

GROUP 54B

SIMPLIFIED WIRING SYSTEM (SWS)

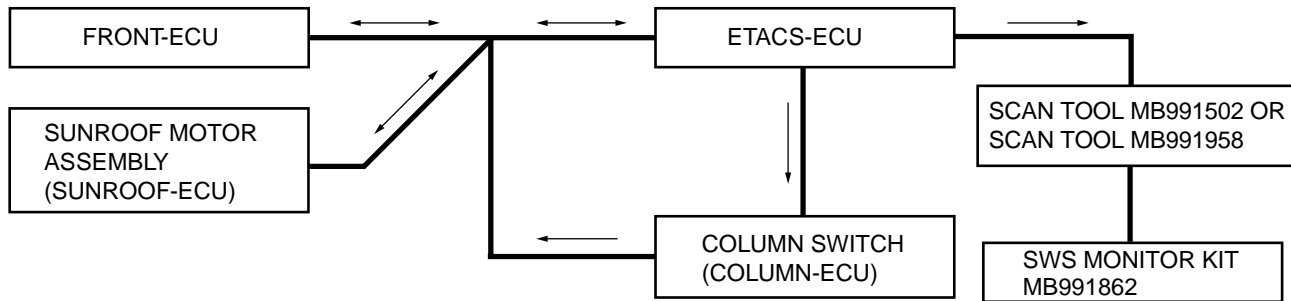
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GENERAL DESCRIPTION

COMMUNICATION METHOD

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As shown below, signal wires used exclusively for transmitting multiplex signal data connect the ETACS-ECU, front-ECU, column switch (incorporating the column-ECU) and sunroof motor assembly (incorporating the sunroof-ECU) and these components communicate with each other.

OPERATION

TONE ALARM FUNCTION

Ignition key reminder tone alarm function

When the driver's door is opened (driver's door switch ON) without removing the ignition key [ignition switch to the "LOCK" (OFF) or "ACC" position], the tone alarm will sound intermittently to remind the driver that the ignition key has not been removed.

Light reminder tone alarm function

When the driver's door is opened (driver's door switch ON) with lighting switch (taillight switch or headlight switch) in the ON position and ignition switch in the "LOCK" (OFF) or "ACC" position, the tone alarm will sound continuously to remind the driver that the lights (taillights or headlights) are ON. This function does not work if the taillights or headlights are switched off through the headlight automatic shutdown function. In addition, the ignition key reminder tone alarm function has a priority over this function.

Seat belt tone alarm function

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

CENTRAL DOOR LOCKING SYSTEM

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Central door locking system operation

- When the driver's inside lock knob is locked or unlocked, the lock relay inside the ETACS-ECU turns on to lock or unlock all doors.
- With all the doors locked, turning the key in the driver's door unlocks the door. Turning it again makes the door unlock relay close to send a signal for unlocking all doors.
- When the door lock switch (built into the power window switch) is operated, the lock or unlock relay inside the ETACS-ECU is turned on to lock or unlock all doors.

POWER WINDOW RELAY CONTROL

Power window relay operation

If the ignition switch is turned to "ON" position, the power window relay is energized to activate the power windows.

Power window timer function

When the ignition switch is turned from the "ON" position to "LOCK" (OFF) or "ACC" position, the power windows can be operated for 30 seconds. If any door is opened for the 30 seconds, the power windows will be immobilized at that point.

KEYLESS ENTRY SYSTEM

If the RKE transmitter "LOCK" or "UNLOCK" switch is pressed while the ignition key is removed, the doors can be locked or unlocked. If the doors are closed, the hazard warning lights, the dome light and the horn will operate due to answerback function. Because of the answerback function, the hazard warning lights flash twice, and the horn sounds once, the dome light flashes twice when the doors are locked. Meanwhile, when the doors are unlocked, the hazard warning lights flash and the dome light illuminates for 15 seconds. The hazard and the horn answerback functions can be cancelled by using the RKE transmitter.

SUNROOF

Sunroof Operation

- All of the slide open/close, tilt up/down, and stop operations can be performed by a single switch.
- When the roof lid glass is tilted up, the sunshade opens approximately 98 mm (3.9 inches) in combined operation with the roof lid glass for better ventilation.
- A jam preventing mechanism has been adopted. When a slide-close or tilt-down operation is blocked by an external force, the roof lid glass moves back and stops.
- The electronic sunroof system cannot be operated manually. The sunroof wrench that was used in previous models is not provided. If the anti-jam mechanism reverses the sunroof five or more times consecutively due to deformation or other problem with the sunroof components, it deactivates and allows the sunroof to make small movements [30 mm (1.2 inches)] until it closes completely.

Sunroof Timer Function

When the ignition switch is turned from "ON" position to "LOCK" (OFF) or "ACC" position, the sunroof can be operated for thirty seconds. If any door is opened for the 30 seconds, the sunroof will be immobilized at that point.

WINDSHIELD WIPERS AND WASHERS

Windshield low-speed (and high-speed) wiper operation

- If the windshield low-speed wiper switch is turned to the ON position with the ignition switch at the "ACC" or "ON" position, the column switch sends a low-speed wiper ON and high-speed wiper OFF signals to the front-ECU. This turns the wiper signal on and the wiper speed control relay off (low-speed), causing the wipers to operate at low-speed.
- If the windshield high-speed wiper switch is turned to the ON position, the column switch sends a low-speed wiper OFF and high-speed wiper ON signals to the front-ECU. This turns both the wiper signal and the wiper speed switching relay on (high-speed), causing the wipers to operate at high-speed.

NOTE: The windshield wiper speed is changed by wiper speed control relay incorporated in front-ECU. When the wiper speed control relay is at "ON" position, the windshield wiper operates at high-speed, and the wiper speed control relay is at "OFF" position, the windshield wiper operates at low-speed.

Windshield intermittent wiper operation

The ETACS-ECU calculates the wiper operation interval according to the voltage signal sent from the column switch. Then the ETACS-ECU sends a signal to the front-ECU. The front-ECU determines the wiper operation interval and turns on the wiper relay signal relay. This causes the wiper auto stop relay to turn on. Then the wiper auto stop relay will turn off after the wipers reach the park position. This causes the wiper signal relay and then the wipers to turn off. If the wiper signal relay remains off for the wiper operation interval, the relay turns on again, causing the wipers to operate in intermittent mode.

Windshield mist wiper operation

- If the windshield mist wiper switch is turned to the ON position with the ignition switch at the "ACC" or "ON" position, the mist wiper high-speed operation signal is sent to the front-ECU. This signal turns on the wiper speed switching relay, causing the wipers to work at high-speed while the mist switch is on.
- While the windshield mist wiper switch remains turned on when the intermittent mode is still working, the wipers work as the mist wiper. However, the wipers return to the intermittent mode again when the switch is changed back to "INT" position.

- To prevent the windshield mist wiper from operating when the windshield wiper switch is turned OFF, the windshield mist wiper does not work for 0.5 second after the windshield intermittent wiper switch, the windshield low-speed wiper switch and the windshield high-speed wiper switch are turned OFF.

Windshield washer operation

- If the windshield washer switch is turned to ON position with the ignition switch at "ACC" or "ON" position, the windshield washer ON signal is sent to the front-ECU, causing the windshield wiper signal to turn on after 0.3 second. After the windshield washer switch signal turns off, the windshield wiper signal turns off in three seconds.
- If the windshield washer switch is turned on while the windshield wiper is at intermittent mode, when the windshield washer switch is turned OFF within 0.2 second, the wiper works only once to perform mist operation by the windshield washer switch. When the ON condition of the windshield washer switch continues more than 0.2 second, the wiper performs the same movement as normal condition from the time when 0.2 second has elapsed and then returns to the intermittent motion.

REAR WIPER AND WASHER

Rear wiper operation

If the rear wiper and washer switch is turned to "INT" position with the ignition switch at "ACC" or "ON" position, the ETACS-ECU turns ON the rear wiper drive signal for three seconds (approximately two cycles), then 7.4 seconds later the intermittent motion operates every eight seconds. If the selector lever is moved to the "R" position when the rear wiper and washer switch is turned to the "INT" position and the ignition switch is at the "ACC" or "ON" position, the park/neutral position switch "R" turns ON. One second later, the ETACS-ECU turns ON the rear wiper drive signal for three seconds (approximately two cycles). Then, 7.4 seconds later, the intermittent motion of eight seconds' cycle is restored.

Rear washer operation

If the rear wiper and washer switch is turned to the ON (washer) position with the ignition switch at the "ACC" or "ON" position, the rear washer ON signal is sent to the ETACS-ECU, causing the rear wiper signal to turn on after 0.3 second. After the rear washer

switch signal turns off, the rear wiper signal turns off in three seconds. If the rear washer switch is turned to the ON position while the rear wiper is in intermittent mode, the rear washer works for that period when the washer switch remains on. Then the rear wipers return to the intermittent mode.

SEAT BELT WARNING LIGHT

If the driver turns the ignition switch to the "ON" position without wearing the seat belt, the seat belt warning light illuminates to alert the driver to wear the seat belt.

HEADLIGHT

Headlight automatic shutdown function

When the headlights or taillights are on, and the ignition switch is turned from "ON" to "LOCK" (OFF) or "ACC" position or the ignition key is removed, the headlights will be switched off in three minutes. If the driver's door is opened within that three-minute period, the headlights will be switched off automatically. This prevents the battery from discharging.

NOTE: The headlight automatic shutdown function can be disabled by the SWS configuration function. Refer to P.54B-545.

Headlight dimmer switch automatic resetting function

This function allows the dimmer switch to be reset to the low-beam position whenever the headlight switch is turned to the ON position.

FLASHER TIMER

Turn-signal light

When the ignition switch is turned to the "ON" position and turn-signal light switch is placed in the ON position for right or left turn-signaling, the system generates turn-signal light drive signals (flashing signals). The system also notifies of a blown turn-signal light bulb by shortening the flashing intervals of the corresponding indicator light.

Hazard warning light

The system detects a change from OFF to ON of the hazard warning input signal and activates or shuts off the hazard warning lights accordingly.

FOG LIGHT

The fog light switch becomes active only when the headlights are at the low-beam mode. Therefore, if the headlights are turned off, the fog lights will also be switched off. When the headlights are turned on during the next key cycle, the fog lights will be off regardless of the fog light switch position.

DOME LIGHT

With the dome light switch in the "door controlled operation" (middle) position, the ETACS-ECU controls the dome light operation as follows:

- When a door is opened from outside or inside [with the ignition switch turned to "LOCK" (OFF)]: When a door is opened, the ETACS-ECU causes the dome light to be illuminated at 100% intensity. When the door is closed, it dims the dome light to 65% intensity and approximately 30 seconds later, turns out the light completely. During this period (timer controlled period), the dome light goes out if the ignition switch is turned "ON" or the doors are locked.
- When a door is opened or closed with the ignition switch in the "ON" position: The dome light illuminates at 100% intensity when a door is opened and turned out when it is closed.
- When no door is opened and the ignition key is removed: The dome light is illuminated at 100% intensity and turned off approximately 30 seconds later. During that time (timer-controlled period), the dome light goes out if the ignition key is inserted and turned to "ON" or the door locking system is activated.

- Dome light's answerback operation in response to door lock control by keyless entry system: To allow the driver to confirm the doors have locked by the keyless entry system, the ETACS-ECU causes the dome light to blink twice when the doors are locked by the RKE system and to illuminate for approximately 15 seconds when the doors are locked. The dome light's answerback operation in response to a keyless entry system control action is accompanied by flashing of the hazard warning lights.

Interior light automatic shutoff function

This function prevents the battery from being discharged when the door is open or the dome light remains on with the ignition switch at the "LOCK" (OFF) position. The ETACS-ECU turns on its "keep" relay to switch off the battery power supply to the interior lights when the interior light loaded signal and all door switches remain on for approximately 30 minutes with the ignition switch at positions other than ACC. Then the interior lights will be switched off. If the ignition switch is turned on again, the ETACS-ECU turns on its "keep" relay to illuminate the interior lights.

Door-ajar indicator light operation

This indicator light warns the driver that door(s) are not closed. If a door switch is on, the ETACS-ECU operates the door-ajar indicator light on the combination meter.

SWS DIAGNOSIS

GENERAL DESCRIPTION

BEFORE CARRYING OUT TROUBLESHOOTING

Before carrying out troubleshooting, check the following two items.

- Make sure that the ETACS-ECU, the junction block (J/B), the front-ECU and the engine compartment relay box are connected securely.

- Make sure that fuses and fusible links related to relevant systems are not blown.

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SWS DIAGNOSTIC TROUBLESHOOTING STRATEGY

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1. Gather information about the problem from the customer.
2. Verify that the condition described by the customer exists.
NOTE: If an error occurs in the SWS communication line, the ECU isolated from the communication line performs a fail-safe or backup operation, so the problem may not match the one shown in the Trouble Symptom Chart. However, the cause of the failure can be tracked down by performing the following troubleshooting with the SWS monitor.

3. Version number and destination check

Check whether the SWS version number (0) and destination (North America) meet the vehicle specifications. If they are different, replace the ETACS-ECU with a correct one.

4. Use scan tool to select "ECU COMM CHK" on the SWS monitor display.

Check whether the communication status of the input- or output-signal-side ECU associated with the defective function is normal.

- If "OK" is displayed for all related ECUs, they communicate with each other normally and the input or output signal circuit system may be defective. Therefore, check SWS monitor service data.
- If "NG" is displayed for any of the related ECUs, something may be wrong with the ECU for which "NG" appears, its power supply or grounding system, or a wiring harness or connector between the SWS monitor and the ECU. Check the wiring harness and connectors associated with the ECU and examine the ECU itself.

5. Service data on the SWS monitor

Select the defective function from the function-specific diagnostic menu, and check the service data that appears for each function item.

NOTE: In addition to the function-specific diagnostic menu, a service data menu is available for SWS monitor service data to check all items for each ECU.

- (1) When the SWS communication line is monitored.
 - (2) You can determine whether the problem lies in the input or output signal circuit system by checking whether communication data is correct.
- The switch condition does not meet the service data display: Input signal system related to defective functions
 - The switch condition meets the service data display: Output signal system related to defective functions
6. Check of input signal circuit system
Check relevant switch, sensor, input signal-side ECU and their wiring harness and connector.
 7. Check of output signal circuit system
Check an output signal-side ECU, electrical load components and their wiring harness and connector.

HOW TO CONNECT SWS MONITOR

Required Special Tools:

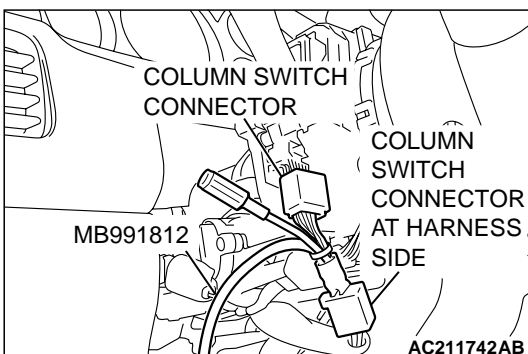
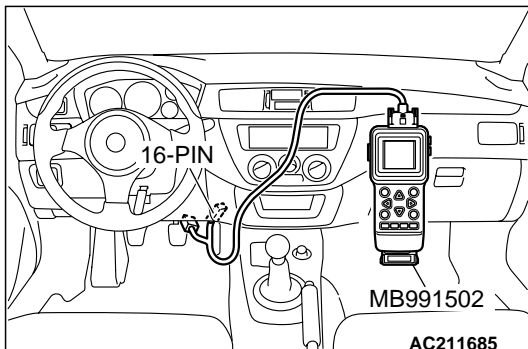
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

<When scan tool MB991502 is used>

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 special tool MB991497 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on scan tool MB991502.

1. Connect scan tool MB991502 to the data link connector.



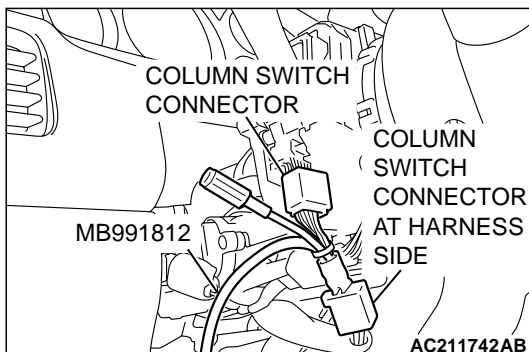
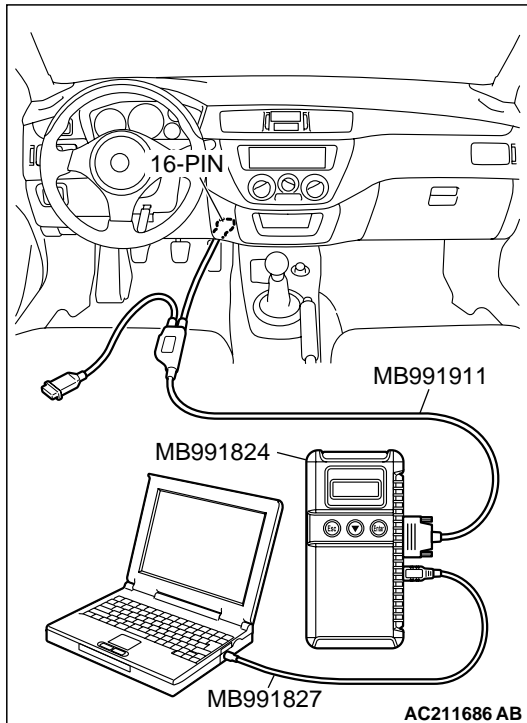
2. Remove the column cover. Refer to GROUP 52A, Instrument Panel Assembly [P.52A-3](#).
3. Disconnect the steering column switch connector.
4. Connect SWS monitor kit MB991813 to the column switch connector.

<When scan tool MB991958 is used>

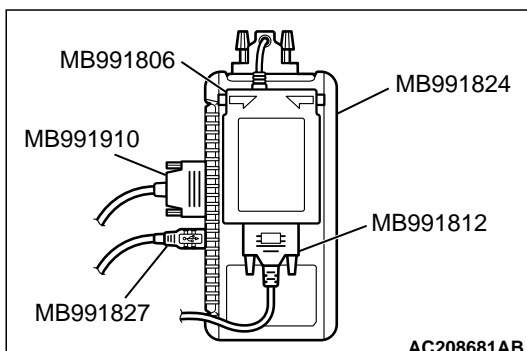
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the special tool MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991924.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991911 to special tool MB991824.
5. Connect special tool MB991911 to the data link connector.



6. Remove the steering column cover. Refer to GROUP 52A, Instrument Panel Assembly P.52A-3.
7. Disconnect the steering column switch connector.
8. Connect special tool MB991812 to column switch connector.



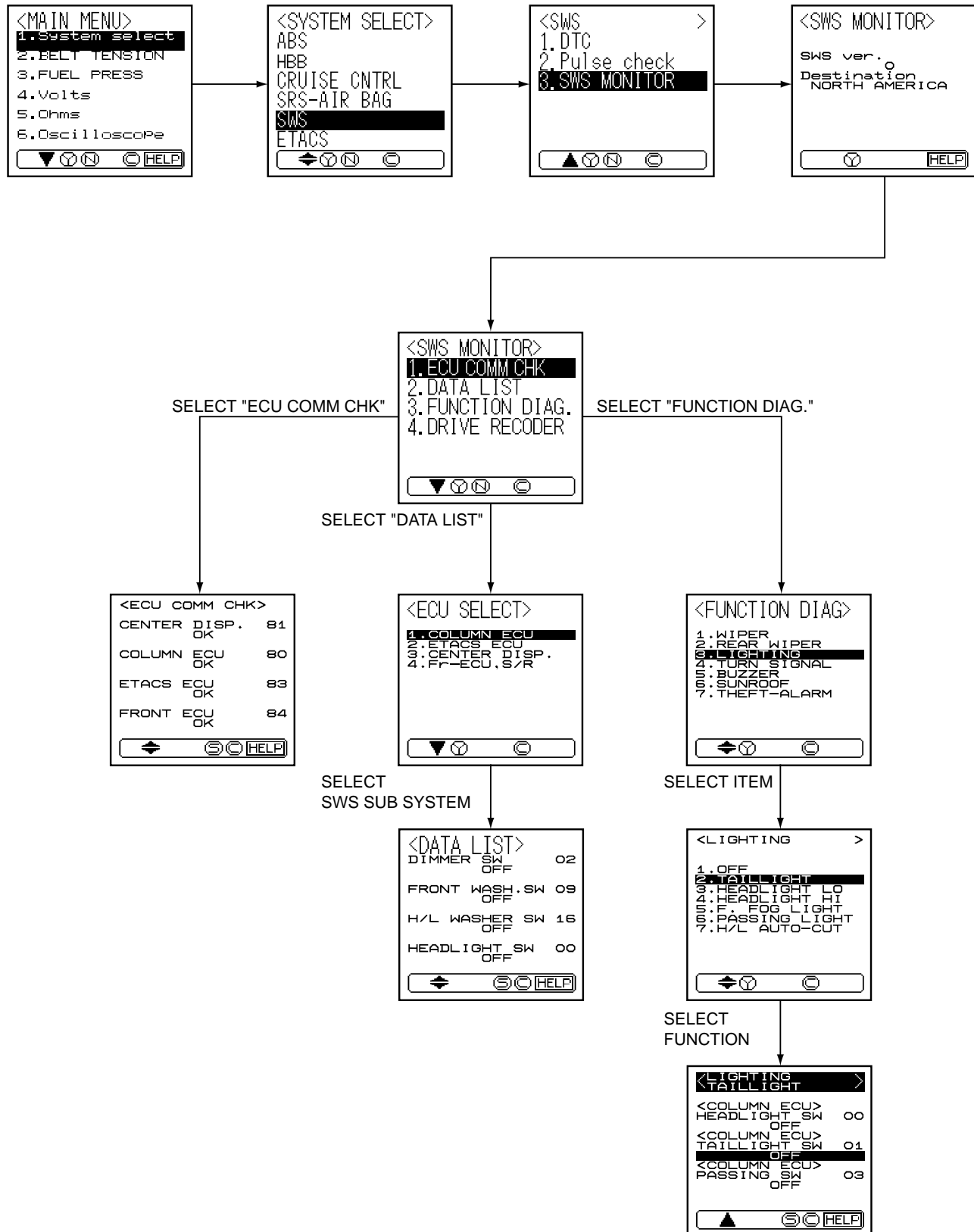
9. Connect special tool MB991812 to special tool MB991806.
10. Connect the special tool MB991806 to special tool MB991824.
11. Turn the power switch of special tool MB991824 to the "ON" position.
NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
12. Start the MUT-III system on the personal computer.

HOW TO USE SWS MONITOR

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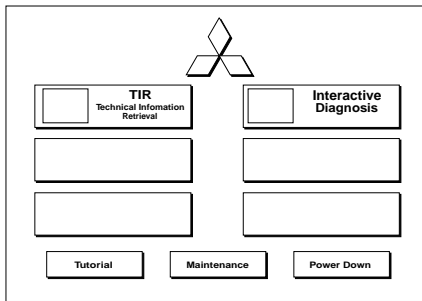
<When scan tool MB991502 is used>

To carry out troubleshooting, operate scan tool MB991502 as follows.



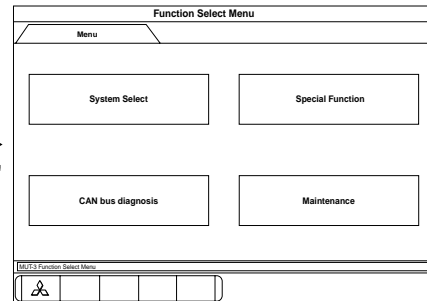
<When scan tool MB991958 (MUT-II sub assembly) is used>

To carry out troubleshooting, operate scan tool MB991958 (MUT-III Sub Assembly) as follows.

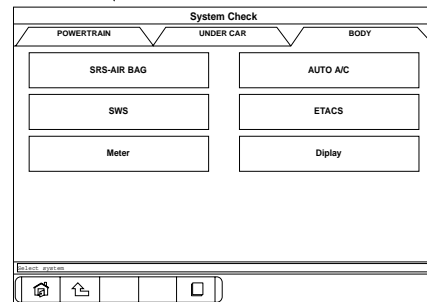


Start-up the MUT-III system.

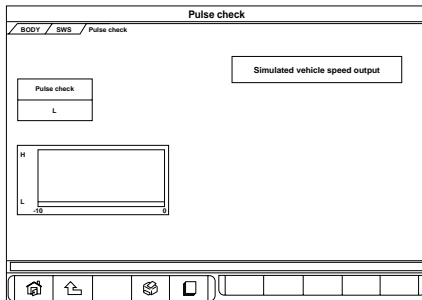
Select "Interactive Diagnosis"



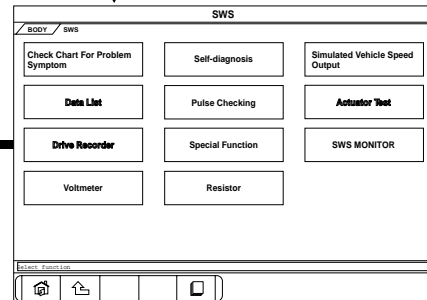
Select "System Select".



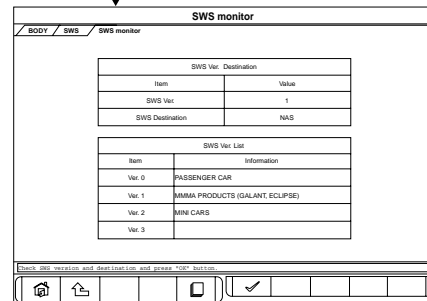
Select "SWS" from the "BODY" tab.



For the pulse check, select "Pulse Checking".



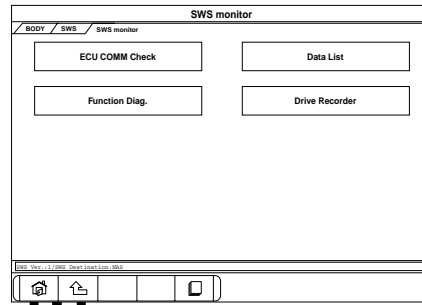
For the SWS monitor, select "SWS MONITOR".



Confirm the SWS version and destination

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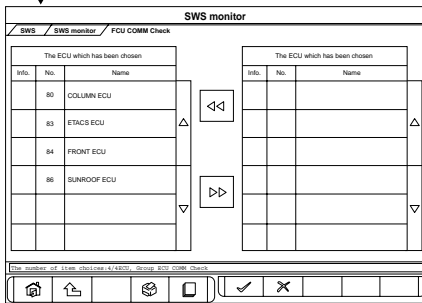
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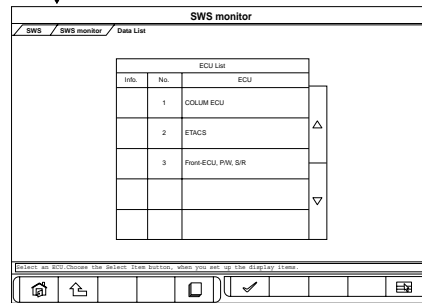
For the ECU comm check, select "ECU COMM Check".

For the data list, select "Data List".

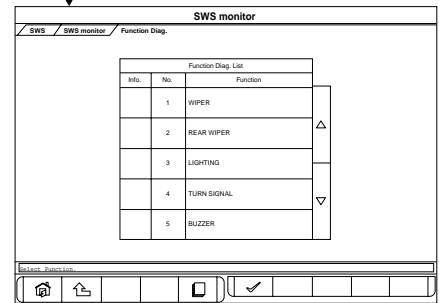
For the function diagnosis, select "Function Diag".



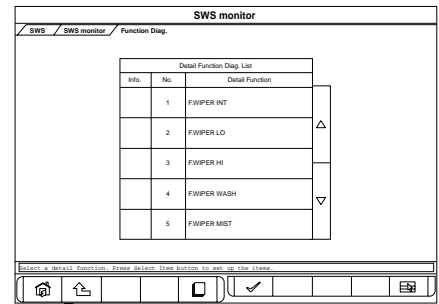
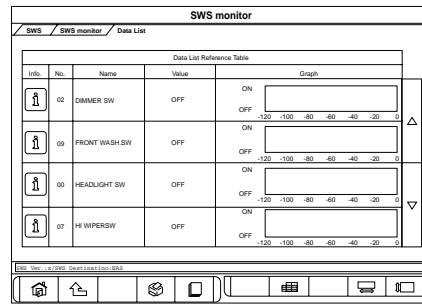
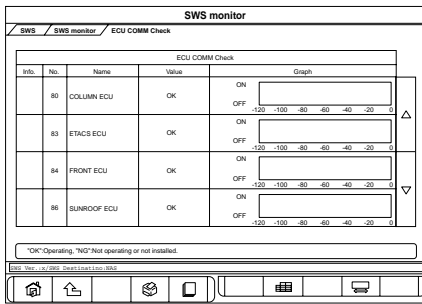
Press the "OK" button.



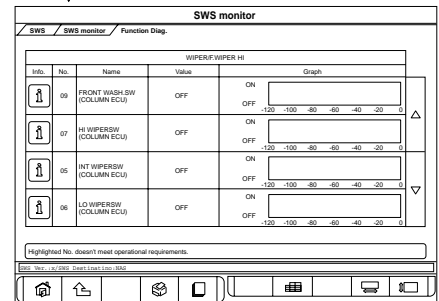
Select the ECU, and then press the "OK" button.



Select the desired item from "Function" and then press the "OK" button.



Select the desired function from "Data Function", and then press the "OK" button.



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HOW TO CHECK ECUs

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1. Use the scan tool and the SWS monitor kit to check ECUs. (Refer to MUT-II Reference Manual or MUT-III User's Manual)
2. The following ECUs can be checked by using the scan tool and the SWS monitor kit.

NOTE: The "ECU COMM Check" function checks a communication status of ECUs "NG" does not always mean ECU malfunction. If a malfunction is found by the "ECU COMM Check", proceed "Symptom Procedure" (Refer to P.54B-22).

SWS monitor kit-compatible ECUs and their conditions

ECU TO BE CHECKED	DISPLAY ON SCAN TOOL	NORMAL CONDITION	ECU CONDITION
Column switch (column-ECU)	COLUMN ECU	OK*1	All of the column switch, power supply, ground and interconnecting communication line are normal
ETACS-ECU	ETACS ECU	OK	All of the ETACS-ECU switch, power supply, ground and interconnecting communication line are normal
Front-ECU	FRONT ECU	OK*2	All of the front-ECU, power supply, ground and interconnecting communication line are normal
Sunroof motor assembly (sunroof-ECU)	SUNROOF ECU	OK*2	All of the sunroof motor assembly, power supply, ground and interconnecting communication line are normal
Other SWS-related ECUs	Other ECUs	NG	ECUs are not used

NOTE:

- *1: If the ignition switch is turned to the "LOCK" (OFF) or "ACC" when "NG" is displayed beside the "ETACS ECU" or the signal request line is abnormal, the scan tool shows "NG" beside the "COLUMN ECU".
- *2: When "NG" is displayed beside the "ETACS ECU", the scan tool shows "NG" beside the "FRONT ECU" and "SUNROOF ECU".

SERVICE DATA CHECK

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Use the scan tool and the SWS monitor kit to check "Data List" or "Function Diag."

1. This "Data List" or "Function Diag" check is applicable for signals, which are transmitted and received through the SWS communication line. For input signals, which are not compatible with the SWS monitor kit, refer to the Pulse Check procedure (by using the scan tool or voltmeter) [P.54B-21](#).

2. The following input signals can be checked by using the scan tool and the SWS monitor kit.

NOTE: If a problem is found in the "Service Data" check, refer to Input Signal Chart <SWS monitor>. (Refer to [P.54B-26](#).)

DATA LIST REFERENCE TABLE

COLUMN ECU (column switch)

CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
Dimmer switch	02	DIMMER SW	Dimmer switch: ON	ON
			Dimmer switch: OFF	OFF
Windshield washer switch	09	FRONT WASH.SW	Windshield washer switch: ON	ON
			Windshield washer switch: OFF	OFF
Headlight switch	00	HEADLIGHT SW	Lighting switch: HEAD	ON
			Lighting switch: Other than HEAD	OFF
Windshield high-speed wiper switch	07	HI WIPER SW	Wiper switch: HI	ON
			Wiper switch: Other than HI	OFF
With or without windshield intermittent wiper interval adjusting knob	15	INT WIPE KNOB	Vehicles with intermittent wiper adjusting knob	EQUIP
			Vehicles without intermittent wiper adjusting knob	NON
Windshield intermittent wiper switch	05	INT WIPER SW	Wiper switch: INT	ON
			Wiper switch: Other than INT	OFF
Windshield low-speed wiper switch	06	LO WIPER SW	Wiper switch: LO	ON
			Wiper switch: Other than LO	OFF
Wind shield mist wiper switch	08	MIST WIPER SW	Wiper switch: Mist	ON
			Wiper switch: Other than "Mist" position	OFF
Passing light switch	03	PASSING SW	Passing light switch: ON	ON
			Passing light switch: OFF	OFF
Taillight switch	01	TAILLIGHT SW	Lighting switch: TAIL	ON
			Lighting switch: OFF	OFF
Turn-signal light switch (LH)	11	T/S LH SW	Turn-signal light switch: LH	ON
			Turn-signal light switch: Other than LH	OFF
Turn-signal light switch: RH	10	T/S RH SW	Turn-signal light switch: RH	ON
			Turn-signal light switch: Other than RH	OFF
Rear wiper switch	13	REAR WIPER SW	Rear wiper switch: INT	ON
			Rear wiper switch: Other than INT	OFF
Rear washer switch	14	REAR WASH.SW	Rear wiper switch: Washer	ON
			Rear wiper switch: Other than "Washer" position	OFF

ETACS ECU

CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
Tone alarm	43	BUZZER	1. Ignition switch: LOCK (OFF) 2. Key reminder switch: ON 3. Front door switch: ON (front door open)	ON
			When requirements for sounding each warning tone alarm are not satisfied	OFF
Front door switch	32	FRONT DOOR SW	Front door switch (right or left): right or left door switch is on (right or left front door is open)	ON
			Front door switches (right and left): both right and left door switches are off (both right and left front doors are closed)	OFF
Headlight automatic shutdown function	35	H/L AUTO-CUT	1. Lighting switch: Other than OFF 2. Ignition switch: from ON or START to LOCK (OFF) or ACC 3. Front door switch: ON (front door open)	OFF to ON (after approximately one second)
			When requirements for the headlight automatic shutdown are not satisfied	OFF
Ignition switch (IG1)	30	IG SW (IG1)	Ignition switch: ON or START	ON
			Ignition switch: LOCK (OFF) or ACC	OFF
Ignition switch (ACC)	31	IG SW (ACC)	Ignition switch: ACC or ON	ON
			Ignition switch: LOCK (OFF) or START	OFF
Backup light switch	41	PNP SW (R)	Backup light switch: ON	ON
			Backup light switch: OFF	OFF
Windshield intermittent wiper interval	37	INT WIPE TIME	1. Ignition switch: ACC or ON 2. Operate the intermittent wiper adjusting knob, and change the wiper interval	The scan tool displays intermittent wiper interval in response to the intermittent wiper adjusting knob positions

NOTE: For item No. 43, the scan tool also display "ON" when the light reminder tone alarm or R (reverse) position warning tone alarm is triggered.

FRONT ECU

CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
Response by the front-ECU	70	FRONT ECU ACK	Lighting switch is at position other than OFF (excluding when high-beam is on) or the wiper switch is at position other than OFF	NORMAL ACK
			<ul style="list-style-type: none"> • Ignition switch: ON or START • Lighting switch: OFF • Wiper switch: OFF 	SLEEP ACK
			<ul style="list-style-type: none"> • Lighting switch: HEAD • Headlight: High-beam 	HI-BEAM ACK
			-	NO ACK

NOTE: For item No. 70, the scan tool also displays "NG" under the "ECU COMM Check" when it displays "NO ACK" under the front-ECU check.

SUNROOF ECU (sunroof motor assembly)

CHECK ITEMS	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITIONS	NORMAL CONDITIONS
Response by the sunroof-ECU	72	S/R ECU ACK	1. Ignition switch: ON or START 2. While sunroof is off	NORMAL ACK → SLEEP ACK (after approximately 30 seconds)
			1. Ignition switch: ON or START 2. One of the sunroof switches is on	INPUT CHECK → NORMAL ACK
			Except above conditions	NO ACK

NOTE: For item No.72, the scan tool also displays "NG" under the "ECU COMM Check" when it displays "No response" under the sunroof-ECU check.

FUNCTION DIAGNOSIS

The table below shows the service data and their normal condition, which are displayed during the "Function Diag." The row "Normal conditions" shows values, which are shown when each operation is made.

WIPER

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
F.WIPER HI	05	Windshield intermittent wiper switch	INT WIPER SW	OFF
	06	Windshield low-speed wiper switch	LO WIPER SW	OFF
	07	Windshield high-speed wiper switch	HI WIPER SW	ON
	08	Wind shield mist wiper switch	MIST WIPER SW	OFF
	09	Windshield washer switch	FRONT WASH.SW	OFF
	31	Ignition switch (ACC)	IG SW (ACC)	ON
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK
F.WIPER INT	05	Windshield intermittent wiper switch	INT WIPER SW	ON
	06	Windshield low-speed wiper switch	LO WIPER SW	OFF
	07	Windshield high-speed wiper switch	HI WIPER SW	OFF
	08	Wind shield mist wiper switch	MIST WIPER SW	OFF
	09	Windshield washer switch	FRONT WASH.SW	OFF
	31	Ignition switch (ACC)	IG SW (ACC)	ON
	37	Windshield intermittent wiper interval	INT WIPE TIME	The scan tool displays intermittent wiper interval in response to the intermittent wiper adjusting knob positions
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
F.WIPER LO	05	Windshield intermittent wiper switch	INT WIPER SW	OFF
	06	Windshield low-speed wiper switch	LO WIPER SW	ON
	07	Windshield high-speed wiper switch	HI WIPER SW	OFF
	08	Wind shield mist wiper switch	MIST WIPER SW	OFF
	09	Windshield washer switch	FRONT WASH.SW	OFF
	31	Ignition switch (ACC)	IG SW (ACC)	ON
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK
F.WIPER MIST	05	Windshield intermittent wiper switch	INT WIPER SW	OFF
	06	Windshield low-speed wiper switch	LO WIPER SW	OFF
	07	Windshield high-speed wiper switch	HI WIPER SW	OFF
	08	Wind shield mist wiper switch	MIST WIPER SW	ON
	09	Windshield washer switch	FRONT WASH.SW	OFF
	31	Ignition switch (ACC)	IG SW (ACC)	ON
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK
F.WIPER WASH	08	Wind shield mist wiper switch	MIST WIPER SW	OFF
	09	Windshield washer switch	FRONT WASH.SW	ON
	31	Ignition switch (ACC)	IG SW (ACC)	ON
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

REAR WIPER

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
REAR WASHER	14	Rear washer switch	REAR WASH.SW	ON
	31	Ignition switch (ACC)	IG SW (ACC)	ON
REAR WIPER	13	Rear wiper switch	REAR WIPER SW	ON
	14	Rear washer switch	REAR WASH.SW	OFF
	31	Ignition switch (ACC)	IG SW (ACC)	ON
REV.INTERLOCK	13	Rear wiper switch	REAR WIPER SW	ON
	31	Ignition switch (ACC)	IG SW (ACC)	ON
	41	Backup light switch	PNP SW (R)	ON

LIGHTING

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
H/L AUTO-CUT	00	Headlight switch	HEADLIGHT SW	Either is on
	01	Taillight switch	TAILLIGHT SW	
	30	Ignition switch (IG1)	IG SW (IG1)	OFF
	32	Front door switch	FRONT DOOR SW	ON
	35	Headlight automatic shutdown function	H/L AUTO-CUT	ON
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK
OFF	00	Headlight switch	HEADLIGHT SW	OFF
	01	Taillight switch	TAILLIGHT SW	OFF
	03	Passing light switch	PASSING SW	OFF
	30	Ignition switch (IG1)	IG SW (IG1)	ON
	35	Headlight automatic shutdown function	H/L AUTO-CUT	OFF
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or SLEEP ACK

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
HEADLIGHT HI	00	Headlight switch	HEADLIGHT SW	ON
	02	Dimmer switch	DIMMER SW	ON
	03	Passing light switch	PASSING SW	ON
	30	Ignition switch (IG1)	IG SW (IG1)	ON
	35	Headlight automatic shutdown function	H/L AUTO-CUT	OFF
	70	Response by the front-ECU	FRONT ECU ACK	HI-BEAM ACK
HEADLIGHT LO	00	Headlight switch	HEADLIGHT SW	ON
	03	Passing light switch	PASSING SW	OFF
	30	Ignition switch (IG1)	IG SW (IG1)	ON
	35	Headlight automatic shutdown function	H/L AUTO-CUT	OFF
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK
PASSING LIGHT	03	Passing light switch	PASSING SW	ON
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK
TAILLIGHT	00	Headlight switch	HEADLIGHT SW	OFF
	01	Taillight switch	TAILLIGHT SW	ON
	03	Passing light switch	PASSING SW	OFF
	30	Ignition switch (IG1)	IG SW (IG1)	ON
	35	Headlight automatic shutdown function	H/L AUTO-CUT	OFF
	70	Response by the front-ECU	FRONT ECU ACK	NORMAL ACK

NOTE: When checking the input signals (off, tail, low-beam or high-beam), turn the ignition switch to the "ON" position in order to disable the headlight automatic shutdown function. However, the headlight operation does not depend on the ignition switch positions, the scan tool does not display the title "IGNITION SWITCH".

For checking item "HI (High-beam)", the scan tool displays "OFF" on the item No. 2 "Dimmer SW" when the headlights are at high-beam. Therefore, the scan tool should display "ON" momentarily when the dimmer switch is operated.

TURN SIGNAL

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
TURN-SIG.LH	10	Turn-signal light switch (RH)	T/S RH SW	OFF
	11	Turn-signal light switch (LH)	T/S LH SW	ON
	30	Ignition switch (IG1)	IG SW (IG1)	ON
TURN-SIG.RH	10	Turn-signal light switch (RH)	T/S RH SW	ON
	11	Turn-signal light switch (LH)	T/S LH SW	OFF
	30	Ignition switch (IG1)	IG SW (IG1)	ON

BUZZER

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
KEY REMND.ALM	30	Ignition switch (IG1)	IG SW (IG1)	OFF
	32	Front door switch	FRONT DOOR SW	ON
	43	Tone alarm	BUZZER	ON
LGT MONI.ALM	00	Headlight switch	HEADLIGHT SW	Either is on
	01	Taillight switch	TAILLIGHT SW	
	30	Ignition switch (IG1)	IG SW (IG1)	OFF
	32	Front door switch	FRONT DOOR SW	ON
	35	Headlight automatic shutdown function	H/L AUTO-CUT	OFF
	43	Tone alarm	BUZZER	ON
OTHER ALARM	30	Ignition switch (IG1)	IG SW (IG1)	ON
	43	Tone alarm	BUZZER	ON

NOTE: The headlight automatic shutdown function works in approximately one second after the lighting monitor tone alarm starts sounding, and then the tone alarm ceases sounding.

SUNROOF

ITEMS	ITEM NO.	INPUT SIGNALS	DISPLAY ON SCAN TOOL	NORMAL CONDITIONS
SUNROOF OPE.	30	Ignition switch (IG1)	IG SW (IG1)	ON
	72	Response by the sunroof-ECU	S/R ECU ACK	INPUT CHECK (only momentarily when switch is operated)

PULSE CHECK

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1. The input signals (signals other than SWS communication line signals), which are compatible with the SWS monitor by using the scan tool or voltmeter, can be confirmed by the Pulse Check. (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-6.](#))

2. Use the scan tool or voltmeter to check the following input signals.

NOTE: If a problem is found the Pulse Check, proceed to the Problems during Input Signal Check <Scan tool or voltmeter> (Refer to [P.54B-26](#)).

Switches and their conditions, which are applicable for Pulse Check

INPUT SIGNAL		REQUIREMENTS FOR SOUNDING TONE ALARM
Key reminder switch		When the inserted ignition key is pulled out.
Hazard warning light switch		When the switch is turned from off to on.
Seat belt switch		When the seat belt is fastened.
All door switches (excluding front door switch)		Either of the doors (excluding front door) is opened.
Door lock key cylinder switch		When the door lock key cylinder is locked or unlocked.
Driver's door lock actuator		When the driver's key cylinder or inside lock knob is unlocked.
Door lock switch		When a door is locked or unlocked by a door lock switch.
Vehicle speed sensor signal		When the vehicle speed reaches 10 km/h or more.
Keyless entry system transmitter	Switches	When the switch is turned from off to on.
Receive a interior light loaded signal		Illuminate any of the interior lights.

SYMPTOM CHART

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ECU communication system

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Communication with the SWS monitor kit is not possible.	A-1	P.54B-28
Communication with the column switch (column-ECU) is not possible.	A-2	P.54B-35
Communication with the ETACS-ECU is not possible.	A-3	P.54B-42
Communication with the front-ECU is not possible.	A-4	P.54B-49
Communication with the sunroof motor assembly (sunroof-ECU) is not possible.	A-5	P.54B-56

Function system

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Tone alarm	General description concerning the tone alarm function.	–	P.54B-65
	Ignition key reminder tone alarm function does not work.	B-1	P.54B-70
	Light reminder tone alarm function does not work normally.	B-2	P.54B-74
	Seat belt tone alarm function does not work normally.	B-3	P.54B-77
Central door locking system	General description concerning the central door locking system.	–	P.54B-82
	The central door lock system does not work at all.	C-1	P.54B-86
	Some doors do not lock or unlock.	C-2	P.54B-94
	All the doors do not lock or unlock with just the door lock switch operation.	C-3	P.54B-108
	All the doors do not lock or unlock with just the door lock key cylinder key operation.	C-4	P.54B-110
	All the doors do not lock or unlock with just the driver's inside lock knob operation.	C-5	P.54B-112

**SIMPLIFIED WIRING SYSTEM (SWS)
SYMPTOM CHART**

54B-23

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Power windows	General description concerning the power windows function.	–	P.54B-114
	Power windows do not work at all.	D-1	P.54B-118
	The power window timer function does not work normally.	D-2	P.54B-130
	Only the front door window (LH) does not work normally by operating the power window main switch.	D-3	P.54B-133
	Power windows does not work normally by operating the front passenger's and rear power window switches.	D-4	P.54B-136
	Front or rear passenger's power windows do not work at all by operating the power window main switch.	D-5	P.54B-169
Keyless entry system	General description concerning keyless entry system.	–	P.54B-171
	Keyless entry system does not operate.	E-1	P.54B-176
	The front dome light, the turn-signal lights and the horn do not operate through the answerback function.	E-2	P.54B-178
	Encrypted code cannot be registered.	E-3	P.54B-186
Sunroof	General description concerning the sunroof.	–	P.54B-189
	Sunroof does not operate.	F-1	P.54B-191
	Any of the sunroof switch positions is defective.	F-2	P.54B-199
	Sunroof timer function does not work normally.	F-3	P.54B-201
	Safety mechanism does not function.	F-4	P.54B-204
Windshield wiper and washer	General description concerning the windshield wiper and washer function.	–	P.54B-205
	The windshield wipers do not work at all.	G-1	P.54B-209
	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.54B-218
	Any of the windshield wiper switch positions is defective.	G-3	P.54B-221
	The windshield wipers do not stop at the predetermined park position.	G-4	P.54B-227
	The windshield intermittent wiper interval is not changed according to the vehicle speed.	G-5	P.54B-232
	The intermittent wiper interval is not changed according to the vehicle speed.	G-6	P.54B-234
	The windshield washer does not work.	G-7	P.54B-237

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Rear wiper and washer	General description concerning the rear wiper and washer function.	–	P.54B-243
	Rear wiper does not work at all.	H-1	P.54B-246
	Rear wiper does not stop at the predetermined park position.	H-2	P.54B-252
	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.54B-258
	Rear washer does not work.	H-4	P.54B-260
Seat belt warning light	General description concerning the seat belt warning light function.	–	P.54B-266
	The seat belt warning light does not work normally.	I-1	P.54B-267
Headlight and taillight	General description concerning headlight and taillight function.	–	P.54B-276
	The taillights do not illuminate normally.	J-1	P.54B-280
	Headlights (low-beam) do not illuminate normally.	J-2	P.54B-285
	Headlights (high-beam) do not illuminate normally.	J-3	P.54B-290
	When the passing switch is turned "on", the headlights (low-beam or high-beam) do not illuminate.	J-4	P.54B-294
	Headlights do not illuminate when the lighting switch is at "AUTO," "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.54B-296
	Any of taillights, position lights or license plate light does not illuminate.	J-6	P.54B-298
	One of the headlights does not illuminate.	J-7	P.54B-323
	Headlight automatic shutdown function does not work normally.	J-8	P.54B-332
	Headlight dimmer switch automatic resetting function does not work normally.	J-9	P.54B-335
Flasher timer	General description concerning the flasher timer function.	–	P.54B-336
	Turn-signal lights do not flash when the turn-signal light switch is turned on.	K-1	P.54B-339
	Hazard warning lights do not flash when the hazard warning light switch is turned on.	K-2	P.54B-346
	The right or left turn-signal light does not illuminate.	K-3	P.54B-349

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Fog light	General description concerning the fog light function.	–	P.54B-371
	Fog lights do not illuminate when the fog light switch is turned on.	L-1	P.54B-373
	The fog lights does not go out when the headlight switch is turned off.	L-2	P.54B-77
	One of the fog lights does not illuminate.	L-3	P.54B-381
Interior light	General description concerning the interior light function.	–	P.54B-392
	The front dome light, rear dome light <vehicles without sunroof> and luggage compartment light do not illuminate or go out normally.	M-1	P.54B-395
	The front dome light, rear dome light <vehicles without sunroof> or luggage compartment light does not illuminate or go out normally.	M-2	P.54B-395
	Front dome light and rear dome light <vehicles without sunroof> dimming function does not work normally.	M-3	P.54B-410
	The interior light automatic shut-down function does not work normally.	M-4	P.54B-415
	The door ajar indicator lights does not illuminate normally.	M-5	P.54B-420

INPUT SIGNAL CHART

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SWS monitor

If a problem is found in the Service Data inspection, observe the table below.

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the ignition switch (ACC).		N-1	P.54B-436
ETACS-ECU does not receive any signal from the ignition switch (IG1).		N-2	P.54B-439
ETACS-ECU does not receive a signal from the fog light switch.		N-3	P.54B-442
ETACS-ECU does not receive any signal from the backup light switch.		N-4	P.54B-448
ETACS-ECU does not receive signals from the front door switches.		N-5	P.54B-454
Column switch	ETACS-ECU does not receive any signal from the taillight switch.	N-6	P.54B-462
	ETACS-ECU does not receive any signal from the headlight switch.		
	ETACS-ECU does not receive any signal from the passing light switch.		
	ETACS-ECU does not receive any signal from the dimmer switch.		
	ETACS-ECU does not receive any signal from the turn-signal light switch.		
	ETACS-ECU does not receive any signal from the windshield mist wiper switch.	N-7	P.54B-464
	ETACS-ECU does not receive any signal from the windshield intermittent wiper switch.		
	ETACS-ECU does not receive any signal from the windshield low-speed wiper switch.		
	ETACS-ECU does not receive any signal from the windshield high-speed wiper switch.		
	ETACS-ECU does not receive any signal from the rear wiper switch.		
	ETACS-ECU does not receive any signal from the windshield intermittent wiper interval adjusting knob.	N-8	P.54B-469
	ETACS-ECU does not receive any signal from the windshield washer switch.	N-7	P.54B-464
	ETACS-ECU does not receive any signal from the rear washer switch.		
	Sunroof	ETACS-ECU does not receive any signal from the up, open or close/down switch.	N-9

Scan tool or voltmeter

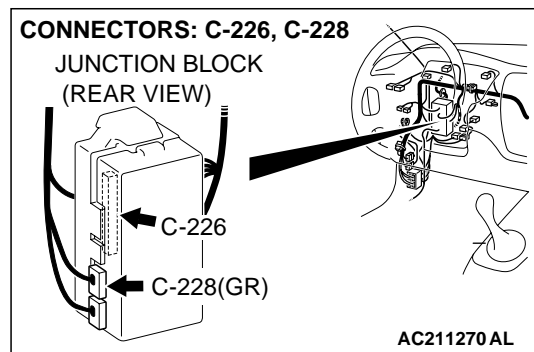
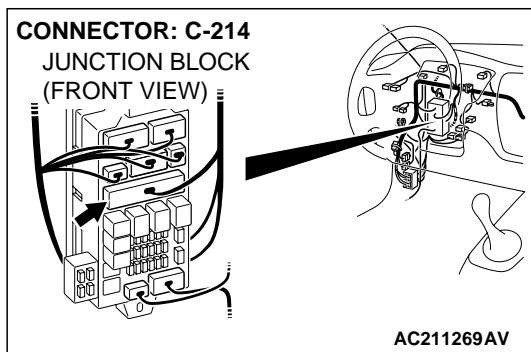
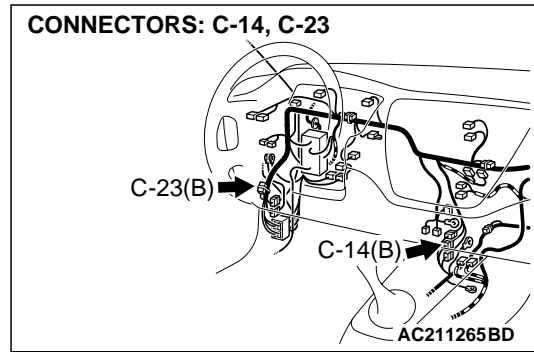
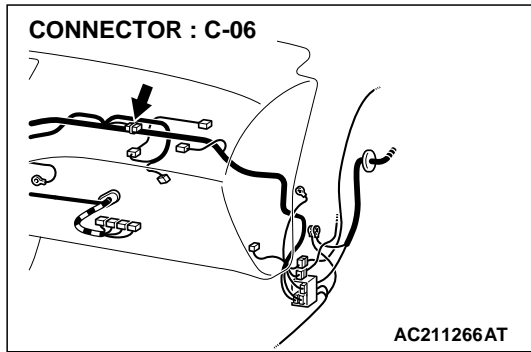
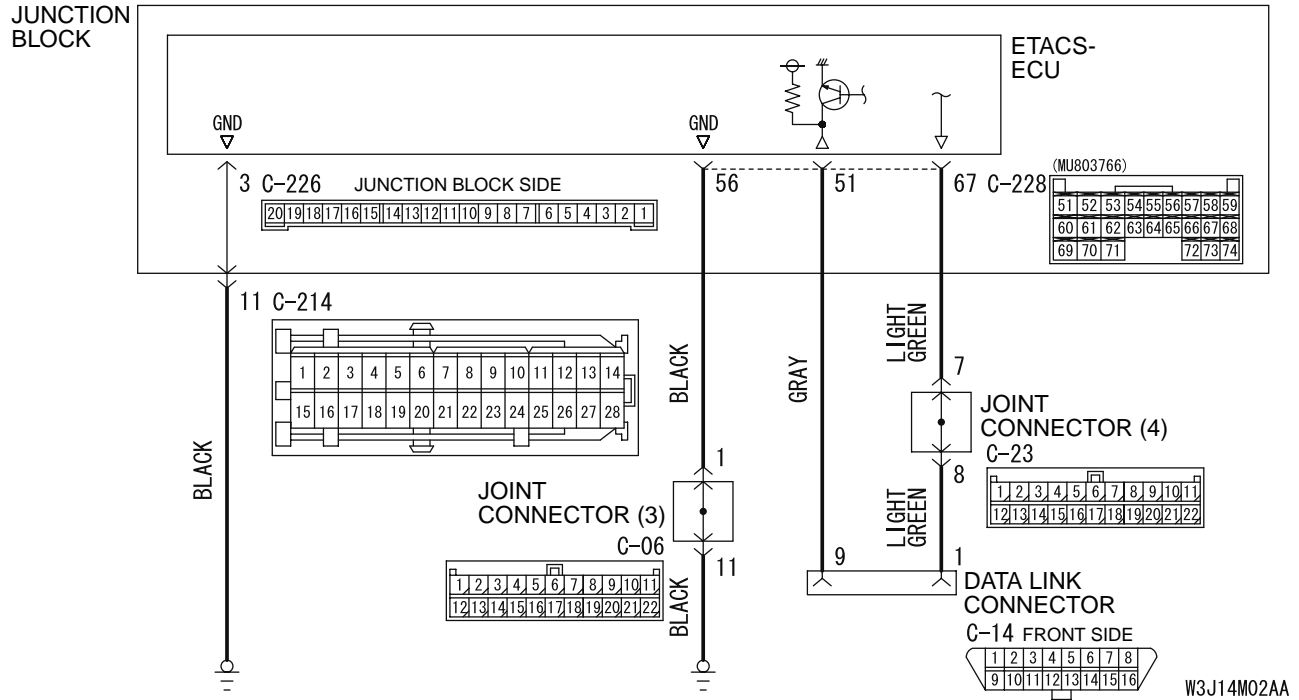
If a problem is found in the Pulse Check, observe the table below.

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the key reminder switch.	O-1	P.54B-476
ETACS-ECU does not receive any signal from the hazard warning light switch.	O-2	P.54B-481
ETACS-ECU does not receive any signal from the driver's seat belt switch.	O-3	P.54B-486
The ETACS-ECU does not receive any signal from all the door switches.	O-4	P.54B-491
ETACS-ECU does not receive any signal from the driver's or front passenger's door lock key cylinder switch.	O-5	P.54B-499
ETACS-ECU does not receive any signal from the door lock actuator.	O-6	P.54B-510
ETACS-ECU does not receive any signal from the door lock switch (incorporated in power window main switch and power window sub switch).	O-7	P.54B-515
ETACS-ECU does not receive any signal from the vehicle speed sensor.	O-8	P.54B-526
Transmitter	ETACS-ECU does not receive any signal from the lock or unlock switch.	O-9 P.54B-529
ETACS-ECU does not receive any interior light loaded signal.		O-10 P.54B-531

SYMPTOM PROCEDURES

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

Scan Tool Communication and ETACS-ECU Ground Circuit



TECHNICAL DESCRIPTION (COMMENT)

The SWS monitor kit may be connected improperly.

- The SWS monitor body (I/F cartridge) may be defective
- The SWS monitor harness may be defective
- The ETACS-ECU may be defective

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit

STEP 1. Verify SWS monitor kit MB991813 for proper connection.

Q: Is SWS monitor kit MB991813 connected with the column switch properly?

YES : Go to Step 2.

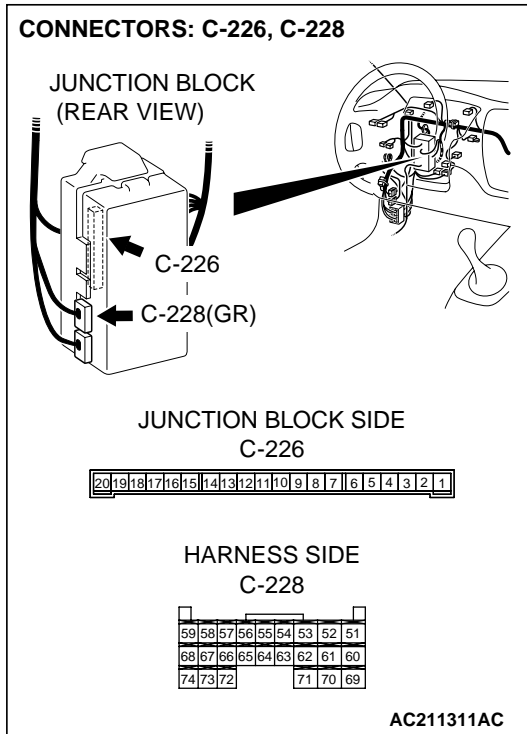
NO : Connect SWS monitor kit MB991813 to the column switch securely.

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

Q: Does the system communicate with scan tool MB991502 or MB991958 when the ignition switch is turned to the "ON" position?

YES : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-42."

NO : Go to Step 3.

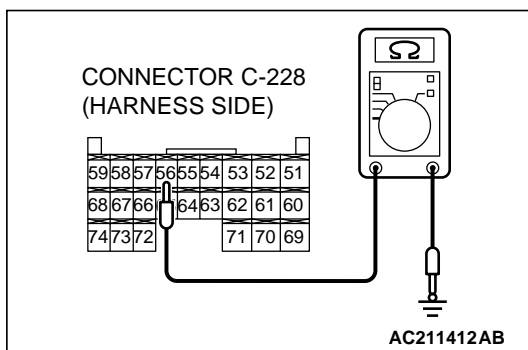
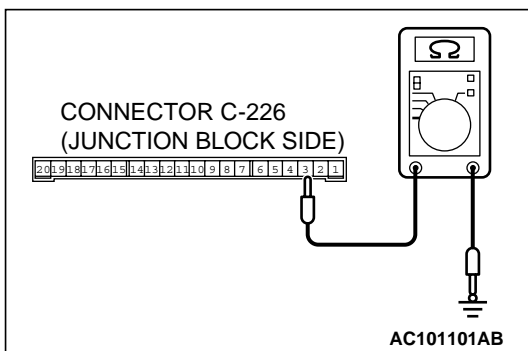
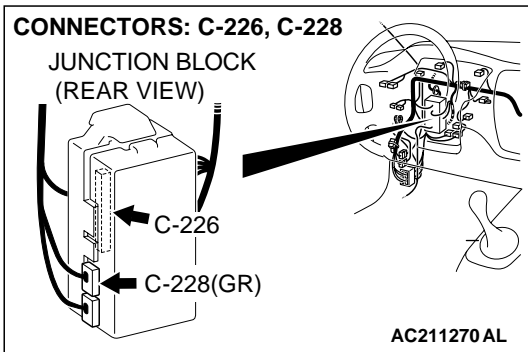


STEP 3. Check ETACS-ECU connector C-226 and C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector C-226 and C-228 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 SWS monitor normally.



**STEP 4. Check the ground circuit to the ETACS-ECU.
Measure the resistance at ETACS-ECU connectors C-226
and C-228.**

(1) Disconnect ETACS-ECU connectors C-226 and C-228 and measure the resistance available at the junction block side of the connector.

(2) Measure the resistance value between ETACS-ECU connector C-226 terminal 3 and ground.

- The resistance should equal 2 ohms or less.

(3) Measure the resistance value between ETACS-ECU connector C-228 terminal 56 and ground.

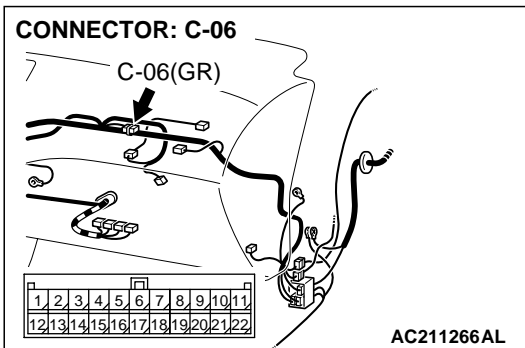
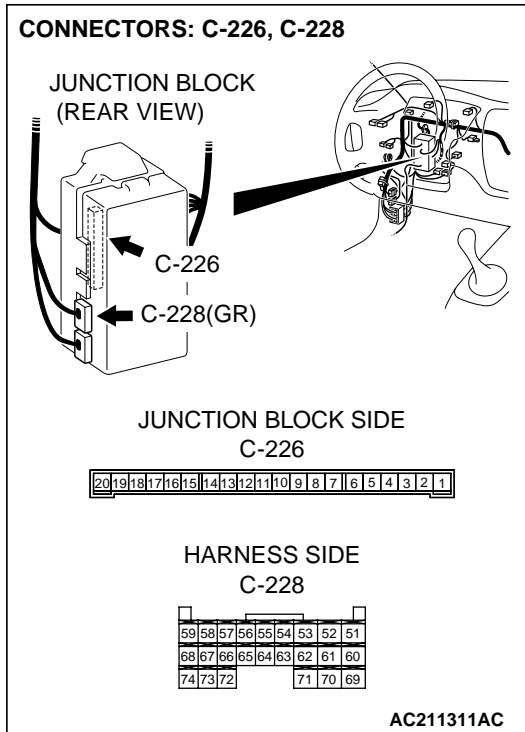
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between ETACS-ECU connector C-226 (terminal 3), C-228 (terminal 56) and the ground.

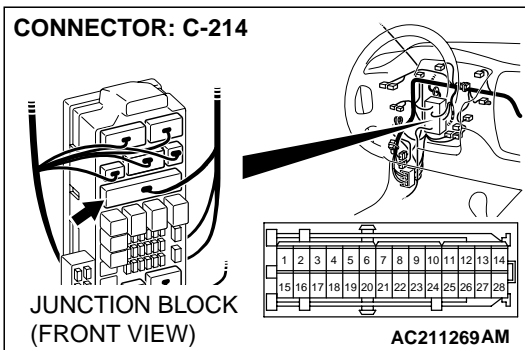


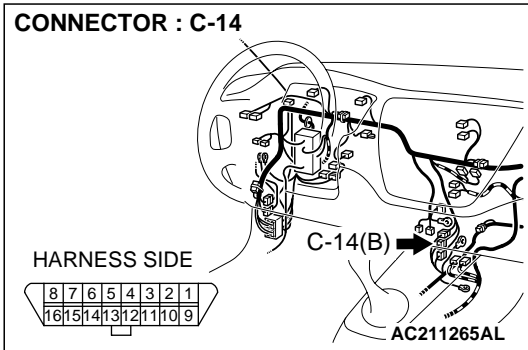
NOTE: Also check junction block connector C-214 and joint connector C-06 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or joint connectors C-06 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 3), C-228 (terminal 56) 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.



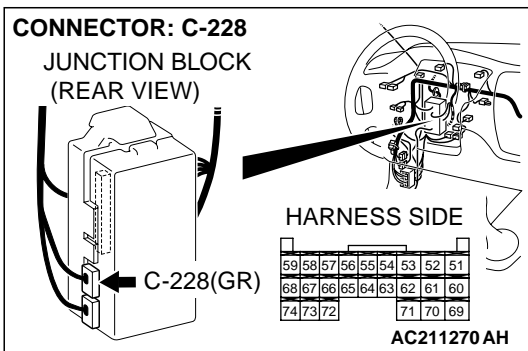


STEP 6. Check ETACS-ECU connector C-228 and data link connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

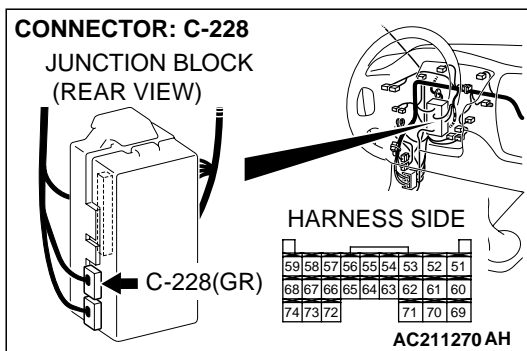
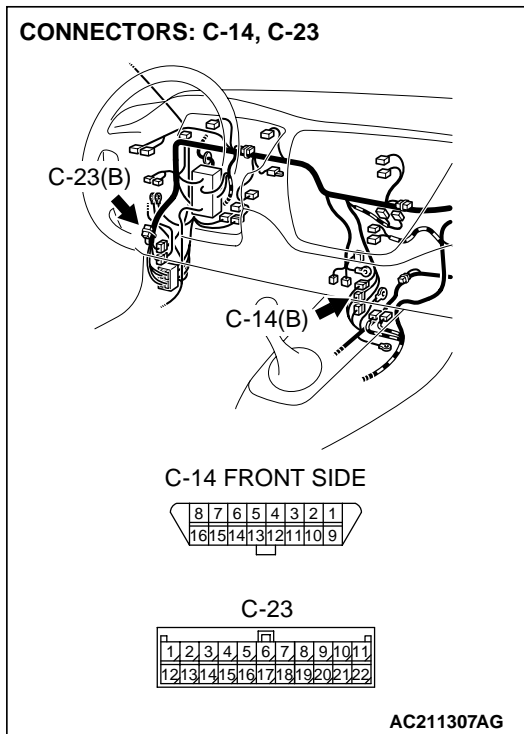
Q: Are ETACS-ECU connector C-228 and data link connector C-14 in good condition?

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 C-228 (terminal 51 and 67) and data link connector C-14 (terminal 9 and 1).



NOTE: Also check joint connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-23 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, *Harness Connector Inspection* P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-228 (terminal 51 and 67) and data link connector C-14 (terminal 9 and 1) in good condition?

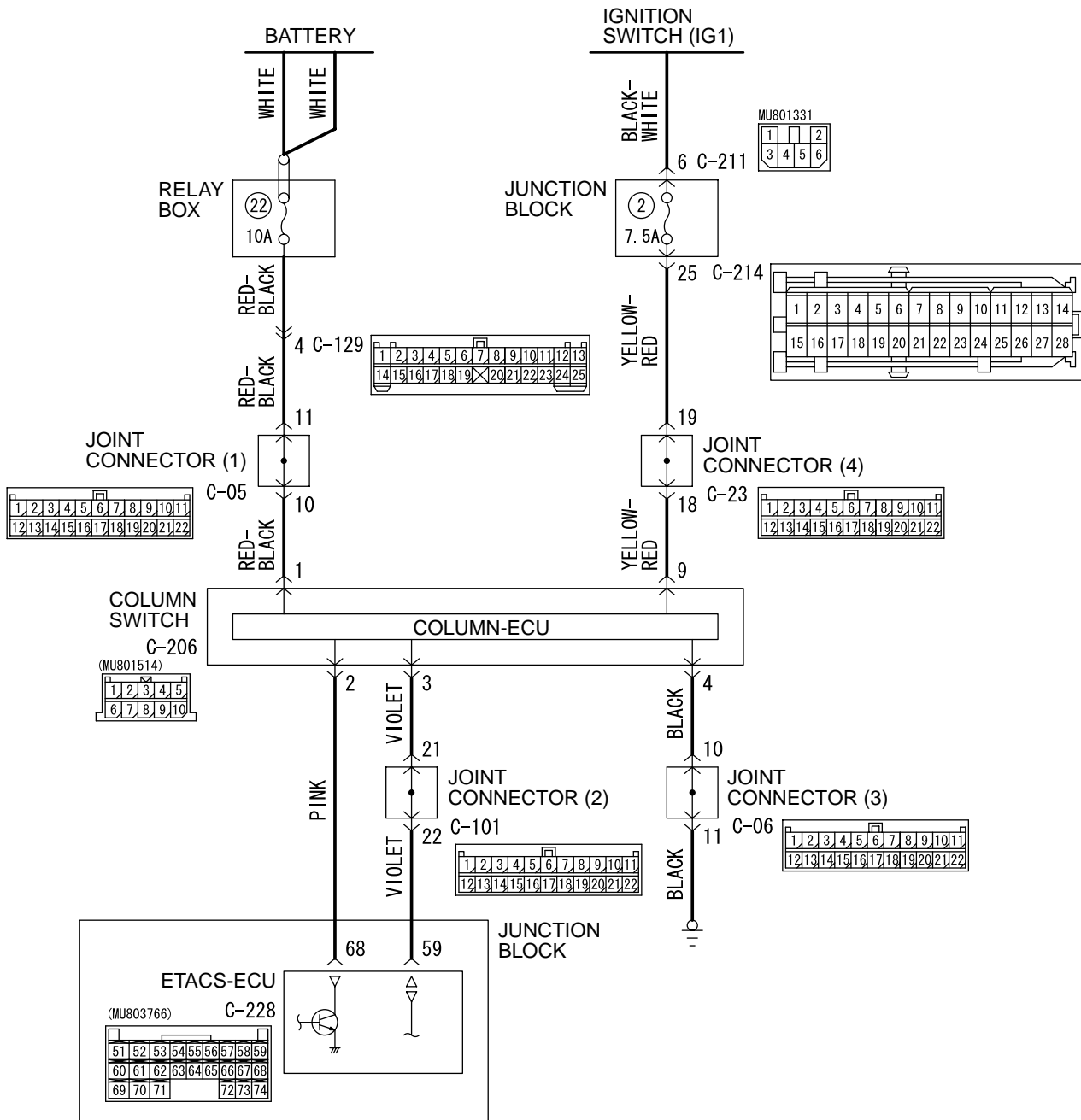
YES : Replace the ETACS-ECU. The system should communicate with the SWS monitor kit normally.

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.

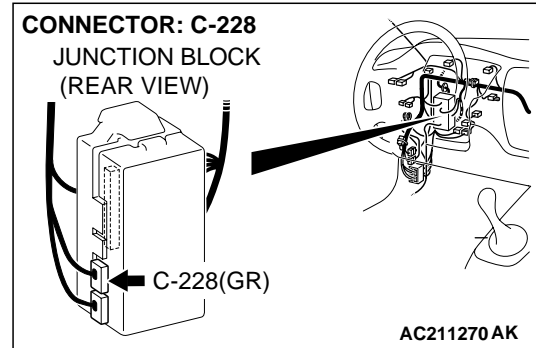
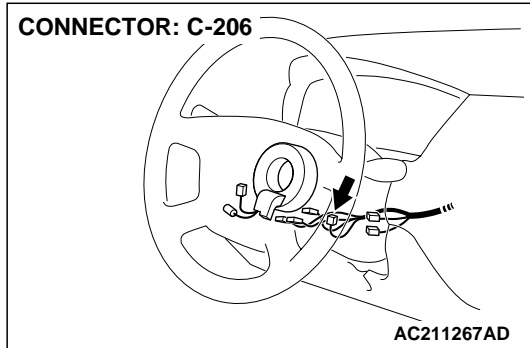
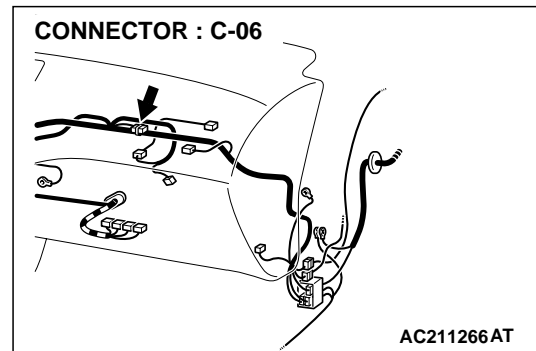
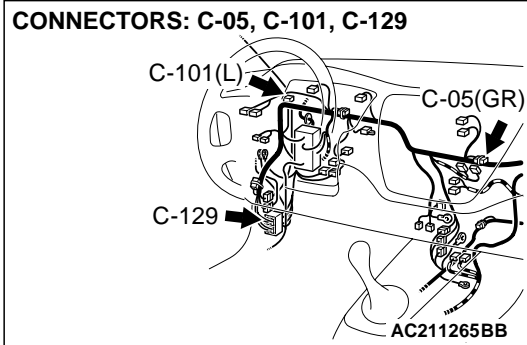
INSPECTION PROCEDURE A-2: Communication with the column switch (column-ECU) is not possible.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9.

Column Switch Power Supply and SWS Communication Circuit



W3J14M03AA



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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Column-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "SWS MONITOR."
- e. Select "ECU COMM Check."

(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

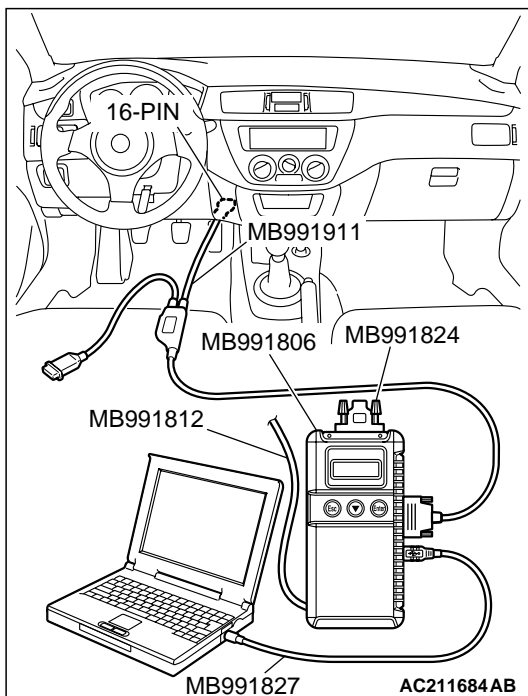
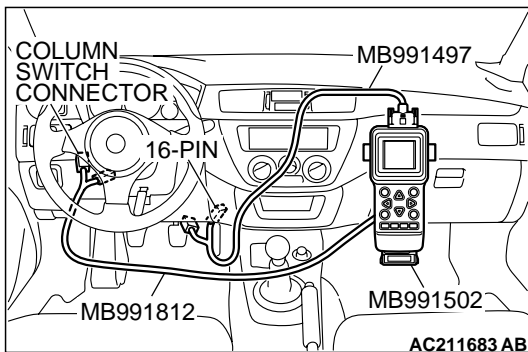
Q: Is "OK" displayed on both the "ETACS ECU" and "COLUMN ECU" menus?

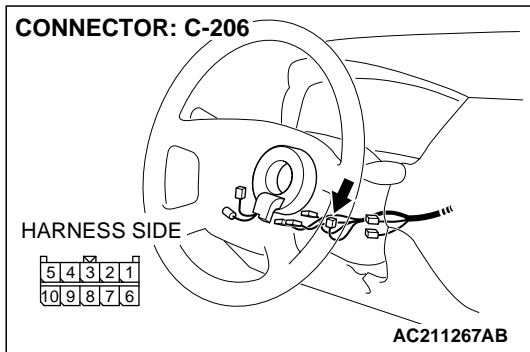
"OK" are displayed for all the items : Go to Step 2.

"NG" is displayed on the "COLUMN ECU" menu : Go to Step 5.

"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54B-42."

"NG" are displayed for all the items : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54B-42."



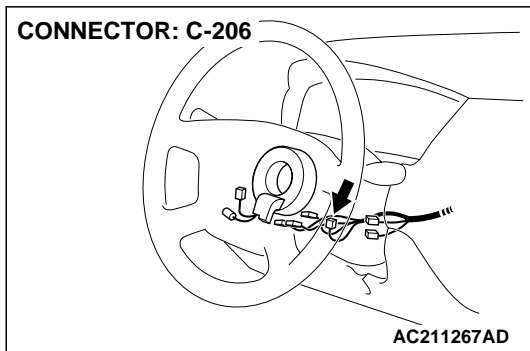


STEP 2. Check column switch connector C-206 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is column switch connector C-206 in good condition?

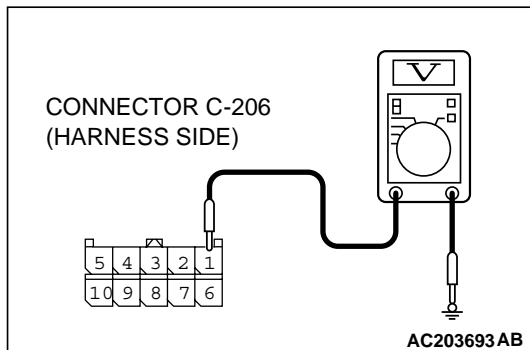
YES : Go to Step 3.

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. Measure the voltage at column switch connector C-206.

(1) Disconnect column switch connector C-206 and measure the resistance available at the harness side of the connector.



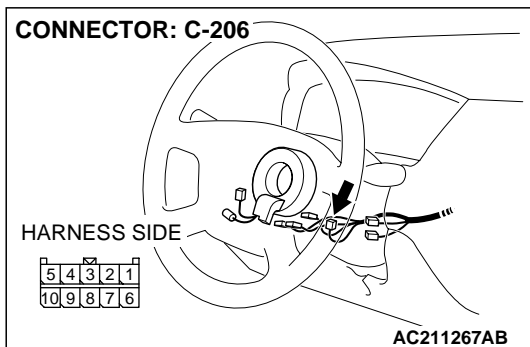
(2) Measure the voltage between terminal 1 and ground.

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

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

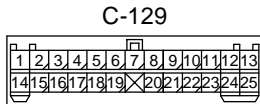
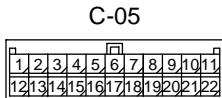
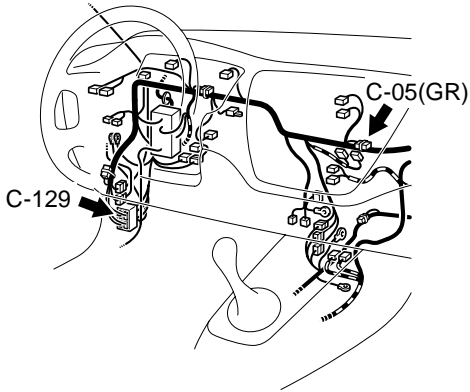
YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between column switch connector C-206 (terminal 1) and the battery.

CONNECTORS: C-05, C-129



AC211307AF

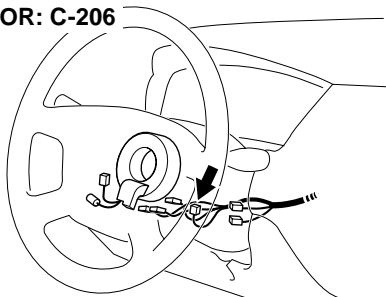
NOTE: Also check joint connector C-05 and intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-05 or intermediate connectors C-129 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between column switch connector C-206 (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.

CONNECTOR: C-206



AC211267AD

STEP 5. Check the ground circuit to the column switch. Measure the resistance at column switch connector C-206.

(1) Disconnect column switch connector C-206 and measure the resistance available at the harness side of the connector.

(2) Measure the resistance value between terminal 4 and ground.

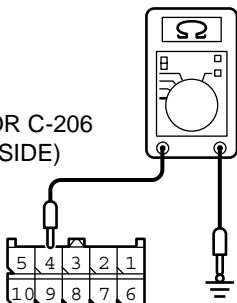
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

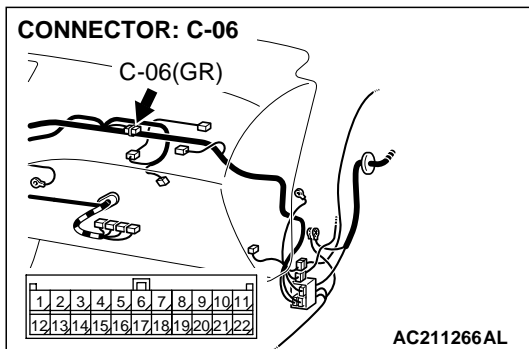
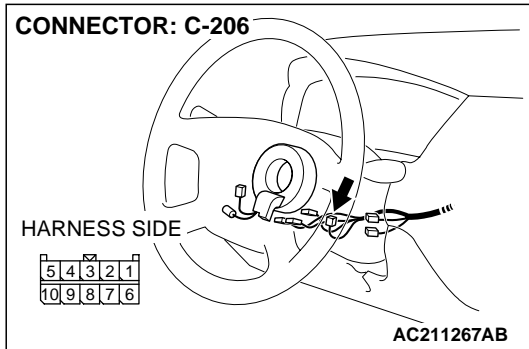
NO : Go to Step 6.

CONNECTOR C-206
(HARNES SIDE)



ACX00772 AD

STEP 6. Check the wiring harness between column switch connector C-206 (terminal 4) and the ground.



NOTE: Also check joint connector C-06 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-06 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 C-206 (terminal 4) and the ground in good condition?

YES : No action is necessary and testing is complete.

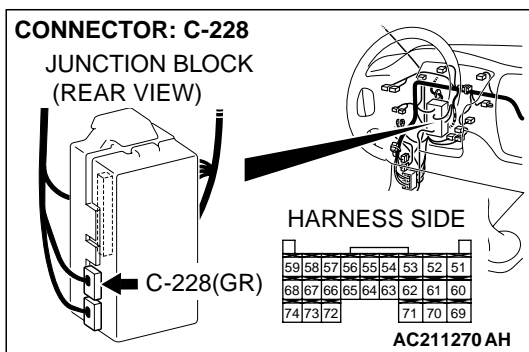
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the column switch (column-ECU) normally.

STEP 7. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

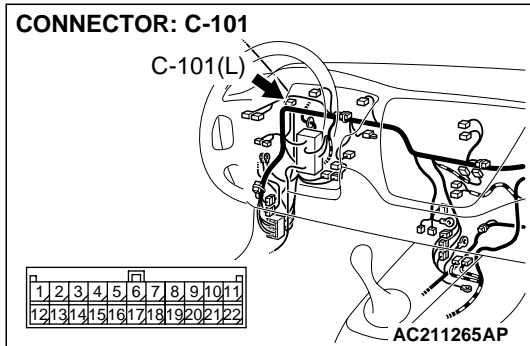
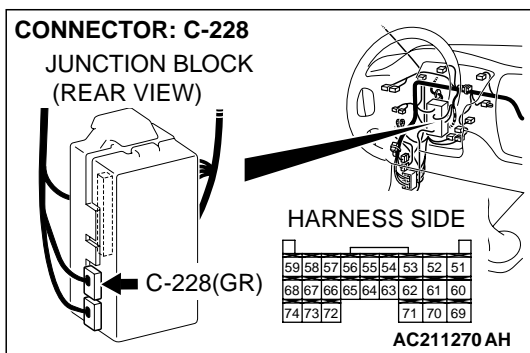
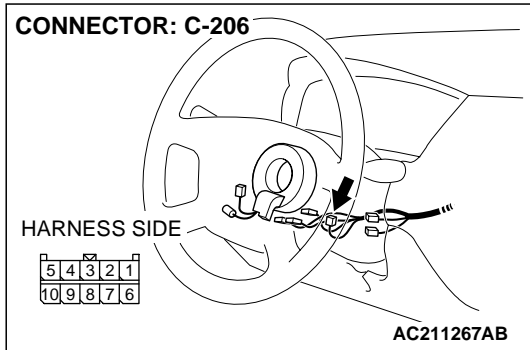
Q: Is ETACS-ECU connector C-228 in good condition?

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 C-206 (terminals 2 and 3) and ETACS-ECU connector C-228 (terminals 68 and 59).



NOTE: Also check joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-101 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 C-206 (terminal 2 and 3) and ETACS-ECU connector C-228 (terminal 68 and 59) 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. The system should communicate with the column switch (column-ECU) normally.

STEP 9. Replace the ECU.

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

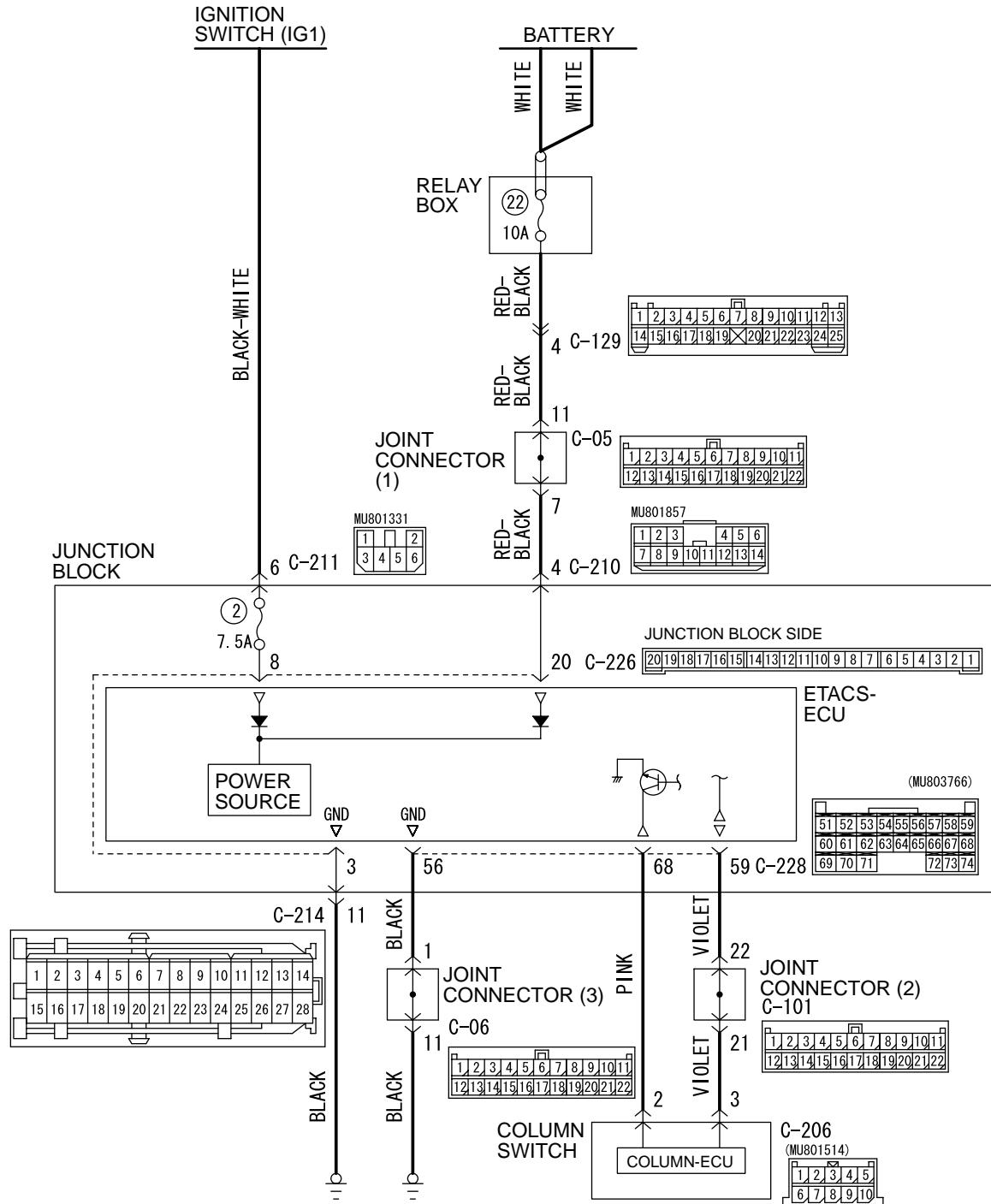
Q: Can the system communicate with the column switch (column-ECU)?

YES : No action is necessary and testing is complete.

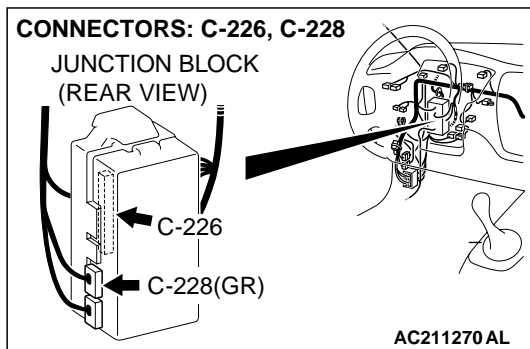
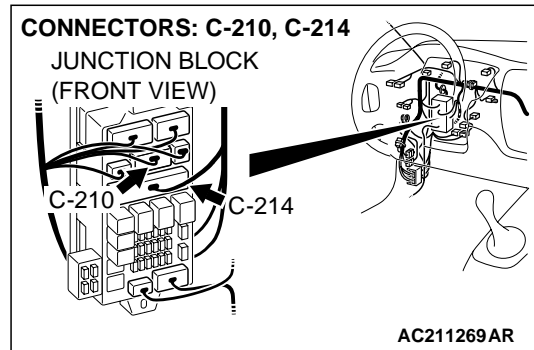
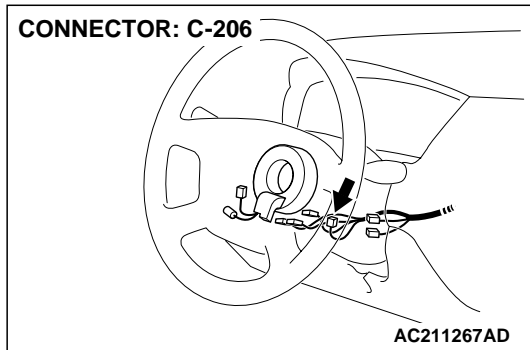
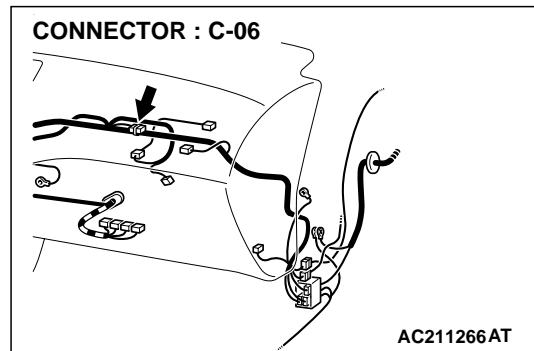
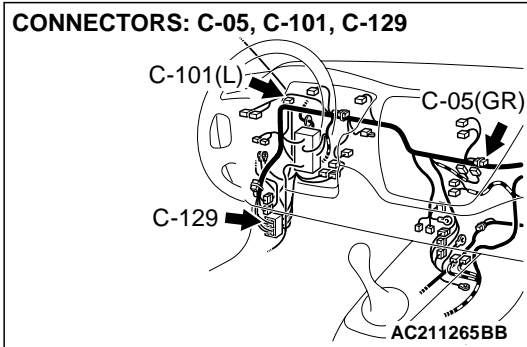
NO : Replace the ETACS-ECU. The system should communicate with the column switch (column-ECU) normally.

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

Etacs-ECU Power Supply and SWS Communication Circuit



W3J14M04AA



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 20 of the ETACS-

ECU) is damaged, also check the power supply circuit from the ignition switch (IG1) (terminal 8 of the ETACS-ECU), and repair if necessary. If the ground circuit to the ECU (terminal 3 of the ETACS-ECU) is damaged, also check the ground circuit to the sensor (terminal 56 of the ETACS-ECU), and repair if necessary.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tool:**

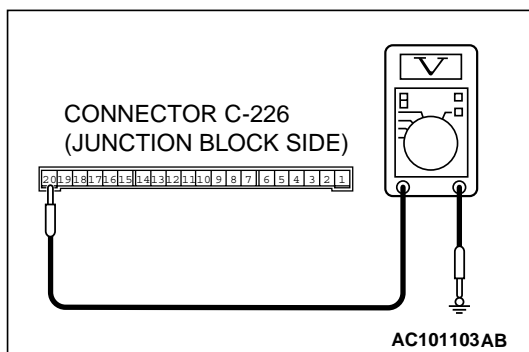
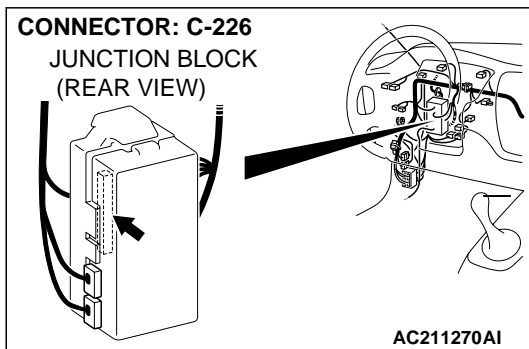
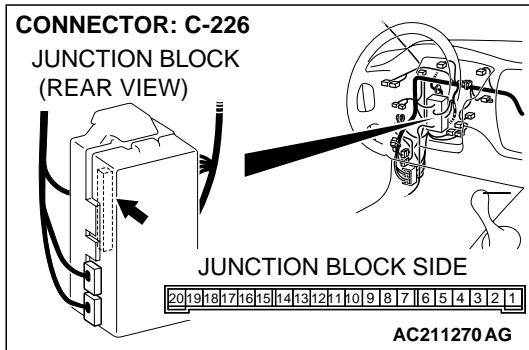
- MB991223: Harness Set

STEP 1. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 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](#). The system should communicate with the ETACS-ECU normally.



STEP 2. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-226.

(1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.

(2) Measure the voltage between terminal 20 and ground.

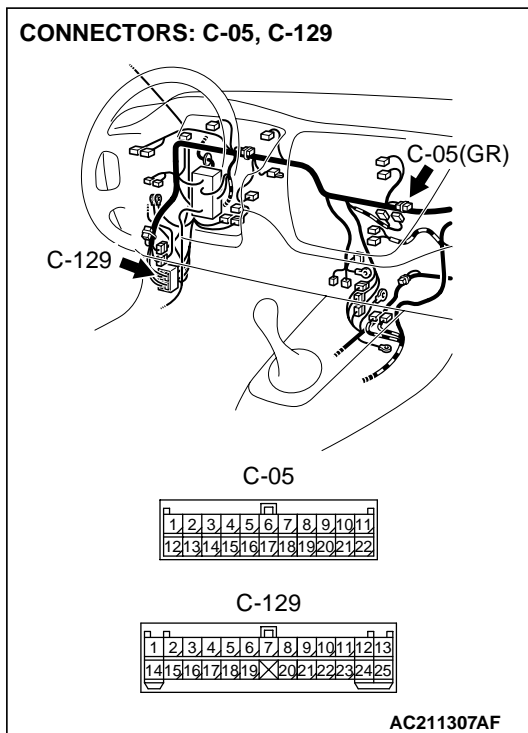
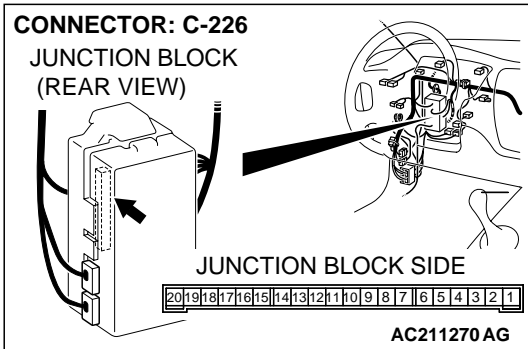
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-226 (terminal 20) and the battery.

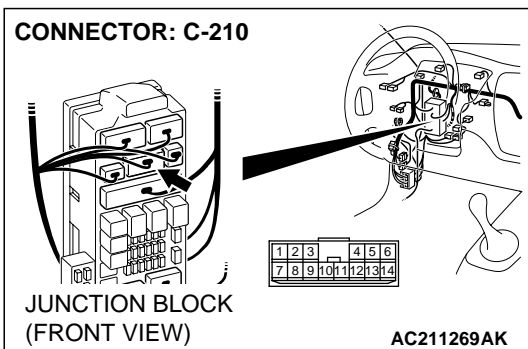


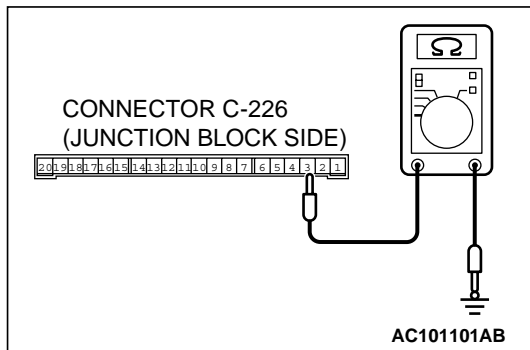
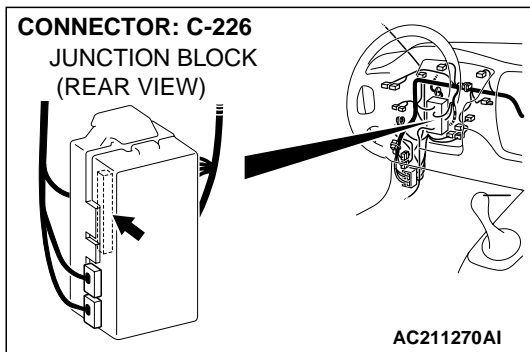
NOTE: Also check joint connector C-05, intermediate connector C-129 and junction block connector C-210 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connectors C-05, intermediate connector C-129 or junction block connector C-210 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 20) 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.
Measure the resistance at ETACS-ECU connector C-226.

(1) Disconnect ETACS-ECU connector C-226 and measure the resistance available at the junction block side of the connector.

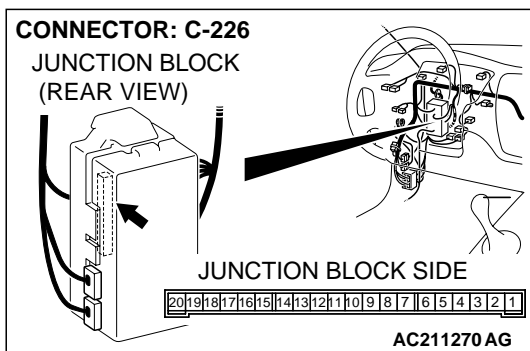
(2) Measure the resistance value between terminal 3 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Check the wiring harness between ETACS-ECU connector C-226 (terminal 3) and the ground.

Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 3) and ETACS-ECU connector C-228 (terminal 56) 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.

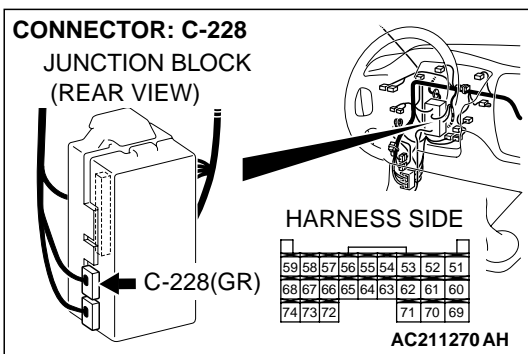
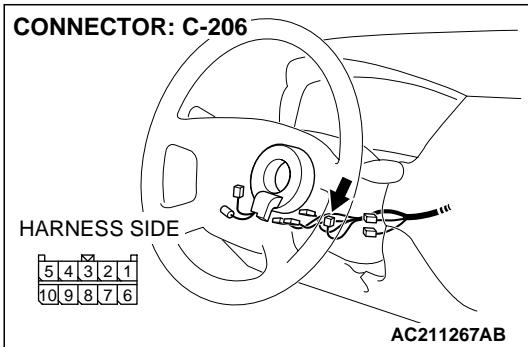
STEP 6. Check column switch connector C-206 and ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are column switch connector C-206 and ETACS-ECU connector C-228 in good condition?

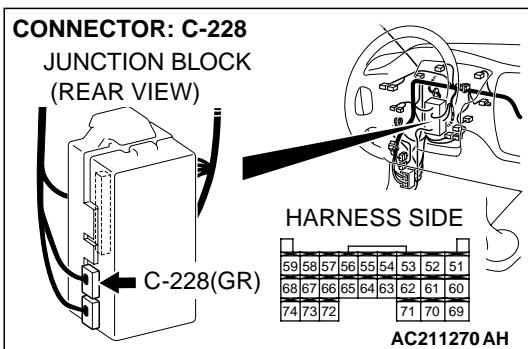
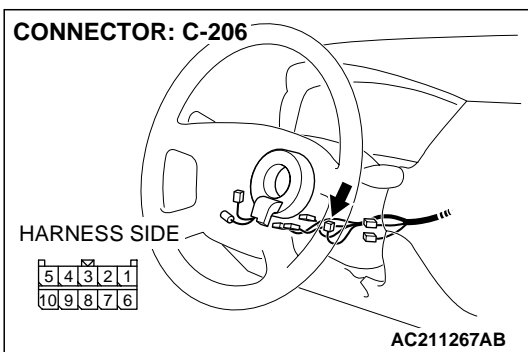
YES : Go to Step 7.

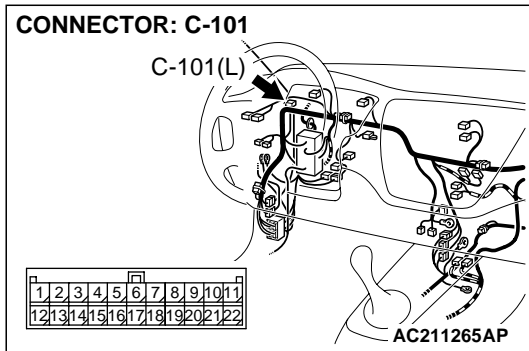
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. The system should communicate with the column switch (column-ECU) normally.



STEP 7. Check the wiring harness between column switch connector C-206 (terminals 2 and 3) and ETACS-ECU connector C-228 (terminals 68 and 59).





NOTE: Also check joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-101 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 C-206 (terminals 2 and 3) and ETACS-ECU connector C-228 (terminals 68 and 59) in good condition?

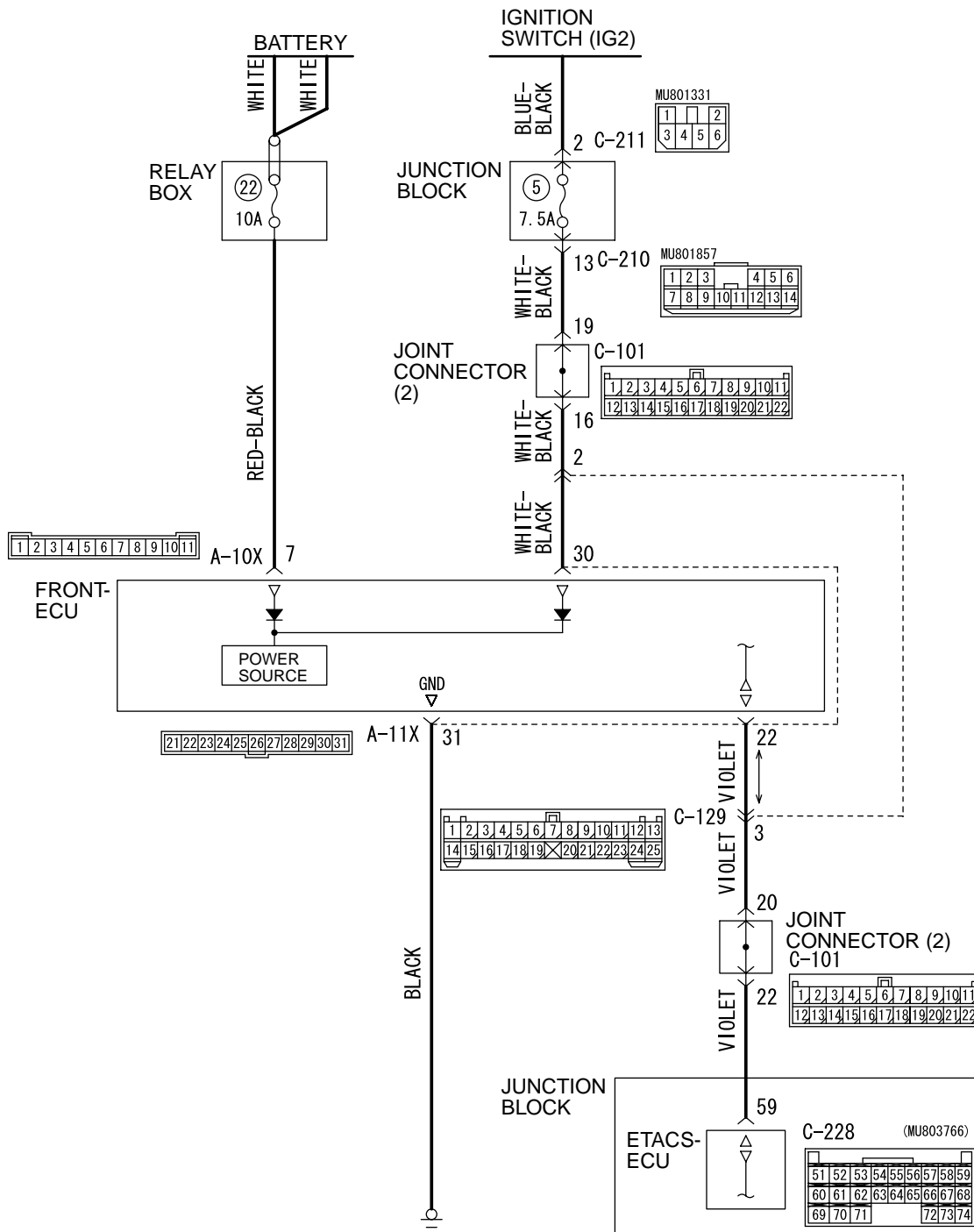
YES : Replace the ETACS-ECU. The system should communicate with the ETACS-ECU normally.

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 column switch (column-ECU) normally.

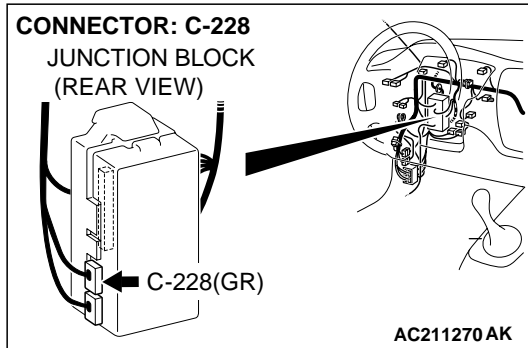
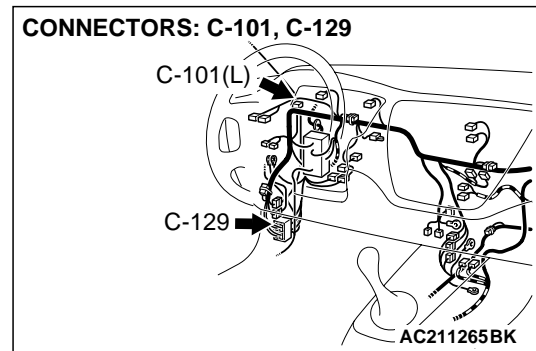
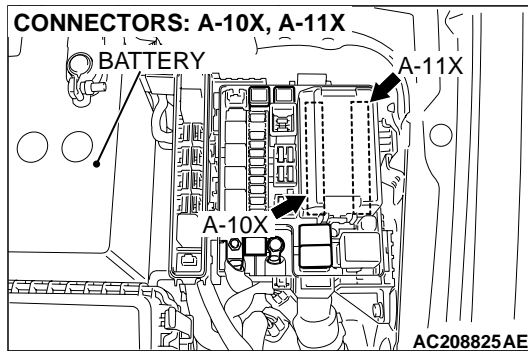
INSPECTION PROCEDURE A-4: Communication with the front-ECU is not possible.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Front-ECU Power Supply and SWS Communication Circuit



W3J14M05AA



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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the ETACS-ECU.

⚠ CAUTION

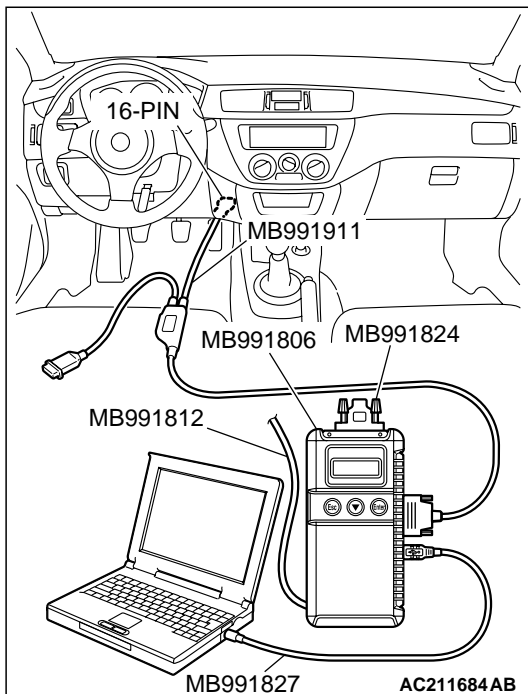
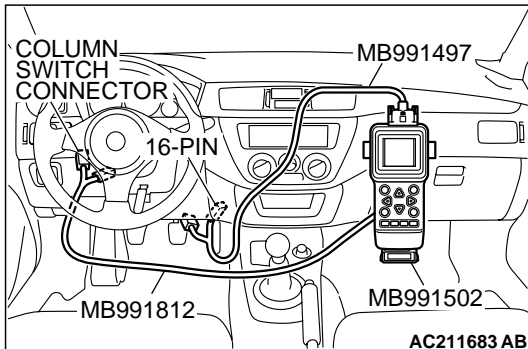
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

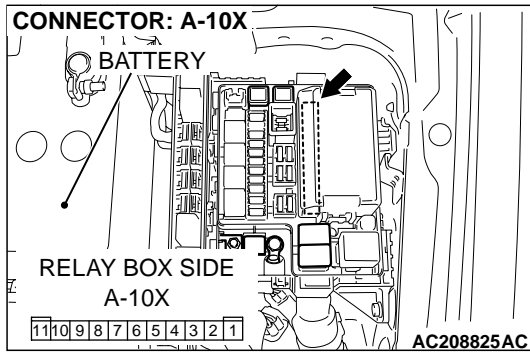
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-42."



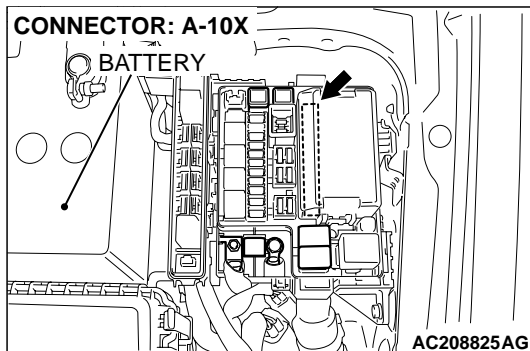


STEP 2. Check the front-ECU connector A-10X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front-ECU connector A-10X in good condition?

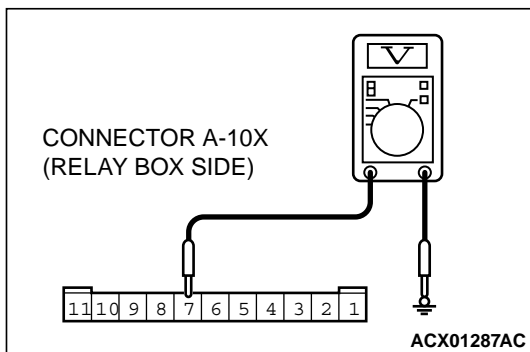
YES : Go to Step 3.

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



STEP 3. Check the battery power supply circuit to the front-ECU. Measure the voltage at front-ECU connector A-10X.

(1) Disconnect front-ECU connector A-10X and measure the voltage available at the relay box side of the connector.



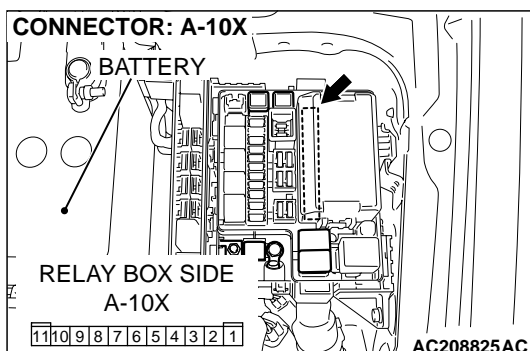
(2) Measure the voltage between terminal 7 and ground.

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

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

YES : Go to Step 5.

NO : Go to Step 4.

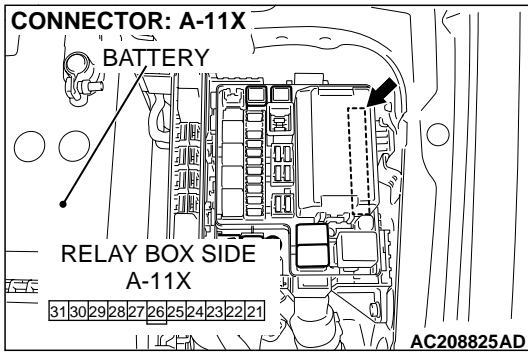


STEP 4. Check the wiring harness between front-ECU connector A-10X (terminal 7) and the battery.

Q: Is the wiring harness between front-ECU connector A-10X (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.

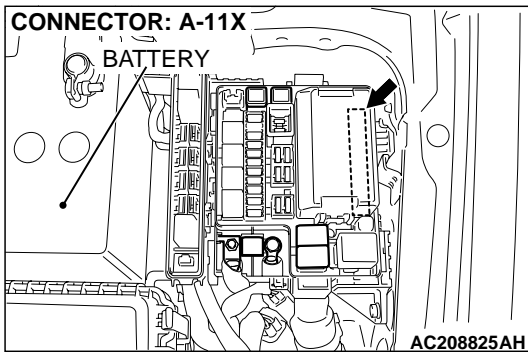


STEP 5. Check the front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 6.

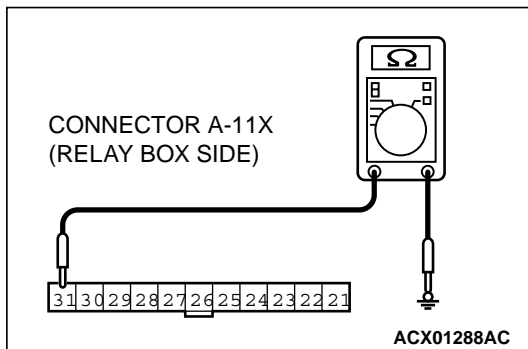
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the front-ECU normally.



STEP 6. Check the ground circuit to the front-ECU.

Measure the resistance at front-ECU connector A-11X.

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



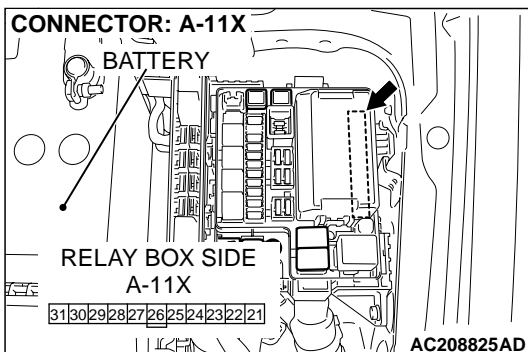
(2) Measure the resistance value between terminal 31 and ground.

- 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 7.



STEP 7. Check the wiring harness between front-ECU connector A-11X (terminal 31) and the ground.

Q: Is the wiring harness between front-ECU connector A-11X (terminal 31) and ground in good condition?

YES : No action is necessary and testing is complete.

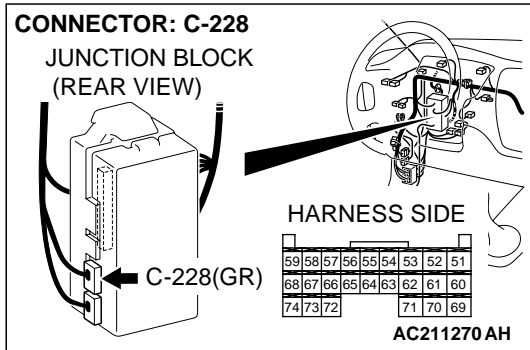
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the front-ECU normally.

STEP 8. Check the ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

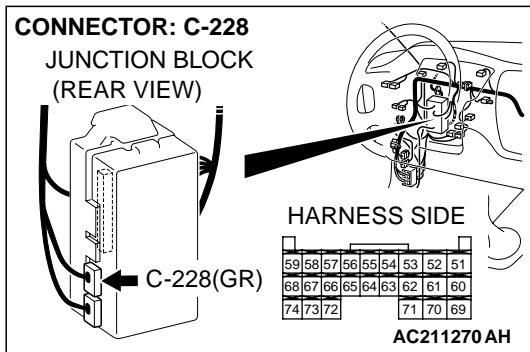
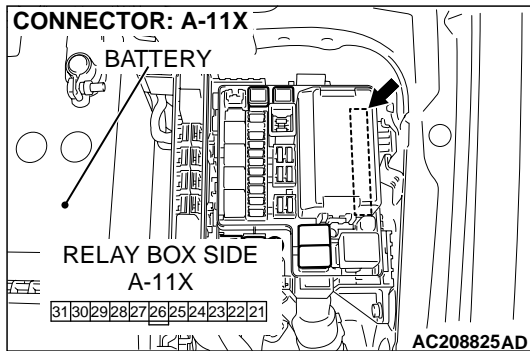
Q: Is ETACS-ECU connector C-228 in good condition?

YES : Go to Step 9.

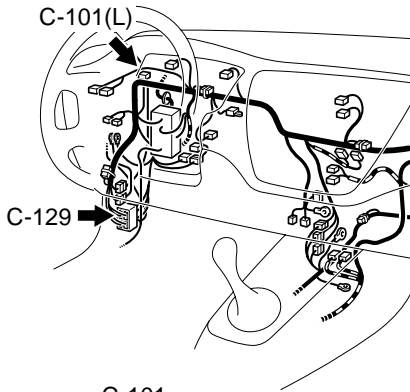
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The system should communicate with the front-ECU normally.



STEP 9. Check the wiring harness between front-ECU connector A-11X (terminal 22) and ETACS-ECU connector C-228 (terminal 59).



CONNECTORS: C-101, C-129



C-101

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22

C-129

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	X	20	21	22	23	24	25

AC211307AL

NOTE: Also check intermediate connector C-129 and joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 or joint connector C-101 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-11X (terminal 22) and ETACS-ECU connector C-228 (terminal 59) 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.

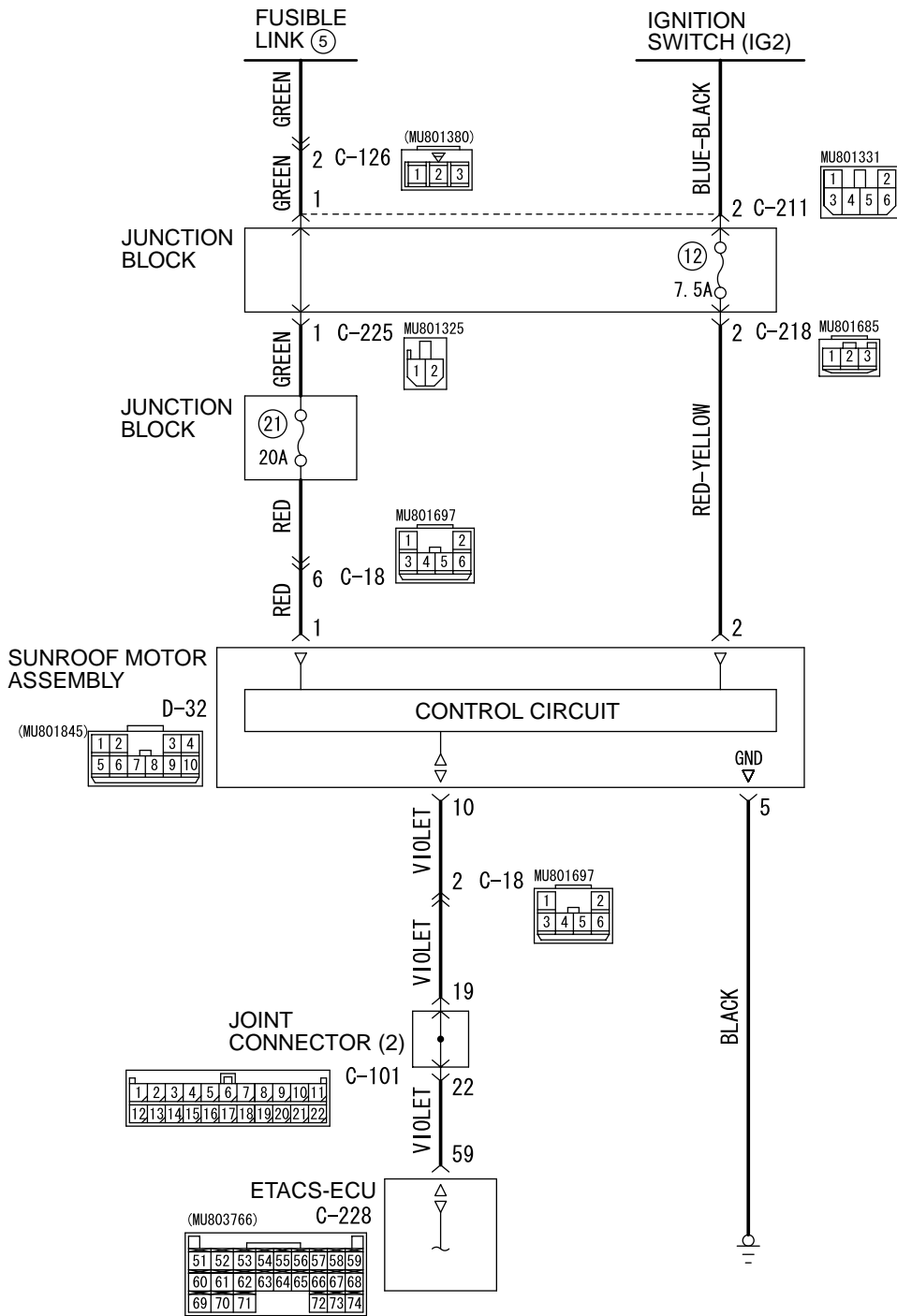
Q: Can the system communicate with the front-ECU?

YES : No action is necessary and testing is complete.

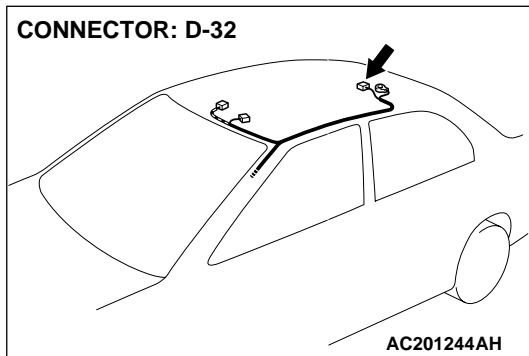
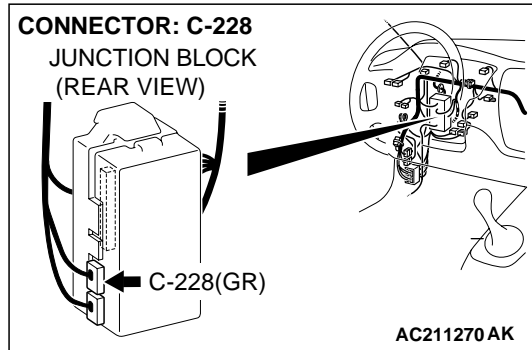
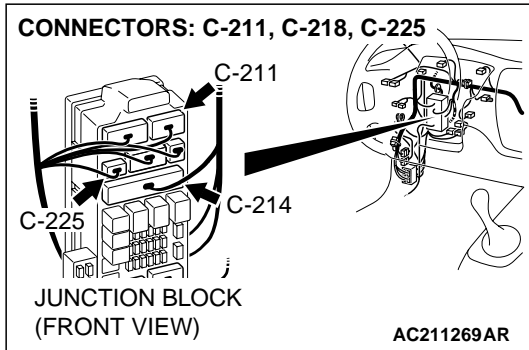
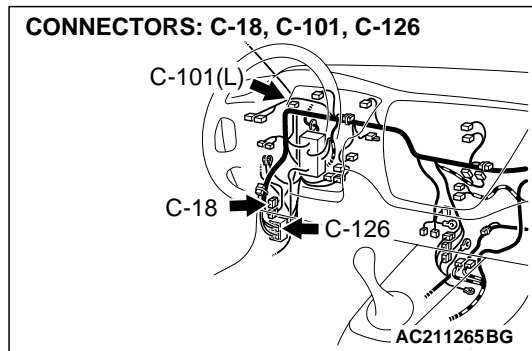
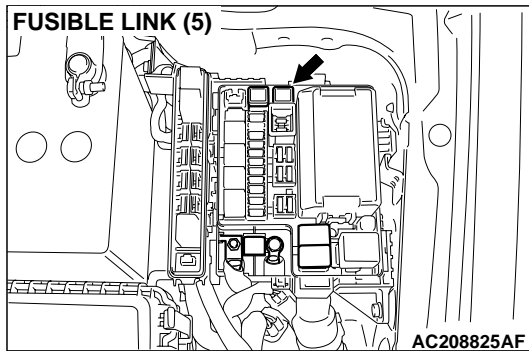
NO : Replace the ETACS-ECU. The system should communicate with the front-ECU normally.

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

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



W3J14M06AA



CIRCUIT OPERATION

- Power to the sunroof motor assembly is supplied through and fusible link (5).
- When the ignition switch (IG2) signal is on, the sunroof motor assembly is ready to operate.

TECHNICAL DESCRIPTION (COMMENT)

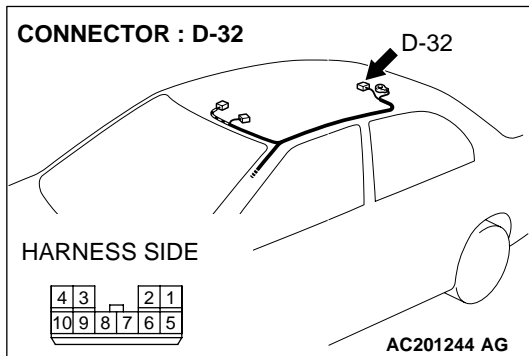
The power supply circuit or the communication circuit to the sunroof motor assembly or the sunroof motor assembly may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tool:**

- MB991223: Harness Set



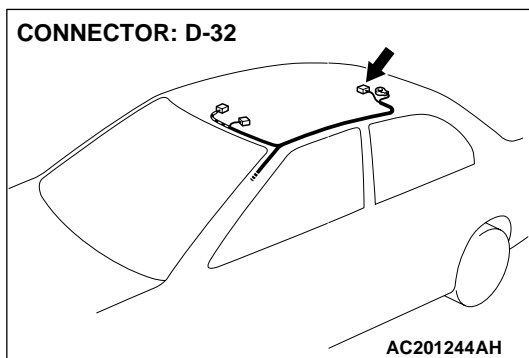
STEP 1. Check sunroof motor assembly connector D-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-32 in good condition?

YES : Go to Step 2.

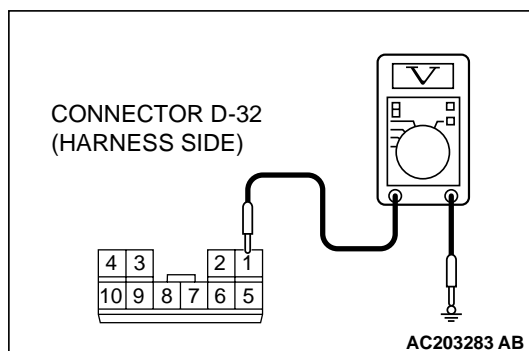
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2](#). The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.



STEP 2. Check the fusible link (5) line of power supply circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-32.

(1) Disconnect sunroof motor assembly connector D-32 and measure the voltage available at the wiring harness side of the connector.



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

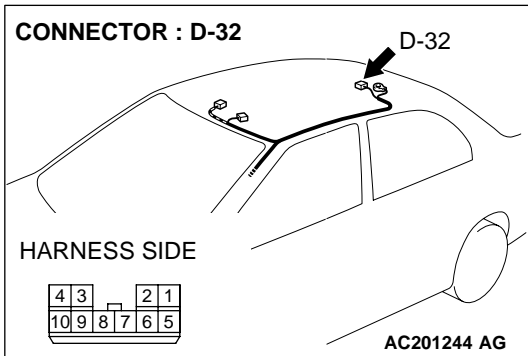
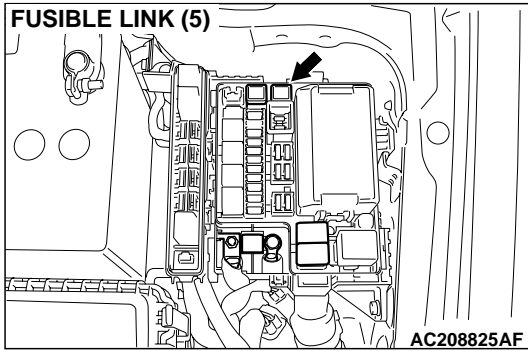
- The voltage should equal approximately 12 volts (battery positive voltage).

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

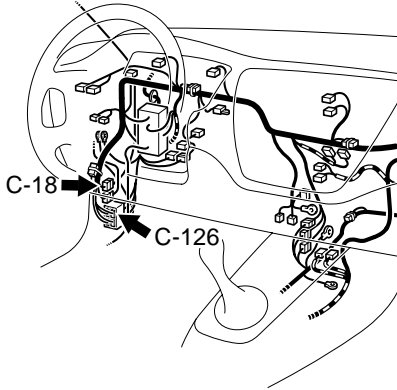
YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the wiring harness between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5).



CONNECTORS: C-18, C-126



AC211307AI

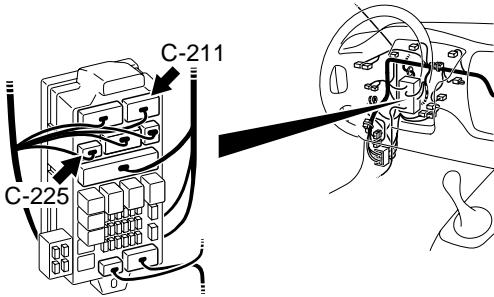
NOTE: Also check intermediate connectors C-18, C-126, junction block connectors C-211 and C-225 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-18, C-126, junction block connector C-211 or C-225 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5) in good condition?

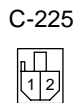
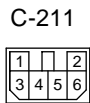
YES : No action is necessary and testing is complete.

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

CONNECTORS: C-211, C-225



JUNCTION BLOCK
(FRONT VIEW)



AC211310AQ

STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-32.

(1) Disconnect sunroof motor assembly connector D-32 and measure the voltage available at the wiring harness side of the connector.

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

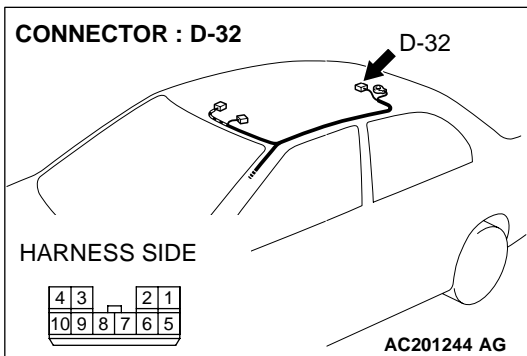
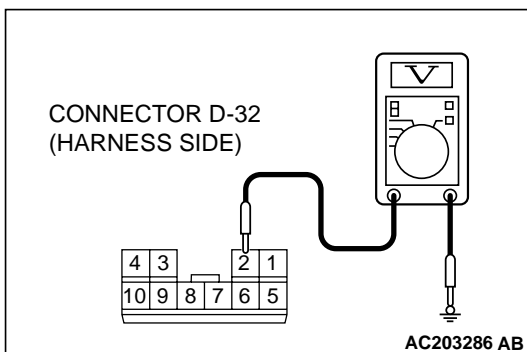
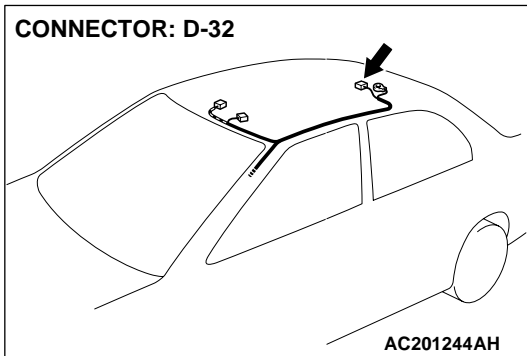
(3) Measure the voltage between terminal 2 and ground.

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

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

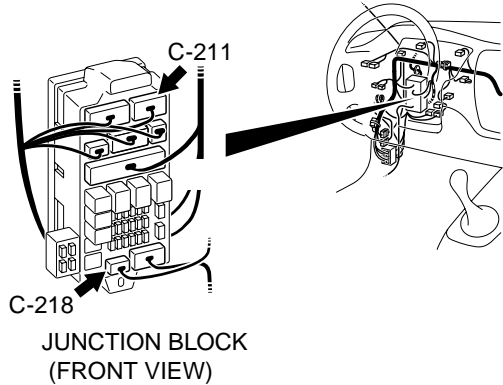
YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Check the wiring harness between sunroof motor assembly connector D-32 (terminal 2) and ignition switch (IG2).

CONNECTORS: C-211, C-218



C-218

JUNCTION BLOCK
(FRONT VIEW)

C-211



C-218



AC211310AP

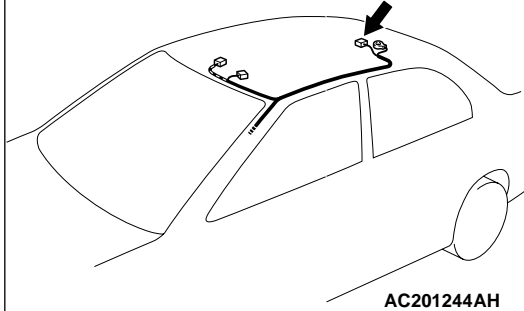
NOTE: Also check junction block connectors C-211 and C-218 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or C-218 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-32 (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.

CONNECTOR: D-32



AC201244AH

STEP 6. Check the ground circuit to the sunroof motor assembly. Measure the resistance at sunroof motor assembly connector D-32.

(1) Disconnect sunroof motor assembly connector D-32 and measure the resistance available at the wiring harness side of the connector.

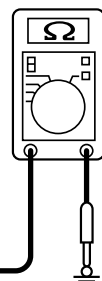
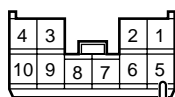
(2) Measure the resistance value between terminal 5 and ground.

- The resistance should equal 2 ohms or less.

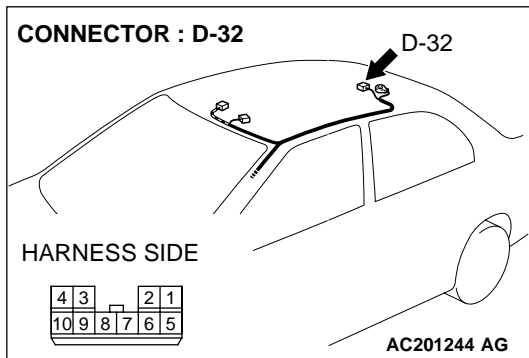
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.

CONNECTOR D-32
(HARNES SIDE)

AC102939AC

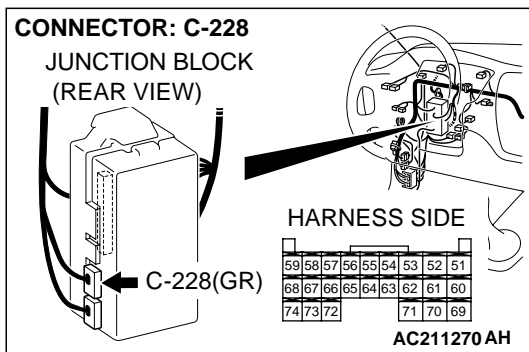


STEP 7. Check the wiring harness between sunroof motor connector D-32 (terminal 5) and ground.

Q: Is the wiring harness between sunroof motor assembly connector D-32 (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.



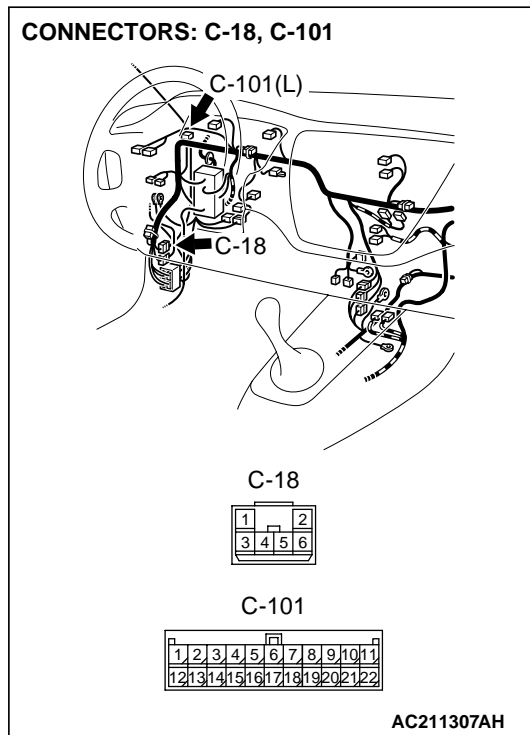
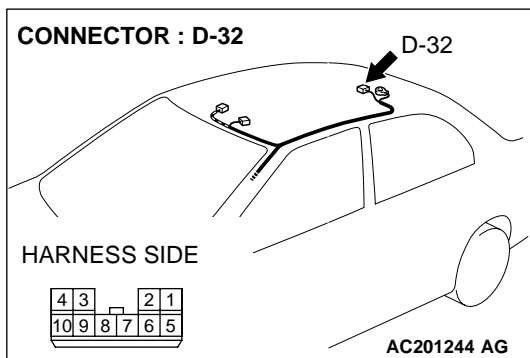
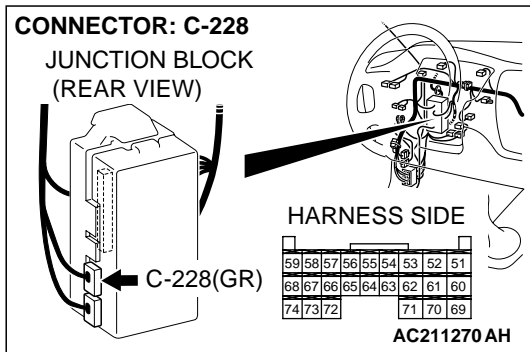
STEP 8. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-228 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 D-32 (terminal 10) and ETACS-ECU connector C-228 (terminal 59).



NOTE: Also check intermediate connector C-18 and joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-18 or joint connector C-101 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-32 (terminal 10) and ETACS-ECU connector C-228 (terminal 59) 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 sunroof motor assembly (sunroof-ECU) normally.

STEP 10. Replace the sunroof motor assembly.

- (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.

TONE ALARM

GENERAL DESCRIPTION THE CONCERNING TONE ALARM

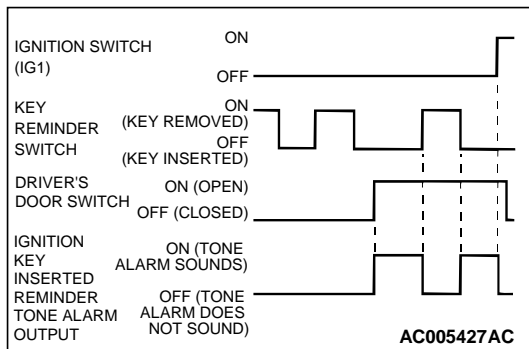
M1549021000133

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

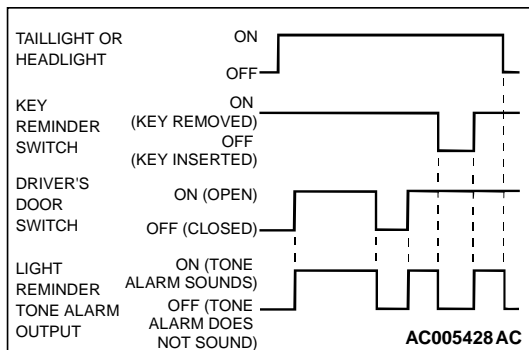
Ignition key reminder tone alarm function

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.

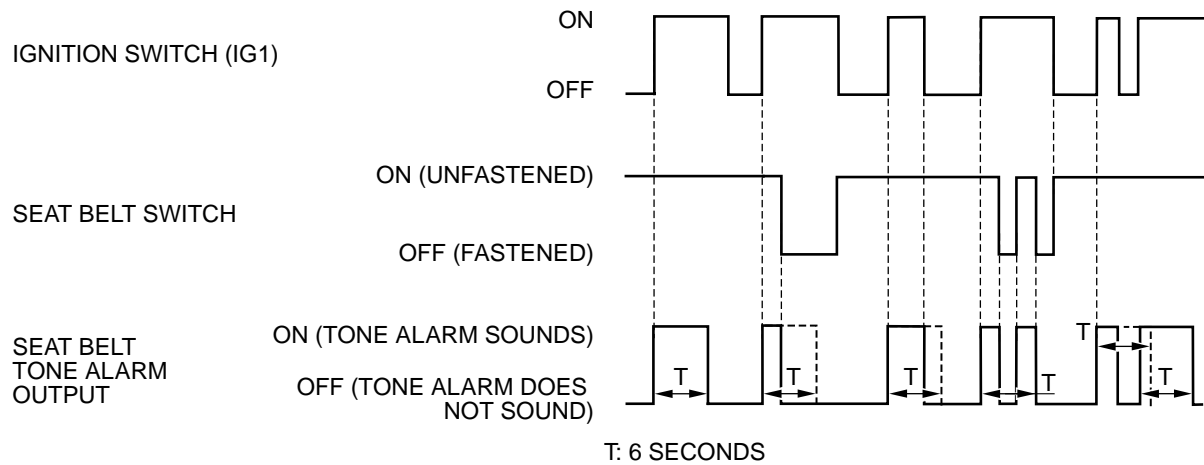


Light reminder tone alarm function

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.



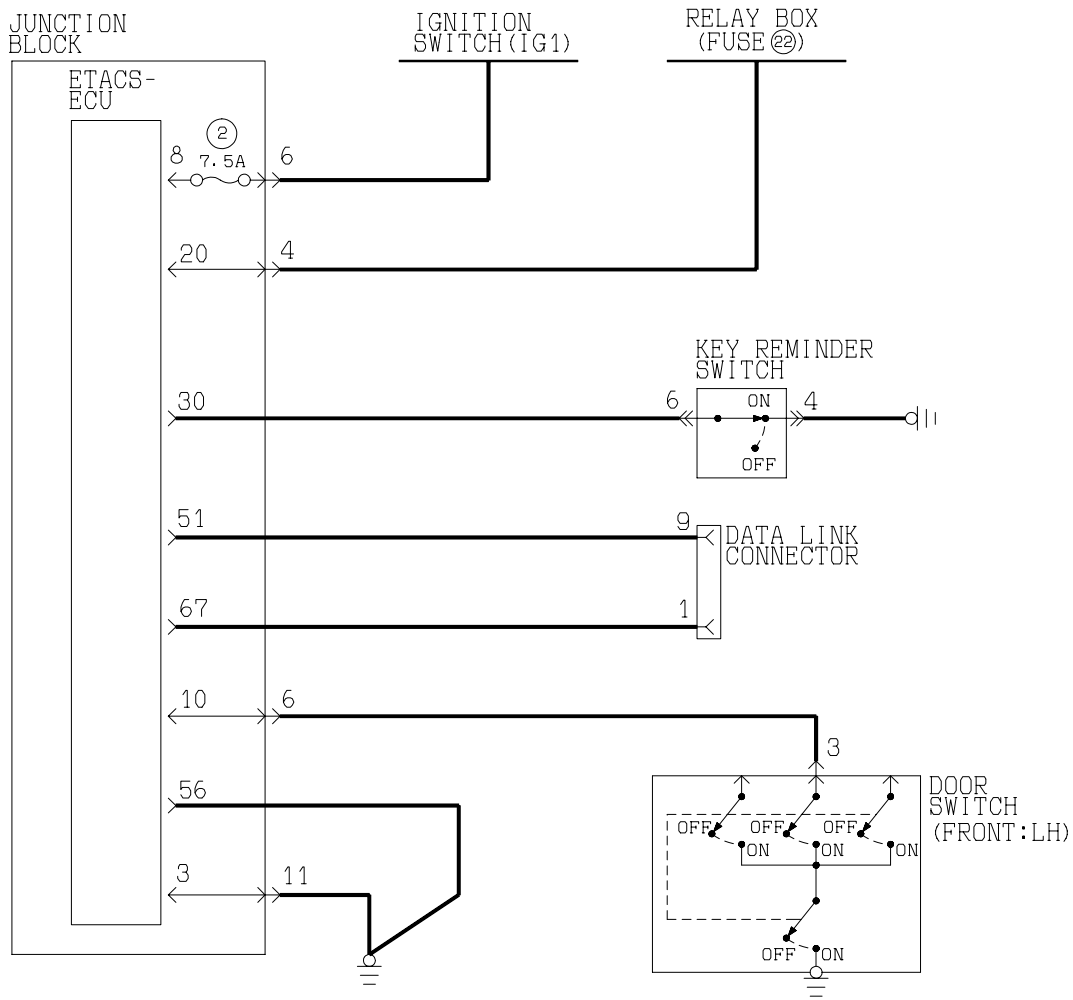
Seat belt tone alarm function



AC101569AC

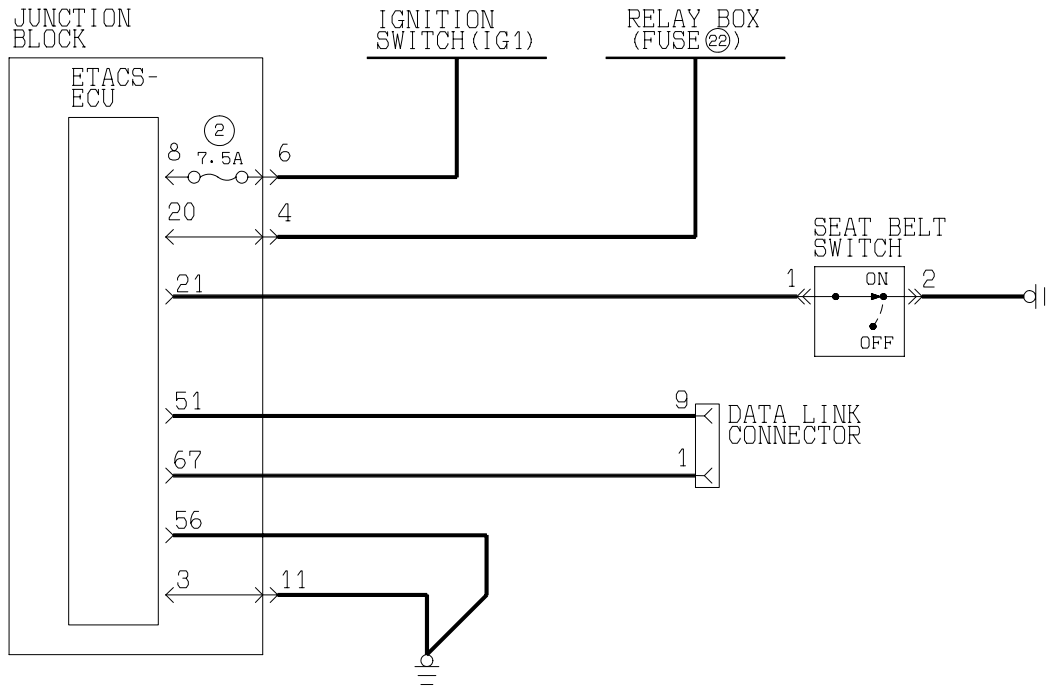
When the ignition switch is turned to ON position without fastening the driver's seat belt (driver's seat belt switch off), the tone alarm will sound for approximately six seconds to warn the driver to fasten the seat belt. When the driver's seat belt are fastened or ignition switch is turned to OFF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

General circuit diagram for the ignition key reminder tone alarm function



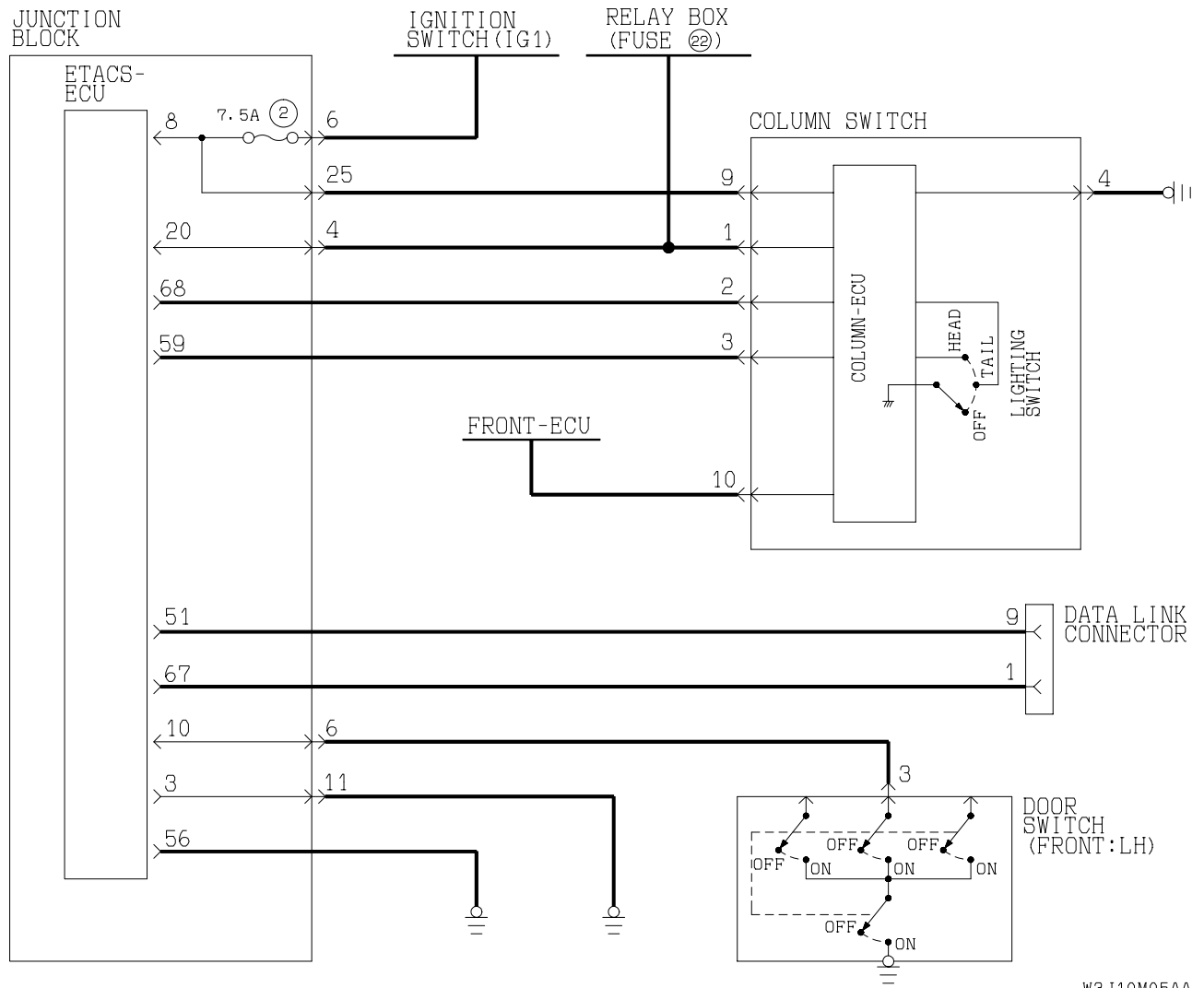
W3J10M07AA

General circuit diagram for the light reminder tone alarm function



W3J10M01AA

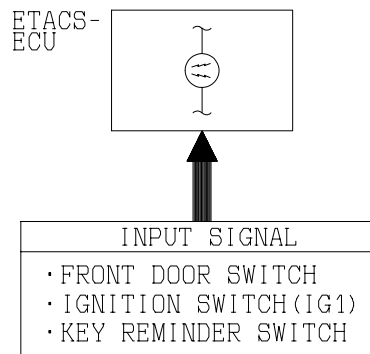
General circuit diagram for the seat belt tone alarm function



W3J10M05AA

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 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Ignition Key Reminder Tone Alarm Function

W1Q15M06AA

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)

- MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the ETACS-ECU.

⚠ CAUTION

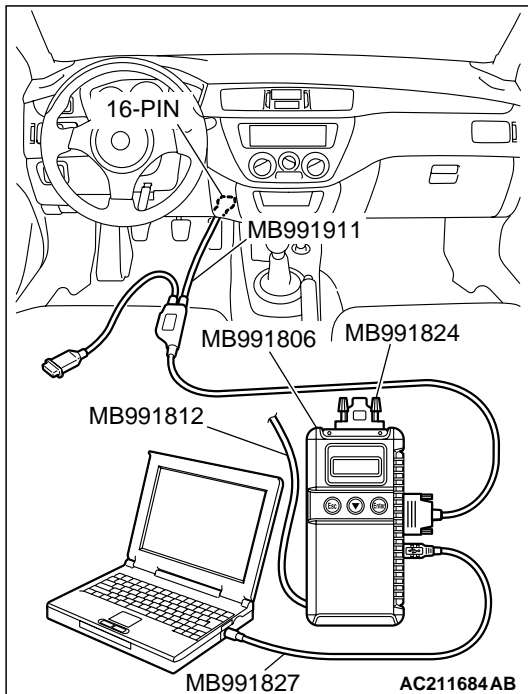
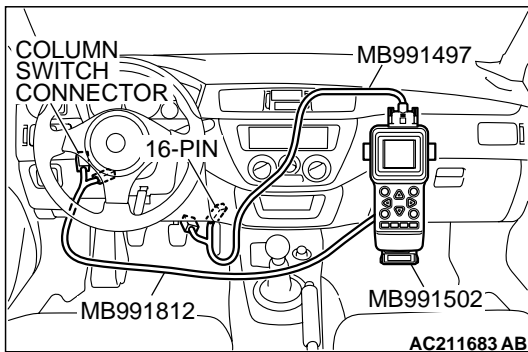
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-42."



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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "KEY RMND. ALM."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "BUZZER."
 - g. Select "KEY RMND. ALM."
- (2) Check that normal conditions are displayed on the items described in the table below.

NOTE: The scan tool MB991502 or MB991958 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: Does the scan tool MB991502 or MB991958 display the items "IG SW (IG1)", "FRONT DOOR SW" and "BUZZER" as normal condition?

Normal conditions are displayed for all the items :

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

Normal condition is not displayed on the "IG SW (IG1)" :

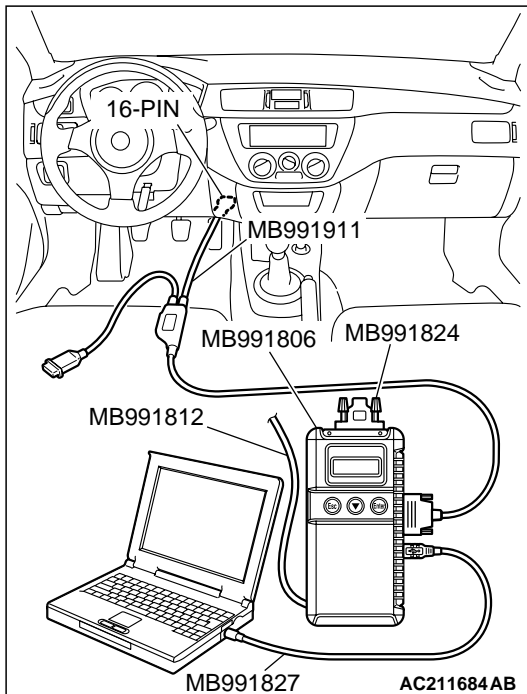
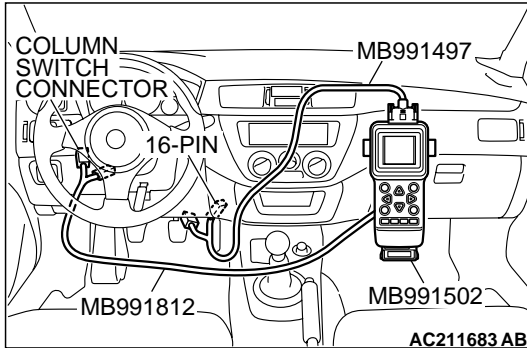
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

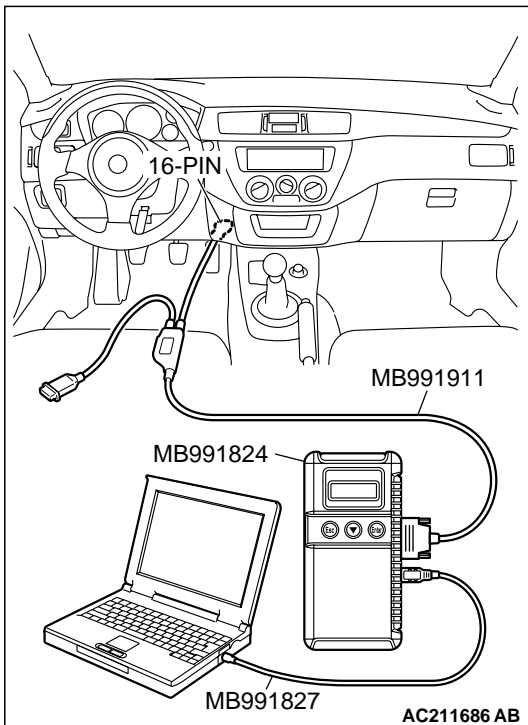
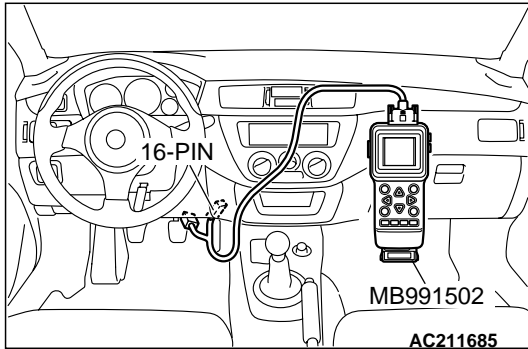
Normal condition is not displayed on the "FRONT

DOOR SW" : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-454.](#)"

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.

