GROUP 54B

SIMPLIFIED WIRING SYSTEM (SWS)

CONTENTS

GENERAL DESCRIPTION

COMMUNICATION METHOD

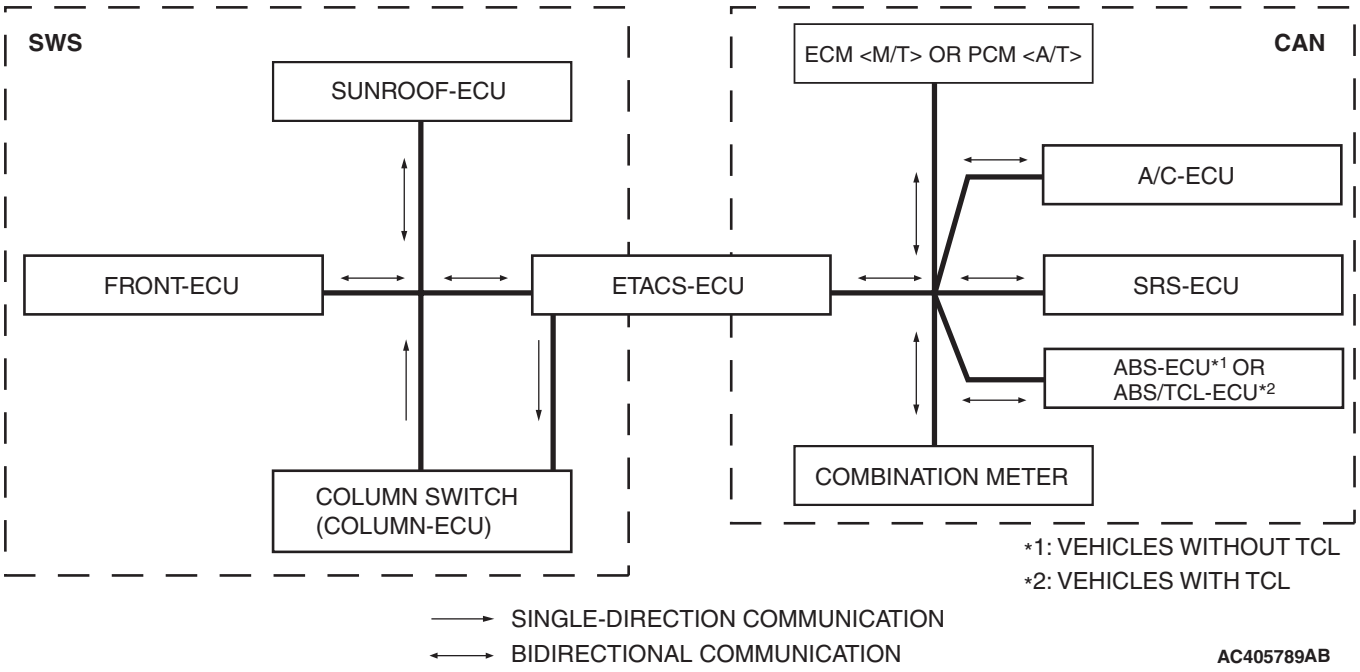
M1549013000677

As shown in the figure, SWS communications connect the ETACS*1-ECU, the column switch (in the column-ECU), the front-ECU, and the sunroof-ECU. CAN*2*3 communications connect the ETACS-ECU, the engine control module (ECM) <M/T>, the power-train control module (PCM) <A/T>, the A/C-ECU, the SRS-ECU, the combination meter, the ABS-ECU and the ABS/TCL-ECU. These two communications groups are connected to form a dedicated network for sending multiplex data.

*1ETACS:Electronic Time and Alarm Control System

*2CAN:Controller Area Network

*3 : For details on CAN, see GROUP 54C.



OPERATION

M1549013100685

TONE ALARM FUNCTION

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 to indicate that the ignition key has not been removed.

LIGHT REMINDER TONE ALARM FUNCTION

When the taillights or headlights are 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 taillights or headlights have been turned off by the headlight automatic-shutdown function, the tone alarm will not sound.

SEAT BELT TONE ALARM FUNCTION

If any of the following conditions are 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 from the combination meter.

- Sounds the tone alarm for 6 seconds when the ignition switch is turned "ON" with the seat belt switch on (the driver's seat belt is not fastened) (Timer function).
- Sounds the tone alarm 12 cycles (after 0.5 second) if any of the following conditions are met when 60 seconds or more have elapsed since the ignition switch is turned "ON". One cycle consists of 5 seconds "on" and then 3 seconds "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 10 seconds while the ignition switch has been turned "ON" and the vehicle speed has been 8 km/h (5 mph) or more.

  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 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.

DOOR AJAR TONE ALARM FUNCTION

The buzzer is sounded 4 times by the ETACS-ECU to warn the driver if any door is open when the ignition is switched ON and the vehicle speed reaches 8 km/h (5 mph) or faster. The buzzer will continue to sound 4 times even if the ignition, door status, or vehicle speed requirements are not maintained.

CENTRAL DOOR LOCKING SYSTEM

CENTRAL DOOR LOCKING SYSTEM OPERATION

Door unlocking by operating the driver’s door lock key cylinder:

- When the ignition key is inserted in the driver’s door lock key cylinder and turned clockwise to unlock the driver’s door, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuator of the driver’s door for 0.25 second to unlock only the driver’s door.
- When the ignition key is turned clockwise again, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all doors for 0.25 second and to unlock all doors.

Door locking or unlocking by operating the driver’s or passenger’s door lock switch:

- When the door is locked by the driver’s or passenger’s door lock switch, the ETACS-ECU operates its door lock relay and passes a current through the door lock actuators of all doors for 0.25 second to lock all doors.
- When the door is unlocked by the driver’s or passenger's door lock switch, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all doors for 0.25 second to unlock all doors.
- When the door is locked and unlocked by driver’s or passenger's door lock switch consecutively, the ETACS-ECU operates its door lock relay and passes a current through the door lock actuators of all doors for 0.25 second to lock all doors. Then, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all doors for 0.25 second to unlock all doors. Due to this, there may be a time lag between the driver’s or passenger's door lock switch actuation and the time when all doors are unlocked.

FORGOTTEN KEY PREVENTION FUNCTION

- If the driver's door is locked while it is open and when the key is still in the ignition key cylinder, approximately 0.3 second later the ETACS-ECU activates the unlock relay output for 0.25 second to prevent the door from being locked with the key inside the vehicle. In addition, if locking the door was not prevented, a re-try current is sent (an unlock relay output ON is sent for 0.25 second up to 5 times including the first attempt).
- If the passenger's door or driver's door are locked while the passenger's door is open and when the key is still in the ignition key cylinder, approximately 0.3 second later the ETACS-ECU activates the unlock relay output for 0.25 second to prevent the door from being locked with the key inside the vehicle. In addition, if locking the door was not prevented, a re-try current is sent (an unlock relay output ON is sent for 0.25 second up to 5 times including the first attempt).

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

Even after the ignition is switched off, the ETACS-ECU keeps the power window relay activated for approximately 30 seconds, enabling raising and lowering of the power windows by using the power window switches. After approximately 30 seconds, the power window relay is deactivated. During this timed operation, if the driver or passenger doors are opened, the power window relay is deactivated from that moment.

KEYLESS ENTRY SYSTEM

KEYLESS ENTRY HAZARD ANSWER-BACK FUNCTION

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

KEYLESS ENTRY HORN ANSWERBACK FUNCTION

When the lock signal from the keyless entry transmitter is received into ETACS-ECU, all doors are locked and the horn sounds. If the driver's door cannot be locked even when the keyless entry transmitter is operated, the horn does not sound.

LIFTGATE UNLOCK FUNCTION

Press the "LIFTGATE" button twice within 5 seconds and the liftgate will be unlocked.

TIMED LOCKING MECHANISM

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

SUNROOF CONTROL

SUNROOF TIMER FUNCTION

The ETACS-ECU enables opening and closing of the sunroof for 30 seconds after the ignition is switched off. During this timed operation, if the driver's or passenger’s door is opened, the sunroof timer function is deactivated from that moment.

WINDSHIELD WIPER AND WASHER

LOW-SPEED WIPER, HIGH-SPEED WIPER CONTROL

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

INTERMITTENT CONTROL

ETACS-ECU uses the dial position of the variable intermittent wiper control switch and the vehicle speed signal sent by the combination meter to calculate the interval to be sent to the front-ECU. The front-ECU determines the intermittent time 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 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 in the ACC or ON position, and 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 once at low speed.
At the point the windshield mist switch is turned ON, if the windshield wiper has been operating intermittently, the same operations as the above will be performed while the windshield mist wiper switch is ON. After the windshield mist wiper switch goes OFF, the intermittent operations will be set again after the windshield wiper auto-stop signal last is turned ON.

WASHER CONTROL

When the ignition switch is in the ACC or ON position, and 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 0.15 seconds until 2 seconds after the windshield washer switch goes OFF to operate the windshield wiper continuously. When the windshield washer switch is turned ON, if the windshield wiper is operating intermittently, intermittent operation will resume after two or three wipes.

REAR WIPER AND WASHER

INTERMITTENT CONTROL (BASIC CONTROL)

When the rear wiper switch on the column switch is turned ON with the ignition switch ACC or ON, ETACS-ECU turns ON the rear wiper relay and operates the rear wiper twice consecutively. After that, operation continues at 8-second intervals.

"R" POSITION-LINKED CONTROL

When the shift lever <M/T> or the selector lever <A/T> is moved to R (reverse) position during the rear wiper operation, the backup light switch <M/T> or the transmission range switch R (reverse) <A/T> turns ON. One second after that, the ETACS-ECU turns the rear wiper relay ON, and operates the rear wiper twice consecutively.

REAR WASHER CONTROL

When the rear washer switch on the column switch is turned ON with the ignition switch ACC or ON, the ETACS-ECU turns ON the rear washer relay. If the rear washer switch remains ON for 0.9 second or more, the rear wiper operates. 3 seconds after the rear washer switch is turned OFF, the rear wiper is stopped. If the rear washer switch is turned ON during the intermittent operation of the rear wiper, the rear wiper operates along with the rear washer consecutively. 7.4 seconds after the rear wiper stops consecutive operation, it returns to the intermittent operation.

HEADLIGHT

HEADLIGHT AUTOMATIC SHUTDOWN FUNCTION

Even if the lighting switch (taillight switch or headlight switch) is ON, the headlights and taillights will automatically go off in the following conditions to prevent the battery from discharging:

When the ignition key is turned from "ON" to "LOCK" (OFF) or "ACC" position with the lighting switch turned ON, and this state continues for three minutes, the light will automatically be turned off. If the driver's seat door is opened during these 3 minutes, the light will go off 1 second later.

HIGH-BEAM INDICATOR

At the same time that the high-beams are illuminated, the ETACS-ECU sends a signal to illuminate the high-beam indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the high-beam indicator on and off.

DAYTIME RUNNING LIGHT FUNCTION

The ETACS-ECU outputs the daytime running light forced-OFF signal to the front-ECU based on the input signal sent via CAN communication. The front-ECU controls illumination and extinction of the daytime running light according to the daytime running light forced-OFF signal.

Illumination control of daytime running lights

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

FLASHER TIMER

TURN-SIGNAL LIGHT

The turn-signal light output (flashing signal) is turned ON when the ignition switch is ON and the turn-signal light switch is ON (LH or RH). If the front turn-signal light or rear turn-signal light bulb has burned out, the flashing speed increases to indicate that the bulb has burned out.

HAZARD WARNING LIGHT

Detects the signal where the hazard warning light switch input changes from OFF to ON, and reverses the flashing state according to this signal. The hazard warning lights toggle on and off whenever the hazard warning light switch is operated.

TURN-SIGNAL INDICATORS

At the same time that the turn-signal lights are illuminated, the ETACS-ECU sends a signal to illuminate the turn-signal light indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the turn-signal light indicator on and off.

FRONT FOG LIGHT

FRONT FOG LIGHT

The front fog lights will illuminate only when the front fog light switch is operated while the low-beam headlights are on.

The front fog lights will be switched off when any of the following conditions is met. The front fog lights will also be switched off automatically by headlight automatic shutdown function.

- When the high-beam headlights are switched on, the front fog lights will be switched off. If the low-beam headlights are switched on again, the front fog lights will illuminate again.
- When the headlight switch is turned off while the taillights are on or the taillights and headlights are off, the front fog lights will be switched off. If the low-beam headlights are switched on again, the front fog lights will not illuminate again.

FRONT FOG LIGHT INDICATOR

At the same time that the front fog lights are illuminated, the ETACS-ECU sends a signal to illuminate the front fog light indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the front fog light indicator on and off.

INTERIOR LIGHT

The ETACS-ECU controls the interior lights by turning them on and off in the following way:

- When a door is opened with the ignition switch off, the interior lights up to a luminance of 100 percent. When a door is closed, the interior lights dim to a luminance of 65 percent, and go off 30 seconds later. However if the ignition switch is turned ON or if a door is locked while the interior lights are dimming, the dome light will go off at that point.
- When a door is opened with the ignition switch ON, the interior lights up at a luminance of 100 percent. When a door is closed, the interior lights go off.
- When the ignition key is removed with all doors closed, the interior lights up at a luminance of 100 percent, and goes off 30 seconds later. However if the ignition key is inserted again or if a door is locked while the interior lights is lighting, the interior lights will go off at that point.
- To check keyless entry operations more easily, the interior lights flash once when the doors are locked. When the doors are unlocked, the interior lights at a luminance of 100 percent, and go off 15 seconds later.

INTERIOR LIGHT AUTOMATIC SHUTDOWN FUNCTION

Illuminated interior lights such as the front dome light, etc. (all lights using the dome light fuse as the power supply) will automatically go off in the following conditions to prevent the battery from discharging as a result of forgetting to turn off the lights or incomplete closing of the door.

- When the ignition switch is turned off and more than 30 minutes pass by with the interior light illuminated, the interior lights will go off automatically.
- When the ignition switch is turned off and one of the door switches remains open for 30 minutes continuously, the interior lights will go off automatically.

SEAT BELT INDICATOR

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

- Illuminates when the ignition switch is at "ON" and the seat belt switch is turned on (the driver's seat belt is unfastened).
- Flashes and illuminates the indicator 12 cycles (after 0.5 second) 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 "flashing" and then three-second "illumination".
  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 turns off 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.

DOOR-AJAR INDICATOR LIGHT

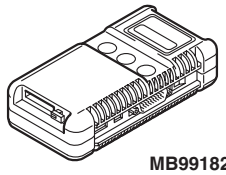
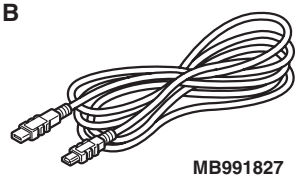
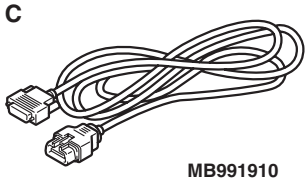
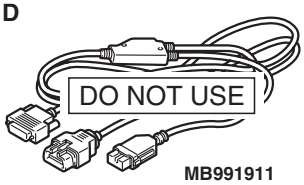
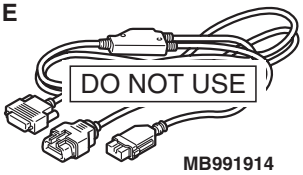
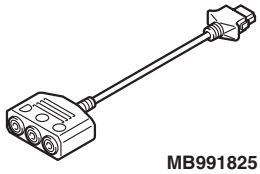
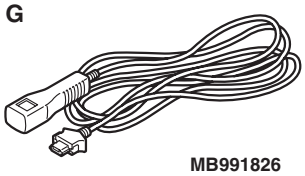
The combination meter receives the signal sent from the ETACS-ECU about whether each door is open or closed and turns the door ajar indicator on and off. While the door ajar indicator is illuminated, the door ajar tone alarm function is activated and the door ajar indicator flashes 4 times. If the door remains open even after the 4 warning flashes, the door ajar indicator will be illuminated again. And when the interior light automatic-shutoff function is activated, the door ajar indicator turns off.

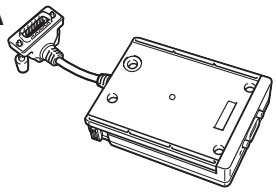
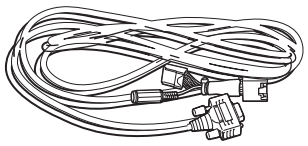
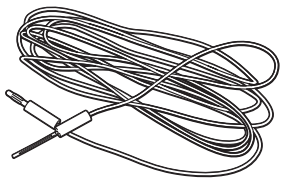
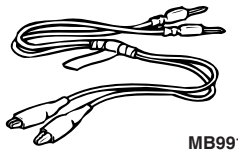
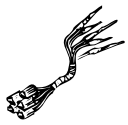
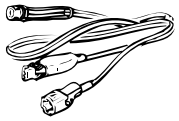
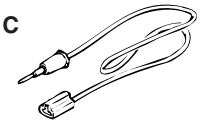
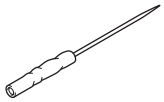
IGNITION KEY CYLINDER ILLUMINATION FUNCTION

The ignition key cylinder illumination light illuminates when the driver's door is opened with the ignition switch off, and for 30 seconds after the driver's door is closed. It also illuminates for 30 seconds after the ignition key is pulled out. In any case, it goes out when the ignition switch is turned on.

SPECIAL TOOLS

M1549000301251

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991914 F  MB991825 G  MB991826 MB991958	MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826 Scan tool (MUT-III sub assembly) A: Vehicle communication interface (V.C.I.) B: MUT-III USB cable C: MUT-III main harness A (Vehicles with CAN communication system) D: MUT-III main harness B (Vehicles without CAN communication system) E: MUT-III main harness C (for Daimler Chrysler models only) F: MUT-III measurement adapter G: MUT-III trigger harness	MB991824-KIT *NOTE: G: MB991826 MUT-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	SWS communication line check (ECU check and service data) **⚠ CAUTION** **For vehicles with CAN communication, use MUT-III main harness A to send simulated vehicle speed. If you connect MUT-III main harness B instead, the CAN communication does not function correctly.**

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  B  C  B991813	MB991813 A: MB991806 B: MB991812 C: MB991822 SWS monitor kit A: SWS monitor cartridge B: SWS monitor harness (for column-ECU) C: Probe harness	-	SWS communication line check (ECU check and service data)
 MB991529	MB991529 Diagnostic trouble code check harness	Tool not necessary if the scan tool (MUT-III) is available	Checking input signal when using a voltmeter
A  B  C  D  DO NOT USE MB991223AZ	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adaptor D: Probe	General service tools	Making voltage and resistance measurement during troubleshooting A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
 MB992006	MB992006 Extra fine probe	General service tool	Making voltage and resistance measurement during troubleshooting

SWS DIAGNOSIS

GENERAL DESCRIPTION

BEFORE CARRYING OUT TROUBLESHOOTING

M1549014700970

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.

DIAGNOSTIC FUNCTION

M1549028900353

ON-BOARD DIAGNOSTICS

If an error occurs in the ECU or the SWS or CAN communication line which performs the SWS or CAN communication, the DTC is memorized in ETACS-ECU. The DTCs have 16 items. The DTCs are checked to connect scan tool MB991958 (MUT-III sub assembly). The memorized DTCs are not erased even if the ignition switch is turned to the "LOCK" (OFF) position. The DTCs are erased to operate scan tool MB991958 (MUT-III sub assembly).

*NOTE: *1: For vehicles that do not have a sunroof, the diagnosis code is always sent but it does not indicate a problem.*

*NOTE: *2: The diagnostic trouble code is always set, but it does not indicate a problem.*

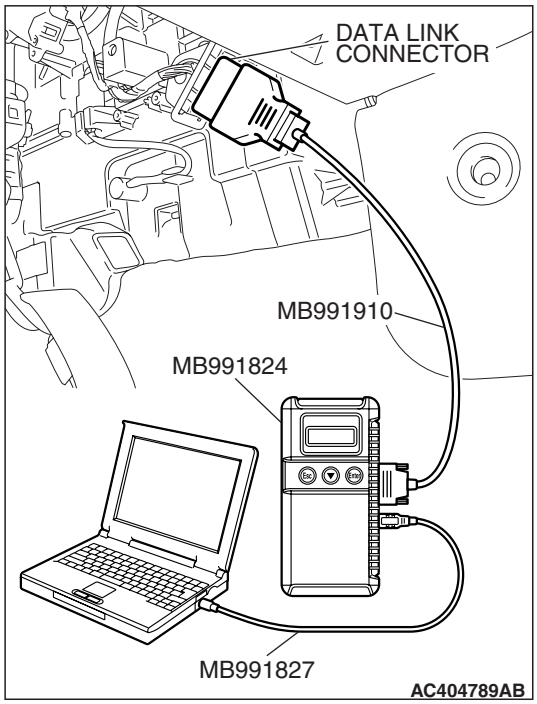
*NOTE: *3: The diagnosis code for a past problem is not sent.*

CODE NUMBER	TROUBLE CONTENT
U1700	Malfunction in the SWS communication line
U1701	Communication error in the column switch
U1702	Communication error in the front-ECU
U1703*1	Communication error in the sunroof-ECU or the sunroof not installed
U1704*2	Communication error in the power window main switch
U1073	Bus Off
U1100	ECM <M/T> or PCM <A/T> time-out (related to engine)
U1101	ECM <M/T> or PCM <A/T> time-out (related to transaxle)
U1108	Combination meter time-out
U1110	A/C-ECU time-out
U1111*2	Multi-center display unit (middle-grade type) time-out
U1128	Failure information on combination meter
B1702*3	Reception error of transponder data
B1703*3	Transponder data inconsistent
B1731	Immobilizer communication failure.
B1761	VIN not recorded

HOW TO CONNECT THE SCAN TOOL (MUT-III)

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A



⚠ 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 MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

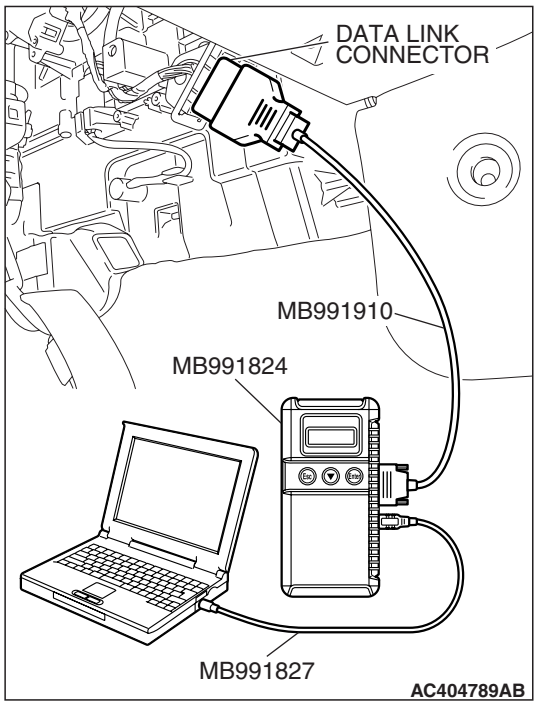
   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the MUT-III system on the personal computer.

NOTE: Disconnecting scan tool MB991958 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A



⚠ 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.

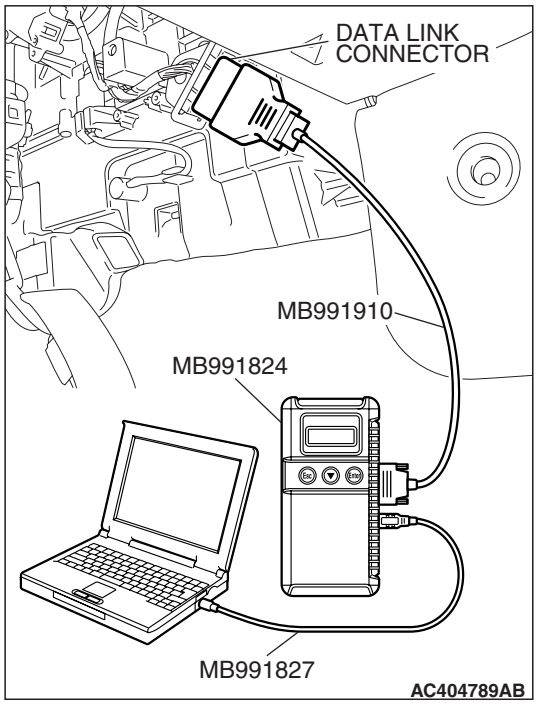
NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool MB991958 does not display.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "ETACS" from the "BODY" tab.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A



⚠ 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. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle being diagnosed.
   - If they match, go to step 8.
   - If not, go to step 5.
5. Select the "view vehicle information" button.
6. Enter the vehicle information and select the "OK" button.
7. When the vehicle information is displayed, confirm again that it matches the vehicle being diagnosed.
   - If they match, go to step 8.
   - If not, go to step 5.
8. Select the "OK" button.
9. When the optional equipment screen is displayed, choose the one which the vehicle is fitted with, and then select the "OK" button.

SWS DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1549000501158

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 (1) and destination (North America) meet the vehicle specifications. If they are different, replace the ETACS-ECU with a correct one.
4. Use scan tool MB991958 (MUT-III Sub Assembly) to select "ECU COMM Check" 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.

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When the SWS communication line is monitored, you can determine whether the problem lies in the input or output signal circuit system by checking whether communication data is correct:

- If the switch condition does not meet the service data display, the input signal is defective.
- If the switch condition meets the service data display, the output signal system is defective.

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.

6. Check the input signal circuit system

   Check the relevant switch, sensor, input signal-side ECU and their wiring harness and connector.
7. Check the 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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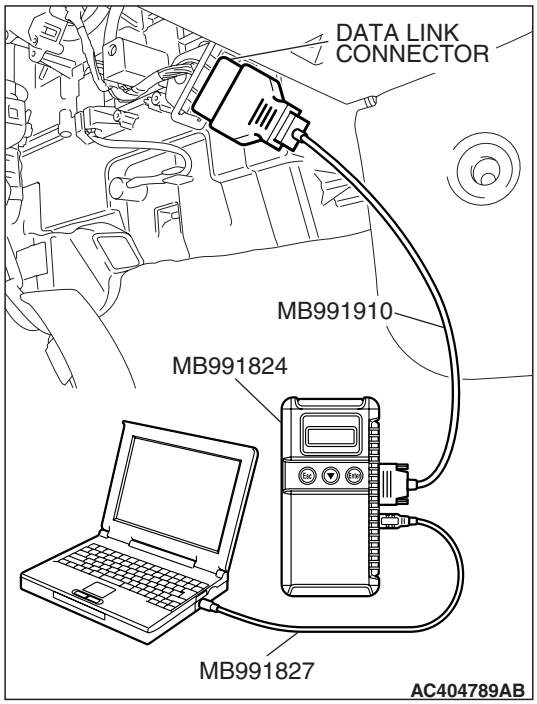
Required Special Tools:

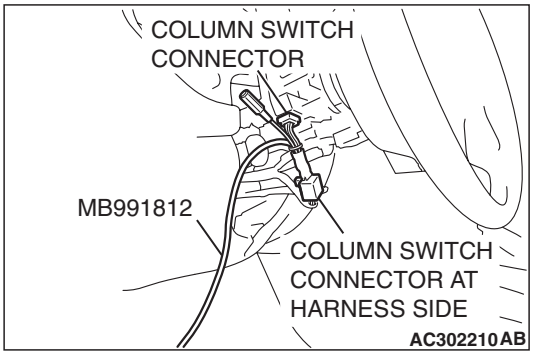
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

⚠ CAUTION

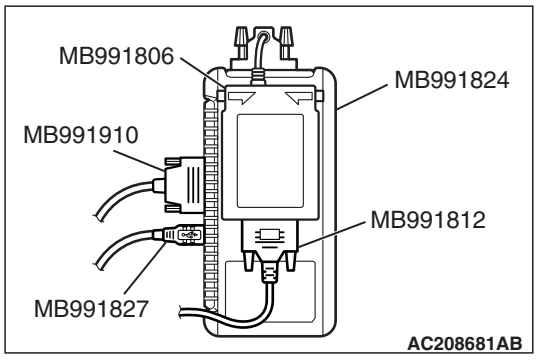
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the main harness A MB991910 before connecting the SWS monitor harness (for column-ECU) MB991812. Be sure to connect SWS monitor cartridge MB991806 after turning on the V.C.I. MB991924.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.





6. Remove the steering column cover.
7. Remove the steering column switch connector.
8. Connect special tool MB991812 to the column switch connector.



9. Connect special tool MB991812 to special tool MB991806.
10. Connect special tool MB991806 to special tool MB991824.
11. Turn the power switch of special tool MB991824 to the "ON" position.

    NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
12. Start the MUT-III system on the personal computer.

HOW TO USE SWS MONITOR

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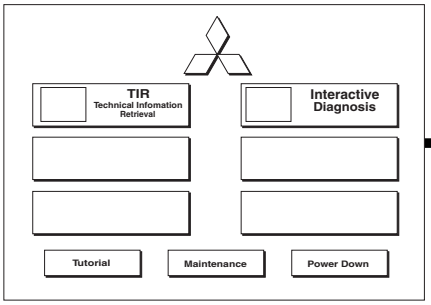
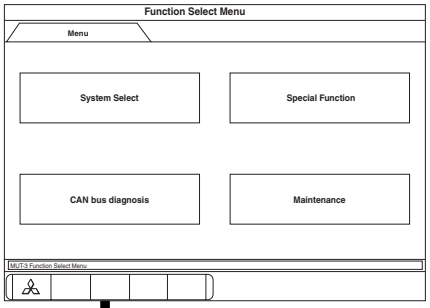
To carry out troubleshooting, operate scan tool MB991958 (MUT-III Sub Assembly) as follows.

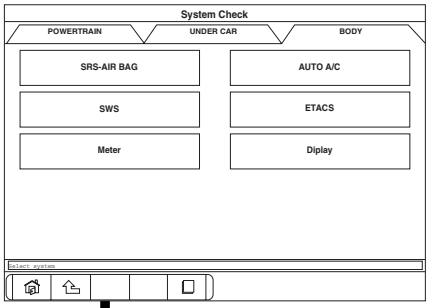


Start-up the MUT-III system.

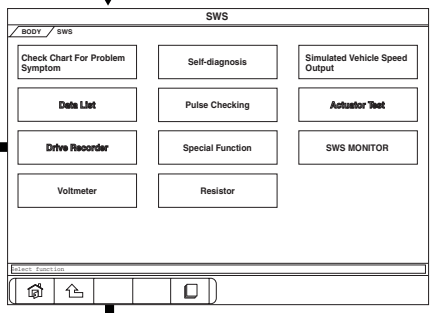
Select "Interactive Diagnosis"



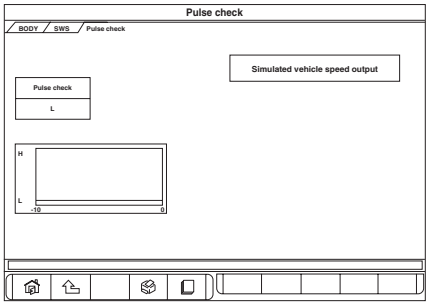
Select "System Select".



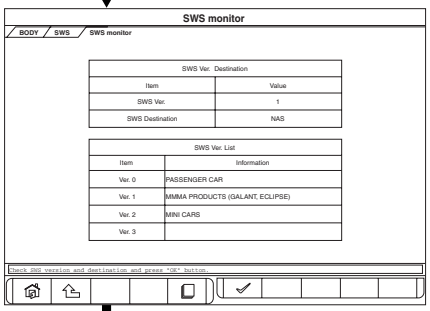
Select "SWS" from the "BODY" tab.



For the pulse check, select "Pulse Checking".



For the SWS monitor, select "SWS MONITOR".



Confirm the SWS version and destination.

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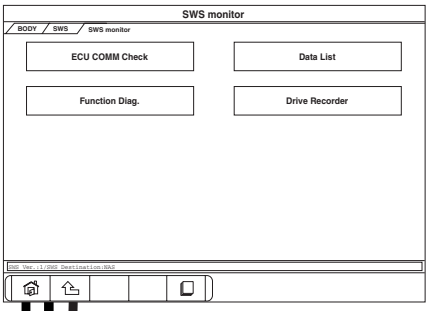
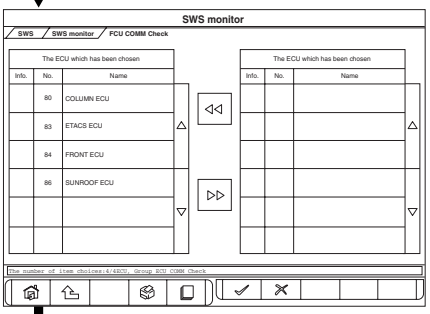
From previous page

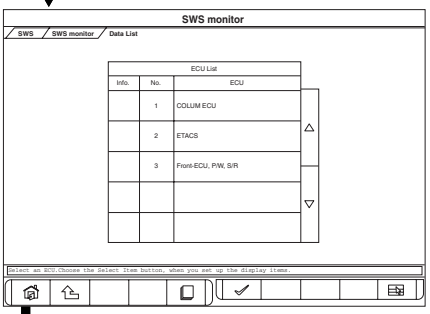


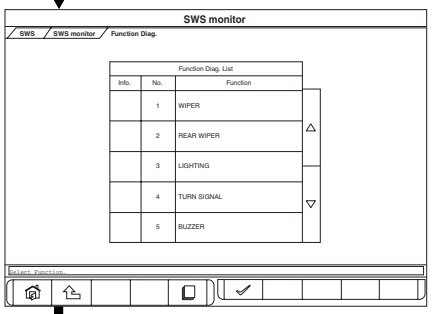
For the ECU comm check, select "ECU COMM Check".

For the data list, select "Data List".

For the function diagnosis, select "Function Diag".



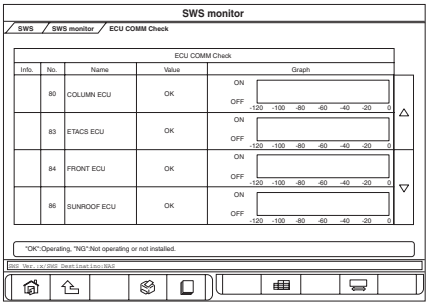


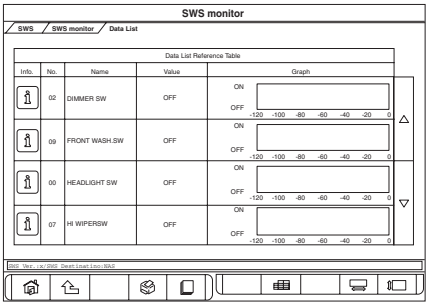


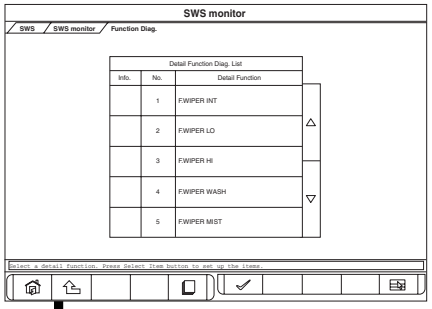
Press the "OK" button.

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

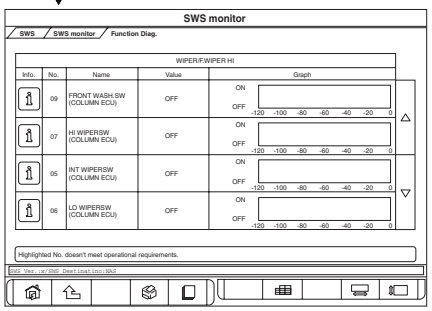
Select the desired item from "Function", and then press the "OK" button.







Select the desired function from "Detail 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 (MUT-III Sub Assembly) and the SWS monitor kit to check ECUs.
2. The following ECUs can be checked by using the scan tool MB991958 (MUT-III Sub Assembly) 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-57).

SWS monitor kit-compatible ECUs and their conditions

ITEM NO.	ECUS TO BE CHECKED	DISPLAY ON SCAN TOOL	NORMAL CONDITION	ECU CONDITION
80	Column switch (column-ECU)	COLUMN ECU	OK*1	All of the column switch, power supply, ground and interconnecting communication lines are normal
83	ETACS-ECU	ETACS-ECU	OK	All of the ETACS-ECU switch, power supply, ground and interconnecting communication lines are normal
84	Front-ECU	FRONT ECU	OK*2	All of the front-ECU, power supply, ground and interconnecting communication lines are normal
86	Sunroof motor assembly (sunroof-ECU)	SUNROOF ECU	OK*2	All of the sunroof motor assembly, power supply, ground and interconnecting communication lines are normal

NOTE:

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

SERVICE DATA CHECK

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Use the scan tool MB991958 (MUT-III Sub Assembly) and the SWS monitor kit to check "Data List" or "Function Diag.". This "Data List" or "Function Diag." check is applicable for signals, which are transmitted and received through the SWS communication line. For input signals, which are not compatible with the SWS monitor kit, refer to the Pulse Check procedure (by using the scan tool or voltmeter) P.54B-28.

1. The following input signals can be checked by using the scan tool MB991958 (MUT-III Sub Assembly) and the SWS monitor kit.

   NOTE: If a problem is found in the "Service Data" check, refer to Input Signal Chart P.54B-61.

<DATA LIST REFERENCE TABLE>

The table below shows the service data and their normal condition, which are displayed during the "Data List."

COLUMN-ECU

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

ETACS

CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
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
Door switch	32	FRONT DOOR SW	Driver's door switch or passenger's door switch is on	ON
			Driver's door switch and passenger's door switch is off	OFF
Headlight automatic shutoff 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. Door switch: ON (door open)	OFF to ON (after approximately one second)
			When requirements for the headlight automatic shutoff are not satisfied	OFF
Front fog lights	36	F.FOG LIGHT	1. Lighting switch: HEAD 2. Front fog light switch: ON	ON
			Other than the condition above	OFF
Windshield intermittent wiper interval	37	INT WIPE TIME	1. Ignition switch: ACC or ON 2. Operate the intermittent wiper control, and change the wiper interval	The scan tool MB991958 (MUT-III Sub Assembly) displays intermittent wiper interval in response to the intermittent wiper control positions.
Backup light switch	41	PNP SW (R)	Backup light switch: ON	ON
			Backup light switch: OFF	OFF
Tone alarm	43	BUZZER	1. Ignition switch: LOCK (OFF) 2. Key reminder switch: ON 3. Door switch: ON (door open)	ON
			When requirements for sounding each warning tone alarm are not satisfied	OFF

NOTE: For item No.43, the scan tool MB991958 (MUT-III Sub Assembly) also displays "ON" when the light reminder tone alarm or the seat belt tone alarm function is triggered.

FRONT-ECU, POWER WINDOW, SUNROOF

CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
Response by the front-ECU	70	FRONT ECU ACK	Lighting switch: Other than OFF (excluding when high-beam is on) or the wiper switch is at position other than OFF (ignition switch: ACC or ON)	NORMAL ACK
			• Ignition switch: Other than ON • Lighting switch: OFF • Wiper switch: OFF	SLEEP ACK
			• Lighting switch: HEAD • Headlights: at high-beam	HI-BEAM ACK
			Other than the condition above	NO ACK
Response by the sunroof-ECU	72	S/R ECU ACK	1. Door switch: OFF 2. Ignition switch: ON →OFF 3. While sunroof is off	NORMAL ACK → SLEEP ACK (after approximately 30 seconds)
			1. Ignition switch: ON or START 2. One of the sunroof switches is on	INPUT CHECK to NORMAL ACK
			Other than the above conditions	NO ACK

NOTE: For item No.70, the scan tool MB991958 (MUT-III Sub Assembly) also displays "NG" under "ECU COMM Check" when it displays "NO ACK" under the front-ECU check.

NOTE: For item No.72, the scan tool MB991958 (MUT-III Sub Assembly) also displays "NG" under "ECU COMM Check" when it displays "NO ACK" under the sunroof-ECU check.

<FUNCTION DIAGNOSIS>

The table below shows the service data and their normal condition, which are displayed during the "Function Diag." The column "Normal condition" shows values that 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 (COLUMN ECU)	OFF
	06	Windshield low-speed wiper switch	LO WIPER SW (COLUMN ECU)	OFF
	07	Windshield high-speed wiper switch	HI WIPER SW (COLUMN ECU)	ON
	08	Windshield mist wiper switch	MIST WIPER SW (COLUMN ECU)	OFF
	09	Windshield washer switch	FRONT WASH.SW (COLUMN ECU)	OFF
	31	Ignition switch (ACC)	IG SW (ACC) (ETACS ECU)	ON
	70	Response by the front-ECU	FRONT ECU ACK (FRONT ECU)	NORMAL ACK or HI-BEAM ACK
F.WIPER INT	05	Windshield intermittent wiper switch	INT WIPER SW (COLUMN ECU)	ON
	06	Windshield low-speed wiper switch	LO WIPER SW (COLUMN ECU)	OFF
	07	Windshield high-speed wiper switch	HI WIPER SW (COLUMN ECU)	OFF
	08	Windshield mist wiper switch	MIST WIPER SW (COLUMN ECU)	OFF
	09	Windshield washer switch	FRONT WASH.SW (COLUMN ECU)	OFF
	31	Ignition switch (ACC)	IG SW (ACC) (ETACS ECU)	ON
	37	Windshield intermittent wiper interval	INT WIPE TIME (ETACS ECU)	The scan tool MB991958 (MUT-III Sub Assembly) displays intermittent wiper interval in response to the intermittent wiper control positions.
	70	Response by the front-ECU	FRONT ECU ACK (FRONT ECU)	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 (COLUMN ECU)	OFF
	06	Windshield low-speed wiper switch	LO WIPER SW (COLUMN ECU)	ON
	07	Windshield high-speed wiper switch	HI WIPER SW (COLUMN ECU)	OFF
	08	Windshield mist wiper switch	MIST WIPER SW (COLUMN ECU)	OFF
	09	Windshield washer switch	FRONT WASH.SW (COLUMN ECU)	OFF
	31	Ignition switch (ACC)	IG SW (ACC) (ETACS ECU)	ON
	70	Response by the front-ECU	FRONT ECU ACK (FRONT ECU)	NORMAL ACK or HI-BEAM ACK
F.WIPER MIST	05	Windshield intermittent wiper switch	INT WIPER SW (COLUMN ECU)	OFF
	06	Windshield low-speed wiper switch	LO WIPER SW (COLUMN ECU)	OFF
	07	Windshield high-speed wiper switch	HI WIPER SW (COLUMN ECU)	OFF
	08	Windshield mist wiper switch	MIST WIPER SW (COLUMN ECU)	ON
	09	Windshield washer switch	FRONT WASH.SW (COLUMN ECU)	OFF
	31	Ignition switch (ACC)	IG SW (ACC) (ETACS ECU)	ON
	70	Response by the front-ECU	FRONT ECU ACK (FRONT ECU)	NORMAL ACK or HI-BEAM ACK
F.WIPER WASH	08	Windshield mist wiper switch	MIST WIPER SW (COLUMN ECU)	OFF
	09	Windshield washer switch	FRONT WASH.SW (COLUMN ECU)	ON
	31	Ignition switch (ACC)	IG SW (ACC) (ETACS ECU)	ON
	70	Response by the front-ECU	FRONT ECU ACK (FRONT ECU)	NORMAL ACK or HI-BEAM ACK

REAR WIPER

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
REAR WIPER	13	Rear wiper switch	REAR WIPER SW (COLUMN ECU)	ON
	14	Rear washer switch	REAR WASH.SW (COLUMN ECU)	OFF
	31	Ignition switch (ACC)	IG SW (ACC) (ETACS ECU)	ON
REV.INTERLOCK	13	Rear wiper switch	REAR WIPER SW (COLUMN ECU)	ON
	30	Ignition switch (IG1)	IG SW (IG1) (ETACS ECU)	ON
	41	Backup light switch	PNP SW (R) (ETACS ECU)	ON
REAR WASHER	14	Rear washer switch	REAR WASH.SW (COLUMN ECU)	ON
	31	Ignition switch (ACC)	IG SW (ACC) (ETACS ECU)	ON

LIGHTING

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

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

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
TAILLIGHT	00	Headlight switch	HEADLIGHT SW (COLUMN ECU)	OFF
	01	Taillight switch	TAILLIGHT SW (COLUMN ECU)	ON
	03	Passing light switch	PASSING SW (COLUMN ECU)	OFF
	30	Ignition switch (IG1)	IG SW (IG1) (ETACS ECU)	ON or OFF
	35	Headlight automatic shutoff function	H/L AUTO-CUT (ETACS ECU)	OFF
	70	Response by the front-ECU	FRONT ECU ACK (FRONT ECU)	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 shutoff function. However, since the headlight operation does not depend on the ignition switch positions, the scan tool MB991958 (MUT-III Sub Assembly) does not display the title "IGNITION SWITCH".

For checking item "HEADLIGHT HI", the scan tool MB991958 (MUT-III Sub Assembly) displays "OFF" on the item No.2 "DIMMER SW" when the headlights are at high-beam. Therefore, the scan tool MB991958 (MUT-III Sub Assembly) 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 (COLUMN ECU)	OFF
	11	Turn-signal light switch (LH)	T/S LH SW (COLUMN ECU)	ON
	30	Ignition switch (IG1)	IG SW (IG1) (ETACS ECU)	ON
TURN-SIG.RH	10	Turn-signal light switch (RH)	T/S RH SW (COLUMN ECU)	ON
	11	Turn-signal light switch (LH)	T/S LH SW (COLUMN ECU)	OFF
	30	Ignition switch (IG1)	IG SW (IG1) (ETACS ECU)	ON

BUZZER

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

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

SUNROOF

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

PULSE CHECK

M1549015100692

1. The input signals (signals other than SWS communication line signals), which are compatible with the SWS monitor by using the scan tool MB991958 (MUT-III Sub Assembly) or voltmeter, can be confirmed by the Pulse Check.

Switches and their conditions, which are applicable for Pulse Check

INPUT SIGNAL	REQUIREMENTS FOR SOUNDING TONE ALARM
Key reminder switch	When the ignition key is pulled out
Hazard warning light switch	When the switch is turned from off to on
Door lock key cylinder switch	Turn the key to the lock or unlock position
Driver's or passenger's door lock actuator switch	Move the door lock knob from lock position to unlock position
Door lock switch (incorporated in power window main switch and power window sub switch)	Press "LOCK" or "UNLOCK" side
Liftgate latch switch	Open the liftgate
Liftgate lock release switch	When the liftgate lock release switch is operated
Interior light loaded signal	Illuminates the interior lights
Keyless entry transmitter	When the switch is turned from off to on
Transmission range switch ("R" position) <A/T> (CAN signal)	When the selector lever is moved to the R position
Parking brake switch (CAN signal)	When the parking brake is pulled
Vehicle speed signal (CAN signal)	When the vehicle speed displayed on the meter has reached 8km/h (5 mph) or more
Driver's seat belt switch (CAN signal)	When the seat belt is fastened.

2. Use the scan tool MB991958 (MUT-III Sub Assembly) or voltmeter to check the following input signals.

NOTE: If a problem is found in the Pulse Check, refer to Input Signal Chart P.54B-61.

DIAGNOSTIC TROUBLE CODE CHART

M1549000700632

*NOTE: *1: For vehicles that do not have a sunroof, the diagnosis code is always sent but it does not indicate a problem.*

*NOTE: *2: The diagnostic trouble code is always set, but it does not indicate a problem.*

*NOTE: *3: The diagnosis code for the past problem is not sent.*

DIAGNOSTIC TROUBLE CODE NO.	DESCRIPTION	REFERENCE PAGE
U1700	Malfunction in the SWS communication line	P.54B-30
U1701	Communication error in the column switch	P.54B-33
U1702	Communication error in the front-ECU	P.54B-36
U1703*1	Communication error in the sunroof-ECU or the sunroof not installed	P.54B-39
U1704*2	Communication error in the power window main switch	–
U1073	Bus off	P.54B-42
U1100	ECM <M/T> or PCM <A/T> time-out (related to engine)	P.54B-43
U1101	ECM <M/T> or PCM <A/T> time-out (related to transaxle)	
U1108	Combination meter time-out	P.54B-47
U1110	A/C-ECU time-out	P.54B-50
U1111*2	Multi center display unit (middle-grade type) time-out	–
U1128	Failure information on combination meter	P.54B-54
B1702*3	Reception error of transponder data	Refer to GROUP 54A – Immobilizer system P.54A-17.
B1703*3	Transponder data inconsistent	
B1731	Immobilizer communication failure.	
B1761	VIN not recorded	

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC U1700: Malfunction in the SWS communication line

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

⚠ CAUTION
If DTC U1700 is set in the ETACS-ECU, always diagnose the CAN main bus line.

TROUBLE JUDGMENT

The ETACS-ECU communicates with the column switch, the front-ECU and the sunroof-ECU through the SWS communication line. If there is any trouble in the SWS communication line and the ETACS-ECU, DTC U1700 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

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

Past trouble

- If DTC U1700 is set as past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) in the SWS communication line. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

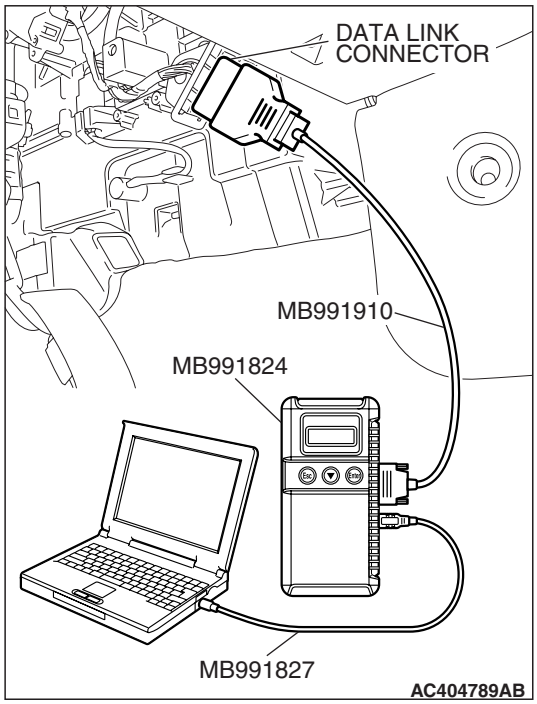
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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



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

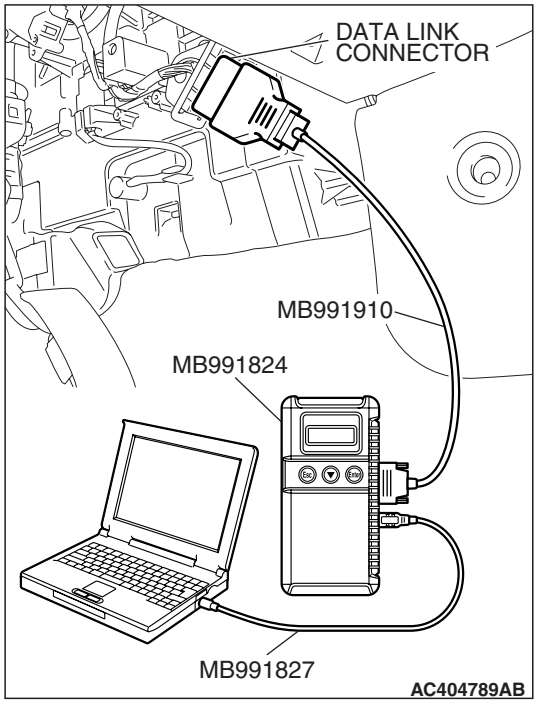
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

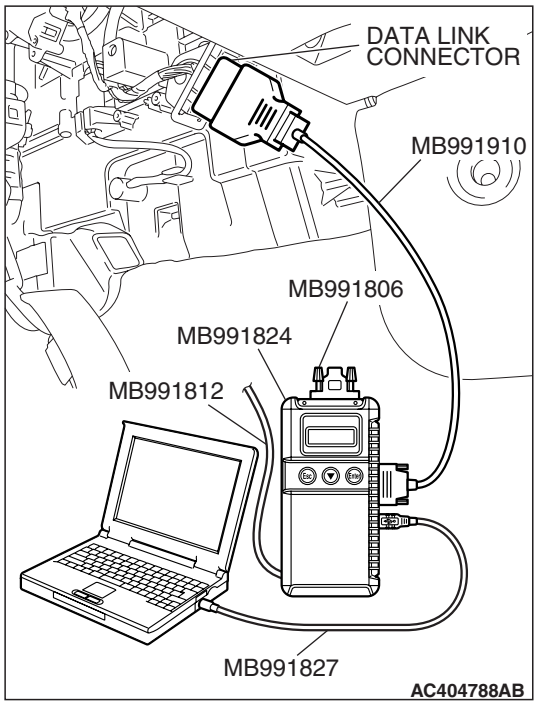


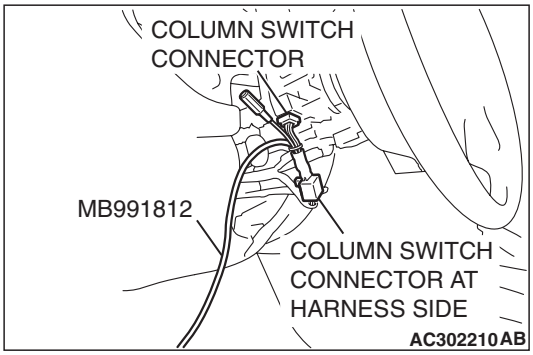
STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.
NO : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).





STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Column switch (column-ECU)
- Front-ECU
- Sunroof-ECU <Vehicles with sunroof only>

⚠ CAUTION

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

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for the "ETACS ECU", "COLUMN ECU", "FRONT ECU" and "SUNROOF ECU" menus.

Q: Are "OK" displayed for the "ETACS ECU," "COLUMN ECU," "FRONT ECU" and "SUNROOF ECU" menus?

"OK" are displayed for all the items : It is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-86."

"NG" is displayed for the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "Communication with the sunroof-ECU is not possible P.54B-93."

DTC U1701: Communication error in the column switch

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

⚠ CAUTION
If DTC U1701 is set in the ETACS-ECU, always diagnose the CAN main bus line.

TROUBLE JUDGMENT

The ETACS-ECU communicates with the column switch through the SWS communication line. If there is any trouble in that communication, DTC U1701 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble
- The column switch, the ETACS-ECU, connector(s), or wiring harness between the two may be defective.

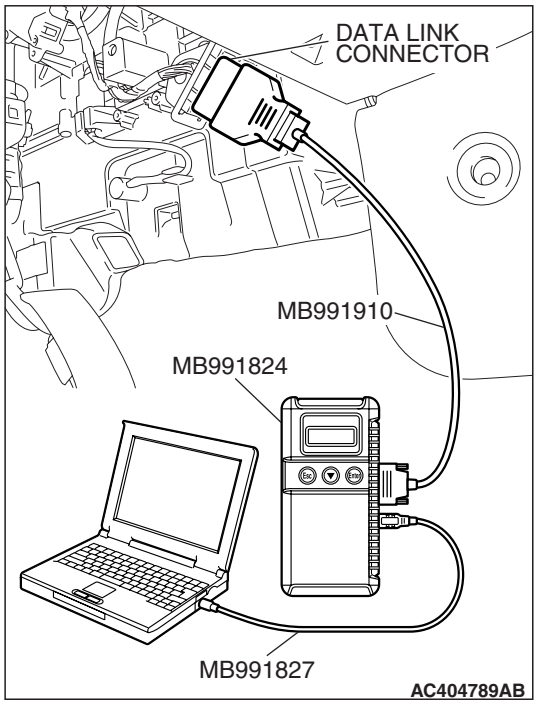
Past trouble
- If DTC U1701 is set as past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the column switch and the ETACS-ECU or power supply to the column switch. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

TROUBLESHOOTING HINTS

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

DIAGNOSIS

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



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

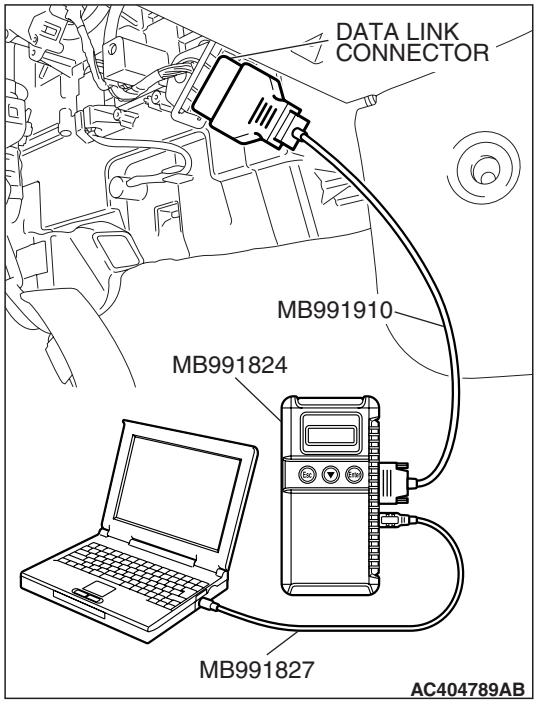
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

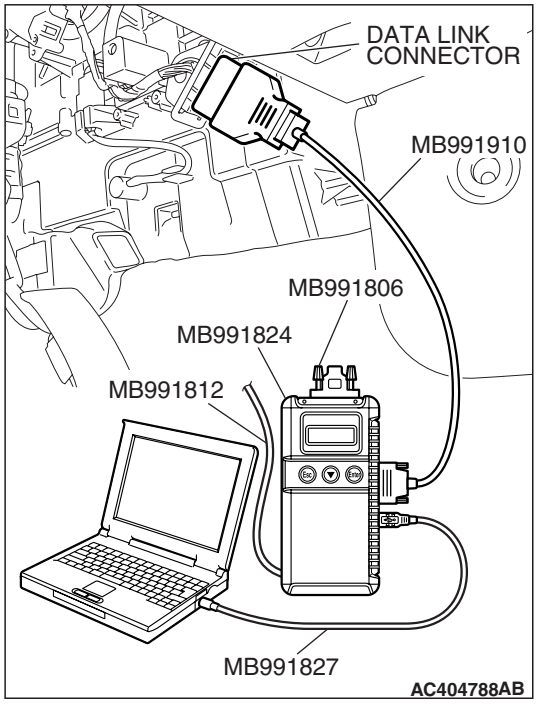


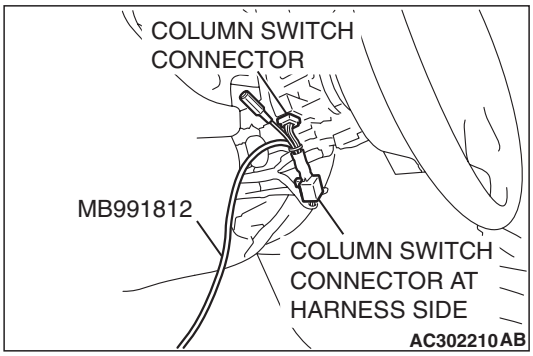
STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.
NO : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-16).





STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- ETACS-ECU

⚠ CAUTION

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

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "ETACS ECU" menus.

Q: Are "OK" displayed for both the "COLUMN ECU" and "ETACS ECU" menus?

"OK" are displayed for all the items : It is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-16).

"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."

"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

DTC U1702: Communication error in the front-ECU

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

⚠ CAUTION
If DTC U1702 is set in the ETACS-ECU, always diagnose the CAN main bus line.

TROUBLE JUDGMENT

The ETACS-ECU communicates with the front-ECU through the SWS communication line. If there is any trouble in that communication, DTC U1702 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble
- The front-ECU, the ETACS-ECU, connector(s), or wiring harness between the two may be defective.

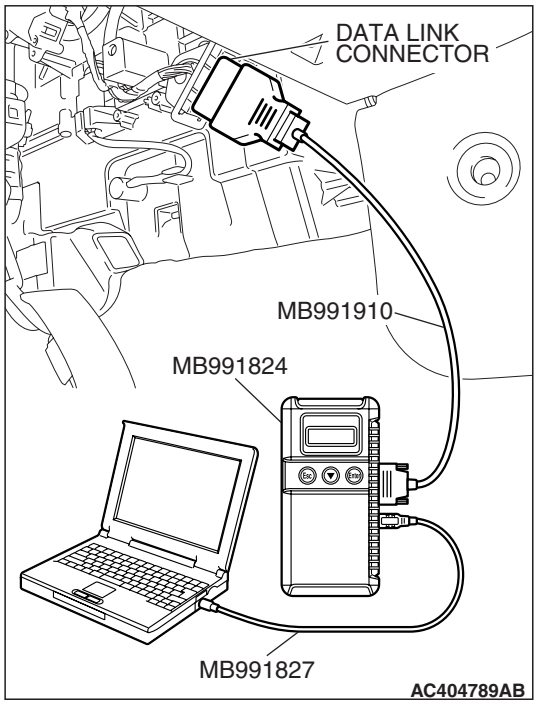
Past trouble
- If DTC U1702 is set as past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the front-ECU and the ETACS-ECU or power supply to the front-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to cope with past trouble P.00-16).

TROUBLESHOOTING HINTS

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

DIAGNOSIS

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



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

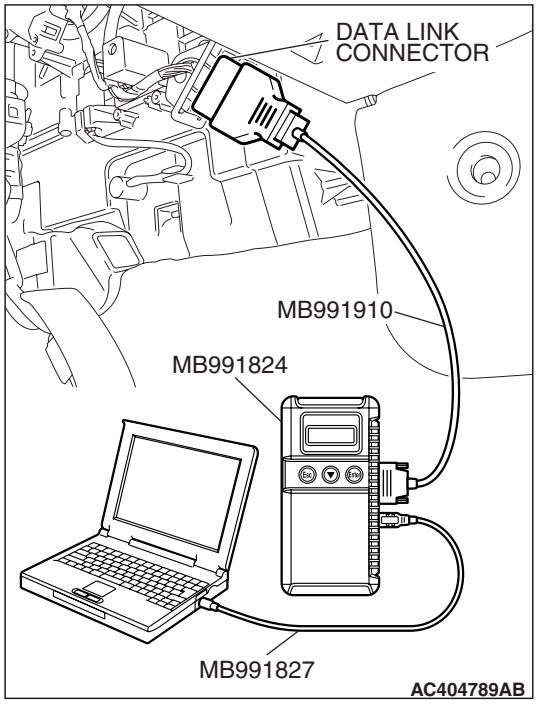
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

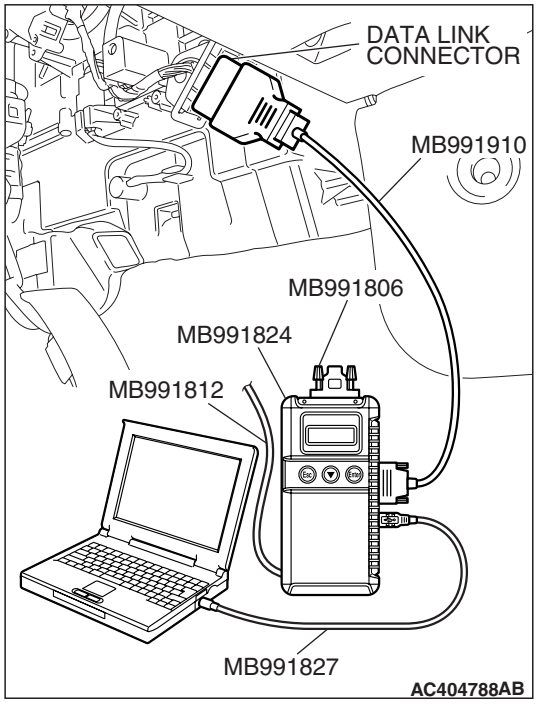


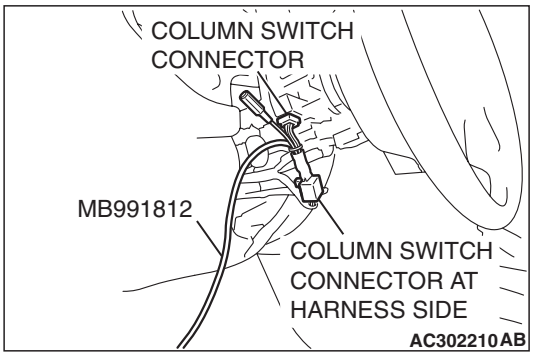
STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.
NO : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).





STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Front-ECU
- ETACS-ECU

⚠ CAUTION

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

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "ETACS ECU" and the "FRONT ECU" menus.

Q: Are "OK" displayed for both the "ETACS ECU" and "FRONT ECU" menus?

"OK" are displayed for all the items : It is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS ECU is not possible P.54B-78."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-86."

DTC U1703: Communication error in the sunroof-ECU or the sunroof not installed

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

⚠ CAUTION

- **DTC U1703 may also set on vehicles without sunroof, but there is no fault.**
- **If DTC U1703 is set in the ETACS-ECU, always diagnose the CAN main bus line.**

TROUBLE JUDGMENT

The ETACS-ECU communicates with the front-ECU through the SWS communication line. If there is any trouble in that communication, DTC U1703 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The sunroof-ECU, the ETACS-ECU, connector(s), or wiring harness between the two may be defective.

Past trouble

- If DTC U1703 is set as past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the sunroof-ECU and the ETACS-ECU or power supply to the sunroof-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

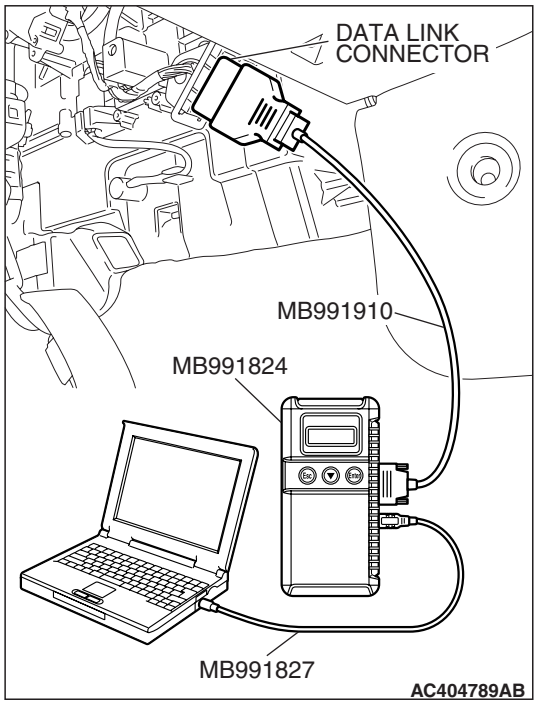
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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



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

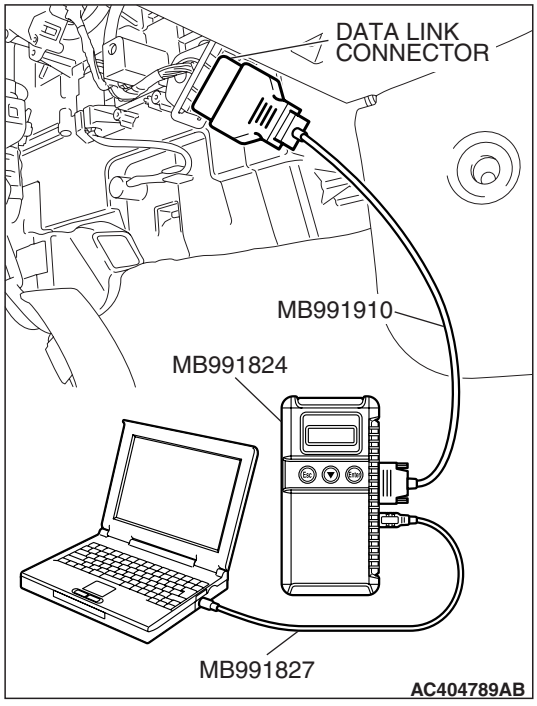
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.
NO : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

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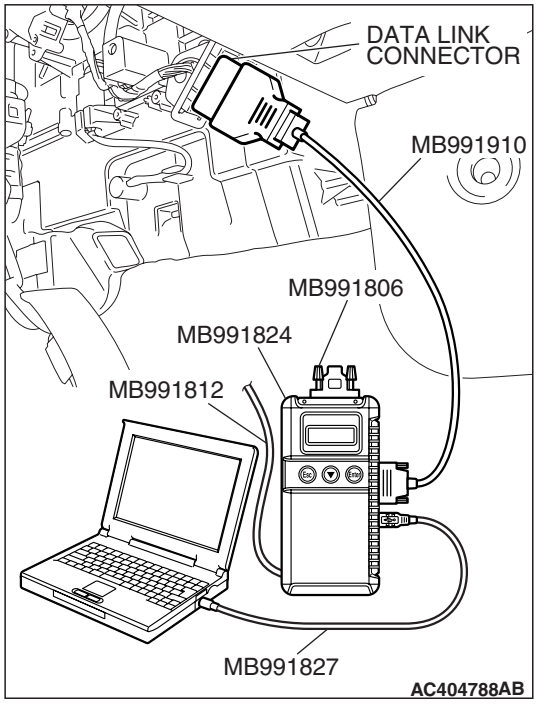
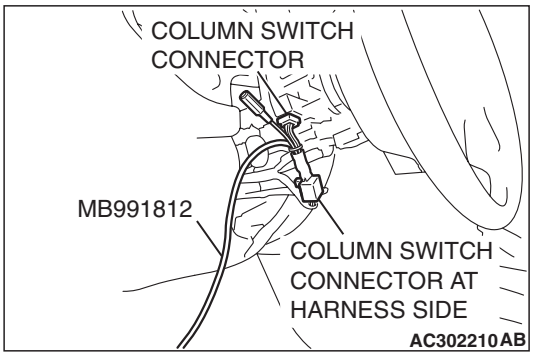




STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Sunroof-ECU
- ETACS-ECU

⚠ CAUTION

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

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "SUNROOF ECU" and the "ETACS ECU" menus.

Q: Are "OK" displayed for both the "SUNROOF ECU" and "ETACS ECU" menus?

"OK" are displayed for all the items : It is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

"NG" is displayed for the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "communication with the sunroof-ECU is not possible P.54B-93."

"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

DTC U1073: Bus off

⚠ CAUTION

- **If DTC U1073 is set in the ETACS-ECU, always diagnose the CAN main bus line.**
- **If the DTC is set as past trouble, the ECU cannot be defective. Do not replace it.**

TROUBLE JUDGMENT

DTC U1073 will be stored when the ETACS-ECU ceases CAN communication (bus off) and then resumes the communication by turning the ignition switch to the "LOCK" (OFF) position

TECHNICAL DESCRIPTION (COMMENT)

Carry out diagnosis with particular emphasis on wiring and connector(s) in the CAN bus lines. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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

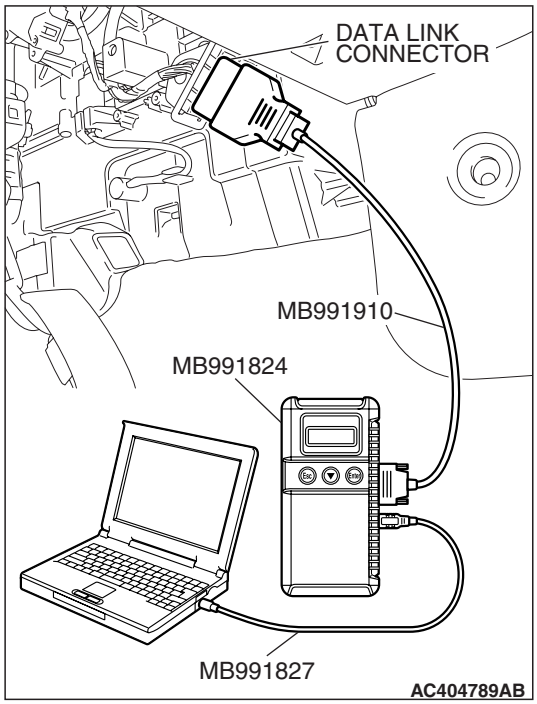
⚠ CAUTION

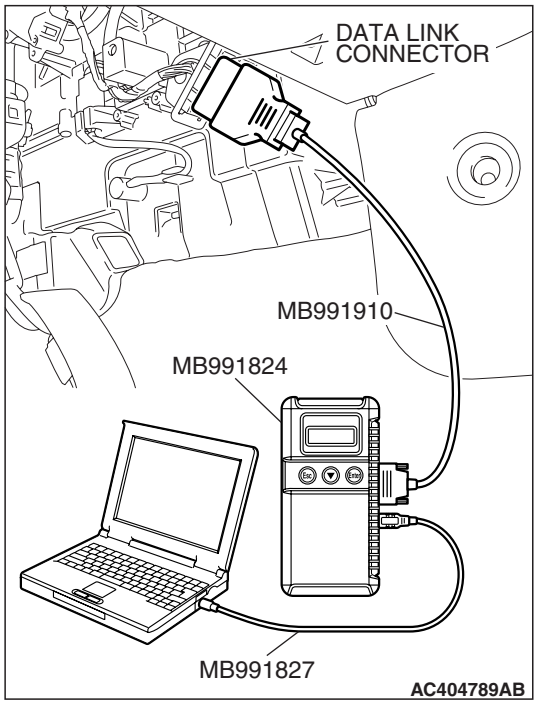
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).





STEP 2. Recheck for diagnostic trouble code.
Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. After replacement, verify that the DTC is not reset.

NO : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

DTC U1100: ECM <M/T> or PCM <A/T> time-out (related to engine)
DTC U1101: ECM <M/T> or PCM <A/T> time-out (related to transaxle)

⚠ CAUTION
- **If DTC U1100 or U1101 is set in the ETACS-ECU, always diagnose the CAN main bus line.**
- **Whenever the ECU is replaced, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT

DTC U1100
- The ETACS-ECU receives engine control system-related signal from the ECM <M/T> or PCM <A/T>. If the ECU cannot receive the signal, DTC U1100 will be set.

DTC U1101
- The ETACS-ECU receives transaxle control system-related signal from the ECM <M/T> or PCM <A/T>. If transaxle control system-related signal cannot be received, DTC U1101 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble
- Connector(s) or wiring harness in the CAN bus lines between the ECM <M/T> or PCM <A/T> and the ETACS-ECU, the power supply system to the ECM <M/T> or PCM <A/T>, the ECM <M/T> or PCM <A/T> itself, or the ETACS-ECU may be defective.

Past trouble
- If DTC U1100 or U1101 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) in the CAN bus line between the ETACS-ECU and the ECM <M/T> or PCM <A/T>, and the power supply system to the ECM <M/T> or PCM <A/T>. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

  NOTE: You cannot find a past trouble, by the MUT-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14 and check the CAN bus lines.

You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN Bus Line Diagnostic Flow P.54C-6).

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.
- The ECM <M/T> or PCM <A/T> may be defective.
- The ETACS-ECU may be defective.

DIAGNOSIS

Required Special Tools:

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

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

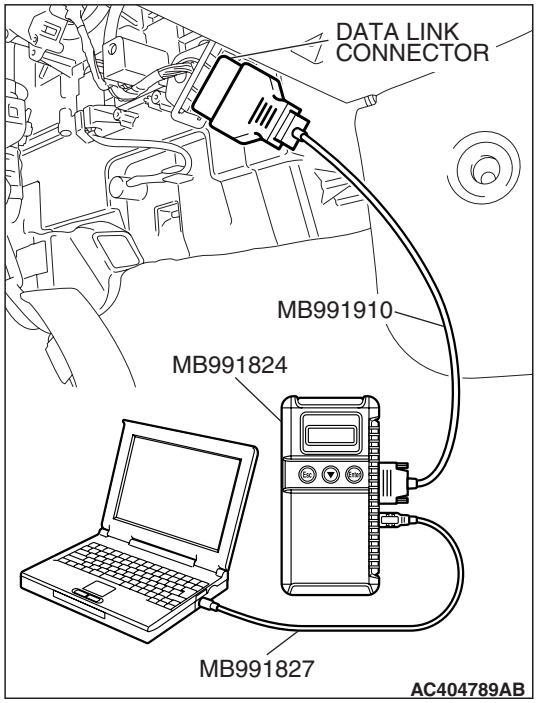
⚠ CAUTION

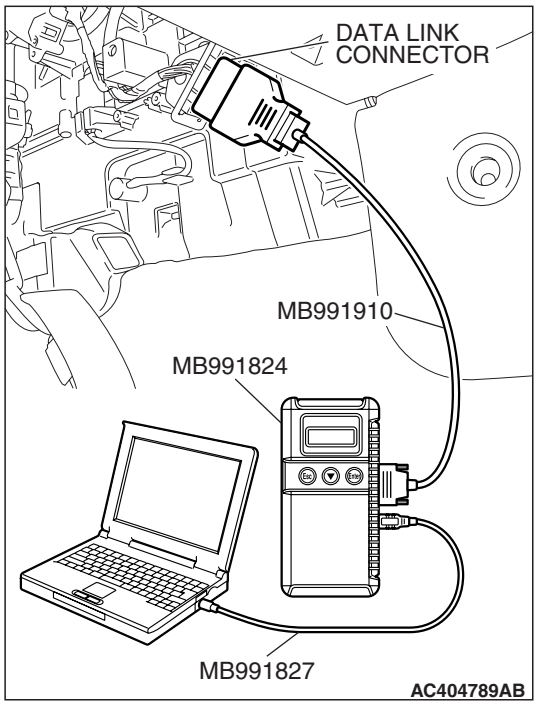
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).





STEP 2. Using scan tool MB991958, read the ECM <M/T> or PCM <A/T> diagnostic trouble code.

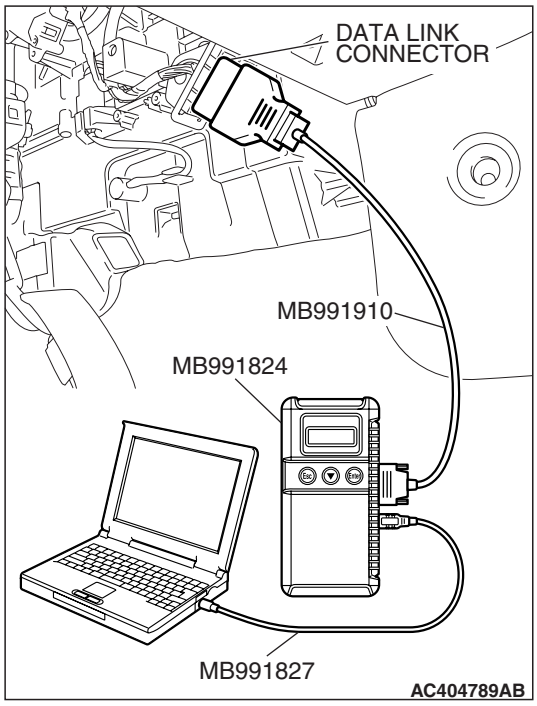
Check whether engine and transaxle DTCs are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ECM <M/T> or PCM <A/T> (Refer to GROUP 13A, Diagnosis P.13A-41 <2.4 L>, GROUP 13B, P.13B-43 <3.8 L> or GROUP 23A, Diagnosis P.23A-64 <A/T>).

NO : Go to Step 3.



STEP 3. Using scan tool MB991958, read the for any diagnostic trouble code.

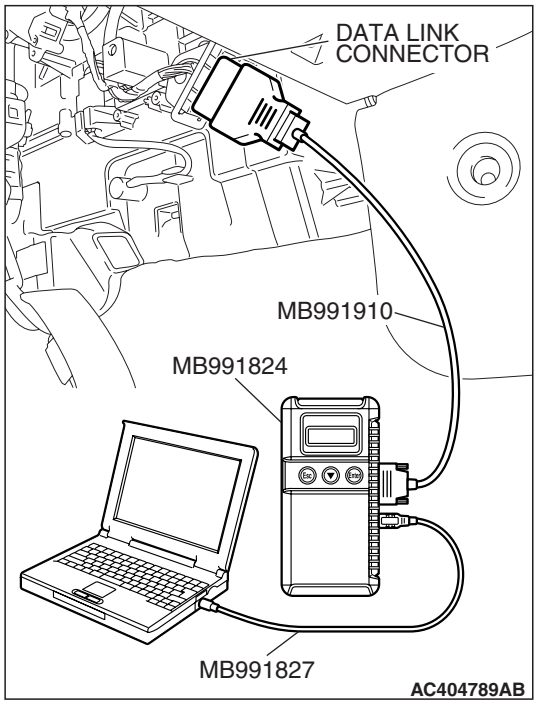
Check if a DTC, which relates to CAN communication-linked systems below, is set.

- Combination meter
  DTC indicating a time-out error related to the engine or automatic transaxle control system
- A/C
  DTC indicating a time-out error related to the engine or automatic transaxle control system

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 4.
NO : Go to Step 5.



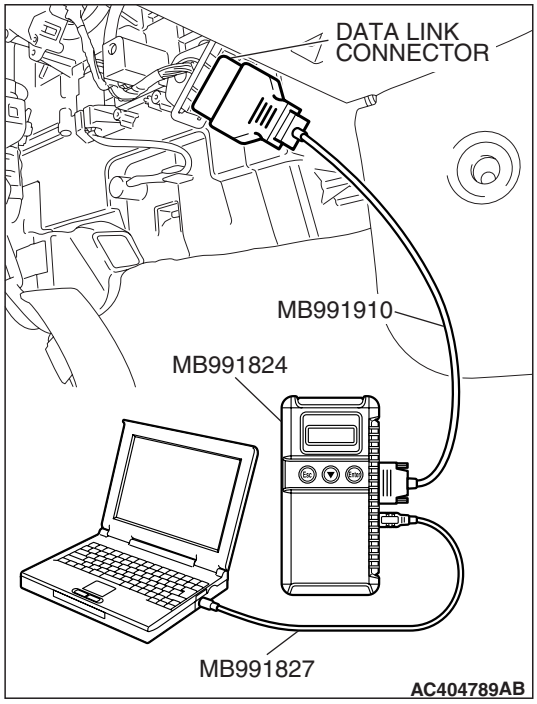
STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ECM <M/T> or PCM <A/T>. On completion, verify that the DTC is not reset.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the ECM <M/T> or PCM <A/T> and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. On completion, verify that the DTC is not reset.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the ECM <M/T> or PCM <A/T> and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

DTC U1108: Combination meter time-out.

⚠ CAUTION
- **If DTC U1108 is set in the ETACS-ECU, always diagnose the CAN main bus line.**
- **Whenever the ECU is replaced, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT

The ETACS-ECU receives combination meter-related signal from the combination meter. If the ECU cannot receive the signal, DTC U1108 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble
- Connector(s) or wiring harness in the CAN bus lines between the combination meter and the ETACS-ECU, the power supply system to the combination meter, the combination meter itself, or the ETACS-ECU may be defective.

Past trouble
- If DTC U1108 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) in the CAN bus line between the combination meter and the ETACS-ECU, and the power supply system to the combination meter. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

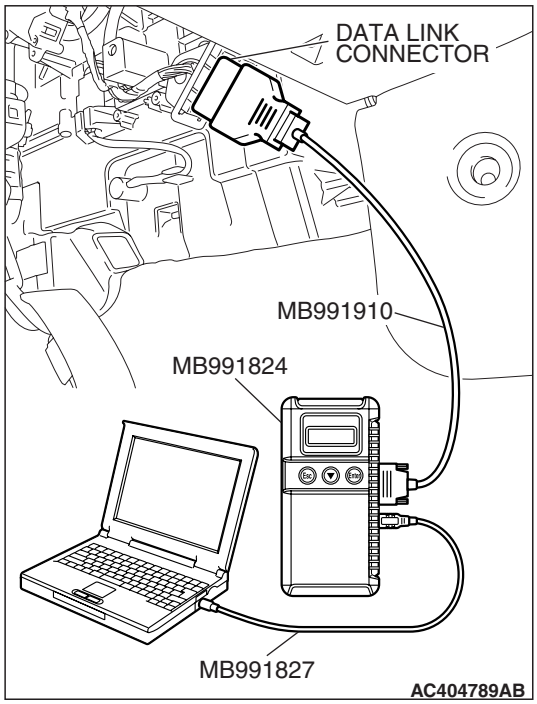
  NOTE: You cannot find a past trouble, by the MUT-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14 and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN Bus Line Diagnostic Flow P.54C-6).

TROUBLESHOOTING HINTS

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

DIAGNOSIS

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



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

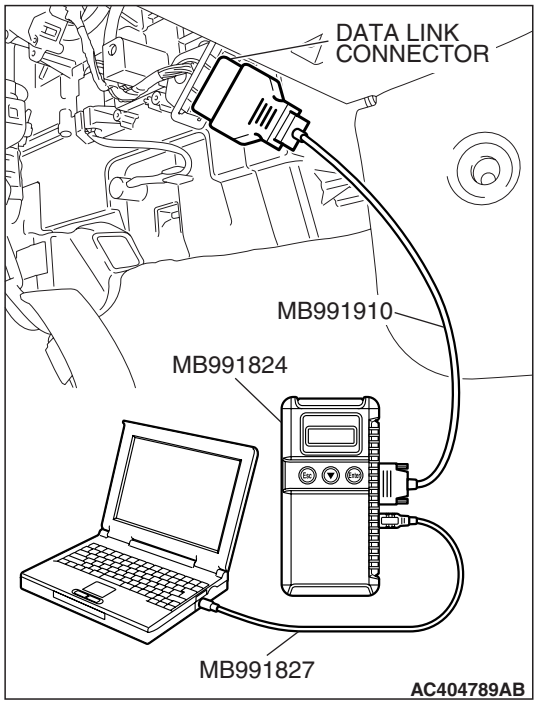
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

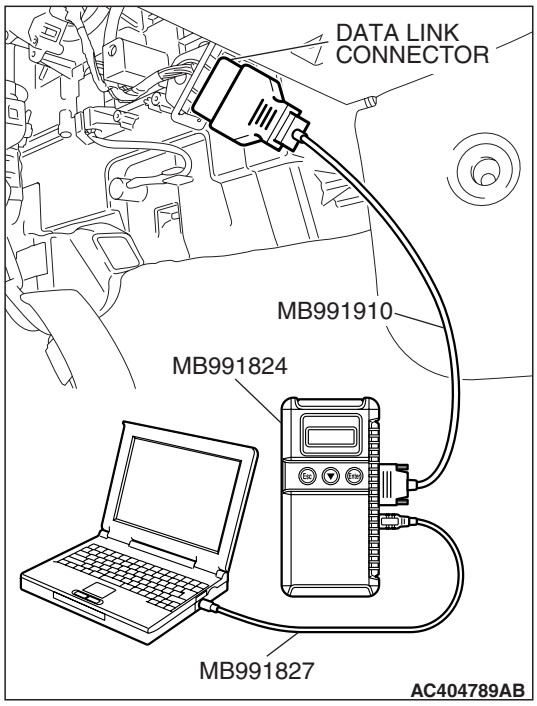


STEP 2. Using scan tool MB991958, read the combination meter diagnostic trouble code.

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

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnosis P.54A-55).
NO : Go to Step 3.



STEP 3. Using scan tool MB991958, read the for any diagnostic trouble code.

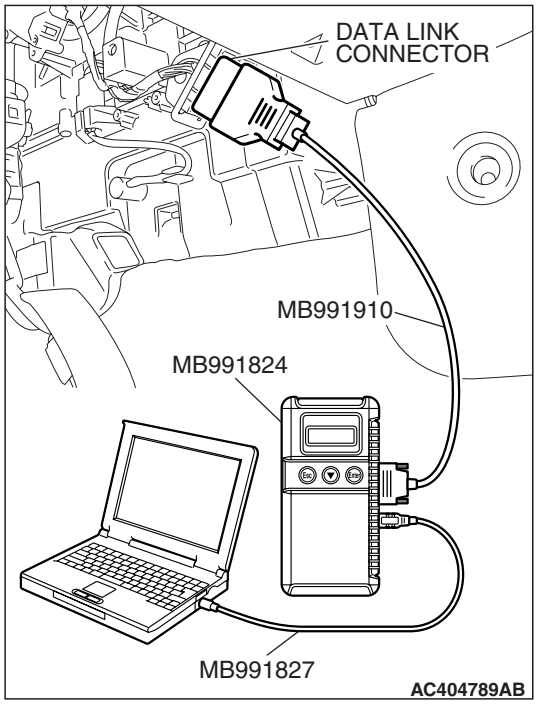
Check if a DTC, which relates to CAN communication-linked systems below, is set.

- Engine
  Meter-related time-out DTC

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 4.
NO : Go to Step 5.

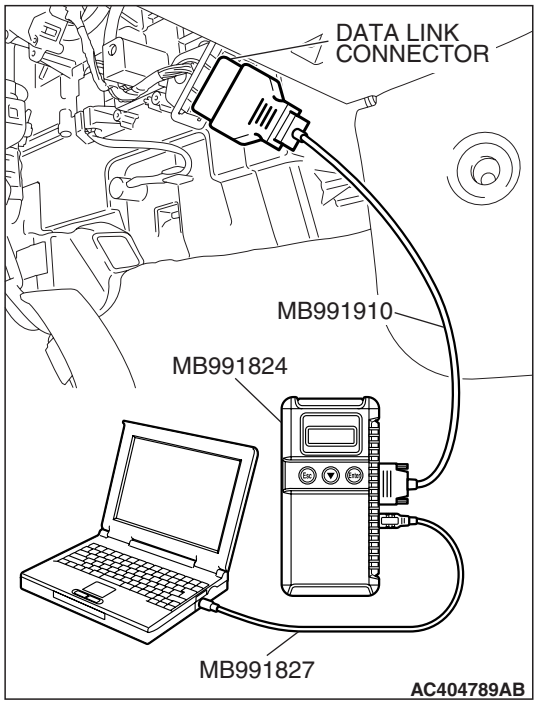


STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the combination meter. On completion, verify that the DTC is not reset.
NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the combination meter and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. On completion, verify that the DTC is not reset.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the combination meter and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

DTC U1110: A/C-ECU time-out.

⚠ CAUTION

- **If DTC U1110 is set in the ETACS-ECU, always diagnose the CAN main bus line.**
- **Whenever the ECU is replaced, ensure that the communication circuit is normal.**

TROUBLE JUDGMENT

The ETACS-ECU receives air conditioning system-related signal from the A/C-ECU. If an air conditioning control system-related signal cannot be received, DTC U1110 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- Connector(s) or wiring harness in the CAN bus lines between the A/C-ECU and the ETACS-ECU, the power supply system to the A/C-ECU, the A/C-ECU, or the ETACS-ECU may be defective.

Past trouble

- If DTC U1110 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) in the CAN bus line between the A/C-ECU and the ETACS-ECU, and the power supply system to the A/C-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

  NOTE: You cannot find a past trouble, by the MUT-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14 and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN Bus Line Diagnostic Flow P.54C-6).

TROUBLESHOOTING HINTS

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

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DIAGNOSIS

Required Special Tools:

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

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

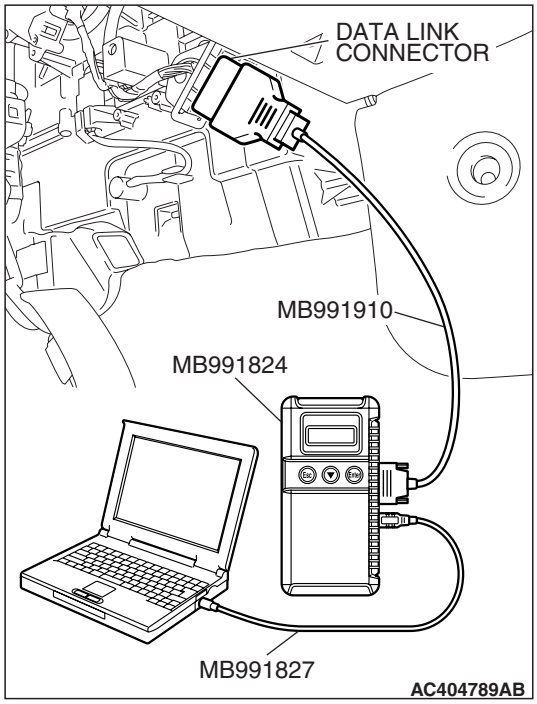
⚠ CAUTION

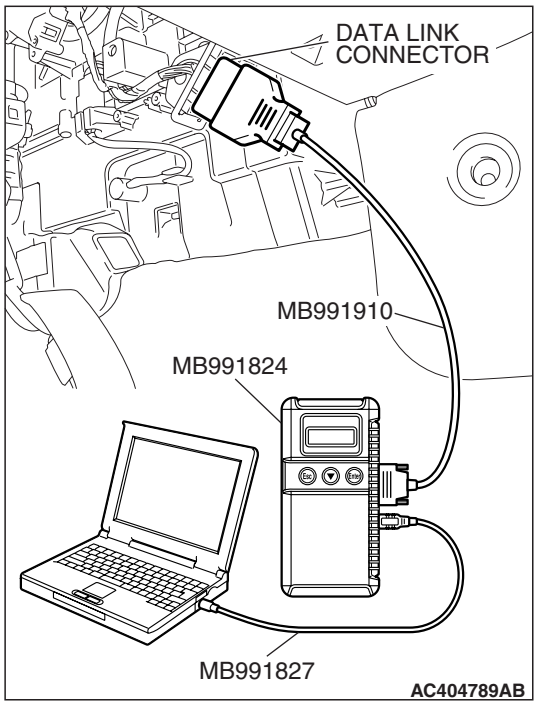
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



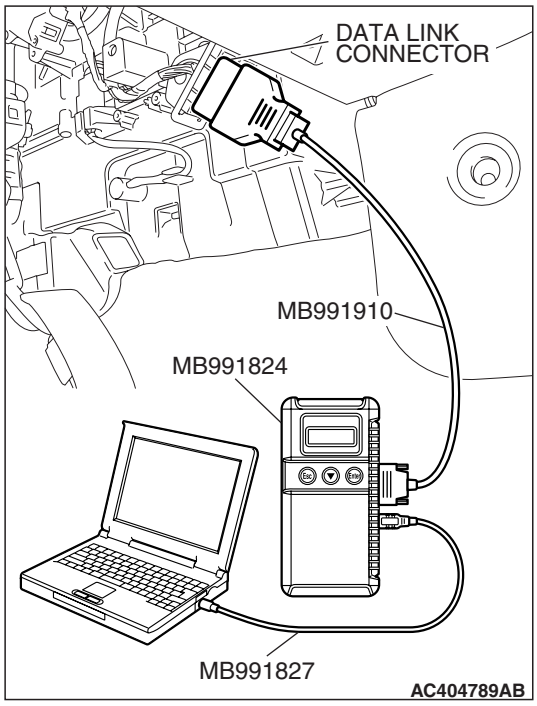


STEP 2. Using scan tool MB991958, read the A/C diagnostic trouble code.

Check if an A/C-ECU DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check whether A/C system-related DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the air conditioning system (Refer to GROUP 55A, Diagnosis P.55A-10<manual A/C> or GROUP 55B, Diagnosis P.55B-9<automatic A/C>).
NO : Go to Step 3.



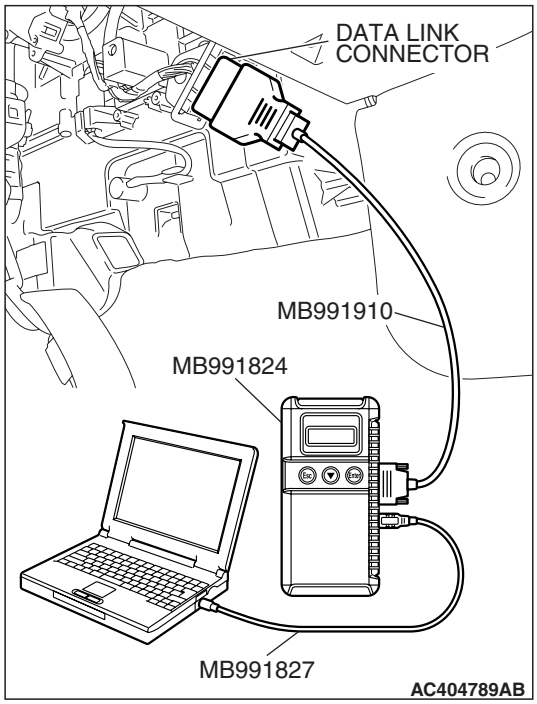
STEP 3. Using scan tool MB991958, read the for any diagnostic trouble code.

Check if a DTC, which relates to CAN communication-linked systems below, is set.
- Combination meter
  A/C-related time-out DTC

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 4.
NO : Go to Step 5.



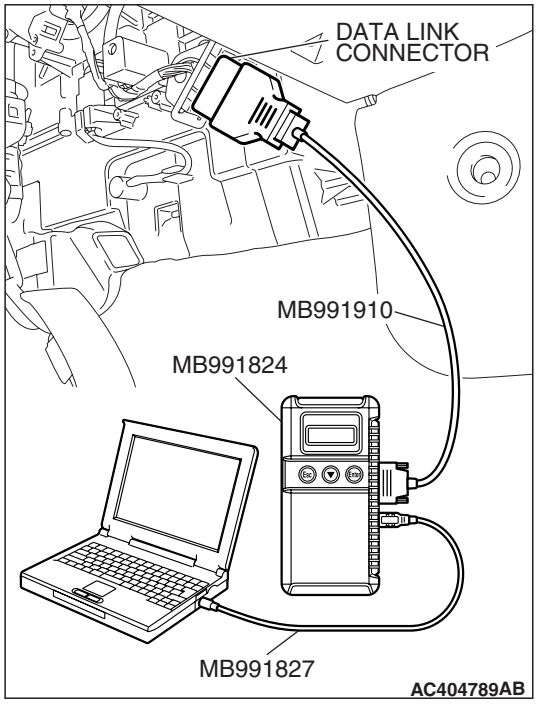
STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the A/C-ECU. On completion, verify that the DTC is not reset.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the A/C-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. On completion, verify that the DTC is not reset.

NO : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the A/C-ECU and the ETACS-ECU (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

DTC U1128: Failure information on combination meter.

⚠ CAUTION
- **If DTC U1128 is set in the ETACS-ECU, always diagnose the CAN main bus line.**
- **Whenever the ECU is replaced, ensure that the communication circuit is normal.**
- **The combination meter-related DTC may be set when DTC U1128 is set (For details refer to GROUP 00, Intersystem Affiliated DTC Reference Table P.00-17). Diagnose the combination meter first when the combination meter-related DTC is set.**

TROUBLE JUDGMENT

The ETACS-ECU receives combination meter-related signal from the combination meter via the CAN bus lines. If a fail-safe related data is contained in the signal from the combination meter, DTC U1128 will be stored.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble
- The wiring harness wire or connectors may have loose, corroded, or damage terminals, or terminals pushed back in the connector, the ECM <M/T> or PCM <A/T>, the combination meter or the ETACS-ECU may be defective.

Past trouble
- If DTC U1128 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) in the CAN bus line between the combination meter and the ETACS-ECU, and the power supply system to the combination meter. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to treat past trouble P.00-16).

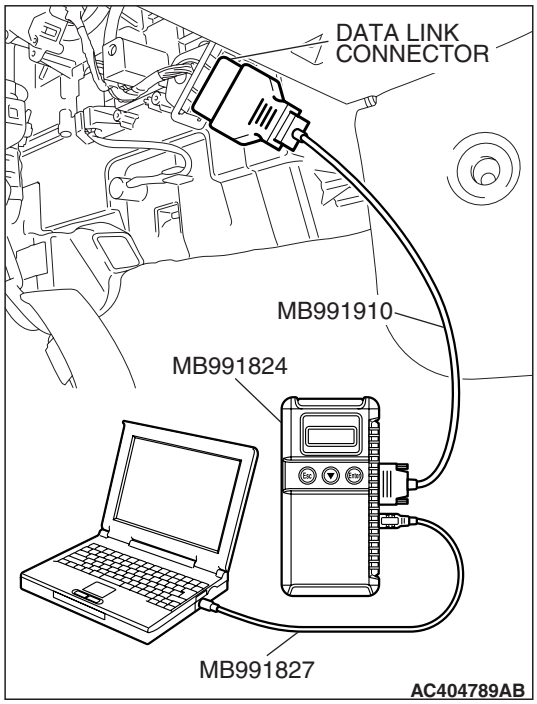
  NOTE: You cannot find a past trouble, by the MUT-III CAN bus diagnostics even if there is a failure in CAN bus lines. In this case, refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14 and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the DTC, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54C, CAN Bus Line Diagnostic Flow P.54C-6).

TROUBLESHOOTING HINTS

- The ETACS-ECU may be defective

DIAGNOSIS

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



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

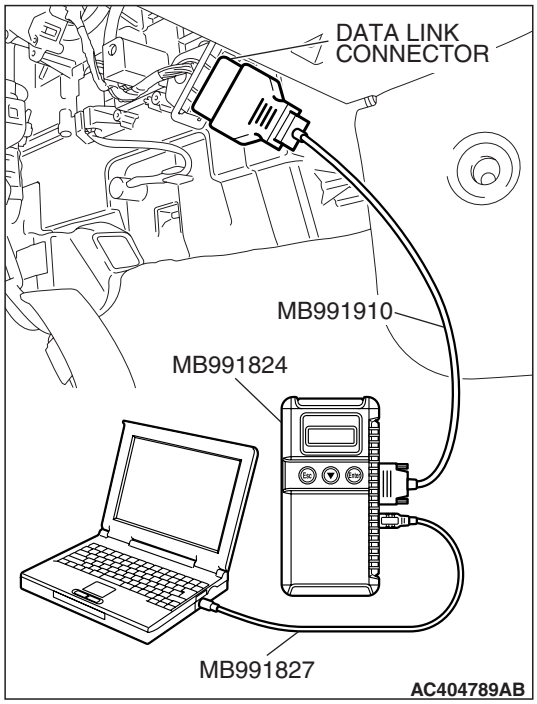
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the ECM <M/T> or PCM <A/T> diagnostic trouble code.

Check whether engine and transaxle DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ECM <M/T> or PCM <A/T> (Refer to GROUP 13A, Diagnosis P.13A-41 <2.4 L> or GROUP 13B, P.13B-43 <3.8 L>).
NO : Go to Step 3.

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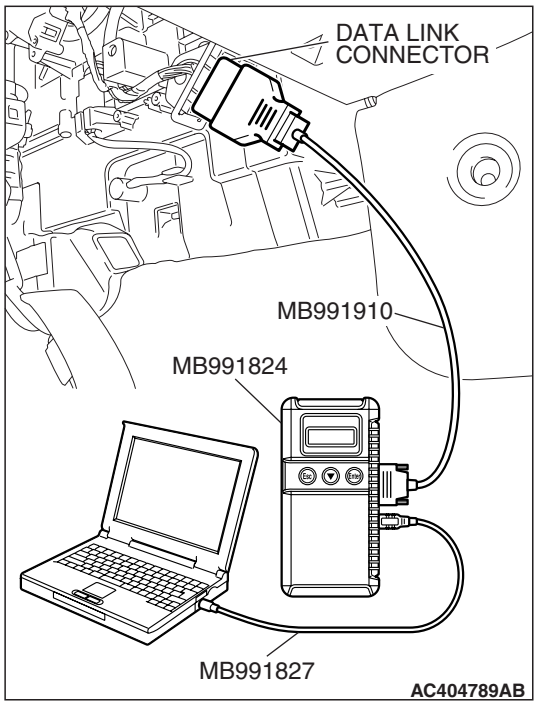
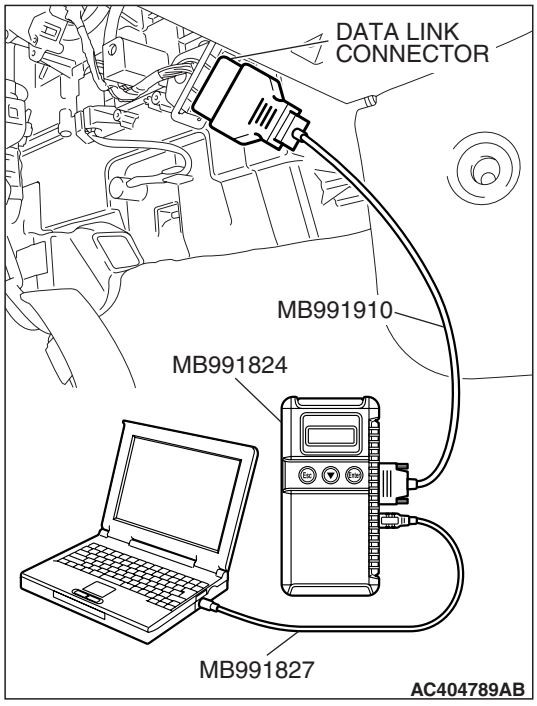


STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

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

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnosis P.54A-55).
NO : Go to Step 4.



STEP 4. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. On completion, verify that the DTC is not reset.
NO : There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-14).

SYMPTOM CHART

M1549000801665

ECU COMMUNICATION SYSTEM

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Communication with the SWS monitor kit is not possible.	A-1	P.54B-63
Communication with the column switch (column-ECU) is not possible.	A-2	P.54B-70
Communication with the ETACS-ECU is not possible.	A-3	P.54B-78
Communication with the front-ECU is not possible.	A-4	P.54B-86
Communication with the sunroof-ECU is not possible.	A-5	P.54B-93

FUNCTION SYSTEM

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Tone alarm	General description concerning the tone alarm	–	P.54B-101
	Ignition key reminder tone alarm function does not work normally.	B-1	P.54B-108
	Light reminder tone alarm function does not work normally.	B-2	P.54B-112
	Seat belt tone alarm function does not work normally.	B-3	P.54B-115
	Door ajar tone alarm function does not work normally.	B-4	P.54B-120
Central door locking system	General description concerning central door locking system	–	P.54B-124
	The central door locking system does not work at all.	C-1	P.54B-130
	Some doors do not lock or unlock.	C-2	P.54B-135
	All the doors do not lock or unlock with just the door lock switch operation.	C-3	P.54B-148
	All the doors do not lock or unlock with just the door lock key cylinder key operation.	C-4	P.54B-150
	All the doors do not lock or unlock with just the driver's or passenger’s inside lock knob operation.	C-5	P.54B-152
	Forgotten key prevention function does not work normally.	C-6	P.54B-154

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Power windows	General description concerning the power windows	–	P.54B-158
	Power windows do not work at all.	D-1	P.54B-160
	The power window timer function does not work normally.	D-2	P.54B-173
	Only the door window (LH) does not work by operating the power window main switch.	D-3	P.54B-177
	Power window (RH) does not work normally by operating the power window sub switch.	D-4	P.54B-183
	Power window (RH) does not work normally by operating the power window main switch.	D-5	P.54B-191
Keyless entry system	General description concerning the keyless entry system	–	P.54B-194
	Keyless entry system does not operate.	E-1	P.54B-198
	The dome light, the turn-signal lights and the horn do not operate through the answerback function.	E-2	P.54B-200
	Encrypted code cannot be registered.	E-3	P.54B-209
	The liftgate is not opened when the keyless entry transmitter "LIFTGATE" button is operated.	E-4	P.54B-211
Sunroof	General description concerning the sunroof	–	P.54B-213
	Sunroof does not operate.	F-1	P.54B-215
	Any of the sunroof switch positions is defective.	F-2	P.54B-223
	Sunroof timer function does not work normally.	F-3	P.54B-225
Windshield wiper and washer	General description concerning the windshield wiper and washer	–	P.54B-227
	The windshield wipers do not work at all.	G-1	P.54B-232
	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-240
	All of the windshield wiper switch positions are defective.	G-3	P.54B-243
	Windshield wipers does not stop at the predetermined park position.	G-4	P.54B-248
	The windshield intermittent wiper interval cannot be adjusted by using the variable intermittent wiper control switch.	G-5	P.54B-253
	The windshield intermittent wiper interval is not changed according to the vehicle speed.	G-6	P.54B-256
	The windshield washer does not work.	G-7	P.54B-259

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SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Rear wiper and washer	General description concerning the rear wiper and washer	–	P.54B-265
	Rear wiper does not work at all.	H-1	P.54B-269
	Rear wiper does not stop at the predetermined park position.	H-2	P.54B-275
	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-277
	Rear washer does not operate.	H-4	P.54B-281
Headlight and taillight	General description concerning the headlights and taillights	–	P.54B-287
	The taillights do not illuminate normally.	I-1	P.54B-293
	The headlights (low-beam) do not illuminate normally.	I-2	P.54B-298
	The headlights (high-beam) do not illuminate normally.	I-3	P.54B-303
	When the passing switch is turned "ON," the headlights (low-beam or high-beam) do not illuminate.	I-4	P.54B-307
	Headlights do not illuminate when the lighting switch is at "TAIL," and "PASSING" position, but illuminate at low-beam when the switch is at "HEAD" position. At this position, the headlights cannot be changed to high beam by operating the dimmer switch.	I-5	P.54B-309
	The taillights, the front parking lights or the license plate light do not illuminate.	I-6	P.54B-311
	One of the headlights does not illuminate.	I-7	P.54B-329
	The high-beam indicator light does not illuminate.	I-8	P.54B-338
	Headlight automatic shutoff function does not work normally.	I-9	P.54B-342
	Headlight dimmer switch automatic resetting function does not work normally.	I-10	P.54B-344
	Daytime running light function does not work normally.	I-11	P.54B-345
Flasher timer	General description concerning the flasher timer	–	P.54B-348
	Turn-signal lights do not flash when the turn-signal light switch is turned on.	J-1	P.54B-351
	Hazard warning lights do not flash when the hazard warning light switch is turned on.	J-2	P.54B-358
	One of the turn-signal lights does not illuminate.	J-3	P.54B-360
	The turn-signal light indicator does not illuminate normally.	J-4	P.54B-374

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SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Front fog light	General description concerning the front fog lights	–	P.54B-378
	Front fog lights do not illuminate when the front fog light switch is turned on.	K-1	P.54B-381
	Front fog lights do not go out when the headlights (low-beam) are turned off while the front fog lights are on.	K-2	P.54B-387
	One of the front fog lights does not illuminate.	K-3	P.54B-387
	The front fog light indicator does not illuminate normally.	K-4	P.54B-393
Interior light	General description concerning the interior light	–	P.54B-397
	The dome lights do not illuminate and go out normally.	L-1	P.54B-403
	The front dome light or rear dome light does not illuminate or go out normally.	L-2	P.54B-408
	The luggage compartment light does not illuminate or go out normally.	L-3	P.54B-417
	Dome light dimming function does not work normally.	L-4	P.54B-422
	The ignition key hole illumination light does not illuminate or go out normally.	L-5	P.54B-427
	The interior light automatic shutoff function does not work normally.	L-6	P.54B-435
	The door ajar indicator lights do not illuminate or go out normally	L-7	P.54B-440
	The seat belt warning light does not illuminate or go out normally	L-8	P.54B-445

INPUT SIGNAL CHART

M1549024200749

SWS MONITOR

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

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the ignition switch (ACC).		M-1	P.54B-449
ETACS-ECU does not receive any signal from the ignition switch (IG1).		M-2	P.54B-452
ETACS-ECU does not receive any signal from the front fog light switch.		M-3	P.54B-455
ETACS-ECU does not receive "R" position signal from the backup light switch <M/T>.		M-4	P.54B-459
ETACS-ECU does not receive any signal from the door switches.		M-5	P.54B-466
Column switch	ETACS-ECU does not receive any signal from the taillight switch.	M-6	P.54B-473
	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.	M-7	P.54B-476
	ETACS-ECU does not receive any signal from the windshield intermittent wiper switch.		
	ETACS-ECU does not receive any signal from the windshield low-speed wiper switch.		
	ETACS-ECU does not receive any signal from the windshield high-speed wiper switch.		
	ETACS-ECU does not receive any signal from the rear wiper switch.		
	ETACS-ECU does not receive any signal from the variable intermittent wiper control switch.	M-8	P.54B-481
	ETACS-ECU does not receive any signal from the windshield washer switch.	M-7	P.54B-476
	ETACS-ECU does not receive any signal from the rear washer switch.		
Sunroof switch	ETACS-ECU does not receive any signal from the up, open or close/down switch.	M-9	P.54B-485

SCAN TOOL OR VOLTMETER

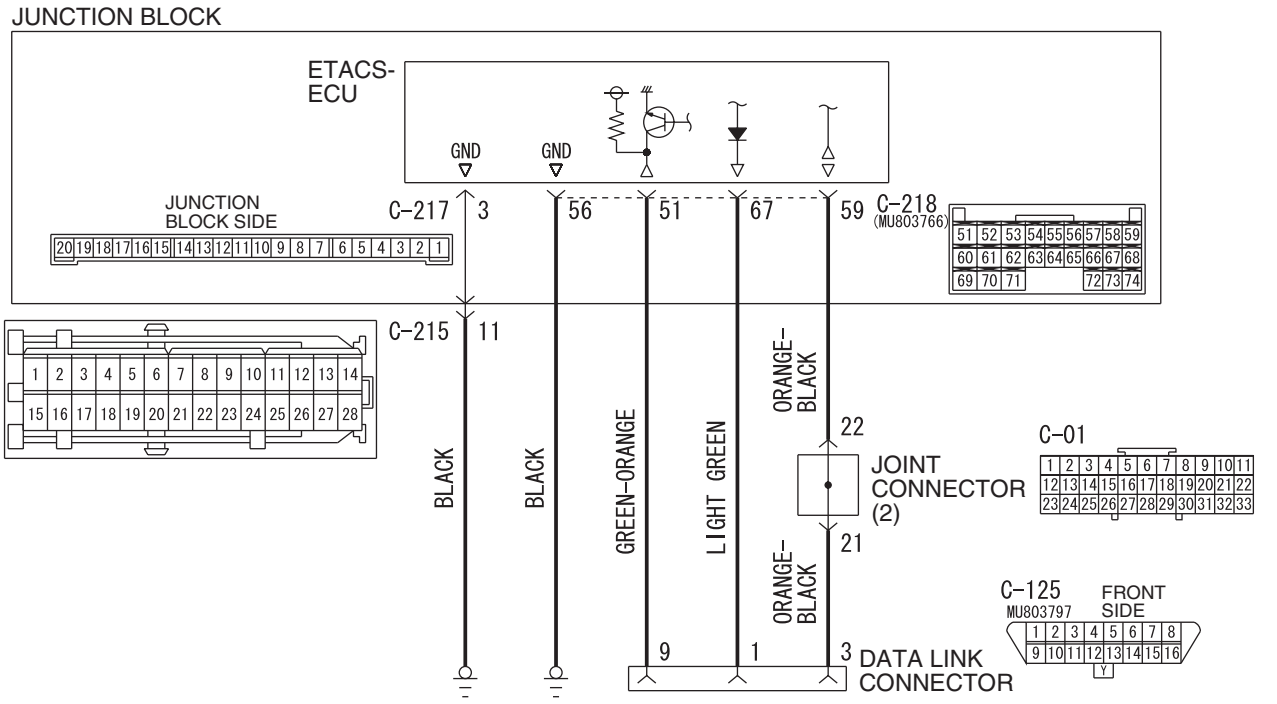
If a problem is found in the Pulse Check, observe the table below.

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the key reminder switch.		N-1	P.54B-489
ETACS-ECU does not receive any signal from the hazard warning light switch.		N-2	P.54B-493
ETACS-ECU does not receive any signal from the door lock key cylinder switch.		N-3	P.54B-498
ETACS-ECU does not receive any signal from the door lock actuator.		N-4	P.54B-503
ETACS-ECU does not receive any signal from the door lock switch (incorporated in the power window main switch and power window sub switch).		N-5	P.54B-513
ETACS-ECU does not receive any signal from the liftgate latch switch.		N-6	P.54B-523
ETACS-ECU does not receive any signal from the liftgate lock release switch.		N-7	P.54B-528
Transmitter	ETACS-ECU does not receive any signal from the lock, unlock, liftgate or panic switch.	N-8	P.54B-532
ETACS-ECU does not receive any interior light loaded signal.		N-9	P.54B-534
ETACS-ECU does not receive an auto-stop signal from the rear wiper motor.		N-10	P.54B-541

SYMPTOM PROCEDURES

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

Scan Tool Communication and ETACS-ECU Ground Circuit



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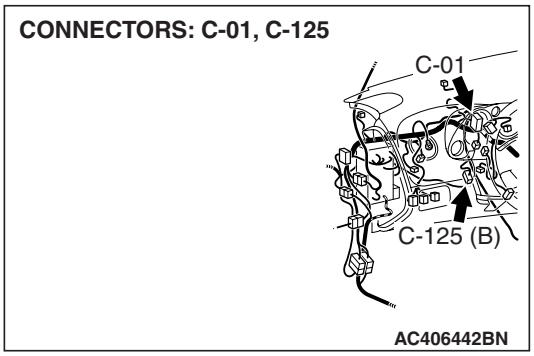

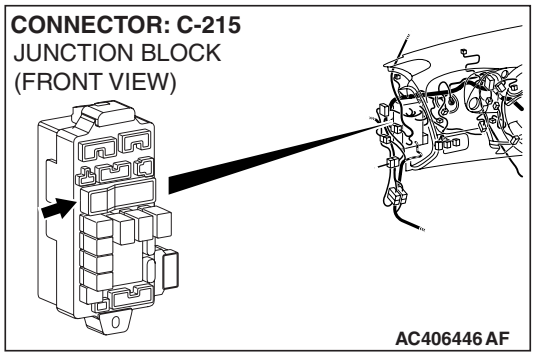

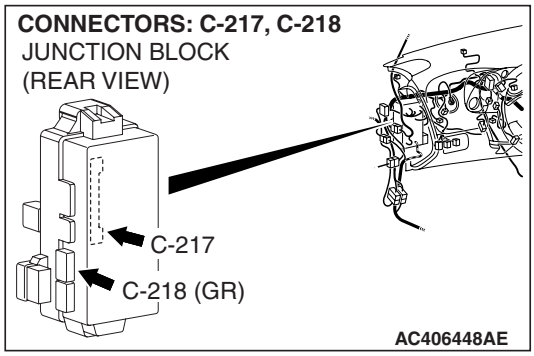

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TECHNICAL DESCRIPTION (COMMENT)

The SWS monitor kit may be connected improperly.

TROUBLESHOOTING HINTS

- The SWS monitor body (I/F cartridge) may be defective
- The SWS monitor harness may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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

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

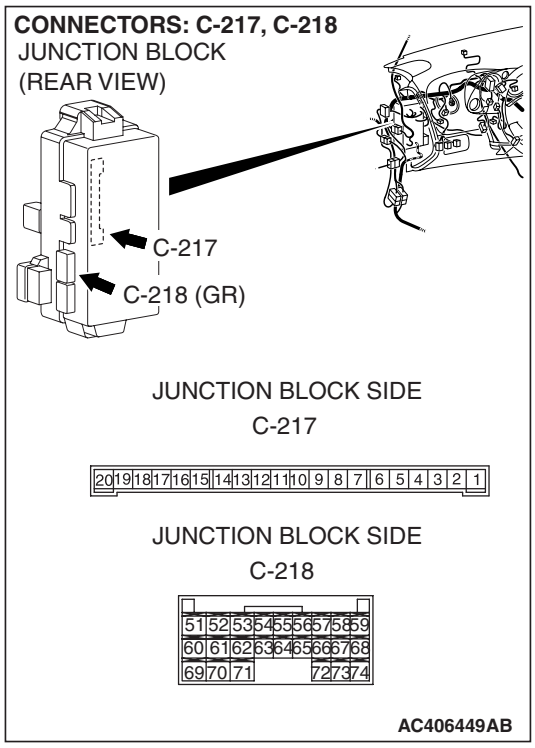
Q: Is SWS monitor kit MB991813 connected with the column switch properly?

YES : Go to Step 2.
NO : Connect SWS monitor kit MB991813 to the column switch securely.

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

Q: Does the system communicate with scan tool 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-78."
NO : Go to Step 3.



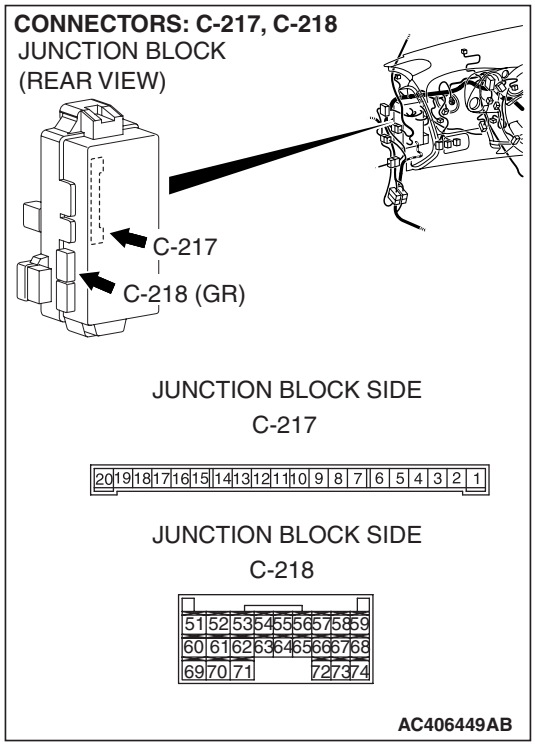
STEP 3. Check ETACS-ECU connectors C-217 and C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-217 and C-218 in good condition?

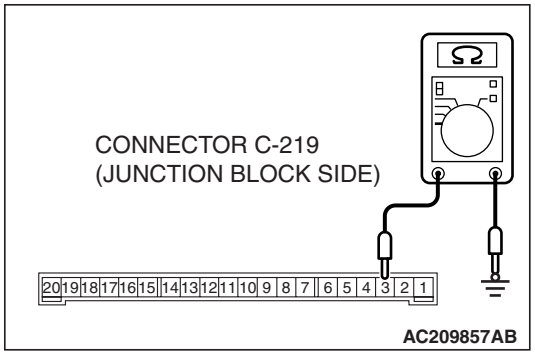
YES : Go to Step 4.

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

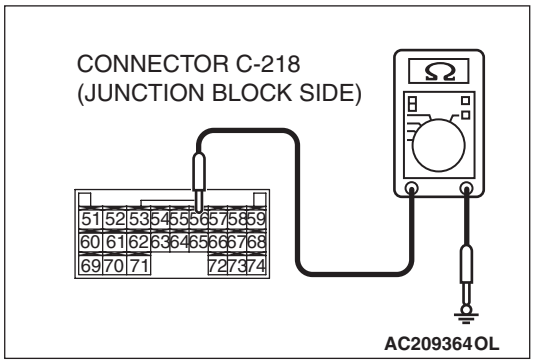
STEP 4. Check the ground circuit to the ETACS-ECU. Measure the resistance at ETACS-ECU connectors C-217 and C-218.



(1) Disconnect ETACS-ECU connectors C-217 and C-218, and measure the resistance available at the junction block side of the connector.



(2) Measure the resistance value between ETACS-ECU connector C-217 terminal 3 and ground.
- The resistance should be 2 ohms or less.

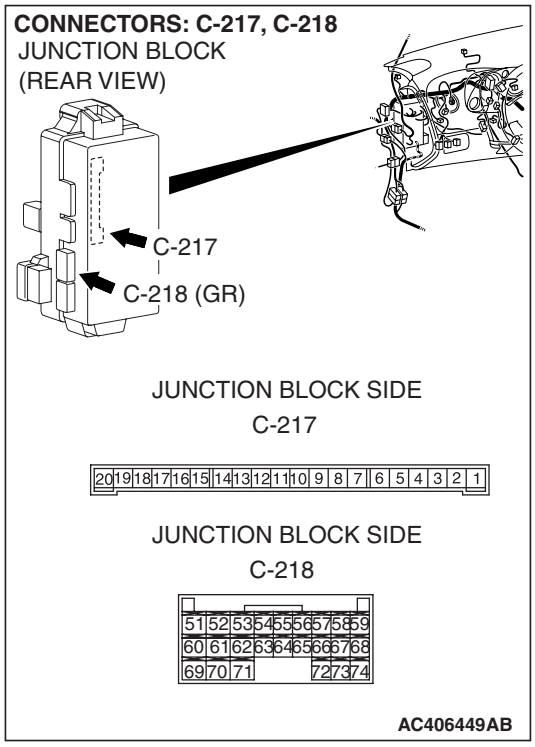


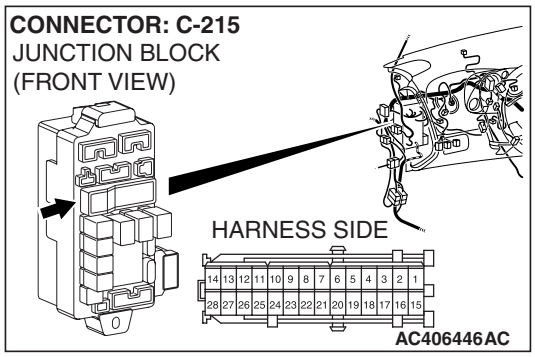
Measure the resistance value between ETACS-ECU connector C-218 terminal 56 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check the wiring harness between ETACS-ECU connector C-217 (terminal 3) or ETACS-ECU connector C-218 (terminal 56) and ground.





NOTE: Also check junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 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-217 (terminal 3) or ETACS-ECU connector C-218 (terminal 56) and ground in good condition?

YES : No action is necessary and testing is complete.

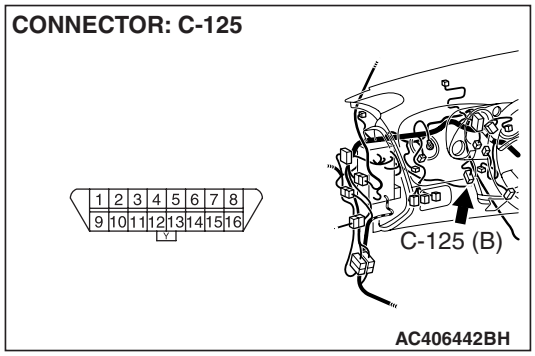
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the system communicates with the SWS monitor kit normally.

STEP 6. Check data link connector C-125 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

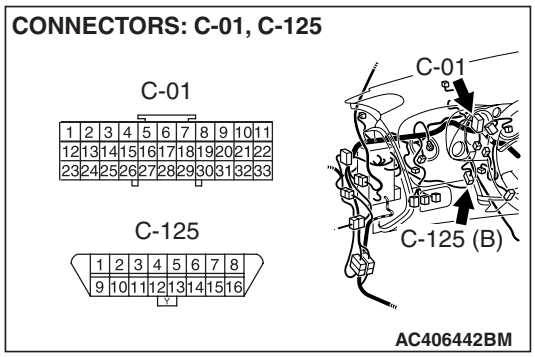
Q: Is data link connector C-125 in good condition?

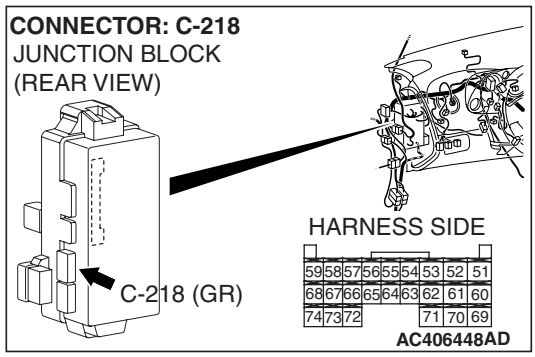
YES : Go to Step 7.

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



STEP 7. Check the wiring harness between ETACS-ECU connector C-218 (terminals 51, 59 and 67) and data link connector C-125 (terminals 9, 3 and 1).





NOTE: Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 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-218 (terminals 51, 59 and 67) and data link connector C-125 (terminals 9, 3 and 1) in good condition?

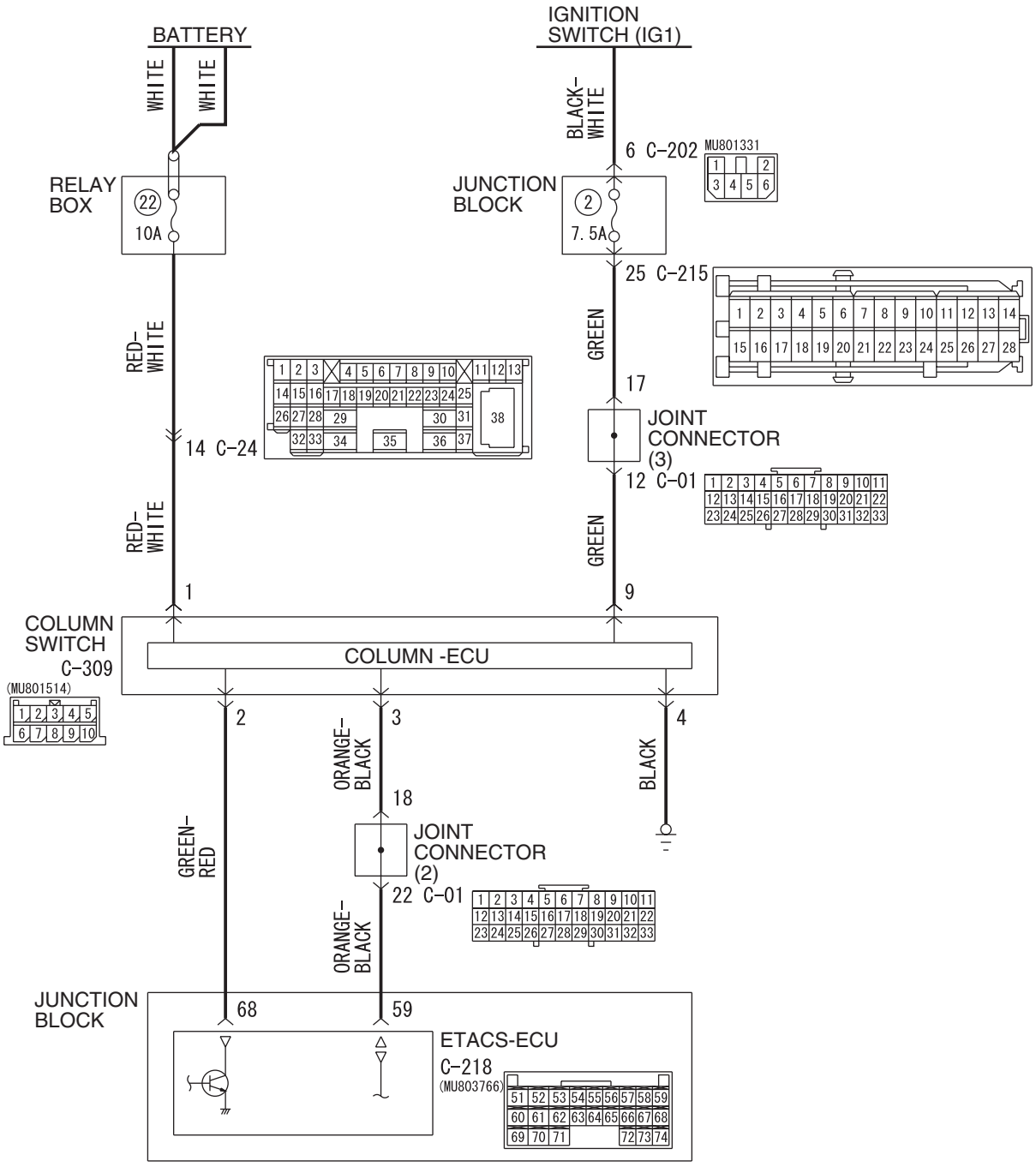
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The system should communicate with the SWS monitor kit normally.

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. Verify that the system communicates 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 MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Column Switch Power Suuply and SWS Communication Circuit



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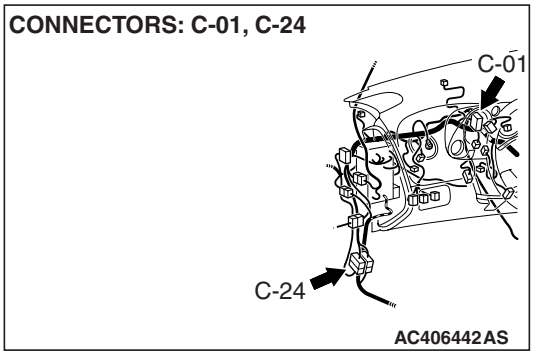

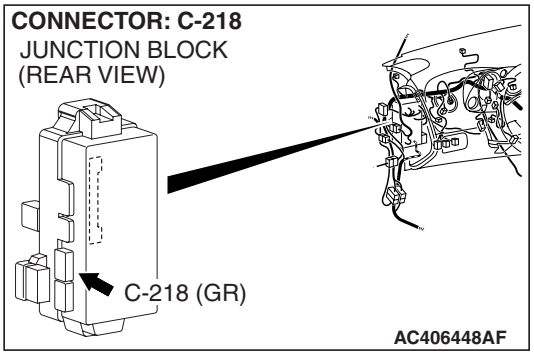

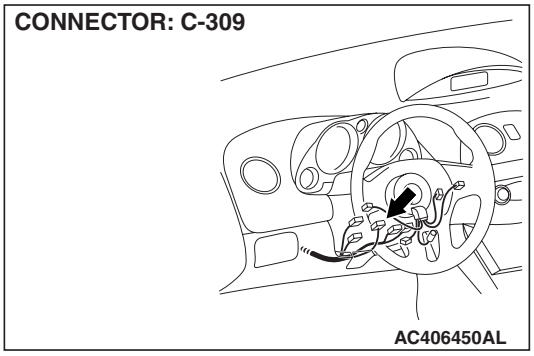

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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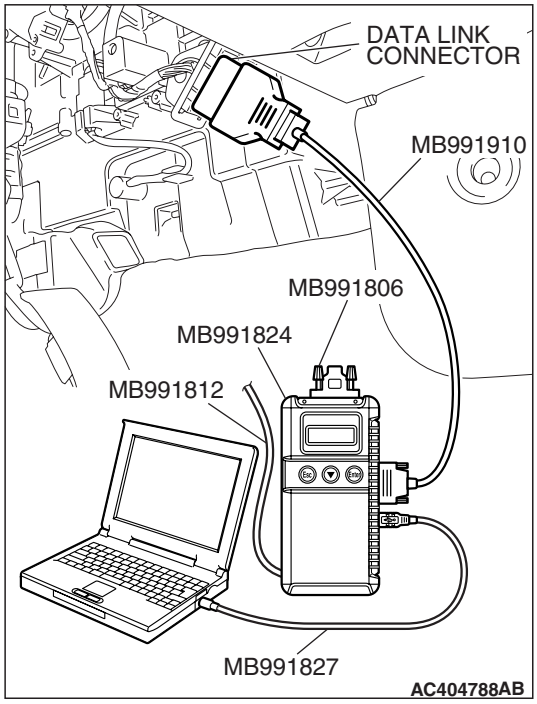
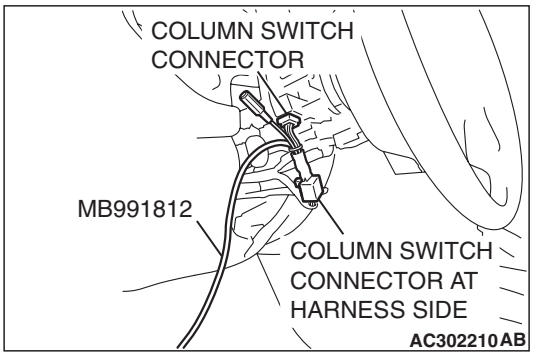




STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Column-ECU

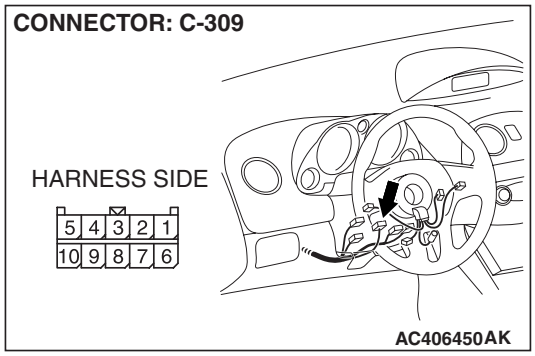
⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed for the "COLUMN ECU" menu : Go to Step 6.
"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."
"NG" is displayed for all the items : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

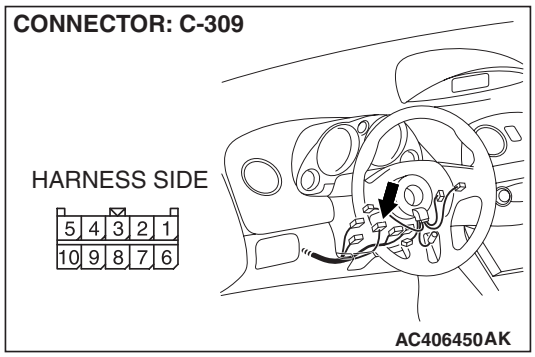


STEP 2. Check column switch connector C-309 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is column switch connector C-309 in good condition?

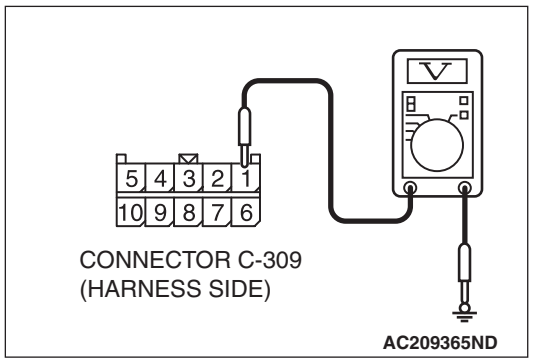
YES : Go to Step 3.

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



STEP 3. Check the power supply circuit to the column switch. Measure the voltage at column switch connector C-309.

(1) Disconnect column switch connector C-309 and measure the voltage available at the wiring harness side of the connector.



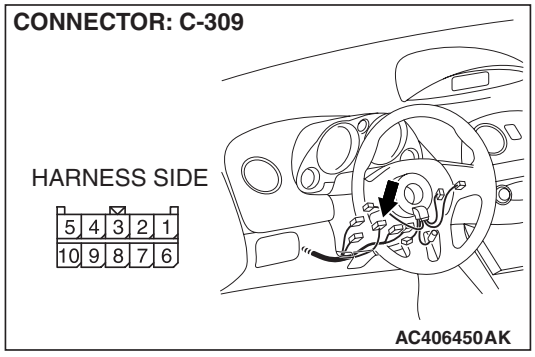
(2) Measure the voltage between terminal 1 and ground by backprobing.
- The voltage should measure approximately 12 volts (battery positive voltage).

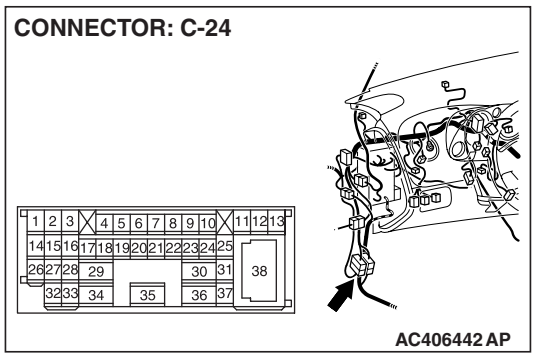
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between column switch connector C-309 (terminal 1) and the battery.





NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

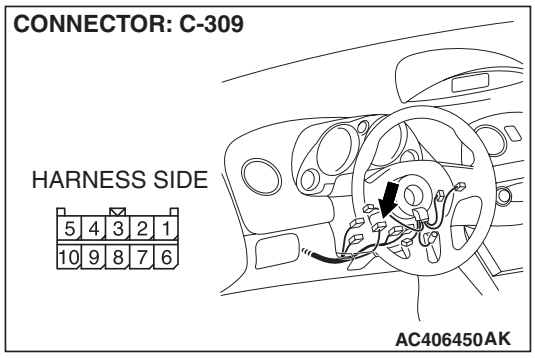
Q: Is the wiring harness between column switch connector C-309 (terminal 1) and the battery in good condition?

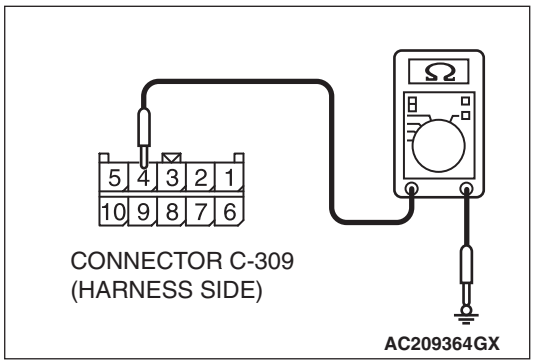
YES : No action is necessary and testing is complete.

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. Measure the resistance at column switch connector C-309.

(1) Disconnect column switch connector C-309 and measure the resistance available at the wiring harness side of the connector.





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

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

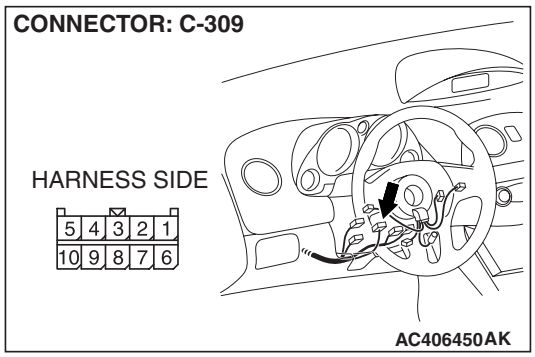
NO : Go to Step 6.

STEP 6. Check the wiring harness between column switch connector C-309 (terminal 4) and ground.

Q: Is the wiring harness between column switch connector C-309 (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 system should communicate with the column switch (column-ECU) normally.



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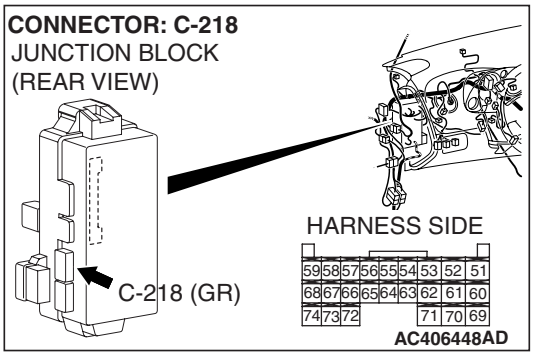
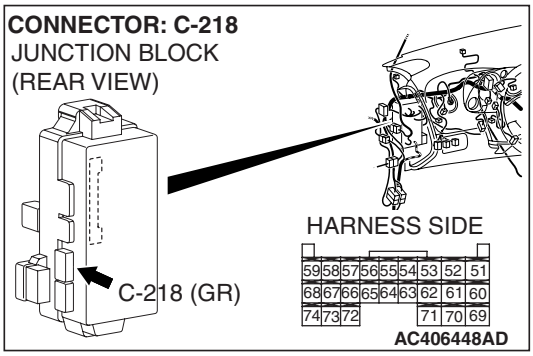


STEP 7. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

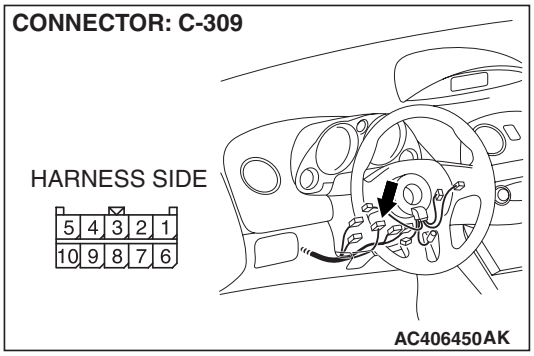
Q: Is ETACS-ECU connector C-218 in good condition?

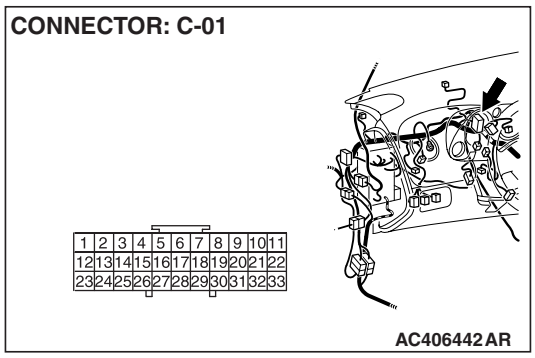
YES : Go to Step 8.

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



STEP 8. Check the wiring harness between column switch connector C-309 (terminal 3) and ETACS-ECU connector C-218 (terminal 59).





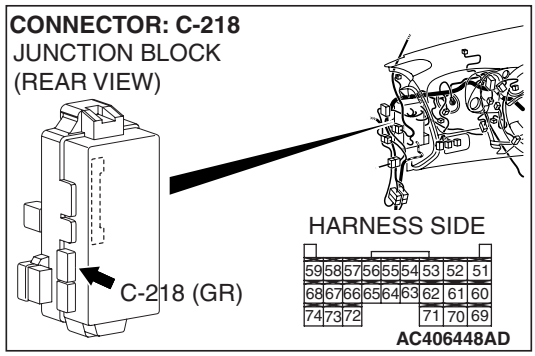
NOTE: Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between column switch connector C-309 (terminal 3) and ETACS-ECU connector C-218 (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.

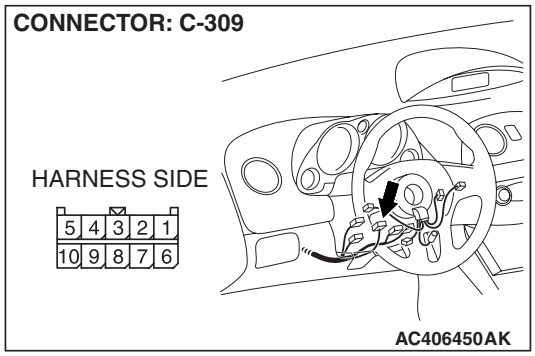
STEP 9. Check the wiring harness between column switch connector C-309 (terminal 2) and ETACS-ECU connector C-218 (terminal 68).



Q: Is the wiring harness between column switch connector C-309 (terminal 2) and ETACS-ECU connector C-218 (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 column switch.

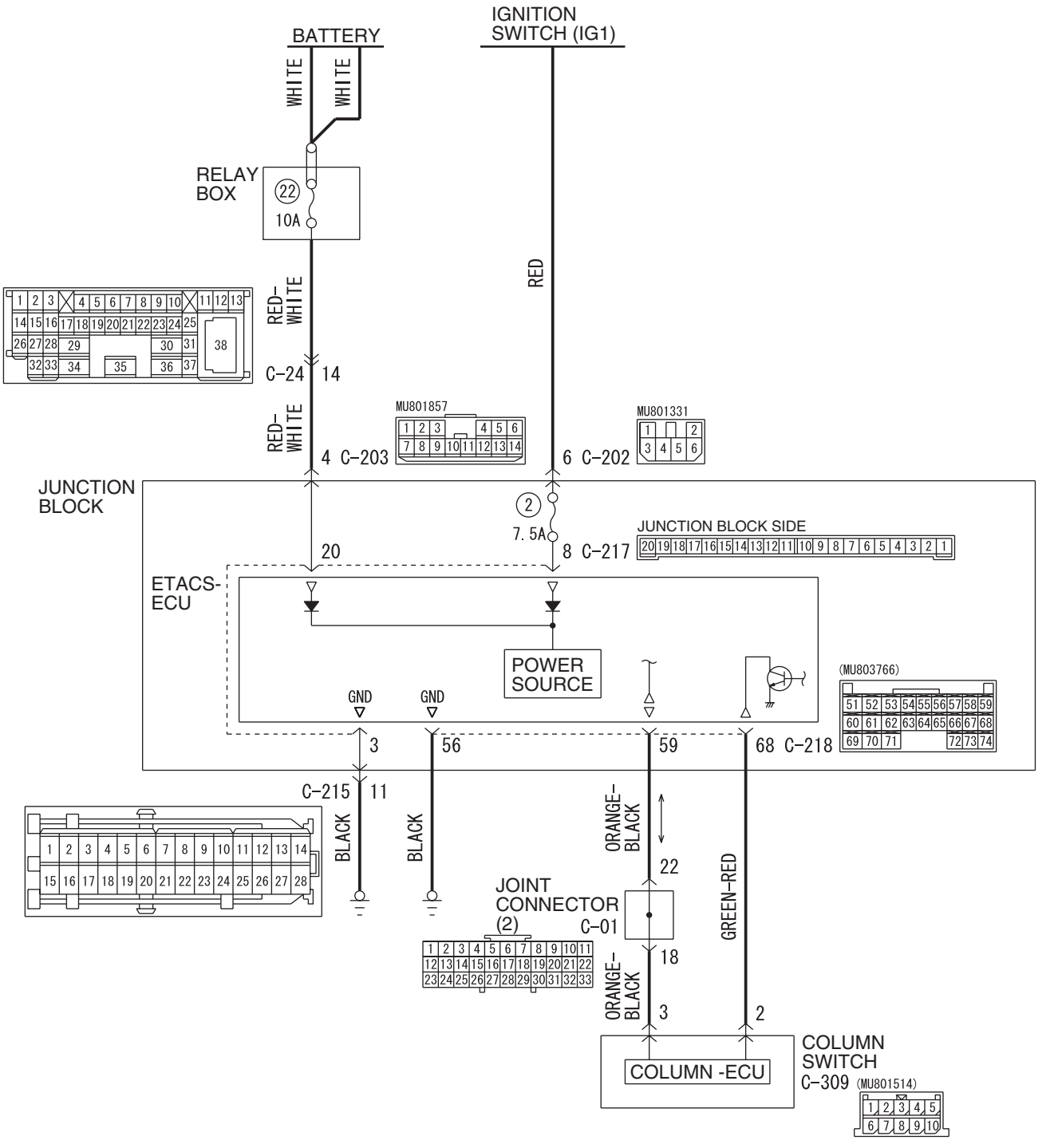
(1) Replace the column switch.
(2) The system should communicate with the column switch (column-ECU) normally.

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. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The system should communicate with the column switch (column-ECU) normally.

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

ETACS-ECU Power Supply and SWS Communication Circuit



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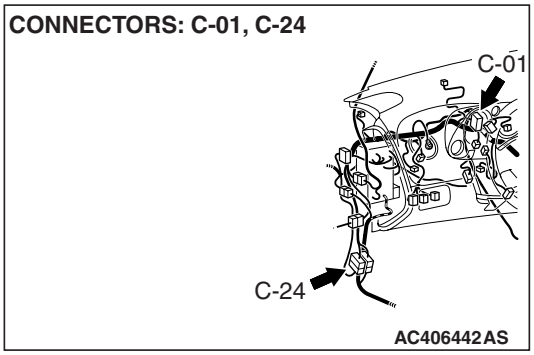
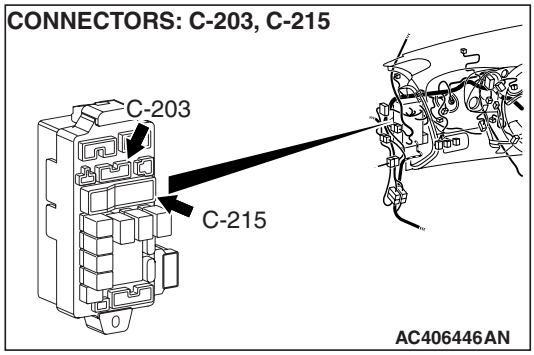
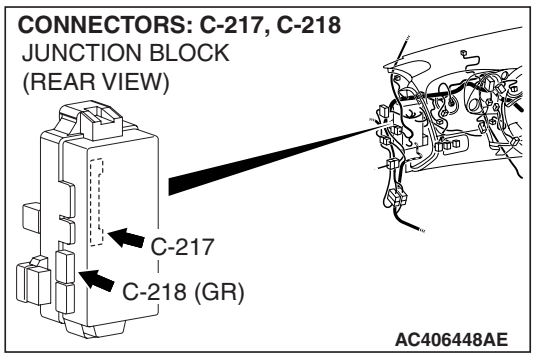
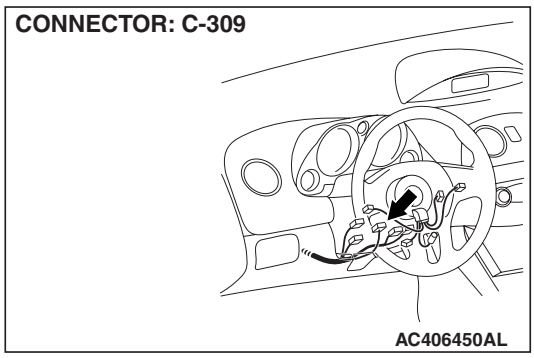








CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

It is suspected that the power supply circuit to the ETACS-ECU is defective, or the wiring harness between the SWS monitor kit and the ETACS-ECU or their connector(s) is damaged. If the battery power supply circuit to the ECU (terminal 20 of the ETACS-ECU) is damaged, also check the power supply circuit from the ignition switch (IG1) (terminal 8 of the ETACS-ECU), and repair if necessary. If the ground circuit to the ECU (terminal 3 of the ETACS-ECU) is damaged, also check the ground circuit to the sensor (terminal 56 of the ETACS-ECU), and repair if necessary.

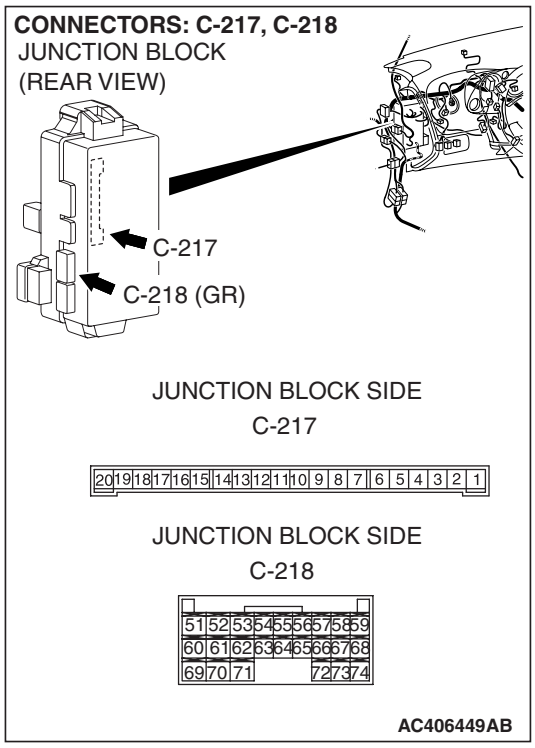
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

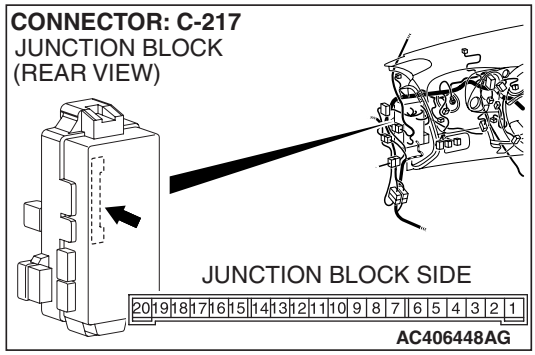


STEP 1. Check ETACS-ECU connectors C-217 and C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-217 and C-218 in good condition?

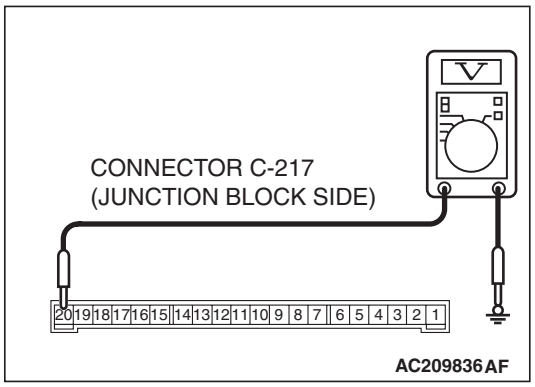
YES : Go to Step 2.

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



STEP 2. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.

(1) Disconnect ETACS-ECU connector C-217 and measure the voltage available at the junction block side of the connector.



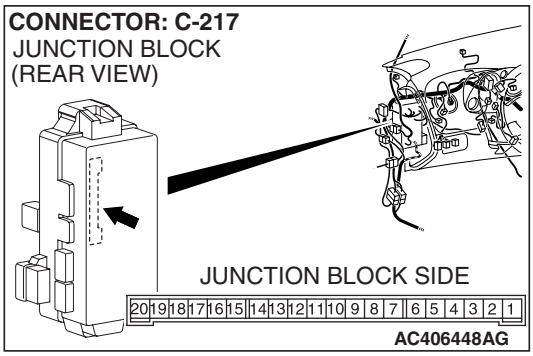
(2) Measure the voltage between terminal 20 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

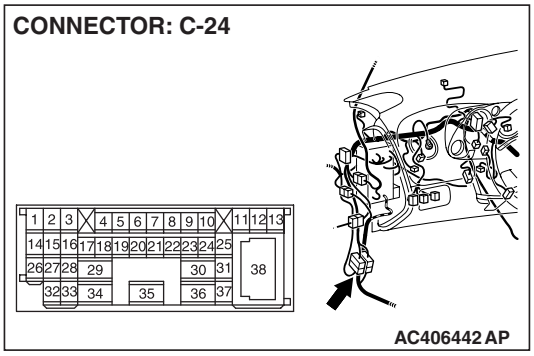
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

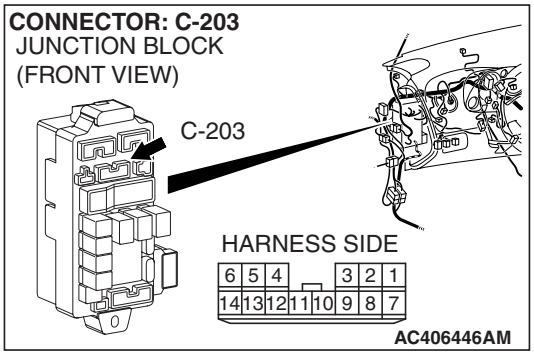
YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-217 (terminal 20) and the battery.







NOTE: Also check intermediate connector C-24 and junction block connector C-203 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 or junction block connector C-203 are damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

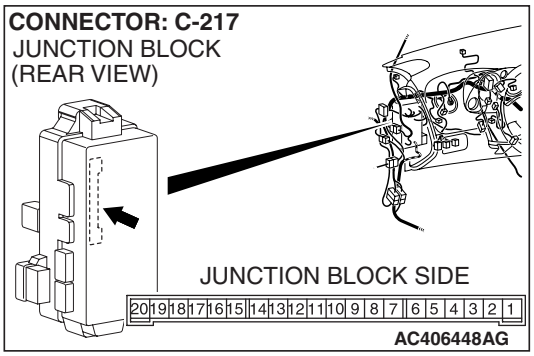
Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 20) and the battery in good condition?

YES : No action is necessary and testing is complete.

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

STEP 4. Check the ground circuit to the ETACS-ECU. Measure the resistance at ETACS-ECU connector C-217.

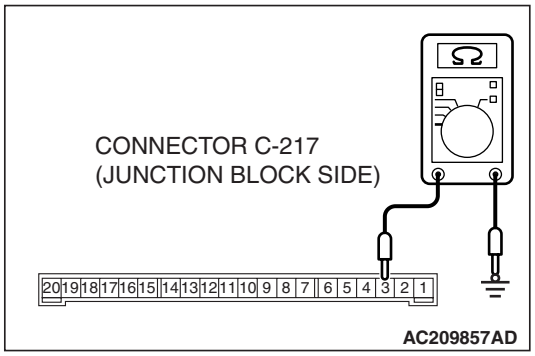
(1) Disconnect ETACS-ECU connector C-217 and measure the resistance available at the junction block side of the connector.



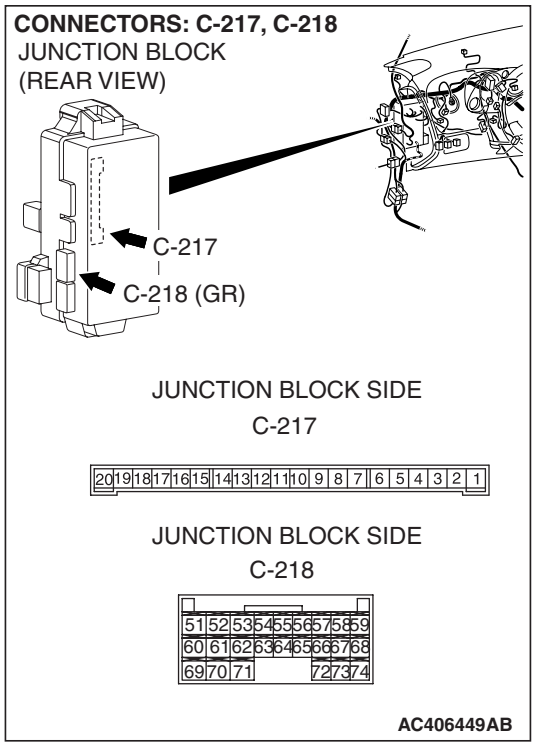
(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

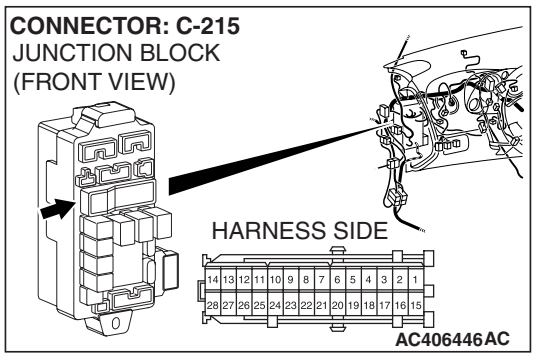
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.
NO : Go to Step 5.



