

GROUP 54B

SIMPLIFIED WIRING SYSTEM (SWS)

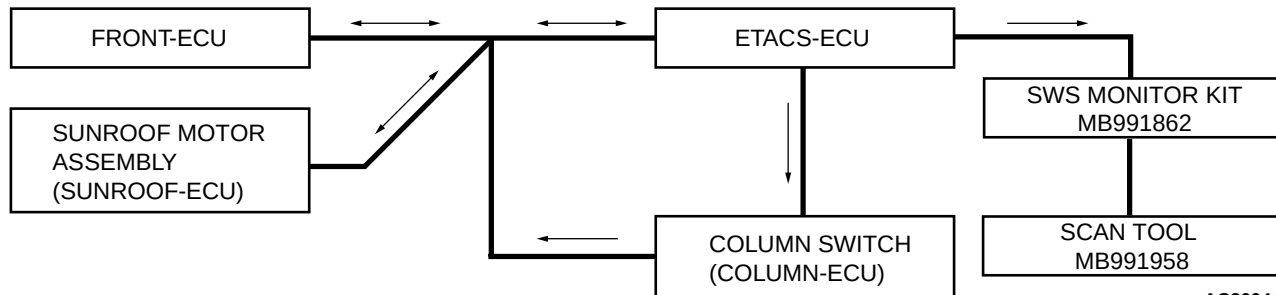
CONTENTS

GENERAL DESCRIPTION.....	54B-2	SUNROOF.....	54B-187
COMMUNICATION METHOD	54B-2	GENERAL DESCRIPTION CONCERNING THE SUNROOF	54B-187
OPERATION.....	54B-2	WINDSHIELD WIPER AND WASHER	54B-203
SWS DIAGNOSIS	54B-7	GENERAL DESCRIPTION CONCERNING THE WINDSHIELD WIPER AND WASHER	54B-203
GENERAL DESCRIPTION	54B-7	REAR WIPER AND WASHER	54B-243
BEFORE CARRYING OUT TROUBLESHOOTING	54B-7	GENERAL DESCRIPTION CONCERNING THE REAR WIPER AND WASHER	54B-243
SWS DIAGNOSTIC TROUBLESHOOTING STRATEGY.....	54B-7	SEAT BELT WARNING LIGHT	54B-266
HOW TO CONNECT SWS MONITOR.....	54B-8	GENERAL DESCRIPTION CONCERNING THE SEAT BELT WARNING LIGHT.....	54B-266
HOW TO USE SWS MONITOR	54B-10	HEADLIGHT AND TAILLIGHT	54B-279
HOW TO CHECK ECUs	54B-12	GENERAL DESCRIPTION CONCERNING THE HEADLIGHT AND TAILLIGHT	54B-279
SERVICE DATA CHECK	54B-13	FOG LIGHT	54B-352
PULSE CHECK.....	54B-22	GENERAL DESCRIPTION CONCERNING FOG LIGHT	54B-352
SYMPTOM CHART	54B-23	FLASHER TIMER	54B-374
INPUT SIGNAL CHART.....	54B-27	GENERAL DESCRIPTION CONCERNING THE FLASHER TIMER	54B-374
SYMPTOM PROCEDURES.....	54B-29	INTERIOR LIGHT	54B-416
TONE ALARM.....	54B-69	GENERAL DESCRIPTION CONCERNING THE INTERIOR LIGHT	54B-416
GENERAL DESCRIPTION THE CONCERNING TONE ALARM.....	54B-69	INPUT SIGNAL PROCEDURES.....	54B-454
CENTRAL DOOR LOCKING SYSTEM.....	54B-88	CHECK AT ECU TERMINAL	54B-567
GENERAL DESCRIPTION CONCERNING THE CENTRAL DOOR LOCKING SYSTEM	54B-88	SPECIAL TOOLS	54B-572
POWER WINDOWS	54B-117	ON-VEHICLE SERVICE	54B-574
GENERAL DESCRIPTION CONCERNING THE POWER WINDOWS	54B-117	ADJUSTMENT PROCEDURES OF SWS FUNCTION <Vehicles with keyless entry system>	54B-574
KEYLESS ENTRY SYSTEM.....	54B-169		
GENERAL DESCRIPTION CONCERNING THE KEYLESS ENTRY SYSTEM.....	54B-169		

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

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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 <Vehicles without keyless entry system>

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.

SEAT BELT TONE ALARM FUNCTION <Vehicles with keyless entry system>

If any of the following conditions is met with the ignition switch at "ON" or "ST", the ETACS-ECU sounds the tone alarm by using the driver's seat belt switch signal and the vehicle speed signal.

- Sounds the tone alarm for six seconds when the ignition switch is turned "ON" with the seat belt switch on (the driver's seat belt is not fastened) (timer operation).
- Sounds the tone alarm 12 cycles (after 0.5 seconds) if any of the following conditions is met when sixty seconds or more have elapsed since the ignition switch is turned "ON". One cycle consists of five-second "on" and then three-second "off".

NOTE: Once the tone alarm has sounded 12 cycles, it does not sound again until the vehicle speed reduces to 3 km/h (2 mph) or less even if any of the following conditions is met.

- a. The vehicle speed has reached 8 km/h (5 mph) while the seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch "ON".
- b. The seat belt switch has been turned on (driver's seat belt has not been fastened) for at least ten seconds while the ignition switch has been turned "ON" and the vehicle speed has been 8 km/h (5 mph) or more.

The tone alarm stops sounding if the ignition switch or the seat belt switch is turned off (the driver's seat belt is fastened) while the timer operation is active.

CENTRAL DOOR LOCKING SYSTEM

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 transmission range 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**<Vehicles without keyless entry system>**

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.

<Vehicles with keyless entry system>

If any of the following conditions is met with the ignition switch at "ON" or "ST", the ETACS-ECU illuminates or extinguishes the seat belt indicator by using the driver's seat belt switch signal and the vehicle speed signal.

- The seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch at "ON" or "ST".
- Flashes the indicator 11 cycles (after 0.5 seconds) if any of the following conditions is met when sixty seconds or more have elapsed since the ignition switch is turned "ON", and then illuminates it for eight seconds. One cycle consists of five-second "on" and then three-second "off".

NOTE: Once this timer operation has been activated, it will not be activated again until the vehicle speed reduces to 3 km/h (2 mph) or less even if any of the following conditions is met.

- a. The vehicle speed has reached 8 km/h (5 mph) while the seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch "ON".

- b. The seat belt switch has been turned on (driver's seat belt has not been fastened) for at least ten seconds while the ignition switch has been turned "ON" and the vehicle speed has been 8 km/h (5 mph) or more.

The indicator stops illuminating if the ignition switch or the seat belt switch is turned off (the driver's seat belt is fastened) while the timer operation is active.

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-574.

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.

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**Operation of 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 of the door-ajar indicator light**

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

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HOW TO CONNECT THE SCAN TOOL (MUT-III)

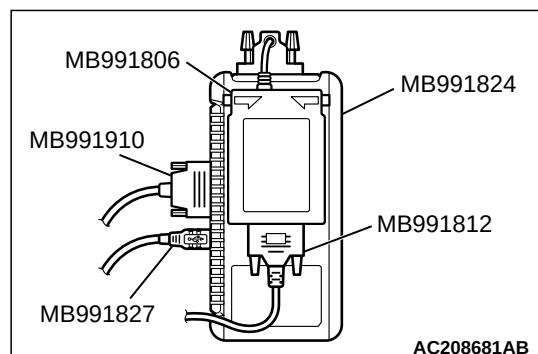
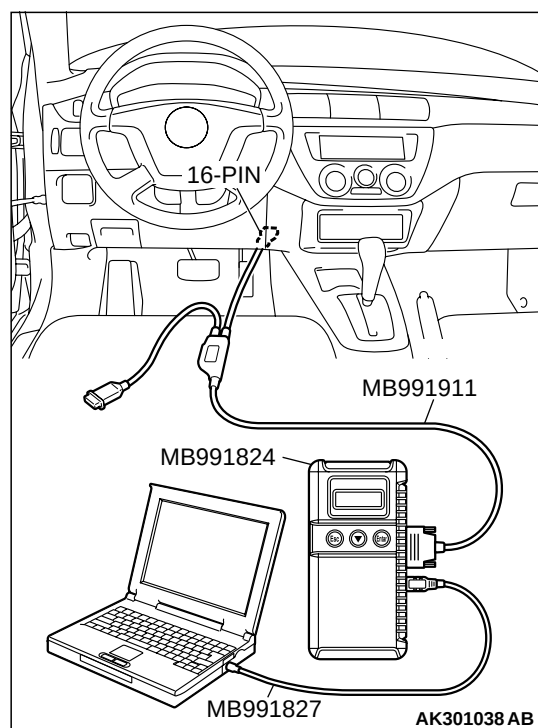
Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991822: Probe Harness

⚠ CAUTION

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

1. 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. Connect special tool MB991812 to special tool MB991806.
7. Connect special tool MB991806 to special tool MB991824.
8. 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.

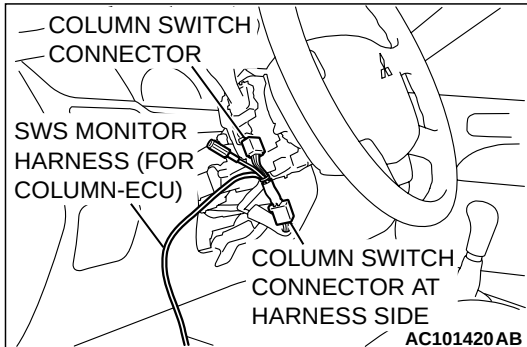
9. Start the MUT-III system on the personal computer.
10. Connect the SWS monitor to the vehicle. Refer to .

HOW TO CONNECT SWS MONITOR

CAUTION

Always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting the SWS monitor kit and scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on the scan tool MB991958.

1. Remove the steering column cover.
2. Remove the steering column switch connector.
3. Connect the SWS monitor harness (for column-ECU).

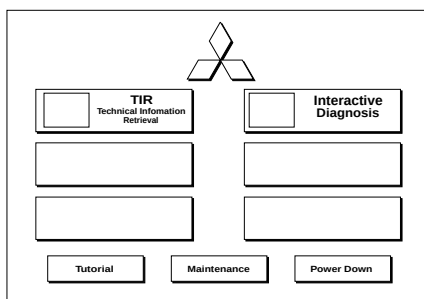


HOW TO USE SWS MONITOR

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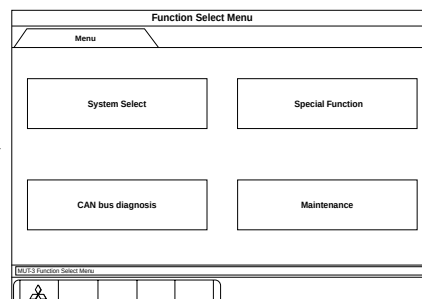
When scan tool MB991958 is used

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

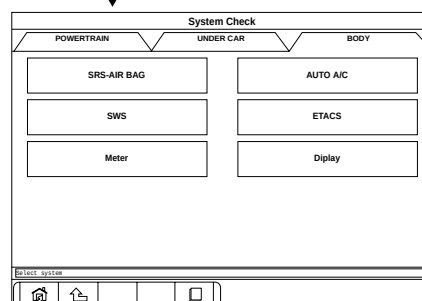


Start-up the MUT-III system.

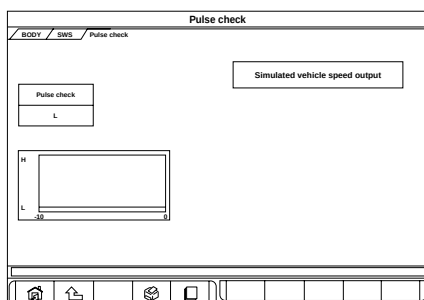
Select "Interactive Diagnosis"



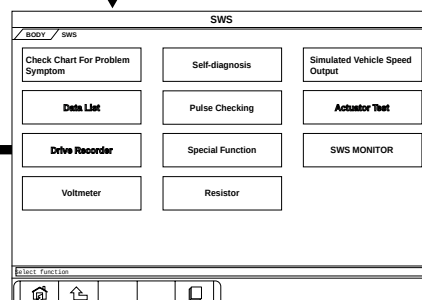
Select "System Select".



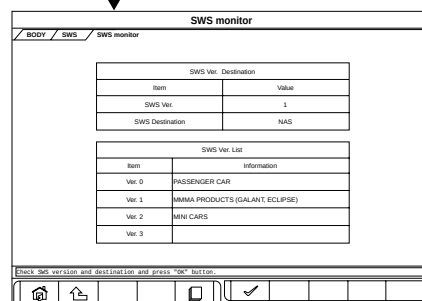
Select "SWS" from the "BODY" tab.



For the pulse check, select "Pulse Checking".



For the SWS monitor, select "SWS MONITOR".



Confirm the SWS version and destination

To next page

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From previous page

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

Press the "OK" button.

For the data list, select
"Data List".

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

For the function diagnosis, select
"Function Diag".

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 MB991958 and the SWS monitor kit to check ECUs.
2. The following ECUs can be checked by using the scan tool MB991958 and the SWS monitor kit.

NOTE: The "ECU COMM Check" function checks the communication status of ECUs. "NG" does not always mean ECU malfunction. If a malfunction is found by the "ECU COMM Check", proceed to "Symptom Procedure" (Refer to [P.54B-23](#)).

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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1. Use the scan tool and the SWS monitor kit to check "Service Data."

This "Service Data" 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-22](#).

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 the Problems during Input Signal Check <SWS monitor>. (Refer to [P.54B-27](#).)

<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
Tail light 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

CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
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
Transmission range switch ("R" position)	41	PNP SW (R)	Transmission range switch: R position	ON
			Transmission range switch: Other than R position	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 number 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
			• Ignition switch: ON or START • Lighting switch: OFF • Wiper switch: OFF	SLEEP ACK
			• Lighting switch: HEAD • Headlight: High-beam	HI-BEAM ACK
			-	NO ACK

NOTE: For item number 70, the scan tool also displays "NG" under the "ECU COMM CHK" when it displays "NO ACK" under the front-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	Park/neutral switch ("R" position)	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	Tail light 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	Tail light switch	TAILLIGHT SW	OFF
	03	Passing light switch	PASSING SW	OFF
	04	Automatic lighting switch	AUTOLAMP 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	Tail light 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 number 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	Tail light 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.

PULSE CHECK

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-27).

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 which		When the seat belt is fastened
All door switches (excluding front door switch)		Either of the doors (excluding front door) is opened
Key cylinder		When the 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 <M/T> or vehicle speed signal <A/T>		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

<ECU communication system>

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Communication with the SWS monitor kit is not possible.	A-1	P.54B-29
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-45
Communication with the front-ECU is not possible.	A-4	P.54B-53
Communication with the sunroof motor assembly (sunroof-ECU) is not possible.	A-5	P.54B-60

<Function system>

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Tone alarm	General description concerning the tone alarm function.	–	P.54B-69
	Ignition key reminder tone alarm function does not work.	B-1	P.54B-76
	Light reminder tone alarm function does not work normally.	B-2	P.54B-80
	Seat belt tone alarm function does not work normally.	B-3	P.54B-84
Central door locking system	General description concerning the central door locking system.	–	P.54B-88
	The central door lock system does not work at all.	C-1	P.54B-91
	Some doors do not lock or unlock.	C-2	P.54B-99
	All the doors do not lock or unlock with just the door lock switch operation.	C-3	P.54B-113
	All the doors do not lock or unlock with just the door lock key cylinder key operation.	C-4	P.54B-115
Power windows	General description concerning the power windows function.	–	P.54B-117
	Power windows do not work at all.	D-1	P.54B-121
	The power window timer function does not work normally.	D-2	P.54B-133
	Only the front door window (LH) does not work normally by operating the power window main switch.	D-3	P.54B-137
	Power windows does not work normally by operating the front passenger's and rear power window switches.	D-4	P.54B-140
	Front or rear passenger's power windows do not work at all by operating the power window main switch.	D-5	P.54B-166

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Keyless entry system	General description concerning keyless entry system.	–	P.54B-169
	Keyless entry system does not operate.	E-1	P.54B-173
	The front dome light, the turn-signal lights and the horn do not operate through the answerback function.	E-2	P.54B-175
	Encrypted code cannot be registered.	E-3	P.54B-185
Sunroof	General description concerning the sunroof.	–	P.54B-187
	Sunroof does not operate.	F-1	P.54B-189
	Any of the sunroof switch positions is defective.	F-2	P.54B-197
	Sunroof timer function does not work normally.	F-3	P.54B-199
	Safety mechanism does not function.	F-4	P.54B-202
Windshield wiper and washer	General description concerning the windshield wiper and washer function.	–	P.54B-203
	The windshield wipers do not work at all.	G-1	P.54B-207
	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-216
	Any of the windshield wiper switch positions is defective.	G-3	P.54B-218
	The windshield wipers do not stop at the predetermined park position.	G-4	P.54B-224
	The windshield intermittent wiper interval is not changed according to the vehicle speed.	G-5	P.54B-231
	The intermittent wiper interval is not changed according to the vehicle speed.	G-6	P.54B-233
	The windshield washer does not work.	G-7	P.54B-236
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-253
	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

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
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-269
Headlight and taillight	General description concerning headlight and taillight function.	–	P.54B-279
	The taillights do not illuminate normally.	J-1	P.54B-284
	Headlights (low-beam) do not illuminate normally.	J-2	P.54B-289
	Headlights (high-beam) do not illuminate normally.	J-3	P.54B-294
	When the passing switch is turned "on", the headlights (low-beam or high-beam) do not illuminate.	J-4	P.54B-297
	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-299
	Any of taillights, position lights or license plate light does not illuminate.	J-6	P.54B-301
	One of the headlights does not illuminate.	J-7	P.54B-329
	The High-beam Indicator Light does not illuminate.	J-8	P.54B-339
	Headlight automatic shutdown function does not work normally.	J-9	P.54B-345
	Headlight dimmer switch automatic resetting function does not work normally.	J-10	P.54B-348
	Daytime running light function does not work normally. <vehicles with daytime running light function>	J-11	P.54B-349
Fog lights	General description concerning fog light	–	P.54B-352
	Fog lights do not illuminate when the fog light switch is turned on	K-1	P.54B-354
	Fog lights do not go out when the headlights (low-beam) are turned off while the fog lights are on	K-2	P.54B-362
	One of the fog lights does not illuminate	K-3	P.54B-363

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Flasher timer	General description concerning the flasher timer function.	–	P.54B-374
	Turn-signal lights do not flash when the turn-signal light switch is turned on.	L-1	P.54B-377
	Hazard warning lights do not flash when the hazard warning light switch is turned on.	L-2	P.54B-384
	The right or left turn-signal light does not illuminate.	L-3	P.54B-386
Interior light	General description concerning the interior light function.	–	P.54B-416
	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-419
	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-424
	Front dome light and rear dome light <vehicles without sunroof> dimming function does not work normally.	M-3	P.54B-437
	The interior light automatic shut-down function does not work normally.	M-4	P.54B-442
	The door ajar indicator lights does not illuminate normally.	M-5	P.54B-447

INPUT SIGNAL CHART

M1549024200244

<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-454
ETACS-ECU does not receive any signal from the ignition switch (IG1).		N-2	P.54B-457
ETACS-ECU does not receive any signal from the backup light switch. <M/T>		N-3	P.54B-460
ETACS-ECU does not receive "R" position signal from the transmission range switch. <A/T>			P.54B-469
ETACS-ECU does not receive signals from the front door switches.		N-4	P.54B-478
Column switch	ETACS-ECU does not receive any signal from the tail light switch.	N-5	P.54B-486
	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-6	P.54B-490
	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 windshield intermittent wiper interval adjusting knob.	N-7	P.54B-495
	ETACS-ECU does not receive any signal from the windshield washer switch.	N-6	P.54B-490
	ETACS-ECU does not receive any signal from the rear wiper switch.		
	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-8	P.54B-499
ETACS-ECU does not receive signals from the fog light switch		M-9	P.54B-502

<Scan tool or voltmeter>

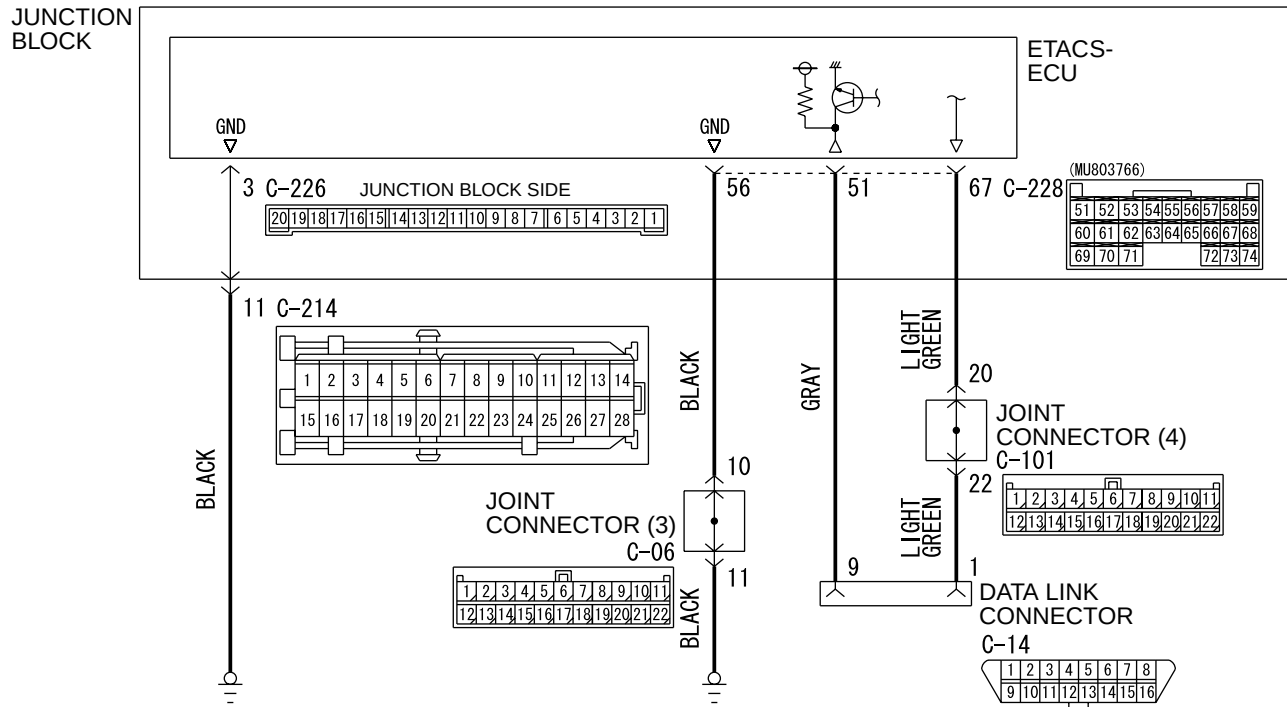
If a problem is found in the Pulse Check, observe the table below.

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the key reminder switch.		O-1	P.54B-507
ETACS-ECU does not receive any signal from the hazard warning light switch.		O-2	P.54B-512
ETACS-ECU does not receive any signal from the driver's seat belt switch.		O-3	P.54B-517
The ETACS-ECU does not receive any signal from all the door switches.		O-4	P.54B-522
ETACS-ECU does not receive any signal from the driver's or front passenger's door lock key cylinder switch.		O-5	P.54B-529
ETACS-ECU does not receive any signal from the driver's door lock actuator switch.		O-6	P.54B-534
ETACS-ECU does not receive any signal from the door lock switch (incorporated in the power window main switch).		O-7	P.54B-539
ETACS-ECU does not receive any signal from the Vehicle Speed Sensor. <M/T>		O-8	P.54B-549
ETACS-ECU does not Receive Vehicle Speed Signal. <A/T>			P.54B-554
Transmitter	ETACS-ECU does not receive any signal from the lock or unlock switch.	O-9	P.54B-558
ETACS-ECU does not receive any interior light loaded signal.		O-10	P.54B-560

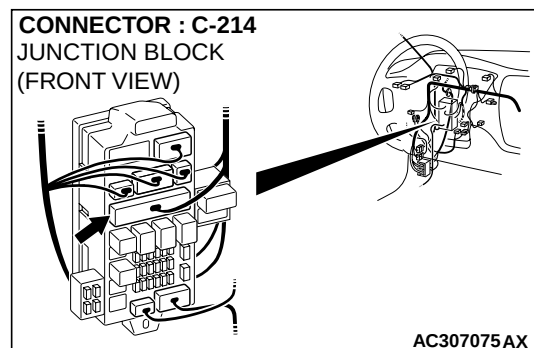
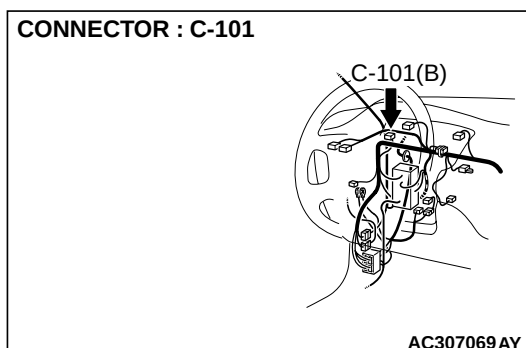
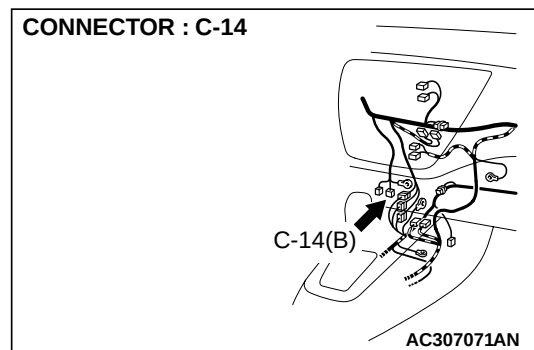
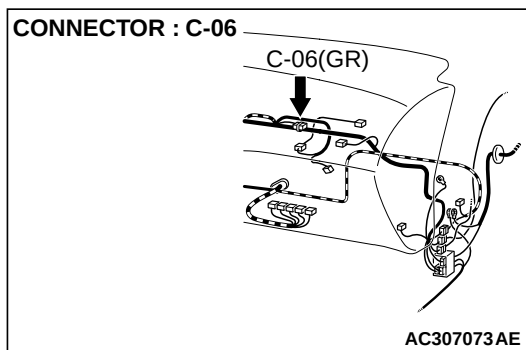
SYMPTOM PROCEDURES

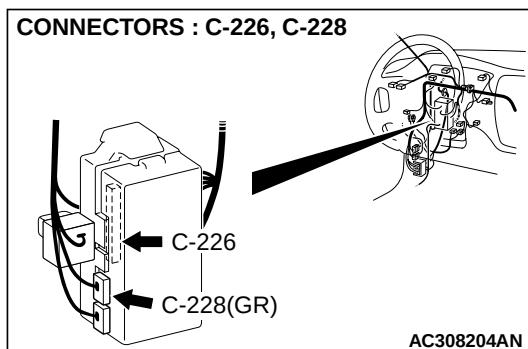
INSPECTION PROCEDURE A-1: Communication with the SWS monitor kit is not possible.

Scan Tool Communication and ETACS-ECU Ground Circuit



W4J54M126A



**TECHNICAL DESCRIPTION (COMMENT)**

The SWS monitor kit may be connected improperly.

TROUBLESHOOTING HINTS

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991813: SWS Monitor Kit
 - MB991806: SWS Monitor Cartridge
 - MB991812: SWS Monitor Harness (For Column-ECU)
 - MB991922: Probe Harness

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

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

YES : Go to Step 2.

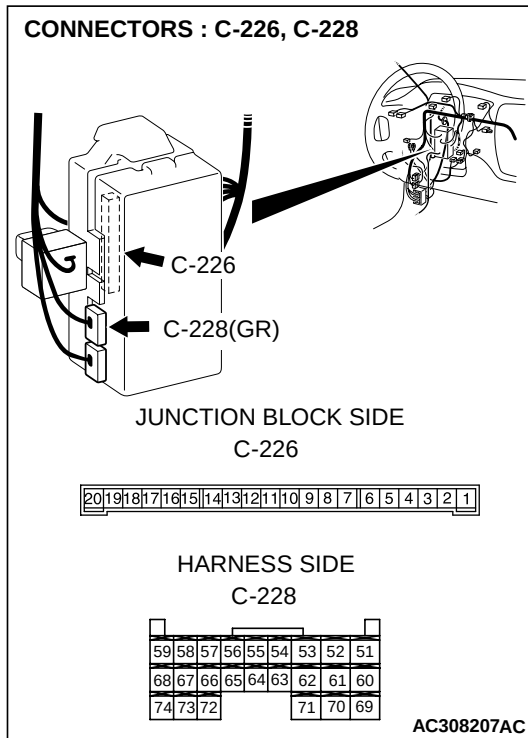
NO : Connect SWS monitor kit MB991862 to the column switch securely.

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

Q: Does the system communicate with scan tool 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-45."

NO : Go to Step 3.

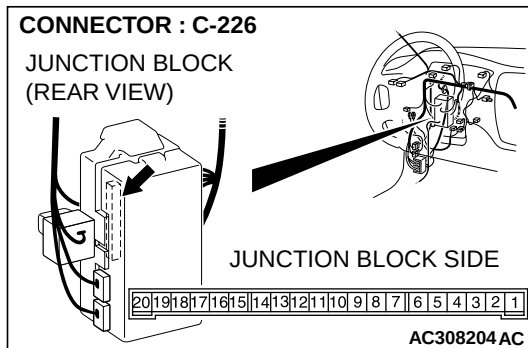


STEP 3. Check ETACS-ECU connector C-226 and C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-226 and C-228 in good condition?

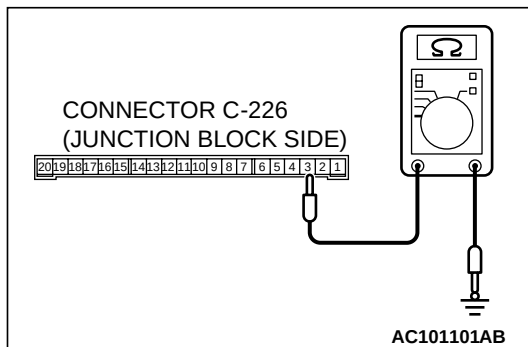
YES : Go to Step 4.

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. Test 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.

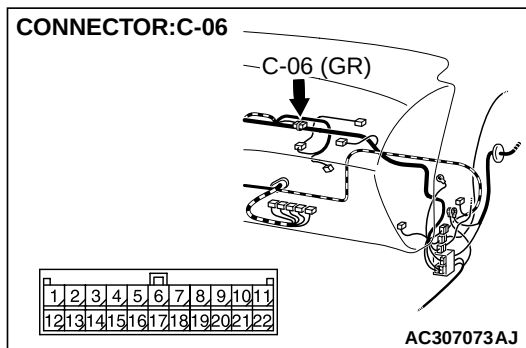
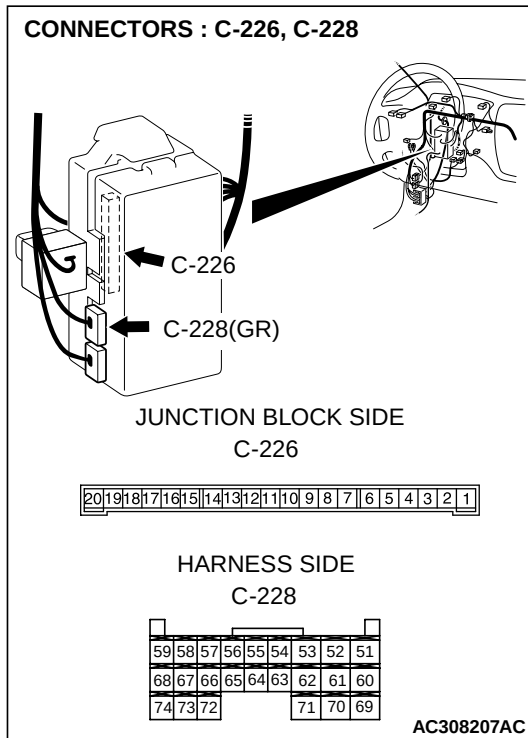
- The resistance should equal 2 ohms or less.

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), C-228 (terminal 56) and the ground.

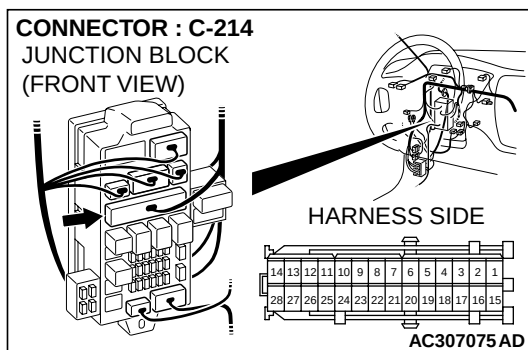


NOTE: Also check junction block connector C-214 and joint connector C-06 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or joint connectors C-06 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness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

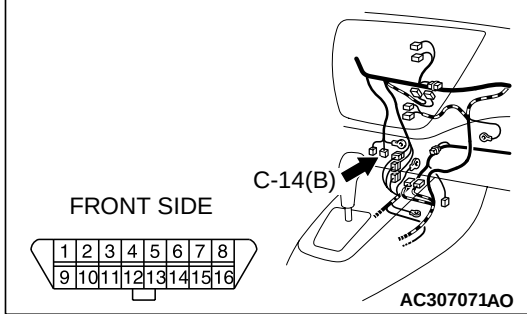
Q: Is the wiring harness between ETACS-ECU connector C-226 (terminal 3), C-228 (terminal 56) and the ground in good condition?

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.



CONNECTOR : C-14



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

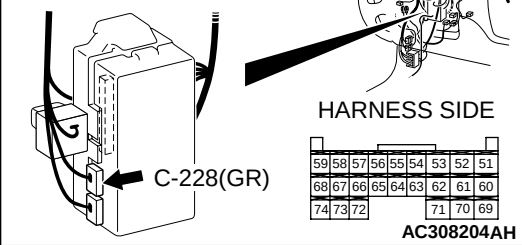
Q: Is data link connector C-14 in good condition?

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.

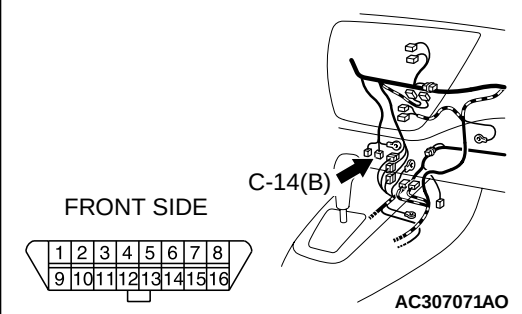
CONNECTOR : C-228

JUNCTION BLOCK
(REAR VIEW)



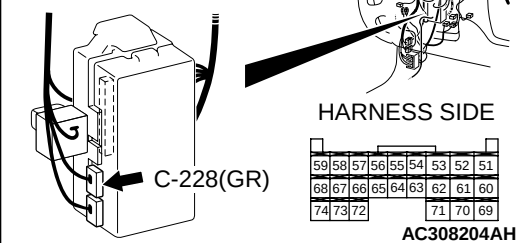
STEP 7. Check the wiring harness between ETACS-ECU connector C-228 (terminal 51 and 67) and data link connector C-14 (terminal 9 and 1).

CONNECTOR : C-14

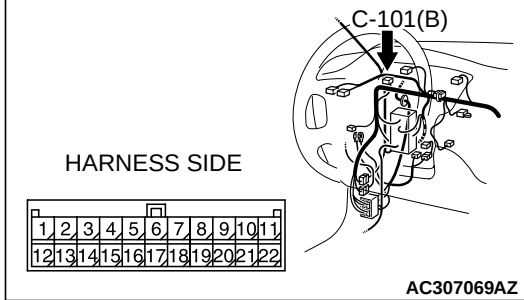


CONNECTOR : C-228

JUNCTION BLOCK
(REAR VIEW)



CONNECTOR : C-101



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](#).

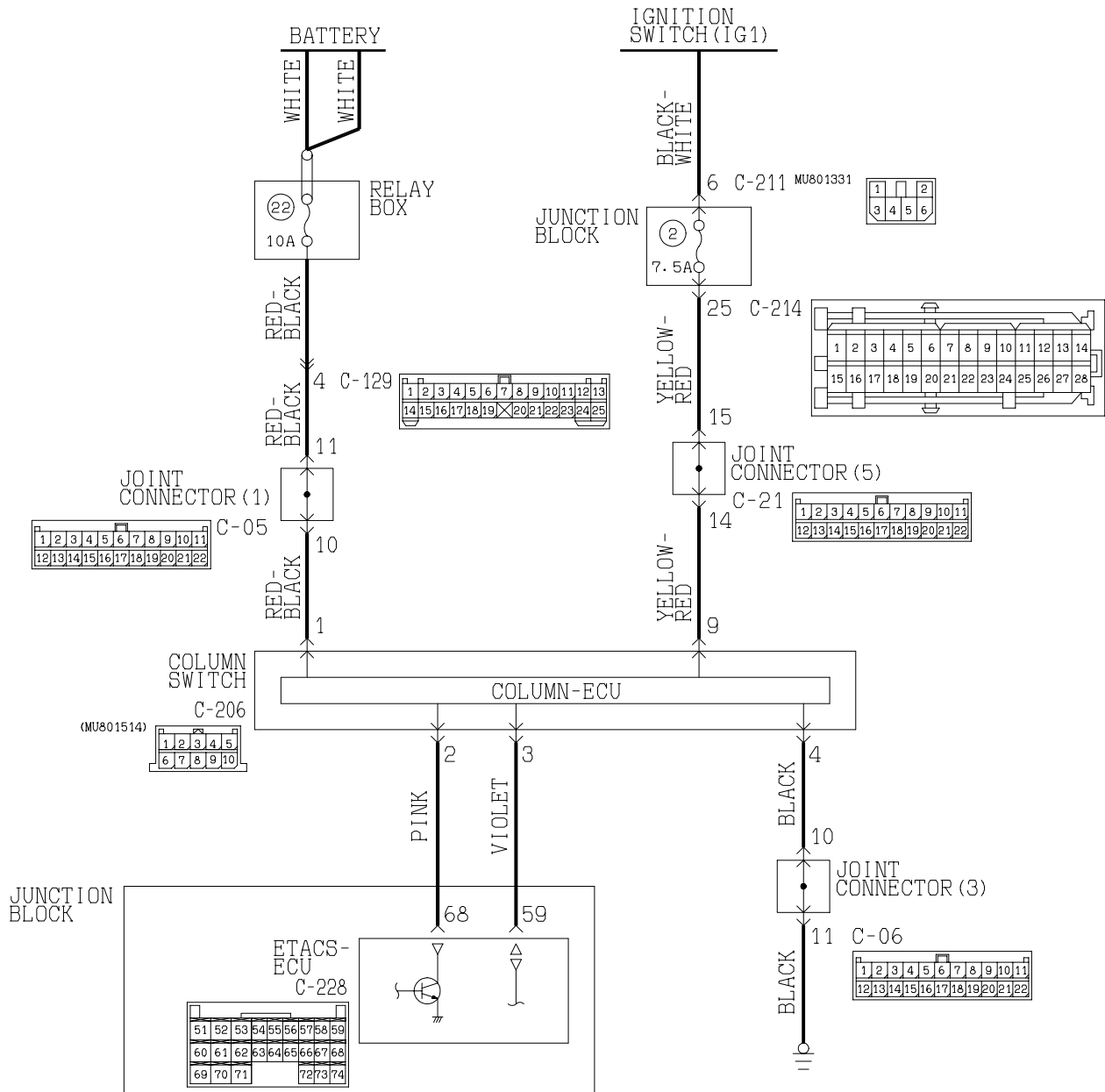
Q: Is the wiring harness between ETACS-ECU connector C-228 (terminal 51 and 67) and data link connector C-14 (terminal 9 and 1) in good condition?

- 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.

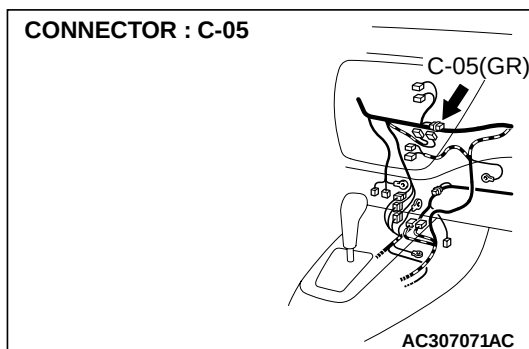
NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor" P.54B-10.

Column Switch Power Supply and SWS Communication Circuit

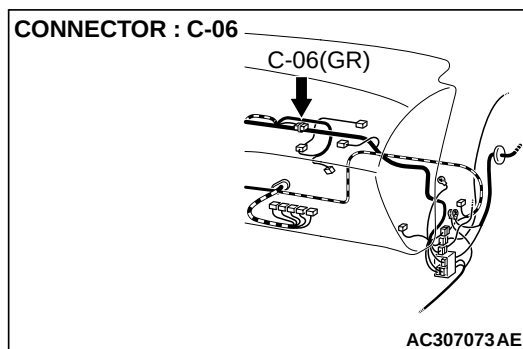


W3J01M06AA

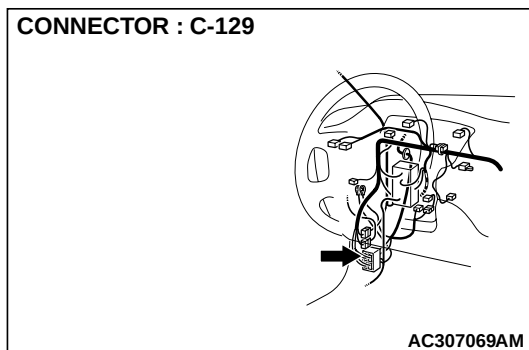
CONNECTOR : C-05



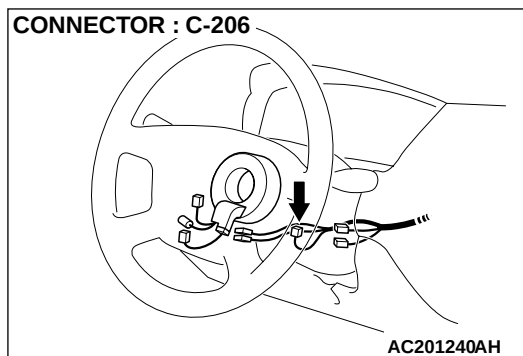
CONNECTOR : C-06



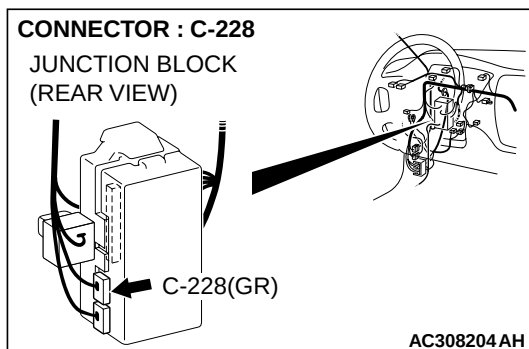
CONNECTOR : C-129



CONNECTOR : C-206



CONNECTOR : C-228

JUNCTION BLOCK
(REAR VIEW)**CIRCUIT OPERATION**

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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 MB991958 to select "ECU COMM CHK" on the SWS monitor display.

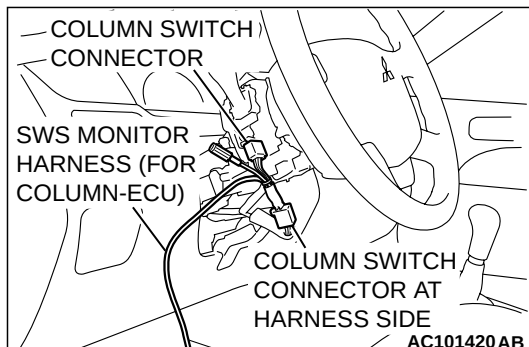
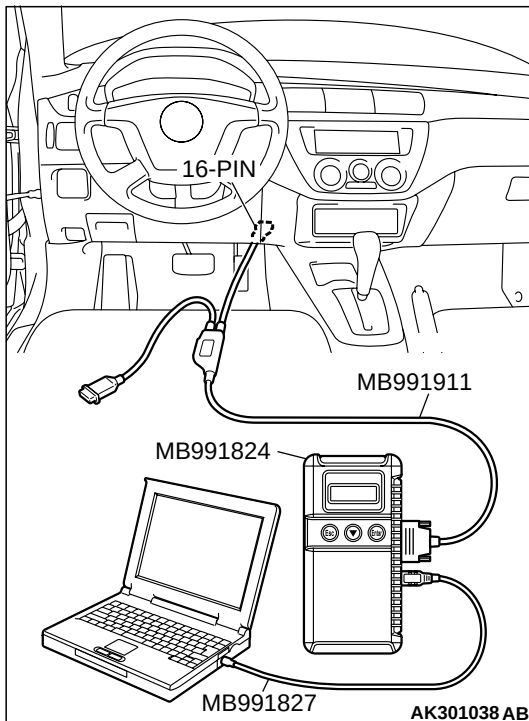
Check the following ECUs:

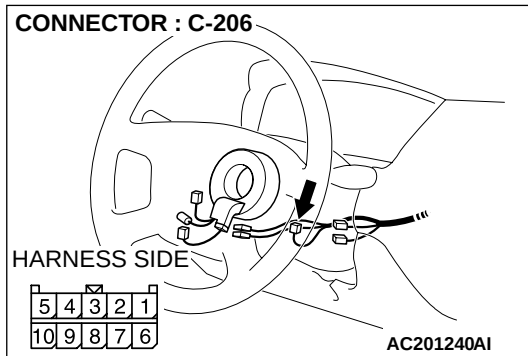
- ETACS-ECU
- Column-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

Q: Is "OK" displayed on both the "ETACS ECU" and "COLUMN ECU" menus?**"OK"** are displayed for all the items : Go to Step 2.**"NG"** is displayed on the "COLUMN ECU" menu : Go to Step 6.**"NG"** is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."**"NG"** are displayed for all the items : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."

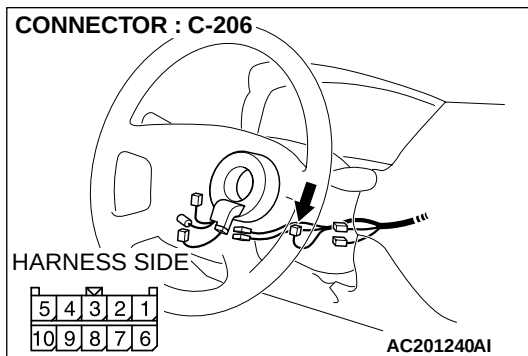


STEP 2. Check column switch connector C-206 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

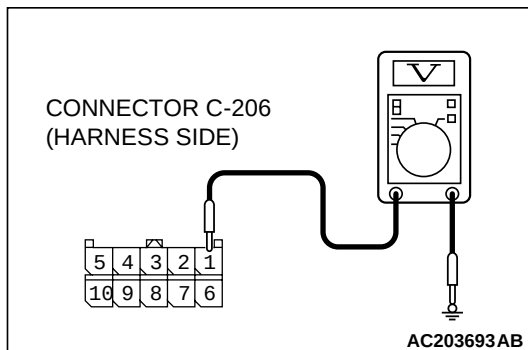
YES : Go to Step 3.

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. Test at column switch connector C-206.

(1) Column switch connector C-206 and measure the voltage available at the wiring harness side of the connector.



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

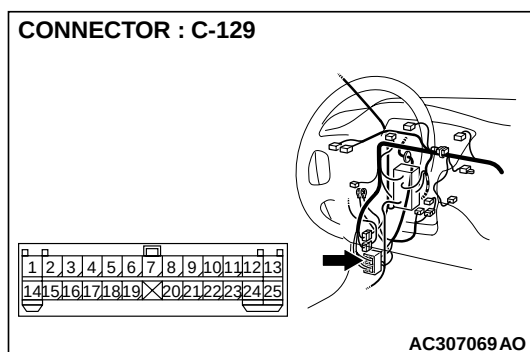
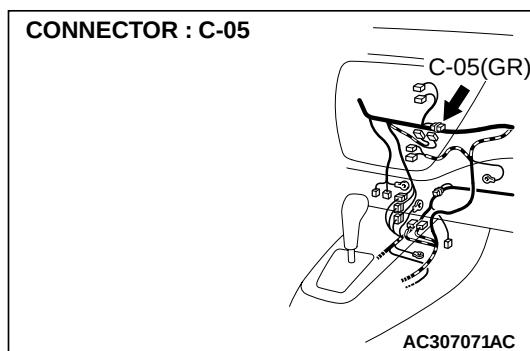
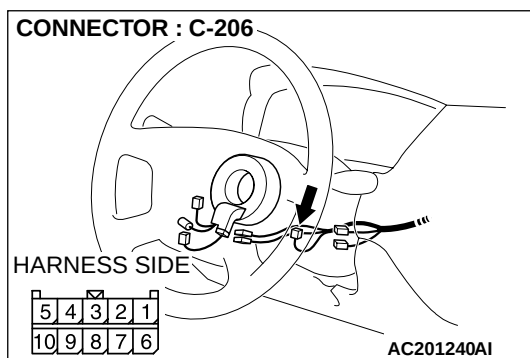
- The voltage should equal approximately 12 volts (battery positive voltage).

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.

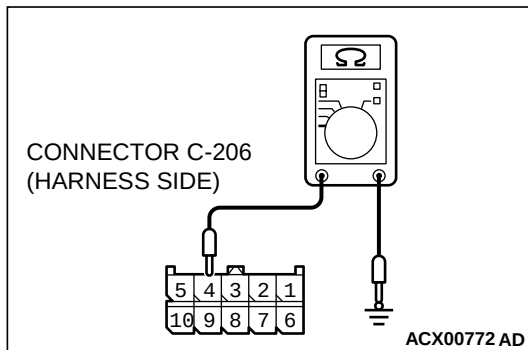
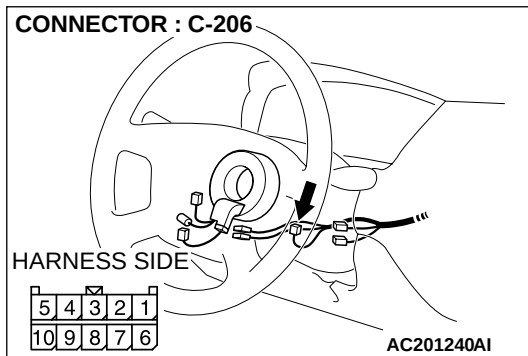


NOTE: Also check joint connector C-05 and intermediate connector C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-05 or intermediate connectors C-129 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness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



**STEP 5. Check the ground circuit to the column switch.
Test 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.

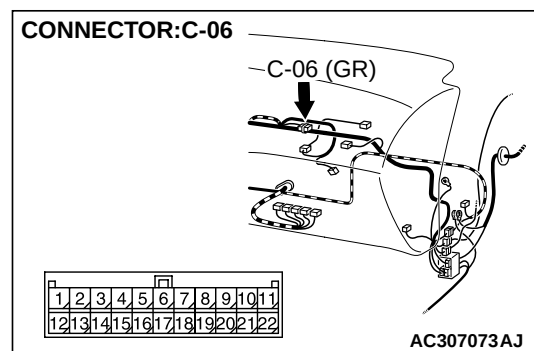
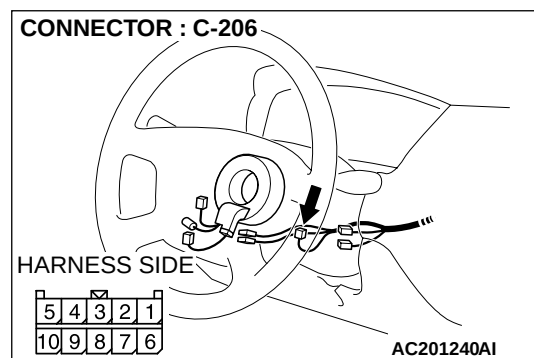
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.

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.

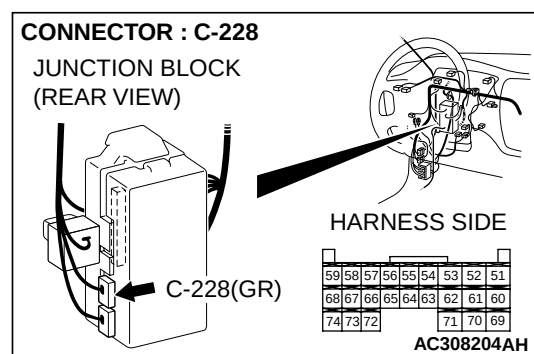
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the column switch (column-ECU) normally.

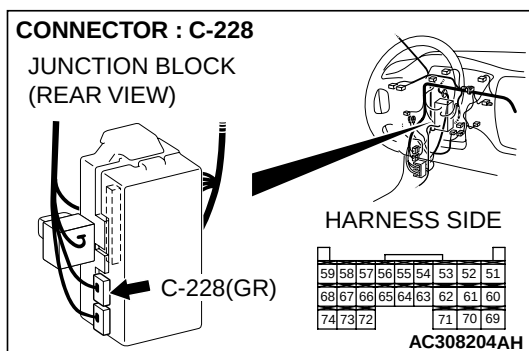
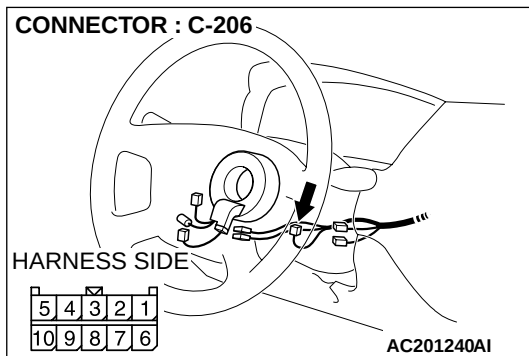
STEP 7. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.



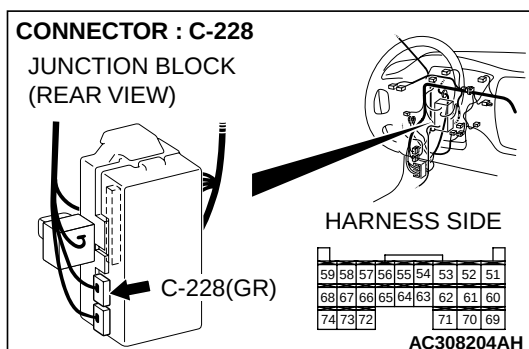
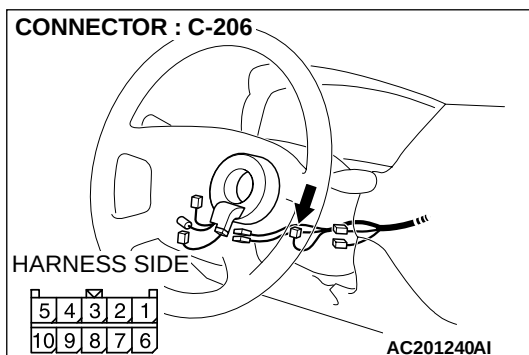


STEP 8. Check the wiring harness between column switch connector C-206 (terminal 3) and ETACS-ECU connector C-228 (terminal 59).

Q: Is the wiring harness between column switch connector C-206 (terminal 3) and ETACS-ECU connector C-228 (terminal 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. Check the wiring harness between column switch connector C-206 (terminal 2) and ETACS-ECU connector C-228 (terminal 68).

Q: Is the wiring harness between column switch connector C-206 (terminal 2) and ETACS-ECU connector C-228 (terminal 68) 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 column switch (column-ECU) normally.

STEP 10. Replace the ECU.

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

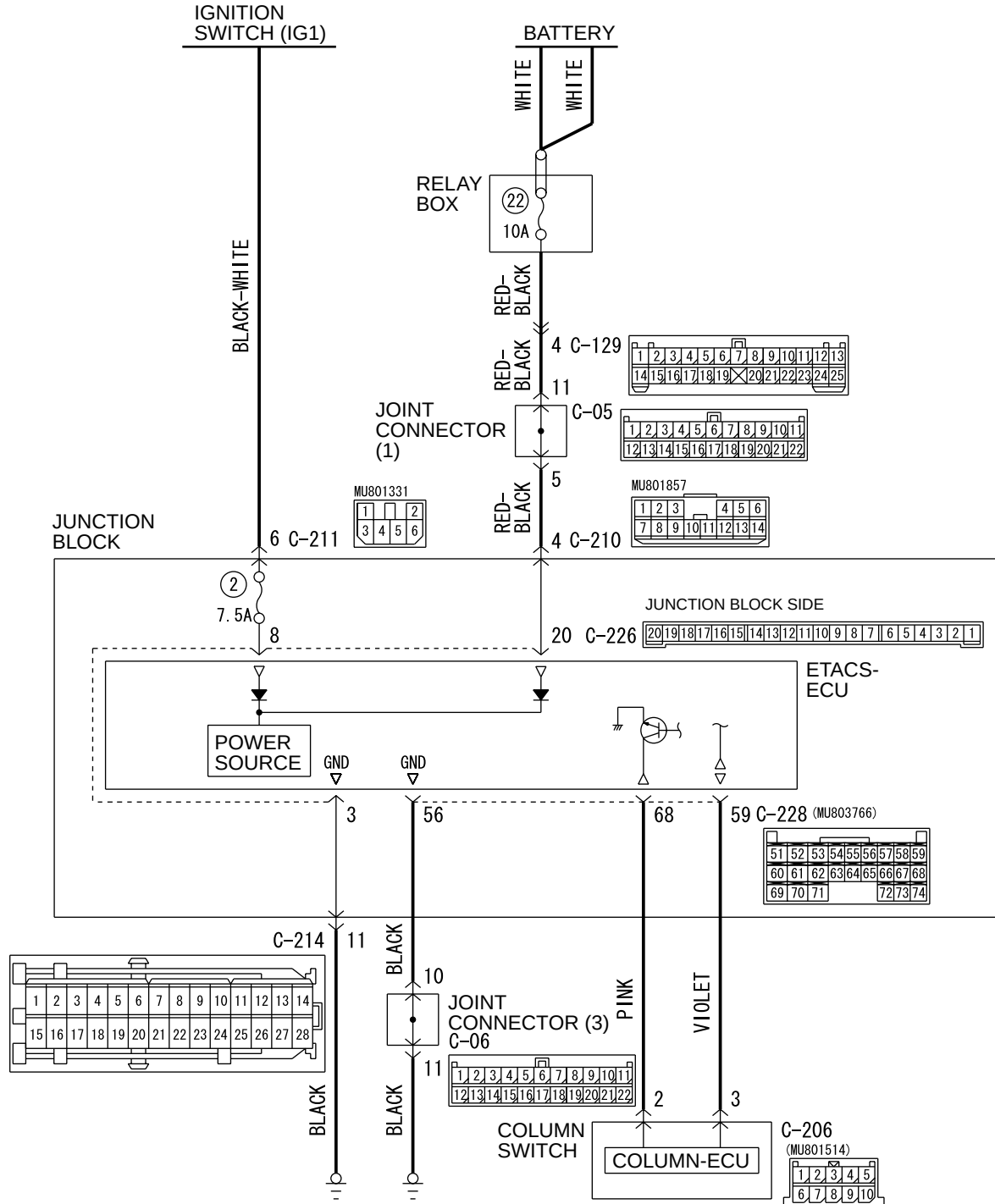
Q: Can the system communicate with the column switch (column-ECU)?

YES : No action is necessary and testing is complete.

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

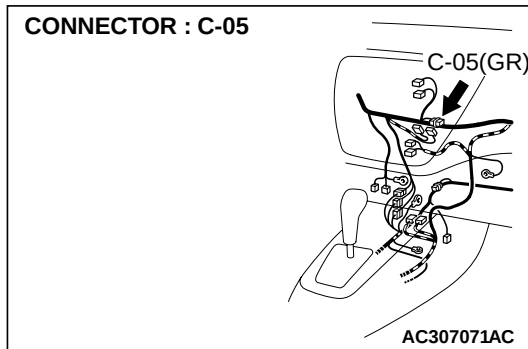
INSPECTION PROCEDURE A-3: Communication with the ETACS-ECU is not possible.

ETACS-ECU Power Supply and SWS Communication Circuit

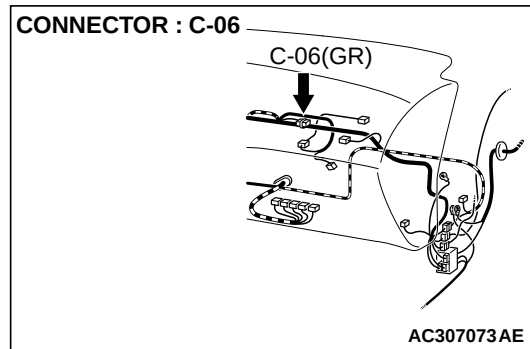


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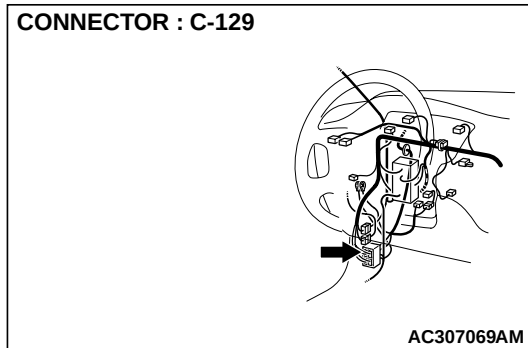
CONNECTOR : C-05



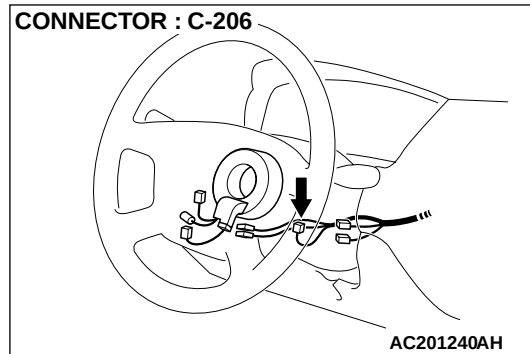
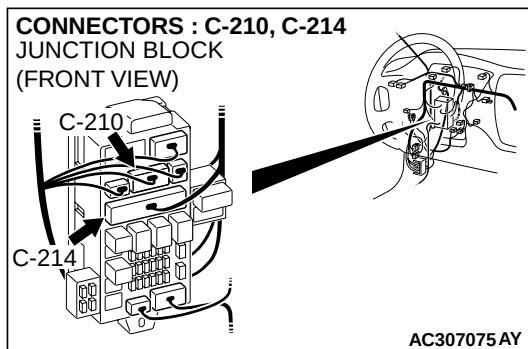
CONNECTOR : C-06



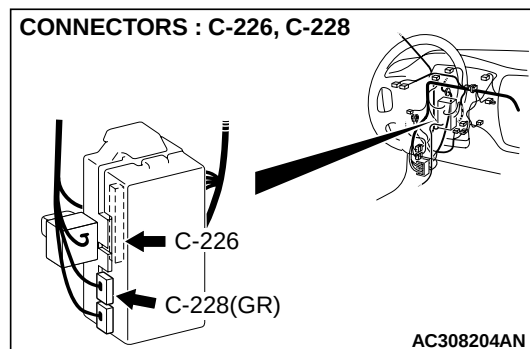
CONNECTOR : C-129



CONNECTOR : C-206

CONNECTORS : C-210, C-214
JUNCTION BLOCK
(FRONT VIEW)

CONNECTORS : C-226, C-228

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

DIAGNOSIS

Required Special Tools:

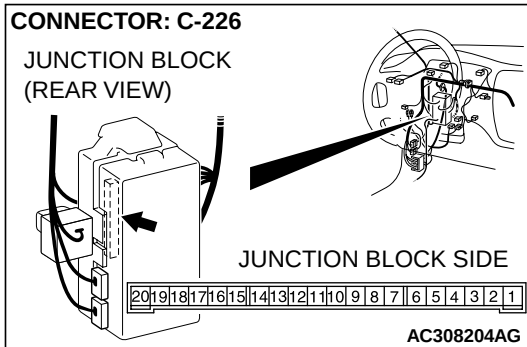
- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B

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?

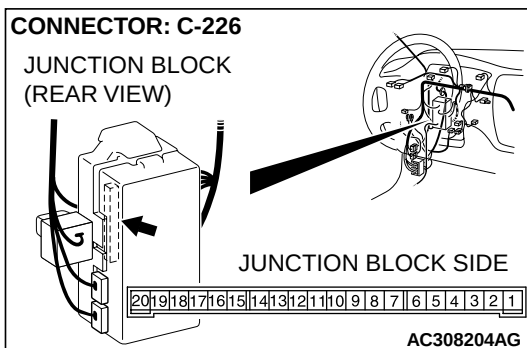
YES : Go to Step 2.

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. Test 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.



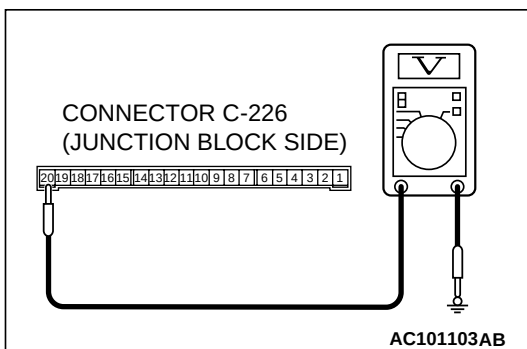
(2) Measure the voltage between terminal 20 and ground.

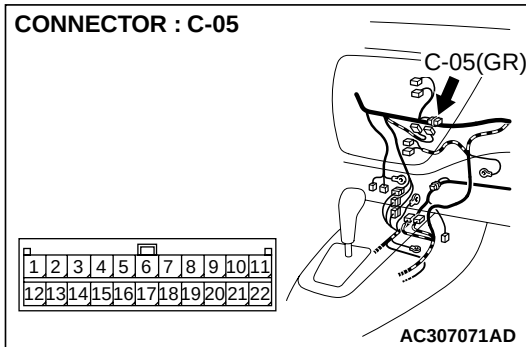
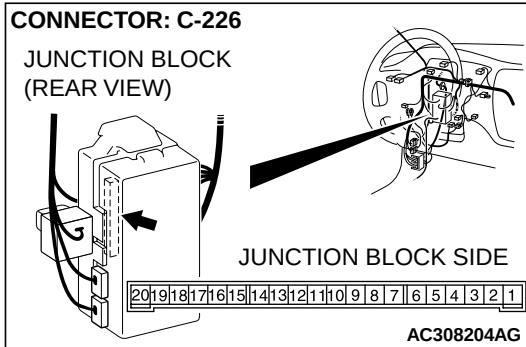
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 4.

NO : Go to Step 3.



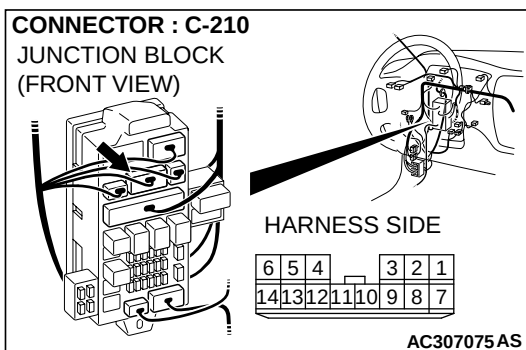
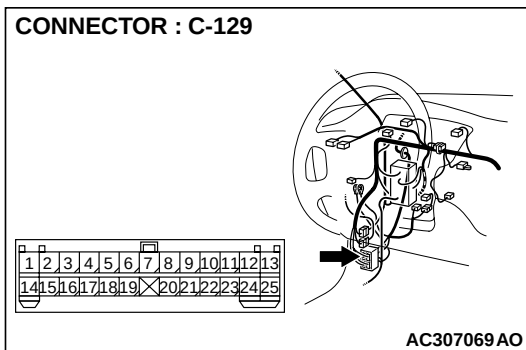
STEP 3. Check the wiring harness between ETACS-ECU connector C-226 (terminal 20) and the battery.

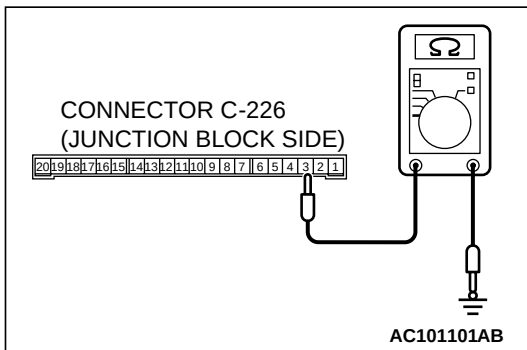
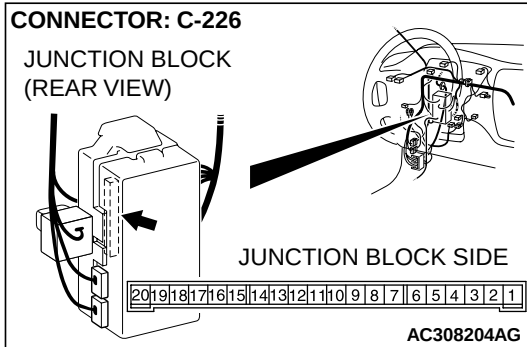
NOTE: Also check intermediate connector C-129, junction block connector C-210 and joint connector C-05 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-129, junction block connector C-210 or joint connectors C-05 is damaged, repair or replace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

Q: Is the wiring harness between 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. Test 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.

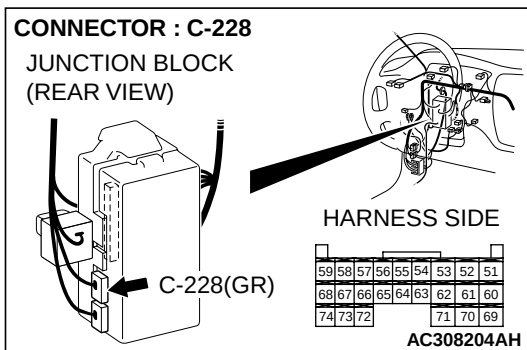
(2) Measure the resistance value between terminal 3 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 5.



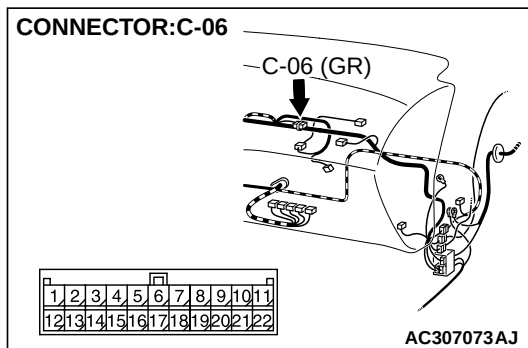
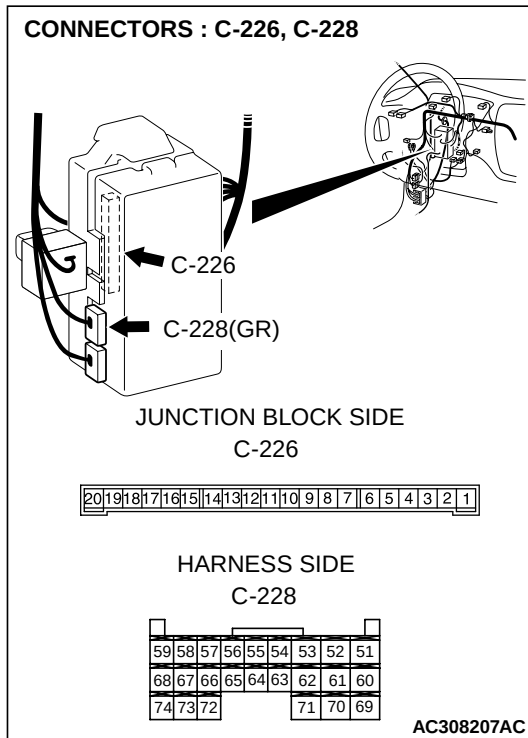
STEP 5. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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](#). The system should communicate with the ETACS-ECU normally.

STEP 6. Check the wiring harness between ETACS-ECU connector C-226 (terminal 3) and ETACS-ECU connector C-228 (terminal 56) and the ground.

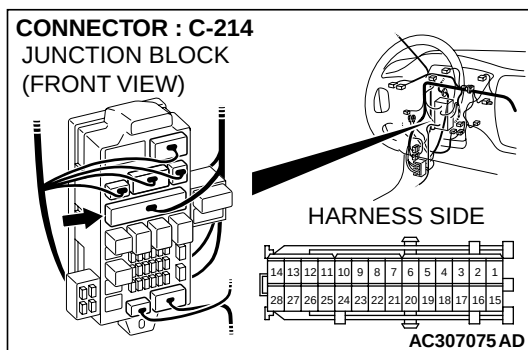


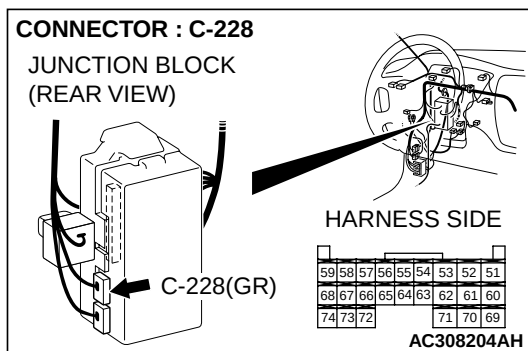
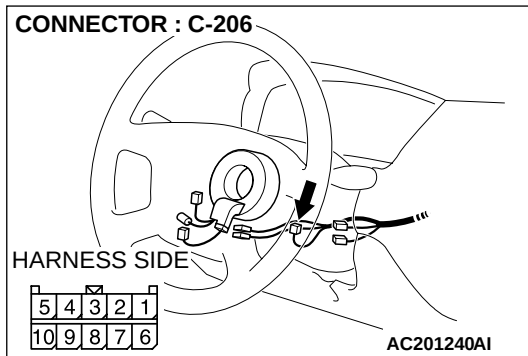
NOTE: Also check joint connector C-06 and junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-06 or junction block connector C-214 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness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

Q: Is the wiring harness between 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.





