GROUP 54B

SIMPLIFIED WIRING SYSTEM (SWS)

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GENERAL INFORMATION

COMMUNICATION METHOD

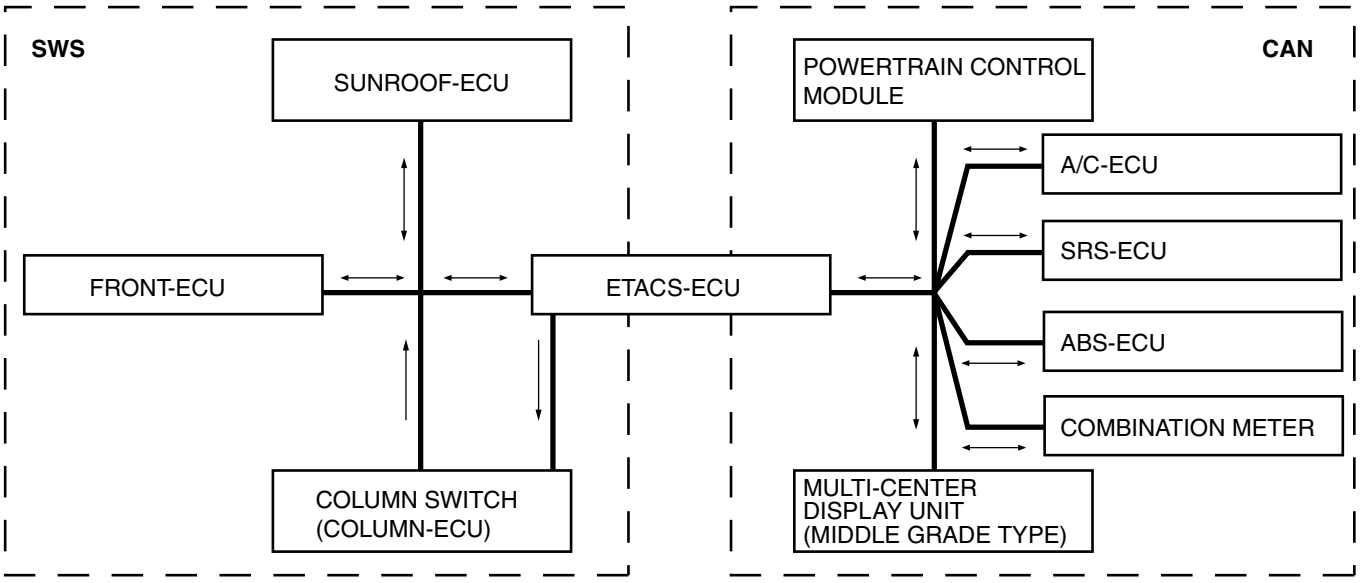
M1549013000688

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 powertrain control module, the A/C-ECU, the SRS-ECU, the combination meter, the ABS-ECU, and the middle-grade multi-center display or mitsubishi multi communication system. These two communications groups are connected to form a dedicated network for sending multiplex data.

*NOTE: *1ETACS: Electronic Time and Alarm Control System*

*NOTE: *2CAN: Controller Area Network*

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



OPERATION

M1549013100737

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 is met with the ignition switch at "ON" or "ST", the ETACS-ECU sounds the tone alarm by using the driver's seat belt switch signal and the vehicle speed signal sent from the combination meter.

- Sounds the tone alarm for six seconds when the ignition switch is turned "ON" with the seat belt switch on (the driver's seat belt is not fastened). This is called "Timer function".
- Sounds the tone alarm 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-seconds "on" and then three-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 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 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 WARNING BUZZER

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 for 4 times even if the ignition, door status, or vehicle speed requirements are not maintained.

MULTI-CENTER DISPLAY OPERATION TONE <VEHICLES WITH MULTI-CENTER DISPLAY (MIDDLE GRADE TYPE) OR MITSUBISHI MULTI COMMUNICATION SYSTEM>

The ETACS-ECU sounds the buzzer when the buzzer signal is sent from the multi-center display.

TURN-SIGNAL LIGHT BUZZER

The ETACS-ECU sounds the buzzer in sync with the turn-signal lights or hazard warning lights.

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 front passenger’s door lock switch:

- When the door is locked by the driver’s or front 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 front 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 front 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 front 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 ANSWERBACK FUNCTION

If the keyless entry transmitter is used to send a lock signal to the ETACS-ECU, all doors, the liftgate, and the glass hatch 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, the liftgate, and the glass hatch are unlocked. Each time the unlock signal is sent, the hazard warning lights flash twice.

KEYLESS ENTRY HORN ANSWERBACK FUNCTION

If the keyless entry transmitter is used to send 2 lock signals to the ETACS-ECU, the first signal locks all doors, the liftgate, and the glass hatch, while the second signal sounds the horn once.

TRUNK UNLOCK FUNCTION

Press the "TRUNK" button twice within 5 seconds and the trunk lid 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 front passenger’s door is opened, the sunroof timer function is deactivated from that moment.

WINDSHIELD WIPERS AND WASHERS

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 (LO) 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 (HI), 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 second until 2 seconds after the windshield washer switch goes OFF to operate the windshield wiper continuously. When the windshield washer switch is turned ON, if the windshield wiper is operating intermittently, intermittent operations will be continued after continuous operations.

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 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.

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 reverse 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.

FOG LIGHT

FOG LIGHT

The fog lights will illuminate only when the fog light switch is operated while the low-beam headlights are on.
The fog lights will be switched off when any of the following conditions is met. The fog lights will also be switched off automatically by headlight automatic shutdown function.

- When the high-beam headlights are switched on, the fog lights will be switched off. If the low-beam headlights are switched on again, the 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 fog lights will be switched off. If the low-beam headlights are switched on again, the fog lights will not illuminate again.

FOG LIGHT INDICATOR

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

INTERIOR LIGHT

ETACS-ECU makes it possible to force operation of all ON and OFF light switches in the overhead console (the map light, rear dome light, and trunk light). This function is assigned higher priority than the controls for the interior light switch that are performed when the doors are in certain positions.

- When the lights are forced on, the illumination level is 100 percent as all interior lights are switched on (the map light, rear dome light, and trunk light). Even when all lights are forced on, the interior light automatic shutoff function is active.
- When the lights are forced off, all interior lights are immediately switched off (the map light, rear dome light, and trunk light).

When the interior light switch is at DOOR position, the ETACS-ECU controls the interior lights as follows:

- 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 dims a luminance of 65 percent, and goes off 30 seconds later. However, if the ignition switch is turned ON or if a door is locked while the interior lights is 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 all doors are 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 will flash twice when doors are locked. When doors are unlocked, the interior lights up at a luminance of 100 percent, and goes off 15 seconds later.

INTERIOR LIGHT AUTOMATIC SHUTDOUN 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 extinguishes 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 stops illuminating if the ignition switch or the seat belt switch is turned off (the driver's seat belt is fastened) while the timer operation is active.

DOOR-AJAR INDICATOR LIGHT

The combination meter receives the signal sent from the ETACS-ECU about whether each door (including the tailgate and glass hatch) is open or closed and turns the door ajar indicator light on and off. While the door ajar indicator is illuminated, the door ajar warning function is activated and the door ajar indicator light flashes 4 times. If the door remains open even after the 4 warning flashes, the door ajar indicator light will be illuminated again.

THEFT-ALARM SYSTEM

THEFT-ALARM SYSTEM OPERATION

When the theft-alarm system has been armed, if a door, trunk lid or hood is opened, the horn will sound and headlights flash (high-beam) intermittently for a period of 180 seconds. This system is controlled by the ETACS-ECU. The system is composed of the components described below.

PANIC ALARM FUNCTION

With the theft-alarm function armed, pressing the panic button on the keyless entry system transmitter causes the horn to sound for about 180 seconds in an attempt to prevent theft. The alarm is turned off by pressing any switch on the transmitter.

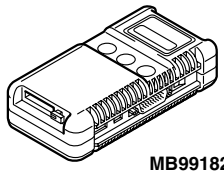
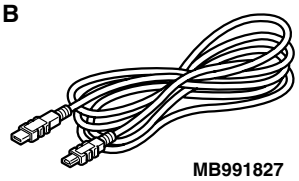
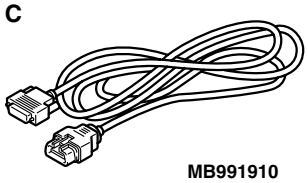
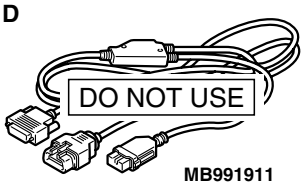
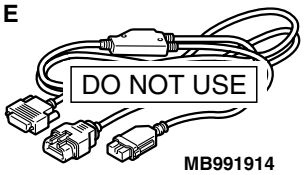
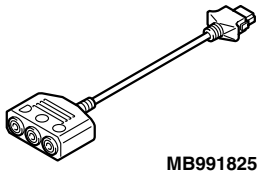
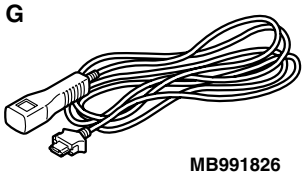
CONFIGURATION FUNCTION

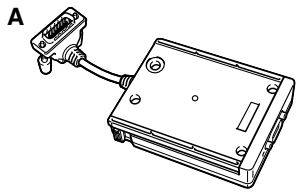
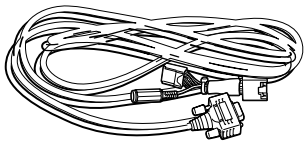
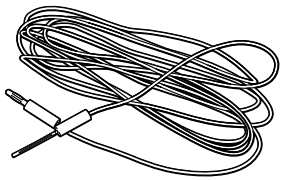
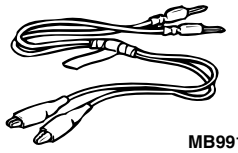
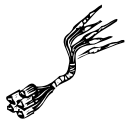
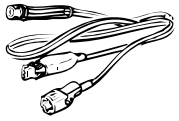
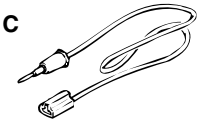
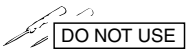
The following functions can be adjusted by operating the middle-grade multi-center display (if equipped).

- Keyless entry horn answerback function
- Keyless entry hazard light answerback function
- Timed locking mechanism
- Turn-signal light buzzer
- Door ajar warning buzzer
- Adjustment of door unlocking operation on keyless entry system
- Vehicle speed-dependent wiper function
- Headlight automatic shutdown function
- Delay-off time of the dome light
- Interior light automatic shutoff function
- Initialization of above mentioned functions

SPECIAL TOOL

M1549000301529

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 M.U.T.-III sub assembly A: Vehicle communication interface (V.C.I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness a (vehicles with CAN communication system) D: M.U.T.-III Main Harness B (Vehicles without CAN communication system) E: M.U.T.-III main harness C (for Daimler Chrysler models only) F: M.U.T.-III measurement adapter G: M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-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 M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-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 (M.U.T.-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	Continuity check and voltage measurement at harness wire or connector for loose, corroded or damaged terminals, or terminals pushed back in the connector. 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 INFORMATION

BEFORE CARRYING OUT TROUBLESHOOTING

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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

ON-BOARD DIAGNOSTICS

M1549028900472

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 (M.U.T.-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 (M.U.T.-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 diagnosis code for the past problem is not sent.*

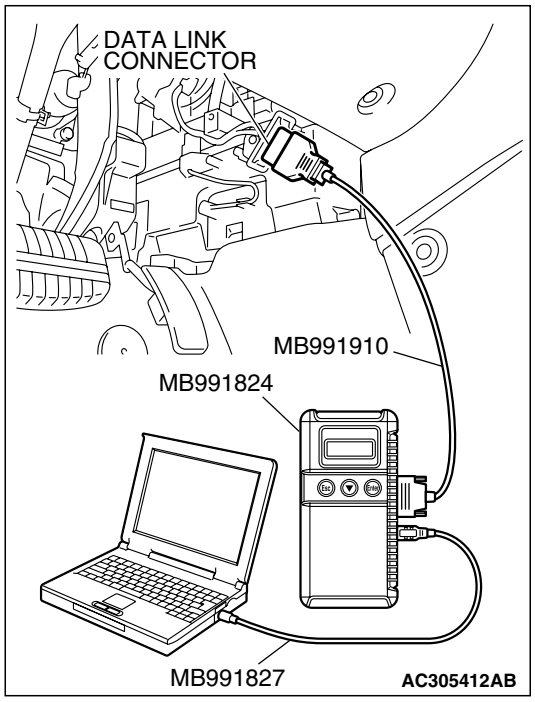
CODE NUMBER	TROUBLE CONTENT
U1700	Malfunction in the SWS communication line
U1701	Communication error in the column switch
U1702	Communication error in the front-ECU
U1703*1	Communication error in the sunroof-ECU or the sunroof not installed
U1704*2	Communication error in the power window main switch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

HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable

TSB Revision



- MB991910: M.U.T.-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.

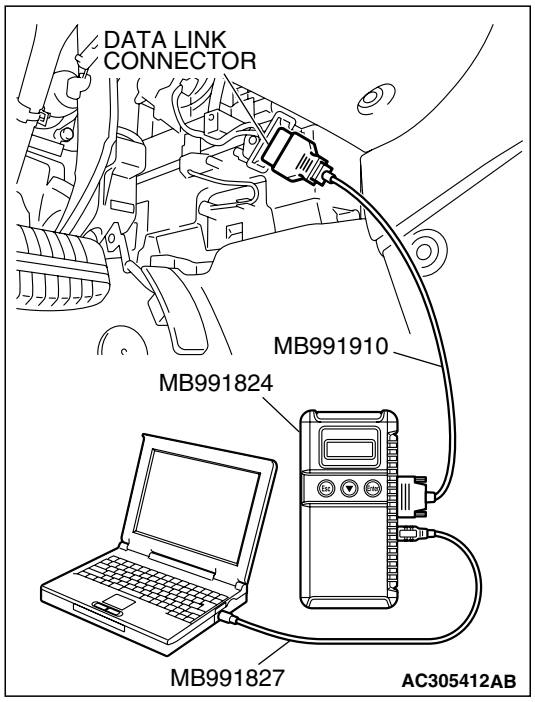
   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the M.U.T.-III system on the personal computer.

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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



⚠ 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.

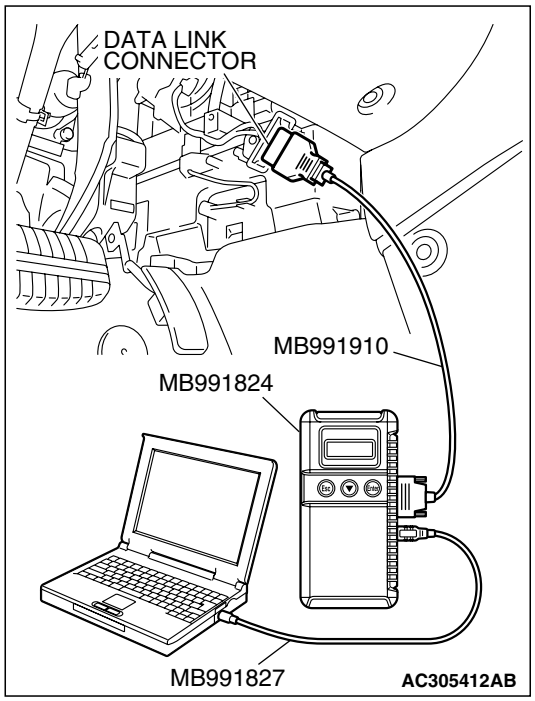
NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool MB991958 does not display.

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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



⚠ 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

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1. Gather information about the problem from the customer.
2. Verify that the condition described by the customer exists.

   NOTE: If an error occurs in the SWS communication line, the ECU isolated from the communication line performs a fail-safe or backup operation, so the problem may not match the one shown in the 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 (M.U.T.-III Sub Assembly) to select "ECU COMM Check" on the SWS monitor display.

   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:

   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.

- 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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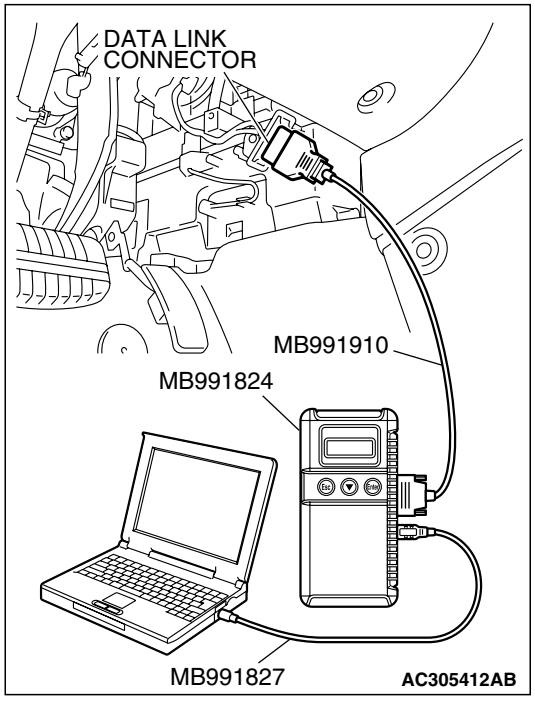
Required Special Tools:

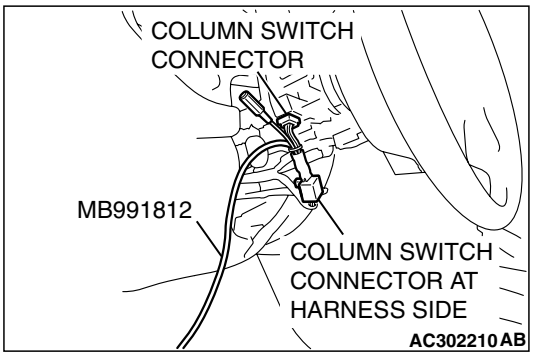
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

⚠ CAUTION

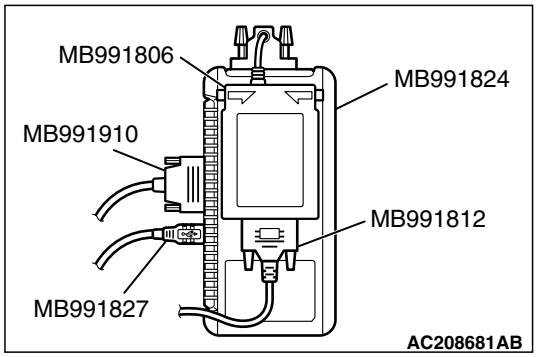
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect the main harness A MB991910 before connecting the SWS monitor harness (for column-ECU) MB991812. Be sure to connect SWS monitor cartridge MB991806 after turning on the V.C.I. MB991824.

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.



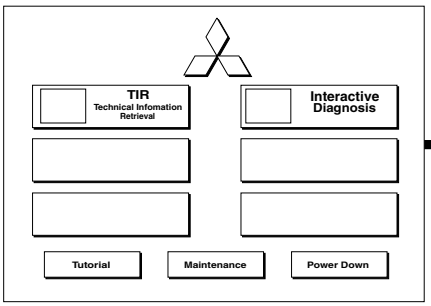
9. Connect special tool MB991812 to special tool MB991806.
10. Connect special tool MB991806 to special tool MB991824.
11. Turn the power switch of special tool MB991824 to the "ON" position.

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

HOW TO USE SWS MONITOR

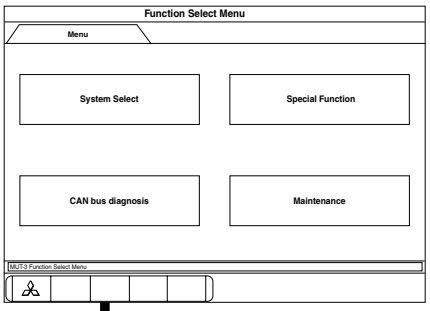
M1549020400428

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

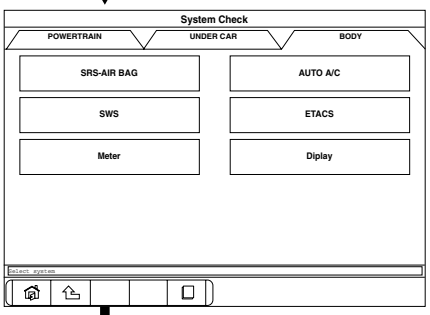


Start-up the M.U.T.-III system.

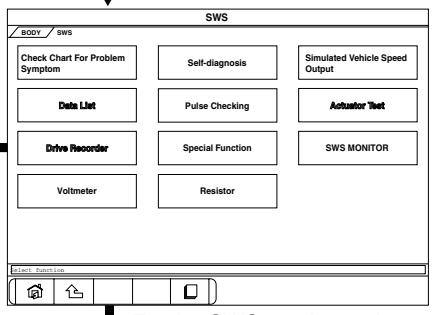
Select "Interactive Diagnosis"



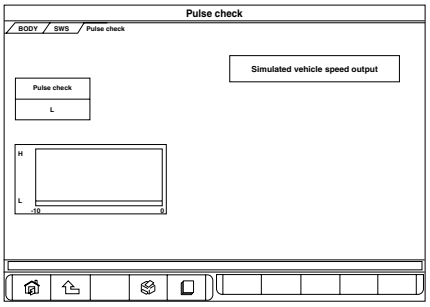
Select "System Select".



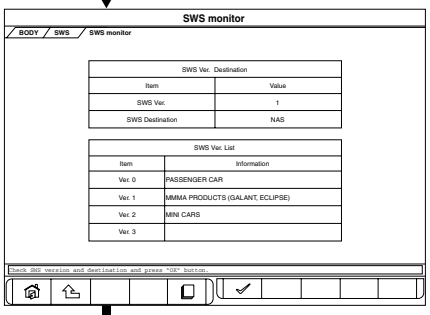
Select "SWS" from the "BODY" tab.



For the pulse check, select "Pulse Checking".



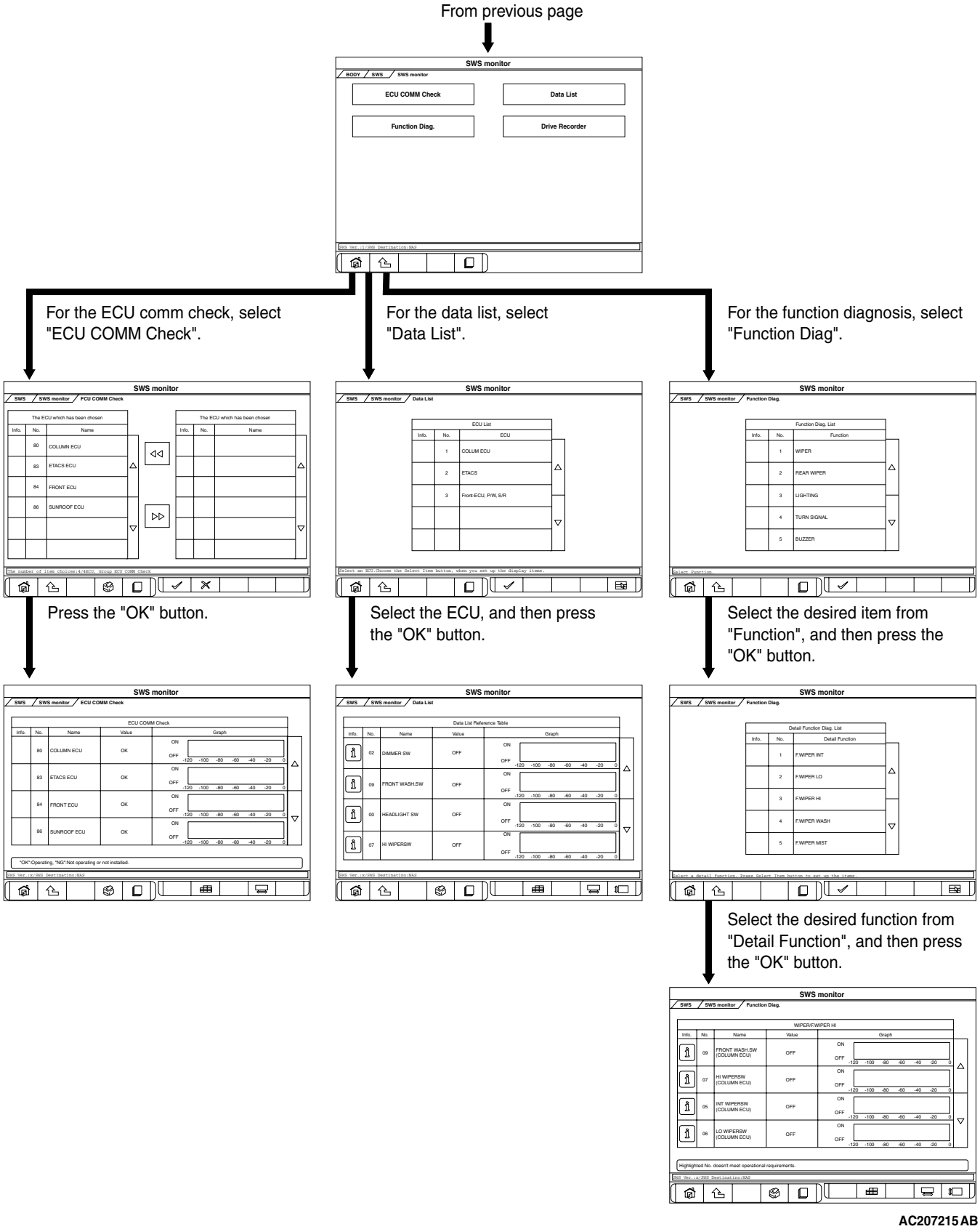
For the SWS monitor, select "SWS MONITOR".



Confirm the SWS version and destination.

To next page

AC207214 AB



AC207215AB

HOW TO CHECK ECUS

M1549014900907

1. Use the scan tool MB991958 (M.U.T.-III Sub Assembly) and the SWS monitor kit to check ECUs.

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2. The following ECUs can be checked by using the scan tool MB991958 (M.U.T.-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-61).

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

M1549015001063

Use the scan tool MB991958 (M.U.T.-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-29.

1. The following input signals can be checked by using the scan tool MB991958 (M.U.T.-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-65.

<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
Dimmer switch	02	DIMMER SW	Dimmer switch: ON	ON
			Dimmer switch: OFF	OFF

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

ETACS-ECU

CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
Tone alarm	43	BUZZER	1. Ignition switch: LOCK (OFF) 2. Key reminder switch: ON 3. Front door switch: ON (front door open)	ON
			When requirements for sounding each warning tone alarm are not satisfied	OFF

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CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
Front fog lights	36	F.FOG LIGHT	1. Lighting switch: HEAD 2. Fog light switch: ON	ON
			Other than the condition above	OFF
Driver's door switch	32	FRONT DOOR SW	Driver's door switch and Front passenger's door switch is on	ON
			Driver's door switch and Front 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. Front door switch: ON (front door open)	OFF to ON (after approximately one second)
			When requirements for the headlight automatic shutoff are not satisfied	OFF
Ignition switch (ACC)	31	IG SW (ACC)	Ignition switch: ACC or ON	ON
			Ignition switch: LOCK (OFF) or START	OFF
Ignition switch (IG1)	30	IG SW (IG1)	Ignition switch: ON or START	ON
			Ignition switch: LOCK (OFF) or ACC	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 (M.U.T.-III Sub Assembly) displays intermittent wiper interval in response to the intermittent wiper control positions.

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

Front-ECU, Sunroof-ECU

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

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CHECK ITEM	ITEM NO.	DISPLAY ON SCAN TOOL	CHECK CONDITION	NORMAL CONDITION
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 (M.U.T.-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 (M.U.T.-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

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
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 (M.U.T.-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
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

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
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

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	Front 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

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
OFF	00	Headlight switch	HEADLIGHT SW (COLUMN ECU)	OFF
	01	Tail light 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
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

ITEM	ITEM NO.	INPUT SIGNAL	DISPLAY ON SCAN TOOL	NORMAL CONDITION
F.FOG LIGHT	00	Headlight switch	HEADLIGHT SW (COLUMN ECU)	ON
	36	Front fog light switch	F.FOG LIGHT (COLUMN ECU)	ON
	35	Headlight automatic shutoff function	H/L AUTO-CUT (ETACS ECU)	OFF
	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
TAIL LIGHT	00	Headlight switch	HEADLIGHT SW (COLUMN ECU)	OFF
	01	Tail light 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 (M.U.T.-III Sub Assembly) does not display the title "IGNITION SWITCH".

For checking item "HEADLIGHT HI", the scan tool MB991958 (M.U.T.-III Sub Assembly) displays "OFF" on the item No.2 "DIMMER SW" when the headlights are at high-beam. Therefore, the scan tool MB991958 (M.U.T.-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	Front 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	Tail light switch	TAILLIGHT SW (COLUMN ECU)	
	30	Ignition switch (IG1)	IG SW (IG1) (ETACS ECU)	OFF
	32	Front 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

M1549015100818

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

Switches and their conditions, which are applicable for Pulse Check

2. Use the scan tool MB991958 (M.U.T.-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-65.

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 switches	A door is opened when all the doors are closed
Door lock key cylinder switch	When a door is locked or unlocked by a key cylinder
Door lock actuators	Move the door lock knob from lock position to unlock position or vice versa
Door lock switch (incorporated in the power window main switch and front power window sub switch)	When a door is locked or unlocked by a door lock switch
Trunk lid latch assembly	When the trunk lid is opened
Keyless entry transmitter	When the switch is turned from off to on
Interior light loaded signal	Illuminates the interior lights
Hood switch	When the hood is opened

DIAGNOSTIC TROUBLE CODE CHART

M1549000700900

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

*NOTE: *2: The diagnostic trouble code for the past problem is not sent.*

DIAGNOSTIC TROUBLE CODE NO.	DESCRIPTION	REFERENCE PAGE
U1700	Malfunction in the SWS communication line	P.00-14
U1701	Communication error in the column switch	P.54C-8
U1702	Communication error in the front-ECU	P.54C-16
U1703*1	Communication error in the sunroof-ECU or the sunroof not installed	P.54A-253
U1704*2	Communication error in the power window main switch	–
U1073	Bus off	P.00-14
U1100	Powertrain control module time-out (related to engine)	P.54A-11
U1101	Powertrain control module time-out (related to A/T)	
U1108	Combination meter time-out	P.00-14
U1110	A/C-ECU time-out	P.54B-51
U1111	Multi-center display unit (middle-grade type) time-out	P.54B-54
U1128	Failure information on combination meter	P.54B-58
B1702*2	Reception error of transponder data	Refer to GROUP 54A – Immobilizer system P.54A-54.
B1703*2	Transponder data inconsistent	
B1731	Immobilizer communication failure.	
B1761	VIN not recorded	

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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-18."

⚠ 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

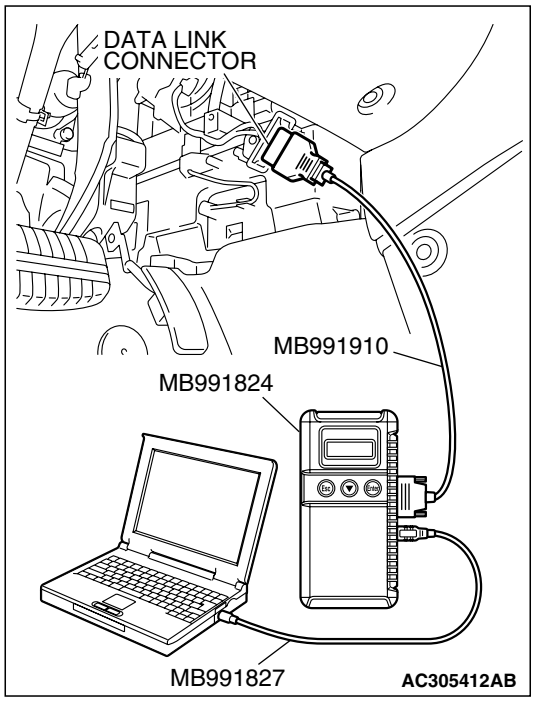
Required Special Tools:

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

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

⚠ CAUTION

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

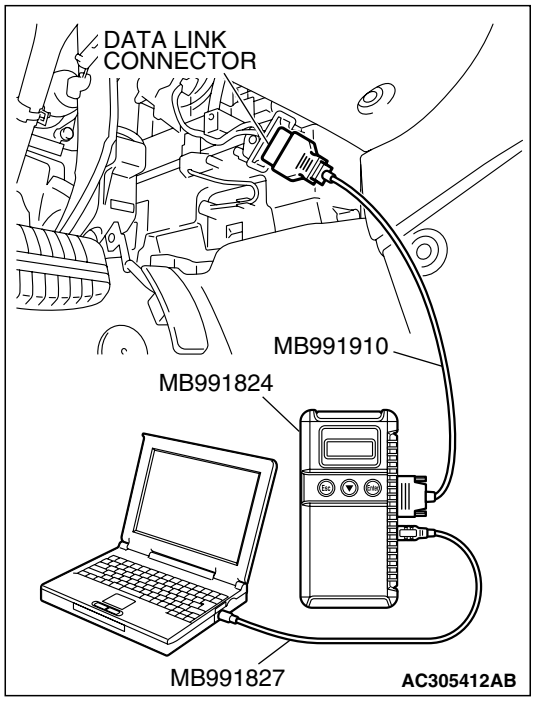


(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-16).

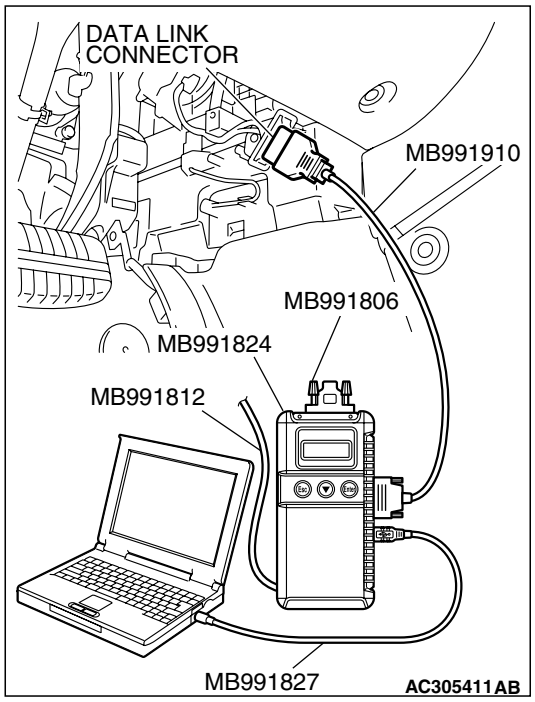
STEP 2. Recheck for diagnostic trouble code.

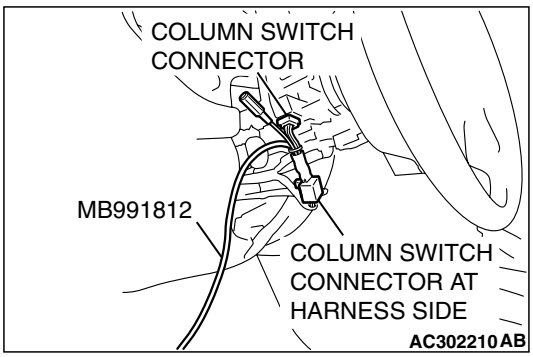


Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-17."
(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-82."

"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-73."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-89."

"NG" is displayed for the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "Communication with the sunroof-ECU is not possible P.54B-97."

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-18."

TSB Revision

⚠ 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

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

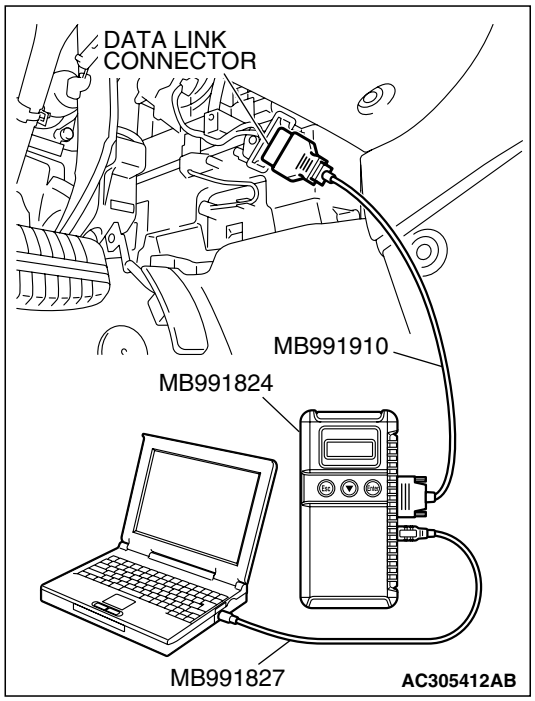
⚠ CAUTION

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

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).

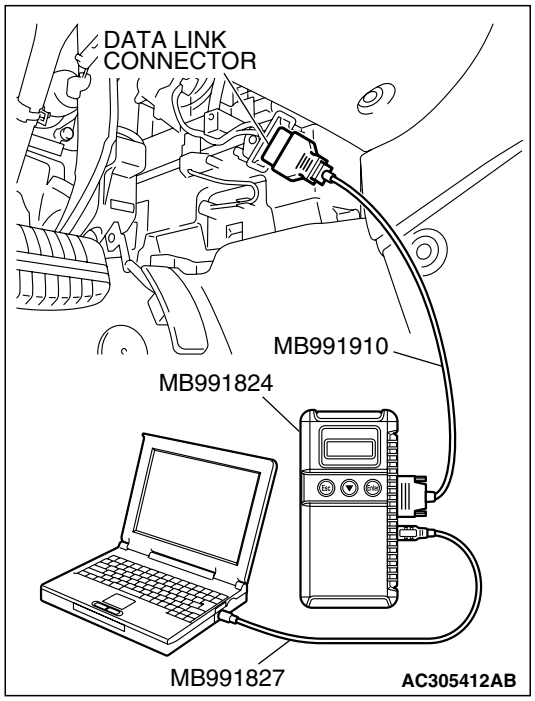


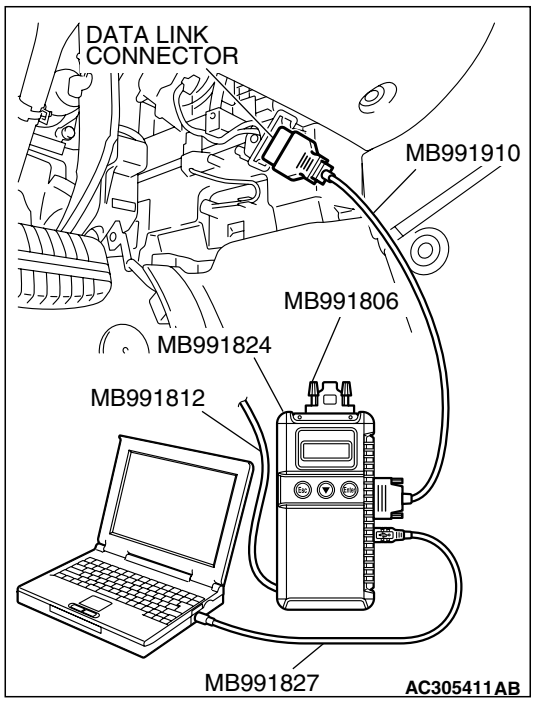
STEP 2. Recheck for diagnostic trouble code.

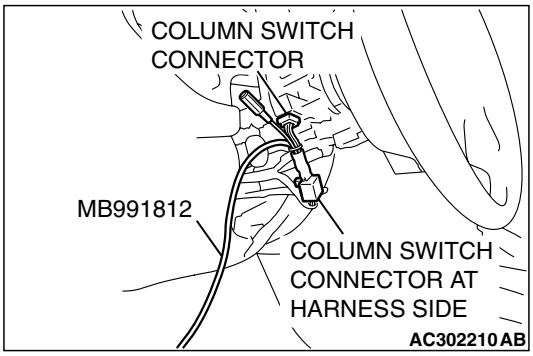
Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-17."
(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-73."

"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."

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-18."

⚠ CAUTION

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

TSB Revision

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

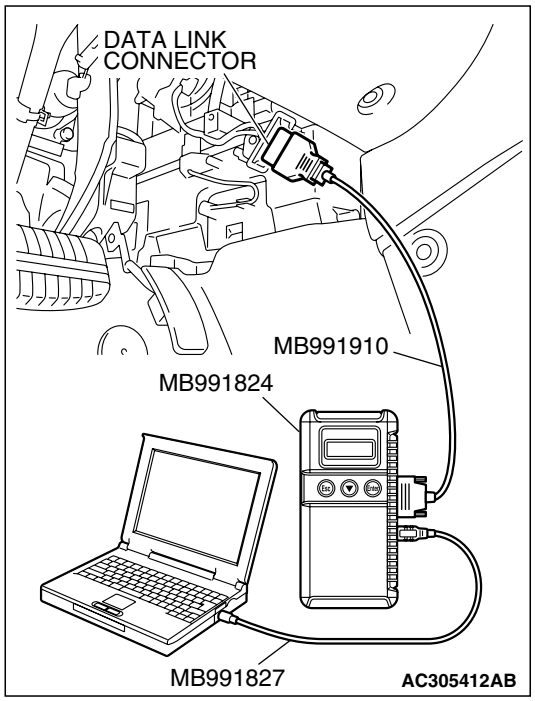
Required Special Tools:

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

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

⚠ CAUTION

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



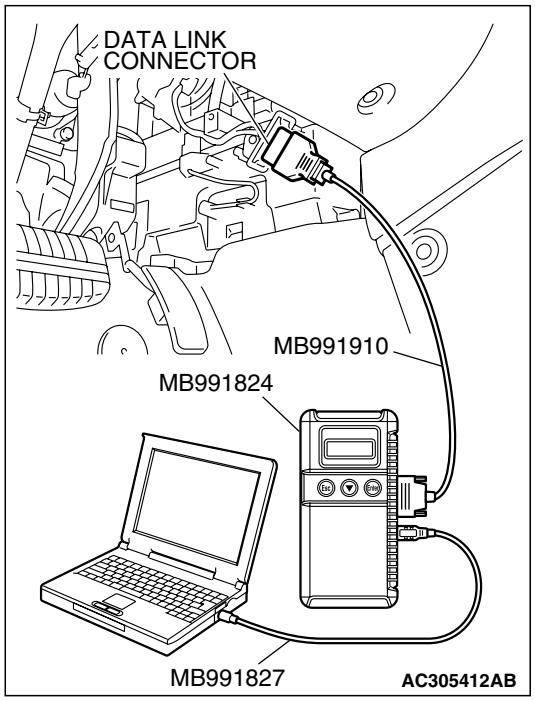
(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-16).

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.

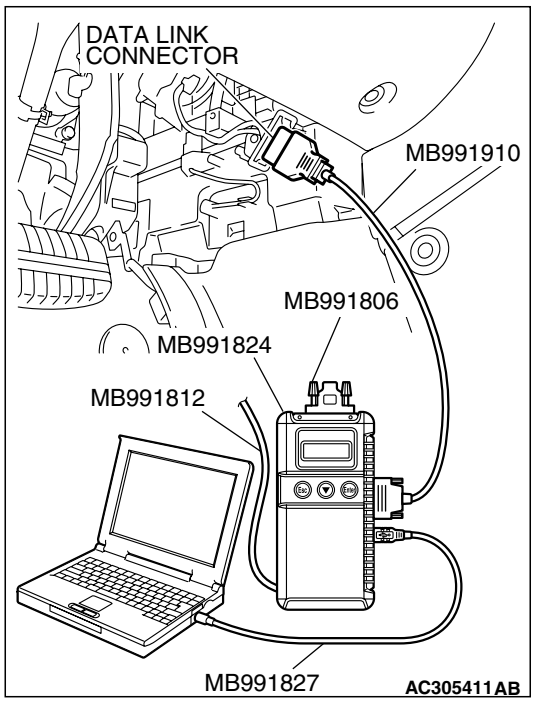
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. 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.

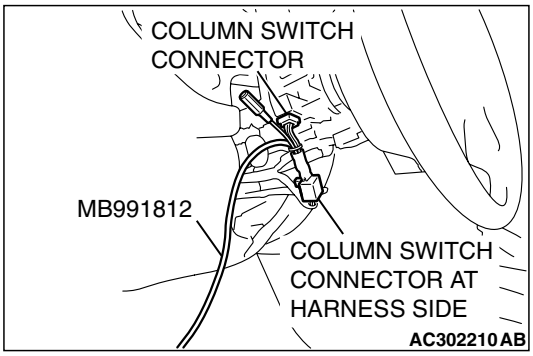
Q: Are "OK" displayed for both the "ETACS ECU" and "FRONT ECU" menus?

"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-82."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-89."





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-18."