STEP 5. Check the wiring harness between ETACS-ECU connector C-217 (terminal 3), C-218 (terminal 56) and ground.





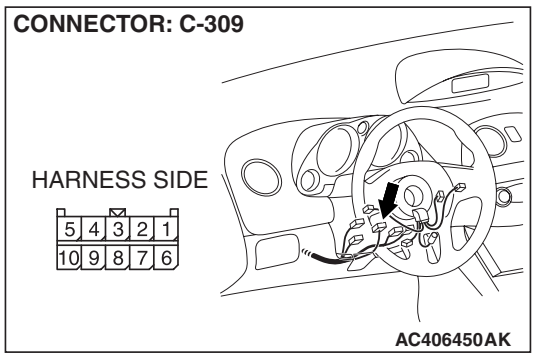
NOTE: Also check junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 3), C-218 (terminal 56) 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 ETACS-ECU normally.

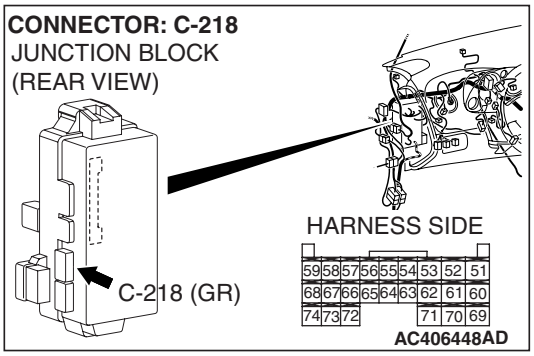
STEP 6. Check column switch connector C-309 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

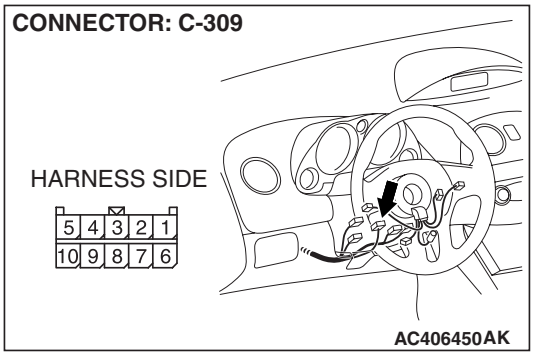


Q: Is column switch connector C-309 in good condition?

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 ETACS-ECU normally.



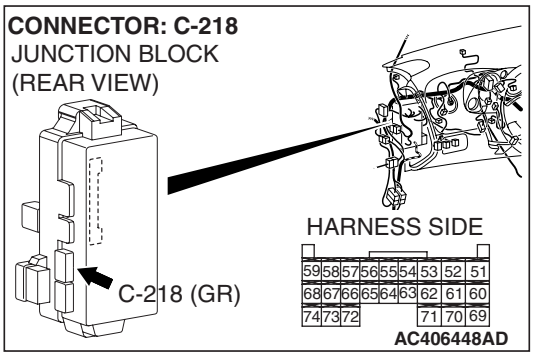


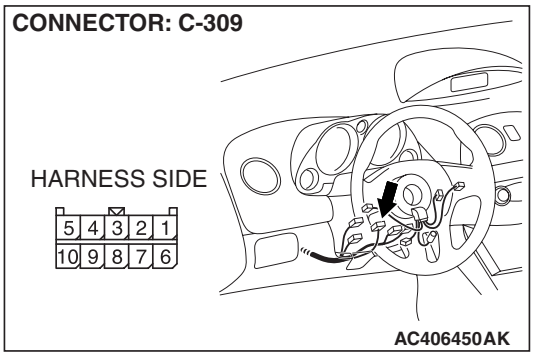
STEP 7. Check the wiring harness between column switch connector C-309 (terminal 2) and ETACS-ECU connector C-218 (terminal 68).

Q: Is the wiring harness between column switch connector C-309 (terminal 2) and ETACS-ECU connector C-218 (terminal 68) in good condition?

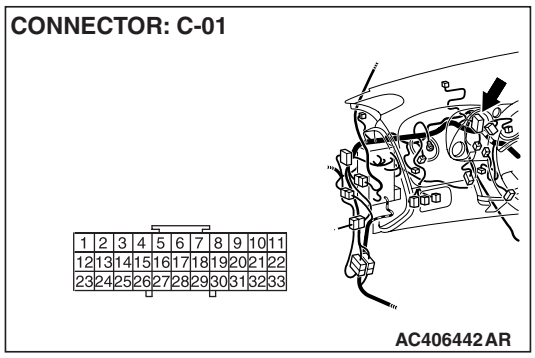
YES : Go to Step 8.

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





STEP 8. Check the wiring harness between column switch connector C-309 (terminal 3) and ETACS-ECU connector C-218 (terminal 59).



NOTE: Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 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-309 (terminal 3) and ETACS-ECU connector C-218 (terminal 59) in good condition?

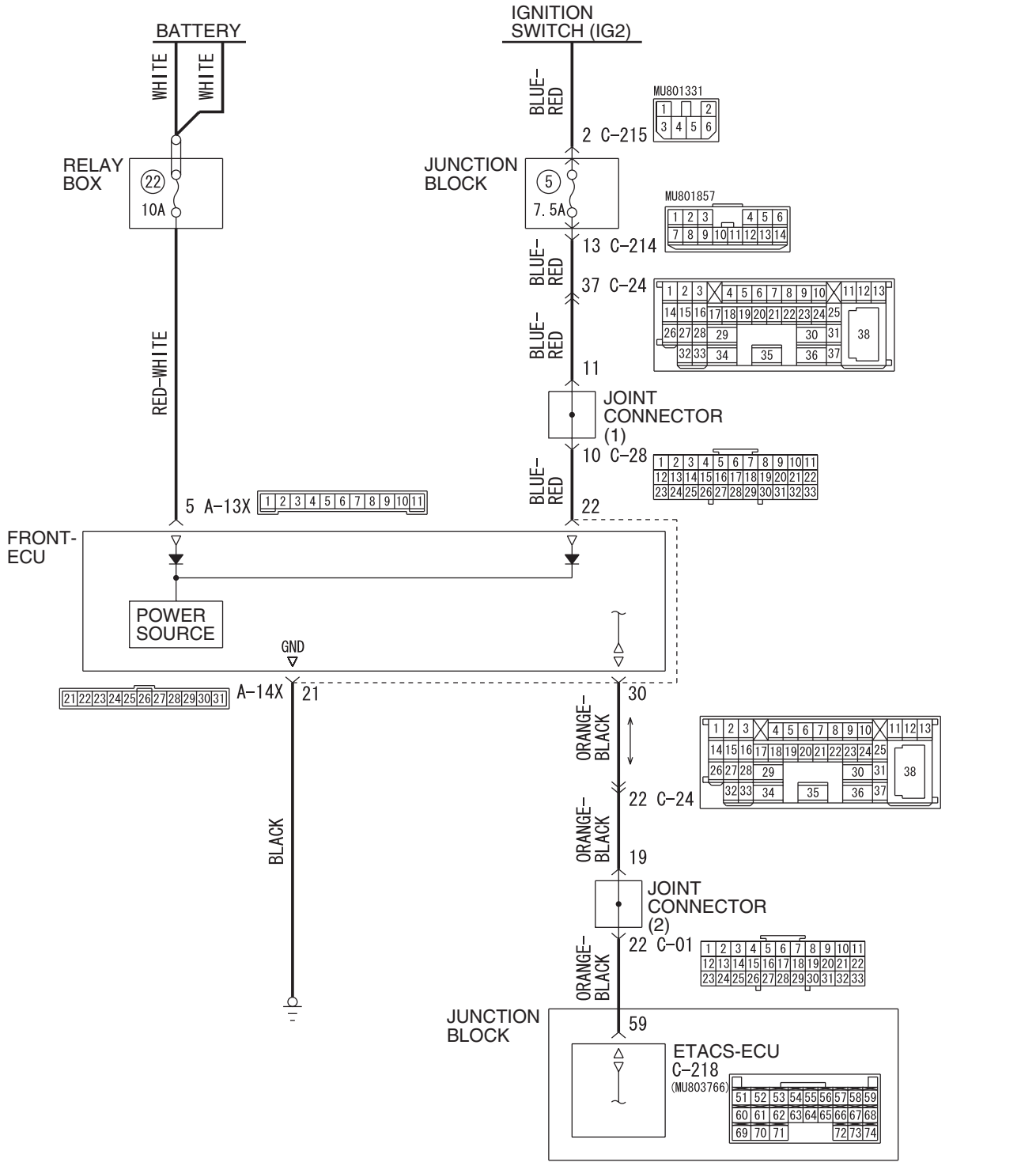
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The system should communicate with the ETACS-ECU normally.

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 MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Front-ECU Power Supply and SWS Communication Circuit



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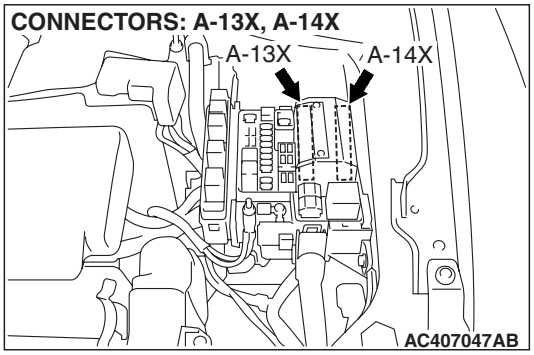
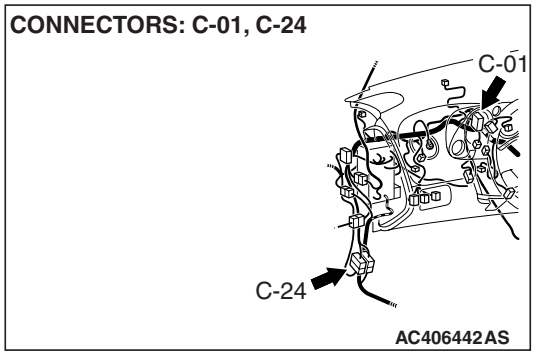
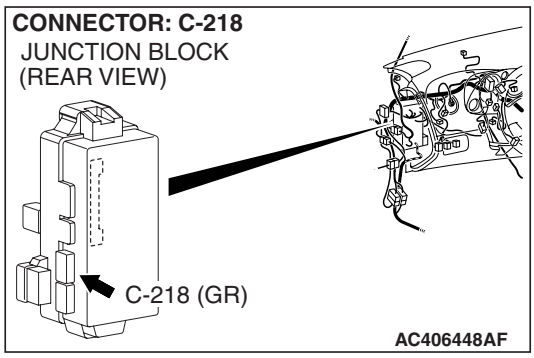






CIRCUIT OPERATION

- 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 5 of the front-ECU) is damaged, also check the power supply circuit from the ignition switch (IG2) (terminal 22 of the front-ECU), and repair if necessary.

TROUBLESHOOTING HINTS

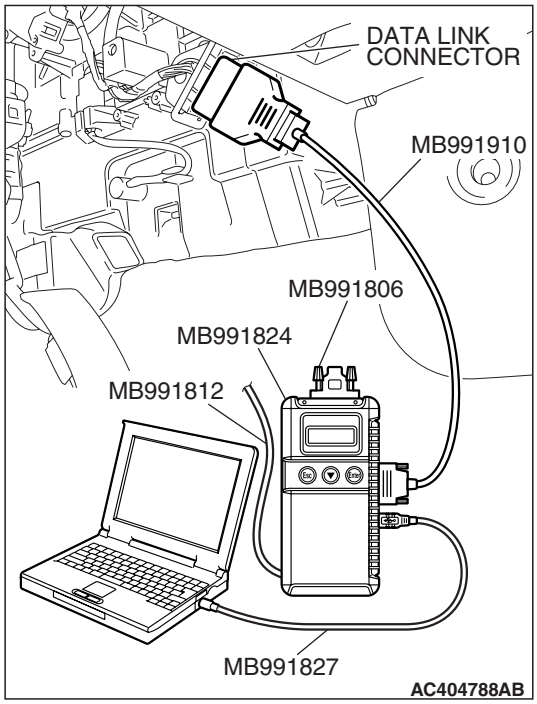
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective
- The ETACS-ECU may be defective

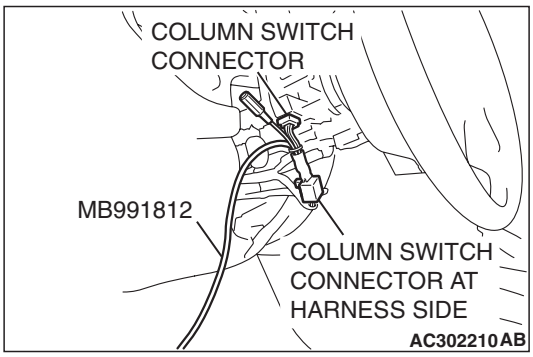
DIAGNOSIS

Required Special Tools:

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

TSB Revision





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

Check the ETACS-ECU.

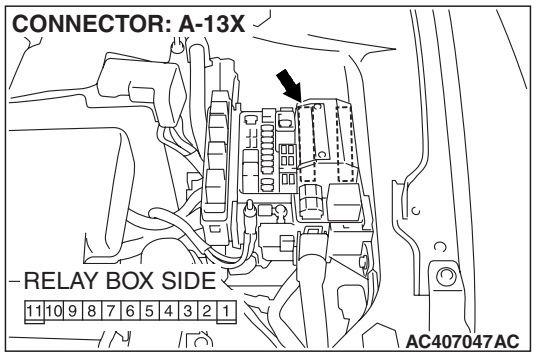
⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

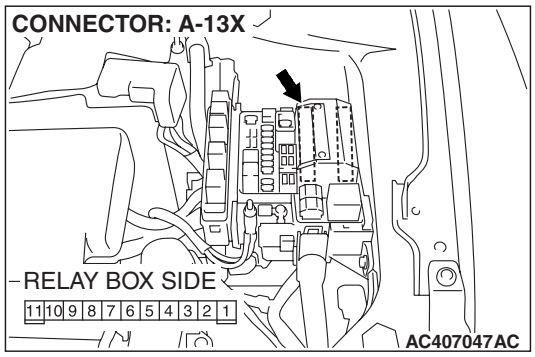


STEP 2. Check front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-13X in good condition?

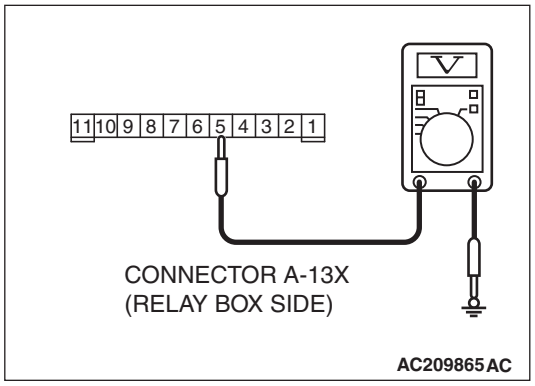
YES : Go to Step 3.

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



STEP 3. Check the battery power supply circuit to the front-ECU. Measure the voltage at front-ECU connector A-13X.

(1) Disconnect front-ECU connector A-13X and measure the voltage available at the relay box side of the connector.



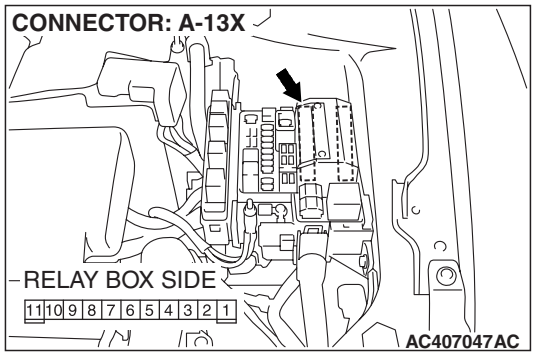
(2) Measure the voltage between terminal 5 and ground.

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

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

YES : Go to Step 5.

NO : Go to Step 4.

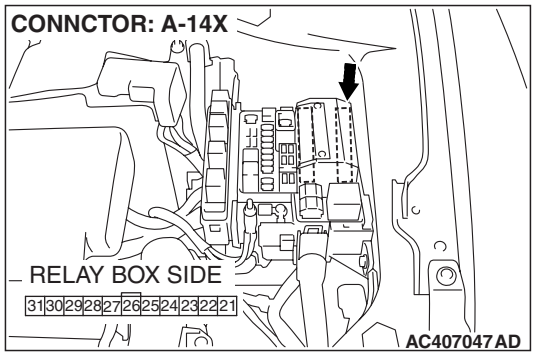


STEP 4. Check the wiring harness between front-ECU connector A-13X (terminal 5) and the battery.

Q: Is the wiring harness between front-ECU connector A-13X (terminal 5) and the battery in good condition?

YES : No action is necessary and testing is complete.

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

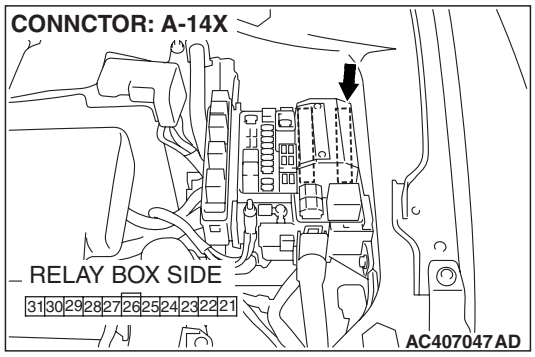


STEP 5. Check front-ECU connector A-14X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-14X in good condition?

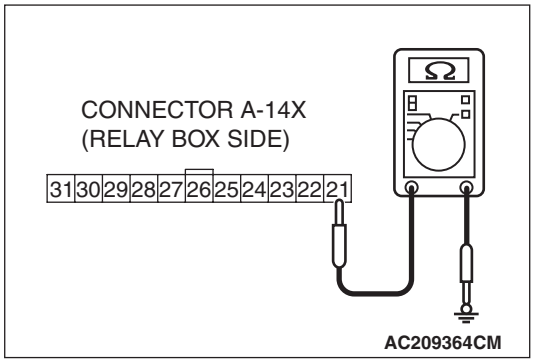
YES : Go to Step 6.

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



STEP 6. Check the ground circuit to the front-ECU.
Measure the resistance at front-ECU connector A-14X.

(1) Disconnect front-ECU connector A-14X and measure the resistance available at the relay box side of the connector.

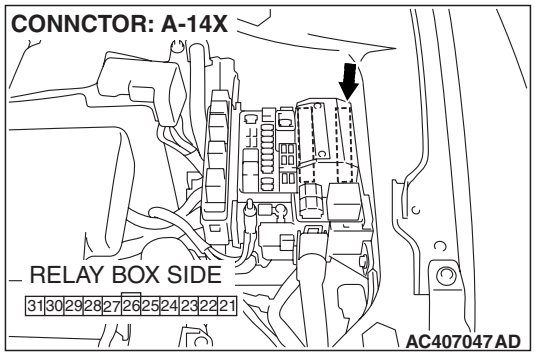


(2) Measure the resistance value between terminal 21 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.

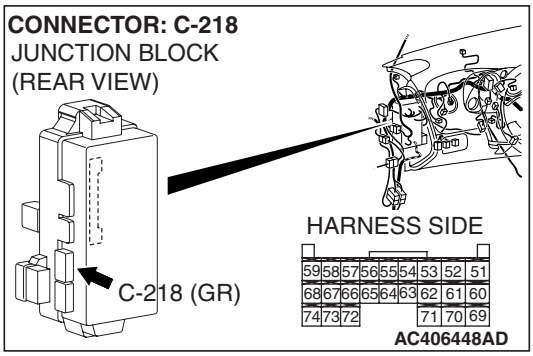


STEP 7. Check the wiring harness between front-ECU connector A-14X (terminal 21) and ground.

Q: Is the wiring harness between front-ECU connector A-14X (terminal 21) 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.



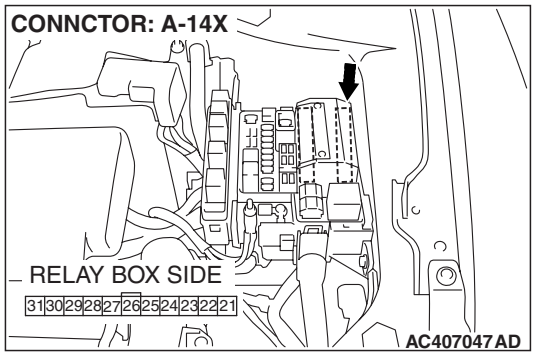
STEP 8. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

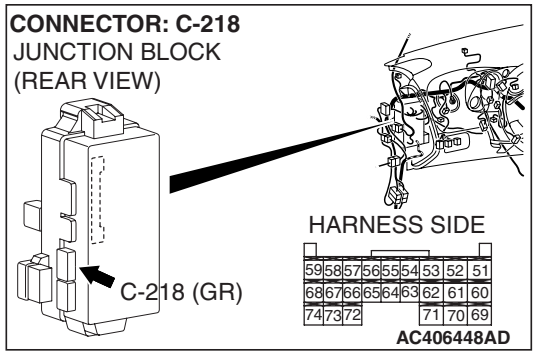
Q: Is ETACS-ECU connector C-218 in good condition?

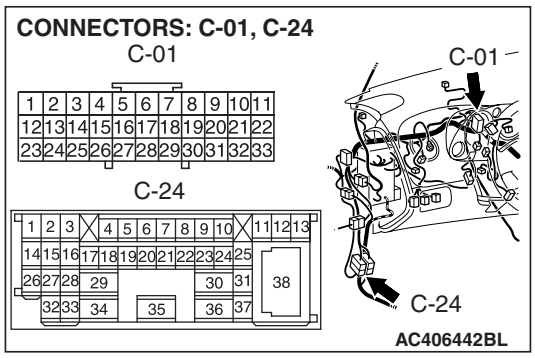
YES : Go to Step 9.

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-14X (terminal 30) and ETACS-ECU connector C-218 (terminal 59).







NOTE: Also check joint connector C-01 and intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 or intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front-ECU connector A-14X (terminal 30) and ETACS-ECU connector C-218 (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 front-ECU.

(1) Replace the front-ECU.

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

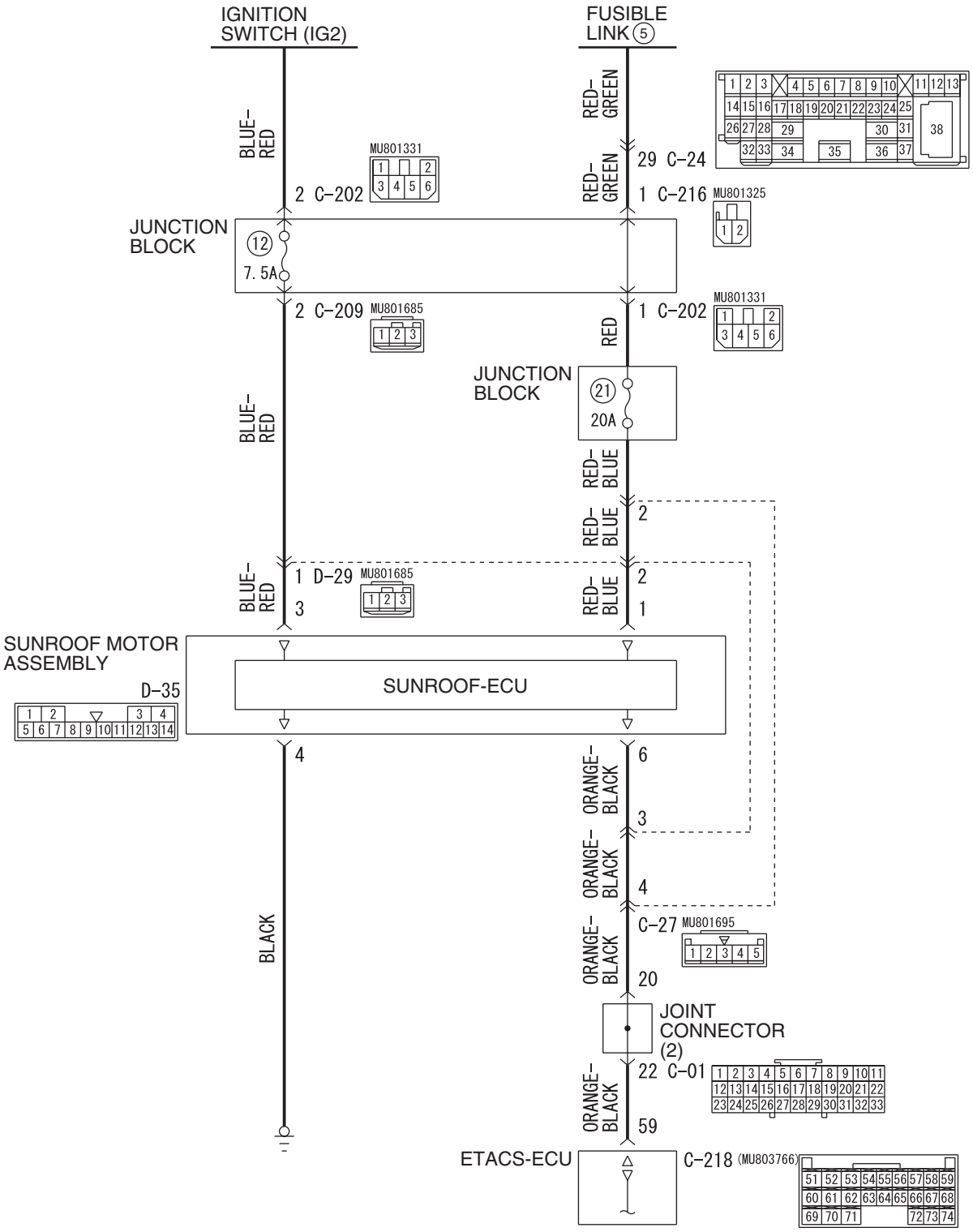
Q: Can the system communicate with the front-ECU?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The system should communicate with the front-ECU normally.

INSPECTION PROCEDURE A-5: Communication with the sunroof-ECU is not possible.

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



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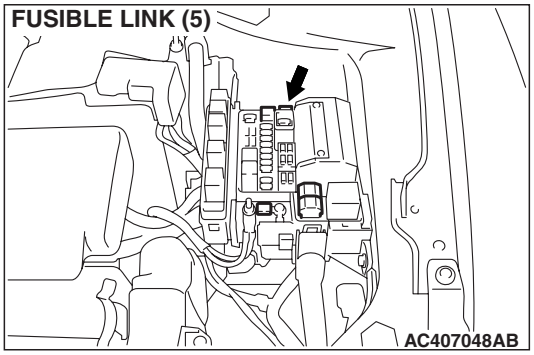
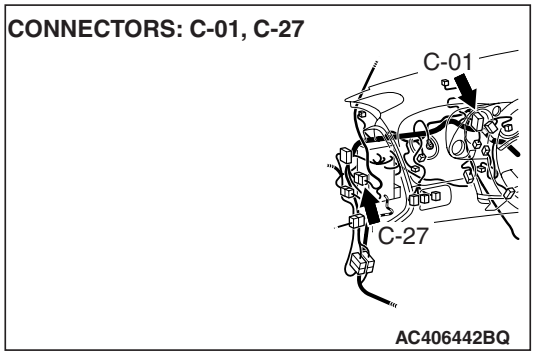
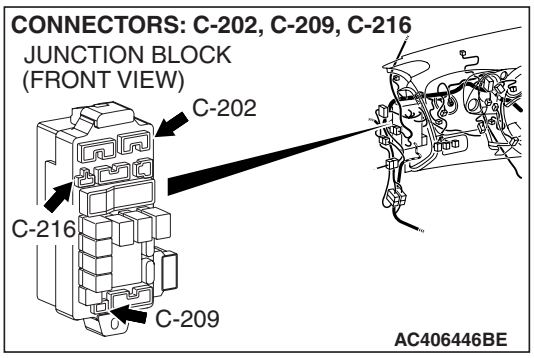
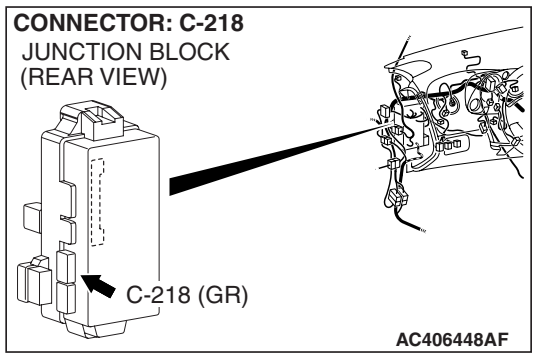
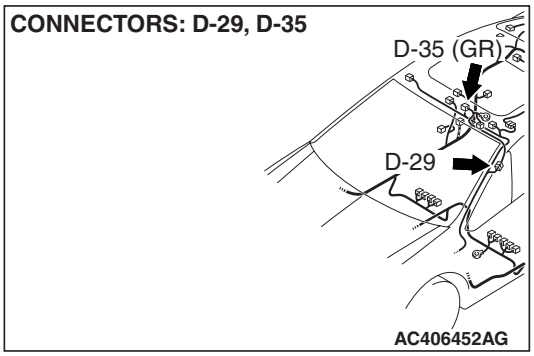










CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

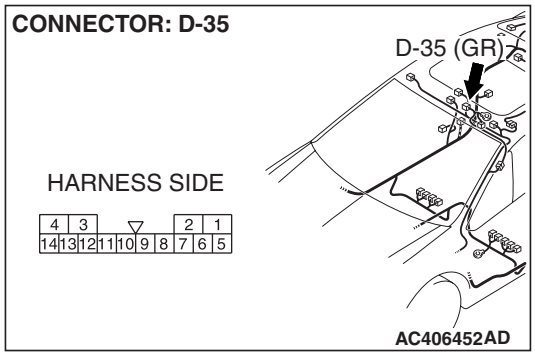
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The sunroof motor assembly may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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

TSB Revision

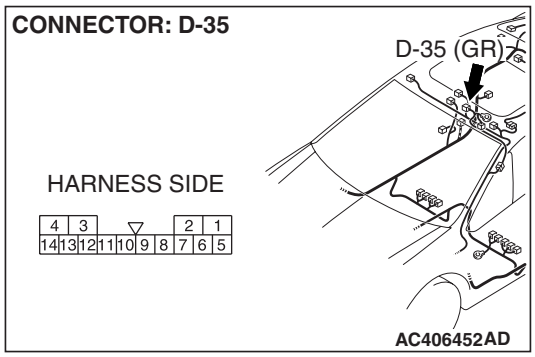


STEP 1. Check sunroof motor assembly connector D-35 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-35 in good condition?

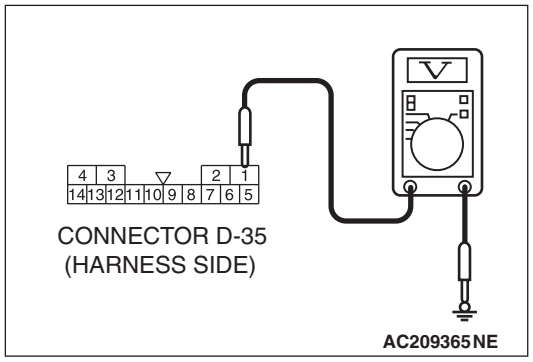
YES : Go to Step 2.

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-ECU normally.



STEP 2. Check the fusible link (5) line of power supply circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-35.

(1) Disconnect sunroof motor assembly connector D-35 and measure the voltage available at the wiring harness side of the connector.



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

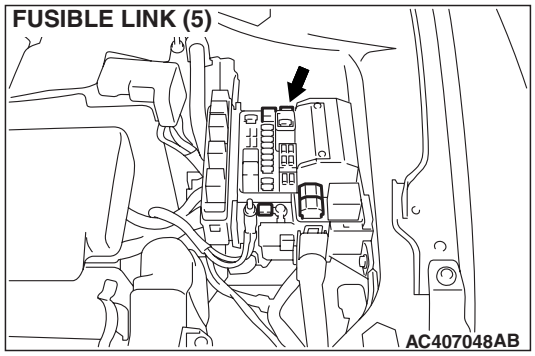
- The voltage should measure approximately 12 volts (battery positive voltage).

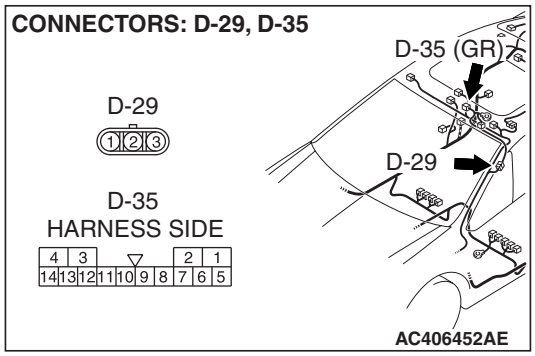
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

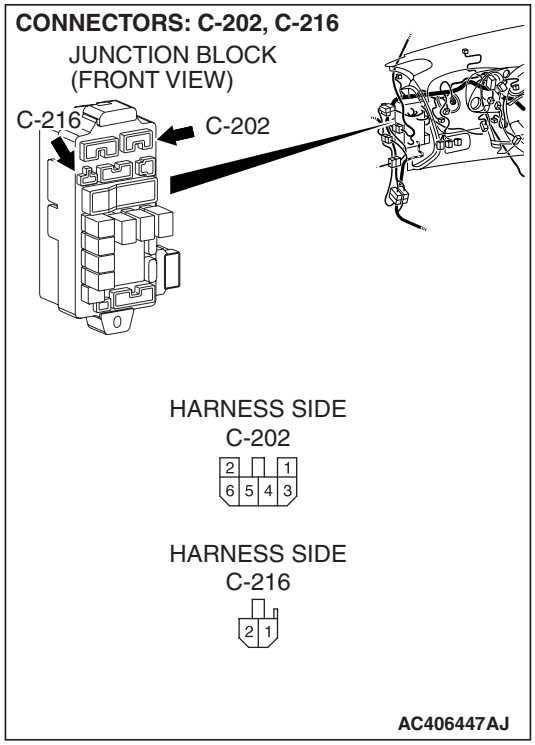
YES : Go to Step 4.

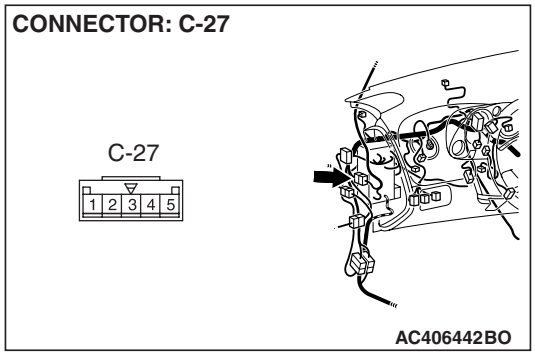
NO : Go to Step 3.

STEP 3. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 1) and fusible link (5).









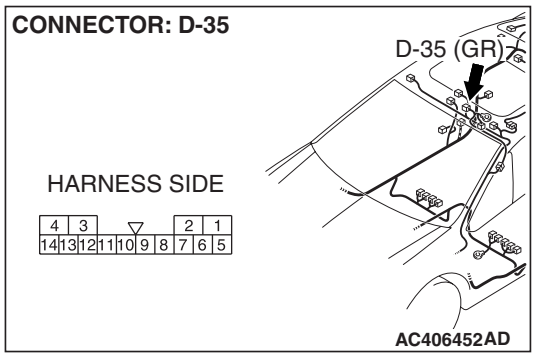
NOTE: Also check junction block connectors C-202, C-216, intermediate connector C-27 and D-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202, C-216, intermediate connector C-27 or D-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (terminal 1) and fusible link (5) in good condition?

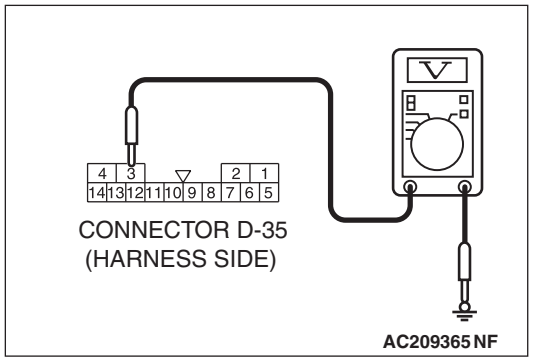
YES : No action is necessary and testing is complete.

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-ECU normally.

STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-35.



(1) Disconnect sunroof motor assembly connector D-35 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to the "ON" position.

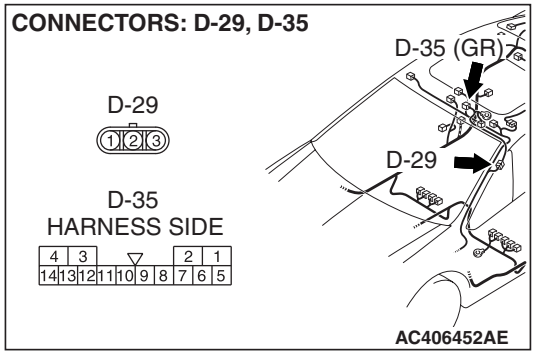


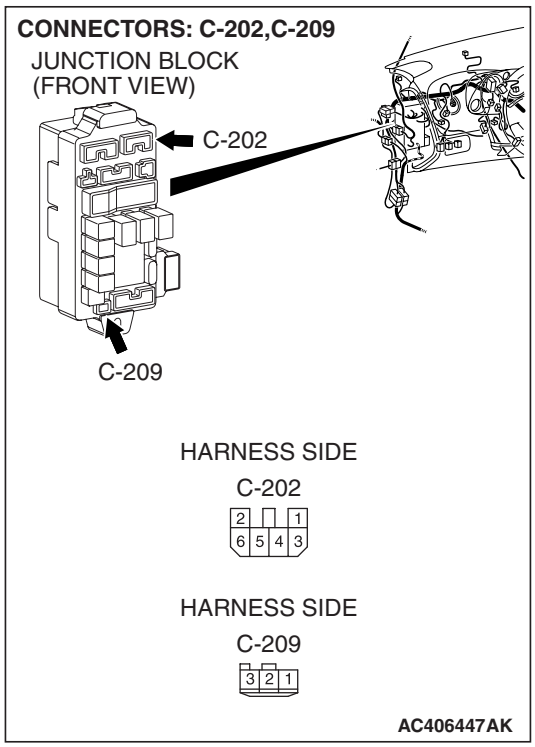
(3) Measure the voltage between terminal 3 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 3) and ignition switch (IG2).





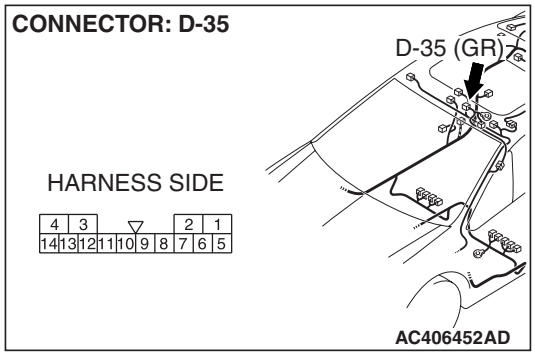
NOTE: Also check junction block connectors C-202, C-209 and intermediate connector D-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202, C-209 or intermediate connector D-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (terminal 3) and the ignition switch (IG2) in good condition?

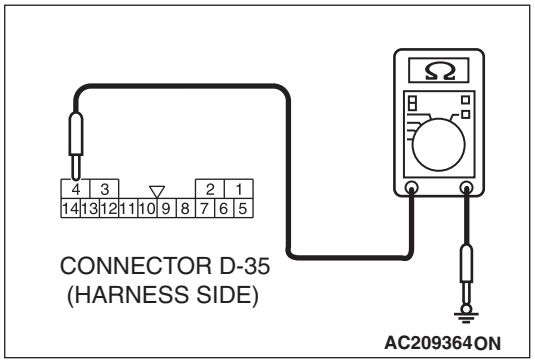
YES : No action is necessary and testing is complete.

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-ECU normally.

STEP 6. Check the ground circuit to the sunroof motor assembly. Measure the resistance at sunroof motor assembly connector D-35.



(1) Disconnect sunroof motor assembly connector D-35 and measure the resistance available at the wiring harness side of the connector.

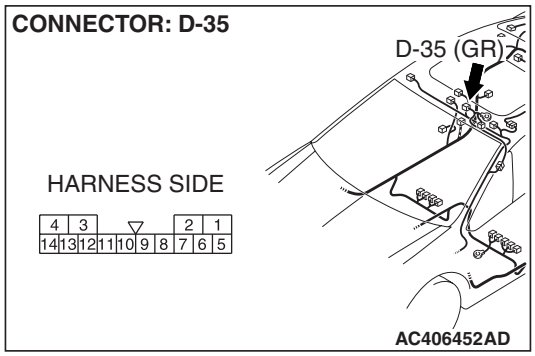


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.

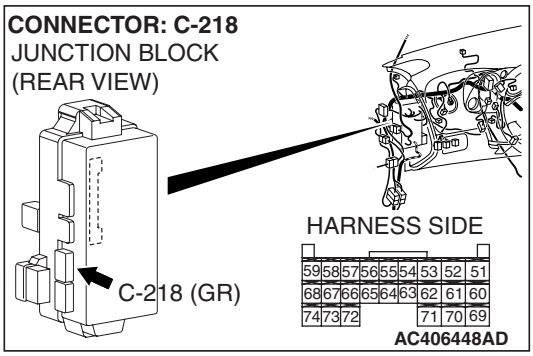


STEP 7. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 4) and ground.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (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 system should communicate with the sunroof-ECU normally.



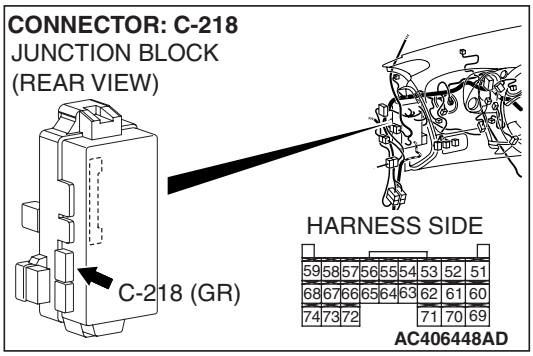
STEP 8. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

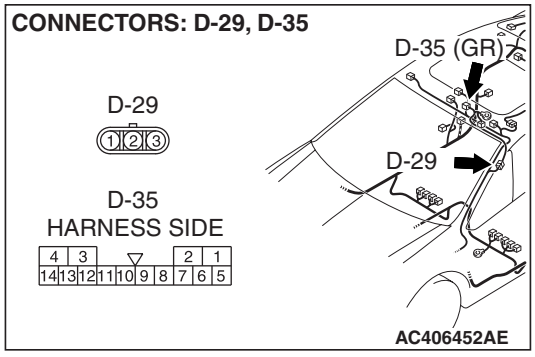
Q: Is ETACS-ECU connector C-218 in good condition?

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-ECU normally.

STEP 9. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 6) and ETACS-ECU connector C-218 (terminal 59).





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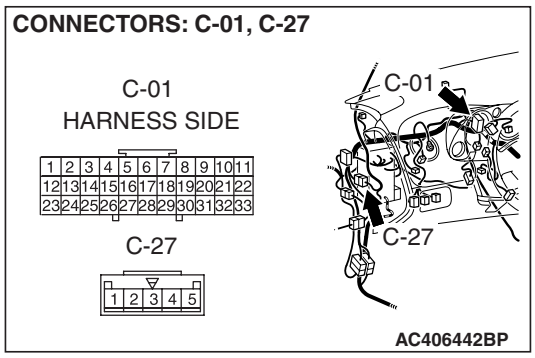


NOTE: Also check intermediate connector C-27, D-29 and joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-27, D-29 or joint connector C-01 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (terminal 6) and ETACS-ECU connector C-218 (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-ECU normally.

STEP 10. Replace the sunroof motor assembly.

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

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

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The system should communicate with the sunroof-ECU normally.

TONE ALARM

GENERAL DESCRIPTION CONCERNING THE TONE ALARM

M1549021000382

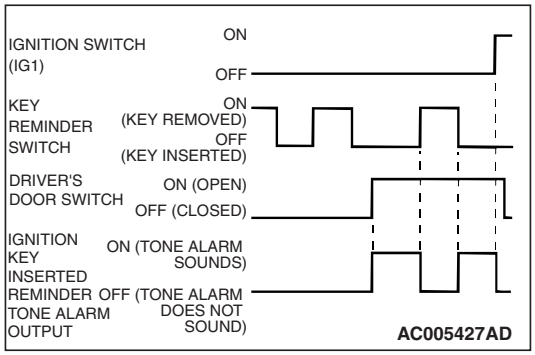
The tone alarm functions are as follows. These functions are controlled by relevant ECUs.

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
Door ajar tone alarm function	ETACS-ECU

TONE ALARM

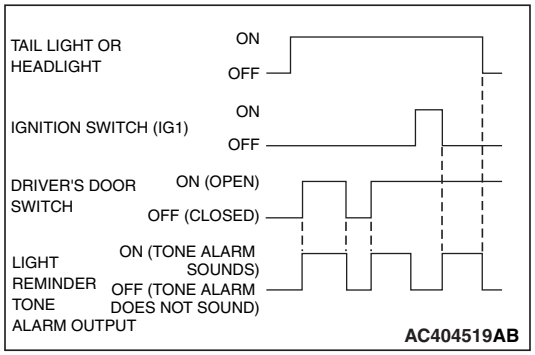
IGNITION KEY REMINDER TONE ALARM FUNCTION

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 to indicate that the ignition key has not been removed.

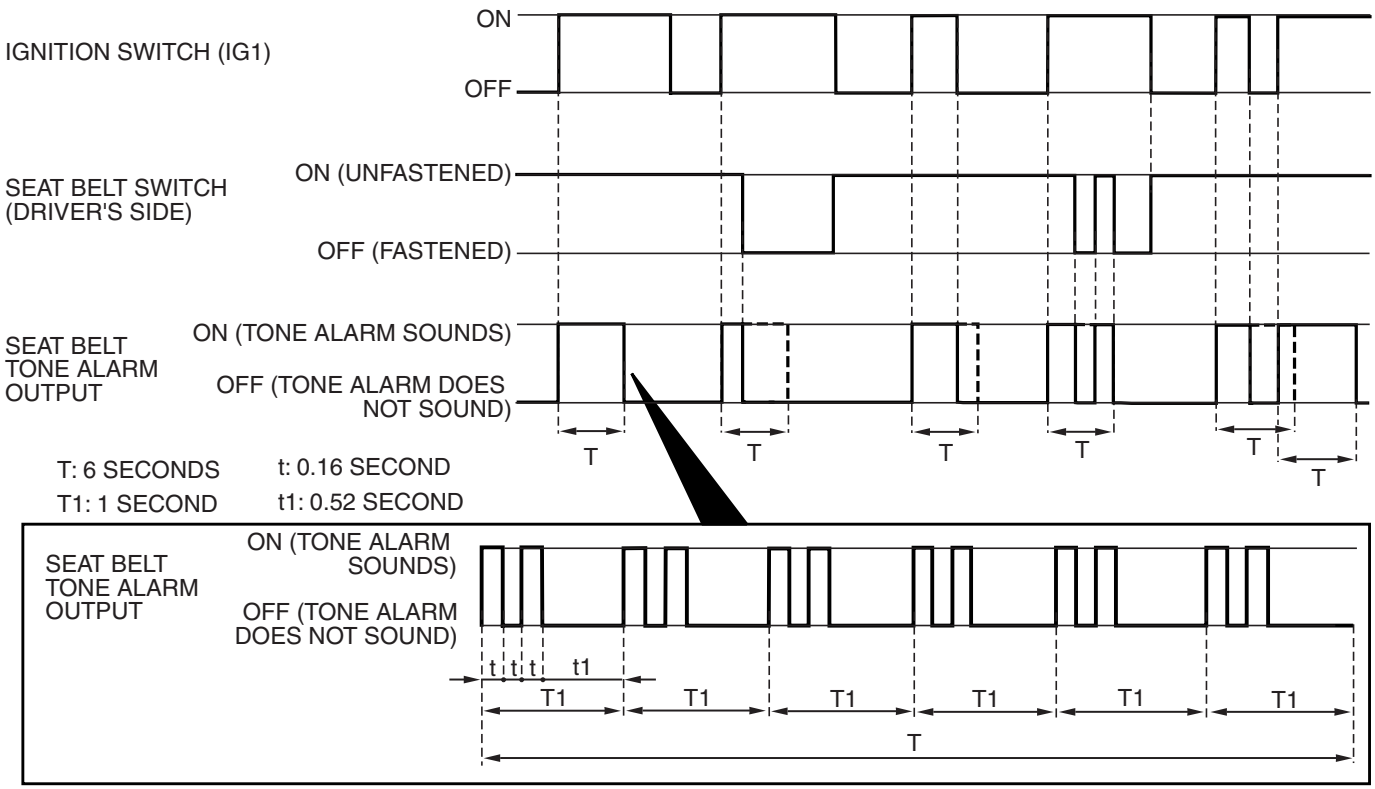


LIGHT REMINDER TONE ALARM FUNCTION

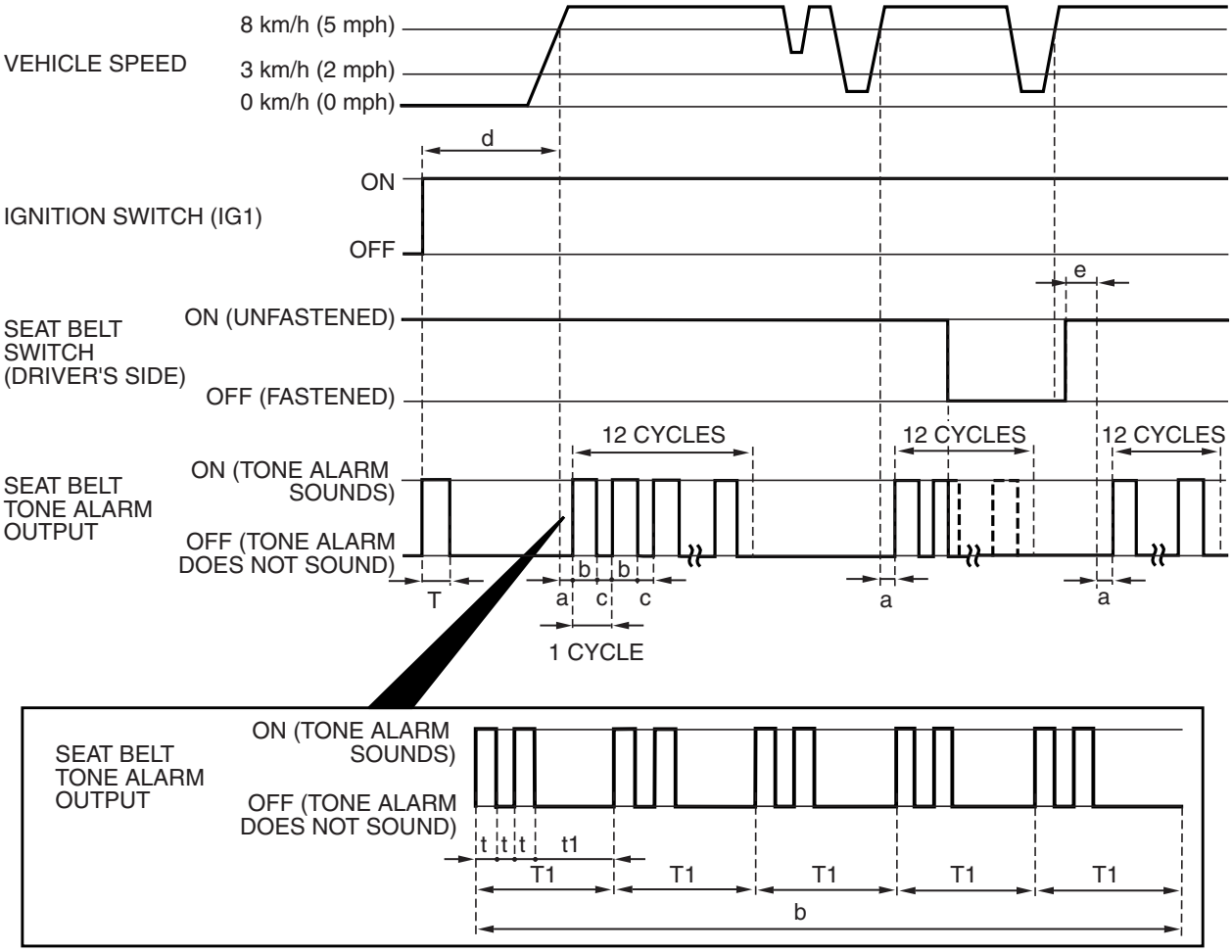
When the taillights or headlights are ON, if the ignition key is removed and the driver's door is opened, a tone alarm will sound continuously to warn that the lights are on. However, if the taillights or headlights have been turned off by the headlight automatic-shutoff function, the tone alarm will not sound.



Seat belt tone alarm function



AC305326 AC



T: 6 SECONDS t: 0.16 SECOND a: 0.5 SECOND c: 3 SECONDS e: 10 SECONDS
T1: 1 SECOND t1: 0.52 SECOND b: 5 SECONDS d: 60 SECONDS OR MORE

AC500126AB

If any of the following conditions are 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 from the combination meter.

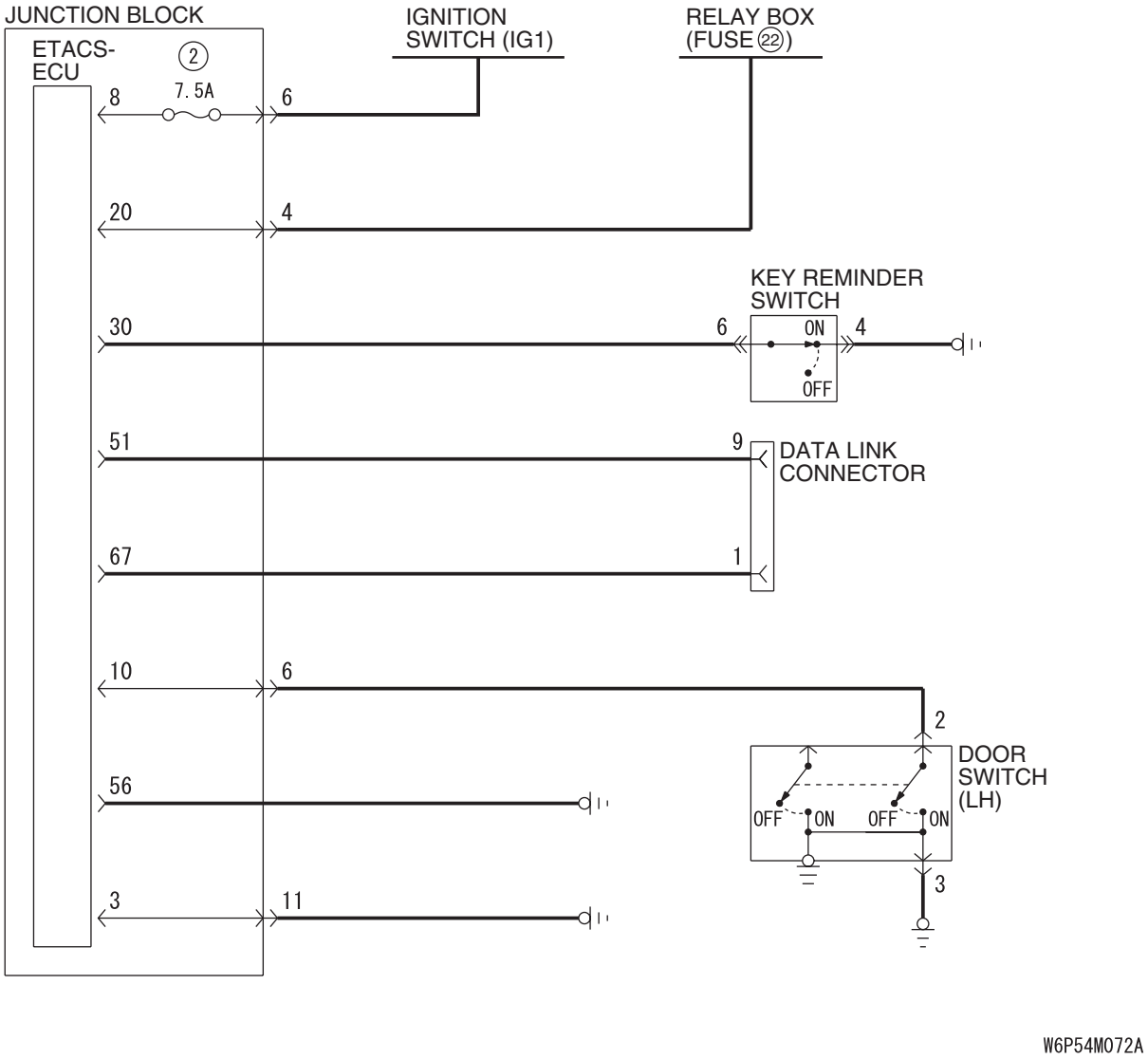
- Sounds the tone alarm for 6 seconds when the ignition switch is turned "ON" with the seat belt switch on (the driver's seat belt is not fastened) (Timer function).
- Sounds the tone alarm 12 cycles (after 0.5 second) if any of the following conditions are met when 60 seconds or more have elapsed since the ignition switch is turned "ON". One cycle consists of 5 seconds "on" and then 3 seconds "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 10 seconds while the ignition switch has been turned "ON" and the vehicle speed has been 8 km/h (5 mph) or more.

  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 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.

DOOR AJAR TONE ALARM FUNCTION

The buzzer is sounded 4 times by the ETACS-ECU to warn the driver if any door (including liftgate) is open when the ignition is switched ON and the vehicle speed reaches 8 km/h (5 mph) or faster. The buzzer will continue to sound 4 times even if the ignition, door status, or vehicle speed requirements are not maintained.

General circuit diagram for ignition key reminder tone alarm function



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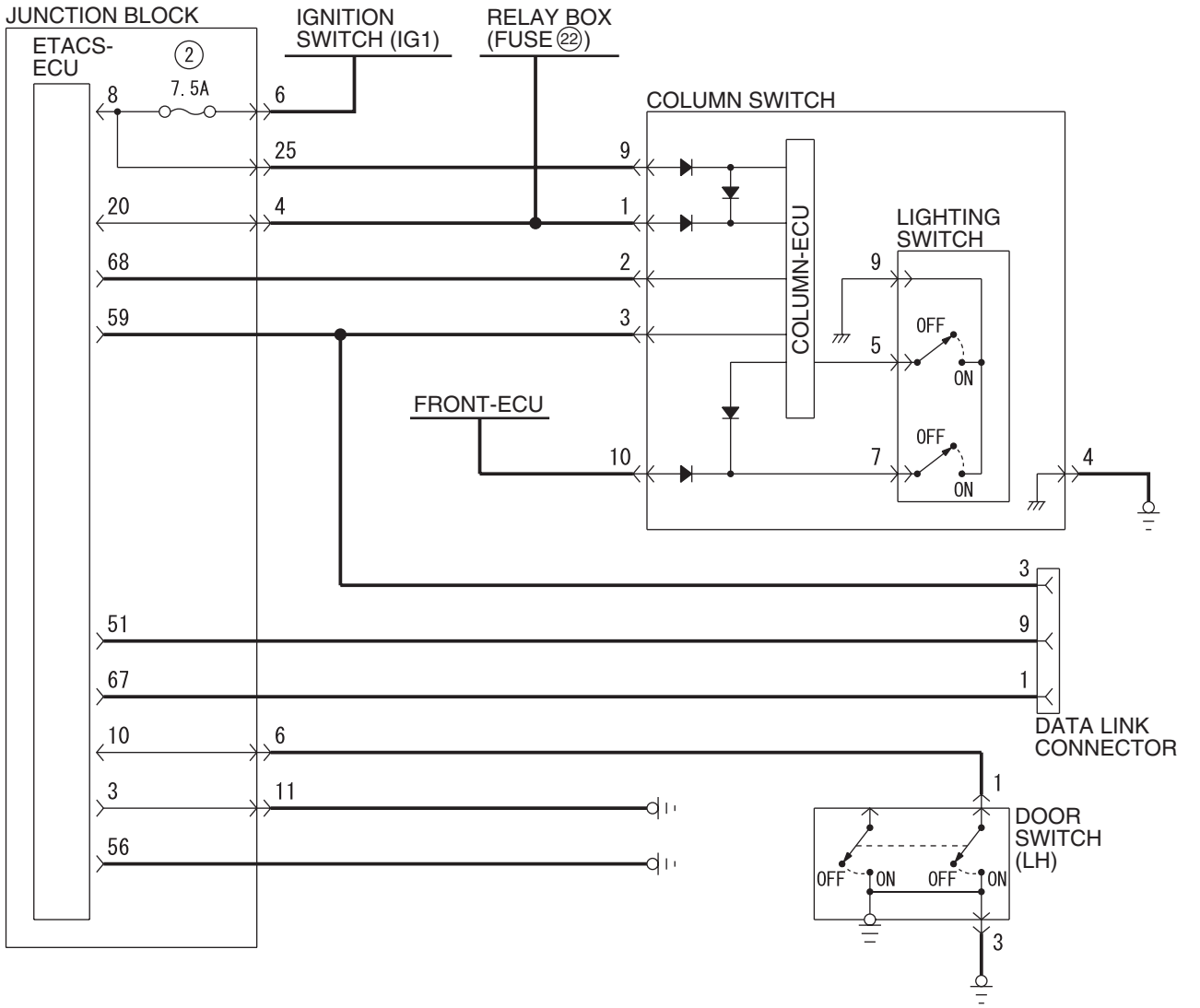
General circuit diagram for light reminder tone alarm function



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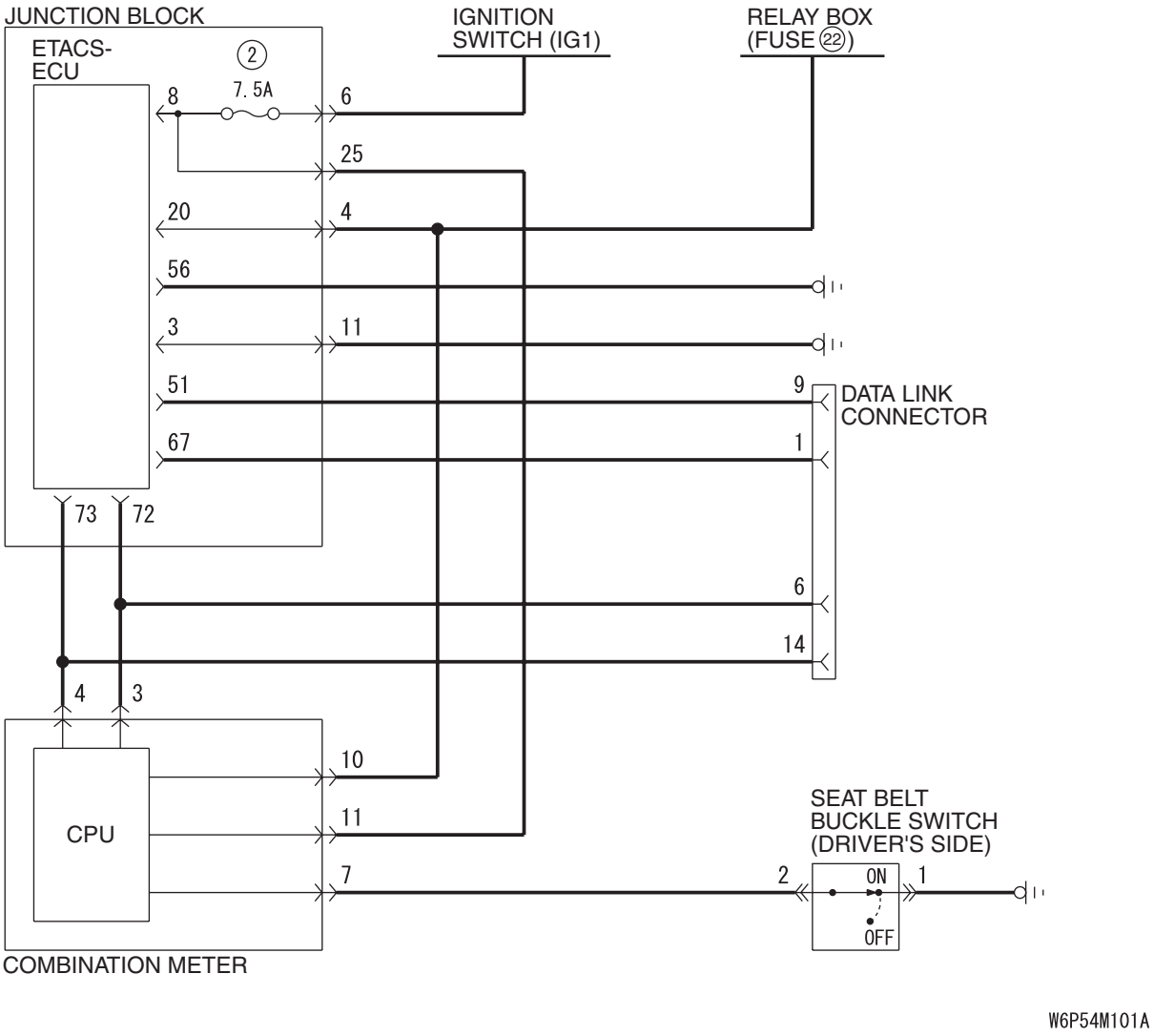
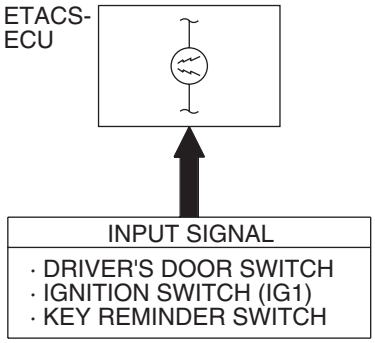
General circuit diagram for seat belt tone alarm function



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 MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Ignition Key Reminder Tone Alarm Function



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CIRCUIT OPERATION

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

- Ignition switch (IG1): OFF
- Key reminder switch: OFF
- Door switch (LH): ON

The ETACS-ECU operates the ignition key reminder tone alarm function under the following conditions:

- Ignition key position: "LOCK" (OFF) position
- Ignition key: Inserted in the ignition key cylinder
- Driver’s door: open

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

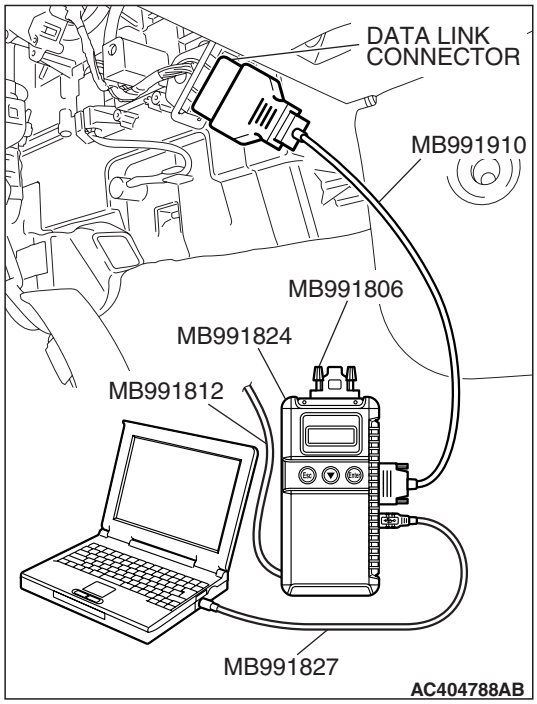
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

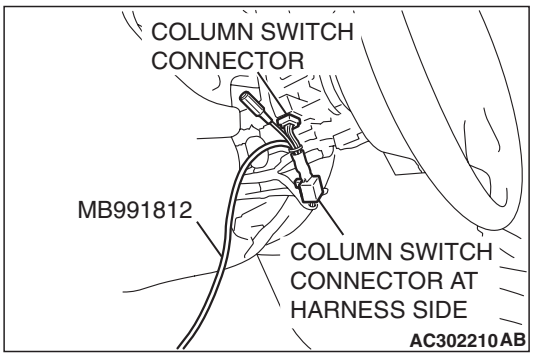
DIAGNOSIS

Required Special Tools:

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

TSB Revision





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

Check the ETACS-ECU.

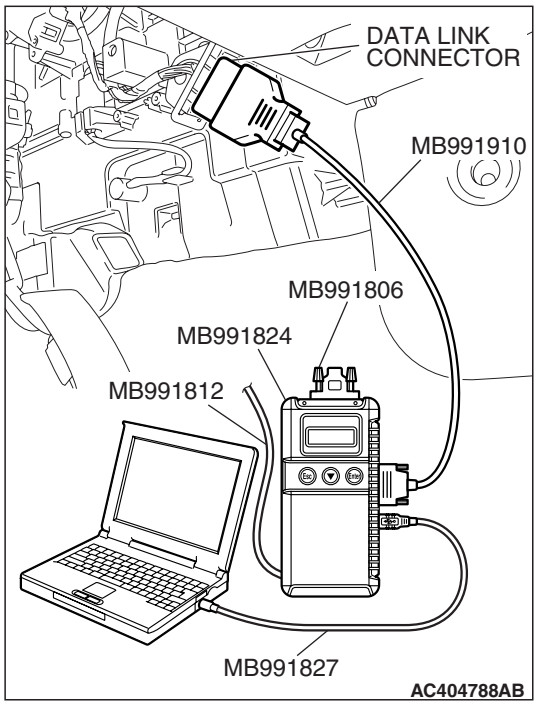
⚠ CAUTION

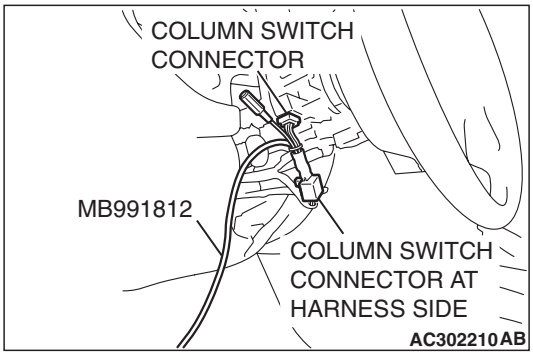
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitorP.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





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
- Passenger's door: closed

(1) Operate scan tool MB991958 according to the procedure below to display "KEY RMND. ALM."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "BUZZER."
   g. Select "KEY RMND. ALM."

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

NOTE: Scan tool MB991958 display changes when the driver's or the passenger's door is opened. If any of the doors is open, the system cannot be checked correctly.

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

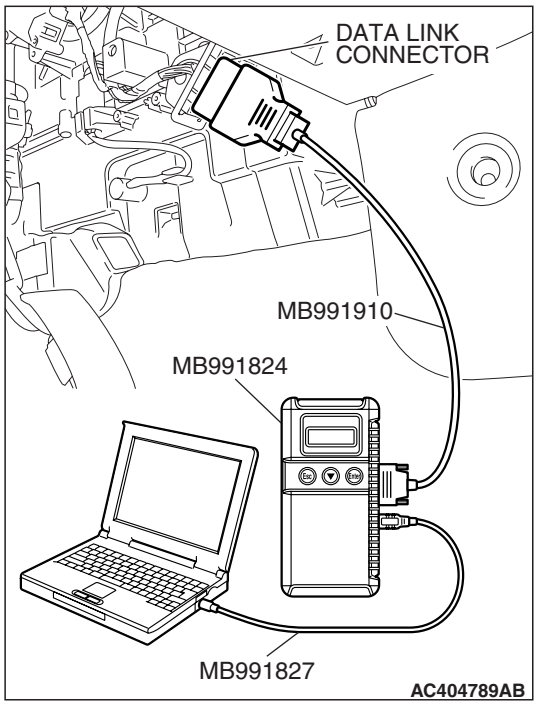
Q: Does scan tool MB991958 display the items "IG SW (IG1)", "FRONT DOOR SW" and "BUZZER" as normal condition?

Normal conditions are displayed for all the items : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The ignition key reminder tone alarm function should now work normally.

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."

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



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

Check the input signals from the key reminder switch.

- Check whether scan tool MB991958 sounds or not when the ignition key is removed.

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

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

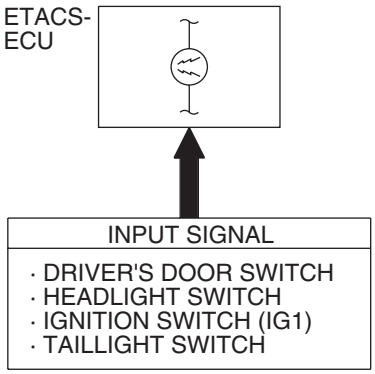
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The ignition key reminder tone alarm function should now work normally.

NO : Refer to Inspection Procedure N-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54B-489."

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 MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Light Reminder Tone Alarm Function



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CIRCUIT OPERATION

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

- Ignition switch (IG1): OFF
- Ignition key reminder switch: ON
- Door switch (LH): ON
- Taillight switch: ON
- Headlight switch: ON

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

- Ignition switch: "LOCK" (OFF) position
- Ignition key: Removed from the ignition key cylinder
- Driver's door: open
- Taillights or headlights: ON

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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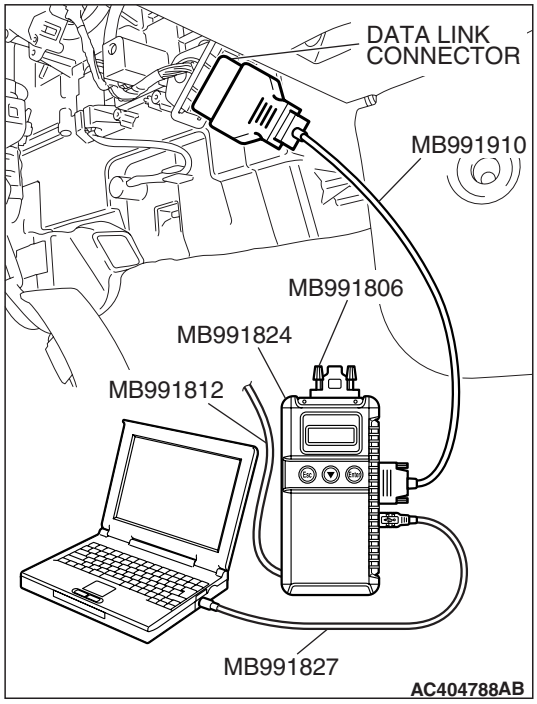
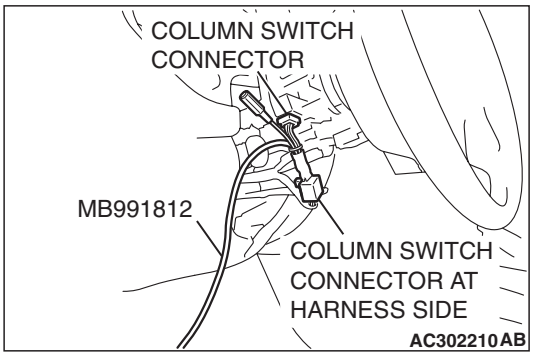




STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Column switch (column-ECU)

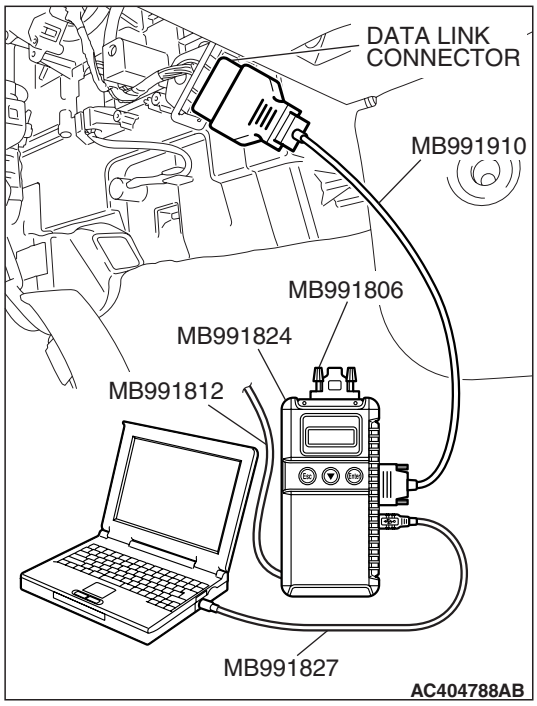
⚠ CAUTION

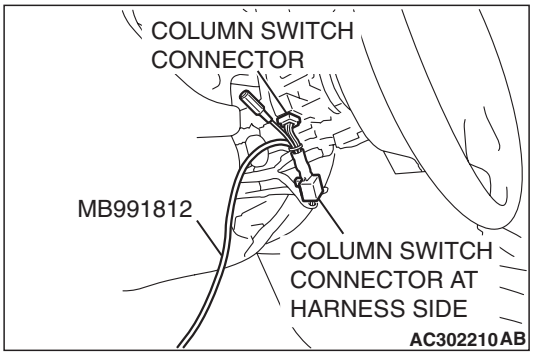
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."





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
- Passenger's door: closed

(1) Operate scan tool MB991958 according to the procedure below to display "LGT MONI. ALRM."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "BUZZER."
   g. Select "LGT MONI. ALRM."

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

NOTE: Scan tool MB991958 display changes when the driver's or the passenger's door is opened. If any of the doors is open, the system cannot be checked correctly.

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

Q: Does scan tool MB991958 display "HEADLIGHT SW", "TAILLIGHT SW", "IG SW IG1", "FRONT DOOR SW", "H/L AUTO-CUT" and "BUZZER" as normal condition?

Normal conditions are displayed for all the items :
Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The light reminder tone alarm function should now work normally.

Normal condition is not displayed for "HEADLIGHT SW" :
Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the headlight switch P.54B-473."

Normal condition is not displayed for "TAILLIGHT SW" :
Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the taillight switch P.54B-473."

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Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."

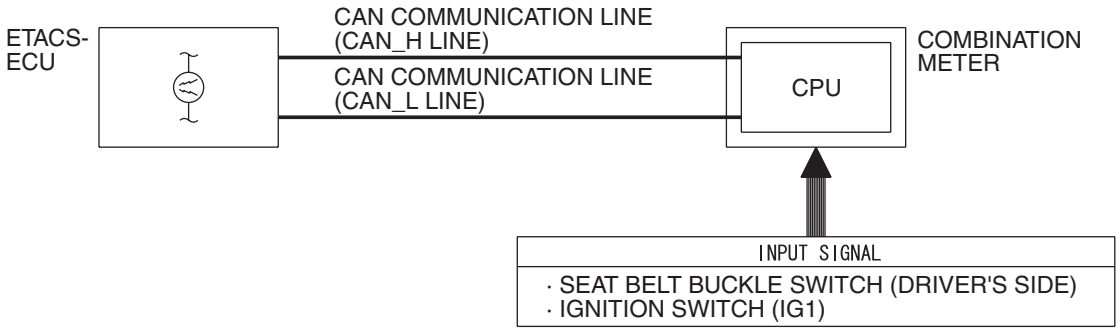
Normal condition is not displayed for "H/L AUTO-CUT" : Refer to Inspection Procedure I-9 "Headlight automatic shutoff function does not work normally P.54B-342."

Normal condition is not displayed for "BUZZER" : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. 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 MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Seat Belt Tone Alarm Function



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CIRCUIT OPERATION

The ETACS-ECU receives the driver's seat belt switch ON signal from the ignition switch (IG1) and the combination meter, and then controls the seat belt tone alarm function.
The ETACS-ECU operates the seat belt tone alarm function under the following conditions:

- Ignition switch: "ON" position
- Driver's seat belt: Unfastened

TECHNICAL DESCRIPTION (COMMENT)

If the seat belt tone alarm does not work, connector(s), wiring harness in the CAN bus lines, the combination meter, the ETACS-ECU or the input signal circuit may be defective.

TROUBLESHOOTING HINTS

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

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DIAGNOSIS

Required Special Tools:

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

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

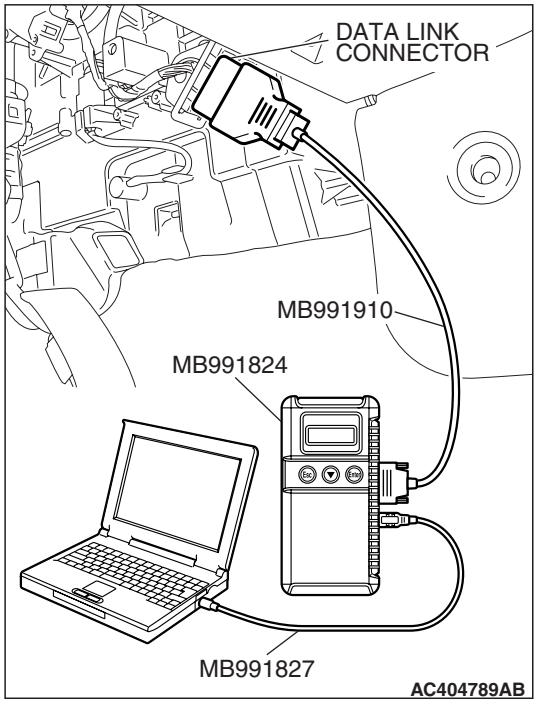
⚠ CAUTION

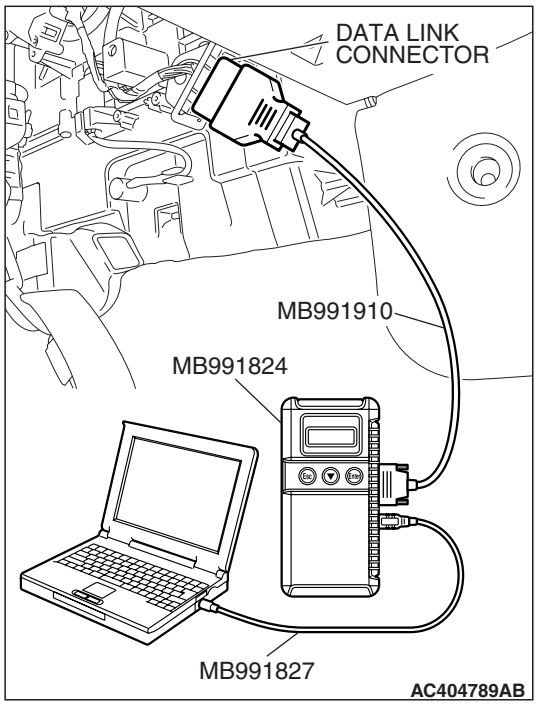
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).





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

Check whether the combination meter-related DTC is set.

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

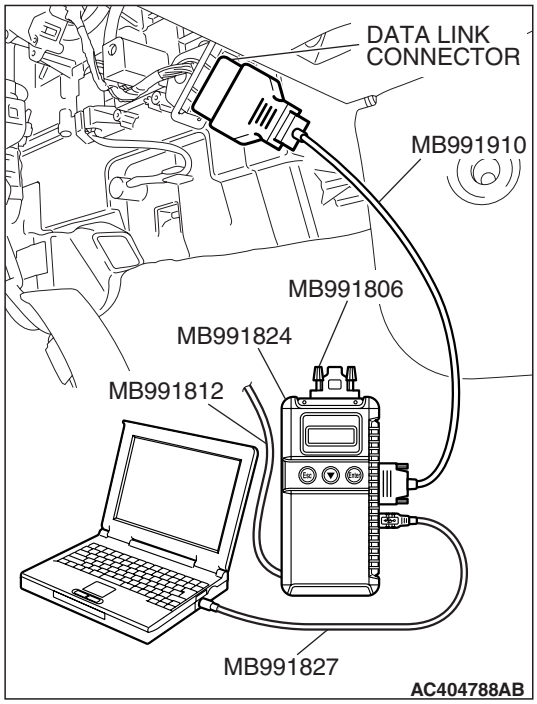
(2) Check whether the combination meter-related DTC is set.

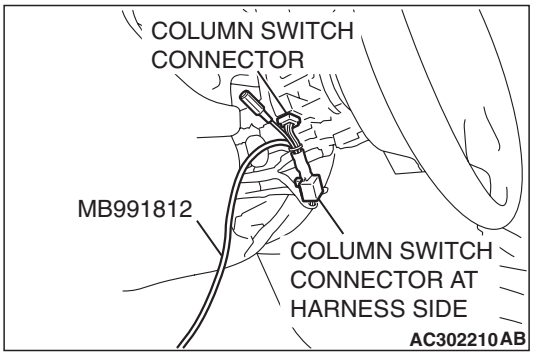
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnosis P.54A-55).

NO : Go to Step 3.





STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

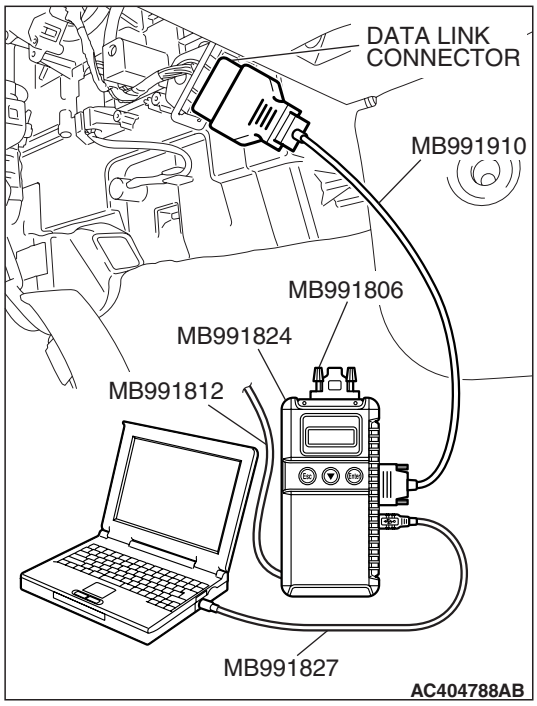
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

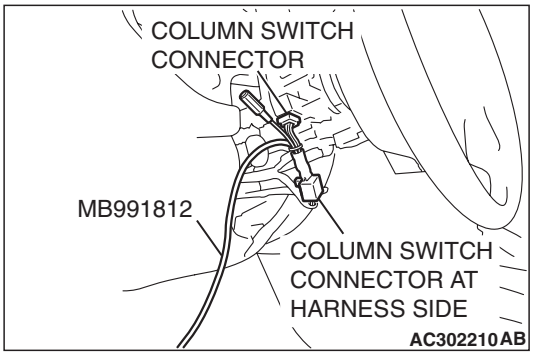
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 4.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





STEP 4. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: OFF →ON
- Driver's seat belt: Unfastened
- All door: Closed

(1) Operate scan tool MB991958 according to the procedure below to display "OTHER ALARM"
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "BUZZER."
   g. Select "OTHER ALARM"

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

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

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

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

Normal conditions are displayed for all the items :
Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the seat belt tone alarm function works normally.

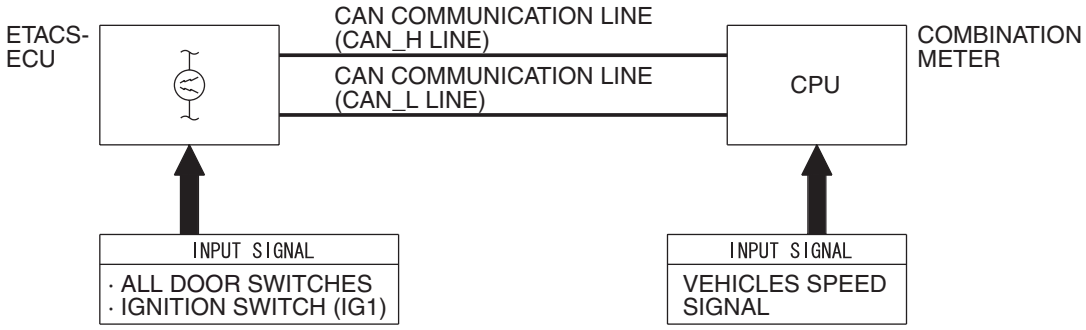
Normal condition is not displayed for "IG SW (IG1)" :
Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "BUZZER" :
Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the seat belt tone alarm function works normally.

INSPECTION PROCEDURE B-4: Tone Alarm: Door ajar tone alarm function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Door Ajar Tone Alarm Function Circuit



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CIRCUIT OPERATION

The ETACS-ECU controls the door-ajar tone alarm, based on the signals from the switches and sensors below.

- Ignition switch (IG1): ON
- One of the door switches: ON
- Vehicle speed signal: 8 km/h (5 mph) or more

TECHNICAL DESCRIPTION (COMMENT)

If the door-ajar tone alarm does not work, connector(s), wiring harness in the CAN bus lines, the combination meter, the ETACS-ECU or the input signal circuit may be defective.

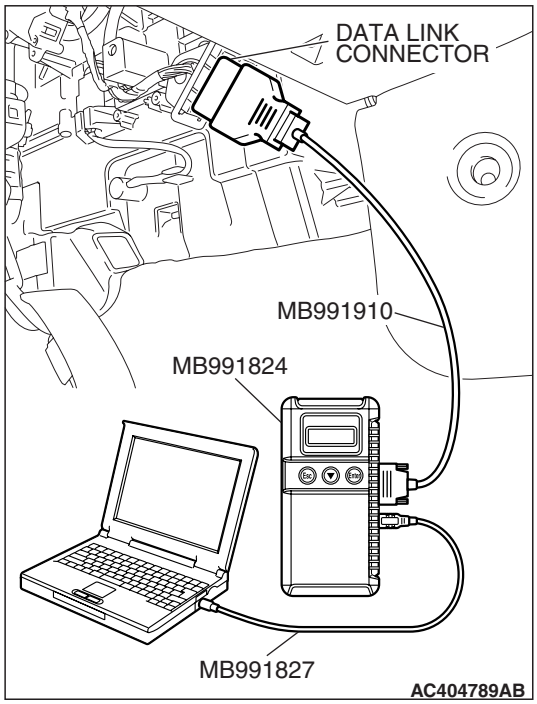
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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



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

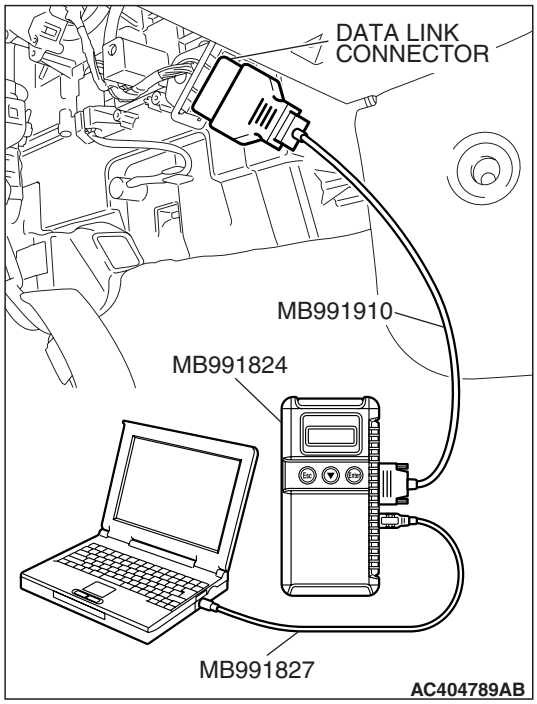
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



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

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

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnostic trouble code chart P.54A-55).
NO : Go to Step 3.

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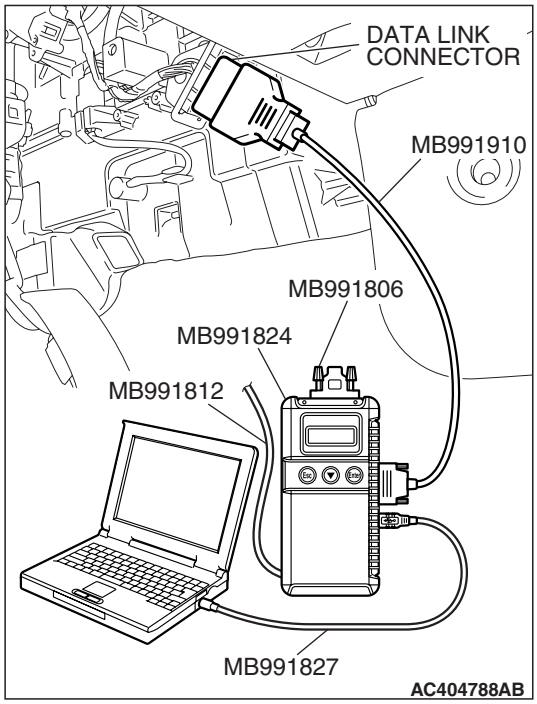
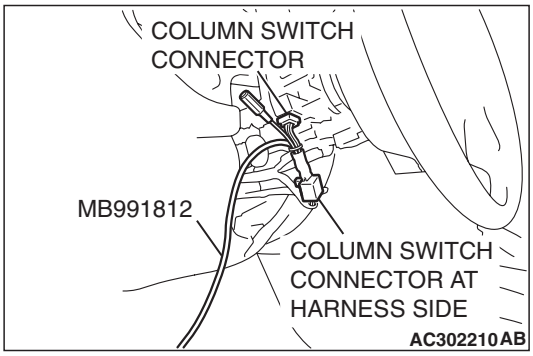




STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

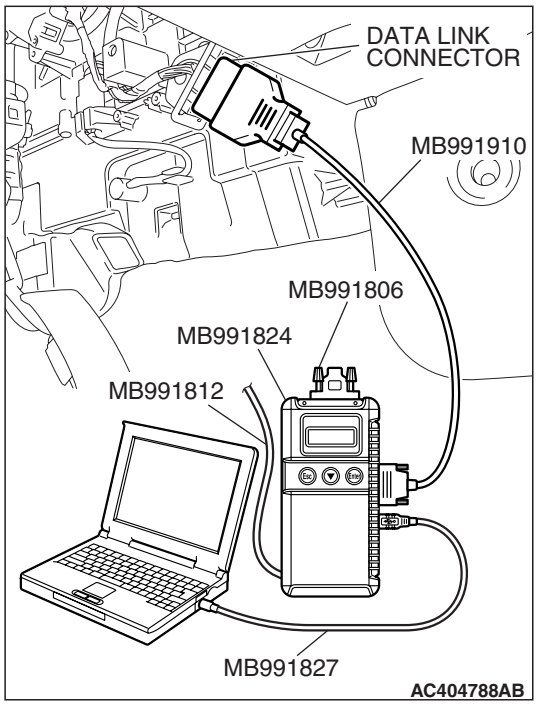
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

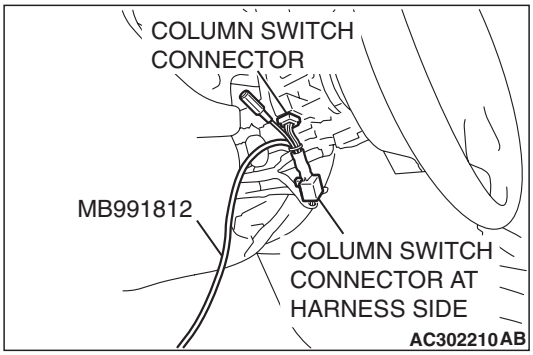
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 4.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





STEP 4. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ON
- Driver's door: Open
- Vehicle speed: 8 km/h (5 mph) or more

(1) Operate scan tool MB991958 according to the procedure below to display "OTHER ALARM"
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "BUZZER."
   g. Select "OTHER ALARM"

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

NOTE: The scan tool MB991958 display changes when the driver's or the passenger's door is opened. If any of the doors are open, the system cannot be checked correctly.

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

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

Normal conditions are displayed for all the items : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The door-ajar tone alarm function should now work normally.

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."

Normal condition is not displayed for "BUZZER" : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The door-ajar tone alarm function should now work normally.

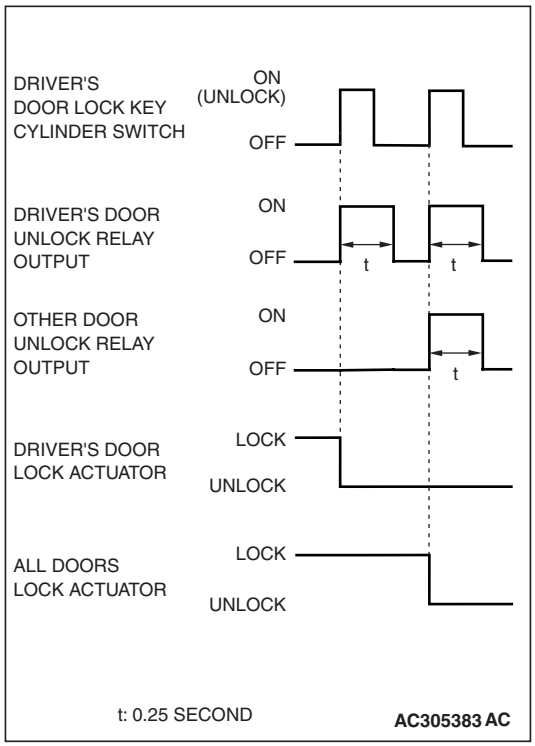
CENTRAL DOOR LOCKING SYSTEM

GENERAL DESCRIPTION CONCERNING CENTRAL DOOR LOCKING SYSTEM

M1549021100334

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

FUNCTION	CONTROL ECU
Door unlocking by operating the driver's door lock key cylinder	ETACS-ECU
Door unlocking or unlocking by operating the driver's or passenger's door lock switch	ETACS-ECU
Forgotten key prevention function	ETACS-ECU

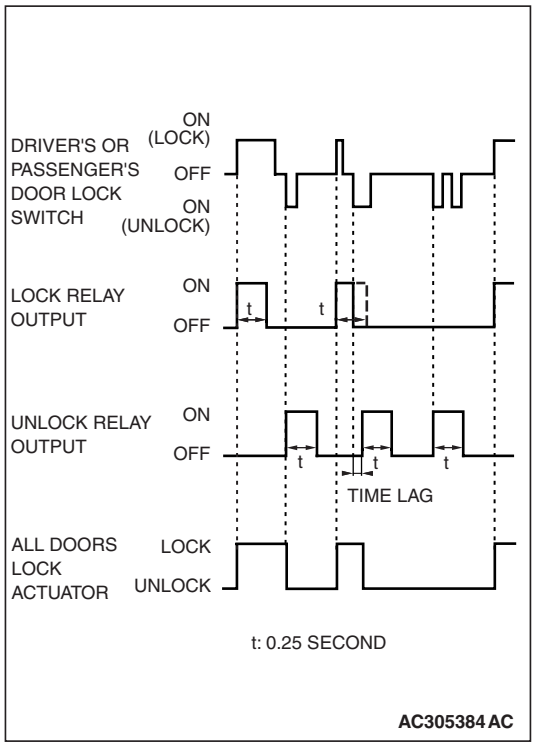


CENTRAL DOOR LOCKING SYSTEM

DOOR UNLOCKING BY OPERATING THE DRIVER'S DOOR LOCK KEY CYLINDER

When the ignition key is inserted in the driver's door lock key cylinder and turned clockwise to unlock the driver's door, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuator of the driver's door for 0.25 second to unlock only the driver's door.
When the ignition key is turned clockwise again, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all doors for 0.25 second to unlock all doors.

DOOR LOCKING OR UNLOCKING BY OPERATING THE DRIVER'S OR PASSENGER'S DOOR LOCK SWITCH



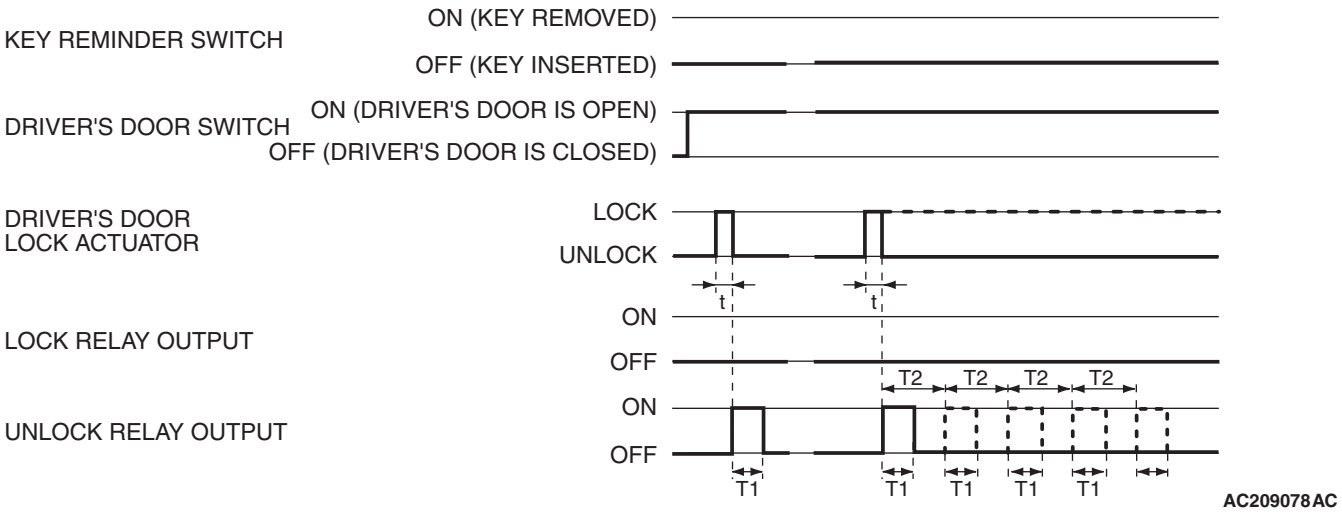
When the door is locked by the driver's or passenger's door lock switch, the ETACS-ECU operates its door lock relay and passes a current through the door lock actuators of all doors for 0.25 second to lock all doors.

When the door is unlocked by the driver's or passenger's door lock switch, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all doors for 0.25 second to unlock all doors.

When the door is locked and unlocked by driver's or passenger's door lock switch consecutively, the ETACS-ECU operates its door lock relay and passes a current through the door lock actuators of all doors for 0.25 second to lock all doors. Then, the ETACS-ECU operates its door unlock relay and passes a current through the door lock actuators of all doors for 0.25 second to unlock all doors. Due to this, there may be a time lag between the driver's or passenger's door lock switch actuation and the time when all doors are unlocked.

Forgotten key prevention function

If the driver's door is locked while it is open



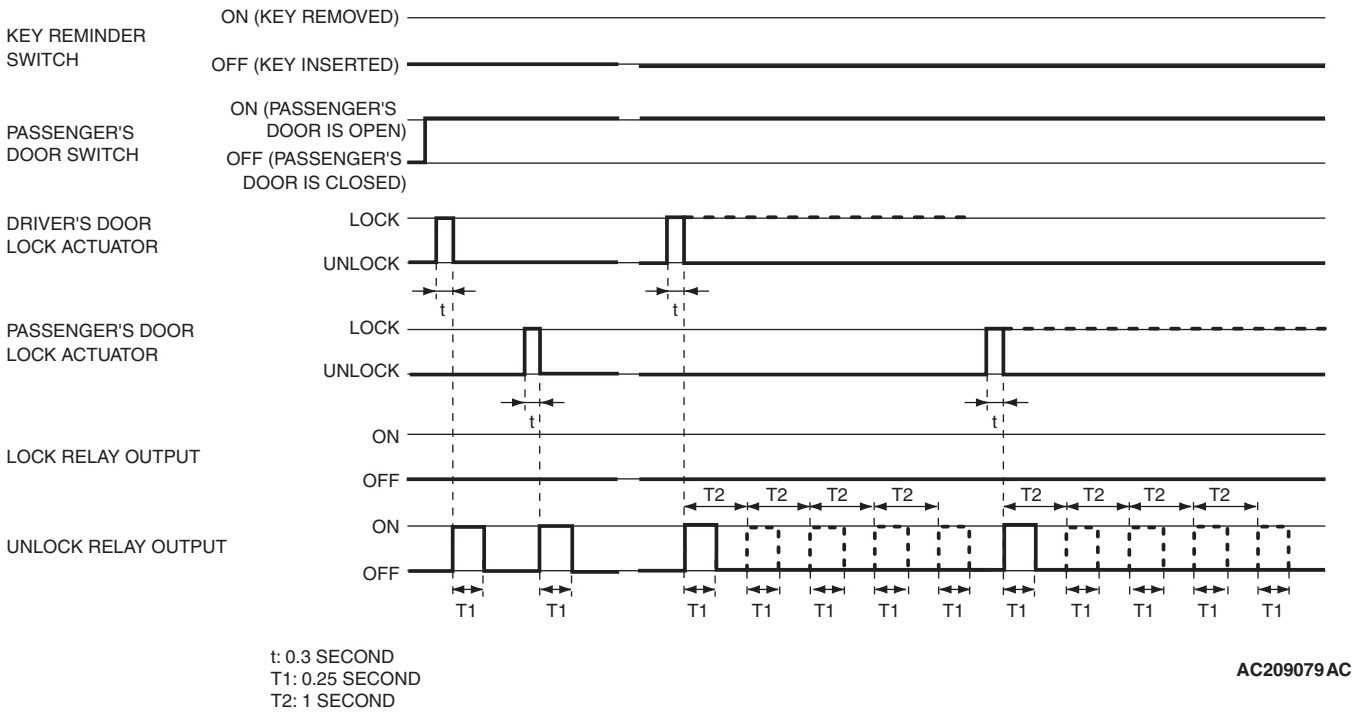
t: 0.3 SECOND
T1: 0.25 SECOND
T2: 1 SECOND

If the driver's door is locked while it is open and when the key is still in the ignition key cylinder, approximately 0.3 second later the ETACS-ECU activates the unlock relay output for 0.25 second to prevent the door from being locked with the key inside the vehicle.

In addition, if locking the door was not prevented, a re-try current is sent (an unlock relay output ON is sent for 0.25 second up to 5 times including the first attempt).

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

If the passenger's door is open when it is locked with the driver's door switch

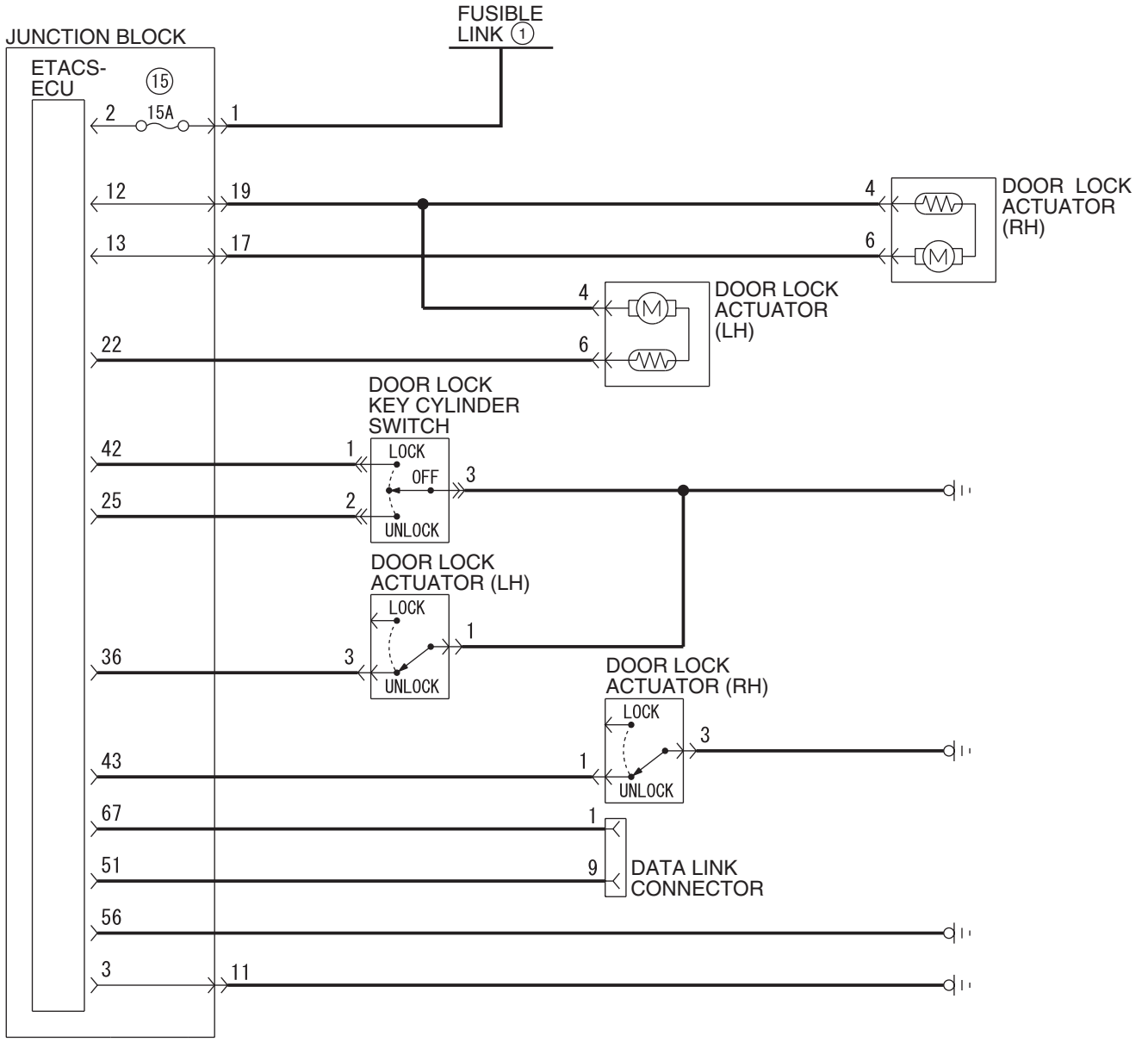


If the passenger's door or driver's door are locked while the passenger's door is open and when the key is still in the ignition key cylinder, approximately 0.3 second later the ETACS-ECU activates the unlock relay output for 0.25 second to prevent the door from being locked with the key inside the vehicle.

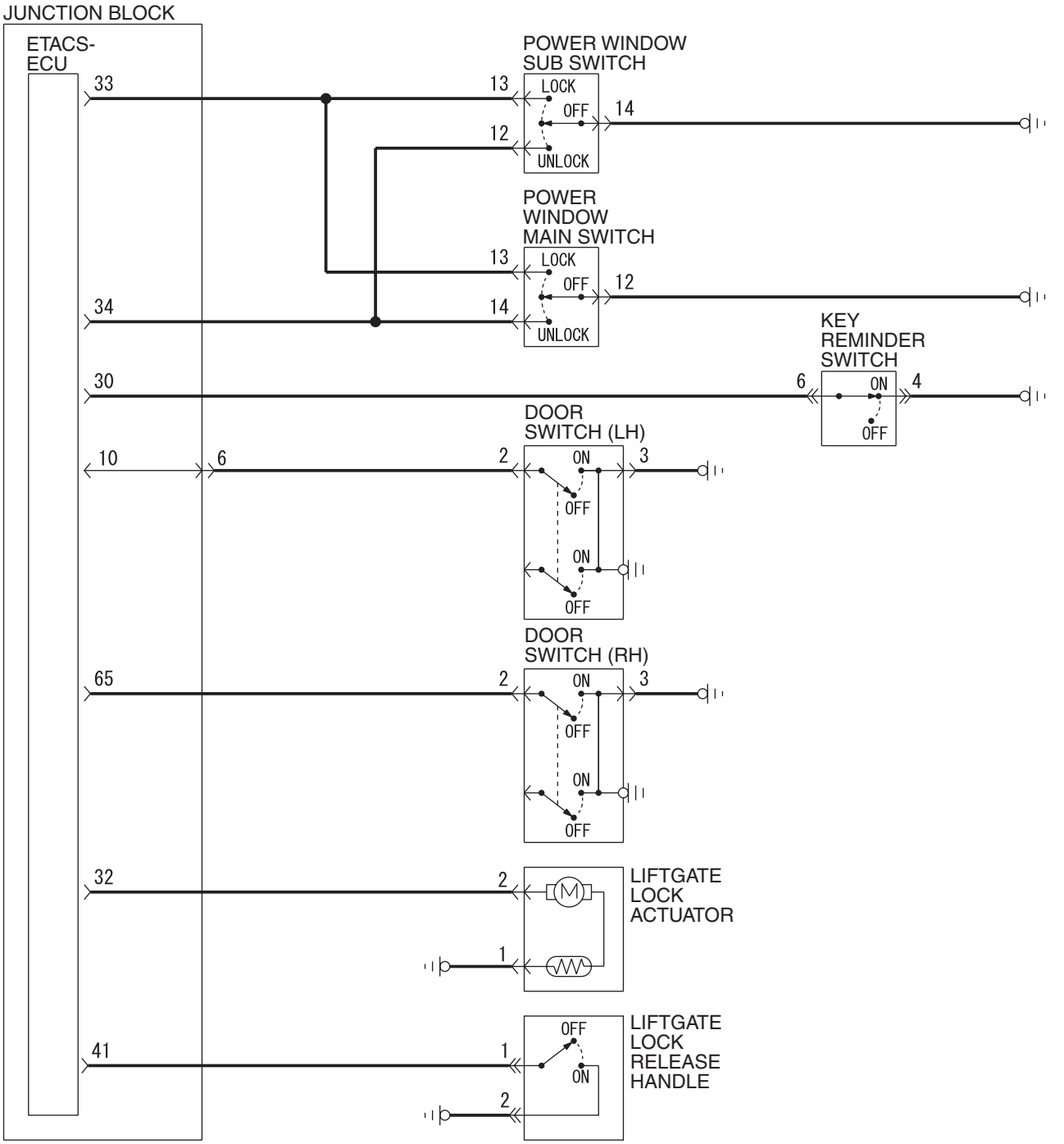
In addition, if locking the door was not prevented, a re-try current is sent (an unlock relay output ON is sent for 0.25 second up to 5 times including the first attempt).

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

General circuit diagram for the central door locking system



W6P54M074A



W6P54M075A

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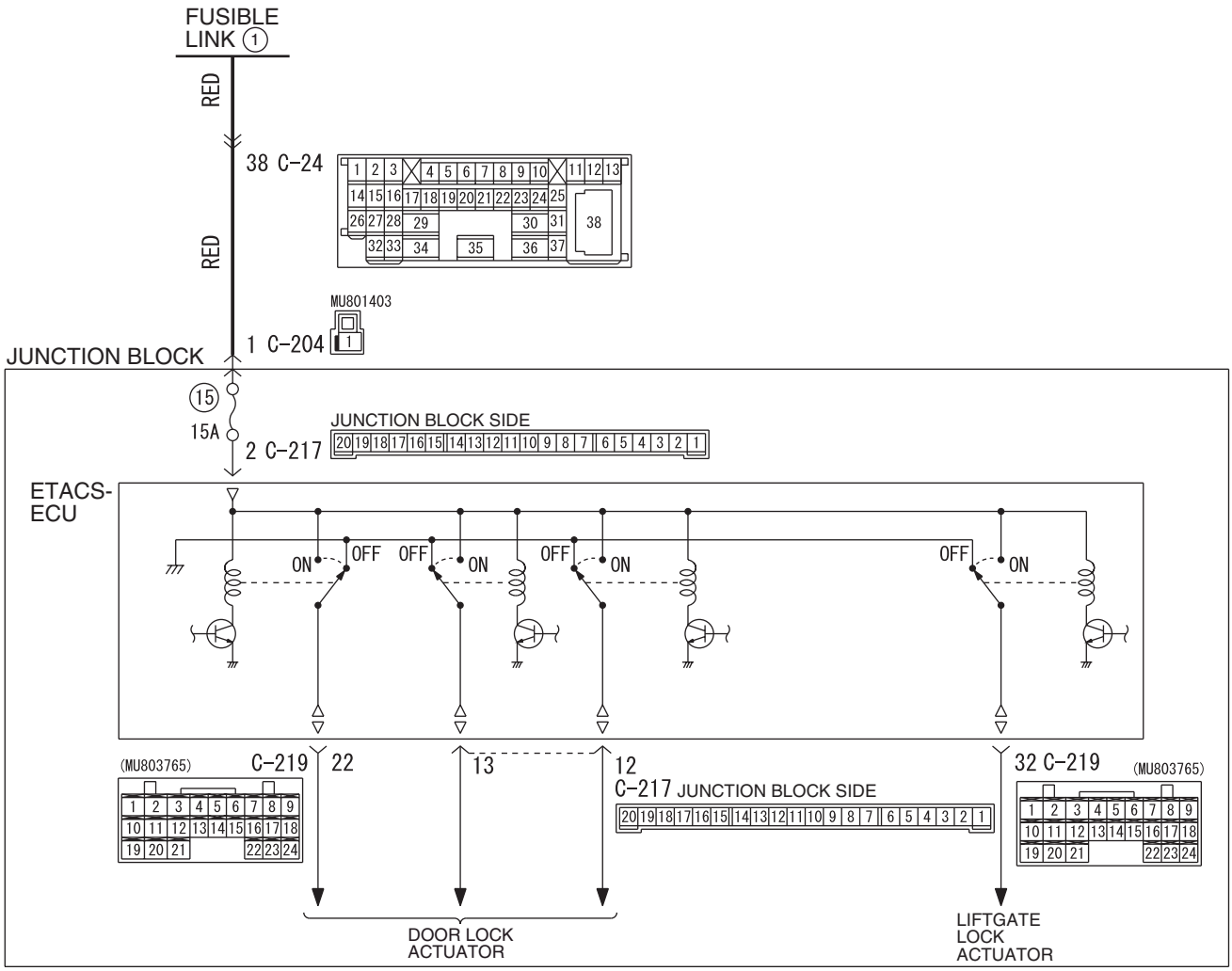
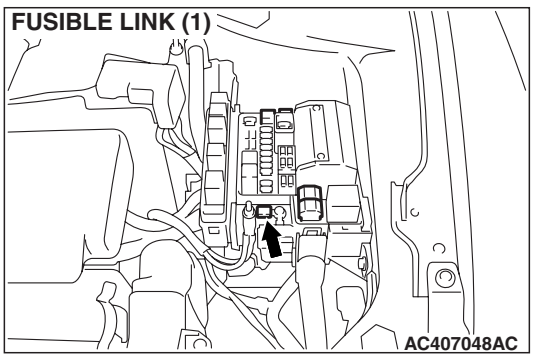
INSPECTION PROCEDURE C-1: Central Door Locking System: The central door locking system does not work at all.

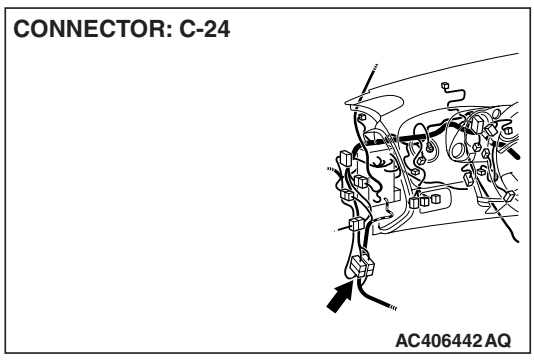
NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Central Door Lock Power Supply Circuit



W6P54M043A





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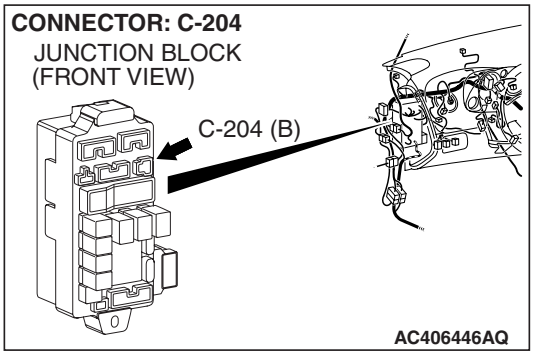
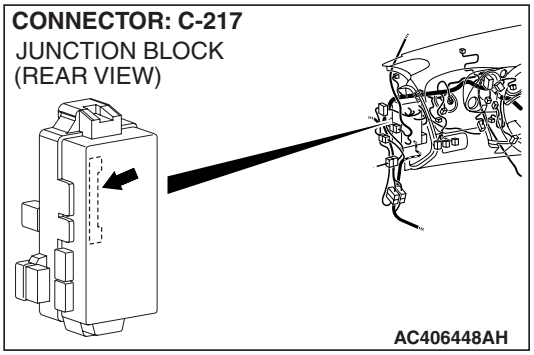




CIRCUIT OPERATION

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

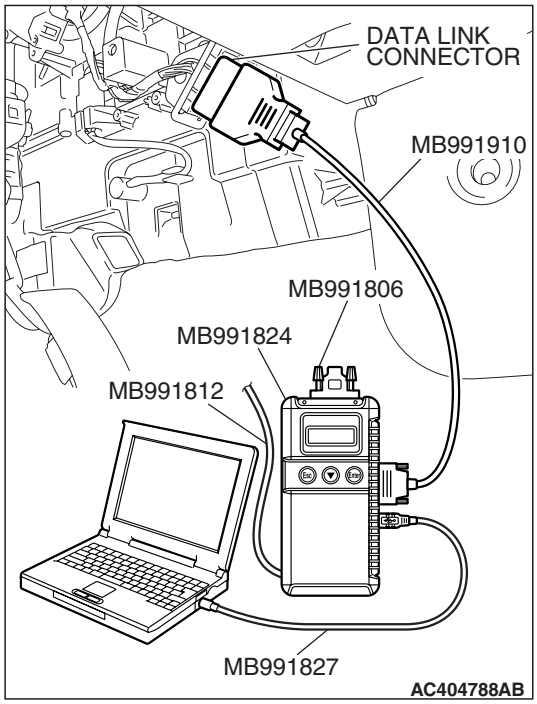
TROUBLESHOOTING HINTS

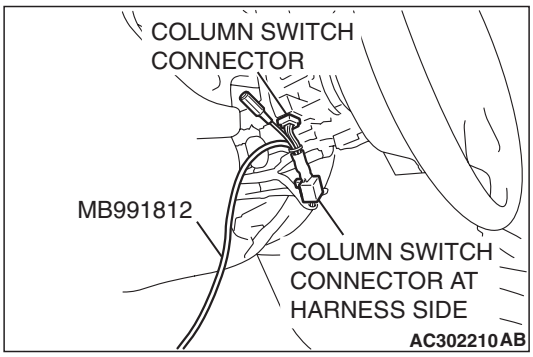
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the ETACS-ECU.

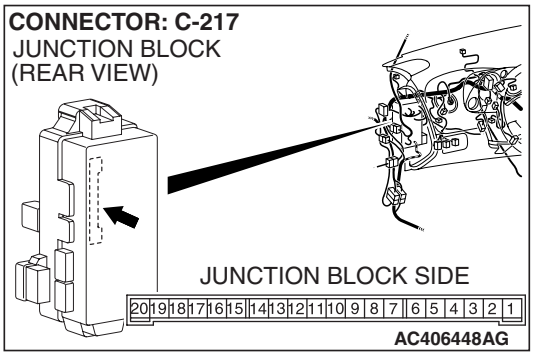
⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) MUT-III should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

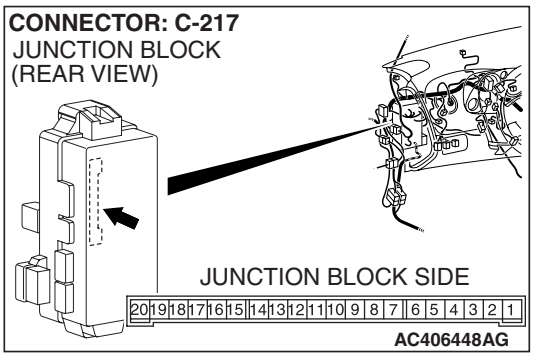


STEP 2. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

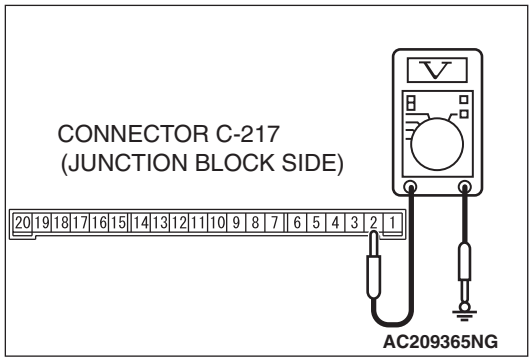
YES : Go to Step 3.

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 battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.

(1) Disconnect ETACS-ECU connector C-217 and measure the voltage available at the junction block side of the connector.



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

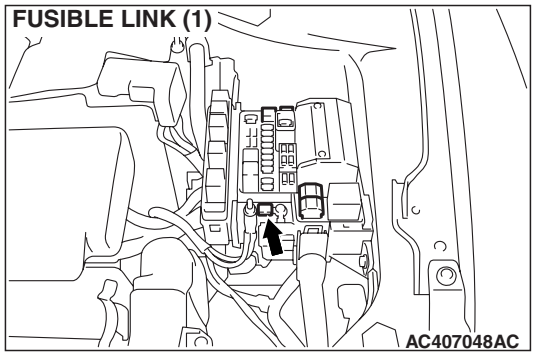
- The voltage should measure approximately 12 volts (battery positive voltage)

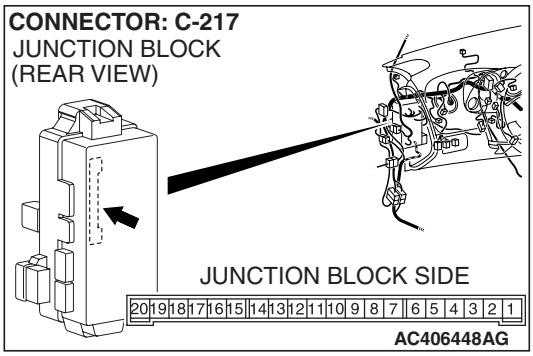
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

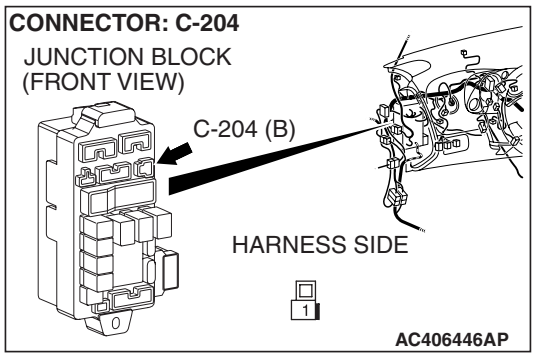
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that all the doors can be locked and unlocked normally.

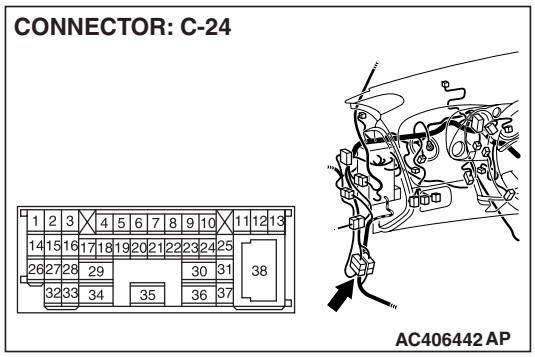
NO : Go to Step 4.

STEP 4. Check the wiring harness between ETACS-ECU connector C-217 (terminal 2) and fusible link (1).









NOTE: Also check junction block connector C-204 and intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 or intermediate connector C-24 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

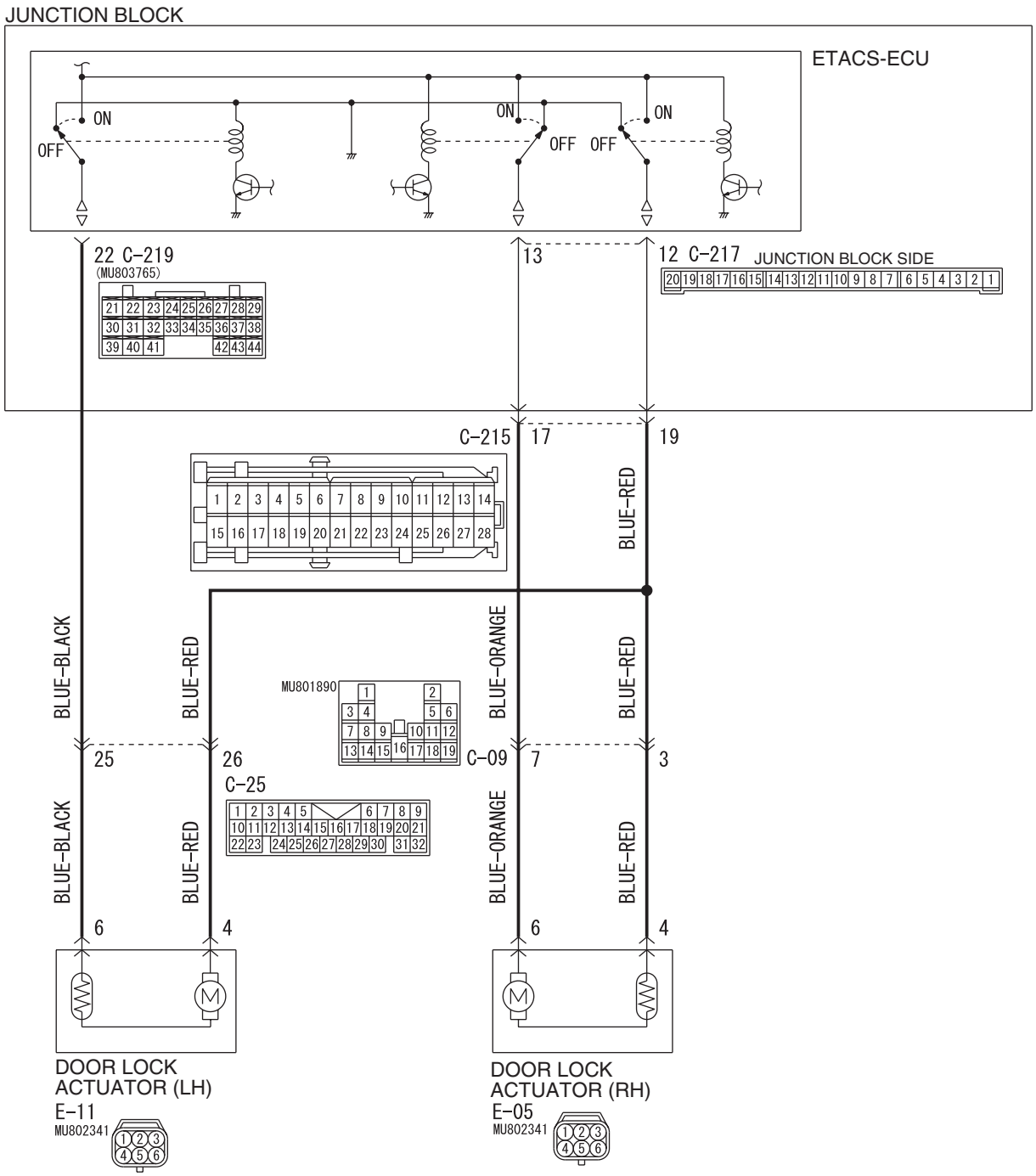
Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 2) and fusible link (1) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector 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.

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

Central Door Lock Circuit



W6P54M044A

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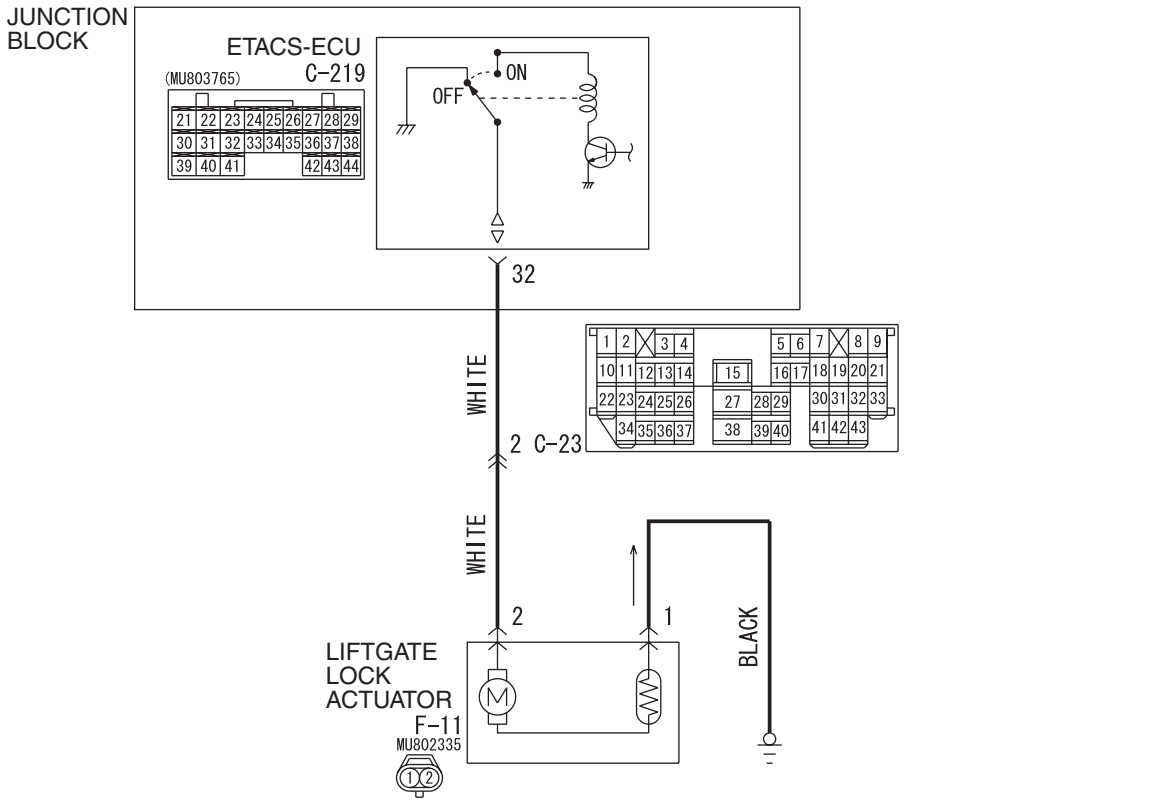
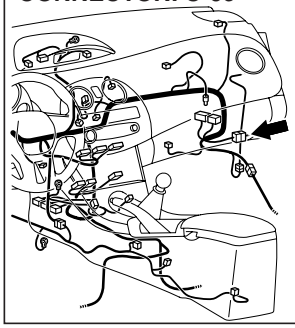
Central Door Lock Circuit



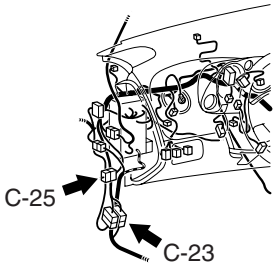
W6P54M045A

CONNECTOR: C-09



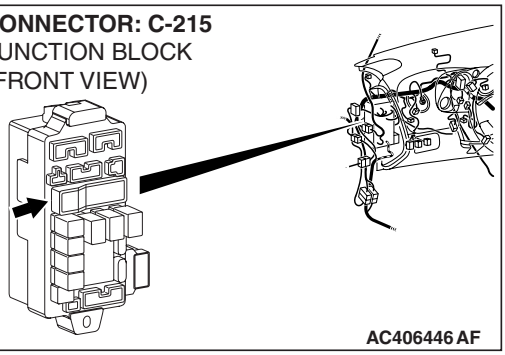
AC406444CL

CONNECTORS: C-23, C-25



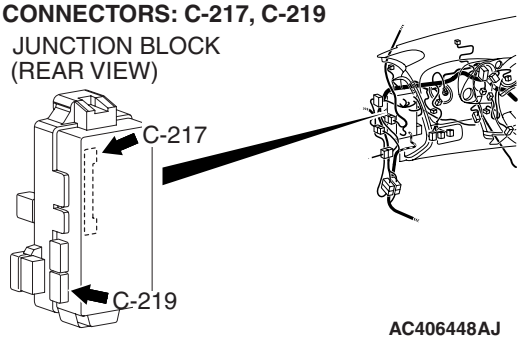
AC406442BS

CONNECTOR: C-215
JUNCTION BLOCK
(FRONT VIEW)



AC406446AF

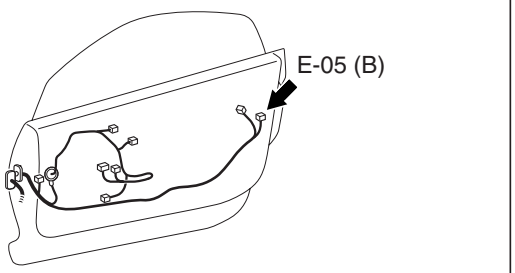
CONNECTORS: C-217, C-219
JUNCTION BLOCK
(REAR VIEW)



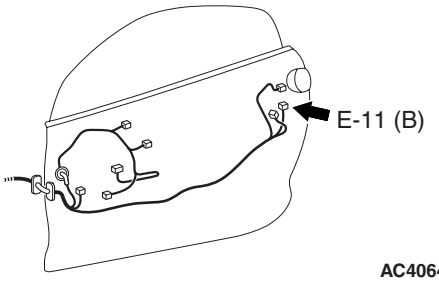
AC406448AJ

TSB Revision

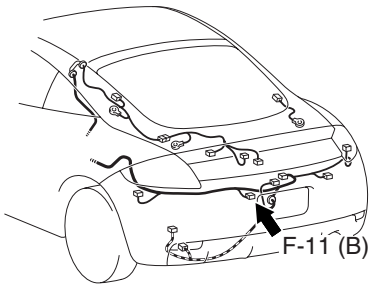
CONNECTOR: E-05



CONNECOTR: E-11



CONNECTOR: F-11



CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

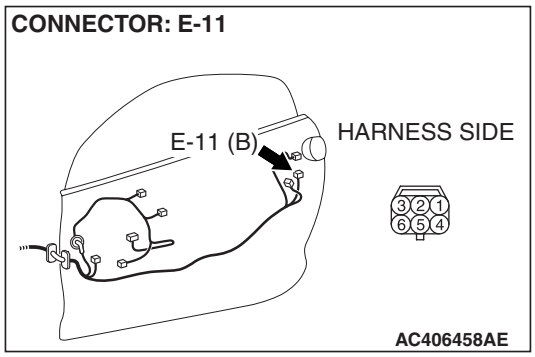
Required Special Tools:

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

STEP 1. Check which door lock is defective.

Q: Which of the door locks is defective?

Driver's door : Go to Step 2.
Passenger's door : Go to Step 7.
Liftgate : Go to Step 11.

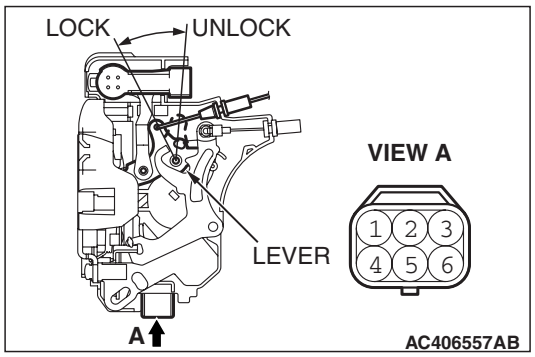


STEP 2. Check door lock actuator (LH) connector E-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock actuator (LH) connector E-11 in good condition?

YES : Go to Step 3.

NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.



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

Remove the door lock actuator (LH). The illustration shows when the door lock actuator is viewed from inside the door. Refer to GROUP 42 –Door Handle and Latch P.42-75.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal No.4 and the negative battery terminal. • Connect terminal No.6 and the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 and the negative battery terminal. • Connect terminal No.4 and the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

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

YES : Go to Step 4.

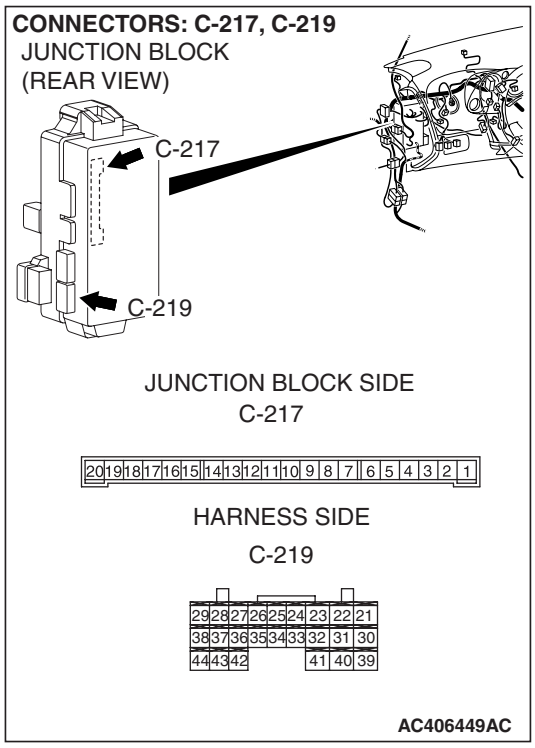
NO : Replace the door lock actuator (LH). Verify that all the doors can be locked and unlocked normally.

STEP 4. Check ETACS-ECU connectors C-217 and C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

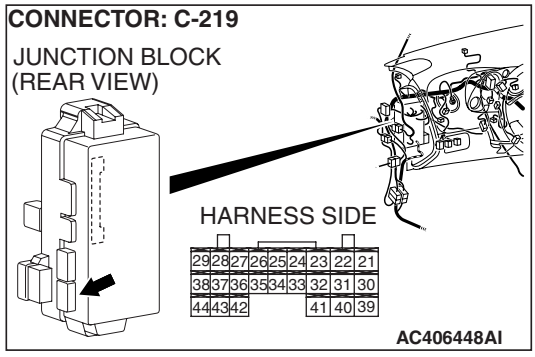
Q: Are ETACS-ECU connectors C-217 and C-219 in good condition?

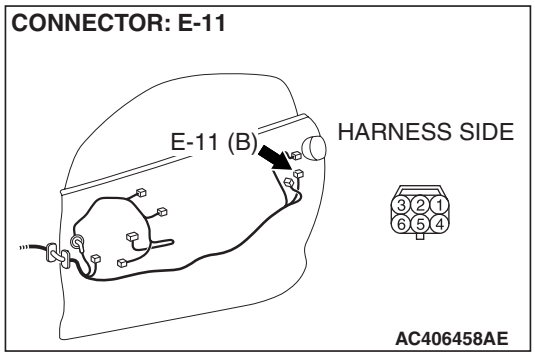
YES : Go to Step 5.

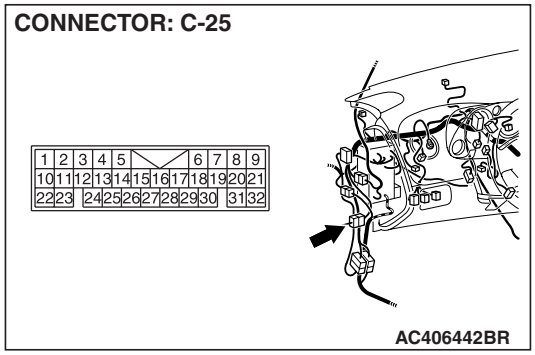
NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.



STEP 5. Check the wiring harness between ETACS-ECU connector C-219 (terminal 22) and door lock actuator (LH) connector E-11 (terminal 6).







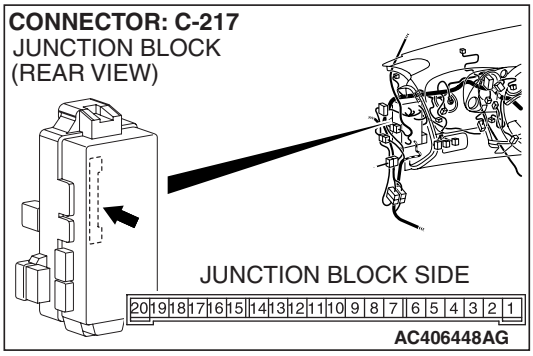
NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

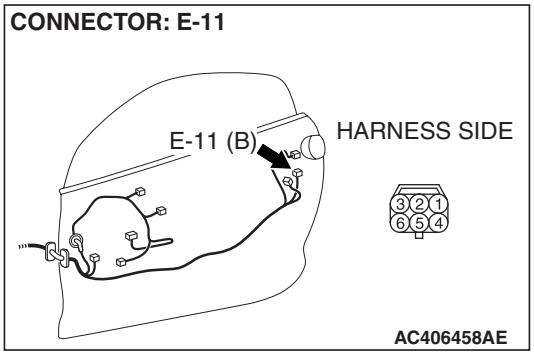
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 22) and door lock actuator (LH) connector E-11 (terminal 6) in good condition?

YES : Go to Step 6.

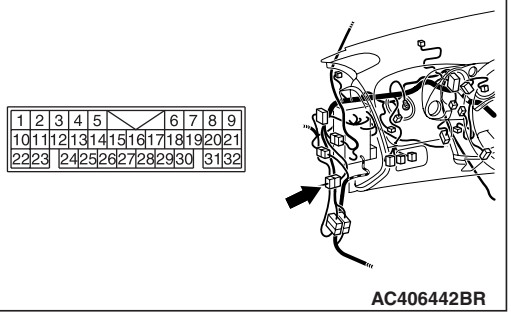
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Verify that the central door locking system works normally.

STEP 6. Check the wiring harness between ETACS-ECU connector C-217 (terminal 12) and door lock actuator (LH) connector E-11 (terminal 4).

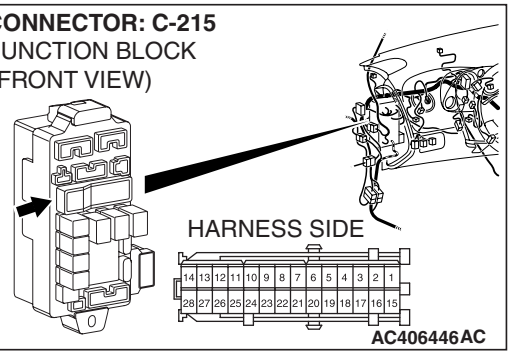




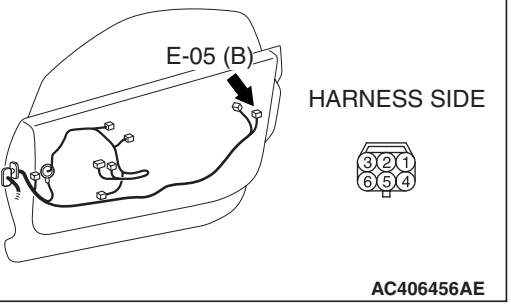
CONNECTOR: C-25



CONNECTOR: C-215
JUNCTION BLOCK
(FRONT VIEW)



CONNECTOR: E-05



NOTE: Also check intermediate connector C-25 and junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 or junction block connector C-215 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-217 (terminal 12) and door lock actuator (LH) connector E-11 (terminal 4) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that all the doors can be locked and unlocked normally.

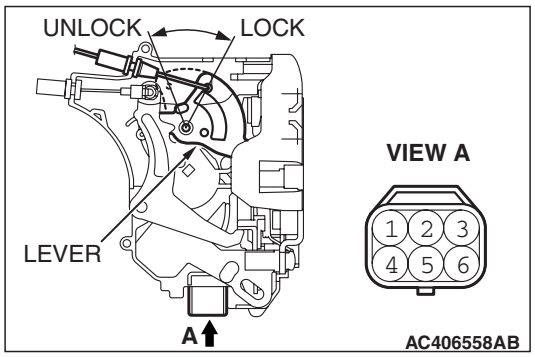
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Verify that the central door locking system works normally.

STEP 7. Check door lock actuator (RH) connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock actuator (RH) connector E-05 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 all the doors can be locked and unlocked normally.



STEP 8. Check the door lock actuator (RH).

Remove the door lock actuator (RH). The illustration shows when the door lock actuator is viewed from inside the door. Refer to GROUP 42 –Door Handle and Latch P.42-75.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "LOCK" position	• Connect terminal No.4 and the negative battery terminal. • Connect terminal No.6 and the positive battery terminal.	The lever moves from the "LOCK" position to the "UNLOCK" position.
At the "UNLOCK" position	• Connect terminal No.6 and the negative battery terminal. • Connect terminal No.4 and the positive battery terminal.	The lever moves from the "UNLOCK" position to the "LOCK" position.

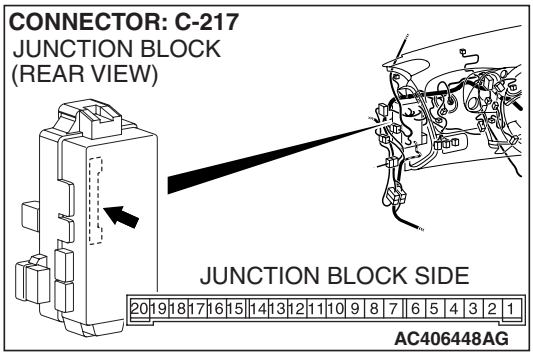
Q: Is the door lock actuator (RH) normal?

YES : Go to Step 9.

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

STEP 9. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

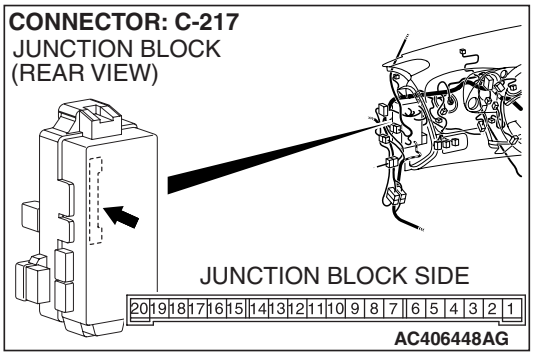
Q: Is ETACS-ECU connector C-217 in good condition?

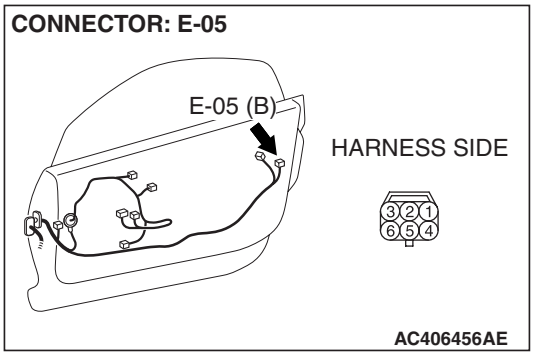


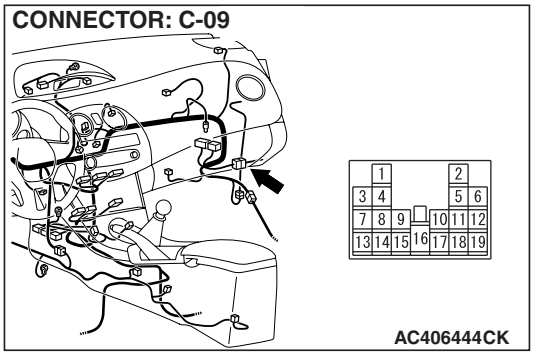
YES : Go to Step 10.

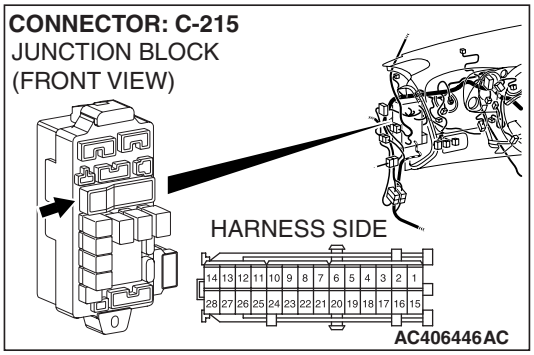
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.

STEP 10. Check the wiring harness between ETACS-ECU connector C-217 (terminals 12 and 13) and door lock actuator (RH) connector E-05 (terminals 4 and 6).







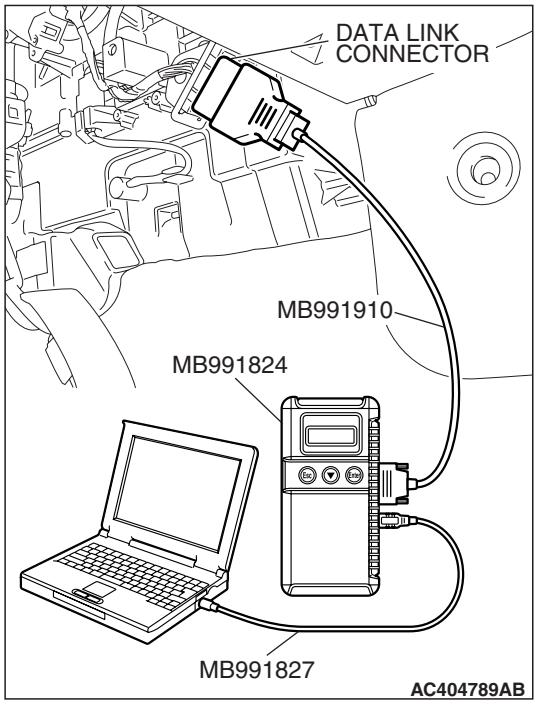


NOTE: Also check intermediate connector C-09 and junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-09 or junction block connector C-215 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-217 (terminals 12 and 13) and door lock actuator (RH) connector E-05 (terminals 4 and 6) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. 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.



STEP 11. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the liftgate lock release switch.

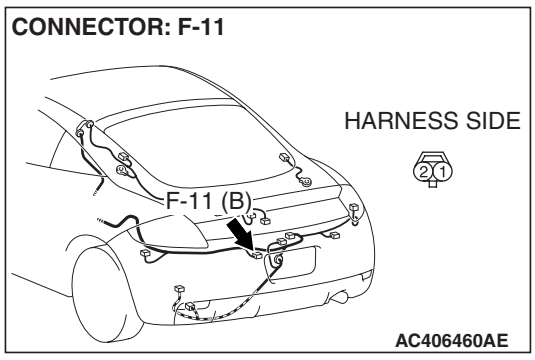
⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) When the liftgate lock release switch is operated, check that scan tool MB991958 sounds.
(3) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

Q: Does scan tool MB991958 sound when the liftgate lock release switch is turned from "OFF" to "ON"?

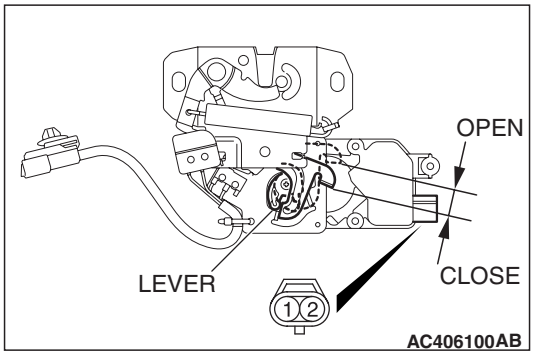
YES : Go to Step 12.
NO : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive any signal from the liftgate lock release switch P.54B-528."



STEP 12. Check liftgate lock actuator connector F-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is liftgate lock actuator connector F-11 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 liftgate lock actuator.

Remove the liftgate lock actuator. The illustration shows when the door lock actuator is viewed from inside the door. Refer to GROUP 42 –Door Handle and Latch P.42-75.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the "CLOSE" position	• Connect terminal No.1 and the negative battery terminal. • Connect terminal No.2 and the positive battery terminal.	The lever moves from the "CLOSE" position to the "OPEN" position.

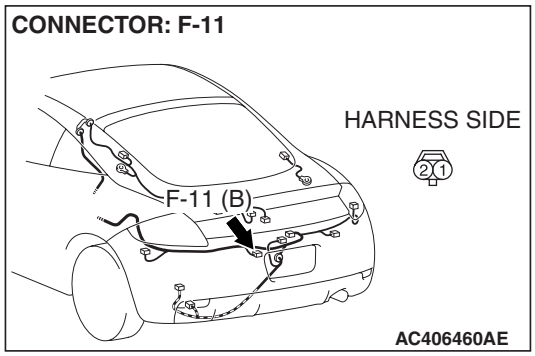
Q: Is the liftgate lock actuator normal?

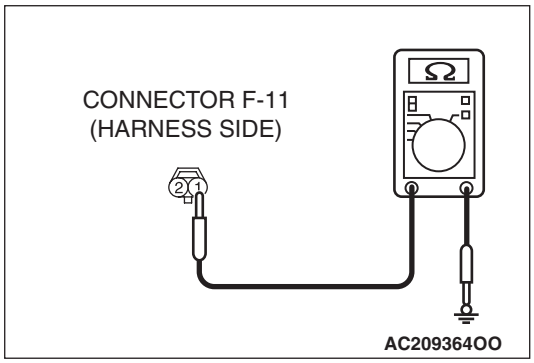
YES : Go to Step 14.

NO : Replace the liftgate lock actuator. Verify that all the doors can be locked and unlocked normally.

STEP 14. Check the ground circuit to the liftgate lock actuator. Measure the resistance at liftgate lock actuator connector F-11.

(1) Disconnect liftgate lock actuator connector F-11 and measure the resistance available at the wiring harness side of the connector.



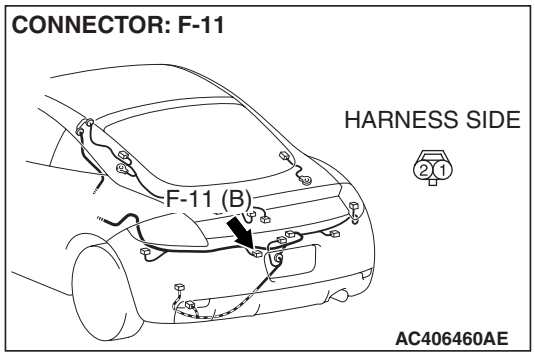


(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 16.

NO : Go to Step 15.

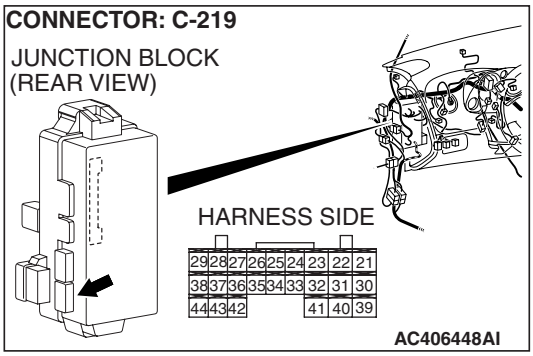


STEP 15. Check the wiring harness between liftgate lock actuator connector F-11 (terminal 1) and ground.

Q: Is the wiring harness between liftgate lock actuator connector F-11 (terminal 1) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the front fog light switch operates normally, a correct signal is sent from the front fog light switch.



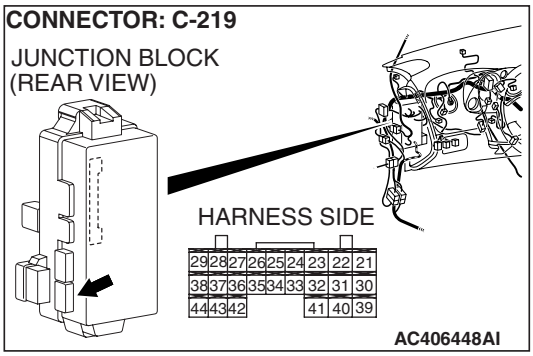
STEP 16. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

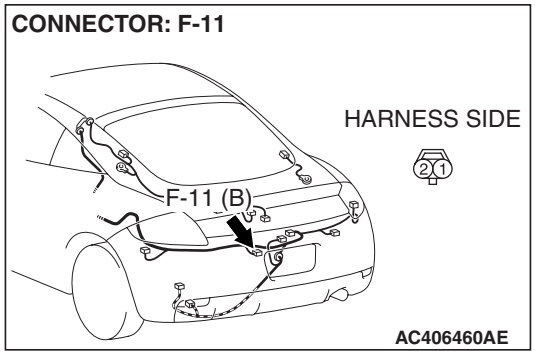
Q: Is ETACS-ECU connector C-219 in good condition?

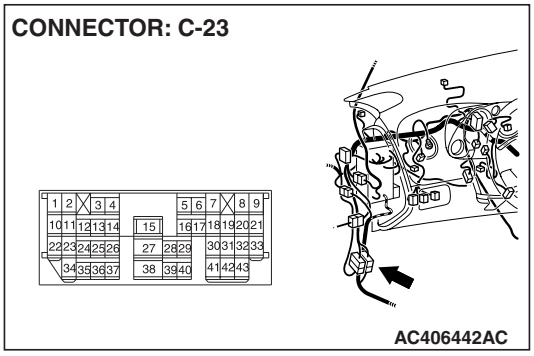
YES : Go to Step 17.

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 between ETACS-ECU connector C-219 (terminal 32) and liftgate lock actuator connector F-11 (terminal 2).