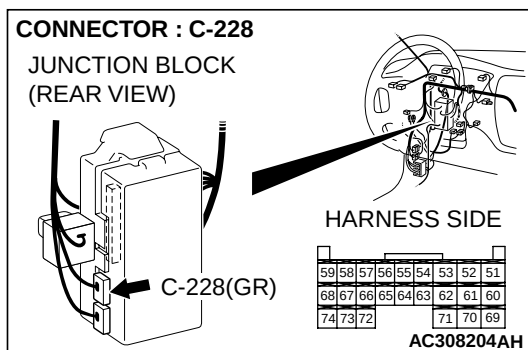
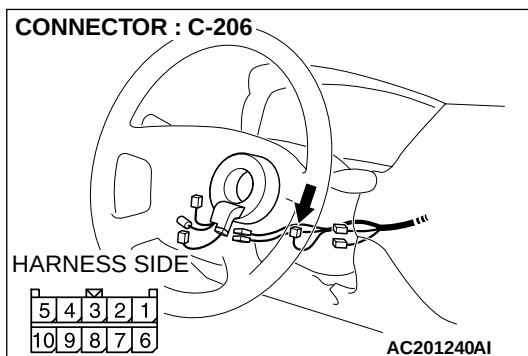
STEP 7. Check column switch connector C-206 and ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 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.

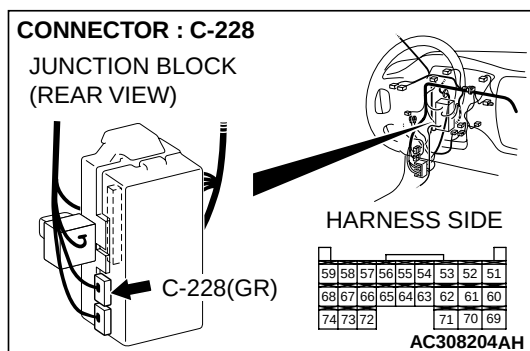
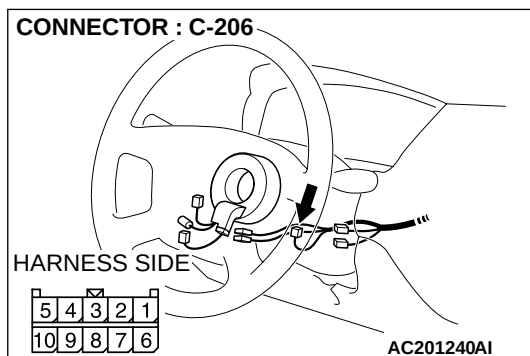


STEP 8. Check the wiring harness between column switch connector C-206 (terminal 2) and ETACS-ECU connector C-228 (terminal 68).

Q: Is the wiring harness between column switch connector C-206 (terminal 2) and ETACS-ECU connector C-228 (terminal 68) 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. Check the wiring harness between column switch connector C-206 (terminal 3) and ETACS-ECU connector C-228 (terminal 59).

Q: Is the wiring harness between column switch connector C-206 (terminal 3) and ETACS-ECU connector C-228 (terminal 59) in good condition?

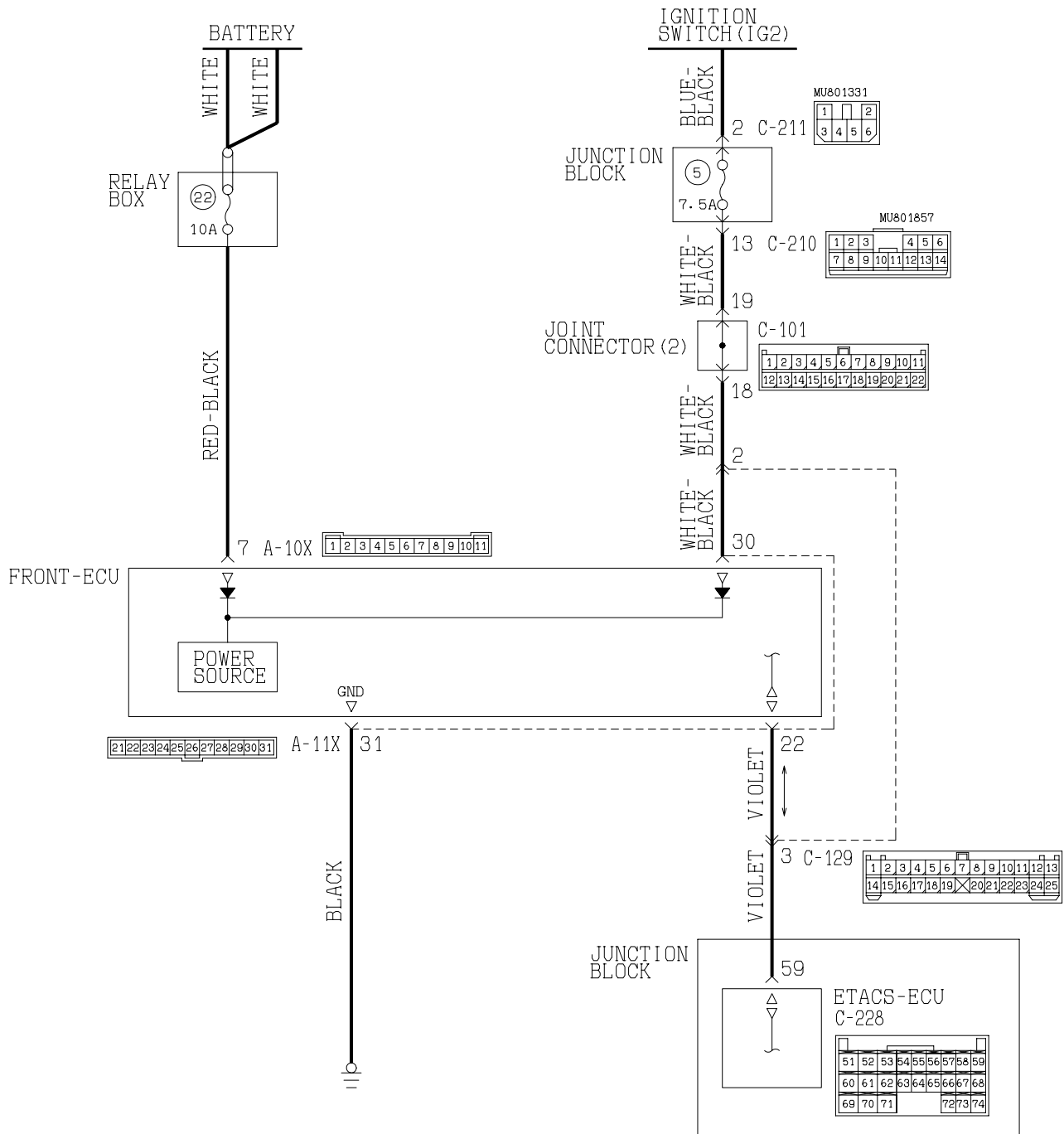
YES : Replace the ETACS-ECU. The system should communicate with the ETACS-ECU normally.

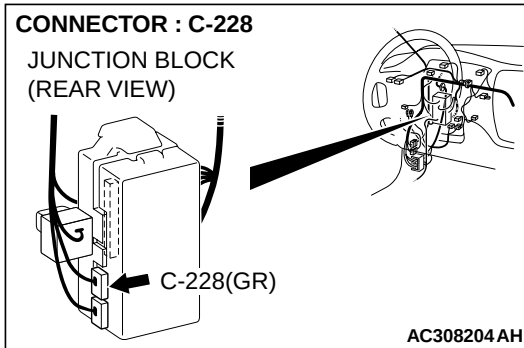
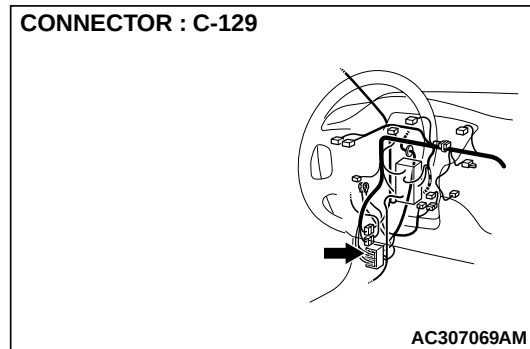
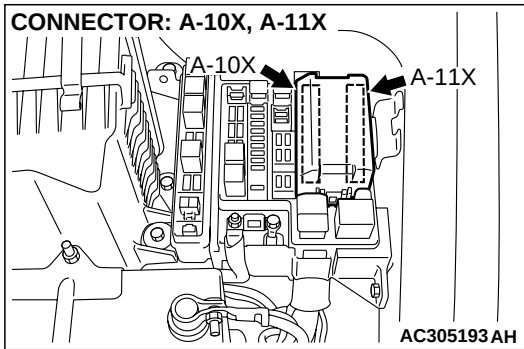
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the ETACS-ECU normally.

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Front-ECU Power Supply and SWS Communication Circuit





CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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 MB991958 to select "ECU COMM CHK" on the SWS monitor display.
Check the ETACS-ECU.

⚠ CAUTION

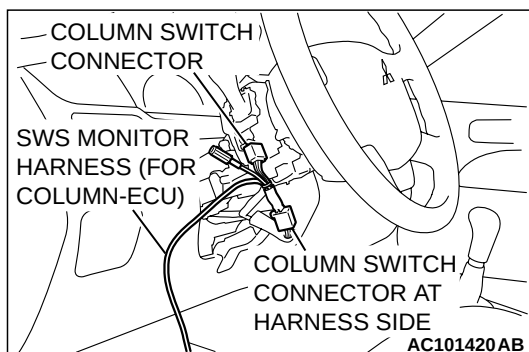
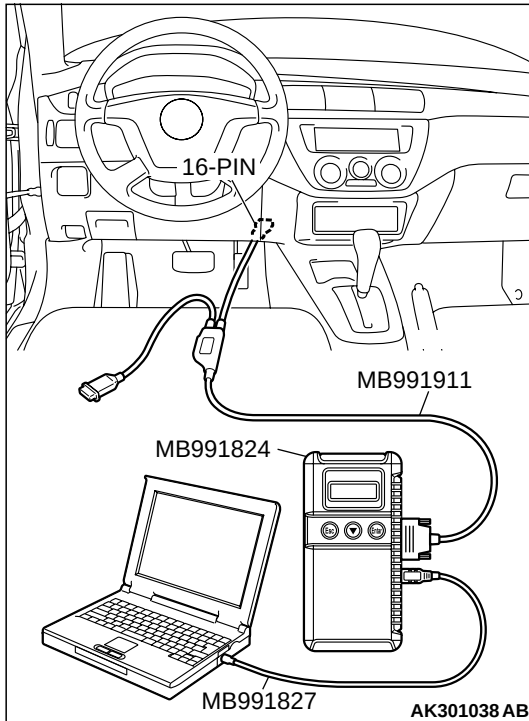
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

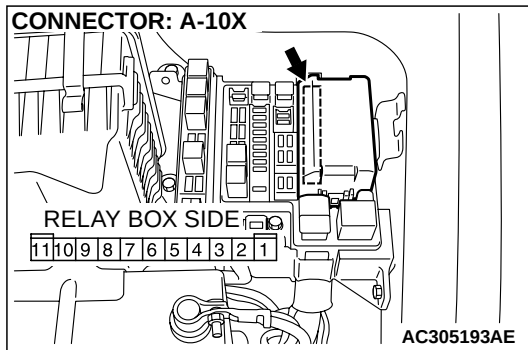
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."



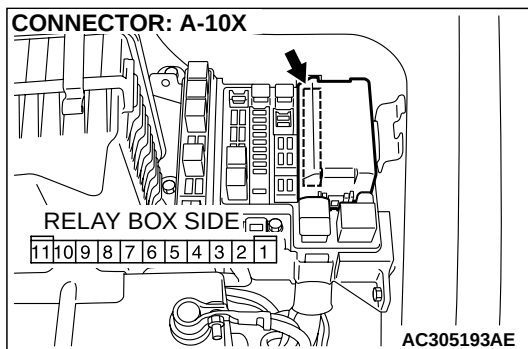


STEP 2. Check the front-ECU connector A-10X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

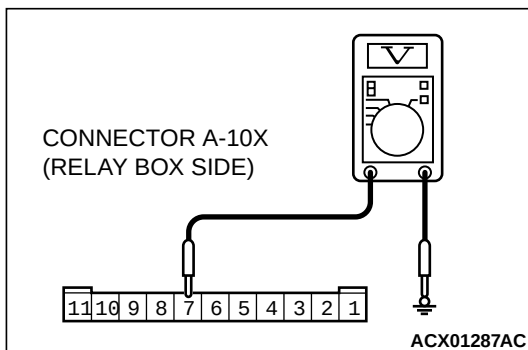
YES : Go to Step 3.

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. Test 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.



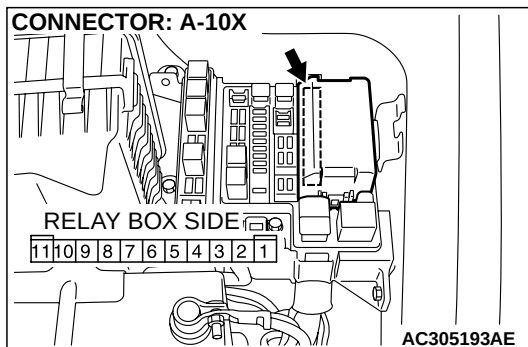
(2) Measure the voltage between terminal 7 and ground.

- 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.

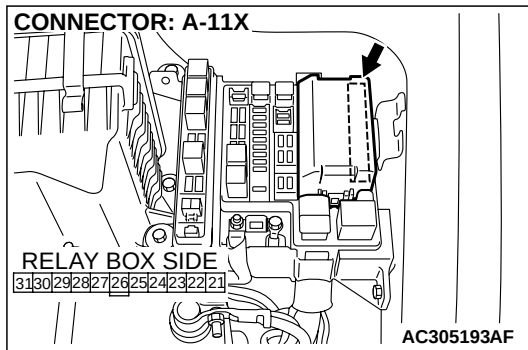


STEP 4. Check the wiring harness between front-ECU connector A-10X (terminal 7) and the battery.

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.

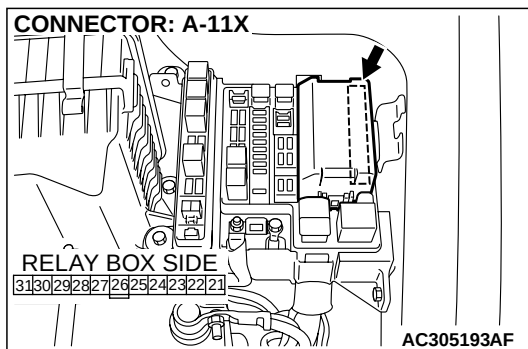


STEP 5. Check the front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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. Test 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.

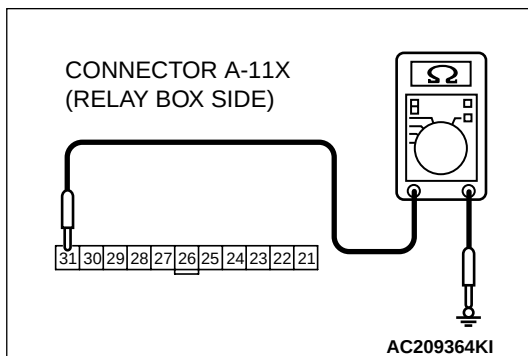
(2) Measure the resistance value between terminal 31 and ground.

- 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.

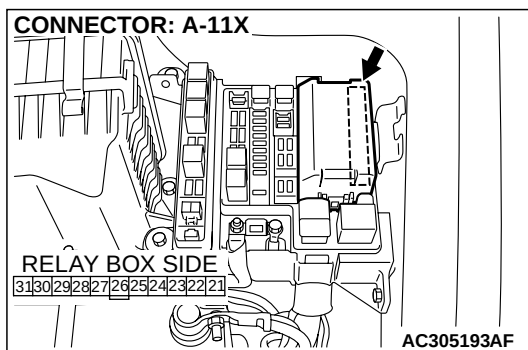


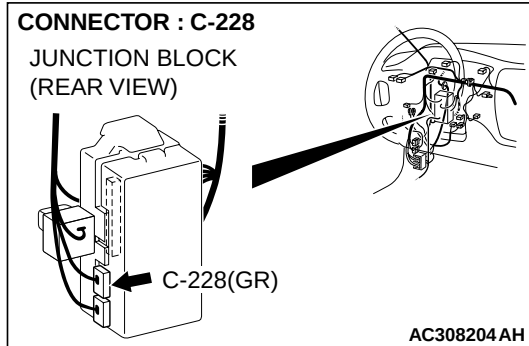
STEP 7. Check the wiring harness between front-ECU connector A-11X (terminal 31) and the ground.

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.



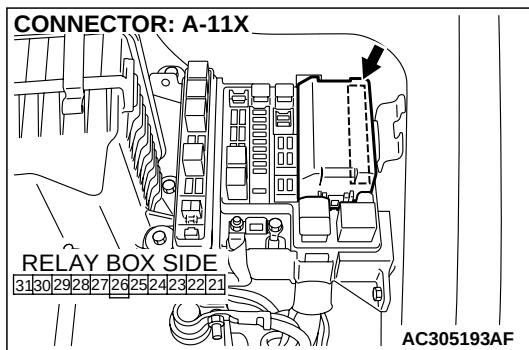


STEP 8. Check the ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

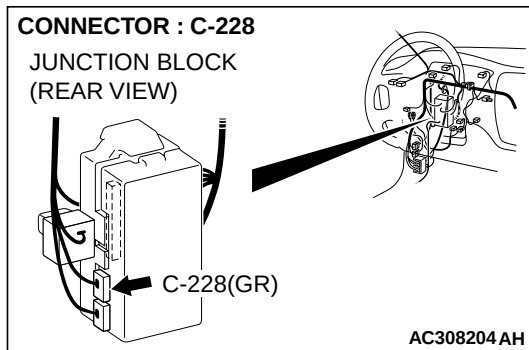
Q: Is ETACS-ECU connector C-228 in good condition?

YES : Go to Step 9.

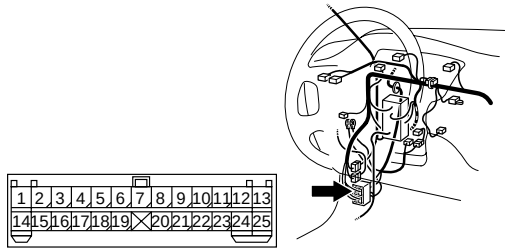
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The system should communicate with the front-ECU normally.



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



CONNECTOR : C-129



AC307069AO

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-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.

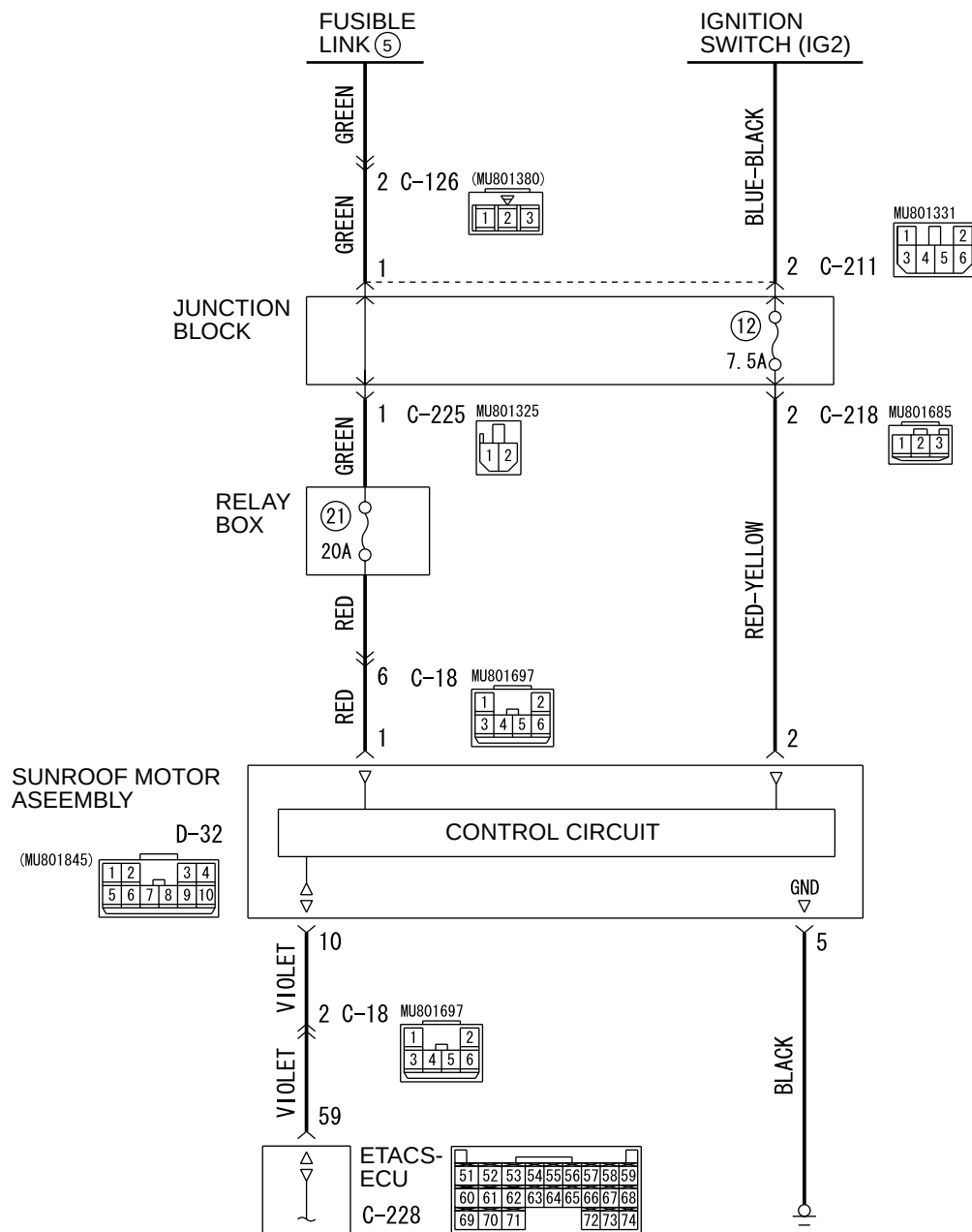
Q: Can the system communicate with the front-ECU?

YES : No action is necessary and testing is complete.

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

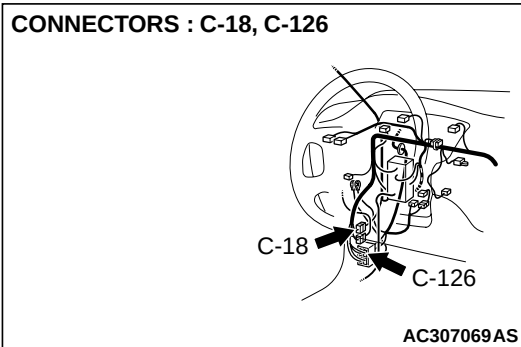
INSPECTION PROCEDURE A-5: Communication with the sunroof motor assembly (sunroof-ECU) is not possible.

Sunroof Motor Power Supply and SWS Communication Circuit

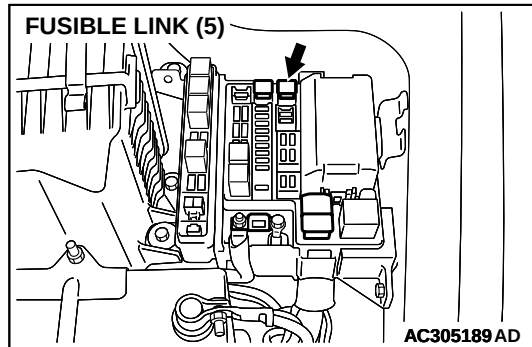


W4J54M128A

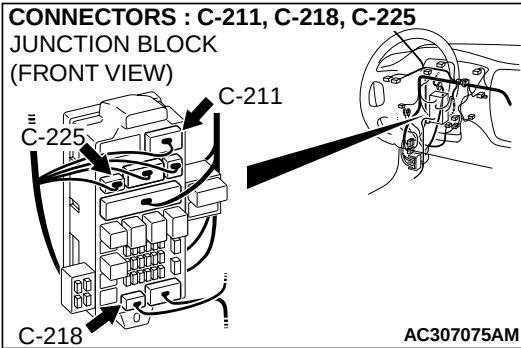
CONNECTORS : C-18, C-126



FUSIBLE LINK (5)

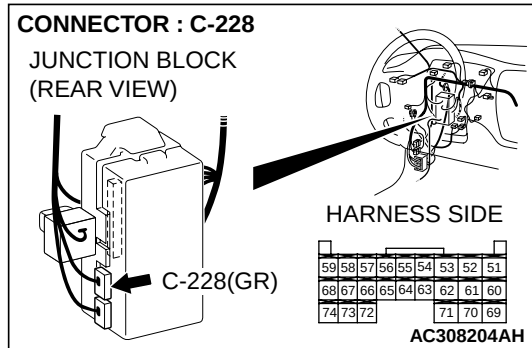


**CONNECTORS : C-211, C-218, C-225
JUNCTION BLOCK
(FRONT VIEW)**

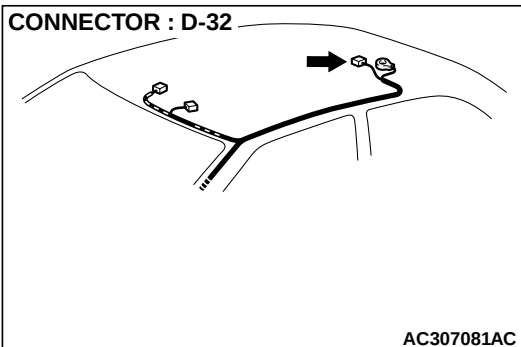


CONNECTOR : C-228

**JUNCTION BLOCK
(REAR VIEW)**



CONNECTOR : D-32



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.

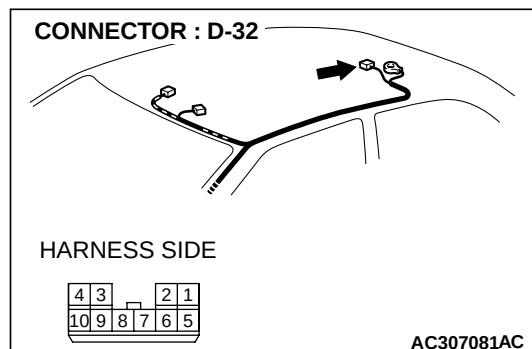
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set

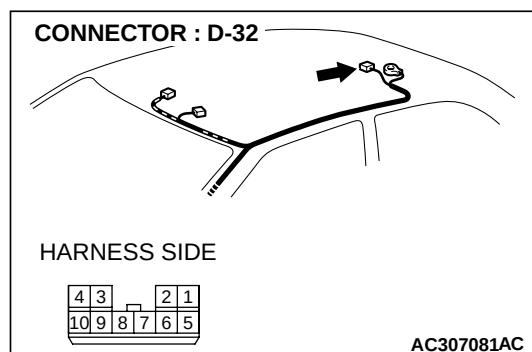


STEP 1. Check sunroof motor assembly connector D-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

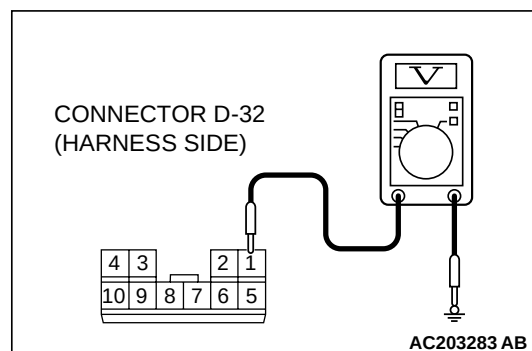
YES : Go to Step 2.

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. Test 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 by backprobing.

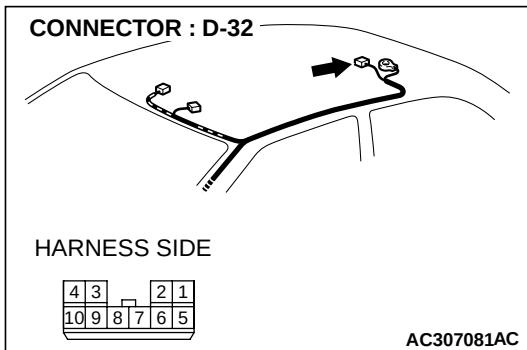
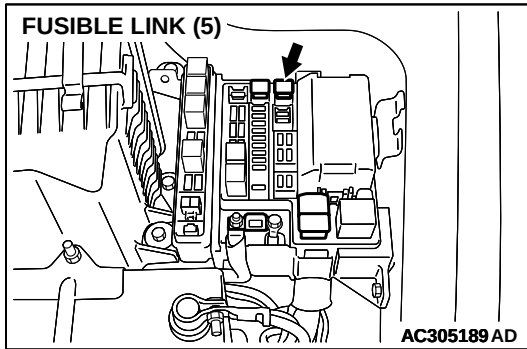
- The voltage should equal approximately 12 volts (battery positive voltage).

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

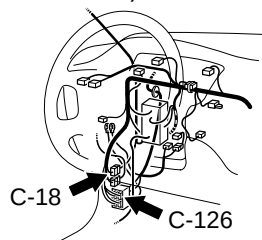
YES : Go to Step 4.

NO : Go to Step 3.

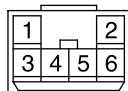
STEP 3. Check the wiring harness between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5).



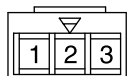
CONNECTORS : C-18, C-126



C-18



C-126



AC307070 AD

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](#).

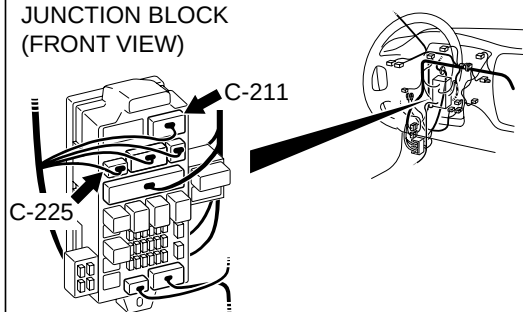
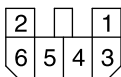
Q: Is the wiring harness between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5) in good condition?

YES : No action is necessary and testing is complete.

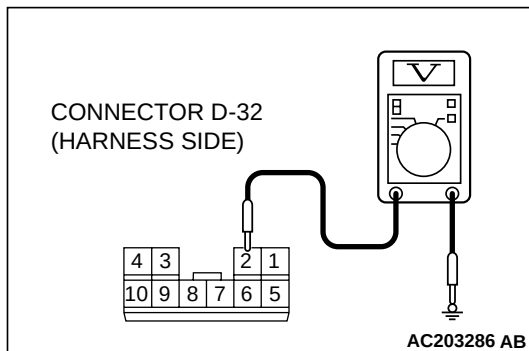
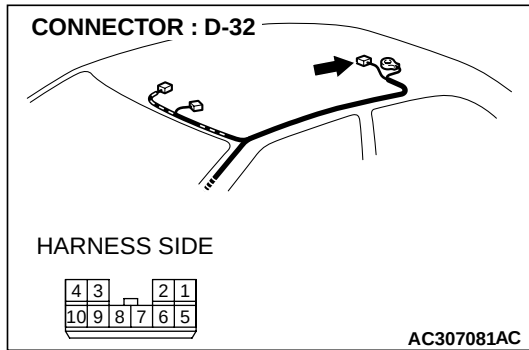
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.

CONNECTORS : C-211, C-225

JUNCTION BLOCK
(FRONT VIEW)

HARNESS SIDE
C-211HARNESS SIDE
C-225

AC307076 AE



STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Test 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.

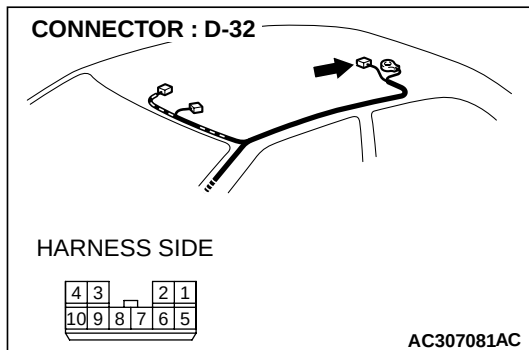
(3) Measure the voltage between terminal 2 and ground by backprobing.

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

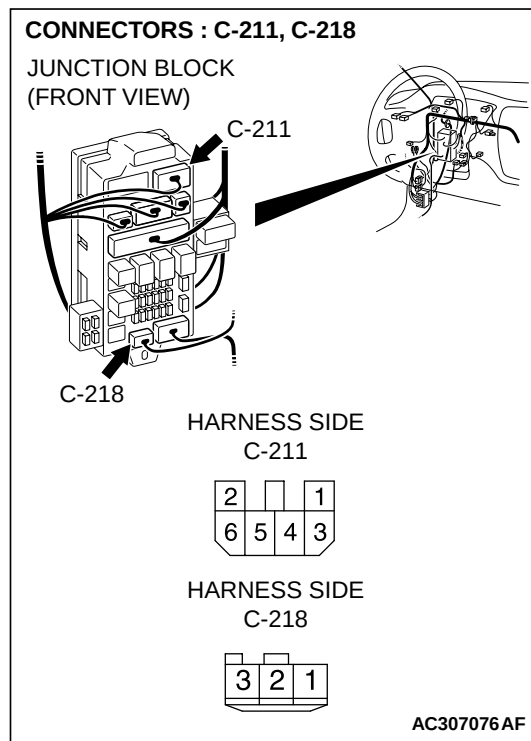
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 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).

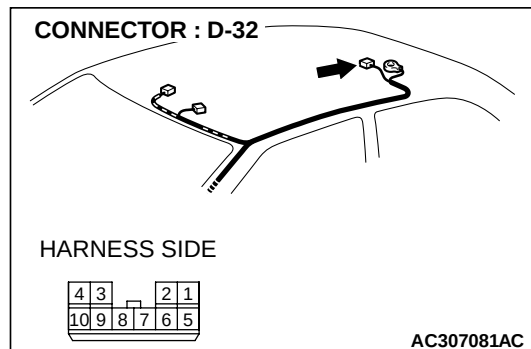


NOTE: Also check junction block connectors C-211 and C-218 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or C-218 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

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

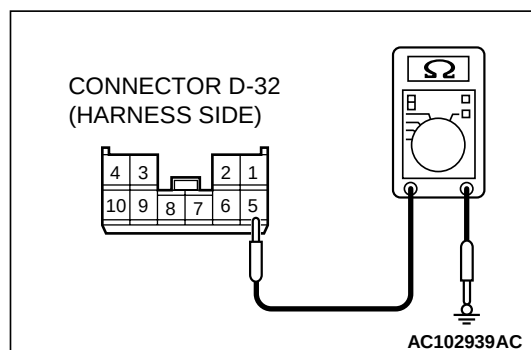
YES : No action is necessary and testing is complete.

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.



STEP 6. Check the ground circuit to the sunroof motor assembly. Test 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.



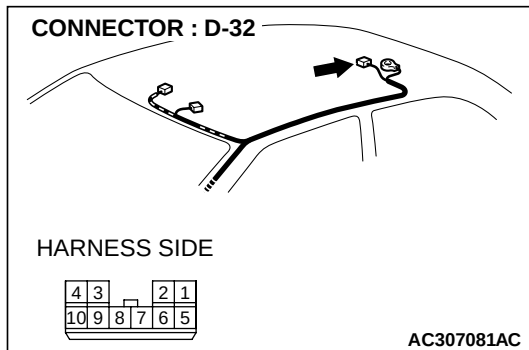
(2) Measure the resistance value between terminal 5 and ground.

- 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.

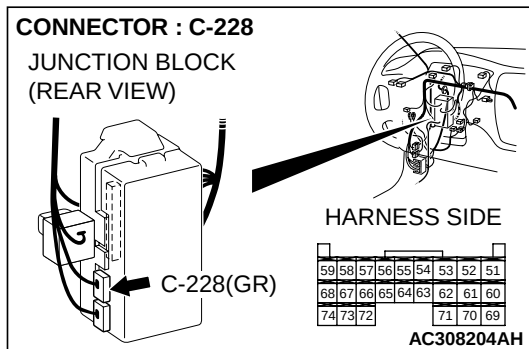


STEP 7. Check the wiring harness between sunroof motor connector D-32 (terminal 5) and ground.

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.

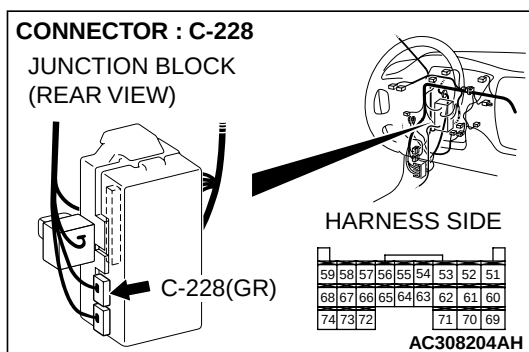


STEP 8. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

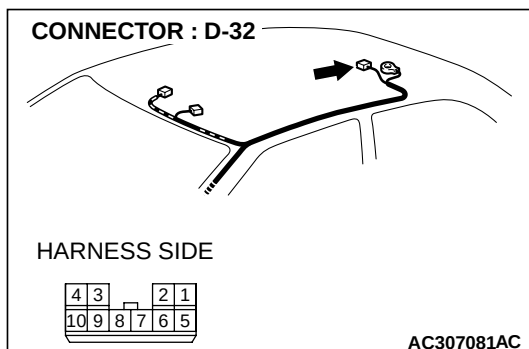
Q: Is ETACS-ECU connector C-228 in good condition?

YES : Go to Step 9.

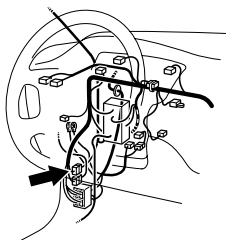
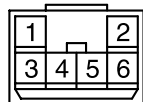
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The system should communicate with the sunroof motor assembly (sunroof-ECU) normally.



STEP 9. Check the wiring harness between sunroof motor assembly connector D-32 (terminal 10) and ETACS-ECU connector C-228 (terminal 59).



CONNECTOR : C-18



AC307069BB

NOTE: Also check intermediate connector C-18 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-18 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.

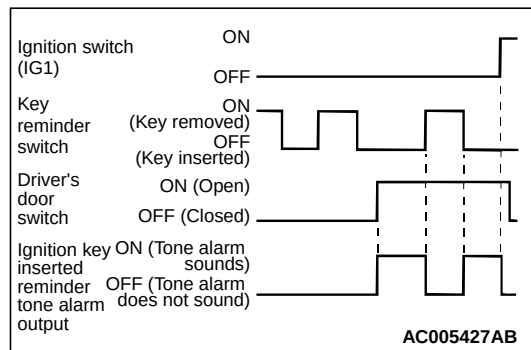
TONE ALARM

GENERAL DESCRIPTION THE CONCERNING TONE ALARM

M1549021000218

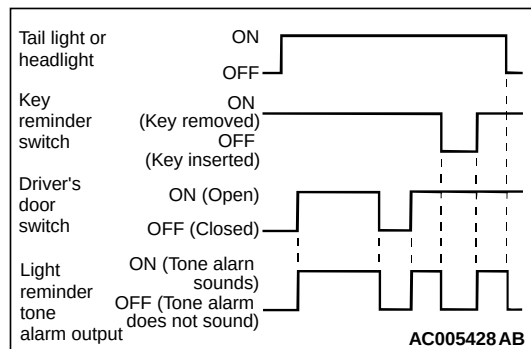
The ECU related to the alarm function types and various control functions are as follows.

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.

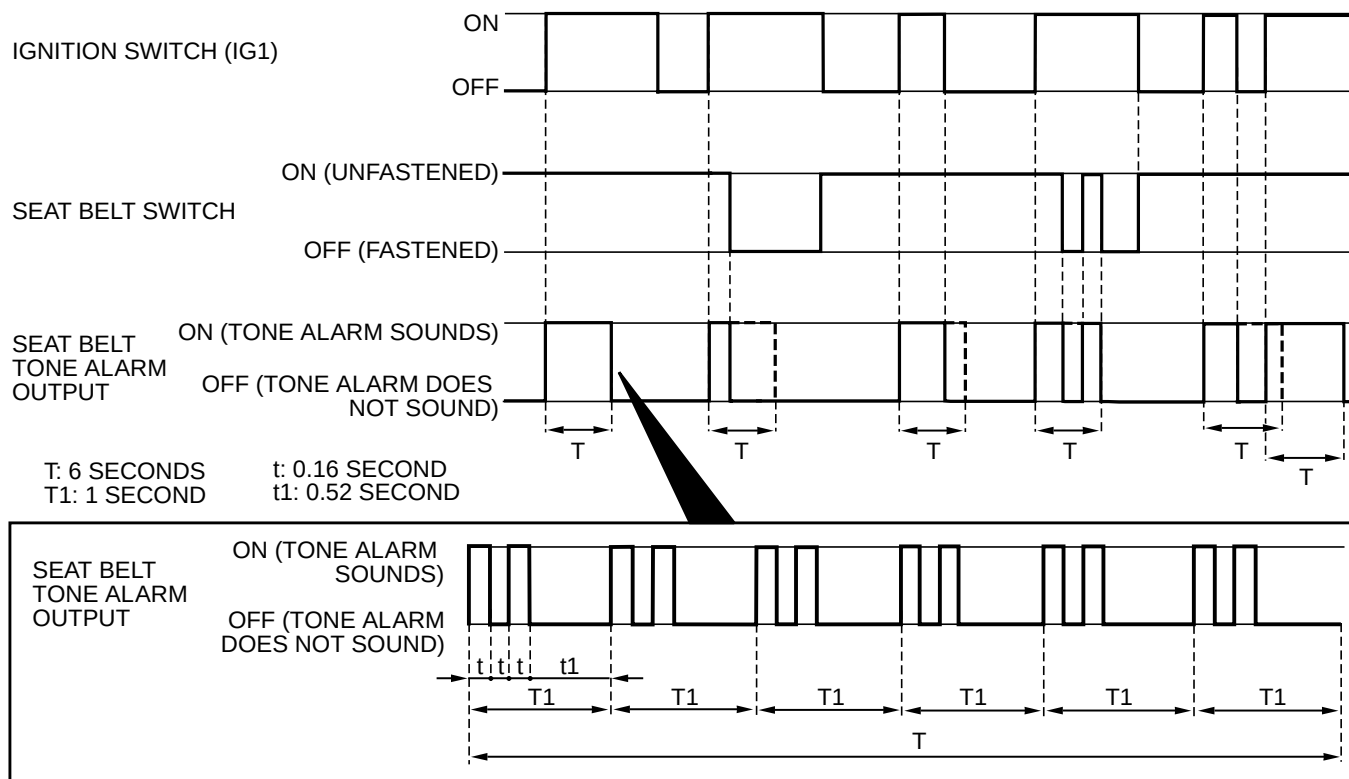


Light reminder tone alarm function

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

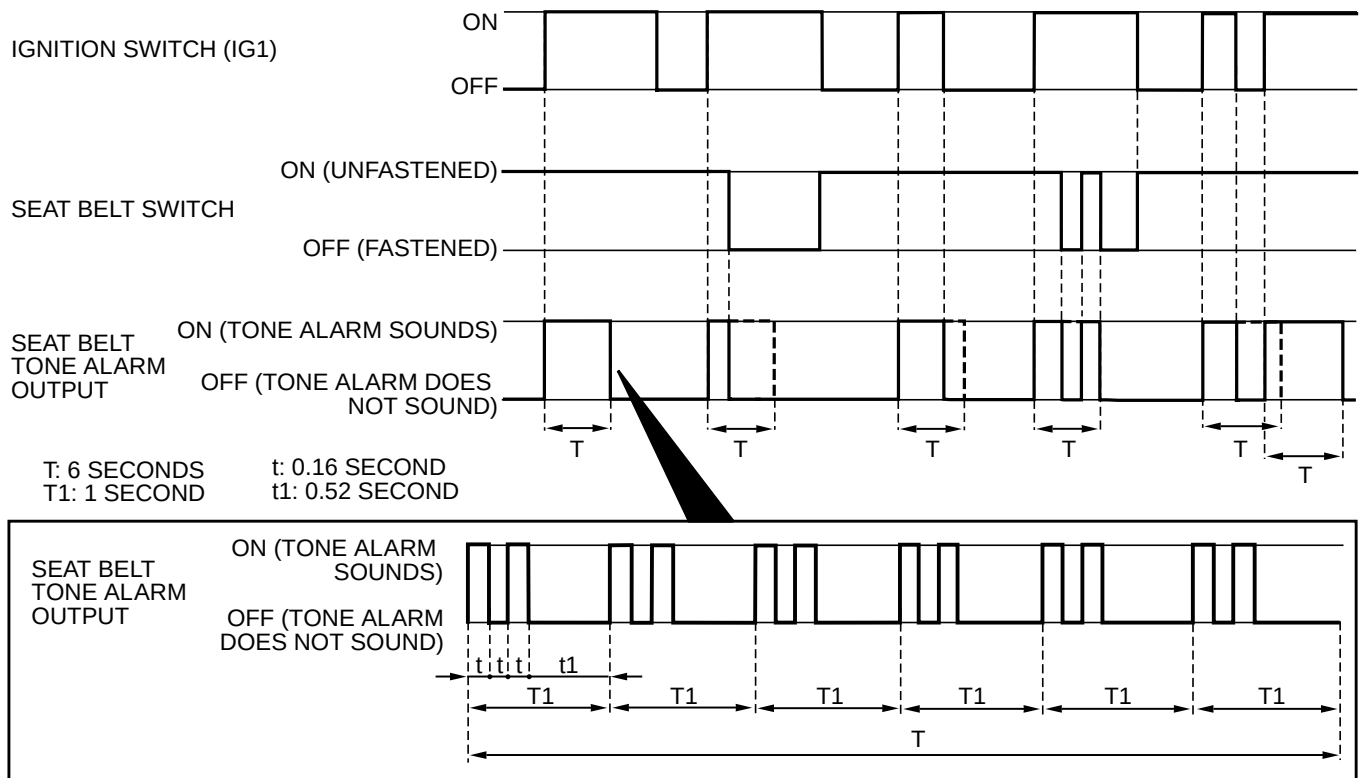
<Vehicles without keyless entry system>



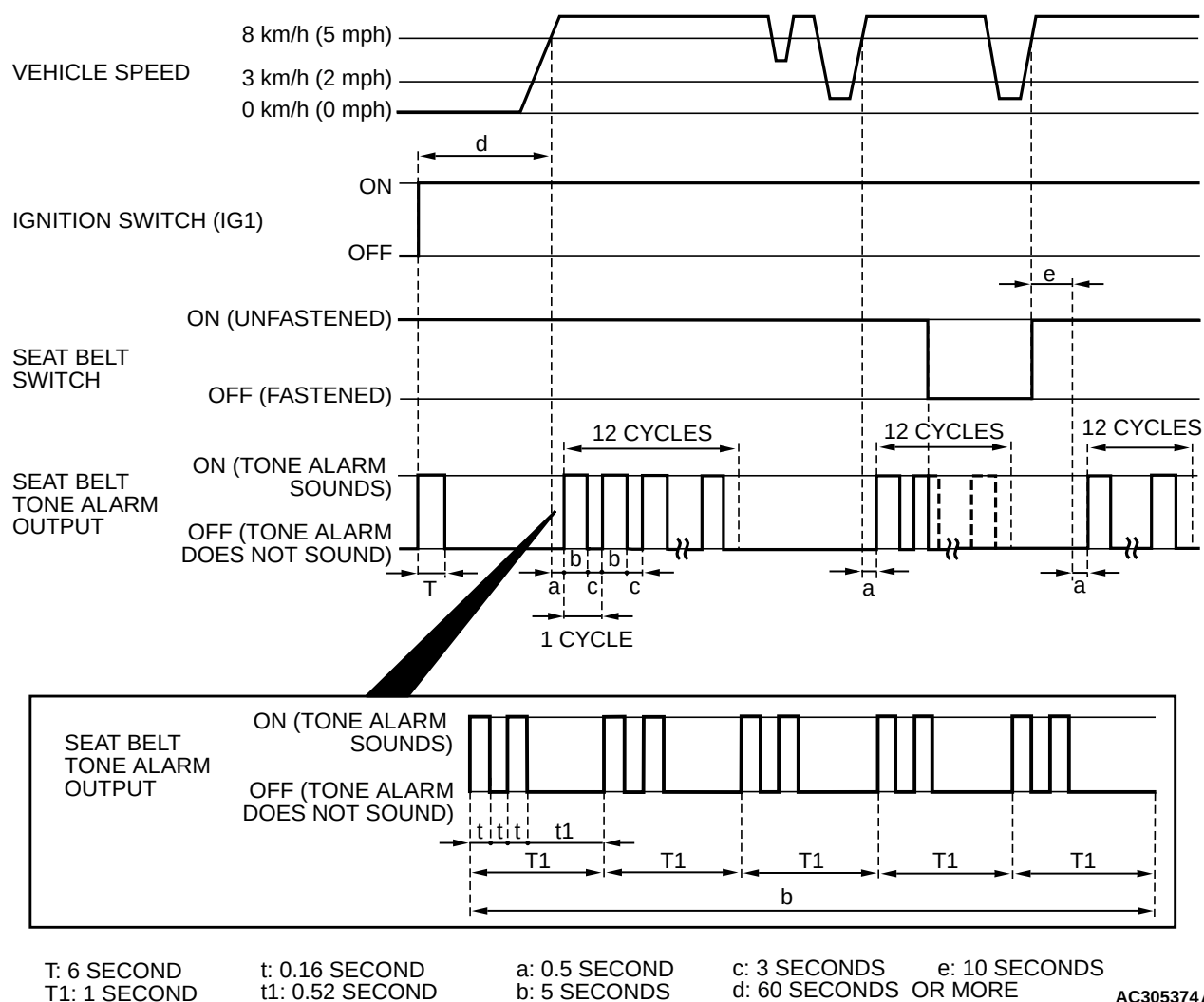
AC305326AB

The ETACS-ECU sounds the tone alarm for six seconds if the ignition switch is turned "ON" or "ST" while the seat belt switch is on (the driver's seat belt is not fastened).

<Vehicles with keyless entry system>



AC305326AB



If any of the following conditions is met with the ignition switch at "ON" or "ST", the ETACS-ECU sounds the tone alarm by using the driver's seat belt switch signal and the vehicle speed signal.

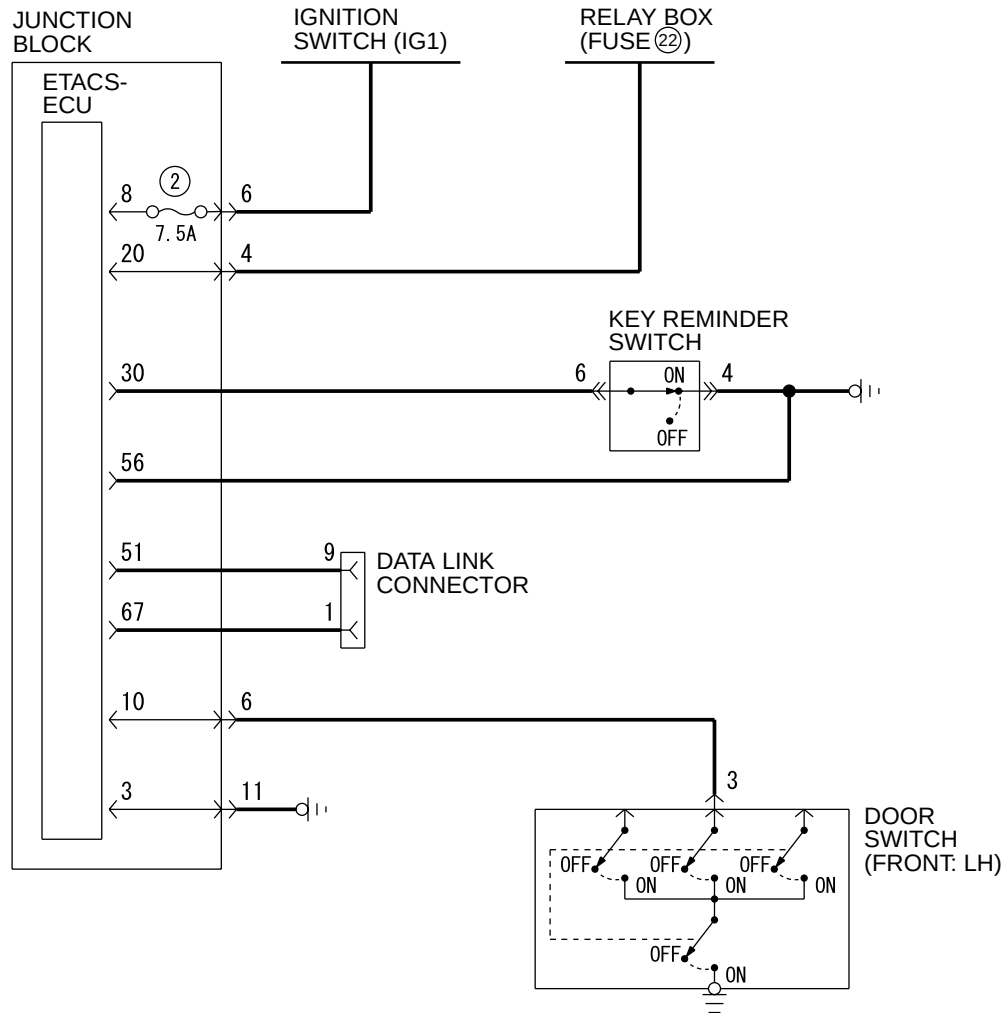
- Sounds the tone alarm for six seconds when the ignition switch is turned "ON" with the seat belt switch on (the driver's seat belt is not fastened) (timer operation).
- Sounds the tone alarm 12 cycles (after 0.5 seconds) if any of the following conditions is met when sixty seconds or more have elapsed since the ignition switch is turned "ON". One cycle consists of five-second "on" and then three-second "off".

NOTE: Once the tone alarm has sounded 12 cycles, it does not sound again until the vehicle speed reduces to 3 km/h (2 mph) or less even if any of the following conditions is met.

- The vehicle speed has reached 8 km/h (5 mph) while the seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch "ON".
- The seat belt switch has been turned on (driver's seat belt has not been fastened) for at least ten seconds while the ignition switch has been turned "ON" and the vehicle speed has been 8 km/h (5 mph) or more.

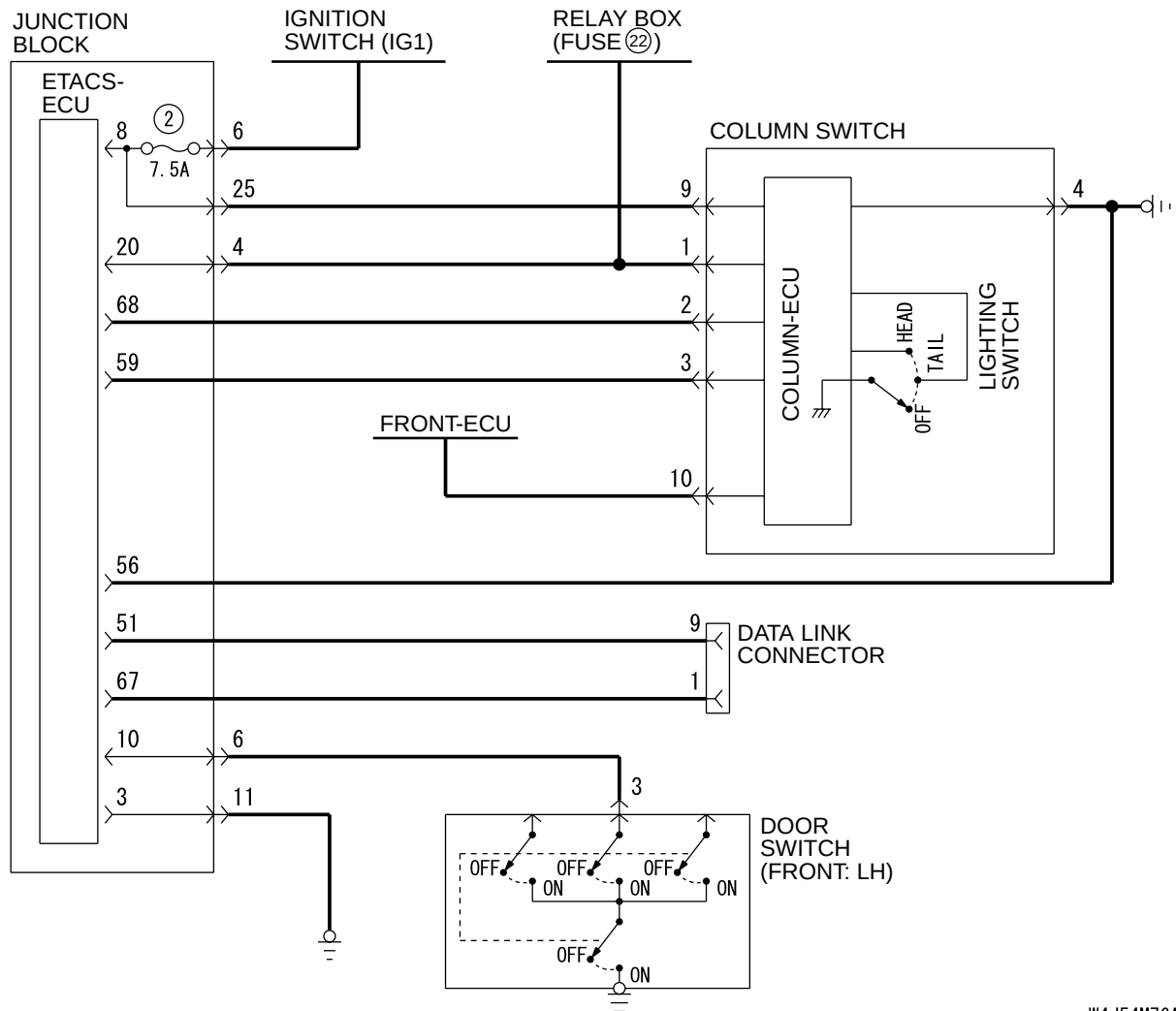
The tone alarm stops sounding if the ignition switch or the seat belt switch is turned off (the driver's seat belt is fastened) while the timer operation is active.

General circuit diagram for the ignition key reminder tone alarm function



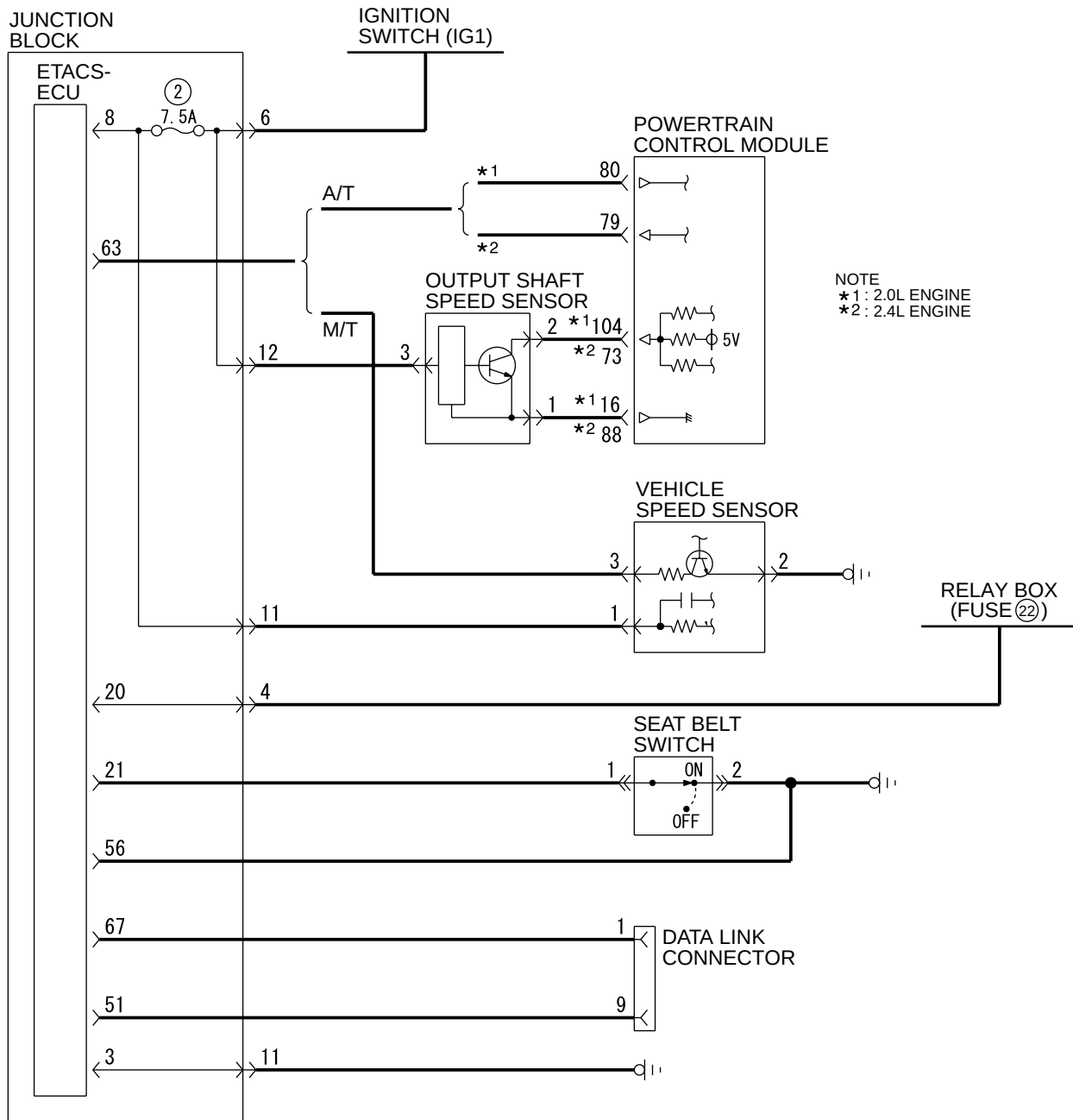
W4J54M75AA

General circuit diagram for the light reminder tone alarm function



W4J54M76AA

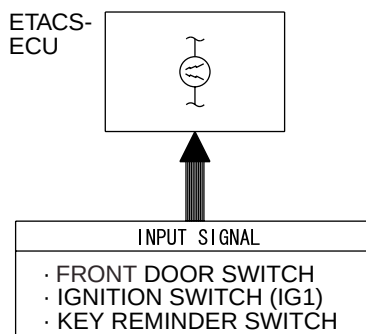
General circuit diagram for the seat belt tone alarm function



W4J54M125A

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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Ignition Key Reminder Tone Alarm Function

W4P54M29AA

CIRCUIT OPERATION

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

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

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

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

⚠ CAUTION

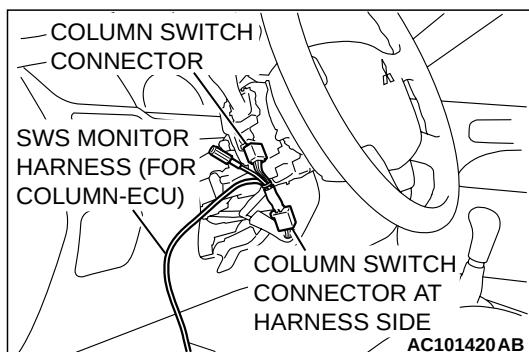
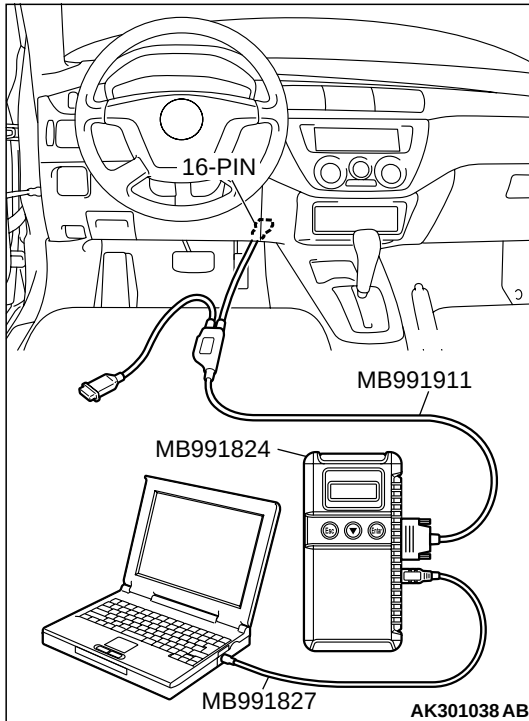
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

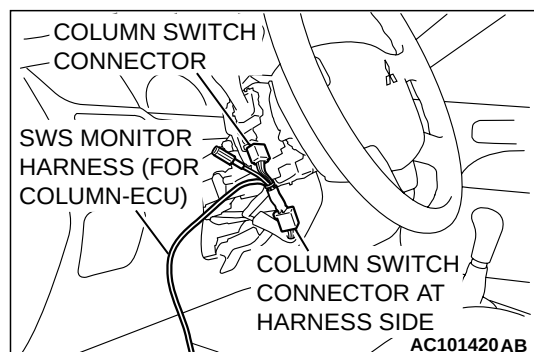
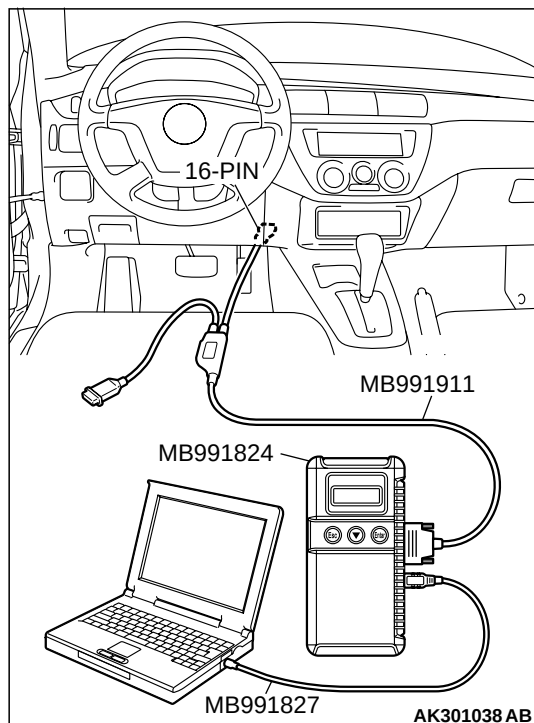
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."





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

Check the input signals from the following switches:

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

Operate scan tool MB991958 according to the procedure below to display "KEY RMND. ALM."

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

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

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

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

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

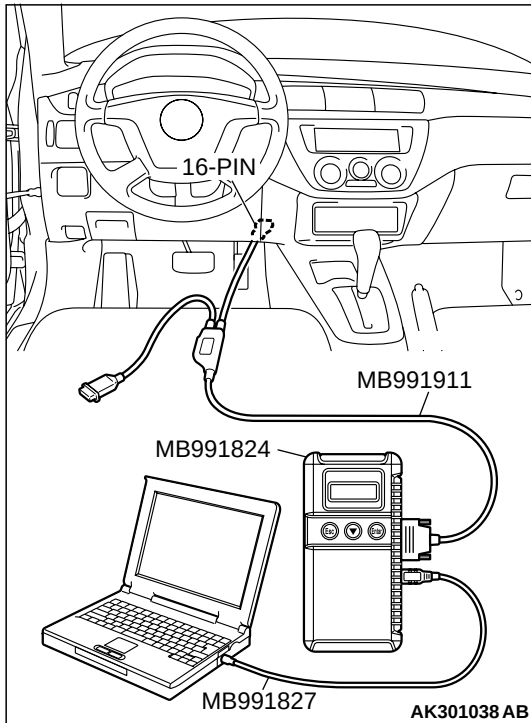
Normal conditions are displayed for all the items :

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

The scan tool does not show the respective normal condition for item "IG SW (IG1)." : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-457](#)."

The scan tool does not show the respective normal condition for item "FRONT DOOR SW." : Refer to Inspection Procedure N-4 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-522](#)."

The scan tool does not show the respective normal condition for item "BUZZER." : Go to Step 3.



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

Check the input signals from the key reminder switch.

Operate scan tool MB991958 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."
 - Check whether scan tool MB991958 sounds or not when the ignition key is removed and reinserted.

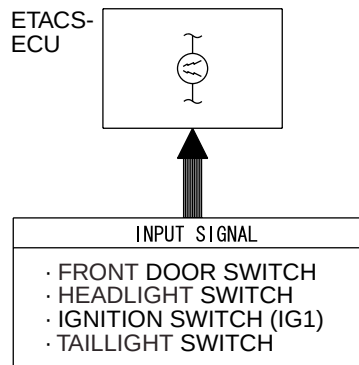
Q: Does scan tool MB991958 sound when the ignition key is removed and reinserted?

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

NO : Refer to Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch [P.54B-507](#)."

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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Light Reminder Tone Alarm Function

W4P54M30AA

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
- 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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

Check the following ECUs:

- ETACS-ECU
- Column-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

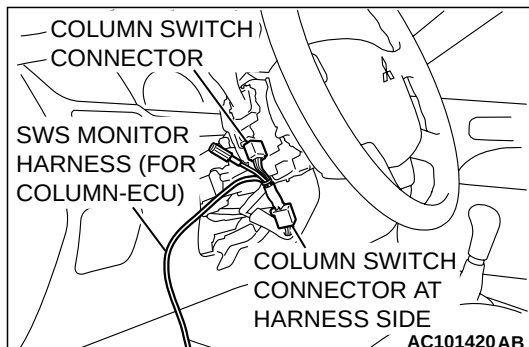
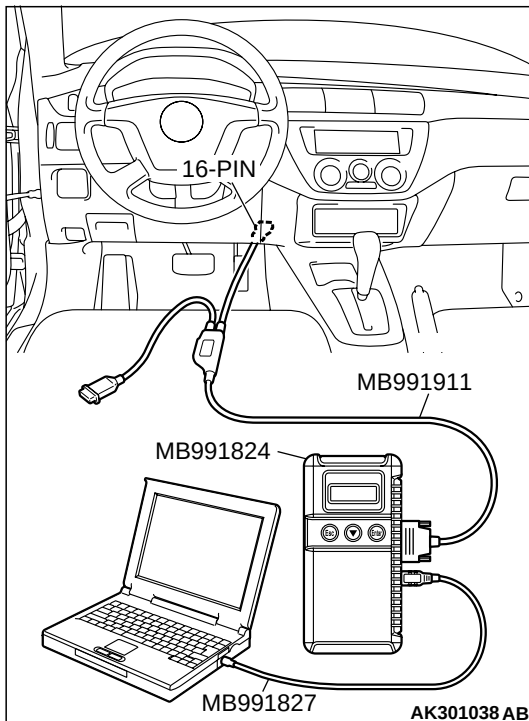
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

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

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

"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."

"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:

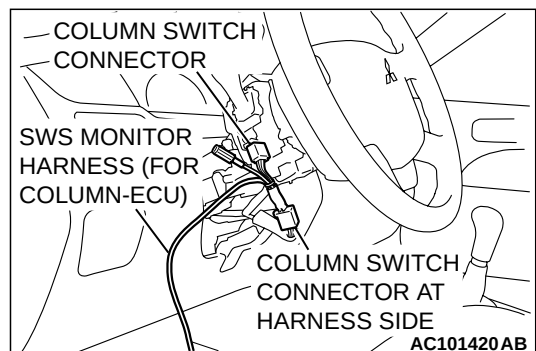
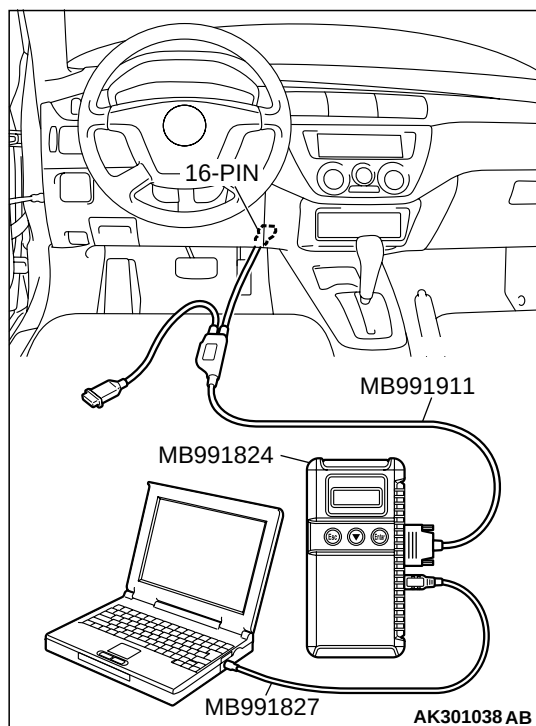
- Ignition switch: OFF (key removed)
- Lighting switch: TAIL or HEAD
- Driver's door: open
- Front passenger's door: closed

Operate scan tool MB991958 according to the procedure below to display "LGT MONI. ALRM."