⚠ 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.**

TSB Revision

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

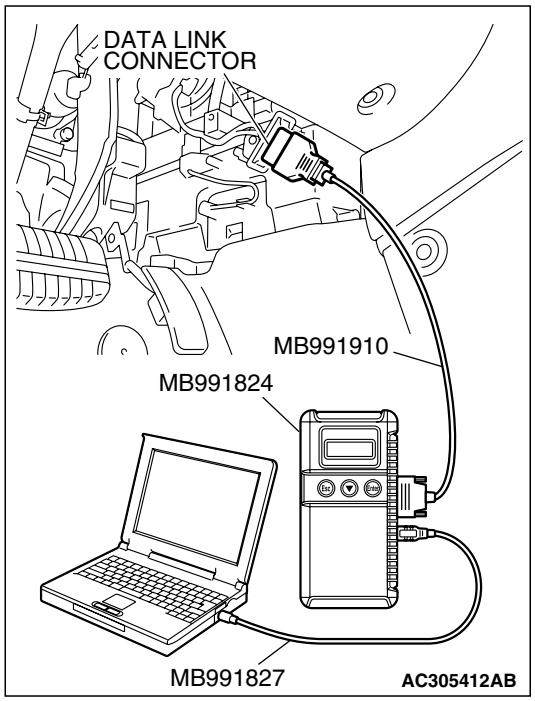
Required Special Tools:

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

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

⚠ CAUTION

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

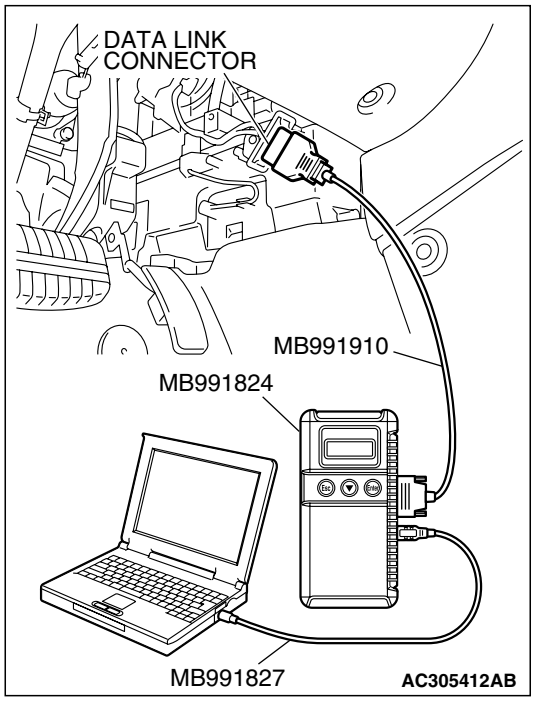


(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-16).

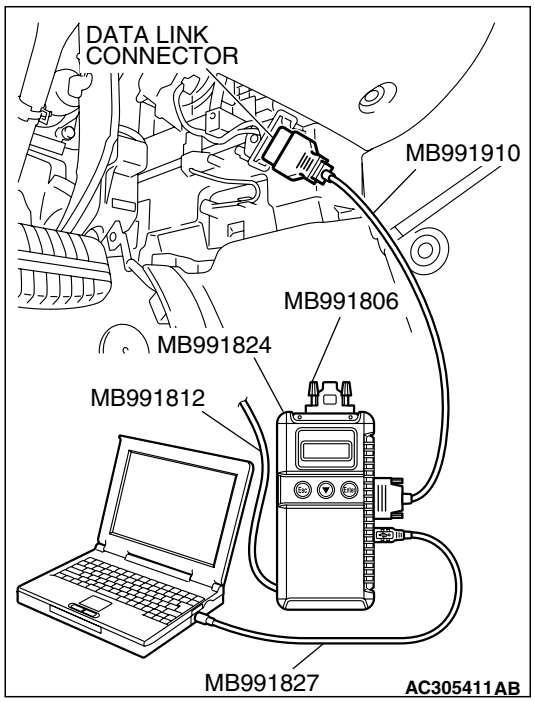
STEP 2. Recheck for diagnostic trouble code.

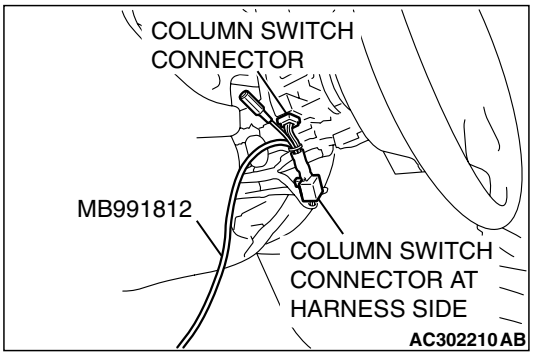


Check again if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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:

- 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-17."
(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-97."

"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."

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

TSB Revision

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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

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

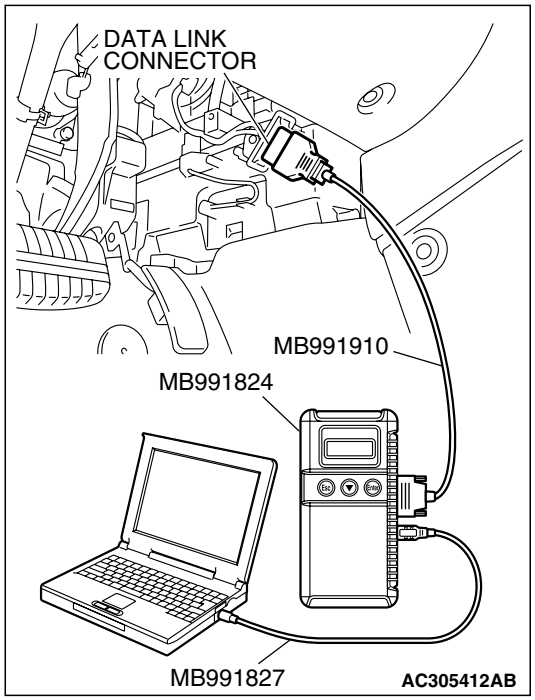
⚠ CAUTION

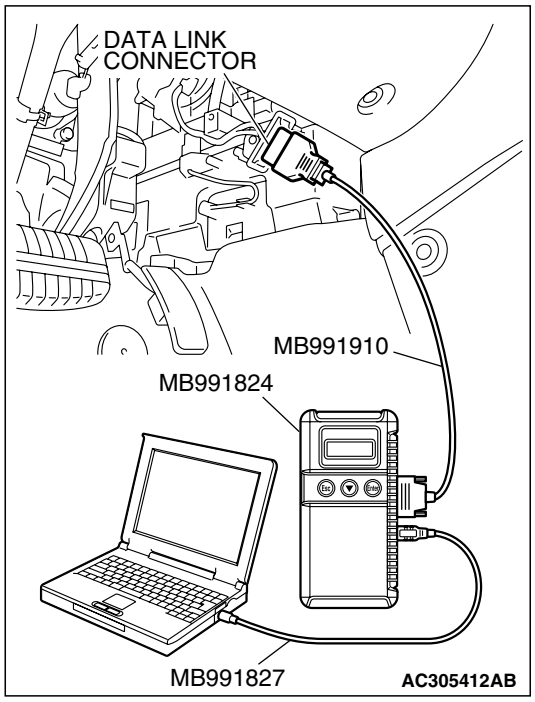
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).





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-11. 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: Powertrain Control Module Time-out (Related to Engine)
DTC U1101: Powertrain Control Module Time-out (related to A/T)

⚠ 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 powertrain control module. 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 powertrain control module. 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 powertrain control module and the ETACS-ECU, the power supply system to the powertrain control module, the powertrain control module 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 powertrain control module, and the power supply system to the powertrain control module. 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 M.U.T.-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.

TSB Revision

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-8).

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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

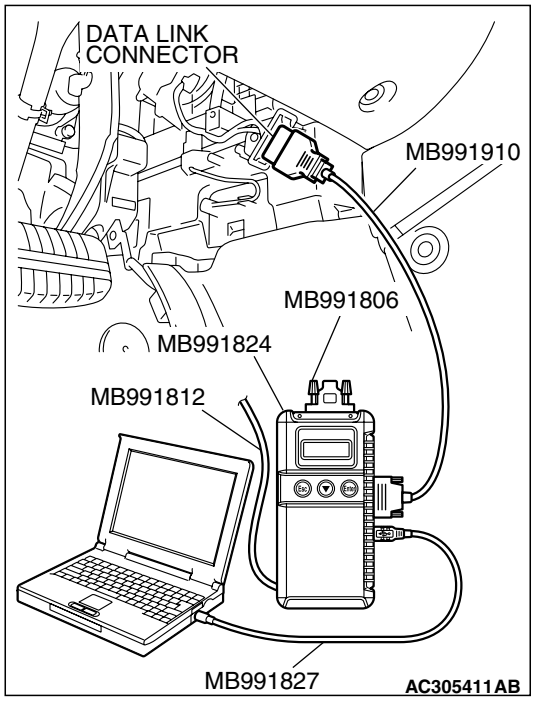
⚠ CAUTION

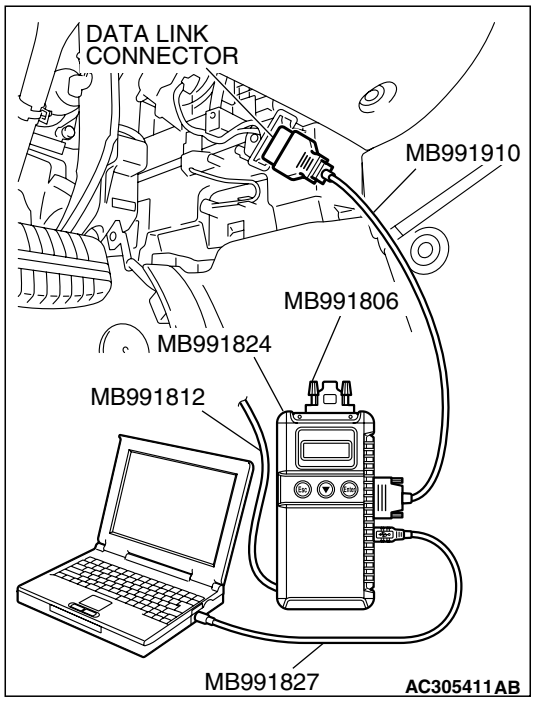
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).





STEP 2. Using scan tool MB991958, read the MFI system diagnostic trouble code.

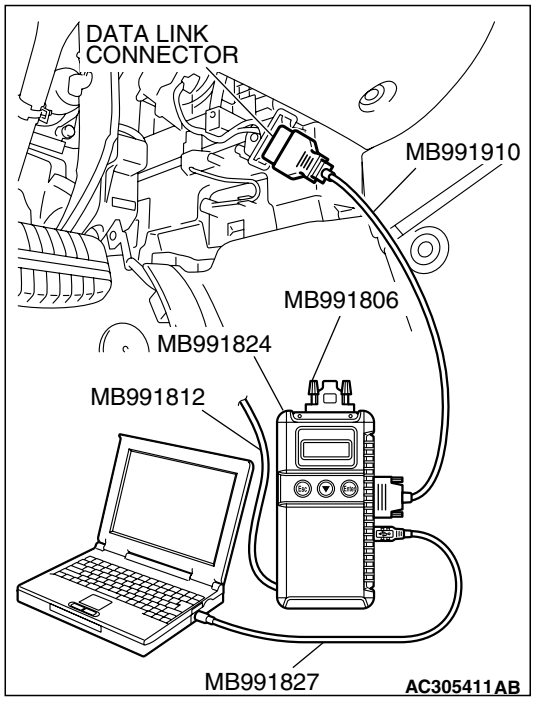
Check whether engine and transaxle DTCs are set or not.

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

Q: Is the DTC set?

YES : Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart P.13A-45 or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart P.13B-46.

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.

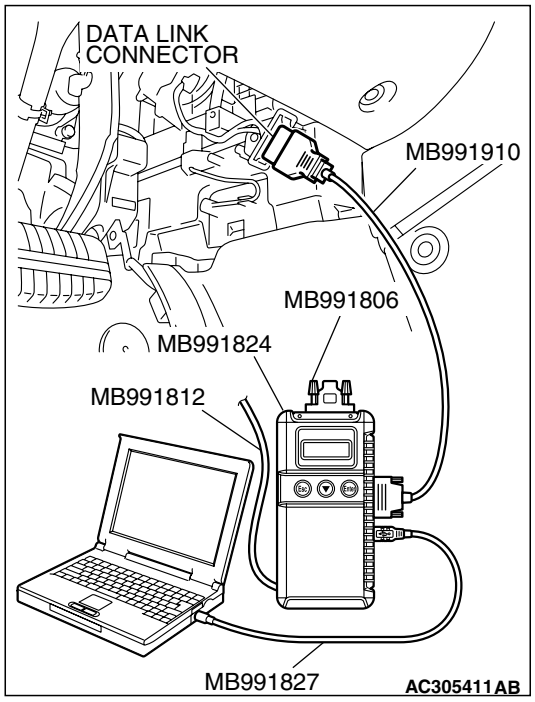
- Combination meter
  DTC indicating a time-out error related to the engine or automatic transaxle control system
- A/C
  DTC indicating a time-out error related to the engine or automatic transaxle control system

(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.



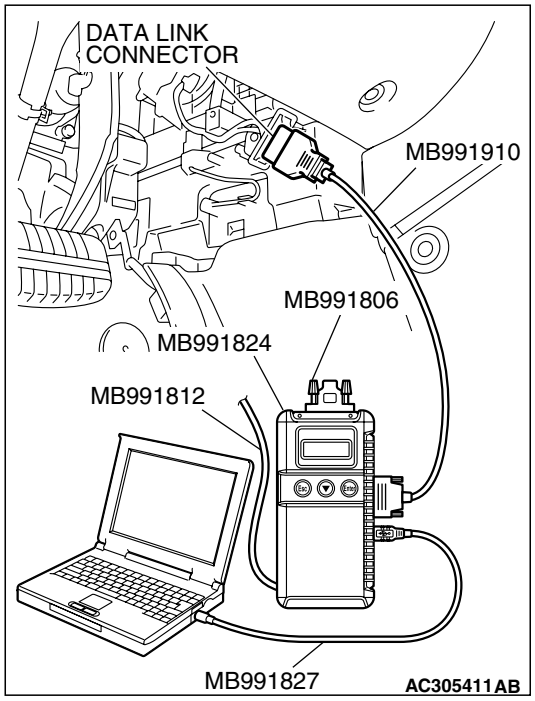
STEP 4. Recheck for diagnostic trouble code.

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 powertrain control module. 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 powertrain control module 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-11. 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 powertrain control module 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.**

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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 M.U.T.-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-8).

TROUBLESHOOTING HINTS

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

DIAGNOSIS

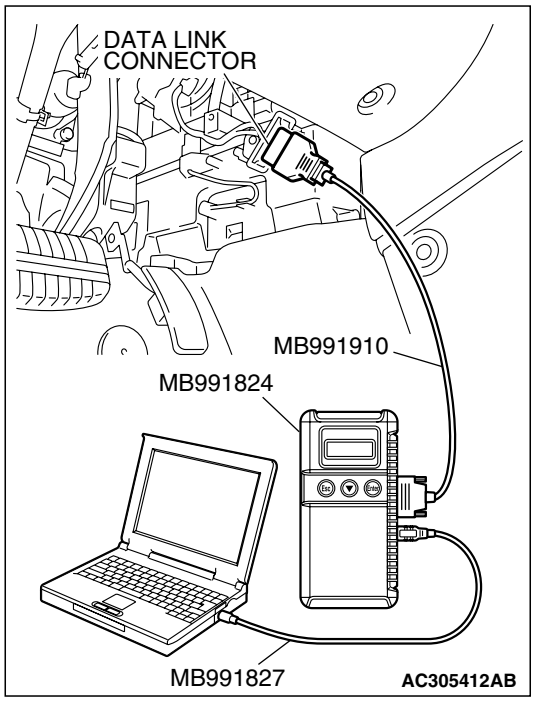
Required Special Tools:

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

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.

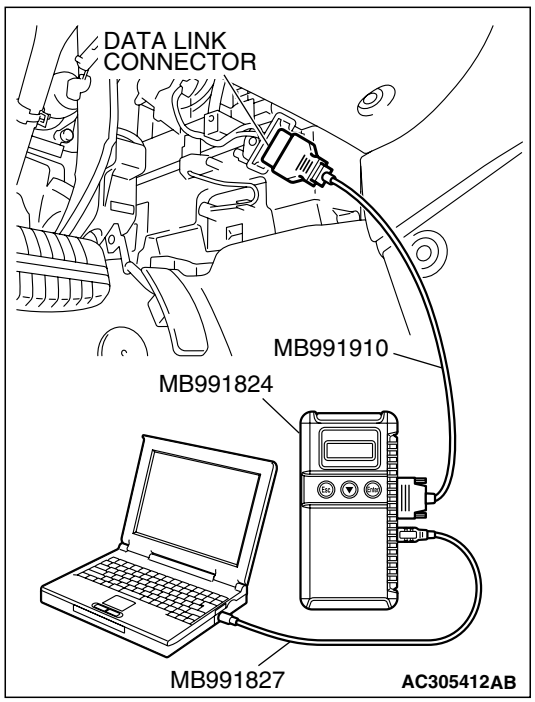


(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-16).

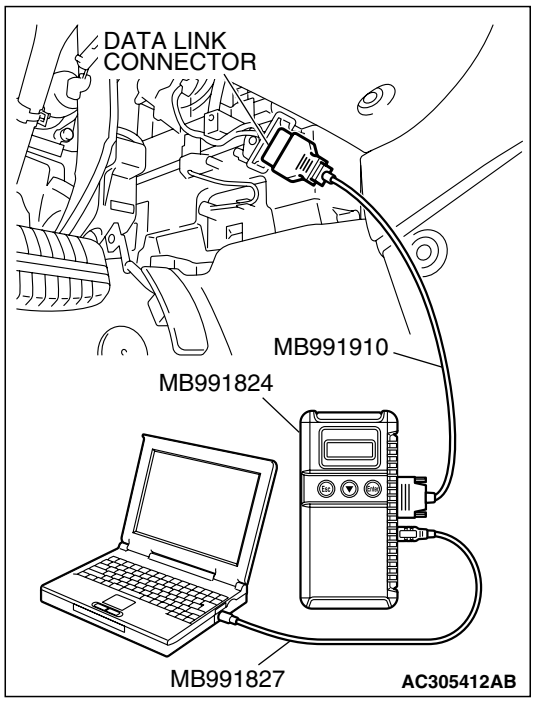
STEP 2. Using scan tool MB991958, read the combination meter diagnostic trouble code.



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-54).
NO : Go to Step 3.



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

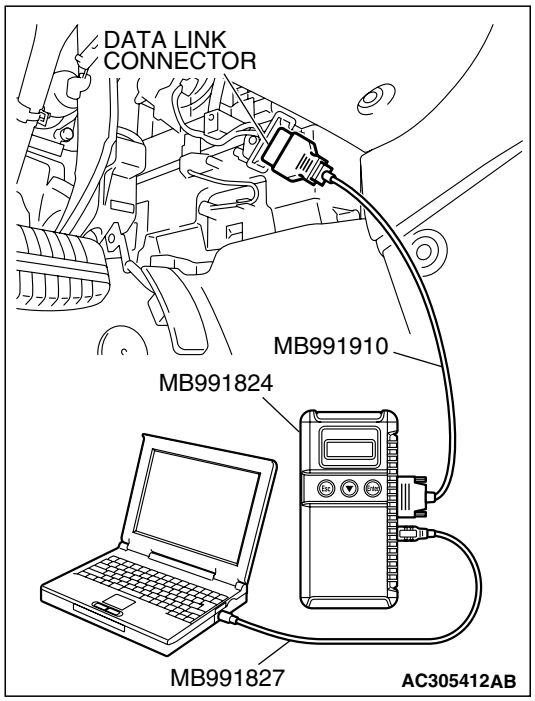
Check if a DTC, which relates to CAN communication-linked systems below, is set.

- 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.

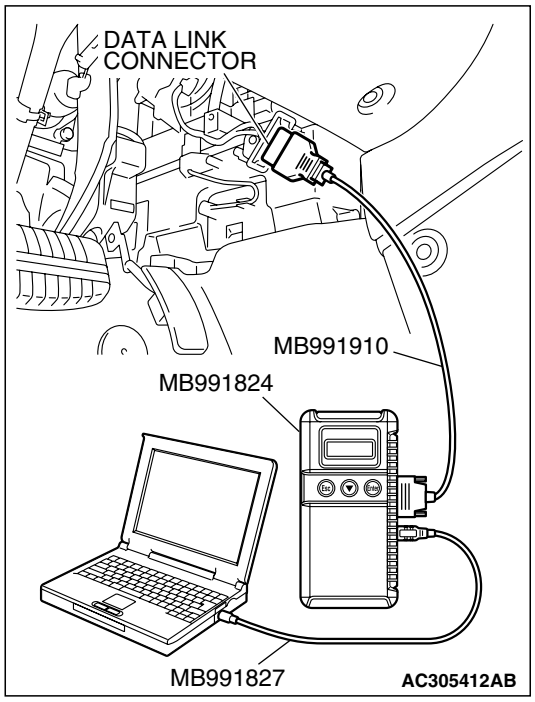


STEP 4. Recheck for diagnostic trouble code.

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-11. 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 M.U.T.-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-8).

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

TSB Revision

DIAGNOSIS

Required Special Tools:

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

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

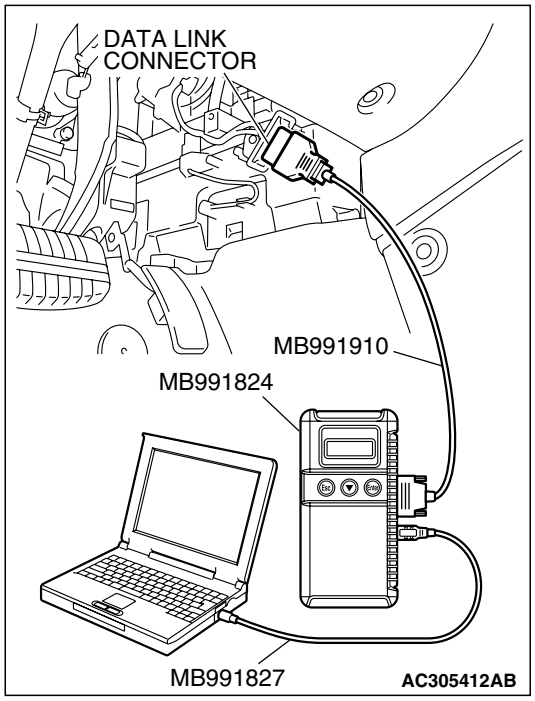
⚠ CAUTION

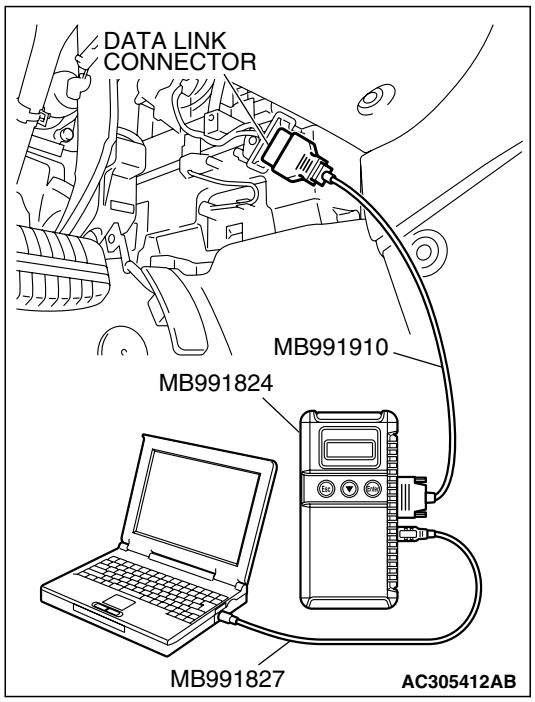
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).





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

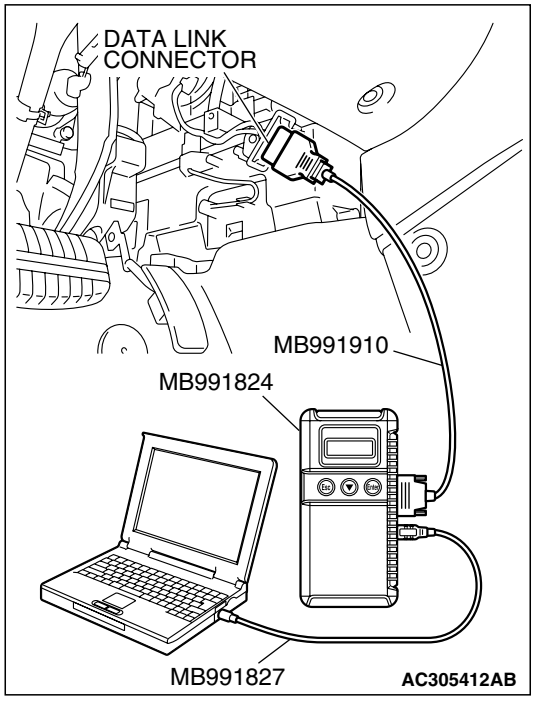
Check if an A/C-ECU DTC is set.

(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-7<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.

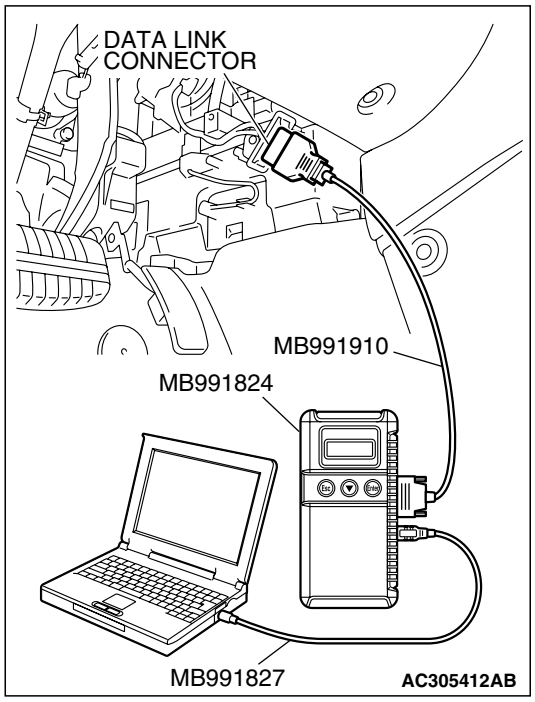
- Combination meter
  A/C-related time-out DTC

(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.



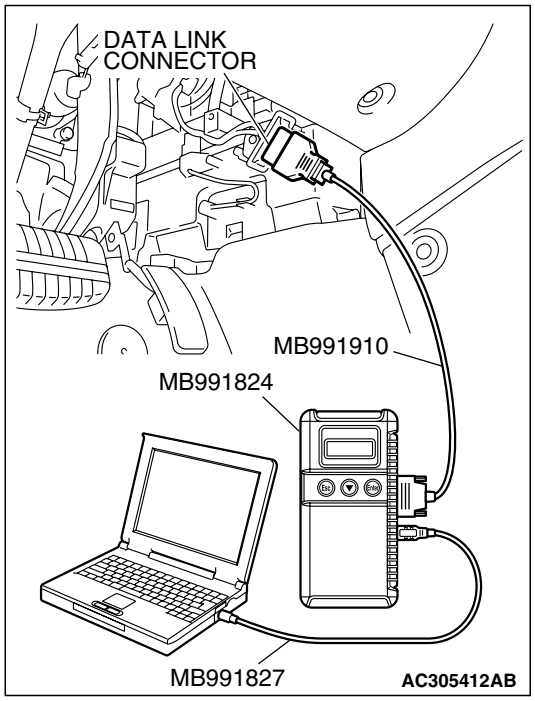
STEP 4. Recheck for diagnostic trouble code.

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-11. 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 U1111: Multi-Center Display Unit (Middle-Grade Type or Vehicles with Mitsubishi Multi Communication system) Time-out

⚠ CAUTION

- **If DTC U1111 is set in the ETACS-ECU, diagnose the CAN main bus line.**
- **Whenever the ECU is replaced, ensure that the communication circuit is normal.**

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TROUBLE JUDGMENT

The ETACS-ECU receives signals from the multi-center display unit (middle-grade type or vehicles with mitsubishi multi communication system). If the ETACS-ECU cannot receive the signal related to the multi-center display unit, DTC U1111 will be set.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- Connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the middle-grade multi-center display unit, the power supply system to the display unit, the display unit itself, or the ETACS-ECU may be defective.

Past trouble

- When DTC U1111 is set as a past trouble, carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the middle-grade multi-center display unit, the power supply system to the display unit. If the connectors and wiring are normal, and obviously the ETACS-ECU or the middle-grade multi-center display is the cause of the trouble, replace the ETACS-ECU or the middle-grade multi-center display. If in doubt, do not replace the ETACS-ECU or the display unit.

NOTE: For a past trouble, you cannot find it by the scan tool CAN bus diagnostics even if there is a failure in the CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/ Inspection Service Points – How to Cope with Intermittent Malfunctions 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 – Explanation about the scan tool CAN bus diagnostics P.54C-8).

TROUBLESHOOTING HINTS

- Malfunction of middle-grade multi-center display unit
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:

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

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

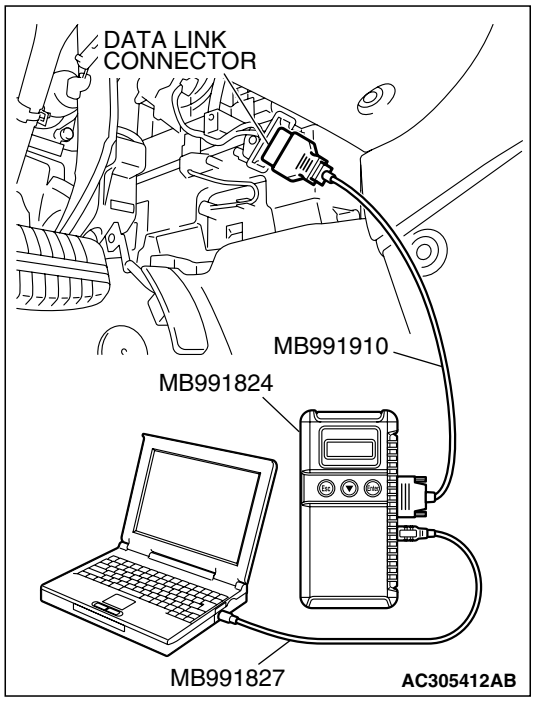
⚠ CAUTION

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 to the data link connector.
(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-16).

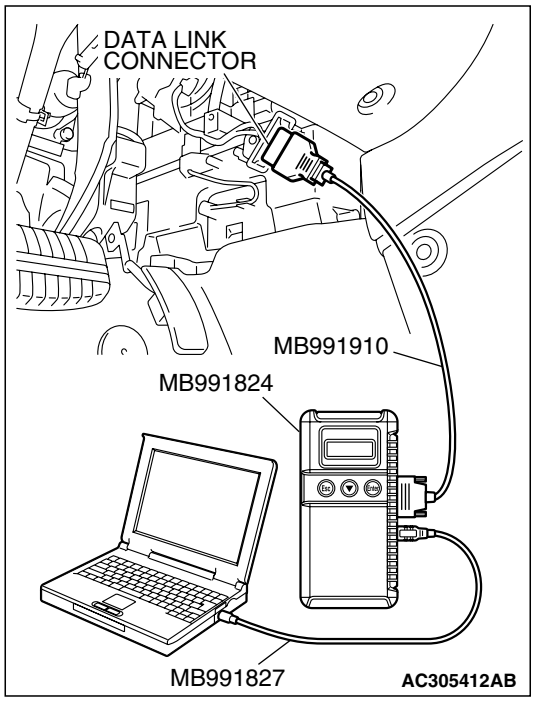


STEP 2. Using scan tool MB991958, read the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system) diagnostic trouble code.

Check that the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system) sets a DTC.
(1) Turn the ignition switch to the "ON" position.
(2) Check for the DTC related to the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system).
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Refer to GROUP 54A, multi-center display unit (middle-grade type or vehicles with mitsubishi multi communication system) – Diagnosis P.54A-253.
NO : Go to Step 3.



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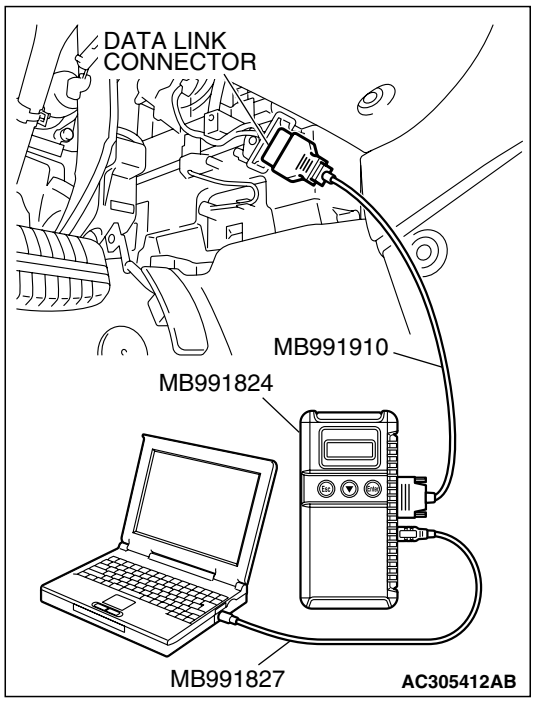


STEP 3. Using scan tool MB991958, check for any diagnostic trouble code.

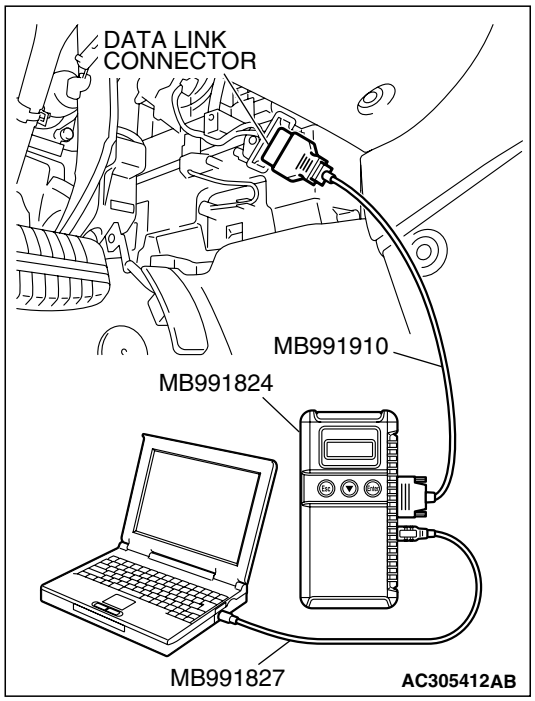
Check if a DTC, which relates to CAN communication-linked systems below, is set.

- ETACS-ECU
  DTC indicating a time-out error of multi center display (middle-grade type or vehicles with mitsubishi multi communication 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 check result satisfactory?

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

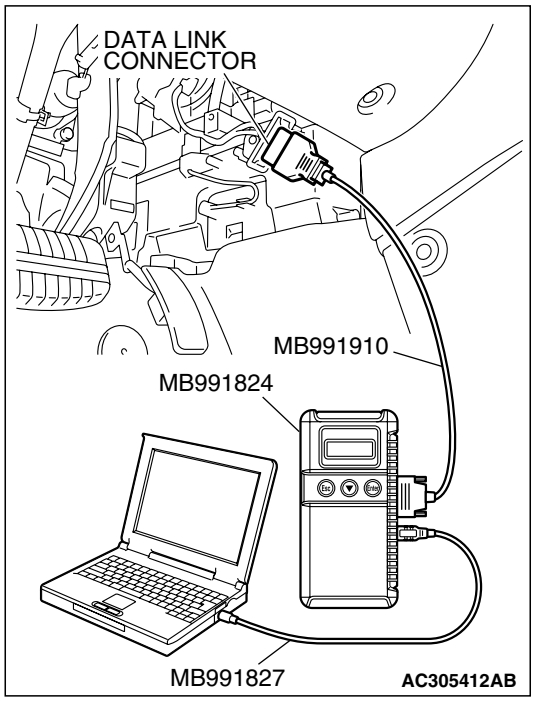


STEP 4. Recheck for diagnostic trouble code.

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 check result satisfactory?

YES : Replace the multi center display (middle-grade type or vehicles with mitsubishi multi communication system). On completion, check 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 middle-grade multi-center display unit and the A/C-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions 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 check result satisfactory?

YES : When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. On completion, check 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 middle-grade multi-center display unit and the A/C-ECU (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions 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 power-train control module, 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 M.U.T.-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-8).

TROUBLESHOOTING HINTS
- The ETACS-ECU may be defective

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DIAGNOSIS

Required Special Tools:

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

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

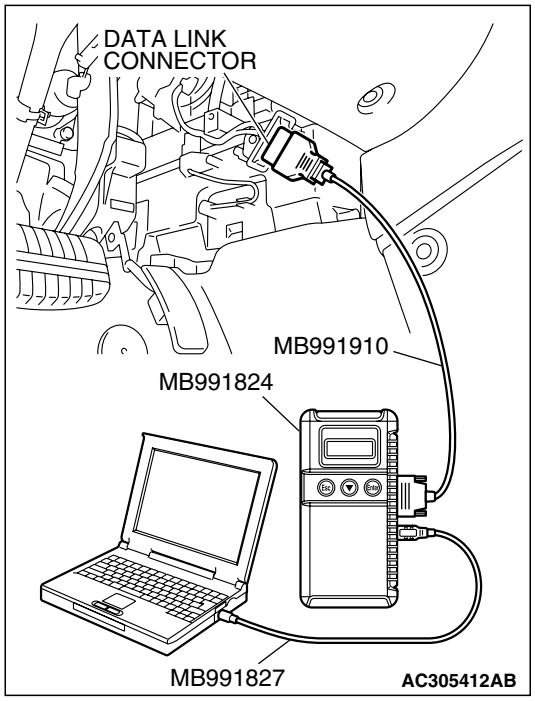
⚠ CAUTION

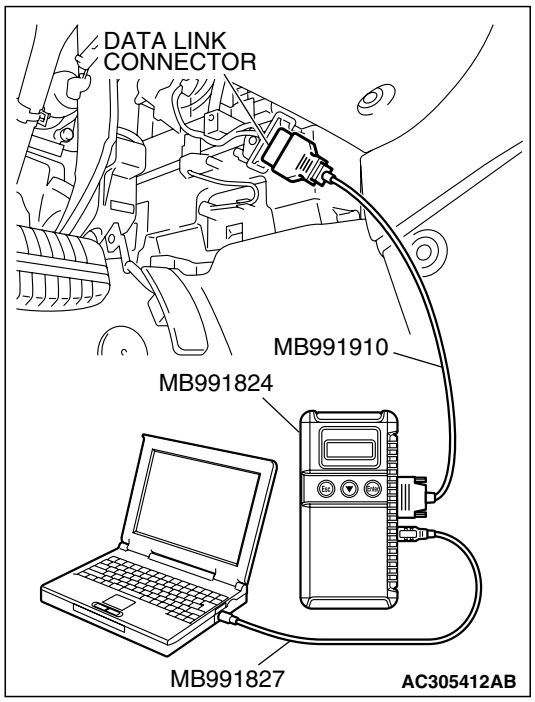
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).





STEP 2. Using scan tool MB991958, read the MFI system diagnostic trouble code.

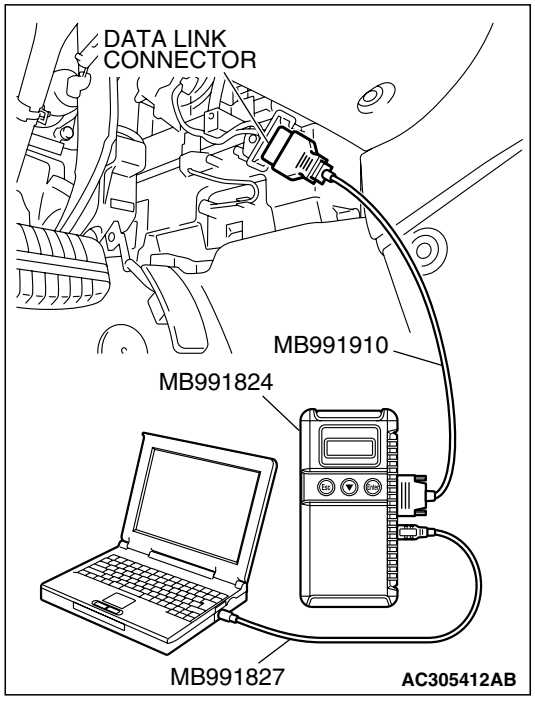
Check whether engine and transaxle DTCs are set or not.

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

Q: Is the DTC set?

YES : Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart P.13A-45 or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart P.13B-46.

NO : Go to Step 3.



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

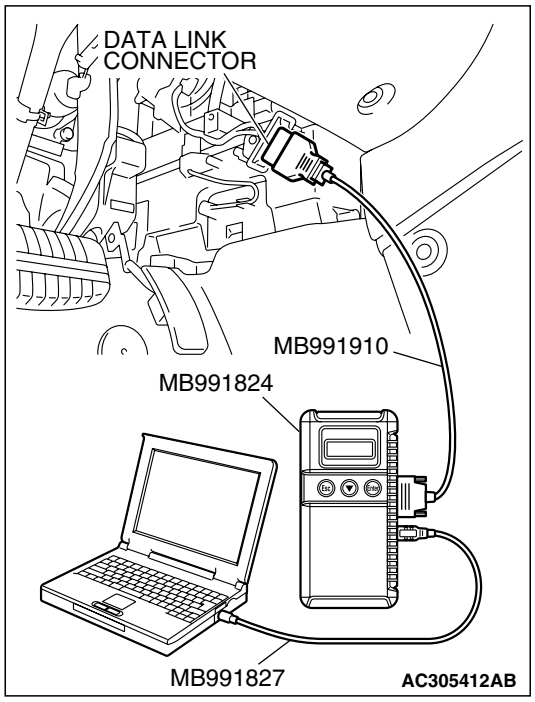
Check whether the combination meter-related DTC is set.

(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-54).