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

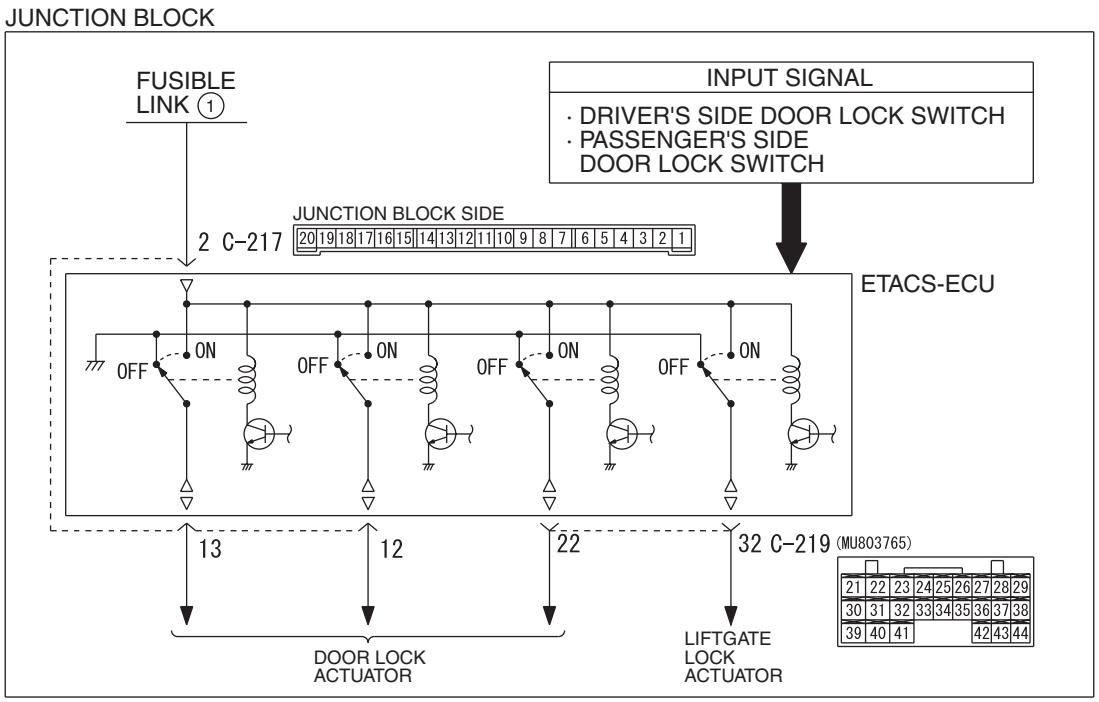
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 32) and liftgate lock actuator connector F-11 (terminal 2) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. 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.

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



W6P54M046A

TECHNICAL DESCRIPTION (COMMENT)

The door lock switch (incorporated in the power window main switch and power window sub switch) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

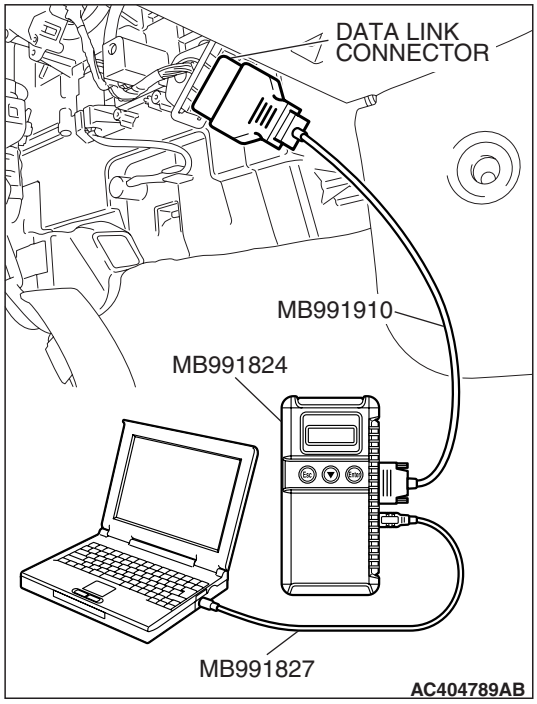
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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

TSB Revision



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

Check the input signals from the door lock switch (incorporated in the power window main switch and power window sub switch):

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

(2) When the driver's or the passenger's door lock switch is moved from "LOCK" to "UNLOCK" and vice versa, check if scan tool MB991958 sounds or not.

(3) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

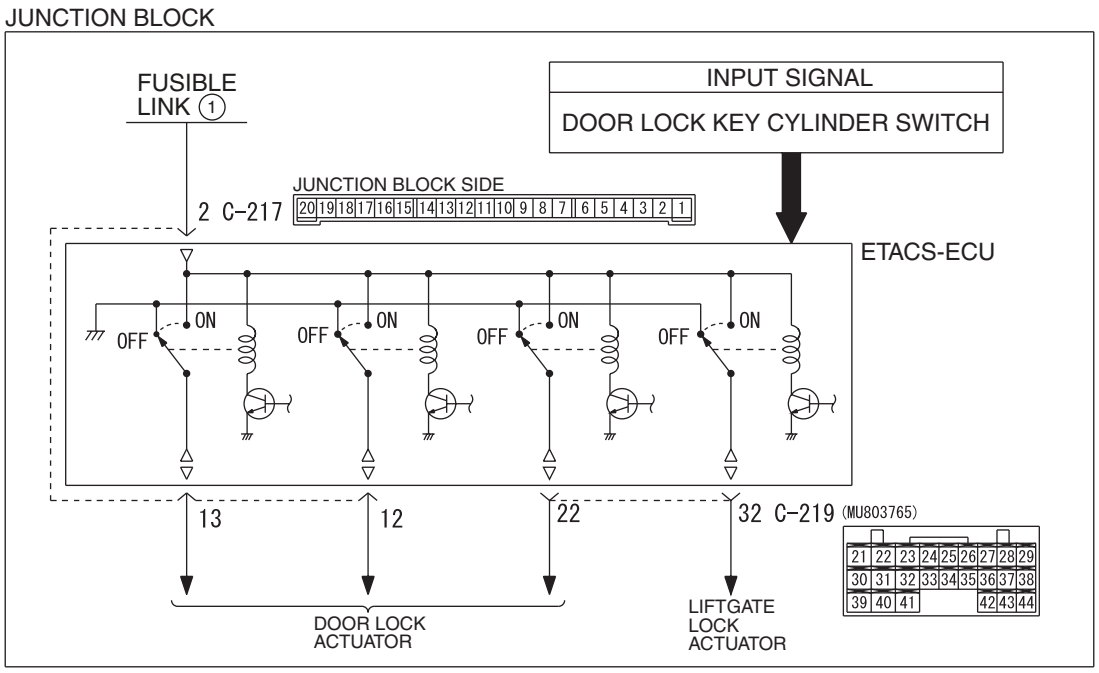
Q: Does scan tool MB991958 sound when the driver's or the passenger's door lock switch is moved from "LOCK" to "UNLOCK" and vice versa?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Check that all the doors should be locked and unlocked by the door lock switch.

NO : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive any signal from the door lock switch (incorporated in the power window main switch and power window sub switch) P.54B-513."

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



W6P54M047A

TECHNICAL DESCRIPTION (COMMENT)

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

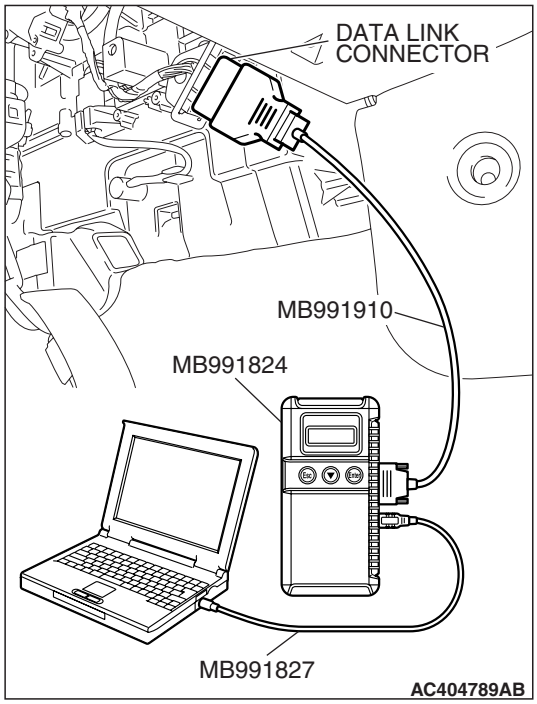
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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



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 the special tool. Refer to "How to connect SWS monitor P.54B-14."

(2) When the doors are locked and unlocked by using the driver's or passenger's door lock key cylinder, check that scan tool MB991958 sounds.

(3) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

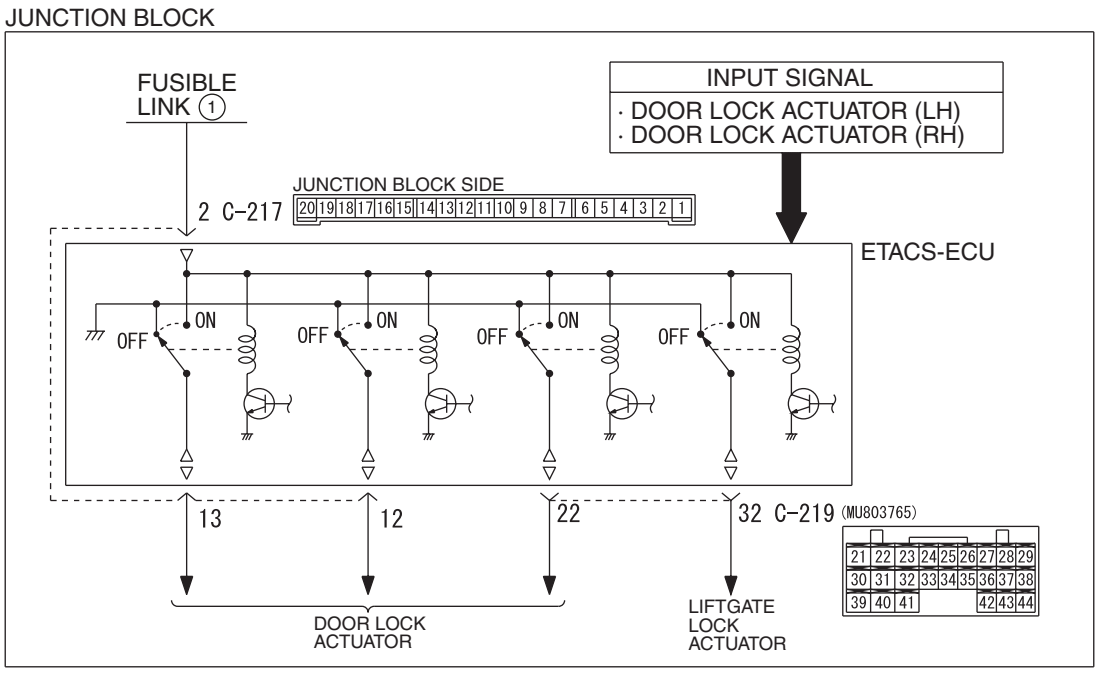
Q: When the doors are locked and unlocked by using the driver's or passenger's door lock key cylinder, does scan tool MB991958 sound?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Check that all the doors should be locked and unlocked by using each door lock key cylinder switch.

NO : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from the door lock key cylinder switch P.54B-498."

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

Central Door Lock (Inside Lock knob) Circuit



W6P54M048A

TECHNICAL DESCRIPTION

The door lock actuator or the ETACS-ECU may be defective.

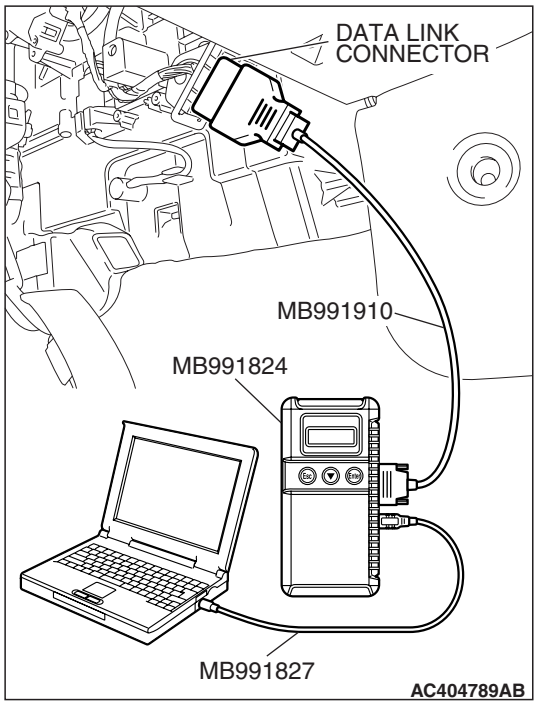
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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



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

Check the input signals from the driver's or passenger's door lock actuator.

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

(2) When the driver's inside lock knob is locked or unlocked, check if scan tool MB991958 sounds or not.

(3) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

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

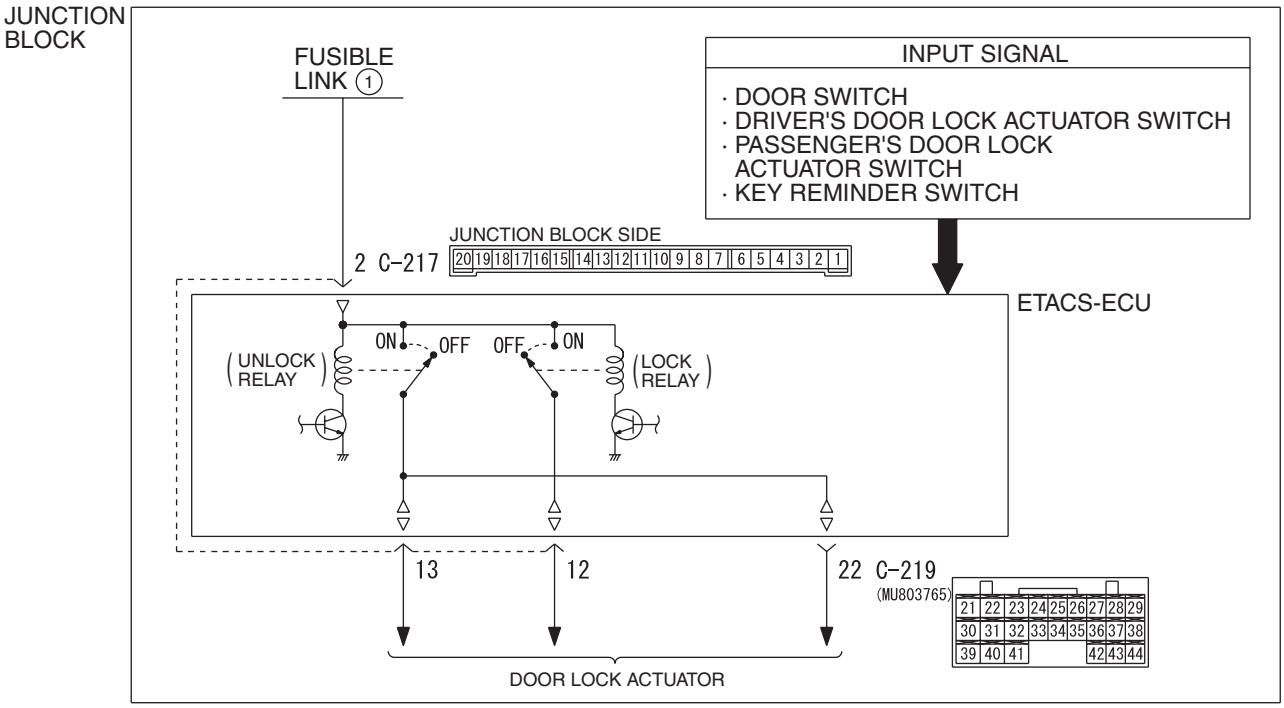
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Check that all the doors can be locked or unlocked by operating the driver's inside lock knob.

NO : Refer to Inspection Procedure N-4 "ETACS-ECU does not receive any signal from the door lock actuator P.54B-503."

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

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Forgotten Key Prevention Circuit



W6P54M049A

CIRCUIT OPERATION

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

- Key reminder switch: OFF
- Door switch: ON
- Door lock actuator switch: being turned on

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

- Ignition key: inserted into the ignition key cylinder
- Door: open
- Door lock: being locked

TECHNICAL DESCRIPTION (COMMENT)

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

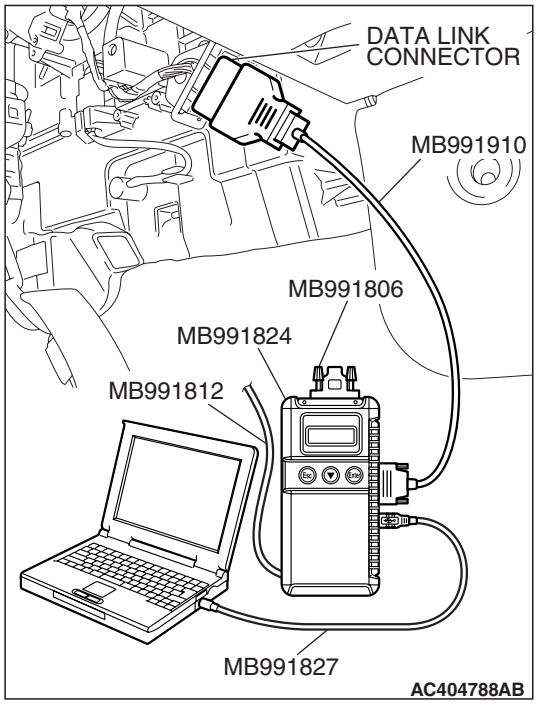
TROUBLESHOOTING HINTS

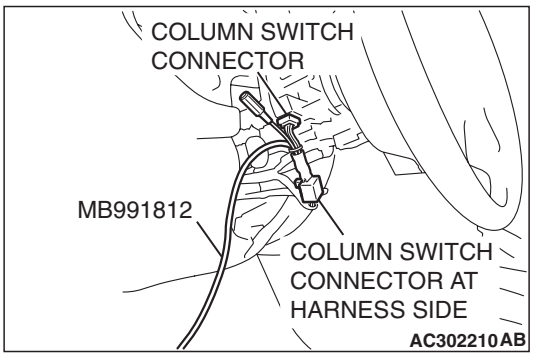
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the ETACS-ECU.

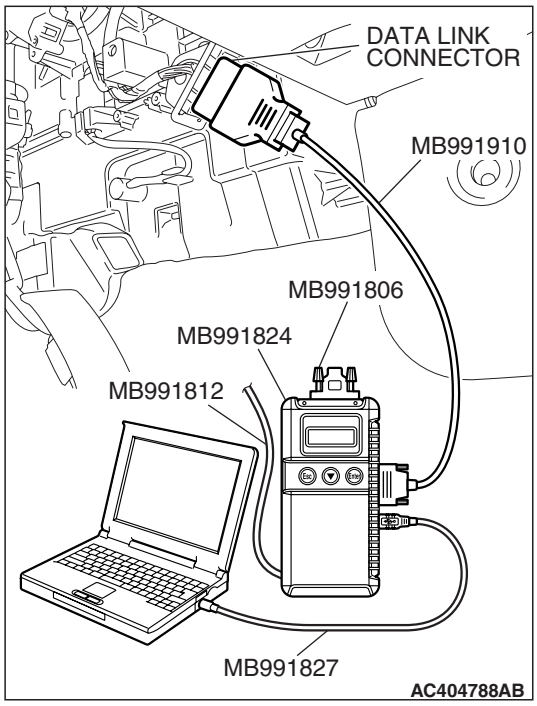
⚠ CAUTION

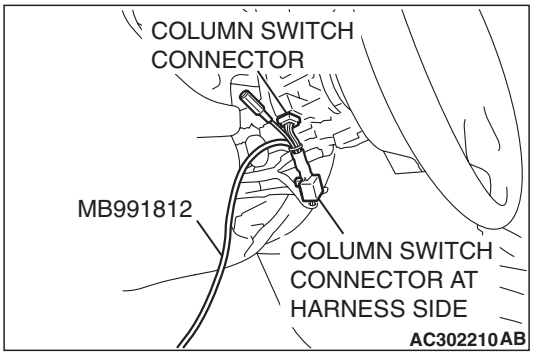
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





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

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

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

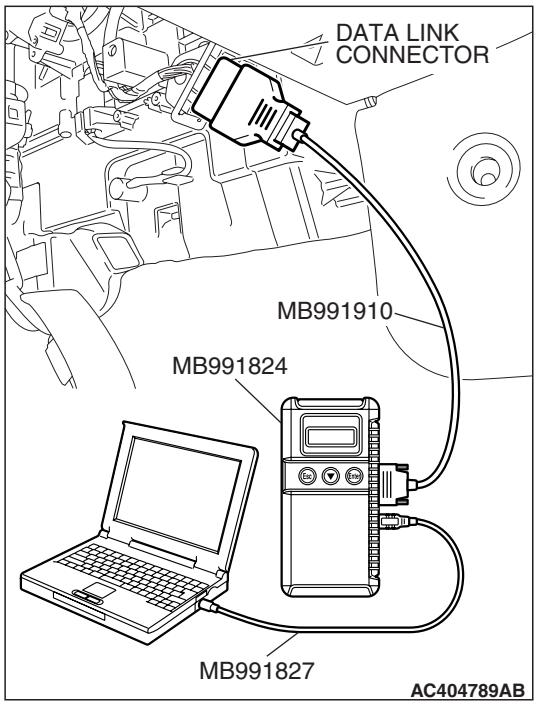
(2) Check that normal conditions are displayed for the items described in the table below.

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

Q: Does scan tool MB991958 display "FRONT DOOR SW" as normal condition?

YES : Go to Step 3.

NO : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."



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

Check the following switches and input signals:

- Key reminder switch

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(2) Check if scan tool MB991958 sounds or not.

ITEM NAME	CONDITION
Key reminder switch	Remove and reinsert the ignition key

Q: When the key reminder switch is operated, does scan tool MB991958 sound?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The forgotten key prevention function should work normally.

NO : Refer to Inspection Procedure N-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54B-489."

POWER WINDOWS

GENERAL DESCRIPTION CONCERNING THE POWER WINDOWS

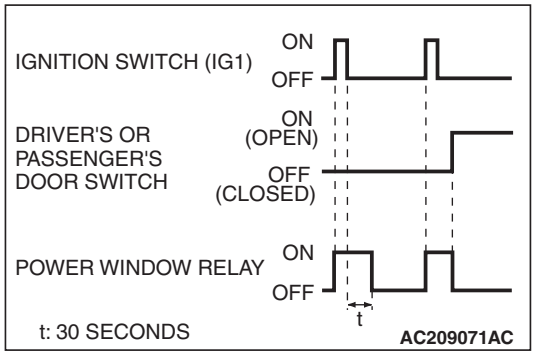
M1549021900318

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

FUNCTION	CONTROL ECU
Power window timer function	ETACS-ECU

POWER WINDOW

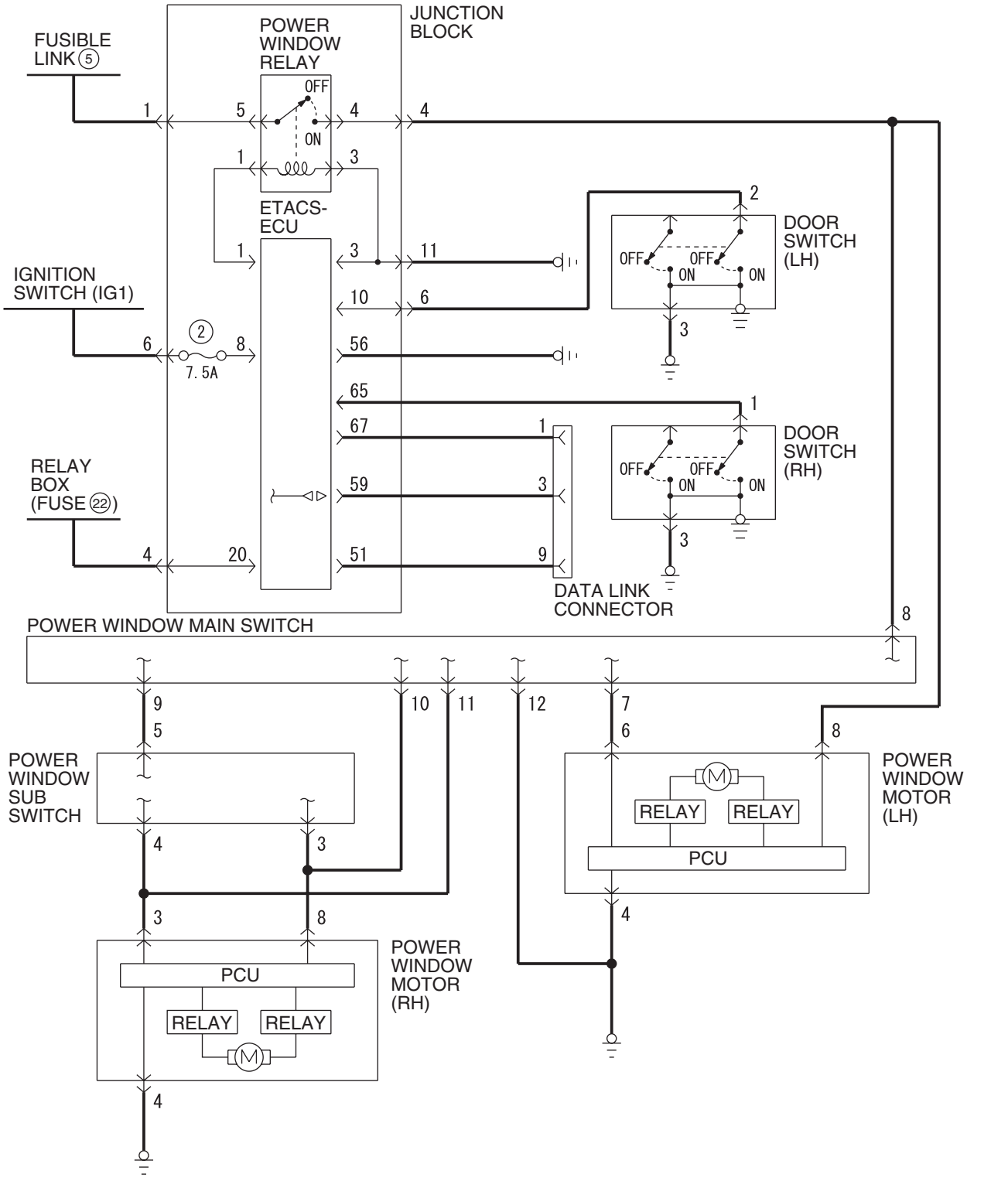
POWER WINDOW TIMER FUNCTION



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

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

General circuit diagram for the power windows



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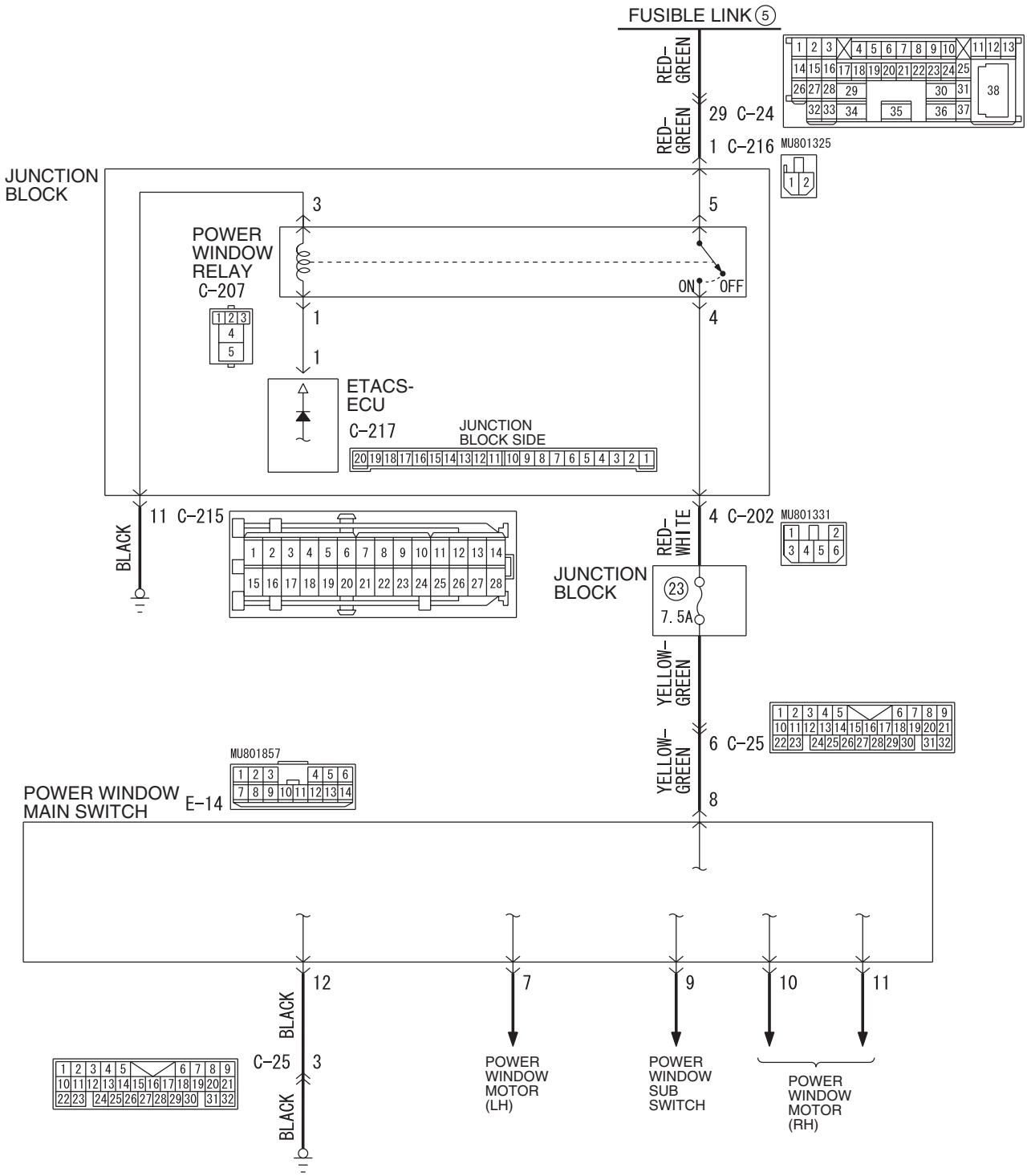
INSPECTION PROCEDURE D-1: Power Windows: Power windows do not work at all.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Power Window Relay Circuit



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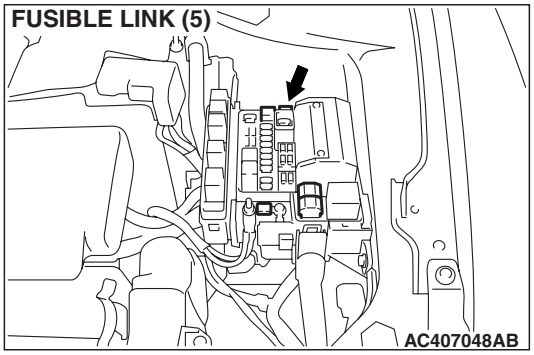
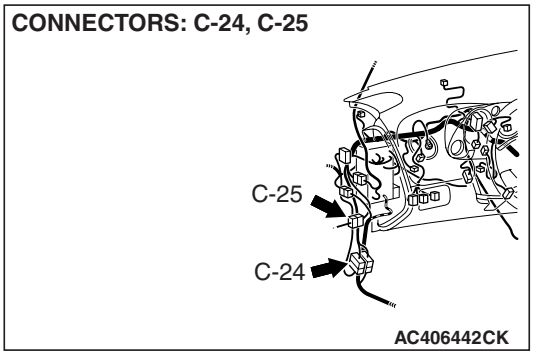
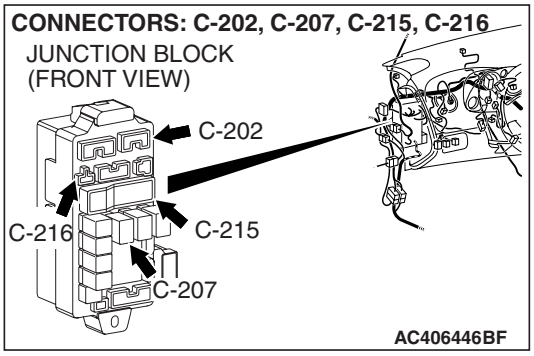
FUSIBLE LINK (5)



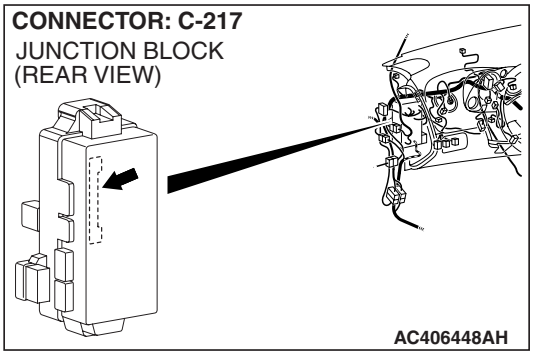
CONNECTORS: C-24, C-25



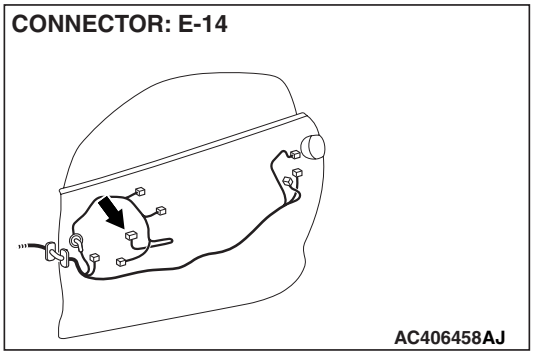
CONNECTORS: C-202, C-207, C-215, C-216



CONNECTOR: C-217



CONNECTOR: E-14



CIRCUIT OPERATION

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

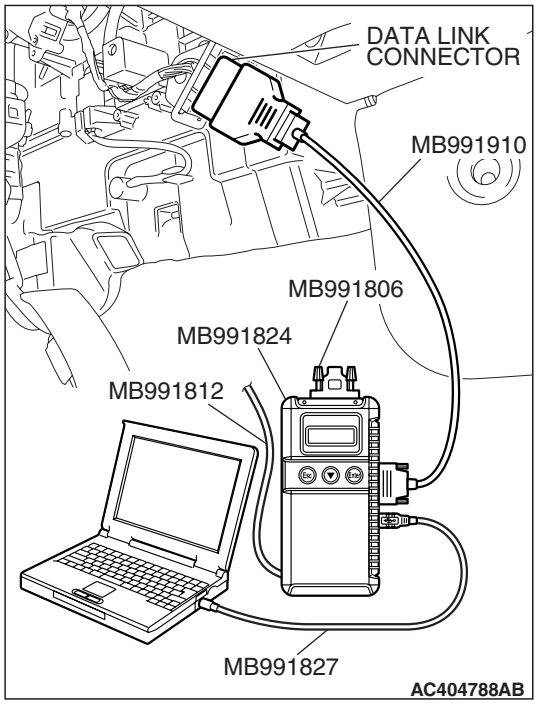
TROUBLESHOOTING HINTS

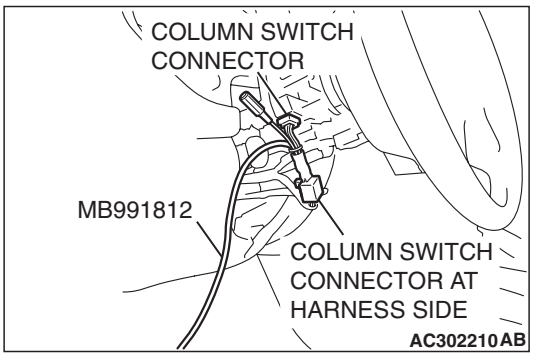
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The power window relay may be defective
- The power window main switch may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the ETACS-ECU.

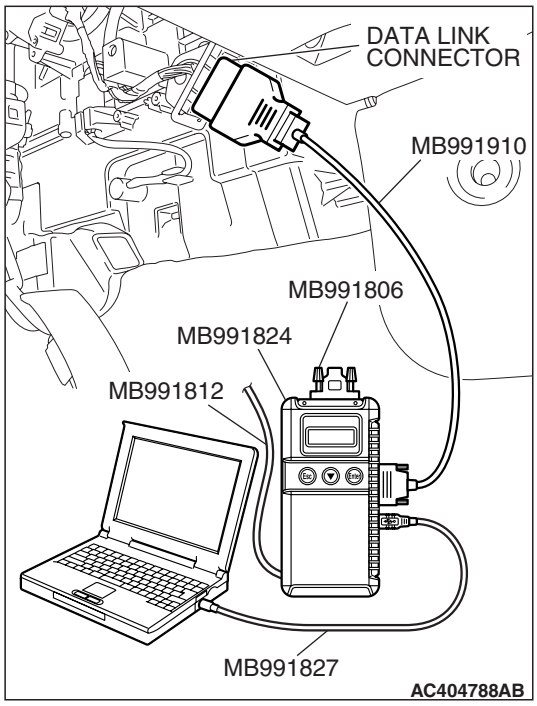
⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate the scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."



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

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

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

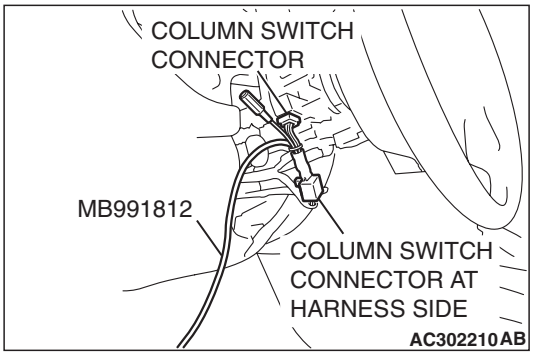
(2) Check that normal conditions are displayed for the items described in the table below.

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

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

YES : Go to Step 3.

NO : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

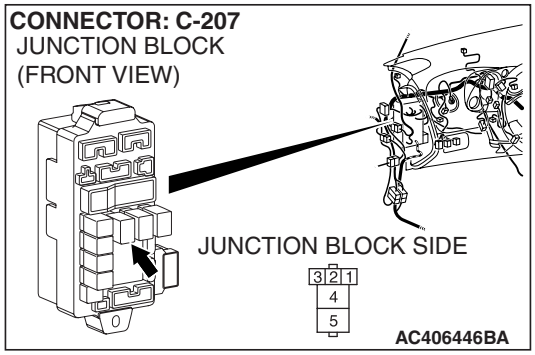


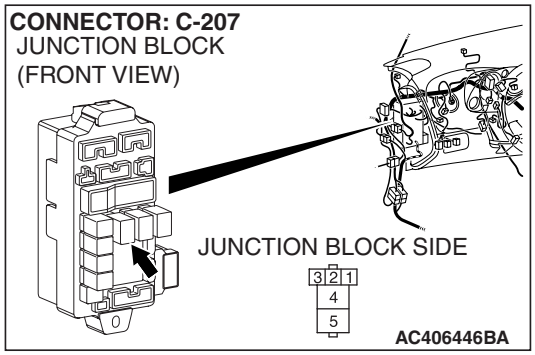
STEP 3. Check power window relay connector C-207 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window relay connector C-207 in good condition?

YES : Go to Step 4.

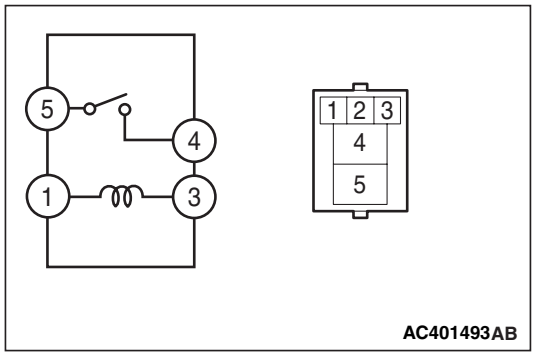
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The power windows function should now work normally.





STEP 4. Check the power window relay.

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



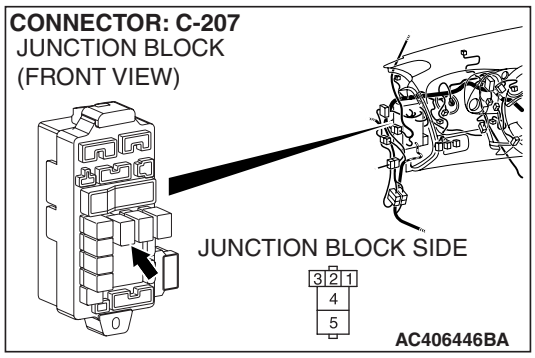
Q: Is the power window relay normal?

YES : Go to Step 5.

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

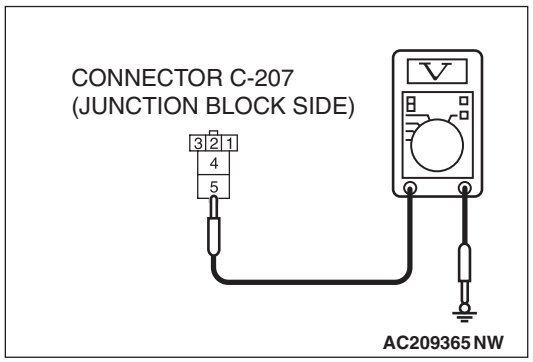
STEP 5. Check the battery power supply circuit to the power window relay. Measure the voltage at power window relay connector C-207.

(1) Disconnect power window relay connector C-207 and measure the voltage available at the junction block side of the connector.



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

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

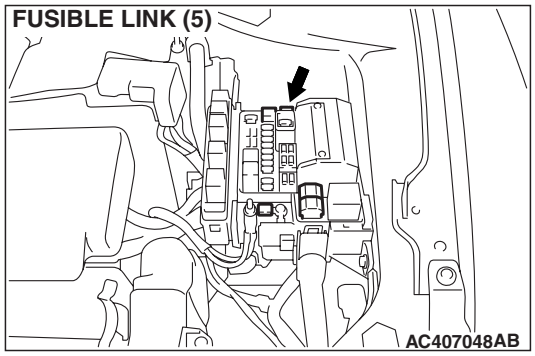


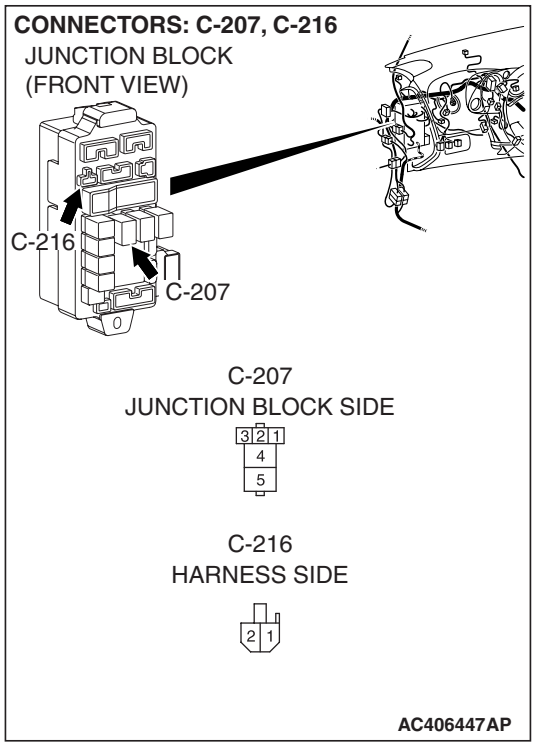
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

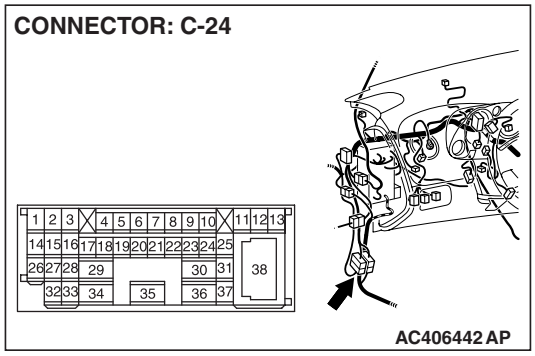
YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Check the wiring harness between power window relay connector C-207 (terminal 5) and fusible link (5).







NOTE: Also check junction block connector C-216 and intermediate connector C-24 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connector C-216 or intermediate connector C-24 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

Q: Is the wiring harness between power window relay connector C-207 (terminal 5) and fusible link (5) in good condition?

YES : No action is necessary and testing is complete.

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

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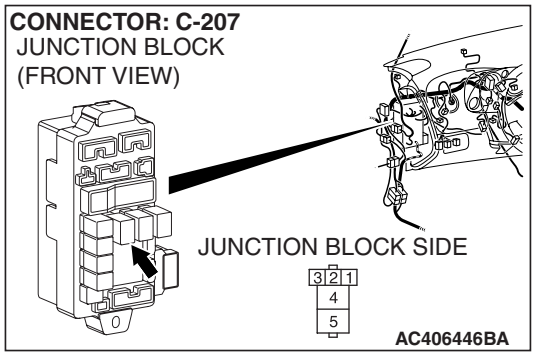
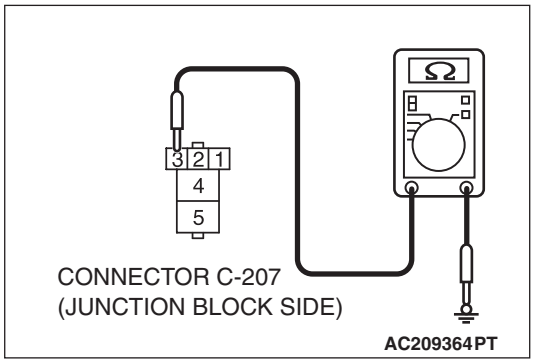
STEP 7. Check the ground circuit to the power window relay. Measure the resistance at power window relay connector C-207.



(1) Disconnect power window relay connector C-207 and measure the resistance available at the junction block side of the connector.

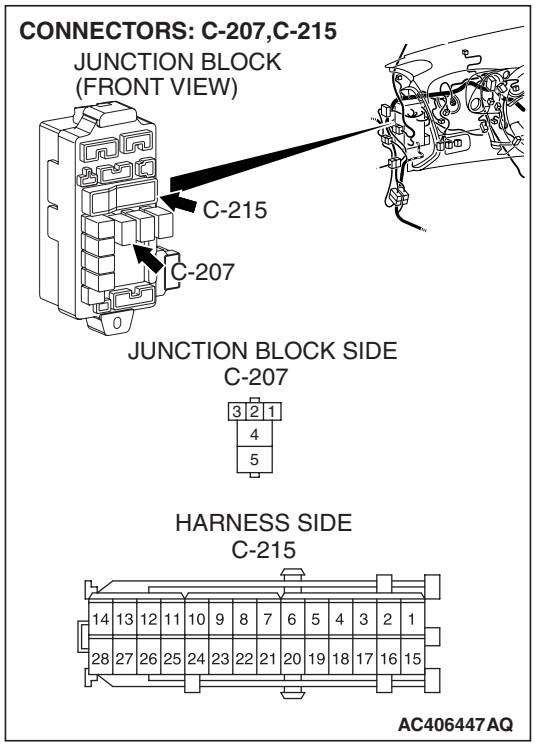


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 9.
NO : Go to Step 8.

STEP 8. Check the wiring harness between power window relay connector C-207 (terminal 3) and ground.



NOTE: Also check junction block connector C-215 for loose, corroded or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 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-207 (terminal 3) and ground in good condition?

YES : No action is necessary and testing is complete.

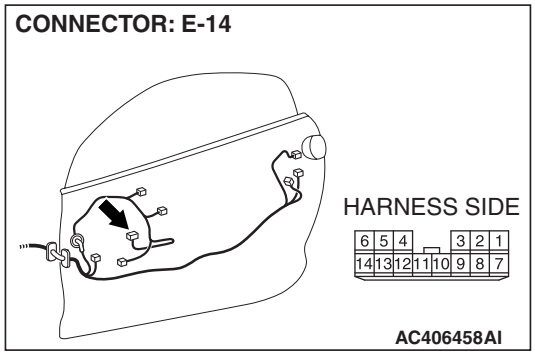
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.

STEP 9. Check power window main switch connector E-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

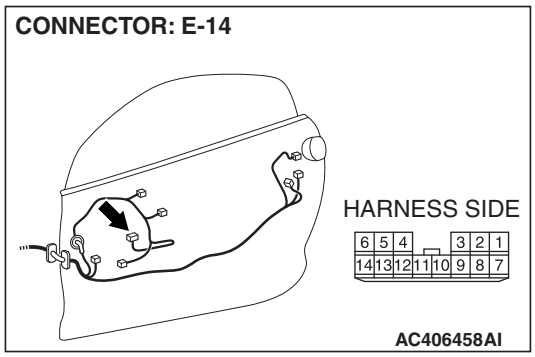
Q: Is power window main switch connector E-14 in good condition?

YES : Go to Step 10.

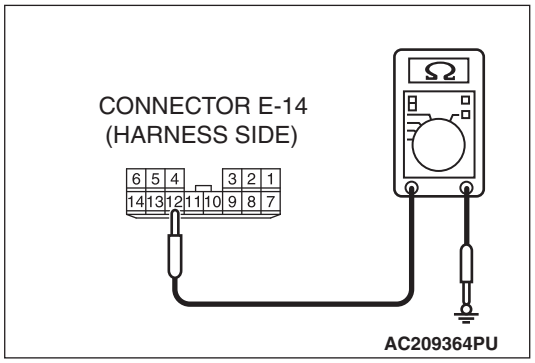
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The power windows function should now work normally.



STEP 10. Check the ground circuit to the power window main switch. Measure the resistance at power window main switch connector E-14.



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

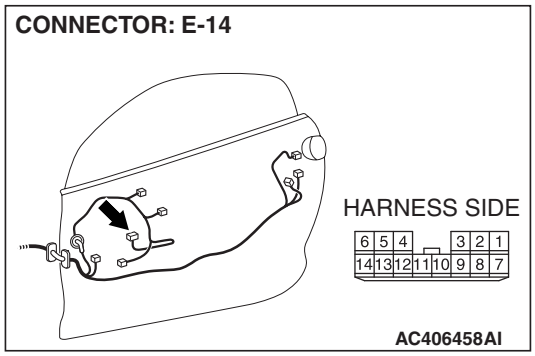


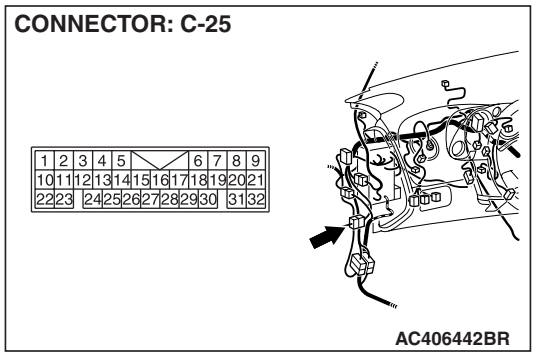
(2) Measure the resistance value between terminal 12 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the wiring harness between power window main switch E-14 (terminal 12) and ground.

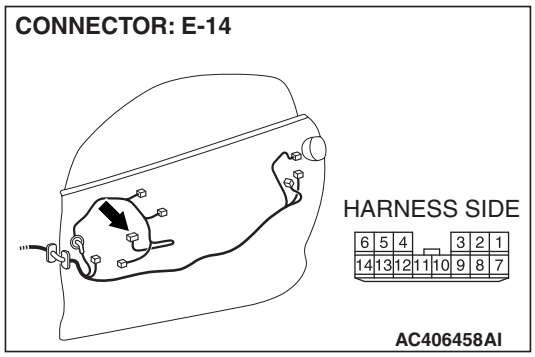




NOTE: Also check intermediate connector C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connector C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-14 (terminal 12) and ground in good condition?

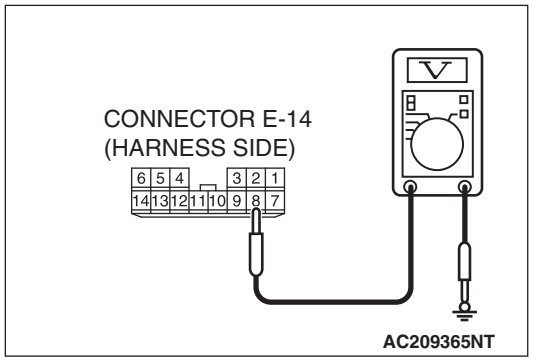
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.



STEP 12. Check the battery power supply circuit to the power window main switch. Measure the voltage at power window main switch connector E-14.

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

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



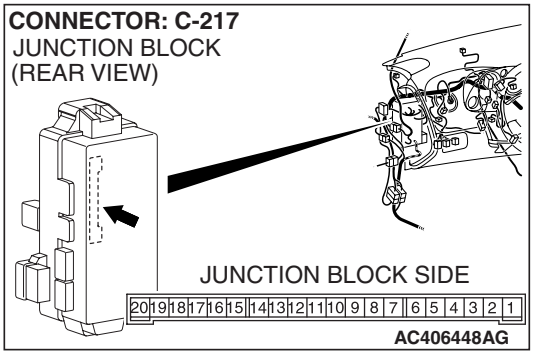
(3) Measure the voltage between terminal 8 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

NO : Go to Step 13.

STEP 13. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

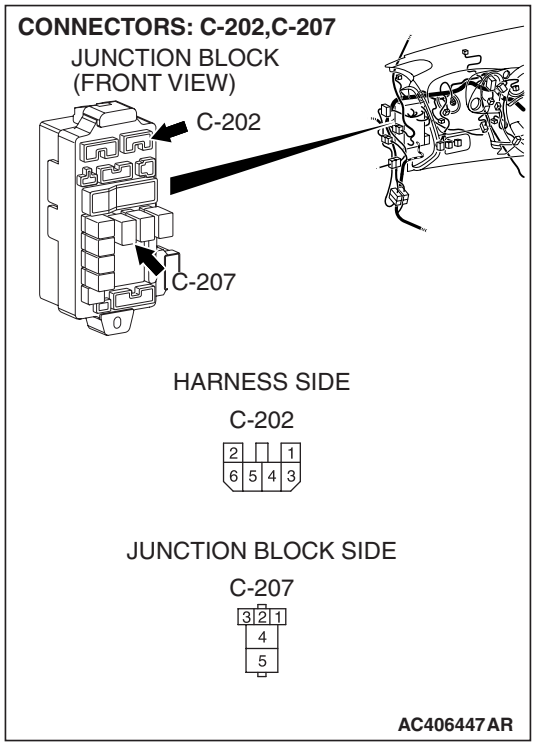


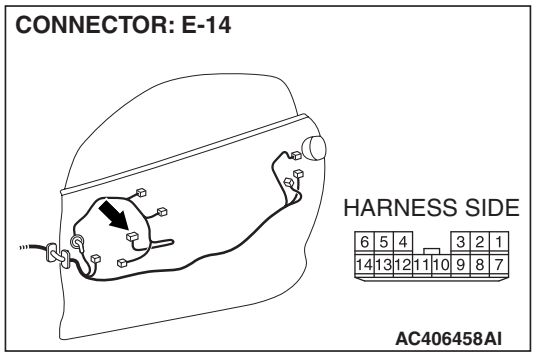
Q: Is ETACS-ECU connector C-217 in good condition?

YES : Go to Step 14.

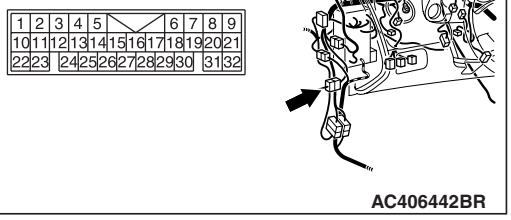
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The power windows function should now work normally.

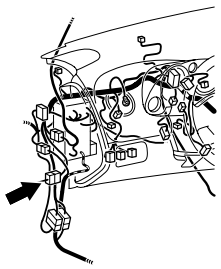
STEP 14. Check the wiring harness between power window relay connector C-207 (terminal 4) and power window main switch connector E-14 (terminal 8).





CONNECTOR: C-25





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NOTE: Also check junction block connector C-202 and intermediate connectors C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connector C-202 or intermediate connector C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window relay connector C-207 (terminal 4) and power window main switch connector E-14 (terminal 8) in good condition?

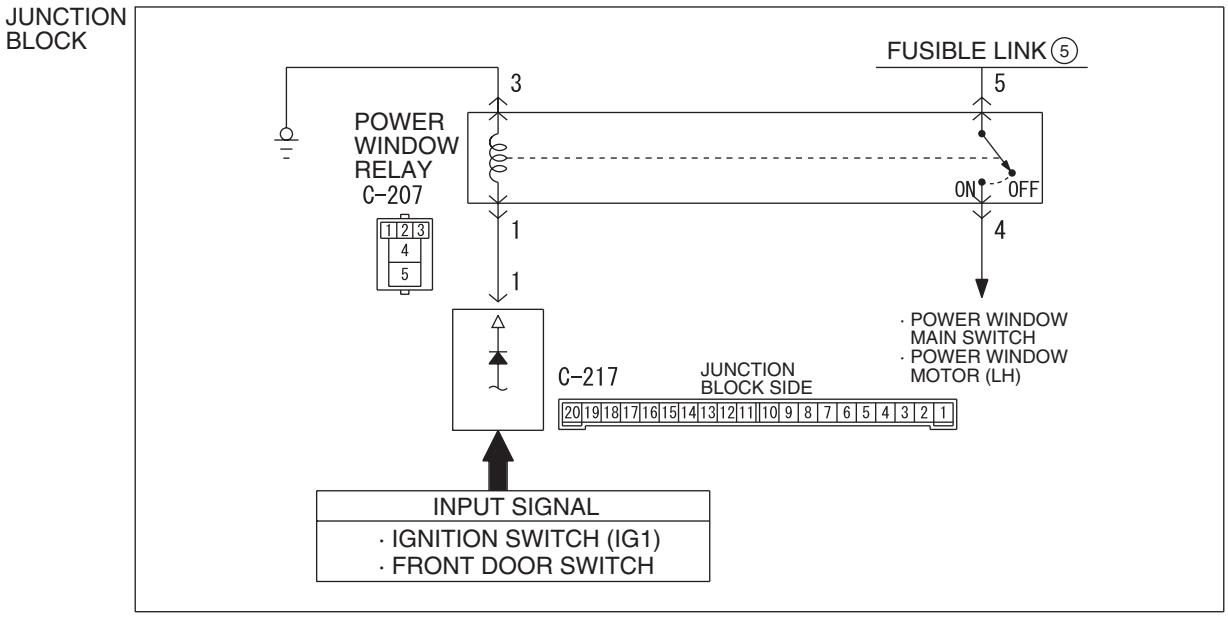
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The power windows function should now work normally.

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

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

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Power Window Timer Function Circuit



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CIRCUIT OPERATION

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

- Ignition switch (IG1)
- Front door switch

TECHNICAL DESCRIPTION (COMMENT)

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

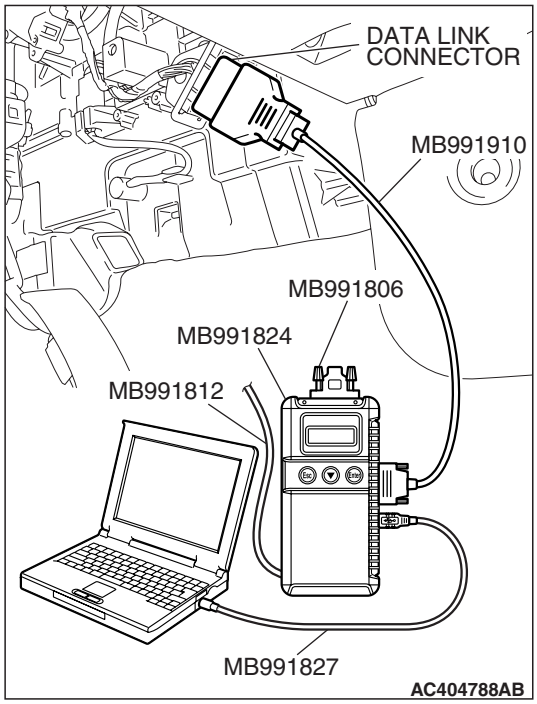
TROUBLESHOOTING HINTS

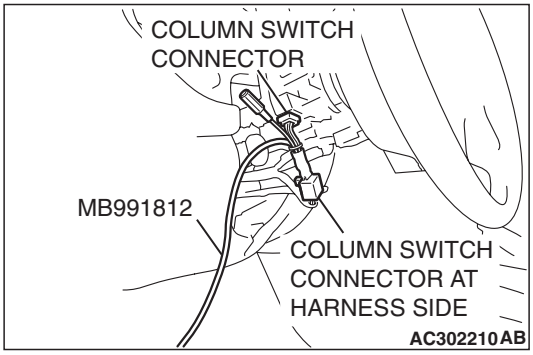
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the ETACS-ECU.

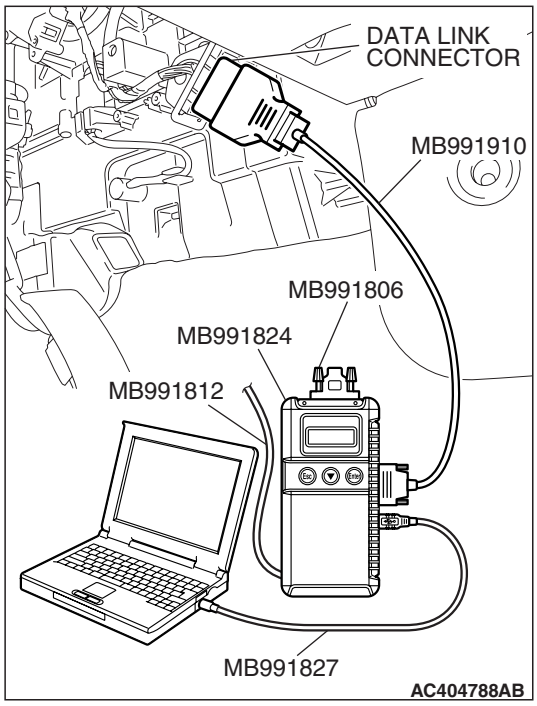
⚠ CAUTION

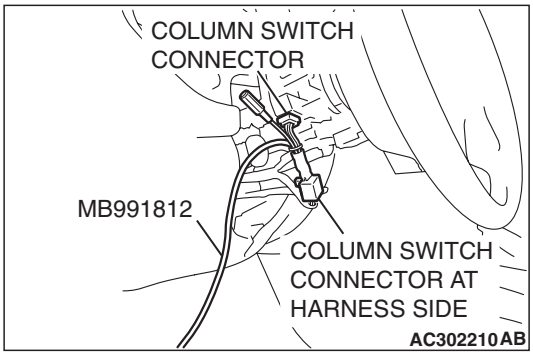
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate the scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





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

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

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

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

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

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

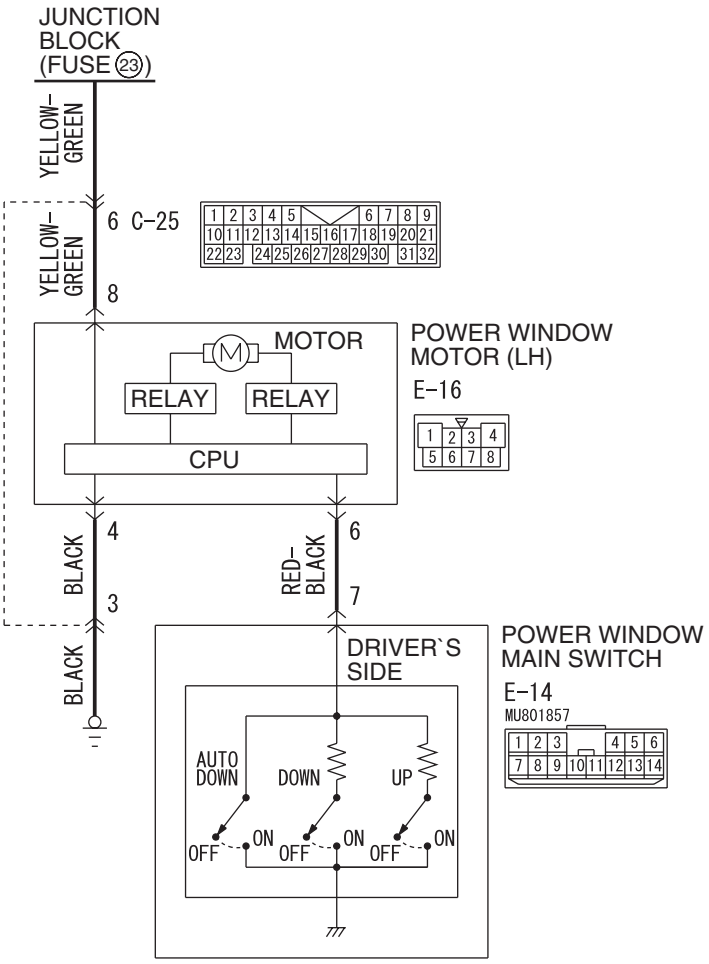
Normal condition displayed for all the items : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the power window timer works normally.

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."

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

Power Window (LH) Circuit



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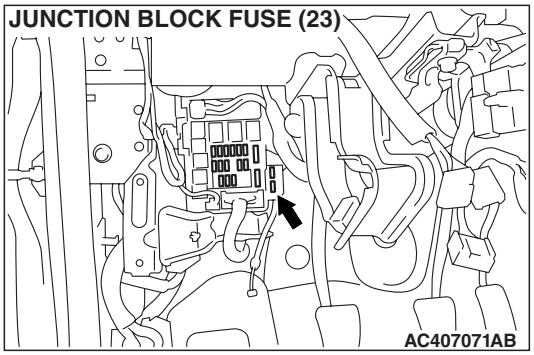

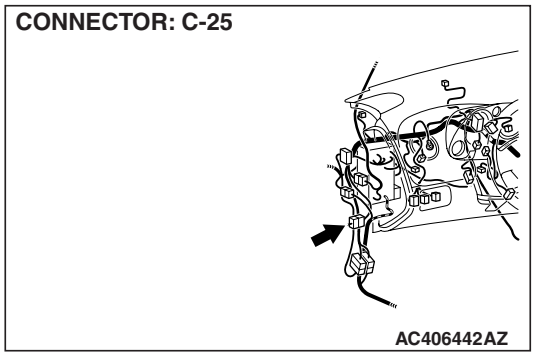

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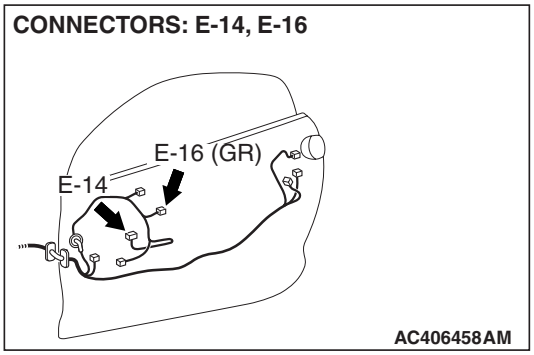


CIRCUIT OPERATION

The power window motor (LH) receives a signal ("UP", "DOWN" or "AUTO DOWN") from the power window main switch and controls the power window (LH).

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

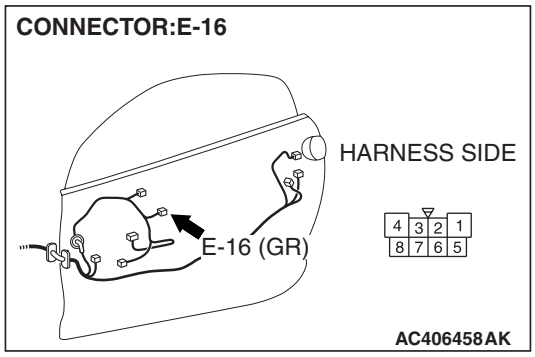
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check power window motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window motor (LH) connector E-16 in good condition?

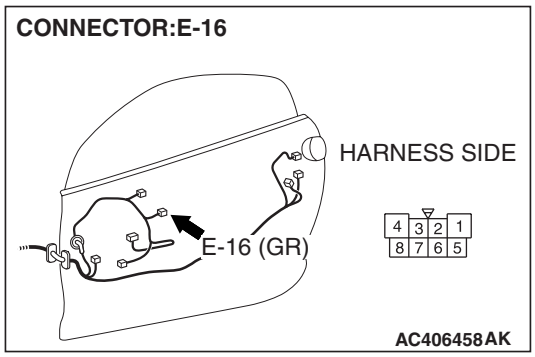
YES : Go to Step 2.

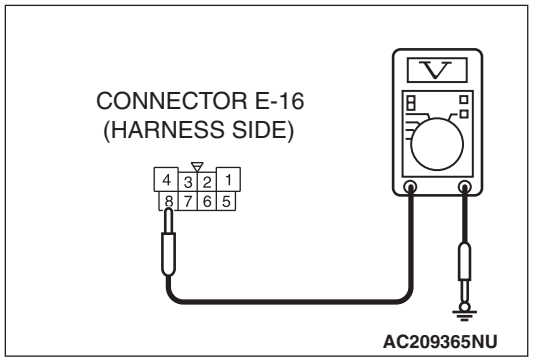
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the power window main switch is operated, the front power window (LH) should lower or raise normally.



STEP 2. Check the battery power supply circuit to the power window motor (LH). Measure the voltage at power window motor (LH) connector E-16.

(1) Disconnect power window motor (LH) connector E-16 and measure the voltage available at the harness side of the connector.



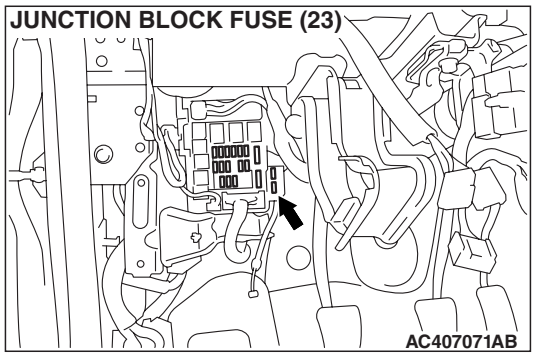


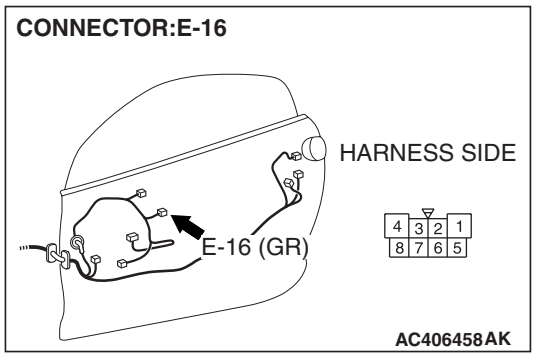
(2) Measure the voltage between terminal 8 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

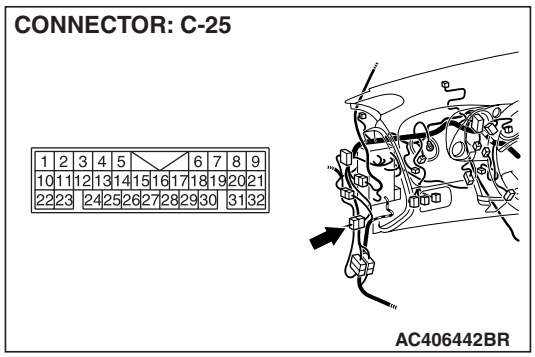
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check the wiring harness between power window motor (LH) connector E-16 (terminal 8) and junction block (fuse 2).







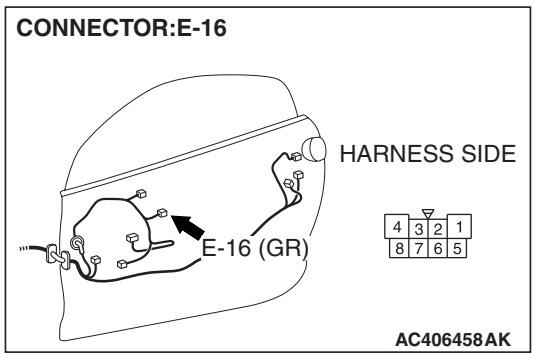
NOTE: Also check intermediate connector C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connector C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window motor (LH) connector E-16 (terminal 8) and junction block (fuse 2) in good condition?

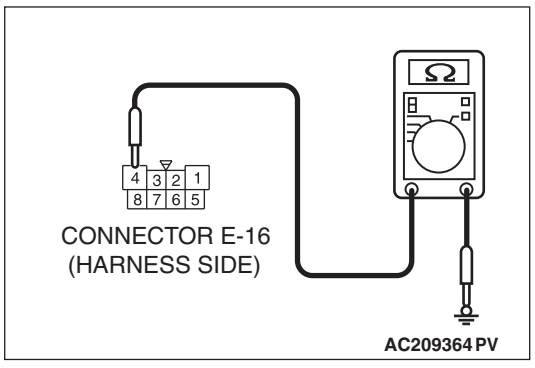
YES : No action is necessary and testing is complete.

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. The power windows function should now work normally.

STEP 4. Check the ground circuit to the power window motor (LH). Measure the resistance at power window motor (LH) connector E-16.



(1) Disconnect power window motor (LH) connector E-16 and measure the resistance available at the junction block side of the connector.



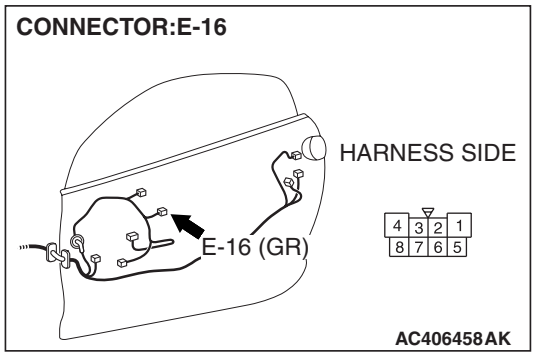
(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

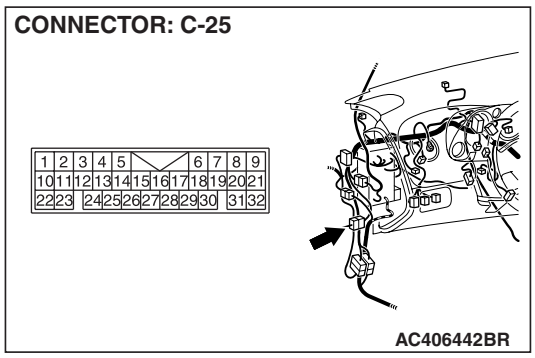
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between power window motor (LH) connector E-16 (terminal 4) and ground.





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

Q: Is the wiring harness between power window motor (LH) connector E-16 (terminal 4) and ground in good condition?

YES : No action is necessary and testing is complete.

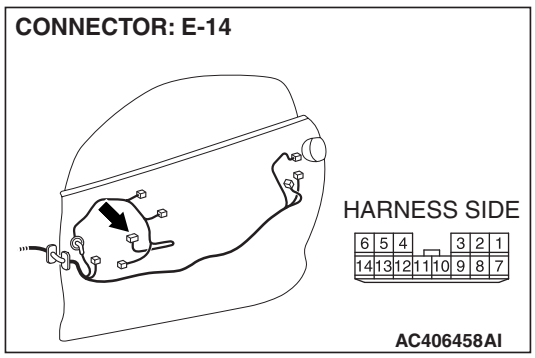
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.

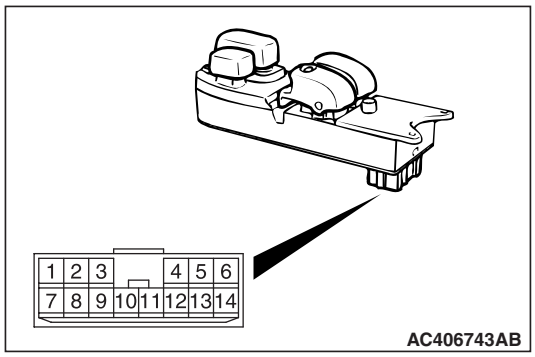
STEP 6. Check power window main switch connector E-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-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. When the power window main switch is operated, the front power window (LH) should lower or raise normally.





STEP 7. Check the power window main switch.

(1) Remove the power window main switch. Refer to GROUP 42, Door, Door Glass and Regulator P.42-70.

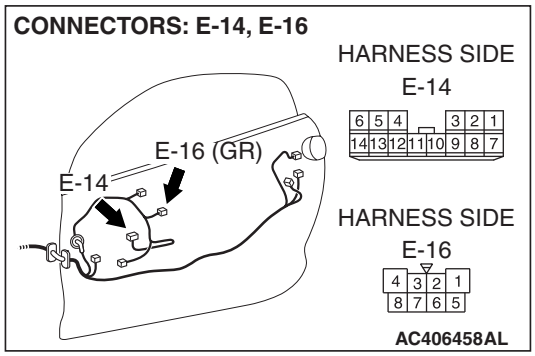
(2) Check continuity while power window main switch is moved to "UP" and "DOWN" position.

SWITCH POSITION (LH)	TESTER CONNECTION	SPECIFIED CONDITION
UP	7 –12	Less than 2 ohms
OFF	7 –12	Open circuit
DOWN	7 –12	Less than 2 ohms
AUTO DOWN	7 –12	Less than 2 ohms

Q: Is the power window main switch normal?

YES : Go to Step 8.

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



STEP 8. Check the wiring harness between power window main switch connector E-14 (terminal 7) and power window motor (LH) connector E-16 (terminal 6).

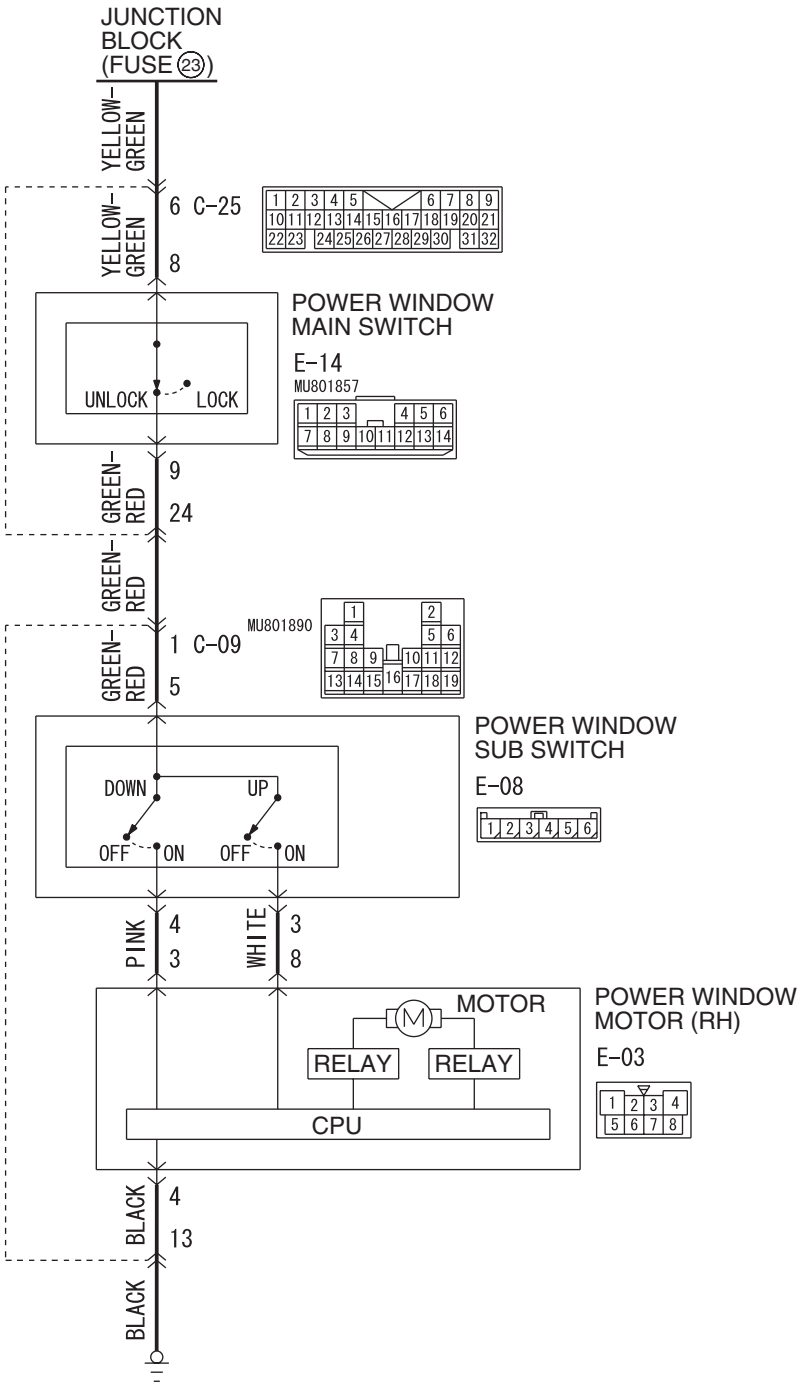
Q: Is the wiring harness between power window main switch connector E-14 (terminal 7) and power window motor (LH) connector E-16 (terminal 6) in good condition?

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 main switch is operated, the front power window (LH) should lower or raise normally.

INSPECTION PROCEDURE D-4: Power Window: Power window (RH) does not work normally by operating the power window sub switch.

Power Window (RH) Circuit



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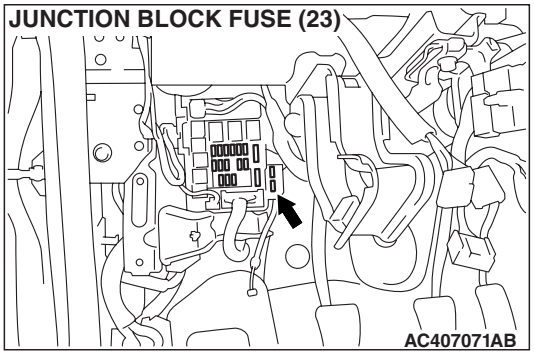
JUNCTION BLOCK FUSE (23)



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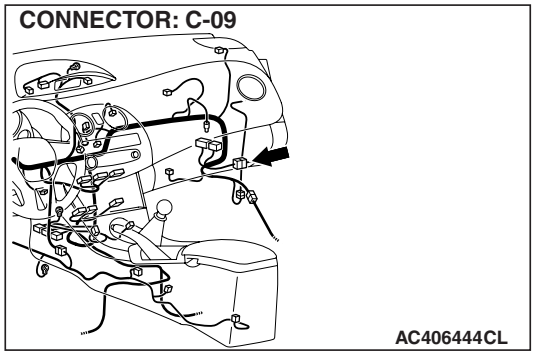
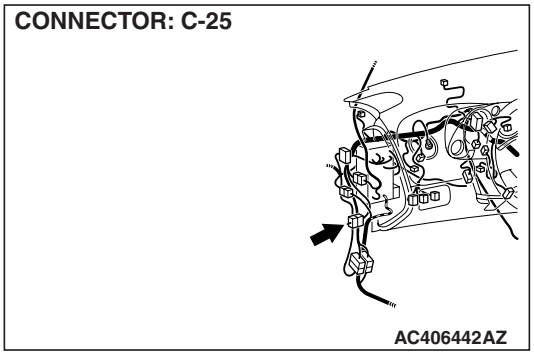
CONNECTOR: C-09



AC406444CL

CONNECTOR: C-25



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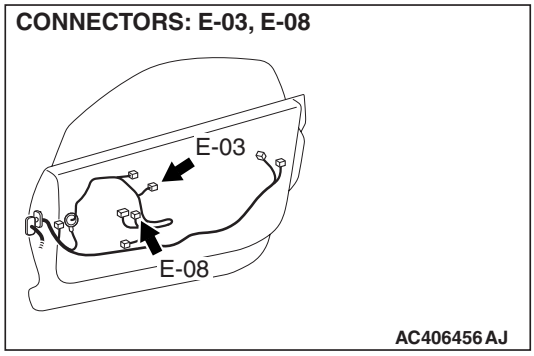
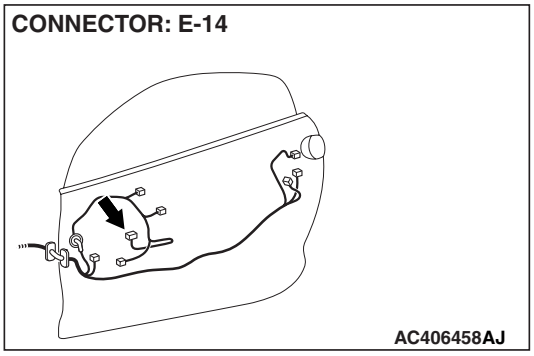
CONNECTORS: E-03, E-08



AC406456AJ

CONNECTOR: E-14



AC406458AJ

CIRCUIT OPERATION

power window motor (RH) raise and lower the door windows when the passenger's sub switch is moved to "UP" or "DOWN" position.

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

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STEP 1. Check the power window lock switch.

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

YES : Go to Step 2.

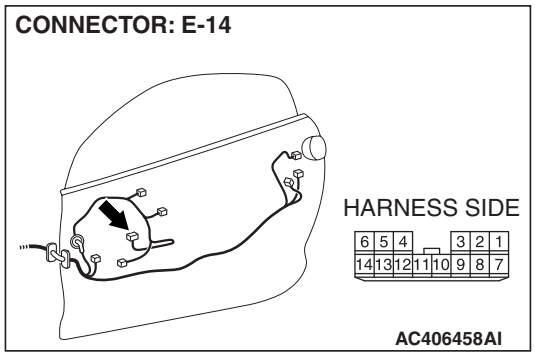
NO : Operate the power window lock switch to the "UNLOCK" position. When the power window sub switch is operated, the power window (RH) should raise and lower normally.

STEP 2. Check power window main switch connector E-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-14 in good condition?

YES : Go to Step 3.

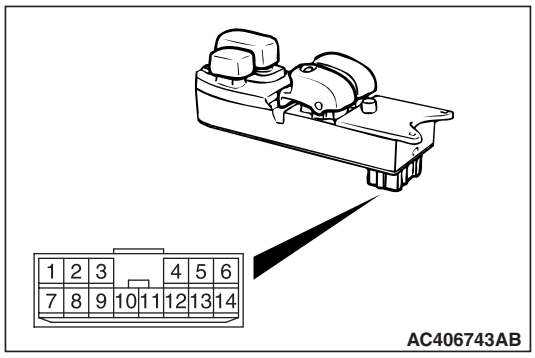
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the power window sub switch is operated, the power window (RH) should raise and lower normally.



STEP 3. Check each switch on the power window main switch for continuity.

(1) Remove the power window main switch. Refer to GROUP 42, Door, Door Glass and Regulator P.42-70.

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



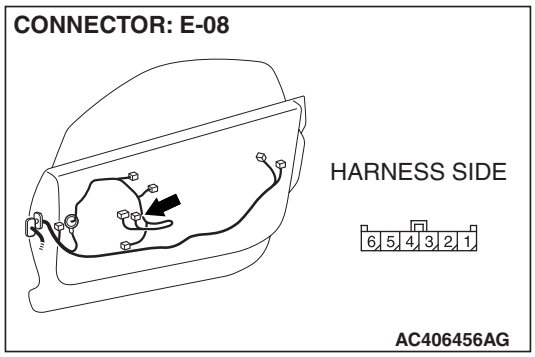
SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
LH	UP	7 –12	Less than 2 ohms
	OFF	7 –12	Open circuit
	DOWN	7 –12	Less than 2 ohms
	AUTO DOWN	7 –12	Less than 2 ohms
RH	UP	8* –11	Less than 2 ohms
	OFF	8* –9	Less than 2 ohms
	DOWN	8* –10	Less than 2 ohms

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

Q: Is the power window main switch normal?

YES : Go to Step 4.

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

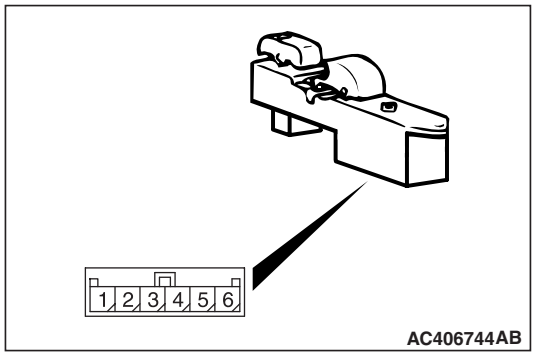


STEP 4. Check power window sub switch connector E-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window sub switch connector E-08 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. When the power window sub switch is operated, the power window (RH) should raise and lower normally.



STEP 5. Check the front power window sub switch for continuity.

(1) Remove the front power window sub switch. Refer to GROUP 42, Door, Door Glass and Regulator P.42-70.

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

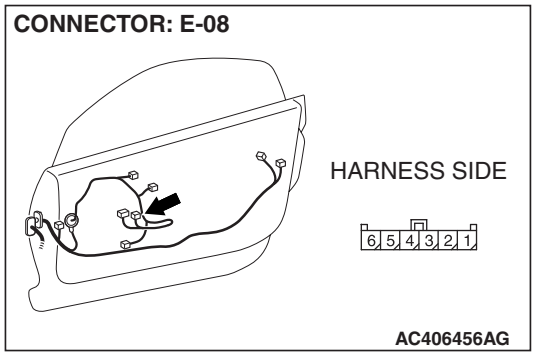
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	3 –5	Less than 2 ohms
OFF	3 –5, 4 –5	Open circuit
DOWN	4 –5,	Less than 2 ohms

Q: Is the front power window sub switch normal?

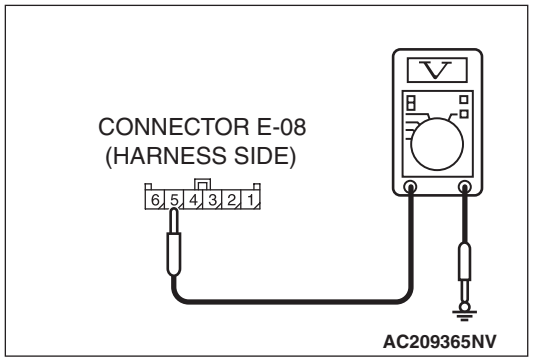
YES : Go to Step 6.

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

STEP 6. Check the battery power supply circuit to the power window sub switch. Measure the voltage at power window sub switch connector E-08.



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

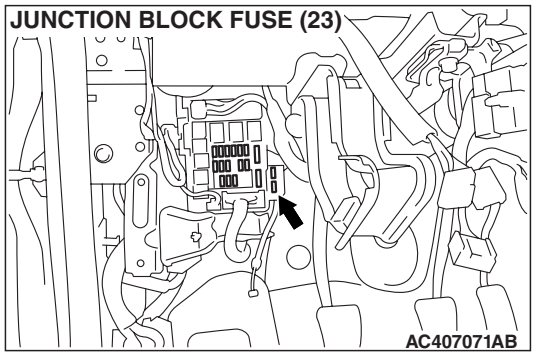


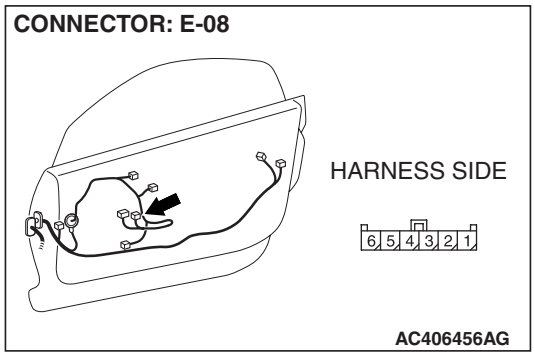
(3) Measure the voltage between terminal 5 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

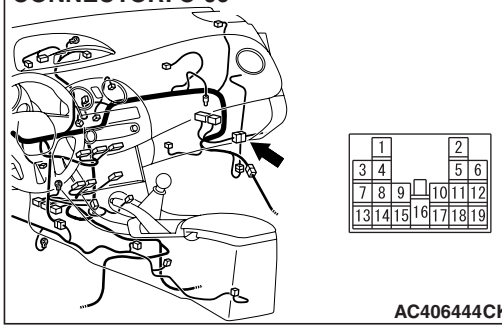
YES : Go to Step 8.
NO : Go to Step 7.

STEP 7. Check the wiring harness between power window sub switch E-08 (terminal 5) and junction block (fuse 2).

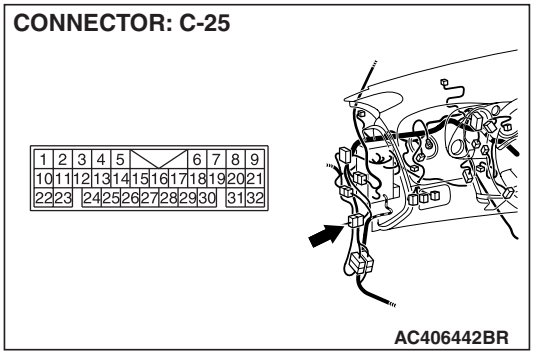




CONNECTOR: C-09



CONNECTOR: C-25



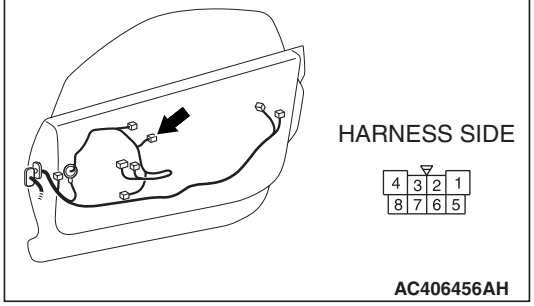
NOTE: Also check intermediate connectors C-09 and C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connector C-09 or C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window sub switch E-08 (terminal 5) and junction block (fuse 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 sub switch is operated, the power window (RH) should raise and lower normally.

CONNECTOR: E-03



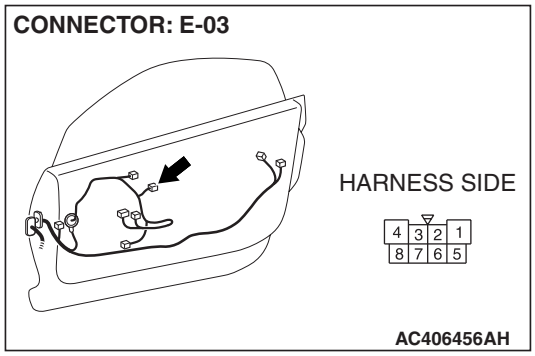
STEP 8. Check power window motor (RH) connector E-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window motor (RH) connector E-03 in good condition?

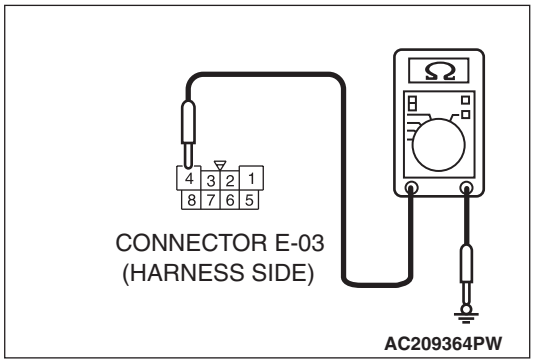
YES : Go to Step 9.

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

STEP 9. Check the ground circuit to the power window motor (RH). Measure the resistance at power window motor (RH) connector E-03.



(1) Disconnect power window motor (RH) connector E-03 and measure the resistance available at the harness side of the connector.

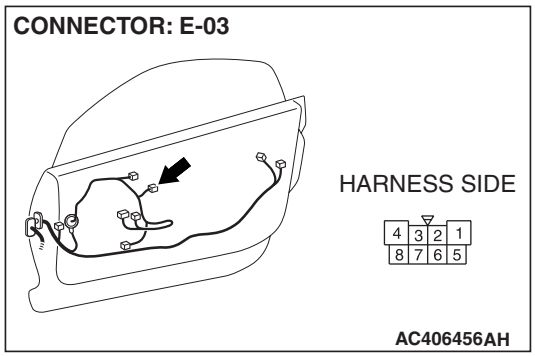


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

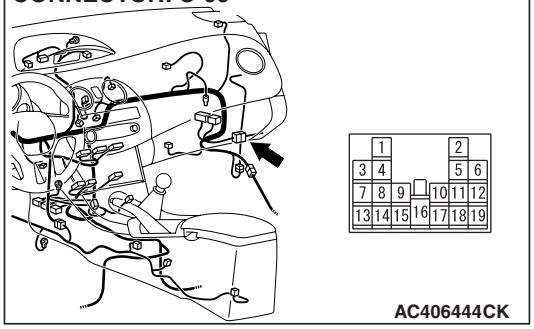
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check the wiring harness between power window motor (RH) connector E-03 (terminal 4) and ground.



CONNECTOR: C-09



NOTE: Also check intermediate connector C-09 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connector C-09 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

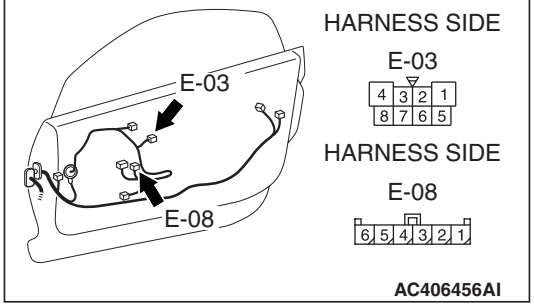
Q: Is the wiring harness between power window motor (RH) connector E-03 (terminal 4) and ground in good condition?

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. When the power window sub switch is operated, the power window (RH) should raise and lower normally.

STEP 11. Check the wiring harness between power window sub switch connector E-08 (terminals 3 and 4) and power window motor (RH) connector E-03 (terminals 8 and 3).

CONNECTORS: E-03, E-08

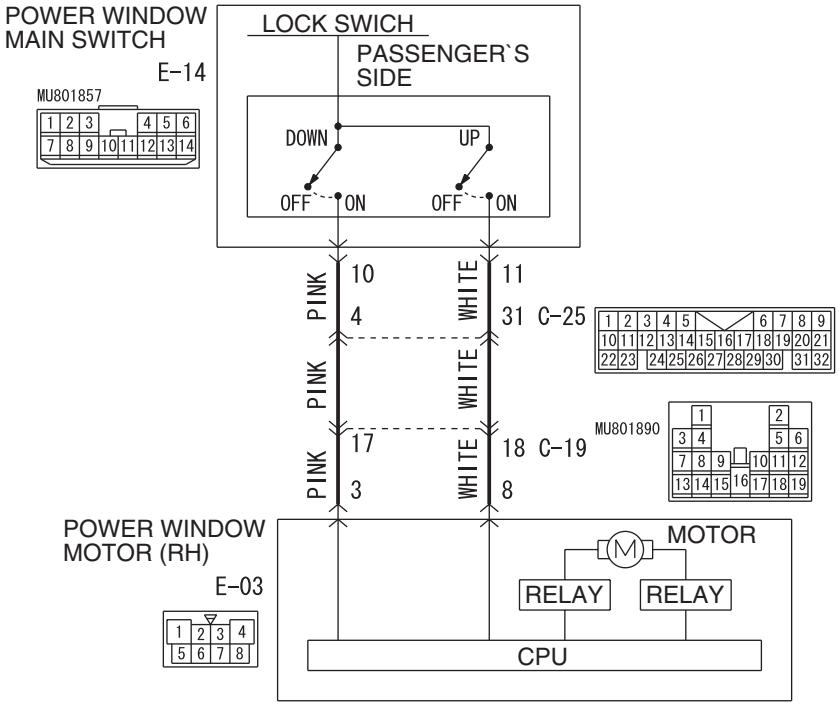


Q: Is the wiring harness between power window sub switch connector E-08 (terminals 3 and 4) and power window motor (RH) connector E-03 (terminals 8 and 3) in good condition?

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

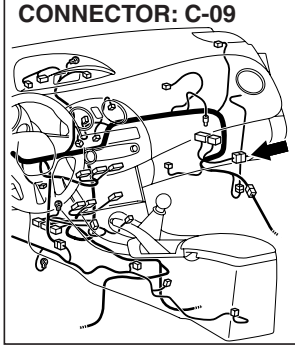
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the power window sub switch is operated, the power window (RH) should raise and lower normally.

INSPECTION PROCEDURE D-5: Power Window: Power window (RH) does not work normally by operating the power window main switch.



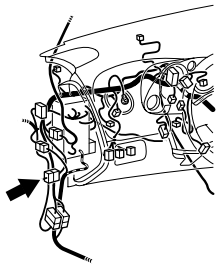
W6P54M096A

CONNECTOR: C-09



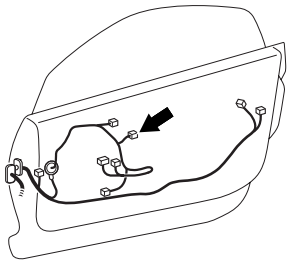
AC406444CL

CONNECTOR: C-25



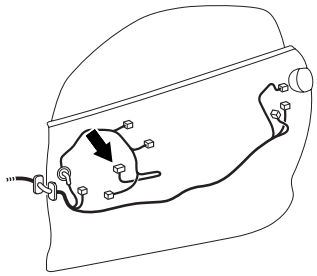
AC406442AZ

CONNECTOR: E-03



AC406456AK

CONNECTOR: E-14



AC406458AJ

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CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

If the power window (RH) opens and closes normally when power window sub switch is operated, the power window main switch may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

STEP 1. Check that power window sub switches operate normally.

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

YES : Go to Step 2.

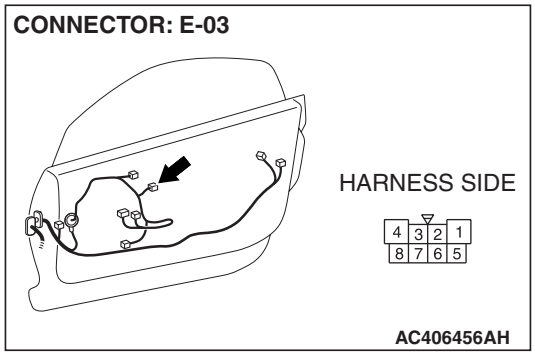
NO : Refer to Symptom Chart P.54B-57 before resolving this trouble.

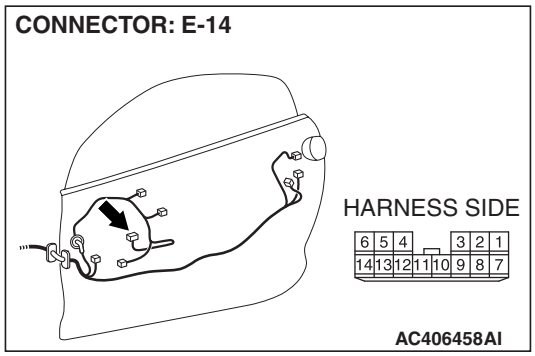
STEP 2. Check power window main switch connector E-14 and power window motor (RH) connector E-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are power window main switch connector E-14 or power window motor (RH) connector E-03 in good condition?

YES : Go to Step 3.

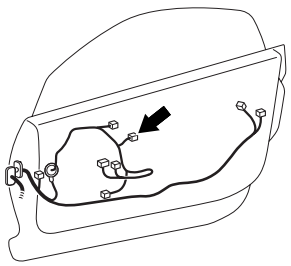
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the power window main switch is operated, the power window (RH) should raise and lower normally.





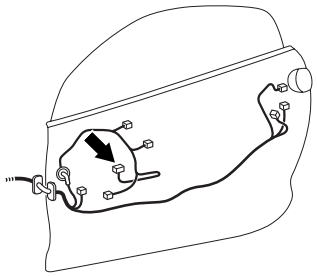
STEP 3. Check the wiring harness between power window main switch connector E-14 (terminals 10 and 11) and power window motor (RH) connector E-03 (terminals 3 and 8).

CONNECTOR: E-03



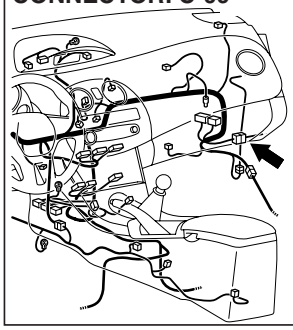
AC406456AH

CONNECTOR: E-14



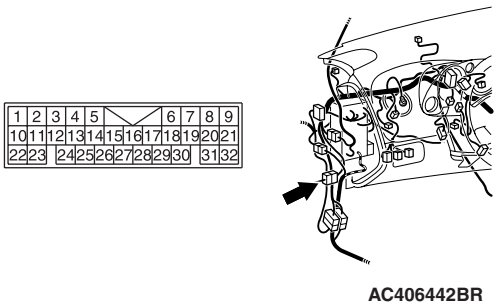
AC406458AI

CONNECTOR: C-09



AC406444CK

CONNECTOR: C-25



AC406442BR

NOTE: Also check intermediate connectors C-09 and C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If intermediate connector C-09 or C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2**.*

Q: Is the wiring harness between power window main switch connector E-14 (terminals 10 and 11) and power window motor (RH) connector E-03 (terminals 3 and 8) in good condition?

YES : No action is necessary and testing is complete.

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

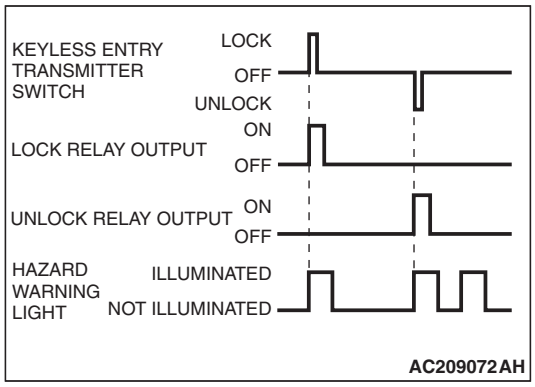
KEYLESS ENTRY SYSTEM

GENERAL DESCRIPTION CONCERNING THE KEYLESS ENTRY SYSTEM

M1549022000318

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

FUNCTION	CONTROL ECU
Keyless entry hazard answerback function	ETACS-ECU
Keyless entry horn answerback function	ETACS-ECU
Liftgate unlock function	ETACS-ECU
Timed locking mechanism	ETACS-ECU

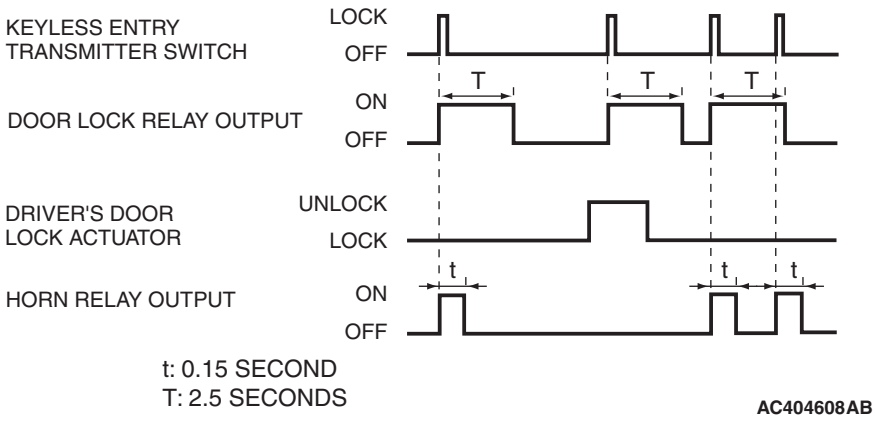


KEYLESS ENTRY SYSTEM

KEYLESS ENTRY HAZARD ANSWERBACK FUNCTION*

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

KEYLESS ENTRY HORN ANSWERBACK FUNCTION



When the lock signal from the keyless entry transmitter is received into ETACS-ECU, all doors are locked and the horn sounds. If the driver's door cannot be locked even when the keyless entry transmitter is operated, the horn does not sound.

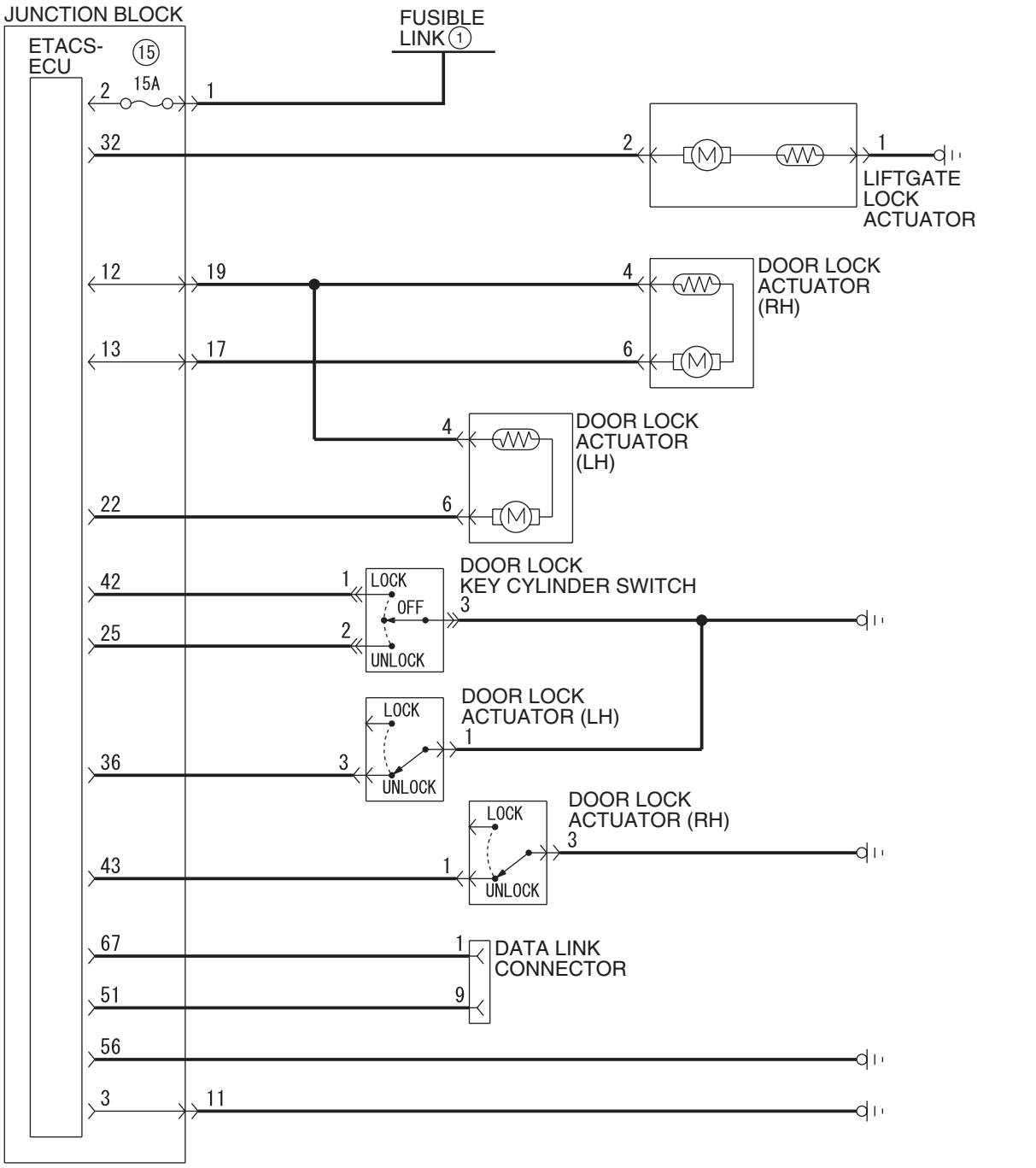
LIFTGATE UNLOCK FUNCTION

Press the "LIFTGATE" button twice within 5 seconds and the liftgate will be unlocked.

TIMED LOCKING MECHANISM

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

General circuit diagram for the keyless entry system



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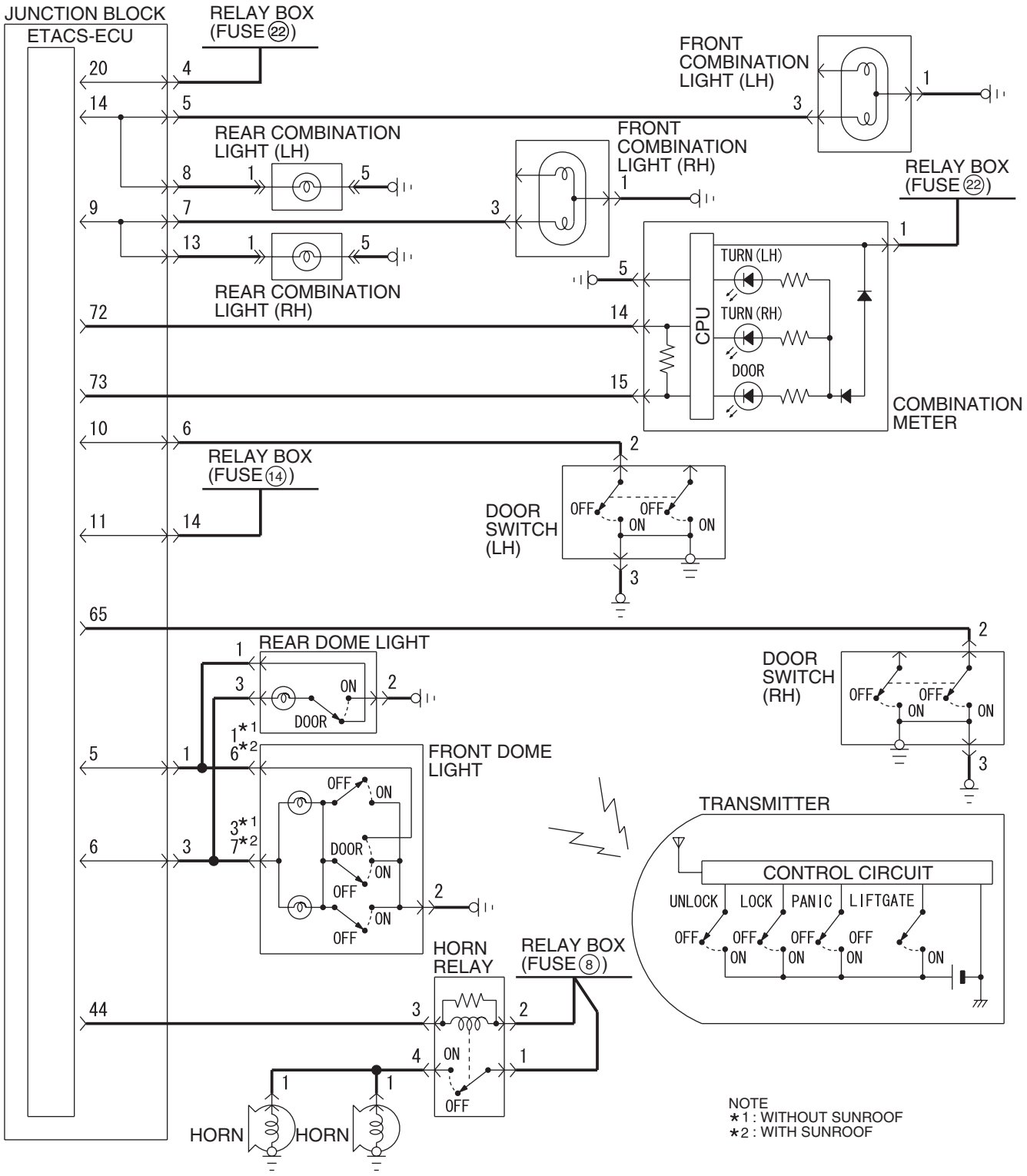

W6P54M077A

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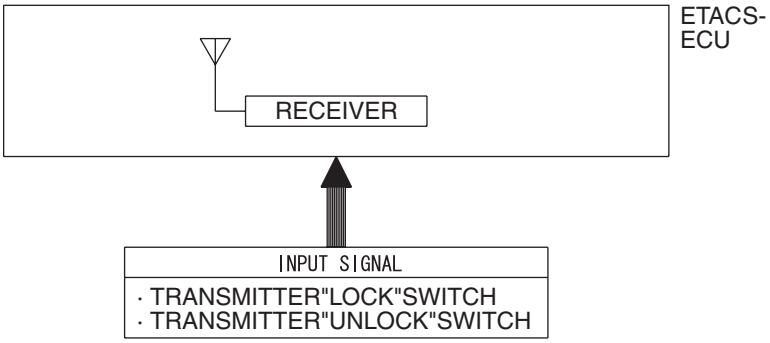
INSPECTION PROCEDURE E-1: Keyless Entry System: Keyless entry system does not operate.

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

DIAGNOSIS

Required Special Tools:

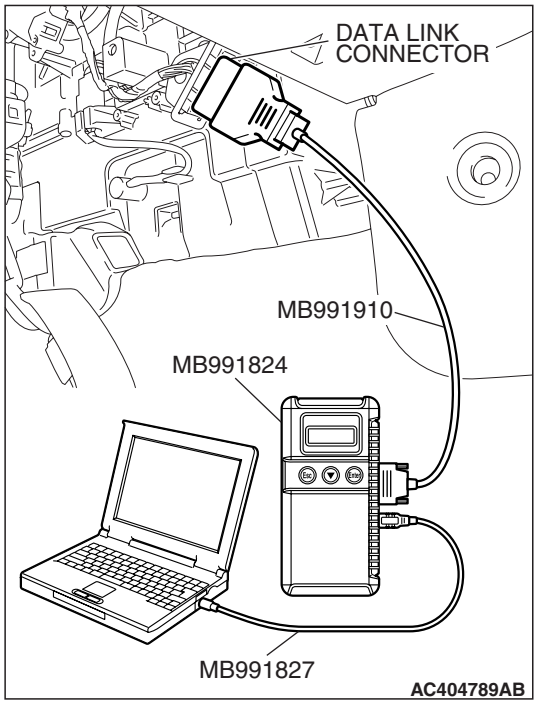
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A

STEP 1. Verify the central door locking system.

Q: Does the central door locking system work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure C-1 "The central door locking system does not work at all P.54B-130."



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

Check input signals from the transmitter.

⚠ CAUTION

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

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."
(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "Pulse Checking."
(3) Push the transmitter "LOCK" or "UNLOCK" button.
(4) Check that scan tool MB991958 sounds

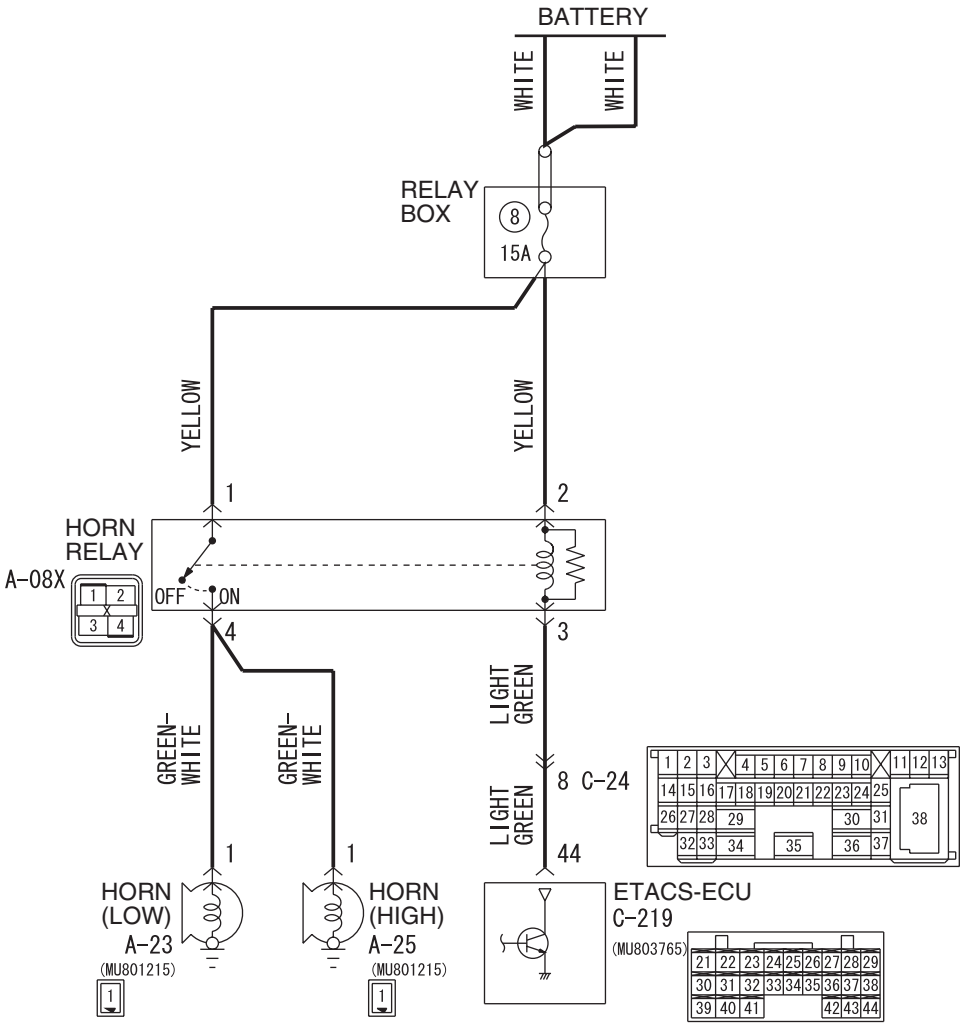
Q: When the transmitter "LOCK" or "UNLOCK" button is turned ON, does scan tool MB991958 sound?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. All the doors can be locked or unlocked by means of the transmitter.

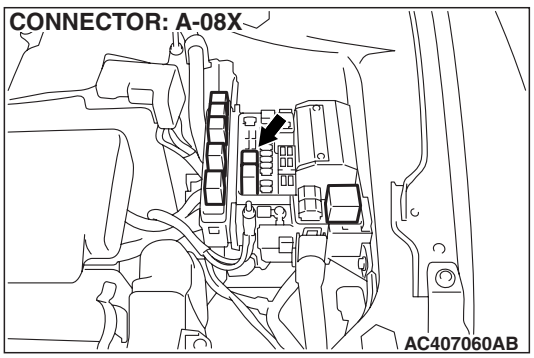
NO : Refer to Inspection Procedure N-8 "ETACS-ECU does not receive any signal from the lock, unlock, liftgate or panic switch P.54B-532."

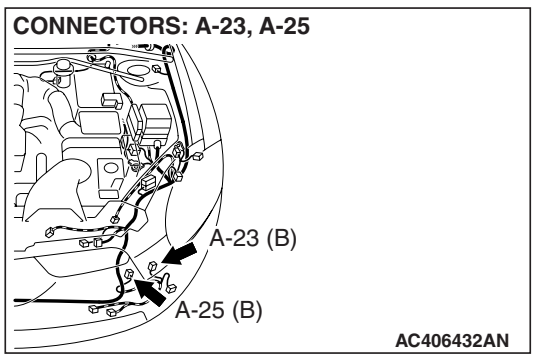
INSPECTION PROCEDURE E-2: Keyless Entry System: The dome light, the turn-signal lights and the horn do not operate through the answerback function.

Horn Drive Circuit



W6P54M053A





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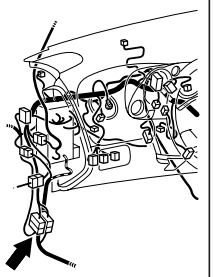
CONNECTOR: C-24



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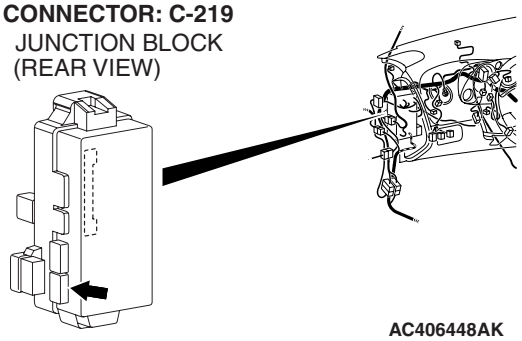
CONNECTOR: C-219
JUNCTION BLOCK
(REAR VIEW)



AC406448AK

CIRCUIT OPERATION

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

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Verify the keyless entry system.

Q: Does the keyless entry system work normally?

YES : Go to Step 2.
NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate P.54B-198."

STEP 2. Check the configuration function.

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

YES : Go to Step 3.
NO : Enable the answerback function by means of the adjustment function. Verify that the answerback functions work normally.

STEP 3. Verify trouble symptom.

Q: Which answerback function is defective?

Only the dome light : Go to Step 4.
Only the turn-signal lights : Go to Step 5.
Only the horn : Go to Step 6.
Dome light, turn-signal lights and horn : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the answerback functions work normally.

STEP 4. Verify the dome light.

Q: Does the dome light illuminate normally?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the answerback functions work normally.
NO : Refer to Inspection Procedure L-1 "The dome lights do not illuminate and go out normally P.54B-403."

STEP 5. Verify the hazard warning light.

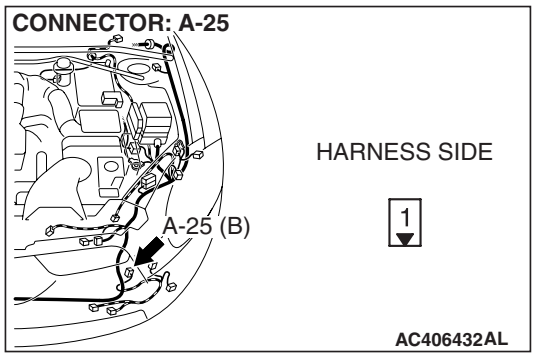
Q: Does the hazard warning light work normally?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the answerback functions work normally.
NO : Refer to Inspection Procedure J-2 "Hazard warning lights do not flash when the hazard warning light switch is turned on P.54B-358."

STEP 6. Verify which horn is defective.

Q: Which horn does not sound?

Horn (HIGH) : Go to Step 7.
Horn (LOW) : Go to Step 11.
Both horns : Go to Step 15.

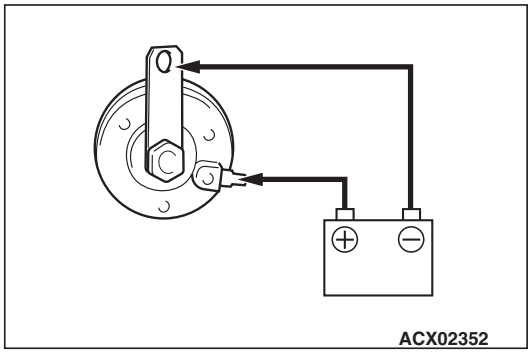


STEP 7. Check horn (HIGH) connector A-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn (HIGH) connector A-25 in good condition?

YES : Go to Step 8.

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



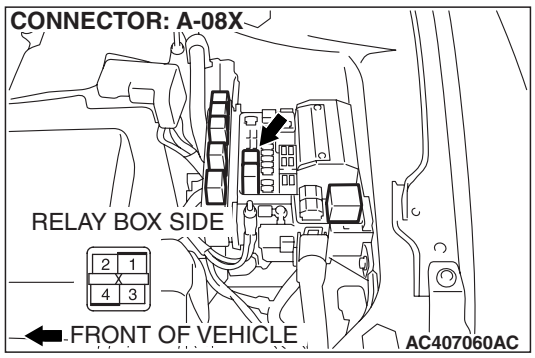
STEP 8. Check the horn (HIGH).

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

Q: Is the horn normal?

YES : Go to Step 9.

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

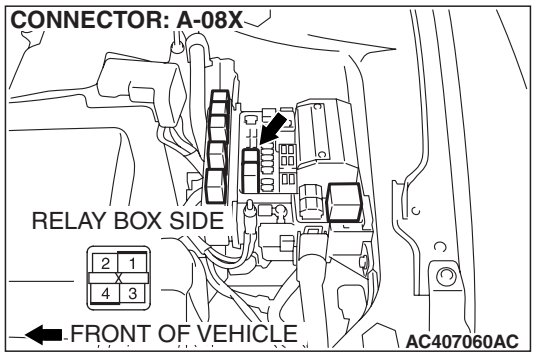


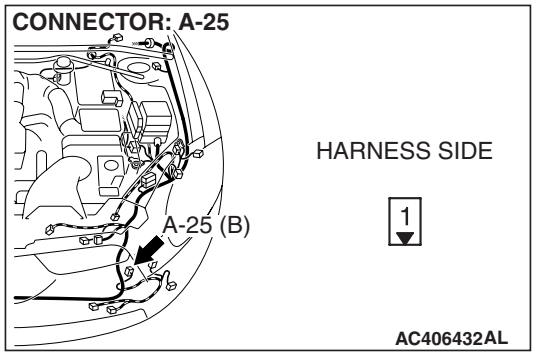
STEP 9. Check horn relay connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-08X in good condition?

YES : Go to Step 10.

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



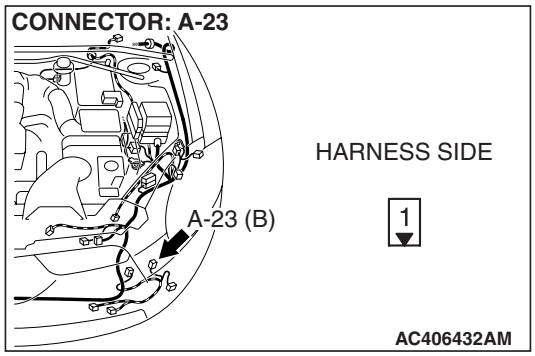


STEP 10. Check the wiring harness between horn relay connector A-08X (terminal 4) and horn (HIGH) connector A-25 (terminal 1).

Q: Is the wiring harness between horn relay connector A-08X (terminal 4) and horn (HIGH) connector A-25 (terminal 1) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the horn sounds normally.

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

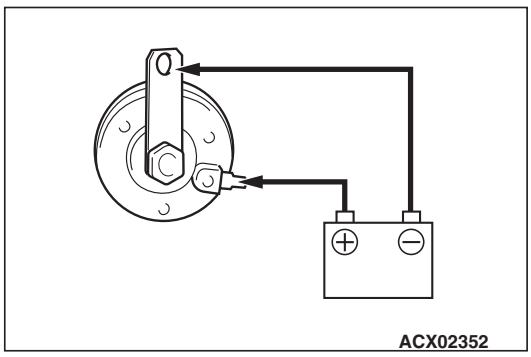


STEP 11. Check horn (LOW) connector A-23 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn (LOW) connector A-23 in good condition?

YES : Go to Step 12.

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



STEP 12. Check the horn (LOW).

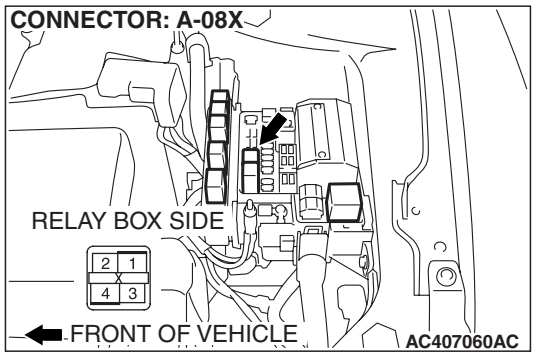
Connect the battery as shown, and verify that the horn sounds.

Q: Is the horn normal?

YES : Go to Step 13.

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

TSB Revision

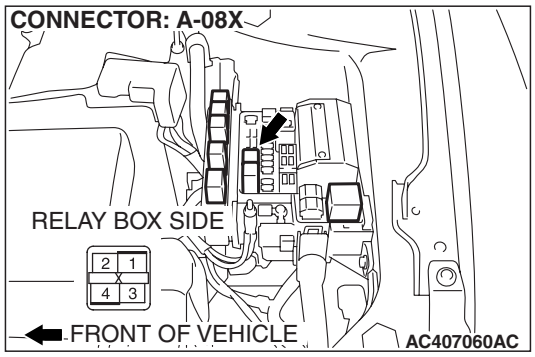


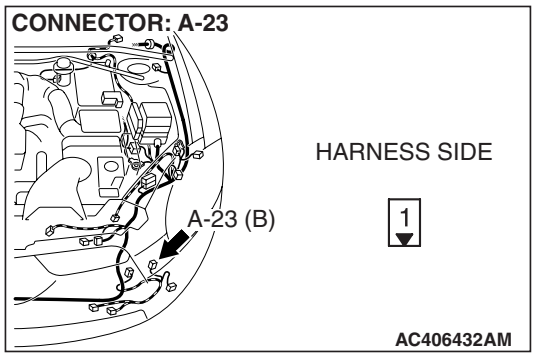
STEP 13. Check horn relay connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-08X in good condition?

YES : Go to Step 14.

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



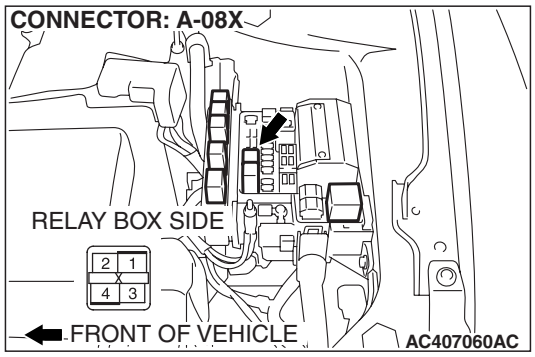


STEP 14. Check the wiring harness between horn relay connector A-08X (terminal 4) and horn (LOW) connector A-23 (terminal 1).

Q: Is the wiring harness between horn relay connector A-08X (terminal 4) and horn (LOW) connector A-23 (terminal 1) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the horn sounds normally.

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

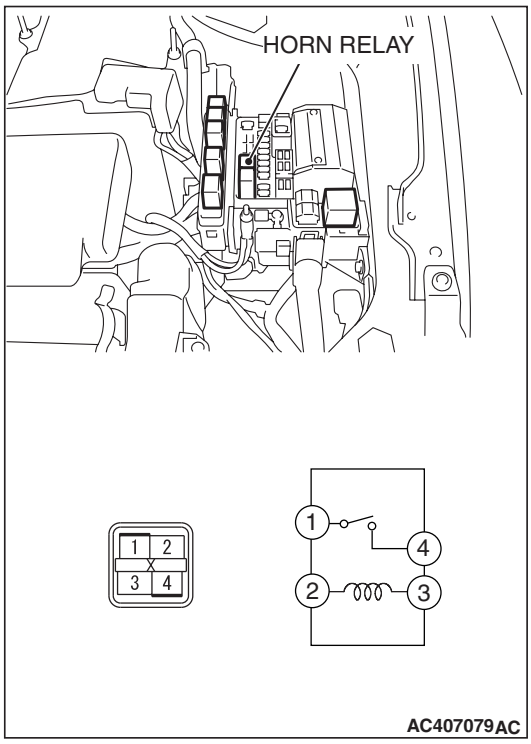


STEP 15. Check horn relay connector A-08X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is horn relay connector A-08X in good condition?

YES : Go to Step 16.

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



STEP 16. Check the horn relay.

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

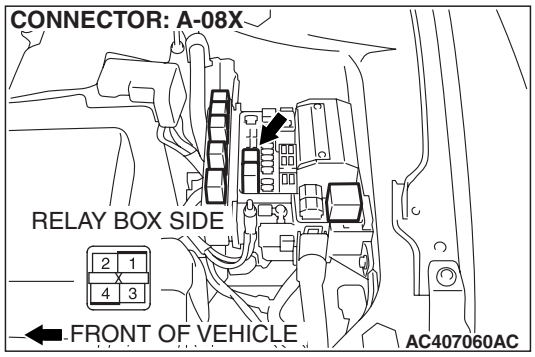
Q: Is the horn relay normal?

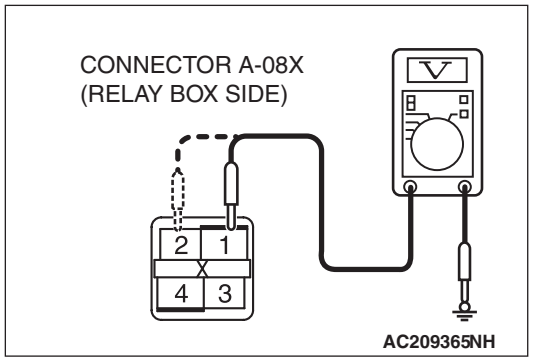
YES : Go to Step 17.

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

STEP 17. Check the battery power supply circuit to the horn relay. Measure the voltage at horn relay connector A-08X.

(1) Disconnect horn relay connector A-08X and measure the voltage available at the relay box side of the connector.





(2) Measure the voltage between terminal 1 and ground, and also between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

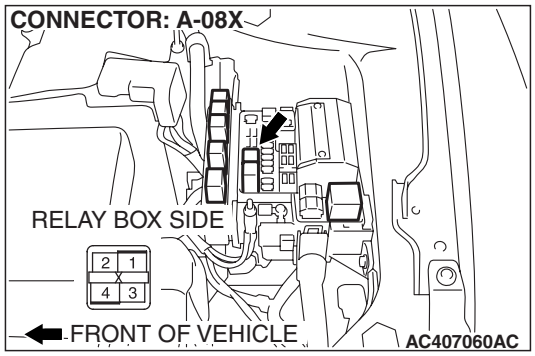
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 19.
NO : Go to Step 18.

STEP 18. Check the wiring harness between horn relay connector A-08X (terminals 1 and 2) and the battery.

Q: Is the wiring harness between horn relay connector A-08X (terminals 1 and 2) and the battery in good condition?

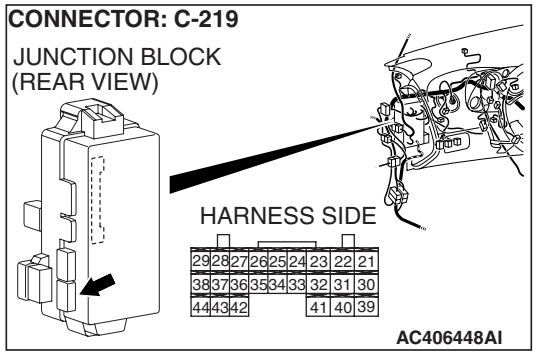
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the horn sounds normally.



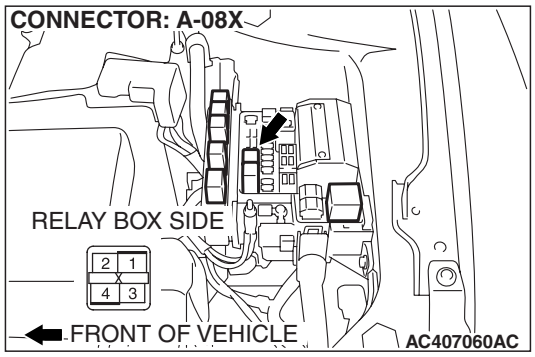
STEP 19. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

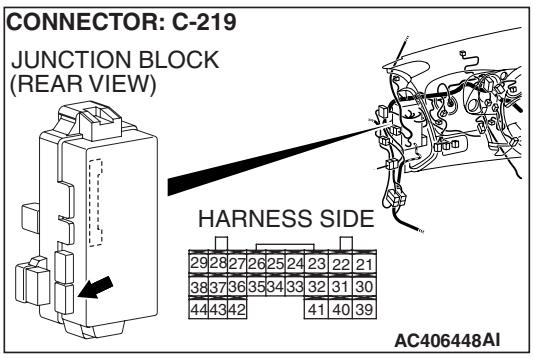
Q: Is ETACS-ECU connector C-219 in good condition?

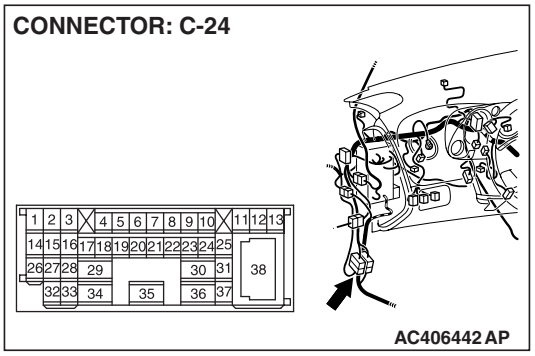
YES : Go to Step 20.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the horn sounds normally.



STEP 20. Check the wiring harness between horn relay connector A-08X (terminal 3) and ETACS-ECU connector C-219 (terminal 44).







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

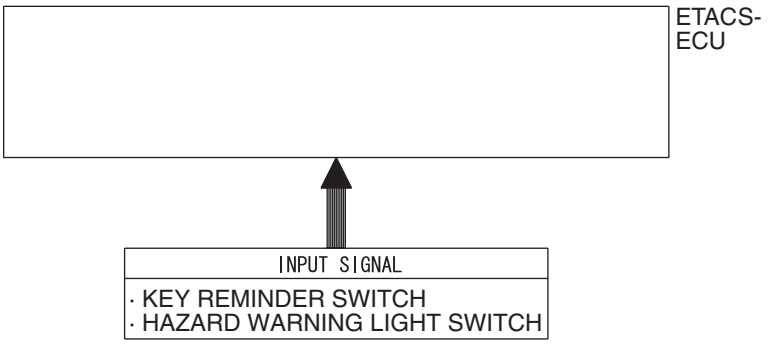
Q: Is the wiring harness between horn relay connector A-08X (terminal 3) and ETACS-ECU connector C-219 (terminal 44) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the horn sounds normally.

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

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

Encrypted Transmitter Code Register Mode



W4P54M46AA

CIRCUIT OPERATION

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

- Key reminder switch
- Hazard warning light switch

TECHNICAL DESCRIPTION (COMMENT)

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

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

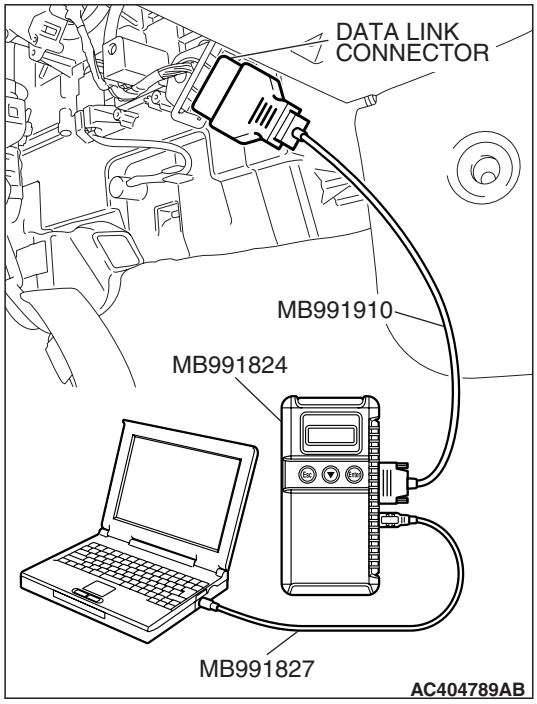
Required Special Tools:

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

STEP 1. Verify trouble symptom.

Q: Can the encrypted code register mode be set?

YES : Go to Step 3.
NO : Go to Step 2.



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

Check the input signals from the following switches:

- Key reminder switch
- Hazard warning light switch

⚠ CAUTION

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

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."

(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(3) Check the switches (see table below) applicable for the input signal check are operated.

(4) Check scan tool MB991958 sounds or not.

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

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

Buzzer of scan tool MB991958 sounds normally. : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the encrypted code can be registered in the transmitter.

Scan tool MB991958 does not sound when the ignition key is removed and reinserted : Refer to Inspection Procedure N-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54B-489."

Scan tool MB991958 does not sound when the hazard warning light switch is turned from "OFF" to "ON" : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive any signal from the hazard warning light switch P.54B-493."

STEP 3. Check the transmitter.

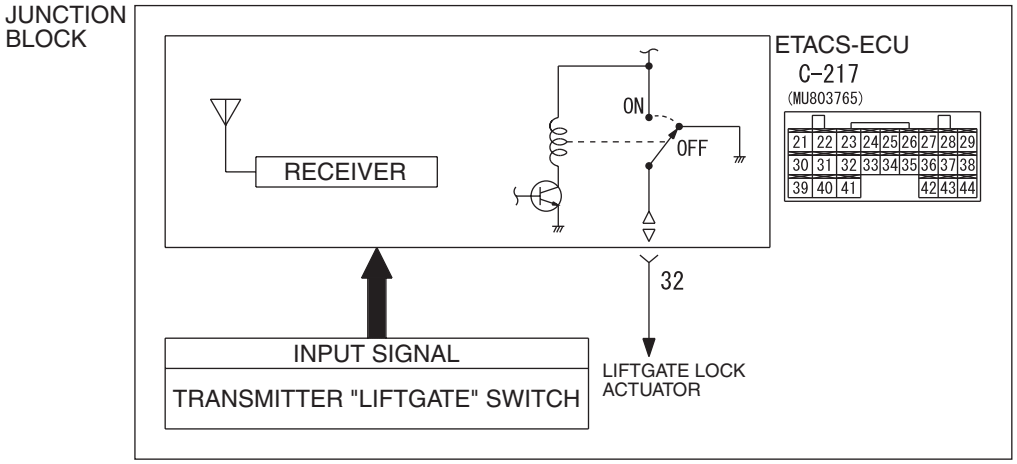
Q: When the transmitter's battery is replaced, can the encrypted code be registered?

YES : No action is necessary and testing is complete.

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

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

Transmitter "LIFTGATE" Input Signal



W6P54M054A

CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the operation of the central door locking system.

Check that the liftgate can be locked and unlocked when the central door locking system is operated.

Q: Does the liftgate work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure C-2 "Some doors do not lock or unlock P.54B-135."

STEP 2. Check that the doors can be locked and unlocked by using the keyless entry transmitter.

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

YES : Go to Step 3.

NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate P.54B-198."

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

Check input signals from the transmitter.

⚠ CAUTION

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

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."

(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

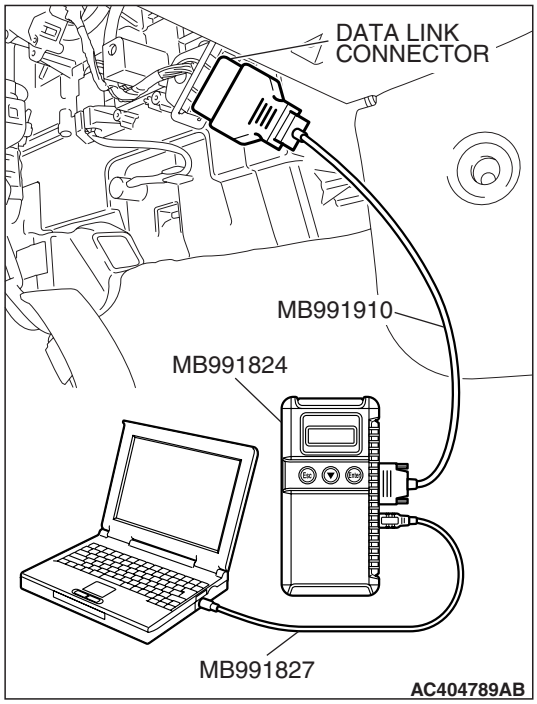
(3) Push the transmitter "LIFTGATE" button.

(4) Check that scan tool MB991958 sounds

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

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. All the doors can be locked or unlocked by means of the transmitter.

NO : Refer to Inspection Procedure N-8 "ETACS-ECU does not receive any signal from the lock, unlock, liftgate or panic switch P.54B-532."



SUNROOF

GENERAL DESCRIPTION CONCERNING THE SUNROOF

M1549021200289

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

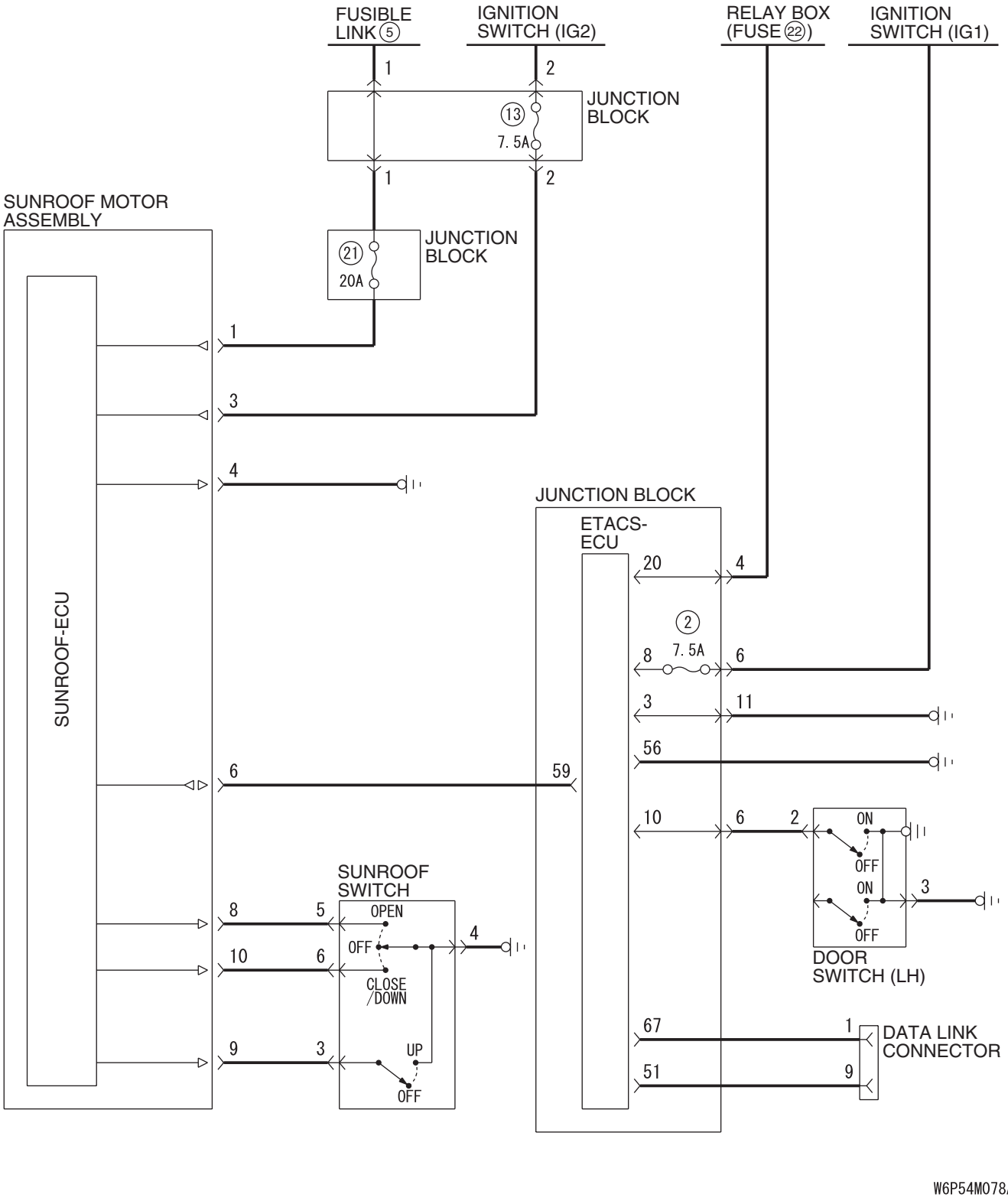
FUNCTION	CONTROL ECU
Sunroof timer function	ETACS-ECU, sunroof motor assembly

SUNROOF

SUNROOF TIMER FUNCTION

The ETACS-ECU enables opening and closing of the sunroof for 30 seconds after the ignition is switched off.
During this timed operation, if the driver's door or passenger’s door is opened, the sunroof timer function is deactivated from that moment.

General circuit diagram regarding the sunroof

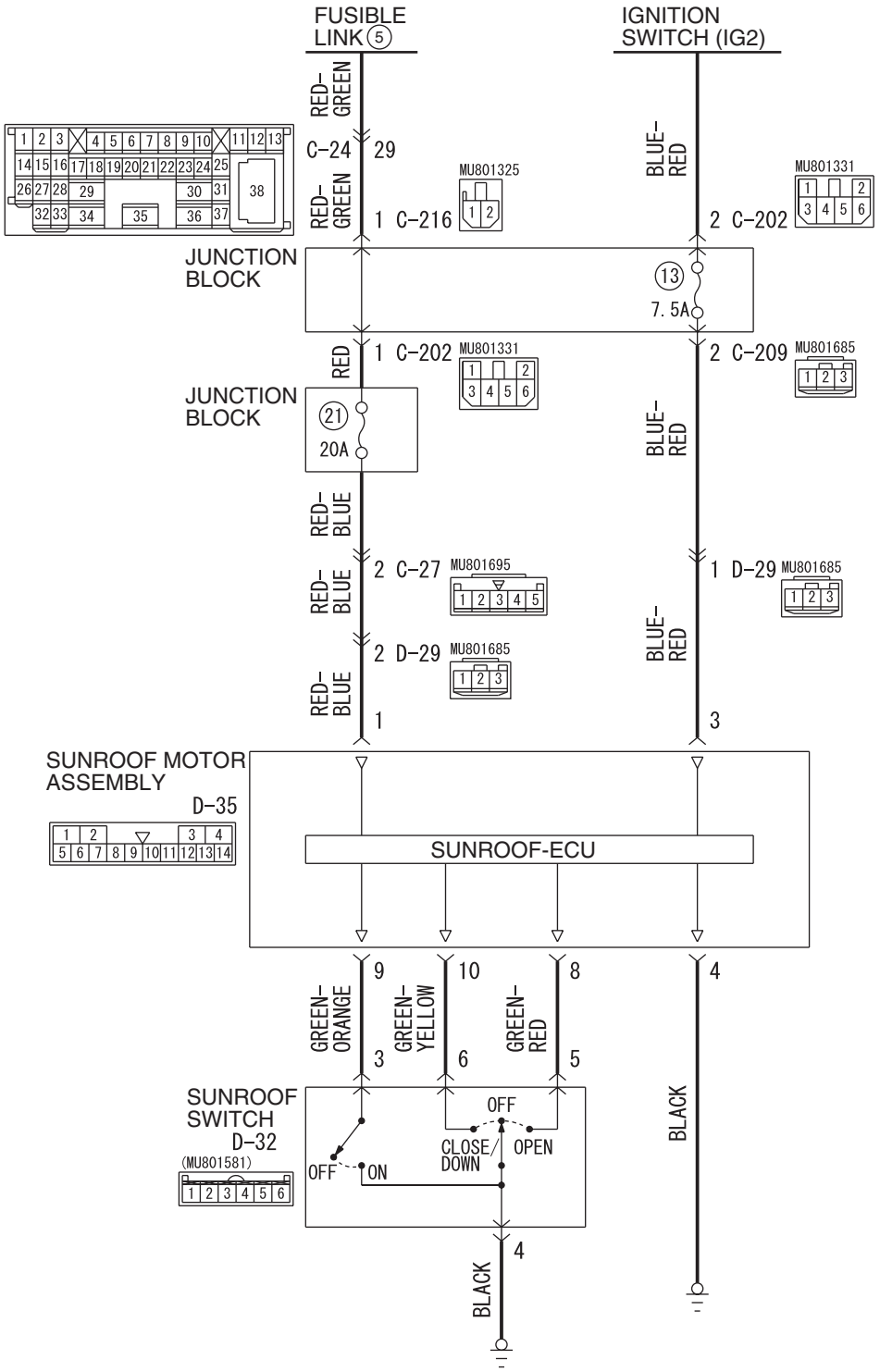


W6P54M078A

TSB Revision

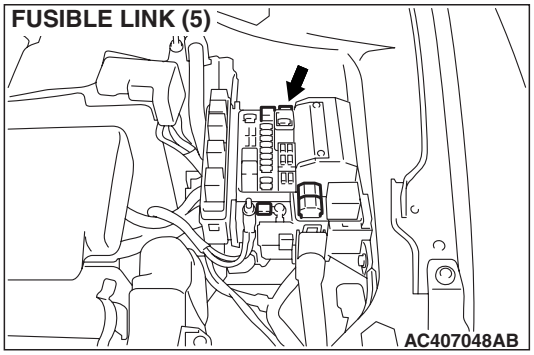
INSPECTION PROCEDURE F-1: Sunroof: Sunroof does not operate.

Sunroof Motor Assembly Power Supply Circuit

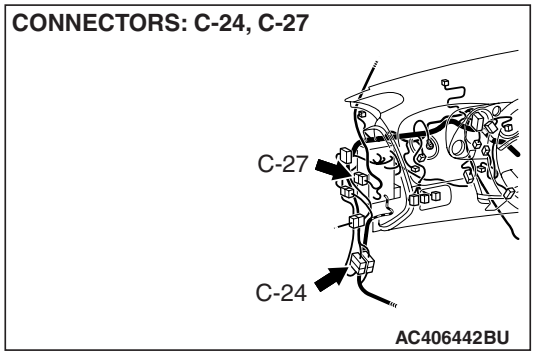


W6P54M050A

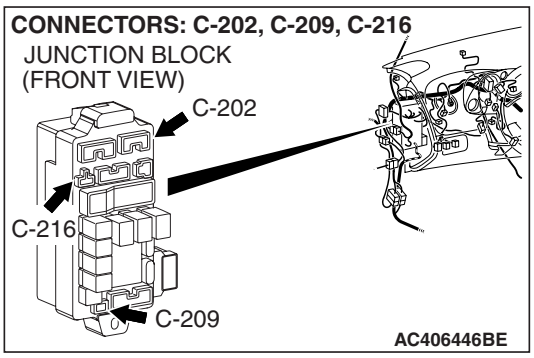
FUSIBLE LINK (5)



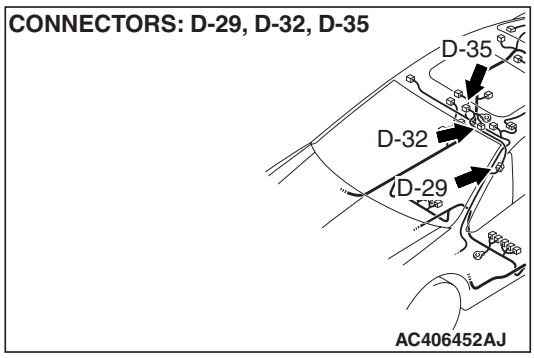
CONNECTORS: C-24, C-27



CONNECTORS: C-202, C-209, C-216



CONNECTORS: D-29, D-32, D-35



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 Tools:

- MB991223: Test Harness Set
- MB992006: Extra Fine Probe

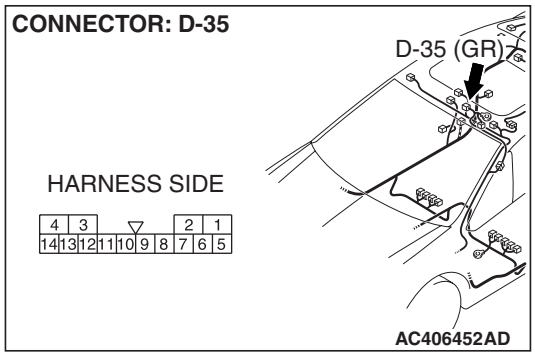
STEP 1. Check sunroof motor assembly connector D-35 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is sunroof motor assembly connector D-35 in good condition?

YES : Go to Step 2.

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

CONNECTOR: D-35



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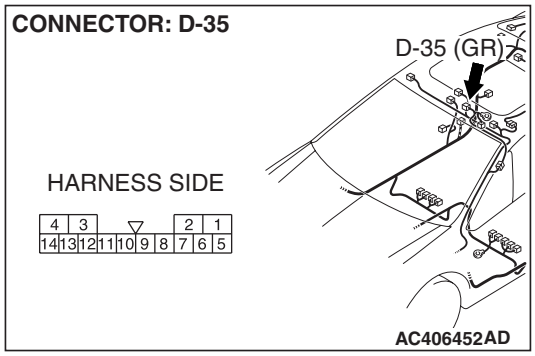
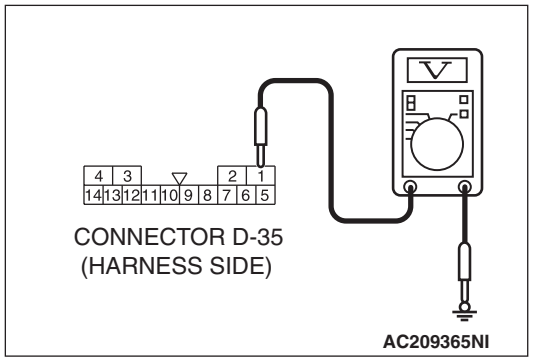
STEP 2. Check the fusible link (5) line of power supply circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-35.

(1) Disconnect sunroof motor assembly connector D-35 and measure the voltage available at the wiring harness side of the connector.





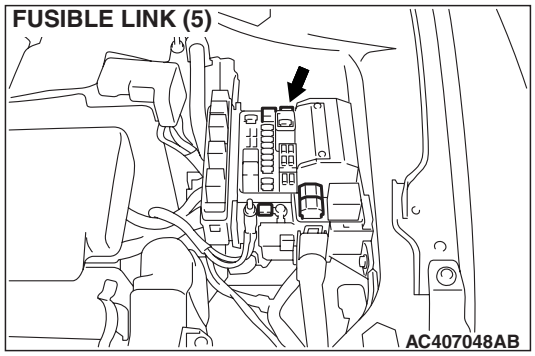
(2) Measure the voltage between terminal 1 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

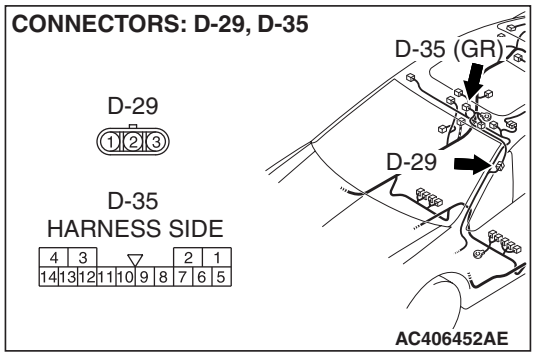
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

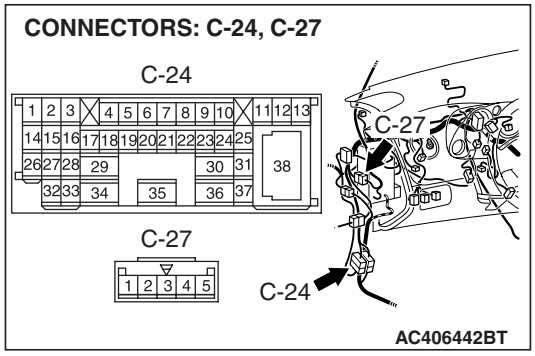
YES : Go to Step 4.

