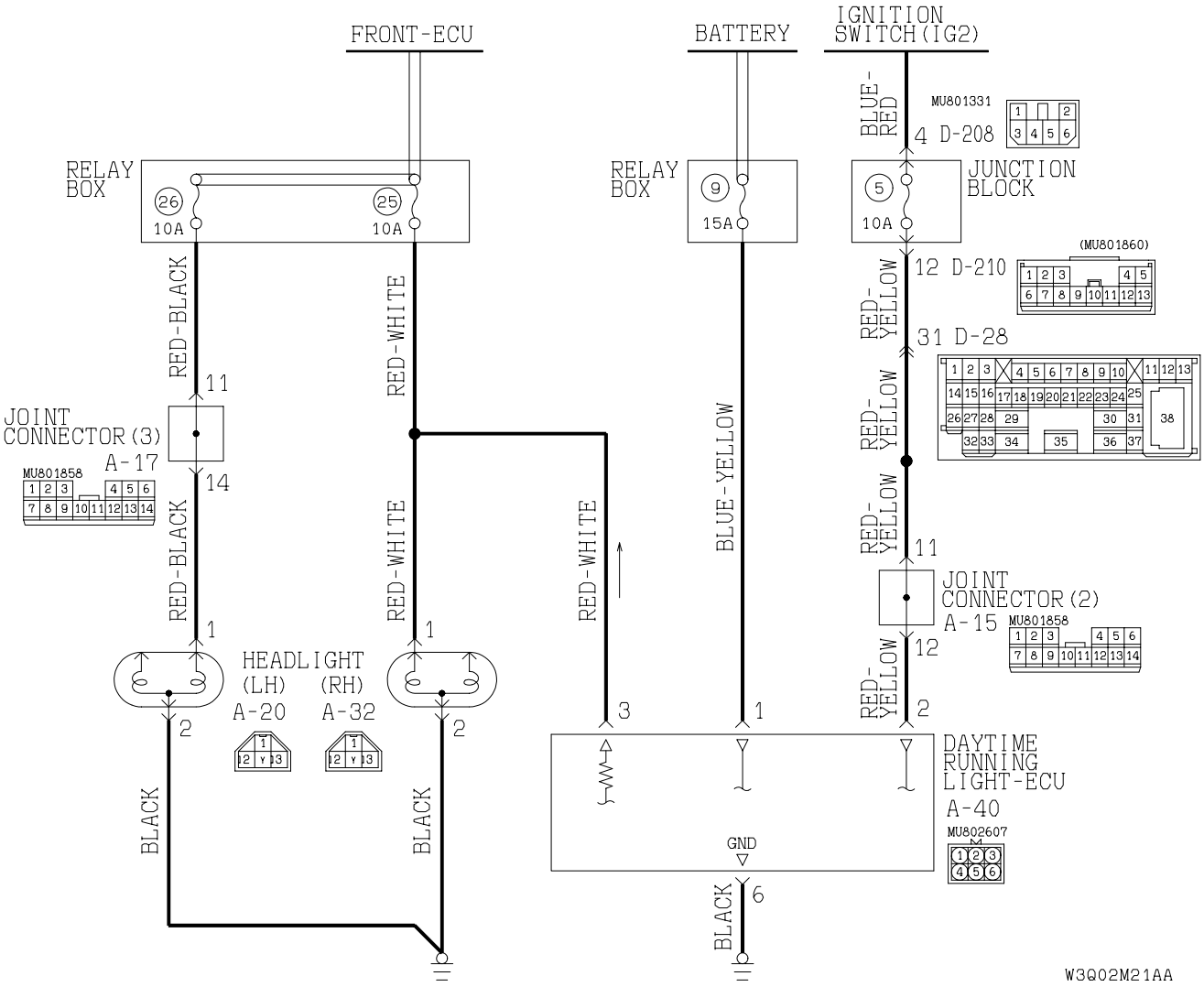
TECHNICAL DESCRIPTION (COMMENT)
If the headlight dimmer switch automatic resetting function does not work normally, the front-ECU may be defective.

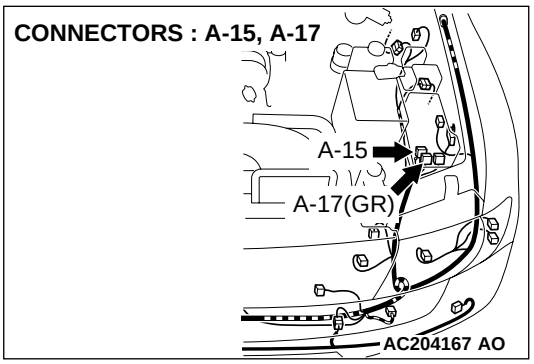
TROUBLESHOOTING HINT
The front-ECU may be defective

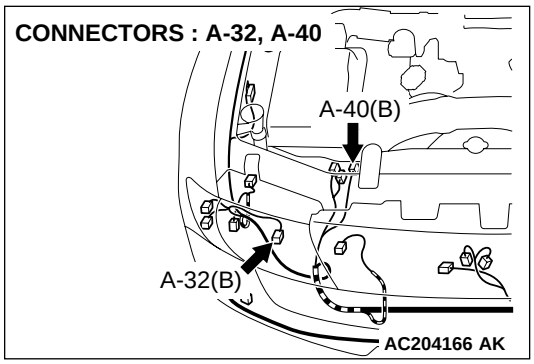
DIAGNOSIS
Replace the front-ECU.
Verify that the headlight dimmer switch automatic resetting function now works normally.

INSPECTION PROCEDURE J-11: Headlight and Taillight: Daytime running light function does not work normally. <vehicles for Canada>

Daytime Running Light Circuit







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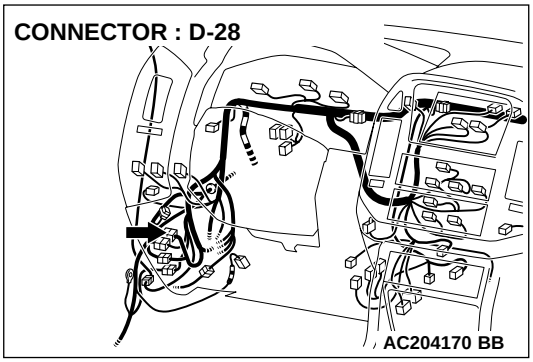
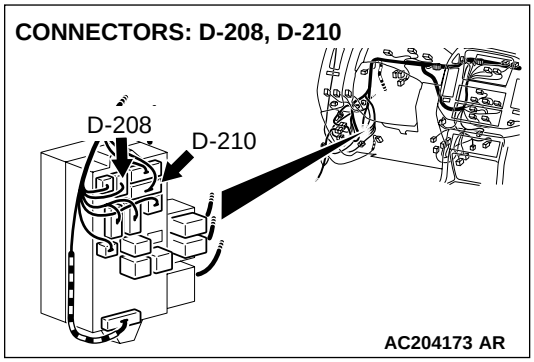




TECHNICAL DESCRIPTION (COMMENT)

If the daytime running light function is not operating normally the daytime running light-ECU power circuit may be defective or the daytime running light-ECU may be defective.

TROUBLESHOOTING HINTS

- The daytime running light-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
- MB991502: Scan Tool (MUT-II)

STEP 1. Verify the headlight (low-beam) operation.

Check to see that the headlight (low-beam) lights up properly when operating the lighting switch while the headlight switch is ON.

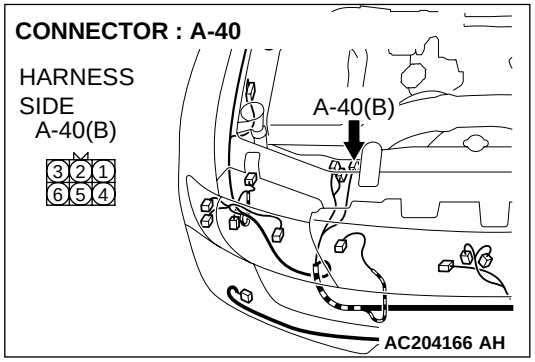
Q: Do the headlights (low-beam) illuminate normally?

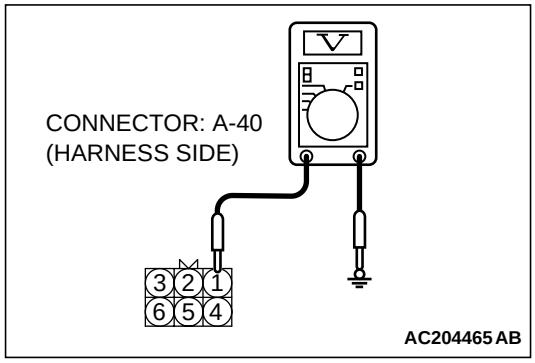
YES : Go to Step 2.

NO : Refer to Inspection Procedure J-7 "One of the headlights does not illuminate P.54Bb-357."

STEP 2. Check the battery power supply circuit to the daytime running light-ECU. Test at daytime running light-ECU connector A-40.

(1) Disconnect daytime running light-ECU connector A-40 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).

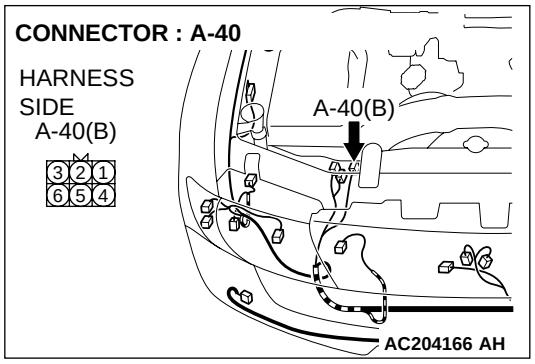
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

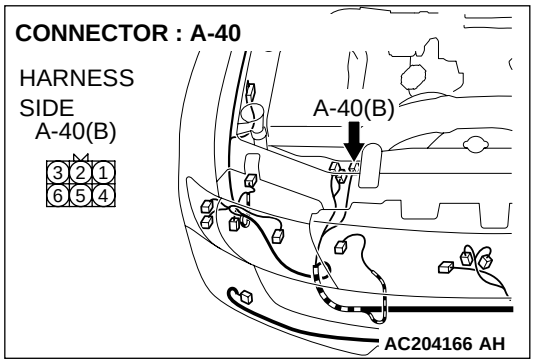
YES : Go to Step 5.
NO : Go to Step 3.

STEP 3. Check daytime running light-ECU connector A-40 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is daytime running light-ECU connector A-40 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 daytime running light function should now work normally.



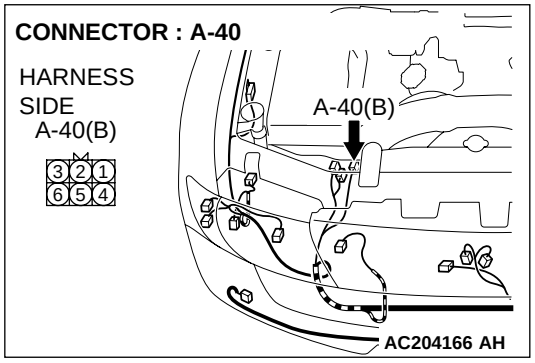


STEP 4. Check the wiring harness between daytime running light-ECU connector A-40 (terminal 1) and battery.

Q: Is the wiring harness between daytime running light-ECU connector A-40 (terminal 1) and battery in good condition?

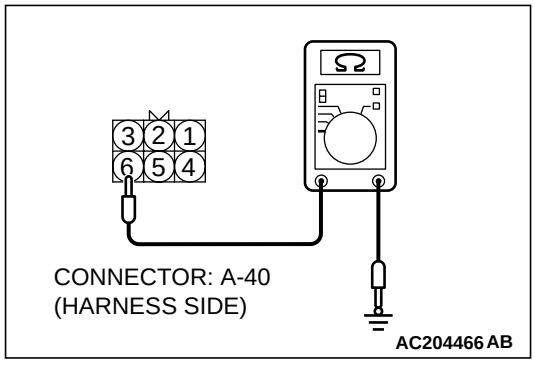
YES : No action is necessary and testing is complete.

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. The daytime running light function should now work normally.



STEP 5. Check the ground circuit to the daytime running light-ECU. Test at daytime running light-ECU connector A-40.

(1) Disconnect daytime running light-ECU connector A-40 and measure the resistance available at the wiring harness side of the connector.

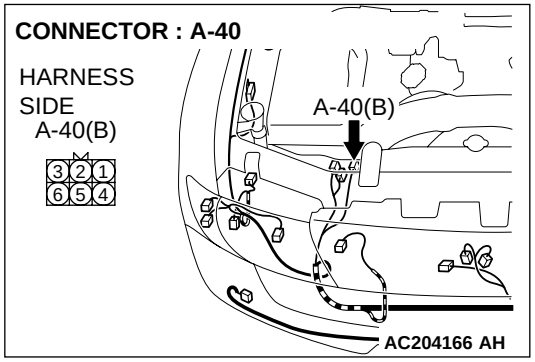


(2) Measure the resistance value between terminal 6 and ground.
- The resistance should measure 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 6.

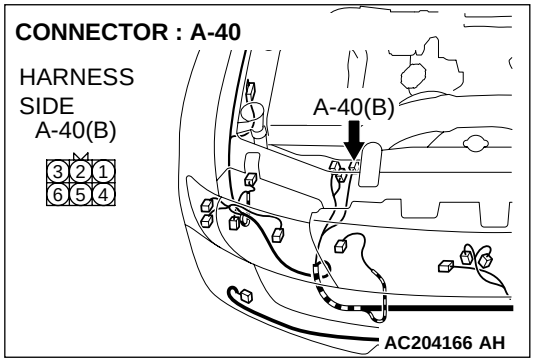


STEP 6. Check daytime running light-ECU connector A-40 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is daytime running light-ECU connector A-40 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 daytime running light function should now work normally.



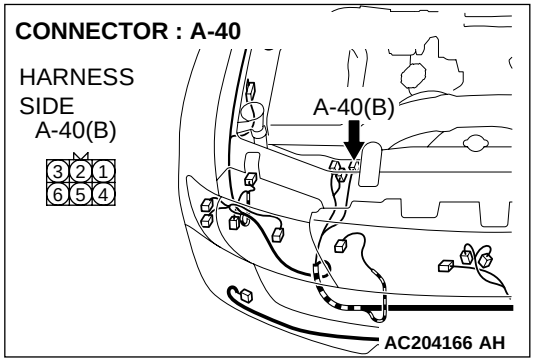
STEP 7. Check the wiring harness between daytime running light-ECU connector A-40 (terminal 6) and ground.

Q: Is the wiring harness between daytime running light-ECU connector A-40 (terminal 6) and ground in good condition?

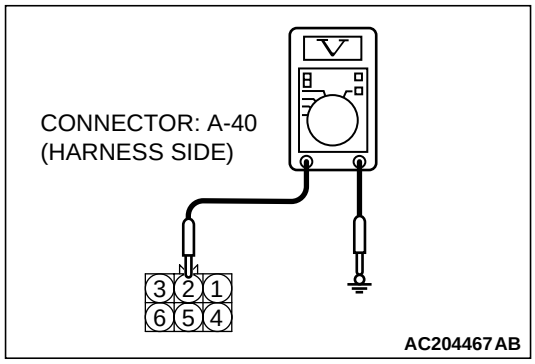
YES : No action is necessary and testing is complete.

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. The daytime running light function should now work normally.

STEP 8. Check the ignition switch (IG2) line of the power supply circuit to the daytime running light-ECU. Test at daytime running light-ECU connector A-40.



(1) Disconnect daytime running light-ECU connector A-40 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to the "ON" position.

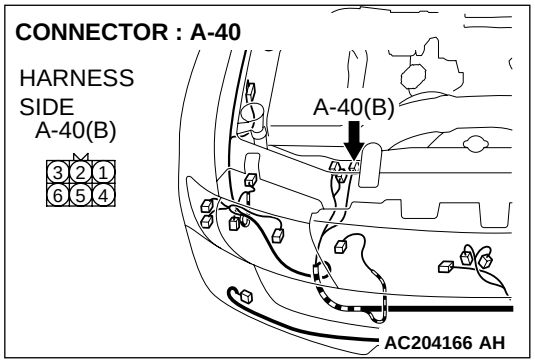


(3) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 11.
NO : Go to Step 9.

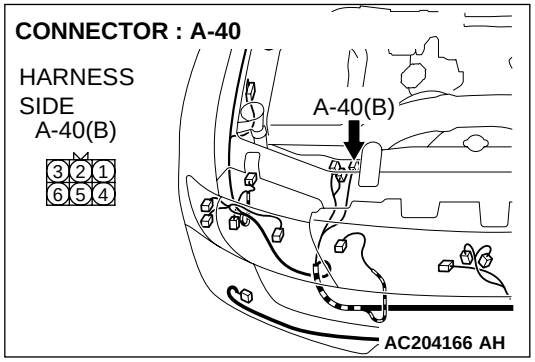
STEP 9. Check daytime running light-ECU connector A-40 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

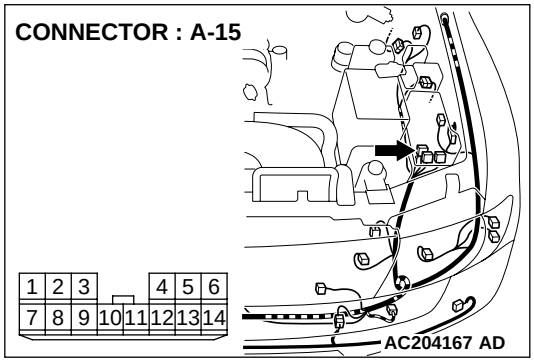


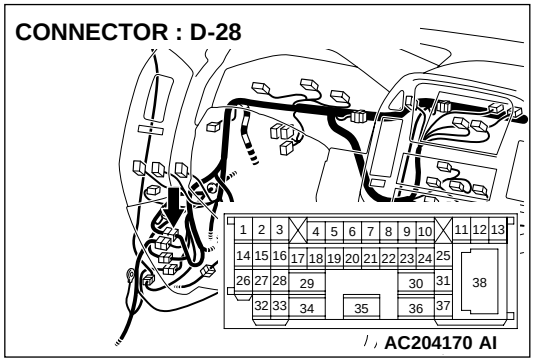
Q: Is daytime running light-ECU connector A-40 in good condition?

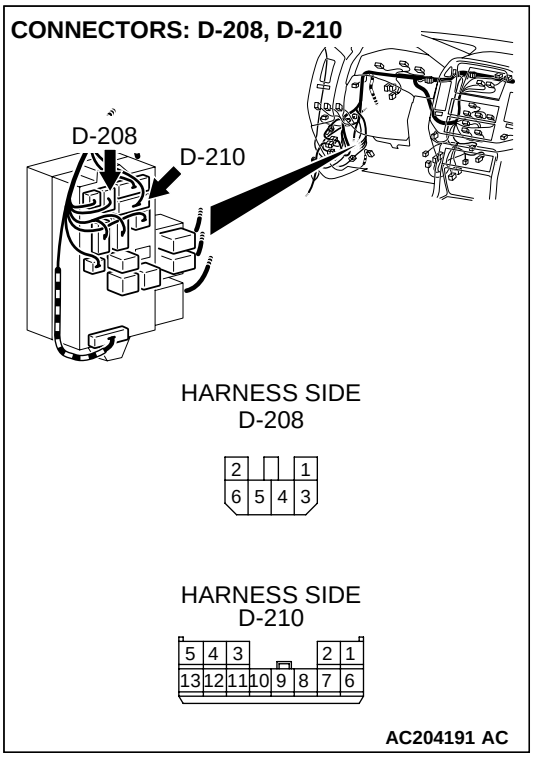
YES : Go to Step 10.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The daytime running light function should now work normally.

STEP 10. Check the wiring harness between daytime running light-ECU connector A-40 (terminal 2) and the ignition switch (IG2).









NOTE: Also check intermediate connector D-28, joint connector A-15, junction block connectors D-208 and D-210 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28, joint connector A-15, junction block connectors D-208 or D-210 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 daytime running light-ECU connector A-40 (terminal 2) and the ignition switch (IG2) in good condition?

YES : No action is necessary and testing is complete.

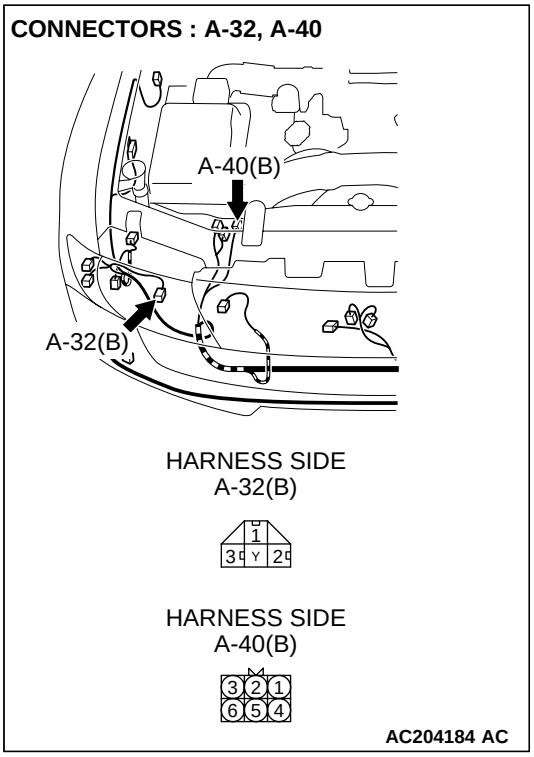
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The daytime running light function should now work normally.

STEP 11. Check daytime running light-ECU connector A-40 and headlight (RH) connector A-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are daytime running light-ECU connector A-40 and headlight (RH) connector A-32 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. The daytime running light function should now work normally.

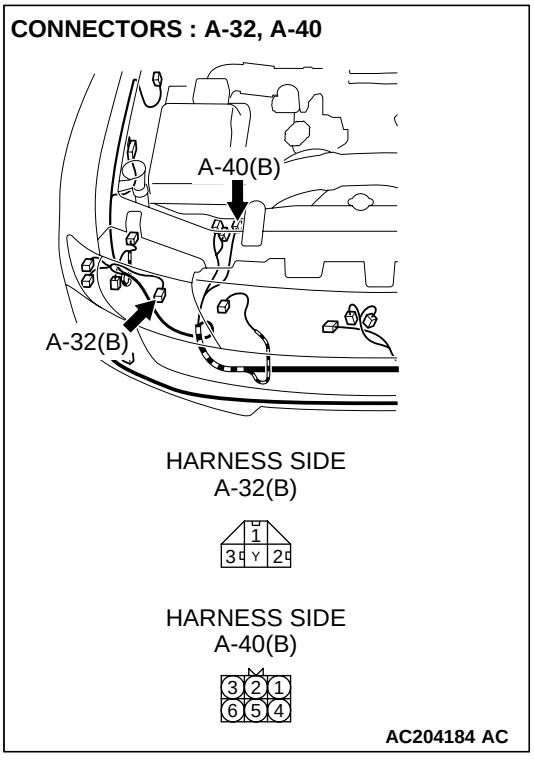


STEP 12. Check the wiring harness between daytime running light-ECU connector A-40 (terminal 3) and the headlight (RH) connector A-32 (terminal 1).

Q: Is the wiring harness between daytime running light-ECU connector A-40 (terminal 3) and headlight (RH) connector A-32 (terminal 1) in good condition?

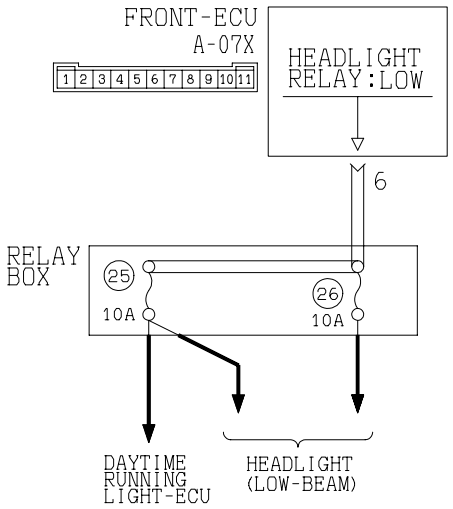
YES : Replace the daytime running light-ECU. The daytime running light function should now work normally.

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 daytime running light function should now work normally.



INSPECTION PROCEDURE J-12: Headlight and Taillight: When the daytime running light function is operating, the headlights (low-beam) continue lighting in a reduced beam state even if the headlight switch turns on. <vehicles for Canada>

Daytime Running Light Circuit



W3Q02M19AA

TECHNICAL DESCRIPTION (COMMENT)
The front-ECU may be defective if the daytime running light function does not operate normally.

TROUBLESHOOTING HINT
The front-ECU may be defective

DIAGNOSIS

STEP 1. Check the headlight operation.

Q: Do the headlights illuminate?

YES : Go to Step 2.
NO : Repair the headlights first (Refer to P.54Bb-313).

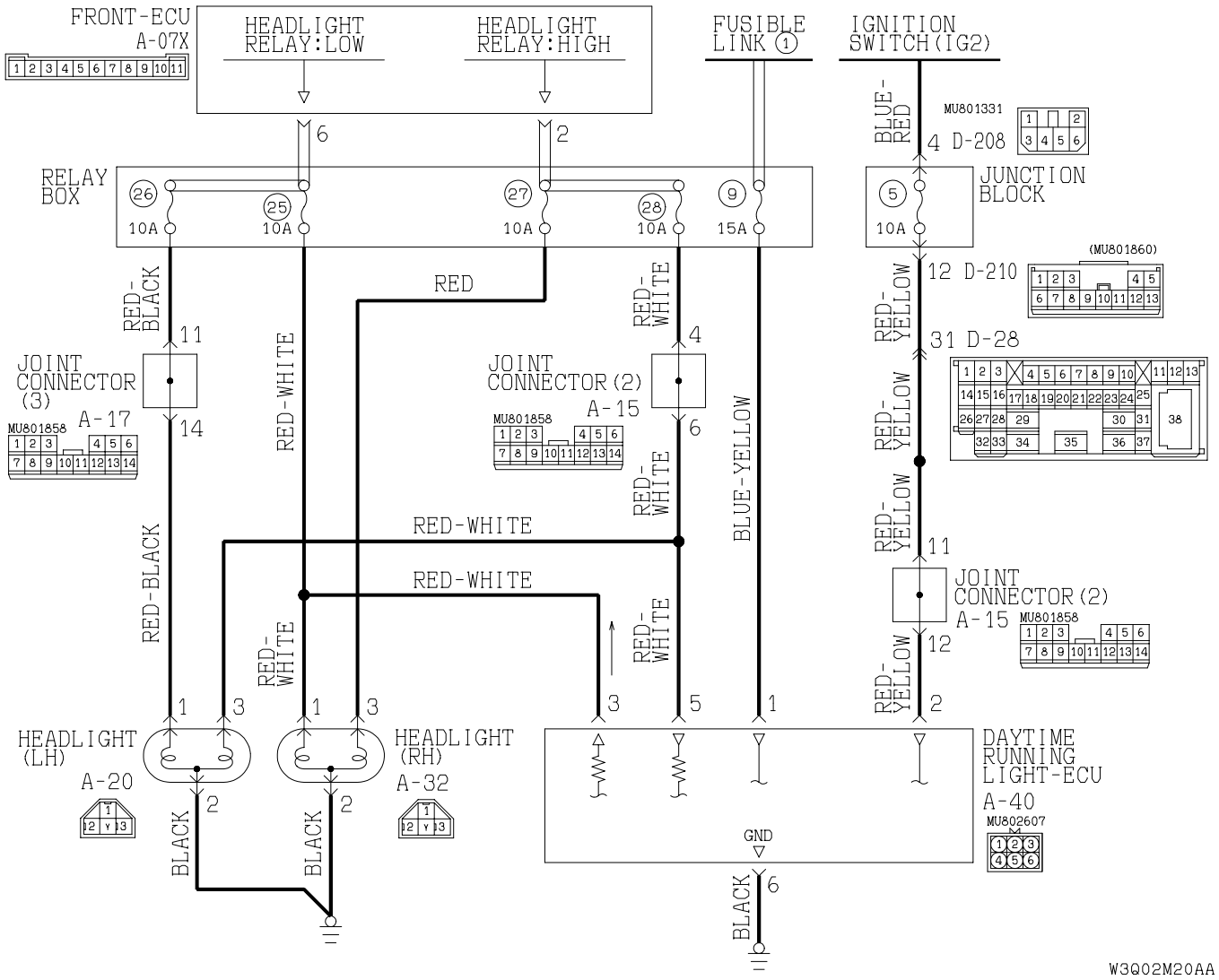
STEP 2. Replace the front-ECU.

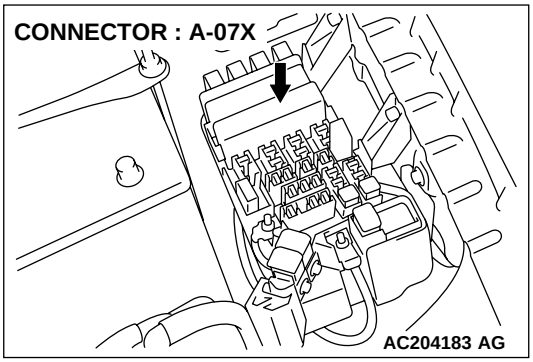
Q: Do the daytime running light function work normally?

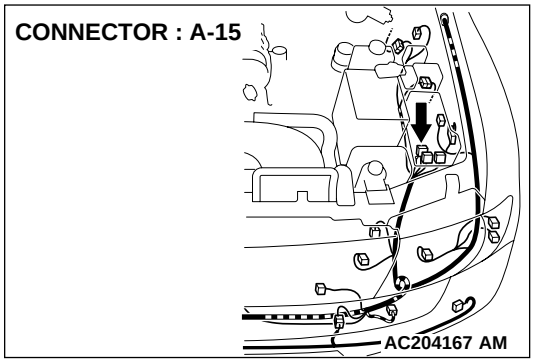
YES : No action is necessary and testing is complete.
NO : Refer to Inspection Procedure J-11 "Daytime running light function does not work normally P.54Bb-357."

INSPECTION PROCEDURE J-13: Headlight and Taillight: When the ignition switch is turned from on to off, the headlights darken significantly. <vehicles for Canada>

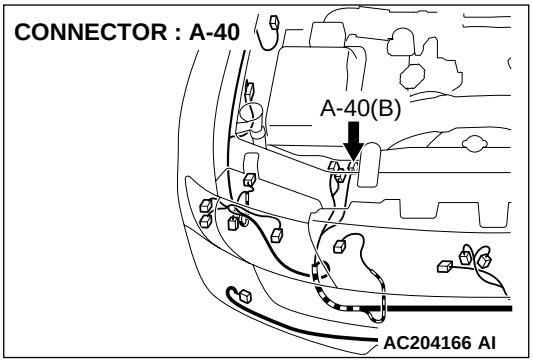
Daytime Running Light Power Supply Circuit







TSB Revision



TECHNICAL DESCRIPTION (COMMENT)

If the wiring harness between daytime running light-ECU connector (terminal 5) and front-ECU connector (terminal 2) is defective when switching the headlight to high-beam, both the headlight (high-beam) and the headlight (low-beam in a reduced state) light up.

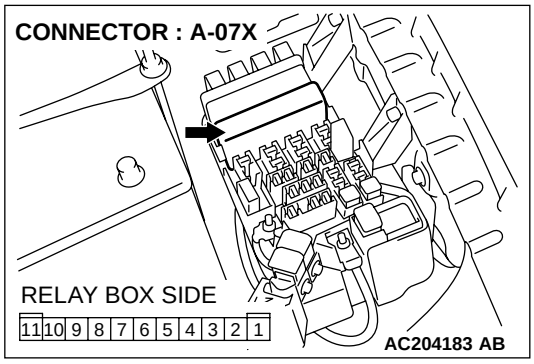
TROUBLESHOOTING HINTS

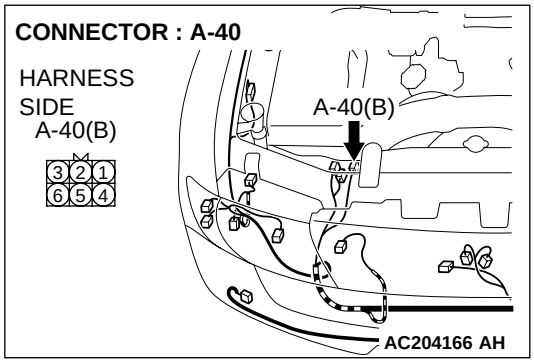
- The daytime running light-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set





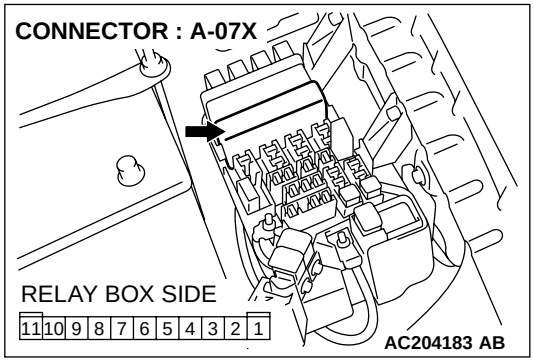
STEP 1. Check front-ECU connector A-07X and daytime running light-ECU connector A-40 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

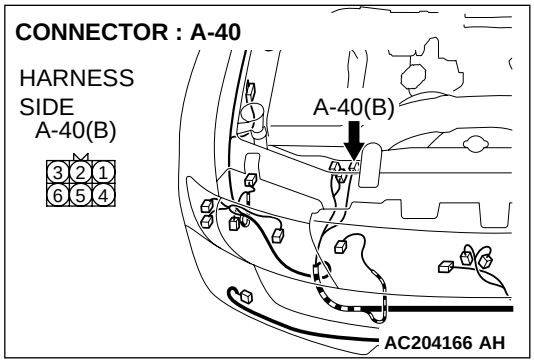
Q: Is front-ECU connector A-07X and daytime running light-ECU connector A-40 in good condition?

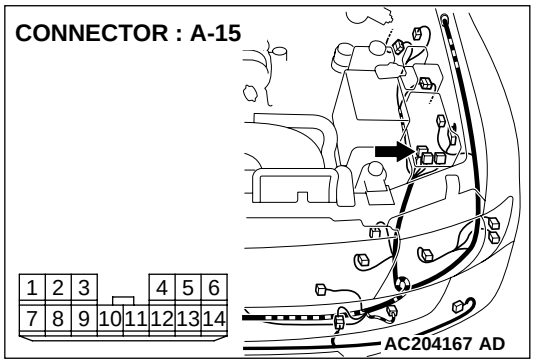
YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify the headlights shut-down when the ignition switch is turned from on to off.

STEP 2. Check the wiring harness between front-ECU connector A-07X (terminal 2) and daytime running light-ECU connector A-40 (terminal 5).







NOTE: Also check joint connector A-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector A-15 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-07X (terminal 2) and daytime running light-ECU connector A-40 (terminal 5) in good condition?

YES : Replace the daytime running light-ECU. The daytime running light 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. Verify the headlights shut-down when the ignition switch is turned from on to off.

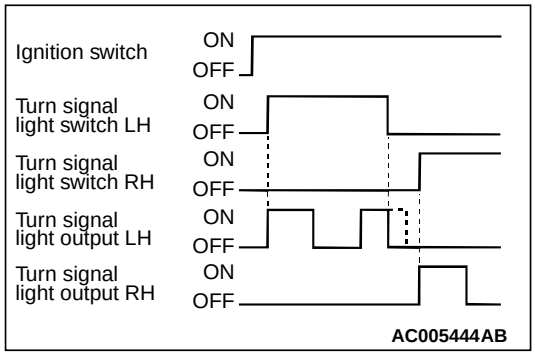
FLASHER TIMER

GENERAL DESCRIPTION CONCERNING FLASHER TIMER

M1549023600067

The ECU related to the alarm function types and various control functions are as follows.

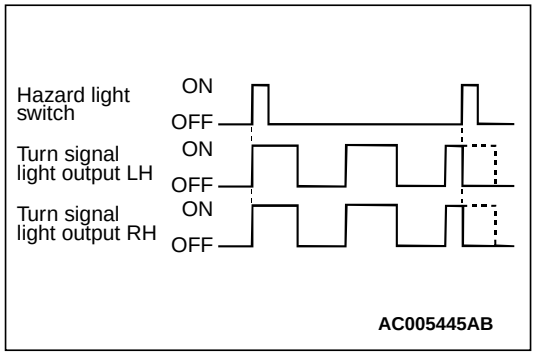
FUNCTION	CONTROL ECU
Turn signal light	ETACS-ECU, column switch
Hazard warning light	ETACS-ECU



Flasher timer function

Turn signal light

The turn signal light output (flashing signal) is turned ON when the turn signal light 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.