- Ignition key: inserted to the ignition key cylinder
- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
 - (2) Check scan tool MB991502 or MB991958 sounds when the ignition key is pulled out.

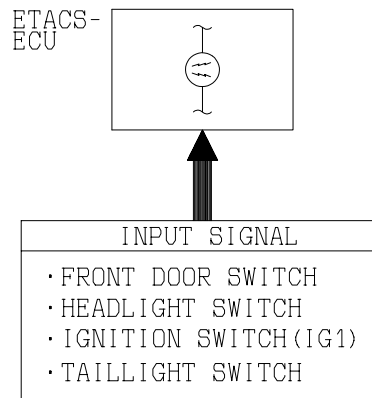
Q: Does scan tool MB991502 or MB991958 sound when the ignition key is removed?

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

NO : Refer to Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch P.54B-476."

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 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Light Reminder Tone Alarm Function

W1Q15M07AA

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

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge

- MB991812: SWS monitor harness (for column-ECU)
- MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Column-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

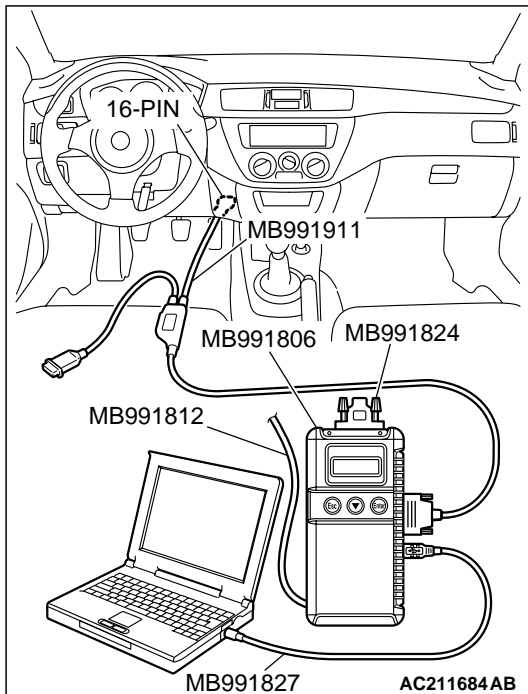
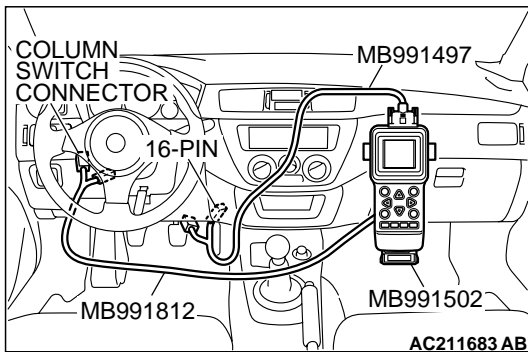
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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.54B-42."

"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54B-35."



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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "LGT MONI. ALRM."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "BUZZER."
 - g. Select "LGT MONI. ALRM."
- (2) 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 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: Does the scan tool MB991502 or MB991958 display the items "HEADLIGHT SW", "TAILLIGHT SW", "IG SW (IG1)", "FRONT DOOR SW", "H/L AUTO-CUT" and "BUZZER" as normal condition?

Normal conditions are displayed for all the items :

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

Normal condition is not displayed for "HEADLIGHT SW"

: Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the headlight switch [P.54B-462.](#)"

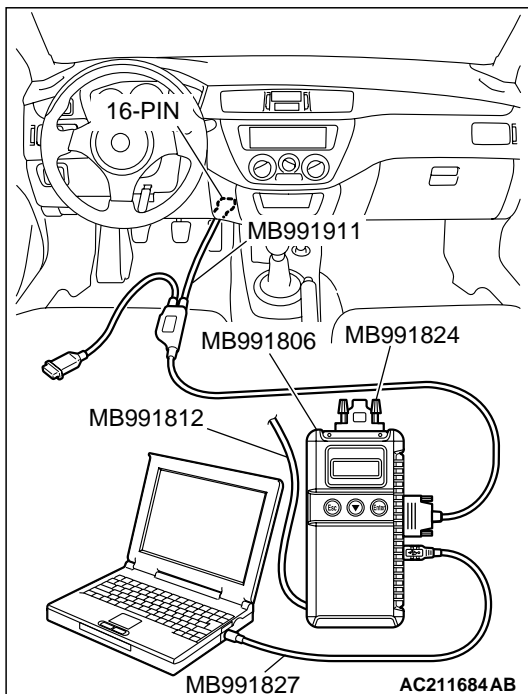
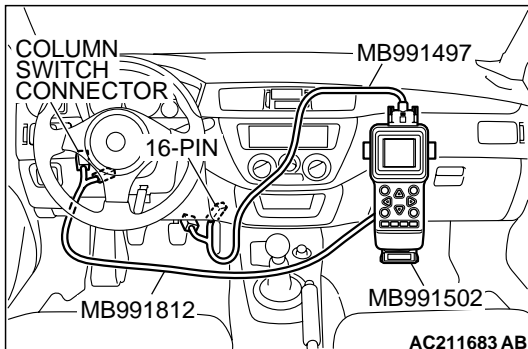
Normal condition is not displayed for "TAILLIGHT SW" :

Refer to Inspection Procedure N-6 "ETACS-ECU does not receive any signal from the taillight switch [P.54B-462.](#)"

Normal condition is not displayed for "IG SW (IG1)" :

Refer to Inspection Procedure N-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed for "FRONT DOOR



SW" : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch [P.54B-454.](#)"

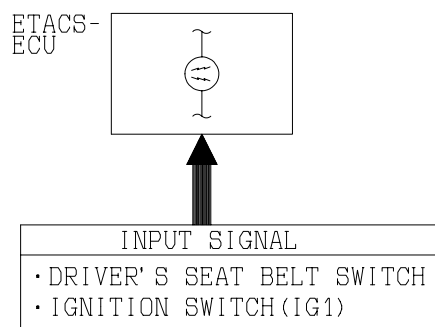
Normal condition is not displayed for "H/L AUTO-CUT" : Refer to Inspection Procedure J-8 "Headlight automatic shutdown function does not work normally [P.54B-332.](#)"

Normal condition is not displayed for "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 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-9.](#)"

Seat Belt Tone Alarm Function



W2J08M04AA

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the ETACS-ECU.

⚠ CAUTION

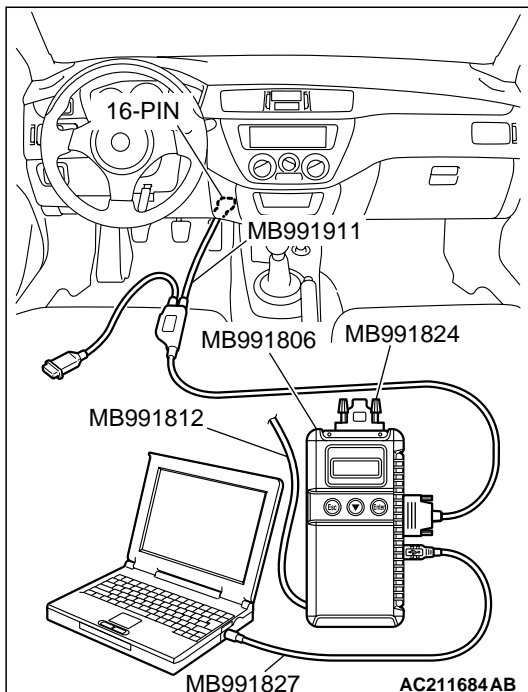
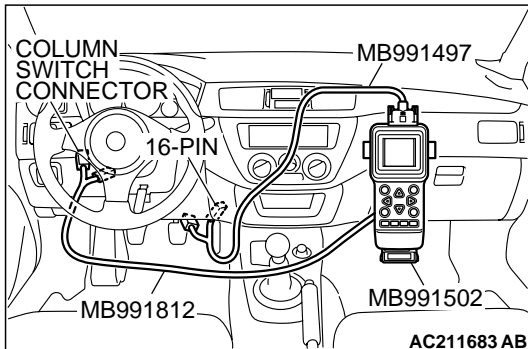
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) When the ignition switch is turned to the "ON" position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-42."



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 → ON
- Driver's seat belt: Unfastened
- All door: closed

- (1) Operate scan tool MB991502 according to the procedure below to display "OTHER ALARM"
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "BUZZER."
 - g. Select "OTHER ALARM"
- (2) Check that normal conditions are displayed on the items described in the table below.

NOTE: Turn the ignition switch from the OFF position to the ON position. Then item No.43 should be ON for approximately six seconds only.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 43	BUZZER	ON (for approximately six seconds after the ignition switch is turned from OFF to ON), and then OFF

Q: Does the scan tool MB991502 or MB991958 display the items "IG SW (IG1)" and "BUZZER" as normal condition?

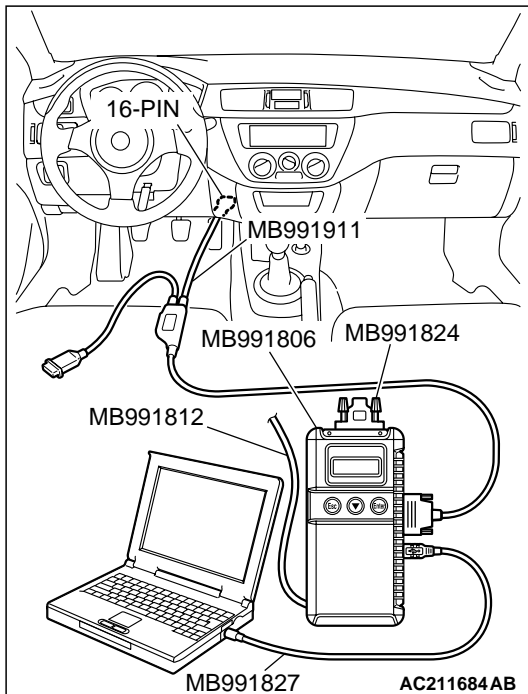
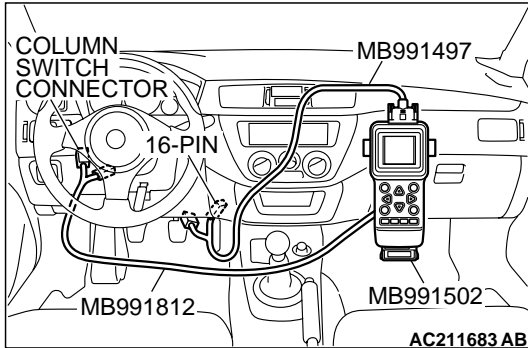
Normal conditions are displayed for all the items :

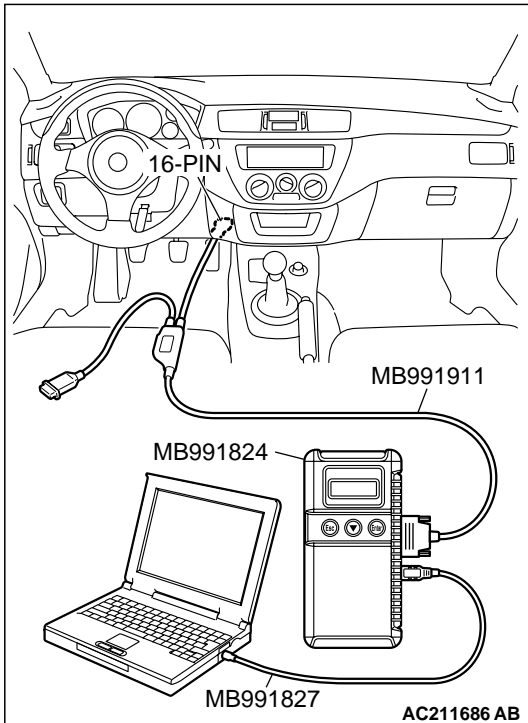
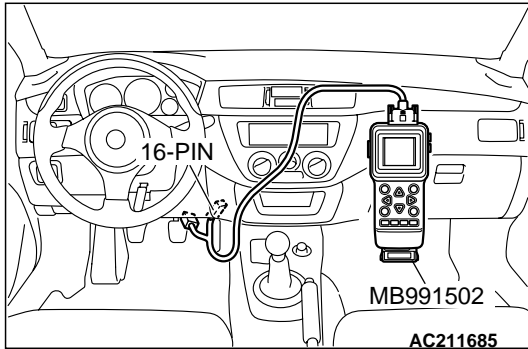
Replace the ETACS-ECU. Verify that the seat belt tone alarm function works normally.

Normal condition is not displayed for "IG SW (IG1)" :

Refer to Inspection Procedure O-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed for "BUZZER" : Go to Step 3.





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.

- Driver's seat belt: fastened

(1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."

- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "Pulse Checking."

(2) Check scan tool MB991502 or MB991958 sounds when the driver's seat belt is unfastened.

Q: Does scan tool MB991502 or MB991958 sound when the driver's side seat belt is unfastened?

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

NO : Refer to Inspection Procedure O-3 "ETACS-ECU does not receive a signal from the driver's side seat belt switch [P.54B-486.](#)"

CENTRAL DOOR LOCKING SYSTEM

GENERAL DESCRIPTION CONCERNING THE CENTRAL DOOR LOCKING SYSTEM

M1549021100130

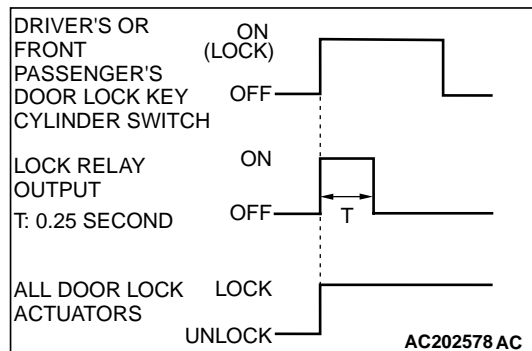
The following ECUs affect the functions and control of the central door locking system.

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	ETACS-ECU
	Operating the driver's door inside lock knob	ETACS-ECU
DOOR UNLOCK FUNCTION	Operating the driver's door lock key cylinder	ETACS-ECU
	Operating the front passenger's door lock key cylinder	ETACS-ECU
	Operating the driver's or front passenger's door lock switch	ETACS-ECU

DOOR LOCK FUNCTION

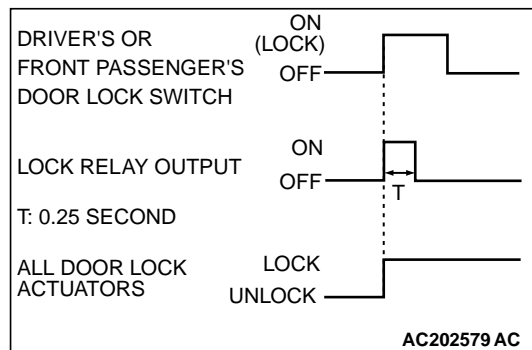
Operating the driver's or front passenger's door lock key cylinder

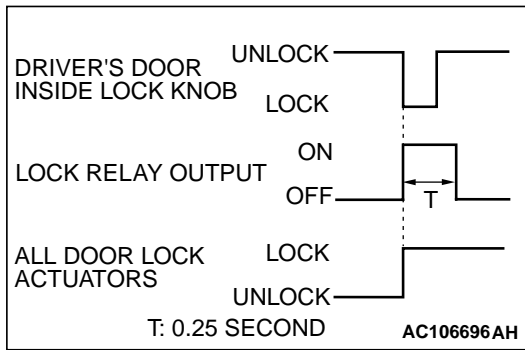
When you insert the ignition key to the driver's or front passenger's door lock key cylinder and turn the key clockwise to lock the door, the ETACS-ECU energizes its door lock relay for 0.25 second to activate all the door lock actuators. Then all the doors will be locked.



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 0.25 second to activate all the door lock actuators. Then all the doors will be locked.





Operating the driver's door inside lock knob

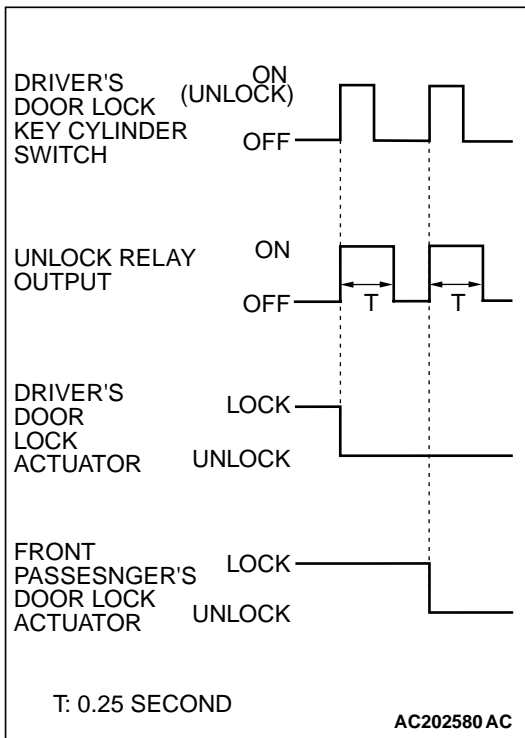
When the door is locked by driver's door inside lock knob, the ETACS-ECU energizes its door lock relay for 0.25 second to activate all the door lock actuators. Then all the doors will be locked.

DOOR UNLOCK FUNCTION

Operating the driver's door lock key cylinder

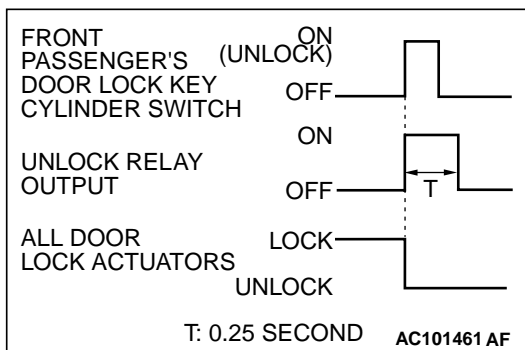
When you insert the ignition key to the driver's door lock key cylinder and turn the key counterclockwise to unlock the door, the ETACS-ECU energizes its door unlock relay for 0.25 second to activate only the driver's door lock actuator. Then only the driver's door will be unlocked.

When you turn the key counterclockwise again, the ETACS-ECU energizes its door unlock relay for 0.25 second to activate all the door lock actuator. Then all the doors will be unlocked.



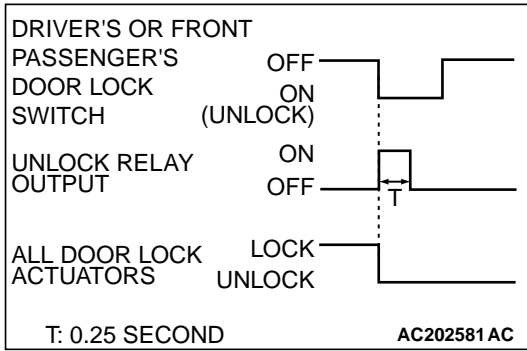
Operating the front passenger's door lock key cylinder

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 0.25 second to activate all the door lock actuators. Then all the doors will be unlocked.

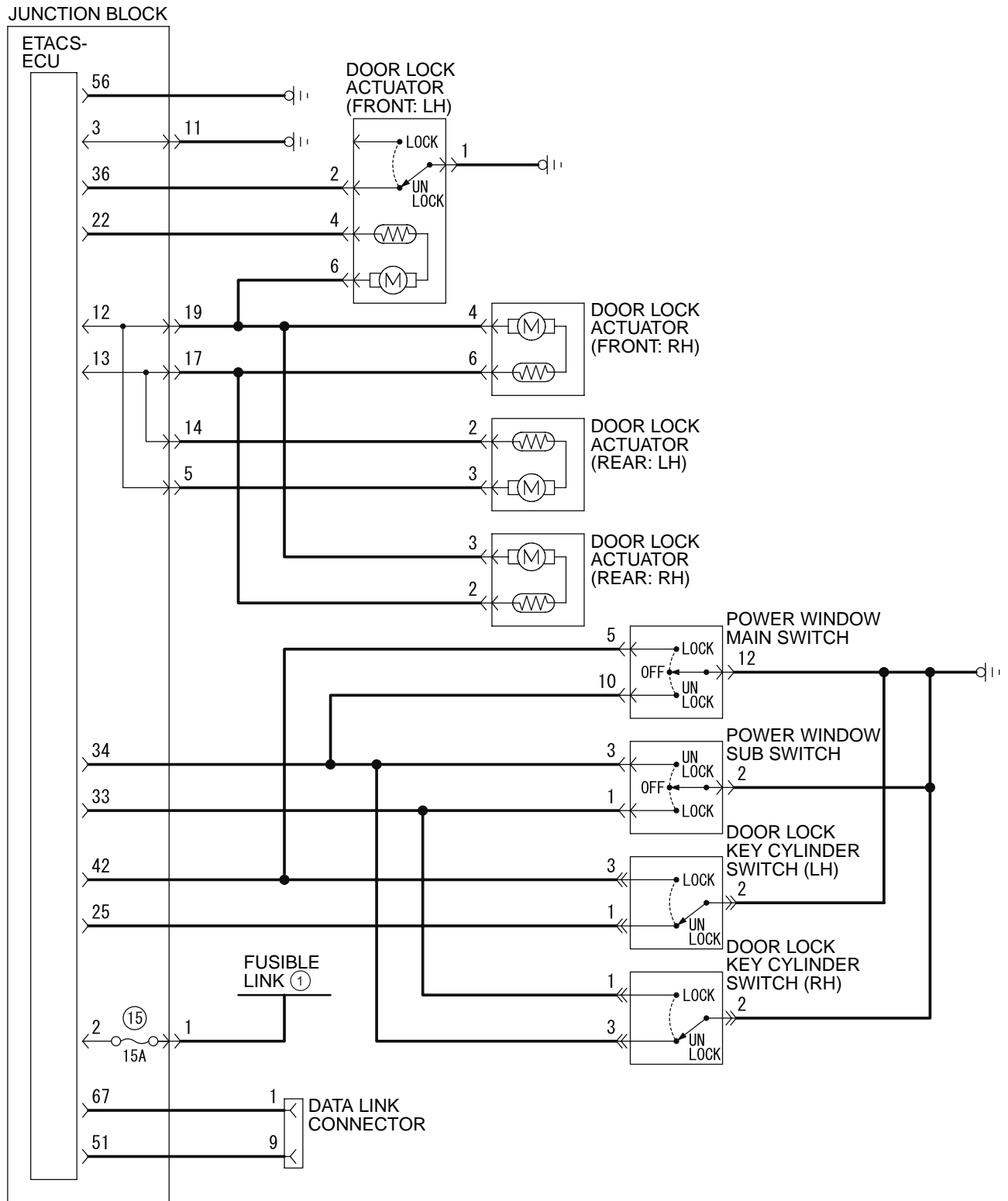


Operating the driver's or front passenger's door lock switch

When the door is unlocked by driver's or front passenger's door lock switch, the ETACS-ECU energizes its door unlock relay for 0.25 second to activate all the door lock actuators. Then all the doors will be unlocked.



General circuit diagram for the central door locking system

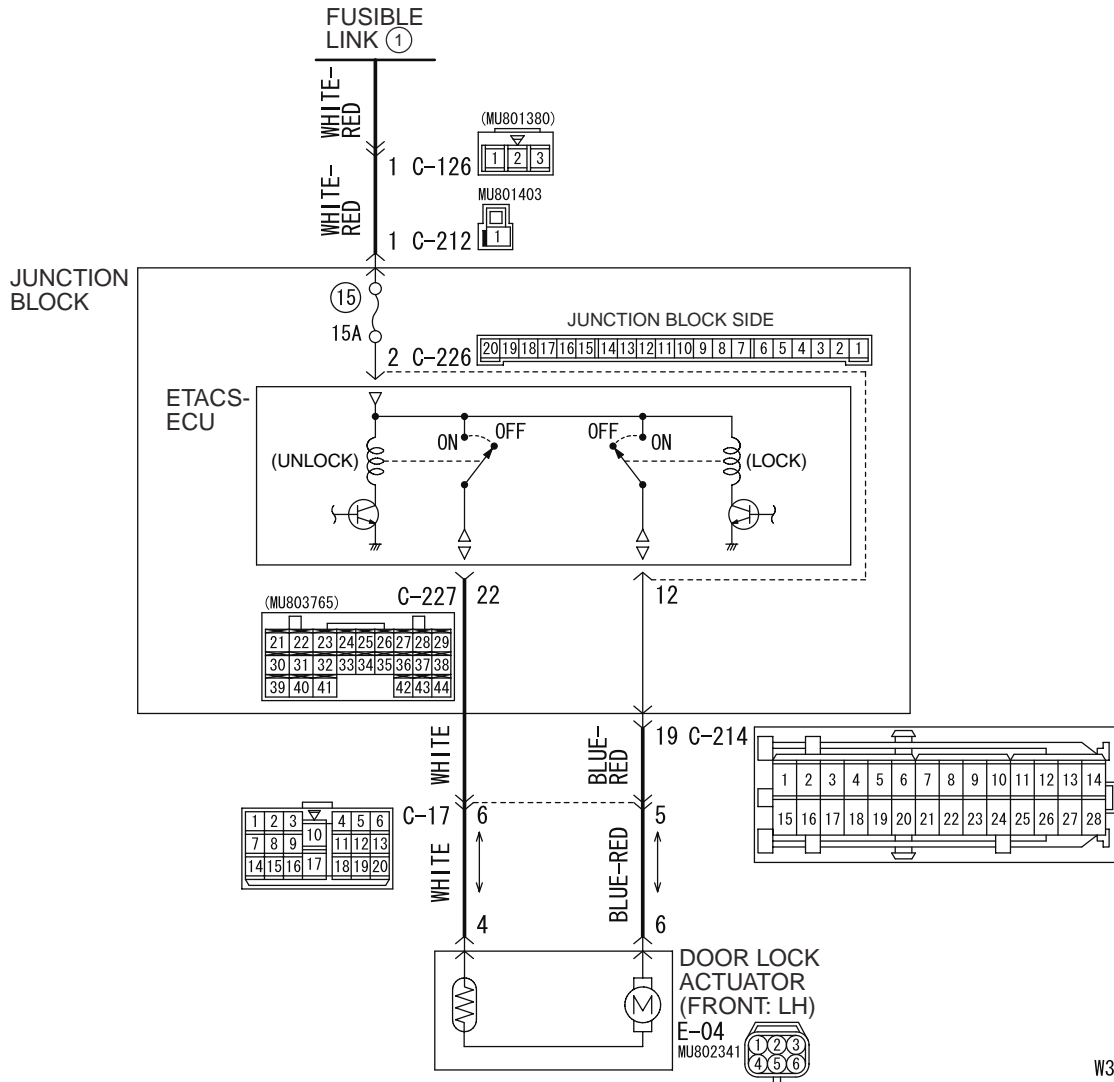


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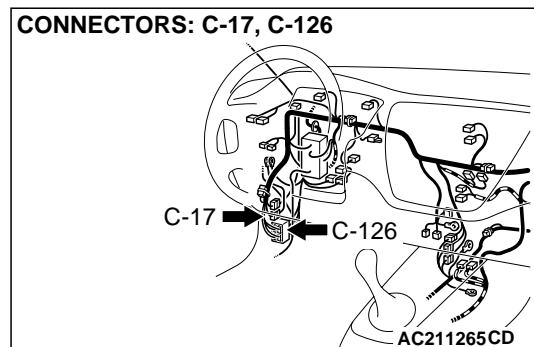
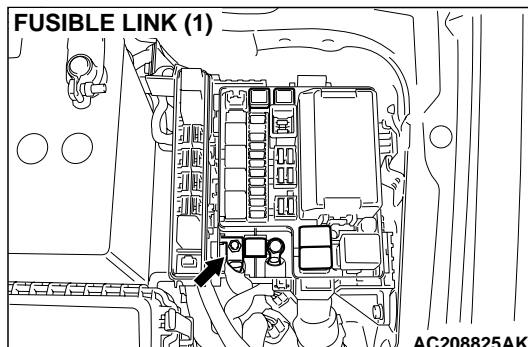
INSPECTION PROCEDURE C-1: Central Door Locking System: The central door lock system does not work at all.

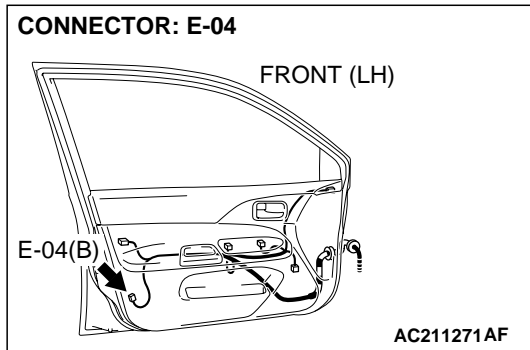
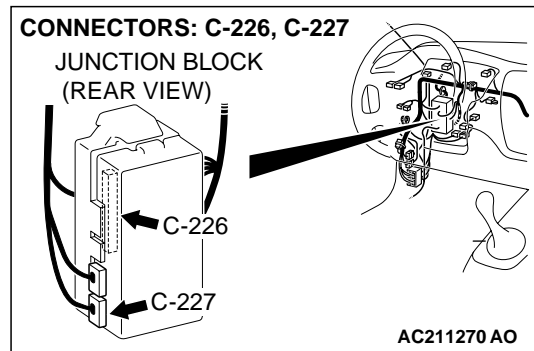
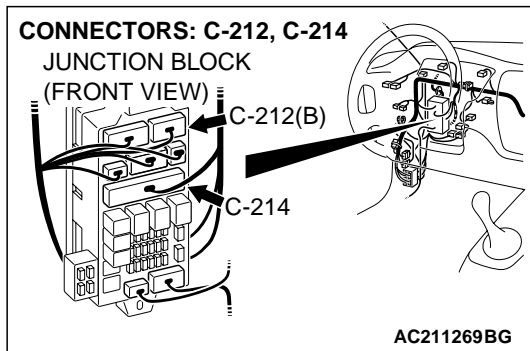
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Central Door Lock Power Supply Circuit



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CIRCUIT OPERATION

- The ETACS-ECU operates the central door lock system according to the following signals:
 - Front door lock actuator
 - Front door lock key cylinder switch
 - Door lock switch, which is incorporated in the power window main switch or front power window sub switch

- The ETACS-ECU locks or unlocks all the doors by operating the central door lock relay (incorporated in the ECU) in response to input signals.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the ETACS-ECU.

⚠ CAUTION

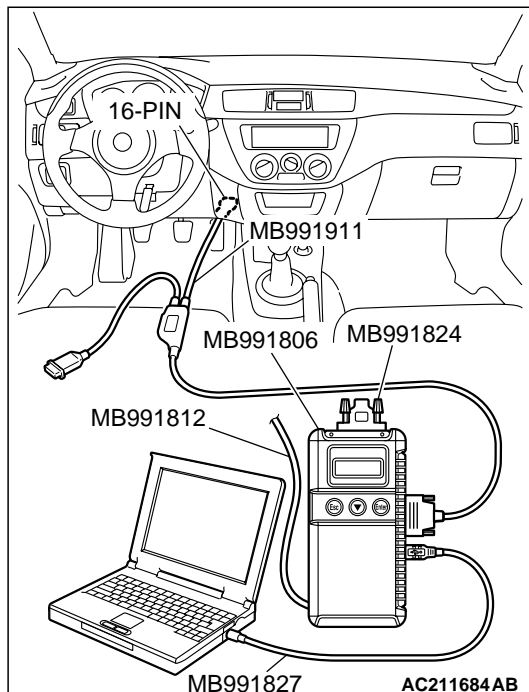
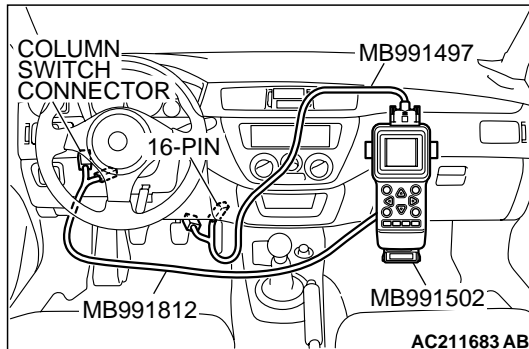
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

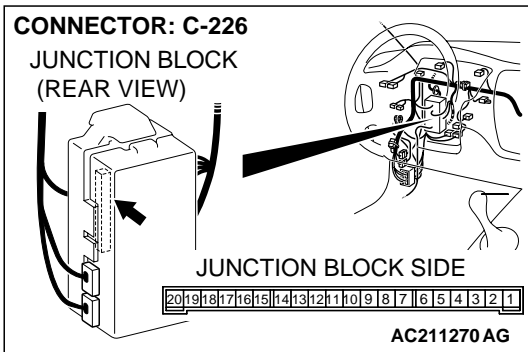
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-42."



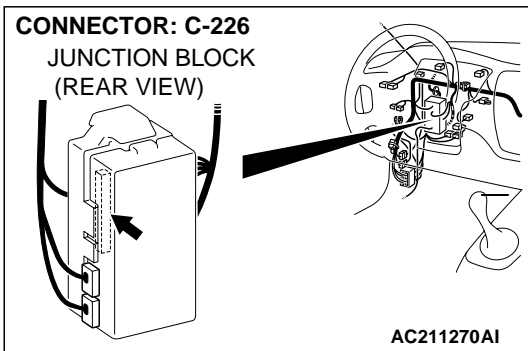


STEP 2. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 in good condition?

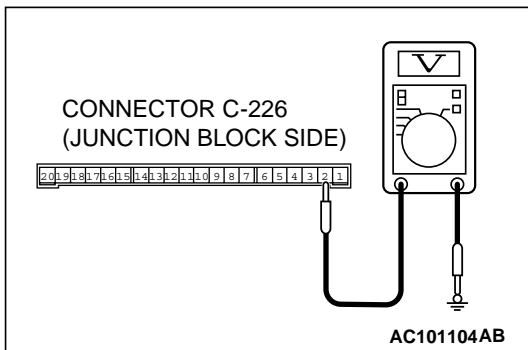
YES : Go to Step 3.

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



STEP 3. Check the fusible link (1) line of power supply circuit to the ETACS-ECU. Measured at ETACS-ECU connector C-226.

(1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.



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

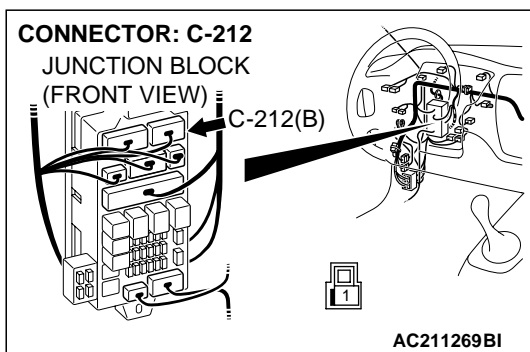
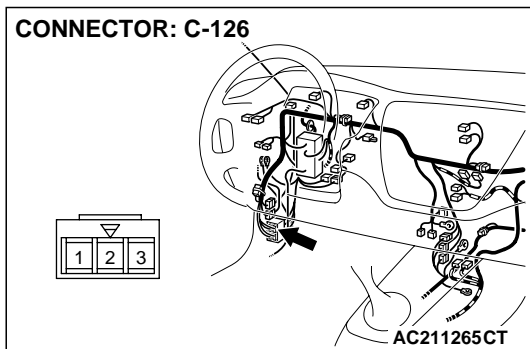
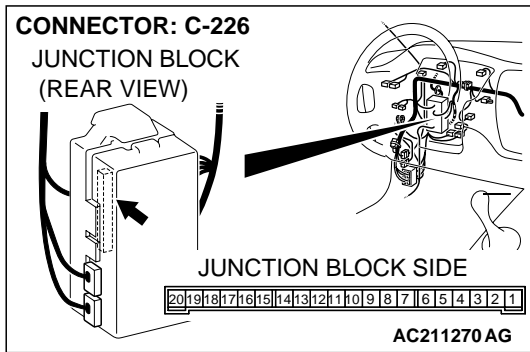
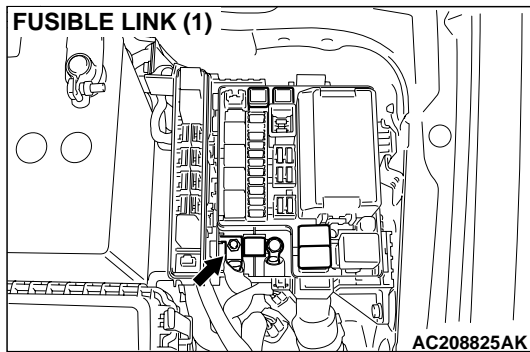
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between ETACS-ECU connector C-226 (terminal 2) and fusible link (1).



NOTE: Also check junction block connector C-212 and intermediate connector C-126 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-212 or intermediate connectors C-126 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (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 central door locking system works normally.

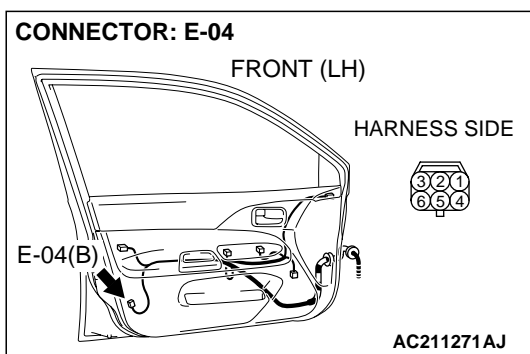
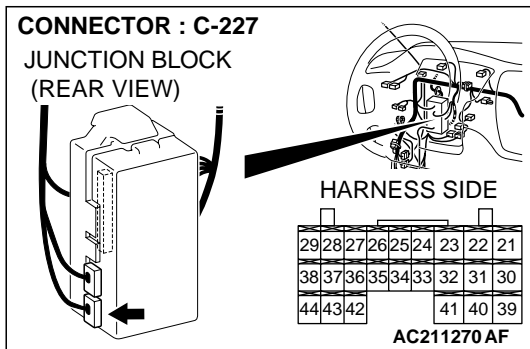
STEP 5. Check ETACS-ECU connectors C-227 and door lock actuator (front: LH) connector E-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-227 and door lock actuator (front: LH) connector E-04 in good condition?

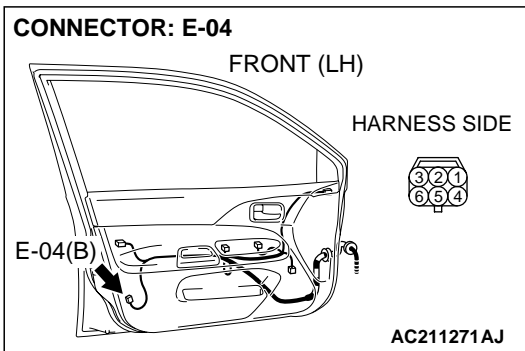
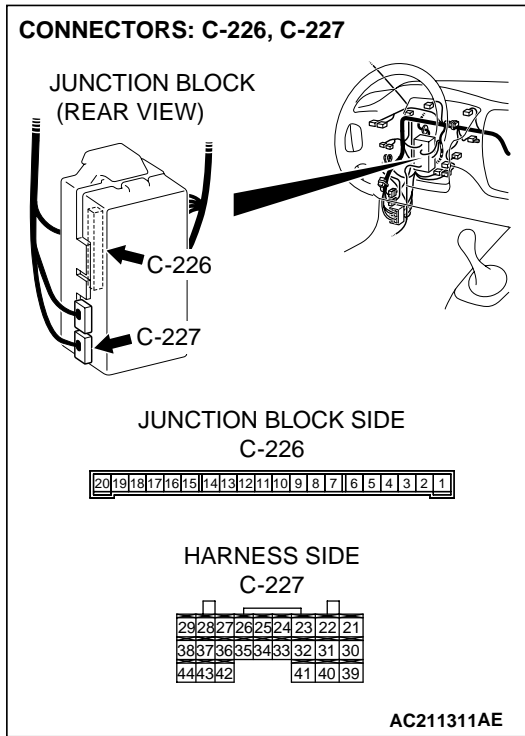
YES : Go to Step 6.

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

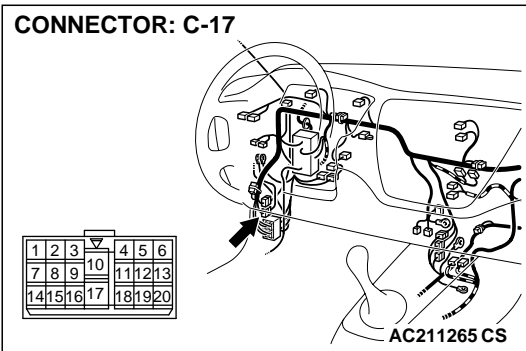
P.00E-2. Verify that the central door locking system works normally.



STEP 6. Check the wiring harness from ETACS-ECU connectors C-226 (terminal 12), C-227 (terminal 22) and door lock actuator (front: LH) connector E-04 (terminal 6 and 4).



CONNECTOR: C-17



NOTE: Also check junction block connector C-214 and intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or intermediate connectors C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

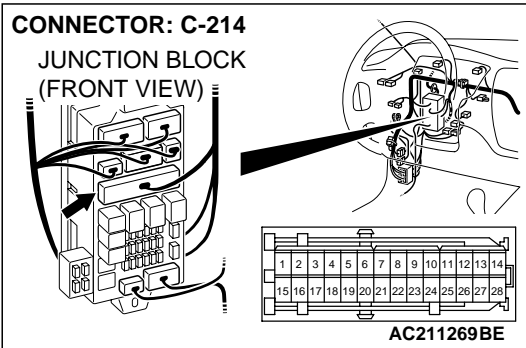
Q: Is the wiring harness from ETACS-ECU connectors C-226 (terminal 12), C-227 (terminal 22) and door lock actuator (front: LH) connector E-04 (terminal 6 and 4) in good condition?

YES : Replace the ETACS-ECU. Verify that the central door locking system 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 the wiring harness as necessary. Verify that the central door locking system works normally.

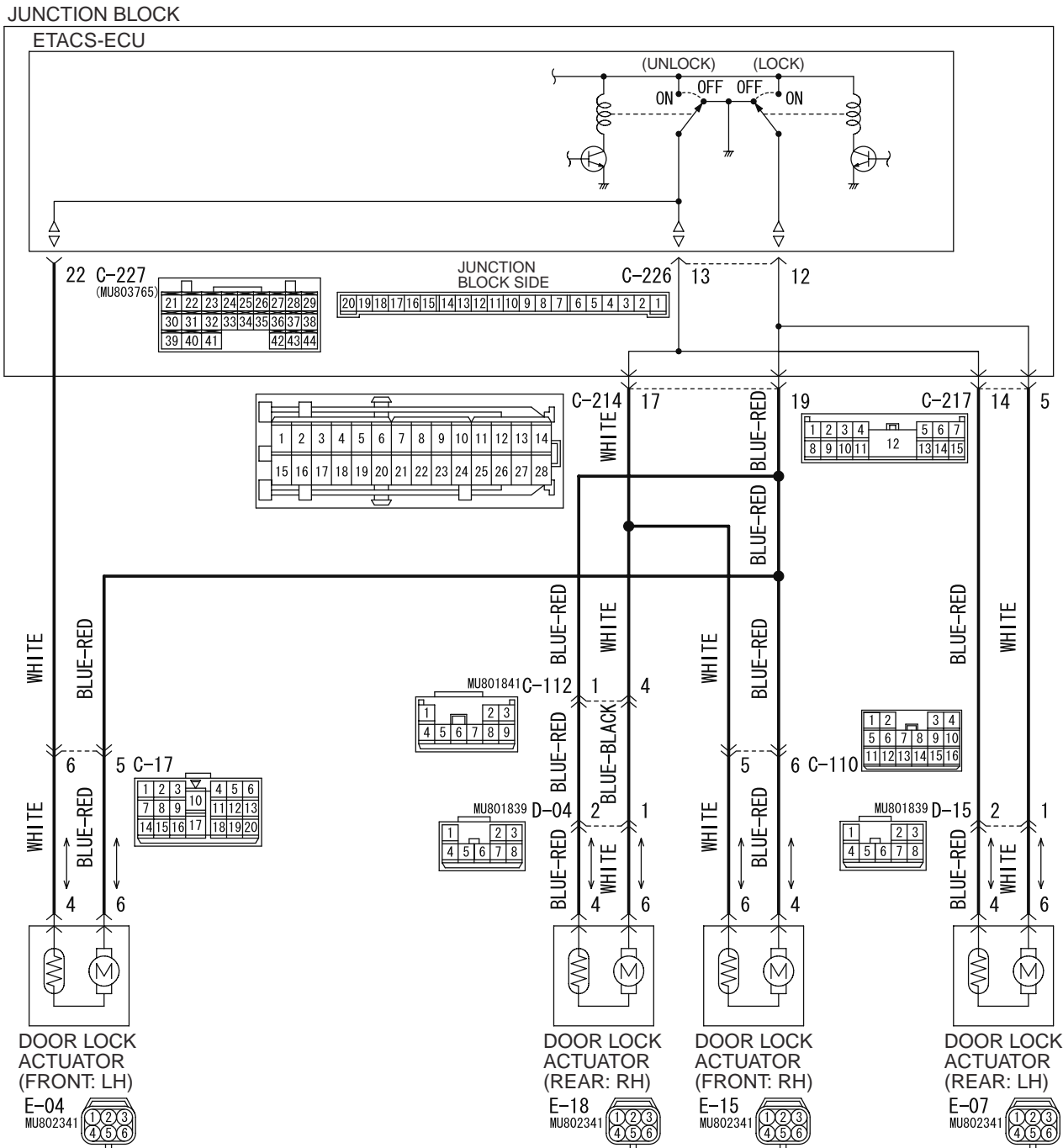
CONNECTOR: C-214

**JUNCTION BLOCK
(FRONT VIEW)**



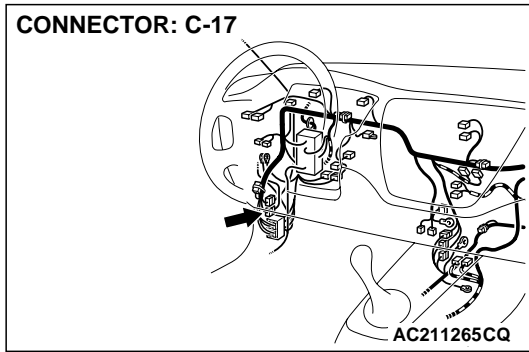
INSPECTION PROCEDURE C-2: Central Door Locking System: Some doors do not lock or unlock.

Central Door Lock Circuit

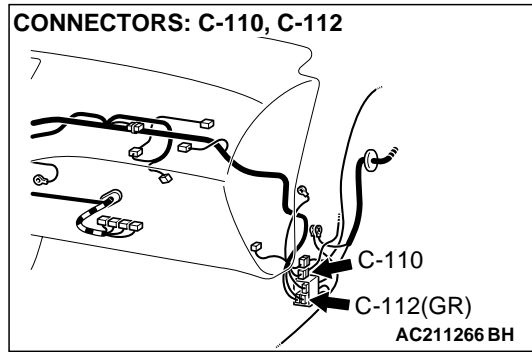


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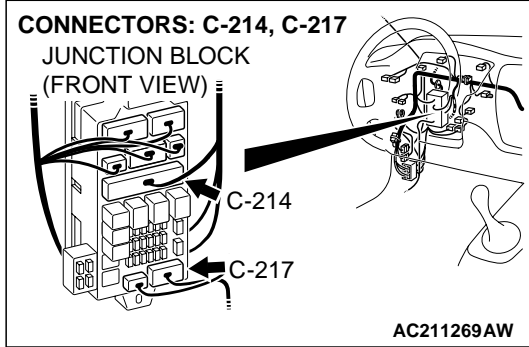
CONNECTOR: C-17



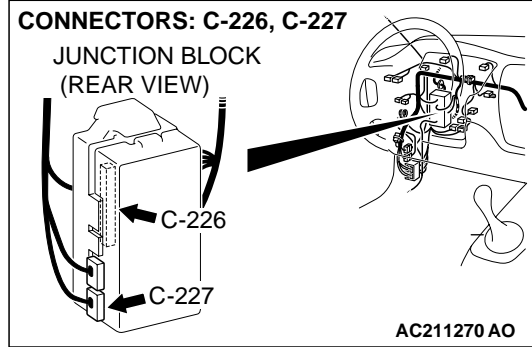
CONNECTORS: C-110, C-112



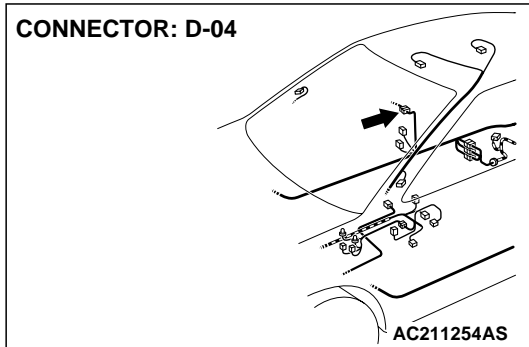
CONNECTORS: C-214, C-217
JUNCTION BLOCK
(FRONT VIEW)



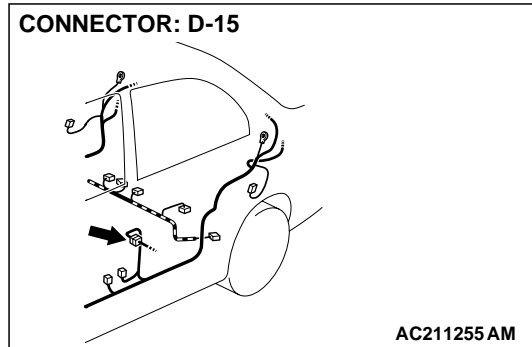
CONNECTORS: C-226, C-227
JUNCTION BLOCK
(REAR VIEW)



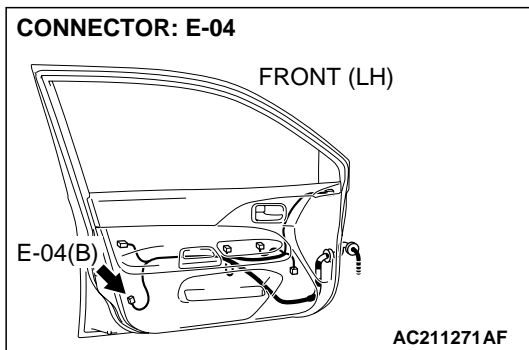
CONNECTOR: D-04



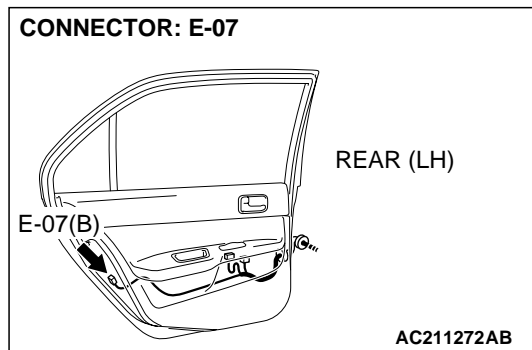
CONNECTOR: D-15

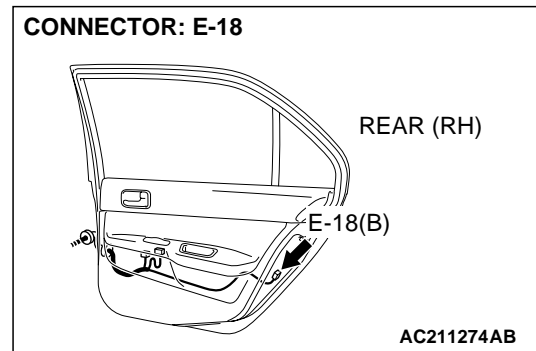
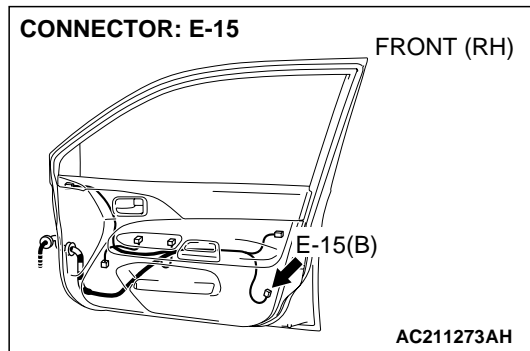


CONNECTOR: E-04



CONNECTOR: E-07





CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

STEP 1. Verify which door lock is defective.

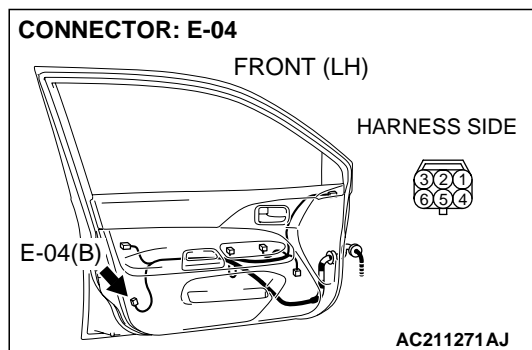
Q: Which of the door locks is defective?

Driver's door : Go to Step 2.

Front passenger's door : Go to Step 6.

Rear door (LH) : Go to Step 10.

Rear door (RH) : Go to Step 14.



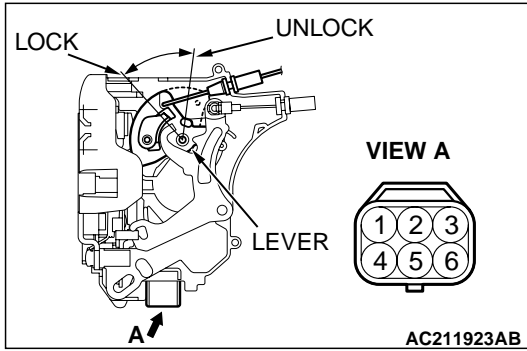
STEP 2. Check door lock actuator (front: LH) connector E-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock actuator (front: LH) connector E-04 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 all the doors can be locked and unlocked normally.



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

1. Remove the door lock actuator (front: LH), and check it. Refer to GROUP 42 – Door Handle and Latch P.42-41.
2. Follow the table below to check the door lock actuator (front: LH) for correct operation.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 6 to the positive battery terminal 	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	<ul style="list-style-type: none"> • Connect terminal 6 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	The lever moves from the "UNLOCK" position to the "LOCK" position.

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

YES : Go to Step 4.

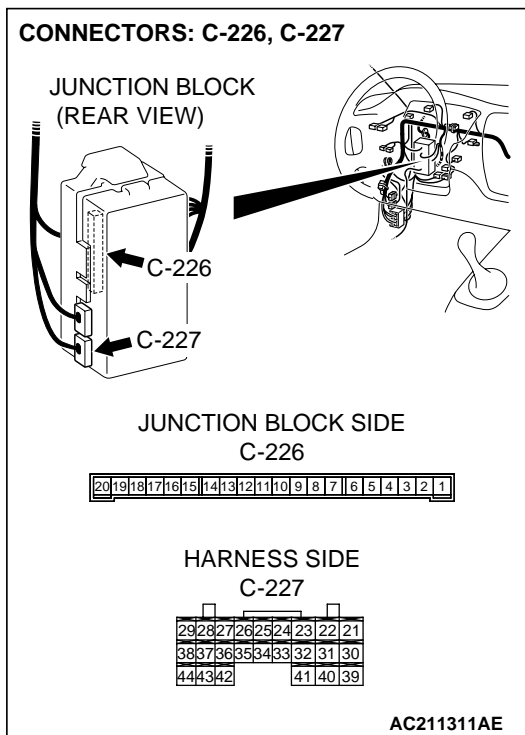
NO : Replace the door lock actuator (front: LH). Verify that all the doors can be locked and unlocked normally.

STEP 4. Check ETACS-ECU connectors C-226 and C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

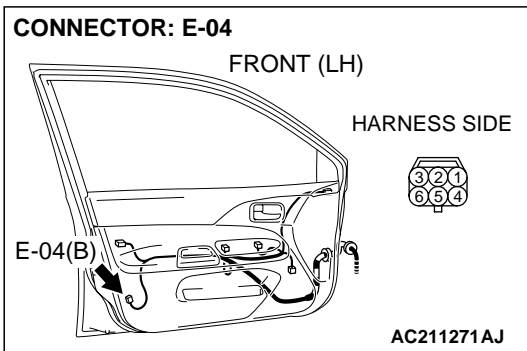
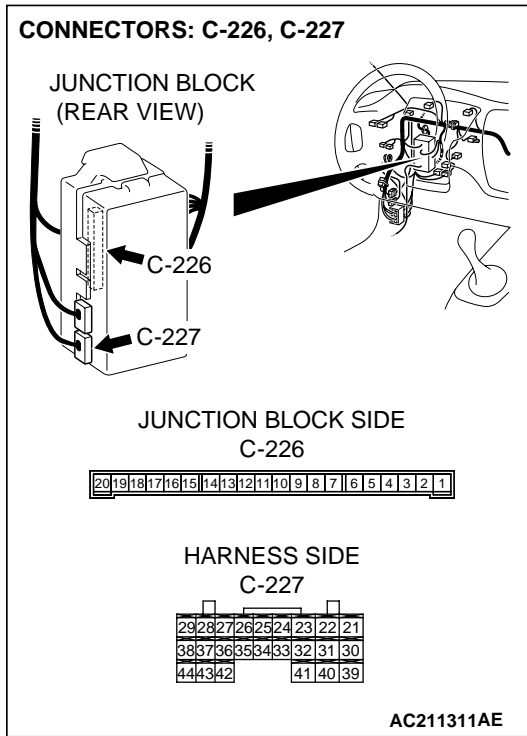
Q: Are ETACS-ECU connectors C-226 and C-227 in good condition?

YES : Go to Step 5.

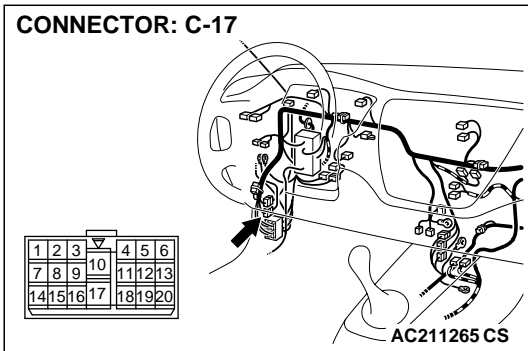
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.



STEP 5. Check the wiring harness from ETACS-ECU connectors C-226 (terminal 12), C-227 (terminal 22) and door lock actuator (front: LH) connector E-04 (terminal 6 and 4).



CONNECTOR: C-17



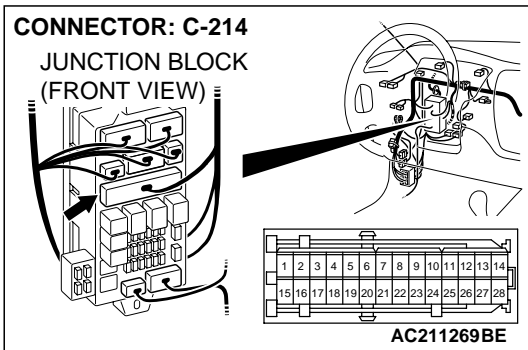
NOTE: Also check junction block connector C-214 and intermediate connector C-17. If junction block connector C-214 or intermediate connector C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness from ETACS-ECU connectors C-226 (terminal 12), C-227 (terminal 22) and door lock actuator (front: LH) connector E-04 (terminal 6 and 4) in good condition?

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

CONNECTOR: C-214



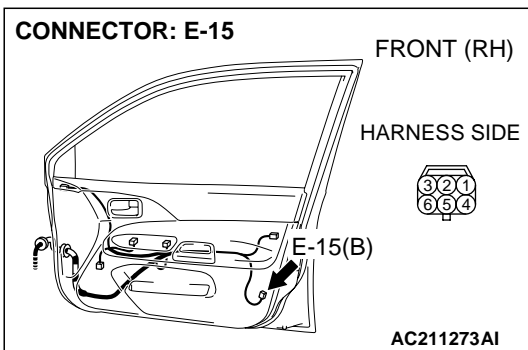
STEP 6. Check door lock actuator (front: RH) connector E-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

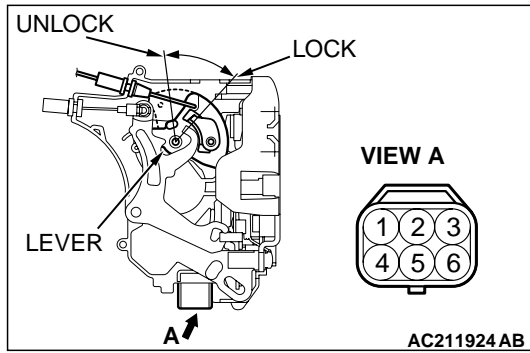
Q: Is door lock actuator (front: RH) connector E-15 in good condition?

YES : Go to Step 7.

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

CONNECTOR: E-15





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

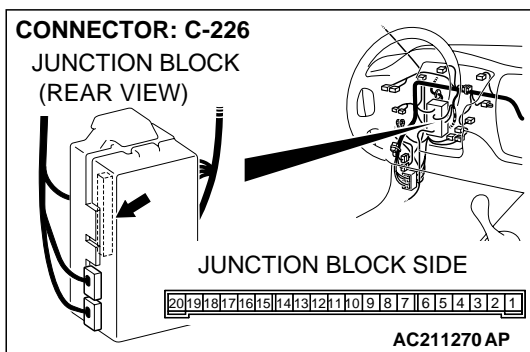
1. Remove the door lock actuator (front: RH), and check it. Refer to GROUP 42 – Door Handle and Latch P.42-41.
2. Follow the table below to check the door lock actuator (front: RH) for correct operation.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 6 to the positive battery terminal 	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	<ul style="list-style-type: none"> • Connect terminal 6 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	The lever moves from the "UNLOCK" position to the "LOCK" position.

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

YES : Go to Step 8.

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



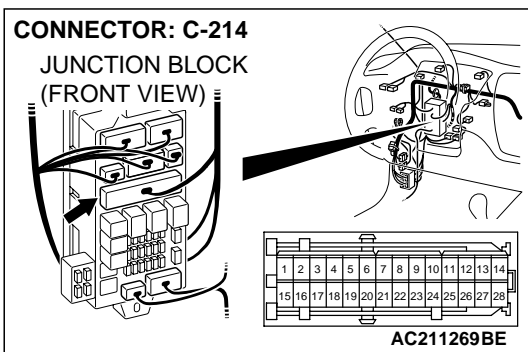
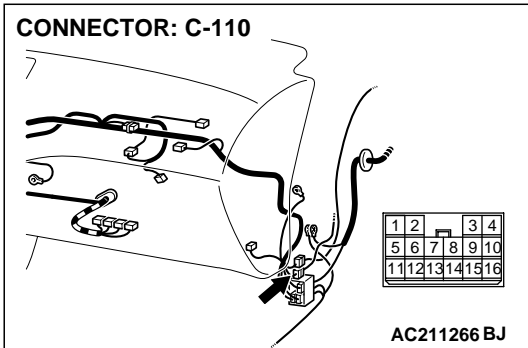
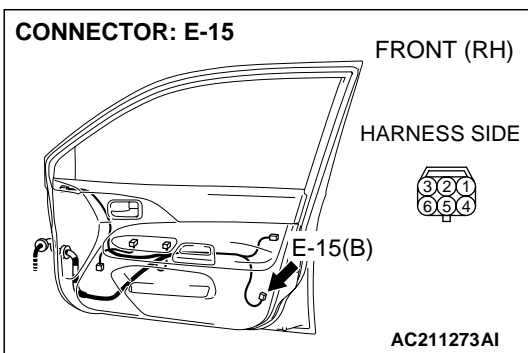
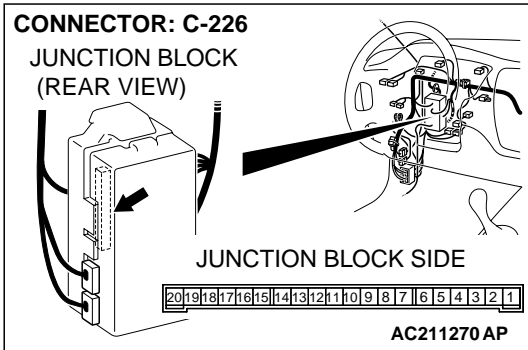
STEP 8. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 in good condition?

YES : Go to Step 9.

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

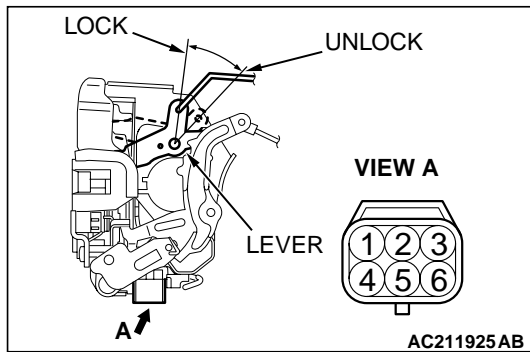
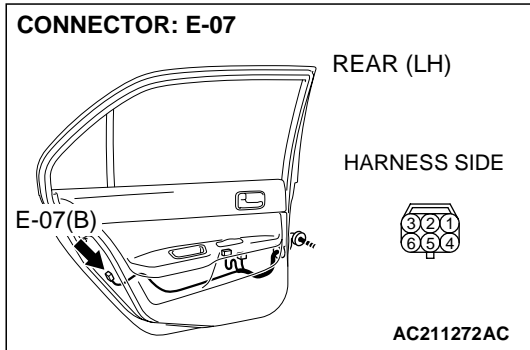
STEP 9. Check the wiring harness from ETACS-ECU connector C-226 (terminal 12 and 13) and door lock actuator (front: RH) connector E-15 (terminal 4 and 6).



NOTE: Also check junction block connector C-214 and intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or intermediate connector C-110 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 ETACS-ECU connector C-226 (terminal 12 and 13) and door lock actuator (front: RH) connector E-15 (terminal 4 and 6) in good condition?

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



STEP 10. Check door lock actuator (rear: LH) connector E-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock actuator (rear: LH) connector E-07 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 all the doors can be locked and unlocked normally.

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

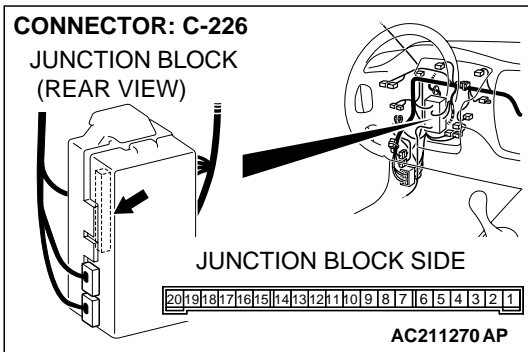
1. Remove the door lock actuator (rear: LH), and check it. Refer to GROUP 42 – Door Handle and Latch [P.42-41](#).
2. Follow the table below to check the door lock actuator (rear: LH) for correct operation.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 6 to the positive battery terminal 	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	<ul style="list-style-type: none"> • Connect terminal 6 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	The lever moves from the "UNLOCK" position to the "LOCK" position.

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

YES : Go to Step 12.

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

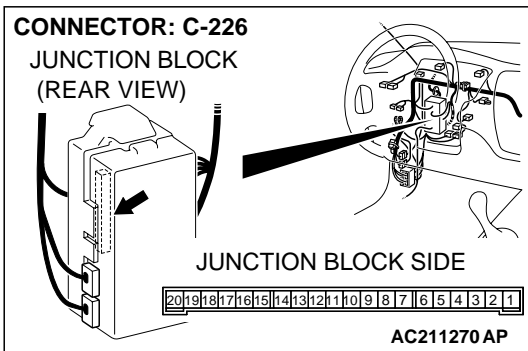


STEP 12. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

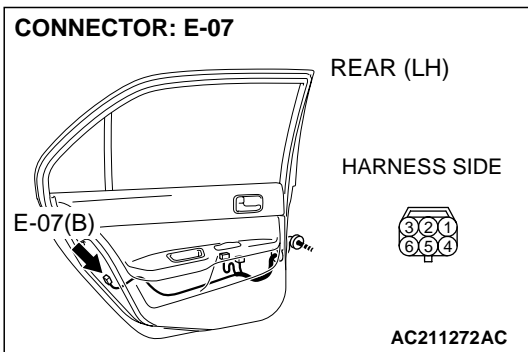
Q: Is ETACS-ECU connector C-226 in good condition?

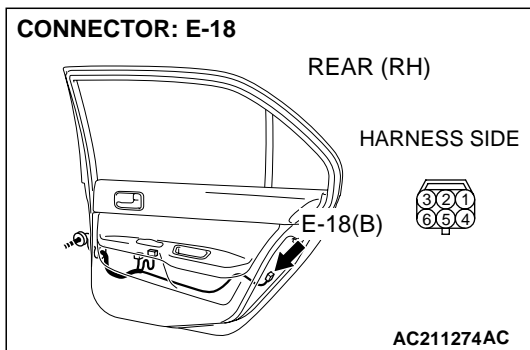
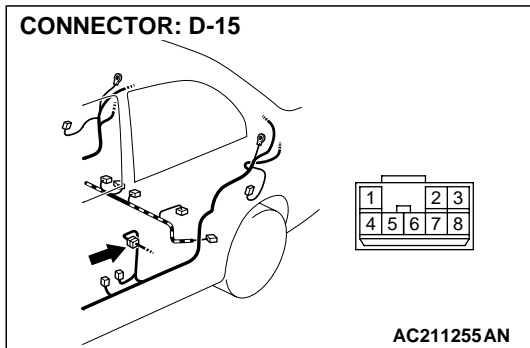
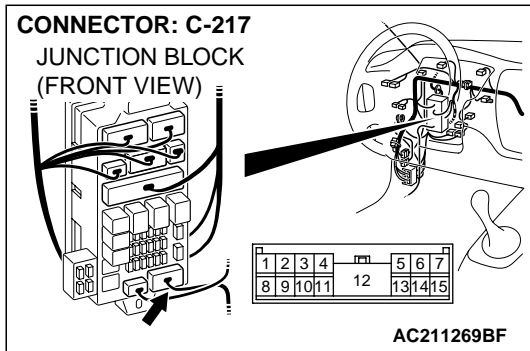
YES : Go to Step 13.

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



STEP 13. Check the wiring harness from ETACS-ECU connector C-226 (terminal 12 and 13) and door lock actuator (rear: LH) connector E-07 (terminal 3 and 2).





NOTE: Also check junction block connector C-217 and intermediate connector D-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-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 wiring harness between ETACS-ECU connector C-226 (terminal 12 and 13) and door lock actuator (rear: LH) connector E-07 (terminal 3 and 2) in good condition?

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

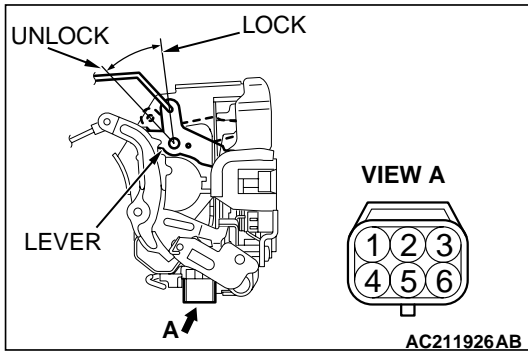
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that all the doors can be locked and unlocked normally.

STEP 14. Check door lock actuator (rear: RH) connector E-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock actuator (rear: RH) connector E-18 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 all the doors can be locked and unlocked normally.



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

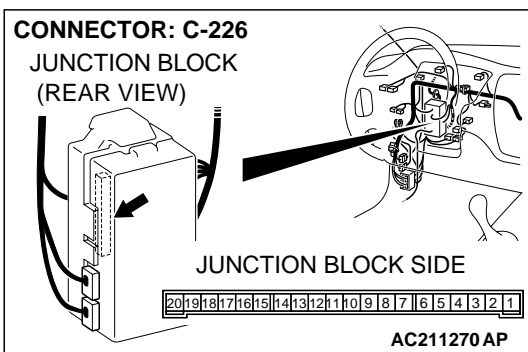
1. Remove the door lock actuator (rear: RH), and check it. Refer to GROUP 42 – Door Handle and Latch P.42-41.
2. Follow the table below to check the door lock actuator (rear: RH) for correct operation.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 6 to the positive battery terminal 	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	<ul style="list-style-type: none"> • Connect terminal 6 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	The lever moves from the "UNLOCK" position to the "LOCK" position.

Q: Does the door lock actuator (rear: RH) work normally?

YES : Go to Step 16.

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



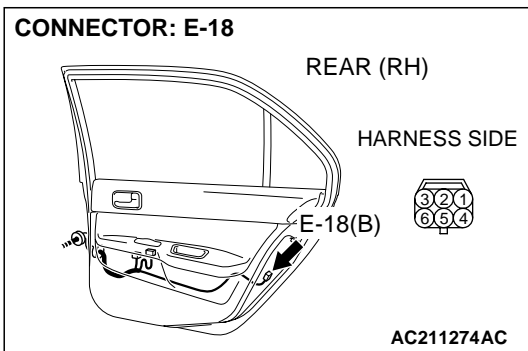
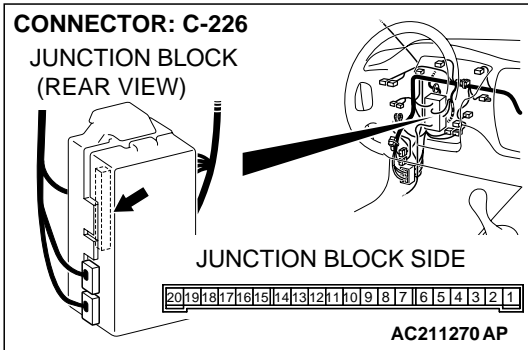
STEP 16. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 in good condition?

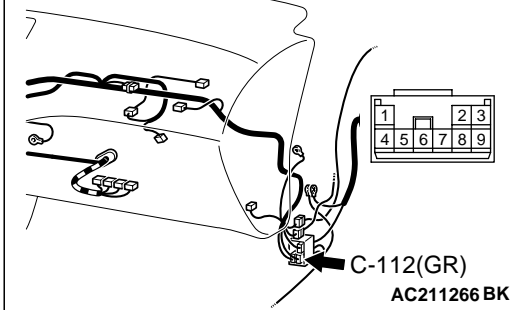
YES : Go to Step 17.

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

STEP 17. Check the wiring harness from ETACS-ECU connector C-226 (terminal 12 and 13) and door lock actuator (rear: RH) connector E-18 (terminal 3 and 2).



CONNECTOR: C-112



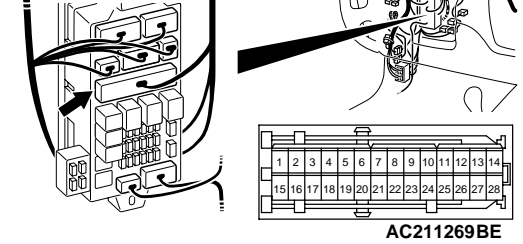
NOTE: Also check junction block connector C-214, intermediate connectors C-112 and D-04 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214, intermediate connector C-112 or D-04 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 12 and 13) and door lock actuator (rear: RH) connector E-18 (terminal 3 and 2) in good condition?

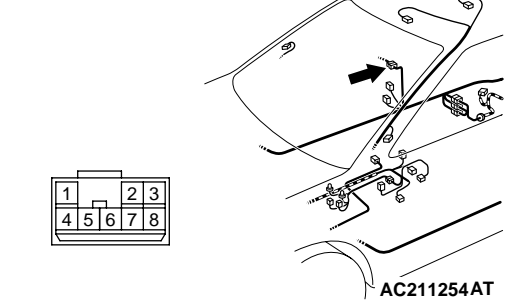
YES : Replace the ETACS-ECU. Verify that all the doors can be locked and unlocked normally.

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 all the doors can be locked and unlocked normally.

**CONNECTOR: C-214
JUNCTION BLOCK
(FRONT VIEW)**

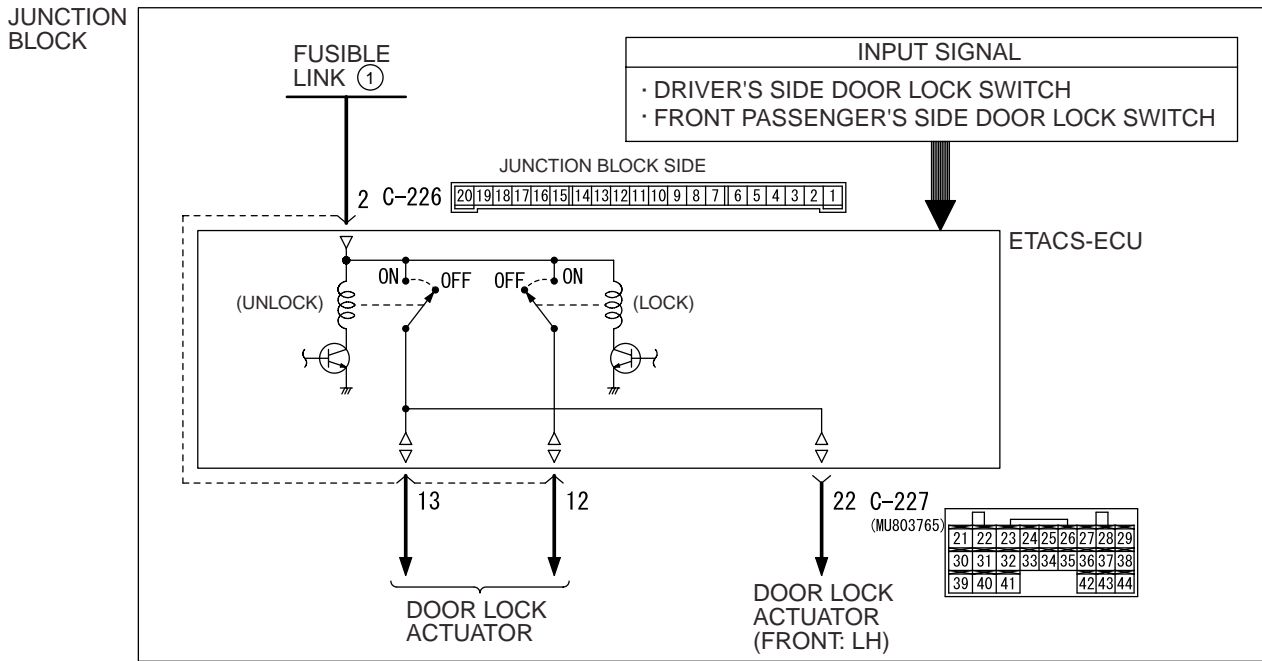


CONNECTOR: D-04



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

Central Door Lock (Door Lock Switch) Circuit



W3J22M03AA

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

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

Check the input signals from the door lock switch:

⚠ CAUTION

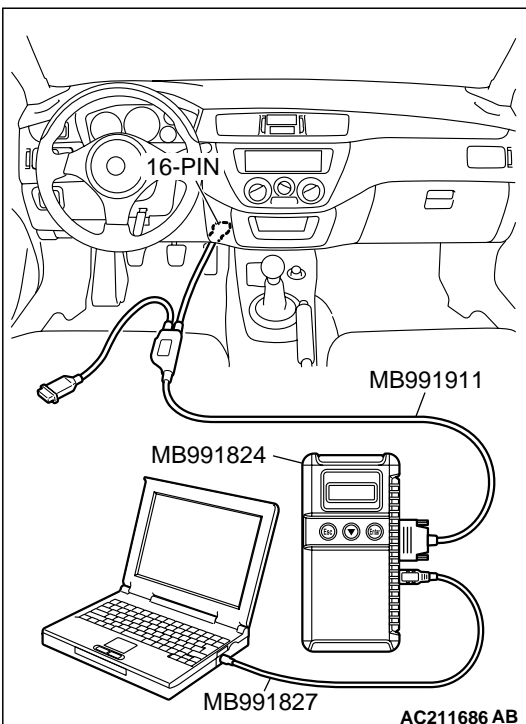
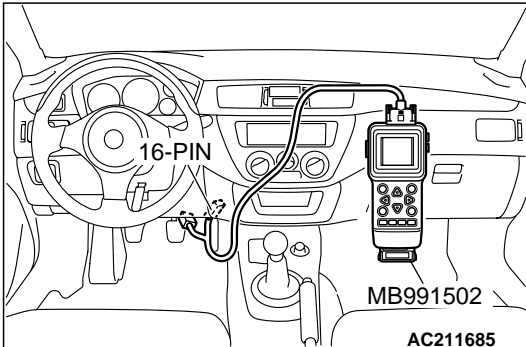
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

- (1) Connect scan tool MB991502 or MB991958 to the data link connector. Refer to "How to connect SWS monitor P.54B-7."
- (2) When the driver's or the front passenger's door lock switch is moved from "LOCK" to "UNLOCK" and vice versa, check if scan tool MB991502 or MB991958 sounds or not.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."

Q: Does scan tool MB991502 or MB991958 sound when the driver's or the front passenger's door lock switch is moved from "LOCK" to "UNLOCK" or vice versa?

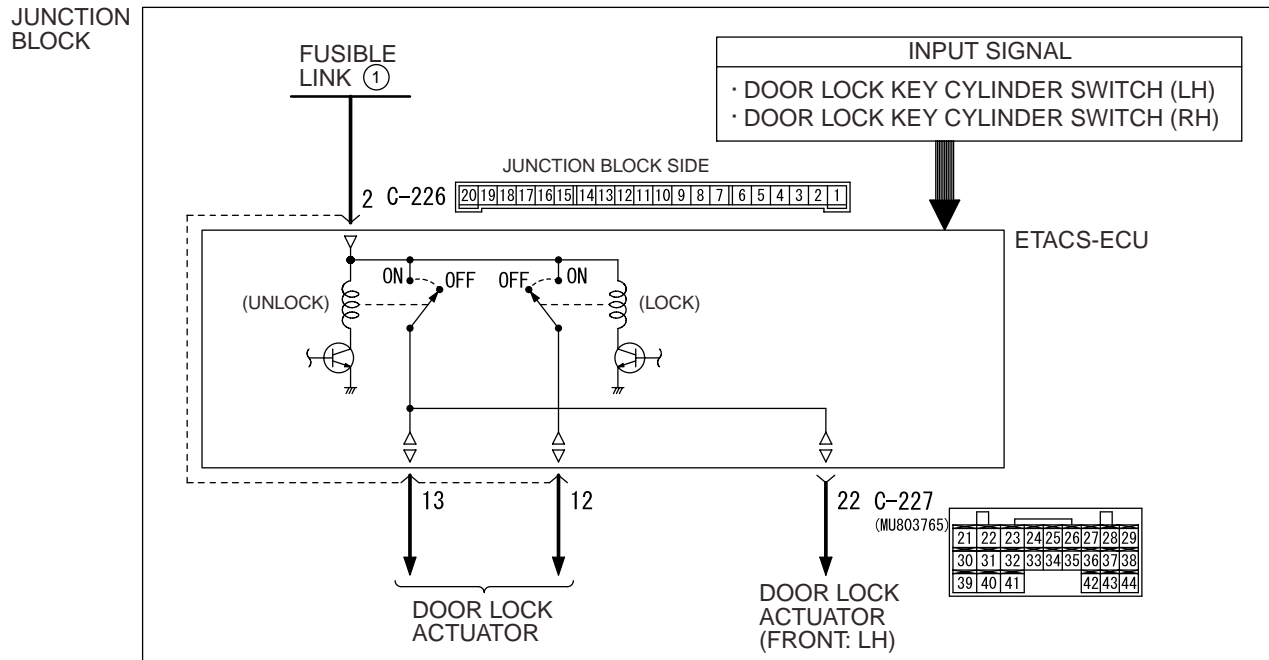
YES : Replace the ETACS-ECU. All the doors should be locked and unlocked by the door lock switch.

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.54B-515."



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 Cylinder Switch) Circuit



W3J22M04AA

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

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

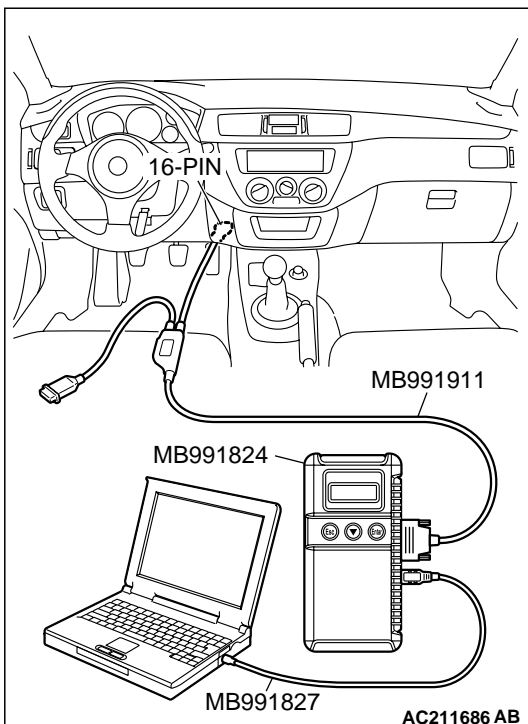
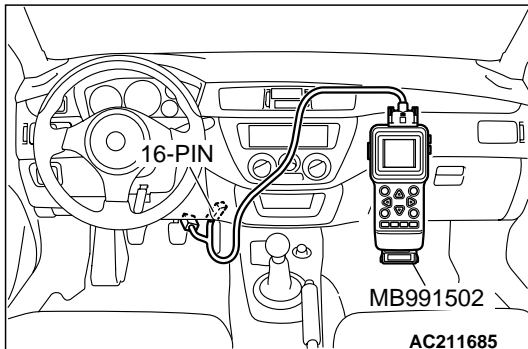
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

- (1) Connect scan tool MB991502 or MB991958 to the data link connector. Refer to "How to connect SWS monitor P.54B-7."
- (2) When the doors are locked and unlocked by using the driver's or front passenger's door lock key cylinder, check that scan tool MB991502 or MB991958 sounds.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."

Q: When the doors are locked and unlocked by using the driver's or front passenger's door lock key cylinder, does scan tool MB991502 or MB991958 sound?

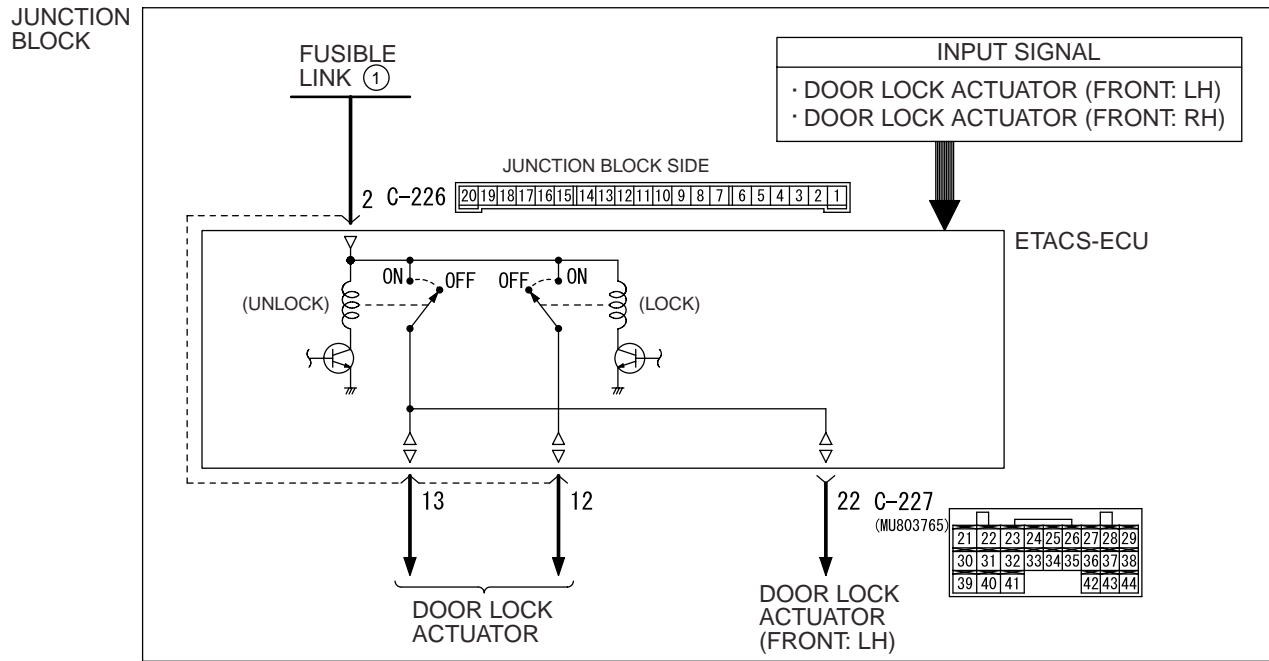
YES : Replace the ETACS-ECU. Check that all the doors should be locked and unlocked by using each door lock key cylinder switch.

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.54B-499."



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

Central Door Lock (Door Lock Actuator) Circuit



W3J22M05AA

TECHNICAL DESCRIPTION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

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

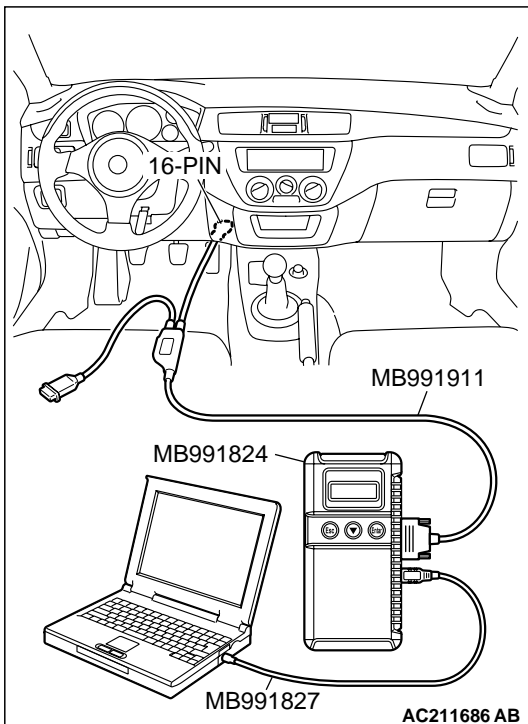
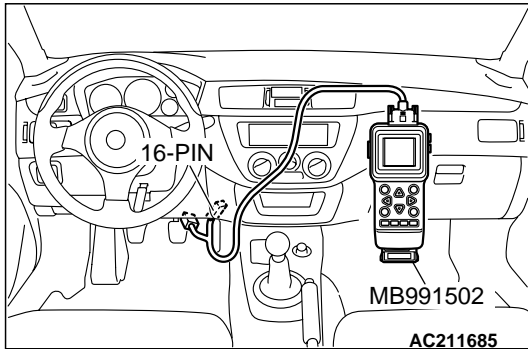
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

- (1) Connect scan tool MB991502 or MB991958 to the data link connector. Refer to "How to connect SWS monitor P.54B-7."
- (2) When the driver's inside lock knob is locked or unlocked, check if scan tool MB991502 or MB991958 sounds or not.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."

Q: Does scan tool MB991502 or MB991958 sound when the driver's inside lock knob is locked or unlocked?

YES : Replace the ETACS-ECU. Check 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.54B-510."



POWER WINDOWS**GENERAL DESCRIPTION CONCERNING THE POWER WINDOWS**

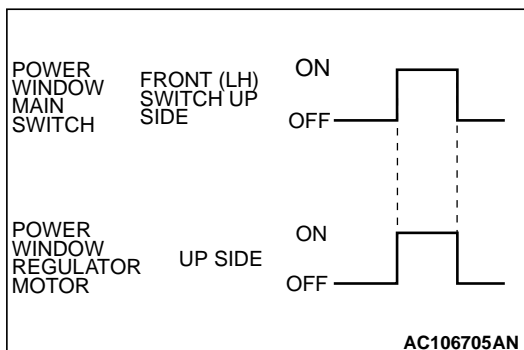
M1549021900103

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

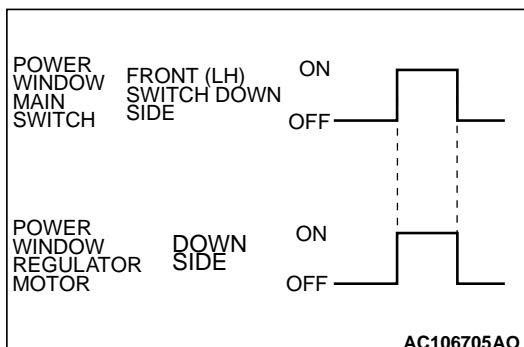
FUNCTION		CONTROL ECU
POWER WINDOW MAIN SWITCH FUNCTION	Raises the driver's power window	Power window main switch
	Lowers the driver's power window	Power window main switch
	Lowers the driver's power window by one-shot down function	Power window main switch
	Raises the passenger's or rear door power window	Power window main switch
	Lowers the passenger's or rear door power window	Power window main switch
POWER WINDOW SUB SWITCH FUNCTION	Raises the passenger's or rear door power window	Power window sub switch
	Lowers the passenger's or rear door power window	Power window sub switch
POWER WINDOW TIMER FUNCTION		ETACS-ECU

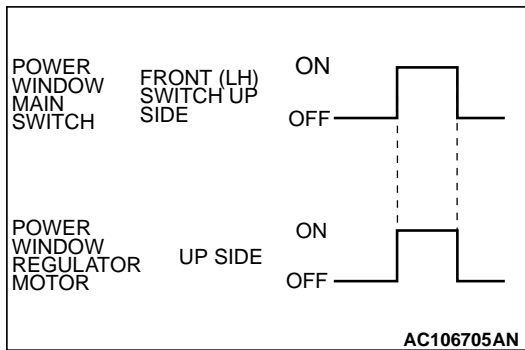
POWER WINDOW MAIN SWITCH FUNCTION**Raises the driver's power window**

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

**Lower the driver's power window**

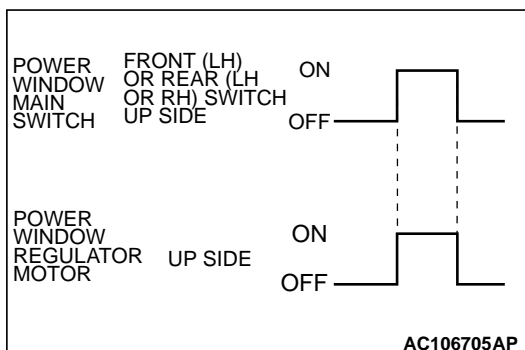
When the front (LH) switch on the power window main switch is pushed down, the system energizes its respective power window regulator motor, and then driver's window glass lowers.





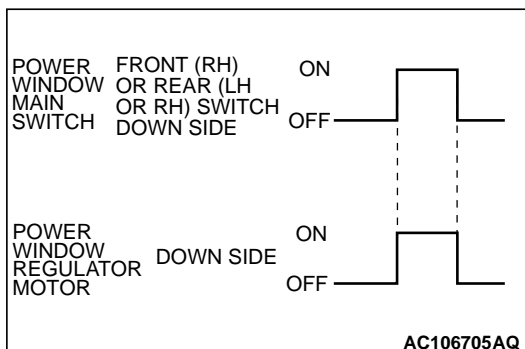
Lowers the driver's power window by one-shot down function

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



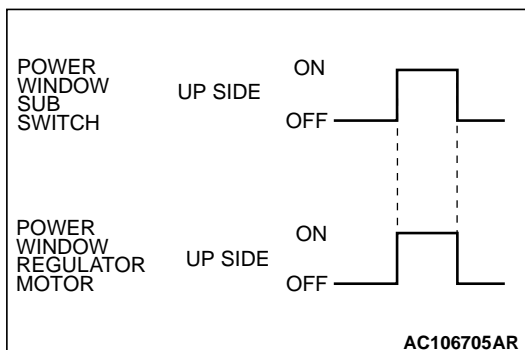
Raises the passenger's or rear door power window

When the front (RH) or rear (LH or RH) switch on the power window main switch is pulled up, the system energizes its respective power window regulator motor, and then passenger's or rear door window glass rises.



Lowers the passenger's or rear door power window

When the front (RH) or rear (LH or RH) switch on the power window main switch is pushed down, the system energizes its respective power window regulator motor, and then passenger's or rear door window glass lowers.



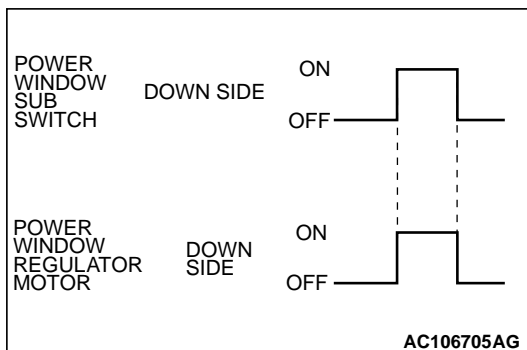
POWER WINDOW SUB SWITCH FUNCTION

Raises the passenger's or rear door power window

When the power window sub switch (FRONT) or power window sub switch (REAR: LH or RH) is pulled up, the system energizes its respective power window regulator motor, and then passenger's or rear door window glass rises.

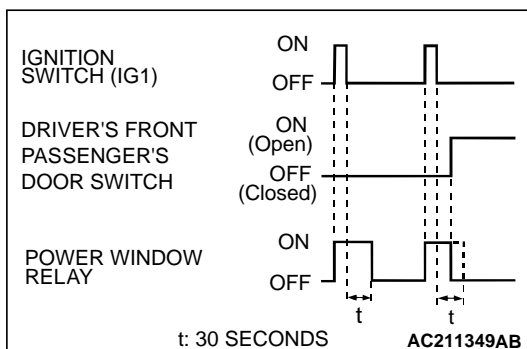
Lowers the passenger's passenger's or rear door power window

When the power window sub switch (front) or power window sub switch (REAR: LH or RH) is pushed down, the system energizes its respective power window regulator motor, and then passenger's or rear door window glass lowers.

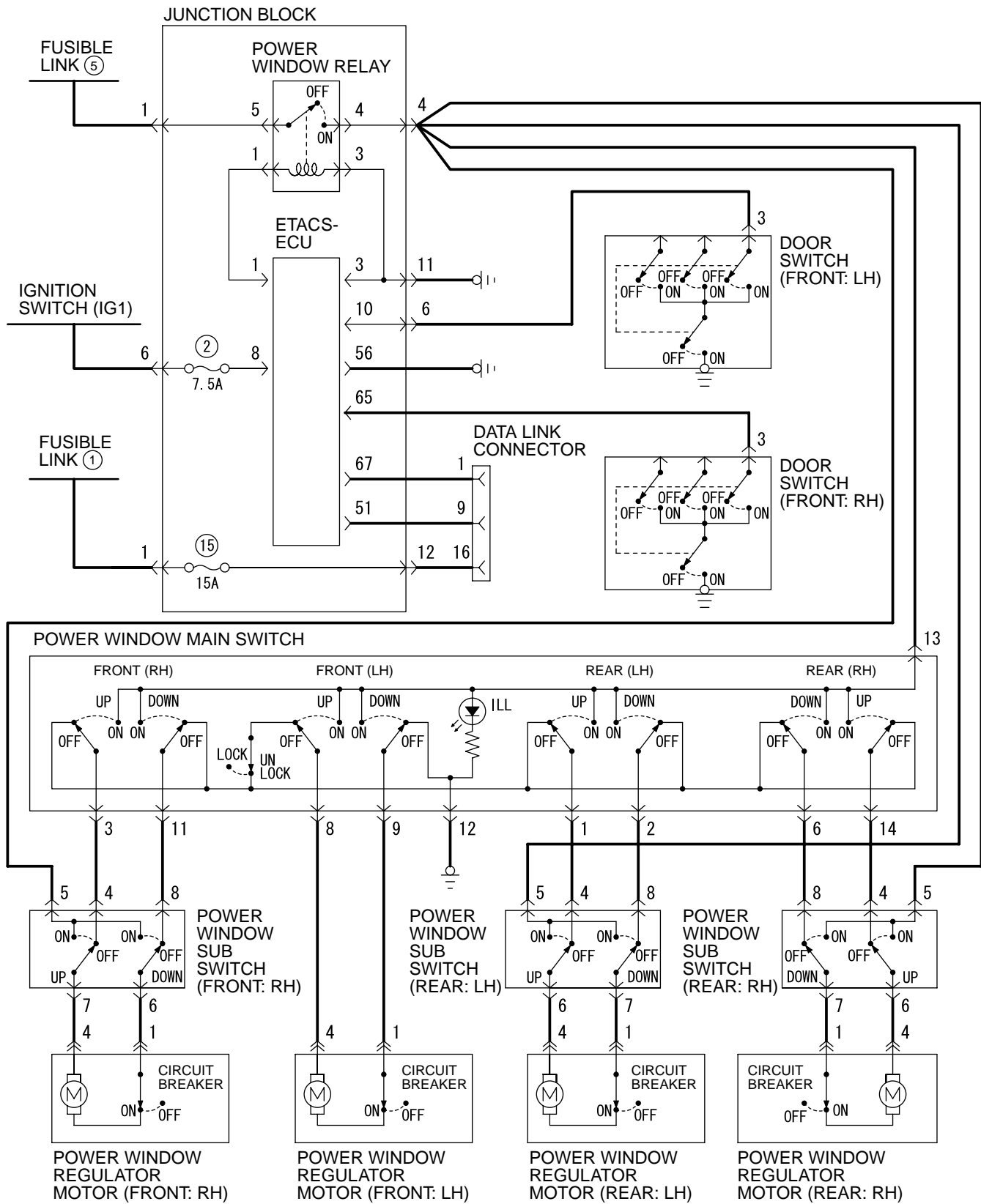


POWER WINDOW TIMER FUNCTION

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.



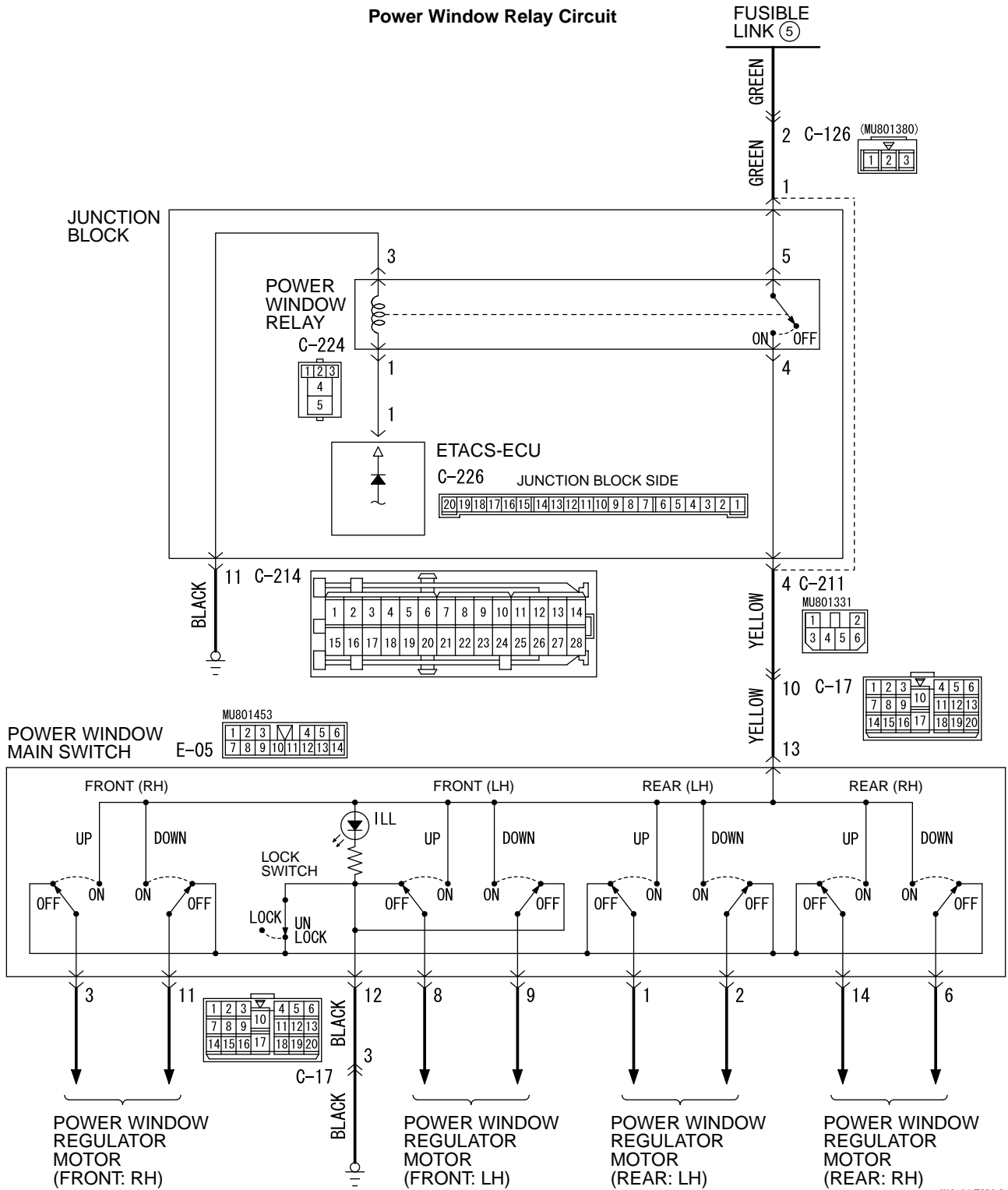
General circuit diagram for the power windows

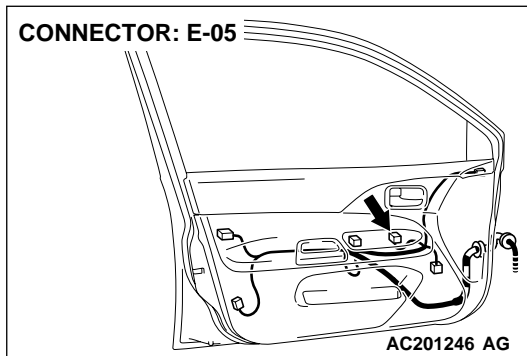
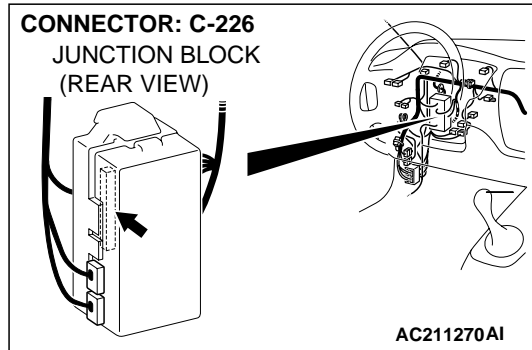
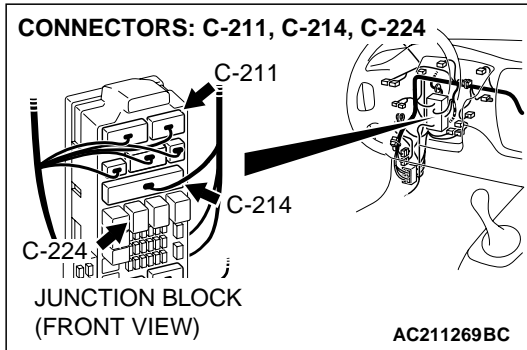
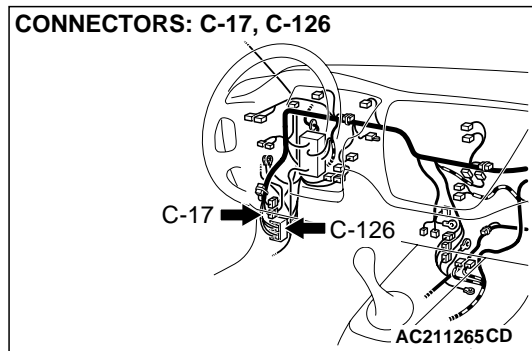
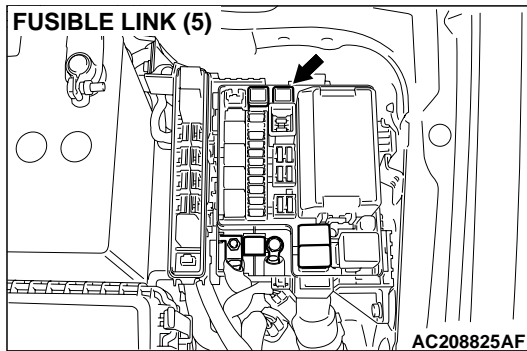


W3J15M02AA

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."





CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit

- MB991806: SWS monitor cartridge
- MB991812: SWS monitor harness (for column-ECU)
- MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

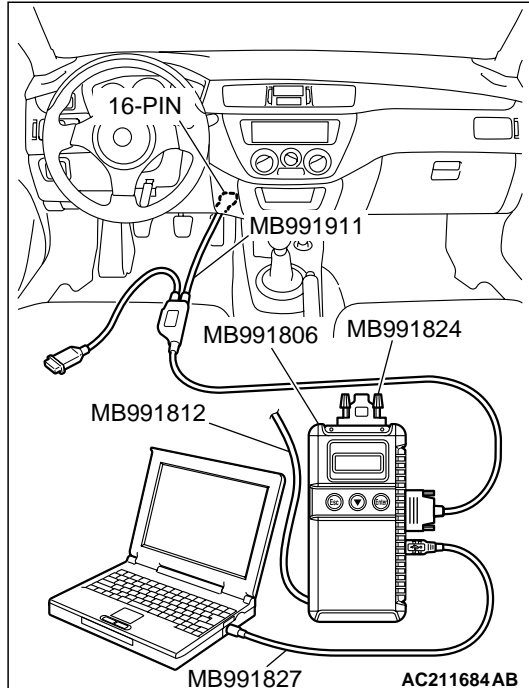
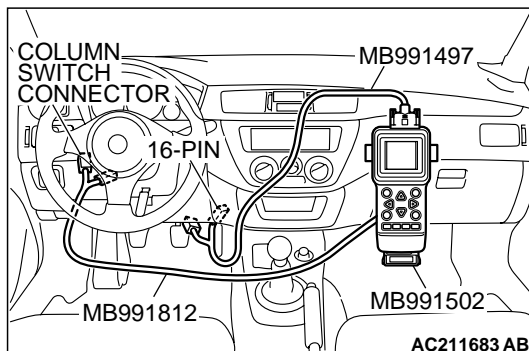
- Select "Interactive Diagnosis."
- Select "System select."
- Select "SWS."
- Select "SWS MONITOR."
- Select "ECU COMM Check."

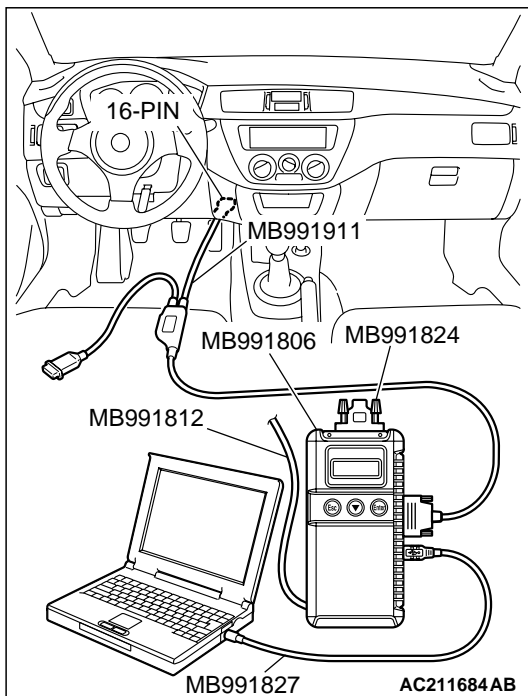
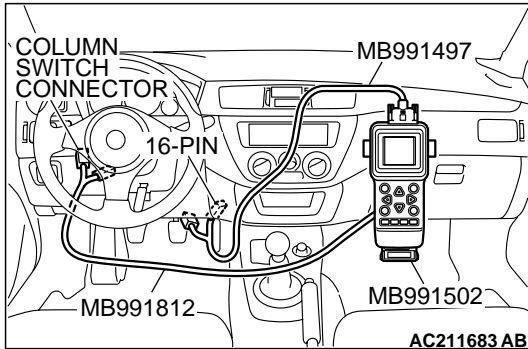
(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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.54B-42."





STEP 2. Check the input signal by using "Data List" menu of the SWS monitor.

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

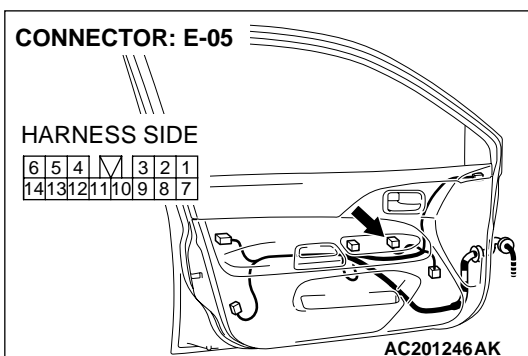
- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (2) Check that normal conditions are displayed 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?

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

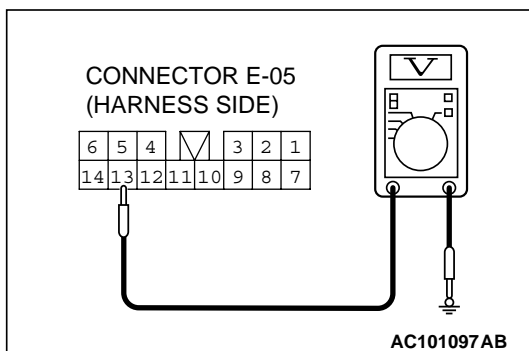
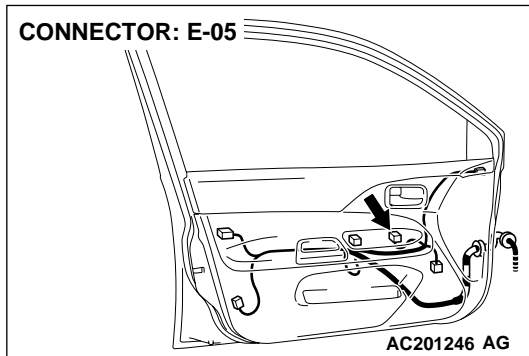


STEP 3. Check power window main switch connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 4.

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



STEP 4. Check the battery power supply circuit to the power window main switch. Measure the resistance at power window main switch connector E-05.

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

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

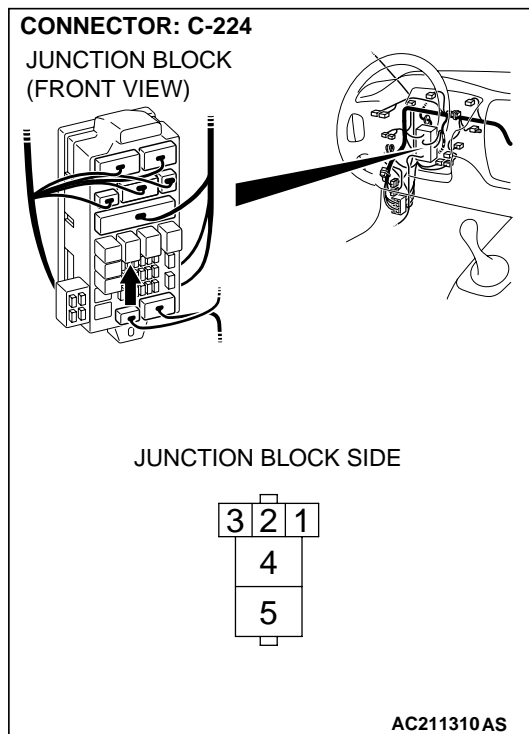
(3) Measure the voltage between terminal 13 and ground.

- The voltage should equal 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 5.

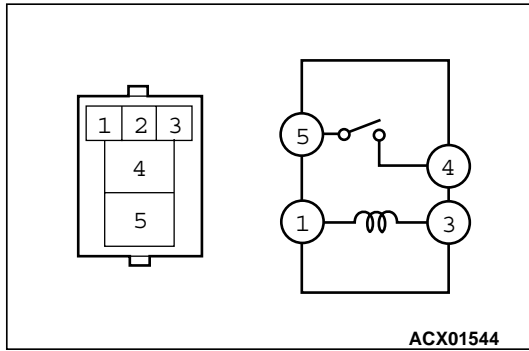


STEP 5. Check power window relay connector C-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window relay connector C-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](#). Verify that the power windows work normally.



STEP 6. Check the power window relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
<ul style="list-style-type: none"> Connect terminal 3 to the positive battery terminal Connect terminal 1 to the negative battery terminal 	4 – 5	Less than 2 ohms

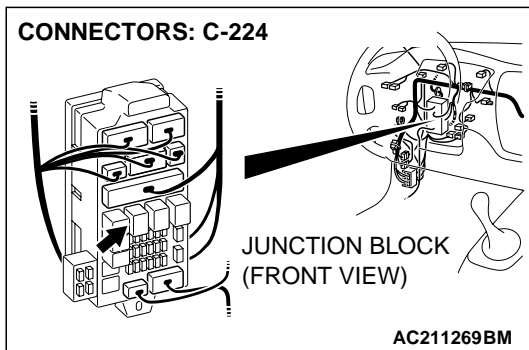
Q: Is the power window relay normal?

YES : Go to Step 7.

NO : Replace the power window relay. Verify that the power windows work normally.

STEP 7. Check the battery power supply circuit to the power window relay. Measure the voltage at power window relay connector C-224.

(1) Disconnect power window relay connector C-224 and measure the voltage available at the junction block side of the connector.



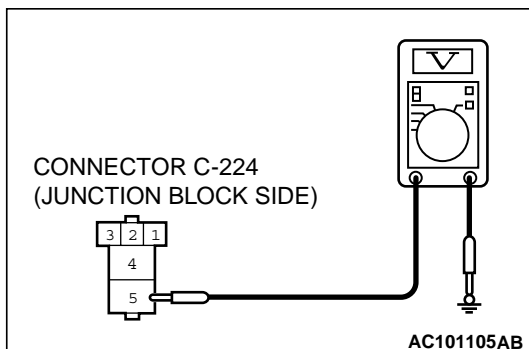
(2) Measure the voltage between terminal 5 and ground.

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

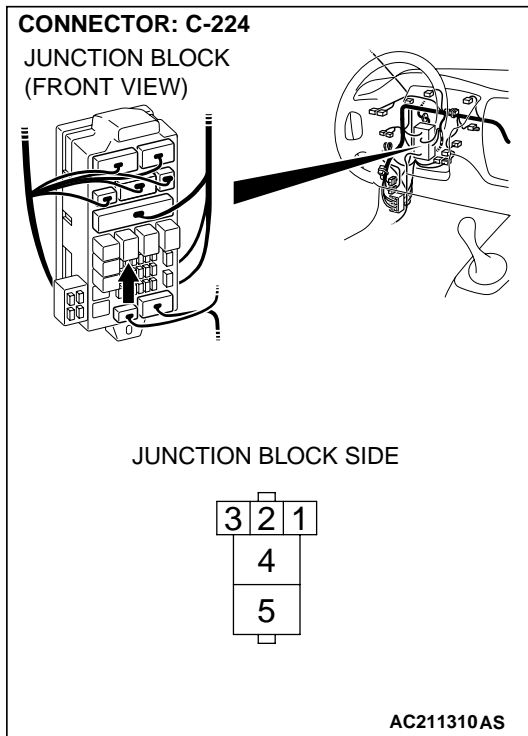
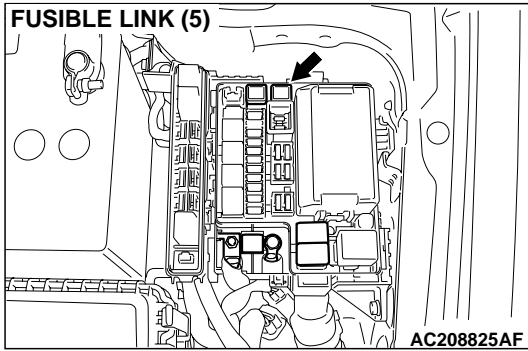
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

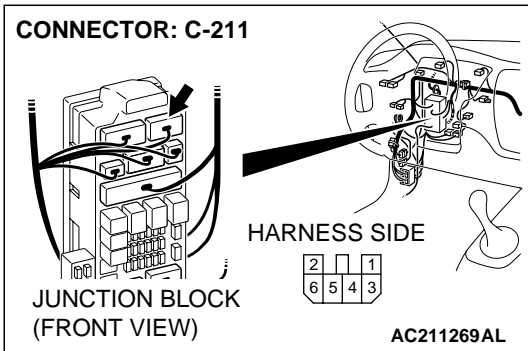
YES : Go to Step 9.

NO : Go to Step 8.



STEP 8. Check the wiring harness between power window relay connector C-224 (terminal 5) and fusible link (5).



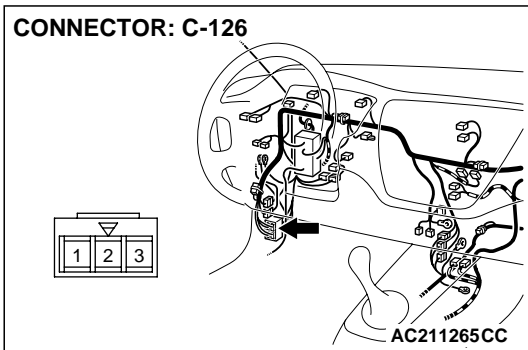


NOTE: Also check junction block connector C-211 and intermediate connector C-126 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or intermediate connectors C-126 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector C-224 (terminal 5) and fusible link (5) in good condition?

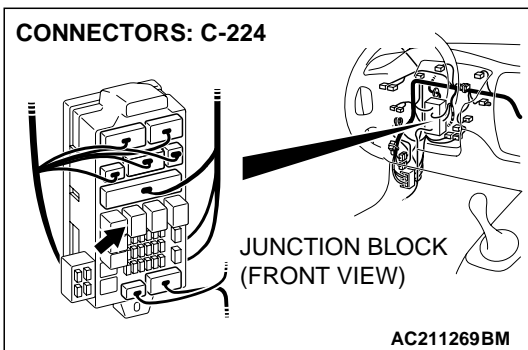
YES : No action is necessary and testing is complete.

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



STEP 9. Check the ground circuit to the power window relay. Measure the resistance at power window relay connector C-224.

(1) Disconnect power window relay connector C-224 and measure the resistance available at the junction block side of the connector.



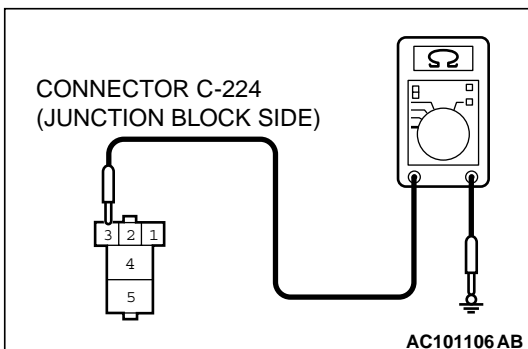
(2) Measure the resistance value between terminal 3 and ground.

- The resistance should equal 2 ohms or less.

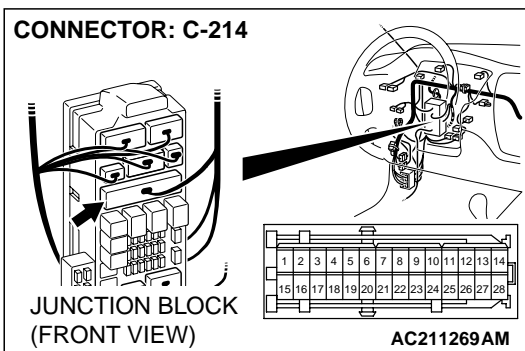
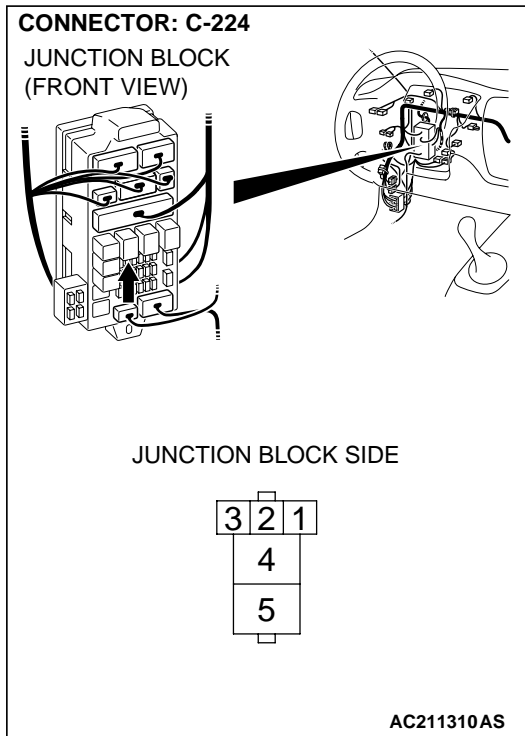
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 11.

NO : Go to Step 10.



STEP 10. Check the wiring harness between power window relay connector C-224 (terminal 3) and ground.



NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector C-224 (terminal 3) and ground in good condition?

YES : No action is necessary and testing is complete.

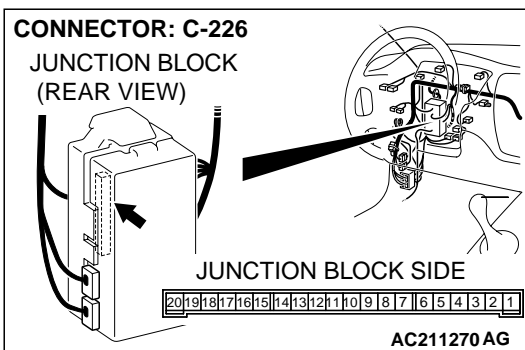
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the power windows work normally.

STEP 11. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

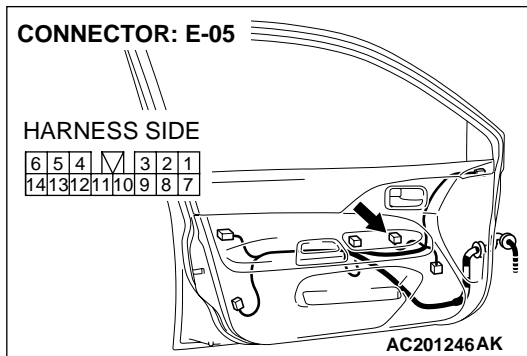
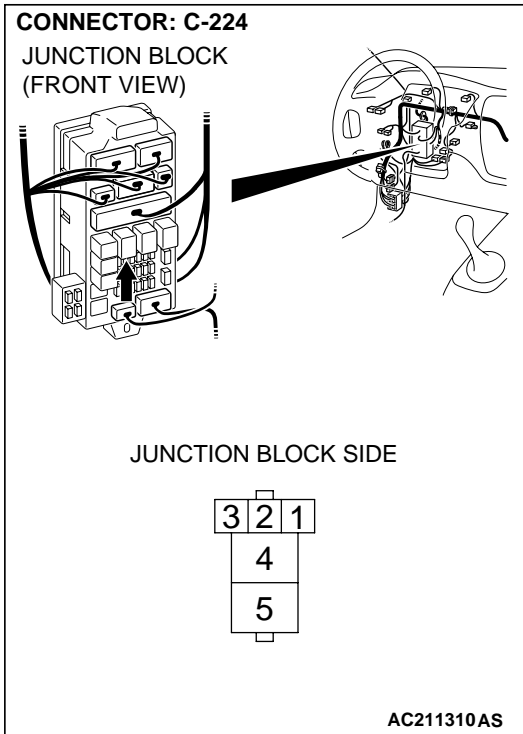
Q: Is ETACS-ECU connector C-226 in good condition?

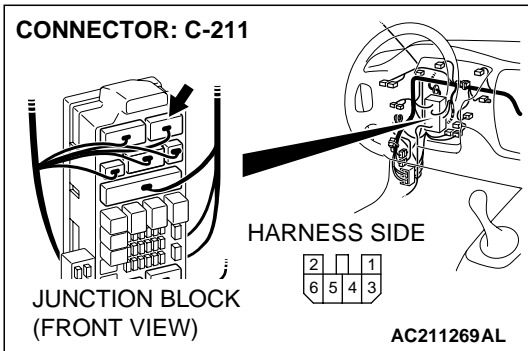
YES : Go to Step 12.

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

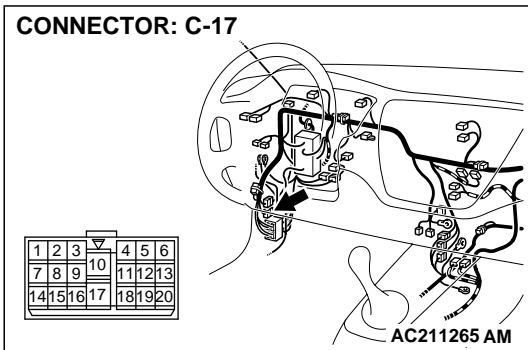


STEP 12. Check the wiring harness between power window relay connector C-224 (terminal 4) and power window main switch connector E-05 (terminal 13).



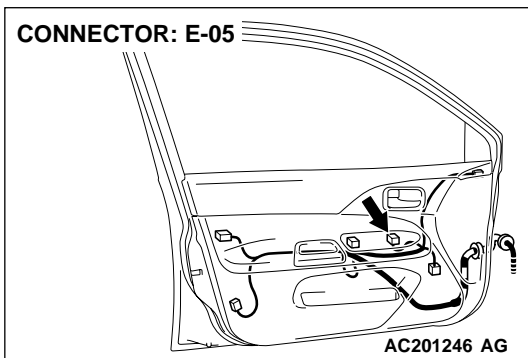


NOTE: Also check junction block connector C-211 and intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or intermediate connectors C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.



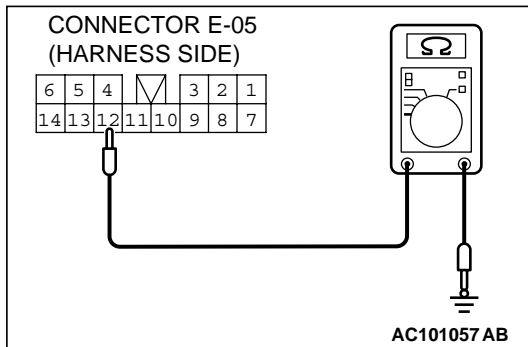
Q: Is the wiring harness between power window relay connector C-224 (terminal 4) and power window main switch connector E-05 (terminal 13) in good condition?

- YES :** Replace the ETACS-ECU. Verify that the power windows 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 work normally.



STEP 13. Check the ground circuit to the power window main switch. Measure the resistance at power window main switch connector E-05.

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



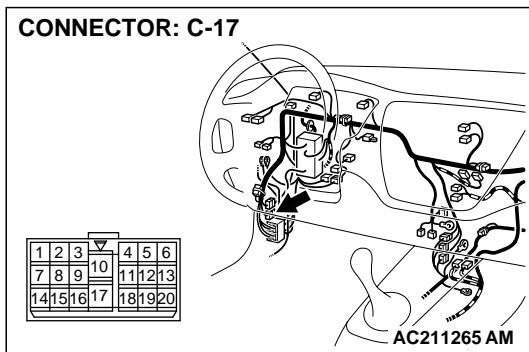
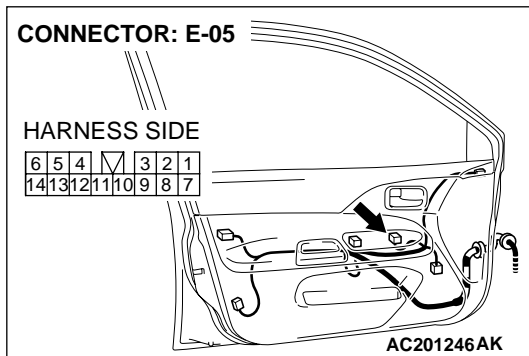
(2) Measure the resistance value between terminal 12 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

- YES :** Replace the power window main switch. Verify that the power windows work normally.
- NO :** Go to Step 14.

STEP 14. Check the wiring harness between power window main switch E-05 (terminal 12) and ground.



NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

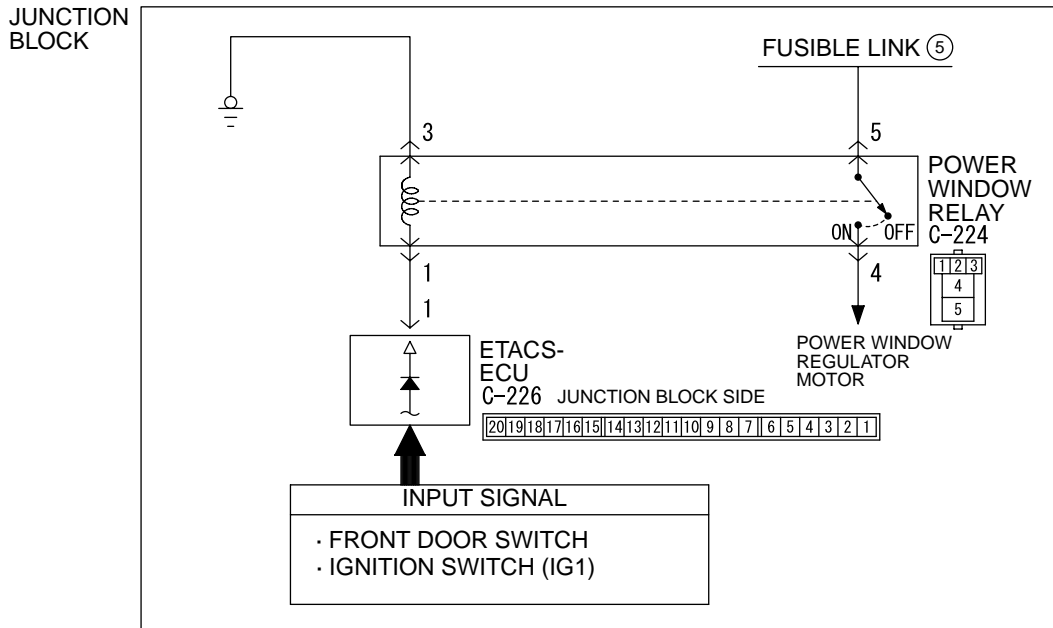
Q: Is the wiring harness between power window main switch connector E-05 (terminal 12) and ground in good condition?

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 work normally.

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Power Window Timer Function Circuit

W3J21M00AA

CIRCUIT OPERATION

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

- Ignition switch (IG1)
- Front door switch

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

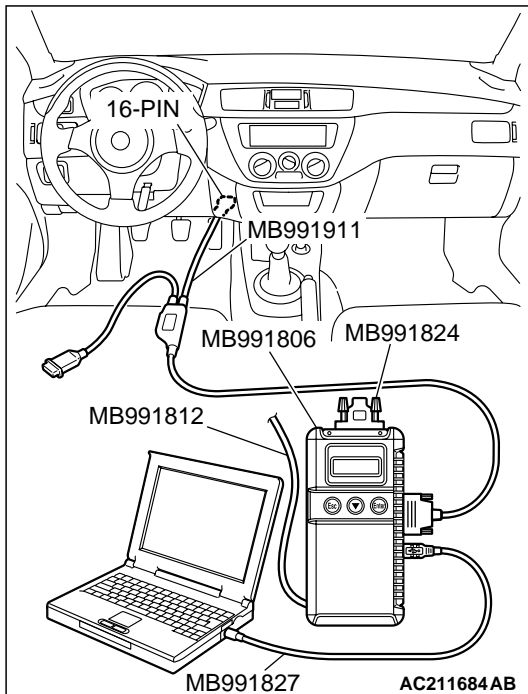
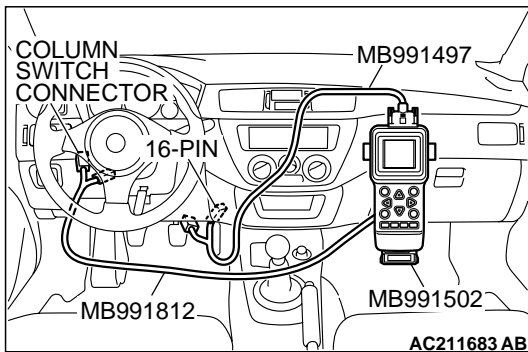
- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "SWS MONITOR."
- e. Select "ECU COMM Check."

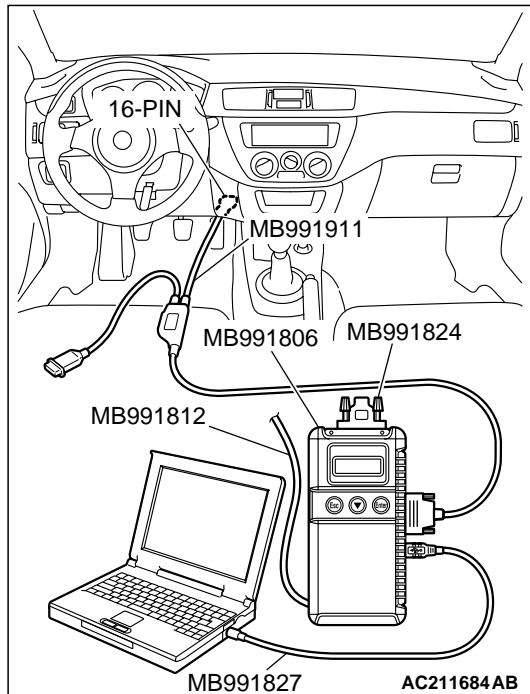
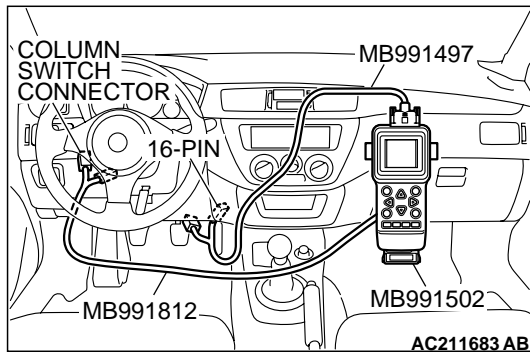
(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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.54B-42."





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 or MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (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: Are normal conditions displayed on the "IG SW (IG1)" and "FRONT DOOR SW"?

Normal conditions are displayed for all the items :

Replace the ETACS-ECU. Verify that the power window timer works normally.

Normal condition is not displayed on the "IG SW (IG1)" :

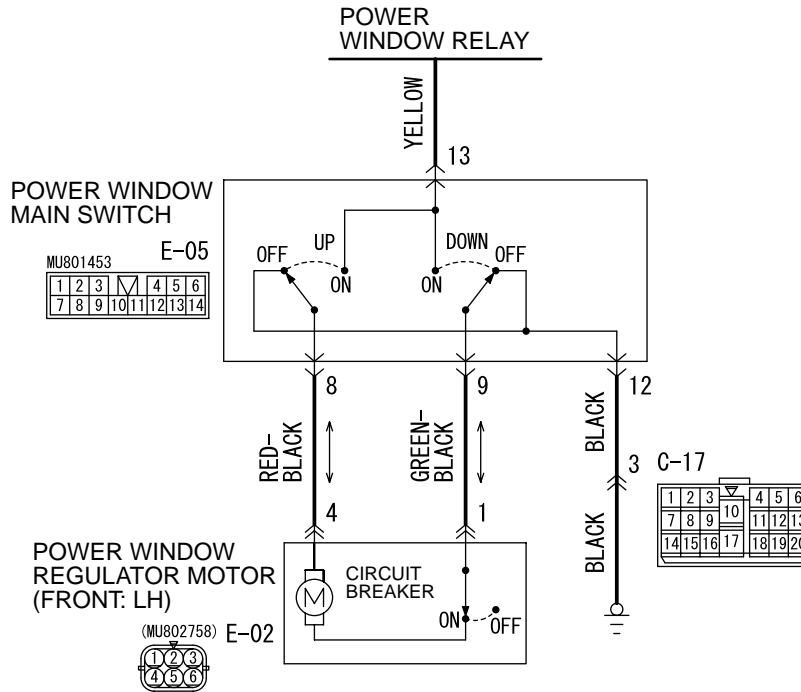
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed on the "FRONT DOOR SW" :

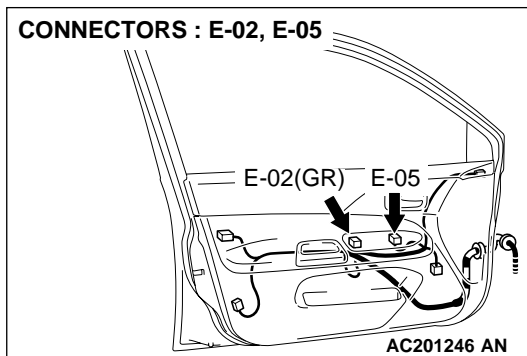
Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-454.](#)"

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

Power Window (Front: LH) Circuit



W3J15M04AA



CIRCUIT OPERATION

The power regulator window motor (FRONT: 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 power window regulator motor (FRONT: LH) may be defective.

TROUBLESHOOTING HINTS

- The power window main switch may be defective
- The power window regulator motor (FRONT: 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:

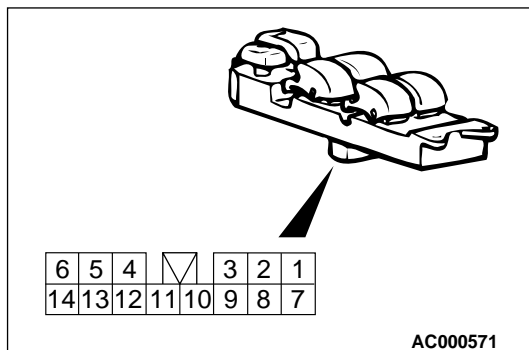
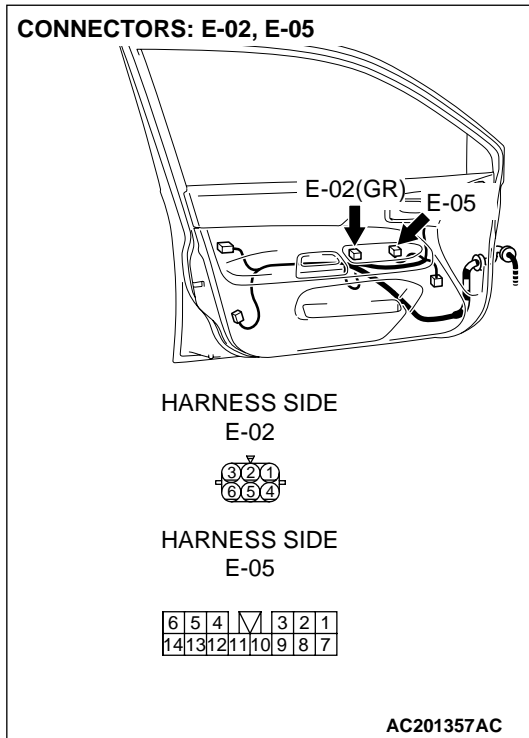
- MB991223: Harness Set

STEP 1. Check power window main switch connector E-05 and power window regulator motor (FRONT: LH) connector E-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector E-05 and power window regulator motor (FRONT: LH) connector E-02 in good condition?

YES : Go to Step 2.

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



STEP 2. Check the power window main switch.

- (1) Remove the power window main switch. Refer to GROUP 42, Door - Door Glass and Regulator [P.42-36](#).
- (2) Check continuity while power window main switch is moved to "UP" and "DOWN" position.

FRONT (LH) SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	8 – 13, 9 – 12	Less than 2 ohms
OFF	8 – 9, 8 – 12, 9 – 12	Less than 2 ohms
DOWN	8 – 12, 9 – 13	Less than 2 ohms

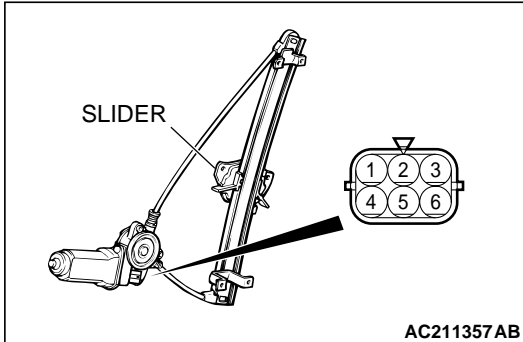
Q: Is the power window main switch normal?

YES : Go to Step 3.

NO : Replace the power window main switch. When the power window main switch is operated, the front power window (LH) should open and close normally.

STEP 3. Check the front power regulator window motor (LH).

- (1) Remove the power window regulator motor (FRONT: LH). Refer to GROUP 42, Door - Door Glass and Regulator P.42-36.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.



BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none"> • Connect terminal 1 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	UP
<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 1 to the positive battery terminal 	DOWN

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

YES : Go to Step 4.

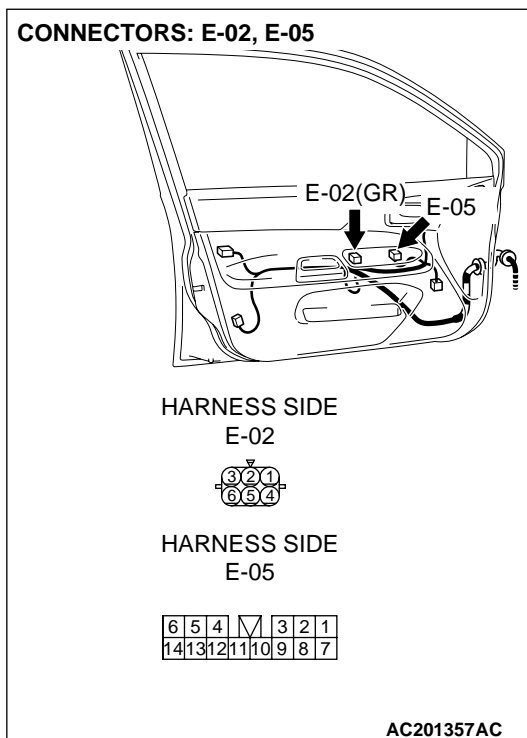
NO : Replace the power window regulator motor (FRONT: LH). When the power window main switch is operated, the front power window (LH) should open and close normally.

STEP 4. Check the wiring harness between power window main switch connector E-05 (terminal 8 and 9) and power window regulator motor (FRONT: LH) connector E-02 (terminal 4 and 1).

Q: Is the wiring harness between power window main switch connector E-05 (terminal 8 and 9) and power window motor (FRONT: LH) connector E-02 (terminal 4 and 1) in good condition?

YES : No action is necessary and testing is complete.

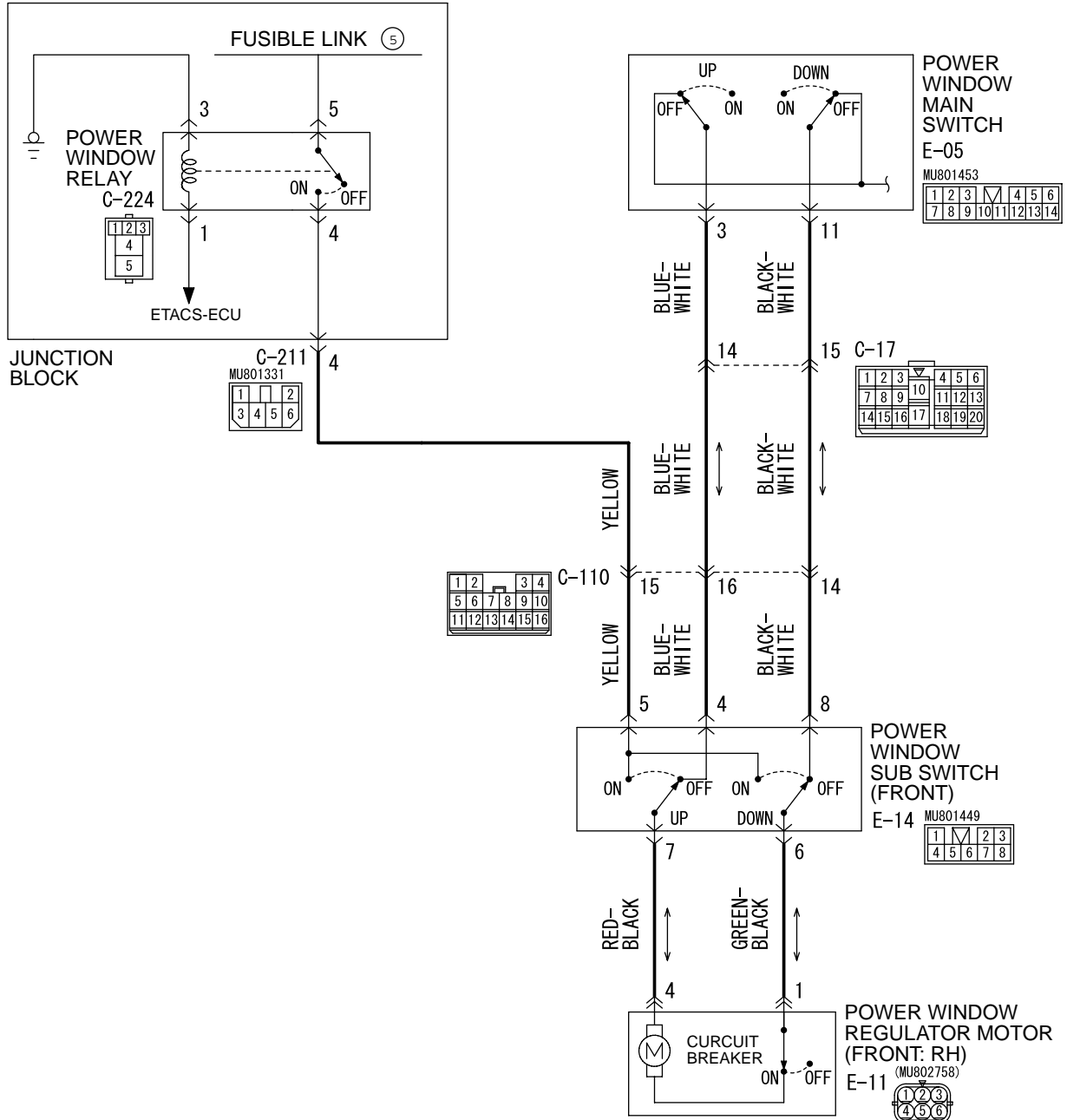
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the power window main switch is operated, the front power window (LH) should open and close normally.



INSPECTION PROCEDURE D-4: Power Windows: Power windows does not work normally by operating the front and rear sub switches.

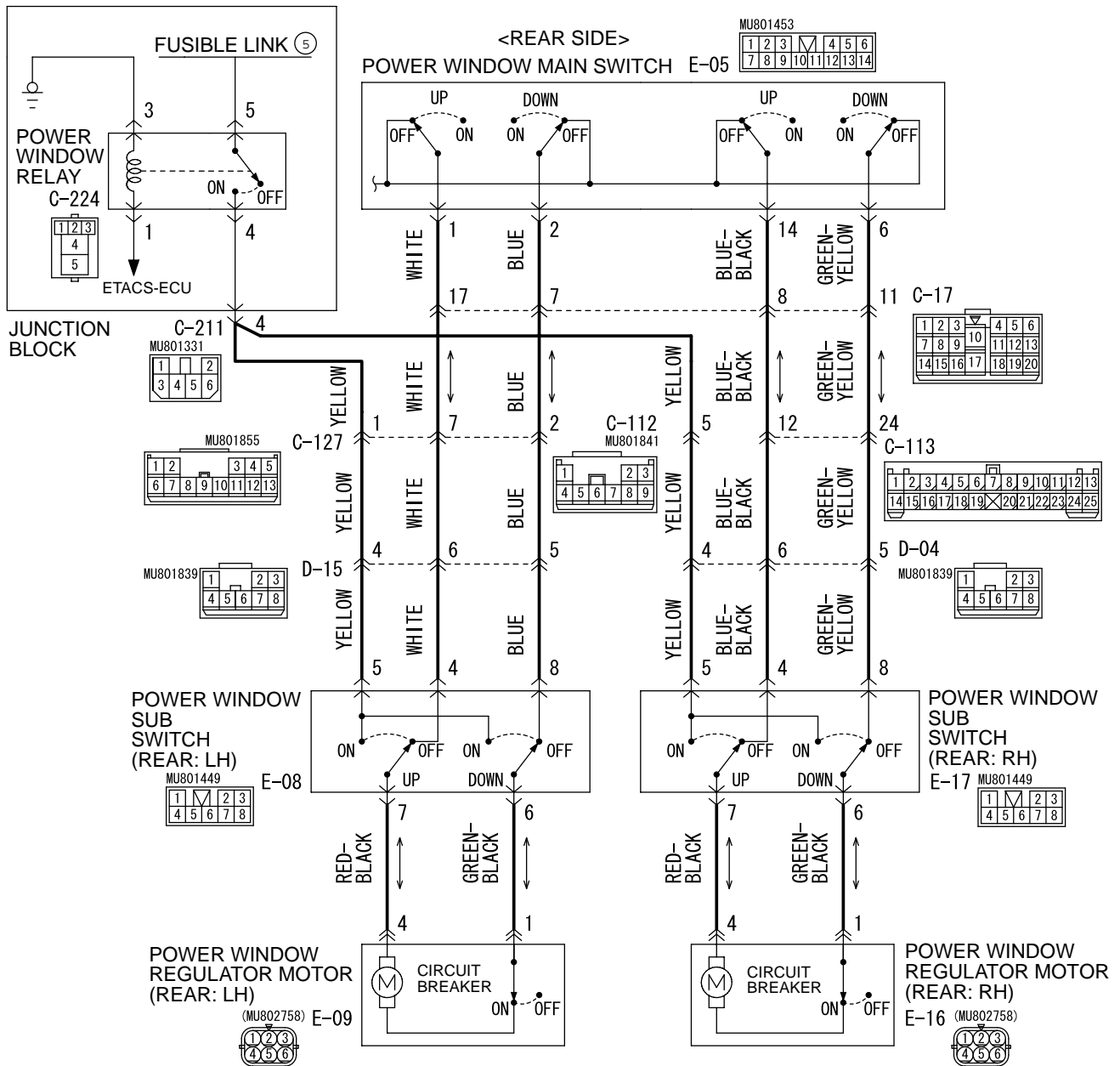
Power Window Sub Switch Circuit

<PASSENGER'S SIDE>

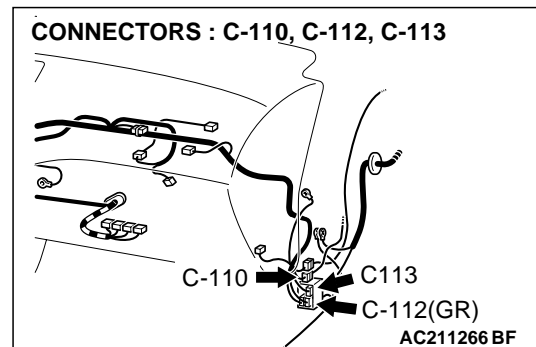
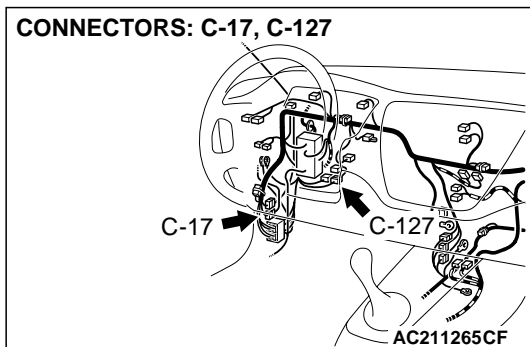


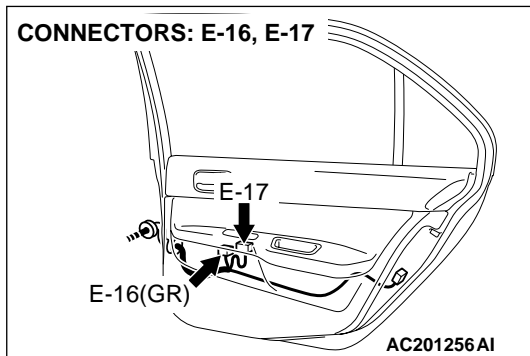
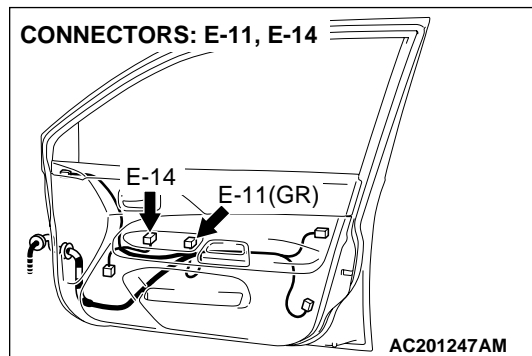
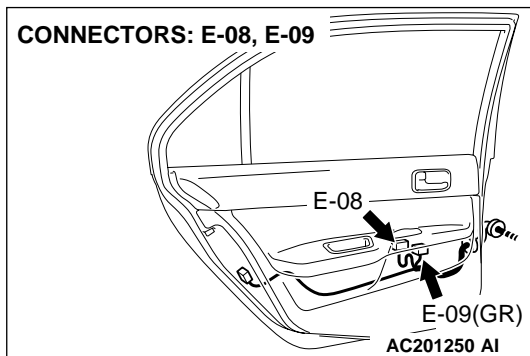
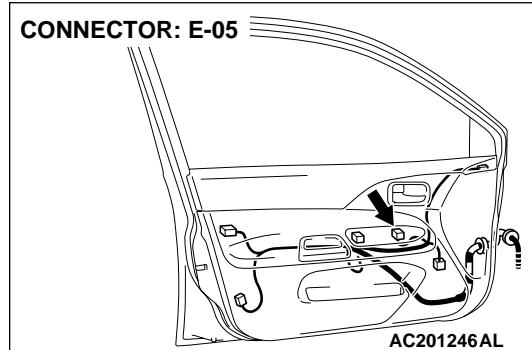
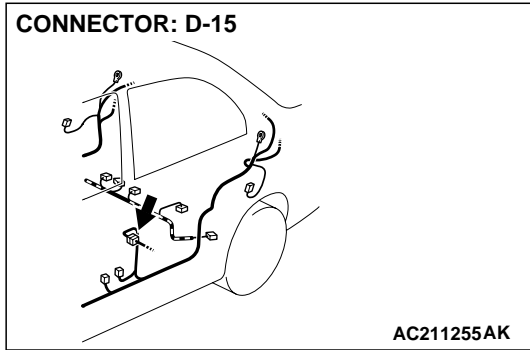
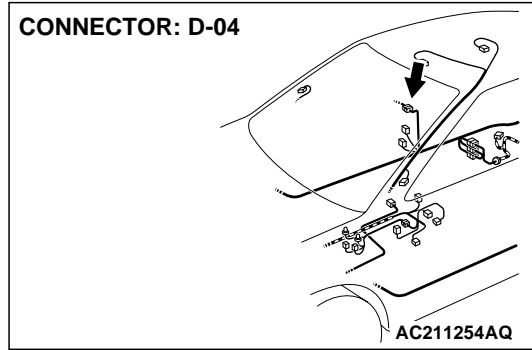
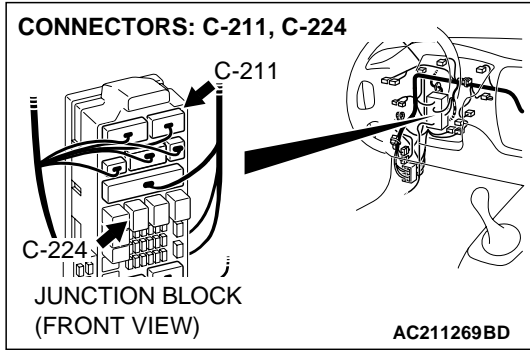
W3J15M05AA

Power Window Sub Switch Circuit



W3J15M06AA





CIRCUIT OPERATION

Power window regulator 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 regulator 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 power window sub switch (FRONT) may be defective
- The power window sub switch (REAR: LH) may be defective
- The power window sub-switch (REAR: RH) may be defective
- The power window regulator motor (FRONT: RH) may be defective
- The power window regulator motor (REAR: LH) may be defective
- The power window regulator motor (REAR: 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

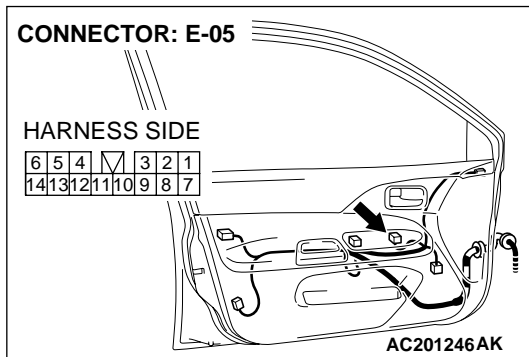
STEP 1. Check power window main switch connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 2.