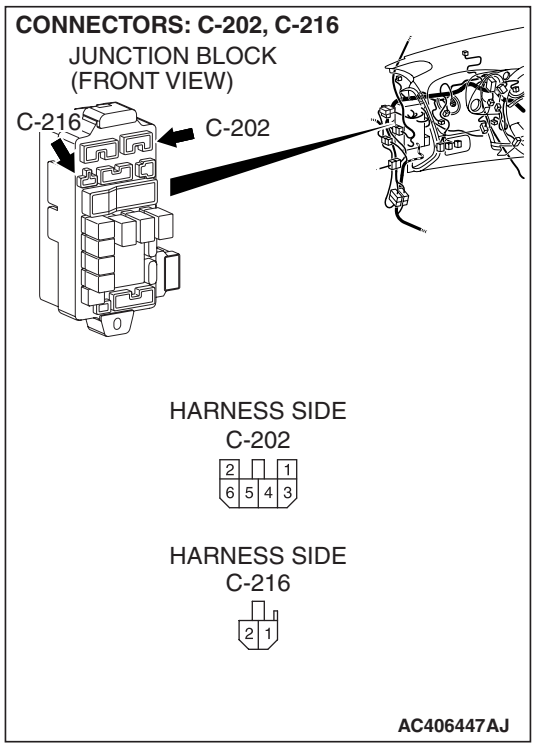
NO : Go to Step 3.

STEP 3. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 1) and fusible link (5).









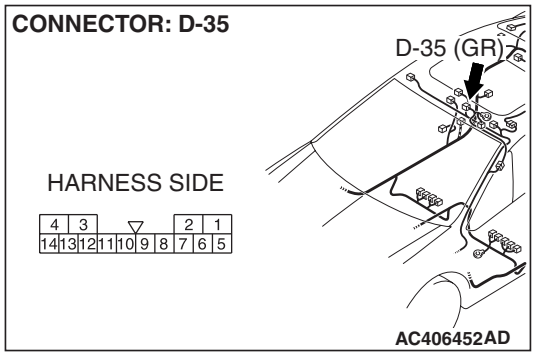
NOTE: Also check junction block connectors C-202, C-216, intermediate connector C-24, C-27 and D-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202, C-216, intermediate connector C-24, C-27 or D-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (terminal 1) and fusible link (5) in good condition?

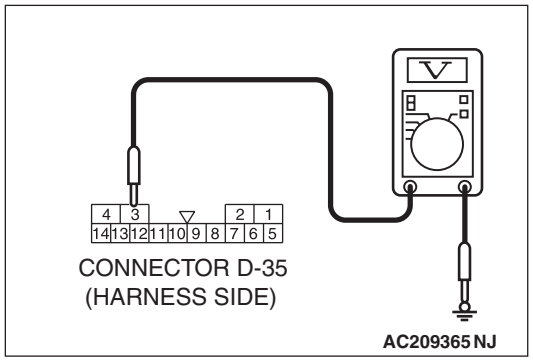
YES : No action is necessary and testing is complete.

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

STEP 4. Check the ignition switch (IG2) circuit to the sunroof motor assembly. Measure the voltage at sunroof motor assembly connector D-35.



(1) Disconnect sunroof motor assembly connector D-35 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to the "ON" position.

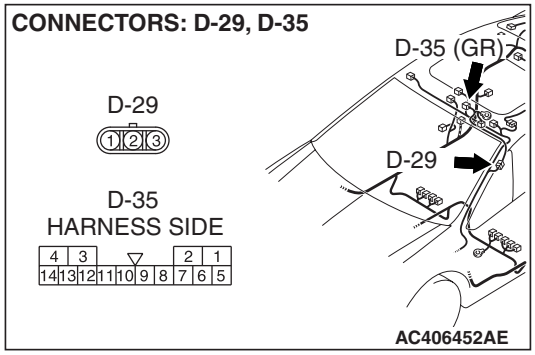


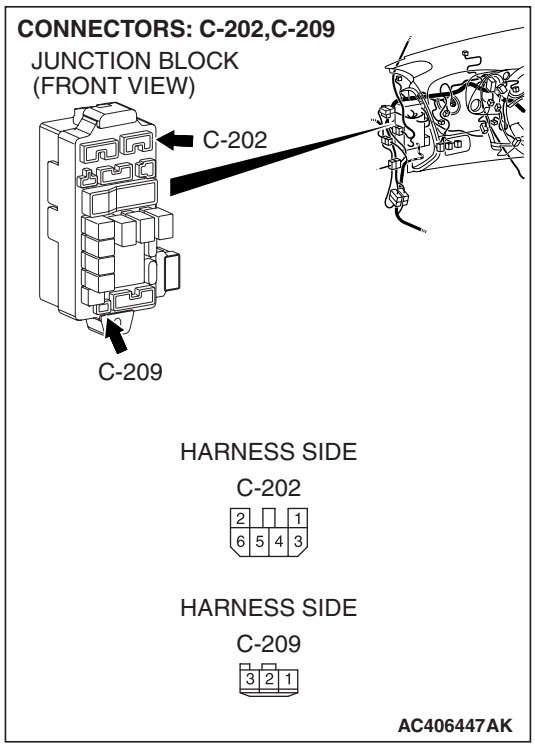
(3) Measure the voltage between terminal 3 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 3) and ignition switch (IG2).





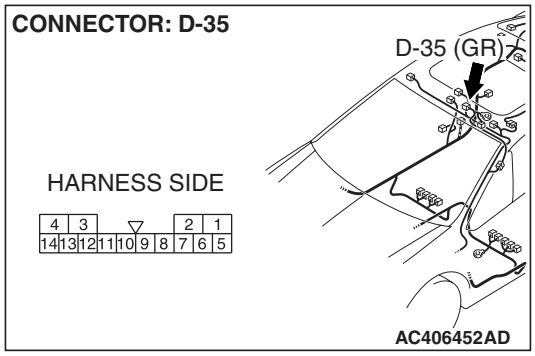
NOTE: Also check junction block connectors C-202, C-209 and intermediate connector D-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202, C-209 or intermediate connector D-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (terminal 3) and the ignition switch (IG2) in good condition?

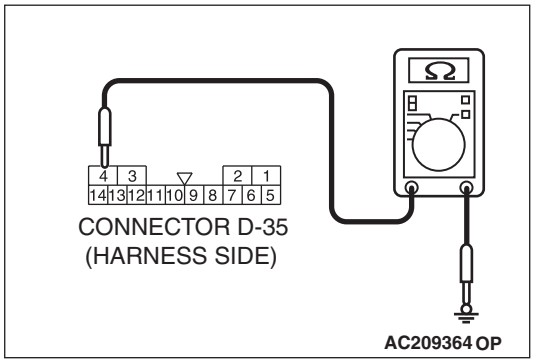
YES : No action is necessary and testing is complete.

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

STEP 6. Check the ground circuit to the sunroof motor assembly. Measure the resistance at sunroof motor assembly connector D-35.



(1) Disconnect sunroof motor assembly connector D-35 and measure the resistance available at the wiring harness side of the connector.

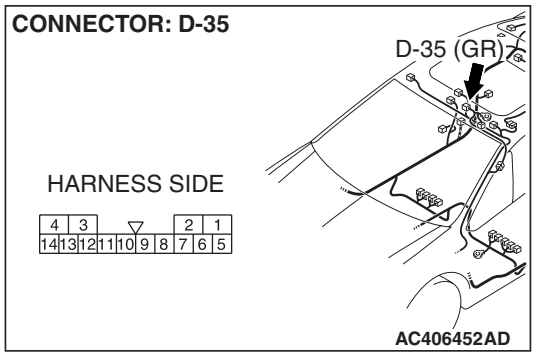


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.

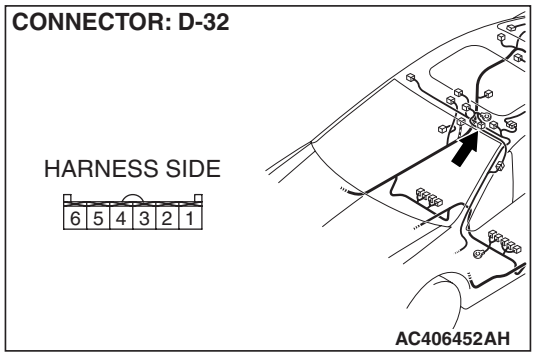


STEP 7. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 4) and ground.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (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. Check that the sunroof works normally.

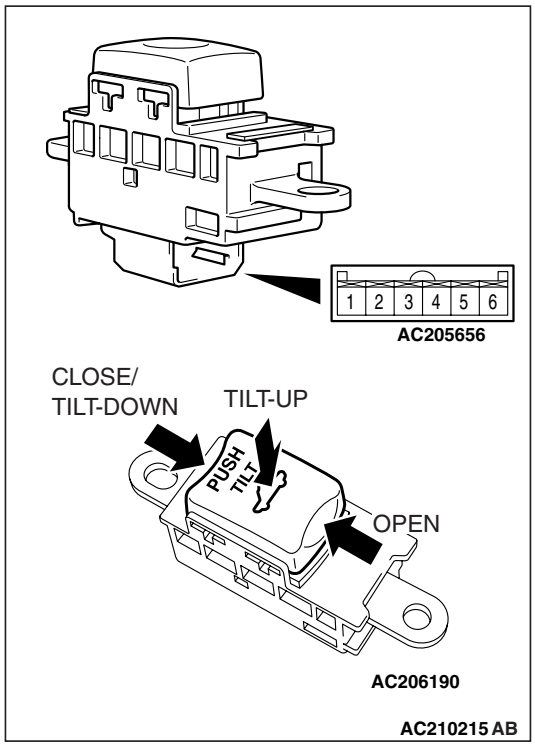


STEP 8. Check the sunroof switch connector D-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 9.

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



STEP 9. Check the sunroof switch.

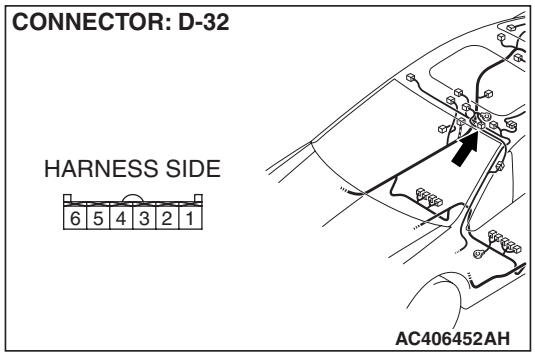
Check continuity when the sunroof switch is operated to "OPEN", "TILT UP" or "CLOSE/TILT DOWN" positions. Refer to GROUP 42, Sunroof Assembly P.42-104.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Open	4 –5	Less than 2 ohms
Off	3 –4, 3 –5, 3 –6, 4 – 5, 4 –6, 5 –6	Open circuit
Tilt-up	3 –4	Less than 2 ohms
Close/Tilt-down	4 –6	Less than 2 ohms

Q: Does the check meet the specified conditions?

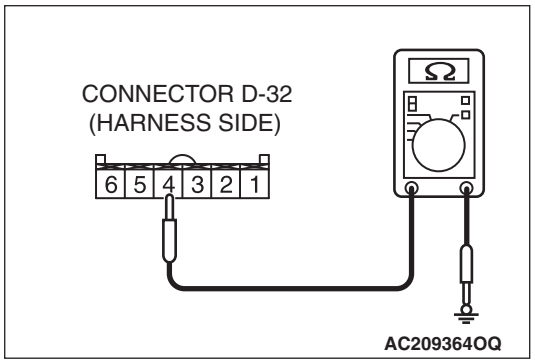
YES : Go to Step 10.

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



STEP 10. Check the ground circuit to the sunroof switch. Measure the resistance at sunroof switch connector D-32.

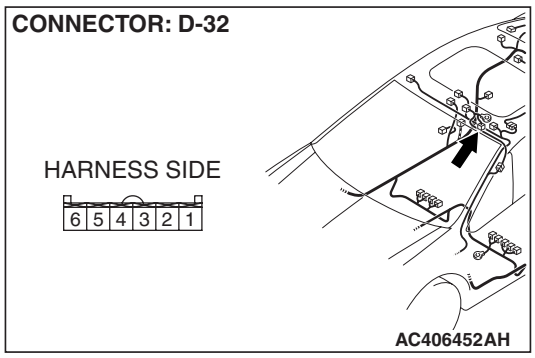
(1) Disconnect sunroof switch connector D-32 and measure the resistance available at the wiring harness side of the connector.



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

Q: Is the measured resistance 2 ohms or less?

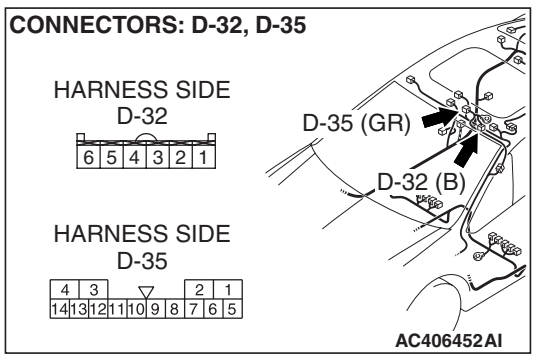
YES : Go to Step 12.
NO : Go to Step 11.



STEP 11. Check the wiring harness sunroof switch connector D-32 (terminal 4) and ground.

Q: Is the wiring harness between sunroof switch connector D-32 (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. Check that the sunroof works normally.



STEP 12. Check the wiring harness between sunroof motor assembly connector D-35 (terminals 8, 9 and 10) and sunroof switch connector D-32 (terminals 5, 3 and 6).

Q: Is the wiring harness between sunroof motor assembly connector D-35 (terminals 8, 9 and 10) and sunroof switch connector D-32 (terminals 5, 3 and 6) in good condition?

YES : Go to Step 13.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Check that the sunroof works normally.

STEP 13. Replace the sunroof switch.

(1) Replace the sunroof switch.

(2) Check that the sunroof works normally.

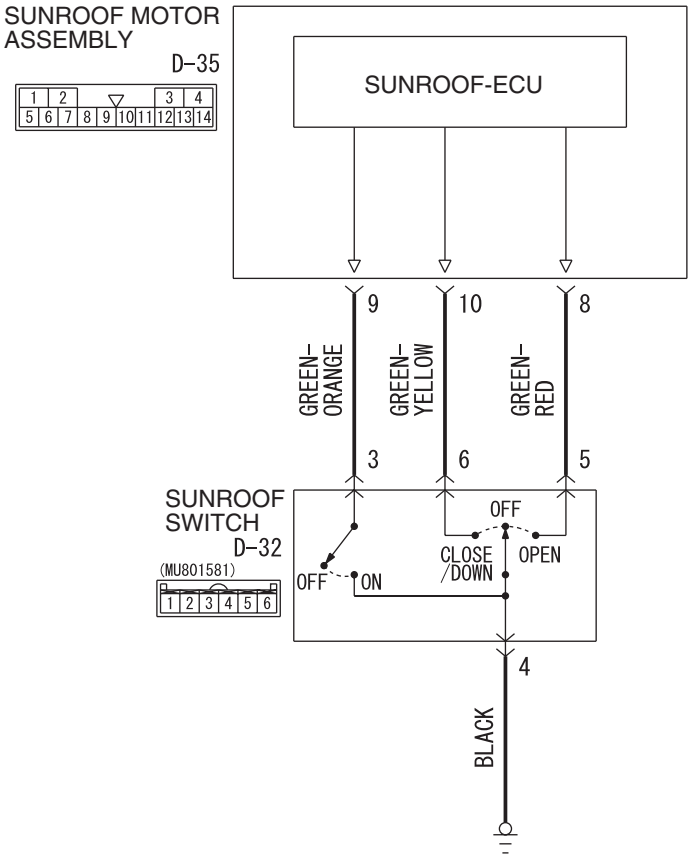
Q: Does the sunroof works normally?

YES : No action is necessary and testing is complete.

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

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

Sunroof Switch Circuit



W6P54M051A

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

TSB Revision

DIAGNOSIS

Required Special Tools:

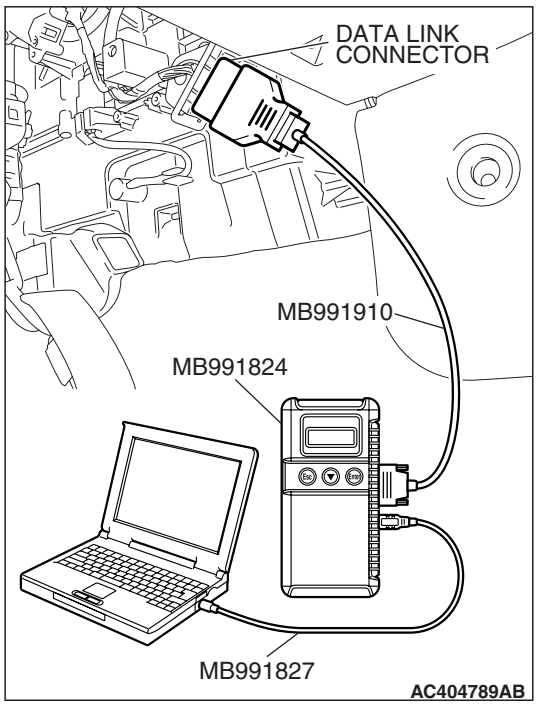
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A

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

Check the input signals from the sunroof switch.

⚠ CAUTION

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



(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."

(2) Operate the scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

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

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

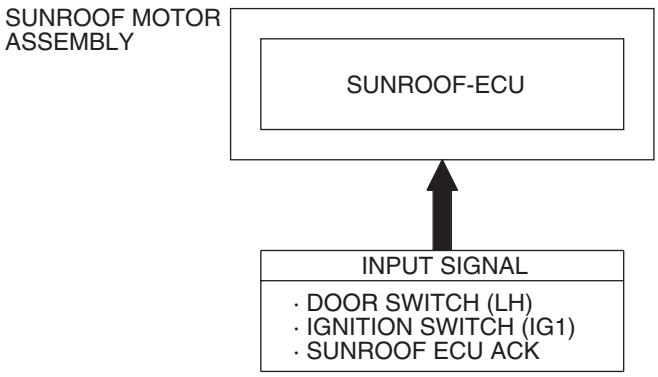
YES : Replace the sunroof motor assembly. Check that the sunroof works at all positions normally.

NO : Refer to Inspection Procedure M-9 "ETACS-ECU does not receive any signal from the up, open or close/down switch P.54B-485."

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

NOTE: This troubleshooting requires use of scan tool MB991958 and SWS monitor kit MB991813. For details of how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Sunroof Timer Function



W6P54M052A

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

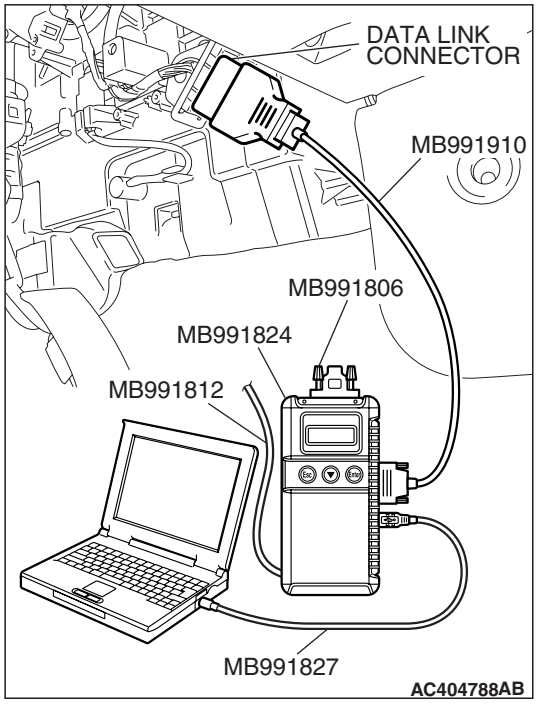
TROUBLESHOOTING HINTS

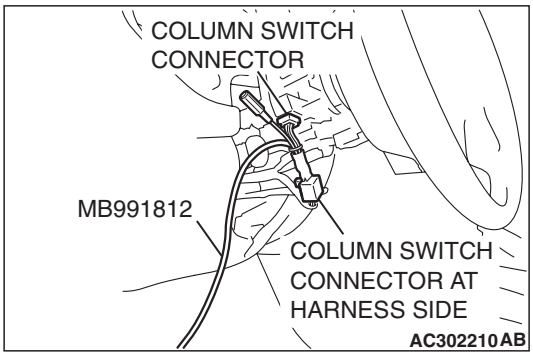
- The front door switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

- ETACS-ECU
- Sunroof-ECU

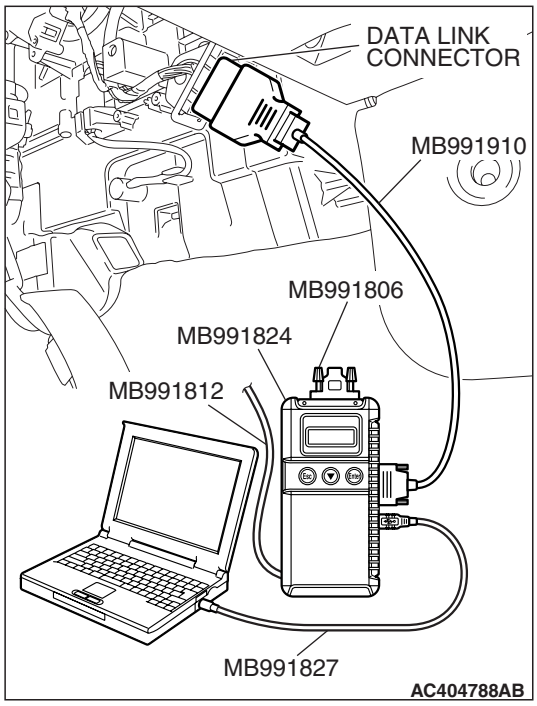
⚠ CAUTION

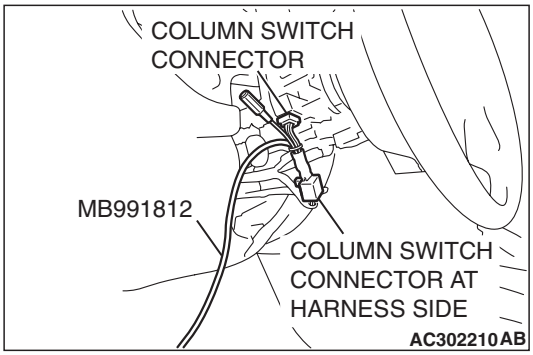
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate the scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "ETACS ECU" and the "SUNROOF ECU" menus.

Q: Is "OK" displayed for both the "ETACS ECU" and "SUNROOF ECU" menus?

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."
"NG" is displayed for the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "Communication with the sunroof-ECU is not possible P.54B-93."





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

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

(1) Operate the MUT-III according to the procedure below to display "SUNROOF-OPE."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "SUNROOF."
   g. Select "SUNROOF-OPE."

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

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

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

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

Normal condition is not displayed for the "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) P.54B-452."

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

WINDSHIELD WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE WINDSHIELD WIPER AND WASHER

M1549021500321

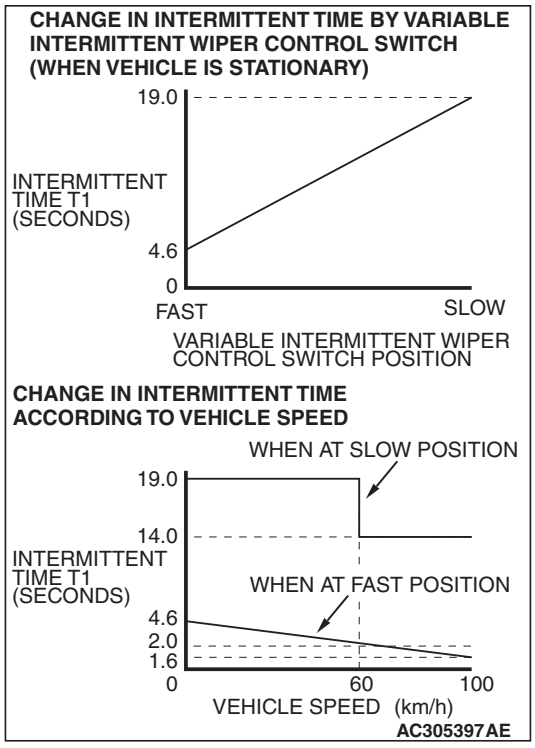
The following ECUs affect the functions and control of the windshield wiper and washer.

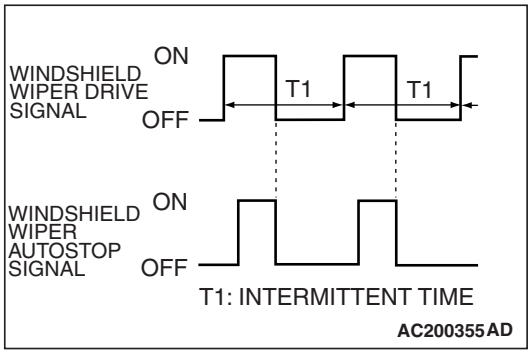
FUNCTION		CONTROL ECU
Windshield wiper and washer control function	Intermittent control (Vehicle speed-dependent variable type)	ETACS-ECU, front-ECU, column switch
	Mist wiper control	ETACS-ECU, column switch
	Low-speed wiper, high-speed wiper control	ETACS-ECU, column switch
	Washer control	ETACS-ECU,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

WINDSHIELD WIPER AND WASHER

INTERMITTENT CONTROL (VEHICLE SPEED-DEPENDENT VARIABLE TYPE)

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

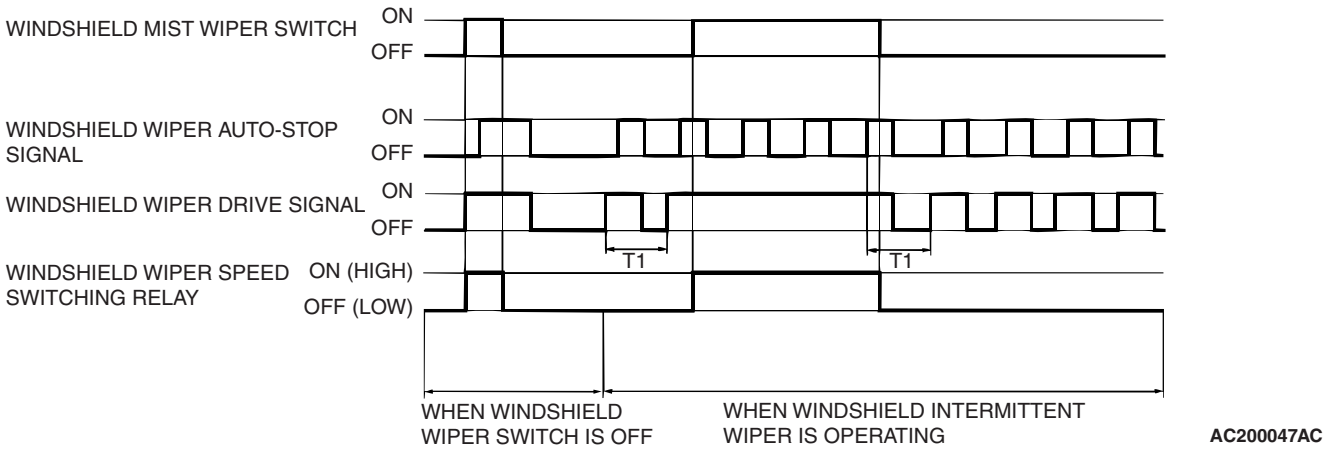




The front-ECU determines the intermittent time T1 from the input SWS data signal, and turns ON the windshield wiper drive signal. When the wiper is at the STOP position, the windshield wiper auto-stop signal goes OFF then turn OFF the windshield wiper drive signal. After the intermittent time T1 seconds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

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

Mist wiper control

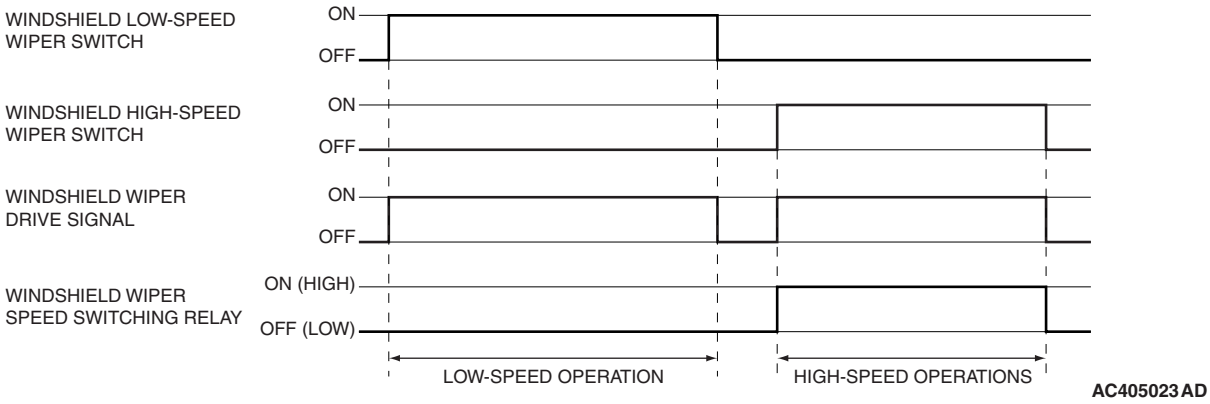


T1: INTERMITTENT TIME

When the ignition switch is in the ACC or ON position, and 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.

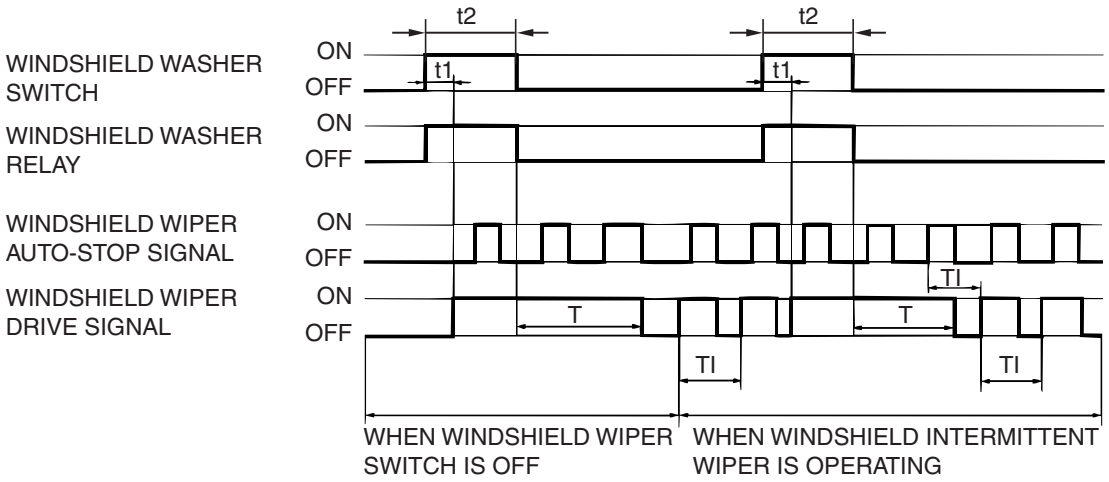
When the windshield mist switch is turned on briefly, the wiper operates once at low speed.
At the point the windshield mist switch is turned ON, if the windshield wiper has been operating intermittently, the same operations as the above will be performed while the windshield mist wiper switch is ON.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

Low-speed wiper, high-speed wiper control



When the ignition switch in at the ACC or ON position, and the windshield low-speed wiper switch of the column switch is turned ON, the front-ECU turns ON the windshield wiper drive signal, turns OFF (LOW) the windshield wiper speed relay, and operates the windshield wiper at low-speed. Next, when the windshield high speed wiper switch is turned ON, the windshield wiper drive signal is turned ON, the windshield wiper speed switching relay is turned ON (HIGH), and the windshield wiper is operated at high-speed.

Washer control



T: WIPER OPERATING TIME AFTER WINDSHIELD WASHER SWITCH IS OFF

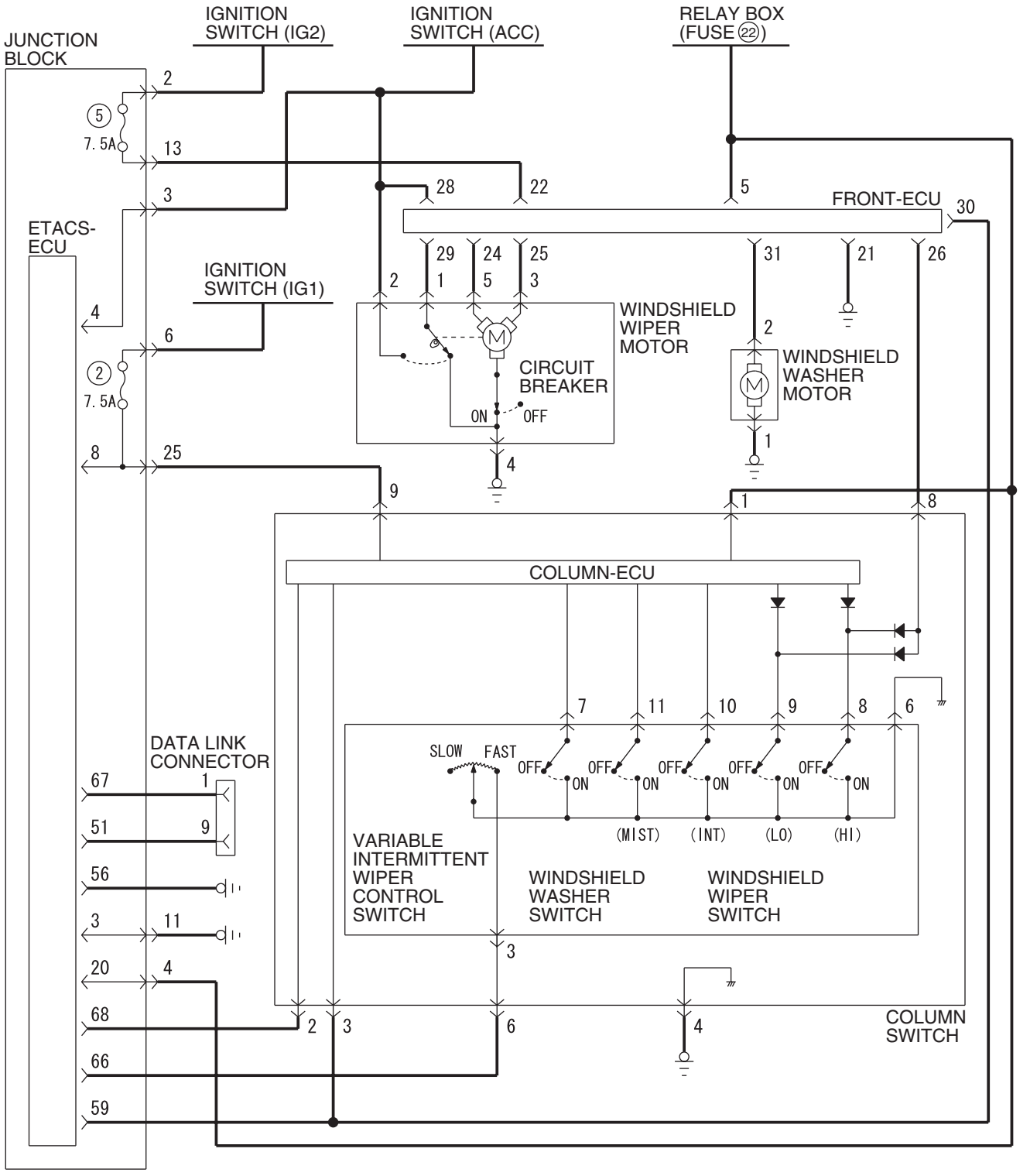
TI: INTERMITTENT TIME t1: 0.15 SECOND t2: WINDSHIELD WASHER OPERATING TIME AC306460AC

When the ignition switch is in the ACC or ON position, and 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 after 0.15 second until 2 seconds after the windshield washer switch goes OFF to operate the windshield wiper continuously. When the windshield washer switch is turned ON, if the windshield wiper is operating intermittently, intermittent operation will resume after two or three wipes.

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

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

General circuit diagram for the windshield wiper and washer



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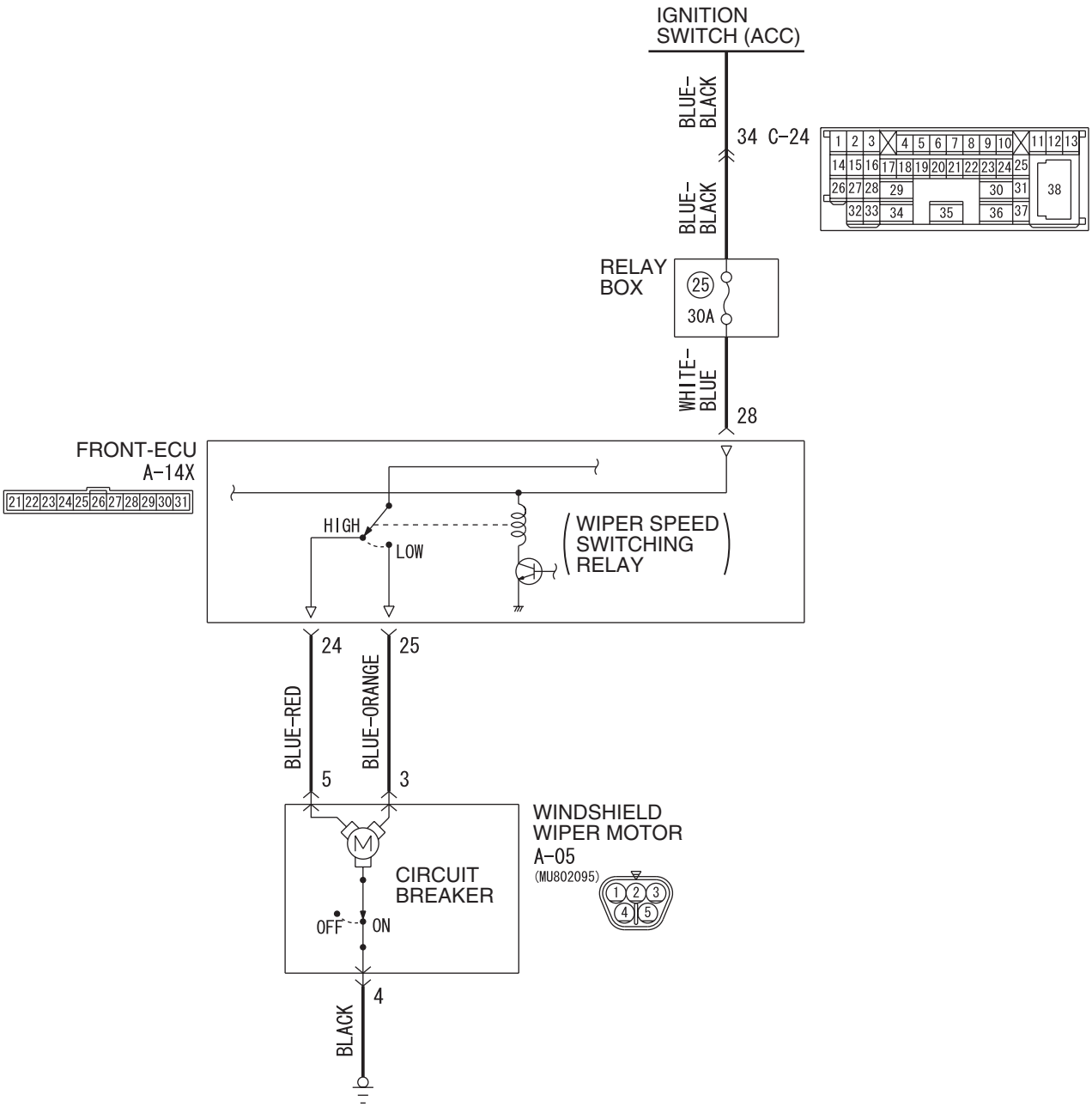
INSPECTION PROCEDURE G-1: Windshield Wiper and Washer: The windshield wipers do not work at all.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Windshield Wiper Motor Circuit



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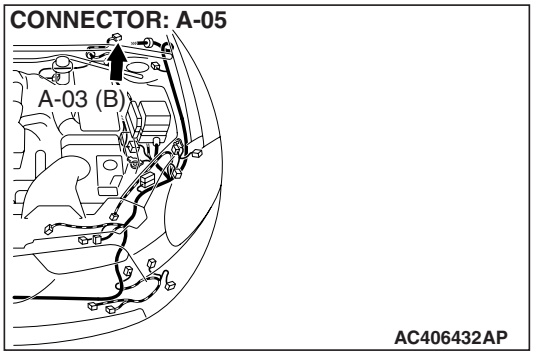
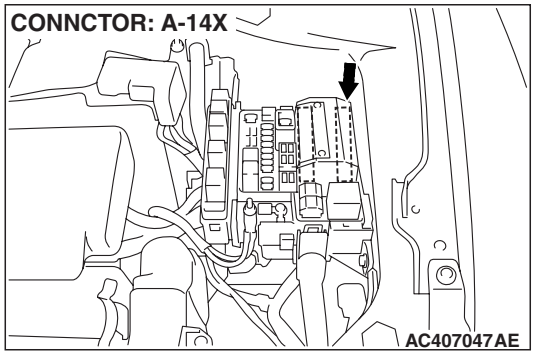
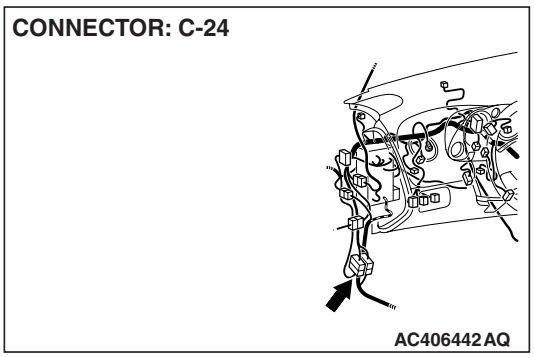






CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

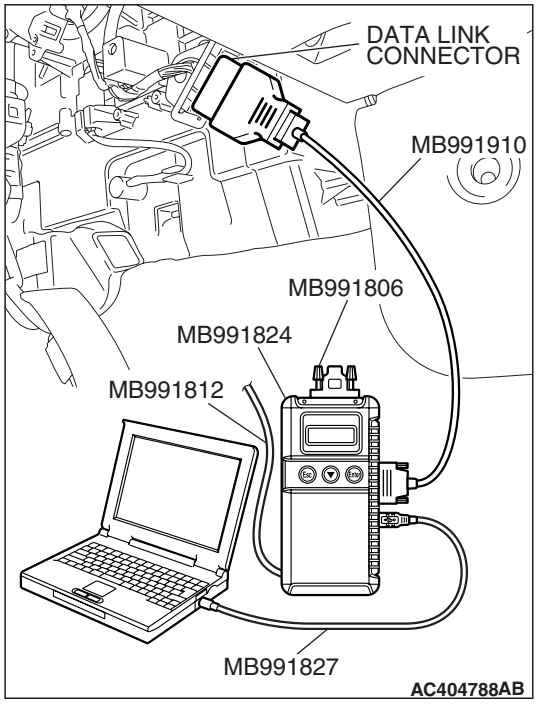
TROUBLESHOOTING HINTS

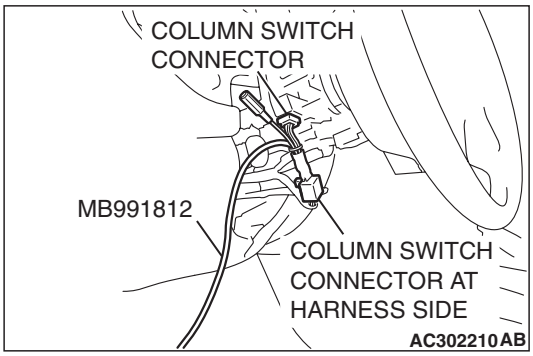
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The wiper motor may be defective
- The column switch may be defective
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible P.54B-86."

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

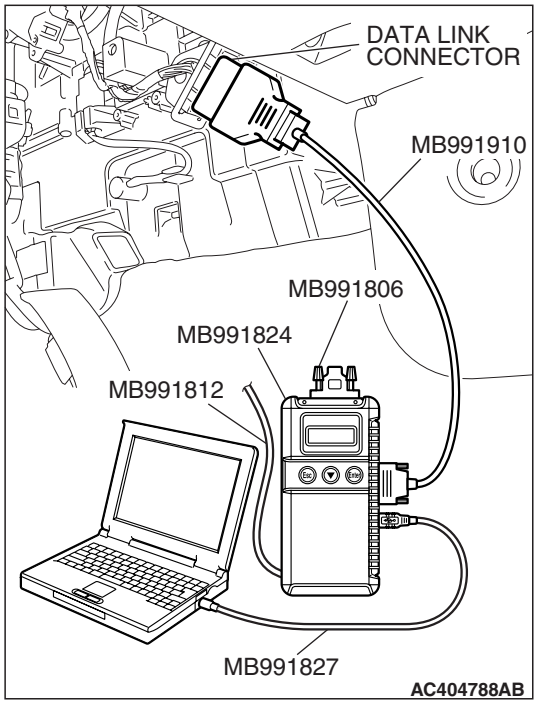
Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield wiper switch: INT

(1) Operate the MUT-III according to the procedure below to display "F.WIPER INT."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "WIPER."
   g. Select "F.WIPER INT."

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

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

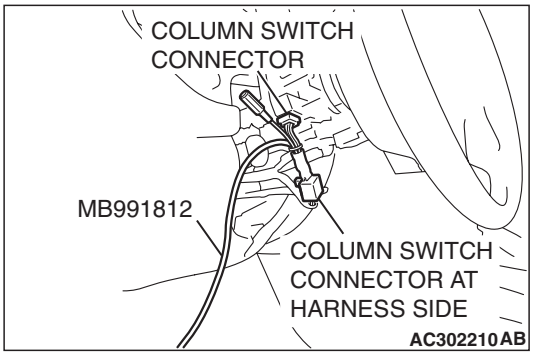


Q: Are normal conditions displayed for "INT WIPER SW" and "FRONT ECU ACK"?

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

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

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

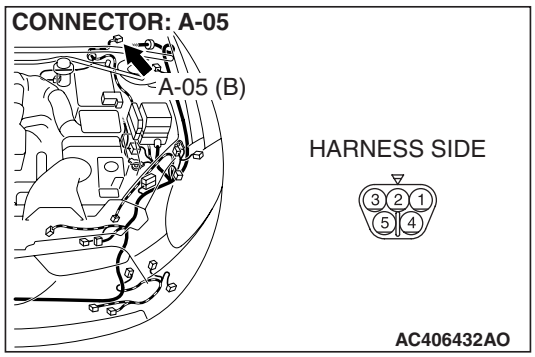


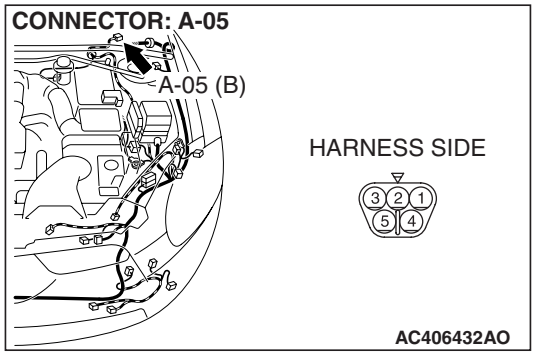
STEP 3. Check windshield wiper motor connector A-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector A-05 in good condition?

YES : Go to Step 4.

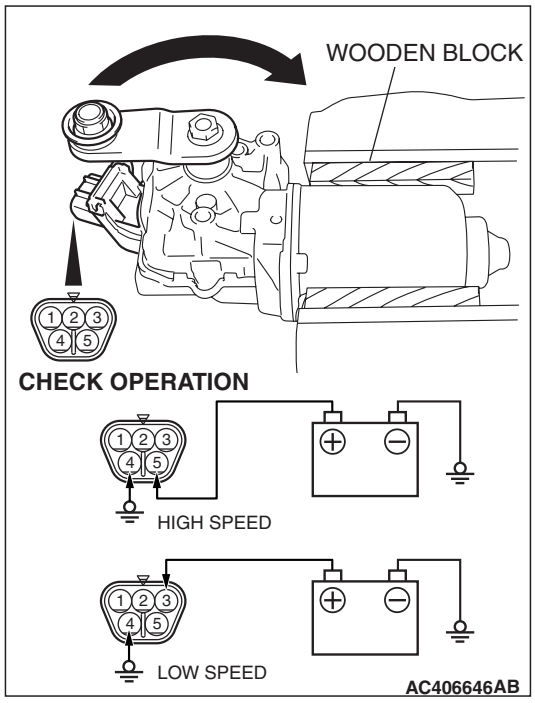
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the windshield wiper works normally.





STEP 4. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector A-05.



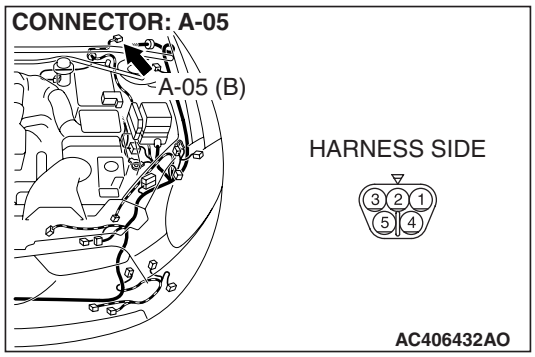
(2) Connect a battery to the windshield wiper motor as shown. Then check that the windshield wiper motor operates normally at high and low speeds.

Q: Does the windshield wiper motor operate normally?

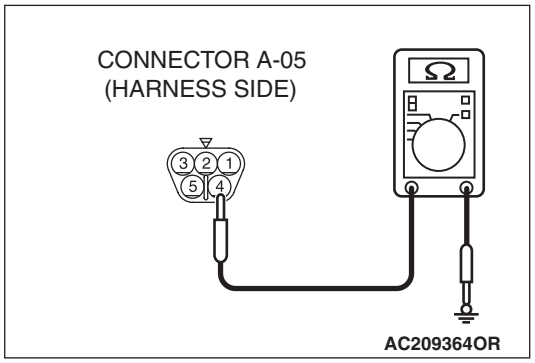
YES : Go to Step 5.

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

STEP 5. Check the ground circuit to the windshield wiper motor. Measure the resistance at the windshield wiper motor connector A-05.



(1) Disconnect windshield wiper motor connector A-05 and measure the resistance available at the wiring harness side of the connector.

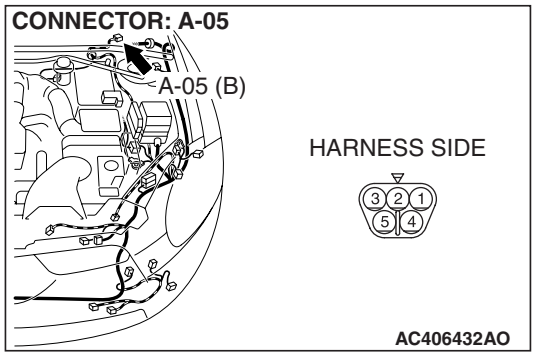


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.
NO : Go to Step 6.

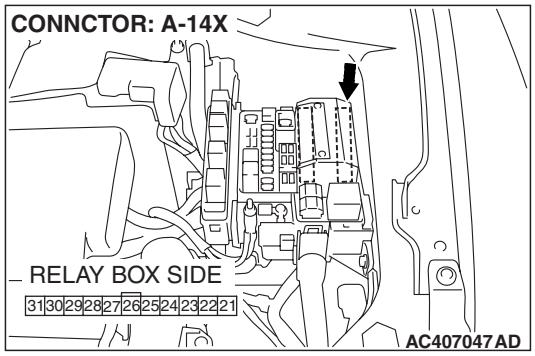
STEP 6. Check the wiring harness between windshield wiper motor connector A-05 (terminal 4) and ground.



Q: Is the wiring harness between windshield wiper motor connector A-05 (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. Verify the windshield wiper works normally.

STEP 7. Check front-ECU connector A-14X for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is front-ECU connector A-14X 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.

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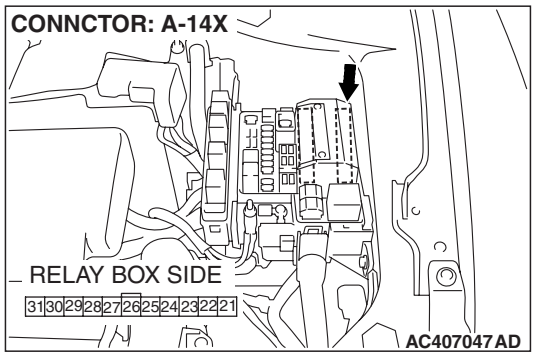
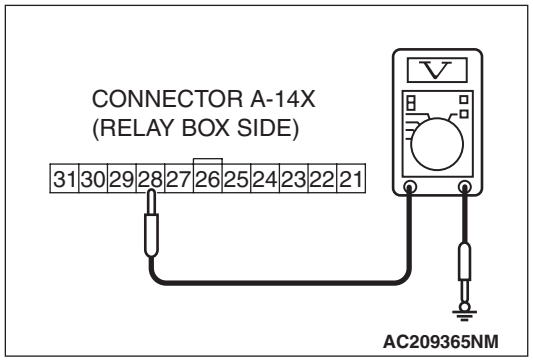
STEP 8. Check the ignition switch (ACC) circuit to the front-ECU. Measure the voltage at front-ECU connector A-14X.



(1) Disconnect front-ECU connector A-14X and measure the resistance available at the relay box side of the connector.
(2) Turn the ignition switch to the "ON" position.



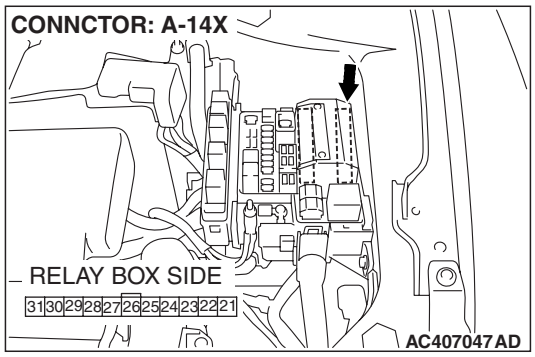
(3) Measure the voltage between terminal 28 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

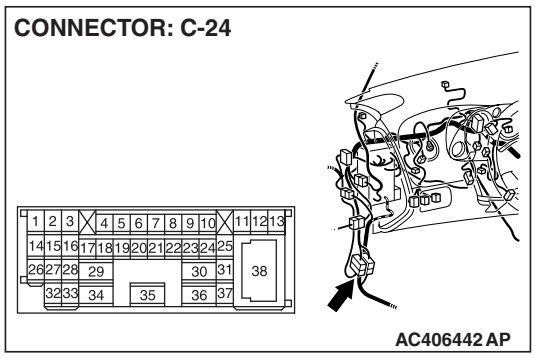
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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

NO : Go to Step 9.

STEP 9. Check the wiring harness between front-ECU connector A-14X (terminal 28) and the ignition switch (ACC).





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

Q: Is the wiring harness between front-ECU connector A-14X (terminal 28) and the ignition switch (ACC) in good condition?

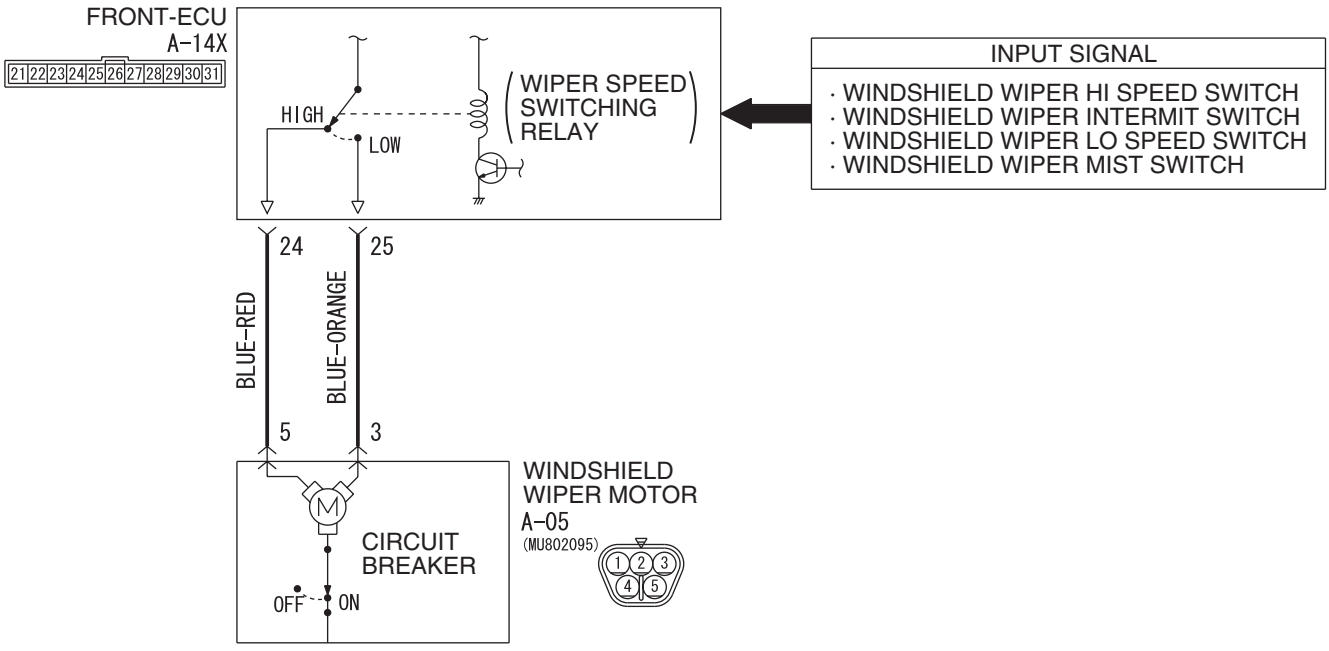
YES : No action is necessary and testing is complete.

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

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

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Windshield Wiper Motor Circuit



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TECHNICAL DESCRIPTION (COMMENT)

This system may be at fail-safe mode if the SWS communication line is defective.
If the system cannot 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.

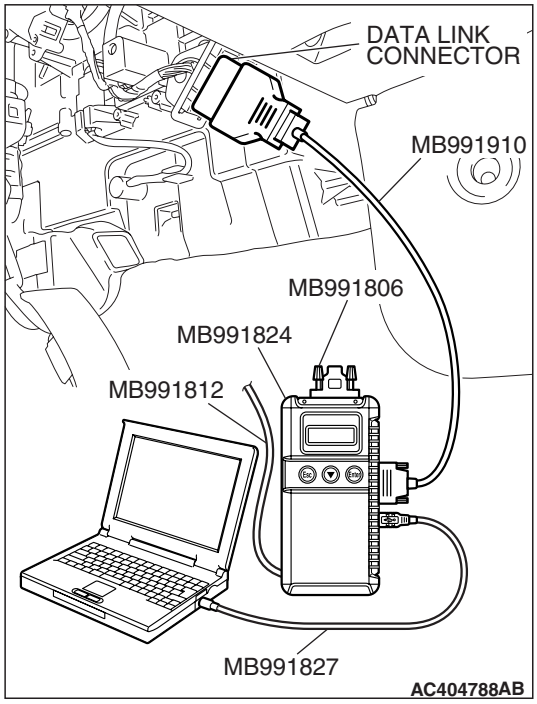
TROUBLESHOOTING HINTS

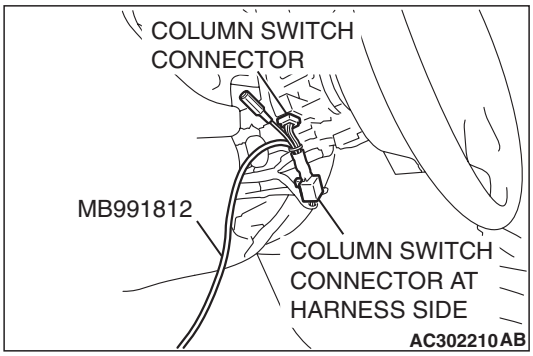
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The column switch may be defective
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM CHECK."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

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

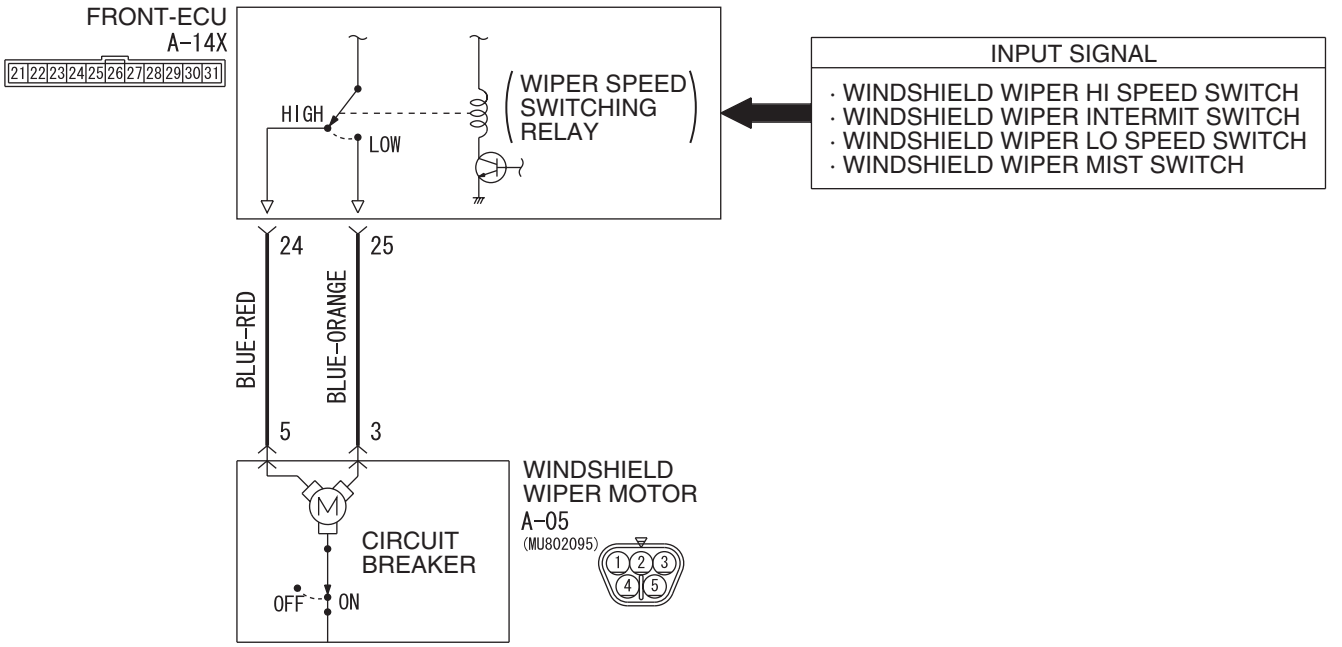
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible P.54B-86."

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

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Windshield Wiper Motor Circuit



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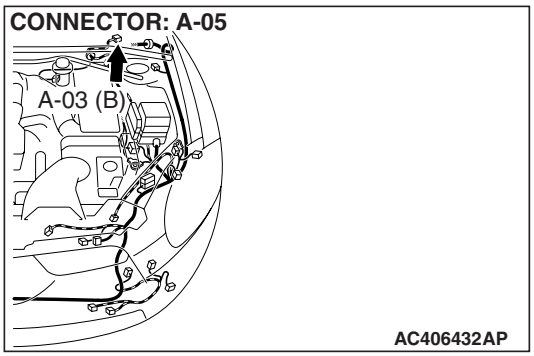

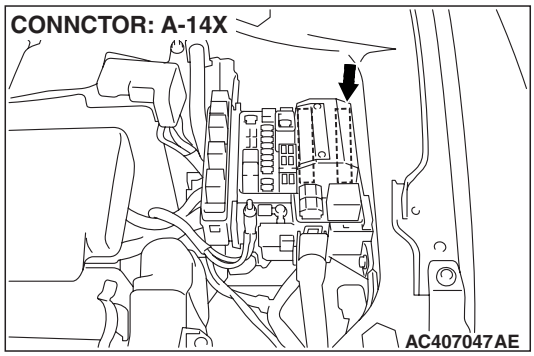

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

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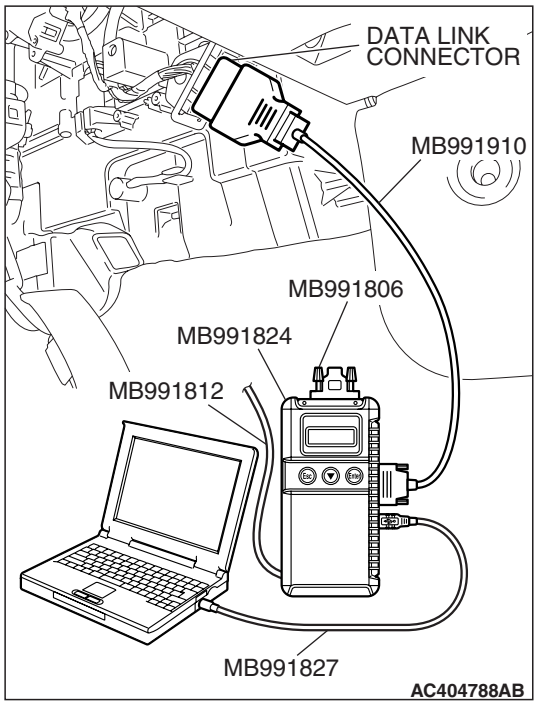
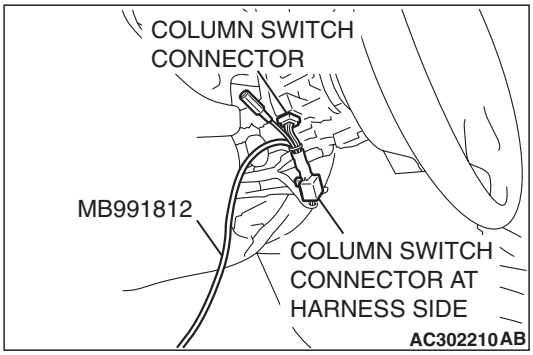
DIAGNOSIS

Required Special Tools:

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





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

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

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

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

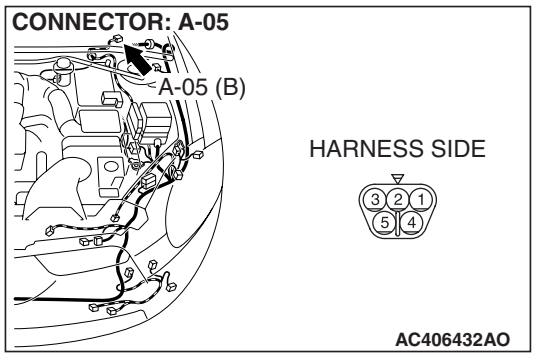
(3) Check that normal conditions are displayed for the items described in the table below.

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

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure M-7 "ETACS-ECU does not receive any signal from the windshield mist wiper switch P.54B-476."

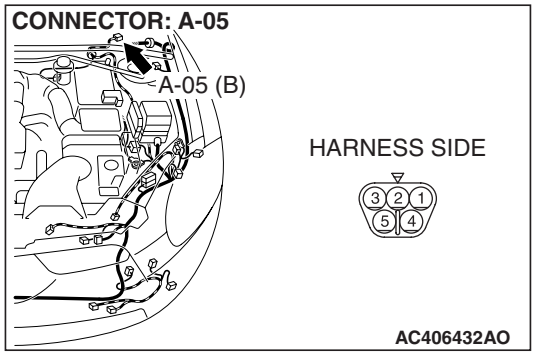


STEP 2. Check windshield wiper motor connector A-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector A-05 in good condition?

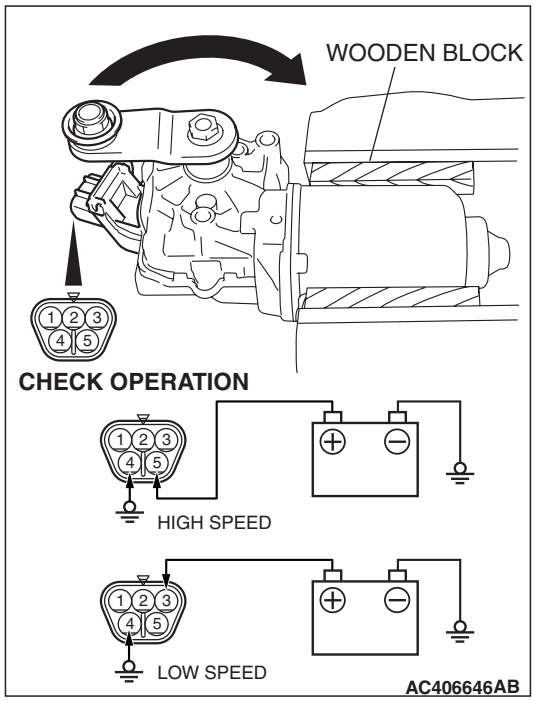
YES : Go to Step 3.

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



STEP 3. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector A-05.

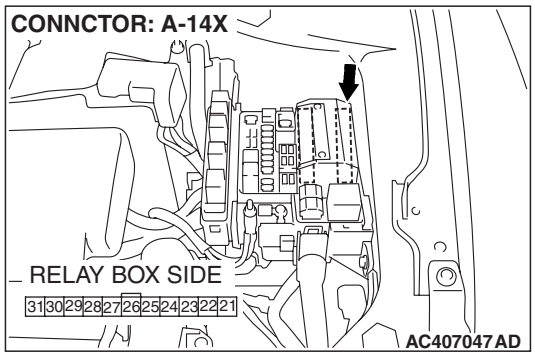


(2) Connect a battery to the windshield wiper motor as shown. Then check if the windshield wiper motor operates normally at high and low speeds.

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.

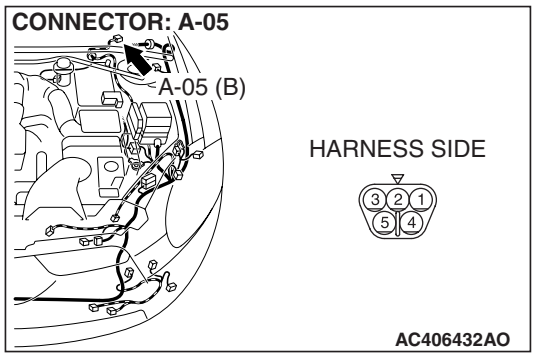


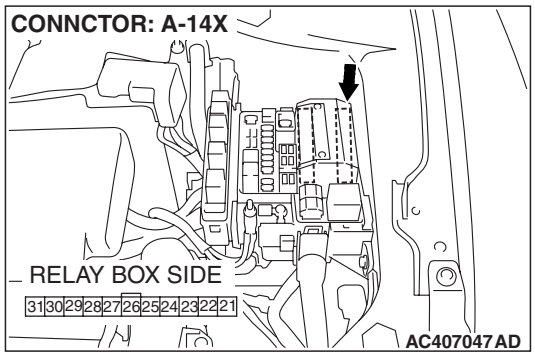
STEP 4. Check front-ECU connector A-14X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-14X in good condition?

YES : Go to Step 5.

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





STEP 5. Check the wiring harness between windshield wiper motor connector A-05 (terminals 3 and 5) and front-ECU connector A-14X (terminals 25 and 24).

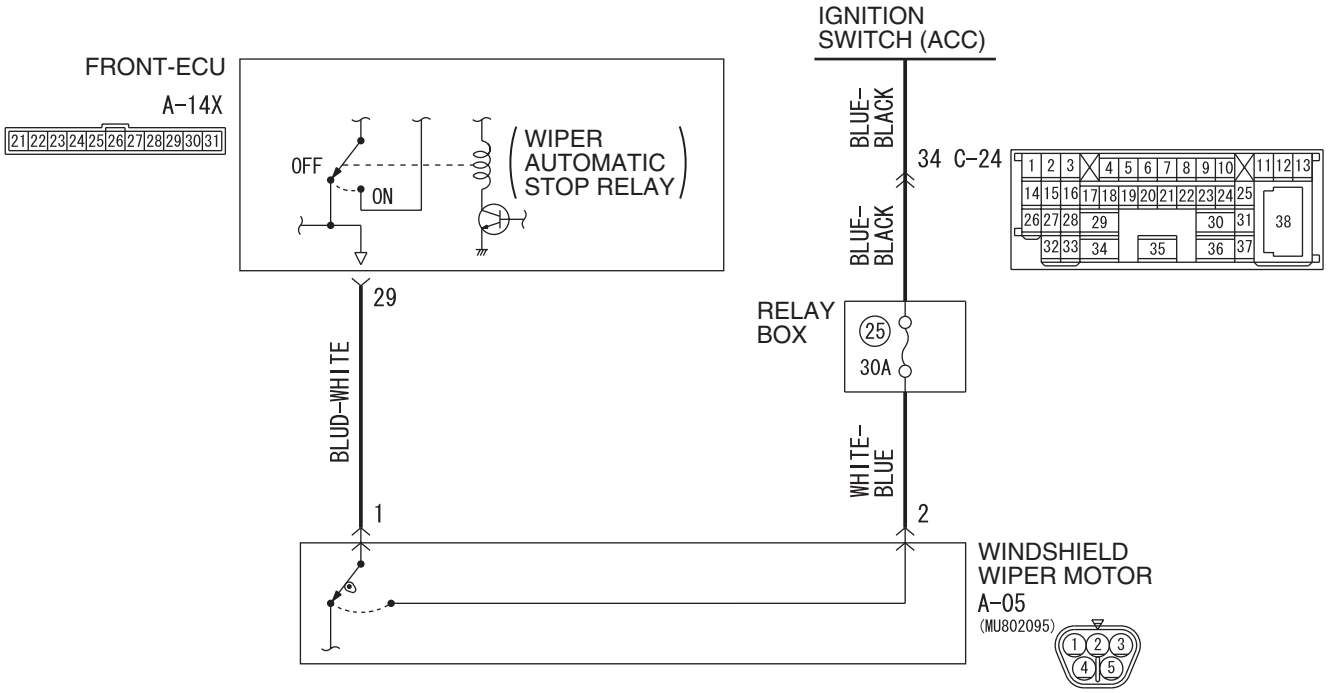
Q: Is the wiring harness between windshield wiper motor connector A-05 (terminals 3 and 5) and front-ECU connector A-14X (terminals 25 and 24) in good condition?

YES : No action is necessary and testing is complete.

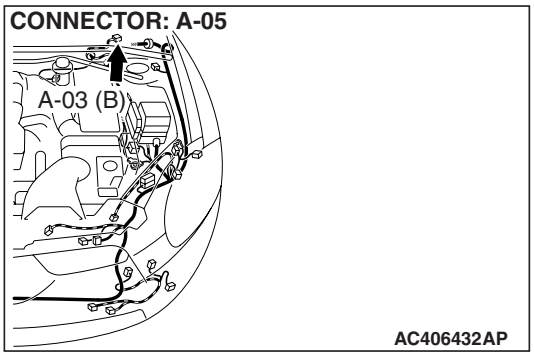
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper operates normally when the windshield wiper switch is moved to each position.

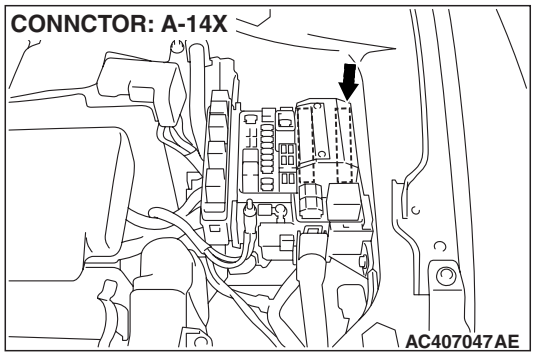
INSPECTION PROCEDURE G-4: Windshield Wiper and Washer: Windshield wipers does not stop at the predetermined park position.

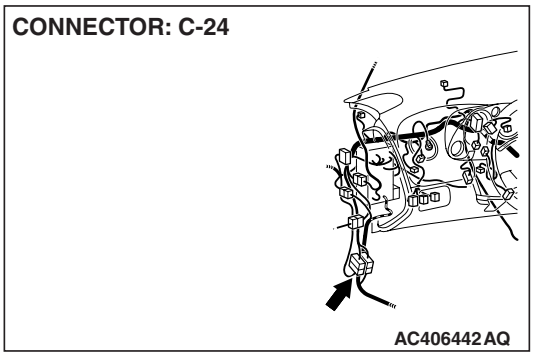
Windshield Wiper Automatic Stop Relay Circuit



W6P54M028A







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TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

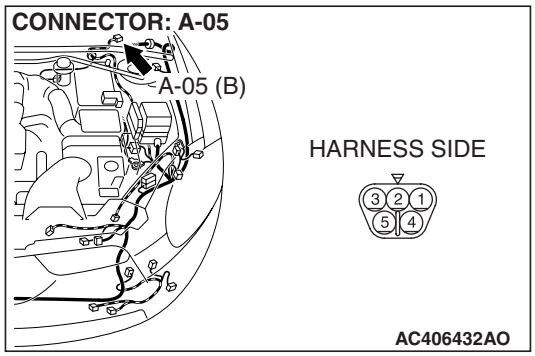
- MB991223: Harness Set
- MB992006: Extra Fine Probe

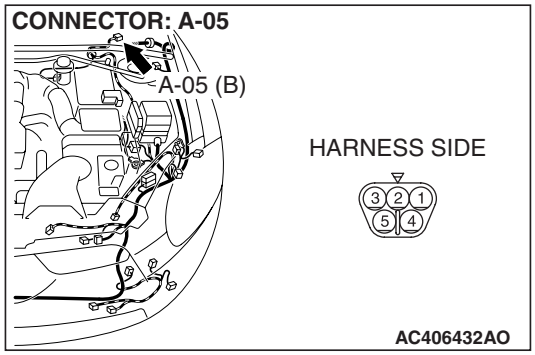
STEP1. Check windshield wiper motor connector A-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector A-05 in good condition?

YES : Go to Step 2.

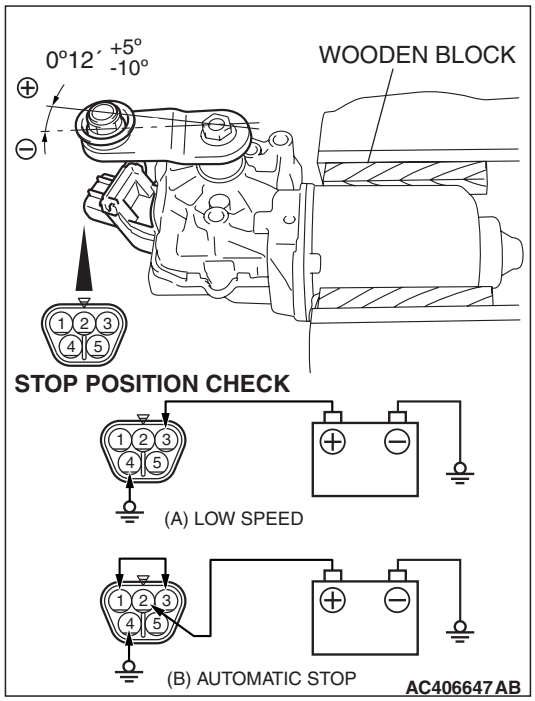
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the windshield wiper works normally.





STEP 2. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector A-05.



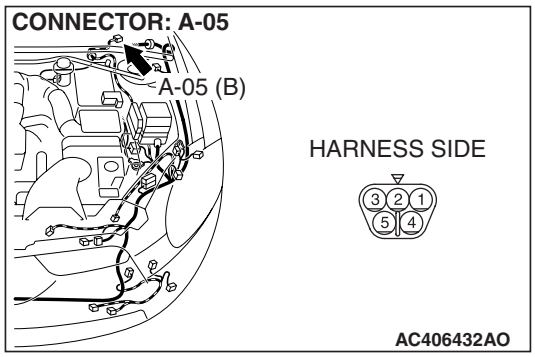
(2) Connect the vehicle battery to the windshield wiper motor connector as shown, and operate the windshield wiper at low speed. While the windshield wiper is working, disconnect the battery at positions other than the predetermined park position to stop the windshield wiper motor.

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

Q: Does the windshield wiper motor operate normally?

YES : Go to Step 3.

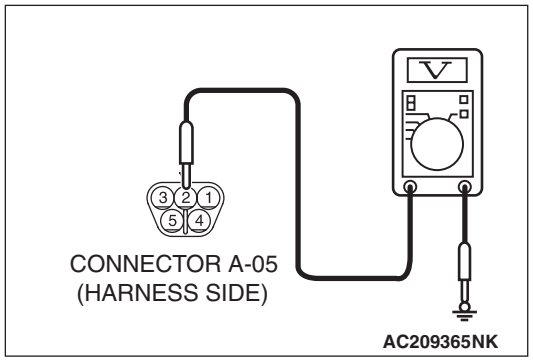
NO : Replace the windshield wiper motor. The windshield wiper should now stop at the predetermined park position.



STEP 3. Check the ignition switch (ACC) circuit to the windshield wiper motor. Measure the voltage at windshield wiper motor connector A-05.

(1) Disconnect windshield wiper motor connector A-05 and measure the voltage available at the wiring harness side of the connector.

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



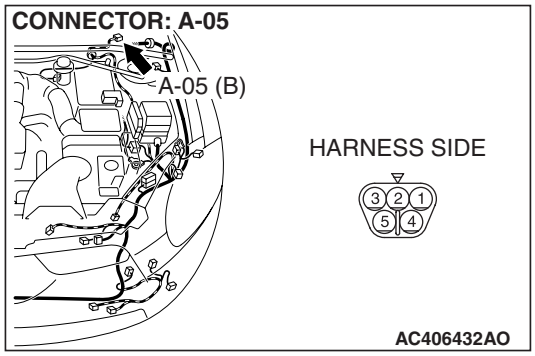
(3) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

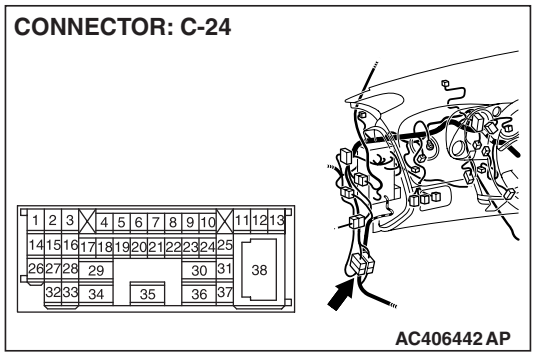
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wiring harness between windshield wiper motor connector A-05 (terminal 2) and the ignition switch (ACC).





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

Q: Is the wiring harness between windshield wiper motor connector A-05 (terminal 2) and the ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

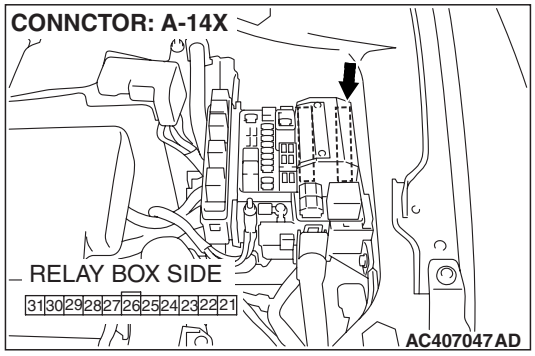
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the windshield wiper works normally.

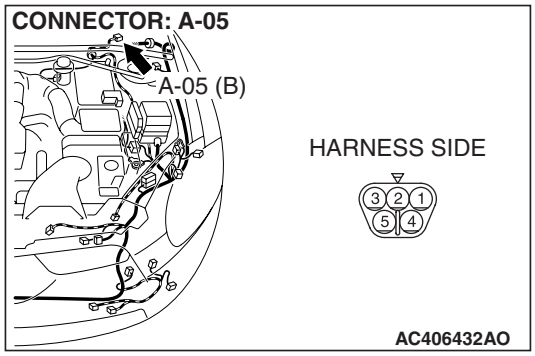
STEP 5. Check front-ECU connector A-14X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

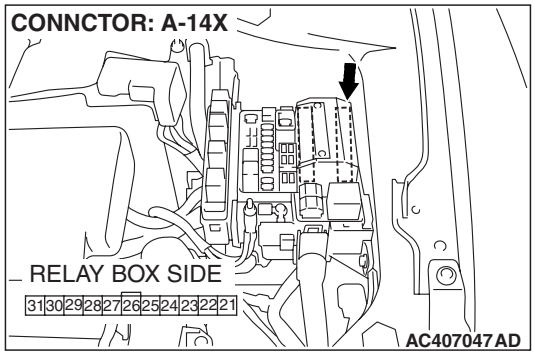
Q: Is front-ECU connector A-14X in good condition?

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.







STEP 6. Check the wiring harness between windshield wiper motor connector A-05 (terminal 1) and front-ECU connector A-14X (terminal 29).

Q: Is the wiring harness between windshield wiper motor connector A-05 (terminal 1) and front-ECU connector A-14X (terminal 29) in good condition?

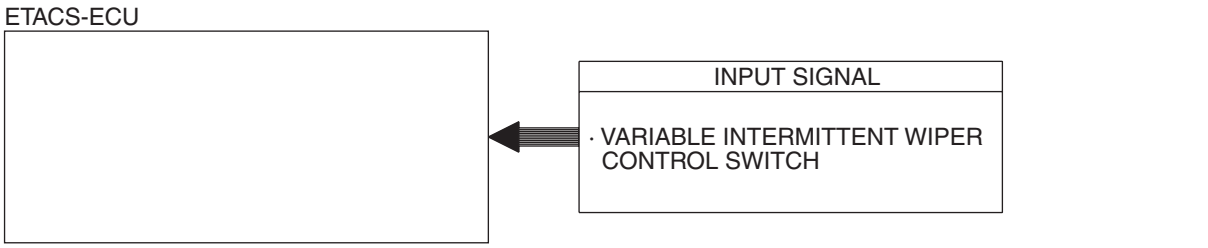
YES : Replace the front-ECU. The windshield wiper should stop at the predetermined park position.

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

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Variable Intermittent Wiper Control Switch Input Signal



TECHNICAL DESCRIPTION (COMMENT)

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

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TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

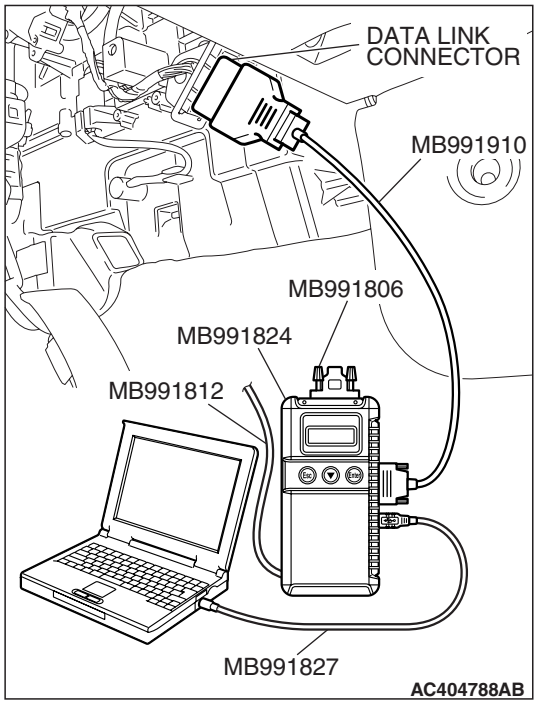
Check the input signal by using "DATA LIST" menu of the SWS monitor.

Set each switch to the following condition to check input signals from the variable intermittent wiper control switch:

- Ignition switch: ACC
- Windshield wiper switch: INT

⚠ CAUTION

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



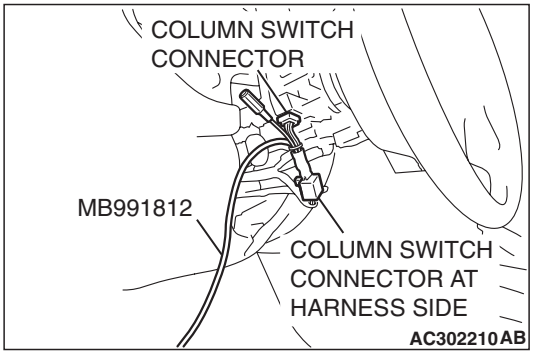
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

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

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

NOTE: Also check that the windshield wiper interval changes smoothly when the variable intermittent wiper control switch is rotated from "SLOW" to "FAST" position.

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



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

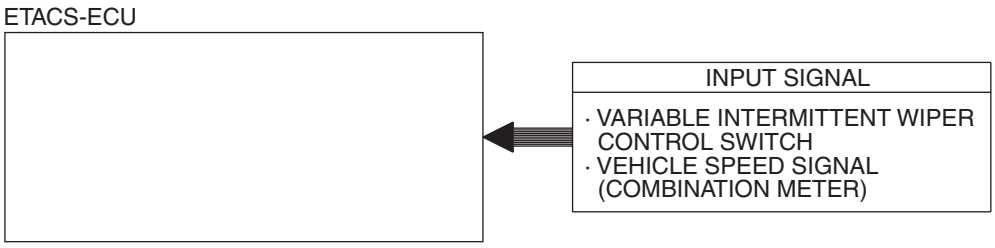
YES : Replace the front-ECU. Check that the windshield intermittent wiper interval changes according to the vehicle speed or while the windshield intermittent wiper interval adjusting knob is rotated.

NO : Refer to Inspection Procedure M-8 "ETACS-ECU does not receive any signal from the variable intermittent wiper control switch P.54B-481."

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

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Variable Intermittent Wiper Control Switch Input Signal



W4P54M57AA

TECHNICAL DESCRIPTION (COMMENT)

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

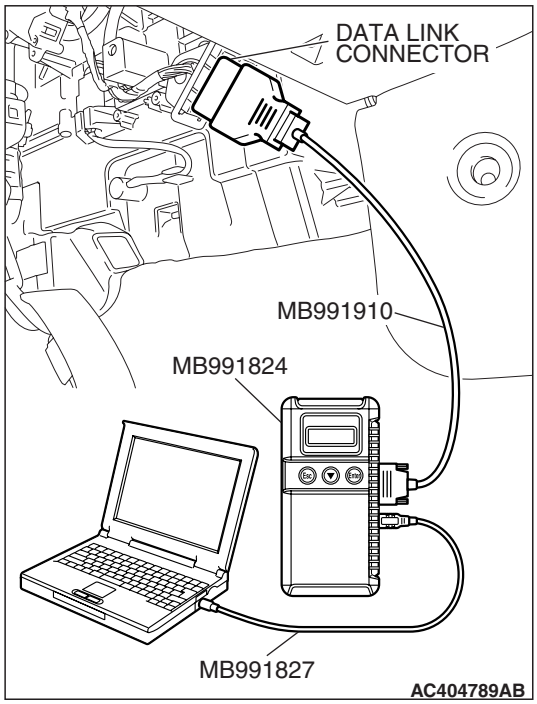
TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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



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

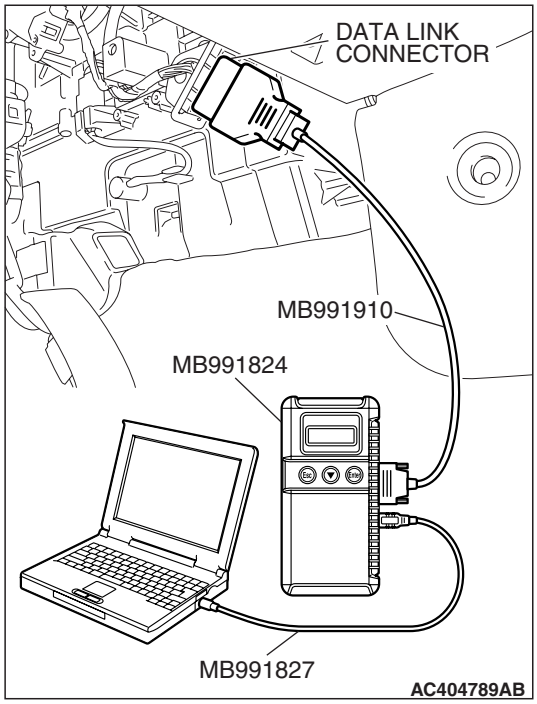
⚠ CAUTION

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

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



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

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

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to P.54A-55.
NO : Go to Step 3.

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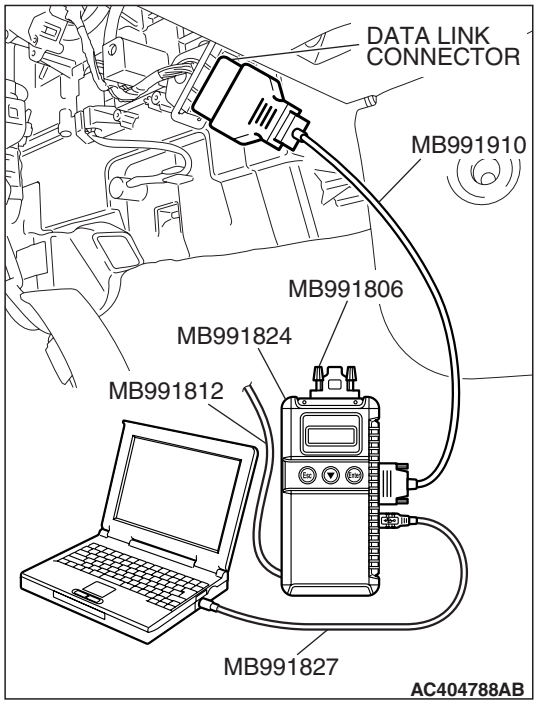
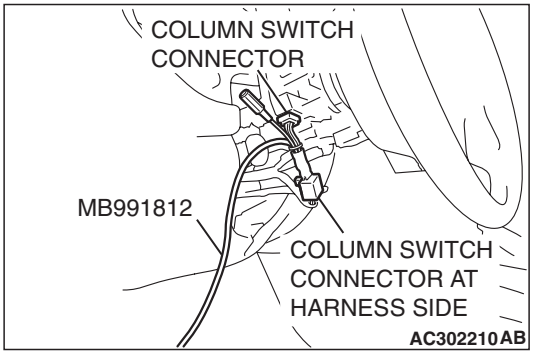




STEP 3. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

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

⚠ CAUTION

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

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

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

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

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

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

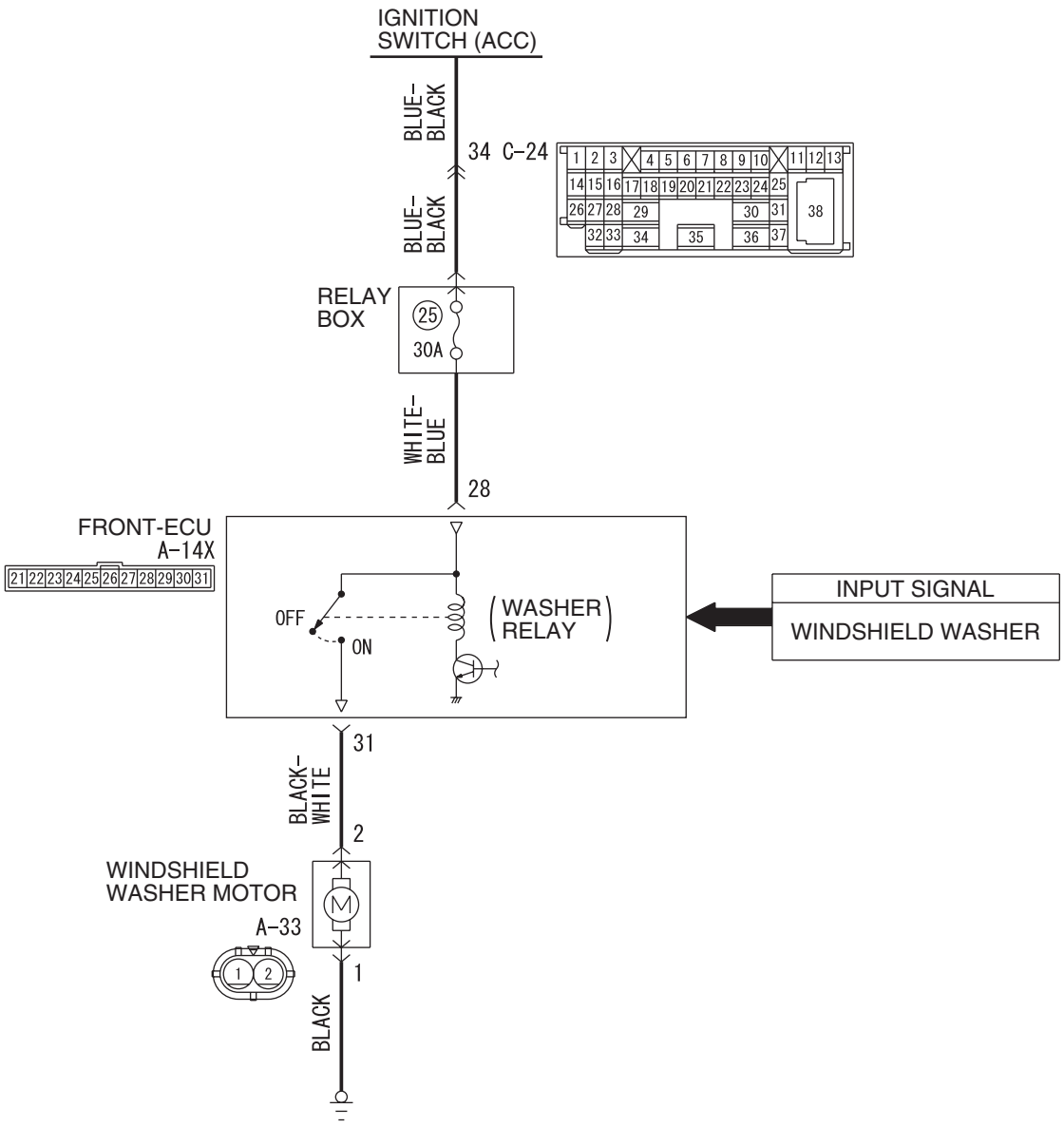
YES : Replace the front-ECU. The windshield intermittent wiper interval should change according to the vehicle speed.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The windshield intermittent wiper interval should change according to the vehicle speed.

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

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Windshield Washer Motor Circuit



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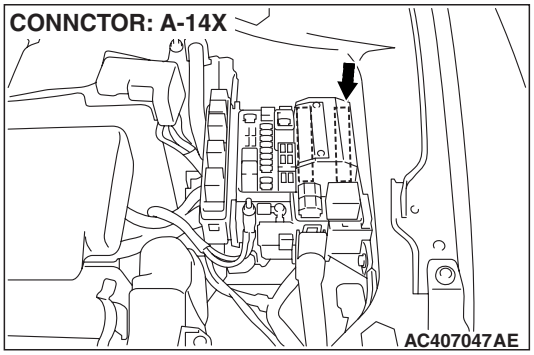
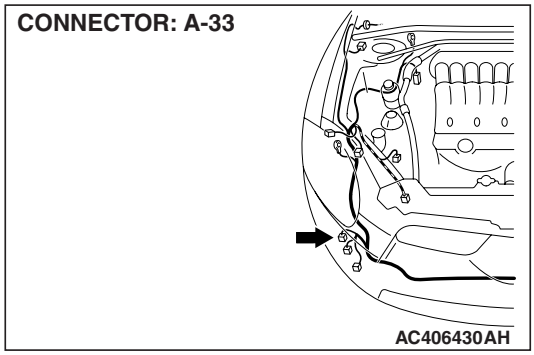




CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

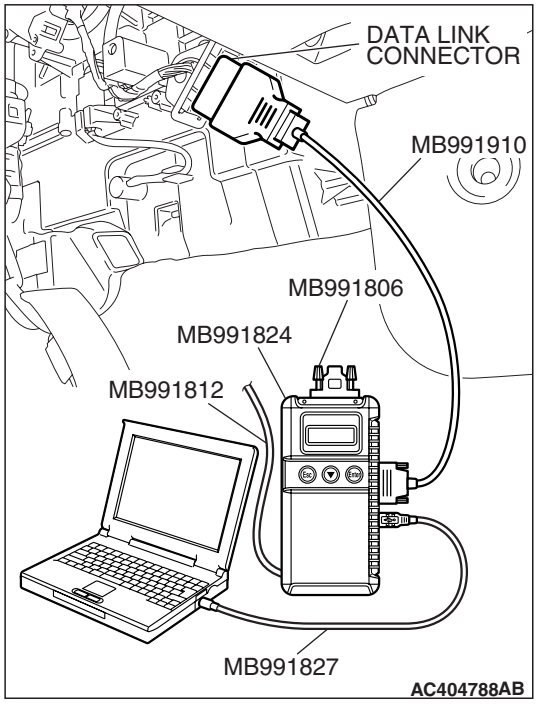
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)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

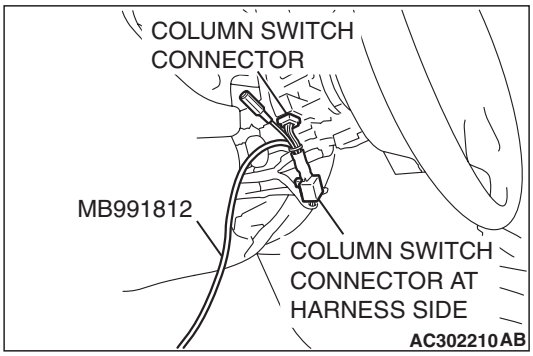
STEP 1. Verify the windshield wiper operation.

Q: Does the windshield wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure G-1 "The windshield wipers do not work at all P.54B-232."





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

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" is displayed for all the items : Go to Step 3.
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible P.54B-86."

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

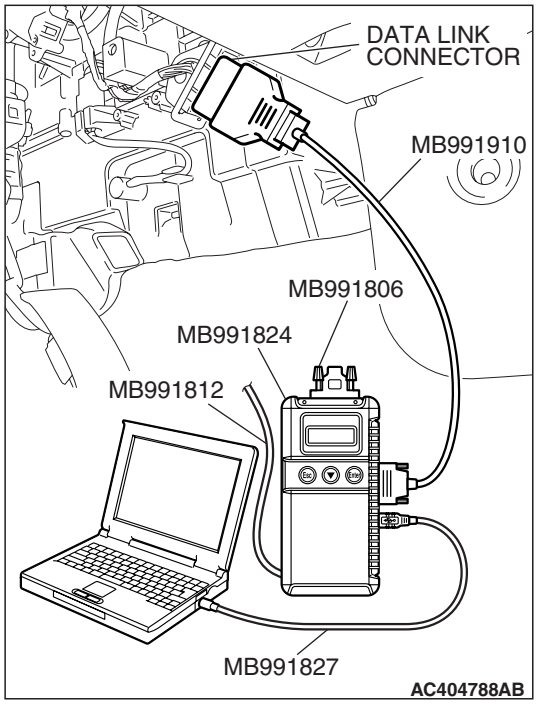
Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield washer switch: ON

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

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

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

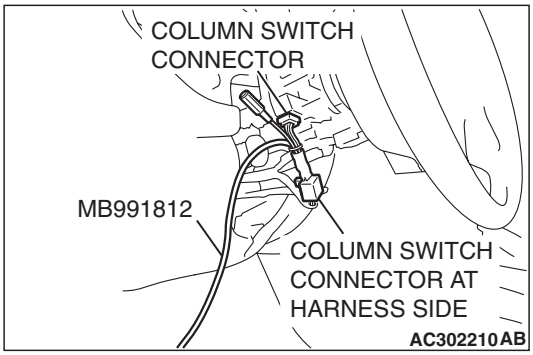


Q: Are normal conditions displayed for "FRONT WASH.SW" and "FRONT ECU ACK"?

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

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

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

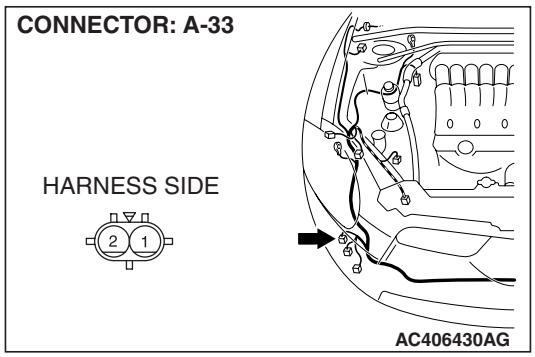


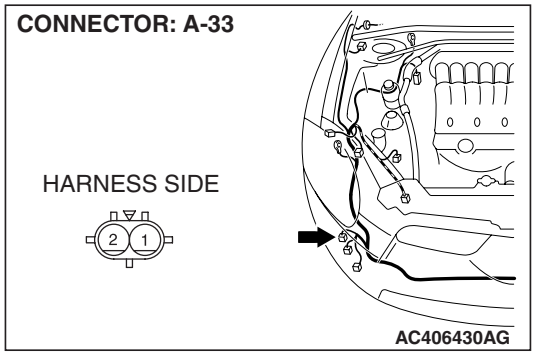
STEP 4. Check windshield washer motor connector A-33 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield washer motor connector A-33 in good condition?

YES : Go to Step 5.

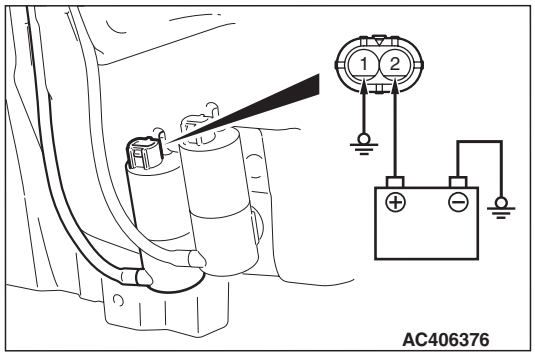
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the windshield washer works normally.





STEP 5. Check the windshield washer motor.

(1) Disconnect windshield washer motor connector A-33, and check at windshield washer motor connector side.
(2) Fill the windshield washer tank with washer fluid.



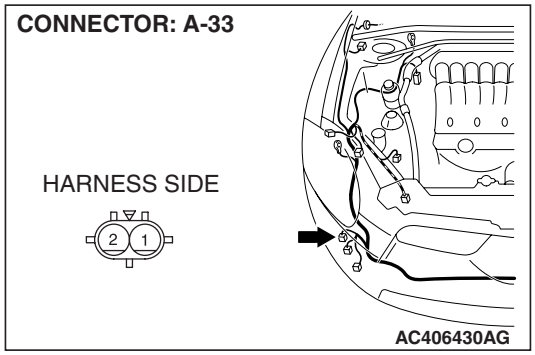
(3) When battery voltage is applied between terminals 1 and 2, washer fluid should spray out.

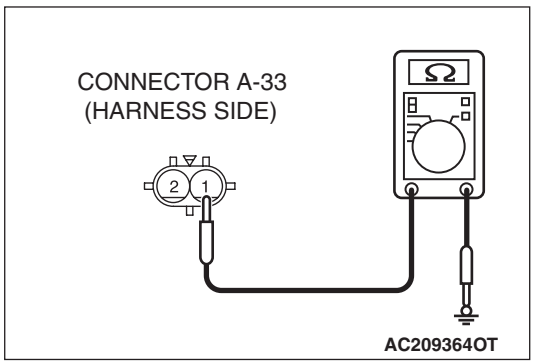
Q: Does the windshield washer motor operate normally?

YES : Go to Step 6.
NO : Replace the windshield washer motor. Verify that the windshield washer works normally.

STEP 6. Check the ground circuit to the windshield washer motor. Measure the resistance at the windshield washer motor connector A-33.

(1) Disconnect windshield washer motor connector A-33 and measure the resistance available at the wiring harness side of the connector.

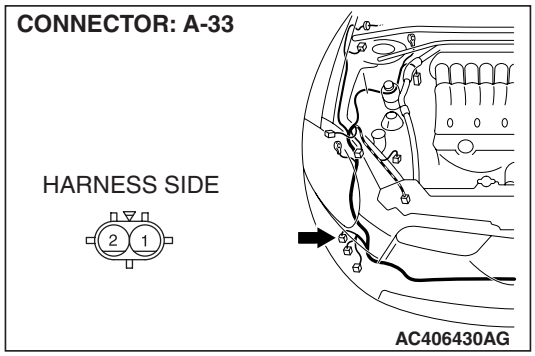




(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.
NO : Go to Step 7.

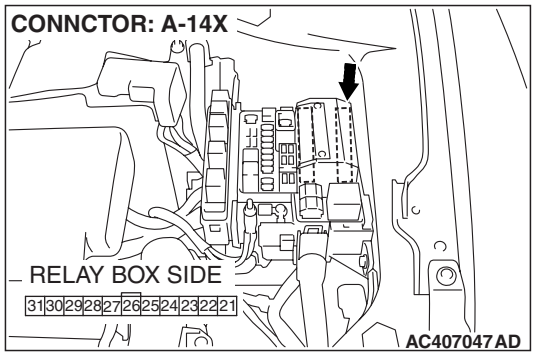


STEP 7. Check the wiring harness between windshield washer motor connector A-33 (terminal 1) and ground.

Q: Is the wiring harness between windshield washer motor connector A-33 (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.

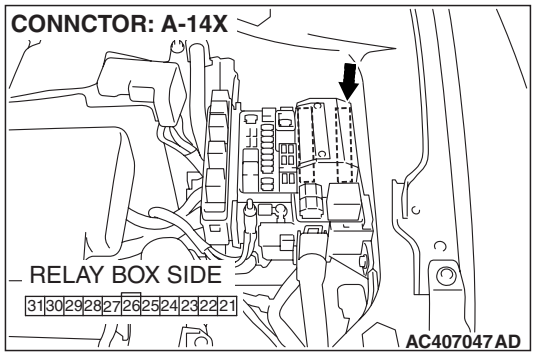


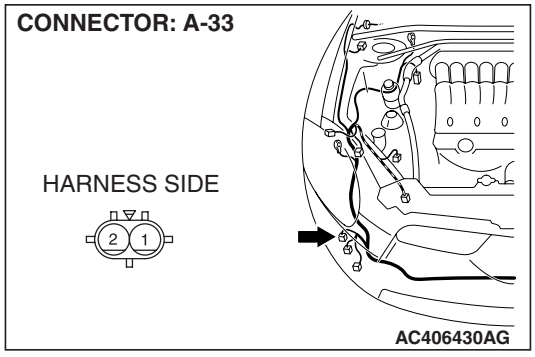
STEP 8. Check front-ECU connector A-14X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-14X in good condition?

YES : Go to Step 9.

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





STEP 9. Check the wiring harness between windshield washer motor connector A-33 (terminal 2) and front-ECU connector A-14X (terminal 31).

Q: Is the wiring harness between windshield washer motor connector A-33 (terminal 2) and front-ECU connector A-14X (terminal 31) in good condition?

YES : No action is necessary and testing is complete.

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

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REAR WIPER AND WASHER

GENERAL DESCRIPTION CONCERNING THE REAR WIPER AND WASHER

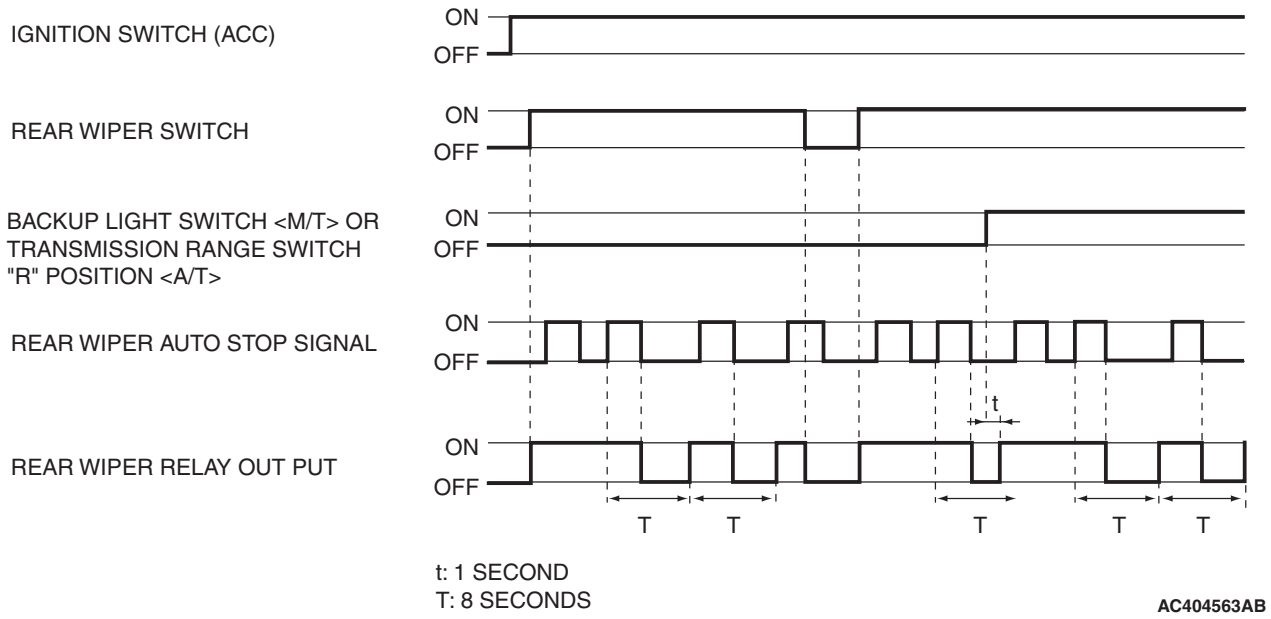
M1549021600317

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

Rear wiper control



Intermittent control (basic control)

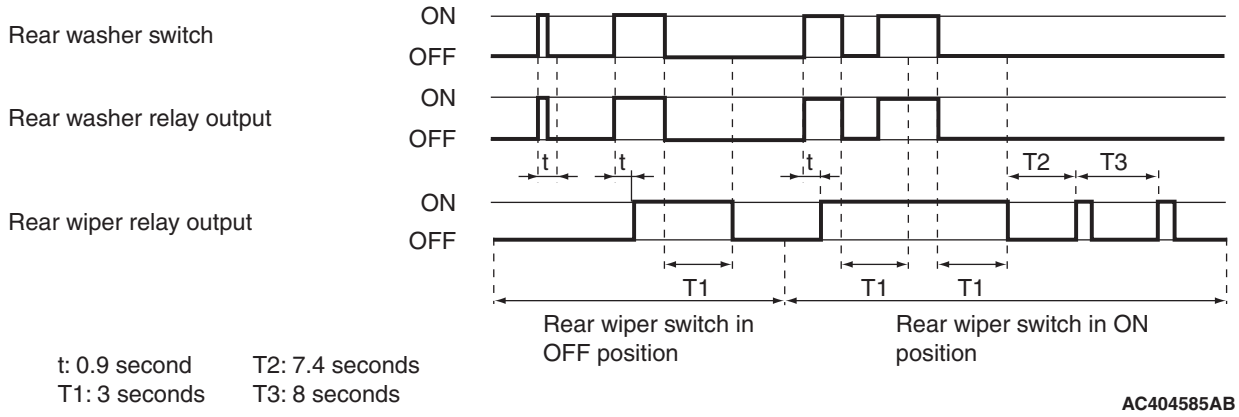
When the rear wiper switch on the column switch is turned ON with the ignition switch ACC or ON, ETACS-ECU turns ON the rear wiper relay and operates the rear wiper twice consecutively. After that, operation continues at 8-second intervals.

"R" position-linked control

When the shift lever <M/T> or the selector lever <A/T> is moved to R (reverse) position during the rear wiper operation, the backup light switch <M/T> or the transmission range switch R (reverse) <A/T> turns ON. One second after that, the ETACS-ECU turns the rear wiper relay ON, and operates the rear wiper twice consecutively.

NOTE: If the rear wiper switch is turned OFF or the backup light switch <M/T> or the transmission range switch R (reverse) <A/T> is turned OFF while the rear wiper is operating twice consecutively, the rear wiper relay will be turned OFF and the rear wiper will be stopped.

Rear washer control



t: 0.9 second T2: 7.4 seconds
T1: 3 seconds T3: 8 seconds

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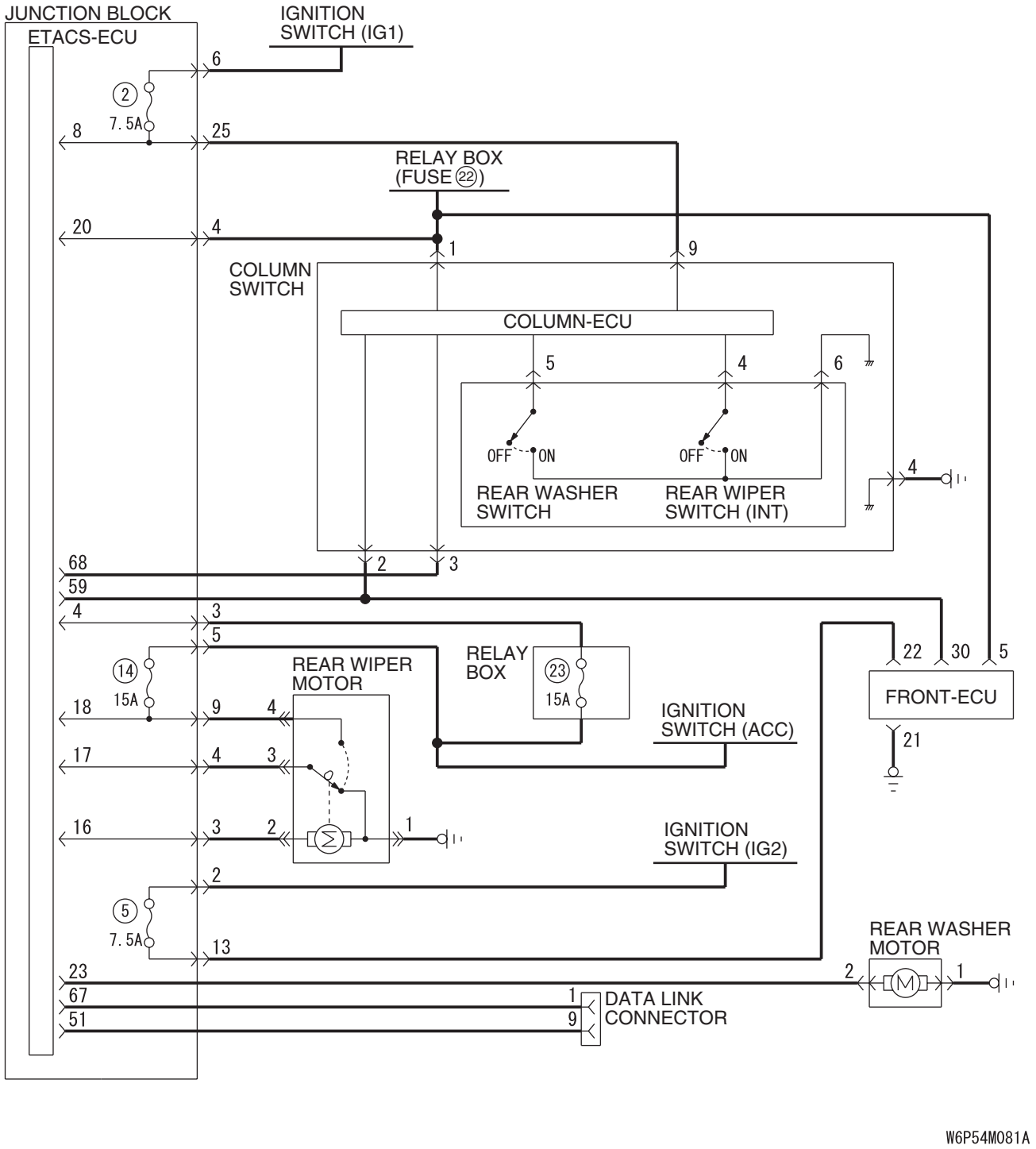
When the rear washer switch on the column switch is turned ON with the ignition switch ACC or ON, the ETACS-ECU turns ON the rear washer relay.
If the rear washer switch remains ON for 0.9 second or more, the rear wiper operates. 3 seconds after the rear washer switch is turned OFF, the rear wiper is stopped.

If the rear washer switch is turned ON during the intermittent operation of the rear wiper, the rear wiper operates along with the rear washer consecutively. 7.4 seconds after the rear wiper stops consecutive operation, it returns to the intermittent operation.

General circuit diagram for rear wiper and washer (A/T)



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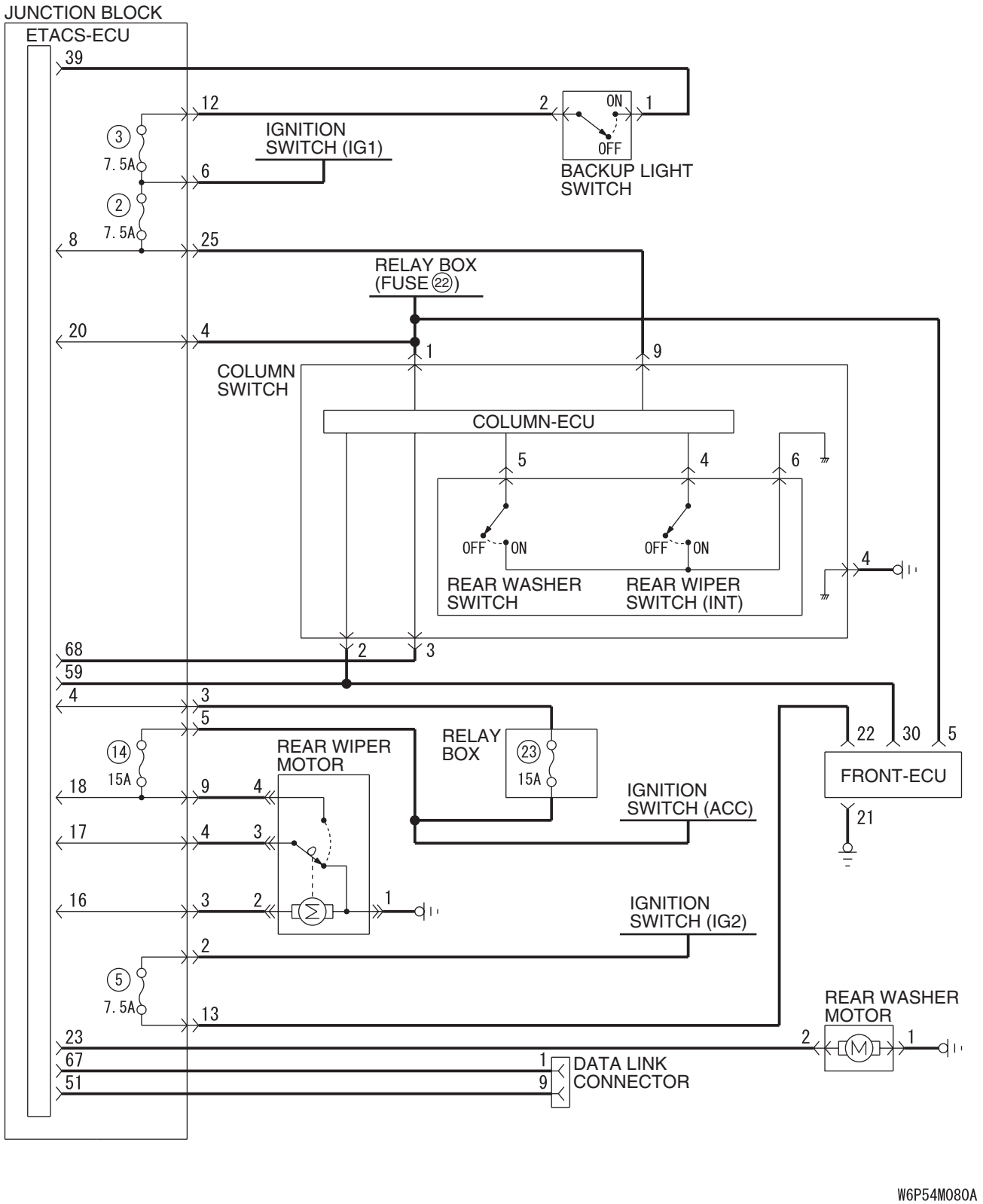
General circuit diagram for rear wiper and washer (M/T)



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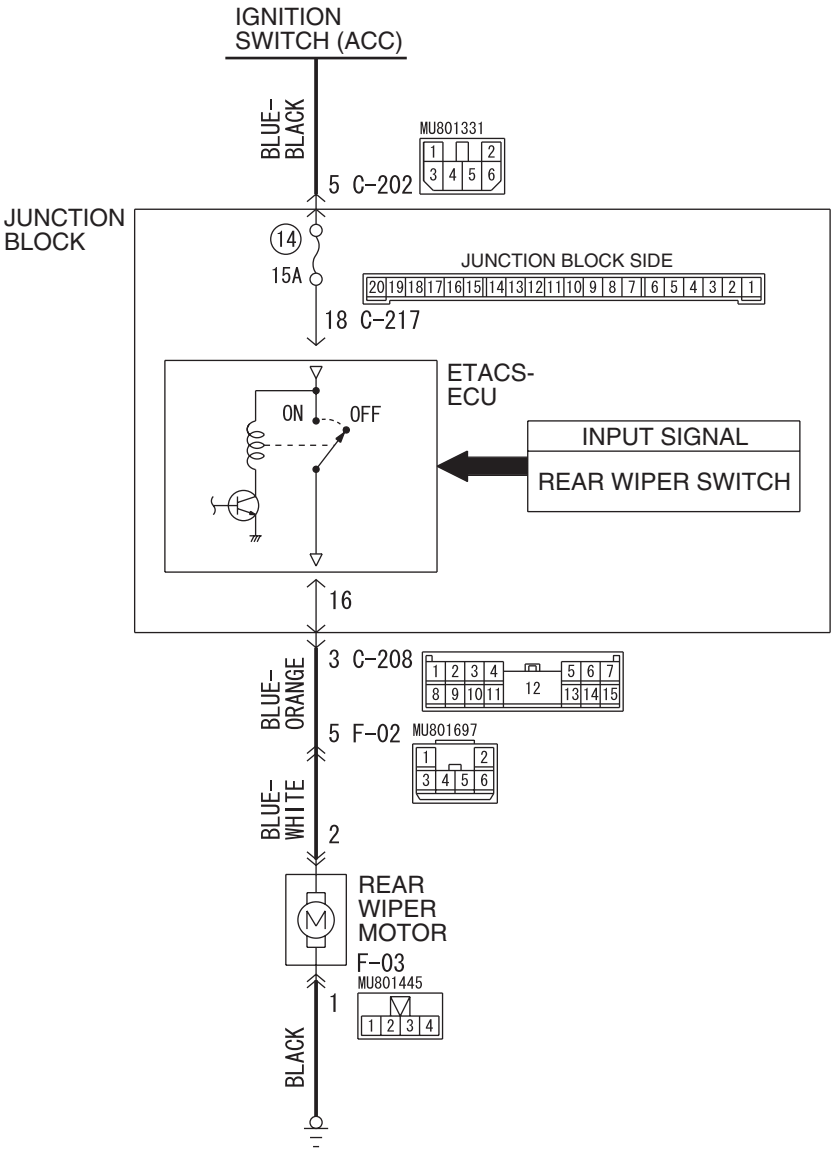
INSPECTION PROCEDURE H-1: Rear Wiper and Washer: Rear wiper does not work at all.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Rear Wiper Drive Circuit



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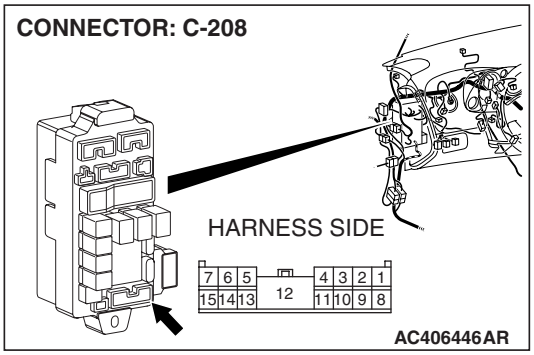

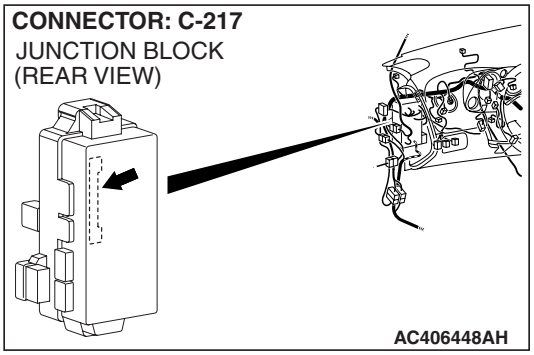

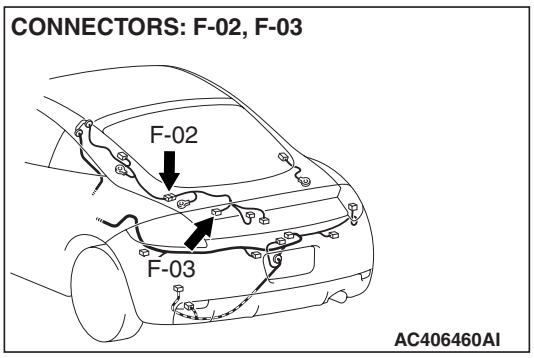

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicles 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

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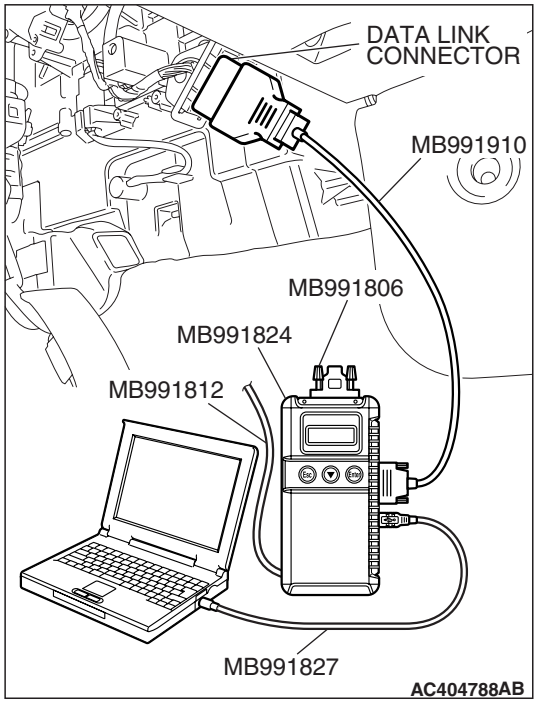
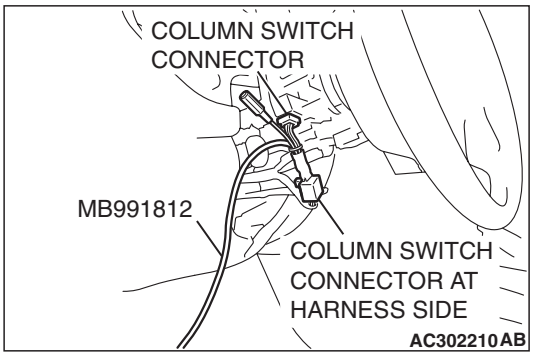




STEP 1. Use scan tool MB991958 to select "ECU COMM CHK" on the SWS monitor display.

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "ETACS ECU" and the "COLUMN ECU" menus.

Q: Are "OK" displayed on the "ETACS ECU" and "COLUMN 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-78."
"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-70."

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

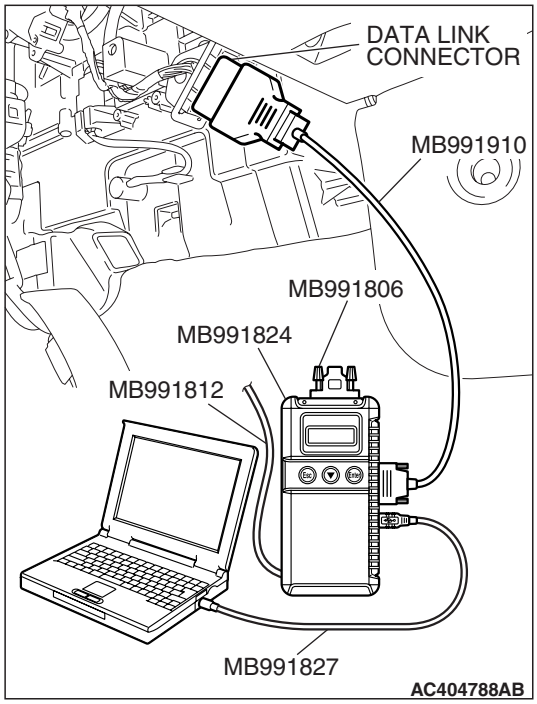
Check the input signals from the following switches:

- Ignition switch: ACC
- Rear wiper switch: INT

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

(2) Check that normal conditions are displayed for 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

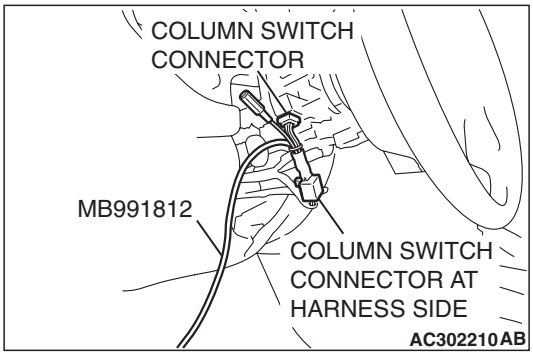


Q: Are normal conditions displayed on the "REAR WIPER SW" and "IG SW (ACC)"?

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

Normal condition is not displayed for "REAR WIPER SW" : Refer to Inspection Procedure M-7 "ETACS-ECU does not receive a signal from the rear wiper switch P.54B-476."

Normal condition is not displayed for "IG SW (ACC)" : Refer to Inspection Procedure M-1 "ETACS-ECU does not receive a signal from the ignition switch (ACC) P.54B-449."

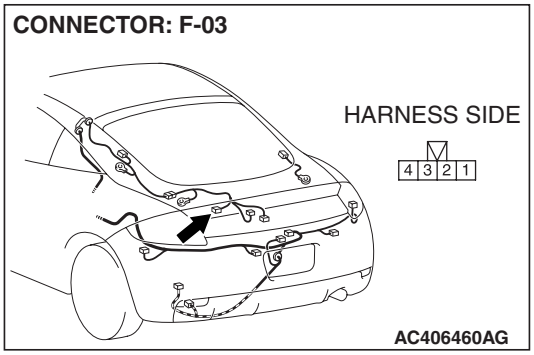


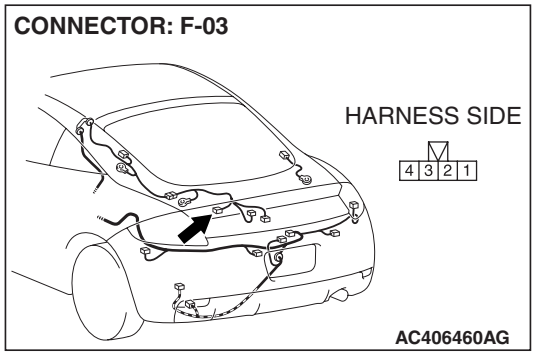
STEP 3. Check the rear wiper motor connector F-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear wiper motor connector F-03 in good condition?

YES : Go to Step 4.

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





STEP 4. Check the rear wiper motor.

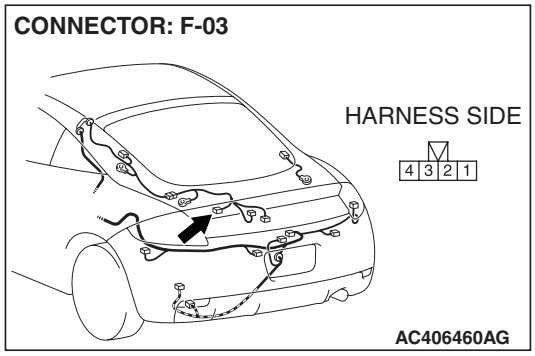
(1) Disconnect rear wiper motor connector F-03.

(2) Connect a battery to the wiper motor as shown in the illustration and inspect the motor operation.

Q: Is the rear wiper motor in good condition?

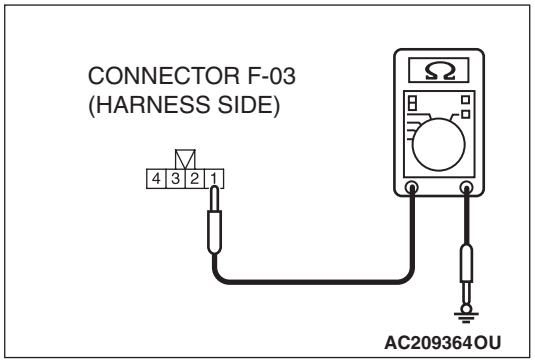
YES : Go to Step 5.

NO : Replace the rear wiper motor. Verify that the rear wiper works normally.



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

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



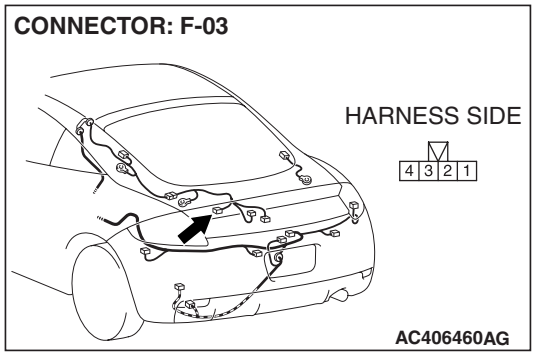
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.

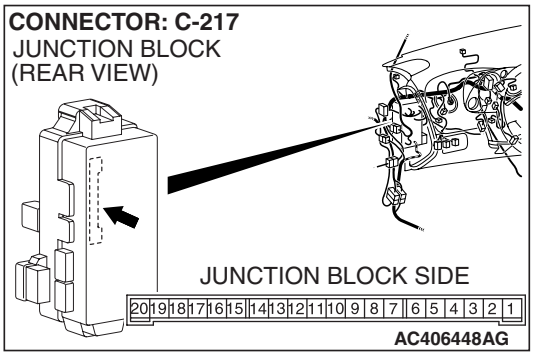


STEP 6. Check the wiring harness between rear wiper motor connector F-03 (terminal 1) and ground.

Q: Is the wiring harness between rear wiper motor connector F-03 (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.

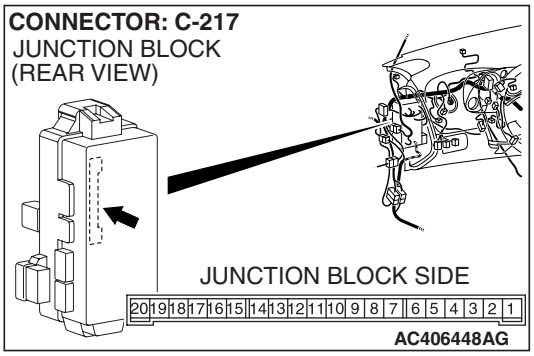


STEP 7. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

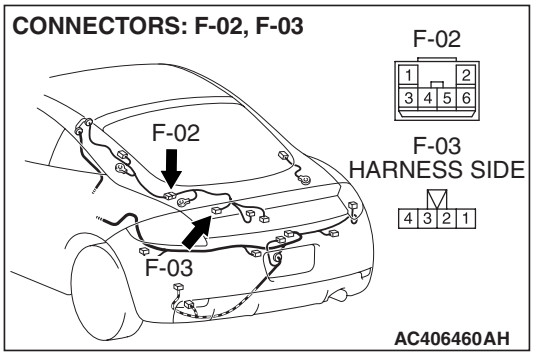
Q: Is ETACS-ECU connector C-217 in good condition?

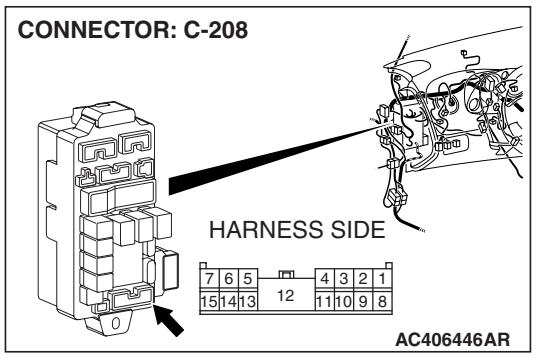
YES : Go to Step 8.

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-03 (terminal 2) and ETACS-ECU connector C-217 (terminal 16).





NOTE: Also check junction block connector C-208 and intermediate connector F-02 for loose, corroded, or damaged terminals, or terminals pushed back in the junction block connector C-208 or intermediate connector F-02 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

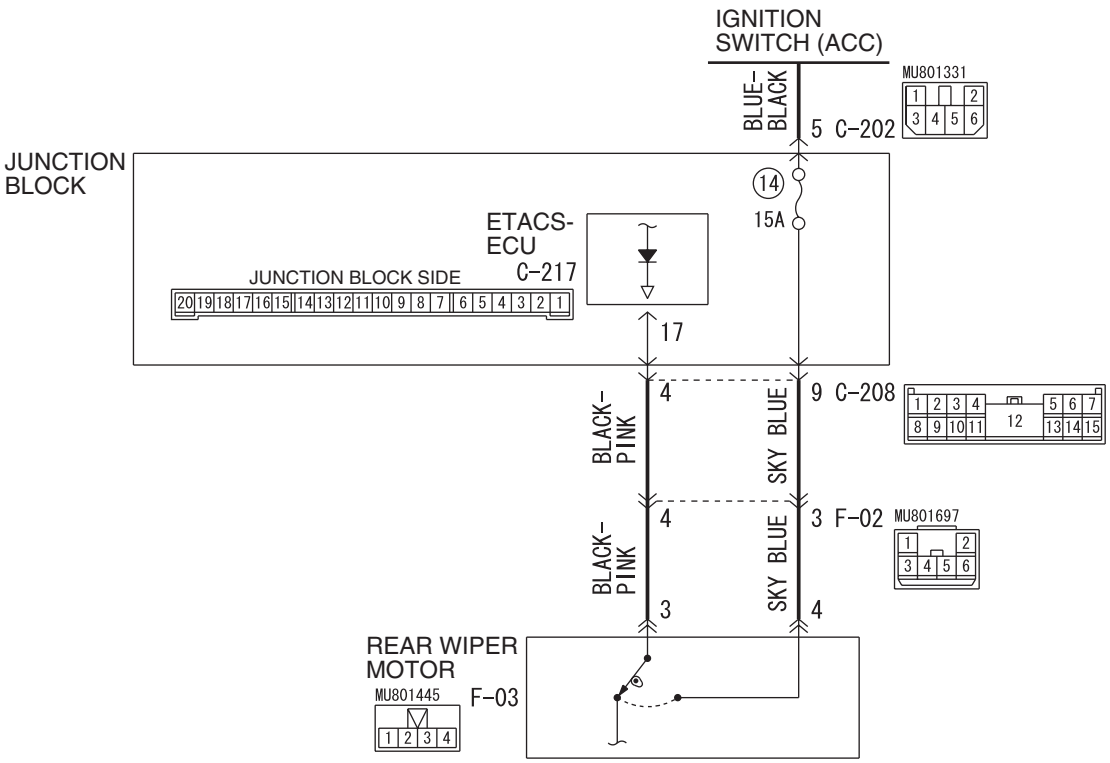
Q: Is the wiring harness between rear wiper motor connector F-03 (terminal 2) and ETACS-ECU connector C-217 (terminal 16) in good condition?

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

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



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TECHNICAL DESCRIPTION (COMMENT)

If the rear wiper does not stop at predetermined park position, the rear wiper motor or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicles 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 automatic stop signal, which the rear wiper motor sends to the ETACS-ECU.

NOTE: When the rear wiper is operated, a signal is sent to the ETACS-ECU.

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

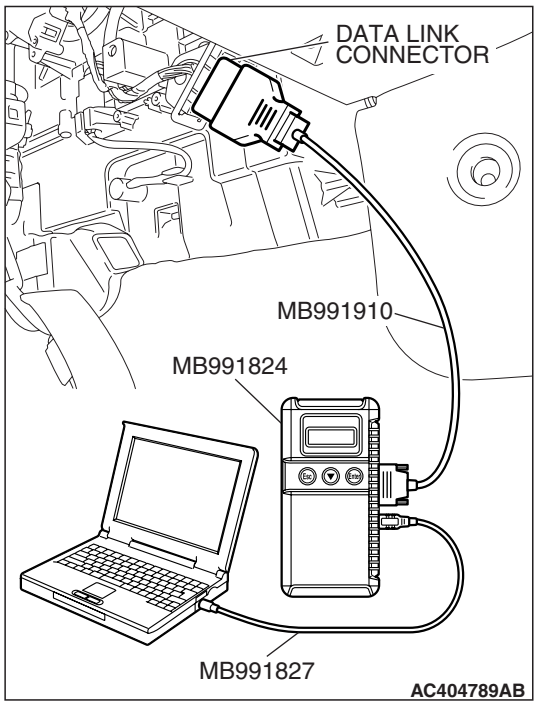
(2) Operate the scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(3) Check that scan tool MB991958 sound when the rear wiper switch is operated.

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

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The rear wiper should stop automatically at the predetermined park position.

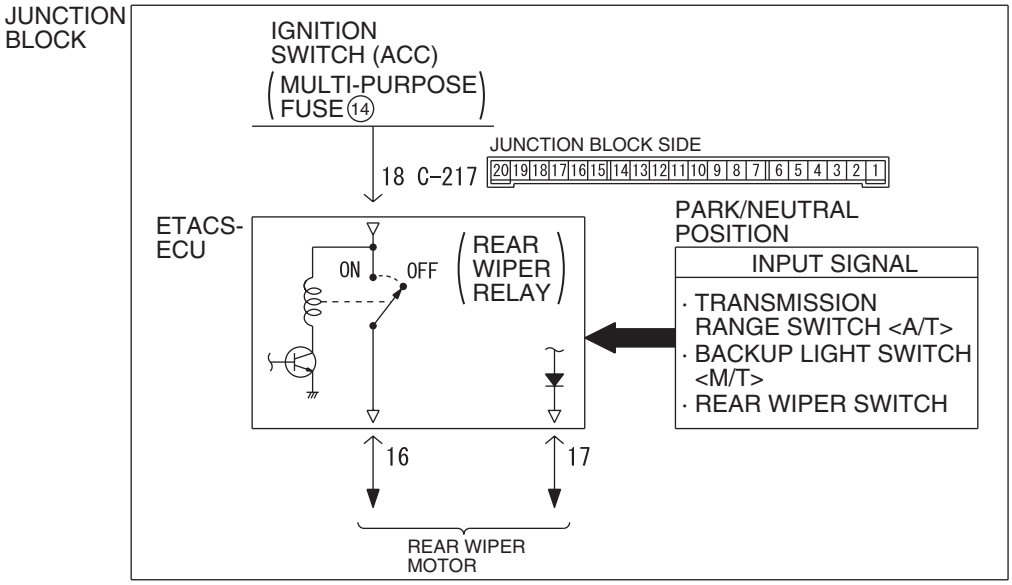
NO : Refer to Inspection Procedure N-10 "ETACS-ECU does not receive an auto-stop signal from the rear wiper motor P.54B-541."



INSPECTION PROCEDURE H-3: Rear Wiper and Washer: When the selector lever is moved to "R" position during the rear wiper operation, the rear wiper does not operate at the continuous mode.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

"R" Position During Rear Wiper Operation Circuit



W6P54M032A

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicles 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

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STEP 1. Verify the rear wiper.

Q: Does the rear wiper operate?

YES <M/T> : Go to Step 2.
YES <A/T> : Go to Step 3.
NO <Rear wiper does not work.> : Refer to Inspection Procedure H-1 "Rear wiper does not work at all P.54B-269."

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 backup light switch.

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

(2) Operate scan tool MB991958 according to the procedure below to display "REV.INTER LOCK."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "REAR WIPER."
   g. Select "REV.INTER LOCK."

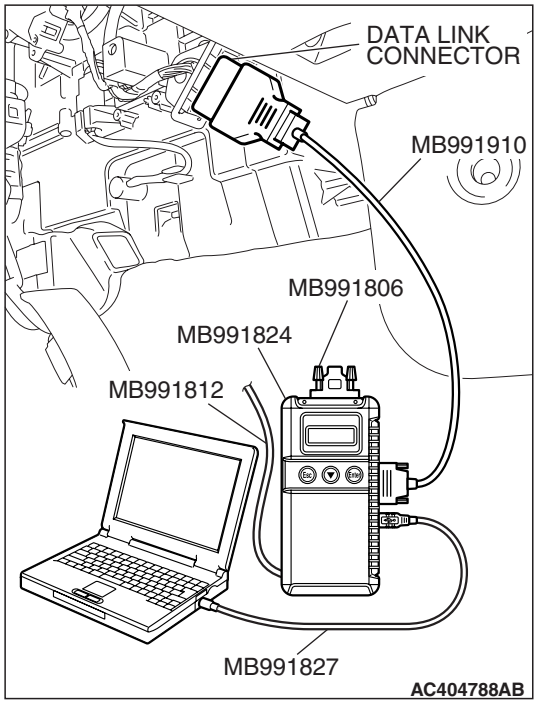
(3) Check that normal conditions are displayed on the item described in the table below.

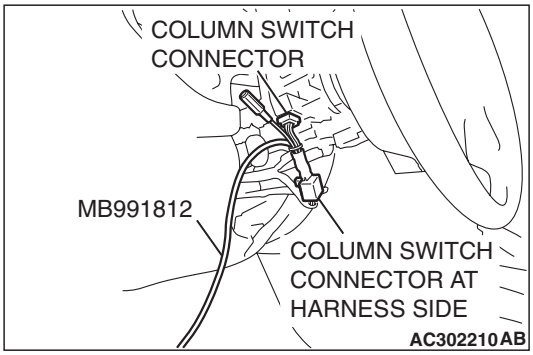
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 41	PNP SW (R)	ON

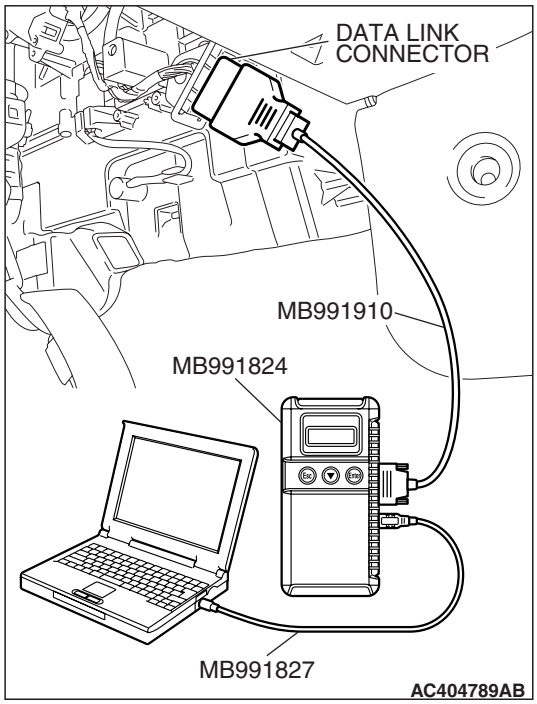
Q: Are normal conditions displayed?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. When the selector lever is moved to the "R" position, the rear wiper should operate consecutively approximately twice.

NO : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive "R" position signal from the backup light switch <M/T>P.54B-459 ."







STEP 3. Using scan tool MB991958, diagnose the CAN bus line.

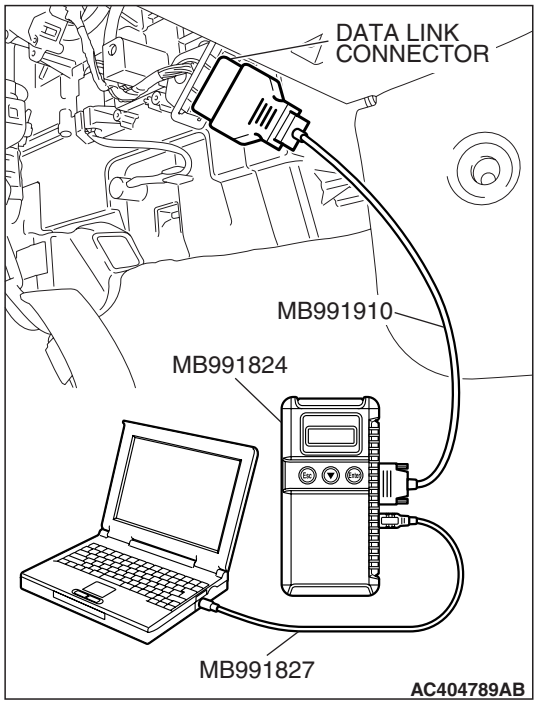
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 4.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 4. Using scan tool MB991958, read the PCM <A/T> diagnostic trouble code.

Check whether engine and automatic transaxle DTCs are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and automatic transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the PCM <A/T> (Refer to GROUP 13A, Diagnosis P.13A-41 <2.4 L> or GROUP 13B, P.13B-43 <3.8 L>).
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. When the selector lever is moved to the "R" position, the rear wiper should operate consecutively approximately twice.

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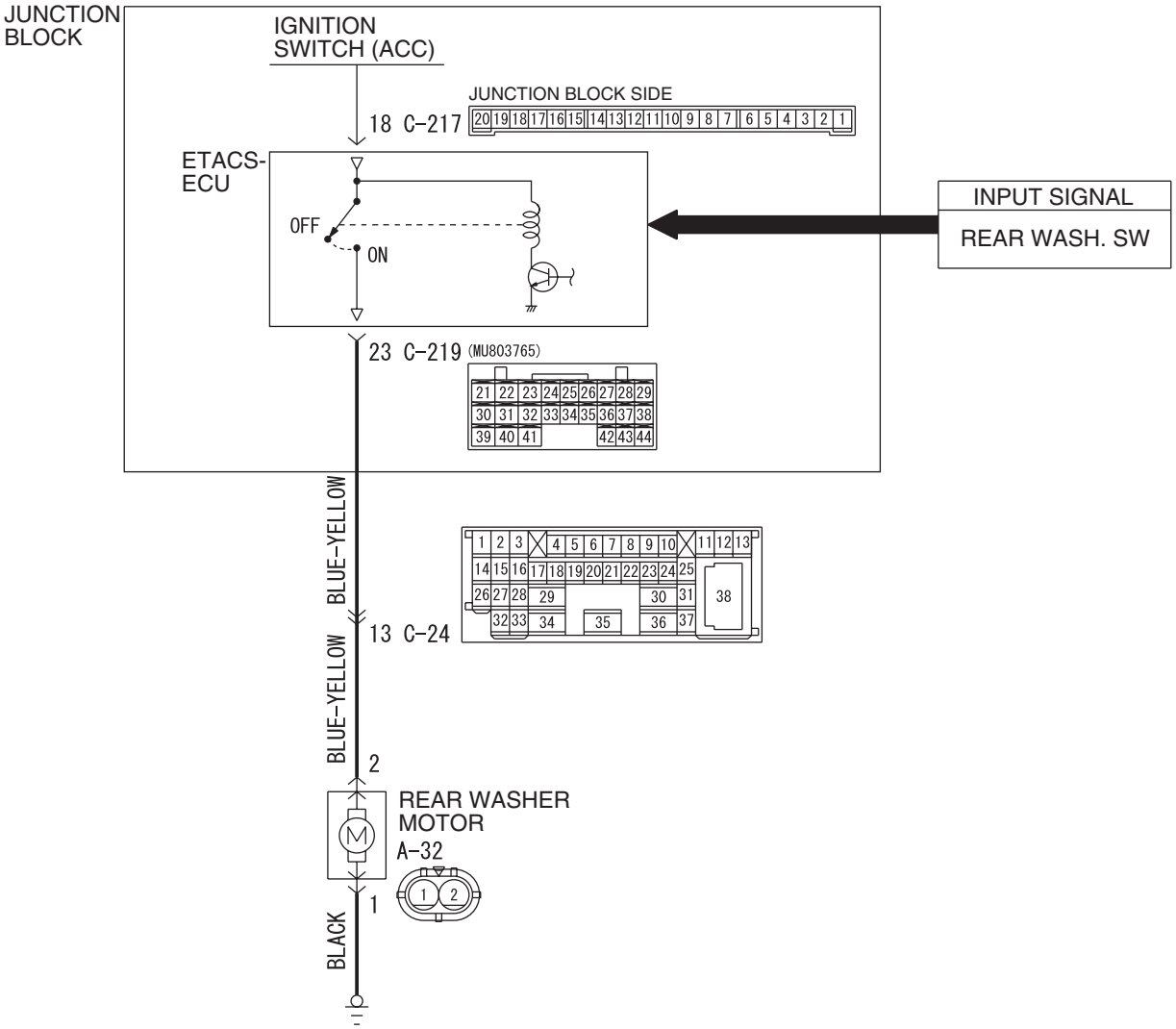
INSPECTION PROCEDURE H-4: Rear Wiper and Washer: Rear washer does not operate.

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Rear Washer Motor Power Supply Circuit



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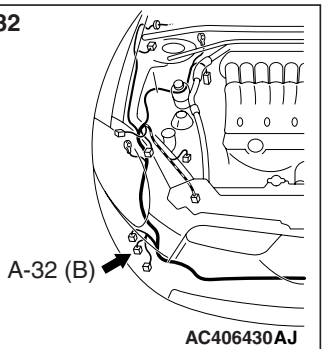
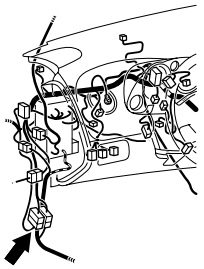
CONNECTOR: A-32



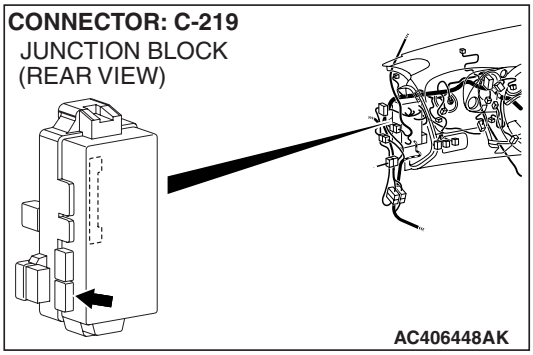
AC406430AJ

CONNECTOR: C-24



AC406442AQ

TSB Revision



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, washer switch) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicles 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 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-269."

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

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

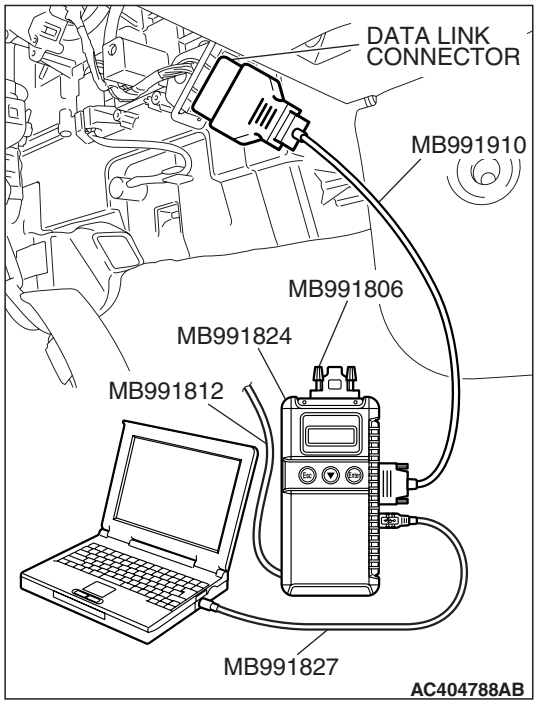
(3) Check that normal condition is displayed for the item described in the table below.