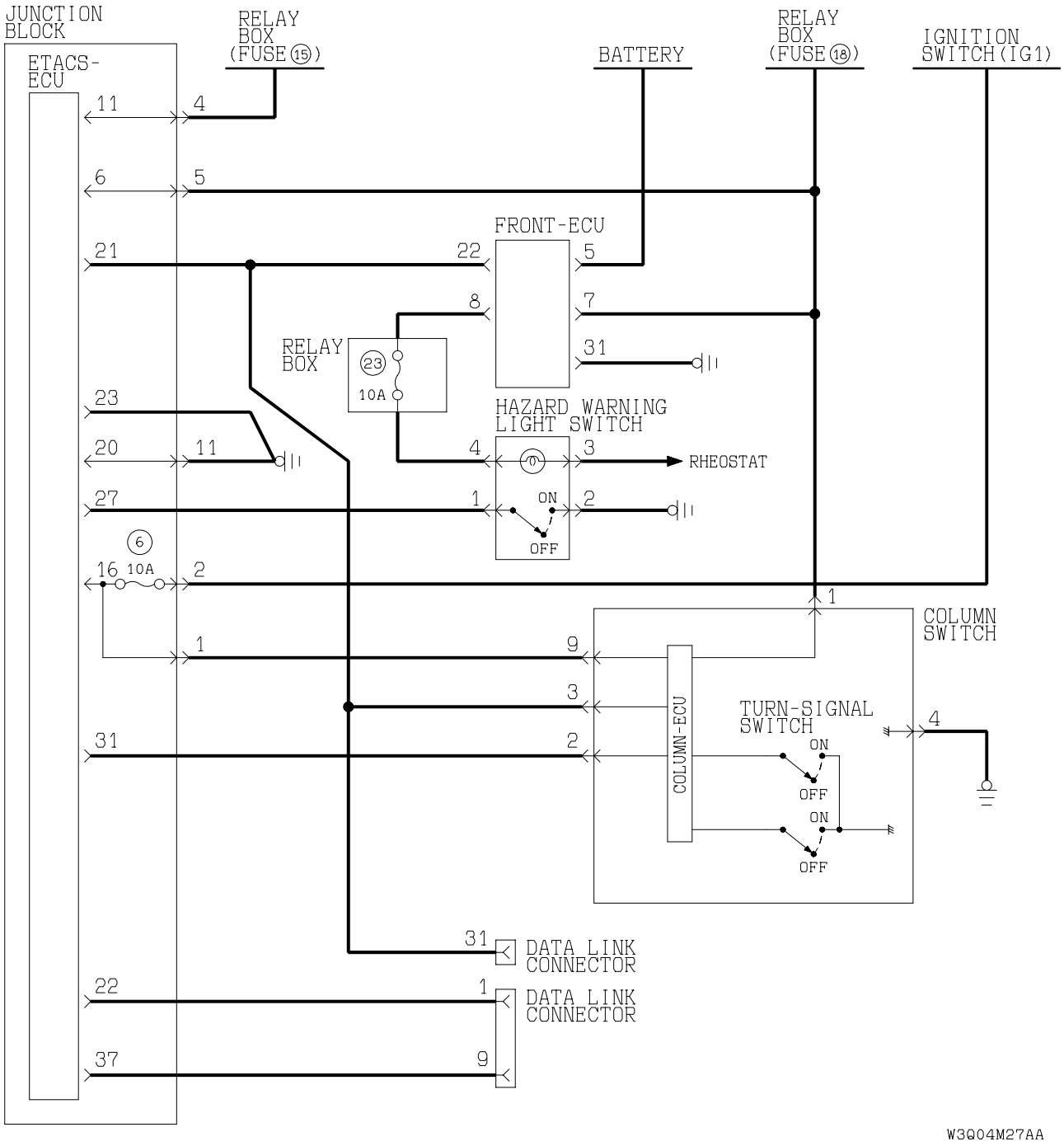


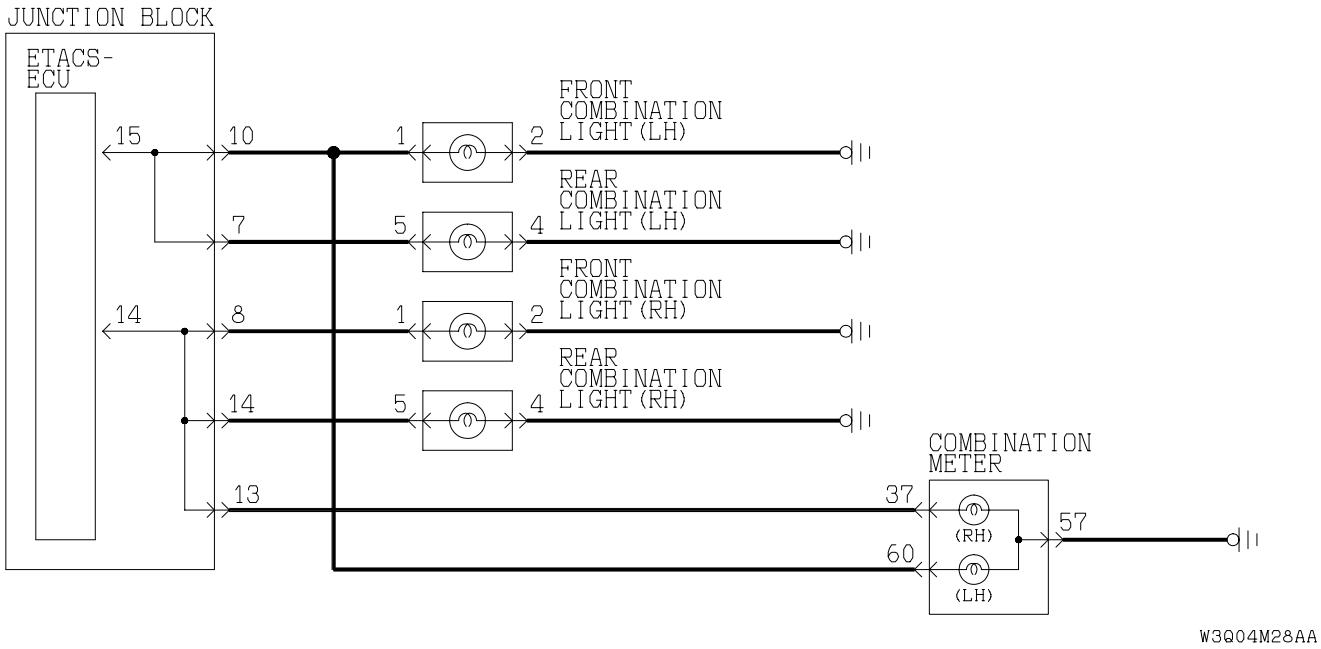
Hazard warning light

The hazard warning lights output (flashing) is turned ON when the hazard warning light switch is turned OFF to ON. When the switch is turned ON again, the output is turned OFF.

NOTE: The hazard warming light switch is a push-return type toggle switch.

General circuit for turn signal light and hazard light

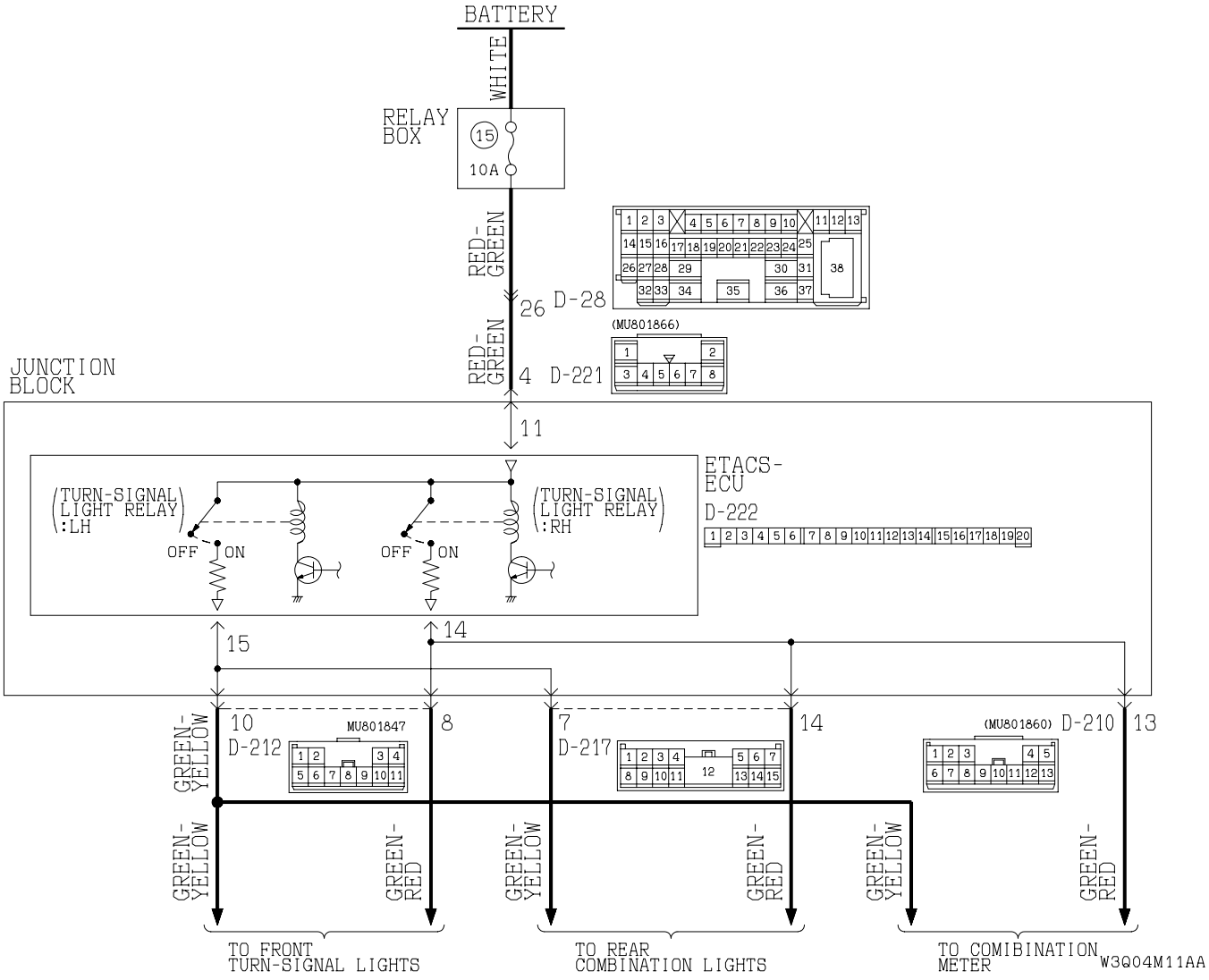



JUNCTION BLOCK
ETACS-
ECU
15
10
1
2
FRONT
COMBINATION
LIGHT(LH)
7
5
4
REAR
COMBINATION
LIGHT(LH)
14
8
1
2
FRONT
COMBINATION
LIGHT(RH)
14
5
4
REAR
COMBINATION
LIGHT(RH)
COMBINATION
METER
13
37
(RH)
57
60
(LH)
W3Q04M28AA

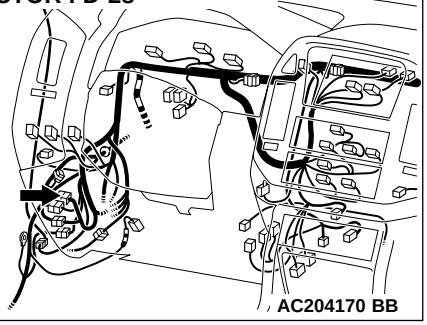
INSPECTION PROCEDURE K-1: Flasher Timer: Turn-signal lights do not flash when the turn-signal light switch is operated.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

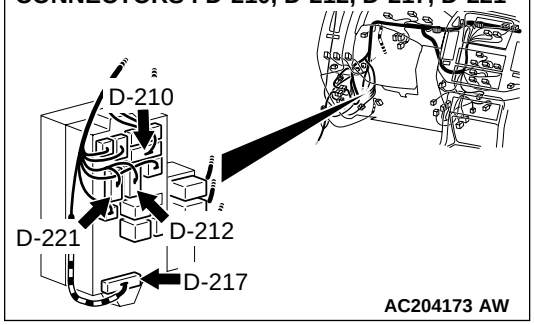
Turn-signal Light Power Supply Circuit



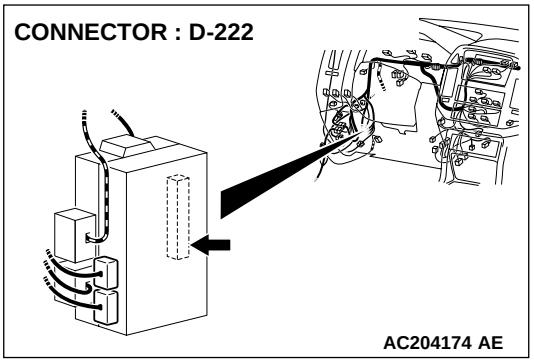
CONNECTOR : D-28



CONNECTORS : D-210, D-212, D-217, D-221



TSB Revision



CIRCUIT OPERATION

- The turn-signal light switch sends any 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)
  - Turn-signal light switch

TECHNICAL DESCRIPTION (COMMENT)

Is 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

- The column switch (turn-signal light and lighting switch) 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
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Verify the hazard warning light operation.

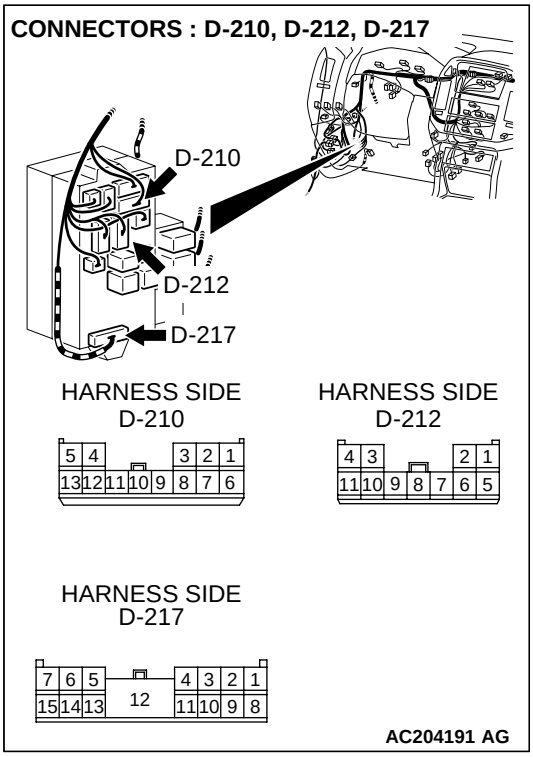
Q: Does the hazard warning light work normally?

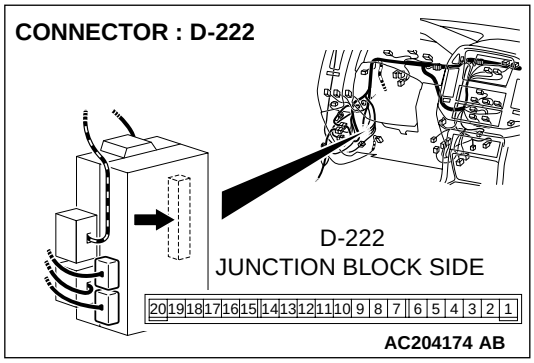
YES : Go to Step 7.
NO : Go to Step 2.

STEP 2. Verify the turn-signal light operation.

Q: Does either of the turn-signal lights illuminate?

YES (illuminates at only one side) : Go to Step 3.
NO (do not illuminate at all) : Go to Step 4.





STEP 3. Check ETACS-ECU connector D-222, junction block connectors D-210, D-212 and D-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

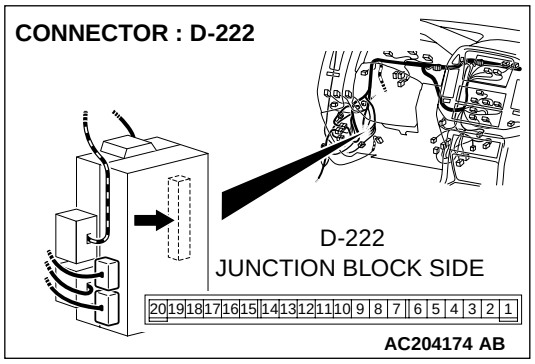
Q: Are ETACS-ECU connector D-222, junction block connectors D-210, D-212 and D-217 in good condition?

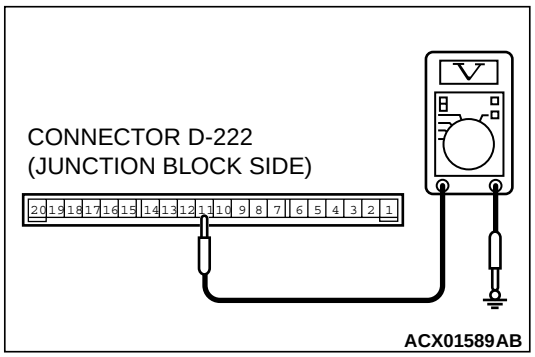
YES : Replace the ETACS-ECU. Verify that the turn-signal lights illuminate normally.

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 the battery power supply circuit to the ETACS-ECU. Test at ETACS-ECU connector D-222.

(1) Disconnect ETACS-ECU connector D-222 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 be approximately 12 volts (battery positive voltage).

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

YES : Replace the ETACS-ECU. Verify that the turn-signal lights illuminate normally.

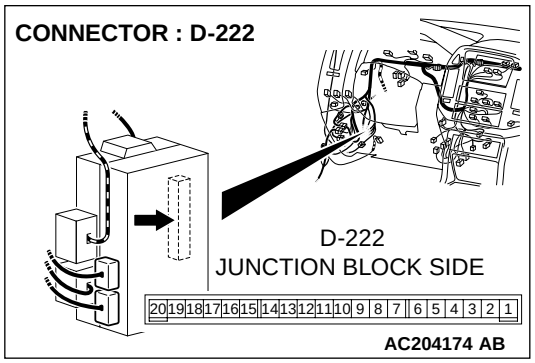
NO : Go to Step 5.

STEP 5. Check ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

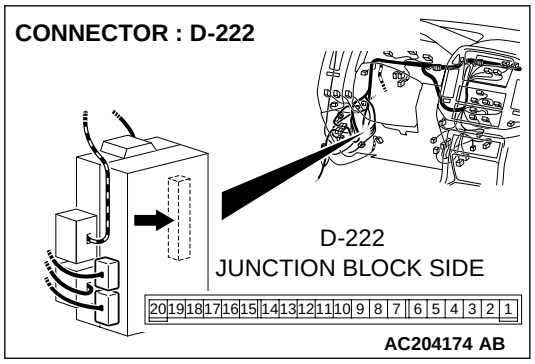
Q: Is ETACS-ECU connector D-222 in good condition?

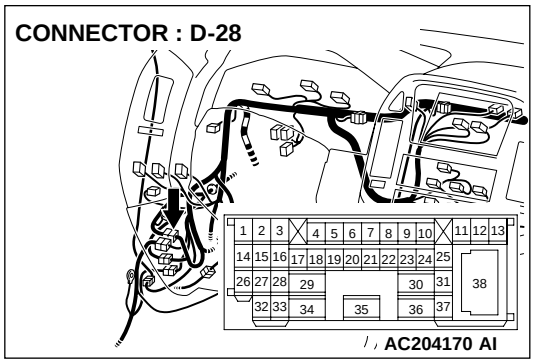
YES : Go to Step 6.

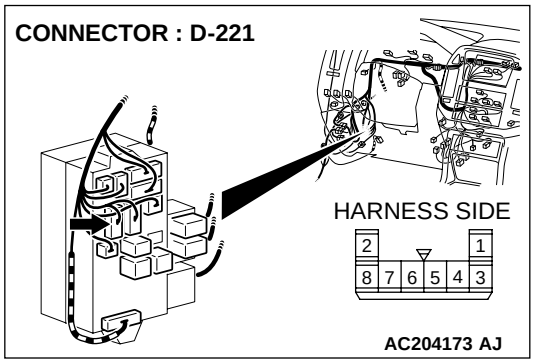
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 6. Check the wiring harness between ETACS-ECU connector D-222 (terminal 11) and the battery.





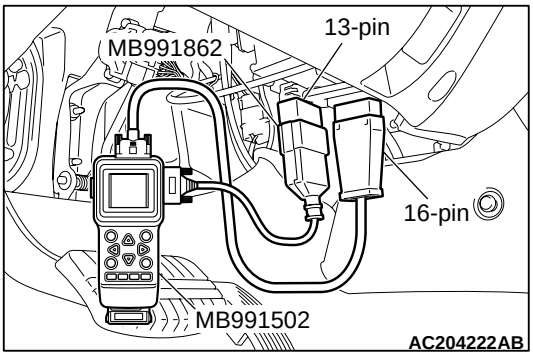


NOTE: Also check intermediate connector D-28 and junction block connector D-221 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or junction block connector D-221 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector D-222 (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 MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

(1) Connect scan tool MB991502 to the data link connector (16-pin).

(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).

(3) Operate scan tool MB991502 according to the procedure below to display "TURN SIG.RH."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "TURN SIGNAL."
6. Select "TURN SIG.RH."

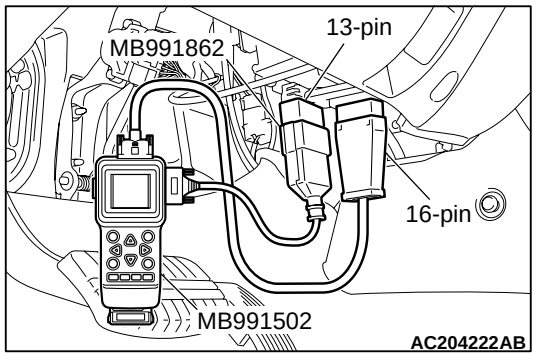
(4) Check that normal conditions are displayed on the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 10	T/S RH SW	ON
ITEM 30	IG SW (IG1)	ON

Q: Are normal conditions displayed on the "T/S RH SW" and "IG SW (IG1)"?

YES : Go to Step 8.

NO :
- Normal condition is not displayed on the "T/S RH SW": Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the turn-signal RH switch P.54Bc-31."
- Normal condition is not displayed on the "IG SW (IG1)": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."



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 on the items described in the table below.
Operate scan tool MB991502 according to the procedure below to display "TURN SIG.LH."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "TURN SIGNAL."
6. Select "TURN SIG.LH."

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 11	T/S LH SW	ON

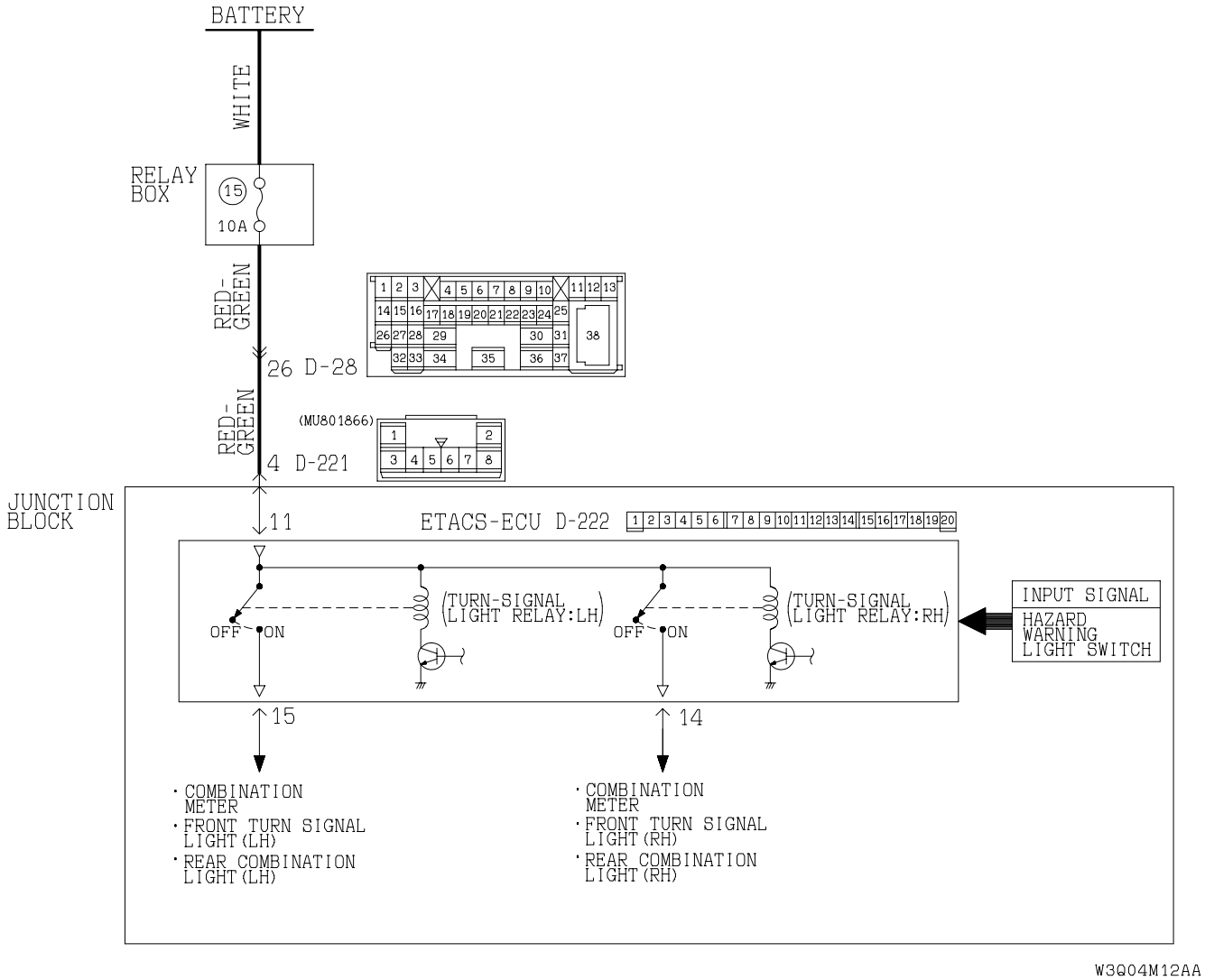
Q: Do the scan tool display the items "T/S LH SW" is normal condition?

YES : Replace the ETACS-ECU. Verify that the turn-signal lights illuminate normally.

NO : Refer to Inspection Procedure O-6 "ETACS-ECU does not receive any signal from the taillight switch, the headlight switch, the passing light switch, the dimmer switch, the turn-signal light switch or switch P.54Bc-31."

INSPECTION PROCEDURE K-2: Flasher Timer: Hazard warning lights do not illuminate.

Hazard Warning Light Circuit



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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

- The hazard warning light switch 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
- MB991502: Scan Tool (MUT-II)

STEP 1. Verify the turn-signal light operation.

Q: Do the turn-signal lights illuminate normally?

YES : Go to Step 2.

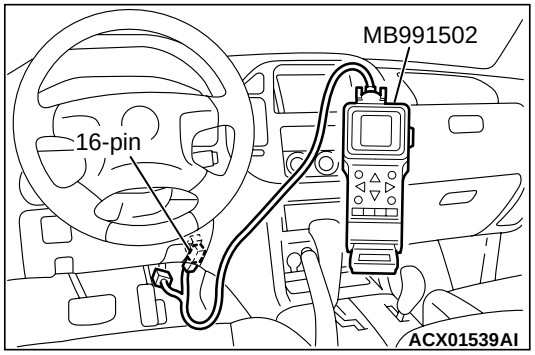
NO : Refer to Inspection Procedure K-1 "Turn-signal lights does not flash when the turn-signal light switch is turned on P.54Bb-392."

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 MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).

(2) Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."
1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

(3) Verify that scan tool MB991502 sounds when the hazard warning light switch is turned from "OFF" to "ON."

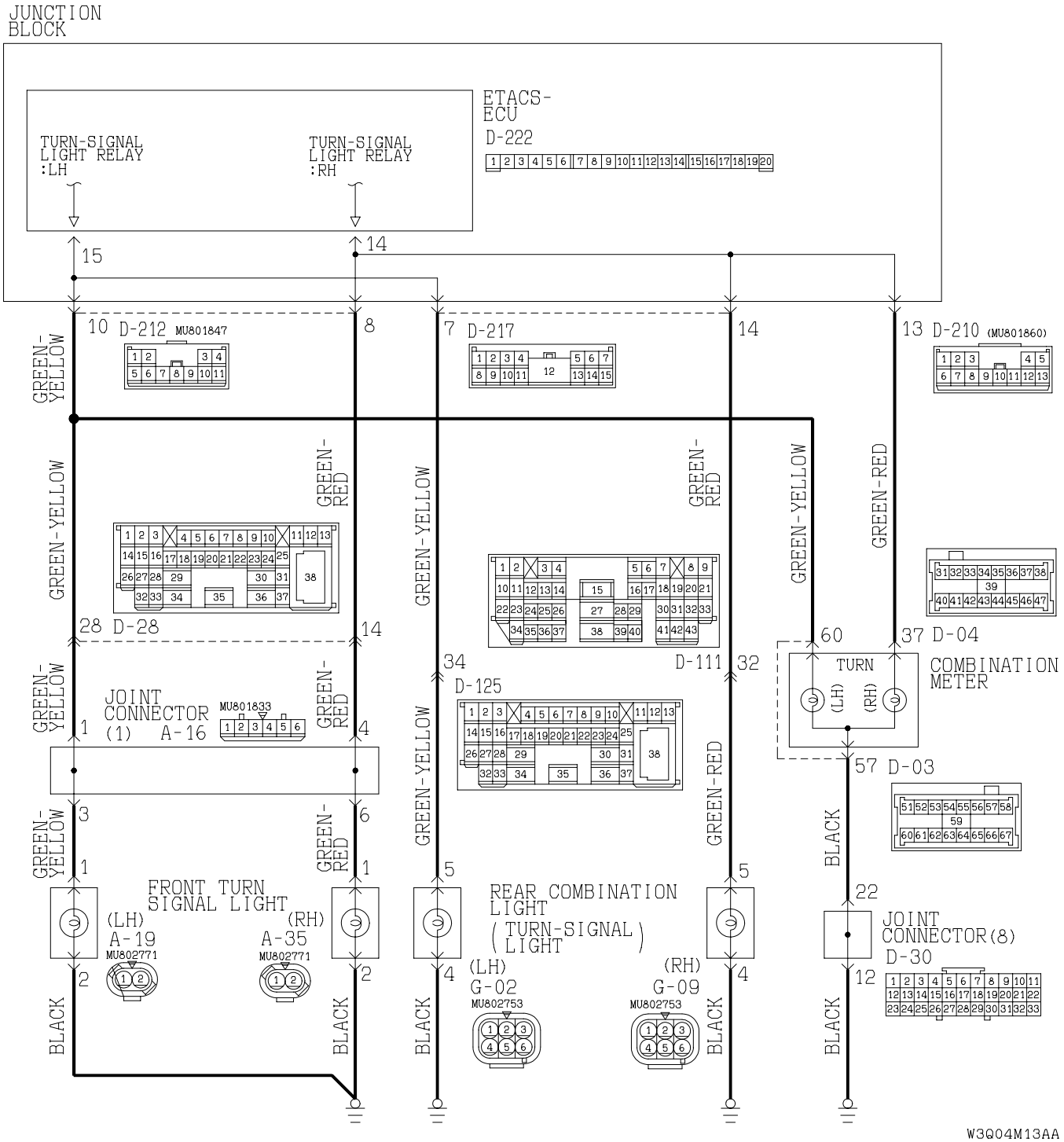
Q: Does scan tool MB991502 sound when the hazard warning light switch is turned from "OFF" to "ON"?

YES : Replace the ETACS-ECU. Verify that the hazard warning lights illuminate normally.

NO : Refer to Inspection Procedure P-2 "ETACS-ECU does not receive any signal from the hazard warning light switch P.54Bc-53."

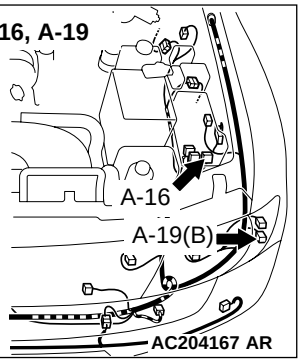
INSPECTION PROCEDURE K-3: Frasher timer: One of the turn-signal light do not illuminate.

Turn-signal Lights Circuit

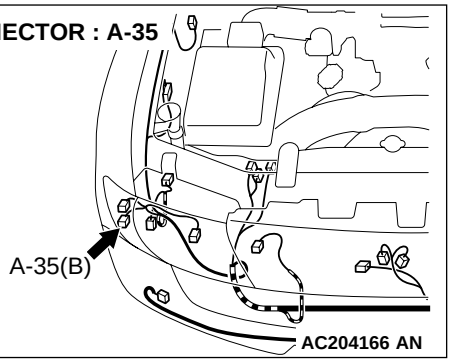


TSB Revision

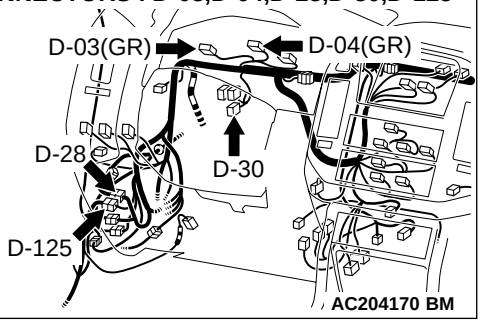
CONNECTORS : A-16, A-19



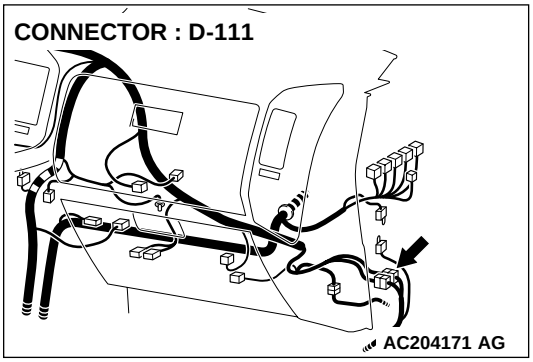
CONNECTOR : A-35



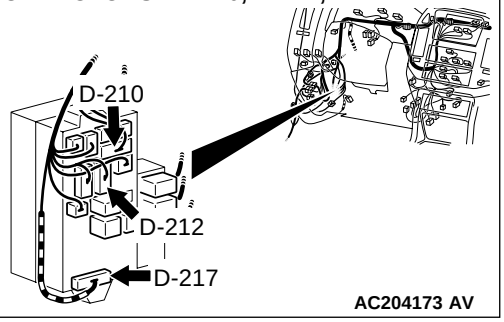
CONNECTORS : D-03,D-04,D-28,D-30,D-125



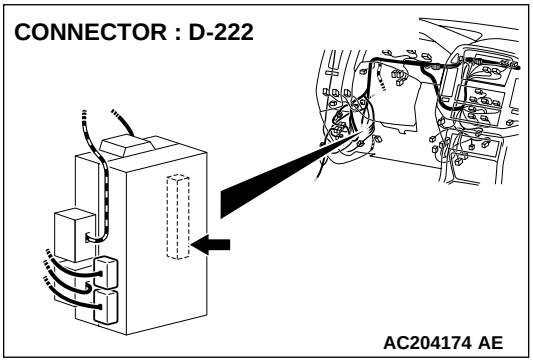
CONNECTOR : D-111



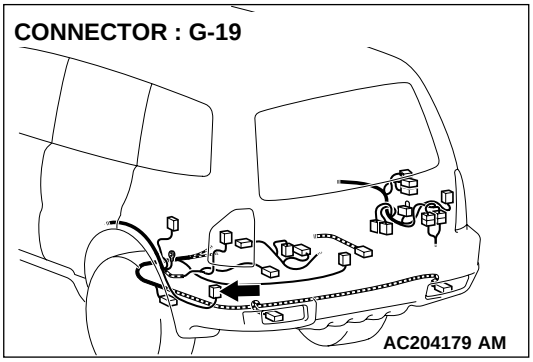
CONNECTORS : D-210, D-212, D-217



CONNECTOR : D-222



CONNECTOR : G-19



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

TSB Revision

DIAGNOSIS

Required Special Tool:
- MB991223: Test Harness Set

STEP 1. Verify the hazard warning light.

Q: Which turn-signal light does not illuminate?

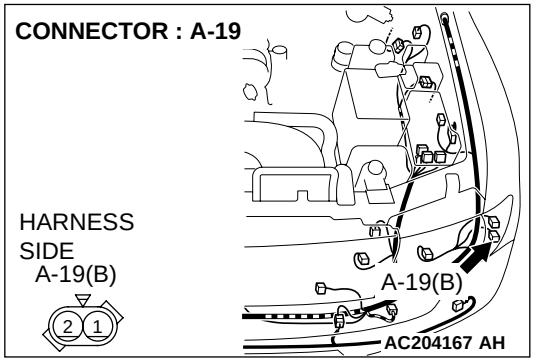
Front turn-signal light (LH) : Go to Step 2.
Front turn-signal light (RH) : Go to Step 8.
Rear combination light (LH) : Go to Step 14.
Rear combination light (RH) : Go to Step 20.
Combination meter (LH) : Go to Step 26.
Combination meter (RH) : Go to Step 28.
Combination meter (both RH and LH) : Go to Step 30.
Front turn-signal light (LH) and combination meter (LH) : Go to Step 32.
LH side only : Refer to Inspection Procedure K-1 "Turn-signal lights does not flash when the turn-signal light switch is turned on P.54Bb-392."
RH side only : Refer to Inspection Procedure K-1 "Turn-signal lights does not flash when the turn-signal light switch is turned on P.54Bb-392."
Both LH and RH sides : Refer to Inspection Procedure K-2 "Hazard warning light does not illuminate P.54Bb-399."

STEP 2. 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.

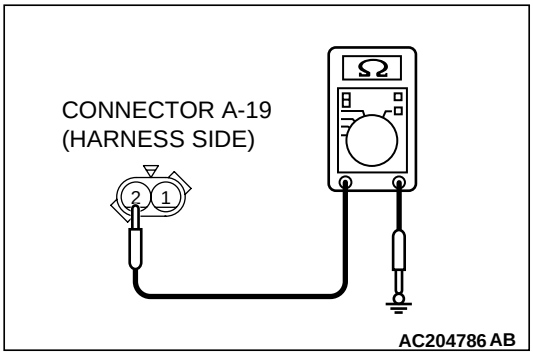
Q: Is the front turn-signal (LH) light bulb in good condition?

YES : Go to Step 3.
NO : Replace the front turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 3. Check the ground circuit to the front combination light (LH). Test at front combination light (LH) connector A-19.



(1) Disconnect front combination light (LH) connector A-19 and measure the resistance available at the wiring harness side of the connector.

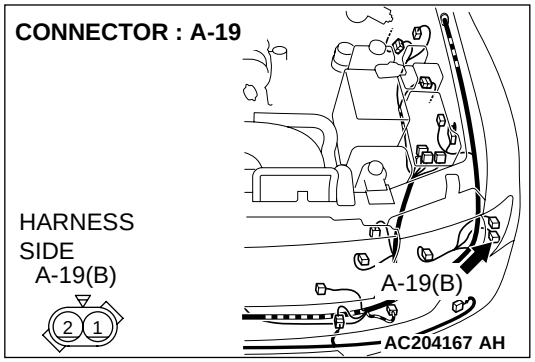


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

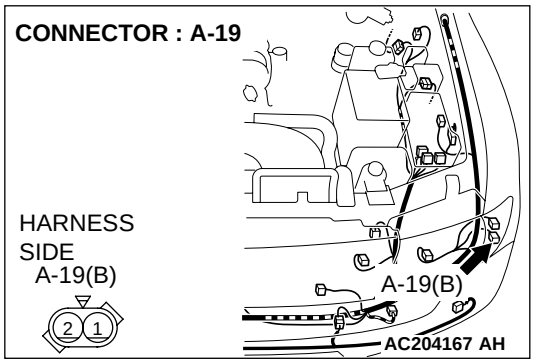
YES : Go to Step 6.
NO : Go to Step 4.

STEP 4. Check front turn-signal light (LH) connector A-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is the front turn-signal light (LH) connector A-19 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.

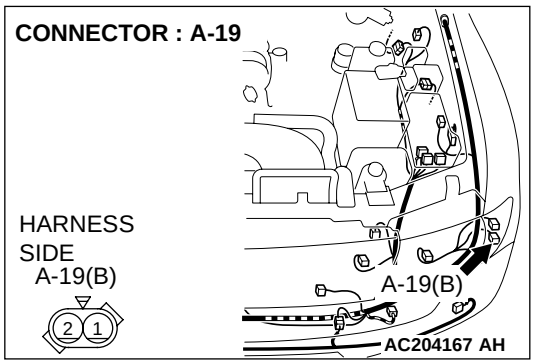


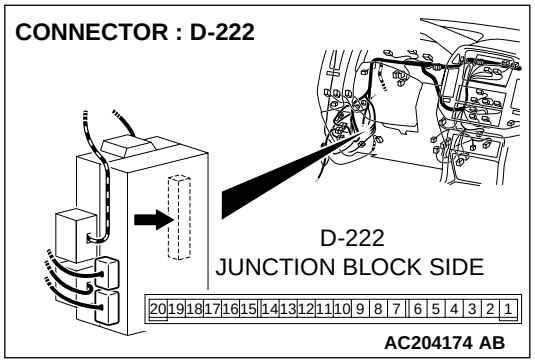
STEP 5. Check the wiring harness between front turn-signal light (LH) connector A-19 (terminal 2) and ground.

Q: Is the wiring harness between front turn-signal light (LH) connector A-19 (terminal 2) and ground in good condition?

YES : Replace the socket. 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 front turn-signal light (LH) connector A-19 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

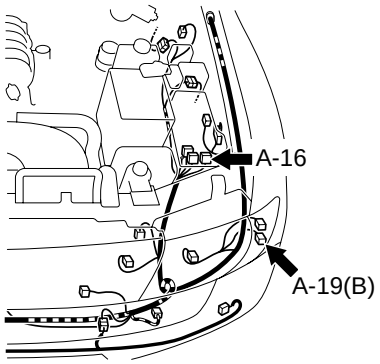
Q: Are front turn-signal light (LH) connector A-19 and ETACS-ECU connector D-222 in good condition?