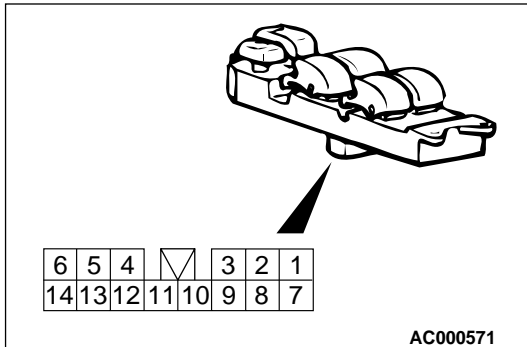
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. When the front power window sub switch (FRONT) is operated, the front power window (RH) should open or close normally.



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

- (1) Remove the power window main switch. Refer to GROUP 42, Door - Door Glass and Regulator P.42-36.
- (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		
power window (FRONT: RH)	lock	UP	3 – 13	Less than 2 ohms
		OFF	3 – 11	Less than 2 ohms
		DOWN	11 – 13	Less than 2 ohms
	unlock	UP	3 – 13, 11 – 12	Less than 2 ohms
		OFF	3 – 11, 3 – 12, 11 – 12	Less than 2 ohms
		DOWN	3 – 12, 11 – 13	Less than 2 ohms
power window (REAR: LH)	lock	UP	1 – 13	Less than 2 ohms
		OFF	1 – 2	Less than 2 ohms
		DOWN	2 – 13	Less than 2 ohms
	unlock	UP	1 – 13, 2 – 12	Less than 2 ohms
		OFF	1 – 2, 1 – 12, 2 – 12	Less than 2 ohms
		DOWN	1 – 12, 2 – 13	Less than 2 ohms

SWITCHES TO BE CHECKED	SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
	power window lock switch	Power window switches to be checked		
power window (REAR: RH)	lock	UP	13 – 14	Less than 2 ohms
		OFF	6 – 14	Less than 2 ohms
		DOWN	6 – 13	Less than 2 ohms
	unlock	UP	13 – 14, 6 – 12	Less than 2 ohms
		OFF	6 – 12, 6 – 14, 12 – 14	Less than 2 ohms
		DOWN	6 – 13, 12 – 14	Less than 2 ohms

Q: Is the power window main switch normal?

YES : Go to Step 3.

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

STEP 3. Check the power window lock switch.

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

YES : Go to Step 4.

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

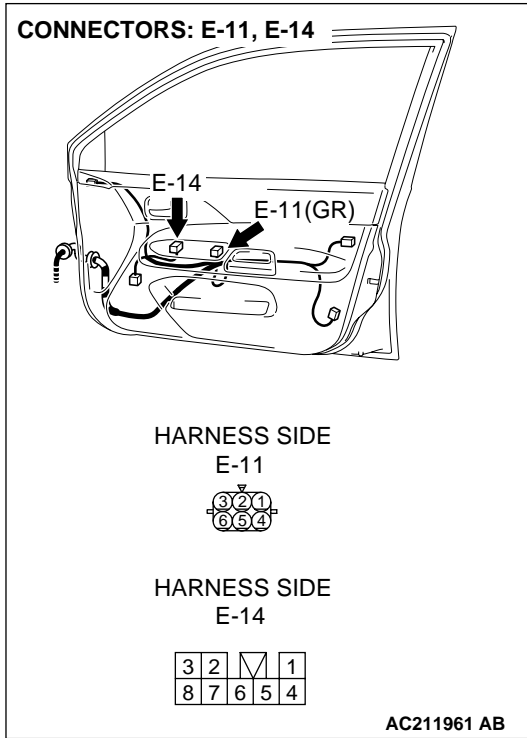
STEP 4. Check which door window is not opened or closed

Q: Which door window is opened or closed?

front door (RH) : Go to Step 5.

Rear door (LH) : Go to Step 19.

Rear door (RH) : Go to Step 33.

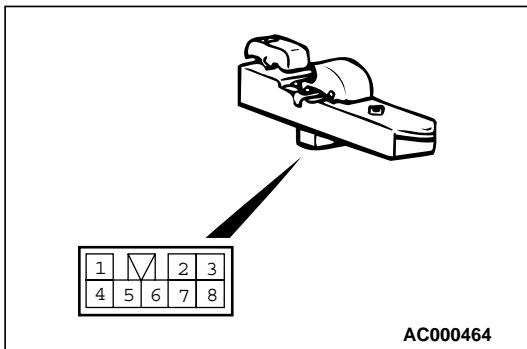


STEP 5. Check power window sub switch (FRONT) connector E-14 and power window regulator motor (FRONT: RH) connector E-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window sub switch (FRONT) connector E-14 and power window regulator motor (FRONT: RH) connector E-11 in good condition?

YES : Go to Step 6.

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



STEP 6. Check the power window sub switch (FRONT) for continuity.

- (1) Remove the power window sub switch (FRONT). Refer to GROUP 42, Door - Door Glass and Regulator [P.42-36](#).
- (2) Check continuity when the power window sub switch (FRONT: RH) is operated to "UP" or "DOWN" position.

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

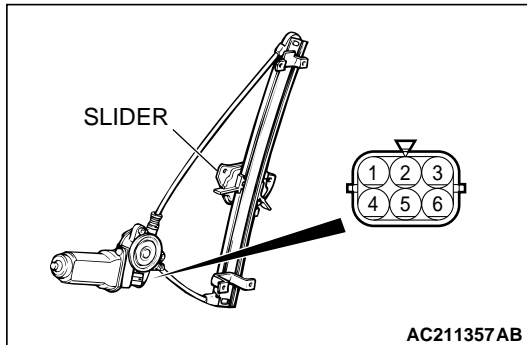
Q: Is the power window sub switch (FRONT: RH) normal?

YES : Go to Step 7.

NO : Replace the power window sub switch (FRONT). When the power window sub switch (FRONT) is operated, the power window (FRONT) should open or close normally.

STEP 7. Check the power window regulator motor (FRONT: RH).

- (1) Remove the front power regulator assembly (RH). Refer to GROUP 42, Door - Door Glass and Regulator P.42-36.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.



BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none"> • Connect terminal 1 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	UP
<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 1 to the positive battery terminal 	DOWN

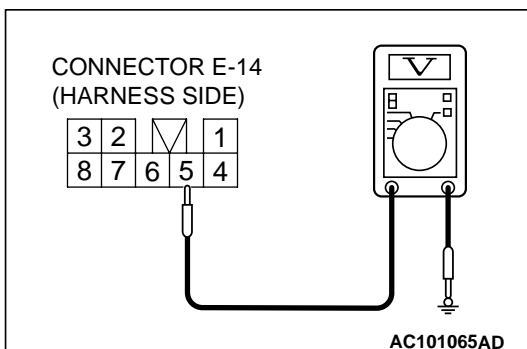
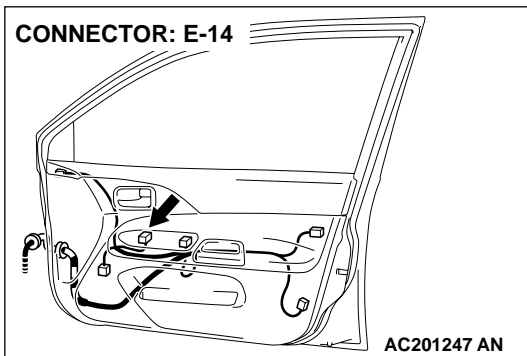
Q: Is the power window regulator motor (FRONT: RH) normal?

YES : Go to Step 8.

NO : Replace the front power regulator assembly (RH).
When the power window sub switch (FRONT) is operated, the front power window (RH) should open or close normally.

STEP 8. Check the battery power supply circuit to the power window sub switch (FRONT). Measure the voltage at power window sub switch (FRONT) connector E-14.

- (1) Disconnect power window sub switch (FRONT) connector E-14 and measure the voltage available at the wiring harness side of the connector.

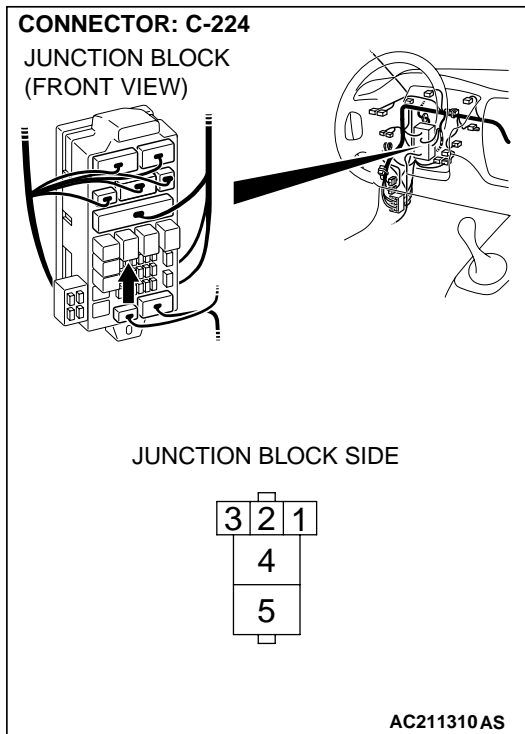


- (2) Measure the voltage between terminal 5 and ground.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 11.

NO : Go to Step 9.



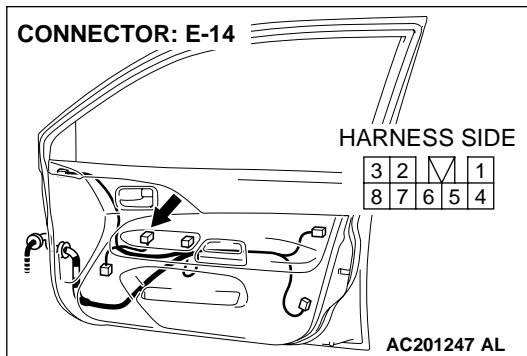
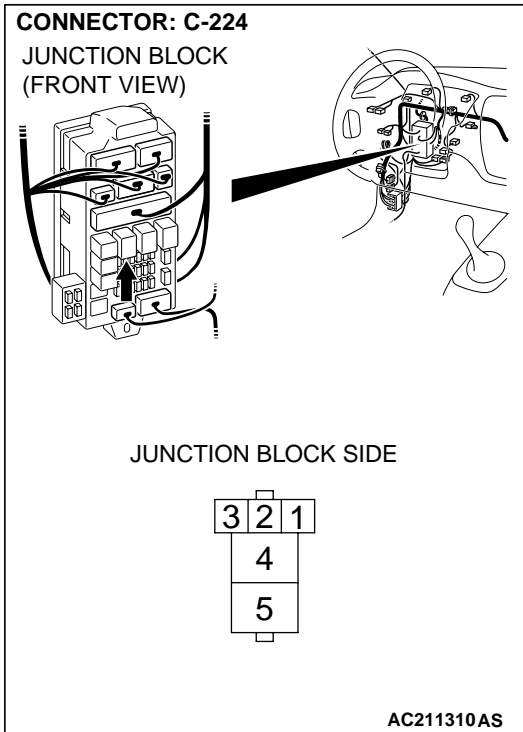
STEP 9. Check power window relay connector C-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

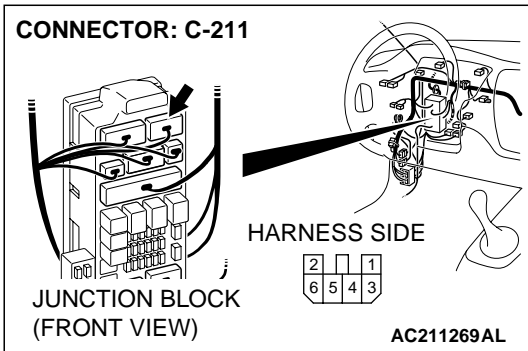
Q: Is power window relay connector C-224 in good condition?

YES : Go to Step 10.

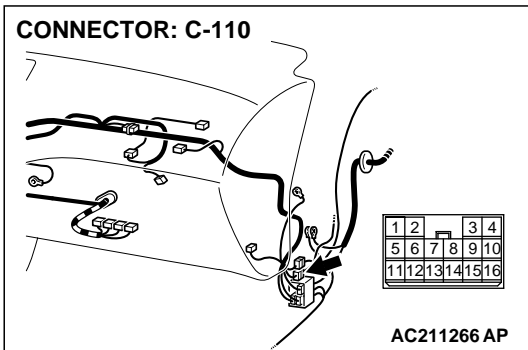
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). When the power window sub switch (FRONT) is operated, the front power window (RH) should open or close normally.

STEP 10. Check the wiring harness between power window relay connector C-224 (terminal 4) and power window sub switch (FRONT) connector E-14 (terminal 5).





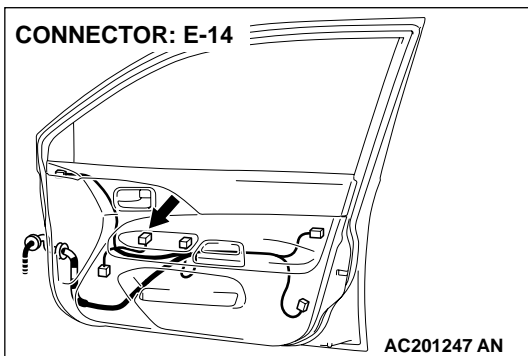
NOTE: Also check junction block connector C-211 and intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or intermediate connectors C-110 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.



Q: Is the wiring harness between power window relay connector C-224 (terminal 4) and power window sub switch (FRONT) connector E-14 (terminal 5) in good condition?

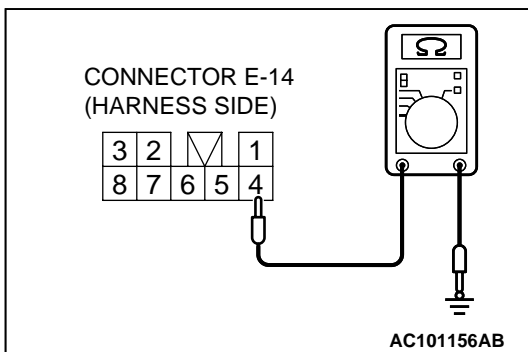
YES : No action is necessary and testing is complete.

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. When the power window sub switch (FRONT) is operated, the front power window (RH) should open or close normally.



STEP 11. Check the ground circuit to the power window sub switch (FRONT). Measure the voltage at power window sub switch (FRONT) connector E-14.

(1) Disconnect power window sub switch (FRONT) connector E-14 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 4 and ground.

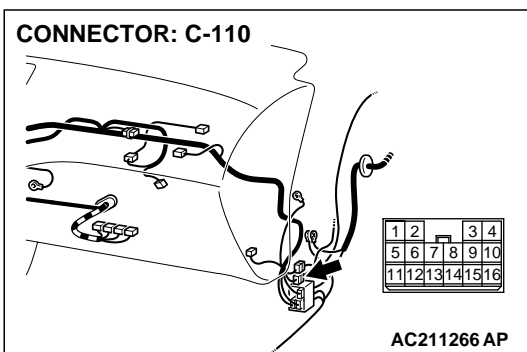
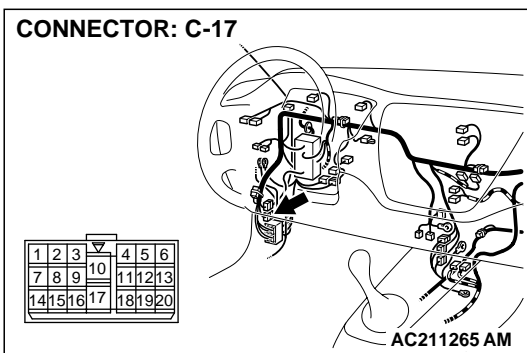
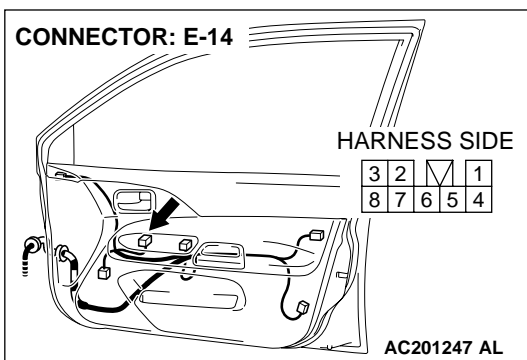
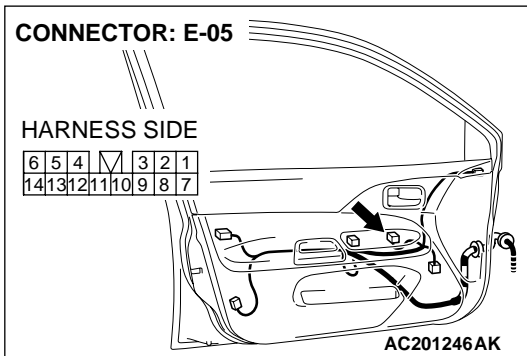
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 13.

NO : Go to Step 12.

STEP 12. Check the wiring harness between power window main switch connector E-05 (terminal 3) and power window sub switch (FRONT) connector E-14 (terminal 4).

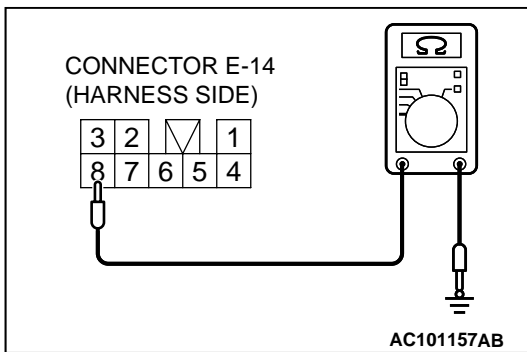
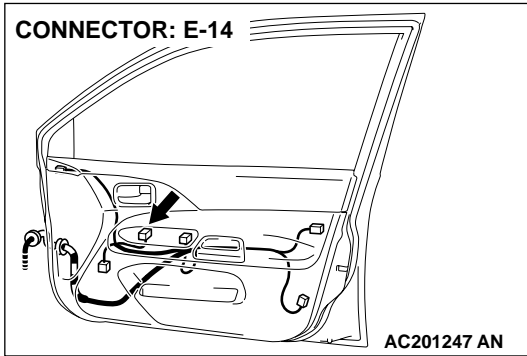


NOTE: Also check intermediate connectors C-110 and C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-110 or C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-05 (terminal 3) and power sub switch (FRONT) connector E-14 (terminal 4) in good condition?

YES : Replace the power window main switch. When the power window sub switch (FRONT) is operated, the front power window (RH) should open or close normally.

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



STEP 13. Check the ground circuit to the power window sub switch (FRONT). Measure the voltage at power window sub switch (FRONT) connector E-14.

(1) Disconnect power window sub switch (FRONT) connector E-14 and measure the resistance available at the wiring harness side of the connector.

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

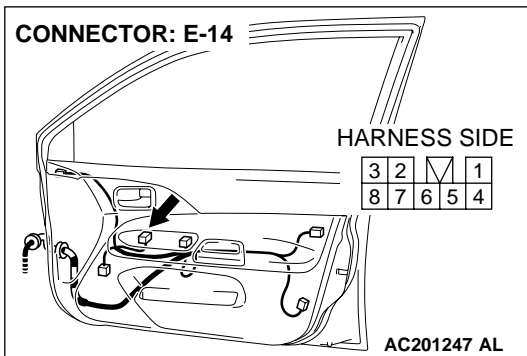
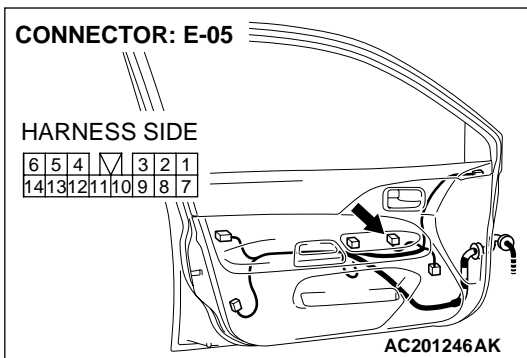
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

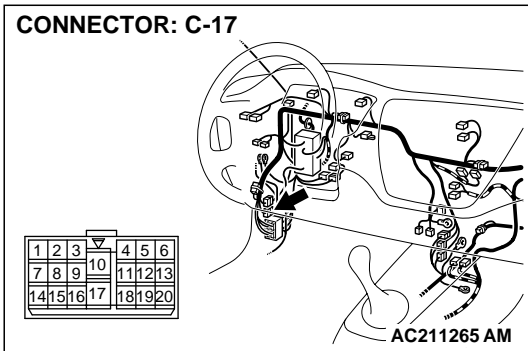
YES : Go to Step 15.

NO : Go to Step 14.

STEP 14. Check the wiring harness between power window main switch connector E-05 (terminal 11) and power window sub switch (FRONT) connector E-14 (terminal 8).

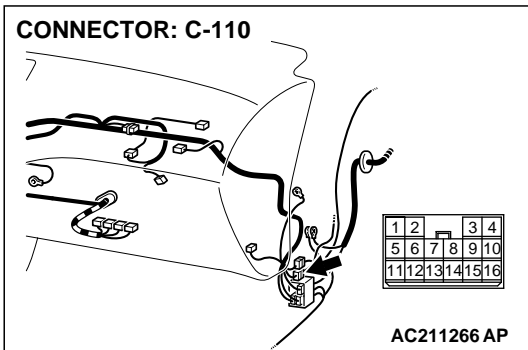


CONNECTOR: C-17



NOTE: Also check intermediate connectors C-110 and C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-110 or C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR: C-110

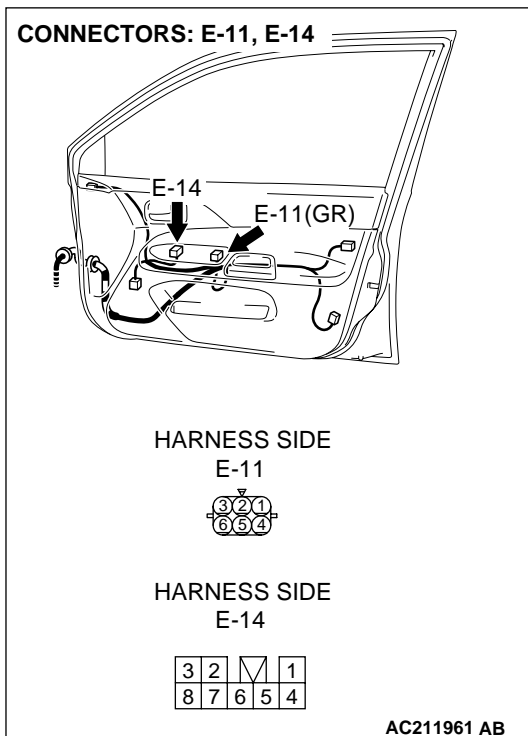


Q: Is the wiring harness between power window main switch connector E-05 (terminal 11) and power sub switch (FRONT) connector E-14 (terminal 8) in good condition?

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

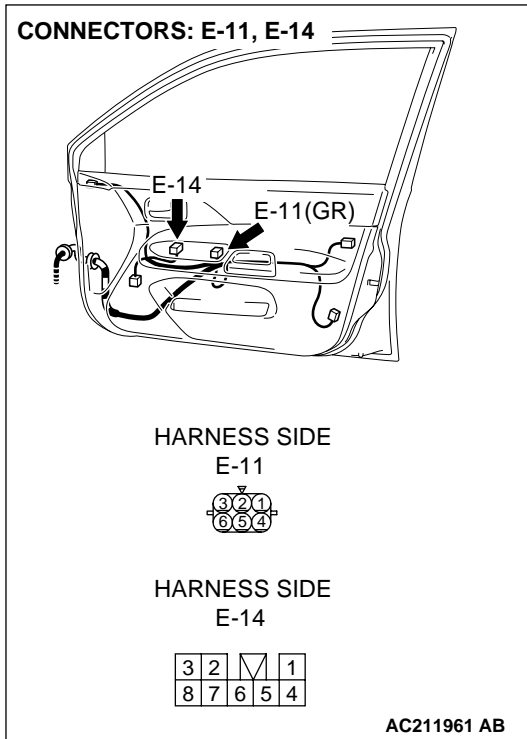
STEP 15. Check power window sub switch (FRONT) connector E-14 and power window regulator motor (FRONT: RH) connector E-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CONNECTORS: E-11, E-14



Q: Are power window sub switch (FRONT) connector E-14 and power window regulator motor (FRONT: RH) connector E-11 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. When the power window sub switch (FRONT) is operated, the front power window (RH) should open or close normally.

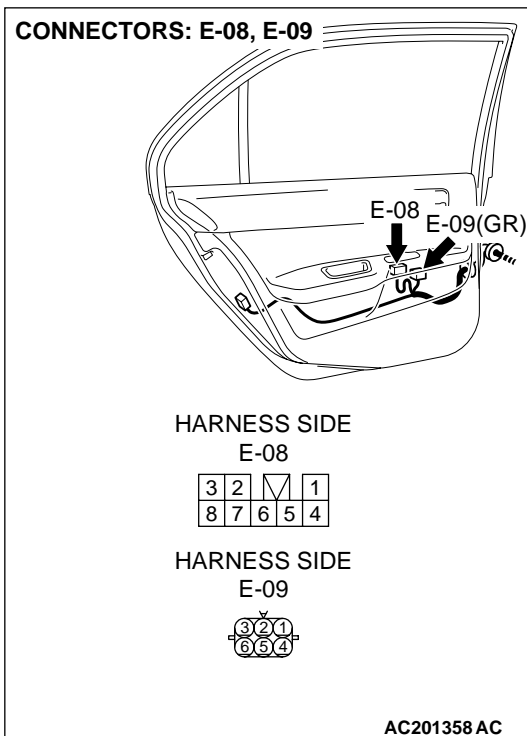


STEP 16. Check the wiring harness between power window sub switch (FRONT) connector E-14 (terminal 6 and 7) and power window regulator motor (FRONT: RH) connector E-11 (terminal 1 and 4).

Q: Is the wiring harness between power window sub switch (FRONT) connector E-14 (terminal 6 and 7) and power window regulator motor (FRONT: RH) connector E-11 (terminal 1 and 4) in good condition?

YES : No action is necessary and testing is complete.

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



STEP 17. Check power window sub switch (REAR: LH) connector E-08 and power window regulator motor (REAR: LH) connector E-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

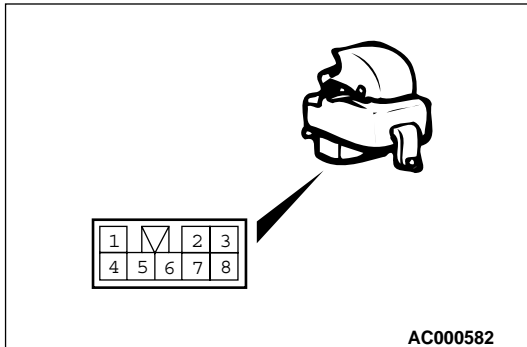
Q: Are power window sub switch (REAR: LH) connector E-08 and power window regulator motor (REAR: LH) connector E-09 in good condition?

YES : Go to Step 18.

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

STEP 18. Check the power window sub switch (REAR: LH) for continuity.

- (1) Remove the power window sub switch (REAR: LH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-36.
- (2) Check continuity when the power window sub switch (REAR: LH) is operated to "UP" or "DOWN" position.



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

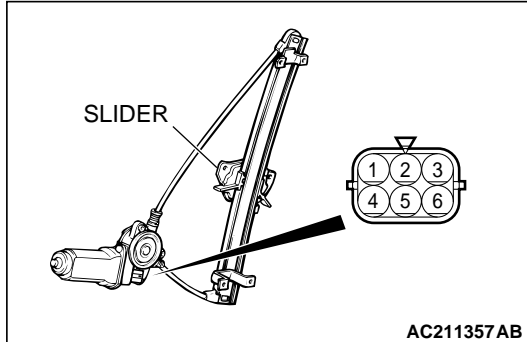
Q: Is the power window sub switch (REAR: LH) normal?

YES : Go to Step 19.

NO : Replace the power window sub switch (REAR: LH).
When the power window sub switch (REAR: LH) is operated, the rear power window (LH) should open or close normally.

STEP 19. Check the power window regulator motor (REAR: LH).

- (1) Remove the rear power regulator assembly (LH). Refer to GROUP 42, Door - Door Glass and Regulator P.42-36.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

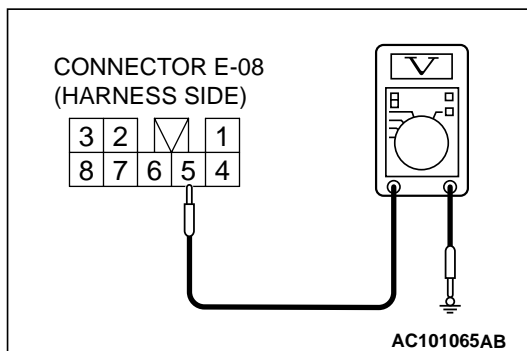
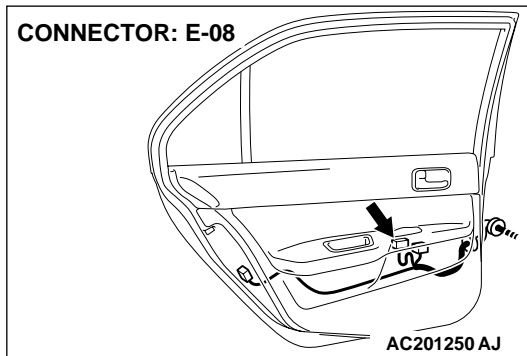


BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none"> • Connect terminal 1 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	UP
<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 1 to the positive battery terminal 	DOWN

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

YES : Go to Step 20.

NO : Replace the rear power regulator assembly (LH).
When the power window sub switch (REAR: LH) is operated, the rear power window (LH) should open or close normally.



STEP 20. Check the battery power supply circuit to the power window sub switch (REAR: LH). Measure the voltage at power window sub switch (REAR: LH) connector E-08.

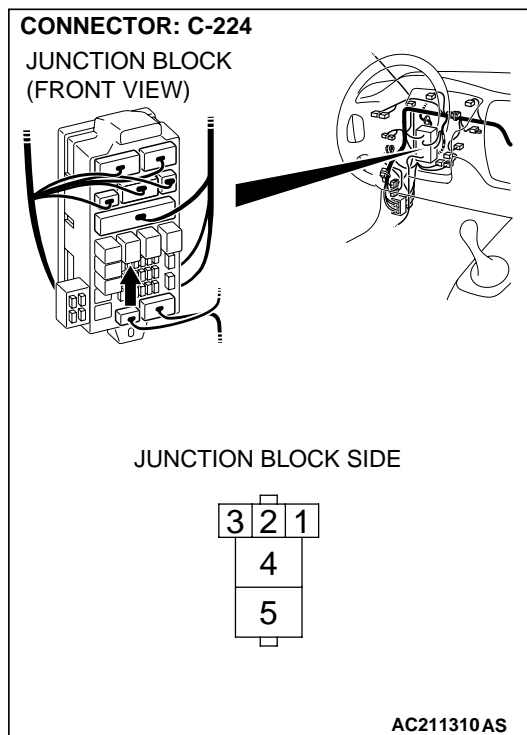
- (1) Disconnect power window sub switch (REAR: LH) connector E-08 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.

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

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

YES : Go to Step 25.

NO : Go to Step 21.



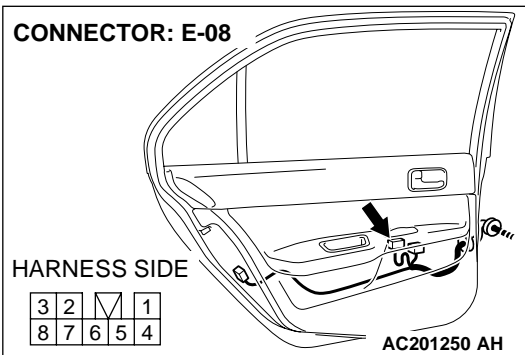
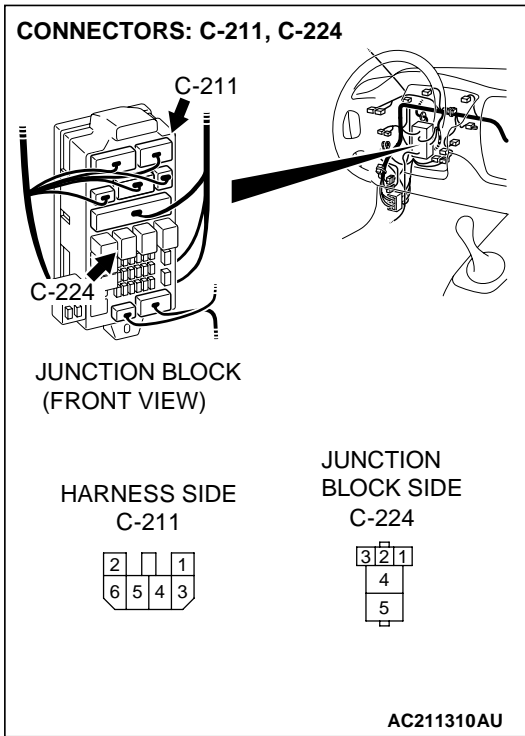
STEP 21. Check power window relay connector C-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

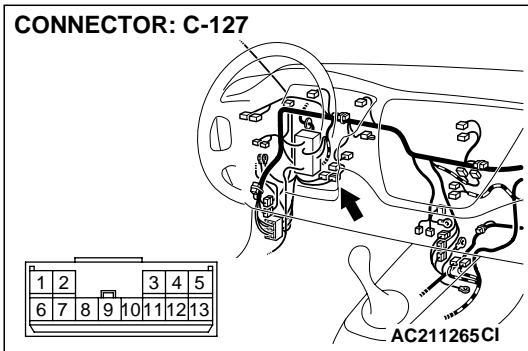
Q: Is power window relay connector C-224 in good condition?

YES : Go to Step 22.

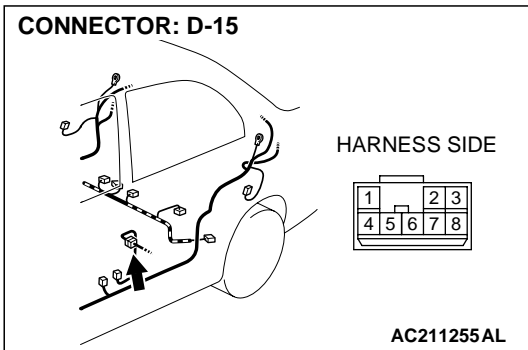
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). When the rear power window sub switch (REAR: LH) is operated, the rear power window (LH) should open or close normally.

STEP 22. Check the wiring harness between power window relay connector C-224 (terminal 4) and power window sub switch (REAR: LH) connector E-08 (terminal 5).





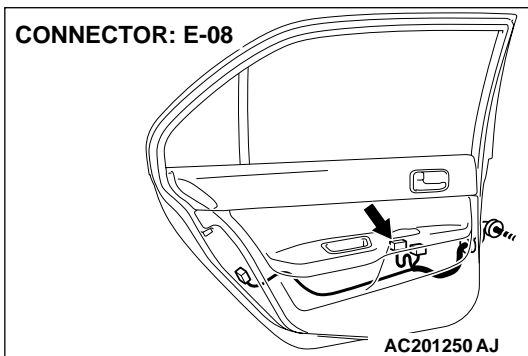
NOTE: Also check junction block connector C-211 and intermediate connectors C-127 and D-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211, intermediate connector C-127 or D-15 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.



Q: Is the wiring harness between power window relay connector C-224 (terminal 4) and power window sub switch (REAR: LH) connector E-08 (terminal 5) in good condition?

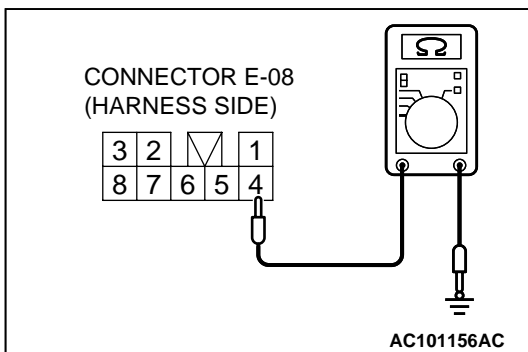
YES : No action is necessary and testing is complete.

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. When the power window sub switch (REAR: LH) is operated, the rear power window (LH) should open or close normally.



STEP 23. Check the ground circuit to the power window sub switch (REAR: LH). Measure the resistance at power window sub switch (REAR: LH) connector E-08.

(1) Disconnect power window sub switch (REAR: LH) connector E-08 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 4 and ground.

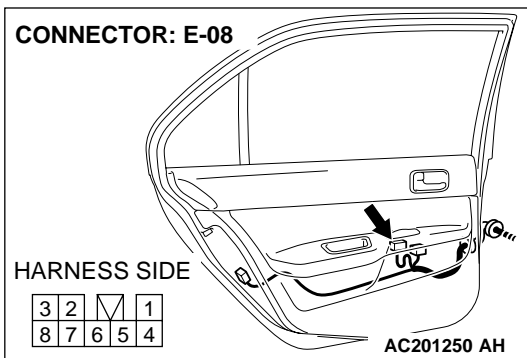
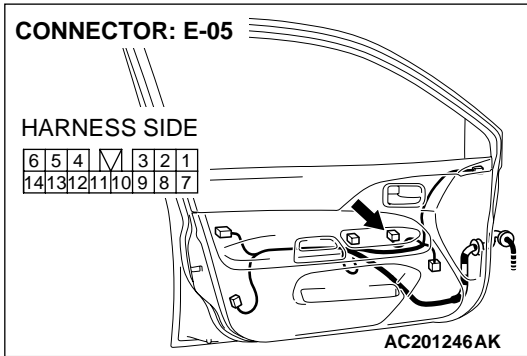
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

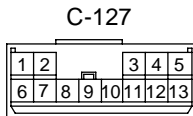
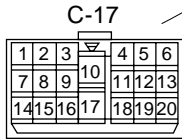
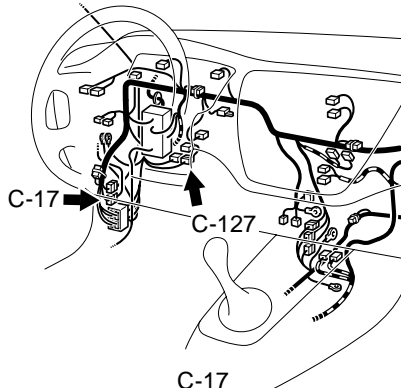
YES : Go to Step 25.

NO : Go to Step 24.

STEP 24. Check the wiring harness between power window main switch connector E-05 (terminal 1) and power window sub switch (REAR: LH) connector E-08 (terminal 4).



CONNECTORS: C-17, C-127



AC211307BB

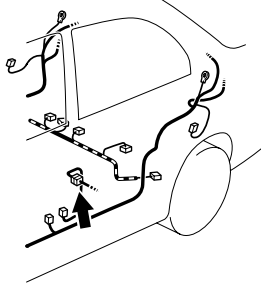
NOTE: Also check intermediate connectors, D-15, C-127 and C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-15, C-127 or C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-05 (terminal 1) and power sub switch (REAR: LH) connector E-08 (terminal 4) in good condition?

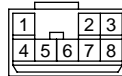
YES : Replace the power window main switch. When the power window sub switch (REAR: LH) is operated, the rear power window (LH) should open or close normally.

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

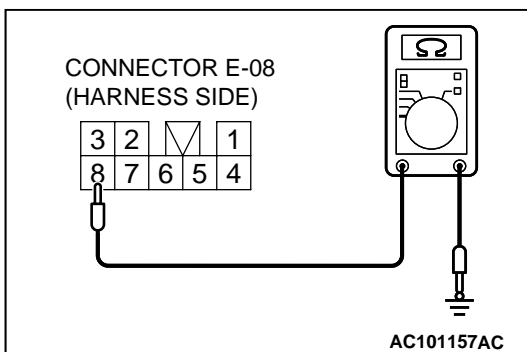
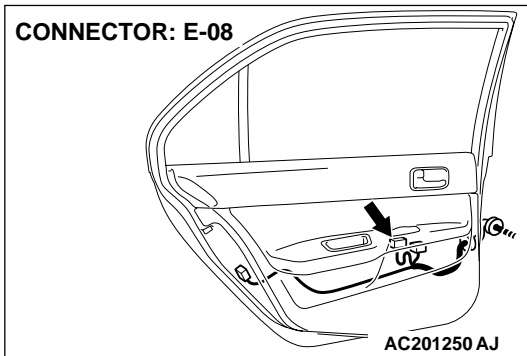
CONNECTOR: D-15



HARNES SIDE



AC211255AL



STEP 25. Check the ground circuit to the power window sub switch (REAR: LH). Measure the resistance at power window sub switch (REAR: LH) connector E-08.

(1) Disconnect power window sub switch (REAR: LH) connector E-08 and measure the resistance available at the wiring harness side of the connector.

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

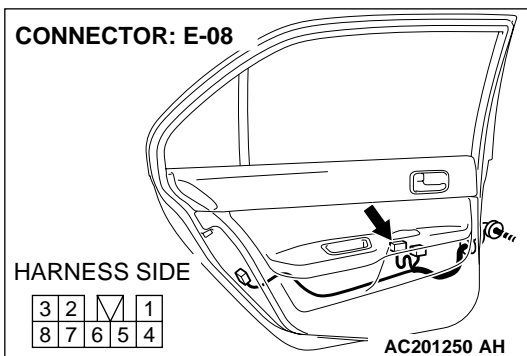
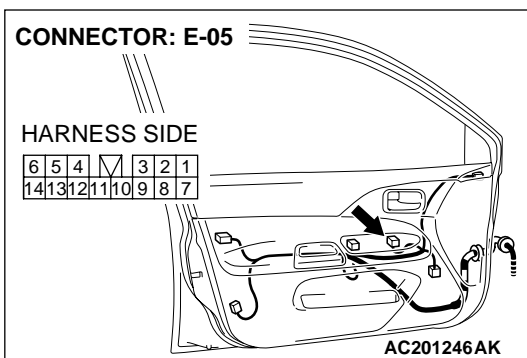
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

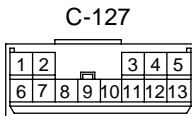
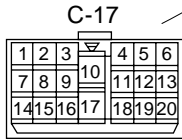
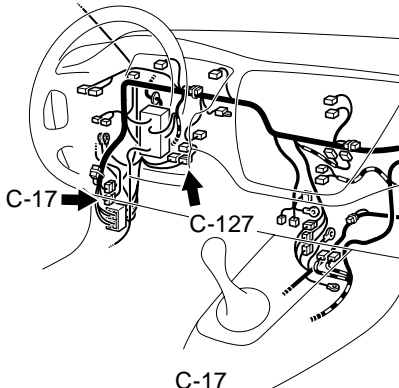
YES : Go to Step 27.

NO : Go to Step 26.

STEP 26. Check the wiring harness between power window main switch connector E-05 (terminal 2) and power window sub switch (REAR: LH) connector E-08 (terminal 8).



CONNECTORS: C-17, C-127



AC211307BB

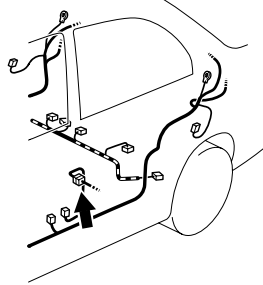
NOTE: Also check intermediate connectors, D-15, C-127 and C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-15, C-127 or C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-05 (terminal 2) and power sub switch (REAR: LH) connector E-08 (terminal 8) in good condition?

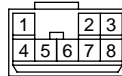
YES : Replace the power window main switch. When the power window sub switch (REAR: LH) is operated, the rear power window (LH) should open or close normally.

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

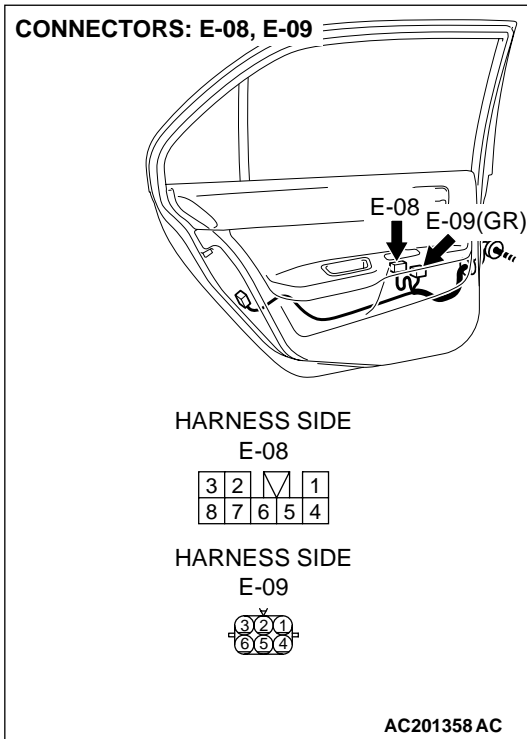
CONNECTOR: D-15



HARNES SIDE



AC211255AL

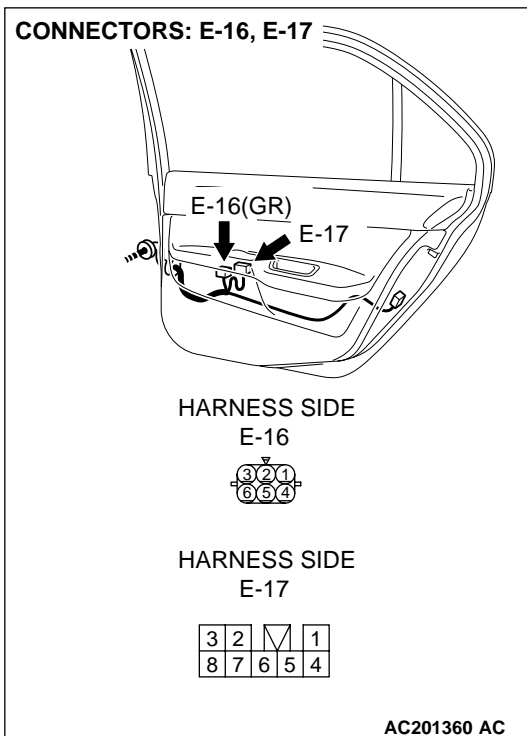


STEP 27. Check the wiring harness between rear power window sub switch (REAR: LH) connector E-08 (terminal 6 and 7) and power window regulator motor (REAR: LH) connector E-09 (terminal 2 and 1).

Q: Is the wiring harness between power window sub switch (REAR: LH) connector E-08 (terminal 6 and 7) and power window regulator motor (REAR: LH) connector E-09 (terminal 2 and 1) in good condition?

YES : No action is necessary and testing is complete.

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

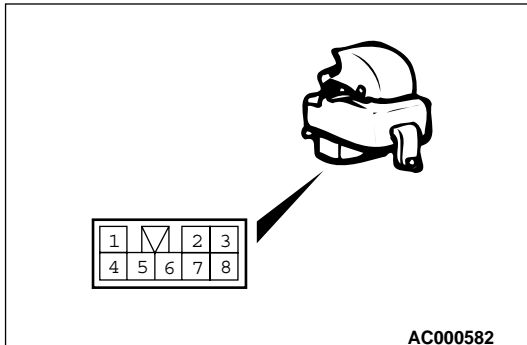


STEP 28. Check power window sub switch (REAR: RH) connector E-17 and power window regulator motor (REAR: RH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

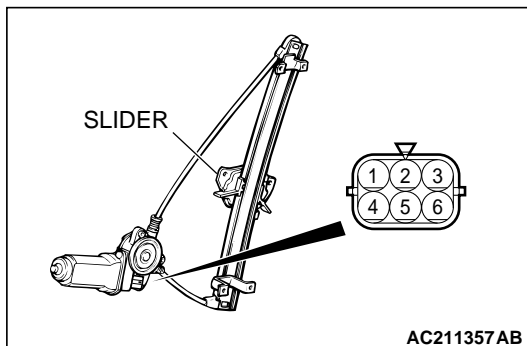
YES : Go to Step 29.

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

**STEP 29. Check the power window sub switch (REAR: RH) for continuity.**

- (1) Remove the power window sub switch (REAR: RH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-36.
- (2) Check continuity when the power window sub switch (REAR: RH) is operated to "UP" or "DOWN" position.

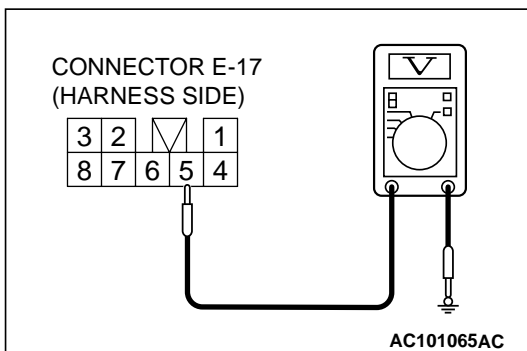
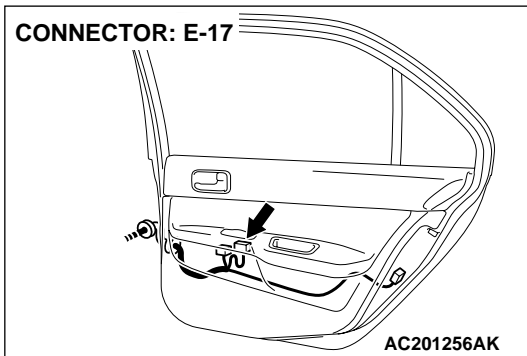
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	5 – 7, 6 – 8	Less than 2 ohms
OFF	4 – 7, 6 – 8	Less than 2 ohms
DOWN	4 – 7, 5 – 6	Less than 2 ohms

Q: Is the power window sub switch (REAR: RH) normal?**YES :** Go to Step 30.**NO :** Replace the power window sub switch (REAR: RH).
When the power window sub switch (REAR: RH) is operated, the rear power window (RH) should open or close normally.**STEP 30. Check the power window regulator motor (REAR: RH).**

- (1) Remove the rear power regulator assembly (RH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-36.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

BATTERY CONNECTION	SLIDER POSITION
<ul style="list-style-type: none"> • Connect terminal 1 to the negative battery terminal • Connect terminal 4 to the positive battery terminal 	UP
<ul style="list-style-type: none"> • Connect terminal 4 to the negative battery terminal • Connect terminal 1 to the positive battery terminal 	DOWN

Q: Is the power window motor (REAR: RH) normal?**YES :** Go to Step 31.**NO :** Replace the rear power regulator assembly (RH).
When the power window sub switch (REAR: RH) is operated, the power window (RH) should open or close normally.



STEP 31. Check the battery power supply circuit to the power window sub switch (REAR: RH). Measure the voltage at power window sub switch (REAR: RH) connector E-17.

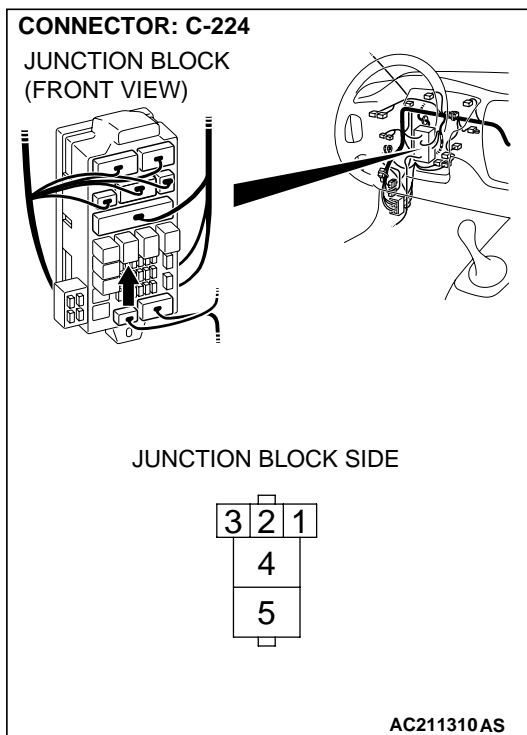
- (1) Disconnect power window sub switch (REAR: RH) connector E-17 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.

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

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

YES : Go to Step 34.

NO : Go to Step 32.



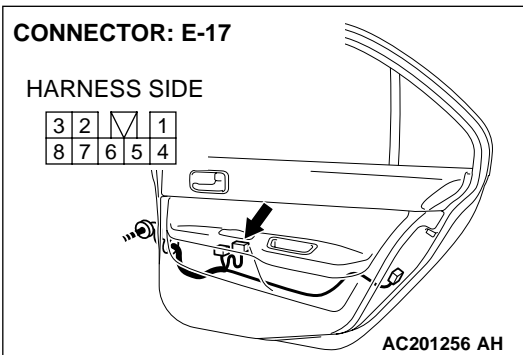
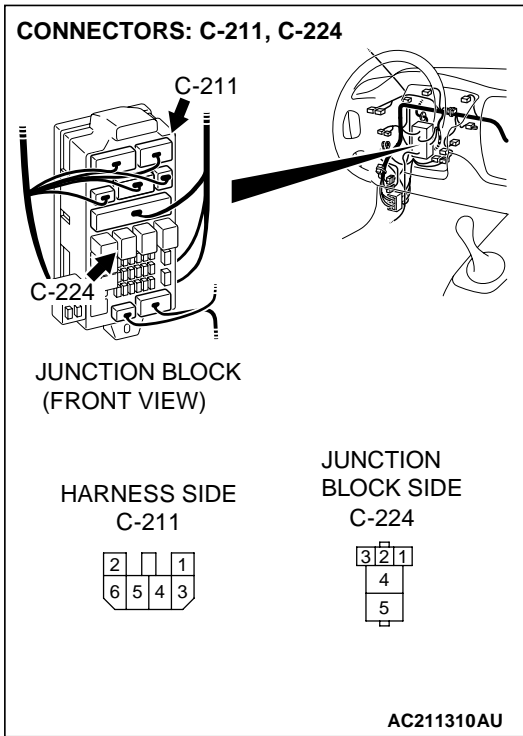
STEP 32. Check power window relay connector C-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window relay connector C-224 in good condition?

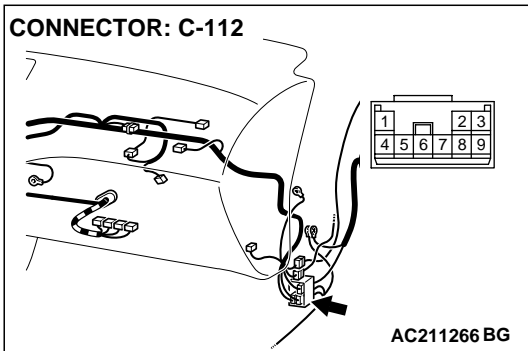
YES : Go to Step 33.

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

STEP 33. Check the wiring harness between power window relay connector C-224 (terminal 4) and power window sub switch (REAR: RH) connector E-17 (terminal 5).



CONNECTOR: C-112



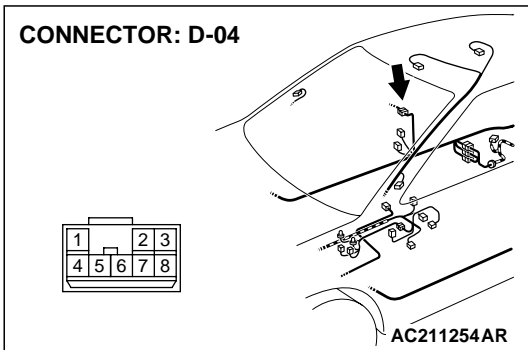
NOTE: Also check junction block connector C-211 and intermediate connectors, C-112 and D-04 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211, intermediate connector C-112 or D-04 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector C-224 (terminal 4) and power window sub switch (REAR: RH) connector E-17 (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. When the power window sub switch (REAR: RH) is operated, the rear power window (RH) should open or close normally.

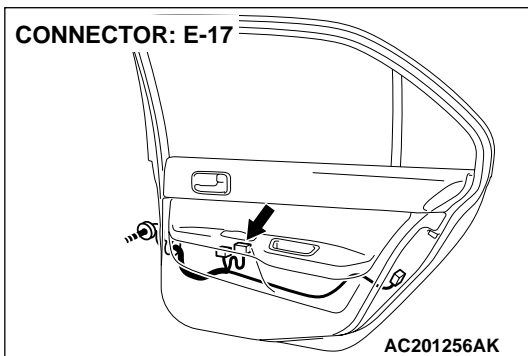
CONNECTOR: D-04



STEP 34. Check the ground circuit to the power window sub switch (REAR: RH). Measure the resistance at power window sub switch (REAR: RH) connector E-17.

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

CONNECTOR: E-17



(2) Measure the resistance value between terminal 4 and ground.

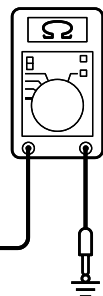
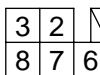
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 36.

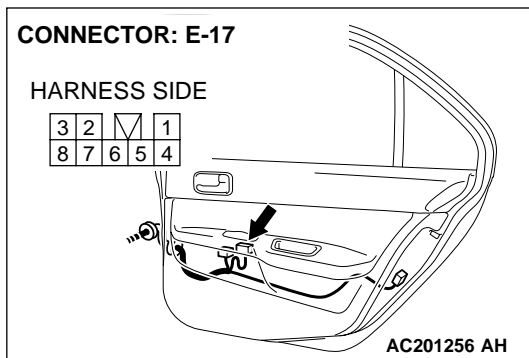
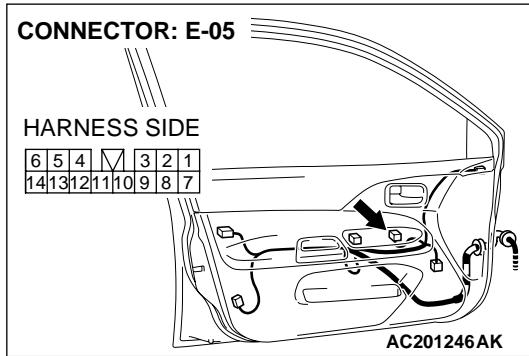
NO : Go to Step 35.

CONNECTOR E-17
(HARNES SIDE)

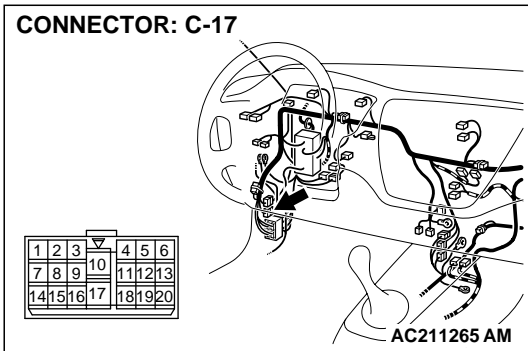


AC101156 AD

STEP 35. Check the wiring harness between power window main switch connector E-05 (terminal 14) and power window sub switch (REAR: RH) connector E-17 (terminal 4).



CONNECTOR: C-17



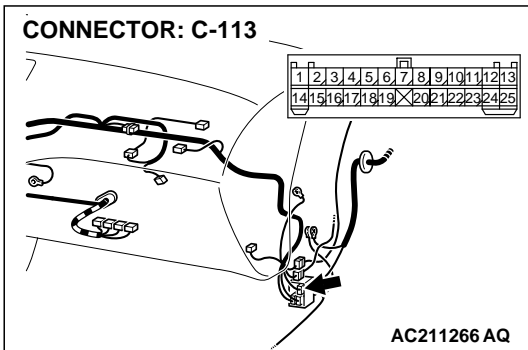
NOTE: Also check intermediate connectors, C-17, C-113 and D-04 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-17, C-113 or D-04 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-05 (terminal 14) and power sub switch (REAR: RH) connector E-17 (terminal 4) in good condition?

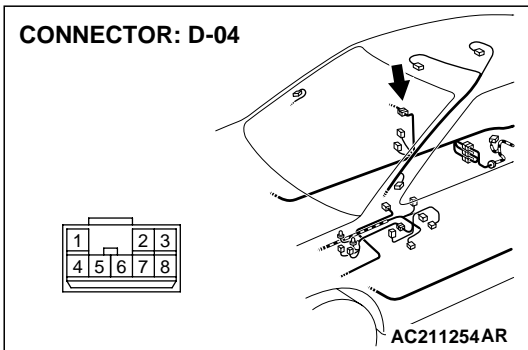
YES : Replace the power window main switch. When the power window sub switch (REAR: RH) is operated, the rear power window (RH) should open or close normally.

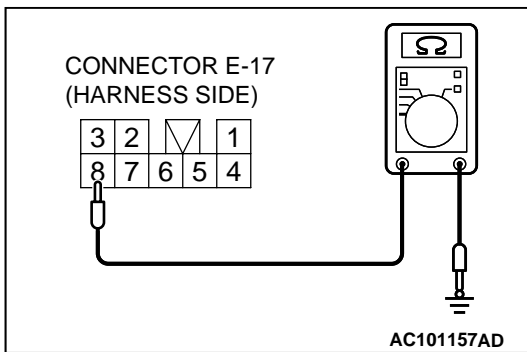
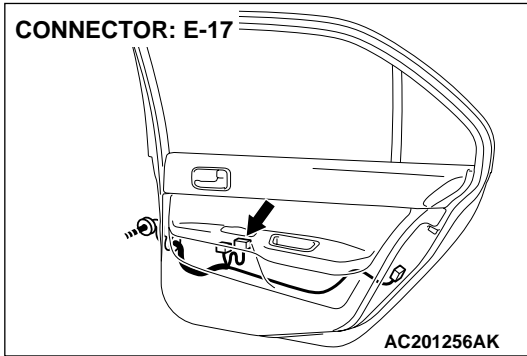
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the power window sub switch (REAR: RH) is operated, the rear power window (RH) should open or close normally.

CONNECTOR: C-113



CONNECTOR: D-04





STEP 36. Check the ground circuit to the power window sub switch (REAR: RH). Measure the resistance at power window sub switch (REAR: RH) connector E-17.

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

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

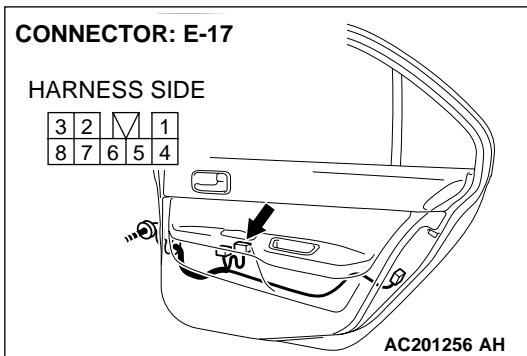
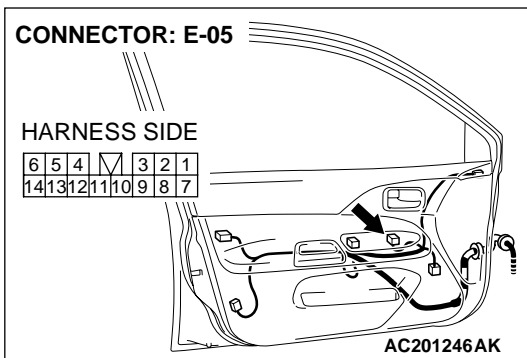
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

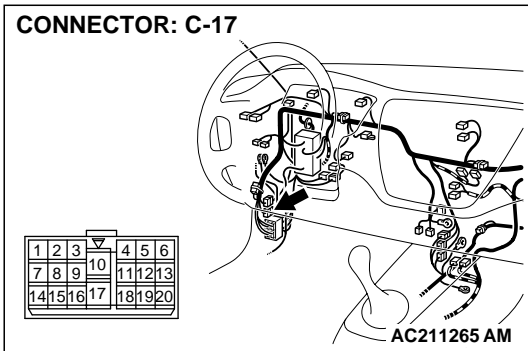
YES : Go to Step 38.

NO : Go to Step 37.

STEP 37. Check the wiring harness between power window main switch connector E-05 (terminal 6) and power window sub switch (REAR: RH) connector E-17 (terminal 8).



CONNECTOR: C-17



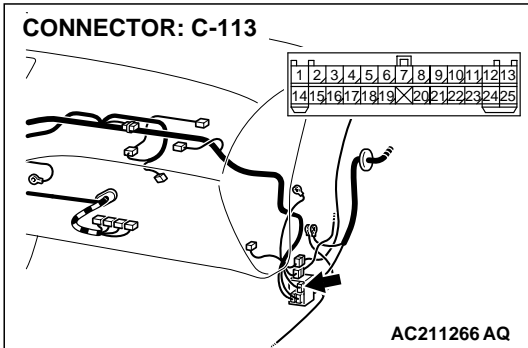
NOTE: Also check intermediate connectors, C-17, C-113 and D-04 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-17, C-113 or D-04 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-05 (terminal 6) and power sub switch (REAR: RH) connector E-17 (terminal 8) in good condition?

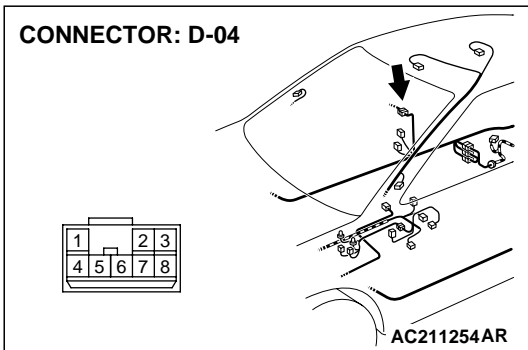
YES : Replace the power window main switch. When the power window sub switch (REAR: RH) is operated, the rear power window (RH) should open or close normally.

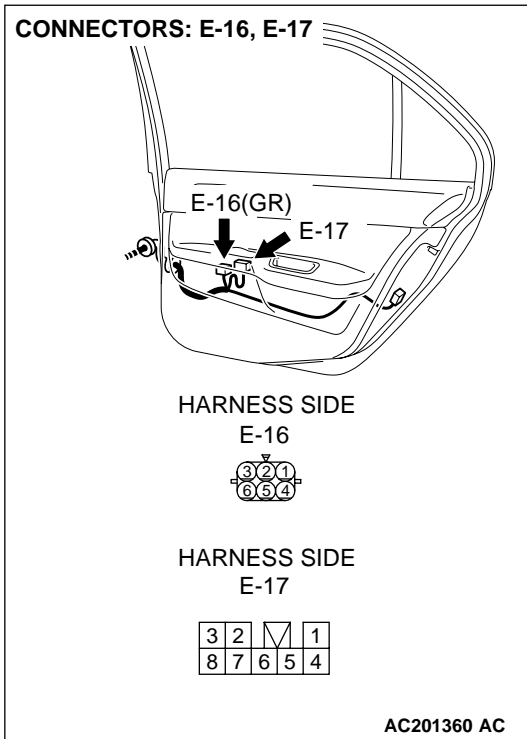
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the power window sub switch (REAR: RH) is operated, the rear power window (RH) should open or close normally.

CONNECTOR: C-113



CONNECTOR: D-04





STEP 38. Check the wiring harness between power window sub switch (REAR: RH) connector E-17 (terminal 6 and 7) and power window regulator motor (REAR: RH) connector E-16 (terminal 1 and 4).

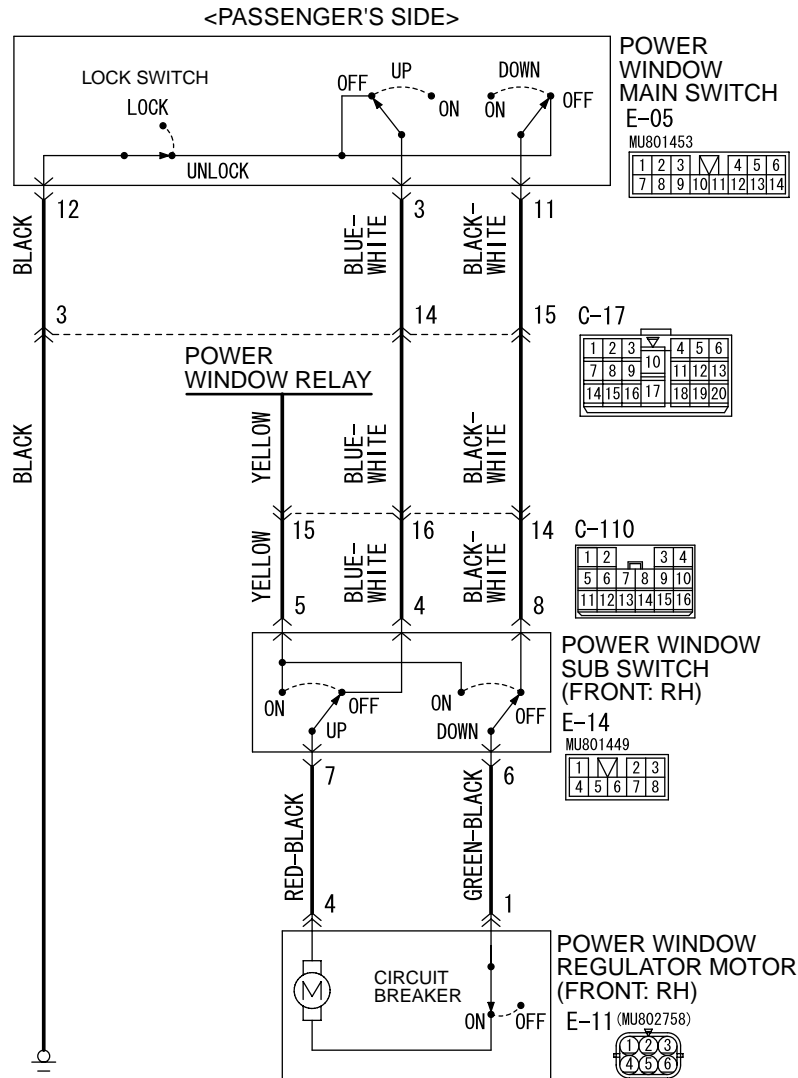
Q: Is the wiring harness between power window sub switch (REAR: RH) connector E-17 (terminal 6 and 7) and power window regulator motor (REAR: RH) connector E-16 (terminal 1 and 4) in good condition?

YES : No action is necessary and testing is complete.

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

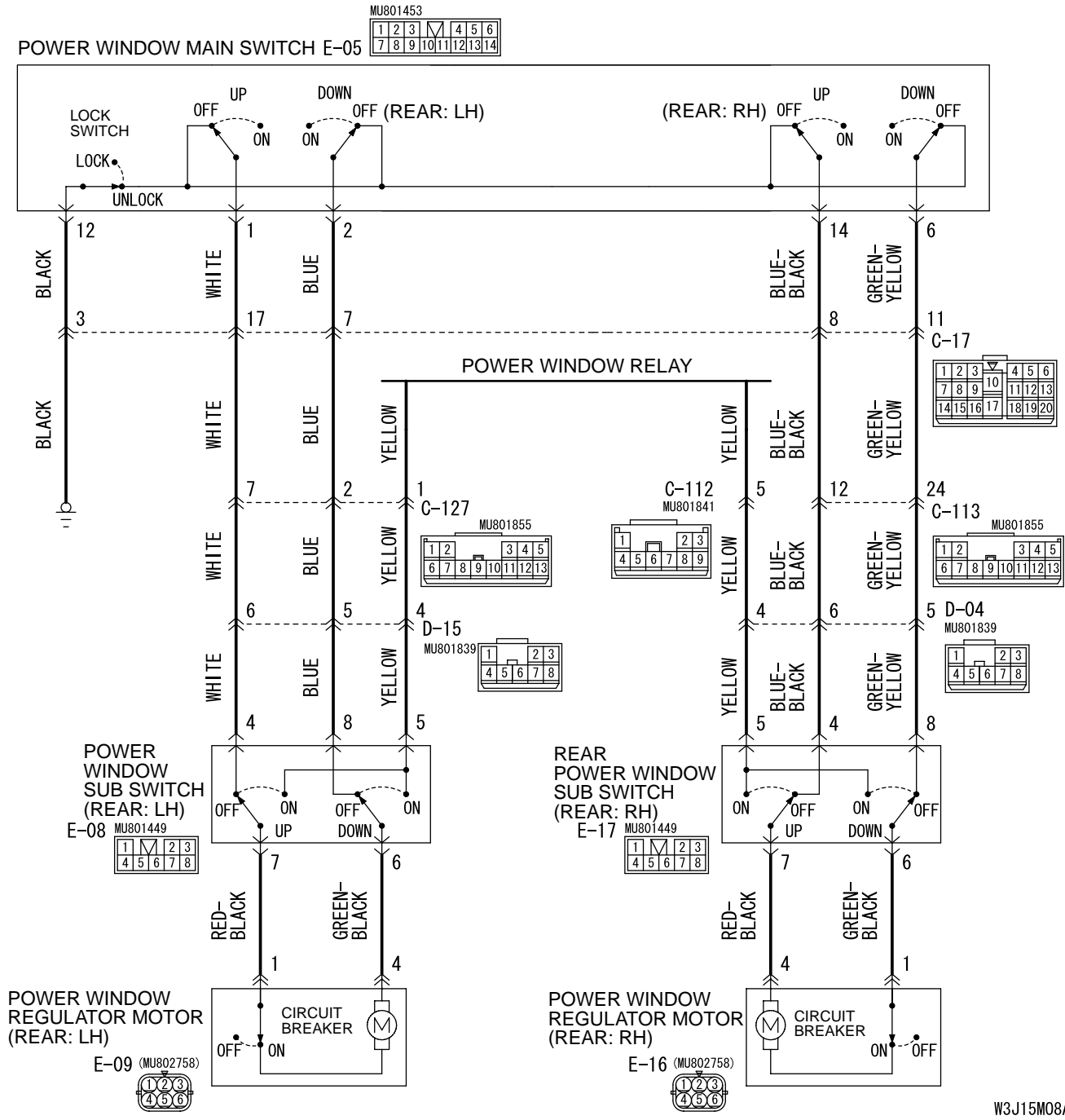
INSPECTION PROCEDURE D-5: Power Windows: Front passenger's or rear power windows do not work at all by operating the power window main switch.

Power Window (Front: RH) Circuit



W3J15M07AA

Power Window (Rear) Circuit



W3J15M08AA

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 each power window sub switch is operated, the power window main switch may be defective.

TROUBLESHOOTING HINT

- The power window main switch may be defective

DIAGNOSIS

Verify 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. Verify that the front passenger's or rear power window can work normally by means of power window main switch.

NO : Refer to Symptom Chart P.54B-22 before resolving this trouble.

KEYLESS ENTRY SYSTEM

GENERAL DESCRIPTION CONCERNING KEYLESS ENTRY SYSTEM

M1549022000103

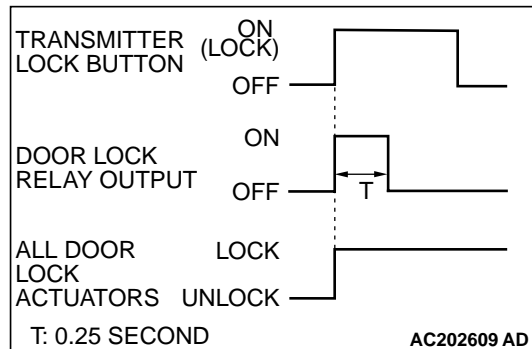
The following ECUs affect the functions and control of the keyless entry system.

FUNCTION		CONTROL ECU
ALL DOOR LOCK FUNCTION	Operating the transmitter lock button	ETACS-ECU
DRIVER'S DOOR UNLOCK FUNCTION	Operating the transmitter unlock button press once	ETACS-ECU
ALL DOOR UNLOCK FUNCTION	Operating the transmitter unlock button press twice	ETACS-ECU
KEYLESS ENTRY HAZARD ANSWERBACK AND HORN ANSWERBACK FUNCTION		ETACS-ECU

ALL DOOR LOCK FUNCTION

Operating the transmitter lock button

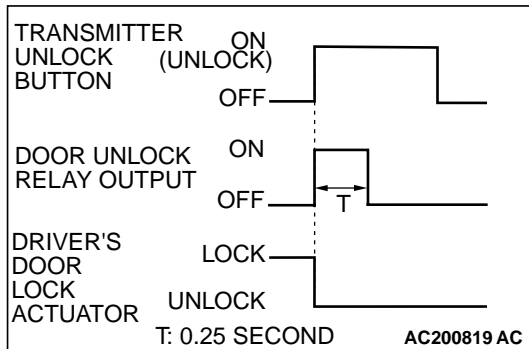
When the transmitter lock button is pressed, the ETACS-ECU energizes its door lock relay to operate all the door lock actuators for 0.25 second thus causing all doors to be locked.



DRIVER'S DOOR UNLOCK FUNCTION

Operating the transmitter unlock button press once

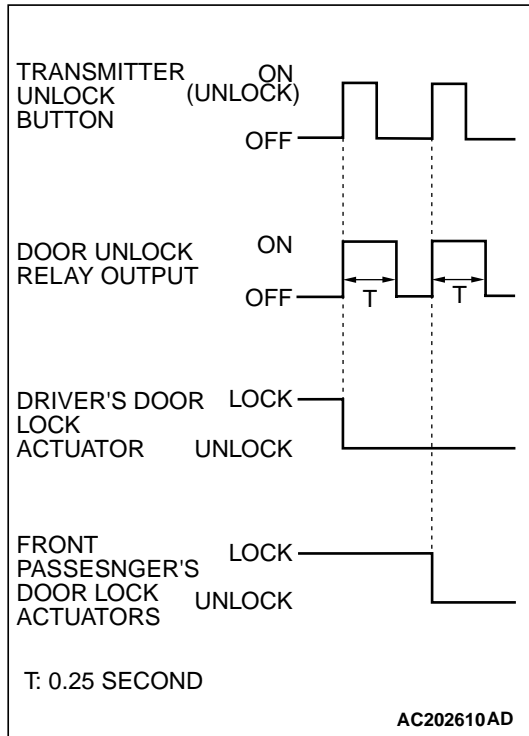
When the transmitter unlock button is pressed once, the ETACS-ECU energizes its door unlock relay to operate the door lock actuator of the driver's door for 0.25 second thus causing only the driver's door to be unlocked.



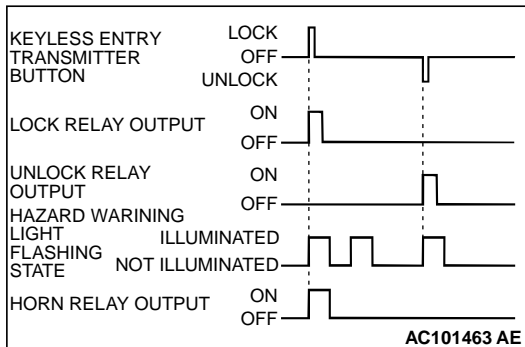
ALL DOOR UNLOCK FUNCTION

Operating the transmitter unlock button press twice

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



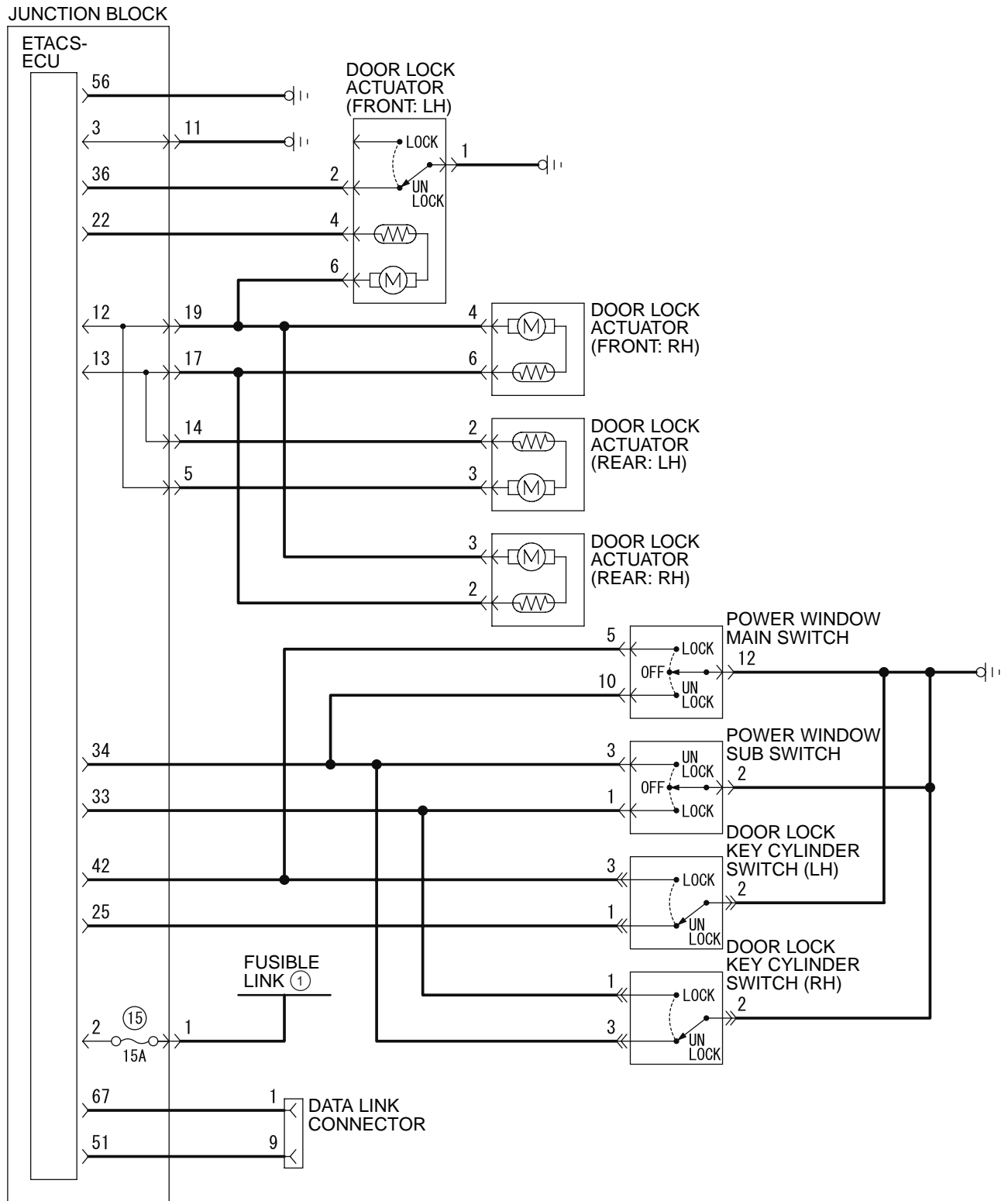
KEYLESS ENTRY HAZARD ANSWERBACK AND HORN ANSWERBACK FUNCTION



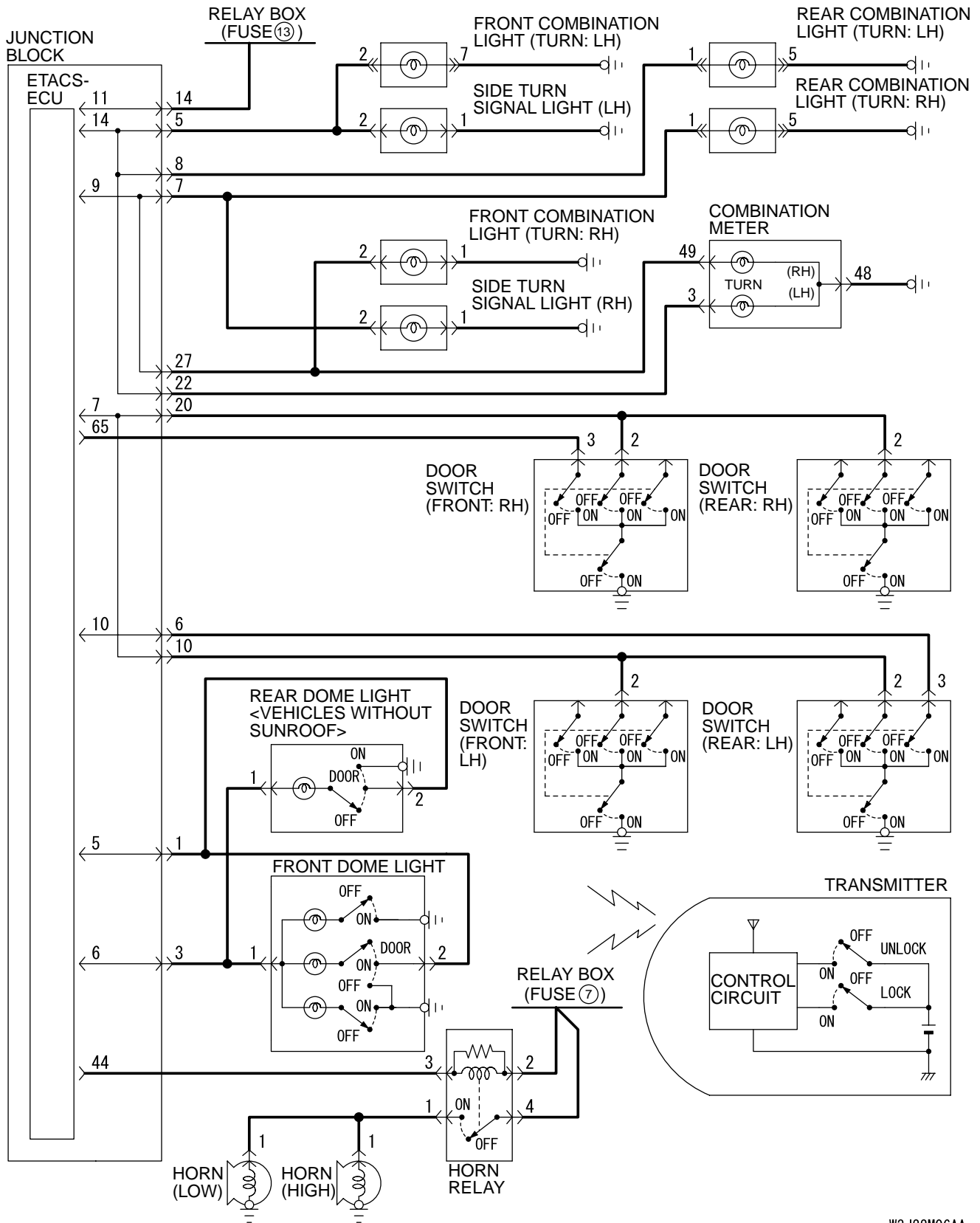
The hazard answerback and horn answerback function which facilities checking of lock or unlock operations even during day-time is provided. When the lock signal is input from the keyless entry transmitter to the ETACS-ECU, the hazard warning light flashes twice and horn sounds once. When the unlock signal is input, hazard warning light flashes once.

NOTE: Hazard answerback function can be disabled by the configuration function (Refer to [P.54B-545.](#))

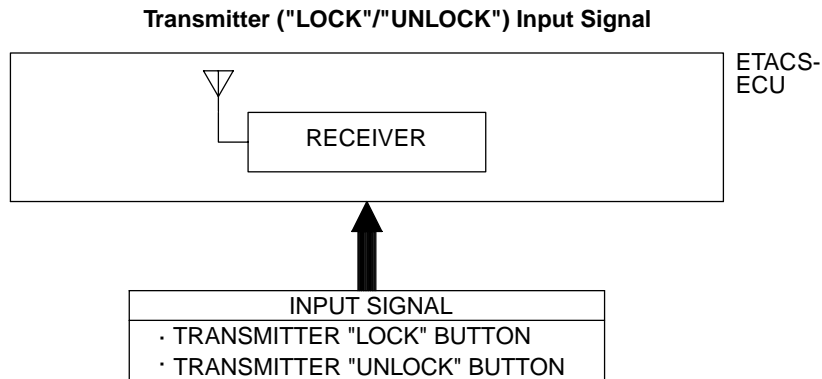
General circuit diagram for the keyless entry system



W3J22M00AA



W3J22M06AA

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

W3J22M07AA

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)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Verify the central door locking system.**Q: Does the central door locking system work normally?**

YES : Go to Step 2.

NO : Refer to Inspection Procedure C-1 "Central door locking system does not work at all [P.54B-86](#)."

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

Check input signals from the transmitter.

⚠ CAUTION

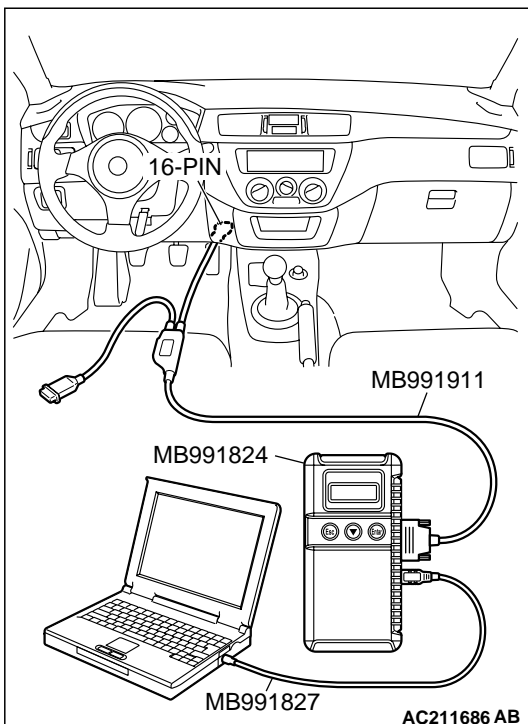
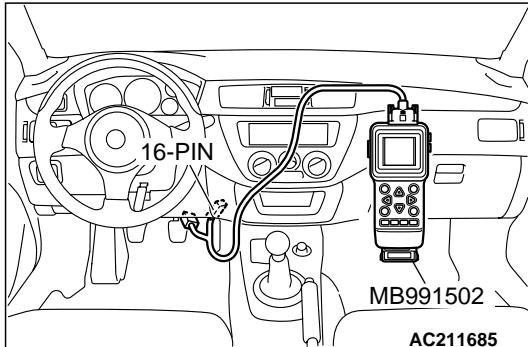
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

- (1) Connect scan tool MB991502 or MB991958 to the data link connector. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 as follows:
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) Push the transmitter "LOCK" or "UNLOCK" button.
- (4) Check that scan tool MB991502 or MB991958 sounds.

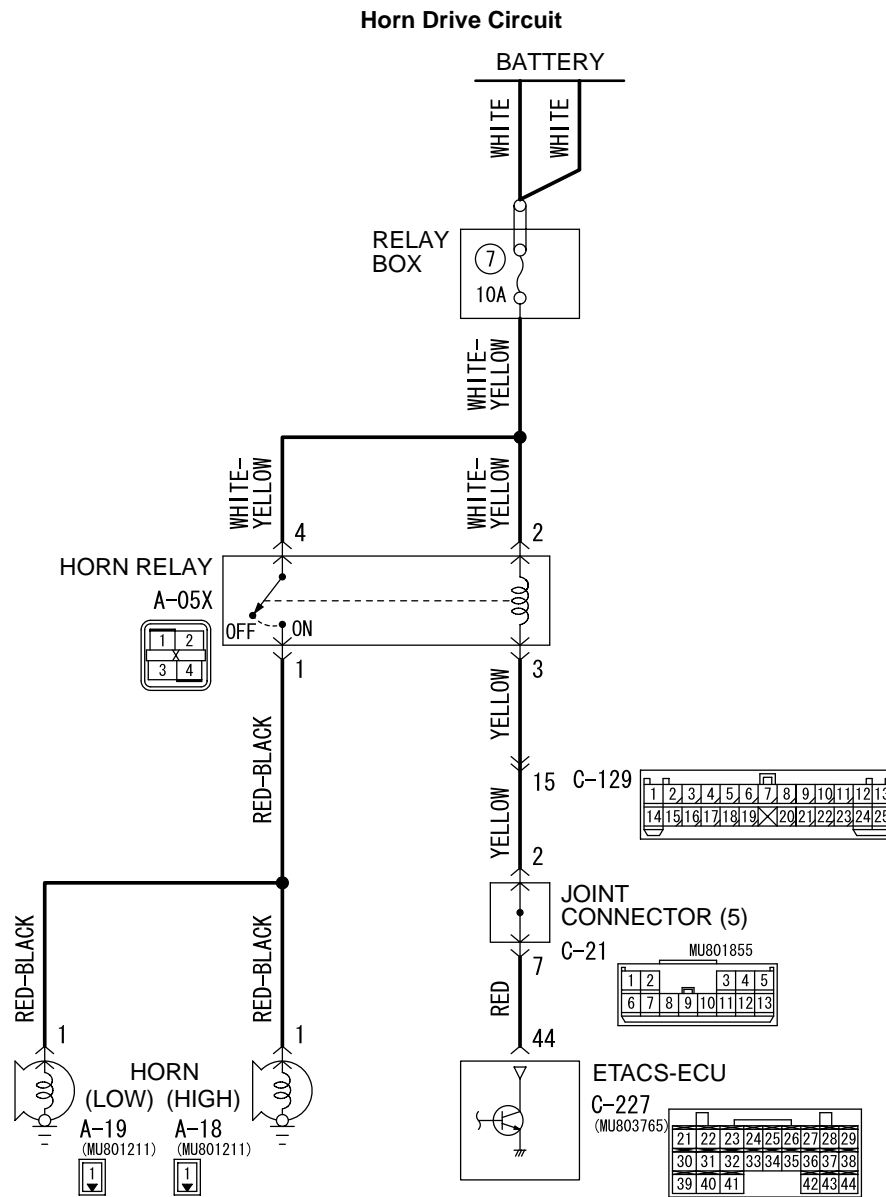
Q: When the transmitter "LOCK" or "UNLOCK" button is turned ON, does scan tool MB991502 or MB991958 sound?

YES : Replace the ETACS-ECU. All the doors can be locked or unlocked by means of the transmitter.

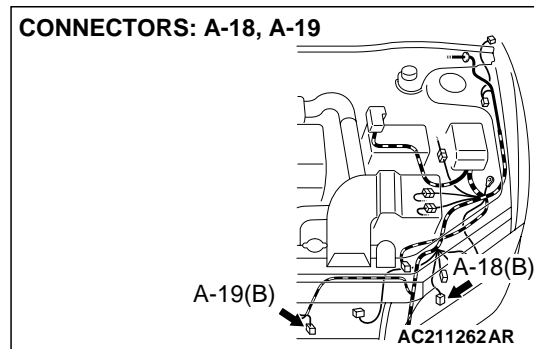
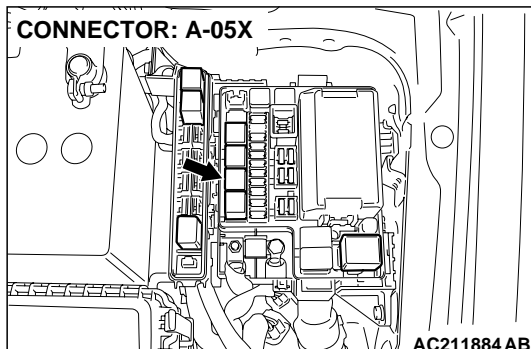
NO : Refer to Inspection Procedure O-9 "ETACS-ECU does not receive a signal from the lock or unlock button P.54B-529."

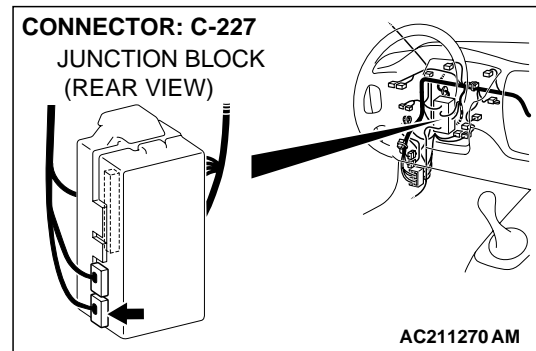
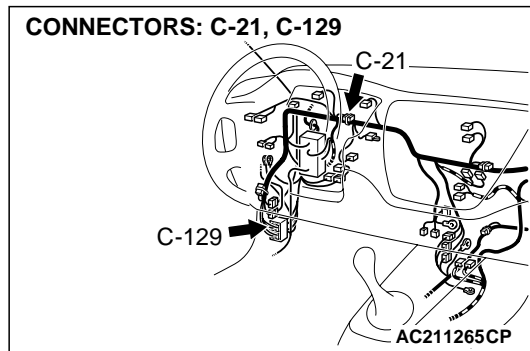


INSPECTION PROCEDURE E-2: Keyless Entry System: The front dome light, the rear dome light <vehicles without sunroof> the turn-signal lights and the horn do not operate through the answerback function.



W3J22M08AA





CIRCUIT OPERATION

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

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

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 normally [P.54B-176.](#)"

STEP 2. Check the configuration function.

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

YES : Go to Step 3.

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

STEP 3. Verify trouble symptom.**Q: Which answerback function is defective?**

Only the dome light : Go to Step 4.

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

Only the horn : Go to Step 6.

None of the dome light and the turn-signal lights and the 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 "Front dome light, rear dome light <vehicles without sunroof> and luggage compartment light do not illuminate or go out normally P.54B-395."

STEP 5. Verify the turn-signal lights.**Q: Does the turn-signal 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 flash when the hazard warning light switch is turned on P.54B-346."

STEP 6. Verify which horn is defective.**Q: Which horn does not sound?**

Horn (HIGH) : Go to Step 7.

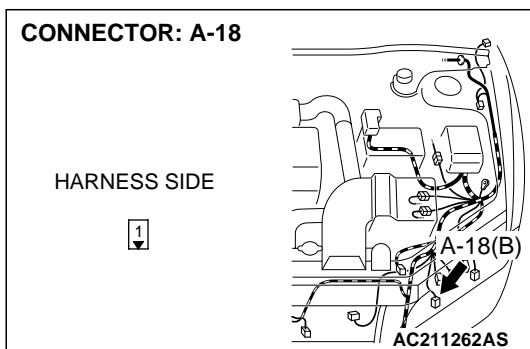
Horn (LOW) : Go to Step 10.

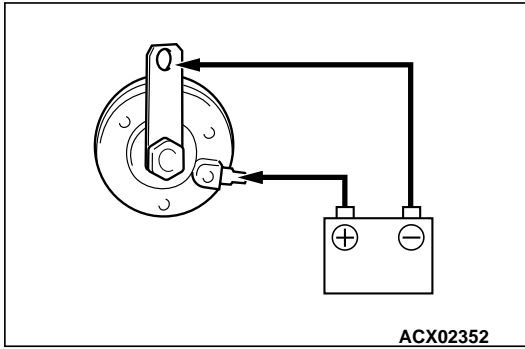
Horn (HIGH or LOW) : Go to Step 13.

STEP 7. Check horn (HIGH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Is horn (HIGH) connector A-18 in good condition?**

YES : Go to Step 8.

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





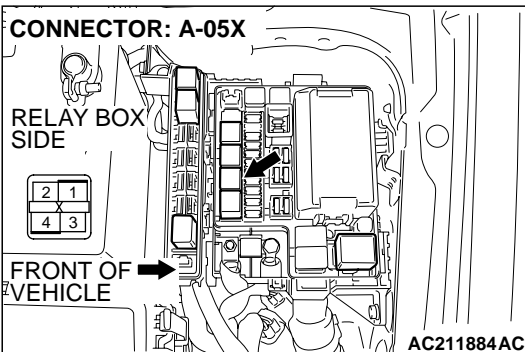
STEP 8. Check the horn (HIGH).

Connect the battery as shown, and Verify that the horn (HIGH) sounds.

Q: Is the horn (HIGH) normal?

YES : Go to Step 9.

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

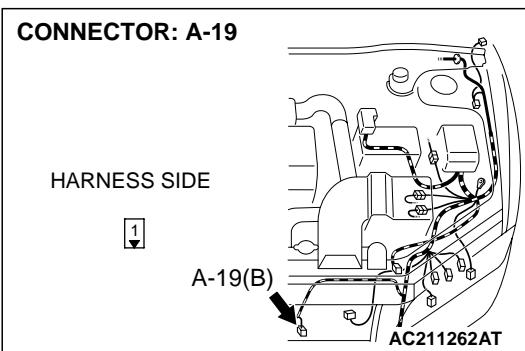
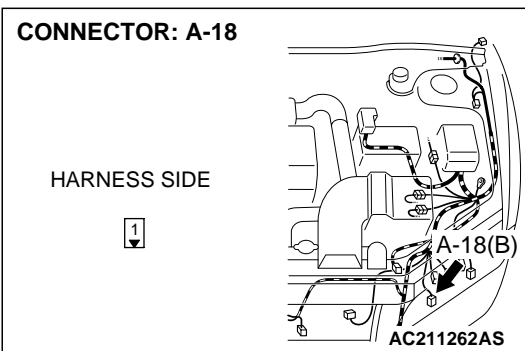


STEP 9. Check the wiring harness between horn relay connector A-05X (terminal 1) and horn (HIGH) connector A-18 (terminal 1).

Q: Is the wiring harness between horn relay connector A-10X (terminal 1) and horn (HIGH) connector A-18 (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 horn (HIGH) sounds normally.

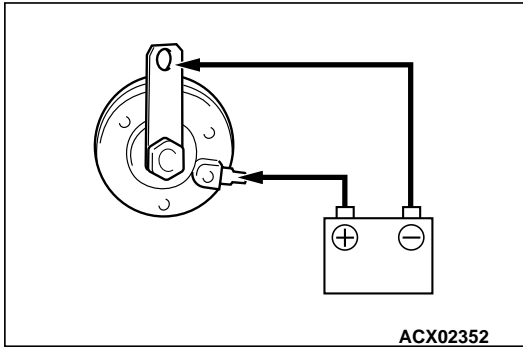


STEP 10. Check horn (LOW) connector A-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn (LOW) connector A-19 in good condition?

YES : Go to Step 11.

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

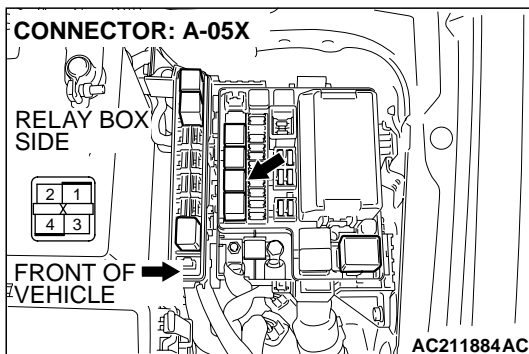
**STEP 11. Check the horn.**

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

Q: Is the horn (LOW) normal?

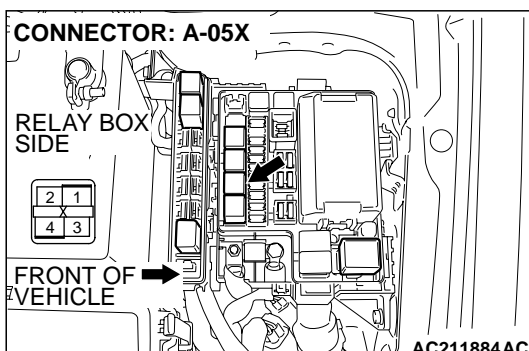
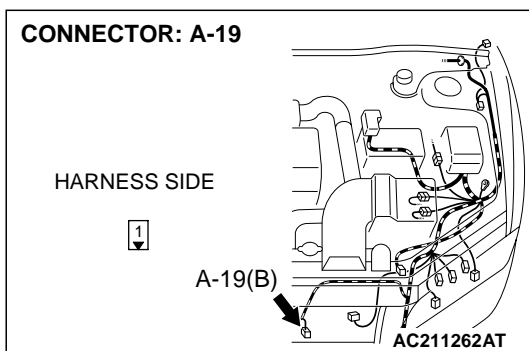
YES : Go to Step 12.

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

**STEP 12. Check the wiring harness between horn relay connector A-05X (terminal 1) and horn (LOW) connector A-19 (terminal 1).****Q: Is the wiring harness between horn relay connector A-05X (terminal 1) and horn (LOW) connector A-19 (terminal 1) in good condition?**

YES : No action is necessary and testing is complete.

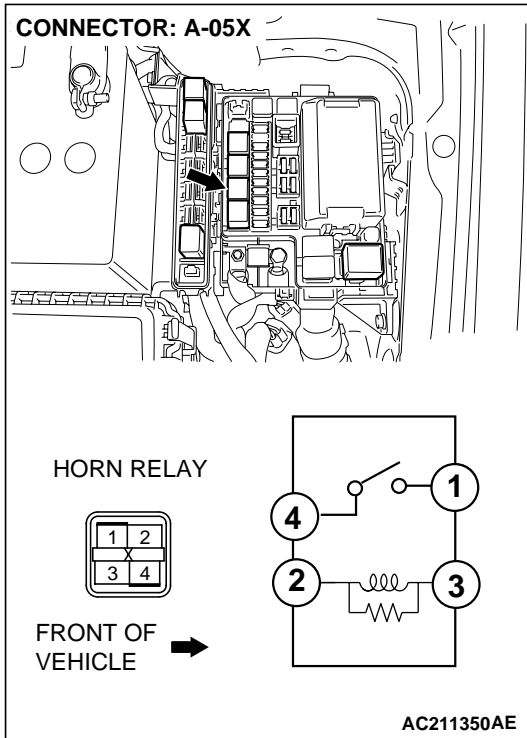
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the horn (LOW) sounds normally.

**STEP 13. Check horn relay connector A-05X for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are horn relay connector A-05X in good condition?**

YES : Go to Step 14.

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

STEP 14. Check the horn relay.



BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 4	Open circuit
<ul style="list-style-type: none"> Connect terminal 2 to the positive battery terminal Connect terminal 3 to the negative battery terminal 	1 – 4	Less than 2 ohms

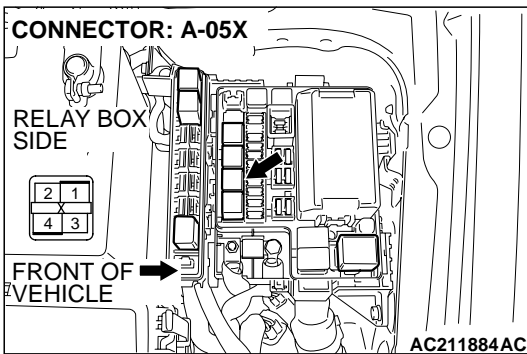
Q: Is the horn relay normal?

YES : Go to Step 15.

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

STEP 15. Check the battery power supply circuit to the horn relay. Measured at horn relay connector A-05X.

(1) Disconnect horn relay connector A-05X and measure the voltage available at the relay box side of the connector.



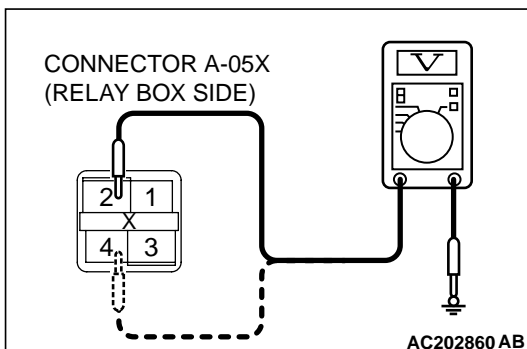
(2) Measure the voltage between terminal numbers 2, 4 and ground.

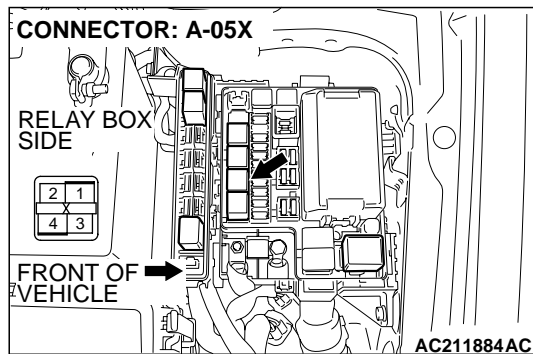
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 17.

NO : Go to Step 16.



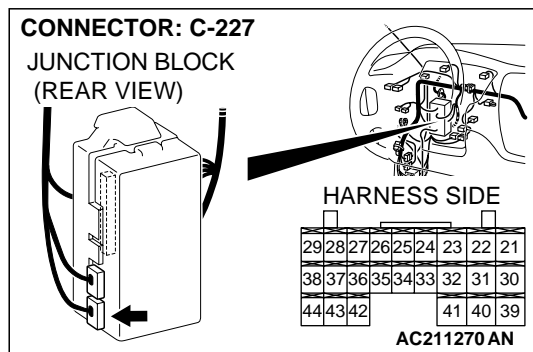


STEP 16. Check the wiring harness between horn relay connector A-05X (terminal 2 and 4) and the battery.

Q: Is the wiring harness between horn relay connector A-05X (terminal 2 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 horn sounds normally.



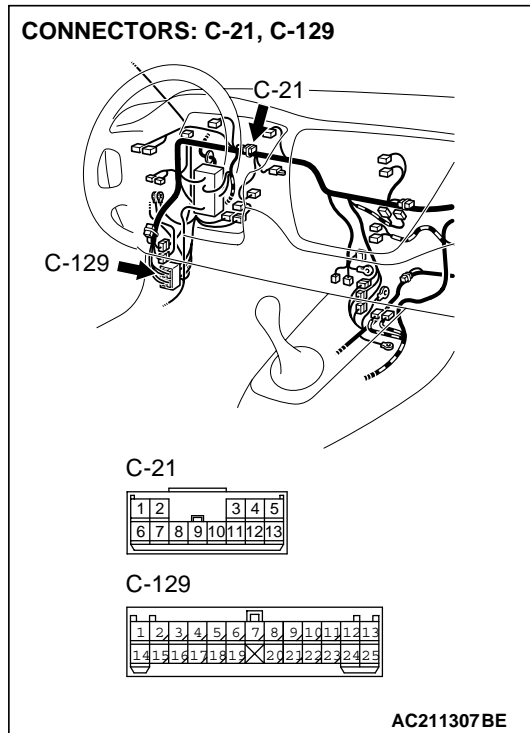
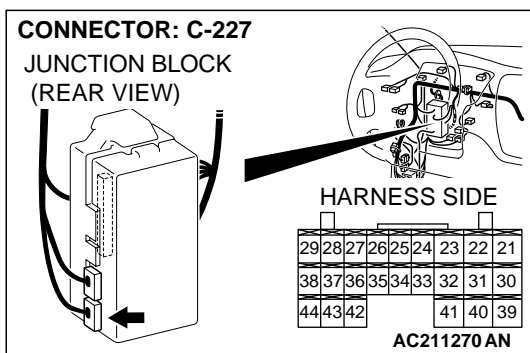
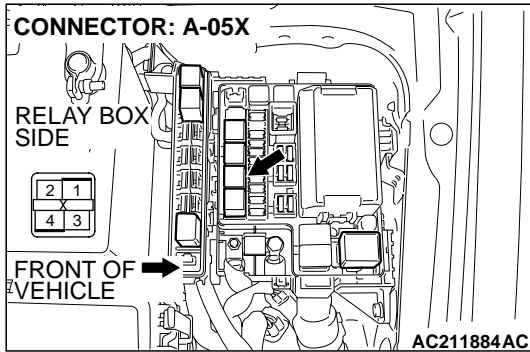
STEP 17. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-227 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 horn sounds normally.

STEP 18. Check the wiring harness between horn relay connector A-05X (terminal 3) and ETACS-ECU connector C-227 (terminal 44).

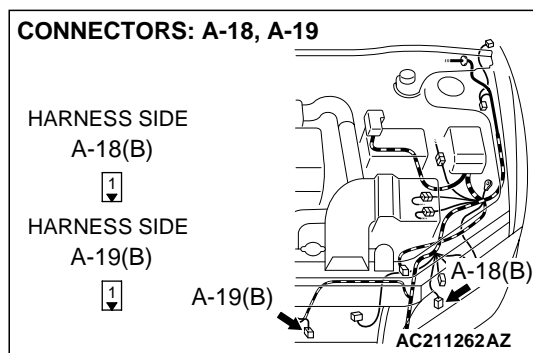
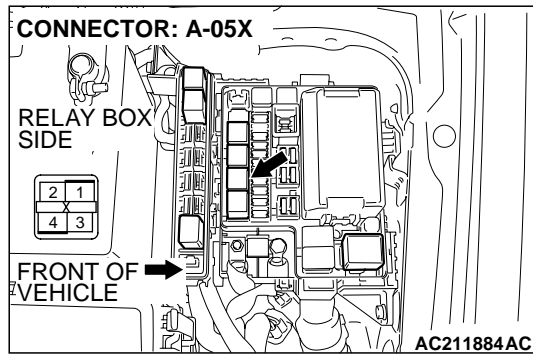


NOTE: Also check intermediate connector C-129 and joint connector C-21 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 or joint connector C-21 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between horn relay connector A-05X (terminal 3) and ETACS-ECU connector C-227 (terminal 44) 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 horn sounds normally.



STEP 19. Check the wiring harness between horn relay connector A-05X (terminal 1), horn (HIGH) connector A-18 (terminal 1) and horn (LOW) connector A-19 (terminal 1).

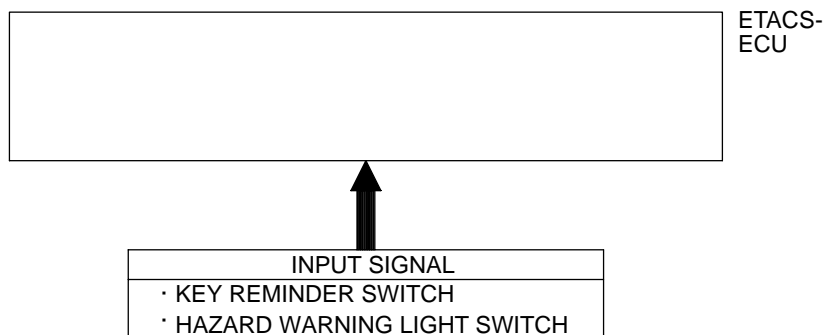
Q: Is the wiring harness between horn relay connector A-05X (terminal 1), horn (HIGH) connector A-18 (terminal 1) and horn (LOW) connector A-19 (terminal 1) in good condition?

YES : Replace the ETACS-ECU. Verify that the horn sounds normally.

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

INSPECTION PROCEDURE E-3: Keyless Entry System: Encrypted code cannot be registered.

Encrypted Transmitter Code Register Mode



W3J22M09AA

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)

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

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Verify trouble symptom.

Q: Can the encrypted code register mode be set?

YES : Go to Step 3.

NO : Go to Step 2.

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

Check the input signals from the following switches:

- Key reminder switch
- Hazard warning light switch

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

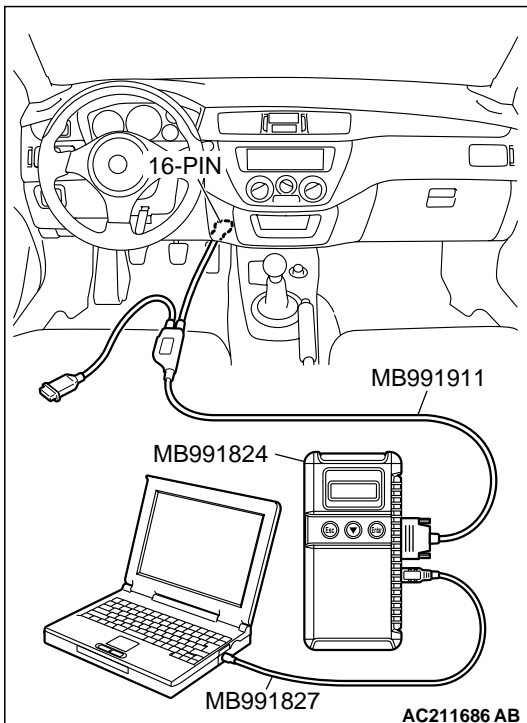
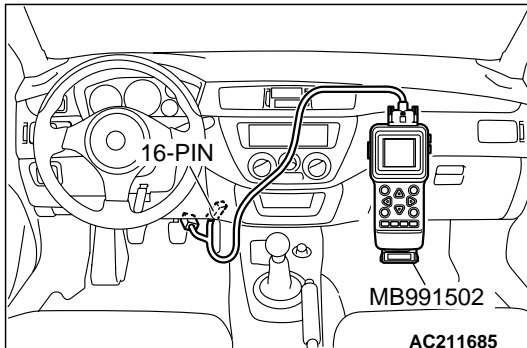
- (1) Connect scan tool MB991502 or MB991958 to the data link connector. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) If the switches (see table below), which are applicable for the input signal check, are operated.
- (4) Check scan tool MB991502 or MB991958 sounds or not.

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

Q: When the key reminder switch and the hazard warning light switch are operated, does scan tool MB991502 or MB991958 sound in each case?

Buzzer of scan tool MB991502 or MB991958 sounds normally. : Replace the ETACS-ECU. Verify that the encrypted code can be registered in the transmitter.
scan tool MB991502 or MB991958 does not sound when the ignition key is removed and reinserted : Refer to Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch P.54B-476."

scan tool MB991502 or MB991958 does not sound when the hazard warning light switch is turned from "OFF" to "ON" : Refer to Inspection Procedure O-2 "ETACS-ECU does not receive a signal from the hazard warning light switch P.54B-481."



STEP 3. Check the transmitter.

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

YES : No action is necessary and testing is complete.

NO : Replace the transmitter. If the encrypted code can not be registered by means of the new transmitter, replace the ETACS-ECU. Verify that the encrypted code can be registered in the transmitter.

SUNROOF

GENERAL DESCRIPTION CONCERNING THE SUNROOF

M1549021200096

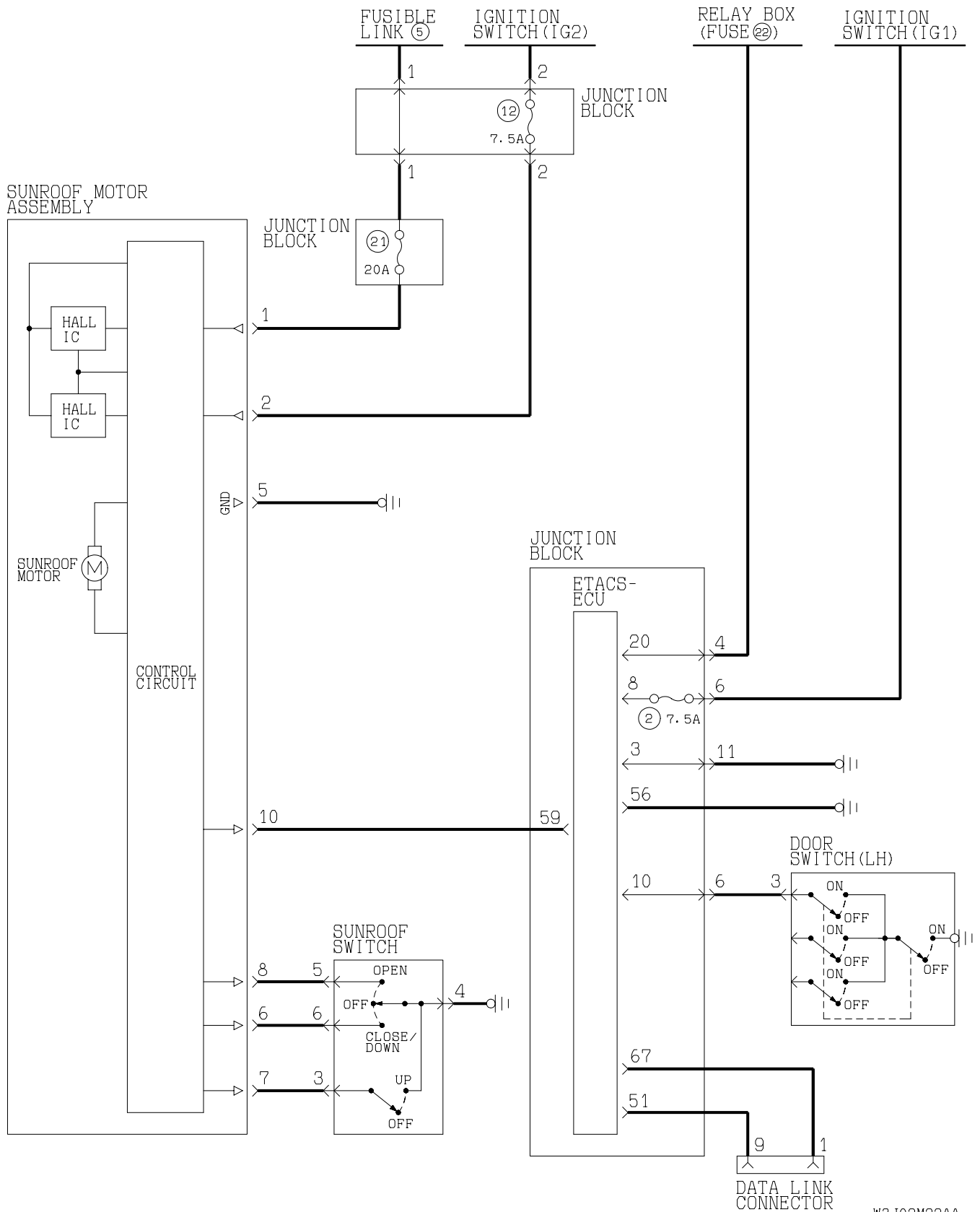
The following ECUs affect the functions and control of the sunroof.

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

Sunroof timer function

The ETACS-ECU enables opening and closing of the sunroof for 30 seconds after the ignition is switched off. During this timed operation, if the driver's door is opened, the sunroof timer function is deactivated from that moment. As for the sunroof functions, refer to GROUP 42, Sunroof [P.42-60](#).

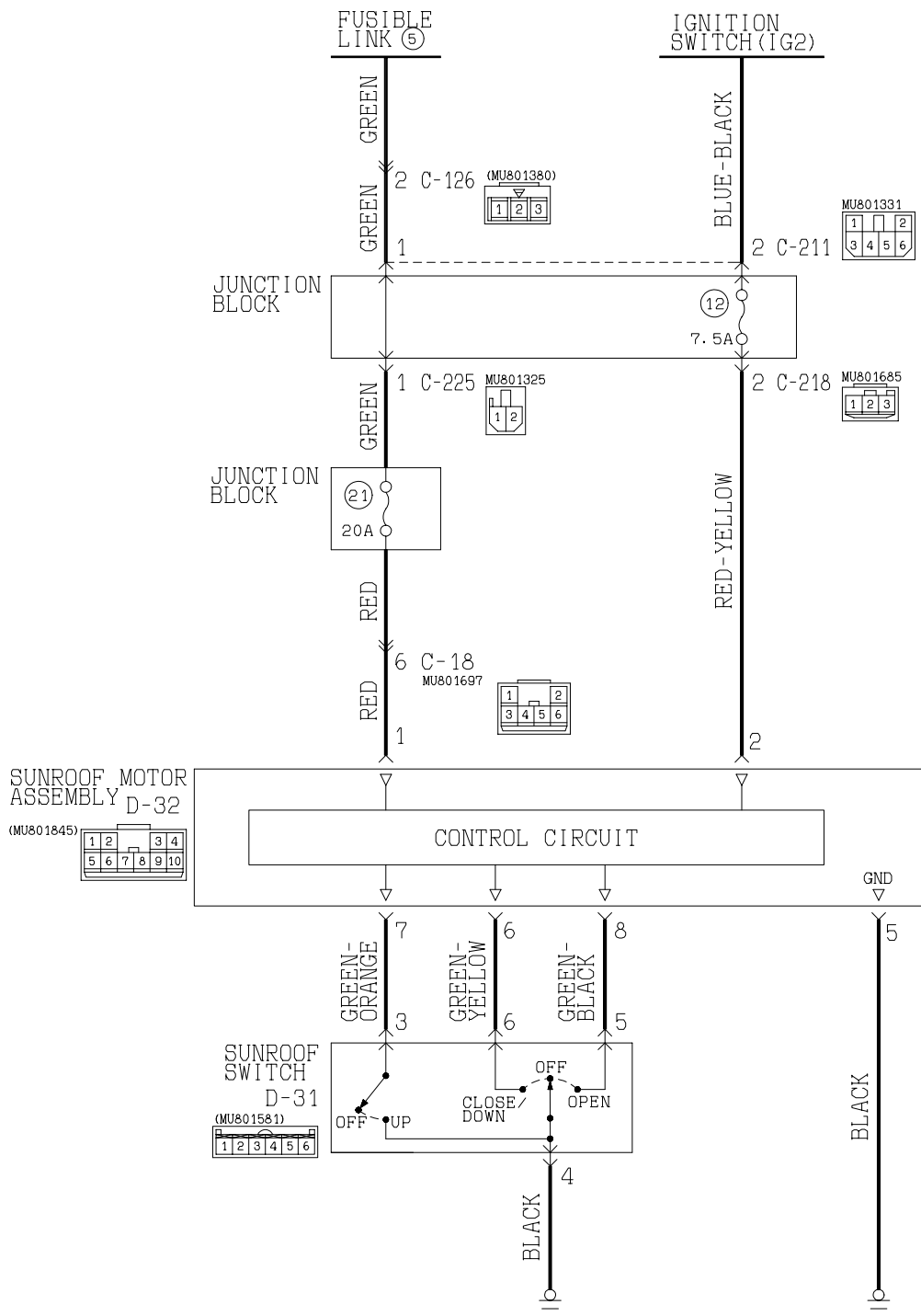
General circuit diagram regarding the sunroof



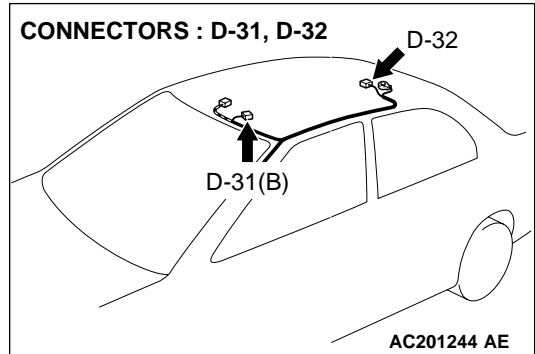
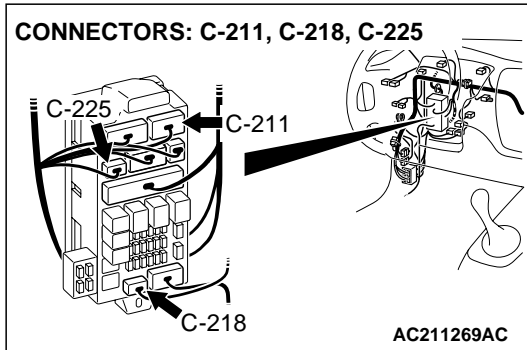
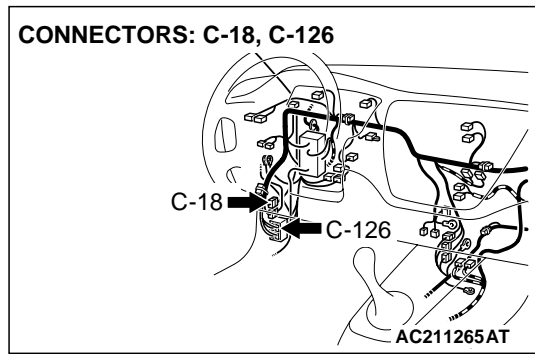
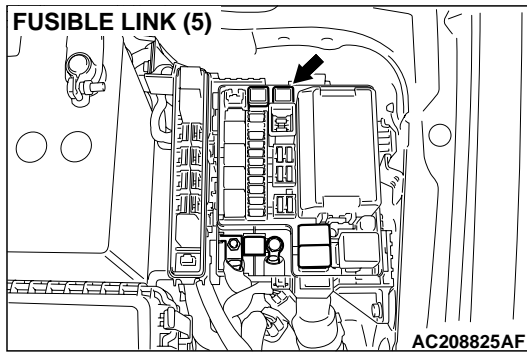
W3J02M22AA

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

Sunroof Motor Assembly Power Supply Circuit



W3J02M08AA



CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof-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:

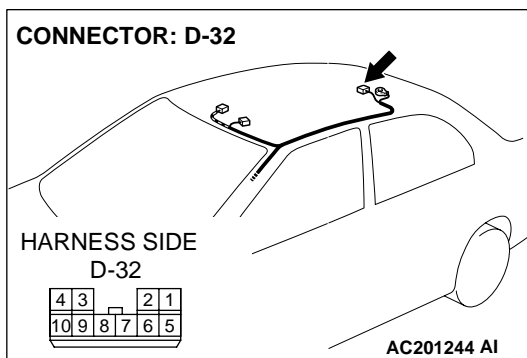
- MB991223: Harness Set

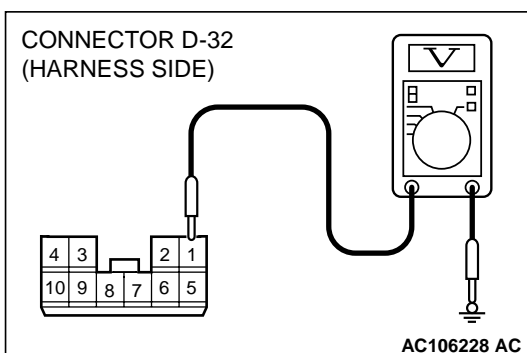
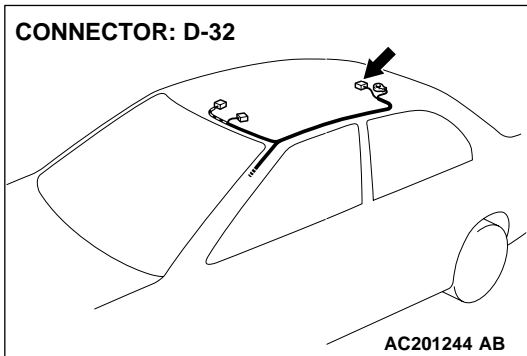
STEP 1. Check the sunroof motor assembly connector D-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-32 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](#). The sunroof should now work normally.





STEP 2. Check the fusible link (5) line of power supply circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-32.

(1) Disconnect sunroof motor assembly connector D-32 and measure the voltage available at the wiring harness side of the connector.

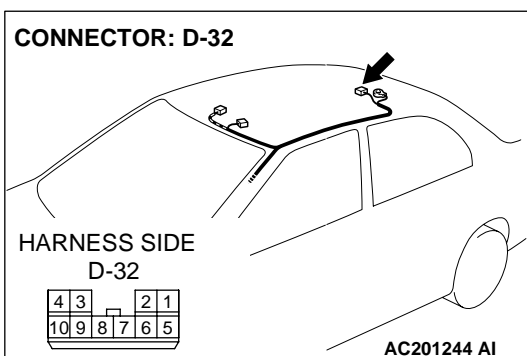
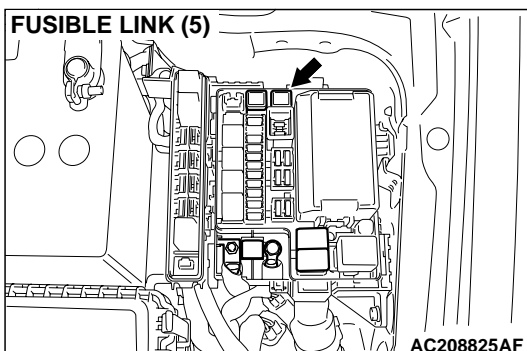
(2) Measure the voltage between terminal 1 and ground.

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

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

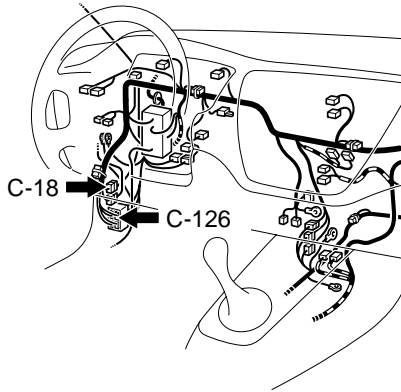
YES : Go to Step 4.

NO : Go to Step 3.

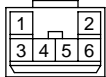


STEP 3. Check the harness wires between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5).

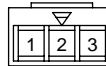
CONNECTORS: C-18, C-126



C-18



C-126



AC211307AD

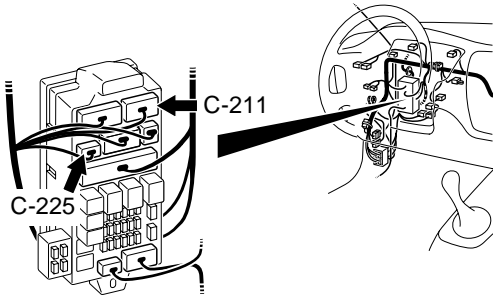
NOTE: Also check intermediate connectors C-18, C-126, junction block connectors C-211 and C-225 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-18, C-126, junction block connector C-211 or C-225 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the harness wires between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5) in good condition?

YES : No action is necessary and testing is complete.

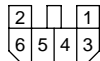
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The sunroof should now work normally.

CONNECTORS: C-211, C-225



HARNESS SIDE

C-211

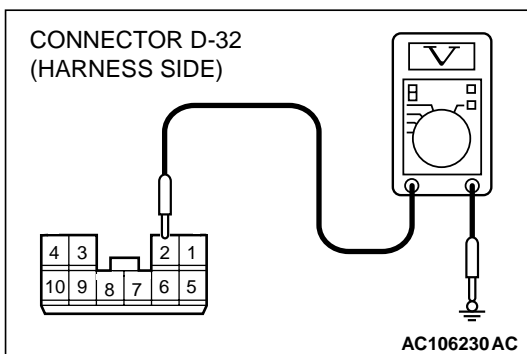
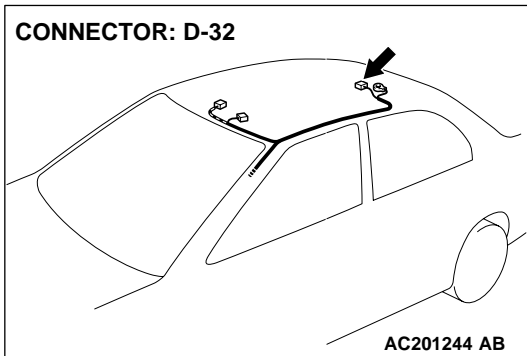


HARNESS SIDE

C-225



AC211310AC



STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-32.

(1) Disconnect sunroof motor assembly connector D-32 and measure the voltage available at the wiring harness side of the connector.

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

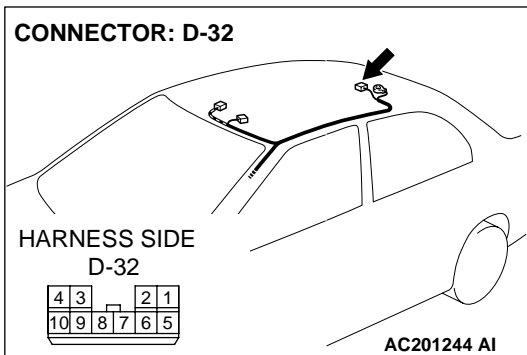
(3) Measure the voltage between terminal 2 and ground.

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

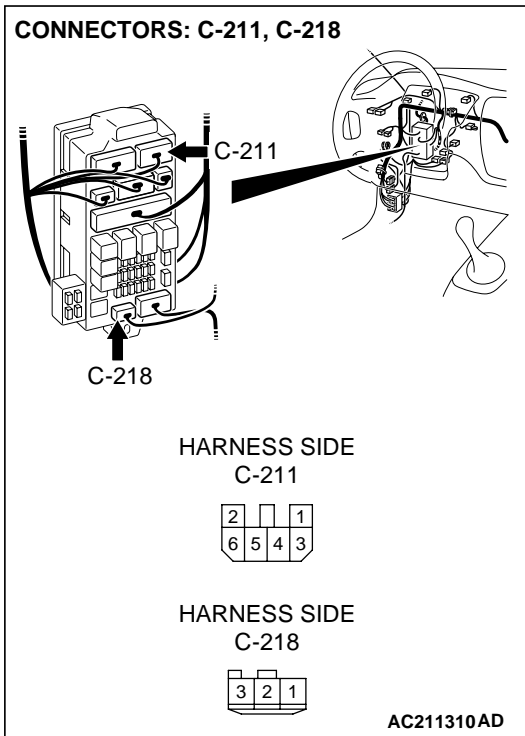
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Check the harness wires between sunroof motor assembly connector D-32 (terminal 2) and ignition switch (IG2).

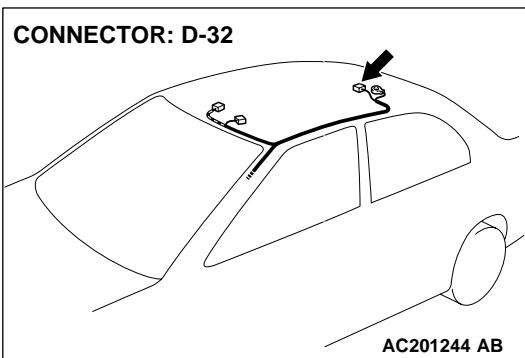


NOTE: Also check junction block connectors C-211 and C-218 for loose, corroded, or damaged terminals, or terminals pushed back in the connector, check the wires. If junction block connector C-211 or C-218 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the harness wires between sunroof motor assembly connector D-32 (terminal 2) and ignition switch (IG2) in good condition?

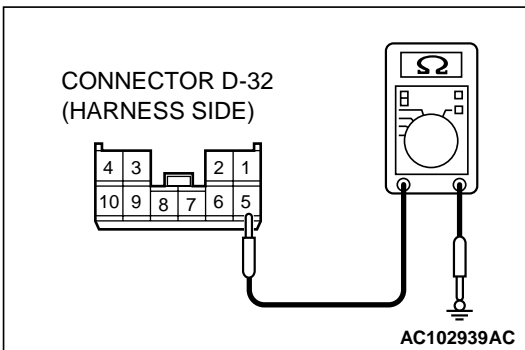
YES : No action is necessary and testing is complete.

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. The sunroof should now work normally.



STEP 6. Check the ground circuit to the sunroof motor assembly. Measure at sunroof motor assembly connector D-32.

(1) Disconnect sunroof motor assembly connector D-32 and measure the resistance available at the wiring harness side of the connector.



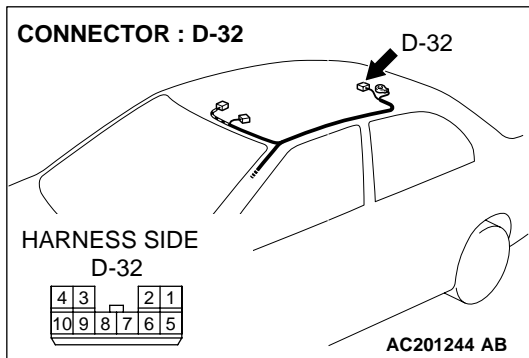
(2) Measure the resistance between terminal 5 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.

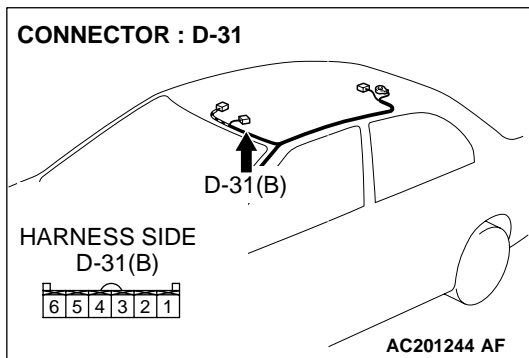


STEP 7. Check the harness wire between sunroof motor assembly connector D-32 (terminal 5) and ground.

Q: Is the harness wire between sunroof motor assembly connector D-32 (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.

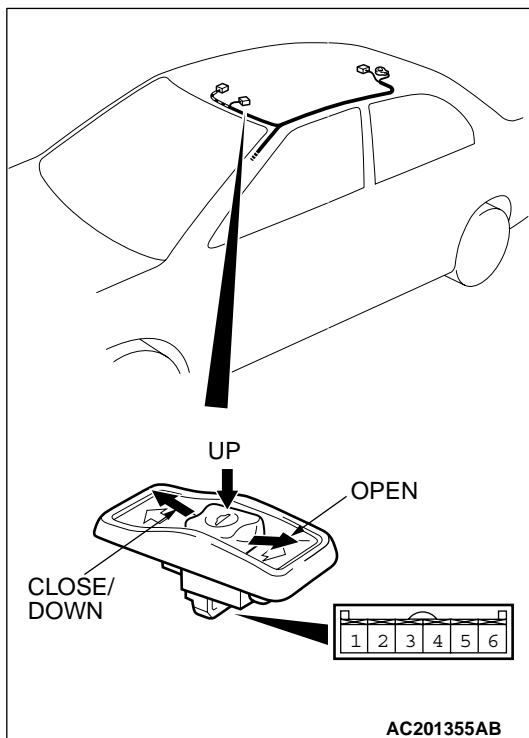


STEP 8. Check the sunroof switch connector D-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof switch connector D-31 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 sunroof switch.

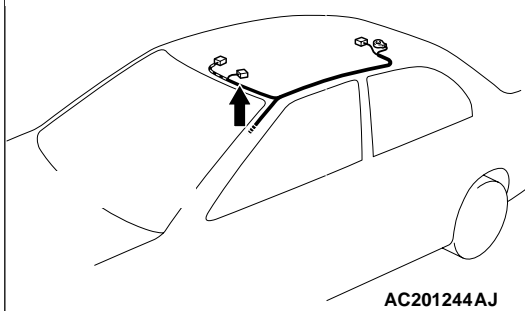
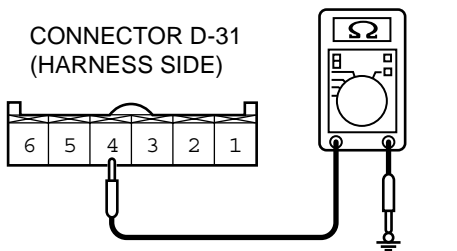
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Off	3 – 4, 4 – 5, 4 – 6	Open circuit
UP	3 – 4	Less than 2 ohms
OPEN	4 – 5	Less than 2 ohms
CLOSE/DOWN	4 – 6	Less than 2 ohms

Q: Does the check above meet the table?

YES : Go to Step 10.

NO : Replace the sunroof switch (Refer to GROUP 42, Sunroof assembly [P.42-65](#)). The sunroof should now work normally.

CONNECTOR: D-31

CONNECTOR D-31
(HARNESS SIDE)**STEP 10. Check the ground circuit to the sunroof switch.
Measure the resistance at sunroof switch connector D-31.**

(1) Disconnect sunroof switch connector D-31 and measure the resistance available at the wiring component side of the connector.

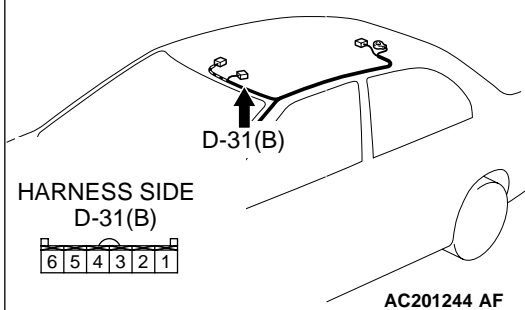
(2) Measure the resistance between terminal 4 and ground.
 • The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Replace the sunroof motor assembly (Refer to GROUP 42, Sunroof assembly P.42-68). The sunroof should now work normally.

NO : Go to Step 11.

CONNECTOR: D-31

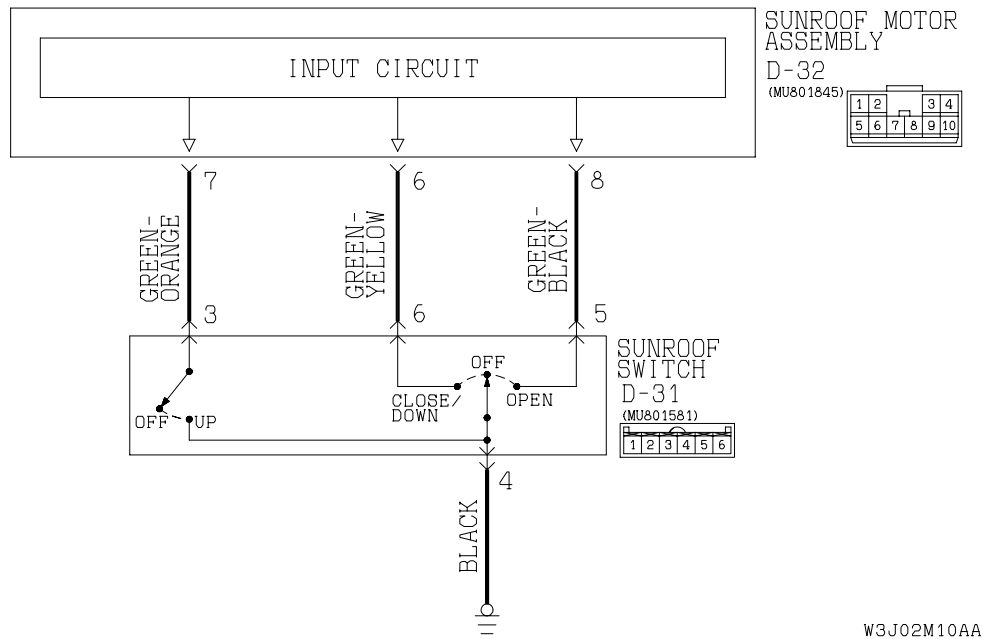
**STEP 11. Check the harness wire between sunroof switch connector D-31 (terminal 4) and ground.****Q: Is the harness wire between sunroof switch connector D-31 (terminal 4) and ground in good condition?**

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 should now work normally.

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

Sunroof Switch Circuit



TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The sunroof switch may be defective
- The sunroof-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)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

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

Check the input signals from the sunroof switch.

⚠ CAUTION

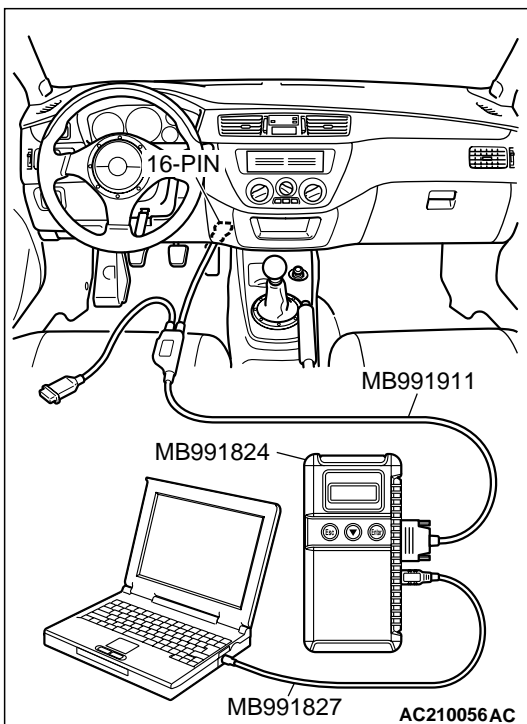
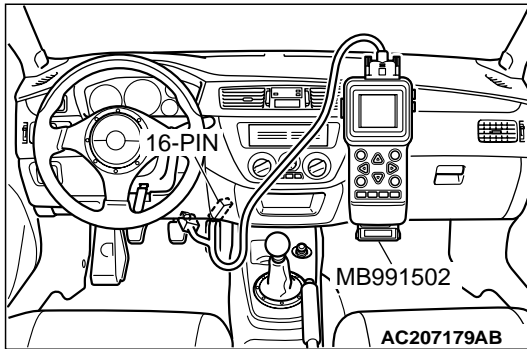
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "PULSE CHECK."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "PULSE CHECK."
- (3) When each function of the sunroof switch is operated, check that scan tool MB991502 or MB991958 sounds.

Q: Does scan tool MB991502 or MB991958 sound when the sunroof switch is operated?

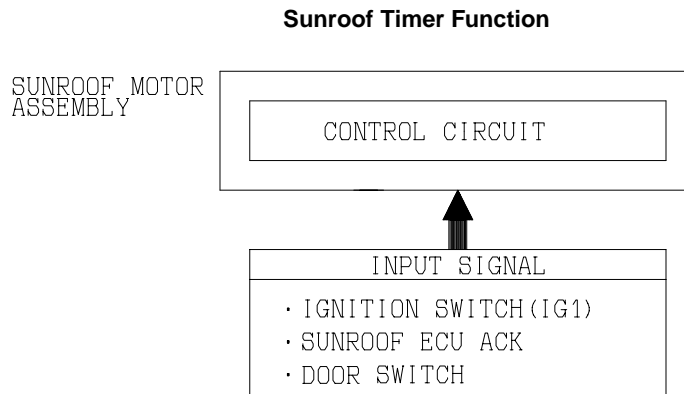
YES : Replace the sunroof motor assembly (Refer to GROUP 42, Sunroof P.42-68). Verify that the sunroof should now work at all positions normally.

NO : Refer to Inspection Procedure N-9 "ETACS-ECU does not receive any signal from the up, open or close/down switch P.54B-472."



INSPECTION PROCEDURE F-3: Sunroof: Sunroof timer function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."



W3S12M02AA

CIRCUIT OPERATION

- The sunroof timer function works according to the signals from the following switches:
 - Ignition switch (IG1): OFF
 - Driver's door switch: OFF
- Vehicle condition
 - Ignition switch: LOCK position
 - Driver'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 function does not work normally, the input circuit system from the switches, the sunroof motor assembly or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- The driver's door switch may be defective
- The sunroof-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)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Sunroof motor assembly (sunroof-ECU)

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

- Select "Interactive Diagnosis."
- Select "System select."
- Select "SWS."
- Select "SWS MONITOR."
- Select "ECU COMM Check."

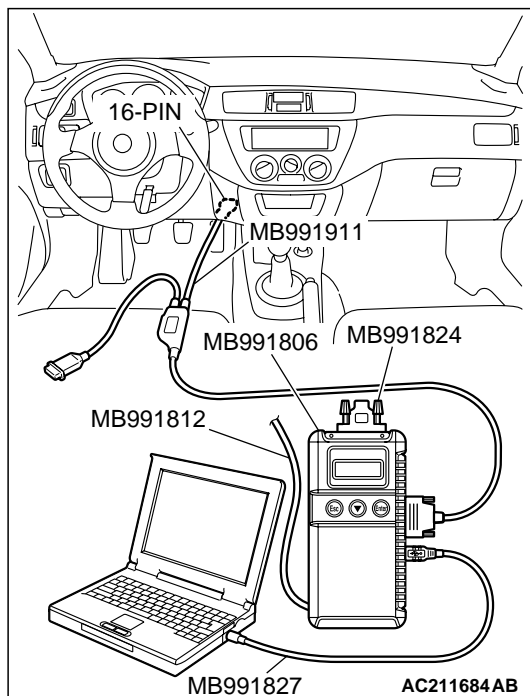
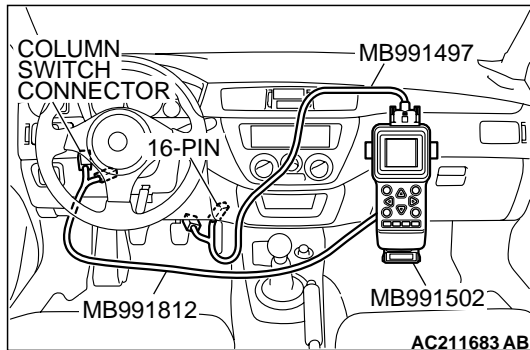
(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" and the "SUNROOF ECU" menus.

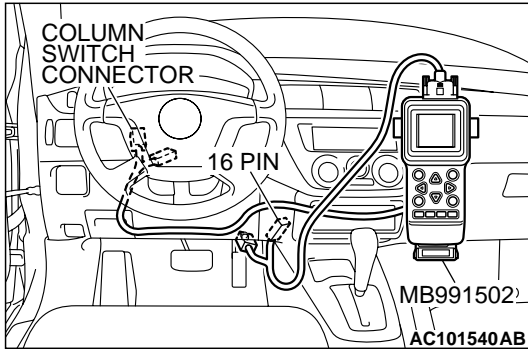
Q: Is "OK" displayed on both the "ETACS ECU" and "SUNROOF ECU" menu?

"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 the ETACS-ECU is not possible P.54B-42."

"NG" is displayed on the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "Communication with the sunroof motor assembly (sunroof-ECU) is not possible P.54B-56."





STEP 2. Check the input signal by using "Function Diag." menu of the SWS monitor.

- (1) Check the input signals from the following the ignition switch to the "OFF" position.
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "SUNROOF-OPE."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "SUNROOF."
 - g. Select "SUNROOF-OPE."
- (3) Check that normal conditions are displayed on the items described in the table below.

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

Q: Does scan tool MB991502 or MB991958 display the items "IG SW (IG1)" and "S/R ECU ACK" as normal condition?

Normal conditions are displayed for all the items :

Replace the ETACS-ECU. Verify that the sunroof timer function should now work normally.

Normal condition is not displayed on the "IG SW (IG1)" :

Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed on the "S/R ECU

ACK" : Replace the sunroof motor assembly (Refer to GROUP 42, Sunroof [P.42-68](#)). Verify that 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 (Refer to GROUP 42, Sunroof assembly [P.42-68](#)).

Verify that the sunroof safety mechanism should now work normally.

WINDSHIELD WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE WINDSHIELD WIPER AND WASHER

M1549021500097

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

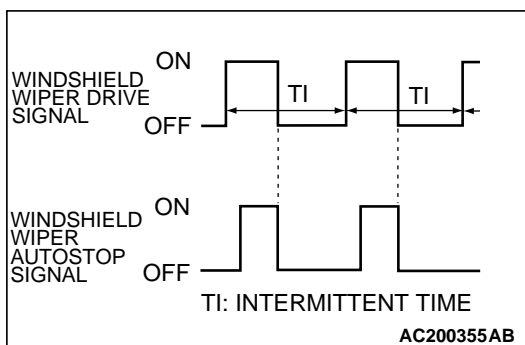
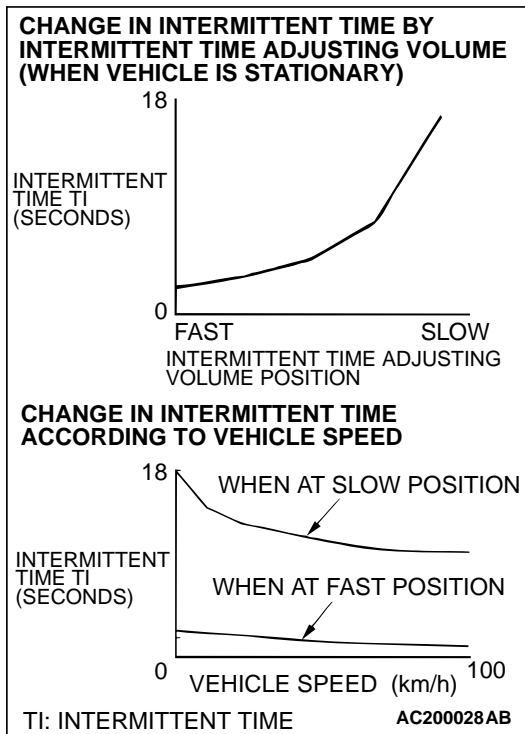
FUNCTION	CONTROL ECU	
Windshield wiper and washer control function	Intermittent control (Vehicle speed-dependent variable type)	ETACS-ECU, front-ECU, column switch
	Mist wiper control	ETACS-ECU, column switch
	Low speed wiper and high speed wiper control	ETACS-ECU, column switch
	Washer control	ETACS-ECU,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

Windshield wiper and washer control function

Intermittent control (Vehicle speed-dependent variable type)

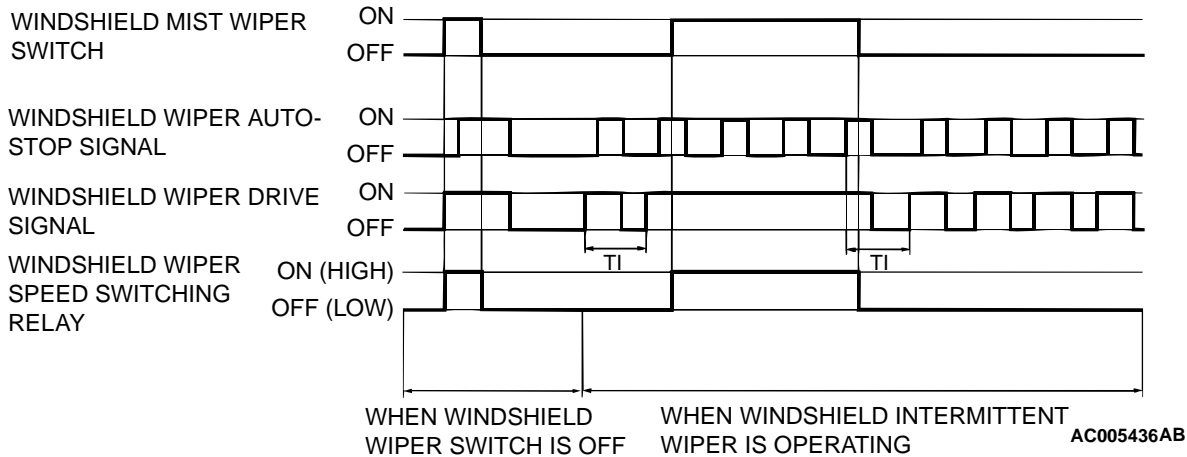
The ETACS-ECU calculates the intermittent time according to the vehicle speed calculated from the windshield wiper intermittent time adjusting knob and vehicle speed signal (ECM) and sends it to the front ECU as SWS data.

NOTE: The vehicle speed-dependent function can be disabled by the adjustment procedures of SWS function (Refer to P.54B-545).



The front-ECU determines the intermittent time TI 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 wiper drive signal. After the intermittent time TI 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

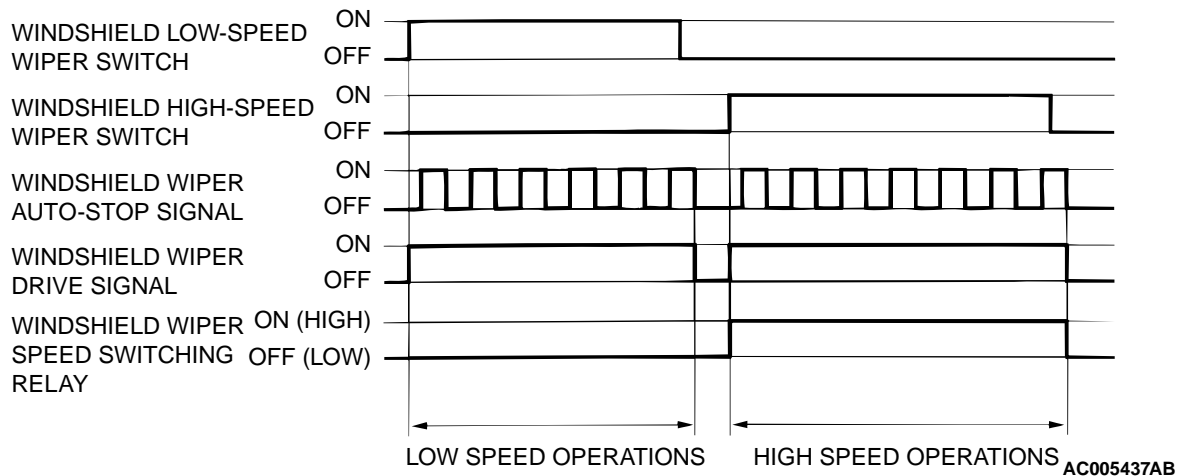


TI: INTERMITTENT WIPER INTERMITTENT TIME

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). 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 pre-determined 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 TI seconds after the windshield wiper auto-stop signal is turned ON last.