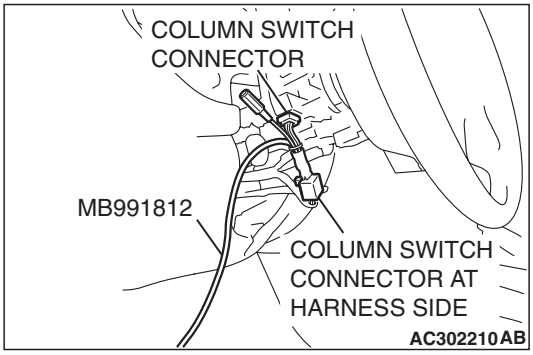
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 14	REAR WASH.SW	ON

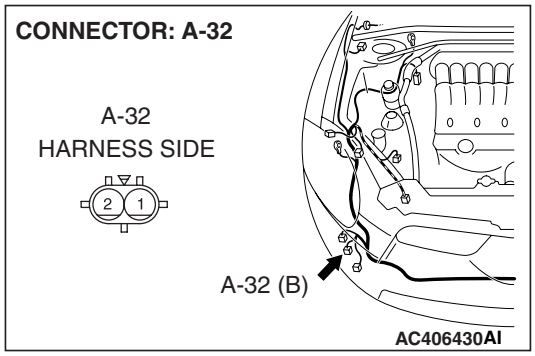
Q: Is normal condition displayed?

YES : Go to Step 3.

NO : Refer to Inspection Procedure M-7 "ETACS-ECU does not receive a signal from the rear washer switch P.54B-476."





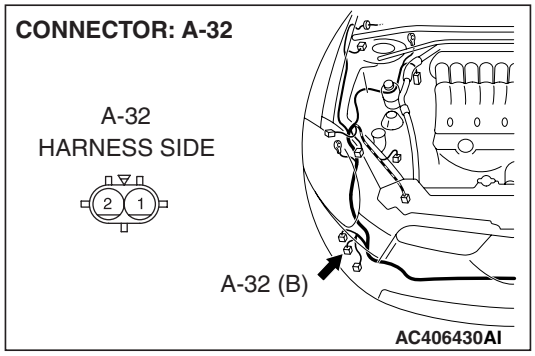


STEP 3. Check the rear washer motor connector A-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear washer motor connector A-32 in good condition?

YES : Go to Step 4.

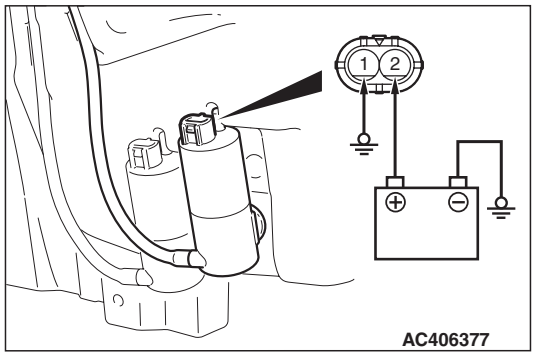
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the rear washer works normally.



STEP 4. Check the rear washer motor.

(1) Disconnect rear washer motor connector A-32.

(2) Fill the washer tank with washer fluid.

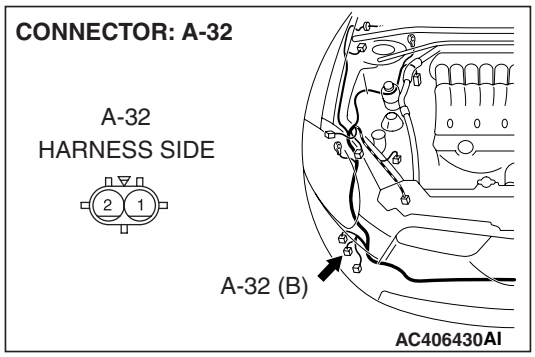


(3) When battery voltage is applied between terminals 1 and 2, washer fluid should spray out.

Q: Does the rear washer motor operate normally?

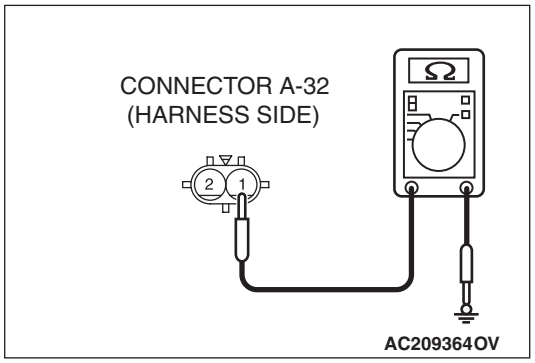
YES : Go to Step 5.

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



STEP 5. Check the ground circuit to the rear washer motor. Measure the resistance at the rear washer motor connector A-32.

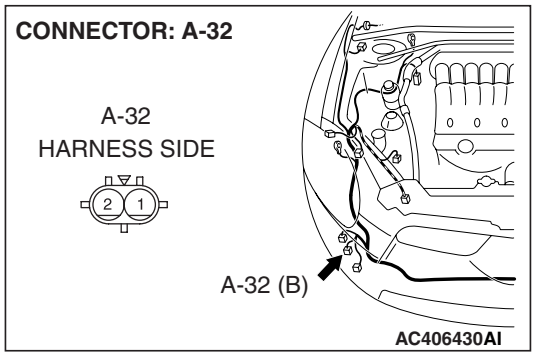
(1) Disconnect rear washer motor connector A-32 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 1 and ground.
- The resistance should equal 2 ohm or less.

Q: Is the measured resistance 2 ohms or less?

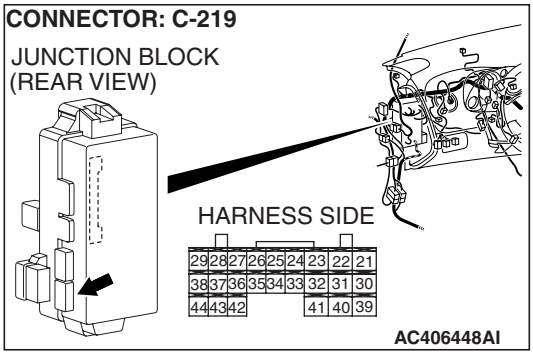
YES : Go to Step 7.
NO : Go to Step 6.



STEP 6. Check the wiring harness between rear washer motor connector A-32 (terminal 1) and ground.

Q: Is the wiring harness between rear washer motor connector A-32 (terminal 1) and ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the rear washer works normally.

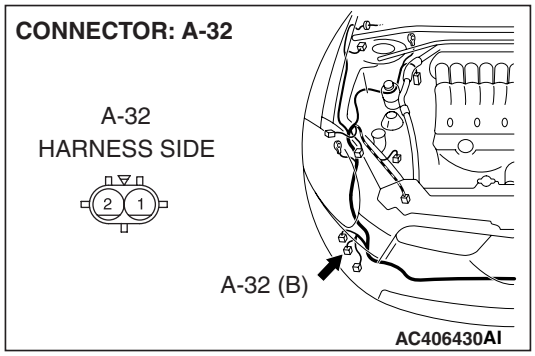


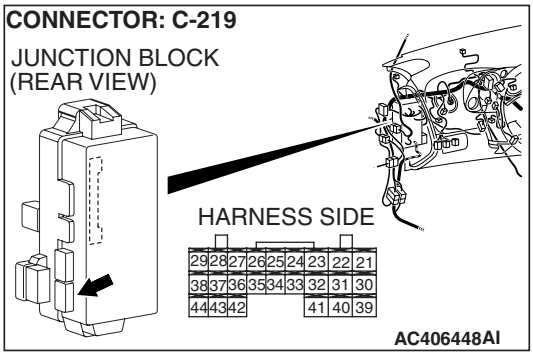
STEP 7. Check the ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

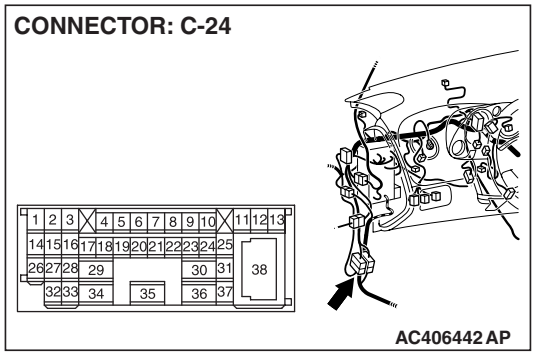
Q: Is ETACS-ECU connector C-219 in good condition?

YES : Go to Step 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-32 (terminal 2) and ETACS-ECU connector C-219 (terminal 23).







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

Q: Is the wiring harness between rear washer motor connector A-32 (terminal 2) and ETACS-ECU connector C-219 (terminal 23) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the rear washer works normally.

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

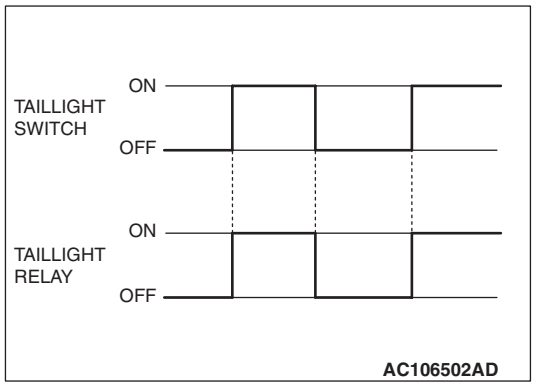
HEADLIGHT AND TAILLIGHT

GENERAL DESCRIPTION CONCERNING THE HEADLIGHTS AND TAILLIGHTS

M1549021300327

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

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



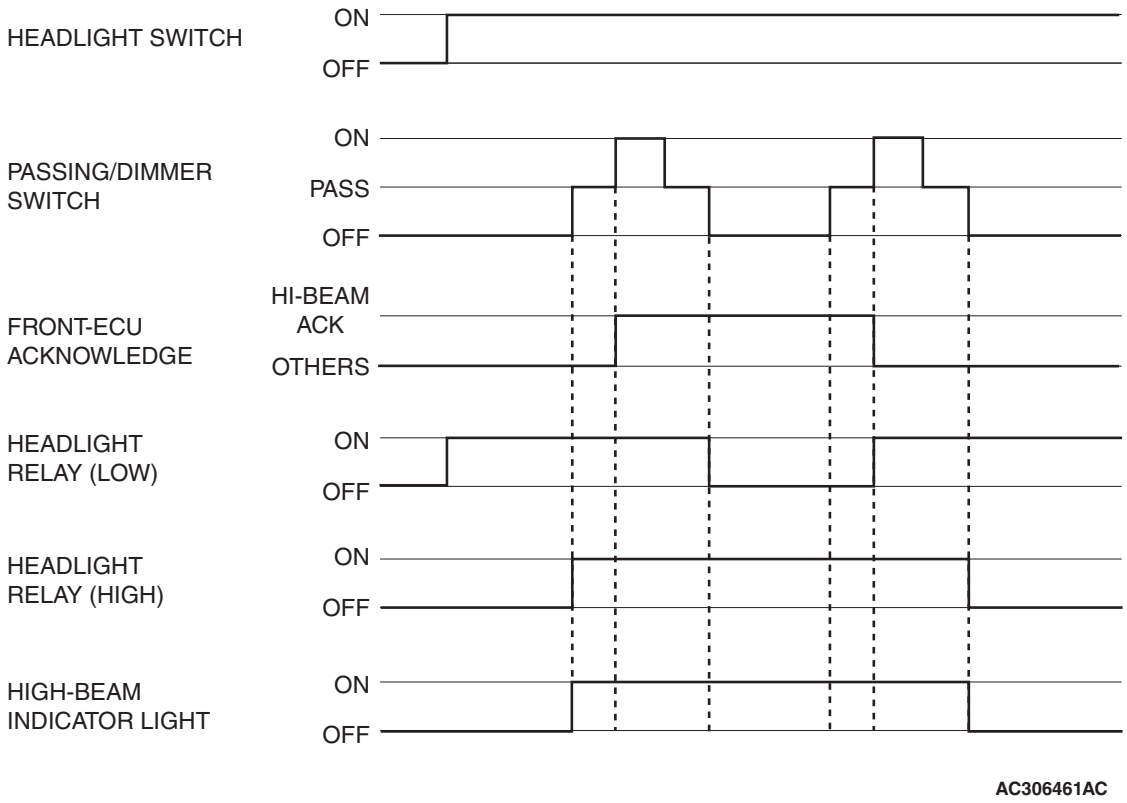
HEADLIGHTS AND TAILLIGHTS

TAILLIGHTS

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

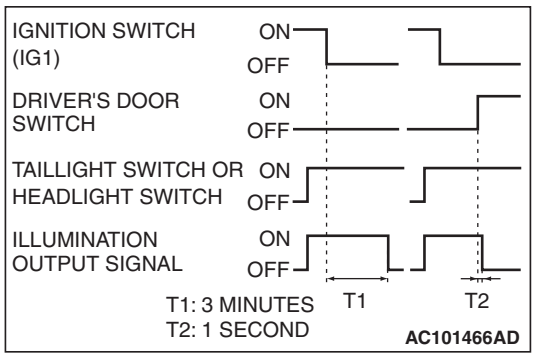
NOTE: This description covers the taillights only. In actual driving, the taillights may be turned off due to the headlight automatic shut-off function. For details on the headlight automatic shut-off function, refer to P.54B-288.

Headlights



If the column switch sends a headlight switch "ON" signal to the front-ECU, the front-ECU turns on its headlight relay (LOW), causing the low-beam headlights to illuminate. If the dimmer switch is turned on while the headlight relay (LOW) is on, the front-ECU turns on the headlight relay (HIGH), causing the high-beam headlights to illuminate.

NOTE: This description covers the headlights only. In actual driving, the headlights may be turned off due to the headlight automatic shut-off function. For details on the headlight automatic shut-off function, refer to P.54B-288.



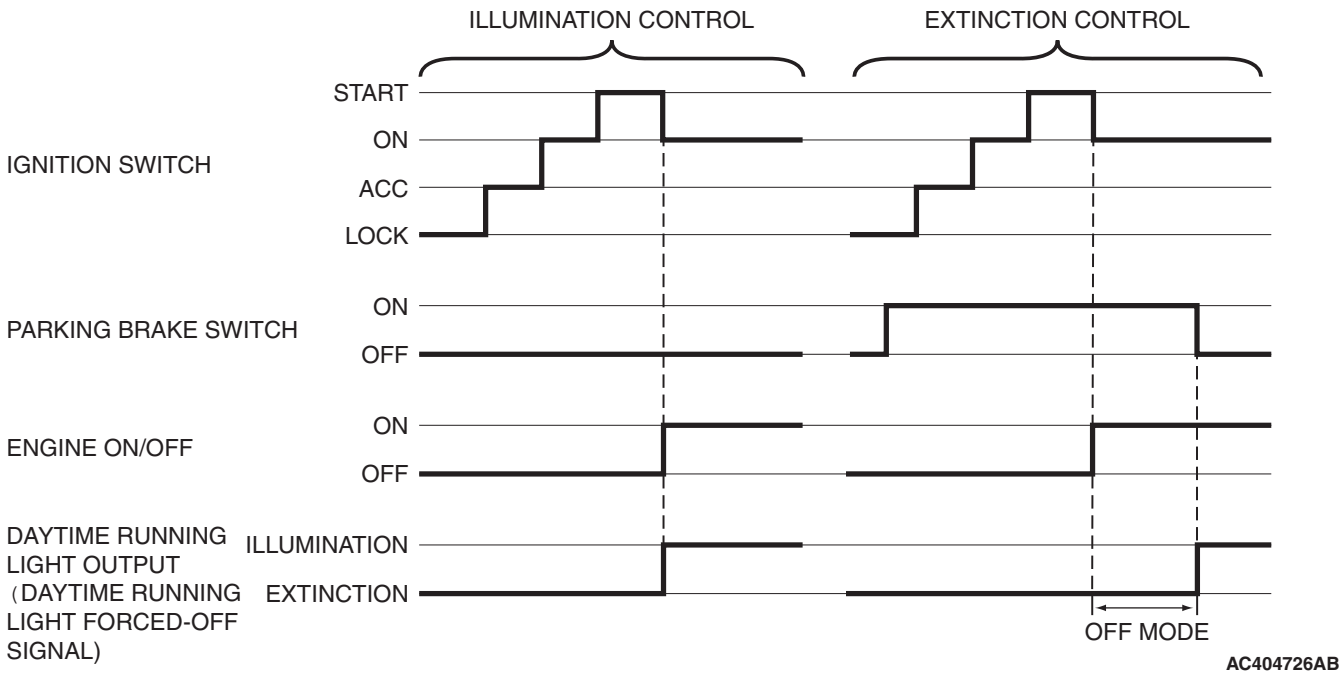
HEADLIGHT AUTOMATIC-SHUTOFF FUNCTION

Even if the lighting switch (taillights switch or headlight switch) is ON, the headlight (including the taillights) will automatically go off in the following conditions to prevent the battery from discharging as a result of forgetting to turn off lights.
When the ignition key is turned from "ON" to "LOCK" (OFF) or "ACC" position with the lighting switch turned ON, and this state continues for three minutes, the light will automatically be turned off. If the driver's door is opened during these three minutes, the light will go off one second later.

HIGH-BEAM INDICATOR

At the same time that the high-beams are illuminated, the ETACS-ECU sends a signal to illuminate the high-beam indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the high-beam indicator on and off.

Daytime running light function

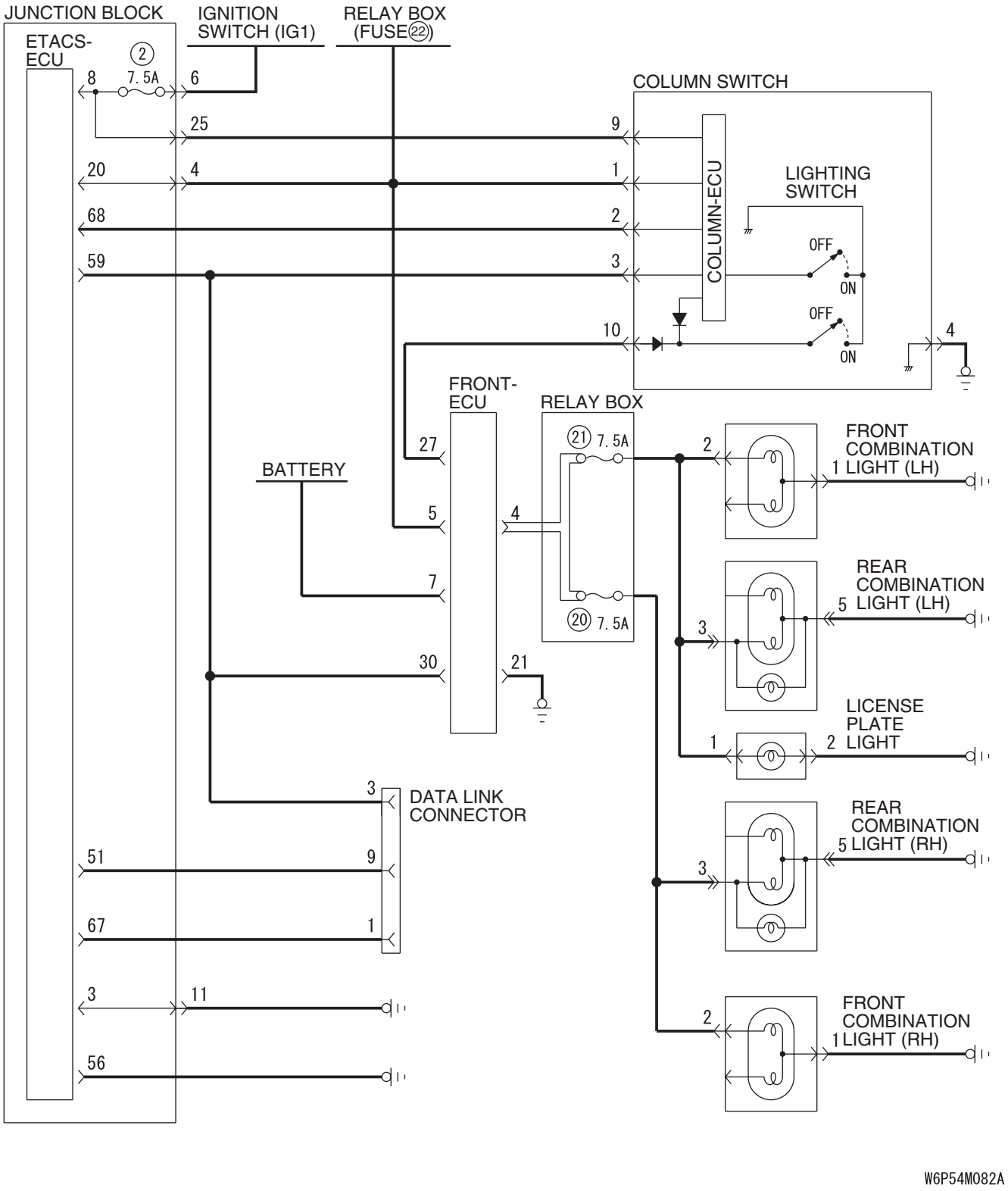


The ETACS-ECU outputs the daytime running light forced-OFF signal to the front-ECU based on the input signal sent via CAN communication. The front-ECU controls illumination and extinction of the daytime running light according to the daytime running light forced-OFF signal.

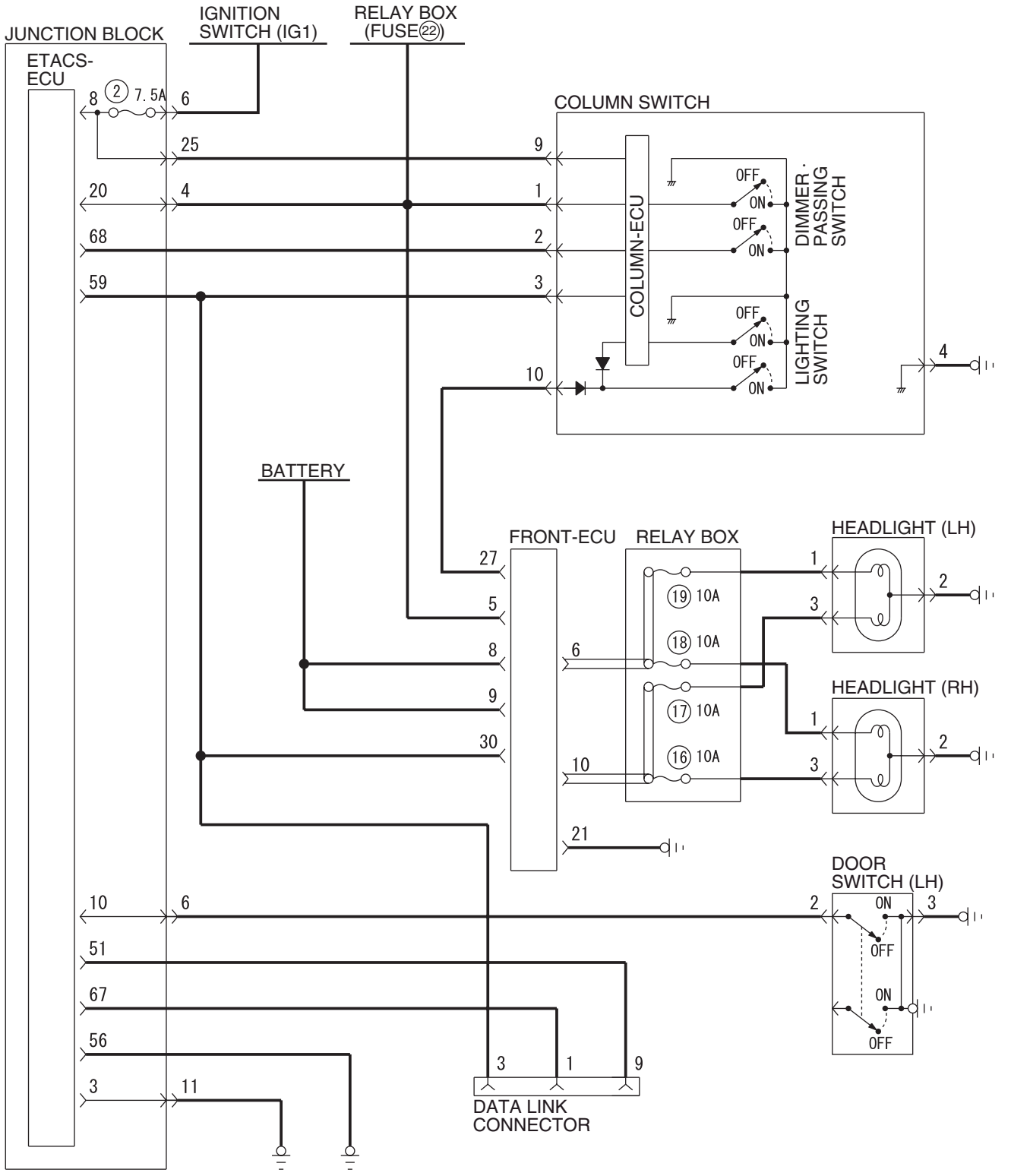
Illumination control of daytime running lights

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

General circuit diagram for the taillights



General circuit diagram for the headlights



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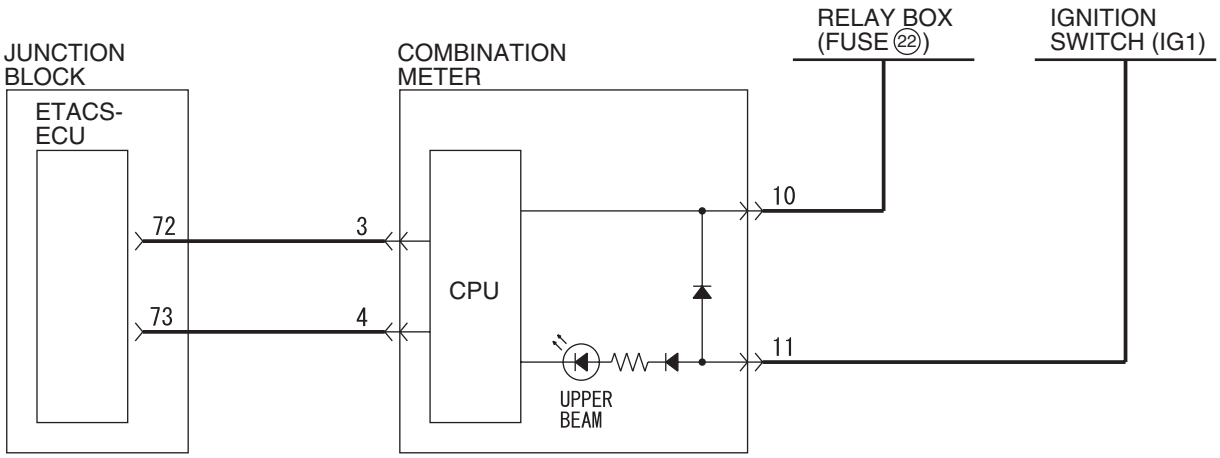
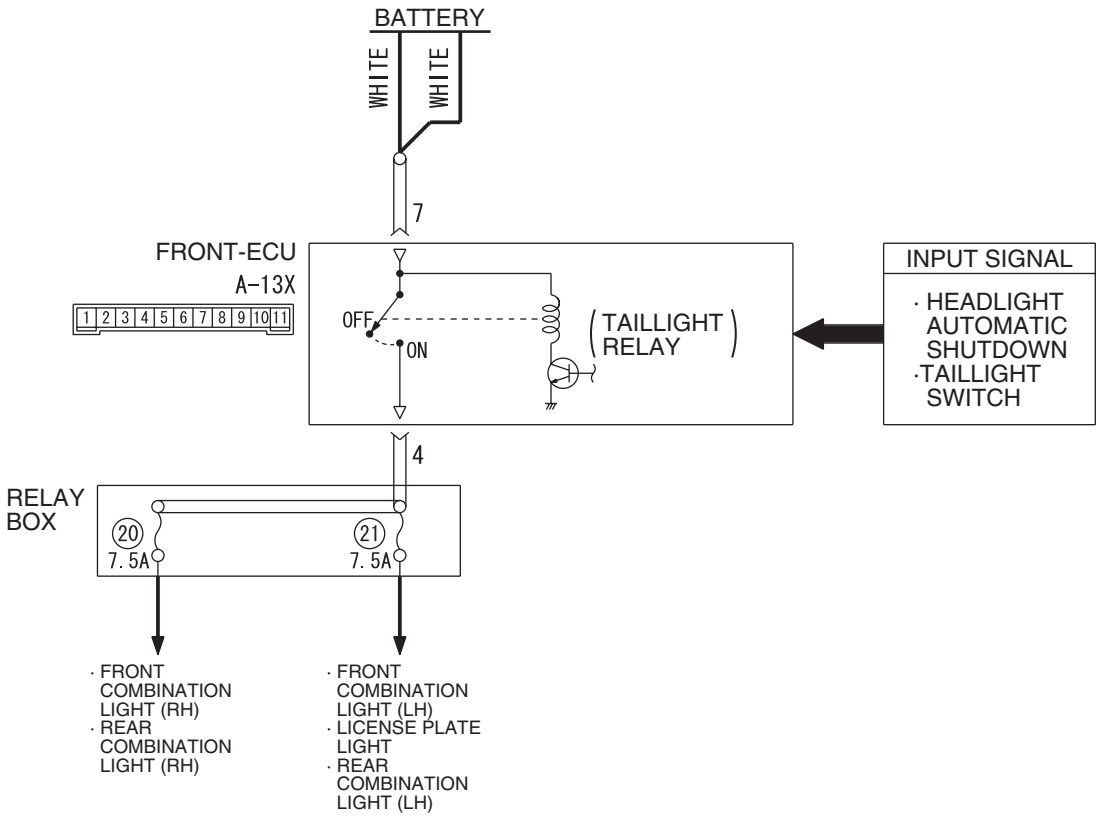

JUNCTION BLOCK
ETACS-ECU
72
73
COMBINATION METER
3
4
CPU
10
11
UPPER BEAM
RELAY BOX (FUSE 22)
IGNITION SWITCH (IG1)

W6P54M084A

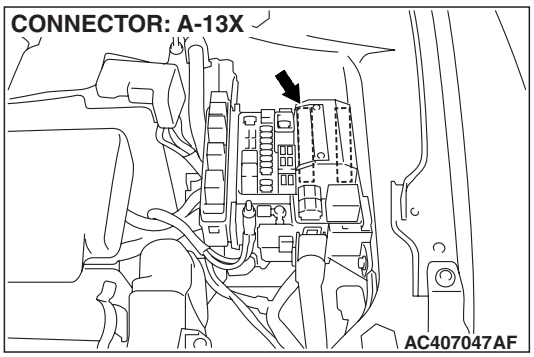
INSPECTION PROCEDURE I-1: Headlight and Taillight: The taillights do not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Taillight Relay Circuit



W6P54M007A



CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TSB Revision

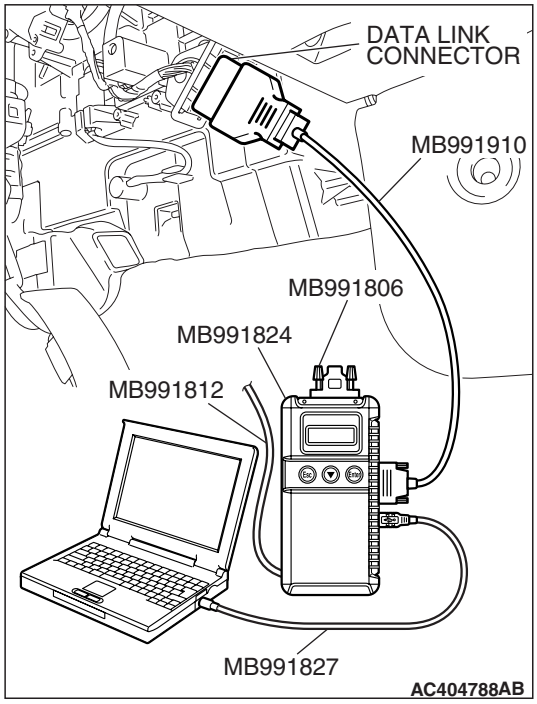
TROUBLESHOOTING HINTS

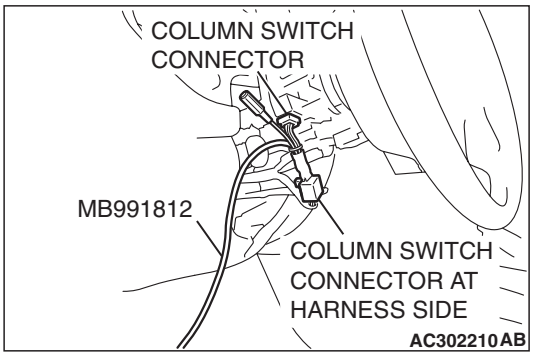
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

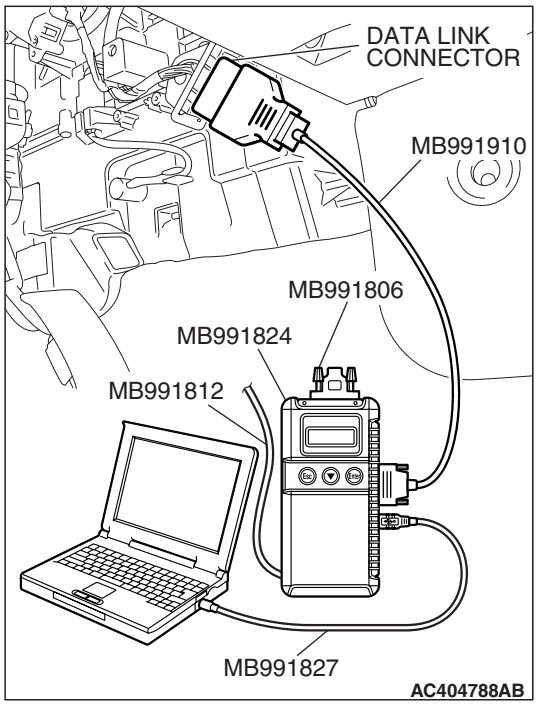
⚠ CAUTION

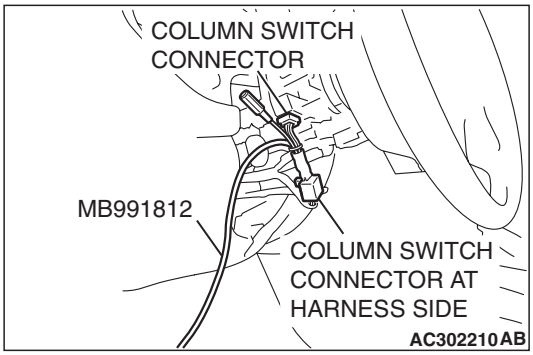
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-86."





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

Check the input signals from the following switches:

- Ignition switch: ON
- Lighting switch: TAIL

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

(1) Operate scan tool MB991958 according to the procedure below to display "TAILLIGHT."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "LIGHTING."
   g. Select "TAILLIGHT."

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

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

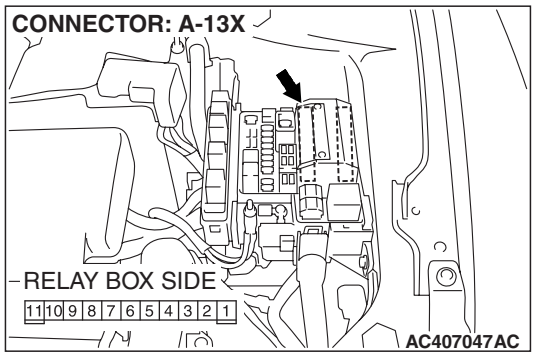
Q: Does the scan tool MB991958 display the items "TAILLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

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

Normal condition is not displayed for "TAILLIGHT SW" : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the taillight switch P.54B-473."

Normal condition is not displayed for "H/L AUTO-CUT" : Refer to Inspection Procedure I-9 "Headlight automatic shutoff function does not work normally P.54B-342."

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

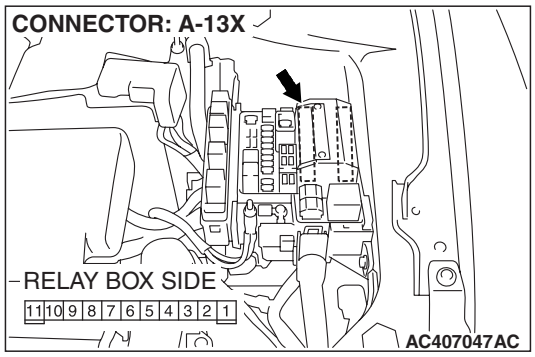


STEP 3. Check front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-13X in good condition?

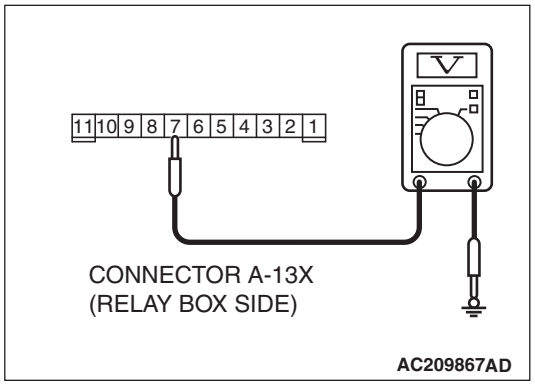
YES : Go to Step 4.

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



STEP 4. Check the battery power supply circuit to the front-ECU. Measure the voltage at front-ECU connector A-13X.

(1) Disconnect front-ECU connector A-13X and measure the voltage available at the relay box side of the connector.



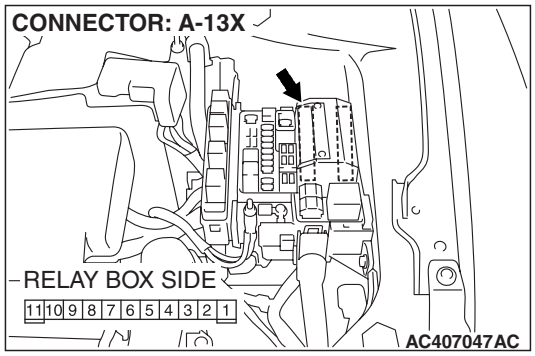
(2) Measure the voltage between terminal 7 and ground.

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

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

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

NO : Go to Step 5.



STEP 5. Check the wiring harness between front-ECU connector A-13X (terminal 7) and the battery.

Q: Is the wiring harness between front-ECU connector A-13X (terminal 7) and the battery in good condition?

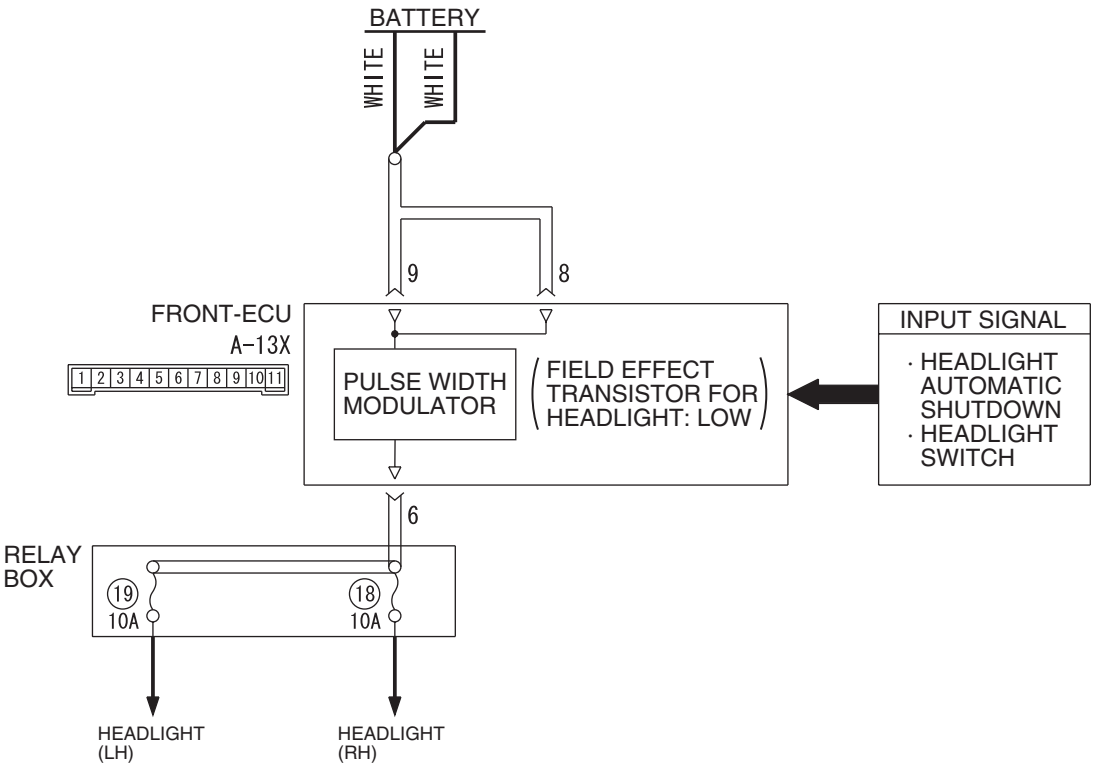
YES : No action is necessary and testing is complete.

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

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Headlight Relay (Low-Beam) Circuit



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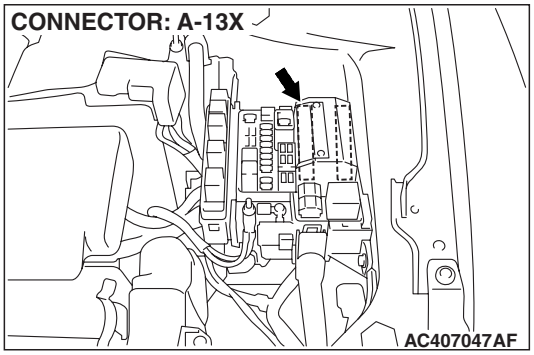


CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

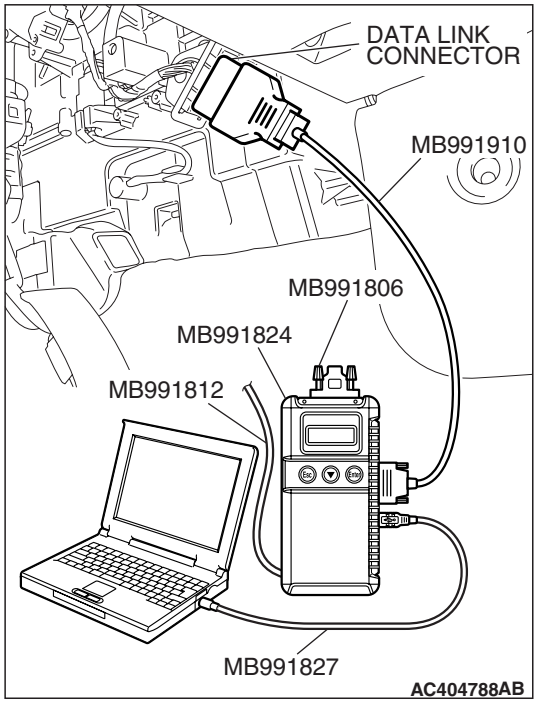
TROUBLESHOOTING HINTS

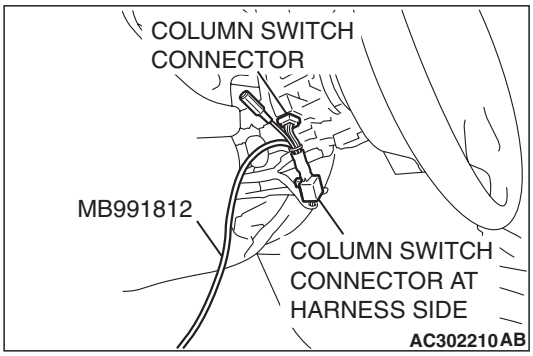
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

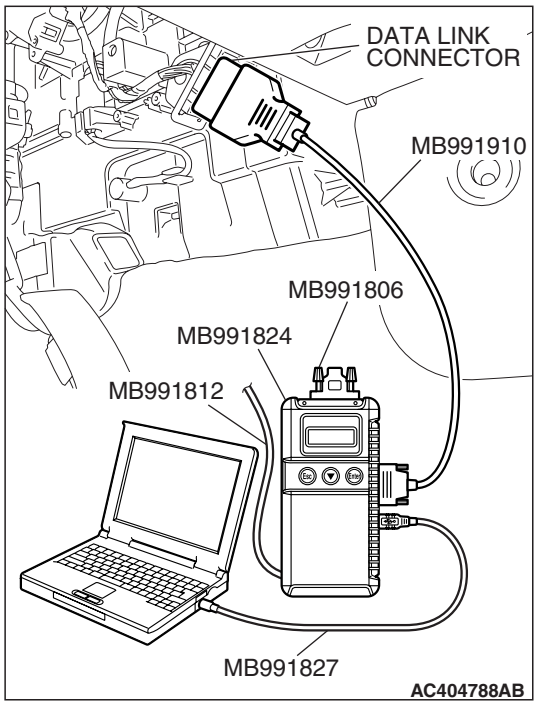
⚠ CAUTION

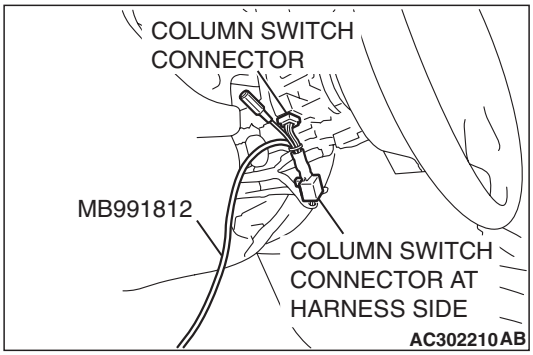
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-86."





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

Check the input signals from the following switches:

- Ignition switch: ON
- Lighting switch: HEAD

(1) Operate scan tool MB991958 according to the procedure below to display "HEADLIGHT LO."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "LIGHTING."
   g. Select "HEADLIGHT LO."

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

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

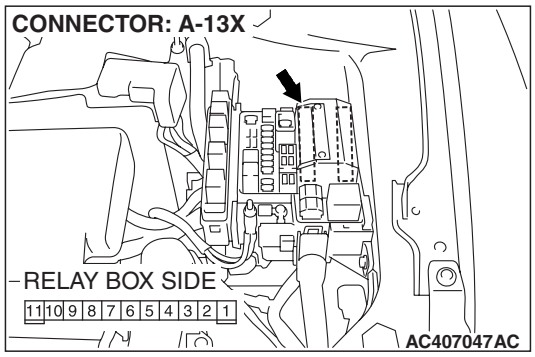
Q: Does the scan tool MB991958 display the items "HEADLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

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

Normal condition is not displayed for "HEADLIGHT SW" : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the headlight switch P.54B-473."

Normal condition is not displayed for "H/L AUTO-CUT" : Refer to Inspection Procedure I-9 "Headlight automatic shutoff function does not work normally P.54B-342."

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

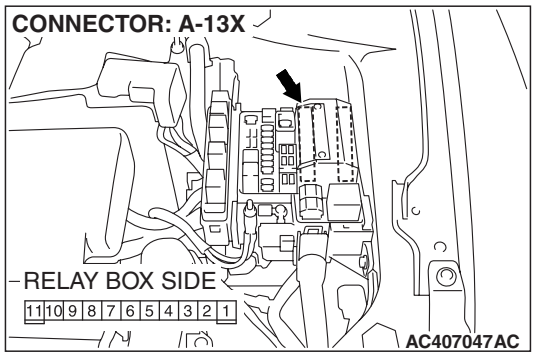


STEP 3. Check front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-13X in good condition?

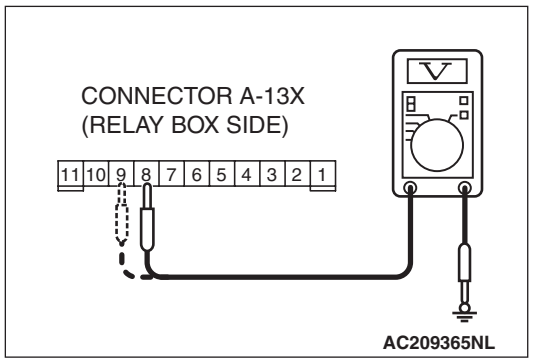
YES : Go to Step 4.

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



STEP 4. Check the battery power supply circuit to the front-ECU. Measure the voltage at front-ECU connector A-13X.

(1) Disconnect front-ECU connector A-13X and measure the voltage available at the relay box side of the connector.

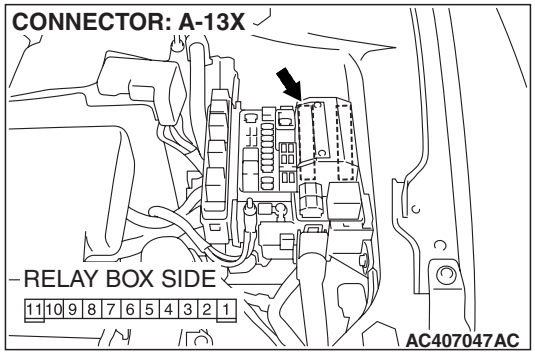


(2) Measure the voltage between terminal numbers 8 and ground, and also between terminal 9 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

NO : Go to Step 5.



STEP 5. Check the wiring harness between front-ECU connector A-13X (terminals 8 and 9) and the battery.

Q: Is the wiring harness between front-ECU connector A-13X (terminals 8 and 9) and the battery in good condition?

YES : No action is necessary and testing is complete.

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

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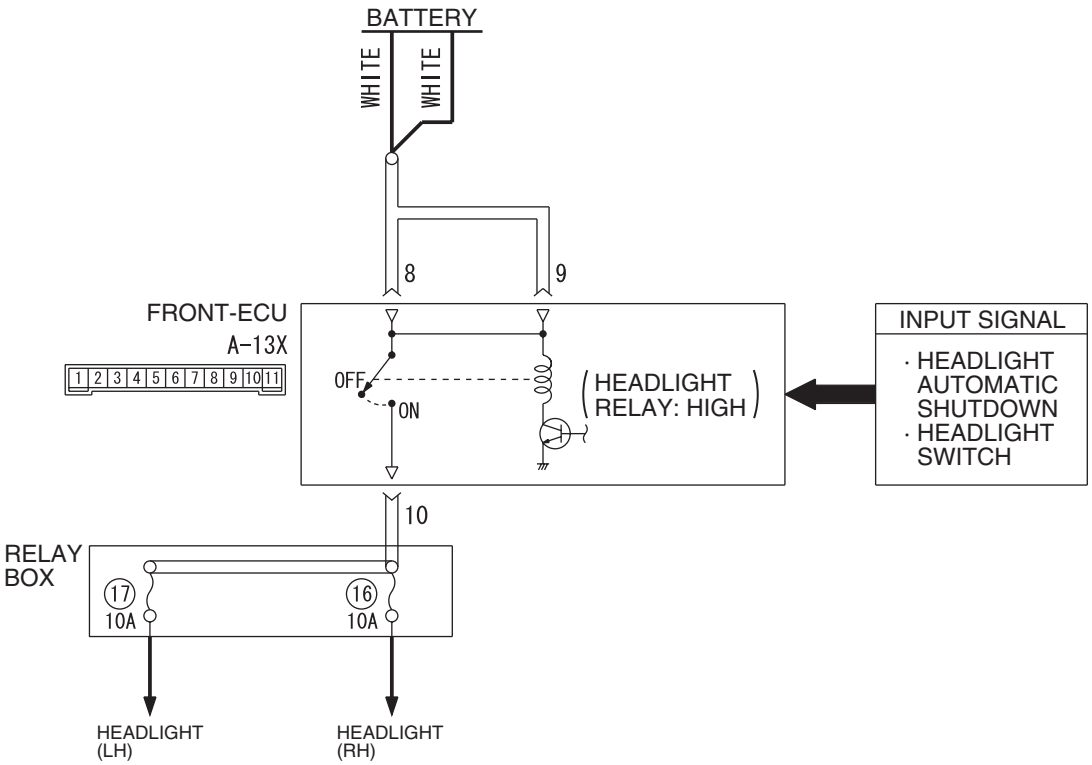
INSPECTION PROCEDURE I-3: Headlight and Taillight: The headlights (high-beam) do not Illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Headlight Relay (High-Beam) Circuit



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CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

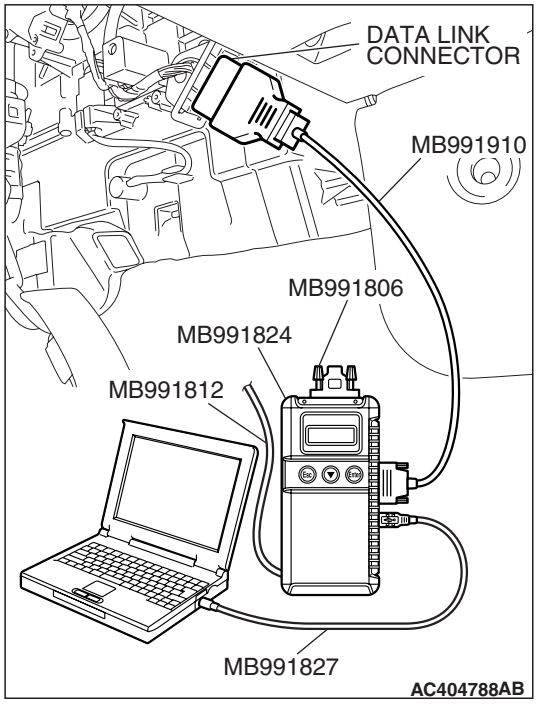
TROUBLESHOOTING HINTS

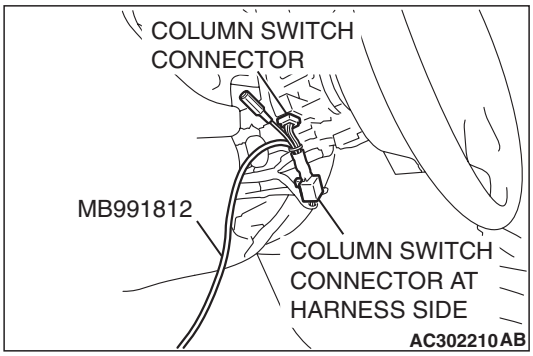
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

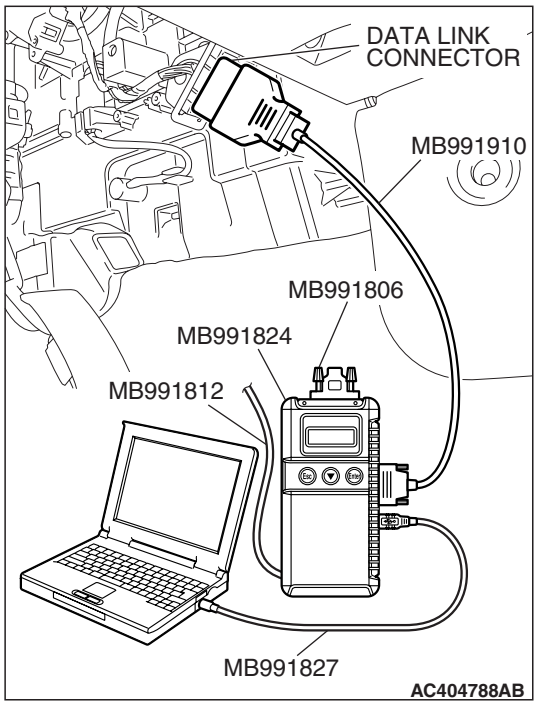
⚠ CAUTION

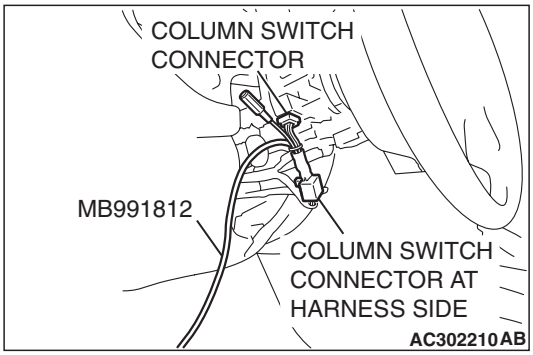
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for both the "COLUMN ECU" and the "FRONT ECU" menus.

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

"OK" is displayed for all the items : Go to Step 2.
"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-86."





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

Check the input signals from the following switches:

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

(1) Operate scan tool MB991958 according to the procedure below to display "HEADLIGHT HI."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "LIGHTING."
   g. Select "HEADLIGHT HI."

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

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

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

Normal conditions are displayed for all the items : Replace the front-ECU. Verify that the headlights (high-beam) illuminate normally.

Normal condition is not displayed for "HEADLIGHT SW" : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the headlight switch P.54B-473."

Normal condition is not displayed for "DIMMER SW" : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the dimmer switch P.54B-473."

Normal condition is not displayed for "H/L AUTO-CUT" : Refer to Inspection Procedure I-9 "Headlight automatic shutoff function does not work normally P.54B-342."

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

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

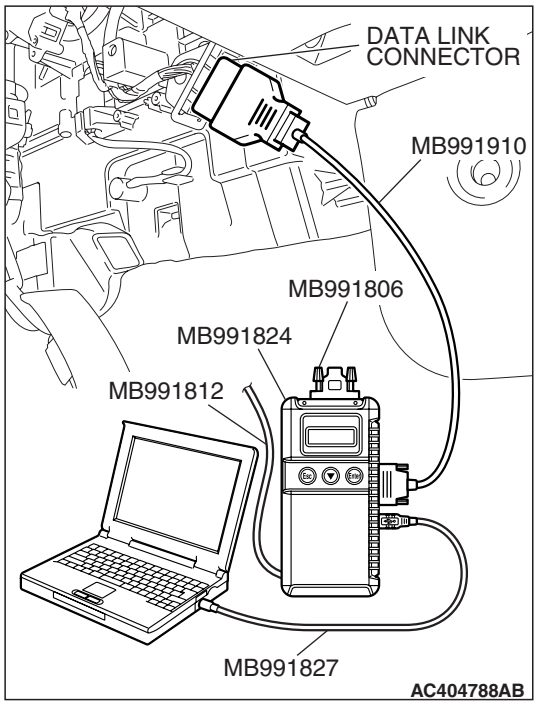
STEP 1. Check the headlights.

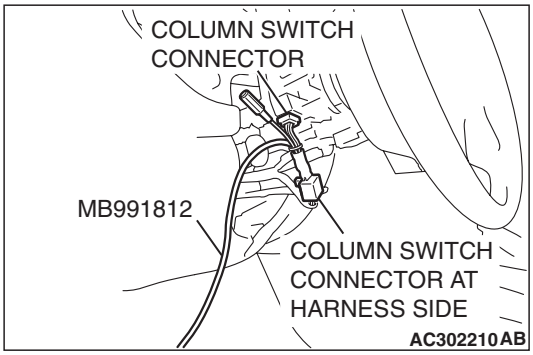
Q: Do the headlights (low-beam and high-beam) illuminate normally?

The headlights illuminate normally. : Go to Step 2.

Headlights (low-beam) do not illuminate normally :
Refer to Inspection Procedure I-2 "The headlights (low-beam) do not illuminate normally P.54B-298.

Headlights (high-beam) do not illuminate normally :
Refer to Inspection Procedure I-3 "The headlights (high-beam) do not illuminate normally P.54B-303.





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

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

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

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

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

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

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

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

NO : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the passing switch P.54B-473."

INSPECTION PROCEDURE I-5: Headlight and Taillight: Headlights do not illuminate when the lighting switch is at "TAIL," and "PASSING" position, but illuminate at low-beam when the switch is at "HEAD" position. At this position, the headlights cannot be changed to high beam by operating the dimmer switch.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

TECHNICAL DESCRIPTION (COMMENT)

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

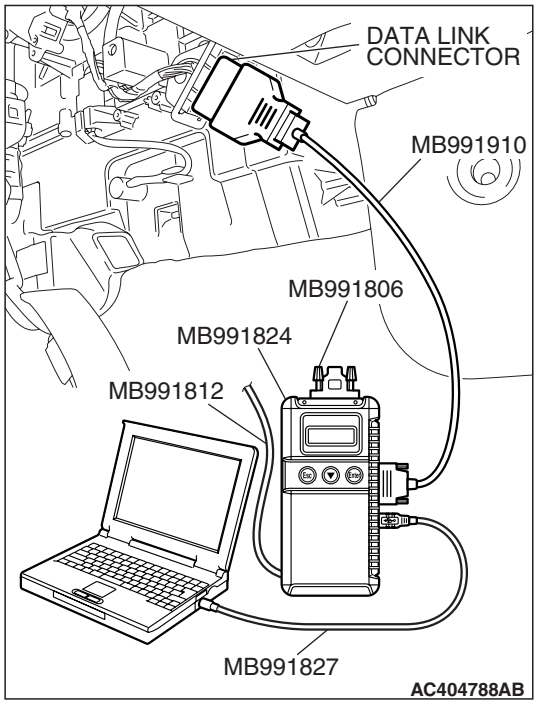
TROUBLESHOOTING HINTS

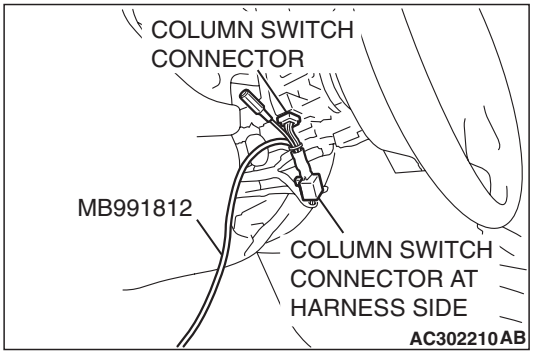
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "System select."
  b. Select "SWS."
  c. Select "SWS MONITOR."
  d. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menus for the "ETACS ECU", "COLUMN ECU" and "FRONT ECU" menus.

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

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

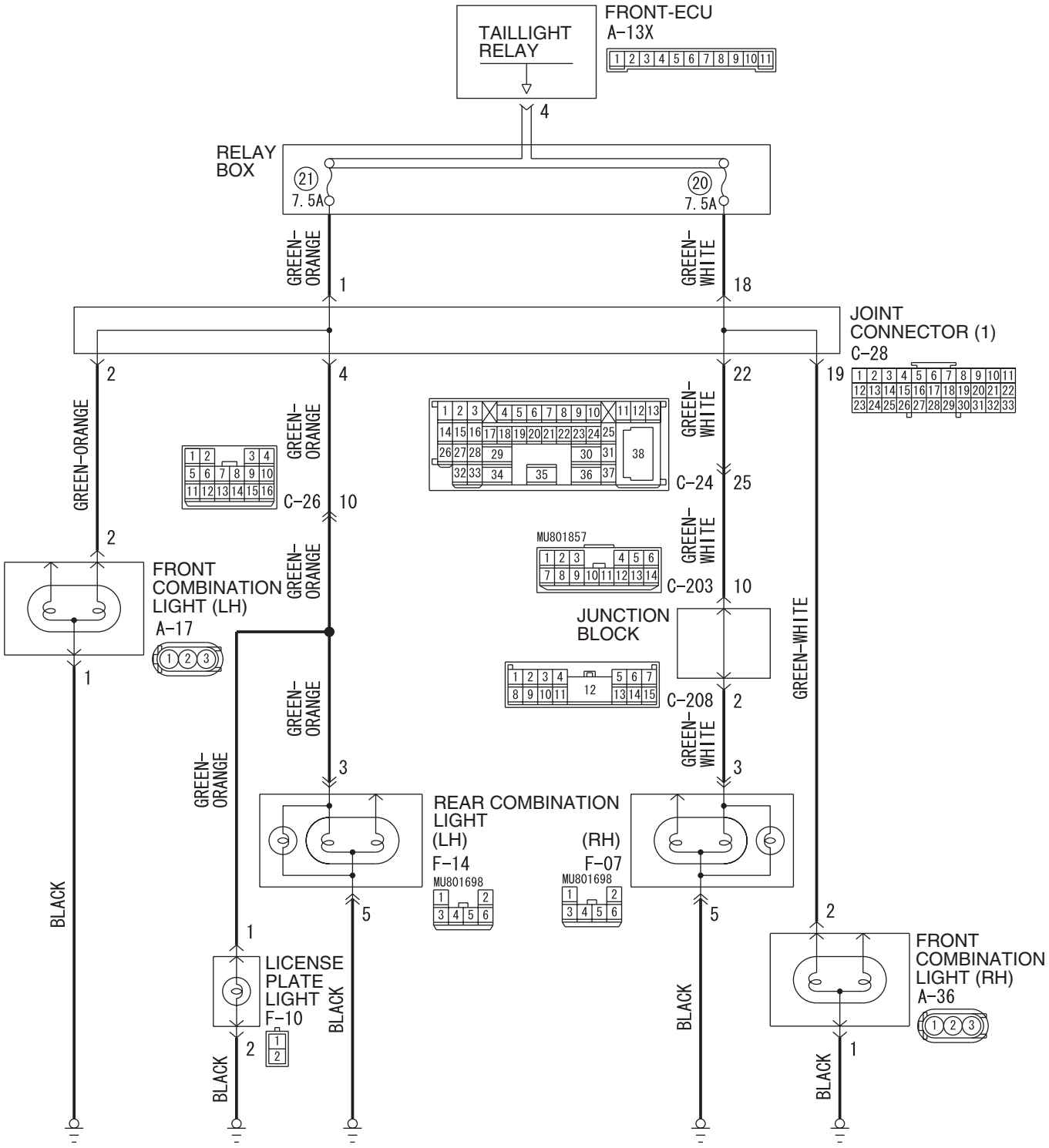
"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

"NG" is displayed for the "COLUMN ECU" menu : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-86."

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

Taillights, Front Parking Lights and License Plate Light Circuit



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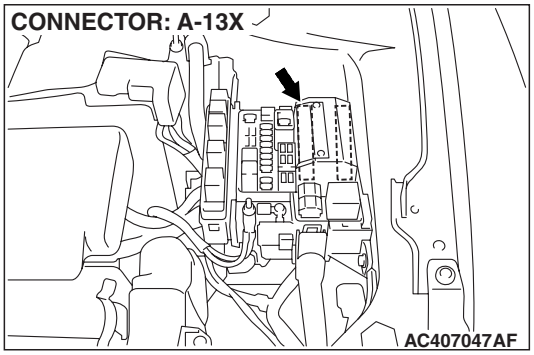

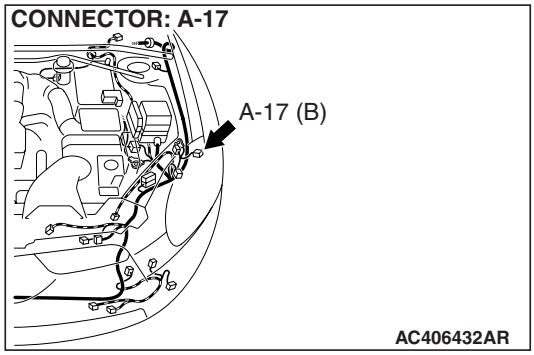

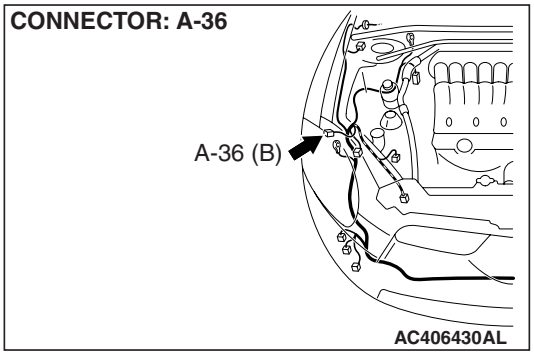

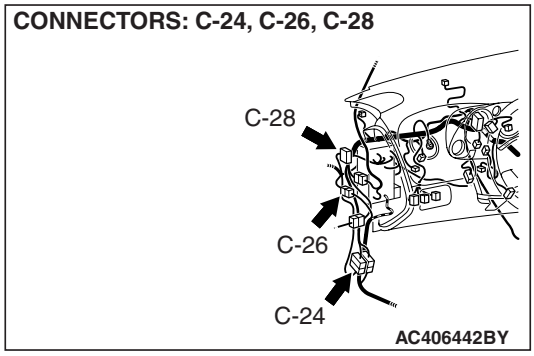

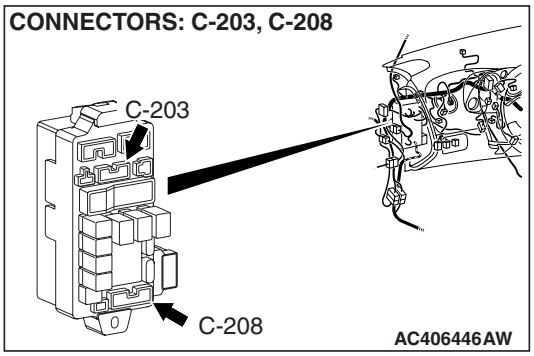

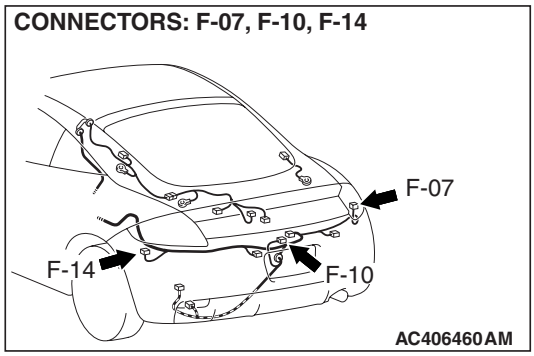

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

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STEP 1. Check the operation of each light.

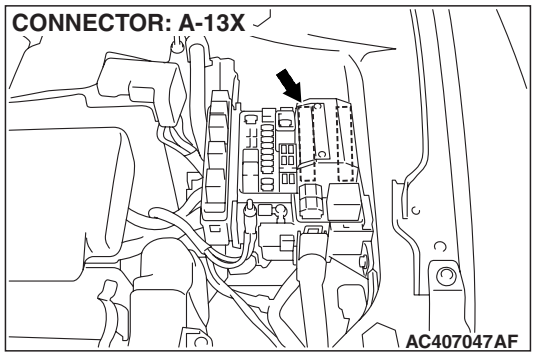
Q: Which light does not illuminate?

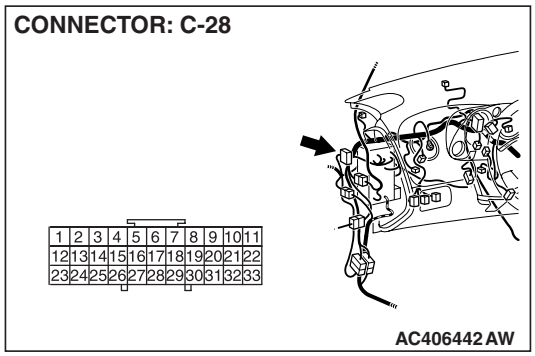
Front parking light (LH), taillight (LH) and license plate light : Go to Step 2.
Front parking light (RH) and taillight (RH) : Go to Step 4.
Taillight (LH) and license plate light : Go to Step 6.
Taillight (LH) : Go to Step 8.
Taillight (RH) : Go to Step 13.
Front parking light (LH) : Go to Step 19.
Front parking light (RH) : Go to Step 25.
License plate light : Go to Step 31.
All lights : Refer to Inspection Procedure I-1 "The taillights do not illuminate normally P.54B-293."

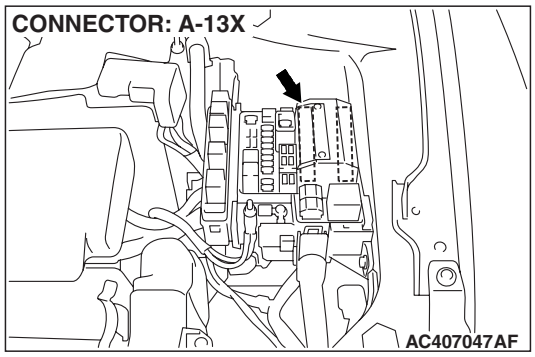
STEP 2. Check joint connector C-28 and front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

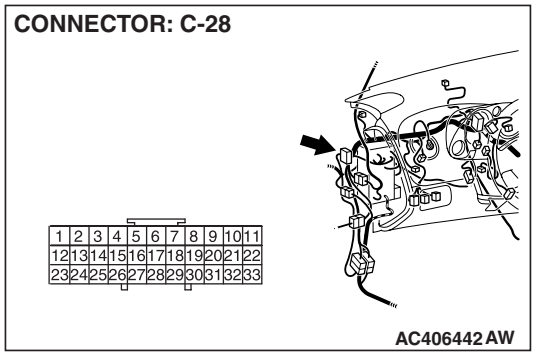
Q: Are joint connector C-28 and front-ECU connector A-13X in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The front parking light (LH), taillight (LH) and the license plate light should illuminate normally.







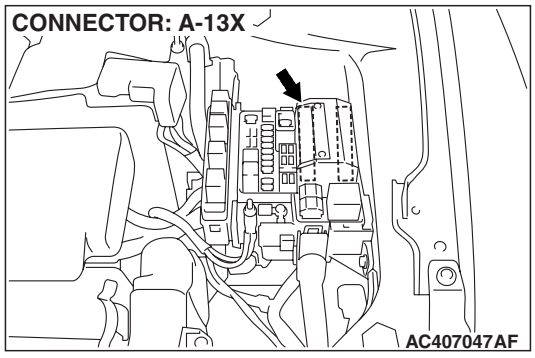


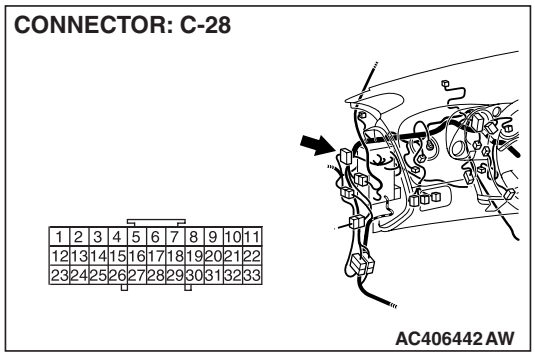
STEP 3. Check the wiring harness between joint connector C-28 (terminal 1) and front-ECU connector A-13X (terminal 4).

Q: Is the wiring harness between joint connector C-28 (terminal 1) and front-ECU connector A-13X (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The front parking light (LH), taillight (LH) and the license plate light should illuminate normally.





STEP 4. Check joint connector C-28 and front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are joint connector C-28 and front-ECU connector A-13X in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The front parking light (RH) and the taillight (RH) should illuminate normally.

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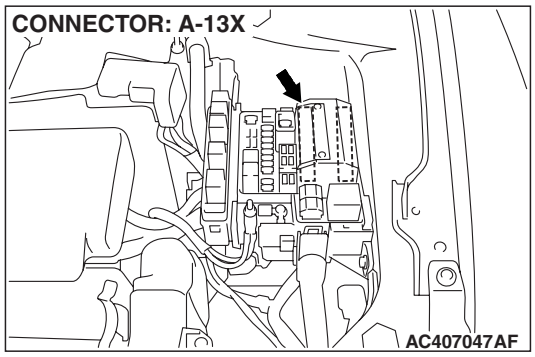
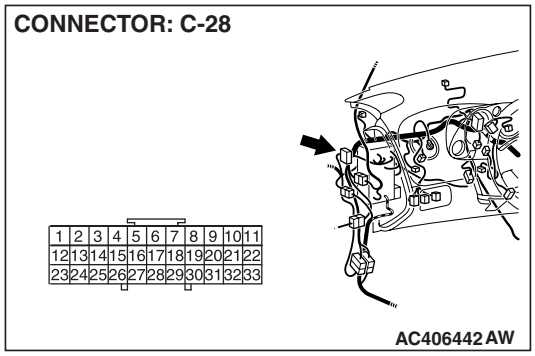


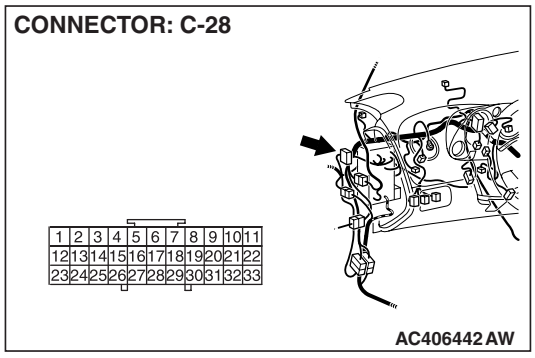


STEP 5. Check the wiring harness between joint connector C-28 (terminal 18) and front-ECU connector A-13X (terminal 4).

Q: Is the wiring harness between joint connector C-28 (terminal 18) and front-ECU connector A-13X (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The front parking light (RH) and the taillight (RH) should illuminate normally.



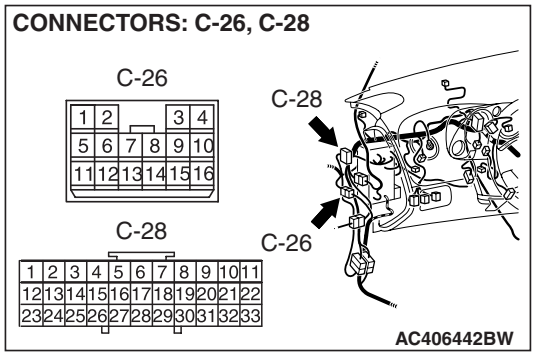
STEP 6. Check joint connector C-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

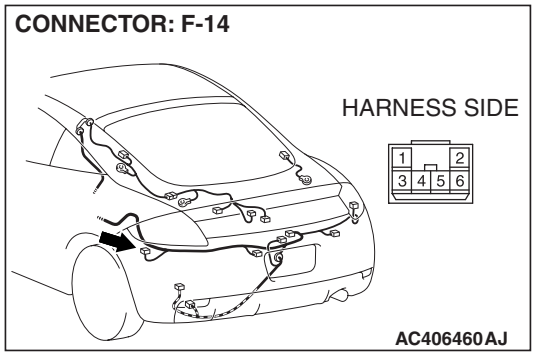
Q: Is joint connector C-28 in good condition?

YES : Go to Step 7.

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

STEP 7. Check the wiring harness between joint connector C-28 (terminal 4) and rear combination light (LH) connector F-14 (terminal 4).



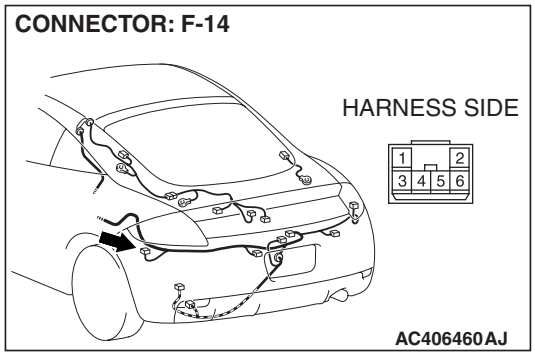


NOTE: Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between joint connector C-28 (terminal 4) and rear combination light (LH) connector F-14 (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The taillight (LH) and the license plate light should illuminate normally.



STEP 8. Check rear combination light (LH) connector F-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (LH) connector F-14 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the taillight (LH) illuminates normally.

STEP 9. Check the stop/taillight bulb (LH).

(1) Remove the stop/taillight bulb (LH).

(2) Verify that the stop/taillight bulb (LH) is not damaged or burned out.

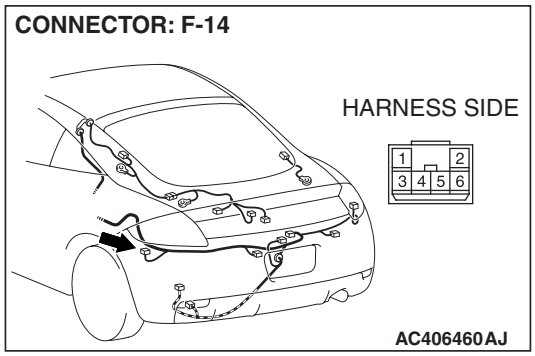
Q: Is the stop/taillight bulb (LH) in good condition?

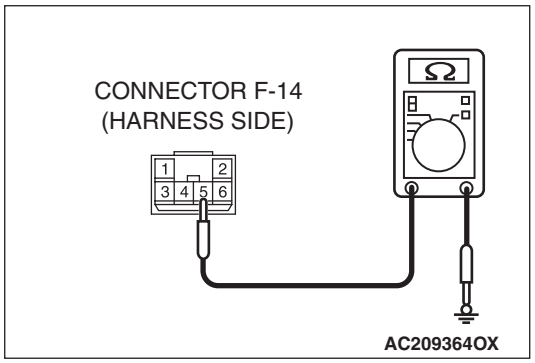
YES : Go to Step 10.

NO : Replace the stop/taillight bulb (LH). Verify that the taillight (LH) illuminates normally.

STEP 10. Check the ground circuit to the rear combination light (LH). Measure the resistance at rear combination light (LH) connector F-14.

(1) Disconnect rear combination light (LH) connector F-14 and measure the resistance available at the wiring harness side of the connector.





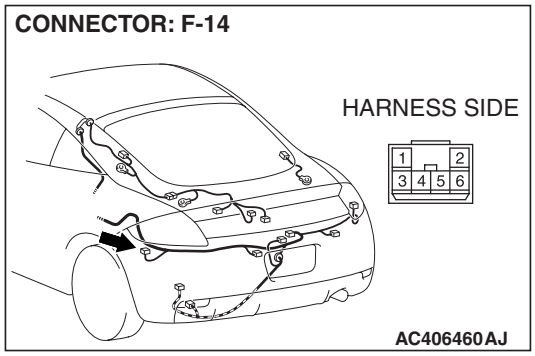
(2) Measure the resistance value between terminal 5 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.

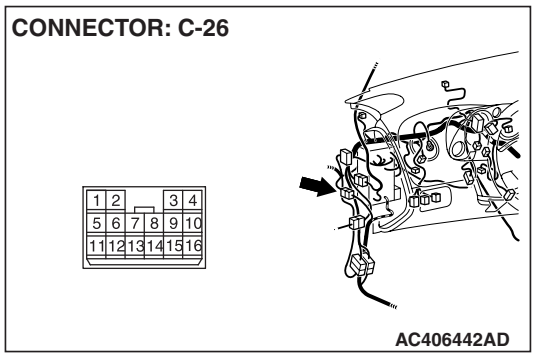


STEP 11. Check the wiring harness between rear combination light (LH) connector F-14 (terminal 5) and ground.

Q: Is the wiring harness between rear combination light (LH) connector F-14 (terminal 5) and ground in good condition?

YES : Replace the rear combination light socket (LH). Verify that the taillight (LH) illuminates normally.

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

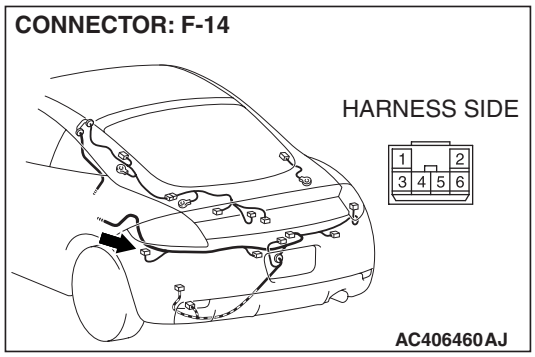


STEP 12. Check the wiring harness between rear combination light (LH) connector F-14 (terminal 3) and intermediate connector C-26 (terminal 10).

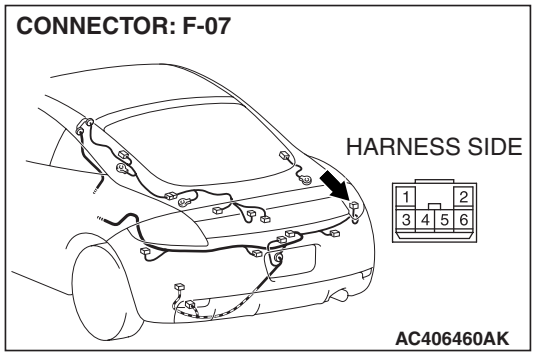
Q: Is the wiring harness between rear combination light (LH) connector F-14 (terminal 3) and intermediate connector C-26 (terminal 10) in good condition?

YES : Replace the rear combination light socket (LH). Verify that the taillight (LH) illuminates normally.

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



STEP 13. Check rear combination light (RH) connector F-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is rear combination light (RH) connector F-07 in good condition?

YES : Go to Step 14.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the taillight (RH) illuminates normally.

STEP 14. Check the stop/taillight bulb (RH).

(1) Remove the stop/taillight bulb (RH).

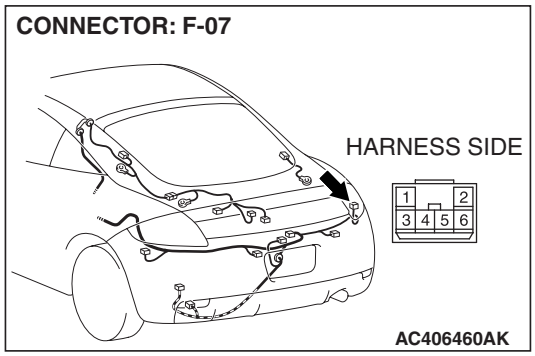
(2) Verify that the stop/taillight bulb (RH) is not damaged or burned out.

Q: Is the stop/taillight bulb (RH) in good condition?

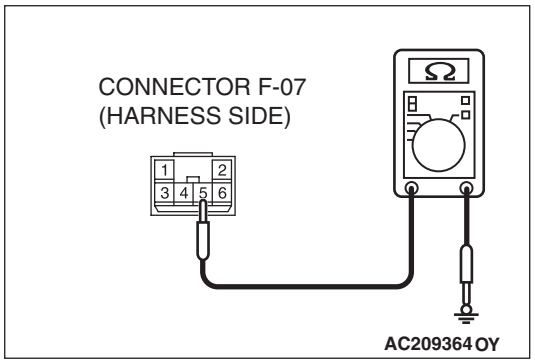
YES : Go to Step 15.

NO : Replace the stop/taillight bulb (RH). Verify that the taillight (RH) illuminates normally.

STEP 15. Check the ground circuit to the rear combination light (RH). Measure the resistance at rear combination light (RH) connector F-07.



(1) Disconnect rear light (RH) connector F-07 and measure the resistance available at the wiring harness side of the connector.



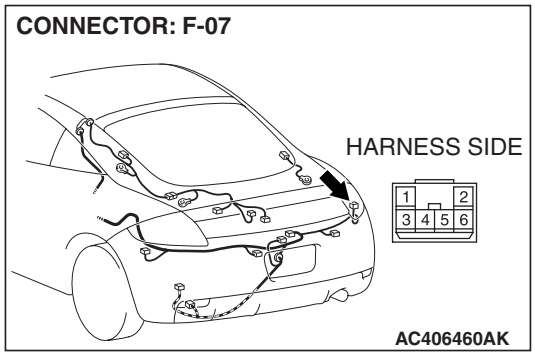
(2) Measure the resistance value between terminal 5 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 17.

NO : Go to Step 16.

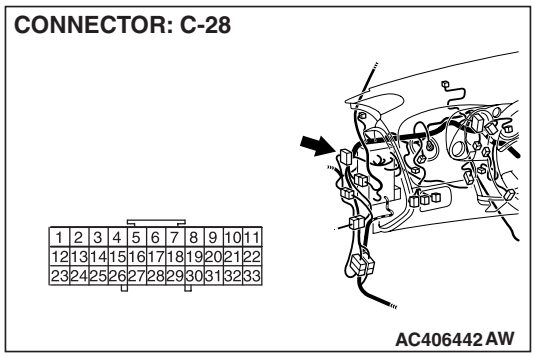


STEP 16. Check the wiring harness between rear combination light (RH) connector F-07 (terminal 5) and ground.

Q: Is the wiring harness between rear combination light (RH) connector F-07 (terminal 5) and ground in good condition?

YES : Replace the rear combination light socket (RH). Verify that the taillight (RH) illuminates normally.

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



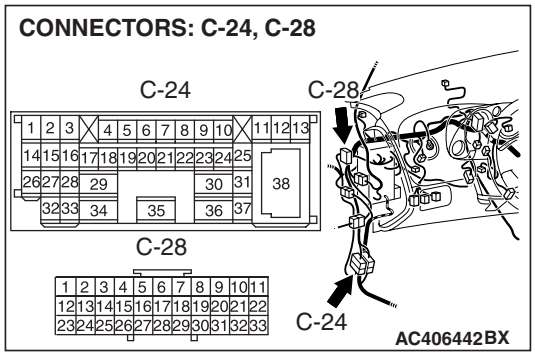
STEP 17. Check joint connector C-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

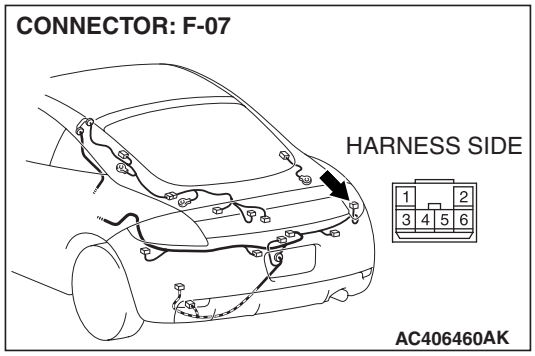
Q: Is joint connector C-28 in good condition?

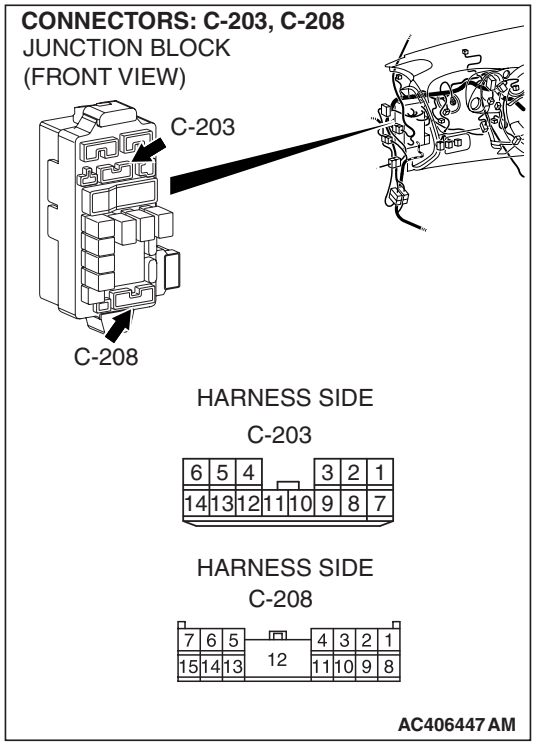
YES : Go to Step 18.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the taillight (RH) illuminates normally.

STEP 18. Check the wiring harness between rear combination light (RH) connector F-07 (terminal 3) and joint connector C-28 (terminal 22).





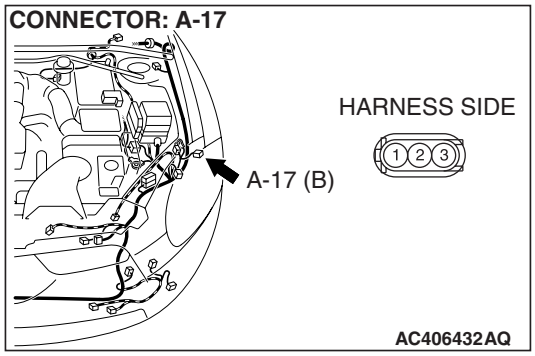


NOTE: Also check intermediate connector C-24, junction block connectors C-203 and C-208 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24, junction block connector C-203 or C-208 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light (RH) connector F-07 (terminal 3) and joint connector C-28 (terminal 22) in good condition?

YES : Replace the rear combination light socket (RH). Verify that the taillight (RH) illuminates normally.

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



STEP 19. Check front combination light (LH) connector A-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light (LH) connector A-17 in good condition?

YES : Go to Step 20.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (LH) illuminates normally.

STEP 20. Check the front parking light bulb (LH).

(1) Remove the front parking light bulb (LH).

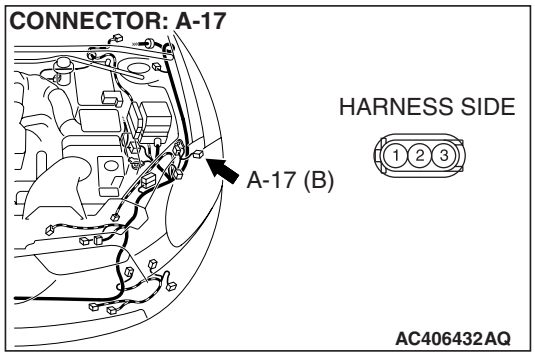
(2) Verify that the front parking light bulb (LH) is not damaged or burned out.

Q: Is the front parking light bulb (LH) in good condition?

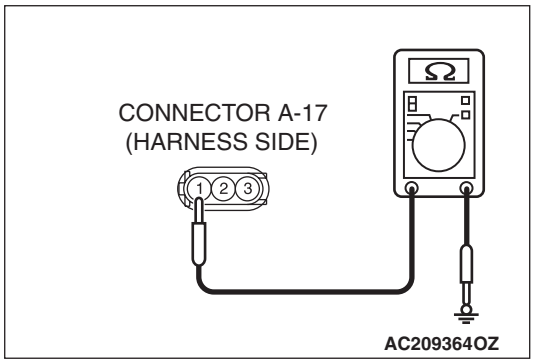
YES : Go to Step 21.

NO : Replace the front parking light bulb (LH). Verify that the front parking light (LH) illuminates normally.

STEP 21. Check the ground circuit to the front parking light (LH). Measure the resistance at front combination light (LH) connector A-17.



(1) Disconnect front combination light (LH) connector A-17 and measure the resistance available at the wiring harness side of the connector.



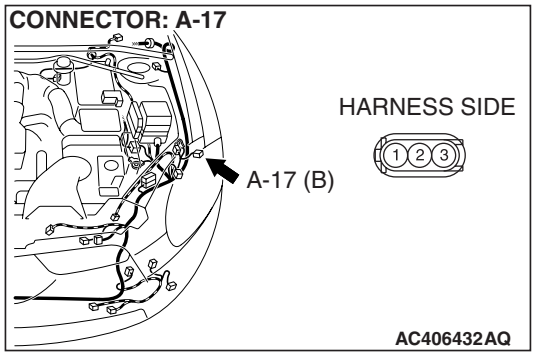
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 23.

NO : Go to Step 22.

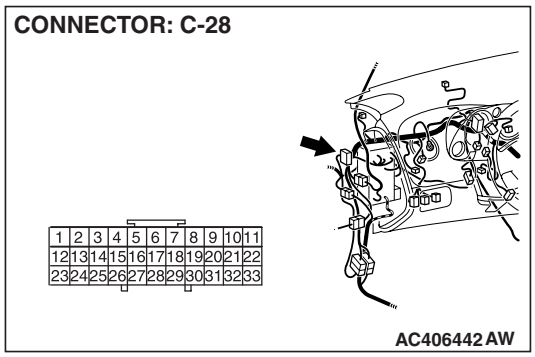


STEP 22. Check the wiring harness between front combination light (LH) connector A-17 (terminal 1) and ground.

Q: Is the wiring harness between front combination light (LH) connector A-17 (terminal 1) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the front parking light (LH) illuminates normally.

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

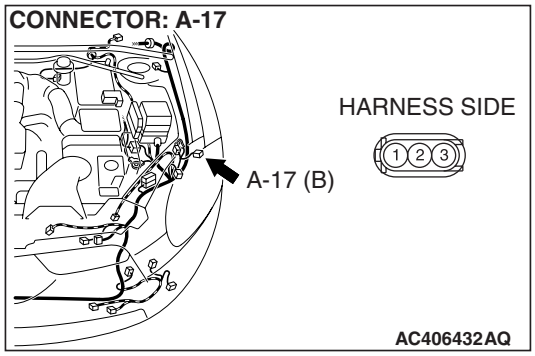


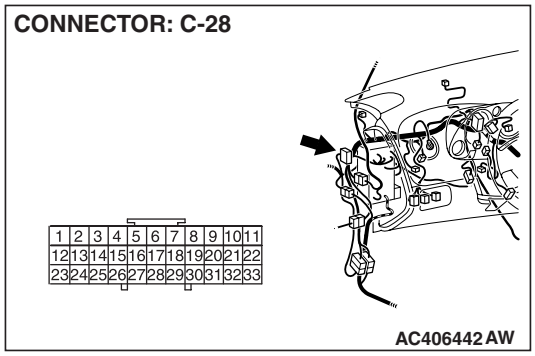
STEP 23. Check joint connector C-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-28 in good condition?

YES : Go to Step 24.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (LH) illuminates normally.



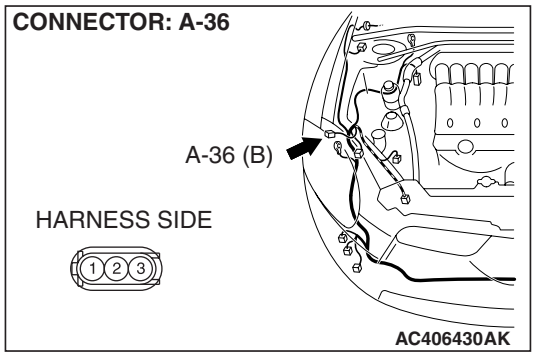


STEP 24. Check the wiring harness between front combination light (LH) connector A-17 (terminal 2) and joint connector C-28 (terminal 2).

Q: Is the wiring harness between front combination light (LH) connector A-17 (terminal 2) and joint connector C-28 (terminal 2) in good condition?

YES : No action is necessary and testing is complete.

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



STEP 25. Check front combination light (RH) connector A-36 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light (RH) connector A-36 in good condition?

YES : Go to Step 26.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (RH) illuminates normally.

STEP 26. Check the front parking light bulb (RH).

(1) Remove the front parking light bulb (RH).

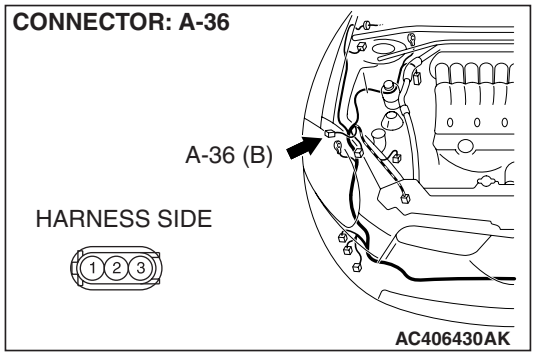
(2) Verify that the front parking light bulb (RH) is not damaged or burned out.

Q: Is the front parking light bulb (RH) in good condition?

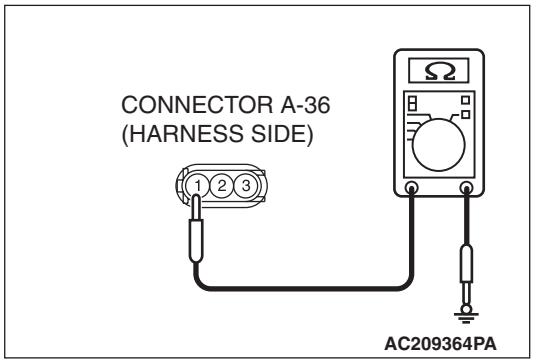
YES : Go to Step 27.

NO : Replace the front side marker light bulb (RH). Verify that the front parking light (RH) illuminates normally.

STEP 27. Check the ground circuit to the front parking light (RH). Measure the resistance at front combination light (RH) connector A-36.



(1) Disconnect front combination light (RH) connector A-36, and measure the resistance available at the harness side of the connector.

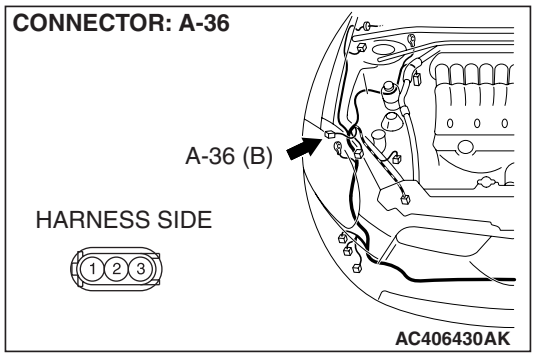


(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

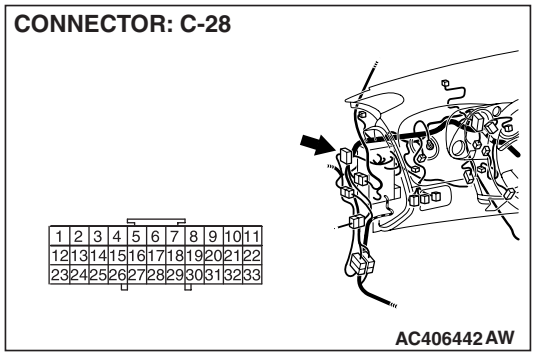
YES : Go to Step 29.
NO : Go to Step 28.

STEP 28. Check the wiring harness between front combination light (RH) connector A-36 (terminal 1) and ground.



Q: Is the wiring harness between front combination light (RH) connector A-36 (terminal 1) and ground in good condition?

YES : Replace the front combination light socket (RH). Verify that the front parking light (RH) illuminates normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (RH) illuminates normally.

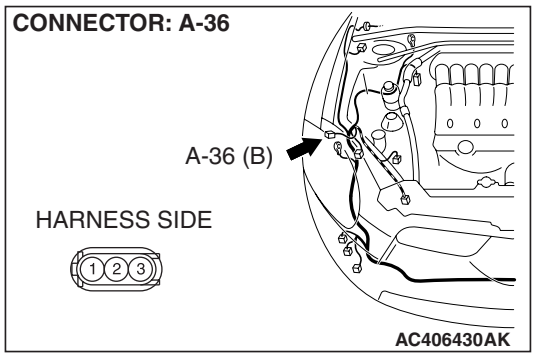


STEP 29. Check joint connector C-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-28 in good condition?

YES : Go to Step 30.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (RH) illuminates normally.

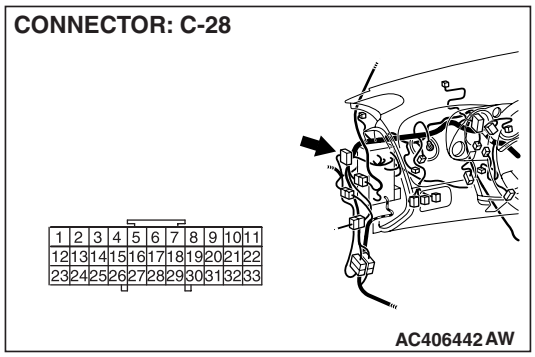


STEP 30. Check the wiring harness between front combination light (RH) connector A-36 (terminal 2) and joint connector C-28 (terminal 19).

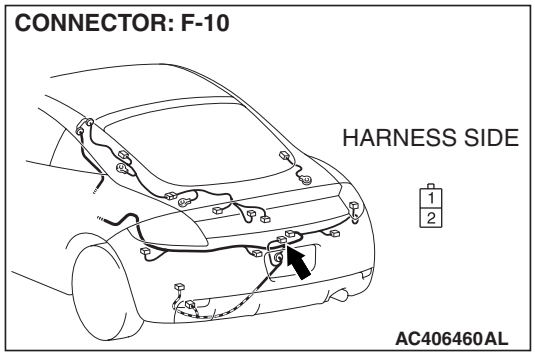
Q: Is the wiring harness between front combination light (RH) connector A-36 (terminal 2) and joint connector C-28 (terminal 19) in good condition?

YES : No action is necessary and testing is complete.

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



STEP 31. Check license plate light connector F-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is license plate light connector F-10 in good condition?

YES : Go to Step 32.

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

STEP 32. Check the license plate light bulb.

(1) Remove the license plate light bulb.

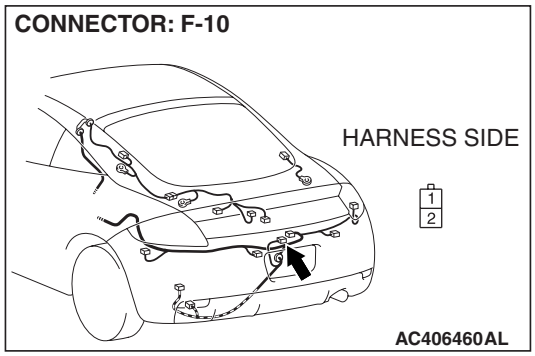
(2) Verify that the license plate light bulb is not damaged or burned out.

Q: Is the license plate light bulb in good condition?

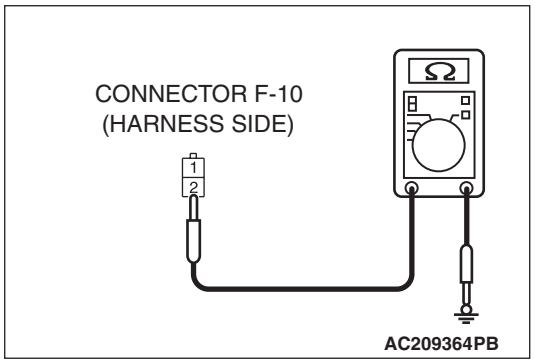
YES : Go to Step 33.

NO : Replace the license plate light bulb. Verify that the license plate light illuminate normally.

STEP 33. Check the ground circuit to the license plate light. Measure the resistance at license plate light connector F-10.



(1) Disconnect license plate light connector F-10 and measure the resistance available at the wiring harness side of the connector.



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

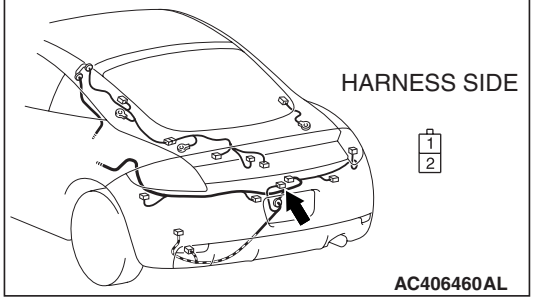
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 35.

NO : Go to Step 34.

CONNECTOR: F-10



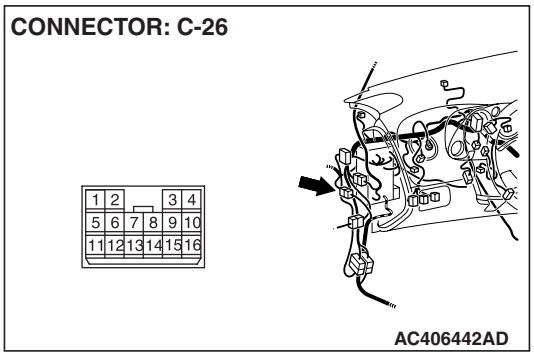
STEP 34. Check the wiring harness between license plate light connector F-10 (terminal 2) and ground.

Q: Is the wiring harness between license plate light connector F-10 (terminal 2) and ground in good condition?

YES : Replace the license plate light socket. Verify that the license plate light illuminate normally.

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

CONNECTOR: C-26



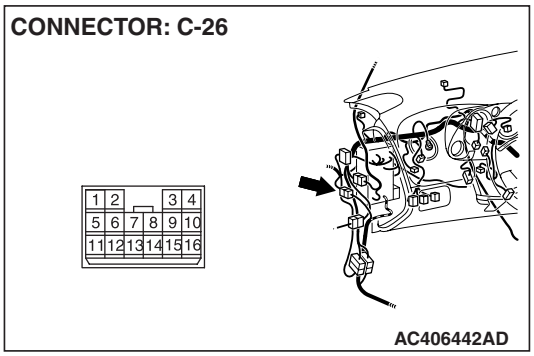
STEP 35. Check intermediate connector C-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is intermediate connector C-26 in good condition?

YES : Go to Step 36.

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

CONNECTOR: C-26



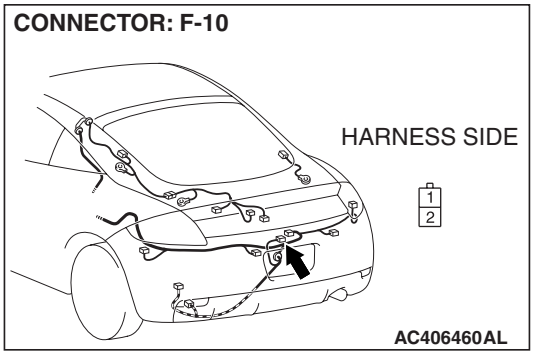
STEP 36. Check the wiring harness between license plate light connector F-10 (terminal 1) and intermediate connector C-26 (terminal 10).

Q: Is the wiring harness between license plate light connector F-10 (terminal 1) and intermediate connector C-26 (terminal 10) in good condition?

YES : Replace the license plate light socket. Verify that the license plate light illuminate normally.

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

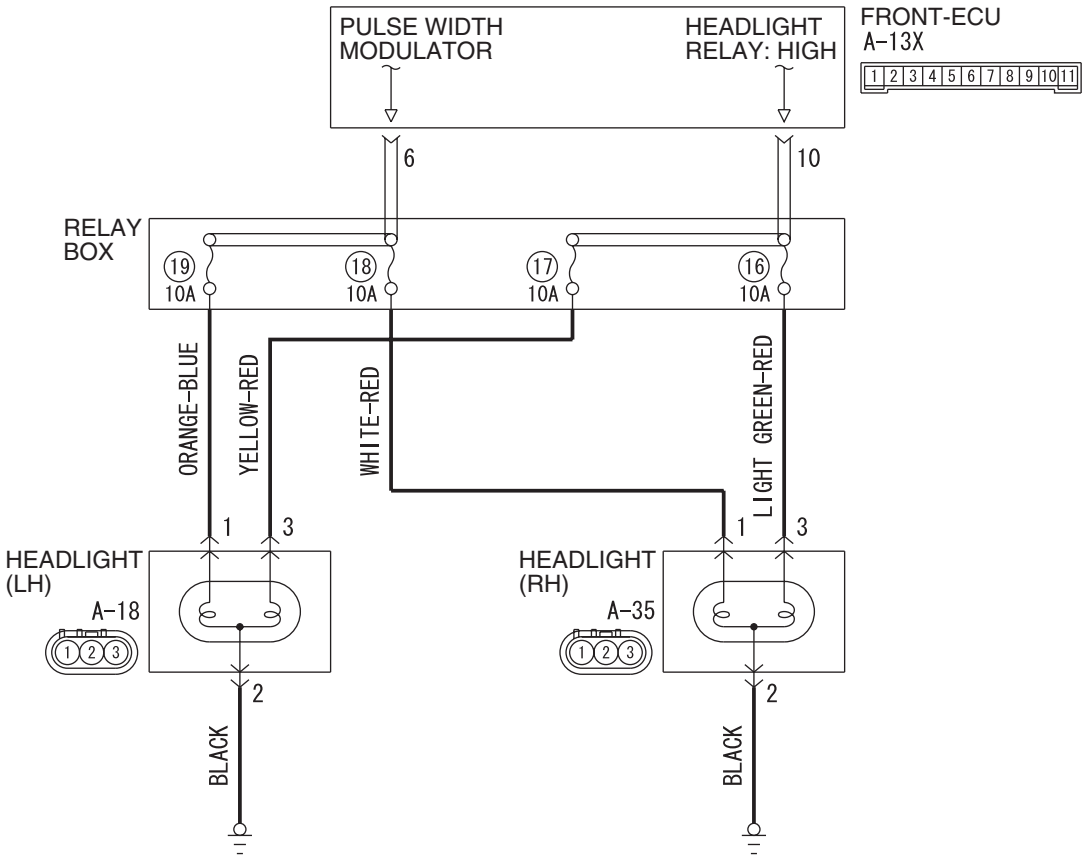
CONNECTOR: F-10



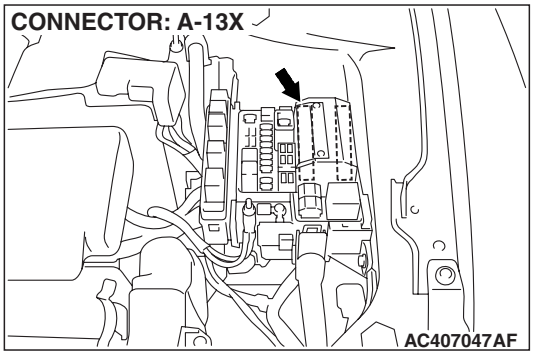
TSB Revision

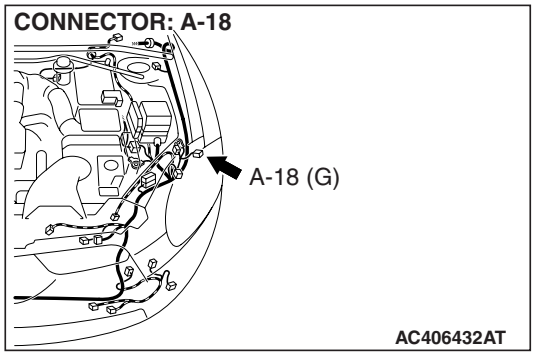
INSPECTION PROCEDURE I-7: Headlight and Taillight: One of the headlights does not illuminate.

Headlights Circuit

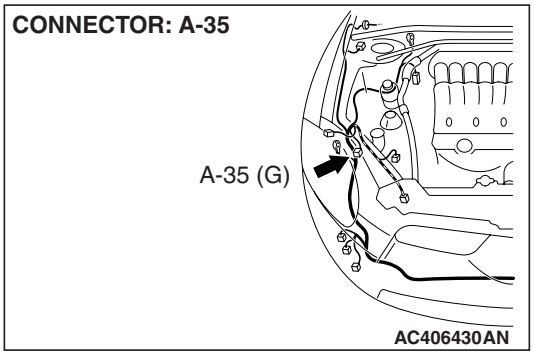


W6P54M056A





TSB Revision



TECHNICAL DESCRIPTION (COMMENT)

If one of the headlights does not illuminate, a headlight bulb may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

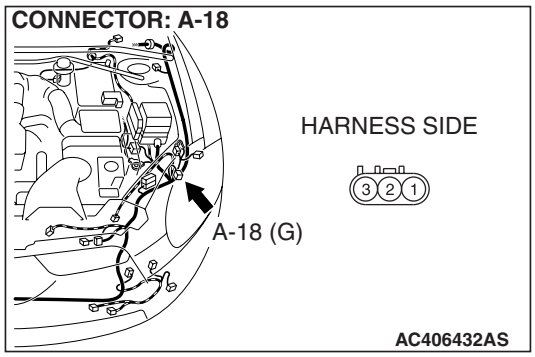
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the headlight operation.

Q: Which of the headlights does not illuminate?

LH (low-beam and high-beam) : Go to Step 2.
RH (low-beam and high-beam) : Go to Step 5.
LH (only low-beam) : Go to Step 8.
RH (only low-beam) : Go to Step 11.
LH (only high-beam) : Go to Step 14.
RH (only high-beam) : Go to Step 17.
Low-beam only (both RH and LH) : Refer to Inspection Procedure I-2 "The headlights (low-beam) do not illuminate normally P.54B-298."
High-beam only (both RH and LH) : Refer to Inspection Procedure I-3 "The headlights (high-beam) do not illuminate normally P.54B-303."
High-beam indicator light : Refer to Inspection Procedure I-8 "The high-beam indicator light does not illuminate P.54B-338."



STEP 2. Check headlight (LH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (LH) connector A-18 in good condition?

YES : Go to Step 3.

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

STEP 3. Check headlight (LH) bulb.

(1) Remove the headlight (LH) bulb.

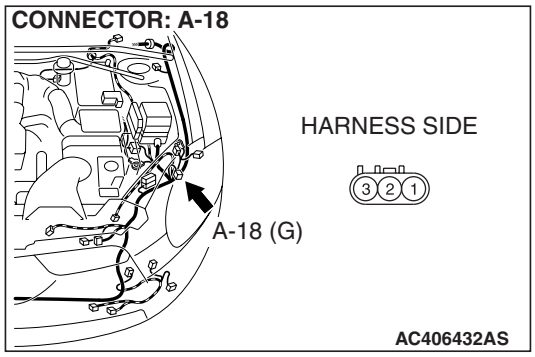
(2) Verify that the headlight (LH) bulb is not damaged or burned out.

Q: Is headlight (LH) bulb normal?

YES : Go to Step 4.

NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

STEP 4. Check the wiring harness between headlight (LH) connector A-18 (terminal 2) and ground.

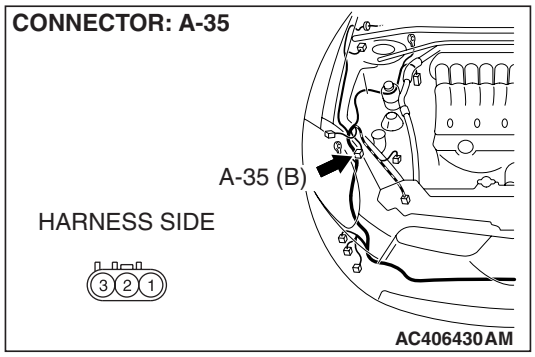


Q: Is the wiring harness between headlight (LH) connector A-18 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

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

STEP 5. Check headlight (RH) connector A-35 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is headlight (RH) connector A-35 in good condition?

YES : Go to Step 6.

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

STEP 6. Check the headlight (RH) bulb.

(1) Remove the headlight (RH) bulb.
(2) Verify that the headlight (RH) bulb is not damaged or burned out.

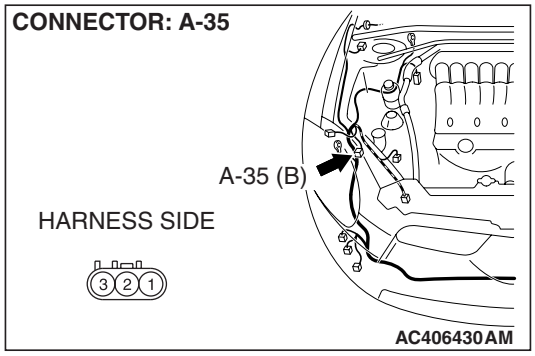
Q: Is headlight (RH) bulb normal?

YES : Go to Step 7.
NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.

STEP 7. Check the wiring harness between headlight (RH) connector A-35 (terminal 2) and ground.

Q: Is the wiring harness between headlight (RH) connector A-35 (terminal 2) and ground in good condition?

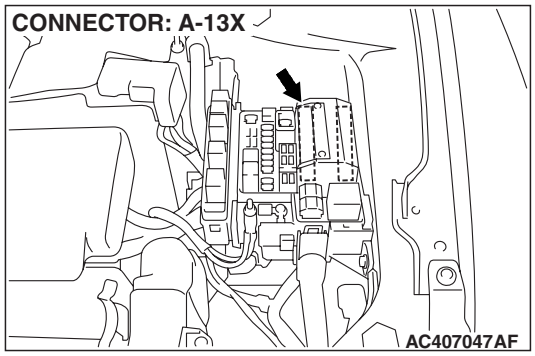
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.

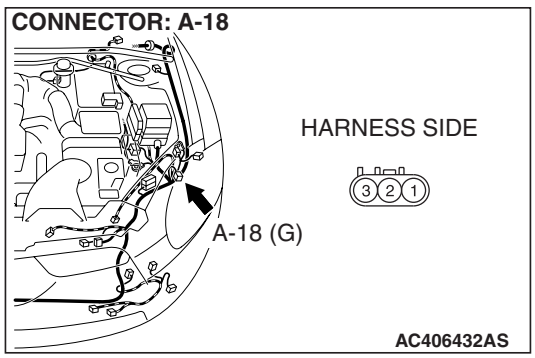


STEP 8. Check headlight (LH) connector A-18 and front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (LH) connector A-18 and front-ECU connector A-13X in good condition?

YES : Go to Step 9.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlights illuminate normally.





STEP 9. Check headlight (LH) bulb.

(1) Remove the headlight (LH) bulb.
(2) Verify that the headlight (LH) bulb is not damaged or burned out.

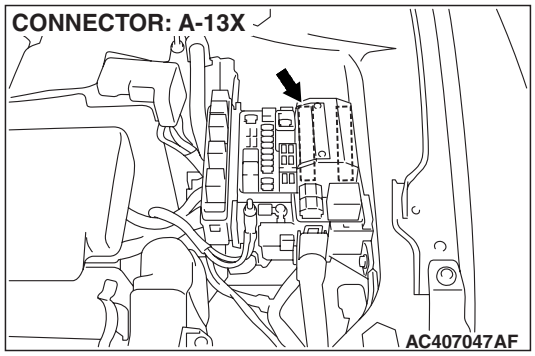
Q: Is headlight (LH) bulb normal?

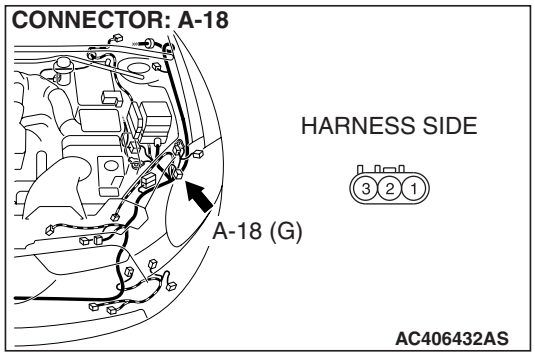
YES : Go to Step 10.
NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

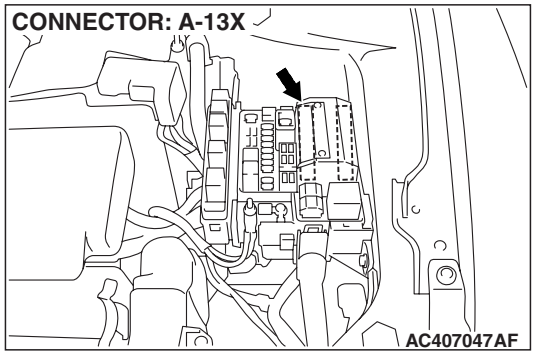
STEP 10. Check the wiring harness between headlight (LH) connector A-18 (terminal 1) and front-ECU connector A-13X (terminal 6).

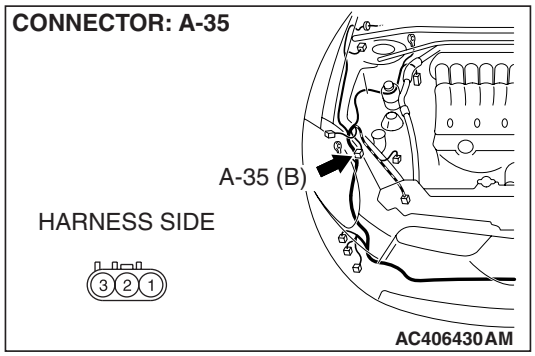
Q: Is the wiring harness between headlight (LH) connector A-18 (terminal 1) and front-ECU connector A-13X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.









STEP 11. Check headlight (RH) connector A-35 and front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-35 and front-ECU connector A-13X in good condition?

YES : Go to Step 12.

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

STEP 12. Check the headlight (RH) bulb.

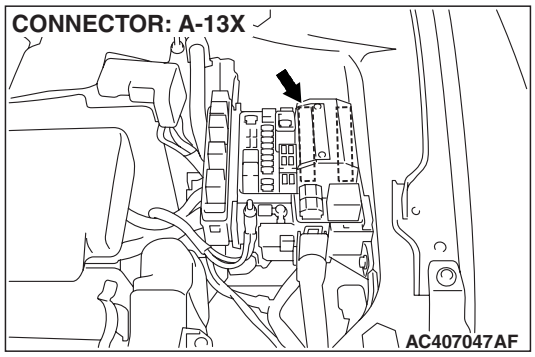
(1) Remove the headlight (RH) bulb.

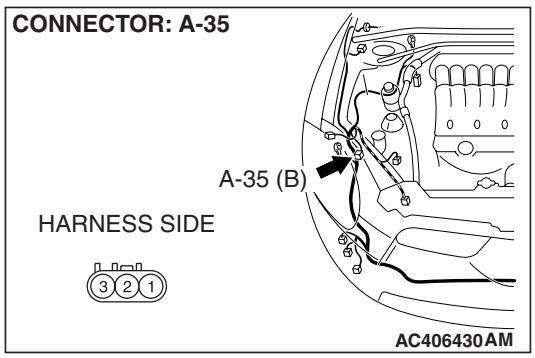
(2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 13.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.



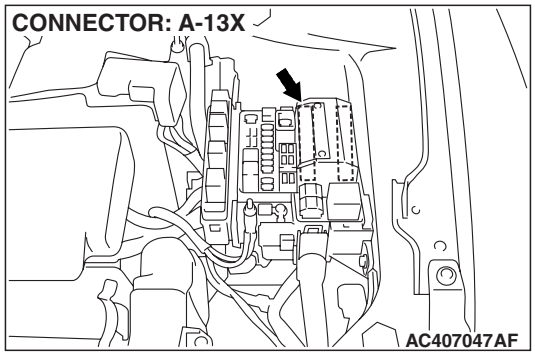


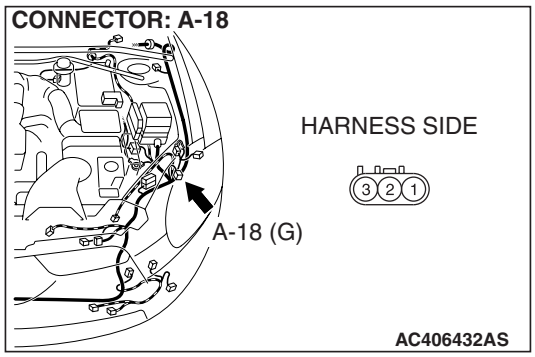
STEP 13. Check the wiring harness between headlight (RH) connector A-35 (terminal 1) and front-ECU connector A-13X (terminal 6).

Q: Is the wiring harness between headlight (RH) connector A-35 (terminal 1) and front-ECU connector A-13X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

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





STEP 14. Check headlight (LH) connector A-18 and front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (LH) connector A-18 and front-ECU connector A-13X in good condition?

YES : Go to Step 15.

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

STEP 15. Check headlight (LH) bulb.

(1) Remove the headlight (LH) bulb.
(2) Verify that the headlight (LH) bulb is not damaged or burned out.

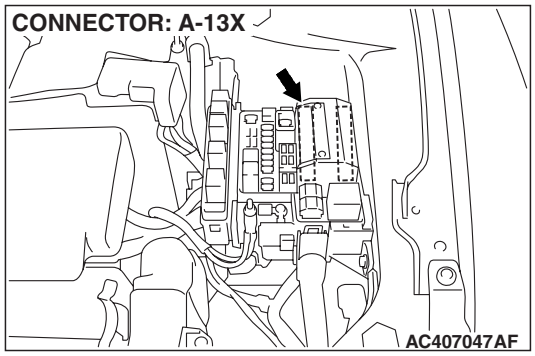
Q: Is headlight (LH) bulb normal?

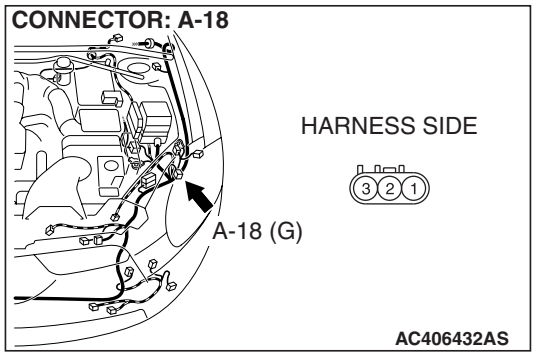
YES : Go to Step 16.
NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

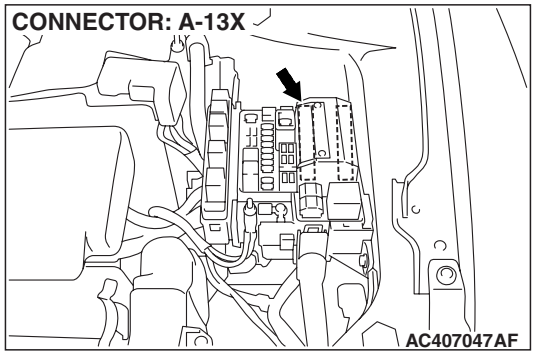
STEP 16. Check the wiring harness between headlight (LH) connector A-18 (terminal 3) and front-ECU connector A-13X (terminal 10).

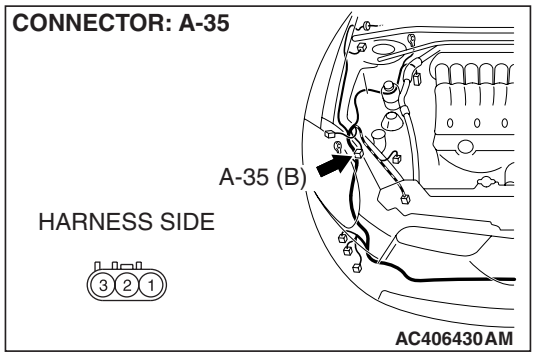
Q: Is the wiring harness between headlight (LH) connector A-18 (terminal 3) and front-ECU connector A-13X (terminal 10) in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.









STEP 17. Check headlight (RH) connector A-35 and front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-35 and front-ECU connector A-13X in good condition?

YES : Go to Step 18.

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

STEP 18. Check the headlight (RH) bulb.

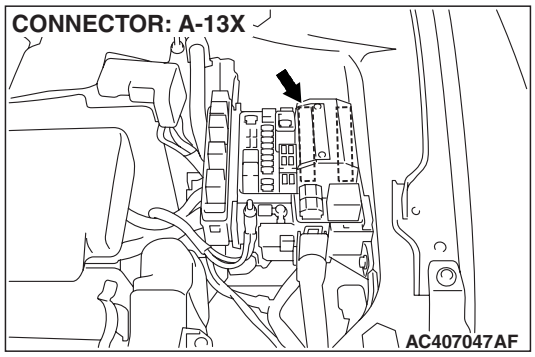
(1) Remove the headlight (RH) bulb.

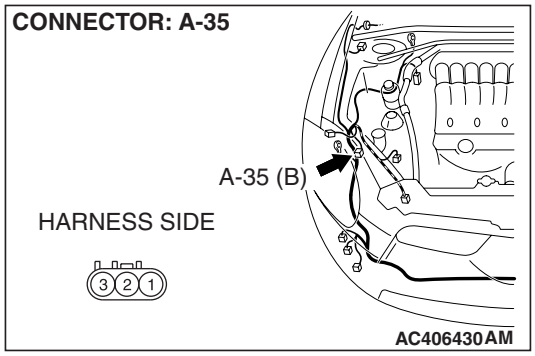
(2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 19.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.





STEP 19. Check the wiring harness between headlight (RH) connector A-35 (terminal 3) and front-ECU connector A-13X (terminal 10).

Q: Is the wiring harness between headlight (RH) connector A-35 (terminal 3) and front-ECU connector A-13X (terminal 10) in good condition?

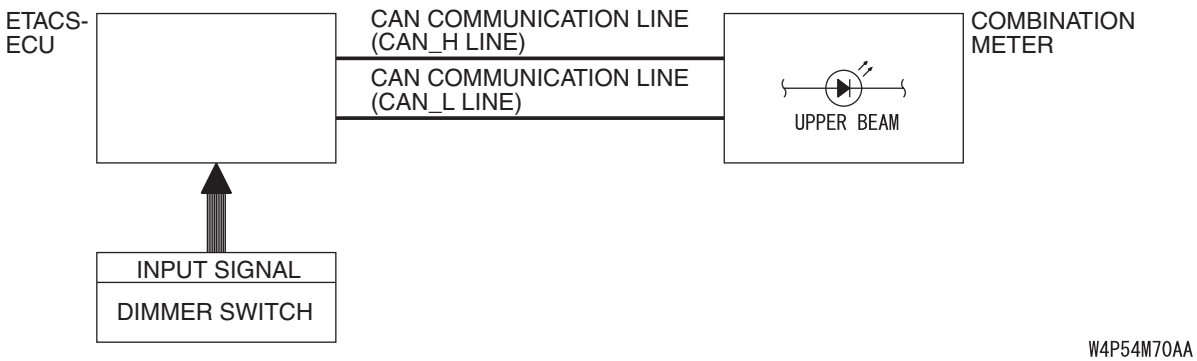
YES : No action is necessary and testing is complete.

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

INSPECTION PROCEDURE I-8: Headlight and Taillight: The high-beam indicator light does not illuminate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

High-Beam Indicator Light Circuit



CIRCUIT OPERATION

At the same time that the high beams are illuminated, the ETACS-ECU sends a signal to illuminate the high beam indicator via the CAN bus line.

TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

If the high beam indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the headlights.

When the lighting switch is operated, check that the headlights illuminate/go off normally.

Q: Are the headlights in good condition?

YES : Go to Step 2.

NO : First, repair the headlights. Refer to Inspection Procedure I-7 "One of the headlights does not illuminate P.54B-329."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

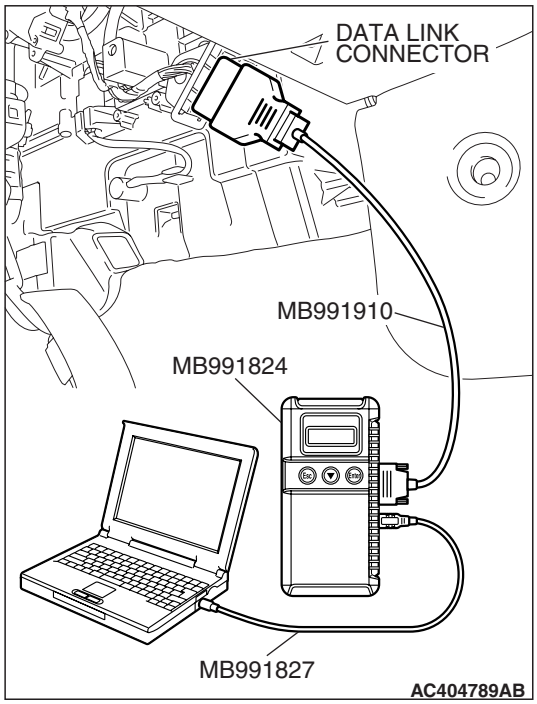
⚠ CAUTION

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

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

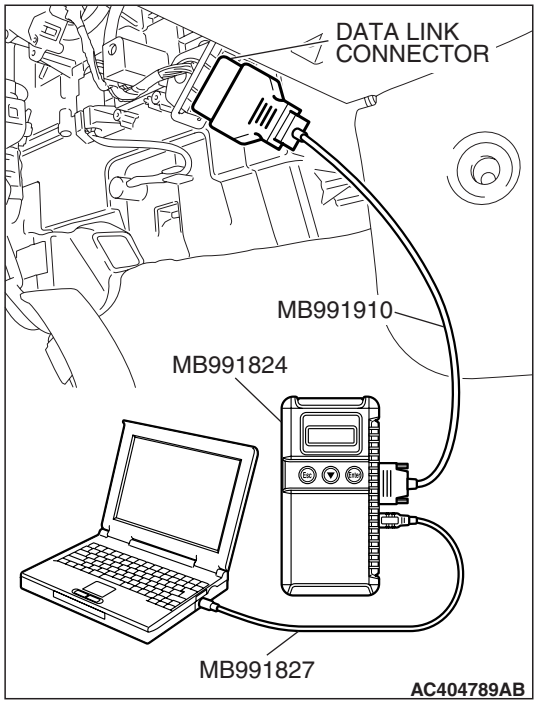


STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

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

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to P.54A-55.
NO : Go to Step 4.



TSB Revision

STEP 4. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

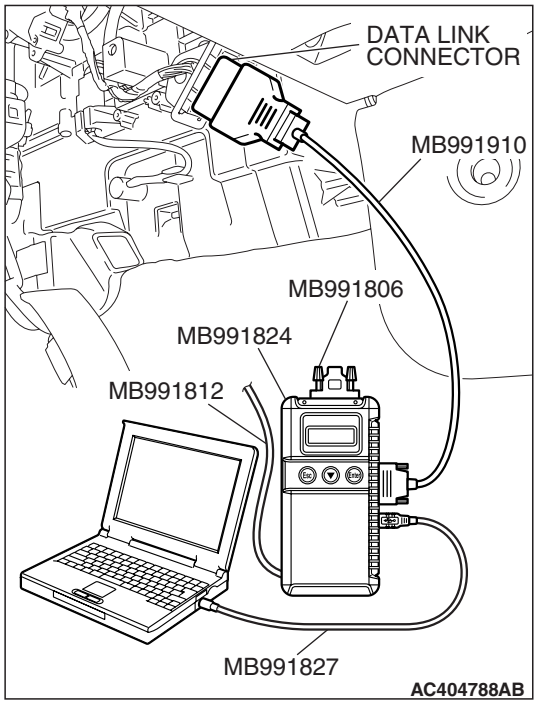
⚠ CAUTION

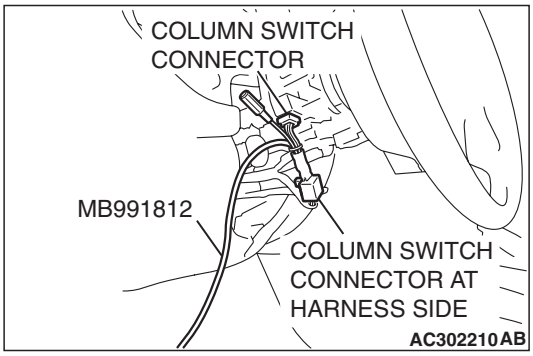
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 5.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





STEP 5. Replace the combination meter.

(1) Replace the combination meter.
(2) Check that the high beam indicator light illuminates normally.

Q: Does the high beam indicator light illuminate normally?

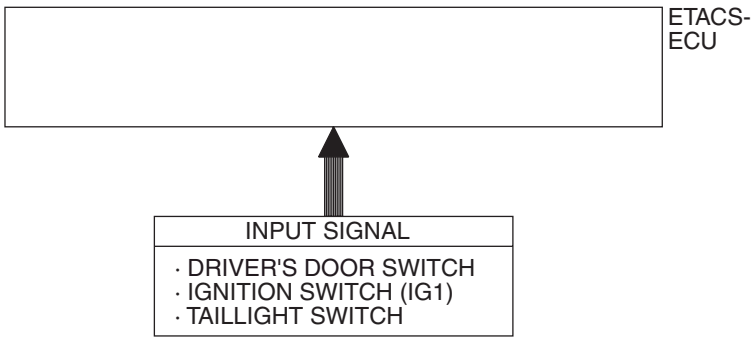
YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Check that the high beam indicator light illuminates normally.

TSB Revision

INSPECTION PROCEDURE I-9: Headlight and Taillight: Headlight automatic shutoff function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Headlight Automatic Shutt-Down Function



W4P54M71AA

CIRCUIT OPERATION

The ETACS-ECU operates the headlight automatic shutdown function according to the following signals:

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

The ETACS-ECU operates the headlight automatic shutdown function under the following conditions:

- Ignition key: Other than "ON" position
- Driver's door: open
- Taillights or headlights: on

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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

Check the input signals from the following switches:

- Ignition switch: "ON" to "OFF"
- Lighting switch: "TAIL" or "HEAD"

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

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

(3) Operate scan tool MB991958 according to the procedure below to display "H/L AUTO-CUT."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "LIGHTING."
   g. Select "H/L AUTO-CUT."

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

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 01	TAILLIGHT SW	ON
ITEM 30	IG SW (IG1)	OFF

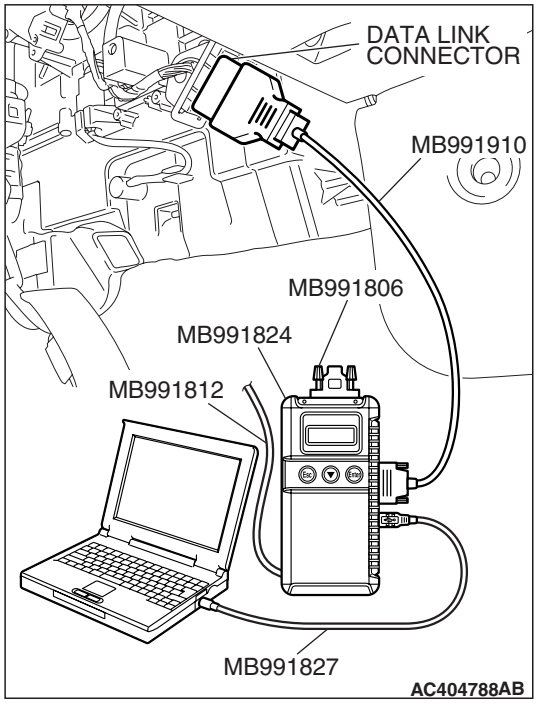
(5) When the driver's door is opened, check that normal conditions are displayed for the items described in the table below.

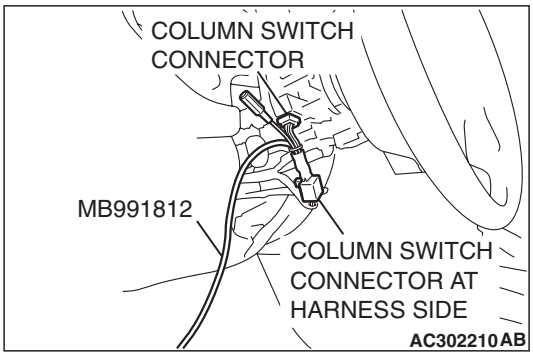
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 32	FRONT DOOR SW	ON
ITEM 35	H/L AUTO-CUT	ON

Q: Does the scan tool MB991958 display the items "TAILLIGHT SW", "IG SW IG1", "FRONT DOOR SW" and "H/L AUTO-CUT" as normal condition?

Normal conditions are displayed for all the items :
Replace the front-ECU. Verify that the headlight automatic shutdown function works normally.

Normal condition is not displayed for "TAILLIGHT SW" :
Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the taillight switch P.54B-473."





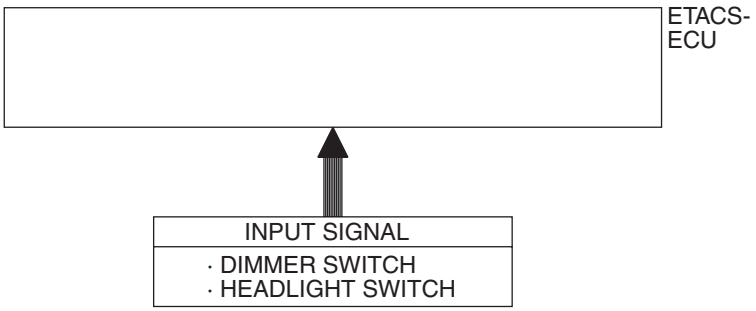
Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."

Normal condition is not displayed for "H/L AUTO-CUT" : Replace the front-ECU. Check that the headlight automatic shutdown function works normally.

INSPECTION PROCEDURE I-10: Headlight and Taillight: Headlight dimmer switch automatic resetting function does not work normally.

Headlight (Dimmer/Passing) Input Signal



W4P54M72AA

CIRCUIT OPERATION
The headlight dimmer switch automatic resetting function is controlled by the front-ECU.

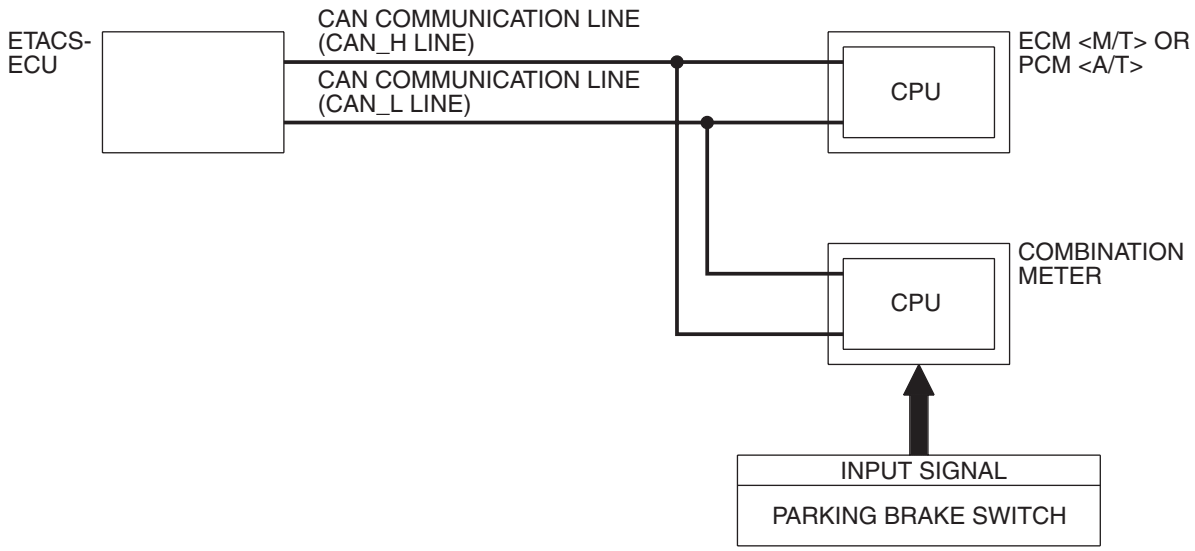
TECHNICAL DESCRIPTION (COMMENT)
If the headlight dimmer switch automatic resetting function does not work normally, the front-ECU may be defective.

TROUBLESHOOTING HINT
The front-ECU may be defective

DIAGNOSIS
Replace the front-ECU.
Check that the headlight dimmer switch automatic resetting function works normally.

INSPECTION PROCEDURE I-11: Headlight and Taillight: Daytime running light function does not work normally.

Daytime Running Light



W6P54M071A

TECHNICAL DESCRIPTION (COMMENT)

If the daytime running light function does not work, connector(s), wiring harness in the CAN bus lines, the ECM <M/T>, the PCM <A/T>, the combination meter, the ETACS-ECU or the input signal circuit may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Verify the headlight (low-beam) operation.

Check to see that the headlight (low-beam) lights up properly when operating the dimmer switch while the headlight switch is ON.

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure I-2 "Headlights (low-beam) do not illuminate normally P.54B-298."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

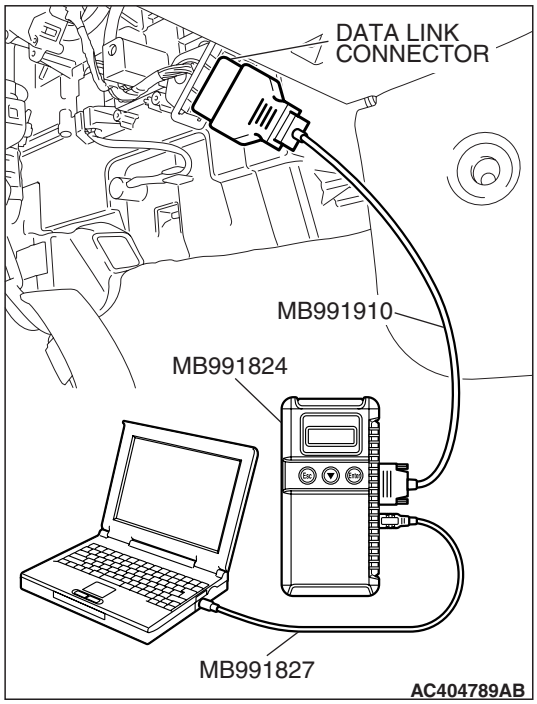
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

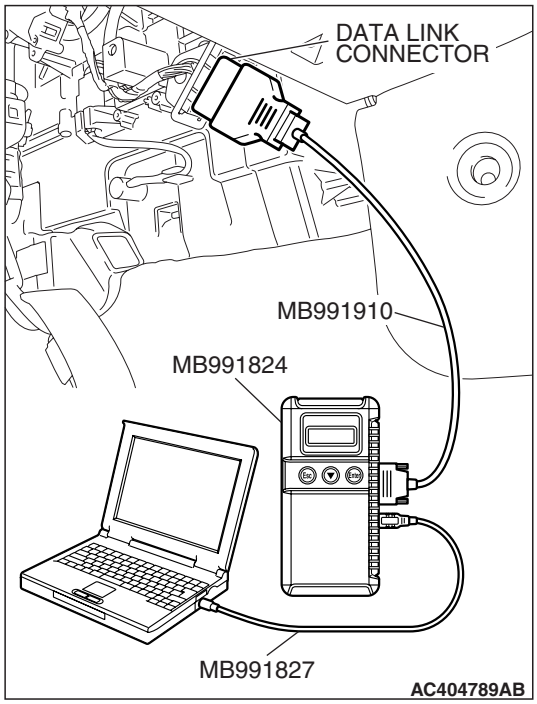


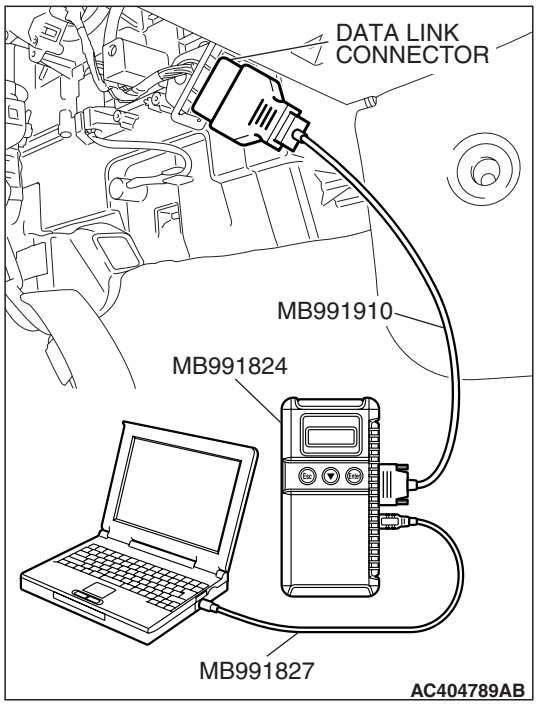
STEP 3. Using scan tool MB991958, read the ECM <M/T> or PCM <A/T> diagnostic trouble code.

Check whether engine and transaxle DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the ECM <M/T> or PCM <A/T> (Refer to GROUP 13A, Diagnosis P.13A-41 <2.4 L> or GROUP 13B, P.13B-43 <3.8 L>).
NO : Go to Step 4.



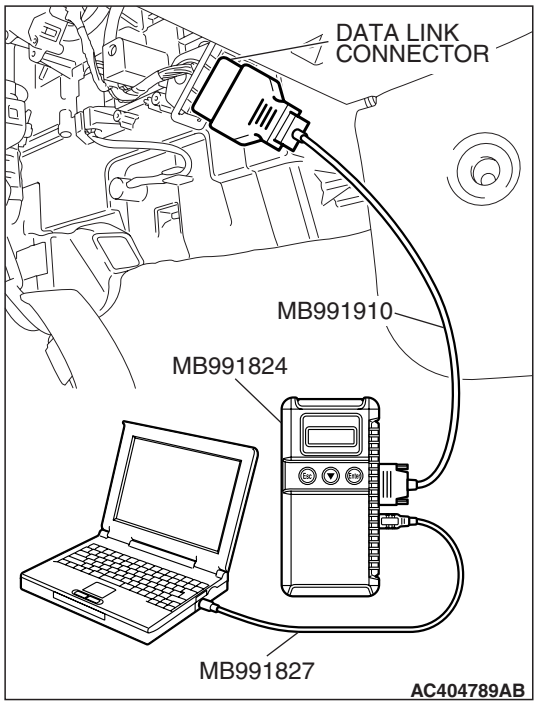


STEP 4. Using scan tool MB991958, read the combination meter diagnostic trouble code.

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

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnostic trouble code chart P.54A-55).
NO : Go to Step 5.



STEP 5. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the parking brake switch.
- Check that scan tool MB991958 sounds when the parking brake lever is pulled.

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

Q: Does scan tool MB991958 sound when the parking brake lever is pulled?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The ignition key reminder tone alarm function should now work normally.
NO : Refer to GROUP 36, troubleshooting P.36-3.

FLASHER TIMER

GENERAL DESCRIPTION CONCERNING THE FLASHER TIMER

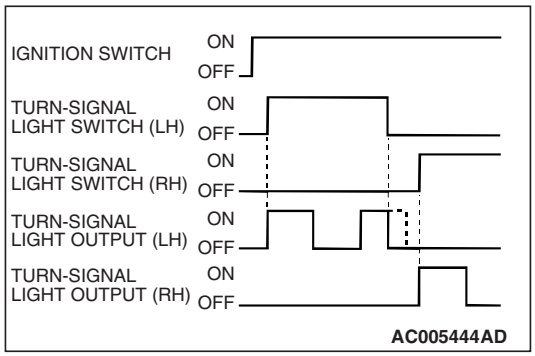
M1549023600302

The following ECUs affect the functions and control of the flasher timer.

FUNCTION	CONTROL ECU
Turn-signal lights	ETACS-ECU, column switch
Hazard warning light	ETACS-ECU
Turn-signal indicators	ETACS-ECU, column switch

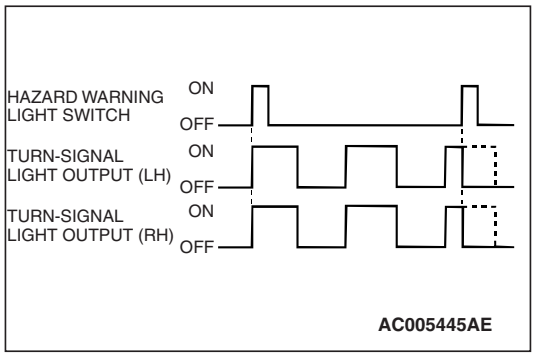
FLASHER TIMER

TURN-SIGNAL LIGHT



The turn-signal light output (flashing signal) is turned ON when the ignition switch is ON and the turn-signal light switch is ON (LH or RH). If the front or rear turn-signal light bulb has burned out, the flashing speed increases to indicate that the bulb has burned out.

HAZARD WARNING LIGHT



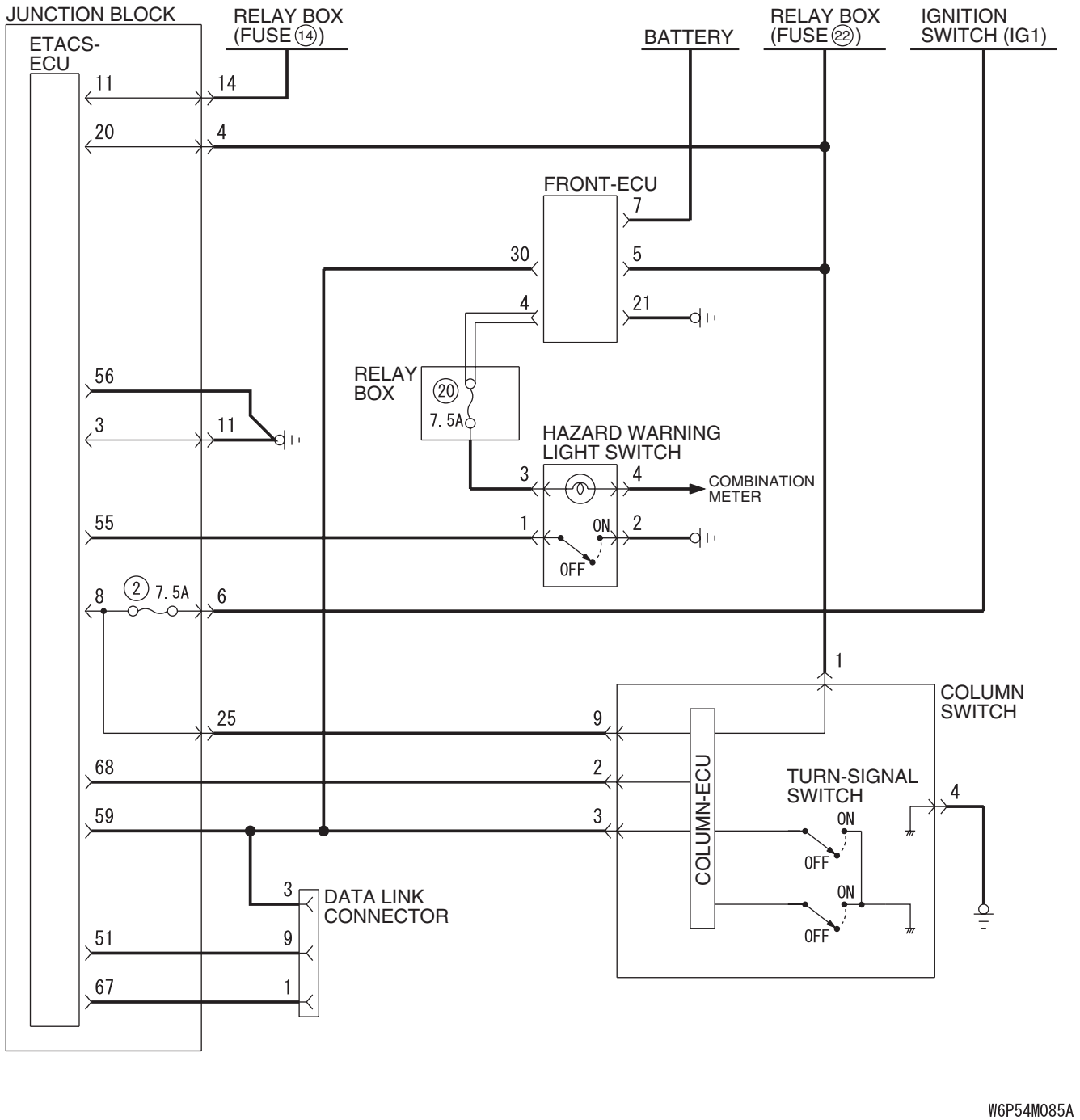
Detects the signal where the hazard warning light switch input changes from OFF to ON, and reverses the flashing state according to this signal. The hazard warning lights toggle on and off whenever the hazard warning light switch is operated.

NOTE: The hazard warning light switch is a push-return type toggle switch.

TURN-SIGNAL INDICATORS

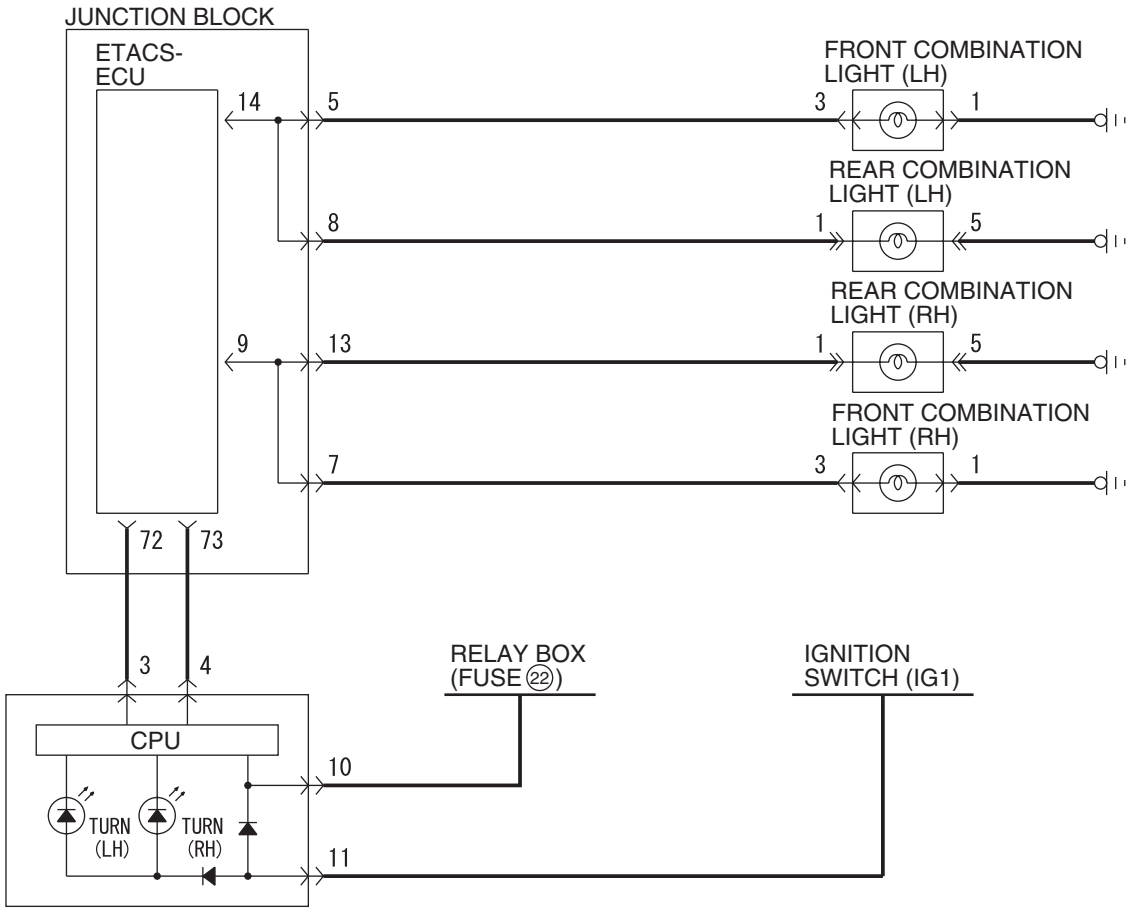
At the same time that the turn-signal lights are illuminated, the ETACS-ECU sends a signal to illuminate the turn-signal light indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the turn-signal light indicator on and off.