YES : Go to Step 7.

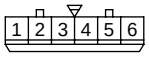
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

STEP 7. Check the wiring harness between front turn-signal light (LH) connector A-19 (terminal 1) and ETACS-ECU connector D-222 (terminal 15).

CONNECTORS : A-16, A-19



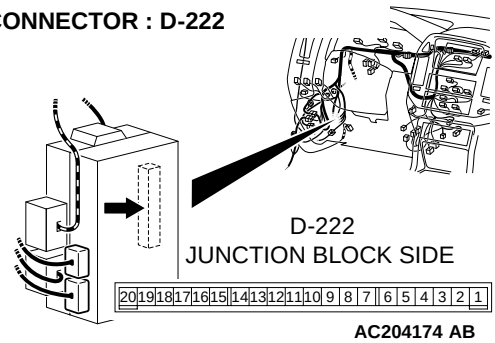
A-16



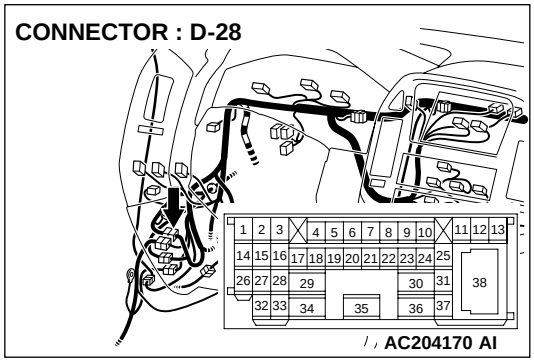
HARNESS SIDE
A-19(B)

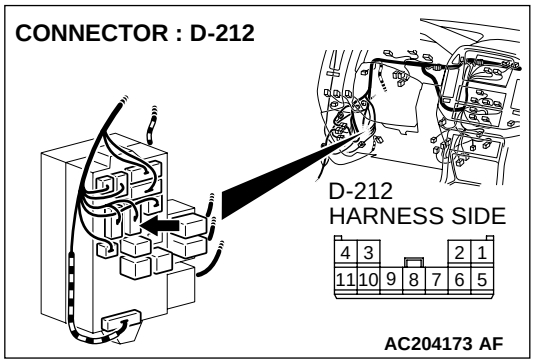
AC204185 AD

CONNECTOR : D-222



AC204174 AB





NOTE: Also check junction block connector D-212, joint connector A-16 and intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-212, joint connector A-16 or intermediate connector D-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 front turn-signal light (LH) connector A-19 (terminal 1) and ETACS-ECU connector D-222 (terminal 15) in good condition?

YES : Replace the socket. 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 the front turn-signal light bulb (RH).

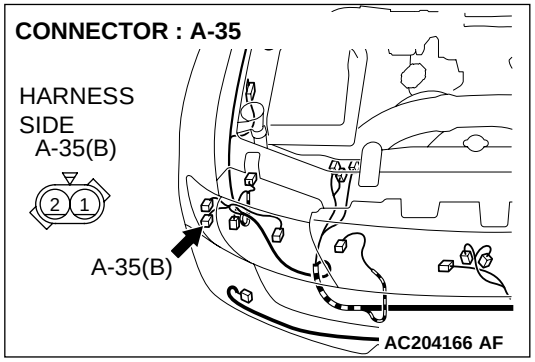
(1) Remove the front turn-signal (RH) light bulb.
(2) Verify that the front turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the front turn-signal (RH) light bulb in good condition?

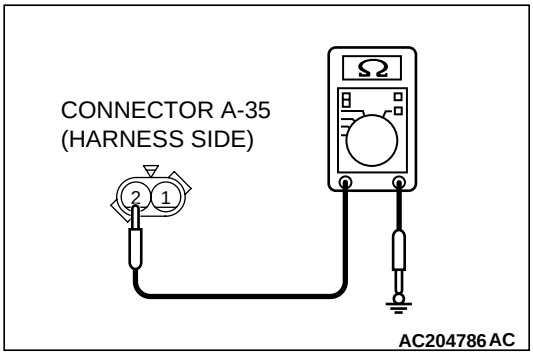
YES : Go to Step 9.

NO : Replace the front turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 9. Check the ground circuit to the front combination light (RH). Test at front combination light (RH) connector A-35.



(1) Disconnect front combination light (RH) connector A-35 and measure the resistance available at the wiring harness side of the connector.

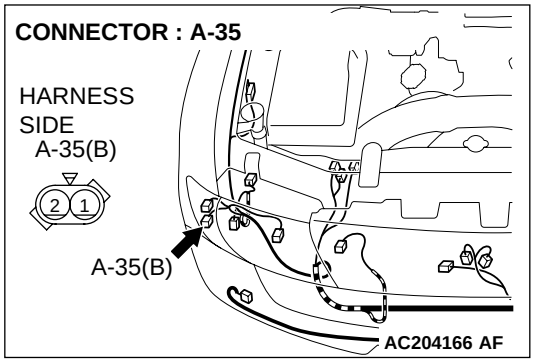


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

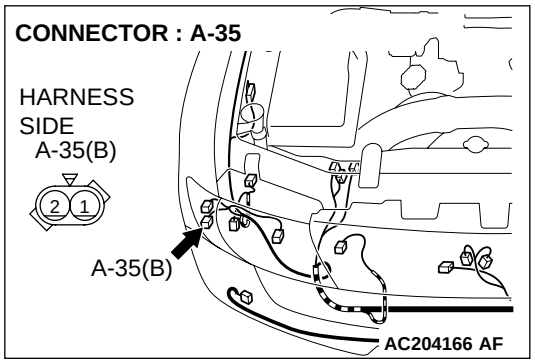
YES : Go to Step 12.
NO : Go to Step 10.

STEP 10. Check front turn-signal light (RH) connector A-35 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is the front turn-signal (RH) connector A-35 in good condition?

YES : Go to Step 11.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

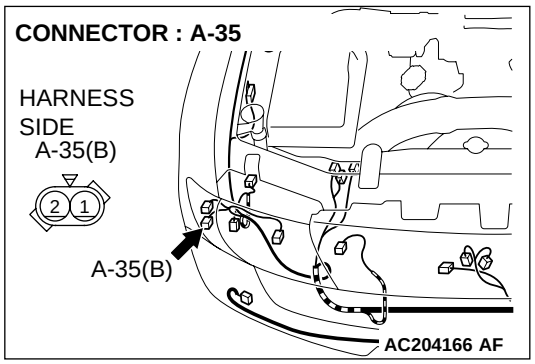


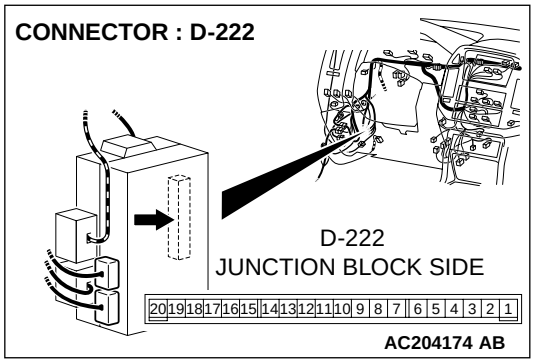
STEP 11. Check the wiring harness between front turn-signal light (RH) connector A-35 (terminal 2) and ground.

Q: Is the wiring harness between front turn-signal light (RH) connector A-35 (terminal 2) and ground in good condition?

YES : Replace the socket. 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.





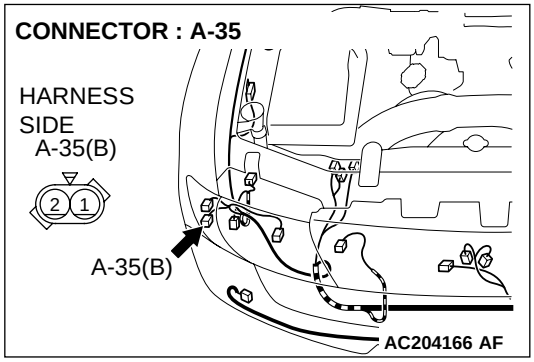
STEP 12. Check front turn-signal light (RH) connector A-35 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

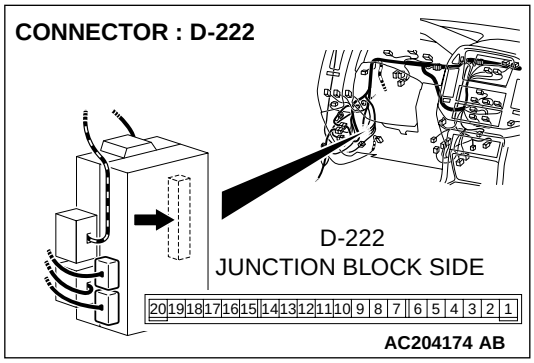
Q: Are front turn-signal light (RH) connector A-35 and ETACS-ECU connector D-222 in good condition?

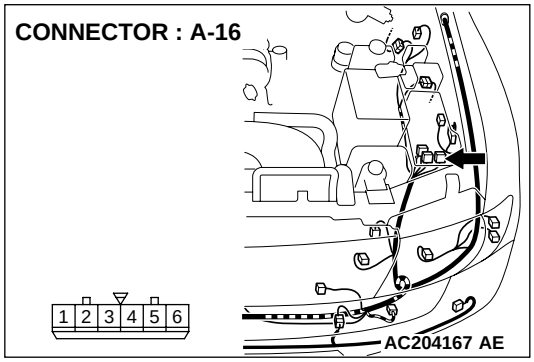
YES : Go to Step 13.

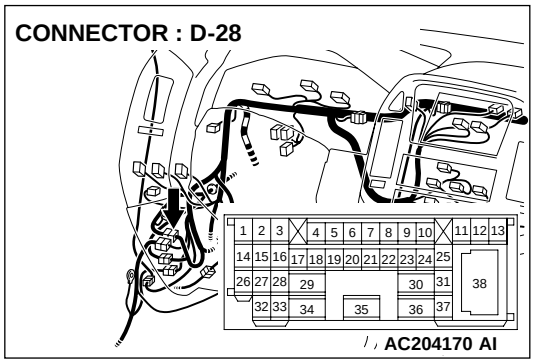
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

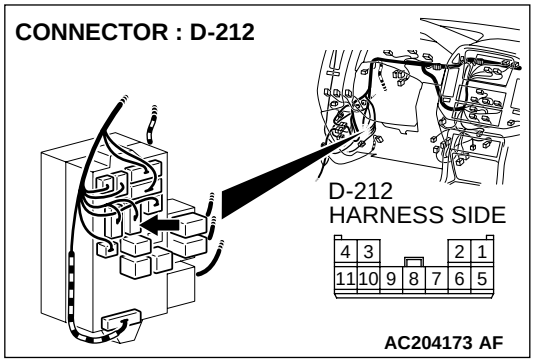
STEP 13. Check the wiring harness between front turn-signal light (RH) connector A-35 (terminal 1) and ETACS-ECU connector D-222 (terminal 14).











NOTE: Also check junction block connector D-212, joint connector A-16 and intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-212, joint connector A-16 or intermediate connector D-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 front turn-signal light (RH) connector A-35 (terminal 1) and ETACS-ECU connector D-222 (terminal 14) in good condition?

YES : Replace the socket. 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 the rear turn-signal light bulb (LH).

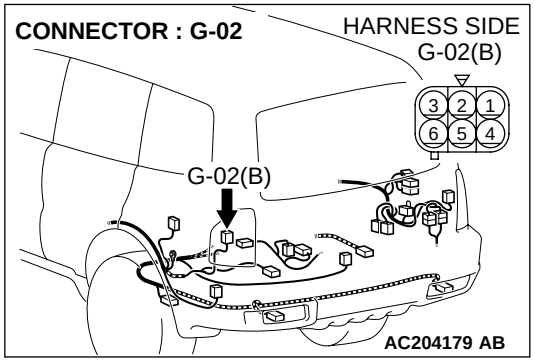
(1) Remove the rear turn-signal (LH) light bulb.
(2) Verify that the rear turn-signal light bulb (LH) is not damaged or burned out.

Q: Is the rear turn-signal (LH) light bulb in good condition?

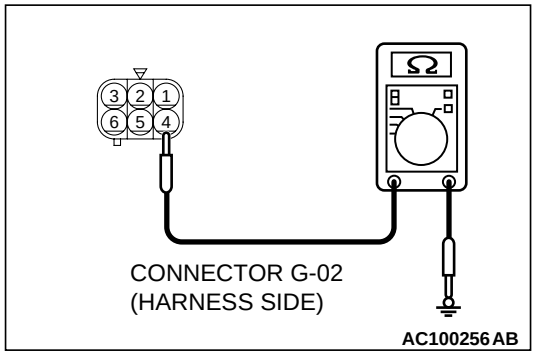
YES : Go to Step 15.

NO : Replace the rear turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 15. Check the ground circuit to the rear combination light (LH). Test at rear combination light (LH) connector G-02.



(1) Disconnect rear combination light (LH) connector G-02 and measure the resistance available at the wiring harness side of the connector.

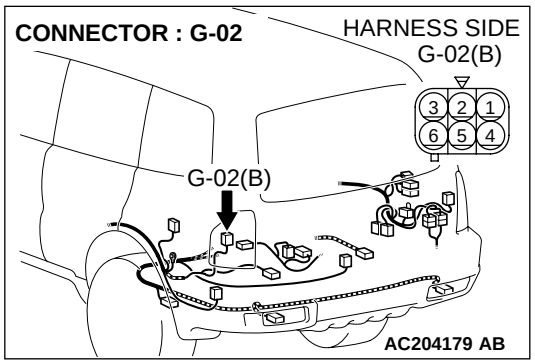


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

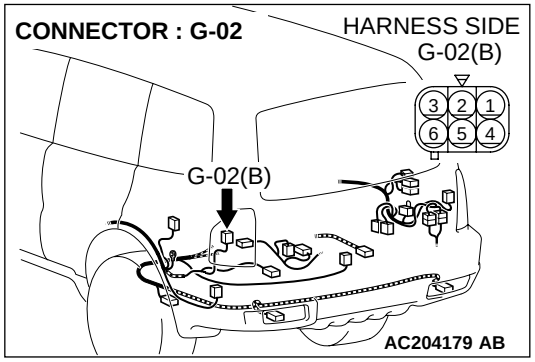
YES : Go to Step 18.
NO : Go to Step 16.

STEP 16. Check rear combination light (LH) connector G-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is rear combination light (LH) connector G-02 in good condition?

YES : Go to Step 17.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

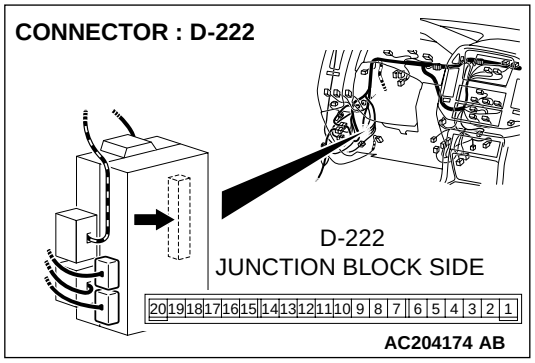


STEP 17. Check the wiring harness between rear combination light (LH) connector G-02 (terminal 4) and ground.

Q: Is the wiring harness between rear combination light (LH) connector G-02 (terminal 4) and ground in good condition?

YES : Replace the socket assembly. 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.

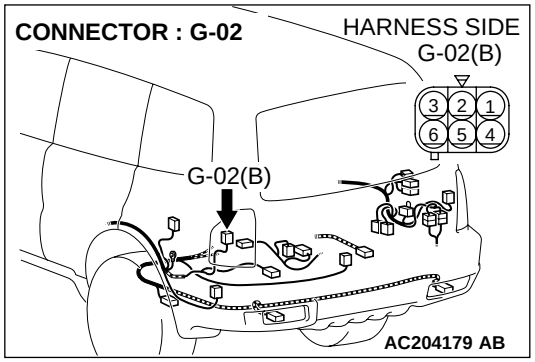


STEP 18. Check rear combination light (LH) connector G-02 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

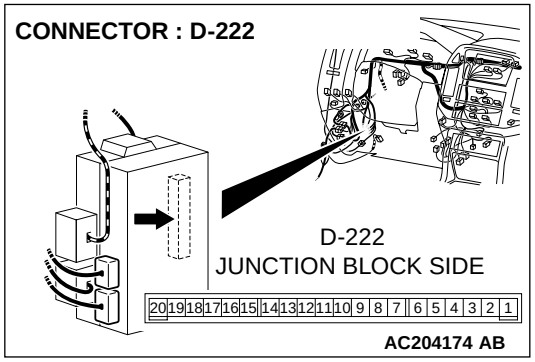
Q: Are rear combination light (LH) connector G-02 and ETACS-ECU connector D-222 in good condition?

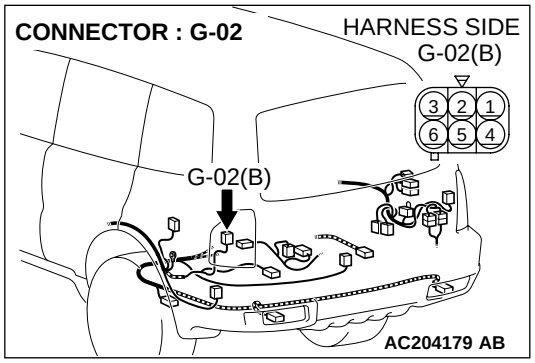
YES : Go to Step 19.

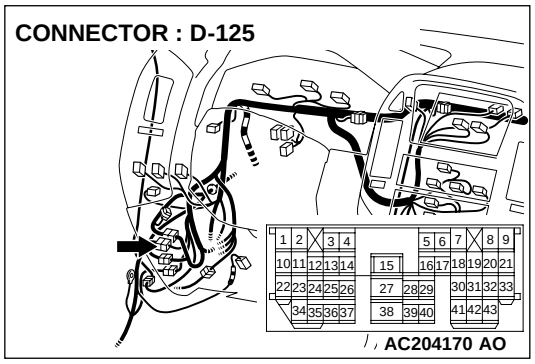
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

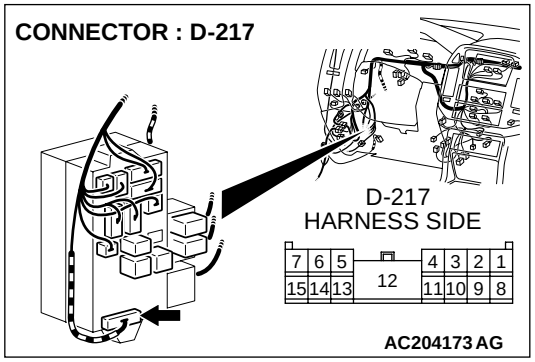


STEP 19. Check the wiring harness between rear combination light (LH) connector G-02 (terminal 5) and ETACS-ECU connector D-222 (terminal 15).









NOTE: Also check junction block connector D-217 and intermediate connector D-125 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-217 or intermediate connector D-125 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 G-02 (terminal 5) and ETACS-ECU connector D-222 (terminal 15) in good condition?

YES : Replace the socket assembly. 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 the rear turn-signal light bulb (RH).

(1) Remove the rear turn-signal (RH) light bulb.

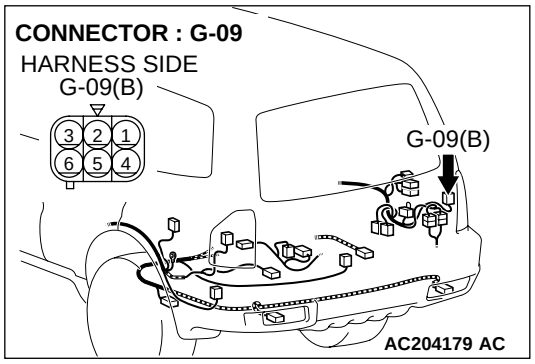
(2) Verify that the rear turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the rear turn-signal (RH) light bulb in good condition?

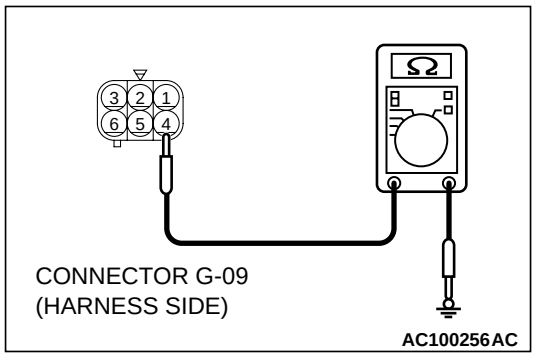
YES : Go to Step 21.

NO : Replace the rear turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 21. Check the ground circuit to the rear combination light (RH). Test at rear combination light (RH) connector G-09.



(1) Disconnect rear combination light (RH) connector G-09 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 4 and ground.

- The resistance should equal 2 ohms or less.

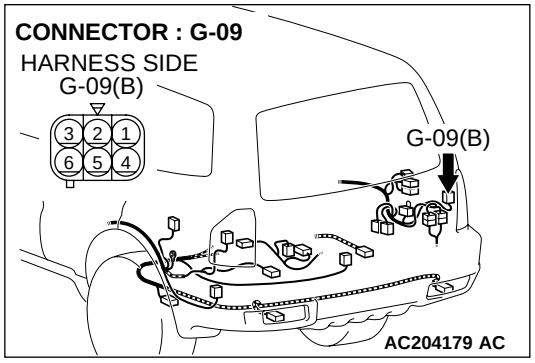
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 24.

NO : Go to Step 22.

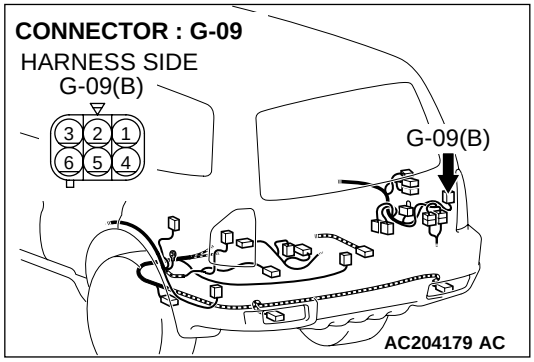
STEP 22. Check rear combination light (RH) connector G-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (RH) connector G-09 in good condition?



YES : Go to Step 23.

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

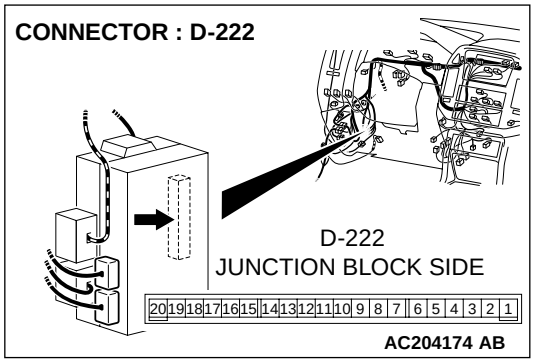


STEP 23. Check the wiring harness between rear combination light (RH) connector G-09 (terminal 4) and ground.

Q: Is the wiring harness between rear combination light (RH) connector G-09 (terminal 4) and ground in good condition?

YES : Replace the socket assembly. 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.

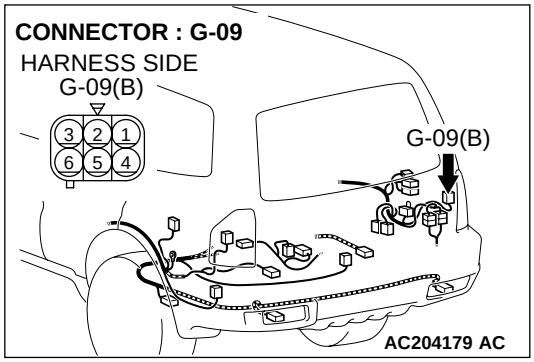


STEP 24. Check rear combination light (RH) connector G-09 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

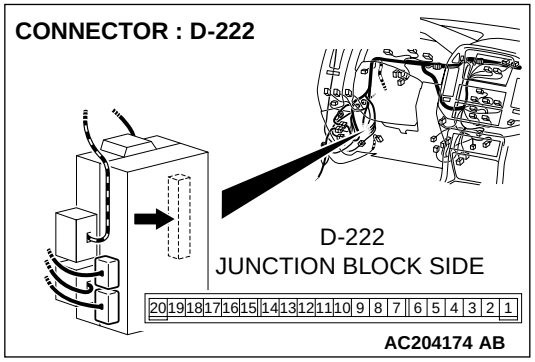
Q: Are rear combination light (RH) connector G-09 and ETACS-ECU connector D-222 in good condition?

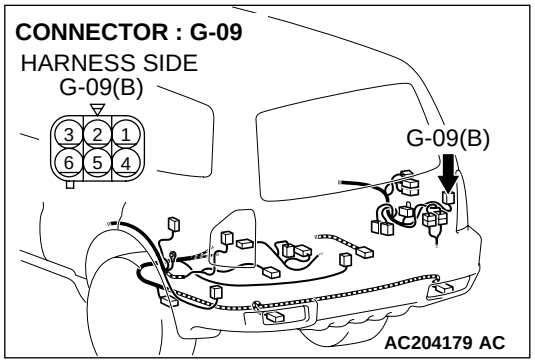
YES : Go to Step 25.

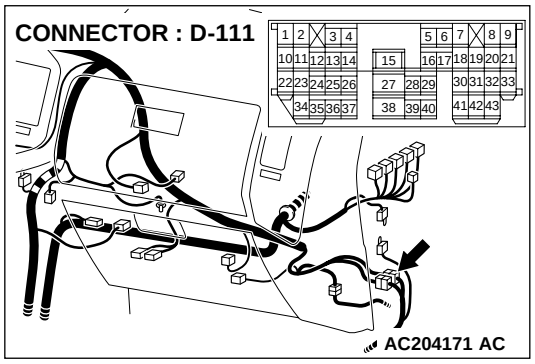
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

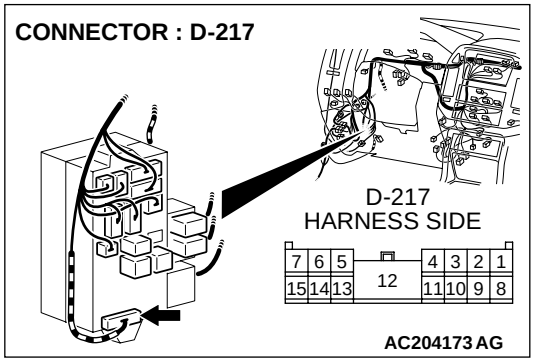


STEP 25. Check the wiring harness between rear combination light (RH) connector G-09 (terminal 5) and ETACS-ECU connector D-222 (terminal 14).







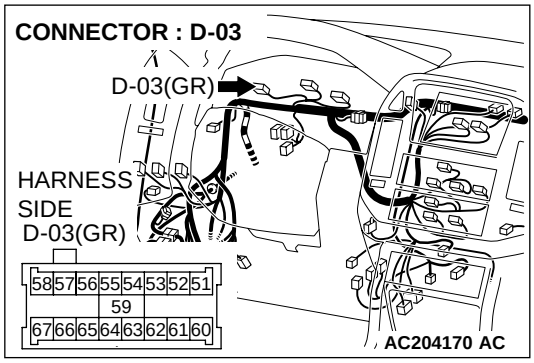


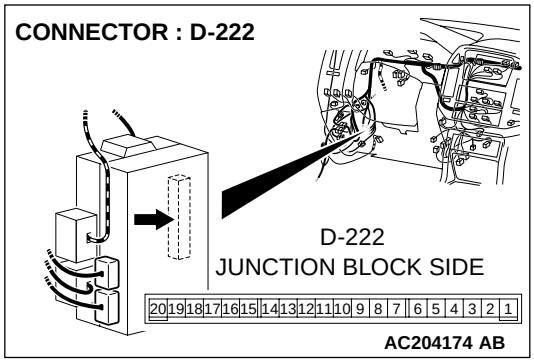
NOTE: Also check junction block connector D-217 and intermediate connector D-111 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-217 or intermediate connector D-111 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light (RH) connector G-09 (terminal 5) and ETACS-ECU connector D-222 (terminal 14) in good condition?

YES : Replace the socket assembly. 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.





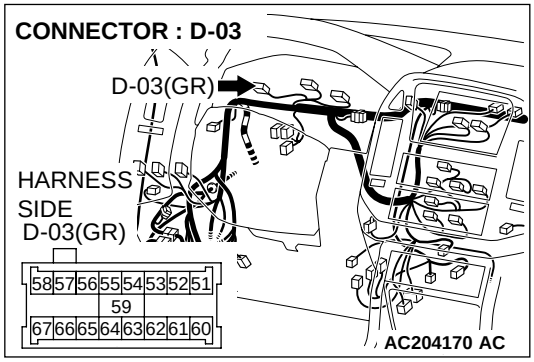
STEP 26. Check combination meter connector D-03 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

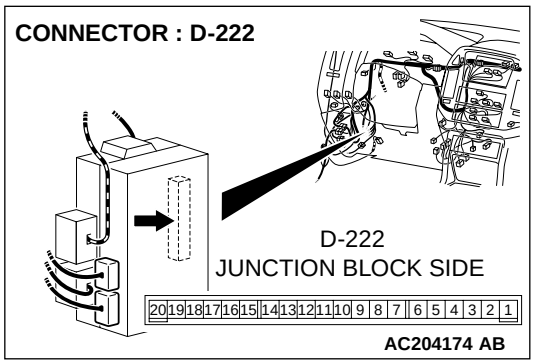
Q: Are combination meter connector D-03 and ETACS-ECU connector D-222 in good condition?

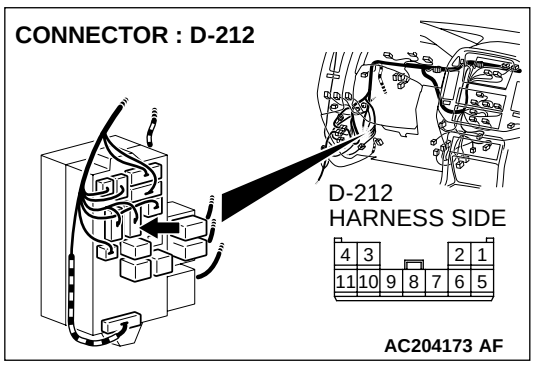
YES : Go to Step 27.

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

STEP 27. Check the wiring harness between combination meter connector D-03 (terminal 60) and ETACS-ECU connector D-222 (terminal 15).





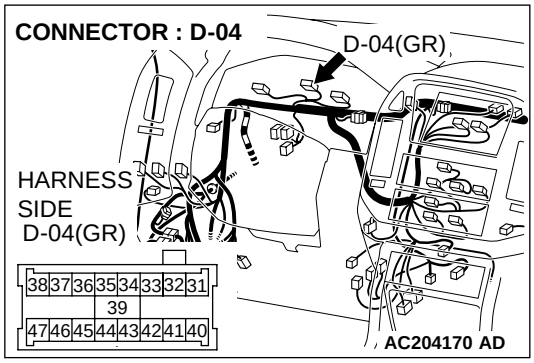


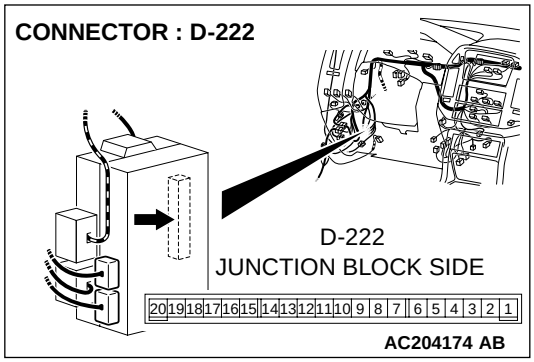
NOTE: Also check junction block connector D-212 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-212 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between combination meter connector D-03 (terminal 60) and ETACS-ECU connector D-222 (terminal 15) in good condition?

YES : Replace the combination meter. 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.





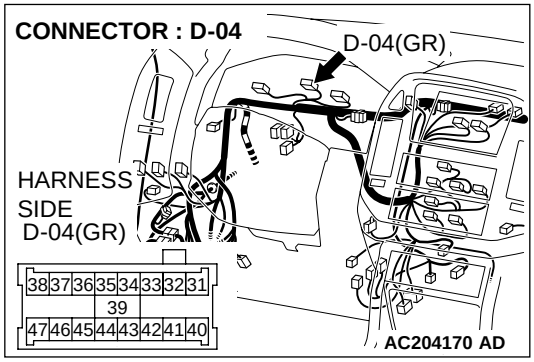
STEP 28. Check combination meter connector D-04 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

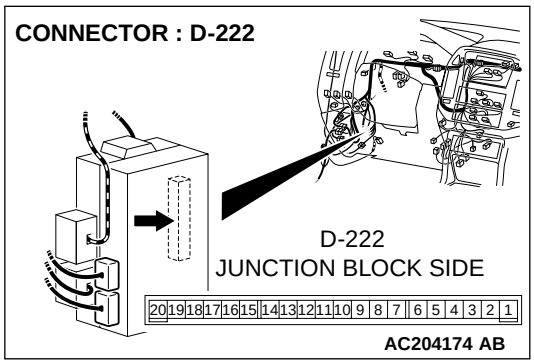
Q: Are combination meter connector D-04 and ETACS-ECU connector D-222 in good condition?

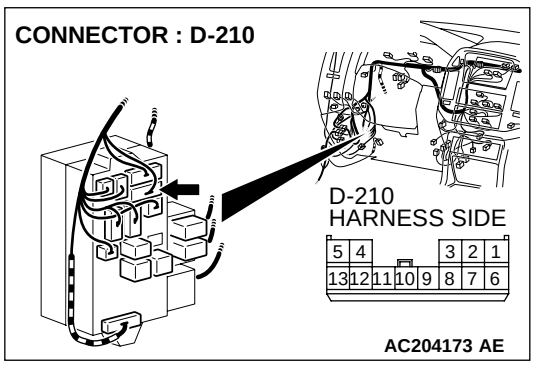
YES : Go to Step 29.

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 29. Check the wiring harness between combination meter connector D-04 (terminal 37) and ETACS-ECU connector D-222 (terminal 14).





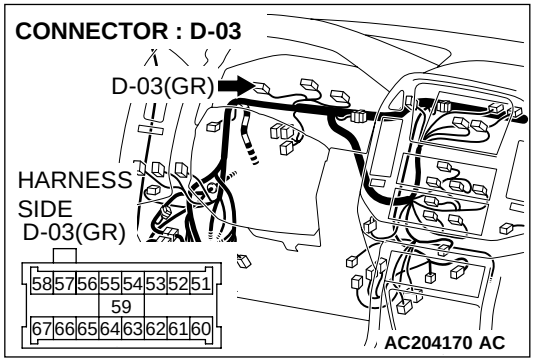


NOTE: Also check junction block connector D-210 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-210 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between combination meter connector D-04 (terminal 37) and ETACS-ECU connector D-222 (terminal 14) in good condition?

YES : Replace the combination meter. 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.

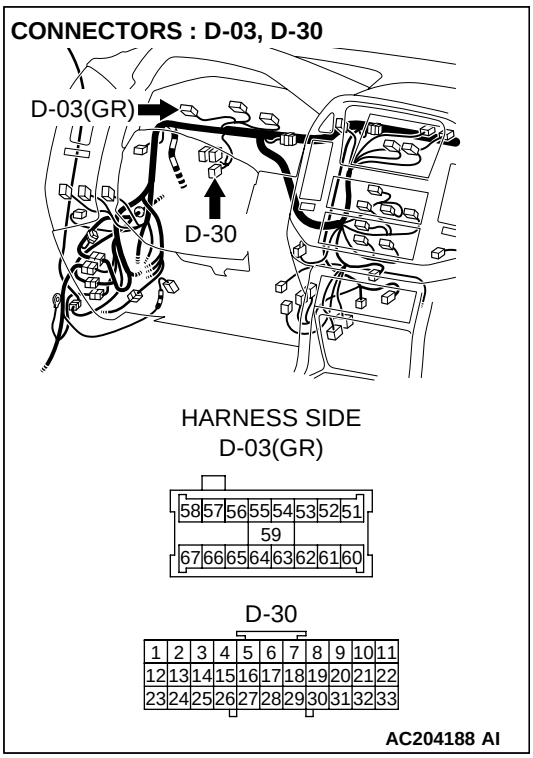


STEP 30. Check combination meter connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector D-03 in good condition?

YES : Go to Step 31.

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.



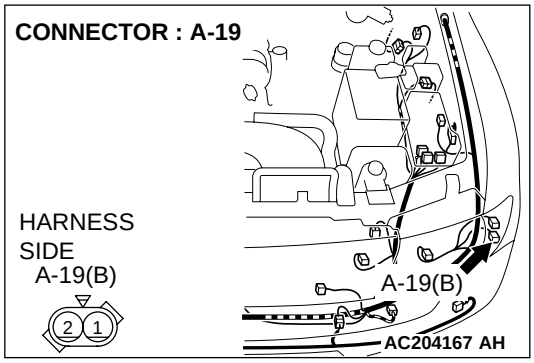
STEP 31. Check the wiring harness between combination meter connector D-03 (terminal 57) and ground.

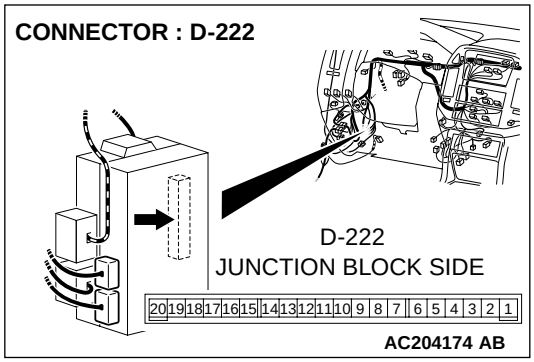
NOTE: Also check joint connector D-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector D-30 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between combination meter connector D-03 (terminal 57) and ground in good condition?

YES : Replace the combination meter. 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 32. Check front turn-signal light (LH) connector A-19 and ETACS-ECU connector D-222 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

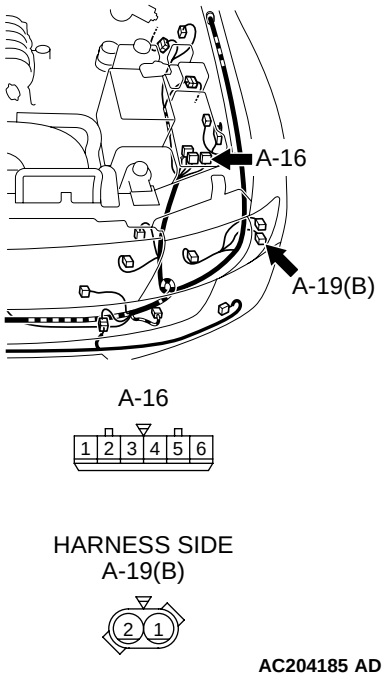
Q: Are front turn-signal light (LH) connector A-19 and ETACS-ECU connector D-222 in good condition?

YES : Go to Step 33.