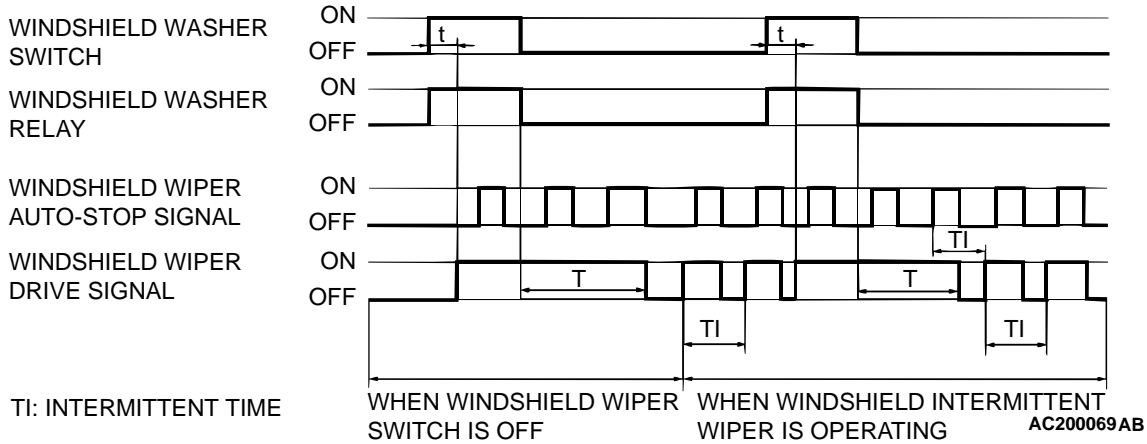
Low speed wiper, high speed wiper control



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 (LOW) 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 (HIGH), and the windshield wiper is operated at high speed.

Washer control



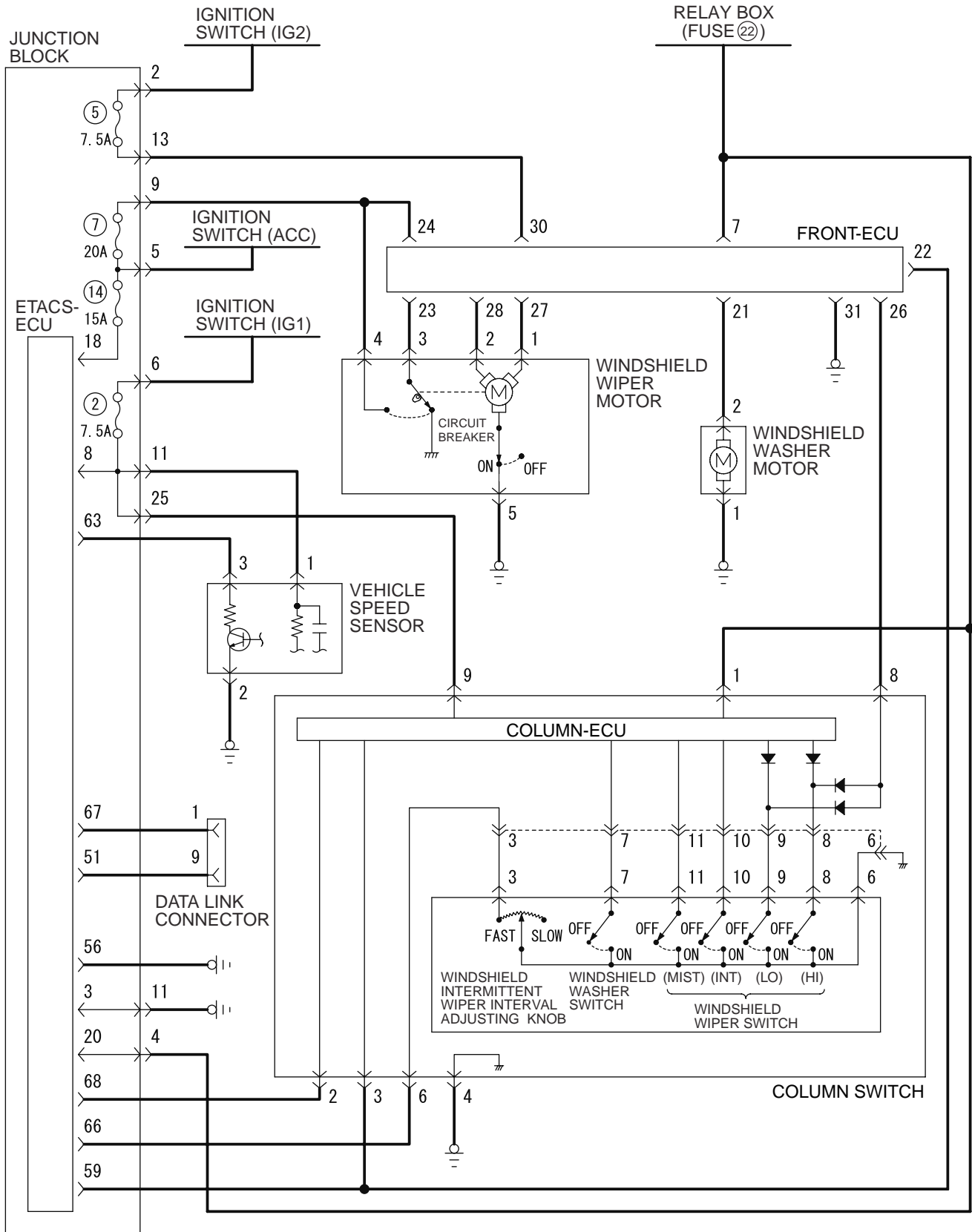
When the ignition switch is at the ACC or ON position, if the windshield washer switch of the column switch is turned ON, the front-ECU turns ON the windshield washer relay. The windshield wiper drive signal is turned ON in 0.3 seconds until 3 seconds after the windshield washer switch goes OFF to

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 LOW or HIGH
	t	T	TI	TI	t	T	TI	TI	
t	0.3 seconds or less	0.3 – 0.5 seconds	0.5 – 0.7 seconds	0.7 seconds	Less than 0.2 seconds	0.3 – 0.5 seconds	0.5 – 0.7 seconds	0.7 seconds	–
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

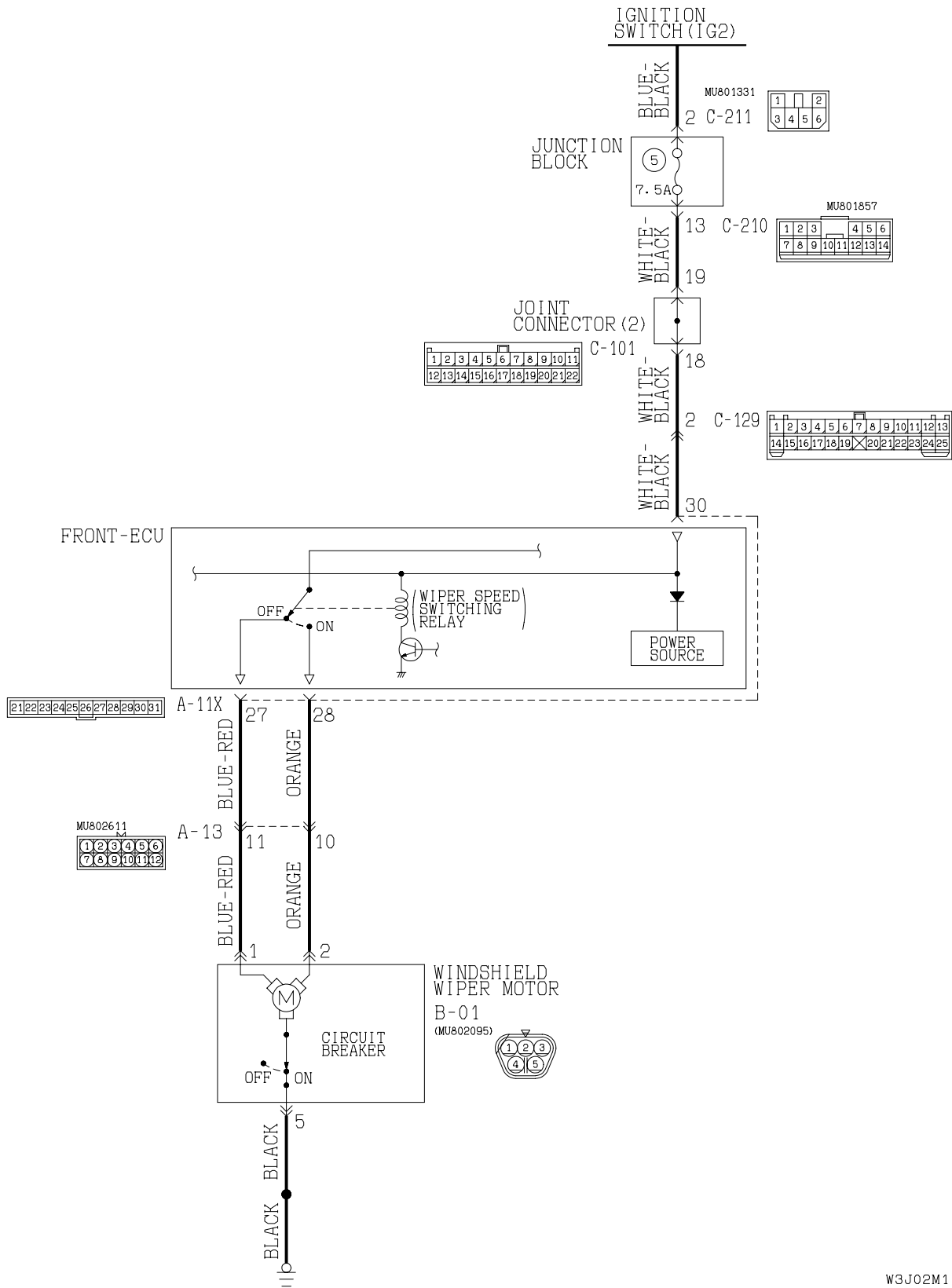


W3J13M03AA

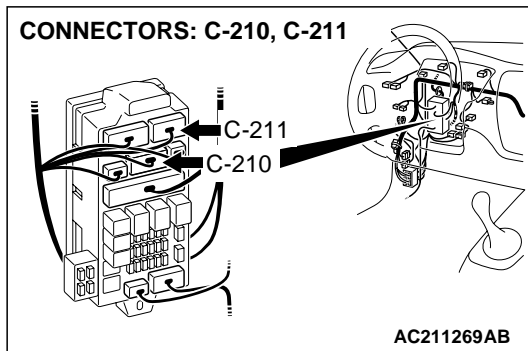
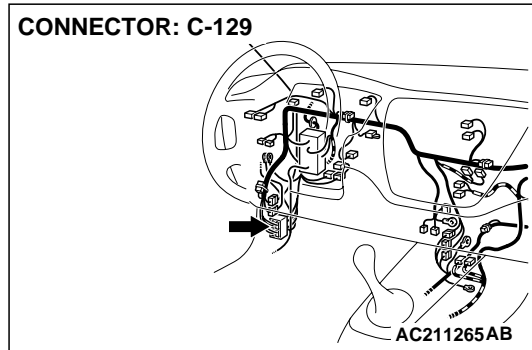
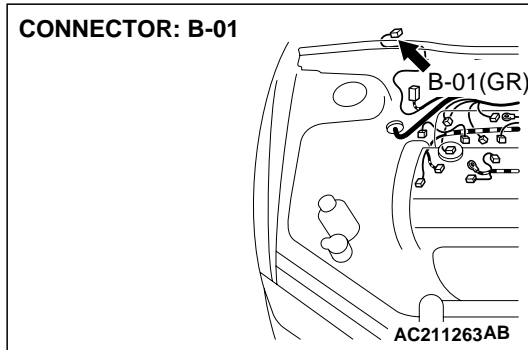
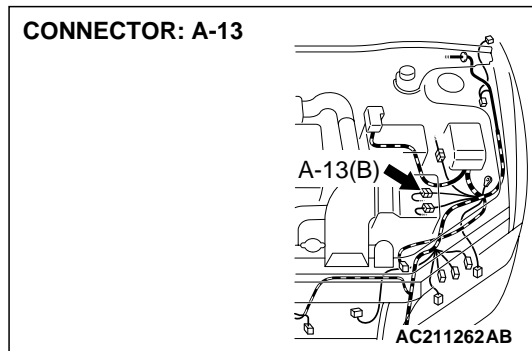
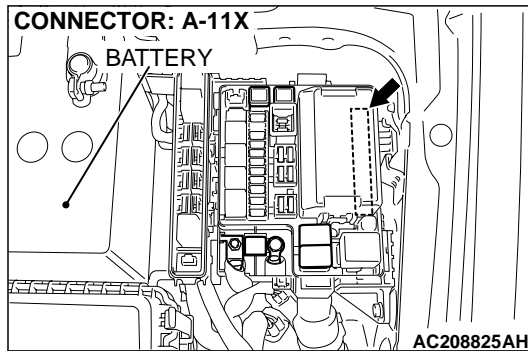
INSPECTION PROCEDURE G-1: Windshield Wiper and Washer: Windshield wipers does not work at all.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Windshield Wiper Motor Circuit



W3J02M11AA



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 ("LOW" or "HIGH").

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

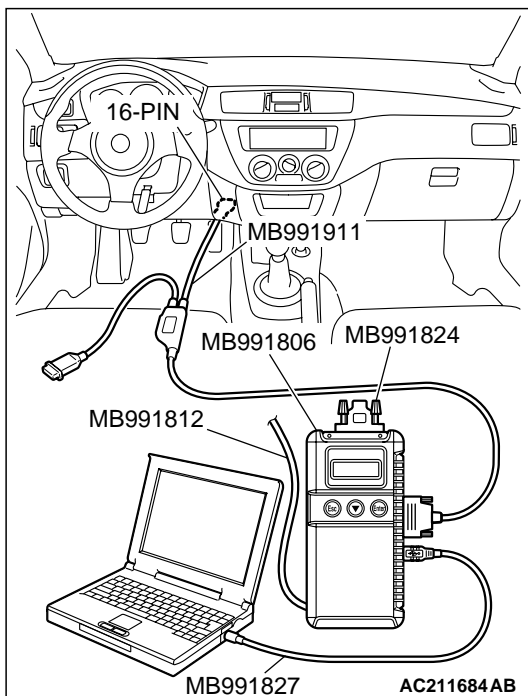
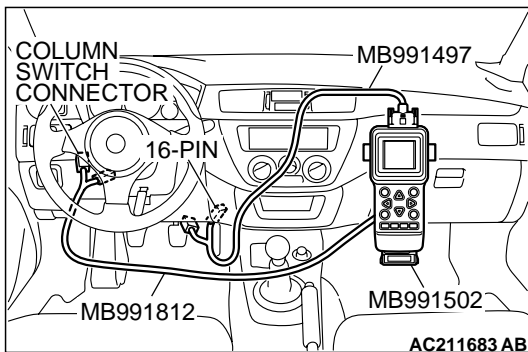
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "ON" position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

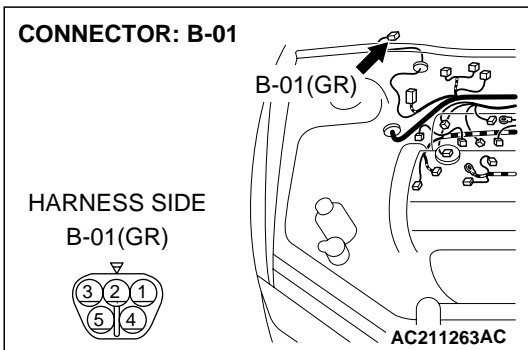
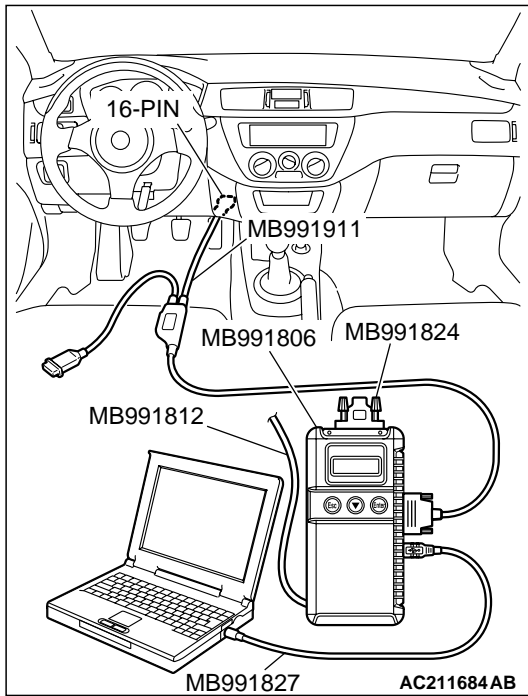
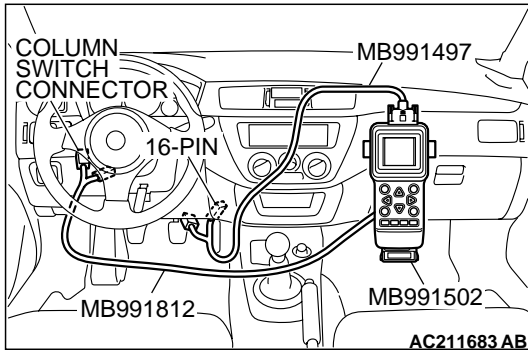
Q: Is "OK" displayed on both the "COLUMN ECU" and "FRONT ECU" menu?

"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.54B-35."

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54B-49."





STEP 2. Check the input signal by using "Function Diag." menu of the SWS monitor.

Check the input signals from the following switches:

- ignition switch: ACC
- windshield wiper switch: INT

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "F.WIPER INT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "WIPER."
 - g. Select "F.WIPER INT."
- (2) Check that normal conditions are displayed 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: Does scan tool MB991502 or MB991958 display the items "INT WIPER SW" and "FRONT ECU ACK" as normal condition?

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

Normal condition is not displayed on the "INT WIPER SW" : Replace the column switch (Refer to GROUP 54A, Column switch P.54A-101). Verify that the windshield wiper works normally.

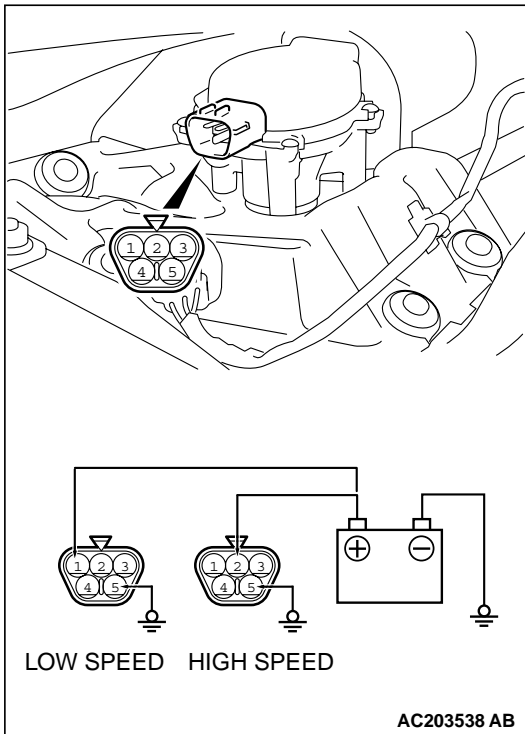
Normal condition is not displayed on the "FRONT ECU ACK" : Replace the front-ECU. Verify that the windshield wiper works normally.

STEP 3. Check windshield wiper motor connector B-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector B-01 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 should now works normally.



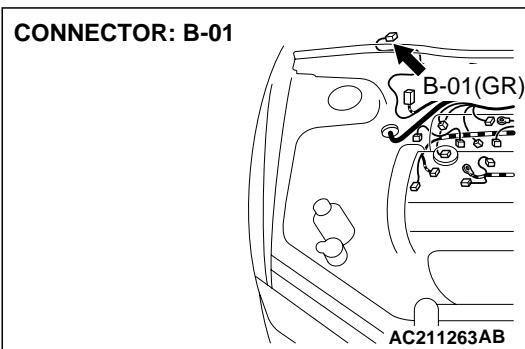
STEP 4. Check the windshield wiper motor.

- (1) Disconnect windshield wiper motor connector B-01.
- (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?

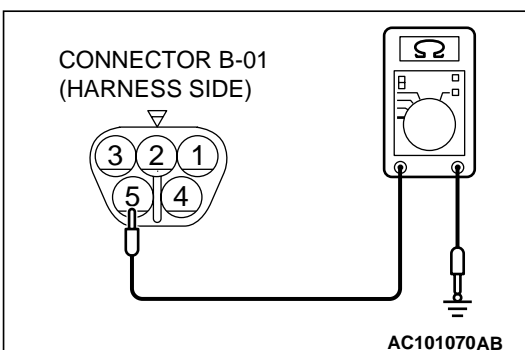
YES : Go to Step 5.

NO : Replace the windshield wiper motor (Refer to GROUP 51, Windshield wiper P.51-16). Verify that the windshield wiper should now works normally.



STEP 5. Check the ground circuit to the windshield wiper motor. Measure the resistance at the connector B-01.

- (1) Disconnect windshield wiper motor connector B-01 and measure the resistance available at the wiring harness side of the connector.



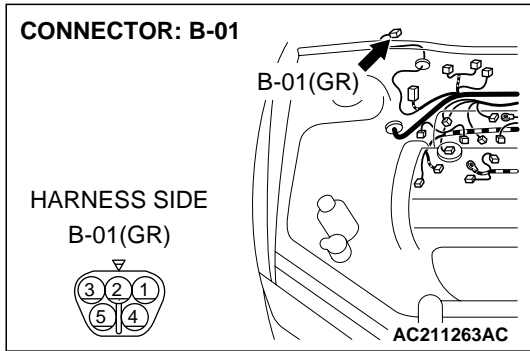
- (2) Measure the resistance value between terminal 5 and ground.

- 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 6.

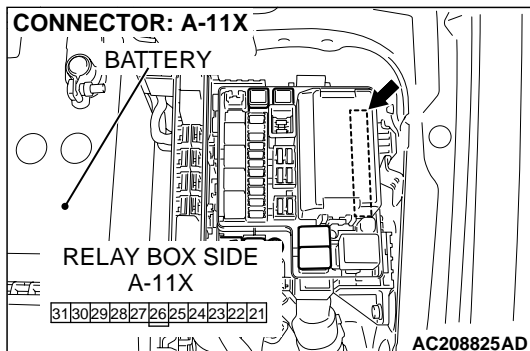


STEP 6. Check the wiring harness between windshield wiper motor connector B-01 (terminal 5) and ground.

Q: Is the wiring harness between windshield wiper motor connector B-01 (terminal 5) and ground in good condition?

YES : No action is necessary and testing is complete.

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

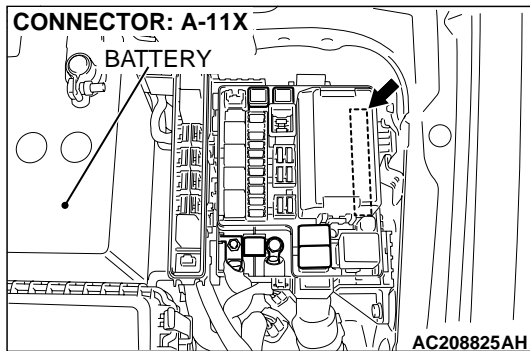


STEP 7. Check the front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

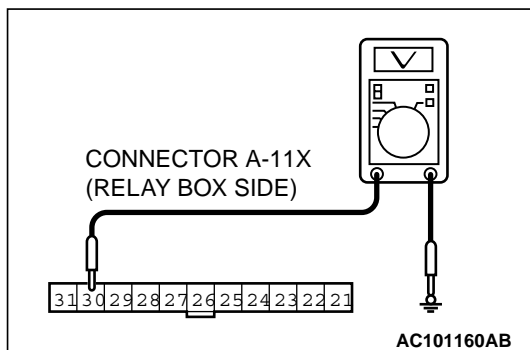
YES : Go to Step 8.

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



STEP 8. Check the ignition switch (IG2) circuit to the front-ECU. Measure the voltage at front-ECU connector A-11X.

- (1) Disconnect front-ECU A-11X and measure the voltage available at the relay box side of the connector.
- (2) Turn the ignition switch to the "ON" position.



- (3) Measure the voltage between terminal 30 and ground.

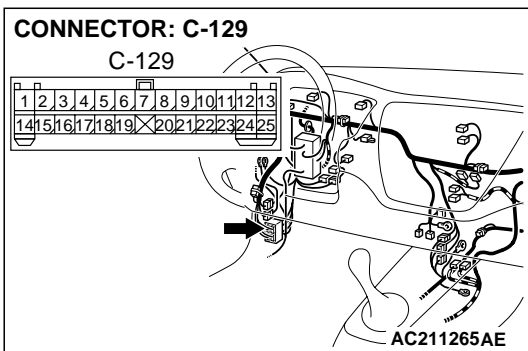
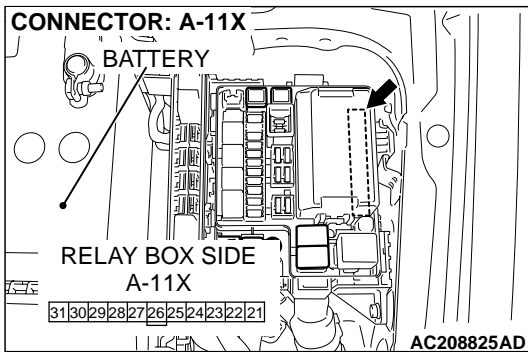
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Replace the front-ECU. Verify that the windshield wiper should now work normally.

NO : Go to Step 9.

STEP 9. Check the wiring harness between front-ECU connector A-11X (terminal 30) and the ignition switch (IG2).

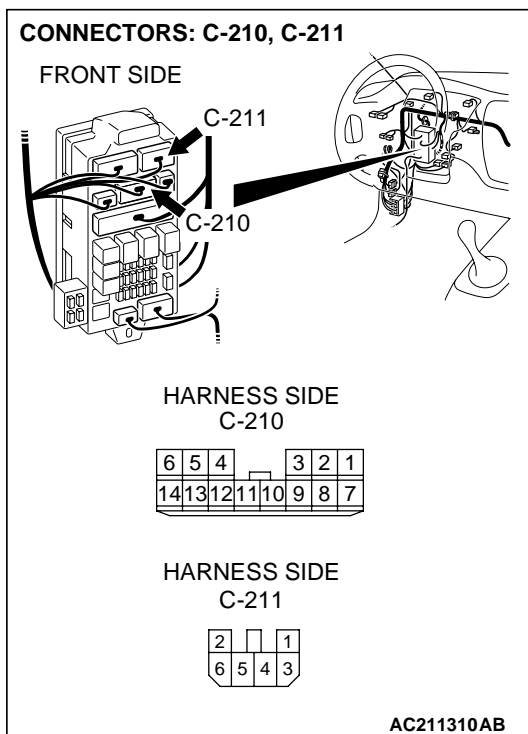


NOTE: Also check intermediate connector C-129, junction block connectors C-210 and C-211 and joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129, junction block connector C-210 or C-211 or joint connector C-101 is 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-11X (terminal 30) and the ignition switch (IG2) in good condition?

YES : No action is necessary and testing is complete.

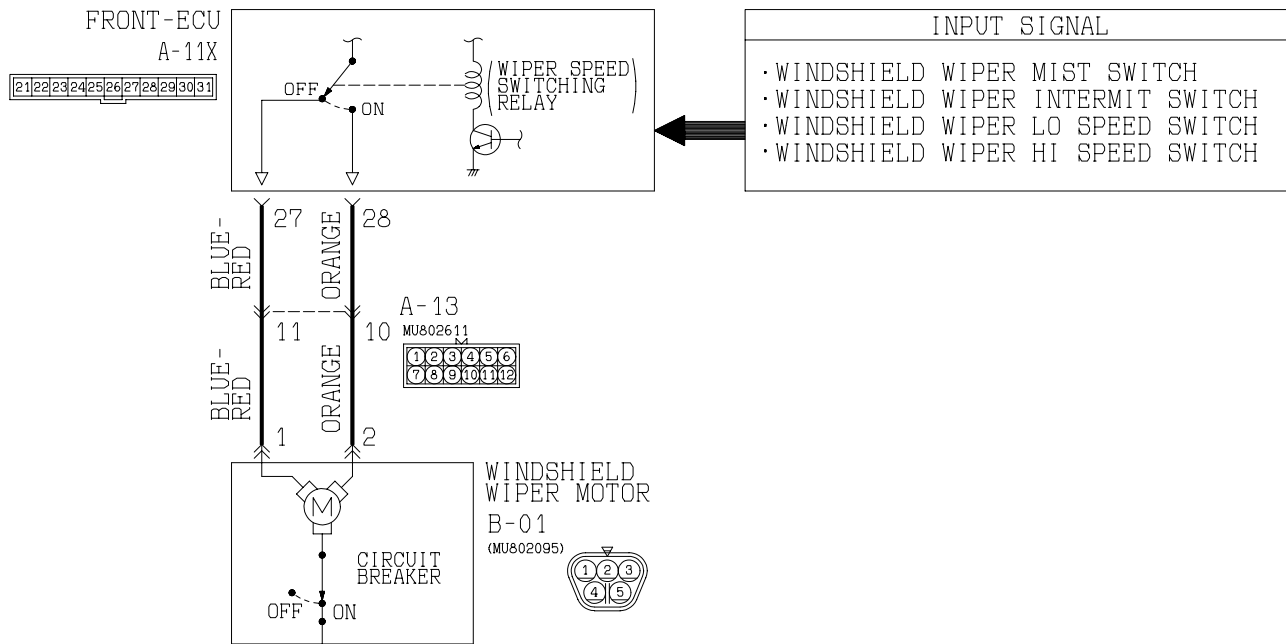
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper should now work normally.



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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Windshield Wiper Motor Drive Circuit



W2J08M52AA

TECHNICAL DESCRIPTION (COMMENT)

This 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 an open circuit in the SWS communication line or other reasons, the system will enter the fail-safe mode when the ignition switch is at the "ACC" position.

TROUBLESHOOTING HINTS

- The front-ECU may be defective
- The column switch may be defective (windshield wiper and washer switch)
- 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)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

- Select "Interactive Diagnosis."
- Select "System select."
- Select "SWS."
- Select "SWS MONITOR."
- Select "ECU COMM Check."

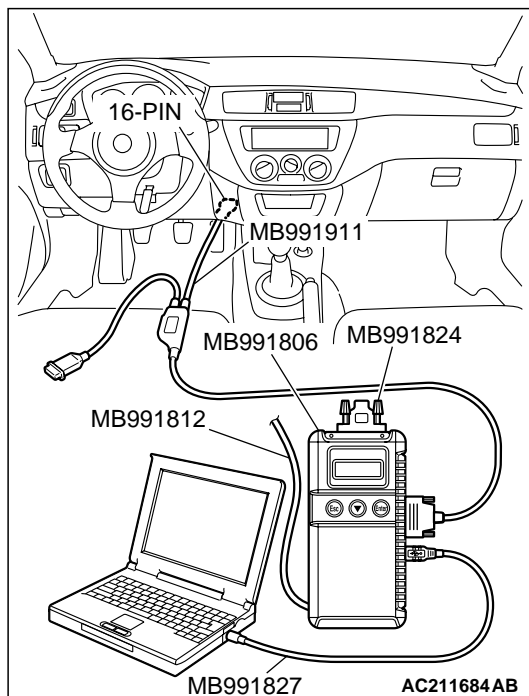
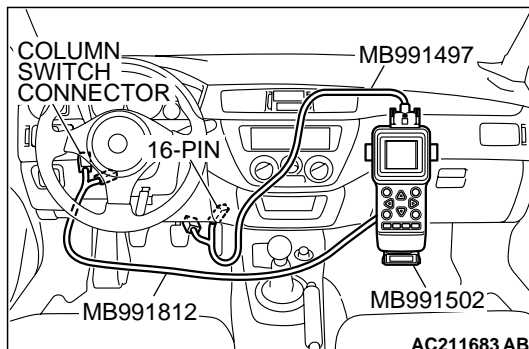
(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" are displayed for all the items : Replace the front-ECU. Verify that the windshield wiper should now work normally.

"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54B-35."

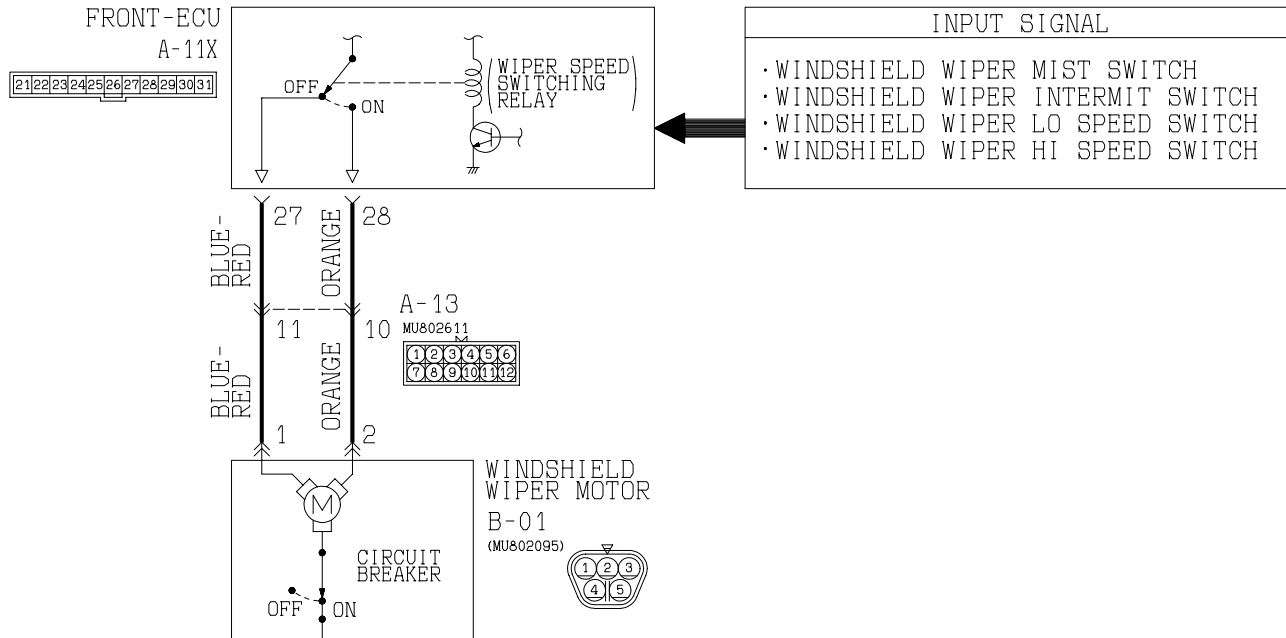
"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54B-49."



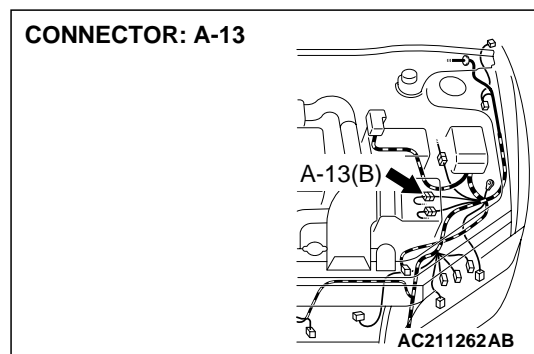
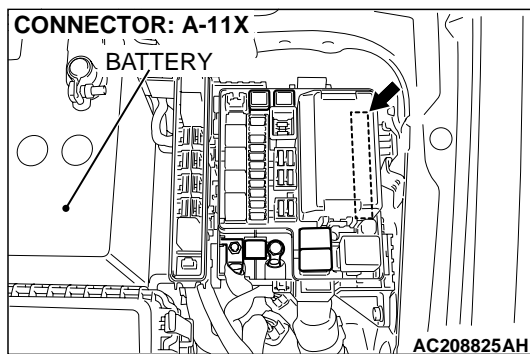
INSPECTION PROCEDURE G-3: Windshield Wiper and Washer: Any of the windshield wiper switch positions is defective.

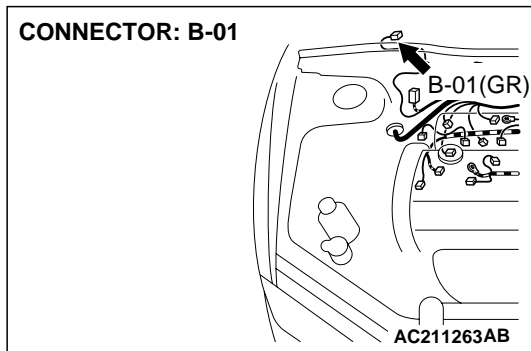
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Windshield Wiper Motor Drive Circuit



W2J08M52AA





TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

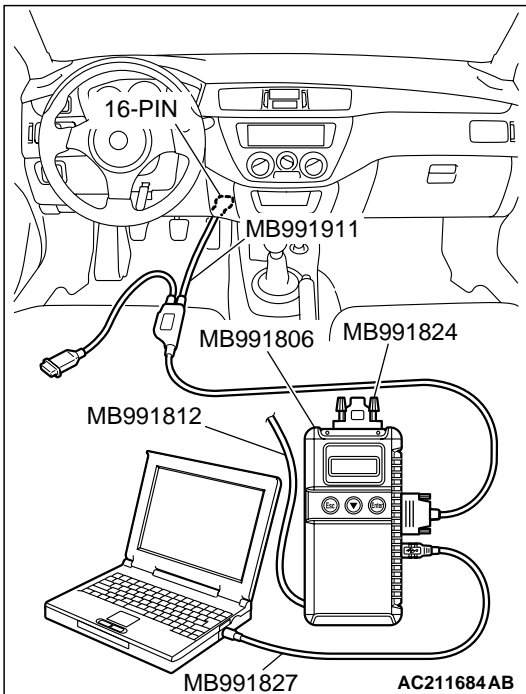
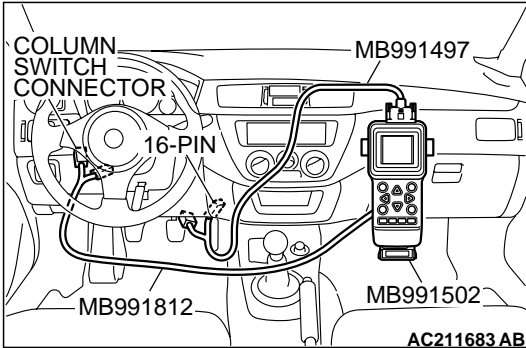
- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Check the input signal by using "Data List" menu of the SWS monitor.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "ACC" position.
- (3) Operate scan tool MB991502 according to the procedure below to display "COLUMN ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "COLUMN ECU."
- (4) Check that normal conditions are displayed on the items described in the table below.

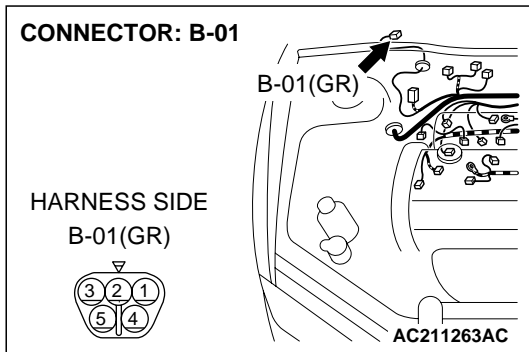


ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 05	INT WIPER SW	ON
ITEM 06	LO WIPER SW	ON
ITEM 07	HI WIPER SW	ON
ITEM 08	MIST WIPER SW	ON

Q: Does scan tool MB991502 or MB991958 display the items "INT WIPER SW", "LO WIPER SW", "HI WIPER SW" and "MIST WIPER SW" as normal condition?

YES : Go to Step 2.

NO : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive a signal from the windshield mist wiper switch P.54B-464."

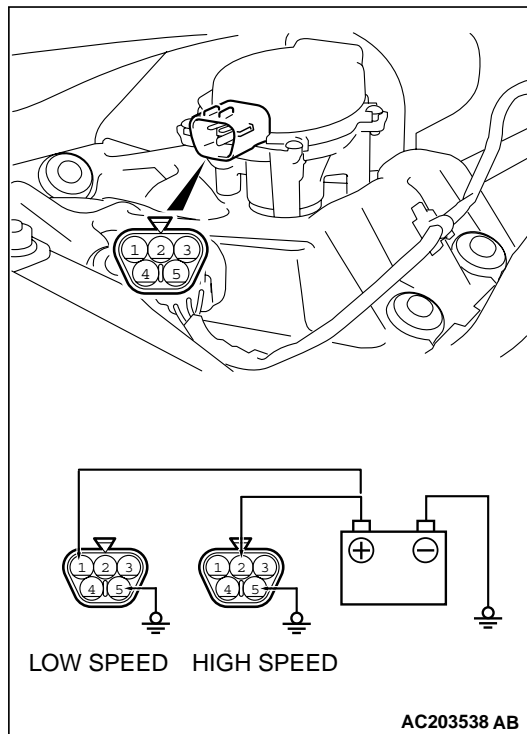


STEP 2. Check windshield wiper motor connector B-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector B-01 in good condition?

YES : Go to Step 3.

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



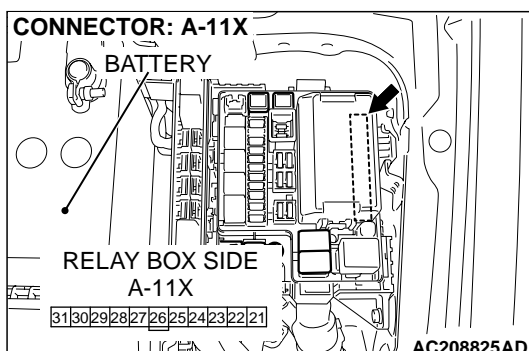
STEP 3. Check the windshield wiper motor.

- (1) Disconnect windshield wiper motor connector B-01.
- (2) Connect a battery to the windshield wiper motor as shown. Then check the windshield wiper motor operates normally at high and low speeds.

Q: Does the windshield wiper motor operate normally?

YES : Go to Step 4.

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



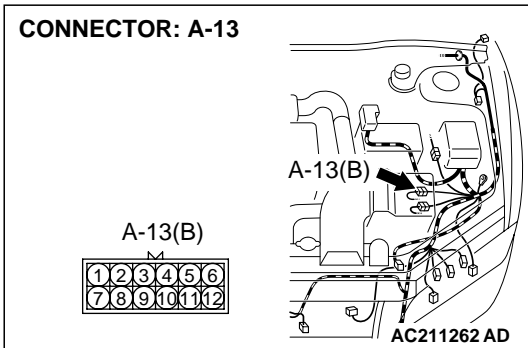
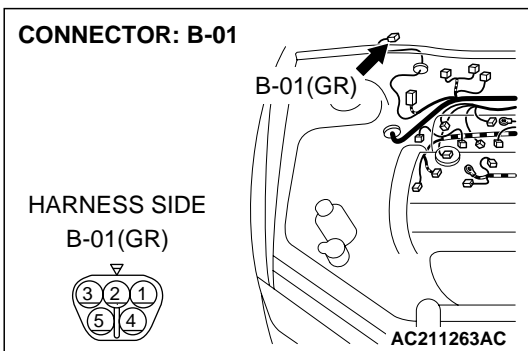
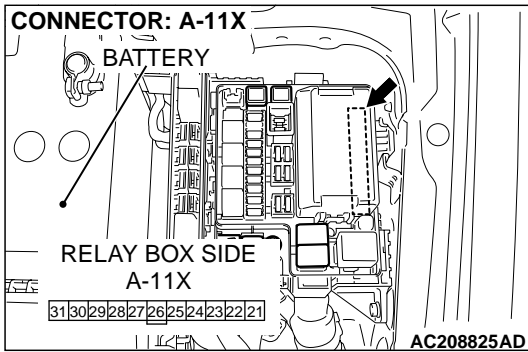
STEP 4. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 5.

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

STEP 5. Check the wiring harness between windshield wiper motor connector B-01 (terminal 1) and front-ECU connector A-11X (terminal 27).



NOTE: Also check intermediate connector A-13 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-13 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-01 (terminal 1) and front-ECU connector A-11X (terminal 27) in good condition?

YES : Go to Step 6.

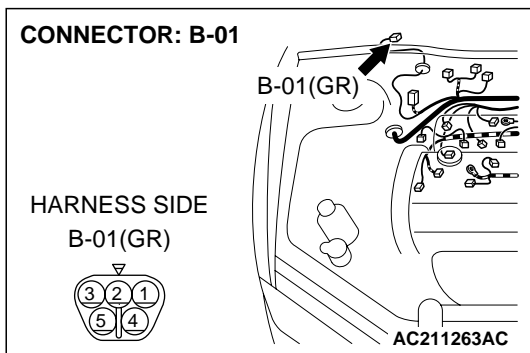
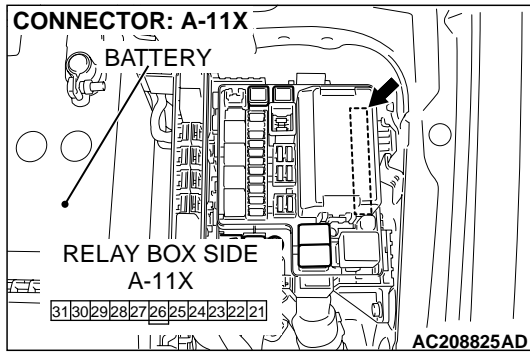
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.

STEP 6. Check the wiring harness between windshield wiper motor connector B-01 (terminal 2) and front-ECU connector A-11X (terminal 28).

Q: Is the wiring harness between windshield wiper motor connector B-01 (terminal 2) and front-ECU connector A-11X (terminal 28) in good condition?

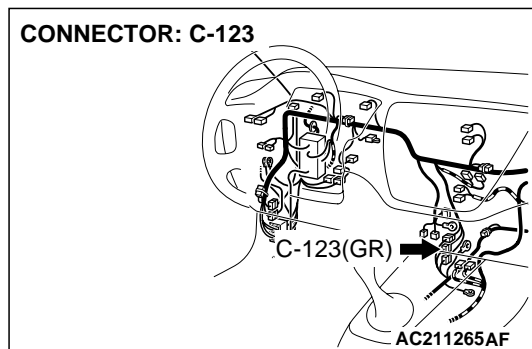
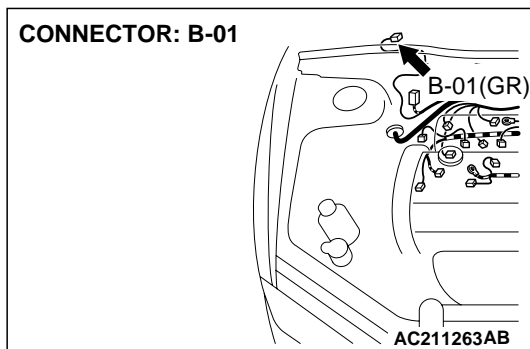
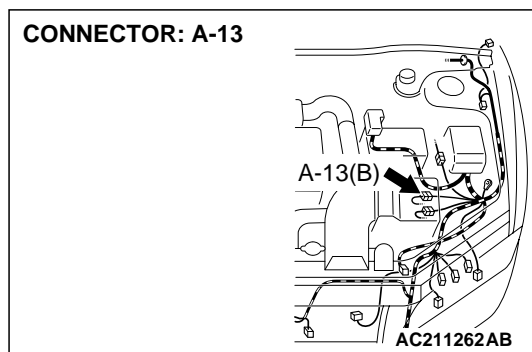
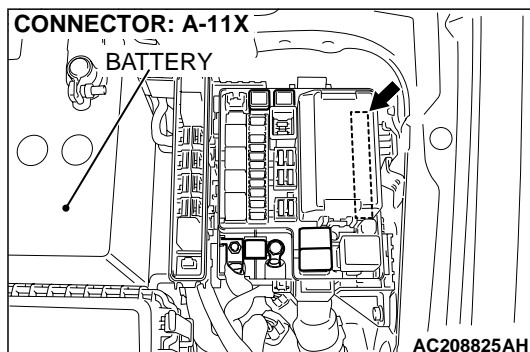
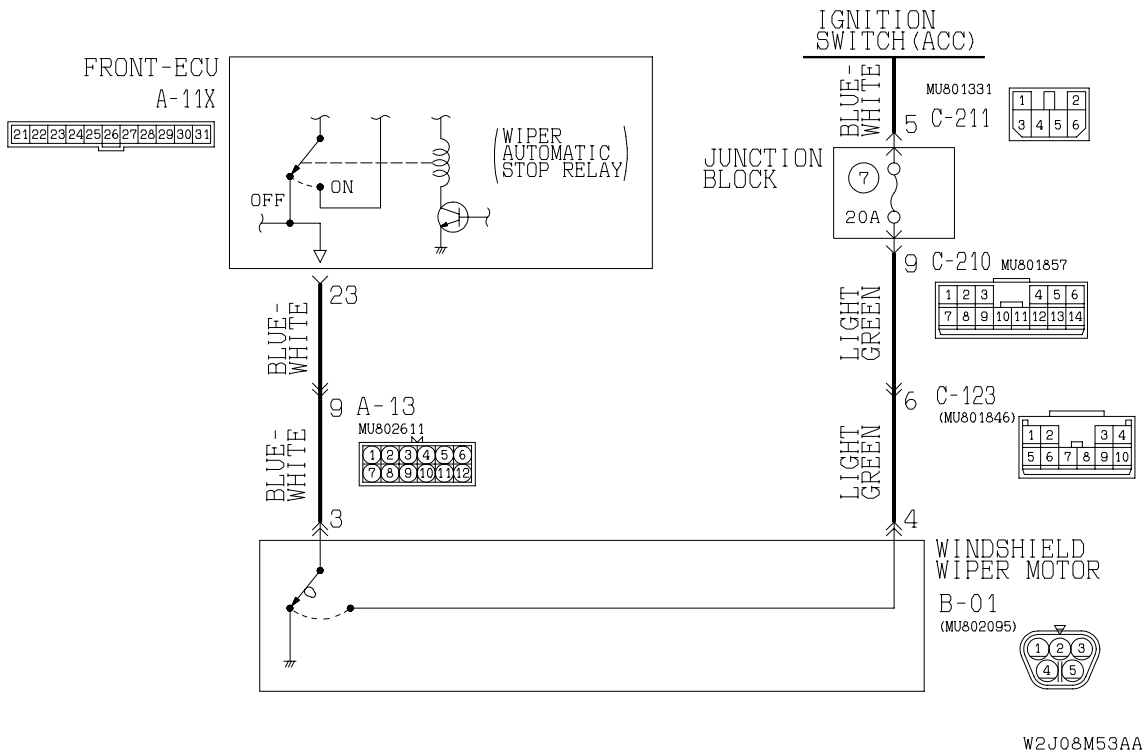
YES : No action is necessary and testing is complete.

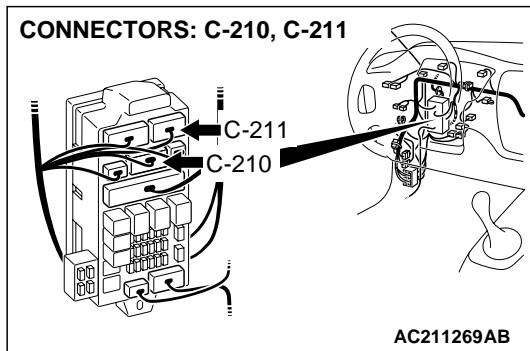
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.



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

Windshield Wiper Automatic Stop Relay Circuit



**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

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

DIAGNOSIS**Required Special Tool:**

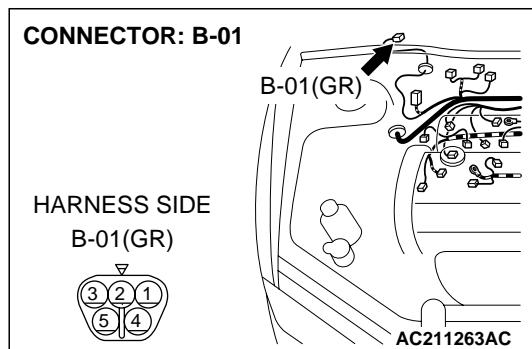
MB991223: Harness Set

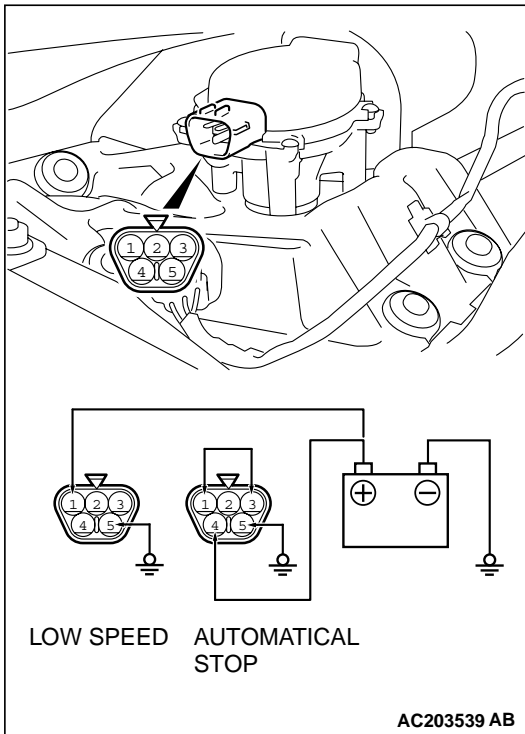
STEP 1. Check windshield wiper motor connector B-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector B-01 in good condition?

YES : Go to Step 2.

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





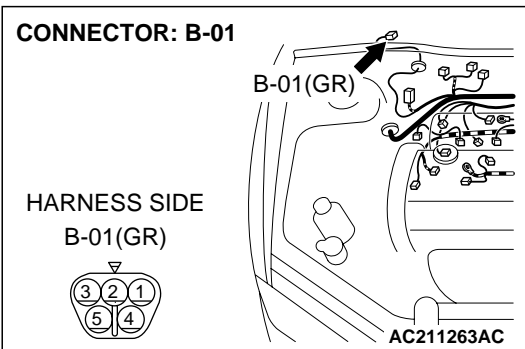
STEP 2. Check the windshield wiper motor.

- (1) Disconnect windshield wiper motor connector B-01.
- (2) Connect a vehicle speed to operate the wipers at low speed. While the wipers are working, disconnect the battery at positions other than the predetermined park position to stop the wiper motor.
- (3) When the battery is connected as shown, the motor should run at low speed, and then stop at the predetermined park position.

Q: Does the windshield wiper motor operate normally?

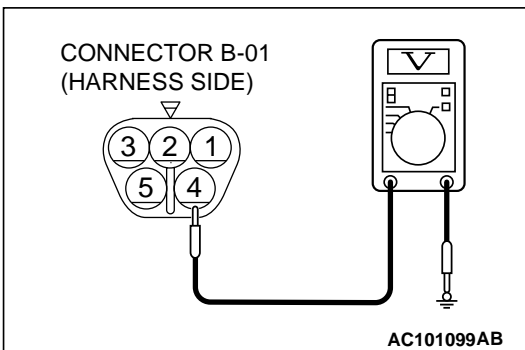
YES : Go to Step 3.

NO : Replace the windshield wiper motor (Refer to GROUP 51, Windshield wiper P.51-16). Verify that the windshield wiper should stop at the predetermined park position.



STEP 3. Check the battery power supply circuit to the windshield wiper motor. Measure the voltage at the windshield wiper motor connector B-01.

- (1) Disconnect windshield wiper motor connector B-01 and measure the voltage available at the component side of the connector.
- (2) Turn the ignition switch to the "ACC" position.



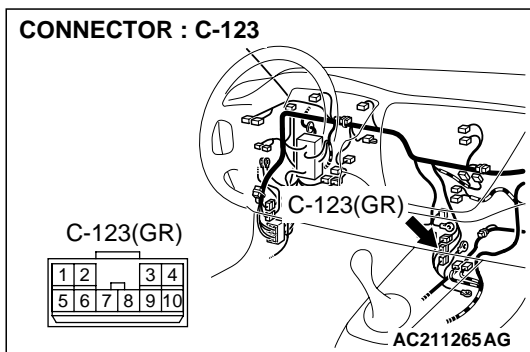
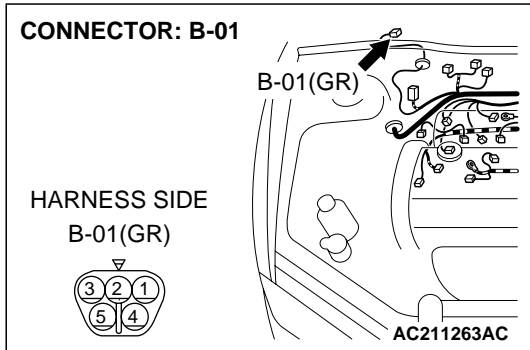
- (3) Measure the voltage between terminal 4 and ground.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between windshield wiper motor connector B-01 (terminal 4) and the ignition switch (ACC).

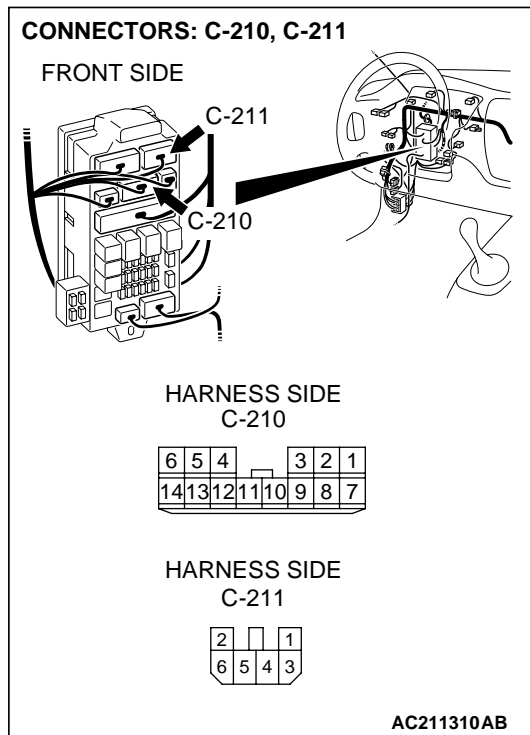


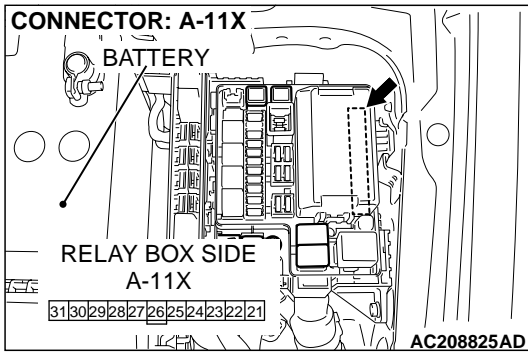
NOTE: Also check intermediate connector C-123, junction block connectors C-210 and C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-123 or junction block connector C-210 or C-211 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between windshield wiper motor connector B-01 (terminal 4) and the ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper should stop at the predetermined park position.



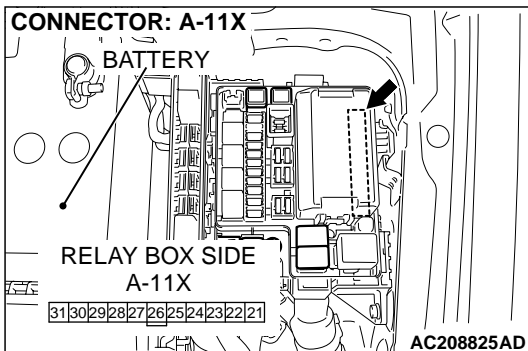


STEP 5. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

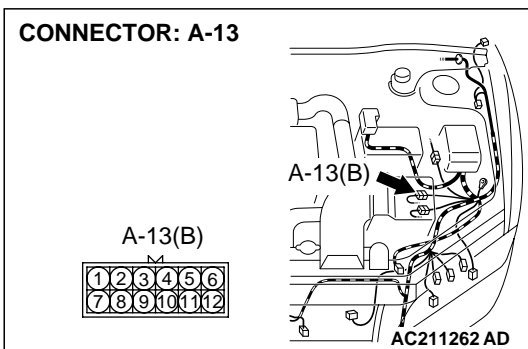
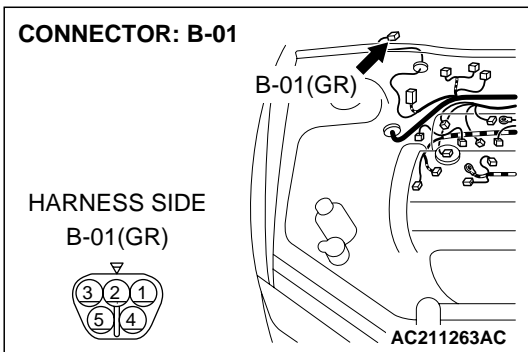
Q: Is front-ECU connector A-11X in good condition?

YES : Go to Step 6.

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



STEP 6. Check the wiring harness between windshield wiper motor connector B-01 (terminal 3) and front-ECU connector A-11X (terminal 23).



NOTE: Also check intermediate connector A-13 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors A-13 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-01 (terminal 3) and front-ECU connector A-11X (terminal 23) in good condition?

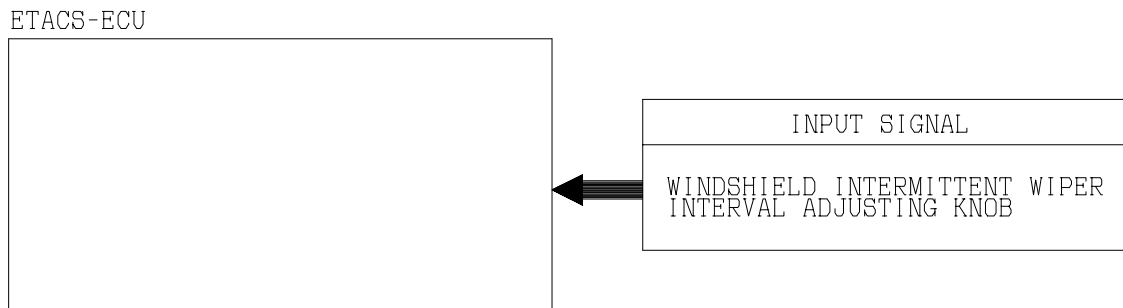
YES : Replace the front-ECU.

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.

INSPECTION PROCEDURE G-5: Windshield Wiper and Washer: The windshield intermittent wiper interval is not changed by operating the windshield intermittent wiper interval adjusting knob or according to the vehicle speed.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Windshield Intermittent Wiper Interval Adjusting Knob Input Signal



W2J08M54AA

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

Check the input signal by using "Function Diag." menu of the SWS monitor.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "ACC" position.
- (3) Set the windshield wiper switch to the following condition:
 - Windshield wiper switch: INT
 - Vehicle speed: 0 km/h (mph)
- (4) Operate scan tool MB991502 according to the procedure below to display "F.WIPER INT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "WIPER."
 - g. Select "F.WIPER INT."
- (5) Check that normal conditions are displayed on the items described in the table below.

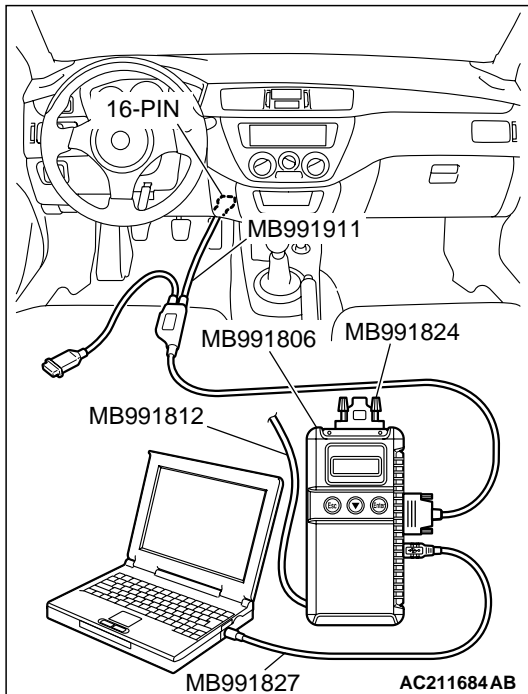
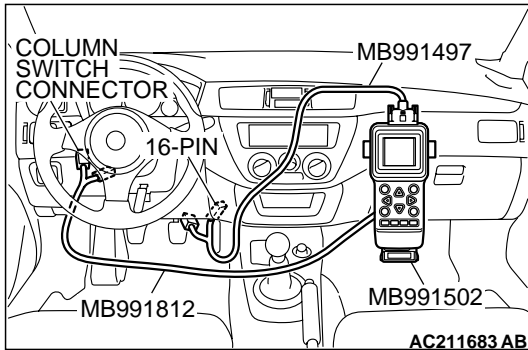
NOTE: Also check that the windshield wiper interval changes smoothly when the windshield intermittent wiper interval adjusting knob is rotated from "SLOW" to "FAST" positions.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 37	INT WIPER TIME	2.4 – 18.0 s

Q: Does scan tool MB991502 or MB991958 display the item "INT WIPER TIME" as normal range when the windshield intermittent wiper interval adjusting knob is rotated?

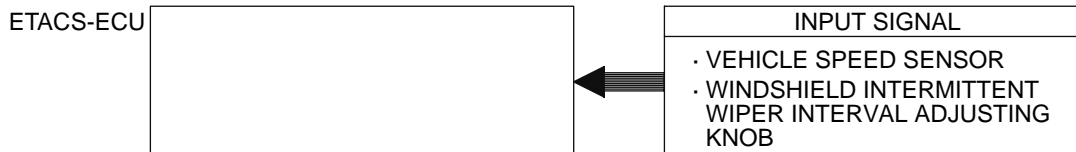
YES : Replace the front-ECU. Check that the windshield intermittent wiper interval changes according to the vehicle speed or while the windshield intermittent wiper interval adjusting knob is rotated.

NO : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive a signal from the windshield mist wiper switch P.54B-464."



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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Windshield Intermittent Wiper Circuit

W3J13M02AA

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Check the input signal by using the pulse check mode of the monitor.

Check the input signals from the vehicle speed sensor.

⚠ CAUTION

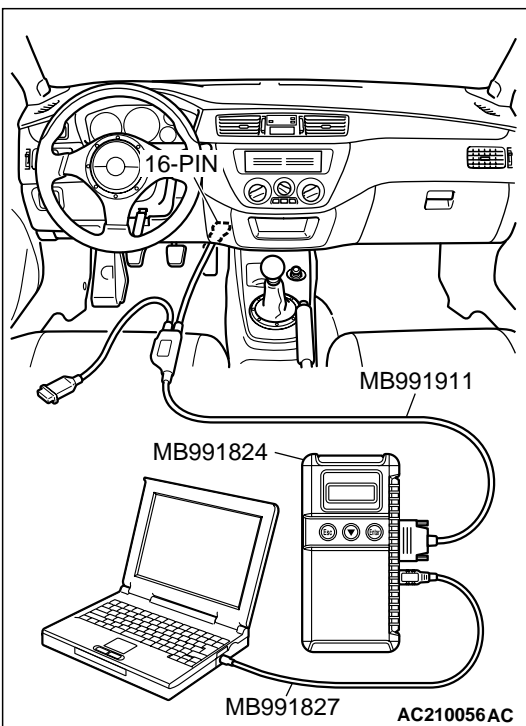
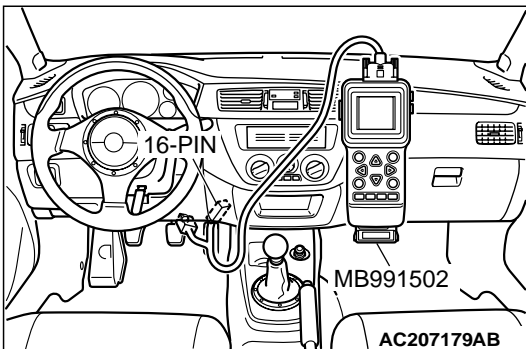
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "PULSE CHECK."
 - a. Select "SYSTEM SELECT."
 - b. Select "SWS."
 - c. Select "PULSE CHECK."
- (3) Check that scan tool MB991502 or MB991958 sounds when the vehicle speed exceeds 10 km/h (6.2 mph).

Q: Does scan tool MB991502 or MB991958 sound when the vehicle speed exceeds 10 km/h (6.2 mph)?

YES : Go to Step 2.

NO : Refer to Inspection Procedure O-8 "ETACS-ECU does not receive a signal from the vehicle speed sensor P.54B-526 ."



STEP 2. 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
- Intermittent wiper adjusting knob: SLOW side

CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "F.WIPER INT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "WIPER."
 - g. Select "F.WIPER INT."

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

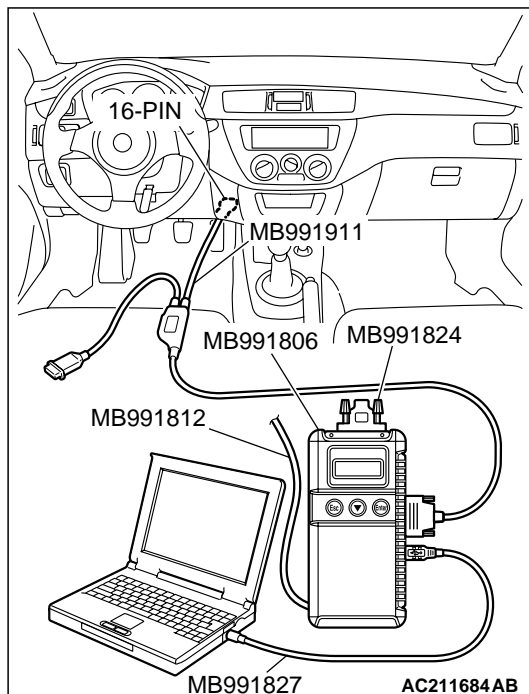
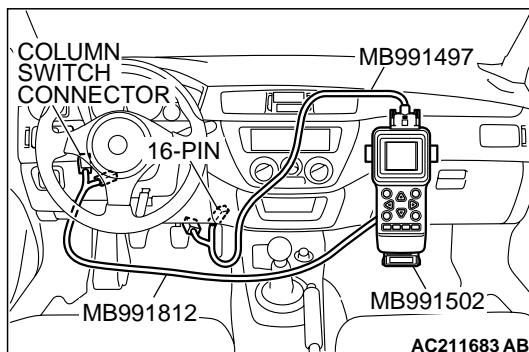
NOTE: Also check that the wiper interval changes smoothly when the vehicle is accelerated from 0 km/h (0 mph) to 25 km/h (15.5 mph).

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 37	INT WIPER TIME	18.0 – 12.0 s

Q: Does scan tool MB991502 or MB991958 display the item "INT WIPER TIME" as the value change within the normal range when the windshield intermittent wiper interval adjusting knob is rotated?

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

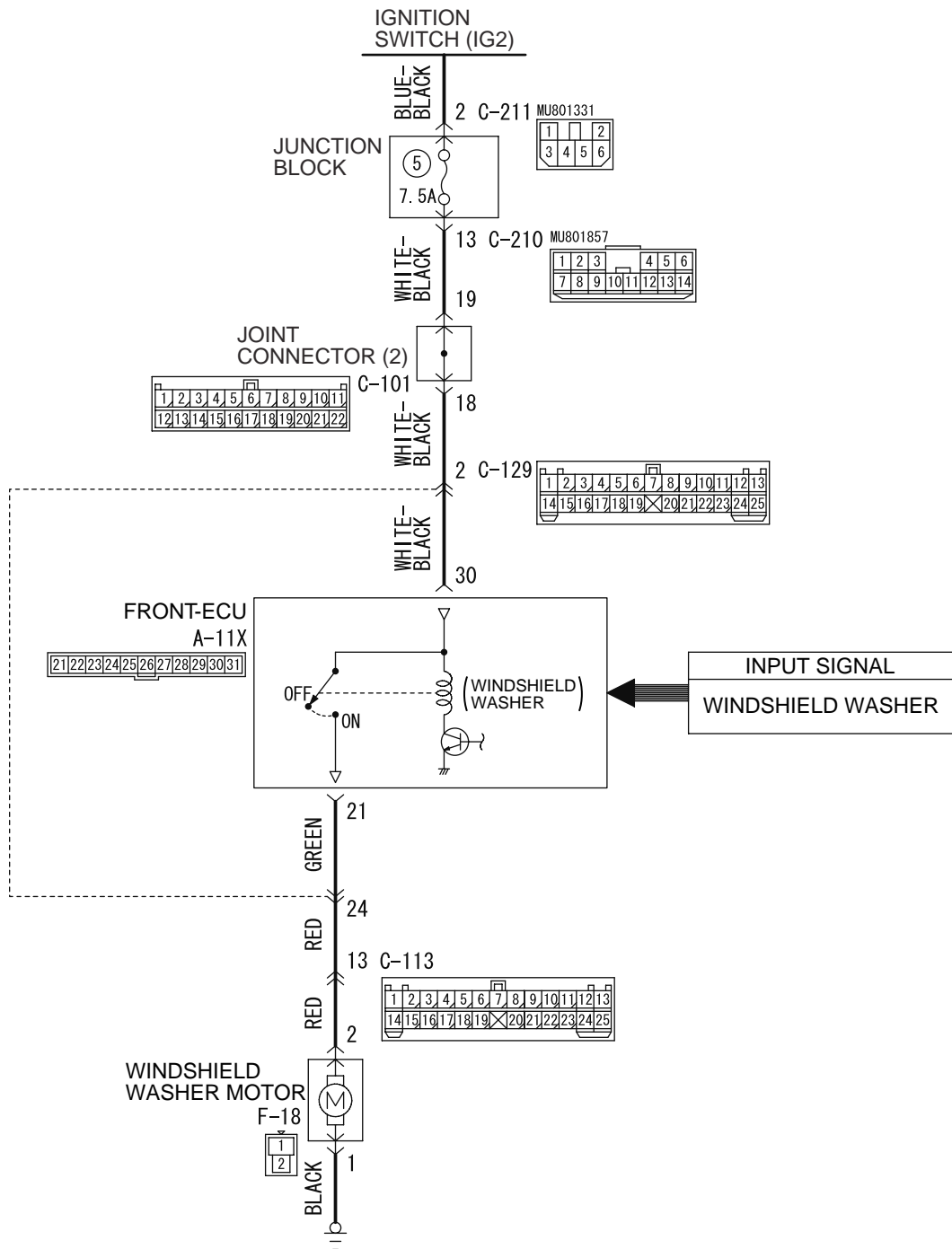
NO : Replace the ETACS-ECU. The windshield intermittent wiper interval should change according to the vehicle speed.



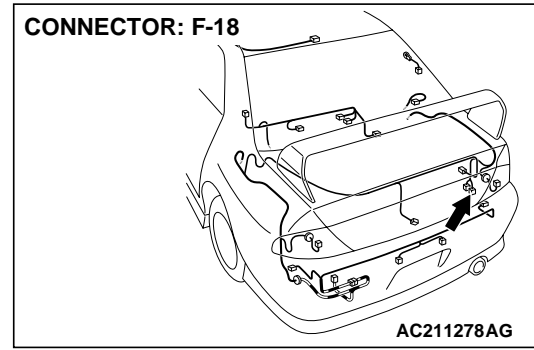
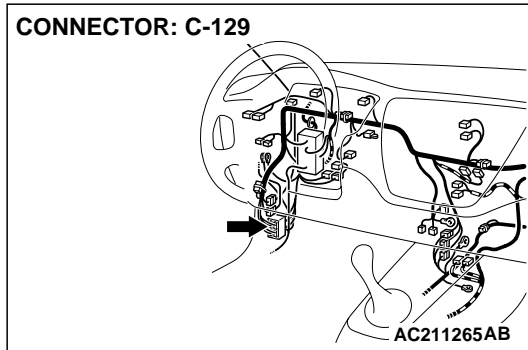
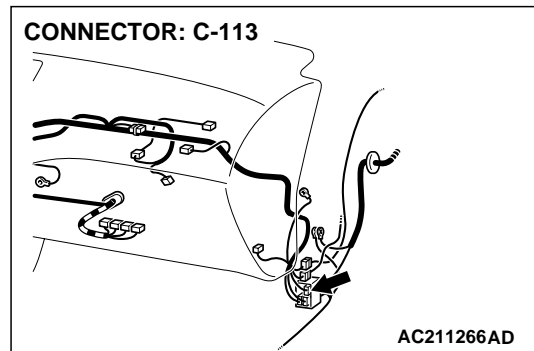
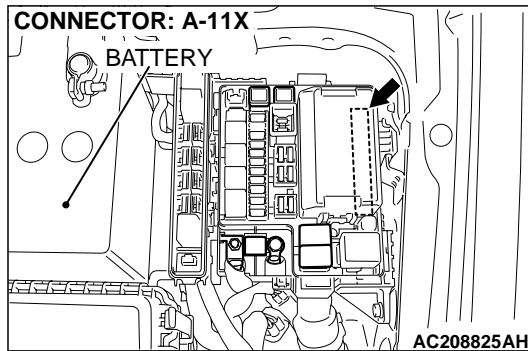
INSPECTION PROCEDURE G-7: Windshield Wiper and Washer: Windshield washer does not work.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Windshield Washer Motor Circuit



W3J15M00AA



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

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Verify the windshield wiper.

Q: Does the windshield wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure F-1 "Windshield wiper does not work at all [P.54B-209.](#)"

STEP 2. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-7.](#)"

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "SWS MONITOR."
- e. Select "ECU COMM Check."

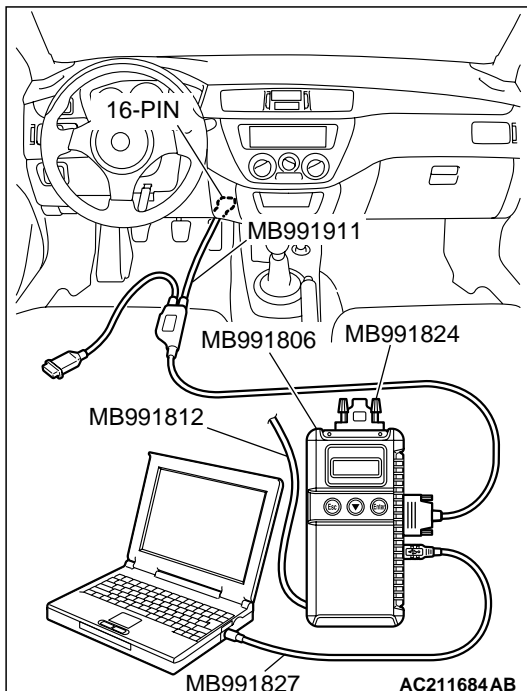
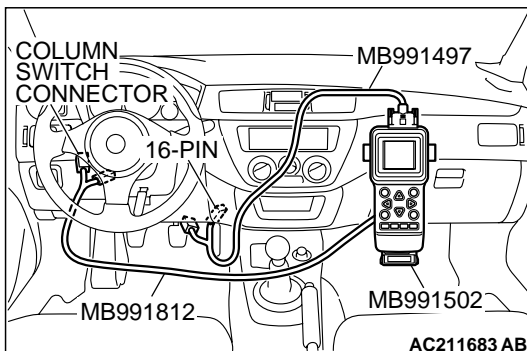
(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menu for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

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

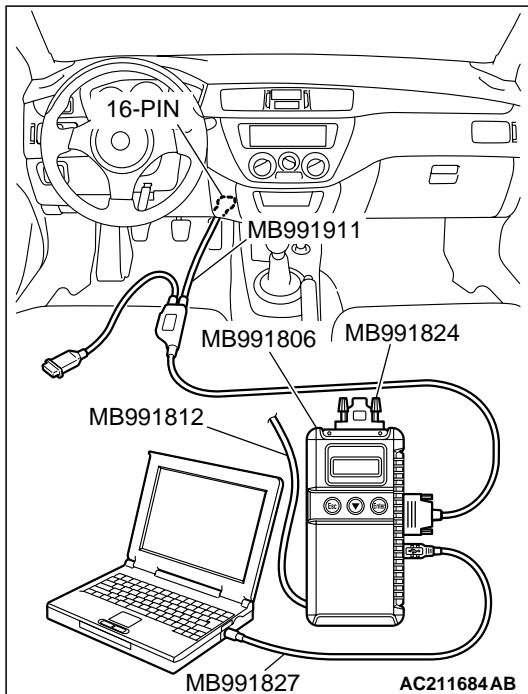
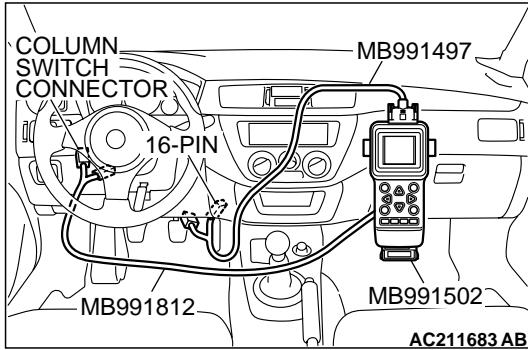
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible [P.54B-35.](#)"

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible [P.54B-49.](#)"



STEP 3. Check the input signal by using "Function Diag." menu of the SWS monitor.

- (1) Turn the ignition switch to the "ACC" position.
- (2) Set the windshield wiper switch to the following condition:
 - Windshield wiper switch: INT
 - Intermittent wiper adjusting knob: SLOW side
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "F.WIPER WASH."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "WIPER."
 - g. Select "F.WIPER WASH."
- (4) Check that normal conditions are displayed on the items described in the table below.



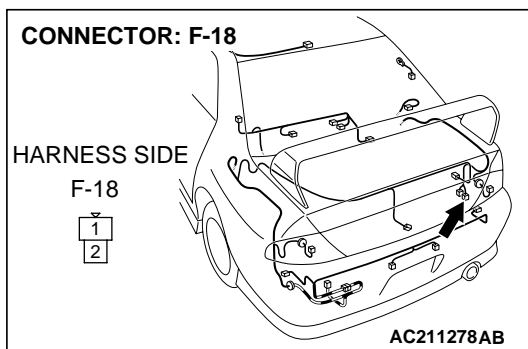
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 09	FRONT WASH.SW	ON
ITEM 70	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

Q: Does scan tool MB991502 or MB991958 display the items "FRONT WASH.SW" and "FRONT ECU ACK" as normal condition?

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

Normal condition is not displayed on the "FRONT WASH.SW" : Replace the column switch(Refer to GROUP 54A, Column switch P.54A-101). Verify that the windshield washer should now work normally.

Normal condition is not displayed on the "FRONT ECU ACK" : Replace the front-ECU. Verify that the windshield washer should now work normally.



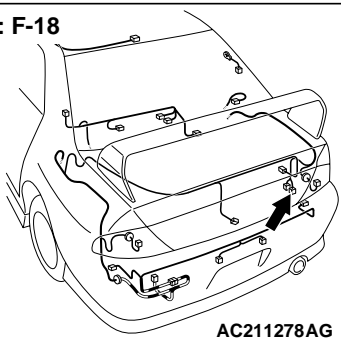
STEP 4. Check windshield washer motor connector F-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield washer motor connector F-18 in good condition?

YES : Go to Step 5.

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

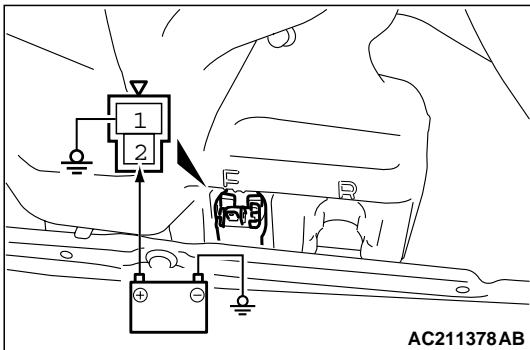
CONNECTOR: F-18



AC211278AG

STEP 5. Check the windshield washer motor.

- (1) Disconnect windshield washer motor connector F-18 and measure the voltage available at the windshield washer motor side of the connector.
- (2) Fill the windshield washer tank with washer fluid.



AC211378AB

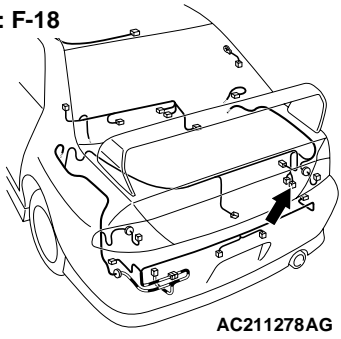
- (3) When battery voltage is applied between terminals 1 and 2, washer fluid should gush out.

Q: Does the windshield washer motor operate normally?

YES : Go to Step 6.

NO : Replace the windshield washer motor (Refer to GROUP 51, Windshield washer P.51-21). Verify that the windshield washer should now work normally.

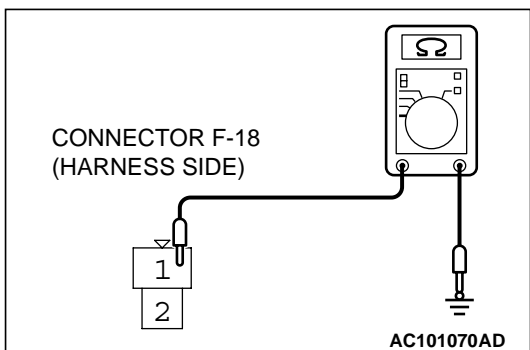
CONNECTOR: F-18



AC211278AG

STEP 6. Check the ground circuit to the windshield washer motor. Measure at windshield washer motor connector F-18

- (1) Disconnect windshield washer motor connector F-18 and measure the resistance available at the wiring harness side of the connector.



CONNECTOR F-18
(HARNES SIDE)

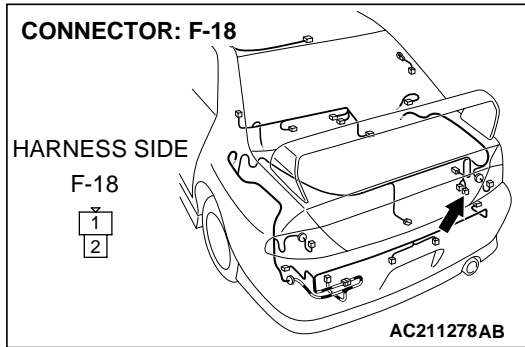
AC101070AD

- (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 8.

NO : Go to Step 7.

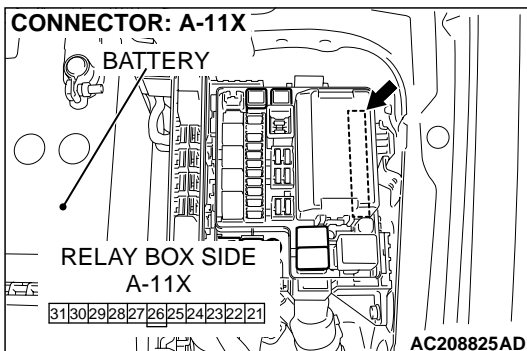


STEP 7. Check the wiring harness between windshield washer motor connector F-18 (terminal 1) and ground.

Q: Is the wiring harness between windshield washer motor connector F-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 windshield washer should now work normally.

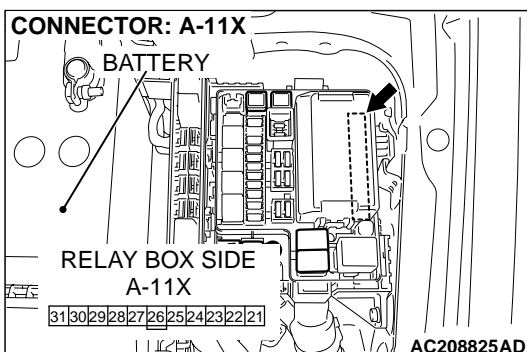


STEP 8. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

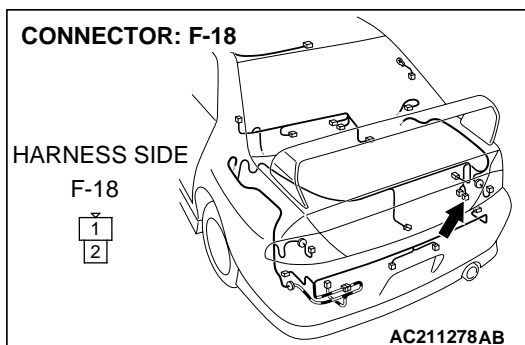
Q: Is front-ECU connector A-11X in good condition?

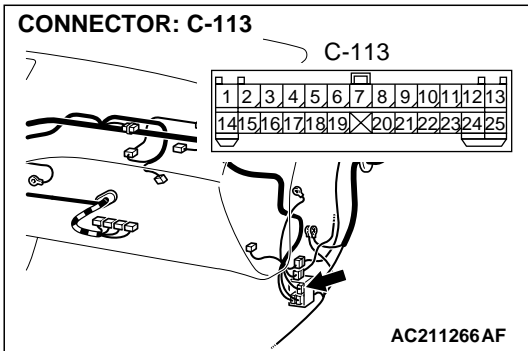
YES : Go to Step 9.

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



STEP 9. Check the wiring harness between windshield washer motor connector F-18 (terminal 2) and front-ECU connector A-11X (terminal 21).



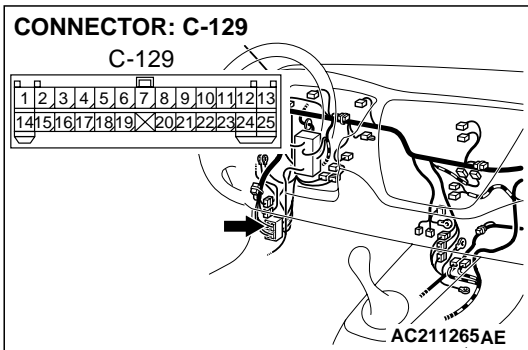


NOTE: Also check intermediate connectors C-113 and C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-113 or C-129 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between windshield washer motor connector F-18 (terminal 2) and front-ECU connector A-11X (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 should now work normally.



REAR WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE REAR WIPER AND WASHER

M1549021600094

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

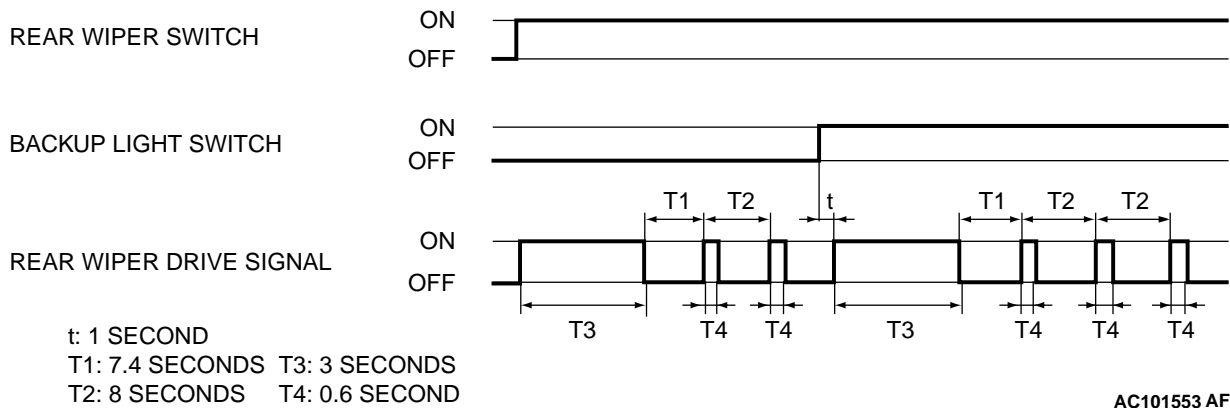
FUNCTION		CONTROL ECU
Rear wiper and washer control function	Rear wiper control	ETACS-ECU, column switch
	Rear washer control	

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.

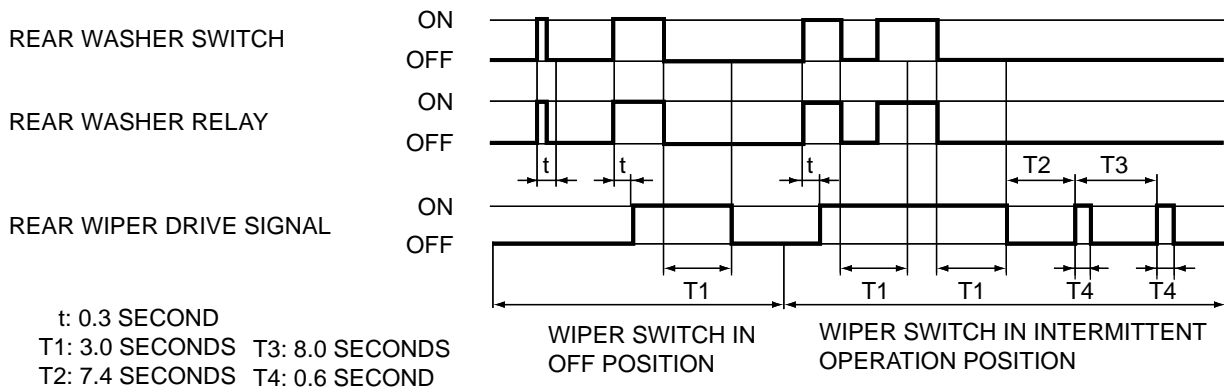
If the shift lever is moved to the "R" position when the rear wiper switch of the column switch assembly is turned ON and the ignition switch is in any position other than OFF, the backup light switch turns ON. One second later, the ETACS-ECU turns the rear wiper drive signal ON for 3 seconds (approximately 2 operations), to clear the rear view, and then returns to intermittent operation at a 7.4 to 8 seconds cycle.



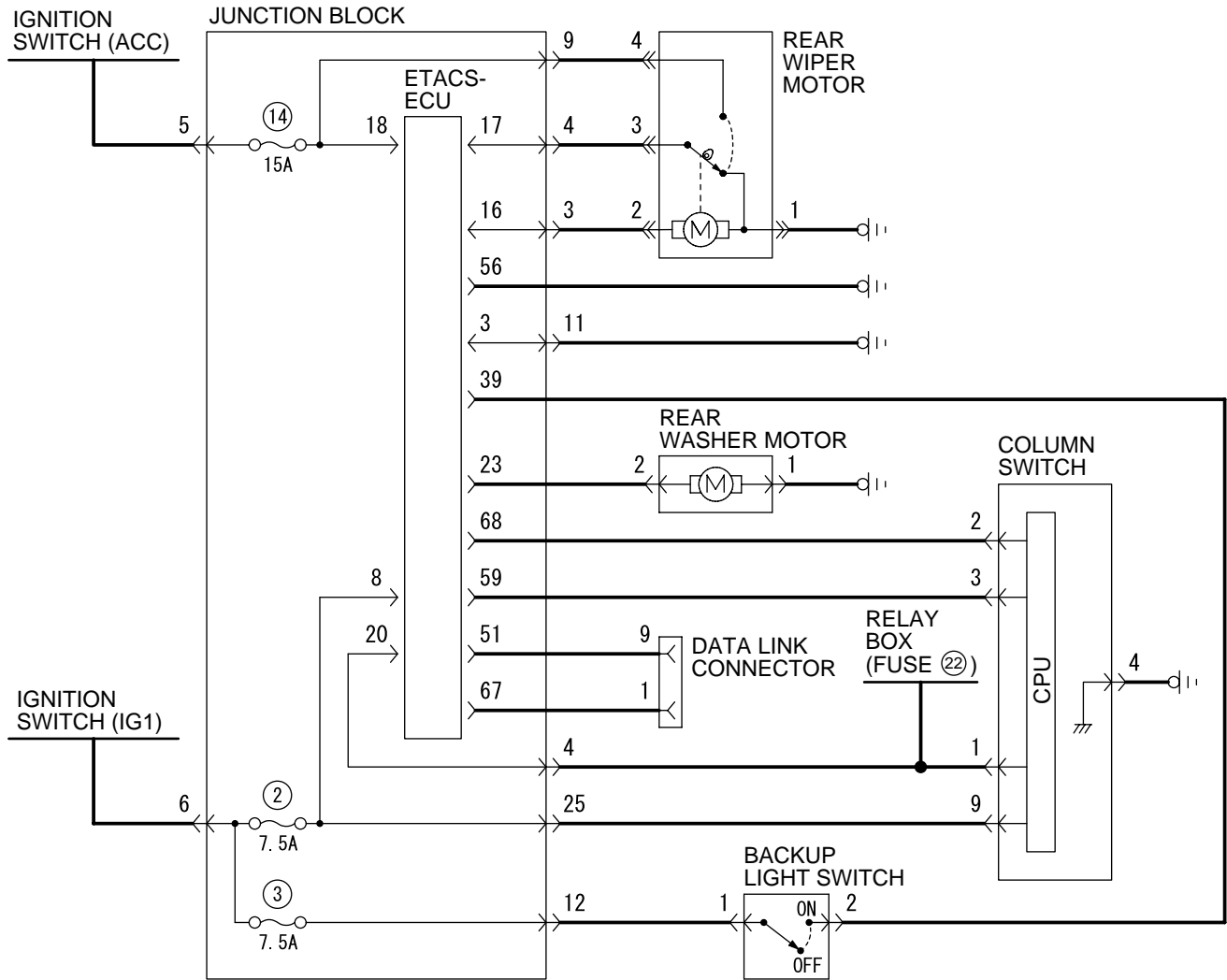
Rear washer control

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 seconds until 3.0 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 8.0 seconds cycle intermittent operation will continue.



General circuit diagram for rear wiper and washer

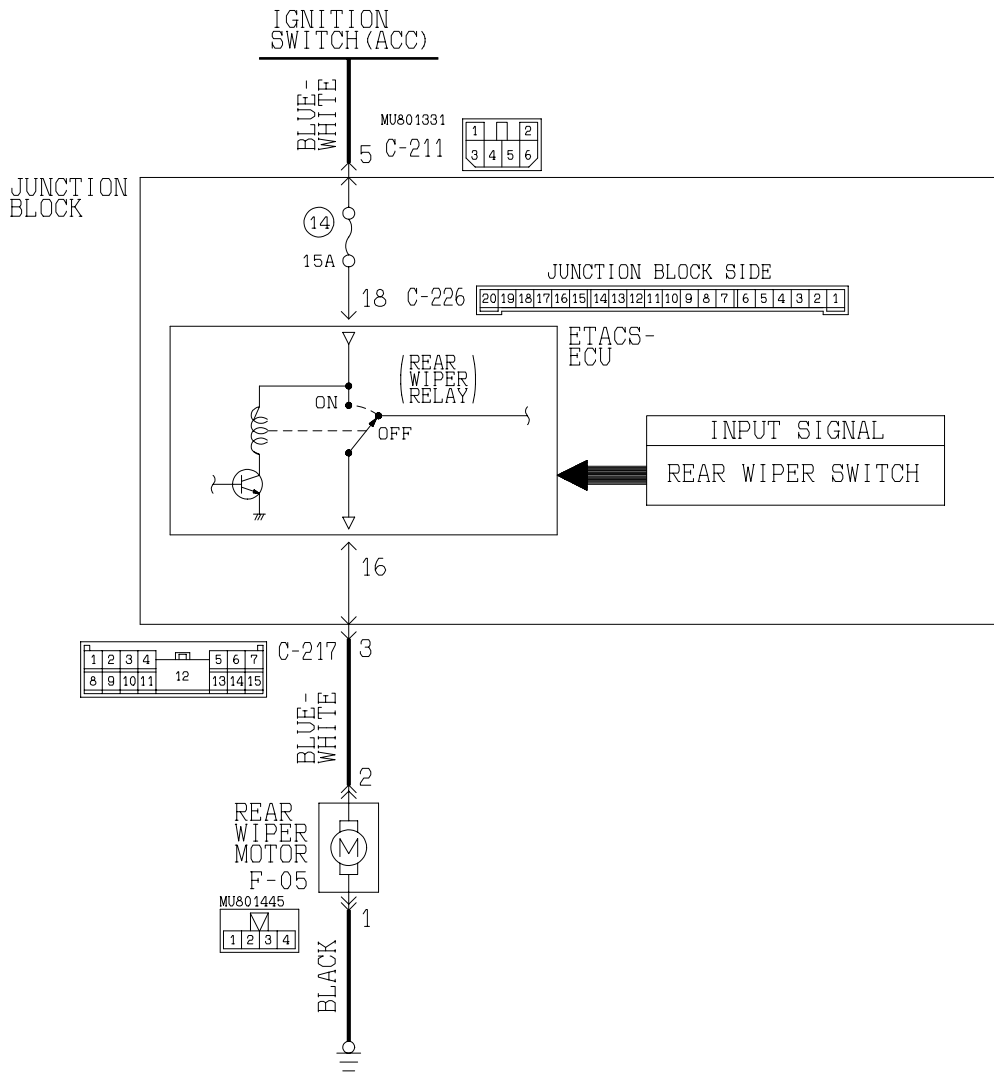


W3J13M00AA

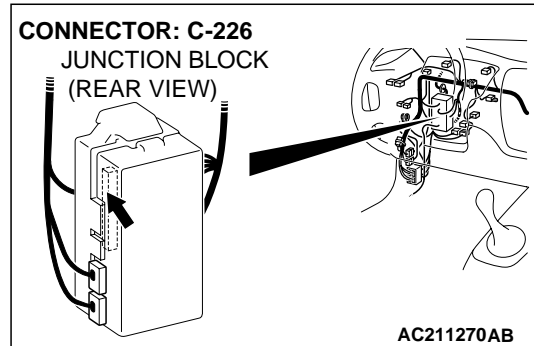
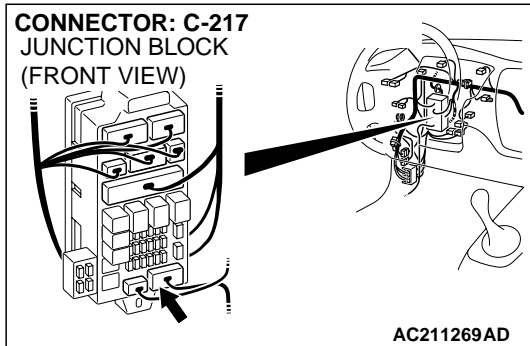
INSPECTION PROCEDURE H-1: Rear Wiper and Washer: Rear wiper does not work at all.

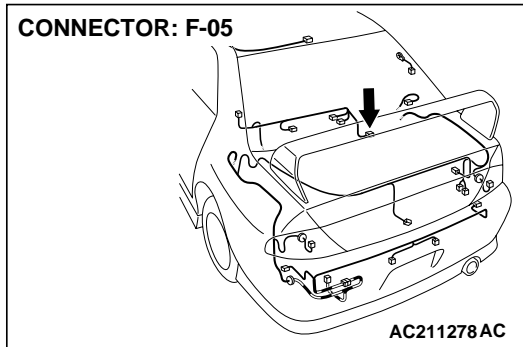
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Rear Wiper Motor Power Supply Circuit



W3J02M13AA





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

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

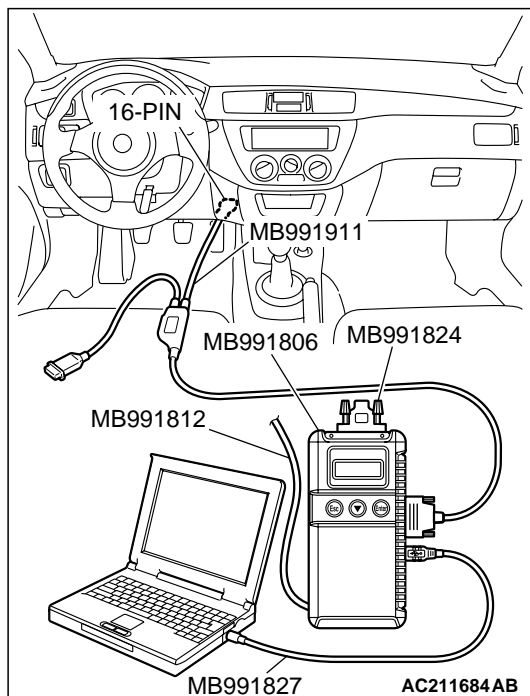
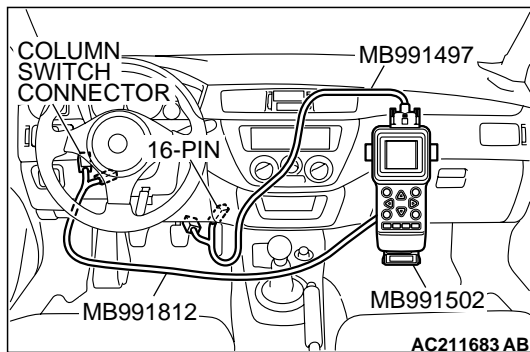
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "ON" position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"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.54B-35."

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54B-49."



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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "REAR WIPER."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "REAR WIPER."
- (2) Check that normal conditions are displayed on the items described in the table below.

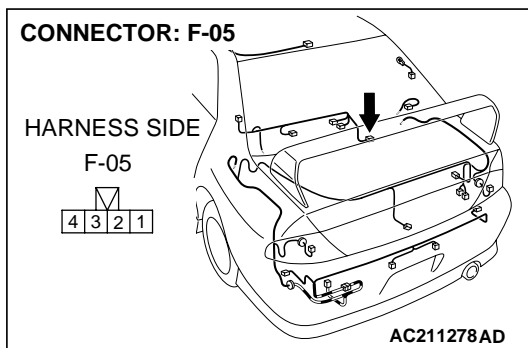
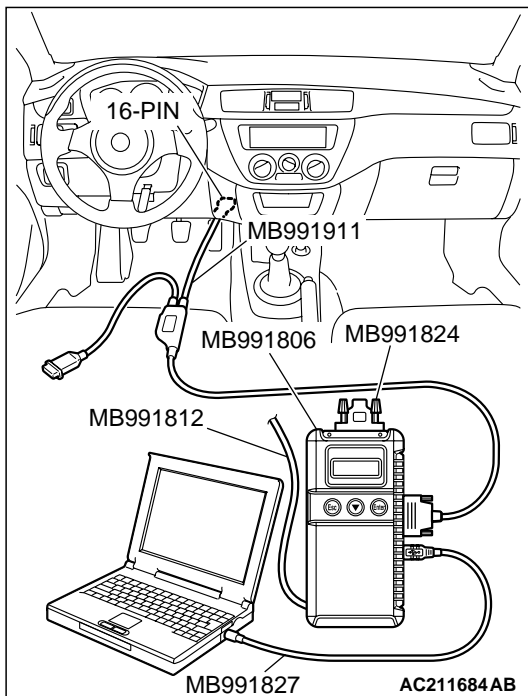
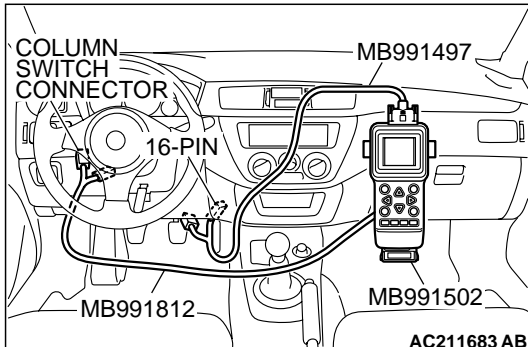
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 13	REAR WIPER SW	ON
ITEM 31	IG SW (ACC)	ON

Q: Does scan tool MB991502 or MB991958 display the items "REAR WIPER SW" and "IG SW (ACC)" as normal condition?

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

Normal condition is not displayed "REAR WIPER SW" :
Refer to Inspection Procedure N-7 "ETACS-ECU does not receive a signal from the rear wiper switch [P.54B-464.](#)"

Normal condition is not displayed "IG SW (ACC)" :
Refer to Inspection Procedure N-1 "ETACS-ECU does not receive a signal from the ignition switch (ACC) [P.54B-436.](#)"

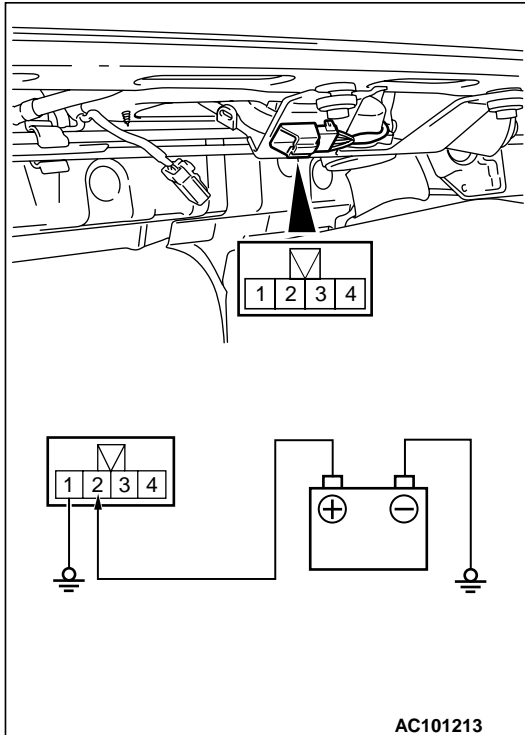


STEP 3. Check rear wiper motor connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear wiper motor connector F-05 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 rear wiper should now work normally.

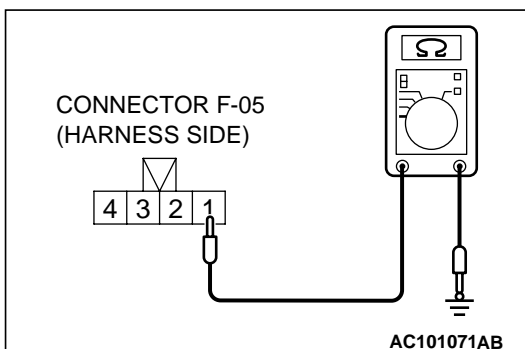
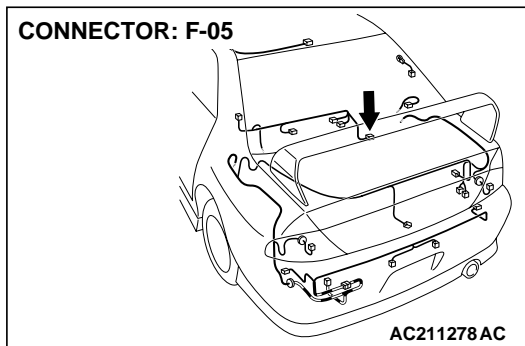
**STEP 4. Check the rear wiper motor.**

- (1) Disconnect rear wiper motor connector F-05.
- (2) Connect a battery to the rear wiper motor as shown, and check the rear wiper motor.

Q: Does the rear wiper motor operate normally?

YES : Go to Step 5.

NO : Replace the rear wiper motor (Refer to GROUP 51, Rear wiper and washer P.51-25). Verify that the rear wiper should now work normally.

**STEP 5. Check the ground circuit to the rear wiper motor. Measure the resistance at rear wiper motor connector F-05.**

- (1) Disconnect rear wiper motor connector F-05 and measure the resistance available at the wiring harness side of the connector.

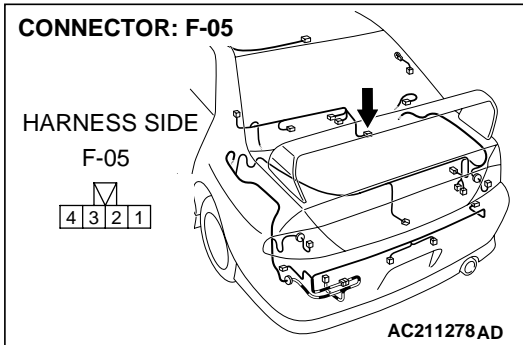
- (2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.

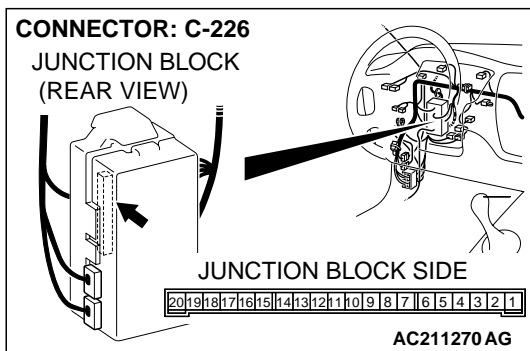


STEP 6. Check the wiring harness between rear wiper motor connector F-05 (terminal 1) and ground.

Q: Is the wiring harness between rear wiper motor connector F-05 (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 rear wiper should now work normally.

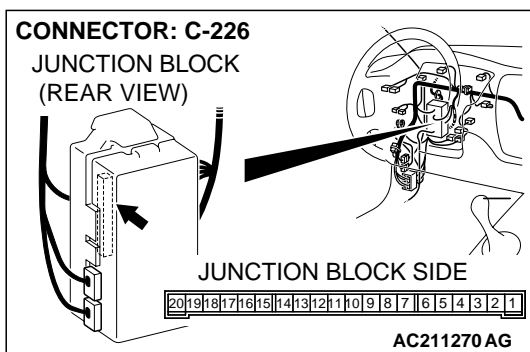


STEP 7. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

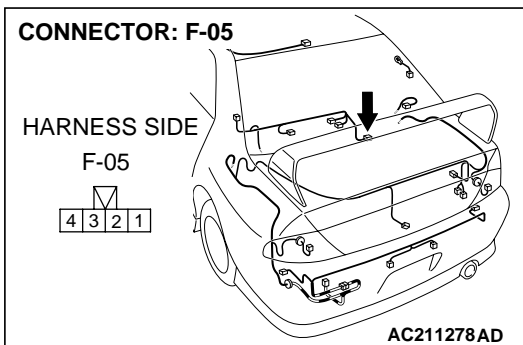
Q: Is ETACS-ECU connector C-226 in good condition?

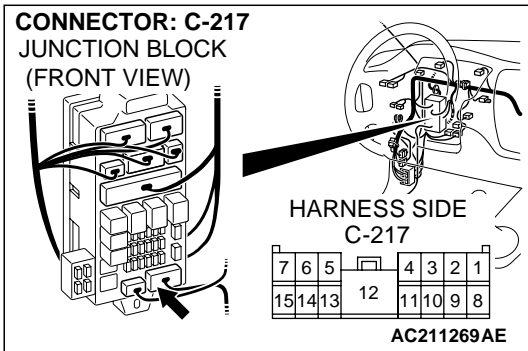
YES : Go to Step 8.

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



STEP 8. Check the wiring harness between rear wiper motor connector F-05 (terminal 2) and ETACS-ECU connector C-226 (terminal 16).





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

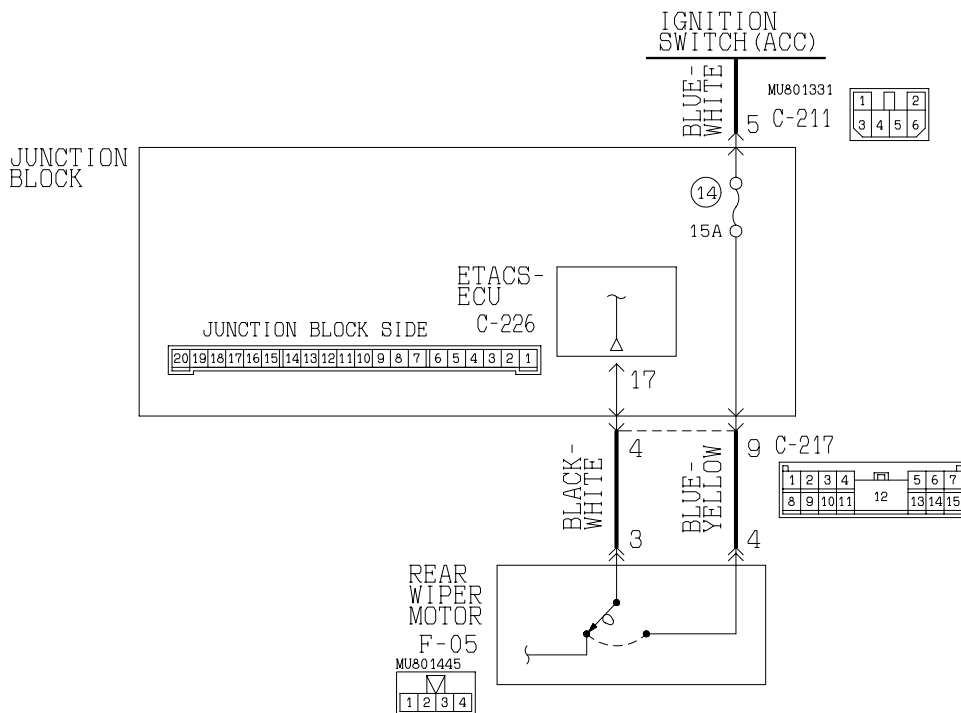
Q: Is the wiring harness between rear wiper motor connector F-05 (terminal 2) and ETACS-ECU connector C-226 (terminal 16) in good condition?

YES : Replace the ETACS-ECU. Verify that the rear wiper should now work normally.

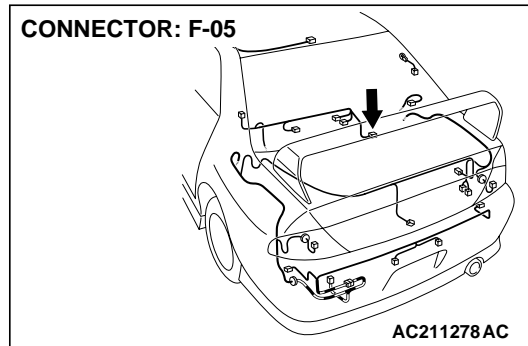
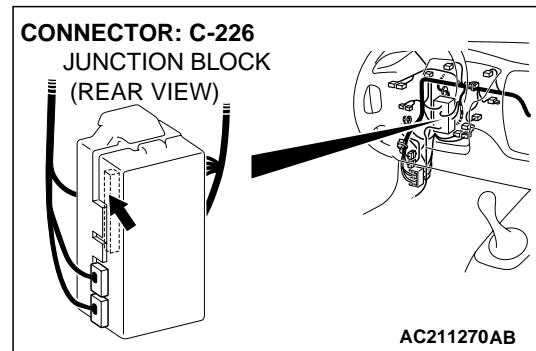
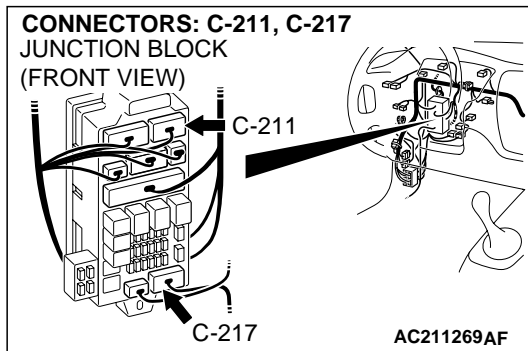
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the rear wiper should now work normally.

INSPECTION PROCEDURE H-2: Rear Wiper and Washer: Rear wiper does not stop at the predetermined park position.

Rear Wiper Auto Stop Circuit



W3J02M14AA



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

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

DIAGNOSIS

Required Special Tool:

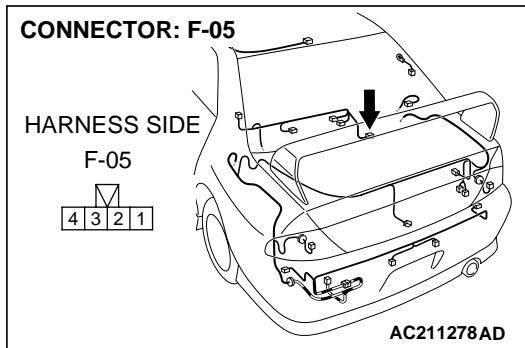
- MB991223: Harness Set

STEP 1. Verify that the rear wiper should work normally.

Q: Does the rear wiper motor operate (however, the rear wiper does not stop at the predetermined park position)?

YES : Go to Step 2.

NO : Refer to Inspection Procedure H-1 "Rear wiper does not work at all [P.54B-246](#)."

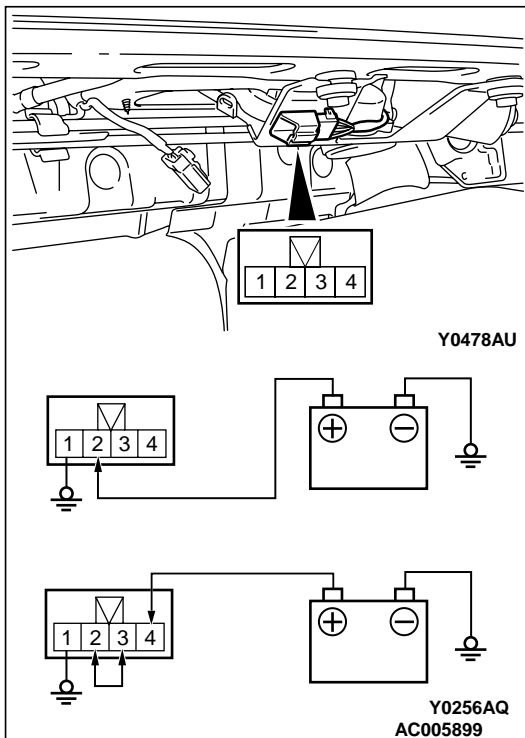


STEP 2. Check rear wiper motor connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear wiper motor connector F-05 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](#). If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.



STEP 3. Check the rear wiper motor.

(1) Disconnect rear wiper motor connector F-05.

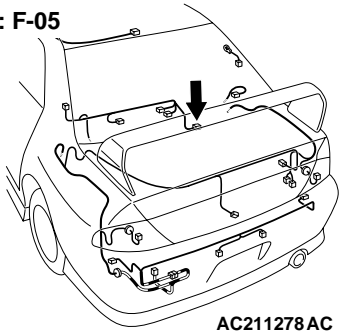
(2) When the battery is connected as shown, the motor should run again and stop at the predetermined park position.

Q: Does the rear wiper motor operate normally?

YES : Go to Step 4.

NO : Replace the rear wiper motor (Refer to GROUP 51, Rear wiper and washer [P.51-25](#)). If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

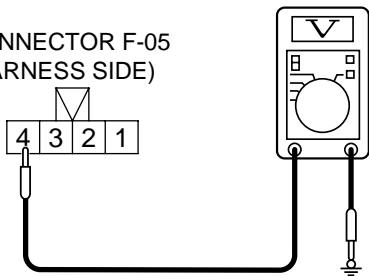
CONNECTOR: F-05



STEP 4. Check the ignition switch (ACC) circuit to the rear wiper motor. Measure the voltage at rear wiper motor connector F-05.

- (1) Disconnect rear wiper motor connector F-05 and measure the voltage available at the harness side of the connector.
- (2) Turn the ignition switch to the "ACC" position.

CONNECTOR F-05
(HARNESS SIDE)

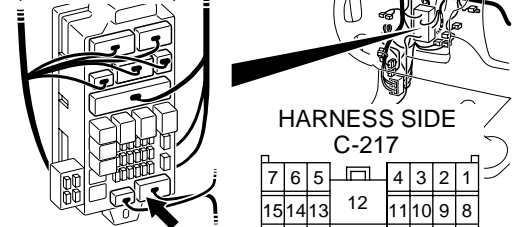


- (3) Measure the voltage between terminal 4 and ground by backprobing.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

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

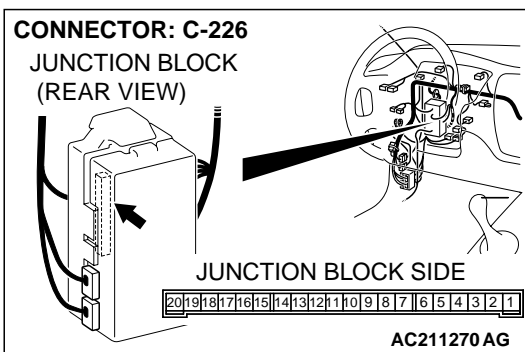
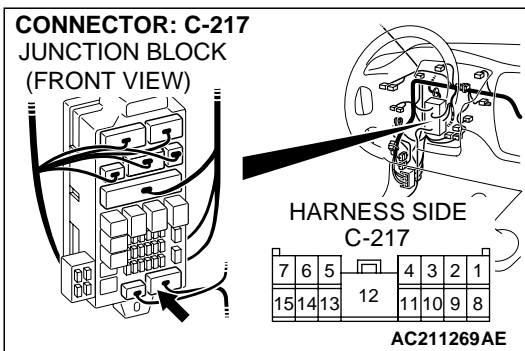
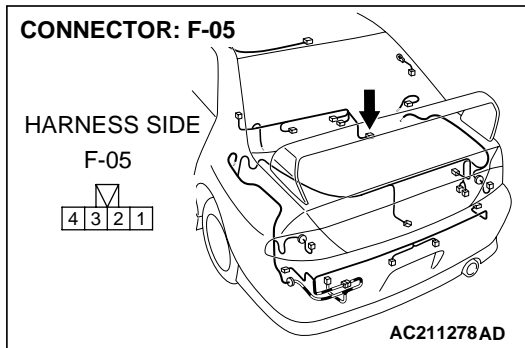
CONNECTOR: C-217
JUNCTION BLOCK
(FRONT VIEW)



STEP 5. Check junction block connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is junction block connector C-217 in good condition?

- YES :** Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.



STEP 6. Check the wiring harness between rear wiper motor connector F-05 (terminal 4) and junction block connector C-217 (terminal 9)

Q: Is the wiring harness between rear wiper motor connector F-05 (terminal 4) and junction block connector C-217 (terminal 9) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

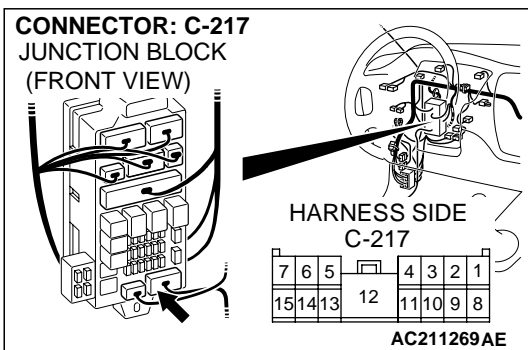
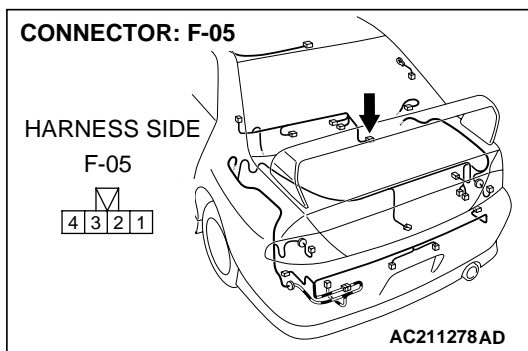
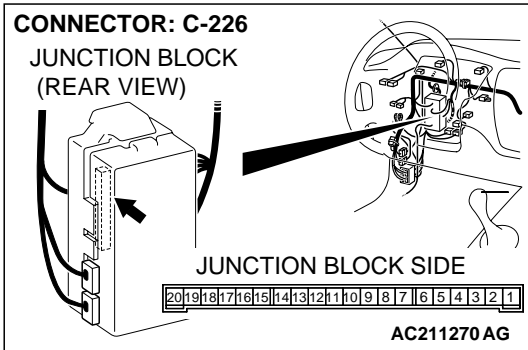
STEP 7. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector C-226 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](#). If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

STEP 8. Check the wiring harness between rear wiper motor connector F-05 (terminal 3) and ETACS-ECU connector C-226 (terminal 17).



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

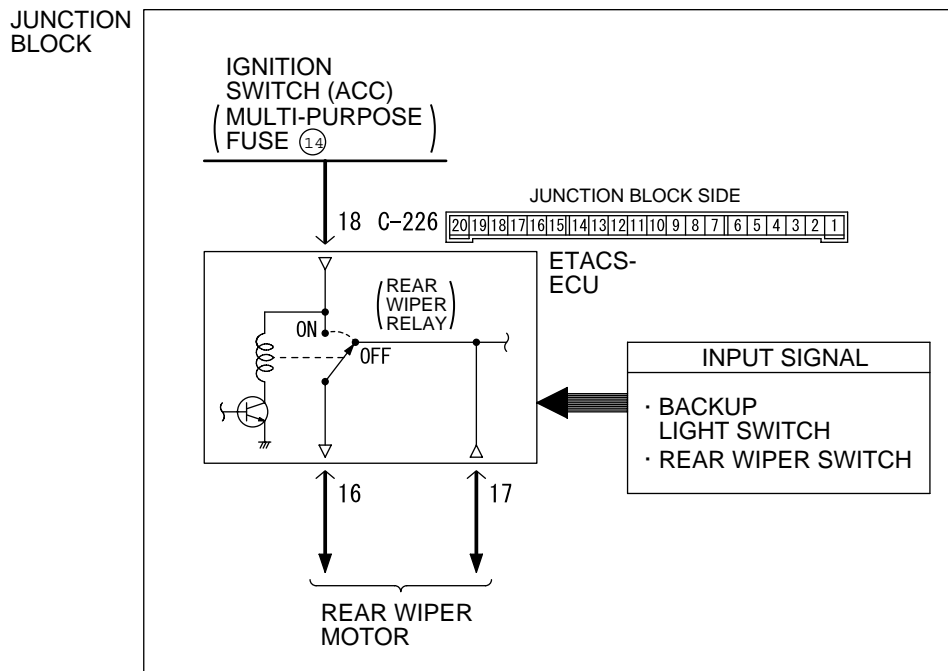
Q: Is the wiring harness between rear wiper motor connector F-05 (terminal 3) and ETACS-ECU connector C-226 (terminal 17) in good condition?

YES : Replace the ETACS-ECU. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

INSPECTION PROCEDURE H-3: Rear Wiper and Washer: When the shift 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 the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

"R" Position During Rear Wiper Operation Circuit

W3J13M01AA

CIRCUIT OPERATION

The ETACS-ECU operates the rear wiper consecutively approximately twice when the shift 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 backup light switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit

- MB991806: SWS monitor cartridge
- MB991812: SWS monitor harness (for column-ECU)
- MB991922: Probe harness

STEP 1. Verify the rear wiper.

Q: Does the rear wiper operate?

YES : Go to Step 2.

NO : Refer to Inspection Procedure G-1 "Rear wiper does not work at all [P.54B-246.](#)"

STEP 2. Check the input signal by using "Function Diag." menu of the SWS monitor.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

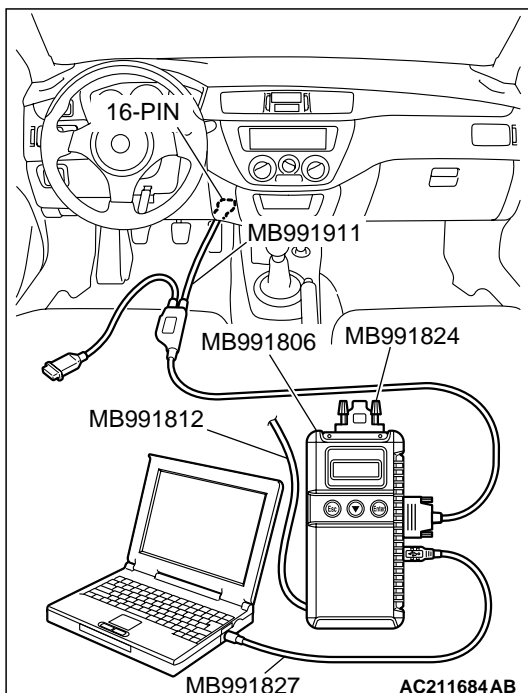
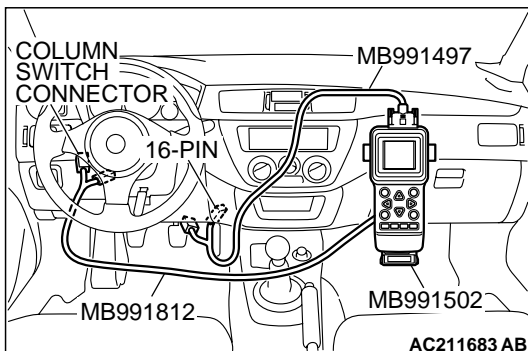
- (1) Connect the special tool. Refer to "How to connect SWS monitor [P.54B-7.](#)"
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the rear wiper switch to the "ON" position.
- (4) Shift the shift lever to the "R" position.
- (5) Operate scan tool MB991502 or MB991958 according to the procedure below to display "REV. INTERLOCK."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "REAR WIPER."
 - g. Select "REV. INTERLOCK."
- (6) 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: Does scan tool MB991502 or MB991958 display the item "PNP SW (R)" as normal condition?

YES : Replace the ETACS-ECU. When the shift lever is moved to the "R" position, the rear wiper should operate consecutively approximately twice.

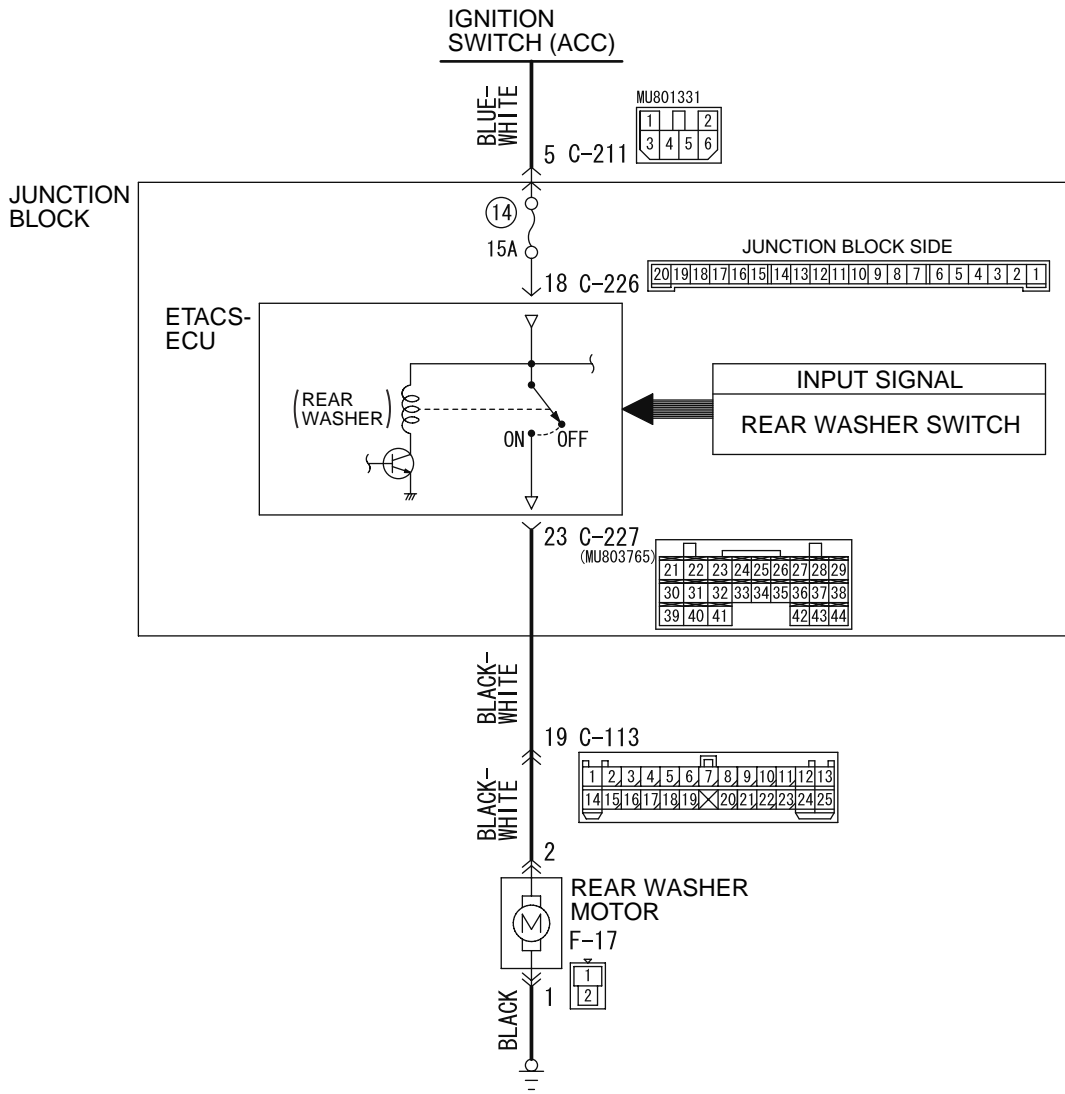
NO : Refer to Inspection Procedure N-4 "ETACS-ECU does not receive any signal from the backup light switch [P.54B-448.](#)"



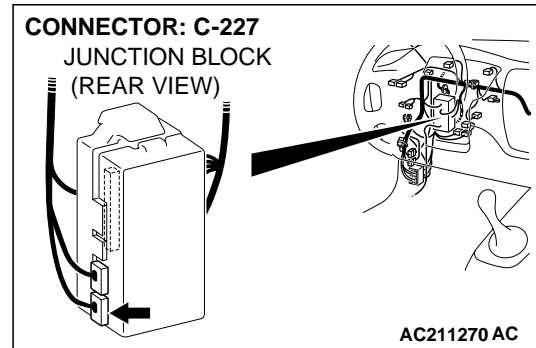
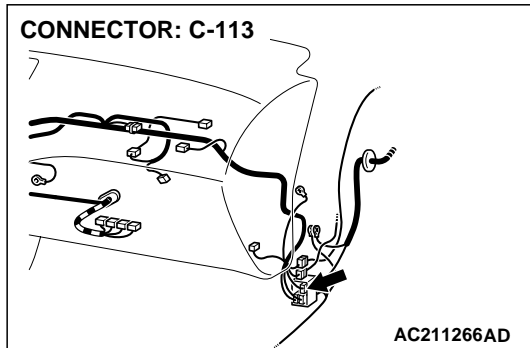
INSPECTION PROCEDURE H-4: Rear Wiper and Washer: Rear washer does not operate.

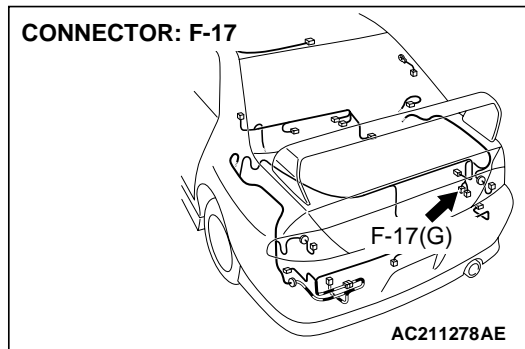
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Rear Washer Motor Power Supply Circuit



W3J15M01AA





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

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Verify that the rear wiper should work normally.

Q: Does the rear wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure G-1 "Rear wiper does not work at all [P.54B-246](#)."

STEP 2. Check the input signal by using "Function Diag." menu of the SWS monitor.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

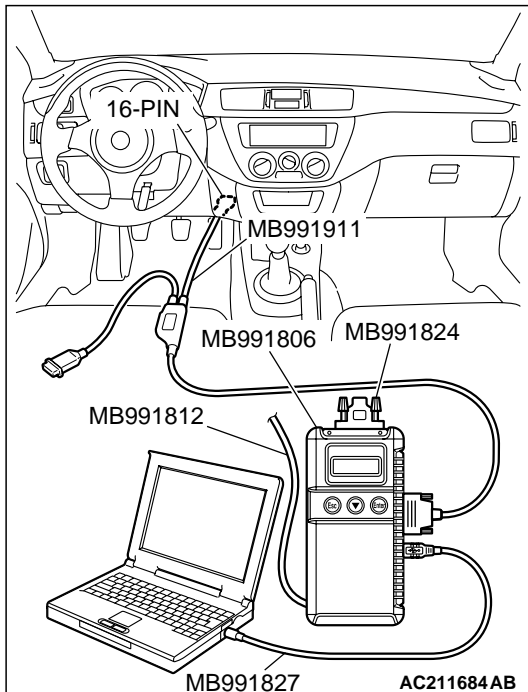
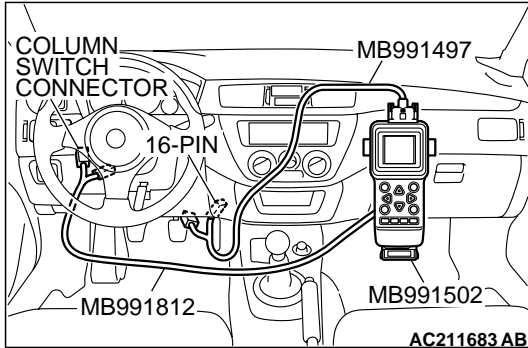
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "ACC" position.
- (3) Turn the rear washer switch to the "ON" position.
- (4) Operate scan tool MB991502 according to the procedure below to display "REAR WASHER."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "REAR WIPER."
 - g. Select "REAR WASHER."
- (5) Check that normal conditions are displayed on the item described in the table below.

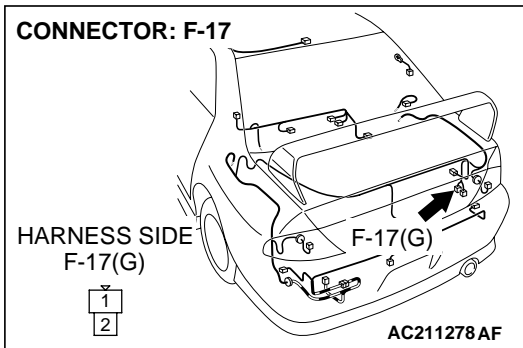
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 14	REAR WASH.SW	ON

Q: Does scan tool MB991502 or MB991958 display the item "REAR WASH. SW" as normal condition?

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive a signal from the rear washer switch P.54B-464."



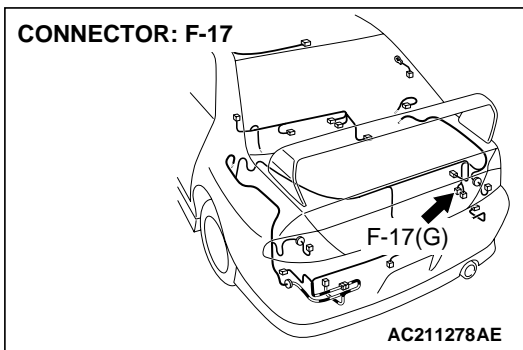


STEP 3. Check rear washer motor connector F-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear washer motor connector F-17 in good condition?

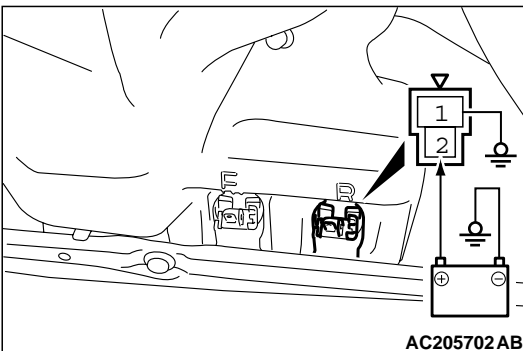
YES : Go to Step 4.

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



STEP 4. Check the rear washer motor.

- (1) Disconnect rear washer motor connector F-17.
- (2) Fill the washer tank with washer fluid.



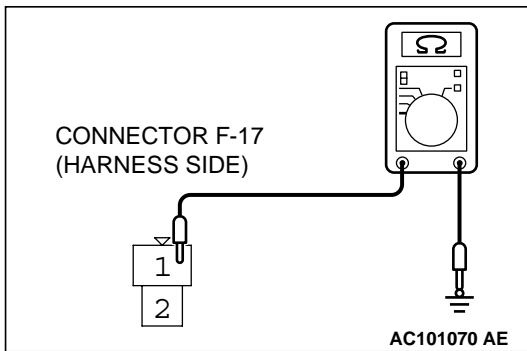
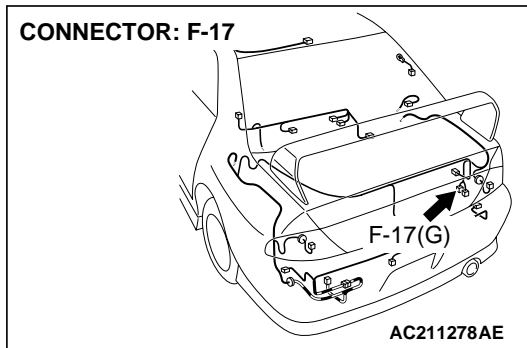
- (3) Connect the rear washer motor connector terminal number 1 to ground.

- (4) When connect the positive battery terminal to rear washer motor connector terminal number 2 , washer fluid should gush out.

Q: Does the rear washer motor operate normally?

YES : Go to Step 5.

NO : Replace the rear washer motor (Refer to GROUP 51, Windshield washer [P.51-21](#)). Verify that the rear washer should now work normally.



STEP 5. Check the ground circuit to the rear washer motor. Measure the resistance at rear washer motor connector F-17.

(1) Disconnect rear washer motor connector F-17 and measure the resistance available at the wiring harness side of the connector.

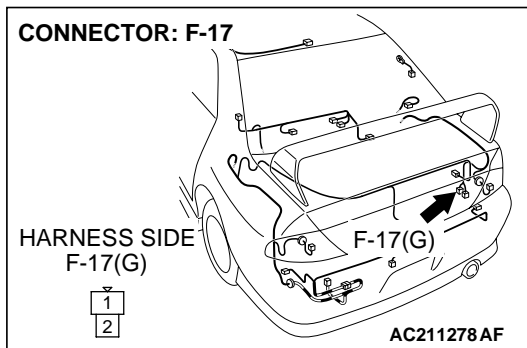
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.

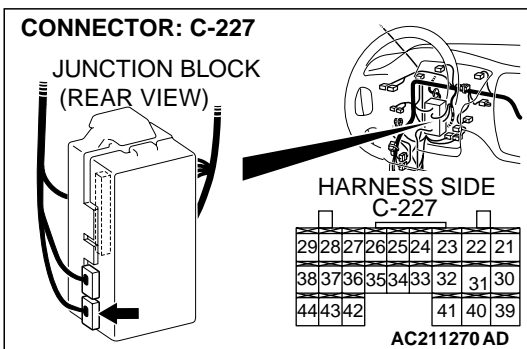


STEP 6. Check the wiring harness between rear washer motor connector F-17 (terminal 1) and ground.

Q: Is the wiring harness between rear washer motor connector F-17 (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 rear washer should now work normally.



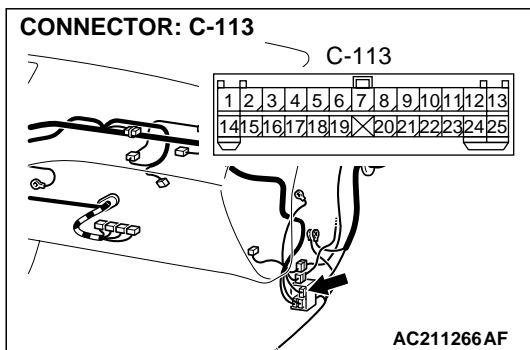
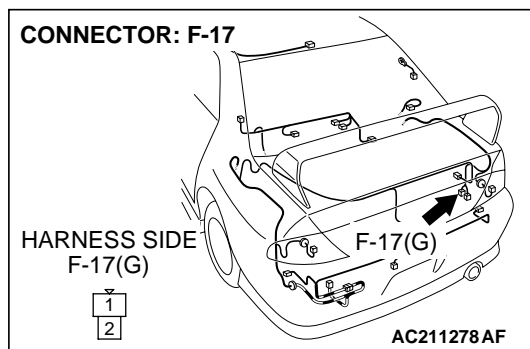
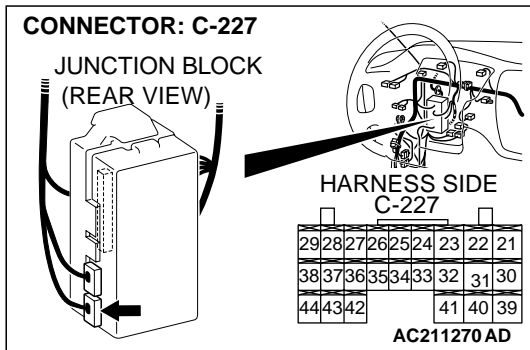
STEP 7. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-227 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 should now work normally.

STEP 8. Check the wiring harness between rear washer motor connector F-17 (terminal 2) and ETACS-ECU connector C-227 (terminal 23).



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

Q: Is the wiring harness between rear washer motor connector F-17 (terminal 2) and ETACS-ECU connector C-227 (terminal 23) in good condition?

YES : Replace the ETACS-ECU. Verify that the rear washer 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 washer should now work normally.

SEAT BELT WARNING LIGHT

GENERAL DESCRIPTION CONCERNING THE SEAT BELT WARNING LIGHT

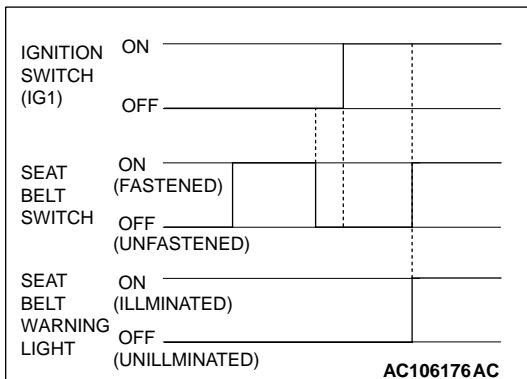
M1549023900080

The ECU related to the seat belt warning light function is as follows.

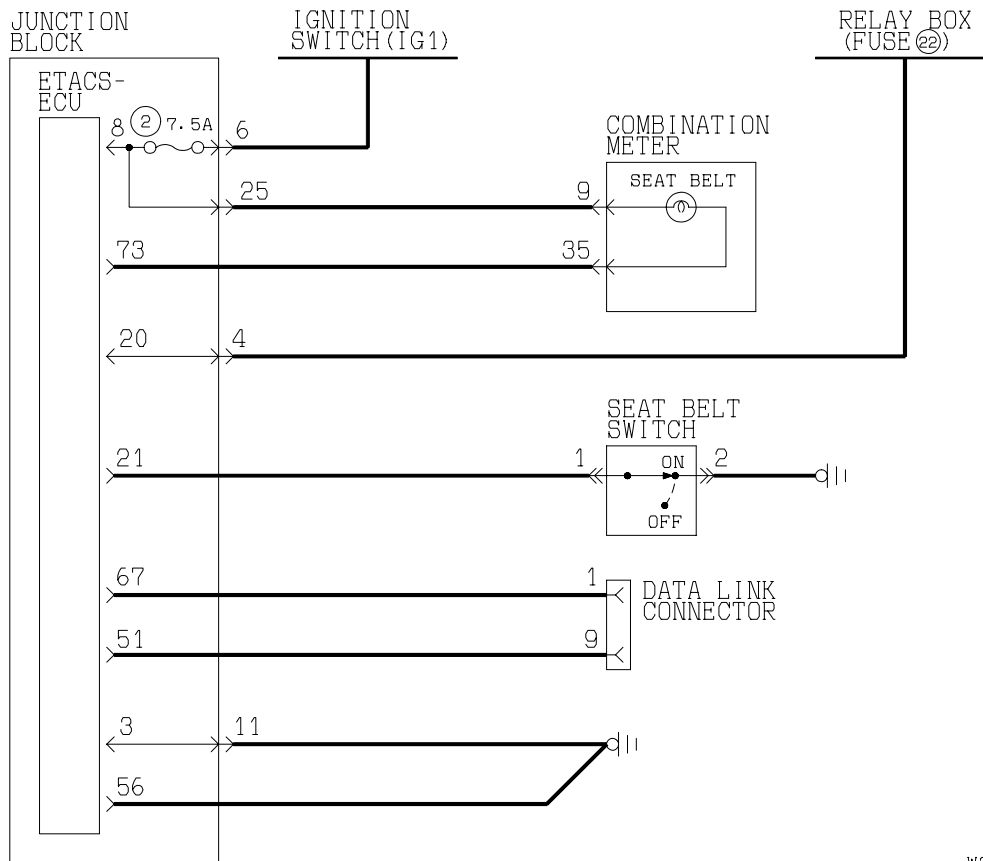
FUNCTION	CONTROL ECU
Seat belt warning light function	ETACS-ECU

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

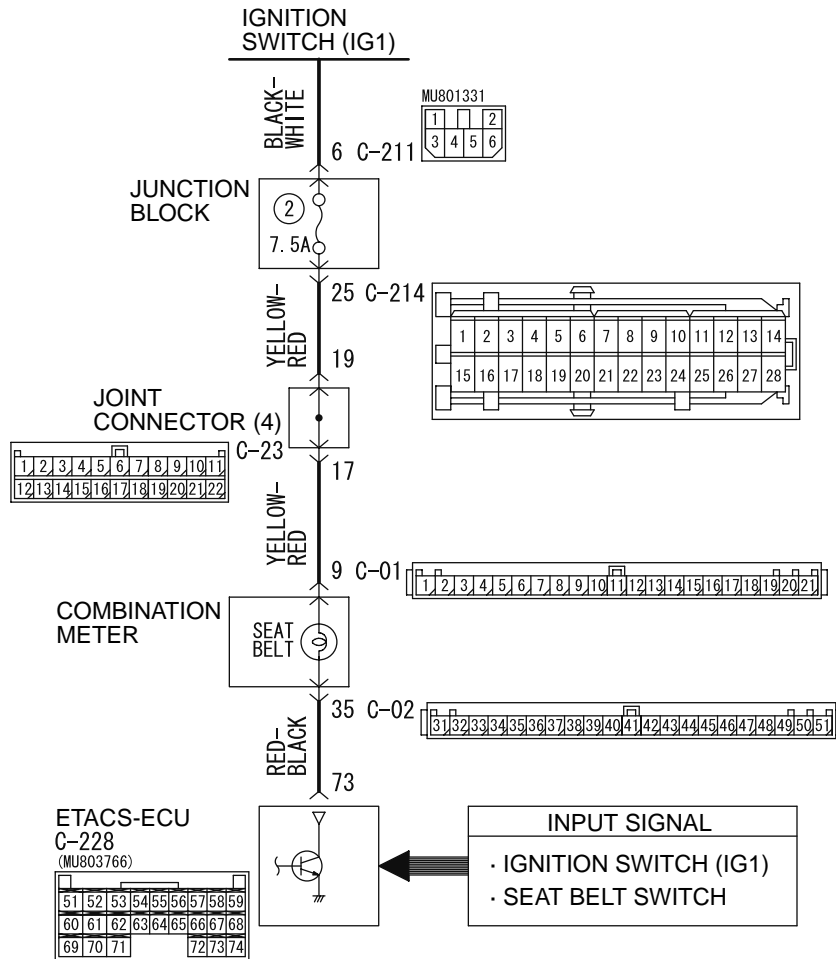


W3J10M02AA

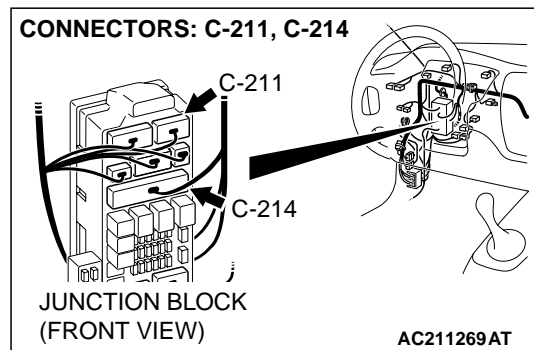
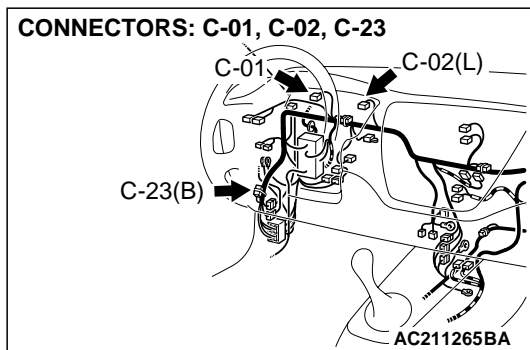
INSPECTION PROCEDURE I-1: Seat Belt Warning Light: The seat belt warning light does not work normally.

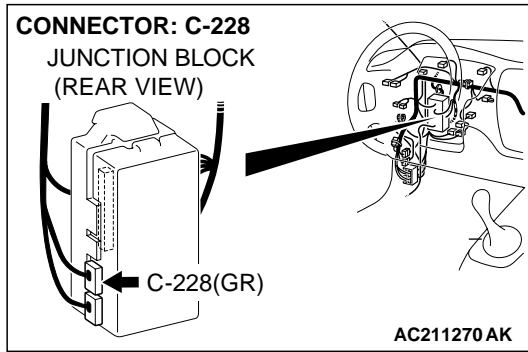
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Seat Belt Warning Light Circuit



W3J14M07AA



**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

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The combination meter (seat belt warning light bulb or printed-circuit board) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the ETACS-ECU.

⚠ CAUTION

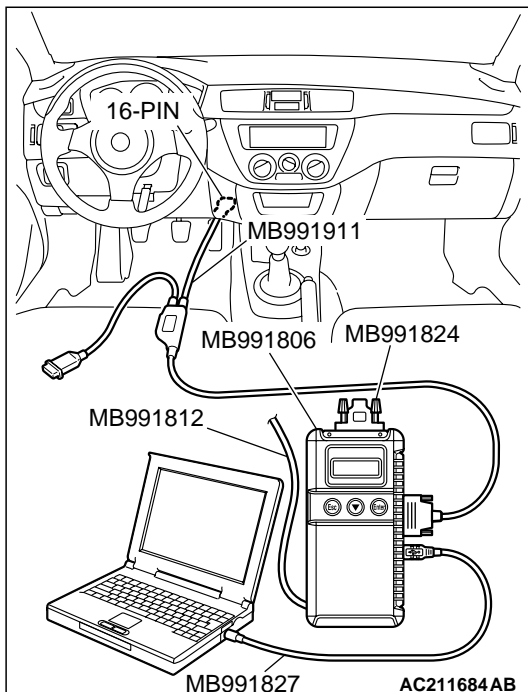
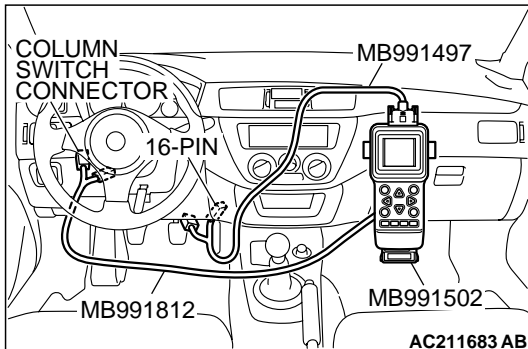
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

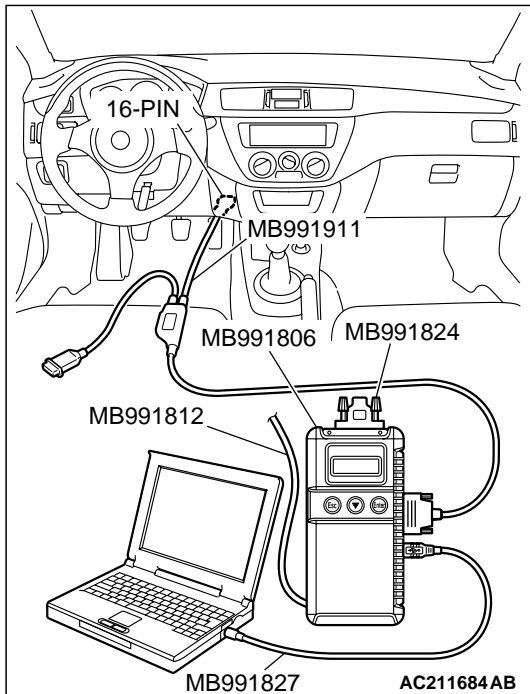
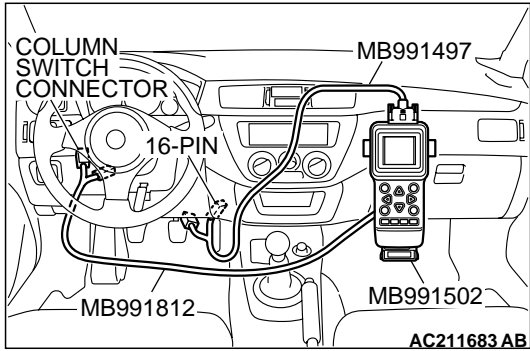
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) When the ignition switch is turned to the "ON" position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-42."