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

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

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

Normal conditions are displayed for all the items :

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

The scan tool does not show the respective normal condition for item "HEADLIGHT SW" : Refer to

Inspection Procedure N-5 "ETACS-ECU does not receive a signal from the headlight switch [P.54B-486](#)."

The scan tool does not show the respective normal condition for item "TAILLIGHT SW" : Refer to Inspection

Procedure N-5 "ETACS-ECU does not receive a signal from the taillight switch [P.54B-486](#)."

The scan tool does not show the respective normal condition for item "IG SW (IG1)" : Refer to Inspection

Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-457](#)."

The scan tool does not show the respective normal condition for item "FRONT DOOR SW" : Refer to

Inspection Procedure N-4 "ETACS-ECU does not receive a signal from the driver's or the front passenger's door switch [P.54B-478](#)."

The scan tool does not show the respective normal condition for item "H/L AUTO-CUT" : Refer to Inspection

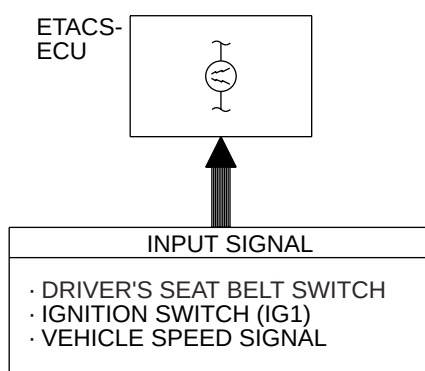
Procedure J-9 "Headlight automatic shutdown function does not work normally [P.54B-345](#)."

The scan tool does not show the respective normal condition for item "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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Seat Belt Tone Alarm Function

W4J54M78AA

CIRCUIT OPERATION

The ETACS-ECU operates the seat belt tone alarm function intermittently according to signals from the following switches:

- Ignition switch (IG1): ON
- Driver's seat belt switch: ON

The ETACS-ECU operates the seat belt tone alarm function intermittently under the following conditions:

- Ignition switch: ON or START
- Driver's seat belt: UNFASTENED

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

⚠ CAUTION

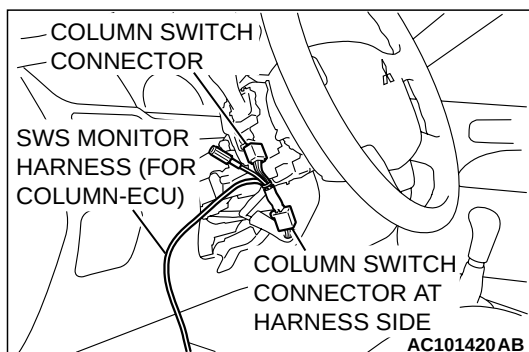
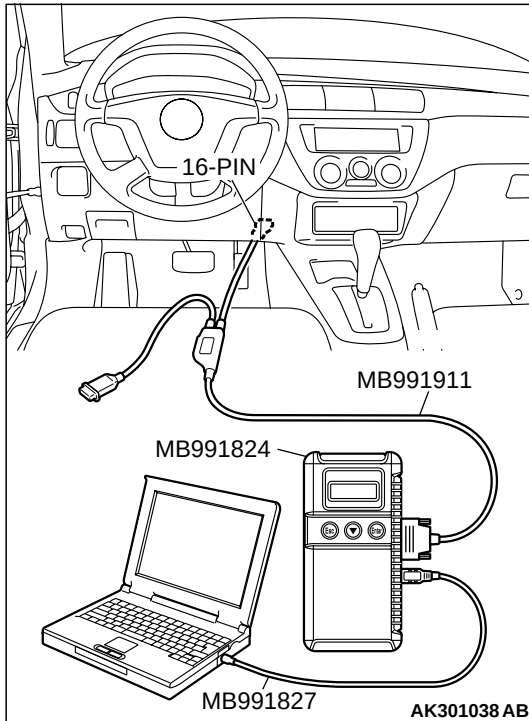
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

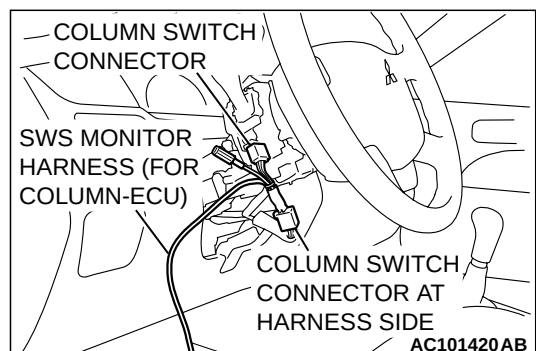
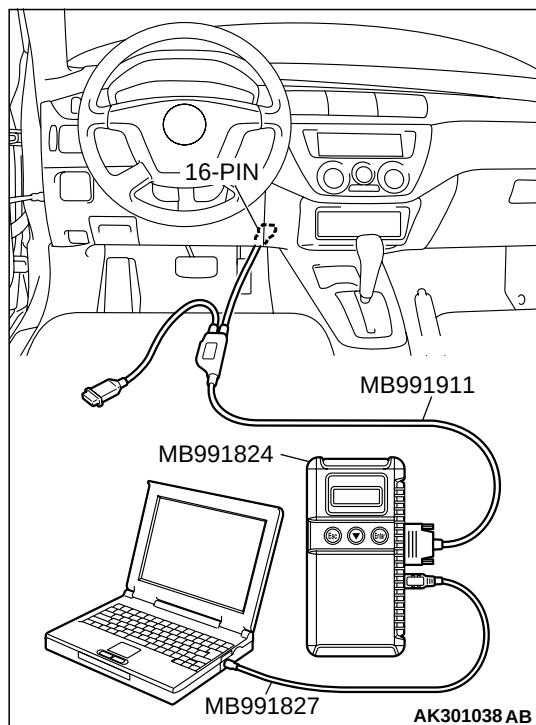
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) When the ignition switch is turned to the "ON" position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."





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

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

Operate scan tool MB991958 according to the procedure below to display "ETACS ECU."

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

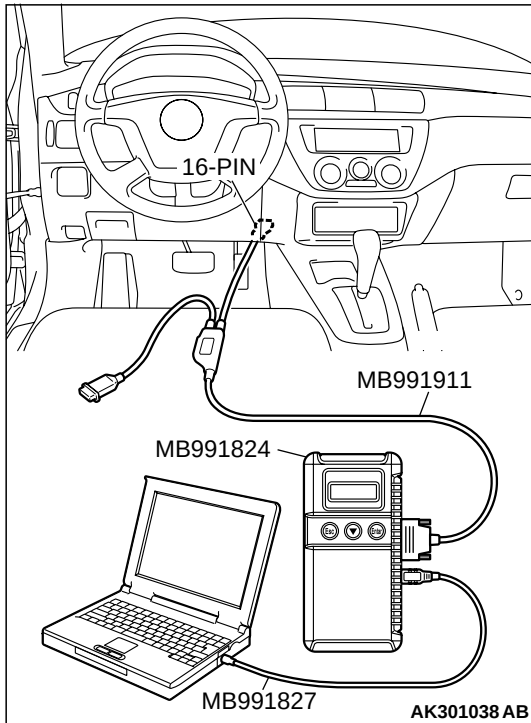
Check that normal conditions are displayed on the items described in the table below.

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

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

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-457](#)."



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

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

Operate scan tool MB991958 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."
 - When the driver's seat belt is unfastened, check if scan tool MB991958 sounds or not.

Q: Does scan tool 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-517](#)."

CENTRAL DOOR LOCKING SYSTEM

GENERAL DESCRIPTION CONCERNING THE CENTRAL DOOR LOCKING SYSTEM

M1549021100185

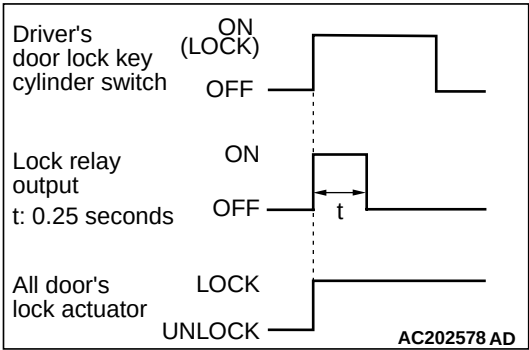
The following ECUs affect the functions and control of the central door locking system.

FUNCTIONS		CONTROL ECU
Door lock function	Operating the driver's door lock key cylinder	ETACS-ECU
	Operating the driver's or front passenger's door lock switch	ETACS-ECU
Door unlock function	Operating the driver's door lock key cylinder	ETACS-ECU
	Operating the driver's door lock switch	ETACS-ECU

DOOR LOCK FUNCTION

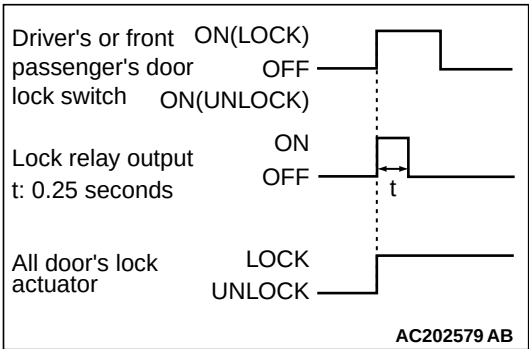
Operating the driver's door lock key cylinder

When you insert the ignition key to the driver's door lock key cylinder and turn the key 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.

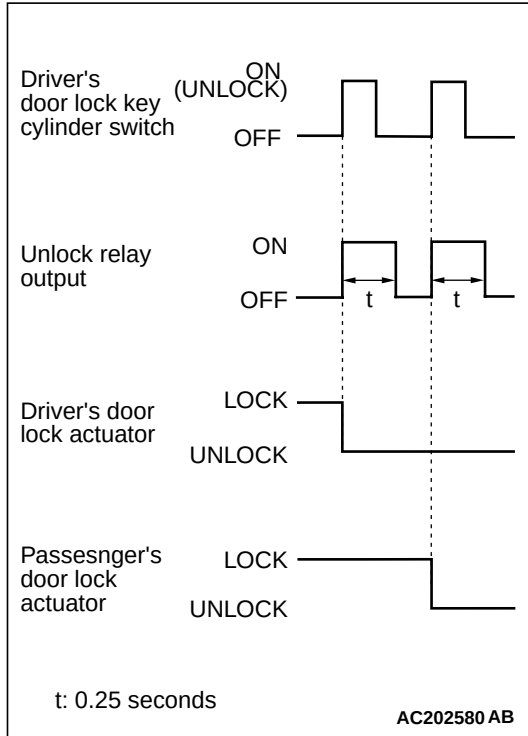


DOOR UNLOCK FUNCTION

Operating the driver's door lock key cylinder

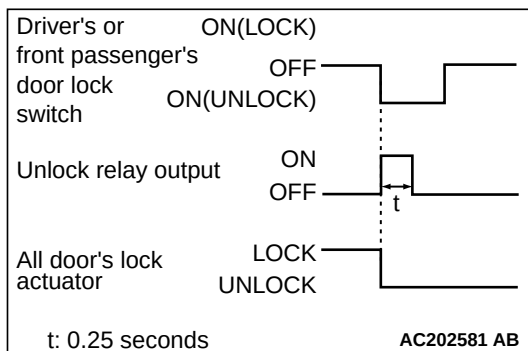
When you insert the ignition key to the driver's door lock key cylinder and turn the key counterclockwise to unlock the door, the ETACS-ECU energizes its door unlock relay for 0.25 second to activate only the driver's door lock actuator. Then only the driver's door will be unlocked.

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.

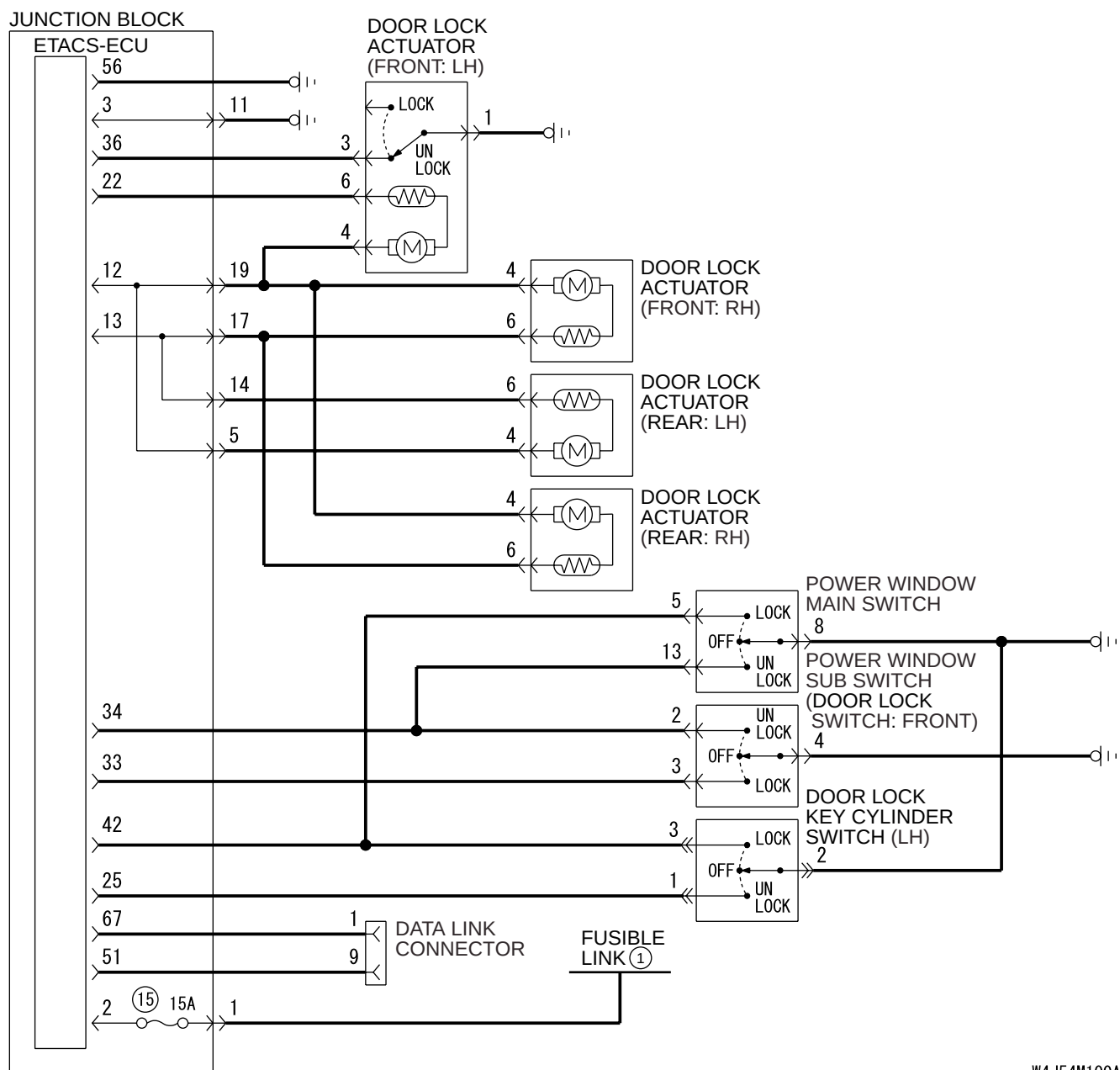


Operating the driver's or front passenger's door lock switch

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.



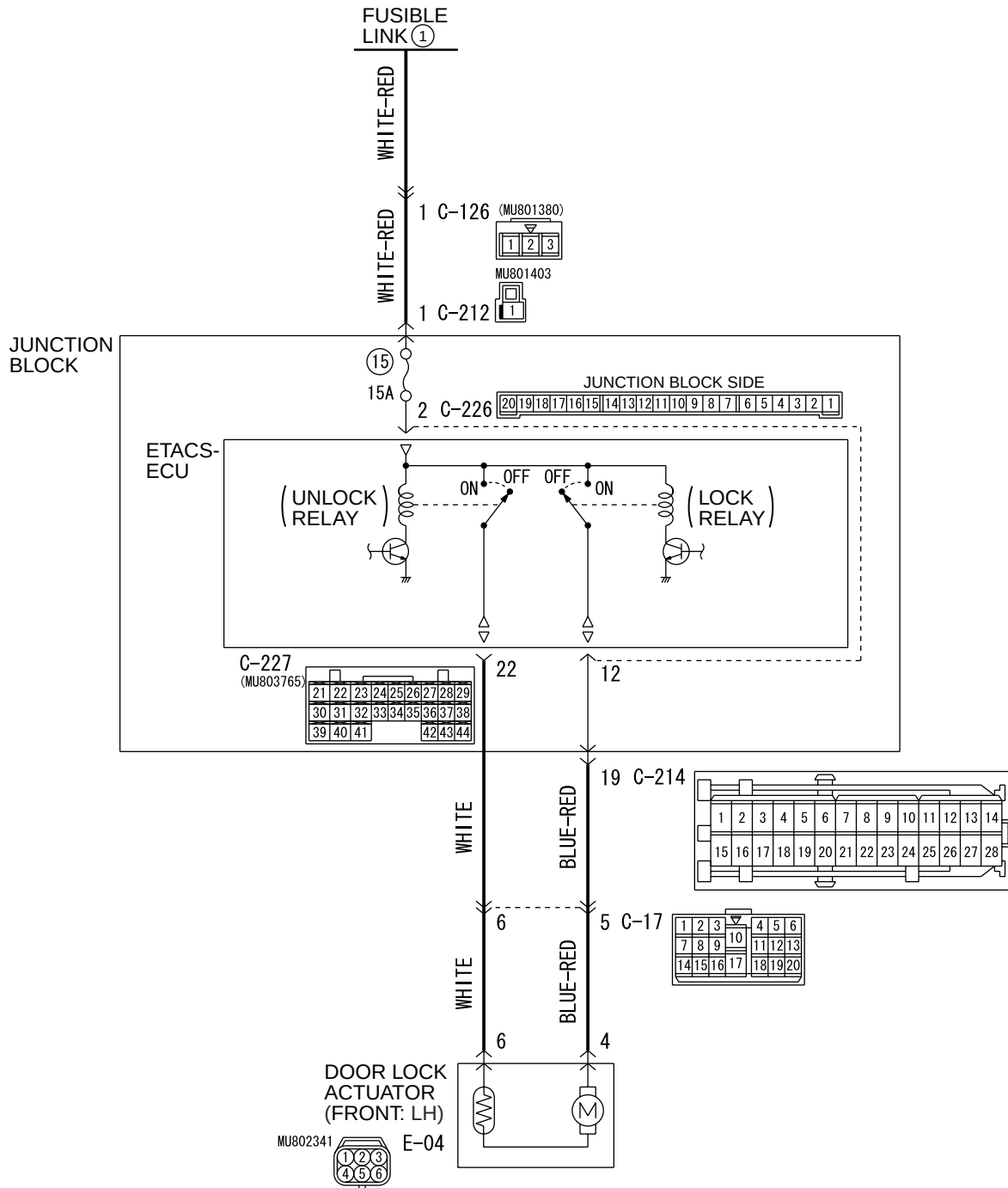
General circuit diagram for the central door locking system



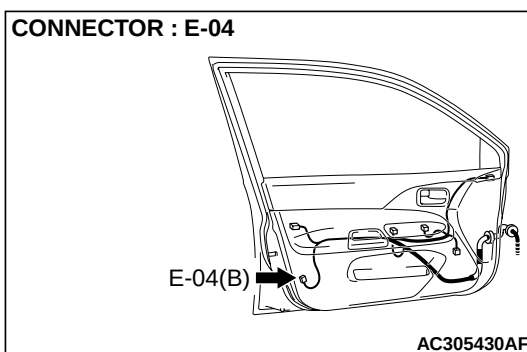
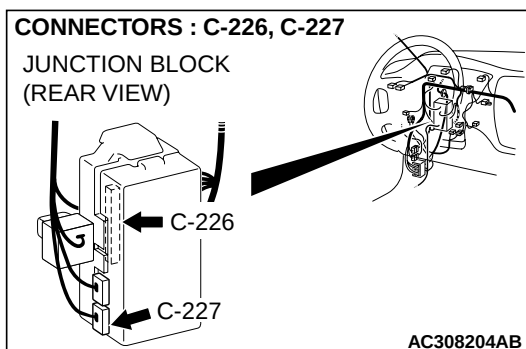
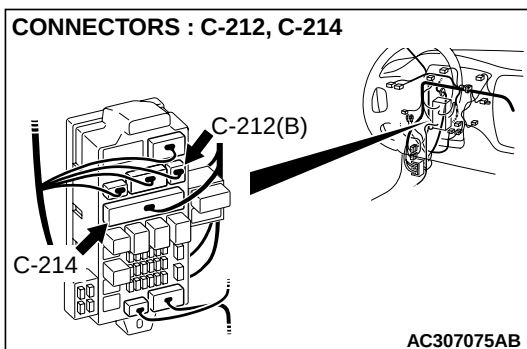
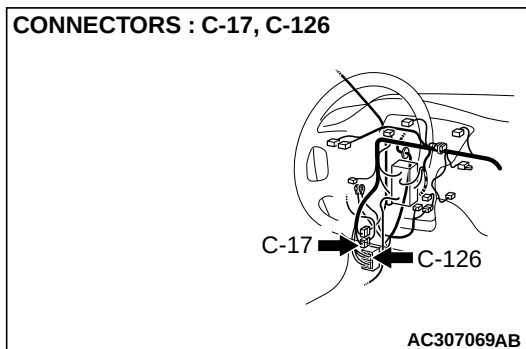
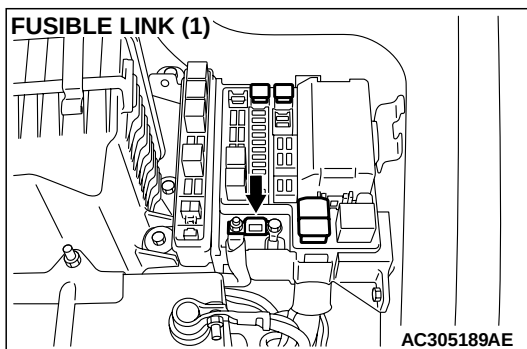
W4J54M100A

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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-10](#)."



W4J54M101A



CIRCUIT OPERATION

- The ETACS-ECU operates the central door lock system according to the following signals:
 - Driver's door lock key cylinder switch
 - Door lock switch, which is incorporated in the power window main switch or power window sub switch (front: RH)

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

⚠ CAUTION

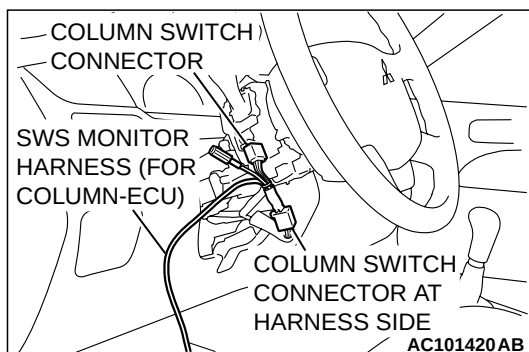
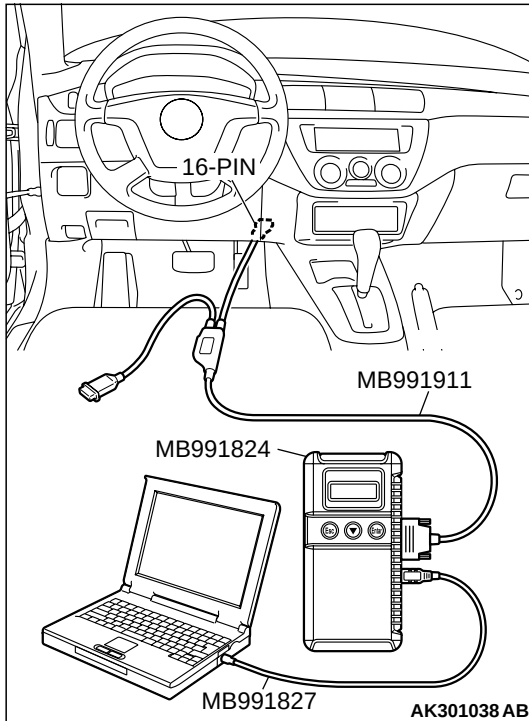
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

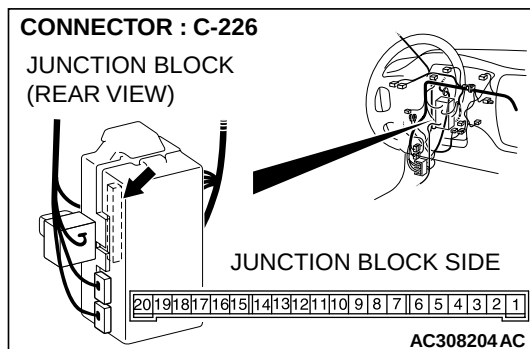
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible P.54B-45."



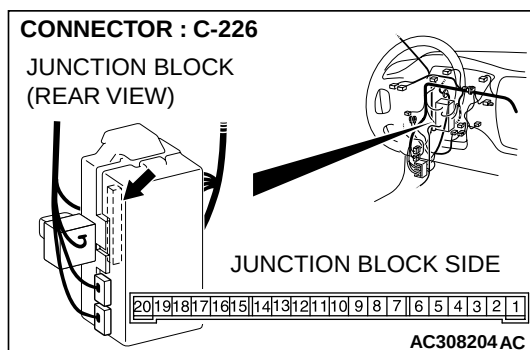


STEP 2. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

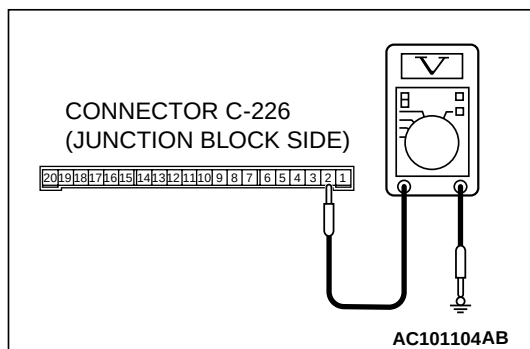
YES : Go to Step 3.

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. Test 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.

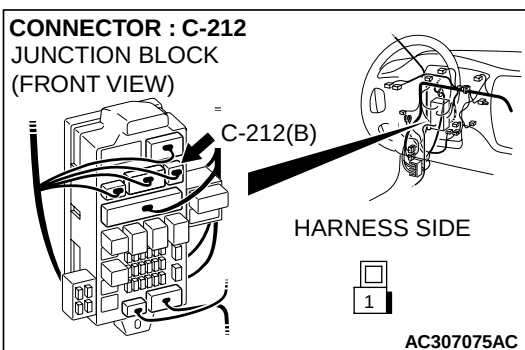
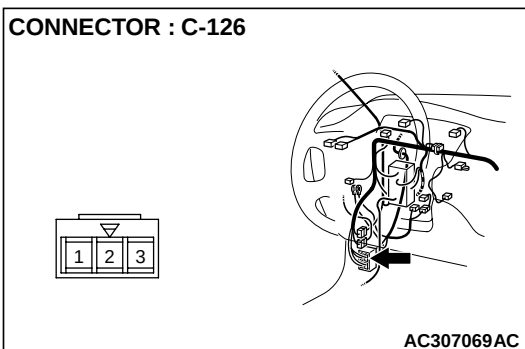
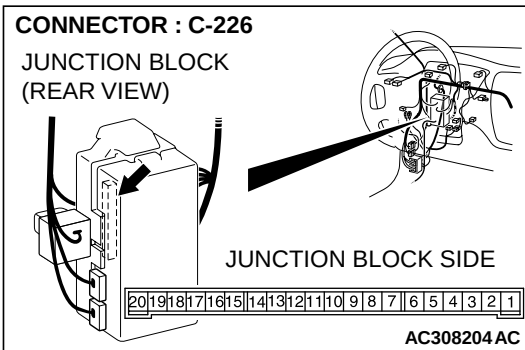
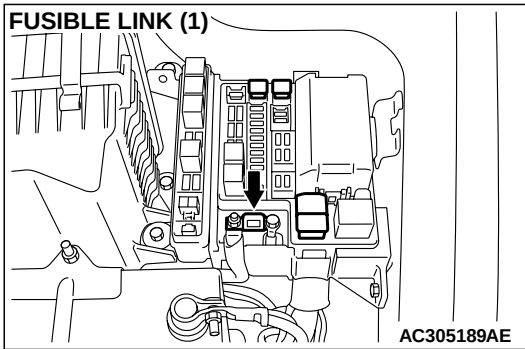
- The voltage should equal approximately 12 volts (battery positive voltage).

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).

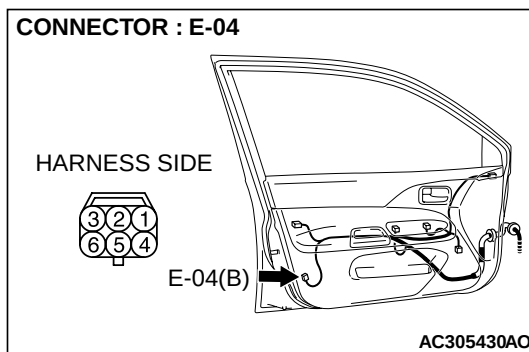
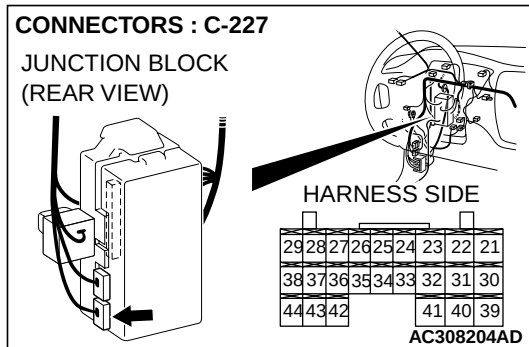


NOTE: Also check junction block connector C-212 and intermediate connector C-126 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-212 or intermediate connectors C-126 is damaged, repair or replace the damaged component(s) as described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

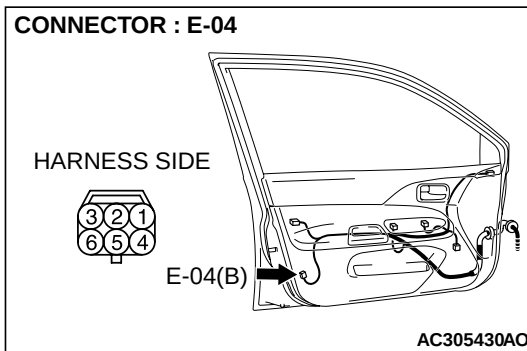
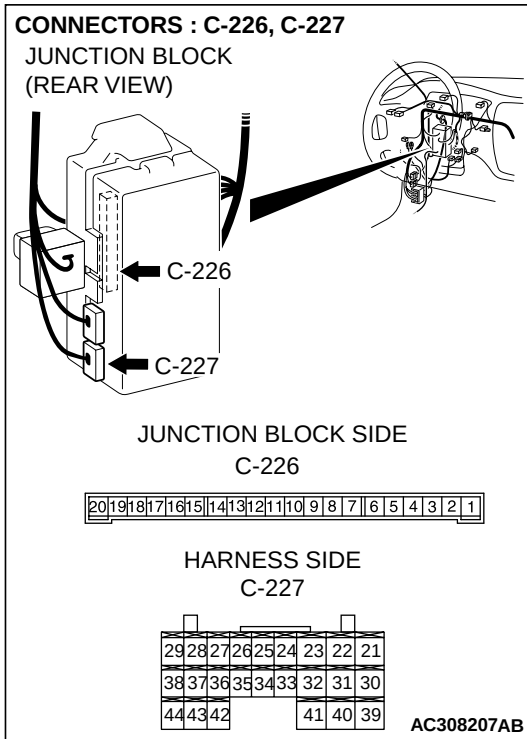
Q: Are ETACS-ECU connectors C-227 and door lock actuator (front: LH) connector E-04 in good condition?

YES : Go to Step 6.

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

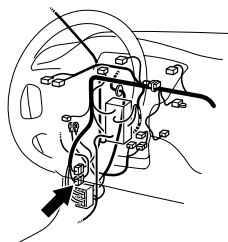
[P.00E-2](#). Verify that the central door locking system works normally.

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

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



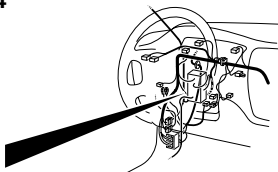
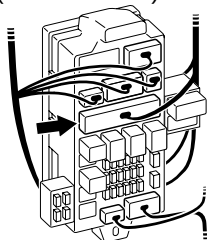
AC307069AD

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.

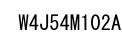
CONNECTOR : C-214
JUNCTION BLOCK
(FRONT VIEW)

HARNESS SIDE

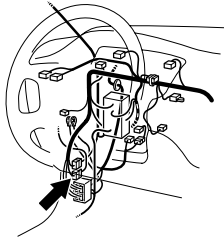
14	13	12	11	10	9	8	7	6	5	4	3	2	1
28	27	26	25	24	23	22	21	20	19	18	17	16	15

AC307075 AD

Central Door Lock Circuit

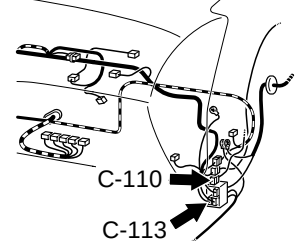


CONNECTOR : C-17

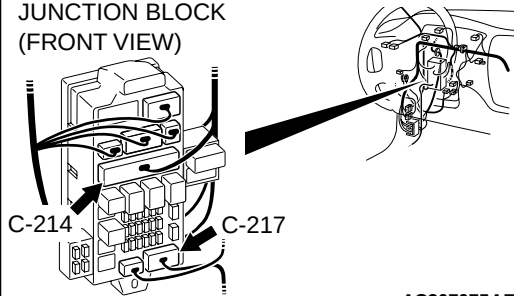


AC307069AH

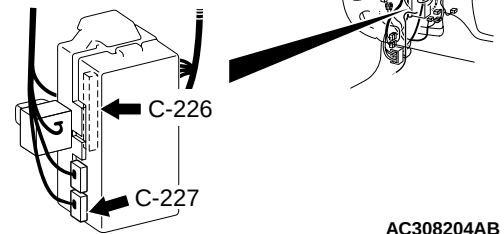
CONNECTORS : C-110, C-113



AC307073AD

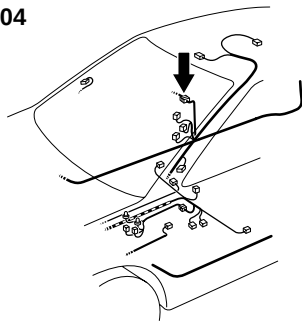
CONNECTORS : C-214, C-217
JUNCTION BLOCK
(FRONT VIEW)

AC307075AF

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

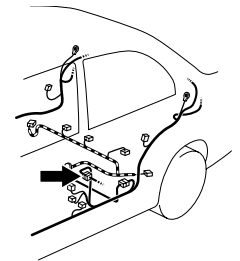
AC308204AB

CONNECTOR : D-04



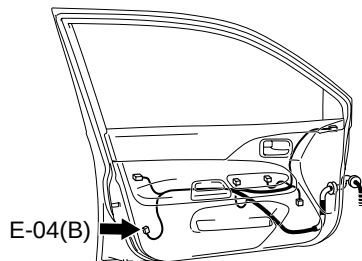
AC307077AC

CONNECTOR : D-15



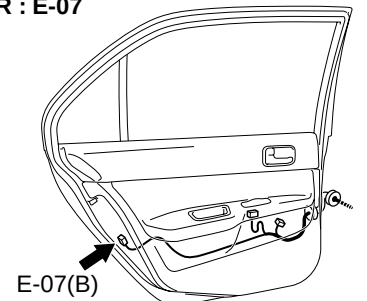
AC307079AB

CONNECTOR : E-04



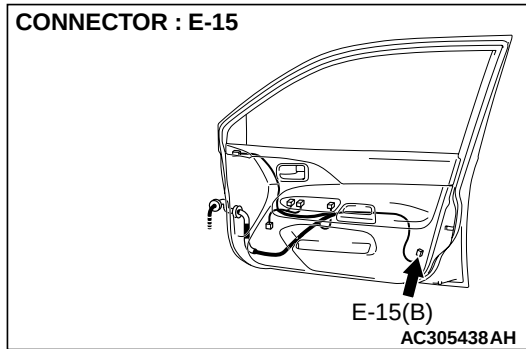
AC305430AP

CONNECTOR : E-07

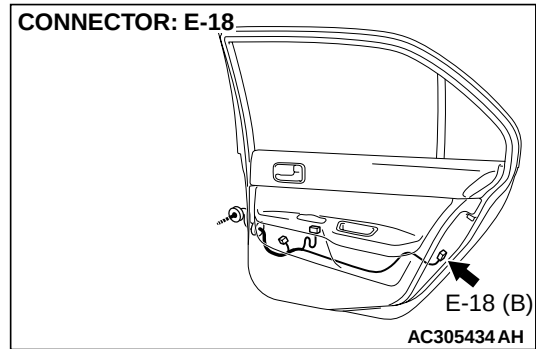


AC305436AG

CONNECTOR : E-15



CONNECTOR: E-18



CIRCUIT OPERATION

- The ETACS-ECU operates the central door lock system according to the following signals:
 - Driver's door lock key cylinder switch
 - Door lock switch, which is incorporated in the power window main switch or power window sub switch (front: RH)
- 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 door lock actuator (front: LH), door lock actuator (front: RH) or rear door lock actuator may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

STEP 1. Verify 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.

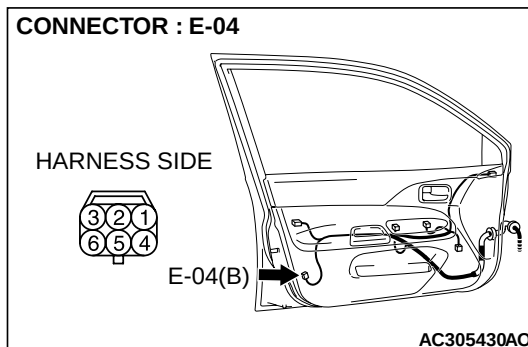
STEP 2. Check door lock actuator (front: LH) connector E-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

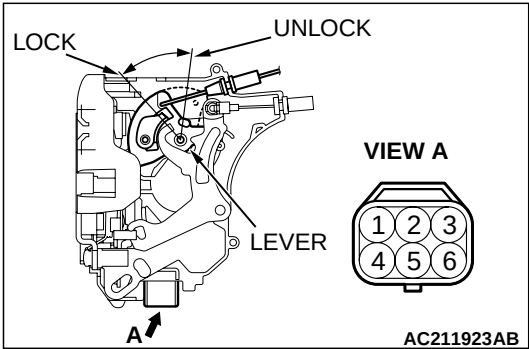
Q: Is door lock actuator (front: LH) connector E-04 in good condition?

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.

CONNECTOR : E-04





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.42-46](#).
2. Follow the table below to check the door lock actuator (font: LH) for correct operation.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• 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	• 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.

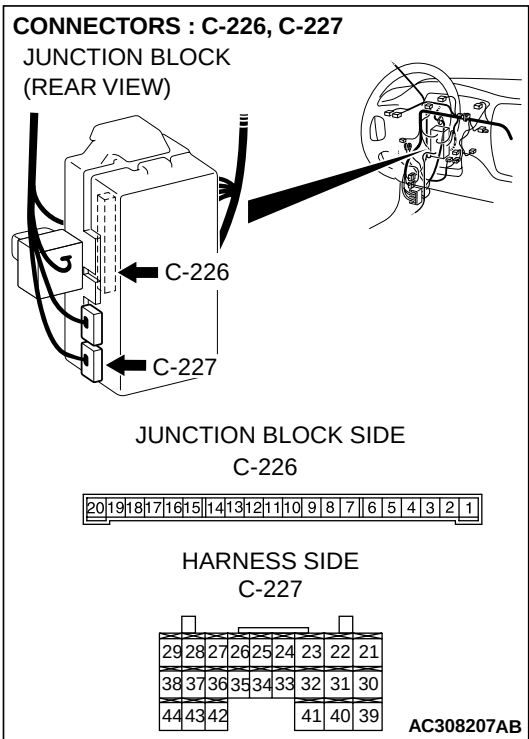
NO : Replace the door lock actuator (front: LH). Verify that all the doors can be locked and unlocked normally.

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

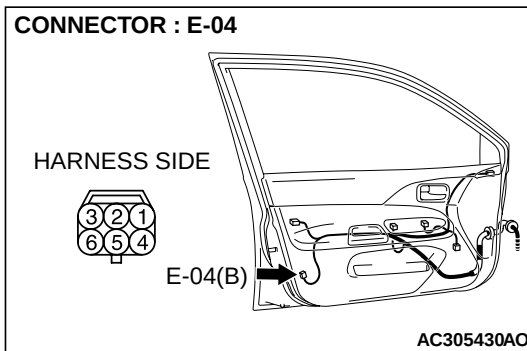
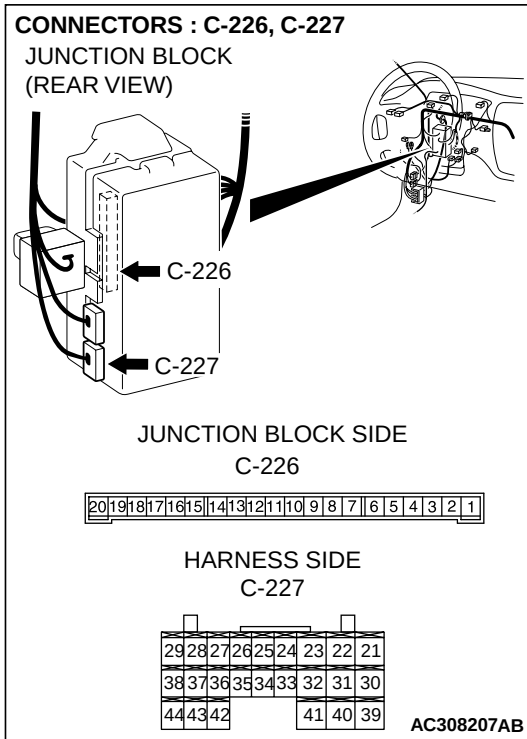
Q: Are ETACS-ECU connectors C-226, C-227 in good condition?

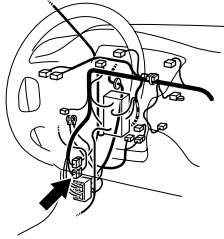
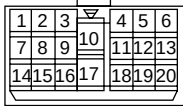
YES : Go to Step 5.

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

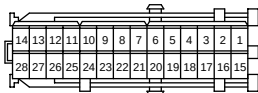
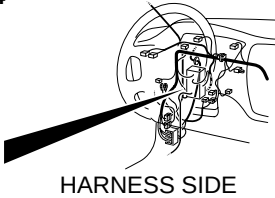
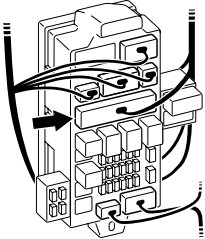
AC307069AD

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.

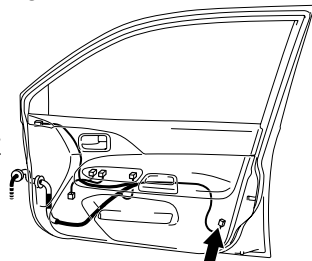
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that all the doors can be locked and unlocked normally.

CONNECTOR : C-214
JUNCTION BLOCK
(FRONT VIEW)

AC307075 AD

CONNECTOR : E-15

HARNESS SIDE



E-15(B)

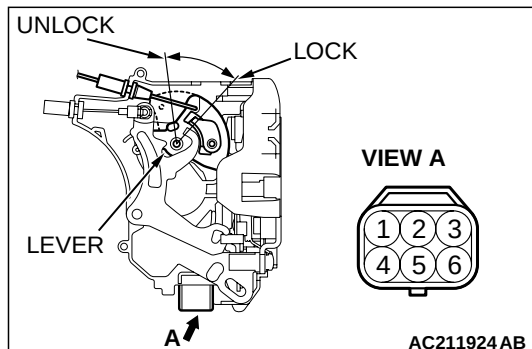
AC305438AH

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.



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.42-46](#).
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	• 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	• 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.

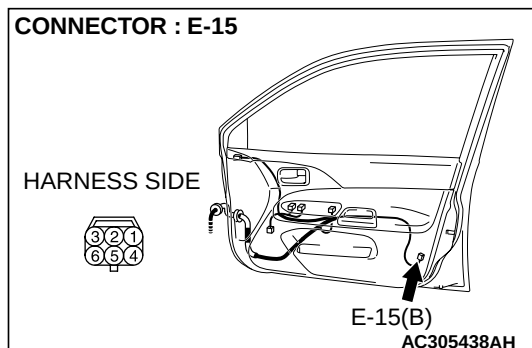
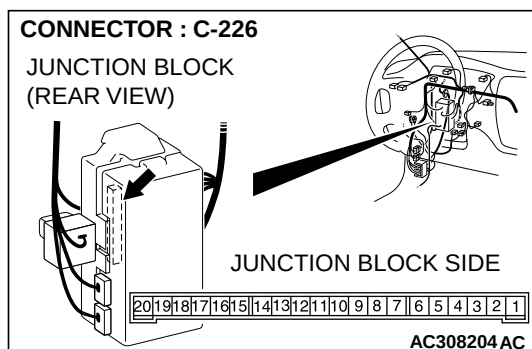
NO : Replace the door lock actuator (front: RH). Verify that all the doors can be locked and unlocked normally.

STEP 8. Check ETACS-ECU connector C-226 connector E-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

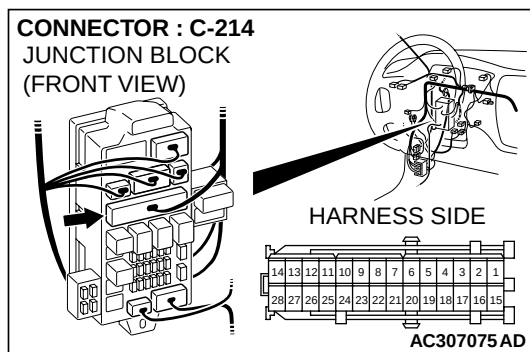
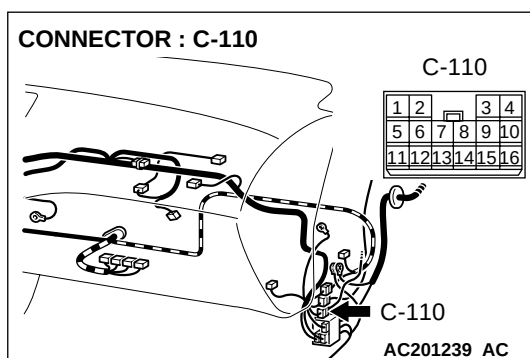
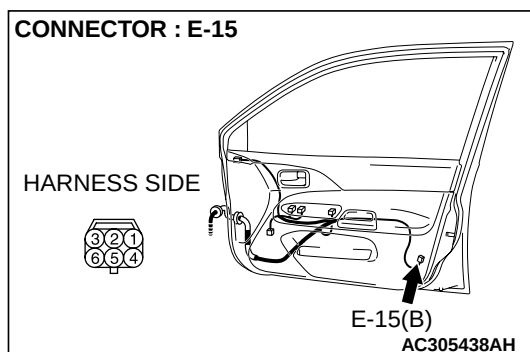
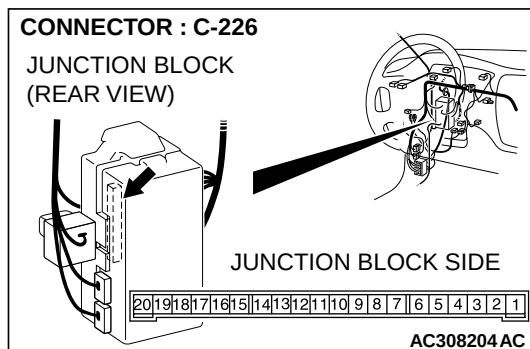
Q: Is ETACS-ECU connector C-226 in good condition?

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).

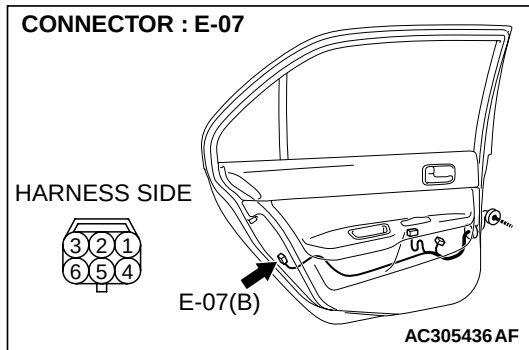


NOTE: Also check junction block connector C-214 and intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or intermediate connector C-110 is damaged, repair or replace the damaged component(s) as described 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.

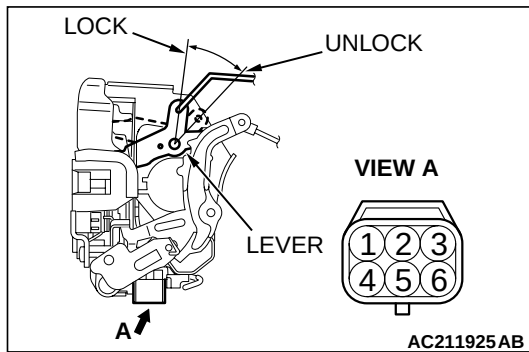


STEP 10. Check door lock actuator (rear: LH) connector E-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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).

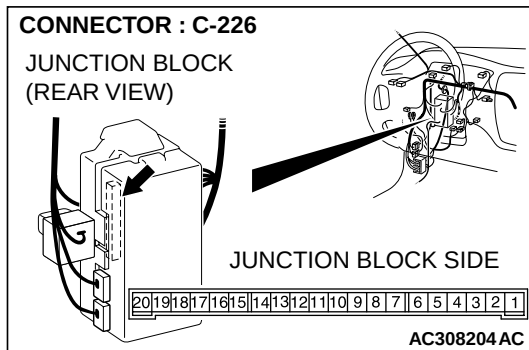
1. Remove the door lock actuator (rear: LH), and check it. Refer to GROUP 42 – Door Handle and Latch [P.42-46](#).
2. Follow the table below to check the door lock actuator (rear: LH) for correct operation.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• 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	• 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.

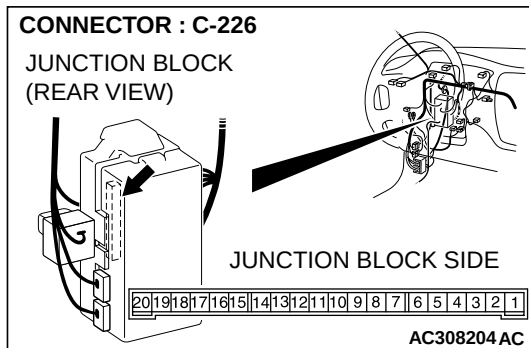


STEP 12. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

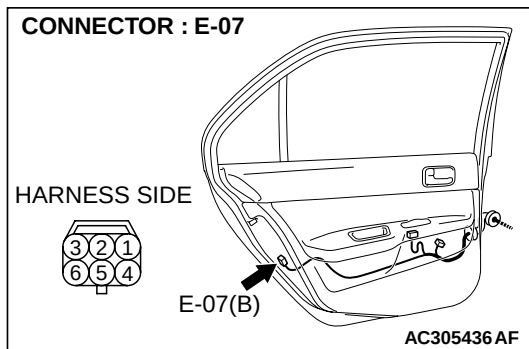
Q: Is ETACS-ECU connector C-226 in good condition?

YES : Go to Step 13.

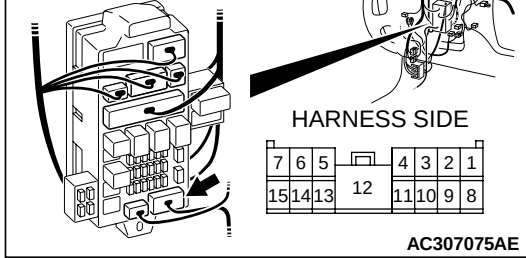
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that all the doors can be locked and unlocked normally.



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).



**CONNECTOR: C-217
JUNCTION BLOCK
(FRONT VIEW)**



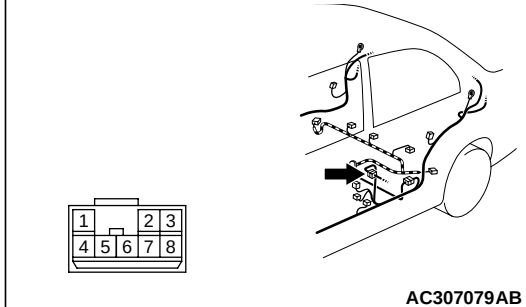
NOTE: Also check junction block connector C-217 and intermediate connector D-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-217 or intermediate connector D-15 is damaged, repair or replace the damaged component(s) as described in 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?

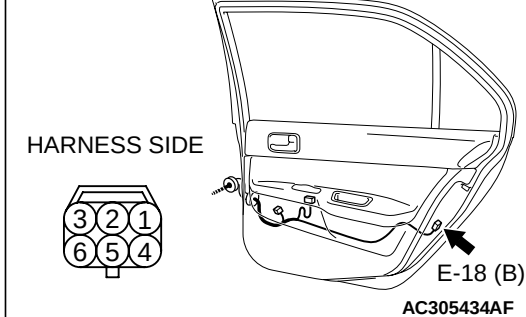
YES : Replace the ETACS-ECU. Verify that all the doors can be locked and unlocked normally.

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.

CONNECTOR : D-15



CONNECTOR: E-18

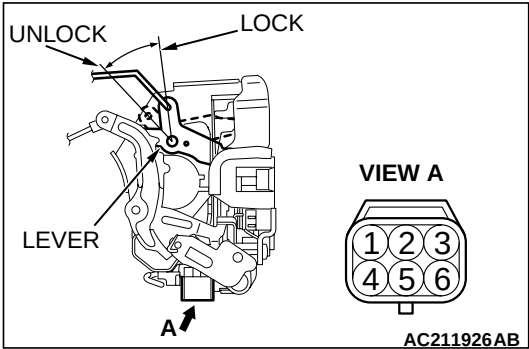


STEP 14. Check door lock actuator (rear: RH) connector E-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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).

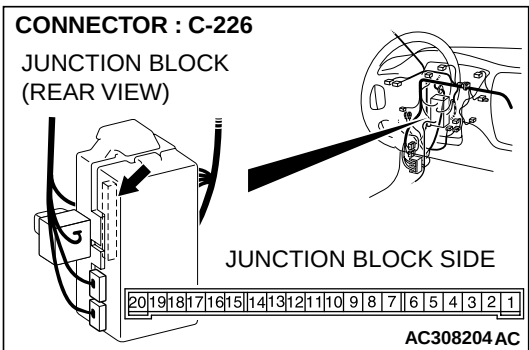
1. Remove the door lock actuator (rear: RH), and check it. Refer to GROUP 42 – Door Handle and Latch [P.42-46](#).
2. Follow the table below to check the door lock actuator (rear: RH) for correct operation.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• 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	• 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.



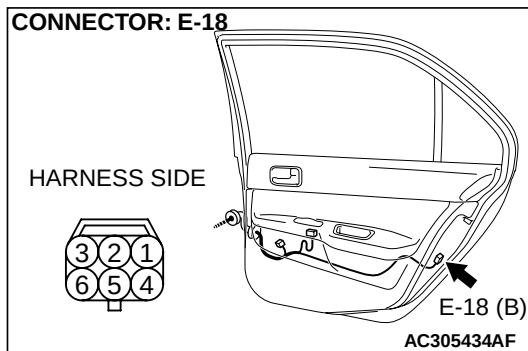
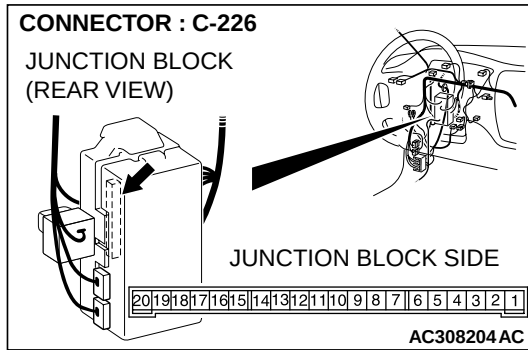
STEP 16. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

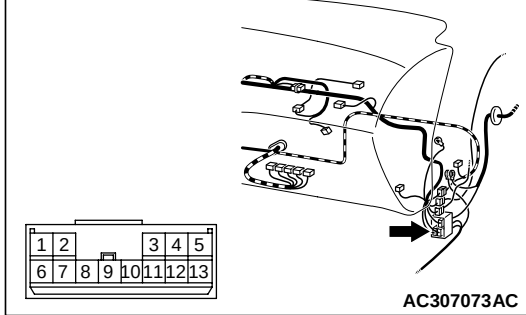
Q: Is ETACS-ECU connector C-226 in good condition?

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).



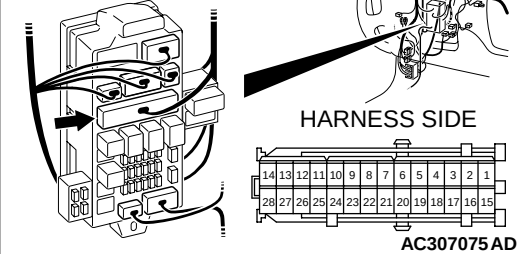
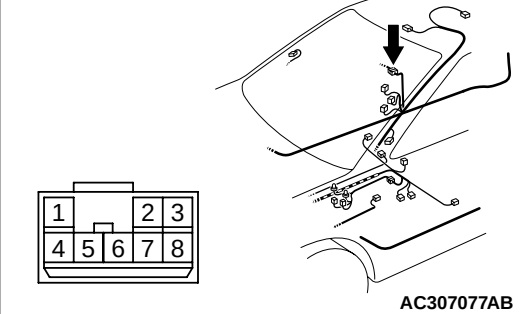
CONNECTOR : C-113

NOTE: Also check junction block connector C-214, intermediate connectors C-113 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-113 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?

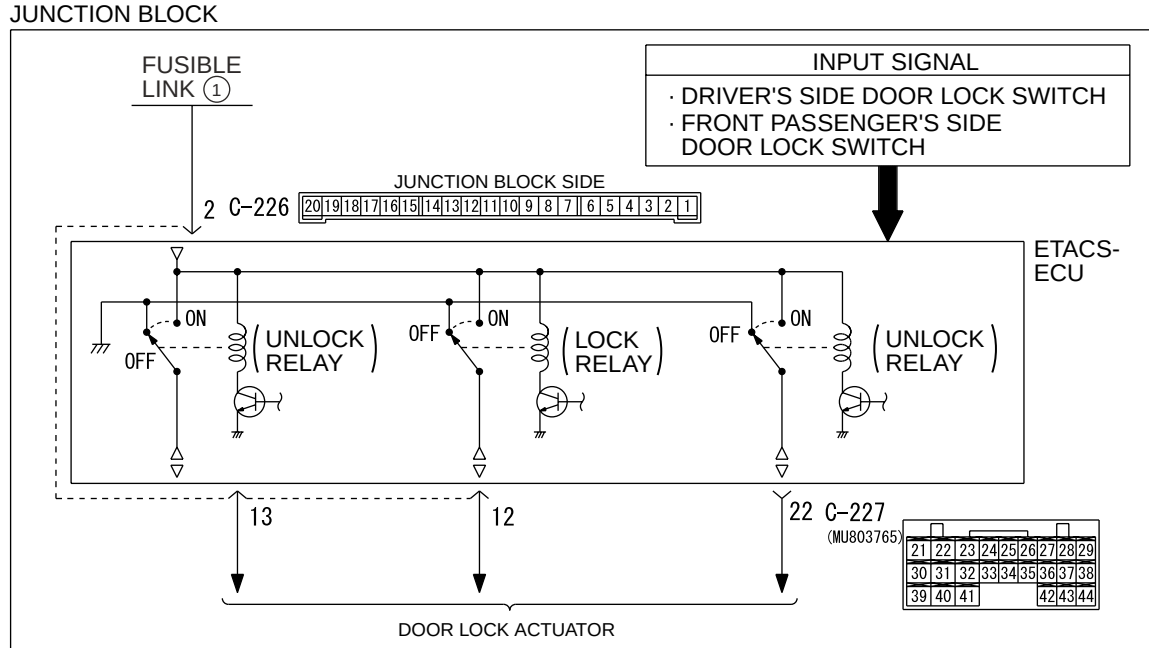
YES : Replace the ETACS-ECU. Verify that all the doors can be locked and unlocked normally.

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



W4J54M103A

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

(2) Operate scan tool MB991958 as follows:

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

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

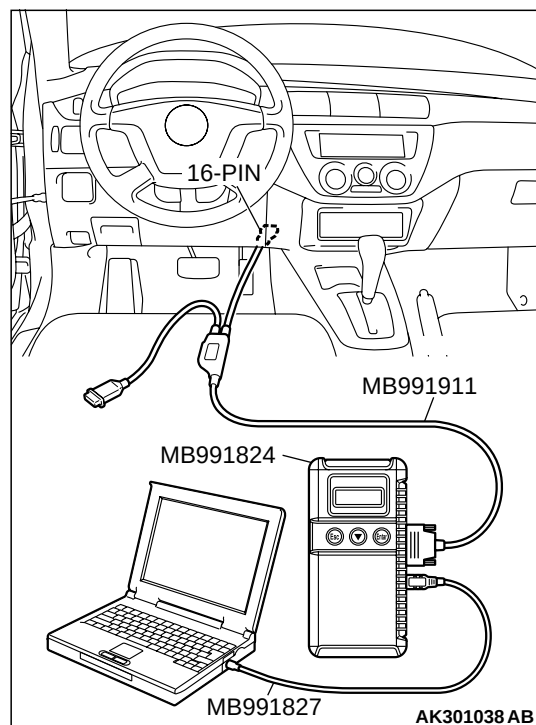
(4) Check scan tool MB991958 sounds or not.

Q: Does scan tool 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.

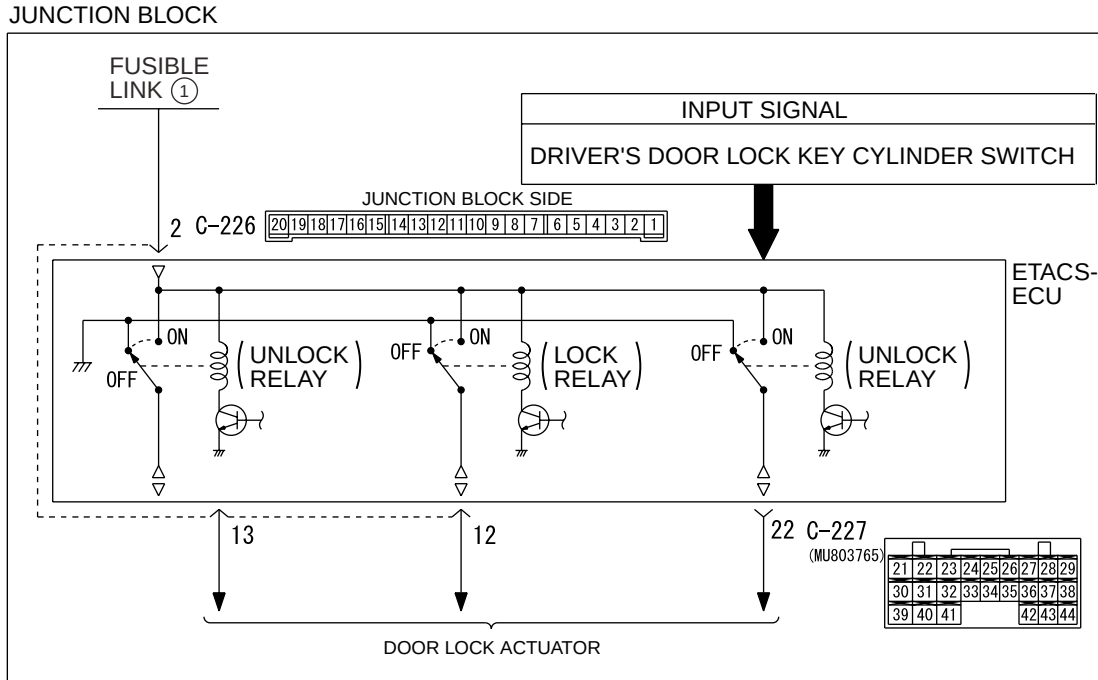
NO : Refer to Inspection Procedure O-7 "ETACS-ECU does not receive a signal from the door lock switch (incorporated in the power window main switch)

[P.54B-539.](#)



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

Central Door Lock (Door Lock Key Cylinder Switch) Circuit



W4J54M104A

TECHNICAL DESCRIPTION (COMMENT)

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

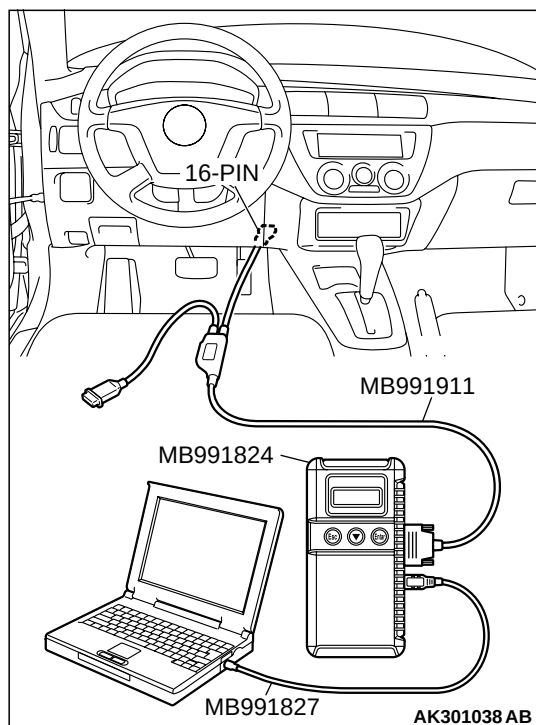
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Use the driver's door lock key cylinder to lock and unlock the doors.
- (3) Operate the MUT-II according to the procedure below to display "PULSE CHECK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "PULSE CHECK."
- (4) Check scan tool MB991958 sounds or not.

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

YES : Replace the ETACS-ECU. All the doors should be locked and unlocked by using driver's door lock key cylinder switch.

NO : Refer to Inspection Procedure O-5 "ETACS-ECU does not receive a signal from the driver's door lock key cylinder switch [P.54B-529](#)."

POWER WINDOWS

GENERAL DESCRIPTION CONCERNING THE POWER WINDOWS

M1549021900158

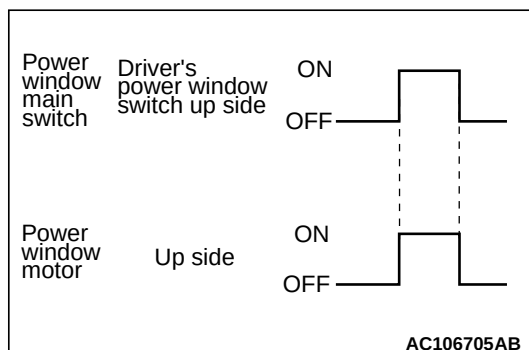
The following ECUs affect the functions and control of the power windows.

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 power window	Power window main switch
	Lowers the passenger's power window	Power window main switch
Power window sub switch function	Raises the passenger's power window	Power window sub switch
	Lowers the passenger's power window	Power window sub switch
Power window timer function		ETACS-ECU

POWER WINDOW MAIN SWITCH FUNCTION

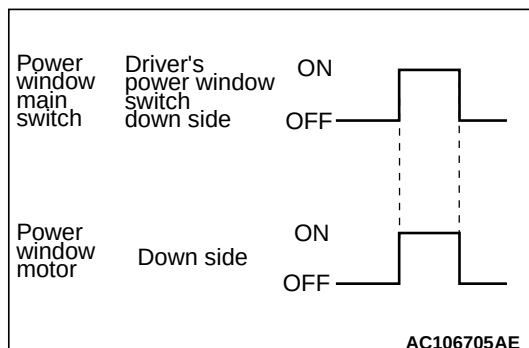
Raises the driver's power window

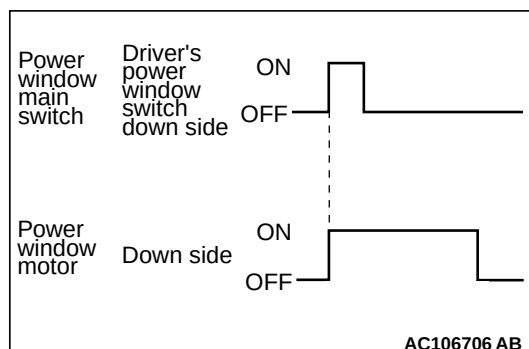
When the driver's power window switch on the power window main switch is pulled up, the system energizes its respective power window motor, and then driver's window glass rises.



Lower the driver's power window

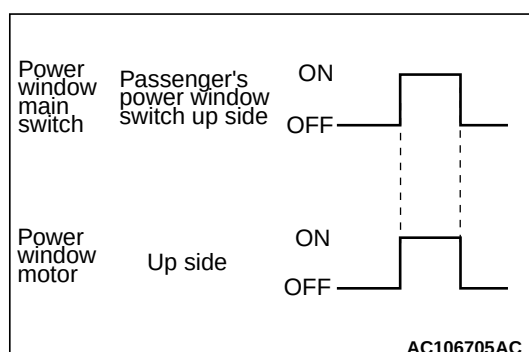
When the driver's power window switch on the power window main switch is pushed down, the system energizes its respective power window motor, and then driver's window glass lowers.