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-11. 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

M1549000802215

ECU COMMUNICATION SYSTEM

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Communication with the SWS monitor kit is not possible.	A-1	P.54B-67
Communication with the column switch (column-ECU) is not possible.	A-2	P.54B-73
Communication with the ETACS-ECU is not possible.	A-3	P.54B-82
Communication with the front-ECU is not possible.	A-4	P.54B-89
Communication with the sunroof-ECU is not possible.	A-5	P.54B-97

FUNCTION SYSTEM

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Tone alarm	General description concerning the tone alarm	–	P.54B-105
	Ignition key reminder tone alarm function does not work normally.	B-1	P.54B-111
	Light reminder tone alarm function does not work normally.	B-2	P.54B-115
	Seat belt tone alarm function does not work normally.	B-3	P.54B-119
	Door ajar warning buzzer function does not work normally.	B-4	P.54B-124
	The multi-center display does not sound normally when it is operated. <multi-center display (middle-grade type or Vehicles With Mitsubishi Multi Communication system)>	B-5	P.54B-129
	Turn-signal light buzzer function does not work normally.	B-6	P.54B-133
Central door locking system	General description concerning central door locking system	–	P.54B-136
	The central door locking system does not work at all.	C-1	P.54B-141
	Some doors do not lock or unlock.	C-2	P.54B-150
	All the doors do not lock or unlock with just the door lock switch operation.	C-3	P.54B-163
	All the doors do not lock or unlock with just the door lock key cylinder key operation.	C-4	P.54B-165
	All the doors do not lock or unlock with just the driver's or front passenger’s inside lock knob operation.	C-5	P.54B-167
	Forgotten key prevention function does not work normally.	C-6	P.54B-168
Power windows	General description concerning the power windows	–	P.54B-172
	Power windows do not work at all.	D-1	P.54B-175
	The power window timer function does not work normally.	D-2	P.54B-187
	Only the front door window (LH) does not work by operating power window main switch.	D-3	P.54B-191
	Power windows do not work normally by operating the front passenger's or rear passenger's sub switches.	D-4	P.54B-194
	Front or rear passenger's power windows do not work at all by operating the power window main switch.	D-5	P.54B-215

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Keyless entry system	General description concerning the keyless entry system	–	P.54B-217
	Keyless entry system does not operate.	E-1	P.54B-222
	The dome light, the turn-signal lights and the horn do not operate through the answerback function.	E-2	P.54B-224
	Encrypted code cannot be registered.	E-3	P.54B-233
	The trunk is not opened when the keyless entry transmitter "TRUNK" button is operated.	E-4	P.54B-236
Sunroof	General description concerning the sunroof	–	P.54B-240
	Sunroof does not operate.	F-1	P.54B-243
	Any of the sunroof switch positions is defective.	F-2	P.54B-254
	Sunroof timer function does not work normally.	F-3	P.54B-255
Windshield wiper and washer	General description concerning the windshield wiper and washer	–	P.54B-258
	The windshield wiper do not work at all.	G-1	P.54B-263
	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-270
	All of the windshield wiper switch positions are defective.	G-3	P.54B-272
	Windshield wipers does not stop at the predetermined park position.	G-4	P.54B-277
	The windshield intermittent wiper interval cannot be adjusted by using the variable intermittent wiper control switch.	G-5	P.54B-282
	The windshield intermittent wiper interval is not changed according to the vehicle speed.	G-6	P.54B-284
	The windshield washer does not work.	G-7	P.54B-287

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Headlight and taillight	General description concerning the headlight and taillight	–	P.54B-294
	The taillights do not illuminate normally.	H-1	P.54B-301
	The headlights (low-beam) do not illuminate normally.	H-2	P.54B-307
	The headlights (high-beam) do not illuminate normally.	H-3	P.54B-312
	When the passing switch is turned "ON," the headlights (low-beam or high-beam) do not illuminate.	H-4	P.54B-315
	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.	H-5	P.54B-316
	The taillights, front parking lights, the front side marker lights or the license plate light do not illuminate.	H-6	P.54B-319
	One of the headlights does not illuminate. <2-bulb type>	H-7	P.54B-343
	One of the headlights does not illuminate. <4-bulb type>		P.54B-352
	The high-beam indicator light does not illuminate.	H-8	P.54B-362
	Headlight automatic shutoff function does not work normally.	H-9	P.54B-366
	Headlight dimmer switch automatic resetting function does not work normally.	H-10	P.54B-369
	Daytime running light function does not work normally.	H-11	P.54B-370
Flasher timer	General description concerning the flasher timer	–	P.54B-372
	Turn-signal lights do not flash when the turn-signal light switch is turned on.	I-1	P.54B-375
	Hazard warning lights do not flash when the hazard warning light switch is turned on.	I-2	P.54B-382
	One of the turn-signal lights does not illuminate.	I-3	P.54B-384
	The turn-signal light indicator does not illuminate normally.	I-4	P.54B-398

SYSTEM	SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Fog light	General description concerning the fog lights	–	P.54B-402
	Fog lights do not illuminate when the fog light switch is turned on.	J-1	P.54B-404
	Fog lights do not go out when the headlights (low-beam) are turned off while the fog lights are on.	J-2	P.54B-411
	One of the fog lights does not illuminate.	J-3	P.54B-411
	The fog light indicator does not illuminate normally.	J-4	P.54B-417
Interior light	General description concerning the interior light	–	P.54B-421
	The dome light do not illuminate and go out normally.	K-1	P.54B-426
	The map lights, rear dome light or trunk light do not illuminate or go out normally.	K-2	P.54B-434
	Dome light dimming function does not work normally.	K-3	P.54B-445
	The ignition key hole illumination light does not illuminate or go out normally.	K-4	P.54B-449
	The interior light automatic shutoff function does not work normally.	K-5	P.54B-458
	The door ajar indicator lights do not illuminate or go out normally	K-6	P.54B-462
	The seat belt warning light do not illuminate or go out normally	K-7	P.54B-466
Can not customize the functions by operating the multi-center display (middle-grade type).		L-1	P.54B-470
Theft-alarm system	General description concerning the theft-alarm system	–	P.54B-474
	Theft-alarm system is not armed (theft-alarm indicator does not illuminate).	O-1	P.54B-479
	The theft-alarm system is not armed.	O-2	P.54B-487
	Horn does not sound when the theft-alarm system is triggered.	O-3	P.54B-490
	Headlights (high-beam) do not flash when the theft-alarm system is triggered.	O-4	P.54B-491
	Panic alarm function does not work.	O-5	P.54B-492

INPUT SIGNAL CHART

M1549024201087

SWS MONITOR

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

TSB Revision

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the ignition switch (ACC).		M-1	P.54B-494
ETACS-ECU does not receive any signal from the ignition switch (IG1).		M-2	P.54B-497
ETACS-ECU does not receive any signal from the fog light switch.		M-3	P.54B-500
ETACS-ECU does not receive any signal from the front door switches.		M-4	P.54B-504
Column switch	ETACS-ECU does not receive any signal from the taillight switch.	M-5	P.54B-511
	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-6	P.54B-515
	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 variable intermittent wiper control switch.	M-7	P.54B-518
	ETACS-ECU does not receive any signal from the windshield washer switch.	M-6	P.54B-515
Sunroof switch	ETACS-ECU does not receive any signal from the up, open or close/down switch.	M-8	P.54B-521

SCAN TOOL OR VOLTMETER

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

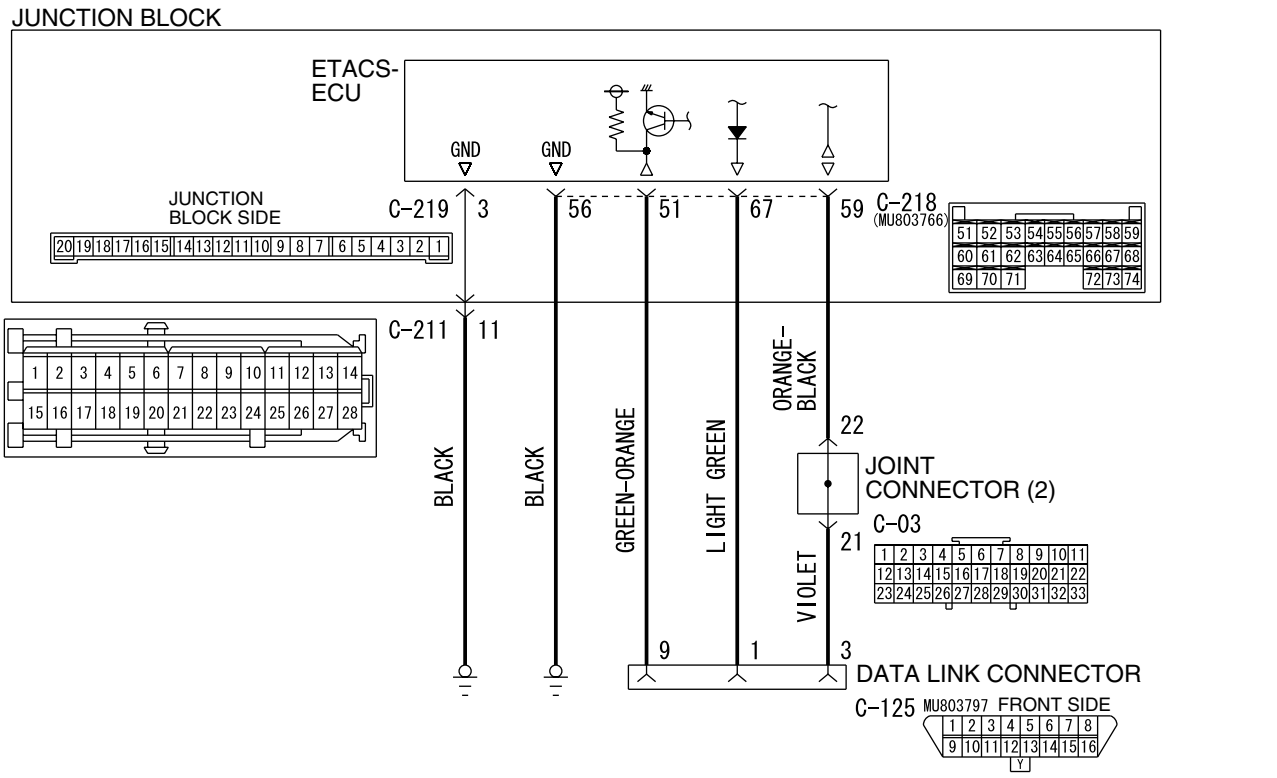
SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the key reminder switch.	N-1	P.54B-525
ETACS-ECU does not receive any signal from the hazard warning light switch.	N-2	P.54B-529
ETACS-ECU does not receive any signal from any of the door switches.	N-3	P.54B-504
ETACS-ECU does not receive any signal from the door lock key cylinder switch.	N-4	P.54B-542
ETACS-ECU does not receive any signal from the front door lock actuator.	N-5	P.54B-547

SYMPTOM		INSPECTION PROCEDURE	REFERENCE PAGE
ETACS-ECU does not receive any signal from the door lock switch (incorporated in the power window main switch and front power window sub switch).		N-6	P.54B-557
ETACS-ECU does not receive any signal from the trunk lid latch assembly.		N-7	P.54B-567
Transmitter	ETACS-ECU does not receive any signal from the lock, unlock, trunk or panic switch.	N-8	P.54B-570
ETACS-ECU does not receive any interior light loaded signal.		N-9	P.54B-572
ETACS-ECU does not receive any signal from hood switch.		N-10	P.54B-578

SYMPTOM PROCEDURES

INSPECTION PROCEDURE A-1: Communication with the SWS Monitor Kit is not Possible.

Scan Tool Communication and ETACS-ECU Ground Circuit



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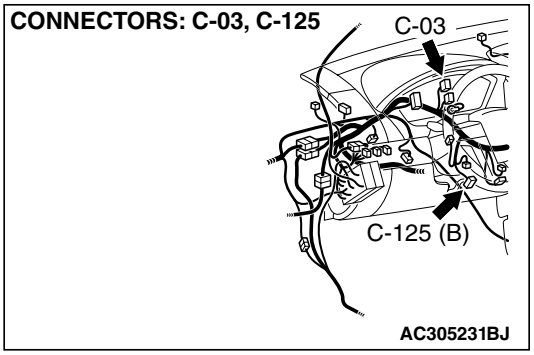
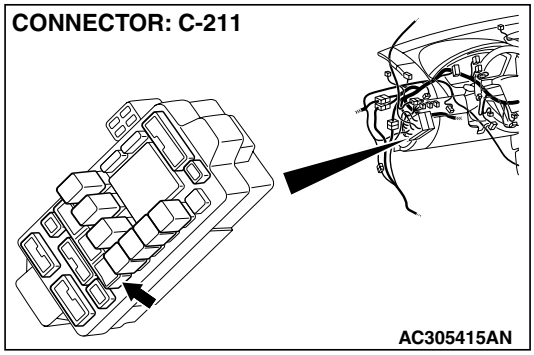
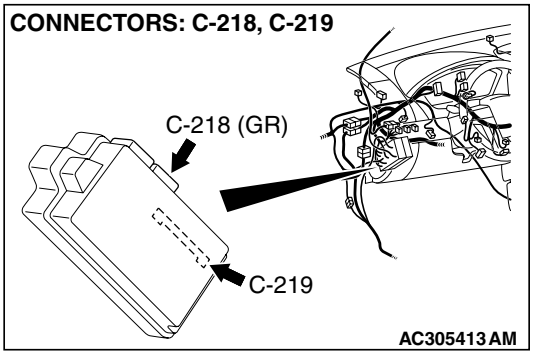






TECHNICAL DESCRIPTION (COMMENT)
The SWS monitor kit may be connected improperly.

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

DIAGNOSIS

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

STEP 1. 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-82."

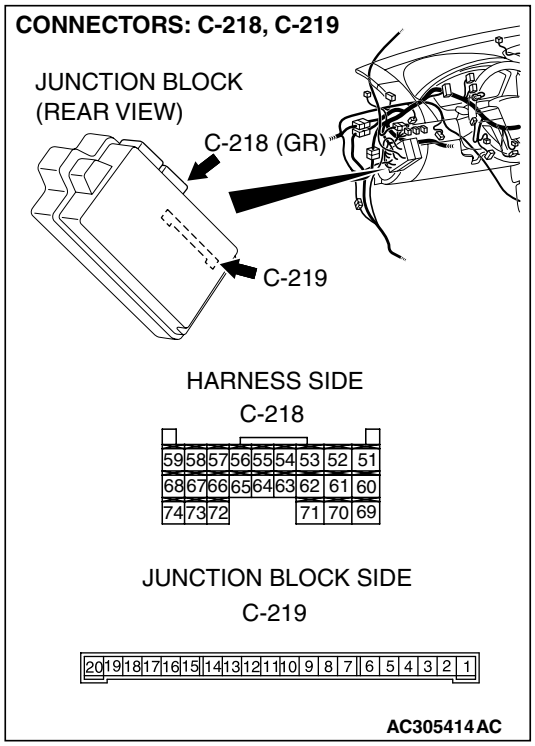
NO : Go to Step 3.

STEP 3. Check ETACS-ECU connectors C-218 and C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-218 and C-219 in good condition?

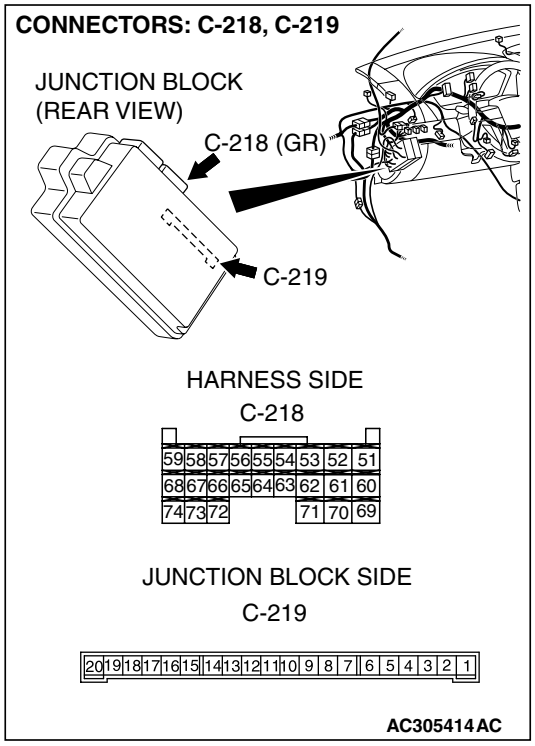
YES : Go to Step 4.

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

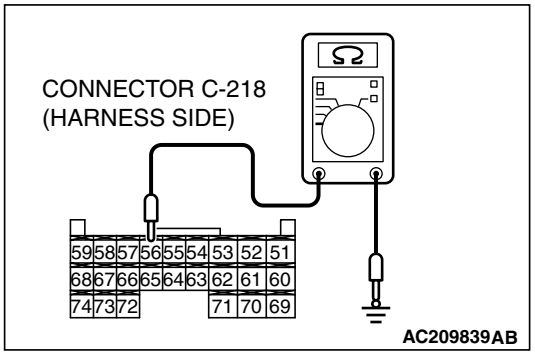


STEP 4. Check the ground circuit to the ETACS-ECU. Measure the resistance at ETACS-ECU connectors C-218 and C-219.

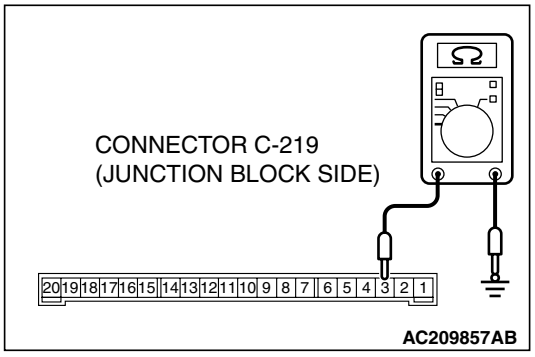
(1) Disconnect ETACS-ECU connectors C-218 and C-219, and measure the resistance available at the junction block side of the connector.



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



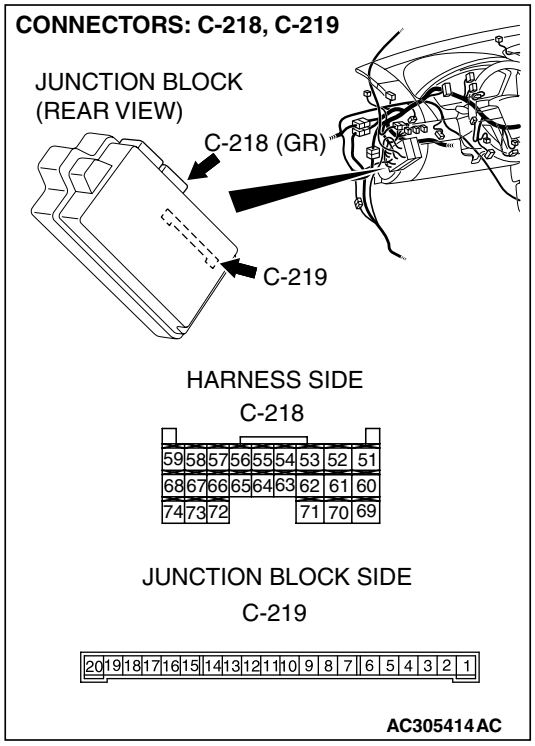
Measure the resistance value between ETACS-ECU connector C-219 terminal 3 and ground.
- The resistance should be 2 ohms or less.

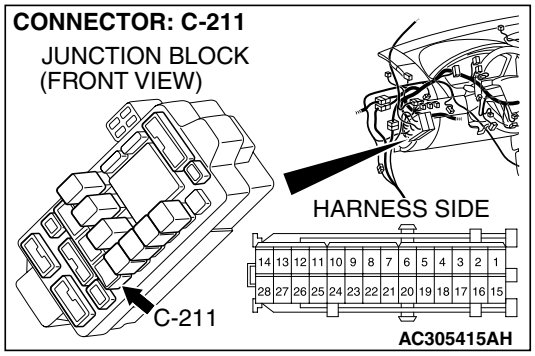


Q: Is the measured resistance 2 ohms or less?

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

STEP 5. Check the wiring harness between ETACS-ECU connector C-218 (terminal 56) or ETACS-ECU connector C-219 (terminal 3) and ground.



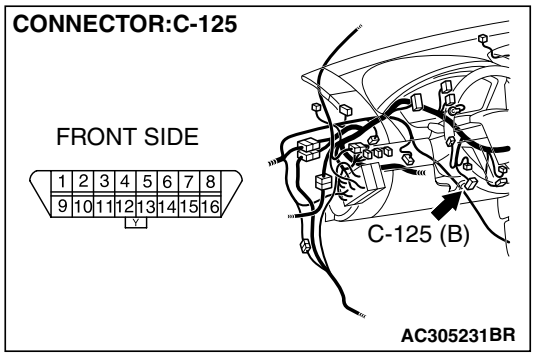


NOTE: Also check junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-218 (terminal 56) or ETACS-ECU connector C-219 (terminal 3) and ground in good condition?

YES : No action is necessary and testing is complete.

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

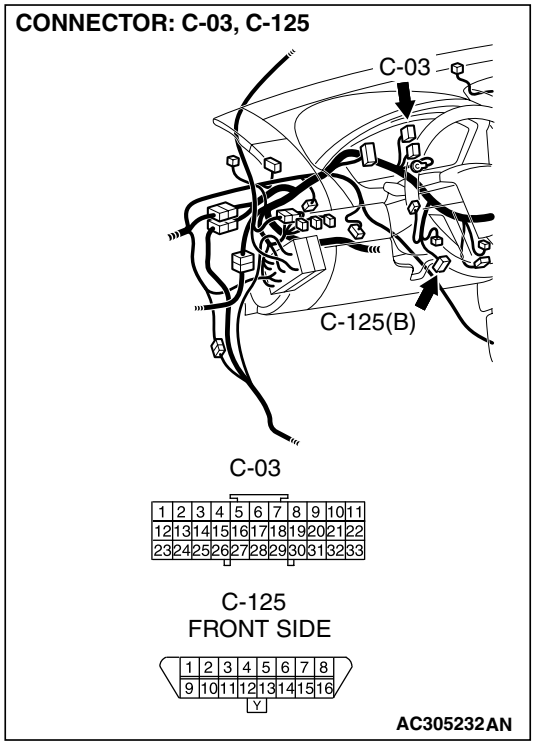


STEP 6. Check data link connector C-125 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

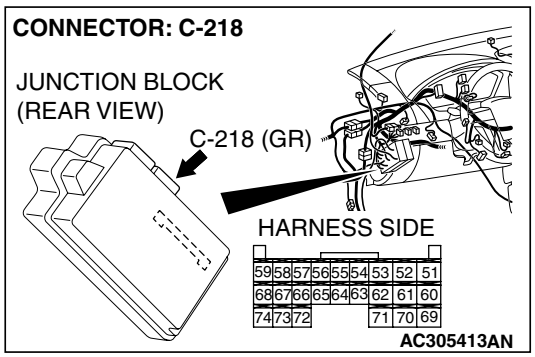
Q: Is data link connector C-125 in good condition?

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 should communicate 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-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 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?

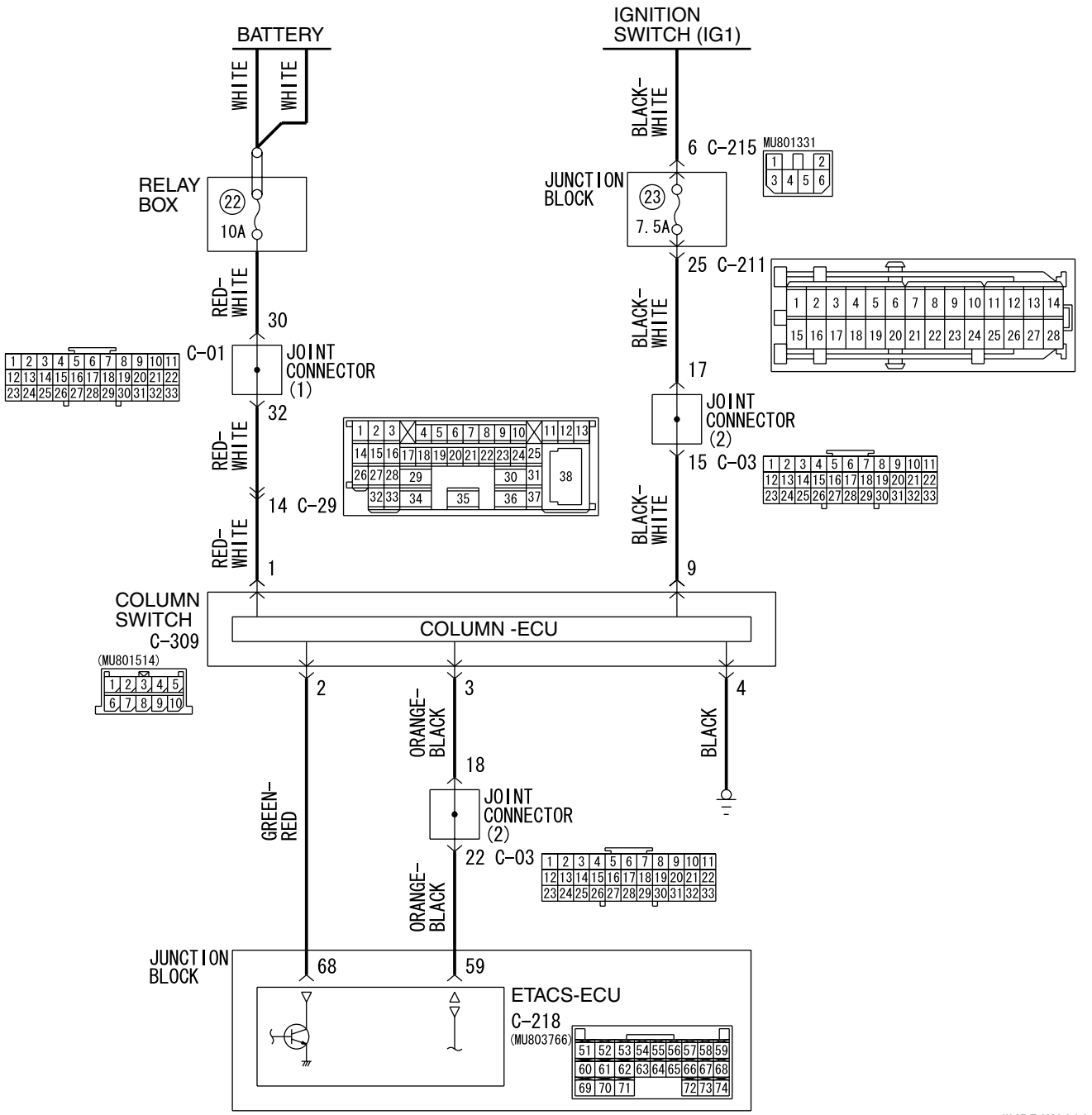
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. The system should communicate with the SWS monitor kit normally.

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 should communicate with the SWS monitor kit normally.

INSPECTION PROCEDURE A-2: Communication with the Column Switch (column-ECU) is not Possible.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Column Switch Power Supply and SWS Communication Circuit



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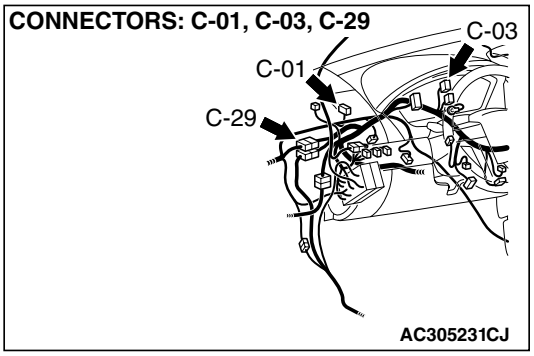
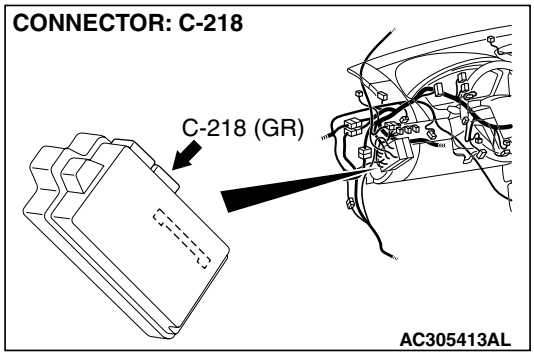
CONNECTORS: C-01, C-03, C-29



CONNECTOR: C-218



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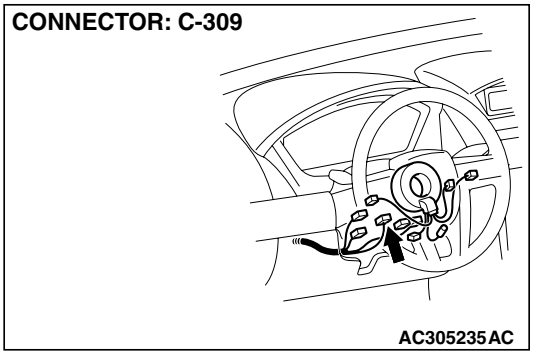


CIRCUIT OPERATION

- 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.

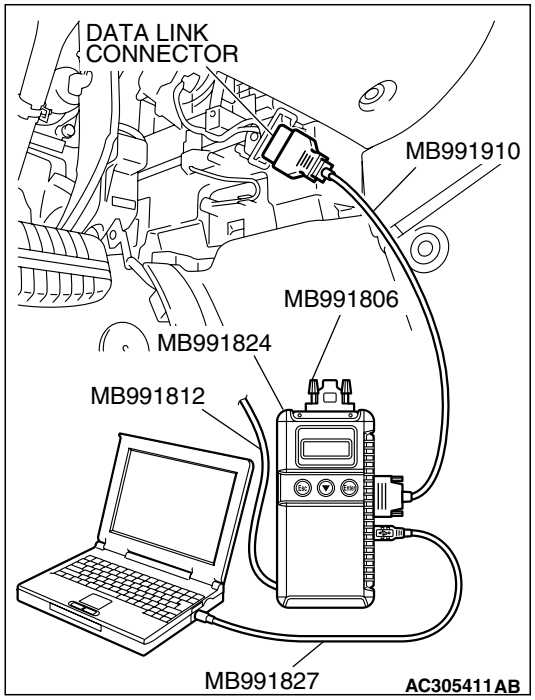
TROUBLESHOOTING HINTS

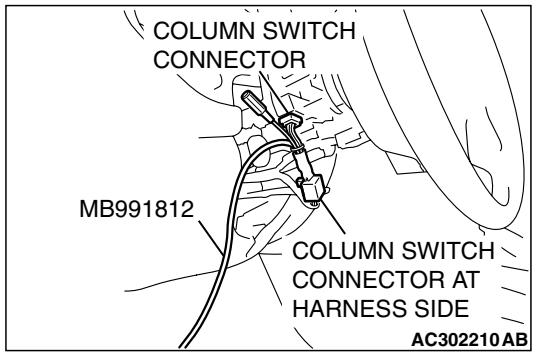
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The column switch may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

- ETACS-ECU
- Column-ECU

⚠ CAUTION

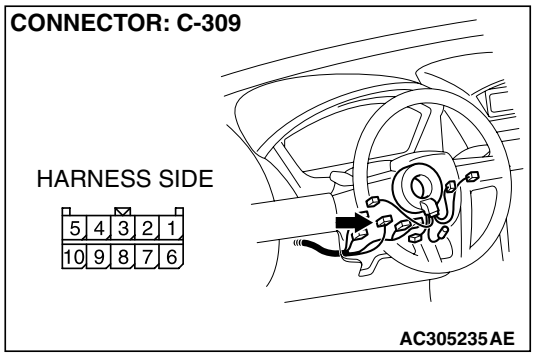
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-82."
"NG" is displayed for all the items : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."

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

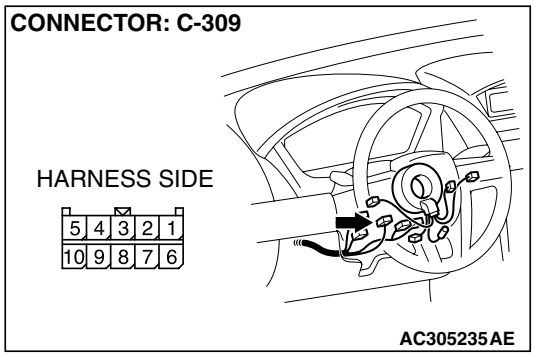


Q: Is column switch connector C-309 in good condition?

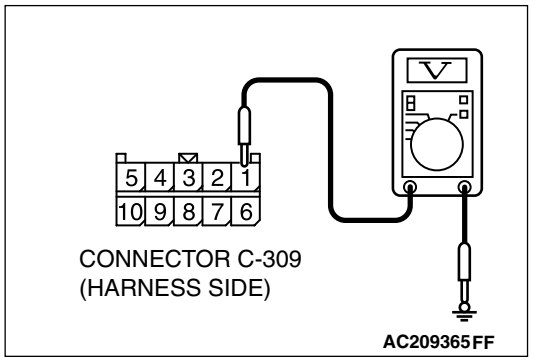
YES : Go to Step 3.

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.



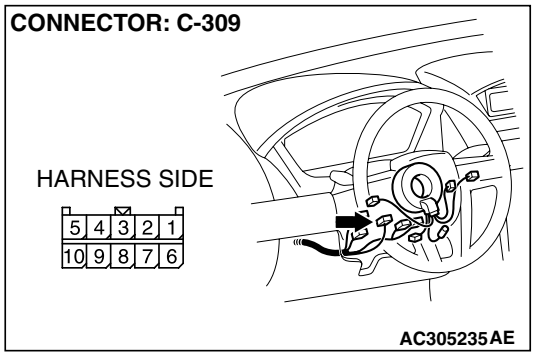
(2) Measure the voltage between terminal 1 and ground by backprobing.
- The voltage should measure approximately 12 volts (battery positive voltage).

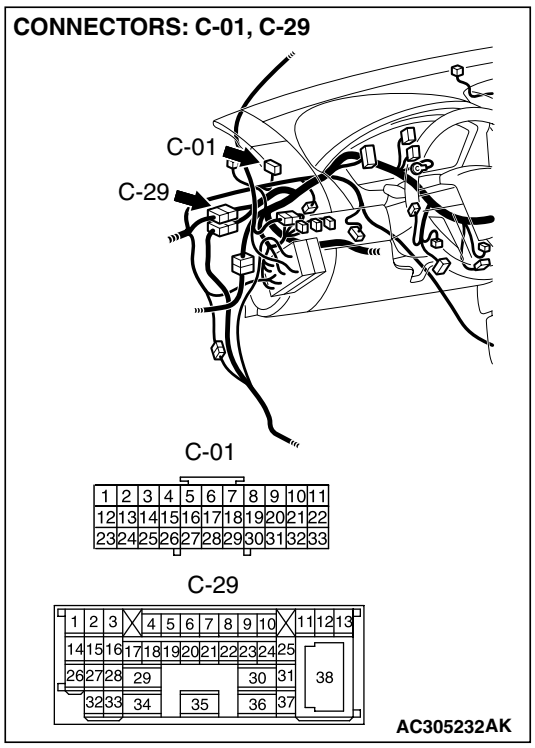
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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-29 and joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 or joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

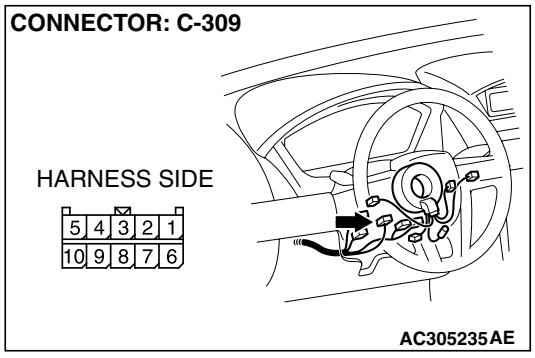
Q: Is the wiring harness between column switch connector C-309 (terminal 1) and the battery in good condition?

YES : No action is necessary and testing is complete.

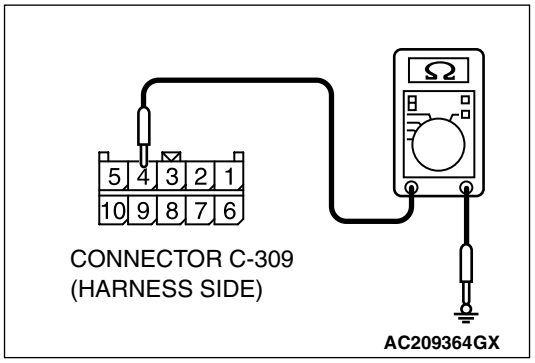
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the column switch (column-ECU) normally.

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.

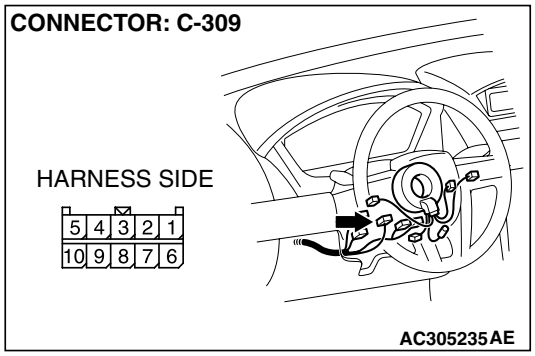


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.

NO : Go to Step 6.

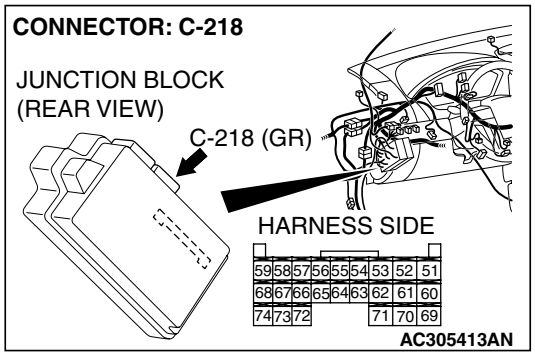


STEP 6. Check the wiring harness between column switch connector C-309 (terminal 4) and ground.

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.



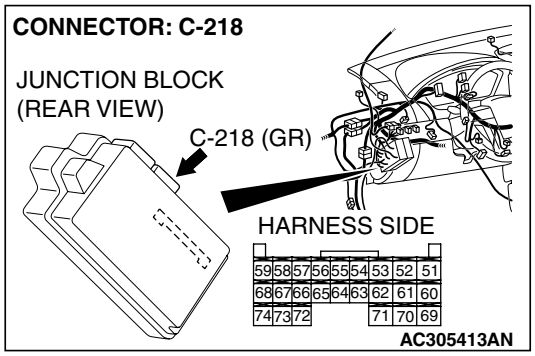
STEP 7. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

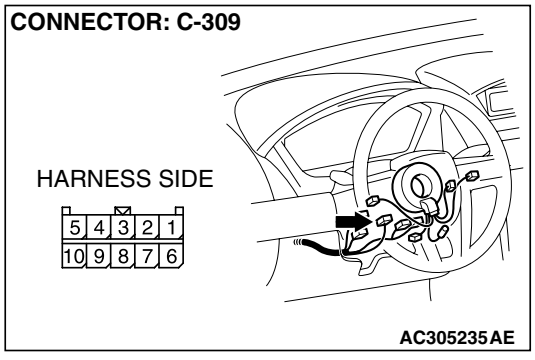
Q: Is ETACS-ECU connector C-218 in good condition?

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).





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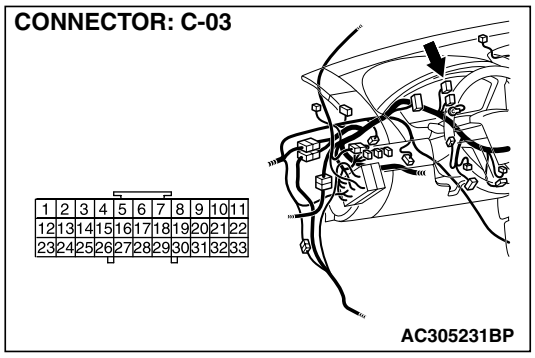


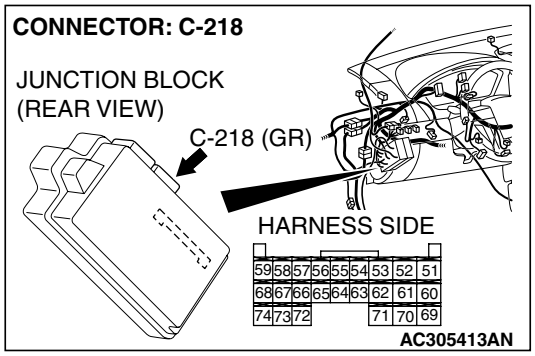
NOTE: Also check joint connector C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.

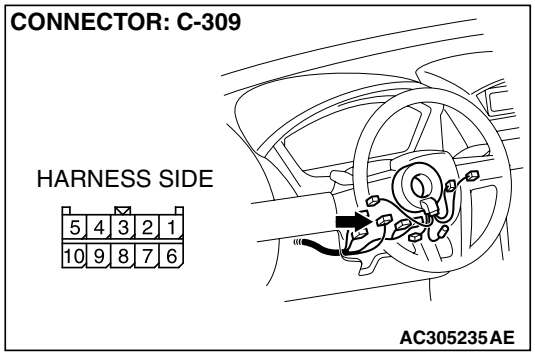
STEP 9. Check the wiring harness between column switch connector C-309 (terminal 2) and ETACS-ECU connector C-218 (terminal 68).



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.

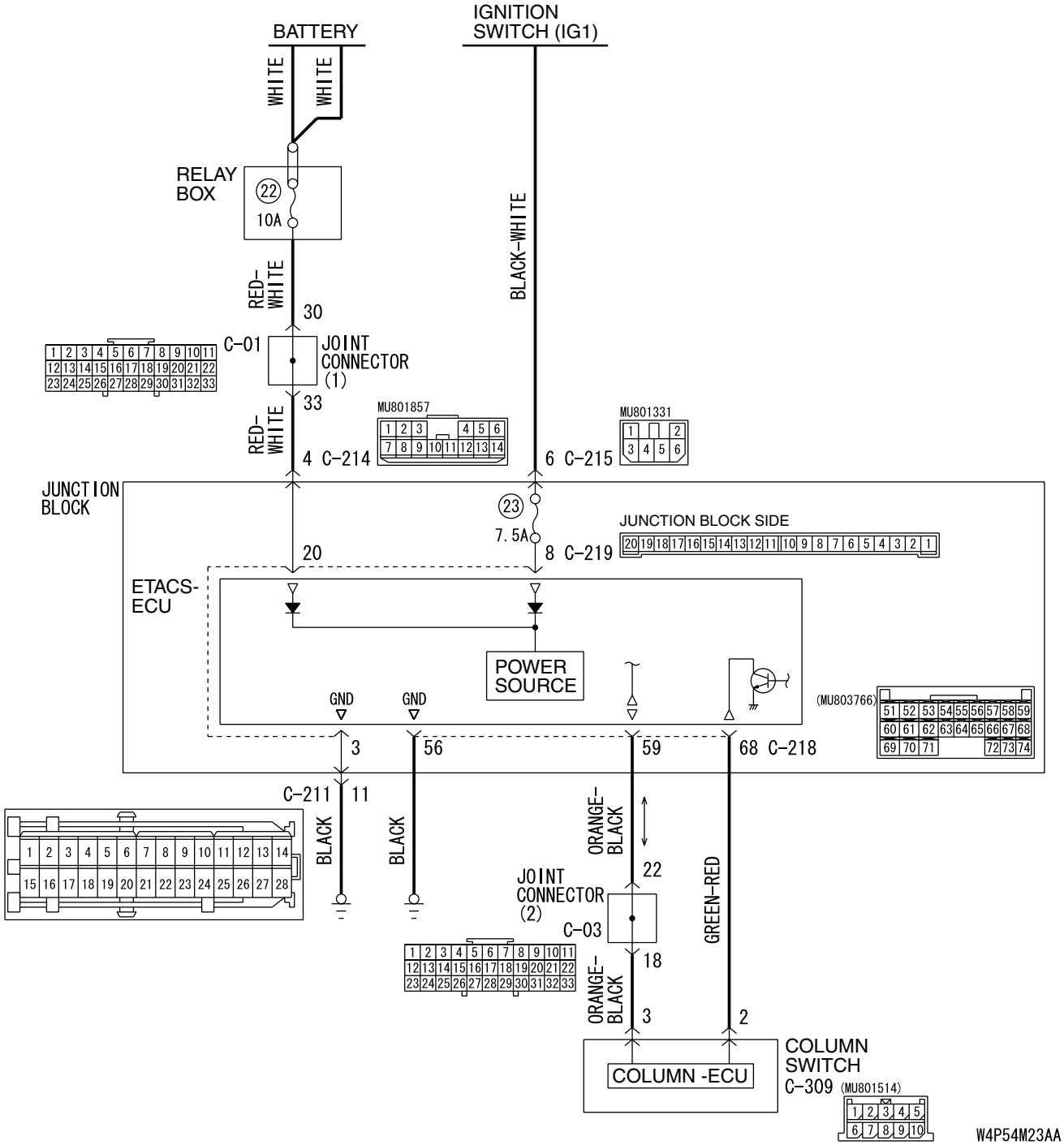
(1) Replace the column switch.
(2) The system should communicate with the column switch (column-ECU) normally.

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-11. 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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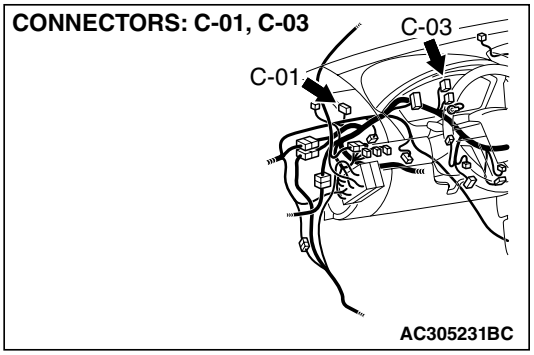
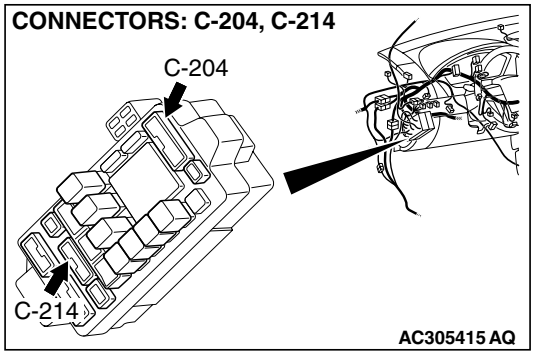
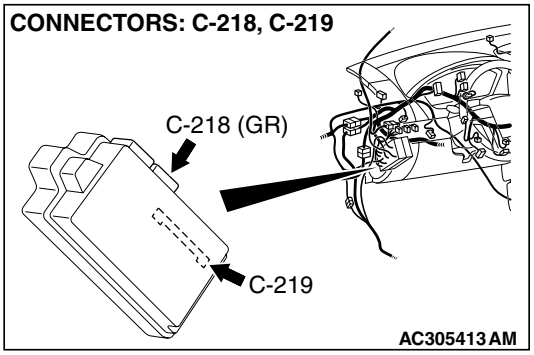
CONNECTORS: C-01, C-03



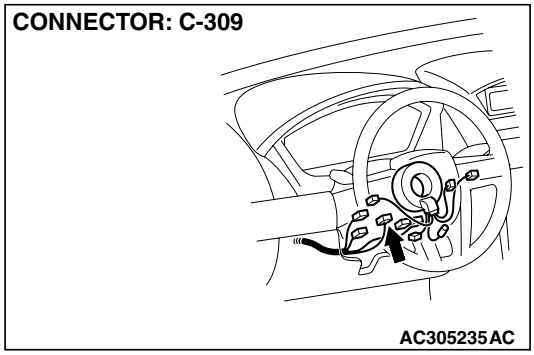
CONNECTORS: C-204, C-214



CONNECTORS: C-218, C-219



CONNECTOR: C-309



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.

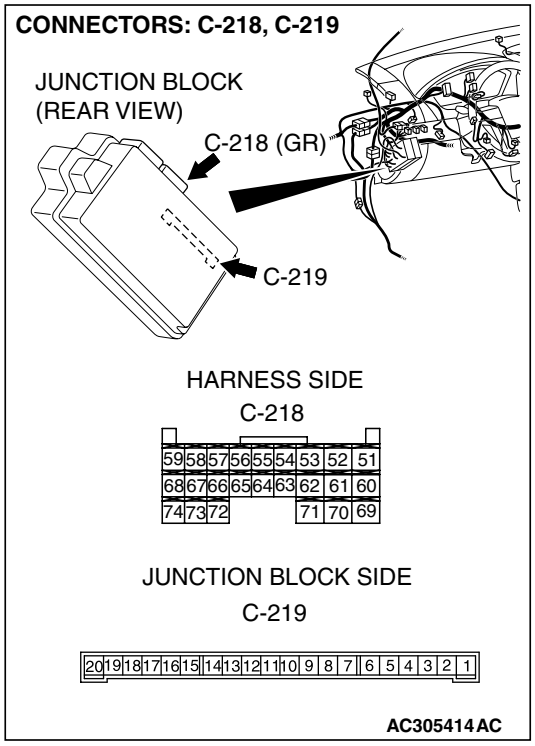
TROUBLESHOOTING HINTS

- 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

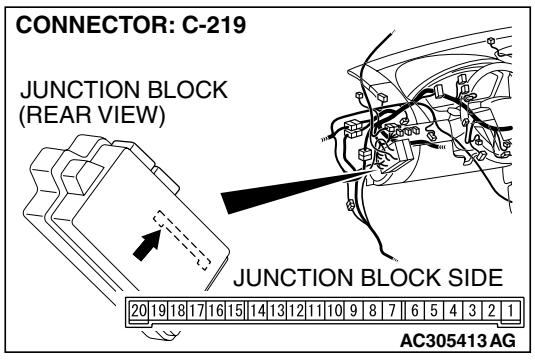


STEP 1. Check ETACS-ECU connectors C-218 and C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-218 and C-219 in good condition?