STEP 2. Check the input signal by using "Data List" menu of the SWS monitor.

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

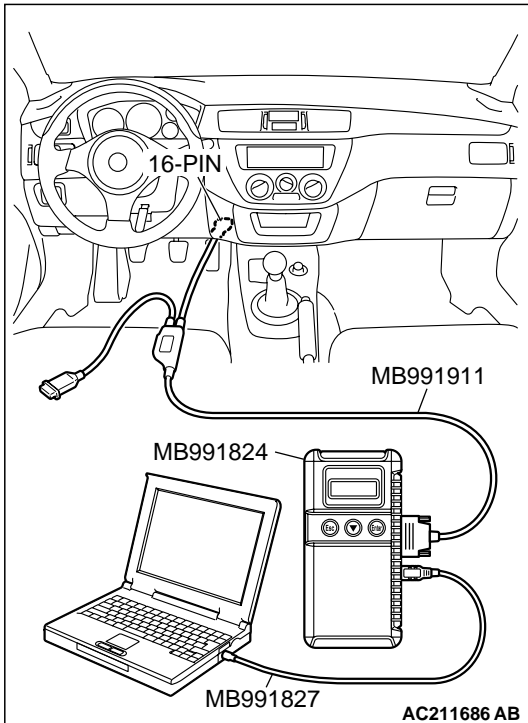
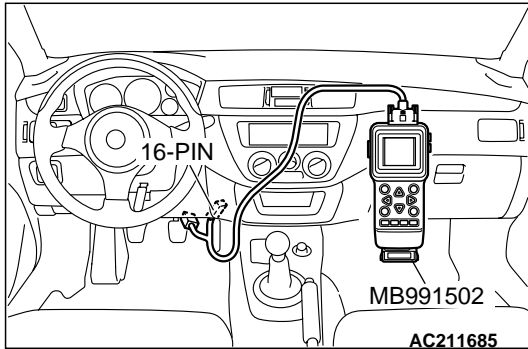
- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (2) Check that normal condition are displayed on the item 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 N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"



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.

- Driver's seat belt: fastened
- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."

(2) Check scan tool MB991502 or MB991958 sounds when the driver's seat belt is unfastened.

Q: Does scan tool MB991502 or MB991958 sound when the driver's side seat belt is unfastened?

Yes : Go to Step 4.

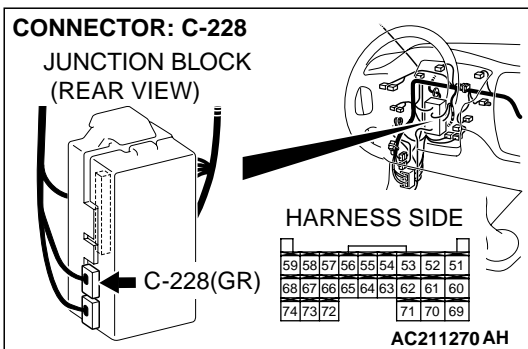
No : Refer to Inspection Procedure O-3 "ETACS-ECU does not receive a signal from the driver's side seat belt switch [P.54B-486](#)."

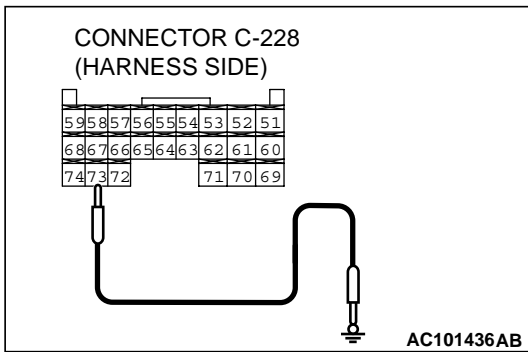
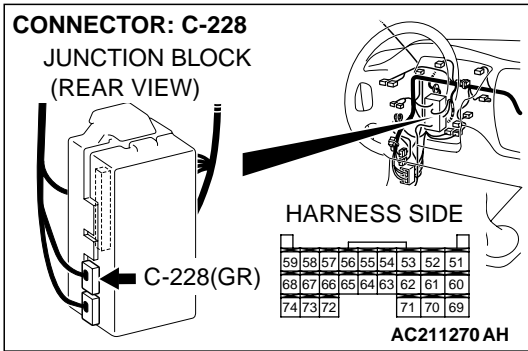
STEP 4. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-228 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 seat belt warning light illuminates normally.





STEP 5. Check at ETACS-ECU connector C-228 in order to check the ground circuit to the seat belt warning light.

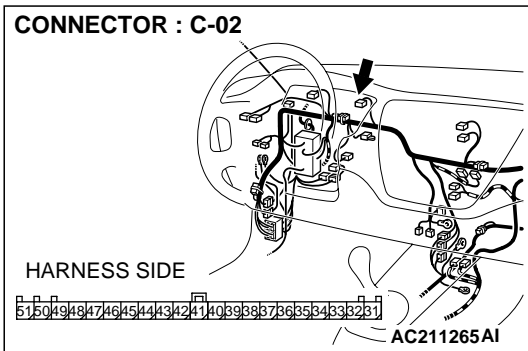
- (1) Disconnect ETACS-ECU connector C-228, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Connect terminal 73 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 6.

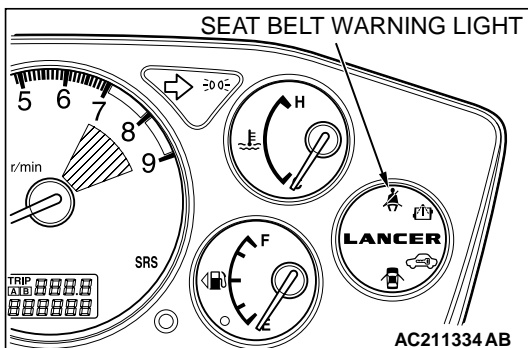


STEP 6. Check combination meter connector C-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-02 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 seat belt warning light illuminates normally.

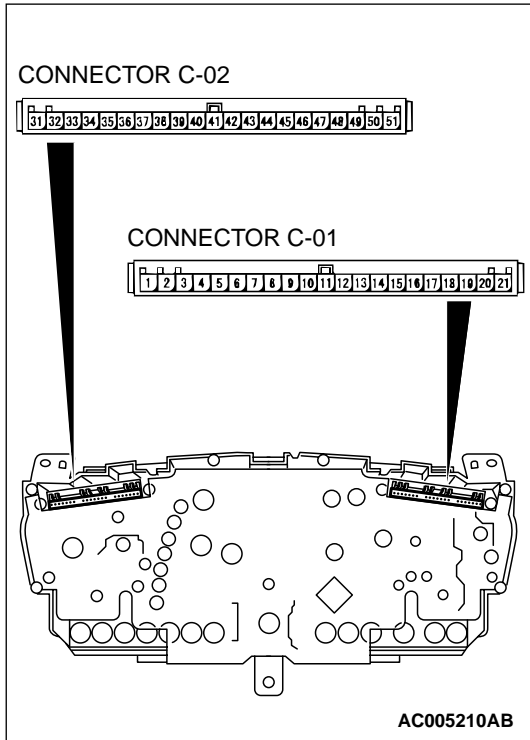


STEP 7. Check the seat belt warning light bulb.

Q: Is the seat belt warning light bulb in good condition?

YES : Go to Step 8.

NO : Replace the bulb. Verify that the seat belt warning light illuminates normally.



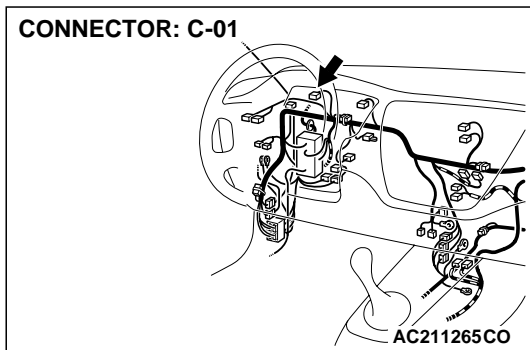
STEP 8. Check the combination meter (printed-circuit board).

- (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 C-01 (terminal 9) and connector C-02 (terminal 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?

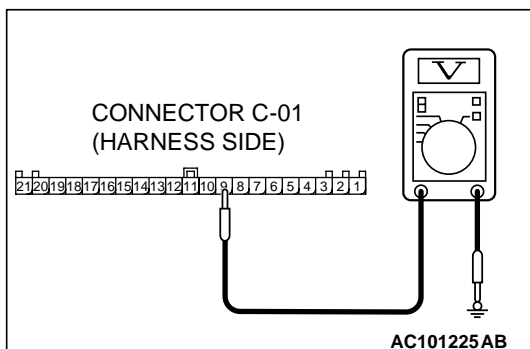
YES : Repair or replace the combination meter (printed circuit board). Verify that the seat belt warning light illuminates normally.

NO (much the same) : Go to Step 9.



STEP 9. Check the ignition switch (IG1) circuit to the combination meter. Measure the voltage at combination meter connector C-01.

- (1) Disconnect combination meter connector C-01 and measure the voltage available at the harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.

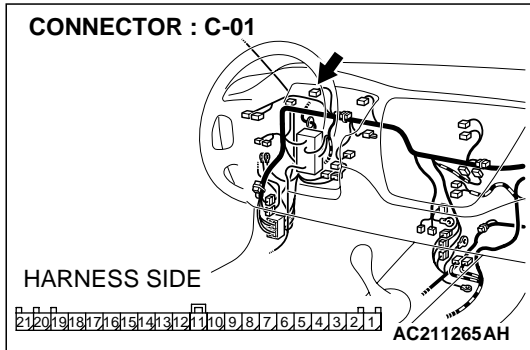


- (3) Measure the voltage between terminal 9 and ground.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 12.

NO : Go to Step 10.

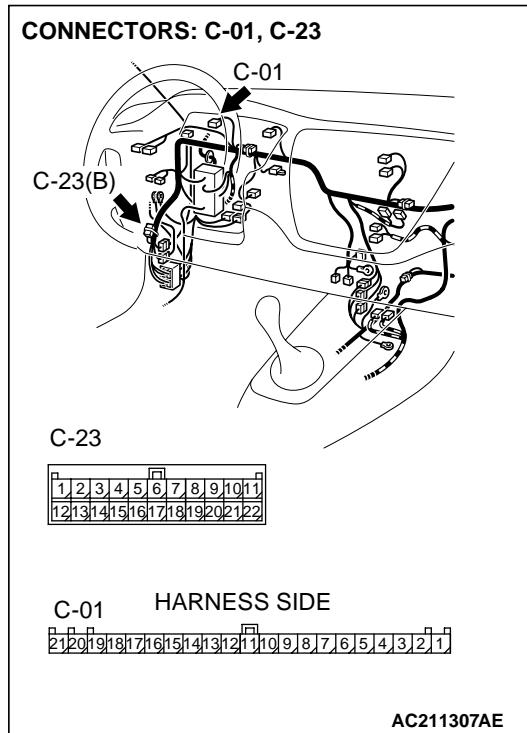


STEP 10. Check combination meter connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-01 in good condition?

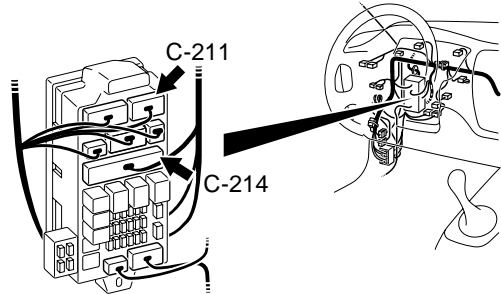
YES : Go to Step 11.

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 C-01 (terminal 9) and the ignition switch (IG1).

CONNECTORS: C-211, C-214

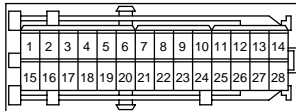


JUNCTION BLOCK
(FRONT VIEW)

C-211



C-214



AC211310AO

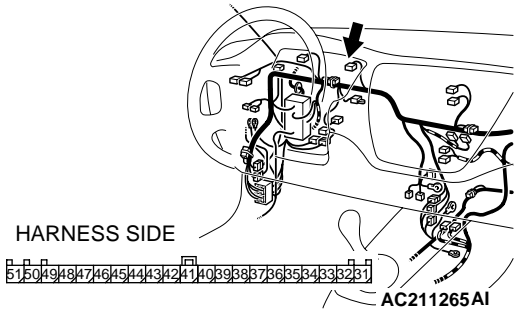
NOTE: Also check junction block connectors C-211, C-214 and joint connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211, C-214 or joint connectors C-23 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between combination meter connector C-01 (terminal 9) and the ignition switch (IG1) in good condition?

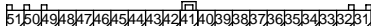
YES : No action is necessary and testing is complete.

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.

CONNECTOR : C-02



HARNES SIDE



AC211265AI

STEP 12. Check the wiring harness between combination meter connector C-02 (terminal 35) and ETACS-ECU connector C-228 (terminal 73).

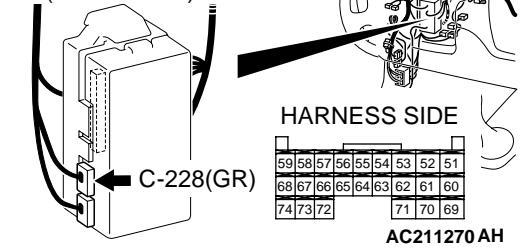
Q: Is the wiring harness between combination meter connector C-02 (terminal 35) and ETACS-ECU connector C-228 (terminal 73) in good condition?

YES : No action is necessary and testing is complete.

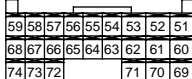
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the seat belt warning light illuminates normally.

CONNECTOR: C-228

JUNCTION BLOCK
(REAR VIEW)



HARNES SIDE



AC211270AH

HEADLIGHT AND TAILLIGHT

GENERAL DESCRIPTION CONCERNING THE HEADLIGHT AND TAILLIGHT

M1549021300093

The ECU related to the headlight and taillight types and various control functions are as follows.

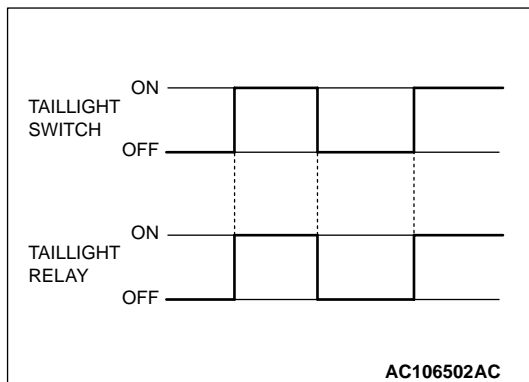
FUNCTION	CONTROL ECU
Taillight	Front-ECU, column switch
Headlights and high-beam indicator light	ETACS-ECU, front-ECU, column switch
Headlight automatic-shutdown function	ETACS-ECU, front-ECU, column switch
Dimmer automatic reset function	Front-ECU, column switch

TAILLIGHTS AND HEADLIGHTS ILLUMINATION

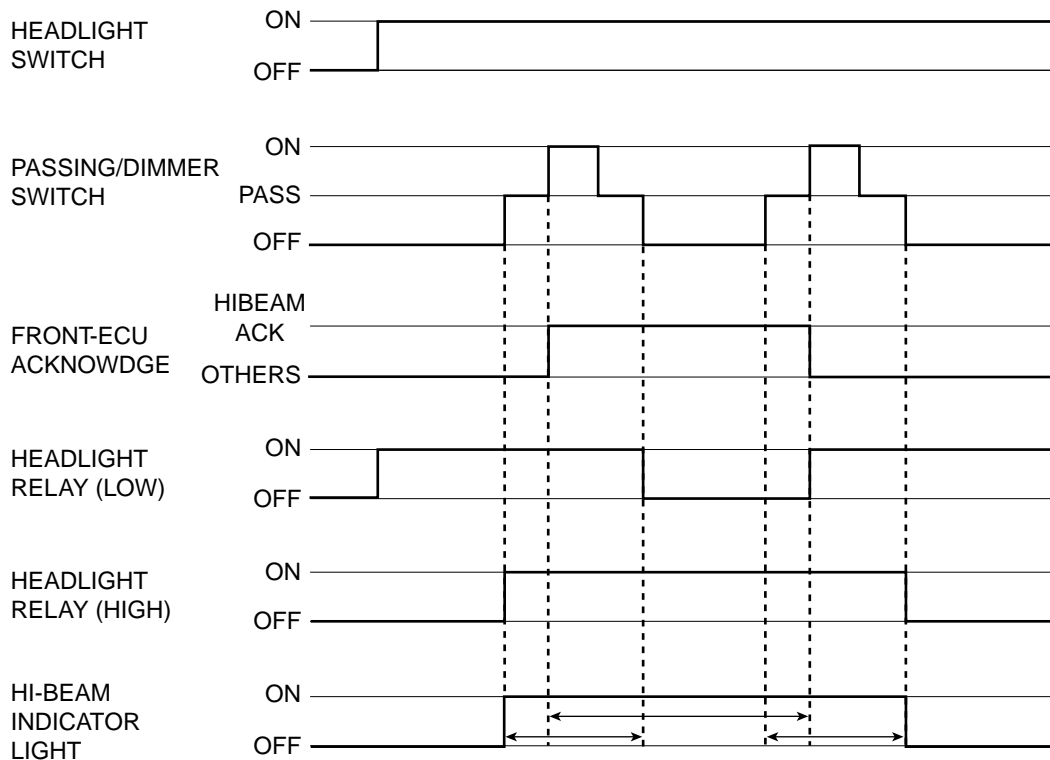
Taillight

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 relay is in the ON state.

NOTE: This item only considers the taillight light up 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

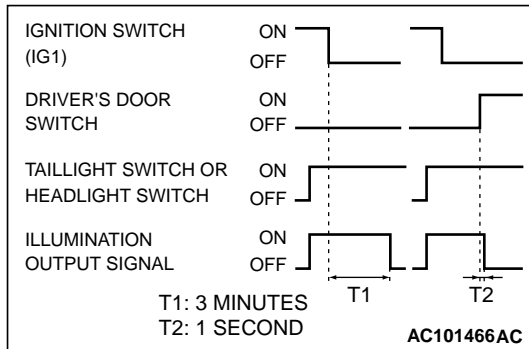


AC106816AE

The front ECU lights up the headlight (LOW) when the signal from the column switch to the headlight switch is in the "ON" state and the built-in head light relay (LOW) is in the ON state. If the dimmer switch is turned on while the headlight relay (LOW) is on, the front-ECU turns on the headlight relay (HIGH), 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 light up 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.

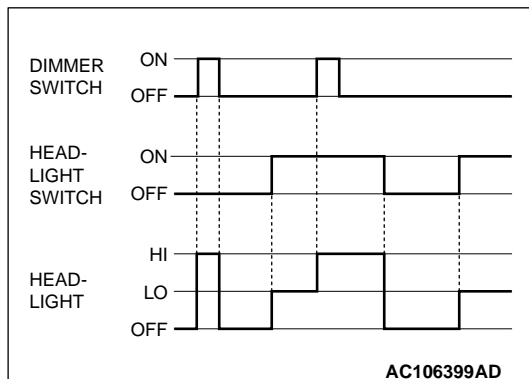


Headlight automatic-shutdown function

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 seat door is opened during these three minutes, the light will go off one second later.

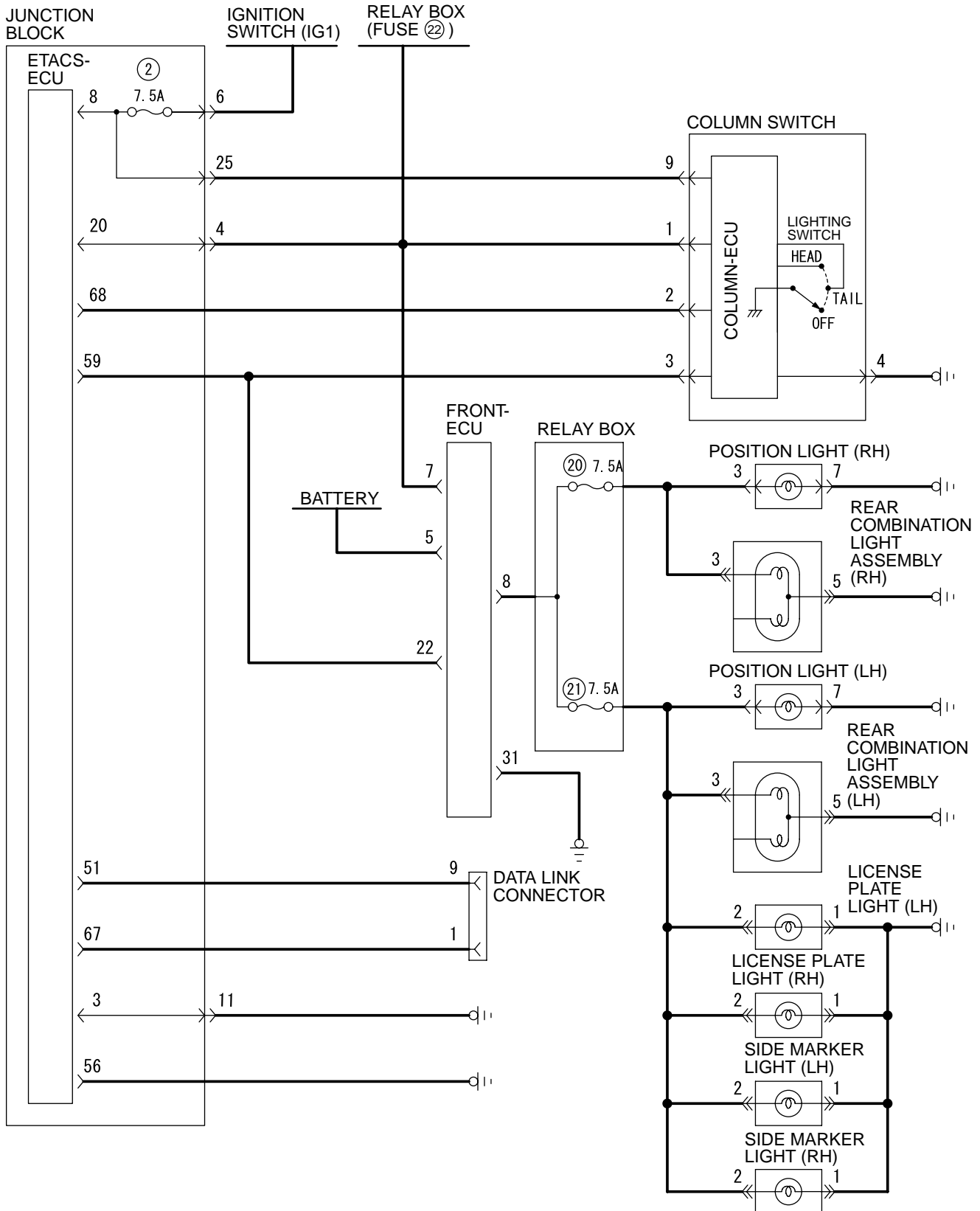
NOTE: This function can be disabled by the configuration function (Refer to P.54B-545.)



Dimmer automatic reset function

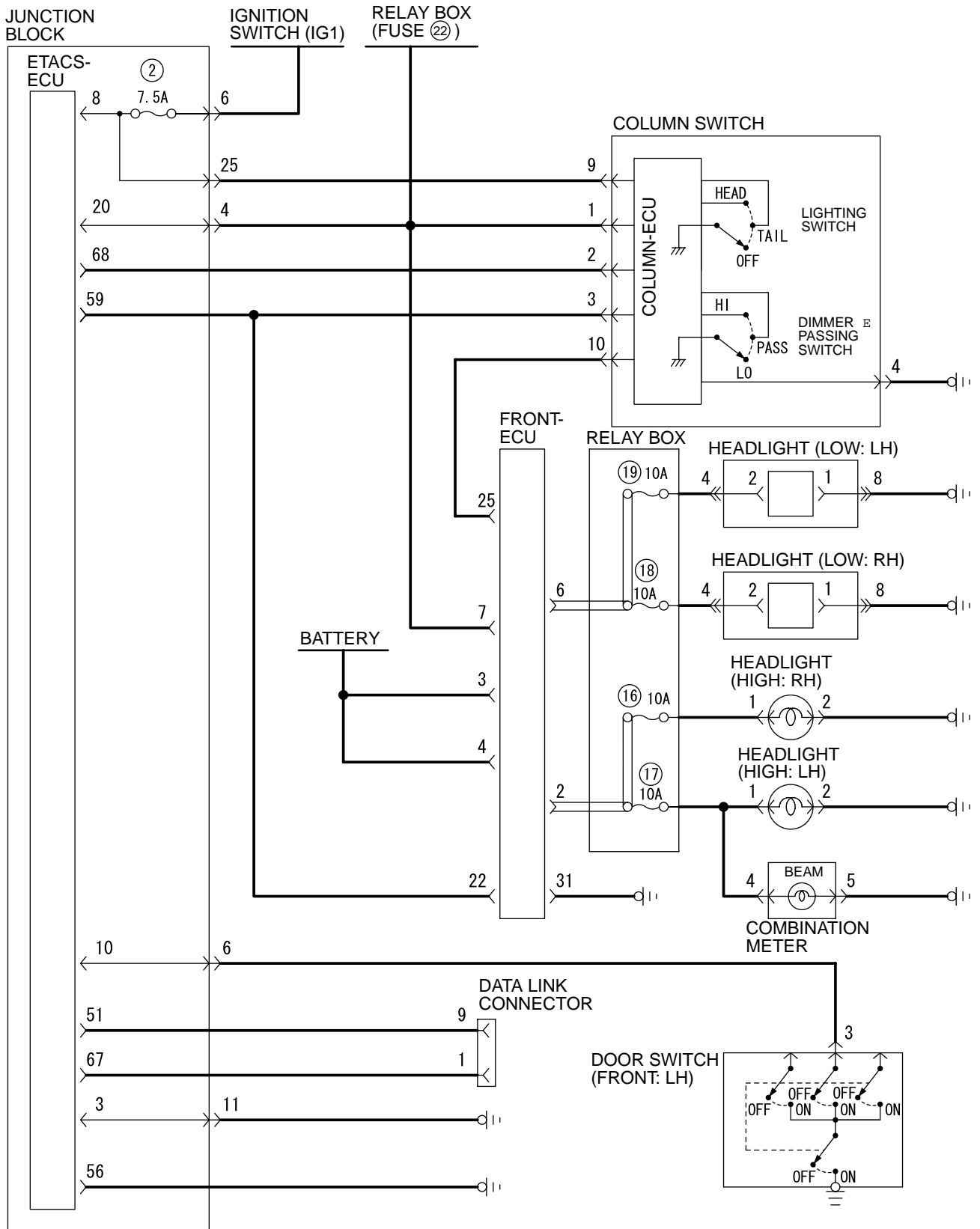
The column switch (column ECU) resets the dimmer switch and prevents the high beam from lighting up when turning on the headlight again if the headlight switch is put in the OFF position while the high beam of the headlight is on (including the instance when the dimmer switch is erroneously put in the ON state upon passing operations) and resets the dimmer switch.

General circuit diagram for the taillight



W3J14M09AA

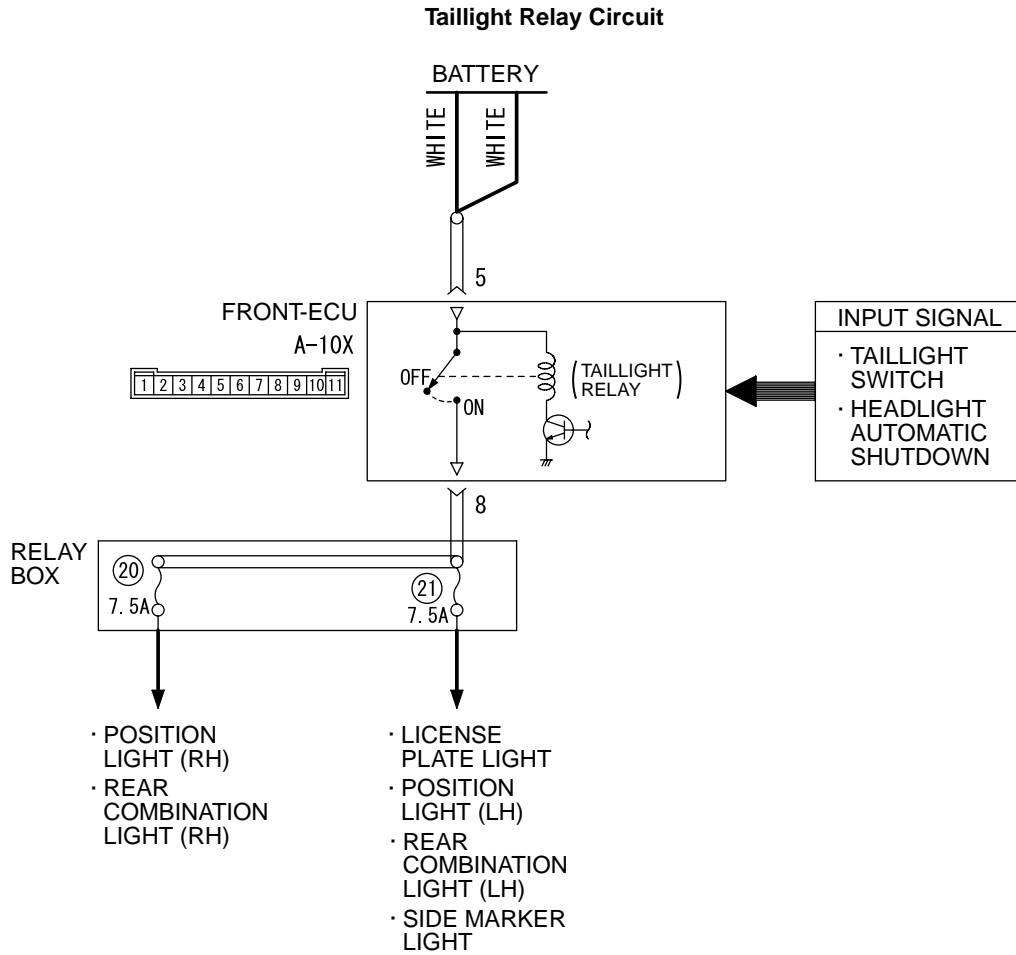
General circuit diagram for the headlight



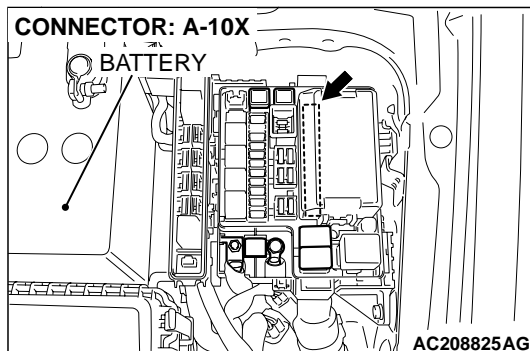
W3J14M08AA

INSPECTION PROCEDURE J-1: Headlight and Taillight : Taillights does not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."



W3J14M10AA



CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

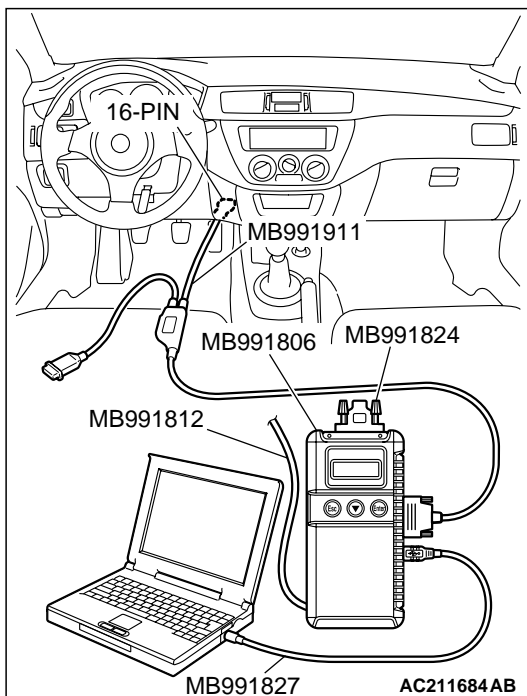
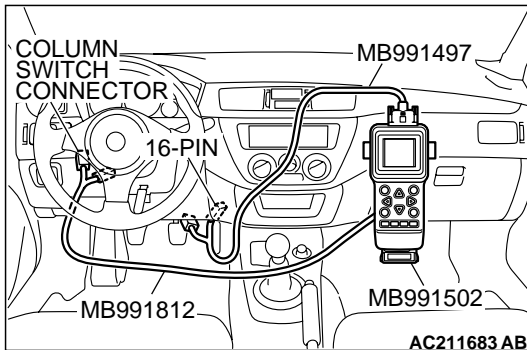
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-35."

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54B-49."

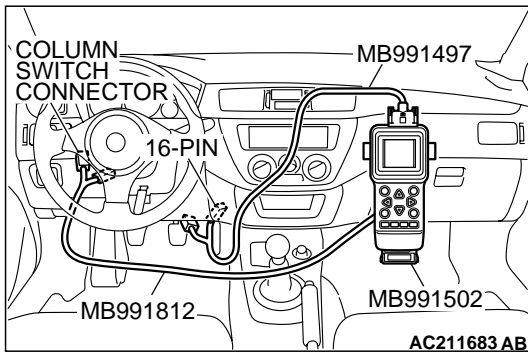


STEP 2. Check the input signal by using "Function Diag." menu of the SWS monitor.

Check the input signals from the following switches:

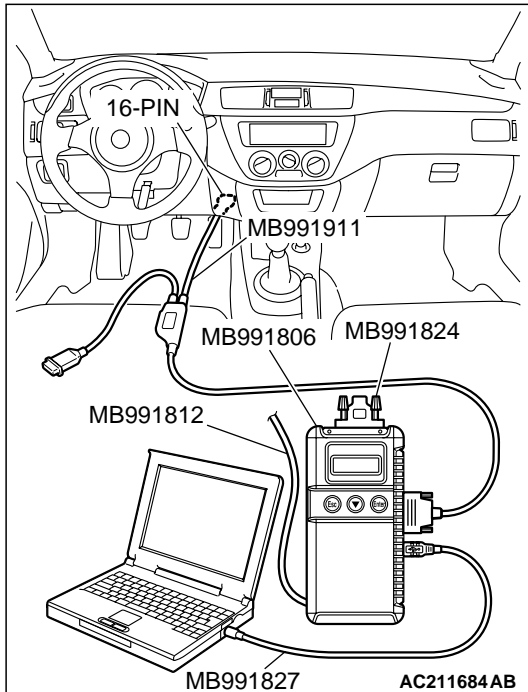
- Ignition switch: ON
- Lighting switch: TAIL

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



- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "TAILLIGHT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "TAILLIGHT."
- (2) Check that normal conditions are displayed 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: Does the scan tool MB991502 or MB991958 display the items "TAILLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

YES : Go to Step 3.

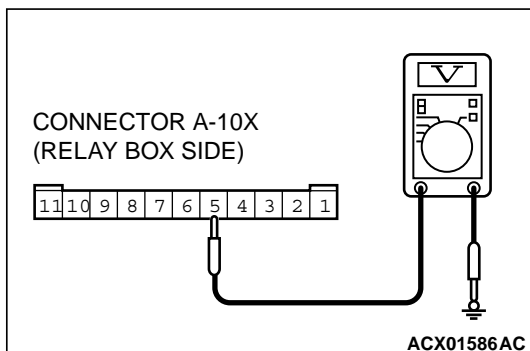
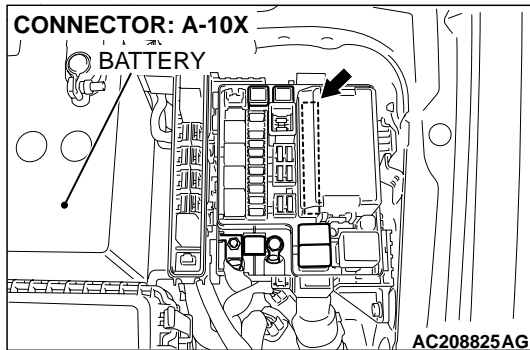
Normal condition is not displayed on the "TAILLIGHT SW" : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the taillight switch

[P.54B-462.](#)"

Normal condition is not displayed on the "H/L AUTO-CUT" : Refer to Inspection Procedure J-8 "The headlight automatic shutdown function does not work normally

[P.54B-332.](#)"

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. Measure the voltage at front-ECU connector A-10X.

(1) Disconnect front-ECU connector A-10X and measure the voltage available at the relay box side of the connector.

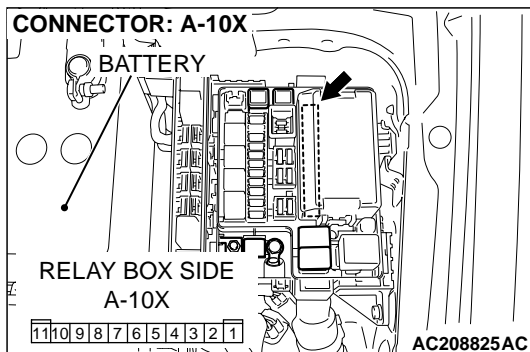
(2) Measure the voltage between terminal 5 and ground.

- The voltage should equal 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.

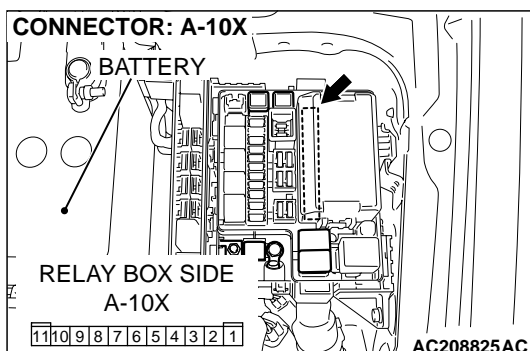


STEP 4. Check the front-ECU connector A-10X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front-ECU connector A-10X 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-10X (terminal 5) and the battery.

Q: Is the wiring harness between front-ECU connector A-10X (terminal 5) and the battery in good condition?

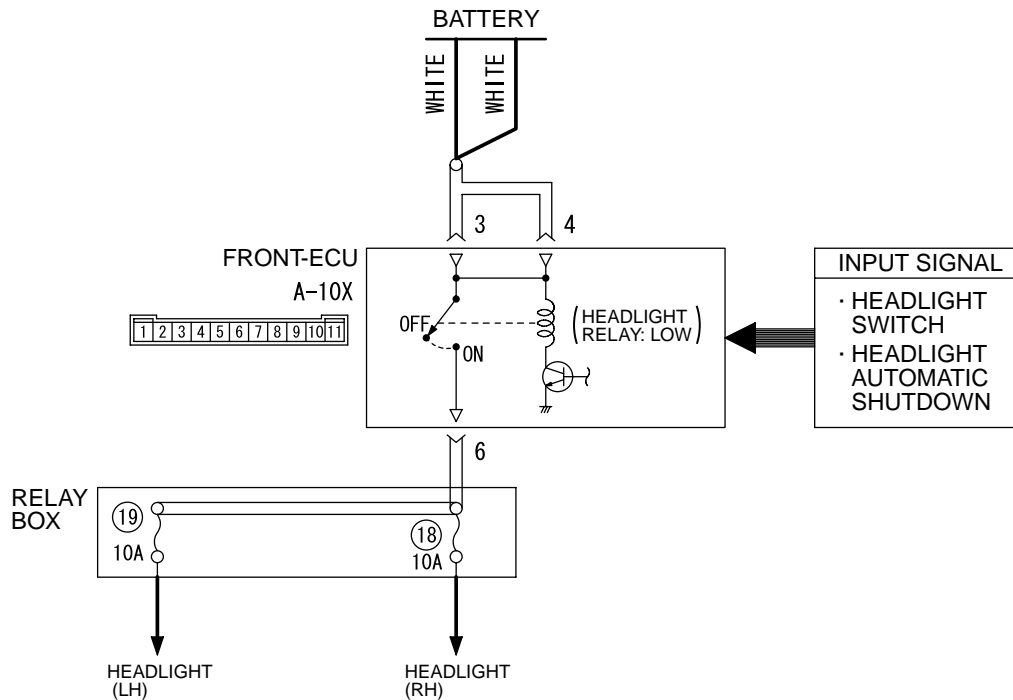
YES : No action is necessary and testing is complete.

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.

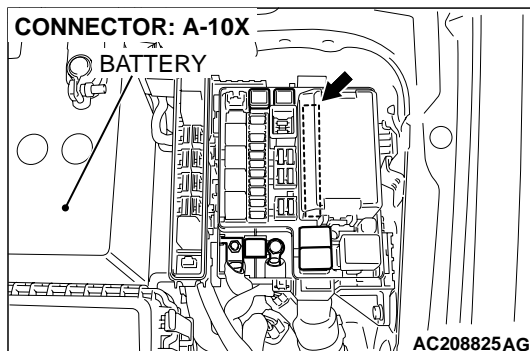
INSPECTION PROCEDURE J-2: Headlight and Taillight: Headlights (low-beam) do not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Headlight Relay (Low-Beam) Circuit



W3J14M11AA



CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

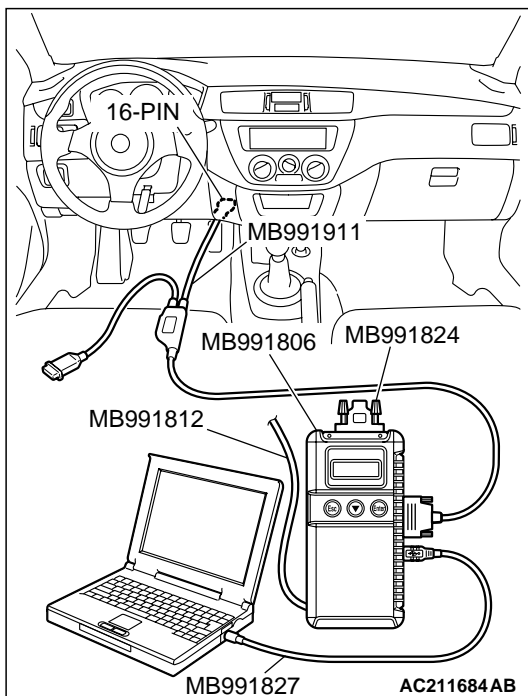
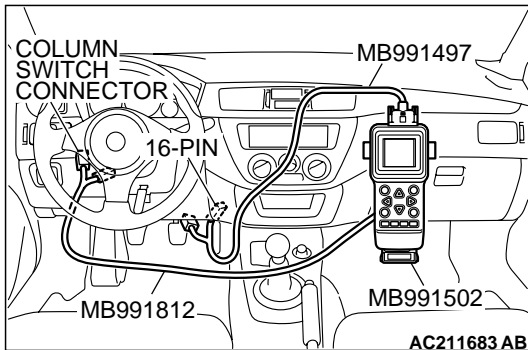
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

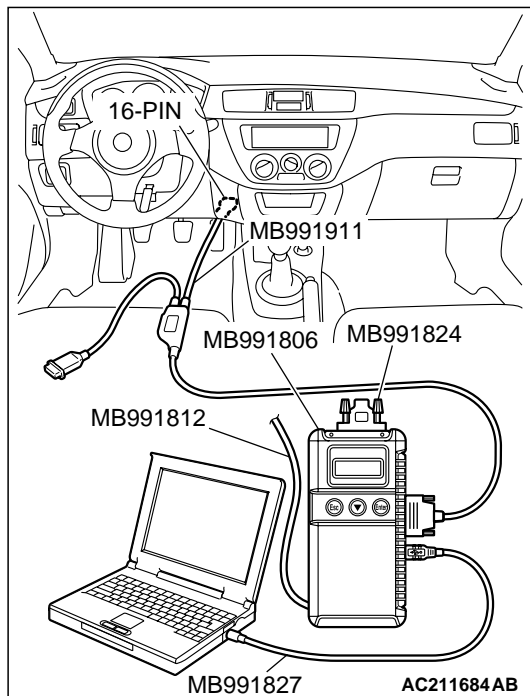
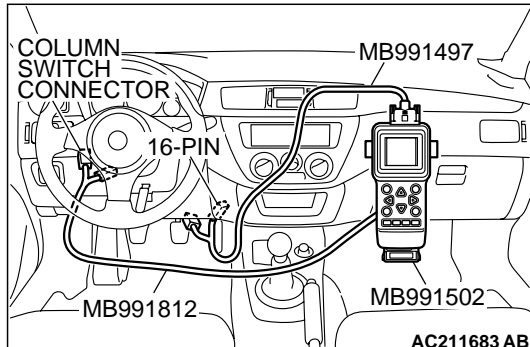
Q: Is "OK" displayed on both the "COLUMN ECU" and "FRONT ECU" menus?

"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.54B-35."

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54B-49."





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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "HEADLIGHT LO."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "HEADLIGHT LO."
- (2) 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

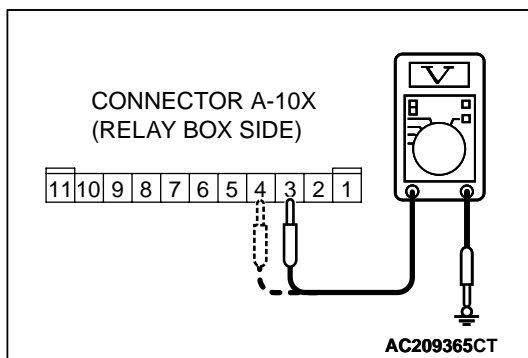
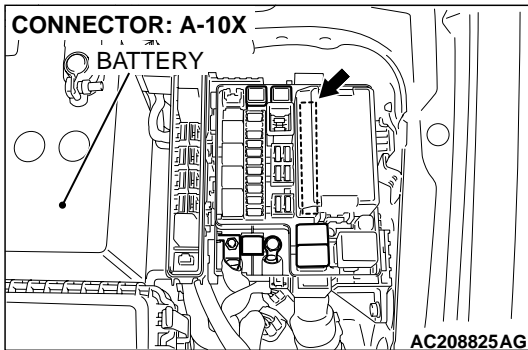
Q: Does the scan tool MB991502 or MB991958 display the items "HEADLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

YES : Go to Step 3.

Normal condition is not displayed on the "HEADLIGHT SW" : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the headlight switch [P.54B-462.](#)"

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.54B-332.](#)"

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. Measure the voltage at front-ECU connector A-10X.

(1) Disconnect front-ECU connector A-10X and measure the voltage available at the relay box side of the connector.

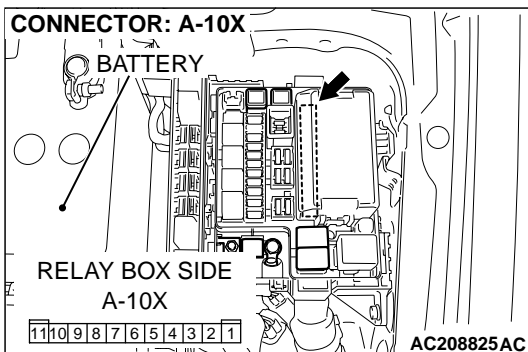
(2) Measure the voltage between terminal 3 and ground, and also between terminal 4 and ground.

- The voltage should equal 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.

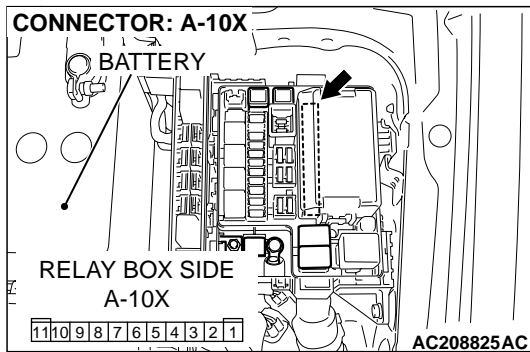


STEP 4. Check the front-ECU connector A-10X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front-ECU connector A-10X 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-10X (terminal 3) and the battery.

Q: Is the wiring harness between front-ECU connector A-10X (terminal 3) and the battery in good condition?

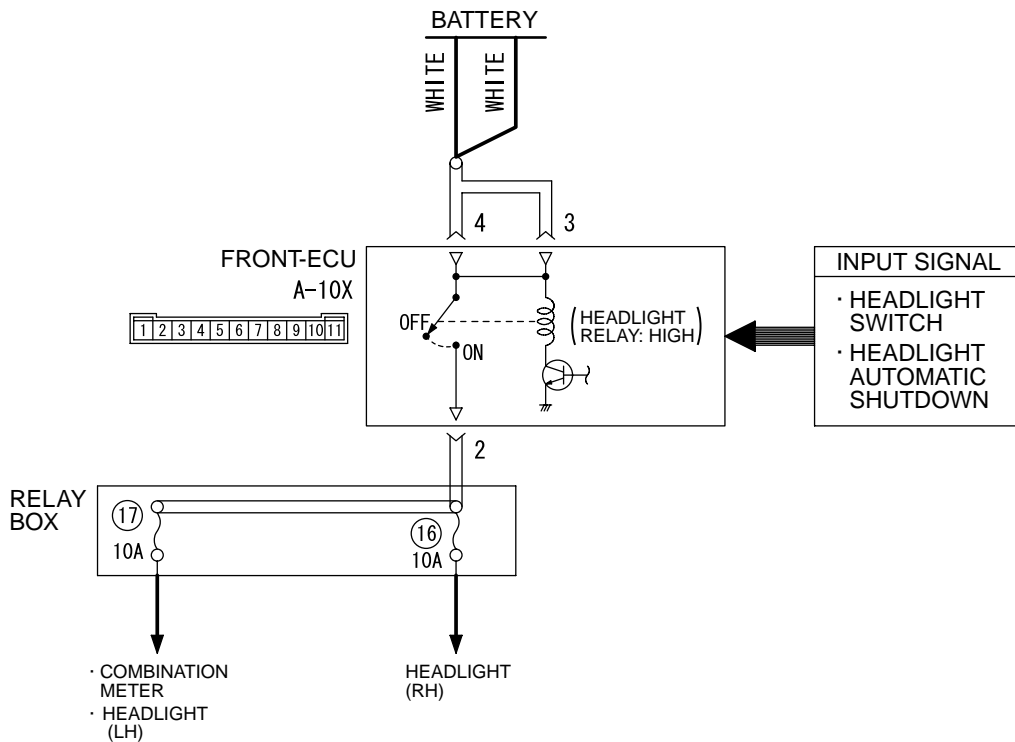
YES : No action is necessary and testing is complete.

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. Check that the headlights (low-beam) illuminate normally.

INSPECTION PROCEDURE J-3: Headlight and Taillight: Headlights (high-beam) do not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Headlight Relay (High-Beam) Circuit



W3J14M12AA

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

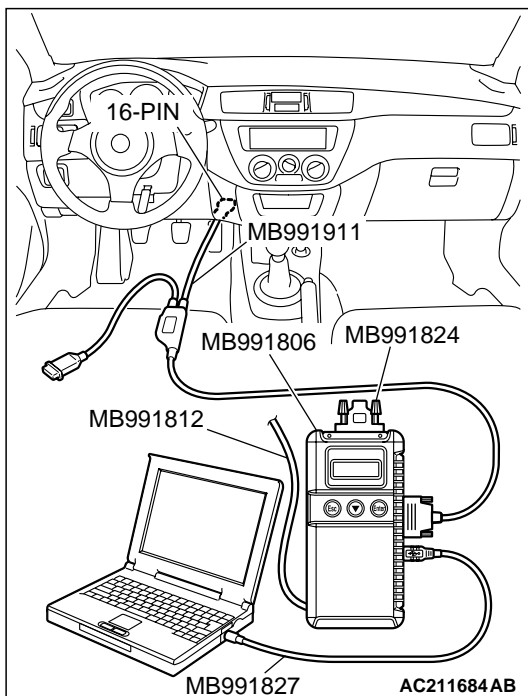
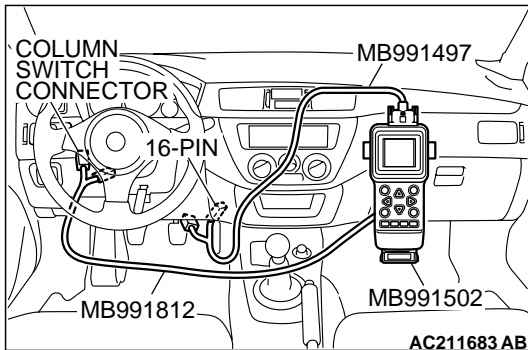
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-35."

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54B-49."

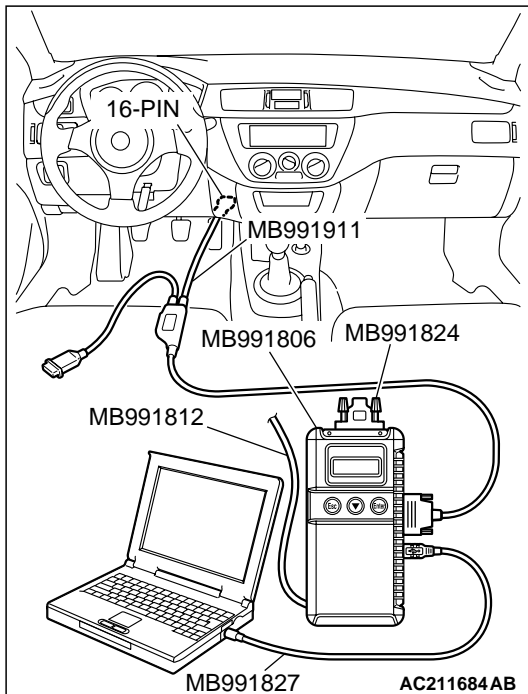
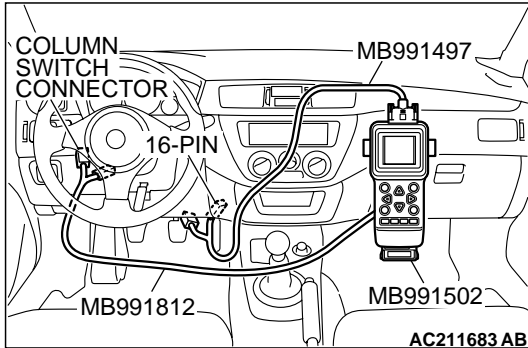


STEP 2. Check the input signal by using "Function Diag." menu of the SWS monitor.

Check the input signals from the following switches:

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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "HEADLIGHT HI."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "HEADLIGHT HI."
- (2) Check that normal conditions are displayed 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"?

Buzzer of scan tool MB991958 sounds normally :

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

Normal condition is not displayed on the "HEADLIGHT SW" : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the headlight switch

[P.54B-462.](#)"

Normal condition is not displayed on the "DIMMER SW"

: Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the dimmer switch

[P.54B-462.](#)"

Normal condition is not displayed on the "H/L AUTO-CUT"

: Refer to Inspection Procedure J-8 "Headlight automatic shutdown function does not work normally

[P.54B-332.](#)"

Normal condition is not displayed on the "FRONT ECU ACK"

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

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Verify the headlights.

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.54B-285](#)."

Headlights (high-beam) do not illuminate normally :

Refer to Inspection Procedure J-3 "Headlights (high-beam) do not illuminate normally [P.54B-290](#)."

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 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

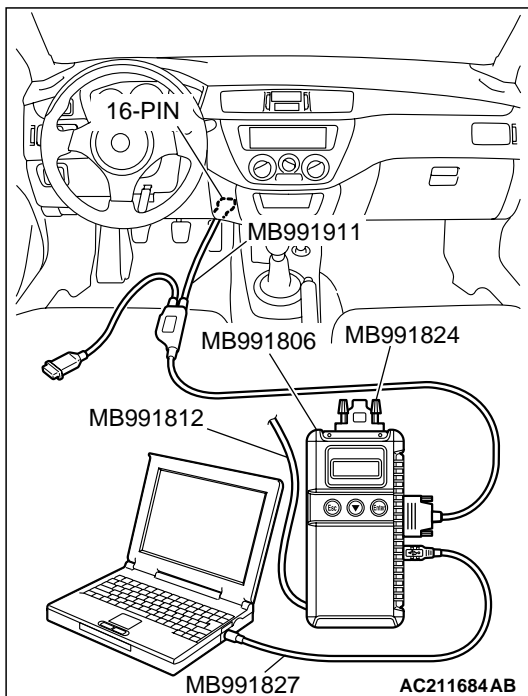
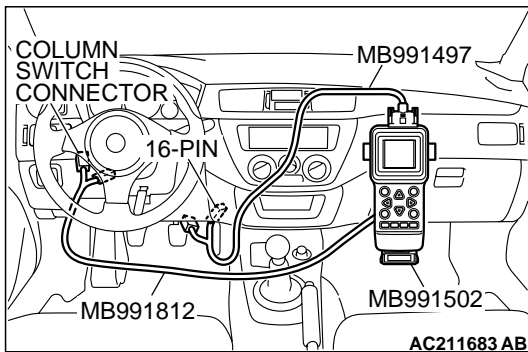
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991958 according to the procedure below to display "COLUMN ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "COLUMN ECU."
- (3) Check that normal conditions are displayed on the items described in the table below.

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

Q: Does the scan tool MB991502 or MB991958 display the items "PASSING SW" as normal condition?

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

NO : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the passing switch P.54B-462."



INSPECTION PROCEDURE J-5: Headlight and Taillight: Headlights do not illuminate when the lighting switch is at "AUTO," "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 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

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

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

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

CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "SWS MONITOR."
- e. Select "ECU COMM Check."

(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menus for the "ETACS ECU", "COLUMN ECU" and "FRONT ECU" menus.

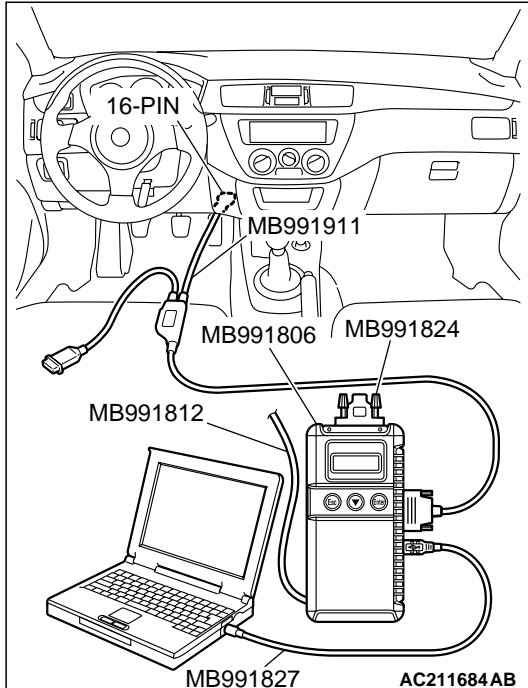
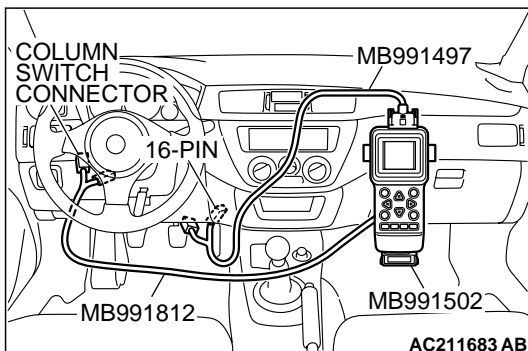
Q: Is "OK" displayed on the "ETACS ECU", "COLUMN ECU" and "FRONT ECU" menus?

"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.54B-42."

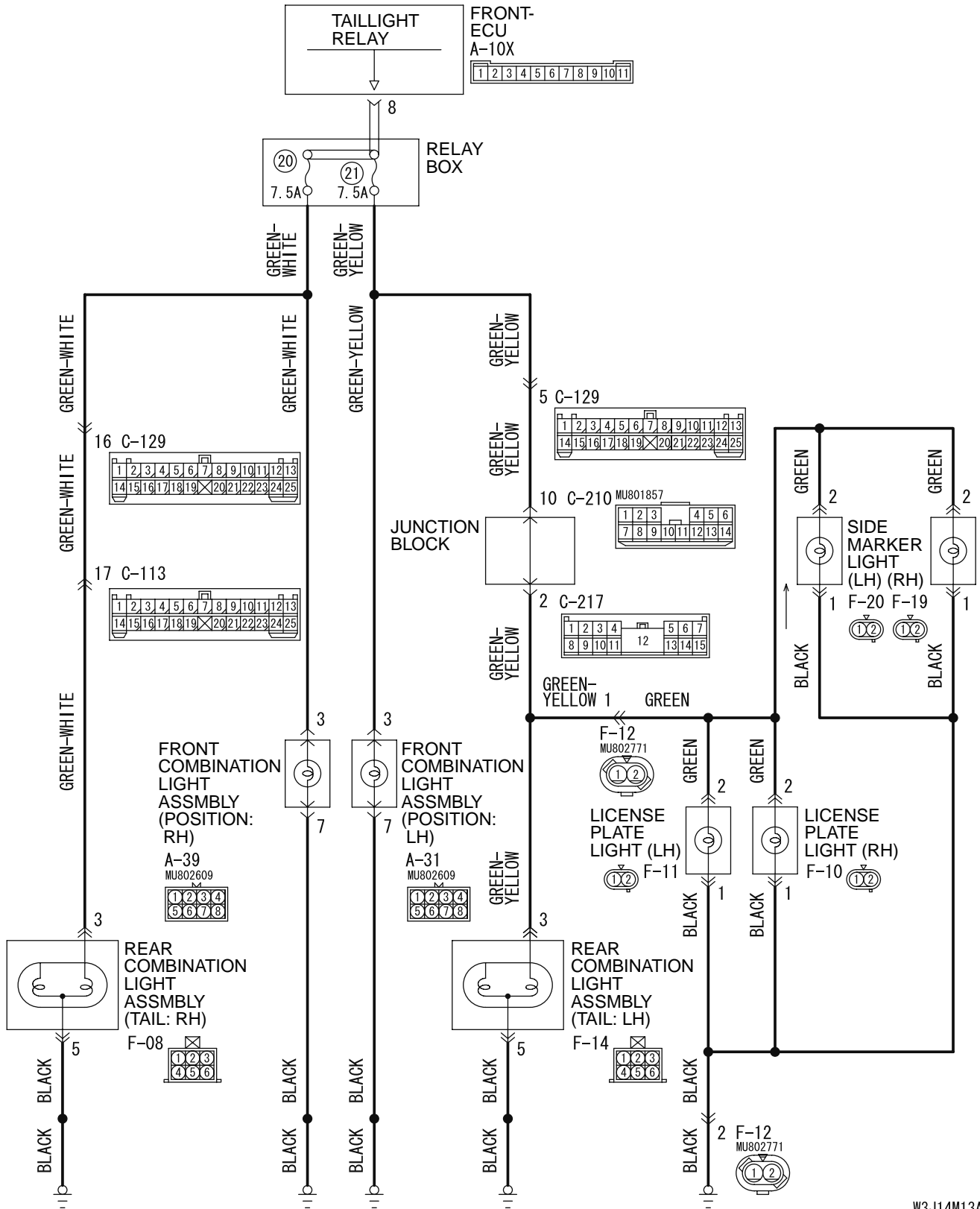
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible P.54B-42."

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible P.54B-49."

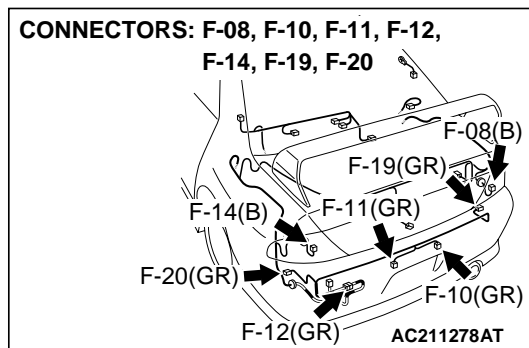
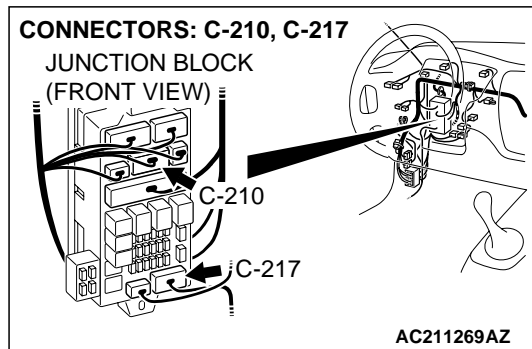
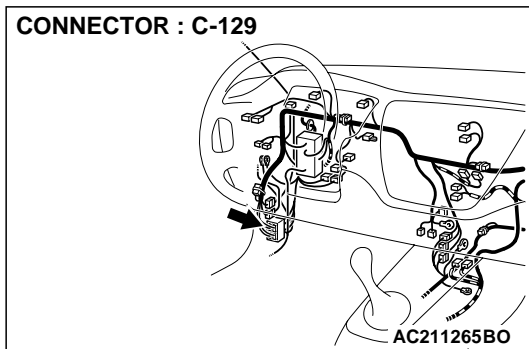
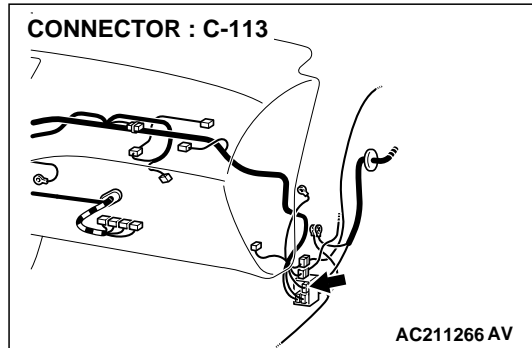
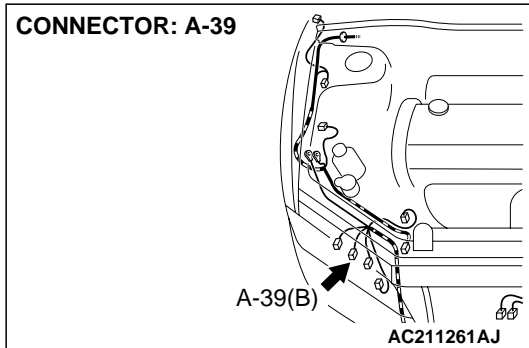
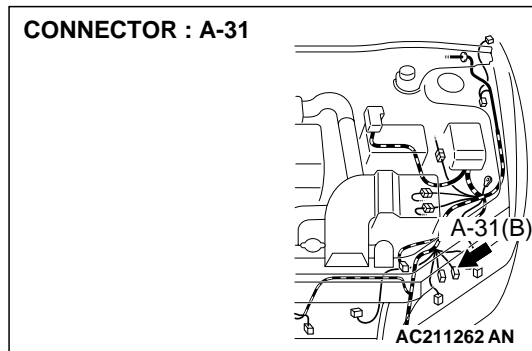
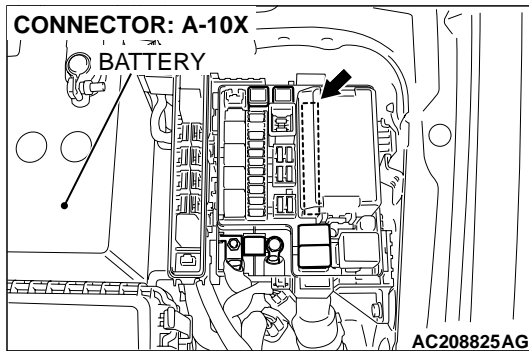


INSPECTION PROCEDURE J-6: Headlight and Taillight: Any of taillights, the position lights or the license plate lights do not illuminate.

Taillights, Position Lights, Side Marker Lights and License Plate Lights Circuit



W3J14M13AA



TECHNICAL DESCRIPTION (COMMENT)

If the position lights, the taillights 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 license plate light bulb may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

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

The position light (LH), the taillight (LH), the license plate lights and the side marker lights : Go to Step 2.
The taillight (LH), the license plate lights and the side marker lights : Go to Step 3.

The position light (RH) and the taillights (RH) : Go to Step 4.

The license plate lights and the side marker lights : Go to Step 5.

The position light (LH) : Go to Step 8.

The position light (RH) : Go to Step 14.

The taillight (LH) : Go to Step 20.

The taillight (RH) : Go to Step 23.

The license plate light (LH) : Go to Step 28.

The license plate light (RH) : Go to Step 33.

The side marker light (LH) : Go to Step 38.

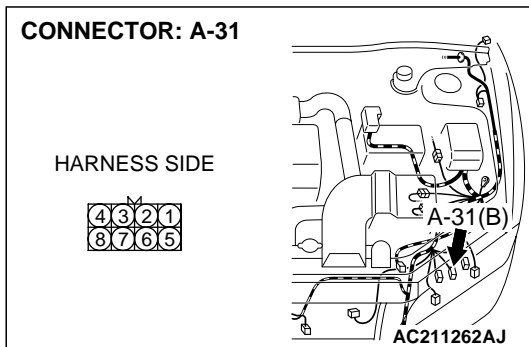
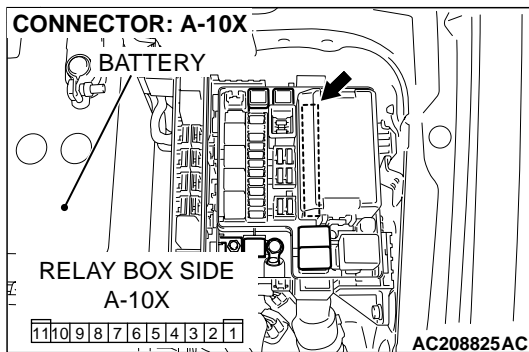
The side marker light (RH) : Go to Step 43.

All lights : Refer to Inspection Procedure J-1 "Taillights do not illuminate P.54B-280."

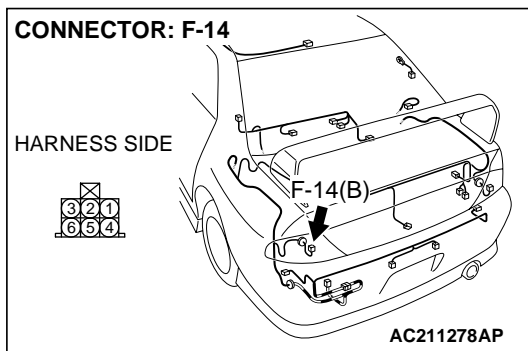
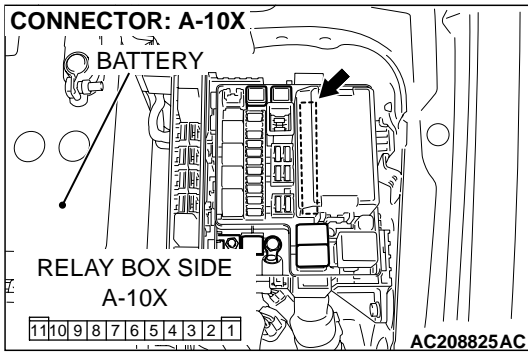
STEP 2. Check the wiring harness between front combination light assembly (LH) connector A-31 (terminal 3) and front-ECU connector A-10X (terminal 8).**Q: Is the wiring harness between front combination light assembly (LH) connector A-31 (terminal 3) and front-ECU connector A-10X (terminal 8) in good condition?**

YES : No action is necessary and testing is complete.

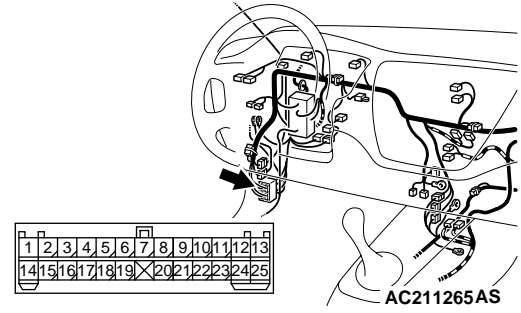
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the taillight (LH), the position light (LH), the license plate lights and the side marker lights should illuminate normally.



STEP 3. Check the wiring harness between front-ECU connector A-10X (terminal 8) and rear combination light assembly (LH) connector F-14 (terminal 3).



CONNECTOR : C-129



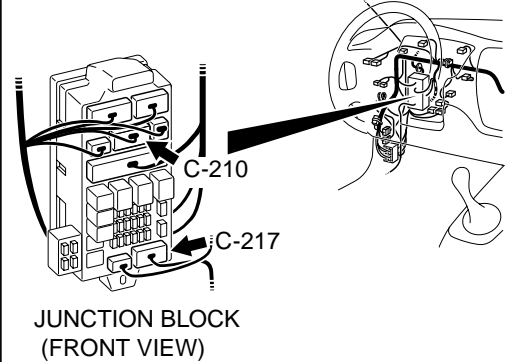
NOTE: Also check junction block connectors C-210, C-217 and intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-210, C-217 or intermediate connector C-129 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front-ECU connector A-10X (terminal 8) and rear combination light assembly (LH) connector F-14 (terminal 3) in good condition?

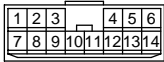
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the taillight (LH), the license plate lights and the side marker lights should illuminate normally.

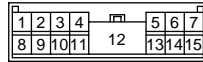
CONNECTORS: C-210, C-217



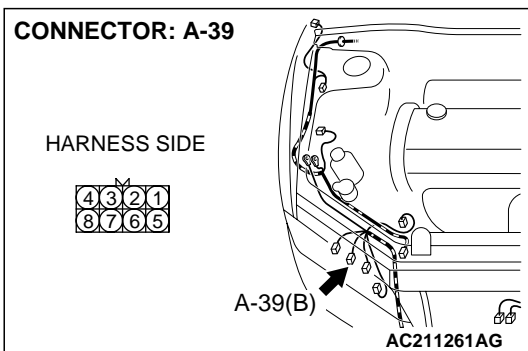
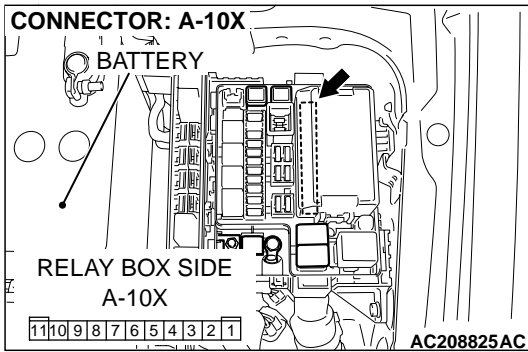
C-210



C-217



AC211310AR

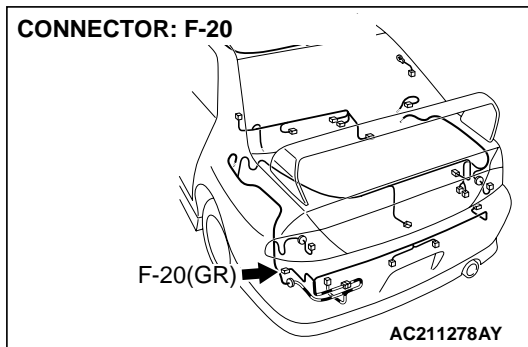


STEP 4. Check the wiring harness between front combination light assembly (RH) connector A-39 (terminal 3) and front-ECU connector A-10X (terminal 8).

Q: Is the wiring harness between front combination light assembly (RH) connector A-39 (terminal 3) and front-ECU connector A-10X (terminal 8) in good condition?

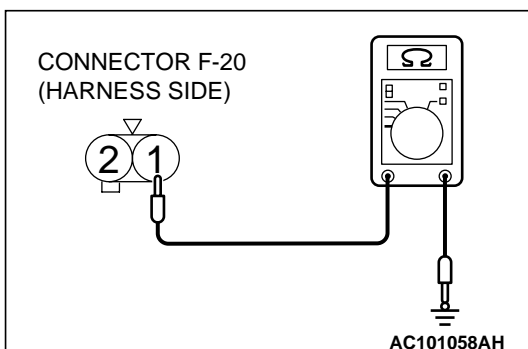
YES : No action is necessary and testing is complete.

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) and the taillight (RH) should illuminate normally.



STEP 5. Check the ground circuit to the license plate light (LH). Measure the resistance at side marker light (LH) connector F-20.

(1) Disconnect side marker light (LH) connector F-20 and measure the resistance available at the wiring harness side of the connector.



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

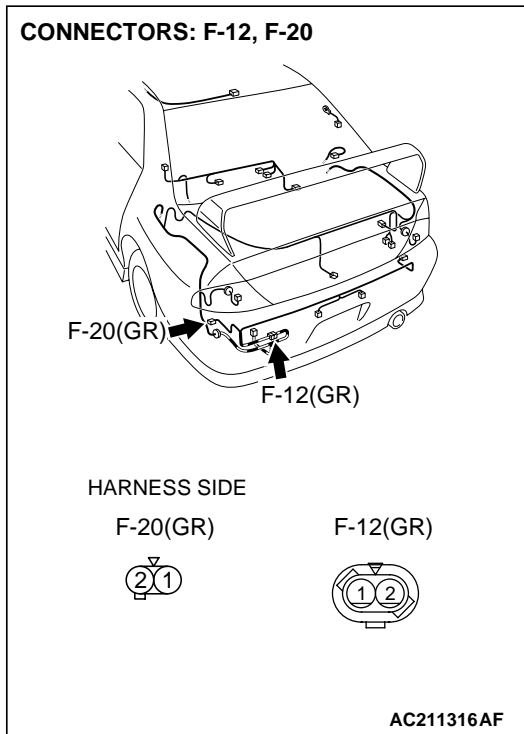
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Check the wiring harness between side marker light (LH) connector F-20 (terminal 1) and ground.



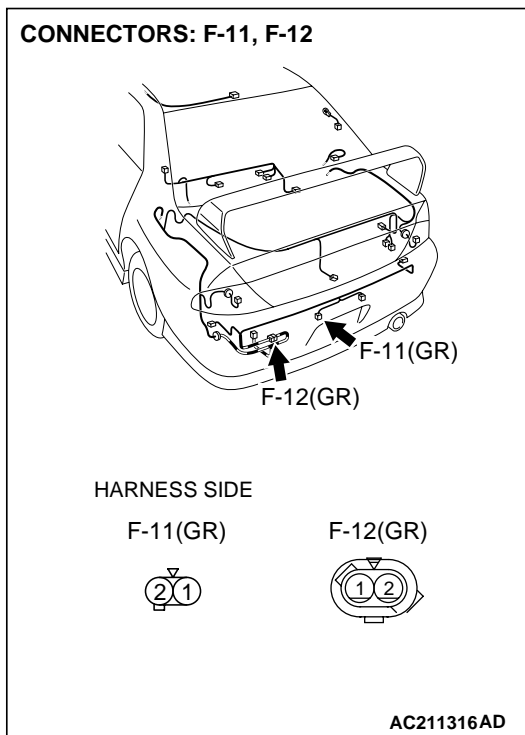
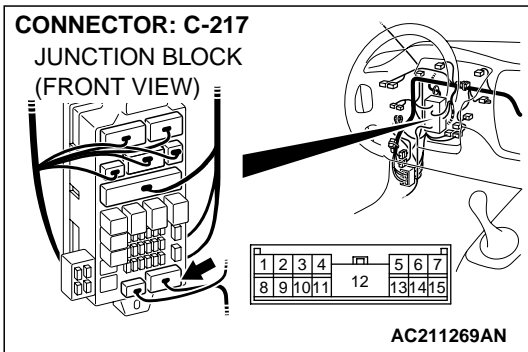
NOTE: Also check intermediate connector F-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between side marker light (LH) connector F-20 (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 and side marker lights illuminates normally.

STEP 7. Check the wiring harness between license plate light (LH) connector F-11 (terminal 2) and junction block connector C-217 (terminal 2).

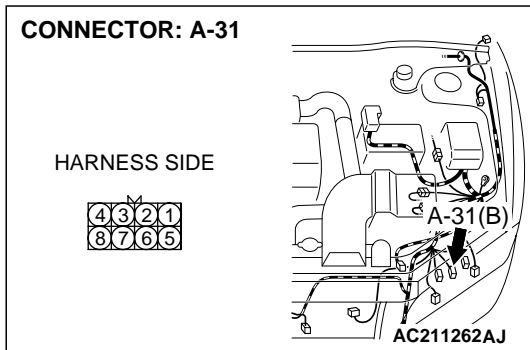


NOTE: Also check intermediate connector F-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between license plate light (LH) connector F-11 (terminal 2) and junction block connector C-217 (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 license plate lights and side marker lights illuminates normally.



STEP 8. Check front combination light assembly (LH) connector A-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light assembly (LH) connector A-31 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 position light (LH) illuminates normally.

STEP 9. 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.

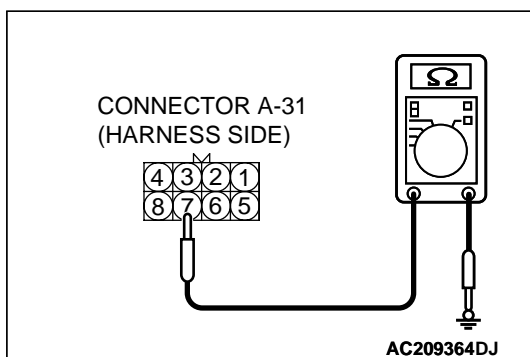
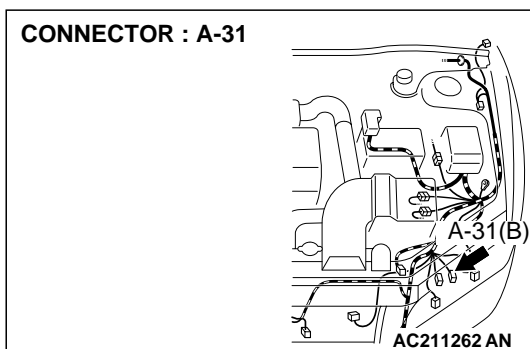
Q: Is the position light bulb (LH) in good condition?

YES : Go to Step 10.

NO : Replace the position light bulb (LH). Verify that the position light (LH) illuminates normally.

STEP 10. Check the ground circuit to the position light (LH). Measure the resistance at front combination light assembly (LH) connector A-31.

(1) Disconnect front combination light assembly (LH) connector A-31 and measure the resistance available at the wiring harness side of the connector.



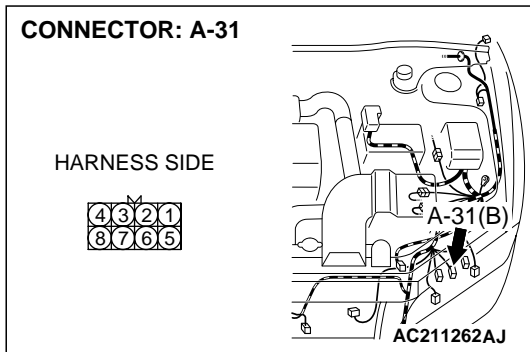
(2) Measure the resistance value between terminal 7 and ground.

- 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 11.

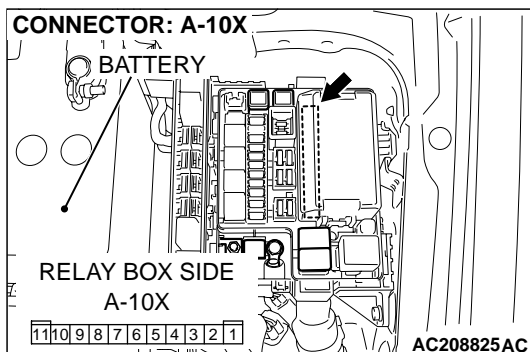


STEP 11. Check the wiring harness between front combination light assembly (LH) connector A-31 (terminal 7) and ground.

Q: Is the wiring harness between position light (LH) connector A-31 (terminal 7) and ground in good condition?

YES : Replace the front combination light assembly (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.

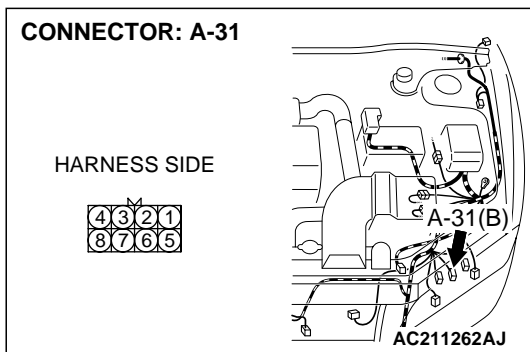


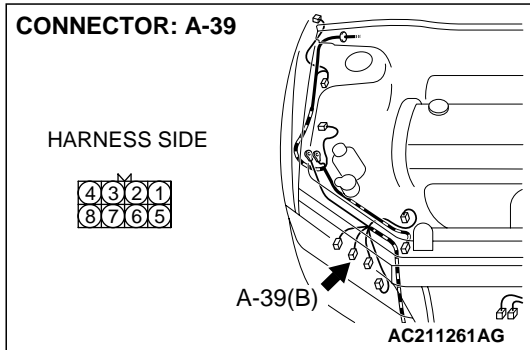
STEP 12. Check the wiring harness between front combination light assembly (LH) connector A-31 (terminal 3) and front-ECU connector A-10X (terminal 8).

Q: Is the wiring harness between front combination light assembly (LH) connector A-31 (terminal 3) and front-ECU connector A-10X (terminal 8) in good condition?

YES : Replace the front combination light assembly (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 13. Check front combination light assembly (RH) connector A-39 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light assembly (RH) connector A-39 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 (RH) illuminates normally.

STEP 14. 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.

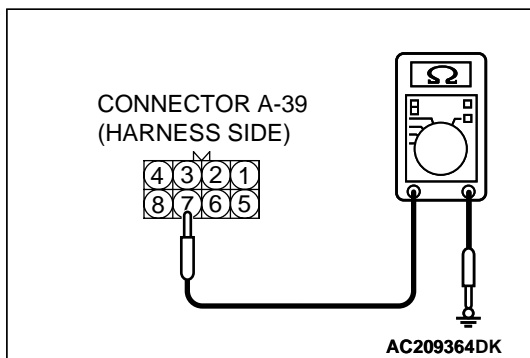
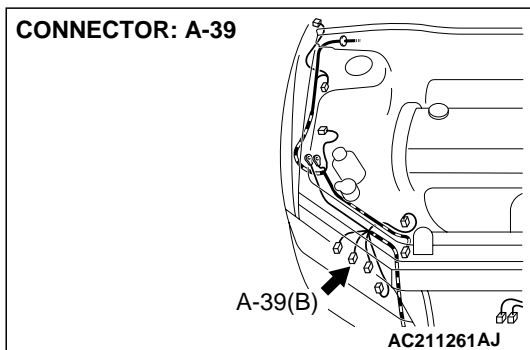
Q: Is the position light bulb (RH) in good condition?

YES : Go to Step 15.

NO : Replace the position light bulb (RH). Verify that the position light (RH) illuminates normally.

STEP 15. Check the ground circuit to the position light (LH). Measure the resistance at front combination light assembly (LH) connector A-39.

- (1) Disconnect front combination light assembly (LH) connector A-39 and measure the resistance available at the wiring harness side of the connector.



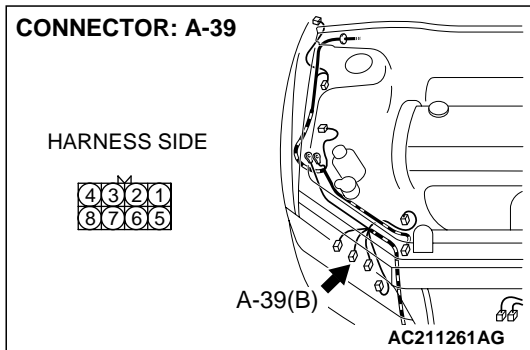
- (2) Measure the resistance value between terminal 7 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 17.

NO : Go to Step 16.

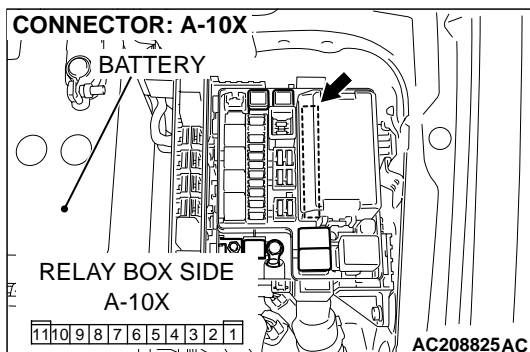


STEP 16. Check the wiring harness between front combination light assembly (RH) connector A-39 (terminal 7) and ground.

Q: Is the wiring harness between front combination light assembly (RH) connector A-39 (terminal 1) and ground in good condition?

YES : Replace the front combination light assembly (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.

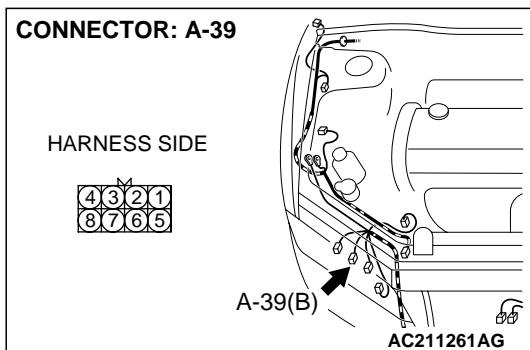


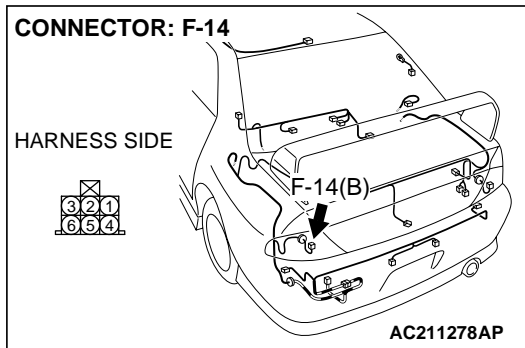
STEP 17. Check the wiring harness between front combination light assembly (RH) connector A-39 (terminal 3) and front-ECU connector A-10X (terminal 8).

Q: Is the wiring harness between front combination light assembly (RH) connector A-39 (terminal 1) and front-ECU connector A-10X (terminal 8) in good condition?

YES : Replace the front combination light assembly (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.





STEP 18. Check rear combination light assembly (LH) connector F-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light assembly (LH) connector F-14 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 taillights (LH) illuminate normally.

STEP 19. Check the stop/taillight bulb (LH).

- (1) Remove the stop/taillight bulb (LH).
- (2) Verify that the stop/taillight bulb (LH) is not damaged or burned out.

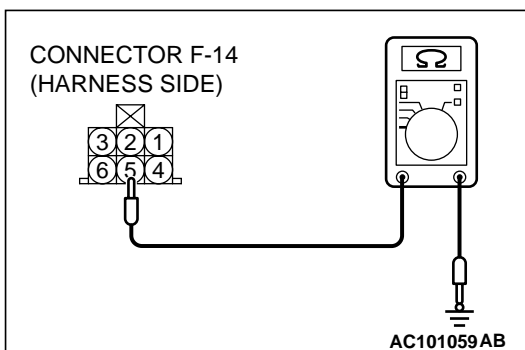
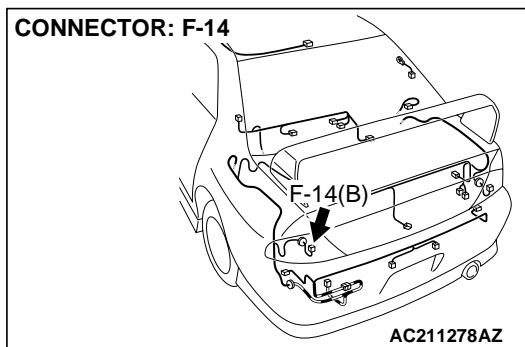
Q: Is the stop/taillight bulb (LH) in good condition?

YES : Go to Step 20.

NO : Replace the stop/taillight bulb (LH). Verify that the taillights (LH) illuminate normally.

STEP 20. Check the ground circuit to the rear combination light (LH). Measure the resistance at rear combination light assembly (LH) connector F-14.

- (1) Disconnect rear combination light assembly (LH) connector F-14 and measure the resistance available at the wiring harness side of the connector.



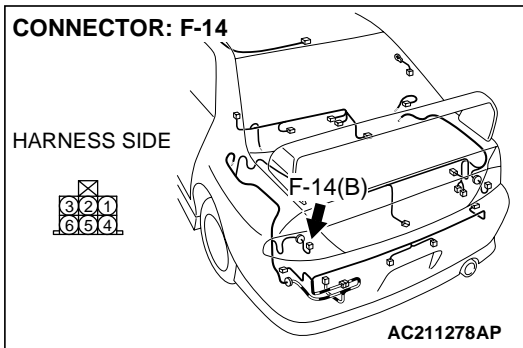
- (2) Measure the resistance value between terminal 5 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 22.

NO : Go to Step 21.

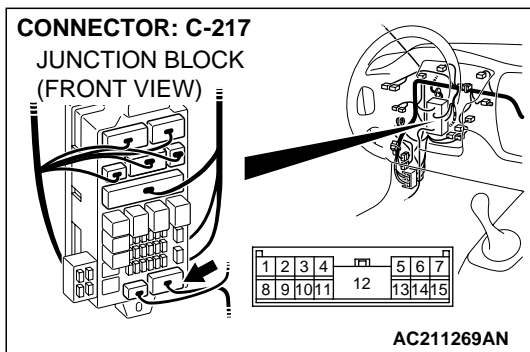


STEP 21. Check the wiring harness between rear combination light assembly (LH) connector F-14 (terminal 5) and ground.

Q: Is the wiring harness between rear combination light assembly (LH) connector F-14 (terminal 5) and ground in good condition?

YES : Replace the rear combination light assembly (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) illuminate normally.

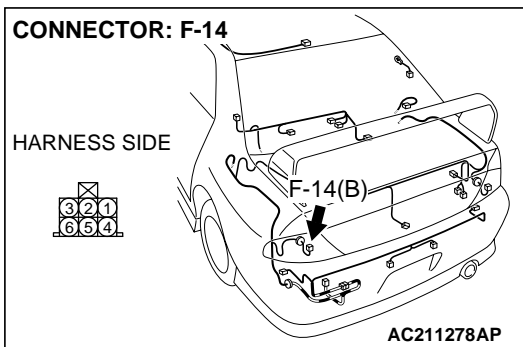


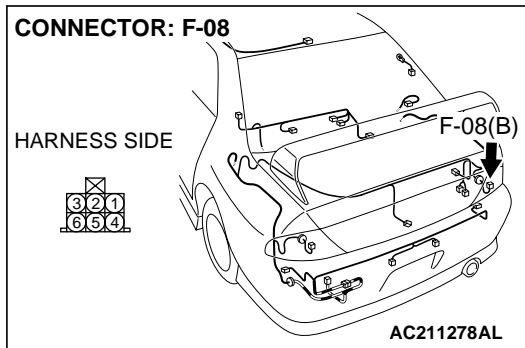
STEP 22. Check the wiring harness between rear combination light assembly (LH) connector F-14 (terminal 3) and junction block connector C-217 (terminal 2).

Q: Is the wiring harness between rear combination light assembly (LH) connector F-14 (terminal 3) and junction block connector C-217 (terminal 2) in good condition?

YES : Replace the rear combination light assembly (LH). Verify that the taillights (LH) illuminate normally.

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





STEP 23. Check rear combination light assembly (RH) connector F-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light assembly (RH) connector F-08 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 taillight (RH) illuminates normally.

STEP 24. Check the stop/taillight bulb (RH).

- (1) Remove the stop/taillight bulb (RH).
- (2) Verify that the stop/taillight bulb (RH) is not damaged or burned out.

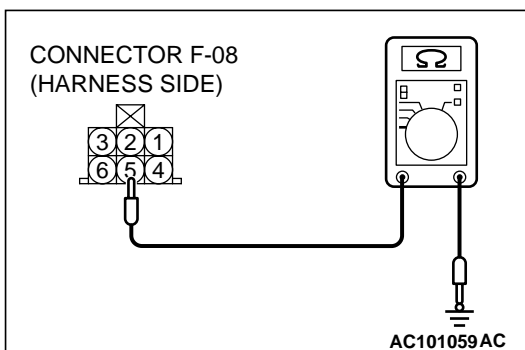
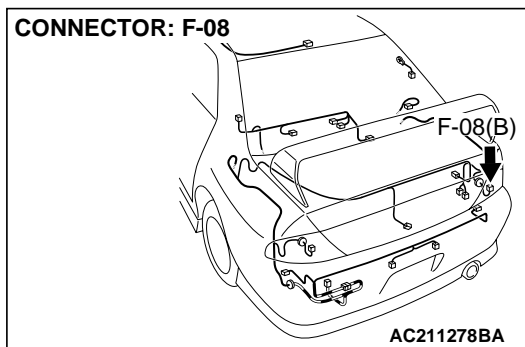
Q: Is the stop/taillight bulb (RH) in good condition?

YES : Go to Step 25.

NO : Replace the stop/taillight bulb (RH). Verify that the taillight (RH) illuminates normally.

STEP 25. Check the ground circuit to the rear combination light (RH). Measure the resistance at rear combination light assembly (RH) connector F-08.

- (1) Disconnect rear combination light assembly (RH) connector F-08 and measure the resistance available at the wiring harness side of the connector.



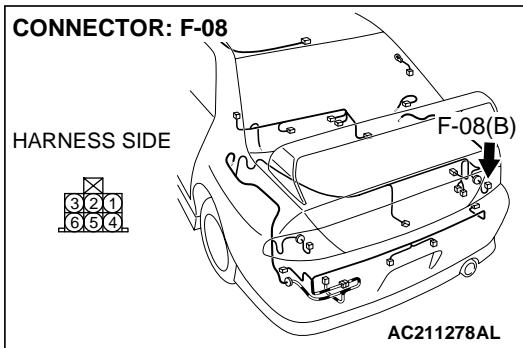
- (2) Measure the resistance value between terminal 5 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 27.

NO : Go to Step 26.

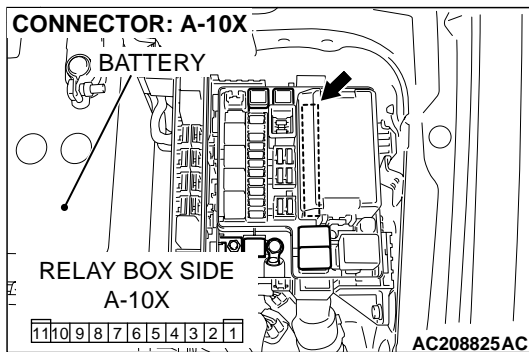


STEP 26. Check the wiring harness between rear combination light assembly (RH) connector F-08 (terminal 5) and ground.

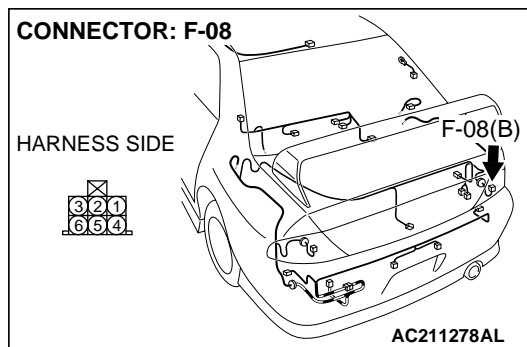
Q: Is the wiring harness between rear combination light assembly (RH) connector F-08 (terminal 5) and ground in good condition?

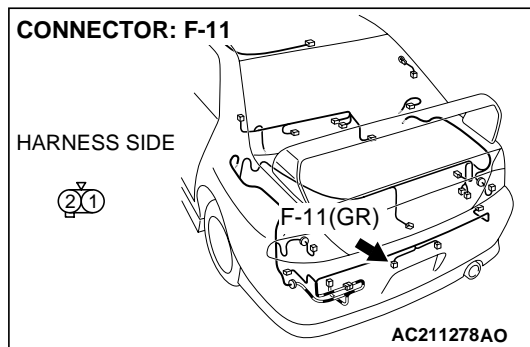
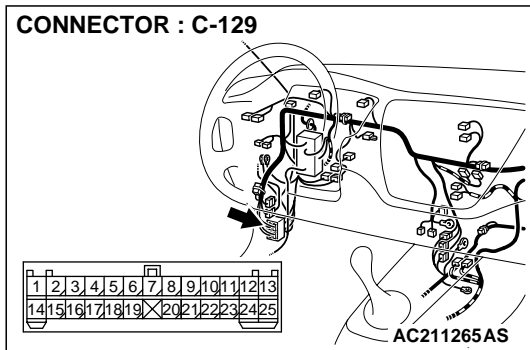
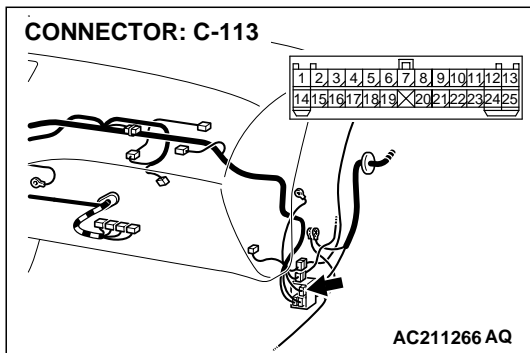
YES : Replace the rear combination light assembly (RH). Verify that the taillight (RH) illuminates normally.

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 27. Check the wiring harness between rear combination light assembly (RH) connector F-08 (terminal 3) and front-ECU connector A-10X (terminal 8).





NOTE: Also check intermediate connectors C-113 and C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-113 or C-129 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 assembly (RH) connector F-08 (terminal 3) and front-ECU connector A-10X (terminal 8) in good condition?

YES : Replace the rear combination light assembly (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 28. Check license plate light (LH) connector F-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is license plate light (LH) connector F-11 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 license plate light (LH) illuminate normally.

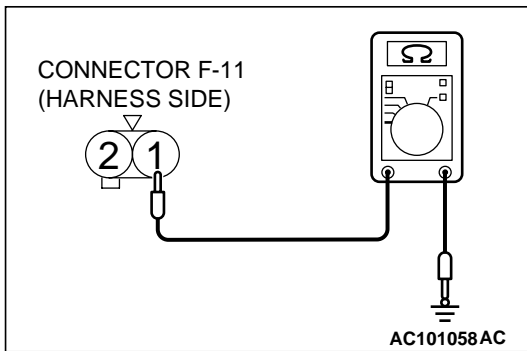
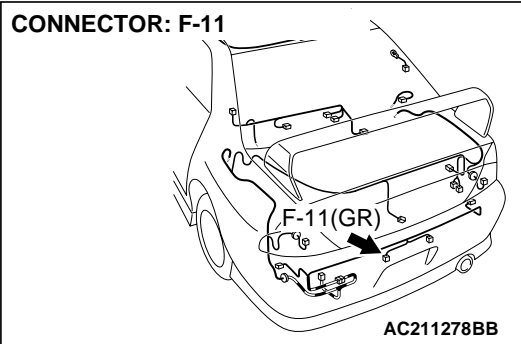
STEP 29. Check the license plate light bulb (LH).

- (1) Remove the license plate light bulb (LH).
- (2) Verify that the license plate light bulb (LH) is not damaged or burned out.

Q: Is the license plate light bulb (LH) in good condition?

YES : Go to Step 30.

NO : Replace the license plate light bulb (LH). Verify that the license plate light (LH) illuminate normally.



STEP 30. Check the ground circuit to the license plate light (LH). Measure the resistance at license plate light (LH) connector F-11.

(1) Disconnect license plate light (LH) connector F-11 and measure the resistance available at the wiring harness side of the connector.

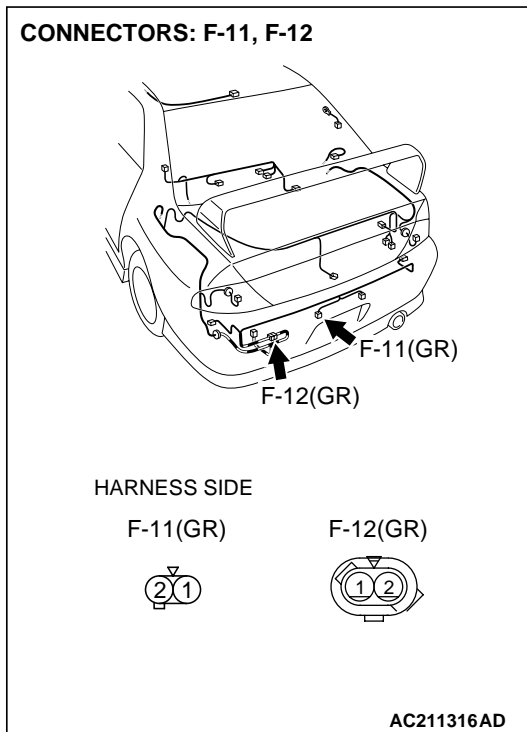
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 32.

NO : Go to Step 31.

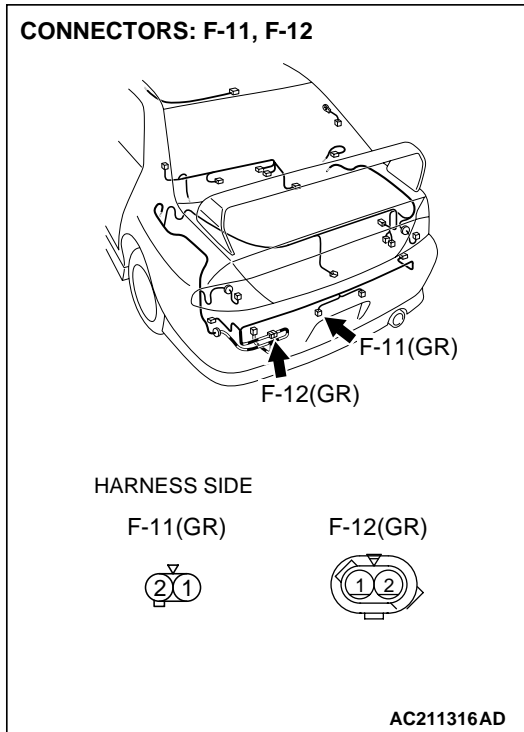


STEP 31. Check the wiring harness between license plate light (LH) connector F-11 (terminal 1) and intermediate connector F-12 (terminal 2).

Q: Is the wiring harness between license plate light (LH) connector F-11 (terminal 1) and intermediate connector F-12 (terminal 2) in good condition?

YES : Replace the license plate light (LH) socket. Verify that the license plate 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 license plate light (LH) illuminates normally.

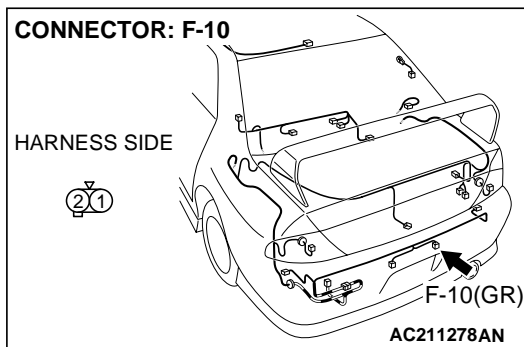


STEP 32. Check the wiring harness between license plate light (LH) connector F-11 (terminal 2) and intermediate connector F-12 (terminal 2).

Q: Is the wiring harness between license plate light (LH) connector F-11 (terminal 2) and intermediate connector F-12 (terminal 2) in good condition?

YES : Replace the license plate light (LH) socket. Verify that the license plate 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 taillight (LH) illuminates normally.



STEP 33. Check license plate light (RH) connector F-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is license plate light (RH) connector F-10 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 license plate light (RH) illuminate normally.

STEP 34. Check the license plate light bulb (RH).

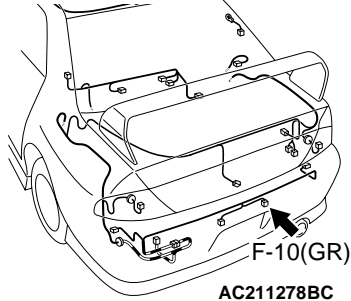
- (1) Remove the license plate light bulb (RH).
- (2) Verify that the license plate light bulb (RH) is not damaged or burned out.

Q: Is the license plate light bulb (RH) in good condition?

YES : Go to Step 35.

NO : Replace the license plate light bulb (RH). Verify that the license plate light (RH) illuminate normally.

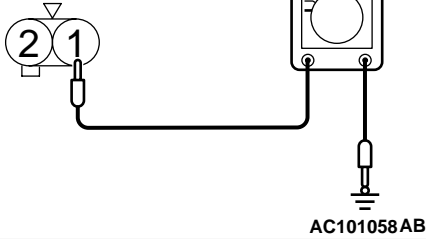
CONNECTOR: F-10



STEP 35. Check the ground circuit to the license plate light (RH). Measure the resistance at license plate light (RH) connector F-10.

(1) Disconnect license plate light (RH) connector F-10 and measure the resistance available at the wiring harness side of the connector.

**CONNECTOR F-10
(HARNESS SIDE)**



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

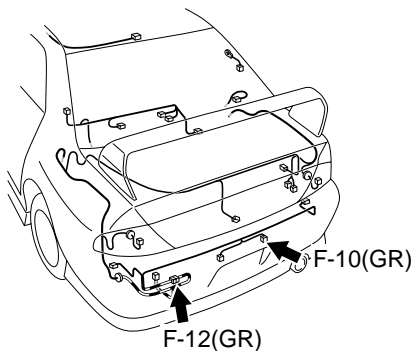
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 37.

NO : Go to Step 36.

CONNECTORS: F-10, F-12



HARNESS SIDE

F-10(GR)



F-12(GR)

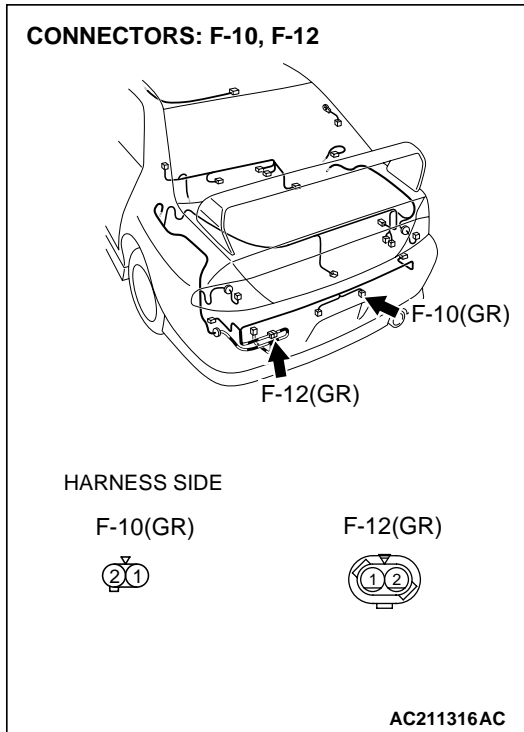


STEP 36. Check the wiring harness between license plate light (RH) connector F-10 (terminal 1) and intermediate connector F-12 (terminal 2).

Q: Is the wiring harness between license plate light (RH) connector F-10 (terminal 1) and intermediate connector F-12 (terminal 2) in good condition?

YES : Replace the license plate light (RH) socket. Verify that the license plate 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 license plate light (RH) illuminates normally.

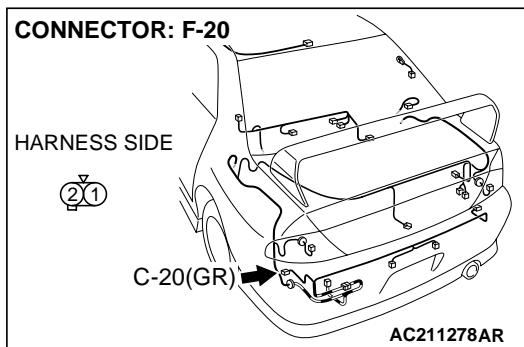


STEP 37. Check the wiring harness between license plate light (RH) connector F-10 (terminal 2) and intermediate connector F-12 (terminal 2).

Q: Is the wiring harness between license plate light (RH) connector F-10 (terminal 2) and intermediate connector F-12 (terminal 2) in good condition?

YES : Replace the license plate light (RH) socket. Verify that the license plate 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 license plate light (RH) illuminates normally.



STEP 38. Check side marker light (LH) connector F-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is side marker light (LH) connector F-20 in good condition?

YES : Go to Step 39.

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

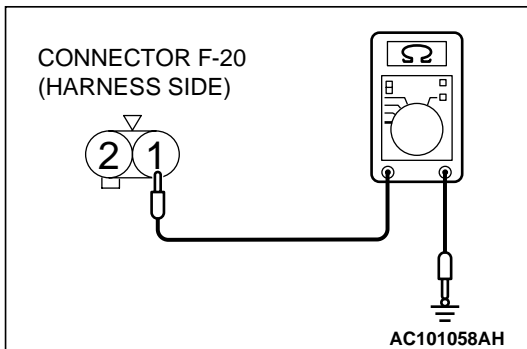
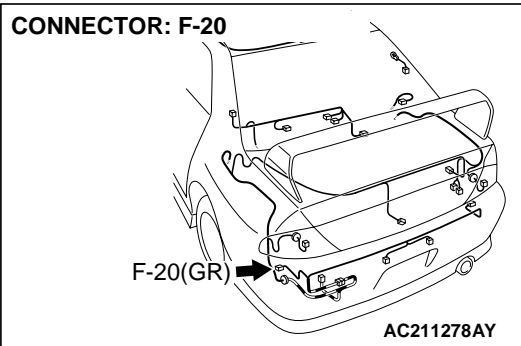
STEP 39. Check the side marker light bulb (LH).

- (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 40.

NO : Replace the side marker light bulb (LH). Verify that the side marker light (LH) illuminate normally.



STEP 40. Check the ground circuit to the side marker light (LH). Measure the resistance at side marker light (LH) connector F-20.

(1) Disconnect side marker light (LH) connector F-20 and measure the resistance available at the wiring harness side of the connector.

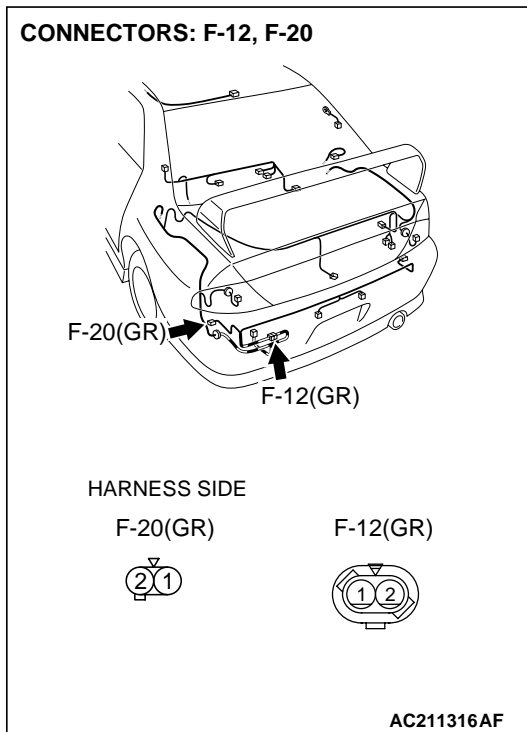
(2) Measure the resistance value between terminal 1 and ground.

- 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 41.

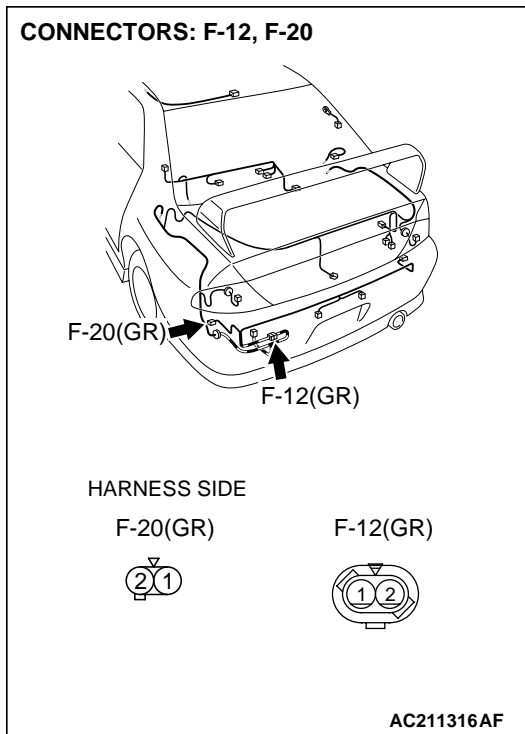


STEP 41. Check the wiring harness between side marker light (LH) connector F-20 (terminal 1) and intermediate connector F-12 (terminal 2).

Q: Is the wiring harness between side marker light (LH) connector F-20 (terminal 1) and intermediate connector F-12 (terminal 2) in good condition?

YES : Replace the side marker light (LH) 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.

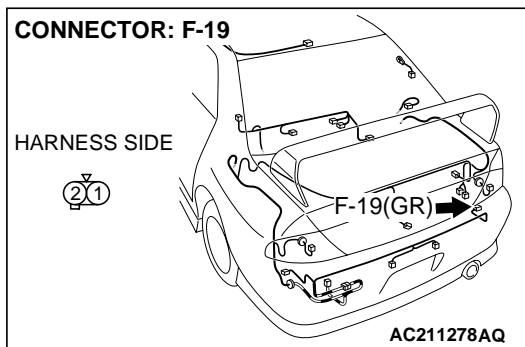


STEP 42. Check the wiring harness between side marker light (LH) connector F-20 (terminal 2) and intermediate connector F-12 (terminal 2).

Q: Is the wiring harness between side marker light (LH) connector F-20 (terminal 2) and intermediate connector F-12 (terminal 2) in good condition?

YES : Replace the side marker light (LH) 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 taillight (LH) illuminates normally.



STEP 43. Check side marker light (RH) connector F-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is side marker light (RH) connector F-19 in good condition?

YES : Go to Step 44.

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) illuminate normally.

STEP 44. Check the side marker light bulb (RH).

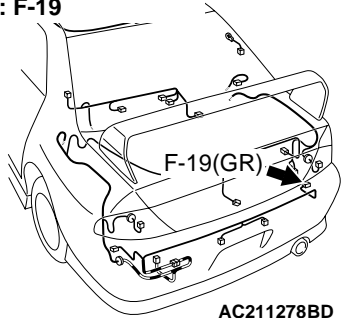
- (1) Remove the side marker light bulb (RH).
- (2) Verify that the side marker light bulb (RH) is not damaged or burned out.

Q: Is the side marker light bulb (RH) in good condition?

YES : Go to Step 45.

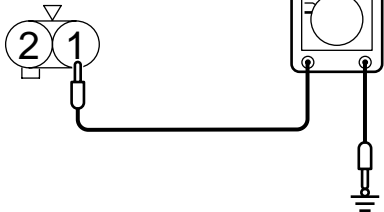
NO : Replace the side marker light bulb (RH). Verify that the side marker light (RH) illuminate normally.

CONNECTOR: F-19



AC211278BD

CONNECTOR F-19
(HARNESS SIDE)



AC101058AG

STEP 45. Check the ground circuit to the side marker light (RH). Measure the resistance at side marker light (RH) connector F-19.

(1) Disconnect side marker light (RH) connector F-19 and measure the resistance available at the wiring harness side of the connector.

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

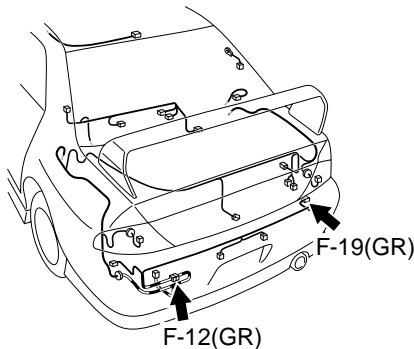
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 47.

NO : Go to Step 46.

CONNECTORS: F-12, F-19



HARNESS SIDE

F-19(GR)



F-12(GR)



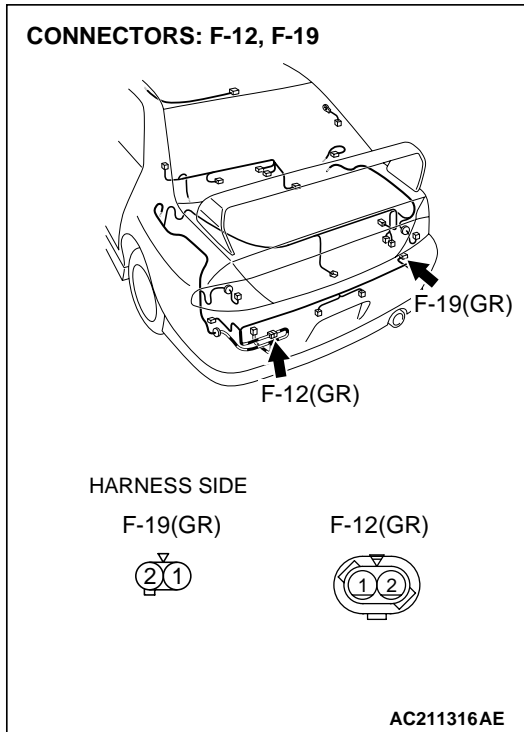
AC211316AE

STEP 46. Check the wiring harness between side marker light (RH) connector F-19 (terminal 1) and intermediate connector F-12 (terminal 2).

Q: Is the wiring harness between side marker light (RH) connector F-19 (terminal 1) and intermediate connector F-12 (terminal 2) in good condition?

YES : Replace the side marker light (RH) 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 47. Check the wiring harness between side marker light (RH) connector F-19 (terminal 2) and intermediate connector F-12 (terminal 2).

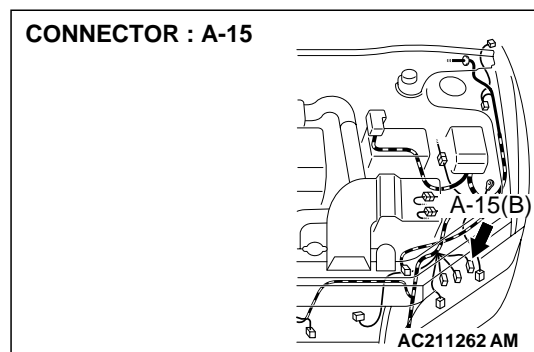
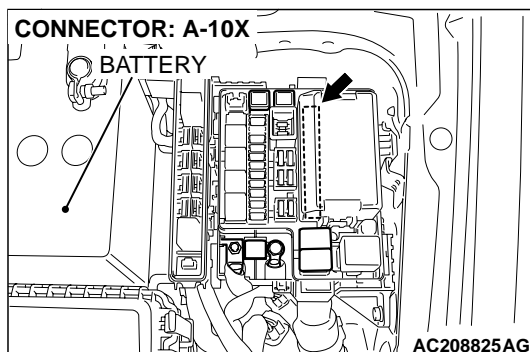
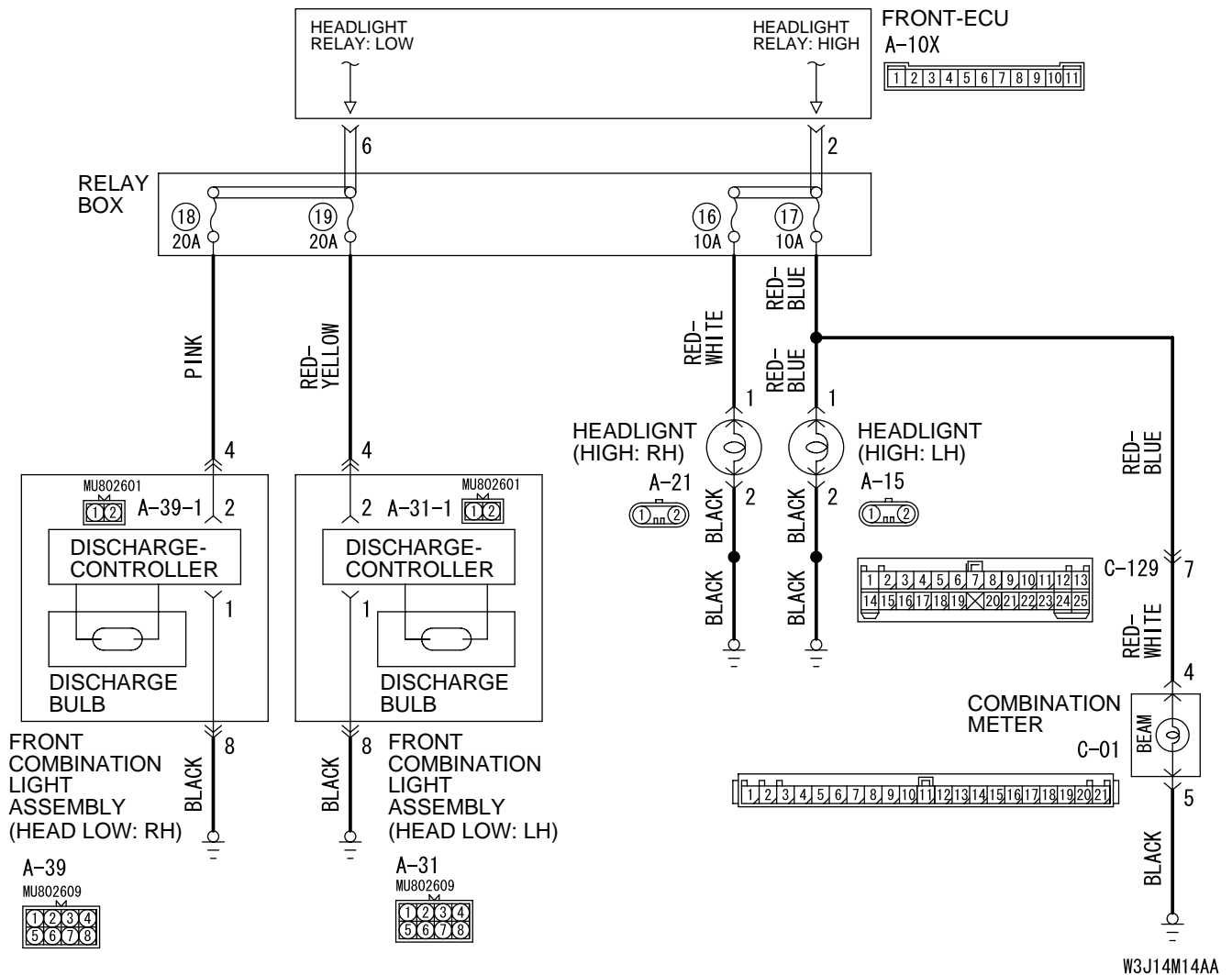
Q: Is the wiring harness between side marker light (RH) connector F-19 (terminal 2) and intermediate connector F-12 (terminal 2) in good condition?

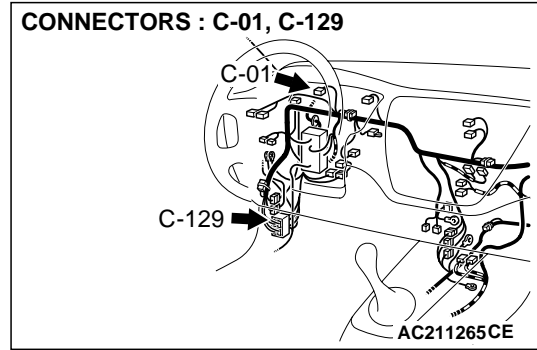
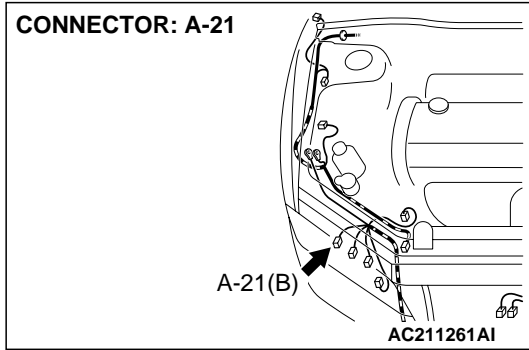
YES : Replace the side marker light (RH) socket. Verify that the side marker light (RH) illuminates normally.

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





TECHNICAL DESCRIPTION (COMMENT)

If one of the headlights does not illuminate, a headlight bulb may be defective.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The headlight bulb may be defective
- The high-beam indicator light bulb may be defective

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

STEP 1. Check the headlight operation.

Q: Which of the headlights does not illuminate?

Low-beam (LH and/or RH) : Refer to GROUP 54A, Headlight, Side Marker Light and Position Light Assembly – Lighting System Diagnosis [P.54A-83](#).

High beam (LH) : Go to Step 2.

High beam (RH) : Go to Step 7.

High-beam indicator light : Go to Step 12.

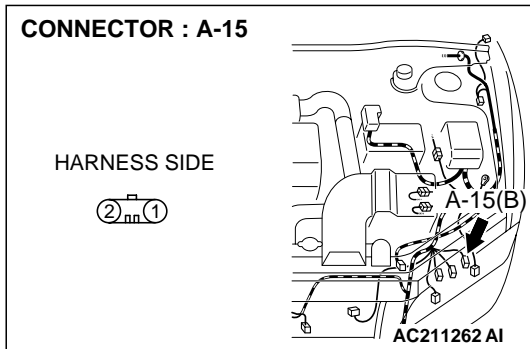
High beam (both RH and LH) and high-beam indicator light : Refer to Inspection Procedure J-3 "Headlights (high-beam) do not illuminate [P.54B-290](#)."

STEP 2. Check headlight (LH) connector A-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (LH) connector A-15 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 headlights illuminate normally.



STEP 3. Check headlight bulb (LH).

- (1) Remove the headlight bulb (LH).
- (2) Verify that the headlight bulb (LH) is not damaged or burned out.

Q: Is headlight bulb (LH) normal?

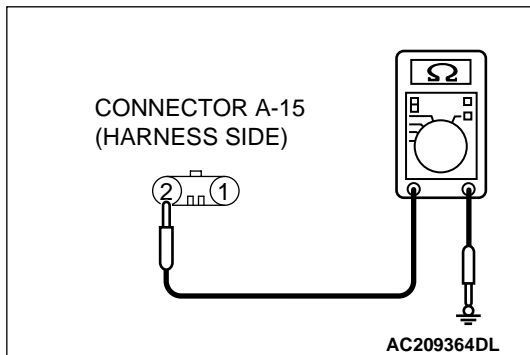
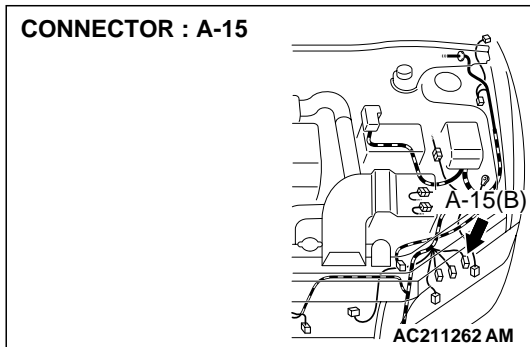
YES : Go to Step 4.

NO : Replace the headlight bulb (LH). Verify that the headlights illuminate normally.

STEP 4. Check the ground circuit to the headlight (LH).

Measure the resistance at headlight (LH) connector A-15.

- (1) Disconnect headlight (LH) connector A-15 and measure the resistance available at the wiring harness side of the connector.



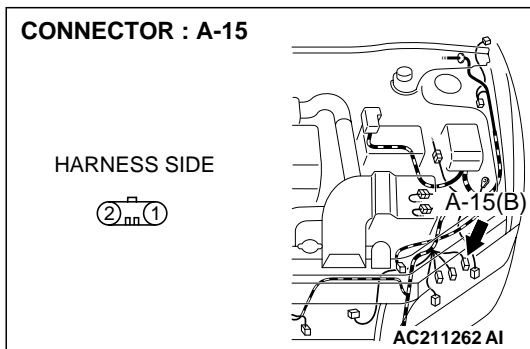
- (2) Measure the resistance value between terminal 2 and ground.

- 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 5.

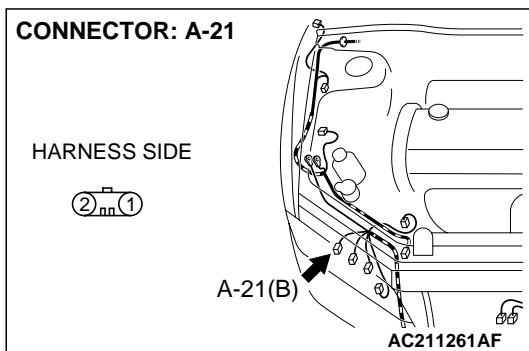
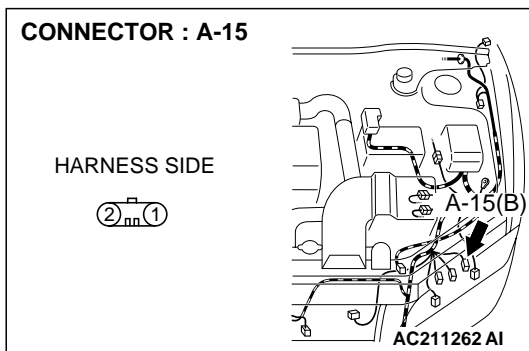
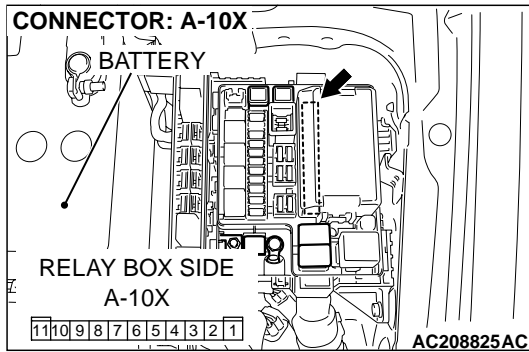


STEP 5. Check the wiring harness between headlight (LH) connector A-15 (terminal 2) and ground.

Q: Is the wiring harness between headlight (LH) connector A-15 (terminal 2) and ground in good condition?

YES : Replace the headlight bulb (LH). Verify that the headlight (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 headlights illuminate normally.



STEP 6. Check the wiring harness between headlight (LH) connector A-15 (terminal 1) and front-ECU connector A-10X (terminal 2).

Q: Is the wiring harness between headlight (LH) connector A-15 (terminal 1) and front-ECU connector A-10X (terminal 2) in good condition?

YES : Replace the headlight bulb (LH). Verify that the headlight (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 headlights illuminate normally.

STEP 7. Check headlight (RH) connector A-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-21 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 headlights illuminate normally.

STEP 8. Check headlight bulb (RH).

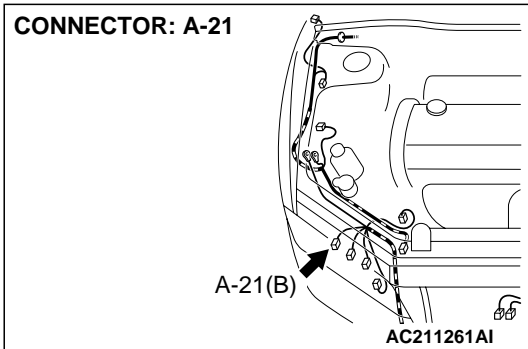
- (1) Remove the headlight bulb (RH).
- (2) Verify that the headlight bulb (RH) is not damaged or burned out.

Q: Is headlight bulb (RH) normal?

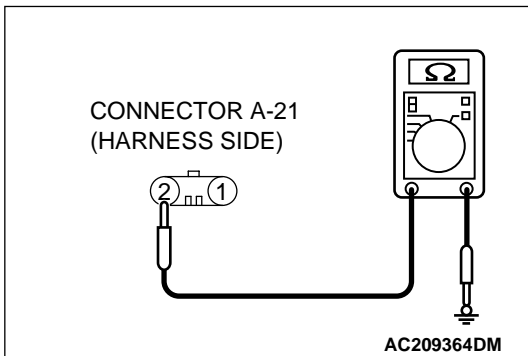
YES : Go to Step 9.

NO : Replace the headlight bulb (RH). Verify that the headlights illuminate normally.

CONNECTOR: A-21



**CONNECTOR A-21
(HARNESS SIDE)**



**STEP 9. Check the ground circuit to the headlight (RH).
Measure the resistance at headlight (RH) connector A-21.**

(1) Disconnect headlight (RH) 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.

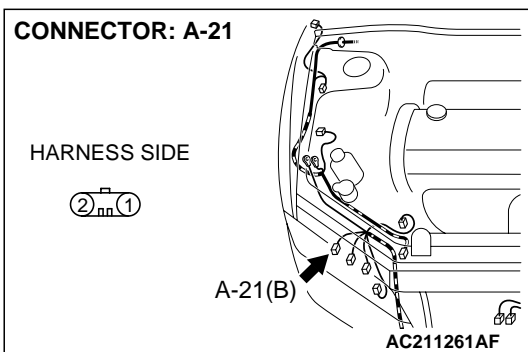
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 11.

NO : Go to Step 10.

CONNECTOR: A-21

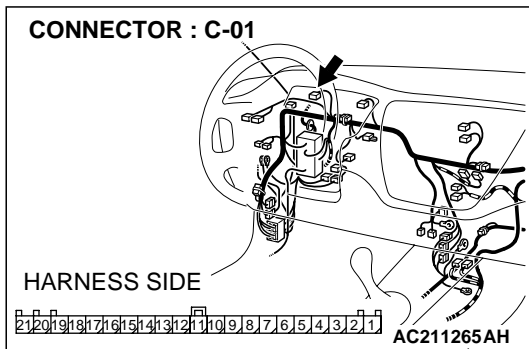
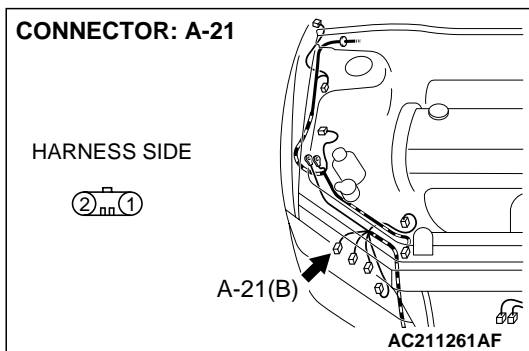
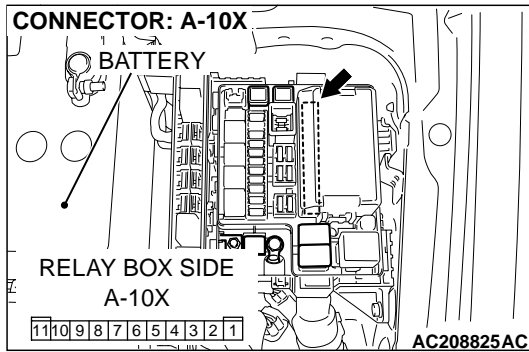


STEP 10. Check the wiring harness between headlight (RH) connector A-21 (terminal 2) and ground.

Q: Is the wiring harness between headlight (RH) connector A-21 (terminal 2) and ground in good condition?

YES : Replace the headlight bulb (RH). Verify that the headlight (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 headlights illuminate normally.



STEP 11. Check the wiring harness between headlight (RH) connector A-21 (terminal 3) and front-ECU connector A-10X (terminal 2).

Q: Is the wiring harness between headlight (RH) connector A-21 (terminal 3) and front-ECU connector A-10X (terminal 2) in good condition?

YES : Replace the headlight bulb (RH). Verify that the headlight (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 headlights illuminate normally.

STEP 12. Check combination meter connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-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](#). Verify that the high-beam indicator light illuminates normally.

STEP 13. 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 14.

NO : Replace the bulb. Verify that the high-beam indicator light illuminates normally.

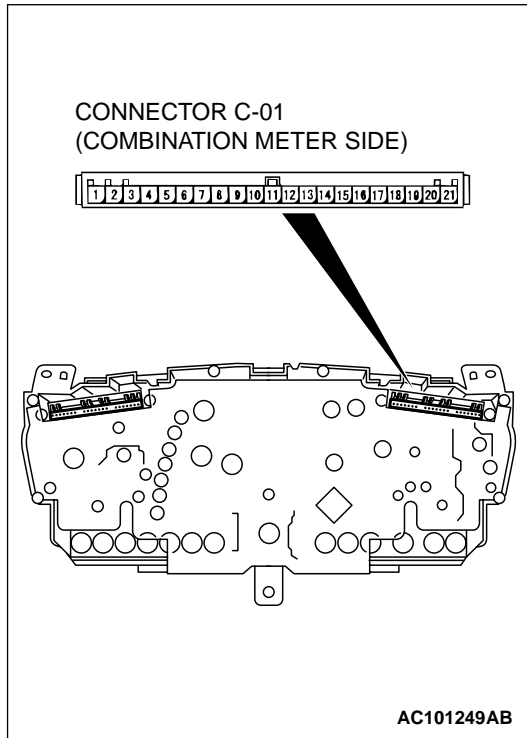
STEP 14. Check the combination meter (printed-circuit board).

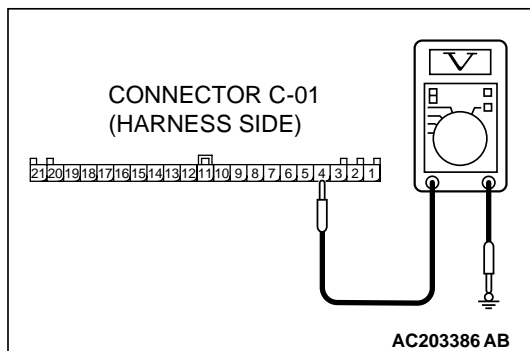
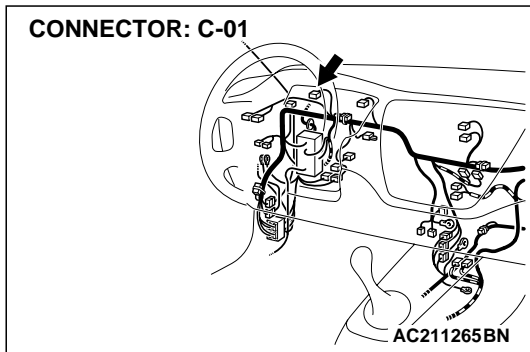
- (1) Remove the combination meter. Refer to GROUP 54A, Combination Meter Assembly and Vehicle Speed Sensor P.54A-91.
- (2) Remove the high-beam indicator light bulb. Then measure the resistance value between the bulb terminals.
- (3) Install the bulb to the combination meter, and then measure the resistance value between connector C-01 terminals 4 and 5. 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 15.





STEP 15. Check the battery power supply circuit to the combination meter. Measure the resistance at combination meter connector C-01.

(1) Disconnect combination meter connector C-01 and measure the resistance available at the wiring harness side of the connector.

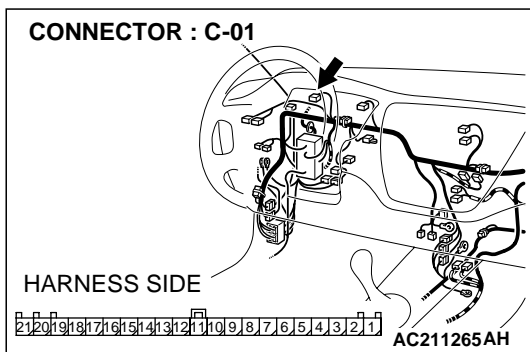
(2) Measure the resistance value between terminal 4 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 17.

NO : Go to Step 16.



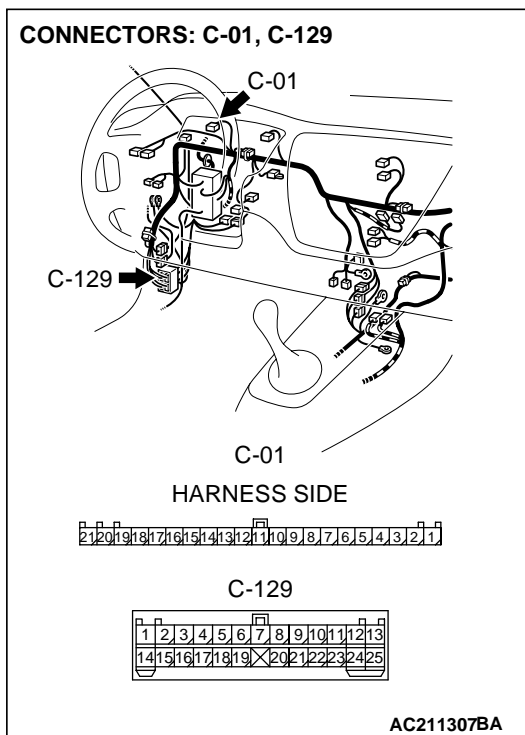
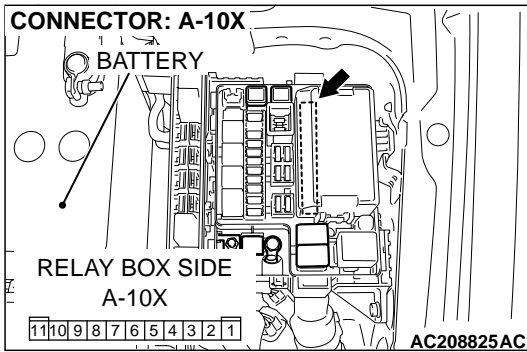
STEP 16. Check the wiring harness between combination meter connector C-01 (terminal 5) and ground.

Q: Is the wiring harness between combination meter connector C-01 (terminal 5) and the battery in good condition?

YES : Replace the combination meter. Verify that the high-beam 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 high-beam indicator light illuminates normally.

STEP 17. Check the wiring harness between combination meter connector C-01 (terminal 4) and front-ECU connector A-10X (terminal 2).



NOTE: Also check intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

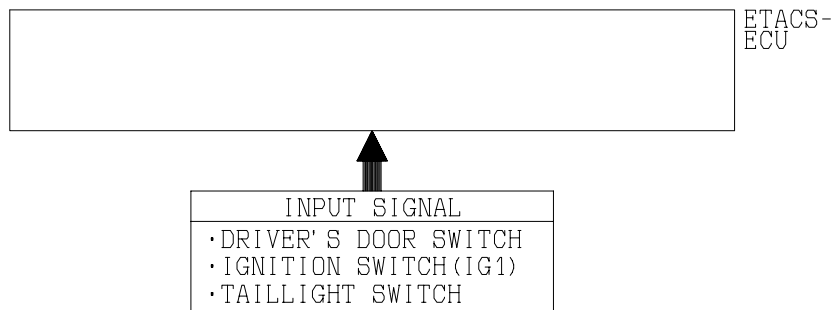
Q: Is the wiring harness between combination meter connector C-01 (terminal 4) and front-ECU connector A-10X (terminal 2) in good condition?

YES : Replace the combination meter. Verify that the high-beam 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 high-beam indicator light illuminates normally.

INSPECTION PROCEDURE J-8: Headlight and Taillight: Headlight automatic shutdown function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Headlight Automatic Shut-down Function

W2J08M62AB

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)

- MB991922: Probe harness

STEP 1. Verify the configuration function.

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.54B-545](#).

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 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "H/L AUTO-CUT."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "H/L AUTO-CUT."
- (3) 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

- (4) 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

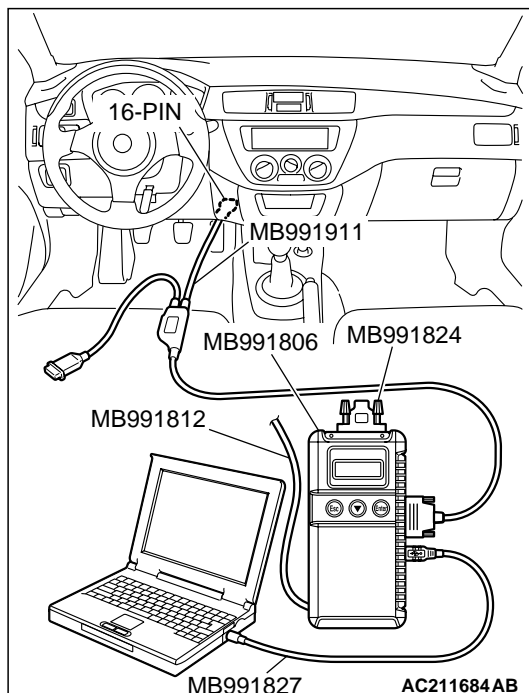
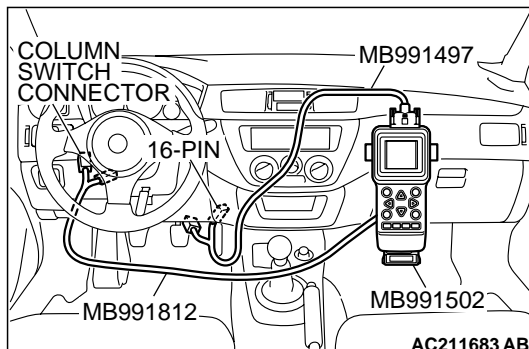
Q: Does the scan tool MB991502 or MB991958 display the items "TAILLIGHT SW", "IG SW (IG1)", "FRONT DOOR SW" and "H/L AUTO-CUT" as normal condition?

Normal conditions are displayed for all the items :

Replace the front-ECU. Verify that the headlight automatic shutdown function now works normally.

Normal condition is not displayed on the "TAILLIGHT SW" : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the taillight switch P.54B-462."

Normal condition is not displayed on the "IG SW (IG1)" : Refer to Inspection Procedure N-2 "ETACS-ECU

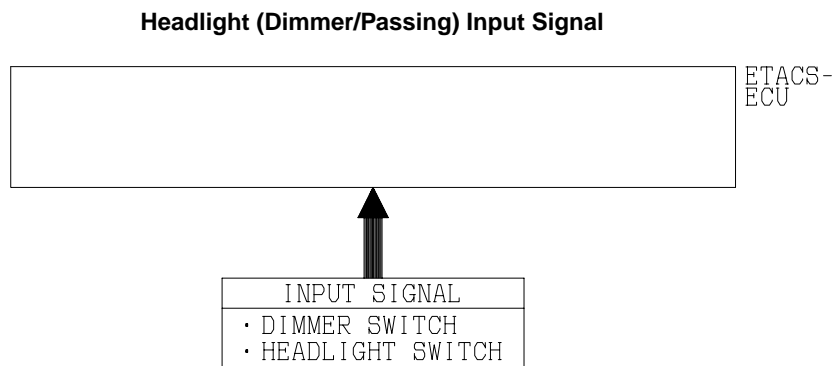


does not receive a signal from the ignition switch (IG1) P.54B-439."

Normal condition is not displayed on the "FRONT DOOR SW" : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch P.54B-454."

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.



W2J08M63AA

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 works normally.

FLASHER TIMER

GENERAL DESCRIPTION CONCERNING THE FLASHER TIMER

M1549023600089

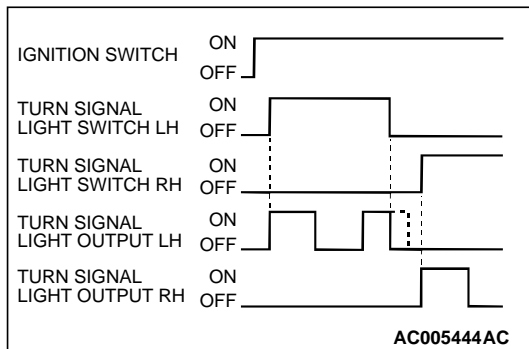
The ECU related to the alarm function types and various control functions are as follows.

FUNCTION	CONTROL ECU
Turn-signal light	ETACS-ECU, column switch
Hazard warning light	ETACS-ECU

FLASHER TIMER FUNCTION

Turn-signal light

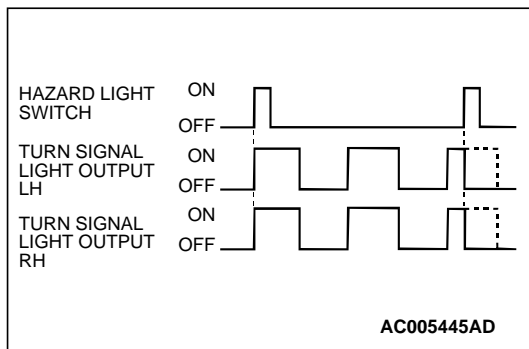
The turn-signal light output (flashing signal) is turned ON when the turn-signal light ignition switch is ON and the turn-signal light switch is ON (LH or RH.) If the front turn-signal light or rear turn-signal light bulb has burned out, the flashing speed increases to indicate that the bulb has burned out.



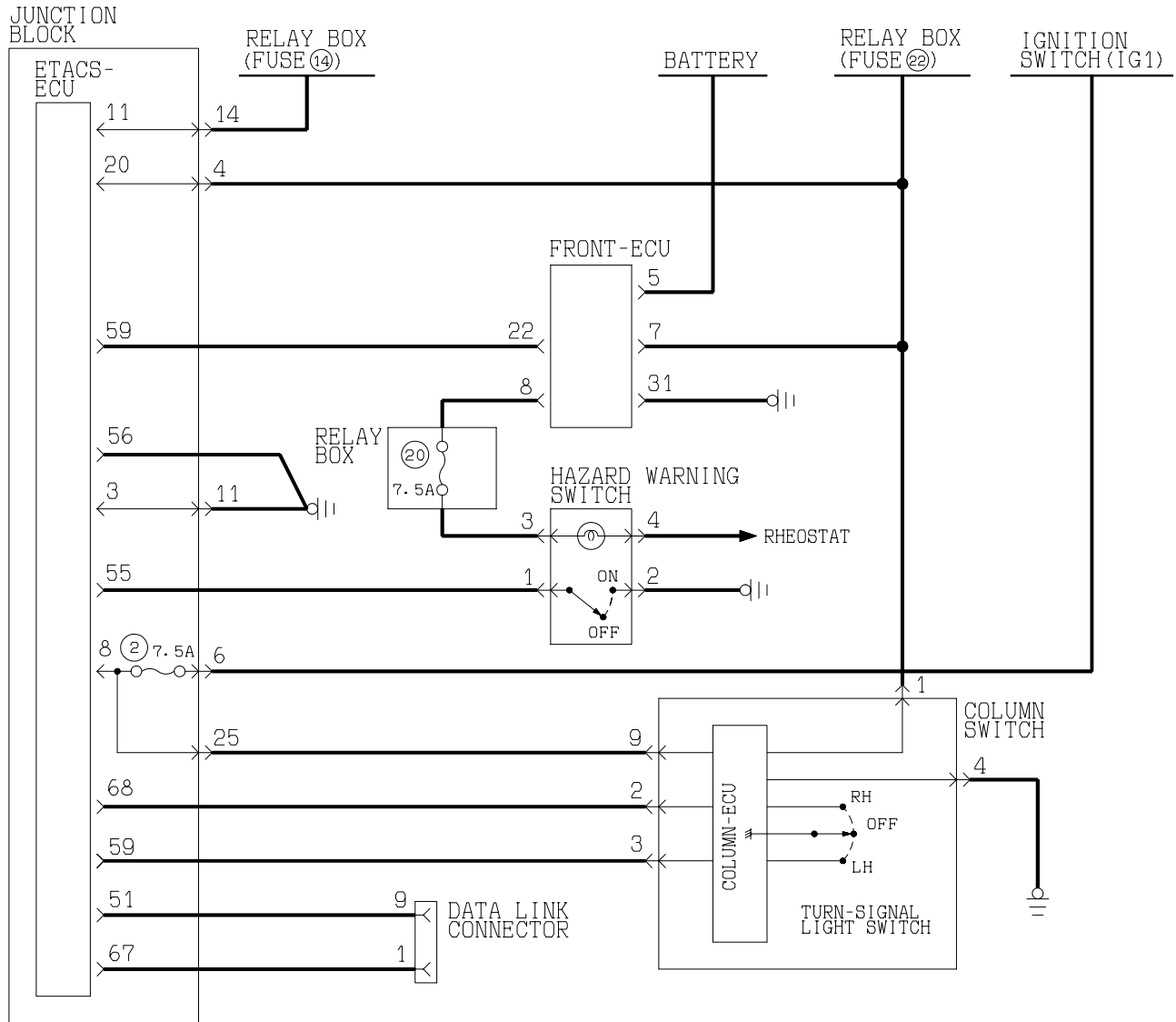
Hazard warning light

The hazard warning lights output (flashing) is turned ON when the hazard switch is turned OFF to ON. When the switch is turned ON again, the output is turned OFF.

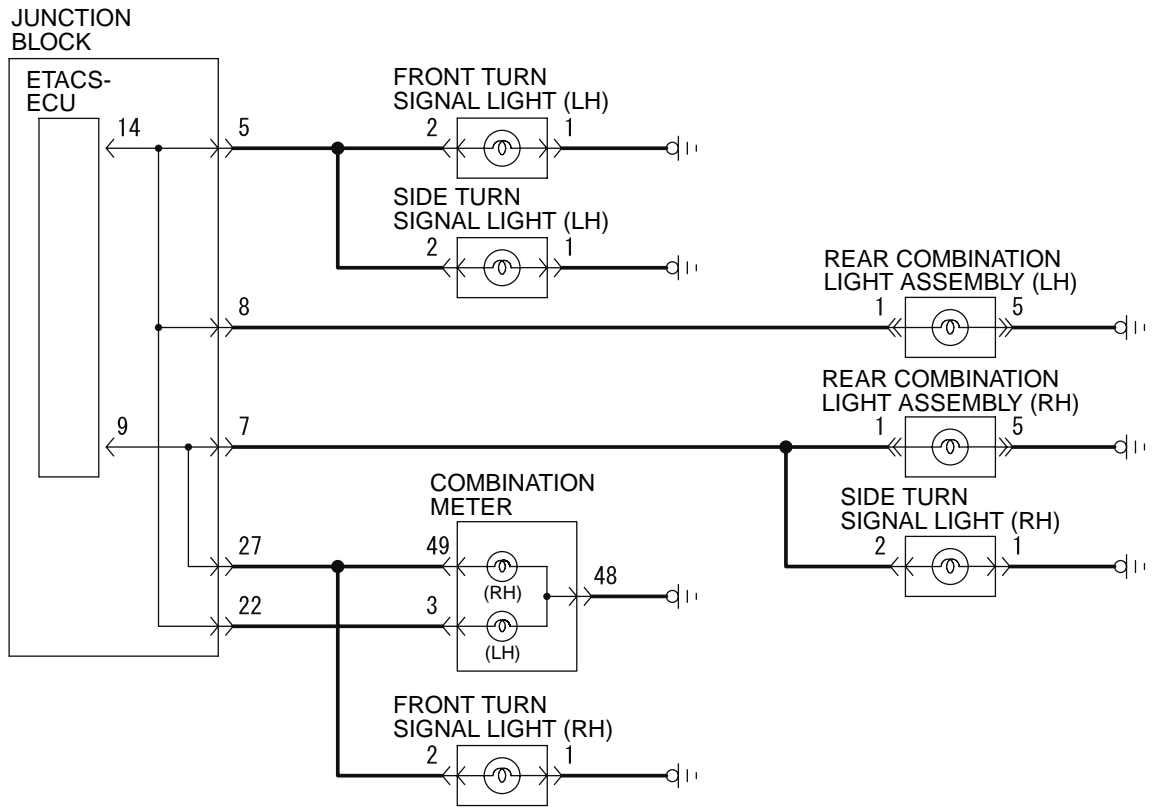
NOTE: The hazard warning light switch is a push-return type toggle switch.