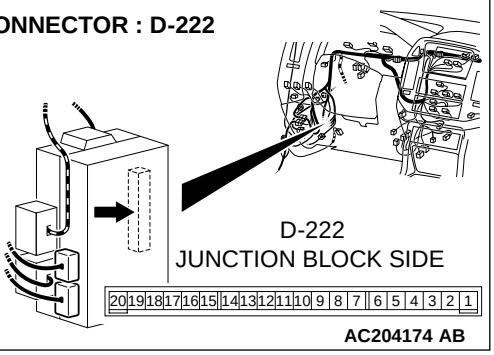
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

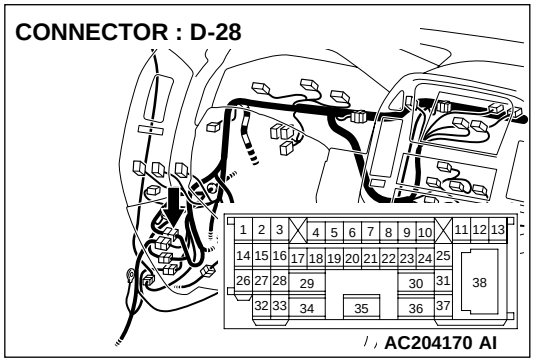
STEP 33. Check the wiring harness between front turn-signal light (LH) connector A-19 (terminal 1) and ETACS-ECU connector D-222 (terminal 15).

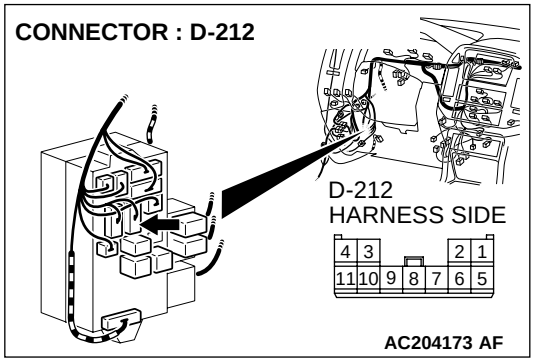
CONNECTORS : A-16, A-19



CONNECTOR : D-222







NOTE: Also check junction block connector D-212, joint connector A-16 and intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-212, joint connector A-16 or intermediate connector D-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 front turn-signal light (LH) connector A-19 (terminal 1) and ETACS-ECU connector D-222 (terminal 15) 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.

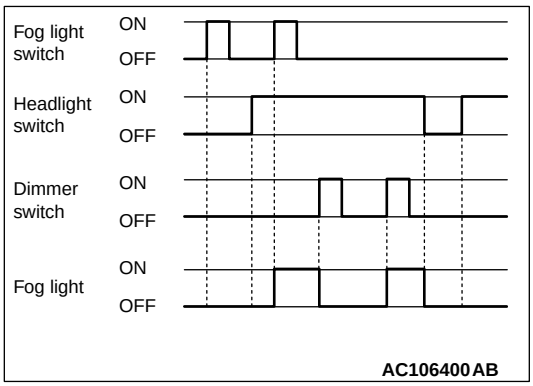
FOG LIGHT

GENERAL DESCRIPTION CONCERNING FOG LIGHT

M1549021400056

The following ECUs affect the functions and control of the fog lights and fog light indicator light.

FUNCTION	CONTROL ECU
Fog light and fog light indicator light	ETACS-ECU, front-ECU, column switch



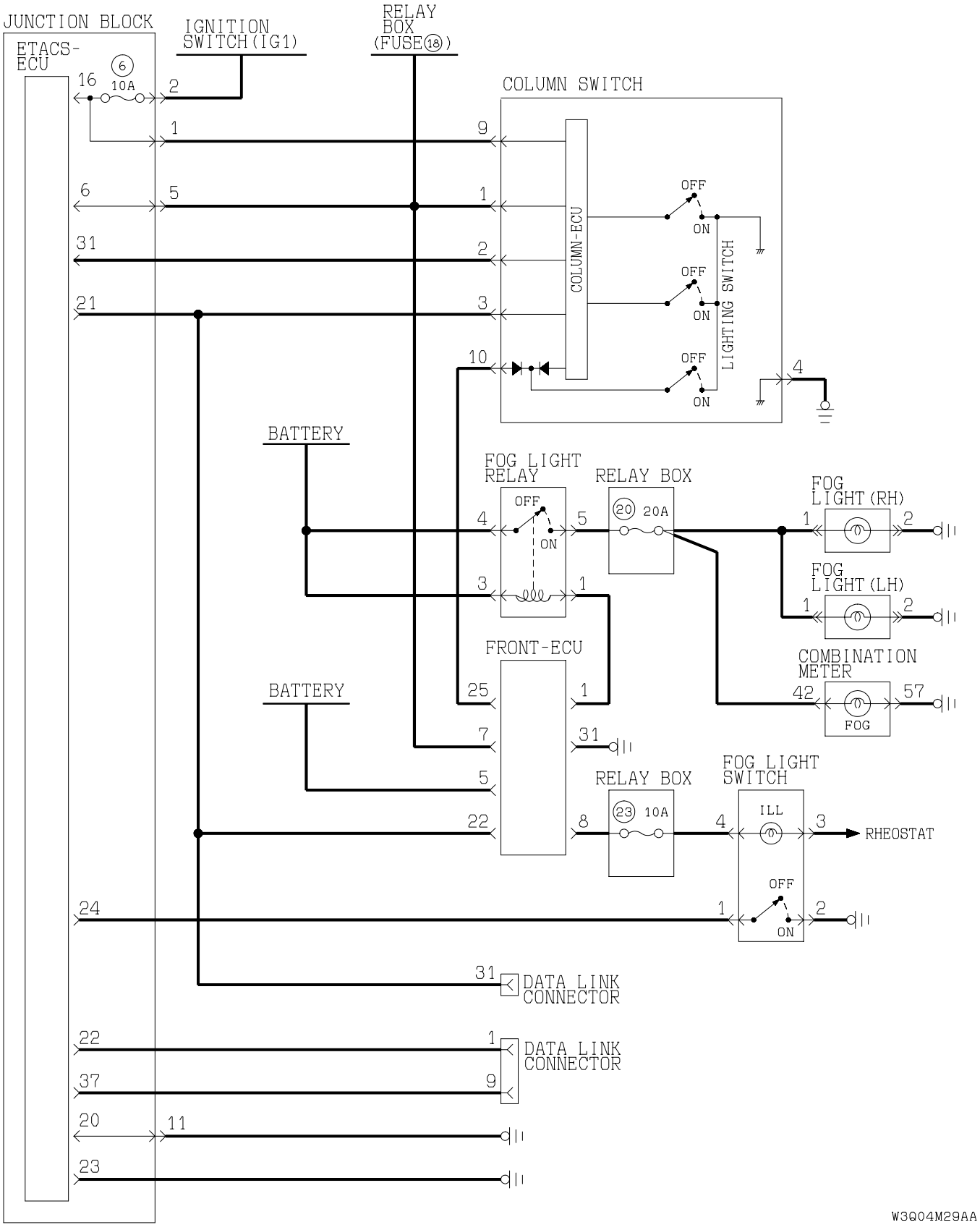
Fog light and fog light indicator light

If the ETAS-ECU sends a fog light "ON" request signal to the front-ECU after the low-beam headlights are on, the fog light relay is turned on, allowing the fog lights and the fog light indicator light to be illuminated. If the low-beam headlights is turned off, the fog lights will also be turn off automatically. Therefore, if the headlights are turned on at next opportunity, the fog lights do not illuminate.

If the high-beam headlights is turned on while the fog lights are on, the fog lights will be turned off. Then, if you switch the headlights from the high-beam to the low-beam, the fog lights will be turned on again.

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

General circuit diagram for the fog lights

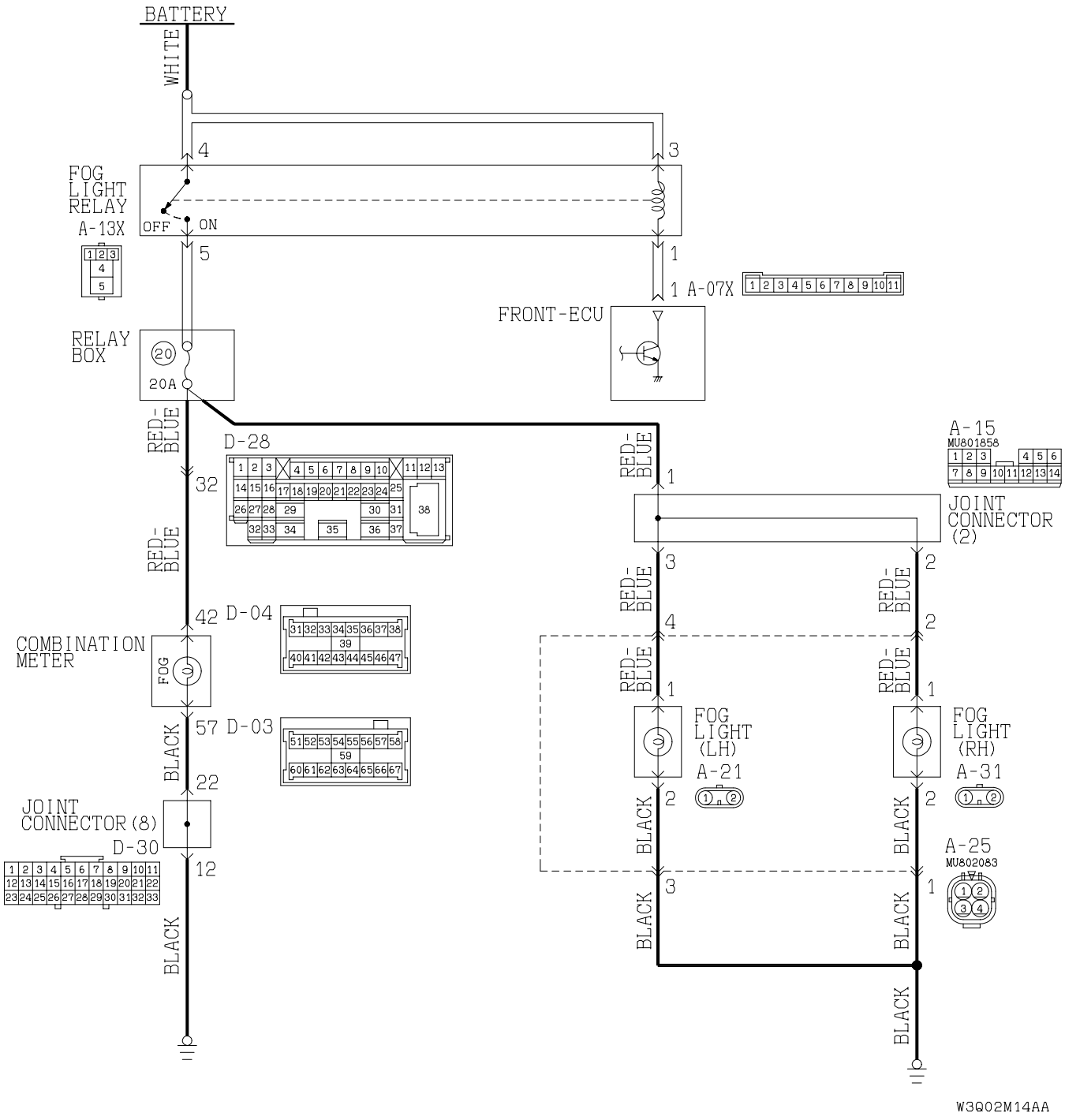


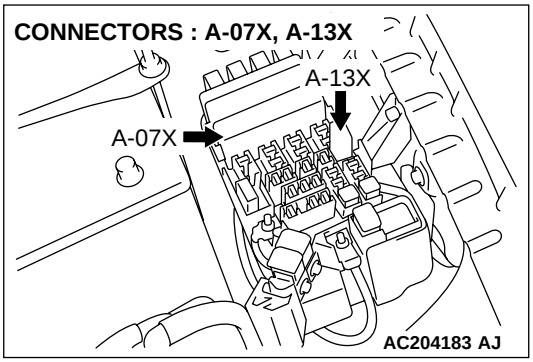
TSB Revision

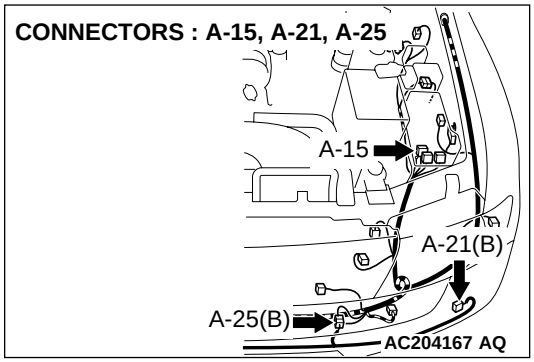
INSPECTION PROCEDURE L-1: Fog Light: Fog lights do not illuminate when the fog light switch is operated.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Fog Light Circuit







CIRCUIT OPERATION

- The ETACS-ECU sends a fog light illumination request signal ("LIGHT ON" signal) to the front-ECU when the fog light switch is turned on while the headlights are on.
- Then the front-ECU switches on its relay to illuminate the fog lights.

TECHNICAL DESCRIPTION (COMMENT)

If the headlights illuminate normally, the fog light relay, the fog light switch, the front-ECU or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The fog light relay may be defective
- The fog light switch may be defective
- The front-ECU 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
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Verify the headlight operation.

Q: Do the headlights illuminate normally?

The lights illuminate normally at both high and low beams : Go to Step 2.

Headlights do not Illuminate at low beam : Refer to Inspection Procedure J-2 "Headlights (low-beam) do not illuminate normally P.54Bb-308."

Headlights do not Illuminate at high beam : Refer to Inspection Procedure J-3 "Headlights (high-beam) do not illuminate normally P.54Bb-313."

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

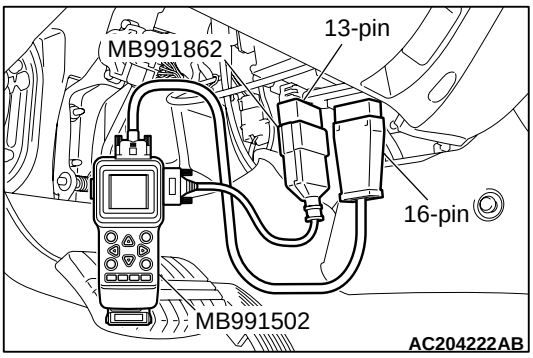
Set each switch to the following condition before checking input signal from the fog light switch:

- Ignition switch: ON
- Fog light switch: ON

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

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



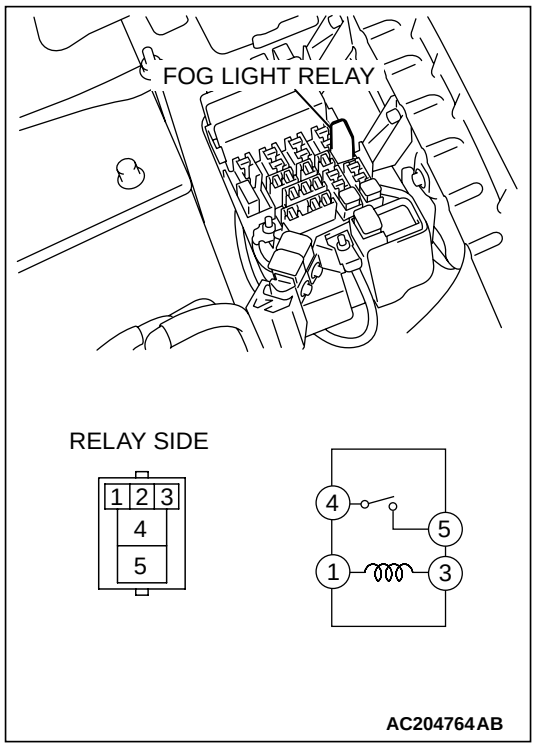
(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Operate scan tool MB991502 according to the procedure below to display "F.FOG LIGHT"
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "FUNCTION DIAG."
   5. Select "LIGHTING."
   6. Select "F.FOG LIGHT."
(4) Check that normal conditions are displayed on the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW(IG1)	ON
ITEM 36	F.FOG LIGHT	ON

Q: Are normal conditions displayed on the "IG SW(IG1)" and "F.FOG LIGHT"?

YES : Go to Step 3.

NO :
- Normal condition is not displayed on the "IG SW(IG1)": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."
- Normal condition is not displayed on the "F.FOG LIGHT": Refer to Inspection Procedure O-3 "ETACS-ECU does not receive any signal from the fog light switch P.54Bc-10."



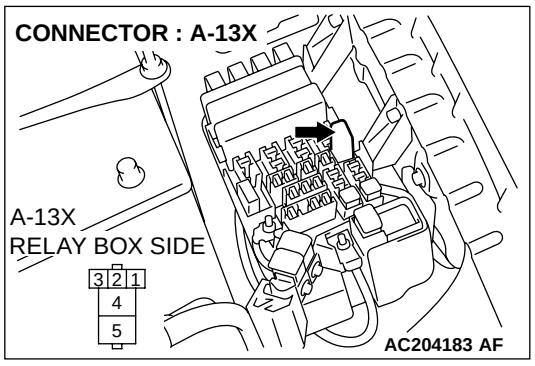
STEP 3. Check the fog light relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
3 – Battery (+) terminal, 1 – Battery (-) terminal	4 – 5	Less than 2 ohms

Q: Is the fog light relay in good condition?

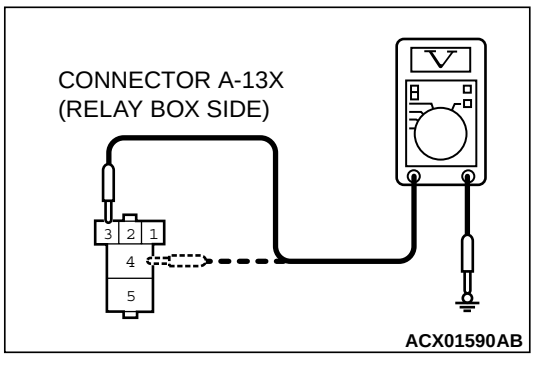
YES : Go to Step 4.

NO : Replace the fog light relay. Verify that the fog lights illuminate normally.



STEP 4. Check the battery power supply circuit to the fog light relay. Test at fog light relay connector A-13X.

(1) Disconnect fog light relay connector A-13X and measure at the voltage available at the relay box side of the connector.

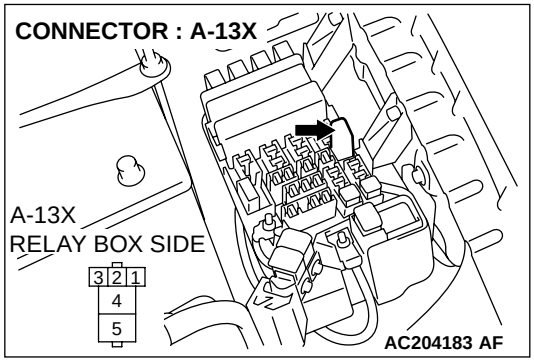


(2) Measure the voltage between terminal 3 and ground, and also between terminal 4 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 7.

NO : Go to Step 5.

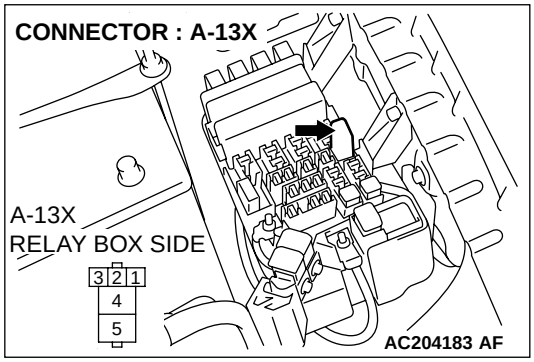


STEP 5. Check fog light relay connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-13X in good condition?

YES : Go to Step 6.

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



STEP 6. Check the wiring harness between fog light relay connector A-13X (terminals 3 and 4) and the battery.

Q: Is the wiring harness between fog light relay connector A-13X (terminals 3 and 4) and the battery in good condition?

YES : No action is necessary and testing is complete.

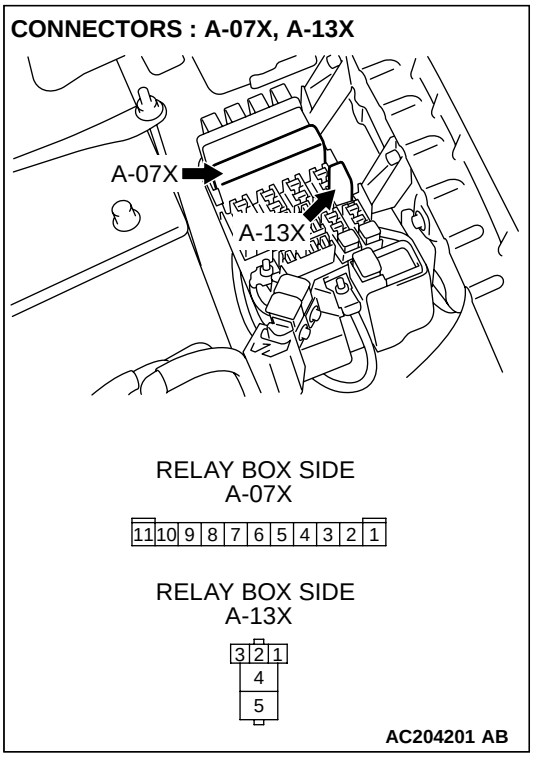
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the fog lights illuminate normally.

STEP 7. Check fog light relay connector A-13X and front-ECU connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are fog light relay connector A-13X and front-ECU connector A-07X 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 fog lights illuminate normally.

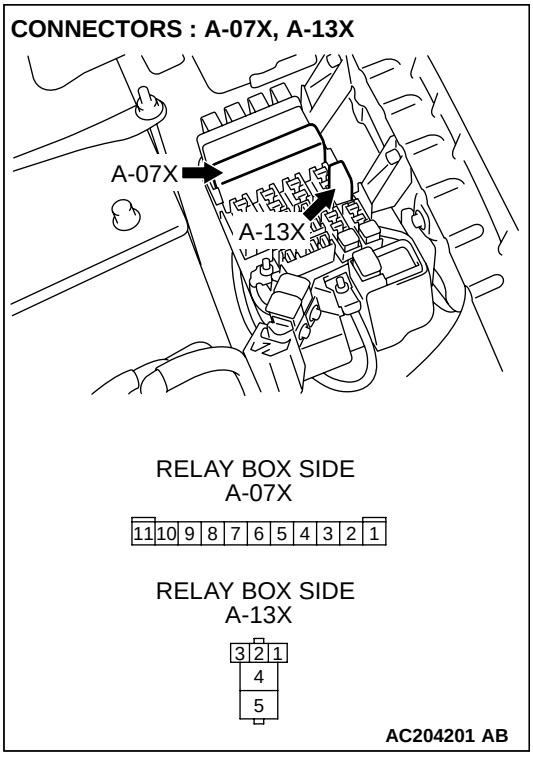


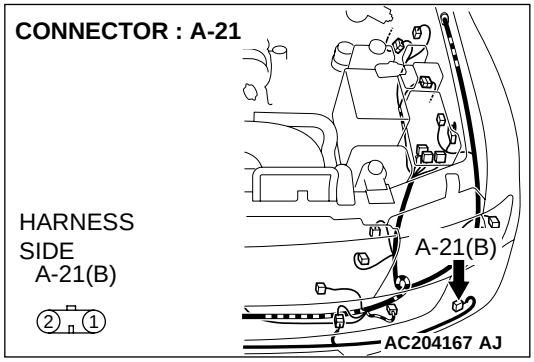
STEP 8. Check the wiring harness between fog light relay connector A-13X (terminal 1) and front-ECU connector A-07X (terminal 1).

Q: Is the wiring harness between fog light relay connector A-13X (terminal 1) and front-ECU connector A-07X (terminal 1) in good condition?

YES : Go to Step 9.

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



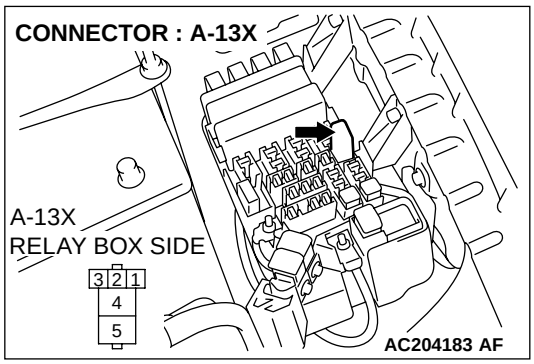


STEP 9. Check fog light (LH) connector A-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (LH) connector A-21 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 fog lights illuminate normally.



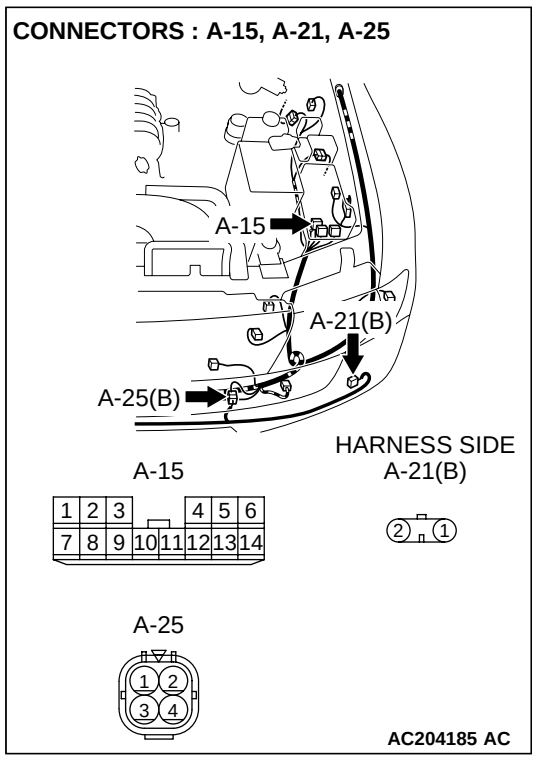
STEP 10. Check the wiring harnesses among fog light relay connector A-13X (terminal 5) and fog light (LH) connector A-21 (terminal 1).

NOTE: Also check joint connector A-15 and intermediate connector A-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector A-15 or intermediate connectors A-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harnesses among fog light relay connector A-13X (terminal 5) and fog light (LH) connector A-21 (terminal 1) in good condition?

YES : Go to Step 11.

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 fog lights illuminate normally.



STEP 11. Replace the ECU.
(1) Replace the front-ECU.
(2) Verify that the fog lights illuminate normally.

Q: Do the fog lights illuminate normally?

YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU. Verify that the fog lights illuminate normally.

INSPECTION PROCEDURE L-2: Fog Light: Fog lights do not go out when the headlights (low-beam) are turned off while the fog lights are on.

TECHNICAL DESCRIPTION (COMMENT)
If the trouble above occurs, the front-ECU may be defective.

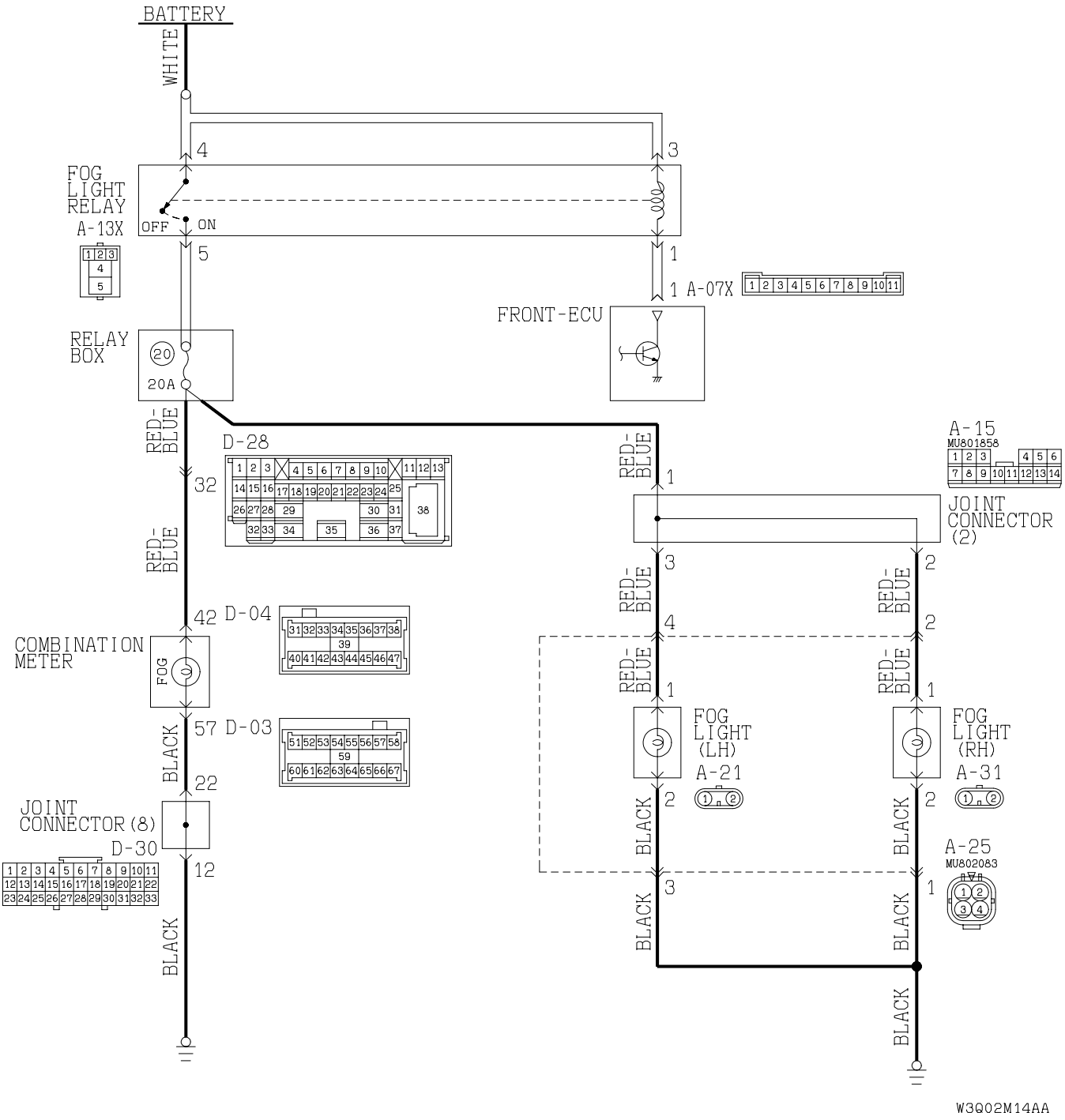
TROUBLESHOOTING HINT
The front-ECU may be defective

DIAGNOSIS

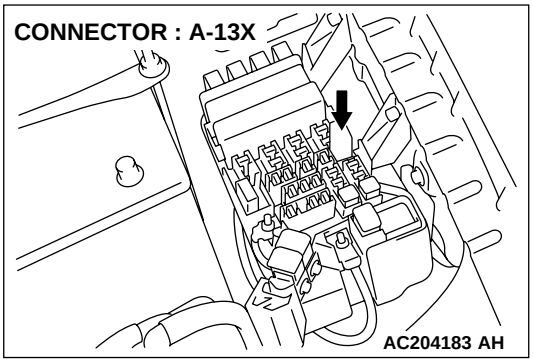
Replace the front-ECU.
The fog lights should go out when the headlights (low-beam) are turned off while the fog lights are on.

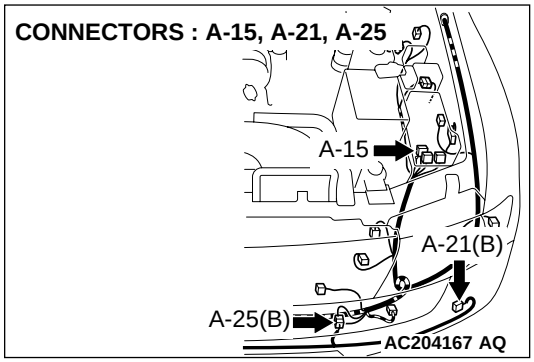
INSPECTION PROCEDURE L-3: Fog Light: One of the fog lights does not illuminate.

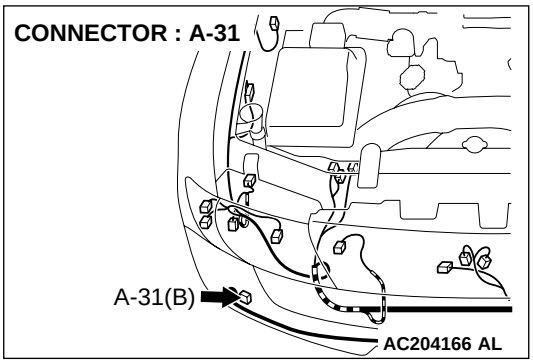
Fog Light Circuit

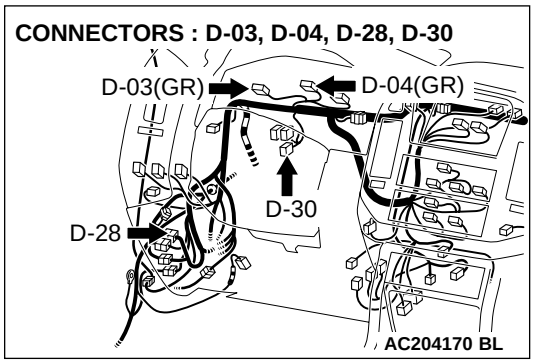


TSB Revision









TECHNICAL DESCRIPTION (COMMENT)

If one of the fog lights does not illuminate, the fog light relay or the fog light bulb may be defective. If the fog light indicator light does not illuminate, the combination meter may be defective.

TROUBLESHOOTING HINTS

- The fog light bulb may be defective
- The combination meter 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

STEP 1. Verify that the fog lights and the fog light indicator light illuminate.

Q: Which light does not illuminate?

Fog light (LH) : Go to Step 2.
Fog light (RH) : Go to Step 8.
Fog light indicator : Go to Step 14.
Fog lights (both RH and LH) : Go to Step 20.
All lights : Refer to Inspection procedure L-1 "Fog lights do not illuminate when the fog light switch is turned on P.54Bb-2."

STEP 2. Check the fog light bulb (LH).

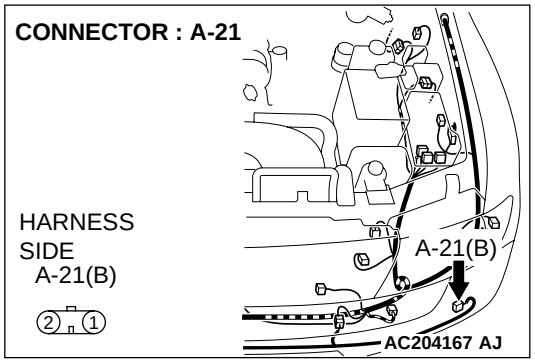
(1) Remove the fog light bulb (LH).
(2) Verify that the fog light bulb (LH) is not damaged or burned out.

Q: Is the fog light bulb (LH) in good condition?

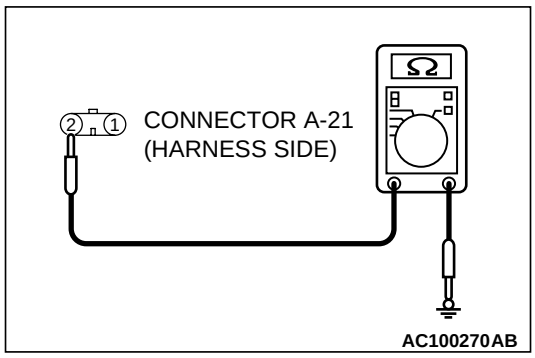
YES : Go to Step 3.
NO : Replace the fog light bulb (LH). Verify that the fog lights illuminate normally.

STEP 3.Check the ground circuit to the fog light (LH). Test at fog light (LH) connector A-21.

(1) Disconnect fog light (LH) connector A-21 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 equal 2 ohms or less.



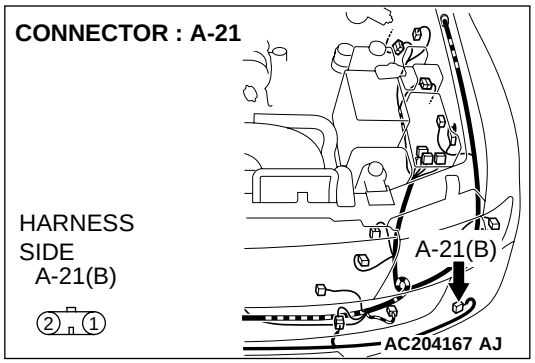
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.
NO : Go to Step 4.

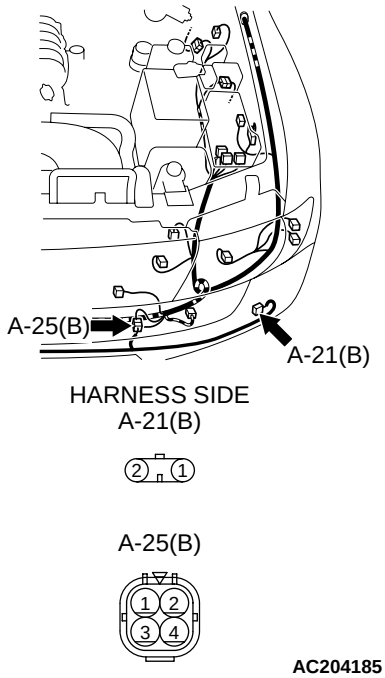
STEP 4. Check fog light (LH) connector A-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (LH) connector A-21 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 fog lights illuminate normally.



CONNECTORS : A-21, A-25



STEP 5. Check the wiring harness between fog light (LH) connector A-21 (terminal 2) and ground.

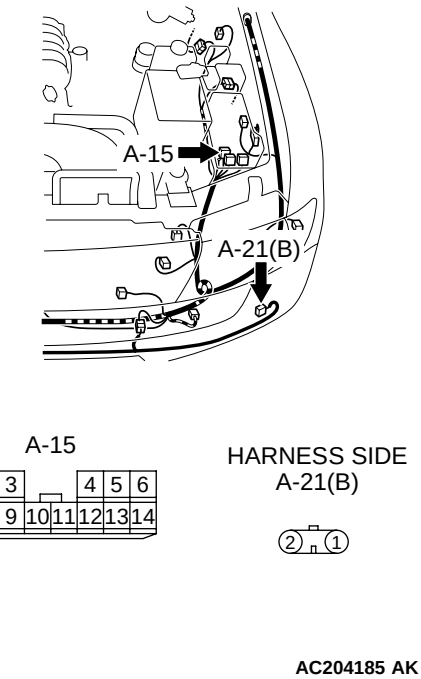
NOTE: Also check intermediate connector A-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between fog light (LH) connector A-21 (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 fog lights illuminate normally.

CONNECTORS : A-15, A-21



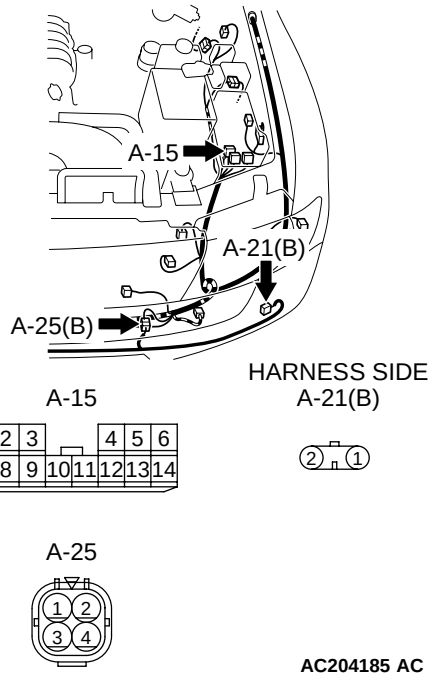
STEP 6. Check joint connector (2) A-15 and fog light (LH) connector A-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are joint connector (2) A-15 and fog light (LH) connector A-21 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 fog lights illuminate normally.