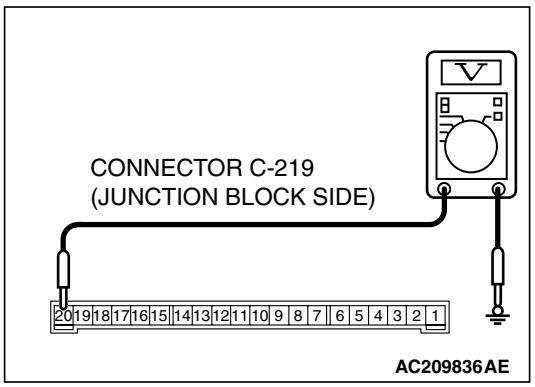
YES : Go to Step 2.

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-219.

(1) Disconnect ETACS-ECU connector C-219 and measure the voltage available at the junction block side of the connector.



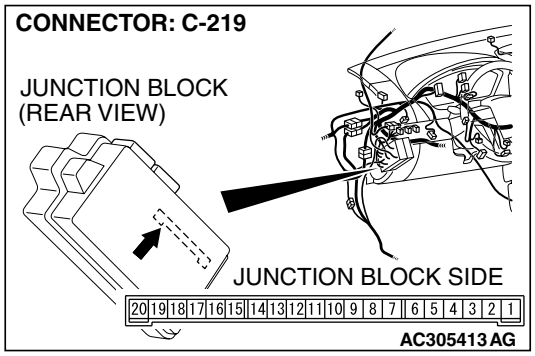
(2) Measure the voltage between terminal 20 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

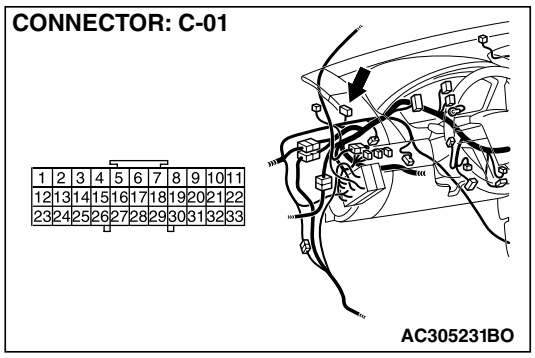
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

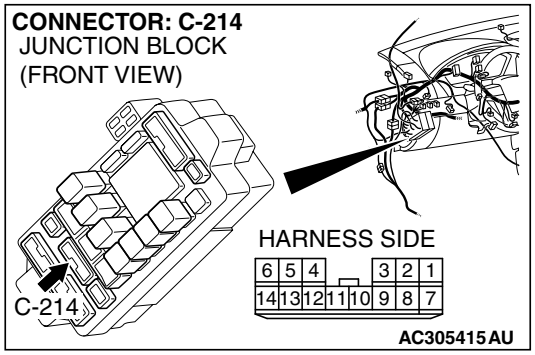
YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-219 (terminal 20) and the battery.







NOTE: Also check joint connector C-01 and junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 or junction block connector C-214 are damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

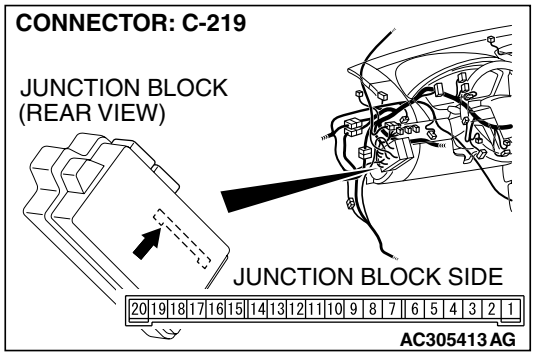
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 20) and the battery in good condition?

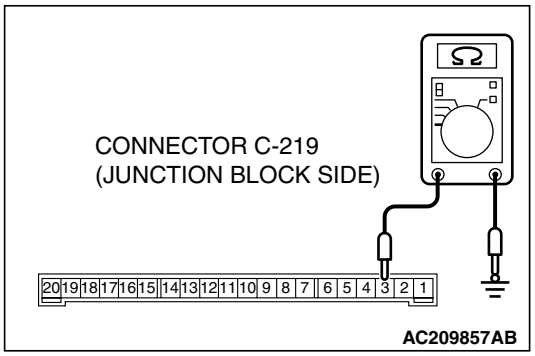
YES : No action is necessary and testing is complete.

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-219.

(1) Disconnect ETACS-ECU connector C-219 and measure the resistance available at the junction block side of the connector.



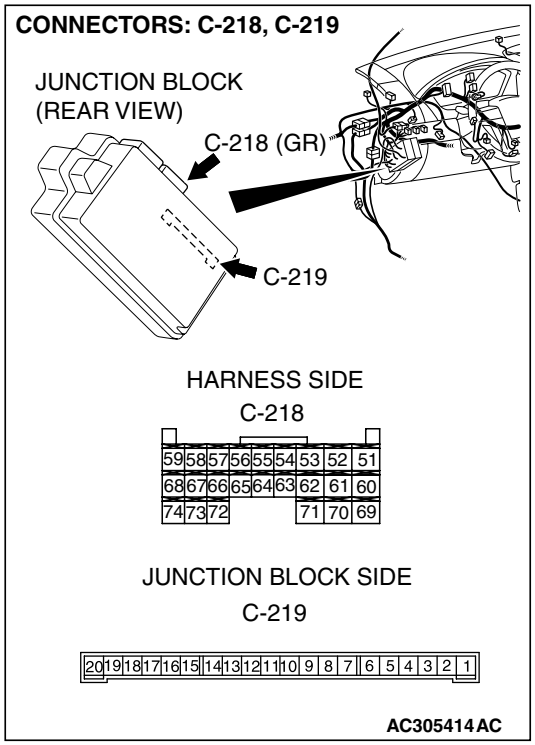


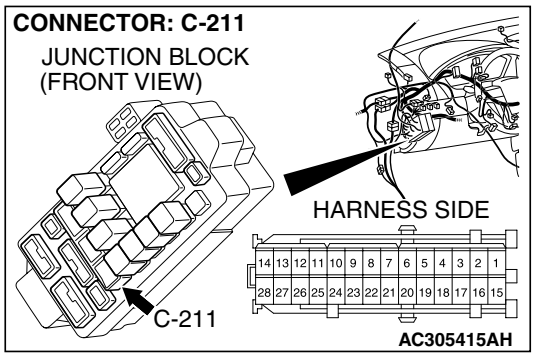
(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

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-218 (terminal 56), C-219 (terminal 3) and ground.





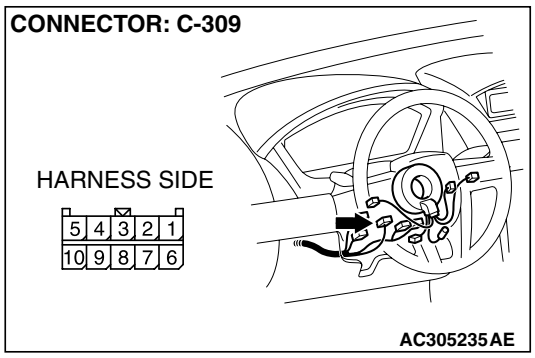
NOTE: Also check junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-218 (terminal 56), C-219 (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 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.

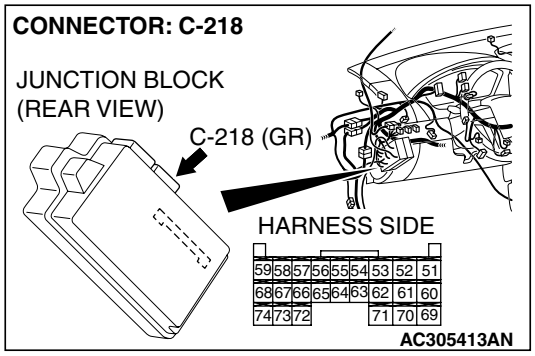
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The system should communicate with the ETACS-ECU normally.

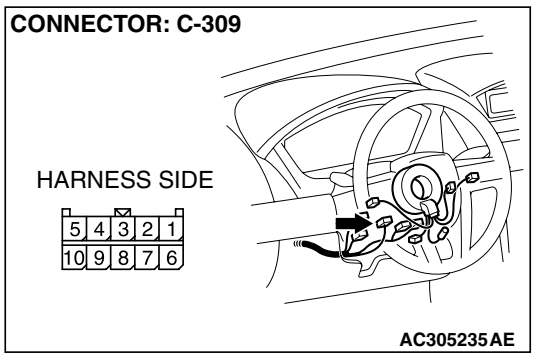
STEP 7. Check the wiring harness between column switch connector C-309 (terminal 2) and ETACS-ECU connector C-218 (terminal 68).

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

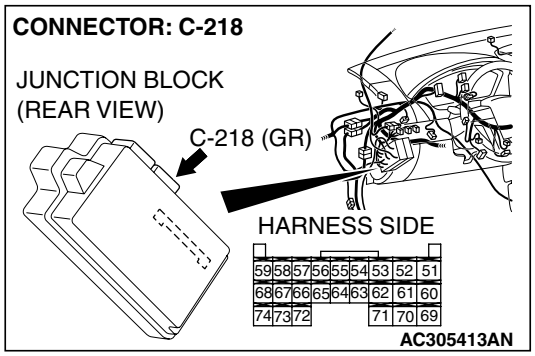
YES : Go to Step 8.

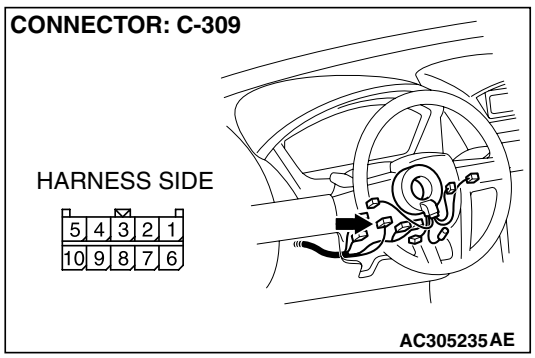
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The system should communicate with the ETACS-ECU normally.

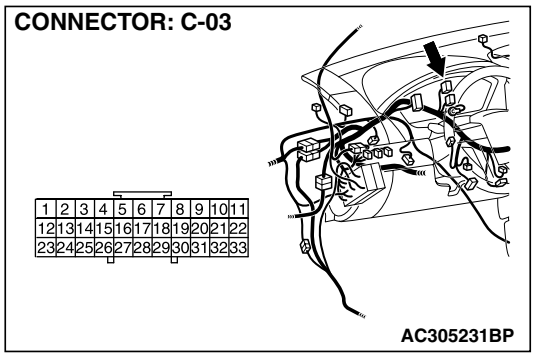




STEP 8. Check the wiring harness between column switch connector C-309 (terminal 3) and ETACS-ECU connector C-218 (terminal 59).







NOTE: Also check joint connector C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 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?

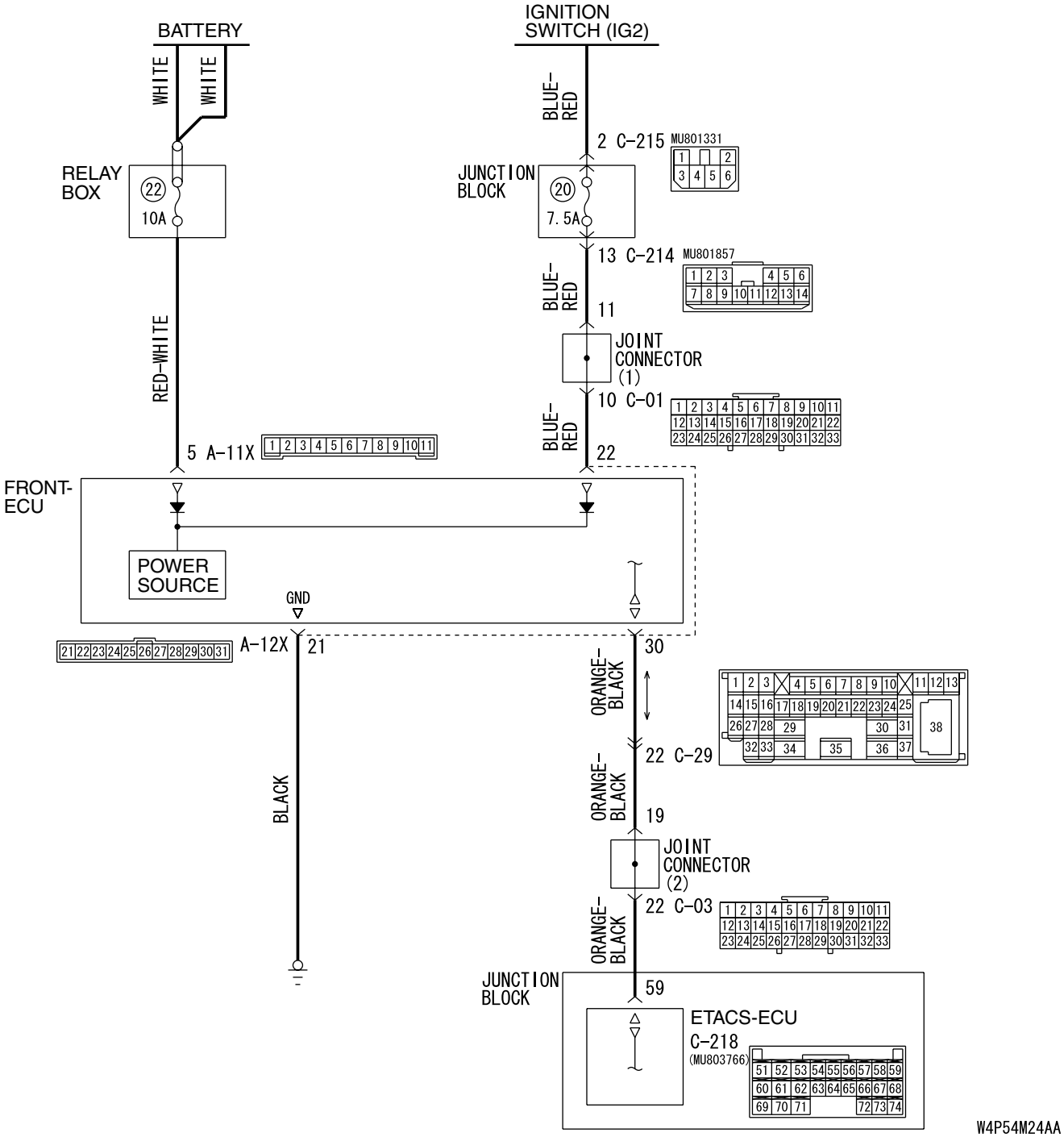
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. The system should communicate with the ETACS-ECU normally.

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.

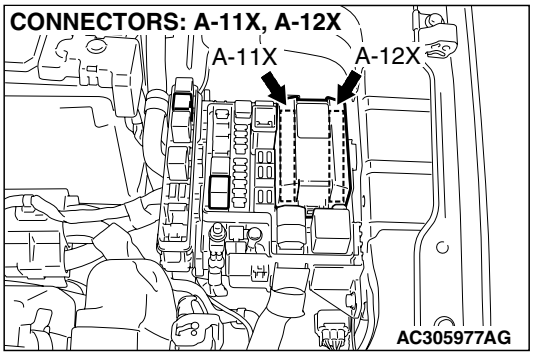
INSPECTION PROCEDURE A-4: Communication with the Front-ECU is not Possible.

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-18."

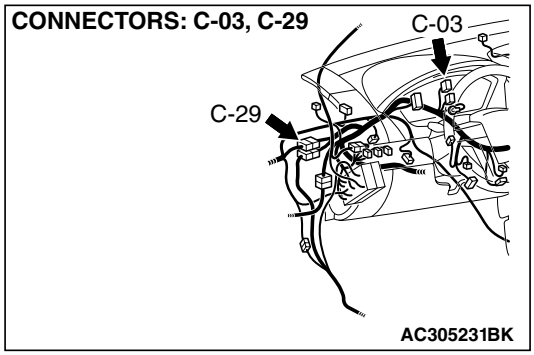
Front-ECU Power Supply and SWS Communication Circuit



CONNECTORS: A-11X, A-12X



CONNECTORS: C-03, C-29



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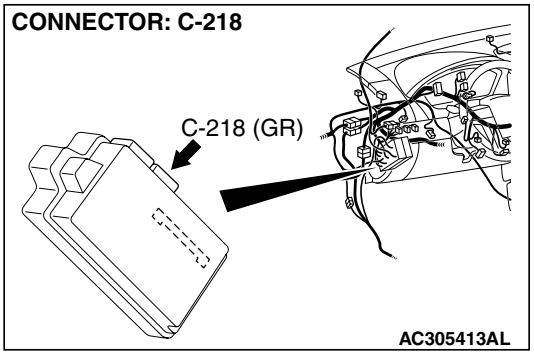


CIRCUIT OPERATION

- 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.

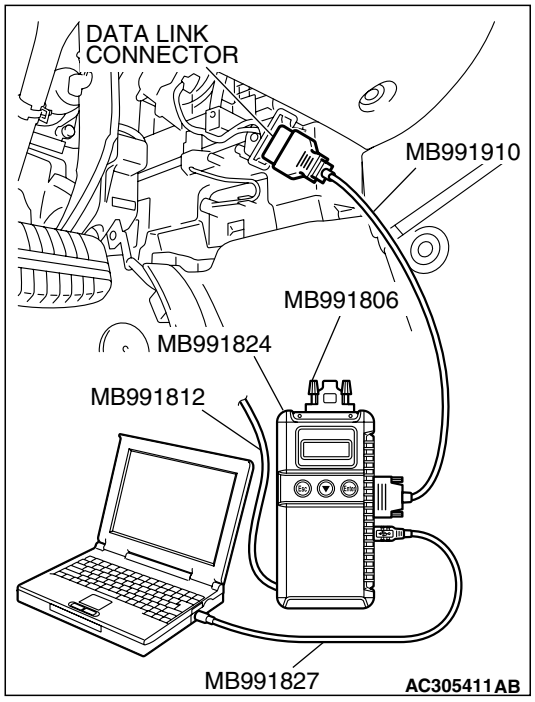
TROUBLESHOOTING HINTS

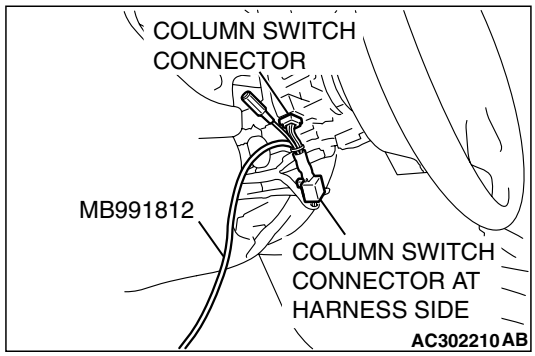
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the ETACS-ECU.

⚠ CAUTION

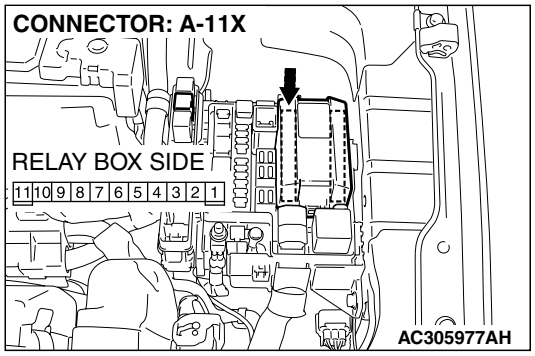
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-82."

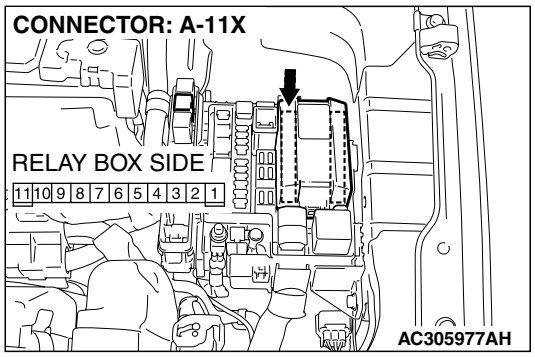


STEP 2. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

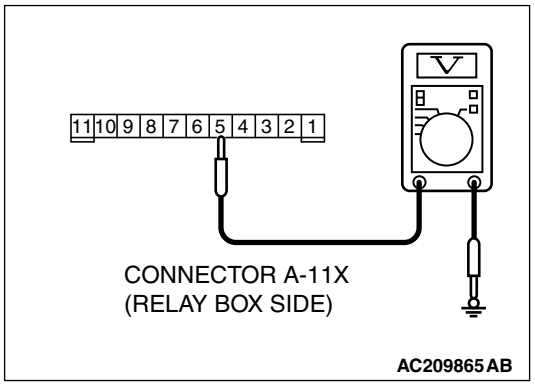
YES : Go to Step 3.

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-11X.

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

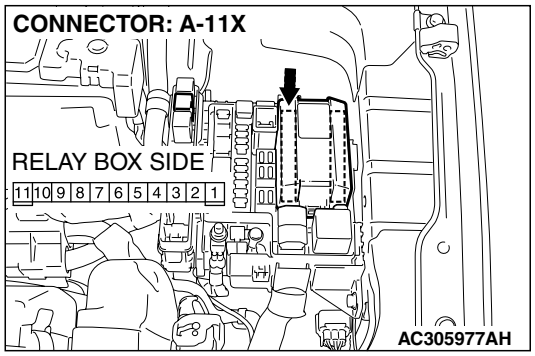


(2) Measure the voltage between terminal 5 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 5.

NO : Go to Step 4.

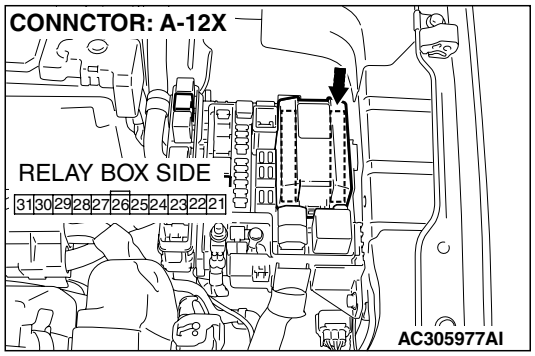


STEP 4. Check the wiring harness between front-ECU connector A-11X (terminal 5) and the battery.

Q: Is the wiring harness between front-ECU connector A-11X (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.

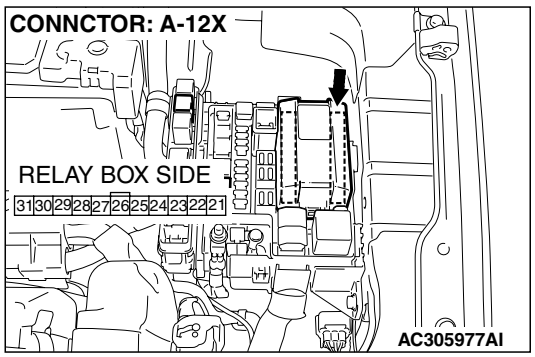


STEP 5. Check front-ECU connector A-12X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

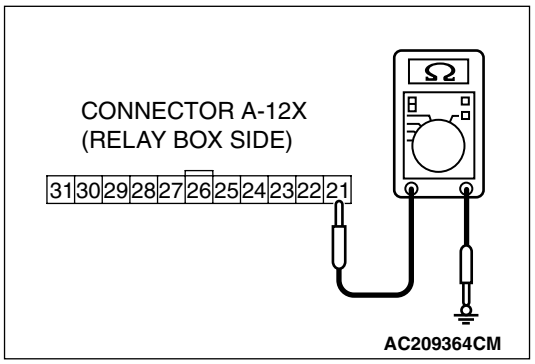
YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The 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-12X.

(1) Disconnect front-ECU connector A-12X 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.

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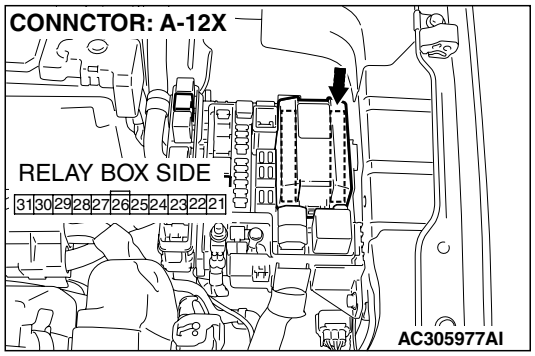
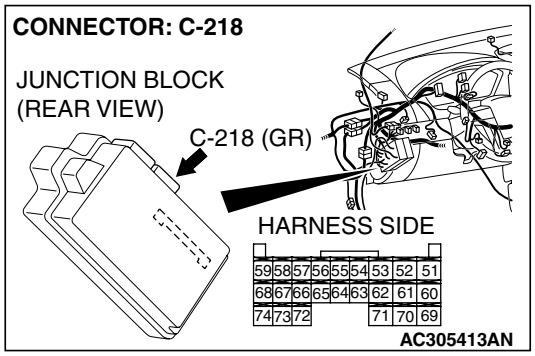


STEP 7. Check the wiring harness between front-ECU connector A-12X (terminal 21) and ground.

Q: Is the wiring harness between front-ECU connector A-12X (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.



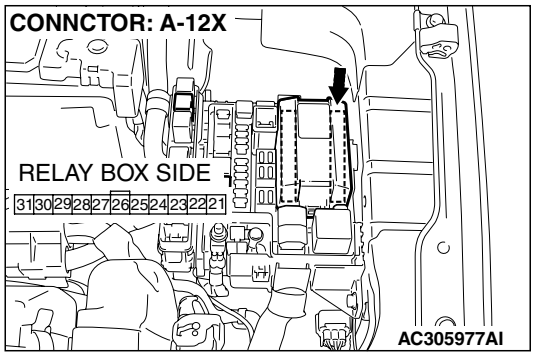
STEP 8. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

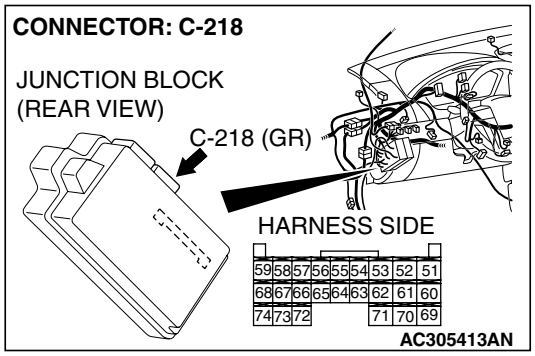
Q: Is ETACS-ECU connector C-218 in good condition?

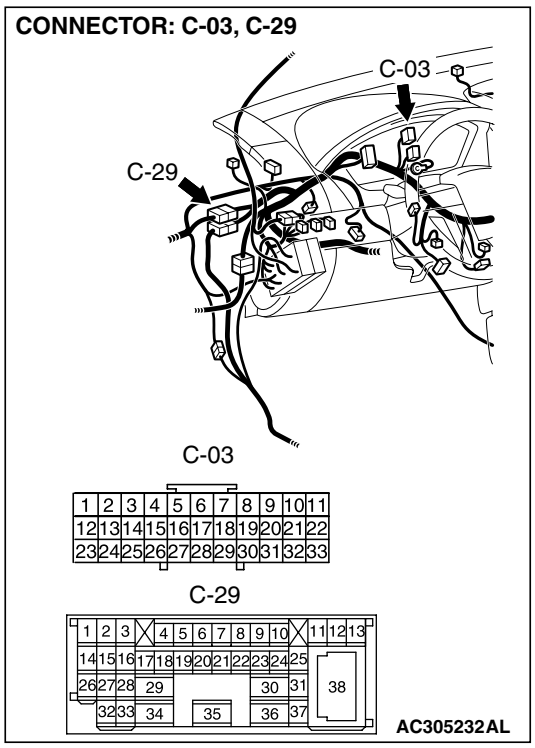
YES : Go to Step 9.

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-12X (terminal 30) and ETACS-ECU connector C-218 (terminal 59).







NOTE: Also check joint connector C-03 and intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 or intermediate connector C-29 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-12X (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.

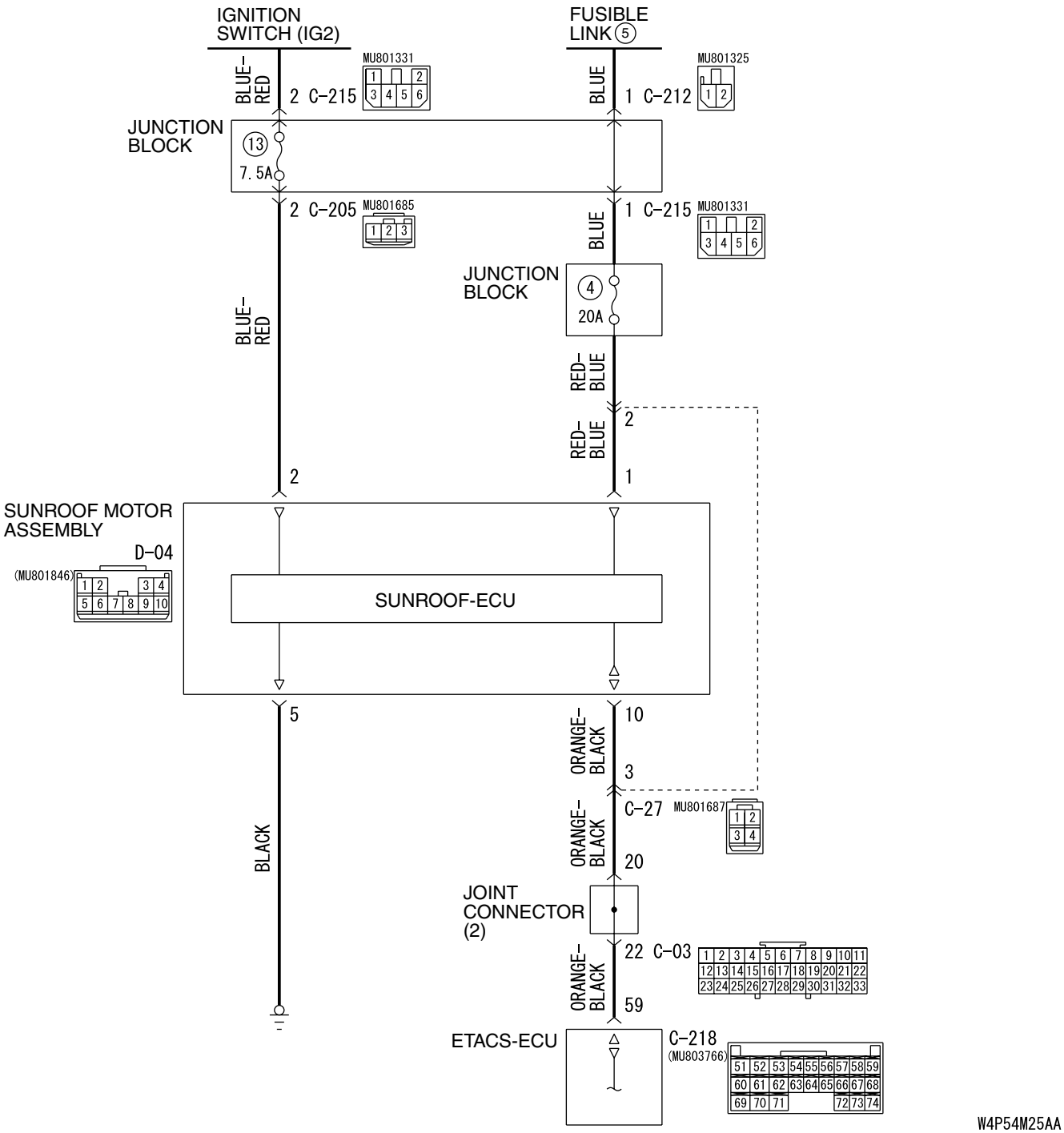
Q: Can the system communicate with the front-ECU?

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-11. 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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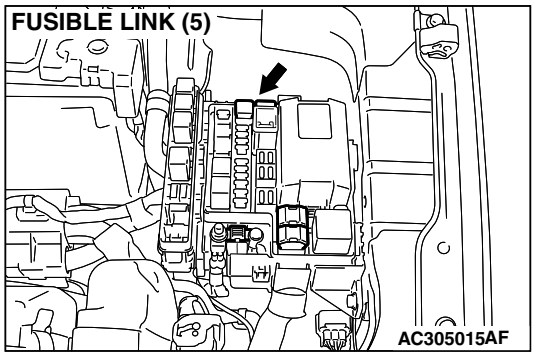

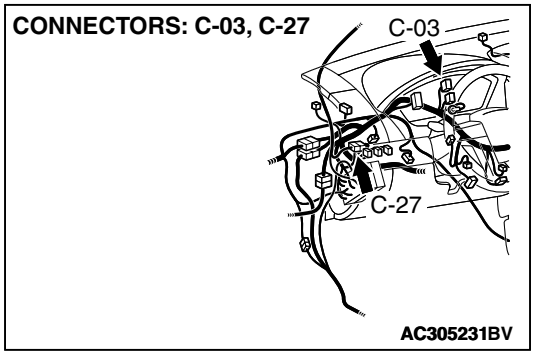

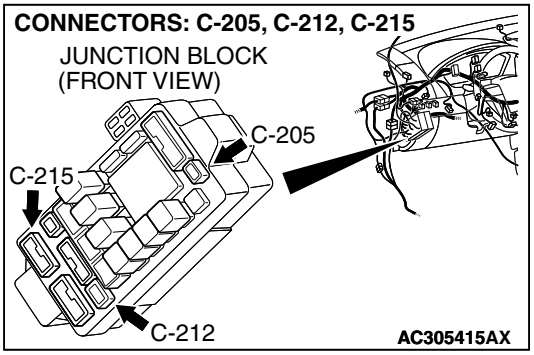

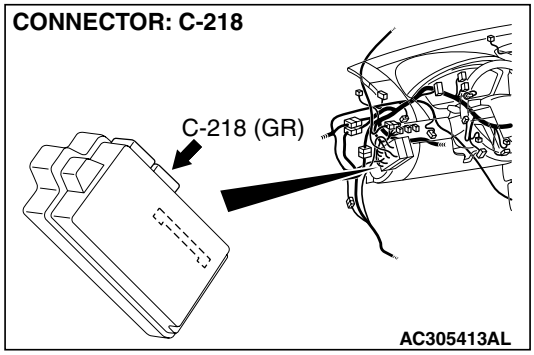

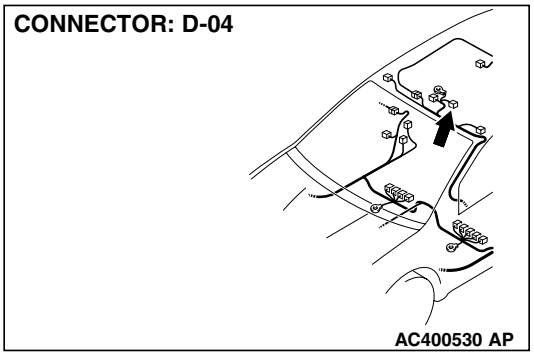

CIRCUIT OPERATION

- 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

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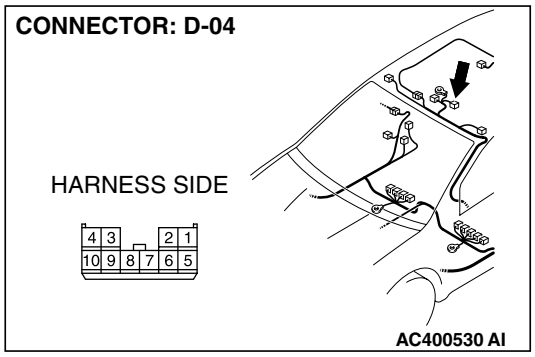
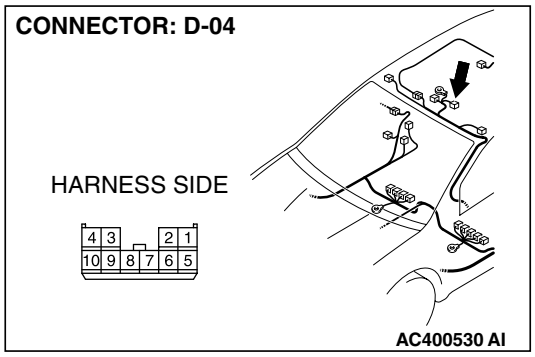


STEP 1. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

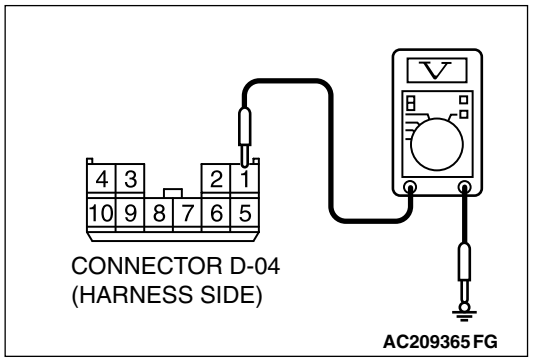
YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. 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-04.

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



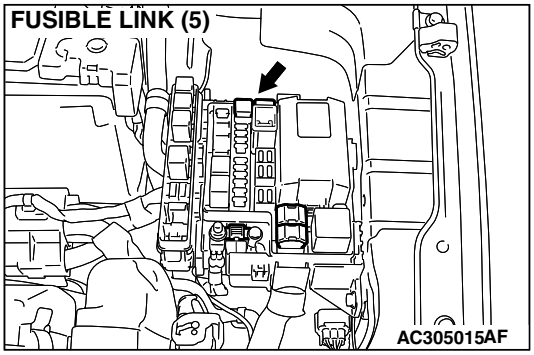
(2) Measure the voltage between terminal 1 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

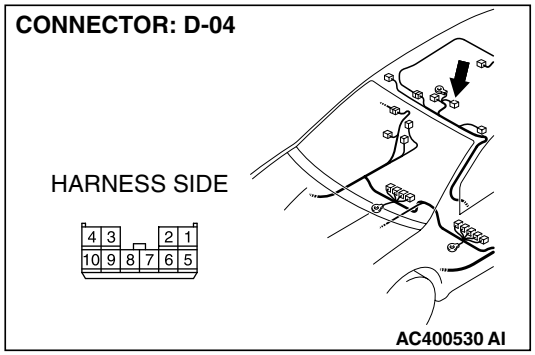
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

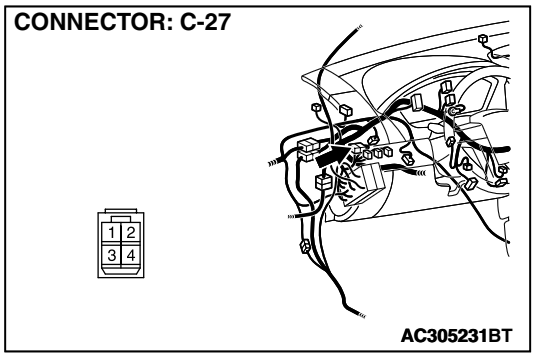
YES : Go to Step 4.

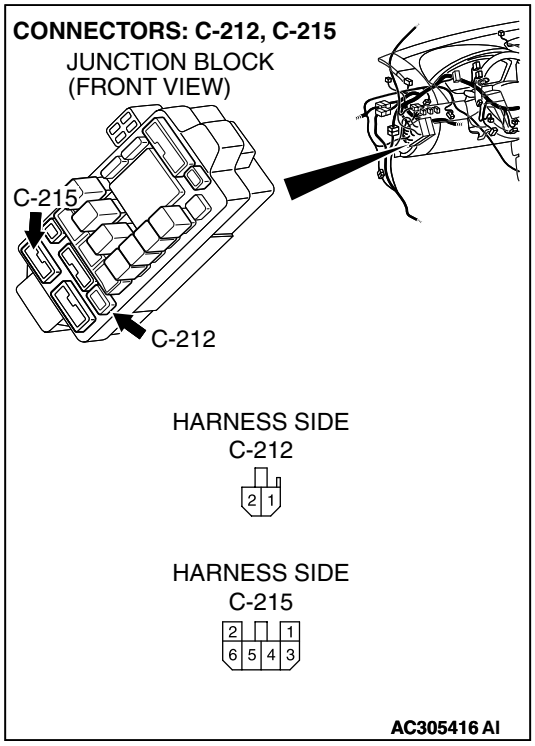
NO : Go to Step 3.

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









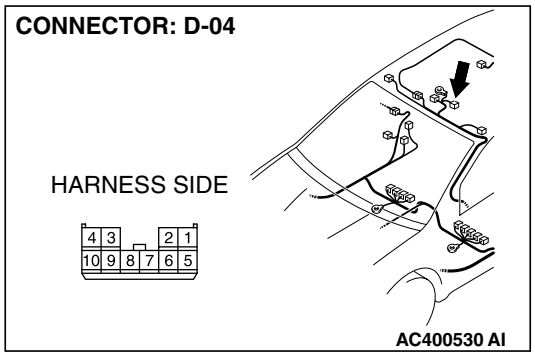
NOTE: Also check junction block connectors C-212, C-215 and intermediate connector C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-212, C-215 or intermediate connector C-27 is damaged, repair or replace the damaged component(s)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

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

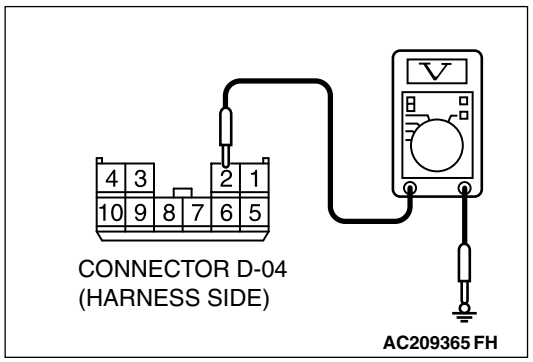
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. 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-04.



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

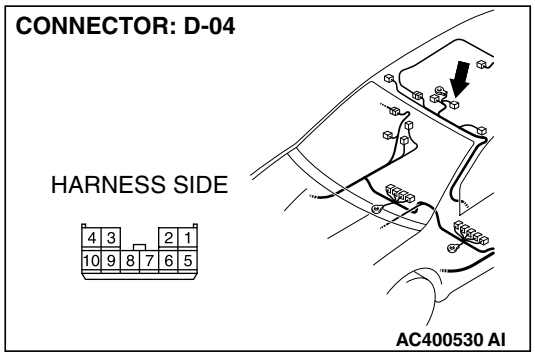


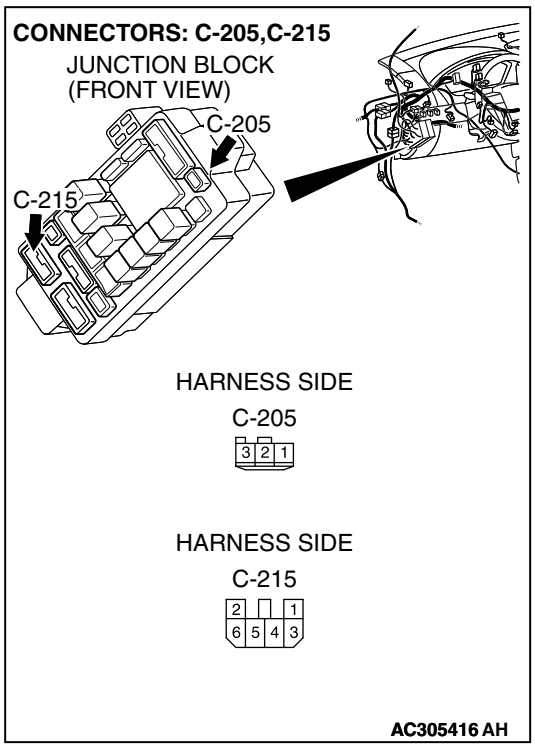
(3) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

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





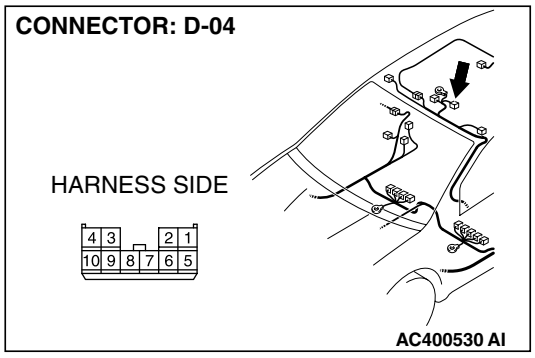
NOTE: Also check junction block connectors C-215 and C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 or C-205 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

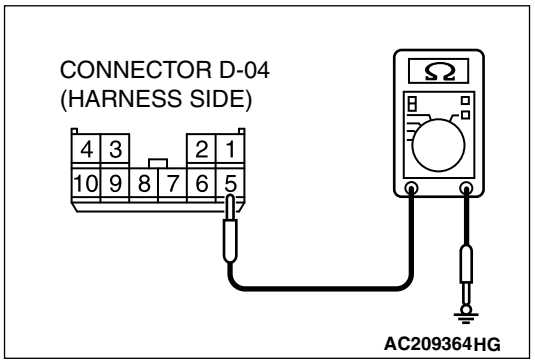
YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. 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-04.