General circuit diagram for the turn-signal light and hazard light



W6P54M085A

TSB Revision

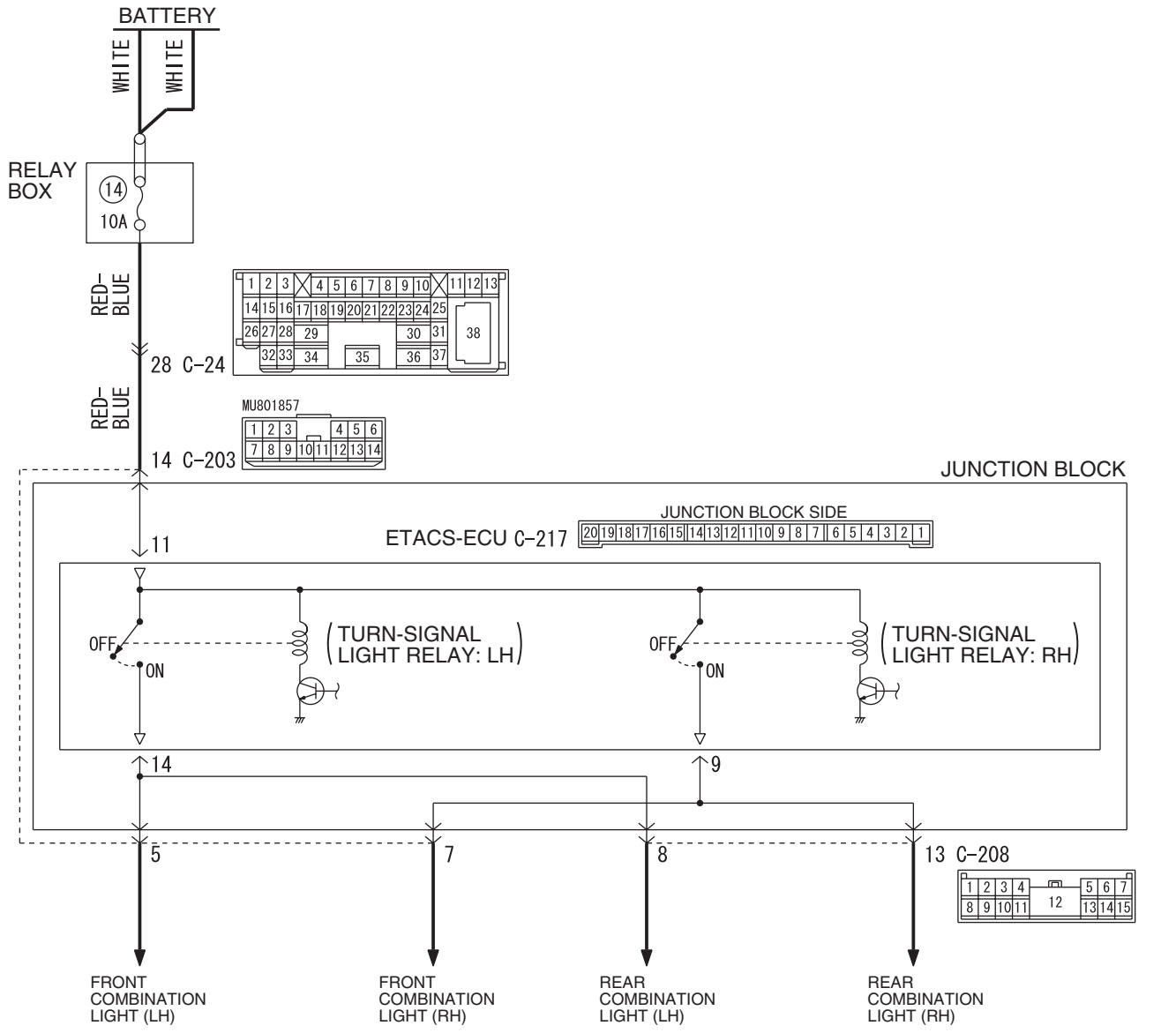

JUNCTION BLOCK
ETACS-ECU
14
5
8
9
13
7
72
73
FRONT COMBINATION LIGHT (LH)
REAR COMBINATION LIGHT (LH)
REAR COMBINATION LIGHT (RH)
FRONT COMBINATION LIGHT (RH)
3
1
5
3
4
CPU
TURN (LH)
TURN (RH)
10
11
RELAY BOX (FUSE 22)
IGNITION SWITCH (IG1)

W6P54M086A

INSPECTION PROCEDURE J-1: Flasher Timer: Turn-signal lights do not flash when the turn-signal light switch is turned on.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Turn-Signal Light Power Supply Circuit



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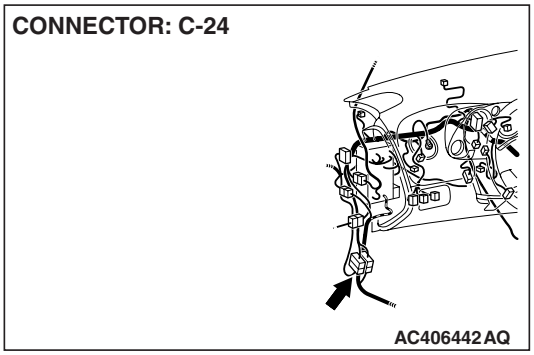
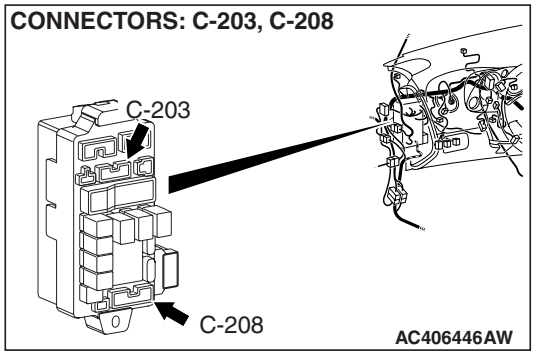
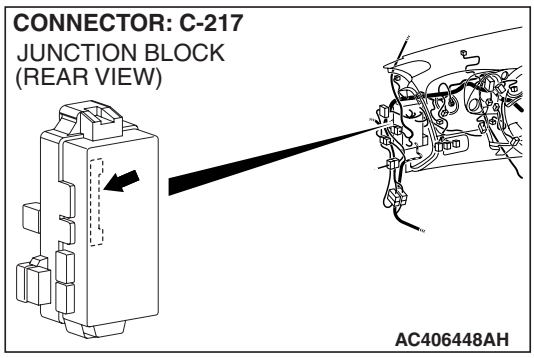
TSB Revision







CIRCUIT OPERATION

- The turn-signal light switch sends a signal through the column-ECU (incorporated in the column switch) to the ETACS-ECU. If the column-ECU sends a turn-signal light switch "ON" signal to the ETACS-ECU, the ETACS-ECU turns on the flasher timer (incorporated in the ETACS-ECU), thus causing the turn-signal lights to flash.
- The ETACS-ECU operates the turn-signal lights according to the following signals:
  - Ignition switch (IG1): ON
  - Turn-signal light switch: ON
- The ETACS-ECU flashes the turn-signal lights under the following conditions:
  - Ignition key: "ON" position
  - Turn-signal light switch: Left or right turn-signal position

TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal lights do not flash normally, the input circuits from the switches described in "CIRCUIT OPERATION" or the ETACS-ECU may be defective. If the hazard warning lights do not flash, the power supply line to the ETACS-ECU (dedicated to the turn-signal lights) may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the hazard warning light.

Q: Do the hazard warning lights work normally?

YES : Go to Step 7.
NO : Go to Step 2.

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STEP 2. Check the turn-signal lights.

Q: Does either of the turn-signal lights illuminate?

Only right or left side light does not illuminate. : Go to Step 3.

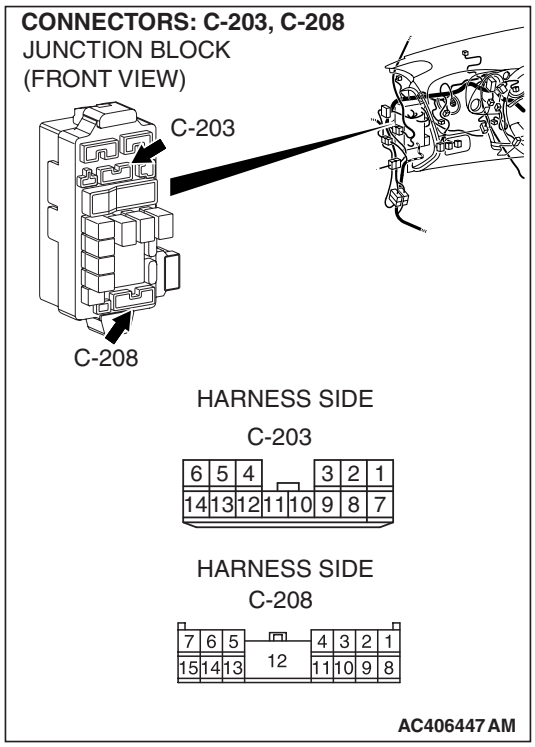
Turn-signal lights do not illuminate at all : Go to Step 4.

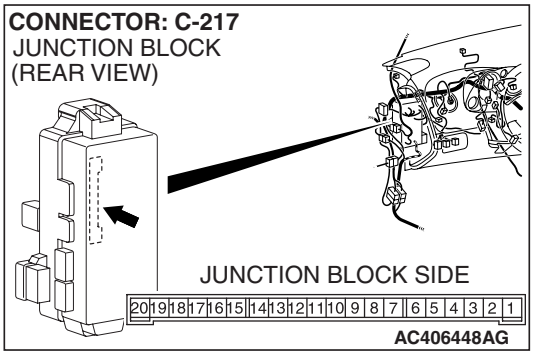
STEP 3. Check ETACS-ECU connector C-217, junction block connectors C-203 and C-208 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

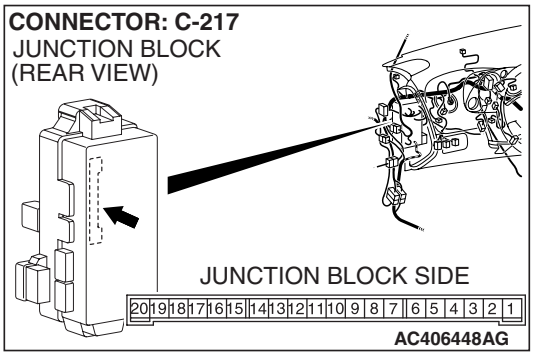
Q: Are ETACS-ECU connector C-217, junction block connectors C-203 and C-208 in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the turn-signal lights illuminate normally.

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





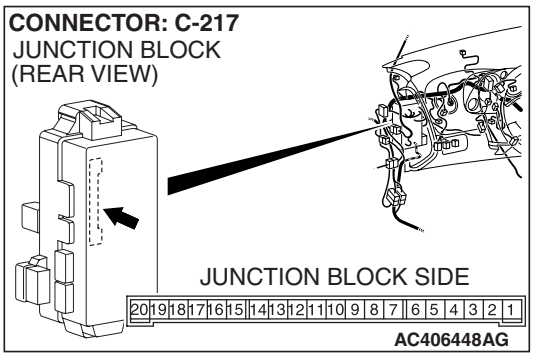


STEP 4. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

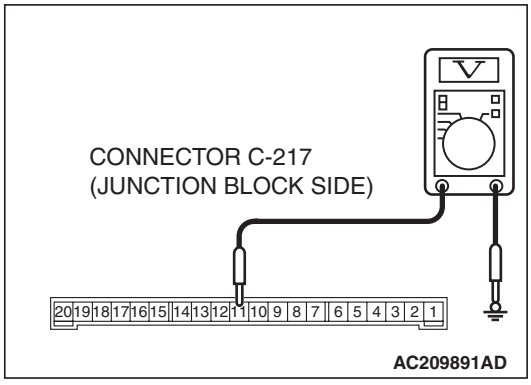
YES : Go to Step 5.

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



STEP 5. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.

(1) Disconnect ETACS-ECU connector C-217, and measure the voltage available at the junction block side of the connector.



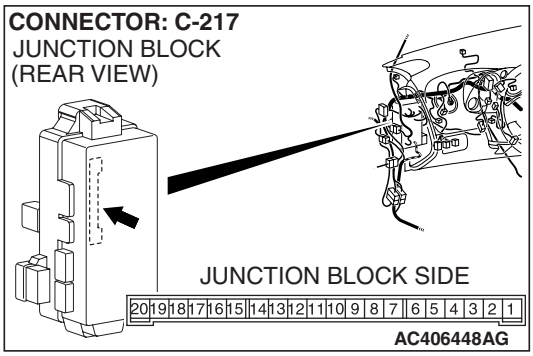
(2) Measure the voltage between terminal 11 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

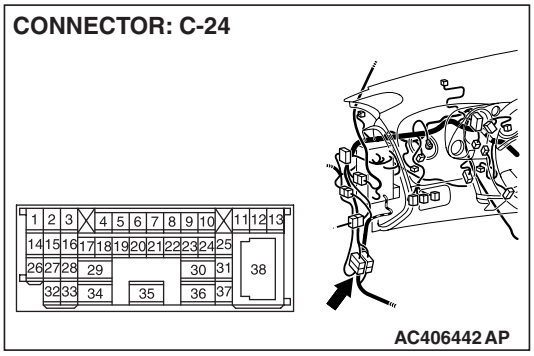
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

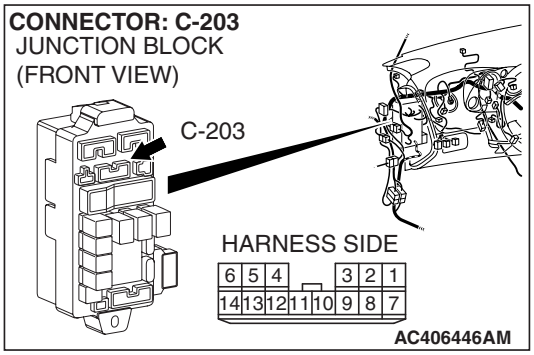
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the turn-signal lights illuminate normally.

NO : Go to Step 6.

STEP 6. Check the wiring harness between ETACS-ECU connector C-217 (terminal 11) and the battery.







NOTE: Also check junction block connector C-203 and intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-203 or intermediate connector C-24 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 11) and the battery in good condition?

YES : No action is necessary and testing is complete.

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

STEP 7. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

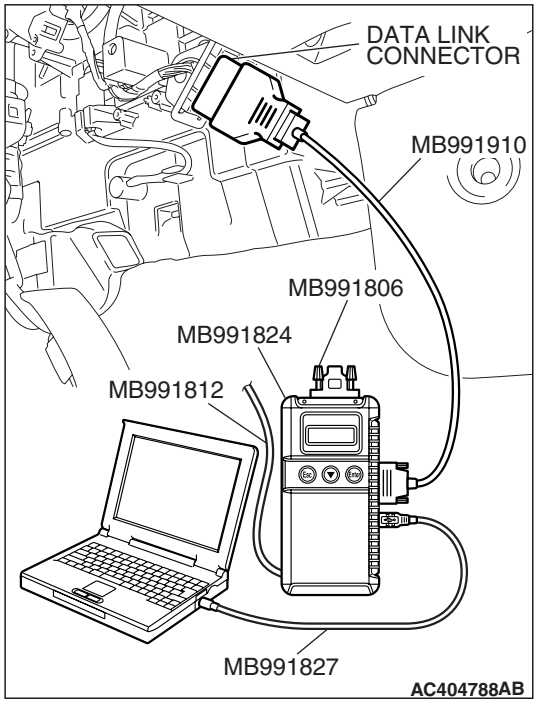
- Ignition switch: ON
- Turn-signal light switch: RH

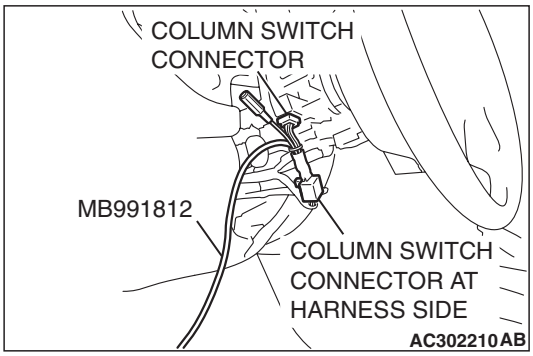
⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "TURN SIG.RH."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "TURN SIGNAL."
   g. Select "TURN SIG.RH."
(4) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 10	T/S RH SW	ON
ITEM 30	IG SW (IG1)	ON



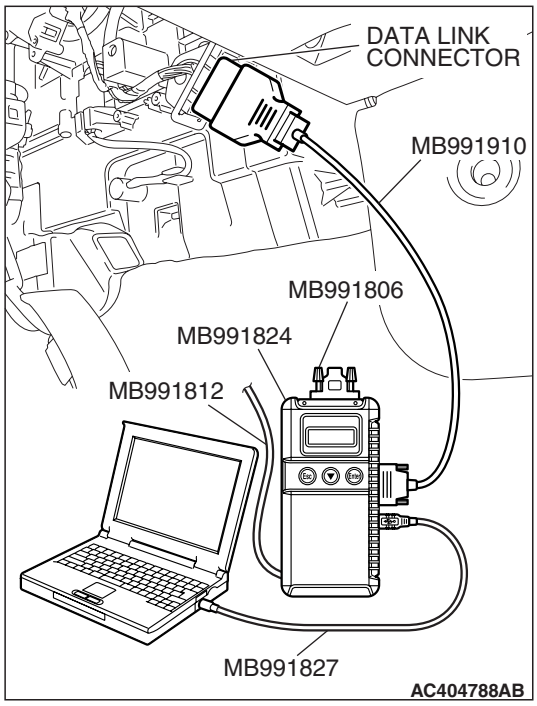


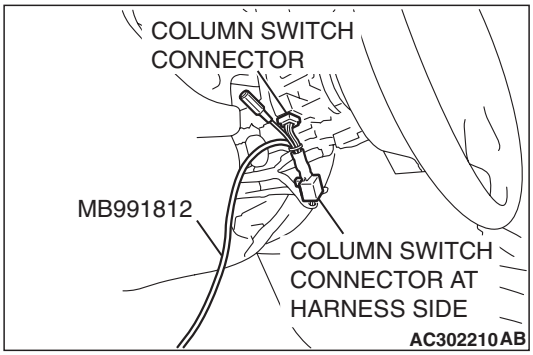
Q: Does the scan tool MB991958 display the items "T/S RH SW" and "IG SW (IG1)" as normal condition?

Normal conditions are displayed for all the items : Go to Step 8.

Normal condition is not displayed for "T/S RH SW" : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the turn-signal light switch P.54B-473."

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."





STEP 8. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

If the Ignition switch is turned to the "ON" position and the turn-signal light switch (LH) is turned on, normal conditions should be displayed for the items described in the table below.

(1) Operate scan tool MB991958 according to the procedure below to display "TURN SIG.LH."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "TURN SIGNAL."
   g. Select "TURN SIG.LH."

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

ITEM No.	ITEM NAME	NORMAL CONDITION
ITEM 11	T/S LH SW	ON

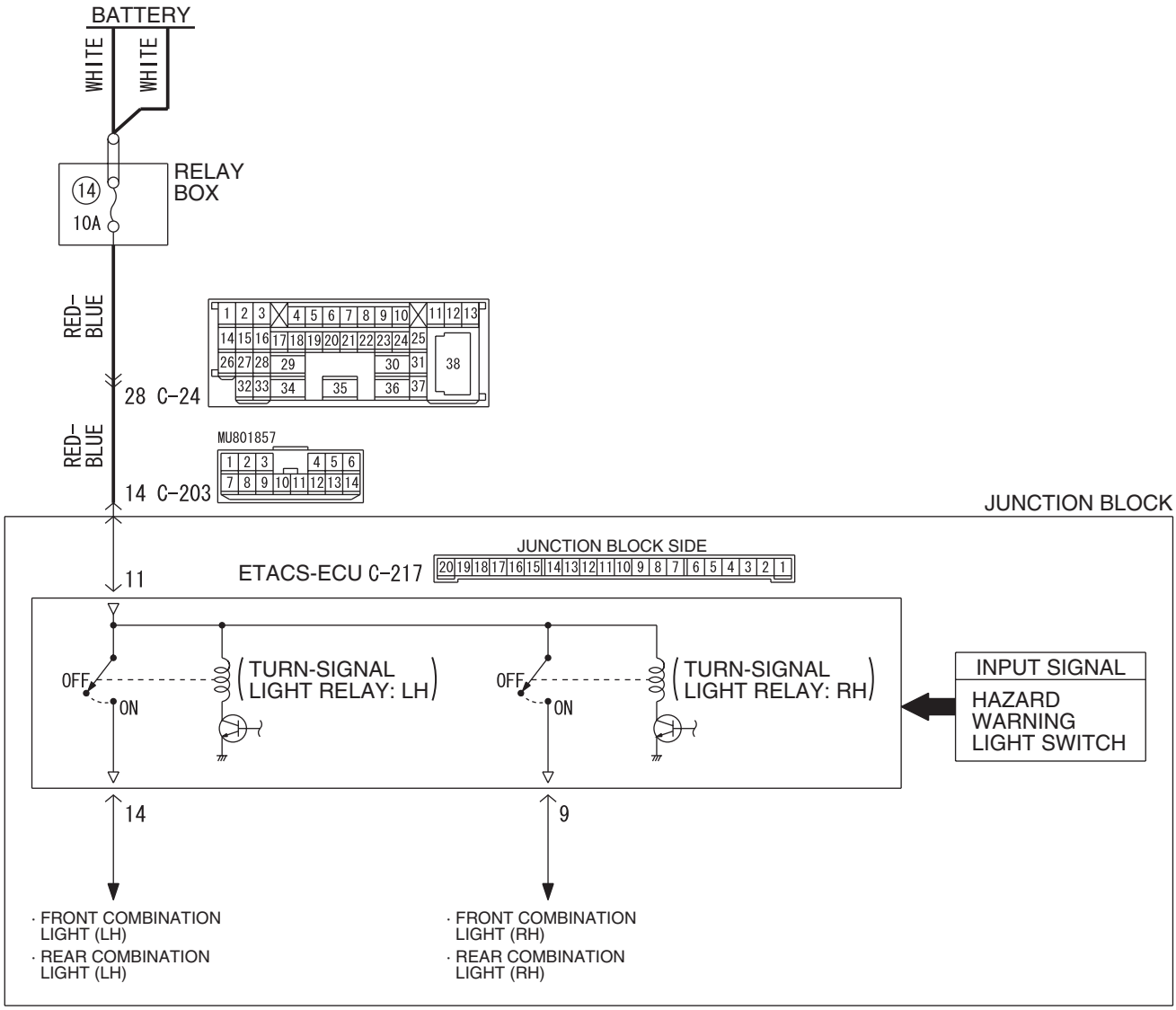
Q: Do the scan tool display the item "T/S LH SW" as normal condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the turn-signal lights illuminate normally.

NO : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the turn-signal light switch P.54B-473."

INSPECTION PROCEDURE J-2: Flasher Timer: Hazard warning lights do not flash when the hazard warning light switch is turned on.

Hazard Warning Light Circuit



W6P54M016A

CIRCUIT OPERATION

If the ETACS-ECU receives "ON" signal from the hazard warning light switch, the ETACS-ECU turns on the flasher timer (incorporated in the ETACS-ECU), thus causing the turn-signal lights to flash.

TECHNICAL DESCRIPTION (COMMENT)

If the hazard warning lights do not flash, the power supply line to the ETACS-ECU (dedicated to the turn-signal lights) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

TSB Revision

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the turn-signal lights.

Q: Do the turn-signal lights illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure J-1 "Turn-signal lights do not flash when the turn-signal light switch is turned on P.54B-351."

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

Check input signal from the hazard warning light switch.

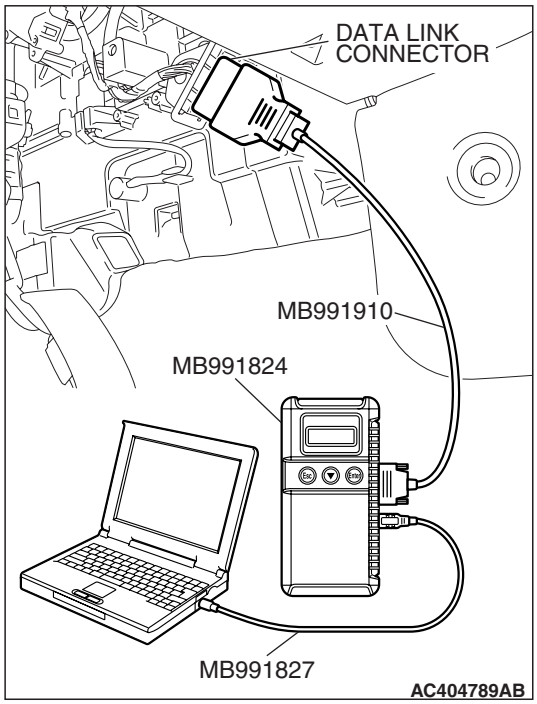
⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(3) Check that scan tool MB991958 sounds when the hazard warning light switch is turned from "OFF" to "ON."



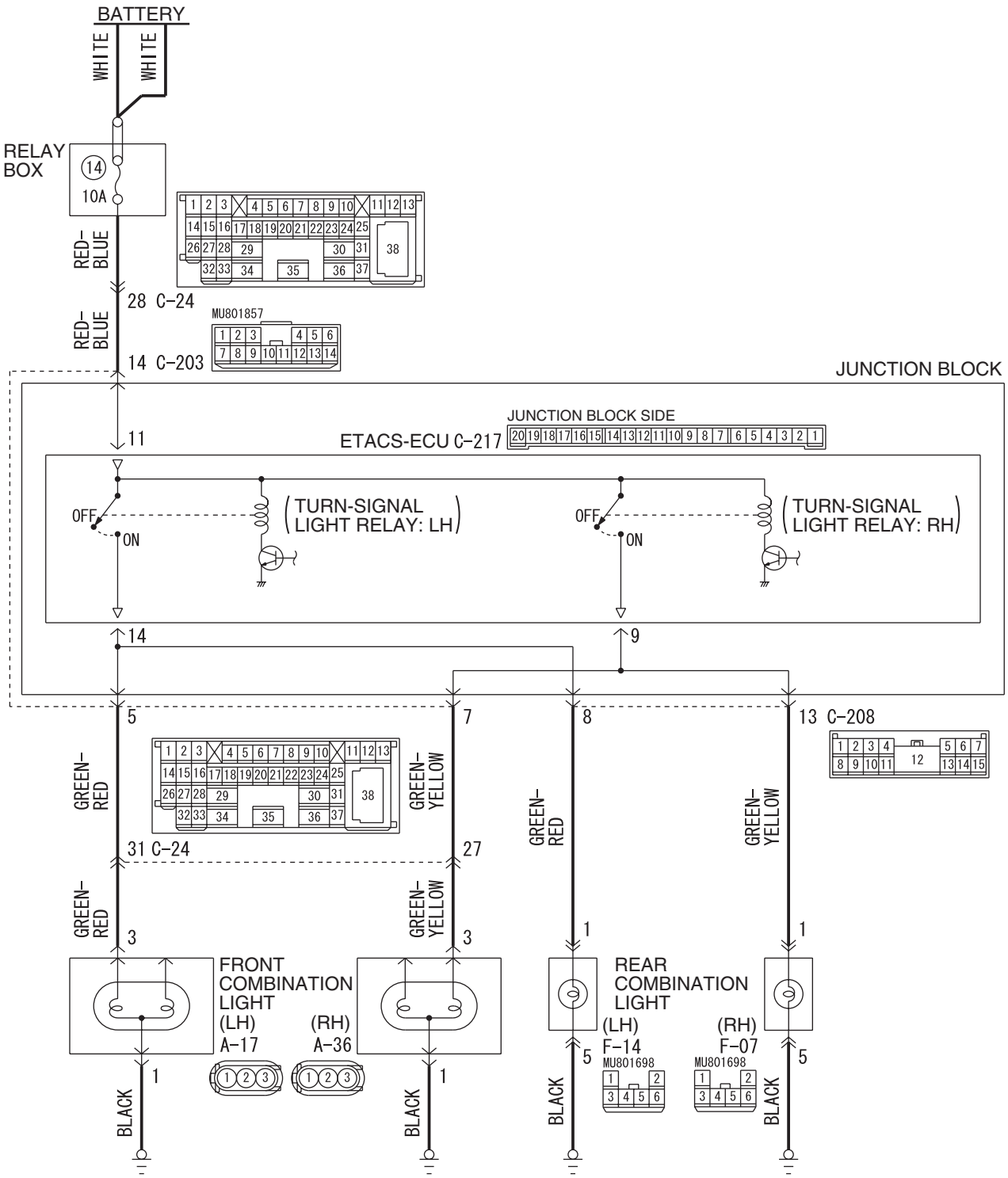
Q: Does scan tool MB991958 sound when the hazard warning light switch is turned from "OFF" to "ON"?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the hazard warning lights illuminate normally.

NO : Refer to Inspection Procedure N-2 "ETACS-ECU does not receive any signal from the hazard warning light switch P.54B-493."

INSPECTION PROCEDURE J-3: Flasher Timer: One of the turn-signal lights does not illuminate.

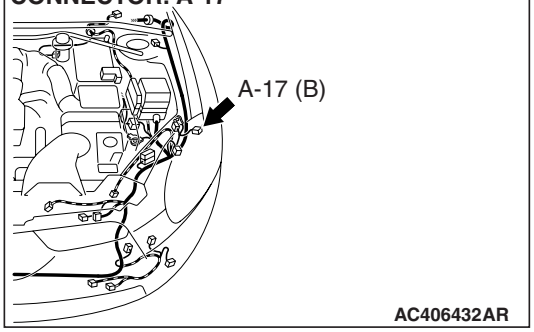
Turn-Signal Lights Circuit



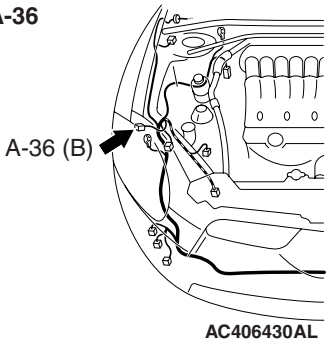
W6P54M057A

TSB Revision

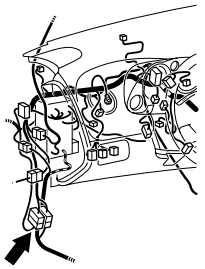
CONNECTOR: A-17



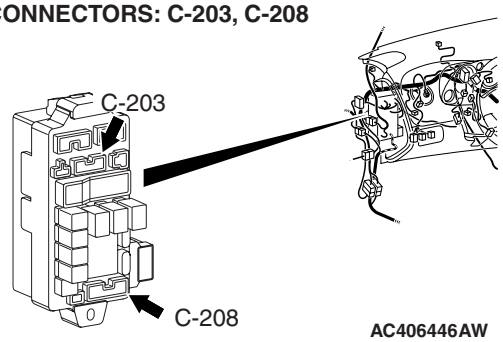
CONNECTOR: A-36



CONNECTOR: C-24

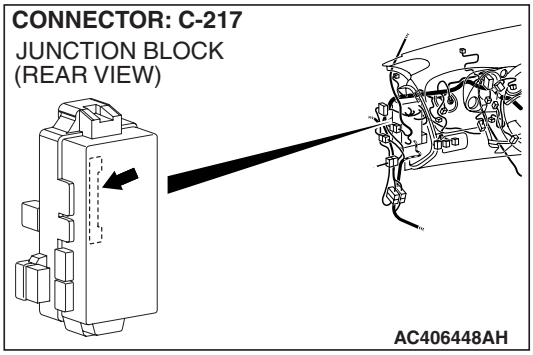


CONNECTORS: C-203, C-208

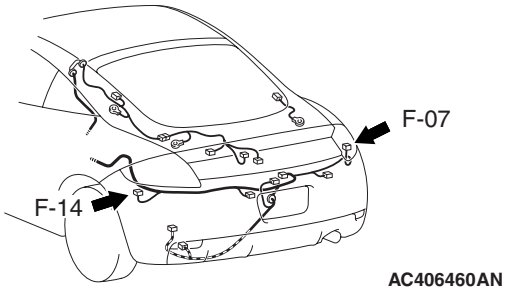


CONNECTOR: C-217

JUNCTION BLOCK
(REAR VIEW)



CONNECTORS: F-07, F-14



TECHNICAL DESCRIPTION (COMMENT)

If the right or left turn-signal light does not illuminate, their bulb may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

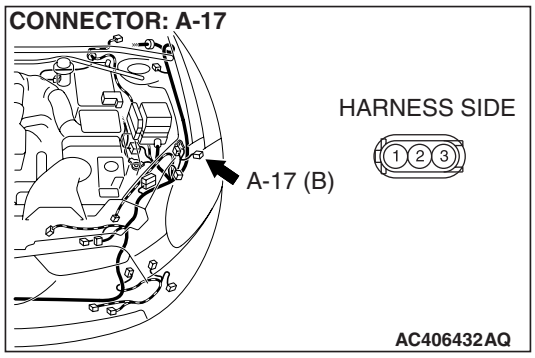
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the hazard warning light.

Q: Which turn-signal light does not illuminate?

Front turn-signal light (LH) : Go to Step 2.
Front turn-signal light (RH) : Go to Step 8.
Rear combination light (LH) : Go to Step 14.
Rear combination light (RH) : Go to Step 20.
Turn-signal indicators : Refer to Inspection Procedure J-4 "The turn-signal light indicator does not illuminate normally P.54B-374."
LH side only : Refer to Inspection Procedure J-1 "Turn-signal lights do not flash when the turn-signal light switch is turned on P.54B-351."
RH side only : Refer to Inspection Procedure J-1 "Turn-signal lights do not flash when the turn-signal light switch is turned on P.54B-351."
Both LH and RH sides : Refer to Inspection Procedure J-2 "Hazard warning lights do not flash when the hazard warning light switch is turned on P.54B-358."

STEP 2. Check front combination light (LH) connector A-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is front combination light (LH) connector A-17 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

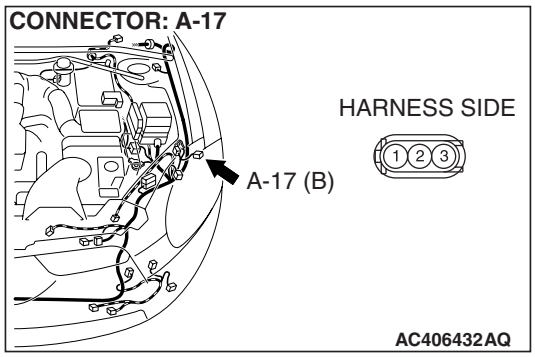
STEP 3. Check the front turn-signal light bulb (LH).

(1) Remove the front turn-signal (LH) light bulb.
(2) Verify that the front turn-signal light bulb (LH) is not damaged or burned out.

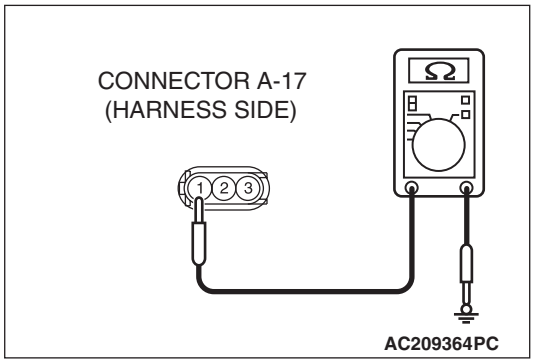
Q: Is the front turn-signal (LH) light bulb in good condition?

YES : Go to Step 4.
NO : Replace the front turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 4. Check the ground circuit to the ETACS-ECU. Measure the resistance at front combination light (LH) connector A-17.



(1) Disconnect front combination light (LH) connector A-17 and measure the resistance available at the wiring harness side of the connector.

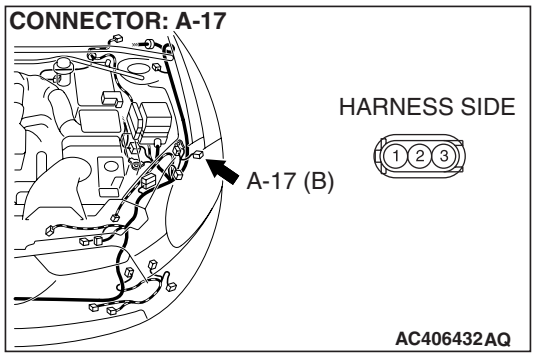


(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

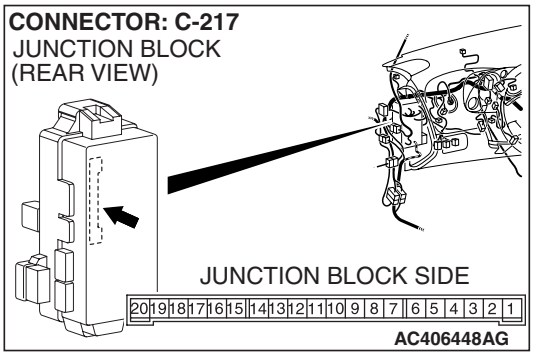
YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check the wiring harness between front combination light (LH) connector A-17 (terminal 1) and ground.



Q: Is the wiring harness between front combination light (LH) connector A-17 (terminal 1) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

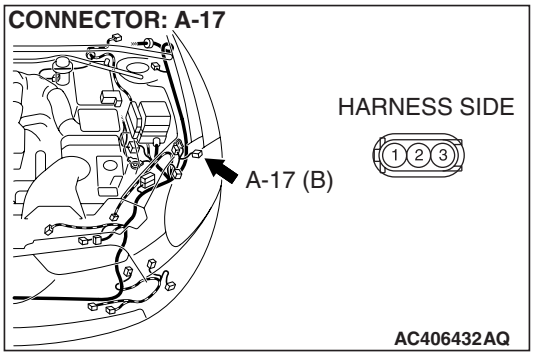


STEP 6. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

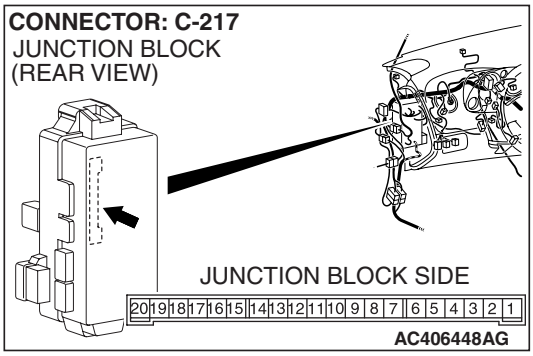
Q: Is ETACS-ECU connector C-217 in good condition?

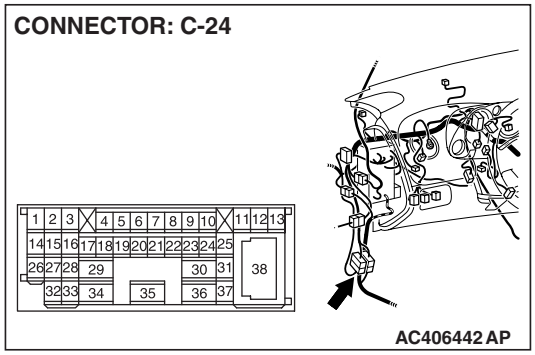
YES : Go to Step 7.

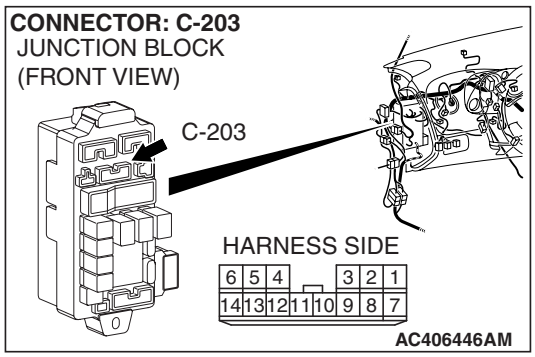
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 7. Check the wiring harness between front combination light (LH) connector A-17 (terminal 3) and ETACS-ECU connector C-217 (terminal 14).







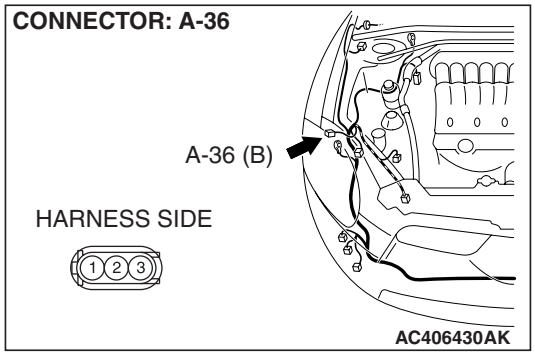
NOTE: Also check junction block connector C-203 and intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-203 or intermediate connector C-24 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front combination light (LH) connector A-17 (terminal 3) and ETACS-ECU connector C-217 (terminal 14) in good condition?

YES : Replace the front combination light socket (LH). Verify that the turn-signal lights illuminate normally.

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

STEP 8. Check front combination light (RH) connector A-36 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is front combination light (RH) connector A-36 in good condition?

YES : Go to Step 9.

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

STEP 9. Check the front turn-signal light bulb (RH).

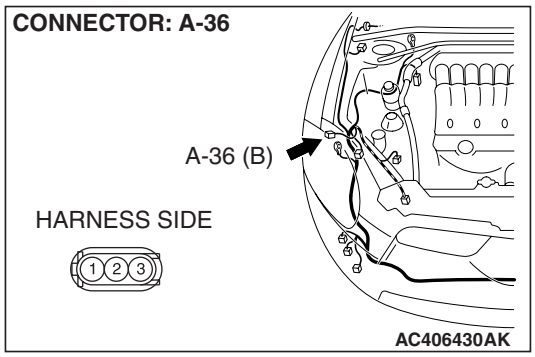
(1) Remove the front turn-signal (RH) light bulb.
(2) Verify that the front turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the front turn-signal (RH) light bulb in good condition?

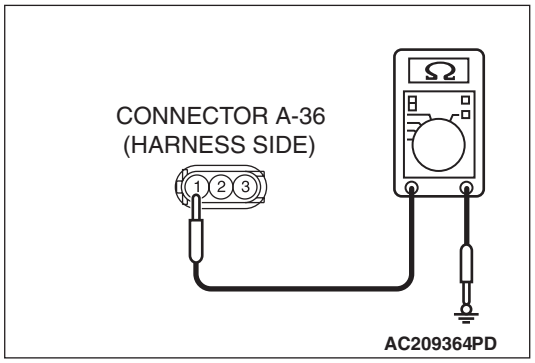
YES : Go to Step 10.

NO : Replace the front turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 10. Check the ground circuit to the front combination light (RH). Measure the resistance at front combination light (RH) connector A-36.



(1) Disconnect front combination light (RH) connector A-36 and measure the resistance available at the wiring harness side of the connector.

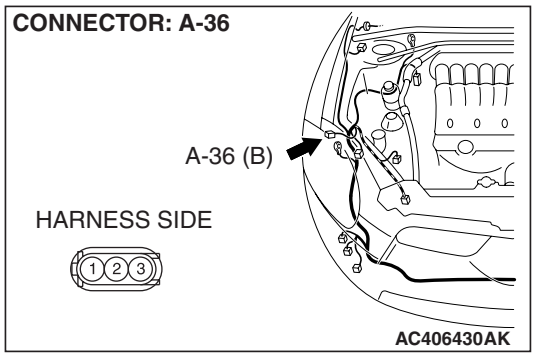


(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

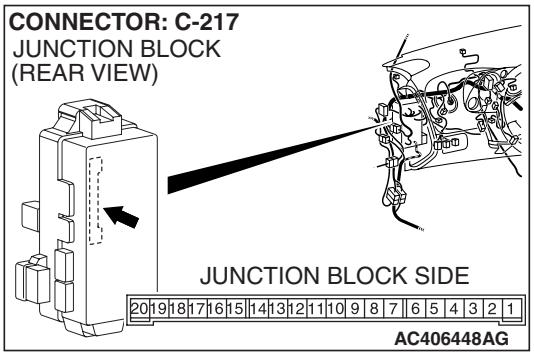
YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the wiring harness between front combination light (RH) connector A-36 (terminal 1) and ground.



Q: Is the wiring harness between front combination light (RH) connector A-36 (terminal 1) and ground in good condition?

YES : Replace the front combination light socket (RH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

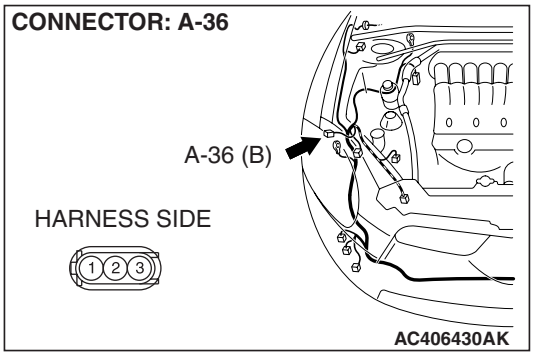


STEP 12. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

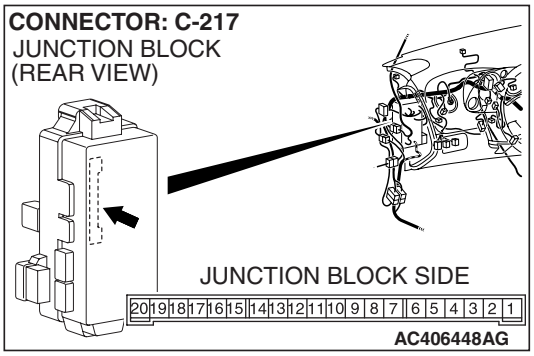
Q: Is ETACS-ECU connector C-217 in good condition?

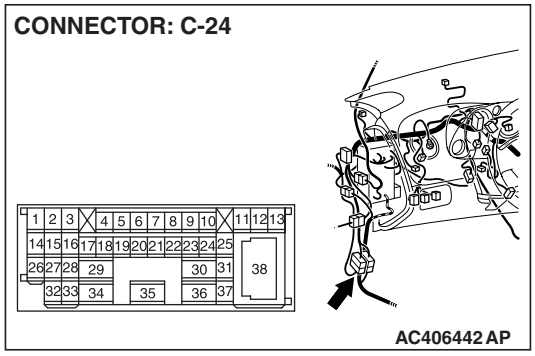
YES : Go to Step 13.

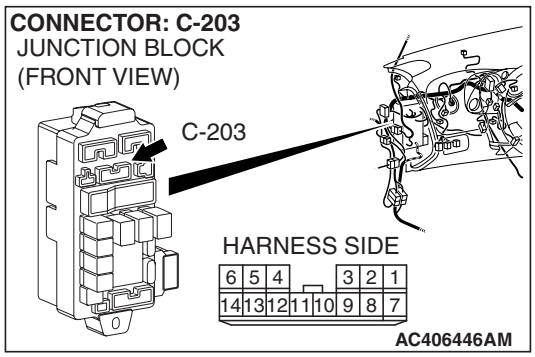
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 13. Check the wiring harness between front combination light (RH) connector A-36 (terminal 3) and ETACS-ECU connector C-217 (terminal 9).





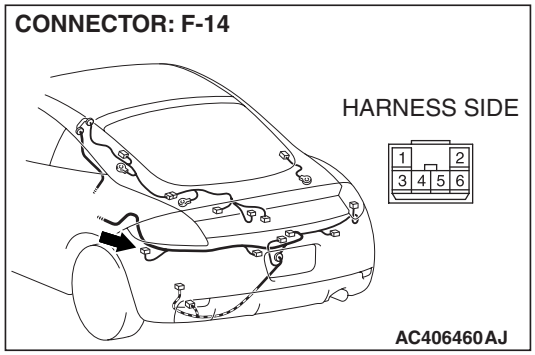


NOTE: Also check junction block connector C-203 and intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-203 or intermediate connector C-24 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection *P.00E-2.*

Q: Is the wiring harness between front combination light (RH) connector A-36 (terminal 3) and ETACS-ECU connector C-217 (terminal 9) in good condition?

YES : Replace the front combination light socket (RH). Verify that the turn-signal lights illuminate normally.

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



STEP 14. Check rear combination light (LH) connector F-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (LH) connector F-14 in good condition?

YES : Go to Step 15.

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

STEP 15. Check the rear turn-signal light bulb (LH).

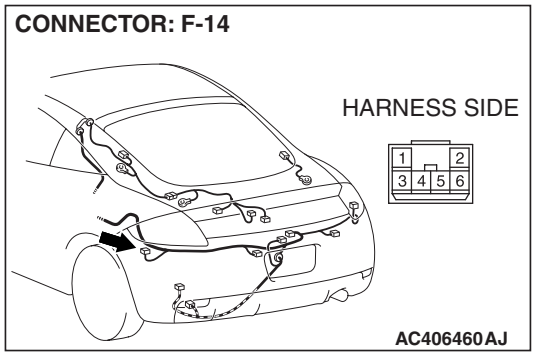
(1) Remove the rear turn-signal (LH) light bulb.
(2) Verify that the rear turn-signal light bulb (LH) is not damaged or burned out.

Q: Is the rear turn-signal (LH) light bulb in good condition?

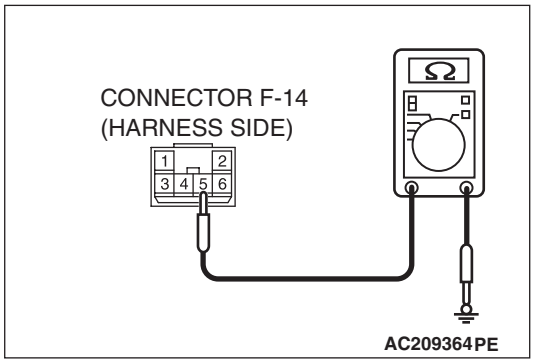
YES : Go to Step 16.

NO : Replace the rear turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 16. Check the ground circuit to the rear combination light (LH). Measure the resistance at rear combination light (LH) connector F-14.



(1) Disconnect rear combination light (LH) connector F-14 and measure the resistance available at the wiring harness side of the connector.

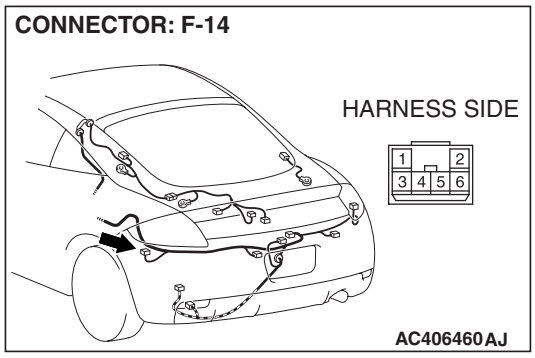


(2) Measure the resistance value between terminal 5 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

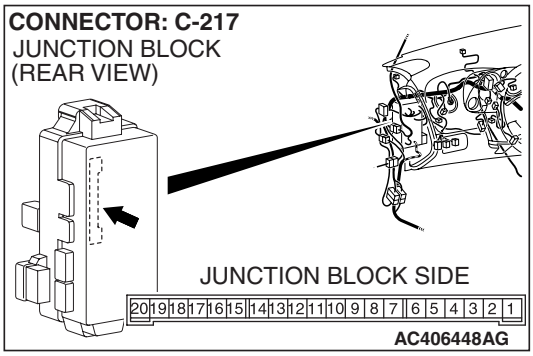
YES : Go to Step 18.
NO : Go to Step 17.

STEP 17. Check the wiring harness between rear combination light (LH) connector F-14 (terminal 5) and ground.



Q: Is the wiring harness between rear combination light (LH) connector F-14 (terminal 5) and ground in good condition?

YES : Replace the rear combination light socket assembly (LH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

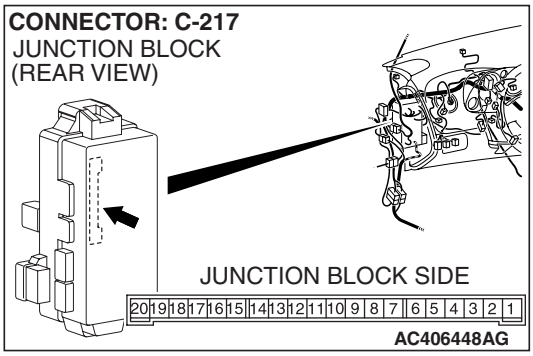


STEP 18. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

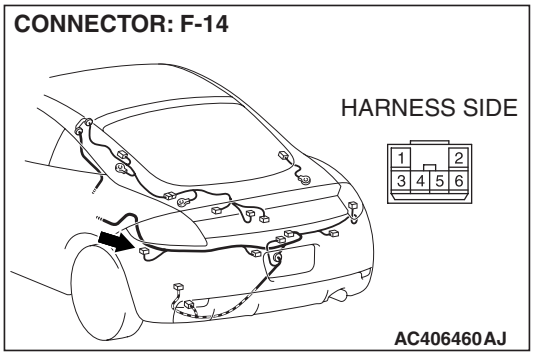
Q: Is ETACS-ECU connector C-217 in good condition?

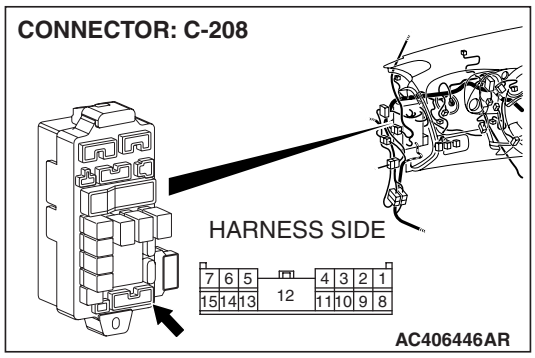
YES : Go to Step 19.

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



STEP 19. Check the wiring harness between rear combination light (LH) connector F-14 (terminal 1) and ETACS-ECU connector C-217 (terminal 14).





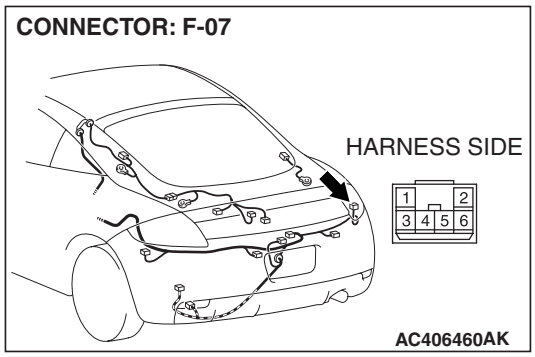
NOTE: Also check junction block connector C-208 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-208 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light (LH) connector F-14 (terminal 1) and ETACS-ECU connector C-217 (terminal 14) in good condition?

YES : Replace the rear combination light socket assembly (LH). Verify that the turn-signal lights illuminate normally.

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

STEP 20. Check rear combination light (RH) connector F-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is rear combination light (RH) connector F-07 in good condition?

YES : Go to Step 21.

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

STEP 21. Check the rear turn-signal light bulb (RH).

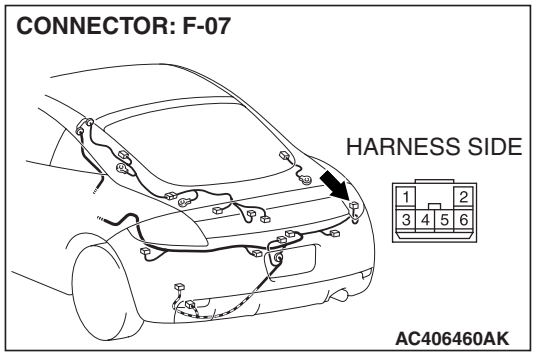
(1) Remove the rear turn-signal (RH) light bulb.
(2) Verify that the rear turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the rear turn-signal (RH) light bulb in good condition?

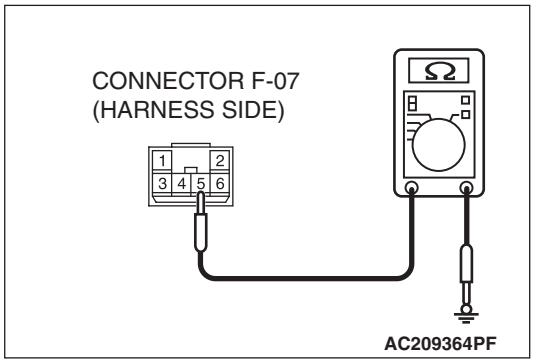
YES : Go to Step 22.

NO : Replace the rear turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 22. Check the ground circuit to the rear turn-signal light (RH). Measure the resistance at rear combination light (RH) connector F-07.



(1) Disconnect rear combination light (RH) connector F-07 and measure the resistance available at the harness side of the connector.

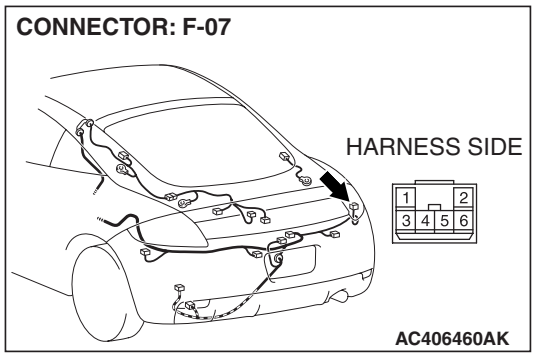


(2) Measure the resistance value between terminal 5 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 24.
NO : Go to Step 23.

STEP 23. Check the wiring harness between rear combination light (RH) connector F-07 (terminal 5) and ground.



Q: Is the wiring harness between rear combination light (RH) connector F-07 (terminal 5) and ground in good condition?

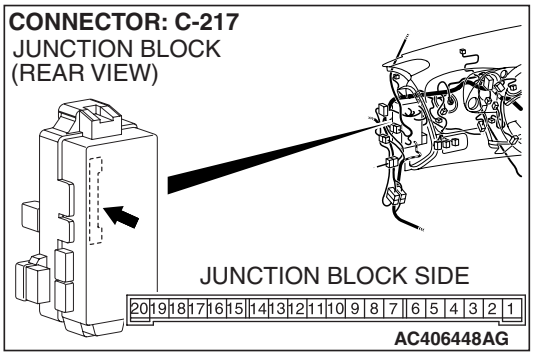
YES : Replace the rear combination light socket assembly (RH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 24. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

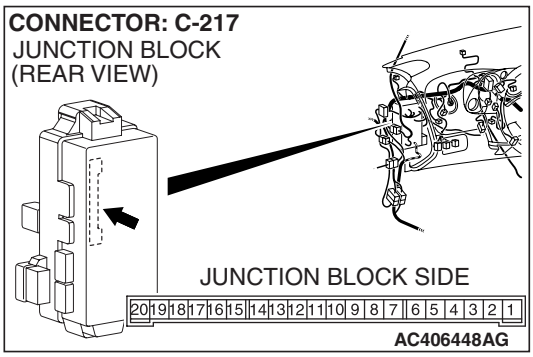
Q: Is ETACS-ECU connector C-217 in good condition?

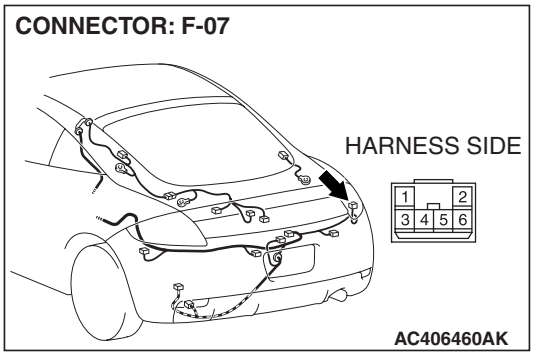
YES : Go to Step 25.

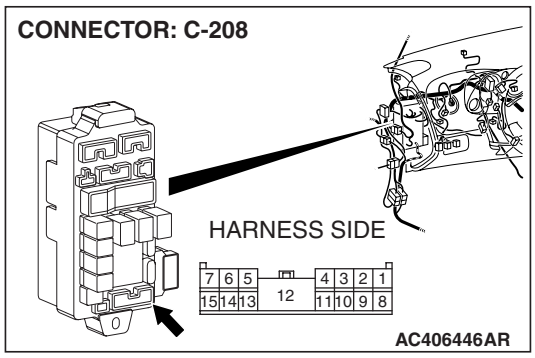
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 25. Check the wiring harness between rear combination light (RH) connector F-07 (terminal 1) and ETACS-ECU connector C-217 (terminal 9).







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

Q: Is the wiring harness between rear combination light (RH) connector F-07 (terminal 1) and ETACS-ECU connector C-217 (terminal 9) in good condition?

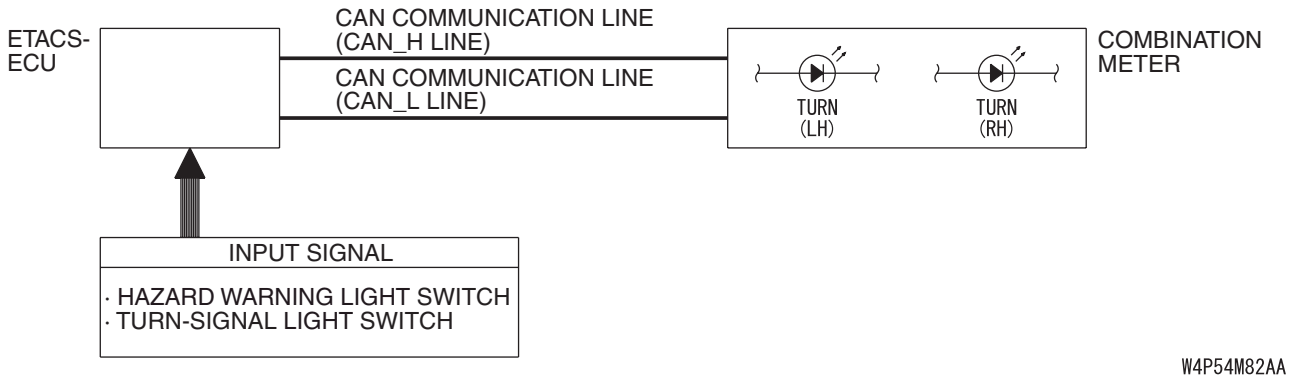
YES : Replace the rear combination light socket assembly (RH). Verify that the turn-signal lights illuminate normally.

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

INSPECTION PROCEDURE J-4: Flasher Timer: The turn-signal light indicator does not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Turn-signal Lights Indicator Light Circuit



CIRCUIT OPERATION

At the same time that the turn-signal lights are illuminated, the ETACS-ECU sends a signal to illuminate the turn-signal light indicator via the CAN bus line.

TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS

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

TSB Revision

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the turn-signal lights.

When the column switch or the hazard warning light switch are operated, check that the turn-signal lights illuminate and go off normally.

Q: Are the turn-signal lights in good condition?

YES : Go to Step 2.

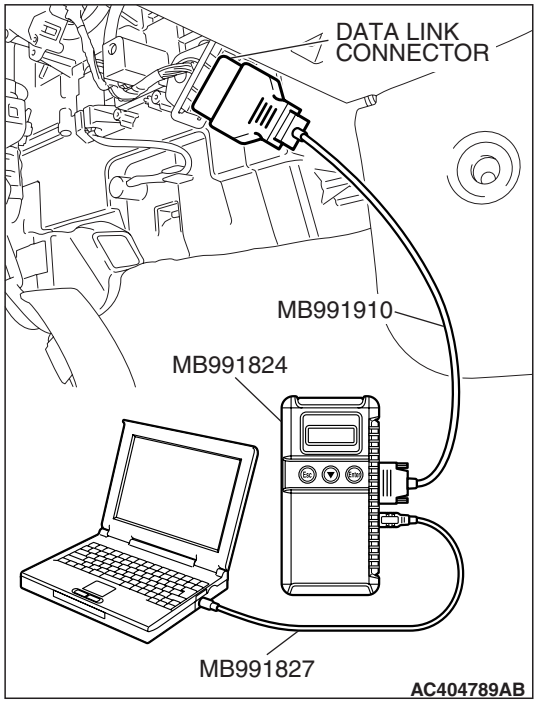
NO : First, repair the turn-signal light(s). Refer to Inspection Procedure J-3 "One of the turn-signal lights does not illuminate P.54B-360."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

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

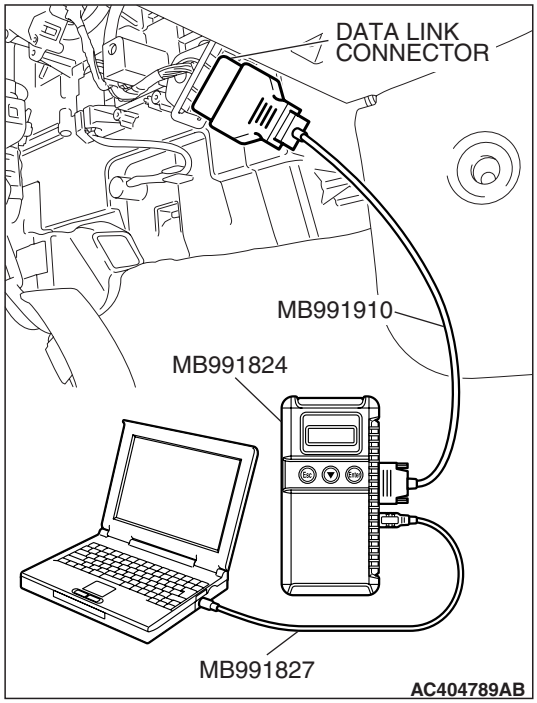
(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.



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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).

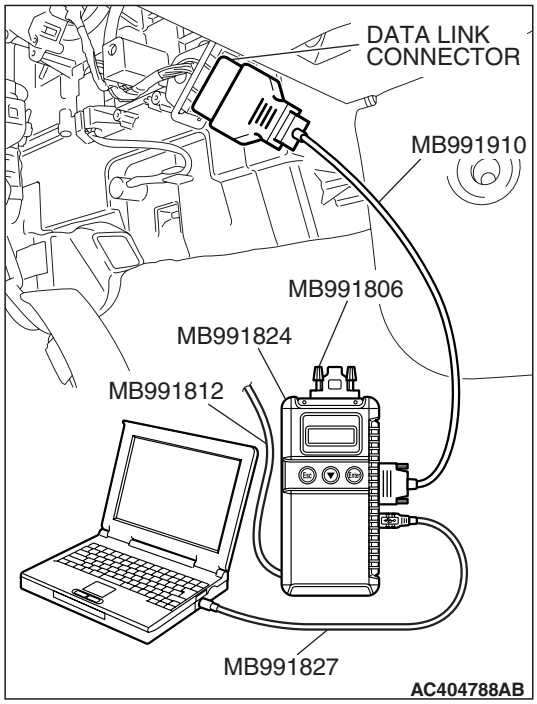


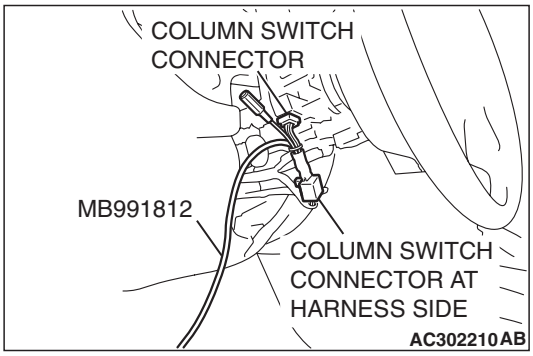
STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

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

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to P.54A-55.
NO : Go to Step 4.





STEP 4. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

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

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 5.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

STEP 5. Replace the combination meter.

(1) Replace the combination meter.
(2) Check that the turn-signal light indicator lights illuminate normally.

Q: Are the turn-signal indicator lights in good condition?

YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Check that the turn-signal light indicator lights illuminate normally.

TSB Revision

FOG LIGHT

GENERAL DESCRIPTION CONCERNING THE FRONT FOG LIGHTS

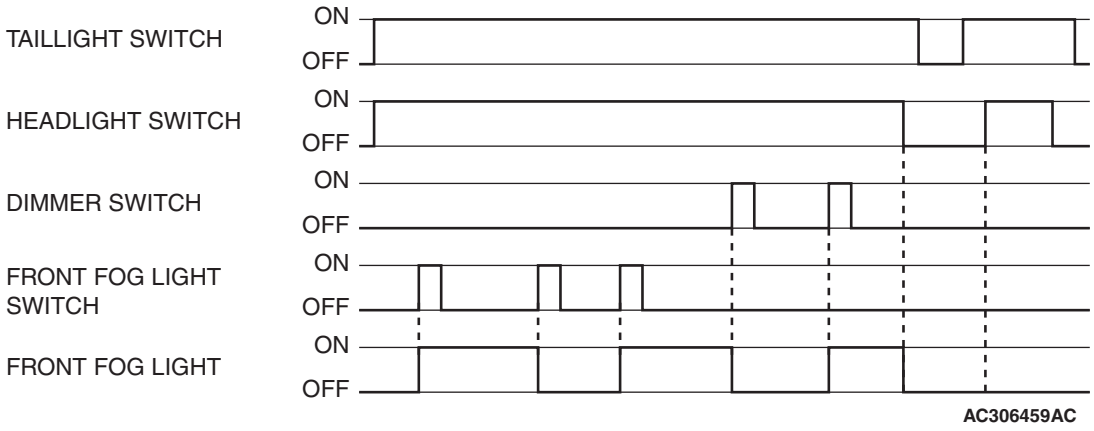
M1549021400272

The following ECUs affect the functions and control of the front fog lights.

FUNCTION	CONTROL ECU
Front fog light	ETACS-ECU, front-ECU, column switch
Front fog light indicator	ETACS-ECU, column switch

FRONT FOG LIGHT

Front fog light



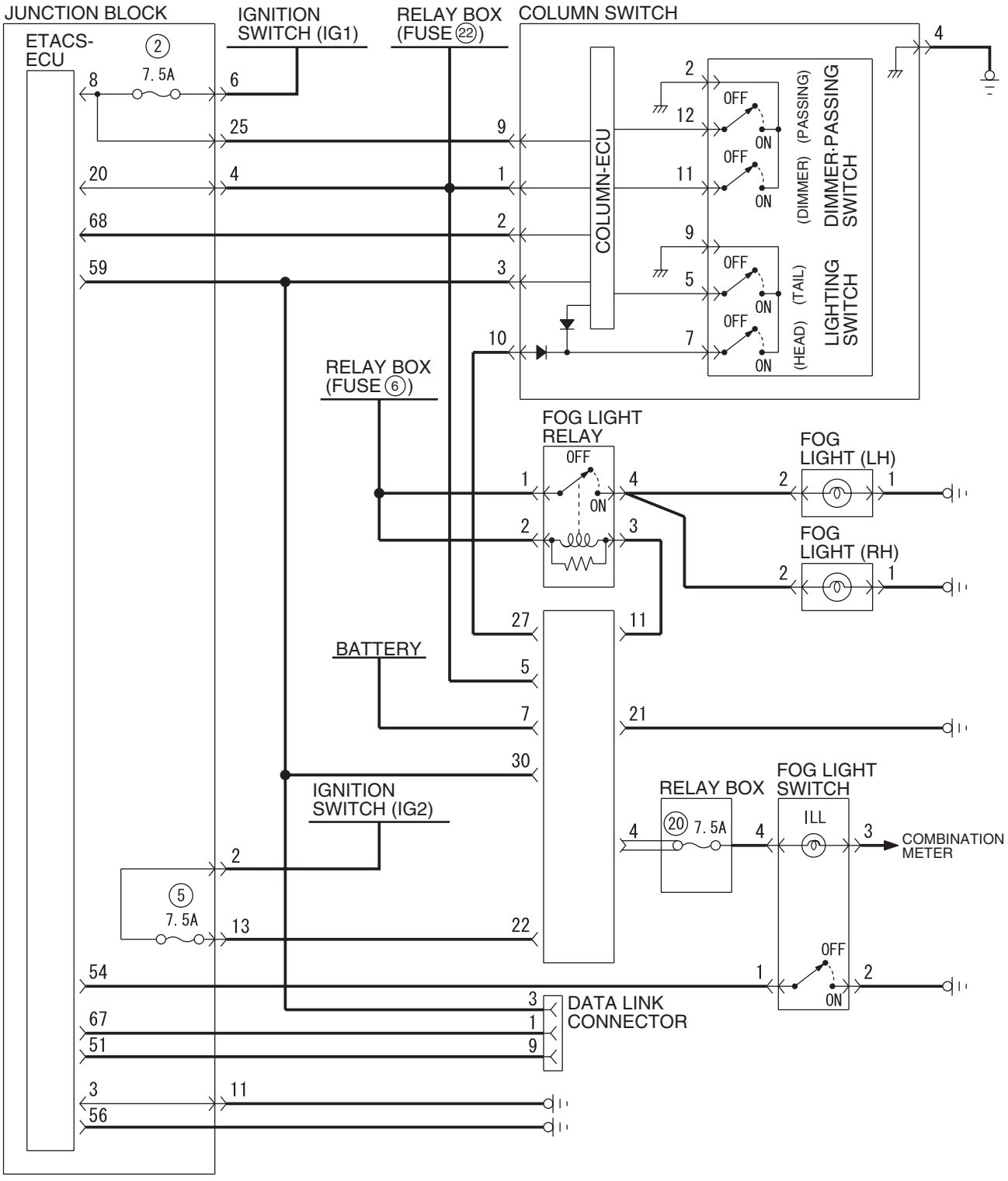
The front fog lights will illuminate only when the front fog light switch is operated while the low-beam headlights are on.
The front fog lights will be switched off when any of the following conditions are met. The front fog lights will also be switched off automatically by headlight automatic shutoff function.

- When the high-beam headlights are switched on, the front fog lights will be switched off. If the low-beam headlights are switched on again, the front fog lights will illuminate again.
- When the headlight switch is turned off or the taillights and headlights are off, the front fog lights will be switched off. If the low-beam headlights are switched on again, the front fog lights will not illuminate again.

FRONT FOG LIGHT INDICATOR

At the same time that the front fog lights are illuminated, the ETACS-ECU sends a signal to illuminate the front fog light indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the front fog light indicator on and off.

General circuit diagram for the front fog lights



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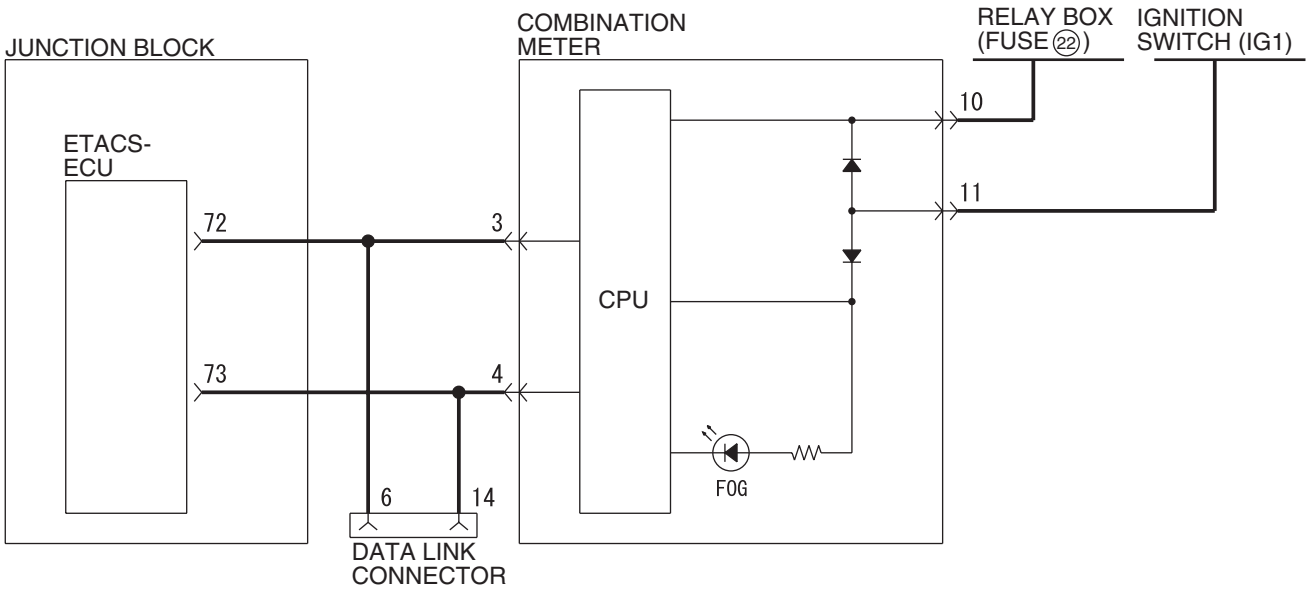
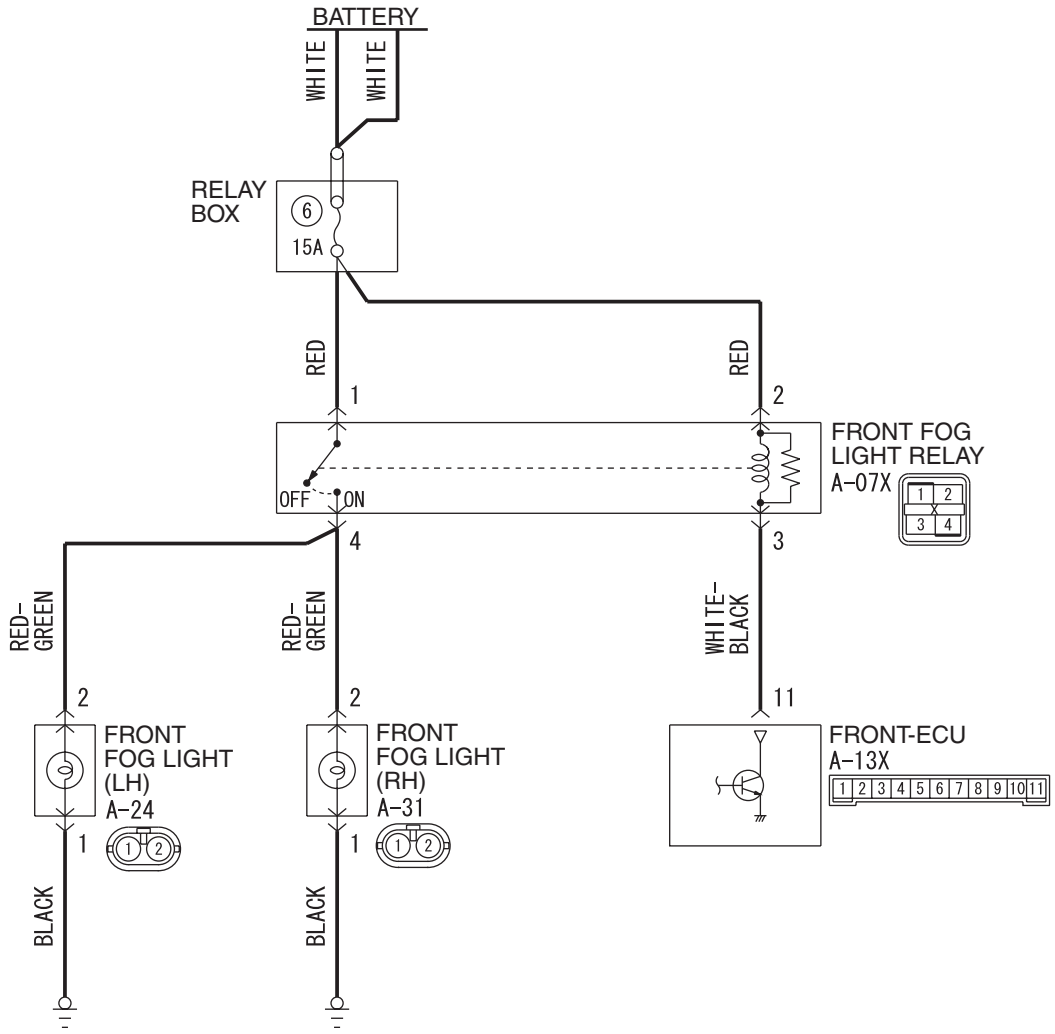
TSB Revision


JUNCTION BLOCK
ETACS-
ECU
72
73
COMBINATION
METER
3
4
CPU
10
11
RELAY BOX
(FUSE 22)
IGNITION
SWITCH (IG1)
FOG
6
14
DATA LINK
CONNECTOR
W6P54M088A

INSPECTION PROCEDURE K-1: Front fog light: Front fog lights do not illuminate when the front fog light switch is turned on.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Front Fog Light Circuit



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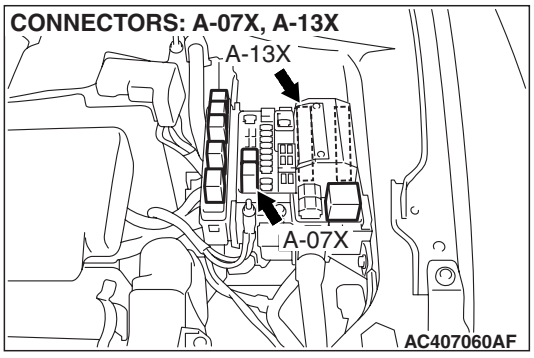

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CIRCUIT OPERATION

- The ETACS-ECU sends a front fog light illumination request signal ("LIGHT ON" signal) to the front-ECU when the front fog light switch is turned on while the headlights are illuminating at low beam.
- Then the front-ECU switches on its relay to illuminate the front fog lights.

TECHNICAL DESCRIPTION (COMMENT)

If the headlights illuminate at low beam, the front fog light relay, the front fog light switch, the front-ECU or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the headlight (low-beam) operation.

Q: Do the headlights illuminate at low beam normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure I-2 "The headlights (low-beam) do not illuminate normally P.54B-298."

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 front fog light switch:

- Ignition switch: ON
- Front fog light switch: ON

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

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."

(2) Operate scan tool MB991958 according to the procedure below to display "F.FOG."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "LIGHTING."
   g. Select "F.FOG."

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

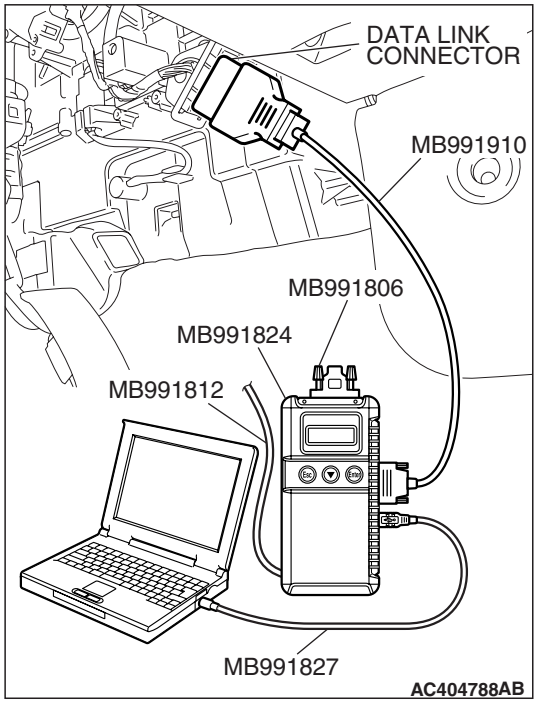
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 36	F.FOG LIGHT	ON

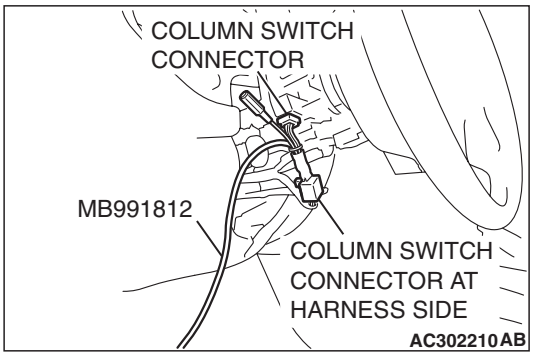
Q: Does the scan tool MB991958 display the items "IG SW (IG1)" and "F.FOG LIGHT" as normal condition?

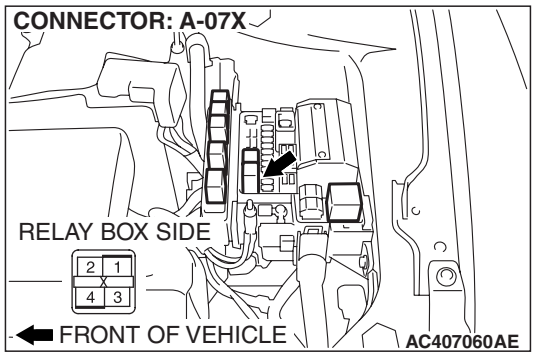
Normal conditions are displayed for all the items : Go to Step 3.

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "F.FOG LIGHT" : Refer to Inspection Procedure M-3 "ETACS-ECU does not receive any signal from the front fog light switch P.54B-455."





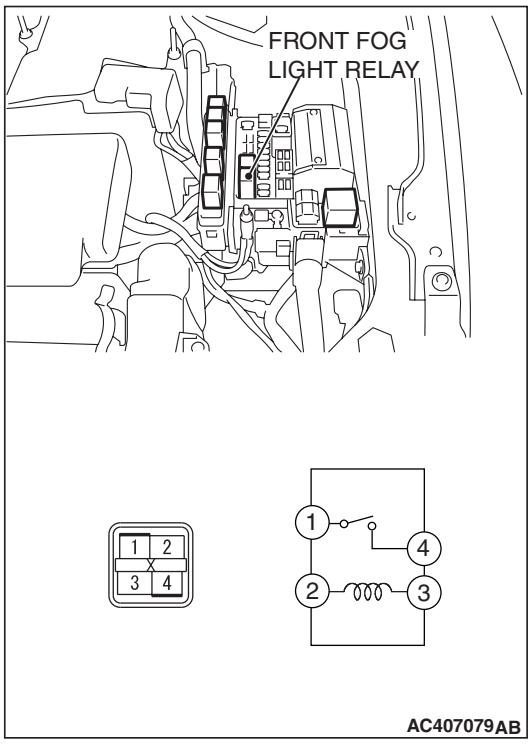


STEP 3. Check front fog light relay connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front fog light relay connector A-07X in good condition?

YES : Go to Step 4.

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



STEP 4. Check the front fog light relay.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not supplied	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 front fog light relay in good condition?

YES : Go to Step 5.

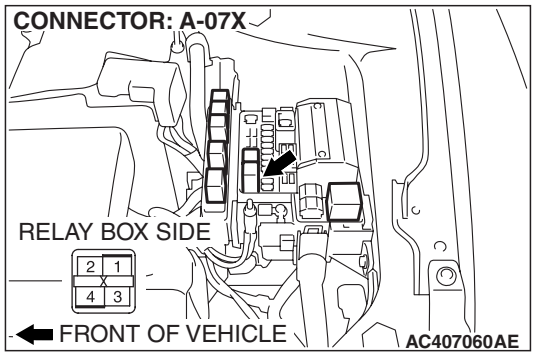
NO : Replace the front fog light relay. Verify that the front fog lights illuminate normally.

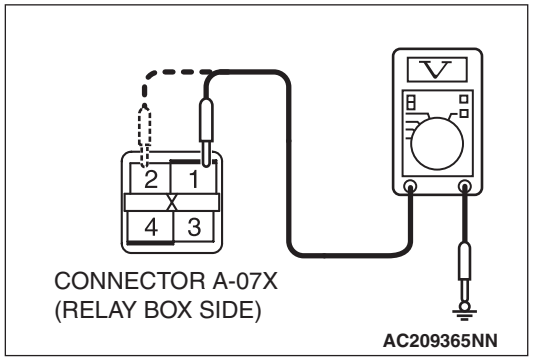
STEP 5. Check the battery power supply circuit to the front fog light relay. Measure the voltage at front fog light relay connector A-07X.

⚠ CAUTION

The top and bottom of the front fog light relay are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.

(1) Disconnect front fog light relay connector A-07X and measure the voltage available at the relay box side of the connector.





(2) Measure the voltage between terminal 1 and ground, and also between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

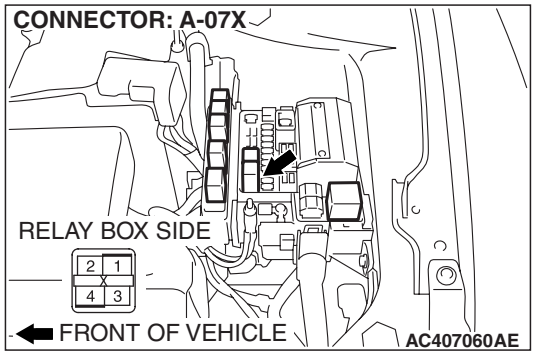
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

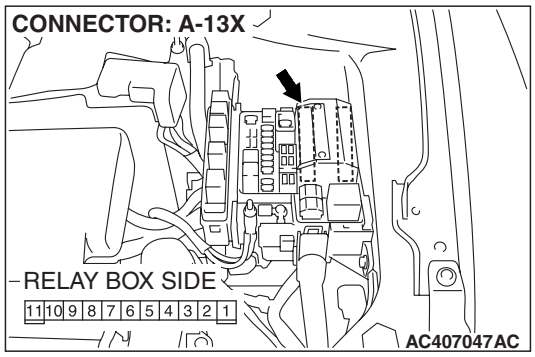
YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Check the wiring harness between front fog light relay connector A-07X (terminals 1 and 2) and the battery.

Q: Is the wiring harness between front fog light relay connector A-07X (terminals 1 and 2) and the battery in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front fog lights illuminate normally.



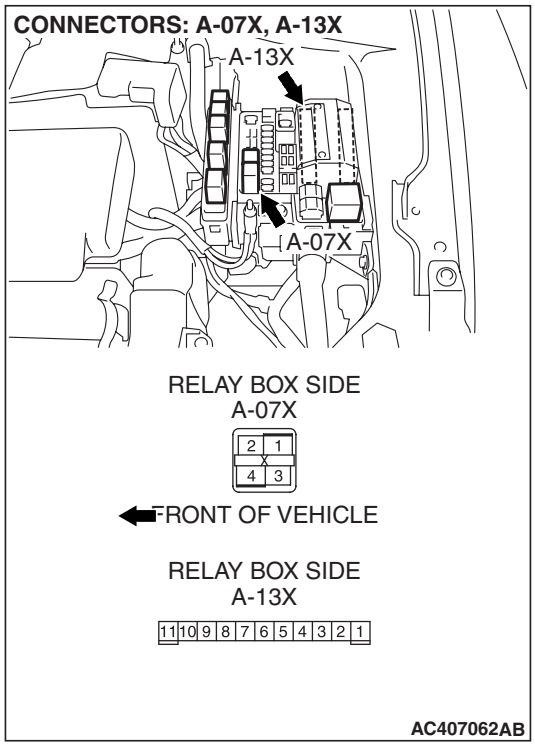


STEP 7. Check front-ECU connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-13X in good condition?

YES : Go to Step 8.

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



STEP 8. Check the wiring harness between front fog light relay connector A-07X (terminal 3) and front-ECU connector A-13X (terminal 11).

Q: Is the wiring harness between front fog light relay connector A-07X (terminal 3) and front-ECU connector A-13X (terminal 11) in good condition?

YES : Go to Step 9.

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

STEP 9. Replace the ECU.

(1) Replace the front-ECU.

(2) The front fog lights should illuminate normally.

Q: Do the front fog lights illuminate normally?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the front fog lights illuminate normally.

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INSPECTION PROCEDURE K-2: Front fog Light: Front fog lights do not go out when the headlights (low-beam) are turned off while the front fog lights are on.

TECHNICAL DESCRIPTION (COMMENT)

If the trouble above occurs, the front-ECU may be defective.

TROUBLESHOOTING HINT

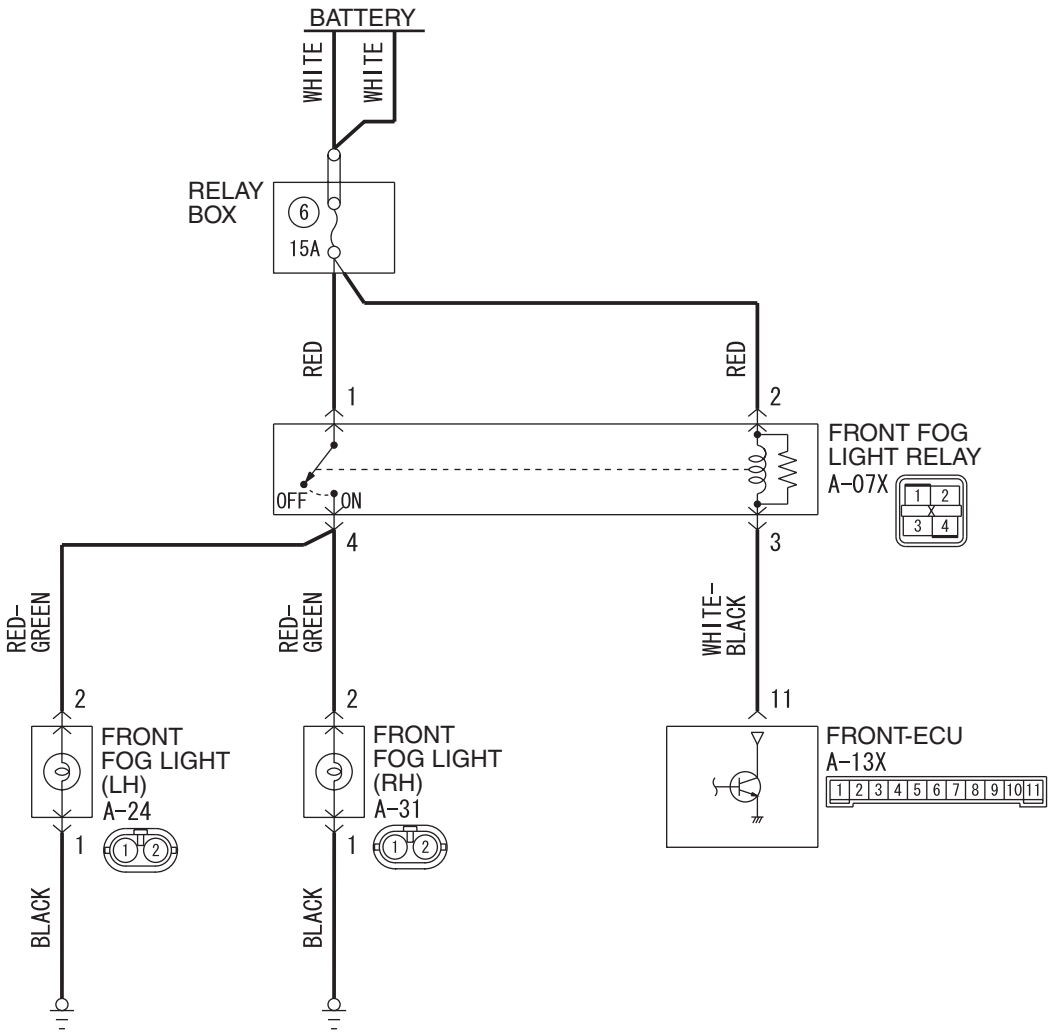
The front-ECU may be defective

DIAGNOSIS

Replace the front-ECU.
The front fog lights should go out when the headlights (low-beam) are turned off while the front fog lights are on.

INSPECTION PROCEDURE K-3: Front fog Light: One of the front fog lights does not illuminate.

Front Fog Light Circuit



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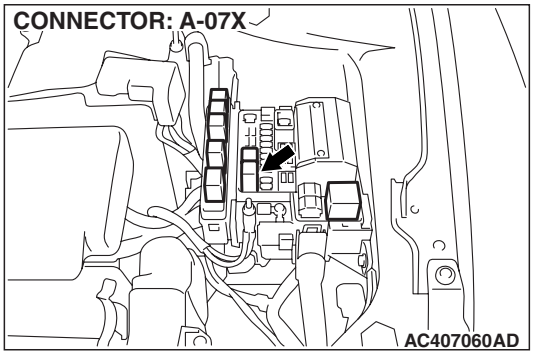
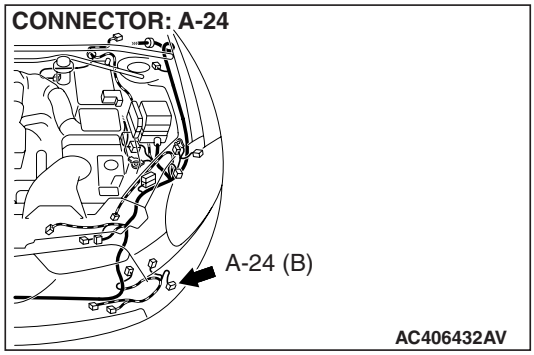
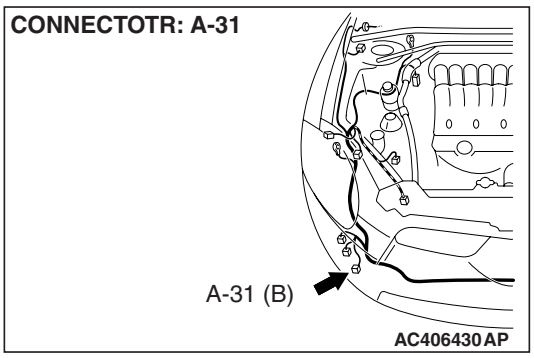






TECHNICAL DESCRIPTION (COMMENT)

If one of the front fog lights does not illuminate, the front fog light relay or the front fog light bulb may be defective. If the front fog light indicator light does not illuminate, the combination meter may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Verify that the front fog lights and the front fog light indicator light illuminate.

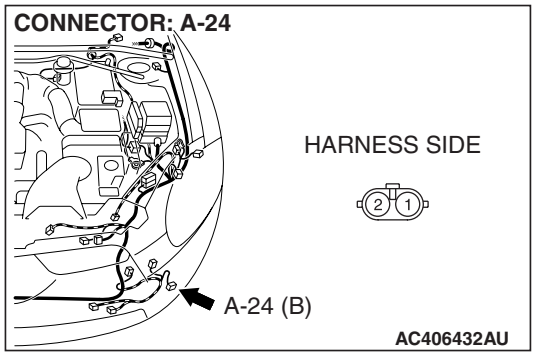
Q: Do the front fog lights and the front fog light indicator light illuminate normally?

Only the front fog light (LH) does not illuminate : Go to Step 2.

Only the front fog light (RH) does not illuminate : Go to Step 8.

Only the front fog light indicator does not illuminate : Refer to Inspection Procedure K-4 "The front fog light indicator does not illuminate normally P.54B-393."

Both of the front fog lights do not illuminate : Refer to Inspection Procedure K-1 "Front fog lights do not illuminate when the front fog light switch is turned on P.54B-381."



STEP 2. Check front fog light (LH) connector A-24 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front fog light (LH) connector A-24 in good condition?

YES : Go to Step 3.

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

STEP 3. Check the front fog light bulb (LH).

(1) Remove the front fog light bulb (LH).

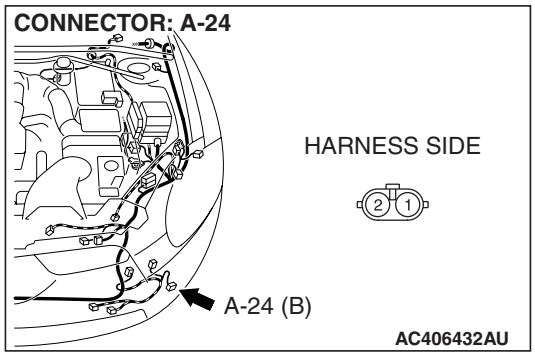
(2) Verify that the front fog light bulb (LH) is not damaged or burned out.

Q: Is the front fog light bulb (LH) in good condition?

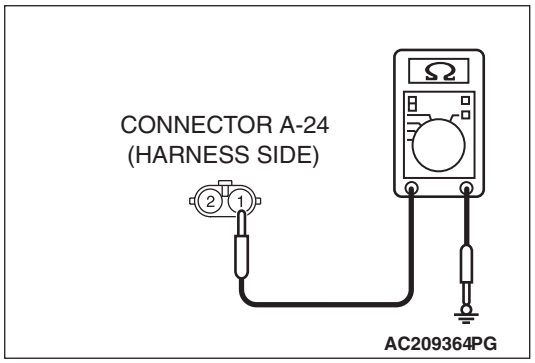
YES : Go to Step 4.

NO : Replace the front fog light bulb (LH). Verify that the front fog lights illuminate normally.

STEP 4. Check the ground circuit to the front fog light (LH). Measure the resistance at front fog light (LH) connector A-24.



(1) Disconnect front fog light (LH) connector A-24 and measure the resistance available at the wiring harness side of the connector.



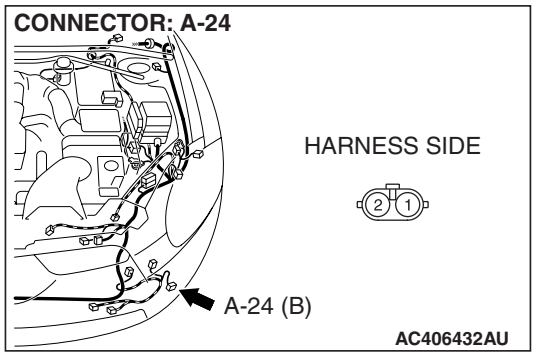
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

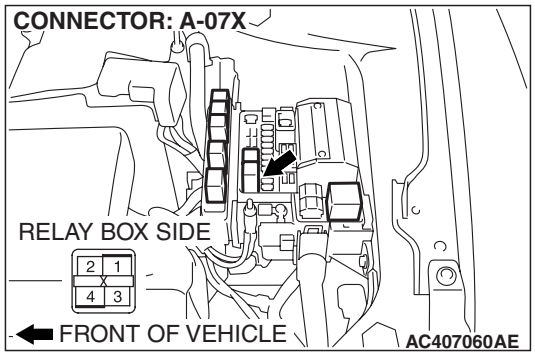


STEP 5. Check the wiring harness between front fog light (LH) connector A-24 (terminal 1) and ground.

Q: Is the wiring harness between front fog light (LH) connector A-24 (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 front fog lights illuminate normally.

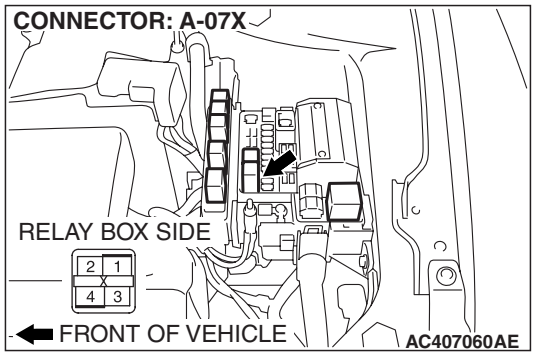


STEP 6. Check front fog light relay connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front fog light relay connector A-07X in good condition?

YES : Go to Step 7.

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

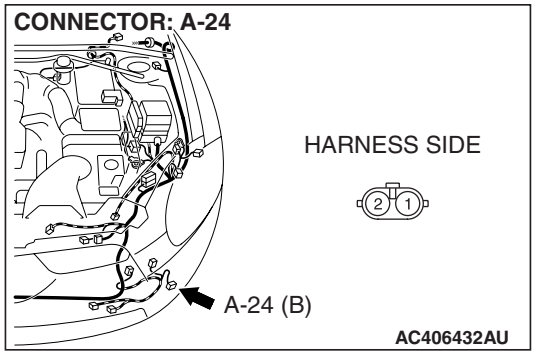


STEP 7. Check the wiring harness between front fog light relay connector A-07X (terminal 4) and front fog light (LH) connector A-24 (terminal 2).

Q: Is the wiring harness between front fog light relay connector A-07X (terminal 4) and front fog light (LH) connector A-24 (terminal 2) in good condition?

YES : No action is necessary and testing is complete.

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



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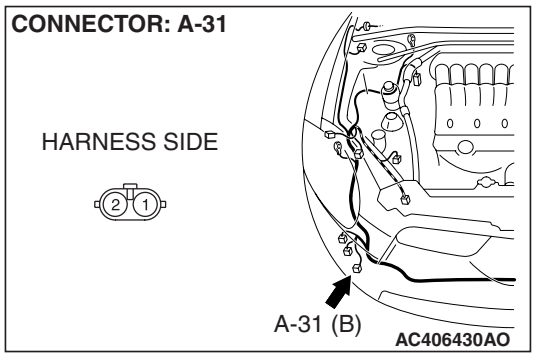


STEP 8. Check front fog light (RH) connector A-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front fog light (RH) connector A-31 in good condition?

YES : Go to Step 9.

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

STEP 9. Check the front fog light bulb (RH).

(1) Remove the front fog light bulb (RH).

(2) Verify that the front fog light bulb (RH) is not damaged or burned out.

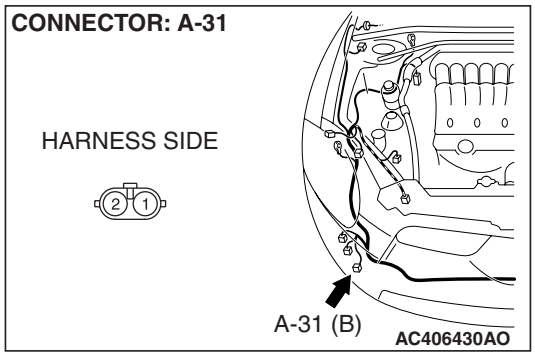
Q: Is the front fog light bulb (RH) in good condition?

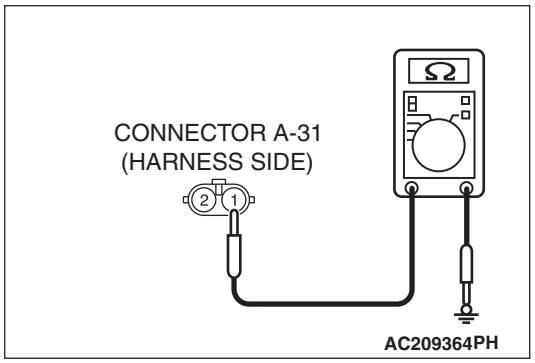
YES : Go to Step 10.

NO : Replace the front fog light bulb (RH). Verify that the front fog lights illuminate normally.

STEP 10. Check the ground circuit to the front fog light (RH). Measure the resistance at front fog light (RH) connector A-31.

(1) Disconnect front fog light (RH) connector A-31 and measure the resistance available at the wiring harness side of the connector.





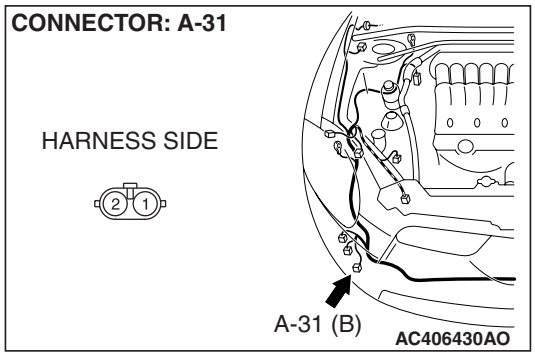
(2) Measure the resistance value between terminal 1 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.

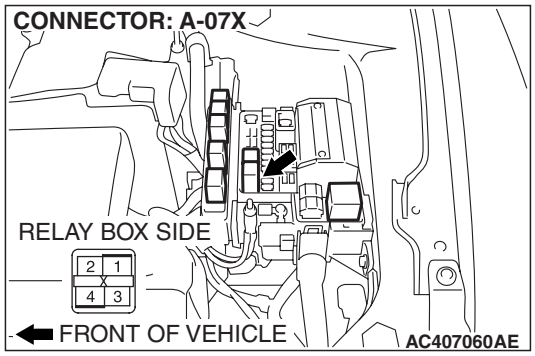


STEP 11. Check the wiring harness between front fog light (RH) connector A-31 (terminal 1) and ground.

Q: Is the wiring harness between front fog light (RH) connector A-31 (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 front fog lights illuminate normally.

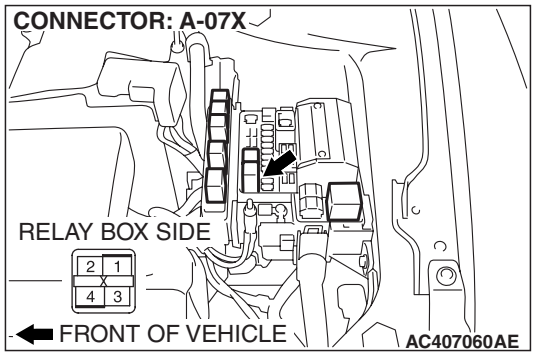


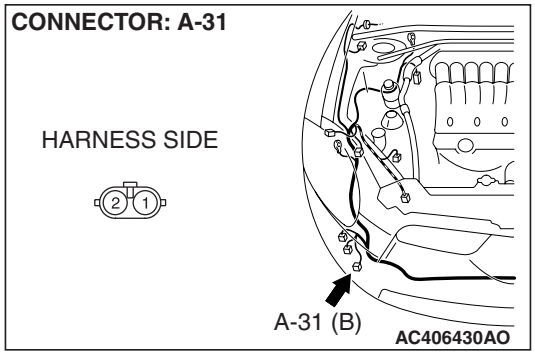
STEP 12. Check front fog light relay connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front fog light relay connector A-07X in good condition?

YES : Go to Step 13.

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





STEP 13. Check the wiring harness between front fog light relay connector A-07X (terminal 4) and front fog light (RH) connector A-31 (terminal 2).

Q: Is the wiring harness between front fog light relay connector A-07X (terminal 4) and front fog light (RH) connector A-31 (terminal 2) in good condition?

YES : No action is necessary and testing is complete.

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

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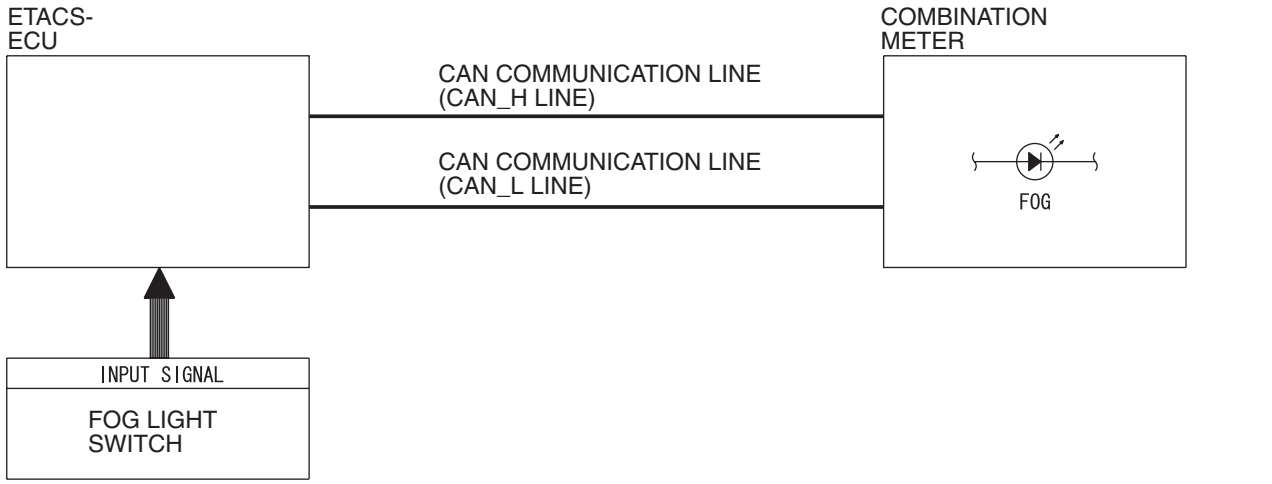
INSPECTION PROCEDURE K-4: Front fog light: The front fog light indicator does not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Fog Light Indicator Light Circuit



CIRCUIT OPERATION

At the same time that the front fog lights are illuminated, the ETACS-ECU sends a signal to illuminate the front fog light indicator via the CAN bus line.

TECHNICAL DESCRIPTION (COMMENT)

If the front fog light indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the front fog lights.

When the front fog light switch is operated, check that the front fog lights illuminate/go off normally.

Q: Are the front fog lights operating properly?

YES : Go to Step 2.

NO : First, repair the front fog lights. Refer to Inspection Procedure K-3 "One of the front fog lights does not illuminate P.54B-387."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

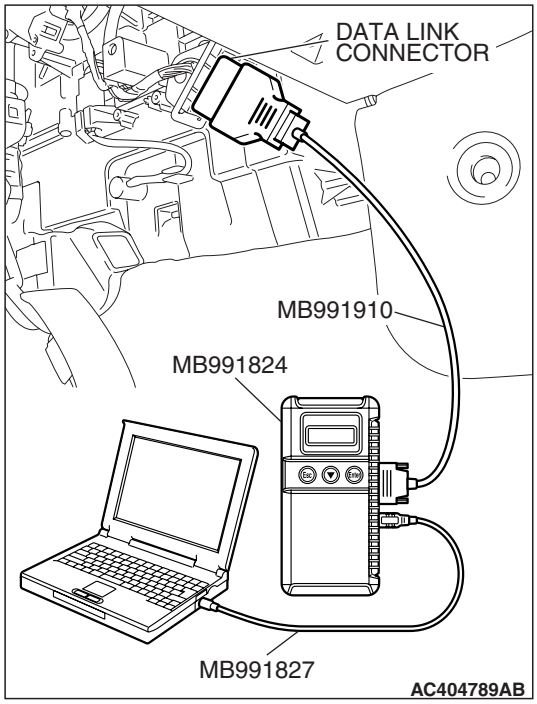
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

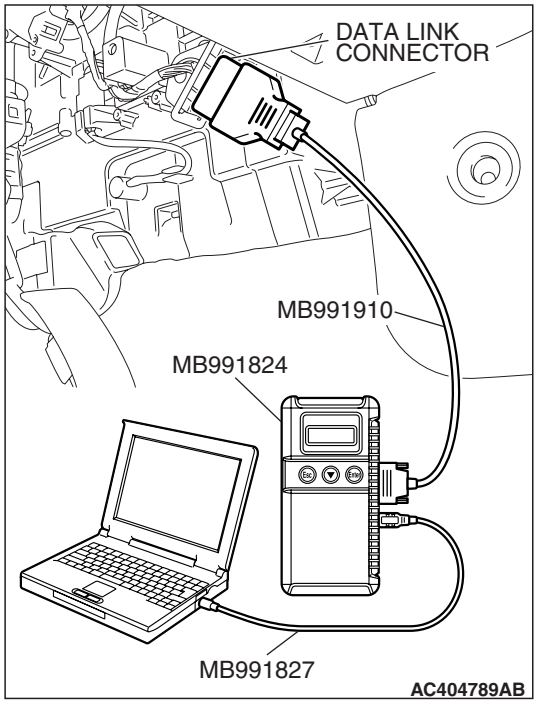
(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



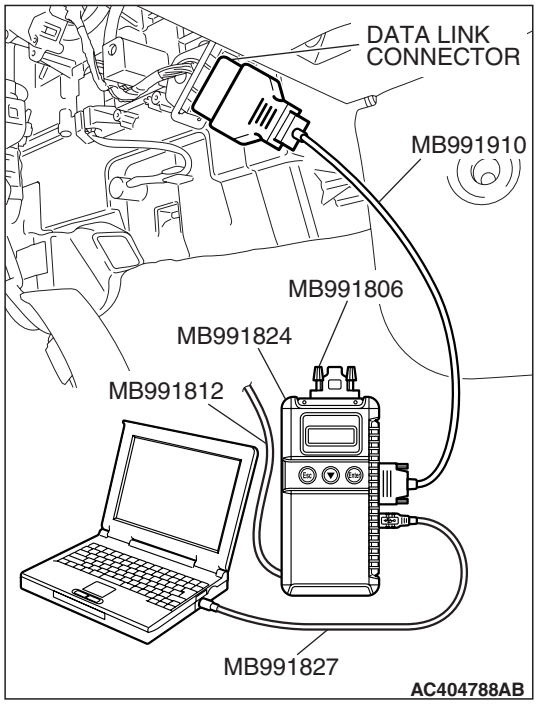


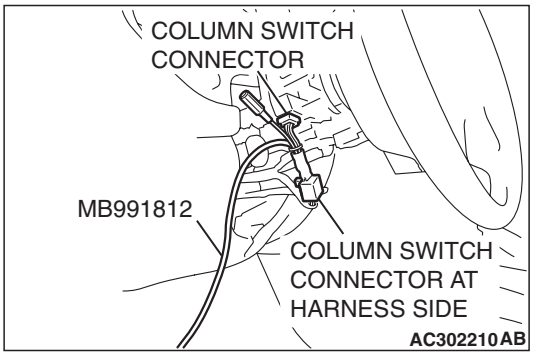
STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

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

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to P.54A-55.
NO : Go to Step 4.





STEP 4. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

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

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 5.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."

STEP 5. Replace the combination meter.

(1) Replace the combination meter.
(2) Check that the front fog light indicator light illuminates normally.

Q: Is the front fog light indicator light operating properly?

YES : No action is necessary and testing is complete.
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Check that the front fog light indicator light illuminates normally.

INTERIOR LIGHT

GENERAL DESCRIPTION CONCERNING THE INTERIOR LIGHT

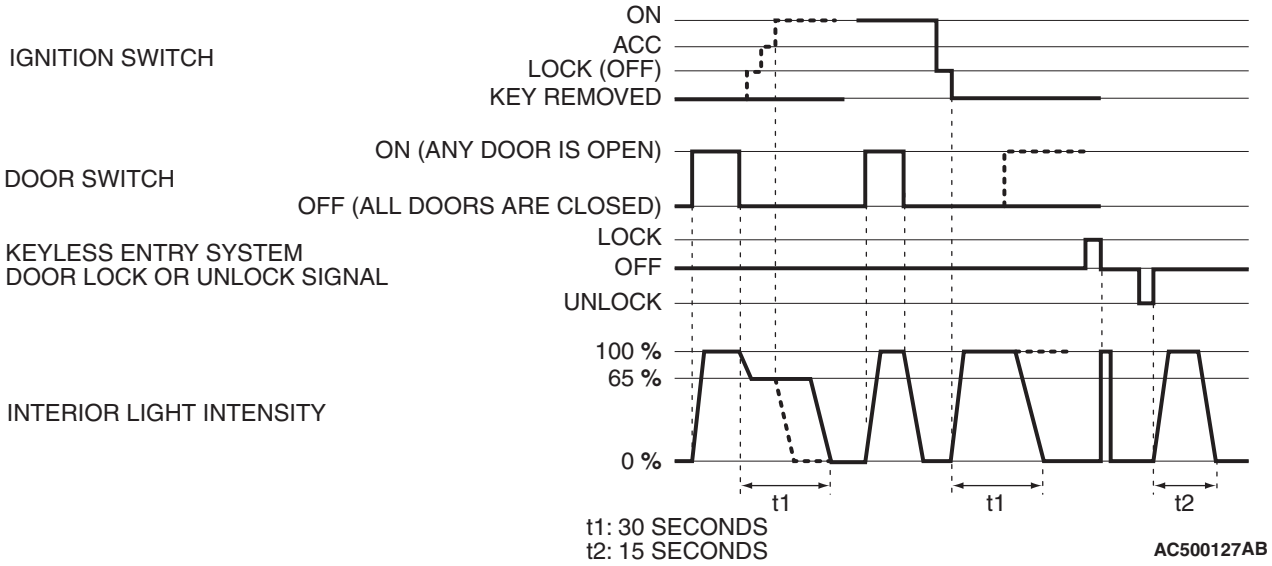
M1549021800300

The following ECUs affect the functions and control of the interior lights.

FUNCTION	CONTROL ECU
Interior light control	ETACS-ECU
Interior light automatic-shutoff function	ETACS-ECU
Seat belt indicator	ETACS-ECU
Door ajar indicator	ETACS-ECU
Ignition key cylinder illumination light function	ETACS-ECU

INTERIOR LIGHT

INTERIOR LIGHT CONTROL

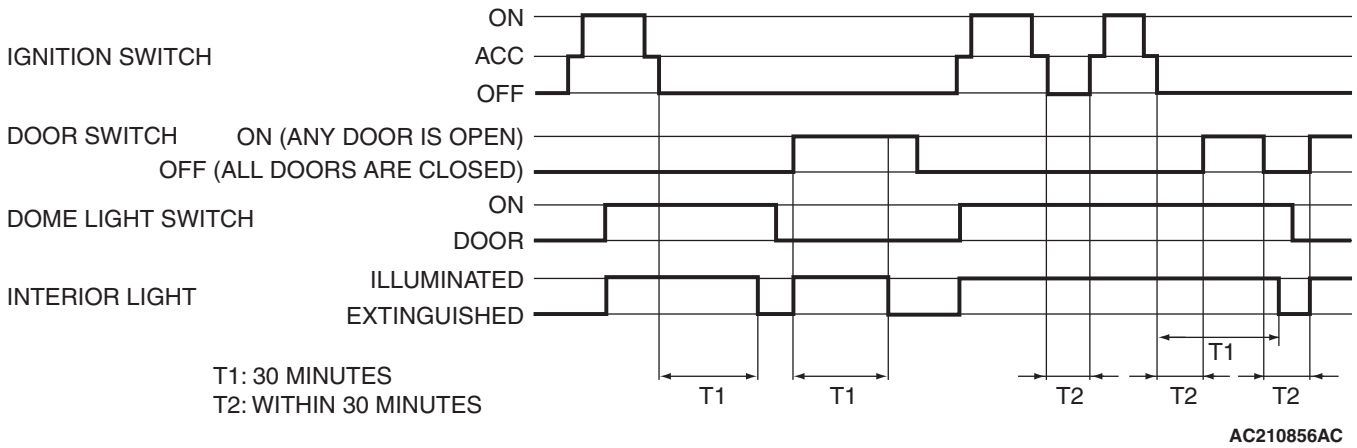


The ETACS-ECU controls the interior lights by turning them on and off in the following way:

- When a door is opened with the ignition switch off, the interior lights up to a luminance of 100 percent. When a door is closed, the interior lights dim to a luminance of 65 percent, and go off 30 seconds later. However if the ignition switch is turned ON or if a door is locked while the interior lights are dimming, the dome light will go off at that point.
- When a door is opened with the ignition switch ON, the interior lights up at a luminance of 100 percent. When a door is closed, the interior lights go off.
- When the ignition key is removed with all doors closed, the interior lights up at a luminance of 100 percent, and goes off 30 seconds later. However if the ignition key is inserted again or if a door is locked while the interior lights is lighting, the interior lights will go off at that point.
- To check keyless entry operations more easily, the interior lights flash once when the doors are locked. When the doors are unlocked, the interior lights at a luminance of 100 percent, and go off 15 seconds later.

NOTE: The dotted lines indicate that lighting mode when the ignition switch is turned ON, door is locked, or any door is opened during the timer illumination time.

Interior light automatic-shutoff function



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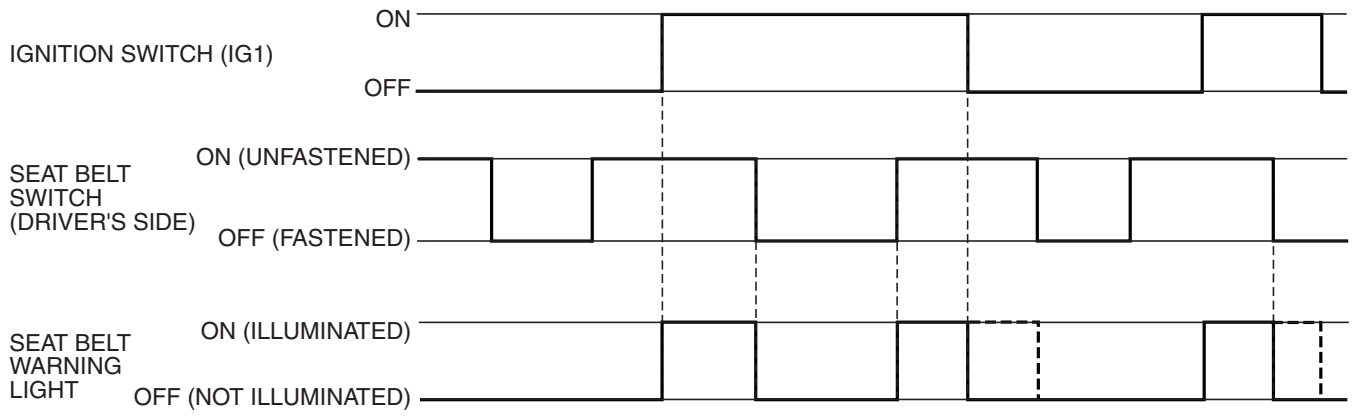
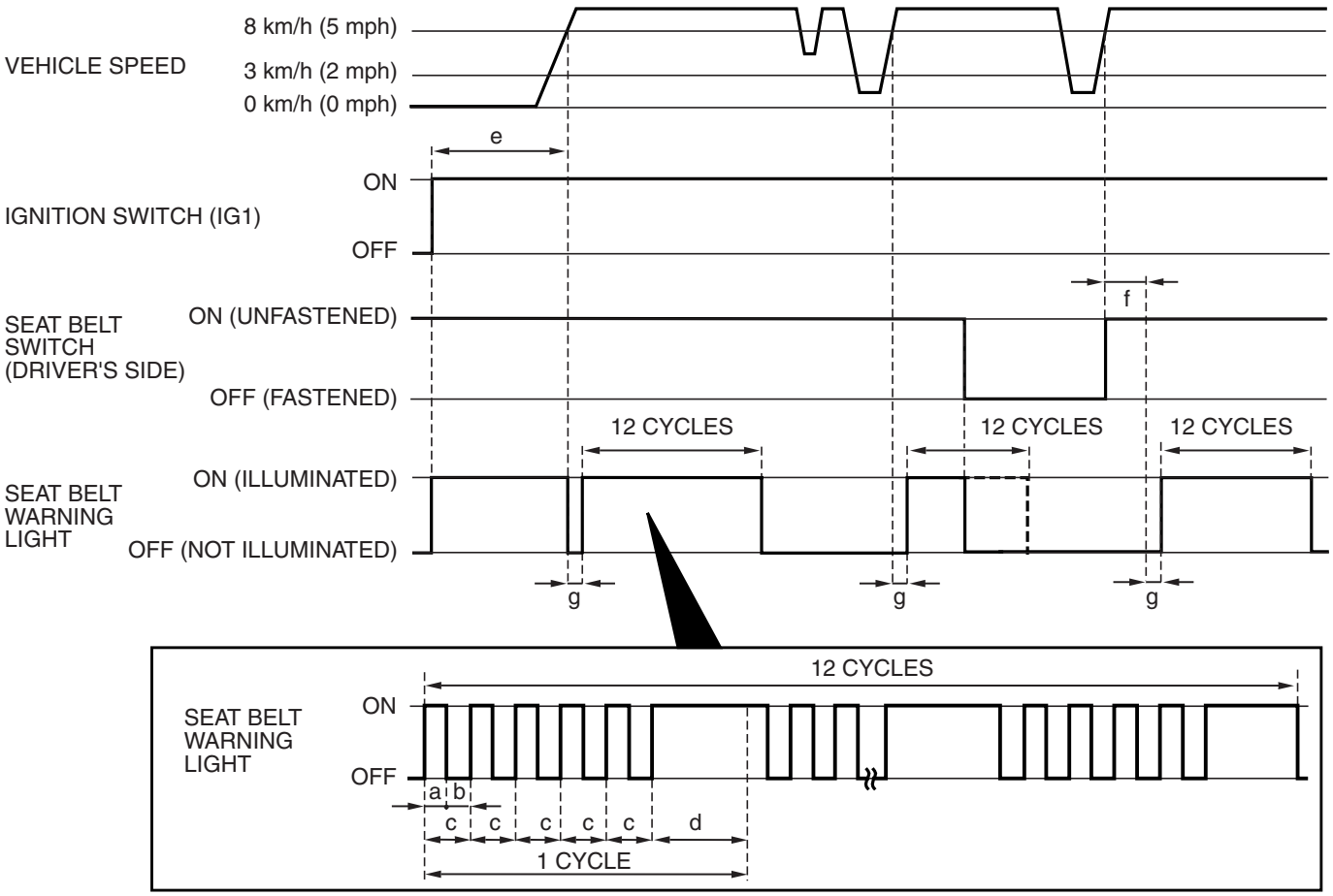
Illuminated interior lights such as the front dome light, etc. (all lights using the dome light fuse as the power supply) will automatically go off in the following conditions to prevent the battery from discharging as a result of forgetting to turn off the lights or incomplete closing of the door.

- When the ignition switch is turned off and more than 30 minutes pass by with the interior light illuminated, the interior lights will go off automatically.
- When the ignition switch is turned off and one of the door switches remains open for 30 minutes continuously, the interior lights will go off automatically.

Seat belt indicator



AC305420 AC



a: 0.48 SECOND
b: 0.52 SECOND
c: 1 SECOND
d: 3 SECONDS
e: 60 SECONDS OR MORE
f: 10 SECONDS
g: 0.5 SECOND

AC305443AB

If any of the following conditions are 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 from the combination meter.

- The seat belt indicator illuminates when the seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch "ON.
- Flashes and illuminates the indicator 12 cycles (after 0.5 second) if any of the following conditions are met when 60 seconds or more have elapsed since the ignition switch is turned "ON". One cycle consists of five-second "flash" and then three-second "illuminate".
  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 10 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 are met.
- The indicator turns off 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.

DOOR AJAR INDICATOR

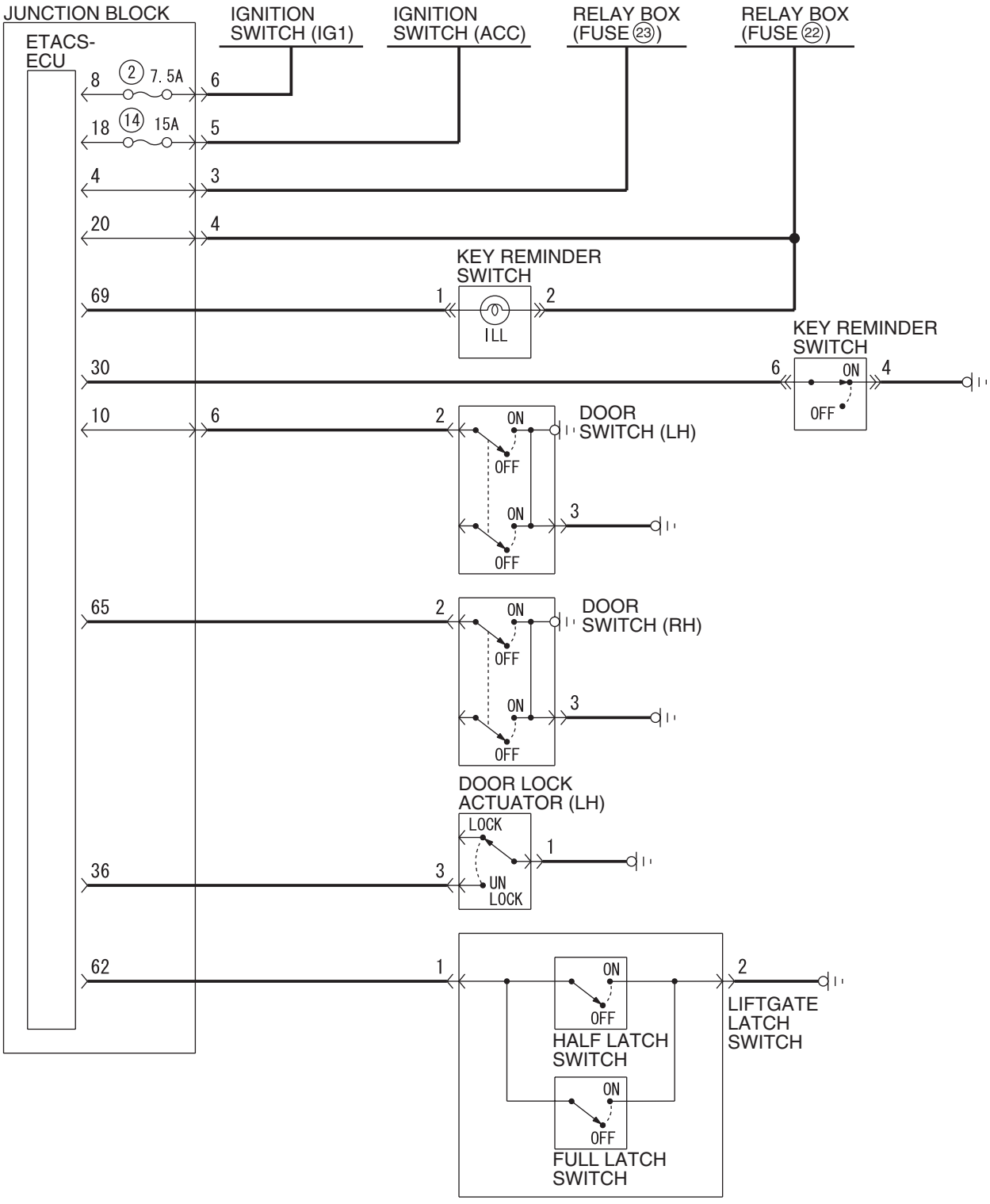
The combination meter receives the signal sent from the ETACS-ECU about whether each door is open or closed and turns the door ajar indicator on and off. While the door ajar indicator is illuminated, the door ajar tone alarm function is activated and the door ajar indicator flashes 4 times. If the door remains open even after the 4 warning flashes, the door ajar indicator will be illuminated again. And when the interior light automatic-shutoff function is activated, the door ajar indicator is extinguished.

IGNITION KEY CYLINDER ILLUMINATION FUNCTION

The ignition key cylinder illumination light illuminates when the driver's door is opened with the ignition switch off, and for 30 seconds after the driver's door is closed. It also illuminates for 30 seconds after the ignition key is pulled out. In any case, it goes out when the ignition switch is turned on.

NOTE: When the ignition key cylinder illumination is extinguished by the interior light automatic-shutoff function, it does not illuminate.

General circuit diagram for interior lights



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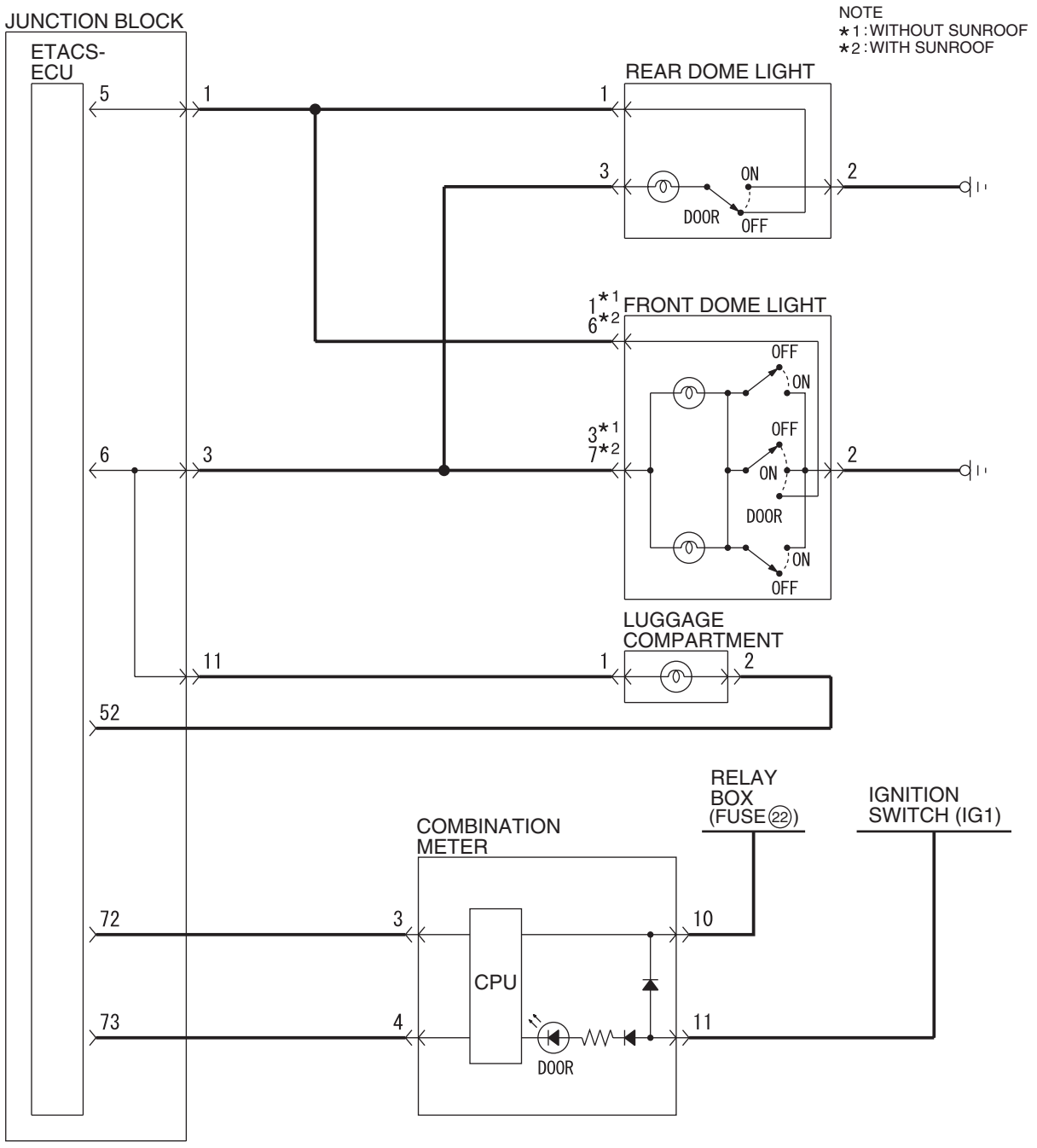
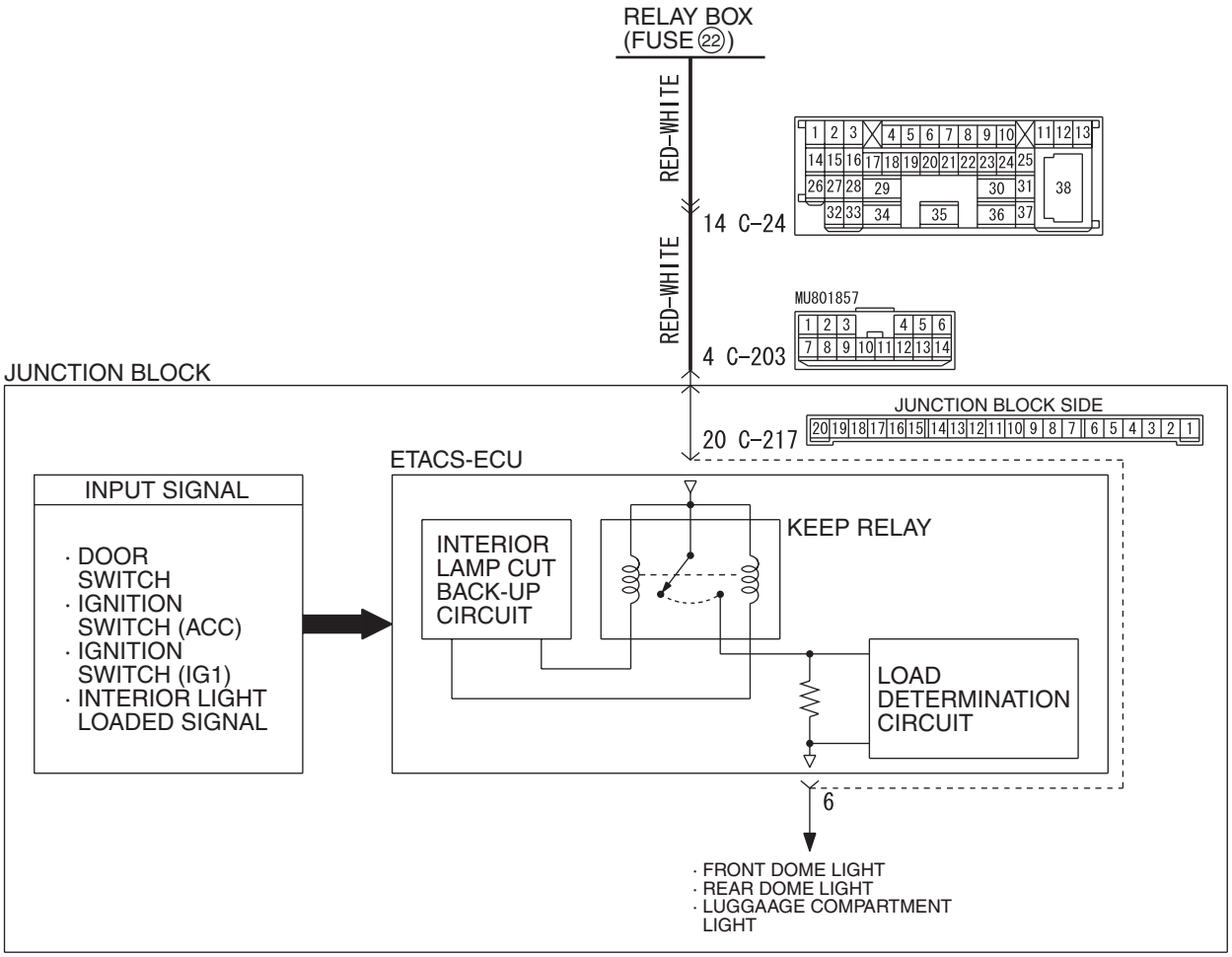

JUNCTION BLOCK
ETACS-ECU
NOTE
*1:WITHOUT SUNROOF
*2:WITH SUNROOF
REAR DOME LIGHT
FRONT DOME LIGHT
LUGGAGE COMPARTMENT
DOOR
ON
OFF
RELAY BOX (FUSE 22)
IGNITION SWITCH (IG1)
COMBINATION METER
CPU
W6P54M090A

INSPECTION PROCEDURE L-1: Interior Light: The dome lights do not illuminate and go out normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Interior Light Circuit



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CIRCUIT OPERATION

The ETACS-ECU operates the dome light according to the following signals:

- Ignition switch (IG1): ON or OFF
- Key reminder switch: ON or OFF
- Door switches: ON or OFF
- Driver's door lock actuator switch: ON or OFF
- Interior light loaded signal: ON

TECHNICAL DESCRIPTION (COMMENT)

If the dome light does not illuminate normally, a burned-out dome light bulb, the input circuits from the switches described in "CIRCUIT OPERATION", the power supply line to the switches or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

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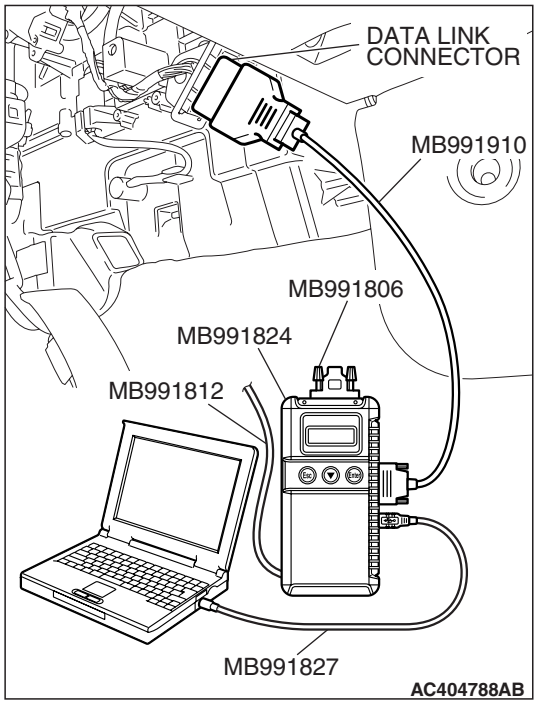
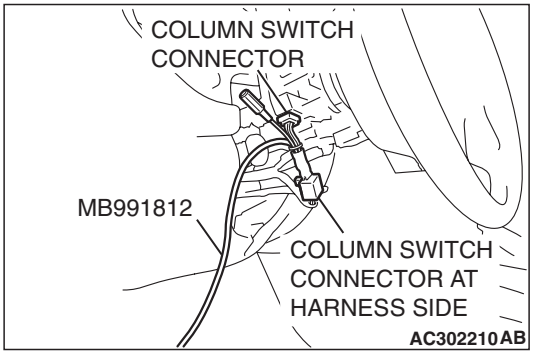
DIAGNOSIS

Required Special Tools:

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





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

Check the ETACS-ECU.

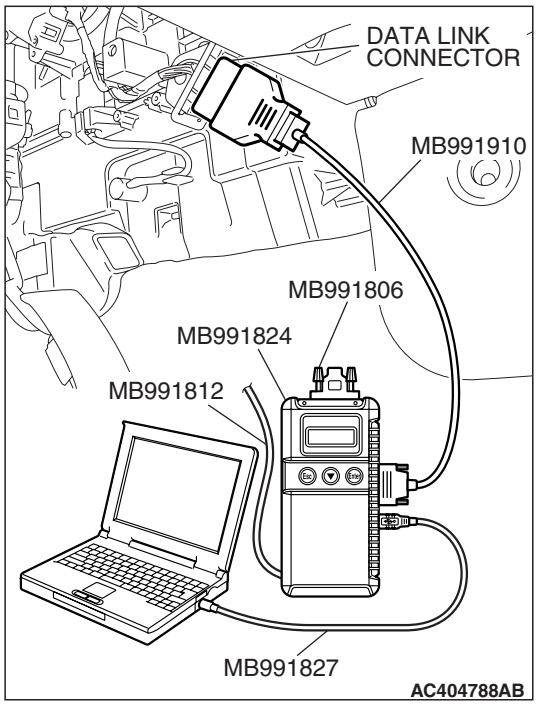
⚠ CAUTION

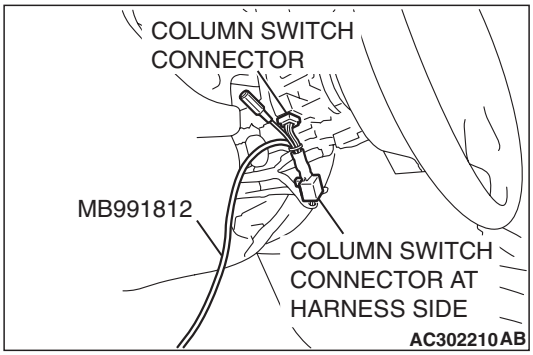
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





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

Check the input signals from the following switches:

- Ignition switch: ON or START
- Driver's or passenger's door: open

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

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

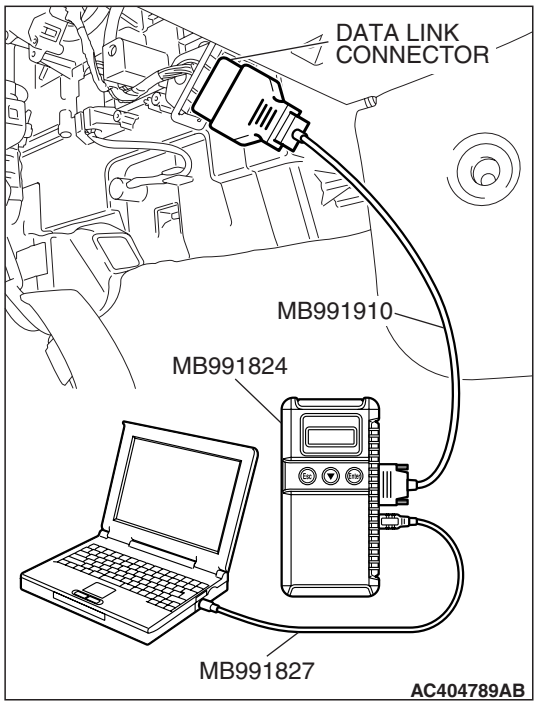
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 32	FRONT DOOR SW	ON

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

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

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."



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

Check the following switches and input signals:

- Key reminder switch
- Interior light loaded signal

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(2) Check if scan tool MB991958 sounds or not.

ITEM NAME	CONDITION
Key reminder switch	Remove and reinsert the ignition key
Interior light loaded signal	Turn on one of the interior lights

Q: When the key reminder switch, any door switch or interior light is operated, does scan tool MB991958 sound?

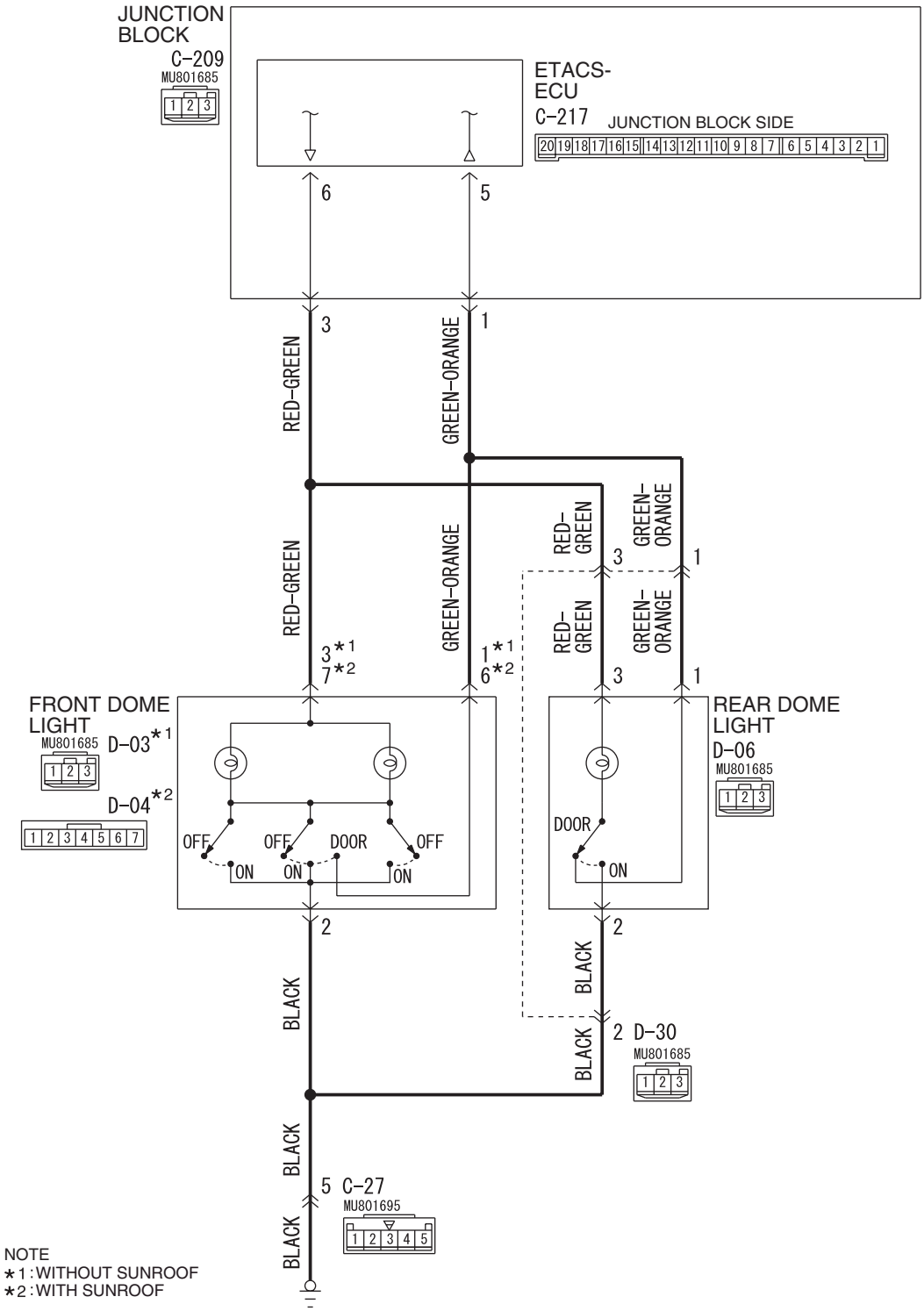
Buzzer of scan tool MB991958 sounds normally. : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the dome light illuminates normally.

Scan tool MB991958 does not sound when the ignition key is removed and reinserted : Refer to Inspection Procedure N-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54B-489."

When one of the interior lights is illuminated, scan tool MB991958 does not sound : Refer to Inspection Procedure N-9 "ETACS-ECU does not receive any interior light loaded signal P.54B-534."

INSPECTION PROCEDURE L-2: Interior Light: The front dome light or rear dome light does not illuminate or go out normally.

Interior Light Circuit



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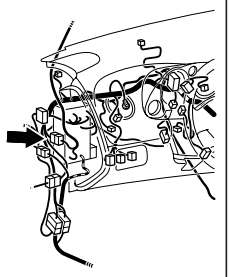
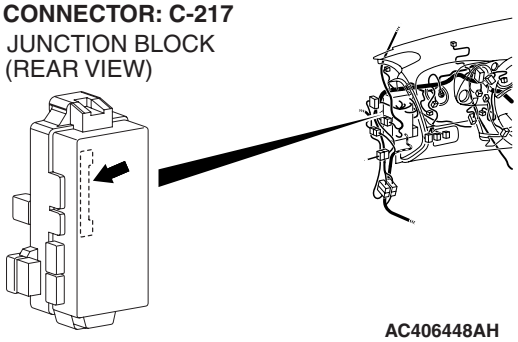
CONNECTOR: C-27



AC406442CB

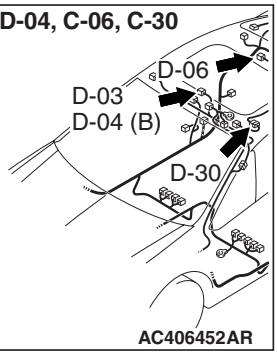
CONNECTOR: C-217

JUNCTION BLOCK
(REAR VIEW)



AC406448AH

CONNECTORS: D-03, D-04, C-06, C-30



AC406452AR

CIRCUIT OPERATION

The ETACS-ECU operates the dome light according to the following signals:

- Ignition switch (IG1): ON or OFF
- Key reminder switch: ON or OFF
- Door switches: ON or OFF
- Driver's door lock actuator switch: LOCK or UNLOCK

TECHNICAL DESCRIPTION (COMMENT)

Is the dome light does not flash normally, a burned-out dome light bulb, the input circuits from the switches described in "CIRCUIT OPERATION", the power supply line to the switches or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check which of the front dome light or rear dome light does not illuminate normally.

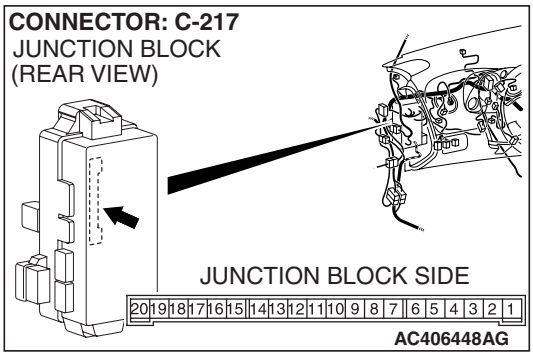
Q: Which of the front dome light or rear dome light fail to illuminate normally?

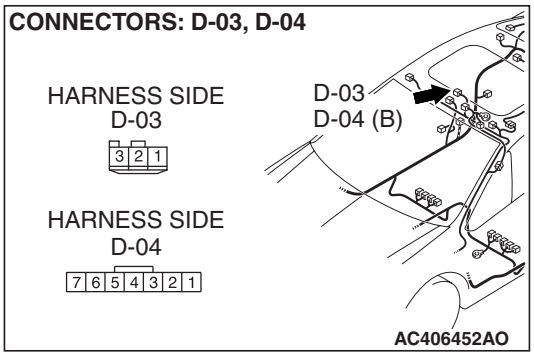
Front dome light and rear dome light : Go to Step 2.
Front dome light : Go to Step 4.
Rear dome light : Go to Step 9.

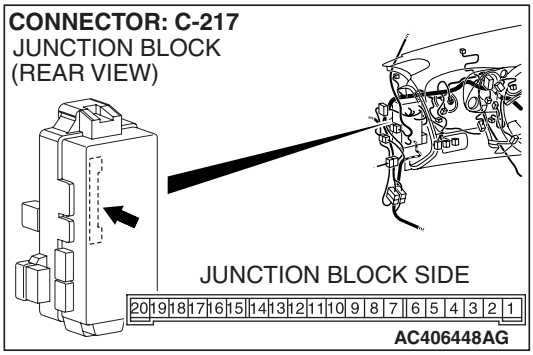
STEP 2. Check front dome light connector D-03 <without sunroof>, D-04 <with sunroof> and ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

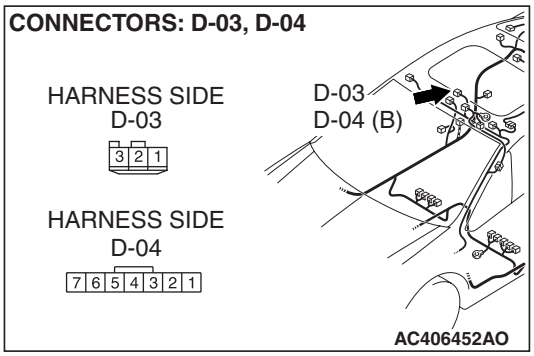
Q: Is front dome light connector D-03 <without sunroof>, D-04 <with sunroof> and ETACS-ECU connector C-217 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front dome light and rear dome light illuminates normally.







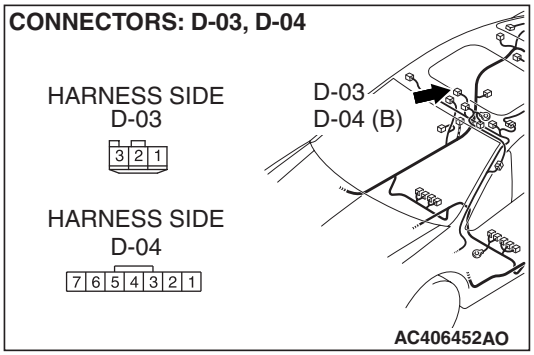


STEP 3. Check the wiring harness between front dome light connector D-03 (terminals 1 and 3) <without sunroof> or D-04 (terminals 6 and 7) <with sunroof> and ETACS-ECU connector C-217 (terminals 5 and 6).

Q: Is the wiring harness between front dome light connector D-03 (terminals 1 and 3) <without sunroof> or D-04 (terminals 6 and 7) <with sunroof> and ETACS-ECU connector C-217 (terminals 5 and 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. Check that the front dome light and rear dome light illuminates normally.



STEP 4. Check front dome light connector D-03 <without sunroof> or D-04 <with sunroof> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front dome light connector D-03 <without sunroof> or D-04 <with sunroof> 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. Check that the front dome light illuminates normally.

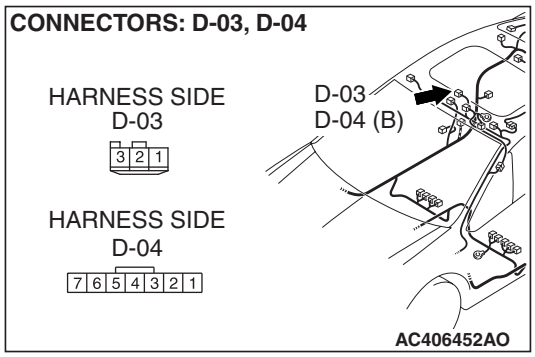
STEP 5. Check the front dome light bulb.

Q: Is the front dome light bulb in good condition?

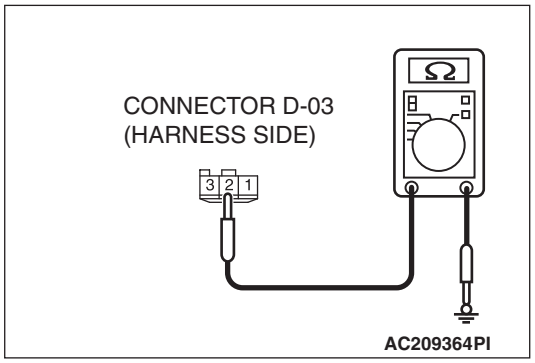
YES : Go to Step 6.

NO : Replace the front dome light bulb. Check that the front dome light illuminates normally.

STEP 6. Check the ground circuit to the front dome light. Measure the resistance at front dome light connector D-03 <without sunroof> or D-04 <with sunroof>.



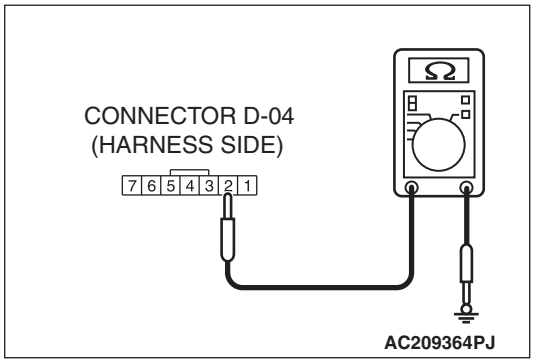
(1) Disconnect front dome light connector D-03 <without sunroof> or D-04 <with sunroof> and measure the resistance available at the wiring harness side of the connector.