CONNECTORS : A-15, A-21, A-25



STEP 7. Check the wiring harness between joint connector (2) A-15 (terminal 3) and fog light (LH) connector A-21 (terminal 1).

NOTE: Also check intermediate connector A-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-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 (2) A-15 (terminal 3) and fog light (LH) connector A-21 (terminal 1) in good condition?

YES : No action is necessary and testing is complete.

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

STEP 8. Check the fog light bulb (RH).

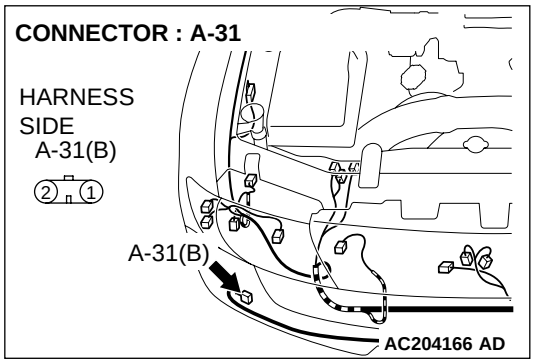
(1) Remove the fog light bulb (RH).

(2) Verify that the fog light bulb (RH) is not damaged or burned out.

Q: Is the fog light bulb (RH) in good condition?

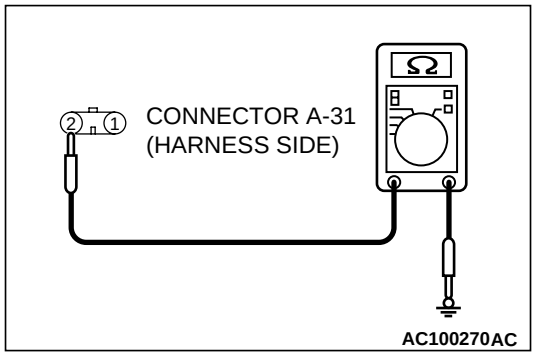
YES : Go to Step 9.

NO : Replace the fog light bulb (RH). Verify that the fog lights illuminate normally.



STEP 9. Check the ground circuit to the fog light (RH). Test at fog light (RH) connector A-31.

(1) Disconnect fog light (RH) connector A-31 and measure the resistance available at the wiring harness side of the connector.

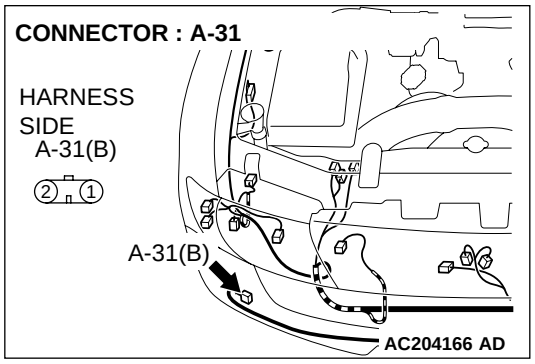


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

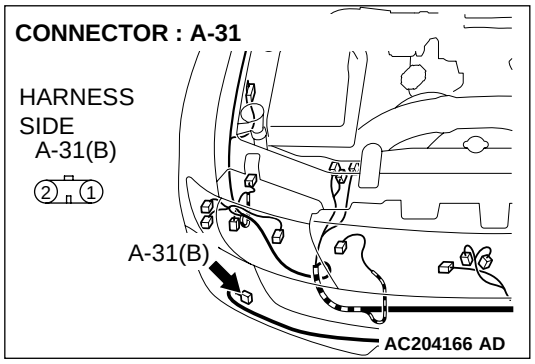
YES : Go to Step 12.
NO : Go to Step 10.

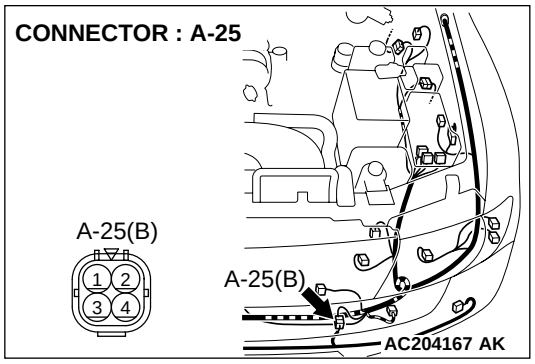
STEP 10. Check fog light (RH) connector A-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is fog light (RH) connector A-31 in good condition?

YES : Go to Step 11.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the fog lights illuminate normally.





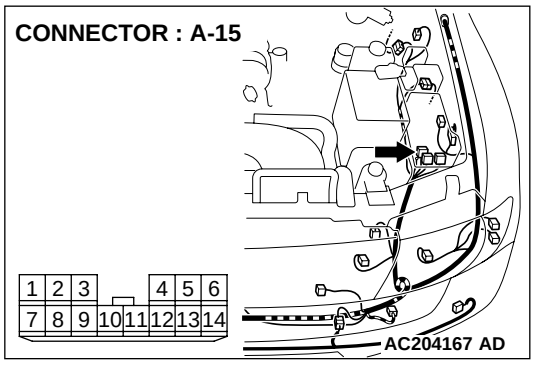
STEP 11. Check the wiring harness between fog light (RH) connector A-31 (terminal 2) and ground.

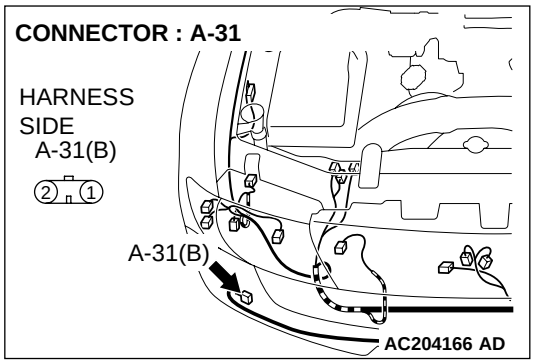
NOTE: Also check intermediate connector A-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between fog light (RH) connector A-31 (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 fog lights illuminate normally.



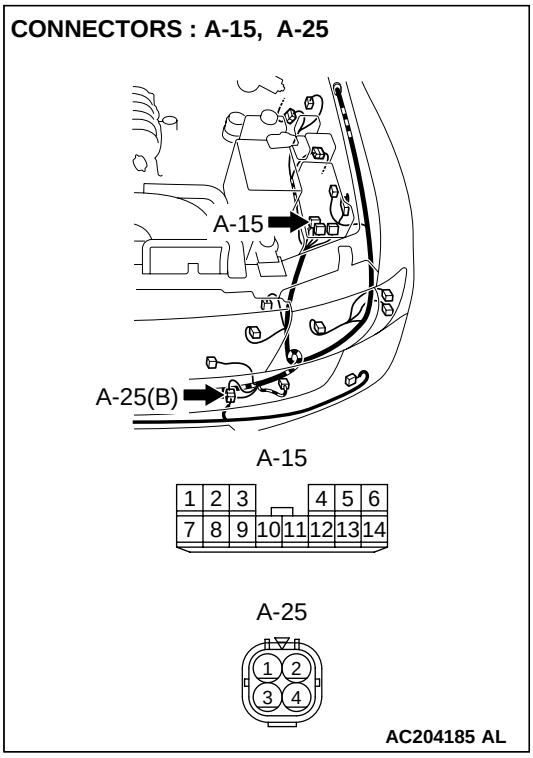


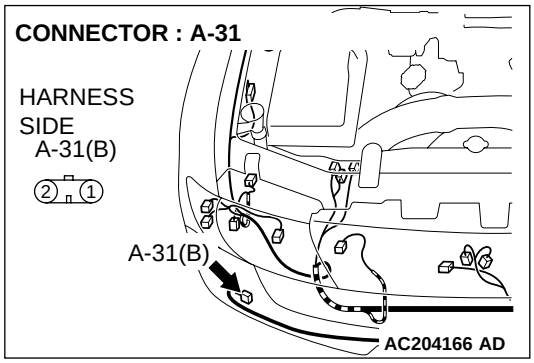
STEP 12. Check joint connector (2) A-15 and fog light (RH) connector A-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are joint connector (2) A-15 and fog light (RH) connector A-31 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 fog lights illuminate normally.





STEP 13. Check the wiring harness between joint connector (2) A-15 (terminal 2) and fog light (RH) connector A-31 (terminal 1).

NOTE: Also check intermediate connector A-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-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 (2) A-15 (terminal 2) and fog light (RH) connector A-31 (terminal 1) in good condition?

YES : No action is necessary and testing is complete.

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

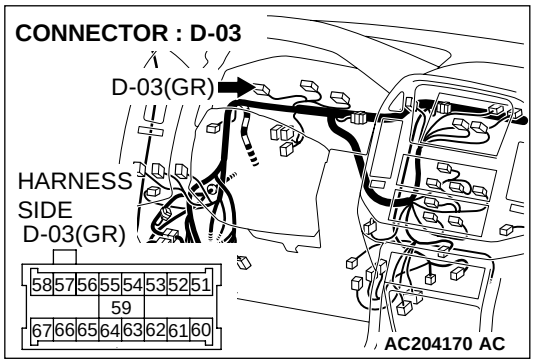
STEP 14. Check the fog light indicator light bulb.

(1) Remove the fog light indicator light bulb.
(2) Verify that the fog light indicator light bulb is not damaged or burned out.

Q: Is the fog light indicator light bulb in good condition?

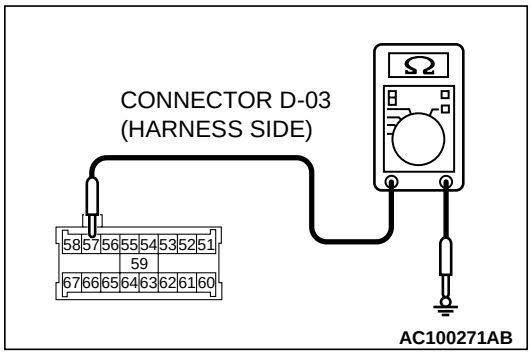
YES : Go to Step 15.

NO : Replace the fog light indicator light bulb. Verify that the fog light indicator light illuminates normally.



STEP 15. Check the ground circuit to the fog light indicator light. Test at combination meter connector D-03.

(1) Disconnect fog light indicator light connector D-03 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 57 and ground.
- The resistance should equal 2 ohms or less.

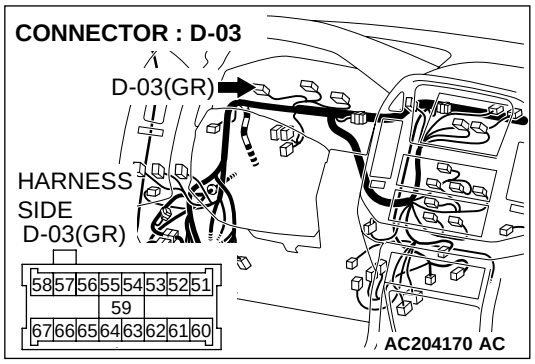
Q: Is the measured resistance 2 ohms or less?

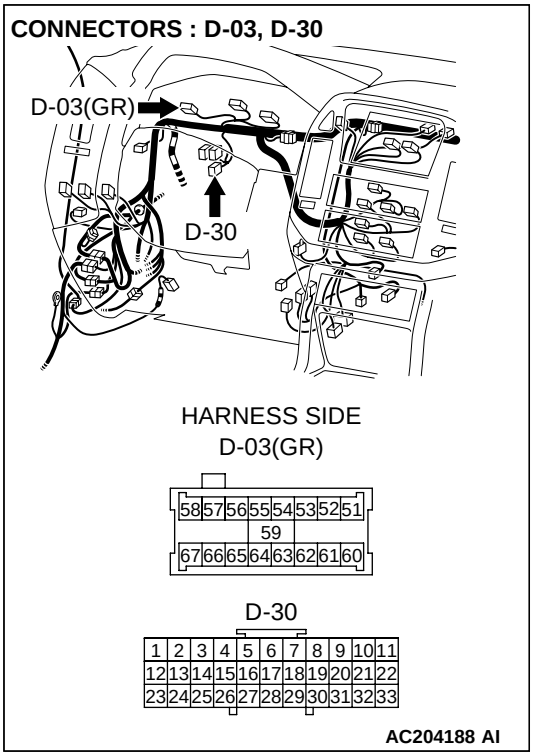
YES : Go to Step 18.
NO : Go to Step 16.

STEP 16. Check combination meter connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector D-03 in good condition?

YES : Go to Step 17.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the fog light indicator light illuminates normally.





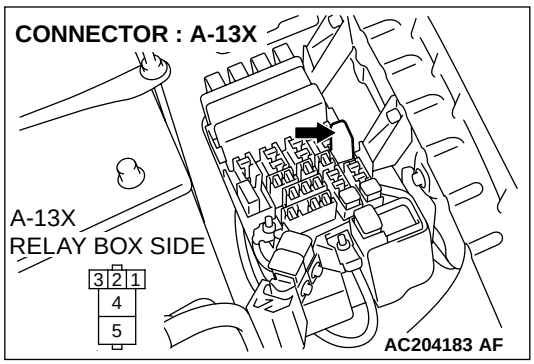
STEP 17. Check the wiring harness between combination meter connector D-03 (terminal 57) and ground.

NOTE: Also check joint connector D-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector D-30 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 combination meter connector D-03 (terminal 57) 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 fog light indicator light illuminates normally.

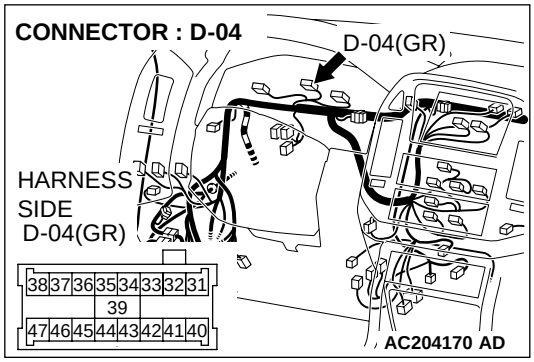


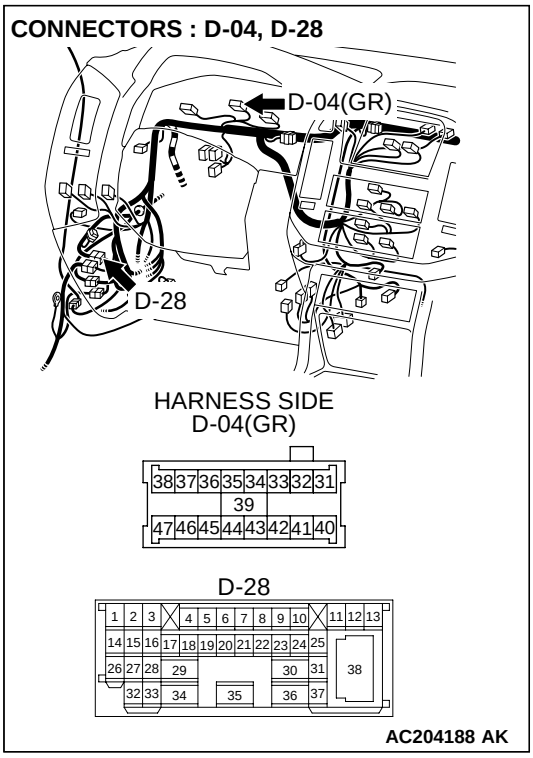
STEP 18. Check combination meter connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector D-04 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 fog light indicator light illuminates normally.





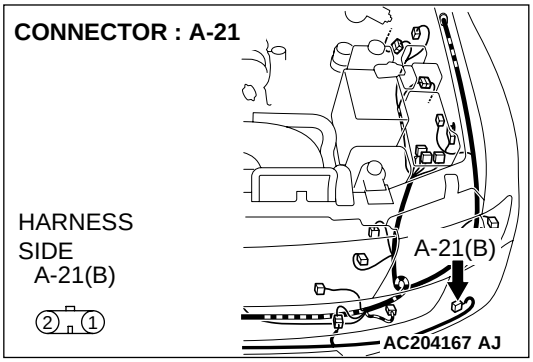
STEP 19. Check the wiring harness between relay box (fuse No.20) and combination meter connector D-04 (terminal 42).

NOTE: Also check intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-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 relay box (fuse No.20) and combination meter connector D-04 (terminal 42) in good condition?

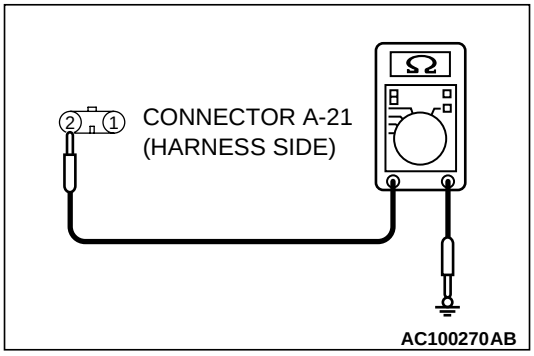
YES : Replace the combination meter (printed-circuit board). Verify that the fog light indicator light illuminates normally.

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 fog light indicator light illuminates normally.



STEP 20.Check the ground circuit to the fog light (LH). Test at fog light (LH) connector A-21.

(1) Disconnect fog light (LH) connector A-21 and measure the resistance available at the wiring harness side of the connector.

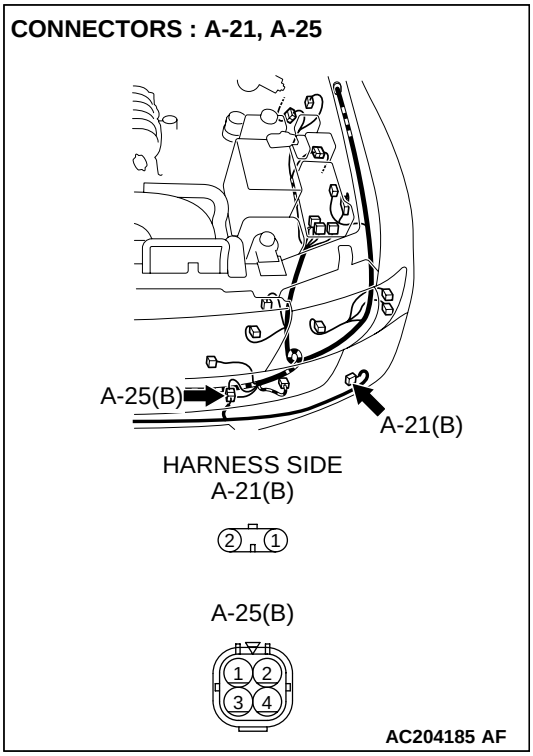


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 22.

NO : Go to Step 21.



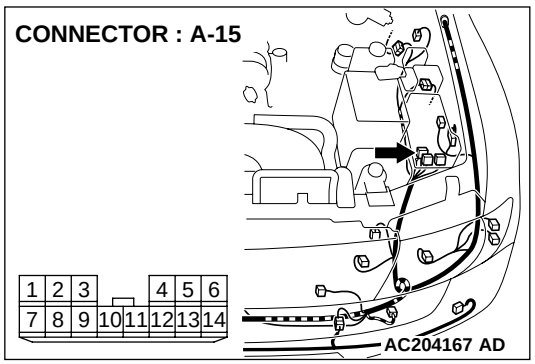
STEP 21. Check the wiring harness between fog light (LH) connector A-21 (terminal 2) and ground.

NOTE: Also check intermediate connector A-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-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 fog light (LH) connector A-21 (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 fog lights illuminate normally.

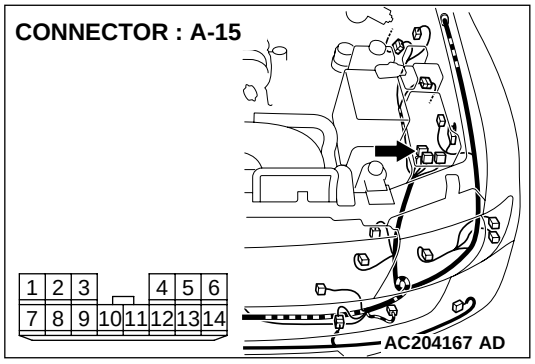


STEP 22. Check joint connector (2) A-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector (2) A-15 in good condition?

YES : Go to Step 23.

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



STEP 23. Check the wiring harness between joint connector (2) A-15 (terminal 1) and relay box (fuse No. 20).

Q: Is the wiring harness between joint connector (2) A-15 (terminal 1) and relay box (fuse No. 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 fog lights illuminate normally.

TSB Revision

INTERIOR LIGHT

GENERAL DESCRIPTION CONCERNING INTERIOR LIGHT

M1549021800065

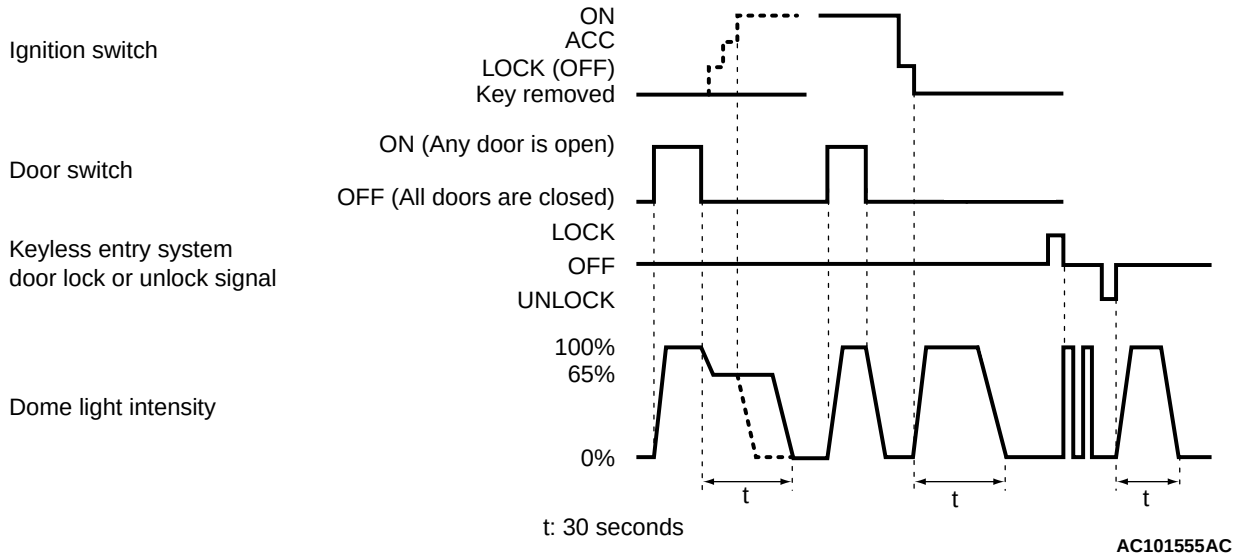
The ECU related to the interior light function types and various control functions are as follows.

FUNCTION	CONTROL ECU
Dome light control function	ETACS-ECU
Ignition key hole illumination light function	ETACS-ECU

Dome light control function

When the dome light switch is at the door position, the ETACS-ECU controls the lighting of the dome light as follows:

- When a door is opened to get on or get off the vehicle with the ignition switch off, the dome light lights up at a luminance of 100 percent. When a door is closed, the dome light dims at a luminance of 65 percent, and goes off 30 seconds later. However if the ignition switch is turned ON or if all doors are locked while they are closed, the dome light will go off at that point.
- When a door is opened with the ignition switch ON, the dome light lights up at a luminance of 100 percent. When a door is closed, the dome light goes off.
- When the ignition key is removed with all doors closed, the dome light lights up at a luminance of 100 percent, and goes off 30 seconds later. However if the ignition key is inserted again or if all doors are locked while the dome light is lighting, the dome light will go off at that point.
- The dome light is flashed twice when door is locked with keyless entry. When door is unlocked with keyless entry, the dome light lights at a luminance of 100 percent, and goes off 15 seconds later.



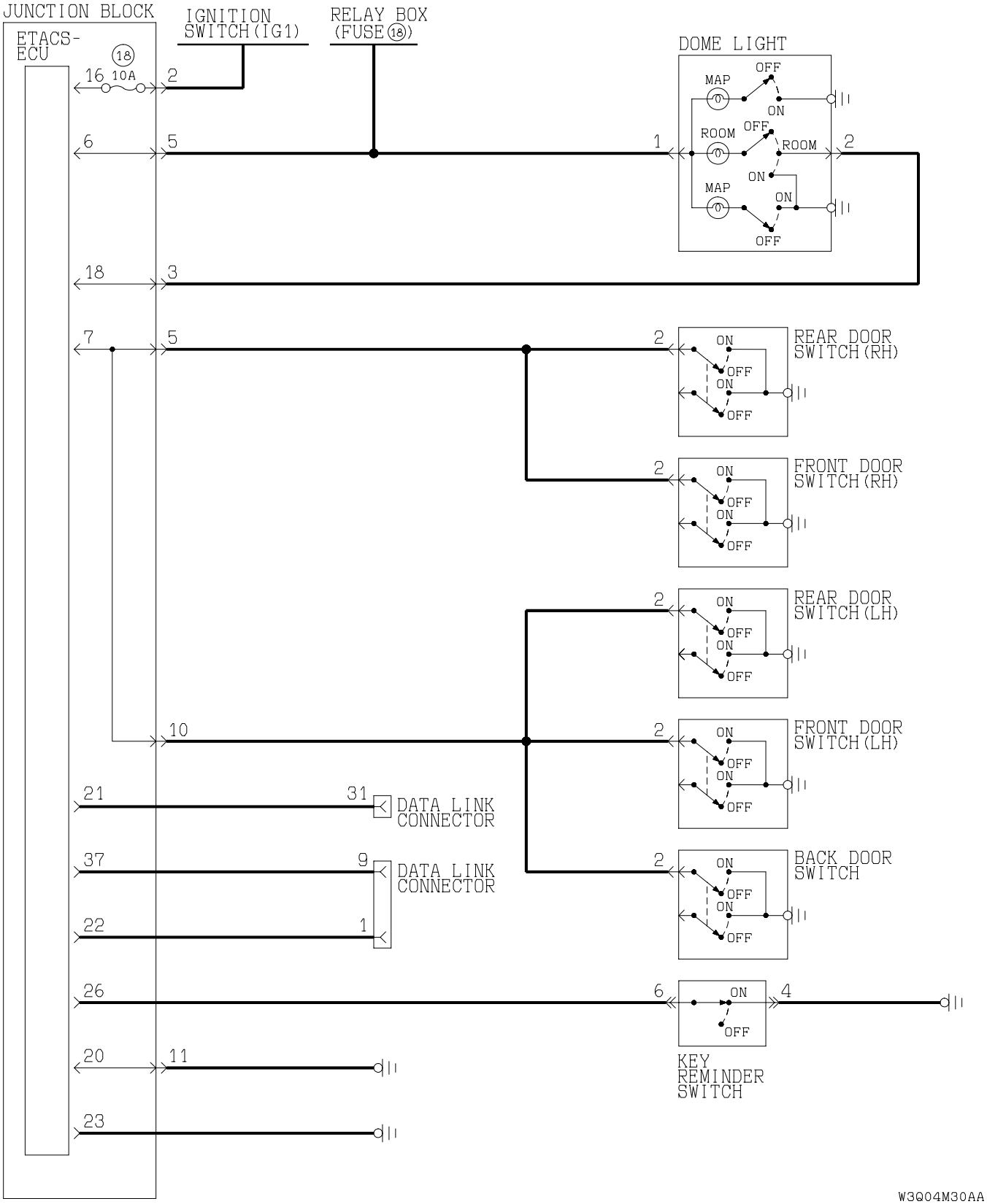
NOTE: The dotted lines indicate that lighting mode when the ignition switch is turned ON, all doors are locked during the timer illumination time.

Ignition key hole illumination light function

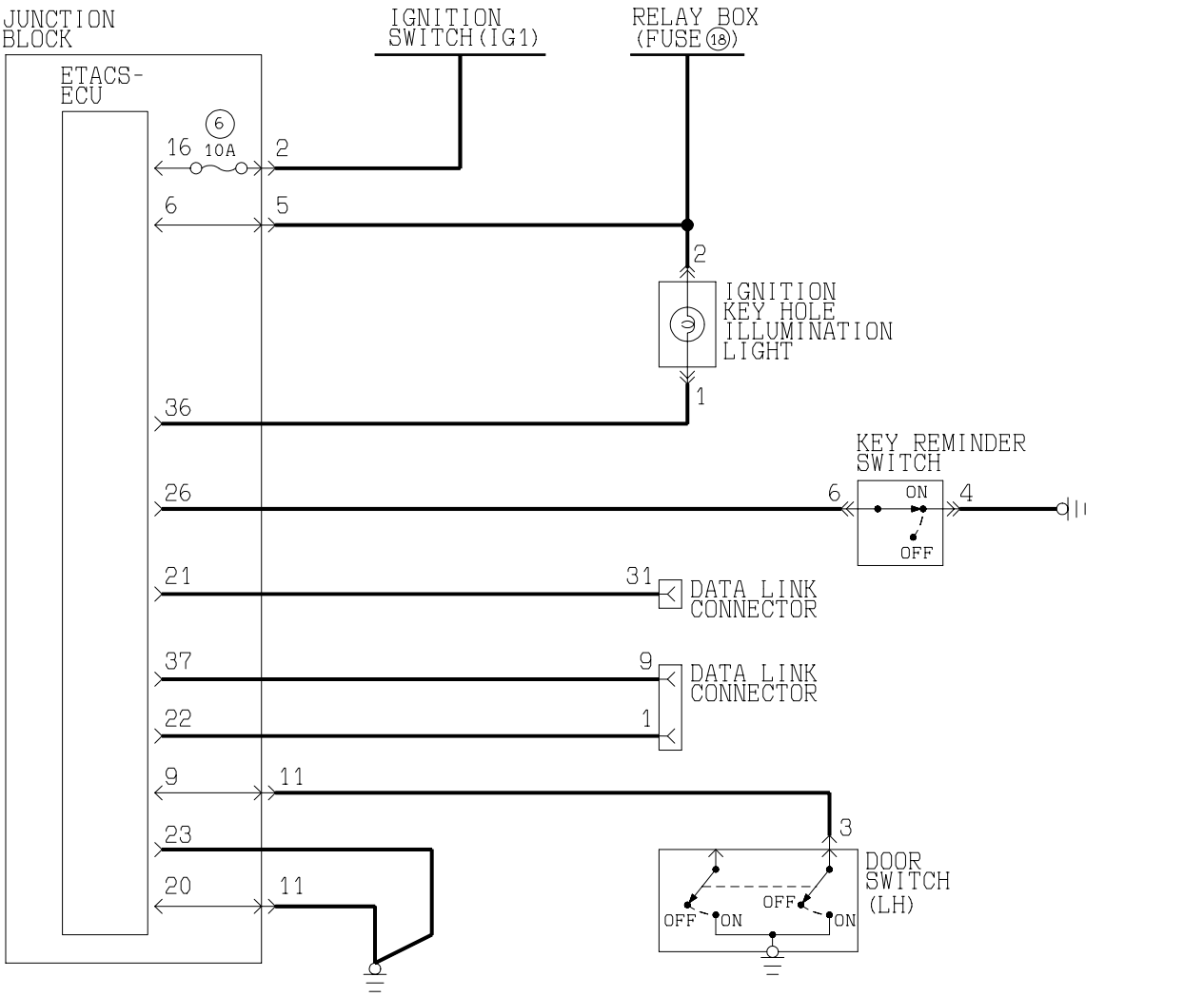
The ignition key cylinder illumination light illuminates when the driver's door is opened with the ignition switch off, and for thirty seconds after the driver's door is closed. It also illuminates for thirty seconds after the ignition key is pulled out. In any case, it goes out when the ignition switch is turned on.

TSB Revision

General circuit diagram for interior lights



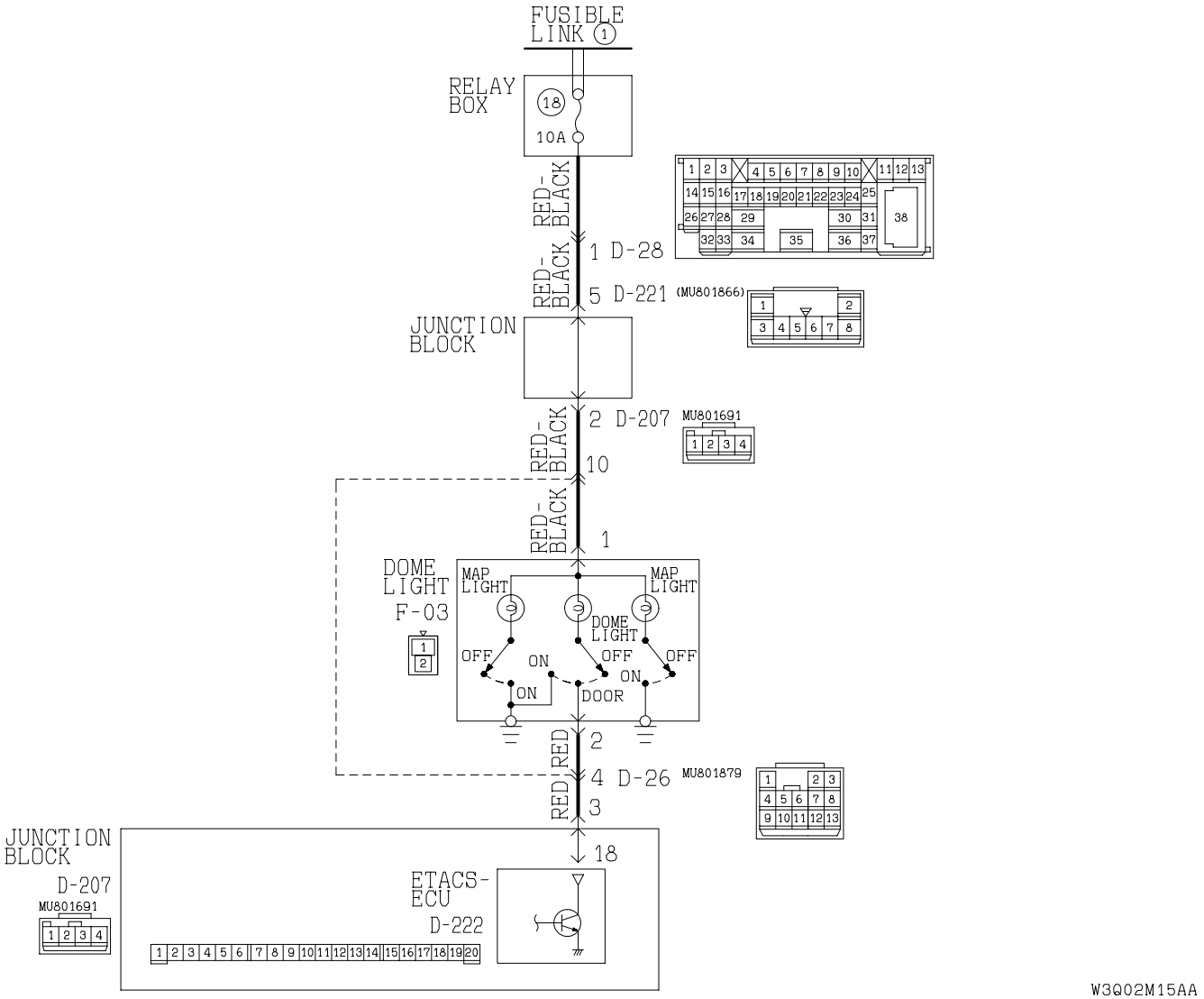
TSB Revision

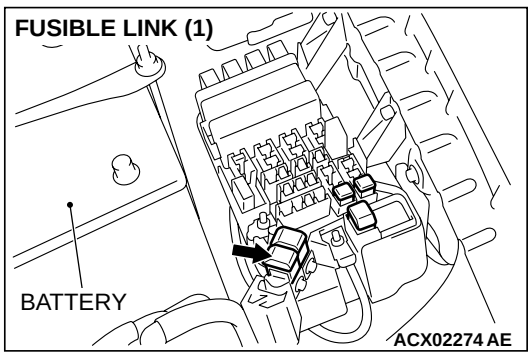

JUNCTION BLOCK
ETACS-ECU
IGNITION SWITCH(IG1)
RELAY BOX (FUSE 18)
6
16
10A
2
6
5
2
IGNITION KEY HOLE ILLUMINATION LIGHT
1
36
KEY REMINDER SWITCH
26
6
ON
4
OFF
21
31
DATA LINK CONNECTOR
37
9
DATA LINK CONNECTOR
22
1
9
11
3
23
DOOR SWITCH (LH)
OFF
OFF
ON
ON
20
11
W3Q04M31AA

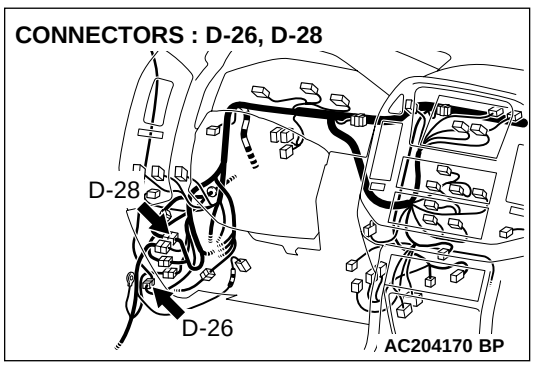
INSPECTION PROCEDURE M-1: Interior Light: The dome light do not illuminate or go out normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

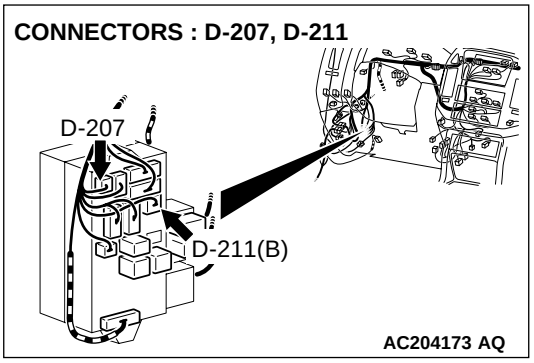
Interior Light Circuit

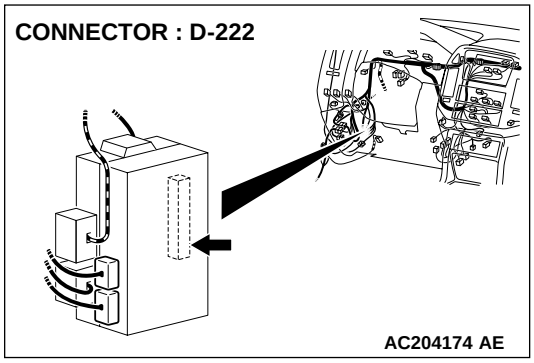


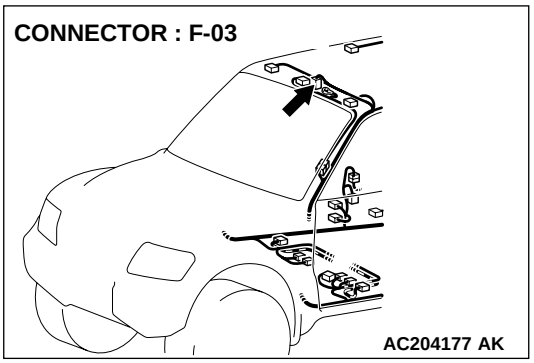




TSB Revision







CIRCUIT OPERATION

The ETACS-ECU illuminates the front dome light and the rear dome light according to the following signals:

- Ignition switch (IG1)
- Key reminder switch
- Front door switch (LH)
- All door switches
- Driver's door lock actuator switch

TECHNICAL DESCRIPTION (COMMENT)

If the front dome light and the rear dome light do not illuminate normally, the dome light bulb(s) may be burned out or the input circuit system from the switches, the power supply lines to the switches or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION"). Alternatively, the delay-off function may be set to "0 second" by using the configuration function.