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

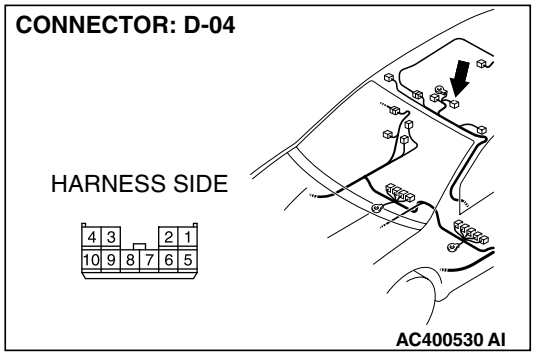


(2) Measure the resistance value between terminal 5 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.

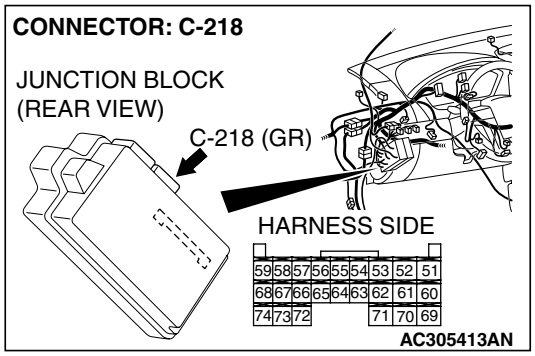


STEP 7. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 5) and ground.

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

YES : No action is necessary and testing is complete.

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



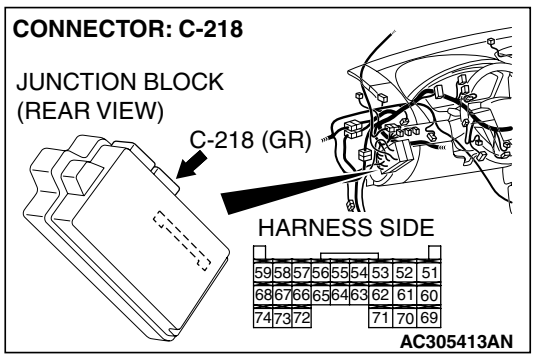
STEP 8. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

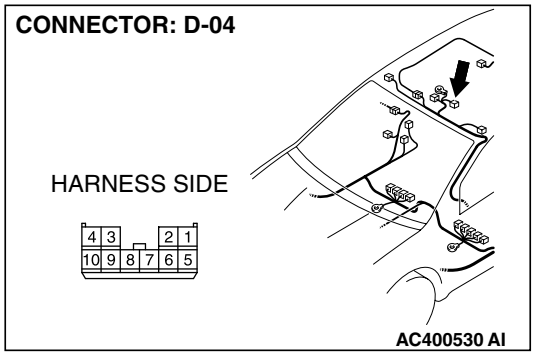
Q: Is ETACS-ECU connector C-218 in good condition?

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-04 (terminal 10) and ETACS-ECU connector C-218 (terminal 59).





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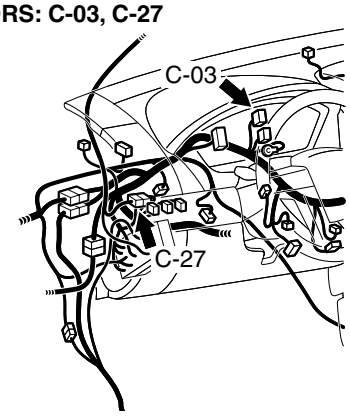
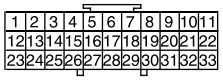
CONNECTORS: C-03, C-27



C-03 HARNESS SIDE



C-27

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NOTE: Also check intermediate connector C-27 and joint connector C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-27 or joint connector C-03 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between sunroof motor assembly connector D-04 (terminal 10) 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-11. The system should communicate with the sunroof-ECU normally.

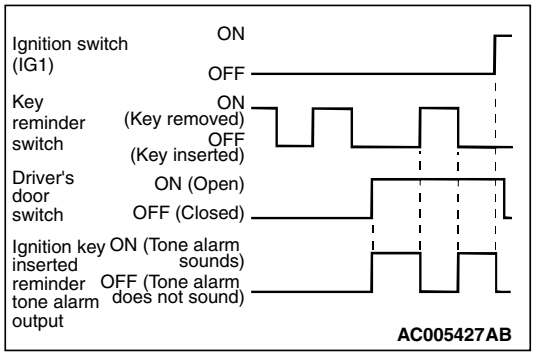
TONE ALARM

GENERAL DESCRIPTION CONCERNING THE TONE ALARM

M1549021000434

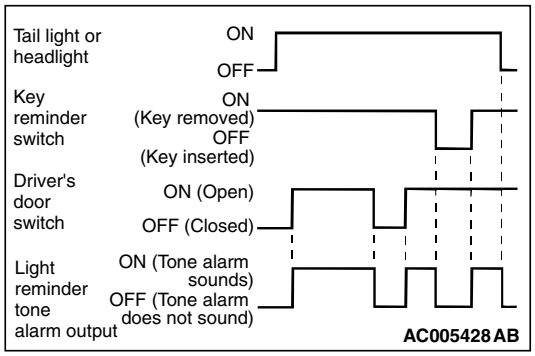
The tone alarm functions are as follows. These functions are controlled by relevant ECUs.

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 warning buzzer	ETACS-ECU
Center display operation tone <vehicles with multi-center display (middle-grade type)>	ETACS-ECU
Turn-signal light buzzer	ETACS-ECU, column switch



Ignition key reminder tone alarm function

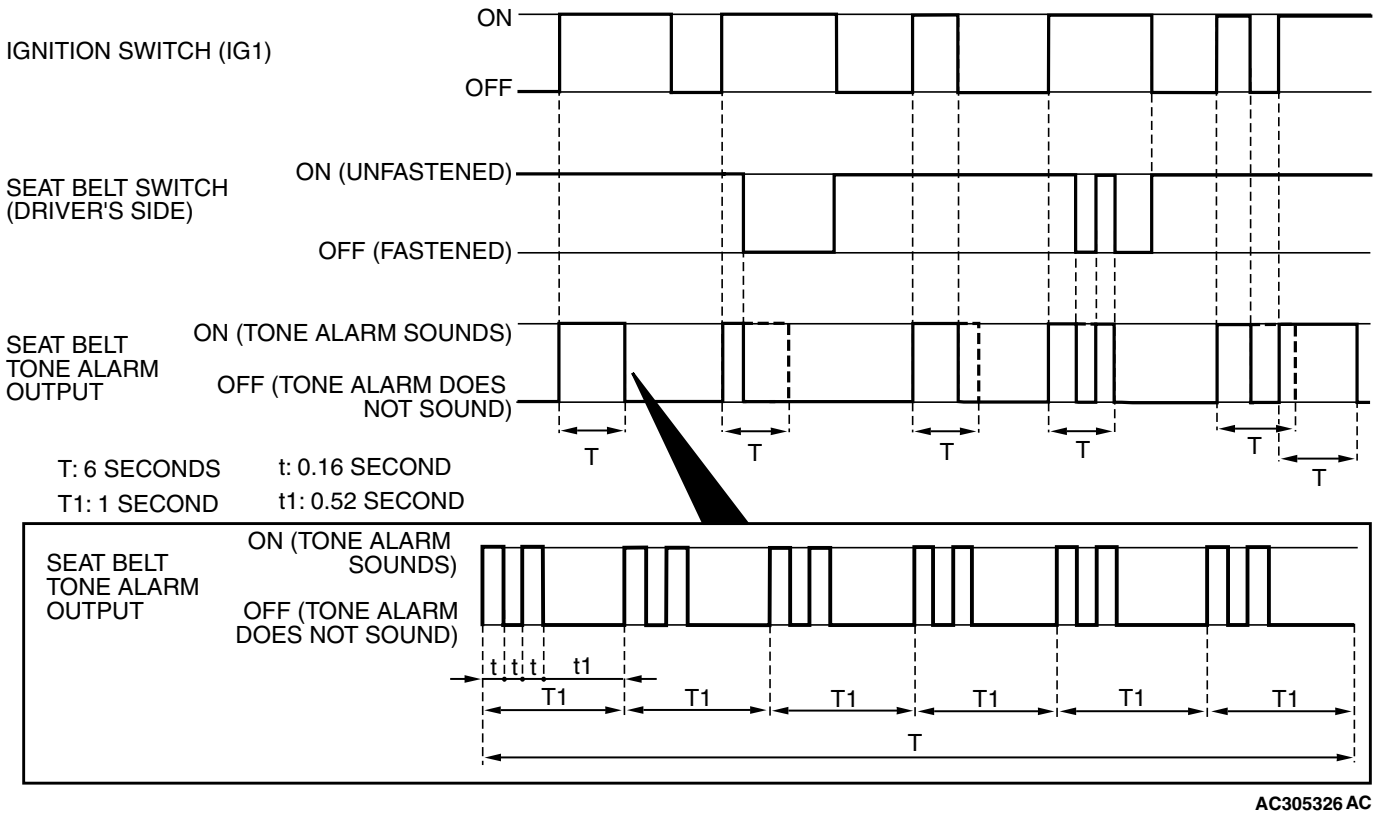
When the driver's door is opened with the ignition key inserted in the ignition key cylinder (ignition switch is in the OFF position,) the tone alarm sounds intermittently to indicate that the ignition key has not been removed.

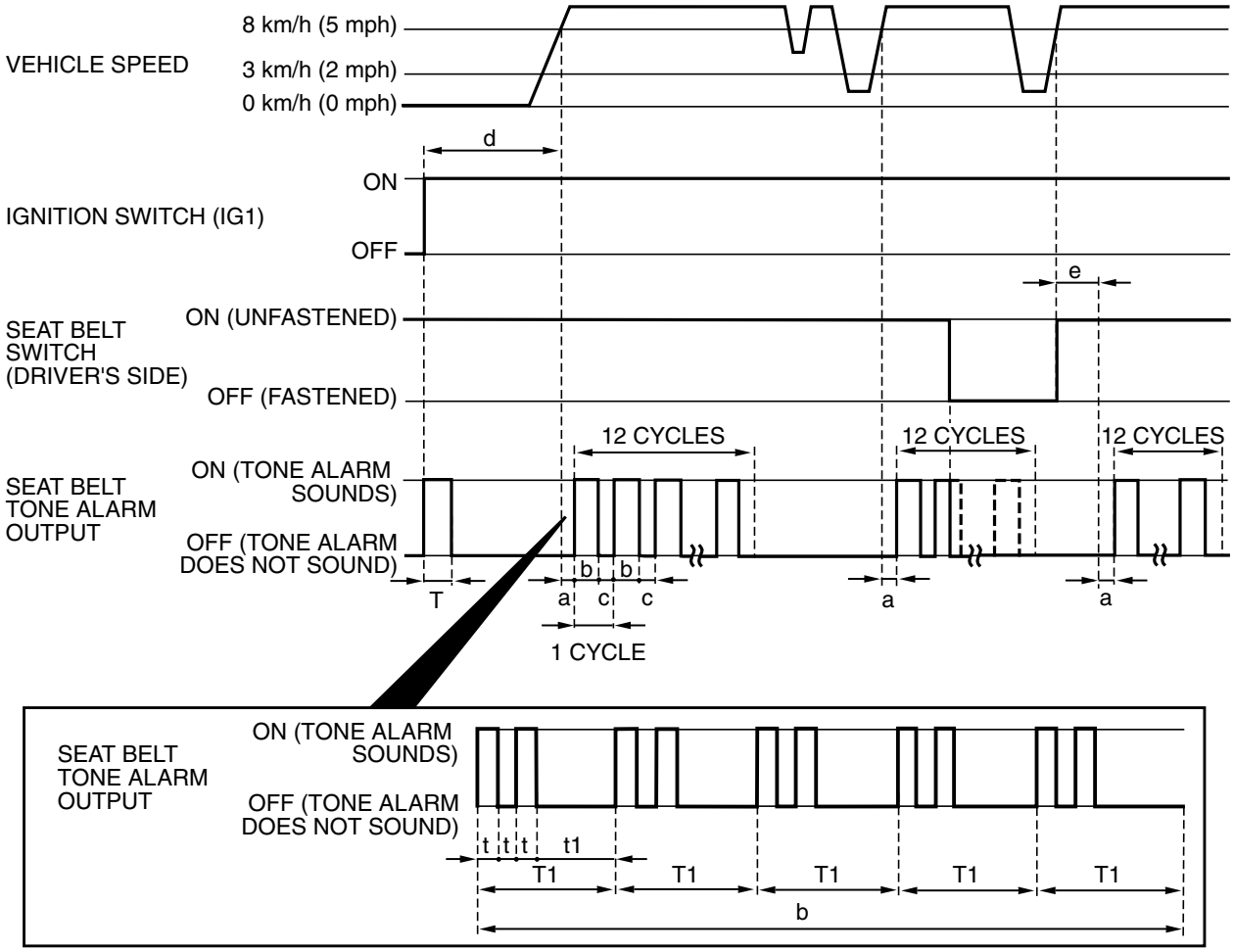


Light reminder tone alarm function

When the taillights or headlights is the ON position, 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





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

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

- Sounds the tone alarm for six seconds when the ignition switch is turned "ON" with the seat belt switch on (the driver's seat belt is not fastened). This is called "Timer function".
- Sounds the tone alarm 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 "on" and then three-second "off."
  a. The vehicle speed has reached 8 km/h (5 mph) while the seat belt switch is turned on (driver's seat belt is not fastened) with the ignition switch "ON."
  b. The seat belt switch has been turned on (driver's seat belt has not been fastened) for at least ten seconds while the ignition switch has been turned "ON" and the vehicle speed has been 8 km/h (5 mph) or more.

  NOTE: Once 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 warning buzzer

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 for 4 times even if the ignition, door status, or vehicle speed requirements are not maintained.

NOTE: The warning buzzer can be customized on vehicles equipped with a multi-center display (middle-grade type). Refer to P.54B-587.

Multi-center display operation tone <vehicles with multi-center display (middle-grade type)>

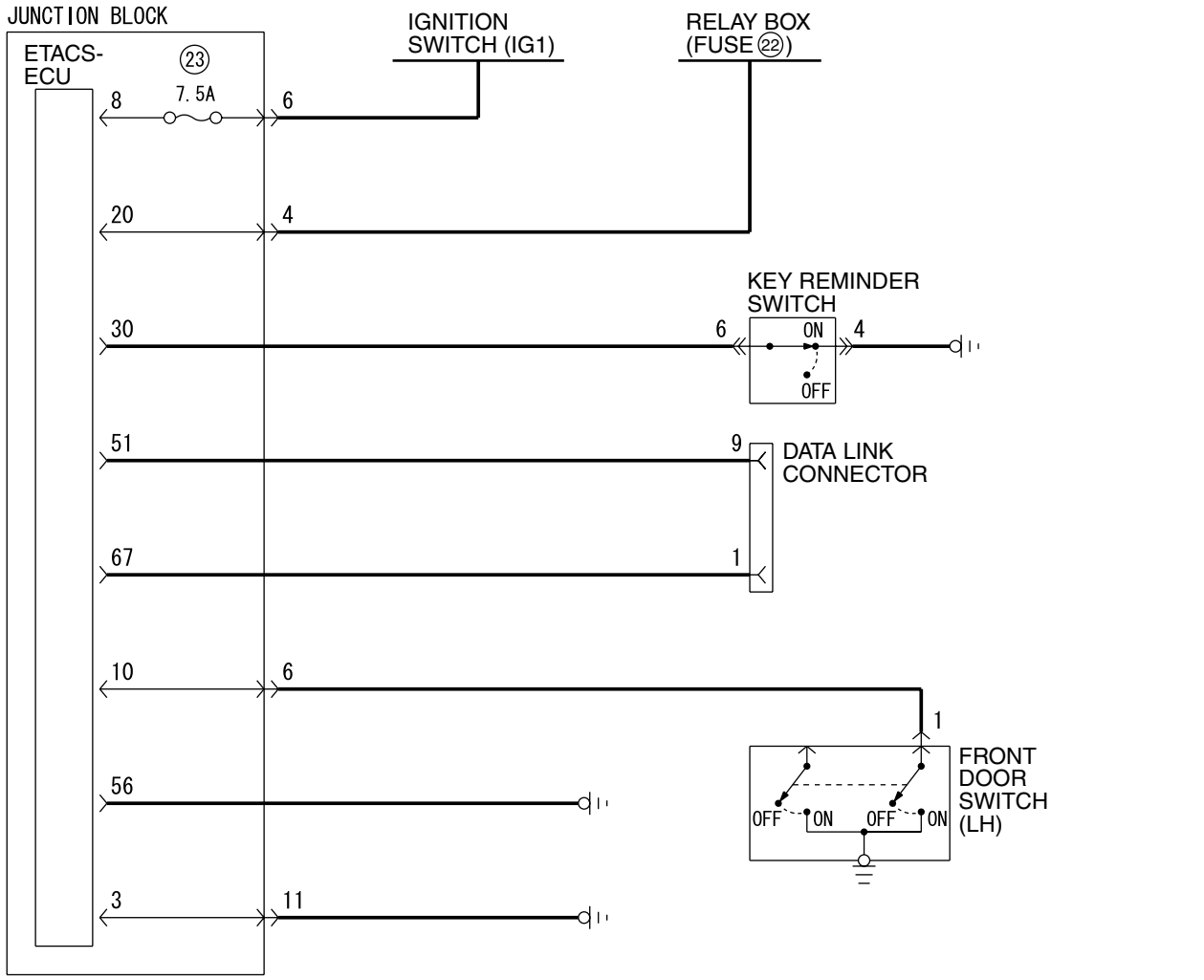
The ETACS-ECU sounds the buzzer when the buzzer signal is sent from the multi-center display.

Turn-signal light buzzer

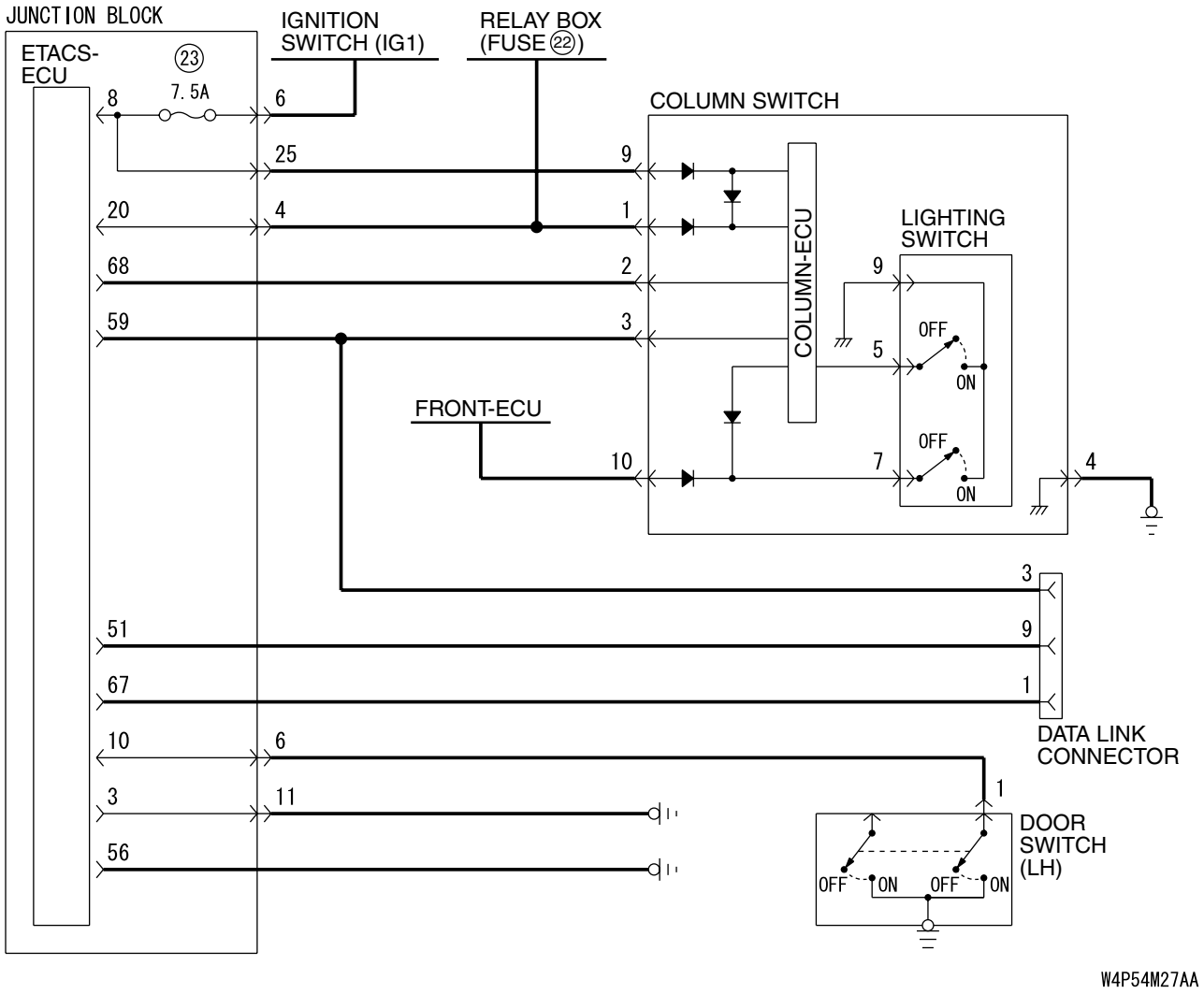
The ETACS-ECU sounds the buzzer in sync with the turn-signal lights or hazard warning lights.

NOTE: The turn-signal light buzzer can be customized on vehicles equipped with a multi-center display (middle-grade type). Refer to P.54B-587.

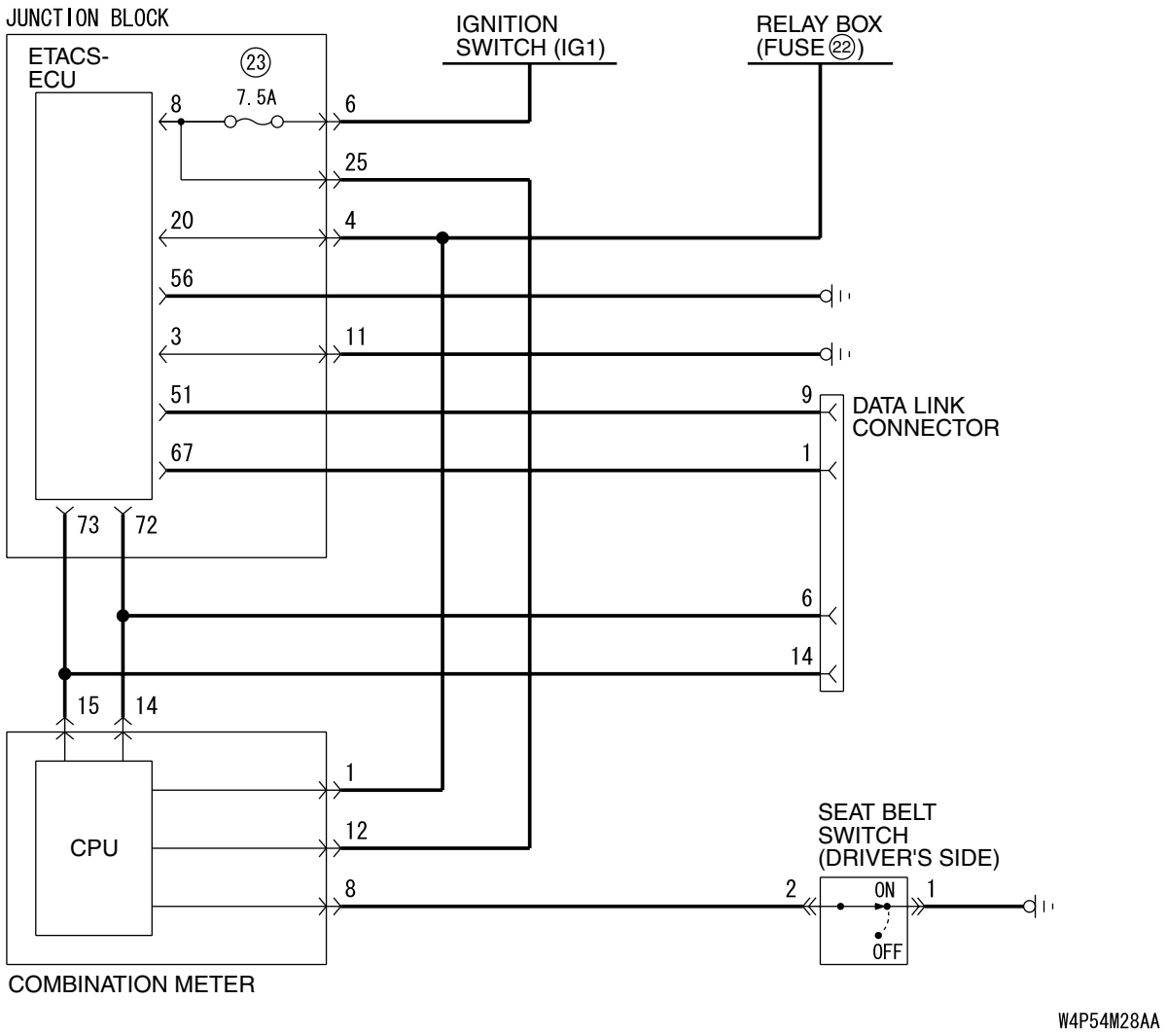
General circuit diagram for ignition key reminder tone alarm function



General circuit diagram for light reminder tone alarm function



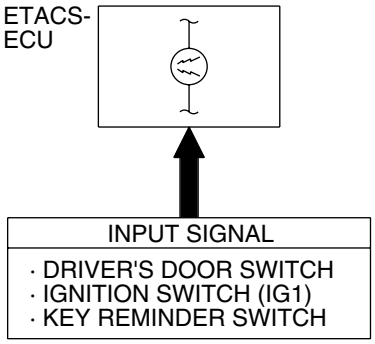
General circuit diagram for seat belt tone alarm function



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-18."

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
- Front 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

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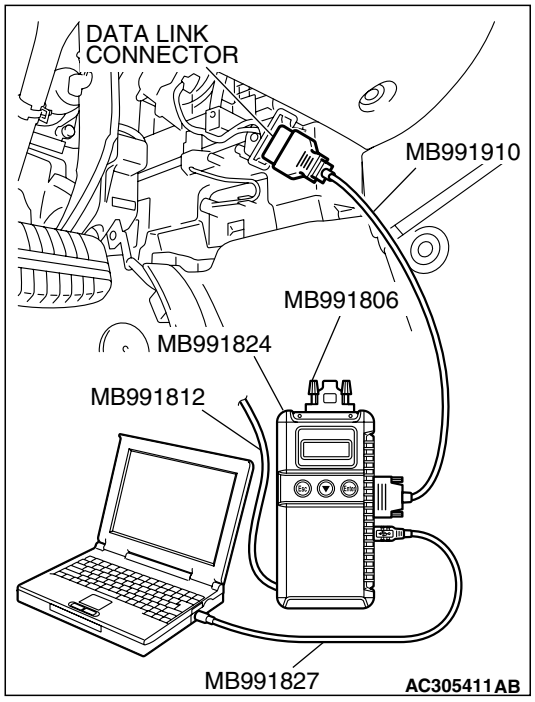
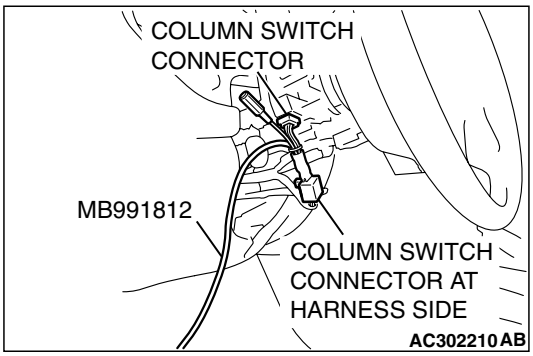




STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

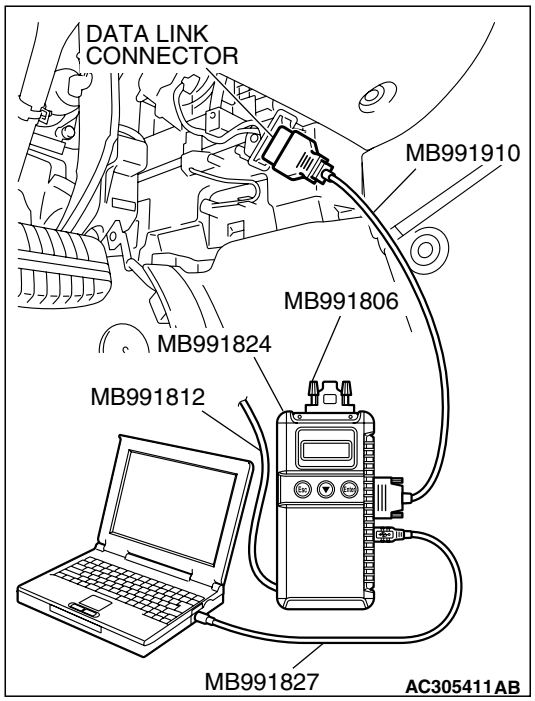
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

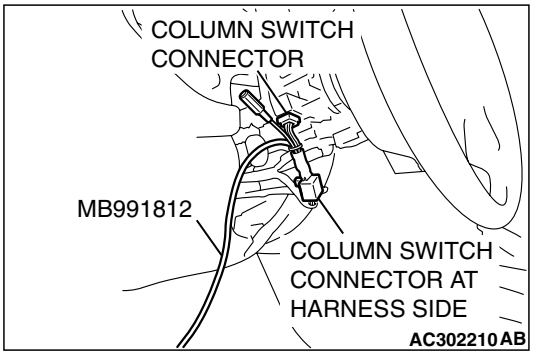
(1) Connect the special tool. Refer to "How to connect SWS monitorP.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "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-82."





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

Check the input signals from the following switches:

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

(1) Operate scan tool 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 REMND. 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 front 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	DR DOOR SW	ON
ITEM 43	BUZZER	ON

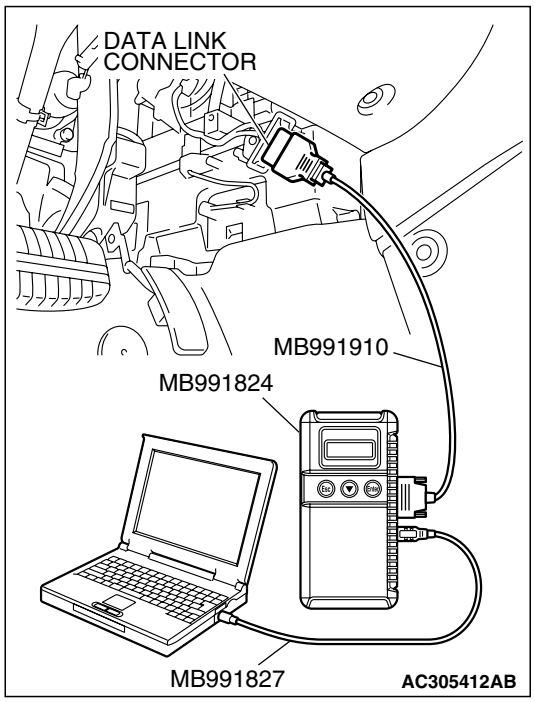
Q: Does scan tool MB991958 display the items "IG SW (IG1)", "DR DOOR SW" and "BUZZER" as normal condition?

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-11. 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-497."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."

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?

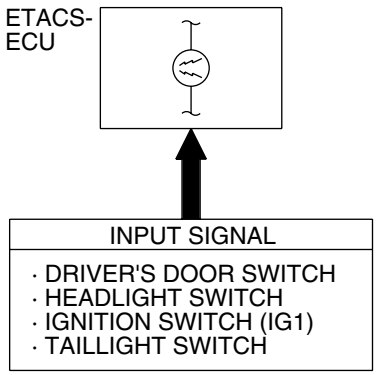
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. The ignition key reminder tone alarm function should now work normally.

NO : Refer to Inspection Procedure N-1 "ETACS-ECU does not receive any signal from the key reminder switch P.54B-525."

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-18."

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
- Front door switch (LH): ON
- Taillight switch: ON
- Headlight switch: ON

TSB Revision

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").

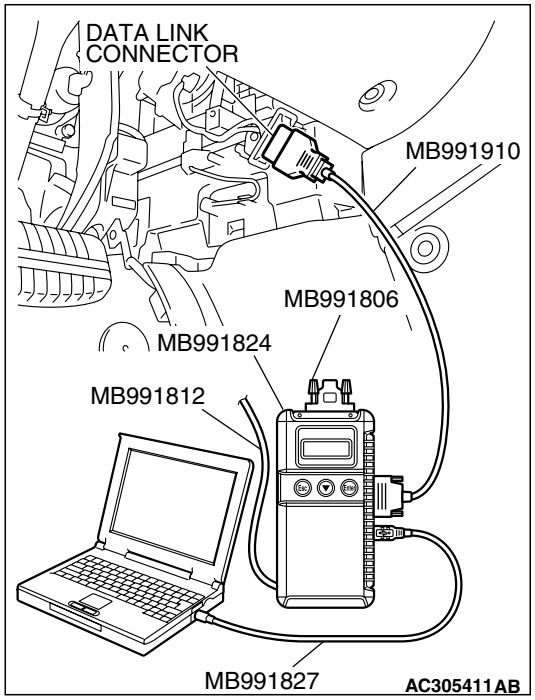
TROUBLESHOOTING HINTS

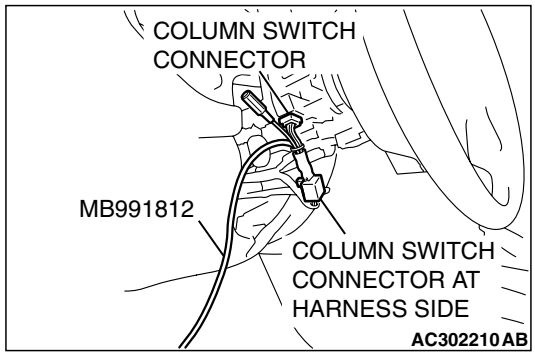
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

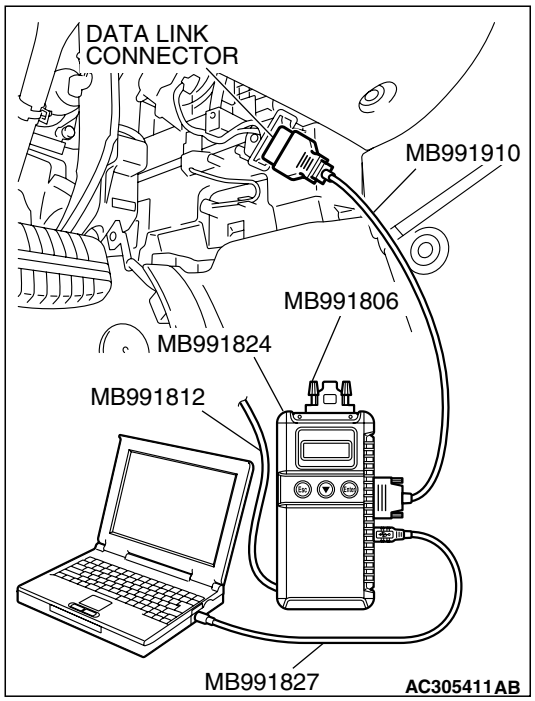
⚠ CAUTION

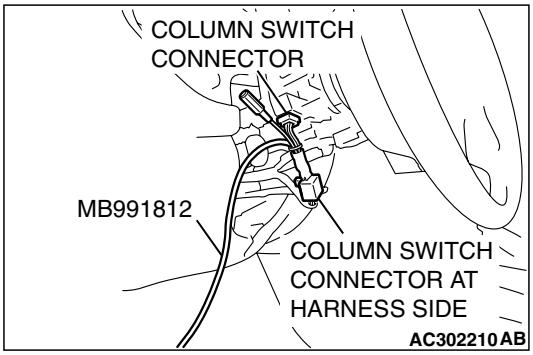
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-82."
"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-73."





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

Check the input signals from the following switches:

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

(1) Operate scan tool 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 front 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	DR 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", "DR 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-11. Verify that the light reminder tone alarm function should now work normally.

Normal condition is not displayed for "HEADLIGHT SW" :
Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the headlight switch P.54B-511."

Normal condition is not displayed for "TAILLIGHT SW" :
Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the taillight switch P.54B-511."

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

TSB Revision

(IG1) P.54B-497."

Normal condition is not displayed for "DR DOOR SW" :
Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."

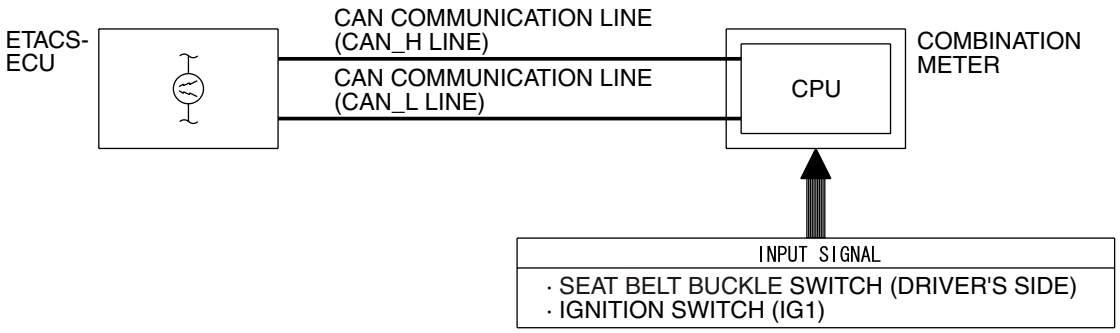
Normal condition is not displayed for "H/L AUTO-CUT" :
Refer to Inspection Procedure H-9 "Headlight automatic shutoff function does not work normally P.54B-366."

Normal condition is not displayed for "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-11. Verify that 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-18."

Seat Belt Tone Alarm Function



W4P54M31AA

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

DIAGNOSIS

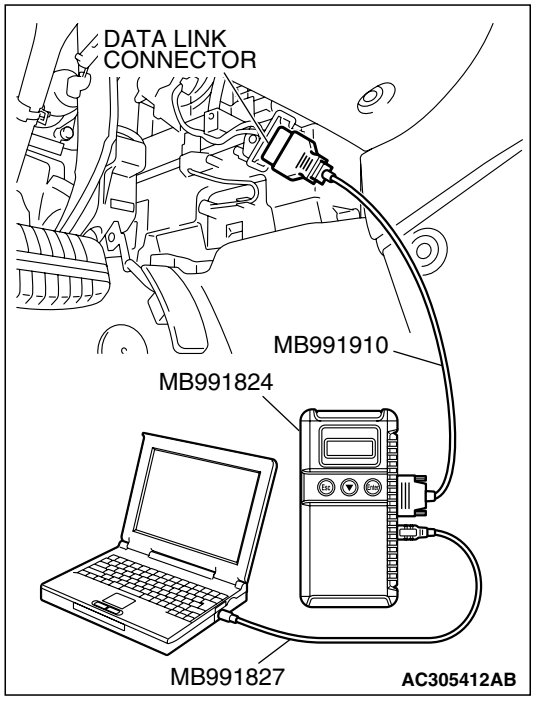
Required Special Tools:

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

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

⚠ CAUTION

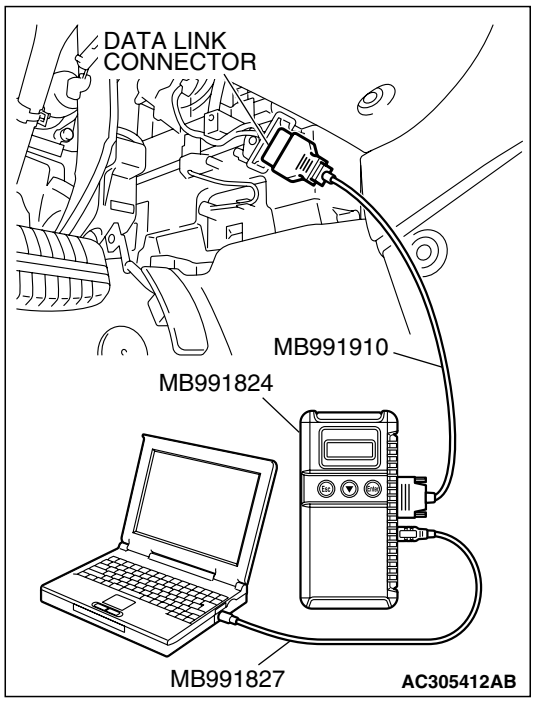
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.



(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).



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

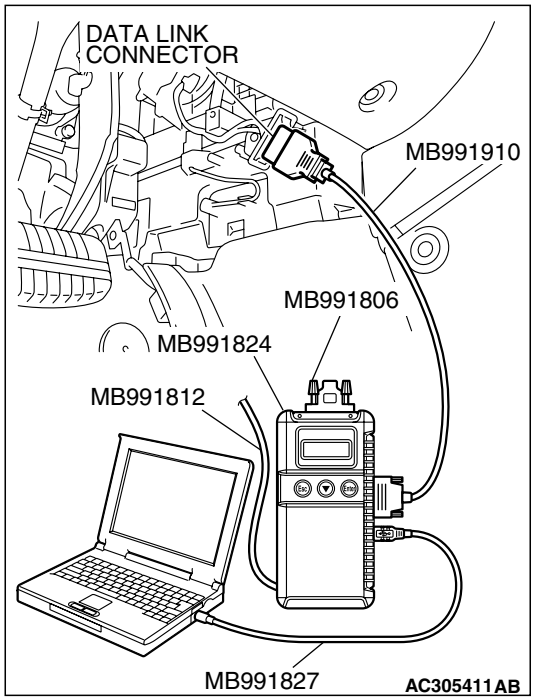
Check whether the combination meter-related DTC is set.

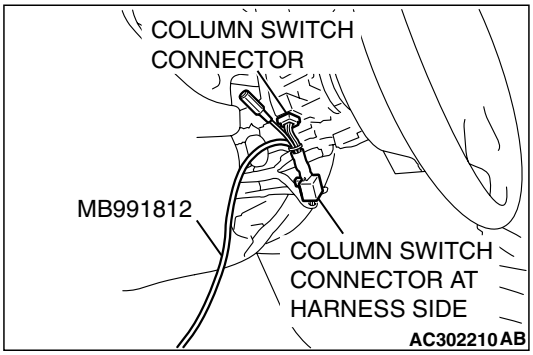
(1) Turn the ignition switch to the "ON" position.
(2) Check whether the combination meter-related DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

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

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

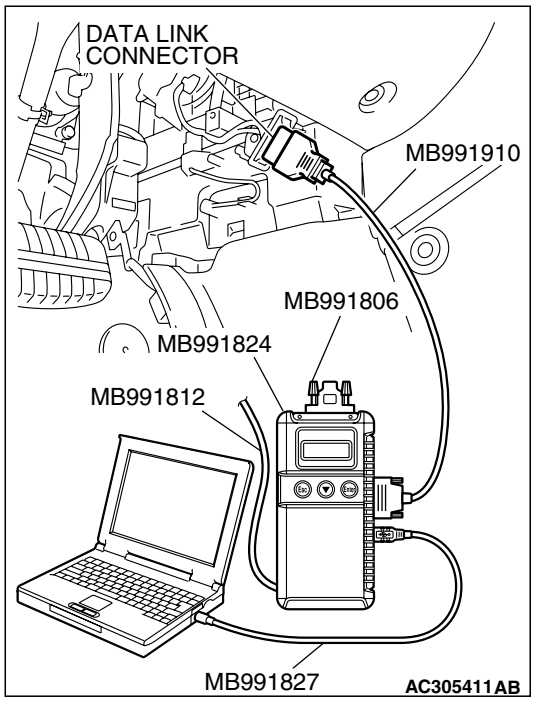
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

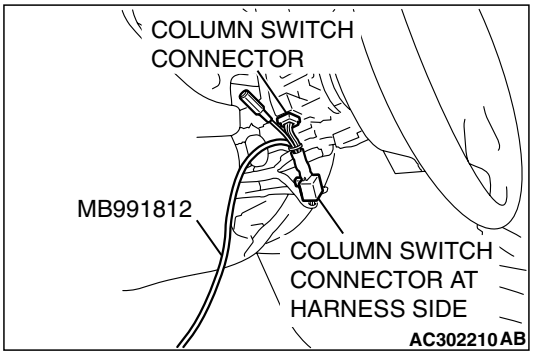
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. Select "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-82."





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-11. Verify that the seat belt tone alarm function works normally.