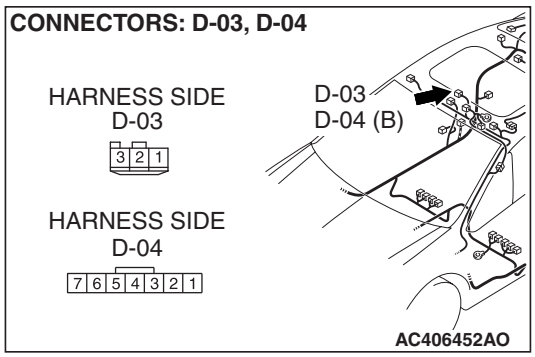
(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

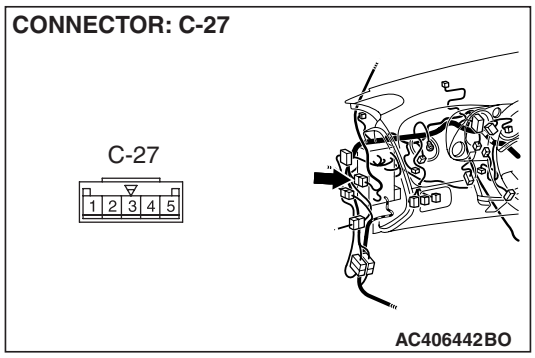
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.
NO : Go to Step 7.



STEP 7. Check the wiring harness between front dome light connector D-03 (terminal2) <without sunroof> or D-04 (terminal 2) <with sunroof> and ground.





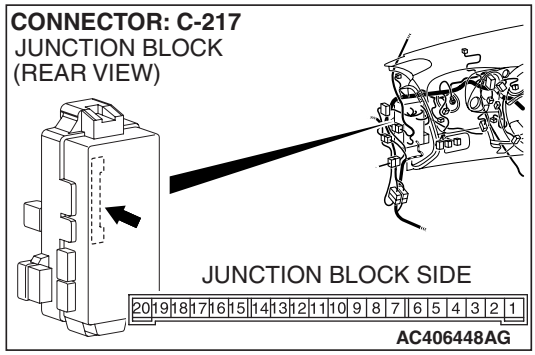
NOTE: Also check intermediate connector C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-27 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front dome light connector D-03 (terminal 2) <without sunroof> D-04 (terminal 2) <with sunroof> and ground in good condition?

YES : Replace the front dome light. Check that the front dome light illuminates normally.

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

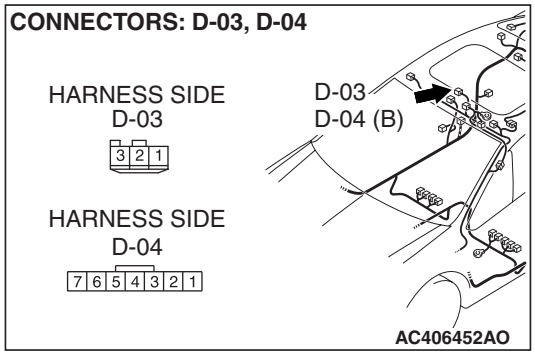
STEP 8. Check the wiring harness between front dome light connector D-03 (terminals 1 and 3) <without sunroof> or D-04 (terminals 6 and 7) <with sunroof> and ETACS-ECU connector C-217 (terminals 5 and 6).

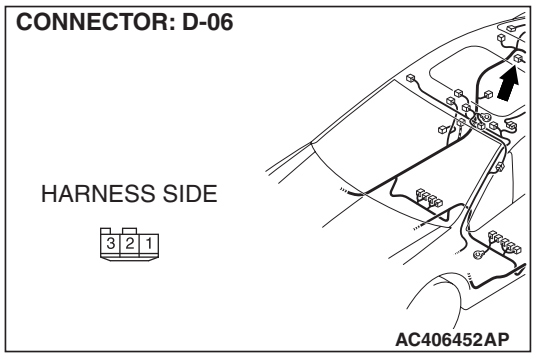


Q: Is the wiring harness between front dome light connector D-03 (terminals 1 and 3) <without sunroof> or D-04 (terminals 6 and 7) <with sunroof> and ETACS-ECU connector C-217 (terminals 5 and 6) in good condition?

YES : Replace the front dome light. Check that the front dome light illuminates normally.

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





STEP 9. Check rear dome light connector D-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear dome light connector D-06 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. Check that the rear dome light illuminates normally.

STEP 10. Check the rear dome light bulb.

Q: Is the rear dome light bulb in good condition?

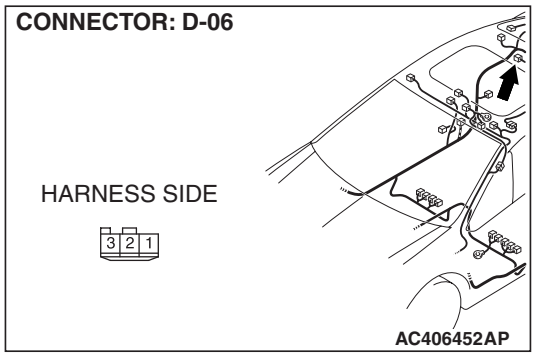
YES : Go to Step 11.

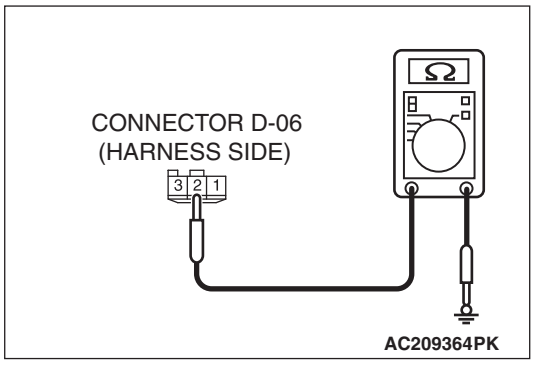
NO : Replace the rear dome light bulb. Check that the rear dome light illuminates normally.

STEP 11. Check the ground circuit to the rear dome light.

Measure the resistance at rear dome light connector D-06.

(1) Disconnect rear dome light connector D-06 and measure the resistance available at the wiring harness side of the connector.





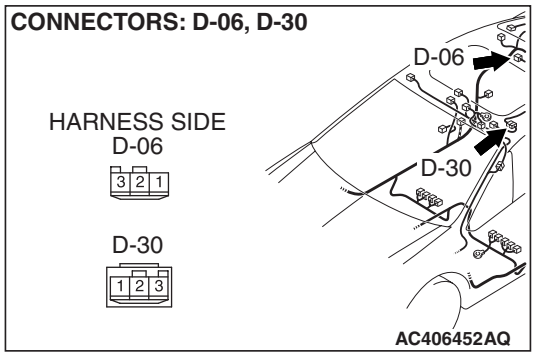
(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 13.

NO : Go to Step 12.

STEP 12. Check the wiring harness between rear dome light connector D-06 and ground.



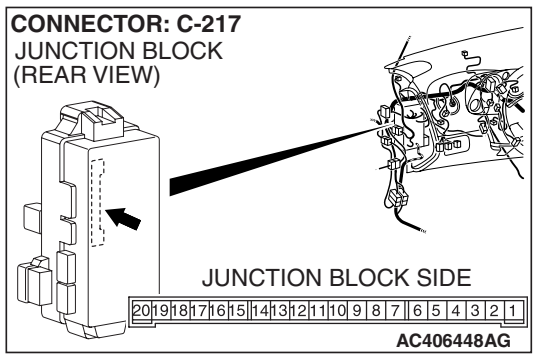
NOTE: Also check intermediate connector D-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-30 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

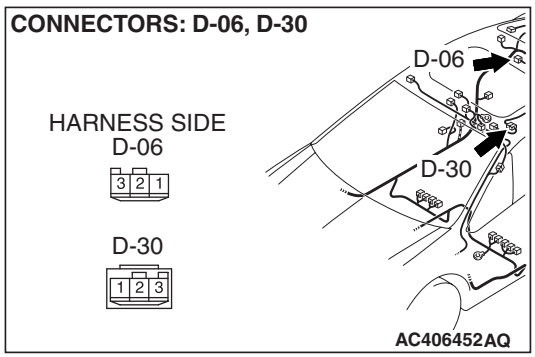
Q: Is the wiring harness between rear dome light connector D-06 and ground in good condition?

YES : Replace the rear dome light. Check that the rear dome light illuminates normally.

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

STEP 13. Check the wiring harness between rear dome light connector D-06 (terminals 1 and 3) and ETACS-ECU connector C-217 (terminals 5 and 6).





NOTE: Also check intermediate connector D-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-30 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

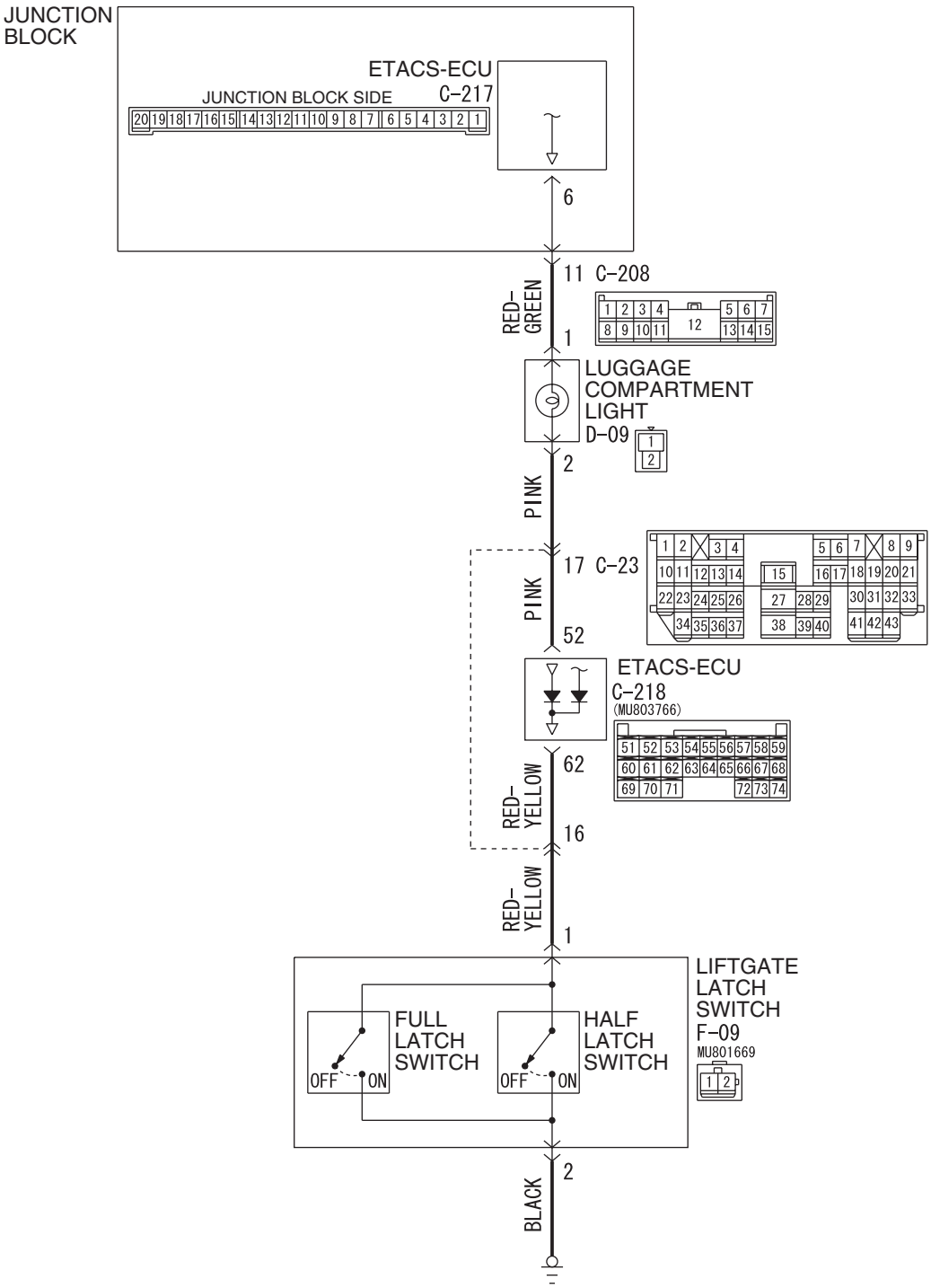
Q: Is the wiring harness between rear dome light connector D-06 (terminals 1 and 3) and ETACS-ECU connector C-217 (terminals 5 and 6) in good condition?

YES : Replace the rear dome light. Check that the rear dome light illuminates normally.

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

INSPECTION PROCEDURE L-3: Interior Light: The luggage compartment light does not illuminate or go out normally.

Luggage Compartment Light Circuit



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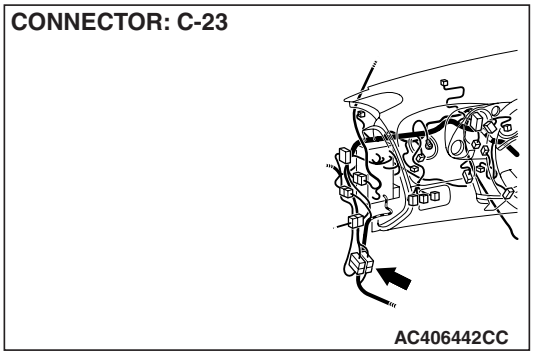
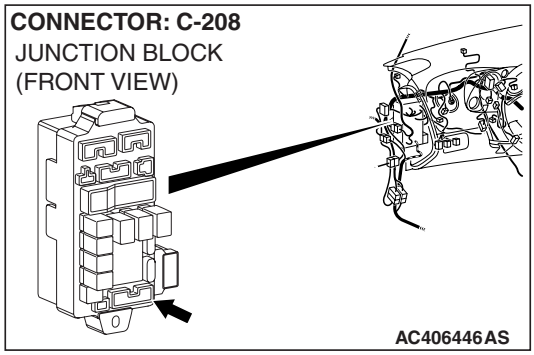
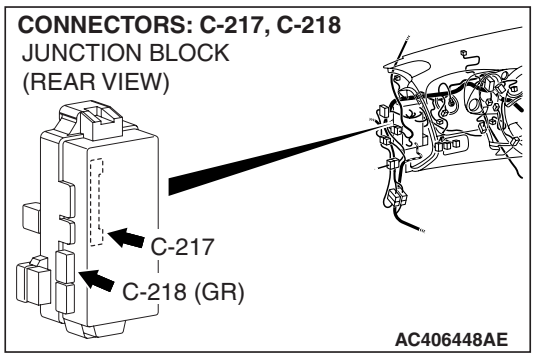
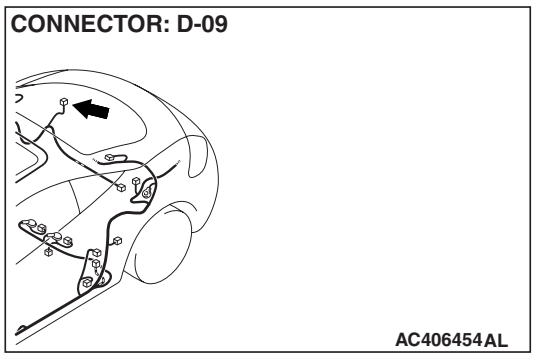








CIRCUIT OPERATION

The ETACS-ECU operates the luggage compartment light according to the following signals:

- Ignition switch (IG1): ON or OFF
- Liftgate latch switch: ON

TECHNICAL DESCRIPTION (COMMENT)

Is the luggage compartment light does not flash normally, a burned-out dome light bulb, the input circuits from the switches described in "CIRCUIT OPERATION", the power supply line to the switches or the ETACS-ECU may be defective.

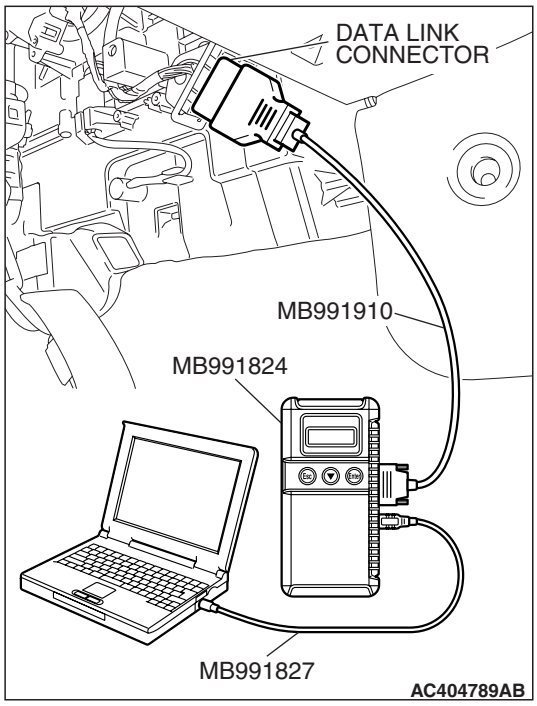
TROUBLESHOOTING HINTS

- The luggage compartment light bulb may be defective
- The liftgate latch switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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



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

Check the input signals from the liftgate latch switch.

- Check whether scan tool MB991958 sounds or not when the liftgate is opened.

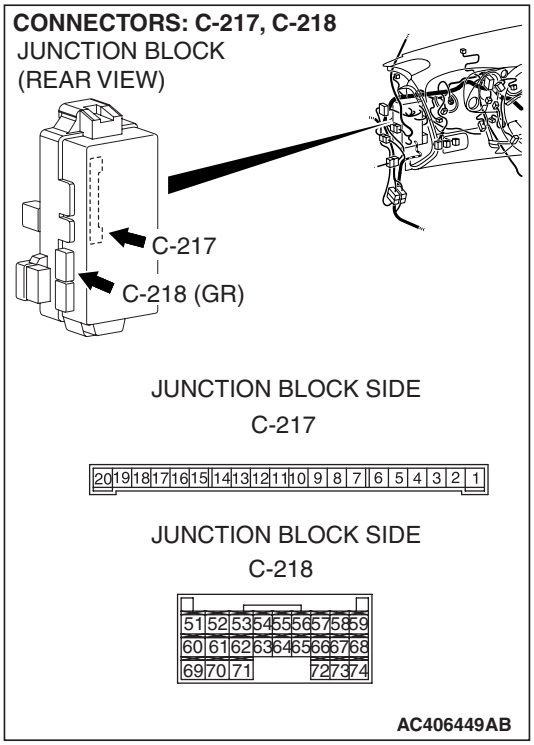
(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

Q: Does scan tool MB991958 sound when the liftgate is opened?

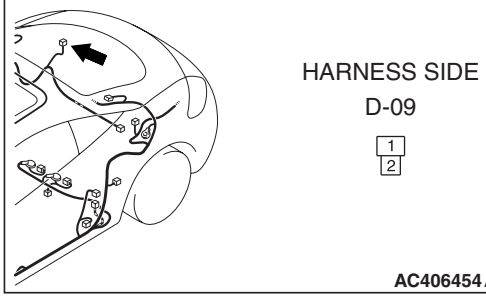
YES : Go to Step 2.

NO : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive any signal from the liftgate latch switch P.54B-523."

CONNECTORS: C-217, C-218



CONNECTOR: D-09



STEP 2. Check luggage compartment light connector D-09, ETACS-ECU connectors C-217 and C-218 and for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is luggage compartment light connector D-09, ETACS-ECU connectors C-217 and C-218 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the luggage compartment light illuminates normally.

STEP 3. Check the luggage compartment light bulb.

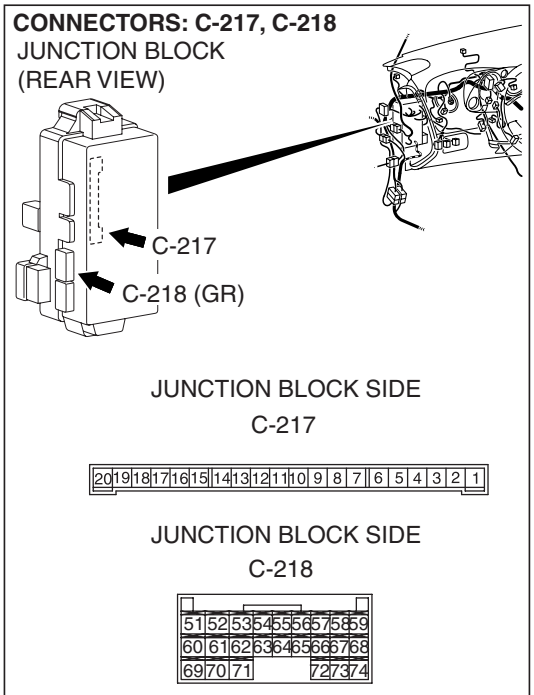
Q: Is the luggage compartment light bulb in good condition?

YES : Go to Step 4.

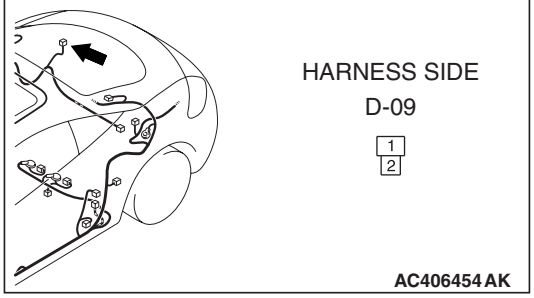
NO : Replace the luggage compartment light bulb. Check that the luggage compartment light illuminates normally.

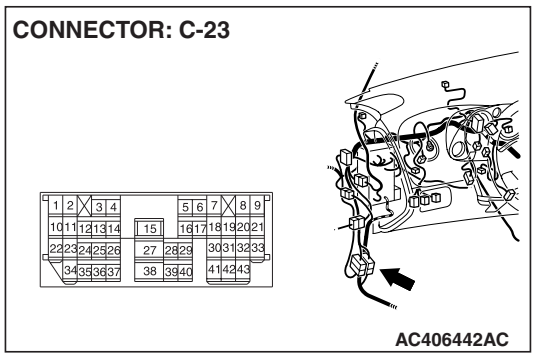
STEP 4. Check the wiring harness between luggage compartment light connector D-09 (terminals 1 and 2) and ETACS-ECU connector C-217 (terminal 6) or C-218 (terminal 52).

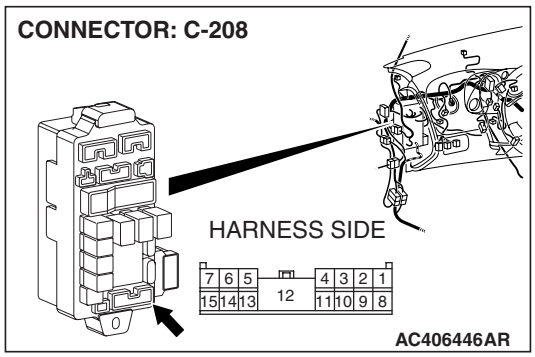
CONNECTORS: C-217, C-218



CONNECTOR: D-09







NOTE: Also check intermediate connector C-23 and junction block connector C-208 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 or junction block connector C-208 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 luggage compartment light connector D-09 (terminals 1 and 2) and ETACS-ECU connector C-217 (terminal 6) or C-218 (terminal 52) in good condition?

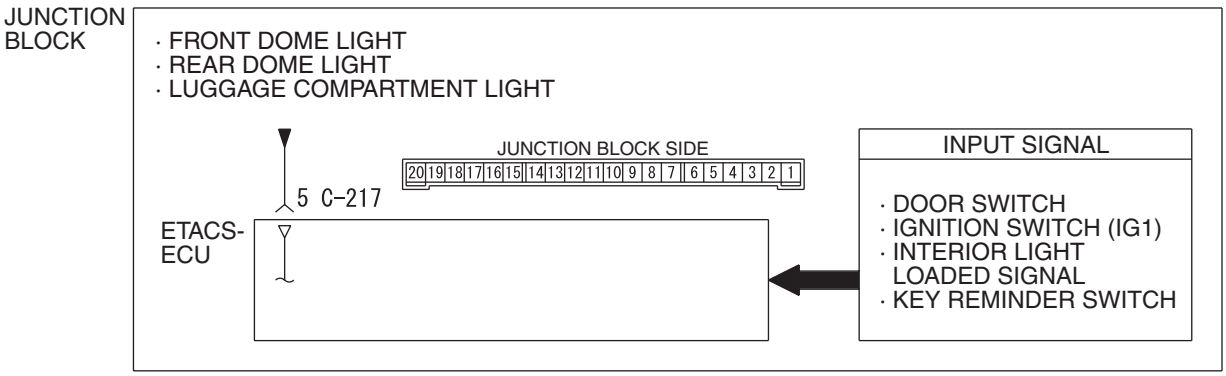
YES : Replace the front dome light. Check that the front dome light illuminates normally.

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

INSPECTION PROCEDURE L-4: Interior light: Dome light dimming function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Ignition Dimming Function



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CIRCUIT OPERATION

The ETACS-ECU operates the dome light dimming function according to the input signals from the following switches:

- Ignition switch (IG1): OFF
- Key reminder switch: ON
- Door switches: OFF
- Driver's door lock actuator switch: LOCK or UNLOCK

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TECHNICAL DESCRIPTION (COMMENT)

If the dome lights do not dim normally, the input circuits from the switches described in "CIRCUIT OPERATION" or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

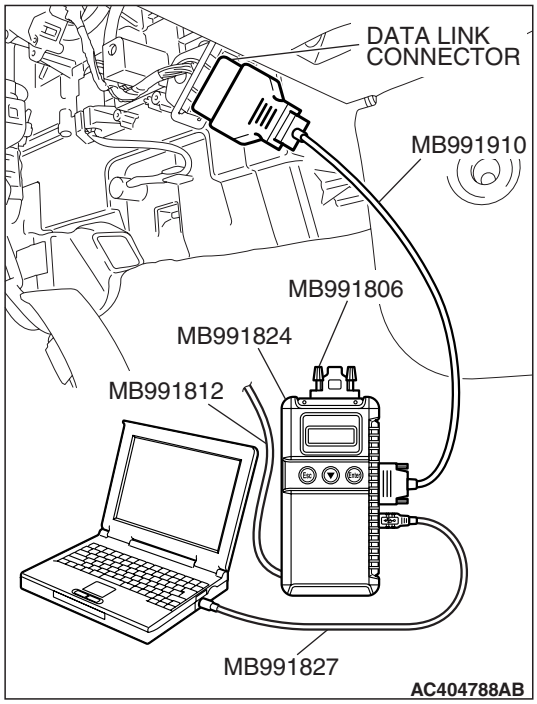
STEP 1. Check the dome light.

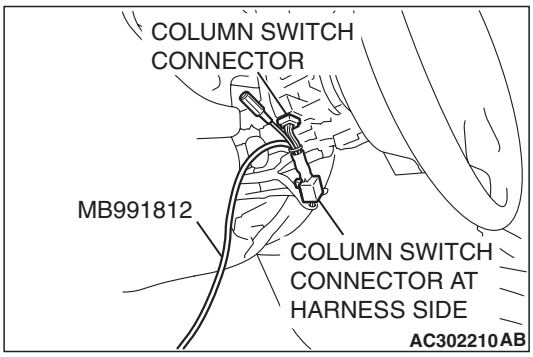
If a door is opened while the dome light switch is at "door-linked" position, the dome light should illuminate.

Q: Does the dome light illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure L-1 "The dome lights do not illuminate and go out normally P.54B-403."





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

Check the ETACS-ECU.

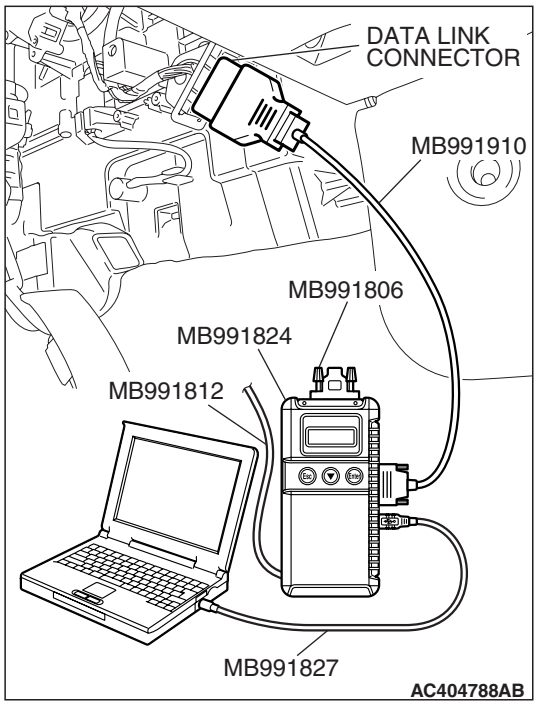
⚠ CAUTION

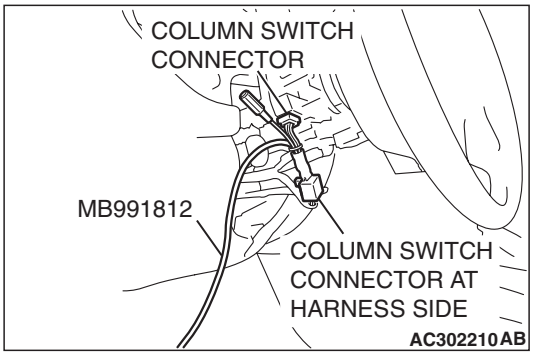
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

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

YES : Go to Step 3.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





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

Check the input signals from the following switches:

- Ignition switch: OFF
- Driver's or passenger's door: open

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

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

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	OFF
ITEM 31	IG SW (ACC)	OFF
ITEM 32	FRONT DOOR SW	ON

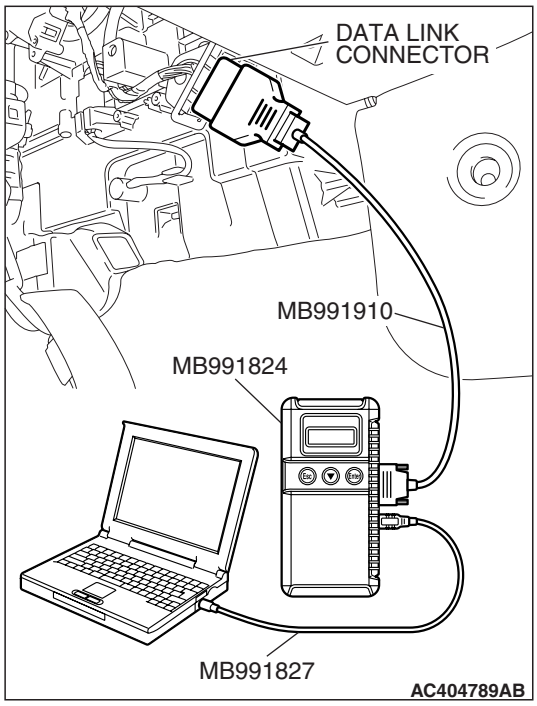
Q: Does the scan tool MB991958 display the items "IG SW (IG1)", "IG SW (ACC)" and "FRONT DOOR SW" as normal condition?

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

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "IG SW (ACC)" : Refer to Inspection Procedure M-1 "ETACS-ECU does not receive any signal from the ignition switch (ACC) P.54B-449."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."



STEP 4. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the following switches:

- Key reminder switch
- Liftgate latch switch

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(2) Check if scan tool MB991958 sounds or not.

ITEM NAME	CONDITION
key reminder switch	Remove and reinsert the ignition key
liftgate latch switch	Open or close the liftgate

Q: When the key reminder switch, any door switch, or the trunk lid is operated, does scan tool MB991958 sound?

Buzzer of scan tool MB991958 sounds normally. : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the dome light dimming function works normally.

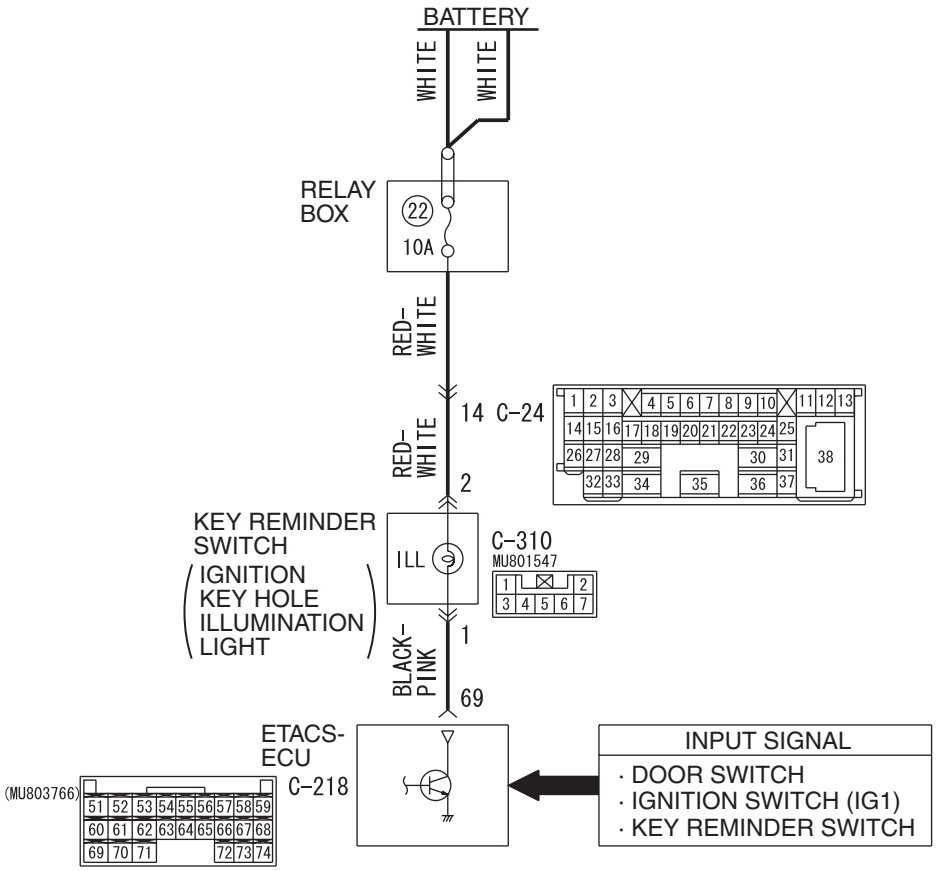
Scan tool MB991958 does not sound when the ignition key is removed and reinserted : Refer to Inspection Procedure N-1 "ETACS-ECU does not receive a signal from the key reminder switch P.54B-489."

When the liftgate is opened and closed, scan tool MB991958 does not sound. : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive any signal from liftgate latch switch P.54B-523."

INSPECTION PROCEDURE L-5: Interior Light: The ignition key hole illumination light does not illuminate or go out normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Ignition Key Hole Illumination Light Circuit



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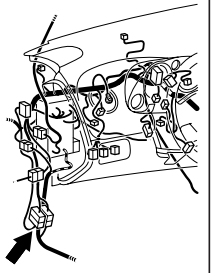
CONNECTOR: C-24



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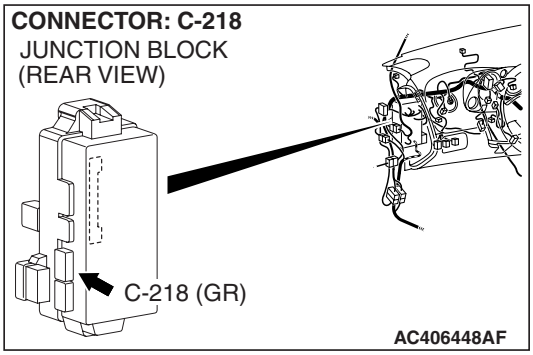
CONNECTOR: C-218

JUNCTION BLOCK (REAR VIEW)



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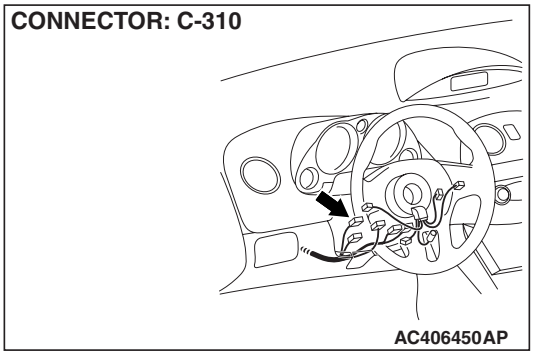


CIRCUIT OPERATION

- When the driver's door is opened with the ignition switch at "ACC" position, the ETACS-ECU illuminates the ignition key hole illumination light.
- The ignition key hole illumination light goes out in 30 seconds after the driver's door is closed. The ignition key hole illumination light remains illuminated for 30 seconds after the ignition key is pulled out.
- The ETACS-ECU operates the ignition key hole illumination light according to the input signals from the following switches:
  - Ignition switch (IG1): OFF
  - Key reminder switch: OFF
  - Interior light loaded signal: ON
- Vehicle condition:
  - Ignition switch: "LOCK" (OFF) or "ACC" position
  - Ignition key: Removed from the ignition key cylinder
  - Driver’s door: Opened or closed

TECHNICAL DESCRIPTION (COMMENT)

If the ignition key hole illumination light does not illuminate, the input circuits from the switches described in "CIRCUIT OPERATION", the key reminder switch (ignition key hole illumination light bulb) or the ETACS-ECU may be defective.

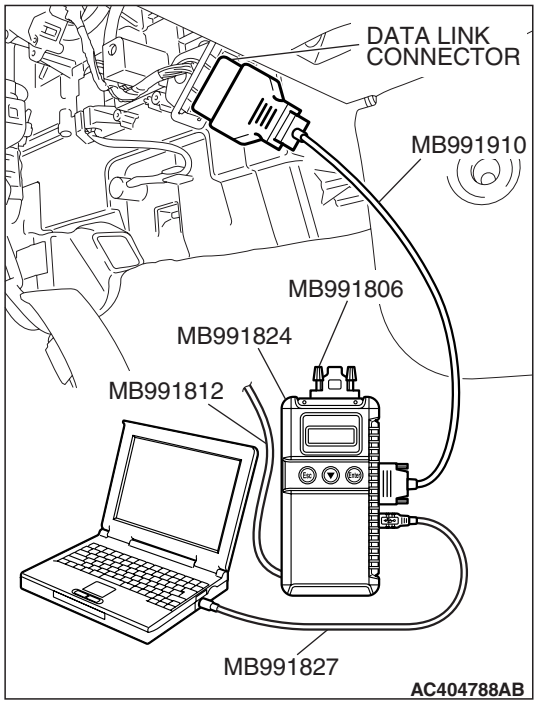
TROUBLESHOOTING HINTS

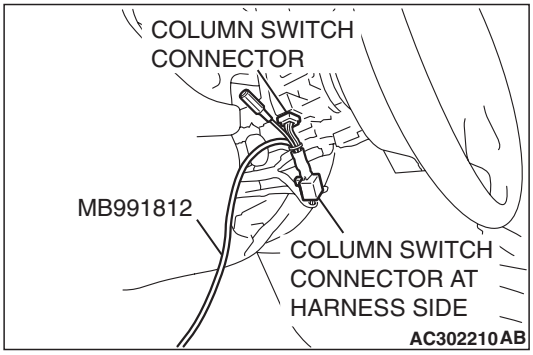
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the ETACS-ECU.

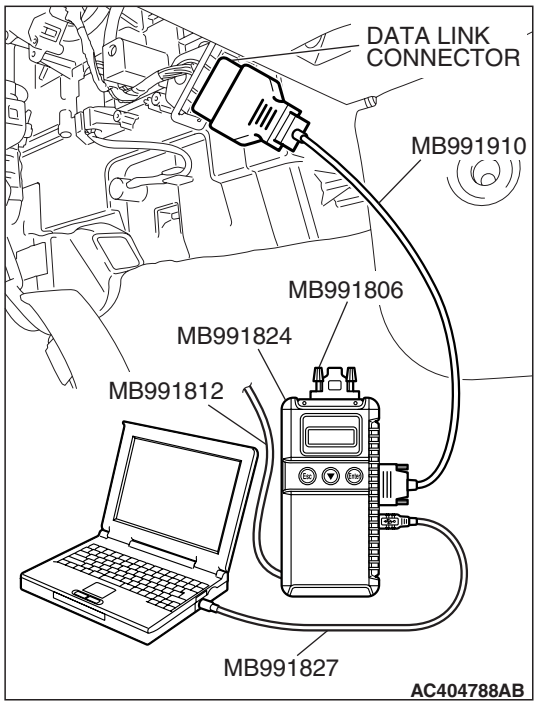
⚠ CAUTION

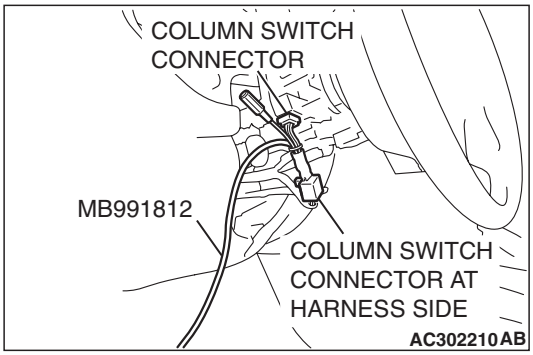
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: OFF
- Driver's door: open
- Passenger's door: closed

(1) Operate scan tool MB991958 according to the procedure below to display "ETACS ECU."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Data List."
   f. Select "ETACS ECU."

(2) Check that normal conditions are displayed for the items described in the table below.

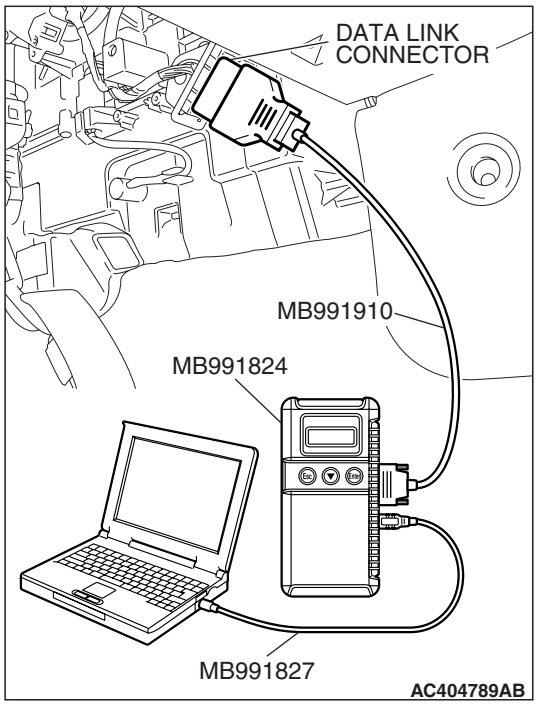
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW(IG1)	OFF
ITEM 32	FRONT DOOR SW	ON

Q: Does the scan tool MB991958 display the items "IG SW (IG1)" and "FRONT DOOR SW" as normal condition?

Normal conditions are displayed for all the items : Go to Step 3.

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."



STEP 3. Check the input signal (by using the pulse check mode of the monitor).

Check the following switches and input signals:

- Key reminder switch
- Interior light loaded signal

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(2) When the switches (see table below), which are applicable for the input signal check, are operated, check if scan tool MB991958 sounds or not.

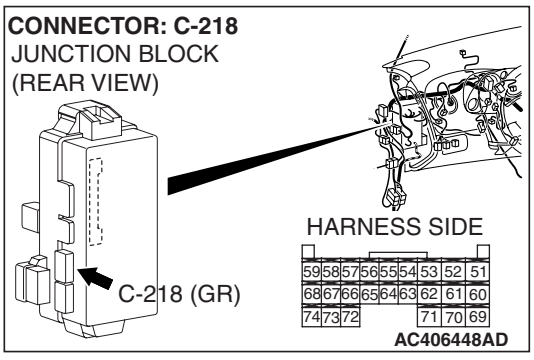
ITEM NAME	CONDITION
key reminder switch	Remove and reinsert the ignition key
interior light loaded signal	Turn on one of the interior lights

Q: When the key reminder switch and the interior light are operated, does scan tool MB991958 sound in each case?

Buzzer of scan tool MB991958 sounds normally. : Go to Step 4.

When the ignition key is removed and reinserted, scan tool MB991958 does not sound : Refer to Inspection Procedure N-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54B-489."

When one of the interior lights is illuminated, scan tool MB991958 does not sound : Refer to Inspection Procedure N-9 "ETACS-ECU does not receive any interior light loaded signal P.54B-534."



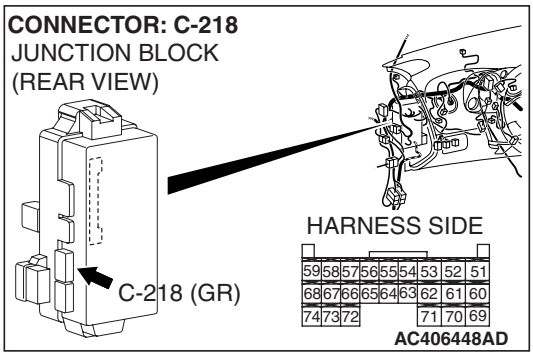
STEP 4. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-218 in good condition?

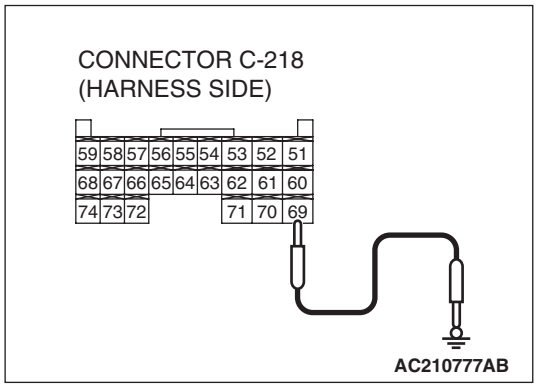
YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the ignition key hole illumination light illuminates normally.

STEP 5. Check at ETACS-ECU connector C-218 in order to check the ignition key hole illumination light circuit.



(1) Disconnect ETACS-ECU connector C-218, and measure at the wiring harness side.



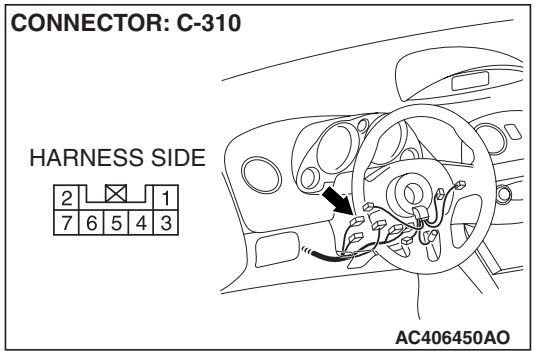
(2) The ignition key hole illumination light should illuminate when terminal 69 is grounded.

Q: Does the ignition key hole illumination light illuminate?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the ignition key hole illumination light illuminates normally.

NO : Go to Step 6.

STEP 6. Check key reminder switch connector C-310 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is key reminder switch connector C-310 in good condition?

YES : Go to Step 7.

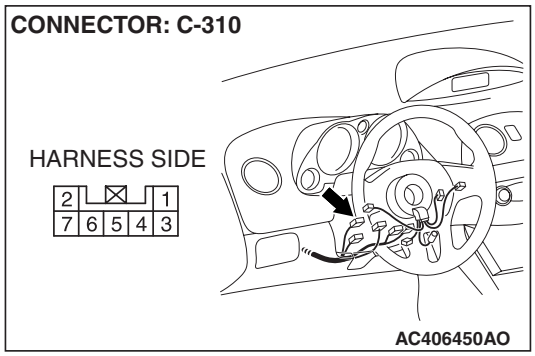
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the ignition key hole illumination light illuminates normally.

STEP 7. Check the ignition key hole illumination light bulb.

Q: Is the ignition key hole illumination light bulb in good condition?

YES : Go to Step 8.

NO : Replace the bulb. Verify that the ignition key hole illumination light illuminates normally.



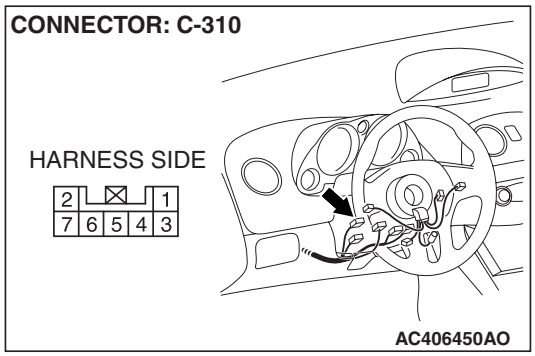
STEP 8. Check the key reminder switch (ignition key hole illumination).

(1) Disconnect key reminder switch connector C-310.
(2) Remove the ignition key hole illumination light bulb. Then measure the resistance value between the bulb terminals.
(3) Install a bulb to the key remainder switch, and measure the resistance between connector C-310 terminals 1 and 2. The measured resistance value should be roughly the same as the value measured in Step (2).

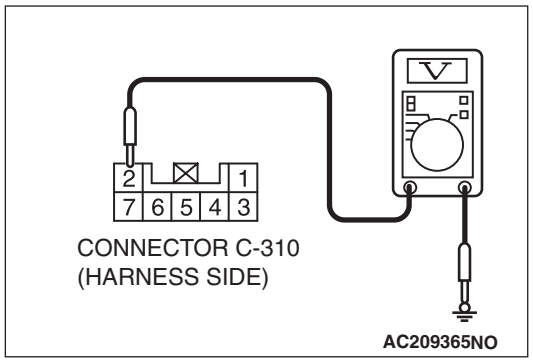
Q: Are these two resistance values extremely different?

YES : Replace the key reminder switch. Verify that the ignition key hole illumination light illuminates normally.
NO : <Nearly equal> Go to Step 9.

STEP 9. Check the battery power supply circuit to the key reminder switch circuit. Measure the voltage at key reminder switch connector C-310.



(1) Disconnect key reminder switch connector C-310, and measure the voltage available at the wiring harness side of the connector.

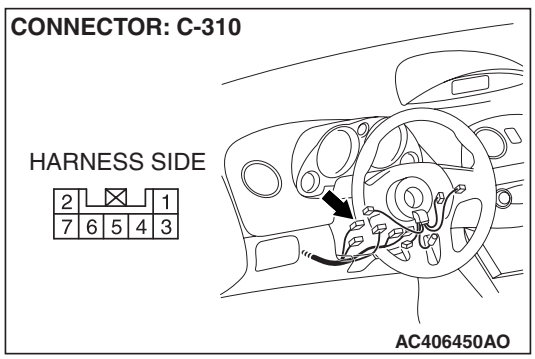


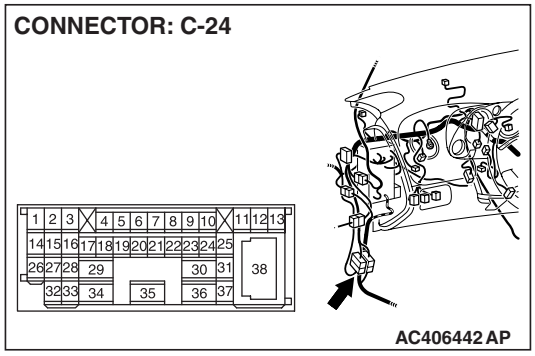
(2) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check the wiring harness between key reminder switch connector C-310 (terminal 2) and battery.





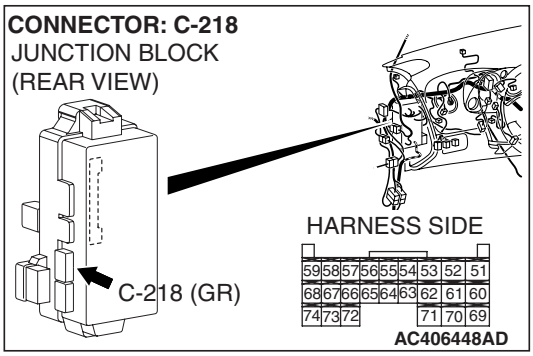
NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

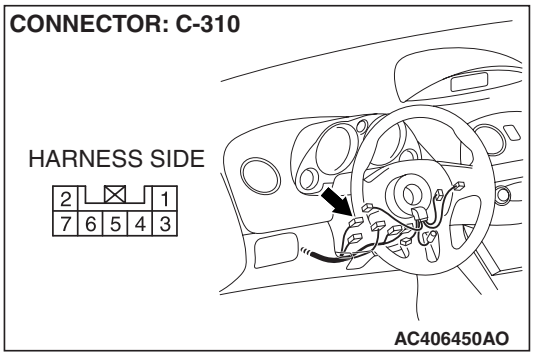
Q: Is the wiring harness between key reminder switch connector C-310 (terminal 2) and battery in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the ignition key hole illumination light illuminates normally.

STEP 11. Check the wiring harness between key reminder switch connector C-310 (terminal 1) and ETACS-ECU connector C-218 (terminal 69).





Q: Is the wiring harness between key reminder switch connector C-310 (terminal 1) and ETACS-ECU connector C-218 (terminal 69) in good condition?

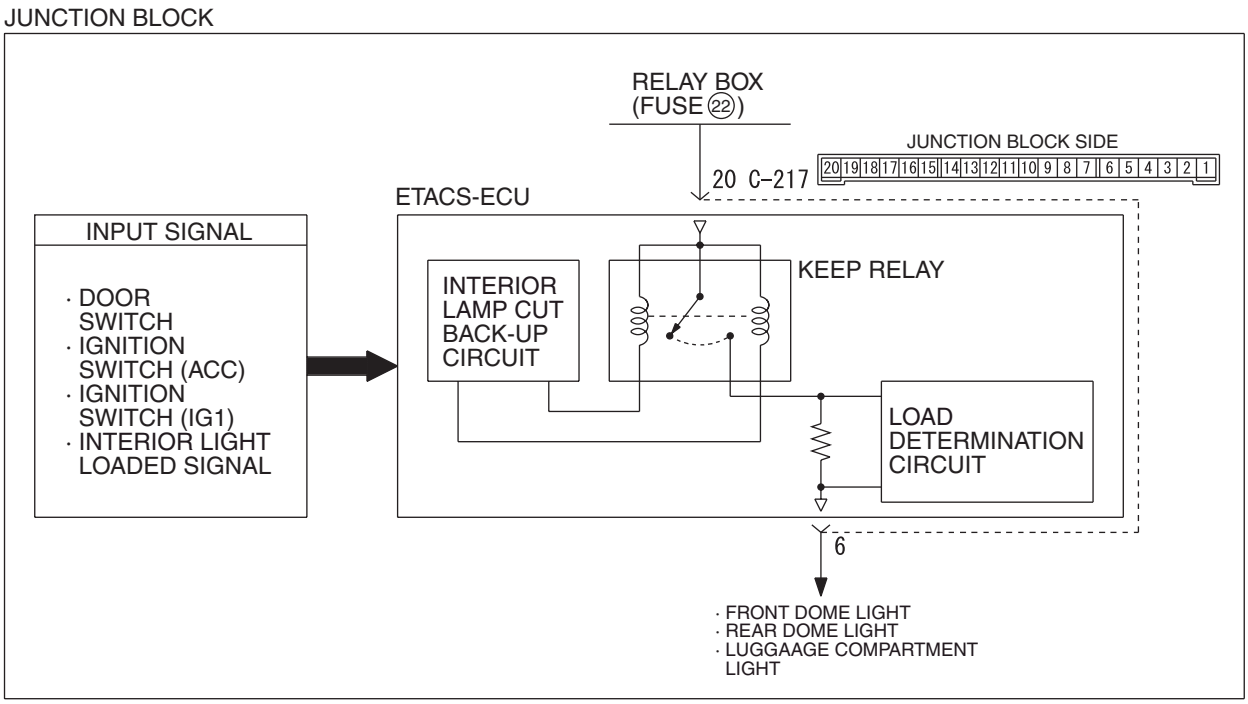
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the ignition key hole illumination light illuminates normally.

INSPECTION PROCEDURE L-6: Interior Light: The interior light automatic shutoff function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Interior Light Automatic Shutoff Function Circuit



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CIRCUIT OPERATION

The ETACS-ECU operates the interior light automatic shutdown function according to the following switch signals:

- Ignition switch (ACC)
- Ignition switch (IG1)
- Front door switch (LH)
- Door switches
- interior light loaded signal

TECHNICAL DESCRIPTION (COMMENT)

If the function does not work normally, the input circuit system from the switches or the ETACS-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

STEP 1. Check the interior lights.

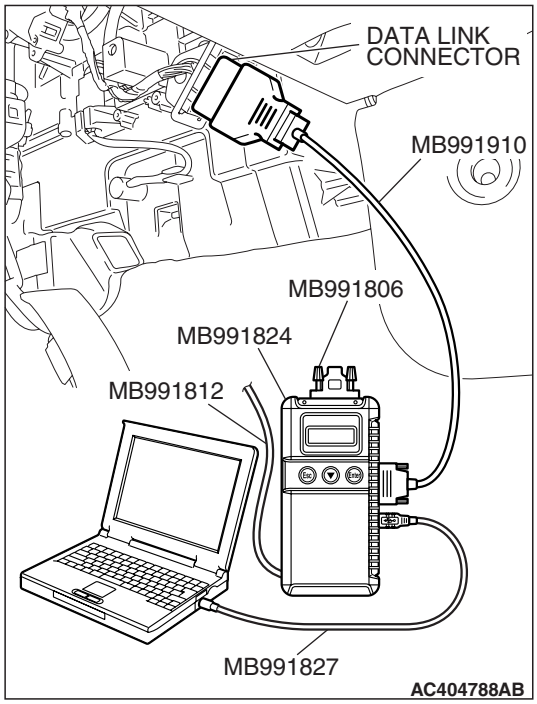
If the interior light switch is moved to the "door interlock position", the interior lights should illuminate when either door is opened.

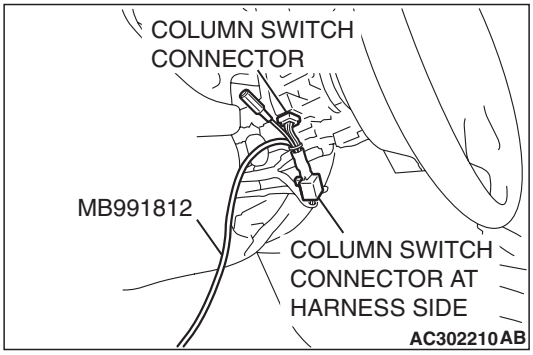
Q: Do the interior light illuminate normally?

All the interior lights illuminate normally. : Go to Step 2.

None of the interior lights illuminate normally. : Refer to Inspection Procedure L-1 "The dome lights do not illuminate and go out normally P.54B-403."

Some of the interior lights do not illuminate normally. : Refer to Inspection Procedure L-2 "The front dome light or rear dome light does not illuminate or go out normally P.54B-408."





STEP 2. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

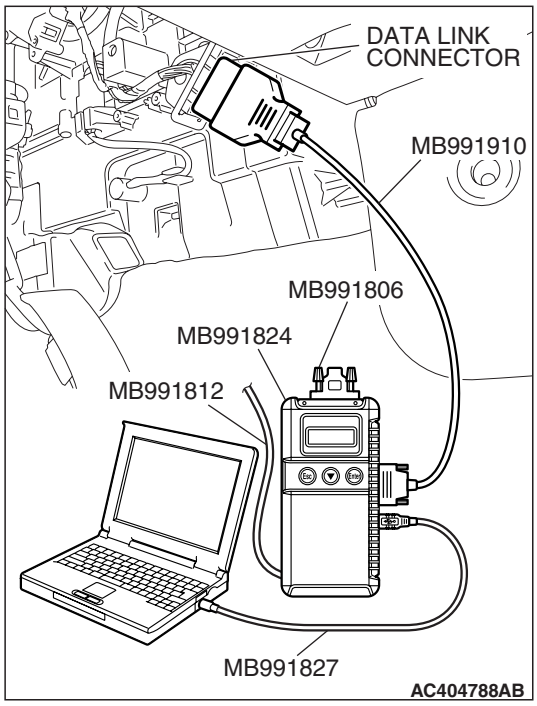
⚠ CAUTION

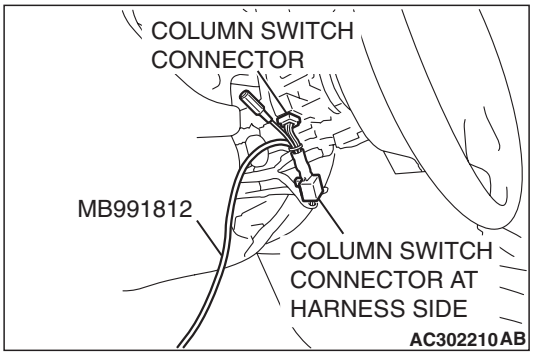
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 3.
NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





STEP 3. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: OFF
- Driver's or passenger's door: open

(1) Operate scan tool MB991958 according to the procedure below to display "ETACS ECU."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Data List."
   f. Select "ETACS ECU."

(2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	OFF
ITEM 31	IG SW (ACC)	OFF
ITEM 32	FRONT DOOR SW	ON

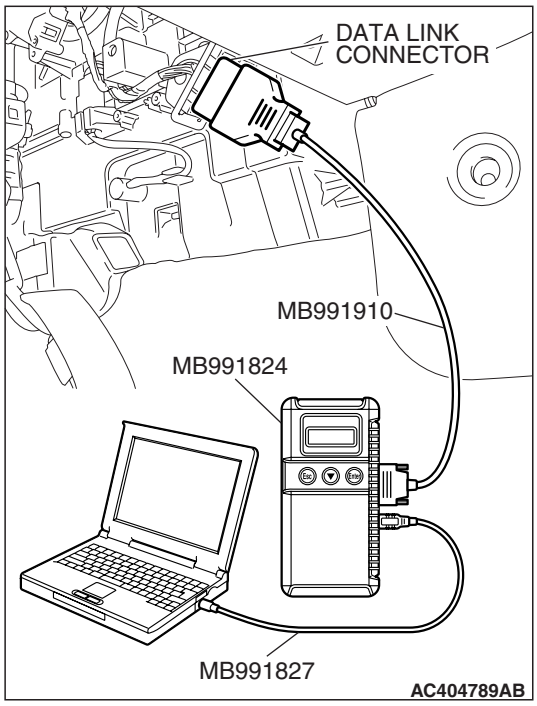
Q: Does the scan tool MB991958 display the items "IG SW (IG1)", "IG SW (ACC)" and "FRONT DOOR SW" as normal condition?

Normal conditions are displayed for all the items : Go to Step 4.

Normal condition is not displayed for "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

Normal condition is not displayed for "IG SW (ACC)" : Refer to Inspection Procedure M-1 "ETACS-ECU does not receive any signal from the ignition switch (ACC) P.54B-449."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."



STEP 4. Check the input signal (by using the pulse check mode of the monitor).

Check the following switch and input signal:

- Interior light loaded signal

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(2) Check if scan tool MB991958 sounds or not.

ITEM NAME	CONDITION
interior light loaded signal	Turn on one of the interior lights

Q: When any door switch, interior light, the liftgate latch or glass hatch latch is operated, does scan tool MB991958 sound?

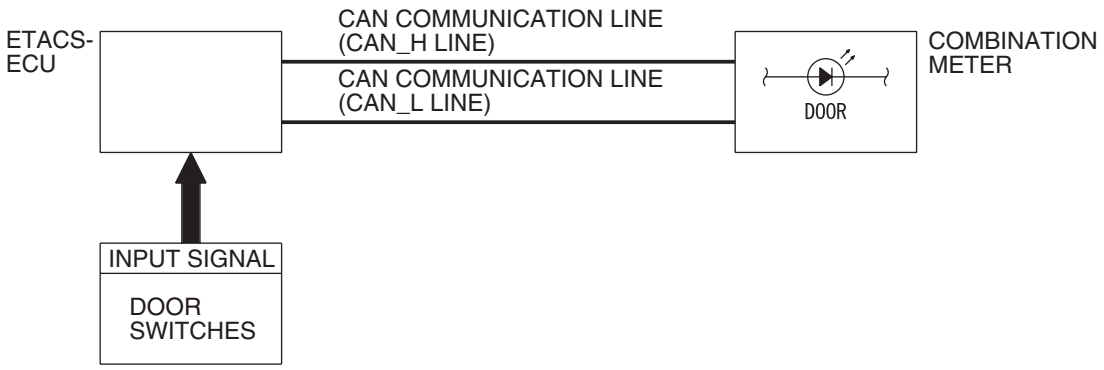
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the dome light illuminates normally.

NO : Refer to Inspection Procedure N-9 "ETACS-ECU does not receive any interior light loaded signal P.54B-534."

INSPECTION PROCEDURE L-7: Interior Light: The door ajar indicator lights do not illuminate or go out normally

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Door Ajar Indicator Light Circuit



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CIRCUIT OPERATION

The combination meter receives the door switches signals from the ETACS-ECU, and then controls the door ajar indicator, based on these signals.

TECHNICAL DESCRIPTION (COMMENT)

If the door ajar indicator does not illuminate, connector(s), wiring harness in the CAN bus lines, the door switches, the ETACS-ECU, or the combination meter may be defective.

TROUBLESHOOTING HINTS

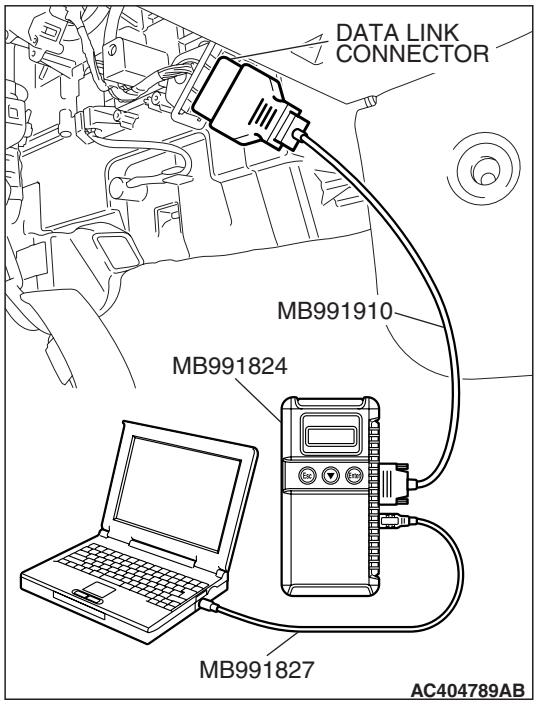
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The combination meter may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

TSB Revision



STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

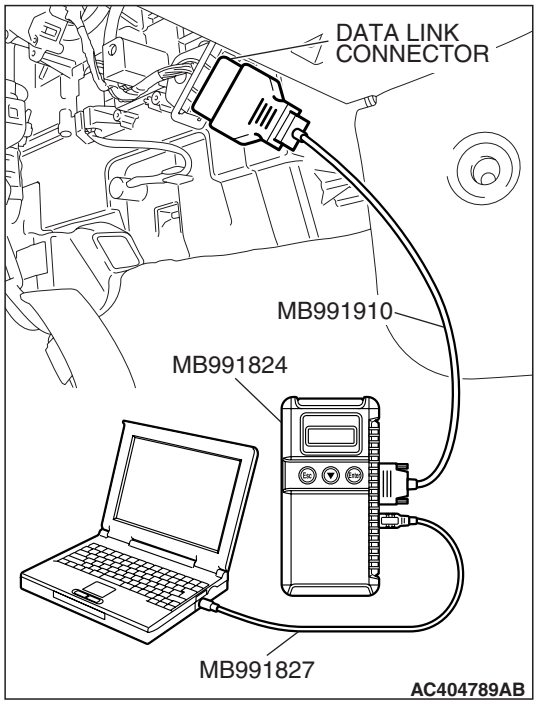
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



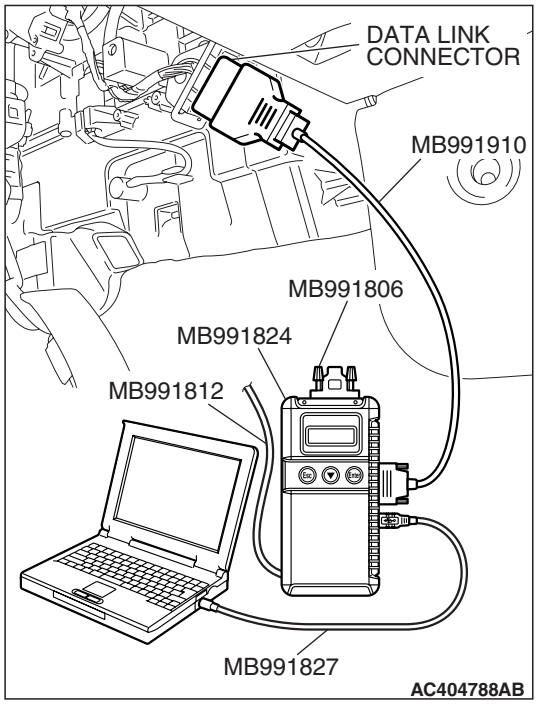
STEP 2. Using scan tool MB991958, read the combination meter diagnostic trouble code.

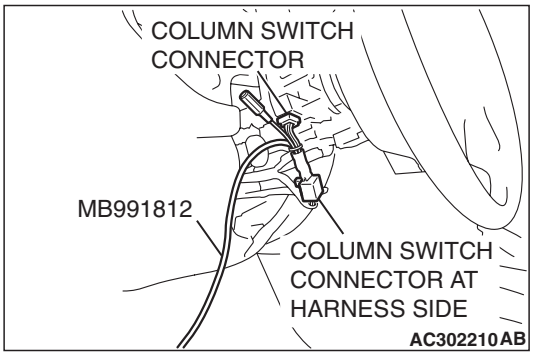
(1) Check whether the combination meter-related DTC is set.
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the combination meter-related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to P.54A-55.
NO : Go to Step 3.

TSB Revision





STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

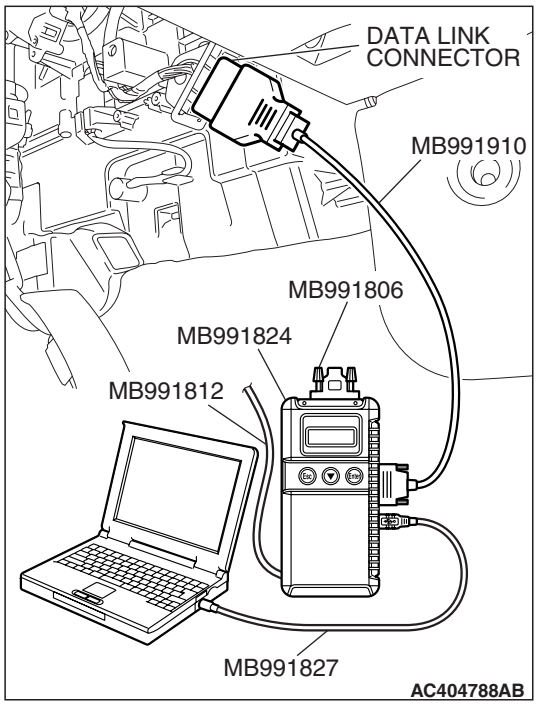
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

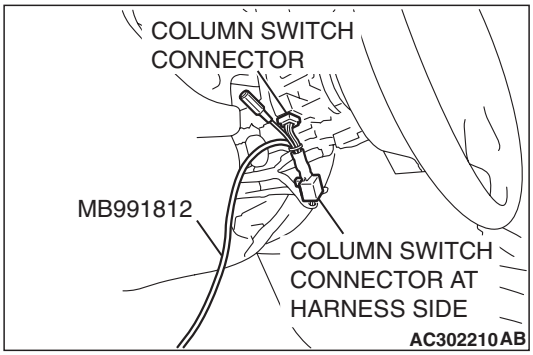
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 4.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





STEP 4. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signal from the following switch:

- Driver's or passenger's door: open

(1) Operate scan tool MB991958 according to the procedure below to display "ETACS ECU."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Data List."
   f. Select "ETACS ECU."

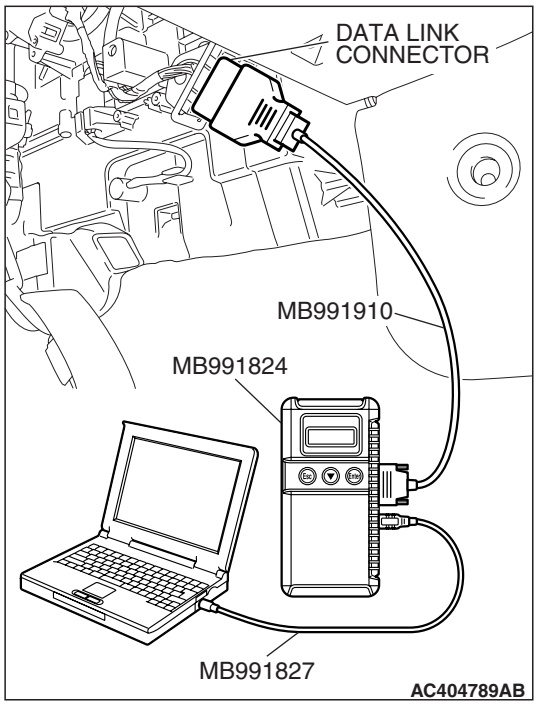
(2) Check that normal condition are displayed for the item described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 32	FRONT DOOR SW	ON

Q: Does the scan tool MB991958 display the item "FRONT DOOR SW" as normal condition?

YES : Go to Step 5.

NO : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the door switches P.54B-466."



STEP 5. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the liftgate latch switch.

- Check whether scan tool MB991958 sounds or not when the liftgate is opened.

(1) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

Q: Does scan tool MB991958 sound when the liftgate is opened?

YES : Go to Step 6.

NO : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive any signal from the liftgate latch switch P.54B-523."

STEP 6. Replace the combination meter.

(1) Replace the combination meter.
(2) Check that the door ajar indicator light illuminates normally.

Q: Is the door ajar indicator light in good condition?

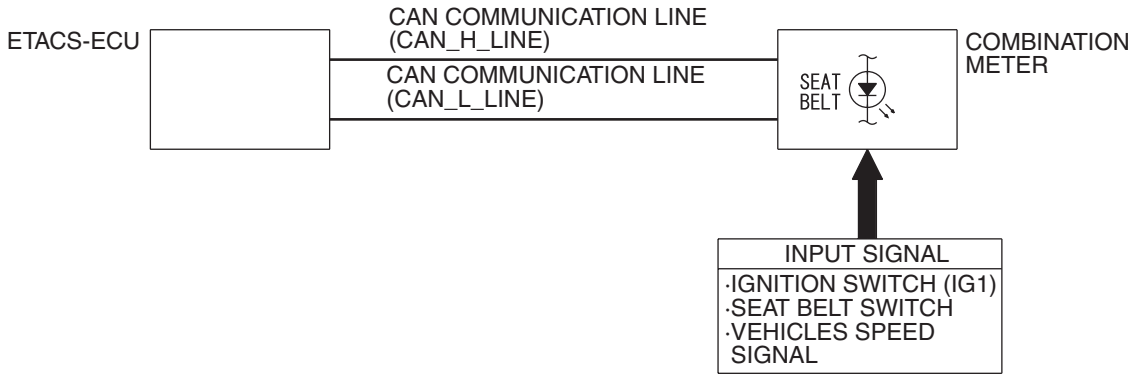
YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Check that the door ajar indicator light illuminates normally.

INSPECTION PROCEDURE L-8: Interior Light: The seat belt warning light does not illuminate or go out normally

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Seat Belt Warning Light Circuit



CIRCUIT OPERATION

The combination meter and the ETACS-ECU illuminates and flashes the seat belt warning light by using the signal from the seat belt switch, the ignition switch (IG1) and the vehicle speed signal.

TECHNICAL DESCRIPTION (COMMENT)

If the seat belt warning light does not illuminate or flash correctly, connector(s), wiring harness in the CAN bus lines, the door switches, the ETACS-ECU, or the combination meter may be defective.

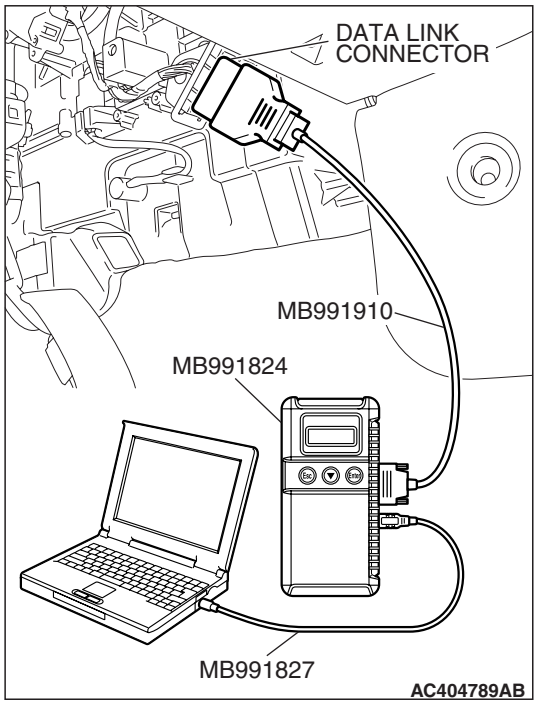
TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The combination meter may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness



STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

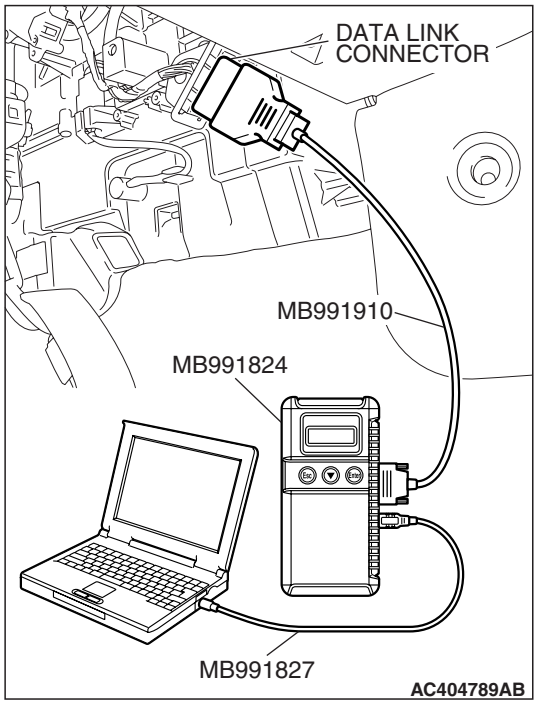
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 2.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-14).



STEP 2. Using scan tool MB991958, read the combination meter diagnostic trouble code.

(1) Check whether the combination meter-related DTC is set.
(2) Turn the ignition switch to the "ON" position.
(3) Check whether the combination meter-related DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter. Refer to P.54A-55.
NO : Go to Step 3.

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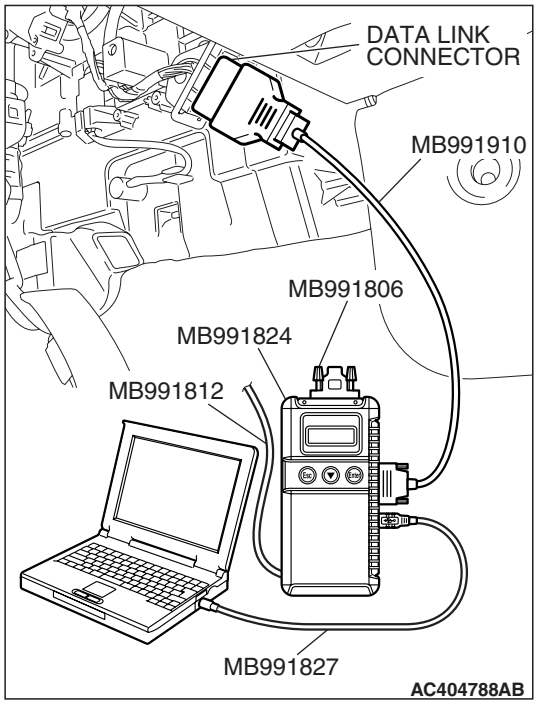
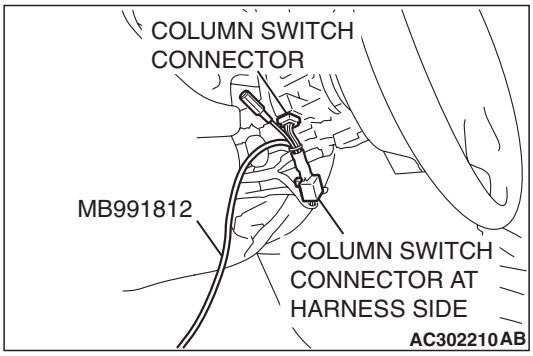




STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

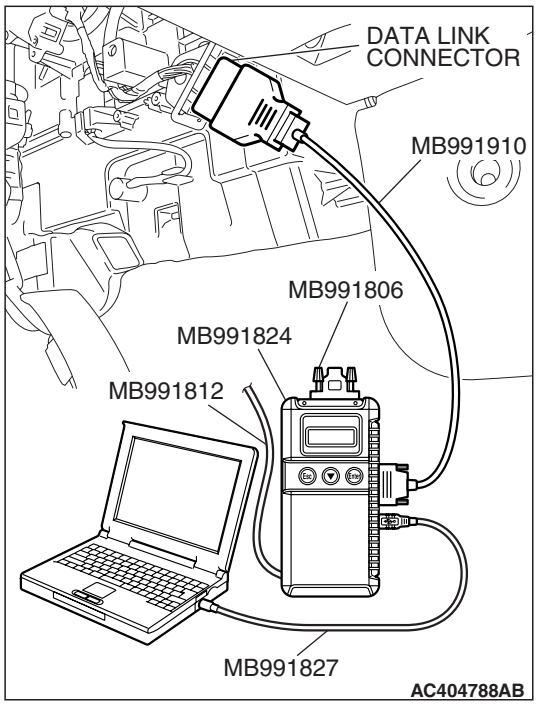
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

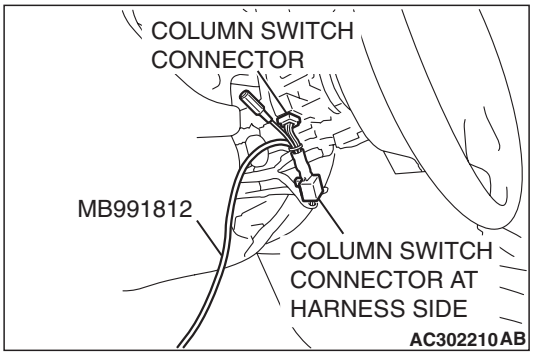
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "ECU COMM Check."
(4) Scan tool MB991958 should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 4.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-78."





STEP 4. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ON

(1) Operate scan tool MB991958 according to the procedure below to display "ETACS ECU."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Data List."
   f. Select "ETACS ECU."

(2) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON

Q: Is the scan tool MB991958 display the items "IG SW (IG1)" normal condition?

YES : Go to Step 5.

NO : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-452."

STEP 5. Replace the combination meter.

(1) Replace the combination meter.
(2) Check that the seat belt warning light illuminates normally.

Q: Is the seat belt warning light in good condition?

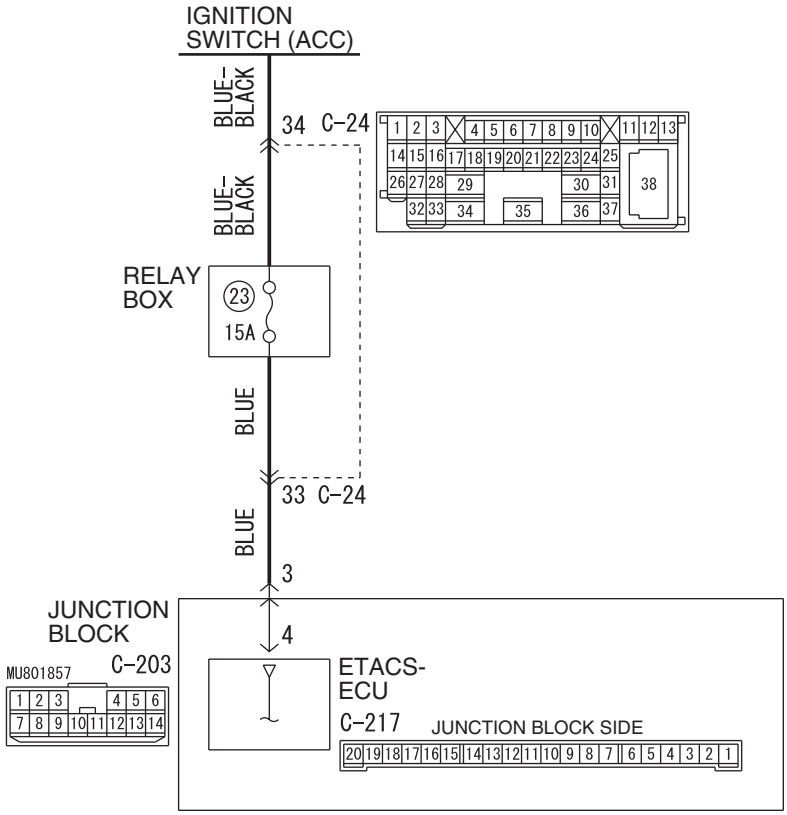
YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. Verify that the seat belt warning light illuminates normally.

INPUT SIGNAL PROCEDURES

INSPECTION PROCEDURE M-1: ETACS-ECU does not receive any signal from the ignition switch (ACC).

Ignition Switch (ACC) Input Circuit



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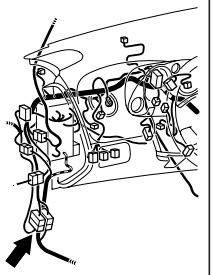
CONNECTOR: C-24



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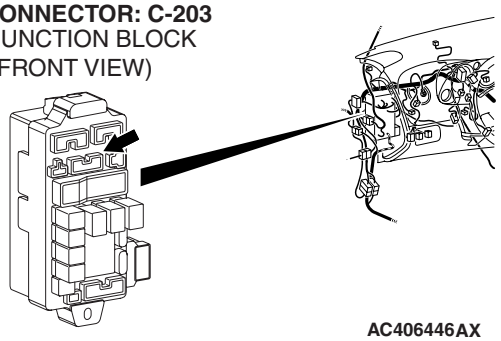
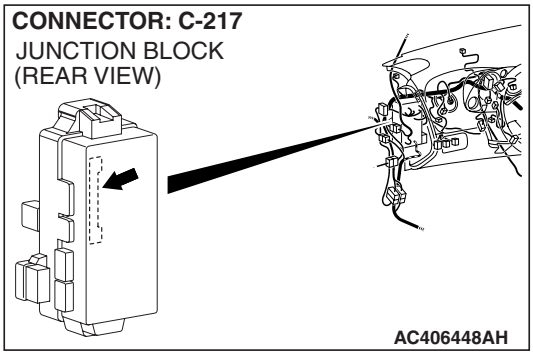
CONNECTOR: C-203
JUNCTION BLOCK
(FRONT VIEW)



AC406446AX

TSB Revision



CIRCUIT OPERATION

The ETACS-ECU operates the following equipment and function(s) according to signal from the ignition switch (ACC):

- Windshield wiper and washer
- Interior light automatic shutoff function

The ETACS-ECU receives information on the ignition switch condition (ACC) from the middle-grade multi center display unit via CAN communication. If the ignition switch (ACC) input signal is incorrect, refer to the appropriate Diagnostic Trouble Code Chart P.54B-29.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment and function(s), which are described in "CIRCUIT OPERATION", do not work normally.

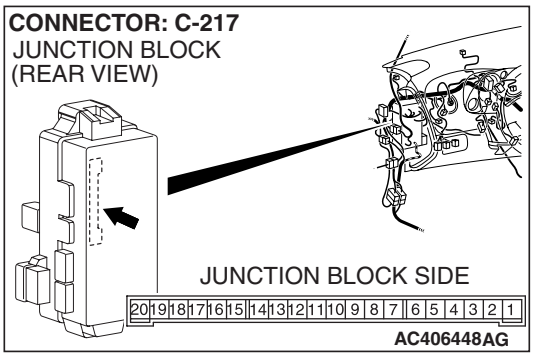
TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe



STEP 1. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-217 in good condition?

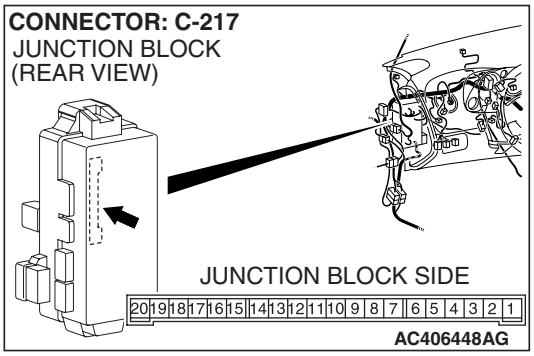
YES : Go to Step 2.

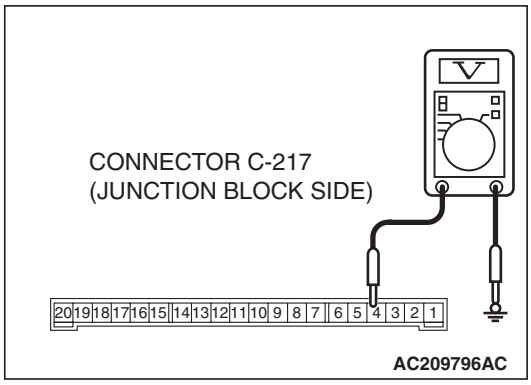
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the equipment described in "CIRCUIT OPERATION" works normally, the input signal from the ignition switch (ACC) should be normal.

STEP 2. Check the ignition switch (ACC) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.

(1) Disconnect ETACS-ECU connector C-217 and measure the voltage available at the junction block side of the connector.

(2) Turn the ignition switch to the "ACC" position.





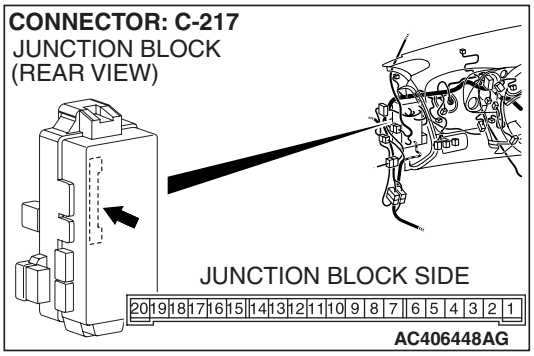
(3) Measure the voltage between terminal 4 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

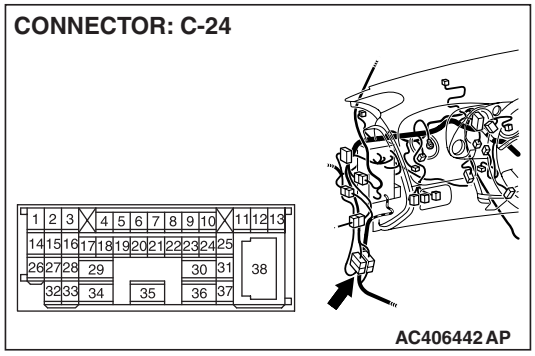
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

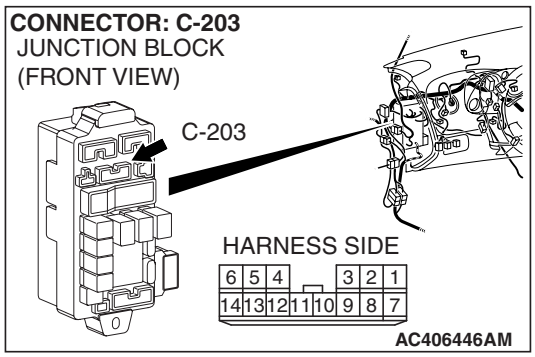
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the equipment described in "CIRCUIT OPERATION" works normally, the input signal from the ignition switch (ACC) should be normal.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-217 (terminal 4) and the ignition switch (ACC).







NOTE: Also check intermediate connector C-24 and junction block connector C-203 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 or junction block connector C-203 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

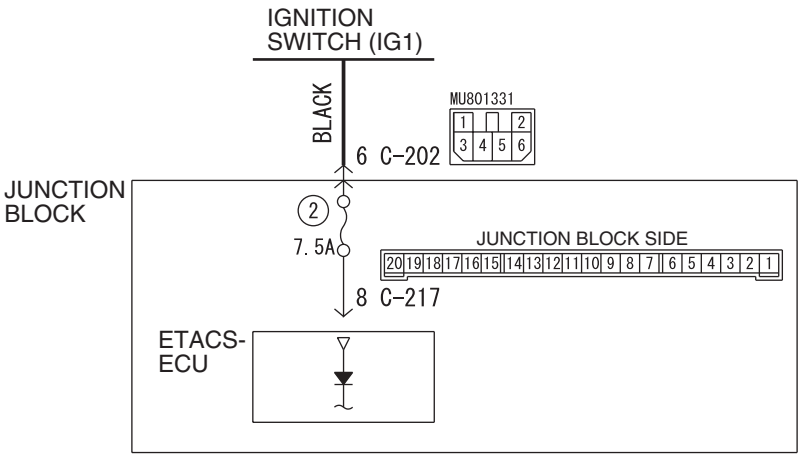
Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 4) and ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment described in "CIRCUIT OPERATION" works normally, the input signal from the ignition switch (ACC) should be normal.

INSPECTION PROCEDURE M-2: ETACS-ECU does not receive any signal from the ignition switch (IG1).

Ignition Switch (IG1) Input Circuit



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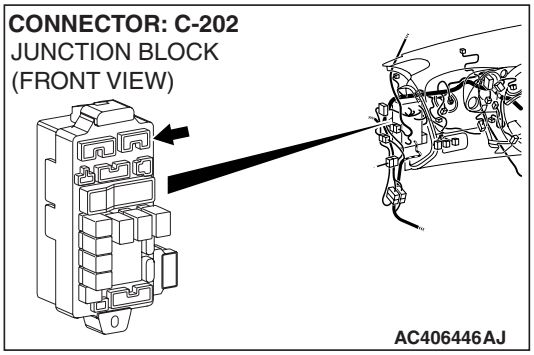
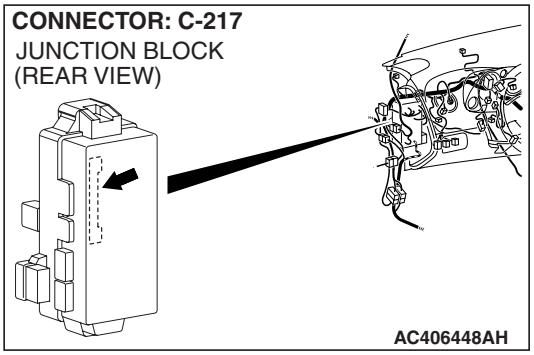




CIRCUIT OPERATION

The ETACS-ECU operates the following equipment or functions according to signal from the ignition switch (IG1):

- Ignition key reminder tone alarm function
- Light reminder tone alarm function
- Seat belt tone alarm function
- Door ajar warning buzzer
- Power window timer function
- Sunroof timer function
- Headlight automatic shutdown function
- Turn-signal light
- Dome light dimming function
- Ignition key cylinder illumination light

- If the power supply circuit from the battery to the ETACS-ECU is open, this circuit is used as backup circuit.

If the signal is not normal, the equipment or functions described in "CIRCUIT OPERATION" do not work normally.

The ETACS-ECU receives information on the ignition switch condition (IG1) from the combination meter via CAN communication. If the ignition switch (IG1) input signal is incorrect, refer to the Diagnostic Trouble Code Chart P.54B-29.

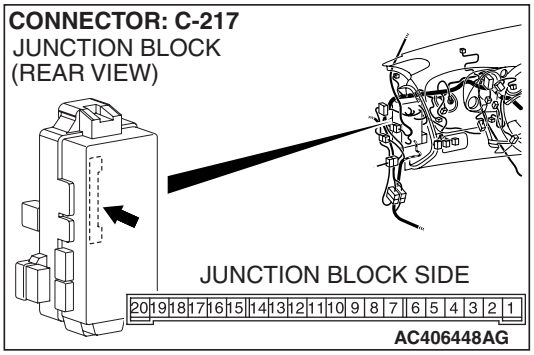
TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe



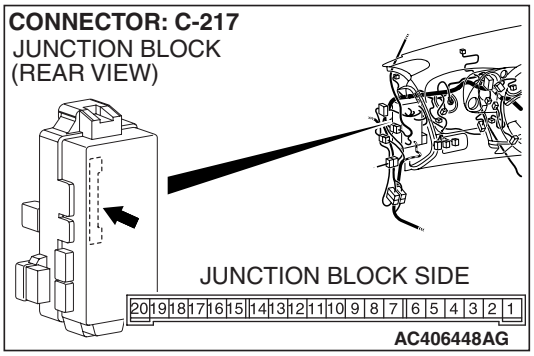
STEP 1. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-217 in good condition?

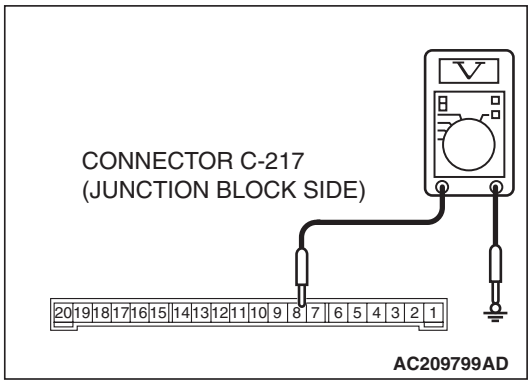
YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the ignition switch (IG1) should be normal.

STEP 2. Check the ignition switch (IG1) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.



(1) Disconnect ETACS-ECU connector C-217 and measure the voltage available at the junction block side of the connector.
(2) Turn the ignition switch to the "ON" position.



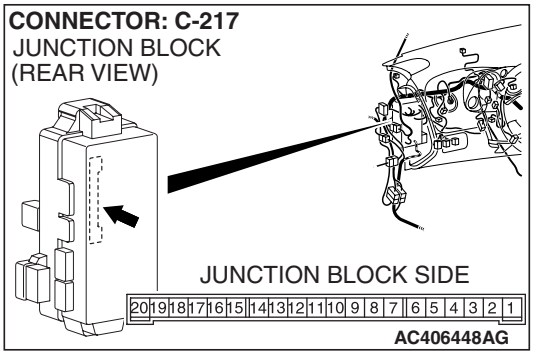
(3) Measure the voltage between terminal 8 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

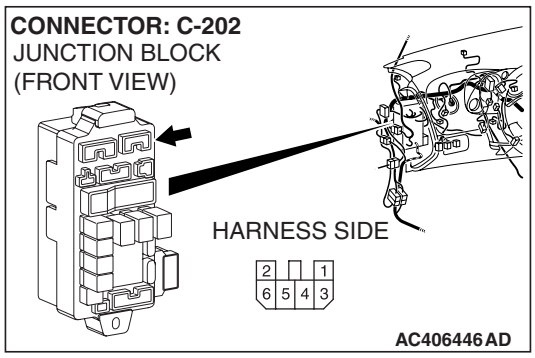
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the ignition switch (IG1) should be normal.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-217 (terminal 8) and the ignition switch (IG1).





NOTE: Also check junction block connector C-202 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

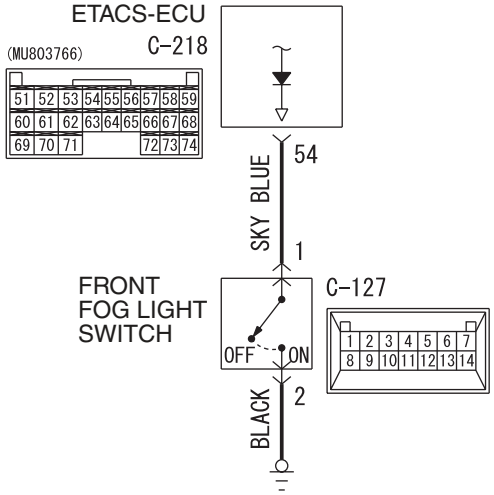
Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 8) and ignition switch (IG1) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the ignition switch (IG1) should be normal.

INSPECTION PROCEDURE M-3: ETACS-ECU does not receive any signal from the front fog light switch.

Front Fog Light Switch Input Circuit



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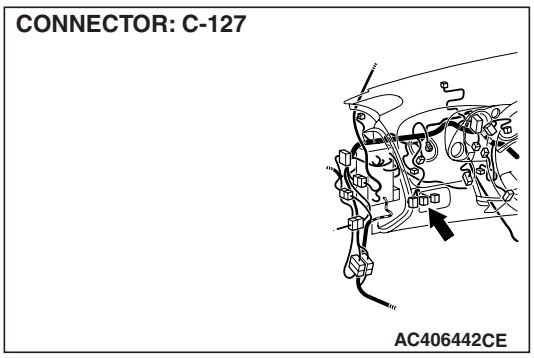

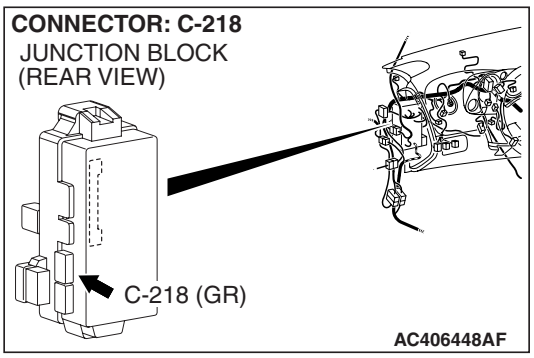

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CIRCUIT OPERATION

The ETACS-ECU operates the front fog lights according to signal from the front fog light switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the front fog lights do not work normally. If the signal is not normal, the front fog light switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

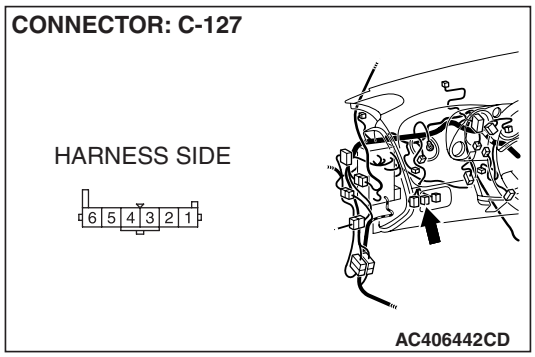
- The front fog light switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check front fog light switch connector C-127 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



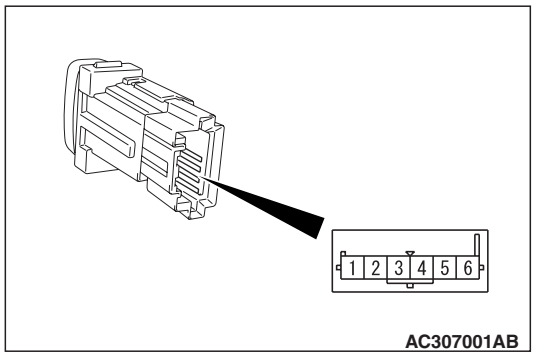
Q: Is front fog light switch connector C-127 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Repair the front fog light switch. If the front fog light switch operates normally, a correct signal is sent from the front fog light switch.

STEP 2. Check the front fog light switch.

Remove the front fog light switch. Refer to GROUP 54A, Front fog light P.54A-148. Then check continuity between the switch terminals.



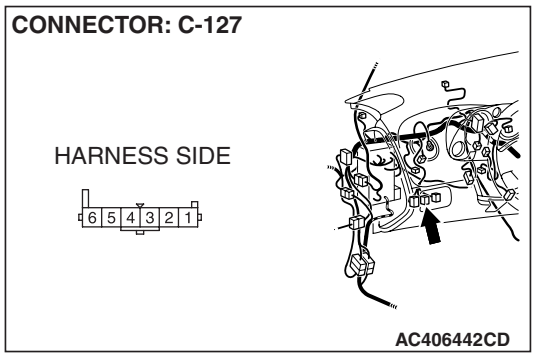
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 –2	Open circuit
Pressed	1 –2	Less than 2 ohms

Q: Is the front fog light switch in good condition?

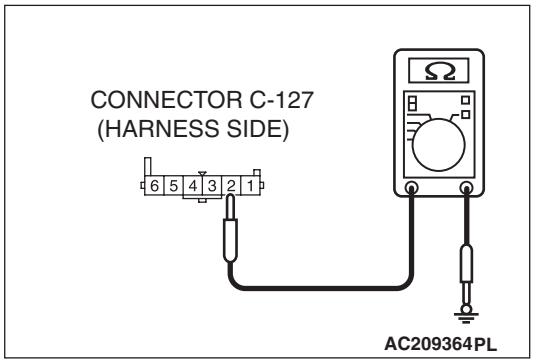
YES : Go to Step 3.

NO : Repair the front fog light switch. If the front fog light switch operates normally, a correct signal is sent from the front fog light switch.

STEP 3. Check the ground circuit to the front fog light switch. Measure the resistance at front fog light switch connector C-127.



(1) Disconnect front fog light switch connector C-127 and measure the resistance available at the wiring harness side of the connector.

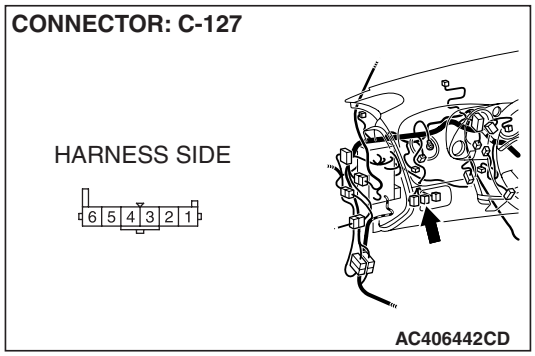


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.
NO : Go to Step 4.

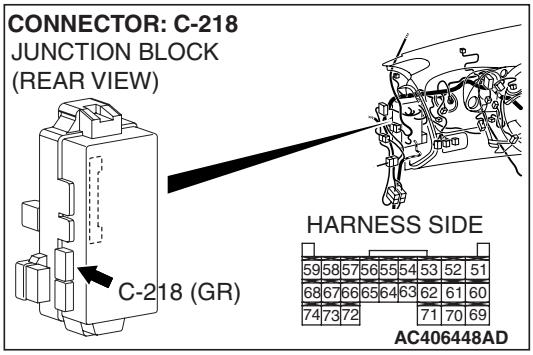
STEP 4. Check the wiring harness between front fog light switch connector C-127 (terminal 2) and ground.



Q: Is the wiring harness between front fog light switch connector C-127 (terminal 2) and ground in good condition?

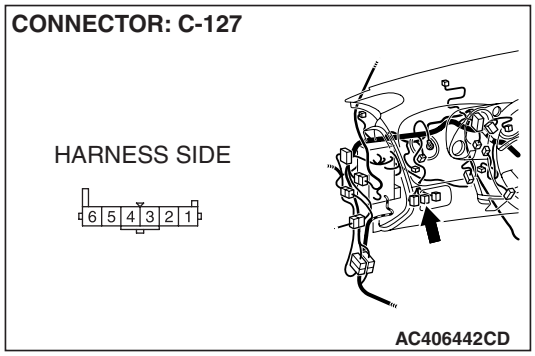
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the front fog light switch operates normally, a correct signal is sent from the front fog light switch.

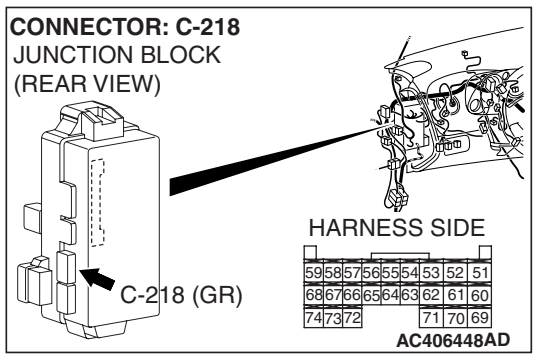
STEP 5. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is ETACS-ECU connector C-218 in good condition?

YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the front fog light switch operates normally, a correct signal is sent from the front fog light switch.





STEP 6. Check the wiring harness between front fog light switch connector C-127 (terminal 1) and ETACS-ECU connector C-218 (terminal 54).

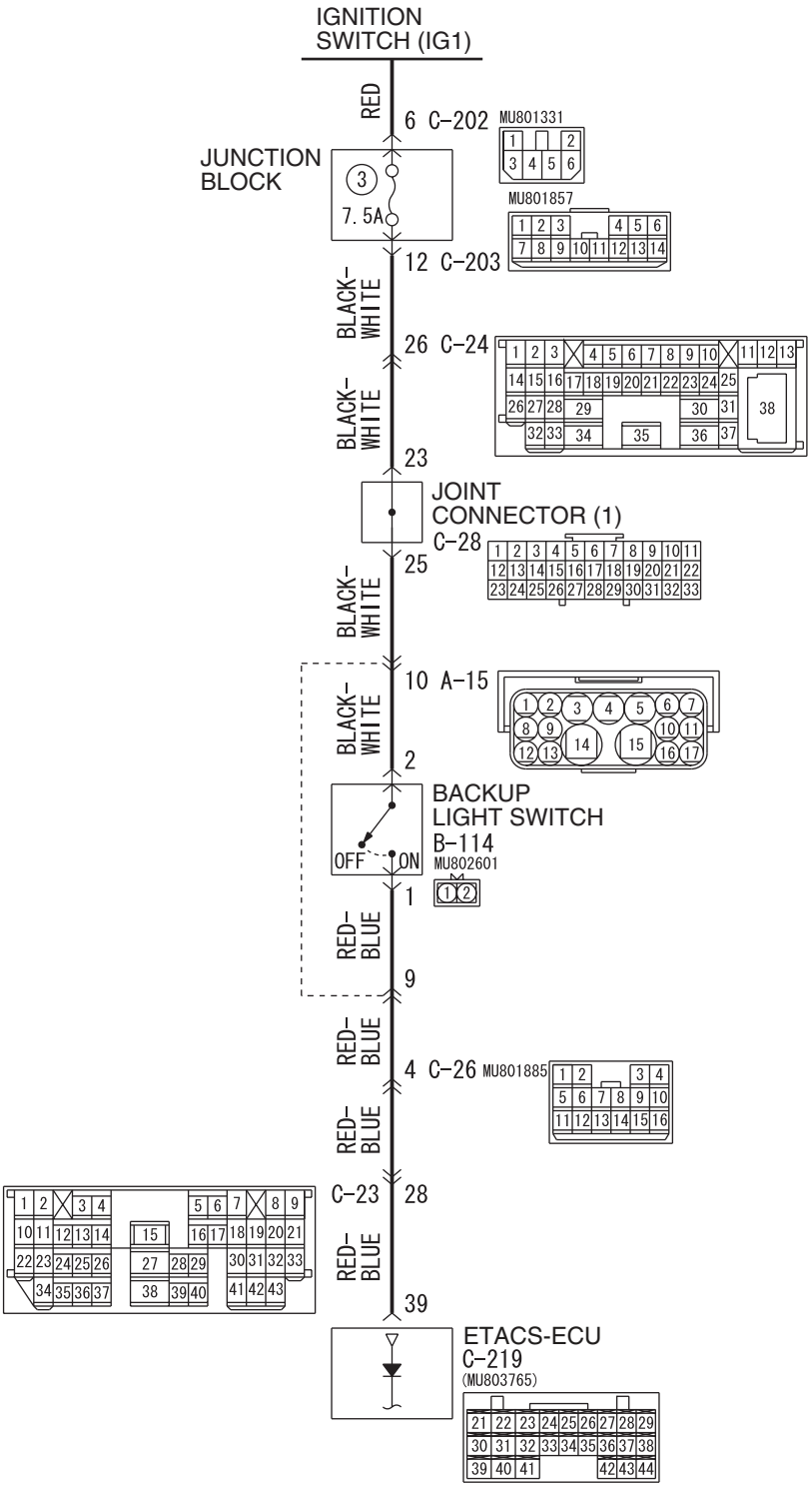
Q: Is the wiring harness between front fog light switch connector C-127 (terminal 1) and ETACS-ECU connector C-218 (terminal 54) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the front fog light switch operates normally, a correct signal is sent from the front fog light switch.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the front fog light switch operates normally, a correct signal is sent from the front fog light switch.

INSPECTION PROCEDURE M-4: ETACS-ECU does not receive "R" position signal from the backup light switch <M/T>.

Buckup Light Switch Input Circuit



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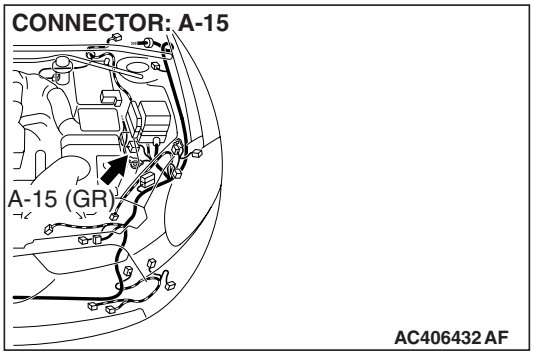
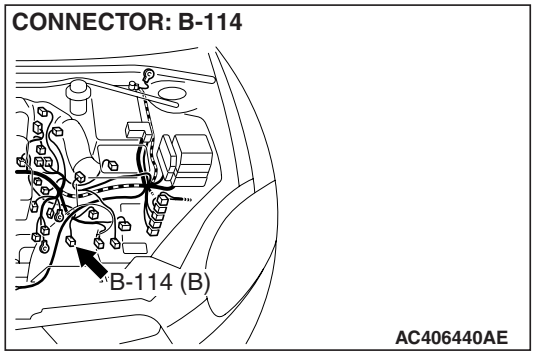
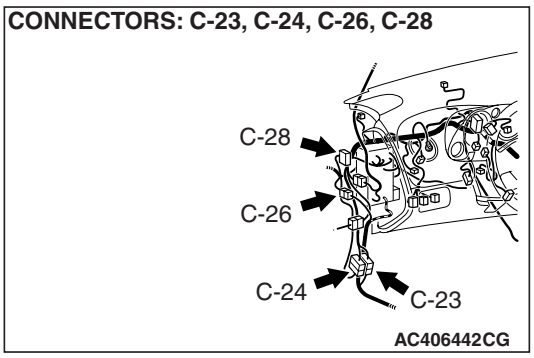
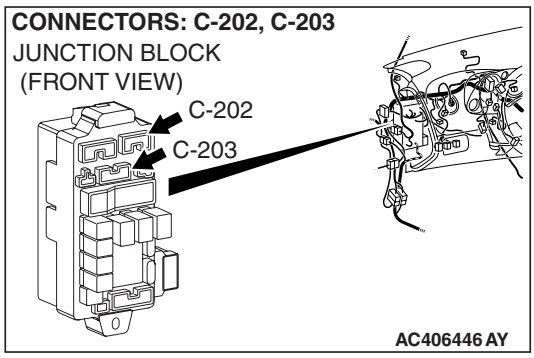
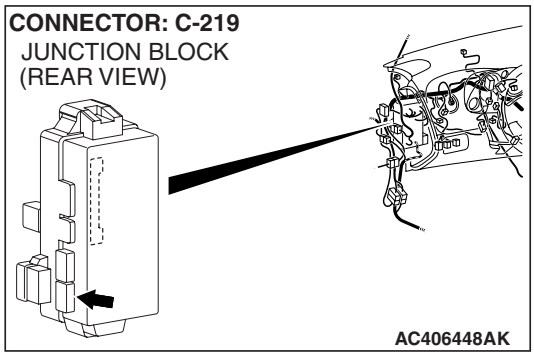










CIRCUIT OPERATION

The ETACS-ECU operates the rear wiper according to signal from the backup light switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the rear wiper does not operate consecutively twice when the shift lever is moved to the "R" position with the rear wiper on. If the signal is not normal, the backup light switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The backup light switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

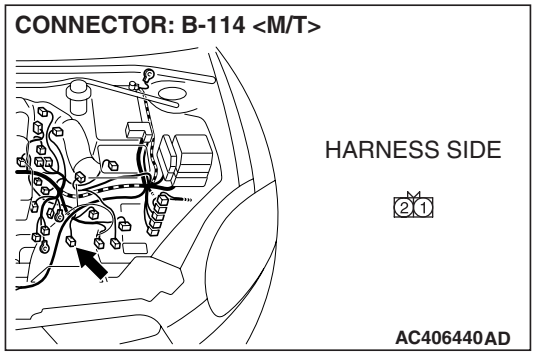
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check backup light switch connector B-114 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the backup light switch connector B-114 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.



STEP 2. Check the backup light switch.

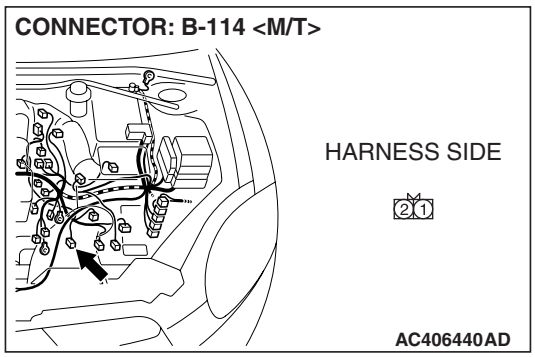
Disconnect backup light switch connector B-114. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Other than "R"	1 –2	Open circuit
R	1 –2	Less than 2 ohm

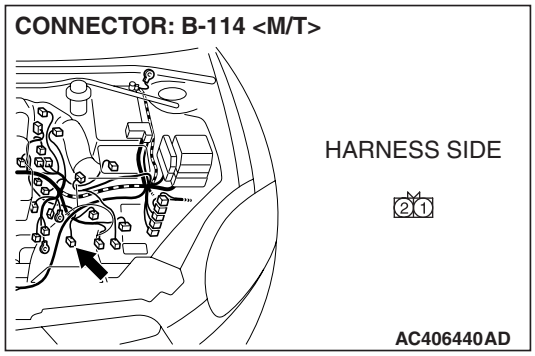
Q: Is the backup light switch in good condition?

YES : Go to Step 3.

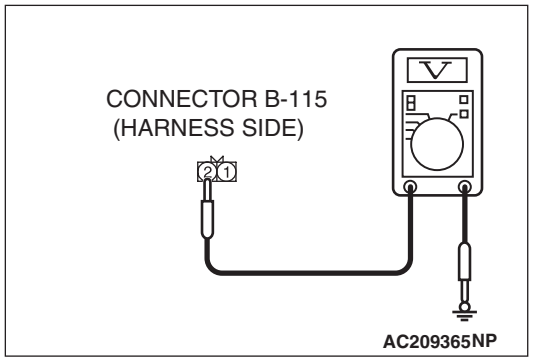
NO : Replace the backup light switch. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.



STEP 3. Check the ignition switch (IG1) circuit to the backup light switch. Measure the voltage at backup light switch connector B-114.



(1) Disconnect backup light switch connector B-114 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to the "ON" position.

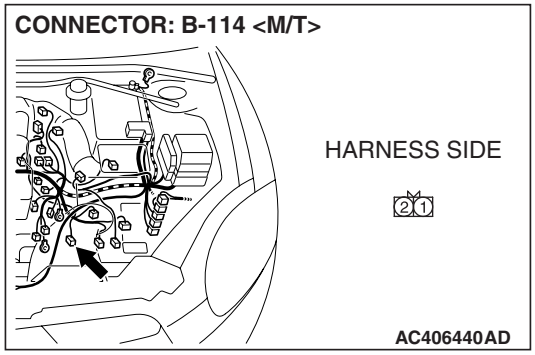


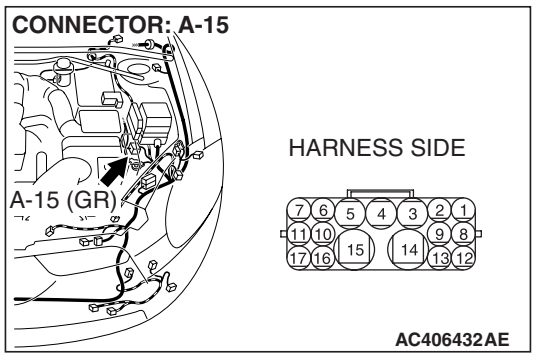
(3) Measure the voltage between terminal 2 and ground.
- The voltage should equal approximately 12 volts (battery positive voltage).

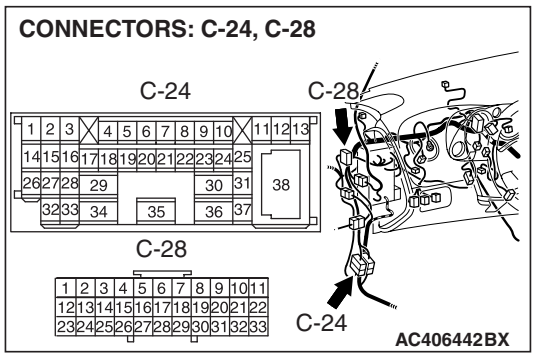
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

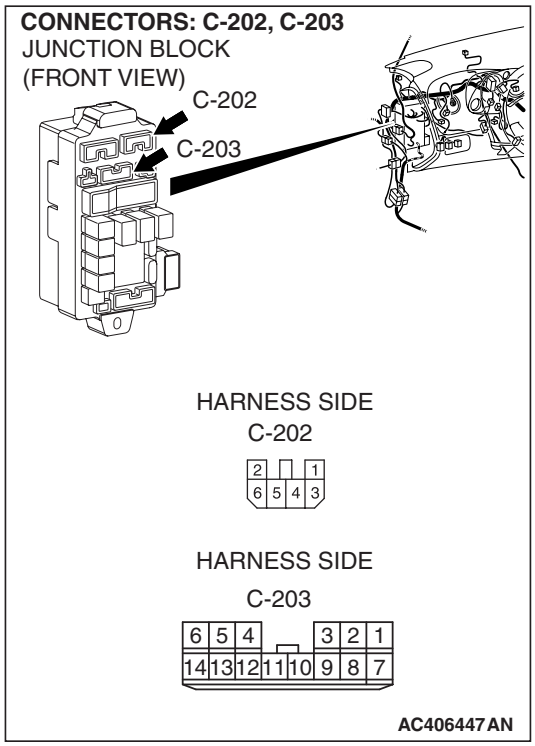
YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Check the wiring harness between backup light switch connector B-114 (terminal 2) and the ignition switch (IG1).







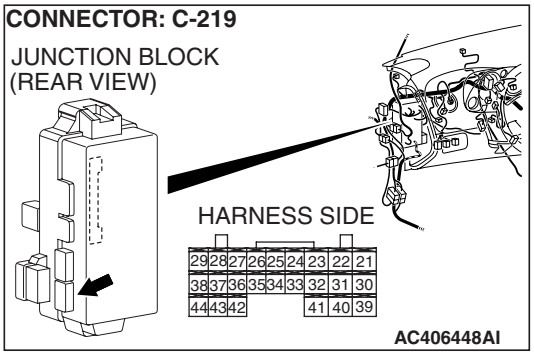


NOTE: Also check junction block connectors C-202, C-203, joint connector C-28, intermediate connectors A-15 and C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors C-202, C-203, joint connector C-28, intermediate connectors A-15 or C-24 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between backup light switch connector B-114 (terminal 2) and the ignition switch (IG1) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.



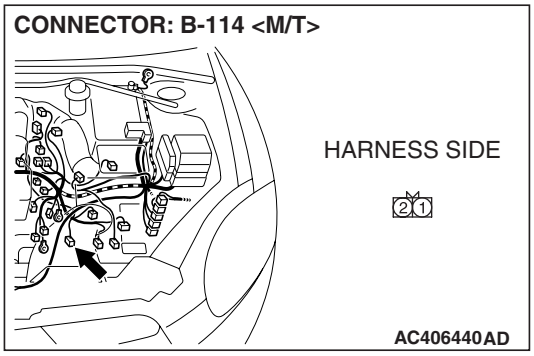
STEP 5. Check ETACS-ECU connector C-219 for damage.

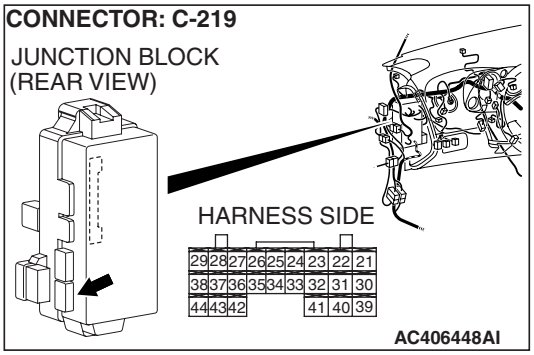
Q: Is ETACS-ECU connector C-219 in good condition?

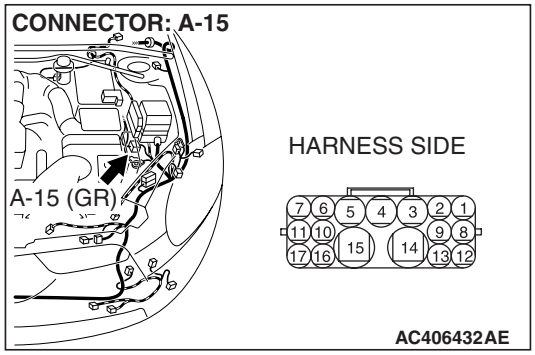
YES : Go to Step 6.

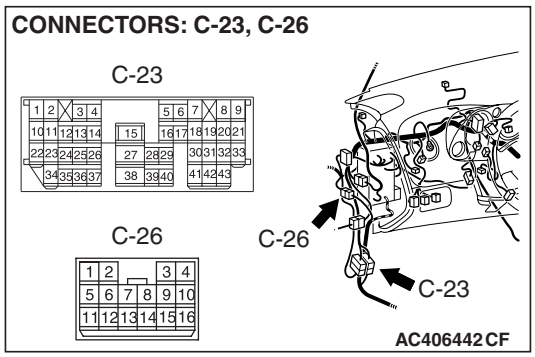
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.

STEP 6. Check the wiring harness between backup light switch connector B-114 (terminal 1) and ETACS-ECU connector C-219 (terminal 39).









NOTE: Also check intermediate connectors A-15, C-23 and C-26. If intermediate connectors A-15, C-23 or C-26 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

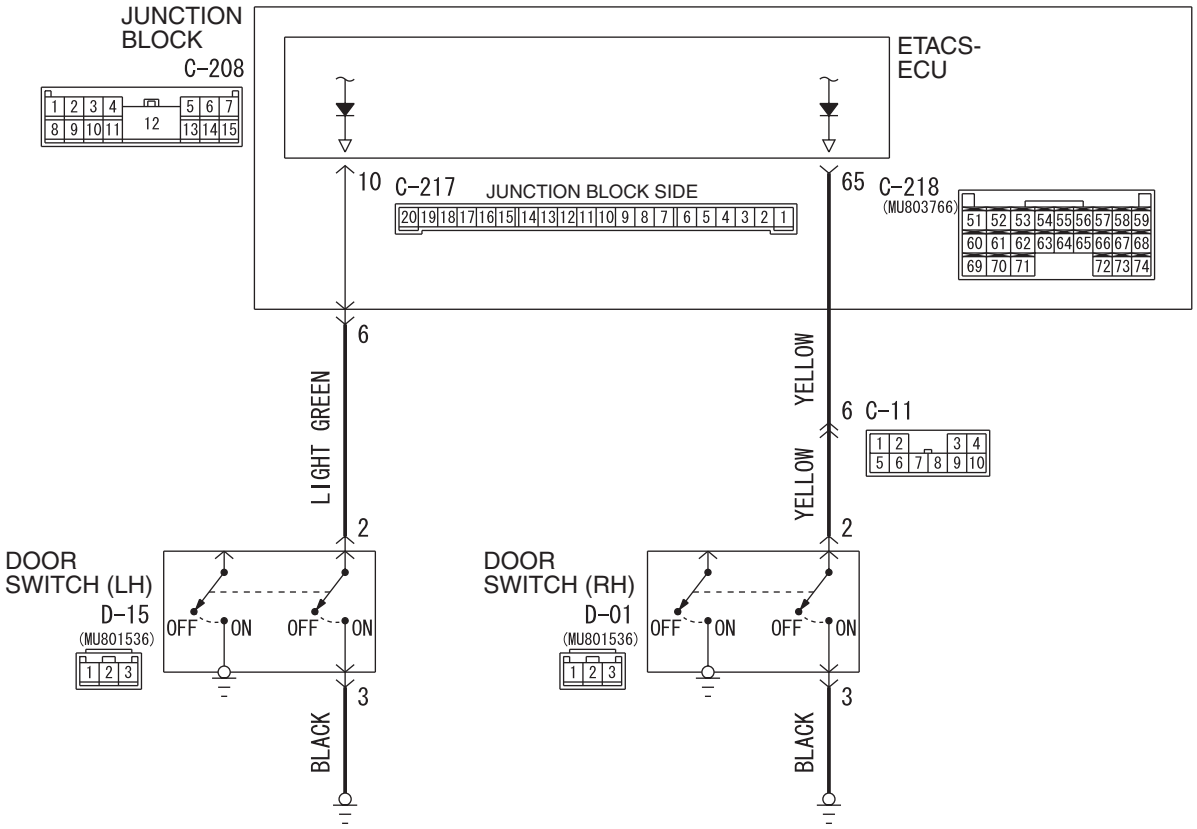
Q: Is the wiring harness between backup light switch connector B-114 (terminal 1) and ETACS-ECU connector C-219 (terminal 39) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the rear wiper operates normally, it indicates that a correct "R" position signal is sent from the backup light switch.

INSPECTION PROCEDURE M-5: ETACS-ECU does not receive any signal from the door switches.

Door Switches Input circuit



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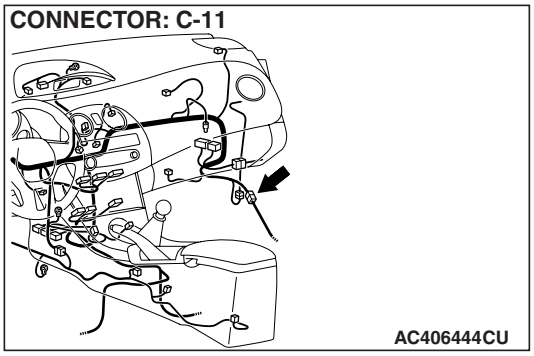

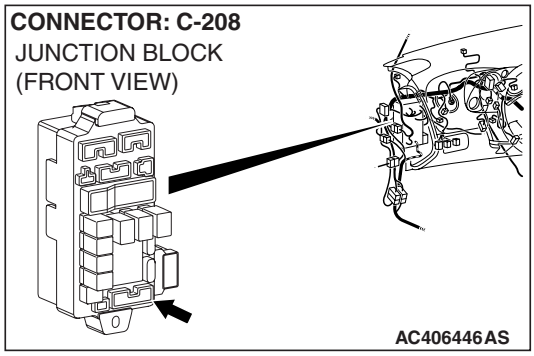

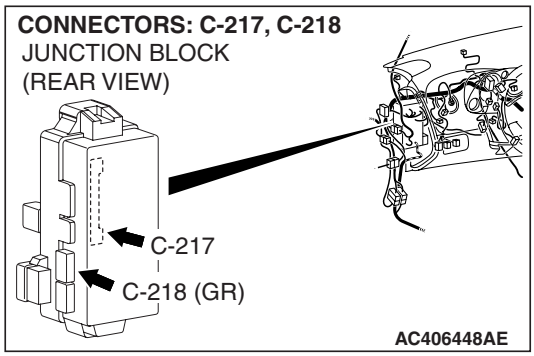

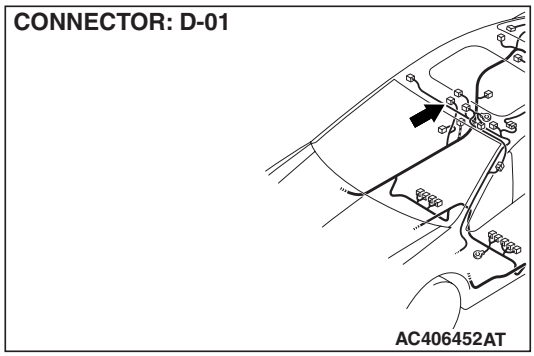

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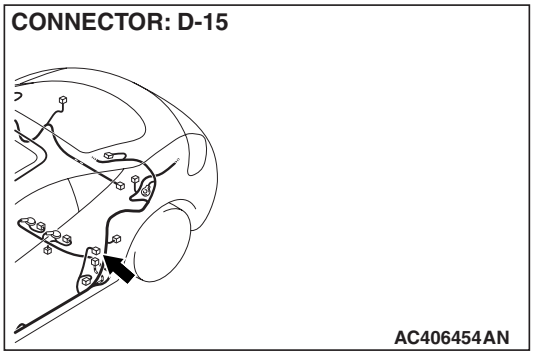


CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the door switches:

- Ignition key reminder tone alarm function <door switch (LH)>
- Light reminder tone alarm function <door switch (LH)>
- Door ajar warning buzzer
- Forgotten key reminder
- Power window timer function
- Sunroof timer function <door switch (LH)>
- Keyless entry system
- Timed locking mechanism
- Headlight automatic shutdown function <door switch (LH)>
- Dome light
- Interior light automatic-shutdown function
- Ignition key cylinder illumination light <door switch (LH)>
- Door-ajar indicator light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems described in "CIRCUIT OPERATION" do not work normally. If the signal is not normal, the door switches or the ETACS-ECU may be defective.

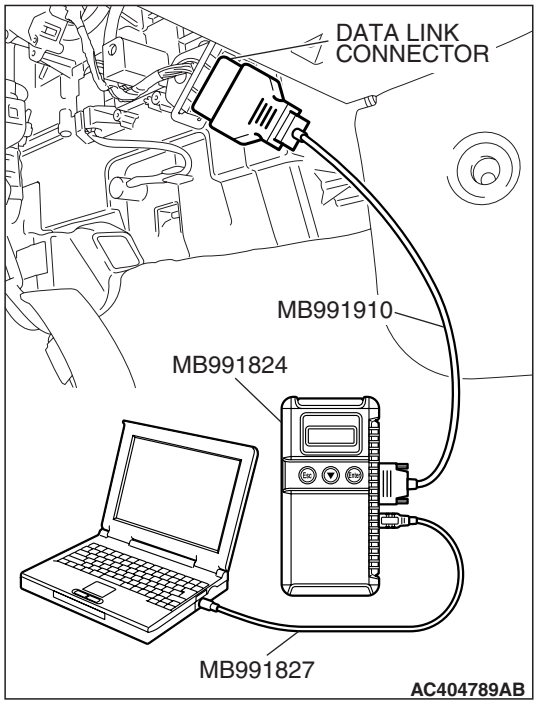
TROUBLESHOOTING HINTS

- The door switches may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A



STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the door switches.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect the scan tool MB991958.Refer to "How to connect SWS monitor P.54B-14."

(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

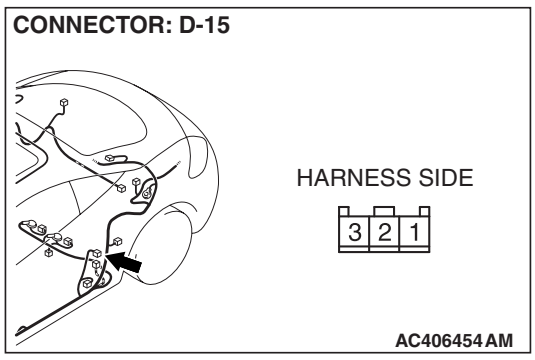
(3) Check that scan tool MB991958 sounds.

Q: Does scan tool MB991958 sound when each door is opened and closed?

When the door (LH) is opened and closed, scan tool MB991958 does not sound. : Go to Step 2.

When the door (RH) is opened and closed, scan tool MB991958 does not sound. : Go to Step 7.

When either door is opened and closed, scan tool MB991958 sounds. : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switches should be normal.

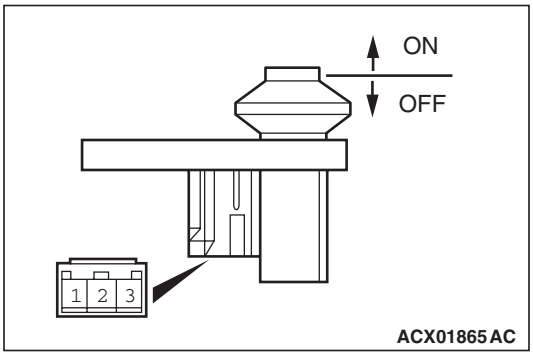


STEP 2. Check door switch (LH) connector D-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door switch (LH) connector D-15 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (LH) should be normal.



STEP 3. Check the door switch (LH).

Remove the door switch (LH). Refer to GROUP 42, Door, Door Assembly P.42-68. Then check continuity between the switch terminals and the body ground.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	2 –body ground	Less than 2 ohms
Pressed (OFF)	2 –body ground	Open circuit

Q: Is the door switch (LH) in good condition?

YES : Go to Step 4.

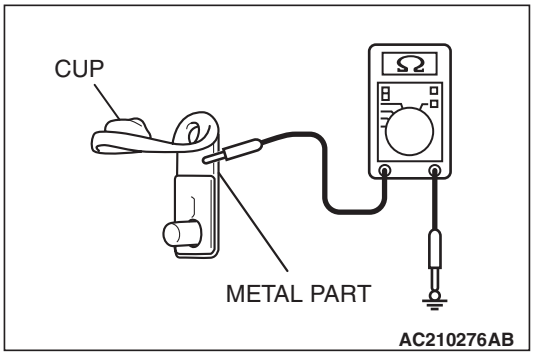
NO : Replace the door switch (LH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (LH) should be normal.

STEP 4. Measure resistance at the lower metal part of the door switch (LH) in order to check the ground circuit to the door switch (LH).

NOTE: Check that the door switch (LH) is grounded to the vehicle body via its mounting screw.

Remove the cap, and measure the resistance value between the lower metal part and ground.

- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

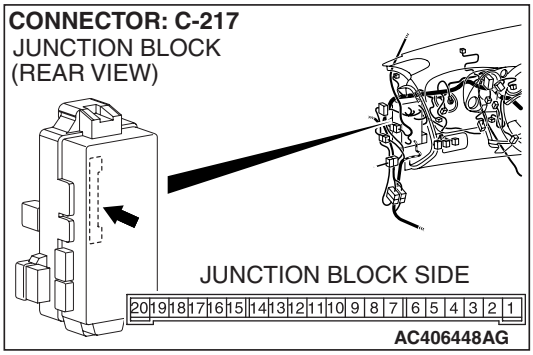
NO : Check the installation of the switch, and repair if necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (LH) should be normal.

STEP 5. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

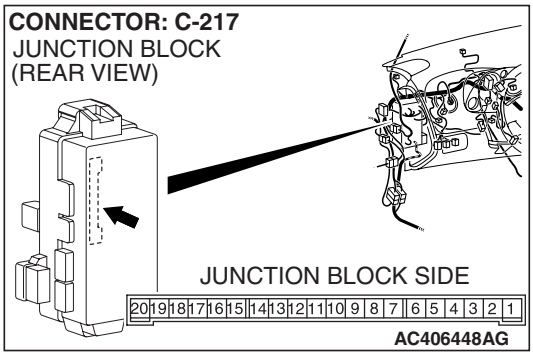
Q: Is ETACS-ECU connector C-217 in good condition?

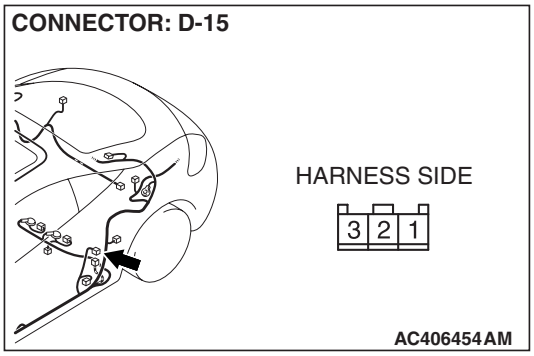
YES : Go to Step 6.

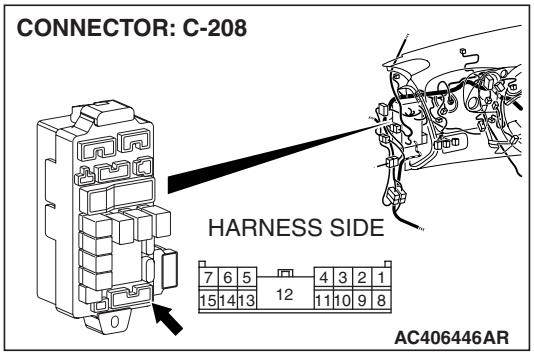
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (LH) should be normal.



STEP 6. Check the wiring harness between door switch (LH) connector D-15 (terminal 2) and ETACS-ECU connector C-217 (terminal 10).





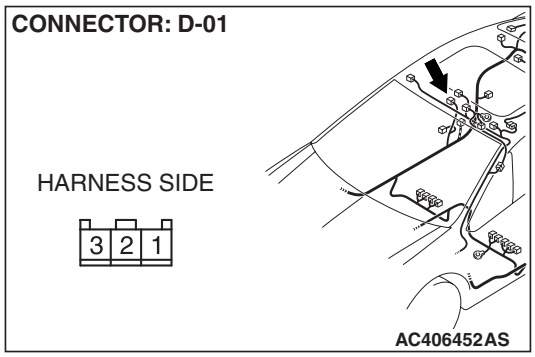


NOTE: Also check junction block connector C-208 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-208 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door switch (LH) connector D-15 (terminal 2) and ETACS-ECU connector C-217 (terminal 10) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (LH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (LH) should be normal.

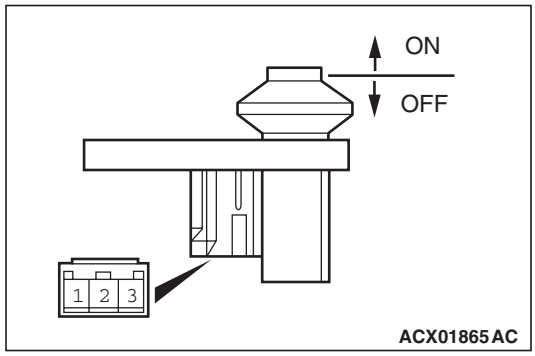


STEP 7. Check door switch (RH) connector D-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door switch (RH) connector D-01 in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (RH) should be normal.



STEP 8. Check the door switch (RH).

Remove the door switch (RH). Refer to GROUP 42, Door, Door Assembly P.42-68. Then check continuity between the switch terminals and the body ground.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	2 –body ground	Less than 2 ohms
Pressed (OFF)	2 –body ground	Open circuit

Q: Is the door switch (RH) in good condition?

YES : Go to Step 9.

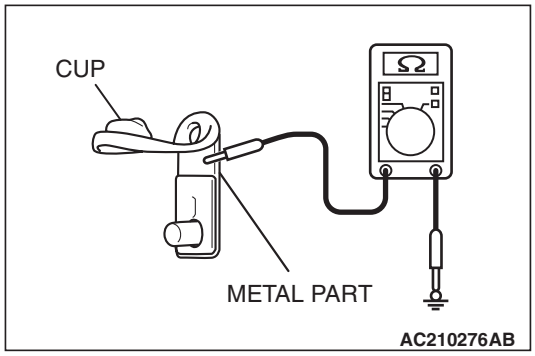
NO : Replace the door switch (RH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (RH) should be normal.

STEP 9. Measure resistance at the lower metal part of the door switch (RH) in order to check the ground circuit to the door switch (RH).

NOTE: Check that the door switch (RH) is grounded to the vehicle body via its mounting screw.

Remove the cap, and measure the resistance value between the lower metal part and ground.

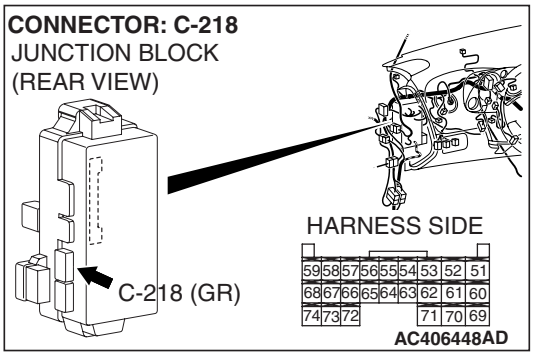
- The resistance should be 2 ohms or less.



Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 10.

NO : Check the installation of the switch, and repair if necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (RH) should be normal.

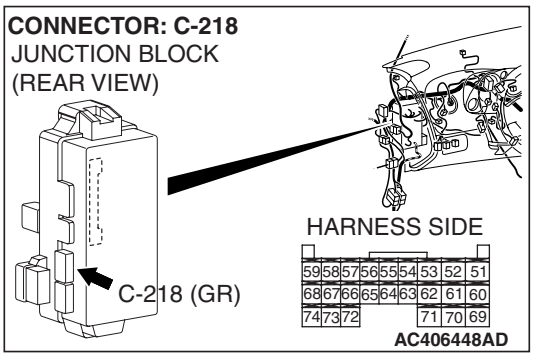


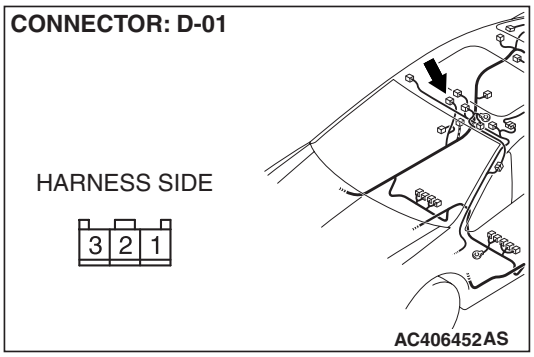
STEP 10. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-218 in good condition?

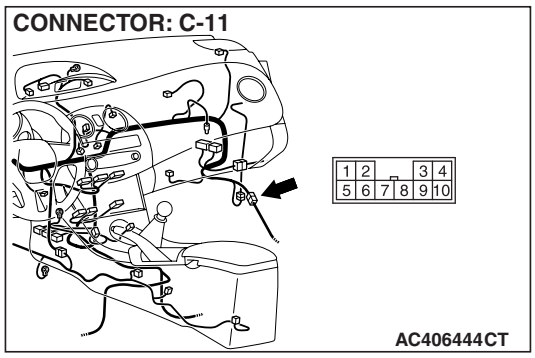
YES : Go to Step 11.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (RH) should be normal.





STEP 11. Check the wiring harness between door switch (RH) connector D-01 (terminal 2) and ETACS-ECU connector C-218 (terminal 65).



NOTE: Also check intermediate connector C-11 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-11 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door switch (RH) connector D-01 (terminal 2) and ETACS-ECU connector C-218 (terminal 65) in good condition?

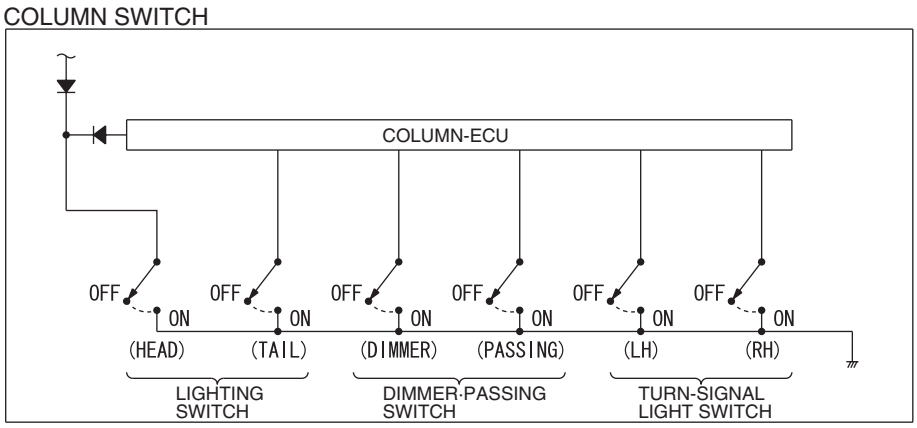
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (RH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door switch (RH) should be normal.

INSPECTION PROCEDURE M-6: Column Switch: ETACS-ECU does not receive any signal from the taillight switch, the headlight switch, the passing light switch, the dimmer switch or the turn-signal light switch.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Turn-signal Light and Lighting Switch Input Circuit



W6P54M102A

TSB Revision

CIRCUIT OPERATION

The ETACS-ECU operates the following equipment or functions according to signal from the column switch (turn-signal light and lighting switch):

- Light reminder tone alarm function
- Headlight
- Turn-signal light
- High-beam indicator
- Turn-signal indicators

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment or functions described in "CIRCUIT OPERATION" do not work normally. If the signal is not normal, the column switch (turn-signal light and lighting switch) or the ETACS-ECU may be defective.

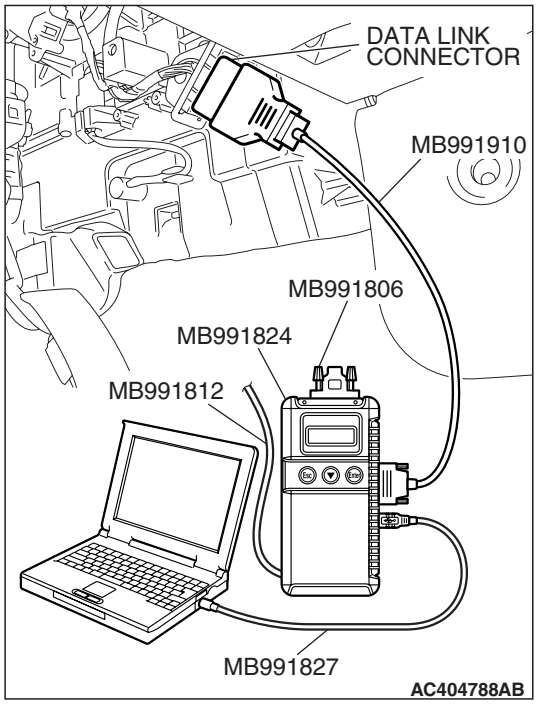
TROUBLESHOOTING HINTS

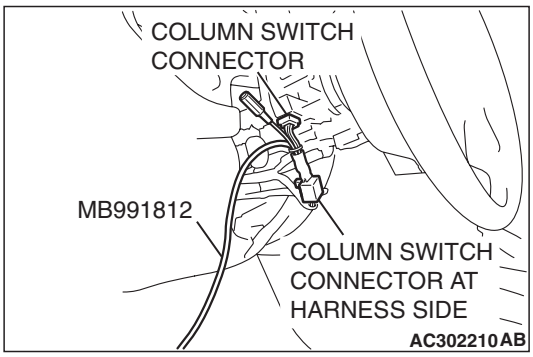
- The column switch (turn-signal light and lighting switch) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness





STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the 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 special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate the scan tool according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool (MUT-III) should show "OK" on the "ECU COMM Check" menu for the "COLUMN ECU" menu.

Q: Is "OK" displayed for the "COLUMN ECU" menu?

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."

STEP 2. Replace the column switch.

(1) Replace the column switch.

(2) The input signal from the column switch (turn-signal light and lighting switch) should be able to be checked and the functions described in the "CIRCUIT OPERATION" should work normally.

Q: Is the input signal from the column switch (turn-signal light and lighting switch) input normally?

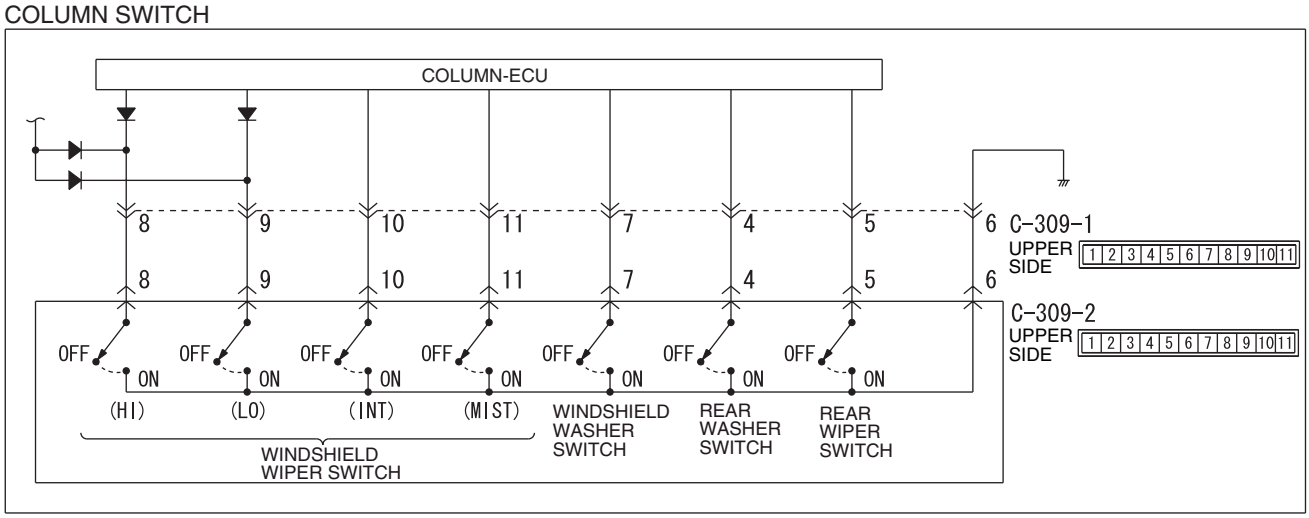
YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. The input signal from the column switch (turn-signal light and lighting switch) should be able to be checked and the functions described in the "CIRCUIT OPERATION" should work normally.

INSPECTION PROCEDURE M-7: Column switch: ETACS-ECU does not receive any signal from the windshield mist wiper switch, the windshield intermittent wiper switch, the windshield low-speed wiper switch, the windshield high-speed wiper switch, the rear wiper switch, the windshield washer switch or the rear washer switch.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-16."

Wiper and Washer Switch Input Circuit



W6P54M103A

CIRCUIT OPERATION

The ETACS-ECU operates the windshield wiper/washer and rear wiper/washer according to signal from the wiper and washer switch.

TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the windshield wiper/washer and rear wiper/washer do not work normally.

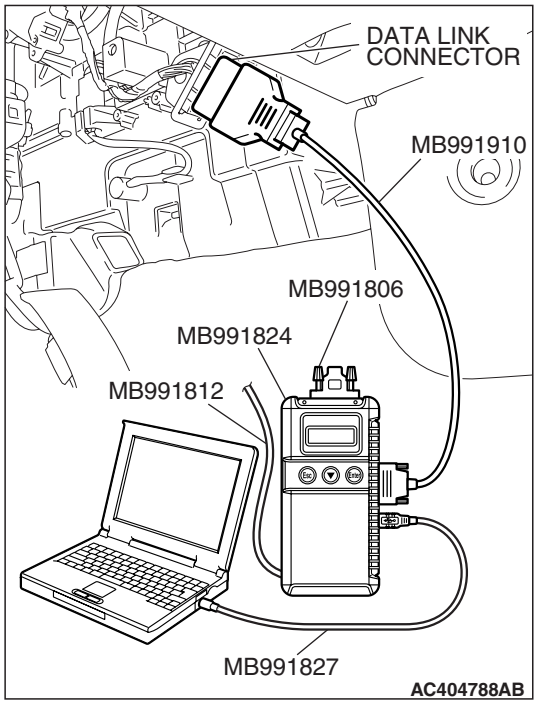
TROUBLESHOOTING HINTS

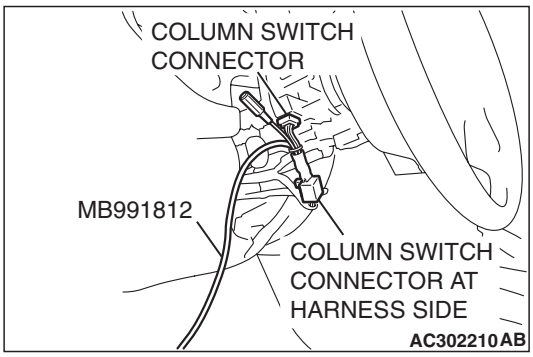
- The column switch may be defective (wiper and washer switch)
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness





STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the column-ECU.

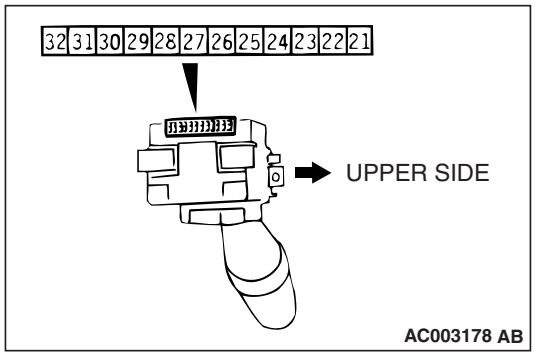
⚠ CAUTION

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 special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-14."
(2) Turn the ignition switch to the "ON" position.
(3) Operate the scan tool according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) Scan tool (MUT-III) should show "OK" on the "ECU COMM Check" menu for the "COLUMN ECU" menu.

Q: Is "OK" displayed for the "COLUMN ECU" menu?

YES : Go to Step 2.
NO : Refer to Inspection Procedure A-2 "Communication with the column switch (column-ECU) is not possible P.54B-70."



STEP 2. Check the wiper and washer switch.

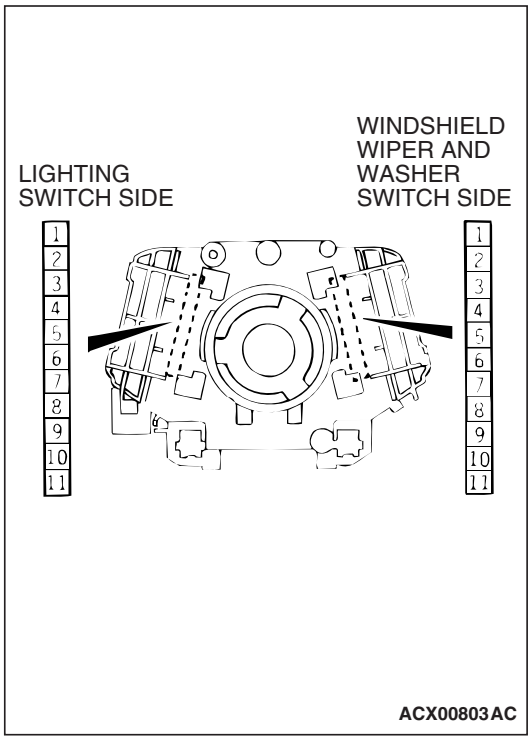
Remove the wiper and washer switch. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	4 –6, 5 –6, 6 –7, 6 –8, 6 –9, 6 –10, 6 –11	Open circuit
Windshield mist wiper switch	6 –11	Less than 2 ohms
Windshield intermittent wiper switch	6 –10	Less than 2 ohms
Windshield low-speed wiper switch	6 –9	Less than 2 ohms
Windshield high-speed wiper switch	6 –8	Less than 2 ohms
Windshield washer switch	6 –7	Less than 2 ohms
Rear wiper switch	4 –6	Less than 2 ohms
Rear washer switch	5 –6	Less than 2 ohms

Q: Are the wiper and washer switch in good condition?

YES : Go to Step 3.

NO : Replace the wiper and washer switch. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the column switch (wiper and washer switch) should be normal.



STEP 3. Check the switch body.

Remove the turn-signal light and lighting switch and windshield wiper and washer switch. Then check continuity between the switch body terminals.

SWITCH BODY	TESTER CONNECTION	SPECIFIED CONDITION
Lighting switch side – Windshield wiper and washer switch side	4 –4, 5 –5, 6 –6, 6 –6, 7 –7, 8 –8, 9 – 9, 10 –10, 11 –11	Less than 2 ohms

Q: Is the switch body in good condition?

YES : Go to Step 4.

NO : Replace the column switch. If the equipment, which are described in "CIRCUIT OPERATION", work normally, the input signal from the column switch (wiper and washer switch) should be normal.

STEP 4. Replace the column switch.

(1) Replace the column switch.

(2) If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the column switch (wiper and washer switch) should be normal.

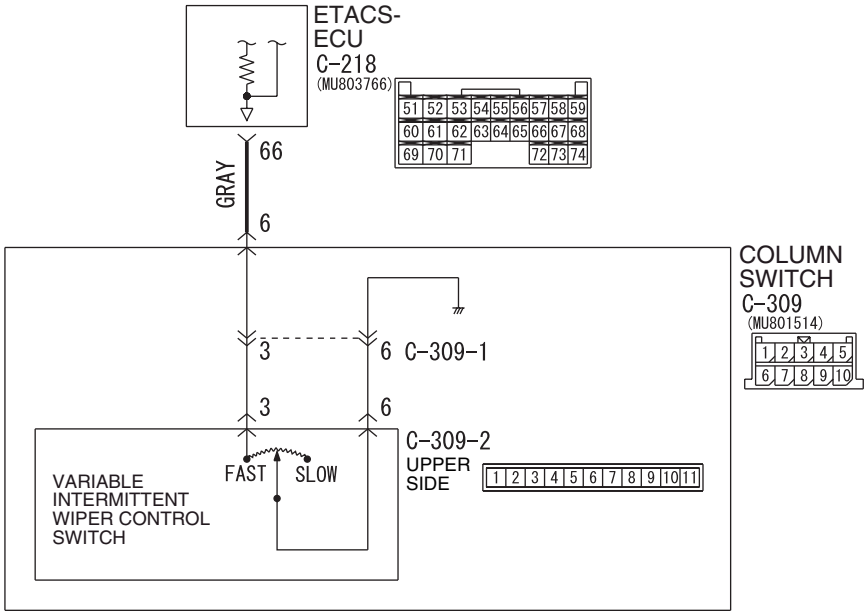
Q: Does the column switch (windshield wiper and washer switch) send a normal signal to the ECU?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the column switch (wiper and washer switch) should be normal.