General circuit diagram for the turn-signal light and hazard warning light



W3J01M01AA

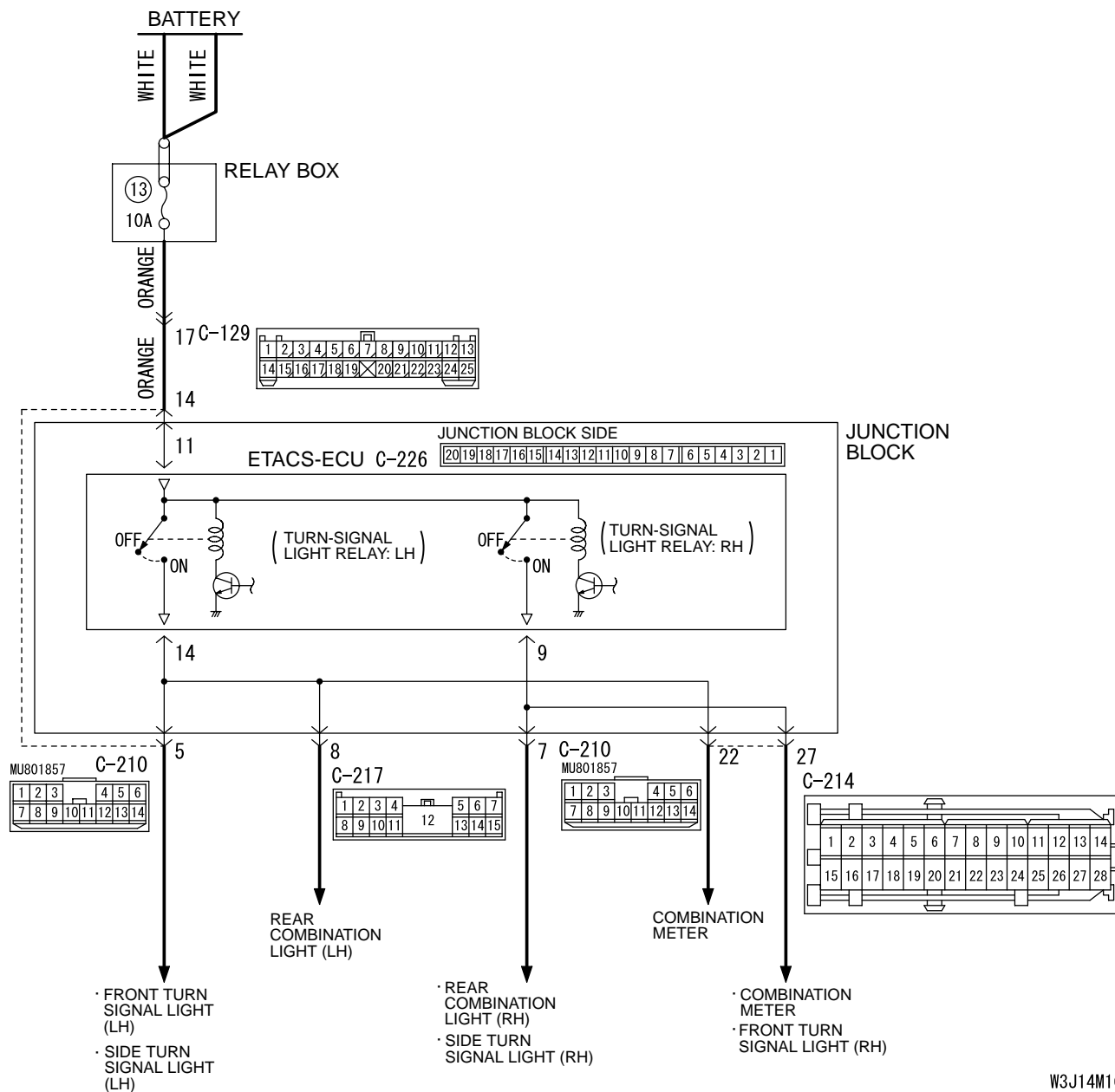


W3J14M15AA

INSPECTION PROCEDURE K-1: Flasher Timer: Turn-signal lights does not flash when the turn-signal light switch is turned on.

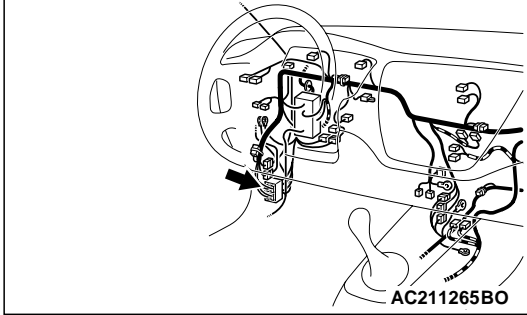
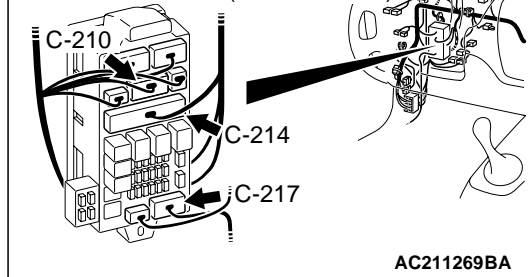
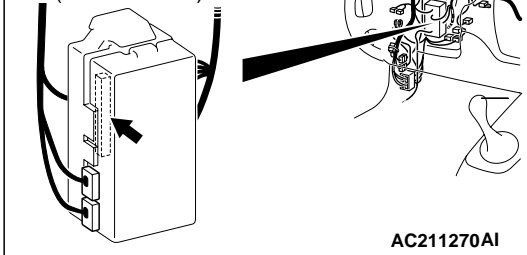
NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Turn-Signal Light Power Supply Circuit



W3J14M16AA

CONNECTOR : C-129

CONNECTORS: C-210, C-214, C-217
JUNCTION BLOCK (FRONT VIEW)CONNECTOR: C-226
JUNCTION BLOCK
(REAR VIEW)**CIRCUIT OPERATION**

- The turn-signal light switch sends a signal through the column-ECU (incorporated in the column switch) to the ETACS-ECU. If the column-ECU sends a turn-signal light switch "ON" signal to the ETACS-ECU, the ETACS-ECU turns on the flasher timer (incorporated in the ETACS-ECU), thus causing the turn-signal lights to flash.
- The ETACS-ECU operates the turn-signal lights according to the following signals:
 - Ignition switch (IG1)
 - 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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Verify the hazard warning light.

Q: Does the hazard warning light work normally?

YES : Go to Step 7.

NO : Go to Step 2.

STEP 2. Verify the turn-signal lights.

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.

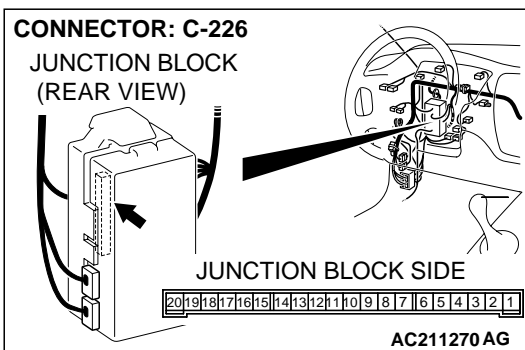
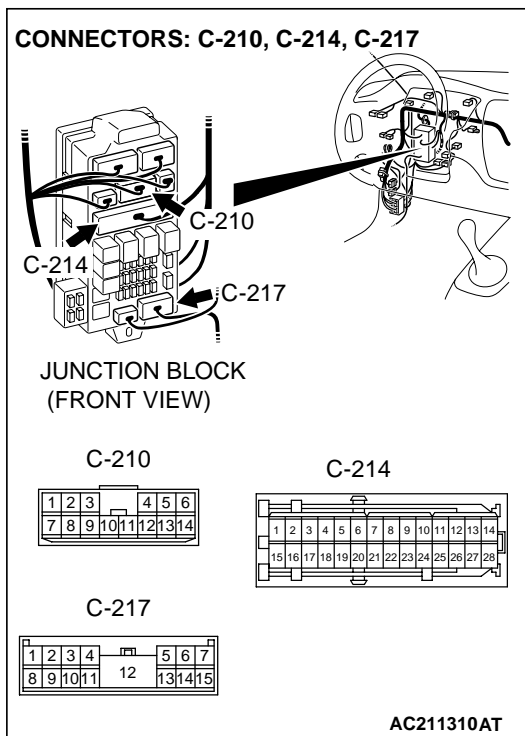
STEP 3. Check ETACS-ECU connector C-226, junction block connectors C-210, C-214 and C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

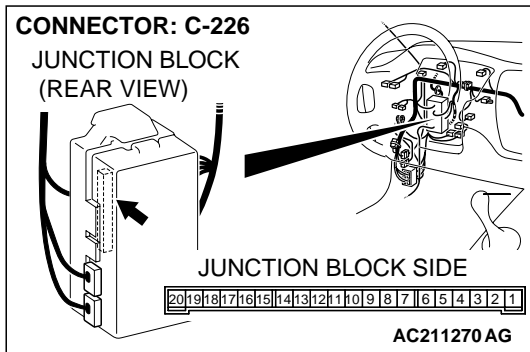
Q: Are ETACS-ECU connector C-226, junction block connectors C-210, C-214 and C-217 in good condition?

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.



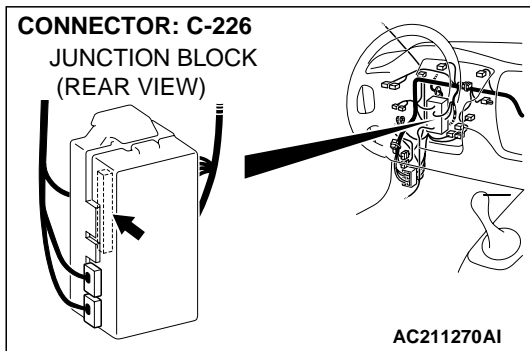


STEP 4. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 in good condition?

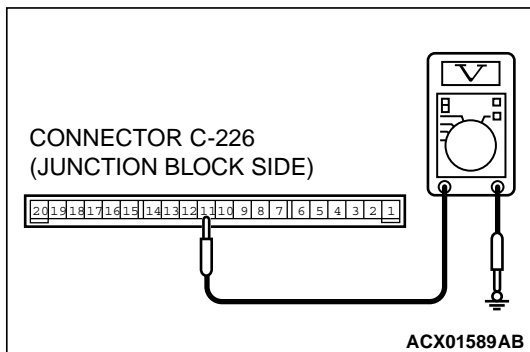
YES : Go to Step 5.

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



STEP 5. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-226.

(1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.



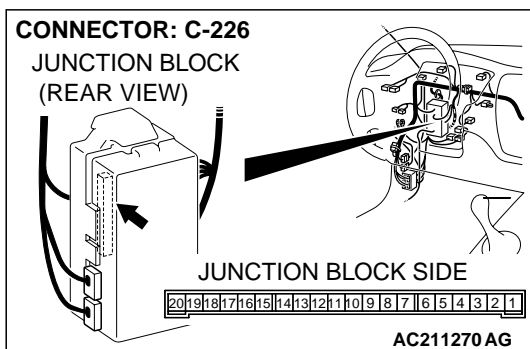
(2) Measure the voltage between terminal 11 and ground.

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

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

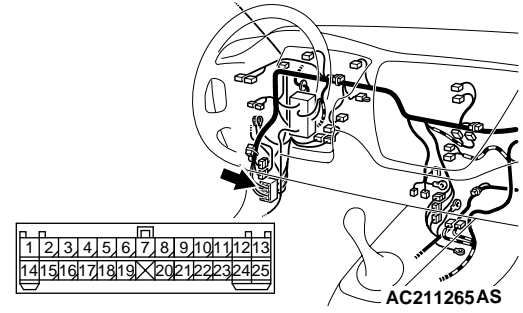
YES : Replace the ETACS-ECU. Verify that the turn-signal lights illuminate normally.

NO : Go to Step 6.



STEP 6. Check the wiring harness between ETACS-ECU connector C-226 (terminal 11) and the battery.

CONNECTOR : C-129



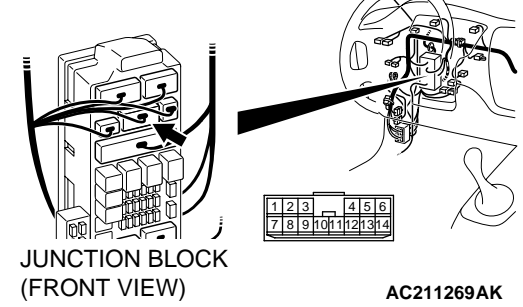
NOTE: Also check intermediate connector C-129 and junction block connector C-210 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 or junction block connector C-210 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (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.

CONNECTOR: C-210



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 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "TURN SIG.RH."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "TURN SIGNAL."
 - g. Select "TURN SIG.RH."
- (3) 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: Does the scan tool MB991502 or MB991958 display the items "T/S RH SW" and "IG SW (IG1)" as normal condition?

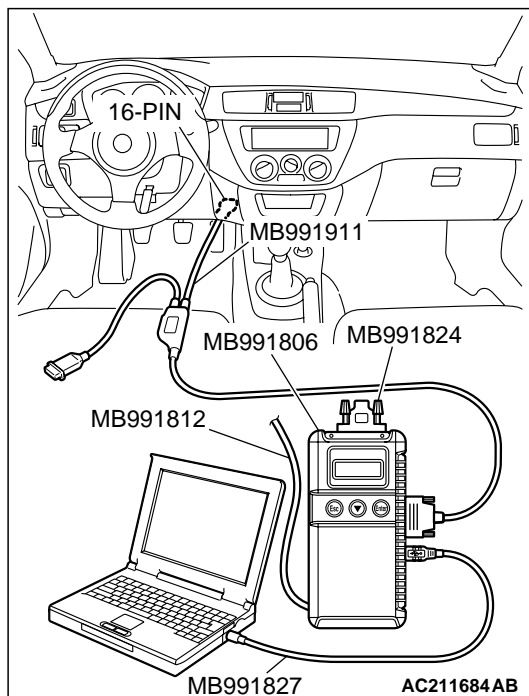
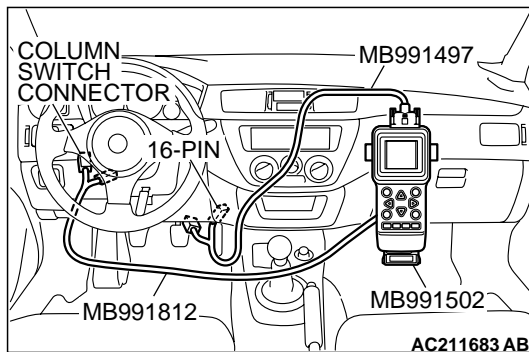
YES : Go to Step 8.

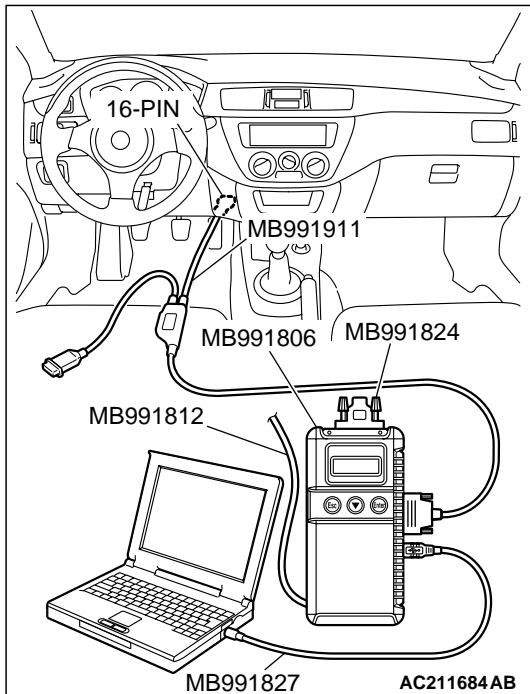
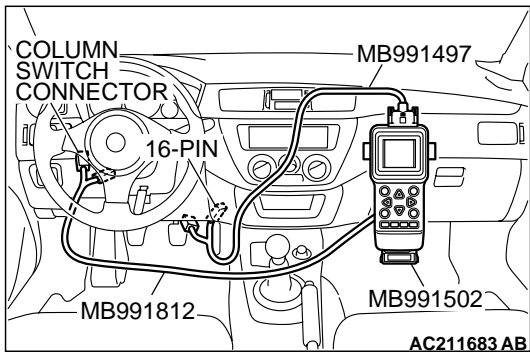
Normal condition is not displayed on the "T/S RH SW" :

Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the turn-signal RH switch P.54B-462."

Normal condition is not displayed on the "IG SW (IG1)" :

Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) P.54B-439."





STEP 8. Check the input signal by using "Function Diag." menu of the SWS monitor.

Check the input signal from the turn-signal light switch (LH).

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "TURN SIG.LH."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "TURN SIGNAL."
 - g. Select "TURN SIG.LH."
- (2) Check that normal condition is displayed on the item described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 11	T/S LH SW	ON

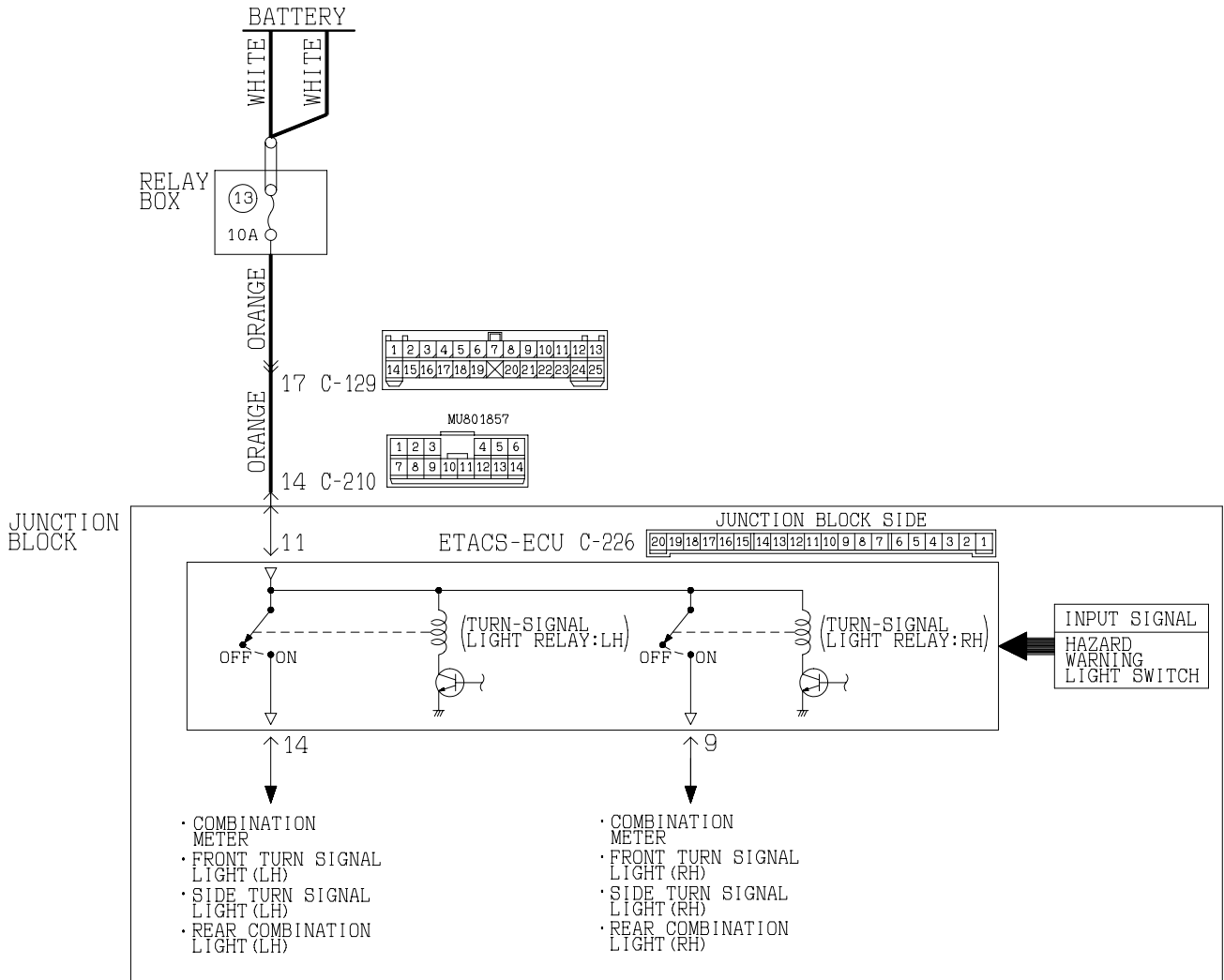
Q: Does the scan tool MB991502 or MB991958 display the items "T/S LH SW" as normal condition?

YES : Replace the ETACS-ECU. Verify that the turn-signal lights illuminate normally.

NO : Refer to Inspection Procedure N-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.54B-462.](#)"

INSPECTION PROCEDURE K-2: Flasher Timer: Hazard warning lights do not flash when the hazard warning light switch is turned on.

Hazard Warning Light Circuit



W3J01M20AA

CIRCUIT OPERATION

If the ETACS-ECU receives "ON" signal from the hazard warning light switch, the ETACS-ECU turns on the flasher timer (incorporated in the ETACS-ECU), thus causing the turn-signal lights to flash.

TECHNICAL DESCRIPTION (COMMENT)

If the hazard warning lights do not flash, the power supply line to the ETACS-ECU (dedicated to the turn-signal lights) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Verify the turn-signal lights.

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.54B-339](#)."

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 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

(2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."

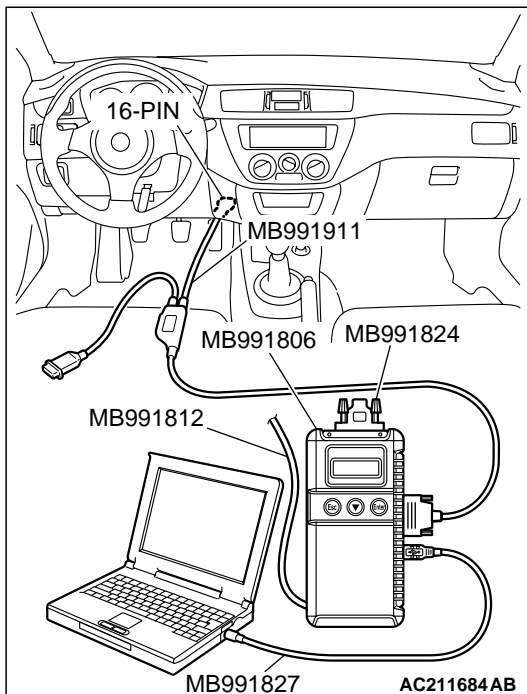
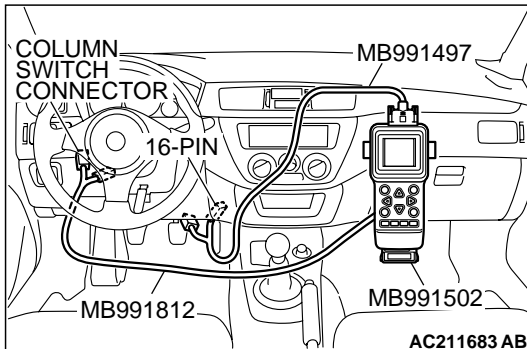
- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "Pulse Checking."

(3) Check scan tool MB991502 or MB991958 sounds when the hazard warning light switch is turned from "OFF" to "ON."

Q: Does scan tool MB991502 or MB991958 sound when the hazard warning light switch is turned from "OFF" to "ON"?

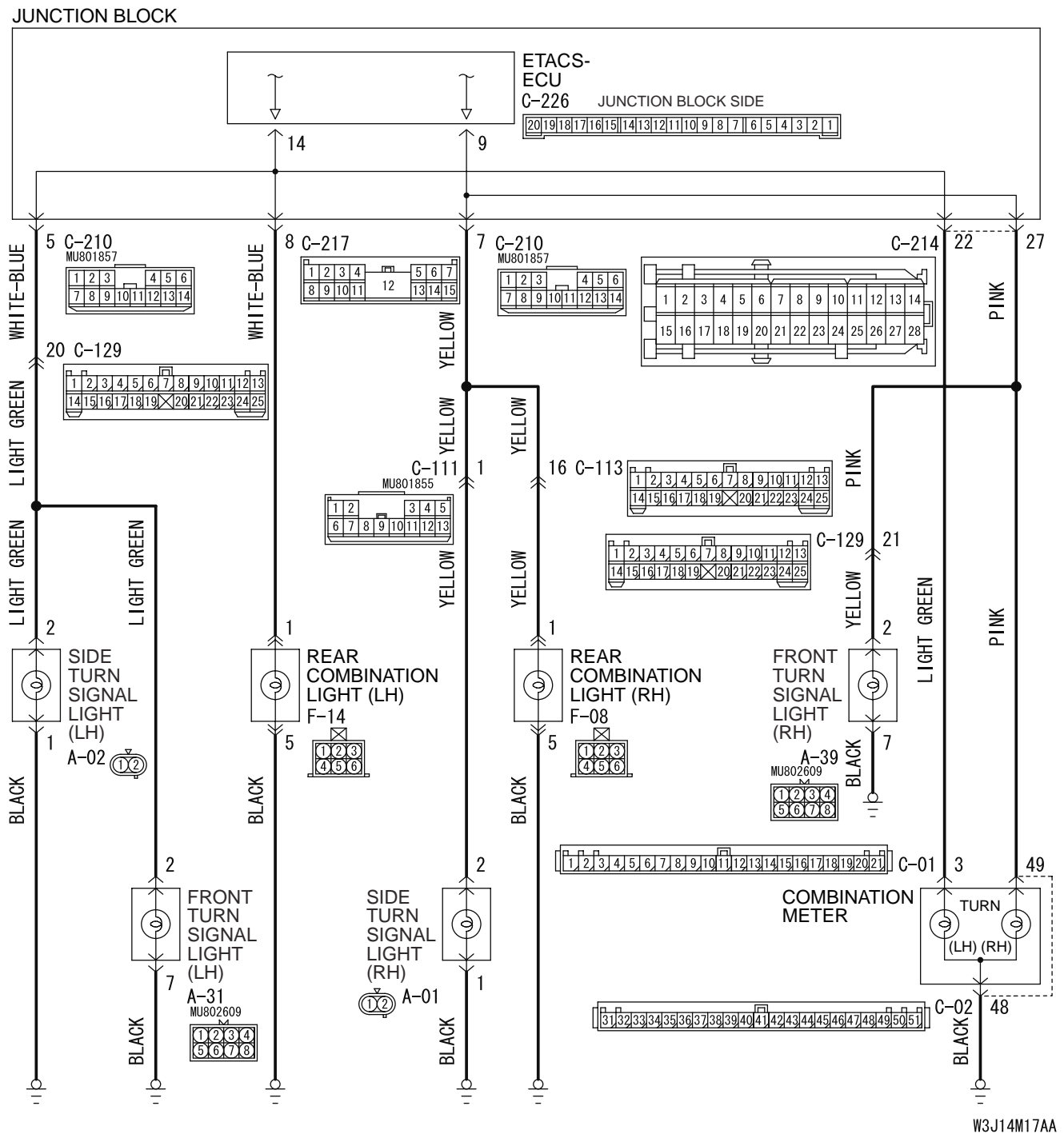
YES : Replace the ETACS-ECU. Verify that the hazard warning lights illuminate normally.

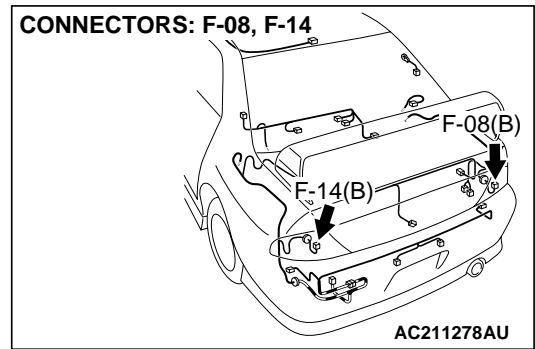
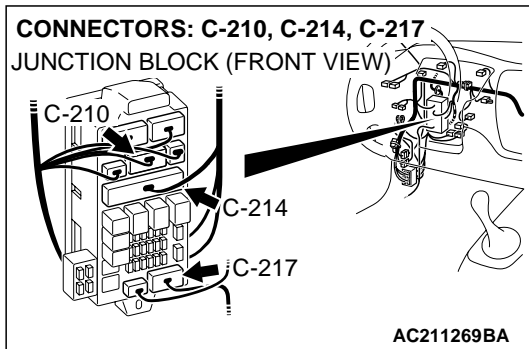
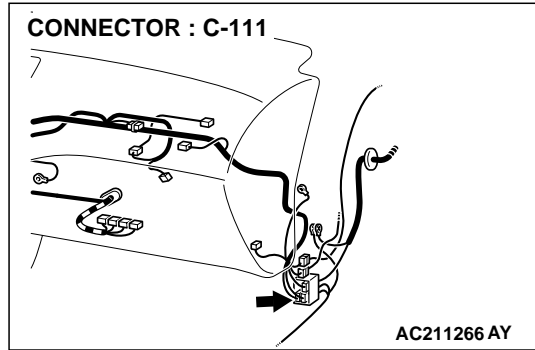
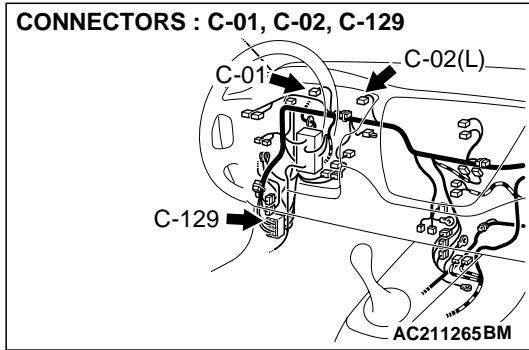
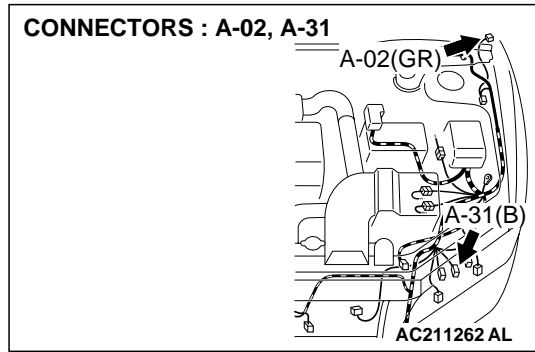
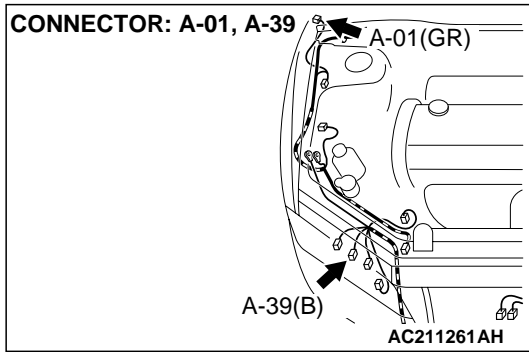
NO : Refer to Inspection Procedure O-2 "ETACS-ECU does not receive a signal from the hazard warning light switch P.54B-481."



INSPECTION PROCEDURE K-3: Flasher Timer: The right or left turn-signal light does not illuminate.

Turn-Signal Lights Circuit





TECHNICAL DESCRIPTION (COMMENT)

If the right or left turn-signal light does not illuminate, their bulb may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

STEP 1. Check the hazard warning light.

Q: Which turn-signal light does not illuminate?

The front turn-signal light (LH) and the side turn-signal light (LH) : Go to Step 2.

The front turn-signal light (RH) and the turn-signal indicator light (RH) : Go to Step 4.

The the side turn-signal light (RH) and the rear turn-signal light (RH) : Go to Step 6.

The front turn-signal light (LH) : Go to Step 8.

The front turn-signal light (RH) : Go to Step 13.

The side turn-signal light (LH) : Go to Step 18.

The side turn-signal light (RH) : Go to Step 23.

The rear turn-signal light (LH) : Go to Step 28.

The rear turn-signal light (RH) : Go to Step 33.

The turn-signal indicator light (LH) : Go to Step 38.

The turn-signal indicator light (RH) : Go to Step 40.

The turn-signal indicator light (both right and left) : Go to Step 42.

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.54B-339](#)."

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.54B-339](#)."

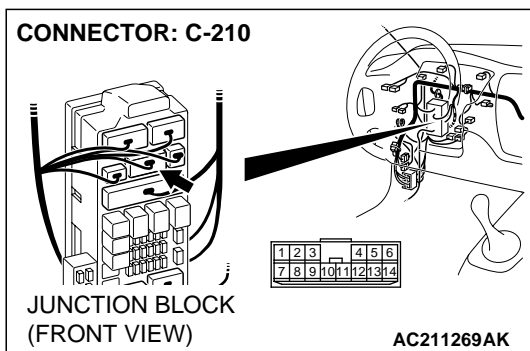
Both LH and RH sides : Refer to Inspection Procedure K-2 "Hazard warning light does not illuminate [P.54B-346](#)."

STEP 2. Check junction block connector C-210 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

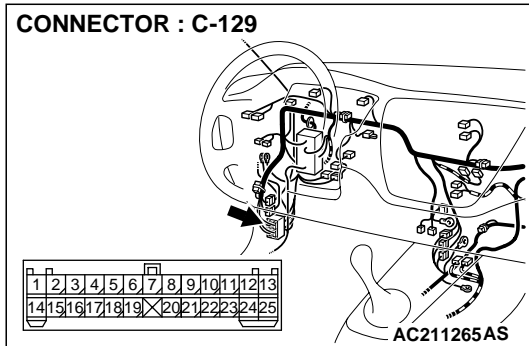
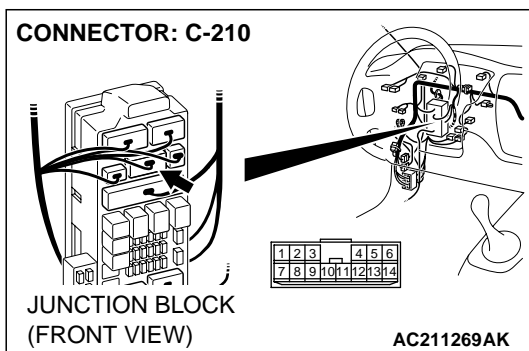
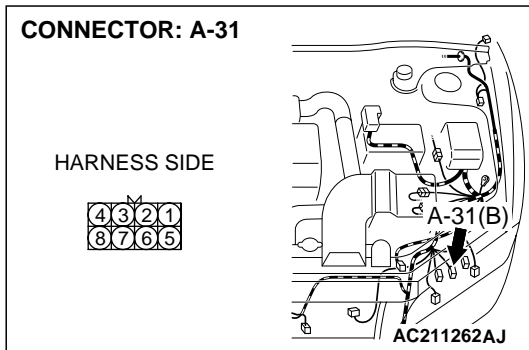
Q: Is junction block connector C-210 in good condition?

YES : Go to Step 3.

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



STEP 3. Check the wiring harness between front combination light assembly (LH) connector A-31 (terminal 2) and junction block connector C-210 (terminal 5).

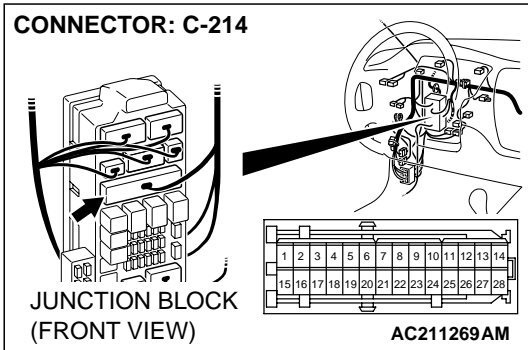


NOTE: Also check intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front combination light assembly (LH) connector A-31 (terminal 2) and junction block connector C-210 (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 turn-signal lights illuminate normally.

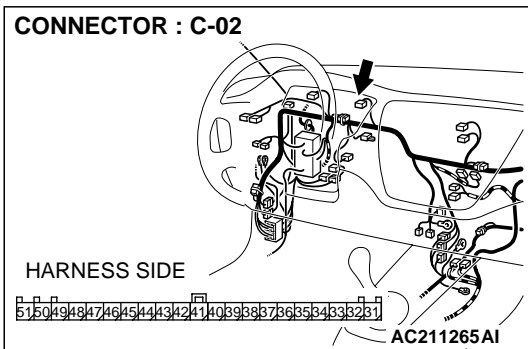


STEP 4. Check junction block connector C-214 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are junction block connector C-214 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.

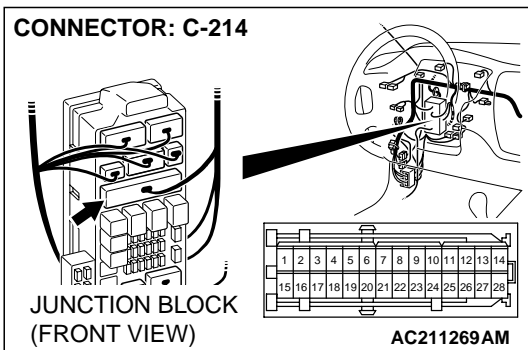


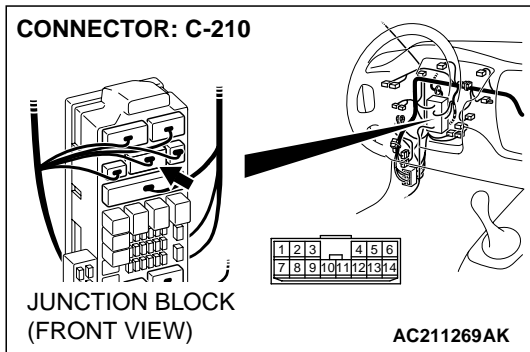
STEP 5. Check the wiring harness between combination meter connector C-02 (terminal 49) and junction block connector C-214 (terminal 27).

Q: Is the wiring harness between combination meter connector C-02 (terminal 49) and junction block connector C-214 (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 turn-signal lights illuminate normally.



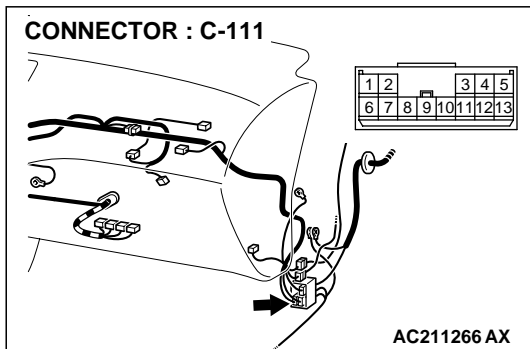


STEP 6. Check junction block connector C-210 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is junction block connector C-210 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.

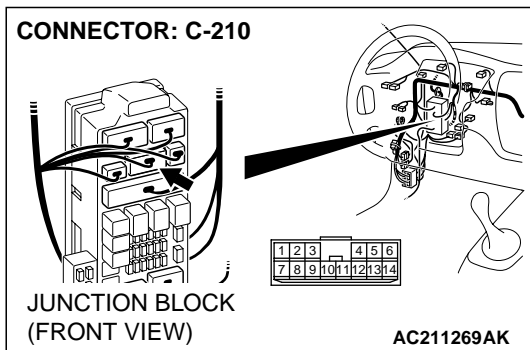


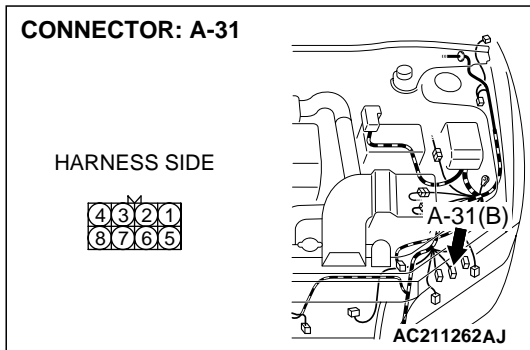
STEP 7. Check the wiring harness between intermediate connector C-111 (terminal 1) and junction block connector C-210 (terminal 7).

Q: Is the wiring harness between intermediate connector C-111 (terminal 1) and junction block connector C-210 (terminal 7) 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 8. Check front combination light assembly (LH) connector A-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front turn-signal (LH) connector A-31 in good condition?

YES : Go to Step 9.

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

STEP 9. Check the front turn-signal light bulb (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.

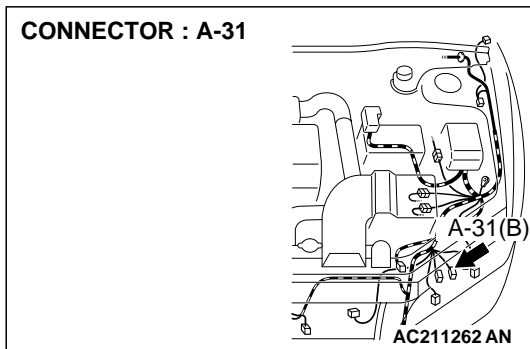
Q: Is the front turn-signal (LH) light bulb in good condition?

YES : Go to Step 10.

NO : Replace the front turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 10. Check the ground circuit to the front turn-signal light (LH). Measure the resistance at front combination light assembly (LH) connector A-31.

- (1) Disconnect front combination light assembly (LH) connector A-31 and measure the resistance available at the wiring harness side of the connector.



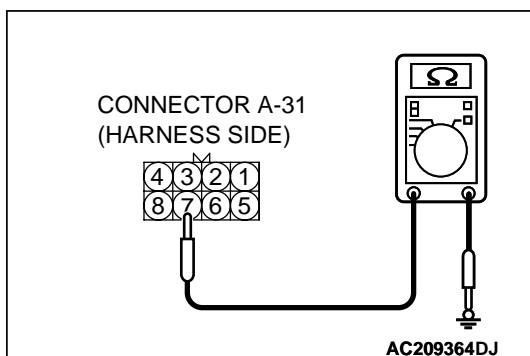
- (2) Measure the resistance value between terminal 7 and ground.

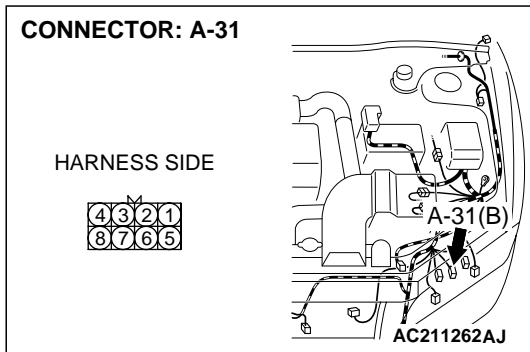
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.

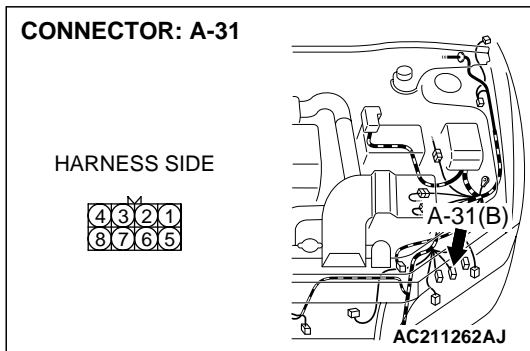




STEP 11. Check the wiring harness between front combination light assembly (LH) connector A-31 (terminal 7) and ground.

Q: Is the wiring harness between front combination light assembly (LH) connector A-31 (terminal 7) and ground in good condition?

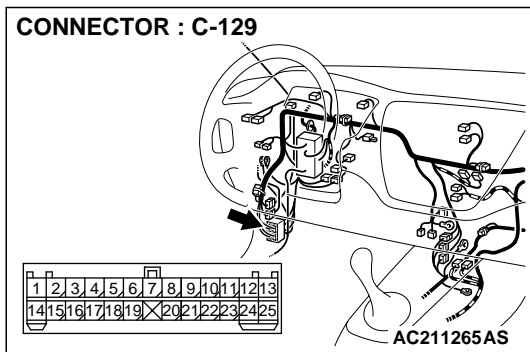
- YES :** Replace the front combination light assembly (LH).
Verify that the turn-signal lights illuminate normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

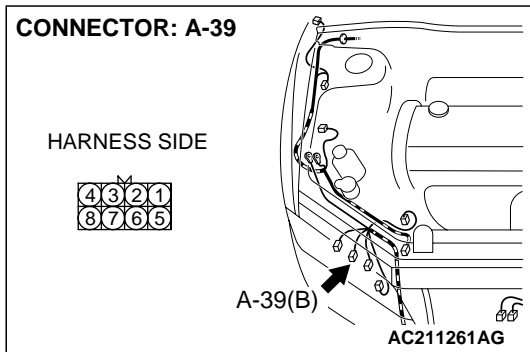


STEP 12. Check the wiring harness between front combination light assembly (LH) connector A-31 (terminal 2) and intermediate connector C-129 (terminal 20).

Q: Is the wiring harness between front combination light assembly (LH) connector A-31 (terminal 2) and intermediate connector C-129 (terminal 20) in good condition?

- YES :** Replace the front combination light assembly (LH).
Verify that the turn-signal lights illuminate normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.





STEP 13. Check front combination light assembly (RH) connector A-39 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the front turn-signal (RH) connector A-39 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 turn-signal lights illuminate normally.

STEP 14. 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.

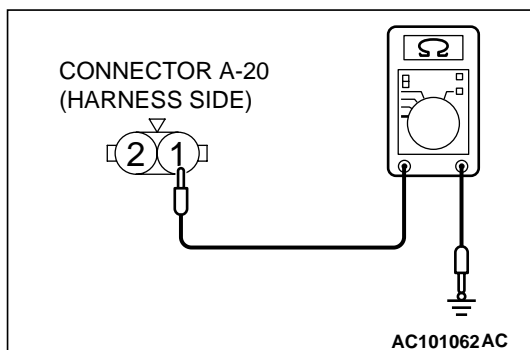
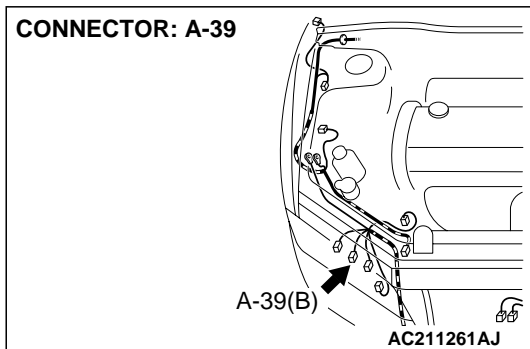
Q: Is the front turn-signal (RH) light bulb in good condition?

YES : Go to Step 15.

NO : Replace the front turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 15. Check the ground circuit to the front turn-signal light (RH). Measure the resistance at front combination light assembly (RH) connector A-39.

- (1) Disconnect front combination light assembly (RH) connector A-39 and measure the resistance available at the wiring harness side of the connector.



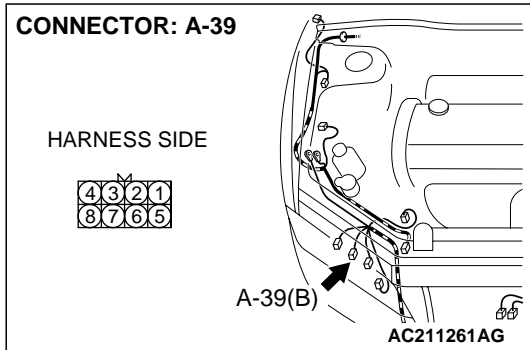
- (2) Measure the resistance value between terminal 7 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 17.

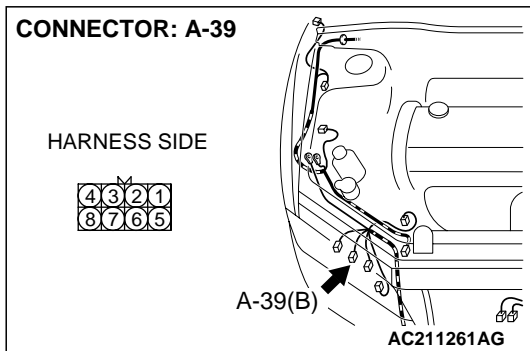
NO : Go to Step 16.



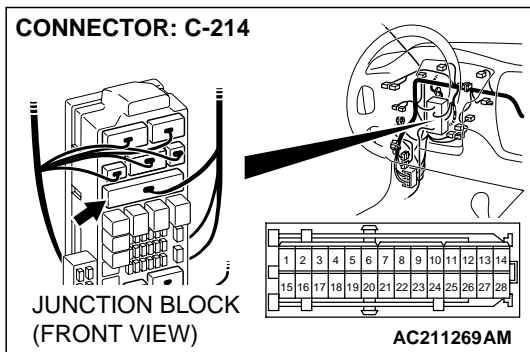
STEP 16. Check the wiring harness between front combination light assembly (RH) connector A-39 (terminal 7) and ground.

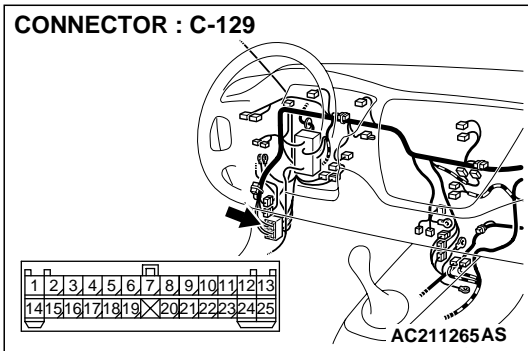
Q: Is the wiring harness between front combination light assembly (RH) connector A-39 (terminal 7) and ground in good condition?

- YES :** Replace the front combination light assembly (RH). Verify that the turn-signal lights illuminate normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.



STEP 17. Check the wiring harness between front combination light assembly (RH) connector A-39 (terminal 2) and junction block connector C-214 (terminal 27).



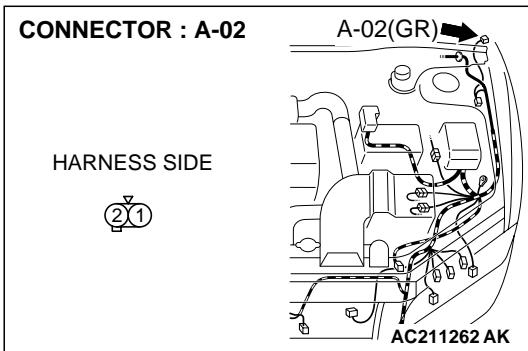


NOTE: Also check intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front combination light assembly (RH) connector A-39 (terminal 2) and junction block connector C-214 (terminal 27) in good condition?

YES : Replace the front combination light assembly (RH). Verify that the turn-signal lights illuminate normally.

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



STEP 18. Check side turn-signal light (LH) connector A-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the side turn-signal light (LH) connector A-02 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 side turn-signal light bulb (LH).

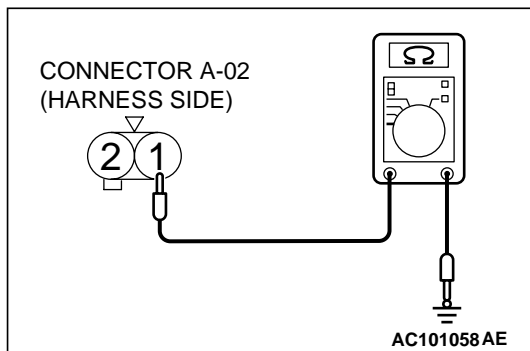
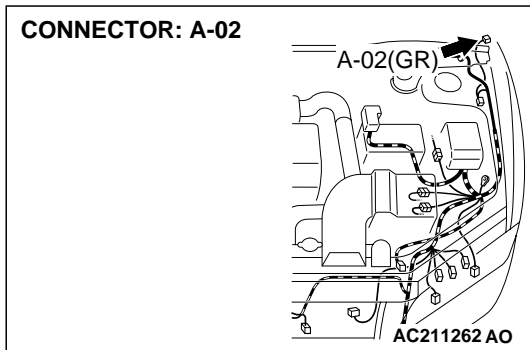
(1) Remove the side turn-signal light (LH) bulb.

(2) Verify that the side turn-signal light bulb (LH) is not damaged or burned out.

Q: Is the side turn-signal light (LH) bulb in good condition?

YES : Go to Step 20.

NO : Replace the side turn-signal light (LH) bulb. Verify that the turn-signal lights illuminate normally.



STEP 20. Check the ground circuit to the side turn-signal light (LH). Measure the resistance at side turn-signal light (LH) connector A-02.

(1) Disconnect side turn-signal light (LH) connector A-02 and measure the resistance available at the wiring harness side of the connector.

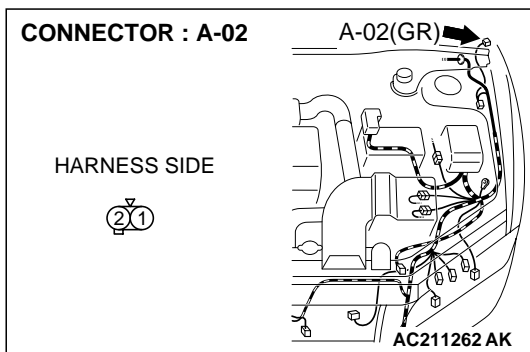
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 22.

NO : Go to Step 21.

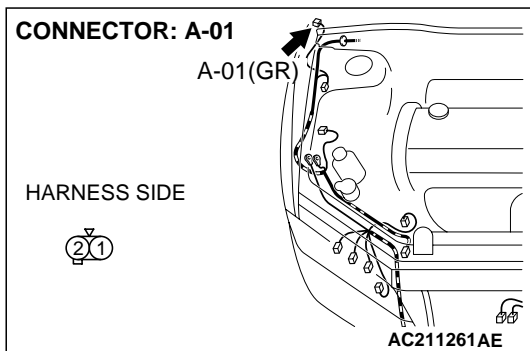
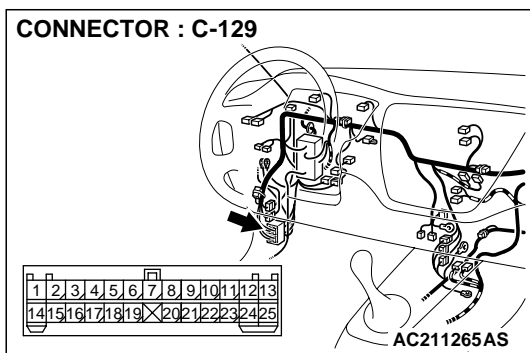
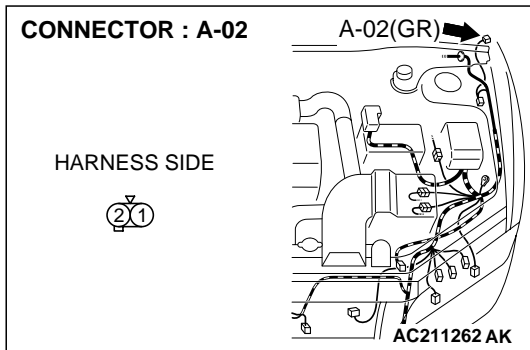


STEP 21. Check the wiring harness between side turn-signal light (LH) connector A-02 (terminal 1) and ground.

Q: Is the wiring harness between side turn-signal light (LH) connector A-02 (terminal 1) and ground in good condition?

YES : Replace the side turn-signal light (LH) 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 22. Check the wiring harness between side turn-signal light (LH) connector A-02 (terminal 2) and intermediate connector C-129 (terminal 20).

Q: Is the wiring harness between side turn-signal light (LH) connector A-02 (terminal 2) and intermediate connector C-129 (terminal 20) in good condition?

YES : Replace the side turn-signal light (LH) 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 23. Check side turn-signal light (RH) connector A-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the side turn-signal light (RH) connector A-01 in good condition?

YES : Go to Step 24.

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

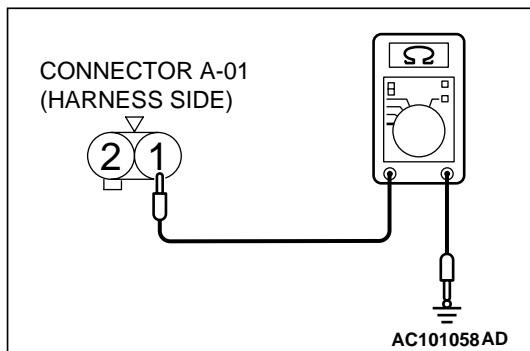
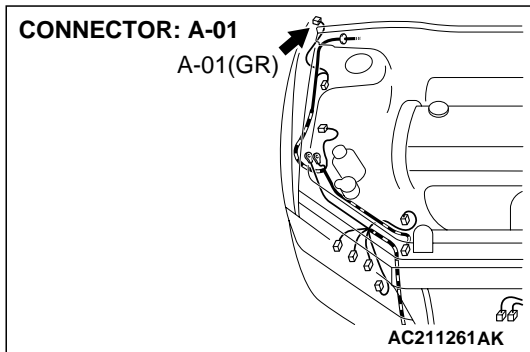
STEP 24. Check the side turn-signal light bulb (RH).

- (1) Remove the side turn-signal light (RH) bulb.
- (2) Verify that the side turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the side turn-signal light (RH) bulb in good condition?

YES : Go to Step 25.

NO : Replace the side turn-signal light (RH) bulb. Verify that the turn-signal lights illuminate normally.



STEP 25. Check the ground circuit to the side turn-signal light (RH). Measure the resistance at side turn-signal light (RH) connector A-01.

(1) Disconnect side turn-signal light (RH) connector A-01 and measure the resistance available at the wiring harness side of the connector.

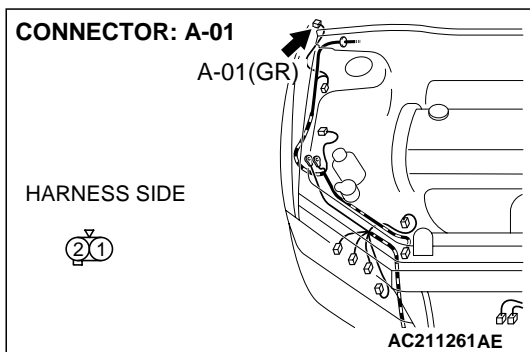
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 27.

NO : Go to Step 26.



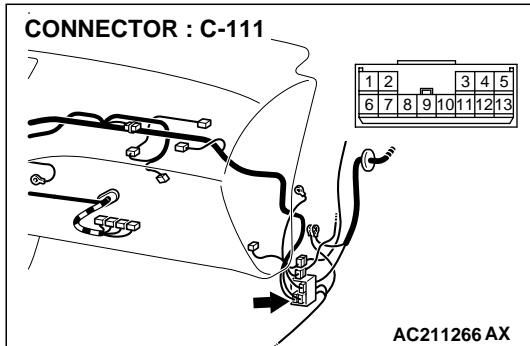
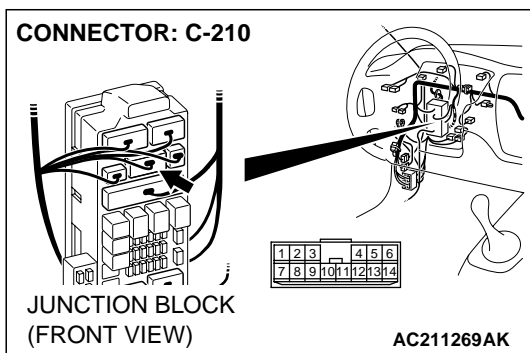
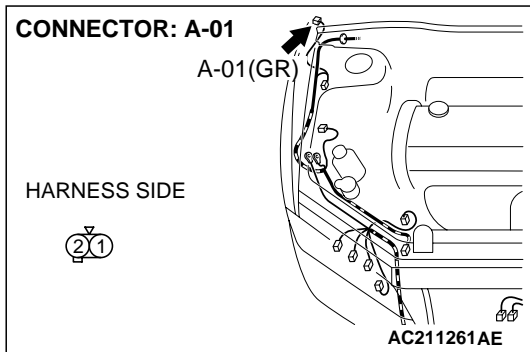
STEP 26. Check the wiring harness between side turn-signal light (RH) connector A-01 (terminal 1) and ground.

Q: Is the wiring harness between side turn-signal light (RH) connector A-01 (terminal 1) and ground in good condition?

YES : Replace the side turn-signal light (RH) 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 27. Check the wiring harness between side turn-signal light (RH) connector A-01 (terminal 2) and junction block connector C-210 (terminal 7).

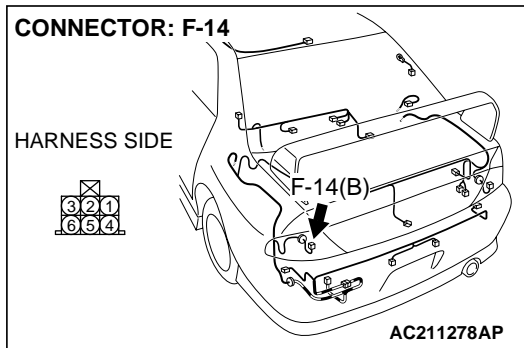


NOTE: Also check intermediate connector C-111 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-111 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between side turn-signal light (RH) connector A-01 (terminal 2) and junction block connector C-210 (terminal 7) 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 28. Check rear combination light (LH) connector F-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (LH) connector F-14 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 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.

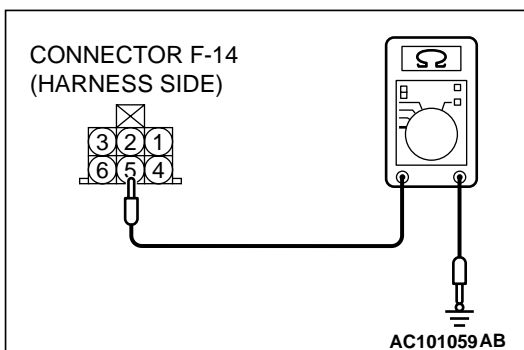
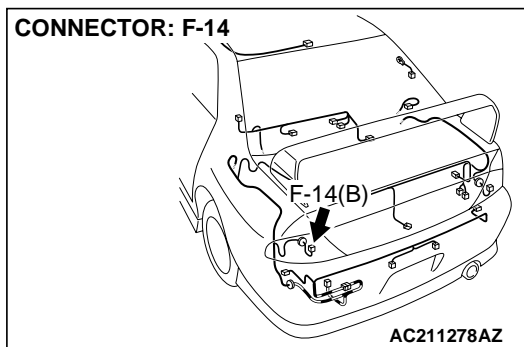
Q: Is the rear turn-signal (LH) light bulb in good condition?

YES : Go to Step 30.

NO : Replace the rear turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 30. Check the ground circuit to the rear turn-signal light (LH). Measure the resistance at rear combination light (LH) connector F-14.

- (1) Disconnect rear combination light (LH) connector F-14 and measure the resistance available at the wiring harness side of the connector.

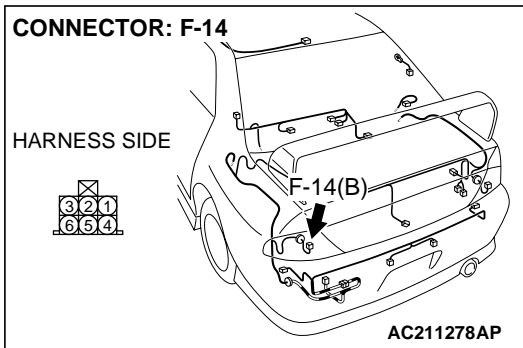


- (2) Measure the resistance value between terminal 5 and ground.
 - The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 32.

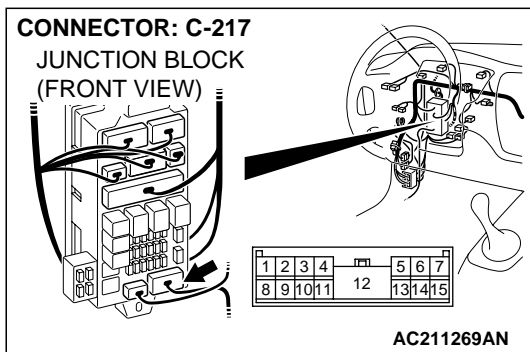
NO : Go to Step 31.



STEP 31. Check the wiring harness between rear combination light (LH) connector F-14 (terminal 5) and ground.

Q: Is the wiring harness between rear combination light (LH) connector F-14 (terminal 5) and ground in good condition?

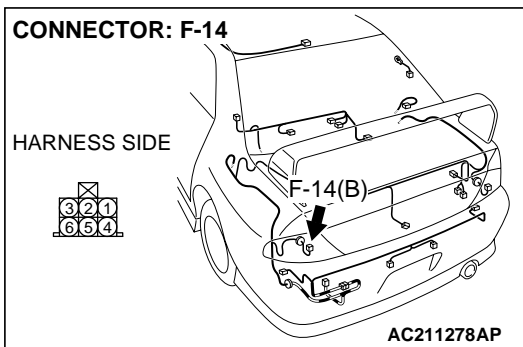
- YES :** Replace the socket assembly. Verify that the turn-signal lights illuminate normally.
- NO :** The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

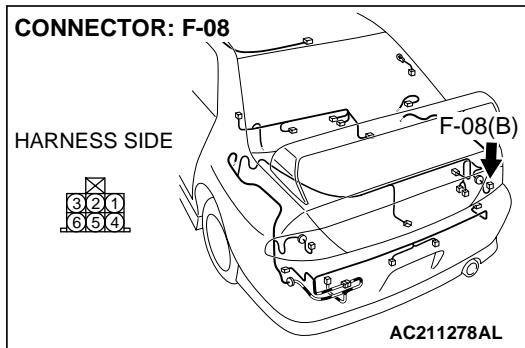


STEP 32. Check the wiring harness between rear combination light (LH) connector F-14 (terminal 1) and junction block connector C-217 (terminal 8).

Q: Is the wiring harness between rear combination light (LH) connector F-14 (terminal 1) and junction block connector C-217 (terminal 8) 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 33. Check rear combination light (RH) connector F-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (RH) connector F-08 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 turn-signal lights illuminate normally.

STEP 34. Check the rear turn-signal light bulb (RH).

- (1) Remove the rear turn-signal light bulb (RH).
- (2) Verify that the rear turn-signal light bulb (RH) is not damaged or burned out.

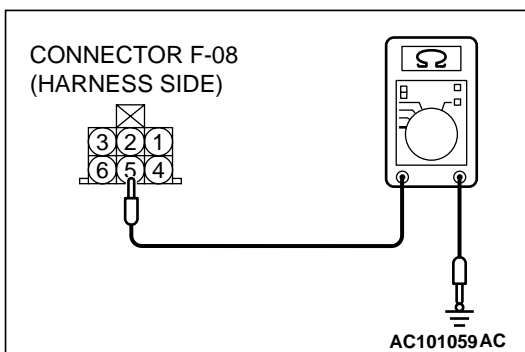
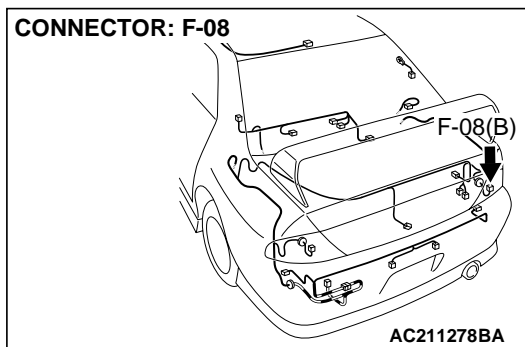
Q: Is the rear turn-signal light bulb (RH) in good condition?

YES : Go to Step 35.

NO : Replace the rear turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 35. Check the ground circuit to the rear turn-signal light (RH). Measure the resistance at rear combination light (RH) connector F-08.

- (1) Disconnect rear combination light (LH) connector F-08 and measure the resistance available at the wiring harness side of the connector.



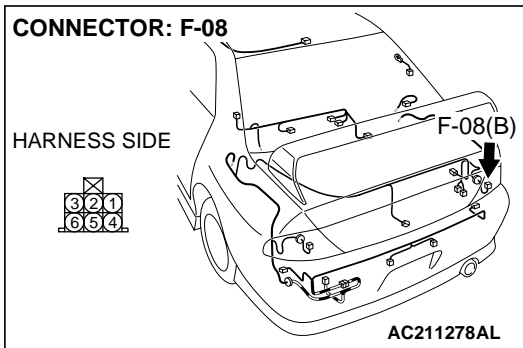
- (2) Measure the resistance value between terminal 5 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 37.

NO : Go to Step 36.

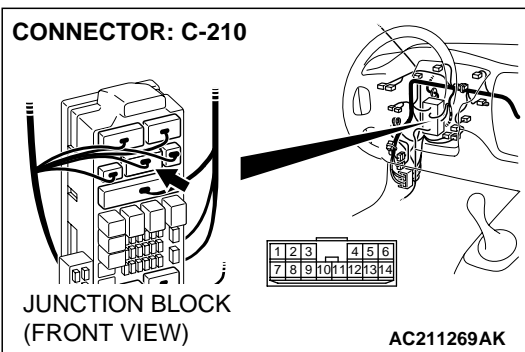


STEP 36. Check the wiring harness between rear combination light (RH) connector F-08 (terminal 5) and ground.

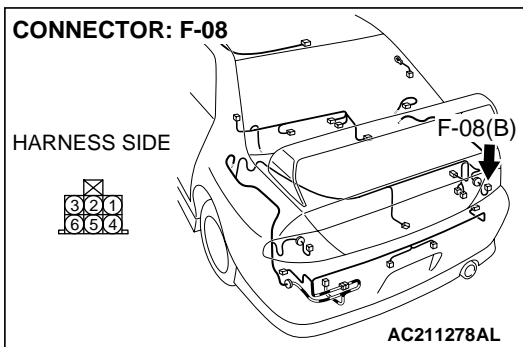
Q: Is the wiring harness between rear combination light (RH) connector F-08 (terminal 5) and ground in good condition?

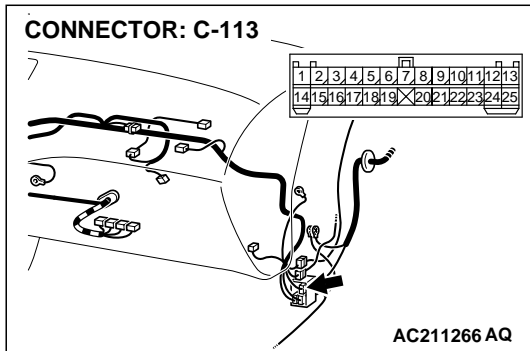
YES : Replace the socket assembly. Verify that the turn-signal lights illuminate normally.

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 37. Check the wiring harness between rear combination light (RH) connector F-08 (terminal 1) and junction block connector C-210 (terminal 7).





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

Q: Is the wiring harness between rear combination light (RH) connector F-08 (terminal 1) and junction block connector C-210 (terminal 7) in good condition?

YES : Replace the socket assembly. Verify that the turn-signal lights illuminate normally.

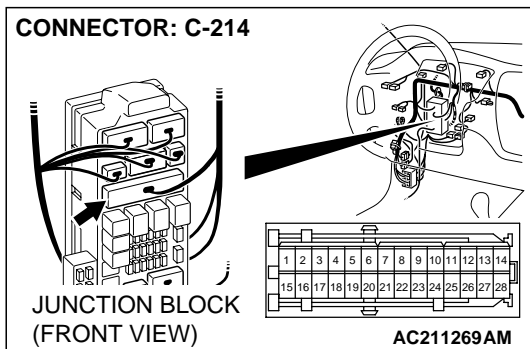
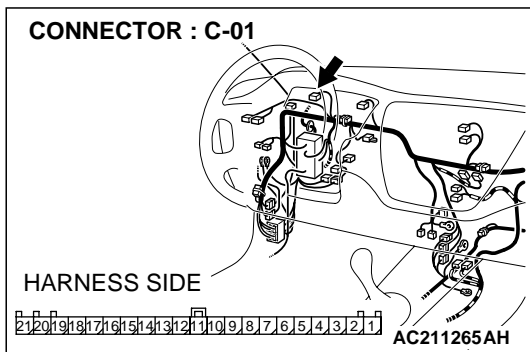
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

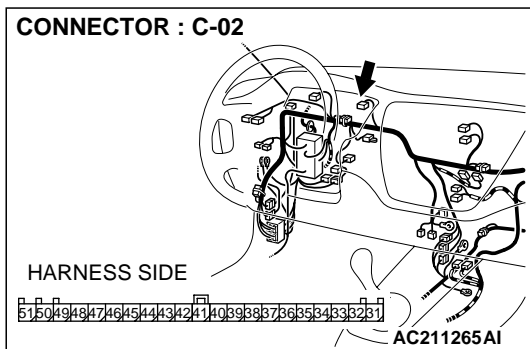
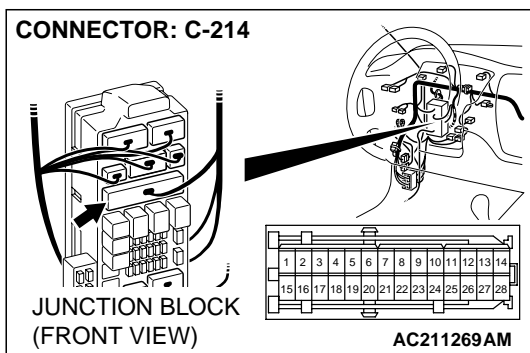
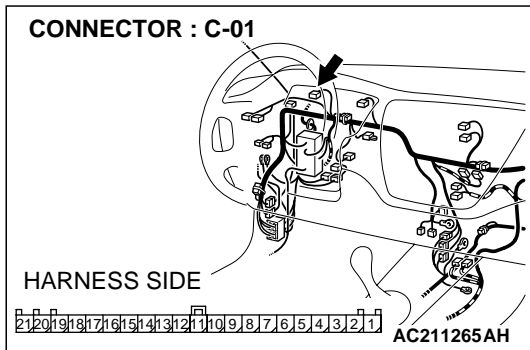
STEP 38. Check combination meter connector C-01 and junction block connector C-214 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are combination meter connector C-01 and junction block connector C-214 in good condition?

YES : Go to Step 39.

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 39. Check the wiring harness between combination meter connector C-01 (terminal 3) and junction block connector C-214 (terminal 22).

Q: Is the wiring harness between combination meter connector C-01 (terminal 3) and junction block connector C-214 (terminal 22) in good condition?

YES : Replace the combination meter. Verify that the turn-signal lights illuminate normally.

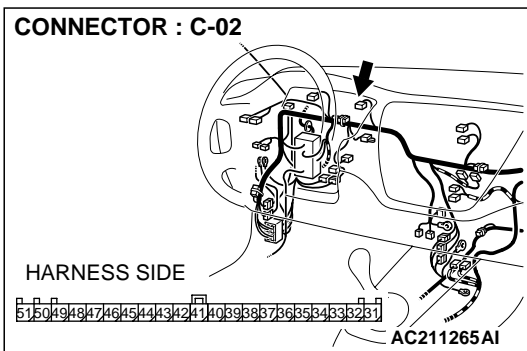
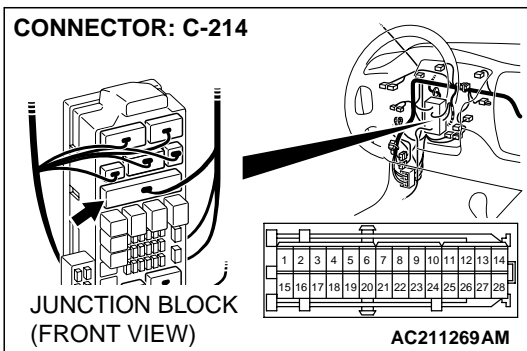
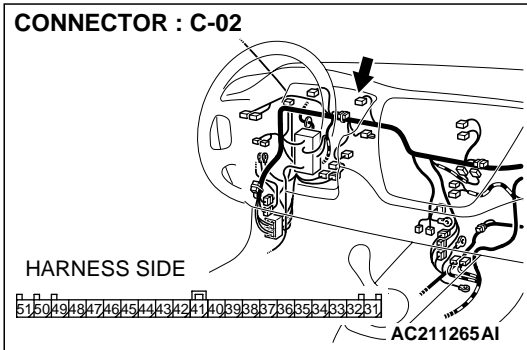
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 40. Check combination meter connector C-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-02 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 turn-signal lights illuminate normally.



STEP 41. Check the wiring harness between combination meter connector C-02 (terminal 49) and junction block connector C-214 (terminal 27).

Q: Is the wiring harness between combination meter connector C-02 (terminal 49) and junction block connector C-214 (terminal 27) in good condition?

YES : Replace the combination meter. Verify that the turn-signal lights illuminate normally.

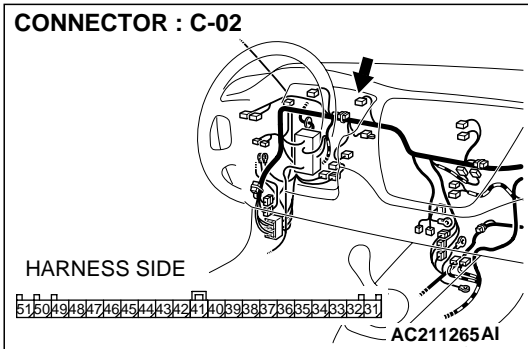
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 42. Check combination meter connector C-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-02 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 turn-signal lights illuminate normally.



STEP 43. Check the wiring harness between combination meter connector C-02 (terminal 48) and ground.

Q: Is the wiring harness between combination meter connector C-02 (terminal 48) 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.

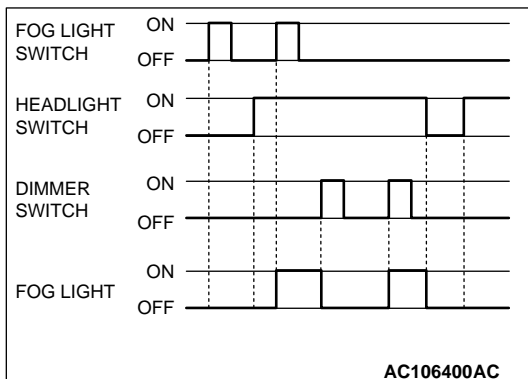
FOG LIGHT

GENERAL DESCRIPTION CONCERNING FOG LIGHT

M1549021400078

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

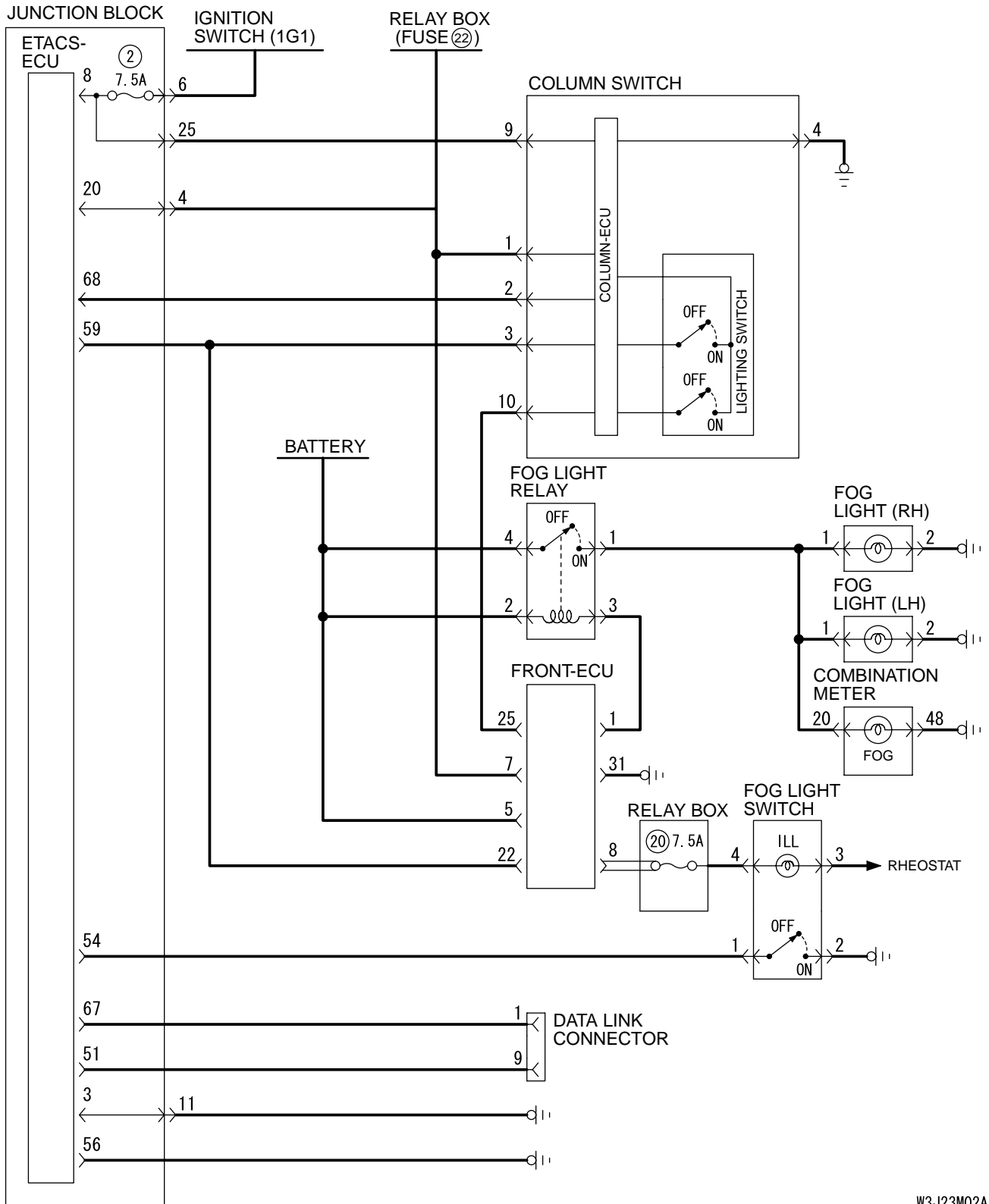
If the ETAS-ECU sends a fog light "ON" request signal to the front-ECU after the low-beam headlights are on, the fog light relay is turned on, allowing the fog lights and the fog light indicator light to be illuminated. If the low-beam headlights is turned off, the fog lights will also be turn off automatically.

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

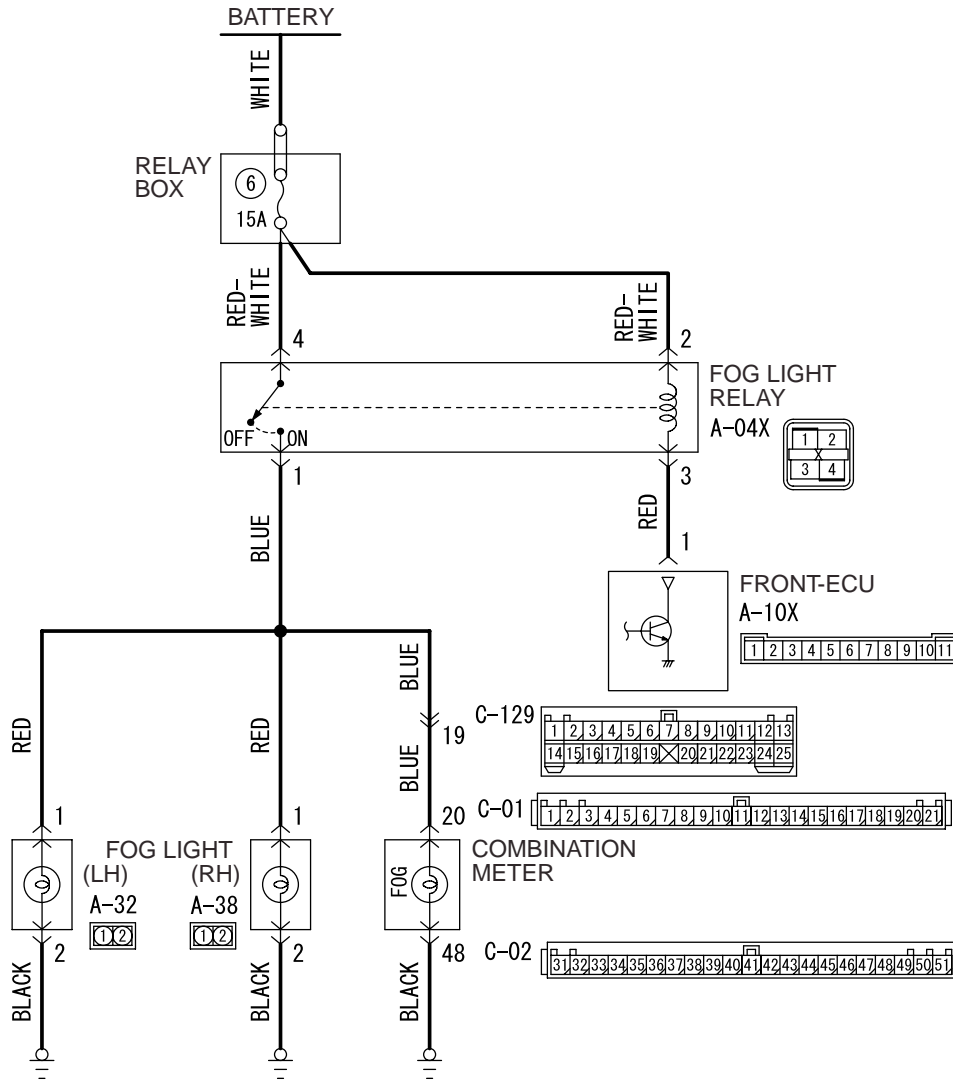


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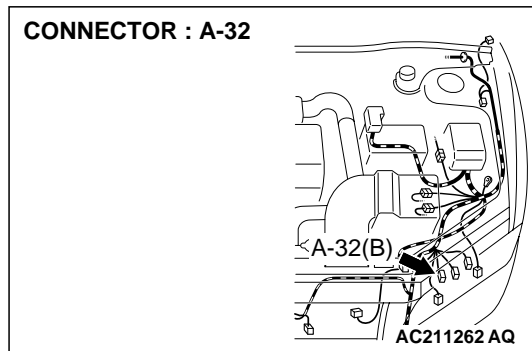
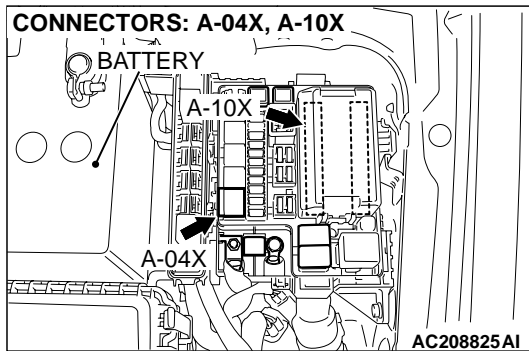
INSPECTION PROCEDURE L-1: Fog Light: Fog lights do not illuminate when the fog light switch is turned on.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Fog light circuit



W3J23M00AA



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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

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.54B-285](#)."

Headlights do not illuminate at high beam : Refer to Inspection Procedure J-3 "Headlights (high-beam) do not illuminate normally [P.54B-290](#)."

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 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "F.FOG."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Function Diag."
 - f. Select "LIGHTING."
 - g. Select "F.FOG."
- (3) Check that normal conditions are displayed on the items described in the table below.

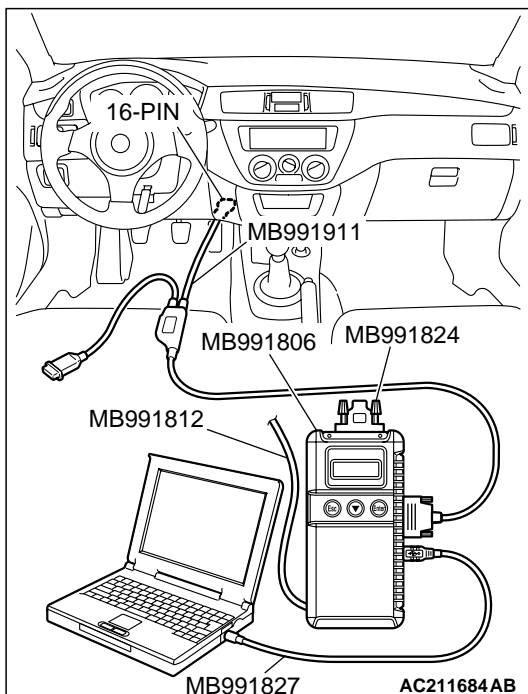
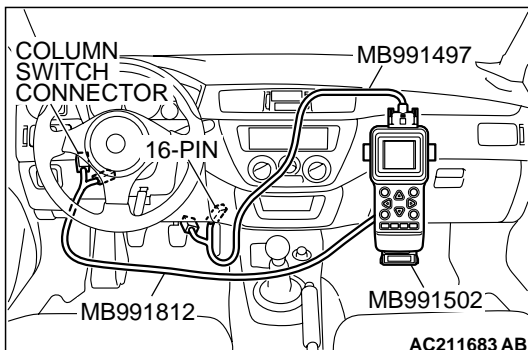
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 36	F.FOG LIGHT	ON

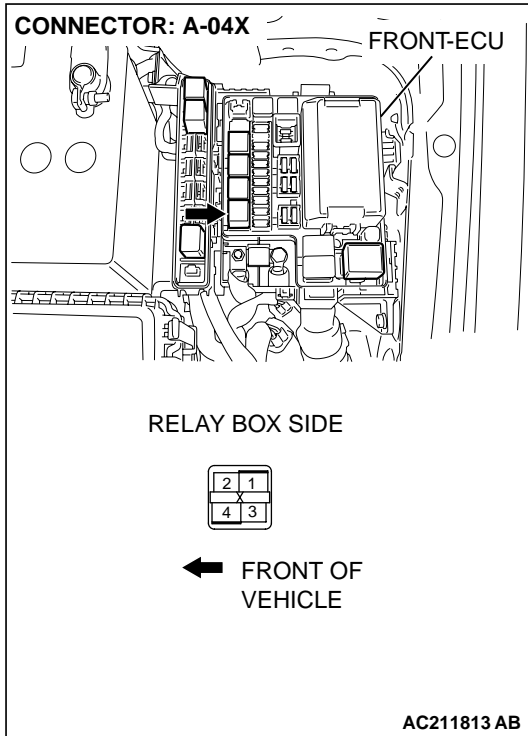
Q: Are normal conditions displayed on the "IG SW(IG1)" and "F.FOG LIGHT"?

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

Normal condition is not displayed for "IG SW (IG1)" :
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-439."

Normal condition is not displayed for "F.FOG LIGHT" :
Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from the fog light switch P.54B-442."



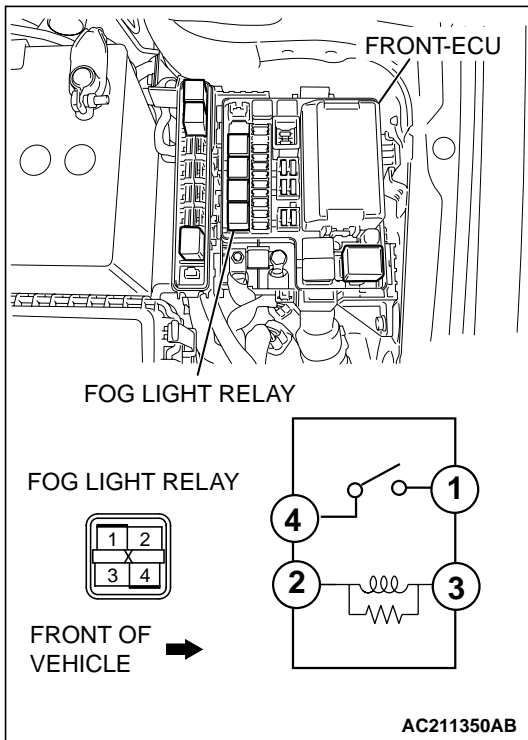


STEP 3. Check fog light relay connector A-04X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are fog light relay connector A-04X in good condition?

YES : Go to Step 4.

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



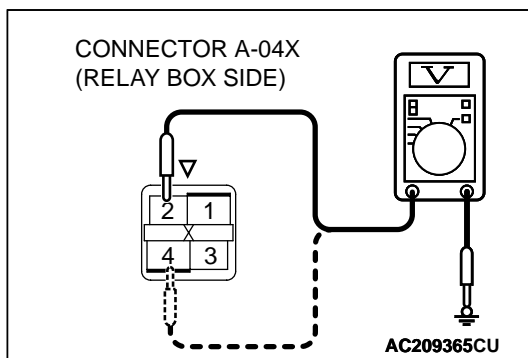
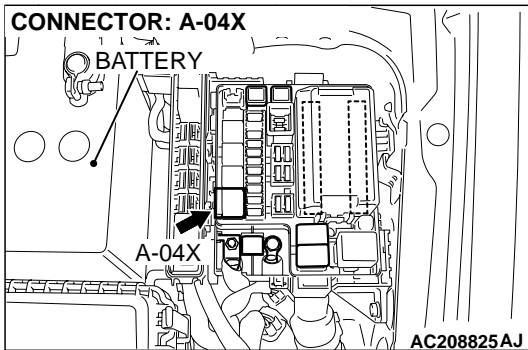
STEP 4. Check the fog light relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 4	Open circuit
<ul style="list-style-type: none"> Connect terminal 2 to the positive battery terminal Connect terminal 3 to the negative battery terminal 	1 – 4	Less than 2 ohms

Q: Is the fog light relay in good condition?

YES : Go to Step 5.

NO : Replace the fog light relay. Verify that the fog lights illuminate normally.



STEP 5. Check the battery power supply circuit to the fog light relay. Measure the voltage at fog light relay connector A-04X.

(1) Disconnect fog light relay connector A-04X and measure at the voltage available at the relay box side of the connector.

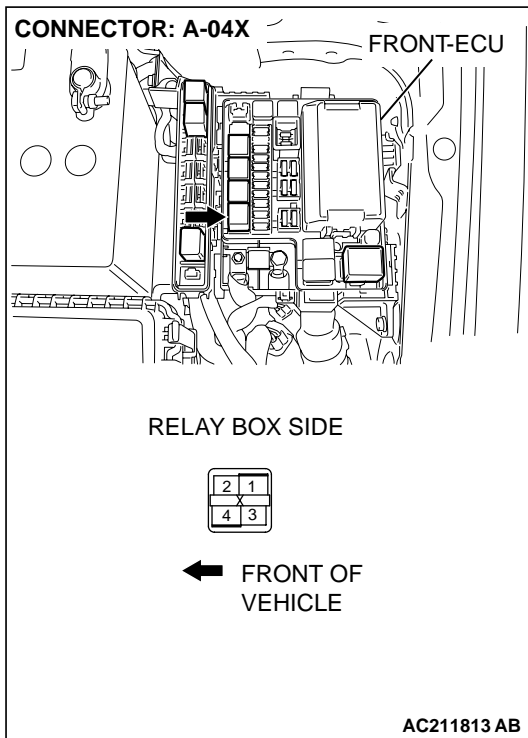
(2) Measure the voltage between terminal 2 and ground, and also between terminal 4 and ground.

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

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

YES : Go to Step 7.

NO : Go to Step 6.

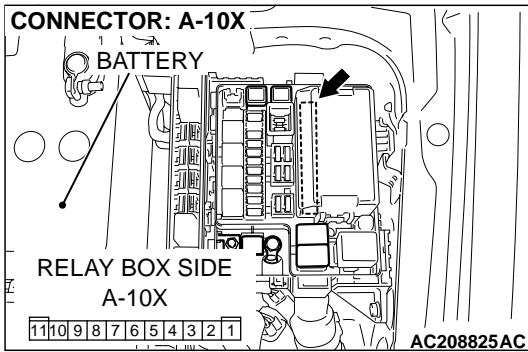


STEP 6. Check the wiring harness between fog light relay connector A-04X (terminal 2 and 4) and the battery.

Q: Is the wiring harness between fog light relay connector A-04X (terminal 2 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.

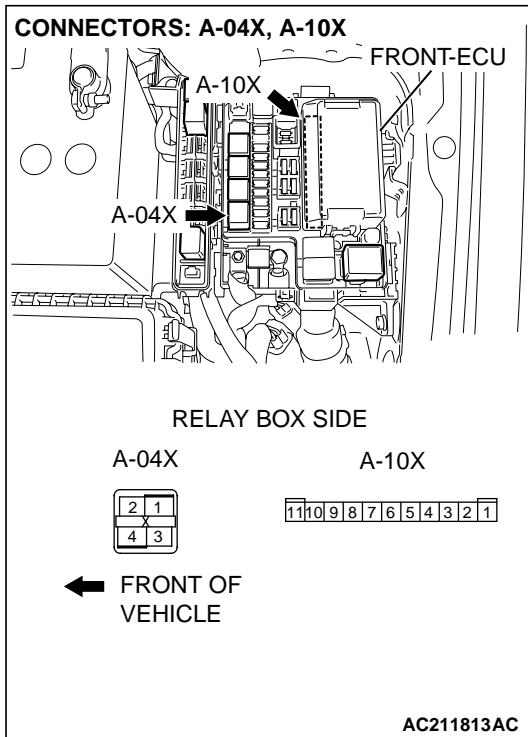


STEP 7. Check front-ECU connector A-10X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-10X 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.

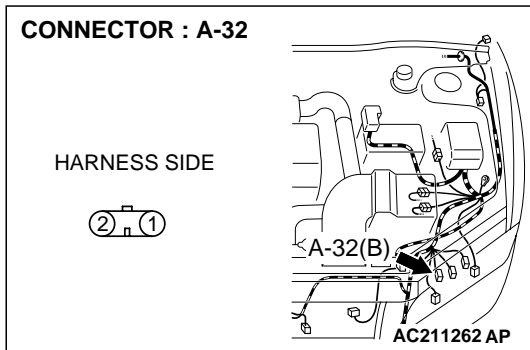


STEP 8. Check the wiring harness between fog light relay connector A-04X (terminal 3) and front-ECU connector A-10X (terminal 1).

Q: Is the wiring harness between fog light relay connector A-04X (terminal 3) and front-ECU connector A-10X (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.



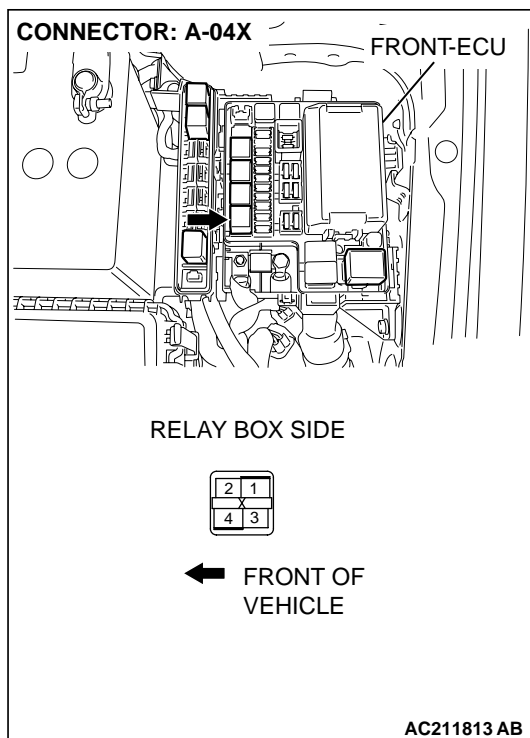
STEP 9. Check fog light (LH) connector A-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (LH) connector A-32 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.

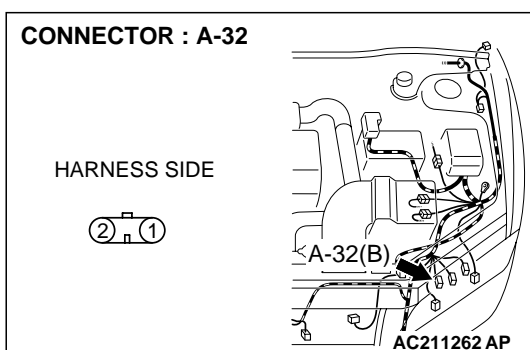


STEP 10. Check the wiring harnesses among fog light relay connector A-04X (terminal 1) and fog light (LH) connector A-32 (terminal 1).

Q: Are the wiring harnesses among fog light relay connector A-04X (terminal 1) and fog light (LH) connector A-32 (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

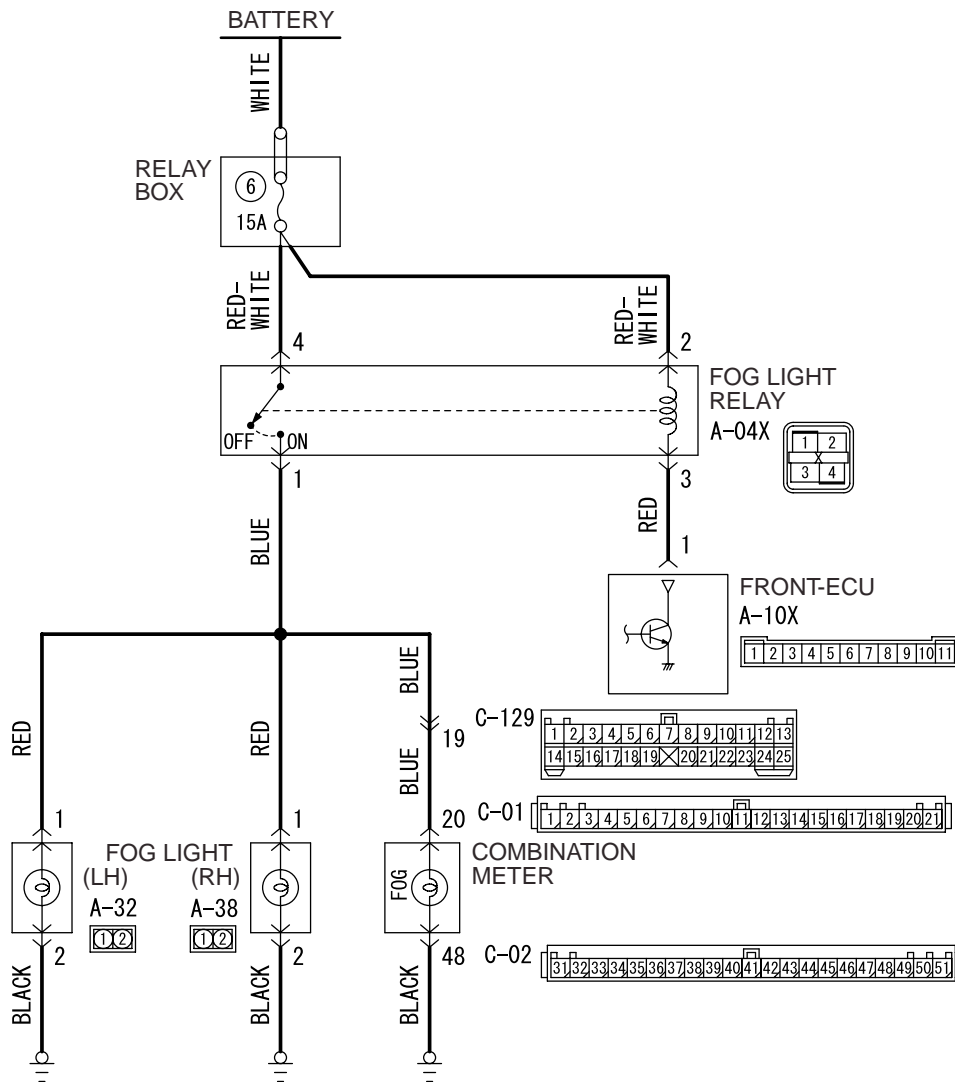
DIAGNOSIS

Replace the front-ECU.

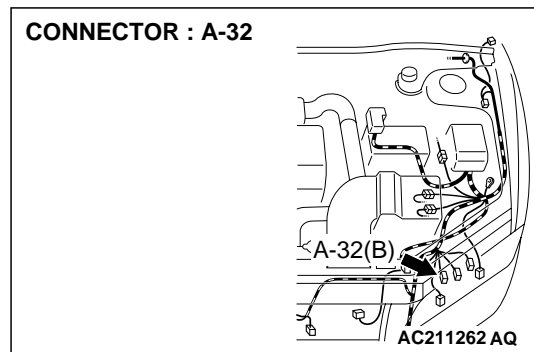
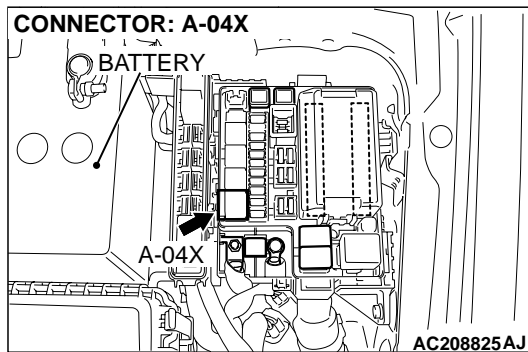
The fog lights should go out when the headlights (low-beam) are turned off while the fog lights are on.

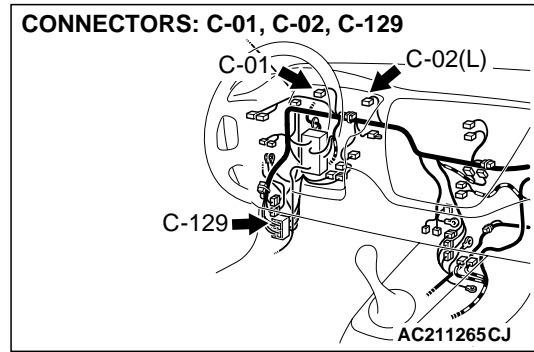
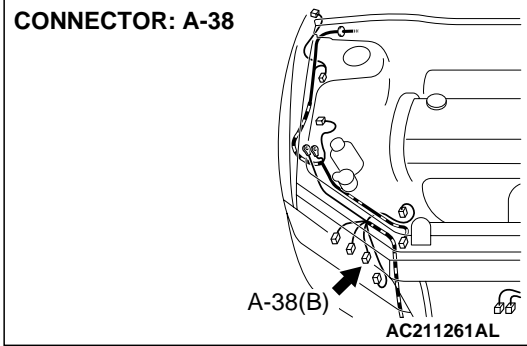
INSPECTION PROCEDURE L-3: Fog Light: One of the fog lights does not illuminate.

Fog light circuit



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**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 operation.

Q: Which out of the fog lights and the fog light indicator light does not illuminate normally?

Only the fog light (LH) does not illuminate : Go to Step 2.

Only the fog light (RH) does not illuminate : Go to Step 8.

Only the fog light indicator light does not illuminate :
Go to Step 14.

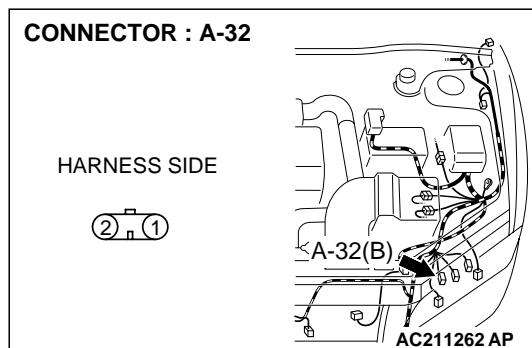
All of the fog lights and the fog light indicator light does not illuminate : Refer to Inspection procedure L-1 "Fog lights do not illuminate when the fog light switch is turned on [P.54B-22](#)".

STEP 2. Check fog light (LH) connector A-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (LH) connector A-32 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 fog lights illuminate normally.



STEP 3. 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?

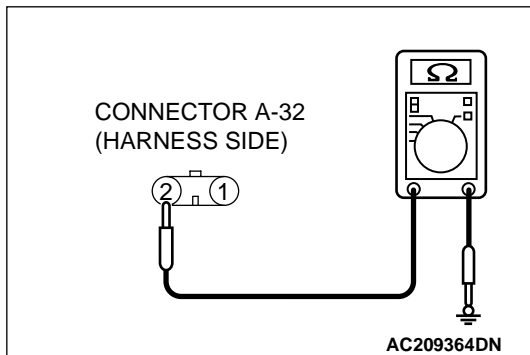
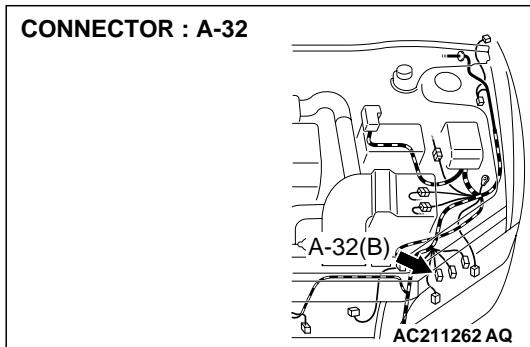
YES : Go to Step 4.

NO : Replace the fog light bulb (LH). Verify that the fog lights illuminate normally.

STEP 4. Check the ground circuit to the fog light (LH).

Measure the resistance at fog light (LH) connector A-32.

- (1) Disconnect fog light (LH) connector A-32 and measure the resistance available at the wiring harness side of the connector.



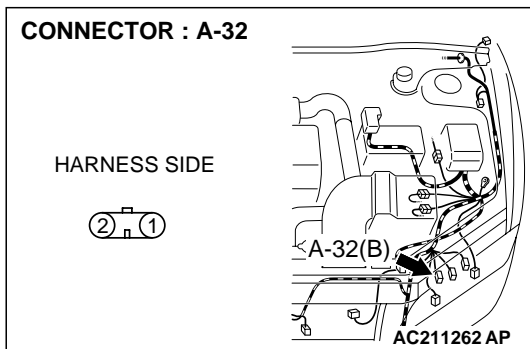
- (2) Measure the resistance value between terminal 2 and ground.

- 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 5.

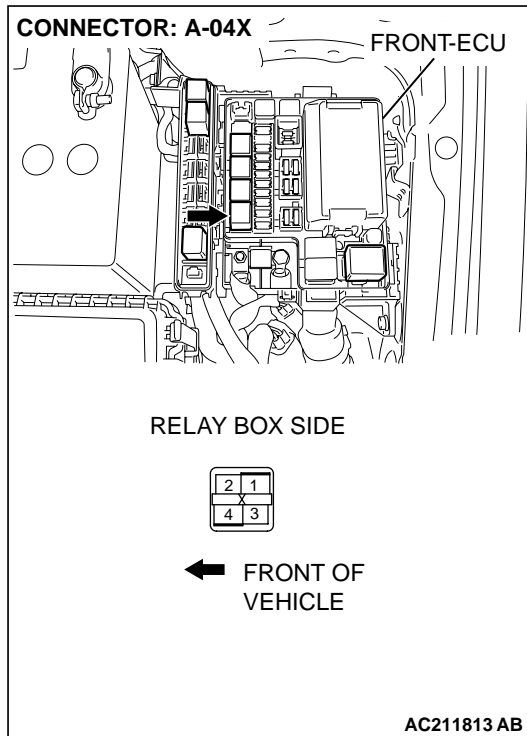


STEP 5. Check the wiring harness between fog light (LH) connector A-32 (terminal 2) and ground.

Q: Is the wiring harness between fog light (LH) 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 fog lights illuminate normally.



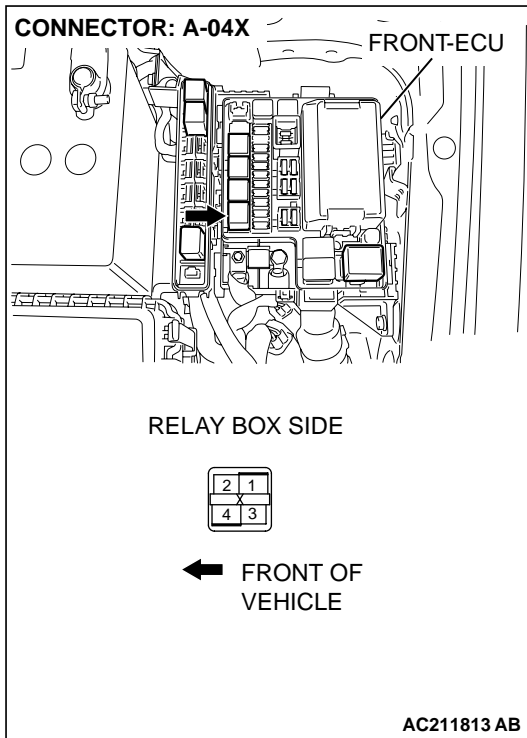
STEP 6. Check fog light relay connector A-04X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-04X 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.

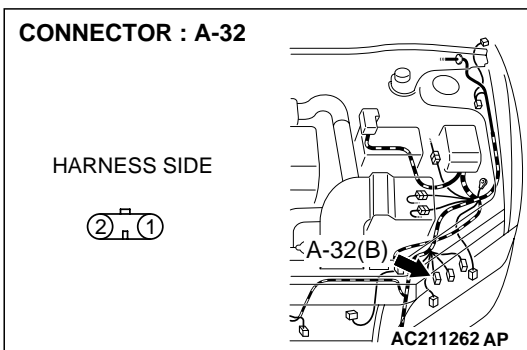


STEP 7. Check the wiring harness between fog light relay connector A-04X (terminal 1) and fog light (LH) connector A-32 (terminal 1).

Q: Is the wiring harness between fog light relay connector A-04X (terminal 1) and fog light (LH) connector A-32 (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.

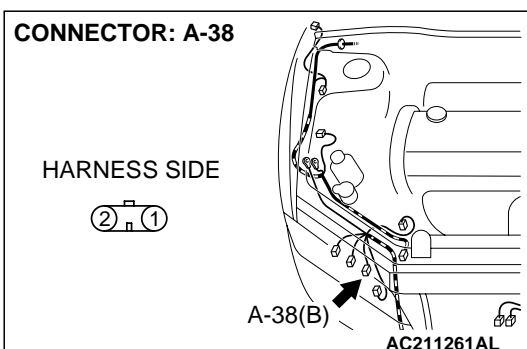


STEP 8. Check fog light (RH) connector A-38 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (RH) connector A-38 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 fog lights illuminate normally.

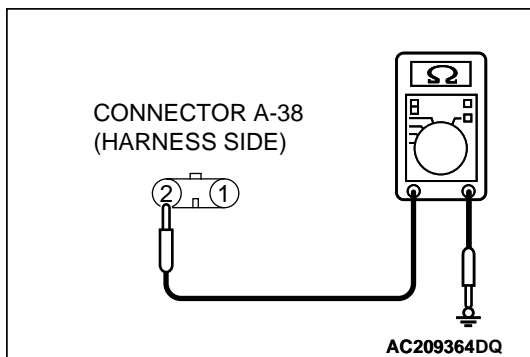
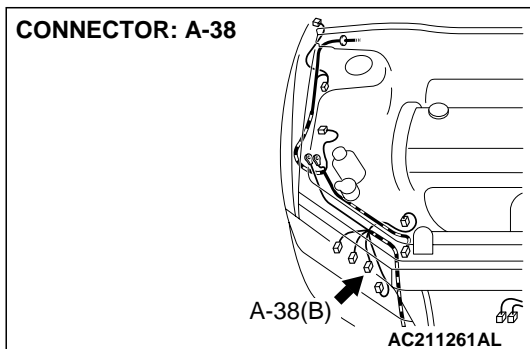


STEP 9. Check the fog light bulb (RH).

- (1) Remove the fog light bulb (RH).
- (2) Verify that the fog light bulb (RH) is not damaged or burned out.

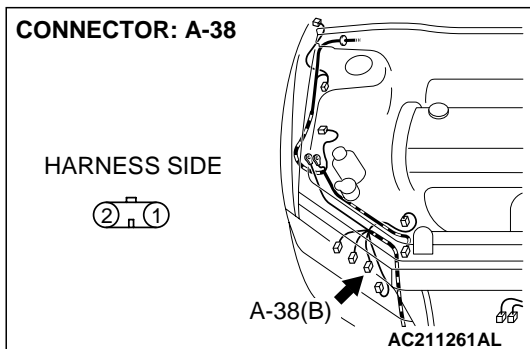
Q: Is the fog light bulb (RH) in good condition?**YES :** Go to Step 10.**NO :** Replace the fog light bulb (RH). Verify that the fog lights illuminate normally.**STEP 10. Check the ground circuit to the fog light (RH). Measure the resistance at fog light (RH) connector A-38.**

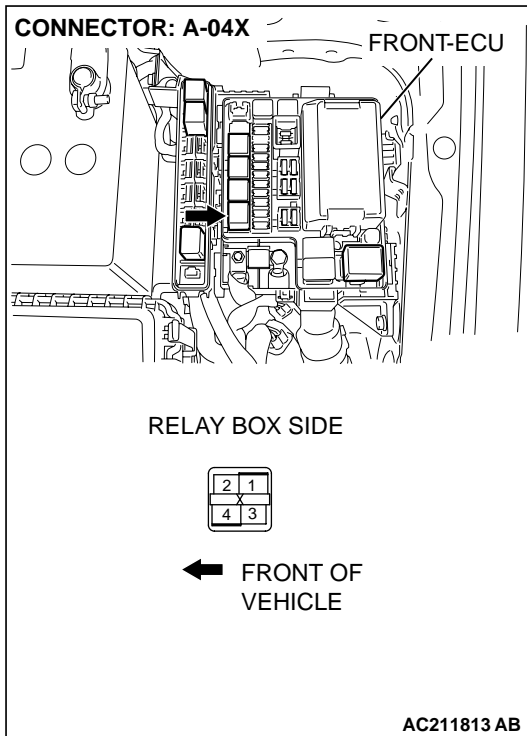
- (1) Disconnect fog light (RH) connector A-38 and measure the resistance available at the wiring harness side of the connector.



- (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 11.**STEP 11. Check the wiring harness between fog light (RH) connector A-38 (terminal 2) and ground.****Q: Is the wiring harness between fog light (RH) connector A-38 (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.



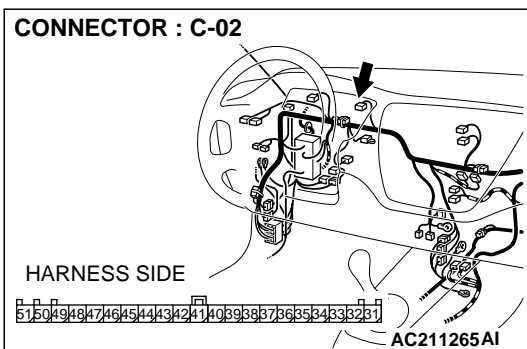
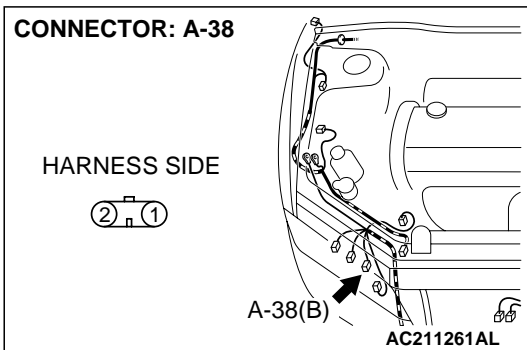
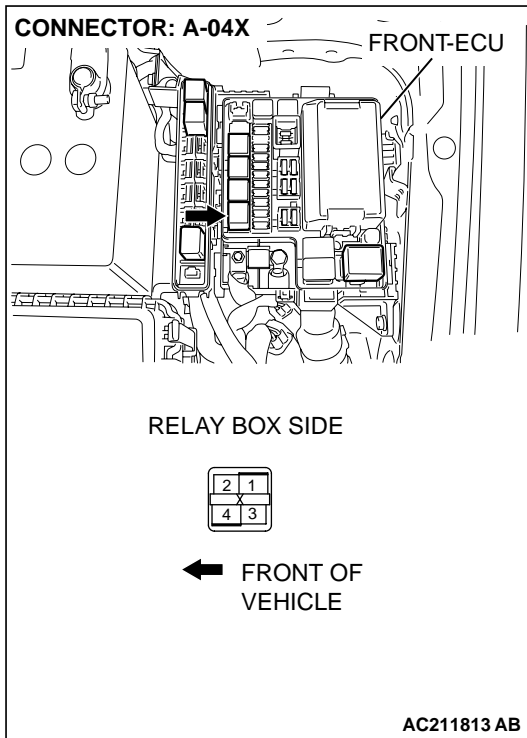
STEP 12. Check fog light relay connector A-04X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-04X 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 fog light relay connector A-04X (terminal 1) and fog light (RH) connector A-38 (terminal 1).

Q: Is the wiring harness between fog light relay connector A-04X (terminal 1) and fog light (RH) connector A-38 (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 combination meter connector C-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is combination meter connector C-02 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 fog light indicator light illuminates normally.

STEP 15. 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.

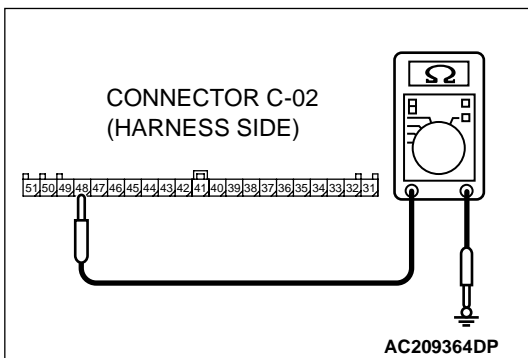
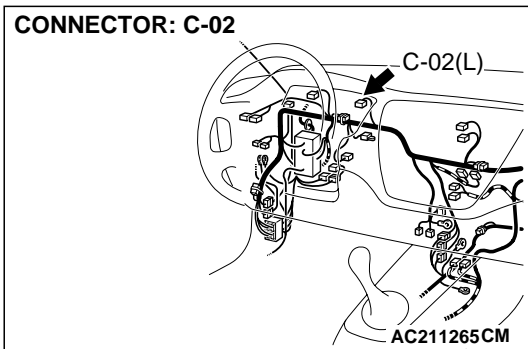
Q: Is the fog light indicator light bulb in good condition?

YES : Go to Step 16.

NO : Replace the fog light indicator light bulb. Verify that the fog light indicator light illuminates normally.

STEP 16. Check the ground circuit to the fog light indicator light. Measure the resistance at combination meter connector C-02.

- (1) Disconnect fog light indicator light connector C-02 and measure the resistance available at the wiring harness side of the connector.



- (2) Measure the resistance value between terminal 48 and ground.
 - The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 18.

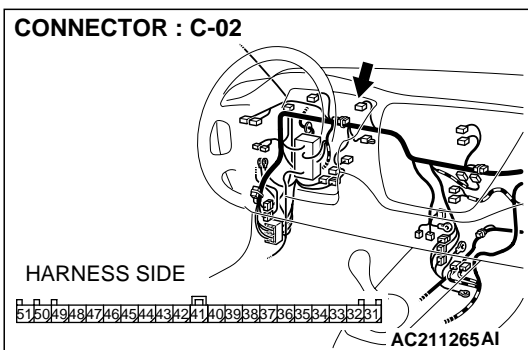
NO : Go to Step 17.

STEP 17. Check the wiring harness between combination meter connector C-02 (terminal 48) and ground.

Q: Is the wiring harness between combination meter connector C-02 (terminal 48) 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.



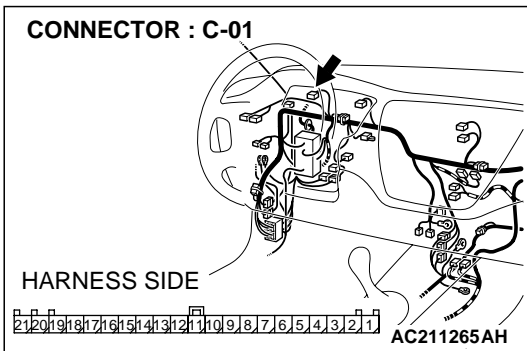
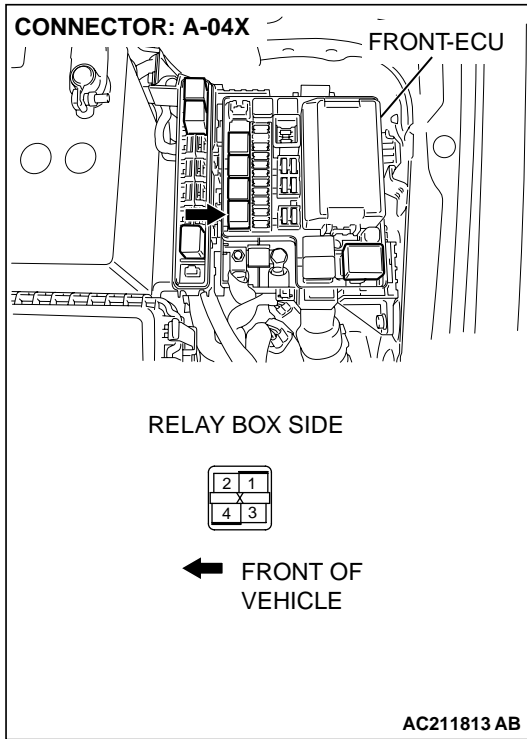
STEP 18. Check fog light relay connector A-04X and combination meter connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are fog light relay connector A-04X and combination meter connector C-01 in good condition?

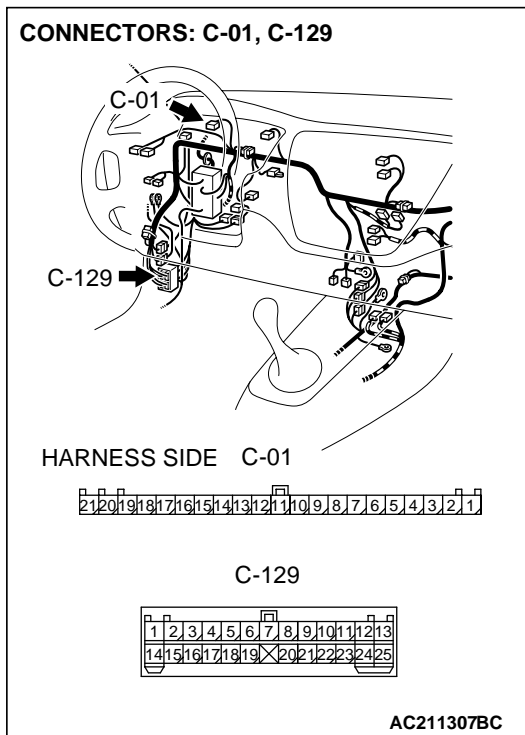
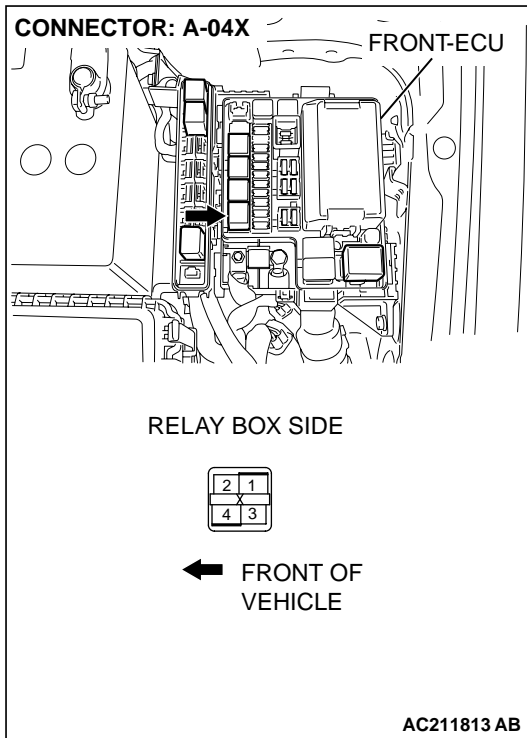
YES : Go to Step 19.

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 fog light relay connector A-04X (terminal 1) and combination meter connector C-01 (terminal 20).



NOTE: Also check intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129 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 relay connector A-04X (terminal 1) and combination meter connector C-01 (terminal 20) in good condition?

YES : Replace the combination meter. 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.

INTERIOR LIGHT

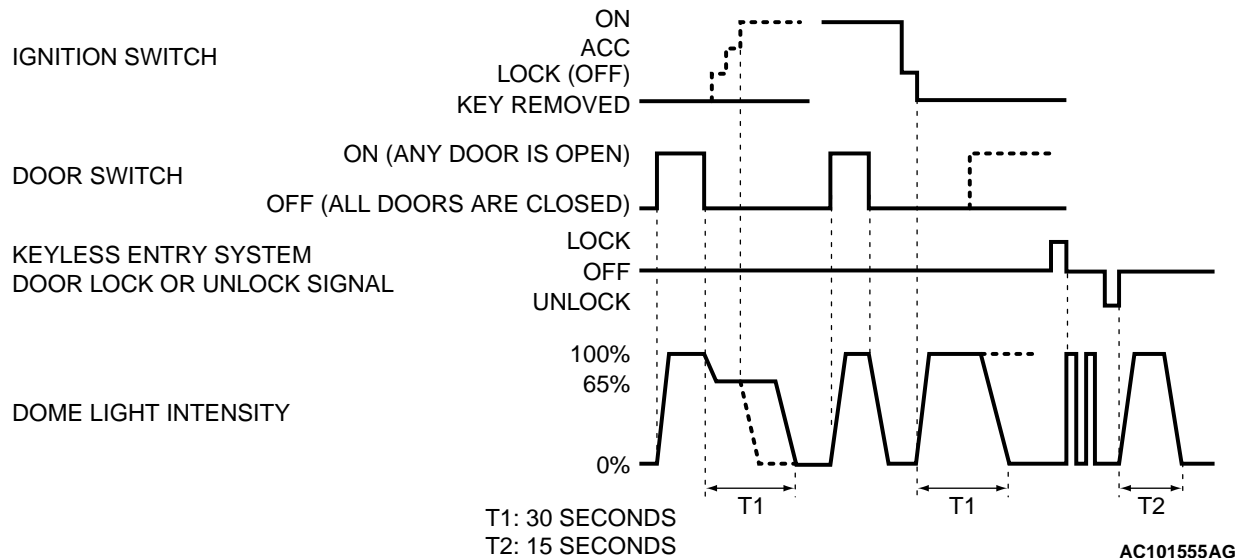
GENERAL DESCRIPTION CONCERNING THE INTERIOR LIGHT

M1549021800087

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
Interior light automatic-shutdown function	ETACS-ECU

Dome light control function



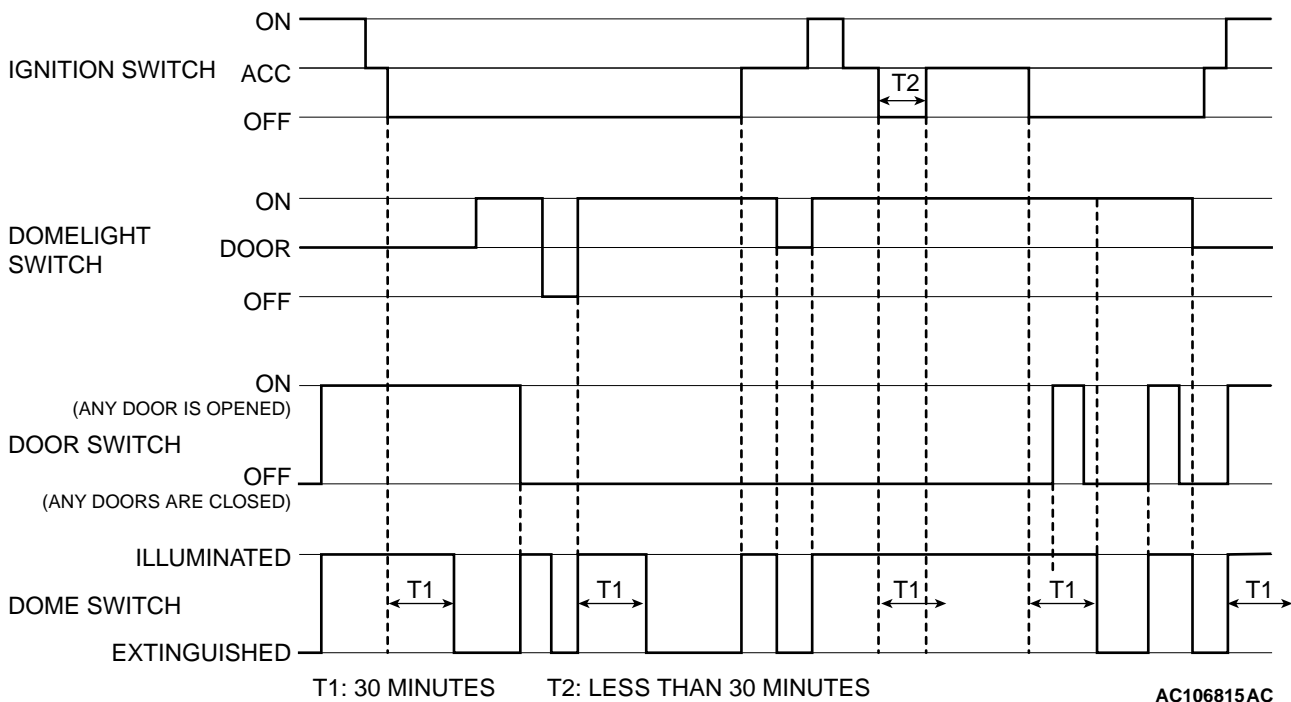
When the dome light switch is at the door position, the ETACS-ECU controls the lighting of the dome light as follows:

- 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.

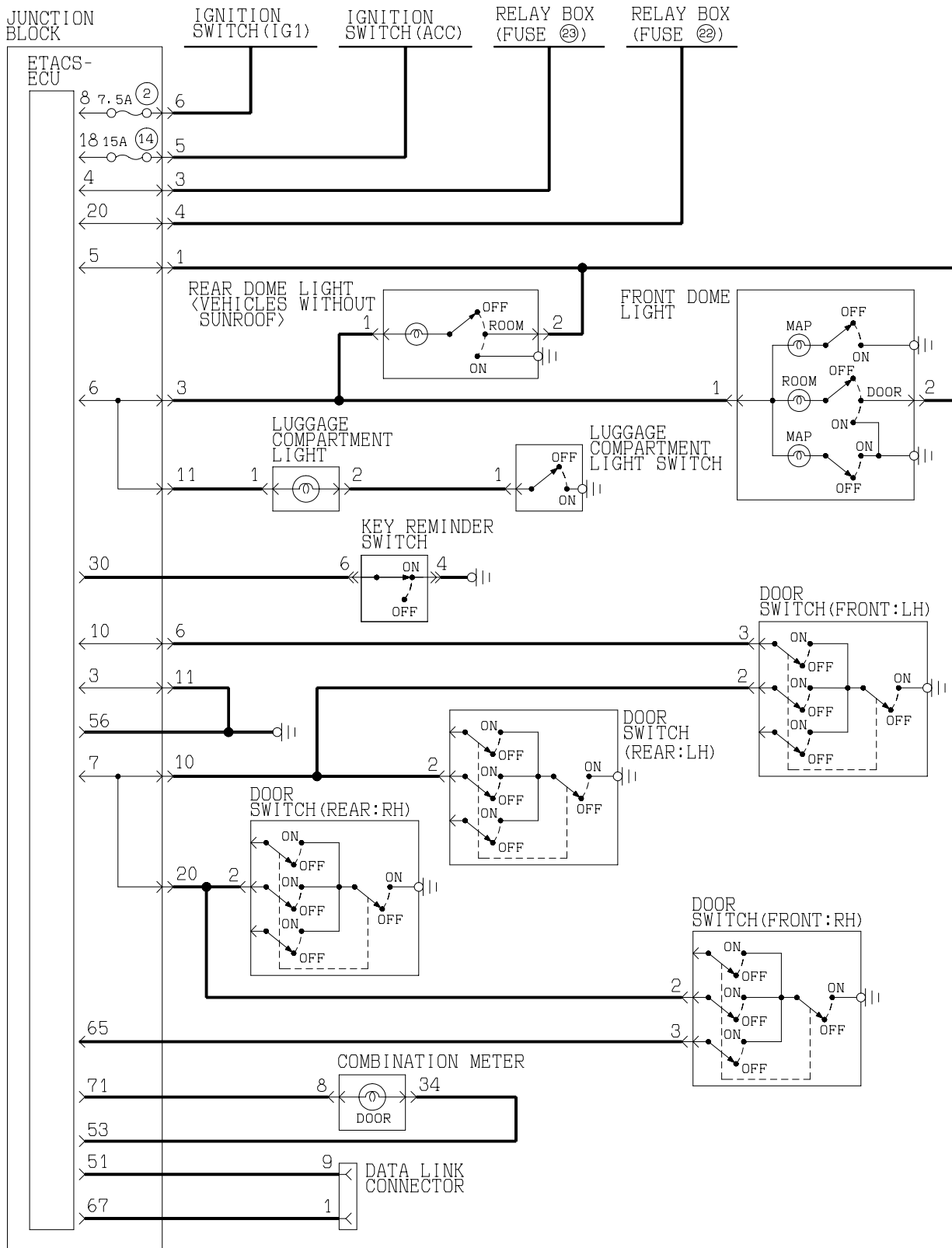
Interior light automatic-shutdown function



Illuminated interior lights such as the front dome light, etc. (all lights using the dome light fuse as the power supply) will automatically go off in the following conditions to prevent excess battery discharge as a result of forgetting to turn off the lights or incomplete closing of the door.

- When the ignition switch is turned off and more than 30 minutes pass by with the interior light illuminated, the interior lights will go off automatically.
- When the ignition switch is turned off and any door switch remains open for 30 minutes continuously, the interior lights will go off automatically.

General circuit diagram for the interior light

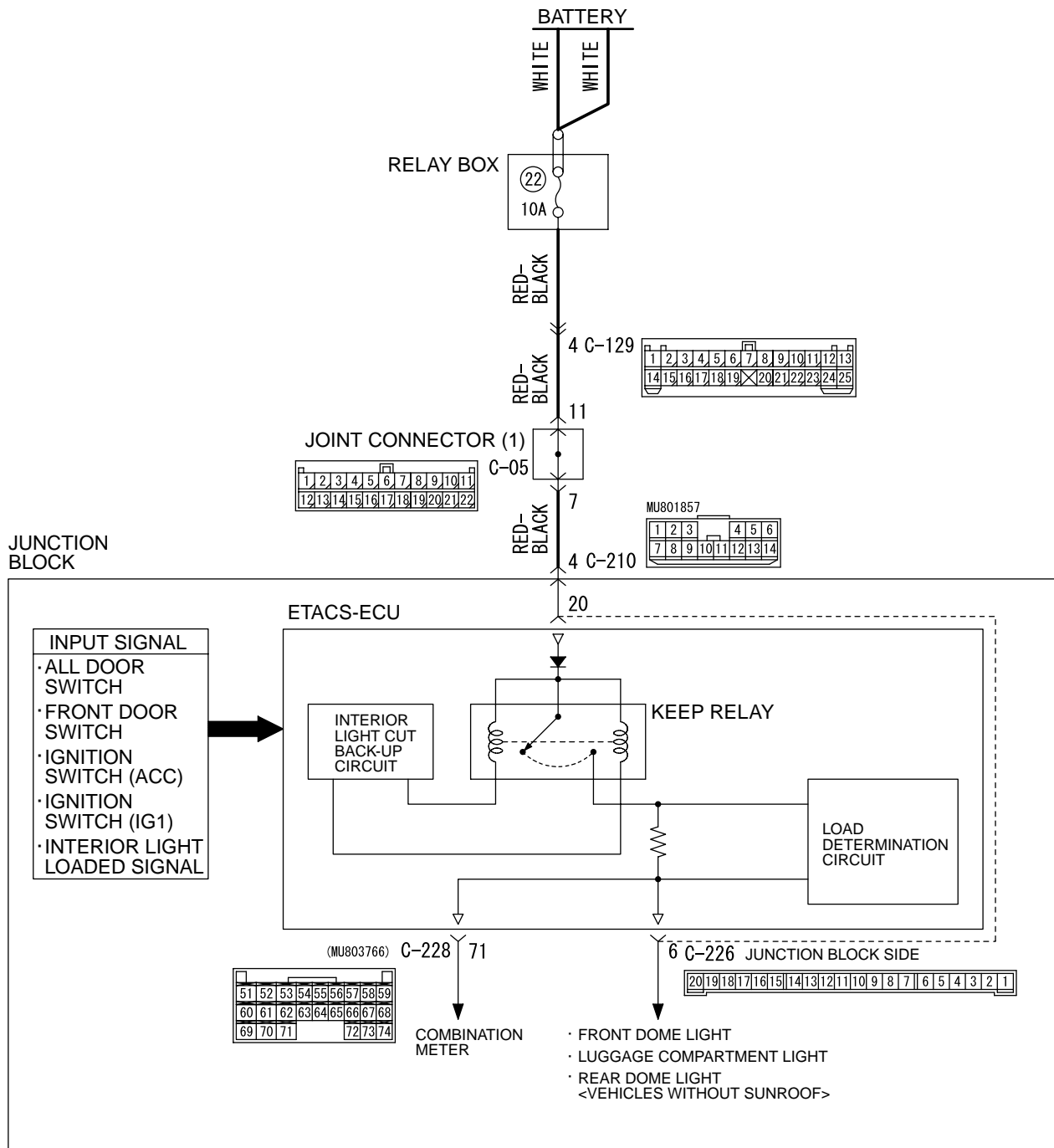


W3J01M03AA

INSPECTION PROCEDURE M-1: Interior Light: The front dome light, rear dome light <vehicles without sunroof> and luggage compartment light do not illuminate or go out normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Interior Light Automatic Shut-Down Function Circuit



W3J14M18AA

CIRCUIT OPERATION

The ETACS-ECU illuminates the front dome light, the rear dome light and the luggage compartment 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, the rear dome light and luggage compartment 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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

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. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

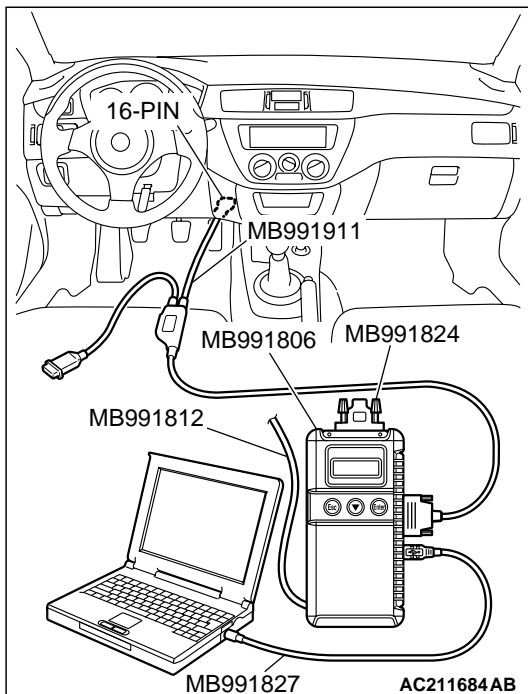
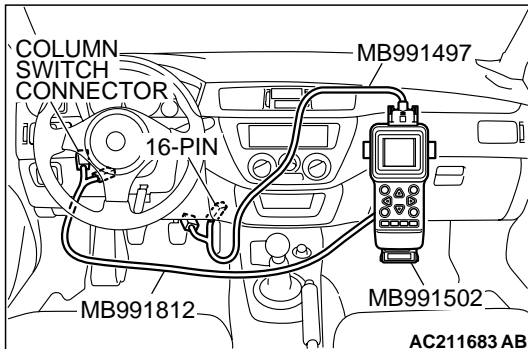
- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "SWS MONITOR."
- e. Select "ECU COMM Check."

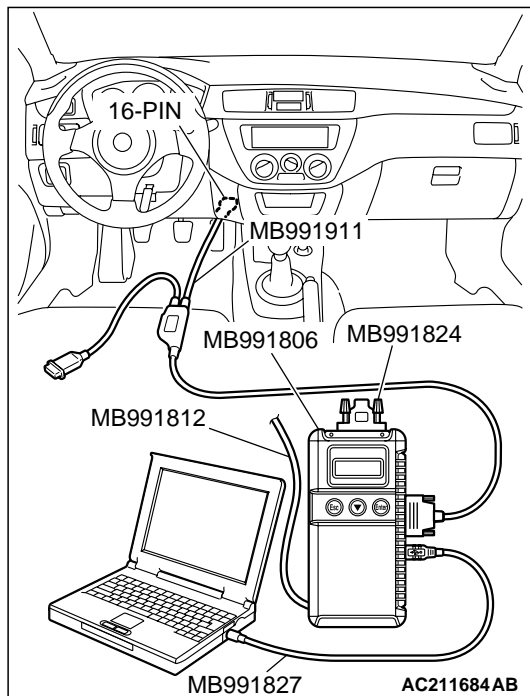
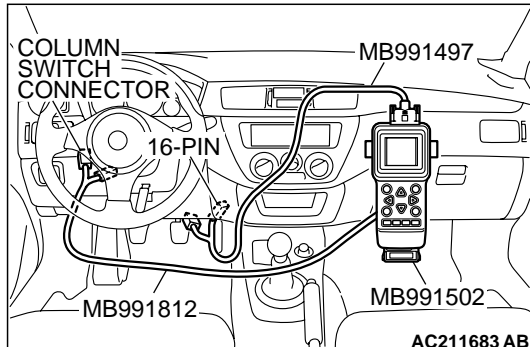
(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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.54B-42."





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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (2) Check that normal conditions are displayed on the items described in the table below.

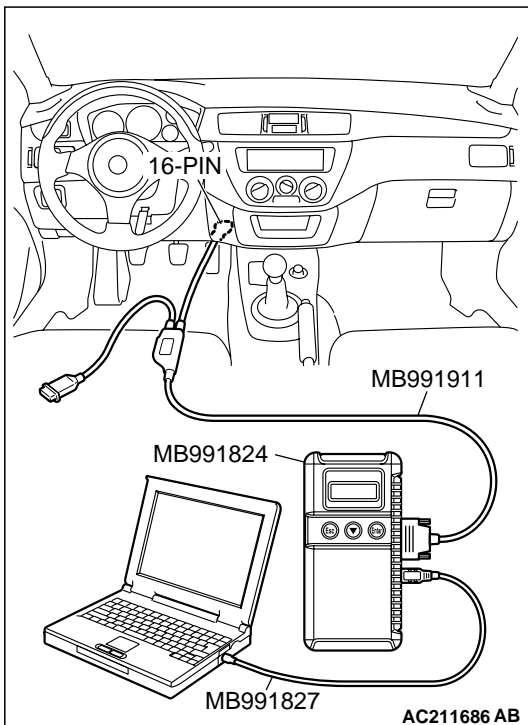
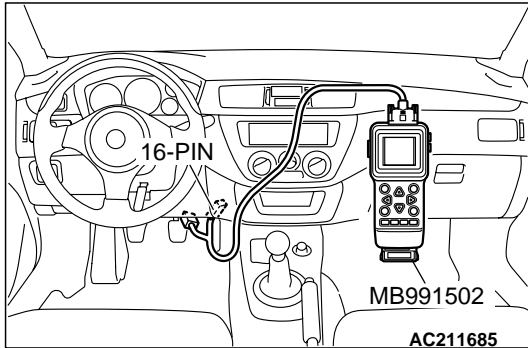
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 32	FRONT DOOR SW	ON

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

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

Normal condition is not displayed on the "IG SW (IG1)" : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed on the "FRONT DOOR SW" : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-454.](#)"



STEP 4. Check the input signal by using "Function Diag." menu of the SWS monitor.

Check the input signals from the following switches:

- Key reminder switch
- All door switches
- Interior light loaded signal

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (2) Check scan tool MB991502 or MB991958 sounds.

ITEM NAME	CONDITION
Key reminder switch	Remove and reinsert the ignition key
Each door switch	Open or close one of the doors
Interior light loaded signal	Illuminate one of the interior lights

Q: When the key reminder switch, each door switch and the interior light are operated, does scan tool MB991502 or MB991958 sound in each case?

Buzzer of scan tool MB991502 or MB991958 sounds normally : Replace the ETACS-ECU. Verify that the dome light illuminates normally.

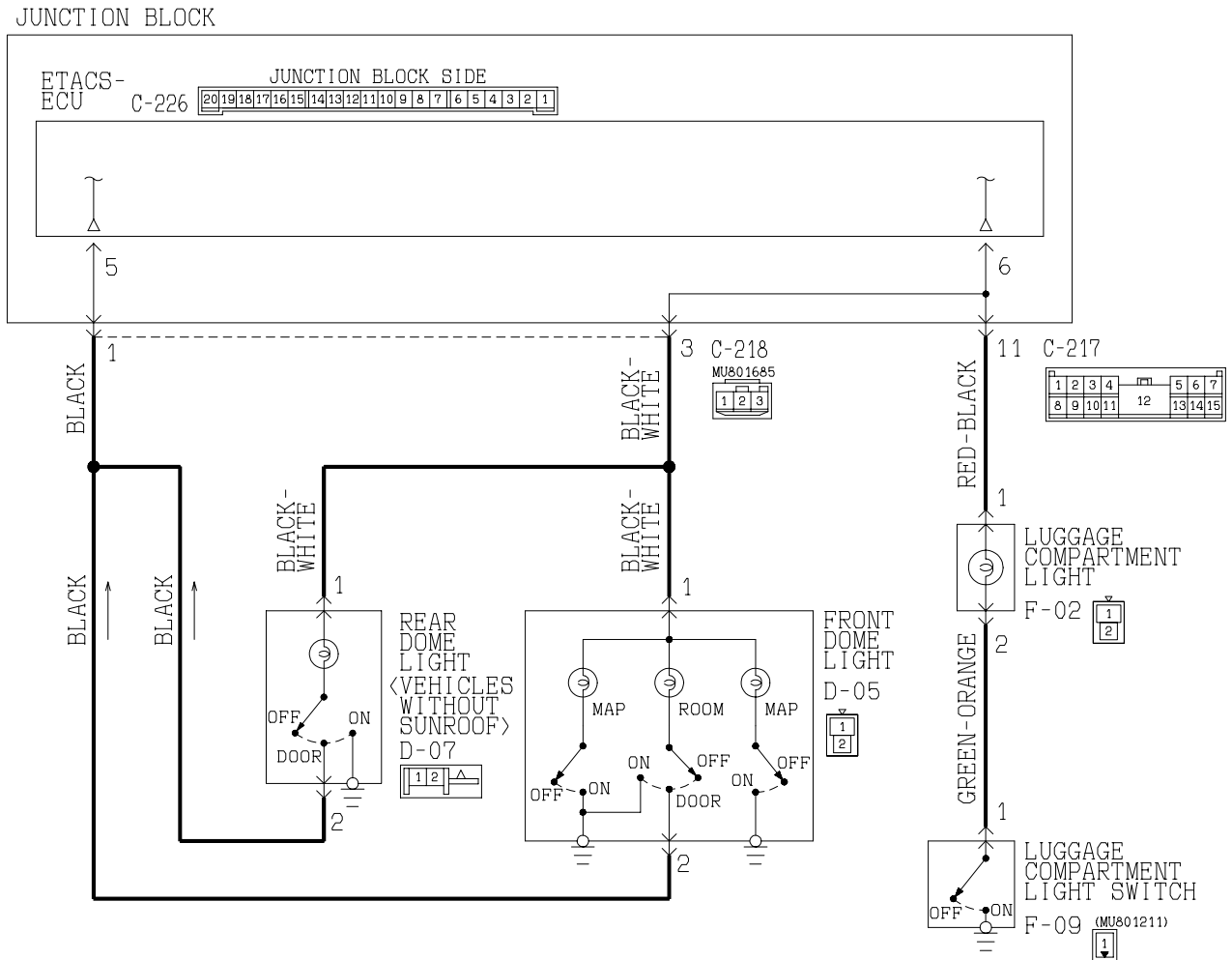
Scan tool MB991502 or MB991958 does not sound when the ignition key is removed and reinserted : Refer to Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch [P.54B-476.](#)"

When one of the doors is opened and closed, scan tool MB991502 or MB991958 does not sound : Refer to Inspection Procedure O-4 "ETACS-ECU does not receive a signal from all the door switches [P.54B-491.](#)"

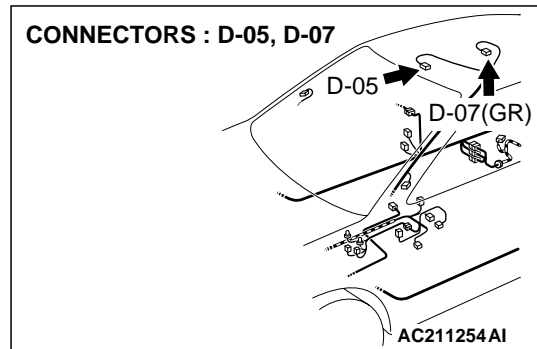
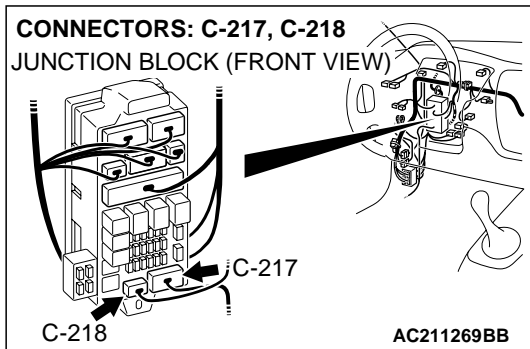
When one of the interior lights is illuminated, scan tool MB991502 or MB991958 does not sound : Refer to Inspection Procedure O-10 "ETACS-ECU does not receive any interior light loaded signal [P.54B-531.](#)"

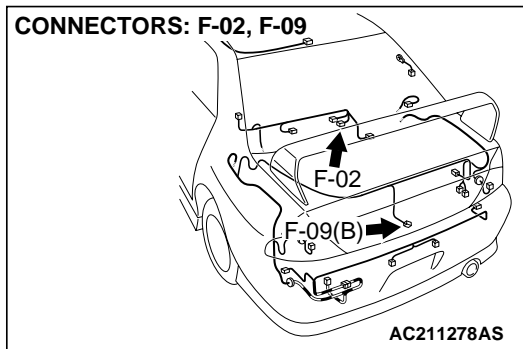
INSPECTION PROCEDURE M-2: Interior Light: The front dome light, rear dome light <vehicles without sunroof> or luggage compartment light does not illuminate or go out normally.

Interior Lights and Luggage Compartment Light Circuit



W3J01M23AA





CIRCUIT OPERATION

The ETACS-ECU operates the dome light according to the following signals:

- Ignition switch (IG1)
- Key reminder switch
- Front door switch
- All door switches
- Driver's door lock actuator switch

TECHNICAL DESCRIPTION (COMMENT)

If the dome light does not flash normally, a burned-out dome light bulb, the input circuits from the switches described in "CIRCUIT OPERATION", the power supply line to the switches or the ETACS-ECU may be defective. Alternatively, the delay-off function may be set to "0 second" by using the configuration function.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

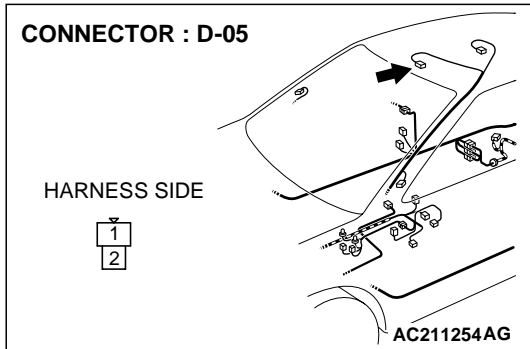
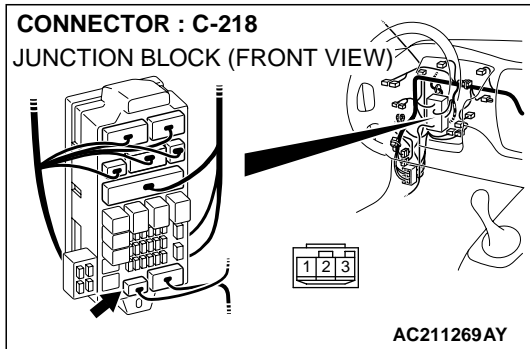
STEP 1. Verify which of the front dome light, the rear dome light <vehicles without sunroof> or the luggage compartment light does not illuminate normally.

Q: Which of the front dome light, the rear dome light <vehicles without sunroof> or the luggage compartment light fail to illuminate normally?

The front dome light : Go to Step 2.

The rear dome light <vehicles without sunroof> : Go to Step 7.

The luggage compartment light : Go to Step 12.



STEP 2. Check front dome light connectors D-05 and junction block connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are front dome light connector D-05 and junction block connector C-218 in good condition?

YES : Go to Step 3.

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

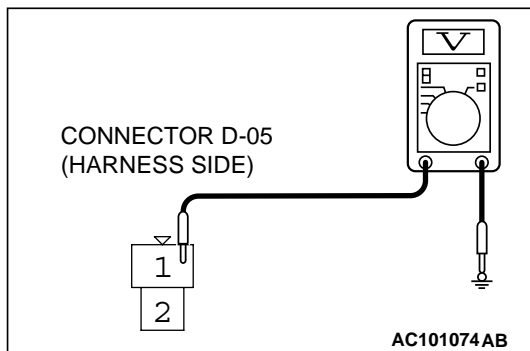
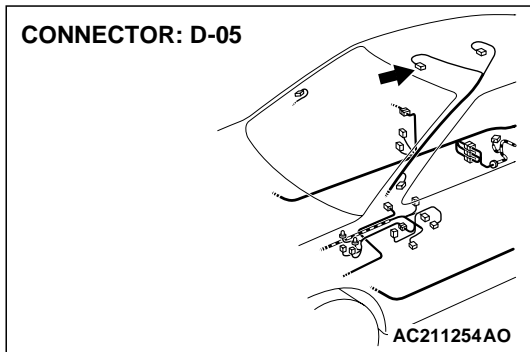
P.00E-2. Verify that the front dome light illuminates normally.

STEP 3. Verify the front dome light bulb.

Q: Is the front dome light bulb in good condition?

YES : Go to Step 4.

NO : Replace the front dome light bulb. Verify that the front dome light illuminates normally.



STEP 4. Check the battery power supply circuit to the front dome light. Measure the voltage at front dome light connector D-05.

(1) Disconnect front dome light connector D-05 and measure the voltage available at the harness side of the connector.

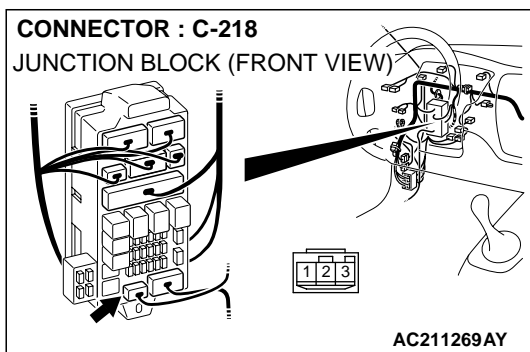
(2) Measure the voltage between terminal 1 and ground.

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

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

YES : Go to Step 6.

NO : Go to Step 5.

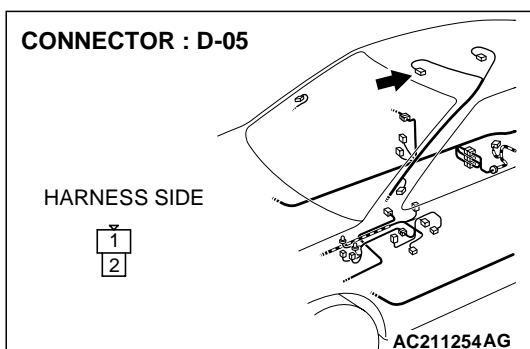


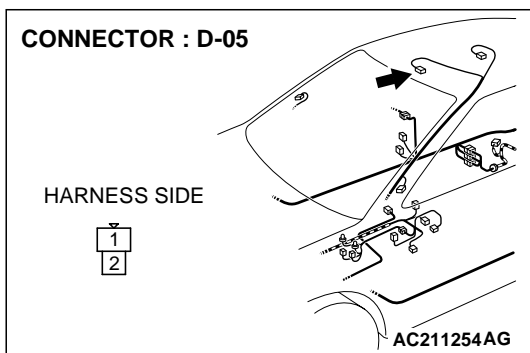
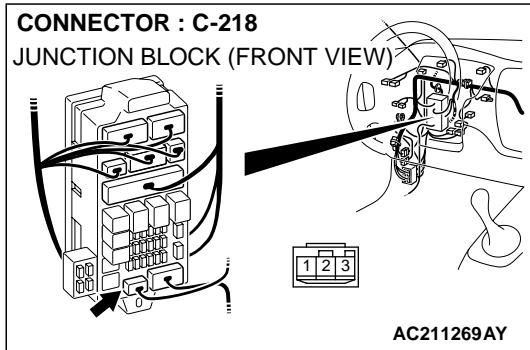
STEP 5. Check the wiring harness between front dome light connector D-05 (terminal 1) and junction block connector C-218 (terminal 3).

Q: Is the wiring harness between front dome light connector D-05 (terminal 1) and junction block connector C-218 (terminal 3) in good condition?

YES : Replace the front doom light. Verify that the front dome 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 front dome light illuminates normally.



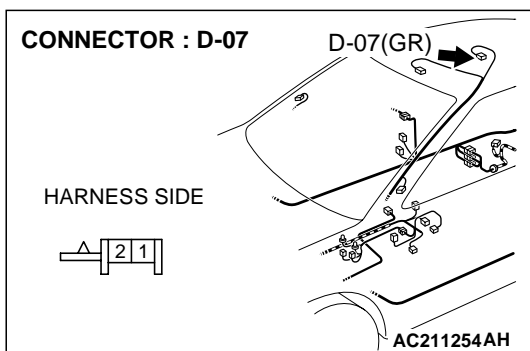
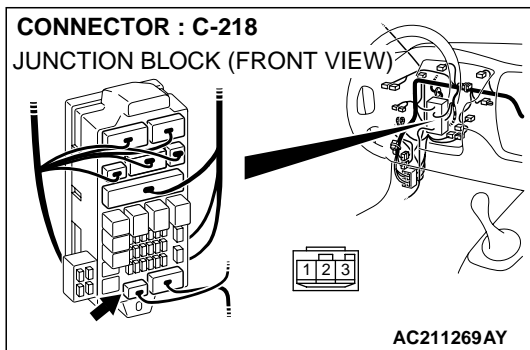


STEP 6. Check the wiring harness between front dome light connector D-05 (terminal 2) and junction block connector C-218 (terminal 1).