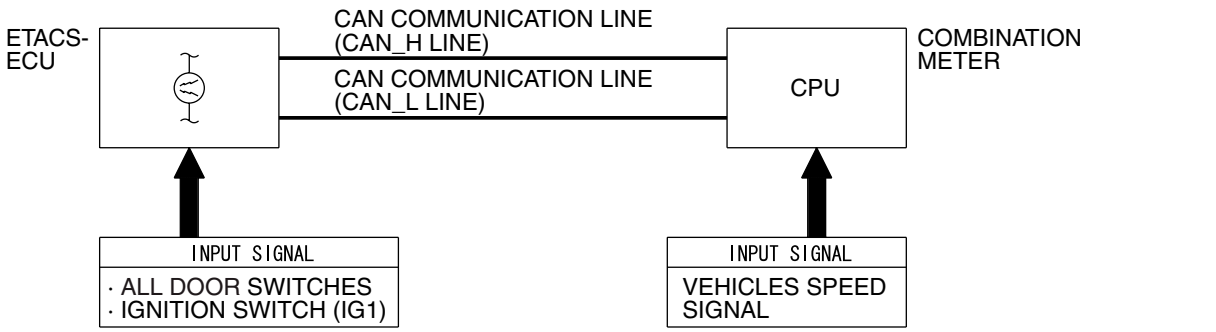
Normal condition is not displayed for "IG SW (IG1)" :
Refer to Inspection Procedure M-2 "ETACS-ECU does not receive any signal from the ignition switch (IG1) P.54B-497."

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-11. Verify that the seat belt tone alarm function works normally.

INSPECTION PROCEDURE B-4: Tone Alarm: Door ajar Warning Buzzer 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-18."

Door Ajar Tone Alarm Function Circuit



W4P54M32AA

CIRCUIT OPERATION

The ETACS-ECU controls the door-ajar warning 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 warning 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.

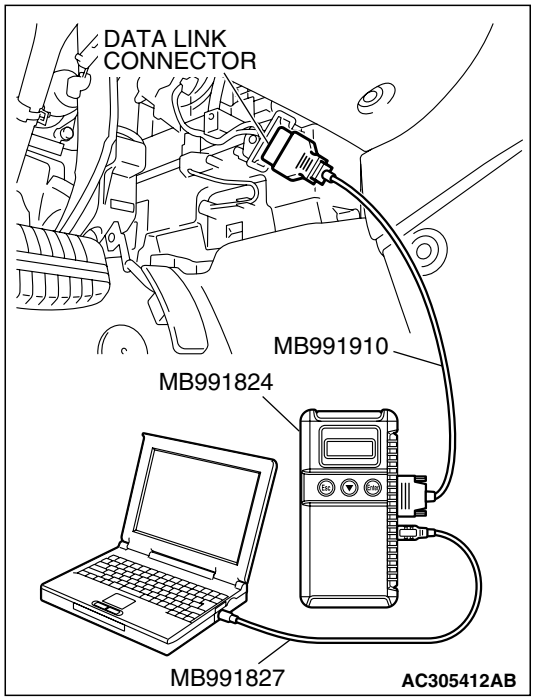
TROUBLESHOOTING HINTS

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



STEP 1. Check the adjustment function.

Q: Has the door-ajar warning tone alarm function been enabled by the adjustment function?

YES : Go to Step 2.

NO : Enable the door-ajar warning tone alarm.

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

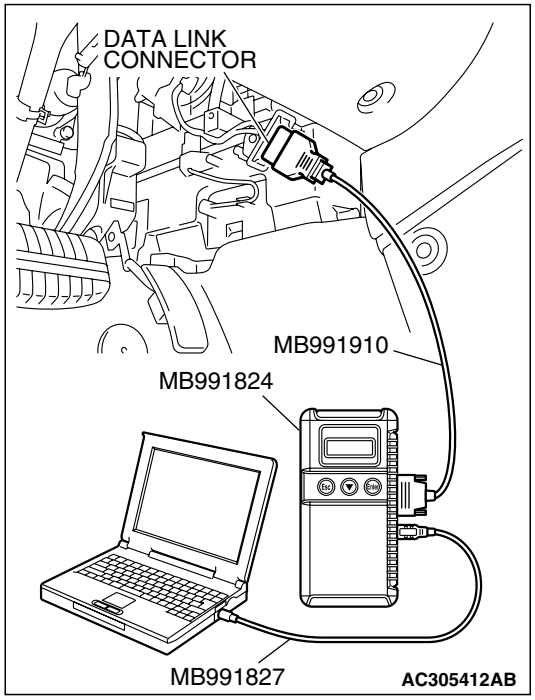
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).



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

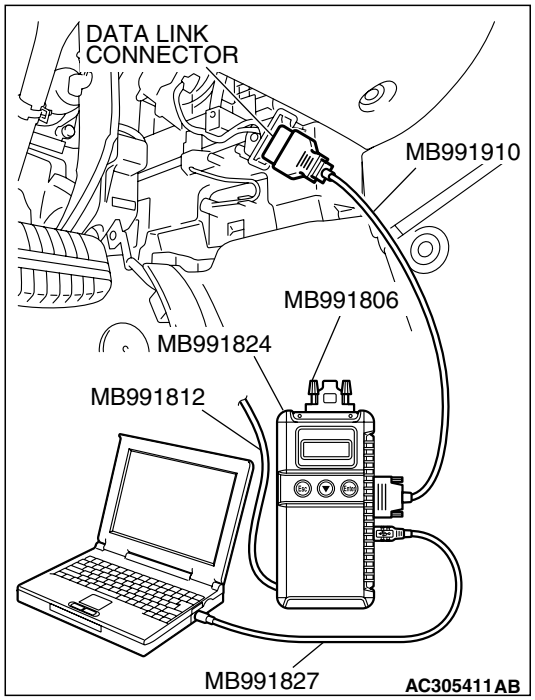
Check whether the combination meter-related DTC is set.

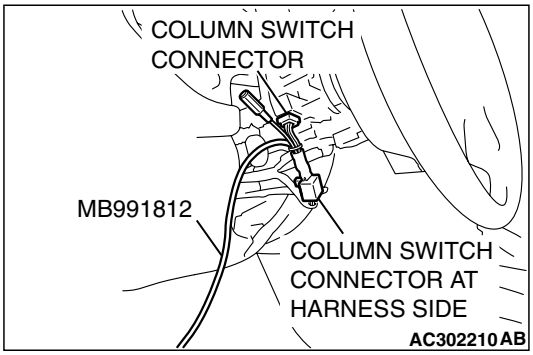
(1) Turn the ignition switch to the "ON" position.
(2) Check whether the combination meter-related DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnostic trouble code chart P.54A-54).

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

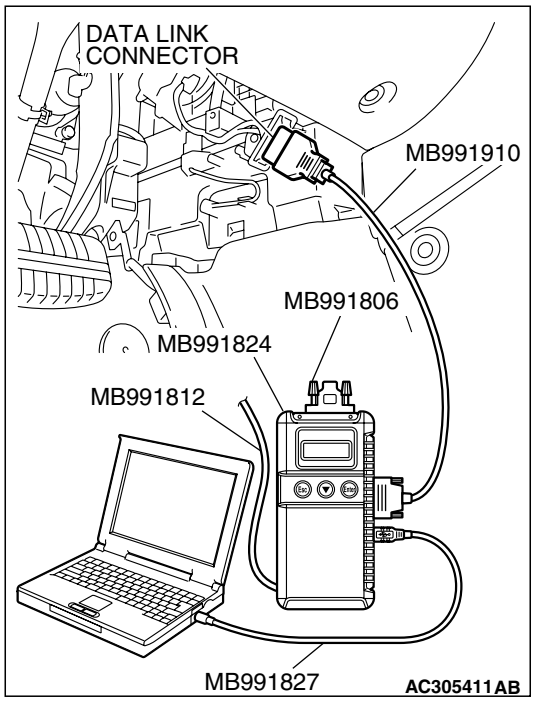
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

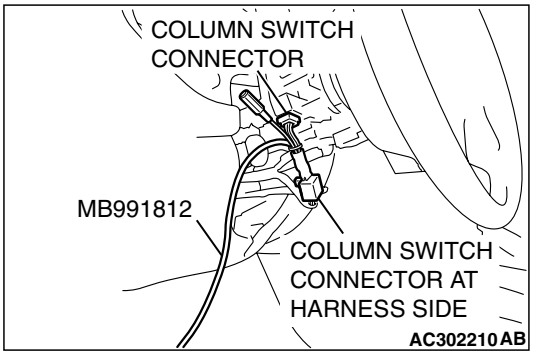
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "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-82."





STEP 5. 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 front 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	DR DOOR SW	ON
ITEM 43	BUZZER	ON

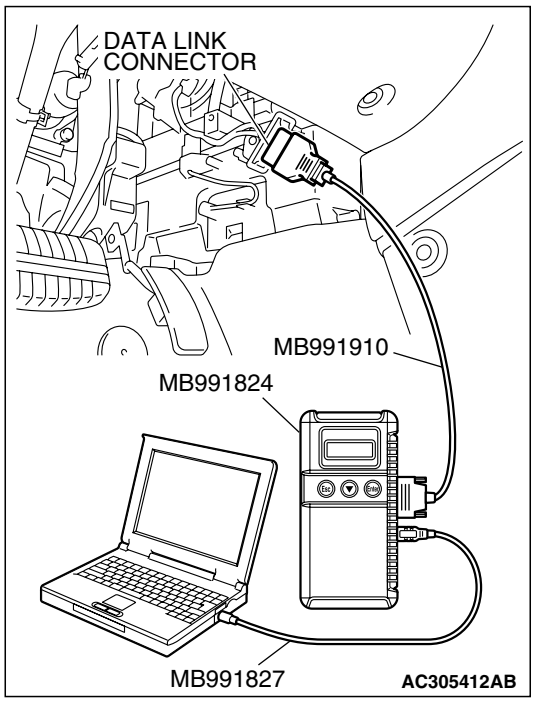
Q: Does scan tool MB991958 display the items "IG SW (IG1)", "DR DOOR SW" and "BUZZER" as normal condition?

Normal conditions are displayed for all the items : Go to Step 6.

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-497."

Normal condition is not displayed for "DR DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."

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-11. The door-ajar tone alarm function should now work normally.



STEP 6. Check the input signal (by using the pulse check mode of the monitor).

Check the following switches and input signals:

- Doors switches

(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
Door switch	Open or close one of the doors

Q: When any door switch is operated, does scan tool MB991958 sound?

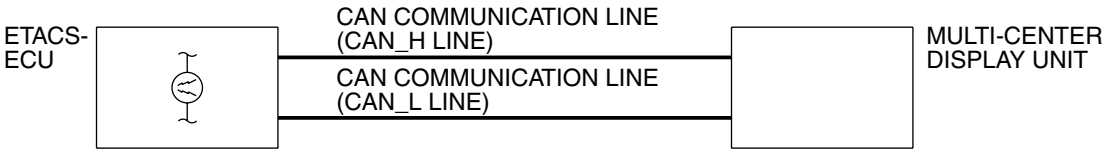
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. The door ajar warning buzzer function should now work normally.

NO : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from any of the door switches P.54B-534."

INSPECTION PROCEDURE B-5: Tone Alarm: The Multi-center Display does not Sound Normally When it is Operated. <Multi-center Display (Middle-grade Type) or Vehicles With Mitsubishi Multi Communication system>

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-18."

Multi-Center Display Annunciation Function



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CIRCUIT OPERATION
The ETACS-ECU sounds the buzzer when it receives buzzer signal from the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system).

TECHNICAL DESCRIPTION (COMMENT)
If this function does not work normally, connector(s), wiring harness in the CAN bus lines, the middle-grade multi-center display unit or the ETACS-ECU may be defective.

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

DIAGNOSIS

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

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STEP 1. Check the operation of the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system).

Q: Does the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system) work normally?

YES : Go to Step 2.

NO : First, replace the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system) unit.

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

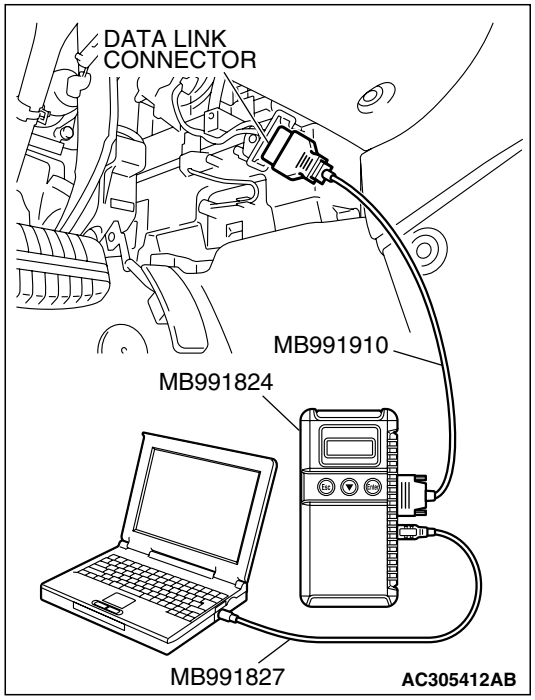
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).



STEP 3. Using scan tool MB991958, read the multi-center display (middle-grade type or vehicles with mitsubishi multi communication system) diagnostic trouble code.

Check that a multi-center display DTC is set.
(1) Turn the ignition switch to the "ON" position.
(2) Check if the multi-center display DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the multi-center display unit (middle-grade type or vehicles with mitsubishi multi communication system) (Refer to GROUP 54A, Diagnosis P.54A-253).

NO : Go to Step 4.

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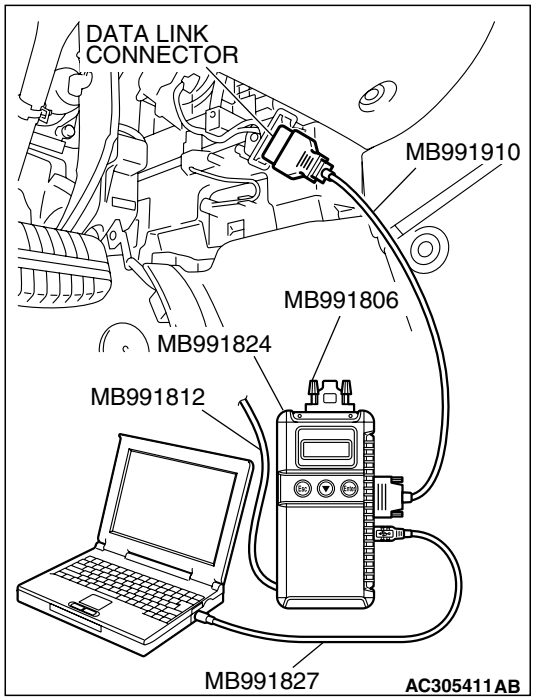
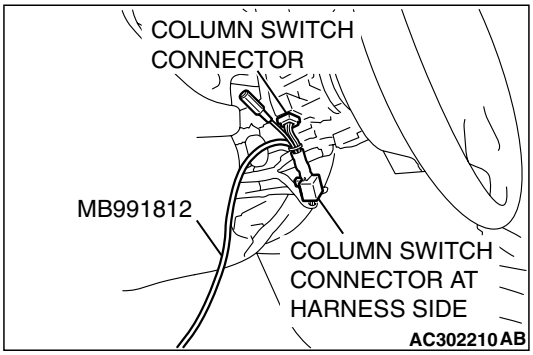




STEP 4. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

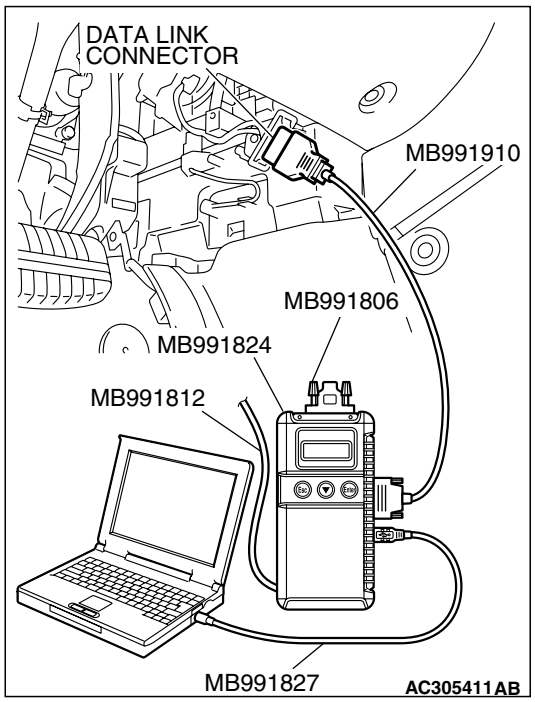
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

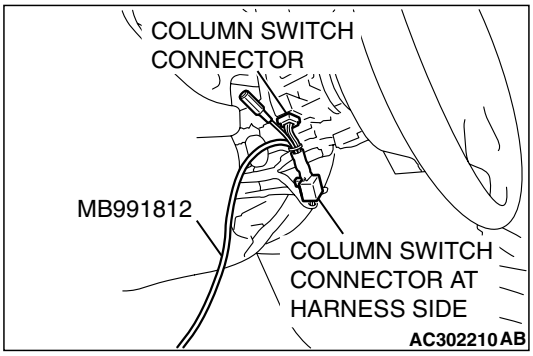
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. Select "SWS."
  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-82."





STEP 5. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

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

(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: If the function switch of the multi-center display (middle-grade type) is operated, check that No.43 "BUZZER" is displayed as normal condition.

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

Q: Are normal conditions displayed for the "IG SW (IG1)" and "BUZZER"?

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-11. Verify that the multi-center display operating sound 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-497."

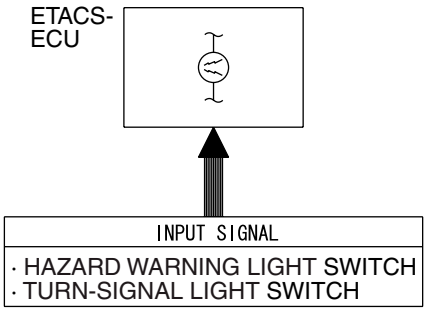
Normal condition is not displayed for "BUZZER" :
Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Verify that the multi-center display operating sound function works normally.

INSPECTION PROCEDURE B-6: Tone Alarm: Turn-signal Light Buzzer 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-18."

TSB Revision

Turn-signal Annunciation Function



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CIRCUIT OPERATION

The ETACS-ECU controls the turn-signal light buzzer function, based on the switch signals below:

- Turn-signal light switch: ON
- Hazard switch: ON

TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal light buzzer function does not work normally, connector(s), wiring harness, the column switch, 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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Check the adjustment function.

Q: Has the turn-signal light buzzer function been enabled by the adjustment function?

YES : Go to Step 2.
NO : Enable the turn-signal light buzzer function.

STEP 2. Check whether the turn-signal lights illuminate.

When the turn-signal light switch or the hazard warning light switch is operated, check that the turn-signal lights flash.

Q: Are the turn-signal lights in good condition?

YES : Go to Step 3.
NO : First, repair the turn-signal light(s). Refer to Inspection Procedure I-3 "One of the turn-signal lights does not illuminate P.54B-384."

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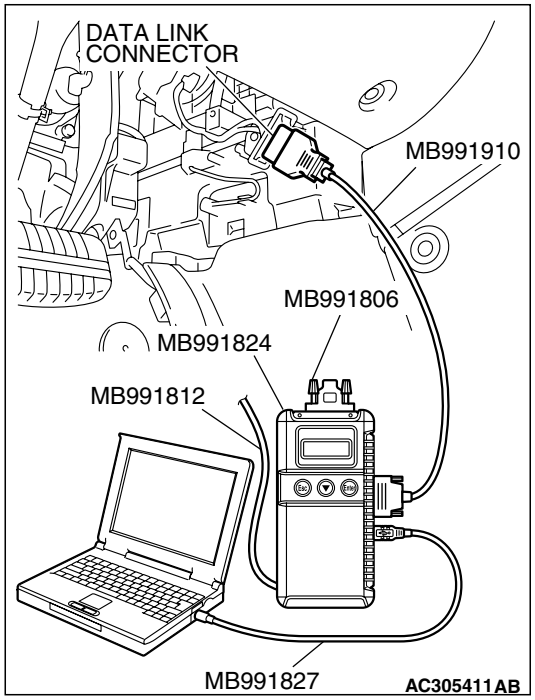
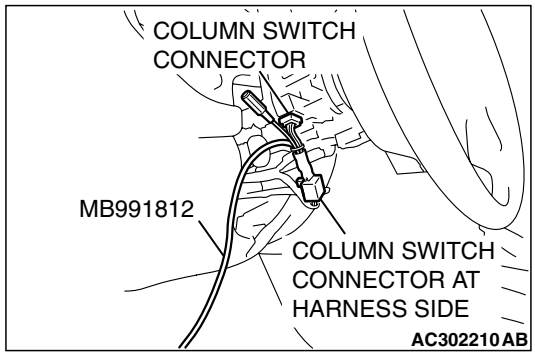




STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- ETACS-ECU
- Column-ECU

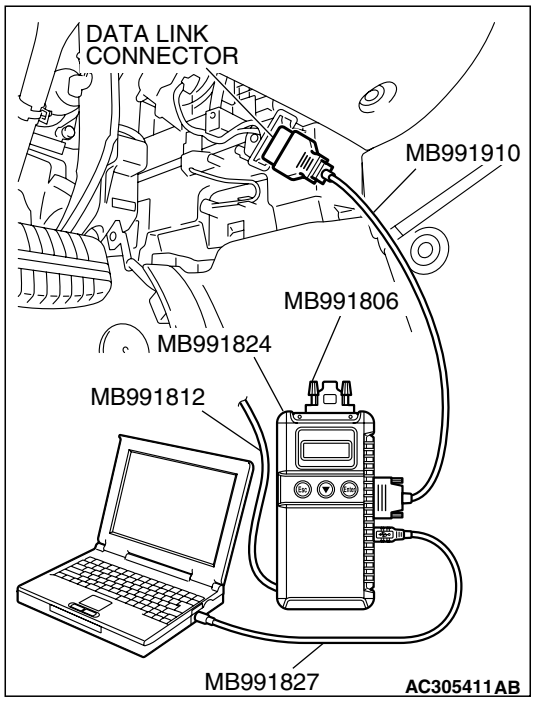
⚠ CAUTION

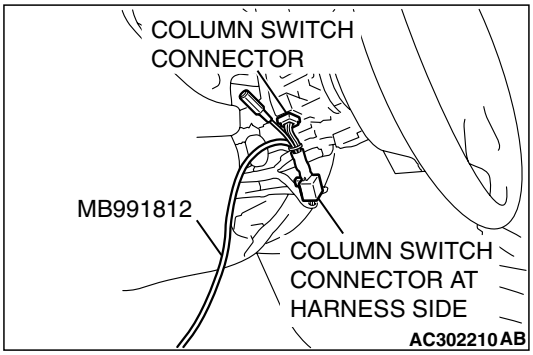
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
    1. Select "Interactive Diagnosis."
    2. Select "System Select."
    3. Select "SWS."
    4. Select "SWS MONITOR."
    5. 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 4.
"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-73."
"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."
"NG" is displayed for all the items : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."





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
- 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: The scan tool MB991958 display changes when the driver's or the front 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)	ON
ITEM 43	BUZZER	ON

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-11. Check that the turn-signal light buzzer 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-497."

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-11. Check that the turn-signal light buzzer function works normally.

CENTRAL DOOR LOCKING SYSTEM

GENERAL DESCRIPTION CONCERNING CENTRAL DOOR LOCKING SYSTEM

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

FUNCTION	CONTROL ECU
Central door locking system	ETACS-ECU
Forgotten key prevention function	ETACS-ECU

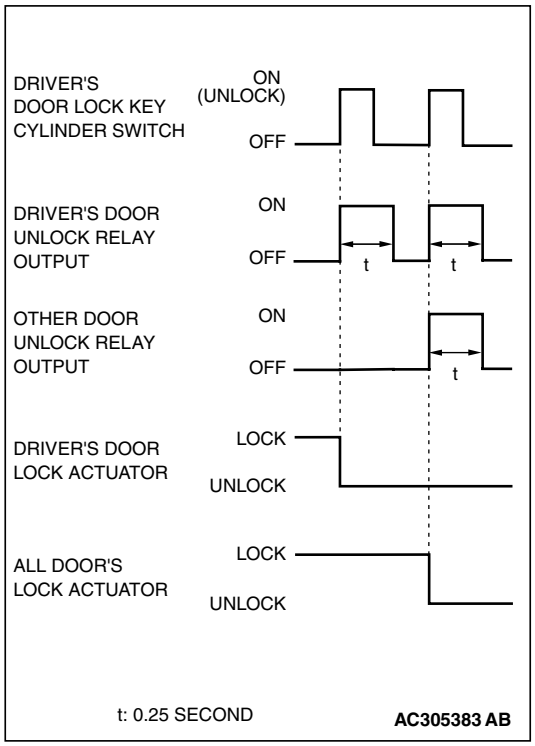
CENTRAL DOOR LOCKING SYSTEM

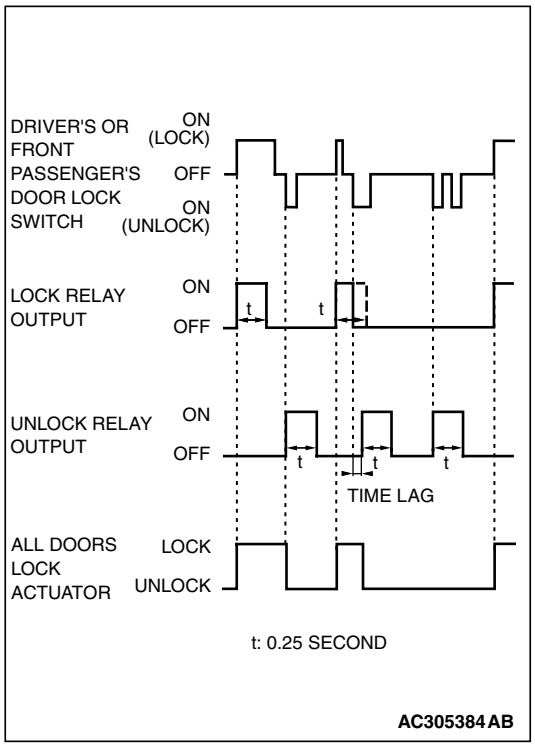
DOOR UNLOCKING BY OPERATING THE DRIVER'S DOOR LOCK KEY CYLINDER

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 seconds 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 seconds and to unlock all doors.

NOTE: Vehicles with a multi center display (middle grade type) can be customized so that a single unlock operation will unlock all doors. Refer to P.54B-587.



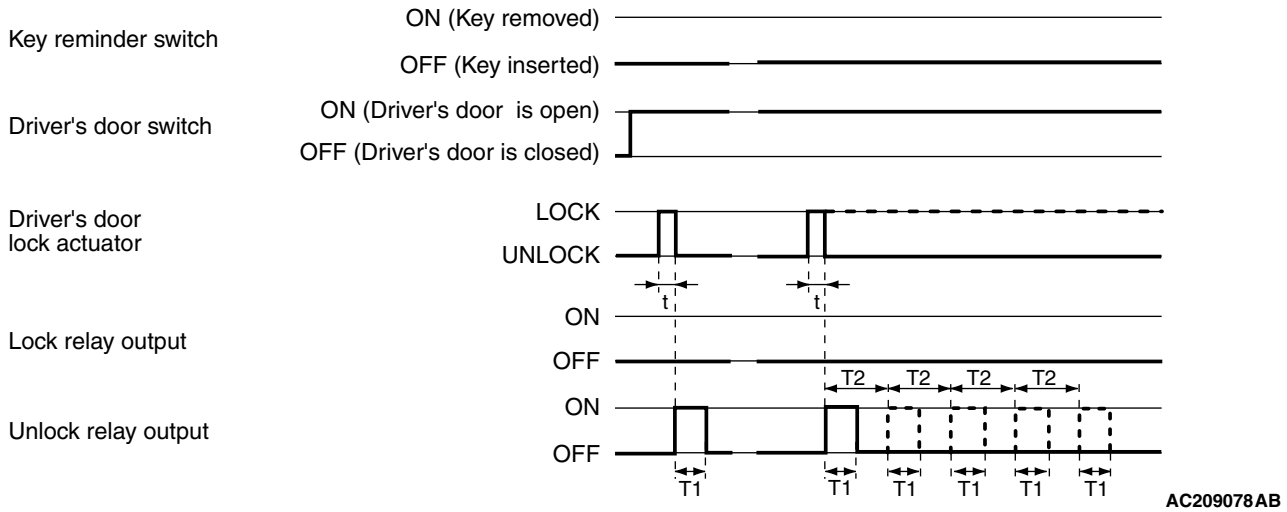


DOOR LOCKING OR UNLOCKING BY OPERATING THE DRIVER'S OR FRONT PASSENGER'S DOOR LOCK SWITCH

When the door is locked by the driver's or front 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 seconds to lock all doors.
When the door is unlocked by the driver's or front 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 seconds to unlock all doors.
When the door is locked and unlocked by driver's or front 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 seconds 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 seconds to unlock all doors. Due to this, there may be a time lag between the driver's or front 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 seconds
T1: 0.25 seconds
T2: 1 seconds

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).

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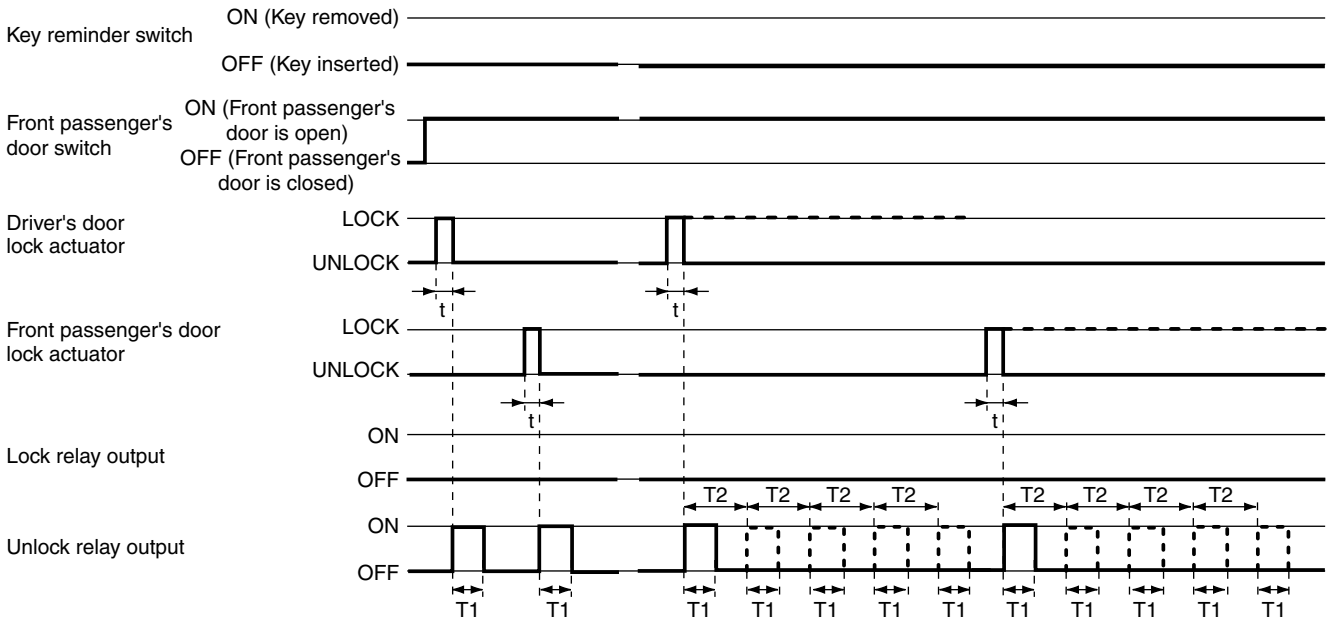
NOTE: The dotted line indicates that the system is trying to turn on the unlock relay if the door cannot be unlocked.

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



t: 0.3 seconds
T1: 0.25 seconds
T2: 1 seconds

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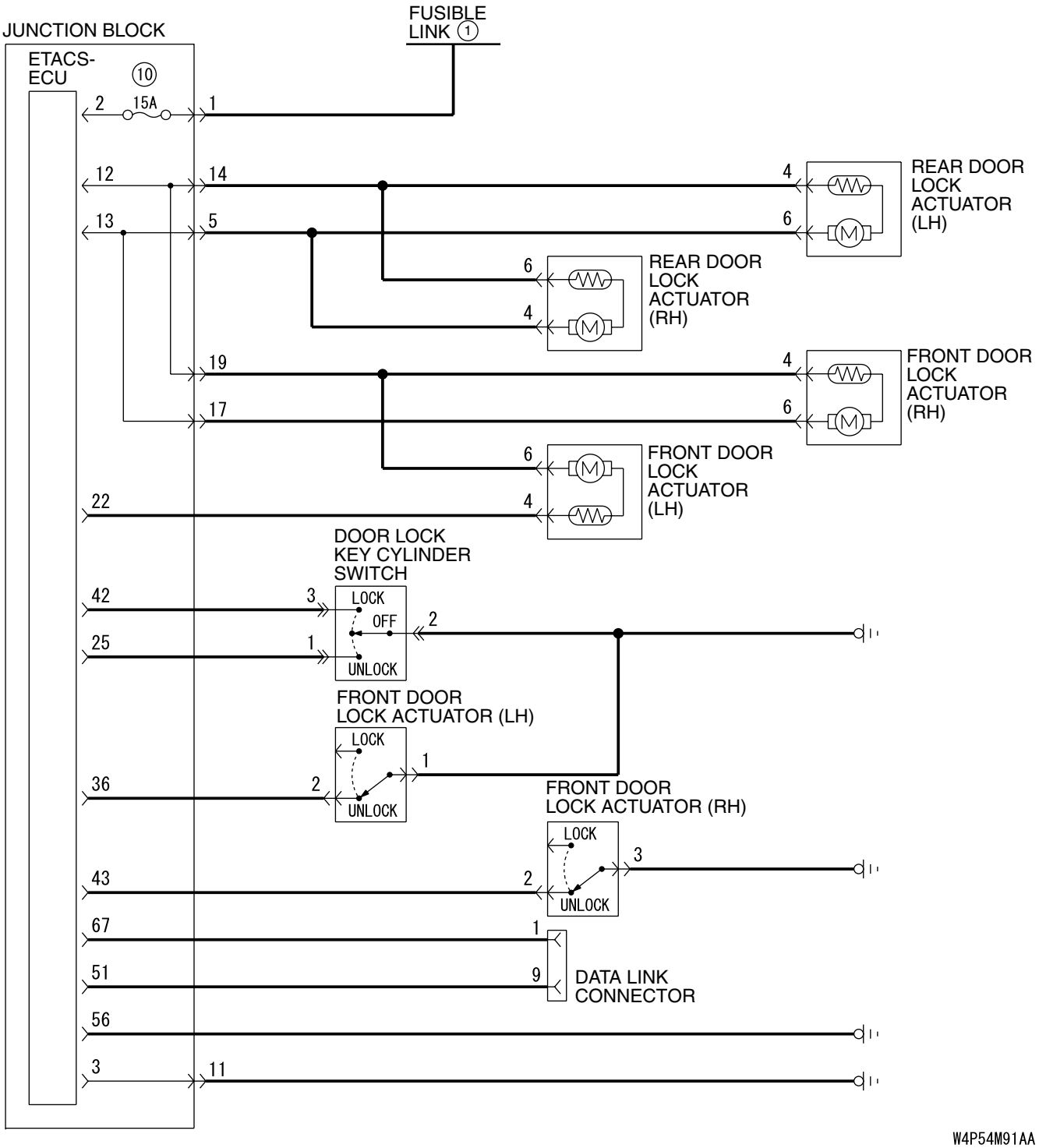
If the passenger's door or driver's door are locked while the passenger's door is open and when the key is still in the ignition key cylinder, approximately 0.3 second later the ETACS-ECU activates the unlock relay output for 0.25 second to prevent the door from being locked with the key inside the vehicle.

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



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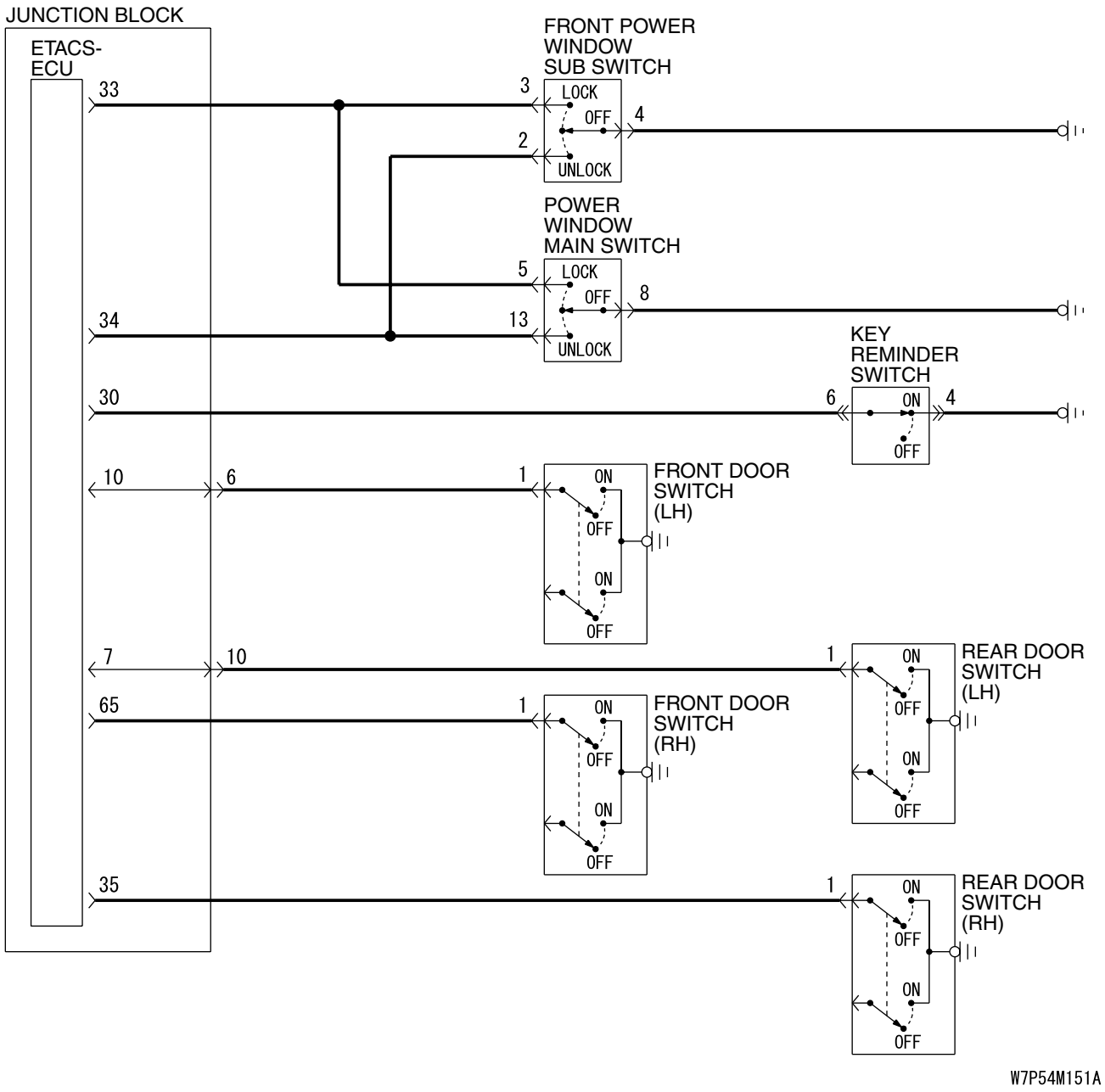
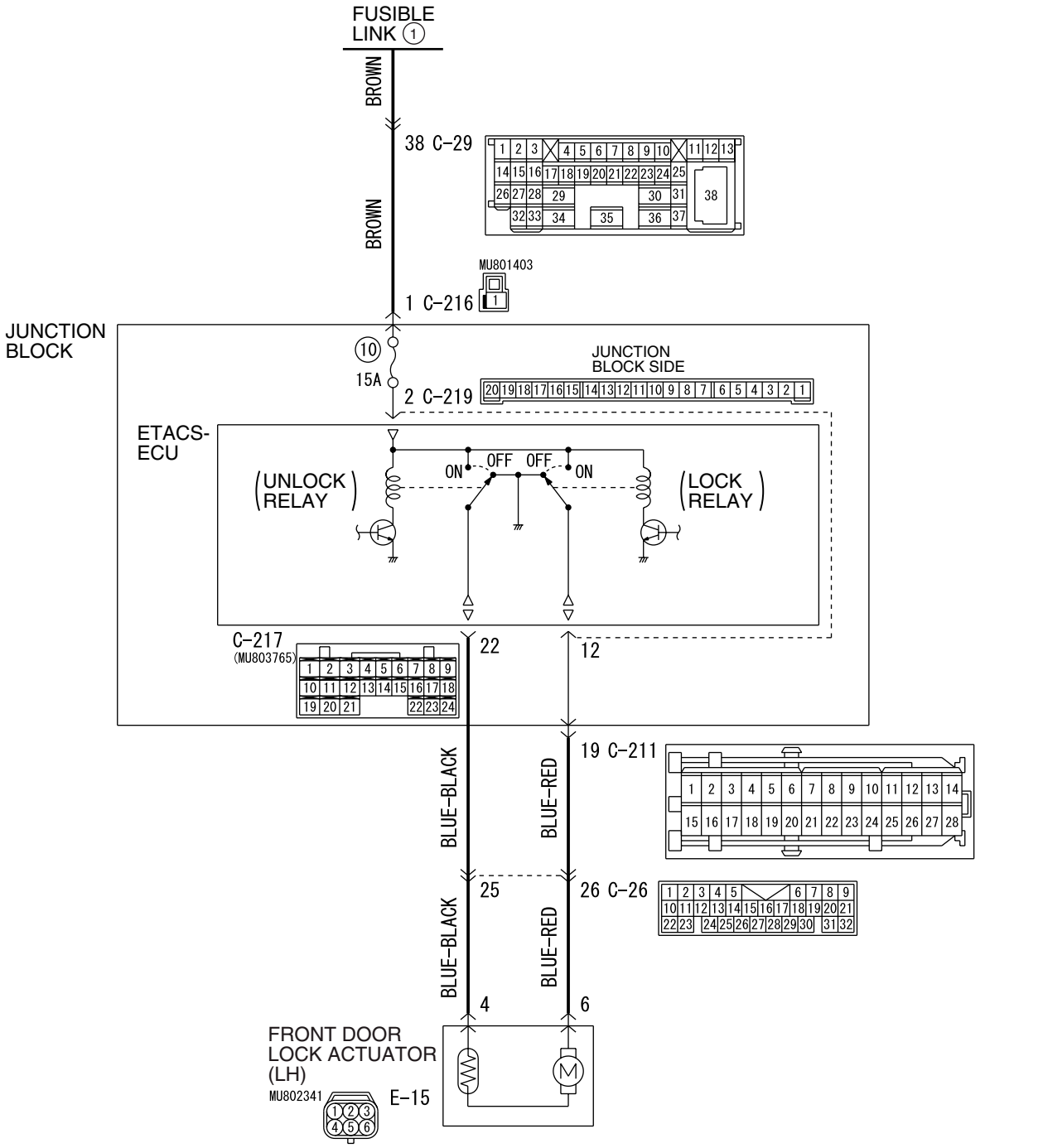


INSPECTION PROCEDURE C-1: Central Door Locking System: The Central Door Locking System does not Work at all.

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-18."