TROUBLESHOOTING HINTS

- The key reminder switch may be defective
- The door switch may be defective
- The driver's door lock actuator switch may be defective
- The dome light 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
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Verify the adjustment function.

Q: Is the dome light delay-off time set to "7.5 seconds," "10 seconds," "15 seconds" or "30 seconds" by using the adjustment function?

YES : Go to Step 2.
NO : Set the dome light delay-off time to "7.5 seconds," "10 seconds," "15 seconds" or "30 seconds" by using the adjustment function. Verify that the dome light illuminates normally.

STEP 2. Verify the power supply circuit to the dome light.

Q: Does the dome light illuminate when the dome light switch is turned to the "ON" position?

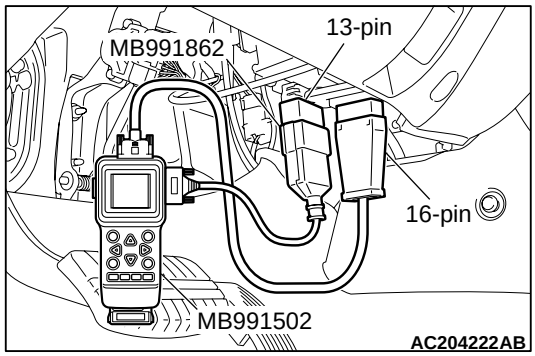
YES : Go to Step 3.
NO : Go to Step 8.

STEP 3. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

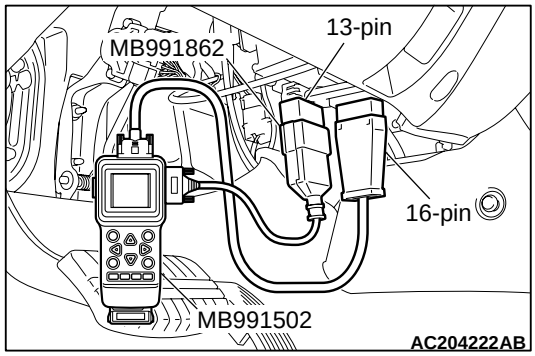
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 4.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is impossible P.54Bb-25."



STEP 4. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Turn the ignition switch to the "OFF" position before checking input signals from the ignition switch:

Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "DATA LIST."
5. Select "ETACS ECU."

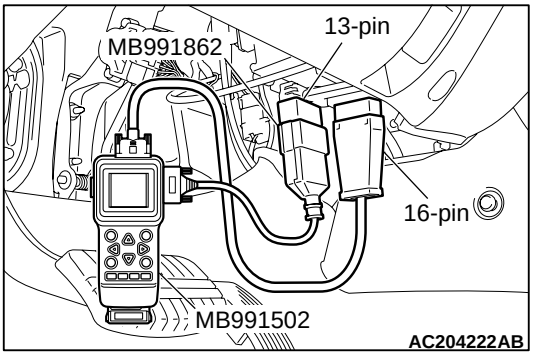
Check that normal conditions are displayed on the items described in the table below.

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

Q: Are normal conditions displayed on the "IG SW (IG1)"?

YES : Go to Step 5.

NO : Refer to Inspection Procedure O-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) P.54Bc-7."



STEP 5. Check the input signal (by using the pulse check mode of the monitor.)

Check the input signals from the following switches:

- Key reminder switch
- All door switch

Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

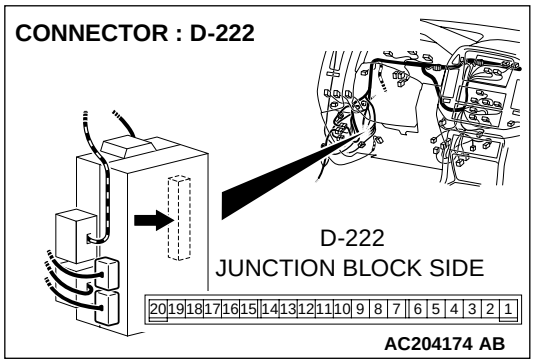
Check if scan tool MB991502 sounds or not.

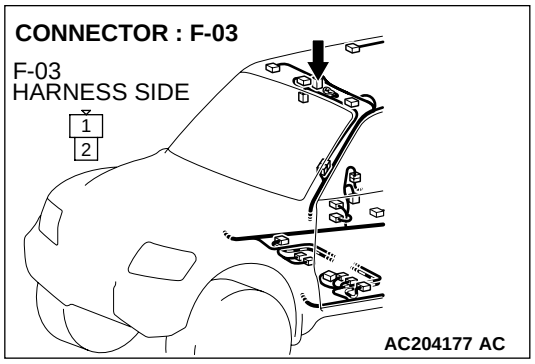
ITEM NAME	CONDITION
Key reminder switch	Remove and reinsert the ignition key
Each door switch	Open or close one of the doors

Q: When the key reminder switch, each door switch and the interior light are operated, does scan tool MB991502 sound in each case?

YES : Go to Step 6.

NO :
- Scan tool MB991502 does not sound when the key reminder switch is operated: Refer to Inspection Procedure P-1 "ETACS-ECU does not receive a signal from the key reminder switch P.54Bc-49."
- Scan tool MB991502 does not sound whenever each door switch is operated: Refer to Inspection Procedure P-4 "ETACS-ECU does not receive a signal from all the door switches P.54Bc-62."





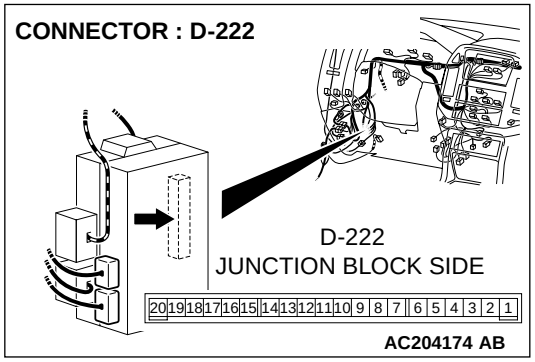
STEP 6. Check dome light connectors F-03 and ETACS-ECU connector D-222 for damage.

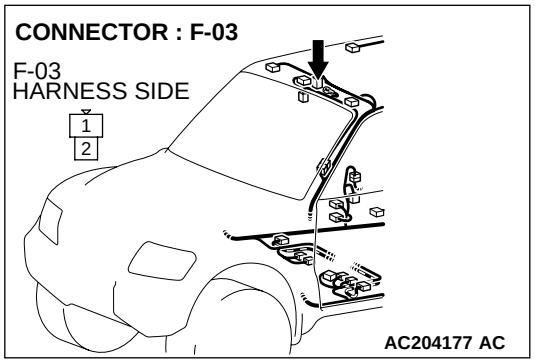
Q: Are dome light connector F-03 and ETACS-ECU connector D-222 in good condition?

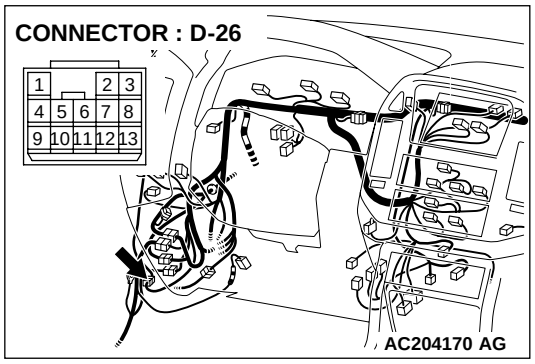
YES : Go to Step 7.

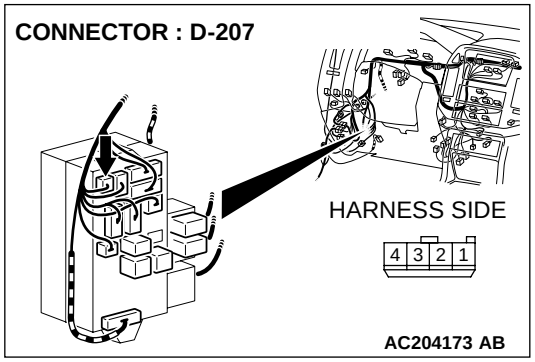
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the dome light illuminates normally.

STEP 7. Check the wiring harness between dome light connector F-03 (terminal 2) and ETACS-ECU connector D-222 (terminal 18).









NOTE: Also check intermediate connector D-26 and junction block connector D-207 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector D-207 or intermediate connector D-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 dome light connector F-03 (terminal 2) and ETACS-ECU connector D-222 (terminal 18) in good condition?

YES : Replace the ETACS-ECU. Verify that the dome light illuminates normally.

NO : Repair the wiring harness. Verify that the dome light illuminates normally.

STEP 8. Check the dome light bulb.

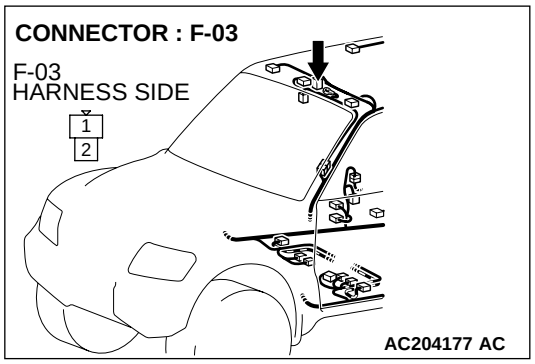
Q: Is the dome light bulb in good condition?

YES : Go to Step 9.

NO : Replace the bulb. Verify that the dome light illuminates normally.

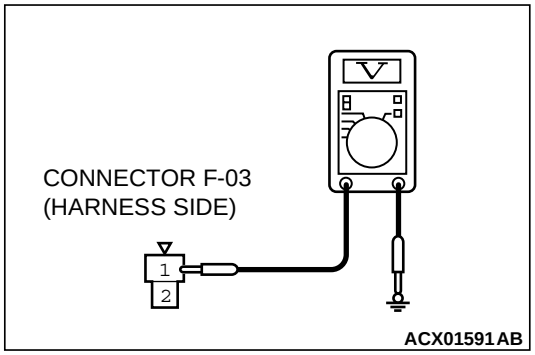
STEP 9. Check the fusible link (1) line of the power supply circuit to the dome light. Test at dome light connector F-03.

(1) Disconnect dome light connector F-03 and measure the voltage available at the wiring harness side of the connector.



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

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



Q: Does the measured voltage correspond with this range?

YES : Replace the dome light. Verify that the dome light illuminates normally.

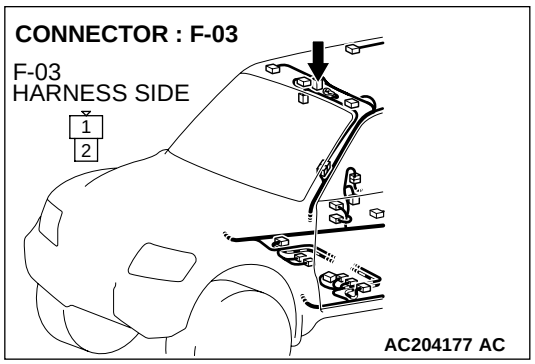
NO : Go to Step 10.

STEP 10. Check dome light connector F-03 for damage.

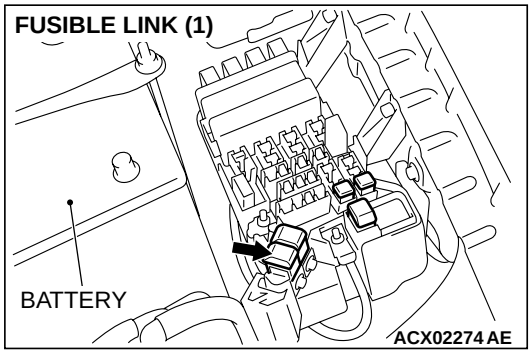
Q: Is dome light connector F-03 in good condition?

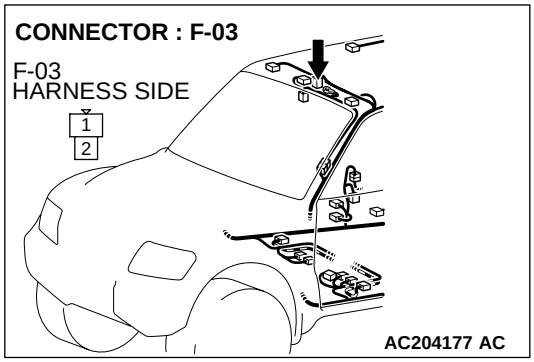
YES : Go to Step 11.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the dome light illuminates normally.

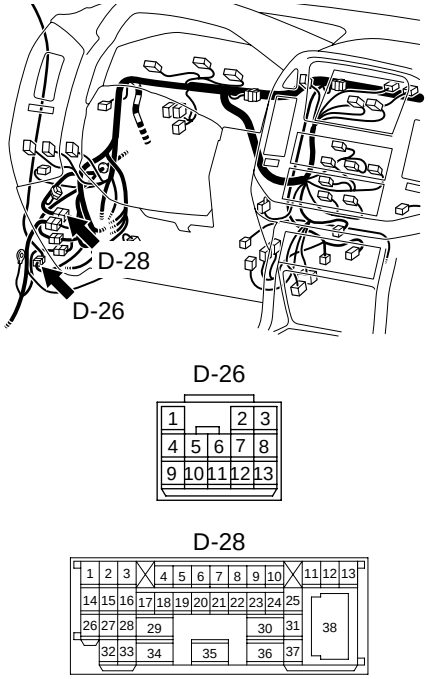


STEP 11. Check the wiring harness between dome light connector F-03 (terminal 1) and fusible link (1).





CONNECTORS : D-26, D-28



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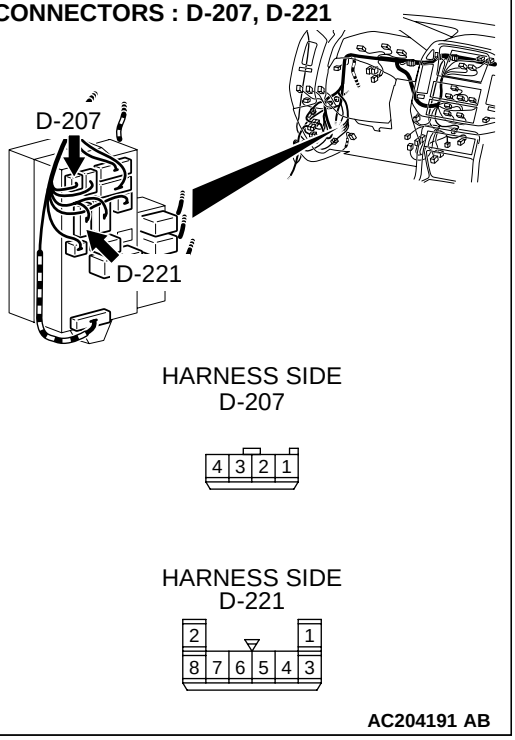
CONNECTORS : D-207, D-221



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NOTE: Also check intermediate connectors D-26, D-28, junction block connectors D-207 and D-221 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-26, D-28, junction block connector D-207 or D-221 is damaged, repair or replace the damaged component(s) as described in GROUP, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between dome light connector F-03 (terminal 1) and fusible link (1) in good condition?

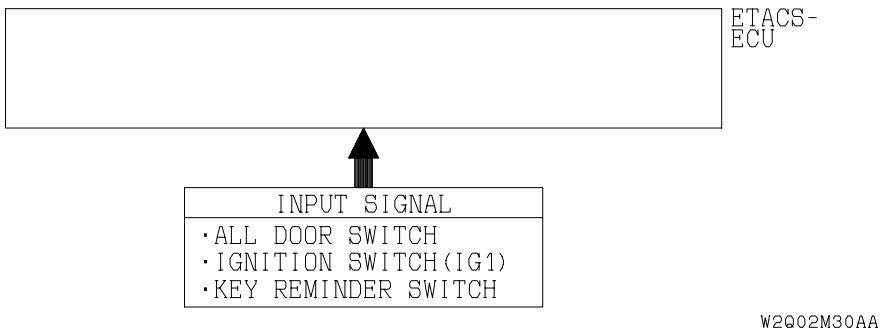
YES : No action to be taken.

NO : Repair the wiring harness. Verify that the dome light illuminates normally.

INSPECTION PROCEDURE M-2: Interior Light: Dome light dimming function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Interior Light Dimming Function



CIRCUIT OPERATION
The ETACS-ECU operates the dome light dimming function according to the following switches:
- Ignition switch (IG1)
- Key reminder switch
- Front door switches
- Driver's door lock actuator switch

TECHNICAL DESCRIPTION (COMMENT)
Is the dome lights do not dim normally, the input circuits from the switches described in "CIRCUIT OPERATION" or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS
- The key reminder switch may be defective
- The door switches may be defective
- The driver's door lock actuator switch 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

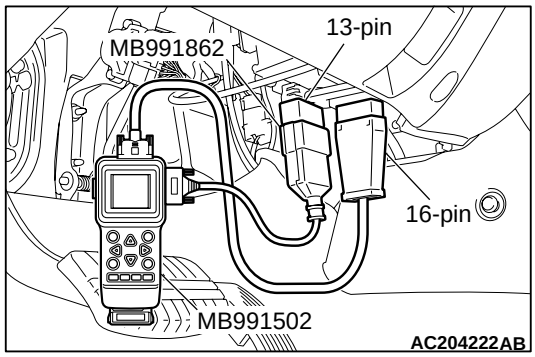
Required Special Tools:
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Verify the dome light.
If the dome light switch are moved to the "door interlock position", the dome light should illuminate when either door is opened.

Q: Do the dome light illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure M-1 "The dome light do not illuminate or go out normally P.54Bb-450."



STEP 2. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

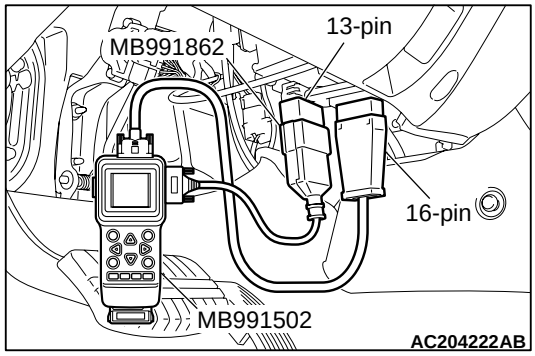
⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 3.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



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: ON or START
- Driver's door: open

Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "DATA LIST."
5. Select "ETACS ECU."

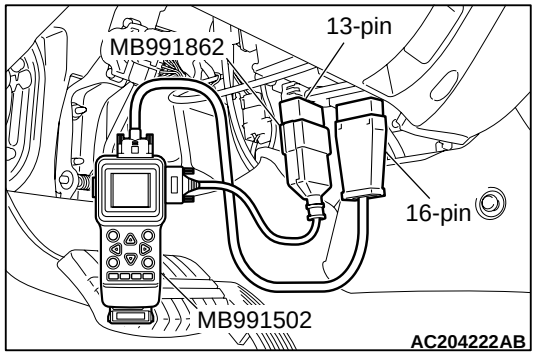
Check that normal conditions are displayed on the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 32	FRONT DOOR SW	ON

Q: Are normal conditions displayed on the "IG SW (IG1)" and "FRONT DOOR SW"?

YES : Go to Step 4.

NO :
- Normal condition is not displayed on the "IG SW (IG1)": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."
- Normal condition is not displayed on the "FRONT DOOR SW": Refer to Inspection Procedure O-5 "ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch P.54Bc-23."



STEP 4. Check the input signal (by using the pulse check mode of the monitor.)

Check the following switches and input signals:

- Key reminder switch
- All door switches

Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

Check if scan tool MB991502 sounds or not.

ITEM NAME	CONDITION
key reminder switch	Remove and reinsert the ignition key
Each door switch	Open or close one of the doors

Q: When the key reminder switch and each door switch are operated, does scan tool MB991502 sound in each case?

YES : Replace the ETACS-ECU. Verify that the dome light illuminates normally.

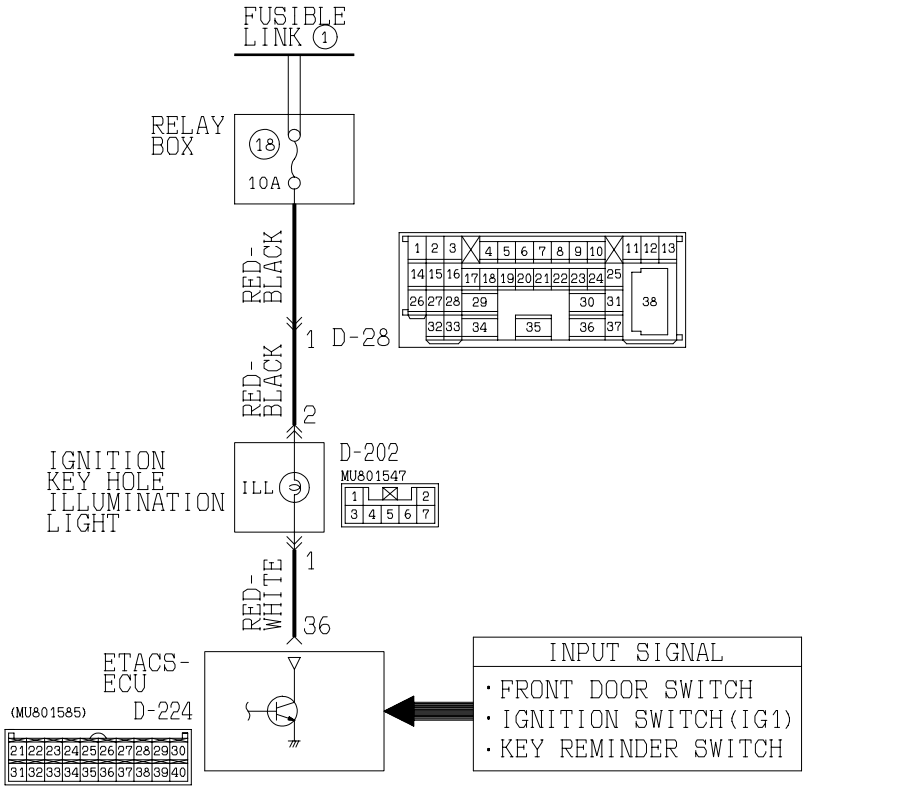
NO :

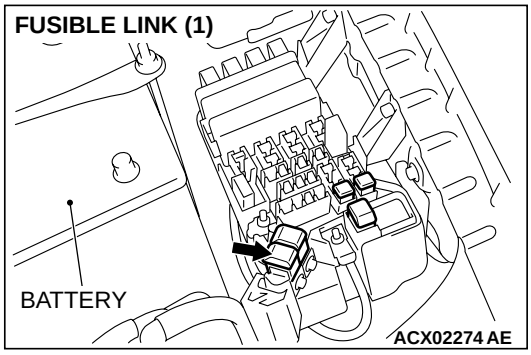
- Scan tool MB991502 does not sound when the ignition key is removed and reinserted: Refer to Inspection Procedure P-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54Bc-49."
- When one of the doors is opened and closed, scan tool MB991502 does not sound: Refer to Inspection Procedure P-4 "ETACS-ECU does not receive any signal from all the door switches P.54Bc-62."

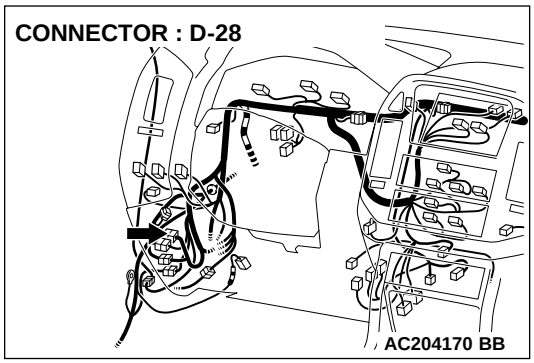
INSPECTION PROCEDURE M-3: Interior Light: The ignition key hole illumination light does not illuminate or go out normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

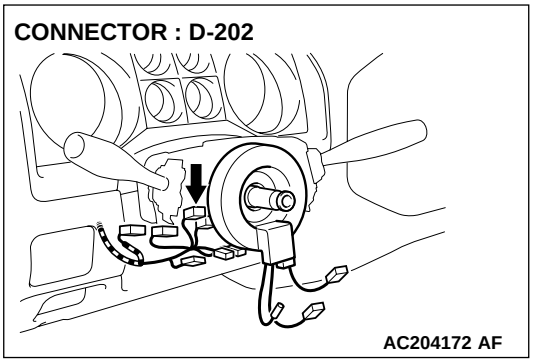
Ignition Key Hole Illumination Light Circuit

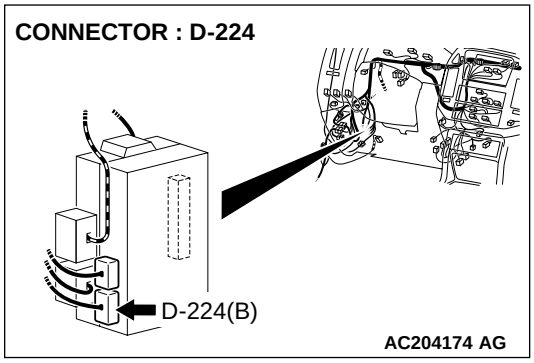






TSB Revision





CIRCUIT OPERATION

- When the driver's door is opened with the ignition switch at "ACC" position, the ETACS-ECU illuminates the ignition key hole illumination light.
- The ignition key hole illumination light goes out in 30 seconds after the driver's door is closed. The ignition key hole illumination light remains illuminated for 30 seconds after the ignition key is pulled out.
- The ETACS-ECU operates the ignition key hole illumination light according to the input signals from the following switches:
  - Ignition switch (IG1): OFF
  - Key reminder switch: OFF
- Vehicle condition
  - Ignition switch: ACC position
  - Ignition key is inserted in the ignition key cylinder

TECHNICAL DESCRIPTION (COMMENT)

Is the ignition key hole illumination light does not illuminate, the input circuits from the switches described in "CIRCUIT OPERATION", the key reminder switch (ignition key hole illumination light bulb) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The driver's door switch may be defective
- The key reminder switch (key reminder switch or ignition key hole illumination light bulb) 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:

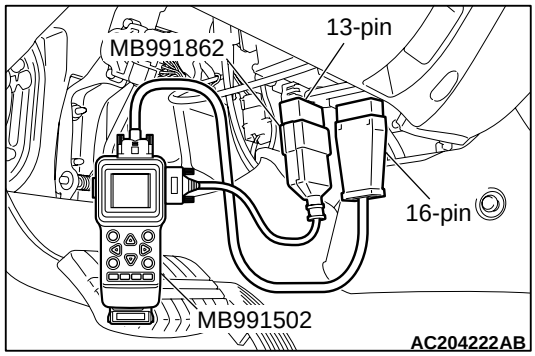
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

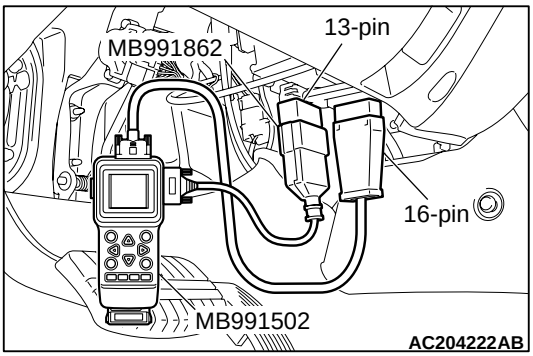
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54Bb-25."



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: OFF
- Driver's door: open
- Front passenger's door: closed

Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "DATA LIST."
5. Select "ETACS ECU."

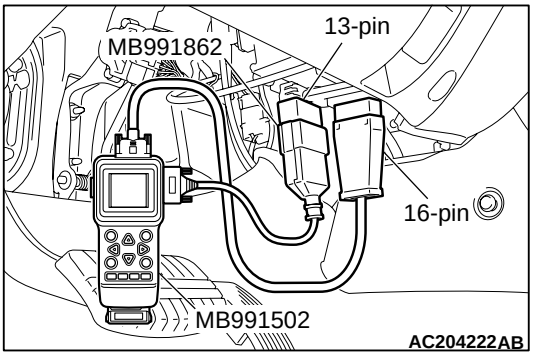
Check that normal conditions are displayed on the items described in the table below.

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

Q: Are normal conditions displayed on the "IG SW (IG1)" and "FRONT DOOR SW"?

YES : Go to Step 3.

NO :
- Normal condition is not displayed "IG SW (IG1)": Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54Bc-7."
- Normal condition is not displayed "FRONT DOOR SW": Refer to Inspection Procedure O-5 "ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch P.54Bc-23."



STEP 3. Check the input signal (by using the pulse check mode of the monitor.)

Check the input signals from the key reminder switch.

Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

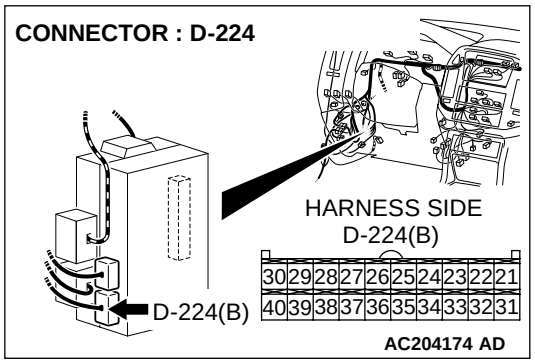
- Check whether scan tool MB991502 sounds or not when the ignition key is removed and reinserted.

Q: Does scan tool MB991502 sound when the ignition key is removed and reinserted?

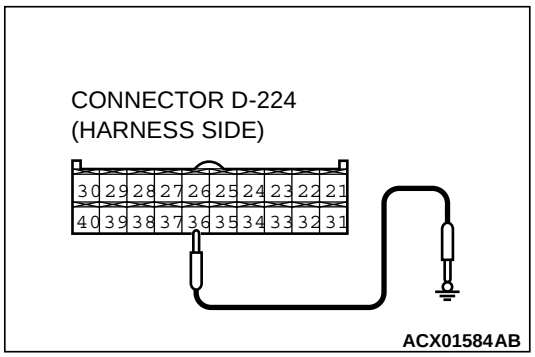
YES : Go to Step 4.

NO : Refer to Inspection Procedure P-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54Bc-49."

STEP 4. Check at ETACS-ECU connector D-224 in order to check the line from the ignition key hole illumination light.



(1) Disconnect ETACS-ECU connector D-224, and measure at the wiring harness side.



(2) Connect terminal 36 to ground.

Q: Does the ignition key hole illumination light illuminate?

YES : Replace the ETACS-ECU. Verify that the ignition key hole illumination light illuminates normally.

NO : Go to Step 5.

STEP 5. Check the ignition key hole illumination light bulb.

Q: Is the ignition key hole illumination light bulb in good condition?

YES : Go to Step 6.

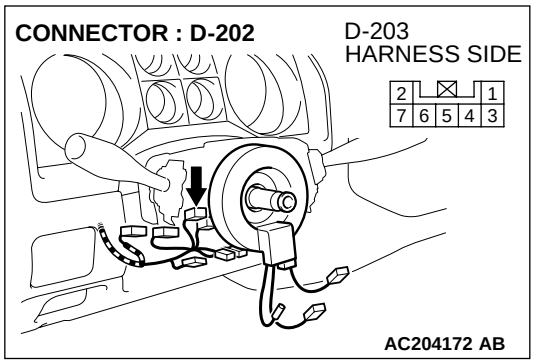
NO : Replace the bulb. Verify that the ignition key hole illumination light illuminates normally.

STEP 6. Check the key reminder switch (ignition key hole illumination).

(1) Disconnect key reminder switch connector D-202.

(2) Remove the ignition key hole illumination light bulb. Then measure the resistance value between the bulb terminals.

(3) Install a bulb to the key remainder switch, and measure the resistance between connector D-202 terminal 1 and 2.The measured resistance value should be roughly the same as the value measured in Step (2).

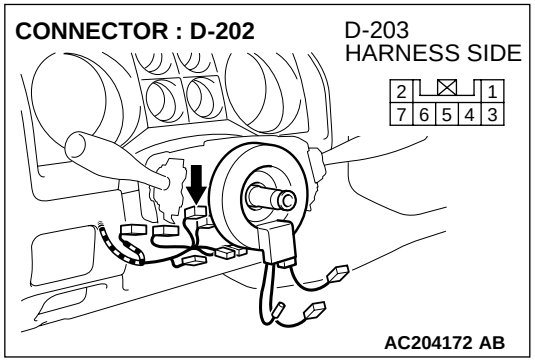


Q: Are these two resistance values extremely different?

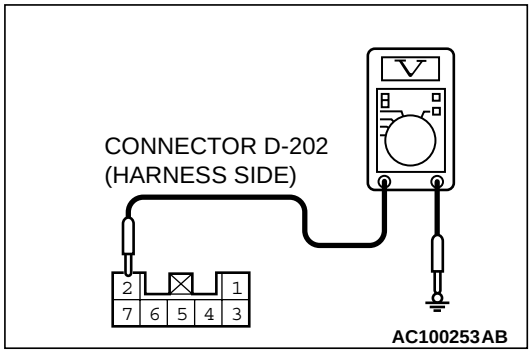
YES : Replace the key reminder switch. Verify that the ignition key hole illumination light illuminates normally.

NO (roughly the same) : Go to Step 7.

STEP 7. Check the fusible link (1) line of the power supply circuit to the key reminder switch. Test at key reminder switch connector D-202.



(1) Disconnect key reminder switch connector D-202 and measure at the voltage available at the wiring harness side of the connector.

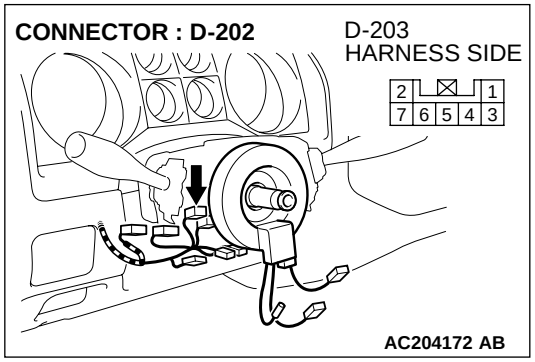


(2) Measure the voltage between terminal 2 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 10.
NO : Go to Step 8.

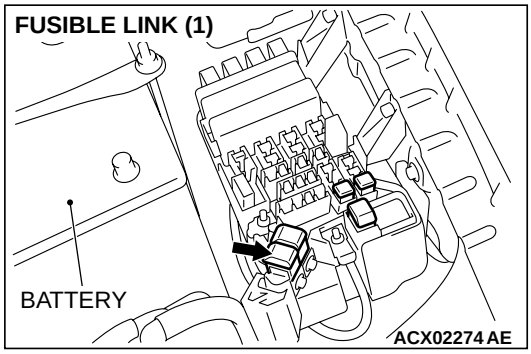
STEP 8. Check key reminder switch connector D-202 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

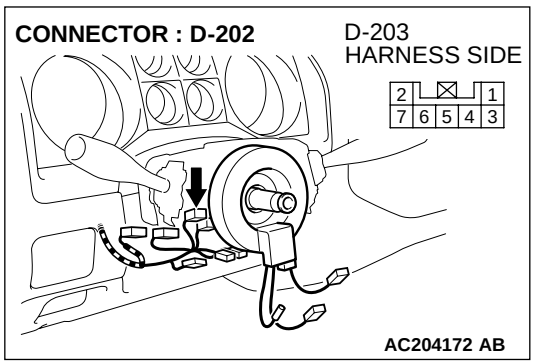


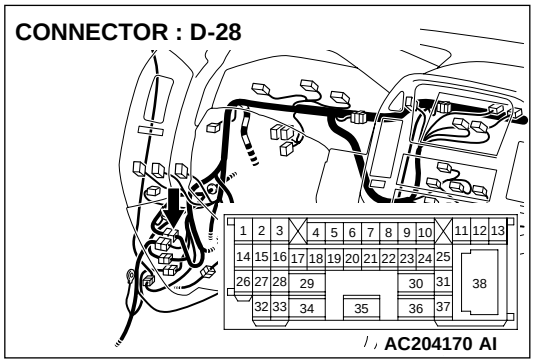
Q: Is key reminder switch connector D-202 in good condition?

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 ignition key hole illumination light illuminates normally.

STEP 9. Check the wiring harness between key reminder switch connector D-202 (terminal 2) and fusible link (1).







NOTE: Also check intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors D-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 key reminder switch connector D-202 (terminal 2) and fusible link (1) in good condition?

YES : No action is necessary and testing is complete.

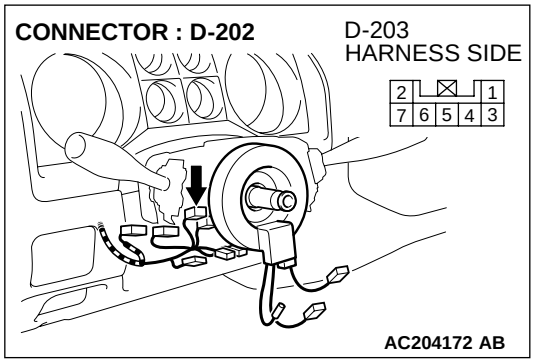
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the ignition key hole illumination light illuminates normally.

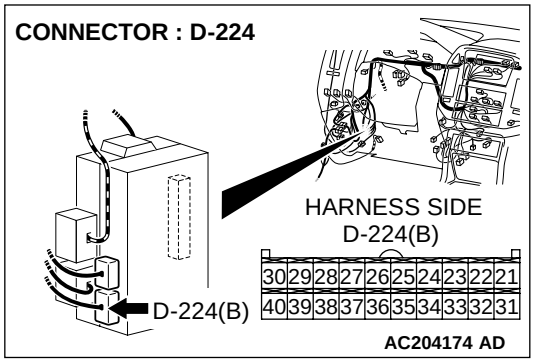
STEP 10. Check key reminder switch connector D-202 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are key reminder switch connector D-202 and ETACS-ECU connector D-224 in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the ignition key hole illumination light illuminates normally.



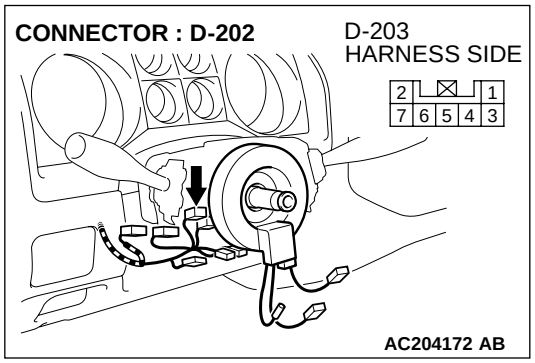


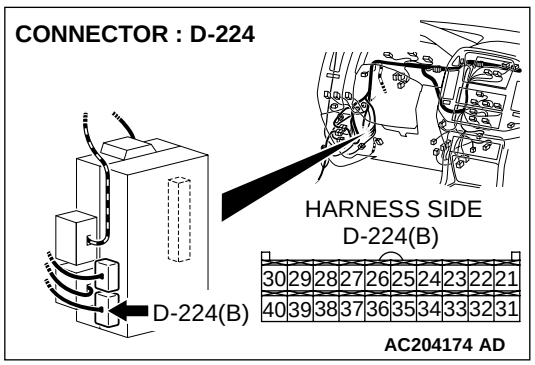
STEP 11. Check the wiring harness between key reminder switch connector D-202 (terminal 1) and ETACS-ECU connector D-224 (terminal 36).