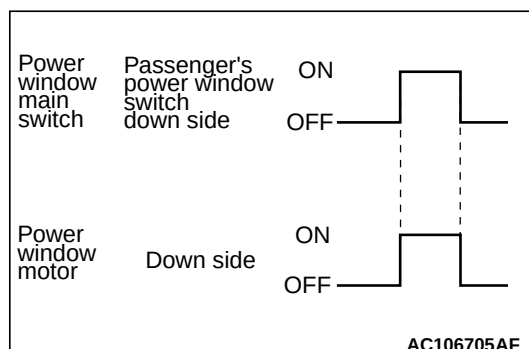
Lowers the driver's power window by one-shot down function

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



Raises the passenger's power window

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



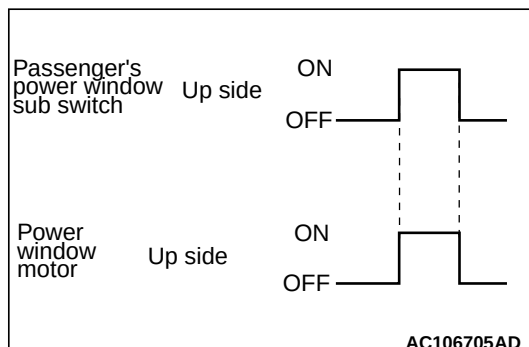
Lowers the passenger's power window

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

POWER WINDOW SUB SWITCH FUNCTION

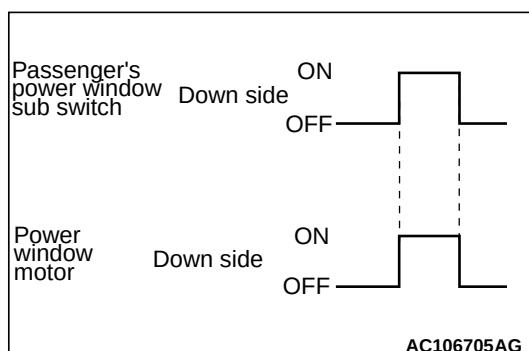
Raises the passenger's power window

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



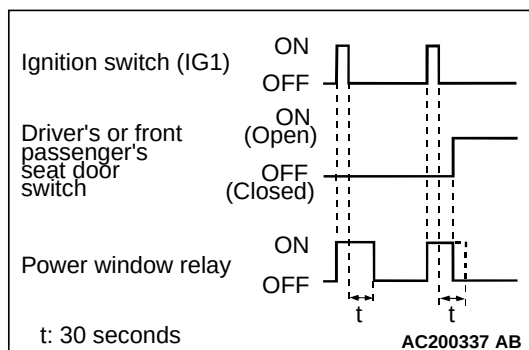
Lowers the passenger's power window

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

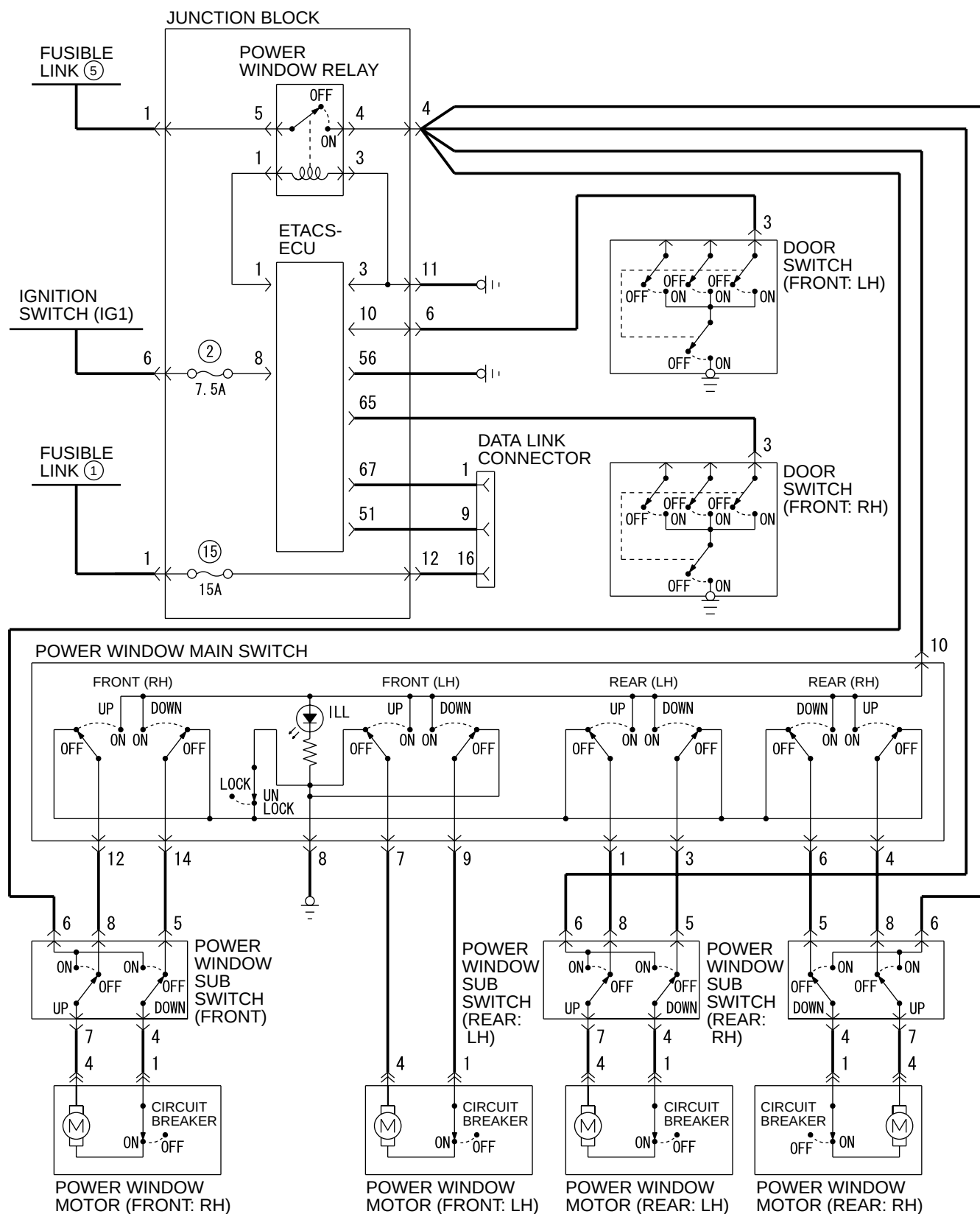


POWER WINDOW TIMER FUNCTION

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



General circuit diagram for the power windows

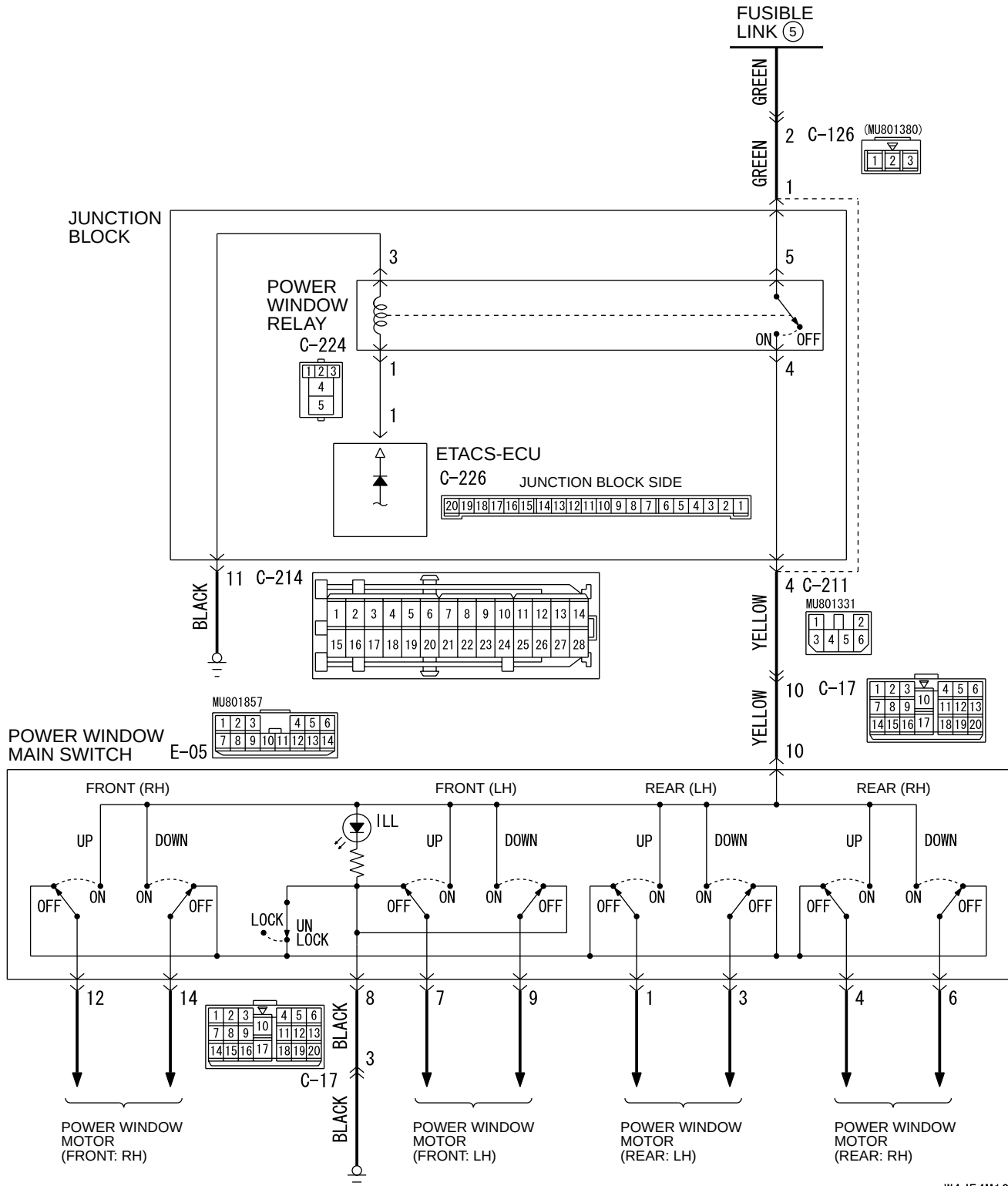


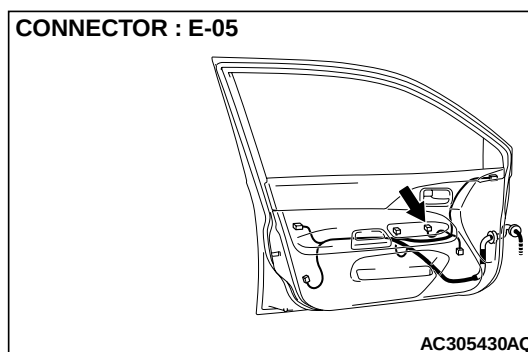
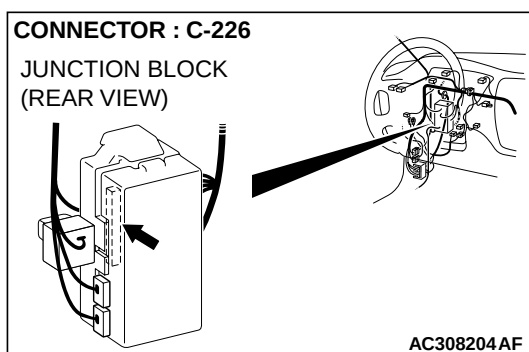
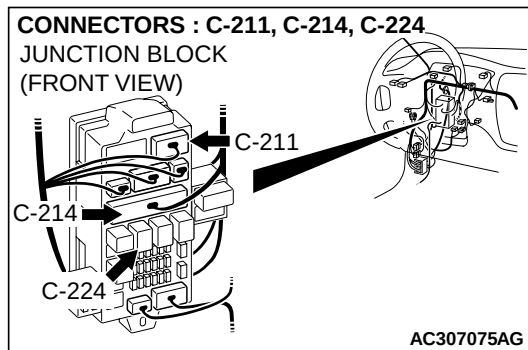
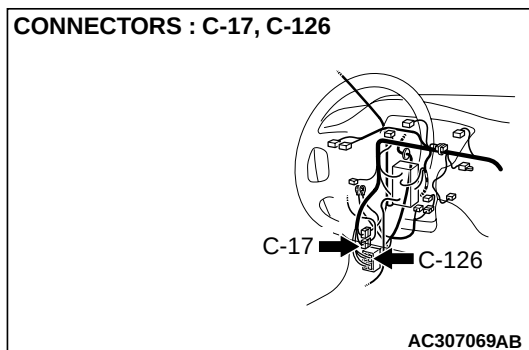
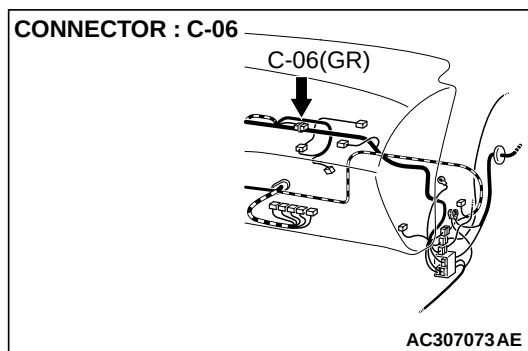
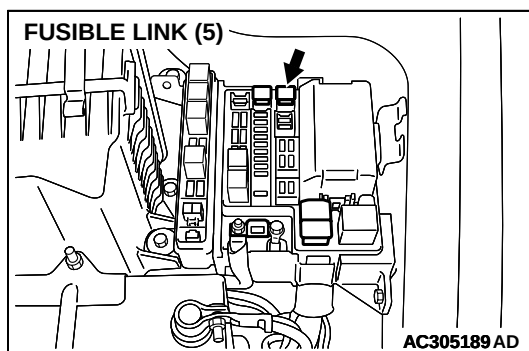
W4J54M107A

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Power Window Relay Circuit





CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

⚠ CAUTION

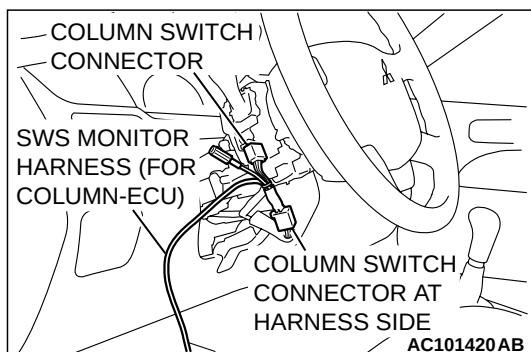
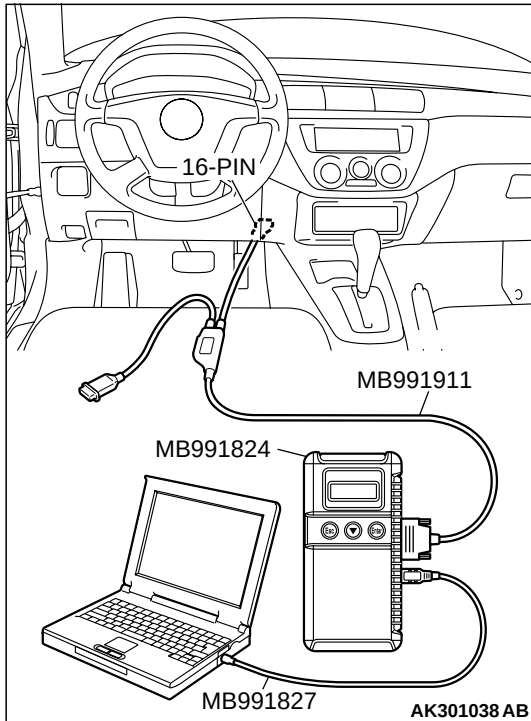
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

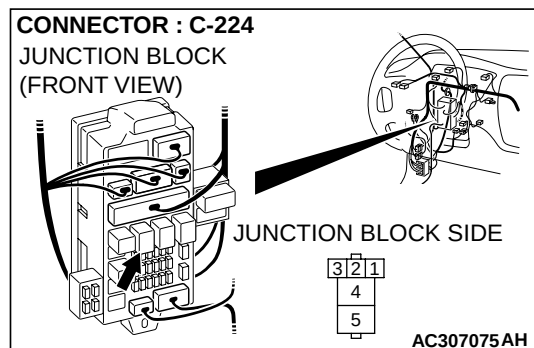
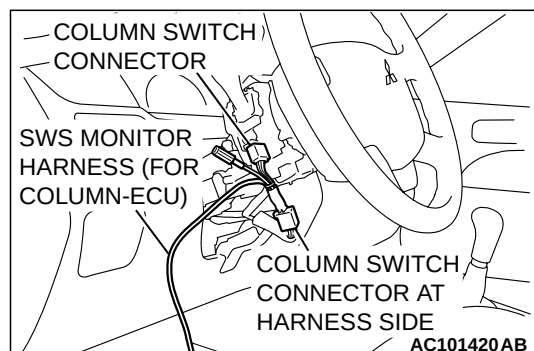
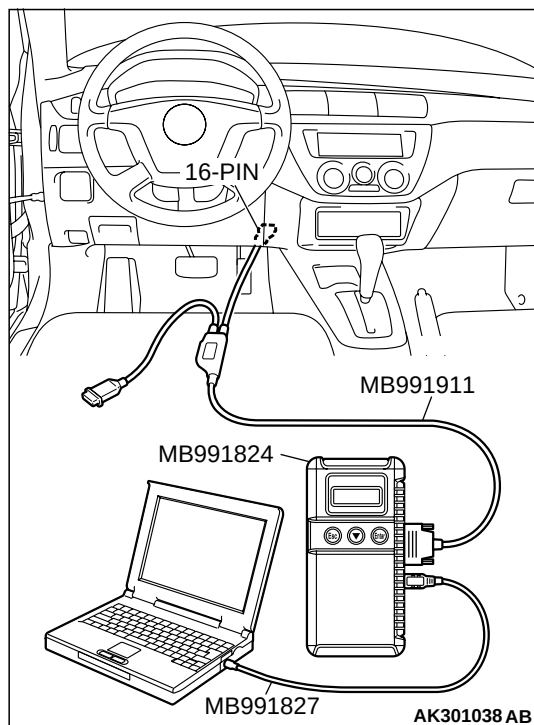
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."





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

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

(1) Operate the MUT-II as follows:

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

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

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

Q: Is normal condition displayed?

YES : Go to Step 3.

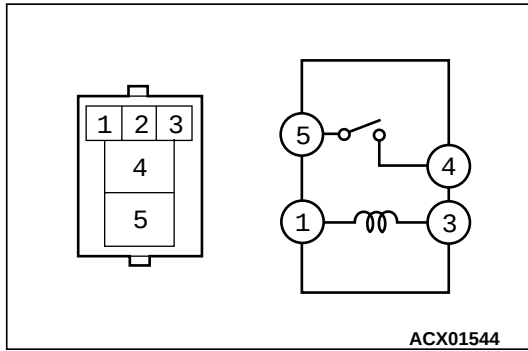
NO : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-457](#)."

STEP 3. 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 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 power window relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
- Connect terminal 3 to the positive battery terminal - Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

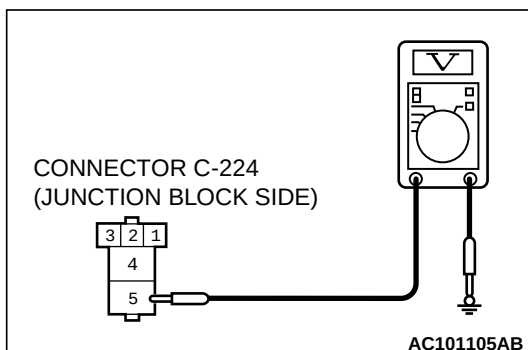
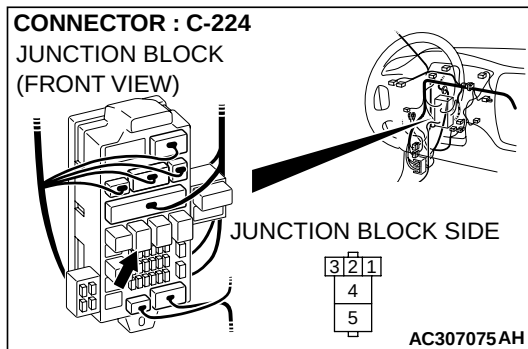
Q: Is the power window relay normal?

YES : Go to Step 5.

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

STEP 5. Check the fusible link (5) line of power supply circuit to the power window relay. Test 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.

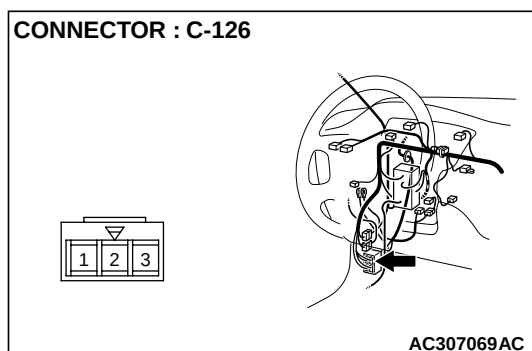
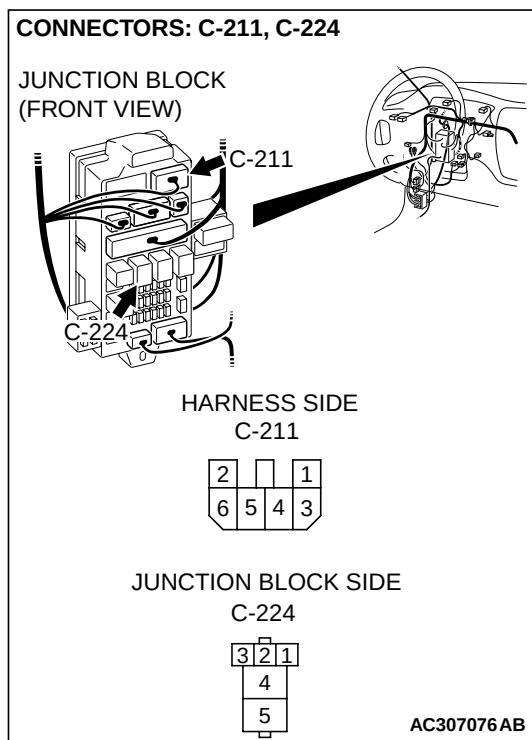
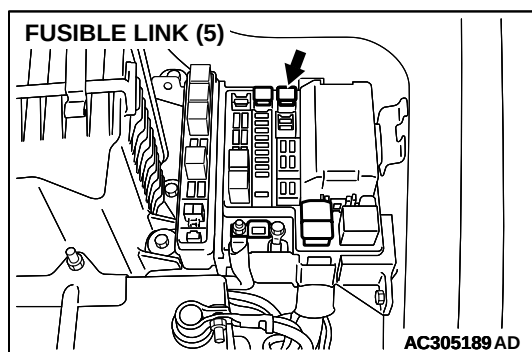
- The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Check the wiring harness between power window relay connector C-224 (terminal 5) and fusible link (5).

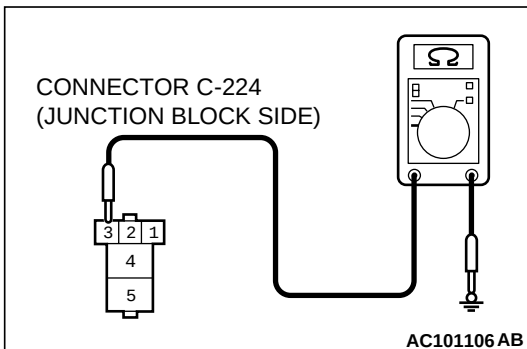
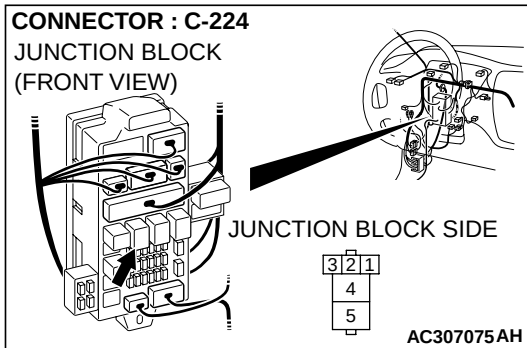


NOTE: Also check junction block connector C-211 and intermediate connector C-126 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or intermediate connectors C-126 is damaged, repair or replace the damaged component(s) as described 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 7. Check the ground circuit to the power window relay. Test 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.

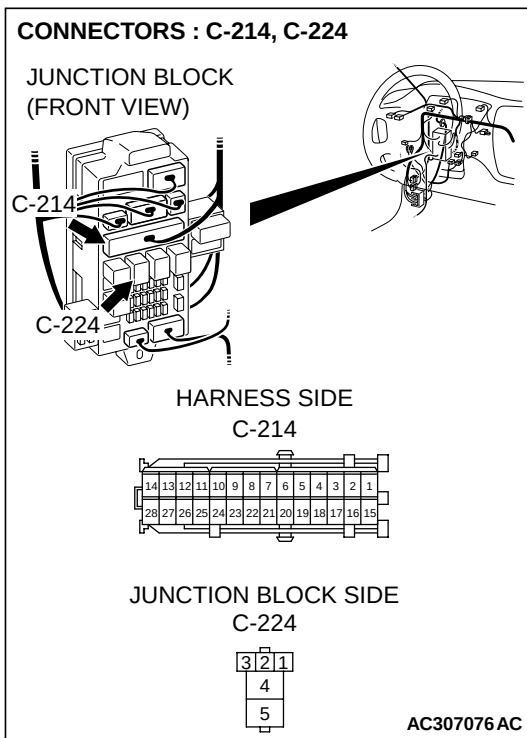
(2) Measure the resistance value between terminal 3 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.

NO : Go to Step 8.



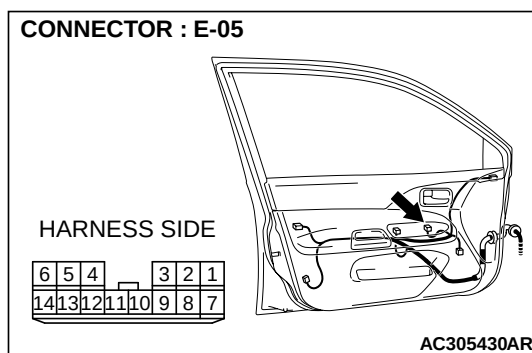
STEP 8. Check the wiring harness between power window relay connector C-224 (terminal 3) and ground.

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.

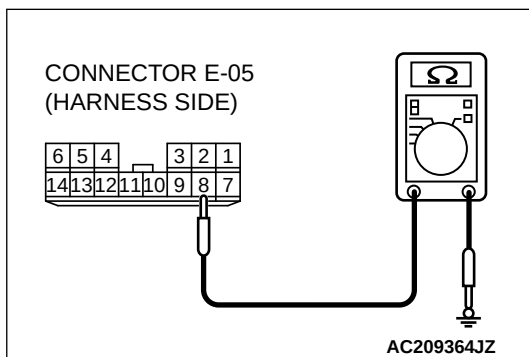
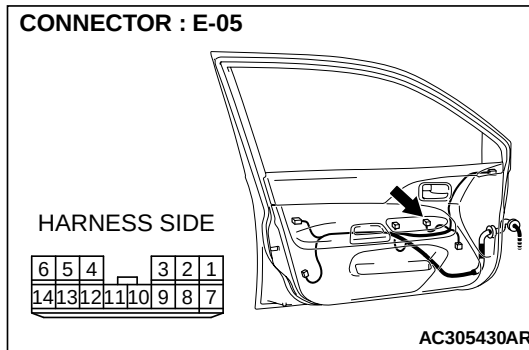


STEP 9. Check power window main switch connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 10.

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 10. Check the ground circuit to the power window main switch. Test 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 8 and ground.

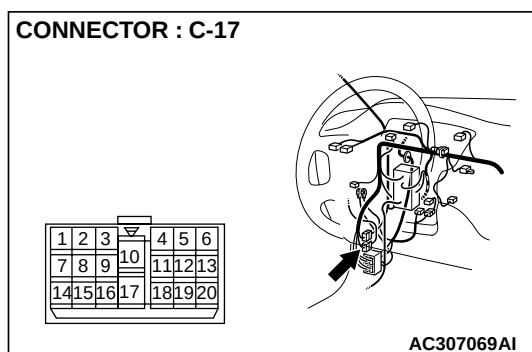
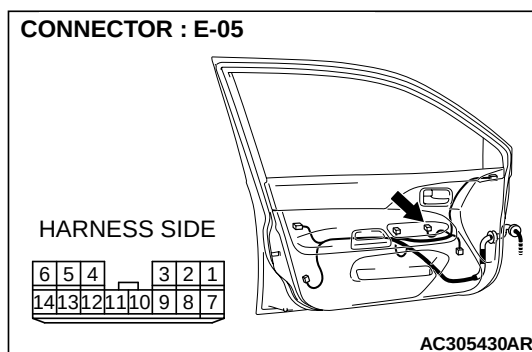
- The resistance should equal 2 ohms or less.

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 main switch E-05 (terminal 8) and ground.

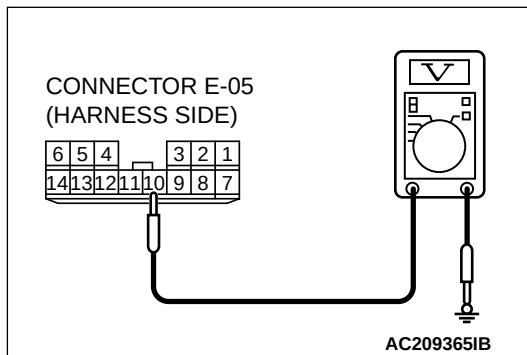
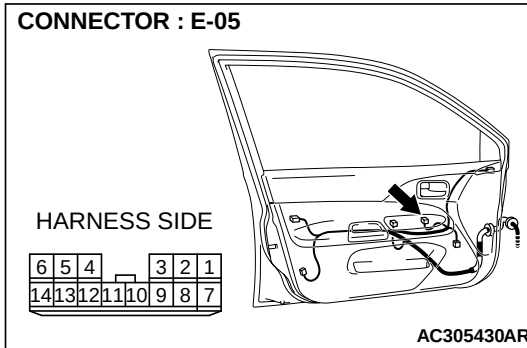


NOTE: Also check intermediate connector C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

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

YES : No action is necessary and testing is complete.

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



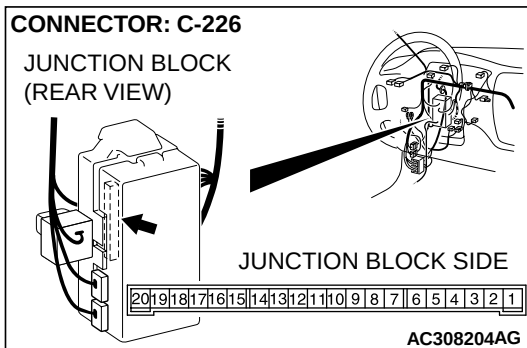
STEP 12. Check the battery power supply circuit to the power window main switch. Test at power window main switch connector E-05.

- (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 10 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 power window main switch. Verify that the power windows work normally.
- NO :** Go to Step 13.

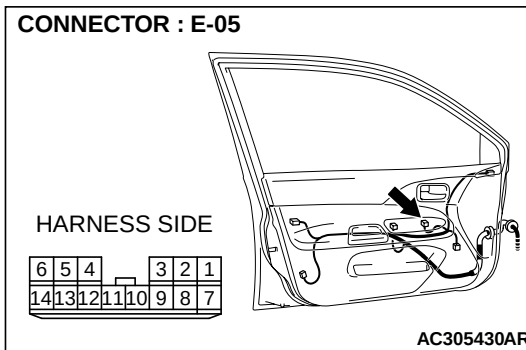
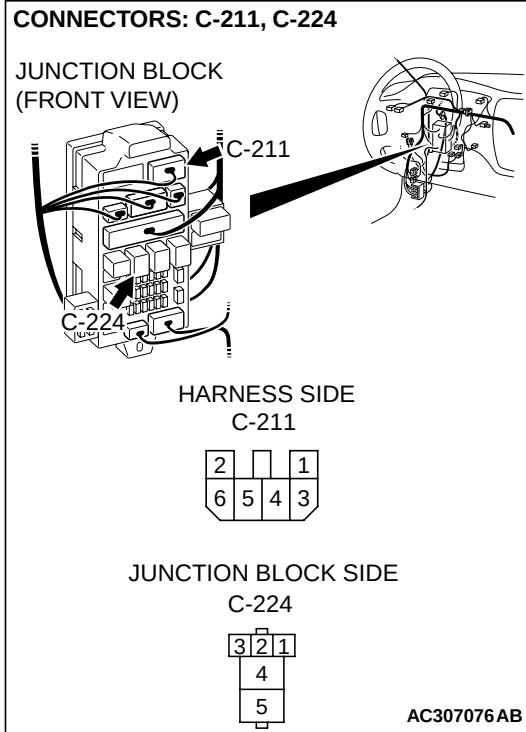


STEP 13. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

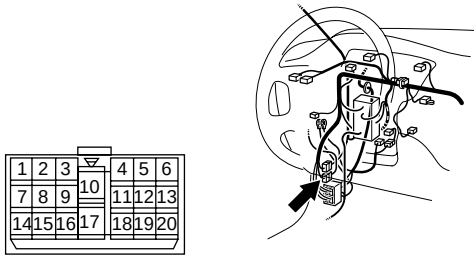
Q: Is ETACS-ECU connector C-226 in good condition?

- YES :** Go to Step 14.
- 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 14. Check the wiring harness between power window relay connector C-224 (terminal 4) and power window main switch connector E-05 (terminal 10).



CONNECTOR : C-17



AC307069AI

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 10) in good condition?

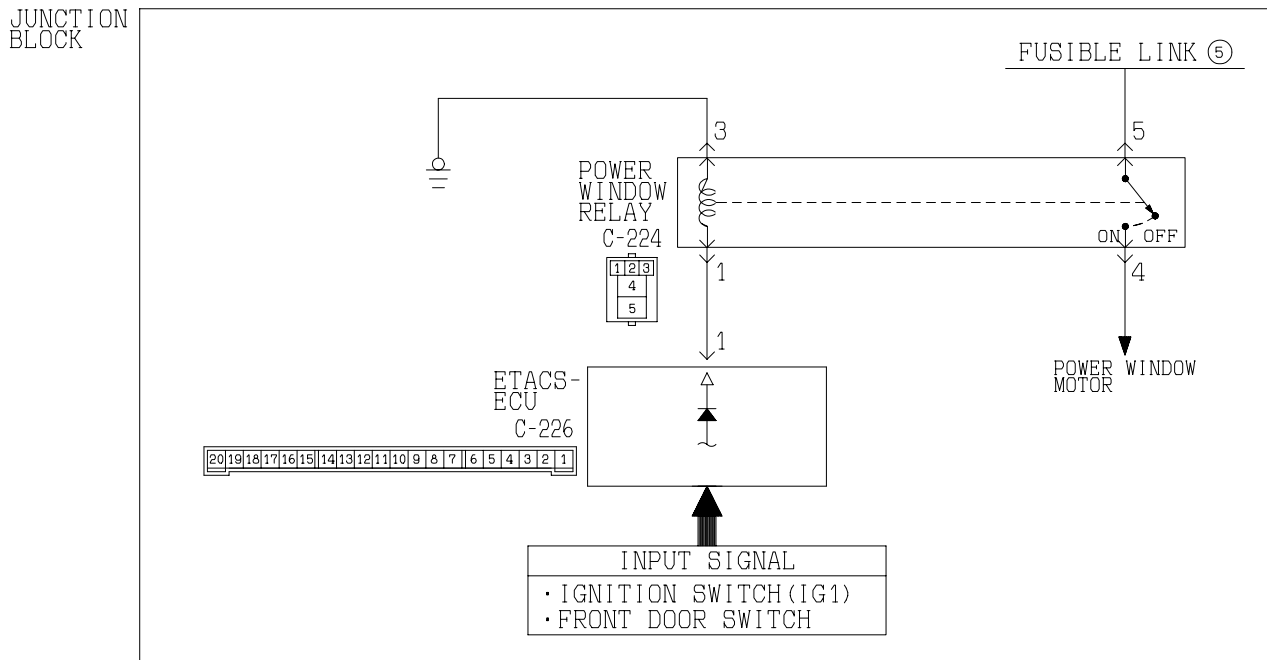
YES : Replace the ETACS-ECU. Verify that the power windows work normally.

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.

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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Power Window Timer Function Circuit



W3J02M07AA

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

Check the ETACS-ECU.

⚠ CAUTION

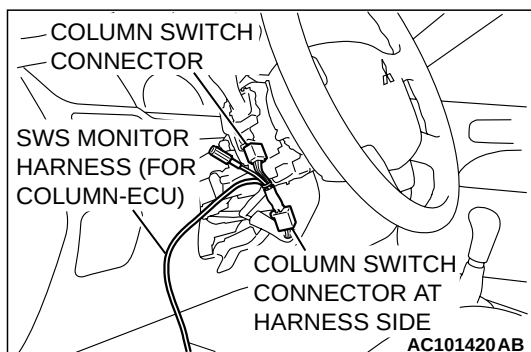
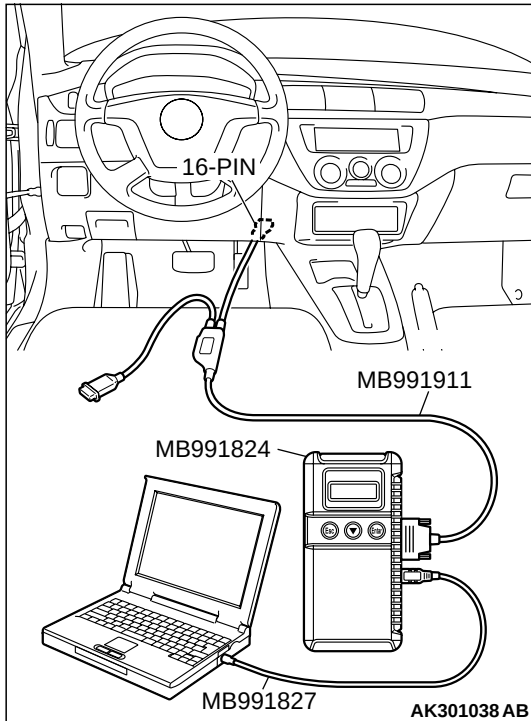
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

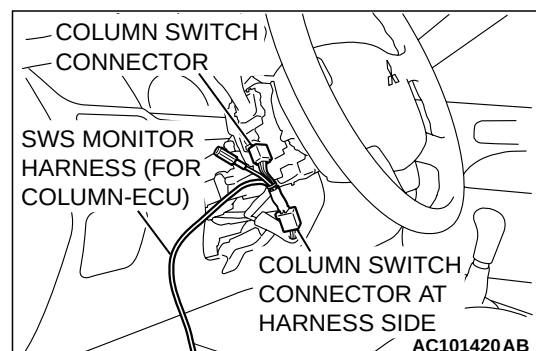
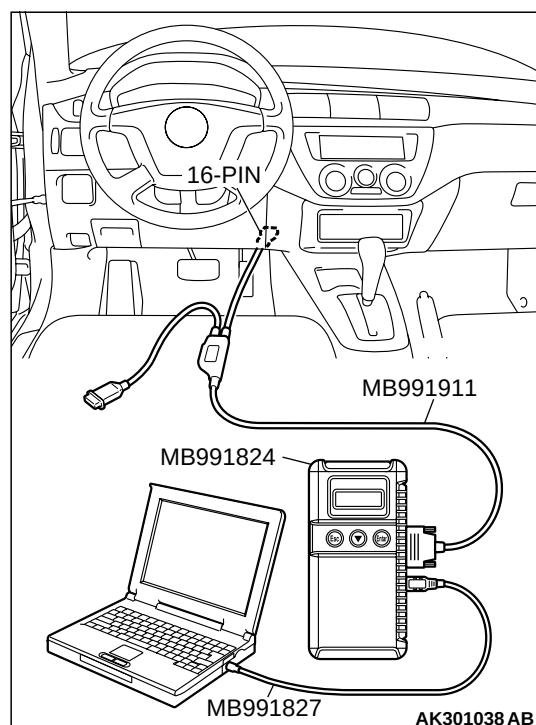
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."





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 MB991958 according to the procedure below to display "ETACS ECU."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "DATA LIST."
 5. Select "ETACS ECU."
- (3) Check that normal conditions are displayed on the items described in the table below.

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

Q: 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.

The scan tool does not show the respective normal condition for item "IG SW (IG1)" :

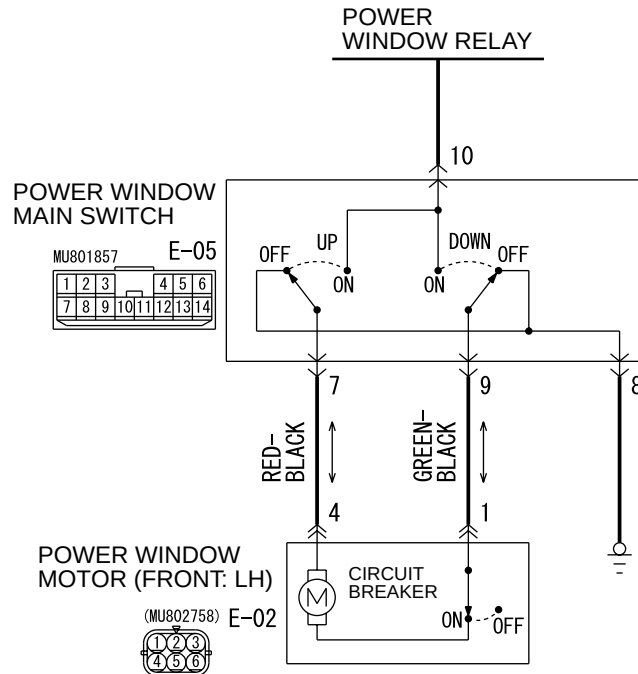
Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-457](#)."

The scan tool does not show the respective normal condition for item "FRONT DOOR SW" :

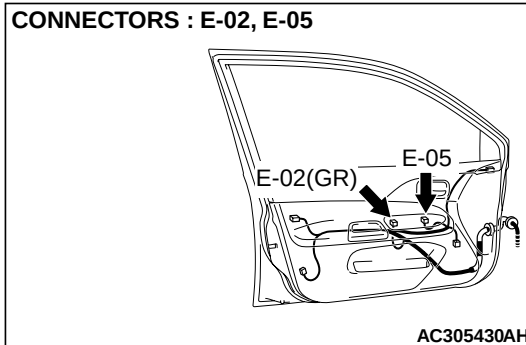
Refer to Inspection Procedure N-4 "ETACS-ECU does not receive a signal from the driver's door switch [P.54B-478](#)."

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



W4J54M109A



CIRCUIT OPERATION

The power 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 motor (front: LH) may be defective.

TROUBLESHOOTING HINTS

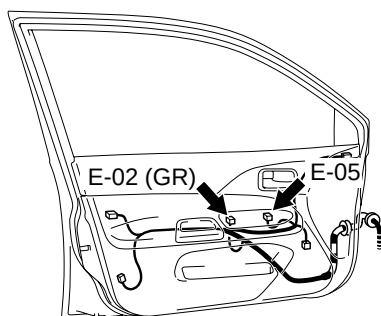
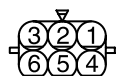
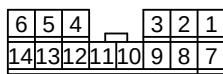
- The power window main switch may be defective
- The power window motor (front: LH) may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

CONNECTORS : E-02, E-05

HARNESS SIDE
E-02HARNESS SIDE
E-05

AC305431AC

STEP 1. Check power window main switch connector E-05 and power window 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 motor (front: LH) connector E-02 in good condition?

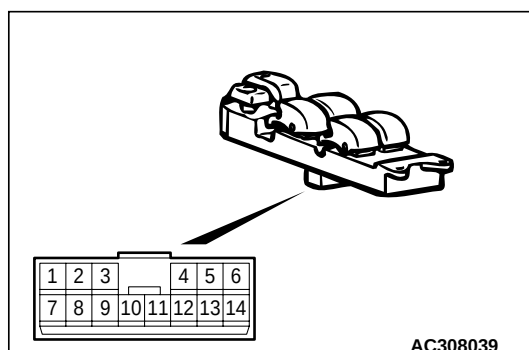
YES : Go to Step 2.

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 Trim and Waterproof Film [P.42-37](#).
- (2) Check continuity while power window main switch is moved to "UP" and "DOWN" position.



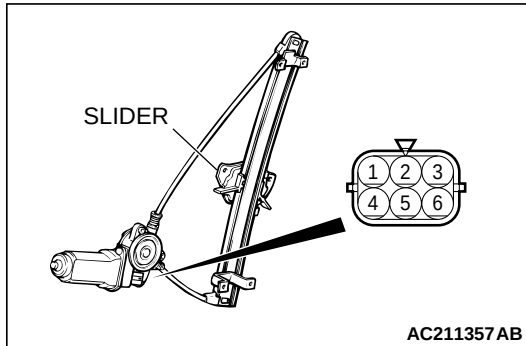
AC308039

FRONT (LH) SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	7 – 10, 8 – 9	Less than 2 ohms
OFF	7 – 8, 7 - 9, 8 – 9	Less than 2 ohms
DOWN	7 – 8, 9 – 10	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 power window motor (front: LH).

- (1) Remove the power window motor (front: LH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-43.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

TESTER CONNECTION	SLIDER POSITION
- Connect terminal 1 to the negative battery terminal - Connect terminal 4 to the positive battery terminal	UP
- Connect terminal 4 to the negative battery terminal - Connect terminal 1 to the positive battery terminal	DOWN

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

YES : Go to Step 4.

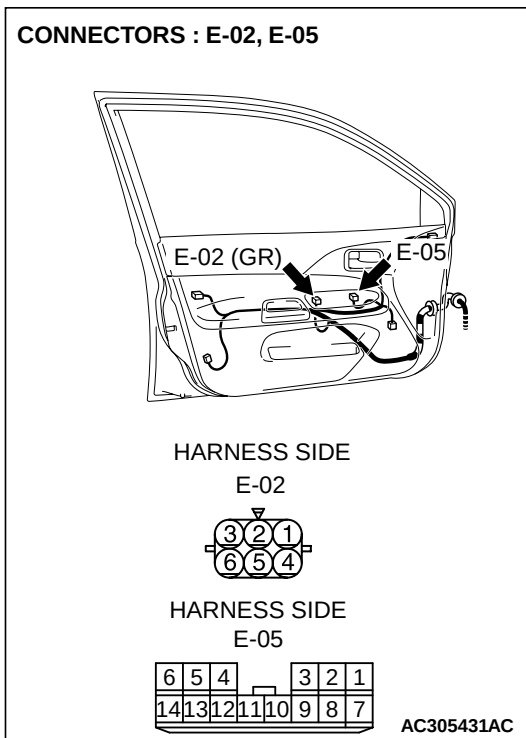
NO : Replace the power window motor (front: LH). When the power window main switch is operated, the power window (front: LH) should open and close normally.

STEP 4. Check the wiring harness between power window main switch connector E-05 (terminal 7 and 9) and power window motor (front: LH) connector E-02 (terminal 1 and 2).

Q: Is the wiring harness between power window main switch connector E-05 (terminal 7 and 9) and power window motor (front: LH) connector E-02 (terminal 1 and 2) in good condition?

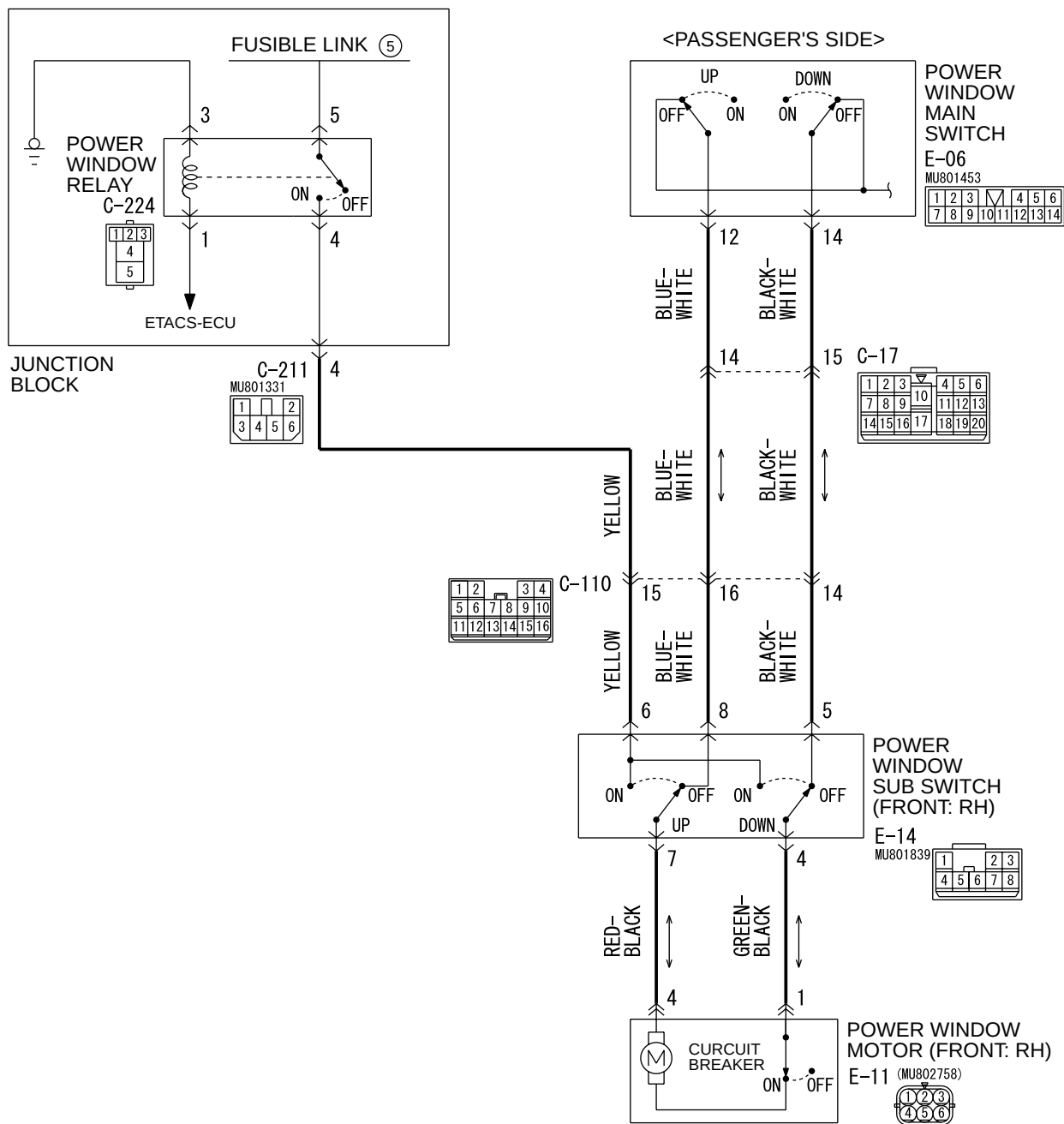
YES : No action is necessary and testing is complete.

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



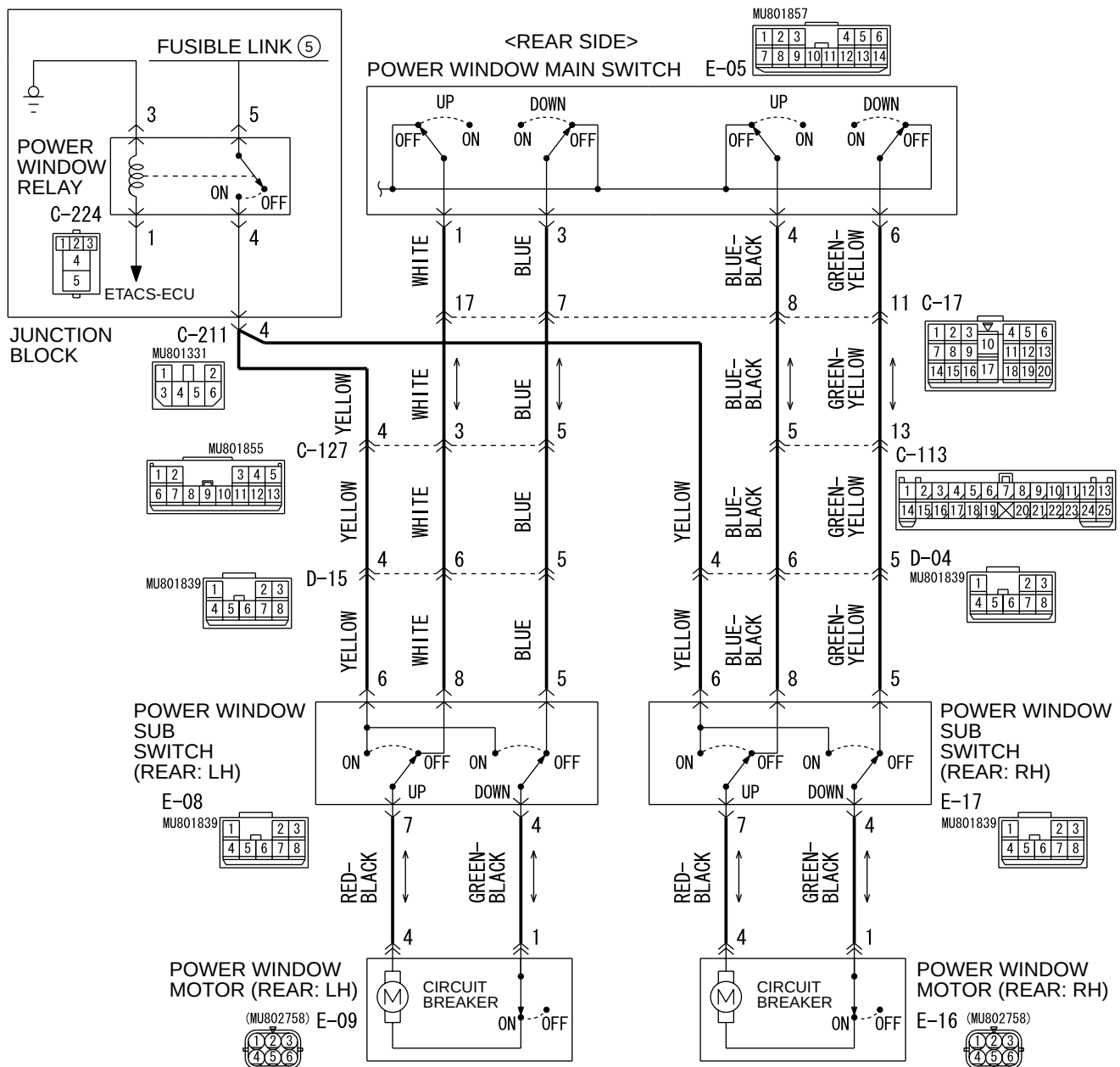
INSPECTION PROCEDURE D-4: Power Windows: Power windows does not work normally by operating the front passenger's and rear sub switches.

Power Window Sub Switch Circuit



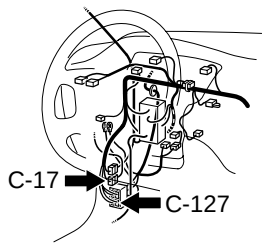
W4J54M110A

Power Window Sub Switch Circuit



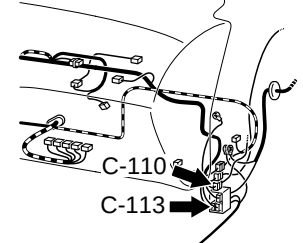
W4J54M111A

CONNECTORS : C-17, C-127

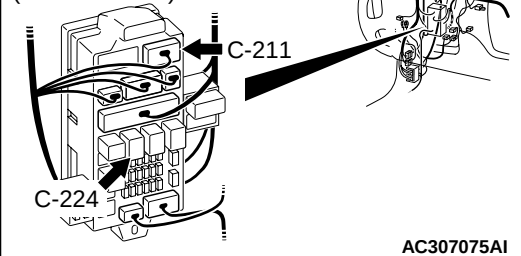


AC307069AJ

CONNECTORS : C-110, C-113

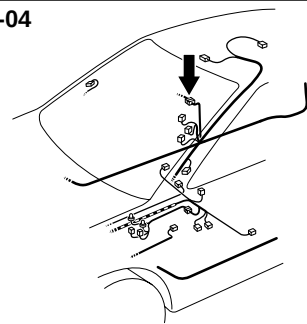


AC307073AF

CONNECTORS : C-211, C-224
JUNCTION BLOCK
(FRONT VIEW)

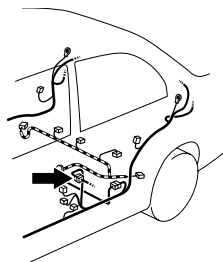
AC307075AI

CONNECTOR : D-04



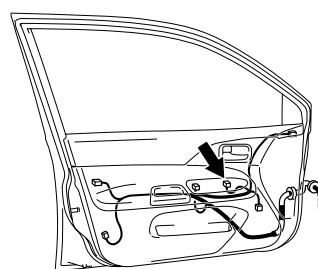
AC307077AC

CONNECTOR : D-15



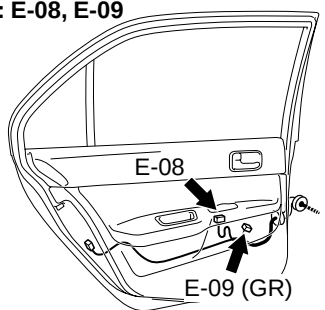
AC307079AB

CONNECTOR : E-05



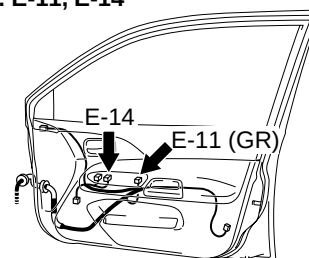
AC305430AQ

CONNECTORS : E-08, E-09



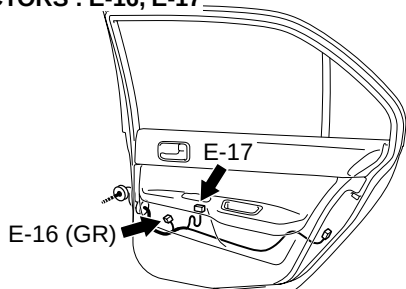
AC305436AH

CONNECTORS : E-11, E-14



AC305438AJ

CONNECTORS : E-16, E-17



AC305434AI

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

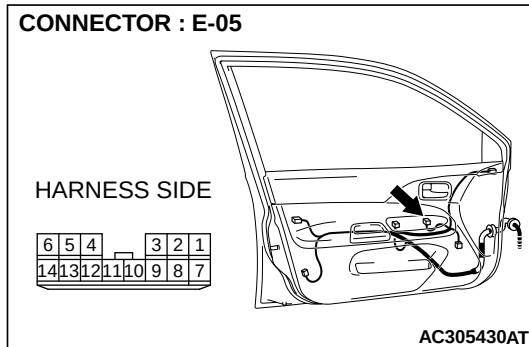
STEP 1. Check power window main switch connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

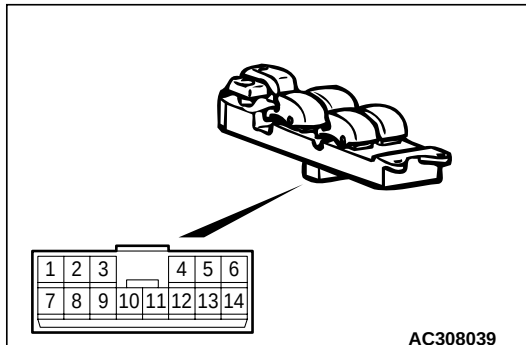
Q: Is power window main switch connector E-05 in good condition?

YES : Go to Step 2.

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

[P.00E-2.](#)



**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 Trim and Waterproof Film P.42-37.
- (2) Check continuity when each switch on the power window main switch is operated to "UP" or "DOWN" position.

SWITCHES TO BE CHECKED	SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
	power window lock switch	Power window switches to be checked		
front power window (RH)	lock	UP	10 – 12	Less than 2 ohms
		OFF	12 – 14	Less than 2 ohms
		DOWN	10 – 14	Less than 2 ohms
	unlock	UP	10 – 12, 8 – 14	Less than 2 ohms
		OFF	12 – 14, 8 – 12, 8 – 14	Less than 2 ohms
		DOWN	10 – 14, 8 – 12	Less than 2 ohms
rear power window (LH)	lock	UP	1 – 10	Less than 2 ohms
		OFF	1 – 3	Less than 2 ohms
		DOWN	3 – 10	Less than 2 ohms
	unlock	UP	1 – 10, 3 – 8	Less than 2 ohms
		OFF	1 – 3, 1 – 8, 3 – 8	Less than 2 ohms
		DOWN	1 – 8, 3 – 10	Less than 2 ohms

SWITCHES TO BE CHECKED	SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
	power window lock switch	Power window switches to be checked		
rear power window (RH)	lock	UP	4 – 10	Less than 2 ohms
		OFF	4 – 6	Less than 2 ohms
		DOWN	6 – 10	Less than 2 ohms
	unlock	UP	4 – 10, 6 – 8	Less than 2 ohms
		OFF	4 – 6, 4 – 8, 6 – 8	Less than 2 ohms
		DOWN	6 – 10, 4 – 10	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.

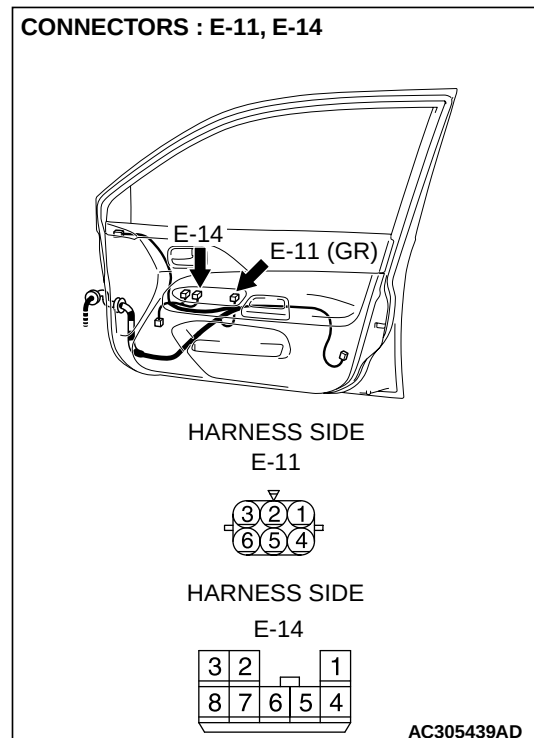
STEP 4. Check which door window is not opened or closed

Q: Which door window is opened or closed?

Passenger's side : Go to Step 5.

Rear passenger (LH) : Go to Step 14.

Rear passenger (RH) : Go to Step 23.



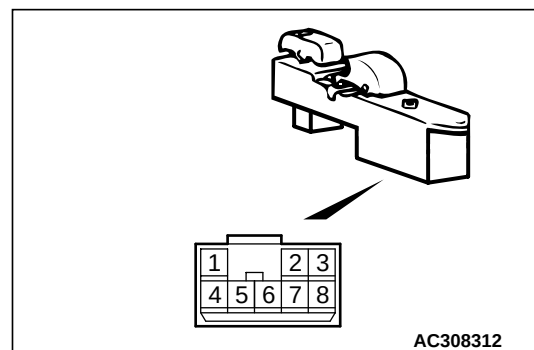
STEP 5. Check power window sub-switch (front: RH) connector E-14 and power window motor (front: RH) connector E-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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



STEP 6. Check the power window sub-switch (front: RH) for continuity.

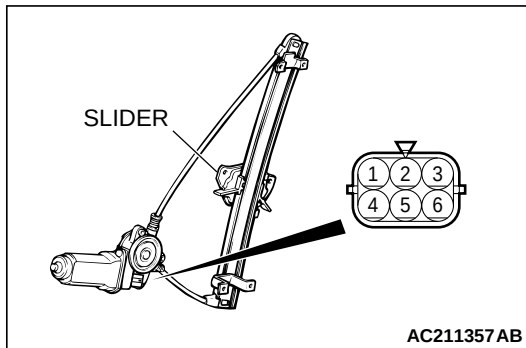
- (1) Remove the power window sub-switch (front: RH). Refer to GROUP 42, Door-Door Trim and Waterproof Film **P.42-37**.
- (2) Check continuity when the power window sub-switch (front: RH) is operated to "UP" or "DOWN" position.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	4 – 5, 6 – 7	Less than 2 ohms
OFF	4 – 5, 7 – 8	Less than 2 ohms
DOWN	4 – 6, 7 – 8	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: RH). When the power window sub-switch (front: RH) is operated, the front power window (RH) should open or close normally.



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

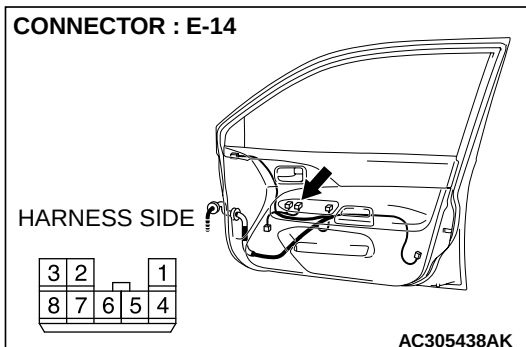
- (1) Remove the front power regulator assembly (RH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-43.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

TESTER CONNECTION	SLIDER POSITION
- Connect terminal 1 to the negative battery terminal - Connect terminal 4 to the positive battery terminal	UP
- Connect terminal 4 to the negative battery terminal - Connect terminal 1 to the positive battery terminal	DOWN

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

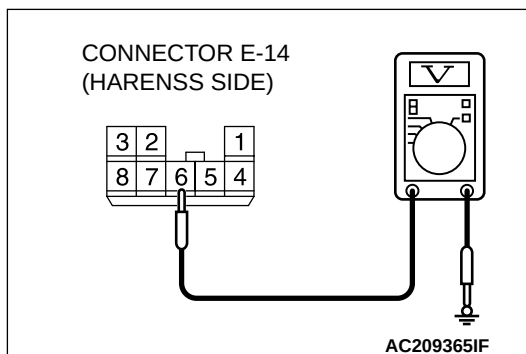
YES : Go to Step 8.

NO : Replace the front power regulator assembly (RH).
When the power window sub-switch (front: RH) 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: RH). Test at power window sub-switch (front: RH) connector E-14.

- (1) Disconnect power window sub-switch (front: RH) connector E-14 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.



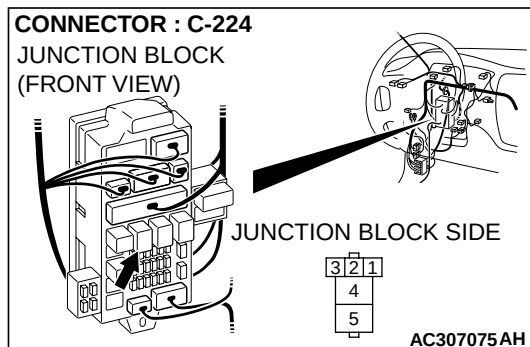
- (3) Measure the voltage between terminal 6 and ground.

- 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.



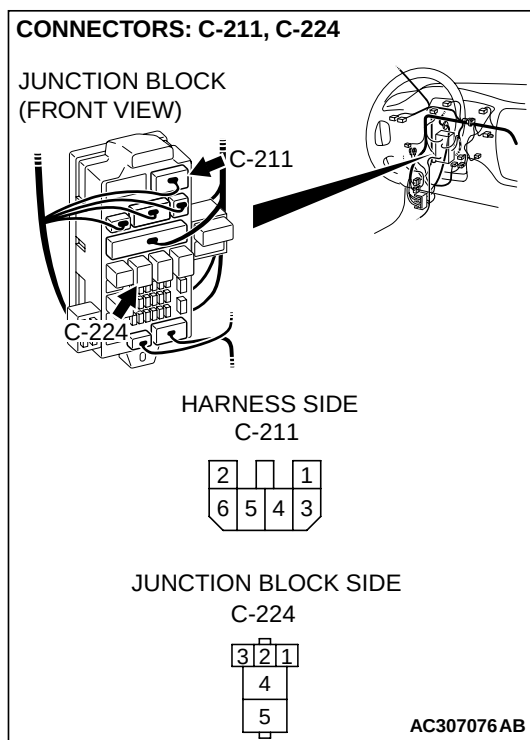
STEP 9. Check power window relay connector C-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

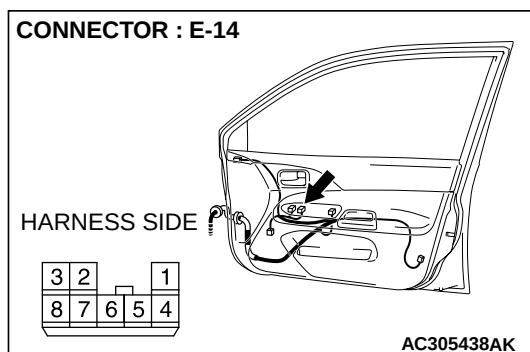
YES : Go to Step 10.

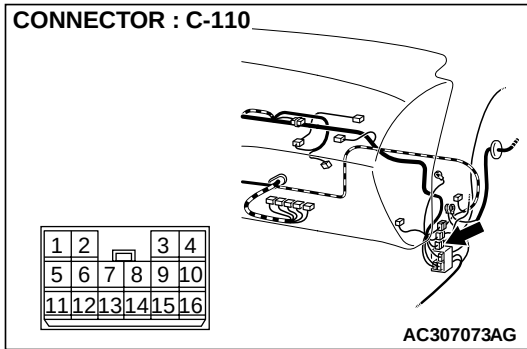
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



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



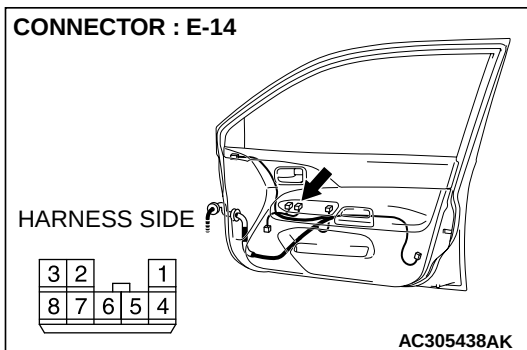


NOTE: Also check junction block connector C-211 and intermediate connector C-110 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or intermediate connectors C-110 is damaged, repair or replace the damaged component(s) as described 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: RH) connector E-14 (terminal 6) in good condition?

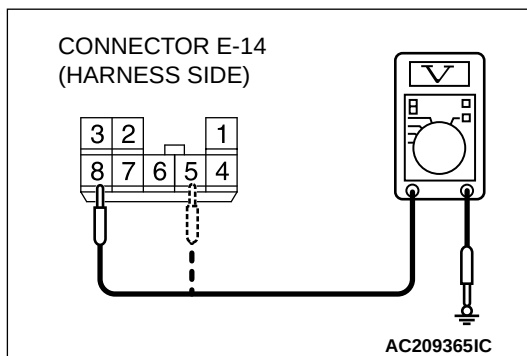
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the power window sub-switch (front: RH) 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: RH). Test at power window sub-switch (front: RH) connector E-14.

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



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

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 13.

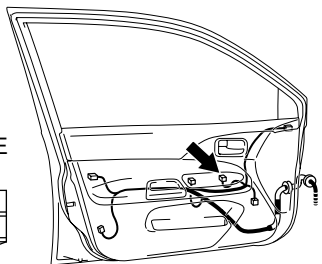
NO : Go to Step 12.

STEP 12. Check the wiring harness between power window main switch connector E-05 (terminals 12 and 14) and power window sub-switch (front: RH) connector E-14 (terminals 8 and 5).

CONNECTOR : E-05

HARNESS SIDE

6	5	4			3	2	1
14	13	12	11	10	9	8	7

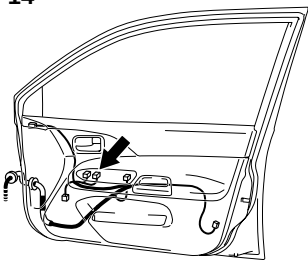


AC305430AT

CONNECTOR : E-14

HARNESS SIDE

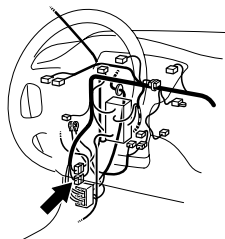
3	2			1
8	7	6	5	4



AC305438AK

CONNECTOR : C-17

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



AC307069AI

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.

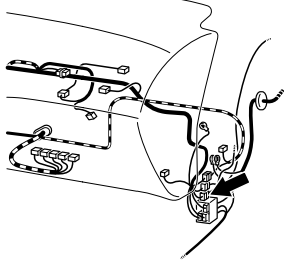
Q: Is the wiring harness between power window main switch connector E-05 (terminals 12 and 14) and power window sub-switch (front: RH) connector E-14 (terminals 8 and 5) in good condition?

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

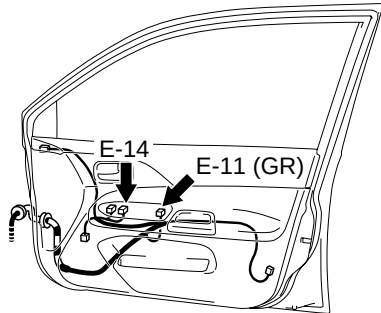
CONNECTOR : C-110

1	2			3	4
5	6	7	8	9	10
11	12	13	14	15	16

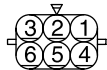


AC307073AG

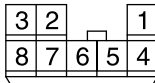
CONNECTORS : E-11, E-14



HARNESS SIDE
E-11



HARNESS SIDE
E-14



AC305439AD

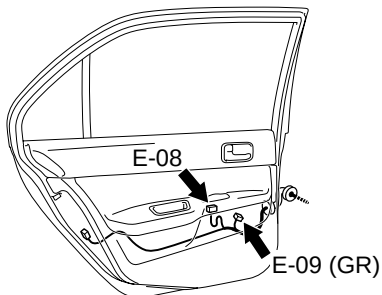
STEP 13. Check the wiring harness between power window sub-switch (front: RH) connector E-14 (terminal 4 and 7) and power window motor (front: RH) connector E-11 (terminal 1 and 4).

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

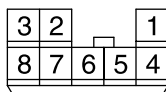
YES : No action is necessary and testing is complete.

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: RH) is operated, the front power window (RH) should open or close normally.

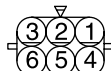
CONNECTORS : E-08, E-09



HARNESS SIDE
E-08



HARNESS SIDE
E-09



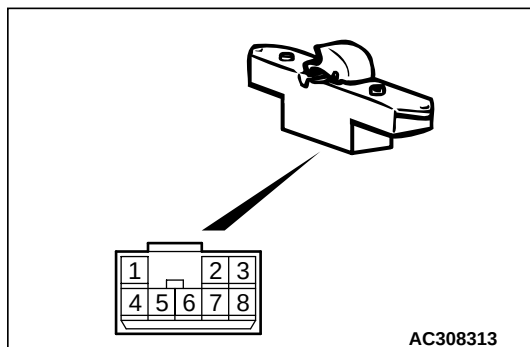
AC305437AC

STEP 14. Check power window sub-switch (rear: LH) connector E-08 and power window 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 motor (rear: LH) connector E-09 in good condition?

YES : Go to Step 15.

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

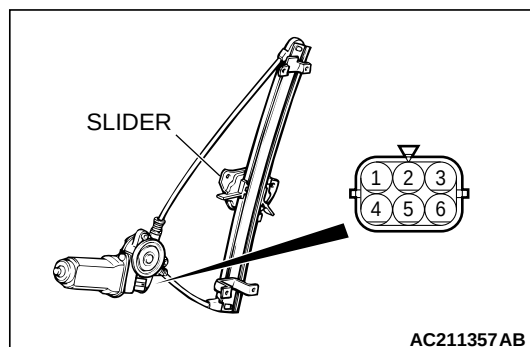
**STEP 15. Check the power window sub-switch (rear: LH) for continuity.**

- (1) Remove the power window sub-switch (rear: LH). Refer to GROUP 42, Door-Door Trim and Waterproof Film P.42-37.
- (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	4 – 5, 6 – 7	Less than 2 ohms
OFF	4 – 5, 7 – 8	Less than 2 ohms
DOWN	4 – 6, 7 – 8	Less than 2 ohms

Q: Is the power window sub-switch (rear: LH) normal?**YES :** Go to Step 16.

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.