TSB Revision

Central Door Lock Power Supply Circuit



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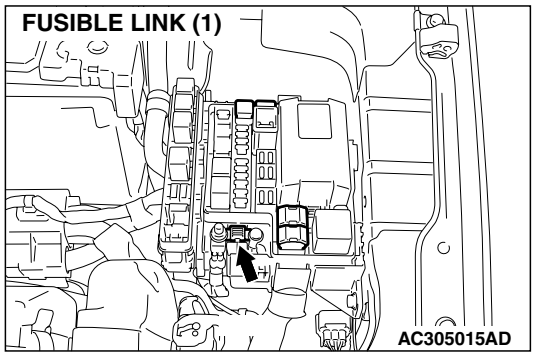
FUSIBLE LINK (1)



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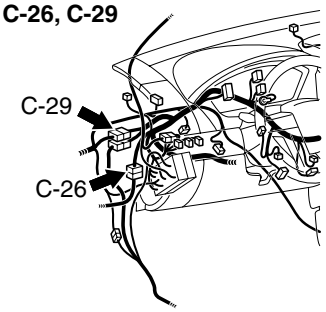
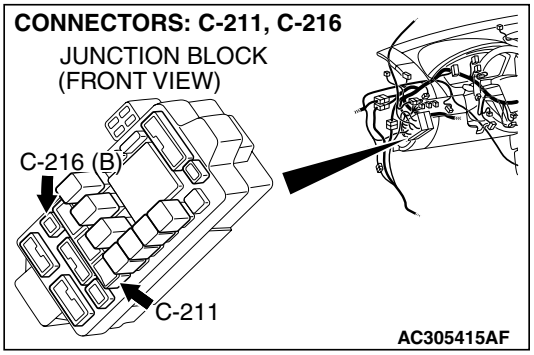
CONNECOTRS: C-26, C-29



AC305231AJ

CONNECTORS: C-211, C-216



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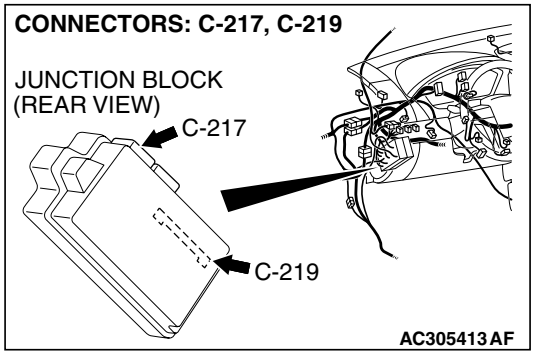
CONNECTORS: C-217, C-219



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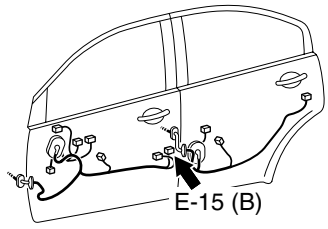
CONNECTOR: E-15



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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:
  - Front door lock actuator
  - Front door lock key cylinder switch
  - Door lock switch, which is incorporated in the power window main switch or front power window sub switch

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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- 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

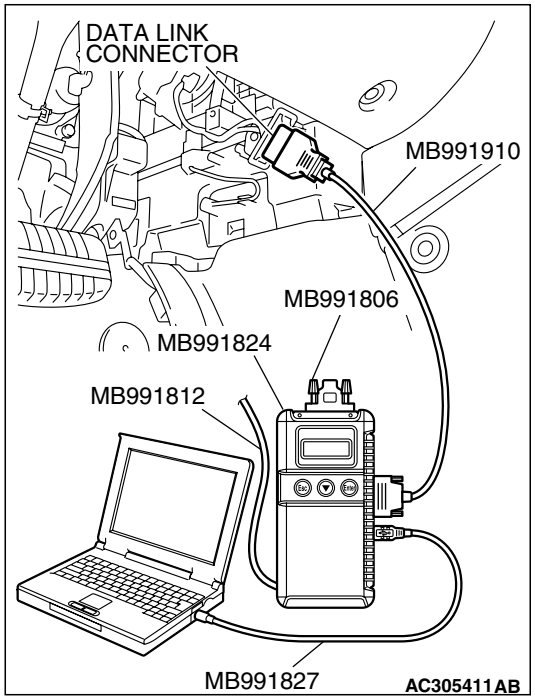
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

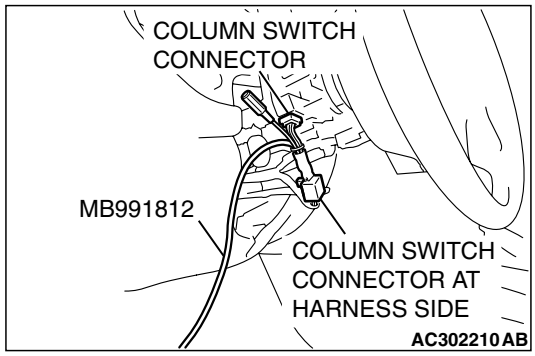
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "ECU COMM Check."
(4) M.U.T.-III should show "OK" on the "ECU COMM Check" menu for the "ETACS ECU" menu.

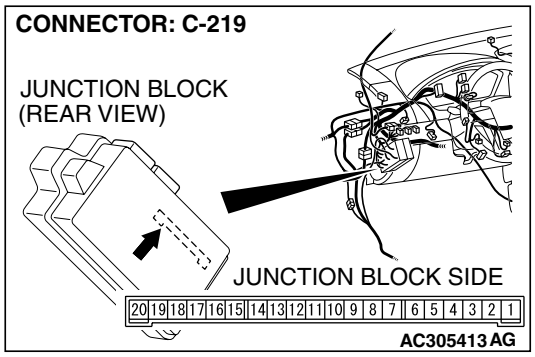
Q: Is "OK" displayed for the "ETACS ECU" menu?

YES : Go to Step 2.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."





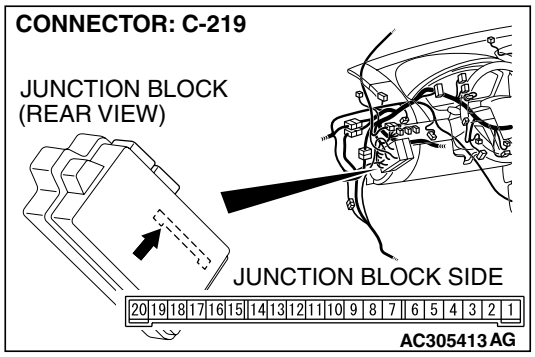


STEP 2. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

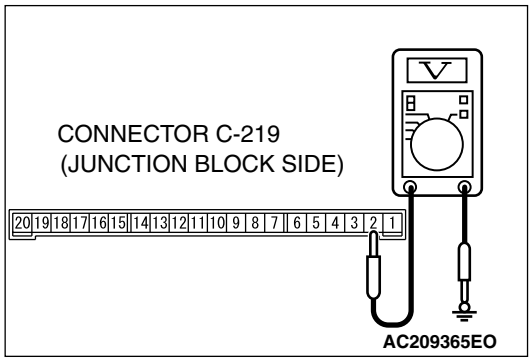
YES : Go to Step 3.

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-219.

(1) Disconnect ETACS-ECU connector C-219 and measure the voltage available at the junction block side of the connector.



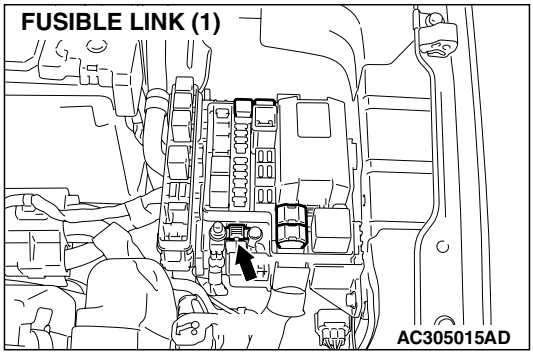
(2) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage)

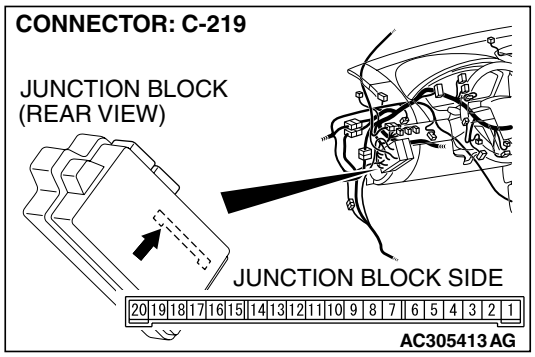
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

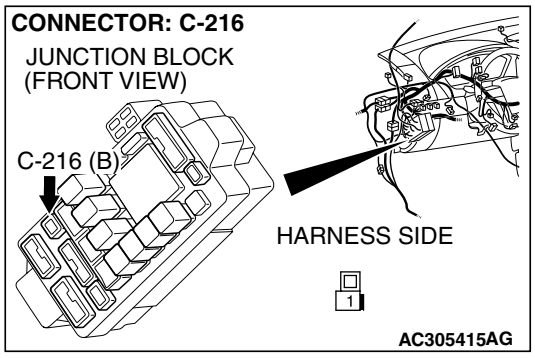
YES : Go to Step 5.

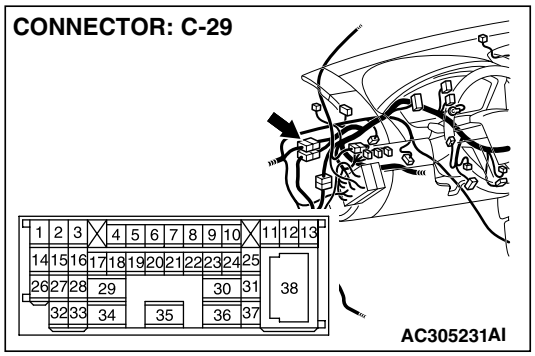
NO : Go to Step 4.

STEP 4. Check the wiring harness between ETACS-ECU connector C-219 (terminal 2) and fusible link (1).









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

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 2) and fusible link (1) in good condition?

YES : No action is necessary and testing is complete.

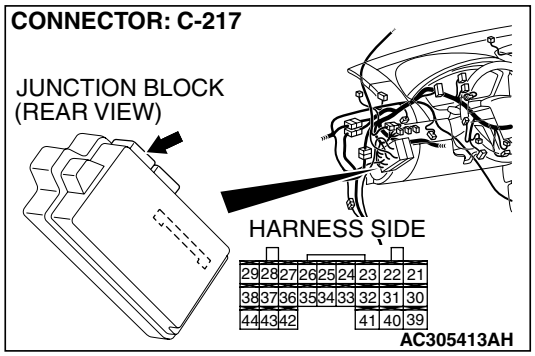
NO : The wiring harness may be damaged or the connector may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the central door locking system works normally.

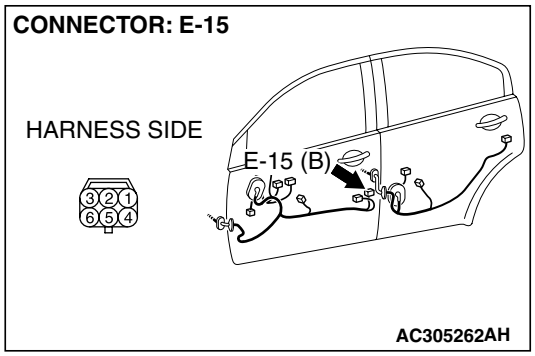
STEP 5. Check ETACS-ECU connectors C-217 and front door lock actuator (LH) connector E-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connectors C-217 and front door lock actuator (LH) connector E-15 in good condition?

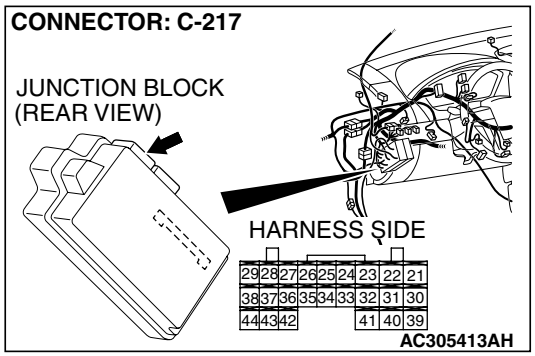
YES : Go to Step 6.

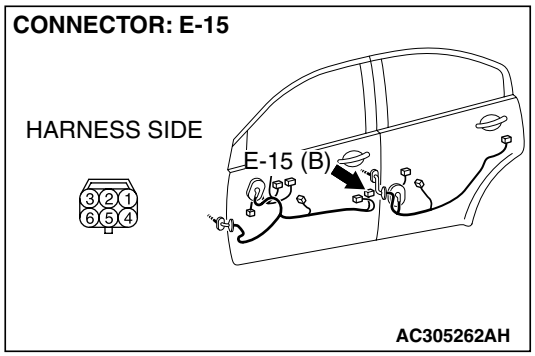
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the central door locking system works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

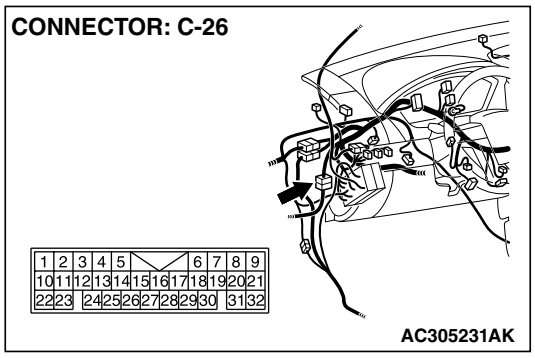




STEP 6. Check the wiring harness between ETACS-ECU connector C-217 (terminal 22) and front door lock actuator (LH) connector E-15 (terminal 4).







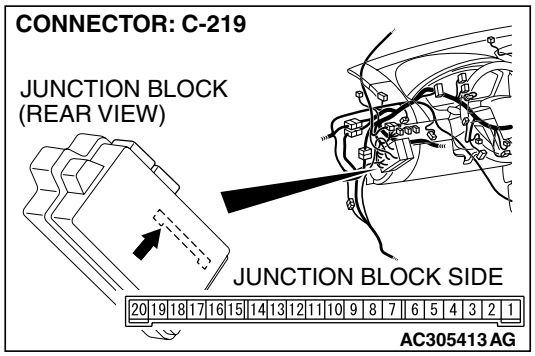
NOTE: Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

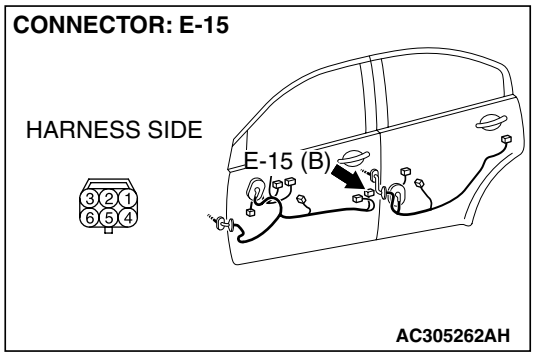
Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 22) and front door lock actuator (LH) connector E-15 (terminal 4) in good condition?

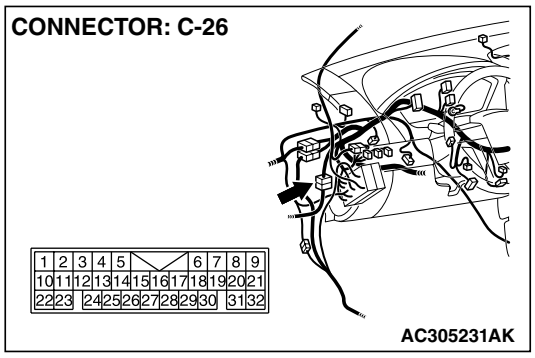
YES : Go to Step 7.

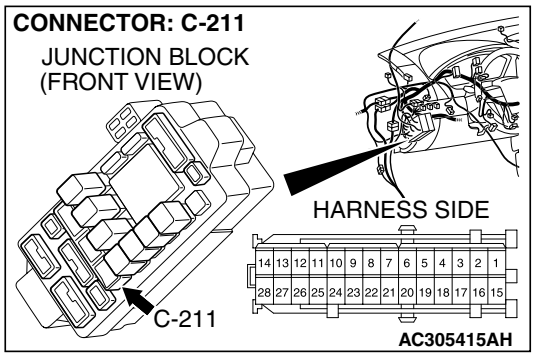
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary.

STEP 7. Check the wiring harness between ETACS-ECU connector C-219 (terminal 12) and front door lock actuator (LH) connector E-15 (terminal 6).









NOTE: Also check intermediate connector C-26 and junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 or junction block connector C-211 are damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

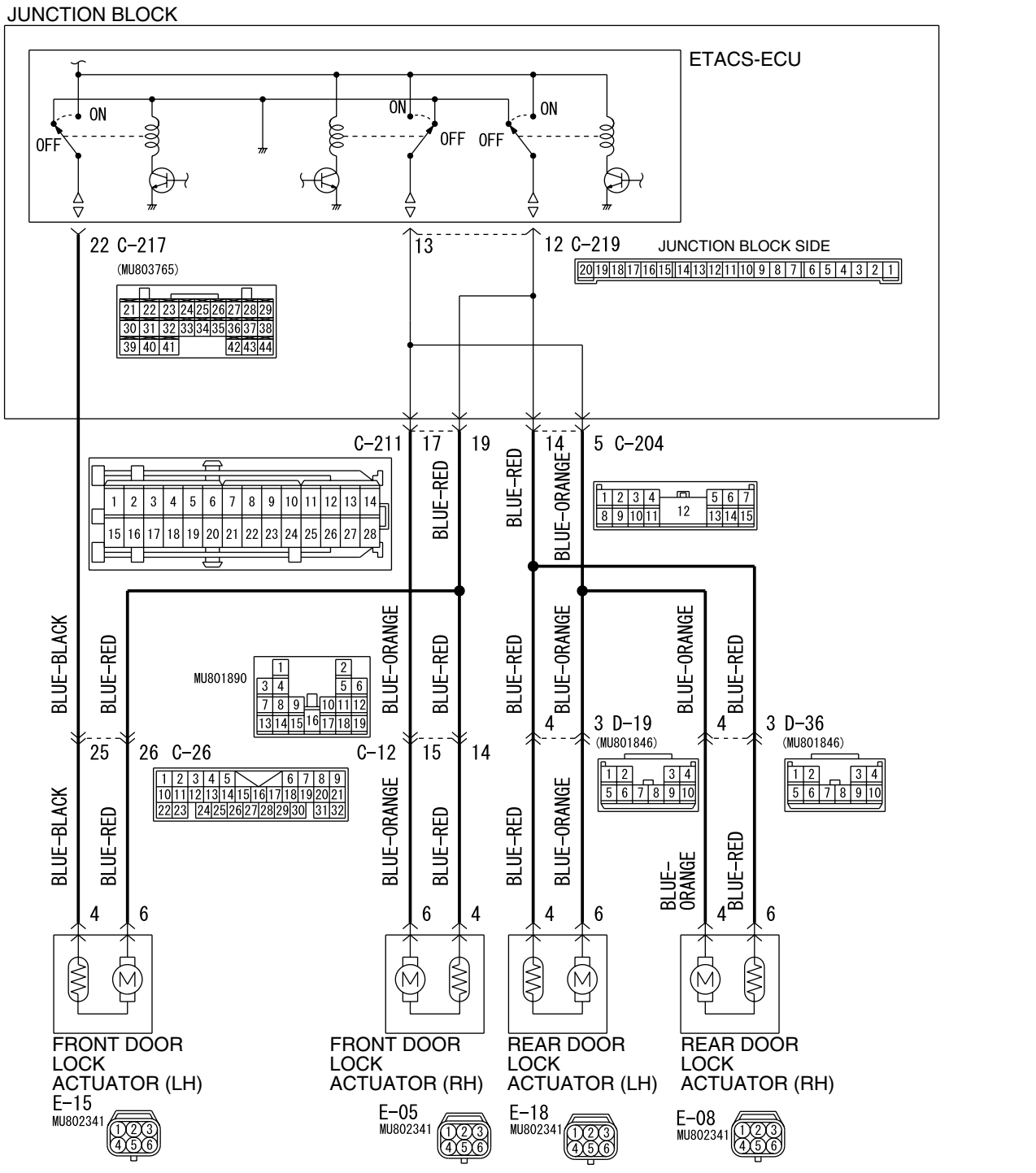
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 12) and front door lock actuator (LH) connector E-15 (terminal 6) in good condition?

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-11.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.

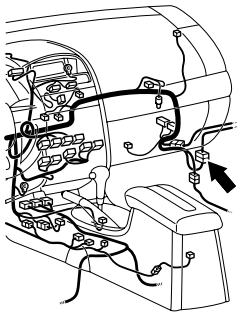
INSPECTION PROCEDURE C-2: Central Door Locking System: Some Doors do not Lock or Unlock.

Central Door Lock Circuit



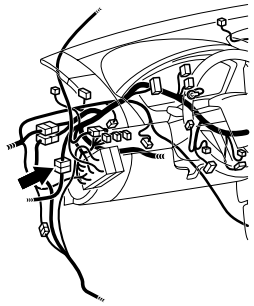
TSB Revision

CONNECTOR: C-12



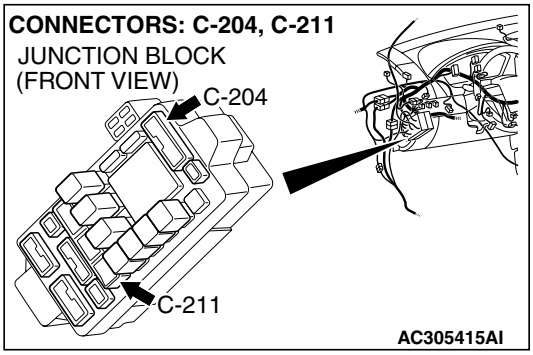
AC305233AE

CONNECTOR: C-26



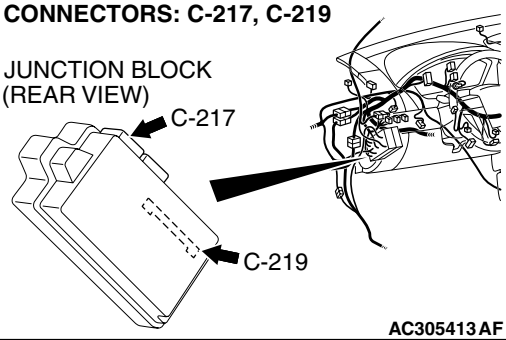
AC305231AL

CONNECTORS: C-204, C-211



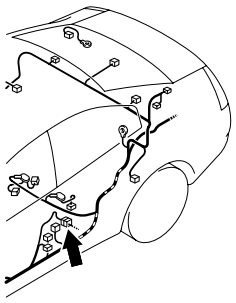
AC305415AI

CONNECTORS: C-217, C-219



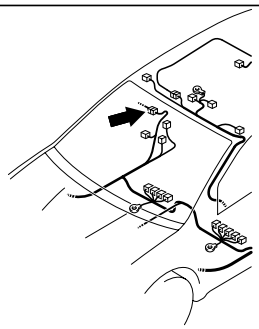
AC305413AF

CONNECTOR: D-19



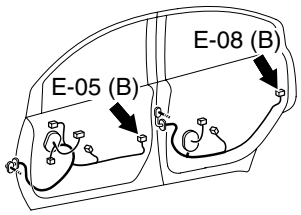
AC400532AB

CONNECTOR: D-36



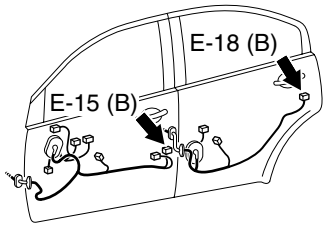
AC400530AC

CONNECTORS: E-05, E-08



AC305333AF

CONNECOTRS: E-15, E-18



AC305262AK

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TSB Revision

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check which door lock is defective.

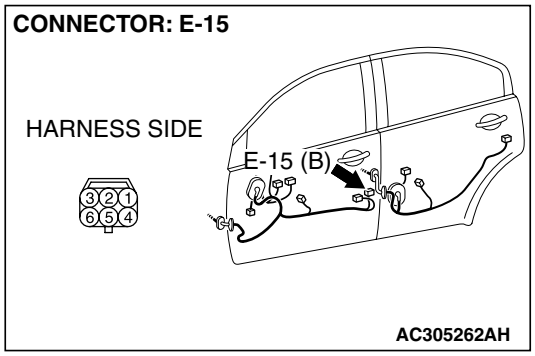
Q: Which of the door locks is defective?

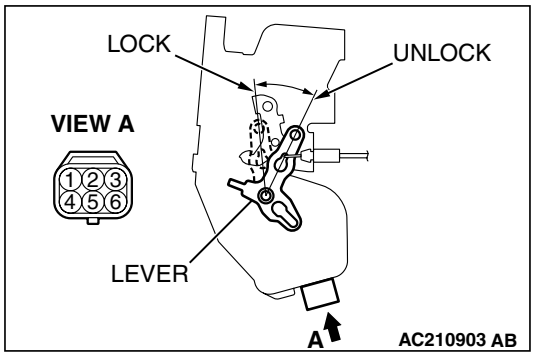
Driver's door : Go to Step 2.
Front passenger's door : Go to Step 7.
Rear door (LH) : Go to Step 11.
Rear door (RH) : Go to Step 15.

STEP 2. Check front door lock actuator (LH) connector E-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door lock actuator (LH) connector E-15 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 front door lock actuator (LH).

Remove the front 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.42-45.

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

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

YES : Go to Step 4.

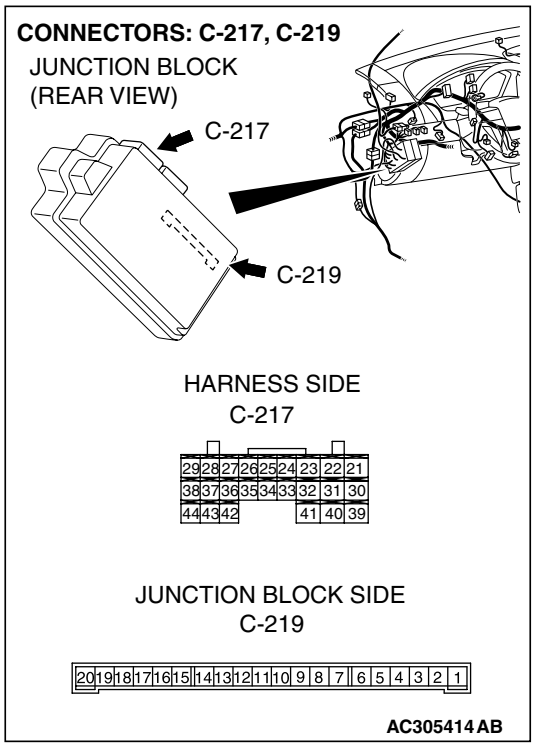
NO : Replace the front door lock actuator (LH). Verify that all the doors can be locked and unlocked normally.

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

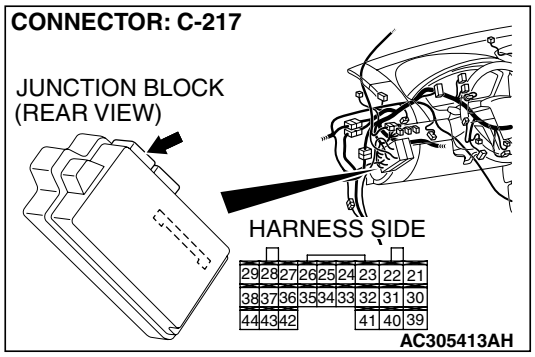
Q: Are ETACS-ECU connectors C-217 and C-219 in good condition?

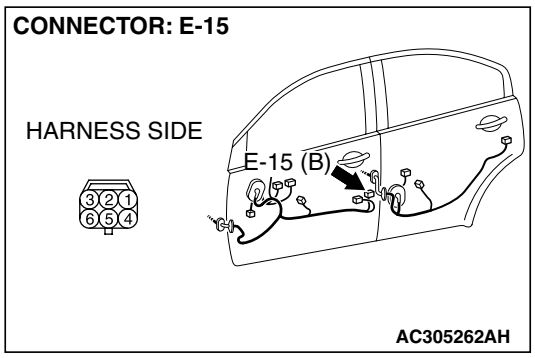
YES : Go to Step 5.

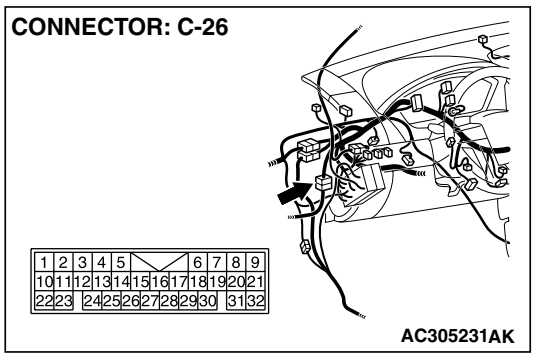
NO : Repair or check the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.



STEP 5. Check the wiring harness between ETACS-ECU connector C-217 (terminal 22) and front door lock actuator (LH) connector E-15 (terminal 4).







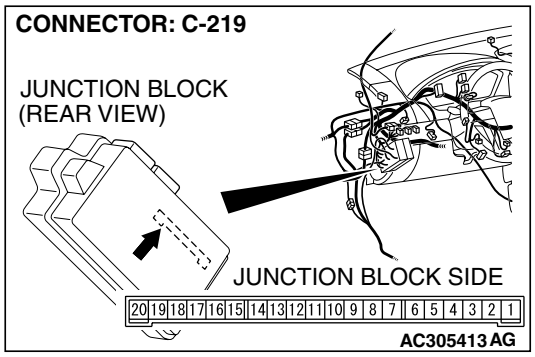
NOTE: Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

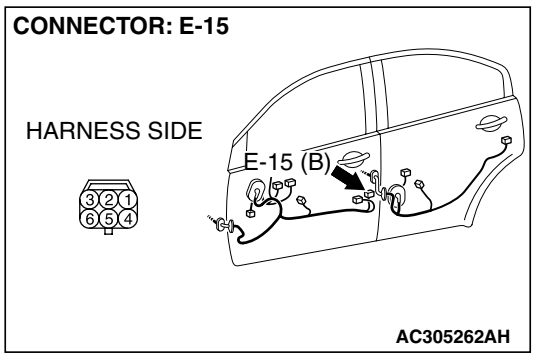
Q: Is the wiring harness between ETACS-ECU connector C-217 (terminal 22) and front door lock actuator (LH) connector E-15 (terminal 4) in good condition?

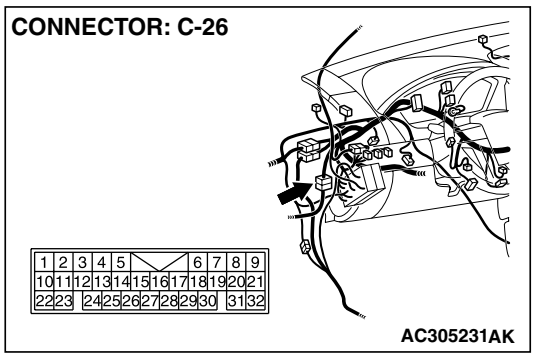
YES : Go to Step 6.

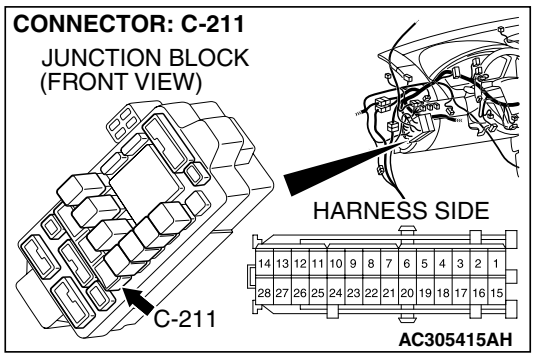
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair or replace the damaged component(s). Verify that the central door locking system works normally.

STEP 6. Check the wiring harness between ETACS-ECU connector C-219 (terminal 12) and front door lock actuator (LH) connector E-15 (terminal 6).







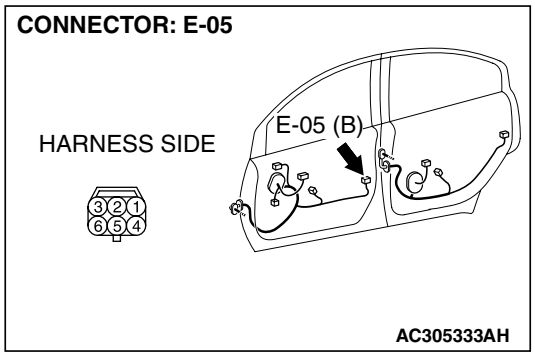


NOTE: Also check intermediate connector C-26 and junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 or junction block connector C-211 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 12) and front door lock actuator (LH) connector E-15 (terminal 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-11. 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.

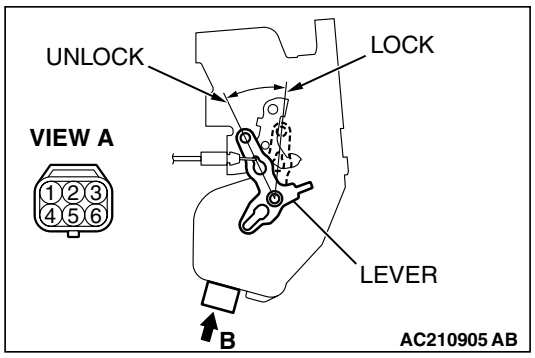


STEP 7. Check front door lock actuator (RH) connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front 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 front door lock actuator (RH).

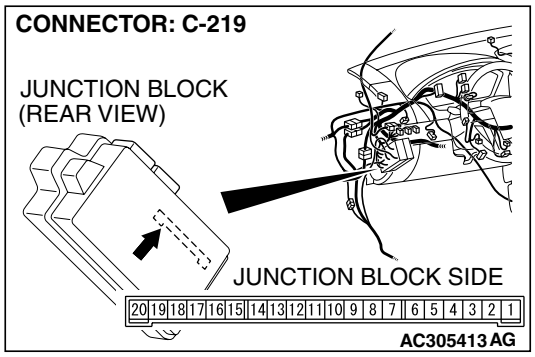
Remove the front door lock actuator (RH). The illustration shows when the door lock actuator is viewed from inside the door. Refer to GROUP 42 – Door Handle and Latch P.42-45.

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

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

YES : Go to Step 9.

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

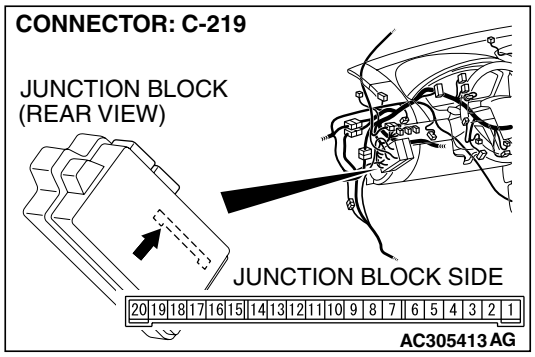


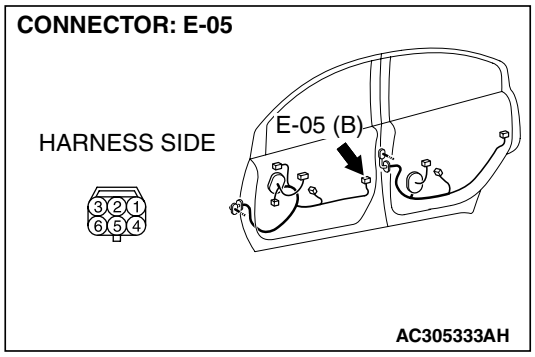
STEP 9. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

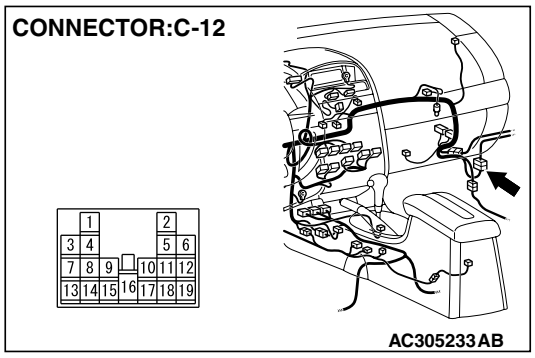
YES : Go to Step 10.

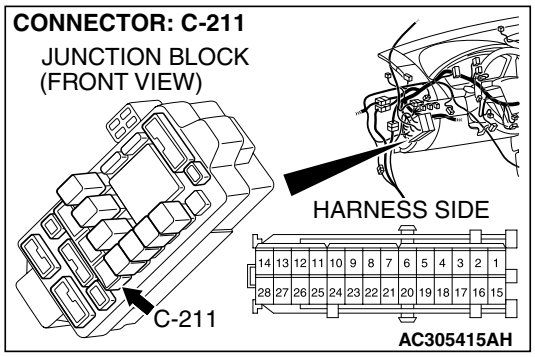
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.





STEP 10. Check the wiring harness between ETACS-ECU connector C-219 (terminals 12 and 13) and front door lock actuator (RH) connector E-05 (terminals 4 and 6).



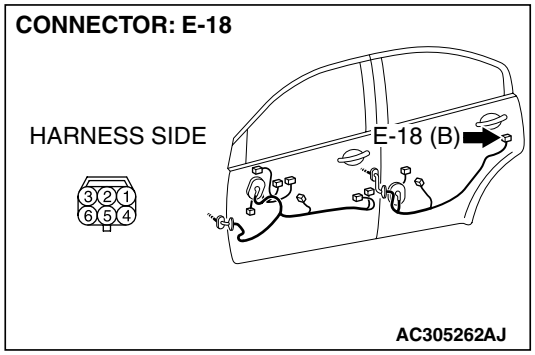


NOTE: Also check intermediate connector C-12 and junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-12 or junction block connector C-211 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminals 12 and 13) and front 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-11. 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.

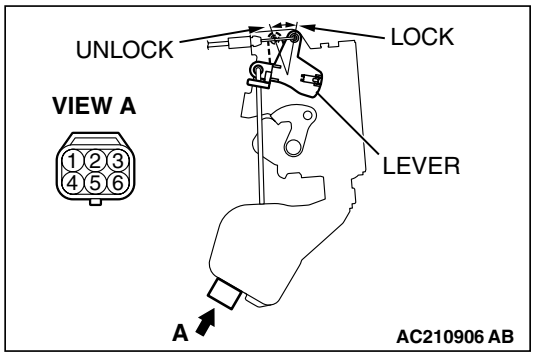


STEP 11. Check rear door lock actuator (LH) connector E-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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



STEP 12. Check the rear door lock actuator (LH).

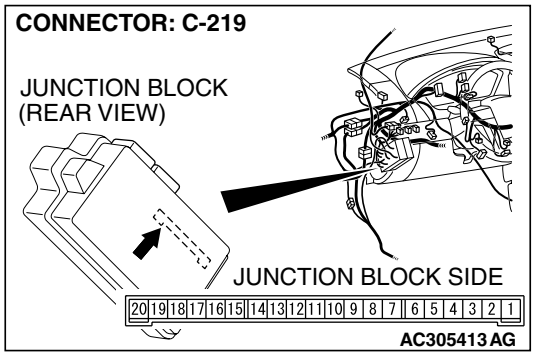
Remove the rear door lock actuator (LH). The illustration shows when the door lock actuator is viewed from outside the door. Refer to GROUP 42 – Door Handle and Latch P.42-45.

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

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

YES : Go to Step 13.

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



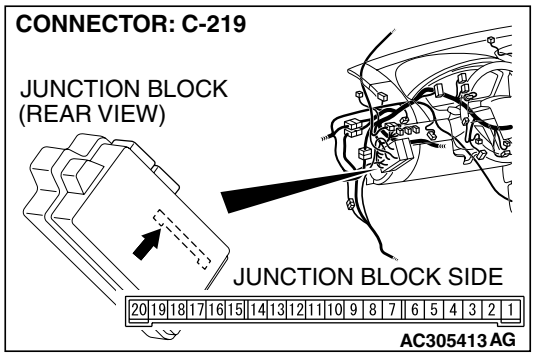
STEP 13. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

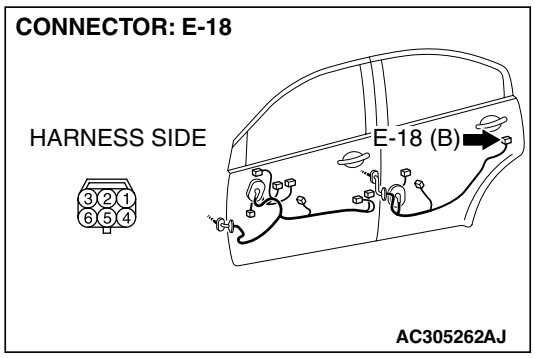
Q: Is ETACS-ECU connector C-219 in good condition?

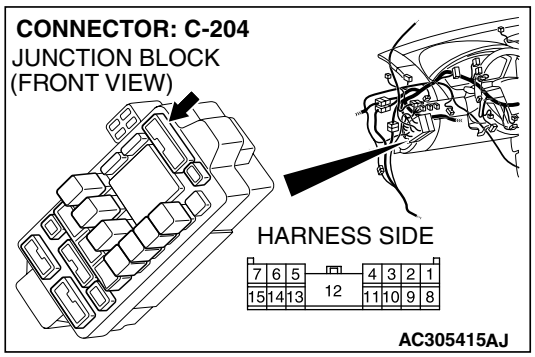
YES : Go to Step 14.

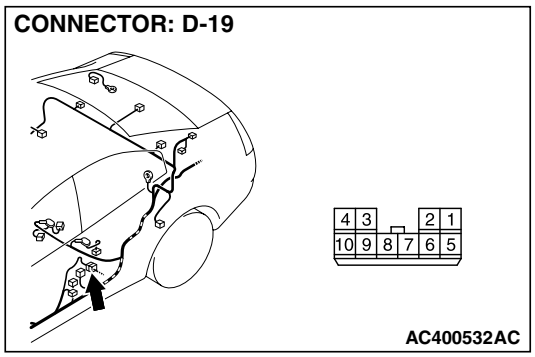
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.

STEP 14. Check the wiring harness between ETACS-ECU connector C-219 (terminals 12 and 13) and rear door lock actuator (LH) connector E-18 (terminals 4 and 6).







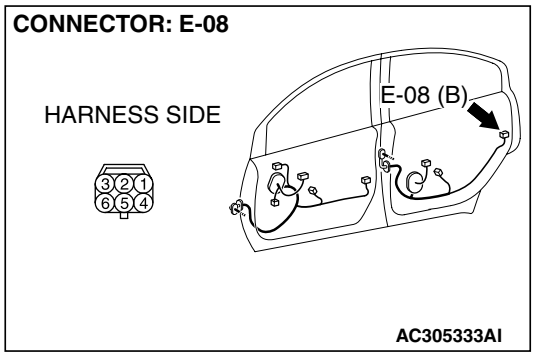


NOTE: Also check intermediate connector D-19 and junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-19 or junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminals 12 and 13) and rear door lock actuator (LH) connector E-18 (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-11. Verify that all the doors can be locked and unlocked normally.

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

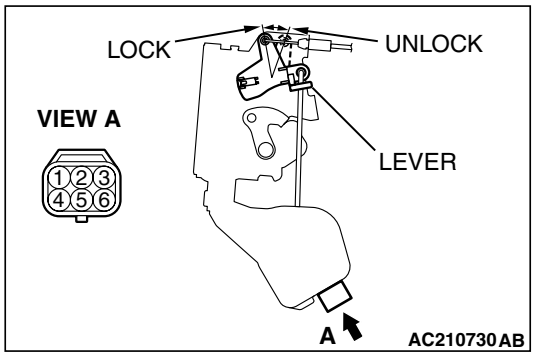


STEP 15. Check rear door lock actuator (RH) connector E-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door lock actuator (RH) connector E-08 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 all the doors can be locked and unlocked normally.



STEP 16. Check the rear door lock actuator (RH).

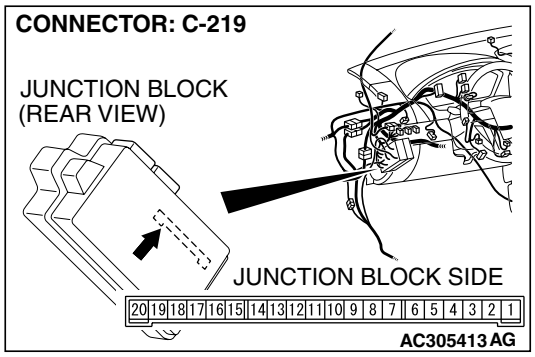
Remove the rear door lock actuator (RH). The illustration shows when the door lock actuator is viewed from outside the door. Refer to GROUP 42 – Door Handle and Latch P.42-45.

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

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

YES : Go to Step 17.

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

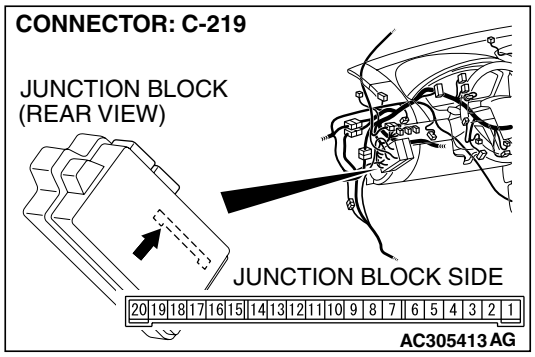


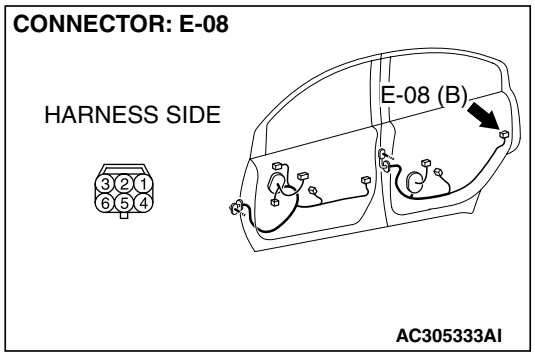
STEP 17. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

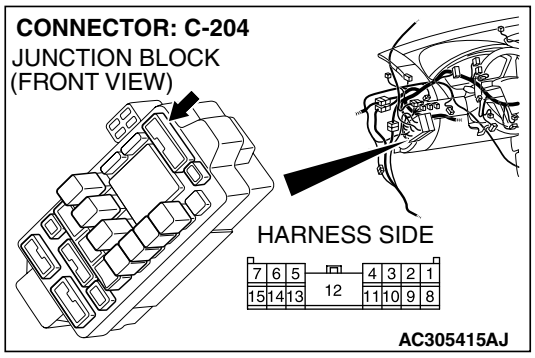
YES : Go to Step 18.

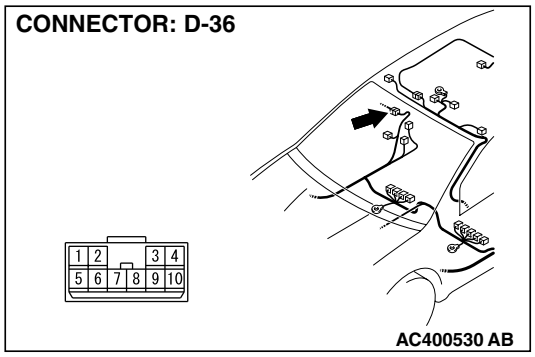
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that all the doors can be locked and unlocked normally.





STEP 18. Check the wiring harness between ETACS-ECU connector C-219 (terminals 12 and 13) and rear door lock actuator (RH) connector E-08 (terminals 6 and 4).