Q: Is the wiring harness between front dome light connector D-05 (terminal 2) and junction block connector C-218 (terminal 1) in good condition?

YES : Replace the front doom light. Verify that the front dome 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 front dome light illuminates normally.



STEP 7. Check rear dome light connectors D-07 and junction block connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear dome light connector D-07 and junction block connector C-218 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 dome light illuminates normally.

STEP 8. Verify the rear dome light bulb.

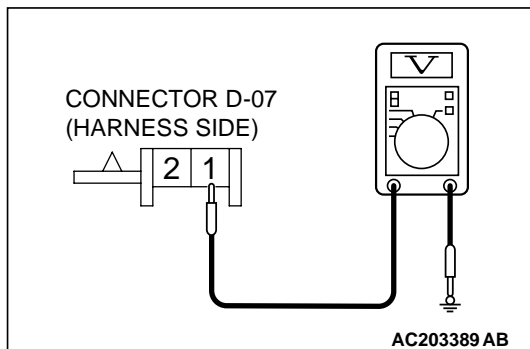
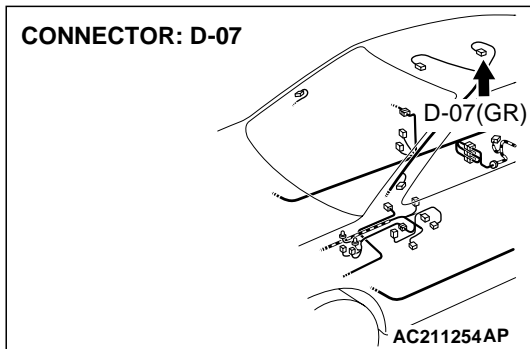
Q: Is the rear dome light bulb in good condition?

YES : Go to Step 9.

NO : Replace the bulb. Verify that the rear dome lights illuminate normally.

STEP 9. Check the battery power supply circuit to the rear dome light. Measure the voltage at rear dome light connector D-07.

(1) Disconnect rear dome light connector D-07 and measure the voltage available at the harness side of the connector.



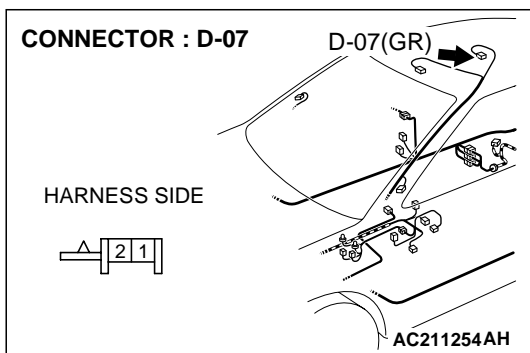
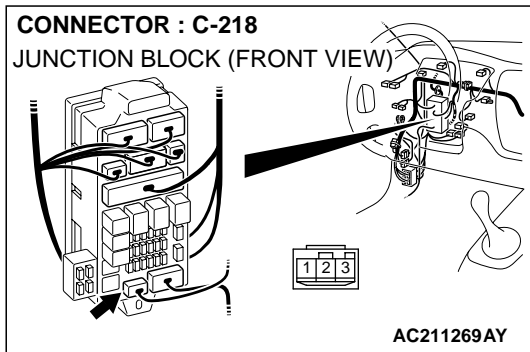
(2) Measure the voltage between terminal 1 and ground.

- The voltage should equal 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 10.

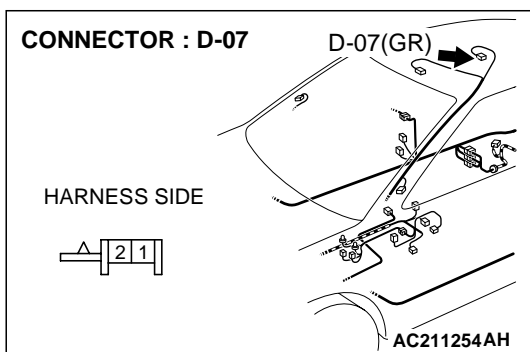
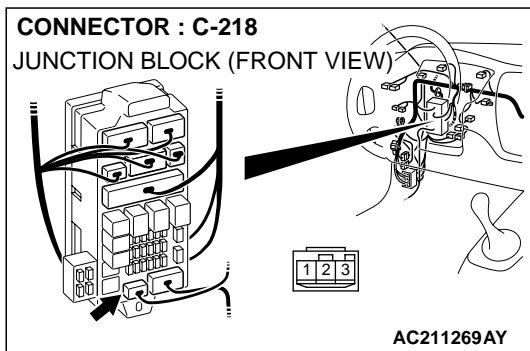


STEP 10. Check the wiring harness between rear dome light connector D-07 (terminal 1) and junction block connector C-218 (terminal 3).

Q: Is the wiring harness between rear dome light connector D-07 (terminal 1) and junction block connector C-218 (terminal 3) in good condition?

YES : Replace the rear dome light. Verify that the front dome 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 rear dome lights illuminate normally.

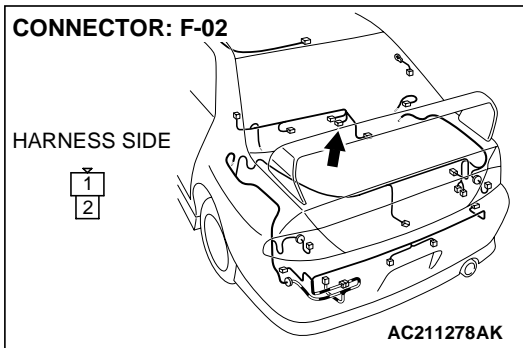


STEP 11. Check the wiring harness between rear dome light connector D-07 (terminal 2) and junction block connector C-218 (terminal 1).

Q: Is the wiring harness between rear dome light connector D-07 (terminal 2) and junction block connector C-218 (terminal 1) in good condition?

YES : Replace the rear dome light. Verify that the front dome 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 rear dome lights illuminate normally.



STEP 12. Check luggage compartment light connector F-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is luggage compartment light connector F-02 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 luggage compartment lights illuminate normally.

STEP 13. Verify the luggage compartment light bulb.

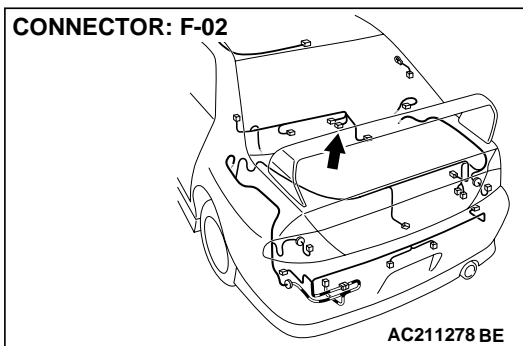
Q: Is the luggage compartment bulb in good condition?

YES : Go to Step 14.

NO : Replace the luggage compartment light bulb. Verify that the luggage compartment lights illuminate normally.

STEP 14. Check the battery power supply circuit to the luggage compartment light. Measure the voltage at luggage compartment light F-02.

(1) Disconnect luggage compartment light F-02 and measure the voltage available at the harness side of the connector.



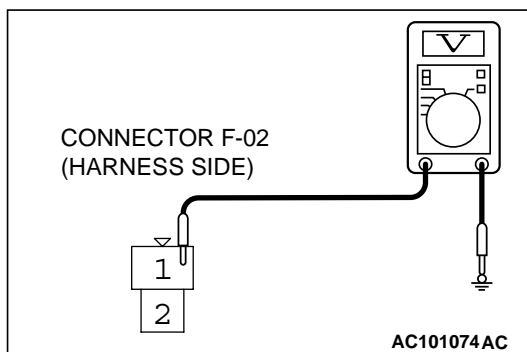
(2) Measure the voltage between terminal 1 and ground.

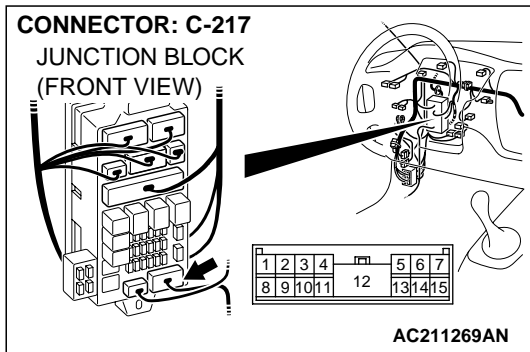
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 17.

NO : Go to Step 15.



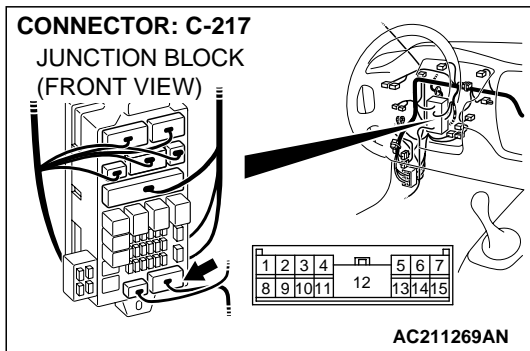


STEP 15. Check junction block connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is junction block connector C-217 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 luggage compartment lights illuminate normally.

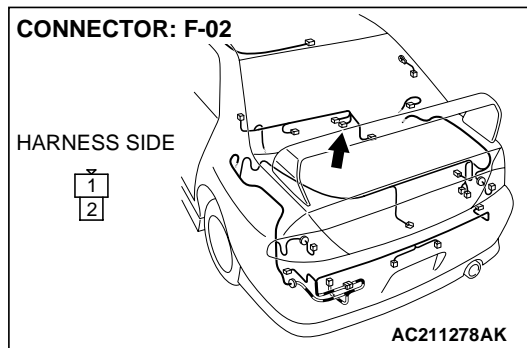


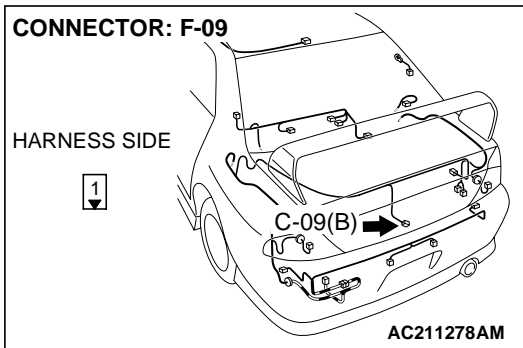
STEP 16. Check the wiring harness between luggage compartment light connector F-02 (terminal 1) and junction block connector C-217 (terminal 11).

Q: Is the wiring harness between luggage compartment light connector F-02 (terminal 1) and junction block connector C-217 (terminal 11) in good condition?

YES : Replace the luggage compartment light. Verify that the front dome 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 luggage compartment lights illuminate normally.



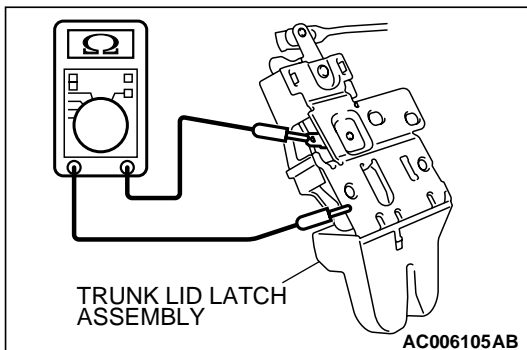


STEP 17. Check luggage compartment light switch connector F-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is luggage compartment light switch connector F-09 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 luggage compartment lights illuminate normally.



STEP 18. Check the luggage compartment light switch.

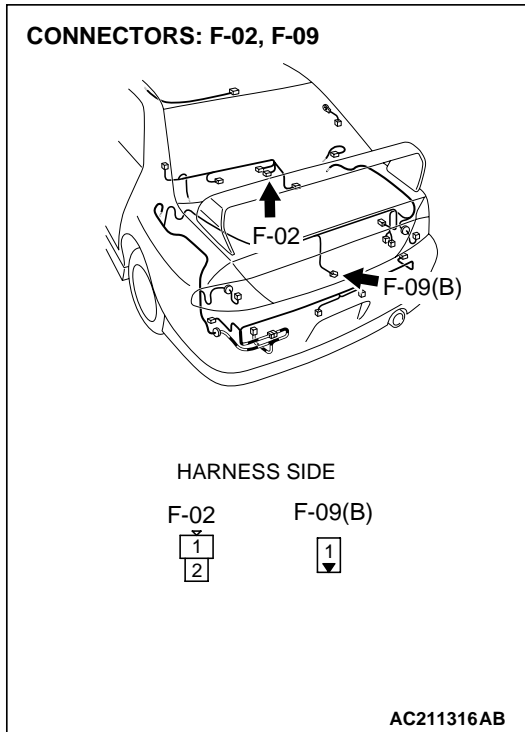
Disconnect luggage compartment light switch connector F-09. Then check the continuity between the switch and switch body.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
ON (Latch open)	1 – switch body	Less than 2 ohms
OFF (Latch shut)	1 – switch body	Open circuit

Q: Is the luggage compartment light switch in good condition?

YES : Go to Step 19.

NO : Replace the luggage compartment light switch. Verify that the luggage compartment lights illuminate normally.



STEP 19. Check the wiring harness between luggage compartment light connector F-02 (terminal 2) and luggage compartment light switch connector F-09 (terminal 1).

Q: Is the wiring harness between luggage compartment light connector F-02 (terminal 2) and luggage compartment light switch connector F-09 (terminal 1) in good condition?

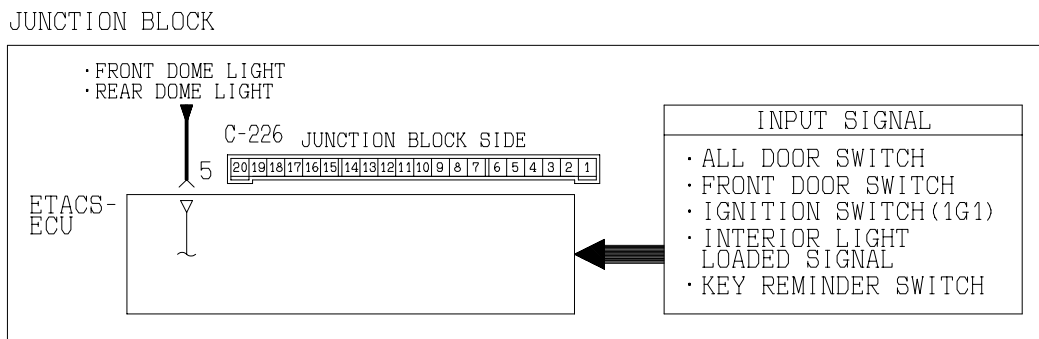
YES : Replace the luggage compartment light. Verify that the front dome light illuminates normally.

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 luggage compartment lights illuminate normally.

INSPECTION PROCEDURE M-3: Interior Light: Front dome light and rear dome light <vehicles without sunroof> dimming function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Interior Light Automatic Shutt-down Function Circuit



W3J01M24AA

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

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Verify the front dome light and the rear dome light.

If the front dome light switch and the rear dome light switch <vehicles without sunroof> are moved to the "door interlock position", the front dome light and the rear dome light <vehicles without sunroof> should illuminate when either door is opened.

Q: Do the front dome light and the rear dome light <vehicles without sunroof> illuminate normally?

Both the front dome light and the rear dome light <vehicles without sunroof> illuminate normally. : Go to Step 2.

Neither the front dome light nor the rear dome light <vehicles without sunroof> illuminates normally. : Refer to Inspection Procedure M-1 "Front dome light, rear dome light and luggage compartment light do not illuminate or go out normally P.54B-395."

Either the front dome light or the rear dome light <vehicles without sunroof> illuminates normally. : Refer to Inspection Procedure M-2 "Front dome light, rear dome light or luggage compartment light do not illuminates or goes out normally P.54B-395."

STEP 2. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the ETACS-ECU.

⚠ CAUTION

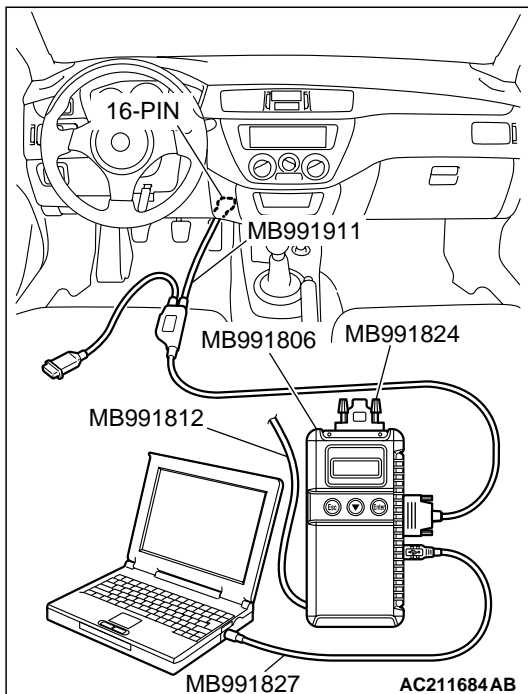
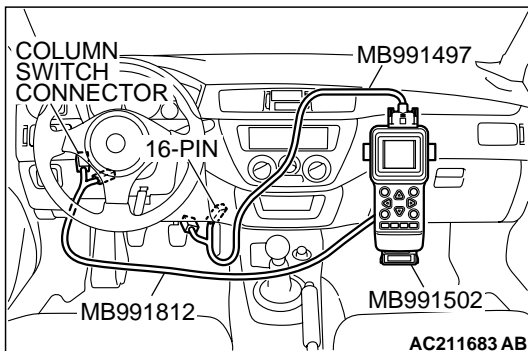
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

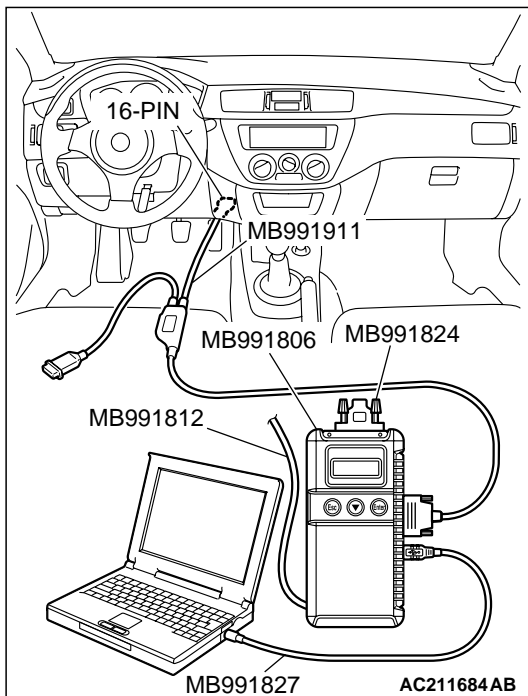
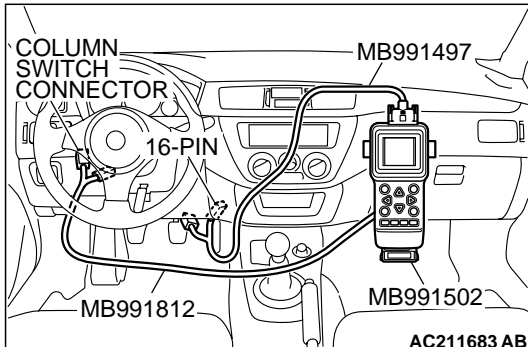
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-42."





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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "System select."
 - b. Select "SWS."
 - c. Select "SWS MONITOR."
 - d. Select "Data List."
 - e. Select "ETACS ECU."
- (2) Check that normal conditions are displayed on the items described in the table below.

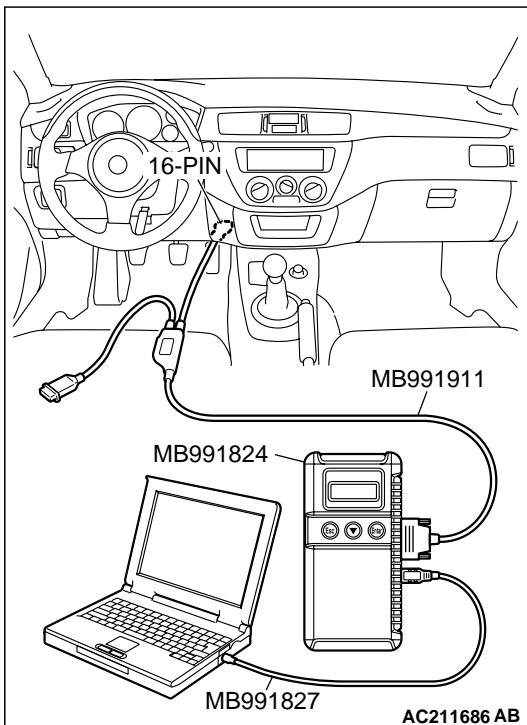
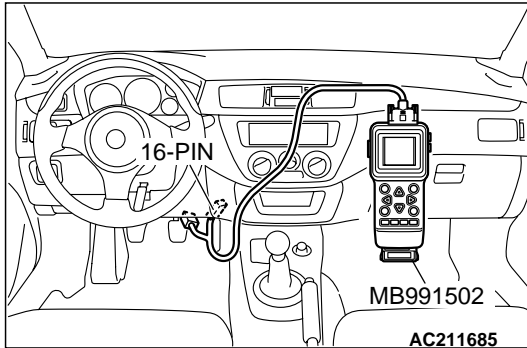
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 32	FRONT DOOR SW	ON

Q: Does the scan tool MB991502 or MB991958 display the items "IG SW (IG1)" and "FRONT DOOR SW" as normal condition?

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

Normal condition is not displayed on the "IG SW (IG1)" :
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed on the "IG SW (IG1)" :
Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-454.](#)"



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
- Interior light loaded signal

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (2) Check if scan tool MB991502 or MB991958 sounds.

ITEM NAME	CONDITION
Key reminder switch	Remove the ignition key
Each door switch	Open one of the doors
Interior light loaded signal	When interior light automatic shut-down function is operated

Q: When the key reminder switch, each door switch and the interior light are operated, does scan tool MB991502 or MB991958 sound in each case?

Buzzer of scan tool MB991958 sounds normally :

Replace the ETACS-ECU. Verify that the dome light illuminates normally.

Scan tool MB991502 or MB991958 does not sound when the ignition key is removed and reinserted : Refer to

Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch [P.54B-476.](#)"

When one of the doors is opened and closed, scan tool MB991502 or MB991958 does not sound : Refer to

Inspection Procedure O-4 "ETACS-ECU does not receive a signal from all the door switches [P.54B-491.](#)"

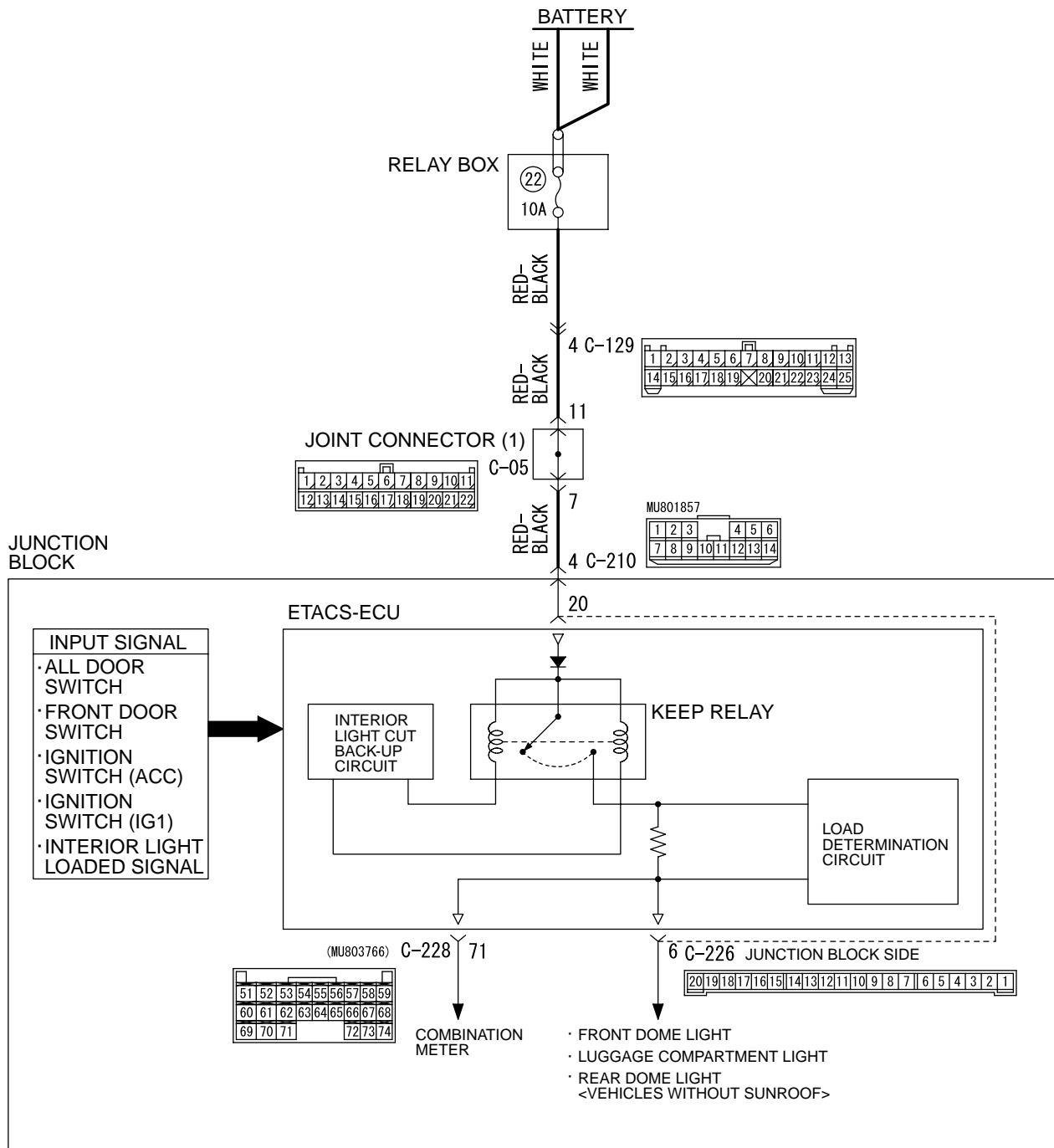
When one of the interior lights is illuminated, scan tool MB991502 or MB991958 does not sound : Refer to

Inspection Procedure O-10 "ETACS-ECU does not receive a interior light loaded signal [P.54B-531.](#)"

INSPECTION PROCEDURE M-4: Interior Light: The interior light automatic shut-down function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Interior Light Automatic Shut-Down Function Circuit



W3J14M18AA

CIRCUIT OPERATION

The ETACS-ECU operates the interior light automatic shutdown function according to the following switch signals:

- Ignition switch (ACC)
- Ignition switch (IG1)
- Front door switch (LH)
- All door switches
- Interior light loaded signal

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Verify the front dome light and the rear dome light <vehicles with sunroof>.

If the front dome light switch and the rear dome light switch <vehicles without sunroof> are moved to the "door interlock position", the front dome light and the rear dome light <vehicles without sunroof> should illuminate when either door is opened.

Q: Do the front dome light and the rear dome light <vehicles with sunroof> illuminate normally?

YES : Go to Step 2.

Neither the front dome light nor the rear dome light

<vehicles without sunroof> illuminates normally : Refer to Inspection Procedure M-1 "The front dome light, rear dome light <vehicles without sunroof> and luggage compartment light do not illuminate or go out normally [P.54B-395](#)."

Either the front dome light or the rear dome light

<vehicles without sunroof> illuminates normally : Refer to Inspection Procedure M-2 "The front dome light, rear dome light <vehicles without sunroof> or luggage compartment light does not illuminate or go out normally [P.54B-395](#)."

STEP 2. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the ETACS-ECU.

⚠ CAUTION

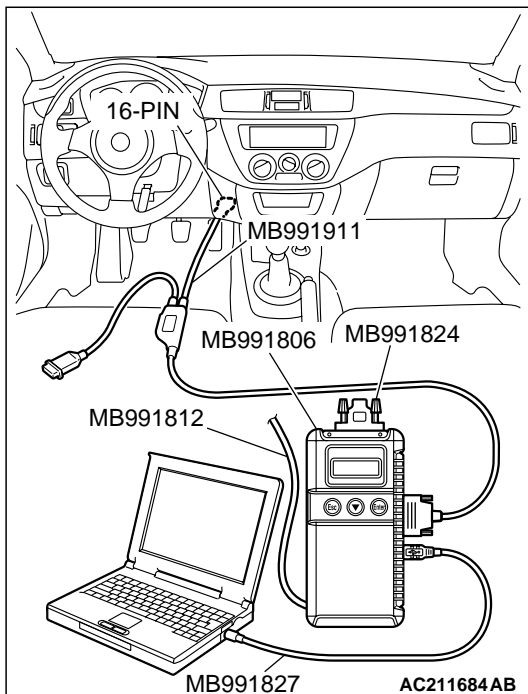
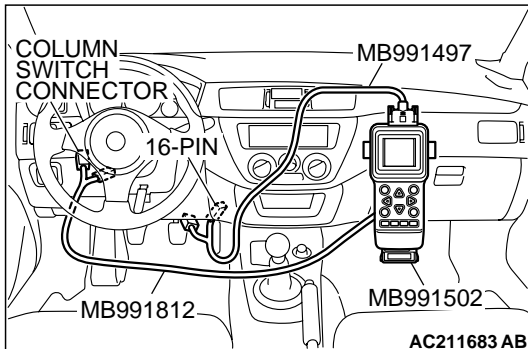
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

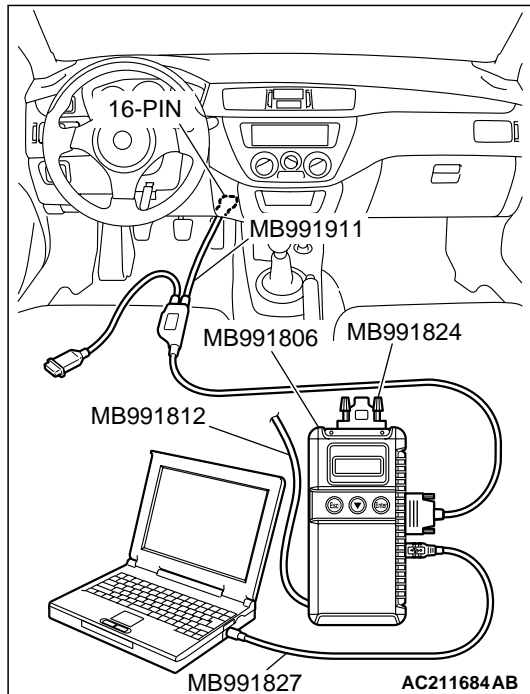
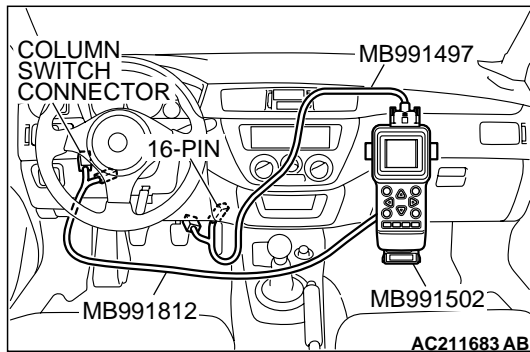
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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.54B-42."





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: OFF
- Driver's and front passenger's door: open

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (2) Check that normal conditions are displayed on the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	OFF
ITEM 31	IG SW (ACC)	OFF
ITEM 32	FRONT DOOR SW	ON

Q: Does the scan tool MB991502 or MB991958 display the items "IG SW (IG1)", "IG SW (ACC)" and "FRONT DOOR SW" as normal condition?

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

Normal condition is not displayed for "IG SW (IG1)" :

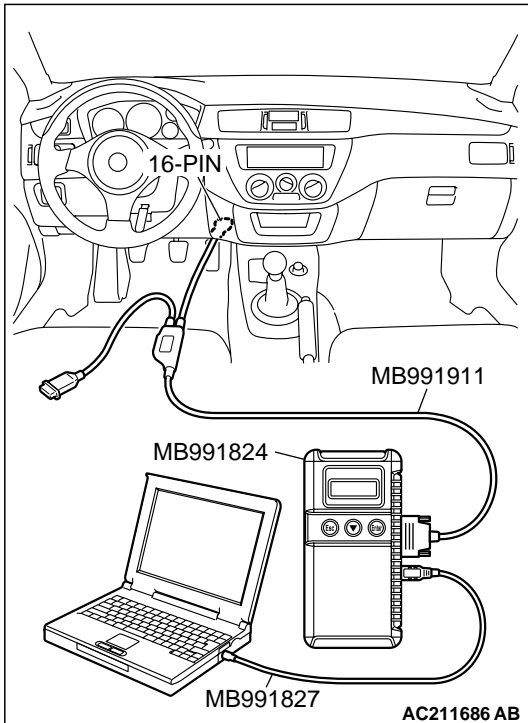
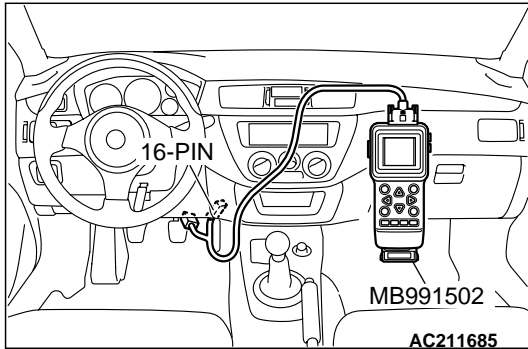
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed for "IG SW (ACC)" :

Refer to Inspection Procedure N-1 "ETACS-ECU does not receive a signal from the ignition switch (ACC) [P.54B-436.](#)"

Normal condition is not displayed for "FRONT DOOR SW" :

Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-454.](#)"



STEP 4. Check the input signal (by using the pulse check mode of the monitor).

Check the following switches and input signals:

- Interior light loaded signal
- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
 - (2) Check if scan tool MB991502 or MB991958 sounds.

ITEM NAME	CONDITION
Interior light loaded signal	When interior light automatic shut-down function is operated

Q: Does scan tool MB991502 or MB991958 sound when the interior light loaded signal is operated?

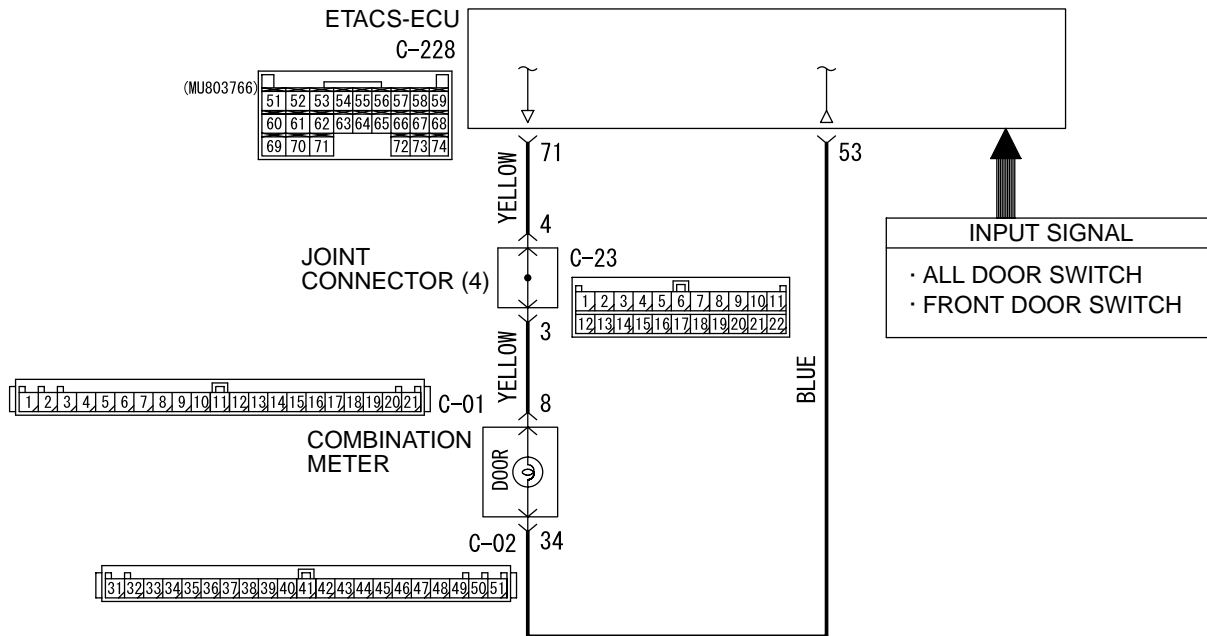
YES : Replace the ETACS-ECU. Verify that the dome light illuminates normally.

NO : Refer to Inspection Procedure O-10 "ETACS-ECU does not receive a interior light loaded signal [P.54B-531.](#)"

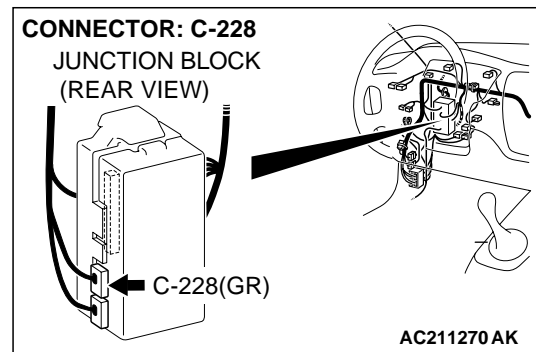
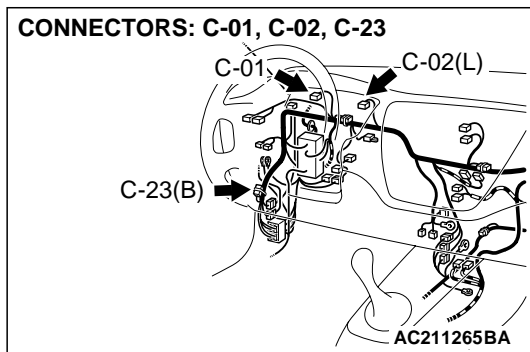
INSPECTION PROCEDURE M-5: Interior Light: The door ajar indicator lights do not illuminate or go out normally

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Door Ajar Indicator Light Circuit



W3J14M19AA



CIRCUIT OPERATION

The ETACS-ECU operates the door ajar indicator light according to the following switch signals:

- Front door switch
- All door switches

TROUBLESHOOTING HINTS

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

TECHNICAL DESCRIPTION (COMMENT)

If the door ajar indicator light does not illuminate normally, the input circuit system from the switches or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Verify the dome light and the rear dome light <vehicles without sunroof>.

If the dome light switch and the rear dome light switch <vehicles without sunroof> are moved to the "door interlock position", the dome light and the rear dome light <vehicles without sunroof> should illuminate when either door is opened.

Q: Do the dome light and the rear dome light illuminate normally?

Both the dome light and the rear dome light illuminate normally. : Go to Step 2.

Neither the dome light nor the rear dome light illuminates normally. : Refer to Inspection Procedure M-1 "The front dome light, rear dome light <vehicles without sunroof> and luggage compartment light do not illuminate or go out normally [P.54B-395](#)."

Either the dome light or the rear dome light illuminates normally. : Refer to Inspection Procedure M-2 "The front dome light, rear dome light <vehicles without sunroof> or luggage compartment light does not illuminate or go out normally [P.54B-395](#)."

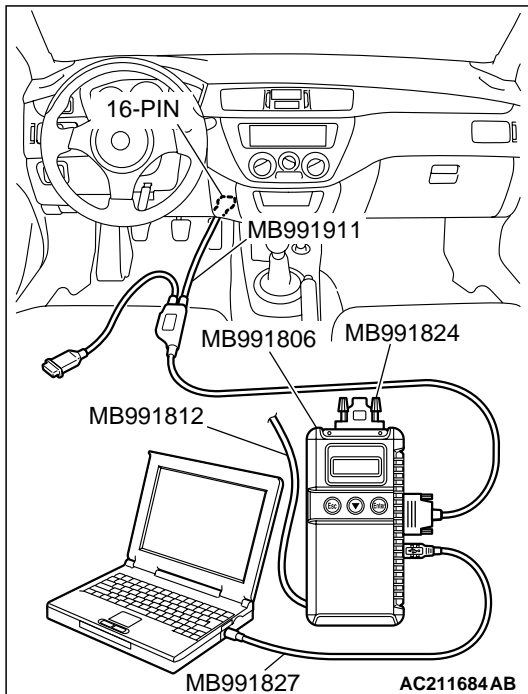
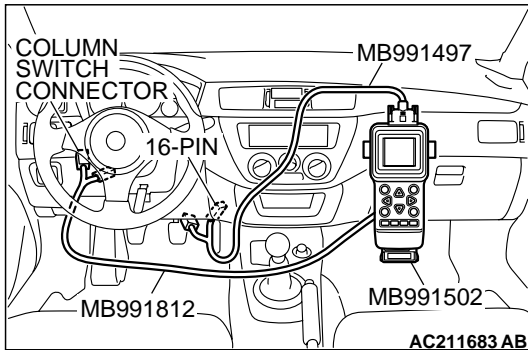
STEP 2. Check the input signal by using "Data List" menu of the SWS monitor.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

Open the driver's door before checking the input signals from the front door switch (LH).

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ETACS ECU"
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (3) Check that normal conditions are displayed on the items described in the table below.

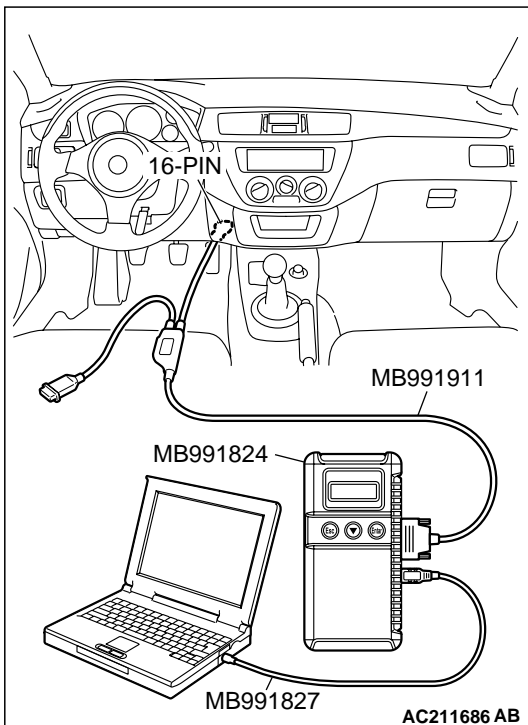
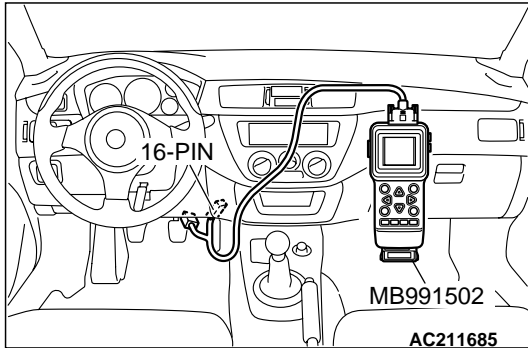


ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 32	FRONT DOOR SW	ON

Q: Is normal condition displayed on the "FRONT DOOR SW"?

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch P.54B-454."



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

Check the input signals from all the door switches:

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (2) Check scan tool MB991502 or MB991958 sounds when a door (except front doors) is opened and closed.

Q: Does scan tool MB991502 or MB991958 sound when a door (except front doors) is opened and closed?

YES : Go to Step 4.

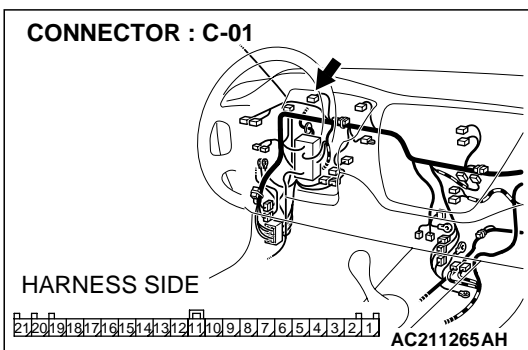
NO : Refer to Inspection Procedure O-4 "ETACS-ECU does not receive a signal from all the door switches [P.54B-491.](#)"

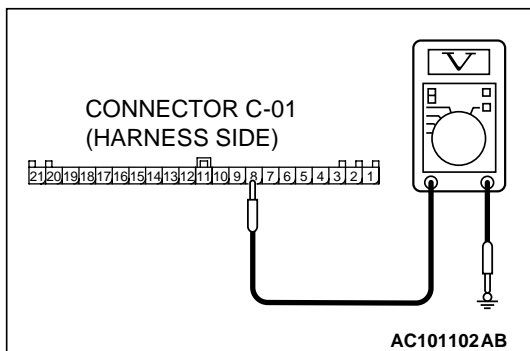
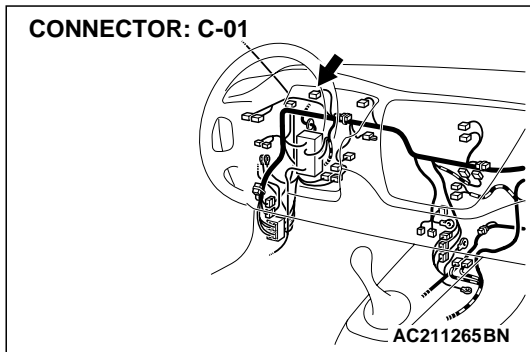
STEP 4. Check combination meter connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are combination meter connector C-01 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 door ajar indicator light illuminates normally.





STEP 5. Check the battery power supply circuit to the combination meter. Measure the voltage at combination meter connector C-01.

(1) Disconnect combination meter connector C-01 and measure the voltage available at the harness side of the connector.

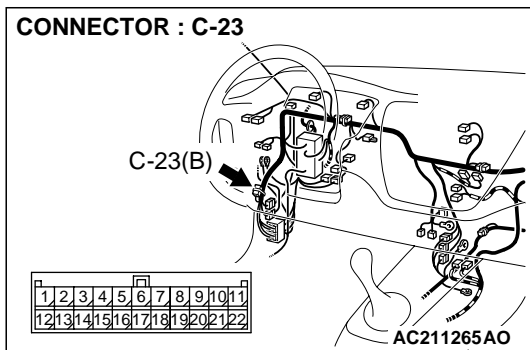
(2) Measure the voltage between terminal 8 and ground.

- The voltage should equal approximately 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.

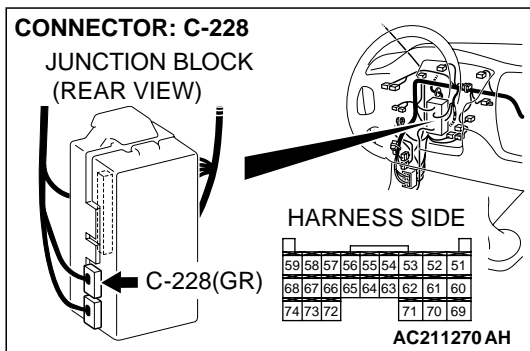
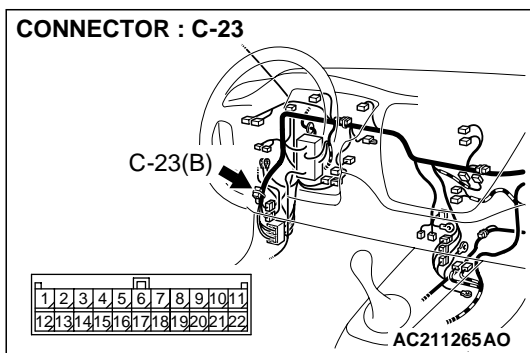
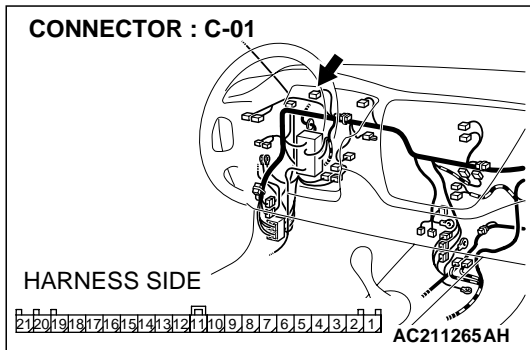


STEP 6. Check joint connector C-23 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-23 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 door ajar indicator light illuminates normally.



STEP 7. Check the wiring harness between combination meter connector C-01 (terminal 8) and joint connector C-23 (terminal 3).

Q: Is the wiring harness between combination meter connector C-01 (terminal 8) and joint connector C-23 (terminal 3) in good condition?

YES : Replace the combination meter. Verify that the door ajar indicator light illuminates normally.

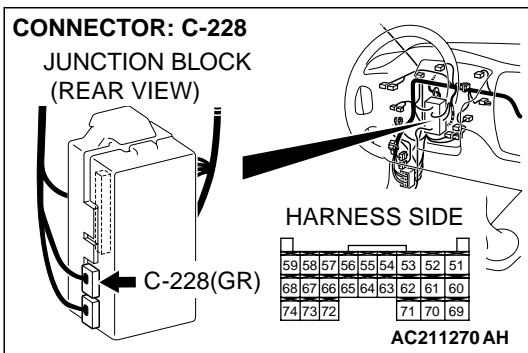
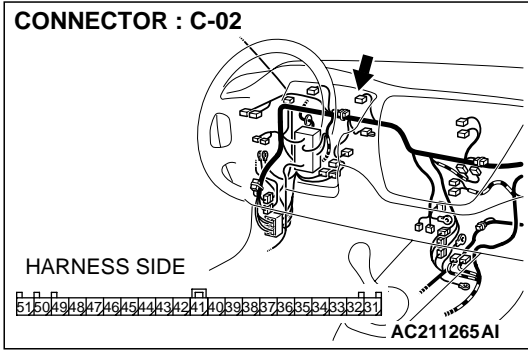
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the door ajar indicator light illuminates normally.

STEP 8. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-228 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 door ajar indicator light illuminates normally.



STEP 9. Check the wiring harness between combination meter connector C-02 (terminal 34) and ETACS-ECU connector C-228 (terminal 53).

Q: Is the wiring harness between combination meter connector C-02 (terminal 34) and ETACS-ECU connector C-228 (terminal 53) in good condition?

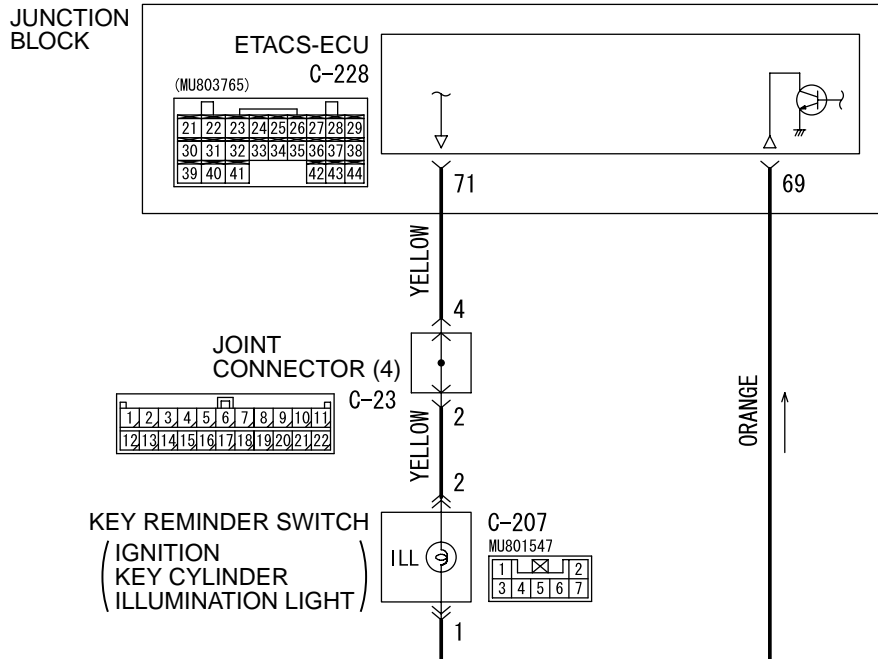
YES : Replace the ETACS-ECU. Verify that the door ajar indicator light illuminates normally.

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 door ajar indicator light illuminates normally.

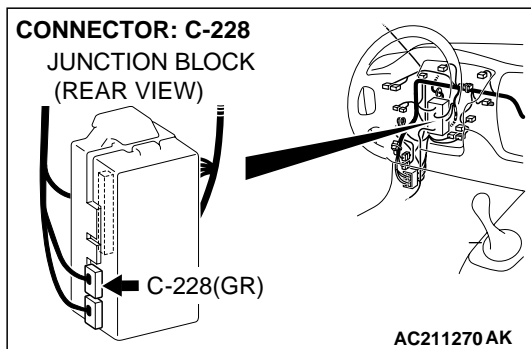
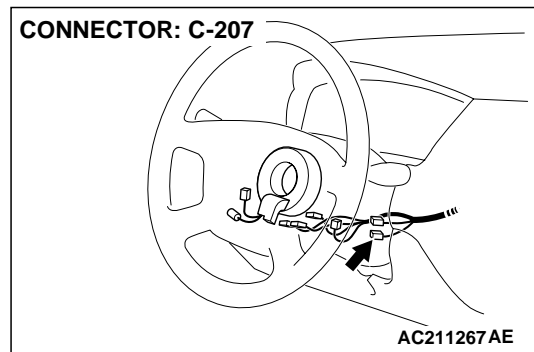
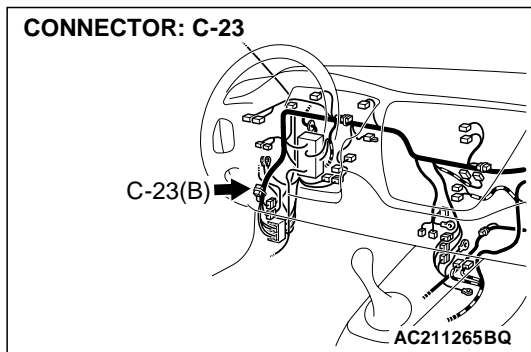
INSPECTION PROCEDURE M-6: Interior Light: The ignition key cylinder illumination light does not illuminate or go out normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Ignition Key Cylinder Illumination Light Circuit



W3J17M00AA



CIRCUIT OPERATION

- When the driver's door is opened with the ignition switch at "ACC" position, the ETACS-ECU illuminates the ignition key cylinder illumination light.
- The ignition key cylinder illumination light goes out in 30 seconds after the driver's door is closed. The ignition key cylinder illumination light remains illuminated for 30 seconds after the ignition key is pulled out.
- The ETACS-ECU operates the ignition key cylinder illumination light according to the input signals from the following switches:
 - Ignition switch (IG1): OFF
 - Key reminder switch: OFF
 - Interior light loaded signal: ON
- Vehicle condition:
 - Ignition switch: "LOCK" (OFF) or "ACC" position

- Ignition key: Removed from the ignition key cylinder
- Driver's door: Opened, or close

TECHNICAL DESCRIPTION (COMMENT)

Is the ignition key cylinder illumination light does not illuminate, the input circuits from the switches described in "CIRCUIT OPERATION", the key reminder switch (ignition key cylinder illumination light bulb) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

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

Check the ETACS-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

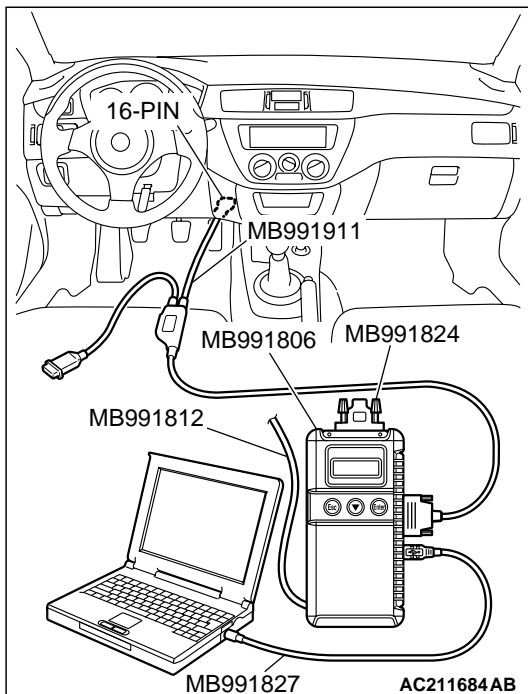
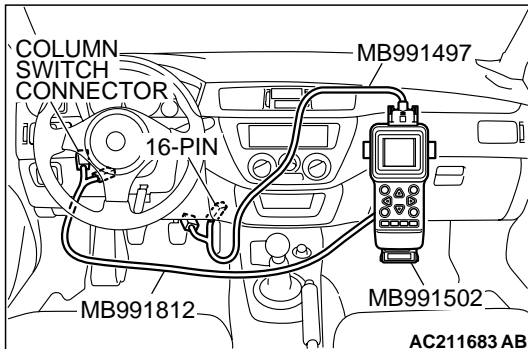
- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "SWS MONITOR."
- e. Select "ECU COMM Check."

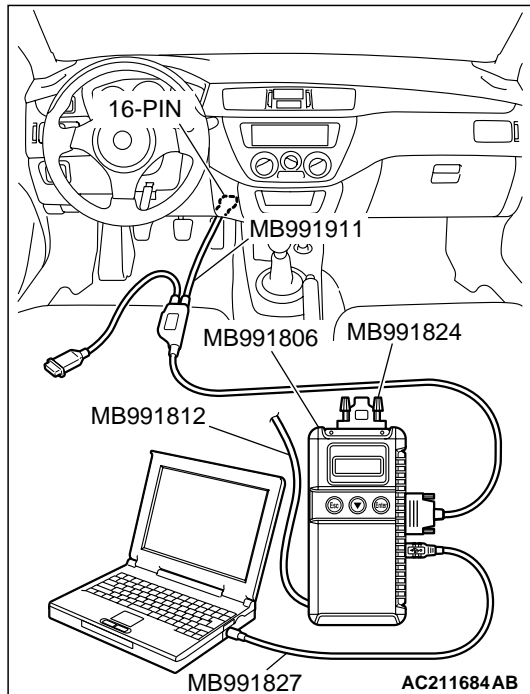
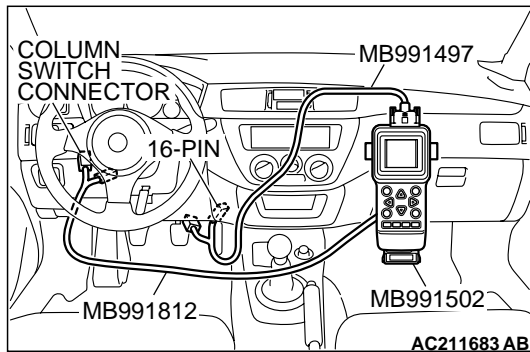
(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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.54B-42."





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

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ETACS ECU."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "Data List."
 - f. Select "ETACS ECU."
- (2) Check that normal conditions are displayed on the items described in the table below.

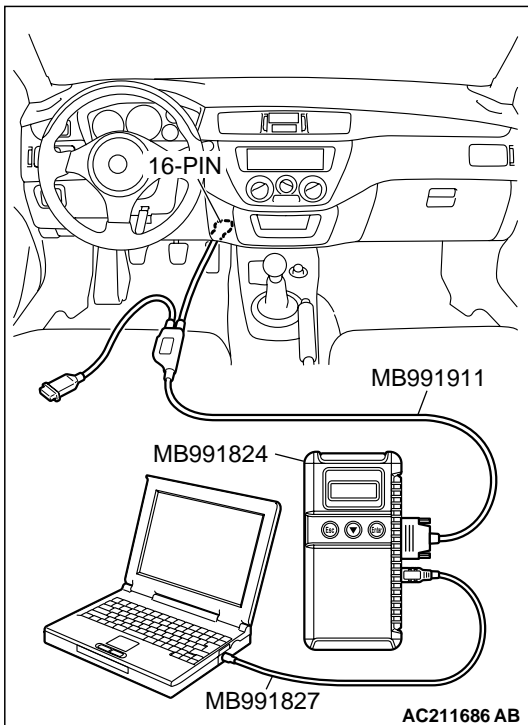
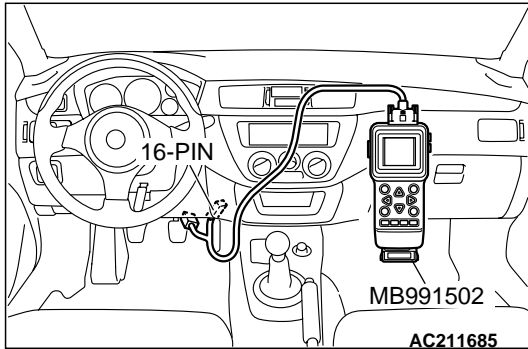
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW(IG1)	OFF
ITEM 32	FRONT DOOR SW	ON

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

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

Normal condition is not displayed on the "IG SW (IG1)" :
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-439.](#)"

Normal condition is not displayed on the "FRONT DOOR SW" : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-454.](#)"



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

Check the following switches and input signals:

- Key reminder switch
- Interior light loaded signal

- (1) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (2) If the switches (see table below), which are applicable for the input signal check, are operated, check if scan tool MB991502 sounds or not.

ITEM NAME	CONDITION
key reminder switch	Remove the ignition key
interior light loaded signal	Illuminate one of the interior lights

Q: When the key reminder switch and the interior light are operated, does scan tool MB991502 or MB991958 sound in each case?

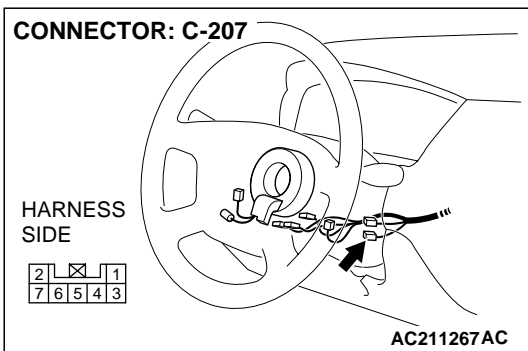
Buzzer of scan tool MB991502 or MB991958 sounds normally : Go to Step 4.

Scan tool MB991502 or MB991958 does not sound when the ignition key is removed : Refer to Inspection

Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch [P.54B-476.](#)"

When one of the interior lights is illuminated, scan tool MB991502 does not sound : Refer to Inspection

Procedure O-10 "ETACS-ECU does not receive any interior light loaded signal [P.54B-531.](#)"



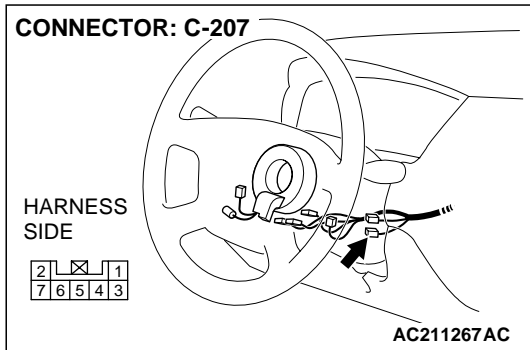
STEP 4. Check key reminder switch connector C-207 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is key reminder switch connector C-207 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 ignition key cylinder illumination light illuminates normally.



STEP 5. Check the ignition key cylinder illumination light bulb.

Q: Is the ignition key cylinder illumination light bulb in good condition?

YES : Go to Step 6.

NO : Replace the bulb. Verify that the ignition key cylinder illumination light illuminates normally.

STEP 6. Check the key reminder switch (ignition key hole illumination).

(1) Disconnect key reminder switch connector C-207.

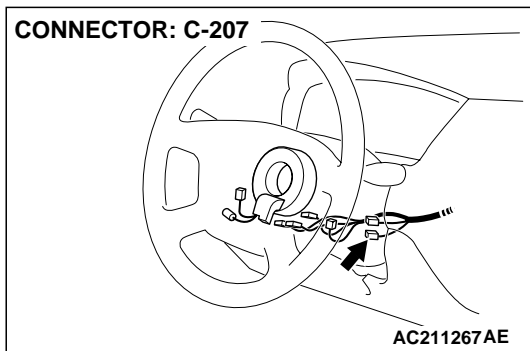
(2) Remove the ignition key cylinder illumination light bulb. Then measure the resistance value between the bulb terminals.

(3) Install a bulb to the key remainder switch, and measure the resistance between connector C-207 terminals 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 cylinder illumination light illuminates normally.

NO (much the same) : Go to Step 7.



STEP 7. Check the battery power supply circuit to the key reminder switch (ignition key cylinder illumination light). Measure the voltage at key reminder switch connector C-207.

(1) Disconnect key reminder switch connector C-207 and measure the voltage available at the wiring harness side of the connector.

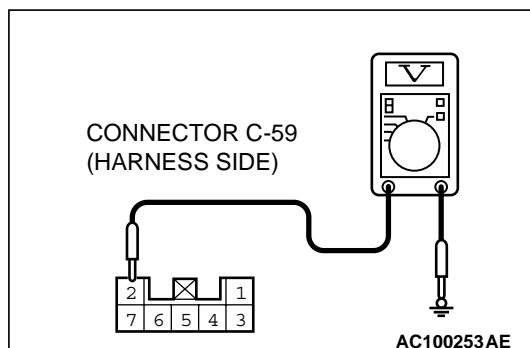
(2) Measure the voltage between terminal 2 and ground.

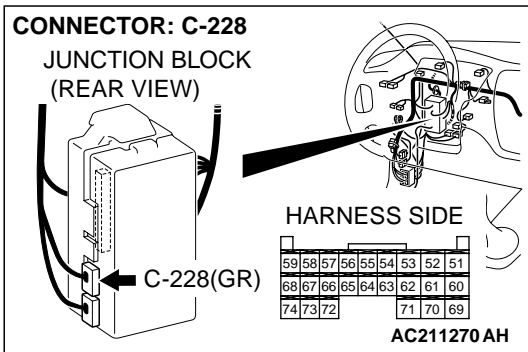
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 10.

NO : Go to Step 8.



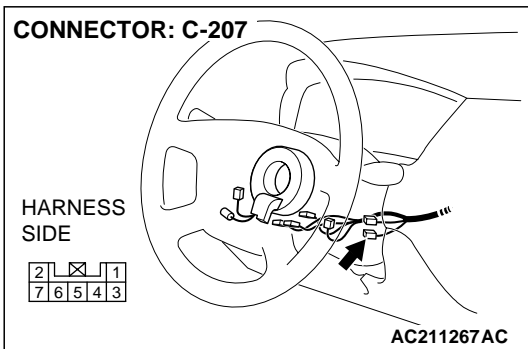


STEP 8. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

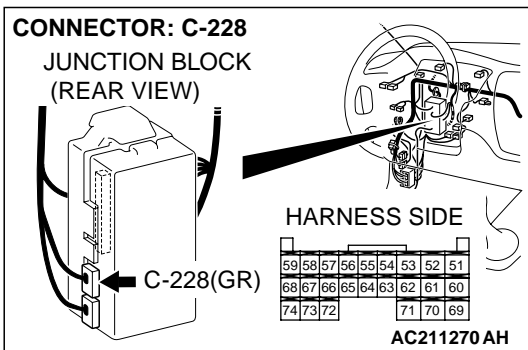
Q: Is ETACS-ECU connector C-228 in good condition?

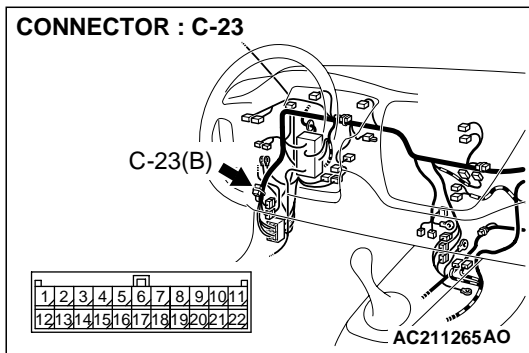
YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the ignition key cylinder illumination light illuminates normally.



STEP 9. Check the wiring harness between key reminder switch connector C-207 (terminal 2) and ETACS-ECU connector C-228 (terminal 71).





NOTE: Also check joint connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-23 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between key reminder switch connector C-207 (terminal 2) and ETACS-ECU connector C-228 (terminal 71) in good condition?

YES : No action is necessary and testing is complete.

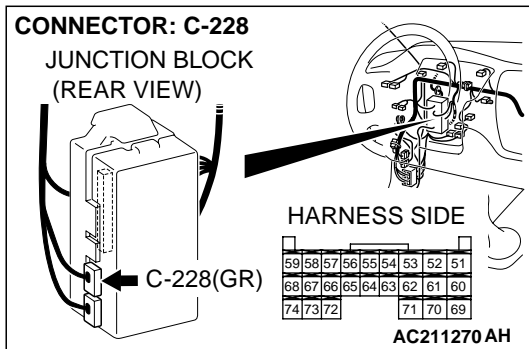
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the ignition key cylinder illumination light illuminates normally.

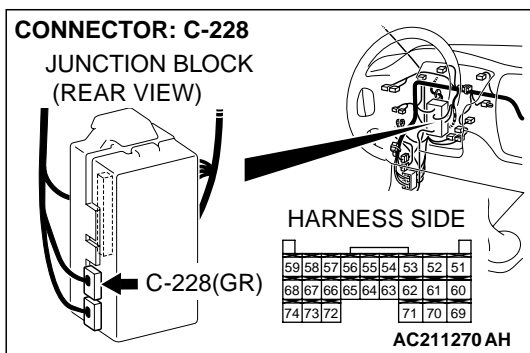
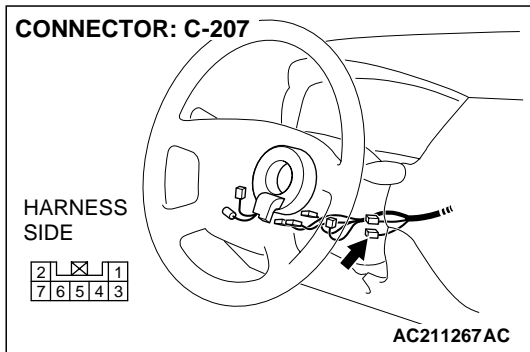
STEP 10. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-228 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 cylinder illumination light illuminates normally.





STEP 11. Check the wiring harness between key reminder switch connector C-207 (terminal 1) and ETACS-ECU connector C-228 (terminal 69).

Q: Is the wiring harness between key reminder switch connector C-207 (terminal 1) and ETACS-ECU connector C-228 (terminal 69) in good condition?

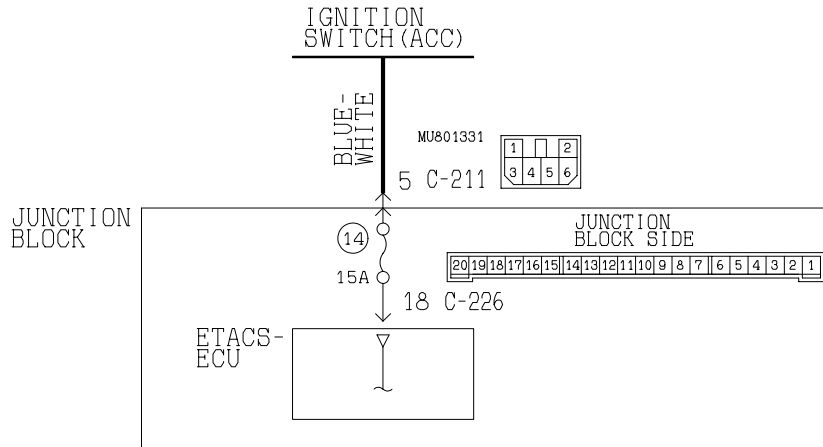
YES : Replace the ETACS-ECU. Verify that the ignition key cylinder illumination light illuminates normally.

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 ignition key cylinder illumination light illuminates normally.

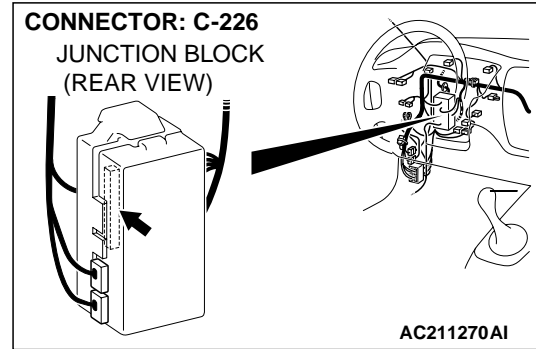
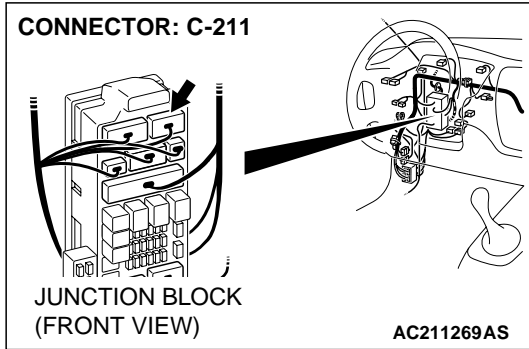
INPUT SIGNAL PROCEDURES

INSPECTION PROCEDURE N-1: The ETACS-ECU does not receive any signal from the ignition switch (ACC).

Ignition Switch (ACC) Input Circuit



W2J08M10AB



CIRCUIT OPERATION

The ETACS-ECU operates the following equipment according to signal from the ignition switch (ACC):

- Windshield wiper and washer
- Rear wiper and washer

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment, which is described in "CIRCUIT OPERATION", does not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

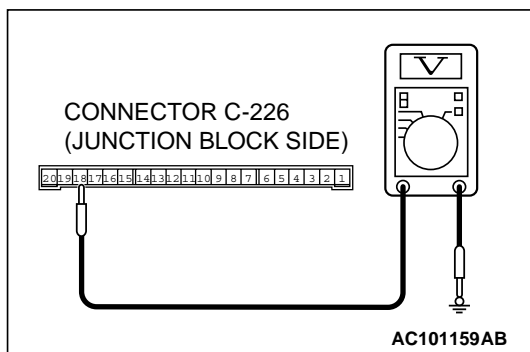
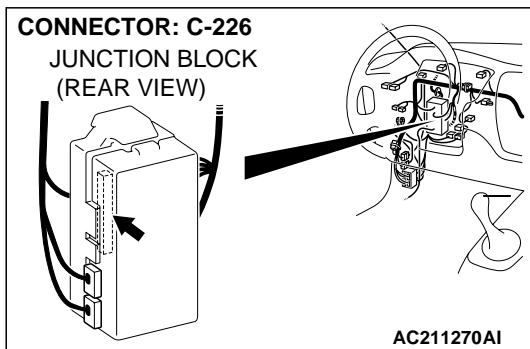
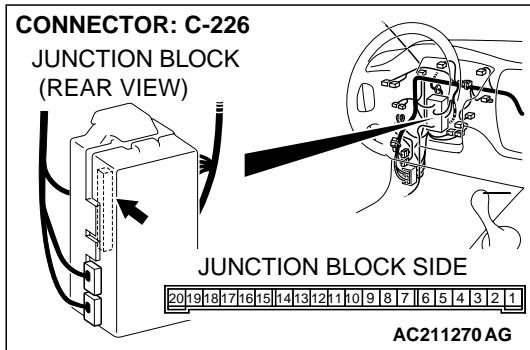
- MB991223: Harness Set

STEP 1. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 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](#). If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the ignition switch (ACC) should be normal.



STEP 2. Check the ignition switch (ACC) circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-226.

- (1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.
- (2) Turn the ignition switch to the "ACC" position.

- (3) Measure the voltage between terminal 18 and ground.

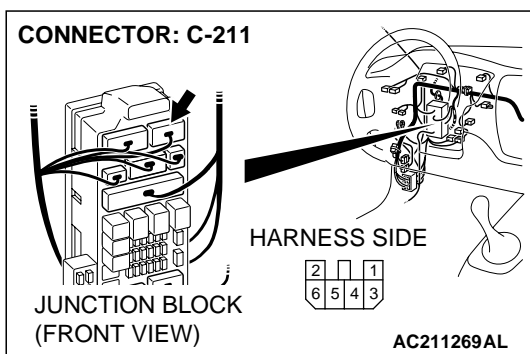
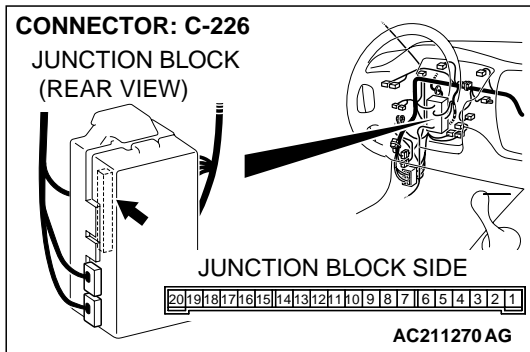
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Replace the ETACS-ECU. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the ignition switch (ACC) should be normal.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-226 (terminal 18) and the ignition switch (ACC).



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

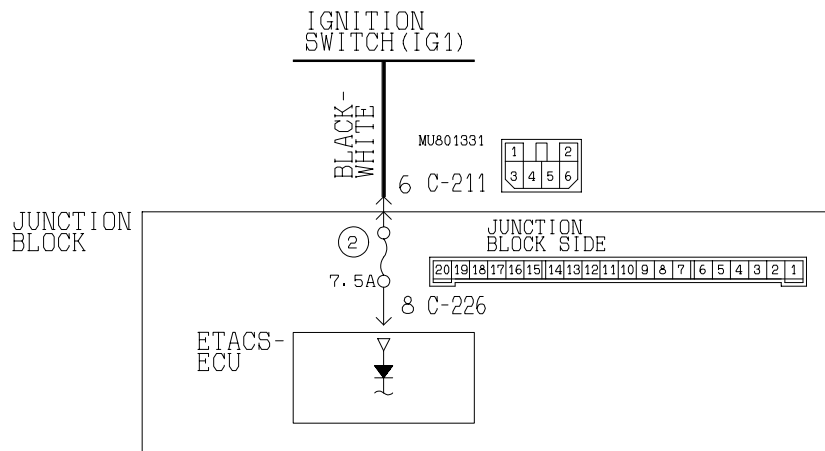
Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 18) and ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

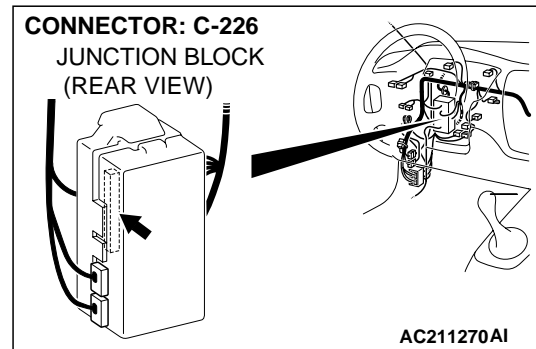
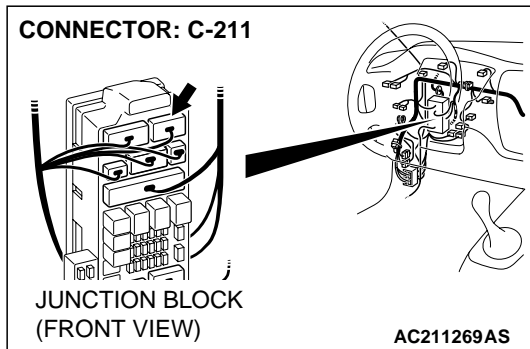
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the ignition switch (ACC) should be normal.

INSPECTION PROCEDURE N-2: The ETACS-ECU does not receive any signal from the ignition switch (IG1).

Ignition Switch (IG1) Input Circuit



W2J08M11AB



CIRCUIT OPERATION

- The ETACS-ECU operates the following equipment or functions according to signal from the ignition switch (IG1):
 - Ignition key reminder tone alarm function
 - Light reminder tone alarm function
 - Seat belt tone alarm function
 - Power window timer function
 - Sunroof timer function
 - Seat belt warning light
 - Headlight automatic shutdown function
 - Turn-signal light
 - Dome light dimming function
 - Interior light automatic shutdown function
 - Ignition key cylinder illumination light

- If the power supply circuit from the battery to the ETACS-ECU is open, this circuit is used as backup circuit.

TECHNICAL DESCRIPTION (COMMENT)

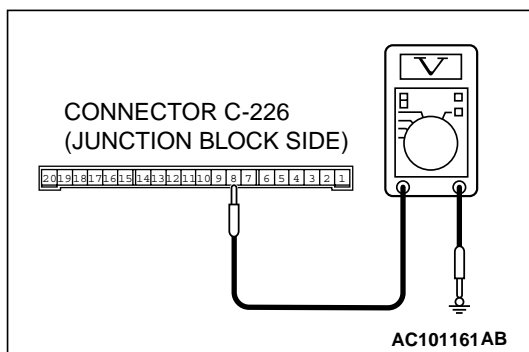
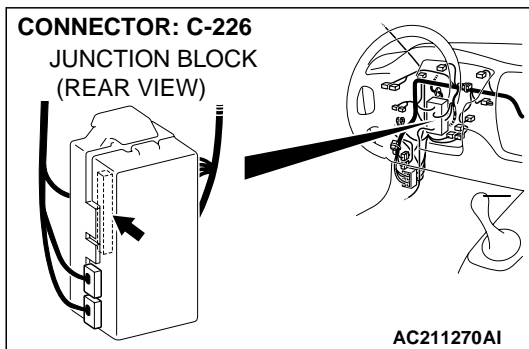
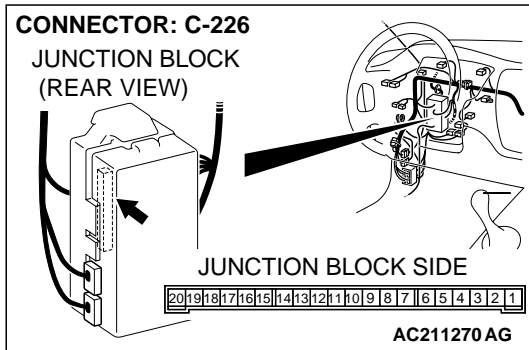
If the signal is not normal, the equipment or functions, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set



STEP 1. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 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](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the ignition switch (IG1) should be normal.

STEP 2. Check the ignition switch (IG1) circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-226.

- (1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 8 and ground.

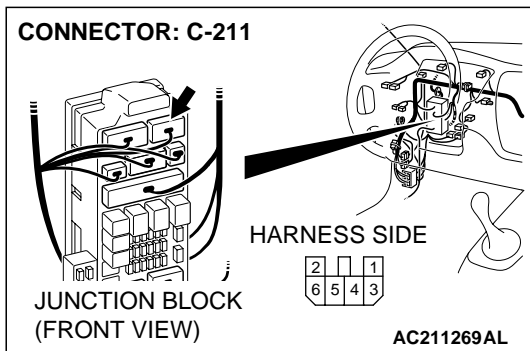
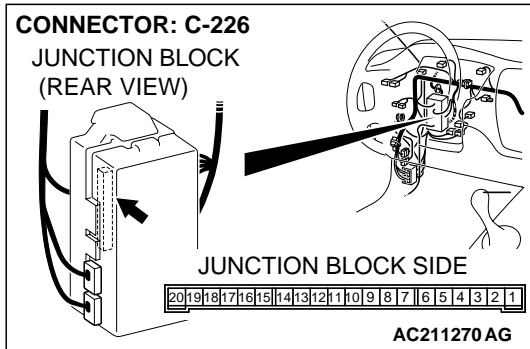
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the ignition switch (IG1) should be normal.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-226 (terminal 8) and the ignition switch (IG1).



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

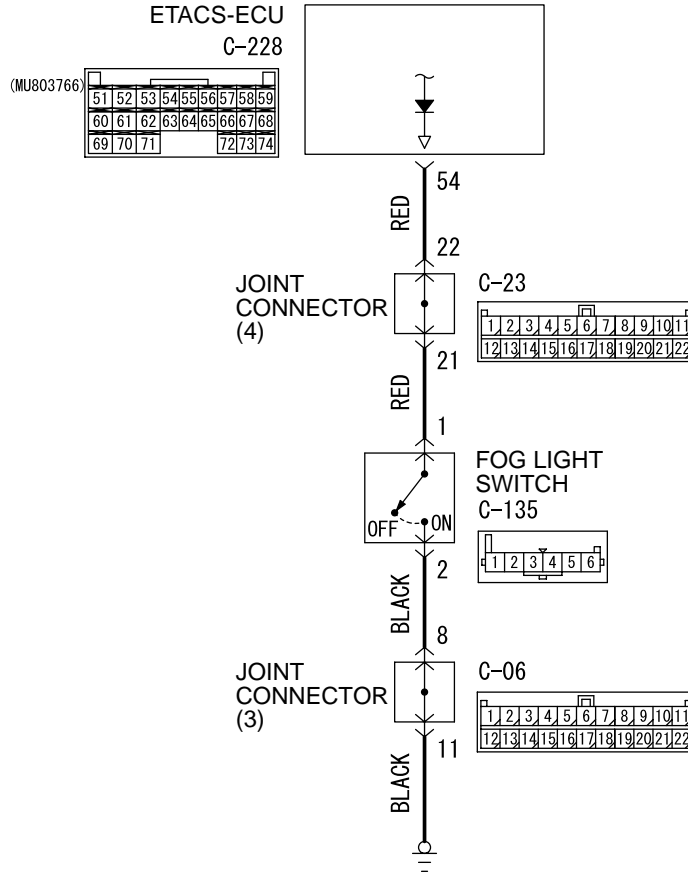
Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 8) and ignition switch (IG1) in good condition?

YES : No action is necessary and testing is complete.

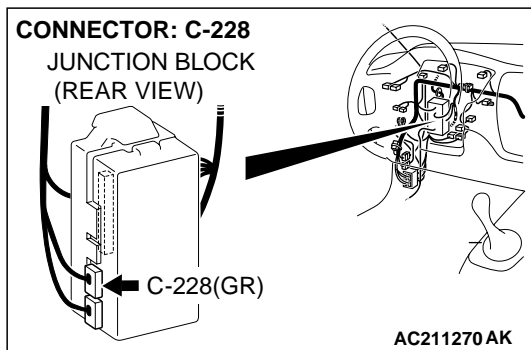
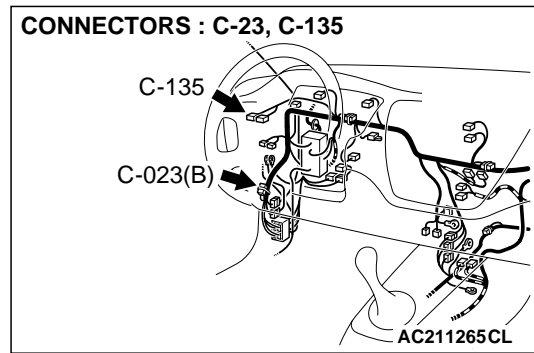
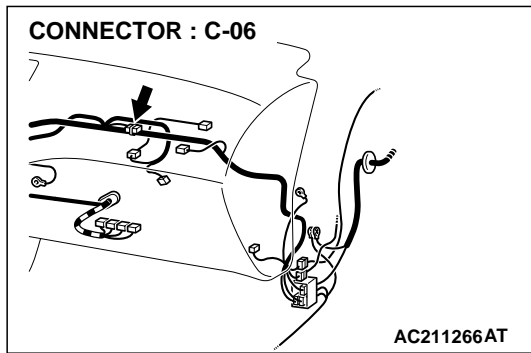
NO : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the ignition switch (IG1) should be normal.

INSPECTION PROCEDURE N-3: The ETACS-ECU does not receive any signal from the fog light switch.

Fog light switch input circuit



W3J23M01AA



CIRCUIT OPERATION

The ETACS-ECU operates the fog lights according to signal from the fog light switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the fog lights do not work normally. If the signal is not normal, the fog light switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

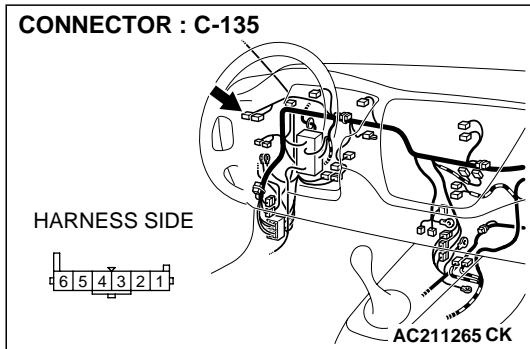
- MB991223: Harness Set

STEP 1. Check fog light switch connector C-135 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light switch connector C-135 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](#). If the fog light switch operates normally, it indicates that a correct signal is sent from the fog light switch.



STEP 2. Check the fog light switch.

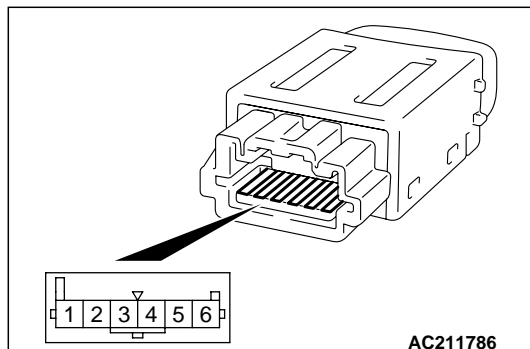
Remove the fog light switch. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – 2	Open circuit
Pressed	1 – 2	Less than 2 ohms

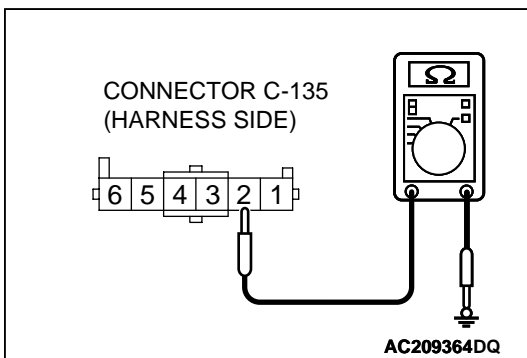
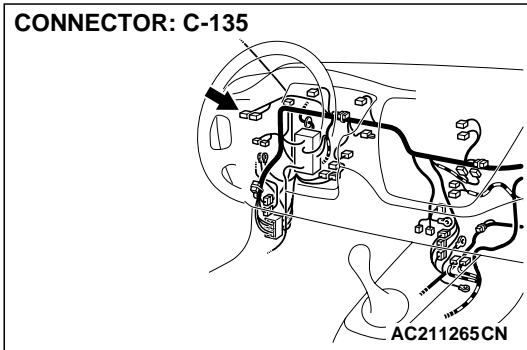
Q: Is the fog light switch in good condition?

YES : Go to Step 3.

NO : Repair the fog light switch. If the fog light switch operates normally, it indicates that a correct signal is sent from the fog light switch.



CONNECTOR: C-135



STEP 3. Check the ground circuit to the fog light switch. Measure the resistance at fog light switch connector C-135.

(1) Disconnect fog light switch connector C-135 and measure the resistance available at the wiring harness side of the connector.

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

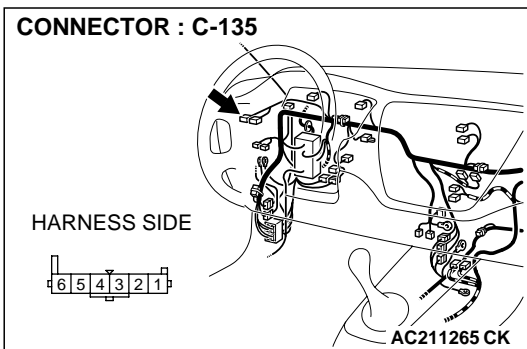
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

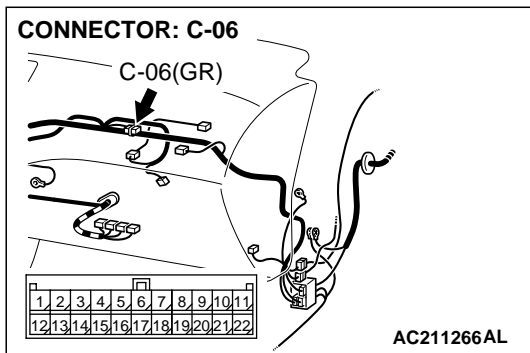
YES : Go to Step 5.

NO : Go to Step 4.

CONNECTOR : C-135



STEP 4. Check the wiring harness between fog light switch connector C-135 (terminal 2) and ground.



NOTE: Also check joint connector C-06 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-06 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 switch connector C-135 (terminal 2) and the ground in good condition?

YES : No action is necessary and testing is complete.

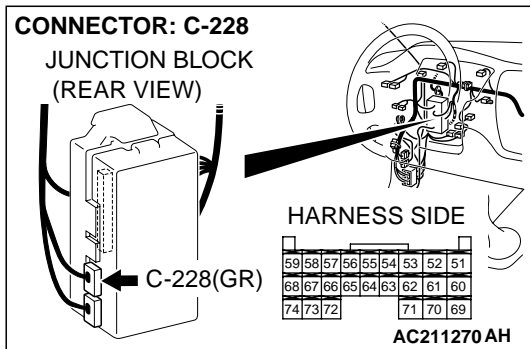
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the fog light switch operates normally, it indicates that a correct signal is sent from the fog light switch.

STEP 5. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

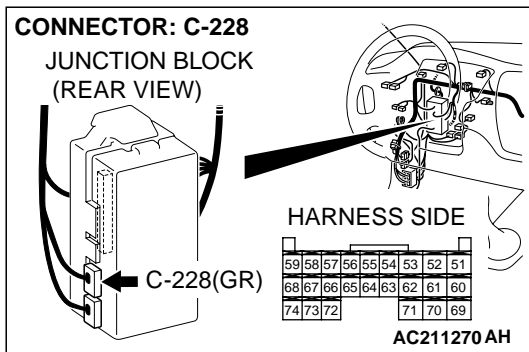
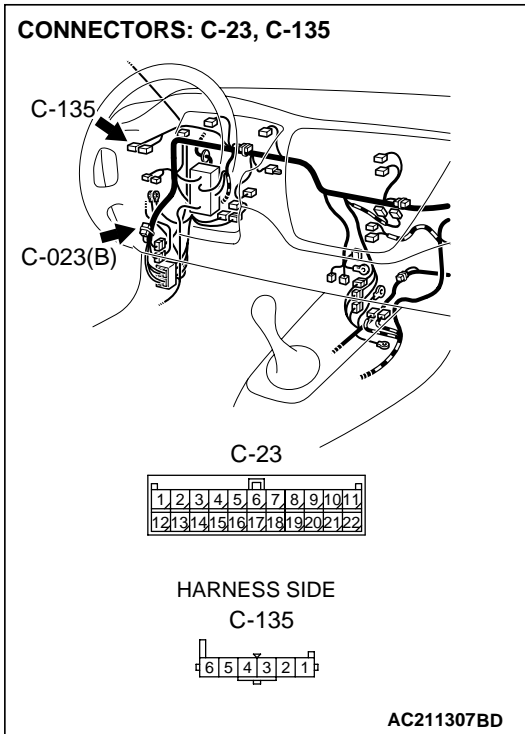
Q: Is ETACS-ECU connector C-228 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the fog light switch operates normally, it indicates that a correct signal is sent from the fog light switch.



STEP 6. Check the wiring harness between fog light switch connector C-135 (terminal 1) and ETACS-ECU connector C-228 (terminal 54).



NOTE: Also check joint connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-23 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

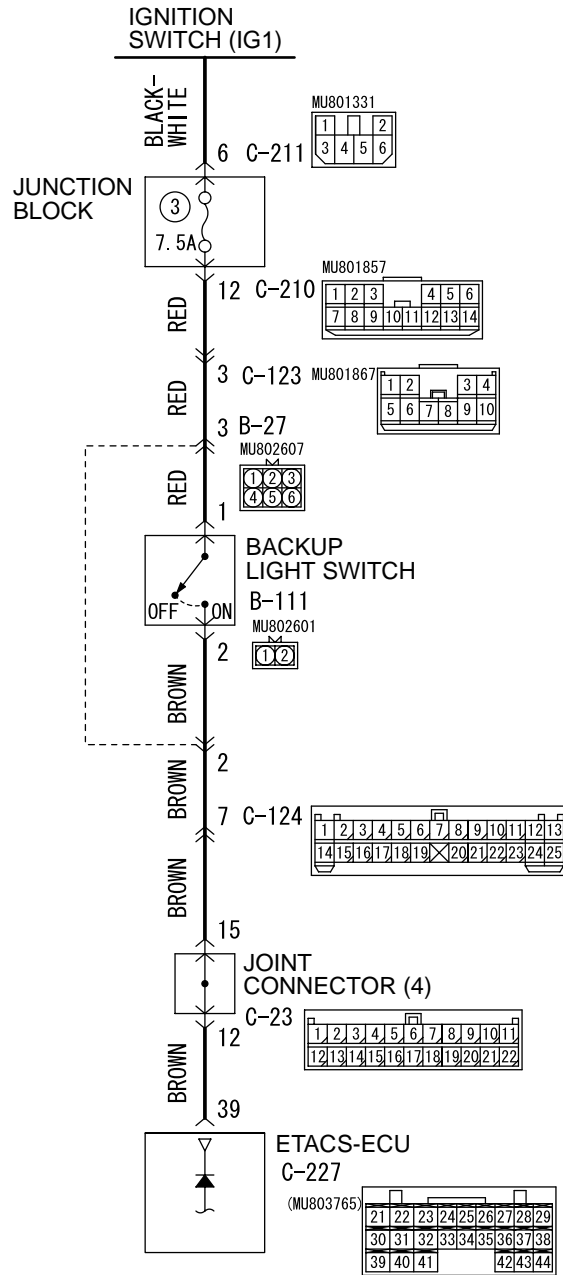
Q: Is the wiring harness between fog light switch connector C-135 (terminal 1) and ETACS-ECU connector C-228 (terminal 54) in good condition?

YES : Replace the ETACS-ECU. If the fog light switch operates normally, it indicates that a correct signal is sent from the fog light switch.

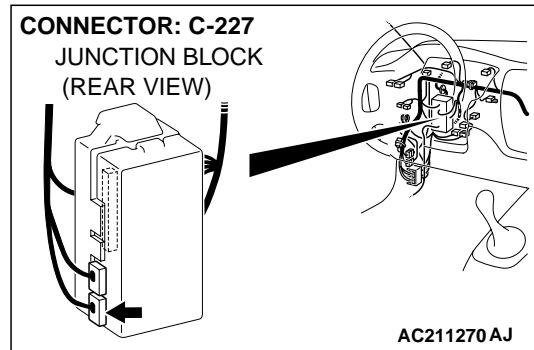
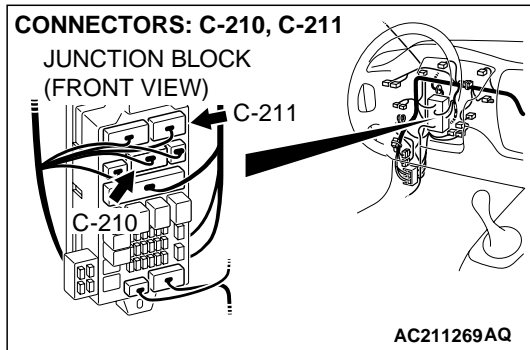
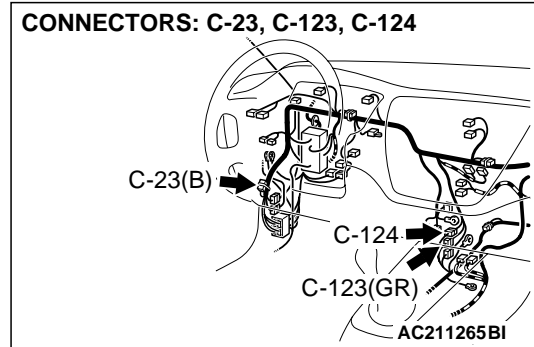
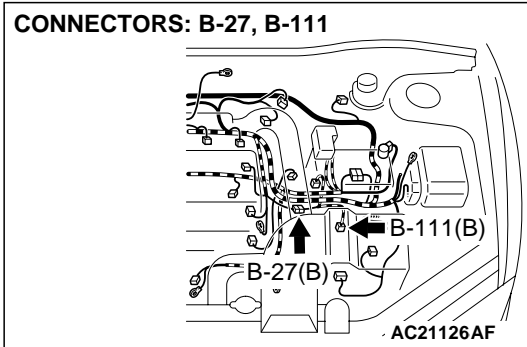
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the fog light switch operates normally, it indicates that a correct signal is sent from the fog light switch.

INSPECTION PROCEDURE N-4: ETACS-ECU does not receive any signal from the backup light switch.

Backup Light Switch Input Circuit



W3J14M20AA



CIRCUIT OPERATION

The ETACS-ECU operates the rear wiper according to signal from the backup light switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the rear wiper does not operate consecutively twice when the shift lever is moved to the "R" position with the rear wiper on. If the signal is not normal, the backup light switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

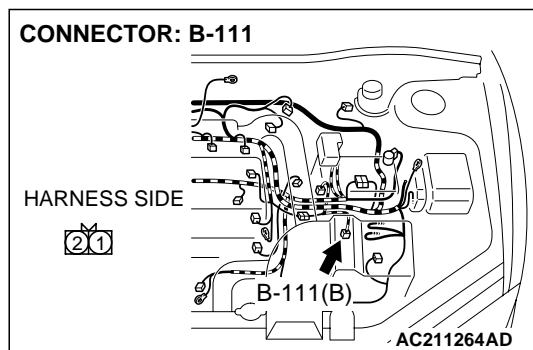
- MB991223: Harness Set

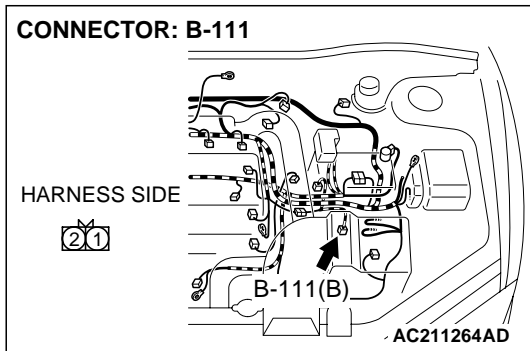
STEP 1. Check backup light switch connector B-111 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the backup light switch connector B-111 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](#). If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.





STEP 2. Check the backup light switch.

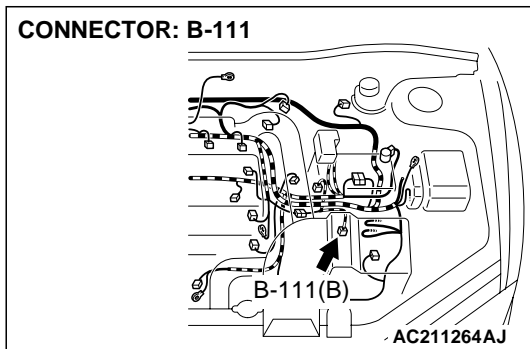
Disconnect backup light switch connector B-111. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Other than "R"	1 – 2	Open circuit
R	1 – 2	Less than 2 ohms

Q: Is the backup light switch in good condition?

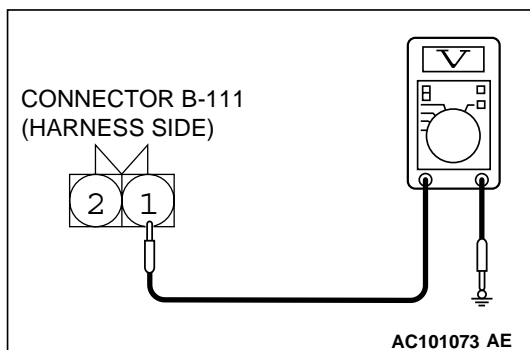
YES : Go to Step 3.

NO : Replace the backup light switch. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.



STEP 3. Check the ignition switch (IG1) circuit to the backup light switch. Measure the voltage at backup light switch connector B-111.

- (1) Disconnect backup light switch connector B-111 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.



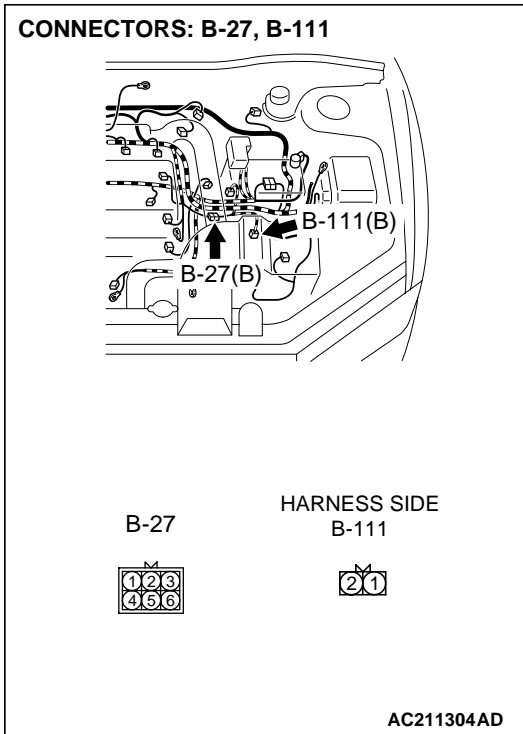
- (3) Measure the voltage between terminal 1 and ground.
 - The voltage should equal approximately 12 volts (battery positive voltage).

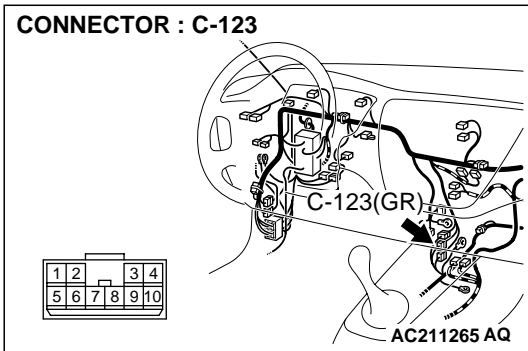
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between backup light switch connector B-111 (terminal 1) and the ignition switch (IG1).



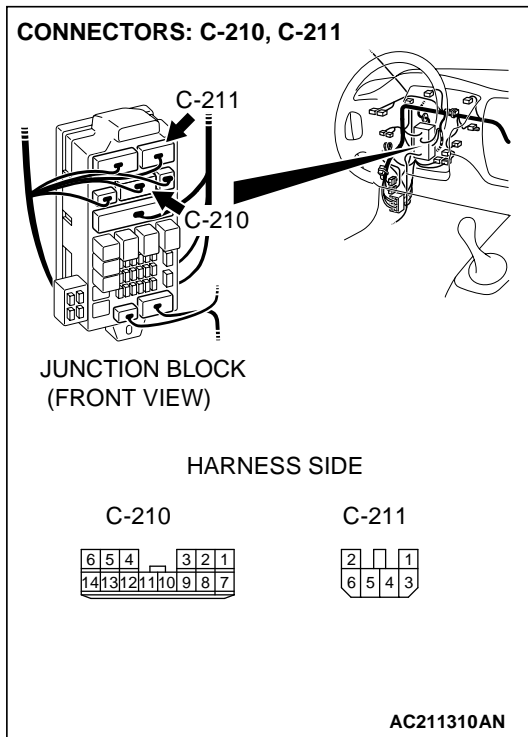


NOTE: Also check junction block connectors C-210, C-211, intermediate connectors B-27 and C-123 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors C-210, C-211, intermediate connectors B-27 or C-123 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between backup light switch connector B-111 (terminal 1) 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. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.

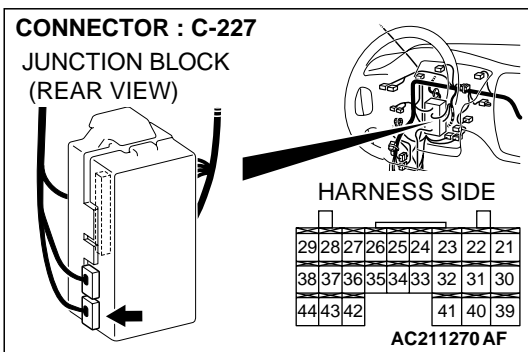


STEP 5. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

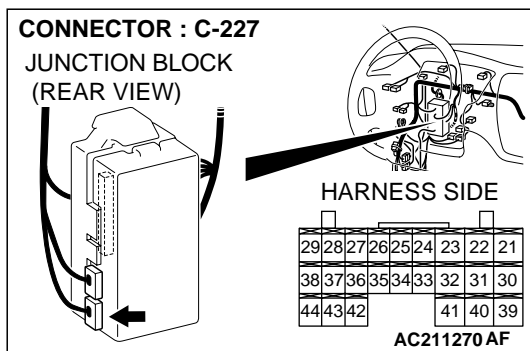
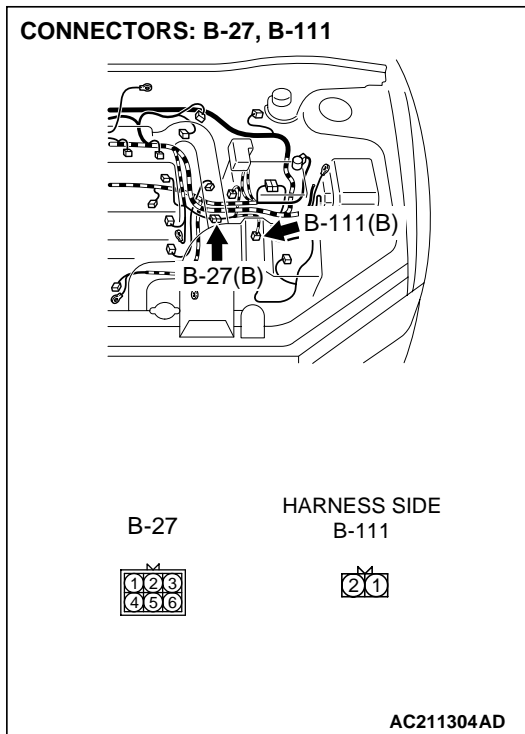
Q: Is ETACS-ECU connector C-227 in good condition?

YES : Go to Step 6.

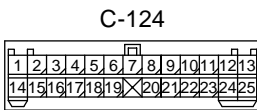
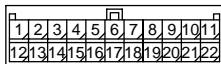
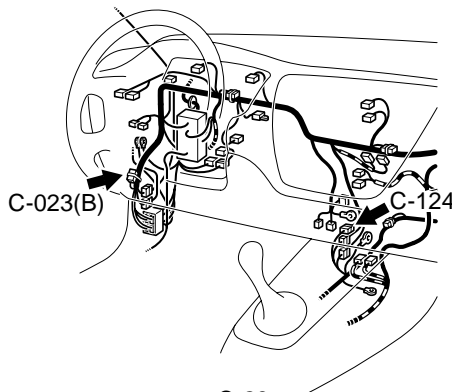
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.



STEP 6. Check the wiring harness between backup light switch connector B-111 (terminal 2) and ETACS-ECU connector C-227 (terminal 39).



CONNECTORS: C-23, C-124



AC211307AK

NOTE: Also check joint connector C-23, intermediate connectors B-27 and C-124 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-23, intermediate connectors B-27 or C-124 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

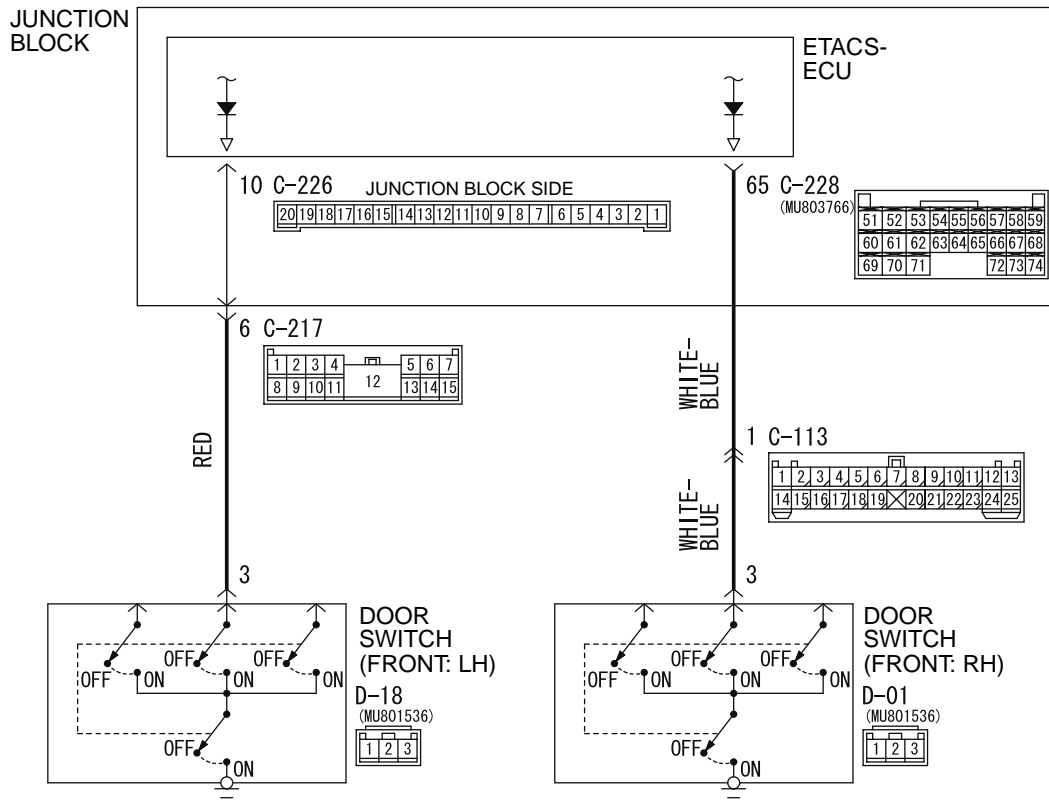
Q: Is the wiring harness between backup light switch connector B-111 (terminal 2) and ETACS-ECU connector C-227 (terminal 39) in good condition?

YES : Replace the ETACS-ECU. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.

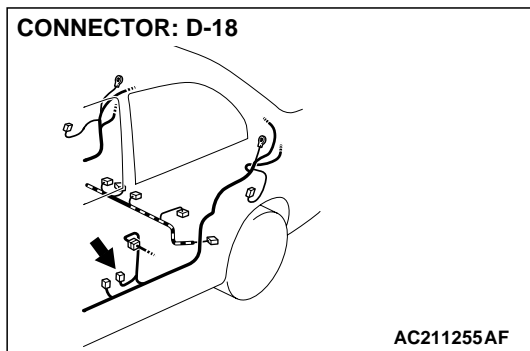
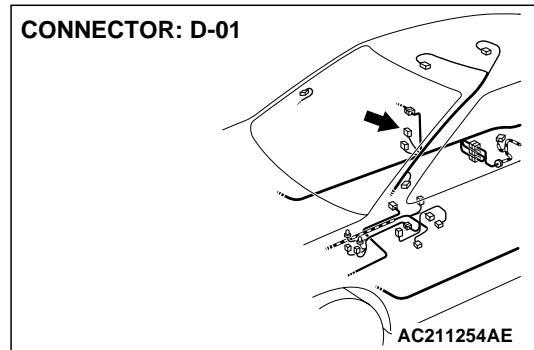
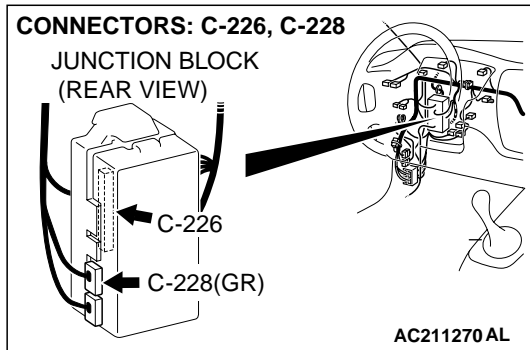
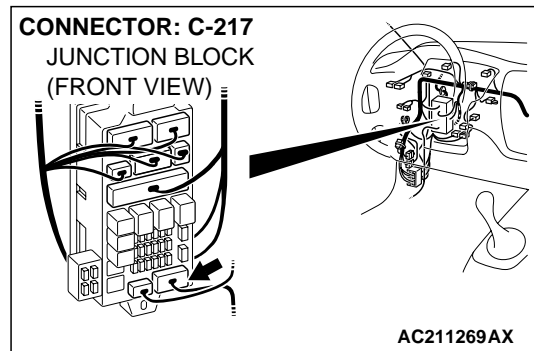
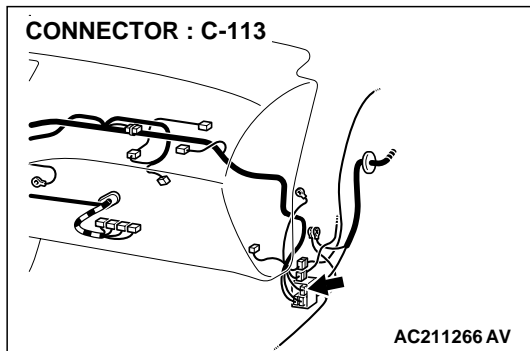
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.

INSPECTION PROCEDURE N-5: The ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch.

Front Door Switches Input Circuit



W3J14M21AA



CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the front door switches:

- Ignition key reminder tone alarm function
- Light reminder tone alarm function
- Power window timer function
- Sunroof timer function
- Headlight automatic shutdown function
- Dome light
- Door-ajar indicator light
- Ignition key cylinder illumination light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems, which are described in "CIRCUIT OPERATION", do not work normally. If the signal is not normal, the front door switches or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the front door switches.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

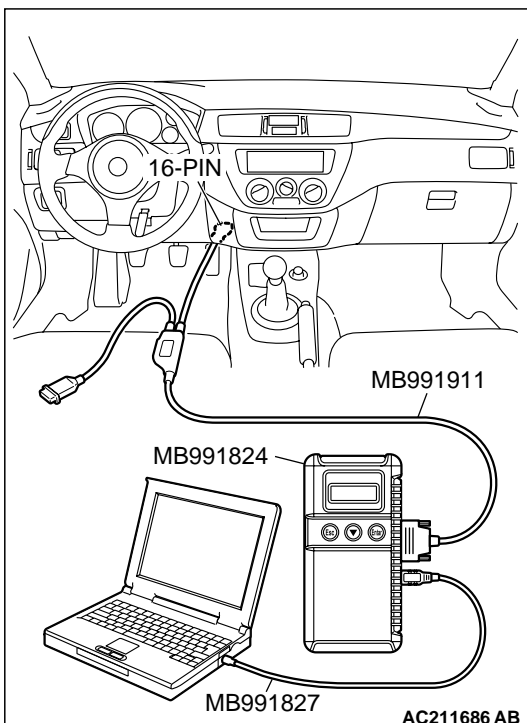
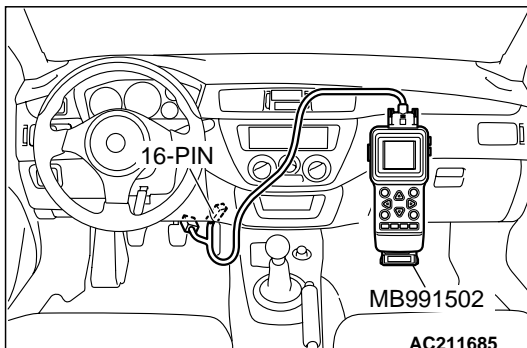
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) When each front door is opened, check if scan tool MB991502 or MB991958 sounds or not.

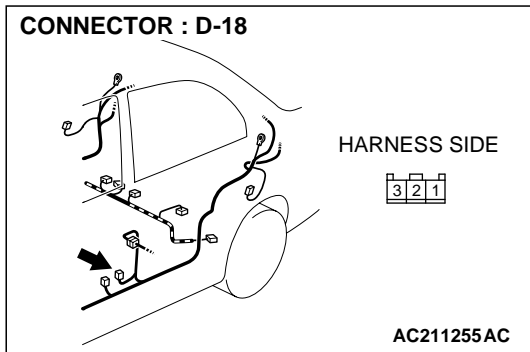
Q: Does scan tool MB991502 or MB991958 sound when each front door is opened?

When the driver's door is opened, scan tool MB991502 or MB991958 does not sound. : Go to Step 2.

When the front passenger's door is opened, scan tool MB991502 or MB991958 does not sound. : Go to Step 7.

when each front door is opened, scan tool MB991502 or MB991958 sounds. : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's or the front passenger's door switch should be normal.



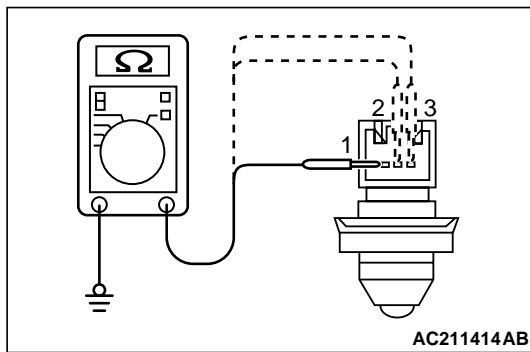


STEP 2. Check door switch (front: LH) connector D-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door switch (front: LH) connector D-18 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: LH) should be normal.



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

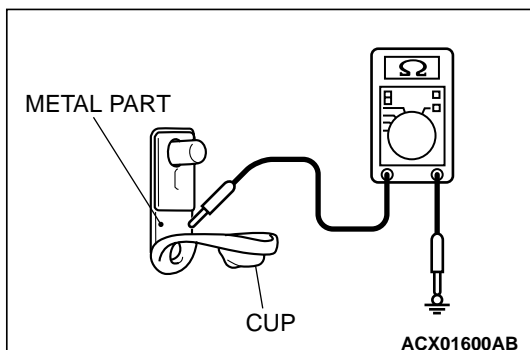
Remove the door switch (front: LH). Then check the continuity between the switch terminals and switch body.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – switch body, 2 – switch body, 3 – switch body	Less than 2 ohms
Pressed	1 – switch body, 2 – switch body, 3 – switch body	Open circuit

Q: Is the door switch (front: LH) in good condition?

YES : Go to Step 4.

NO : Replace the front door switch (LH). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: LH) should be normal.



STEP 4. Measure at the lower metal part of the door switch (front: LH) in order to check the ground circuit to the door switch (front: LH).

NOTE: Check that the door switch (front: LH) is grounded to the vehicle body by means of its mounting screw.

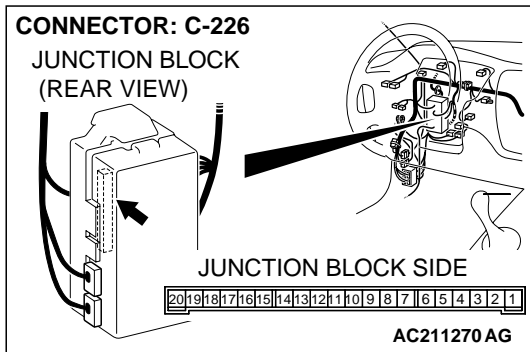
Remove the cap, and measure the resistance value between the lower metal part and the ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Check the fit of the switch, and repair if necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: LH) should be normal.

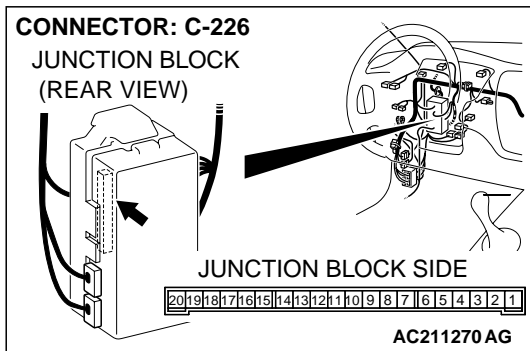


STEP 5. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

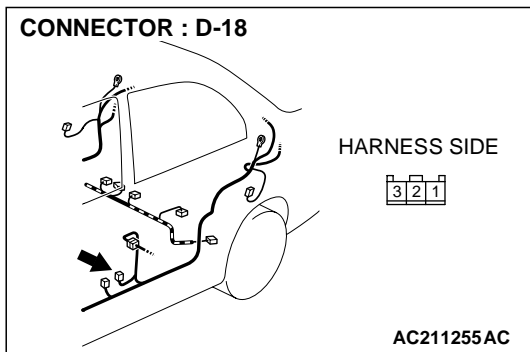
Q: Is ETACS-ECU connector C-226 in good condition?

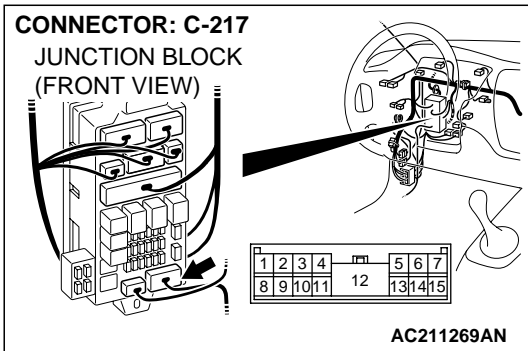
YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: LH) should be normal.



STEP 6. Check the wiring harness between door switch (front: LH) connector D-18 (terminal 3) and ETACS-ECU connector C-226 (terminal 10).





NOTE: Also check junction block connector C-217 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-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 between door switch (front: LH) connector D-18 (terminal 3) and ETACS-ECU connector C-226 (terminal 10) in good condition?

YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: LH) should be normal.

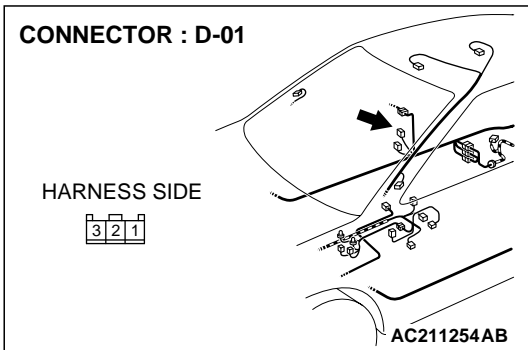
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: LH) should be normal.

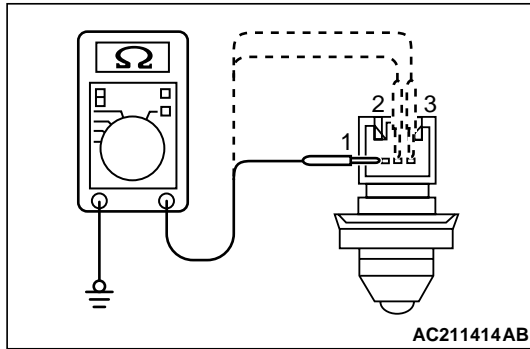
STEP 7. Check door switch (front: RH) connector D-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door switch (front: RH) connector D-01 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. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: RH) should be normal.





STEP 8. Check the door switch (front: RH).

Remove the door switch (front: RH). Then check the continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – switch body, 2 – switch body, 3 – switch body	Less than 2 ohms
Pressed	1 – switch body, 2 – switch body, 3 – switch body	Open circuit

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

YES : Go to Step 9.

NO : Replace the front passenger's door switch. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: RH) should be normal.

STEP 9. Measure at the lower metal part of the door switch (front: RH) in order to check the ground circuit to the door switch (front: RH).

NOTE: Check that the door switch (front: RH) is grounded to the vehicle body by means of its mounting screw.

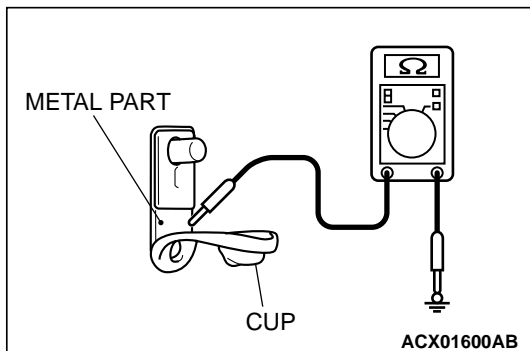
Remove the cap, and measure the resistance value between the lower metal part and the ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.

NO : Check the fit of the switch, and repair if necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: RH) should be normal.

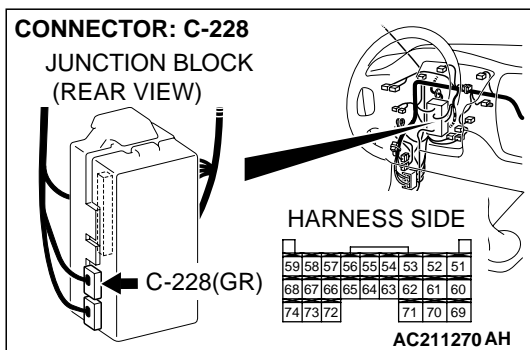


STEP 10. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

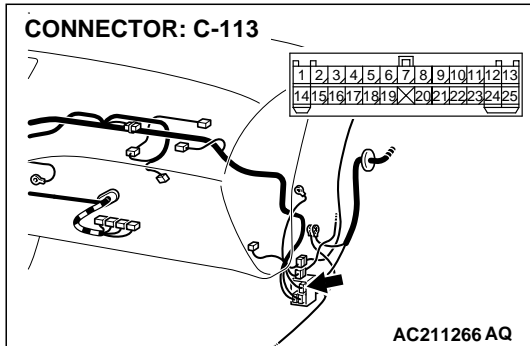
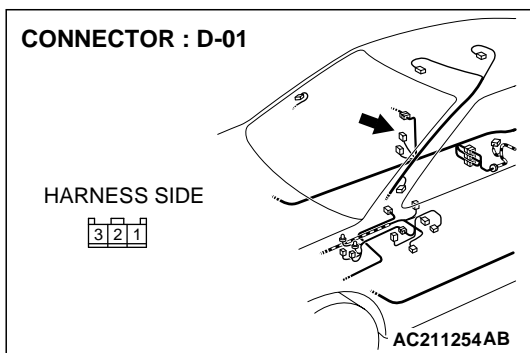
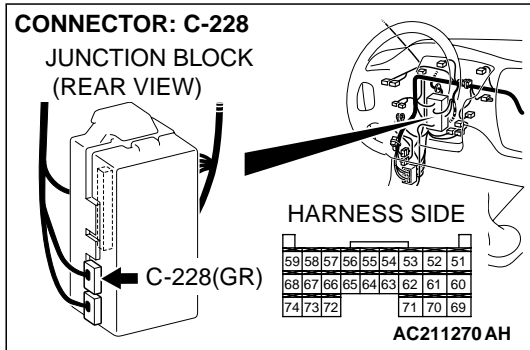
Q: Is ETACS-ECU connector C-228 in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: RH) should be normal.



STEP 11. Check the wiring harness between door switch (front: RH) connector D-01 (terminal 3) and ETACS-ECU connector C-228 (terminal 65).



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

Q: Is the wiring harness between door switch (front: RH) connector D-01 (terminal 3) and ETACS-ECU connector C-228 (terminal 65) in good condition?

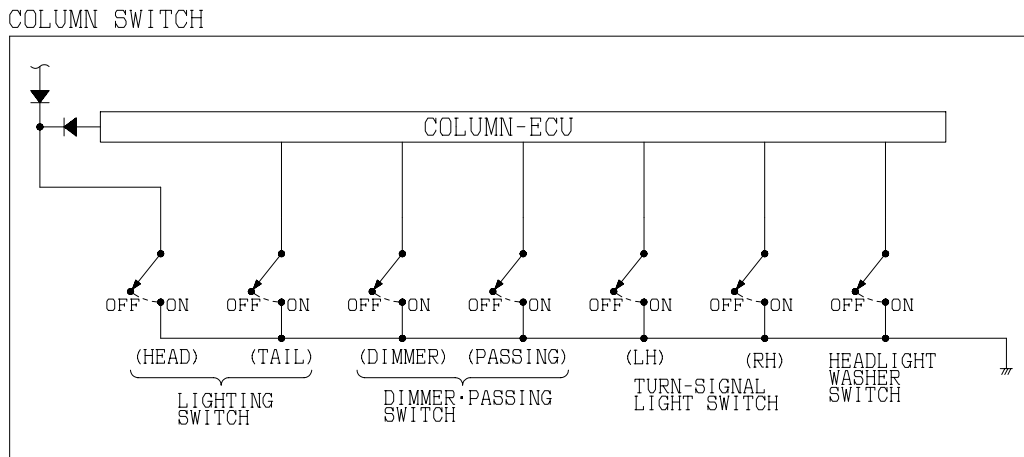
YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: RH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (front: RH) should be normal.

INSPECTION PROCEDURE N-6: Column Switch: ETACS-ECU does not receive any signal from the taillight switch, the headlight switch, the passing light switch, the dimmer switch or the turn-signal light switch.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Turn-signal Light and Lighting Switch Input Circuit



W2J08M15AA

CIRCUIT OPERATION

The ETACS-ECU operates the following equipment or functions according to signal from the column switch (turn-signal light and lighting switch):

- Light reminder tone alarm function
- Headlight
- Turn-signal light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment or functions, which are described in "CIRCUIT OPERATION", do not work normally. If the signal is not normal, the column switch (turn-signal light and lighting switch) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable

- MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the column-ECU.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."

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

(3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."

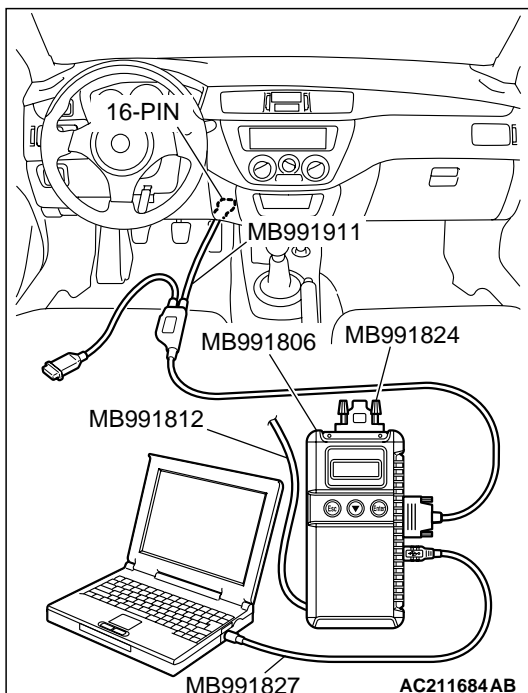
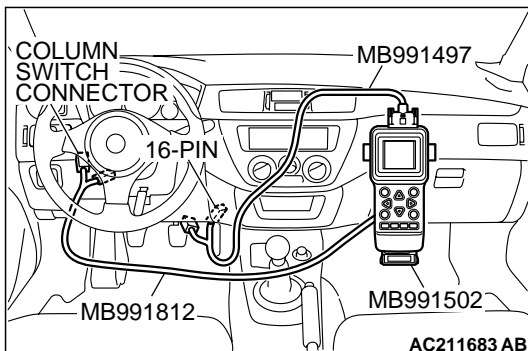
- a. Select "Interactive Diagnosis."
- b. Select "System select."
- c. Select "SWS."
- d. Select "SWS MONITOR."
- e. Select "ECU COMM Check."

(4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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 not possible P.54B-35."



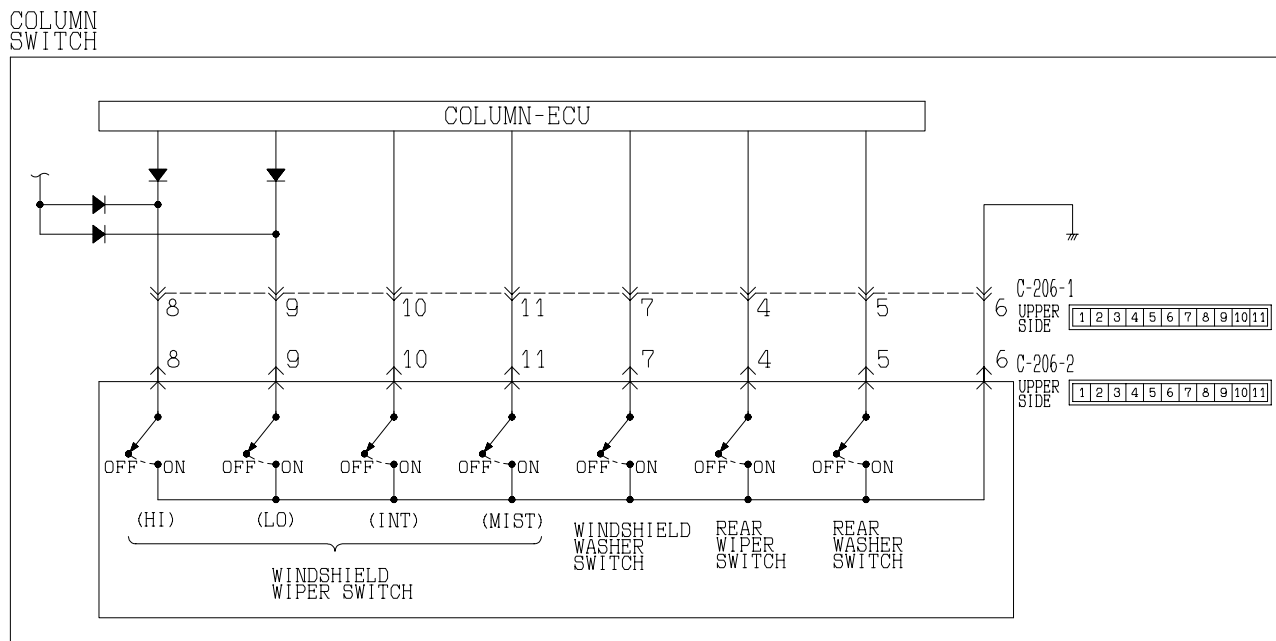
STEP 2. Replace the ECU.

- (1) Replace the column switch (turn-signal light and lighting switch).
- (2) If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the column switch (turn-signal light and lighting switch) should be normal.

Q: Does the column switch (turn-signal light and lighting switch) send normal signal to the ECU?**YES :** No action is necessary and testing is complete.**NO :** Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the column switch (turn-signal light and lighting switch) should be normal.

INSPECTION PROCEDURE N-7: Column switch: ETACS-ECU does not receive any signal from windshield mist wiper switch, windshield intermittent wiper switch, windshield low-speed wiper switch, windshield high-speed wiper switch, windshield washer switch, rear wiper switch or rear washer switch.

NOTE: This troubleshooting procedure requires the use of scan tool MB991502 or MB99158 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-9."

Windshield Wiper and Washer Switch Input Circuit

W2J08M16AA

CIRCUIT OPERATION

The ETACS-ECU operates the following equipment or functions according to signal from the column switch (windshield wiper and washer switch):

- Windshield wiper and washer
- Rear wiper and washer

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment, which is described in "CIRCUIT OPERATION", does not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B
- MB991813: SWS monitor kit
 - MB991806: SWS monitor cartridge
 - MB991812: SWS monitor harness (for column-ECU)
 - MB991922: Probe harness

STEP 1. Use scan tool MB991502 or MB991958 to select "ECU COMM Check" on the SWS monitor display. Check the column-ECU.

⚠ CAUTION

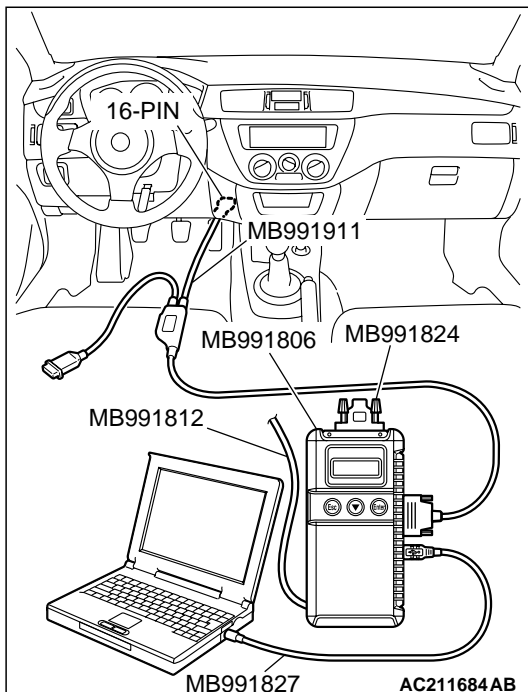
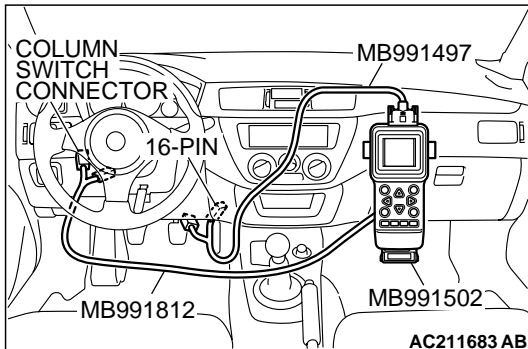
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958. Connect special tool MB991497 or MB991911 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991496 or MB991824.

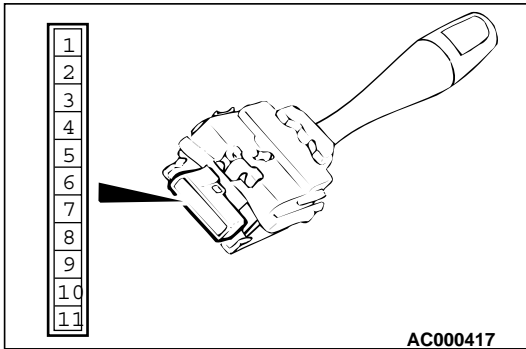
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Turn the ignition switch to the "LOCK" (OFF) position.
- (3) Operate scan tool MB991502 or MB991958 according to the procedure below to display "ECU COMM Check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "SWS MONITOR."
 - e. Select "ECU COMM Check."
- (4) Scan tool MB991502 or MB991958 should show "OK" on the "ECU COMM Check" 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 not possible P.54B-35."





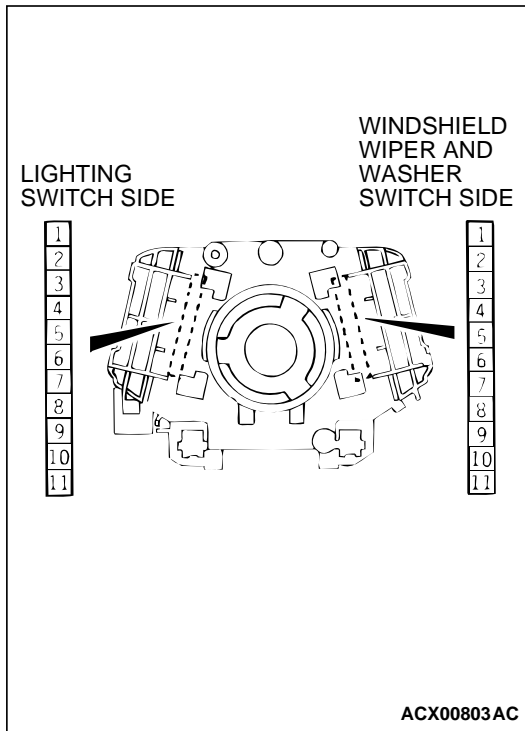
STEP 2. Check the windshield wiper and washer switch.
Remove the windshield wiper and washer switch. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	4 – 6, 5 – 6, 6 – 7, 6 – 8, 6 – 9, 6 – 10, 6 – 11	Open circuit
Windshield mist wiper switch	6 – 11	Less than 2 ohms
Windshield intermittent wiper switch	6 – 10	Less than 2 ohms
Windshield low-speed wiper switch	6 – 9	Less than 2 ohms
Windshield high-speed wiper switch	6 – 8	Less than 2 ohms
Windshield washer switch	6 – 7	Less than 2 ohms
Rear wiper switch	4 – 6	Less than 2 ohms
Rear washer switch	5 – 6	Less than 2 ohms

Q: Are the windshield wiper and washer switch in good condition?

YES : Go to Step 3.

NO : Replace the column switch. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the column switch (windshield wiper and washer switch) should be normal.

**STEP 3. Check the switch body.**

Remove the turn-signal light and lighting switch and windshield wiper and washer switch. Then check continuity between the switch body terminals.

SWITCH BODY	TESTER CONNECTION	SPECIFIED CONDITION
Lighting switch side – Windshield wiper and washer switch side	4 – 4, 5 – 5, 6 – 6, 7 – 7, 8 – 8, 9 – 9, 10 – 10, 11 – 11	Less than 2 ohms

Q: Is the switch body in good condition?

YES : Go to Step 4.

NO : Replace the column switch. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the column switch (windshield wiper and washer switch) should be normal.

STEP 4. Replace the ECU.

- (1) Replace the column switch (turn-signal light and lighting switch).
- (2) If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the column switch (windshield wiper and washer switch) should be normal.

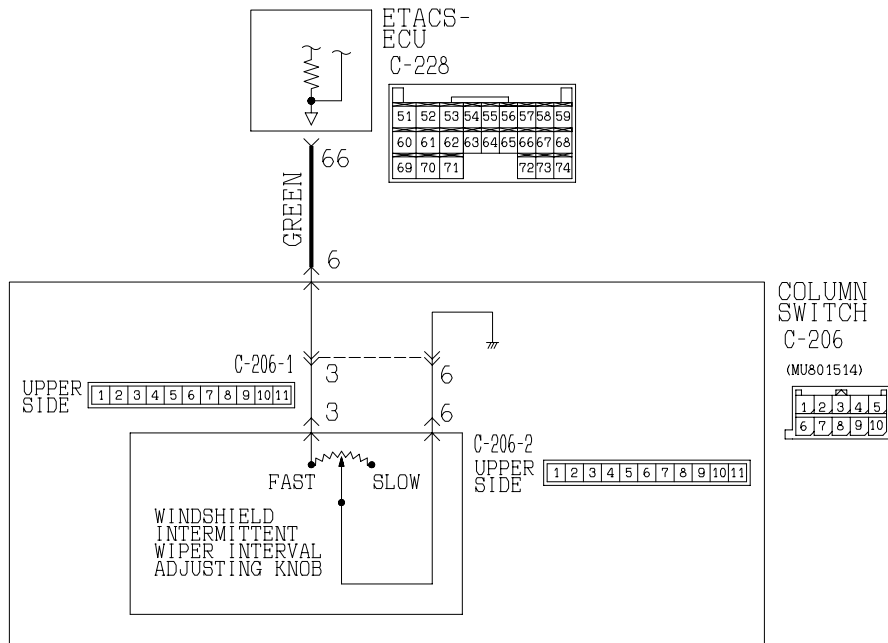
Q: Does the column switch (windshield wiper and washer switch) send a normal signal to the ECU?

YES : No action is necessary and testing is complete.

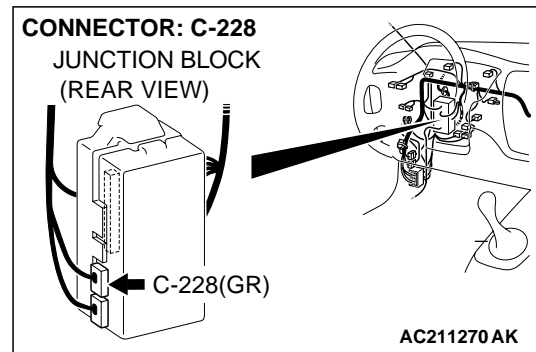
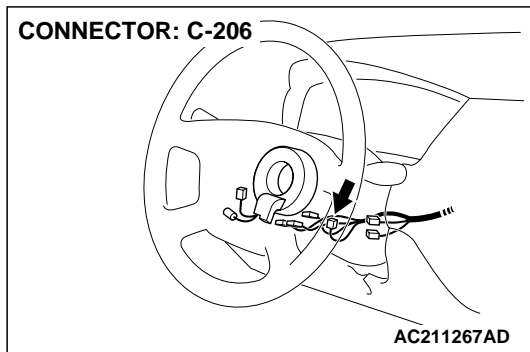
NO : Replace the ETACS-ECU. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the column switch (windshield wiper and washer switch) should be normal.

INSPECTION PROCEDURE N-8: Column Switch: ETACS-ECU does not receive any signal from the windshield intermittent wiper interval adjusting knob.

Windshield Intermittent Wiper Interval Adjusting Knob Input Circuit



W2J08M17AA



CIRCUIT OPERATION

The ETACS-ECU calculates the windshield intermittent wiper interval according to the position of the windshield intermittent wiper interval adjusting knob, which is incorporated in column switch (windshield wiper and washer switch).

TECHNICAL DESCRIPTION (COMMENT)

If the windshield intermittent wiper interval can not be adjusted, the column switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set

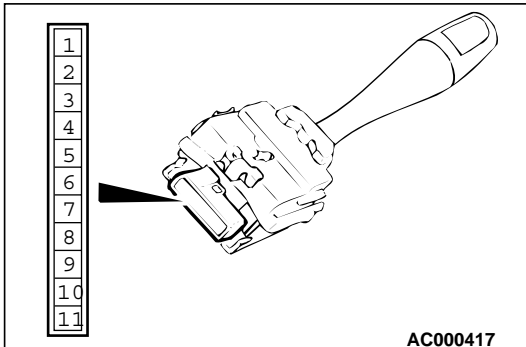
STEP 1. Check the windshield intermittent wiper interval adjusting knob.

- (1) Remove the windshield wiper and washer switch, and check at the switch side.
- (2) Measure the resistance value between terminals 3 and 6. The measured resistance should change smoothly from approximately 0 ohm ("FAST" position) to 1 kilohm ("SLOW" position).

Q: Is the windshield intermittent wiper interval adjusting knob in good condition?

YES : Go to Step 2.

NO : Replace the column switch (windshield wiper and washer switch). If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ECU.



STEP 2. Check the column switch body.

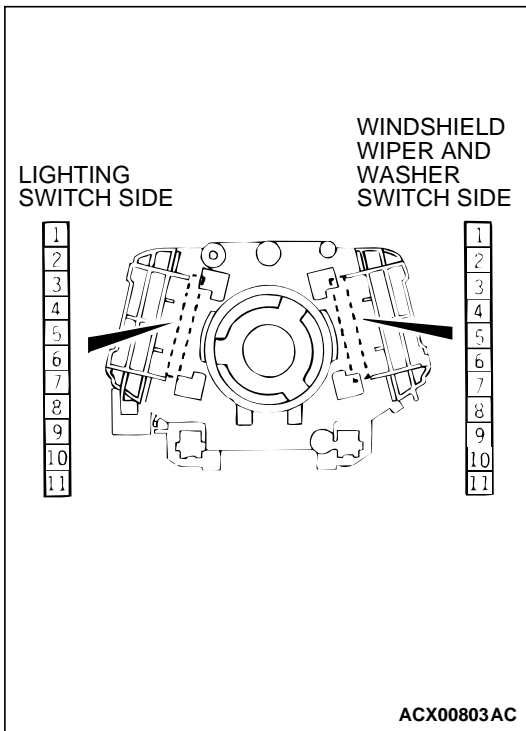
Remove the turn-signal light and lighting switch and windshield wiper and washer switch. Then check continuity between the switch body terminals.

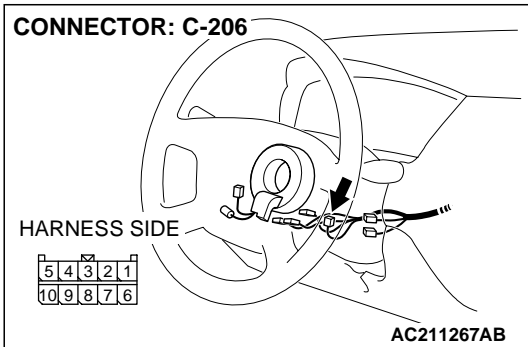
SWITCH BODY	TESTER CONNECTION	SPECIFIED CONDITION
Lighting switch side – Windshield wiper and washer switch side	3 – 3, 6 – 6	Less than 2 ohms

Q: Is the column switch body in good condition?

YES : Go to Step 3.

NO : Replace the column switch body. If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ECU.





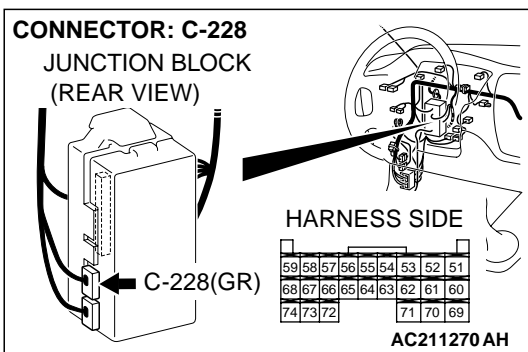
STEP 3. Check column switch connector C-206 and ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are column switch connector C-206 and ETACS-ECU connector C-228 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. If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ECU.

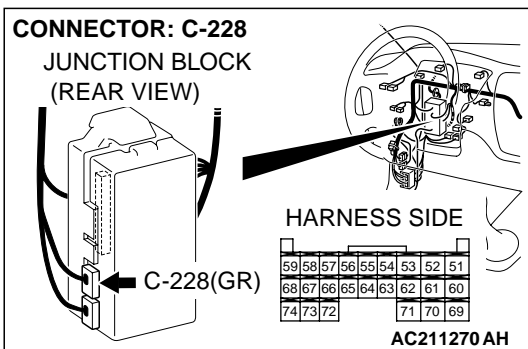
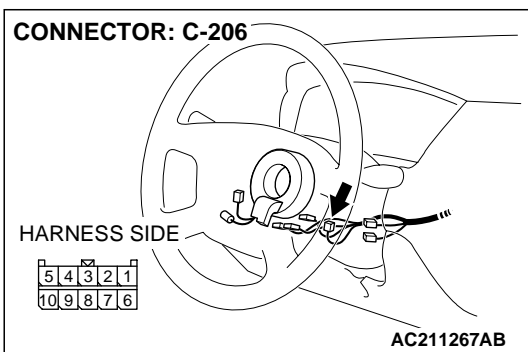


STEP 4. Check the wiring harness between column switch connector C-206 (terminal 6) and ETACS-ECU connector C-228 (terminal 66).

Q: Is the wiring harness between column switch connector C-206 (terminal 6) and ETACS-ECU connector C-228 (terminal 66) 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. If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ECU.



STEP 5. Replace the ECU.

- (1) Replace the ETACS-ECU.
- (2) If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ECU.

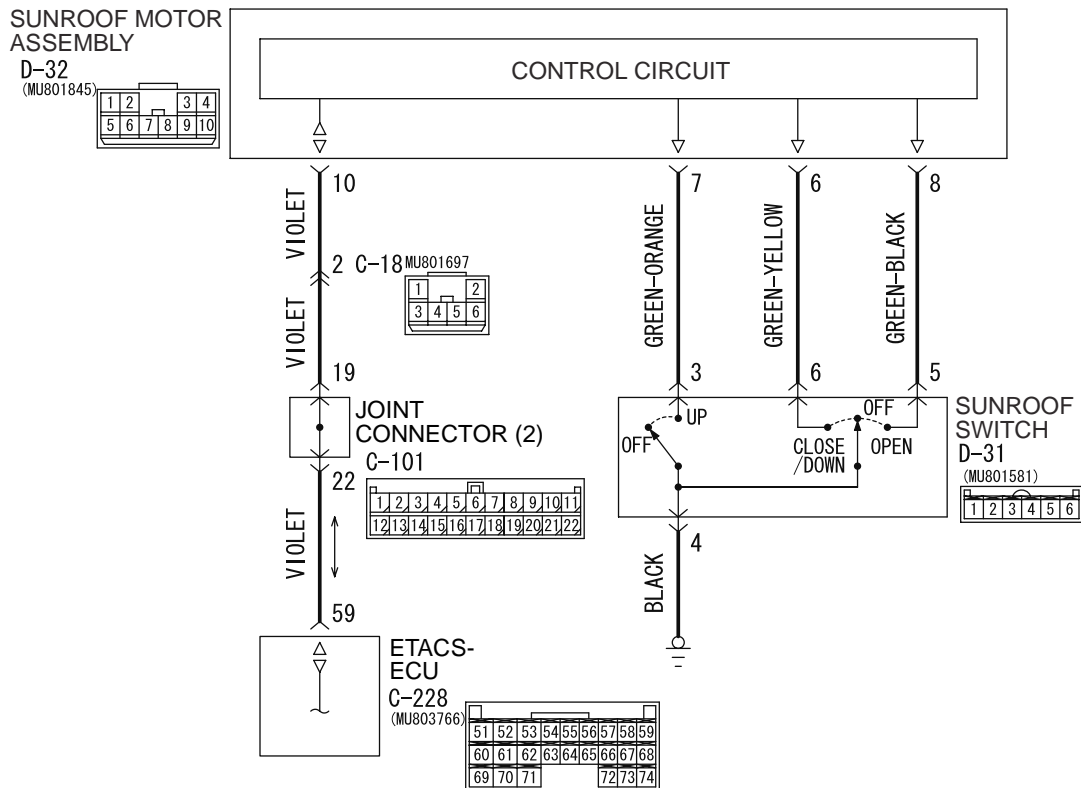
Q: Can input signal be confirmed when the windshield intermittent wiper interval adjusting knob is operated?

YES : No action is necessary and testing is complete.

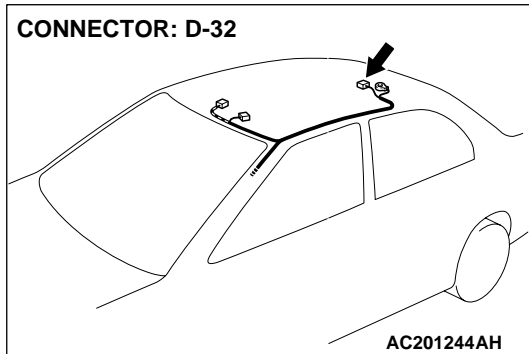
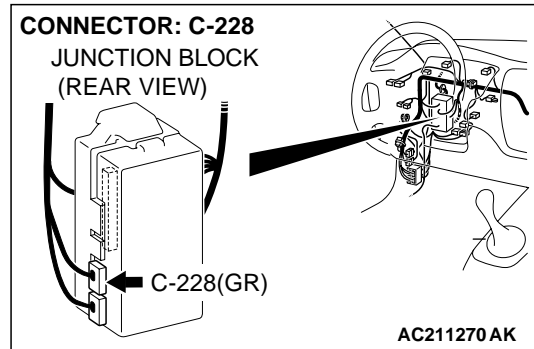
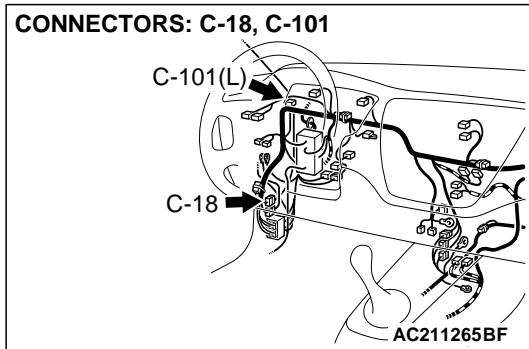
NO : Replace the column switch (windshield wiper and washer switch). If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ECU.

INSPECTION PROCEDURE N-9: Sunroof: The ETACS-ECU does not receive any signal from the up, open or close/down switch.

Sunroof Switch Input Circuit



W3J14M22AA



CIRCUIT OPERATION

The ETACS-ECU receives a signal through the sunroof motor assembly via the SWS communication line from the sunroof switch, and sends a signal to the data link connector.

TECHNICAL DESCRIPTION (COMMENT)

If the SWS communication line between the sunroof motor assembly and the ETACS-ECU is defective, the ETACS-ECU cannot identify the input signal from the sunroof switch even if the sunroof is normal.

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
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

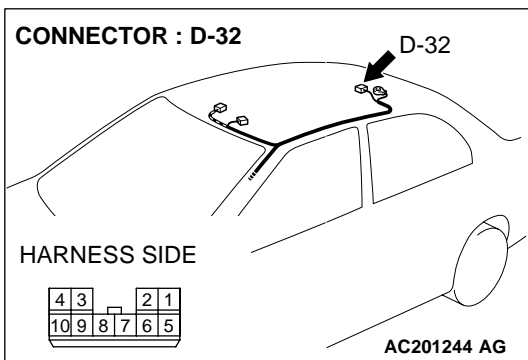
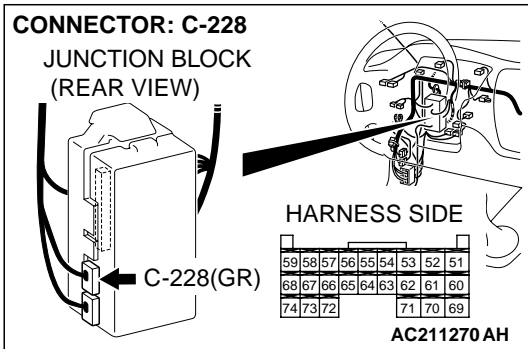
- MB991223: Harness Set

STEP 1. Verify the sunroof operation.