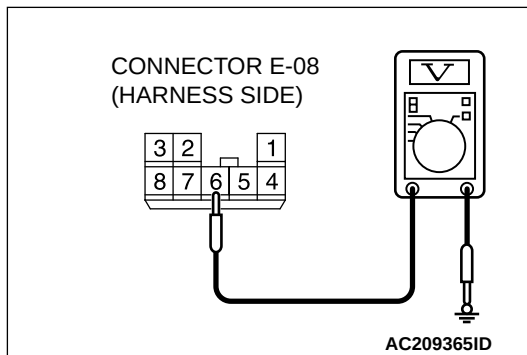
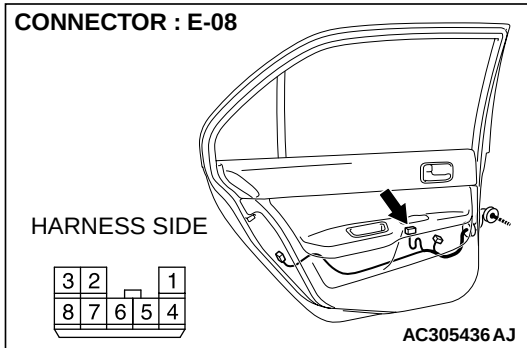
**STEP 16. Check the power window motor (rear: LH).**

- (1) Remove the rear power regulator assembly (LH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-43.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

TESTER CONNECTION	SLIDER POSITION
- Connect terminal 1 to the negative battery terminal - Connect terminal 4 to the positive battery terminal	UP
- Connect terminal 4 to the negative battery terminal - Connect terminal 1 to the positive battery terminal	DOWN

Q: Is the power window motor (rear: LH) normal?**YES :** Go to Step 17.

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 17. Check the battery power supply circuit to the power window sub-switch (rear: LH). Test at power window sub-switch (rear: LH) connector E-08.

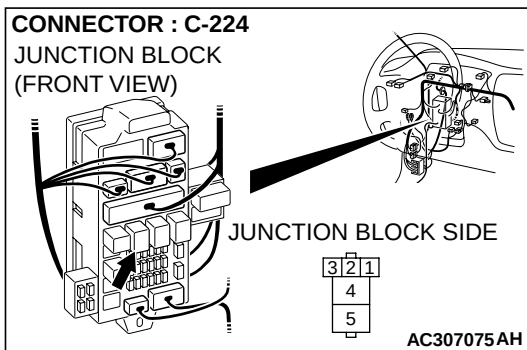
- (1) Disconnect power window sub-switch (rear: LH) connector E-08 and measure the voltage available at the wiring harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 6 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 20.

NO : Go to Step 18.



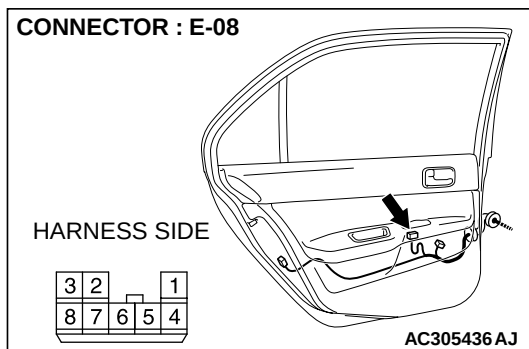
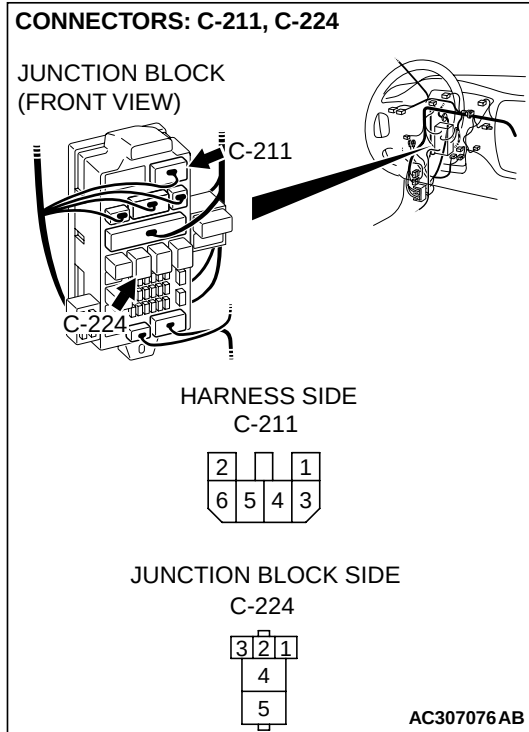
STEP 18. Check power window relay connector C-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

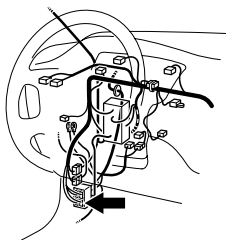
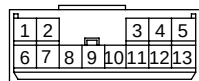
YES : Go to Step 19.

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 19. 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).

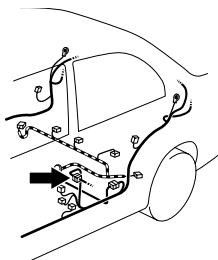
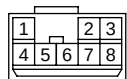


CONNECTOR : C-127



AC307069AL

CONNECTOR : D-15



AC307079AB

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.

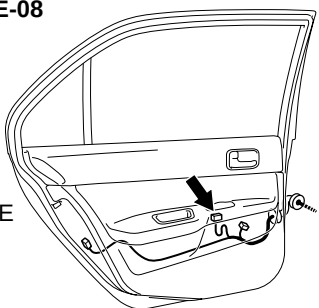
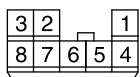
Q: Is the wiring harness between power window relay connector C-224 (terminal 4) and power window sub-switch (rear: LH) connector E-08 (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

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

CONNECTOR : E-08

HARNESS SIDE



AC305436 AJ

STEP 20. Check the ground circuit to the power window sub-switch (rear: LH). Test 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.

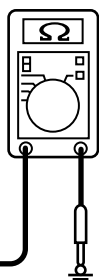
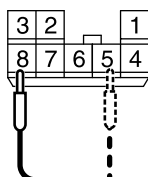
(2) Measure the resistance value between terminal 5 and ground, and also between terminal 8 and ground.
 • The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 22.

NO : Go to Step 21.

CONNECTOR E-08
(HARNESS SIDE)



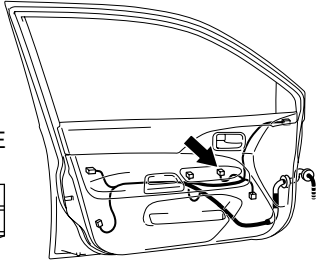
AC209364KB

STEP 21. Check the wiring harness between power window main switch connector E-05 (terminal 1 and 3) and power window sub-switch (rear: LH) connector E-08 (terminal 8 and 5).

CONNECTOR : E-05

HARNESS SIDE

6	5	4			3	2	1
14	13	12	11	10	9	8	7

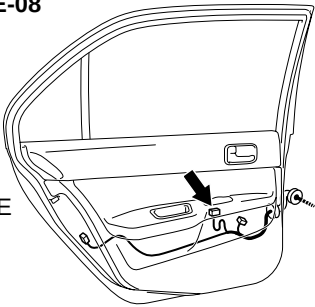


AC305430AT

CONNECTOR : E-08

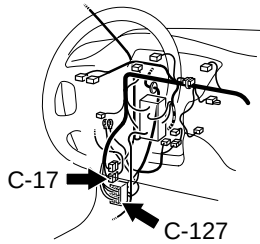
HARNESS SIDE

3	2			1
8	7	6	5	4

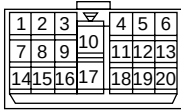


AC305436 AJ

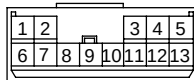
CONNECTORS : C-17, C-127



C-17



C-127



AC307070 AC

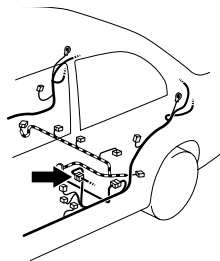
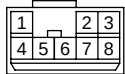
NOTE: Also check intermediate connectors, D-15, C-127 and C-17 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-15, C-127 or C-17 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection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

Q: Is the wiring harness between power window main switch connector E-05 (terminal 1 and 3) and rear power sub-switch (LH) connector E-08 (terminal 8 and 5) 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.

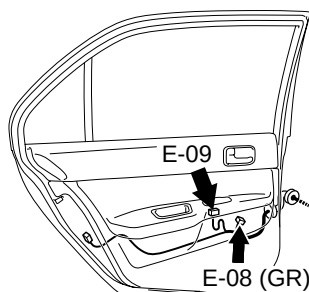
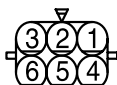
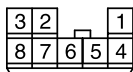
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the power window sub-switch (rear: LH) is operated, the rear power window (LH) should open or close normally.

CONNECTOR : D-15



AC307079AB

CONNECTORS: E-08, E-09

HARNESS SIDE
E-08HARNESS SIDE
E-09

AC305437AB

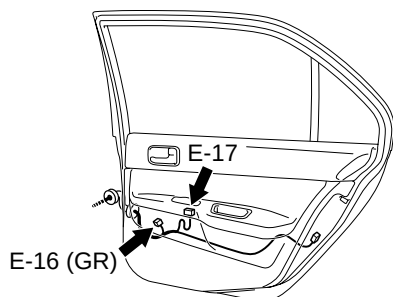
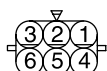
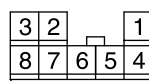
STEP 22. Check the wiring harness between power window sub-switch (rear: LH) connector E-08 (terminal 4 and 7) and power window motor (rear: LH) connector E-09 (terminal 1 and 4).

Q: Is the wiring harness between rear power window main switch (LH) connector E-08 (terminal 4 and 7) and power window motor (rear: LH) connector E-09 (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: LH) is operated, the rear power window (LH) should open or close normally.

CONNECTORS : E-16, E-17

HARNESS SIDE
E-16HARNESS SIDE
E-17

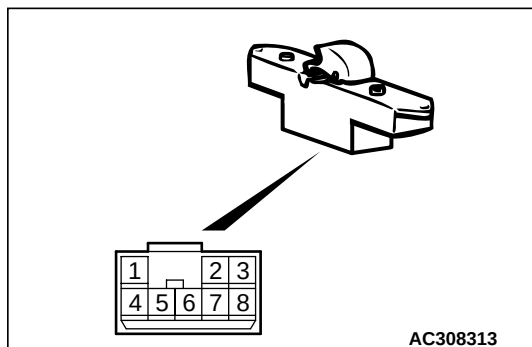
AC305435AC

STEP 23. Check power window sub-switch (rear: RH) connector E-17 and power window 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 motor (rear: RH) connector E-16 in good condition?

YES : Go to Step 24.

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



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

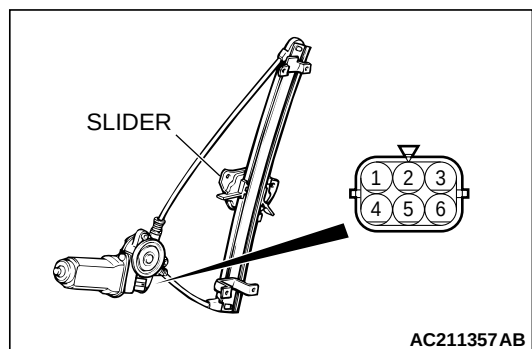
- (1) Remove the power window sub-switch (rear: RH). Refer to GROUP 42, Door-Door Trim and Waterproof Film P.42-37.
- (2) Check continuity when the power window sub-switch (rear: RH) is operated to "UP" or "DOWN" position.

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

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

YES : Go to Step 25.

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 25. Check the power window motor (rear: RH).

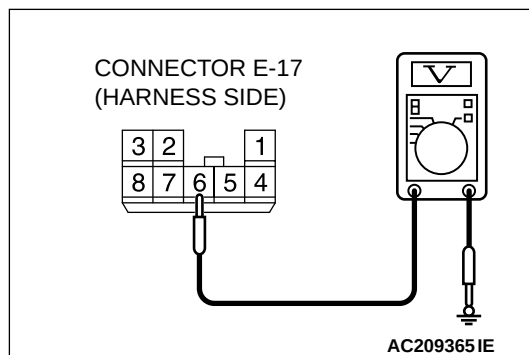
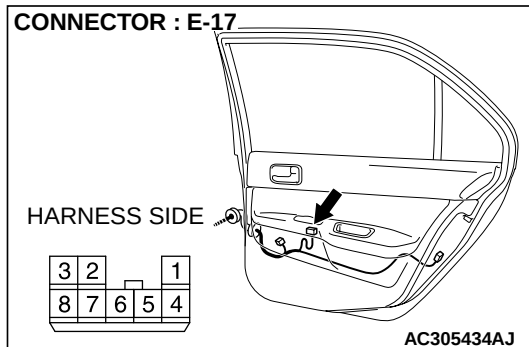
- (1) Remove the rear power regulator assembly (RH). Refer to GROUP 42, Door-Door Glass and Regulator P.42-43.
- (2) Connect a battery to the motor terminal, and check that the motor runs freely.

TESTER CONNECTION	SLIDER POSITION
- Connect terminal 1 to the negative battery terminal - Connect terminal 4 to the positive battery terminal	UP
- Connect terminal 4 to the negative battery terminal - Connect terminal 1 to the positive battery terminal	DOWN

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

YES : Go to Step 26.

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



STEP 26. Check the battery power supply circuit to the power window sub-switch (rear: RH). Test 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.

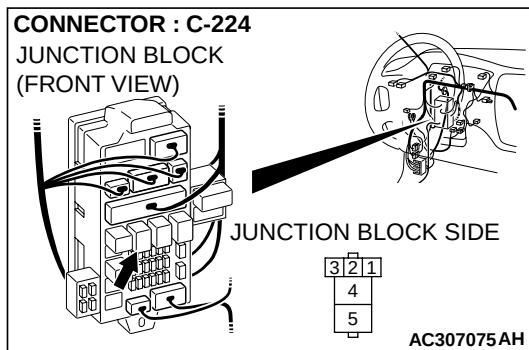
- (3) Measure the voltage between terminal 6 and ground.

- 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 29.

NO : Go to Step 27.



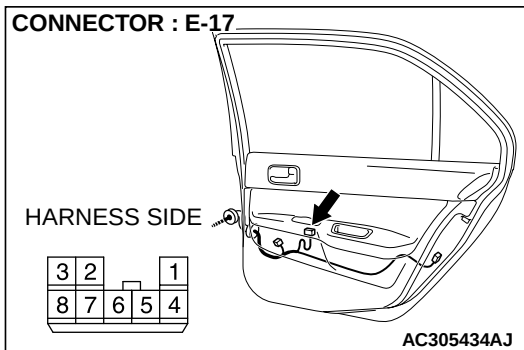
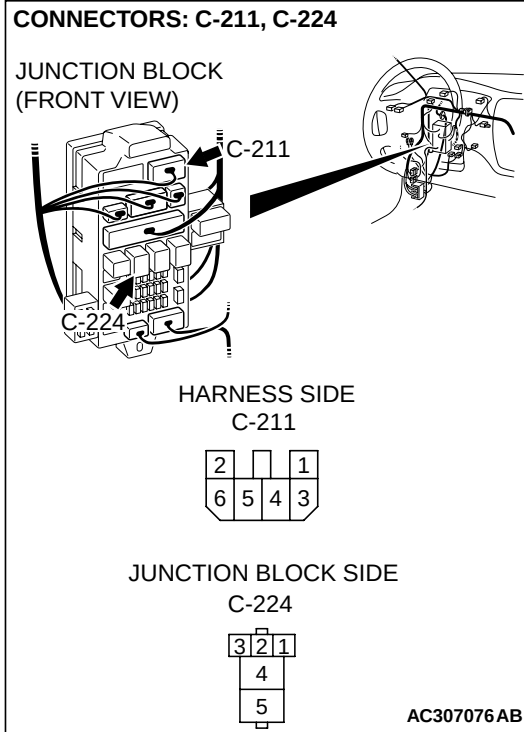
STEP 27. Check power window relay connector C-224 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

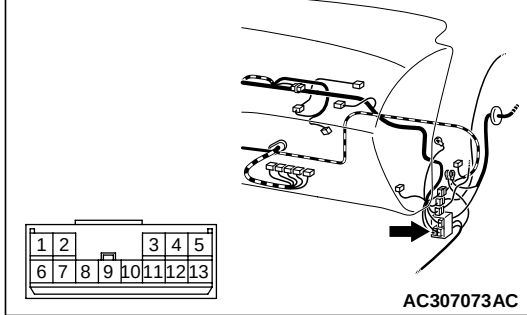
YES : Go to Step 28.

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 28. 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-113



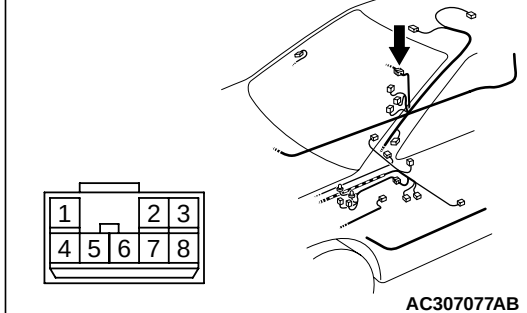
NOTE: Also check junction block connector C-211 and intermediate connectors C-113 and D-04 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211, intermediate connector C-113 or D-04 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector C-224 (terminal 4) and power window sub-switch (rear: RH) connector E-17 (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

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

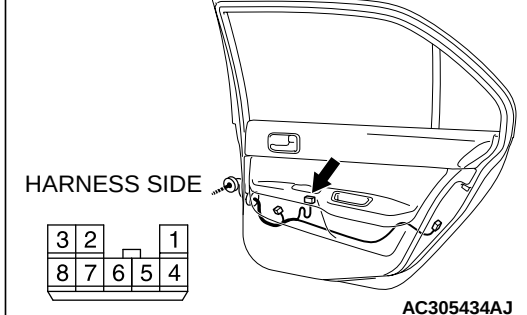
CONNECTOR : D-04



STEP 29. Check the ground circuit to the power window sub-switch (rear: RH). Test 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



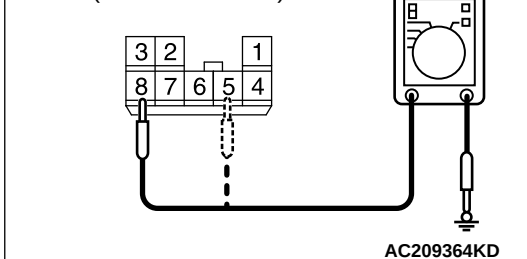
(2) Measure the resistance value between terminal 5 and ground, and also between terminal 8 and ground.

- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

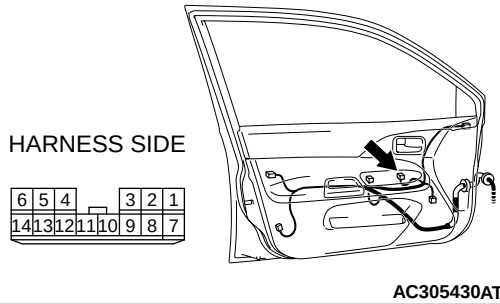
YES : Go to Step 31.

NO : Go to Step 30.

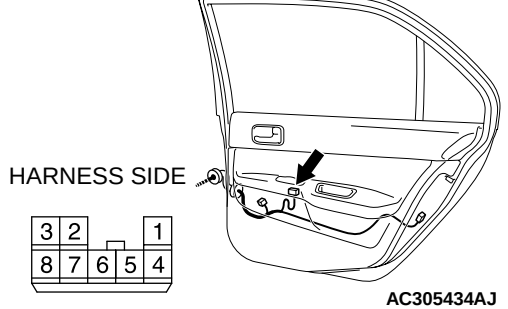
CONNECTOR E-17
(HARNESS SIDE)

STEP 30. Check the wiring harness between power window main switch connector E-05 (terminal 4 and 6) and power window sub-switch (rear: RH) connector E-17 (terminal 8 and 5).

CONNECTOR : E-05

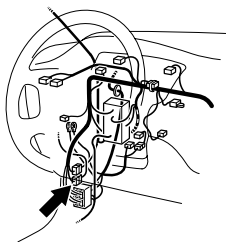


CONNECTOR : E-17



CONNECTOR : C-17

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



AC307069AD

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](#).

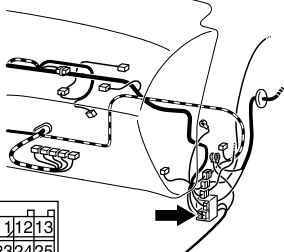
Q: Is the wiring harness between power window main switch connector E-05 (terminal 4 and 6) and rear power sub-switch (RH) connector E-17 (terminal 8 and 5) in good condition?

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

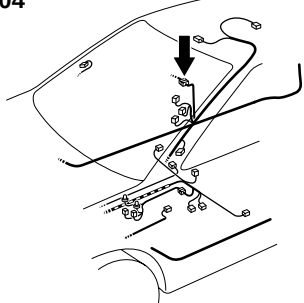
1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	



AC307073AH

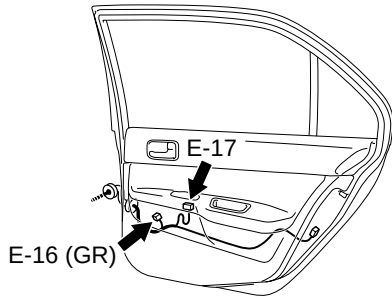
CONNECTOR : D-04

1	2	3
4	5	6
7	8	

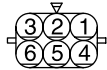


AC307077AB

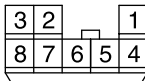
CONNECTORS : E-16, E-17



HARNESS SIDE
E-16



HARNESS SIDE
E-17



AC305435AC

STEP 31. Check the wiring harness between power window sub-switch (rear: RH) connector E-17 (terminal 6 and 7) and power window motor (rear: RH) connector E-16 (terminal 2 and 1).

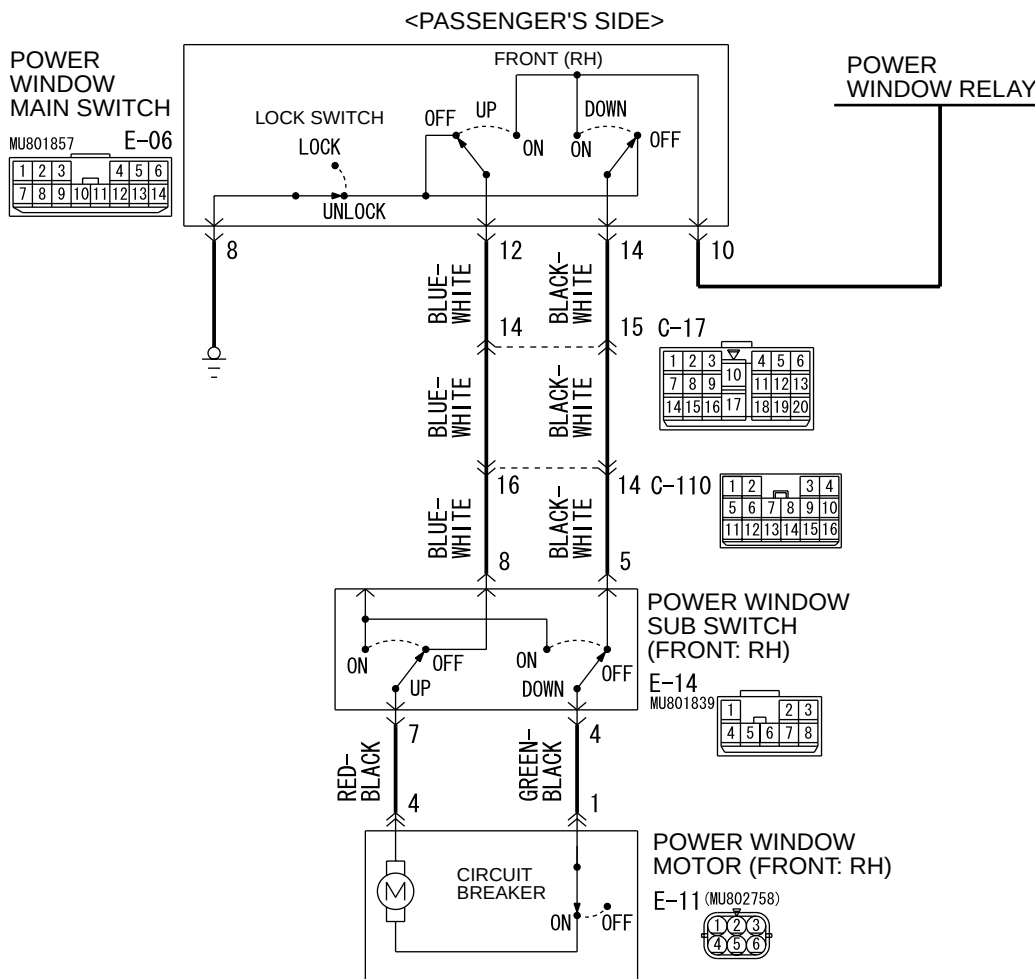
Q: Is the wiring harness between rear power window main switch (RH) connector E-17 (terminal 6 and 7) and power window motor (rear: RH) connector E-16 (terminal 2 and 1) in good condition?

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: RH) is operated, the rear power window (RH) should open or close normally.

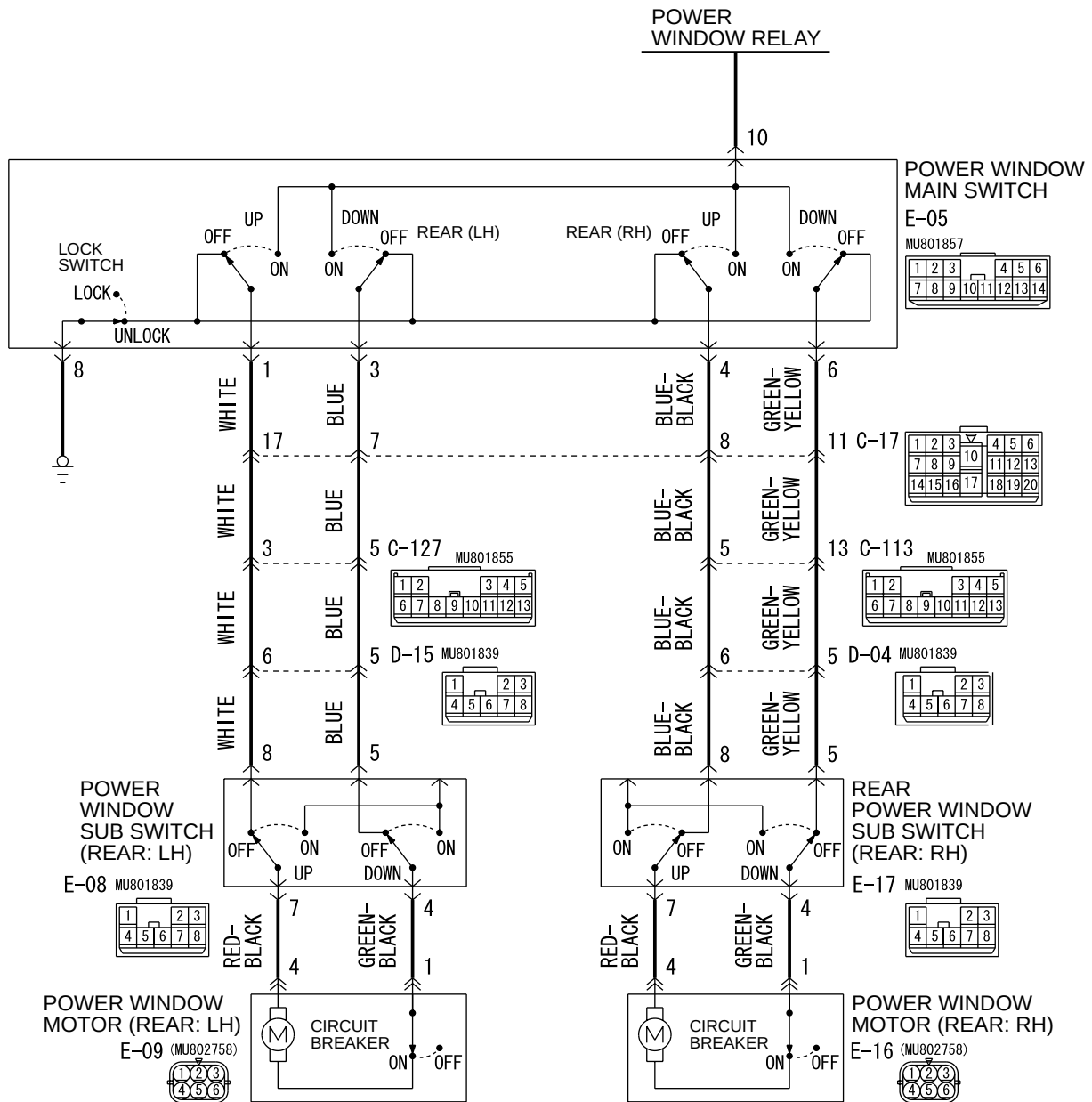
INSPECTION PROCEDURE D-5: Power Windows: Front or rear passenger's power windows do not work at all by operating the power window main switch.

Power Window (front: RH) Circuit



W4J54M112A

Power Window (Rear) Circuit



W4J54M113A

CIRCUIT OPERATION

When you operate each power window sub-switch for front or rear passengers (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 or rear passenger's power window can work normally by means of power window main switch.

NO : Refer to Symptom Chart [P.54B-23](#) before resolving this trouble.

KEYLESS ENTRY SYSTEM

GENERAL DESCRIPTION CONCERNING THE KEYLESS ENTRY SYSTEM

M1549022000169

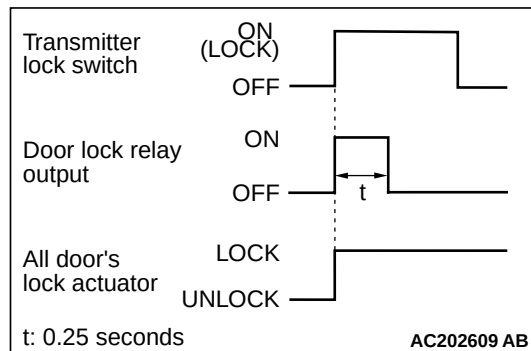
The following ECUs affect the functions and control of the keyless entry system.

Function		Control ECU
All door lock function	Operating the transmitter lock switch	ETACS-ECU
Driver's door unlock function	Operating the transmitter unlock switch press once	ETACS-ECU
All door unlock function	Operating the transmitter unlock switch press twice	ETACS-ECU
Keyless entry hazard answerback and horn answerback function		ETACS-ECU

ALL DOOR LOCK FUNCTION

Operating the transmitter lock switch

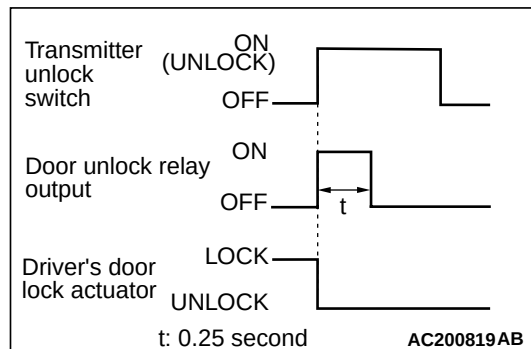
When the transmitter lock switch is pressed, the ETACS-ECU energizes its door lock relay to operate all the door lock actuators for 0.25 second thus causing all doors to be locked.



DRIVER'S DOOR UNLOCK FUNCTION

Operating the transmitter unlock switch press once

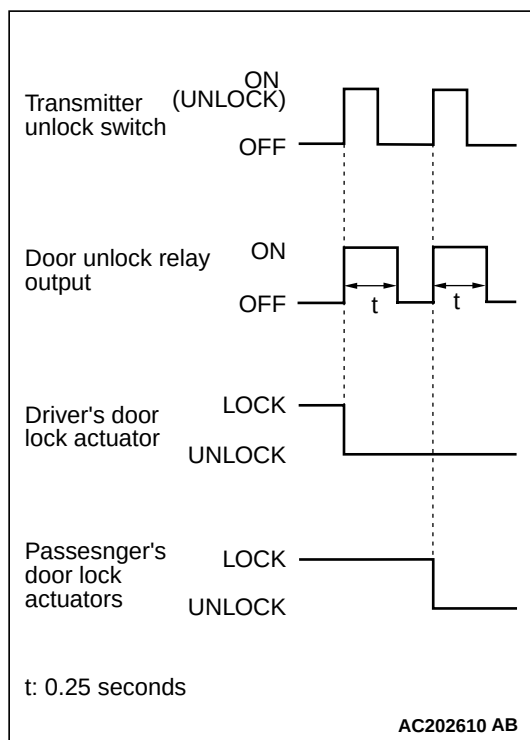
When the transmitter unlock switch is pressed once, the ETACS-ECU energizes its door unlock relay to operate the door lock actuator of the driver's door for 0.25 seconds thus causing only the driver's door to be unlocked.



ALL DOOR UNLOCK FUNCTION

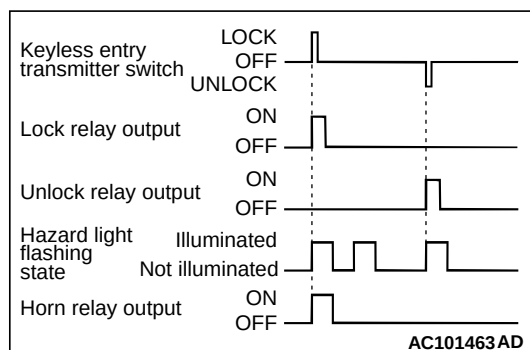
Operating the transmitter unlock switch press twice

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

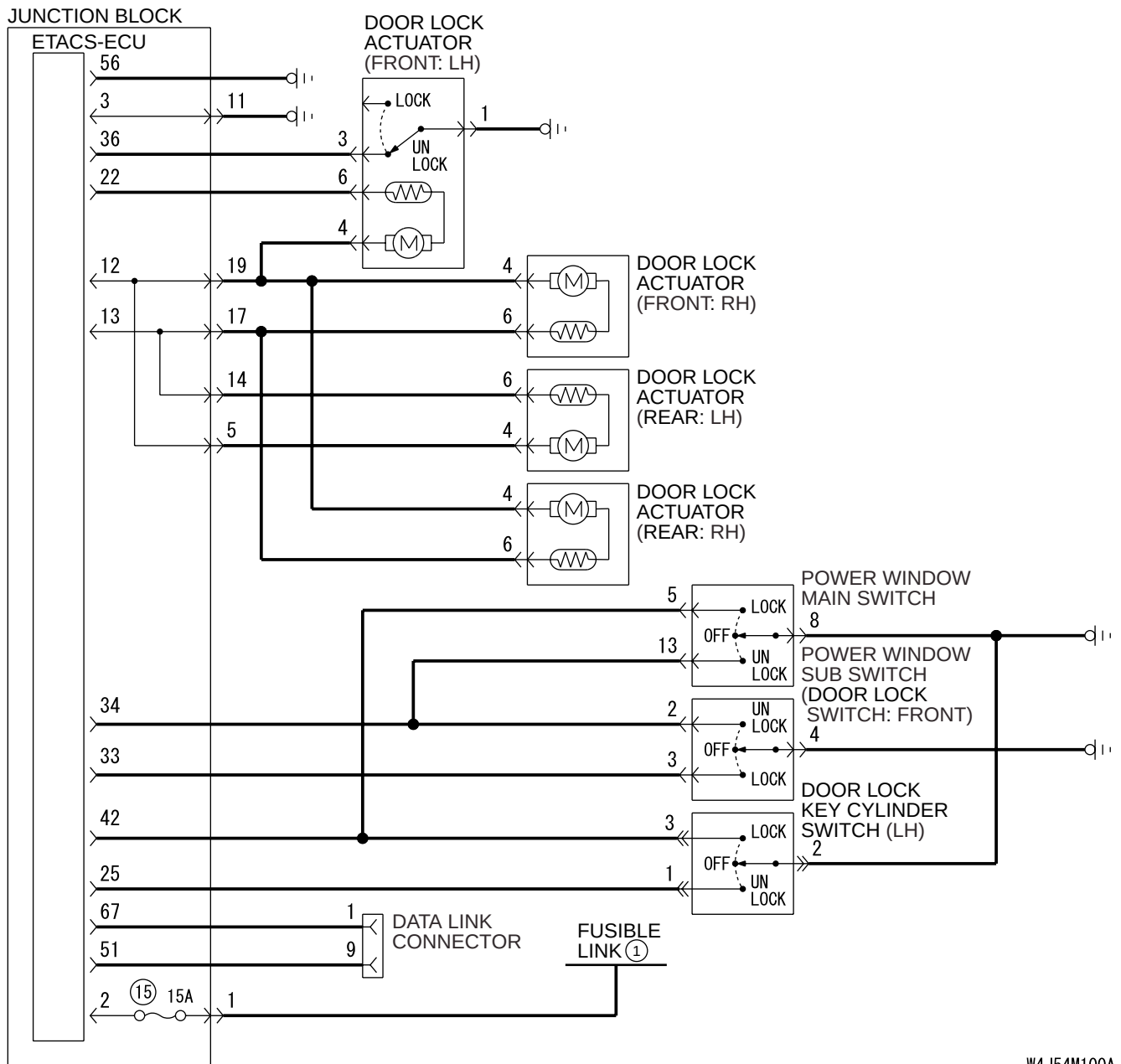
**KEYLESS ENTRY HAZARD ANSWERBACK AND HORN ANSWERBACK FUNCTION**

The hazard answerback and horn answerback function which facilitates 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 light flashes twice and horn sounds once. When the unlock signal is input, hazard light flashes once.

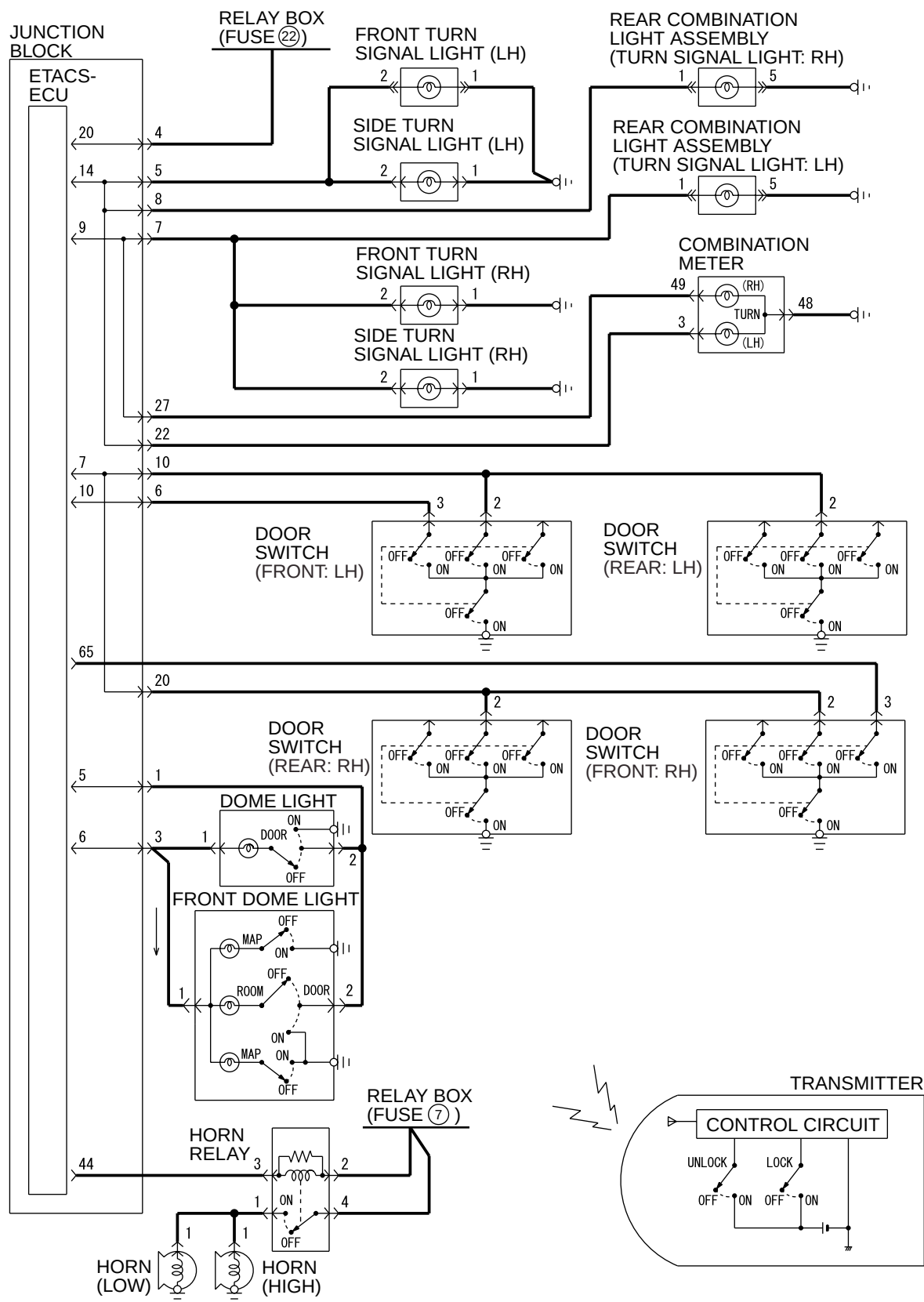
NOTE: Hazard answerback function can be disabled by the configuration function (Refer to [P.54B-574.](#))



General circuit diagram for the keyless entry system



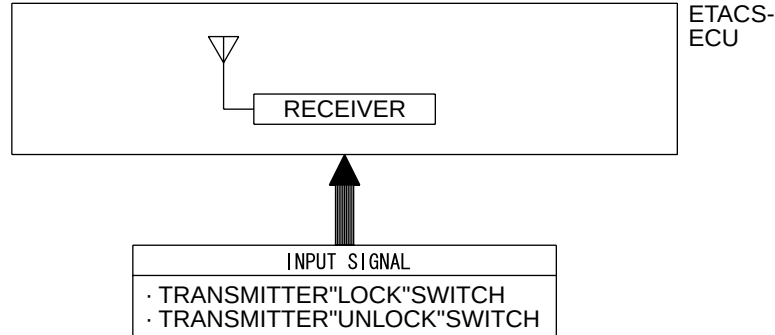
W4J54M100A



W4J54M114A

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

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



W4P54M44AA

CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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-91](#)."

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

Check input signals from the transmitter.

⚠ CAUTION

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

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Operate scan tool MB991958 as follows:

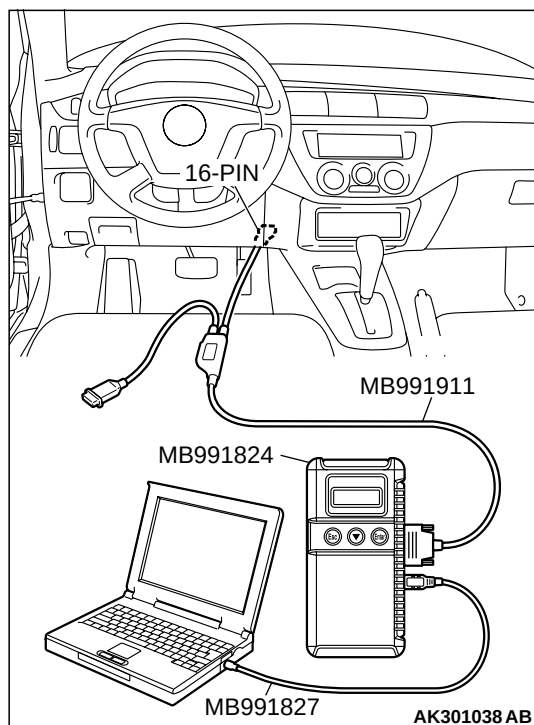
1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

- (3) Push the transmitter "LOCK" or "UNLOCK" switch.
- (4) Check that scan tool MB991958 sounds

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

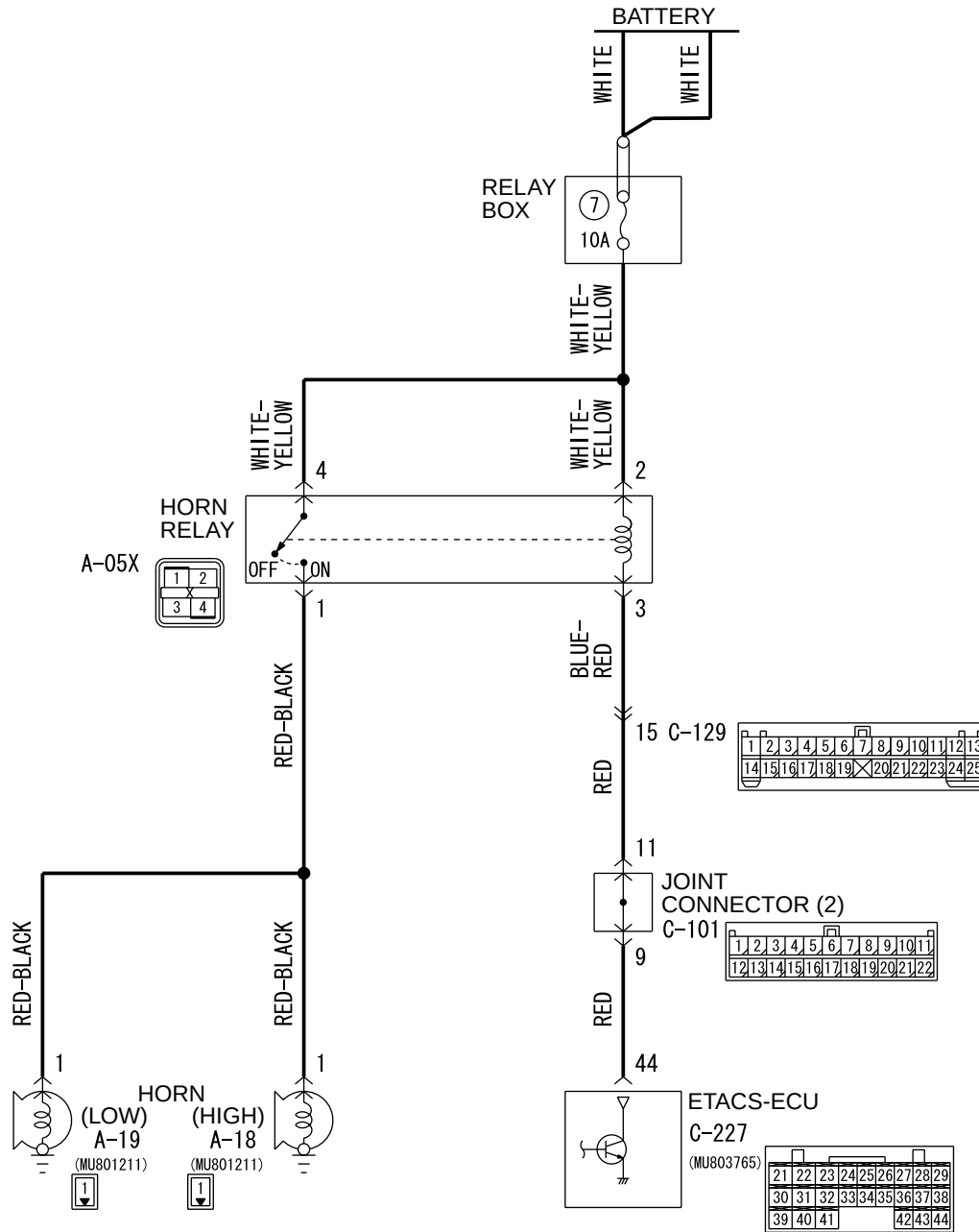
YES : Replace the ETACS-ECU. All the doors can be locked or unlocked by means of the transmitter.

NO : Refer to Inspection Procedure O-9 "ETACS-ECU does not receive a signal from the lock or unlock switch [P.54B-558](#)."

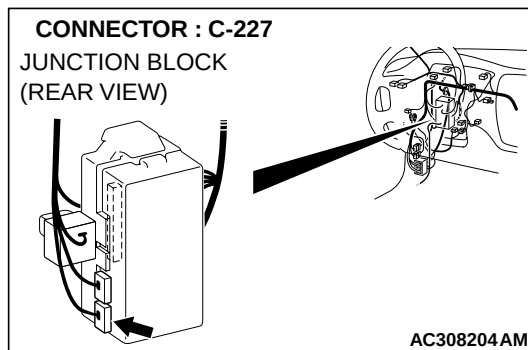
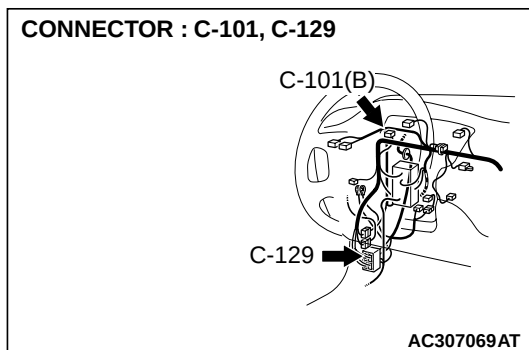
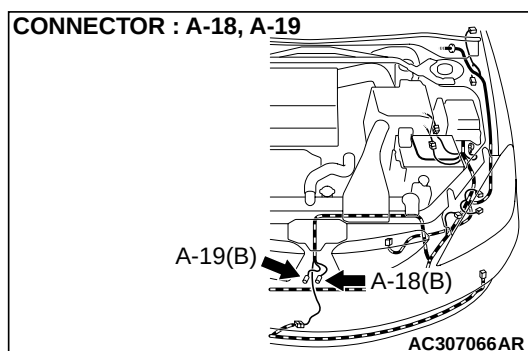
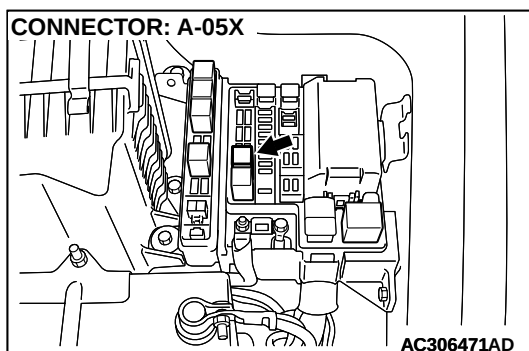


INSPECTION PROCEDURE E-2: Keyless Entry System: The front dome light, the turn-signal lights and the horn do not operate through the answerback function.

Horn Drive Circuit



W4J54M115A



CIRCUIT OPERATION

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

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set

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-173](#)."

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 and luggage compartment light do not illuminate or go out normally [P.54B-419](#)."

STEP 5. Verify the hazard warning light.

Q: Does the hazard warning light work normally?

YES : Replace the ETACS-ECU. Verify that the answerback functions work normally.

NO : Refer to Inspection Procedure L-2 "Hazard warning lights do not flash when the hazard warning light switch is turned on [P.54B-384](#)."

STEP 6. Verify the horn operation.

Q: Does the horn work normally?

YES : Go to Step 21.

NO : Go to Step 7.

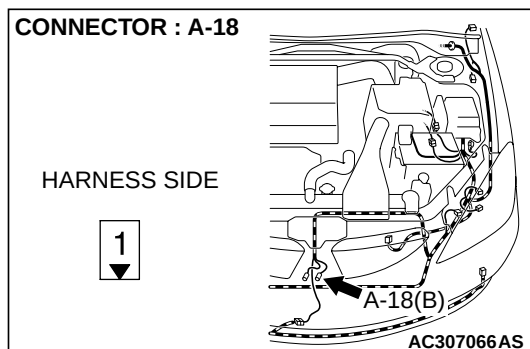
STEP 7. Verify which horn is defective.

Q: Which horn does not sound?

horn (HIGH) : Go to Step 8.

horn (LOW) : Go to Step 12.

horn (HIGH or LOW) : Go to Step 17.

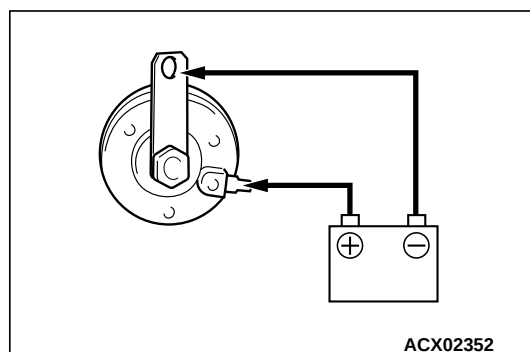


STEP 8. Check horn (HIGH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn (HIGH) connector A-18 in good condition?

YES : Go to Step 9.

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



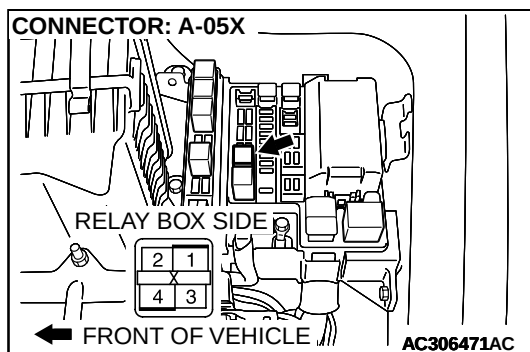
STEP 9. Check the horn.

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

Q: Is the horn normal?

YES : Go to Step 10.

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

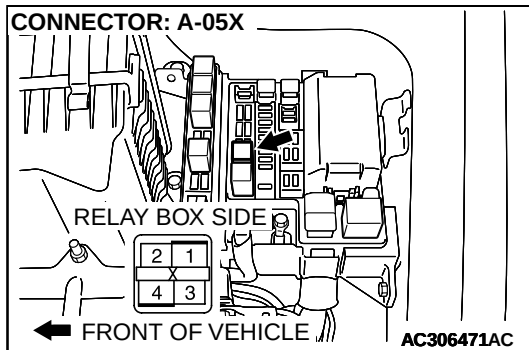


STEP 10. Check horn relay connector A-05X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-05X 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 sounds normally.

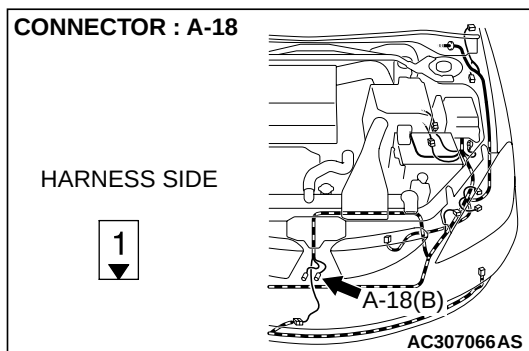


STEP 11. Check the wiring harness between horn relay connector A-05X (terminal 1) and horn (HIGH) connector A-18 (terminal 1).

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

YES : Go to Step 16.

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

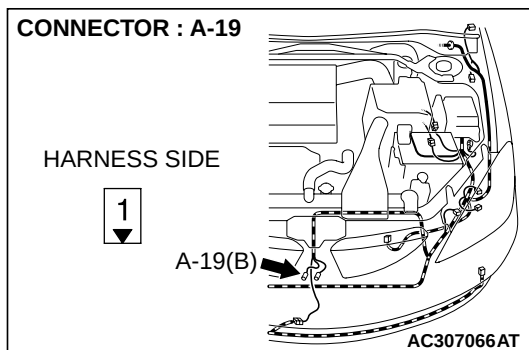


STEP 12. Check horn (LOW) connector A-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 13.

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



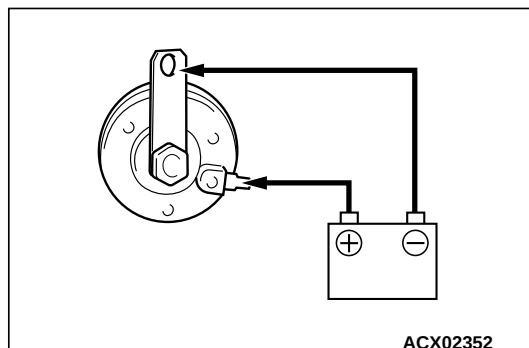
STEP 13. Check the horn.

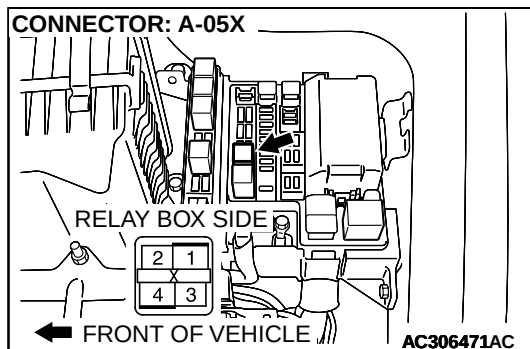
Connect the battery as shown, and Verify that the horn sounds.

Q: Is the horn normal?

YES : Go to Step 14.

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



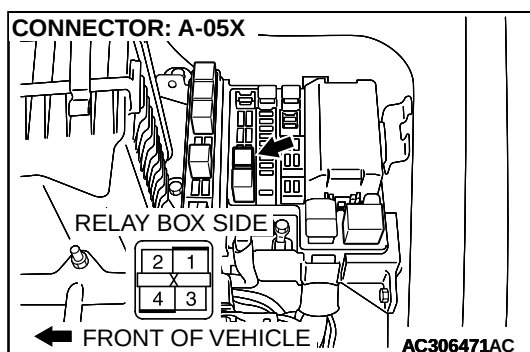


STEP 14. Check horn relay connector A-05X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-05X 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 horn sounds normally.

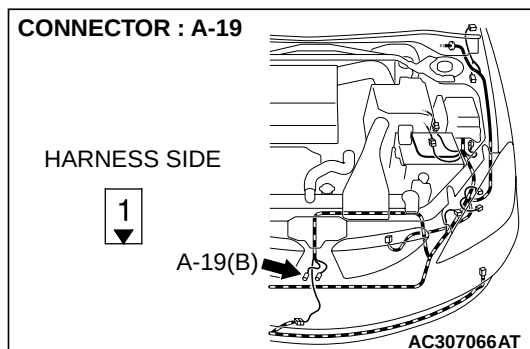


STEP 15. Check the wiring harness between horn relay connector A-05X (terminal 1) and horn (LOW) connector A-19 (terminal 1).

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 : Go to Step 16.

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



STEP 16. Check the fit of the horn.

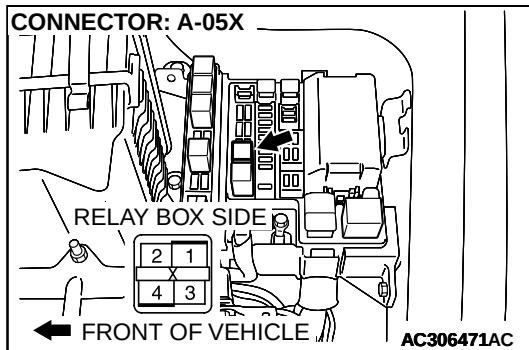
When the theft-alarm system is triggered, check the fit of the horn (HIGH or LOW) which does not sound.

NOTE: The horn is grounded to the vehicle body via its mounting bolt.

Q: Is the horn installed correctly.

YES : No action is necessary and testing is complete.

NO : Install the horn correctly. Verify that the horn sounds normally.

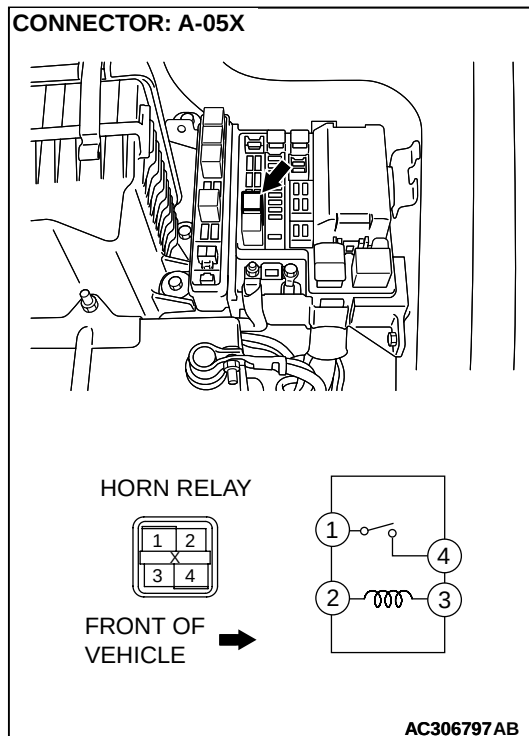


STEP 17. Check horn relay connector A-05X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are horn relay connector A-05X in good condition?

YES : Go to Step 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.



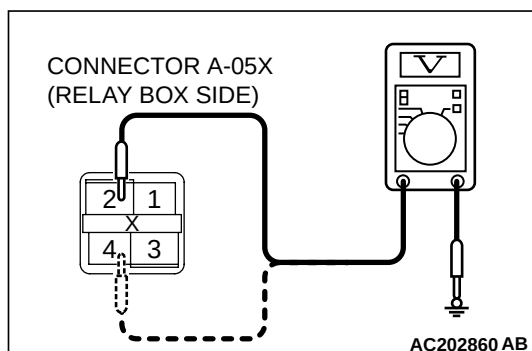
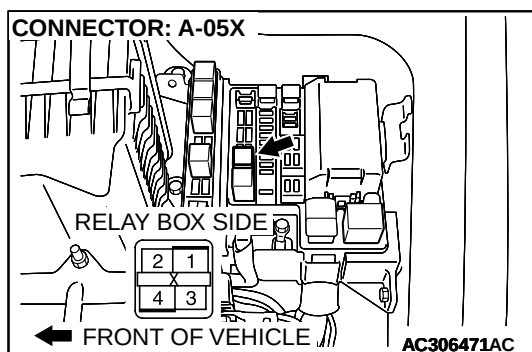
STEP 18. Check the horn relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 4	Open circuit
- 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 19.

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

**STEP 19. Check the battery power supply circuit to the horn relay. Test 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.

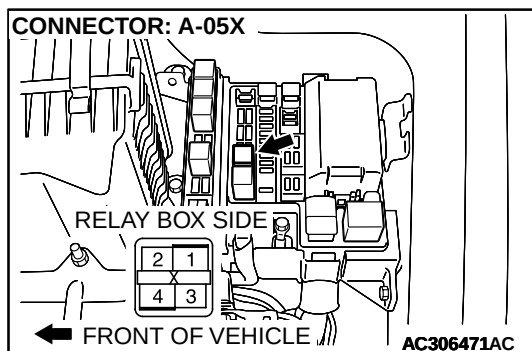
- (2) Measure the voltage between terminal numbers 2, 4 and ground.

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

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

YES : No action is necessary and testing is complete.

NO : Go to Step 20.

**STEP 20. 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.

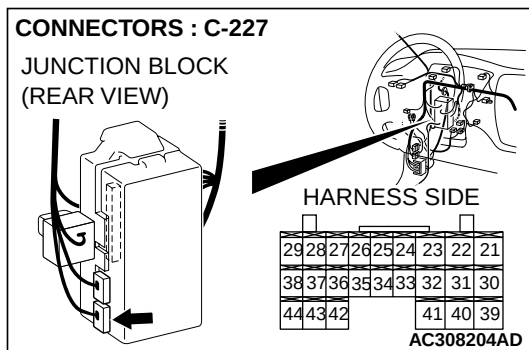
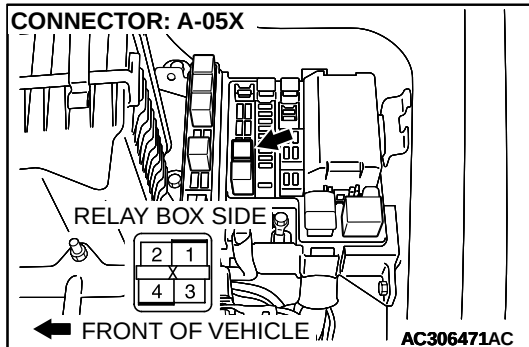
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the horn sounds normally.

STEP 21. Check rear horn relay connector A-05X and ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

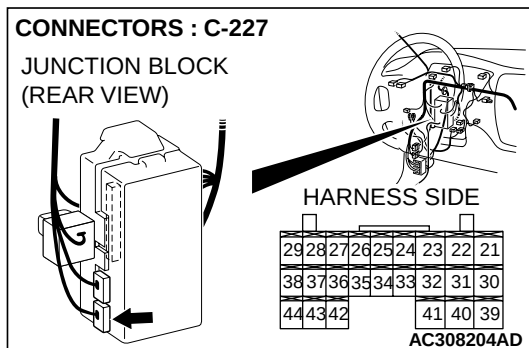
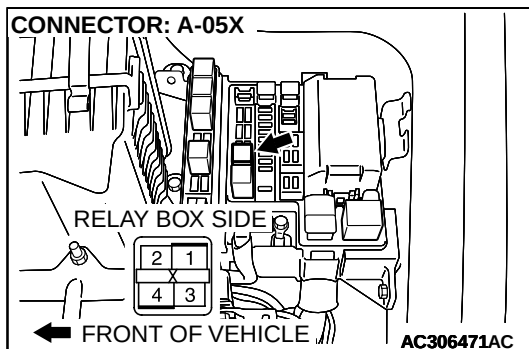
Q: Are horn relay connector A-05X and ETACS-ECU connector C-227 in good condition?

YES : Go to Step 22.

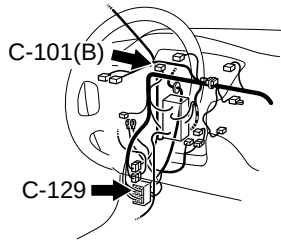
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection
[P.00E-2](#). Verify that the horn sounds normally.



STEP 22. Check the wiring harness between horn relay connector A-05X (terminal 3) and ETACS-ECU connector C-227 (terminal 44).



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	20	21	22	23	24	25		

AC307070 AE

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](#).

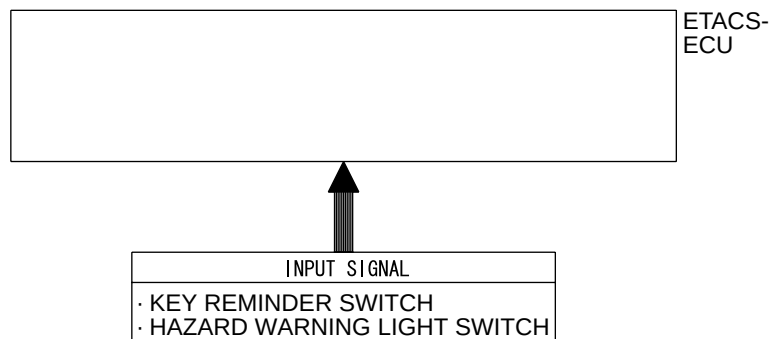
Q: Is the wiring harness between horn relay connector A-05X (terminal 3) and ETACS-ECU connector C-227 (terminal 44) in good condition?

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



W4P54M46AA

CIRCUIT OPERATION

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

- Key reminder switch
- Hazard warning light switch

TECHNICAL DESCRIPTION (COMMENT)

If the encrypted code register mode 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

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

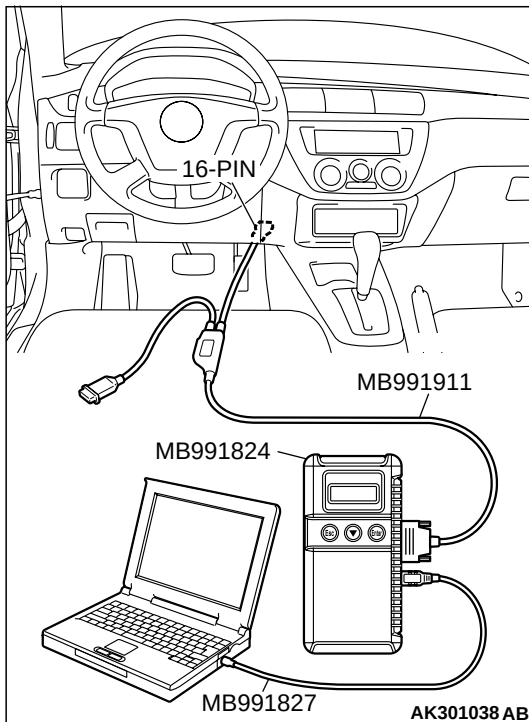
(2) Operate scan tool MB991958 as follows:

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

(3) Check scan tool MB991958 sounds or not.

(4) If the switches (see table below), which are applicable for the input signal check, are operated.

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 MB991958 sound in each case?

Buzzer of scan tool MB991958 sounds normally :

Replace the ETACS-ECU. Verify that the encrypted code can be registered in the transmitter.

Scan tool MB991958 does not sound when the ignition key is removed and reinserted : Refer to Inspection Procedure O-1 "ETACS-ECU does not receive a signal from the key reminder switch P.54B-507."

Scan tool 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-512."

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.

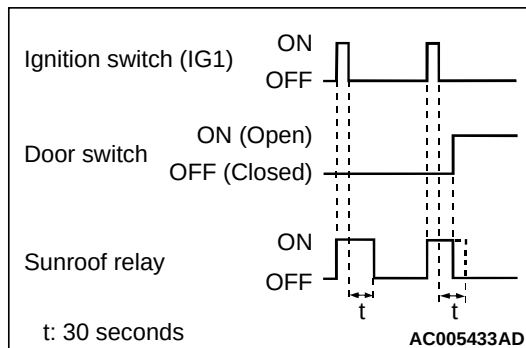
SUNROOF

GENERAL DESCRIPTION CONCERNING THE SUNROOF

M1549021200148

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

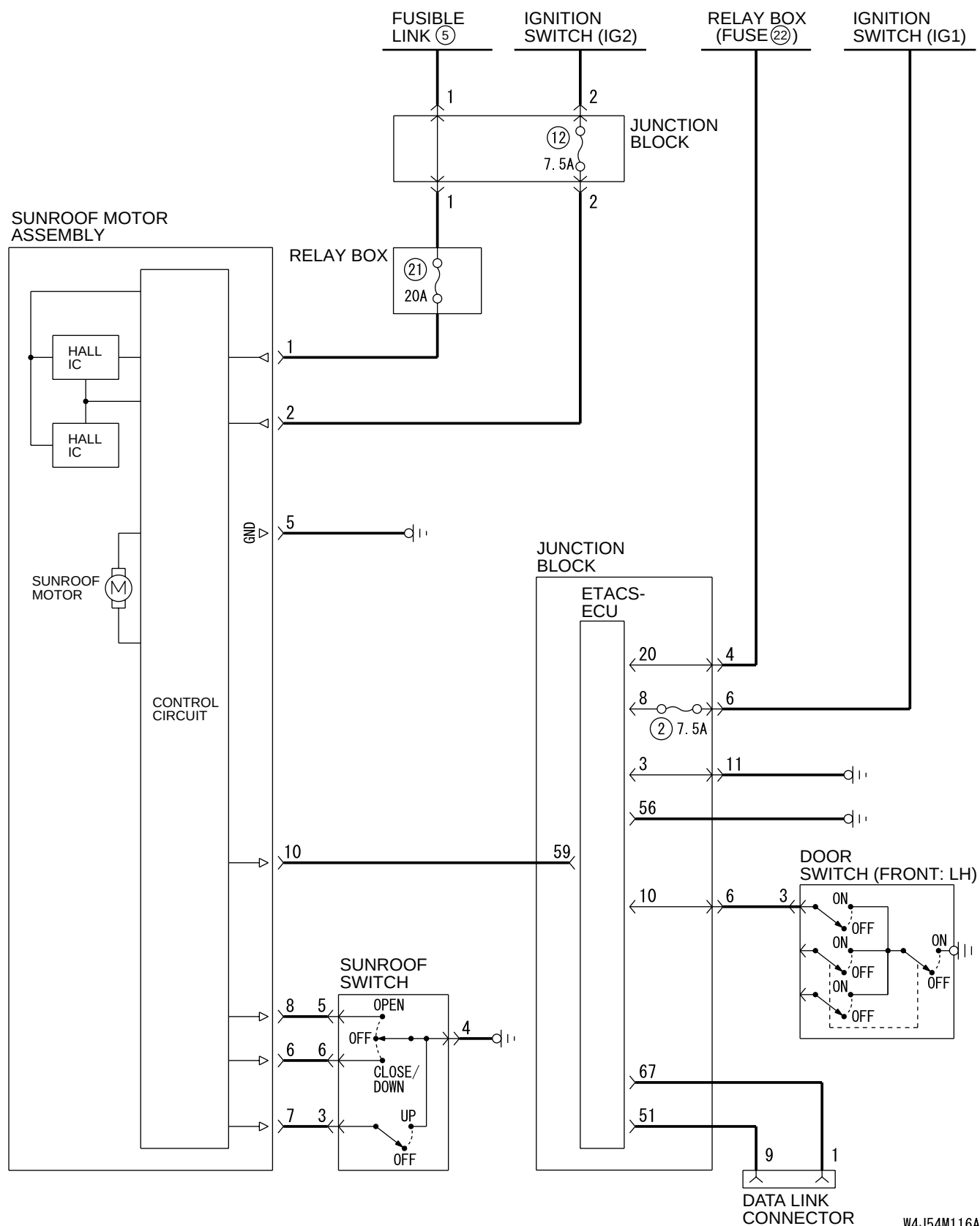
FUNCTION	CONTROL ECU
Sunroof timer function	ETACS-ECU, sunroof motor assembly



Sunroof timer function

After the ignition switch is turned OFF, the system continues to turn ON the sunroof relay for about 30 seconds and to enable the opening and closing of the sunroof by the sunroof switch. When the driver's or front passenger's door is opened while the timer is in operation, the sunroof relay will be turned OFF and the sunroof timer function will be finished. As for the sunroof functions, refer to GROUP 42 – Sunroof [P.42-69](#).