Q: Is the wiring harness between key reminder switch connector D-202 (terminal 1) and ETACS-ECU connector D-224 (terminal 36) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the ignition key hole illumination light illuminates normally.





THEFT-ALARM SYSTEM

GENERAL DESCRIPTION CONCERNING THE THEFT-ALARM SYSTEM

M1549022100047

The following ECUs affect the functions and control of the theft-alarm function.

FUNCTION	CONTROL ECU
Theft-alarm system	ETACS-ECU, front-ECU

Theft-alarm system

Arming the system

After the following procedures have been completed, the theft-alarm indicator light illuminates for about 20 seconds. When the light goes off, the system is armed.

1. Pull out the ignition key from the key cylinder.
2. Lock all doors with the key or the RKE transmitter.

NOTE: The system is set regardless of whether the hood trunk is open or closed, and is armed as soon as the light goes off.

Disarming the system

The system is disarmed if any of the following conditions is satisfied.

- Unlock the doors by using the door lock key cylinder.
- Unlock the doors by using the RKE transmitter.

Activating the alarm

1. If any door or hood is opened without key or RKE transmitter, while the system is armed, the horn (theft-alarm horn and horn) will sound intermittently and the headlights (high-beam) will flash on and off for approximately three minutes.
2. If any door or the hood is opened without disarming the alarm by using the key or the RKE transmitter, the alarm will be activated again. Note that the alarm will not be deactivated by disconnecting the battery.

Deactivating the alarm

To deactivate the alarm, insert the key into the door's key cylinder and turn the key or operate the RKE transmitter (except "PANIC" button).

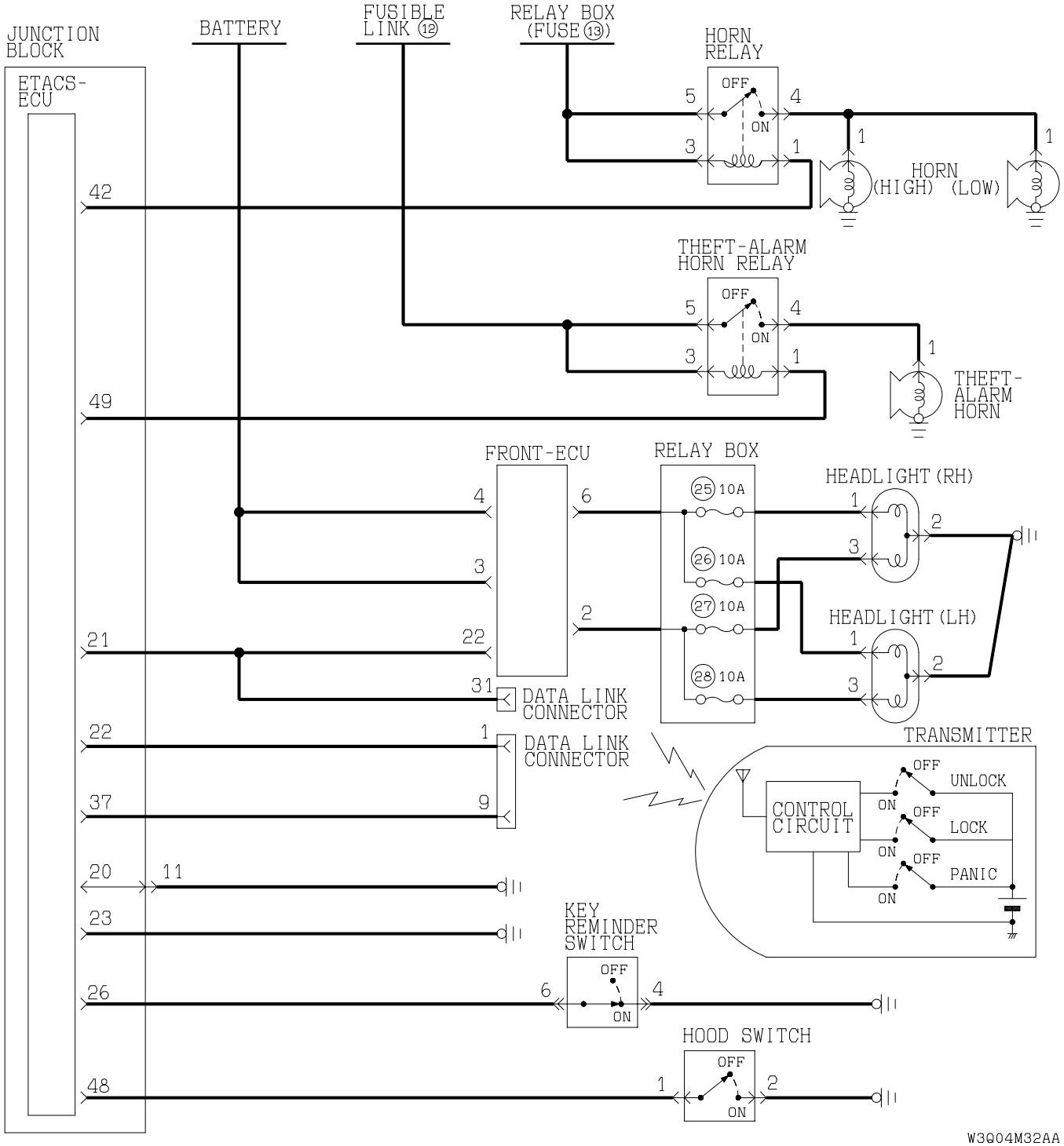
Checking the system operation

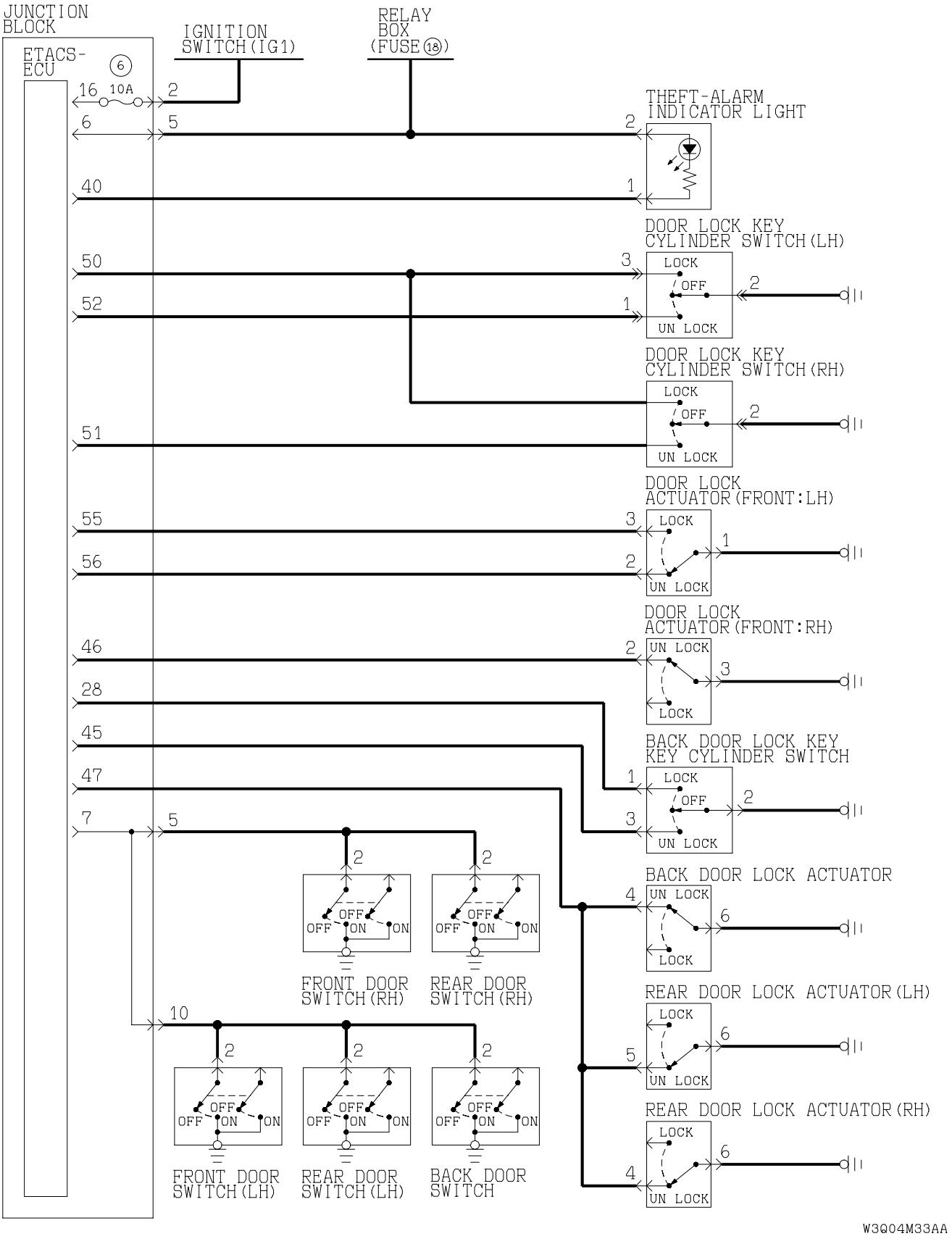
The activation/operation of the system can be checked by following steps below.

1. Turn the ignition key to the "ON" position and to fully open the window on the driver's side with the power window switch.
2. Turn the ignition key to the "LOCK" (OFF) position and then remove the key from the ignition.
3. Close all doors.
4. Lock all doors with the key or RKE transmitter.
5. The theft-alarm indicator light will illuminate; check to be sure that the light goes off in about 20 seconds.
6. After the theft-alarm indicator light goes off, unlock with the driver's door lock knob, and open the driver's door.
7. Check to be sure that, when the door is opened, the horn starts sounding and the headlights flash on and off.
8. To stop the alarm, insert the key into the door key cylinder and turn the key or press RKE transmitter switch.

NOTE: To check the alarm for the opening of the hood, open the hood by using the hood release lever, located on the driver's side either before the alarm is activated by the opening of a door, or after the finish of the first three-minute alarm.

General circuit diagram for the theft-alarm

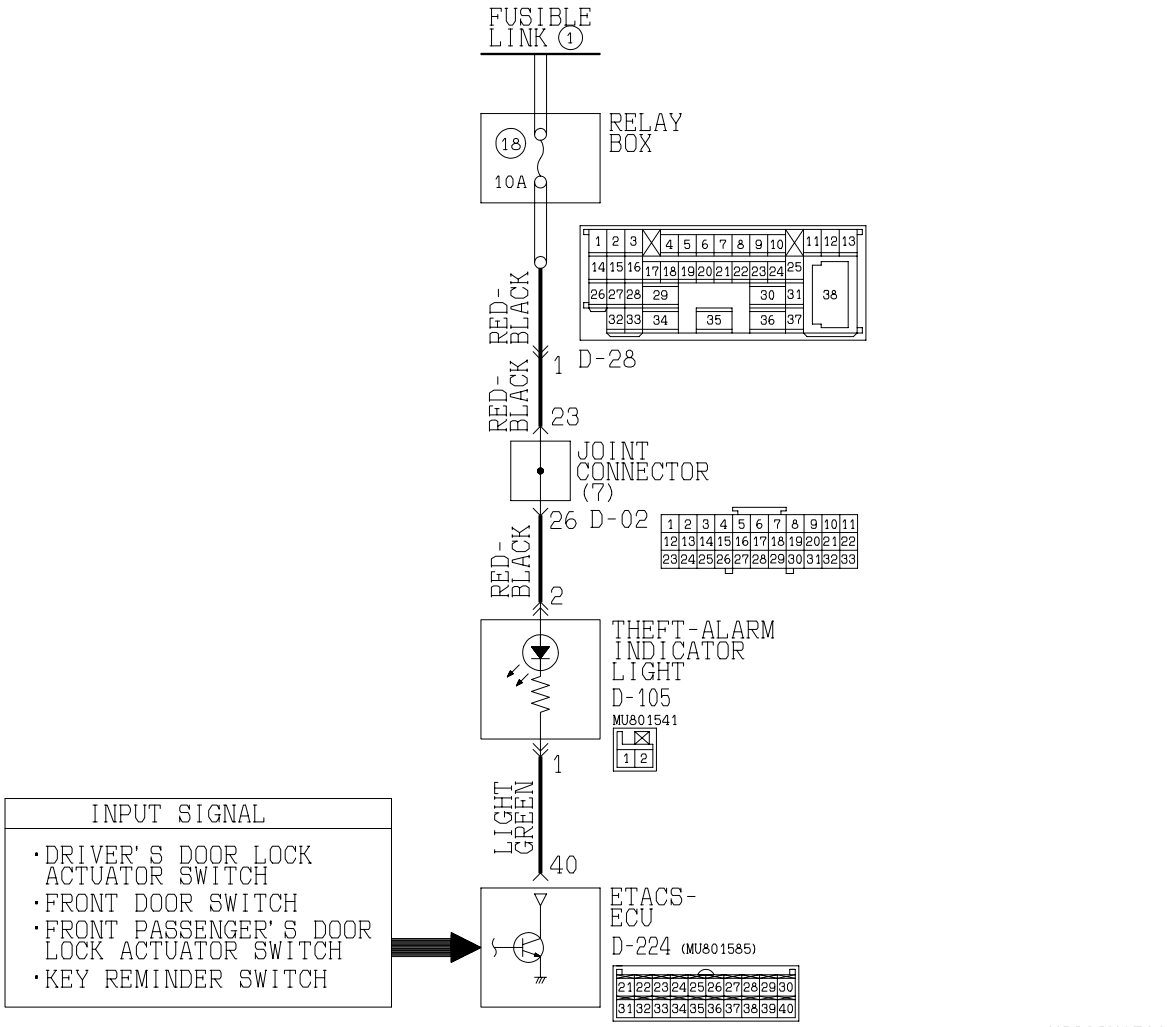



JUNCTION BLOCK
ETACS-ECU
6
16
10A
2
IGNITION SWITCH(IG1)
RELAY BOX (FUSE 18)
6
5
THEFT-ALARM INDICATOR LIGHT
2
40
1
DOOR LOCK KEY CYLINDER SWITCH(LH)
50
3
LOCK
OFF
2
52
1
UN LOCK
DOOR LOCK KEY CYLINDER SWITCH(RH)
LOCK
OFF
2
51
UN LOCK
DOOR LOCK ACTUATOR(FRONT:LH)
55
3
LOCK
1
56
2
UN LOCK
DOOR LOCK ACTUATOR(FRONT:RH)
46
2
UN LOCK
3
28
LOCK
45
BACK DOOR LOCK KEY KEY CYLINDER SWITCH
47
1
LOCK
OFF
2
7
5
3
UN LOCK
2
2
BACK DOOR LOCK ACTUATOR
4
UN LOCK
6
OFF
OFF
ON
ON
LOCK
FRONT DOOR SWITCH(RH)
REAR DOOR SWITCH(RH)
REAR DOOR LOCK ACTUATOR(LH)
10
LOCK
6
5
UN LOCK
REAR DOOR LOCK ACTUATOR(RH)
LOCK
6
4
UN LOCK
FRONT DOOR SWITCH(LH)
REAR DOOR SWITCH(LH)
BACK DOOR SWITCH
W3Q04M33AA

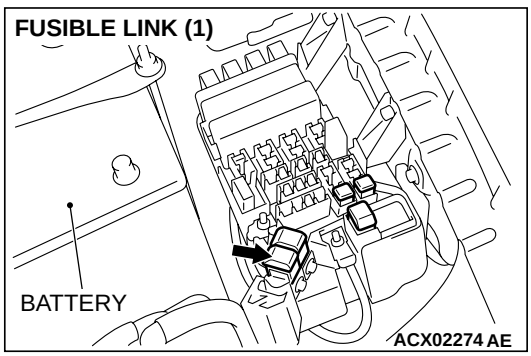
INSPECTION PROCEDURE N-1: Theft-alarm System: Theft-alarm system is not armed (theft-alarm indicator light does not illuminate).

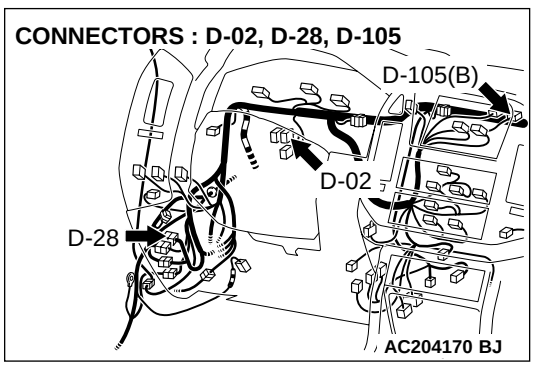
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54Ba-8."

Theft-alarm Indicator Light Drive Circuit

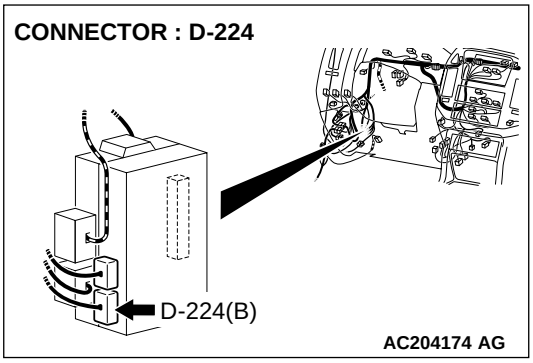


W3Q02M17AA





TSB Revision



CIRCUIT OPERATION

- When the ETACS-ECU receives a "LOCK" signal from the door lock actuator switch, it illuminates the security indicator light for approximately 18 seconds, and then set the theft-alarm system.
- The ETACS-ECU sets the theft-alarm system according to the input signals from the following signals:
  - Ignition key reminder switch: ON
  - Driver's and front passenger's door switch: OFF
  - Rear door switches: OFF
  - Driver's, front passenger's and back door lock key cylinder switch: OFF
  - Driver's, front passenger's, rear and back doors actuator switch: LOCK
  - Hood switch: OFF
  - Transmitter switch: LOCK
- Vehicle condition:
  - Ignition key: Removed from the ignition key cylinder
  - All doors: Closed
  - Driver's, front passenger's and back door lock key cylinder: Not being operated
  - Hood: Closed
  - Transmitter: Turn to the "LOCK" position

TECHNICAL DESCRIPTION (COMMENT)

If the theft-alarm system is set normally, the input signal circuit, the "SECURITY" indicator light or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The theft-alarm indicator light may be defective
- The ignition key reminder switch may be defective
- The driver's or front passenger's door switch may be defective
- The door switches may be defective
- The driver's, the front passenger's or the back door lock key cylinder switch may be defective
- The driver's, front passenger's, the rear or the back door lock actuator switch may be defective
- The hood 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:

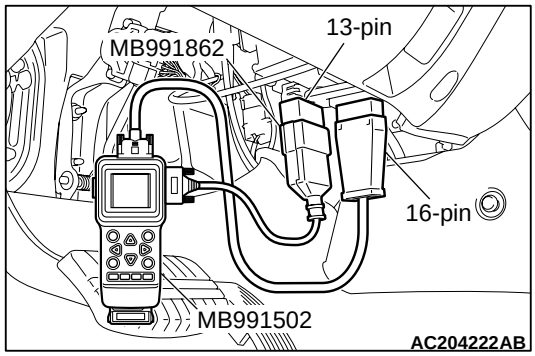
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991862: SWS monitor kit

STEP 1. Use scan tool MB991502 to select "ECU COMM CHK" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

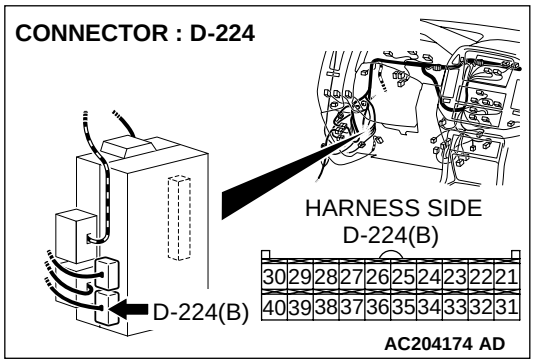


(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Turn the ignition switch to the "LOCK" (OFF) position.
(4) Operate scan tool MB991502 according to the procedure below to display "ECU COMM CHK."
    1. Select "SYSTEM SELECT."
    2. Select "SWS."
    3. Select "SWS MONITOR."
    4. Select "ECU COMM CHK."
(5) Scan tool MB991502 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

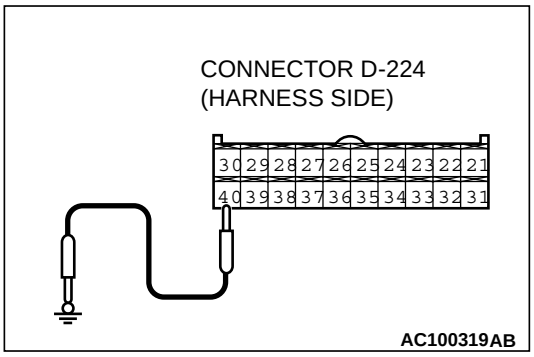
Q: Is "OK" displayed on the "ETACS ECU" menu?

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54Bb-25."

STEP 2. Check at ETACS-ECU connector D-224 in order to check the theft-alarm indicator light circuit.



(1) Disconnect ETACS-ECU connector D-224, and measure at the wiring harness side.



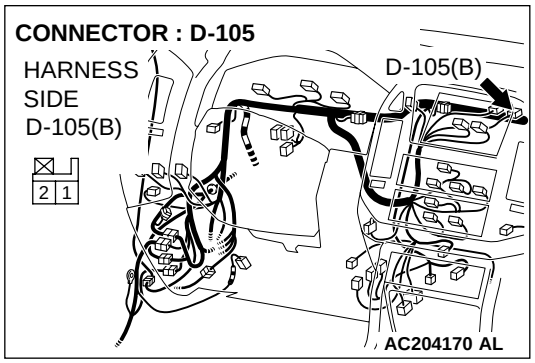
(2) The theft-alarm indicator light should illuminate when terminal 40 is grounded.

Q: Does the theft-alarm indicator light illuminate?

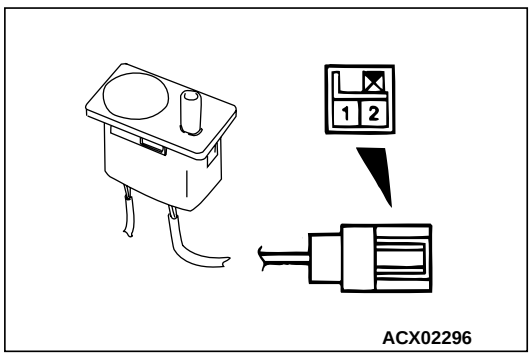
YES : Go to Step 9.
NO : Go to Step 3.

STEP 3. Check the theft-alarm indicator light.

(1) Remove the RV meter. Refer to GROUP 54A, RV meter P.54A-235.
(2) Disconnect theft-alarm indicator light connector D-105.



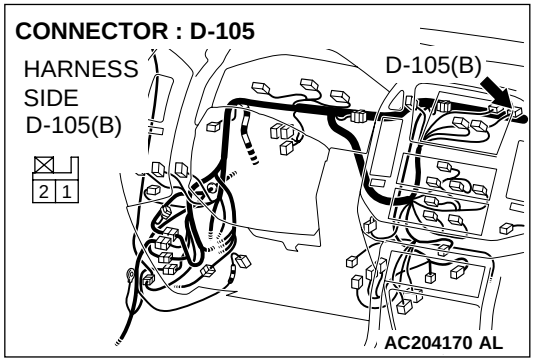
(3) The theft-alarm indicator light should illuminate when battery voltage is applied between terminals 1 and 2.



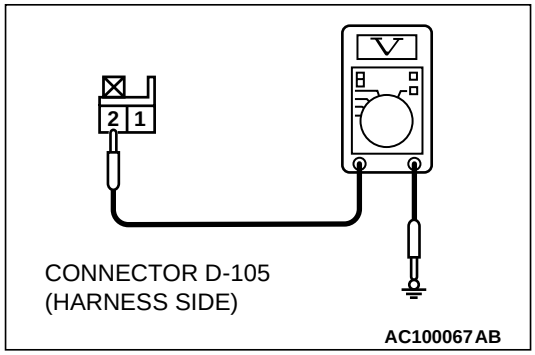
Q: Does the theft-alarm indicator light illuminate?

YES : Go to Step 4.
NO : Replace the theft-alarm indicator light. The theft-alarm indicator light should illuminate, and the theft-alarm system should be set normally.

STEP 4. Check the fusible link (1) line of power supply circuit to the theft-alarm indicator light circuit. Test at theft-alarm indicator light connector D-105.



(1) Disconnect theft-alarm indicator light connector D-105 and measure the voltage available at the wiring harness side of the connector.

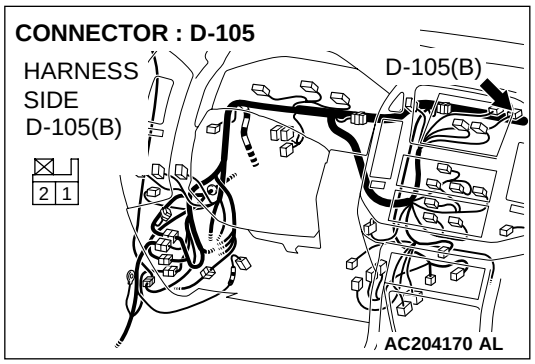


(2) Measure the voltage between terminal 2 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 7.
NO : Go to Step 5.

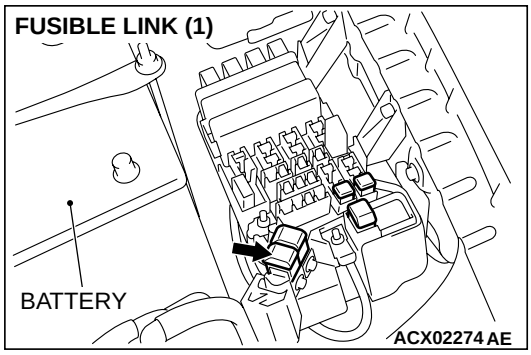
STEP 5. Check theft-alarm indicator light connector D-105 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

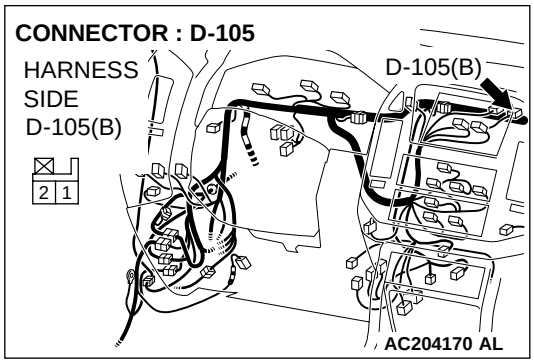


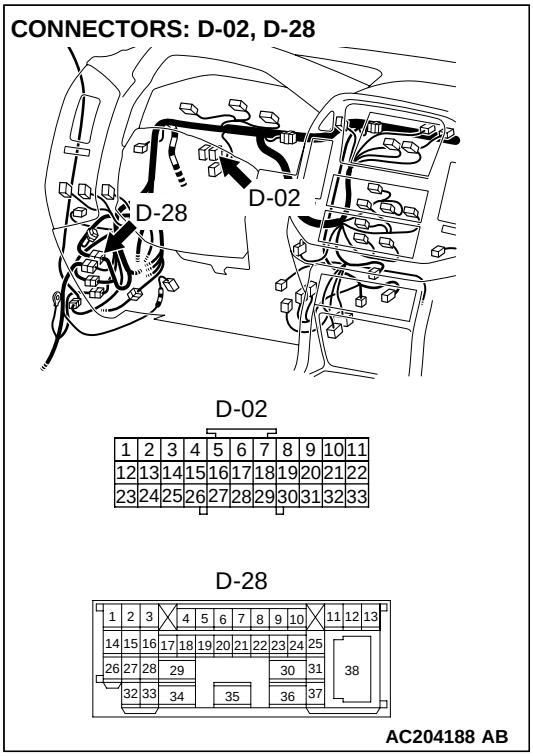
Q: Is theft-alarm indicator light connector D-105 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The theft-alarm indicator light should illuminate, and the theft-alarm system should be set normally.

STEP 6. Check the wiring harness between theft-alarm indicator light connector D-105 (terminal 1) and the fusible link (1).





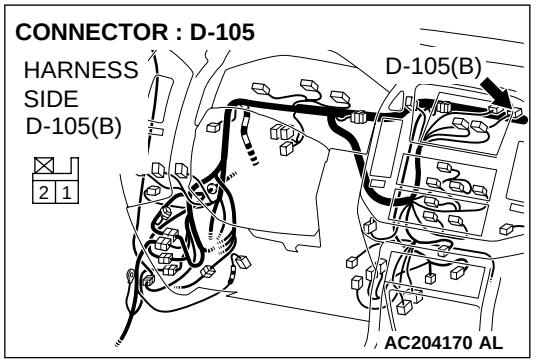


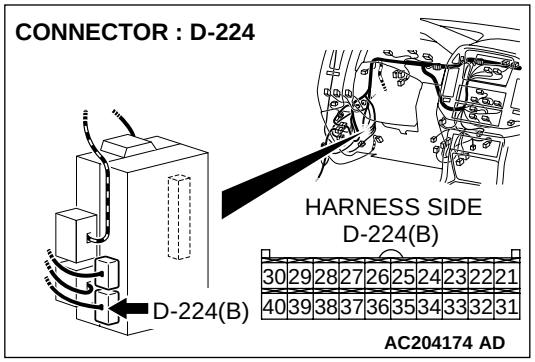
NOTE: Also check intermediate connector D-28 and joint connector D-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-28 or joint connector D-02 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between theft-alarm indicator light connector D-105 (terminal 1) and the fusible link (1) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The theft-alarm indicator light should illuminate, and the theft-alarm system should be set normally.



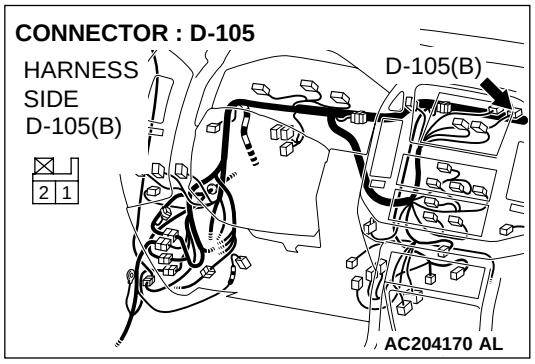


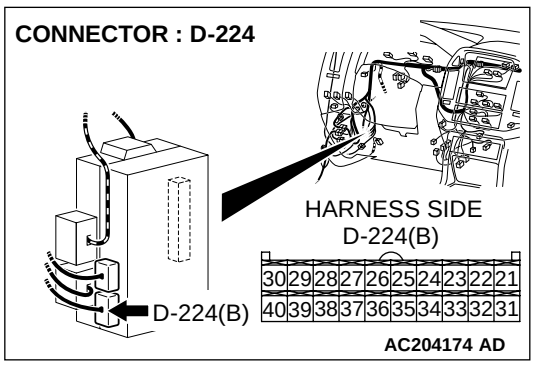
STEP 7. Check theft-alarm indicator light connector D-105 and ETACS-ECU connector D-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are theft-alarm indicator light connector D-105 and ETACS-ECU connector D-224 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. The theft-alarm indicator light should illuminate, and the theft-alarm system should be set normally.



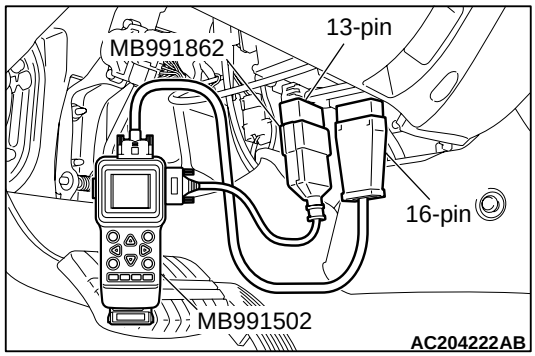


STEP 8. Check the wiring harness between theft-alarm indicator light connector D-105 (terminal 1) and ETACS-ECU connector D-224 (terminal 40).

Q: Is the wiring harness between theft-alarm indicator light connector D-105 (terminal 1) and ETACS-ECU connector D-224 (terminal 40) 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 theft-alarm indicator light should illuminate, and the theft-alarm system should be set normally.



STEP 9. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Satisfy the following conditions to check the driver's and front passenger's door switches.

- Driver's door: Open (driver's door switch is on)
  However, the door should be closed when checking the front passenger's door switch.
- Front passenger's door: Open (front passenger's door switch is on)
  However, the door should be closed when checking the driver's door switch.

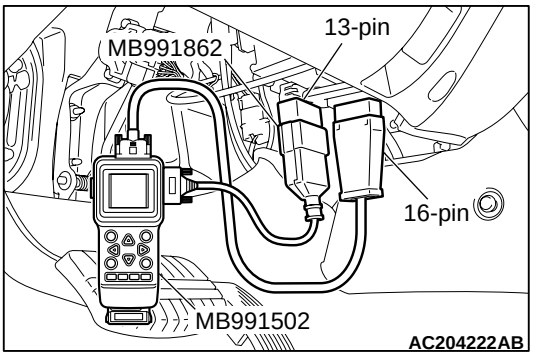
(1) Connect scan tool MB991502 to the data link connector (16-pin).
(2) Connect SWS monitor kit MB991862 to the data link connector (13-pin).
(3) Operate scan tool MB991502 according to the procedure below to display "ETACS ECU."
   1. Select "SYSTEM SELECT."
   2. Select "SWS."
   3. Select "SWS MONITOR."
   4. Select "DATA LIST."
   5. Select "ETACS ECU."
(4) The scan tool should show the following values when each switch is operated.

NOTE: The scan tool display changes when the driver's or the front passenger's door is opened. If any of the doors is open, the system can not be checked correctly.

ITEM No.	ITEM NAME	NORMAL CONDITION
ITEM 32	FRONT DOOR SW	ON

Q: The scan tool shows the respective normal condition for item "FRONT DOOR SW."

YES : Go to Step 10.
NO : Refer to Inspection Procedure O-5 "ETACS-ECU does not receive any signal from the driver's or front passenger's door switch P.54Bc-23."



STEP 10. Check the input signal (by using the pulse check mode of the monitor.)

Check the input signals from the following switches:

- Key reminder switch
- Driver's, front passenger's, rear and back door lock actuator switch
- Driver's, front passenger's and back door lock key cylinder switch
- Food switch

Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

Check if scan tool MB991502 sounds or not.

ITEM NAME	CONDITION
Key reminder switch	Remove and reinsert the ignition key
Driver's, front passenger's, rear and back door lock actuator switches	Lock or unlock each door
Driver's, front passenger's, and back door lock key cylinder switches	Operate the door lock key cylinder at each door
Hood switch	Open and close the hood

Q: When the key reminder switch, driver's, front passenger's, rear and back door lock actuator switches, driver's, front passenger's and back door look key cylinder switches, hood switch are operated, does scan tool MB991502 sound in all cases?

YES : Replace the ETACS-ECU. The theft-alarm indicator light should illuminate, and the theft-alarm system should be set normally.

NO :

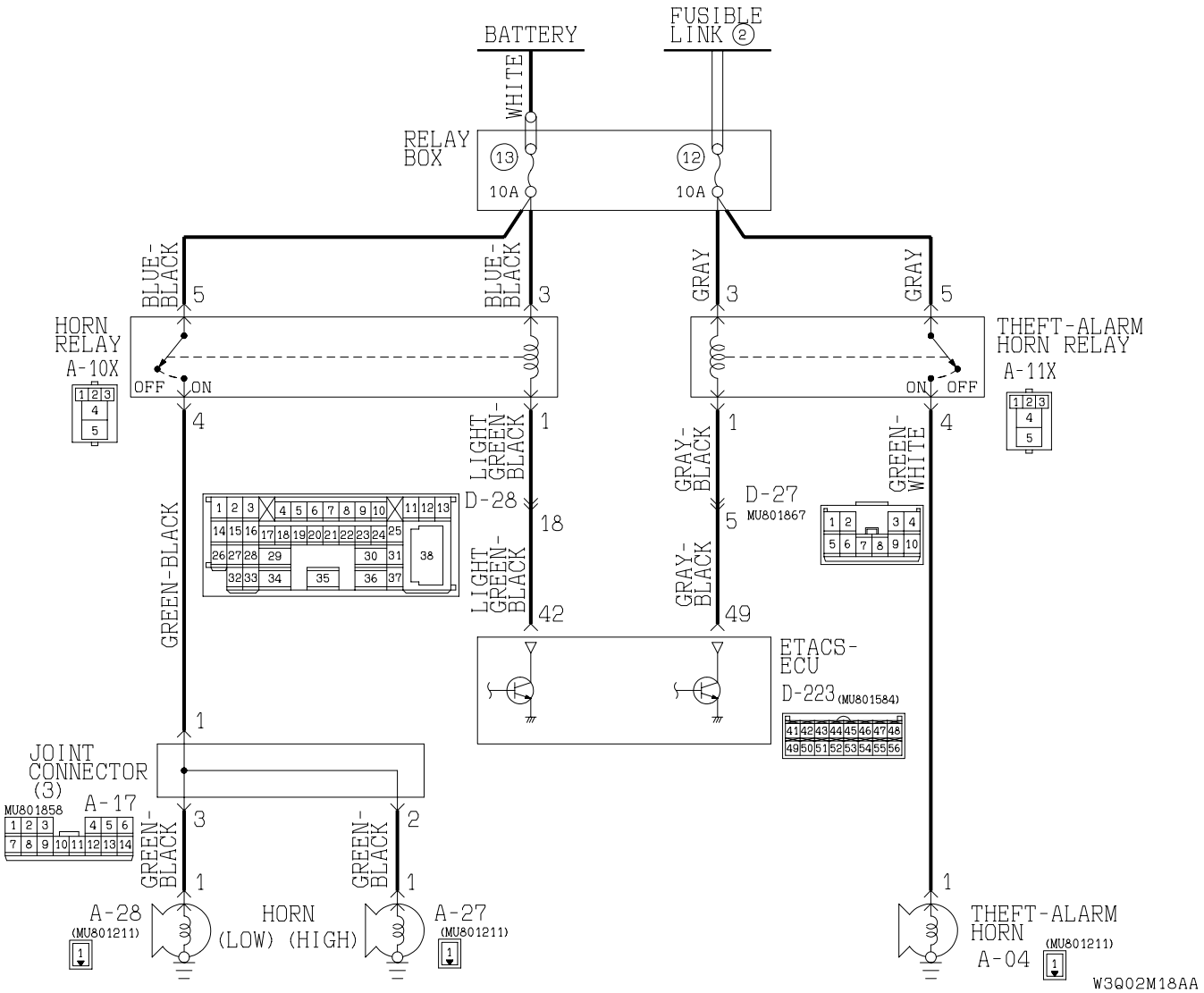
- Scan tool MB991502 does not sound when the key reminder switch is operated: Refer to Inspection Procedure P-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54Bc-49."
- Scan tool MB991502 does not sound when the driver's, the front passenger's, the rear and the back door lock actuator switches are operated: Refer to Inspection Procedure P-6 "ETACS-ECU does not receive signals from the driver's or the front passenger's door lock actuator switches P.54Bc-93."
- Scan tool MB991502 does not sound when the driver's, the front passenger's and the back door lock key cylinder switches are operated: Refer to Inspection Procedure P-5 "ETACS-ECU does not

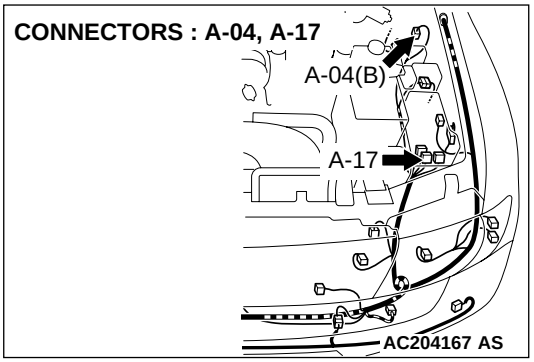
receive signals from the driver's and the front passenger's door lock key cylinder switches P.54Bc-75."