Q: Does the sunroof work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure F-1 "Sunroof does not operate [P.54B-191](#)."



STEP 2. Check sunroof motor assembly connector D-32 and ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

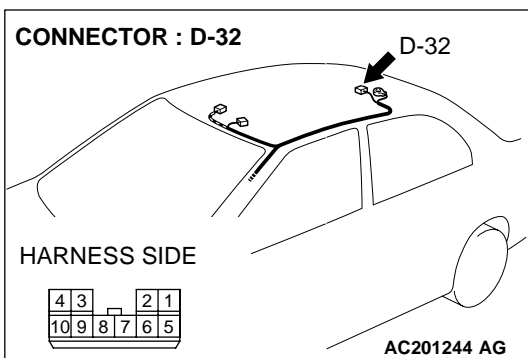
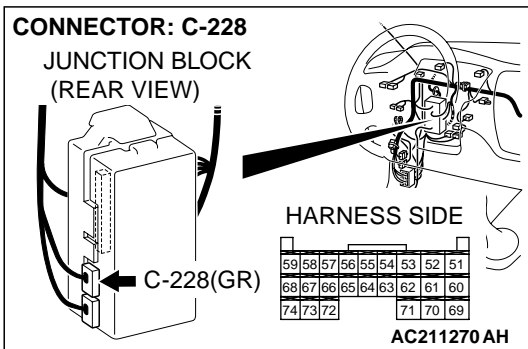
Q: Are sunroof motor assembly connector D-32 and ETACS-ECU connector C-228 in good condition?

YES : Go to Step 3.

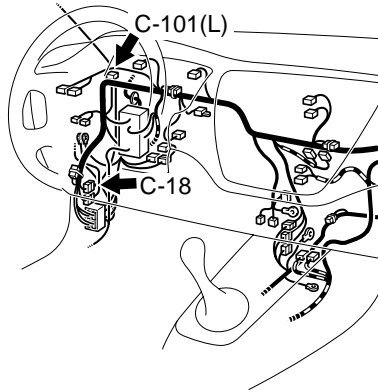
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

P.00E-2. If the sunroof operates normally, it indicates that a correct signal is sent from the sunroof switch.

STEP 3. Check the wiring harness between sunroof motor assembly connector D-32 (terminal 10) and ETACS-ECU connector C-228 (terminal 59).



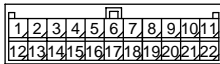
CONNECTORS: C-18, C-101



C-18



C-101



AC211307AH

NOTE: Also check intermediate connector C-18 and joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-18 or joint connector C-101 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-32 (terminal 10) and ETACS-ECU connector C-228 (terminal 59) in good condition?

YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the sunroof operates normally, it indicates that a correct signal is sent from the sunroof switch.

STEP 4. Replace the ECU.

- (1) Replace the sunroof motor assembly.
- (2) If the sunroof operates normally, it indicates that a correct signal is sent from the sunroof switch.

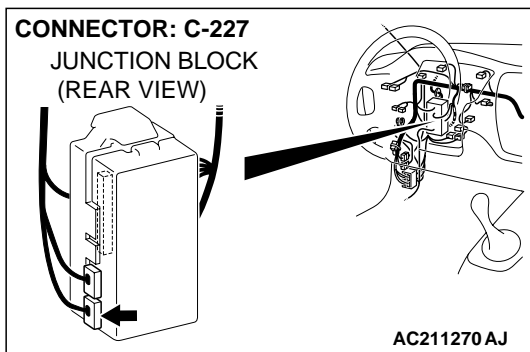
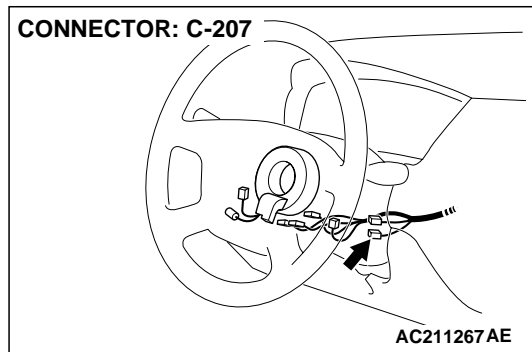
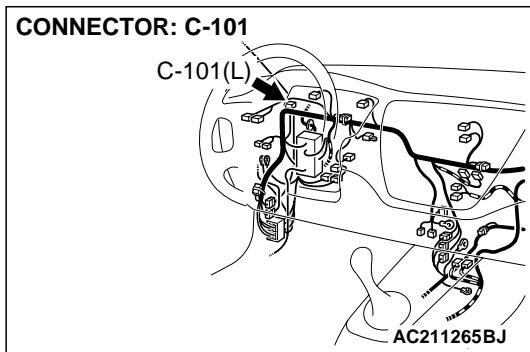
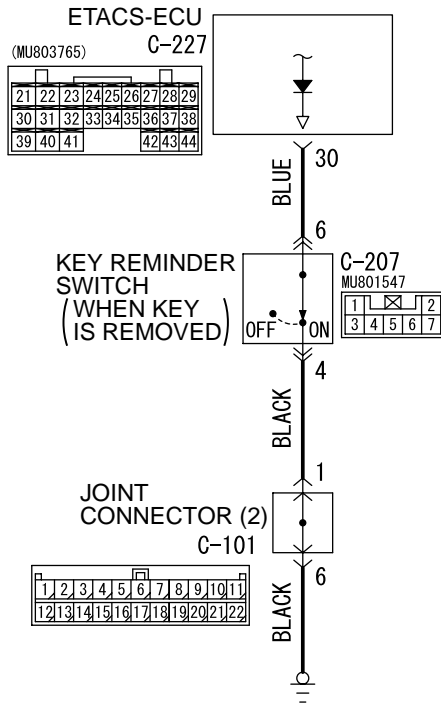
Q: Does the ETACS-ECU receive correct signals from the sunroof switch?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. If the sunroof operates normally, it indicates that a correct signal is sent from the sunroof switch.

INSPECTION PROCEDURE O-1: ETACS-ECU does not receive any signal from the key reminder switch.

Key Reminder Switch Input Circuit



CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the key reminder switch:

- Ignition key reminder tone alarm function
- Keyless entry system
- Dome light dimming function
- Ignition key cylinder illumination light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

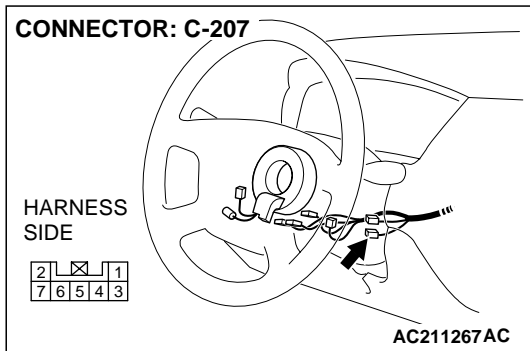
- MB991223: Harness Set

STEP 1. Check key reminder switch connector C-207 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is key reminder switch connector C-207 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](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the key reminder switch should be normal.



STEP 2. Check the key reminder switch.

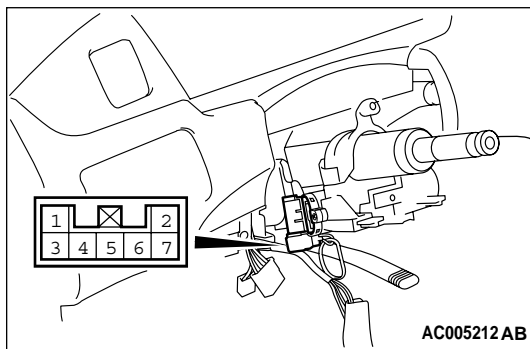
Disconnect key reminder switch connector C-207. Then check continuity between terminals.

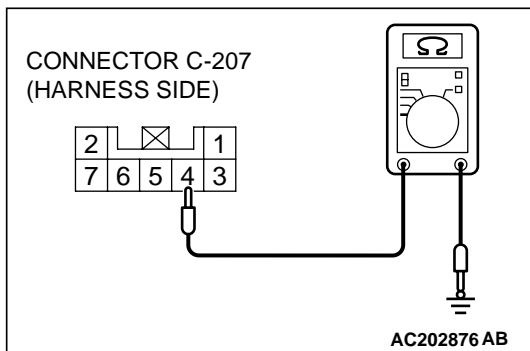
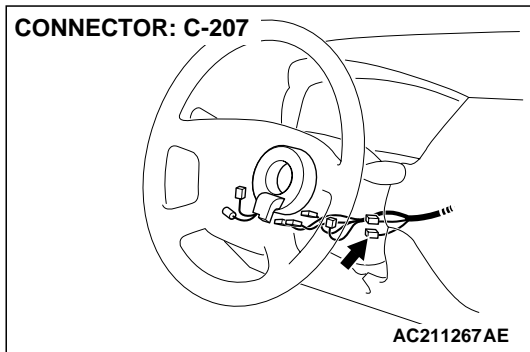
IGNITION KEY	TESTER CONNECTION	SPECIFIED CONDITION
Removed	4 – 6	Less than 2 ohms
Inserted	4 – 6	Open circuit

Q: Is the key reminder switch in good condition?

YES : Go to Step 3.

NO : Replace the key reminder switch. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the key reminder switch should be normal.





STEP 3. Check the ground circuit to the key reminder switch. Measure the resistance at key reminder switch connector C-207.

(1) Disconnect key reminder switch connector C-207 and measure the resistance available at the wiring harness side of the connector.

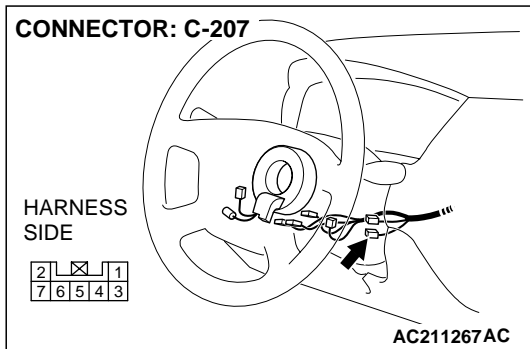
(2) Measure the resistance value between terminal 4 and ground.

- The resistance should equal 2 ohms or less.

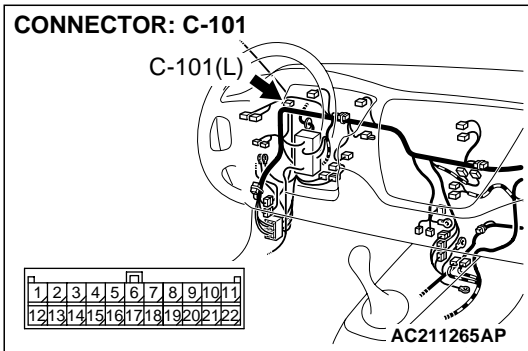
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between key reminder switch connector C-207 (terminal 4) and ground.



NOTE: Also check joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-101 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 C-207 (terminal 4) and ground in good condition?

YES : No action is necessary and testing is complete.

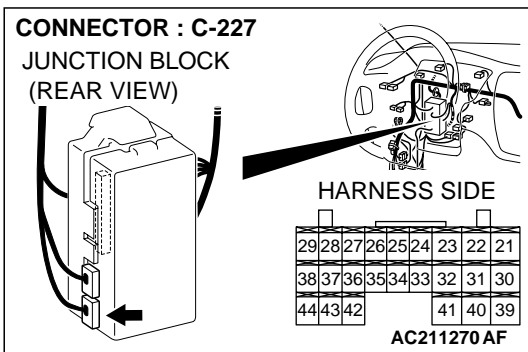
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the key reminder switch should be normal.

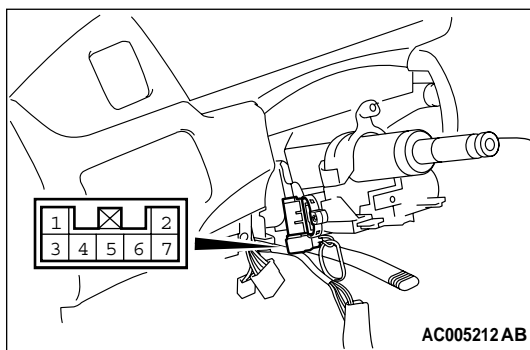
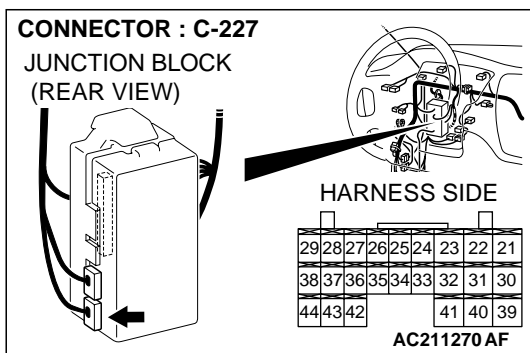
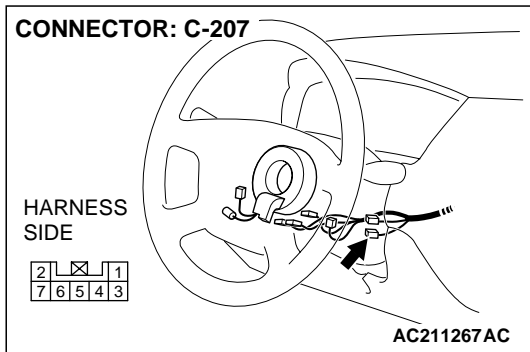
STEP 5. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-227 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the key reminder switch should be normal.





STEP 6. Check the wiring harness between key reminder switch connector C-207 (terminal 6) and ETACS-ECU connector C-227 (terminal 30).

Q: Is the wiring harness between key reminder switch connector C-207 (terminal 6) and ETACS-ECU connector C-227 (terminal 30) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the key reminder switch should be normal.

STEP 7. Check for continuity between key reminder switch connector C-207 terminal 4 and each of the other terminals as well as terminal 6 and each of the other terminals.

- (1) Disconnect key reminder switch connector C-207 and measure the resistance available at the equipment side of the connector.
- (2) Check for continuity between key reminder switch connector C-207 terminal 4 and each of the other terminals as well as terminal 6 and each of the other terminals.

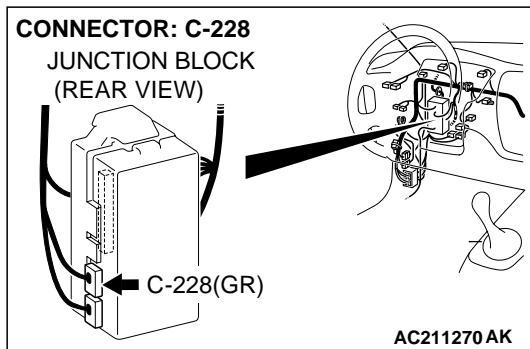
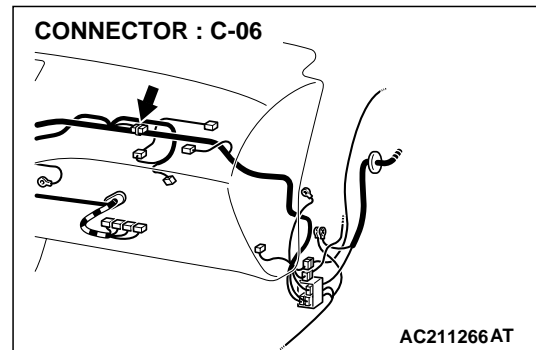
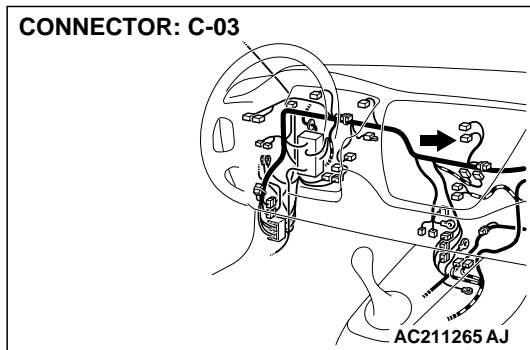
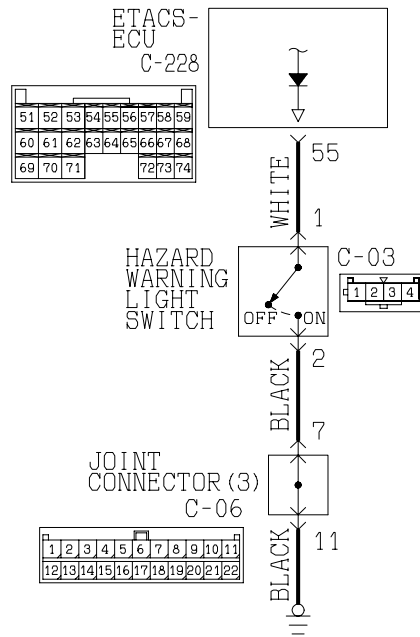
Q: Does the continuity exist between the terminals?

YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the key reminder switch should be normal.

NO : Replace the key reminder switch. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the key reminder switch should be normal.

INSPECTION PROCEDURE O-2: The ETACS-ECU does not receive any signal from the hazard warning light switch.

Hazard Warning Light Switch Input Circuit



CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the hazard warning light switch:

- Hazard warning light
- Keyless entry system (registering the encrypted code)

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment or systems, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

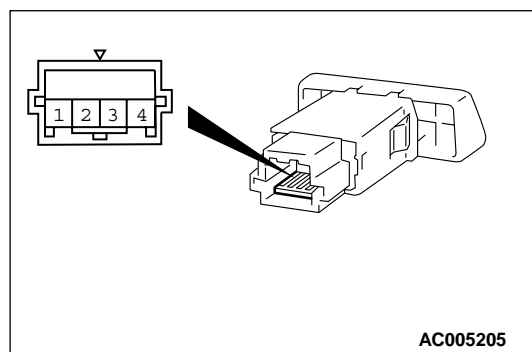
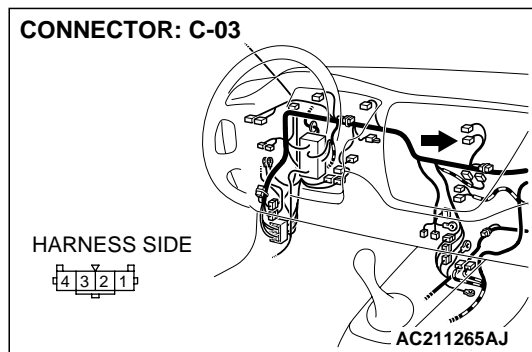
- MB991223: Harness Set

STEP 1. Check hazard warning light switch connector C-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is hazard warning light switch connector C-03 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the hazard warning light switch should be normal.



STEP 2. Check the hazard warning light switch.

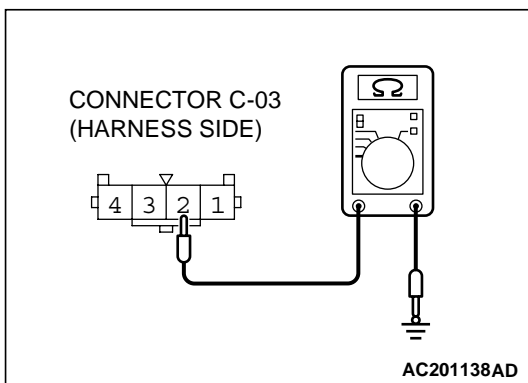
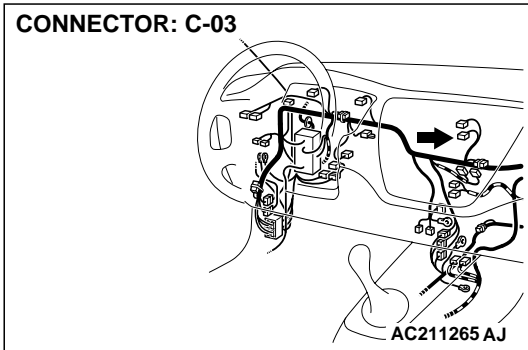
Remove the hazard warning light switch. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – 2	Open circuit
Pressed	1 – 2	Less than 2 ohms

Q: Is the hazard warning light switch in good condition?

YES : Go to Step 3.

NO : Replace the hazard warning light switch. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the hazard warning light switch should be normal.



STEP 3. Check the ground circuit to the hazard warning light switch. Measure the resistance at hazard warning light switch connector C-03.

(1) Disconnect hazard warning light switch connector C-03 and measure the resistance available at the wiring harness side of the connector.

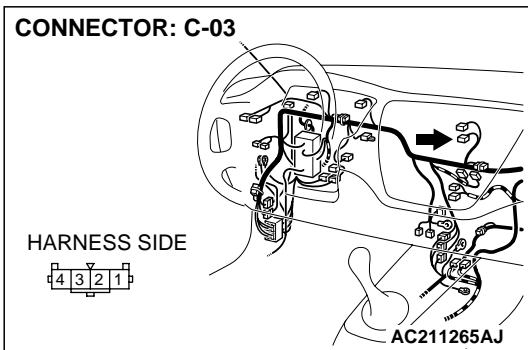
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should equal 2 ohms or less.

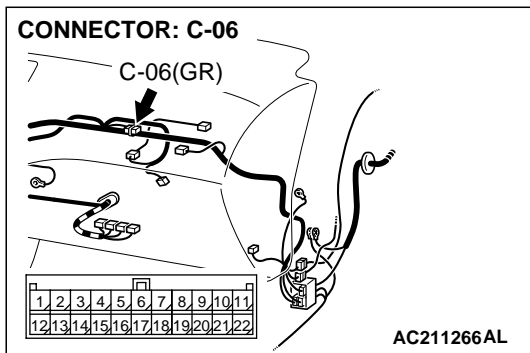
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between hazard warning light switch connector C-03 (terminal 2) and ground.



NOTE: Also check joint connector C-06 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-06 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 hazard warning light switch connector C-03 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

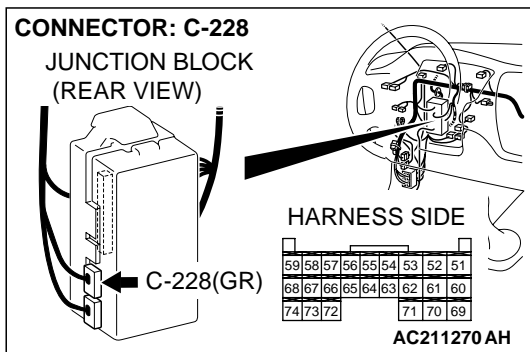
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the hazard warning light switch should be normal.

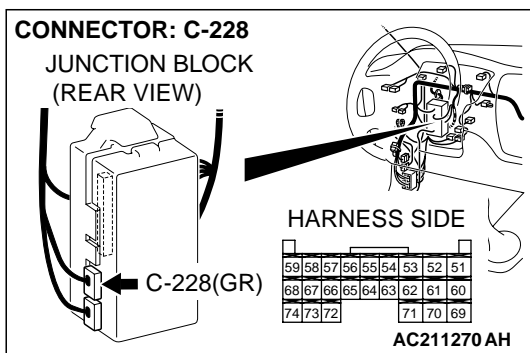
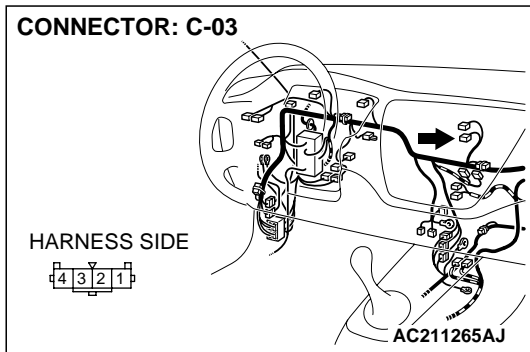
STEP 5. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-228 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the hazard warning light switch should be normal.





STEP 6. Check the wiring harness between hazard warning light switch connector C-03 (terminal 1) and ETACS-ECU connector C-228 (terminal 55).

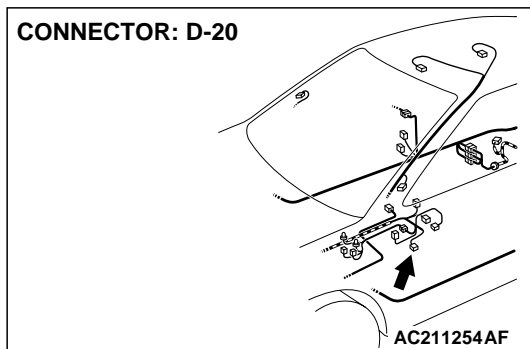
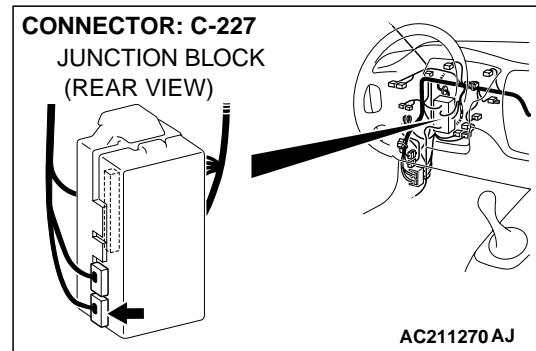
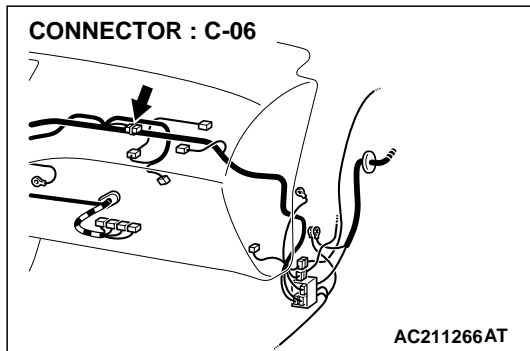
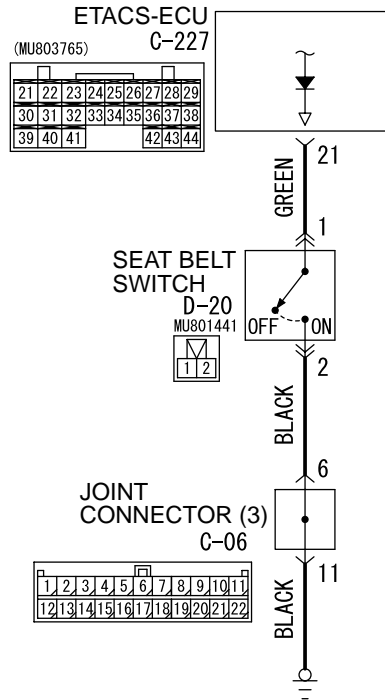
Q: Is the wiring harness between hazard warning light switch connector C-03 (terminal 1) and ETACS-ECU connector C-228 (terminal 55) in good condition?

YES : Replace the ETACS-ECU. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the hazard warning light switch should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the hazard warning light switch should be normal.

INSPECTION PROCEDURE O-3: The ETACS-ECU does not receive any signal from the driver's seat belt switch.

Seat Belt Switch Input Circuit



CIRCUIT OPERATION

The ETACS-ECU operates the following functions and equipment according to signal from the driver's seat belt switch:

- Seat belt tone alarm function
- Seat belt warning light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment and functions, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

- The driver's inner seat belt (driver's seat belt switch) may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

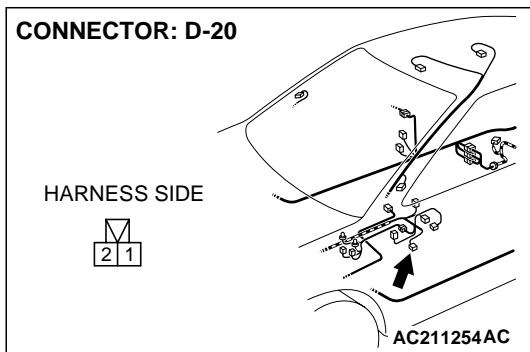
- MB991223: Harness Set

STEP 1. Check driver's seat belt switch connector D-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the driver's seat belt switch connector D-20 in good condition?

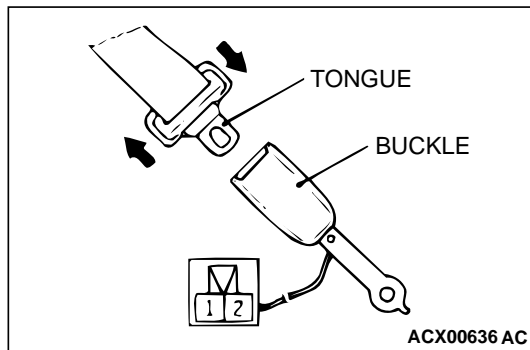
YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's seat belt switch should be normal.



STEP 2. Check the driver's seat belt switch.

Disconnect driver's seat belt switch connector D-20. Then check continuity between the switch terminals.



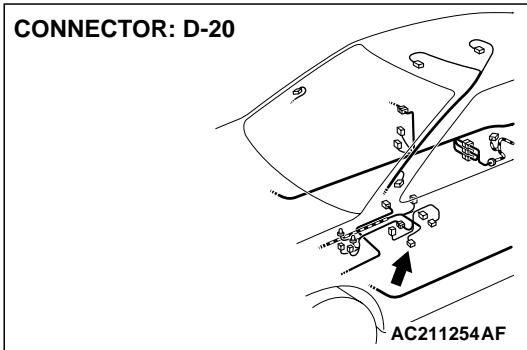
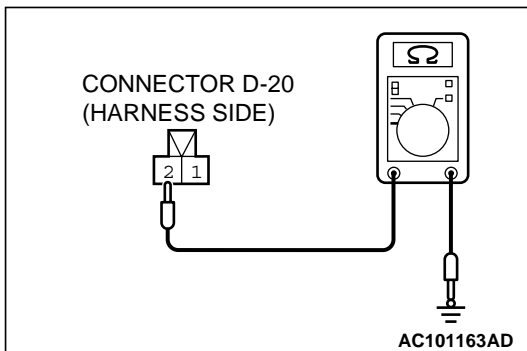
ITEM	TESTER CONNECTION	SPECIFIED CONDITION
Fastened seat belt	1 – 2	Open circuit
Unfastened seat belt	1 – 2	Less than 2 ohms

Q: Is the driver's seat belt switch in good condition?

YES : Go to Step 3.

NO : Replace the driver's seat belt. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's seat belt switch should be normal.

CONNECTOR: D-20

CONNECTOR D-20
(HARNESS SIDE)

STEP 3. Check the battery ground circuit to the driver's seat belt switch. Measure the resistance at driver's seat belt switch connector D-20.

(1) Disconnect driver's seat belt switch connector D-20 and measure the resistance available at the wiring harness side of the connector.

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

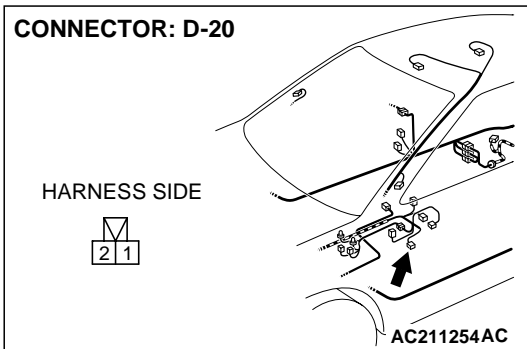
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

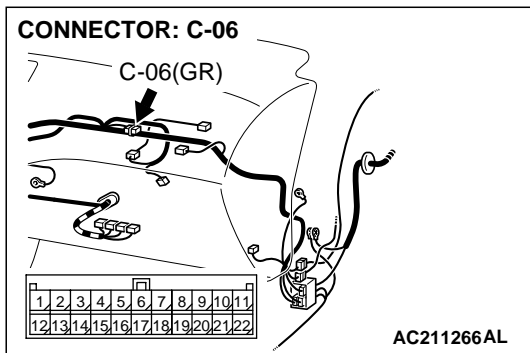
NO : Go to Step 4.

CONNECTOR: D-20



HARNESS SIDE





NOTE: Also check joint connector C-06 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-06 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 driver's seat belt switch connector D-20 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

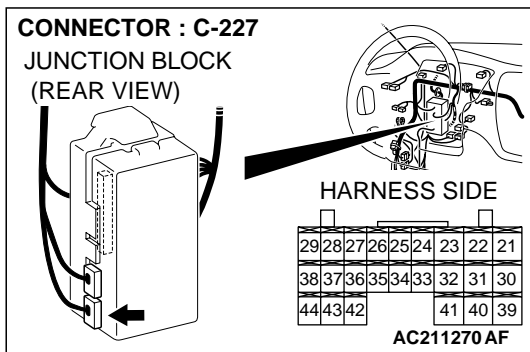
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's seat belt switch should be normal.

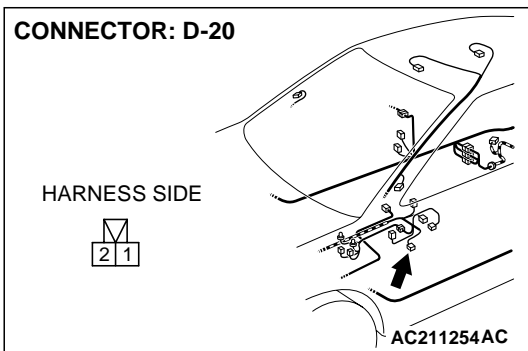
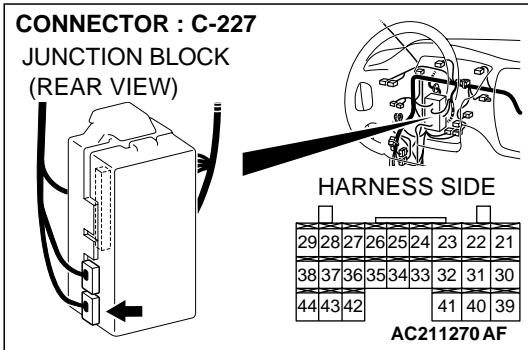
STEP 5. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-227 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's seat belt switch should be normal.





STEP 6. Check the wiring harness between driver's seat belt switch connector D-20 (terminal 1) and ETACS-ECU connector C-227 (terminal 21).

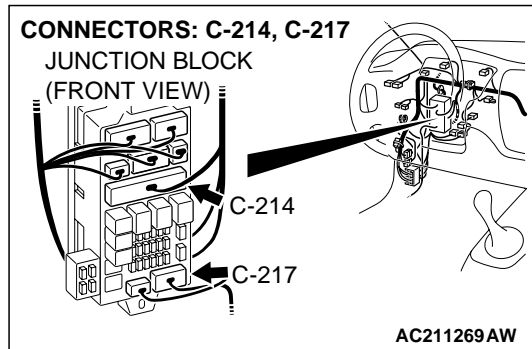
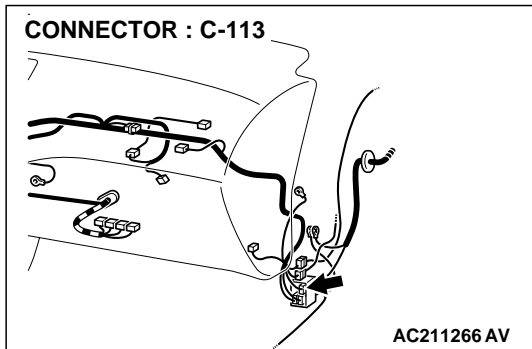
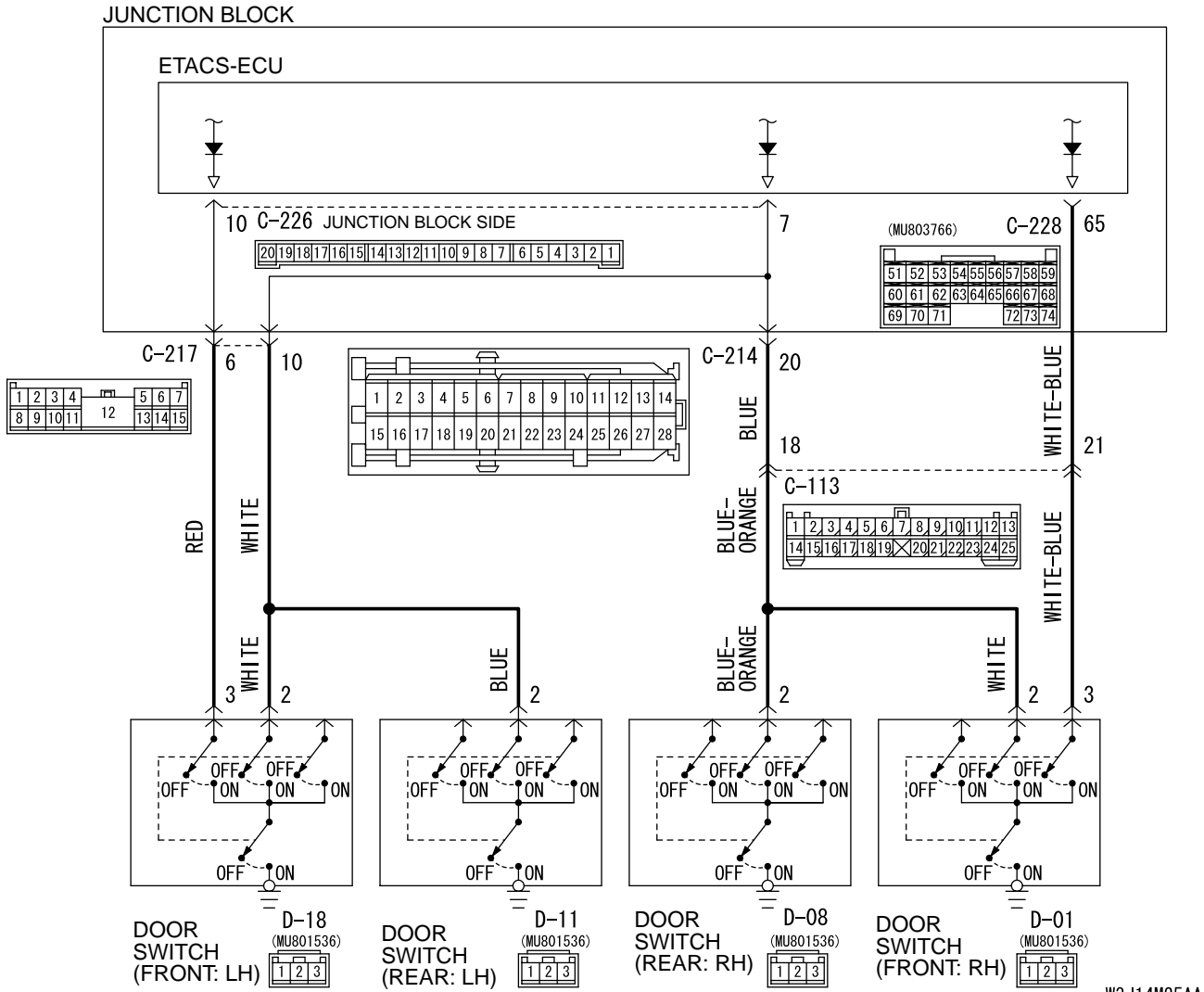
Q: Is the wiring harness between driver's seat belt switch connector D-20 (terminal 1) and ETACS-ECU connector C-227 (terminal 21) in good condition?

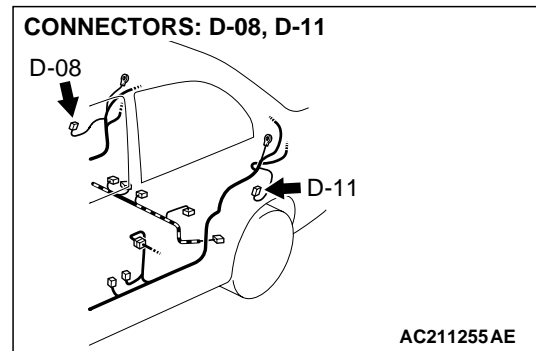
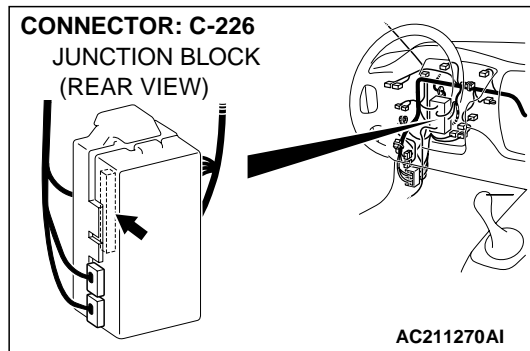
YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's seat belt switch should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's seat belt switch should be normal.

INSPECTION PROCEDURE O-4: The ETACS-ECU does not receive any signal from all the door switches.

All Door Switches Input Circuit





CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the all door switches:

- Light reminder tone alarm function <Driver's door switch>
- Power window timer function <Driver's or front passenger's door switch>
- Sunroof timer function <Driver's or front passenger's door switch>
- Headlight automatic shutdown function <Driver's door switch>
- Keyless entry system <All door switches>
- Dome light <All door switches>
- Door-ajar indicator light <All door switches>

- Ignition key cylinder illumination light <Driver's door switch>

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems, which are described in "CIRCUIT OPERATION", do not work normally. If the signal is not normal, the all door switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the all door switches.

⚠ CAUTION

To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

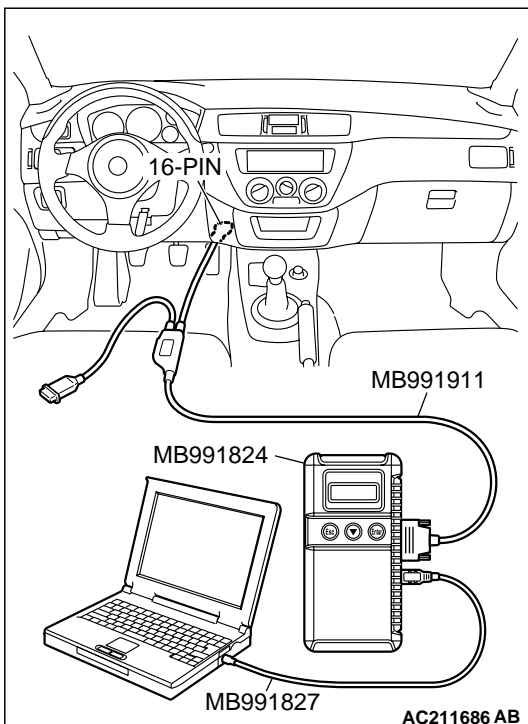
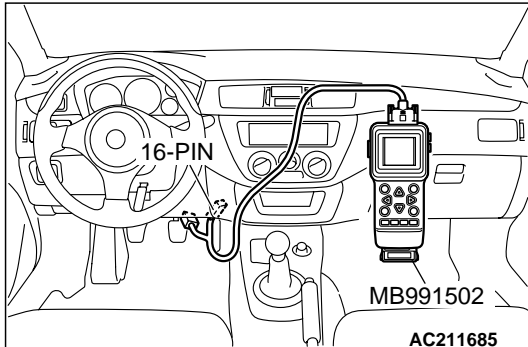
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) When each front and rear doors are opened, check if scan tool MB991502 or MB991958 sounds or not.

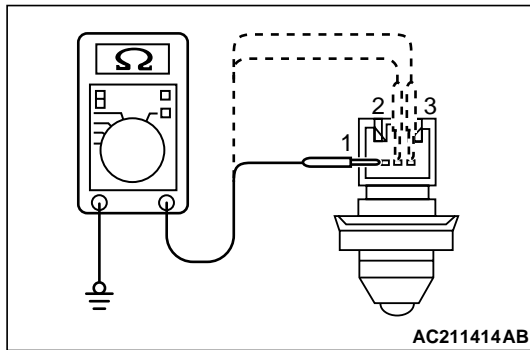
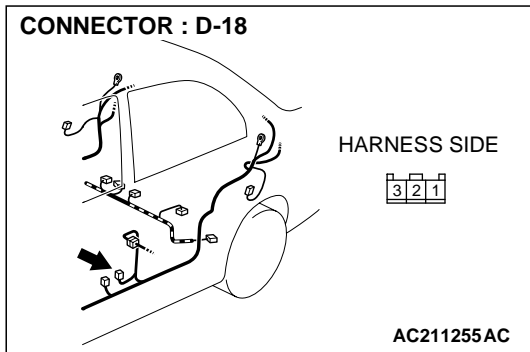
Q: When the front and rear doors are opened, does the scan tool MB991502 or MB991958 sound?

When the front doors are opened, scan tool MB991502 or MB991958 does not sound. : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive any signal from the driver's or the front passenger's door switch P.54B-454."

When the rear door (LH) is opened, scan tool MB991502 or MB991958 does not sound. : Go to Step 2.

When the rear door (RH) is opened, scan tool MB991502 or MB991958 does not sound. : Go to Step 7.





STEP 2. Check door switch (rear: LH) connector D-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door switch (rear: LH) connector D-11 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](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: LH) should be normal.

STEP 3. Check the door switch (rear: LH).

Remove the door switch (rear: LH). Then check continuity between the switch terminals and switch body.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – switch body, 2 – switch body, 3 – switch body	Less than 2 ohms
Pressed	1 – switch body, 2 – switch body, 3 – switch body	Open circuit

Q: Is the door switch (rear: LH) in good condition?

YES : Go to Step 4.

NO : Replace the door switch (rear: LH). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: LH) should be normal.

STEP 4. Measure at the lower metal part of the rear door switch (LH) in order to check the ground circuit to the rear door switch (LH).

NOTE: Check that the rear door switch (LH) is grounded to the vehicle body by means of its mounting screw.

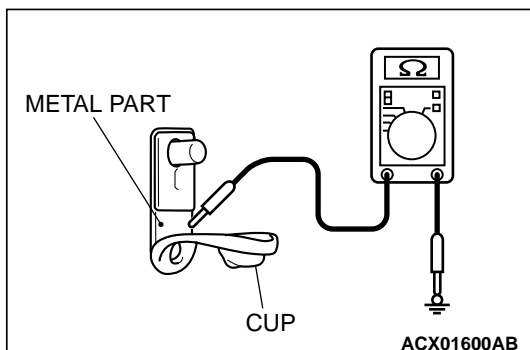
Remove the cap, and measure the resistance value between the lower metal part and the ground.

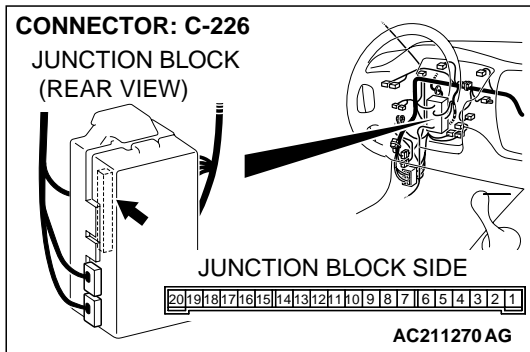
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Check the fit of the switch, and repair if necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the rear door switch (LH) should be normal.



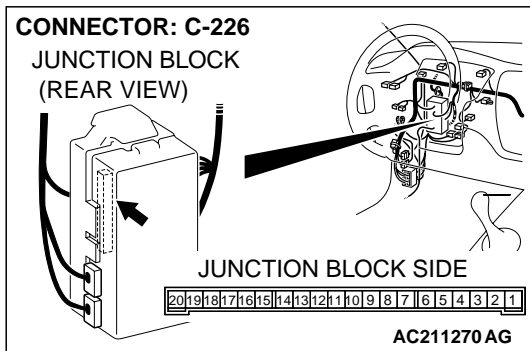


STEP 5. Check and ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

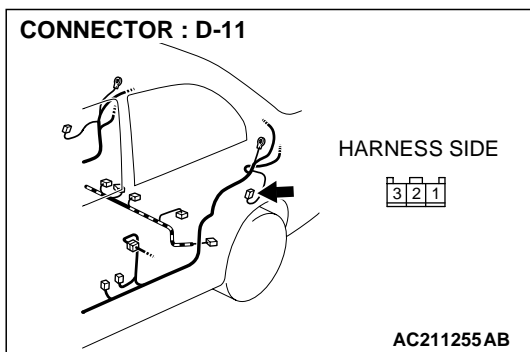
Q: Is ETACS-ECU connector C-226 in good condition?

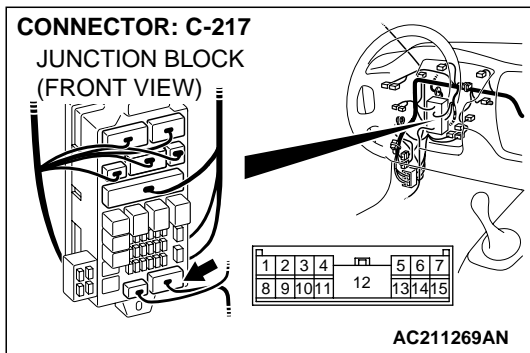
YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: LH) should be normal.



STEP 6. Check the wiring harness between door switch (rear: LH) connector D-11 (terminal 2) and ETACS-ECU connector C-226 (terminal 7).



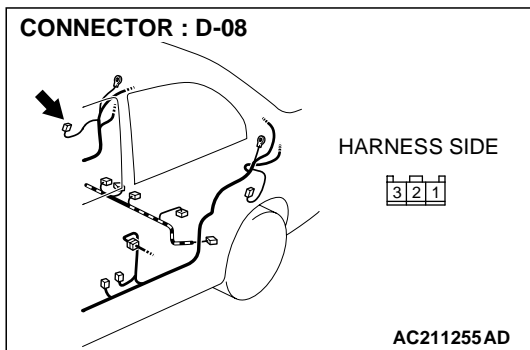


NOTE: Also check junction block connector C-217 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-217 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between door switch (rear: LH) connector D-11 (terminal 2) and ETACS-ECU connector C-226 (terminal 7) in good condition?

YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: LH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: LH) should be normal.

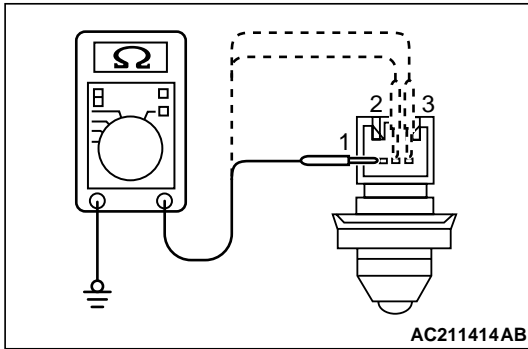


STEP 7. Check door switch (rear: RH) connector D-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door switch (rear: RH) connector D-08 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](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: RH) should be normal.



STEP 8. Check the door switch (rear: RH).

Remove the door switch (rear: RH). Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – switch body, 2 – switch body, 3 – switch body	Less than 2 ohms
Pressed	1 – switch body, 2 – switch body, 3 – switch body	Open circuit

Q: Is the door switch (rear: RH) in good condition?

YES : Go to Step 9.

NO : Replace the door switch (rear: RH). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: RH) should be normal.

STEP 9. Measure at the lower metal part of the door switch (rear: RH) in order to check the ground circuit to the door switch (rear: RH).

NOTE: Check that the door switch (rear: RH) is grounded to the vehicle body by means of its mounting screw.

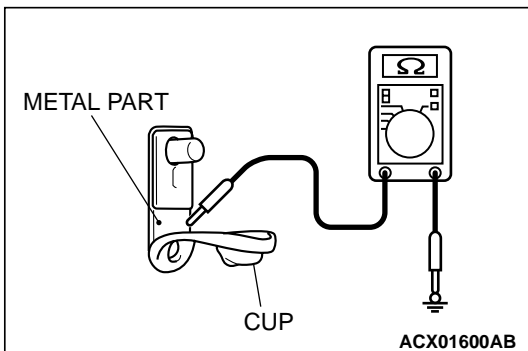
Remove the cap, and measure the resistance value between the lower metal part and the ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.

NO : Check the fit of the switch, and repair if necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: RH) should be normal.

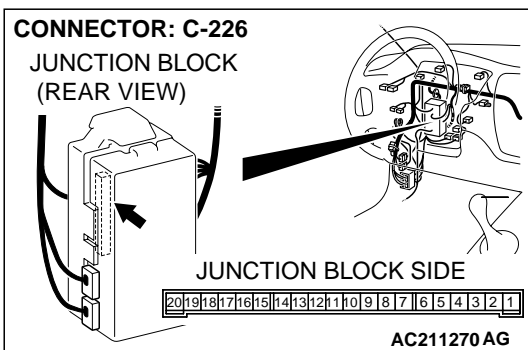


STEP 10. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

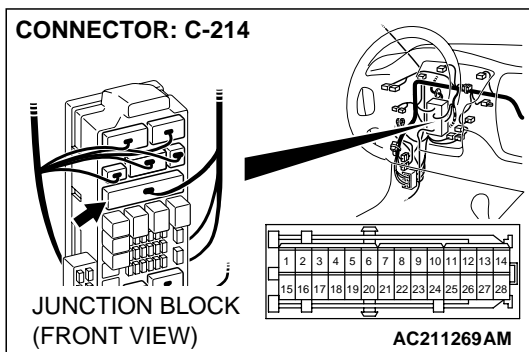
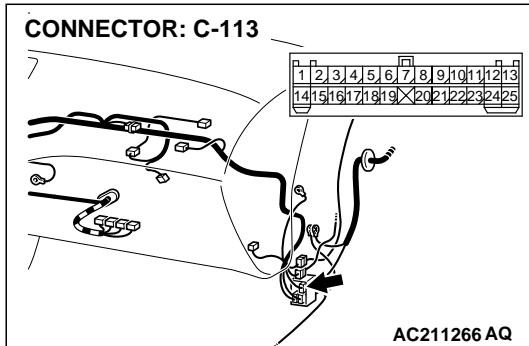
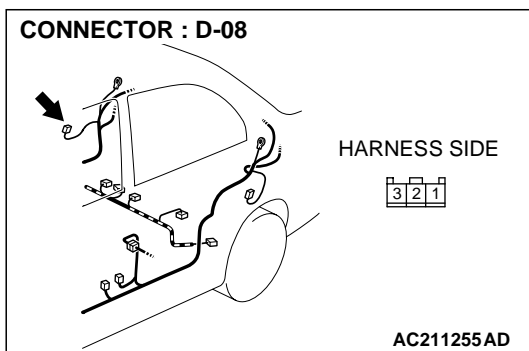
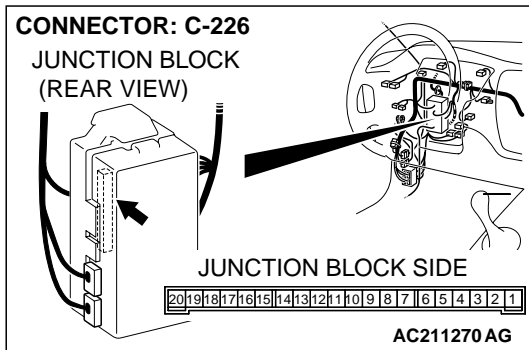
Q: Is ETACS-ECU connector C-226 in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: RH) should be normal.



STEP 11. Check the wiring harness between door switch (rear: RH) connector D-08 (terminal 2) and ETACS-ECU connector C-226 (terminal 7).



NOTE: Also check intermediate connector C-113 and junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-113 or junction block connector C-214 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

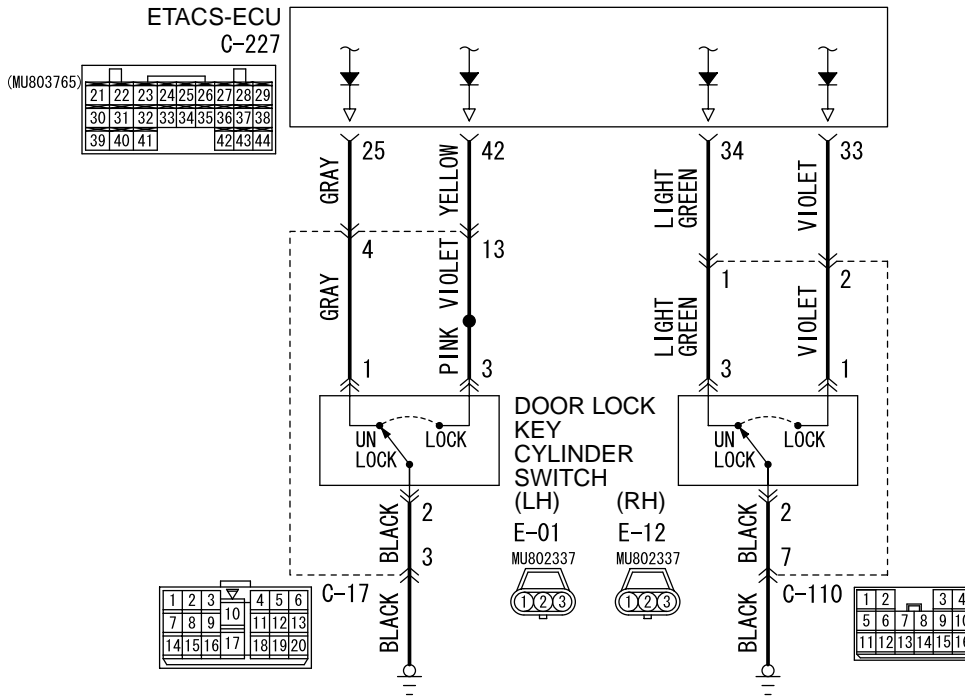
Q: Is the wiring harness between door switch (rear: RH) connector D-08 (terminal 2) and ETACS-ECU connector C-226 (terminal 7) in good condition?

YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: RH) should be normal.

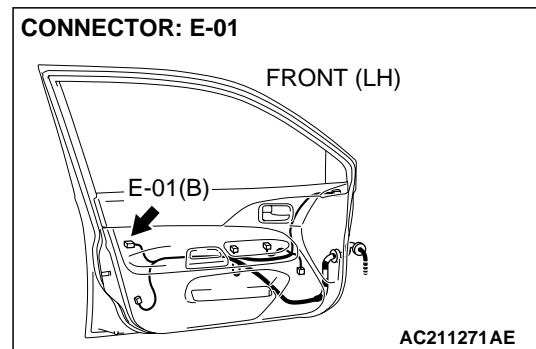
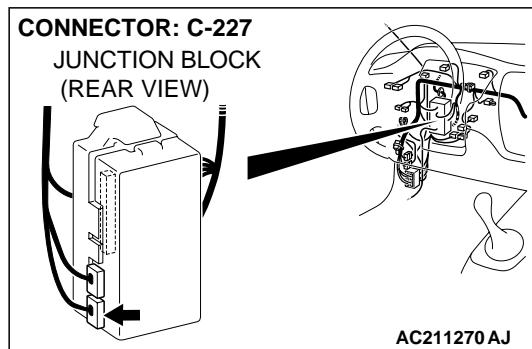
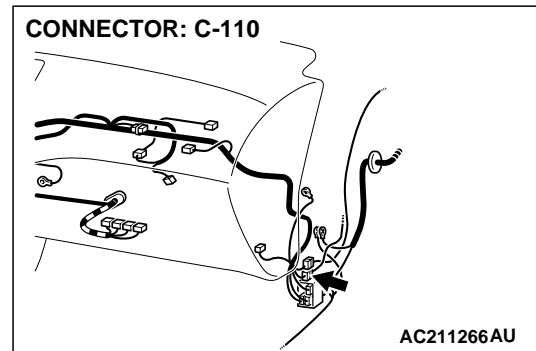
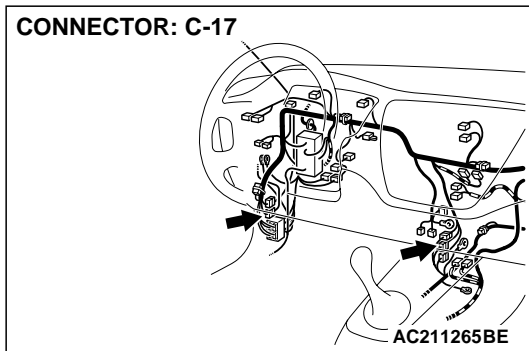
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door switch (rear: RH) should be normal.

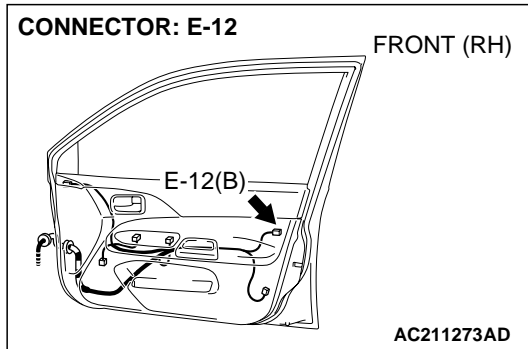
INSPECTION PROCEDURE O-5: The ETACS-ECU does not receive any signal from the door lock key cylinder switch.

Door Lock Key Cylinder Switch Input Circuit



W3J14M26AA



**CIRCUIT OPERATION**

The ETACS-ECU operates the central door locking system according to signal from the door lock key cylinder switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the systems, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. 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

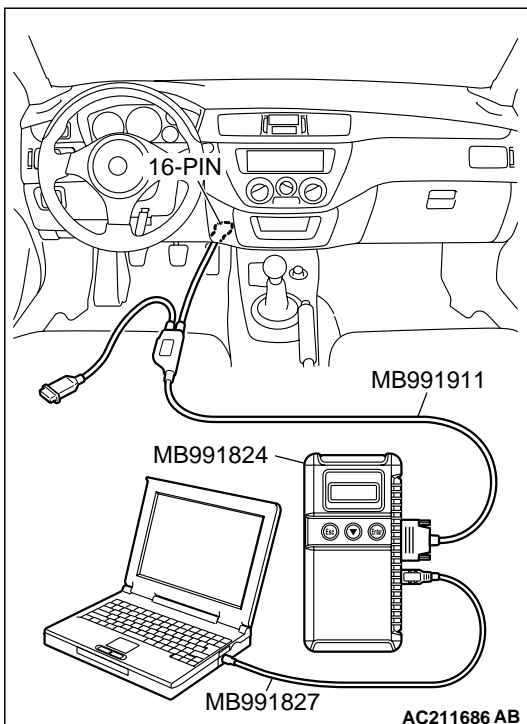
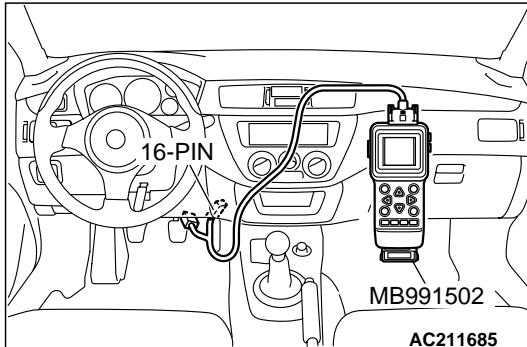
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

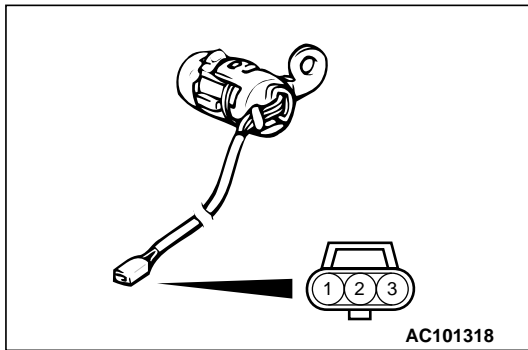
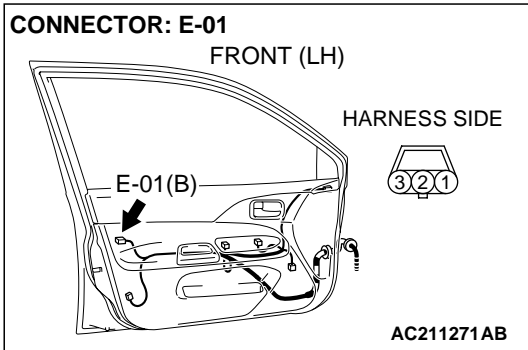
- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) Check that scan tool MB991502 or MB991958 sounds.

Q: When each of the driver's and passenger's door lock key cylinder switch is operated, does scan tool MB991502 or MB991958 sound?

When the door lock key cylinder switch (LH) is operated, scan tool MB991502 or MB991958 does not sound. : Go to Step 2.

When the door lock key cylinder switch (RH) is operated, scan tool MB991502 or MB991958 does not sound. : Go to Step 8.





STEP 2. Check door lock key cylinder switch (LH) connector E-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock key cylinder switch (LH) connector E-01 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](#). If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (LH) should be normal.

STEP 3. Check the door lock key cylinder switch (LH).

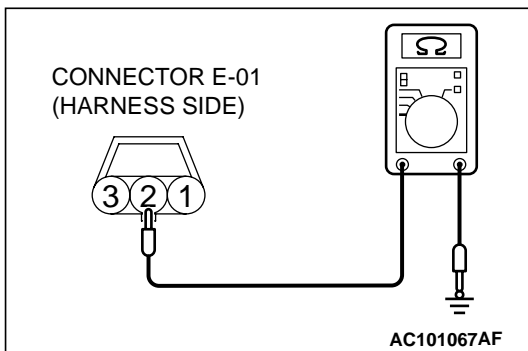
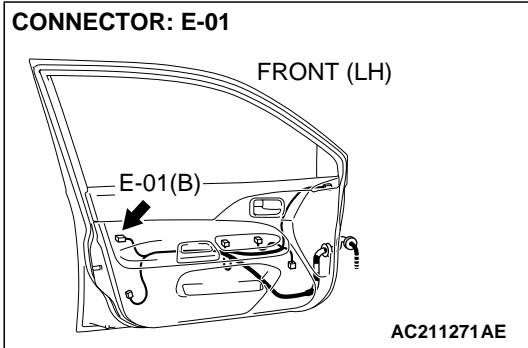
Disconnect door lock key cylinder switch (LH) connector E-01. Then check continuity between the switch terminals.

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

Q: Is the door lock key cylinder switch (LH) in good condition?

YES : Go to Step 4.

NO : Replace the door lock key cylinder switch (LH). If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (LH) should be normal.



STEP 4. Check the ground circuit to the door lock key cylinder switch (LH). Measure the resistance at door lock key cylinder switch (LH) connector E-01.

(1) Disconnect door lock key cylinder switch (LH) connector E-01 and measure the resistance available at the wiring harness side of the connector.

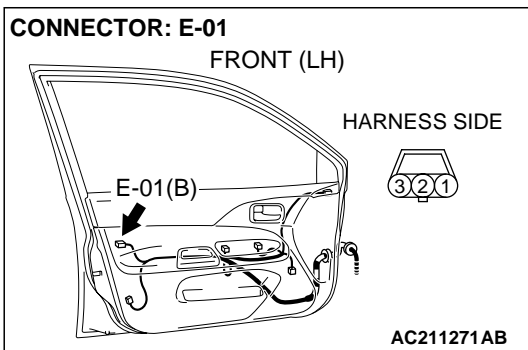
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

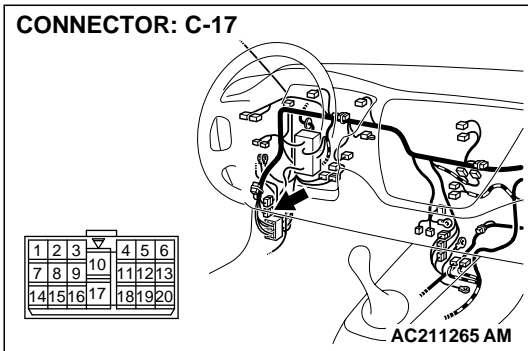
YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Check the wiring harness between door lock key cylinder switch (LH) connector E-01 (terminal 2) and ground.

CONNECTOR: C-17



NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-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 door lock key cylinder switch (LH) connector E-01 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (LH) should be normal.

STEP 6. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

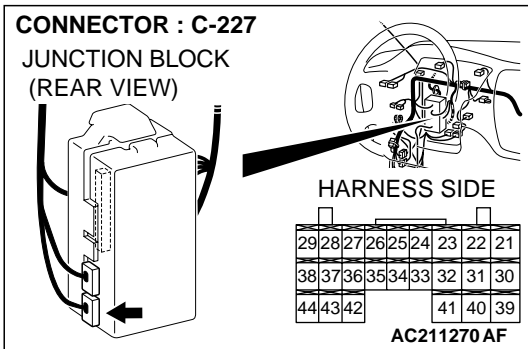
Q: Is ETACS-ECU connector C-227 in good condition?

YES : Go to Step 7.

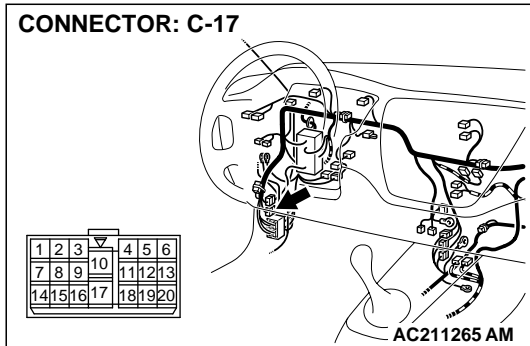
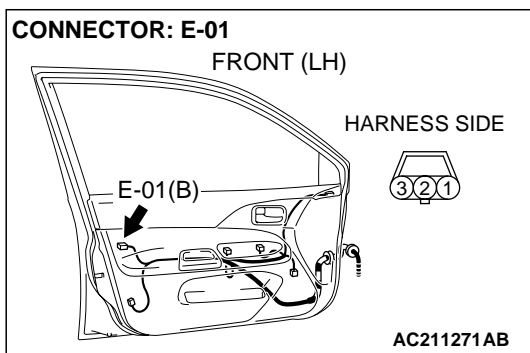
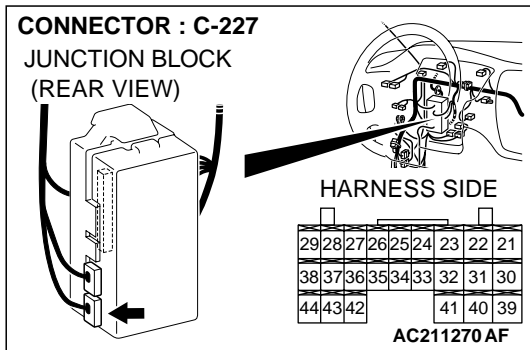
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (LH) should be normal.

CONNECTOR : C-227

JUNCTION BLOCK
(REAR VIEW)



STEP 7. Check the wiring harness between door lock key cylinder switch (LH) connector E-01 (terminal 1 and 3) and ETACS-ECU connector C-227 (terminal 25 and 42).

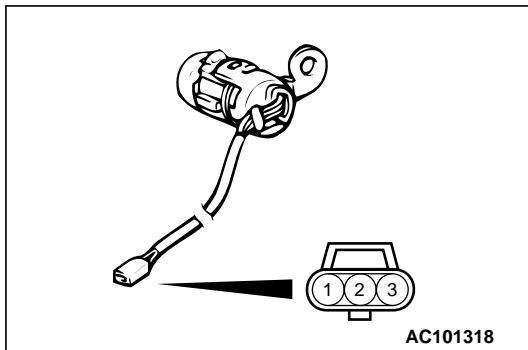
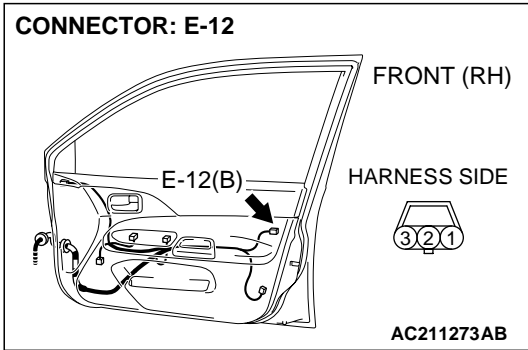


NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door lock key cylinder switch (LH) connector E-01 (terminal 1 and 3) and ETACS-ECU connector C-227 (terminal 25 and 42) in good condition?

YES : Replace the ETACS-ECU. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (LH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (LH) should be normal.



STEP 8. Check door lock key cylinder switch (RH) connector E-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock key cylinder switch (RH) connector E-12 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](#). If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (RH) should be normal.

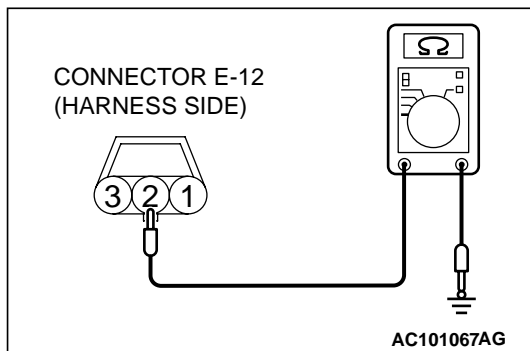
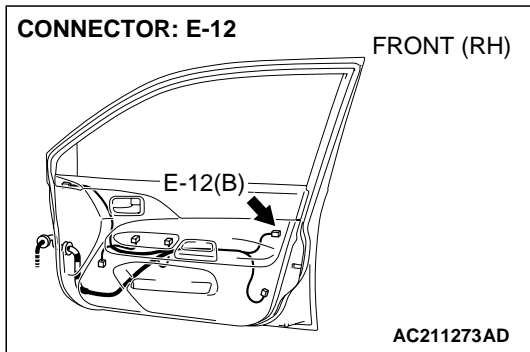
STEP 9. Check the door lock key cylinder switch (RH). Disconnect door lock key cylinder switch (RH) connector E-12. Then check continuity between the switch terminals.

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

Q: Is the front door lock key cylinder switch (RH) in good condition?

YES : Go to Step 10.

NO : Replace the front passenger's door lock key cylinder switch. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (RH) should be normal.



STEP 10. Check the ground circuit to the door lock key cylinder switch (RH). Measure the resistance at door lock key cylinder switch (RH) connector E-12.

(1) Disconnect door lock key cylinder switch (RH) connector E-12 and measure the resistance available at the wiring harness side of the connector.

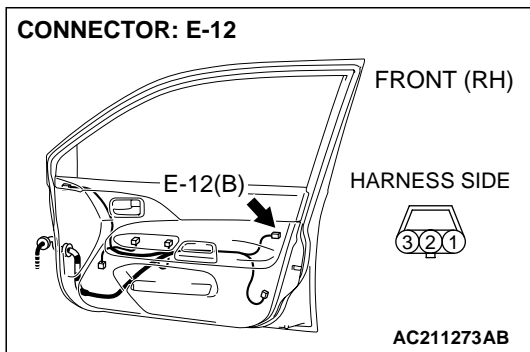
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should equal 2 ohms or less.

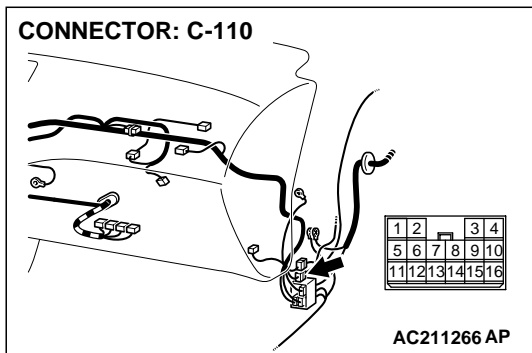
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.



STEP 11. Check the wiring harness between door lock key cylinder switch (RH) connector E-12 (terminal 2) and ground.

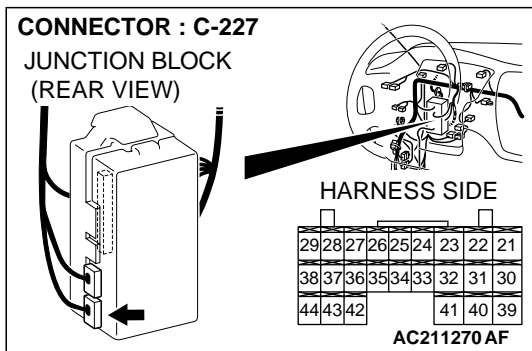


NOTE: Also check intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-110 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door lock key cylinder switch (RH) connector E-12 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (RH) should be normal.



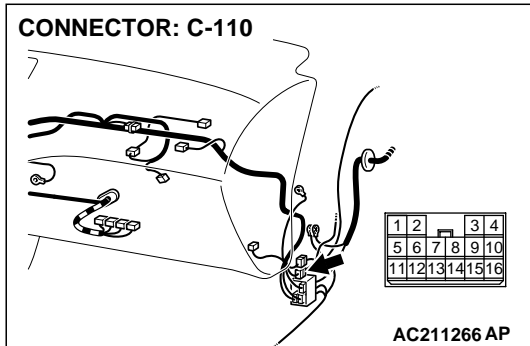
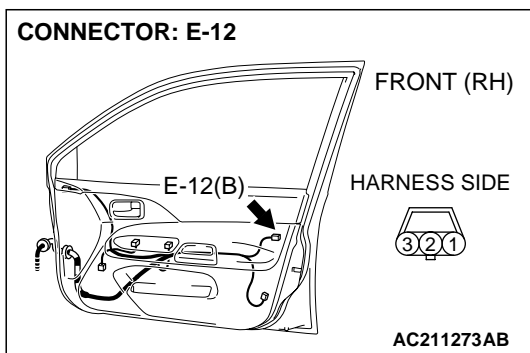
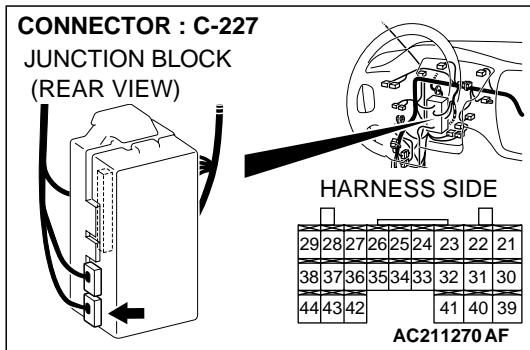
STEP 12. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-227 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. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (RH) should be normal.

STEP 13. Check the wiring harness between door lock key cylinder switch (RH) connector E-12 (terminal 1 and 3) and ETACS-ECU connector C-227 (terminal 33 and 34).



NOTE: Also check intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-110 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

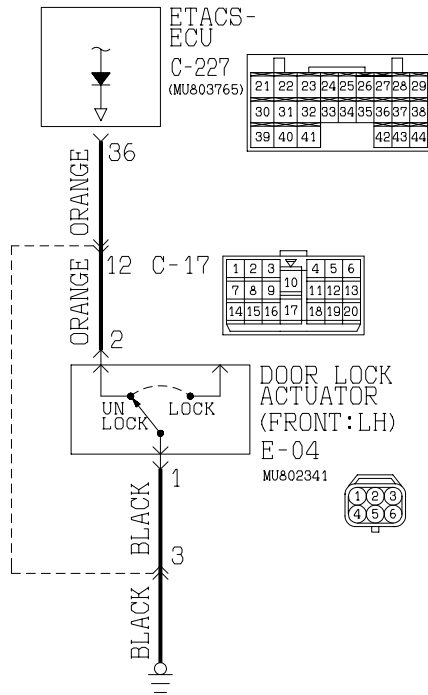
Q: Is the wiring harness between door lock key cylinder switch (RH) connector E-12 (terminal 1 and 3) and ETACS-ECU connector C-227 (terminal 33 and 34) in good condition?

YES : Replace the ETACS-ECU. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (RH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the door lock key cylinder switch (RH) should be normal.

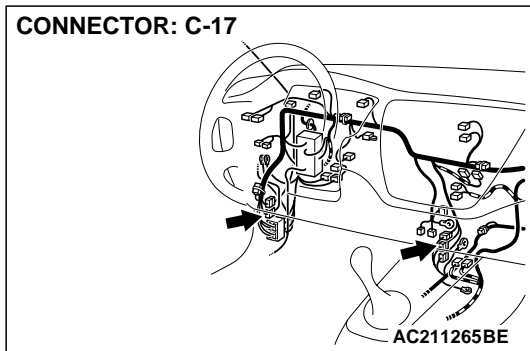
INSPECTION PROCEDURE O-6: The ETACS-ECU does not receive any signal from the door lock actuator.

Door Lock Actuator Input Circuit

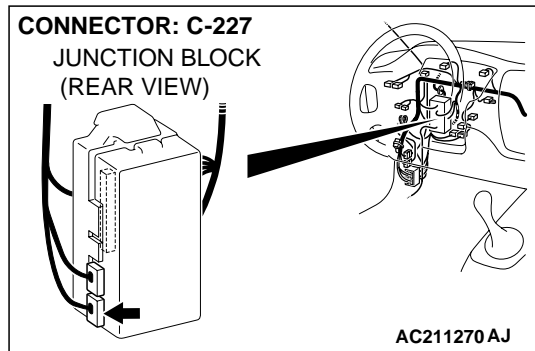


W3J01M29AA

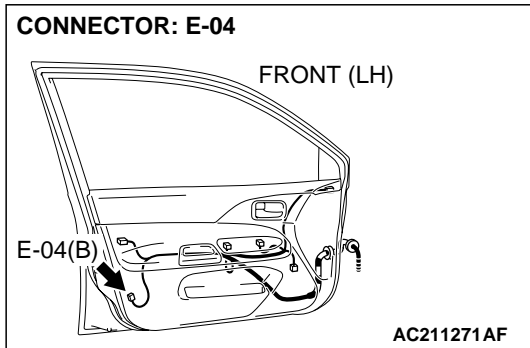
CONNECTOR: C-17



CONNECTOR: C-227
JUNCTION BLOCK
(REAR VIEW)



CONNECTOR: E-04



CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the door lock actuator:

- Central door locking system
- Keyless entry system
- Dome light dimming function

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

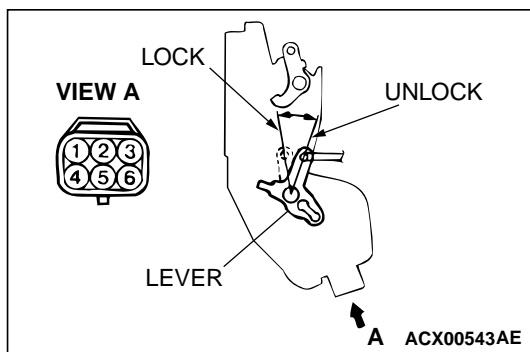
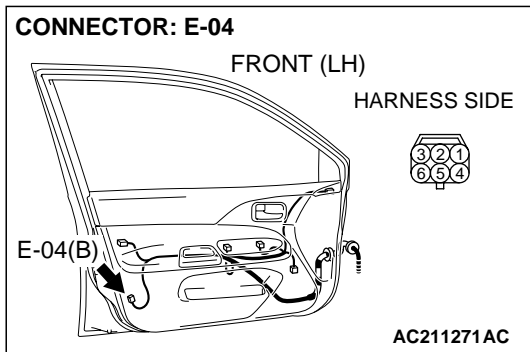
- MB991223: Harness Set

STEP 1. Check driver's door lock actuator switch connector E-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is driver's door lock actuator switch connector E-04 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's door lock actuator switch should be normal.



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

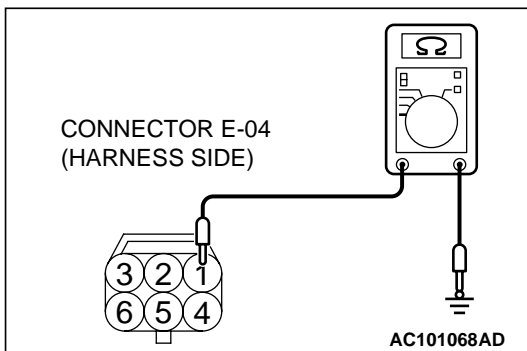
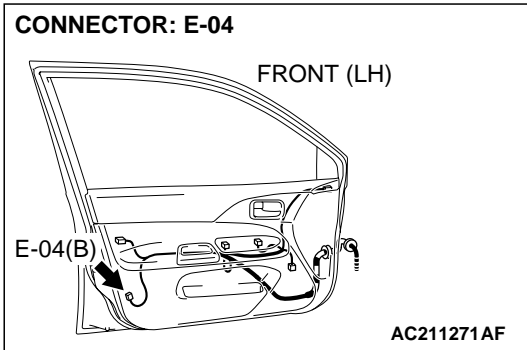
Disconnect driver's door lock actuator switch connector E-04. Then check continuity between the switch terminals.

LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UNLOCK	1 – 2	Less than 2 ohms
LOCK	1 – 2	Open circuit

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

YES : Go to Step 3.

NO : Replace the driver' door lock actuator switch. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's door lock actuator switch should be normal.



STEP 3. Check the ground circuit to the driver's door lock actuator switch. Measure the resistance at driver's door lock actuator switch connector E-04.

(1) Disconnect driver's door lock actuator switch connector E-04 and measure the resistance available at the wiring harness side of the connector.

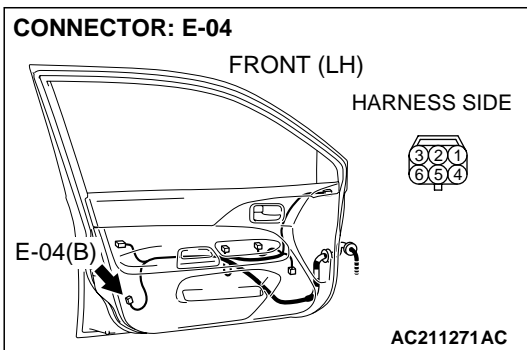
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

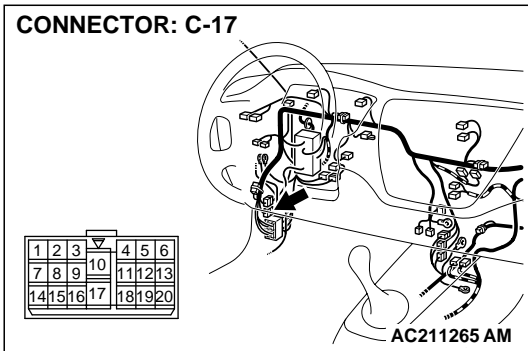
YES : Go to Step 5.

NO : Go to Step 4.



STEP 4. Check the wiring harness between driver's door lock actuator switch connector E-04 (terminal 1) and ground.

CONNECTOR: C-17



NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

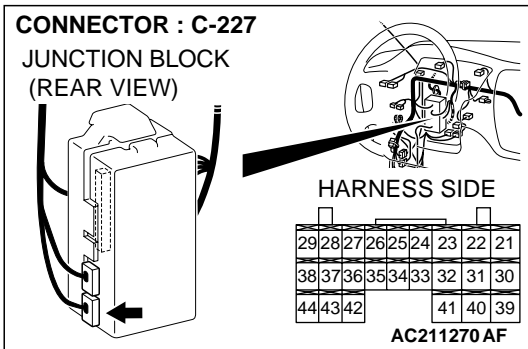
Q: Is the wiring harness between driver's door lock actuator switch connector E-04 (terminal 1) and ground in good condition?

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. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's door lock actuator switch should be normal.

CONNECTOR : C-227

**JUNCTION BLOCK
(REAR VIEW)**



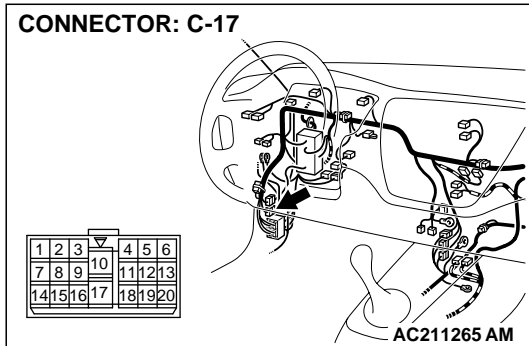
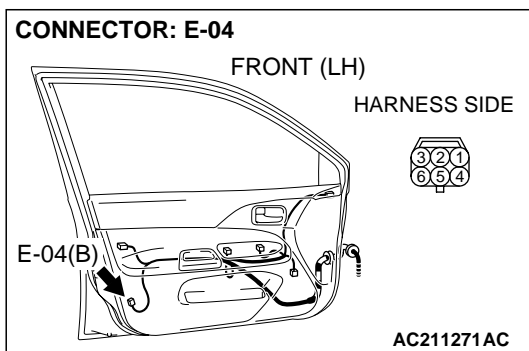
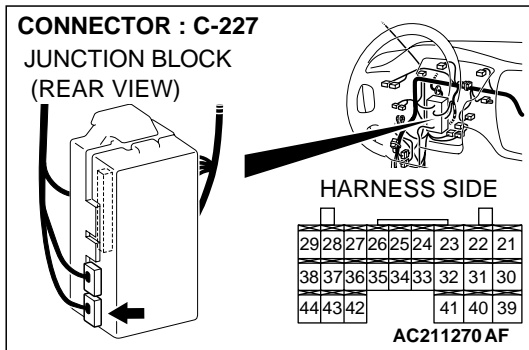
STEP 5. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-227 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's door lock actuator switch should be normal.

STEP 6. Check the wiring harness between driver's door lock actuator switch connector E-04 (terminal 2) and ETACS-ECU connector C-227 (terminal 36).



NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

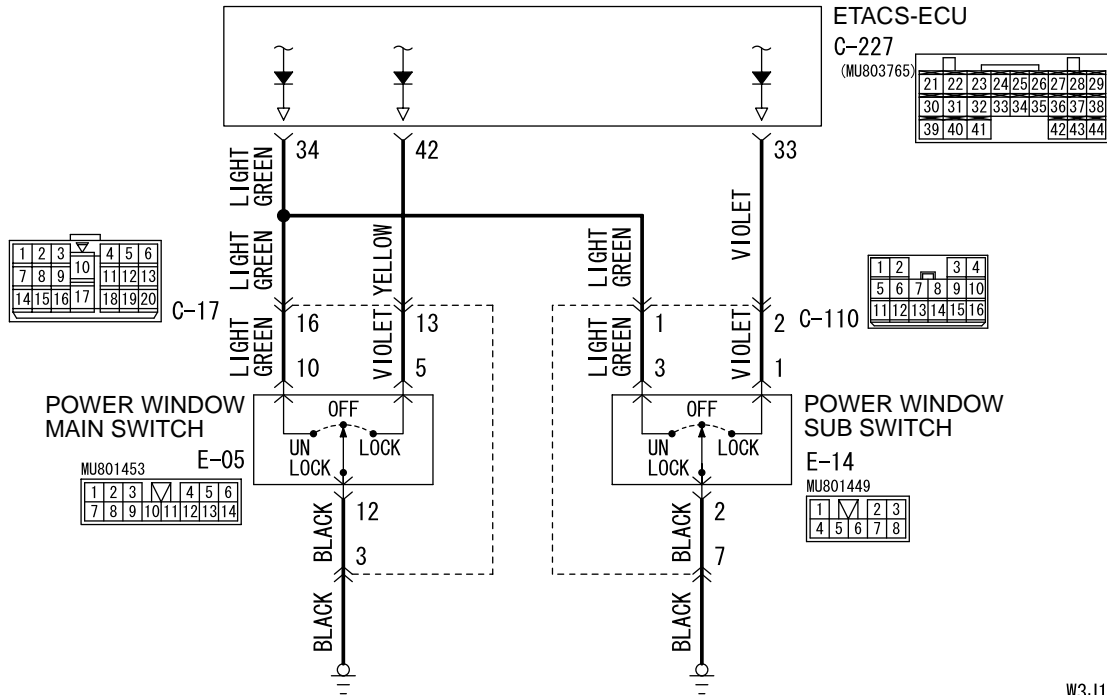
Q: Is the wiring harness between driver's door lock actuator switch connector E-04 (terminal 2) and ETACS-ECU connector C-227 (terminal 36) in good condition?

YES : Replace the ETACS-ECU. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's door lock actuator switch should be normal.

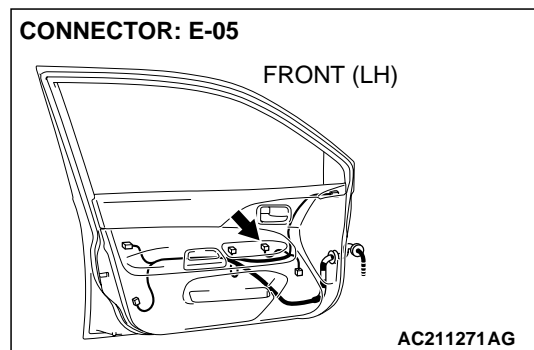
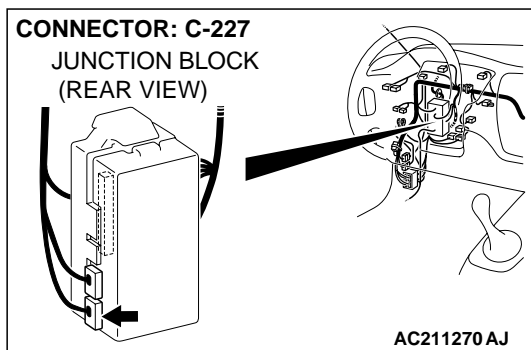
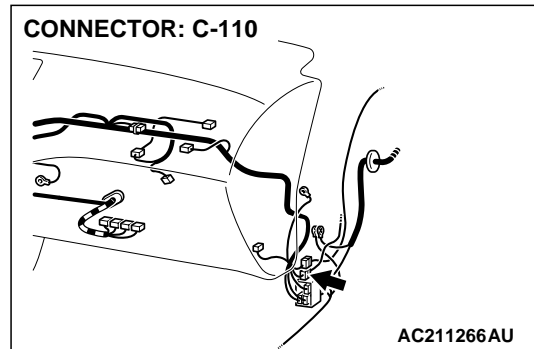
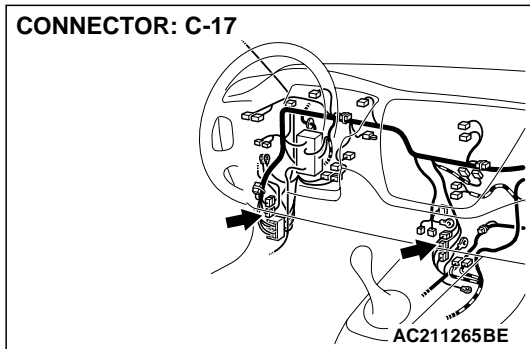
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions, which are described in "CIRCUIT OPERATION", work normally, the input signal from the driver's door lock actuator switch should be normal.

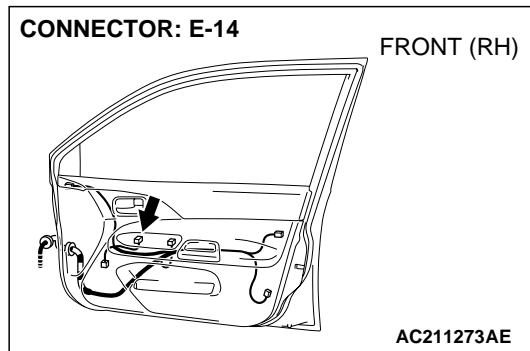
INSPECTION PROCEDURE O-7: The ETACS-ECU does not receive any signal from the door lock switch (incorporated in power window main switch and power window sub switch).

Door Lock Switch Input Circuit



W3J14M27AA





CIRCUIT OPERATION

The ETACS-ECU operates the central door locking system according to signal from the door lock switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the doors is not locked or unlocked. If the signal is not normal, the power window main switch, power window sub switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
 - MB991496: Main unit
 - MB991497: Test Harness (for communication)
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the door lock switch (incorporated in the power window main switch and power window sub switch).

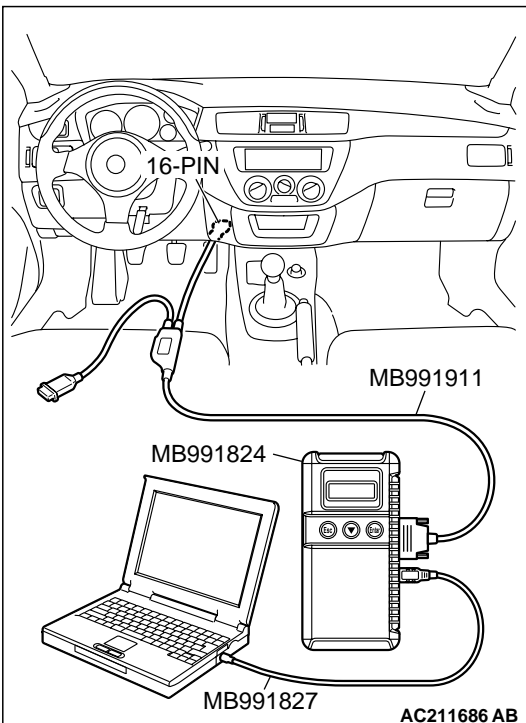
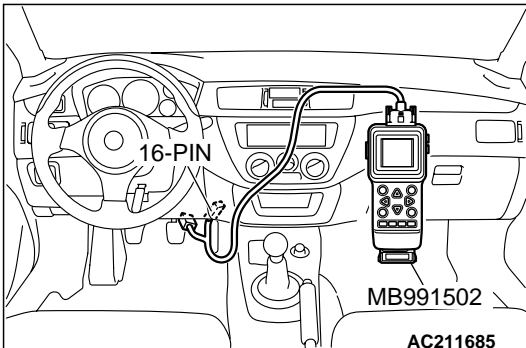
⚠ CAUTION

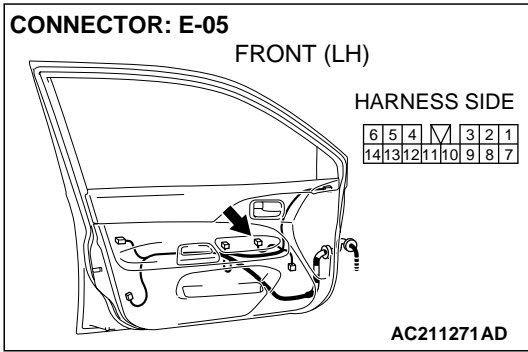
To prevent damage to scan tool MB991502 or MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502 or MB991958.

- (1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-7."
- (2) Operate scan tool MB991502 or MB991958 according to the procedure below to display "Pulse check."
 - a. Select "Interactive Diagnosis."
 - b. Select "System select."
 - c. Select "SWS."
 - d. Select "Pulse Checking."
- (3) Check that scan tool MB991502 or MB991958 sounds when the door lock switch (incorporated in the power window main switch and power window sub switch) is operated.

Q: When the door lock switch (incorporated in the power window main switch and power window sub switch) is operated, does the scan tool MB991502 or MB991958 sound?

When the door lock switch (incorporated in the power window main switch) is operated, the scan tool MB991502 or MB991958 does not sound. : Go to Step 2.
When the door lock switch (incorporated in the power window sub switch) is operated, the scan tool MB991502 or MB991958 does not sound. : Go to Step 8.



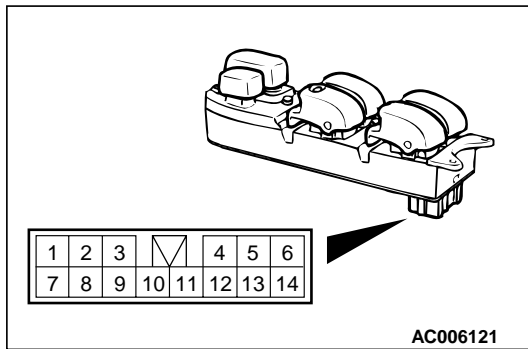


STEP 2. Check power window main switch connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-05 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](#). If the central door locking system works normally, input signal from the door lock switch should be normal.



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

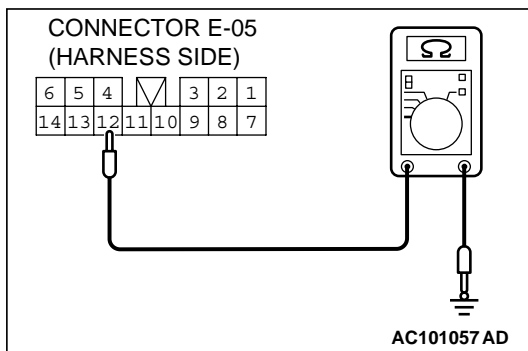
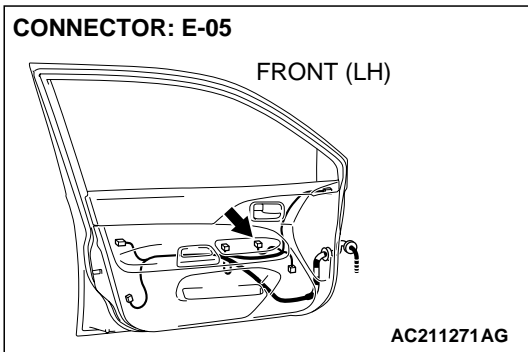
Remove the power window main switch. Then check continuity between the switch terminals.

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

Q: Is the door lock switch (power window main switch) in good condition?

YES : Go to Step 4.

NO : Replace the power window main switch. If the central door locking system works normally, input signal from the door lock switch should be normal.



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

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

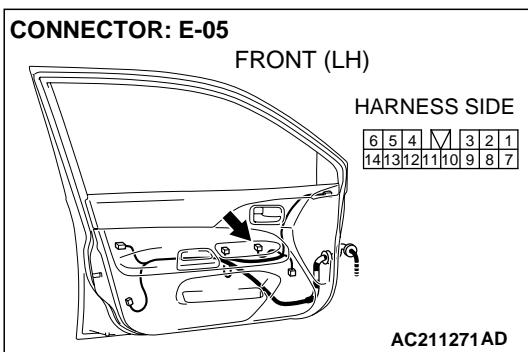
(2) Measure the resistance value between terminal 12 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

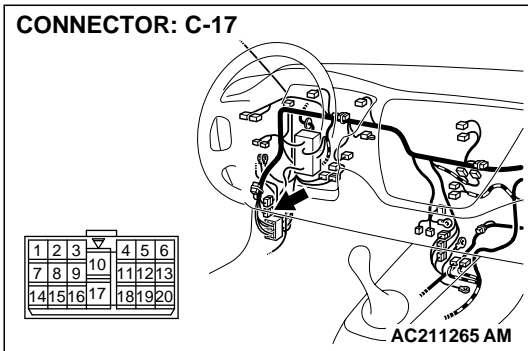
YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Check the wiring harness between power window main switch E-05 (terminal 12) and ground.

CONNECTOR: C-17



NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-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 power window main switch connector E-05 (terminal 12) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch should be normal.

STEP 6. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

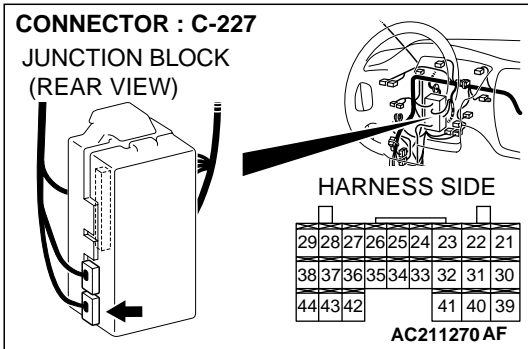
Q: Is ETACS-ECU connector C-227 in good condition?

YES : Go to Step 7.

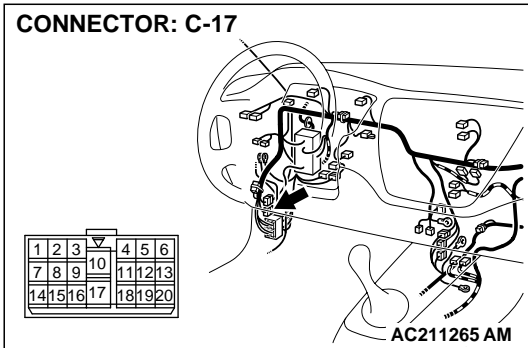
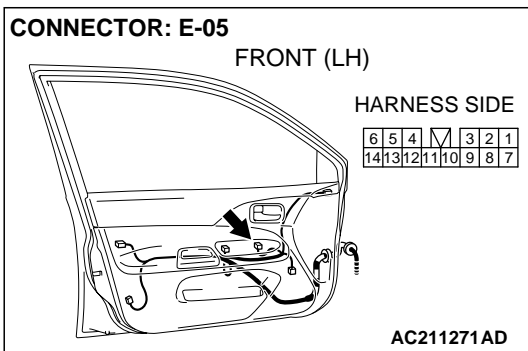
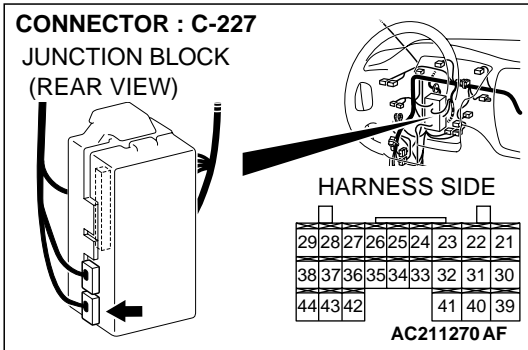
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the central door locking system works normally, input signal from the door lock switch should be normal.

CONNECTOR : C-227

JUNCTION BLOCK
(REAR VIEW)



STEP 7. Check the wiring harness between power window main switch connector E-05 (terminal 5 and 10) and ETACS-ECU connector C-227 (terminal 42 and 34).

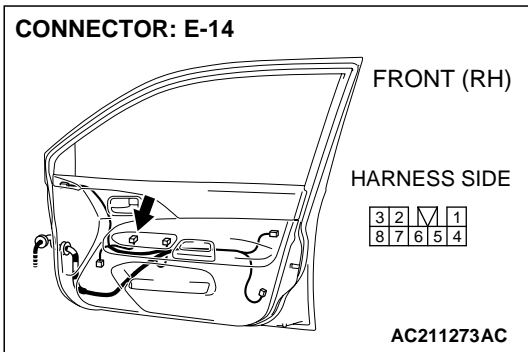


NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-05 (terminal 5 and 10) and ETACS-ECU connector C-227 (terminal 42 and 34) in good condition?

YES : Replace the ETACS-ECU. If the central door locking system works normally, input signal from the door lock switch should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch should be normal.

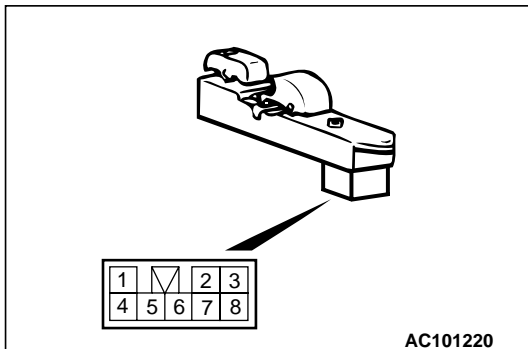


STEP 8. Check power window sub switch connector E-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window sub switch connector E-14 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](#). If the central door locking system works normally, input signal from the door lock switch should be normal.



STEP 9. Check the door lock switch (power window sub switch).

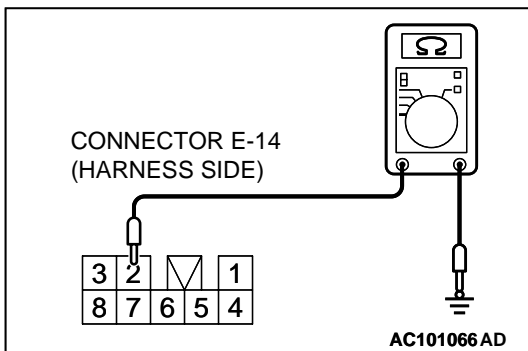
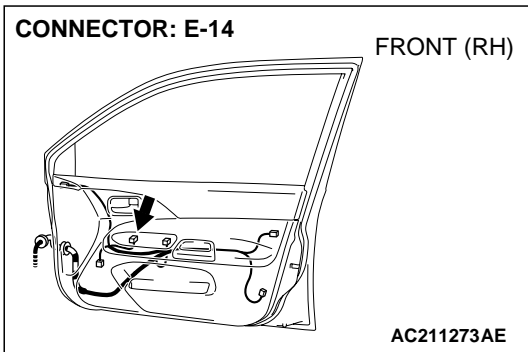
Remove the power window sub switch. Then check continuity between the switch terminals.

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

Q: Is the door lock switch (power window sub switch) in good condition?

YES : Go to Step 10.

NO : Replace the power window sub switch. If the central door locking system works normally, input signal from the door lock switch should be normal.



STEP 10. Check the ground circuit to the power window sub switch. Measure the resistance at power window sub switch connector E-14.

(1) Disconnect power window sub switch connector E-14 and measure the resistance available at the wiring harness side of the connector.

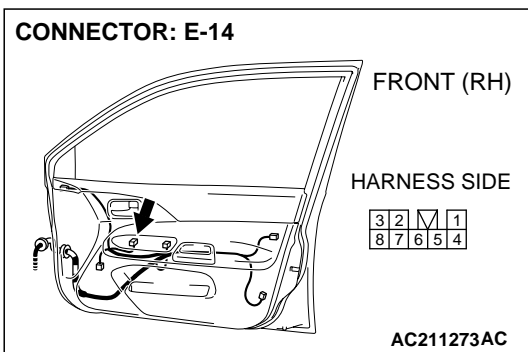
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should equal 2 ohms or less.

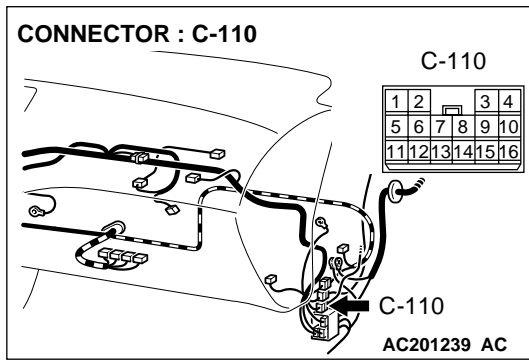
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.



STEP 11. Check the wiring harness between power window sub switch E-14 (terminal 2) and ground.

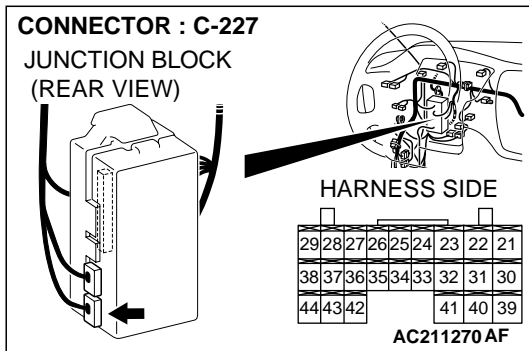


NOTE: Also check intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-110 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window sub switch connector E-14 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch should be normal.



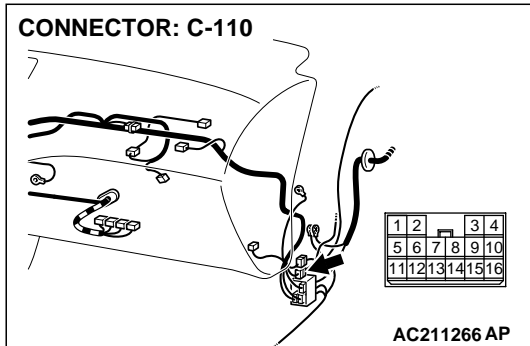
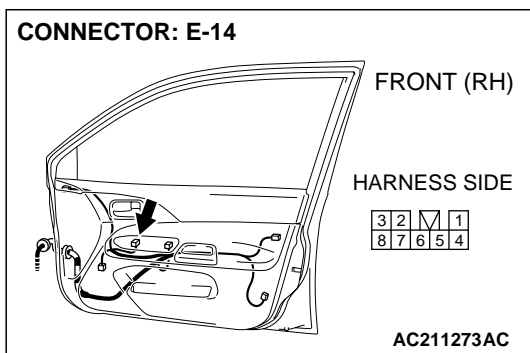
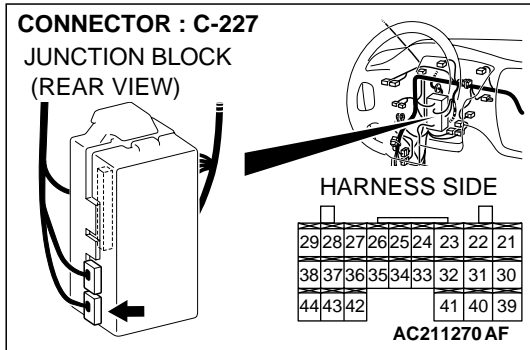
STEP 12. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-227 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. If the central door locking system works normally, input signal from the door lock switch should be normal.

STEP 13. Check the wiring harness between power window sub switch connector E-14 (terminal 1 and 3) and ETACS-ECU connector C-227 (terminal 33 and 34).



NOTE: Also check intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-110 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

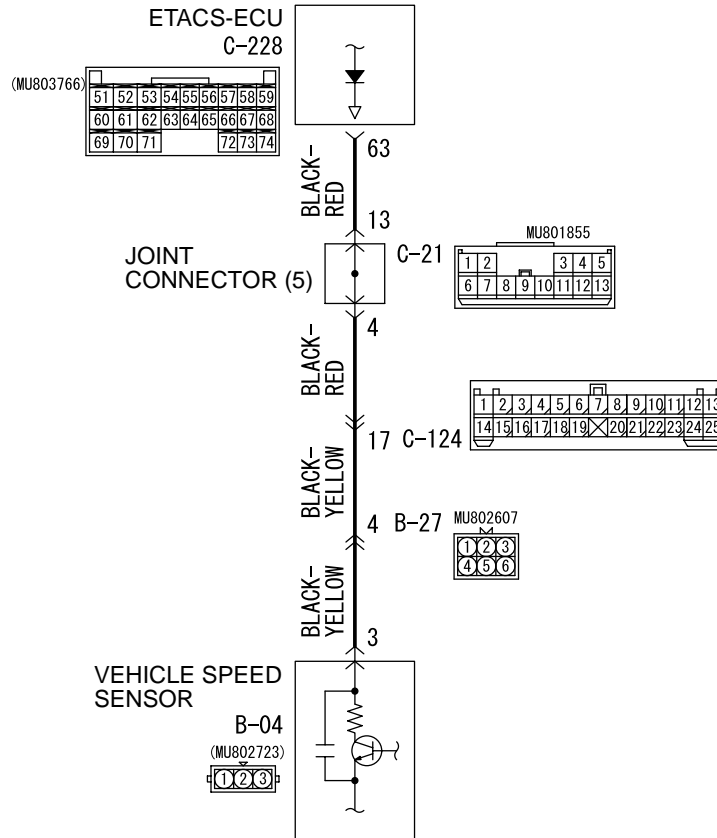
Q: Is the wiring harness between power window sub switch connector E-14 (terminal 1 and 3) and ETACS-ECU connector C-227 (terminal 33 and 34) in good condition?

YES : Replace the ETACS-ECU. If the central door locking system works normally, input signal from the door lock switch should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch should be normal.

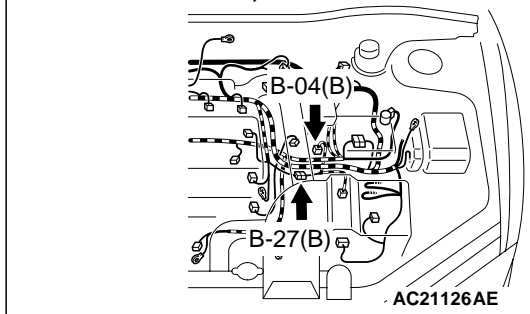
INSPECTION PROCEDURE O-8: ETACS-ECU does not receive any signal from the vehicle speed sensor.

Vehicle Speed Sensor Input Circuit

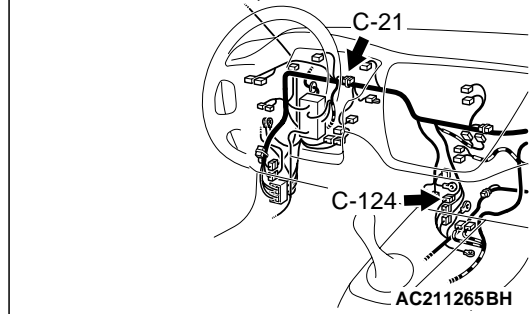


W3J14M28AA

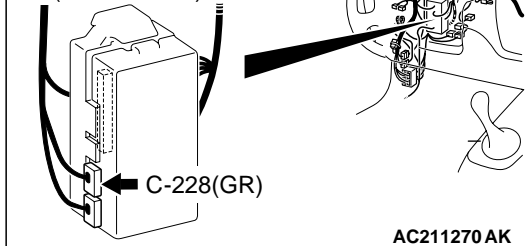
CONNECTORS: B-04, B-27



CONNECTORS: C-21, C-124



CONNECTOR: C-228
JUNCTION BLOCK
(REAR VIEW)



CIRCUIT OPERATION

The ETACS-ECU controls the windshield intermittent wiper interval according to the vehicle speed sensor signal.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the wiper interval, which is described in "CIRCUIT OPERATION", will not be changed correctly. If the signal is not normal, the vehicle speed sensor or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set

STEP 1. Check that the combination meter (speedometer) works normally.

Q: Does the combination meter (speedometer) work normally?

YES : Go to Step 2.

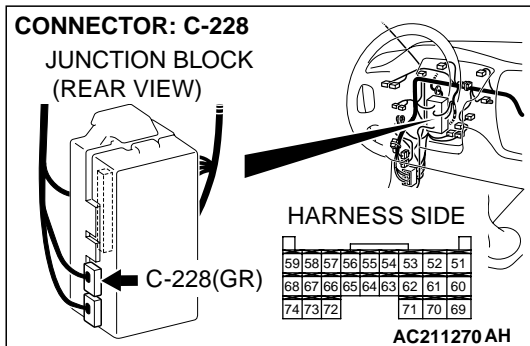
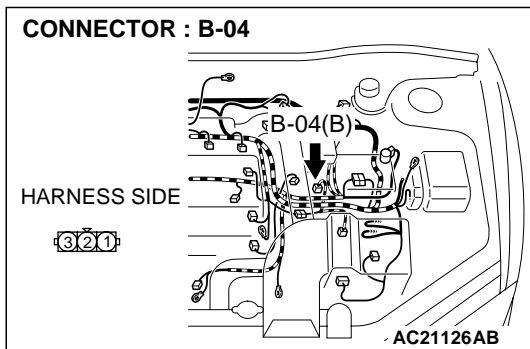
NO : Refer to GROUP 54A, Combination Meters Assembly and Vehicle Speed Sensor, Symptom Procedures "Speed meter does not work [P.54A-55.](#)"

STEP 2. Check ETACS-ECU connector C-228 and vehicle speed sensor connector B-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

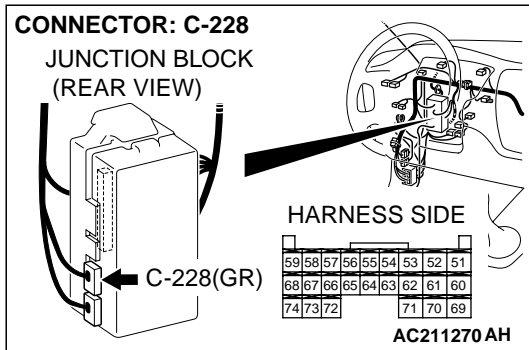
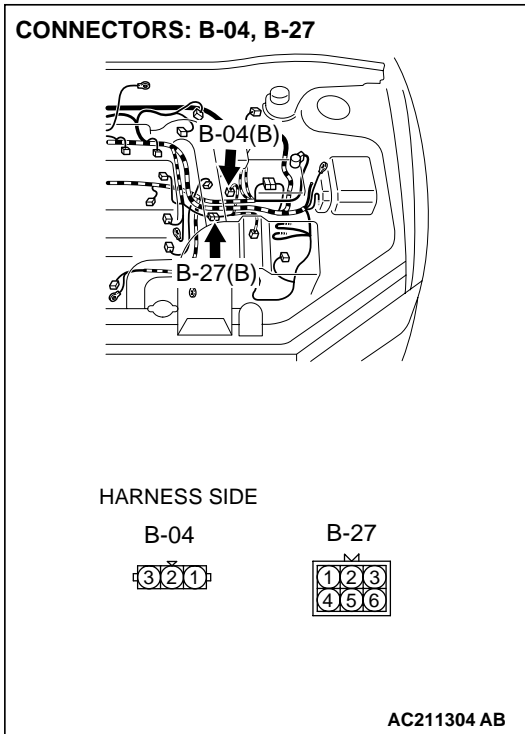
Q: Are ETACS-ECU connector C-228 and vehicles speed sensor connector B-04 in good condition?

YES : Go to Step 3.

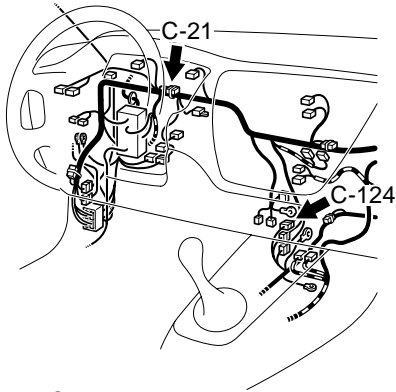
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2.](#) If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ETACS-ECU.



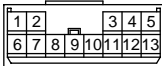
STEP 3. Check the wiring harness between ETACS-ECU connector C-228 (terminal 63) and vehicle speed sensor connector B-04 (terminal 3).



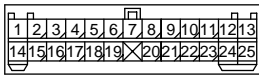
CONNECTORS: C-21, C-124



C-21



C-124



AC211307AJ

NOTE: Also check intermediate connectors B-27, C-124 and joint connector C-21 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector B-27, C-124 or joint connector C-21 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

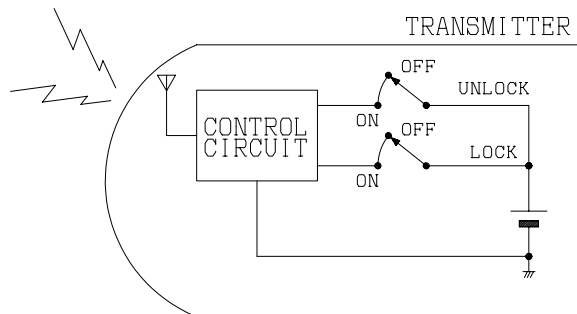
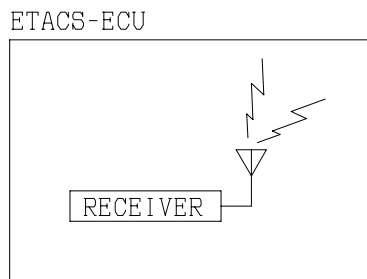
Q: Is the wiring harness between ETACS-ECU connector C-228 (terminal 63) and vehicle speed sensor connector B-04 (terminal 3) in good condition?

YES : Replace the ETACS-ECU. If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ETACS-ECU.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the wiper interval can be adjusted normally, it indicates that the windshield intermittent wiper interval adjusting knob should send a signal to the ETACS-ECU.

INSPECTION PROCEDURE O-9: Transmitter: The ETACS-ECU does not receive any signal from the lock or unlock switch.

Transmitter Input Circuit



W2J08M27AA

CIRCUIT OPERATION

The ETACS-ECU receives signal through its receiver from the transmitter, and operates the keyless entry system according to the signal.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the systems, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set

STEP 1. Register the transmitter.

Replace the transmitter. Refer to GROUP 42, Keyless Entry System, On-vehicle Service, How to register secret code [P.42-58](#).

Q: Can the transmitter be registered correctly?

YES : If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the transmitter should be normal.

NO : Go to Step 2.

STEP 2. Check the transmitter battery.

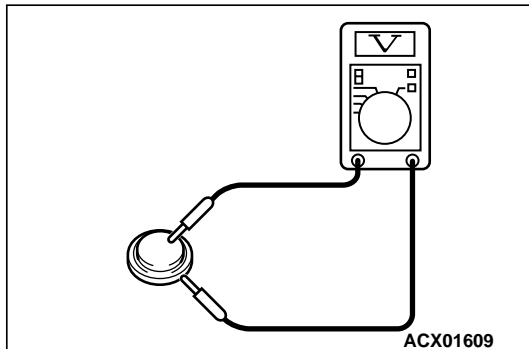
Measure the voltage of the transmitter battery.

- The value should be approximately 2.5 - 3.2 volts.

Q: Is the measured voltage approximately 2.5 - 3.2 volts (battery positive voltage)?

YES : Go to Step 3.

NO : Replace the battery. If the transmitter can be registered normally, and the systems, which are described in "CIRCUIT OPERATION", operate normally, it indicates that the transmitter is sending normal signal to the ECU.

**STEP 3. Check the transmitter.**

Substantial other transmitter in order to register encrypted code. Refer to GROUP 42, Keyless Entry System, On-vehicle Service, How to register secret code [P.42-58](#).

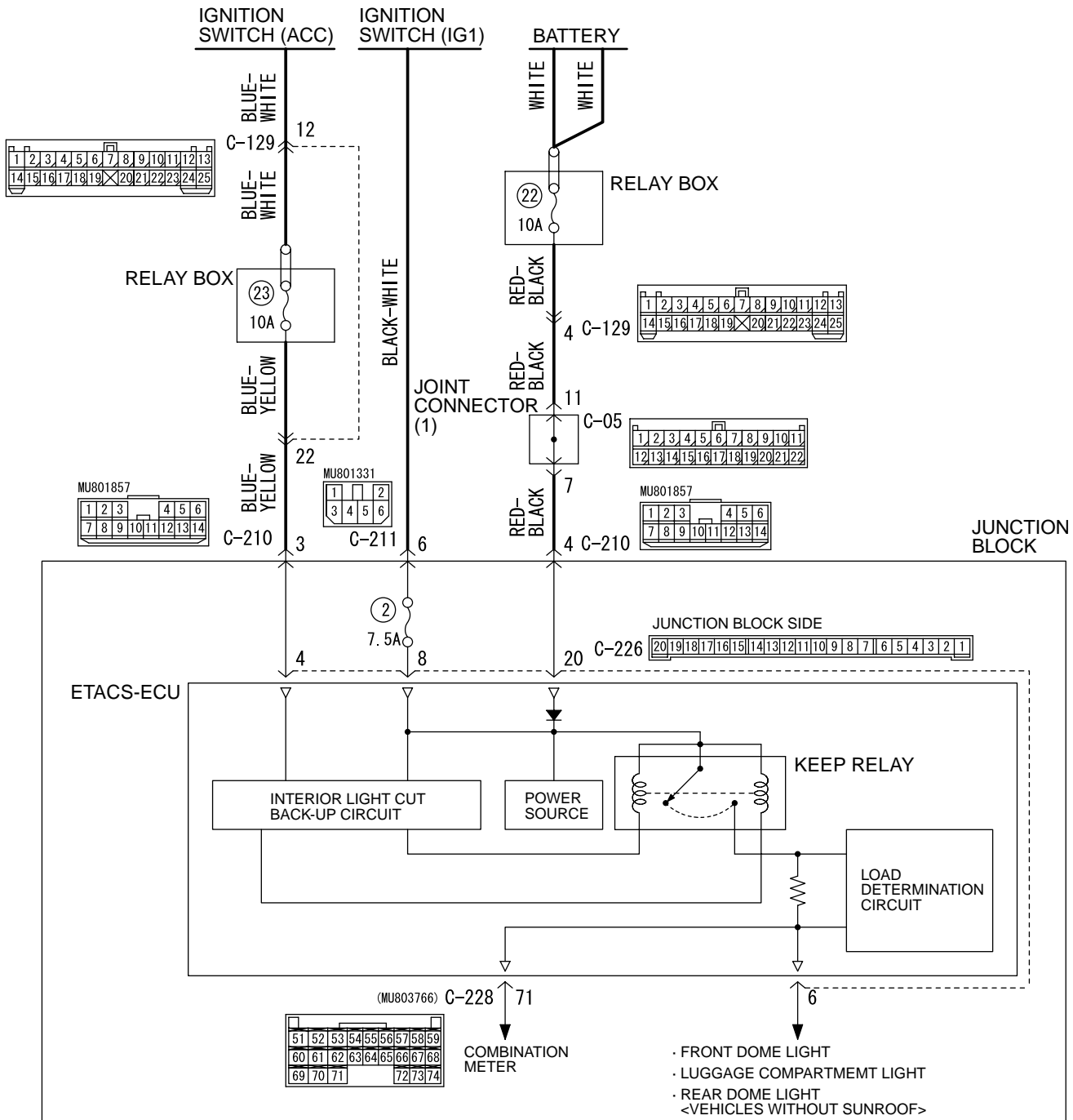
Q: Can the transmitter be registered correctly?

YES : If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the transmitter should be normal.

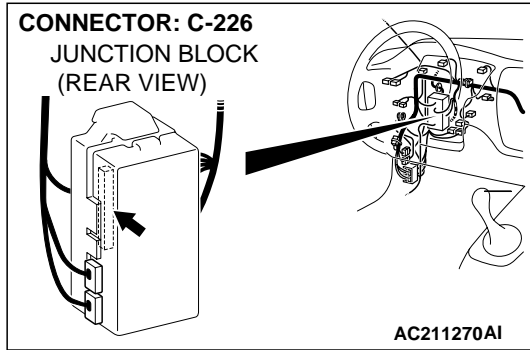
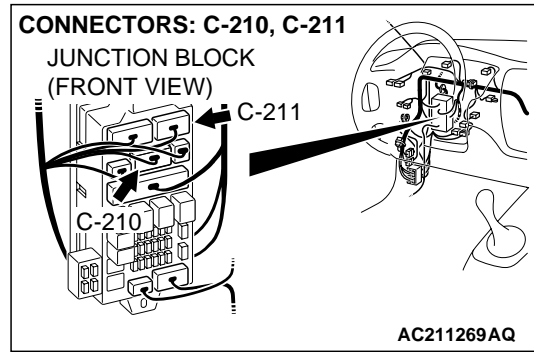
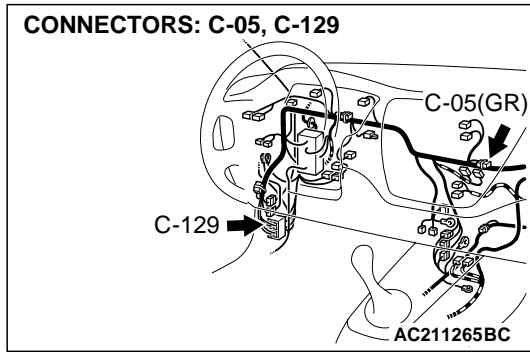
NO : Replace the ETACS-ECU. If the systems, which are described in "CIRCUIT OPERATION", work normally, the input signal from the transmitter should be normal.

INSPECTION PROCEDURE O-10: ETACS-ECU does not receive any interior light loaded signal.

Interior Light Automatic Shutt-Down Function Circuit



W3J14M29AA



CIRCUIT OPERATION

The ETACS-ECU operates the following equipment or functions by the interior light loaded signal:

- Interior light automatic shutoff function
- Interior light
- Door-ajar indicator light
- Ignition key cylinder illumination light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment or functions, which are described in "CIRCUIT OPERATION", do not work normally.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

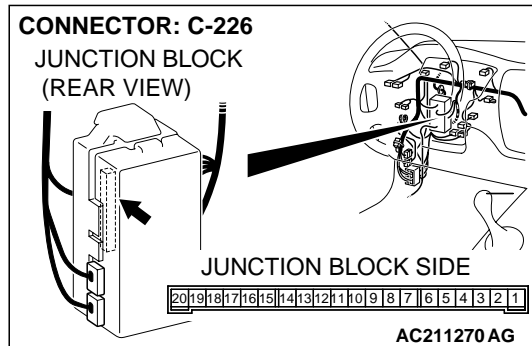
- MB991223: Harness Set

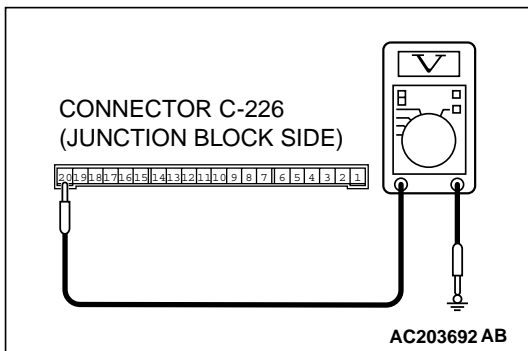
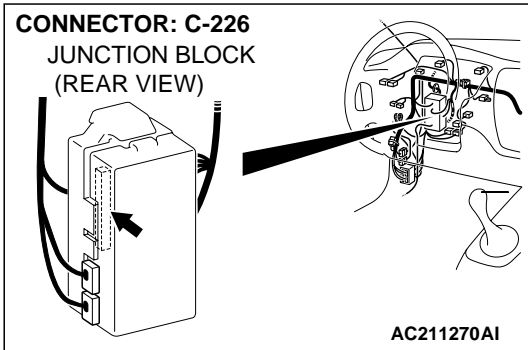
STEP 1. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 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](#). If the functions or equipment, which are described in "CIRCUIT OPERATION", work normally, the interior light loaded signal should be normal.





STEP 2. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-226.

(1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.

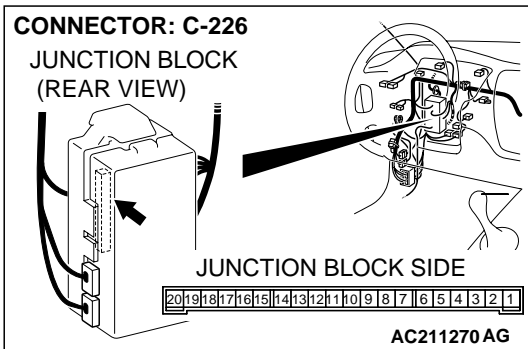
(2) Measure the voltage between terminal 20 and ground.

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

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

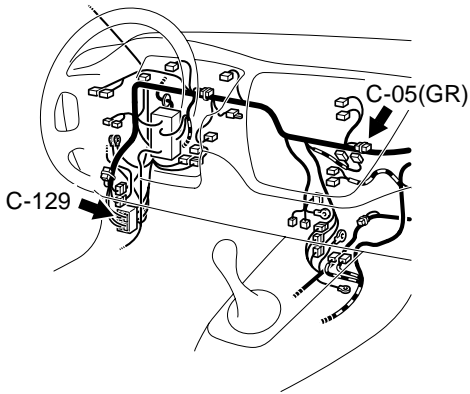
YES : Go to Step 4.

NO : Go to Step 3.

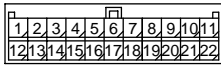


STEP 3. Check the wiring harness between ETACS-ECU connector C-226 (terminal 20) and the battery.

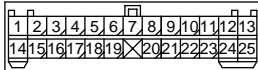
CONNECTORS: C-05, C-129



C-05



C-129



AC211307AF

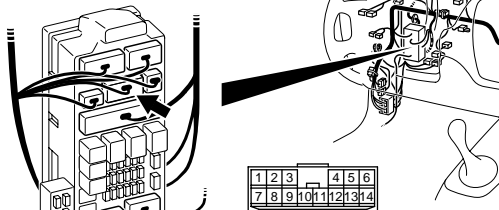
NOTE: Also check junction block connector C-210, joint connector C-05 and intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-210, joint connector C-05 or intermediate C-129 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 20) and the battery in good condition?

YES : No action is necessary and testing is complete.

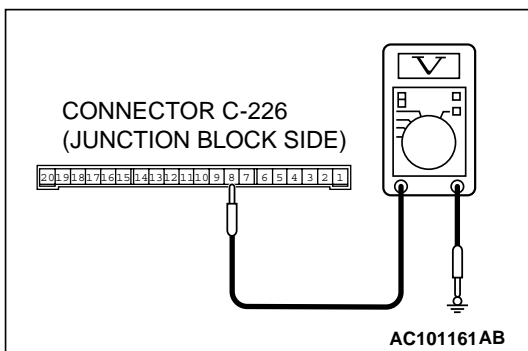
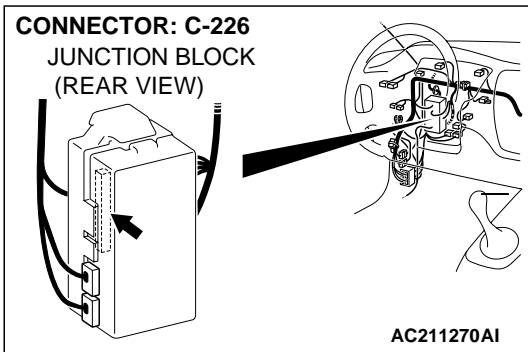
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions or equipment, which are described in "CIRCUIT OPERATION", work normally, the interior light loaded signal should be normal.

CONNECTOR: C-210



JUNCTION BLOCK
(FRONT VIEW)

AC211269AK



STEP 4. Check the ignition switch (IG1) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-226.

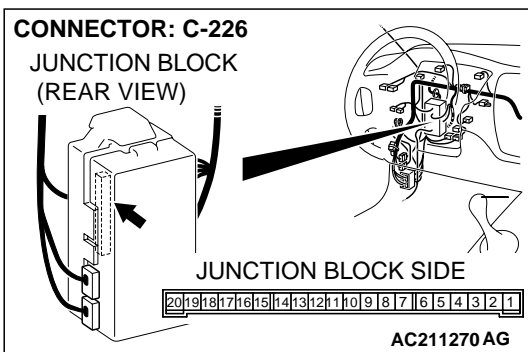
- (1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 8 and ground.
 - The voltage should equal approximately 12 volts (battery positive voltage).

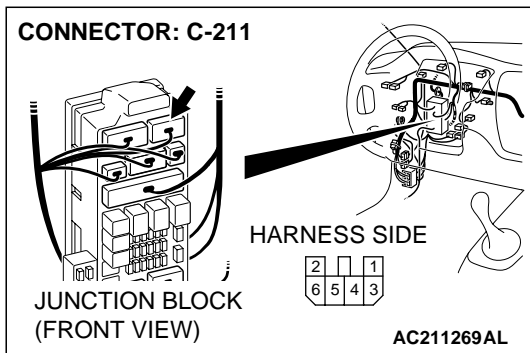
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Check the wiring harness between ETACS-ECU connector C-226 (terminal 8) and the ignition switch (IG1).

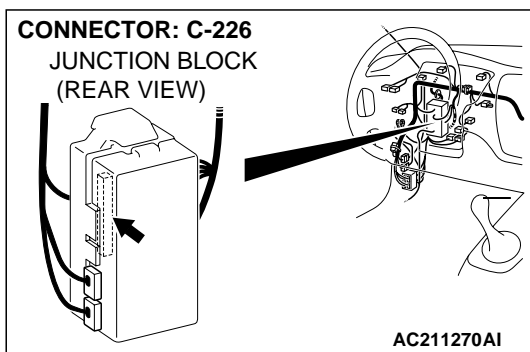


NOTE: Also check junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 8) and the ignition switch (IG1) in good condition?

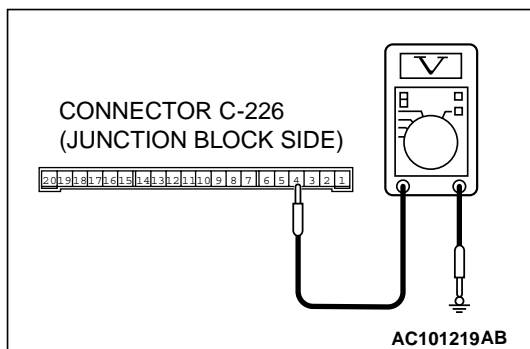
YES : No action is necessary and testing is complete.

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. If the functions or equipment, which are described in "CIRCUIT OPERATION", work normally, the interior light loaded signal should be normal.



STEP 6. Check the ignition switch (ACC) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-226.

- (1) Disconnect ETACS-ECU connector C-226 and measure the voltage available at the junction block side of the connector.
- (2) Turn the ignition switch to the "ACC" position.



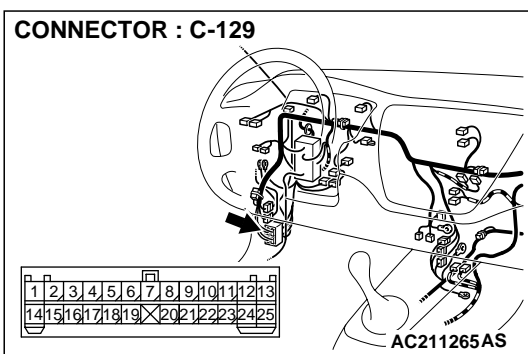
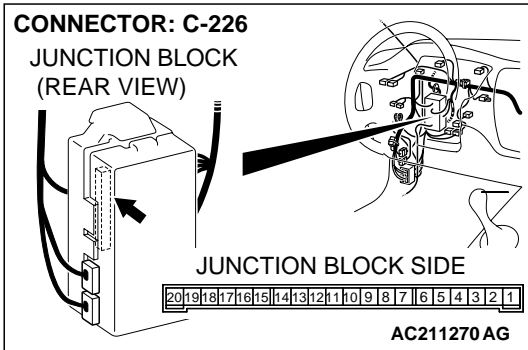
- (3) Measure the voltage between terminal 4 and ground.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Replace the ETACS-ECU. If the functions or equipment, which are described in "CIRCUIT OPERATION", work normally, the interior light loaded signal should be normal.

NO : Go to Step 7.

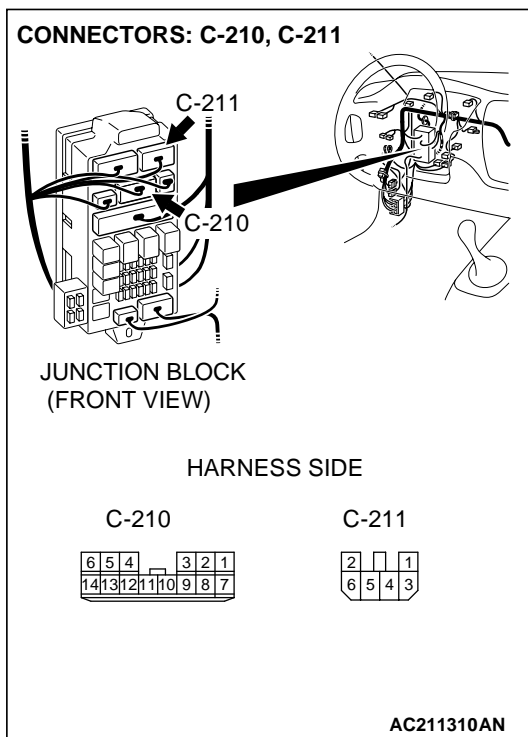
STEP 7. Check the wiring harness between ETACS-ECU connector C-226 (terminal 4 and 18) and the ignition switch (ACC).



NOTE: Also check junction block connectors C-210, C-211 and intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-210, C-211 or intermediate C-129 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 4 and 18) and ignition switch (ACC) in good condition?

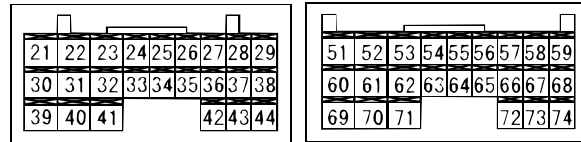
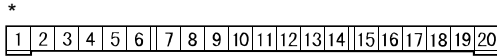
- YES :** No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions or equipment, which are described in "CIRCUIT OPERATION", work normally, the interior light loaded signal should be normal.



CHECK AT ECU TERMINAL

M1549001200511

ETACS-ECU



AC101265

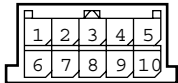
NOTE: *: The terminal 1 to 20 connectors can not be measured as the ETACS-ECU is installed directly on the junction block. Therefore, this information is only for reference.

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Output to power window relay	When the power windows can work	Battery positive voltage
2	Battery positive voltage (for central door lock)	Always	Battery positive voltage
3	Ground (for ECU)	Always	0 V
4	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
5	Output to dome light	When dome light is on	2 V or less
6	Power supply to interior light (dome light)	Always (when interior light shutoff function is not operating)	Battery positive voltage
7	Input from door switches	Either of door switches: ON (Door open)	0 V
8	Power supply to ignition switch (IG1)	Ignition switch: "ON"	Battery positive voltage
9	Output to turn-signal light (RH)	When turn-signal light (RH) is on	Battery positive voltage
10	Input from driver's door switch	Driver's door switch: ON (Driver's door open)	0 V
11	Battery power supply (for turn-signal light)	Always	Battery positive voltage
12	Output to door lock	When door lock actuator is operating (doors locked)	Battery positive voltage
13	Output to door unlock (excluding driver's door)	When door lock actuator is operating (doors unlocked)	Battery positive voltage
14	Output to turn-signal light (LH)	When turn-signal light (LH) is on	Battery positive voltage
15	–	–	–
16	Output to rear wiper	When rear wiper is operating	Battery positive voltage
17	Input of rear wiper automatic stop signal	When rear wiper is operating	Battery positive voltage
18	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
19	–	–	–

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
20	Battery power supply (for ECU)	Always	Battery positive voltage
21	Input of driver's seat belt switch signal	Driver's seat belt switch: ON (seat belts unfastened)	0 V
22	Output to door unlock (for driver's door)	When driver's door lock actuator is operating (doors unlocked)	Battery positive voltage
23	Output to rear washer	When rear washer is operating	Battery positive voltage
24	–	–	–
25	Input of driver's door lock key cylinder switch (UNLOCK) signal	Driver's door lock key cylinder switch: UNLOCK	0 V
26 – 29	–	–	–
30	Input of key reminder switch signal	Key reminder switch: ON (ignition key removed)	0 V
31, 32	–	–	–
33	Input of front passenger's door lock key cylinder switch (LOCK) signal	front passenger's door lock key cylinder switch: LOCK	0 V
	Input of door lock switch signal (LOCK)	Door lock switch (incorporated in power window switch): LOCK	0 V
34	Input of front passenger's door lock key cylinder switch (UNLOCK) signal	Front passenger's door lock key cylinder switch: UNLOCK	0 V
	Input of door lock switch signal (UNLOCK)	Door lock switch (incorporated in power window switch): UNLOCK	0 V
	Input of passenger's door lock key cylinder switch (UNLOCK) signal	Passenger's door lock key cylinder switch: UNLOCK	0 V
35	–	–	–
36	Input of driver's door lock actuator (UNLOCK) signal	Driver's door lock actuator: UNLOCK	0 V
37, 38	–	–	–
39	Input of backup light switch	Ignition switch: "ON," backup light switch: "ON"	Battery positive voltage
40, 41	–	–	–
42	Input of driver's door lock key cylinder switch (LOCK) signal	Driver's door lock key cylinder switch: LOCK	0 V
	Input of door lock switch signal (LOCK)	Door lock switch (incorporated in power window switch): LOCK	0 V
43	–	–	–
44	Output to horn	When the keyless entry horn answerback function operates the horn	2 V or less

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
51	Output to data link connector	When DTC sets	0 – 12 V (pulse signal)
		When input check signal is output	0 – 12 V (when input pulse signal is fluctuating)
52	–	–	–
53	Output to the door-ajar indicator light	Any door is open	2 V or less
54	–	–	–
55	Input of hazard warning light switch signal	Hazard warning light switch: ON (When the switch is depressed)	0 V
56	Ground (for sensor)	Always	0 V
57, 58	–	–	–
59	SWS communication line	Always	0 – 12 V (pulse signal)
60 – 62	–	–	–
63	Input of vehicle speed signal	When the vehicle is being driven	0 – 12 V (pulse signal)
64	–	–	–
65	Input of front passengers's door switch signal	Front passenger's door switch: ON (Front passenger's door open)	0 V
66	Input of signal from windshield intermittent wiper interval adjusting knob	Ignition switch: "ACC," Windshield intermittent wiper interval adjusting knob: "FAST" → "SLOW"	0 → 2.5 V
67	Input of diagnosis indication selection	When scan tool is connected	0 V
68	Output of data request signal	Always	0 – 12 V (pulse signal)
69, 70	–	–	–
71	Power supply to interior light	Always (when interior light shutoff function is not operating)	Battery positive voltage
72	–	–	–
73	Output to seat belt warning light	When seat belt warning light is on	2 V or less
74	–	–	–

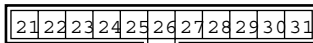
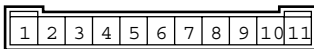
COLUMN SWITCH



ACX01512

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Battery power supply	Always	Battery positive voltage
2	Input of data request signal	Always	0 – 12 V (pulse signal)
3	SWS communication line	Always	0 – 12 V (pulse signal)
4	Ground	Always	0 V
5	–	–	–
6	Output of signal from windshield intermittent wiper interval adjusting knob	Igniting switch: "ACC," Windshield intermittent wipe interval adjusting knob: "FAST" → "SLOW"	0 → 2.5 V
7	–	–	–
8	Output of backup signal from windshield wiper switch	Windshield low-speed wiper switch or windshield high-speed wiper switch: ON	0 V
9	Power supply to ignition switch (IG1)	Ignition switch: "ON"	Battery positive voltage
10	Output of backup signal from headlight switch	Ignition switch: "ON," Headlight switch: ON	0 V

FRONT-ECU



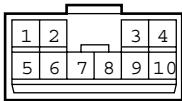
ACX01513

NOTE: Terminal voltages can not be measured as the front-ECU is installed directly on the relay box. Therefore, this information is only for reference.

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	–	–	–
2	Output to headlight (high-beam)	When headlights (high-beam) are on	Battery positive voltage
3, 4	Battery power supply (for headlight)	Always	Battery positive voltage
5	Battery power supply (for taillight)	Always	Battery positive voltage
6	Output to headlight (low-beam)	When headlights (low-beam) are on	Battery positive voltage
7	Battery power supply (for ECU)	Always	Battery positive voltage
8	Output to taillights	When taillights are on	Battery positive voltage

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
9, 11	–	–	–
21	Output to windshield washer	When windshield washer is on	Battery positive voltage
22	SWS communication line	Always	0 – 12 V (pulse signal)
23	Input of automatic stop signal to windshield wiper	When windshield wiper is on	Battery positive voltage
24	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
25	Input of backup signal from headlight switch	Headlight switch: ON	0 V
26	Input of backup signal to windshield wiper	Windshield low-speed wiper switch or windshield high-speed wiper switch: ON	0 V
27	Output to windshield wiper (low-speed)	When windshield wiper is on (at low speed)	Battery positive voltage
28	Output to windshield wiper (high-speed)	When windshield wiper is on (at high speed)	Battery positive voltage
29	–	–	–
30	Power supply to ignition switch (IG2)	Ignition switch: "ON"	Battery positive voltage
31	Ground	Always	0 V

SUNROOF MOTOR ASSEMBLY

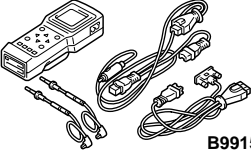
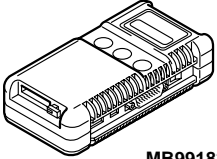
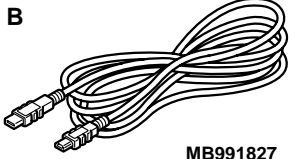
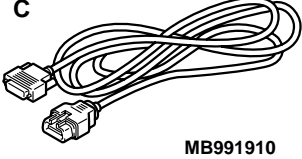
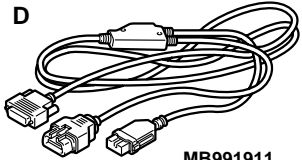
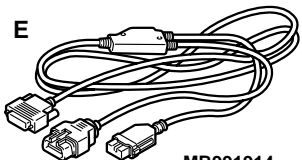
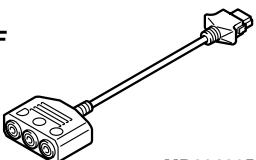
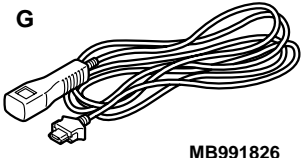


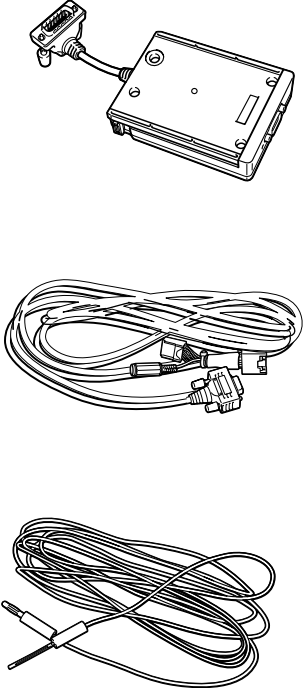
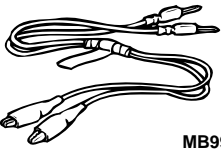

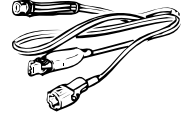
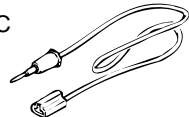

ACX01514

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Battery power supply (for motor)	Always	Battery positive voltage
2	Power supply to ignition switch (IG2)	Ignition switch: ON	Battery positive voltage
3, 4	–	–	–
5	Ground	Always	0 V
6	Input signal ("CLOSE/DOWN") from the sunroof switch	Sunroof switch: "CLOSE/DOWN"	0 V
7	Input signal ("UP") from the sunroof switch	Sunroof switch: "UP"	0 V
8	Input signal ("OPEN") from the sunroof switch	Sunroof switch: "OPEN"	0 V
9	–	–	–
10	SWS communication line	Always	0 – 12 V (pulse signal)

SPECIAL TOOLS

M1549000300452

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
 <p>B991502</p>	<p>MB991502 Scan tool (MUT-II)</p>	<p>MB991496-OD</p>	<p>Checking the diagnostic trouble code and input signal</p>
<p>A</p>  <p>MB991824</p> <p>B</p>  <p>MB991827</p> <p>C</p>  <p>MB991910</p> <p>D</p>  <p>MB991911</p> <p>E</p>  <p>MB991914</p> <p>F</p>  <p>MB991825</p> <p>G</p>  <p>MB991826 MB991958</p>	<p>MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826 MUT-III Sub Assembly A: Vehicle Communication Interface B: MUT-III USB Cable C: MUT-III Main Harness A (Vehicles with CAN communication system) D: MUT-III Main Harness B (Vehicles without CAN communication system) E: MUT-III Main Harness C (Vehicles without CAN communication system) F: MUT-III Adapter Harness G: MUT-III Trigger Harness</p>	<p>MB991956-OD</p>	<ul style="list-style-type: none"> • Reading diagnostic trouble code • Estimated vehicle speed sent <p>⚠ CAUTION MUT-III main harness B (MB991911) should be used. MUT-III main harness A and C should not be used for this vehicle.</p>

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
 <p style="text-align: right;">B991813</p>	<p>MB991813 A: MB991806 B: MB991812 C: MB991822</p>	<p>SWS monitor kit A: SWS monitor cartridge B: SWS monitor harness (for column-ECU) C: Probe harness</p>	<p>SWS communication line check (ECU check and service data)</p>
 <p style="text-align: right;">MB991529</p>	<p>MB991529 Diagnostic trouble code check harness</p>	<p>Tool not necessary if the scan tool (MUT-II) is available</p>	<p>Checking input signal when using a voltmeter</p>
<p>A</p>  <p>B</p>  <p>C</p>  <p>D</p>  <p style="text-align: right;">MB991223AD</p>	<p>MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: test harness B: LED harness C: LED harness adaptor D: Probe</p>	<p>General service tools</p>	<p>Making voltage and resistance measurement during troubleshooting A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection</p>

ON-VEHICLE SERVICE

ADJUSTMENT PROCEDURES OF SWS

FUNCTION <Vehicles with keyless entry system>

M1549002500366

Required Special Tools:

- MB991223: Harness Set
- MB991502: Scan Tool (MUT-II)
- MB991958: Scan Tool (MUT-III Sub Assembly)
- MB991529: Diagnostic Trouble Code Check Harness

The following functions can be enabled or disabled by operating input switches in a special manner. This set mode is stored after the battery is disconnected.

- Keyless entry hazard answerback function
- Headlight automatic shutdown function
- Initialization of above mentioned functions

NOTE: The keyless entry hazard answerback can be also adjusted by operating the RKE transmitter. (however, this adjustment can be done more easily by operating the transmitter.) Refer to GROUP 42, Keyless Entry System – On-vehicle Service – Enabling/disabling the Answerback Function P.42-55.

Entry conditions for adjustment mode

1. Set switches to the following conditions:
 - Hazard warning light switch: OFF
 - Diagnosis control: ON (Connect scan tool MB991502 or MB991958 to the data link connector, or connect the data link connector terminal 1 to ground.)
 - Key reminder switch: OFF (insert the ignition key)
 - Ignition switch: "LOCK" (OFF)
 - Driver's door switch: OFF (driver's door closed)
2. If the windshield washer switch remains on for 10 seconds or more, the tone alarm incorporated in the ETACS-ECU sounds once, and then enter the adjustment mode.

Release conditions for the adjustment mode

The adjustment mode will be released under one of the following conditions:

- Diagnosis control: ON (Disconnect scan tool MB991502 or MB991958 from the data link connector, or disconnect the data link connector terminal 1 from ground.)
- Key reminder switch: ON (ignition key removed)
- Ignition switch: Turn to the positions other than "LOCK" (OFF).
- Driver's door switch: ON (driver's door opened)
- After three minutes while the adjustment is not made (If any adjustment has been made within the three-minute period, cancel or complete the operation, and then release the adjustment mode within three minutes).
- When any other warning tone alarms sound

Configuration of Functions

ITEMS	ADJUSTMENT PROCEDURES
Keyless entry hazard answerback	<p>If the transmitter "LOCK" switch is turned on twice within two seconds, the lock answerback function is enabled or disabled.</p> <ul style="list-style-type: none"> • If the function is enabled, the tone alarm sounds once. (initial status) • If the function is disabled, the tone alarm sounds twice. <p>If the transmitter "UNLOCK" switch is turned on twice within two seconds, the unlock answerback function is enabled or disabled.</p> <ul style="list-style-type: none"> • If the function is enabled, the tone alarm sounds once. (initial status) • If the function is disabled, the tone alarm sounds twice.
Vehicle speed-dependent wiper function	<p>The vehicle speed-dependent wiper function is enabled or disabled by turning on the windshield wiper mist switch for two seconds or more.</p> <ul style="list-style-type: none"> • Enabled: the tone alarm sounds once. (initial status) • Disabled: the tone alarm sounds twice.
Headlight automatic shutdown function	<p>If the passing switch is turned ON for more than two seconds with the headlight switch turned to ON and the turn-signal light switch (RH) turned ON, the headlight automatic shutdown function is switched in the following order: (Next to "c", the function returns to "a" and repeats the sequence from "a".)</p> <ol style="list-style-type: none"> a. With the ignition switch in "LOCK" (OFF) position, the automatic shutdown function is enabled when the lighting switch is turned ON and the tone alarm sounds once. b. If the function is disabled, the tone alarm sounds twice. c. When the function is enabled (While the ignition switch is at "LOCK" (OFF) position, the automatic shutdown function is enabled when the lighting switch is turned ON.), the tone alarm sounds three times. (initial status)
The delay-off time of the dome light	<p>When the turn-signal light switch is moved in the order of LH → RH → LH → RH → LH, the dome light delay-off time will be changed as follows. (Next to "e", the function returns to "a" and repeats the sequence from "a".)</p> <ol style="list-style-type: none"> a. 30 seconds: the tone alarm sounds once. b. 10 seconds: the tone alarm sounds twice. c. 0 second (no delay-off time): the tone alarm sounds three times. d. 15 seconds: the tone alarm sounds four times. (initial status) e. 7.5 seconds: the tone alarm sounds five times.
Interior light automatic shut-down function	<p>The interior light automatic shut-down function is disabled or enabled by turning the hazard warning light switch for two seconds or more.</p> <ul style="list-style-type: none"> • Enabled: the tone alarm sounds once. (initial status) • Disabled: the tone alarm sounds twice.
Initialization of above mentioned functions	<p>If the windshield washer switch is turned ON for more than 20 seconds, the tone alarm sounds twice and all functions are initialized. (The configuration mode entry tone alarm sounds after 10 seconds, but the switch must kept ON for 20 seconds to achieve initialization.)</p> <p>If the windshield washer switch is kept ON for more than 20 seconds without prior entry of the configuration mode, the configuration mode is entered after 10 seconds and initialization does not take place.</p>