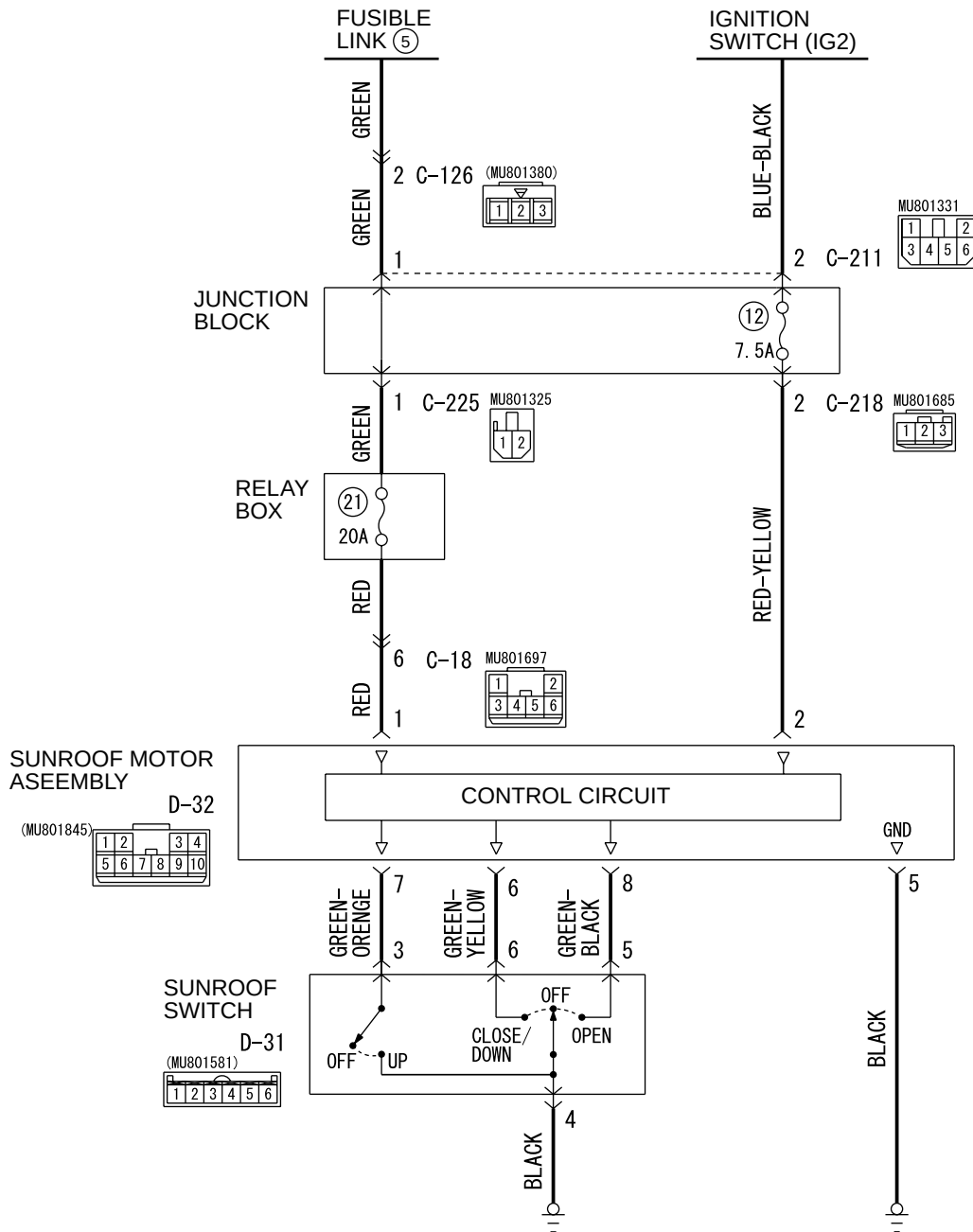
General circuit diagram regarding the sunroof



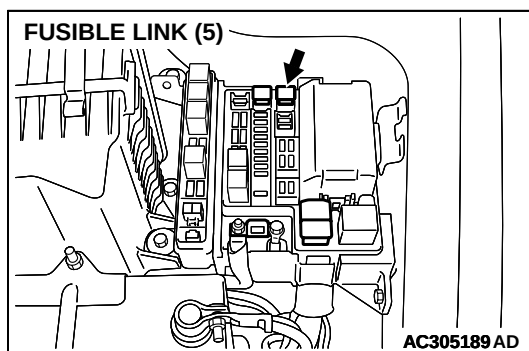
W4J54M116A

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

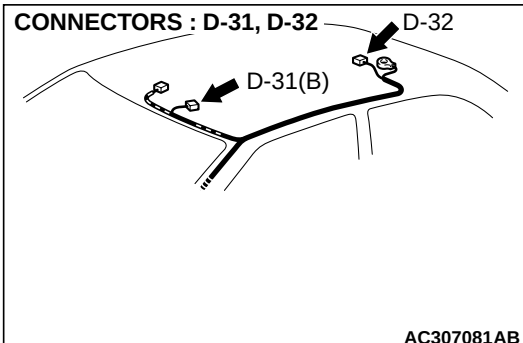
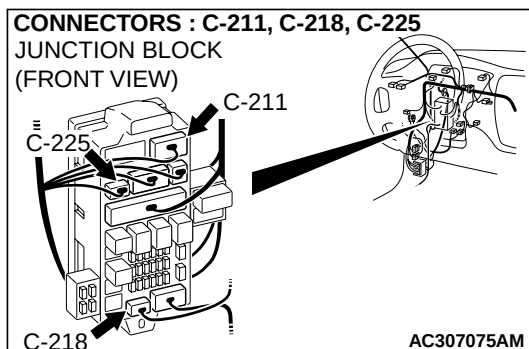
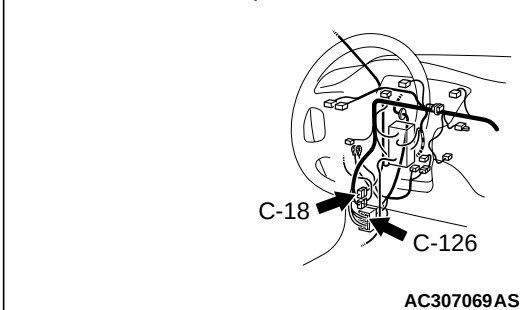
Sunroof Motor Assembly Power Supply Circuit



W4J54M117A



CONNECTORS : C-18, C-126

**CIRCUIT OPERATION**

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tool:**

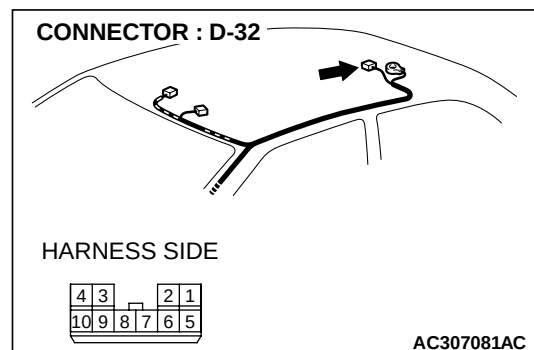
- MB991223: Harness Set

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?

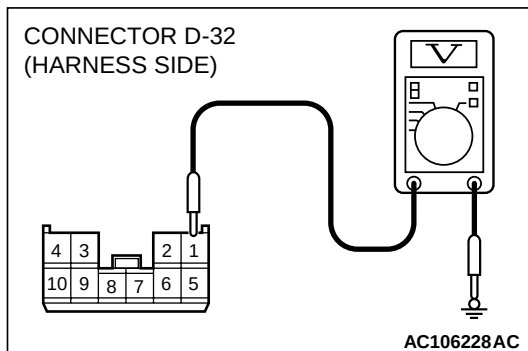
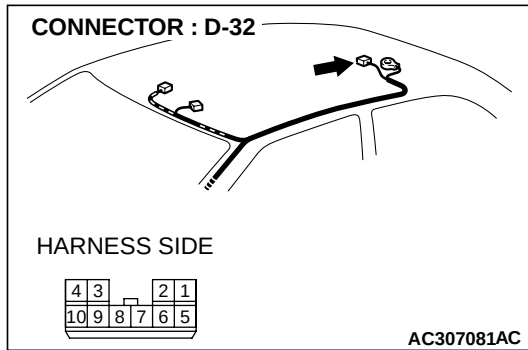
YES : Go to Step 2.

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. Test 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.

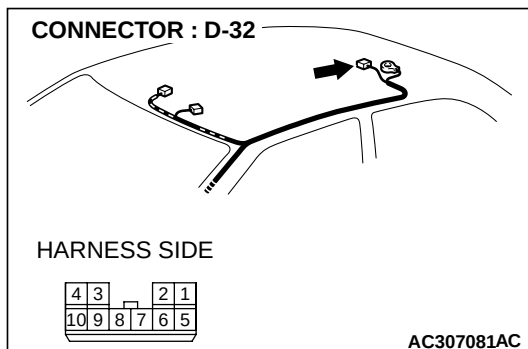
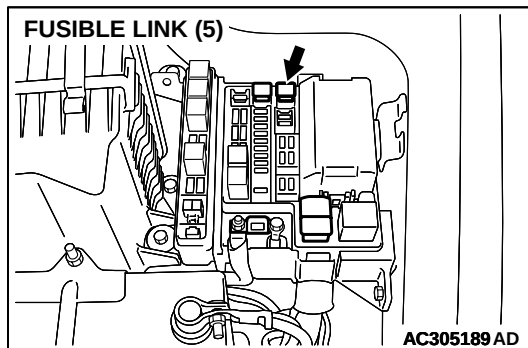
- The voltage should equal approximately 12 volts (battery positive voltage).

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

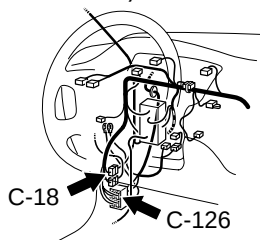
YES : Go to Step 4.

NO : Go to Step 3.

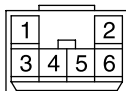
STEP 3. Check the harness wires between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5).



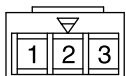
CONNECTORS : C-18, C-126



C-18



C-126



AC307070 AD

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](#).

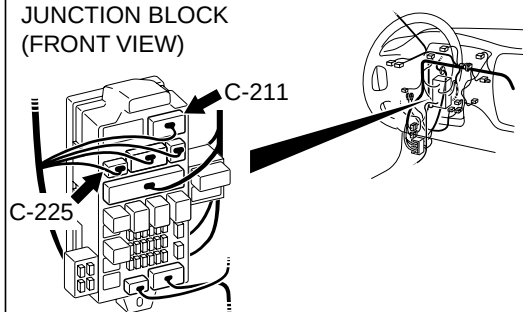
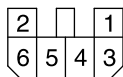
Q: Are the harness wires between sunroof motor assembly connector D-32 (terminal 1) and fusible link (5) in good condition?

YES : No action is necessary and testing is complete.

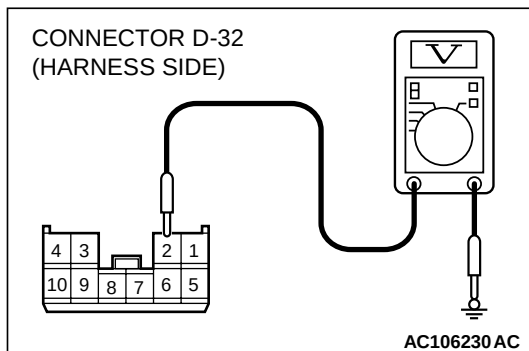
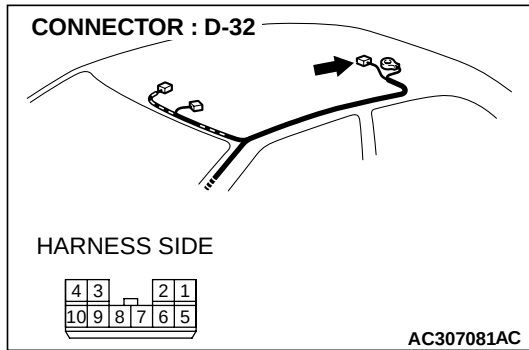
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The sunroof should now work normally.

CONNECTORS : C-211, C-225

JUNCTION BLOCK
(FRONT VIEW)

HARNESS SIDE
C-211HARNESS SIDE
C-225

AC307076 AE



STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Test 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.

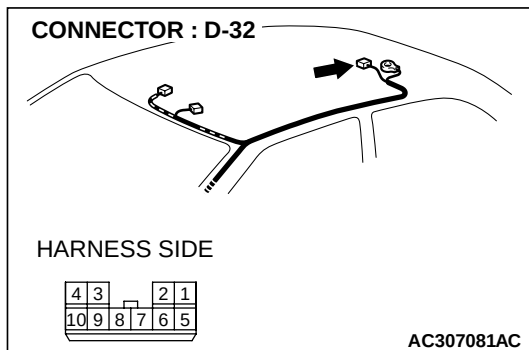
(3) Measure the voltage between terminal 2 and ground.

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

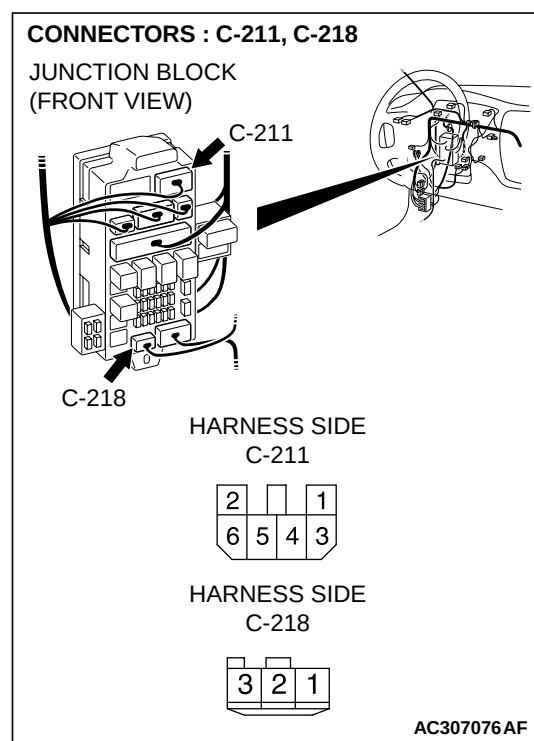
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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).

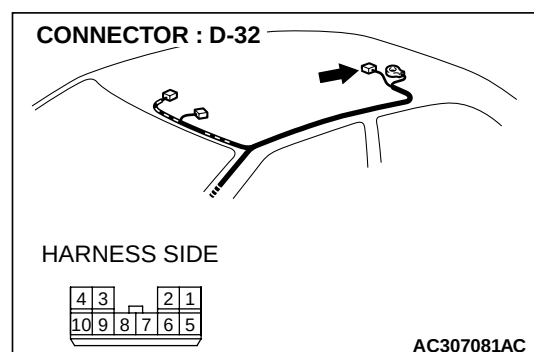


NOTE: Also check junction block connectors C-211 and C-218 for loose, corroded, or damaged terminals, or terminals pushed back in the connector, check the wires. If junction block connector C-211 or C-218 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector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

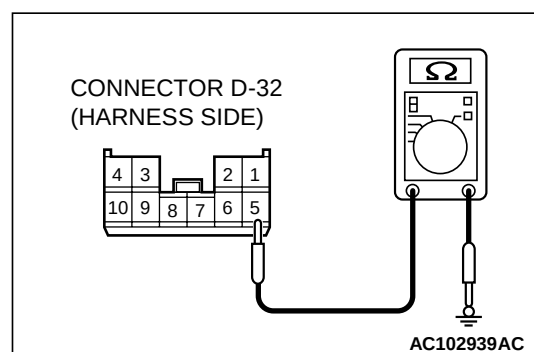
YES : No action is necessary and testing is complete.

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. Test 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.



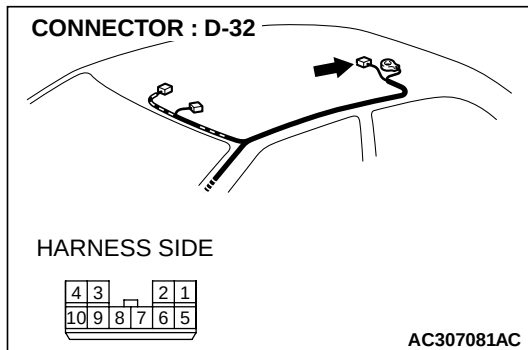
(2) Measure the resistance between terminal 5 and ground.

- 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.

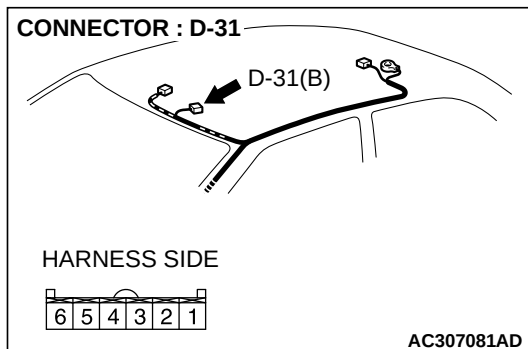


STEP 7. Check the harness wire between sunroof motor assembly connector D-32 (terminal 5) and ground.

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.

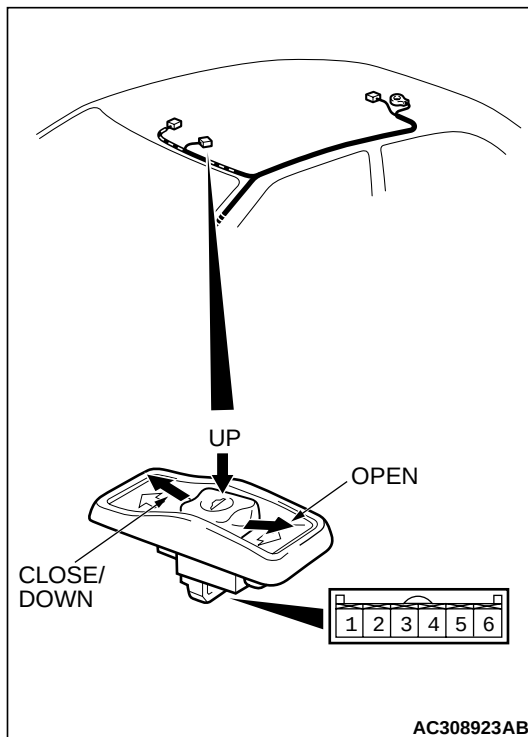


STEP 8. Check the sunroof switch connector D-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.



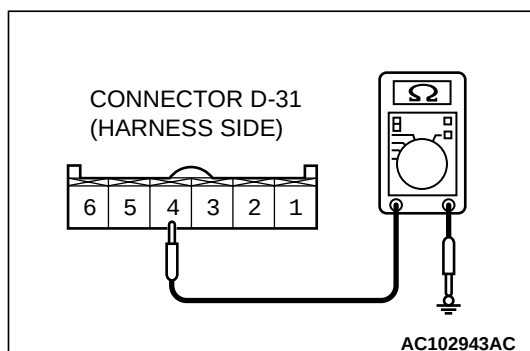
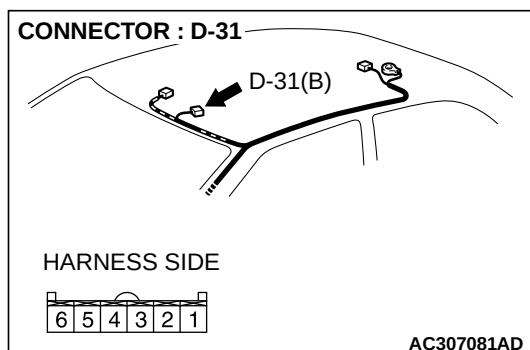
STEP 9. Check the sunroof switch.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Off	3 – 4, 4 – 5, 4 – 6	Open circuit
Tilt up	3 – 4	Less than 2 ohms
Open	4 – 5	Less than 2 ohms
Slide closed, Tilt 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. The sunroof should now work normally.



**STEP 10. Check the ground circuit to the sunroof switch.
Test at sunroof switch connector D-31.**

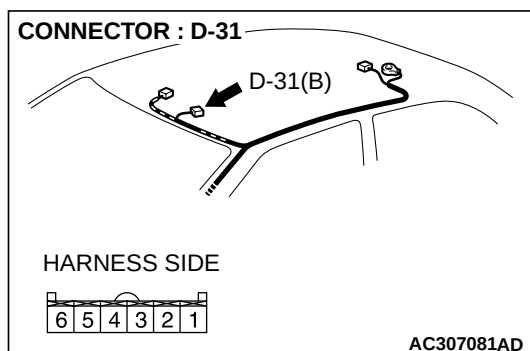
(1) Disconnect sunroof switch connector D-31 and measure the resistance available at the wiring component side of the connector.

(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. The sunroof should now work normally.

NO : Go to Step 11.



STEP 11. Check the harness wire between sunroof switch connector D-31 (terminal 4) and ground.

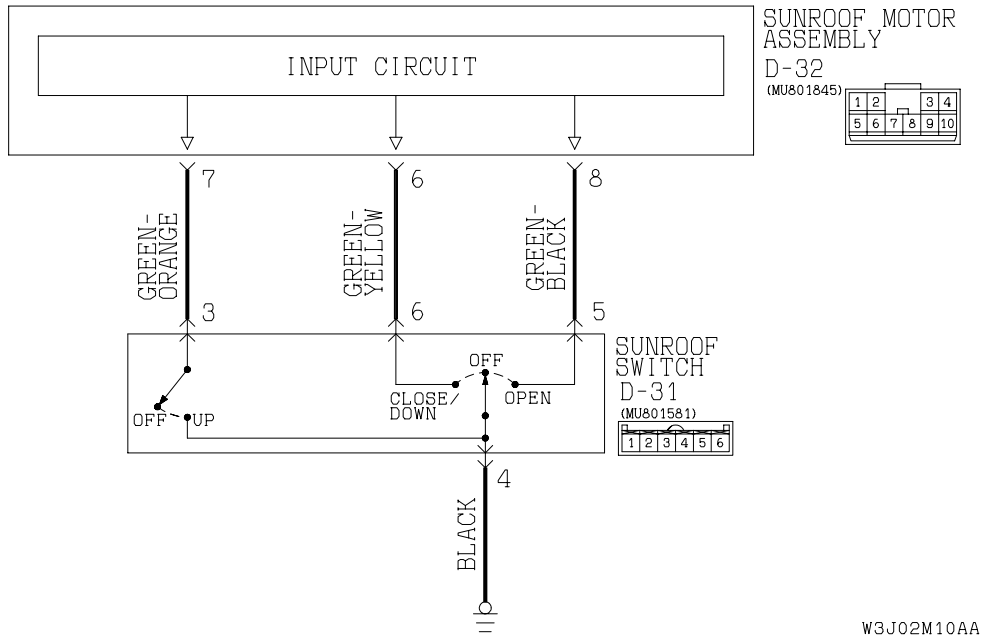
Q: Is the harness wire between sunroof switch connector D-31 (terminal 4) and ground in good condition?

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Operate scan tool MB991958 according to the procedure below to display "PULSE CHECK."

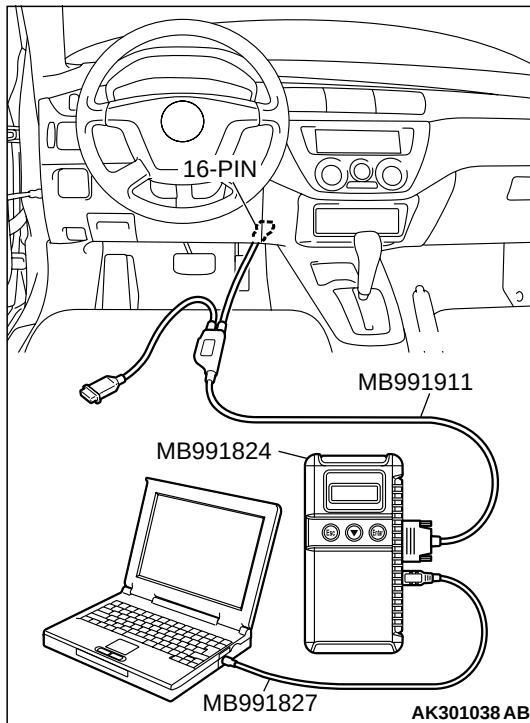
1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."

- (3) When each function of the sunroof switch is operated (turned on), check that scan tool MB991958 sounds.

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

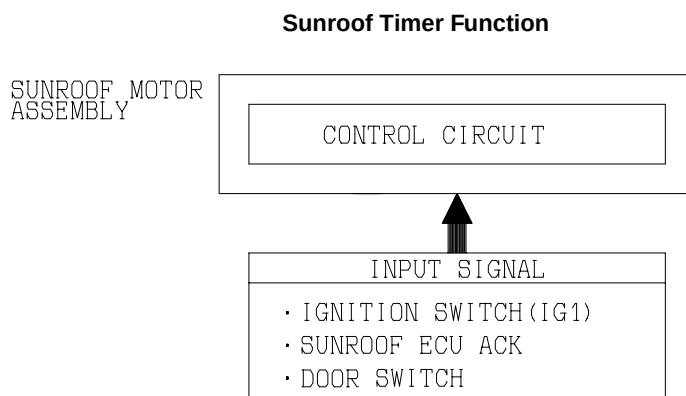
YES : Replace the sunroof motor assembly. Verify that the sunroof works at all positions normally.

NO : Refer to Inspection Procedure N-8 "ETACS-ECU does not receive any signal from the up, open or close/down switch [P.54B-499](#)."



INSPECTION PROCEDURE F-3: Sunroof: Sunroof timer function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."



W3S12M02AA

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III 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 MB991958 to select "ECU COMM CHK" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Sunroof motor assembly (sunroof-ECU)

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

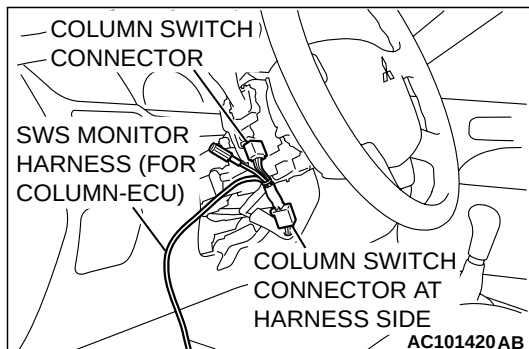
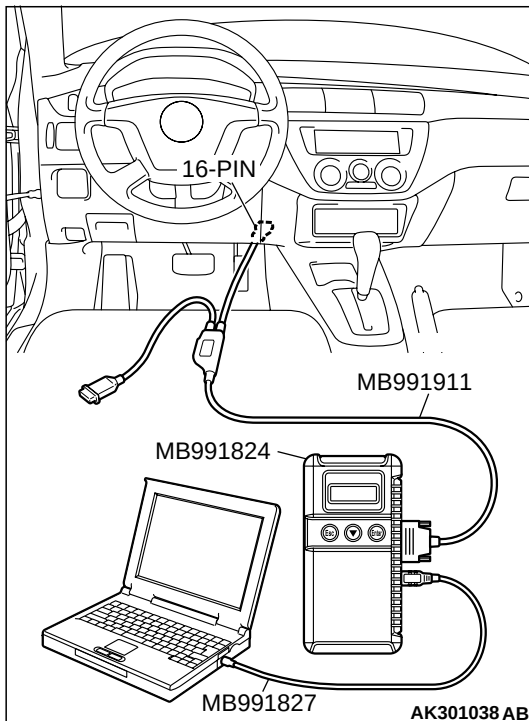
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menus for both the "ETACS ECU" and the "SUNROOF ECU" menus.

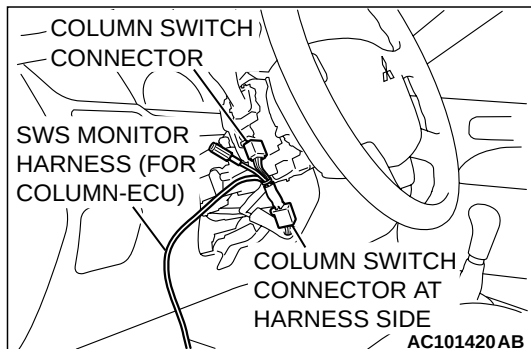
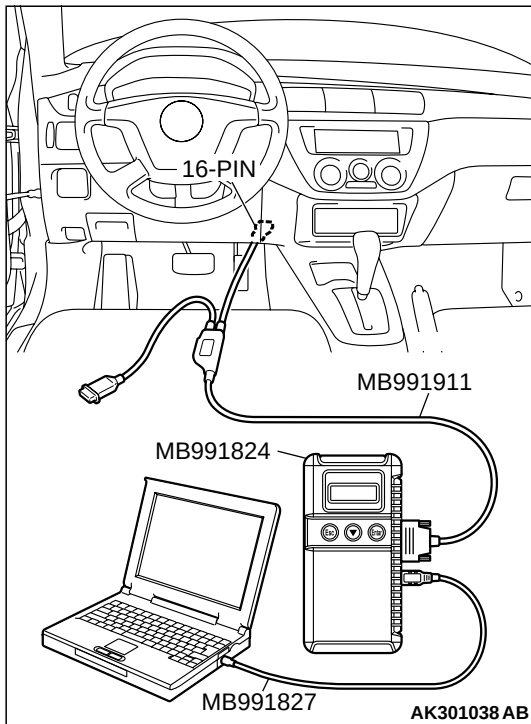
Q: Is "OK" displayed on both the "ETACS ECU" and "SUNROOF ECU" menu?

"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 ETACS-ECU is not possible [P.54B-45](#)."

"NG" is displayed on the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "Communication with sunroof motor (sunroof-ECU) is not possible [P.54B-60](#)."





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

- (1) Turn the ignition switch to the "OFF" position to check the input signals from the following switches.
- (2) Operate scan tool MB991958 according to the procedure below to display "SUNROOF-OPE."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "FUNCTION DIAG."
 5. Select "SUNROOF."
 6. Select "SUNROOF-OPE."
- (3) Check that normal conditions are displayed on the items described in the table below.

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

Q: Are normal conditions displayed on the "IG SW (IG1)" and "S/R ECU ACK"?

Normal conditions displayed for all the items : Replace the sunroof motor assembly. Verify that the sunroof timer function 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-457](#)."

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

The sunroof safety mechanism should now work normally.

WINDSHIELD WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE WINDSHIELD WIPER AND WASHER

M1549021500150

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

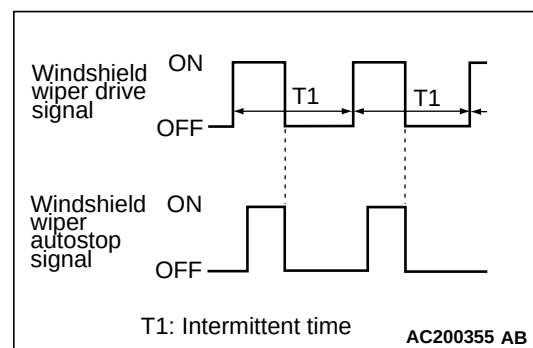
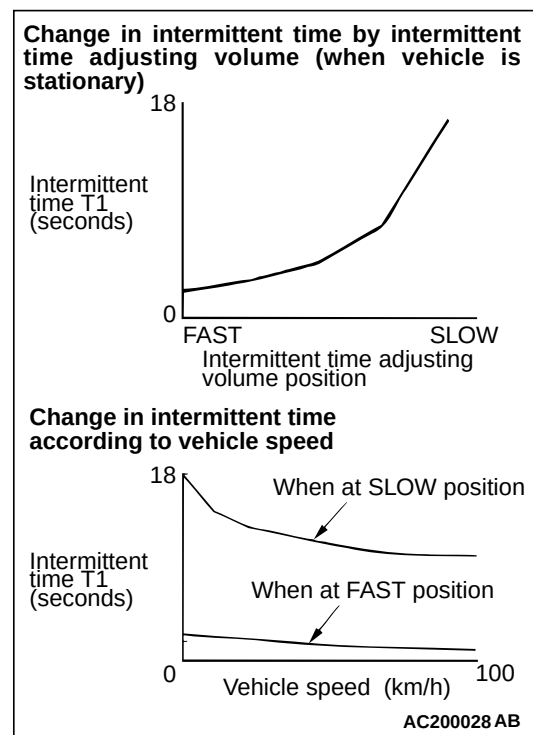
FUNCTION	CONTROL ECU
Intermittent control (Vehicle speed-dependent variable type)	ETACS-ECU, front-ECU, column switch
Mist wiper control	Front-ECU, column switch
Low speed wiper, high speed wiper control	Front-ECU, column switch
Washer control	Front-ECU, column switch

WINDSHIELD WIPER AND WASHER CONTROL FUNCTION

Intermittent control (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 <M/T> or PCM <A/T>,) 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-574).

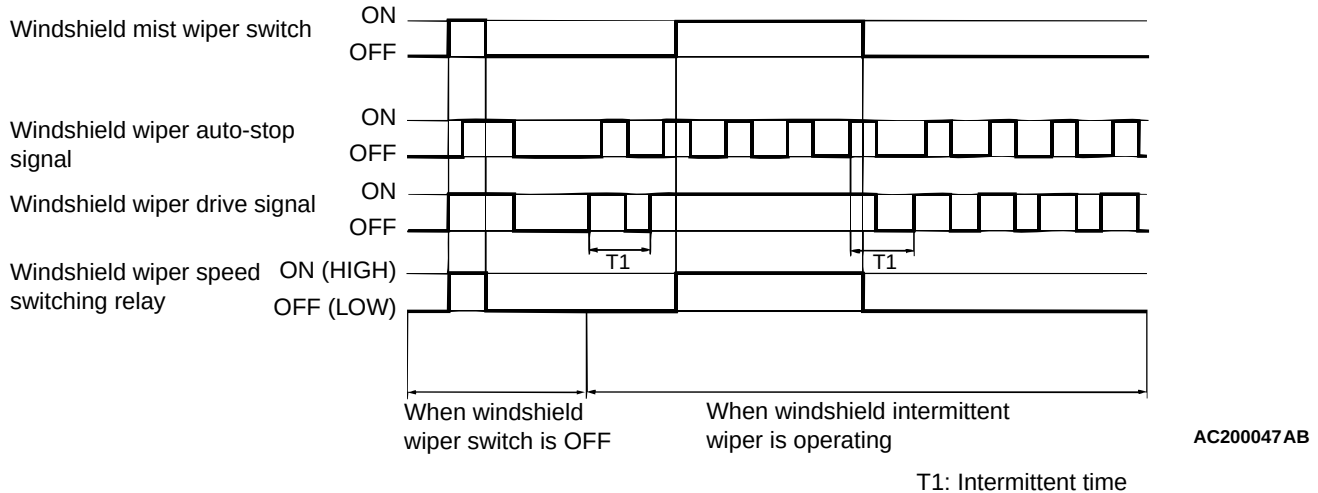


The front-ECU determines the intermittent time T1 from the input SWS data signal, and turns ON the windshield wiper drive signal. When the wiper is at the STOP position, the windshield wiper auto-stop signal goes OFF to turn OFF the windshield wiper drive signal. After the intermittent time T1 seconds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

Mist wiper control

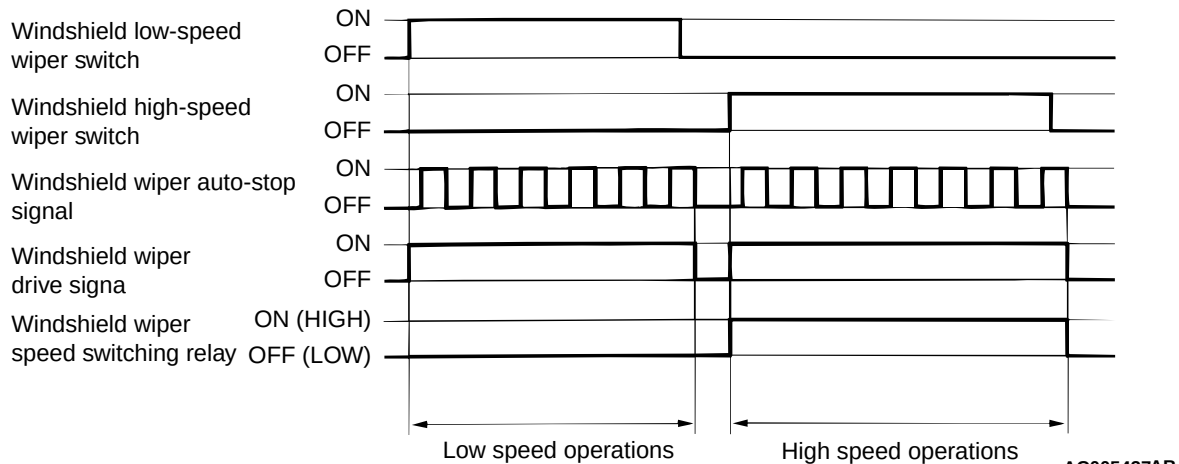
When the ignition switch is at the ACC or ON position, if the windshield mist wiper switch of the column switch is turned ON, the front-ECU turns ON the windshield wiper drive signal. At the same time, the wiper speed switching relay is turned ON (HIGH-SPEED). While the windshield mist wiper switch is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

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

**Low speed wiper, high speed wiper control**

When the ignition switch is at the ACC or ON position, if the windshield low speed wiper switch of the column switch is turned ON, the front-ECU turns ON the windshield wiper drive signal, turns OFF (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.

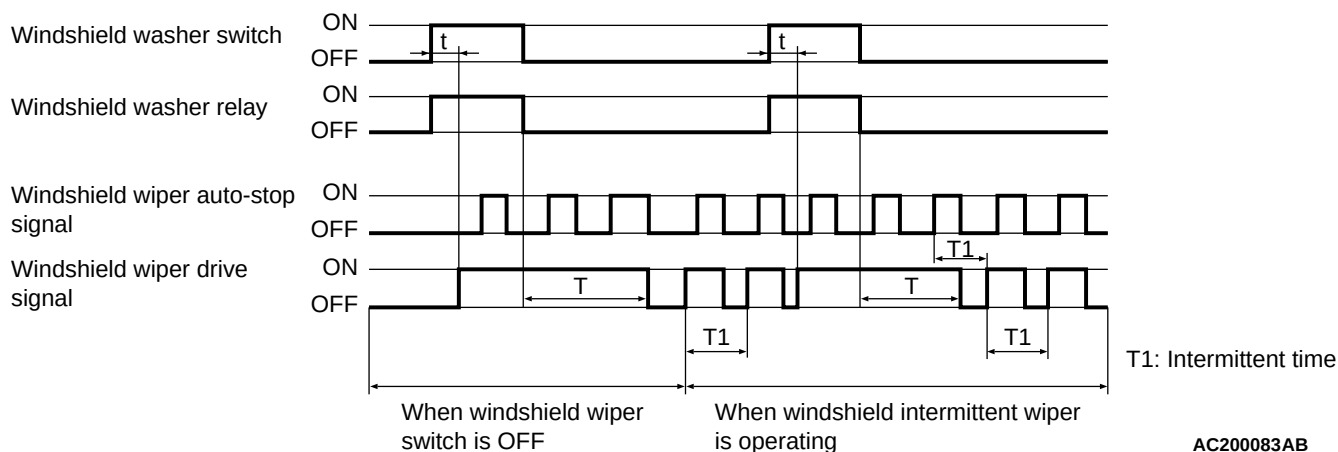


Washer control

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

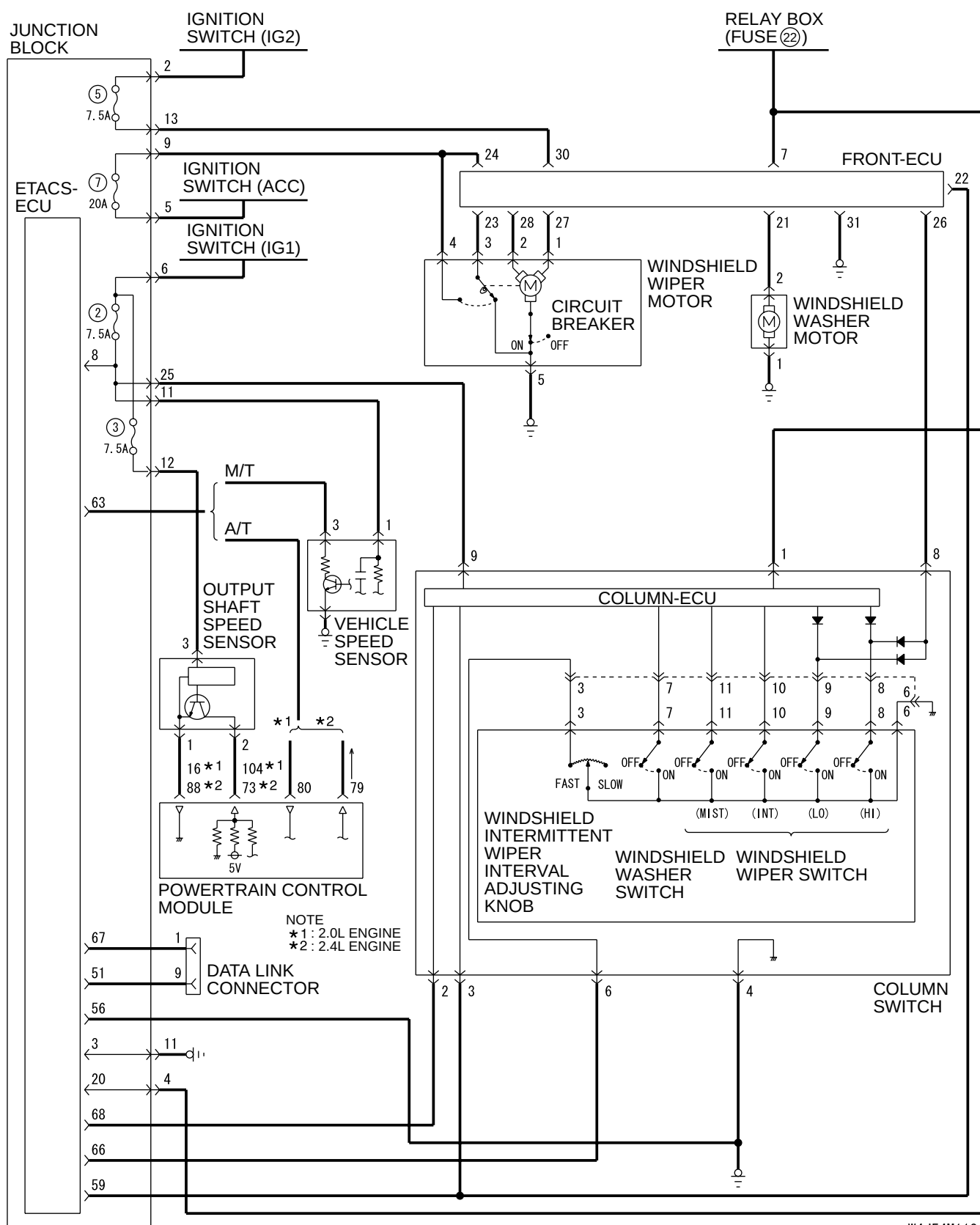
operate the windshield wiper continuously. When the windshield washer switch is turned ON, if the windshield wiper is operating intermittently, intermittent operations will be continued after continuous operations.

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	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

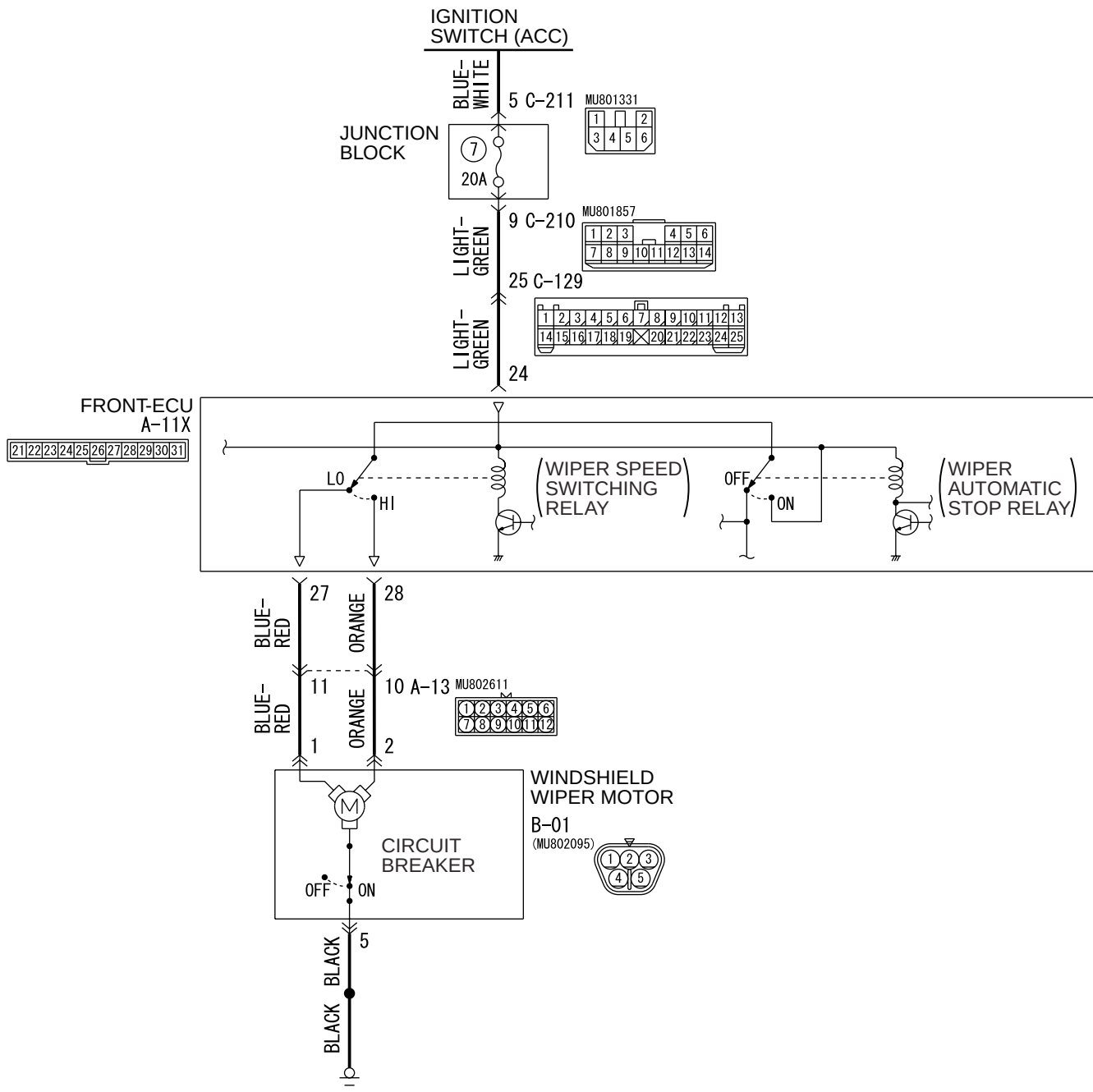
General circuit diagram for the windshield wiper and washer



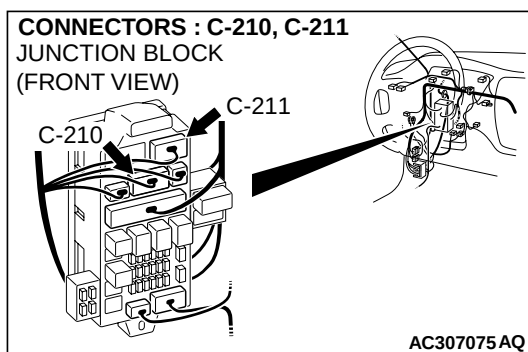
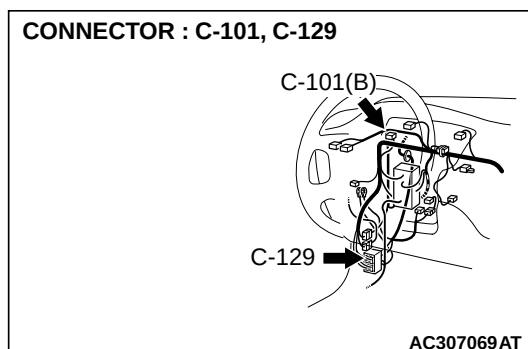
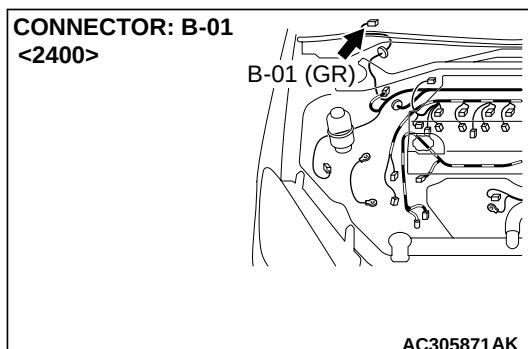
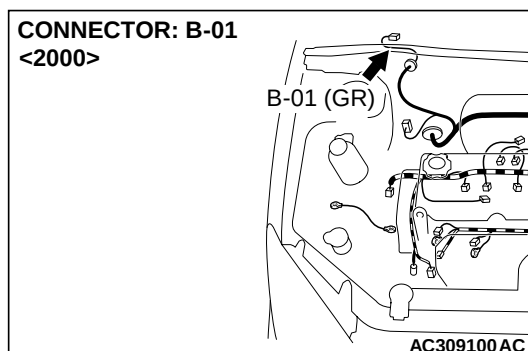
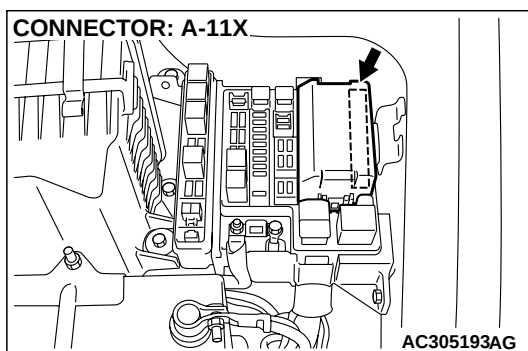
INSPECTION PROCEDURE G-1: Windshield Wiper and Washer: Windshield wipers does no not work at all.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Windshield Wiper Motor Circuit



W4J54M119A



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

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

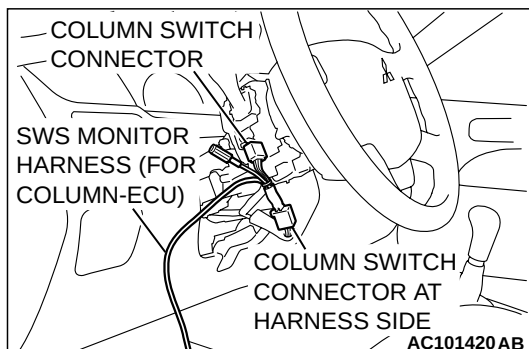
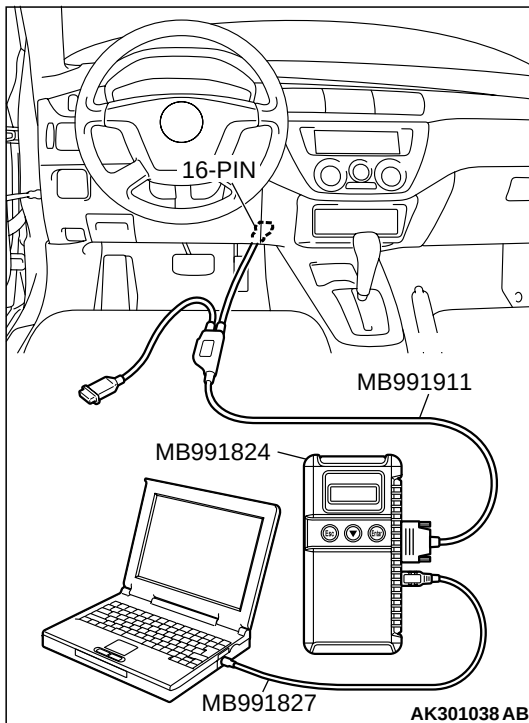
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

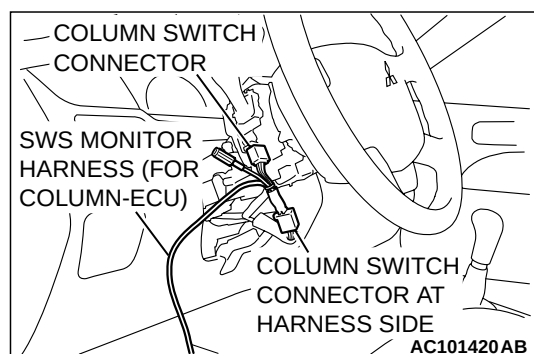
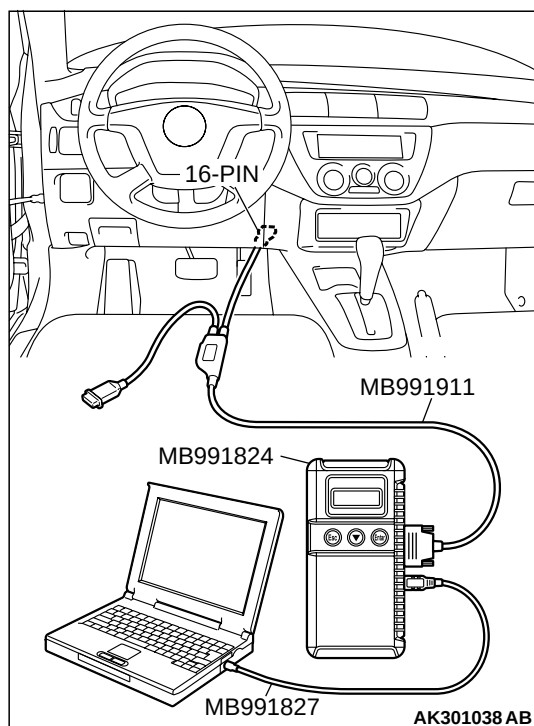
Q: Is "OK" displayed on both the "COLUMN ECU" and "FRONT ECU"?

"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-53.](#)"





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

Check the input signals from the following switches:

- ignition switch: ACC
- windshield wiper switch: INT

Operate scan tool MB991958 according to the procedure below to display "F.WIPER INT."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "WIPER."
6. Select "F.WIPER INT."

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

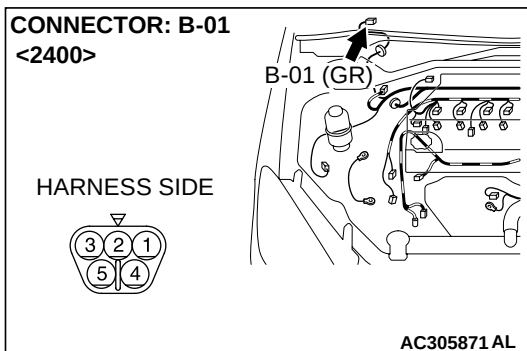
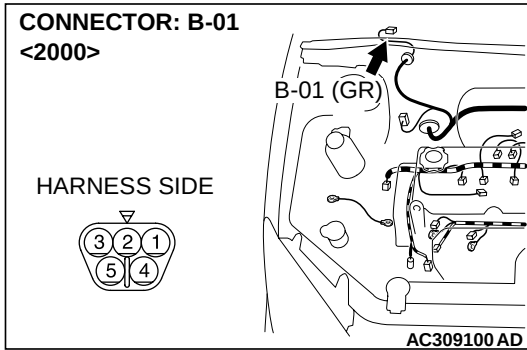
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 05	INT WIPER SW	ON
ITEM 70	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

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

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

The scan tool does not show the respective normal condition for item "INT WIPER SW" : Replace the column switch. Verify that the windshield wiper works normally.

The scan tool does not show the respective normal condition for item "FRONT ECU ACK" : Replace the front-ECU. Verify that the windshield wiper works normally.

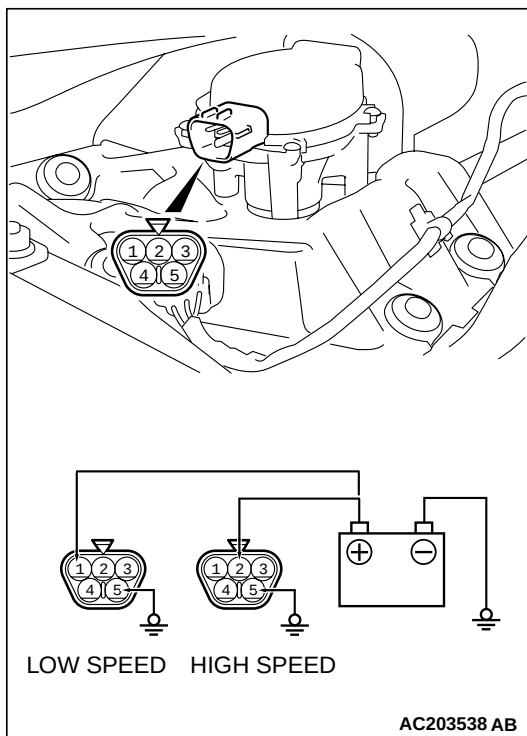


STEP 3. Check windshield wiper motor connector B-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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 works normally.



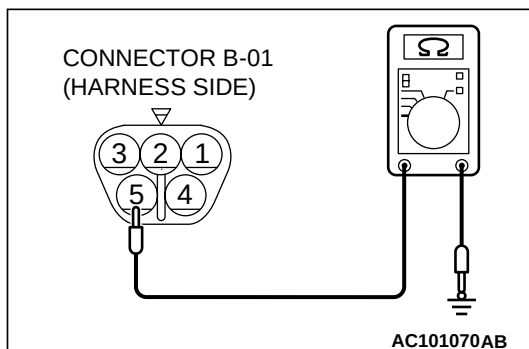
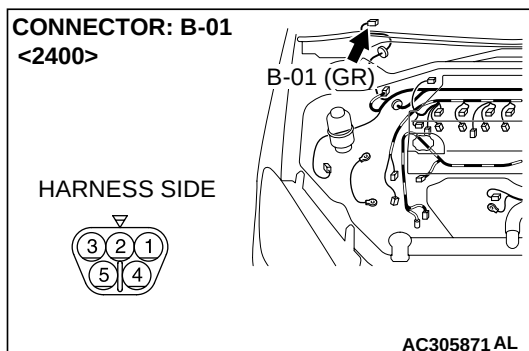
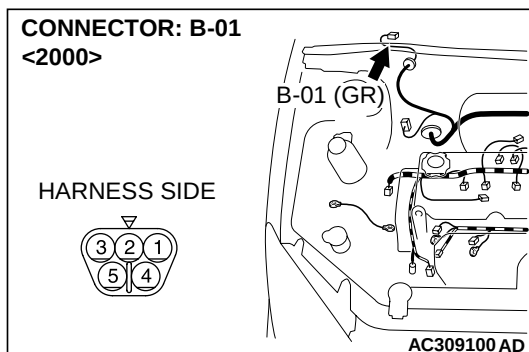
STEP 4. Check the windshield wiper motor.

- (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. Verify that the windshield wiper works normally.



STEP 5. Check the ground circuit to the windshield wiper motor. Test 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.

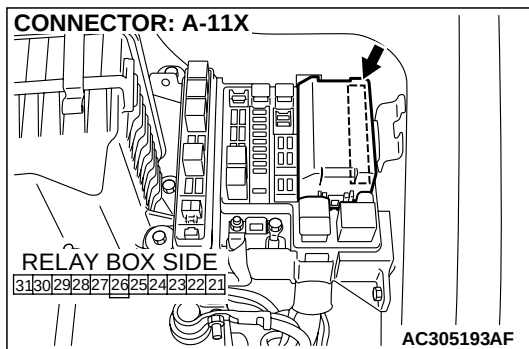
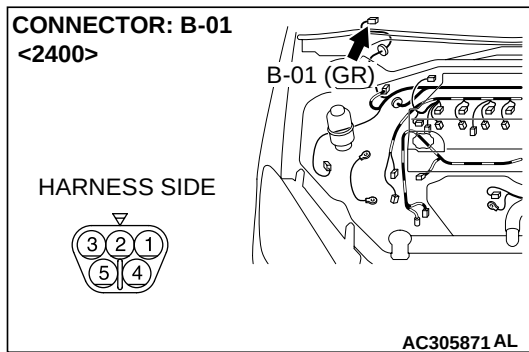
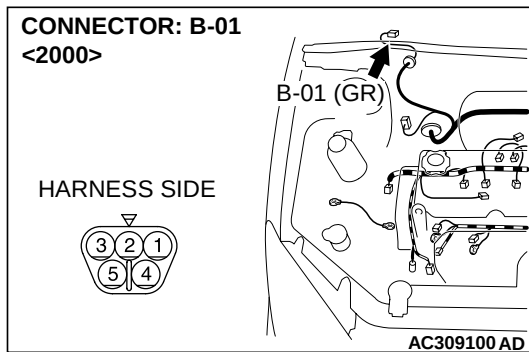
- (2) Measure the resistance value between terminal 5 and ground.

- 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.

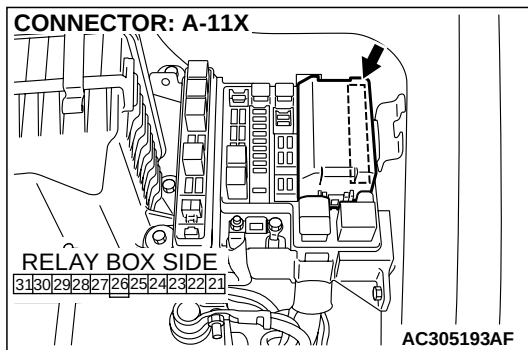
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper works normally.

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?

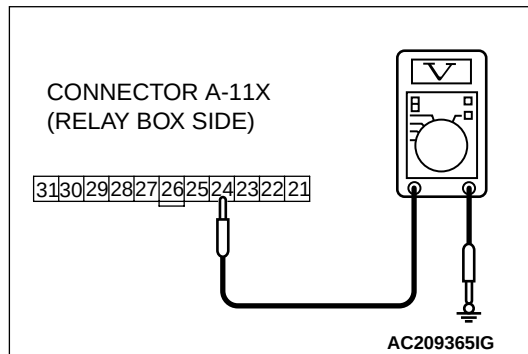
YES : Go to Step 8.

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



STEP 8. Check the ignition switch (IG2) circuit to the front-ECU. Test 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.

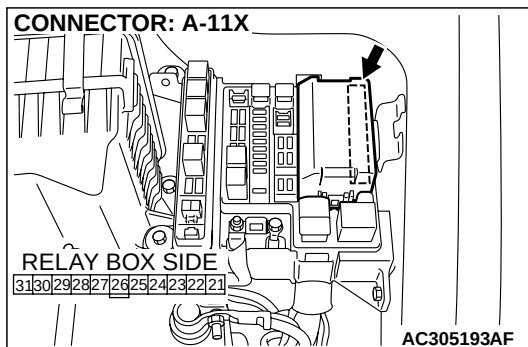


- (3) Measure the voltage between terminal 24 and ground.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

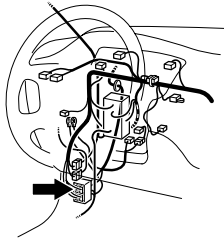
- YES :** Replace the front-ECU. Verify that the windshield wiper works normally.
- NO :** Go to Step 9.

STEP 9. Check the wiring harness between front-ECU connector A-11X (terminal 30) and the ignition switch (IG2).



CONNECTOR : C-129

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



AC307069AO

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.

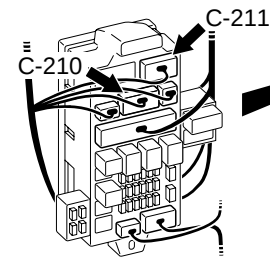
Q: Is the wiring harness between front-ECU connector A-11X (terminal 30) and the ignition switch (IG2) in good condition?

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 works normally.

CONNECTORS : C-210, C-211

JUNCTION BLOCK
(FRONT VIEW)



HARNESS SIDE

C-210

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

HARNESS SIDE

C-211

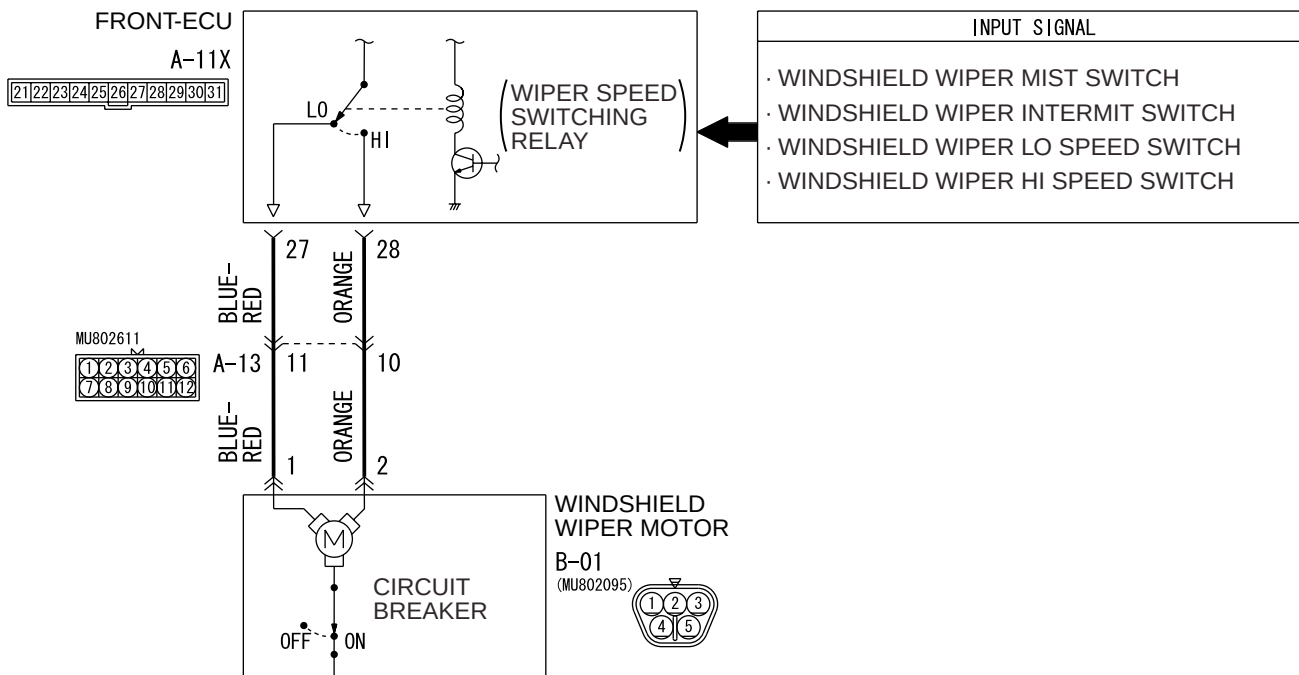
2		1
6	5	4

AC307076AH

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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Windshield Wiper Motor Drive Circuit



W4J54M17AA

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 a open circuit in the SWS communication line or other reasons, the system will enter the fail-safe mode when the ignition switch is at the "ACC" position.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

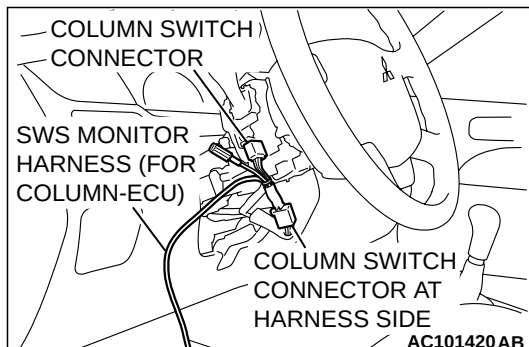
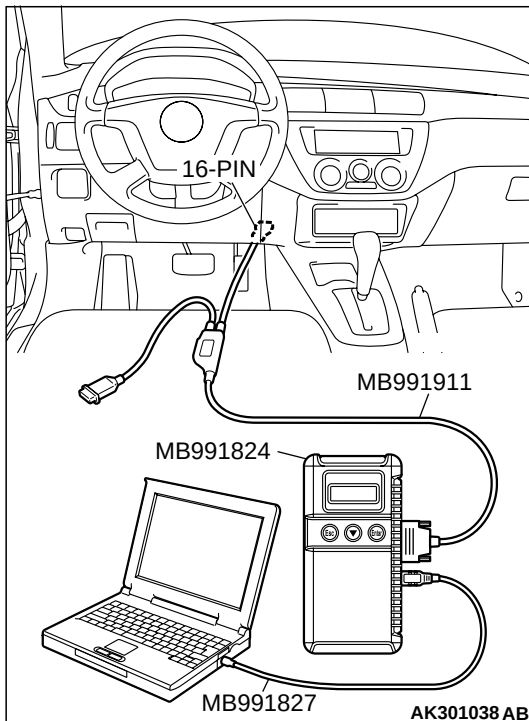
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

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

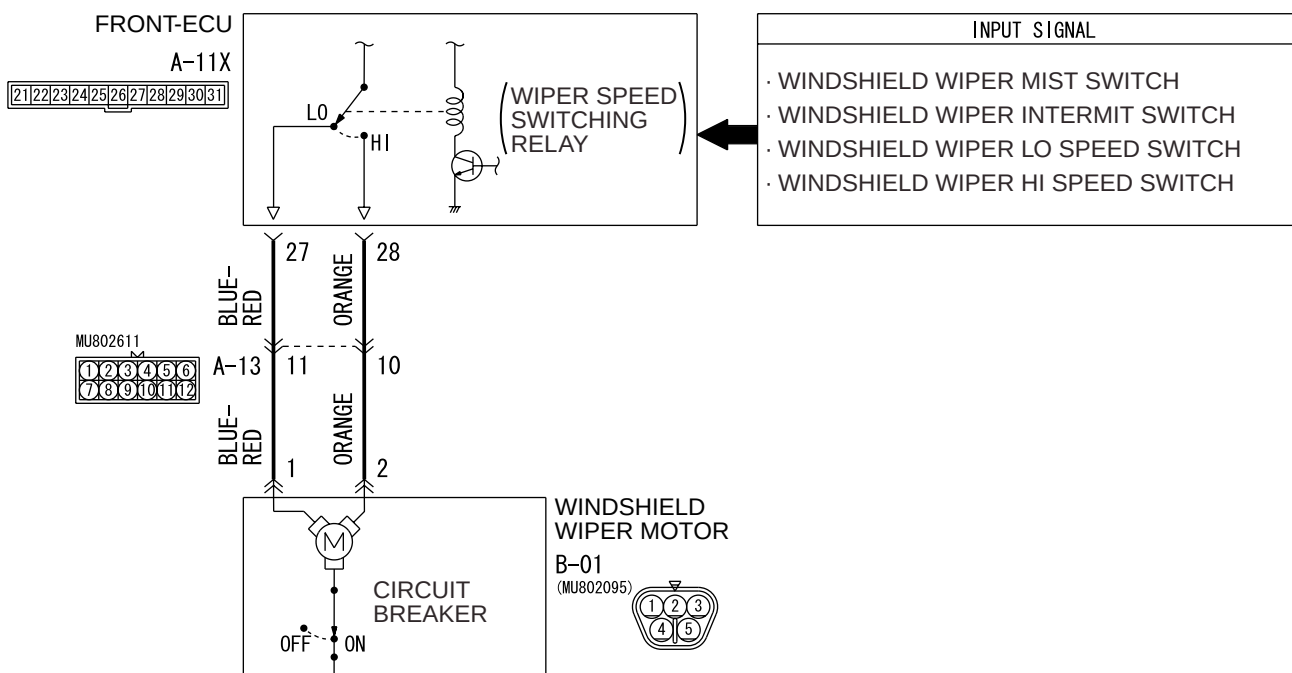
"NG" is displayed on the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with column switch (column-ECU) is not possible [P.54B-35.](#)"

"NG" is displayed on the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with front-ECU is not possible [P.54B-53.](#)"

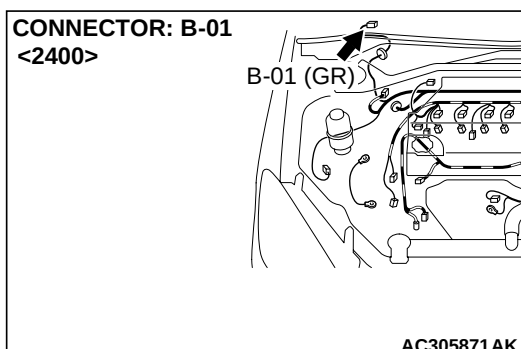
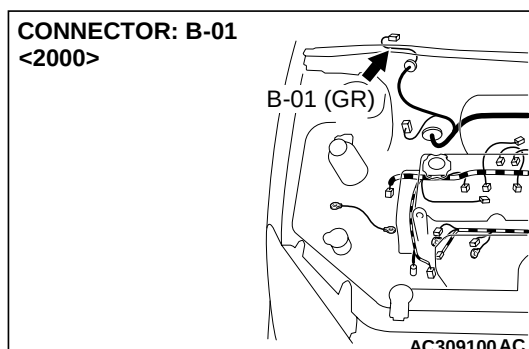
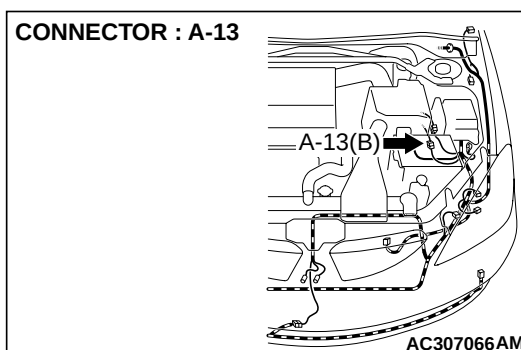
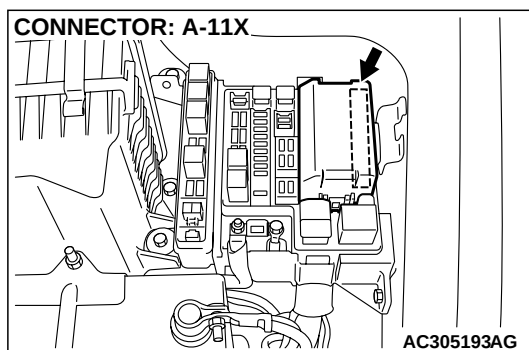


INSPECTION PROCEDURE G-3: Windshield Wiper and Washer: Any of the windshield wiper switch positions is defective.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Windshield Wiper Motor Drive Circuit

W4J54M17AA



TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

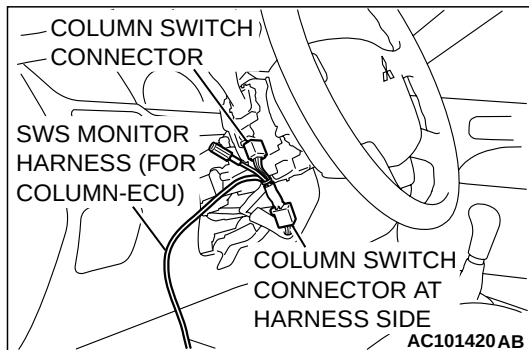
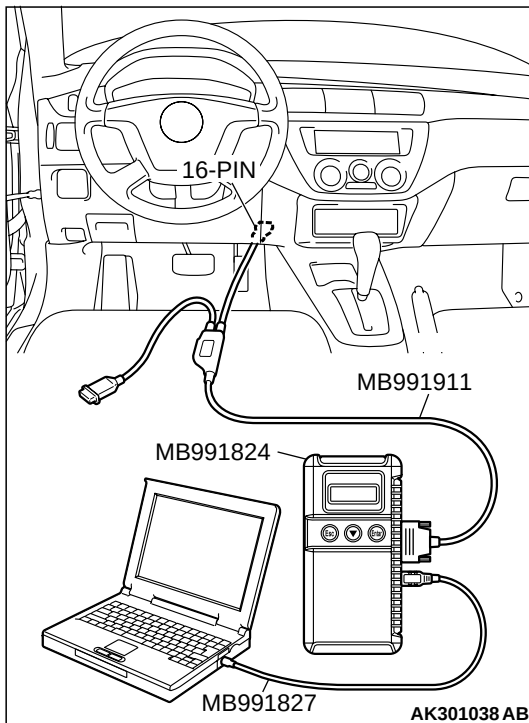
Turn the ignition switch to the "ACC" position before checking input signals from the windshield wiper switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Operate scan tool MB991958 according to the procedure below to display "COLUMN ECU."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "DATA LIST."
 5. Select "COLUMN ECU."
- (4) Check that normal conditions are displayed on the items described in the table below.