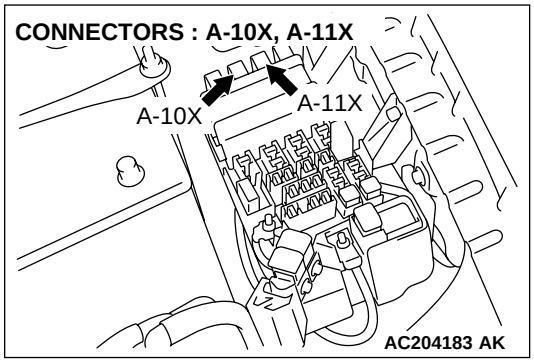
- Scan tool MB991502 does not sound when the hood switch is operated: Refer to Inspection Procedure P-9 "ETACS-ECU does not receive any signal from the hood switch P.54Bc-140."

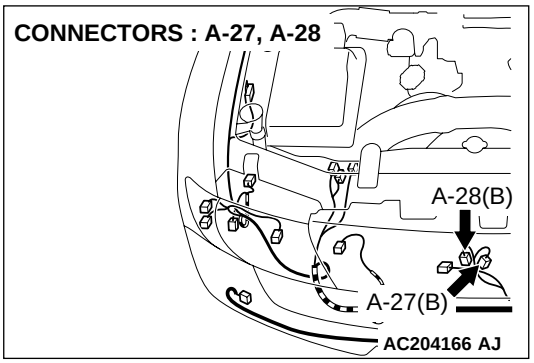
INSPECTION PROCEDURE N-2: Theft-alarm System: Horn does not sound when the theft-alarm is triggered.

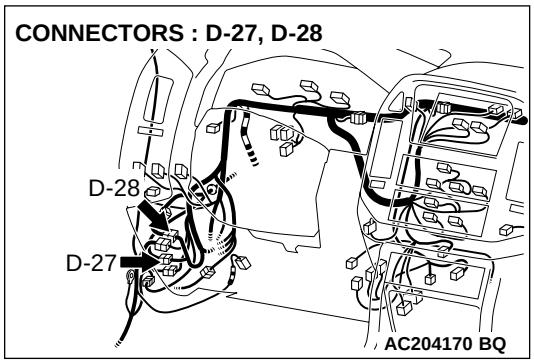
Horn and Theft-alarm Horn Drive Circuit

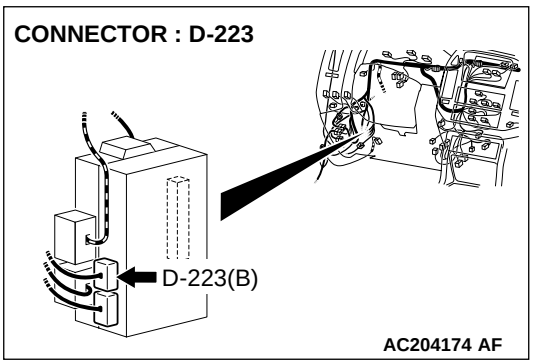












CIRCUIT OPERATION

When the theft-alarm system is triggered, the ETACS-ECU sounds the theft-alarm horn and all the vehicle horns.

TECHNICAL DESCRIPTION (COMMENT)

If the theft-alarm horn and the vehicle horns do not sound when the theft-alarm system is triggered, the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The theft-alarm horn may be defective
- The horn may be defective
- The theft-alarm horn relay may be defective
- The horn relay 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

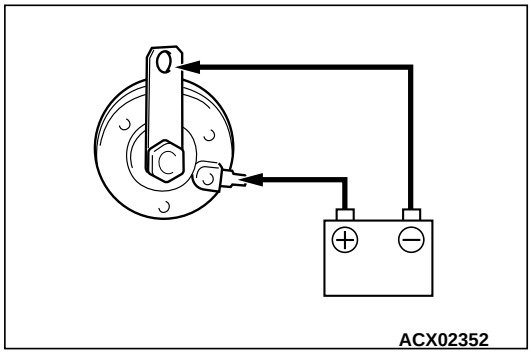
DIAGNOSIS

Required Special Tool:
- MB991223: Harness Set

STEP 1. Check which horn is defective.
Check which horn does not sound when the theft-alarm system is triggered.

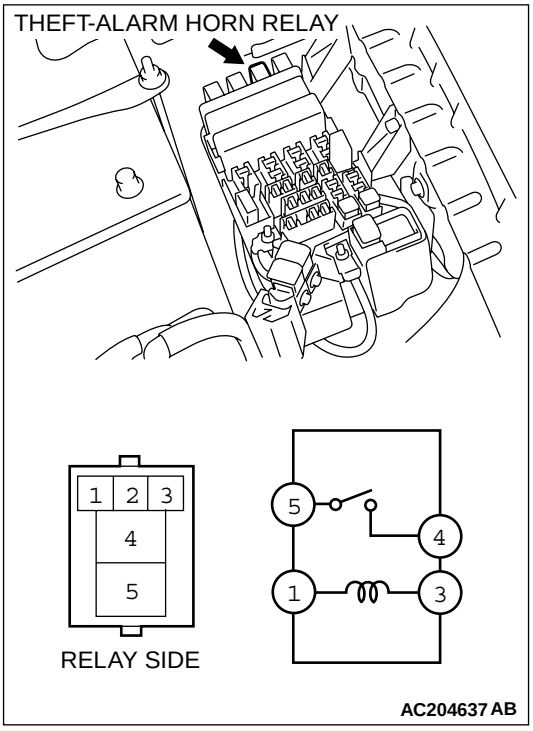
Q: Which horn does not sound?
theft-alarm horn : Go to Step 2.
horns (high and low) : Go to Step 12.
horn (high or low) : Go to Step 20.
theft-alarm horn and all vehicle horns : Replace the ETACS-ECU. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

STEP 2. Check the theft-alarm horn.
Connect the battery as shown, and check that the theft-alarm horn sounds.


ACX02352

Q: Does the theft-alarm horn sound?
YES : Go to Step 3.
NO : Replace the theft-alarm horn. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

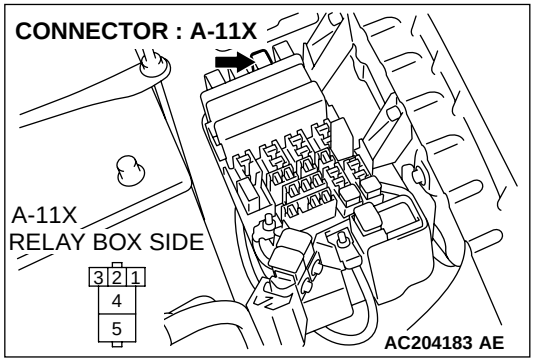
STEP 3. Check the theft-alarm horn relay.



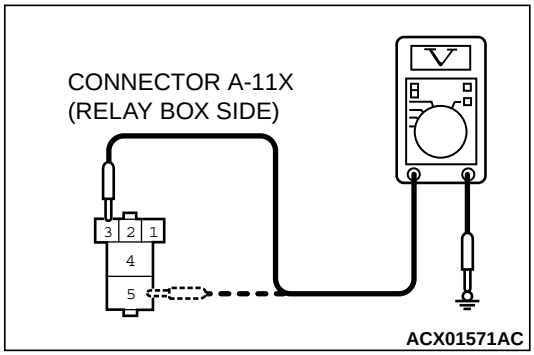
BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
1 – Battery (–) terminal, 3 – Battery (+) terminal	4 – 5	Less than 2 ohms

Q: Is the theft-alarm horn relay normal?
YES : Go to Step 4.
NO : Replace the theft-alarm horn relay. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

STEP 4. Check the fusible link (2) line of the power supply circuit to the theft-alarm horn relay. Test at theft-alarm horn relay connector A-11X.



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



(2) Measure the voltage between terminal 3 and ground, and also between terminal 5 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

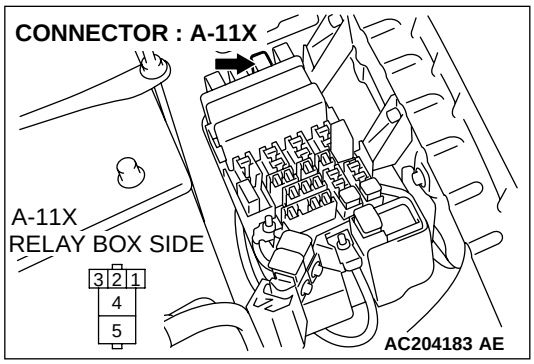
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

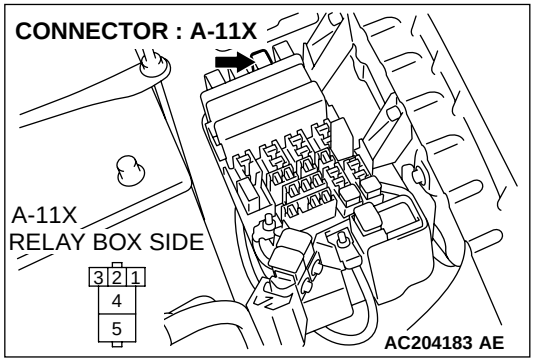
YES : Go to Step 7.
NO : Go to Step 5.

STEP 5. Check theft-alarm horn relay connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is theft-alarm horn relay connector A-11X 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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



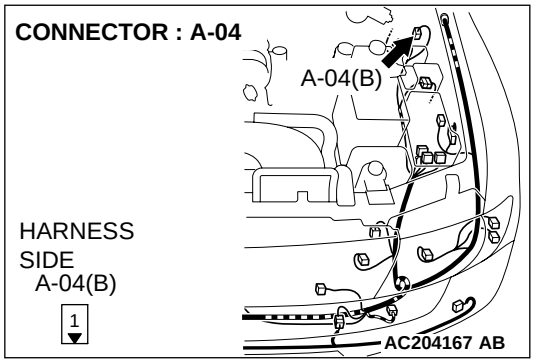


STEP 6. Check the wiring harness between theft-alarm horn relay connector A-11X (terminals 3 and 5) and fusible link (2).

Q: Is the wiring harness between theft-alarm horn relay connector A-11X (terminals 3 and 5) and fusible link (2) in good condition?

YES : Replace the ETACS-ECU. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

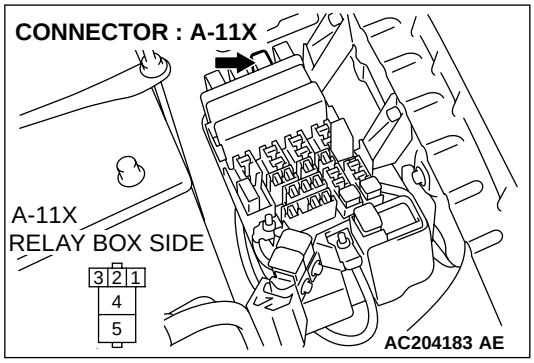


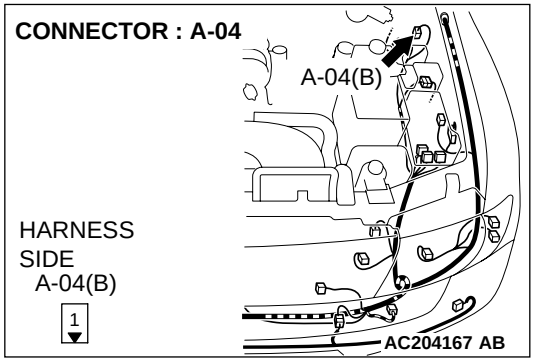
STEP 7. Check theft-alarm horn relay connector A-11X and theft-alarm horn connector A-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

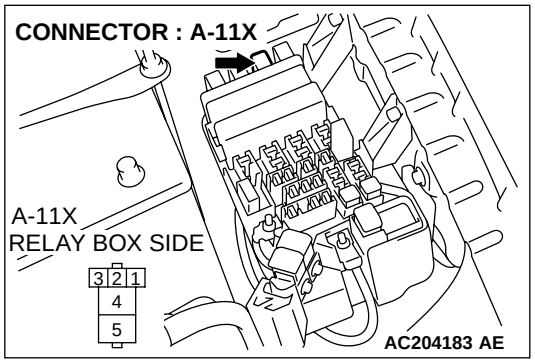
Q: Are theft-alarm horn relay connector A-11X and theft-alarm horn connector A-04 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.





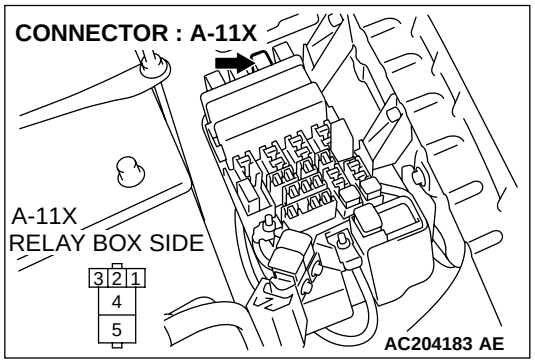


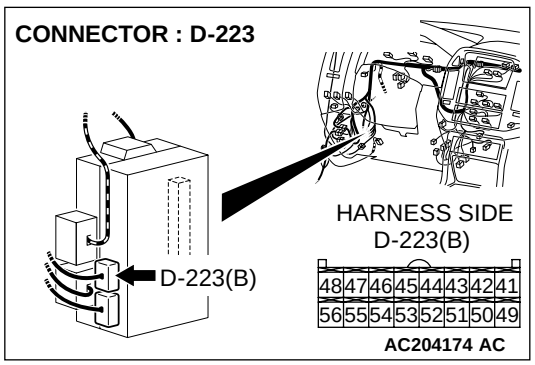
STEP 8. Check the wiring harness between theft-alarm horn relay connector A-11X (terminal 4) and theft-alarm horn connector A-04 (terminal 1).

Q: Is the wiring harness between horn relay connector A-11X (terminal 4) and theft-alarm horn connector A-04 (terminal 1) in good condition?

YES : Go to Step 9.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.





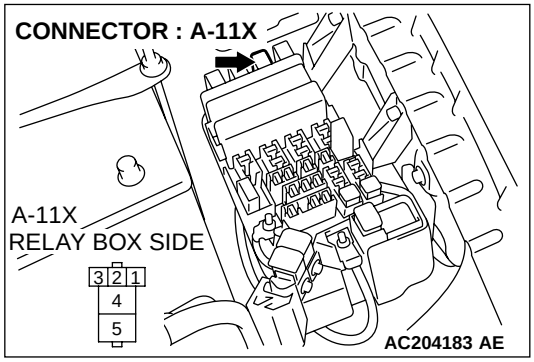
STEP 9. Check theft-alarm horn relay connector A-11X and ETACS-ECU connector D-223 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

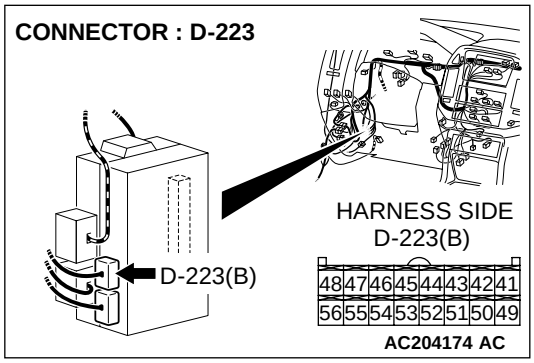
Q: Are theft-alarm horn relay connector A-11X and ETACS-ECU connector D-223 in good condition?

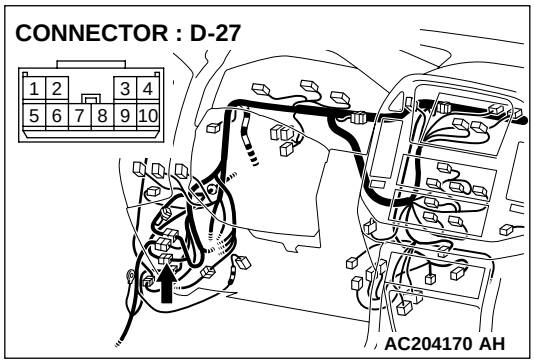
YES : Go to Step 10.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

STEP 10. Check the wiring harness between theft-alarm horn relay connector A-11X (terminal 1) and ETACS-ECU connector D-223 (terminal 49).







NOTE: Also check intermediate connector D-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors D-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 theft-alarm horn relay connector A-11X (terminal 1) and ETACS-ECU connector D-223 (terminal 49) in good condition?

YES : Go to Step 11.

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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

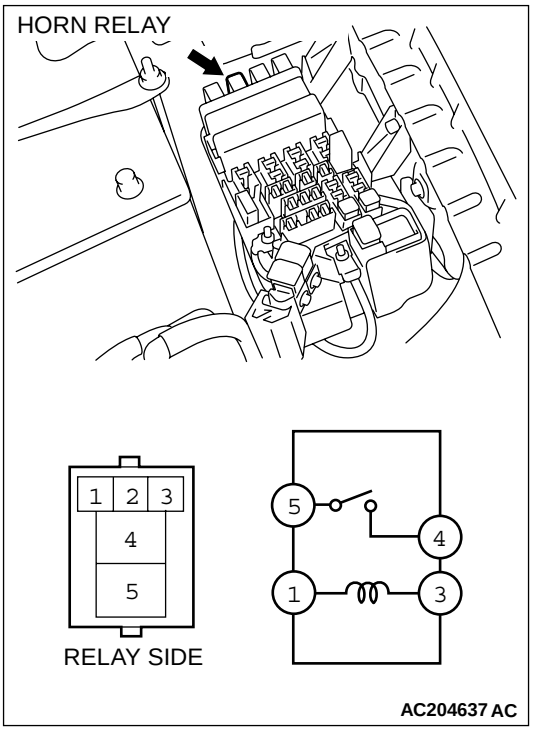
STEP 11. Check the fit of the theft-alarm horn.

NOTE: The theft-alarm horn is grounded to the vehicle body via its mounting bolt.

Q: Is the theft-alarm horn installed correctly?

YES : Replace the ETACS-ECU. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

NO : Install the theft-alarm horn correctly. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



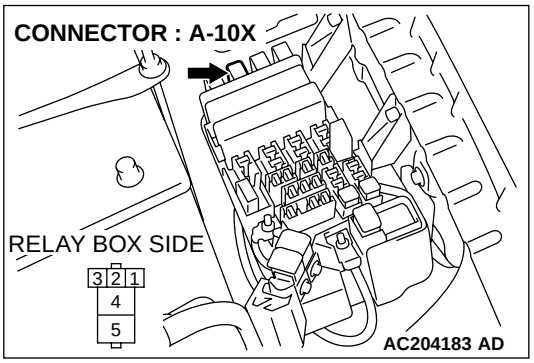
STEP 12. Check the horn relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
1 – Battery (–) terminal, 3 – Battery (+) terminal	4 – 5	Less than 2 ohms

Q: Is the horn relay normal?

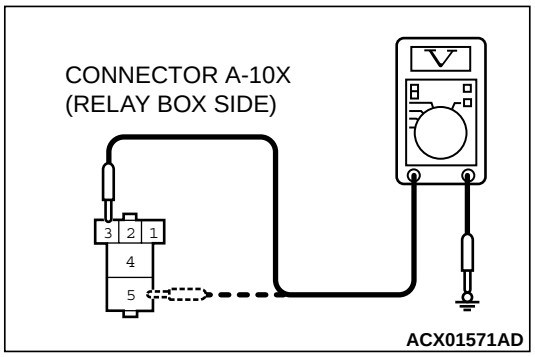
YES : Go to Step 13.

NO : Replace the horn relay. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



STEP 13. Check the battery power supply circuit to the horn relay. Test at horn relay connector A-10X.

(1) Disconnect horn relay connector A-10X and measure the voltage available at the wiring harness side of the connector.

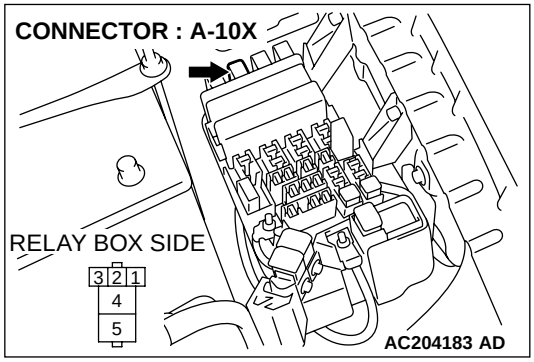


(2) Measure the voltage between terminal 3 and ground, and also between terminal 5 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

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

YES : Go to Step 16.

NO : Go to Step 14.

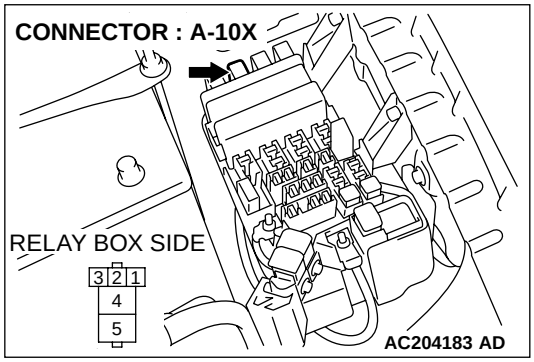


STEP 14. Check horn relay connector A-10X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-10X 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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

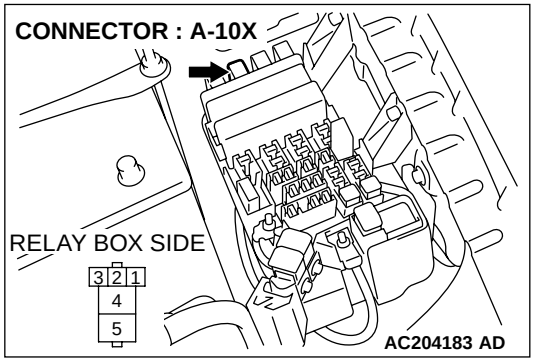


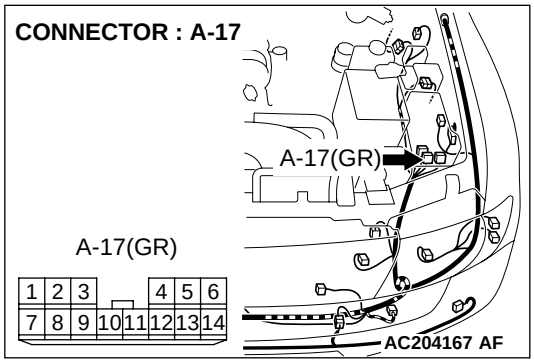
STEP 15. Check the wiring harness between horn relay connector A-10X (terminals 3 and 5) and the battery.

Q: Is the wiring harness between horn relay connector A-10X (terminals 3 and 5) and the battery in good condition?

YES : Replace the ETACS-ECU. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



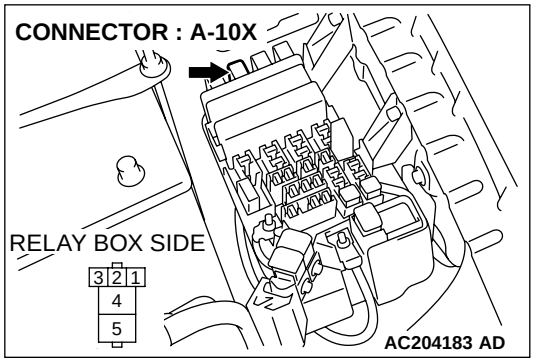


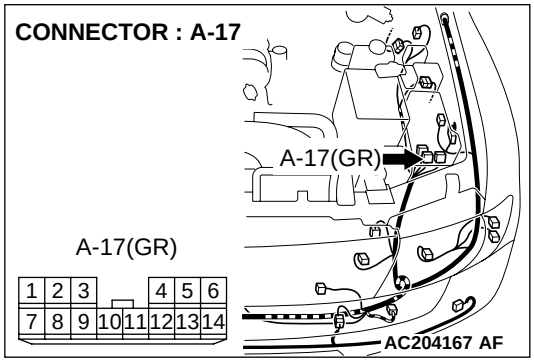
STEP 16. Check horn relay connector A-10X and joint connector (3) A-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-10X and joint connector (3) A-17 in good condition?

YES : Go to Step 17.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



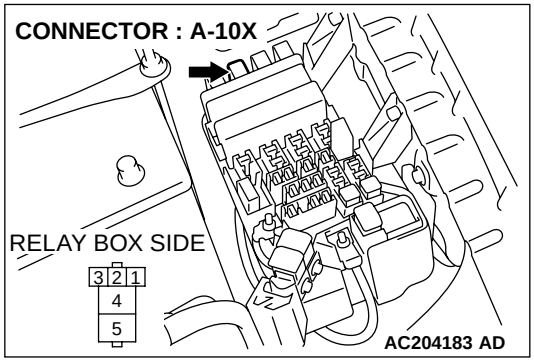


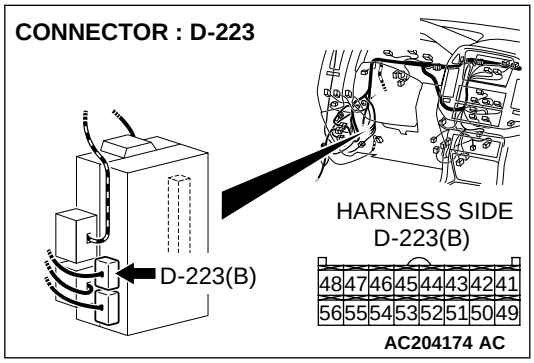
STEP 17. Check the wiring harnesses among horn relay connector A-10X (terminal 4) and joint connector (3) A-17 (terminal 1).

Q: Are the wiring harnesses among horn relay connector A-10X (terminal 4) and joint connector (3) A-17 (terminal 1) in good condition?

YES : Go to Step 18.

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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.





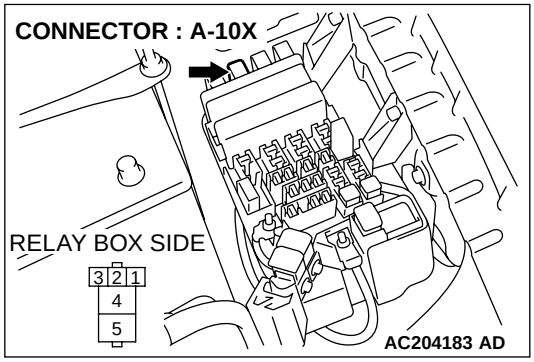
STEP 18. Check ETACS-ECU connector D-223 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

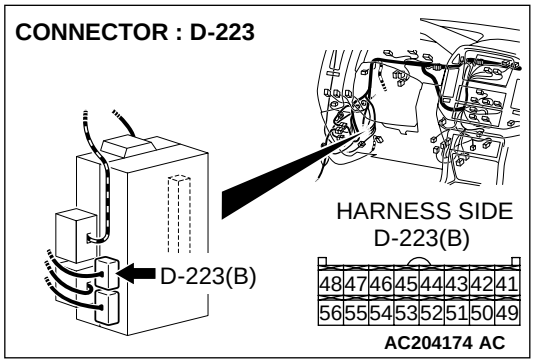
Q: Is ETACS-ECU connector D-223 in good condition?

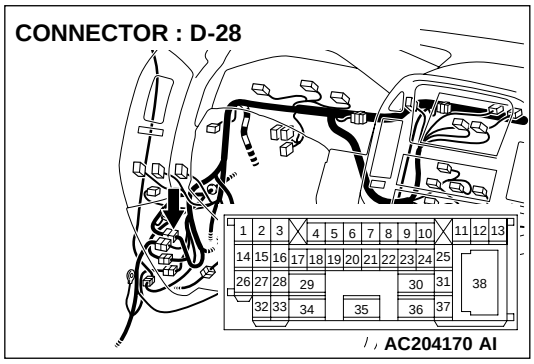
YES : Go to Step 19.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

STEP 19. Check the wiring harness between horn relay connector A-10X (terminal 1) and ETACS-ECU connector D-223 (terminal 42).





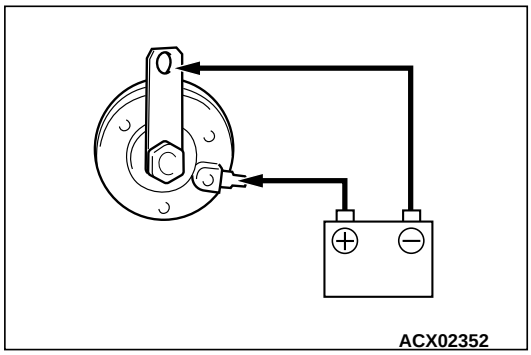


NOTE: Also check intermediate connector D-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors D-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between horn relay connector A-10X (terminal 1) and ETACS-ECU connector D-223 (terminal 42) in good condition?

YES : Replace the ETACS-ECU. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



STEP 20. Check the horn.

(1) When the theft-alarm system is triggered, remove the horn (high or low) which does not sound.
(2) Connect the battery as shown, and Verify that the horn sounds.

Q: Is the horn normal?

YES : Go to Step 21.
NO : Replace the defective horn. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

STEP 21. Check which horn is defective.

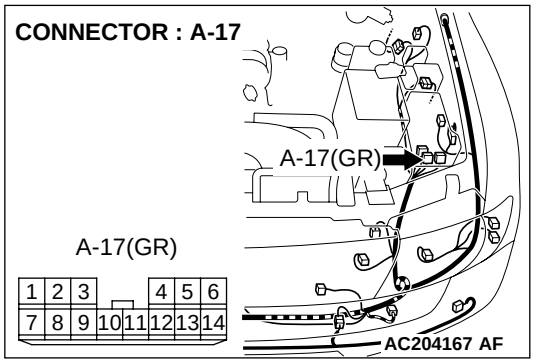
Q: Which horn does not sound?

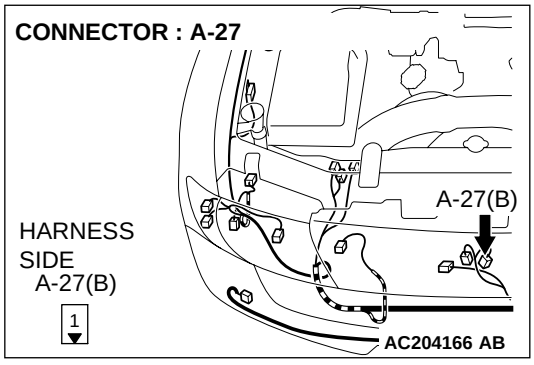
horn (high) : Go to Step 22.
horn (low) : Go to Step 24.

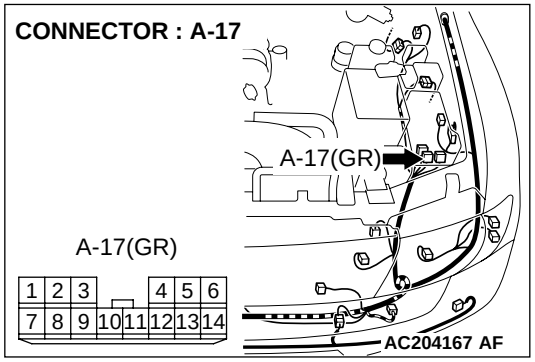
STEP 22. Check joint connector (3) A-17 and horn (high) connector A-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

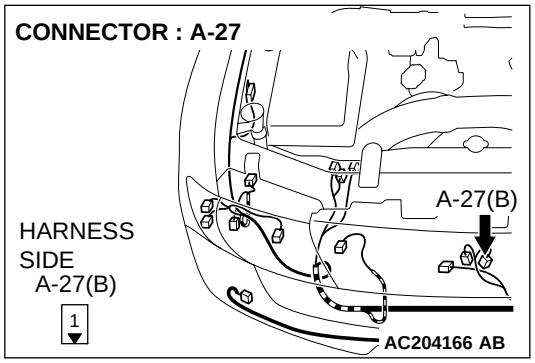
Q: Are joint connector (3) A-17 and horn (high) connector A-27 in good condition?

YES : Go to Step 23.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.







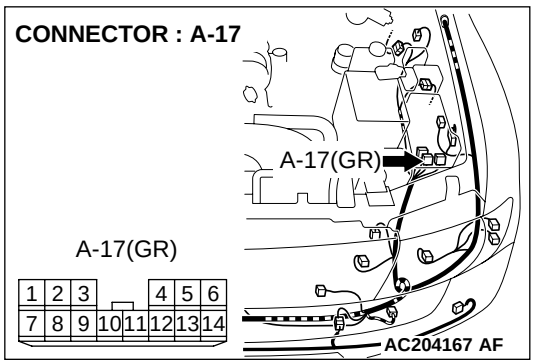


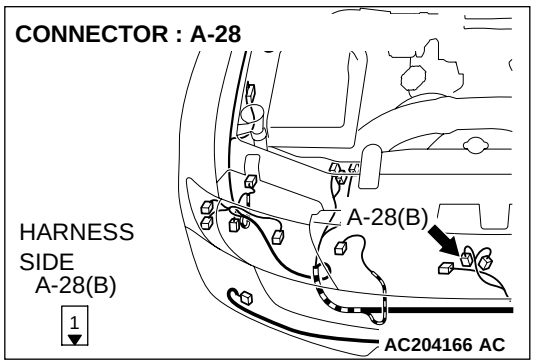
STEP 23. Check the wiring harness between joint connector (3) A-17 (terminal 2) and horn (high) connector A-27 (terminal 1).

Q: Is the wiring harness between joint connector (3) A-17 (terminal 2) and horn (high) connector A-27 (terminal 1) in good condition?

YES : Go to Step 26.

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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



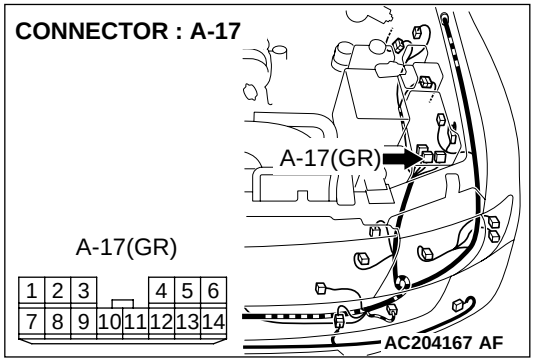


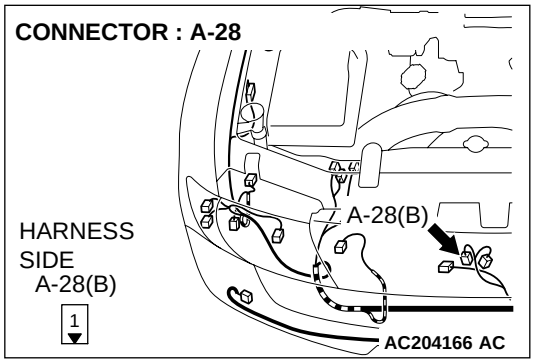
STEP 24. Check joint connector (3) A-17 and horn (low) connector A-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are joint connector (3) A-17 and horn (low) connector A-28 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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.





STEP 25. Check the wiring harness between joint connector (3) A-17 (terminal 3) and horn (low) connector A-28 (terminal 1).

Q: Is the wiring harness between joint connector (3) A-17 (terminal 3) and horn (low) connector A-28 (terminal 1) in good condition?

YES : Go to Step 26.

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. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

STEP 26. Check the fit of the horn.

When the theft-alarm system is triggered, check the fit of the horn (high or low) which does not sound.

NOTE: The horn is grounded to the vehicle body via its mounting bolt.

Q: Is the horn installed correctly?

YES : Replace the ETACS-ECU. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

NO : Install the horn correctly. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.

INSPECTION PROCEDURE N-3: Theft-alarm System: Headlights (high-beam) do not flash when the theft-alarm system is triggered.

TECHNICAL DESCRIPTION (COMMENT)
If the headlights (high-beam) illuminate normally, the front-ECU or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS
- The front-ECU 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

STEP 1. Check the headlight (high-beam) operation.

Q: Do the headlights illuminate at high beam normally?

YES : Go to Step 2.
NO : Refer to Inspection Procedure J-3 "The headlights (high-beam) does not illuminate normally P.54Bb-313."

STEP 2. Replace the ECU.

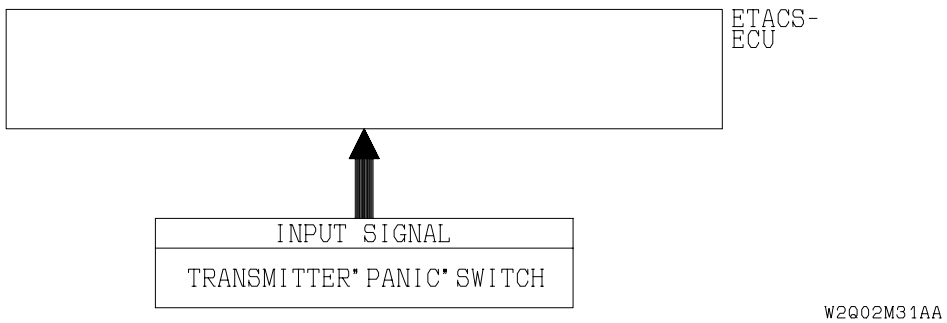
(1) Replace the ETACS-ECU.
(2) The headlights should flash at high beam when the theft-alarm system is triggered.

Q: Do the headlights flash at high beam when the theft-alarm system is triggered?

YES : No action is necessary and testing is complete.
NO : Replace the front-ECU. The headlights should flash at high-beam when the theft-alarm system is triggered.

INSPECTION PROCEDURE N-4: Theft-alarm System: Panic alarm function does not work.

Panic Alarm Function



TECHNICAL DESCRIPTION (COMMENT)
If the keyless entry system is normal, the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS
- 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
- MB991502: Scan Tool (MUT-II)

STEP 1. Check the keyless entry system.

Q: Does the keyless entry system work normally?

YES : Go to Step 2.

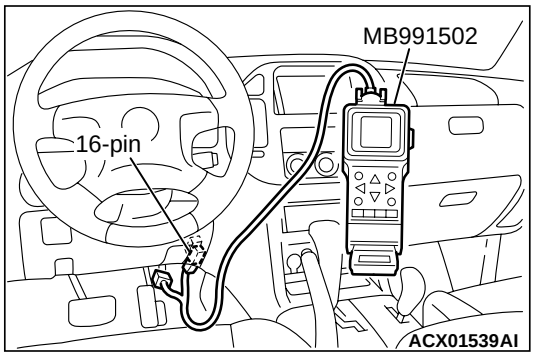
NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate P.54Bb-205."

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

Check the input signals from the transmitter "PANIC" switch:

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.



(1) Connect scan tool MB991502 to the data link connector (16-pin).

(2) Operate scan tool MB991502 according to the procedure below to display "PULSE CHECK."
1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

(3) Check that scan tool MB991502 sounds.

Q: Does scan tool MB991502 sound when the transmitter "PANIC" switch is operated?

YES : Replace the ETACS-ECU. Verify that the panic alarm works normally.

NO : Refer to Inspection Procedure P-10 "ETACS-ECU does not receive any signal from lock, unlock, trunk or panic switch P.54Bc-145."