INSPECTION PROCEDURE M-8: Column Switch: ETACS-ECU does not receive any signal from the variable intermittent wiper control switch.

Variable Intermittent Wiper Control Switch Input Circuit



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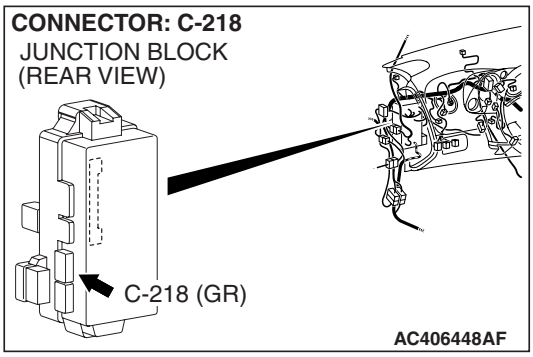
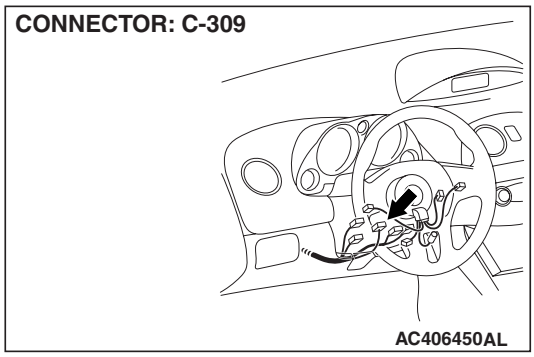




CIRCUIT OPERATION

The ETACS-ECU calculates the windshield intermittent wiper interval according to the position of the variable intermittent wiper control switch, which is incorporated in column switch (windshield wiper and washer switch).

TECHNICAL DESCRIPTION (COMMENT)

If the windshield intermittent wiper interval cannot be adjusted, the column switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

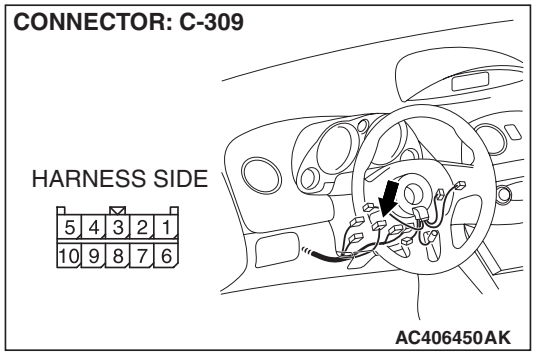
- The column switch may be defective (windshield wiper and washer switch)
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check column switch connector C-309 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

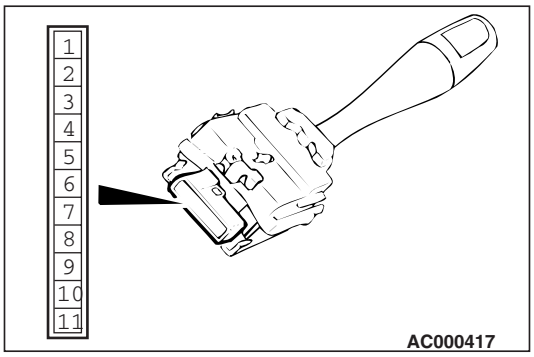


Q: Is column switch connector C-309 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the wiper interval can be adjusted normally, the variable intermittent wiper control switch should send a signal to the ECU.

STEP 2. Check the variable intermittent wiper control switch.



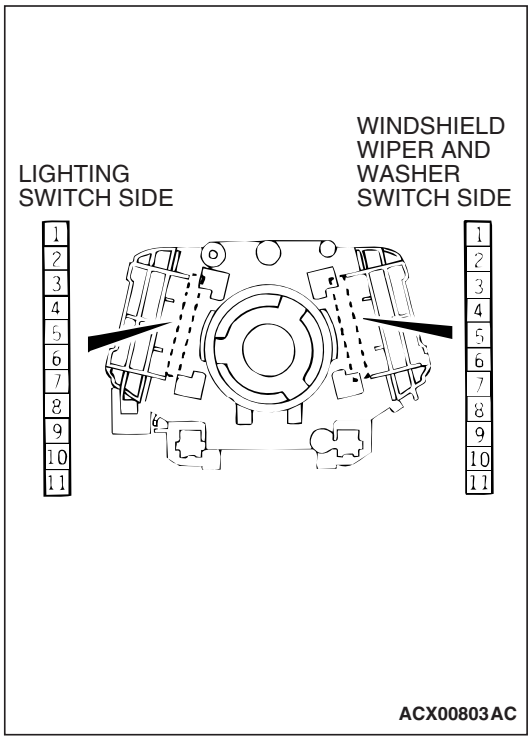
(1) Remove the windshield wiper and washer switch, and check at the switch side.

(2) Measure the resistance value between terminals 3 and 6. The measured resistance should change smoothly from approximately 0 ohm ("FAST" position) to 1 kΩ ("SLOW" position).

Q: Is the variable intermittent wiper control switch in good condition?

YES : Go to Step 3.

NO : Replace the column switch (windshield wiper and washer switch). If the wiper interval can be adjusted normally, that the variable intermittent wiper control switch should send a signal to the ECU.



STEP 3. Check the column switch body.

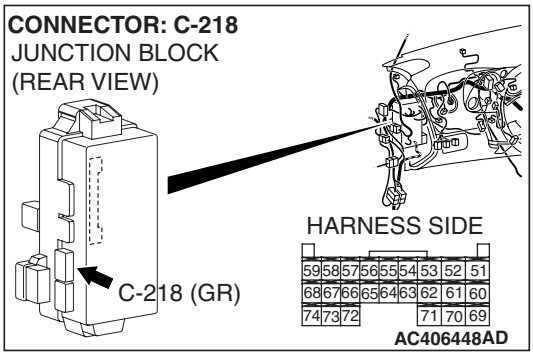
Remove the turn-signal light and lighting switch and windshield wiper and washer switch. Then check continuity between the switch body terminals.

SWITCH BODY	TESTER CONNECTION	SPECIFIED CONDITION
Lighting switch side – Windshield wiper and washer switch side	3 –3, 6 –6	Less than 2 ohms

Q: Is the column switch body in good condition?

YES : Go to Step 4.

NO : Replace the column switch body. If the wiper interval can be adjusted normally, it indicates that the variable intermittent wiper control switch should send a signal to the ECU.

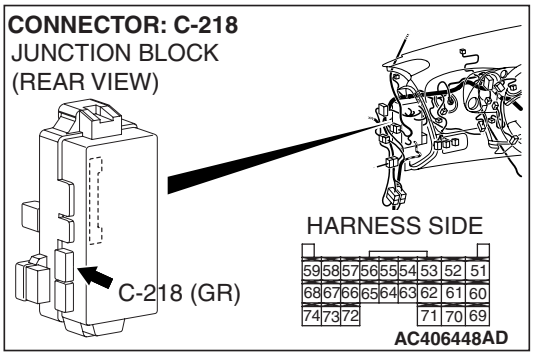


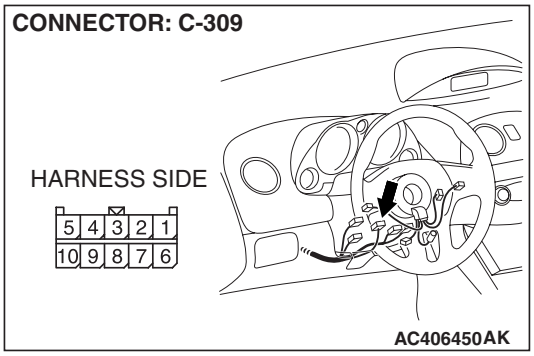
STEP 4. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-218 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. If the wiper interval can be adjusted normally, that the variable intermittent wiper control switch should send a signal to the ECU.





STEP 5. Check the wiring harness between column switch connector C-309 (terminal 6) and ETACS-ECU connector C-218 (terminal 66).

Q: Is the wiring harness between column switch connector C-309 (terminal 6) and ETACS-ECU connector C-218 (terminal 66) in good condition?

YES : Go to Step 6.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the wiper interval can be adjusted normally, the variable intermittent wiper control switch should send a signal to the ECU.

STEP 6. Replace the column switch.

(1) Replace the column switch.
(2) If the wiper interval can be adjusted normally, the variable intermittent wiper control switch should send a signal to the ECU.

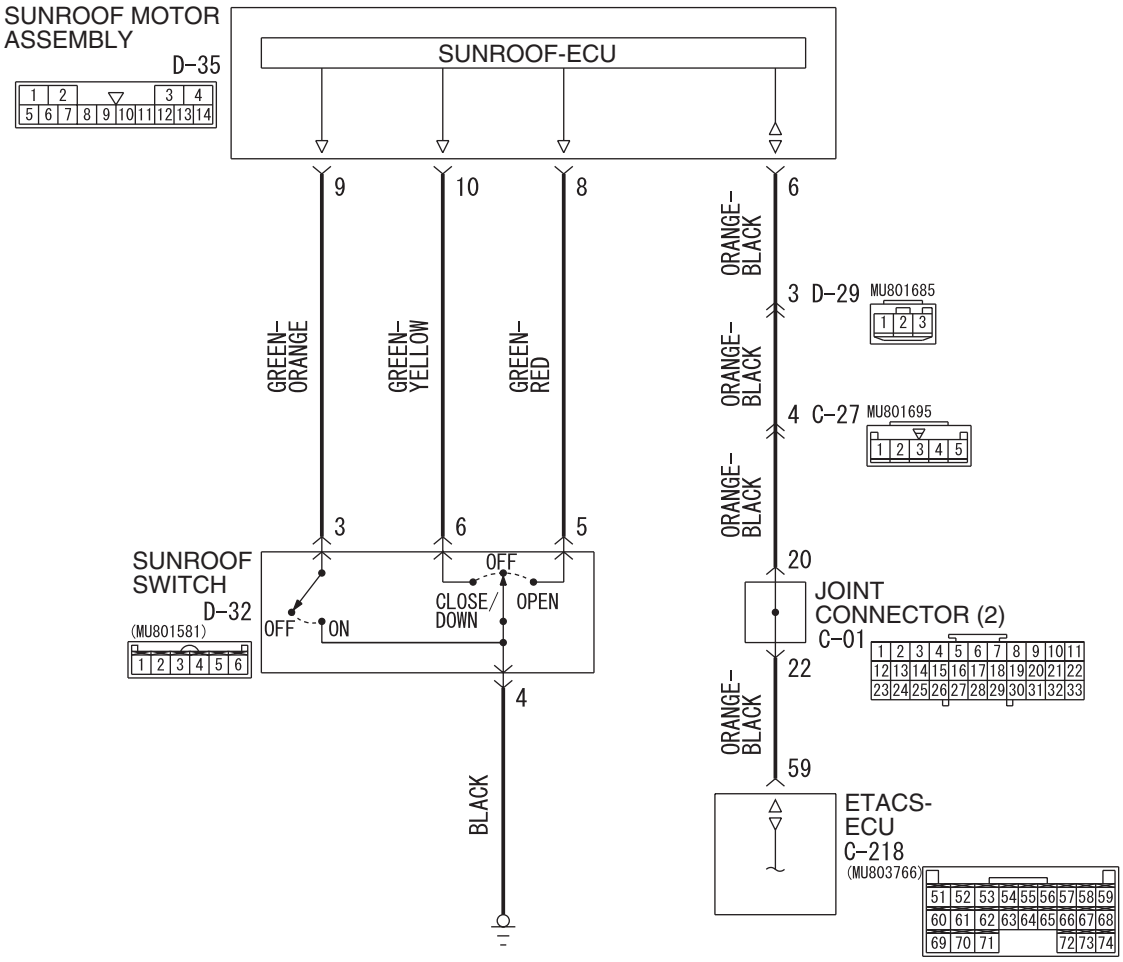
Q: Can input signal be confirmed when the variable intermittent wiper control switch is operated?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the wiper interval can be adjusted normally, the variable intermittent wiper control switch should send a signal to the ECU.

INSPECTION PROCEDURE M-9: Sunroof Switch: ETACS-ECU does not receive any signal from the up, open or close/down switch.

Sunroof Switch Input Circuit



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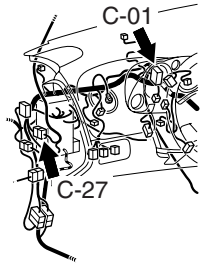
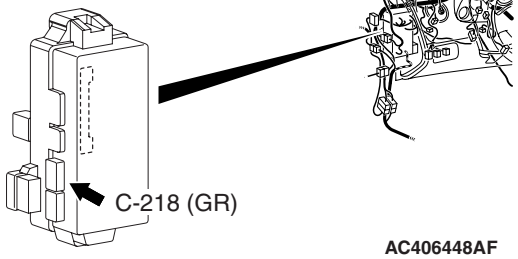
CONNECTORS: C-01, C-27



AC406442BQ

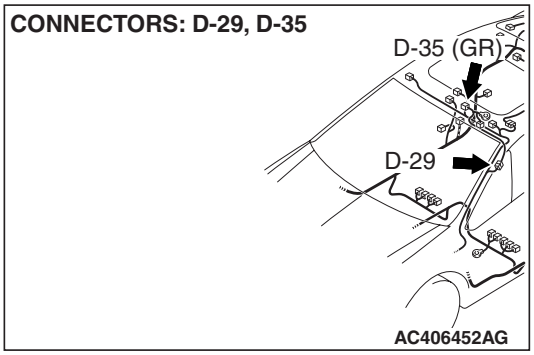
CONNECTOR: C-218

JUNCTION BLOCK (REAR VIEW)



AC406448AF

TSB Revision



CIRCUIT OPERATION

The ETACS-ECU receives a signal through the sunroof motor assembly via the SWS communication line from the sunroof switch, and sends a signal to the data link connector.

TECHNICAL DESCRIPTION (COMMENT)

If the SWS communication line between the sunroof motor assembly and the ETACS-ECU is defective, the ETACS-ECU cannot identify the input signal from the sunroof switch even if the sunroof is normal.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The sunroof motor assembly may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the sunroof operation.

Q: Does the sunroof work normally?

YES : Go to Step 2.

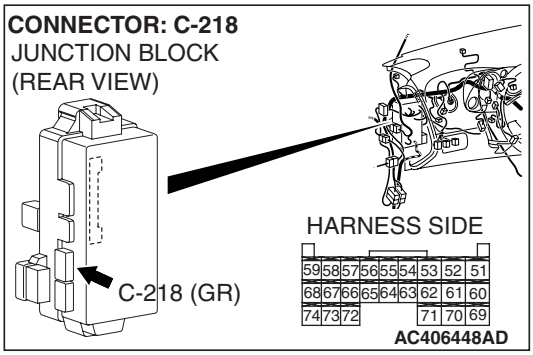
NO : Refer to Inspection Procedure F-1 "Sunroof does not operate P.54B-215."

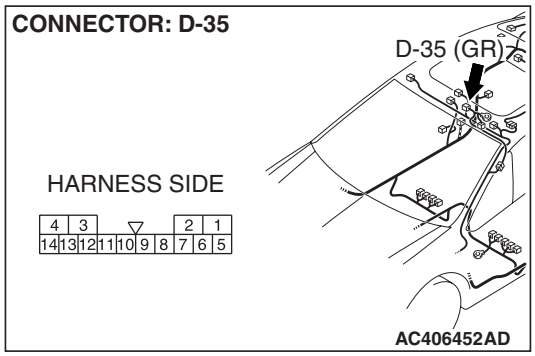
STEP 2. Check sunroof motor assembly connector D-35 and ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are sunroof motor assembly connector D-35 and ETACS-ECU connector C-218 in good condition?

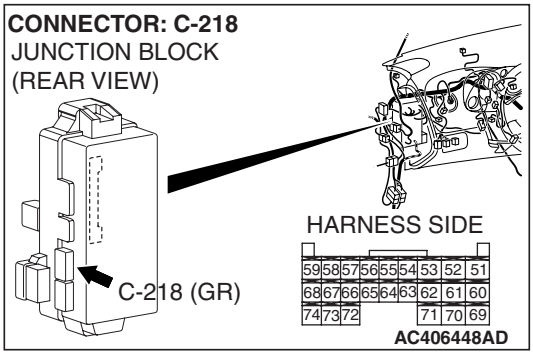
YES : Go to Step 3.

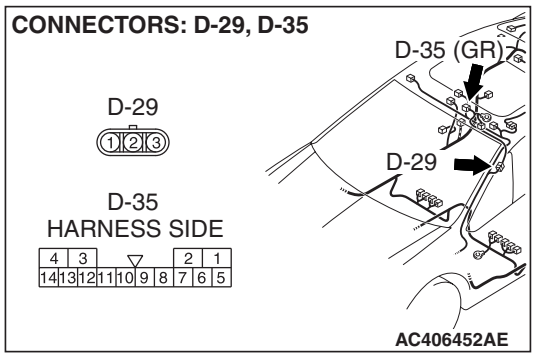
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the sunroof operates normally, a correct signal is sent from the sunroof switch.

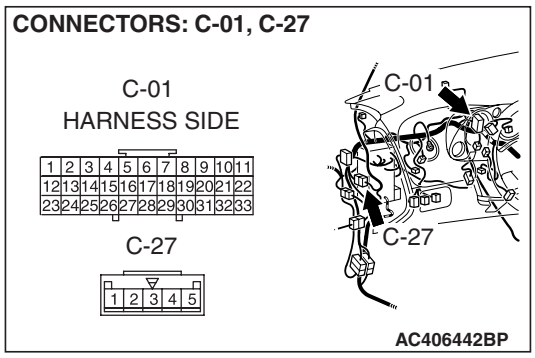




STEP 3. Check the wiring harness between sunroof motor assembly connector D-35 (terminal 6) and ETACS-ECU connector C-218 (terminal 59).







NOTE: Also check intermediate connectors C-27, D-29 and joint connector C-01. If intermediate connector C-27, D-29 or joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-35 (terminal 6) and ETACS-ECU connector C-218 (terminal 59) in good condition?

YES : Go to Step 4.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the sunroof operates normally, a correct signal is sent from the sunroof switch.

STEP 4. Replace the sunroof motor assembly.

(1) Replace the sunroof motor assembly.
(2) If the sunroof operates normally, a correct signal is sent from the sunroof switch.

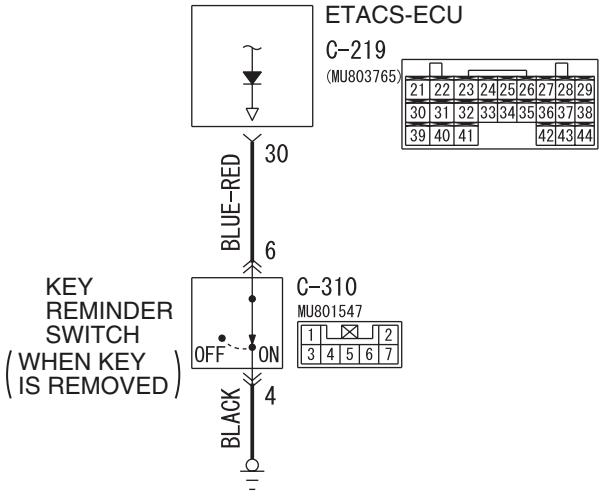
Q: Does the ETACS-ECU receive correct signals from the sunroof switch?

YES : No action is necessary and testing is complete.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the sunroof operates normally, a correct signal is sent from the sunroof switch.

INSPECTION PROCEDURE N-1: ETACS-ECU does not receive any signal from the key reminder switch.

Key Reminder Switch Input Circuit



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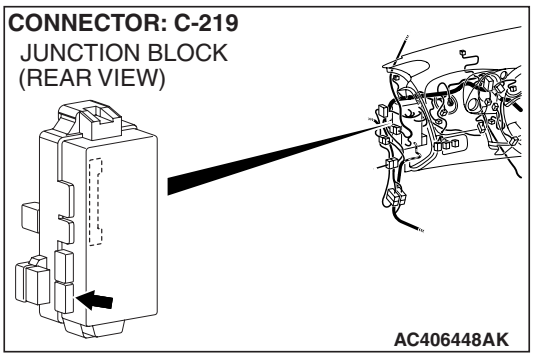
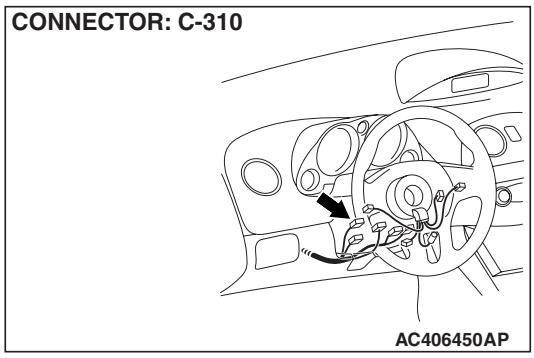




CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the key reminder switch:

- Ignition key reminder tone alarm function
- Forgotten key reminder
- Keyless entry system
- Timed locking mechanism
- Dome light dimming function
- Ignition key cylinder illumination light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems described in "CIRCUIT OPERATION" do not work normally.

TROUBLESHOOTING HINTS

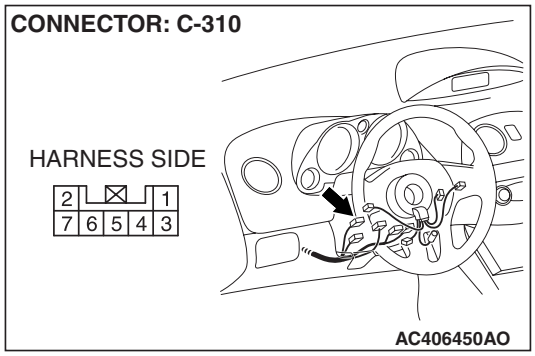
- The key reminder switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

TSB Revision

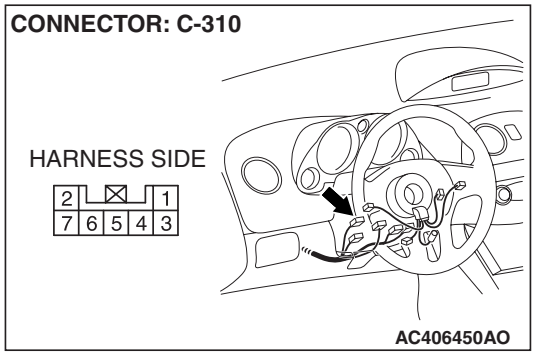


STEP 1. Check key reminder switch connector C-310 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is key reminder switch connector C-310 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.



STEP 2. Check the key reminder switch.

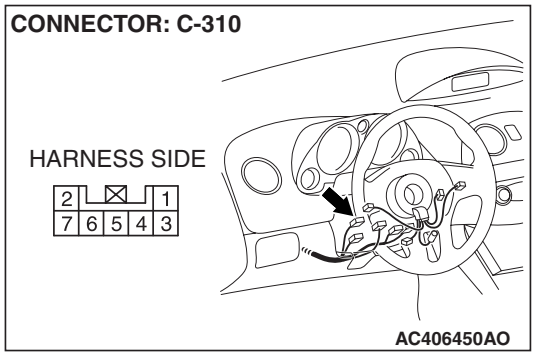
Disconnect key reminder switch connector C-310. Then check continuity between terminals.

STATUS OF IGNITION KEY	TESTER CONNECTION	SPECIFIED CONDITION
Removed	4-6	Less than 2 ohms
Inserted	4-6	Open circuit

Q: Is the key reminder switch in good condition?

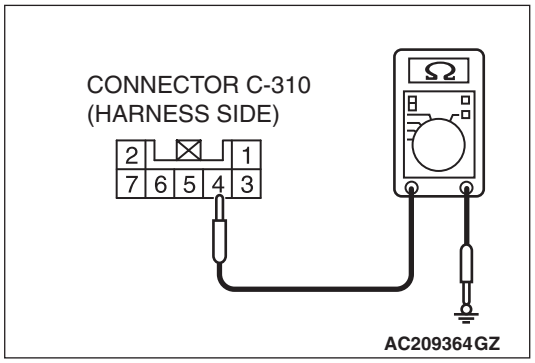
YES : Go to Step 3.

NO : Replace the key reminder switch. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.



STEP 3. Check the ground circuit to the key reminder switch. Measure the resistance at key reminder switch connector C-310.

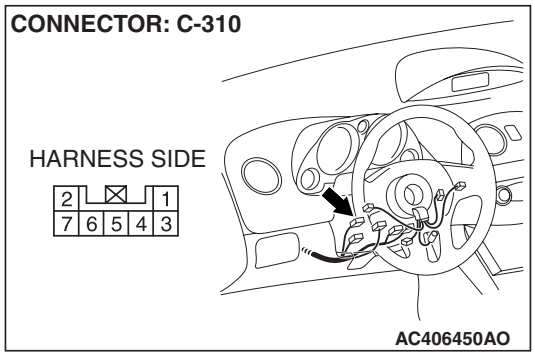
(1) Disconnect key reminder switch connector C-310 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

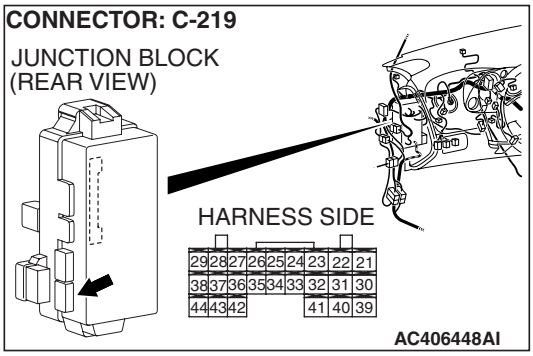
YES : Go to Step 5.
NO : Go to Step 4.



STEP 4. Check the wiring harness between key reminder switch connector C-310 (terminal 4) and ground.

Q: Is the wiring harness between key reminder switch connector C-310 (terminal 4) and ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.

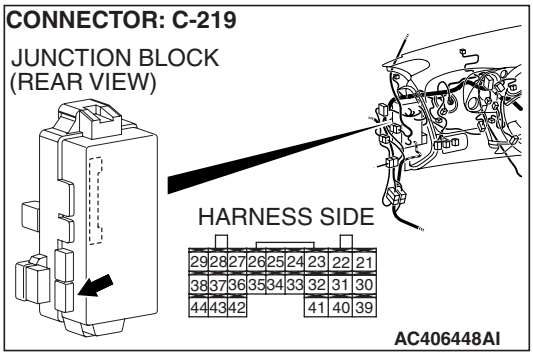


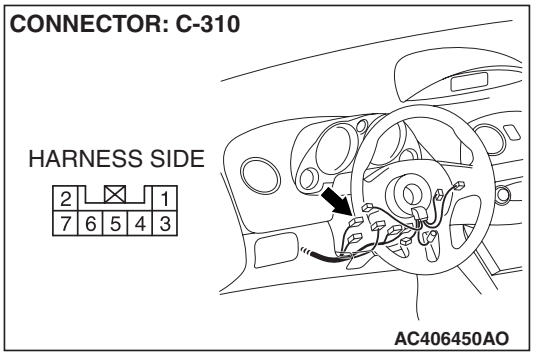
STEP 5. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-219 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.



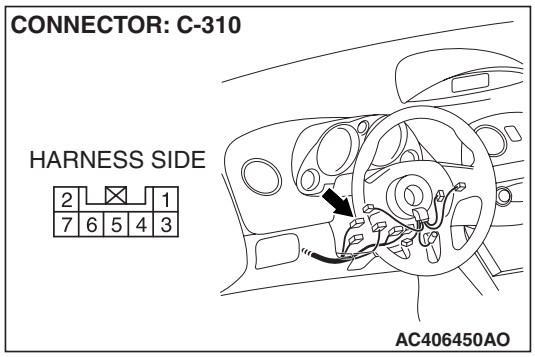


STEP 6. Check the wiring harness between key reminder switch connector C-310 (terminal 6) and ETACS-ECU connector C-219 (terminal 30).

Q: Is the wiring harness between key reminder switch connector C-310 (terminal 6) and ETACS-ECU connector C-219 (terminal 30) in good condition?

YES : Go to Step 7.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.



STEP 7. Check for continuity between key reminder switch connector C-310 terminal 4 and each of the other terminals as well as terminal 6 and each of the other terminals.

(1) Disconnect key reminder switch connector C-310 and measure the resistance available at the equipment side of the connector.

(2) Check for continuity between key reminder switch connector C-310 terminal 4 and each of the other terminals as well as terminal 6 and each of the other terminals.

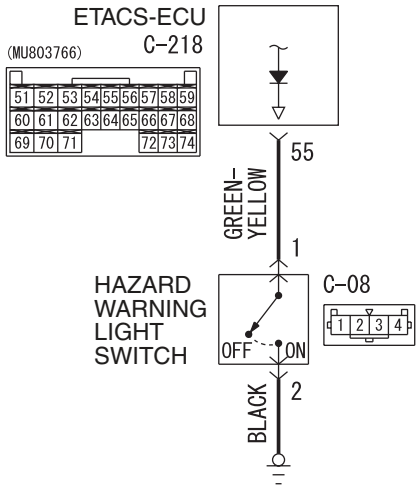
Q: Does continuity exist between the terminals?

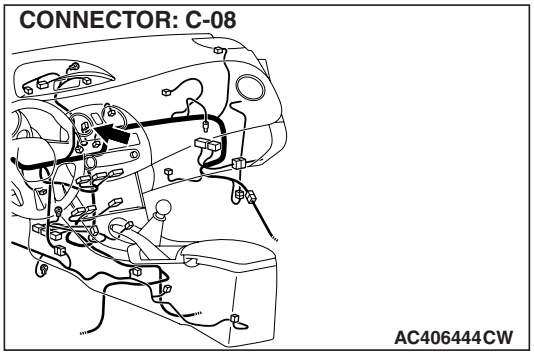
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.

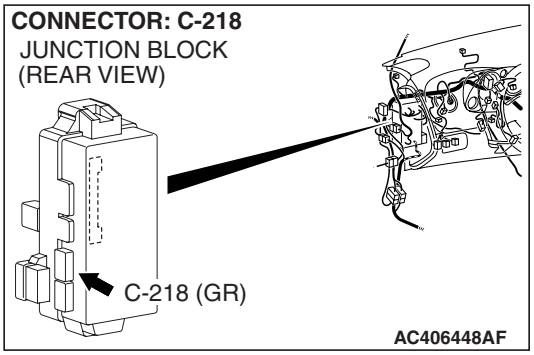
YES : Replace the key reminder switch. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.

INSPECTION PROCEDURE N-2: ETACS-ECU does not receive any signal from the hazard warning light switch.

Hazard Warning Light Switch Input Circuit







CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the hazard warning light switch:

- Hazard warning light
- Keyless entry system (registering the encrypted code)

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment or systems described in "CIRCUIT OPERATION" do not work normally.

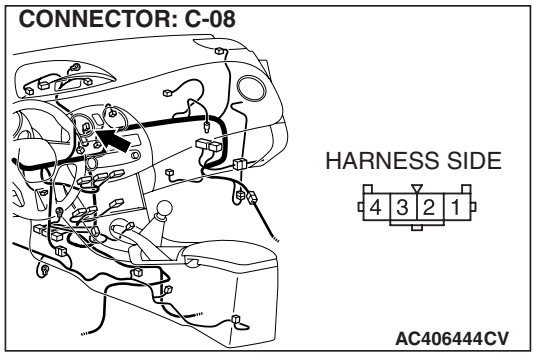
TROUBLESHOOTING HINTS

- The hazard warning light switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

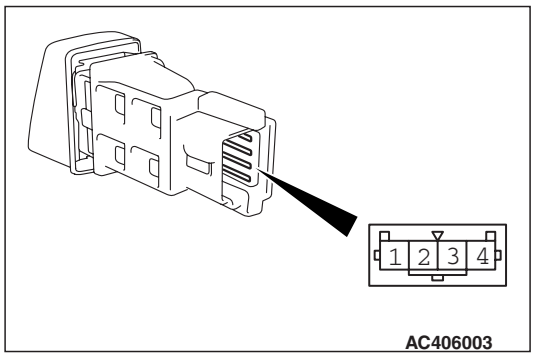


STEP 1. Check hazard warning light switch connector C-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is hazard warning light switch connector C-08 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the hazard warning light switch should be normal.



STEP 2. Check the hazard warning light switch.

Remove the hazard warning light switch. Refer to GROUP 54A, Hazard Warning Light Switch P.54A-148. Then check continuity between the switch terminals.

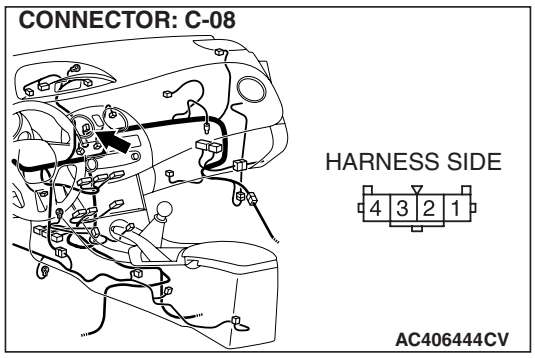
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Pressed	1 –2	Less than 2 ohms
Released	1 –2	Open circuit

Q: Is the hazard warning light switch in good condition?

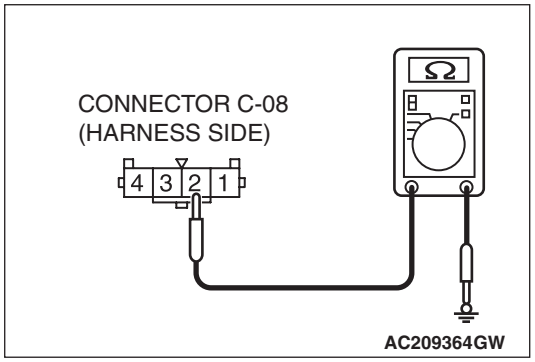
YES : Go to Step 3.

NO : Replace the hazard warning light switch. If the equipment described in "CIRCUIT OPERATION", work normally the input signal from the hazard warning light switch should be normal.

STEP 3. Check the ground circuit to the hazard warning light switch. Measure the resistance at hazard warning light switch connector C-08.



(1) Disconnect hazard warning light switch connector C-08 and measure the resistance available at the wiring harness side of the connector.



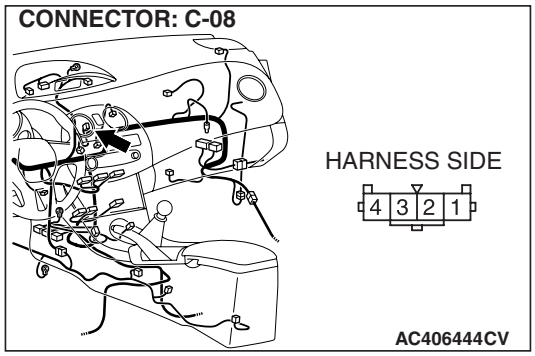
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.

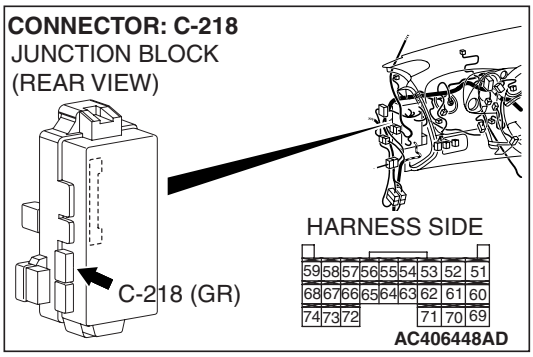


STEP 4. Check the wiring harness between hazard warning light switch connector C-08 (terminal 2) and ground.

Q: Is the the wiring harness between hazard warning light switch connector C-08 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the hazard warning light switch should be normal.

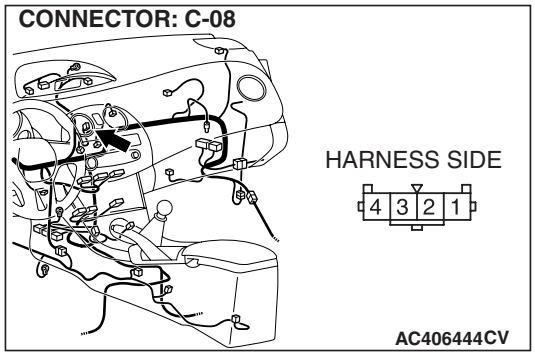


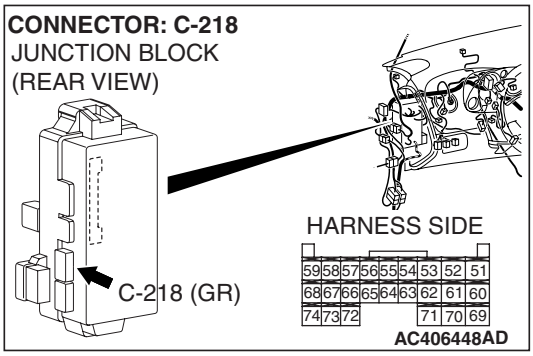
STEP 5. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-218 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the hazard warning light switch should be normal.





STEP 6. Check the wiring harness between hazard warning light switch connector C-08 (terminal 1) and ETACS-ECU connector C-218 (terminal 55).

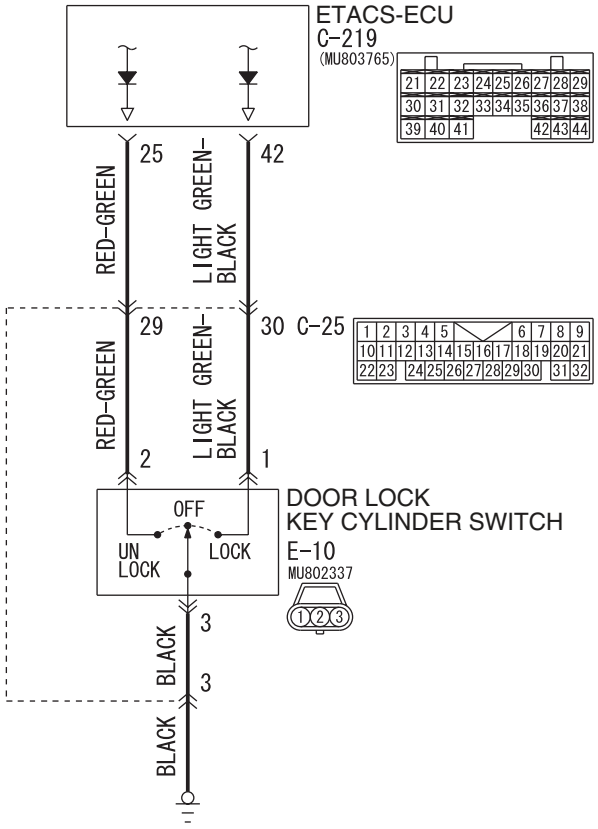
Q: Is the wiring harness between hazard warning light switch connector C-08 (terminal 1) and ETACS-ECU connector C-218 (terminal 55) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the hazard warning light switch should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the hazard warning light switch should be normal.

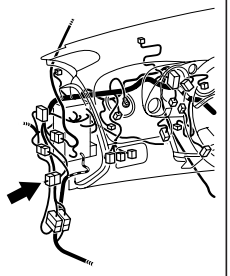
INSPECTION PROCEDURE N-3: ETACS-ECU does not receive any signal from the door lock key cylinder switch.

Door Lock Key Cylinder Switch Input Circuit



W6P54M067A

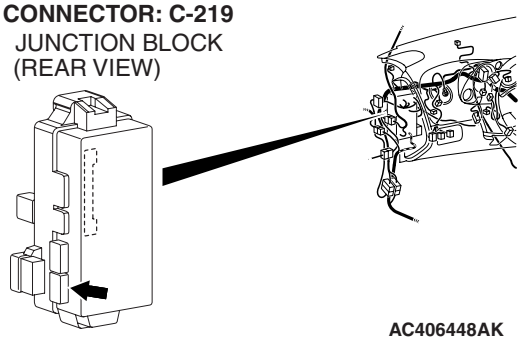
CONNECTOR: C-25



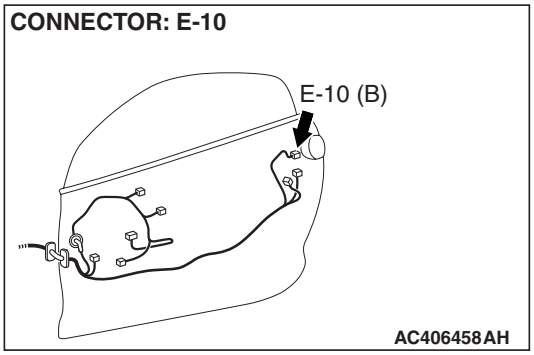
AC406442AZ

CONNECTOR: C-219

JUNCTION BLOCK
(REAR VIEW)



AC406448AK



CIRCUIT OPERATION

The ETACS-ECU operates the central door locking system according to signal from the door lock key cylinder switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the systems, which are described in "CIRCUIT OPERATION", do not work normally.

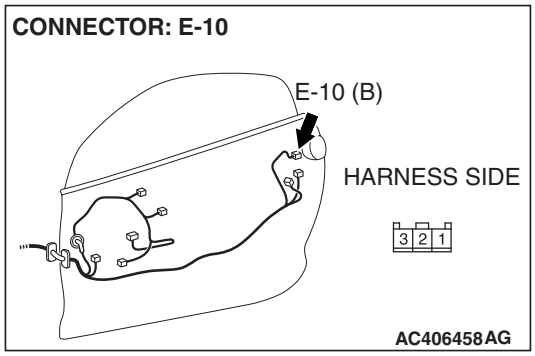
TROUBLESHOOTING HINTS

- The door lock key cylinder switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

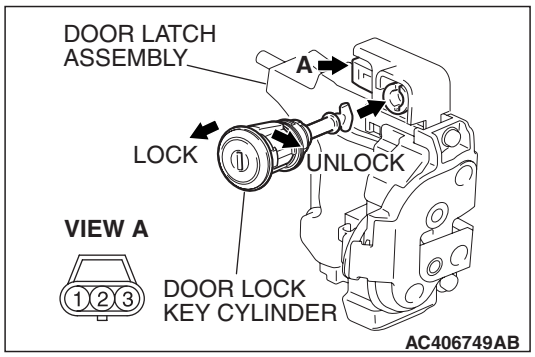


STEP 1. Check door lock key cylinder switch connector E-10 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock key cylinder switch connector E-10 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the systems described in "CIRCUIT OPERATION" work normally, the input signal from the door lock key cylinder switch should be normal.

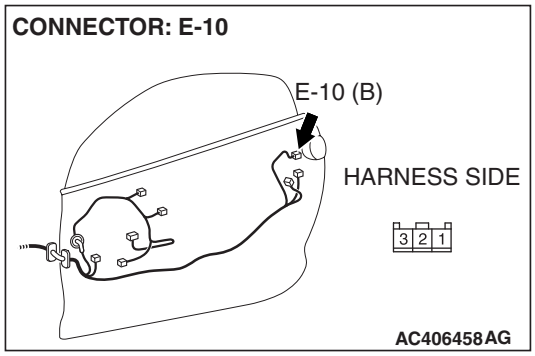


STEP 2. Check the door lock key cylinder switch.
Install the door lock key cylinder to the door latch assembly, and check the door lock key cylinder switch.

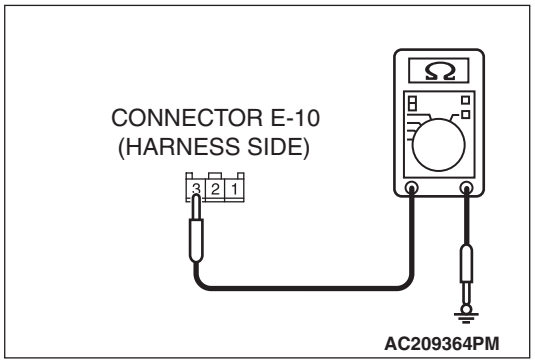
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
LOCK	1 –3	Less than 2 ohms
NEUTRAL (OFF)	1 –2, 2 –3	Open circuit
UNLOCK	2 –3	Less than 2 ohms

Q: Is the door lock key cylinder switch in good condition?
YES : Go to Step 3.
NO : Replace the door lock key cylinder switch. If the systems described in "CIRCUIT OPERATION" work normally, the input signal from the door lock key cylinder switch should be normal.

STEP 3. Check the ground circuit to the door lock key cylinder switch. Measure the resistance at door lock key cylinder switch connector E-10.



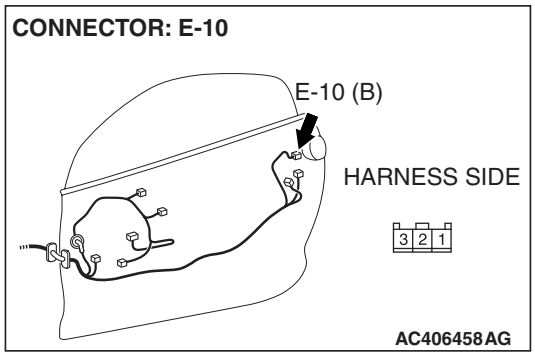
(1) Disconnect door lock key cylinder switch connector E-10 and measure the resistance available at the wiring harness side of the connector.

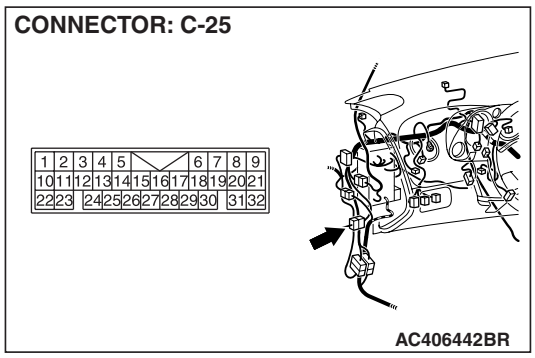


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?
YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Check the wiring harness between door lock key cylinder switch connector E-10 (terminal 3) and ground.





NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door lock key cylinder switch connector E-10 (terminals 3) and ground in good condition?

YES : No action is necessary and testing is complete.

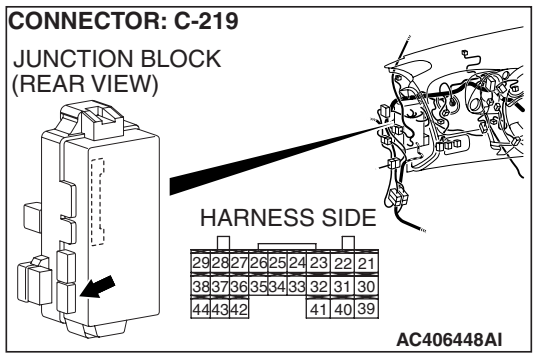
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the systems described in "CIRCUIT OPERATION" work normally, the input signal from the door lock key cylinder switch should be normal.

STEP 5. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

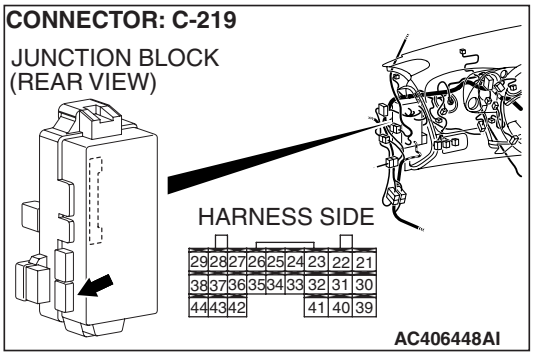
Q: Is ETACS-ECU connector C-219 in good condition?

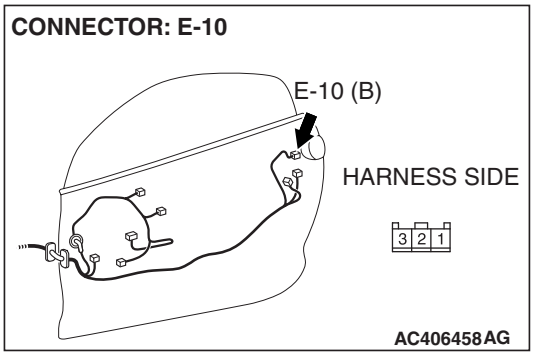
YES : Go to Step 6.

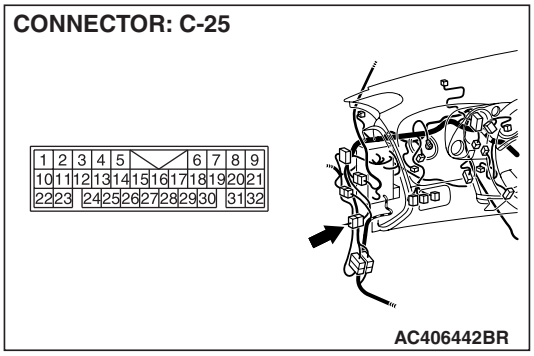
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the systems described in "CIRCUIT OPERATION" work normally, the input signal from the door lock key cylinder switch should be normal.



STEP 6. Check the wiring harness between door lock key cylinder switch connector E-10 (terminals 1 and 2) and ETACS-ECU connector C-219 (terminals 42 and 25).







NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

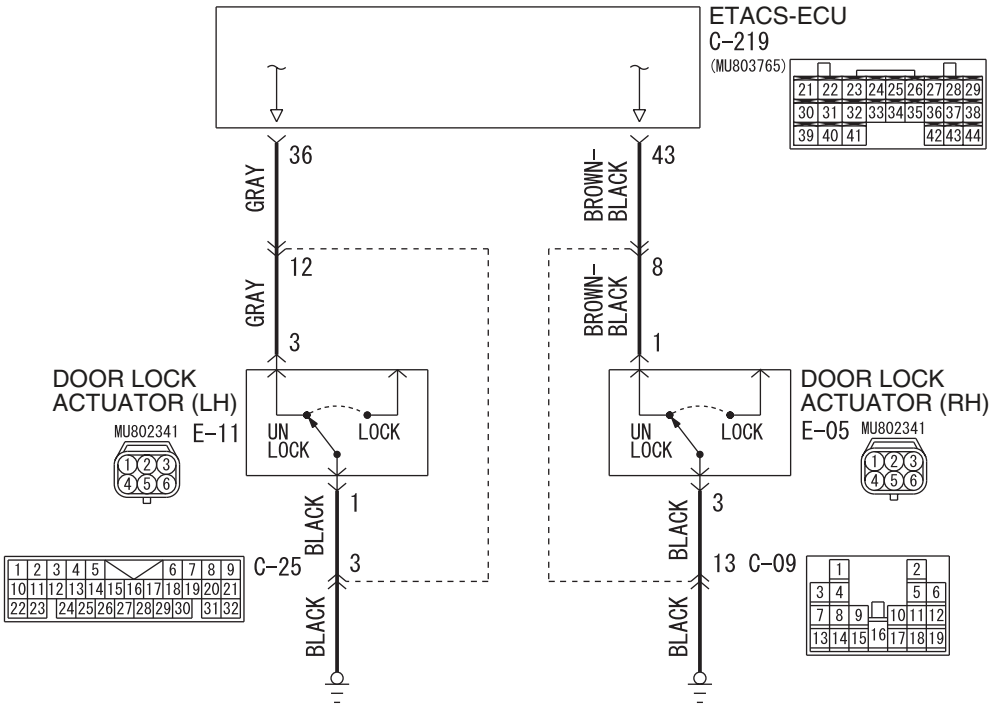
Q: Is the wiring harness between door lock key cylinder switch connector E-10 (terminals 1 and 2) and ETACS-ECU connector C-219 (terminals 42 and 25) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the systems described in "CIRCUIT OPERATION" work normally, the input signal from the door lock key cylinder switch should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the systems described in "CIRCUIT OPERATION" work normally, the input signal from the door lock key cylinder switch should be normal.

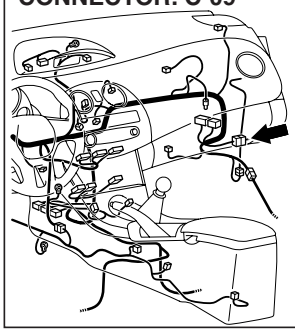
INSPECTION PROCEDURE N-4: ETACS-ECU does not receive any signal from the door lock actuator.

Door Lock Actuator Input Circuit



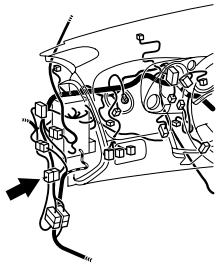
W6P54M068A

CONNECTOR: C-09



AC406444CL

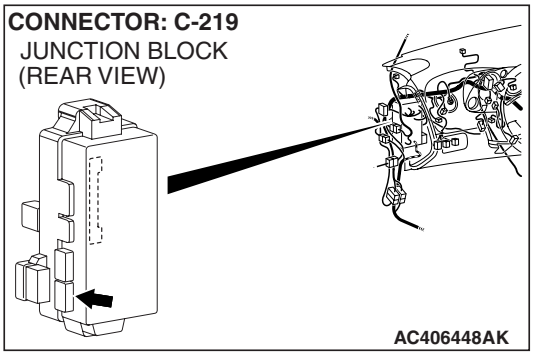
CONNECTOR: C-25



AC406442AZ

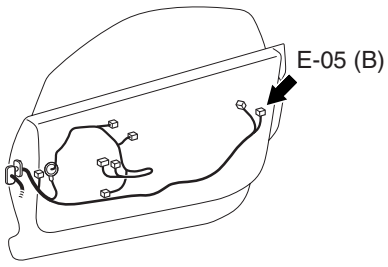
CONNECTOR: C-219

JUNCTION BLOCK
(REAR VIEW)



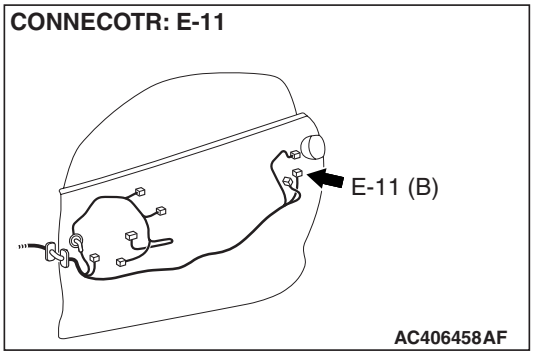
AC406448AK

CONNECTOR: E-05



AC406456AF

TSB Revision



CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the door lock actuator:

- Central door locking system
- Ignition key reminder tone alarm
- Keyless entry system
- Dome light <door lock actuator (LH)>

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems described in "CIRCUIT OPERATION" do not work normally.

TROUBLESHOOTING HINTS

- The door lock actuator may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A

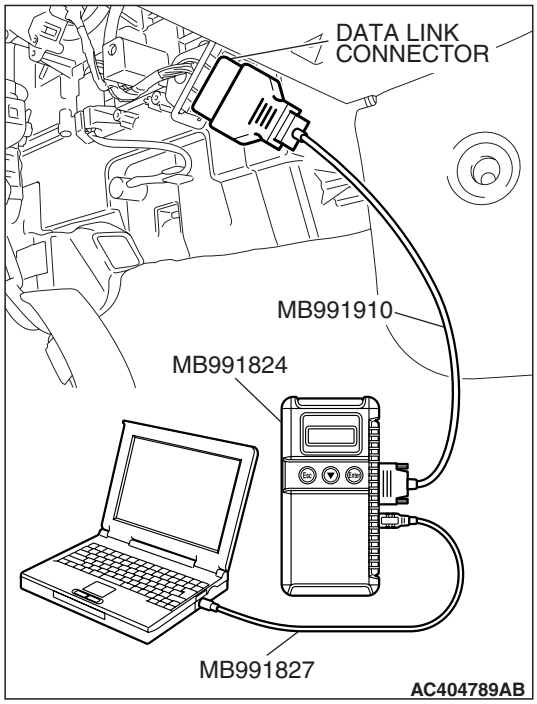
STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the door lock actuators.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect the scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."
(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "Pulse Checking."
(3) Check that scan tool MB991958 sounds.



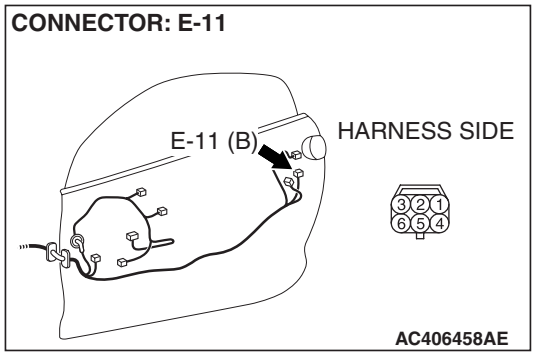
Q: When the door lock actuators are operated, does the scan tool MB991958 sound?

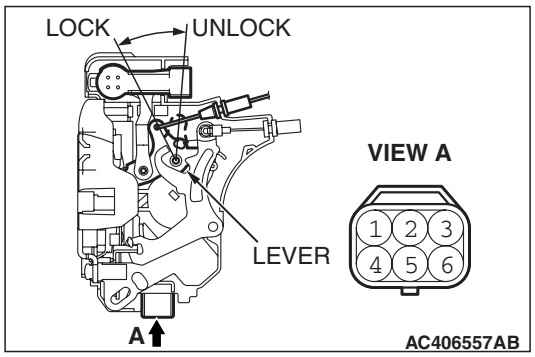
When the door lock actuator (LH) is operated, the scan tool MB991958 does not sound. : Go to Step 2.
When the door lock actuator (RH) is operated, the scan tool MB991958 does not sound. : Go to Step 8.

STEP 2. Check door lock actuator (LH) connector E-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock actuator (LH) connector E-11 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (LH) should be normal.





STEP 3. Check the door lock actuator (LH).

Disconnect door lock actuator (LH) connector E-11. Then check continuity between the terminals. Refer to GROUP 42 – Door Handle and Latch P.42-75.

LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "LOCK" position	1 –3	Open circuit
At the "UNLOCK" position	1 –3	Less than 2 ohms

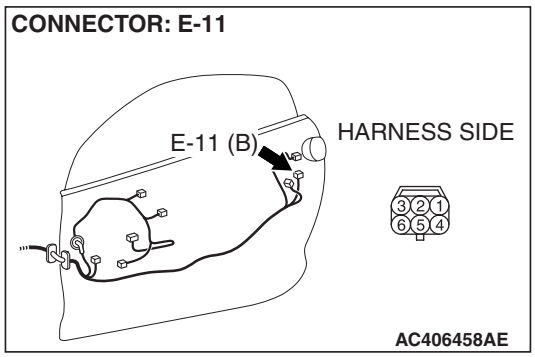
Q: Is the door lock actuator (LH) in good condition?

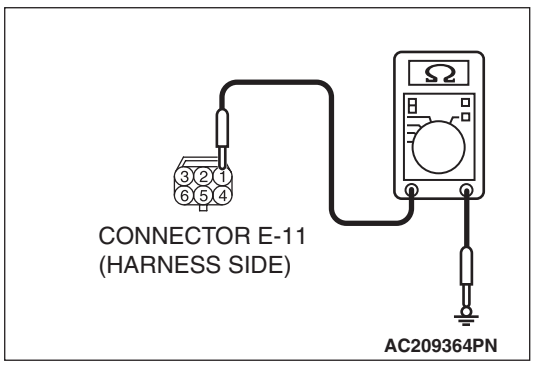
YES : Go to Step 4.

NO : Replace the door lock actuator (LH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (LH) should be normal.

STEP 4. Check the ground circuit to the door lock actuator (LH). Measure the resistance at door lock actuator (LH) connector E-11.

(1) Disconnect door lock actuator (LH) connector E-11 and measure the resistance available at the wiring harness side of the connector.





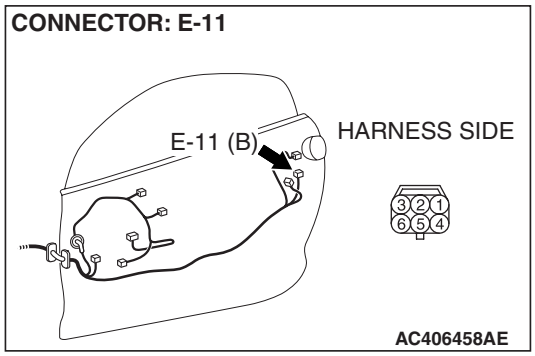
(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

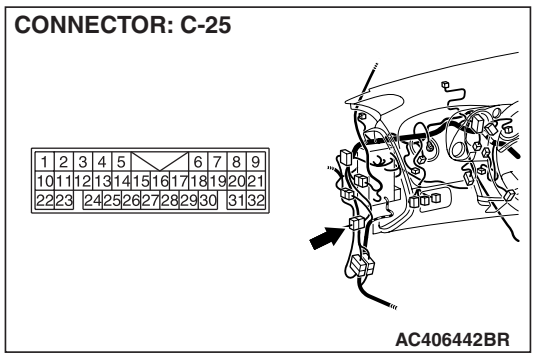
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between door lock actuator (LH) connector E-11 (terminal 1) and ground.





NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door lock actuator (LH) connector E-11 (terminal 1) and ground in good condition?

YES : No action is necessary and testing is complete.

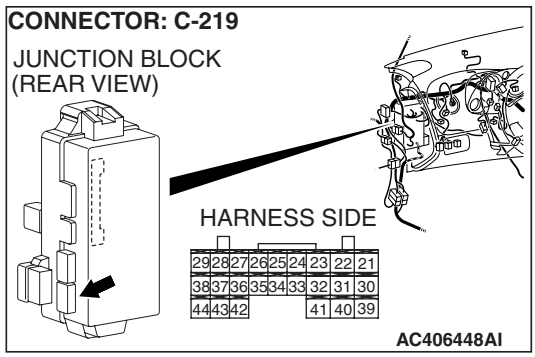
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (LH) should be normal.

STEP 6. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

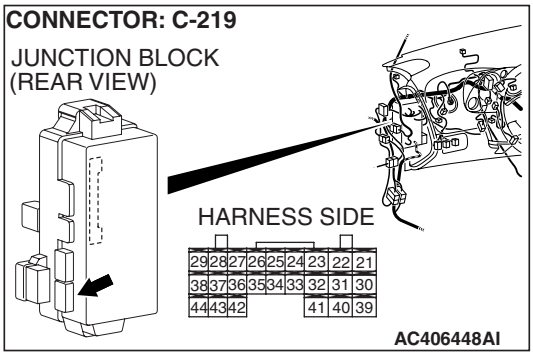
Q: Is ETACS-ECU connector C-219 in good condition?

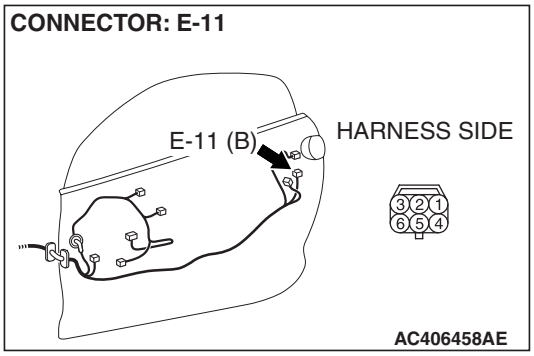
YES : Go to Step 7.

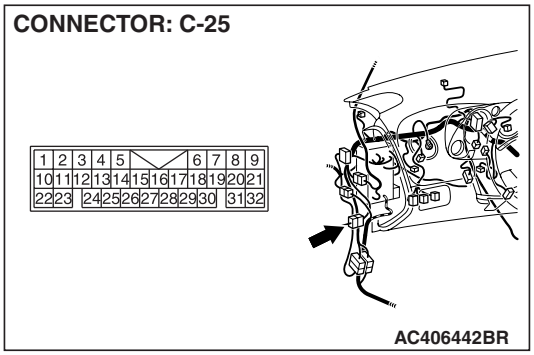
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (LH) should be normal.



STEP 7. Check the wiring harness between door lock actuator (LH) connector E-11 (terminal 3) and ETACS-ECU connector C-219 (terminal 36).





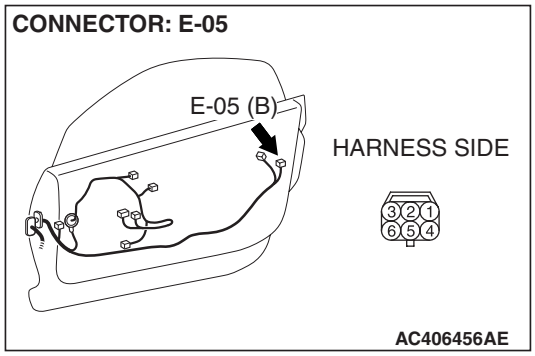


NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door lock actuator (LH) connector E-11 (terminal 3) and ETACS-ECU connector C-219 (terminal 36) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (LH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (LH) should be normal.

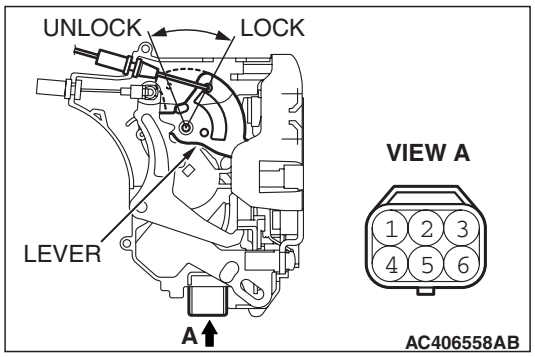


STEP 8. Check door lock actuator (RH) connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is door lock actuator (RH) connector E-05 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (RH) should be normal.



STEP 9. Check the door lock actuator (RH).

Disconnect door lock actuator (RH) connector E-05. Then check continuity between the terminals. Refer to GROUP 42 – Door Handle and Latch P.42-75.

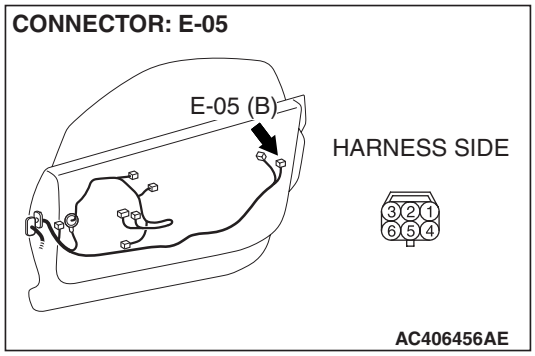
LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "LOCK" position	1 –3	Open circuit
At the "UNLOCK" position	1 –3	Less than 2 ohms

Q: Is the door lock actuator (RH) in good condition?

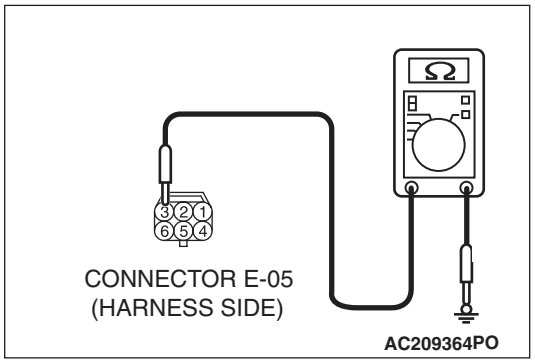
YES : Go to Step 10.

NO : Replace the door lock actuator (RH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (RH) should be normal.

STEP 10. Check the ground circuit to the door lock actuator (RH). Measure the resistance at door lock actuator (RH) connector E-05.



(1) Disconnect door lock actuator (RH) connector E-05 and measure the resistance available at the wiring harness side of the connector.

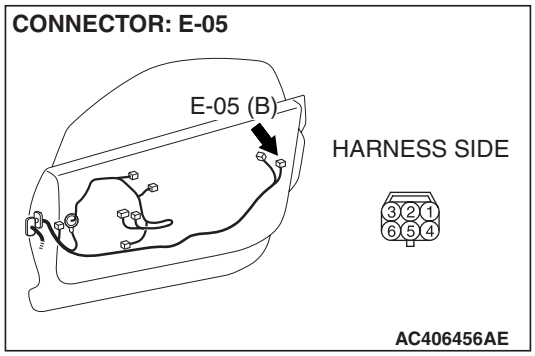


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

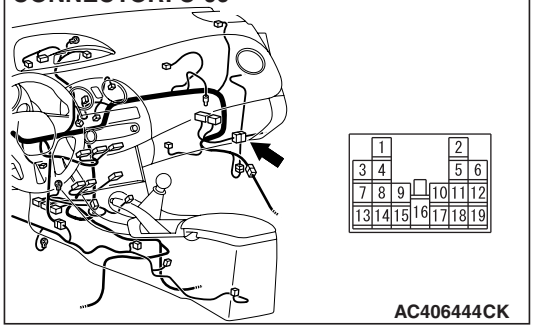
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the wiring harness between door lock actuator (RH) connector E-05 (terminal 3) and ground.



CONNECTOR: C-09



NOTE: Also check intermediate connector C-09 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-09 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

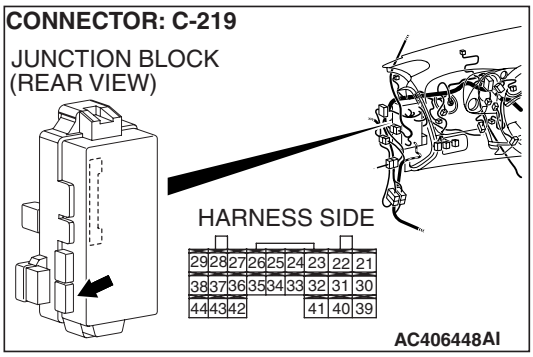
Q: Is the wiring harness between door lock actuator (RH) connector E-05 (terminal 3) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (RH) should be normal.

STEP 12. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CONNECTOR: C-219

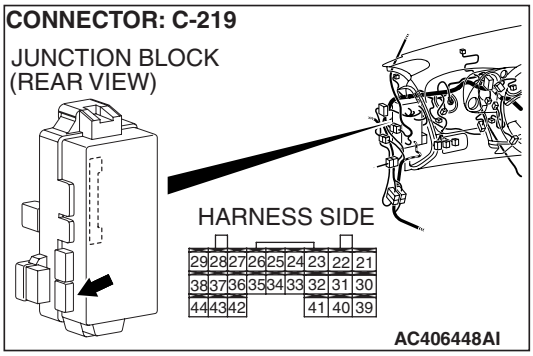


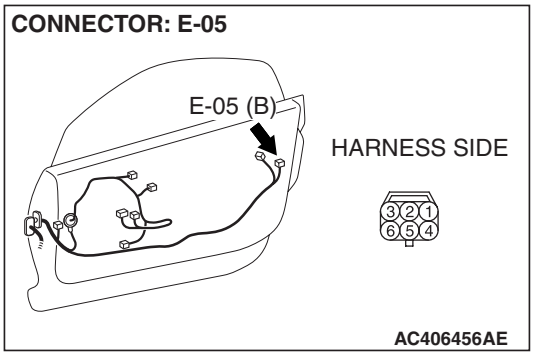
Q: Is ETACS-ECU connector C-219 in good condition?

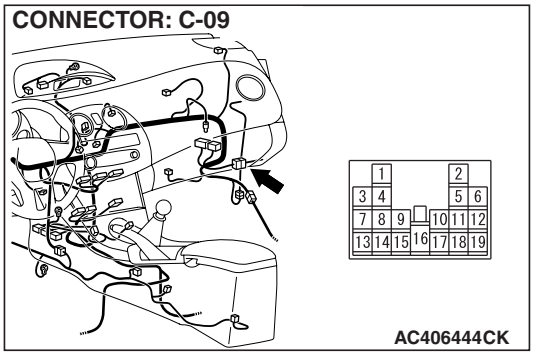
YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (RH) should be normal.

STEP 13. Check the wiring harness between door lock actuator (RH) connector E-05 (terminal 1) and ETACS-ECU connector C-219 (terminal 43).







NOTE: Also check intermediate connector C-09 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-09 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

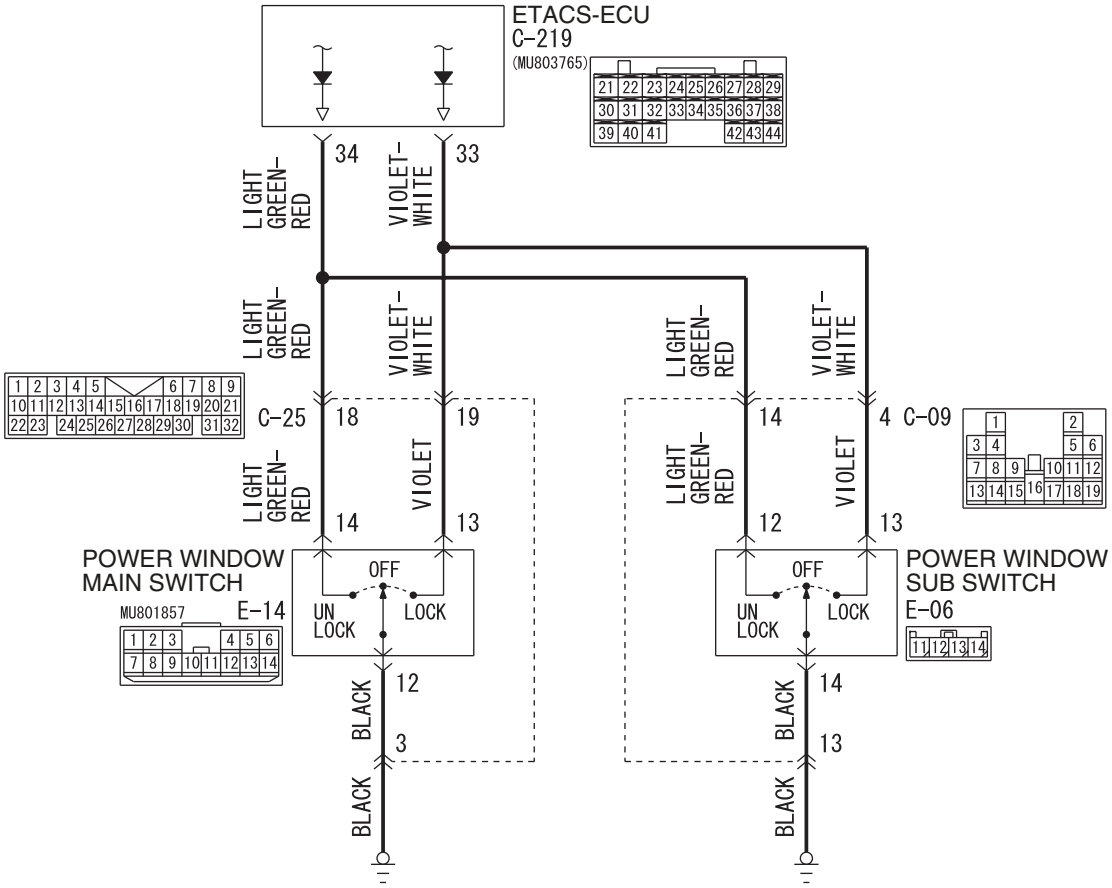
Q: Is the wiring harness between door lock actuator (RH) connector E-05 (terminal 1) and ETACS-ECU connector C-219 (terminal 43) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (RH) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the door lock actuator (RH) should be normal.

INSPECTION PROCEDURE N-5: ETACS-ECU does not receive any signal from the door lock switch (incorporated in the power window main switch and power window sub switch).

Door Lock Switch Input Circuit



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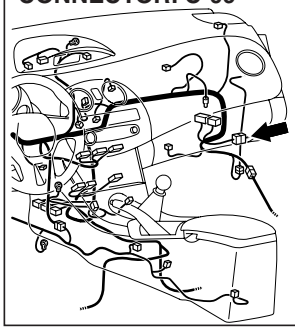
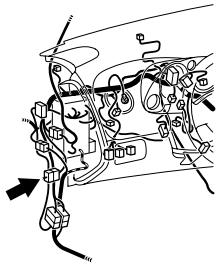
CONNECTOR: C-09



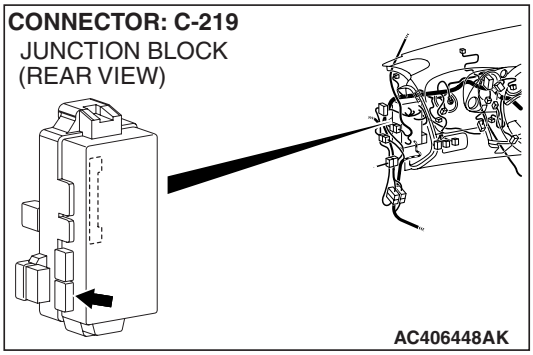
AC406444CL

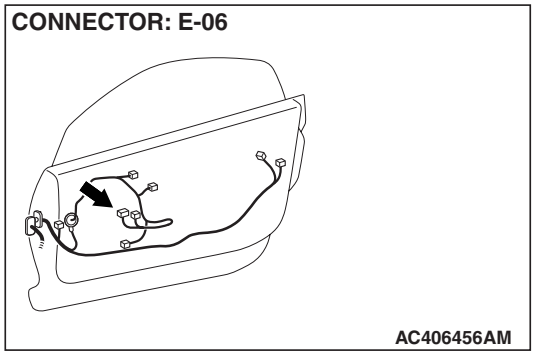
CONNECTOR: C-25

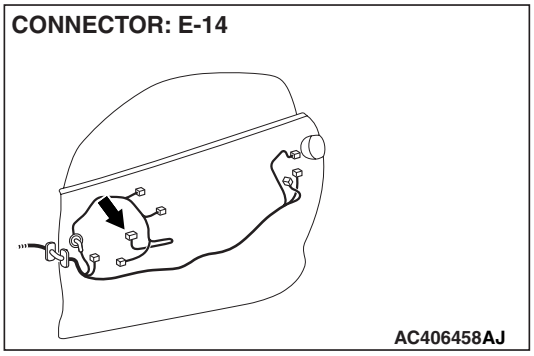


AC406442AZ

TSB Revision







CIRCUIT OPERATION

The ETACS-ECU operates the central door locking system according to signal from the door lock switch (incorporated in the power window main switch and power window sub switch).

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the doors will not lock or unlock. If the signal is not normal, the power window main switch, power window sub switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The power window main switch or power window sub switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A

STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the door lock switch (incorporated in the power window main switch and power window sub switch).

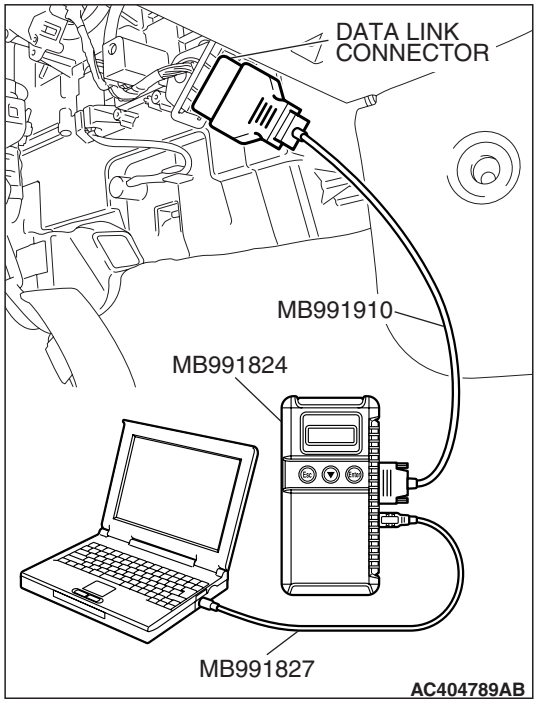
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect the scan tool MB991958. Refer to "How to connect SWS monitor P.54B-14."

(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "Pulse Checking."

(3) Check that scan tool MB991958 sounds.



Q: When the door lock switch (incorporated in the power window main switch and power window sub switch) is operated, does the scan tool MB991958 sound?

When the door lock switch (incorporated in the power window main switch) is operated, the scan tool MB991958 does not sound. : Go to Step 2.

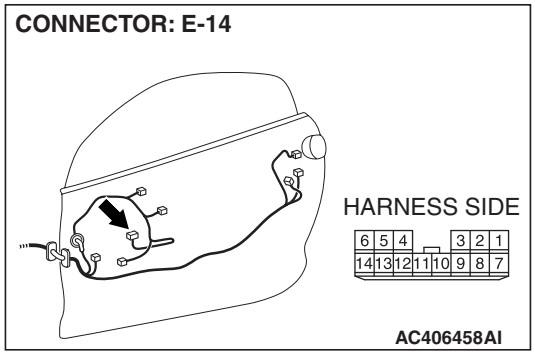
When the door lock switch (incorporated in the power window sub switch) is operated, the scan tool MB991958 does not sound. : Go to Step 8.

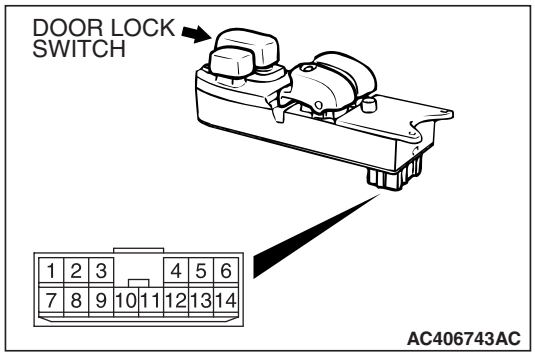
STEP 2. Check power window main switch connector E-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-14 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.





STEP 3. Check the door lock switch (power window main switch).

Remove the power window main switch. Then check continuity between the switch terminals. Refer to GROUP 42 –Door Handle and Latch P.42-75.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
LOCK	12 –13	Less than 2 ohms
OFF	12 –13, 12 –14	Open circuit
UNLOCK	12 –14	Less than 2 ohms

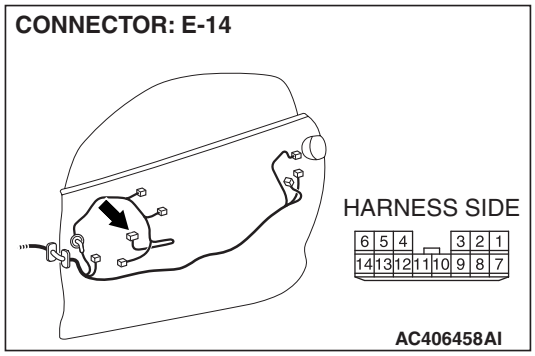
Q: Is the door lock switch (power window main switch) in good condition?

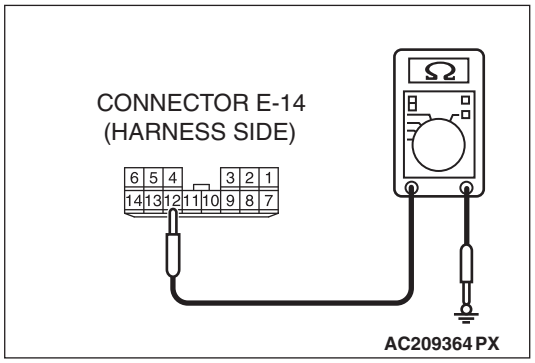
YES : Go to Step 4.

NO : Replace the power window main switch. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.

STEP 4. Check the ground circuit to the power window main switch. Measure the resistance at power window main switch connector E-14.

(1) Disconnect power window main switch connector E-14 and measure the resistance available at the wiring harness side of the connector.





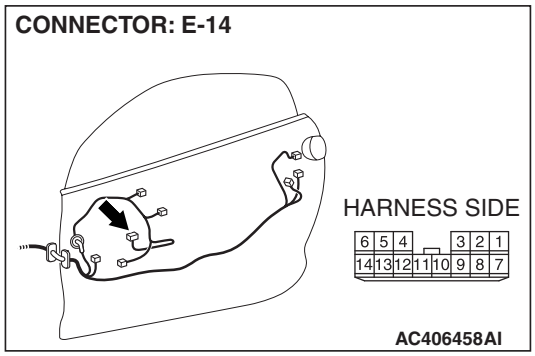
(2) Measure the resistance value between terminal 12 and ground.
- The resistance should be 2 ohms or less.

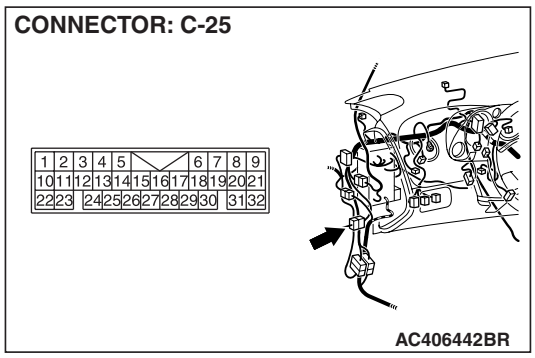
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between power window main switch E-14 (terminal 12) and ground.





NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-14 (terminal 12) and ground in good condition?

YES : No action is necessary and testing is complete.

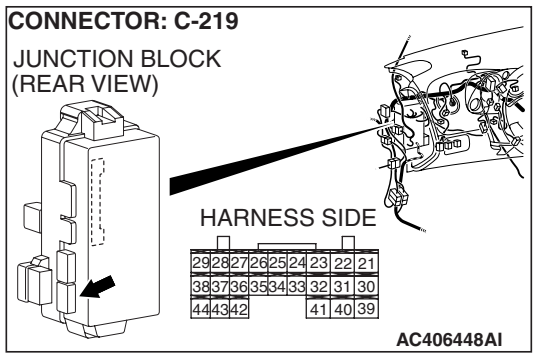
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.

STEP 6. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

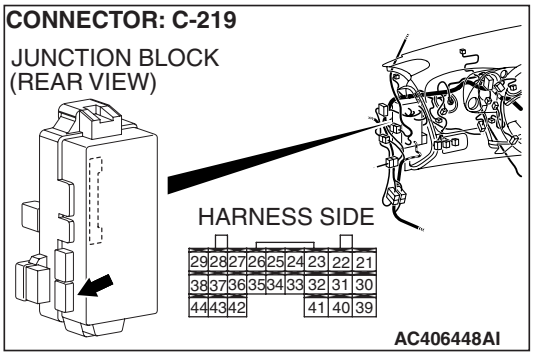
Q: Is ETACS-ECU connector C-219 in good condition?

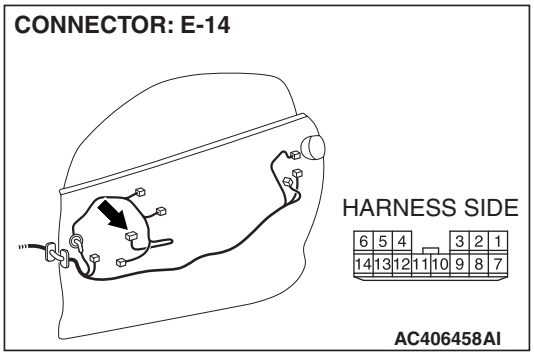
YES : Go to Step 7.

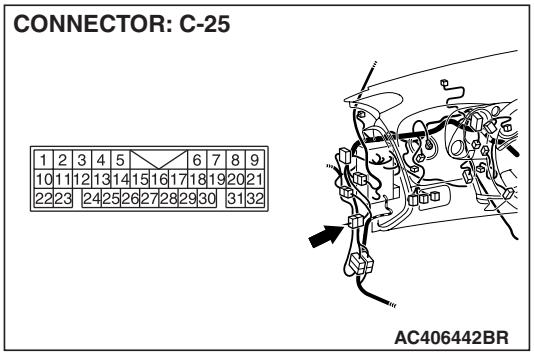
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.



STEP 7. Check the wiring harness between power window main switch connector E-14 (terminals 13 and 14) and ETACS-ECU connector C-219 (terminals 33 and 34).





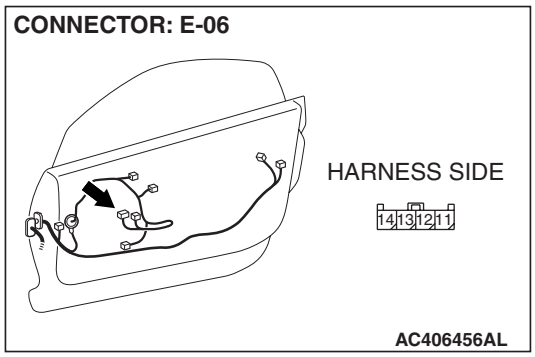


NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-14 (terminals 13 and 14) and ETACS-ECU connector C-219 (terminals 33 and 34) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.

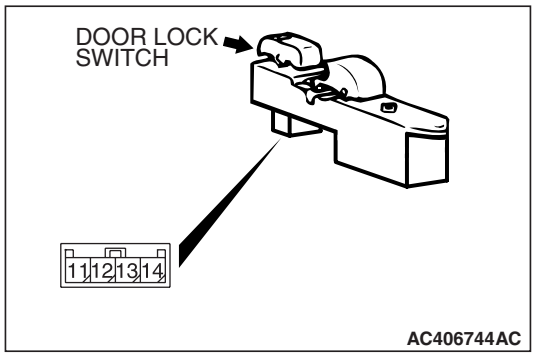


STEP 8. Check power window sub switch connector E-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window sub switch connector E-06 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the central door locking system works normally, input signal from the door lock switch (power window sub switch) should be normal.



STEP 9. Check the door lock switch (power window sub switch).

Remove the power window sub switch. Then check continuity between the switch terminals. Refer to GROUP 42 –Door Handle and Latch P.42-75.

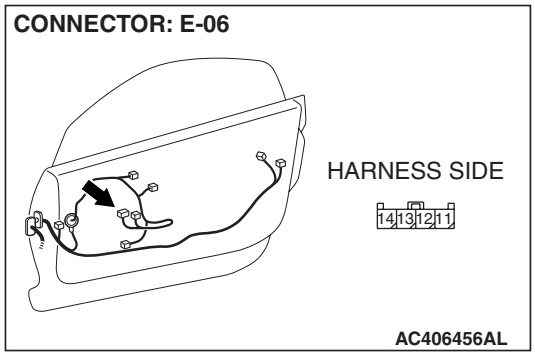
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
LOCK	13 –14	Less than 2 ohms
OFF	13 –14, 12 –14	Open circuit
UNLOCK	12 –14	Less than 2 ohms

Q: Is the door lock switch (power window sub switch) in good condition?

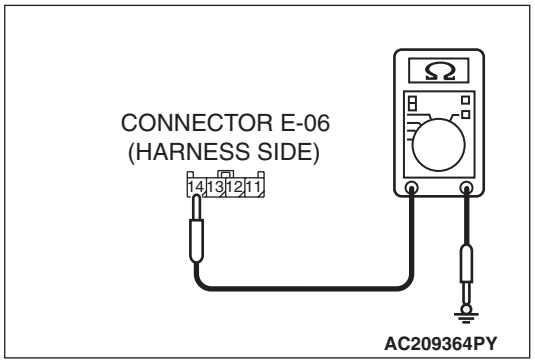
YES : Go to Step 10.

NO : Replace the power window sub switch. If the central door locking system works normally, input signal from the door lock switch (power window sub switch) should be normal.

STEP 10. Check the ground circuit to the power window sub switch. Measure the resistance at power window sub switch connector E-06.



(1) Disconnect power window sub switch connector E-06 and measure the resistance available at the wiring harness side of the connector.

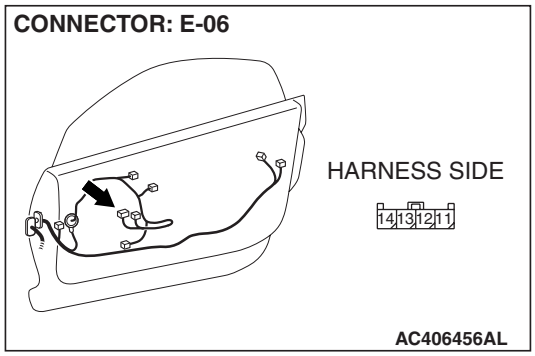


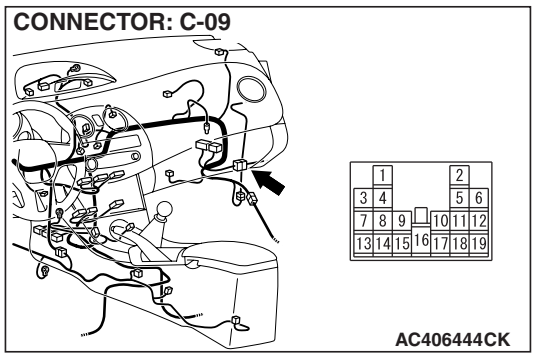
(2) Measure the resistance value between terminal 14 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the wiring harness between power window sub switch E-06 (terminal 14) and ground.





NOTE: Also check intermediate connector C-09 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-09 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window sub switch connector E-06 (terminal 14) and ground in good condition?

YES : No action is necessary and testing is complete.

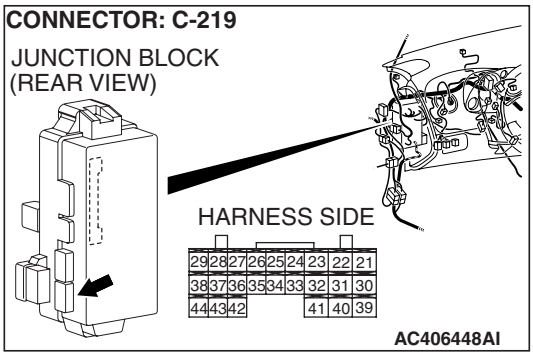
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch should be normal.

STEP 12. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

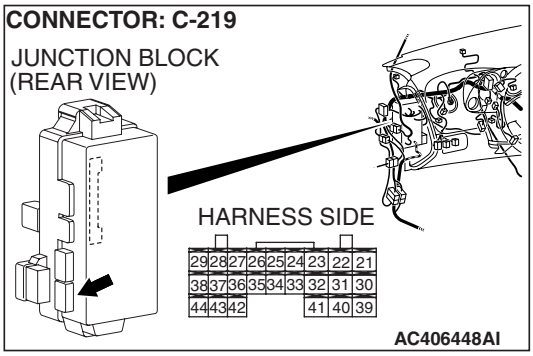
Q: Is ETACS-ECU connector C-219 in good condition?

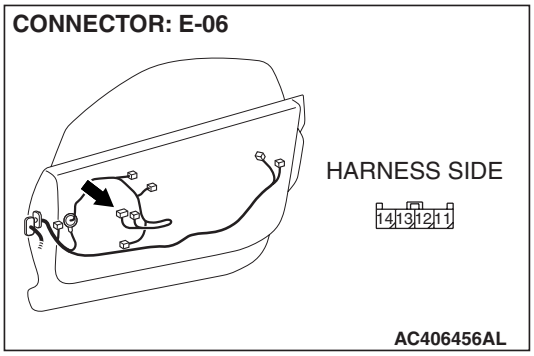
YES : Go to Step 13.

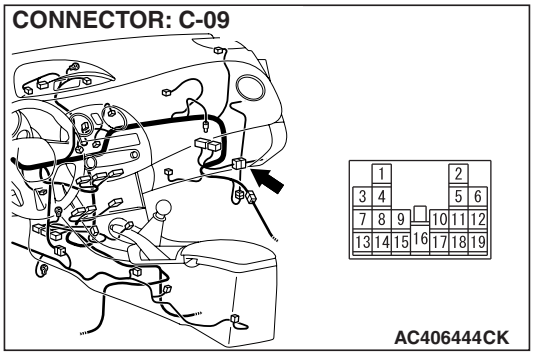
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the central door locking system works normally, input signal from the door lock switch (power window sub switch) should be normal.



STEP 13. Check the wiring harness between power window sub switch connector E-06 (terminals 12 and 13) and ETACS-ECU connector C-219 (terminals 34 and 33).







NOTE: Also check intermediate connector C-09 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-09 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

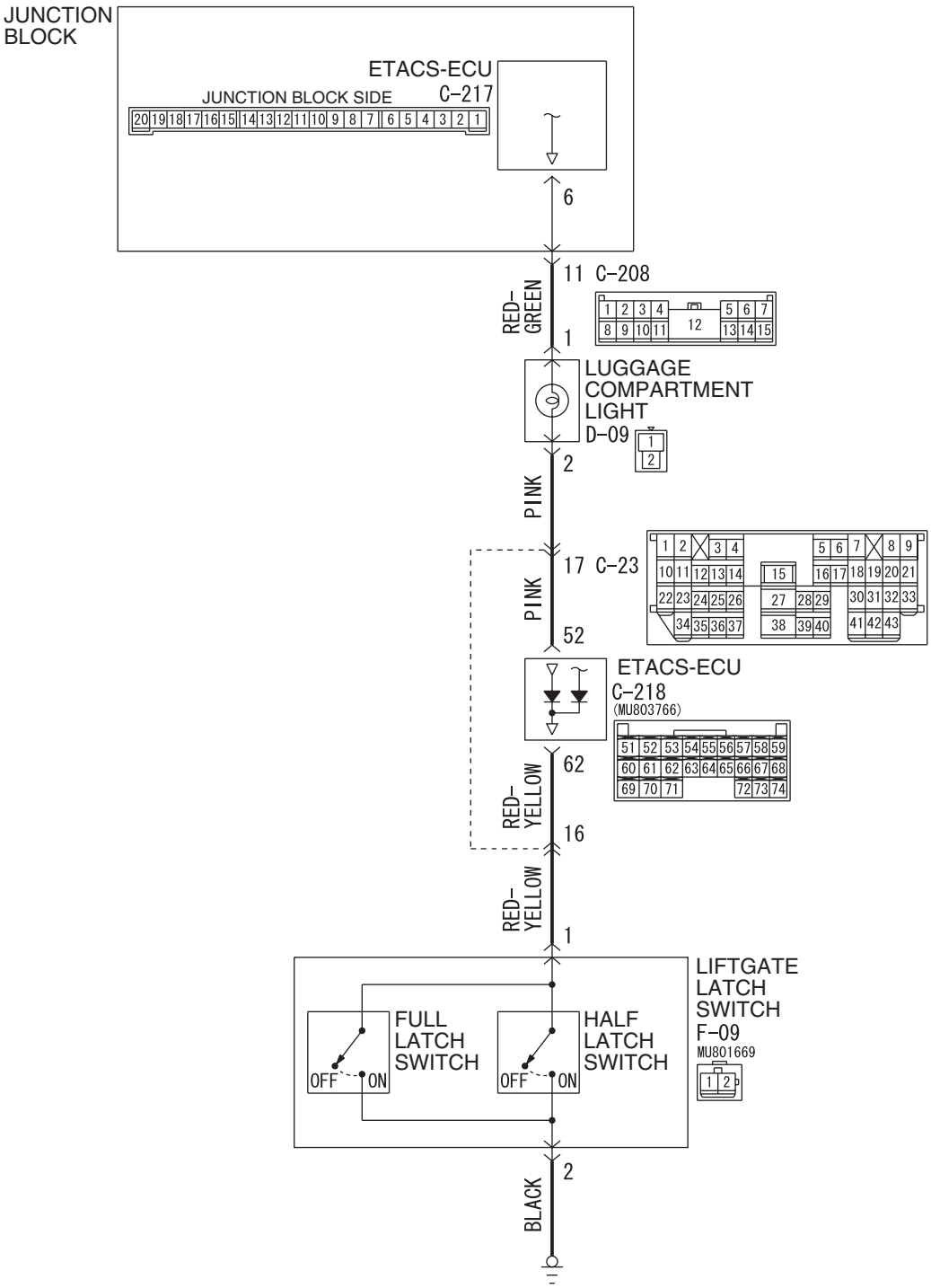
Q: Is the wiring harness between power window sub switch connector E-06 (terminal 12 and 13) and ETACS-ECU connector C-219 (terminals 34 and 33) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the central door locking system works normally, input signal from the door lock switch (power window sub switch) should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch (power window sub switch) should be normal.

INSPECTION PROCEDURE N-6: ETACS-ECU does not receive any signal from the liftgate latch switch.

Luggage Compartment Light Circuit



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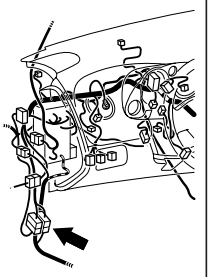
TSB Revision

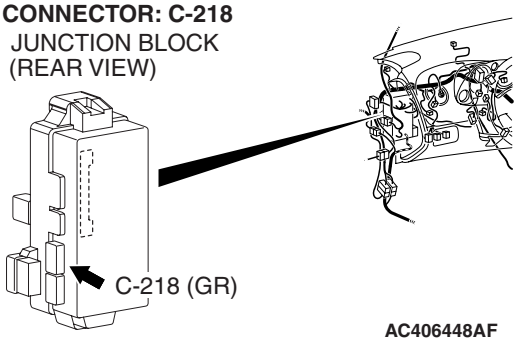
CONNECTOR: C-23



AC406442CC

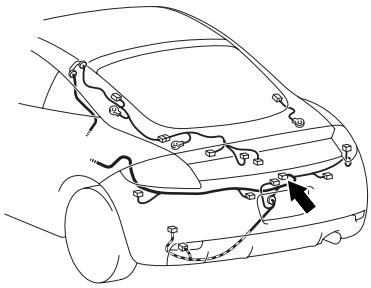
CONNECTOR: C-218

JUNCTION BLOCK
(REAR VIEW)



AC406448AF

CONNECTOR: F-09



AC406460AP

CIRCUIT OPERATION

The ETACS-ECU operates the luggage compartment light according to signal from the liftgate latch switch.

TECHNICAL DESCRIPTION (COMMENT)

The liftgate latch switch input signal is used to operate the luggage compartment light. If the signal fails, this function will not work normally.

TROUBLESHOOTING HINTS

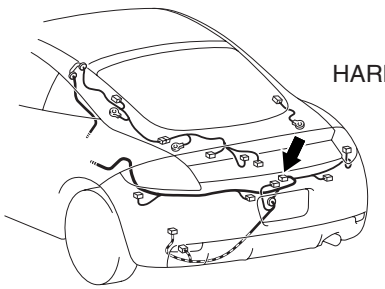
- The liftgate latch switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

CONNECTOR: F-09



AC406460AO

STEP 1. Check liftgate latch switch connector F-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is liftgate latch switch connector F-09 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the liftgate latch switch should be normal.

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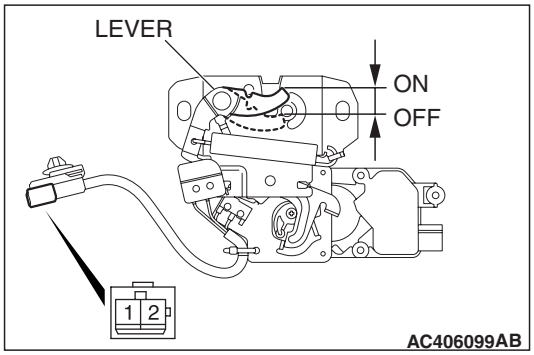


STEP 2. Check the liftgate latch switch.

Remove the liftgate latch switch. Refer to GROUP 42, Liftgate, liftgate inspection P.42-87.

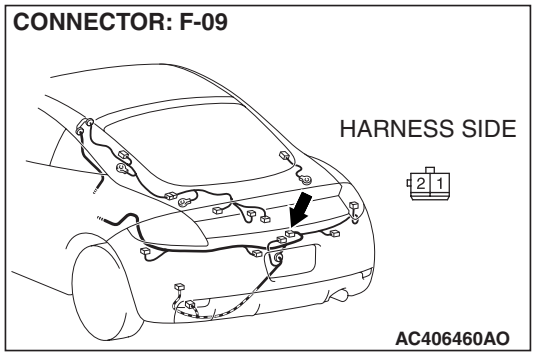
LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "ON" position	1 –2	Less than 2 ohms
At the "OFF" position	1 –2	Open circuit

Q: Is the liftgate latch switch in good condition?

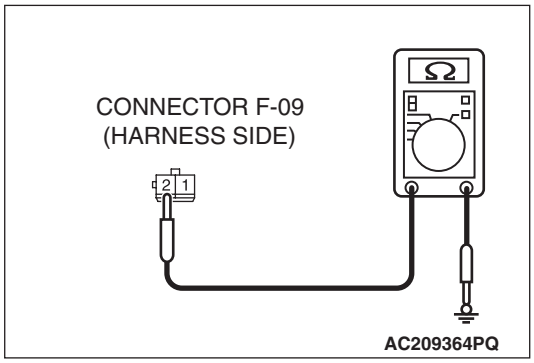
YES : Go to Step 3.

NO : Replace the liftgate latch switch. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the liftgate latch switch should be normal.

STEP 3. Check the ground circuit to the liftgate latch switch. Measure the resistance at liftgate latch switch connector F-09.



(1) Disconnect liftgate latch switch connector F-09 and measure the resistance available at the wiring harness side of the connector.



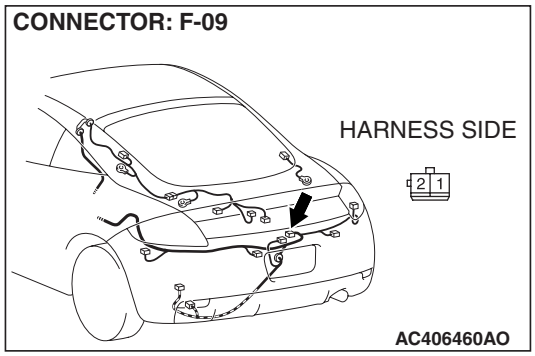
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.

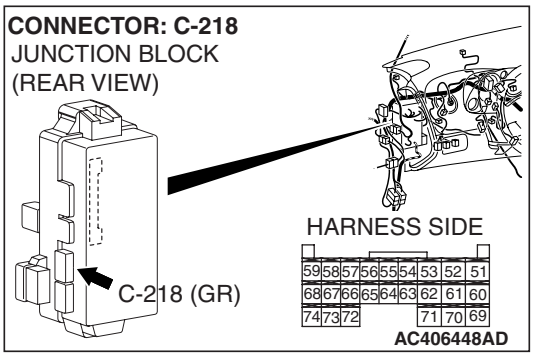


STEP 4. Check the wiring harness between liftgate latch switch connector F-09 (terminal 2) and ground.

Q: Is the wiring harness between liftgate latch switch connector F-09 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the liftgate latch switch should be normal.



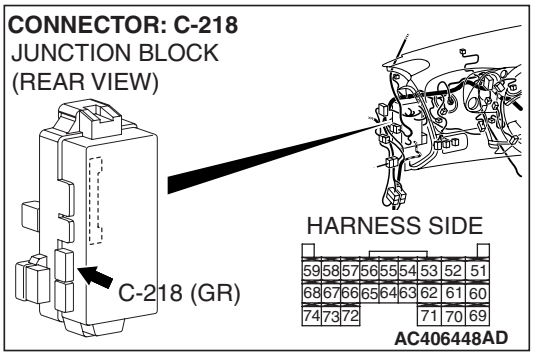
STEP 5. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

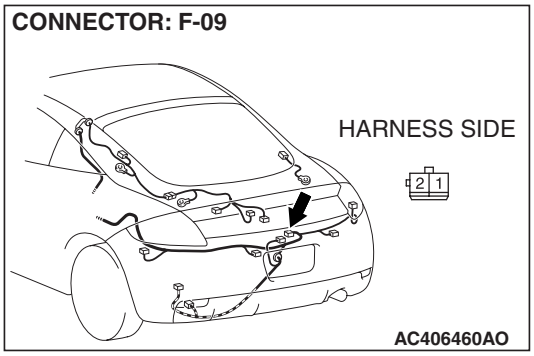
Q: Is ETACS-ECU connector C-218 in good condition?

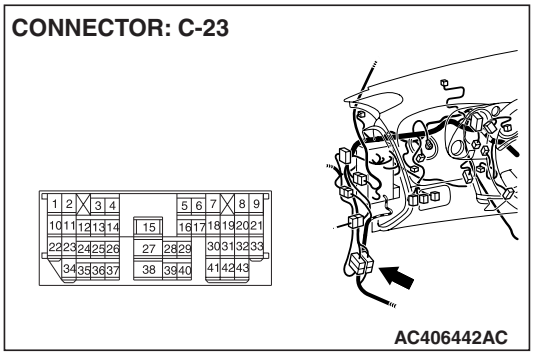
YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the liftgate latch switch should be normal.

STEP 6. Check the wiring harness between liftgate latch switch connector F-09 (terminal 1) and ETACS-ECU connector C-218 (terminal 62).







NOTE: Also check intermediate connector C-23 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-23 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

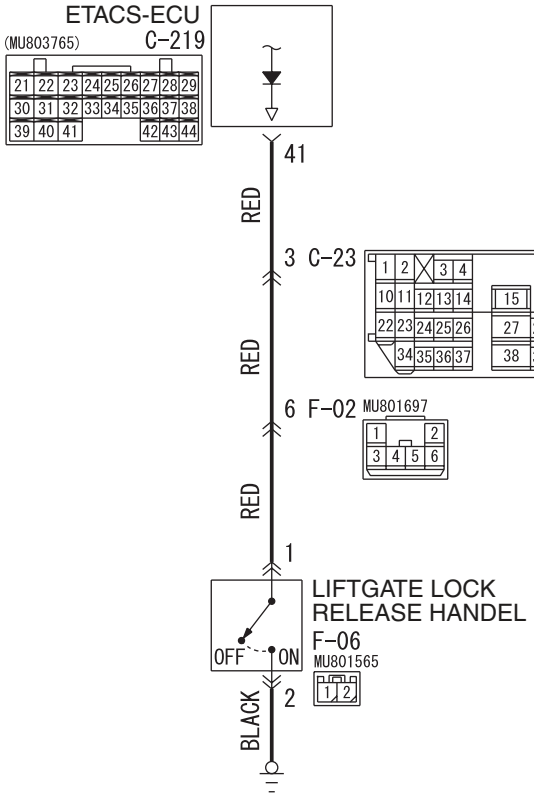
Q: Is the wiring harness between liftgate latch switch connector F-09 (terminal 1) and ETACS-ECU connector C-218 (terminal 62) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the liftgate latch switch should be normal.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the liftgate latch switch should be normal.

INSPECTION PROCEDURE N-7: ETACS-ECU does not receive any signal from the liftgate lock release switch.

Liftgate Lock Release Handle Input Circuit



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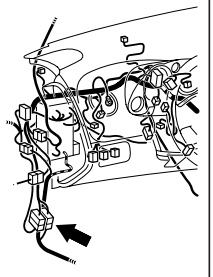
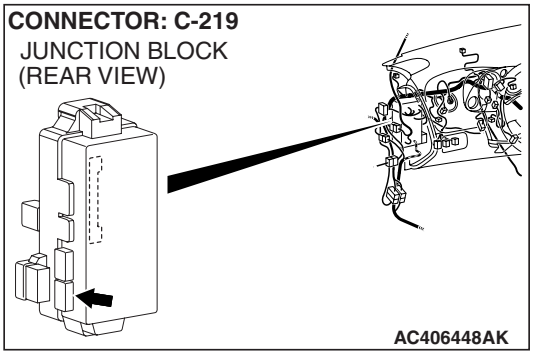
CONNECTOR: C-23



AC406442CC

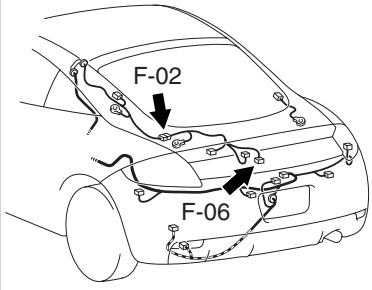
CONNECTOR: C-219

JUNCTION BLOCK
(REAR VIEW)



AC406448AK

CONNECTORS: F-02, F-06



AC406460AS

TSB Revision

CIRCUIT OPERATION

The ETACS-ECU operates the liftgate according to signal from the liftgate lock release switch.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the liftgate do not work normally. If the signal is not normal, the liftgate lock release switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

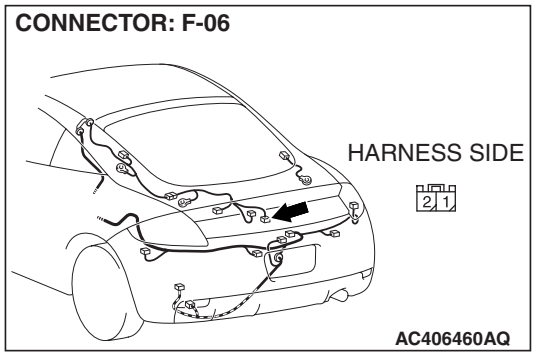
- The liftgate lock release switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check liftgate lock release switch connector F-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



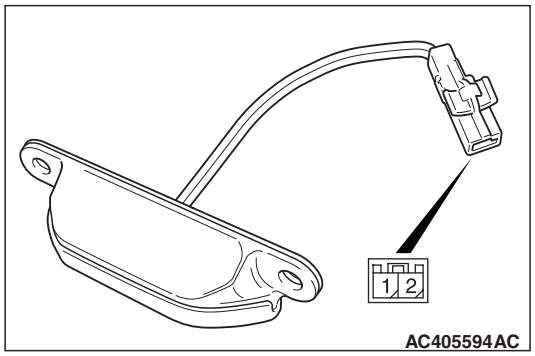
Q: Is liftgate lock release switch connector F-06 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Repair the liftgate lock release switch. If the liftgate lock release switch operates normally, a correct signal is sent from the liftgate lock release switch.

STEP 2. Check the liftgate lock release switch.

Remove the liftgate lock release switch. Refer to GROUP 42, Liftgate P.42-87. Then check continuity between the switch terminals.



HANDLE POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "ON (push)" position	1 –2	Less than 2 ohms
At the "OFF" position	1 –2	Open circuit

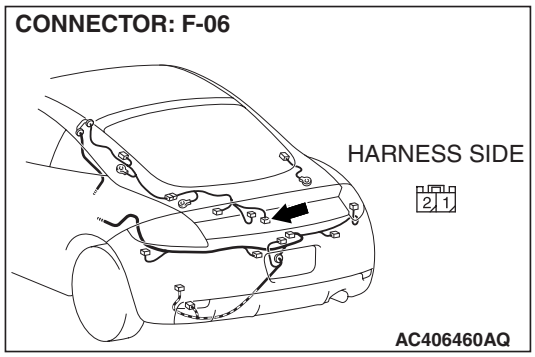
Q: Is the liftgate lock release switch in good condition?

YES : Go to Step 3.

NO : Repair the liftgate lock release switch. If the liftgate lock release switch operates normally, a correct signal is sent from the liftgate lock release switch.

STEP 3. Check the ground circuit to the liftgate lock release switch. Measure the resistance at liftgate lock release switch connector F-06.

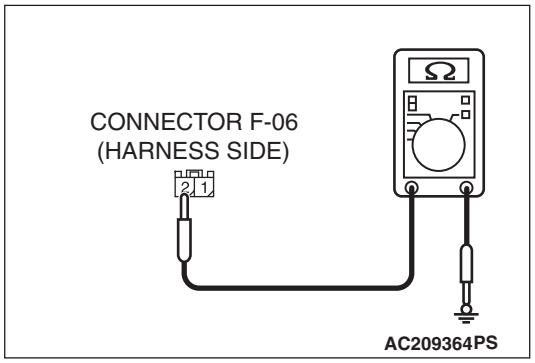
(1) Disconnect liftgate lock release switch connector F-06 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

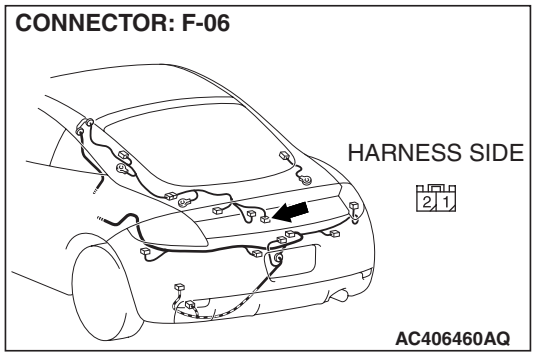
YES : Go to Step 5.
NO : Go to Step 4.



STEP 4. Check the wiring harness between liftgate lock release switch connector F-06 (terminal 2) and ground.

Q: Is the wiring harness between liftgate lock release switch connector F-06 (terminal 2) and ground in good condition?

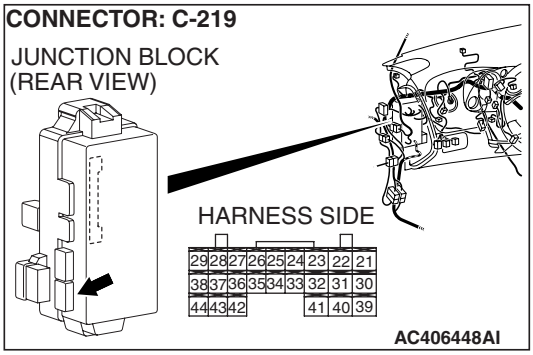
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the liftgate lock release switch operates normally, a correct signal is sent from the liftgate lock release switch.



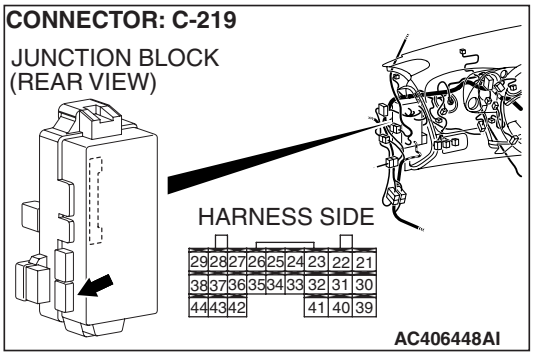
STEP 5. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

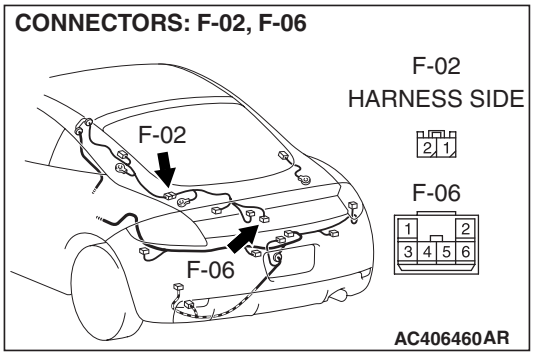
Q: Is ETACS-ECU connector C-219 in good condition?

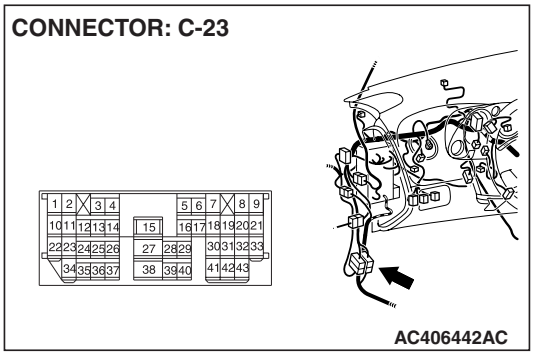
YES : Go to Step 6.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the liftgate lock release switch operates normally, a correct signal is sent from the liftgate lock release switch.



STEP 6. Check the wiring harness between liftgate lock release switch connector F-06 (terminal 1) and ETACS-ECU connector C-219 (terminal 41).







NOTE: Also check junction block connectors C-23 and F-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-23 or F-02 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

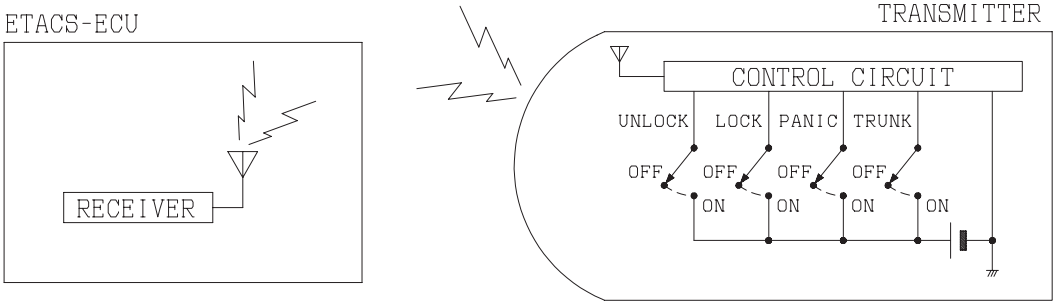
Q: Is the wiring harness between liftgate lock release switch connector F-06 (terminal 1) and ETACS-ECU connector C-219 (terminal 41) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the liftgate lock release switch operates normally, a correct signal is sent from the liftgate lock release switch.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the liftgate lock release switch operates normally, a correct signal is sent from the liftgate lock release switch.

INSPECTION PROCEDURE N-8: Transmitter: ETACS-ECU does not receive any signal from the lock, unlock, liftgate or panic switch.

Receiver and Transmitter Communication Circuit



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CIRCUIT OPERATION

The ETACS-ECU receives signal through its receiver from the transmitter, and operates the keyless entry system according to the signal.

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the keyless entry transmitter does not work normally.

TROUBLESHOOTING HINTS

- The transmitter may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Register the transmitter.

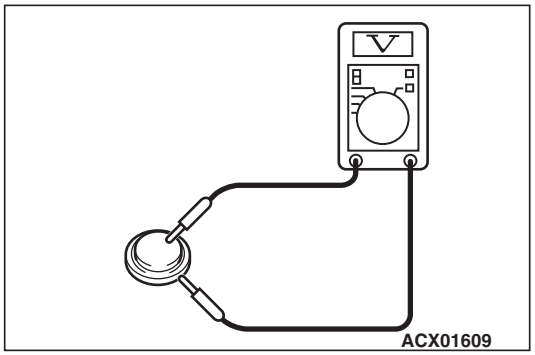
Register the transmitter. Refer to GROUP 42, Keyless Entry System, On-vehicle Service, How to register secret code P.42-93.

Q: Can the transmitter be registered correctly?

YES : If the transmitter works normally, the input signal from the transmitter should be normal.

NO : Go to Step 2.

STEP 2. Check the transmitter battery.



Measure the voltage of the transmitter battery.

- The value should be approximately 2.5 - 3.2 volts.

Q: Is the measured voltage approximately 2.5 - 3.2 volts?

YES : Go to Step 3.

NO : Replace the battery. If the transmitter can be registered normally, and operates normally, it indicates that the transmitter is sending normal signal to the ECU.

STEP 3. Check the transmitter.

Replace the transmitter and register the code. Refer to GROUP 42, Keyless Entry System, On-vehicle Service, How to register secret code P.42-93.

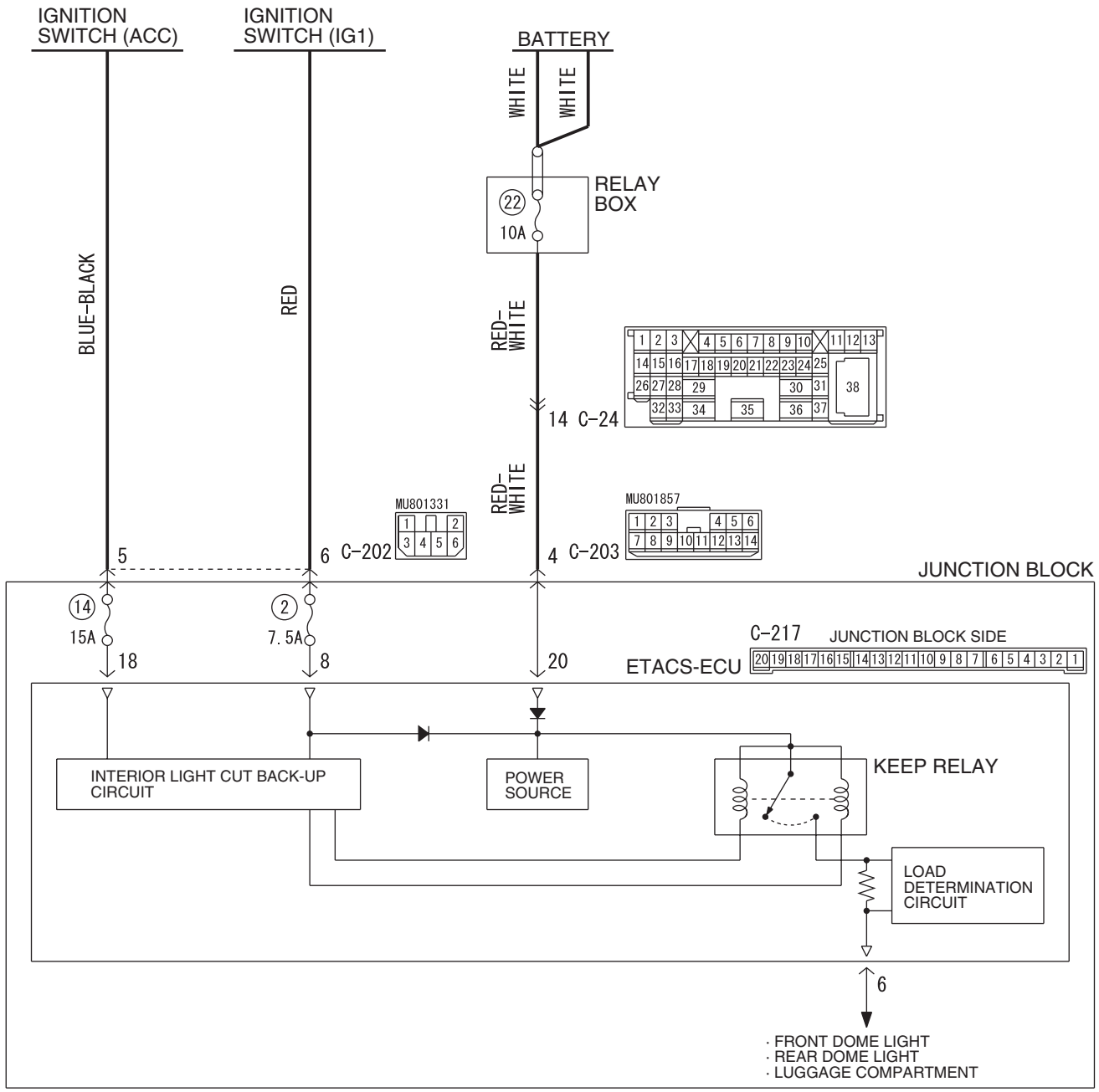
Q: Can the transmitter be registered correctly?

YES : If the transmitter works normally, the input signal from the transmitter should be normal.

NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the transmitter works normally, the input signal from the transmitter should be normal.

INSPECTION PROCEDURE N-9: ETACS-ECU does not receive any interior light loaded signal.

Interior Light Automatic Shut-Down Function Circit



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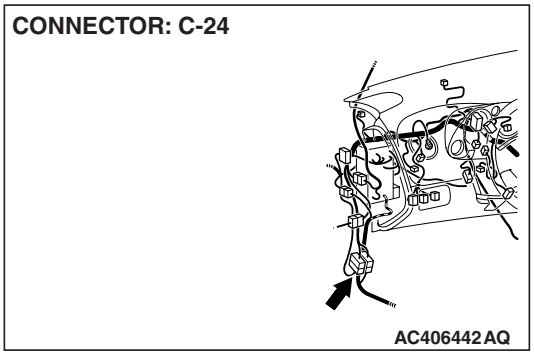
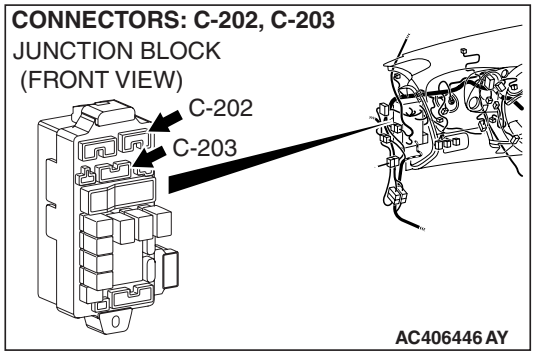
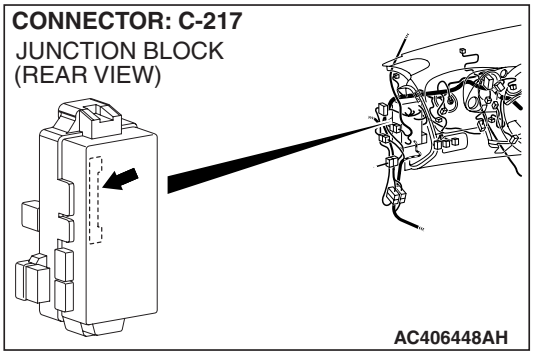






CIRCUIT OPERATION

The ETACS-ECU operates the following equipment or functions by the interior light loaded signal:

- Interior light automatic shut-down function
- Dome light
- Ignition key cylinder illumination light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the equipment or functions described in "CIRCUIT OPERATION" do not work normally.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

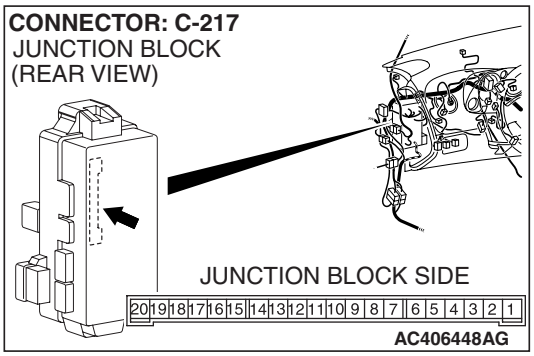
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-217 in good condition?

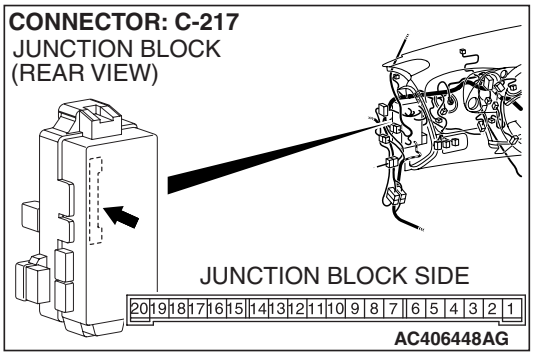
YES : Go to Step 2.

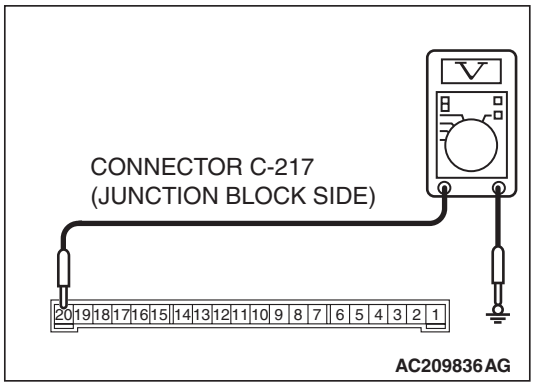
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions or equipment described in "CIRCUIT OPERATION" work normally, the interior light loaded signal should be normal.



STEP 2. Check the battery line of power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.

(1) Disconnect ETACS-ECU connector C-217 and measure the voltage available at the junction block side of the connector.



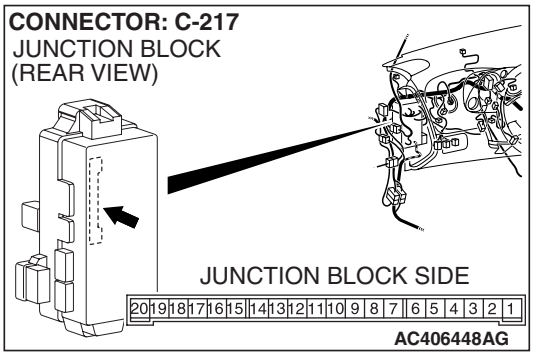


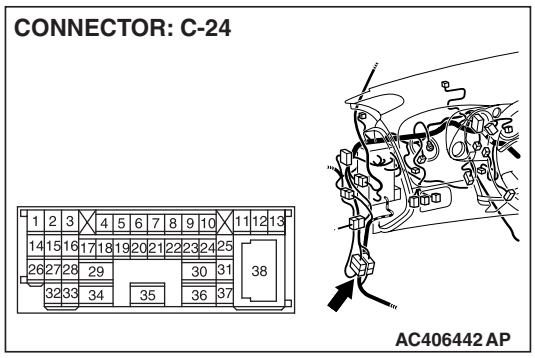
(2) Measure the voltage between terminal 20 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

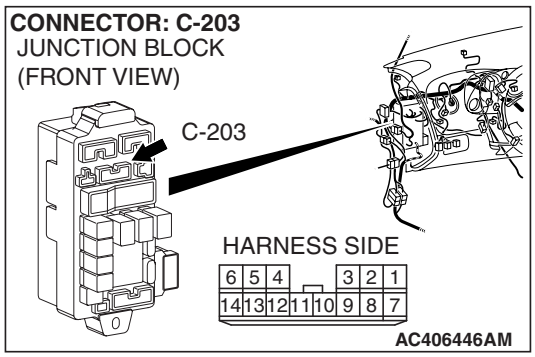
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-217 (terminal 20) and battery.







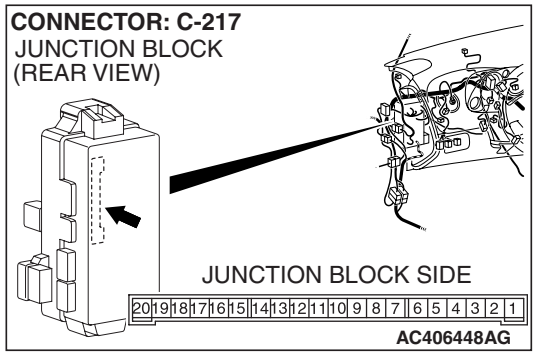
NOTE: Also check junction block connector C-203 and intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-203 or intermediate connector C-24 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 20) and battery in good condition?

YES : No action is necessary and testing is complete.

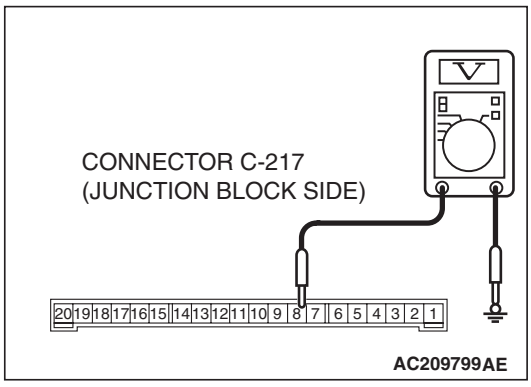
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions or equipment described in "CIRCUIT OPERATION" work normally, the interior light loaded signal should be normal.

STEP 4. Check the ignition switch (IG1) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.



(1) Disconnect ETACS-ECU connector C-217 and measure the voltage available at the junction block side of the connector.

(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between terminal 8 and ground.

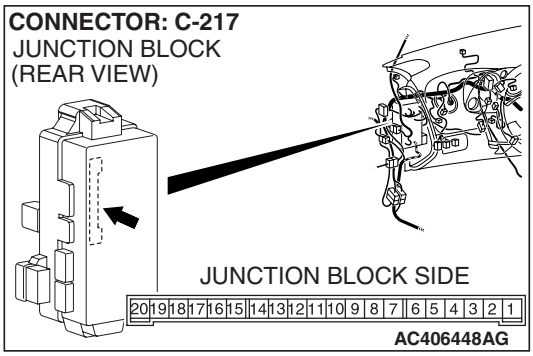
- The voltage should measure approximately 12 volts (battery positive voltage).

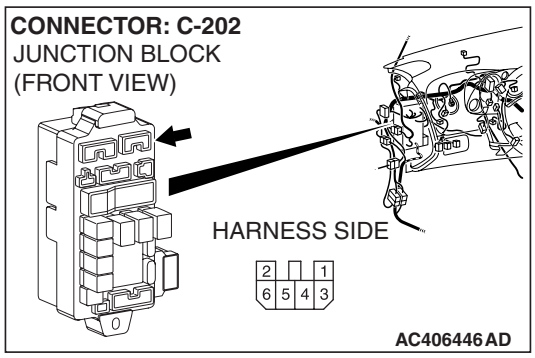
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between ETACS-ECU connector C-217 (terminal 8) and the ignition switch (IG1).





NOTE: Also check junction block connector C-202 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202 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-217 (terminal 8) and the ignition switch (IG1) in good condition?

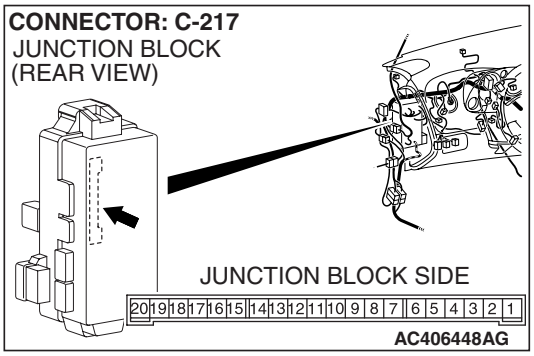
YES : No action is necessary and testing is complete.

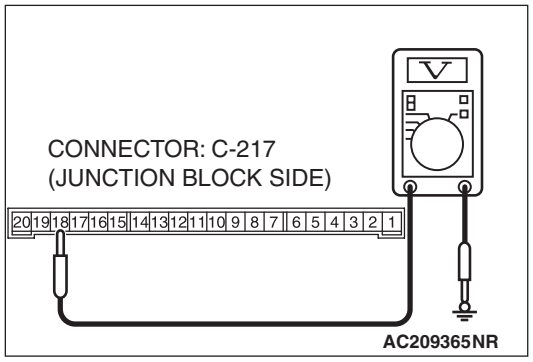
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions or equipment described in "CIRCUIT OPERATION" work normally, the interior light loaded signal should be normal.

STEP 6. Check the ignition switch (ACC) line of the power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-217.

(1) Disconnect ETACS-ECU connector C-217 and measure the voltage available at the junction block side of the connector.

(2) Turn the ignition switch to the "ACC" position.





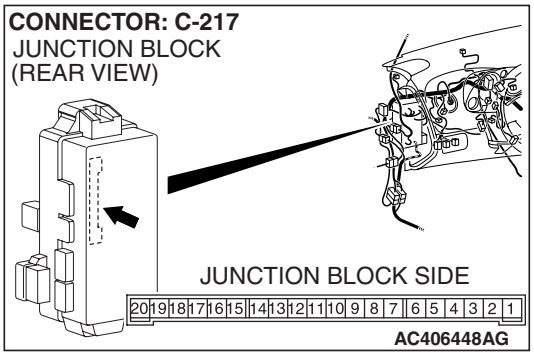
(3) Measure the voltage between terminal 18 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

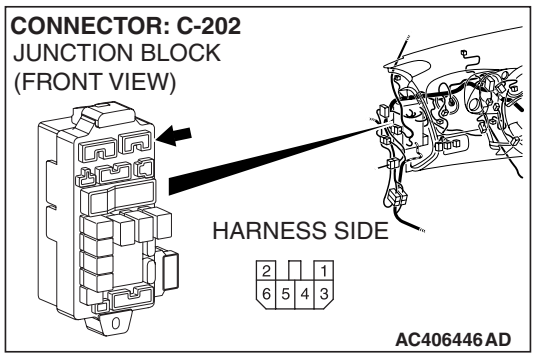
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the functions or equipment described in "CIRCUIT OPERATION" work normally, the interior light loaded signal should be normal.

NO : Go to Step 7.

STEP 7. Check the wiring harness between ETACS-ECU connector C-217 (terminal 18) and the ignition switch (ACC).





NOTE: Also check junction block connector C-202 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202 is damaged, repair or replace the damaged component(s) as described in

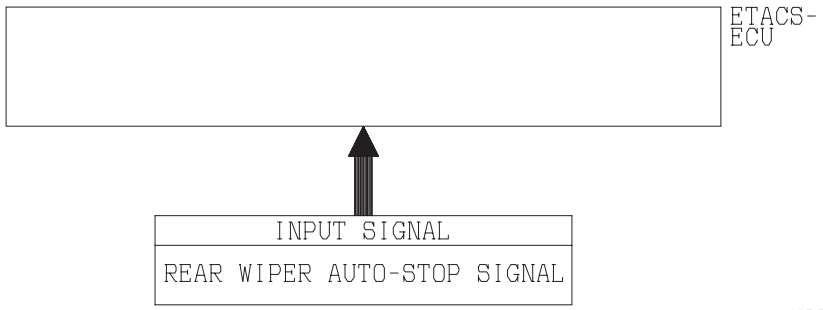
Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 18) and ignition switch (ACC) in good condition?

YES : No action is necessary and testing is complete.

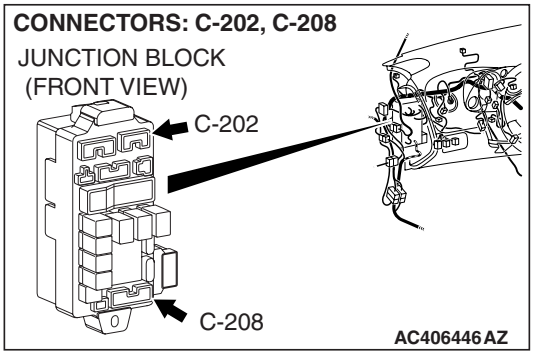
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions or equipment described in "CIRCUIT OPERATION" work normally, the interior light loaded signal should be normal.

INSPECTION PROCEDURE N-10: ETACS-ECU does not receive an auto-stop signal from the rear wiper motor.

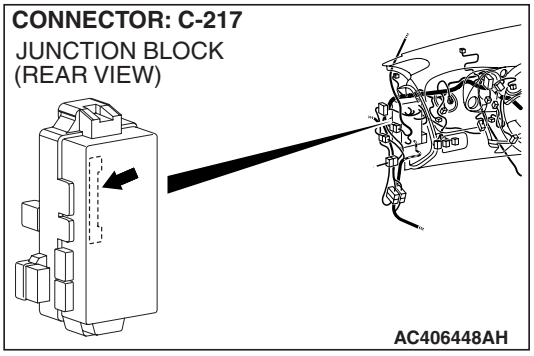
Rear Wiper Auto-stop Signal Input



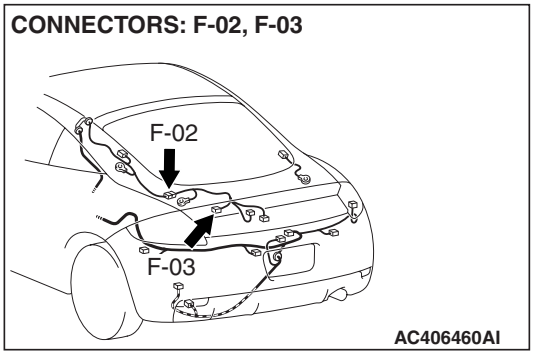
CONNECTORS: C-202, C-208



CONNECTOR: C-217



CONNECTORS: F-02, F-03



CIRCUIT OPERATION

The ETACS-ECU makes the rear wiper stop at the predetermined park position according to the auto-stop signal from the rear wiper motor.

TECHNICAL DESCRIPTION (COMMENT)

If this signal is not normal, the rear wiper does not stop at the predetermined park position.

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

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DIAGNOSIS

Required Special Tool:

- MB991223: Test Harness Set
- MB992006: Extra Fine Probe

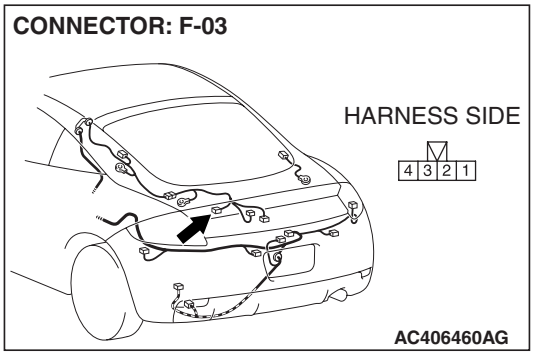
STEP 1. Check rear wiper motor connector F-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear wiper motor connector F-03 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

CONNECTOR: F-03

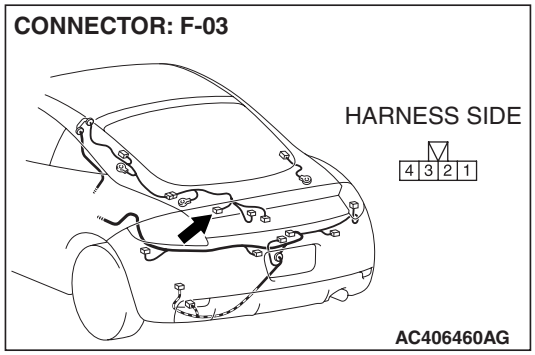


STEP 2. Check the rear wiper.

Q: Does the rear wiper motor operate (however, the rear wiper does not stop at the predetermined park position)?

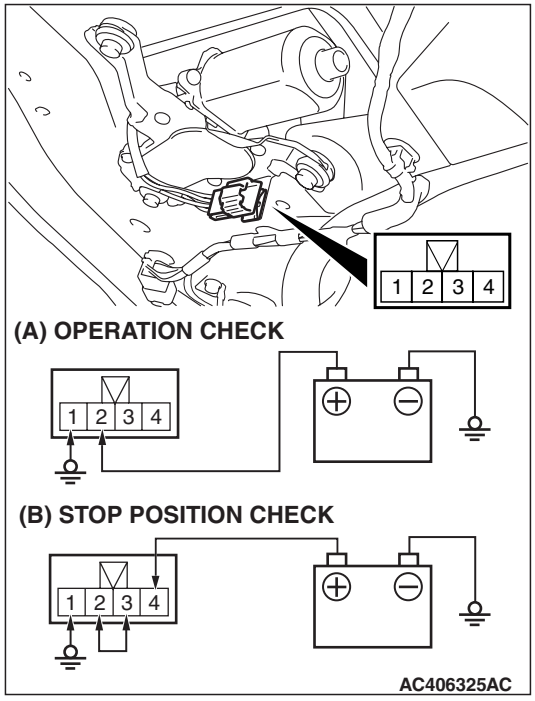
YES : Go to Step 3.

NO : Refer to Inspection Procedure H-1 "Rear wiper does not work at all P.54B-269."



STEP 3. Check the rear wiper motor.

(1) Disconnect rear wiper motor connector F-03.



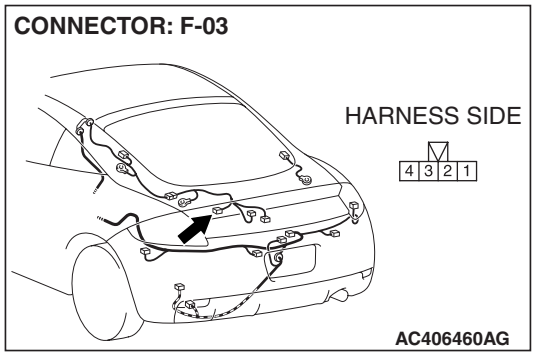
(2) While the rear wiper motor is running, disconnect the battery to stop the motor.
(3) When the battery is connected as shown, the motor should run again and stop at the predetermined park position.

Q: Does the rear wiper motor operate normally?

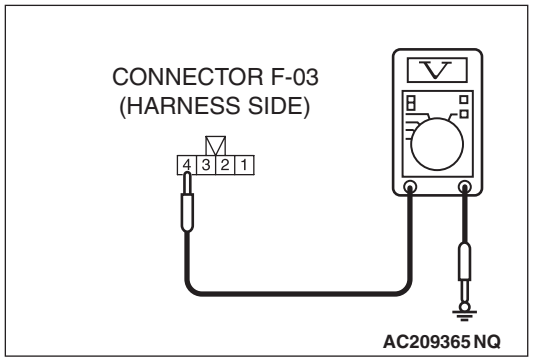
YES : Go to Step 4.

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. Measure at rear wiper motor connector F-03 by backprobing to check the ignition switch (ACC) line of the power supply to the rear wiper motor.



(1) Do not disconnect rear wiper motor connector F-03 and measure the voltage available at the wiring harness side of the connector.
(2) Turn the ignition switch to the "ACC" position.

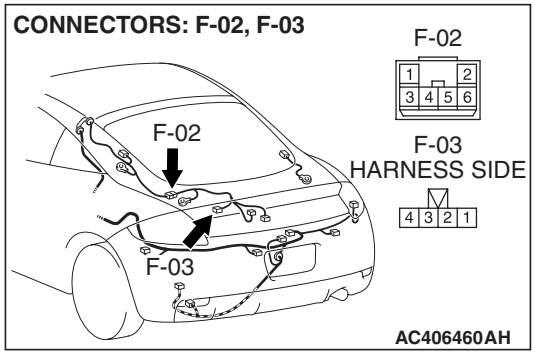


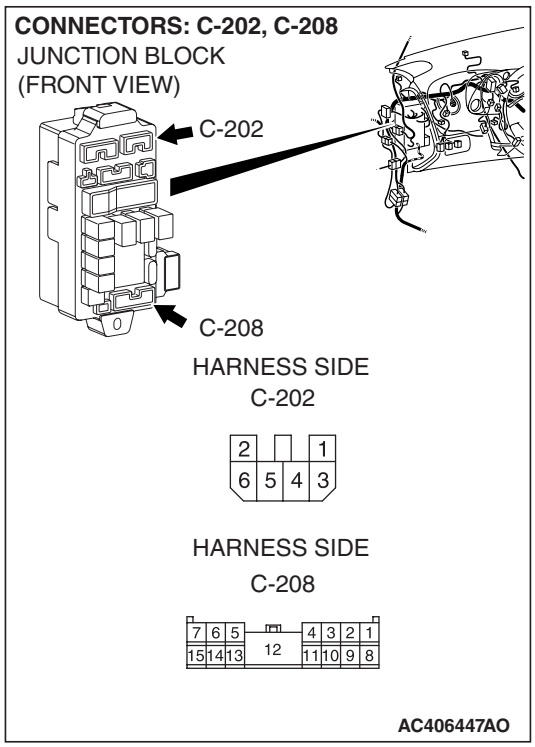
(3) Measure the voltage between terminal 4 and ground by backprobing.
- The voltage should equal approximately 12 volts (battery positive voltage).

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-03 (terminal 4) and the ignition switch (ACC).





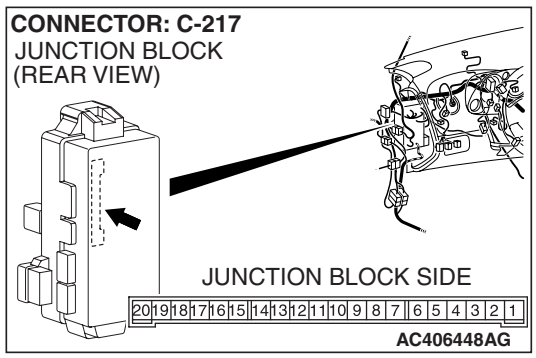
NOTE: Also check intermediate connector F-02, junction block connectors C-202 and C-208 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-02, junction block connectors C-202 or C-208 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear wiper motor connector F-03 (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-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

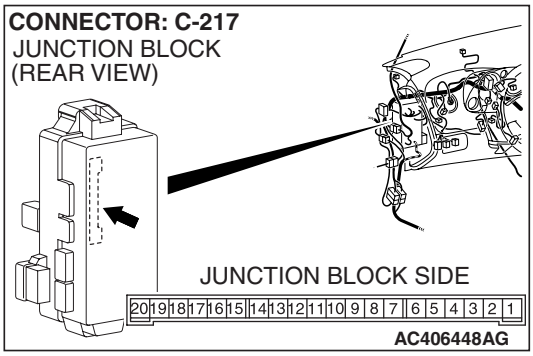


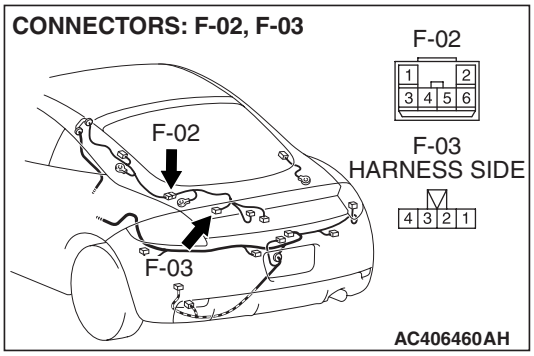
Q: Is ETACS-ECU connector C-217 in good condition?

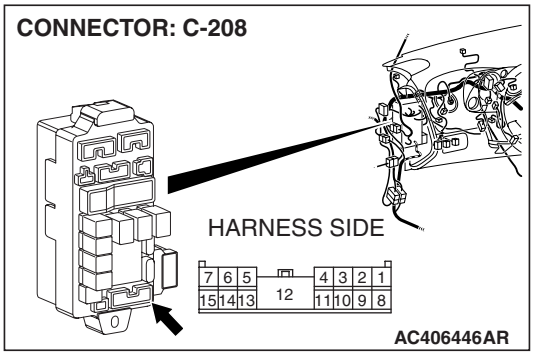
YES : Go to Step 7.

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-03 (terminal 3) and ETACS-ECU connector C-217 (terminal 17).







NOTE: Also check intermediate connector F-02 and junction block connector C-208 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector F-02 or junction block connector C-208 are damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear wiper motor connector F-03 (terminal 3) and ETACS-ECU connector C-217 (terminal 17) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-13. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

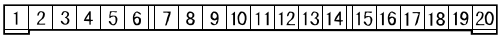
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the rear wiper operates normally, it indicates that a correct auto-stop signal is sent from the rear wiper motor.

CHECK AT ECU TERMINAL

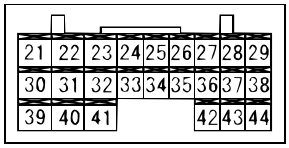
M1549001201279

ETACS-ECU

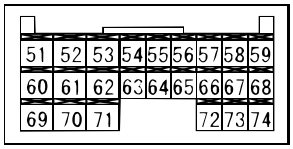
C-217



C-219



C-218



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*NOTE: *:The terminal No.1 to 20 connectors cannot be measured as the ETACS-ECU is installed directly on the junction block. Therefore, this information is only for reference.*

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Output to power window relay	When the power windows can work	Battery positive voltage
2	Battery positive voltage (for central door lock)	Always	Battery positive voltage
3	Ground (for ECU)	Always	0 V
4	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
5	Output to dome light	When dome light is on	2 V or less
6	Power supply to interior light	Always (when interior light shutoff function is not operating)	Battery positive voltage
7	–	–	–
8	Power supply to ignition switch (IG1)	Ignition switch: "ON"	Battery positive voltage
9	Output to turn-signal light (RH)	When turn-signal light (RH) is on	Battery positive voltage
10	Input from door switch (LH)	Door switch (LH): ON (driver's door open)	0 V
11	Battery power supply for turn-signal light	Always	Battery positive voltage
12	Output to door lock	When door lock actuator is operating (doors locked)	Battery positive voltage
13	Output to door unlock (excluding driver's door)	When door lock actuator is operating (doors unlocked)	Battery positive voltage
14	Output to turn-signal light (LH)	When turn-signal light (LH) is on	Battery positive voltage
15	–	–	–
16	Output to rear wiper	When rear wiper is operating	Battery positive voltage
17	Output to automatic stop signal to rear wiper	When rear wiper is operating	Battery positive voltage
18	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
19	–	–	–
20	Battery power supply (for ECU)	Always	Battery positive voltage

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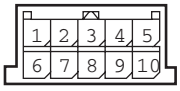
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
21	–	–	–
22	Output to door unlock (for driver's door)	When driver's door lock actuator is operating (doors unlocked)	Battery positive voltage
23	Output to rear washer	When rear washer is operating	Battery positive voltage
24	–	–	–
25	Input of door lock key cylinder switch (UNLOCK) signal	Door lock key cylinder switch: UNLOCK	0 V
26 –29	–	–	–
30	Input of key reminder switch signal	Key reminder switch: ON (when ignition key is removed)	0 V
31	–	–	–
32	Output to liftgate open	When liftgate open actuator is operating (liftgate opened)	Battery positive voltage
33	Input of door lock switch (LOCK) signal	Door lock switch (incorporated in power window switch): LOCK	0 V
34	Input of door lock switch (UNLOCK) signal	Door lock switch (incorporated in power window switch): UNLOCK	0 V
35	–	–	–
36	Input of door lock actuator (LH) "UNLOCK" signal	Door lock actuator (LH): UNLOCK	0 V
37	–	–	–
38	Ground (for sensor)	Always	0 V
39	Input from backup light switch	Backup light switch: ON	Battery positive voltage
40	–	–	–
41	Input of liftgate lock release switch	Liftgate lock release switch: ON	0 V
42	Input of door lock key cylinder switch (LOCK) signal	Door lock key cylinder switch: LOCK	0 V
43	Input of passenger's door lock actuator (UNLOCK) signal	Passenger’s door lock actuator: UNLOCK	0 V
44	Output to horn relay	When a horn sounds by the keyless entry horn answerback function	2 V or less
45 –50	–	–	–
51	Output to data link connector	When input check signal is output	0 –12 V (when input pulse signal is fluctuating)
52	Output to luggage compartment light	When luggage compartment light is on	2 V or less
53	–	–	–
54	Input of front fog light switch signal	Front fog light switch: ON	0 V

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
55	Input of hazard warning light switch signal	Hazard warning light switch: ON (When the switch is depressed)	0 V
56	Ground (for sensor)	Always	0 V
57	Output of key reminder switch (key ring antenna) signal	Always	0 V
58	Input of key reminder switch (key ring antenna) signal	Always	0 V
59	SWS communication line	Always	0 –12 V (pulse signal)
60	Output to immobilizer indicator light	When immobilizer indicator light is on	Battery positive voltage
61	–	–	–
62	Input from liftgate latch switch	Liftgate latch switch: ON (liftgate open)	0 V
63, 64	–	–	–
65	Input from door switch (RH)	Door switch (RH): ON (passenger's door open)	0 V
66	Input of signal from variable intermittent wiper control switch	Ignition switch: "ACC," Variable intermittent wiper control switch: "FAST" to "SLOW"	0 →2.5 V
67	Input of diagnosis indication selection	When scan tool is connected	0 V
68	Output of data request signal	Always	0 –12 V (pulse signal)
69	Output to ignition key hole illumination light	When ignition key hole illumination light is on	0 V
70	–	–	–
71	Power supply to interior light	Always (when interior light shutoff function is not operating)	Battery positive voltage
72 –74	–	–	–

COLUMN SWITCH



C-309

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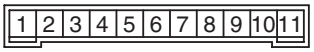
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Battery power supply	Always	Battery positive voltage
2	Input of data request signal	Always	0 –12 V (pulse signal)
3	SWS communication line	Always	0 –12 V (pulse signal)
4	Ground	Always	0 V
5	–	–	–
6	Output of signal from variable intermittent wiper control switch: "FAST" to "SLOW"	Igniting switch: "ACC," Variable intermittent wiper control switch: "FAST" to "SLOW"	0 →2.5 V
7	–	–	–
8	Output of backup signal from windshield wiper switch	Windshield low-speed wiper switch or windshield high-speed wiper switch: ON	0 V
9	Power supply to ignition switch (IG1)	Ignition switch: "ON"	Battery positive voltage
10	Output of backup signal from headlight switch	Ignition switch: "ON," Headlight switch: ON	0 V

FRONT-ECU

A-13X



A-14X

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NOTE: Terminal voltages cannot be measured as the front-ECU is installed directly on the relay box. Therefore, this information is only for reference.

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1 –3	–	–	–
4	Output to taillights	When taillights are on	Battery positive voltage
5	Battery power supply (for ECU)	Always	Battery positive voltage
6	Output to headlight (low-beam)	When headlights (low-beam) are on	Battery positive voltage
7	Battery power supply (for taillight)	Always	Battery positive voltage
8, 9	Battery power supply (for headlight)	Always	Battery positive voltage

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
10	Output to headlight (high-beam)	When headlights (high-beam) are on	Battery positive voltage
11	Output to front fog light relay	When the front fog lights are on	Battery positive voltage
21	Ground	Always	0 V
22	Power supply to ignition switch (IG2)	Ignition switch: "ON"	Battery positive voltage
23	–	–	–
24	Output to windshield wiper (high-speed)	When windshield wiper is on (at high speed)	Battery positive voltage
25	Output to windshield wiper (low-speed)	When windshield wiper is on (at low speed)	Battery positive voltage
26	Input of backup signal to windshield wiper	Windshield low-speed wiper switch or windshield high-speed wiper switch: ON	0 V
27	Input of backup signal from headlight switch	Headlight switch: ON	0 V
28	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
29	Input of automatic stop signal to windshield wiper	When windshield wiper is on	Battery positive voltage
30	SWS communication line	Always	0 –12 V (pulse signal)
31	Output to windshield washer	When windshield washer is on	Battery positive voltage

SUNROOF-ECU

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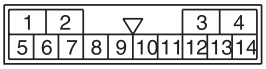

AC406934AB

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Battery power supply (for motor)	Always	Battery positive voltage
2	–	–	–
3	Power supply to ignition switch (IG2)	Ignition switch: ON	Battery positive voltage
4	Ground	Always	0 V
5	–	–	–
6	SWS communication line	Always	0 –12 V (pulse signal)
7	–	–	–
8	Input signal ("OPEN") from the sunroof switch	Sunroof switch: "OPEN"	0 V
9	Input signal ("UP") from the sunroof switch	Sunroof switch: "UP"	0 V
10	Input signal ("CLOSE/DOWN") from the sunroof switch	Sunroof switch: "CLOSE/DOWN"	0 V
11 –14	–	–	–