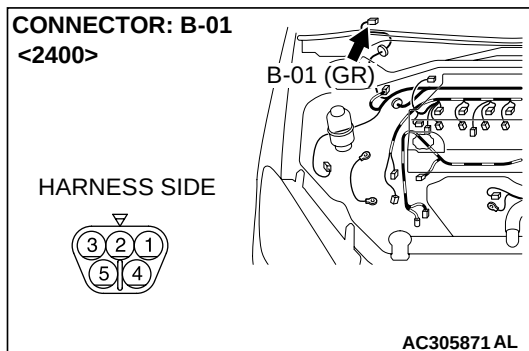
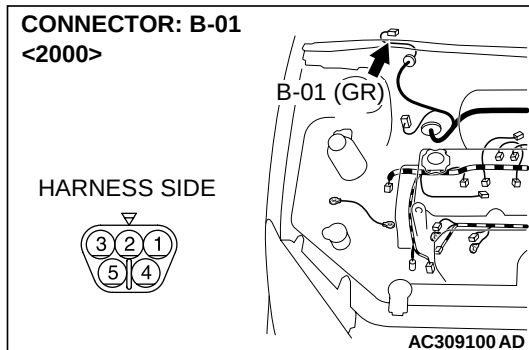
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 05	INT WIPER SW	ON
ITEM 06	LO WIPER SW	ON
ITEM 07	HI WIPER SW	ON
ITEM 08	MIST WIPER SW	ON



Q: Is normal condition displayed when the windshield wiper switch is moved to each position?

YES : Go to Step 2.

NO : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the windshield mist switch [P.54B-490](#)."

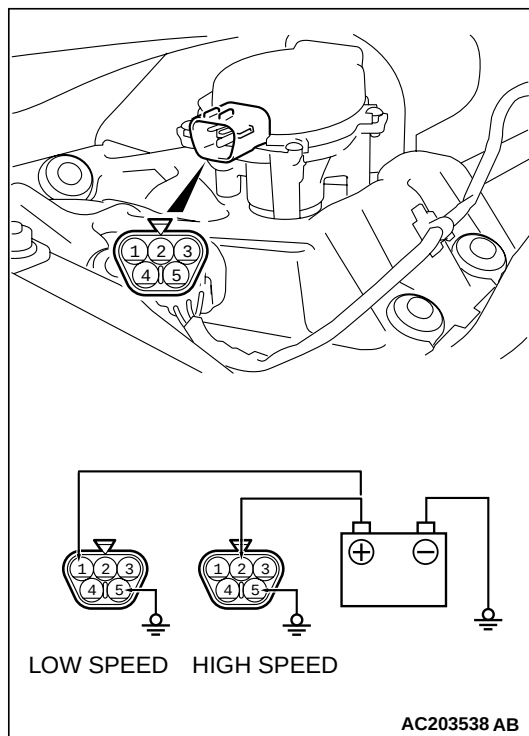


STEP 2. Check windshield wiper motor connector B-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.



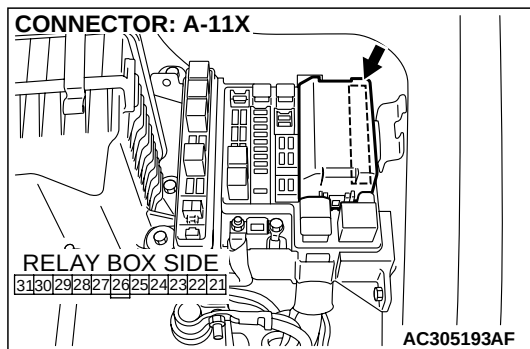
STEP 3. Check the windshield wiper motor.

- (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.

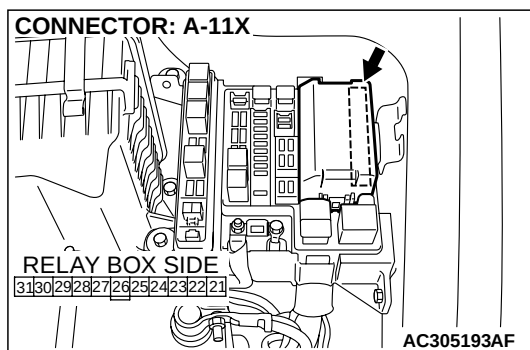


STEP 4. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

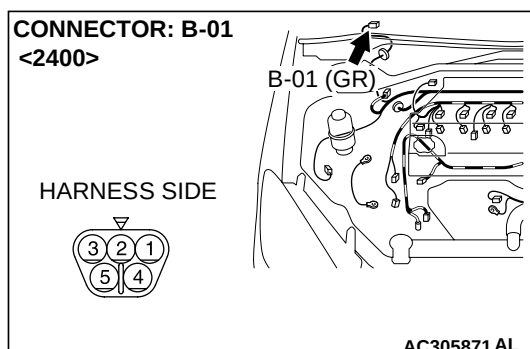
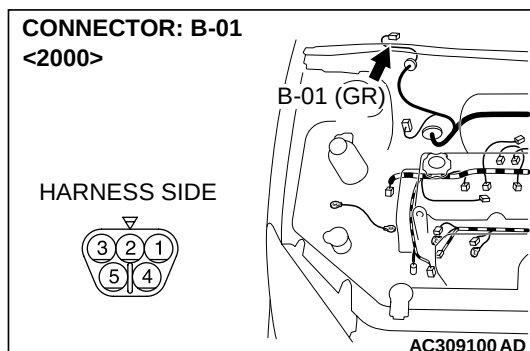
Q: Is front-ECU connector A-11X in good condition?

YES : Go to Step 5.

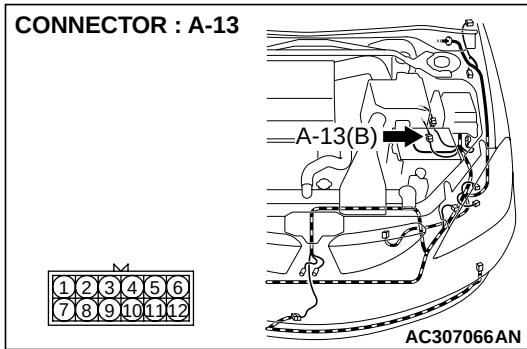
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.



STEP 5. Check the wiring harness between windshield wiper motor connector B-01 (terminal 1 and 2) and front-ECU connector A-11X (terminal 27 and 28).



CONNECTOR : A-13

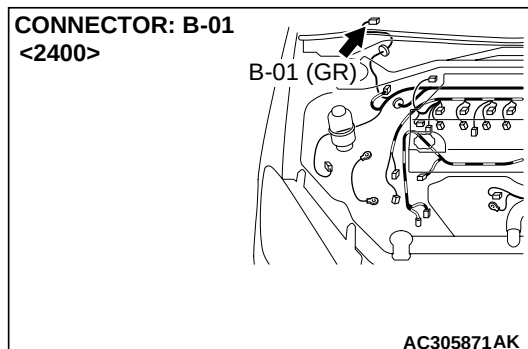
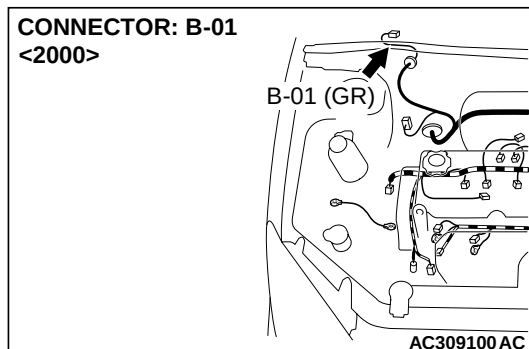
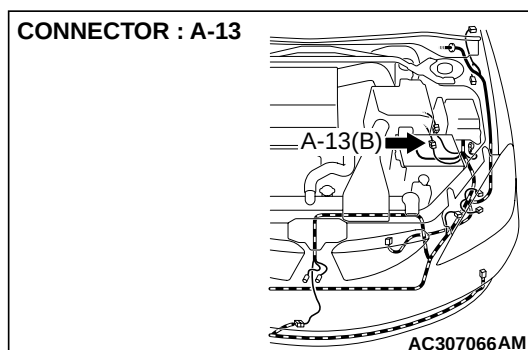
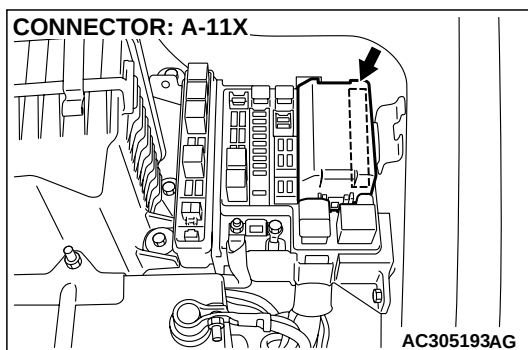
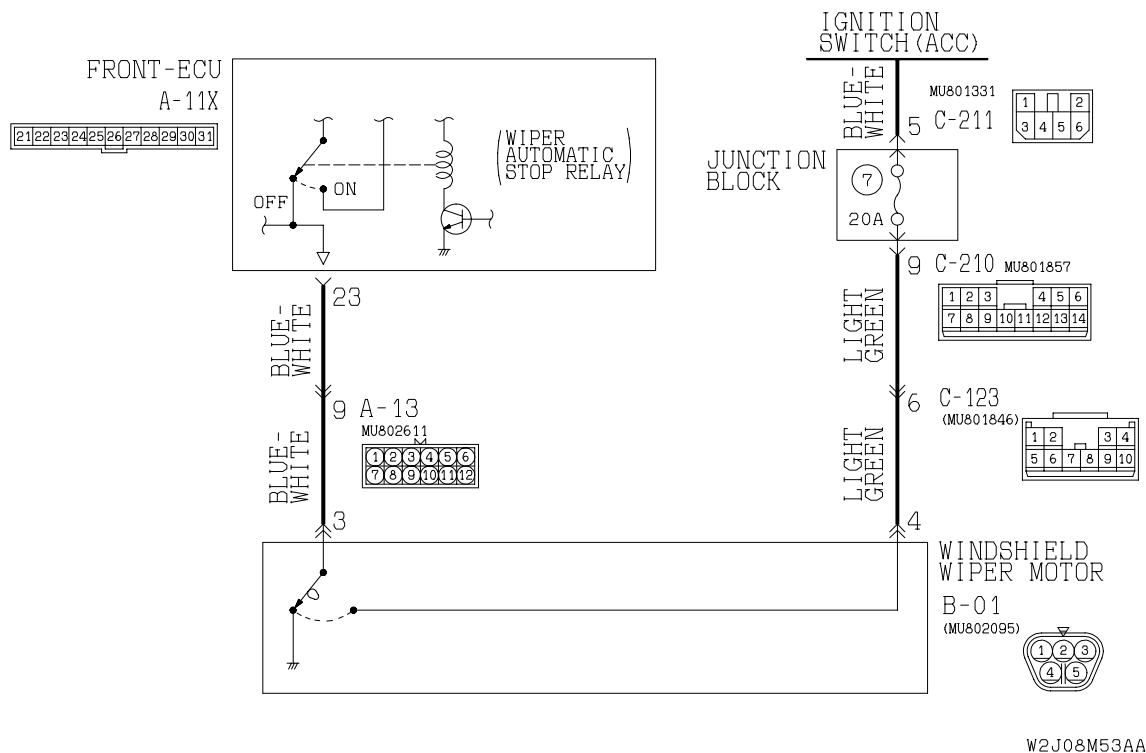


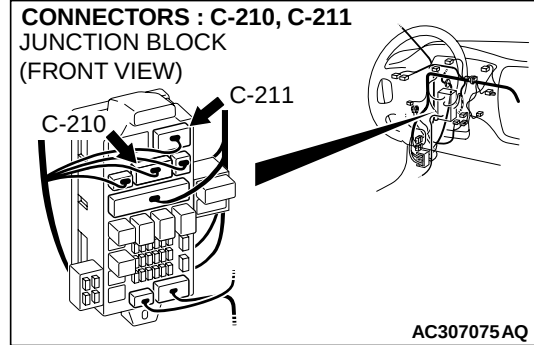
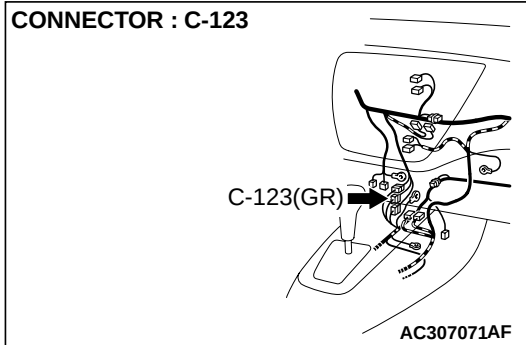
NOTE: Also check intermediate connector A-13 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors A-13 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between windshield wiper motor connector B-01 (terminal 1 and 2) and front-ECU connector A-11X (terminal 27 and 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

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

DIAGNOSIS

Required Special Tool:

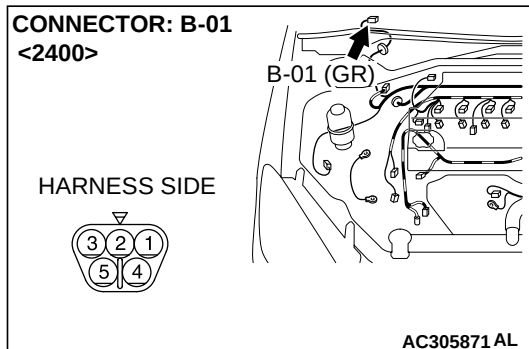
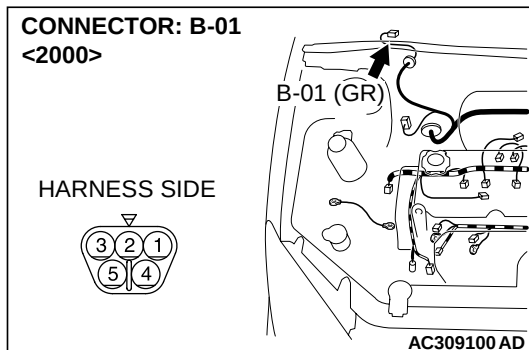
MB991223: Harness Set

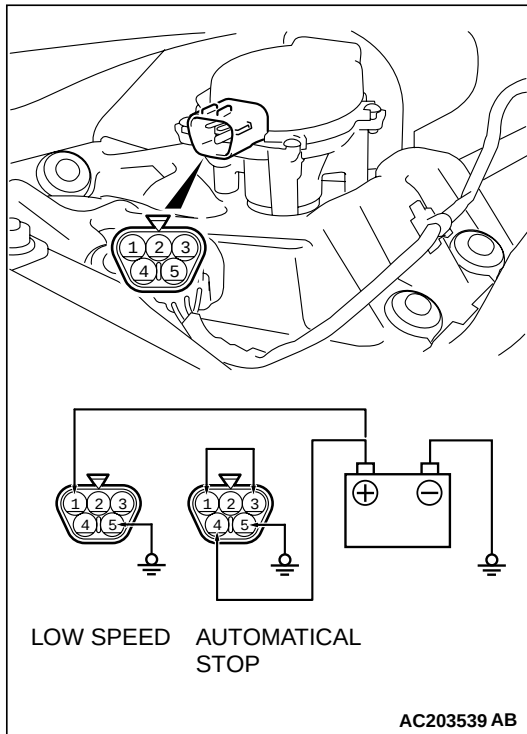
STEP 1. Check windshield wiper motor connector B-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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](#). Check that the windshield wiper works 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.

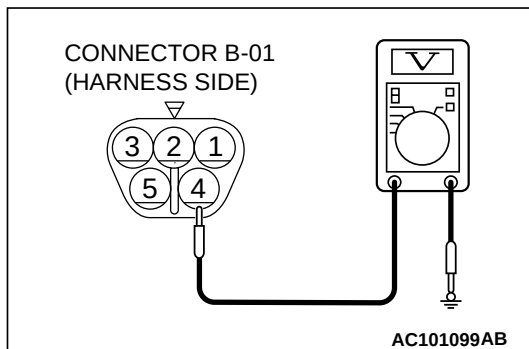
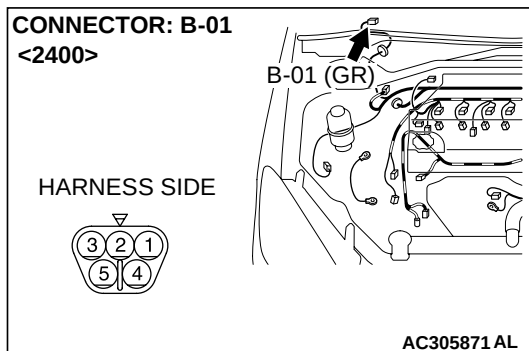
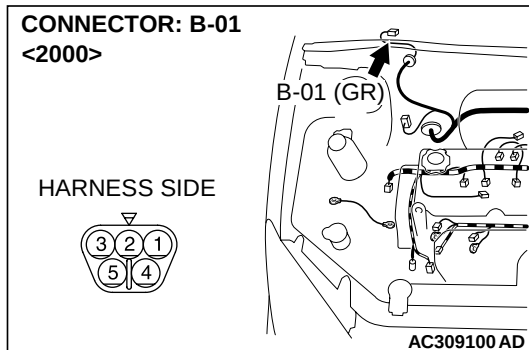
Q: Does the windshield wiper motor operate normally?

YES : Go to Step 3.

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

STEP 3. Check the battery power supply circuit to the windshield wiper motor. Test 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.



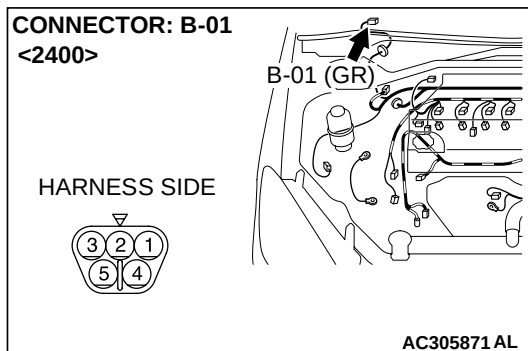
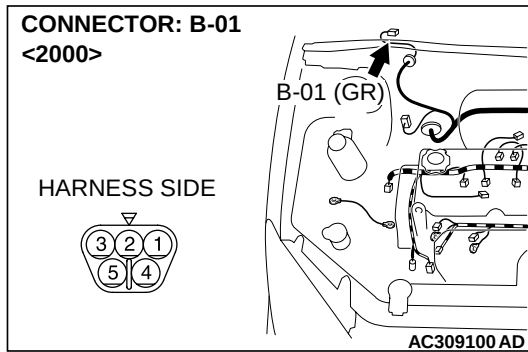
- (3) Measure the voltage between terminal 4 and ground by backprobing.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

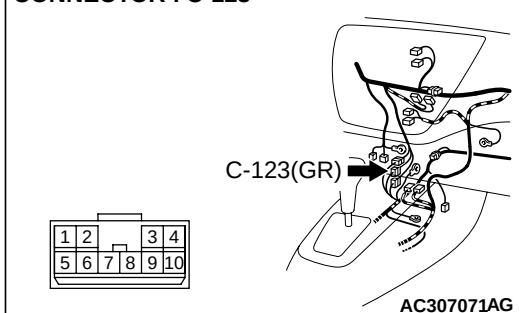
YES : Go to Step 5.

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).



CONNECTOR : C-123



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](#).

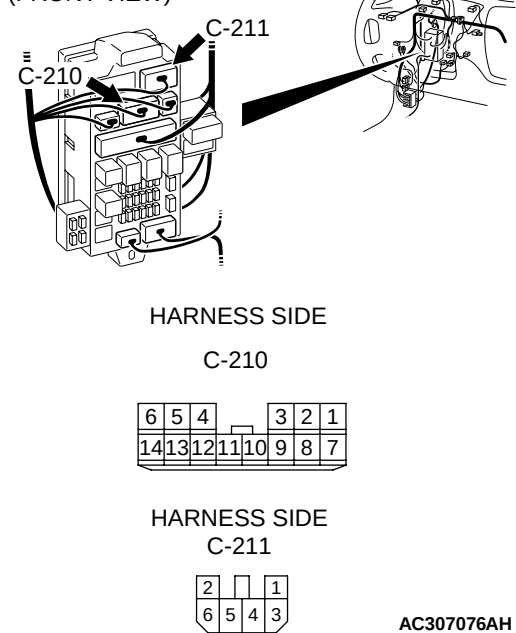
Q: Is the wiring harness between windshield wiper motor connector B-01 (terminal 4) and the ignition switch (ACC) in good condition?

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. The windshield wiper should stop at the predetermined park position.

CONNECTORS : C-210, C-211

JUNCTION BLOCK
(FRONT VIEW)



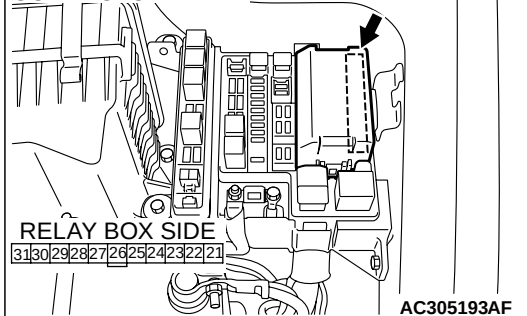
STEP 5. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

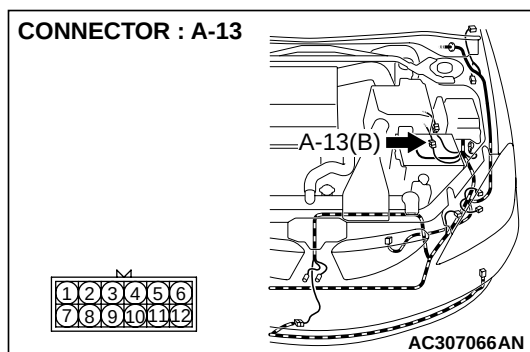
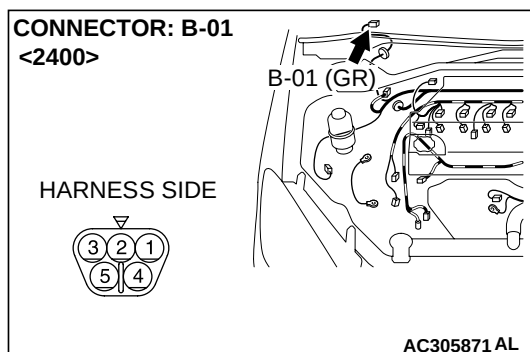
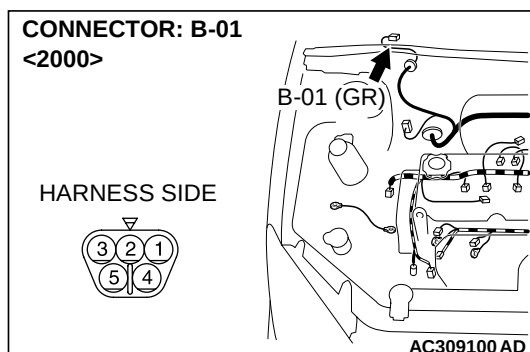
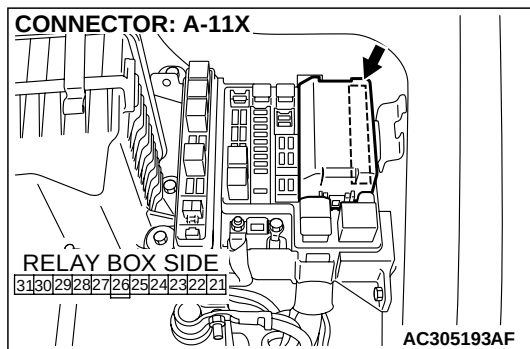
YES : Go to Step 6

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

CONNECTOR: A-11X



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 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 3) and front-ECU connector A-11X (terminal 23) in good condition?

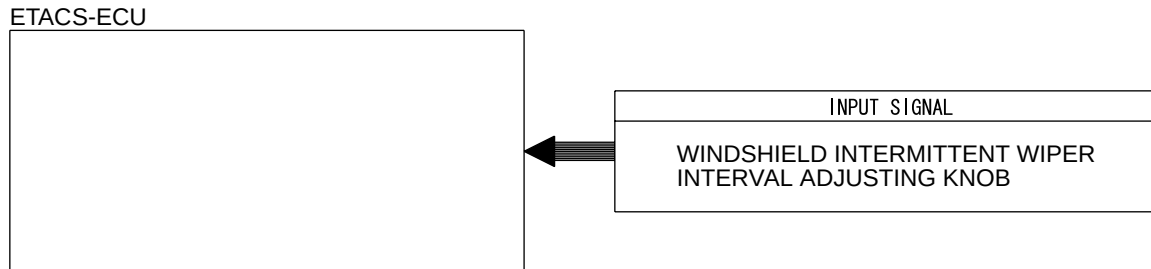
YES : Replace the front-ECU.

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. Replace the front-ECU.

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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-10](#)."

Windshield Intermittent Wiper Interval Adjusting Knob Input Signal



W4J54M19AA

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

STEP 1. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Set each switch to the following condition to check input signals from the windshield intermittent wiper interval adjusting knob:

- Ignition switch: ACC
- Windshield wiper switch: INT
- Vehicle speed: 0 km/h (mph)

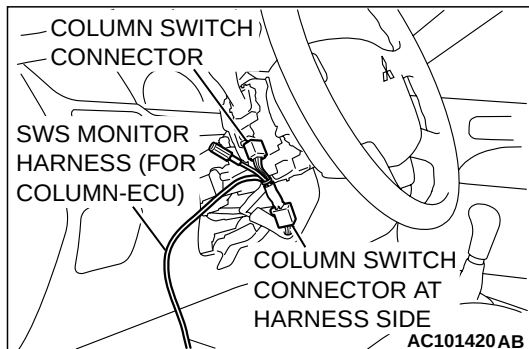
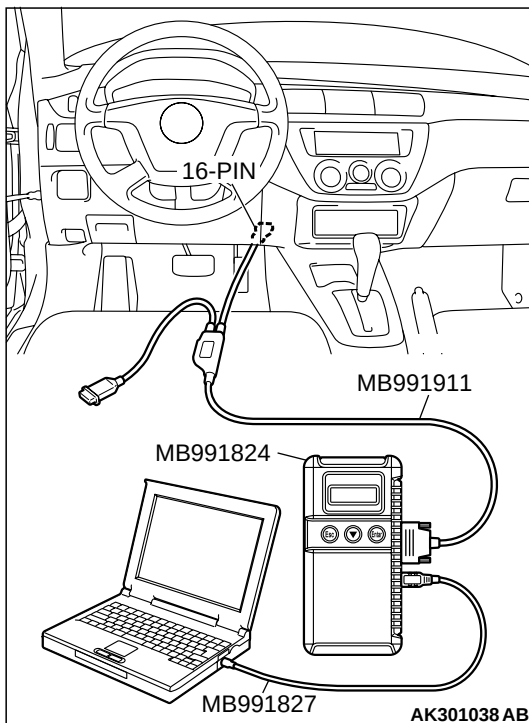
⚠ CAUTION

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 DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Operate scan tool MB991958 according to the procedure below to display "F.WIPER INT."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "FUNCTION DIAG."
 5. Select "WIPER."
 6. Select "F.WIPER INT."
- (4) Check that normal conditions are displayed on the items described in the table below.

NOTE: Also check that the windshield wiper interval changes smoothly when the windshield intermittent wiper interval adjusting knob is rotated from "SLOW" to "FAST" positions.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 37	INT WIPER TIME	2.4 – 18.0 s



Q: Does the value change within the normal range when the windshield intermittent wiper interval adjusting knob is rotated?

YES : Replace the front-ECU. Check that the windshield intermittent wiper interval changes according to the vehicle speed or while the windshield intermittent wiper interval adjusting knob is rotated.

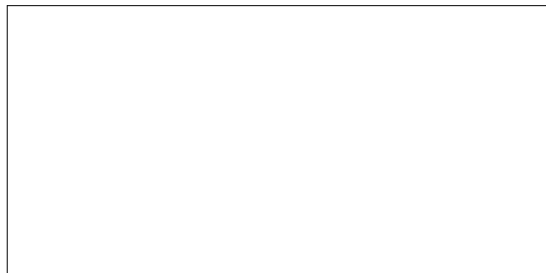
NO : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the windshield mist switch P.54B-490."

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 MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Windshield Intermittent Wiper Circuit

ETACS-ECU

**INPUT SIGNAL**

- WINDSHIELD INTERMITTENT WIPER INTERVAL ADJUSTING KNOB
- VEHICLE SPEED SENSOR (M/T) OR VEHICLE SPEED SIGNAL (A/T)



W2J08M55AA

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the vehicle speed sensor <M/T> or the vehicle speed signal <A/T>.

⚠ CAUTION

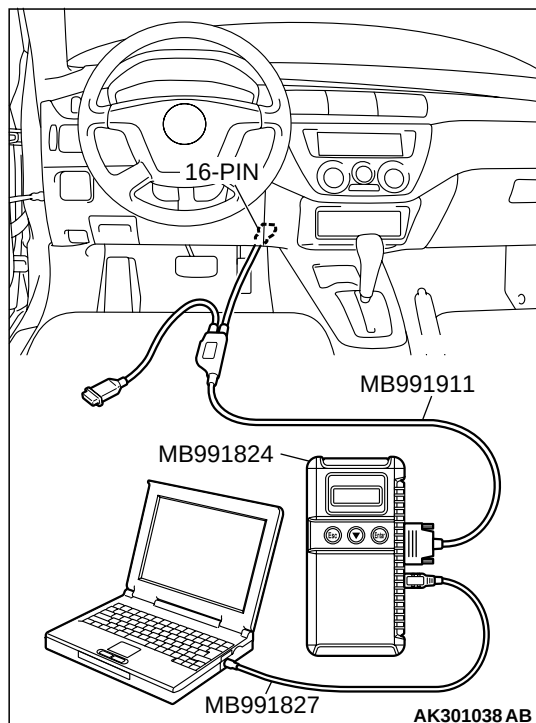
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Operate scan tool MB991958 according to the procedure below to display "PULSE CHECK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "PULSE CHECK."
- (3) Check that scan tool MB991958 sounds when the vehicle speed exceeds 10 km/h (6.2 mph).

Q: Does scan tool 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 <M/T>P.54B-549 " or "ETACS-ECU does not receive a signal from the vehicle speed signal <A/T>P.54B-554 ."



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

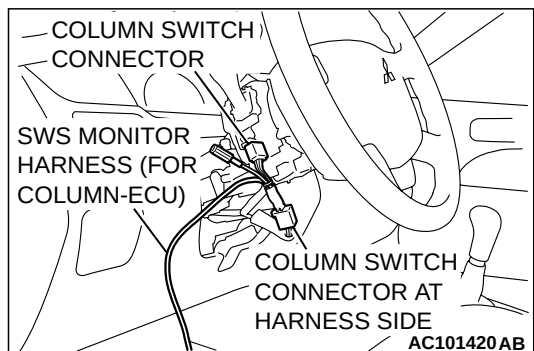
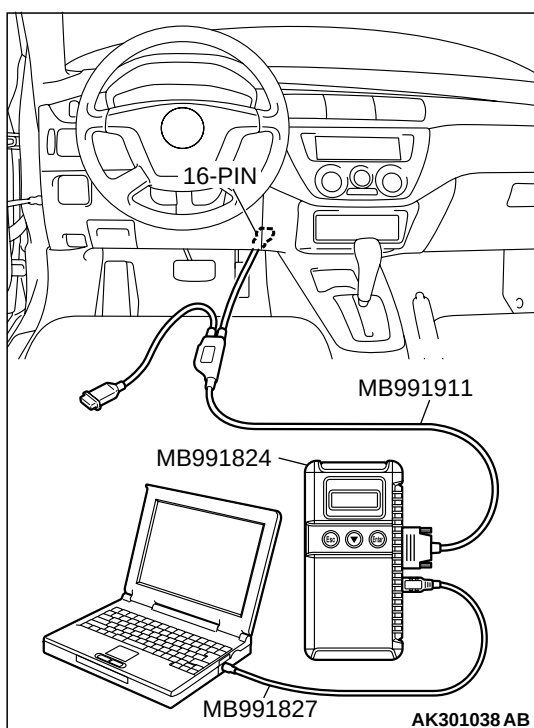
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

- (1) Connect SWS monitor kit MB991862 to the column switch connector.
- (2) Operate scan tool MB991958 according to the procedure below to display "F.WIPER INT."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "FUNCTION DIAG."
 5. Select "WIPER."
 6. Select "F.WIPER INT."
- (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



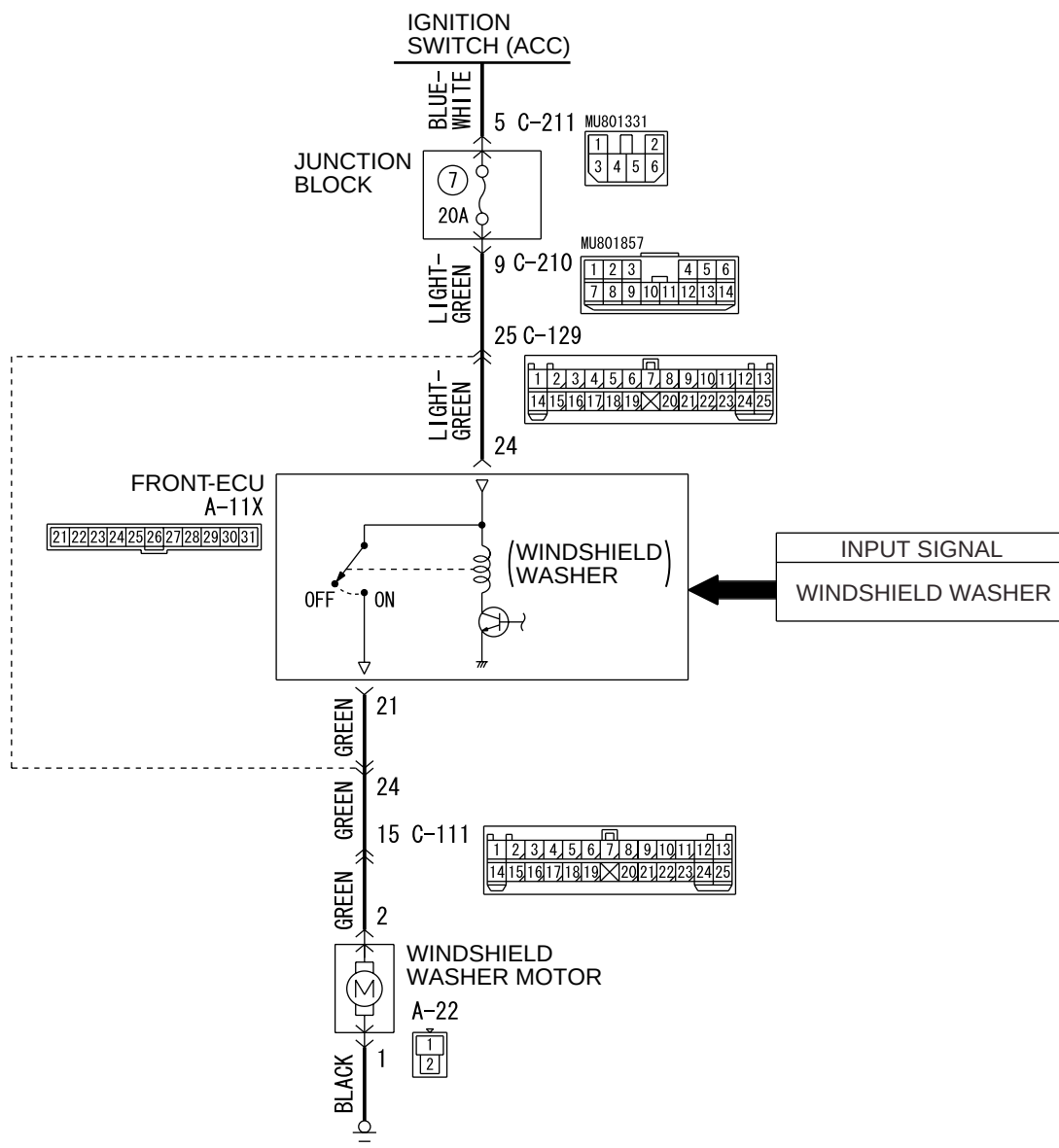
Q: Does the value change within the normal range when the windshield intermittent wiper interval adjusting knob is rotated?

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

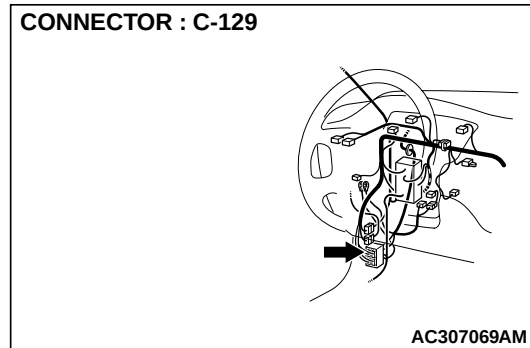
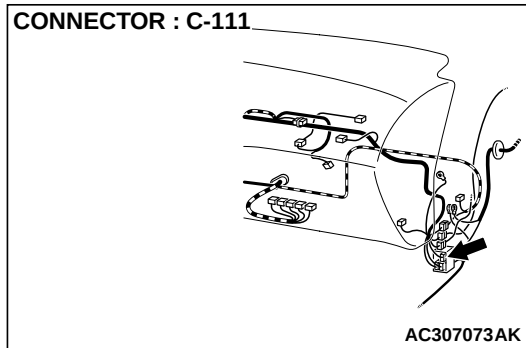
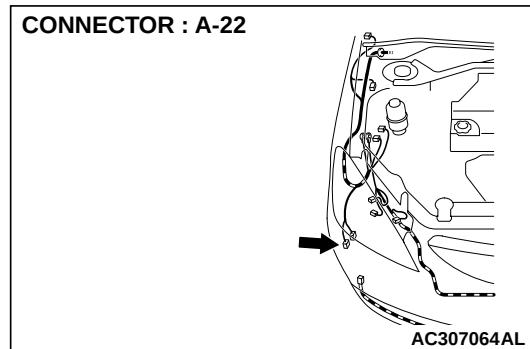
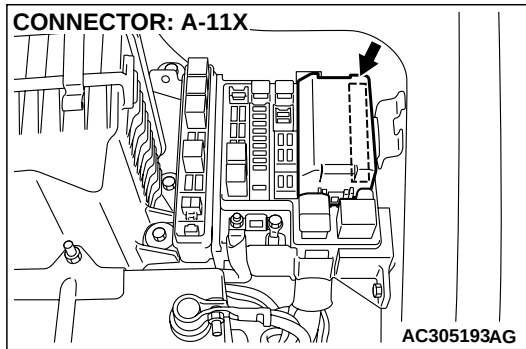
NO : Replace the ETACS-ECU. The windshield intermittent wiper interval should change according to the vehicle speed.

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-10](#)."

Windshield Wiper Motor Circuit

W4J54M120A



CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

STEP 1. Verify the windshield wiper.

Q: Does the windshield wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure G-1 "Windshield wiper does not work at all [P.54B-207](#)."

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

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

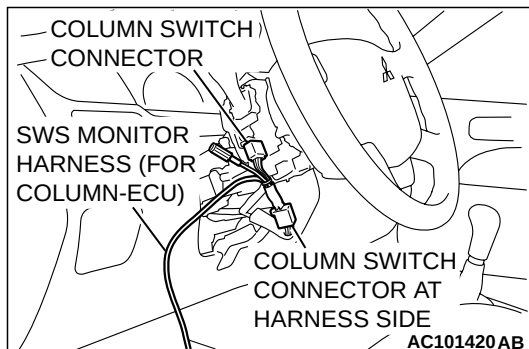
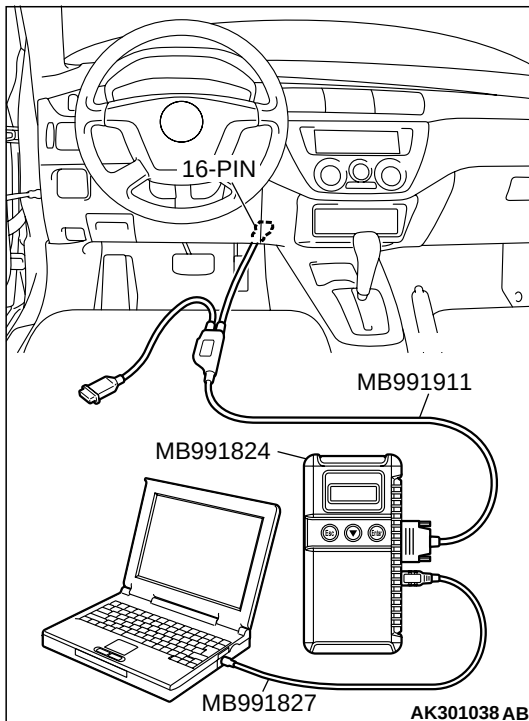
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

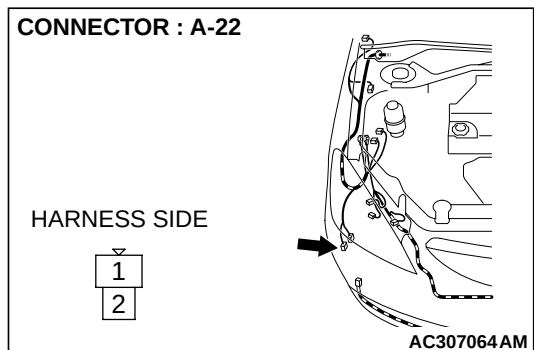
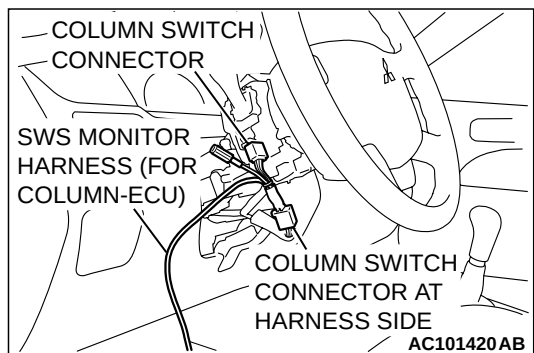
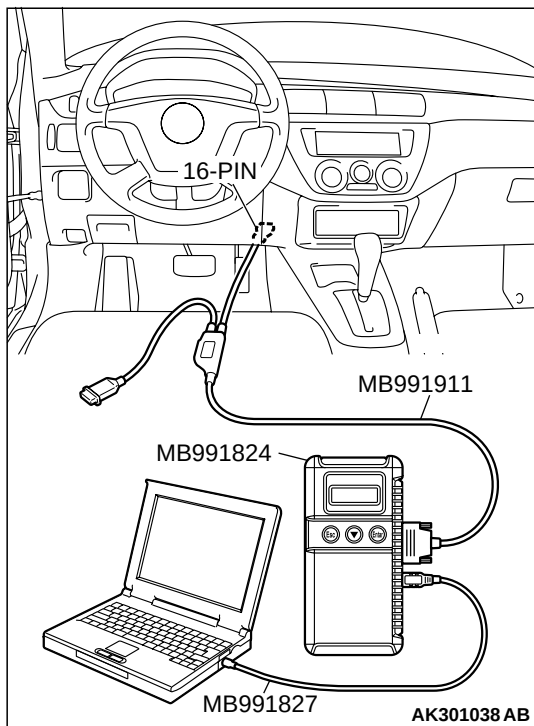
Q: Is "OK" displayed on both the "COLUMN ECU" and "FRONT ECU" menus?

"OK" are displayed for all the items : Go to Step 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-53."





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

Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield washer switch: ON

Operate scan tool MB991958 according to the procedure below to display "F.WIPER WASH."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "WIPER."
6. Select "F.WIPER WASH."

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

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

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

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

The scan tool does not show the respective normal condition for item "FRONT WASH. SW" : Normal condition is not displayed on the "FRONT WASH.SW": Replace the column switch. Verify that the windshield washer works normally.

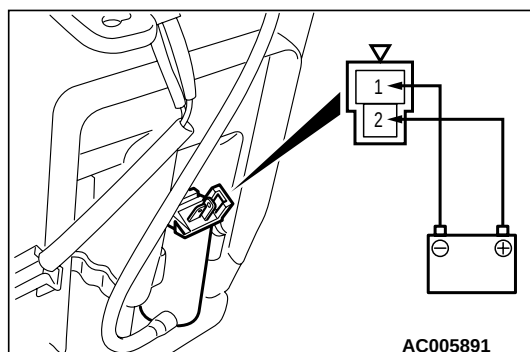
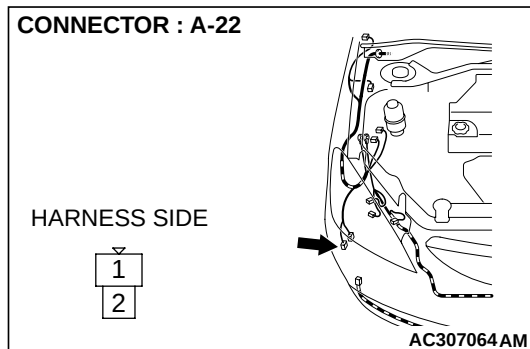
The scan tool does not show the respective normal condition for item "FRONT ECU ACK" : Normal condition is not displayed on the "FRONT ECU ACK": Replace the front-ECU. Verify that the windshield washer works normally.

STEP 4. Check windshield washer motor connector A-22 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield washer motor connector A-22 in good condition?

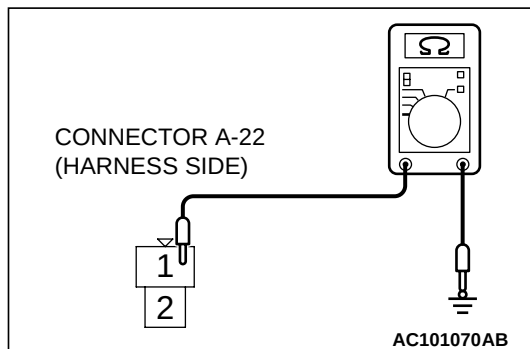
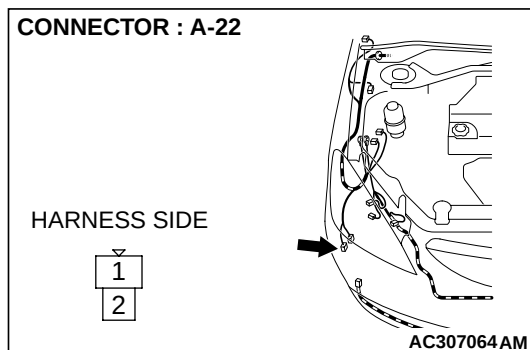
YES : Go to Step 5.

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

**STEP 5. Check the windshield washer motor.**

- (1) Disconnect windshield washer motor connector A-22 and measure the voltage available at the windshield washer motor side of the connector.
- (2) Fill the windshield washer tank with washer fluid.

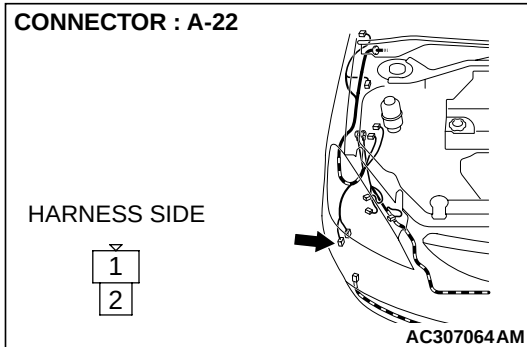
- (3) When battery voltage is applied between terminals 1 and 2, washer fluid should gush out.

Q: Does the windshield washer motor operate normally?**YES :** Go to Step 6.**NO :** Replace the windshield washer motor. Verify that the windshield washer works normally.**STEP 6. Check the ground circuit to the windshield washer motor. Test at windshield washer motor connector A-22**

- (1) Disconnect windshield washer motor connector A-22 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 8.**NO :** Go to Step 7.

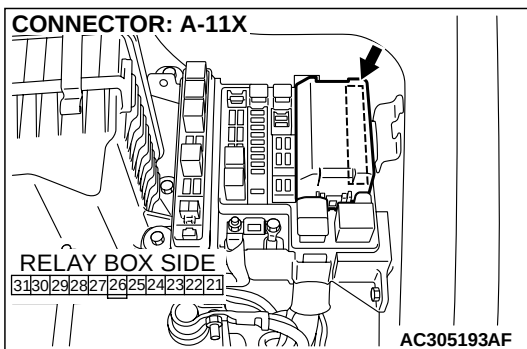


STEP 7. Check the wiring harness between windshield washer motor connector A-22 (terminal 1) and ground.

Q: Is the wiring harness between windshield washer motor connector A-22 (terminal 1) and ground in good condition?

YES : No action is necessary and testing is complete.

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

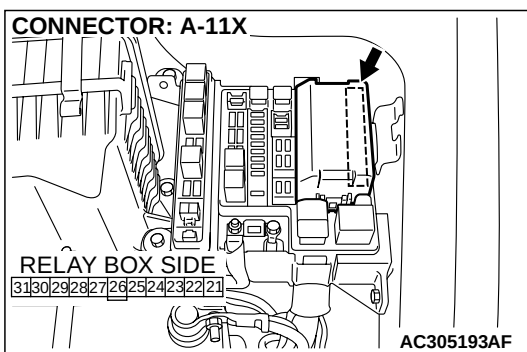


STEP 8. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

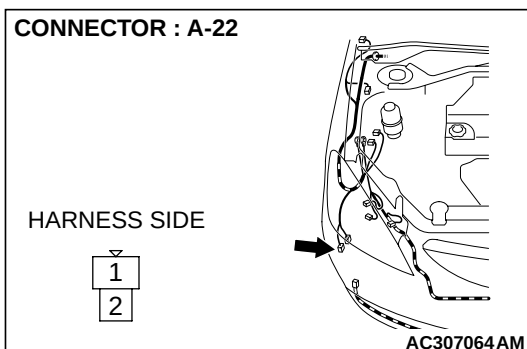
Q: Is front-ECU connector A-11X in good condition?

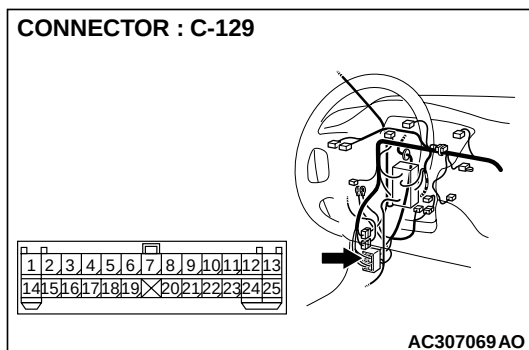
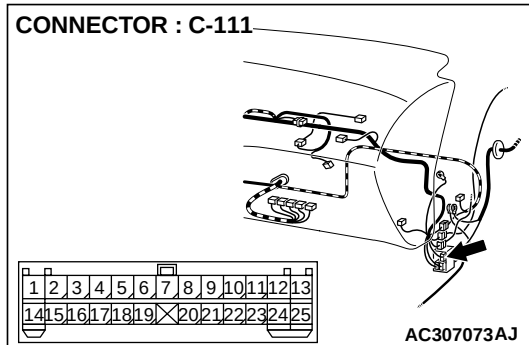
YES : Go to Step 9.

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



STEP 9. Check the wiring harness between windshield washer motor connector A-22 (terminal 2) and front-ECU connector A-11X (terminal 21).





NOTE: Also check intermediate connectors C-111 and C-129 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors C-111 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 A-22 (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 works normally.

REAR WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE REAR WIPER AND WASHER

M1549021600157

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

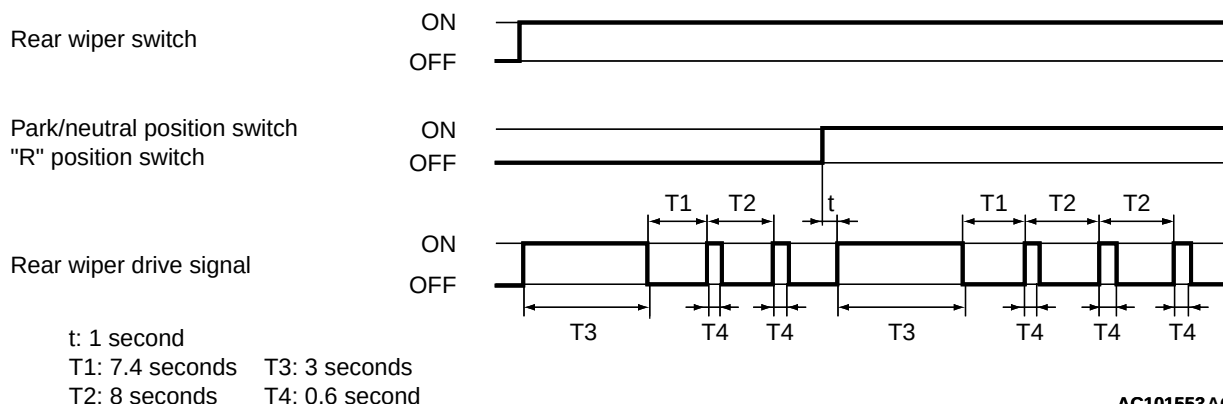
FUNCTION	CONTROL ECU
Rear wiper control	ETACS-ECU, column switch
Rear washer control	ETACS-ECU, column switch

REAR WIPER AND WASHER CONTROL FUNCTION

Rear wiper control

If the rear wiper switch of the column switch assembly is turned ON with the ignition switch in the ACC or ON position, the ETACS-ECU will turn the rear wiper drive signal ON for 3 seconds (approximately 2 operations), and then will carry out intermittent operation in a 7.4 to 8 seconds cycle.

If the selector lever is moved to the "R" position when the rear wiper switch of the column switch assembly is turned ON and the ignition switch is in any position other than OFF, the transmission range switch "R" position switch turns ON. One second later, the ETACS-ECU turns the rear wiper drive signal ON for 3 seconds (approximately 2 operations), to clear the rear view, and then returns to intermittent operation at a 7.4 to 8 seconds cycle.

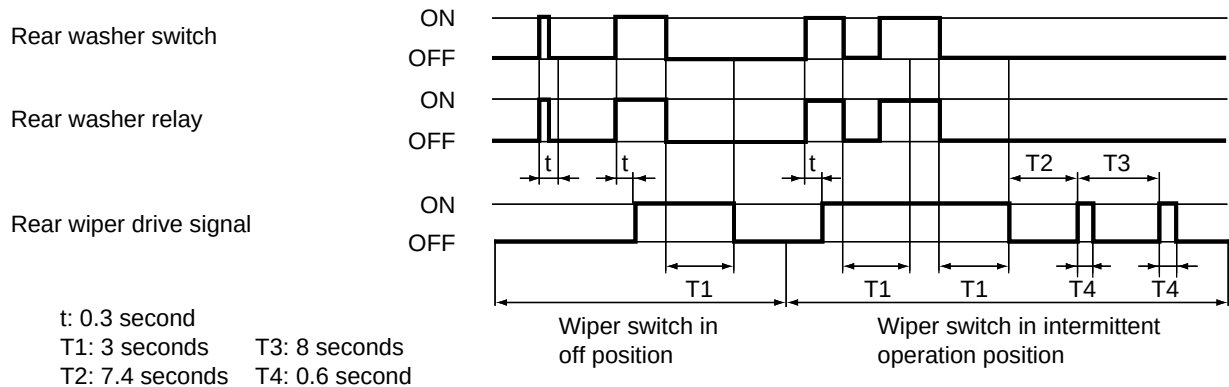


AC101553AC

Rear washer control

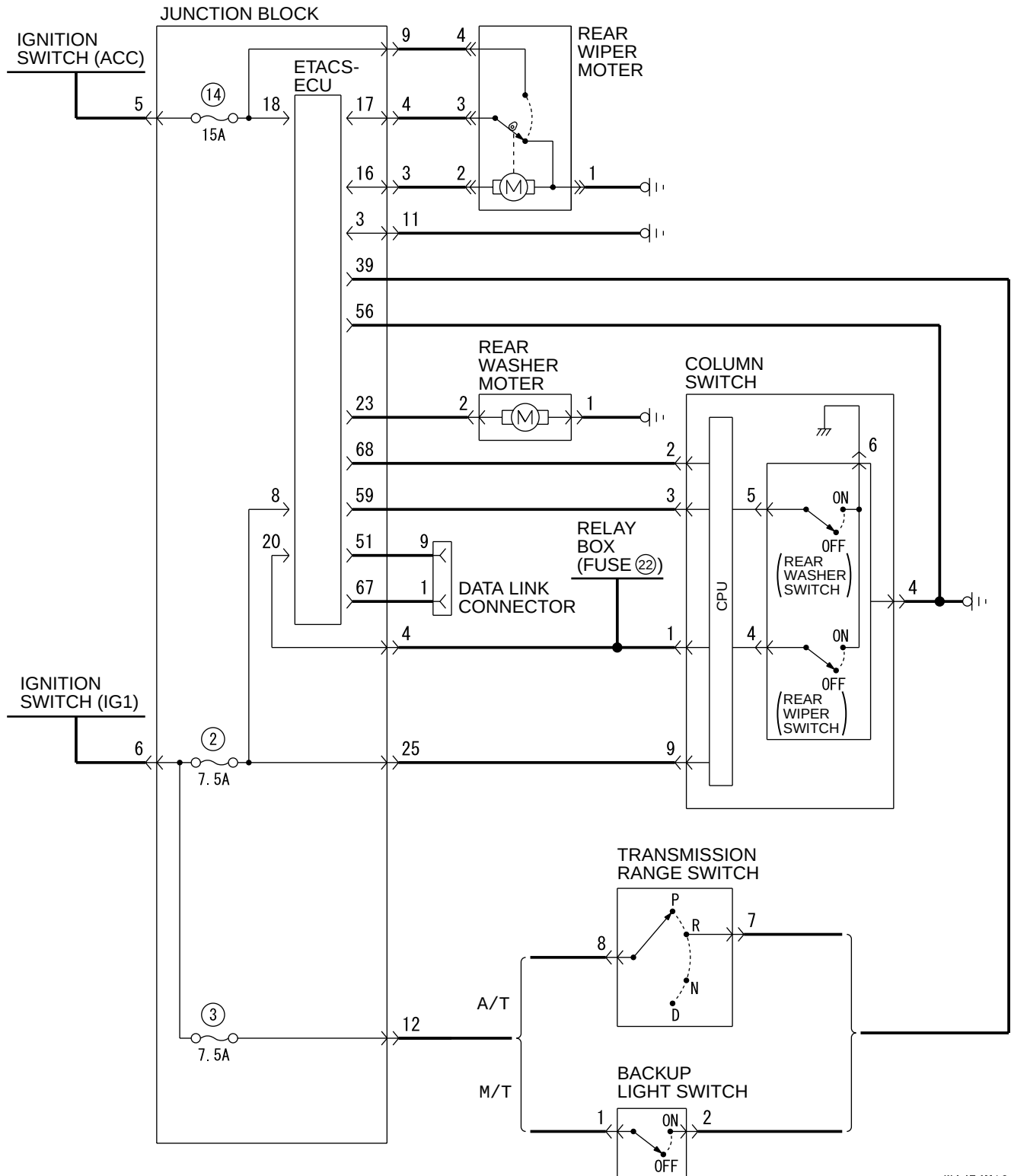
When the ignition switch is at the ACC or ON position, if the rear washer switch of the column switch is turned ON, the ETACS-ECU turns ON the rear washer relay. The rear wiper drive signal is turned ON in 0.3 seconds until 3 seconds after the rear washer switch goes OFF to operate the rear wiper continuously.

If the rear wiper is in intermittent operation when the rear washer switch is turned ON, 7.4 seconds after the rear wiper drive signal turns OFF, the 8 seconds cycle intermittent operation will continue.



AC101554AC

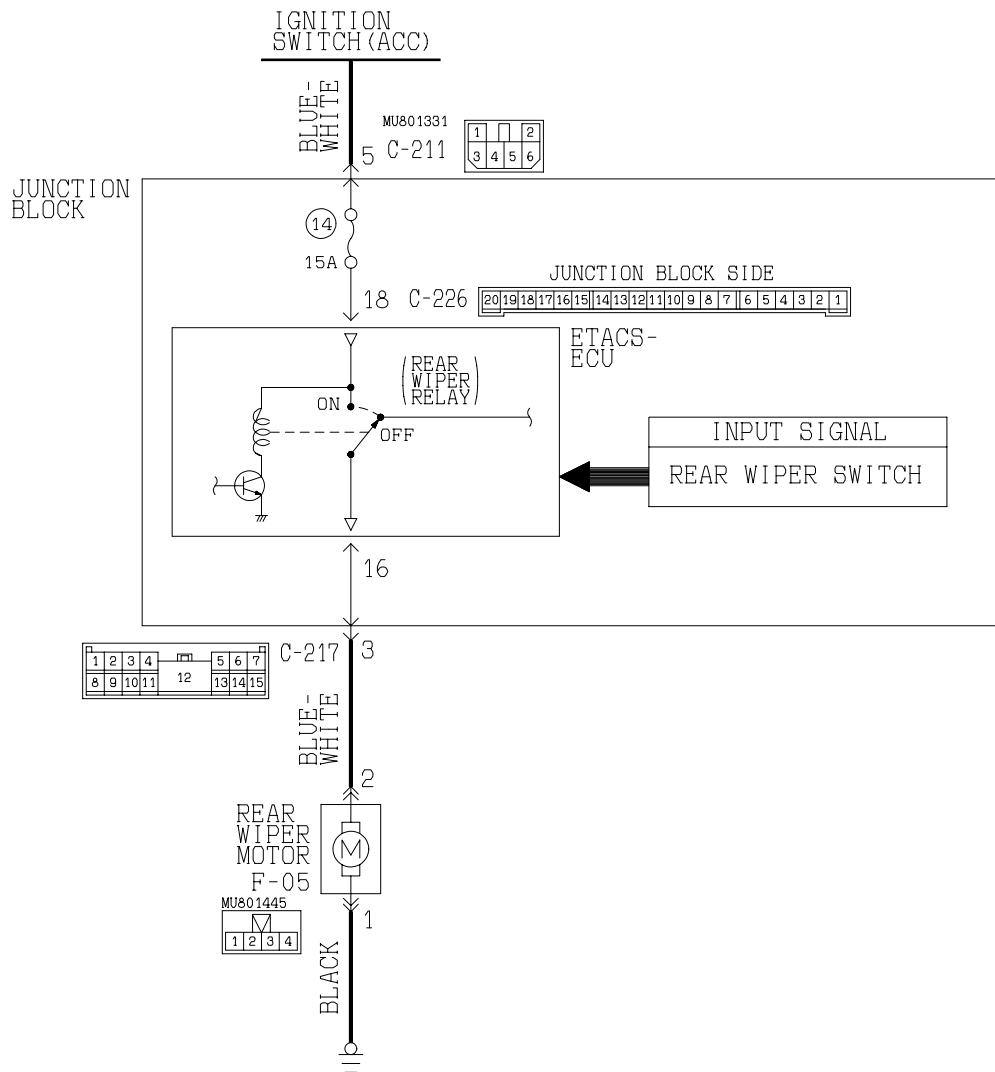
General circuit diagram for rear wiper and washer



W4J54M121A

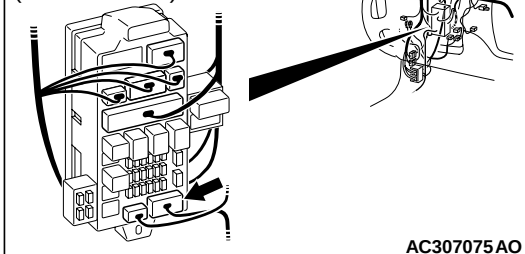
INSPECTION PROCEDURE H-1: Rear Wiper and Washer: Rear wiper does not work at all.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-10](#)."

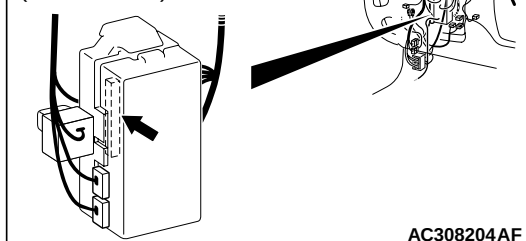
Rear Wiper Motor Power Supply Circuit

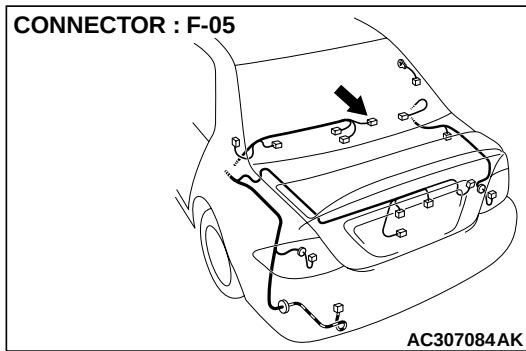
W3J02M13AA

CONNECTOR : C-217
JUNCTION BLOCK
(FRONT VIEW)



CONNECTOR : C-226
JUNCTION BLOCK
(REAR VIEW)





CIRCUIT OPERATION

- The rear wiper switch sends a signal through the column-ECU (incorporated in the column switch) to the ETACS-ECU. If the column-ECU sends a rear wiper switch "ON" signal to the ETACS-ECU, the ETACS-ECU turns on the relay (incorporated in the ETACS-ECU), thus causing the rear wiper motor to be turned on.
- The ETACS-ECU operates the rear wiper according to the following switches:
 - Ignition switch (ACC)
 - Rear wiper switch

TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not work normally, the input circuit system from the switches, the rear wiper motor, the column switch (windshield wiper and windshield washer switch) or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- The rear wiper motor may be defective
- The column switch may be defective (windshield wiper and washer switch)
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

Check the following ECUs:

- ETACS-ECU
- Column-ECU

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

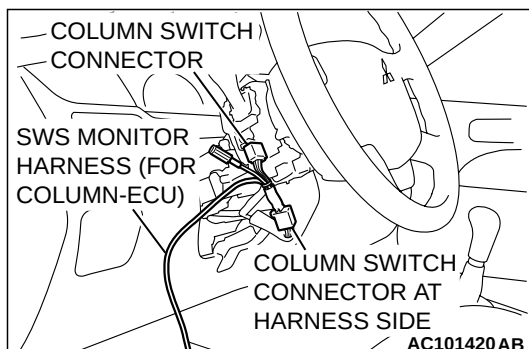
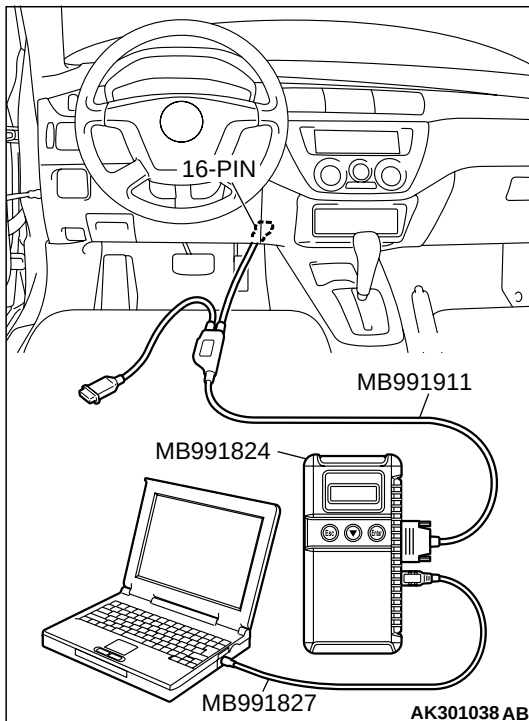
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

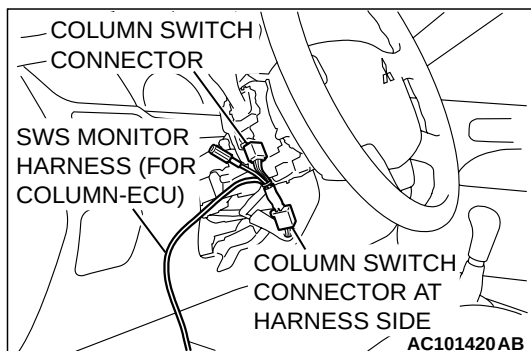
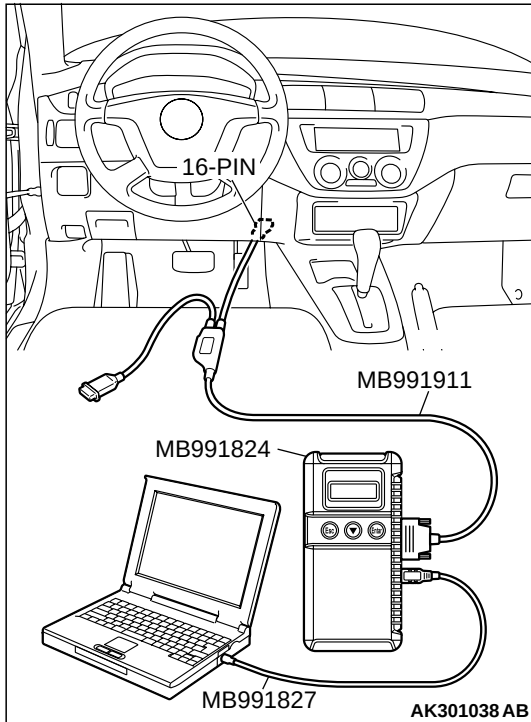
Q: Is "OK" displayed on both the "ETACS ECU" and "COLUMN ECU" menus?

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

"NG" is displayed on the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."

"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: ACC
- rear wiper switch: INT

Operate scan tool MB991958 according to the procedure below to display "REAR WIPER."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "SWS MONITOR."
4. Select "FUNCTION DIAG."
5. Select "REAR WIPER."

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

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 13	REAR WIPER SW	ON
ITEM 31	IG SW (ACC)	ON

Q: Are normal conditions displayed on the "REAR WIPER SW" and "IG SW (ACC)"?

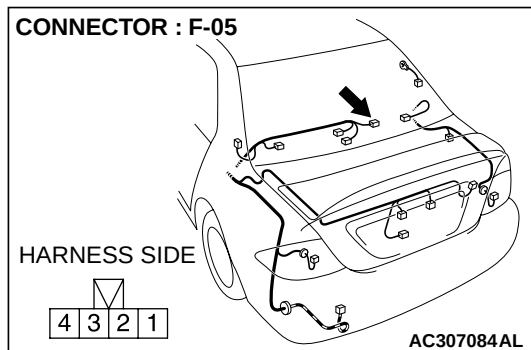
Normal conditions are displayed for all the items : Go to Step 3.

Normal condition is not displayed "REAR WIPER SW" :

Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the rear wiper switch [P.54B-490.](#)"

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-454.](#)"

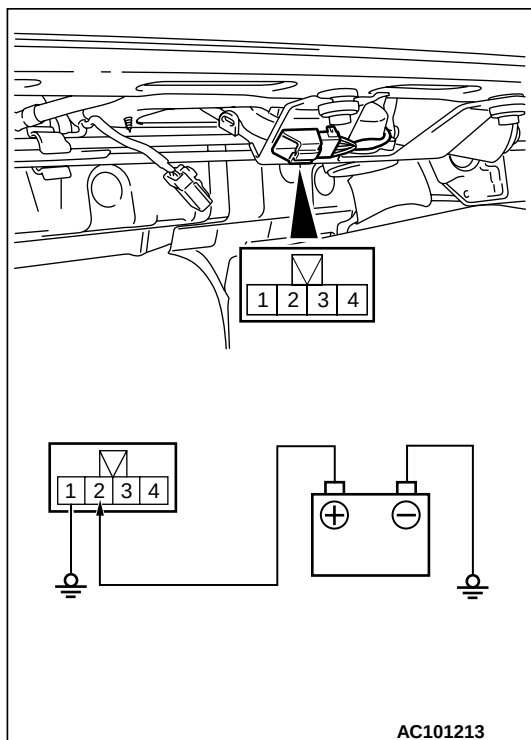


STEP 3. Check rear wiper motor connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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 works normally.



STEP 4. Check the rear wiper motor.

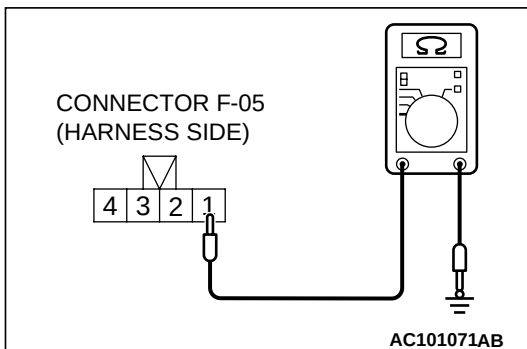
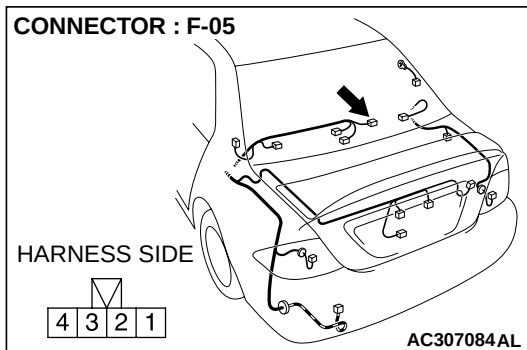
(1) Disconnect rear wiper motor connector F-05.

(2) Connect the battery to the rear wiper motor, 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. Verify that the rear wiper works normally.



**STEP 5. Check the ground circuit to the rear wiper motor.
Test 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.

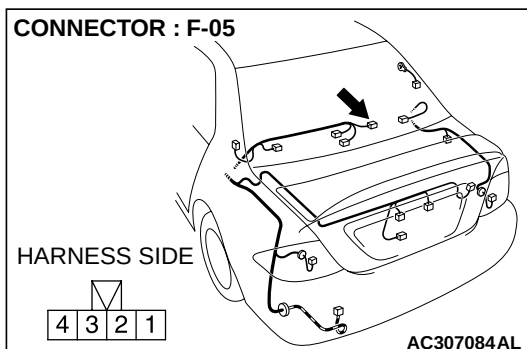
(2) Measure the resistance value between terminal 1 and ground.

- 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.

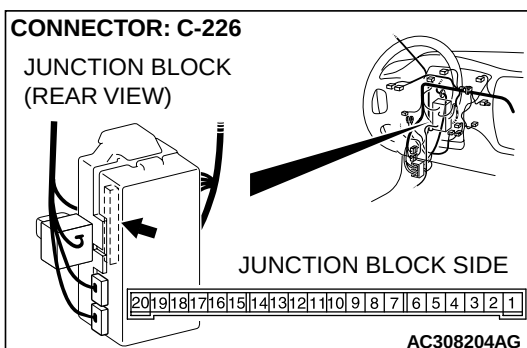


STEP 6. Check the wiring harness between rear wiper motor connector F-05 (terminal 1) and ground.

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 works normally.



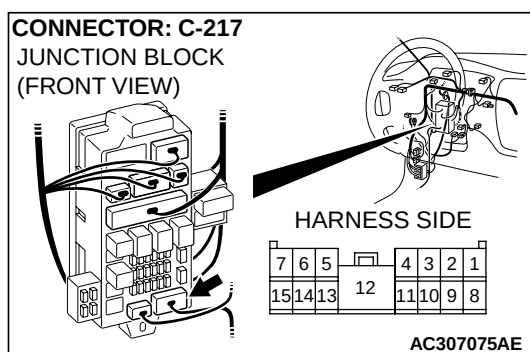
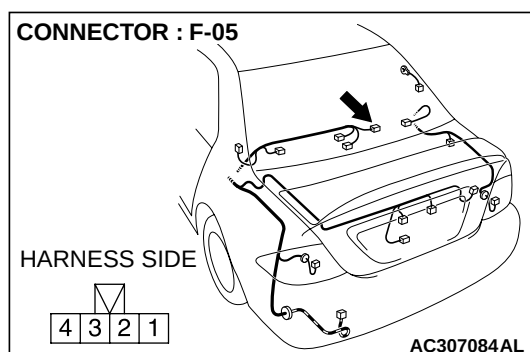
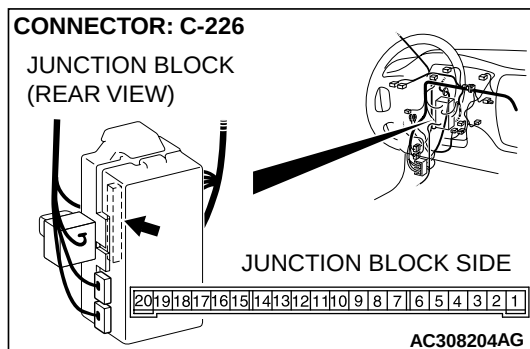
STEP 7. Check C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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 works 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](#).

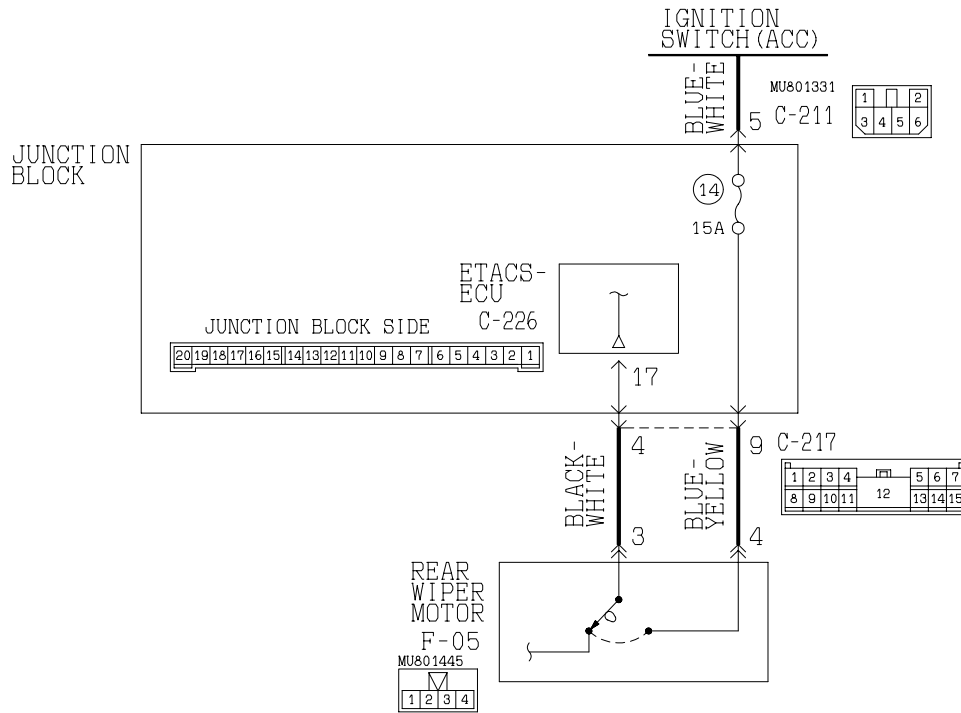
Q: Is the wiring harness between rear wiper motor connector F-05 (terminal 2) and ETACS-ECU connector C-226 (terminal 16) in good condition?

YES : Replace the ETACS-ECU. Verify that the rear wiper works normally.

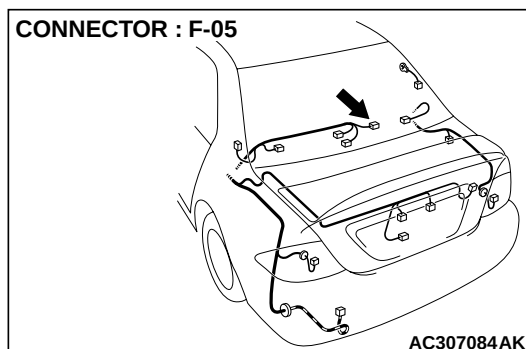
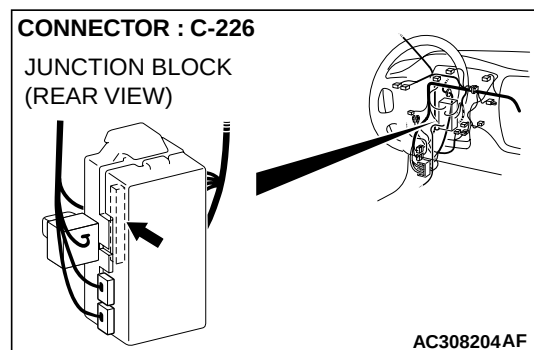
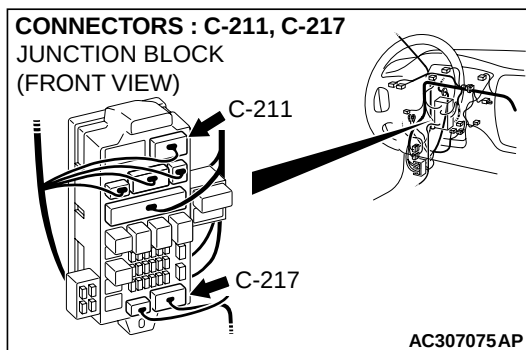
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the rear wiper works normally.

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

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set

STEP 1. Verify the rear wiper.

Q: Does the rear wiper motor operate (however, the rear wiper does not stop at the predetermined park position)?

YES : Go to Step 2.

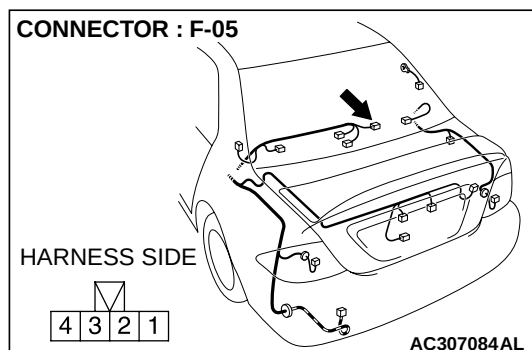
NO : Refer to Inspection Procedure H-1 "Rear wiper does not work at all [P.54B-246](#)."

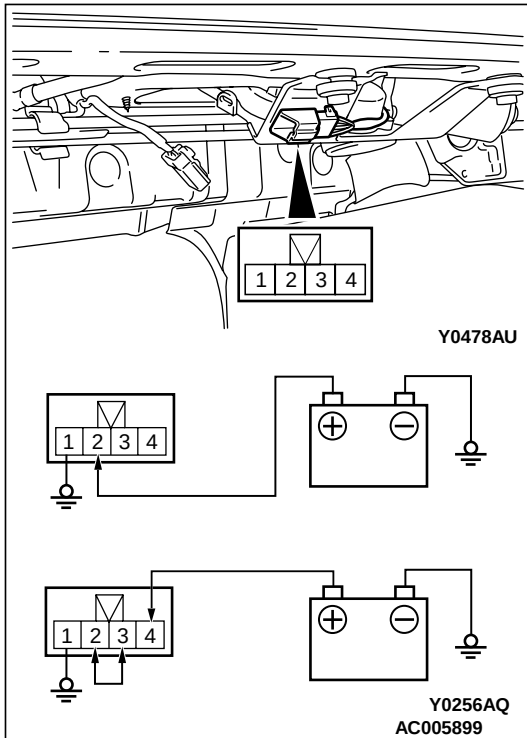
STEP 2. Check rear wiper motor connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.





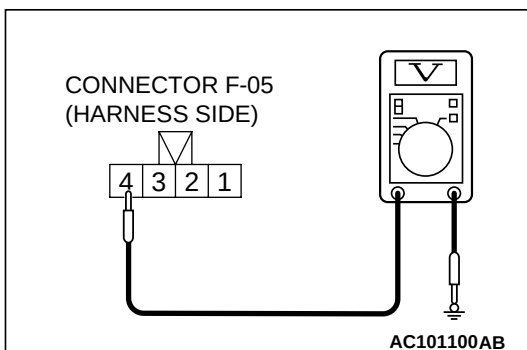
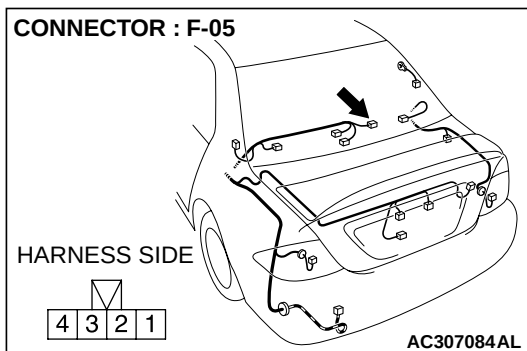
STEP 3. Check the rear wiper motor.

- (1) Disconnect rear wiper motor connector F-05.
- (2) While the rear wiper motor is running, disconnect the battery to stop the motor.
- (3) 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. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.



STEP 4. Check the ignition switch (ACC) circuit to the rear wiper motor. Test 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.

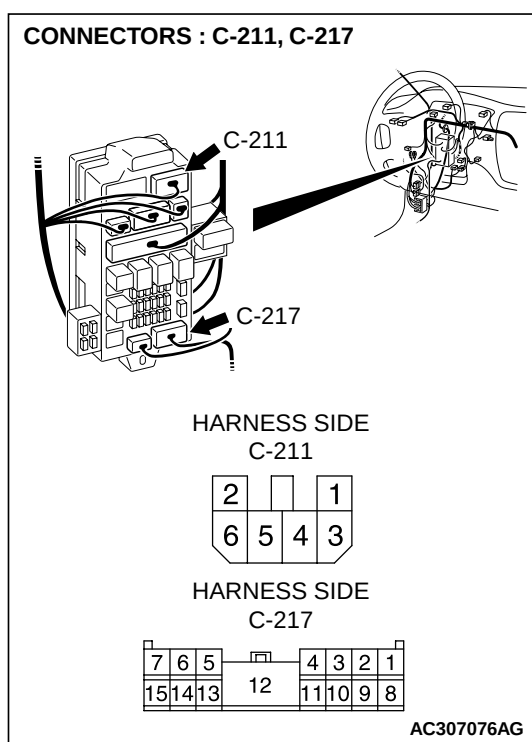
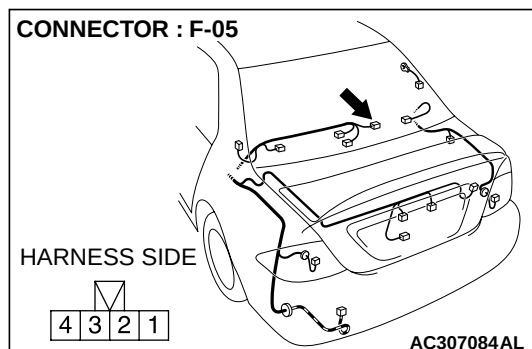
- (3) Measure the voltage between terminal 4 and ground by backprobing.
 - The voltage should equal approximately 12 volts (battery positive voltage).

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

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between rear wiper motor connector F-05 (terminal 4) and the ignition switch (ACC).



NOTE: Also check junction block connectors C-211 and C-217 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 or 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 4) and the ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

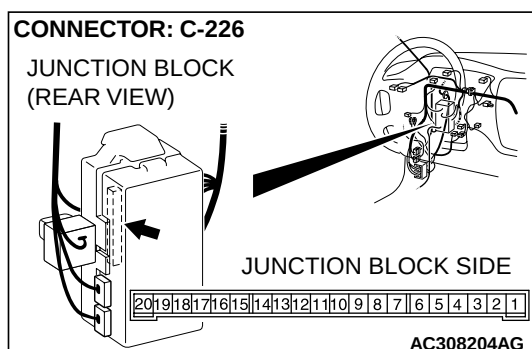
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

STEP 6. Check ETACS-ECU connector C-226 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

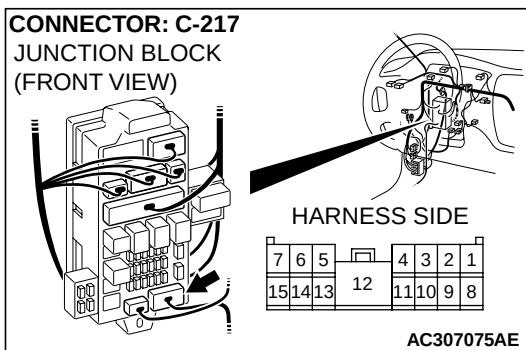
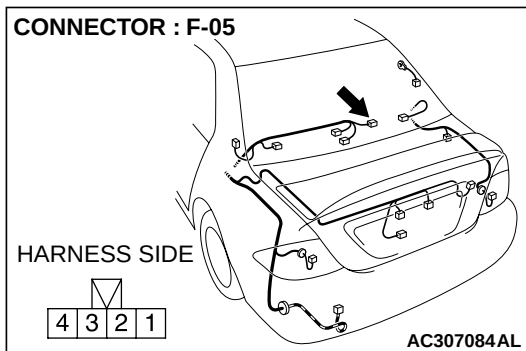
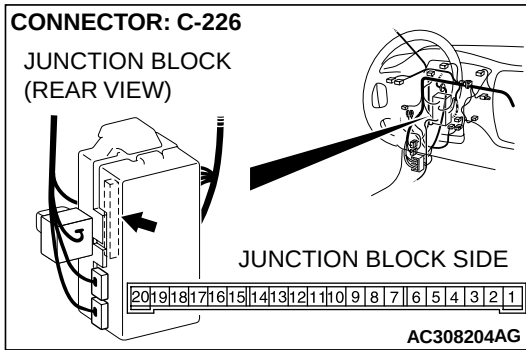
Q: Is ETACS-ECU connector C-226 in good condition?

YES : Go to Step 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 7. 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](#).

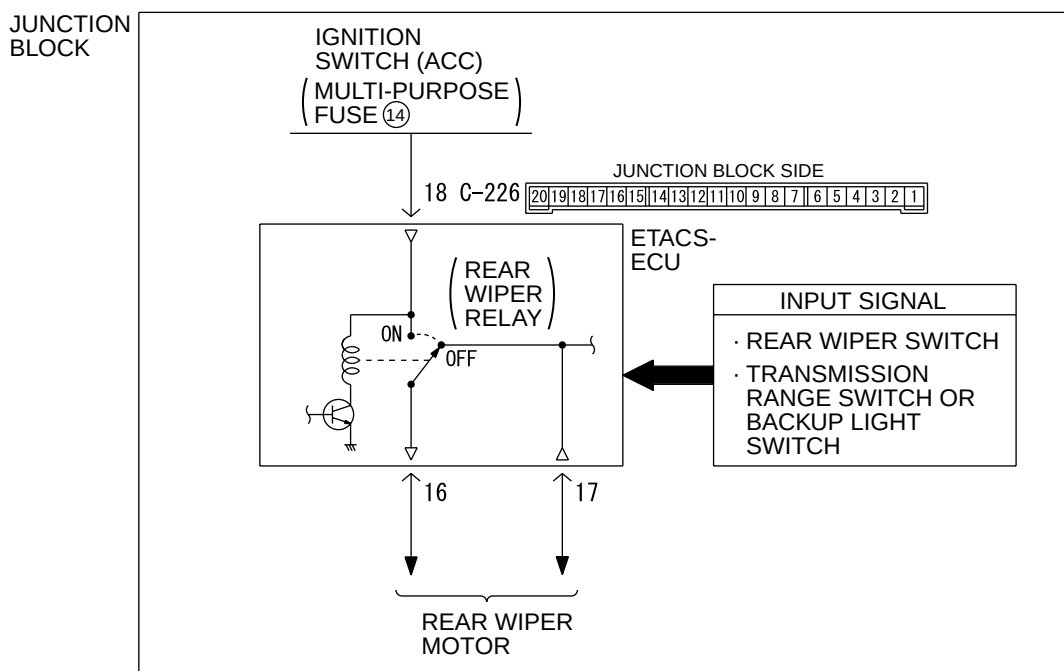
Q: Is the wiring harness between rear wiper motor connector F-05 (terminal 3) and ETACS-ECU connector C-226 (terminal 17) in good condition?

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

"R" Position During Rear Wiper Operation Circuit

W4J54M122A

CIRCUIT OPERATION

The ETACS-ECU operates the rear wiper consecutively approximately twice when the selector lever is moved to "R" position while the rear wiper is turned on.

TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not work consecutively approximately twice, the transmission range switch ("R" position) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

STEP 1. Verify the rear wiper.

Q: Does the rear wiper operate?

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

Set each switch to the following condition before checking input signal from the transmission range switch ("R" position).

- Ignition switch: ON
- Rear wiper switch: ON
- Shift position: R position

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

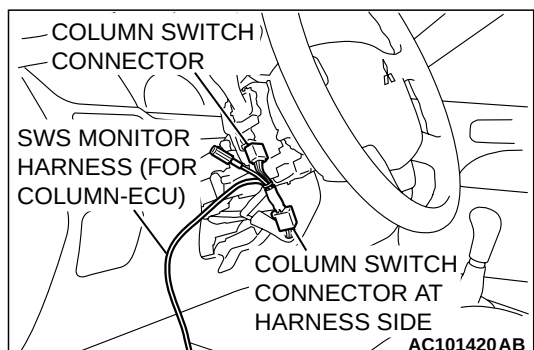
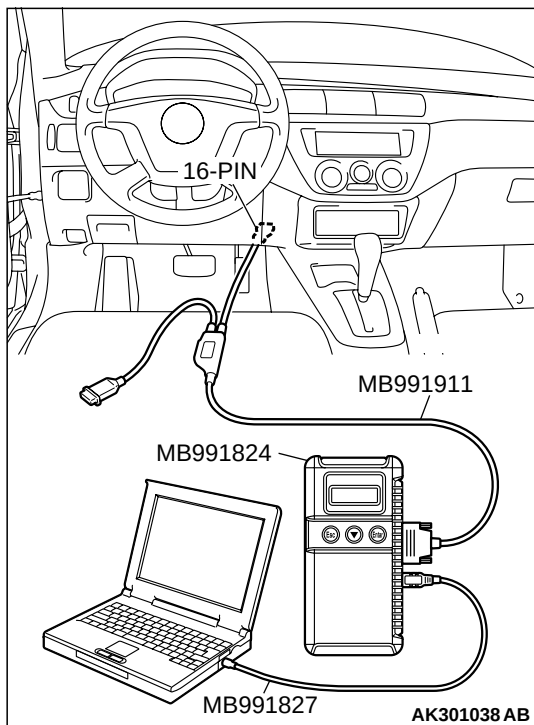
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Operate scan tool MB991958 according to the procedure below to display "REV. INTERLOCK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "FUNCTION DIAG."
 5. Select "REAR WIPER."
 6. Select "REV. INTERLOCK."
- (4) Check that normal conditions are displayed on the item described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 41	PNP SW (R)	ON

Q: Is normal condition displayed?

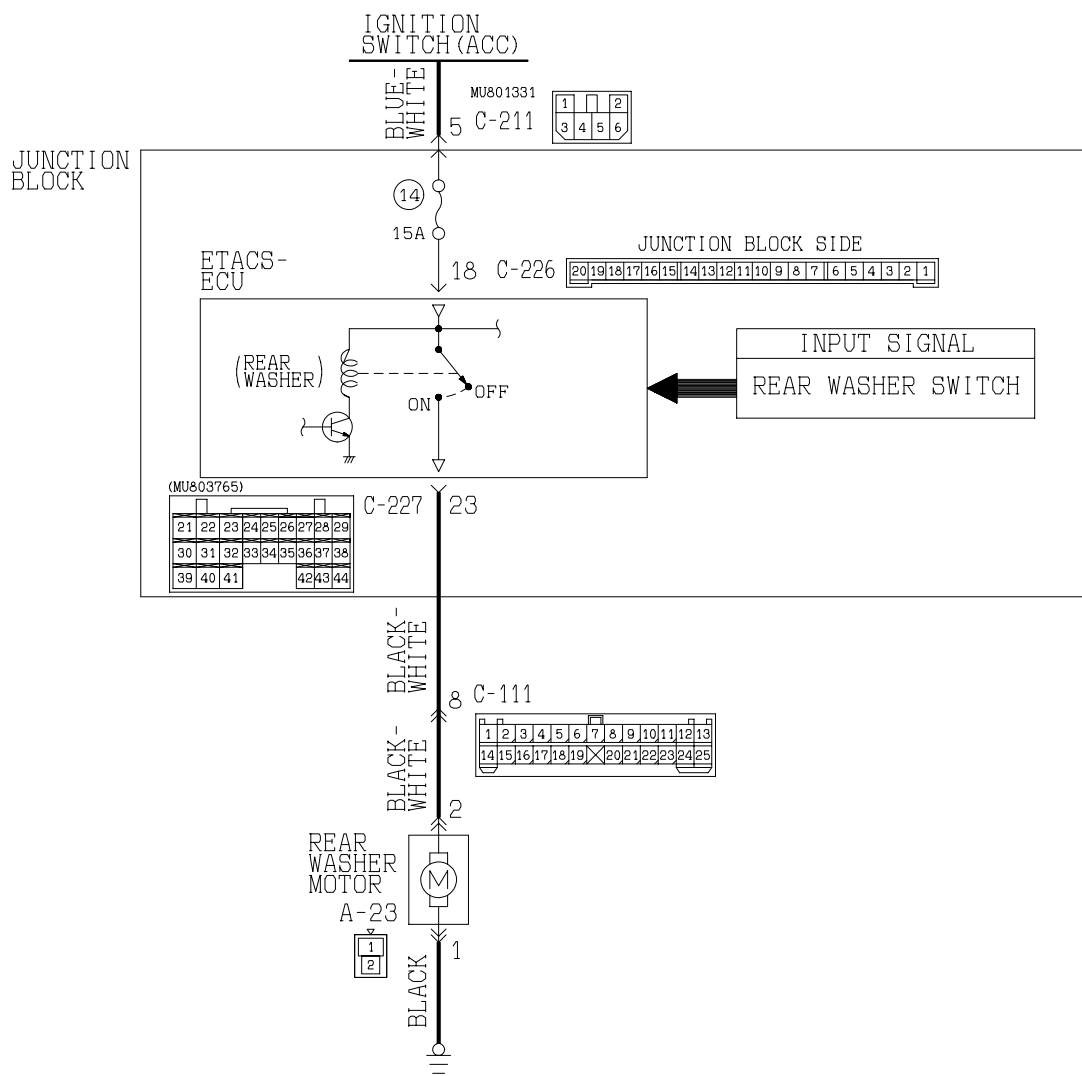
YES : Replace the ETACS-ECU. When the selector lever is moved to the "R" position, the rear wiper should operate consecutively approximately twice.

NO : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive a signal from the backup light switch <M/T>[P.54B-460](#) " or Inspection Procedure N-3 "ETACS-ECU does not receive "R" position signal from the transmission range switch <A/T>[P.54B-469](#) ."

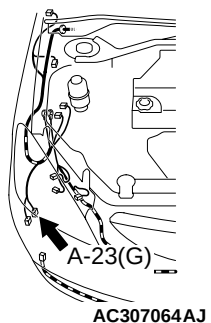
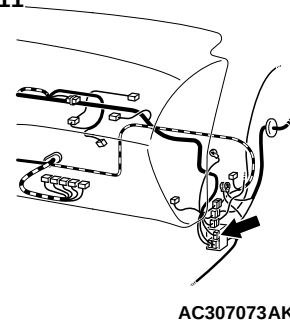


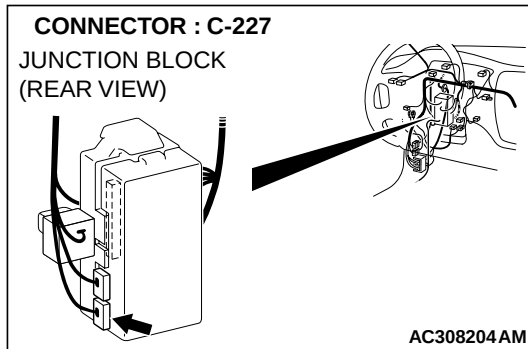
INSPECTION PROCEDURE H-4: Rear Wiper and Washer: Rear washer does not operate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor [P.54B-10](#)."

Rear Washer Motor Power Supply Circuit

W3J02M16AA

CONNECTOR : A-23**CONNECTOR : C-111**



CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

- The rear washer motor may be defective
- The column switch (windshield wiper and washer switch) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

STEP 1. Verify the rear wiper.

Q: Does the rear wiper operate?

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

Set each switch to the following condition before checking input signals from the rear washer switch:

- Ignition switch: ACC
- Rear washer switch: ON

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the DLC harness before connecting the column-ECU harness. Be sure to connect SWS monitor kit MB991862 after turning on scan tool MB991958.

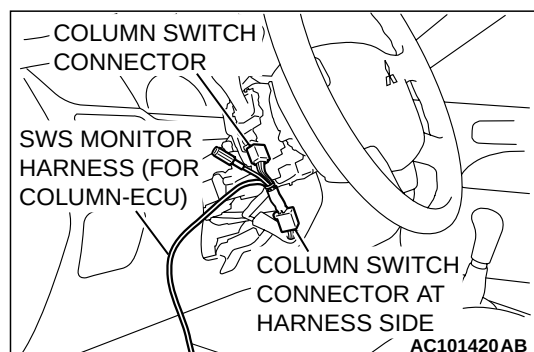
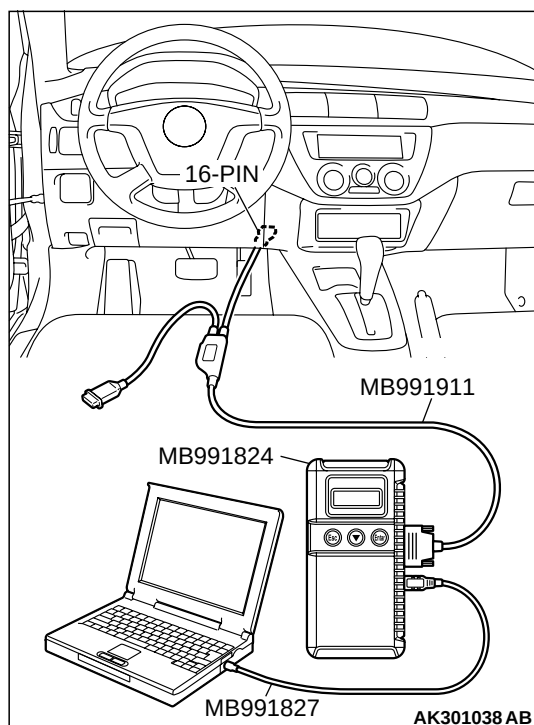
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) Operate scan tool MB991958 according to the procedure below to display "REAR WASHER."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "FUNCTION DIAG."
 5. Select "REAR WIPER."
 6. Select "REAR WASHER."
- (4) Check that normal conditions are displayed on the item described in the table below.

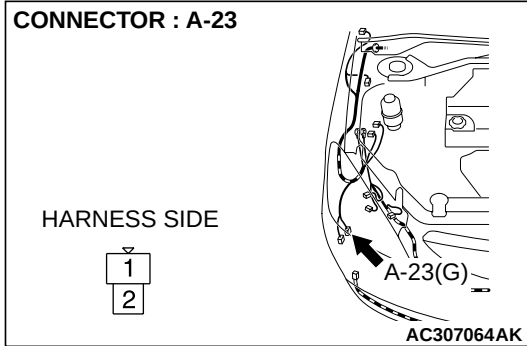
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 14	REAR WASH.SW	ON

Q: Is normal conditions displayed?

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive a signal from the rear washer switch [P.54B-490](#)."





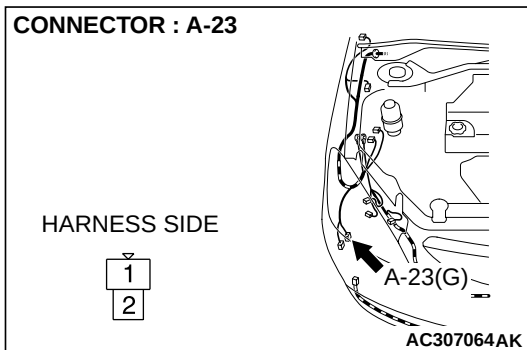
STEP 3. Check rear washer motor connector A-23 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear washer motor connector A-23 in good condition?

YES : Go to Step 4.

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

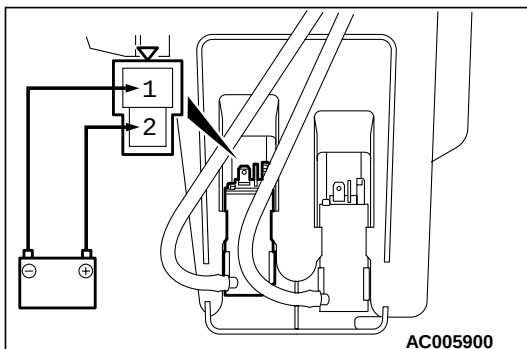
[P.00E-2](#). Verify that the rear washer works normally.



STEP 4. Check the rear washer motor.

(1) Disconnect rear washer motor connector A-23.

(2) Fill the washer tank with washer fluid.

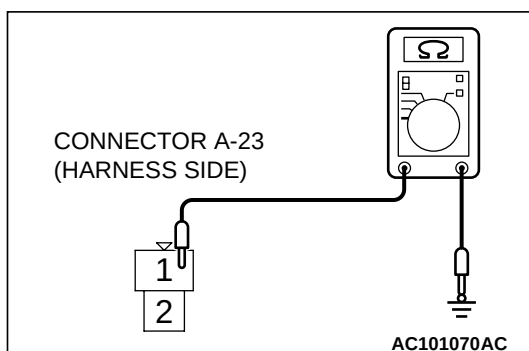
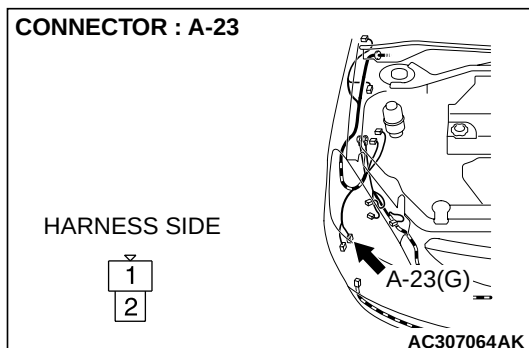


(3) When battery voltage is applied between terminals 1 and 2, washer fluid should gush out.

Q: Does the rear washer motor operate normally?

YES : Go to Step 5.

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



**STEP 5. Check the ground circuit to the rear washer motor.
Test at rear washer motor connector A-23.**

(1) Disconnect rear washer motor connector A-23 and measure the resistance available at the wiring harness side of the connector.

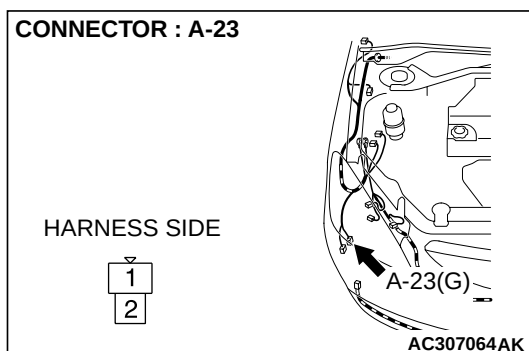
(2) Measure the resistance value between terminal 1 and ground.

- 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.

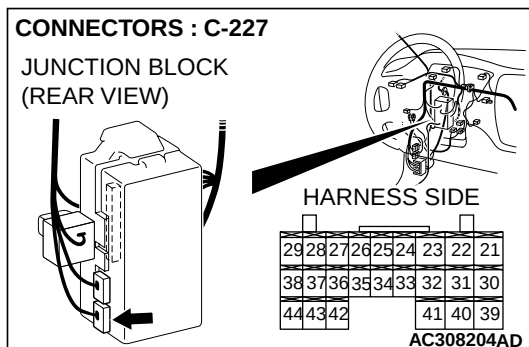


STEP 6. Check the wiring harness between rear washer motor connector A-23 (terminal 1) and ground.

Q: Is the wiring harness between rear washer motor connector A-23 (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 works normally.



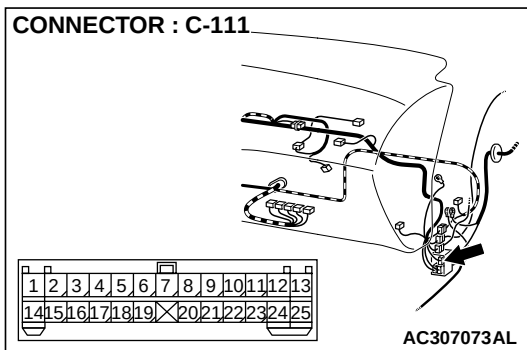
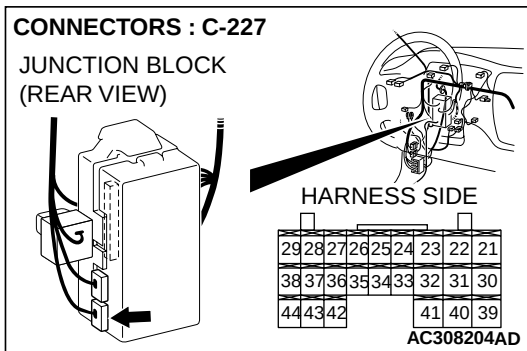
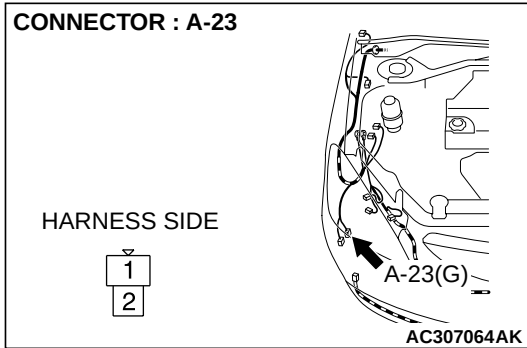
STEP 7. Check ETACS-ECU connector C-227 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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 works normally.

STEP 8. Check the wiring harness between rear washer motor connector A-23 (terminal 2) and ETACS-ECU connector C-227 (terminal 23).



NOTE: Also check intermediate connector C-111 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connectors 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 rear washer motor connector A-23 (terminal 2) and ETACS-ECU connector C-227 (terminal 23) in good condition?

YES : Replace the ETACS-ECU. Verify that the rear washer works normally.

NO : The wiring harness may be damaged or the connector(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 works normally.

SEAT BELT WARNING LIGHT

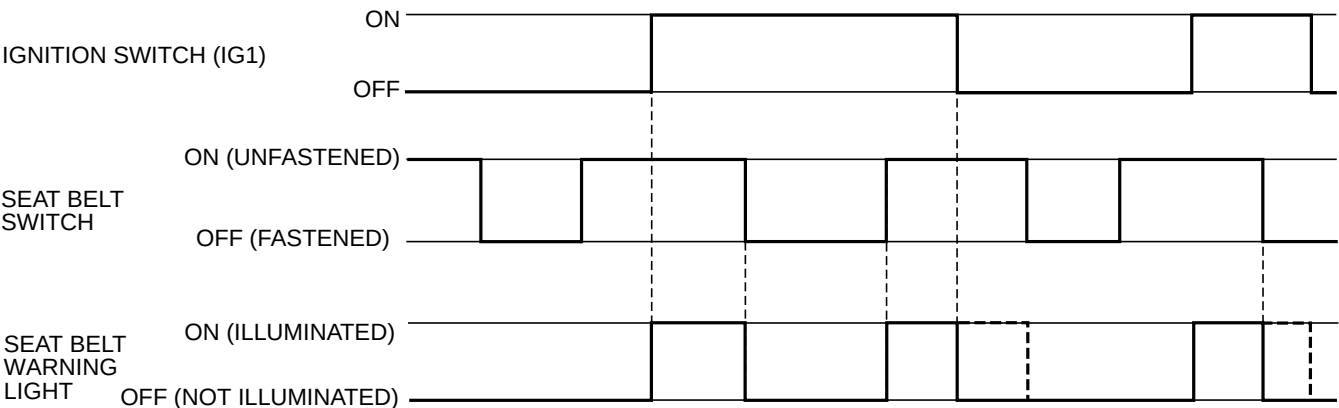
GENERAL DESCRIPTION CONCERNING THE SEAT BELT WARNING LIGHT

M1549023900132

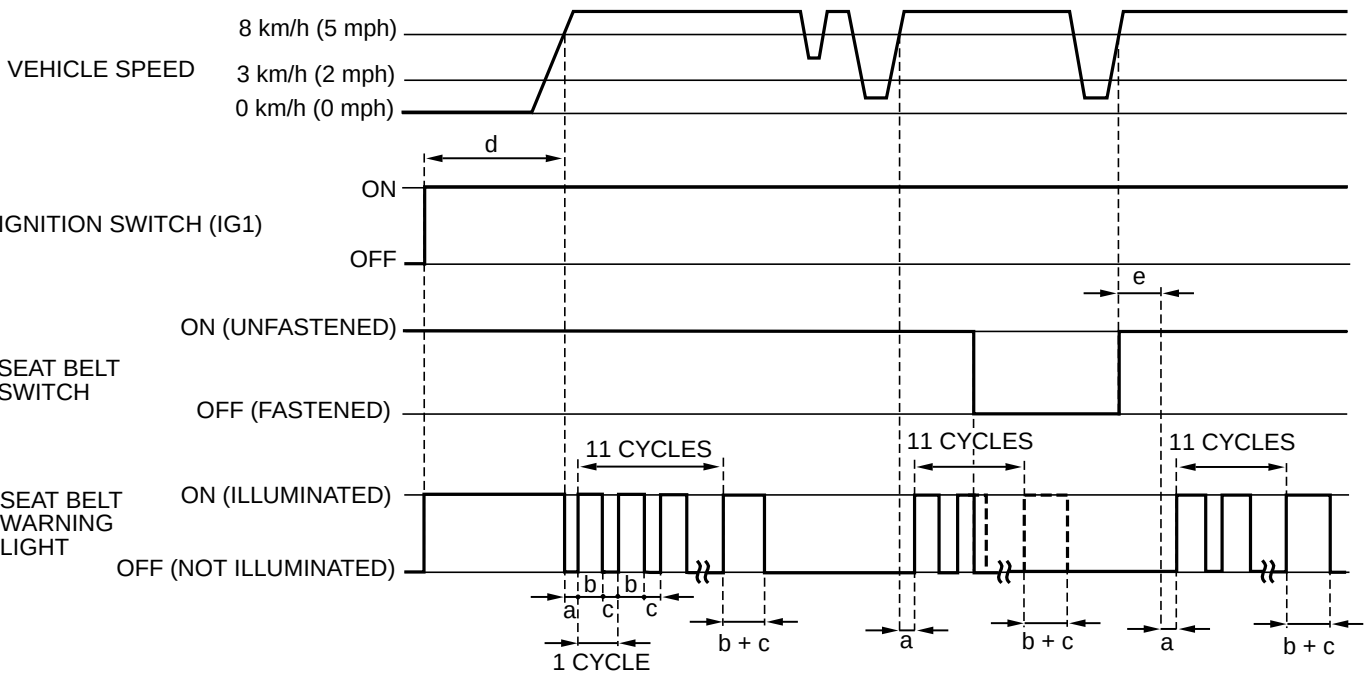
The ECU related to the seat belt warning light function is as follows.

FUNCTION	CONTROL ECU
Seat belt warning light function	ETACS-ECU

Seat belt warning light function



AC305420 AB



a: 0.5 SECOND
b: 5 SECONDS
c: 3 SECONDS
d: 60 SECONDS OR MORE
e: 10 SECONDS

AC305376 AB

If any of the following conditions is met with the ignition switch at "ON" or "ST", the ETACS-ECU illuminates or extinguishes the seat belt indicator by using the driver's seat belt switch signal and the vehicle speed signal.

- The seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch at "ON" or "ST".

- Flashes the indicator 11 cycles (after 0.5 seconds) if any of the following conditions is met when sixty seconds or more have elapsed since the ignition switch is turned "ON", and then illuminates it for eight seconds. One cycle consists of five-second "on" and then three-second "off".

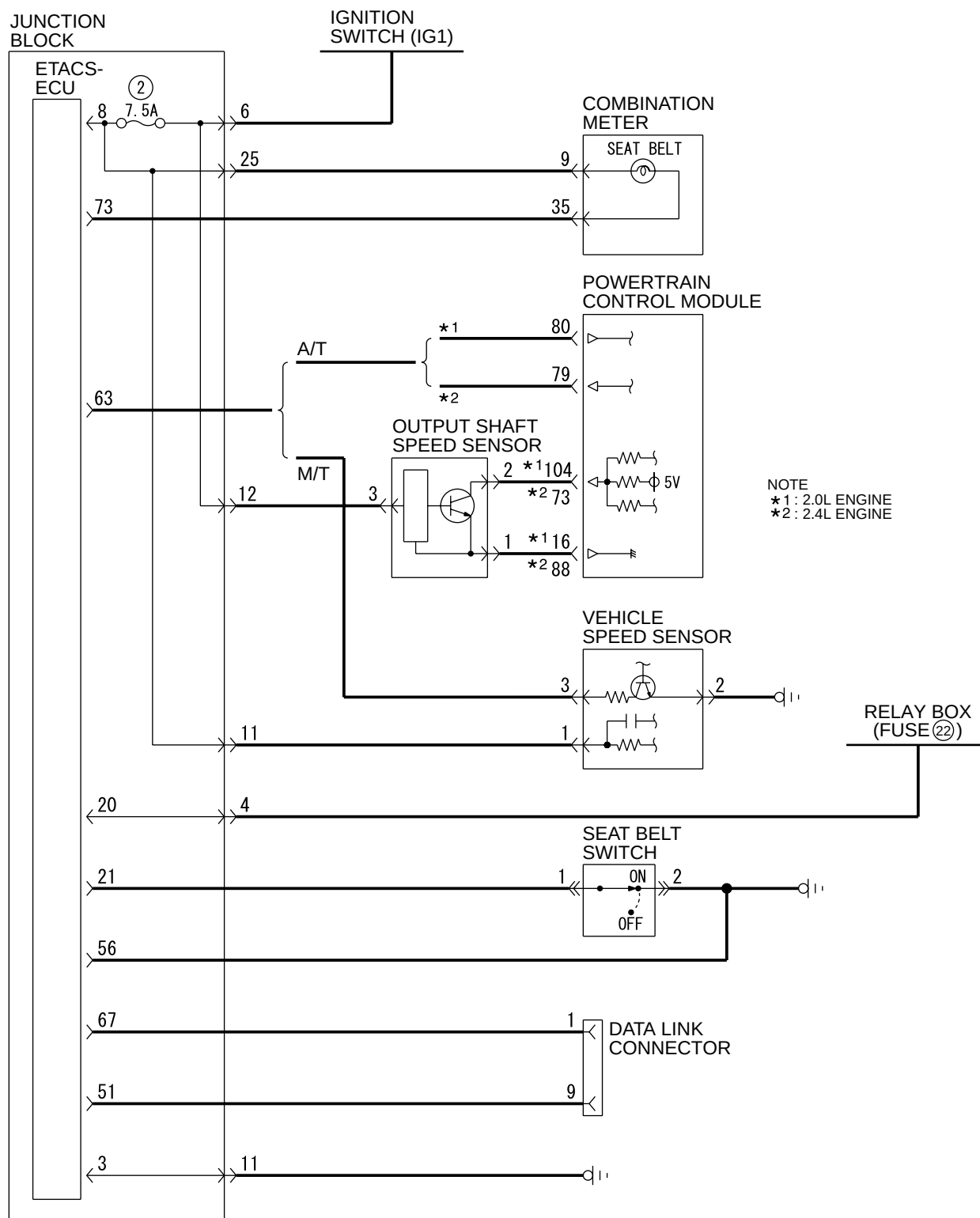
- a. The vehicle speed has reached 8 km/h (5 mph) while the seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch "ON.

- b. The seat belt switch has been turned on (driver's seat belt has not been fastened) for at least ten seconds while the ignition switch has been turned "ON" and the vehicle speed has been 8 km/h (5 mph) or more.

NOTE: Once this timer operation has been activated, it will not be activated again until the vehicle speed reduces to 3 km/h (2 mph) or less even if any of the following conditions is met.

- The indicator stops illuminating if the ignition switch or the seat belt switch is turned off (the driver's seat belt is fastened) while the timer operation is active.

General circuit diagram for the seat belt warning light function

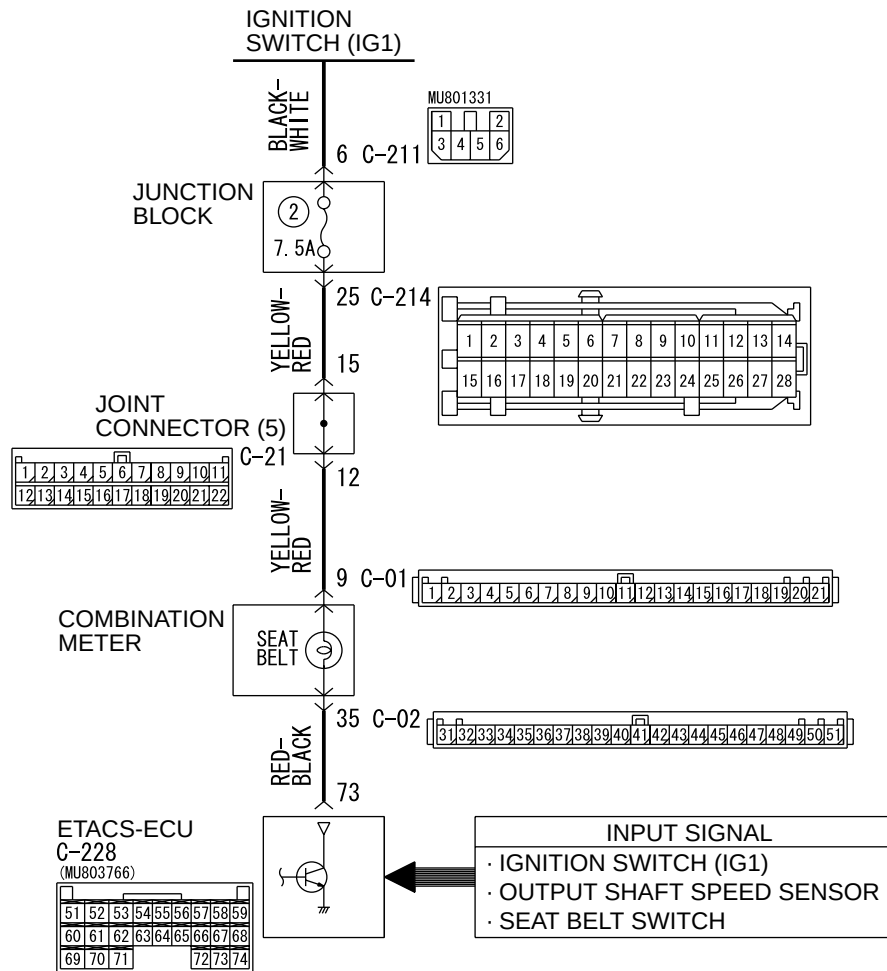


W4J54M123A

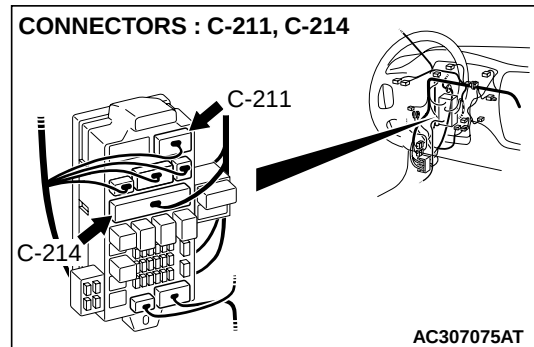
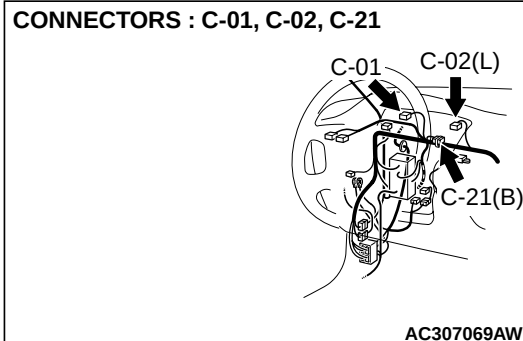
INSPECTION PROCEDURE I-1: Seat Belt Warning Light: The seat belt warning light does not work normally.

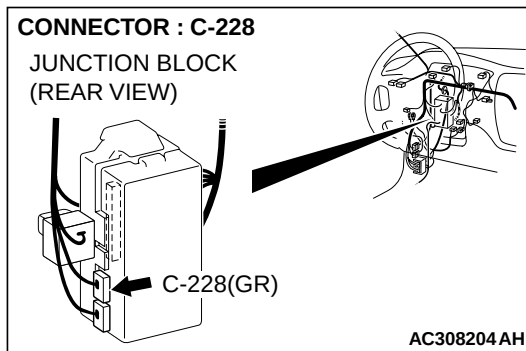
NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991862. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-10."

Seat Belt Warning Light Circuit



W4J54M124A



**CIRCUIT OPERATION**

- The ETACS-ECU operates the seat belt warning light according to the following switch signals:
 - Ignition switch (IG1)
 - Driver's seat belt switch
- If the driver turn the ignition switch to the "ON" position without fastening the seat belt, the seat belt warning light illuminates.

TECHNICAL DESCRIPTION (COMMENT)

If the seat belt warning light does not illuminate, the input circuit, the combination meter (seat belt warning light bulb or printed-circuit board) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The driver's side seat belt switch may be defective
- The combination meter (seat belt warning light bulb or printed-circuit board) may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: MUT-III USB Cable
 - MB991911: MUT-III Main Harness B
- MB991862: SWS monitor kit

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

Check the ETACS-ECU.

⚠ CAUTION

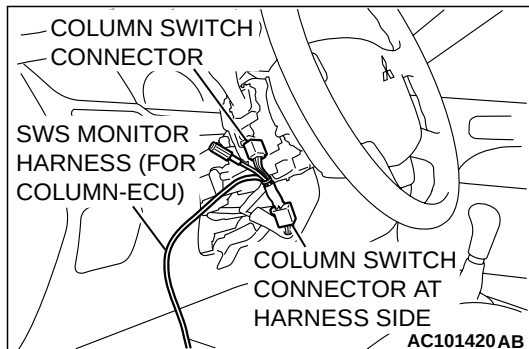
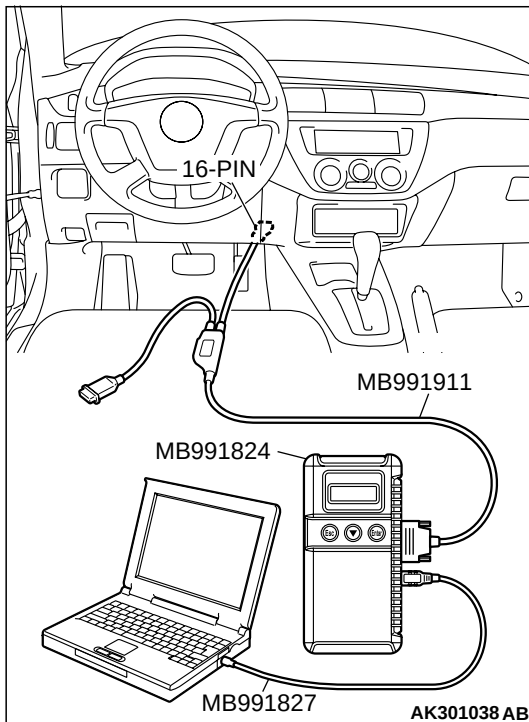
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Also connect SWS monitor kit MB991862 after turning on scan tool MB991958.

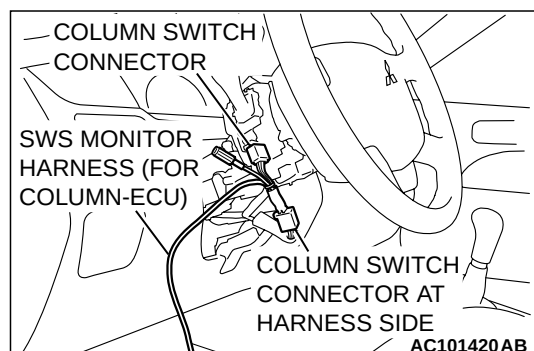
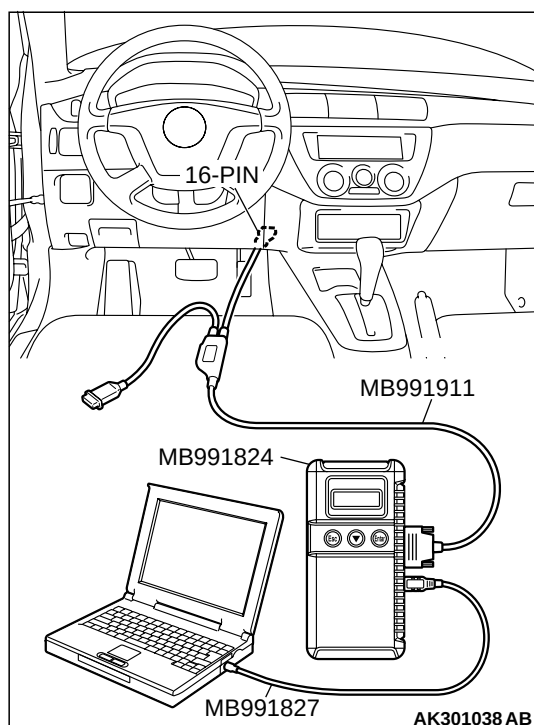
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Connect SWS monitor kit MB991862 to the column switch connector.
- (3) When the ignition switch is turned to the "ON" position.
- (4) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHK."
 1. Select "SYSTEM SELECT."
 2. Select "SWS."
 3. Select "SWS MONITOR."
 4. Select "ECU COMM CHK."
- (5) Scan tool MB991958 should show "OK" on the "ECU COMM CHK" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with ETACS-ECU is not possible [P.54B-45](#)."





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

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

Operate scan tool MB991958 according to the procedure below to display "ETACS ECU."

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

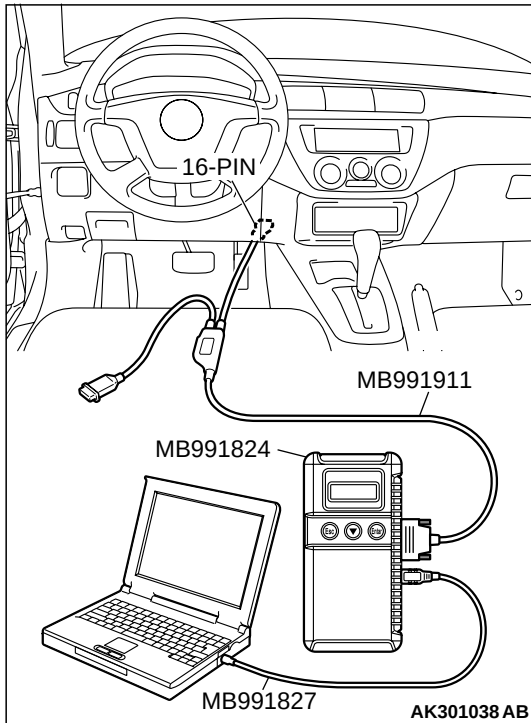
Check that normal conditions are displayed on the items described in the table below.

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

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

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) [P.54B-457](#)."



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

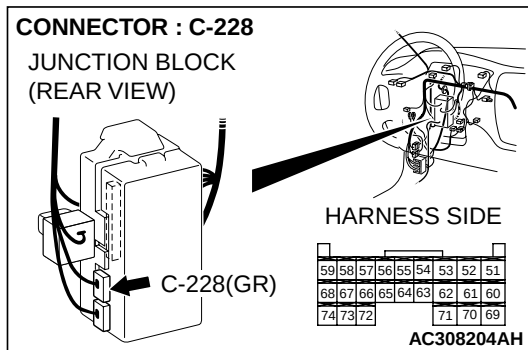
Check input signal from the driver's side seat belt switch. Operate scan tool MB991958 according to the procedure below to display "PULSE CHECK."

1. Select "SYSTEM SELECT."
2. Select "SWS."
3. Select "PULSE CHECK."
 - When the driver's seat belt is fastened, check if scan tool MB991958 sounds or not.

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

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-517](#)."

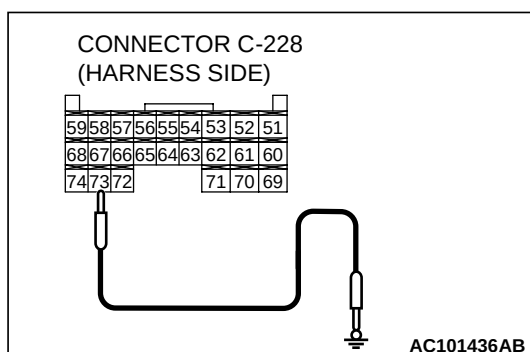
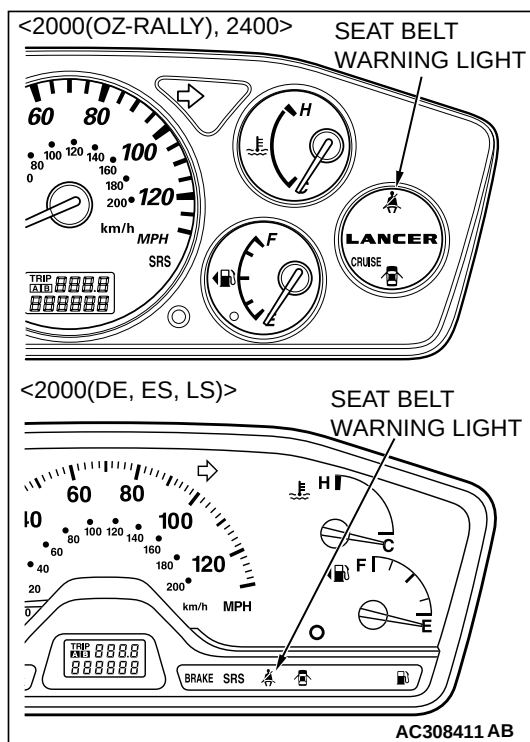


STEP 4. Check ETACS-ECU connector C-228 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

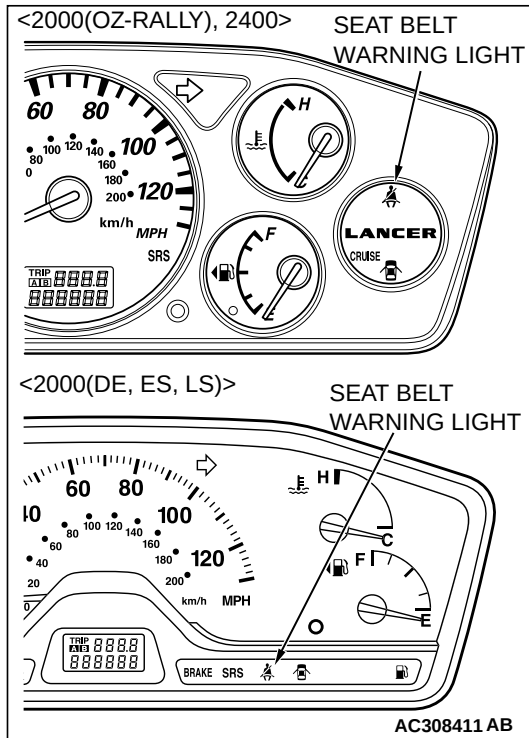
- (1) Disconnect ETACS-ECU connector C-228, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Connect terminal No.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.

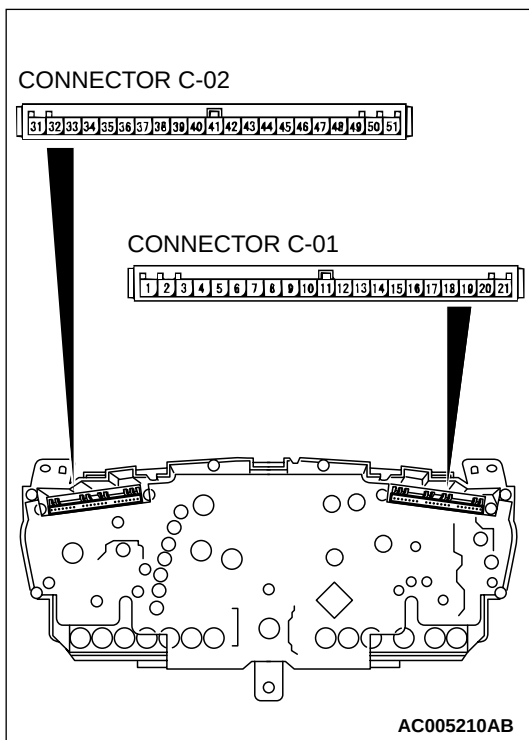


STEP 6. Check the seat belt warning light bulb.

Q: Is the seat belt warning light bulb in good condition?

YES : Go to Step 7.

NO : Replace the bulb. Verify that the seat belt warning light illuminates normally.



STEP 7. Check the combination meter (printed-circuit board).

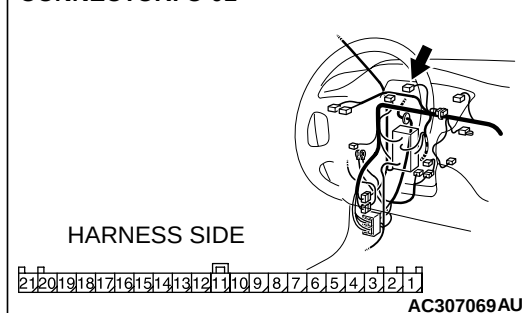
- (1) Remove the combination meter.
- (2) Remove the seat belt warning light bulb. Then measure the resistance value between the bulb terminals.
- (3) Install the bulb to the combination meter, and then measure the resistance value between connector C-01 (terminal 9) and connector C-02 (terminal 35). 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 8.

CONNECTOR: C-01



STEP 8. Check combination meter connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

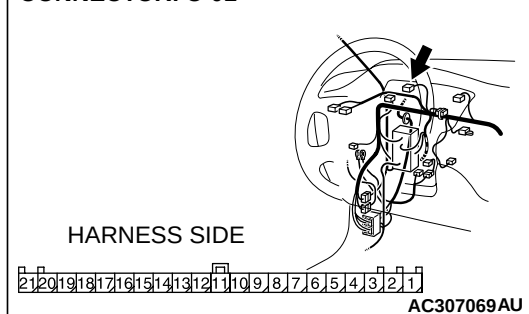
Q: Is combination meter connector C-01 in good condition?

YES : Go to Step 9.

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

P.00E-2. Verify that the seat belt warning light illuminates normally.

CONNECTOR: C-01



STEP 9. Check the ignition switch (IG1) circuit to the combination meter. Test at combination meter connector C-01.

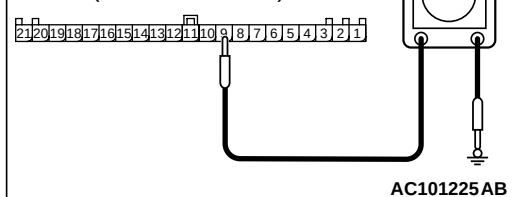
- (1) Disconnect combination meter connector C-01 and measure the voltage available at the harness side of the connector.
- (2) Turn the ignition switch to the "ON" position.

- (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)?

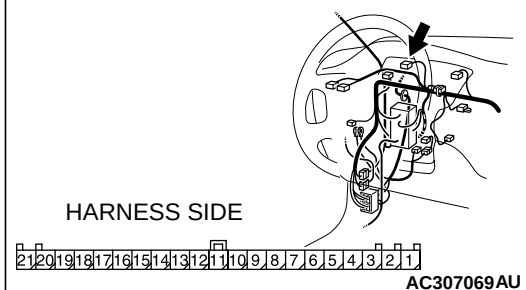
YES : Go to Step 11.

NO : Go to Step 10.

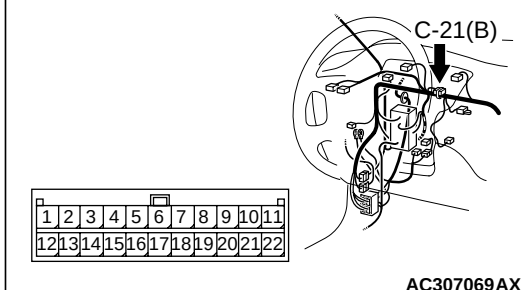
CONNECTOR C-01
(HARNESS SIDE)

STEP 10. Check the wiring harness between combination meter connector C-01 (terminal 9) and the ignition switch (IG1).

CONNECTOR: C-01



CONNECTOR : C-21



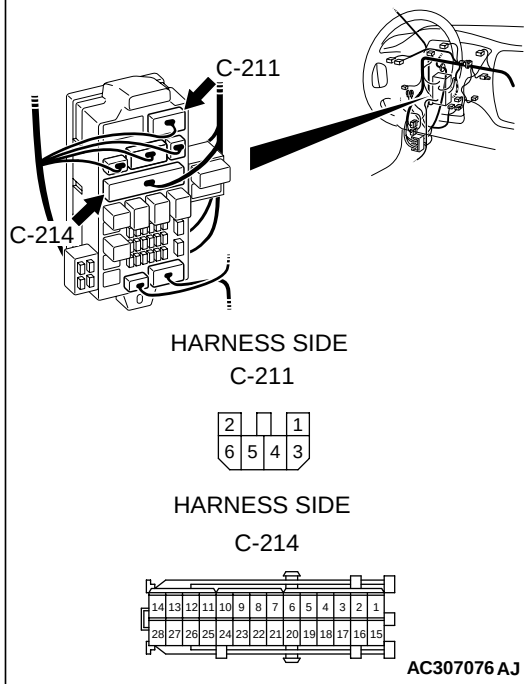
NOTE: Also check junction block connectors C-211, C-214 and joint connector C-21 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211, C-214 or joint connectors C-21 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

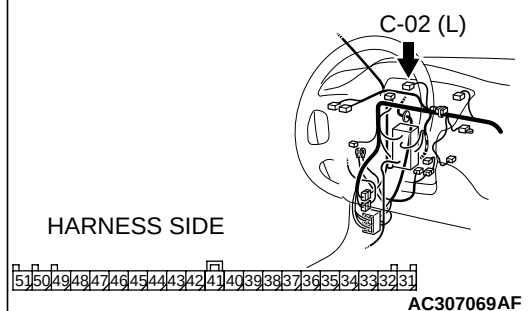
Q: Is the wiring harness between combination meter connector C-01 (terminal 9) and the ignition switch (IG1) in good condition?

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.

CONNECTORS : C-211, C-214



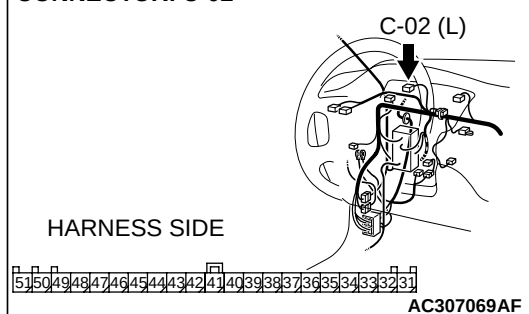
CONNECTOR: C-02

STEP 11. Check combination meter connector C-02 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 12.

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.

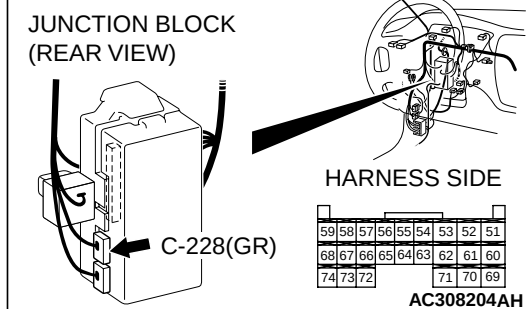
CONNECTOR: C-02

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

Continue