NOTE: Also check junction block connector C-204 and intermediate connectors D-36 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 or intermediate connector D-36 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

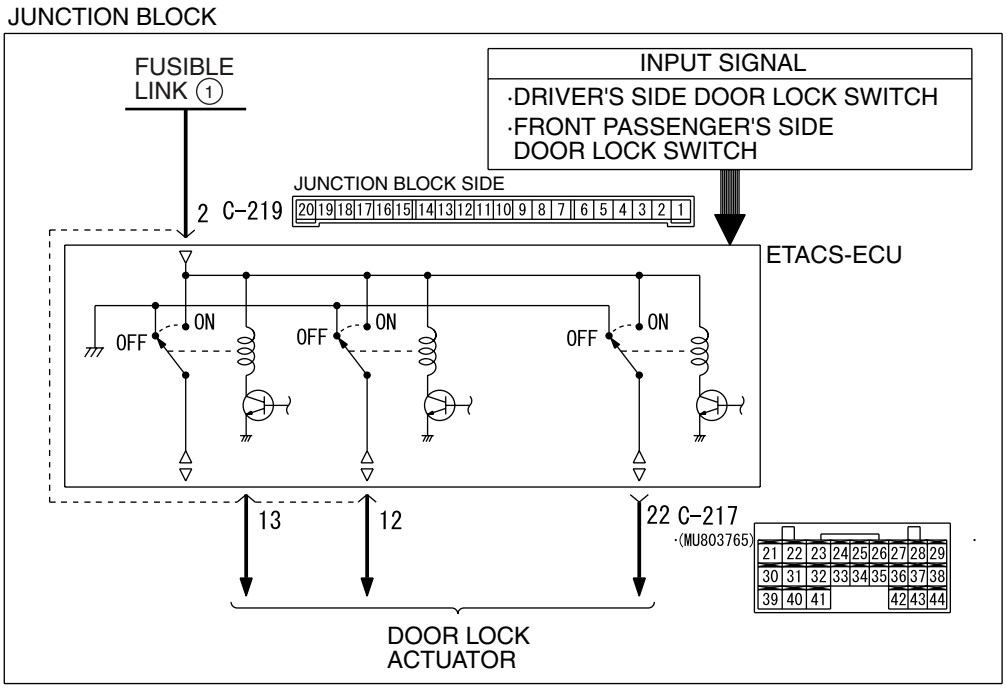
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminals 12 and 13) and rear door lock actuator (RH) connector E-08 (terminals 6 and 4) in good condition?

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-11. Verify that all the doors can be locked and unlocked normally.

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

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



W4P54M94AA

TSB Revision

TECHNICAL DESCRIPTION (COMMENT)

The door lock switch (incorporated in the power window main switch and front 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

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

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

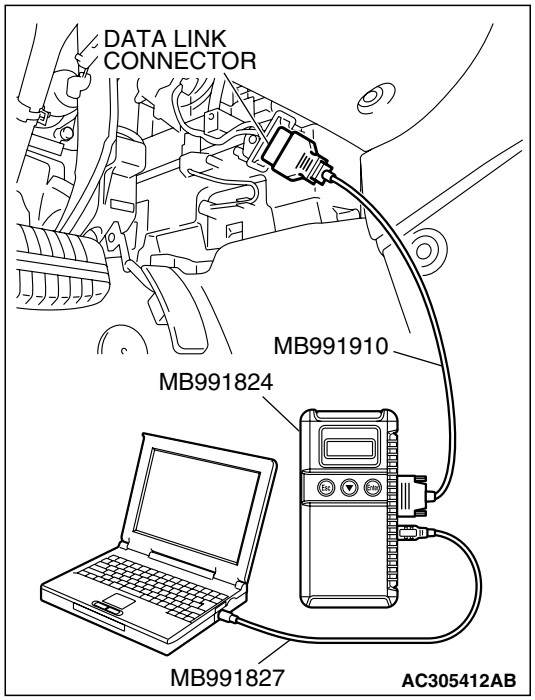
⚠ CAUTION

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-17."

(2) When the driver's or the front passenger's door lock switch is moved from "LOCK" to "UNLOCK" and vice versa, check if scan tool 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."



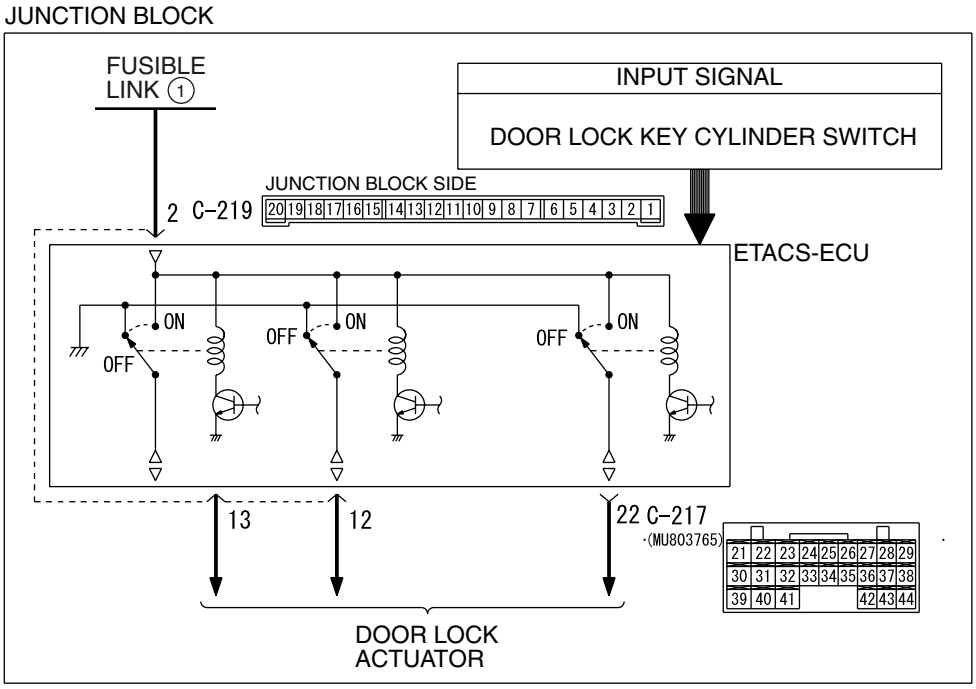
Q: Does scan tool MB991958 sound when the driver's or the front passenger's door lock switch is moved from "LOCK" to "UNLOCK" and vice versa?

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-11. Check that all the doors should be locked and unlocked by the door lock switch.

NO : Refer to Inspection Procedure N-6 "ETACS-ECU does not receive any signal from the door lock switch (incorporated in the power window main switch and front power window sub switch) P.54B-557."

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



W4P54M93AA

TECHNICAL DESCRIPTION (COMMENT)

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

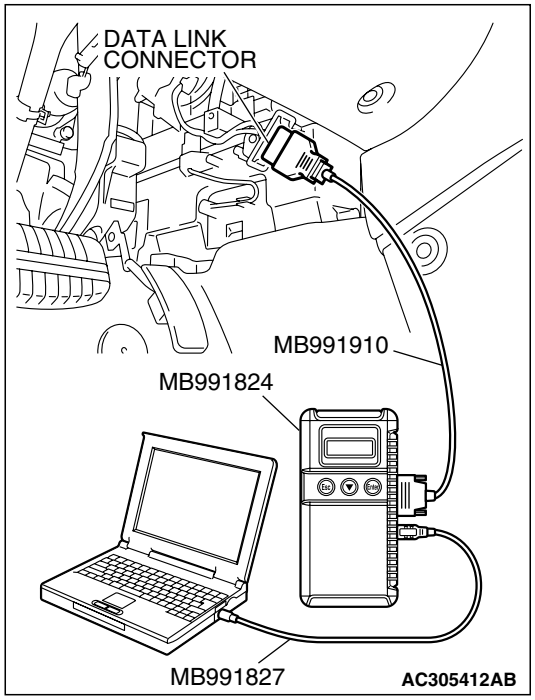
TROUBLESHOOTING HINTS

- 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



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

Check the input signals from the 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-17."
(2) When the doors are locked and unlocked by using the driver's or front passenger's door lock key cylinder, check that scan tool 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."

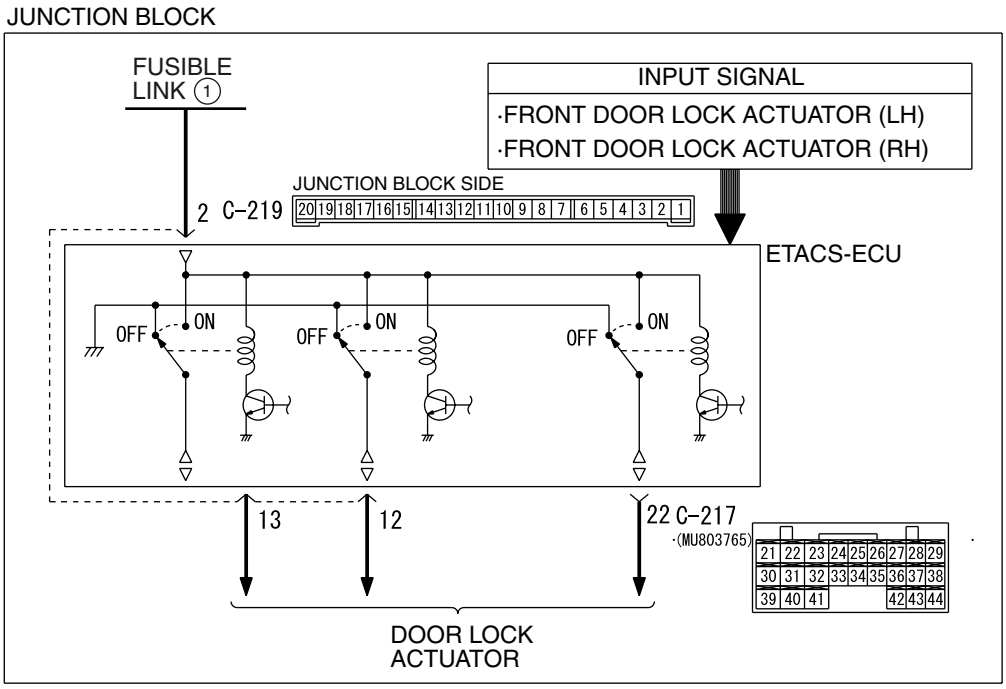
Q: When the doors are locked and unlocked by using the driver's or front passenger's door lock key cylinder, does scan tool MB991958 sound?

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-11. Check that all the doors should be locked and unlocked by using each door lock key cylinder switch.

NO : Refer to Inspection Procedure N-4 "ETACS-ECU does not receive any signal from the door lock key cylinder switch P.54B-542."

INSPECTION PROCEDURE C-5: Central Door Locking System: All the Doors do not Lock or Unlock with just the Driver's or Front Passenger's inside Lock Knob Operation.

Central Door Lock (Door Lock Key Cylinder Switch) Circuit



W4P54M95AA

TECHNICAL DESCRIPTION

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

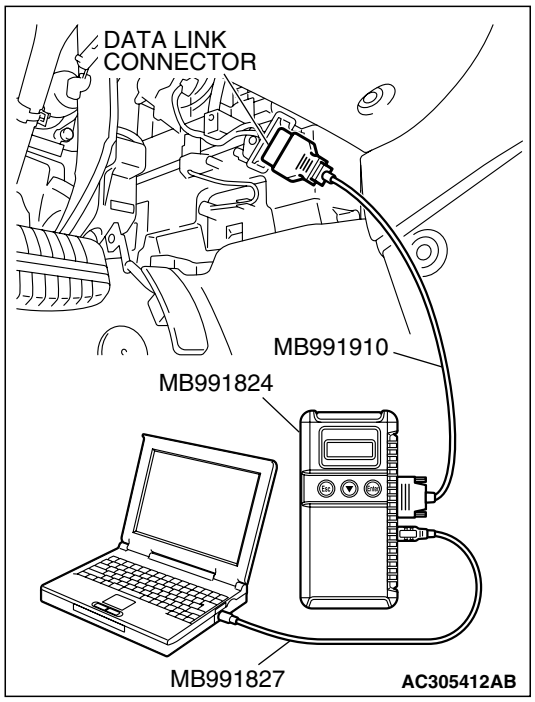
TROUBLESHOOTING HINTS

- 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



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

Check the input signals from the driver's or front 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-17."
(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 front passenger's inside lock knob is moved from "LOCK" to "UNLOCK" or vice versa?

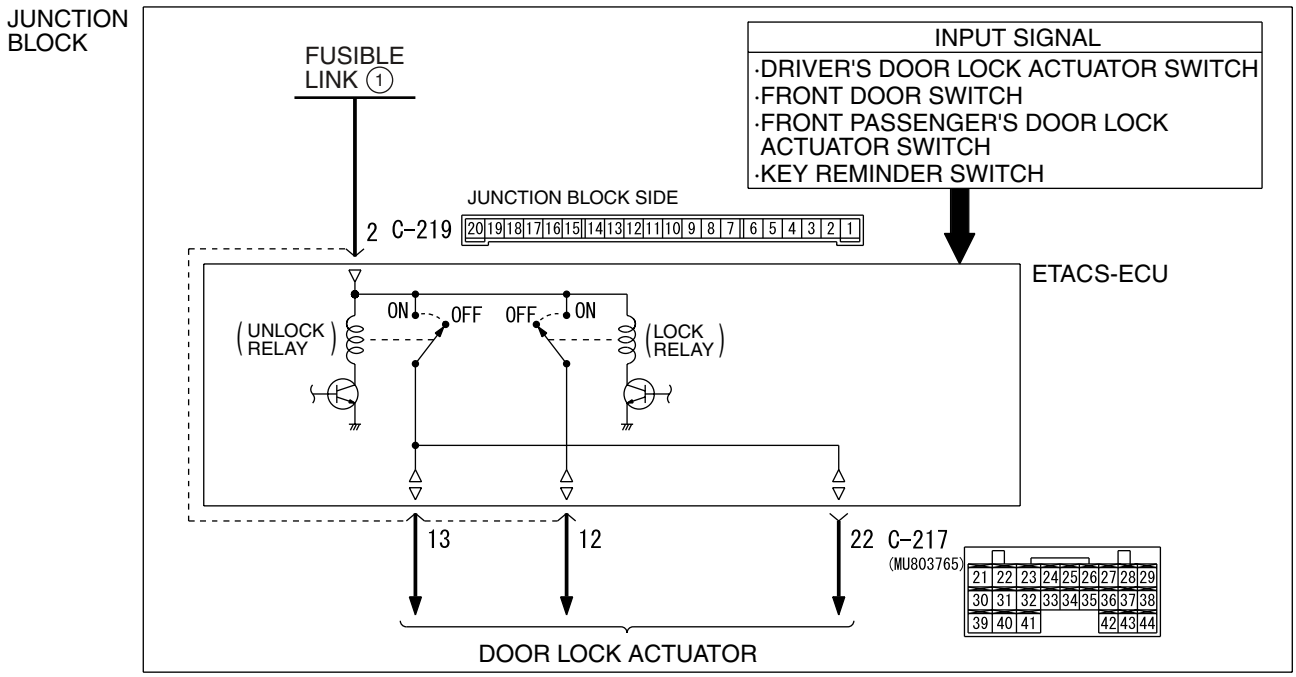
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Check that all the doors can be locked or unlocked by operating the driver's inside lock knob.

NO : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive any signal from the front door lock actuator P.54B-547."

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-18."

Forgotten Key Prevention Circuit



W4P54M20AA

CIRCUIT OPERATION

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

- Key reminder switch: OFF
- Front door switch: ON
- Front 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
- Front door: open
- Front 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

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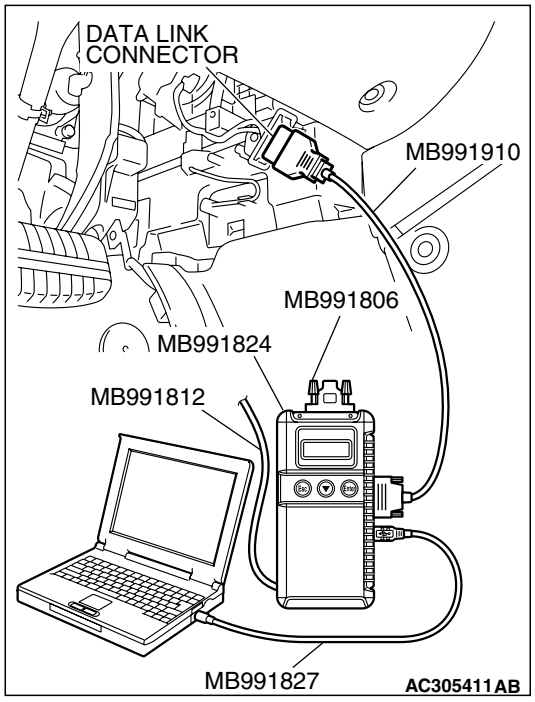
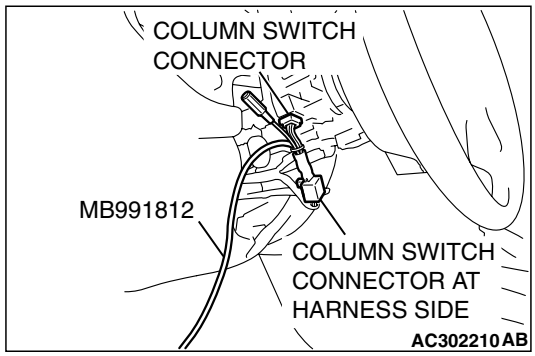




STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

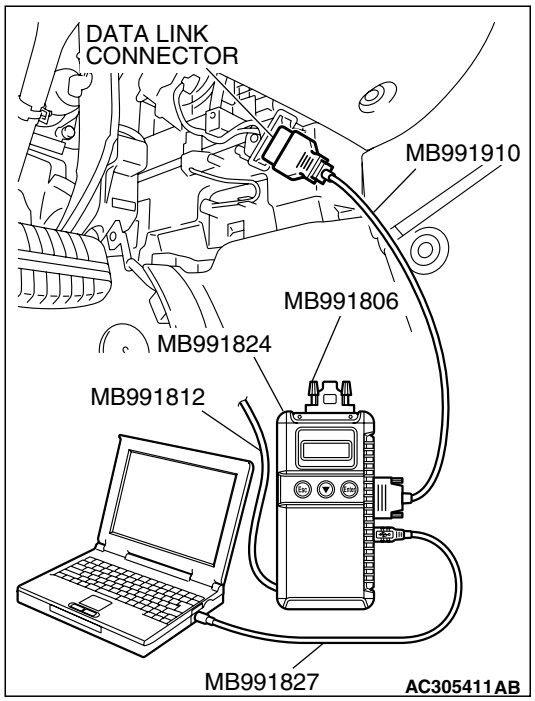
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

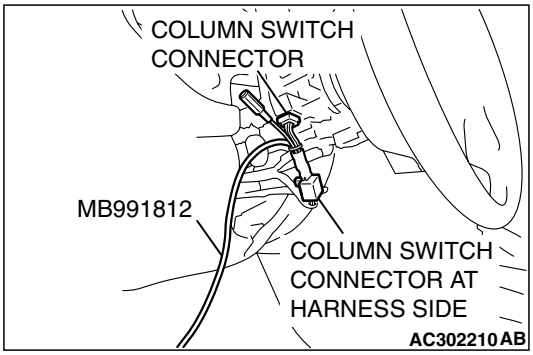
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. 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-82."





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."

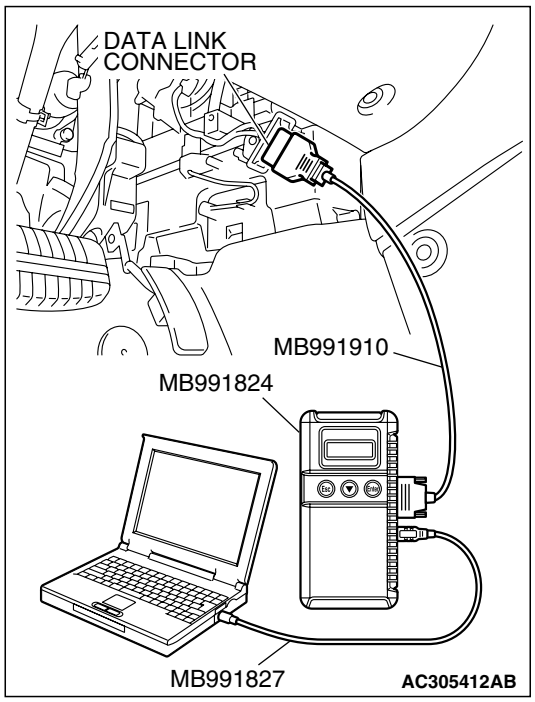
(2) Check that normal conditions are displayed for the items described in the table below.

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

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

YES : Go to Step 3.

NO : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."



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
- Door switches

(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
Door switches	Open or close one of the doors

Q: When the key reminder switch, any door switch 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-11. The forgotten key prevention function should work normally.

When the ignition key is removed and inserted, 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-525."

When one of the doors is opened and closed, scan tool MB991958 does not sound : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from any of the door switches P.54B-534."

POWER WINDOWS

GENERAL DESCRIPTION CONCERNING THE POWER WINDOWS

M1549021900329

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

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

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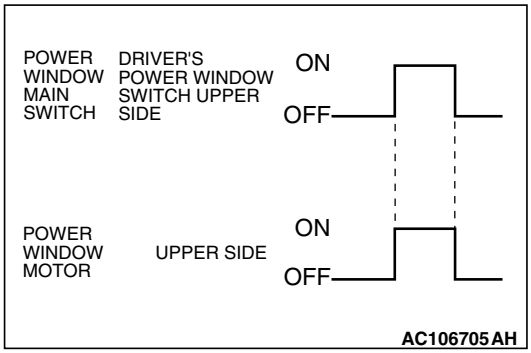
POWER WINDOW MAIN SWITCH FUNCTION

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

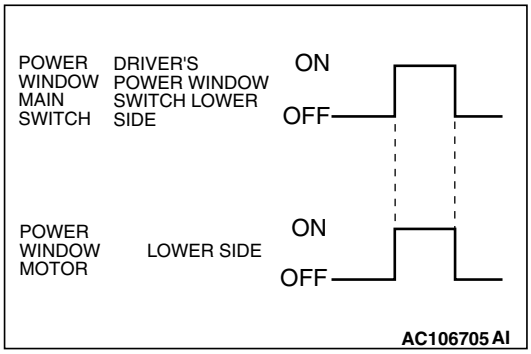
Raises the driver's power window

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



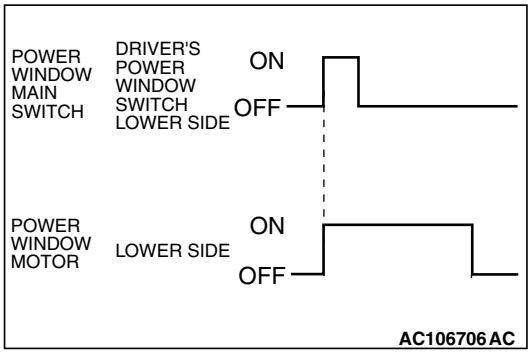
Lowers the driver's power window

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



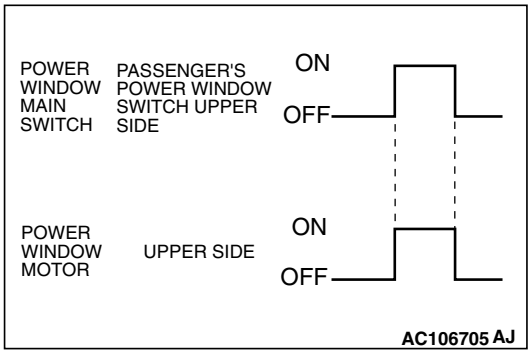
Lowers the driver's power window by one-touch down function

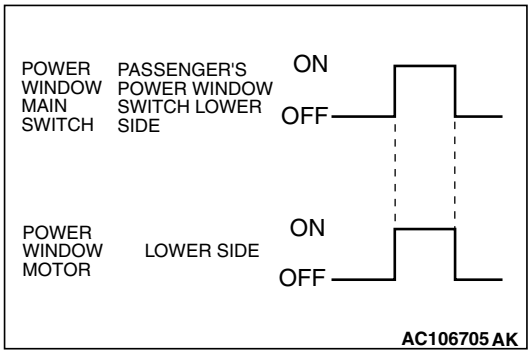
When the driver's power window switch on the power window main switch is pushed down fully, the system energizes its respective power window motor, and then the driver's window glass moves to its lowest position.



Raises the passenger's power window

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





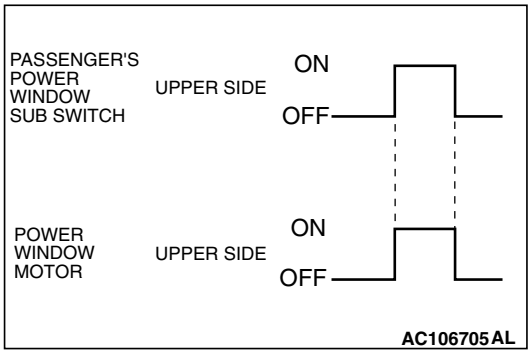
Lowers the passenger's power window

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

POWER WINDOW SUB SWITCH FUNCTION

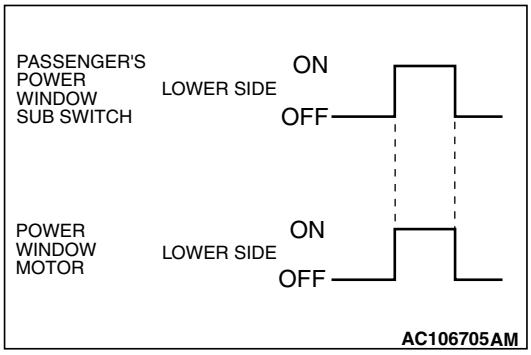
The sub switches are located on the passenger's doors.

Raises the passenger's power window



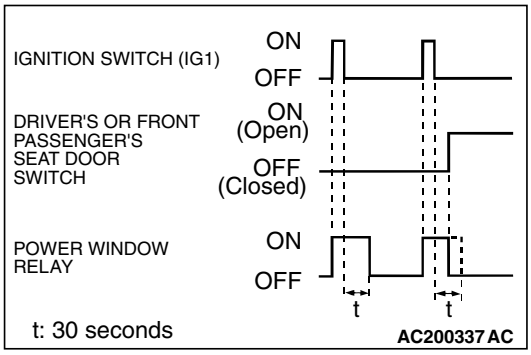
When the power window sub switch is pulled up, the system energizes its respective power window motor, and then the passenger's window glass rises.

Lowers the passenger's power window



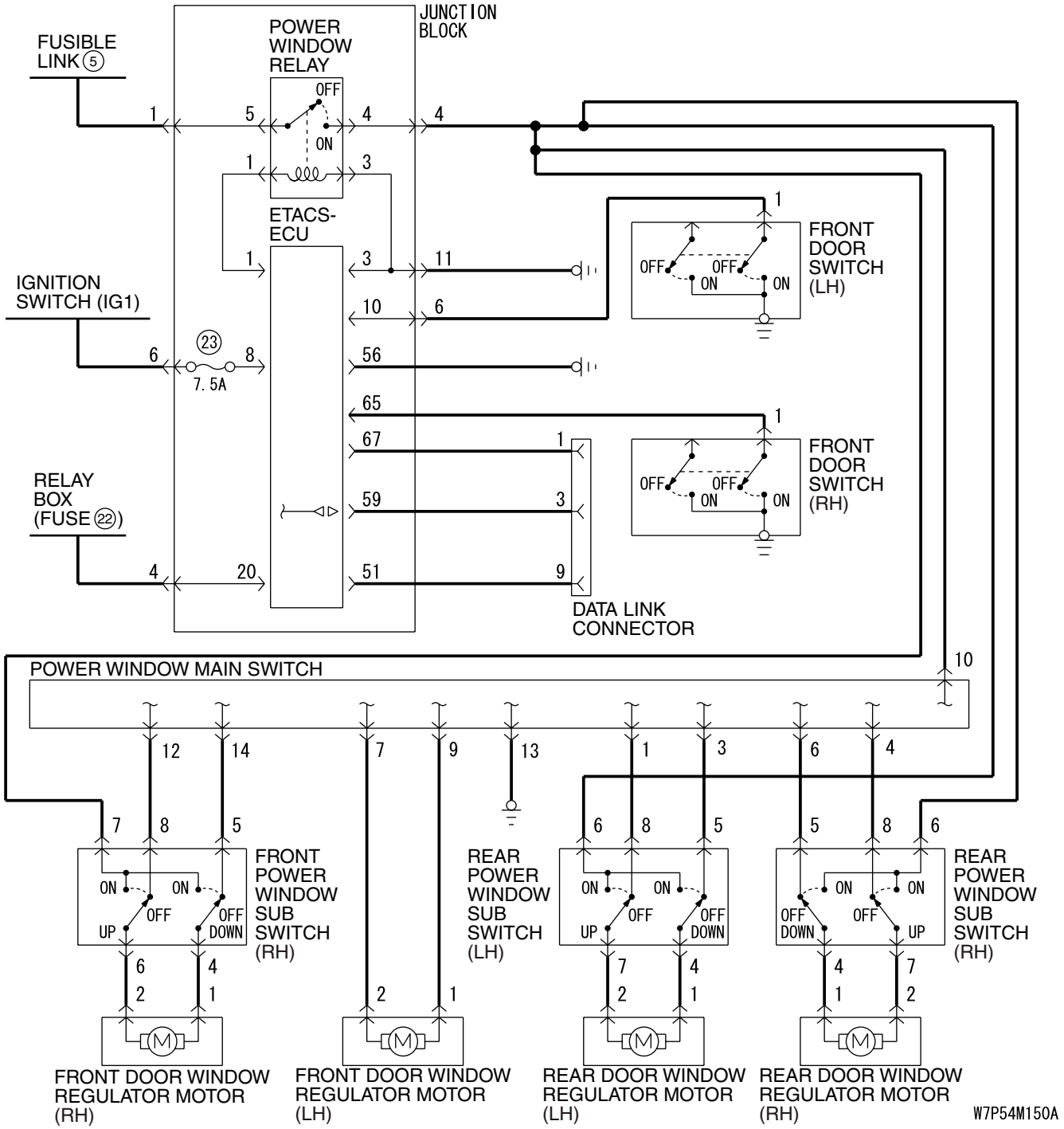
When the power window sub switch is pushed down, the system energizes its respective power window motor, and then the passenger's window glass lowers.

Power window timer function



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

GENERAL CIRCUIT DIAGRAM FOR THE POWER WINDOWS



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-18."

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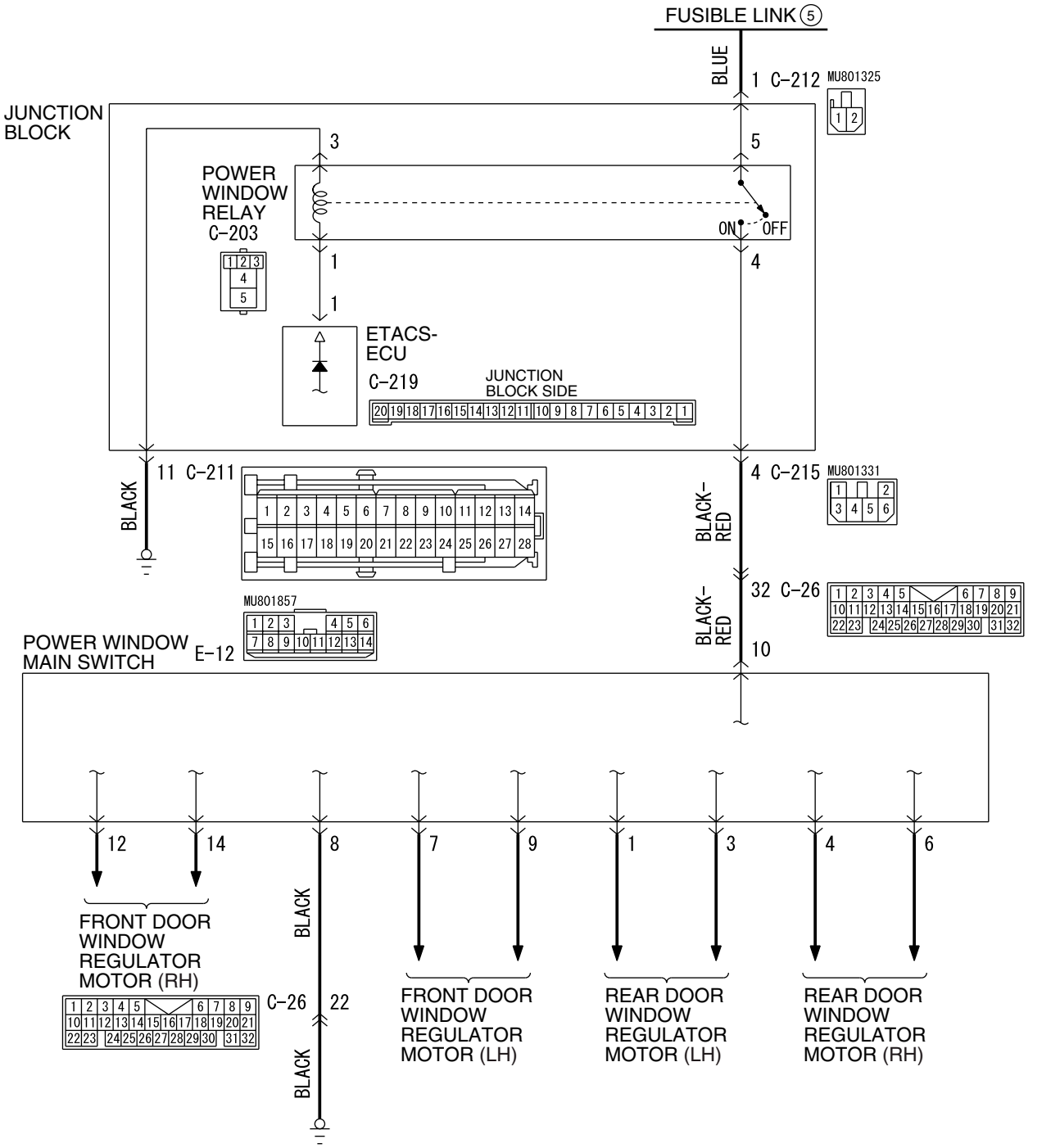
Power Window Relay Circuit



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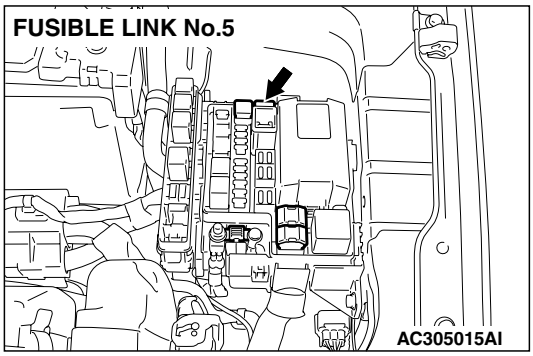

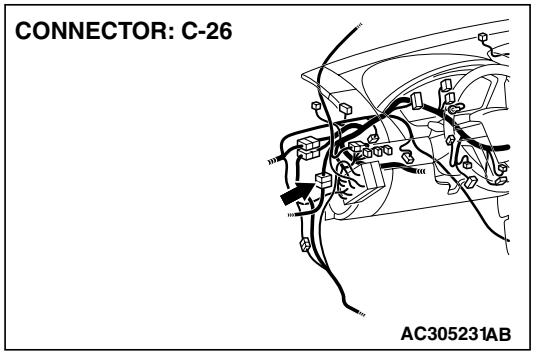

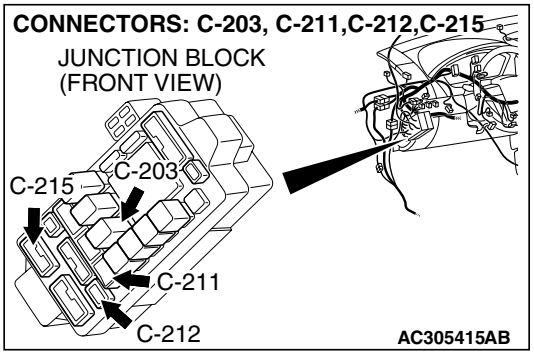

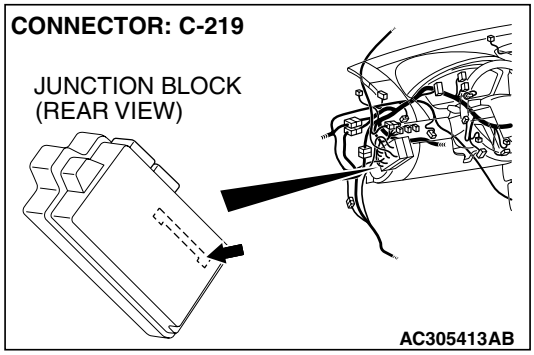

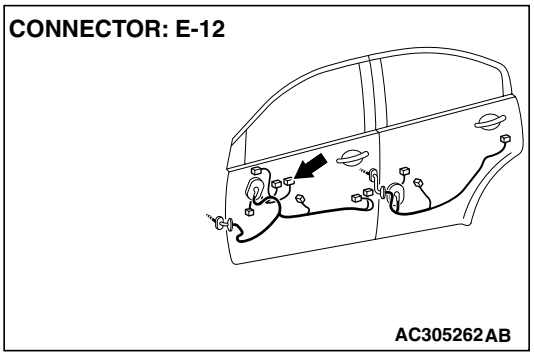

CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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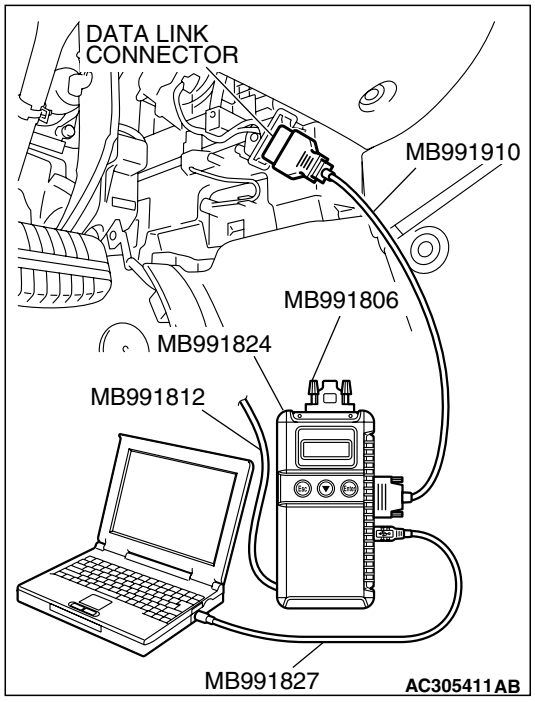
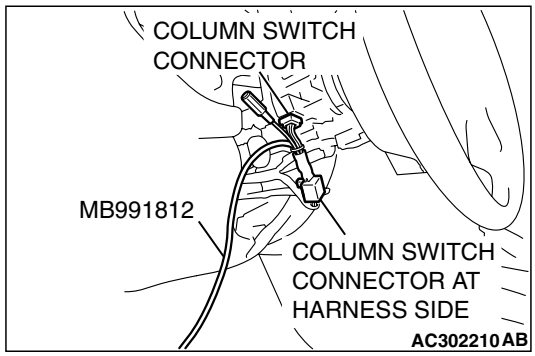




STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

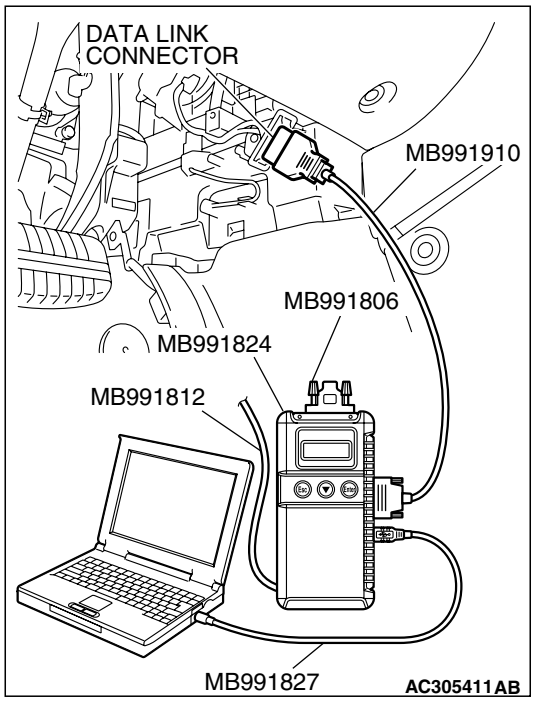
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-82."



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."

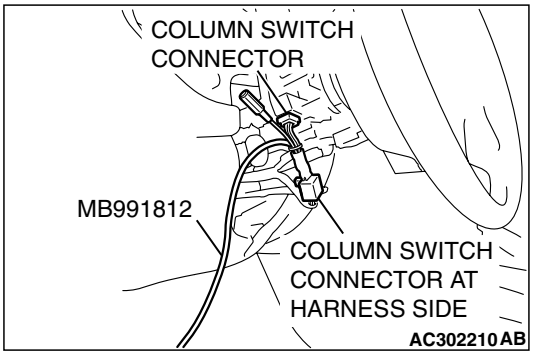
(2) Check that normal conditions are displayed for the items described in the table below.

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-497."

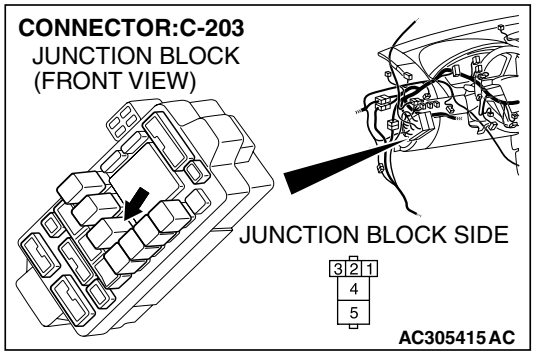


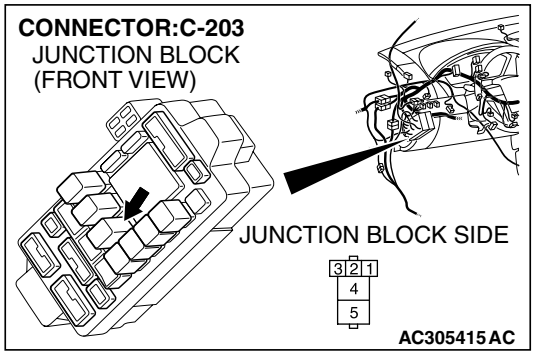
STEP 3. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

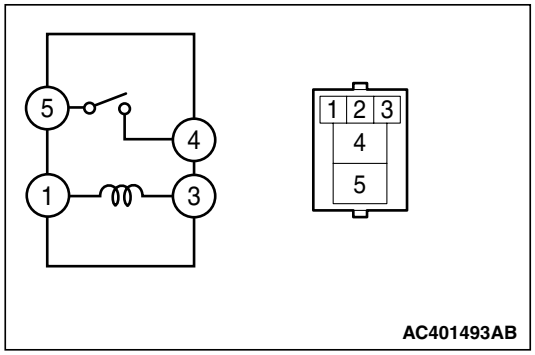
Q: Is power window relay connector C-203 in good condition?

YES : Go to Step 4.

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







STEP 4. Check the power window relay.

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

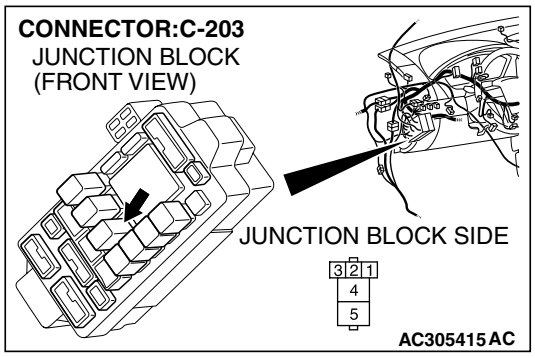
Q: Is the power window relay normal?

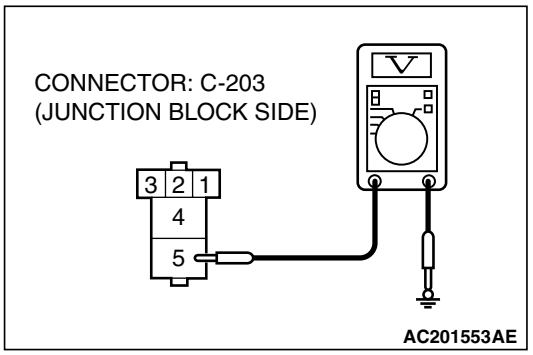
YES : Go to Step 5.

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-203.

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





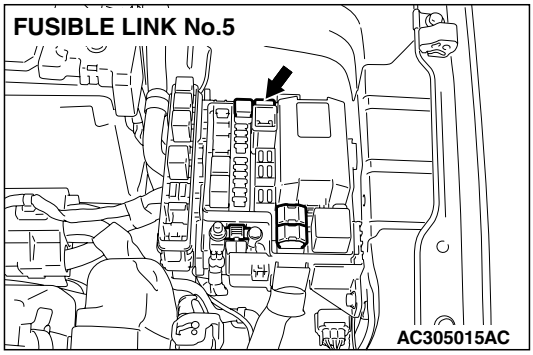
(2) Measure the voltage between terminal 5 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

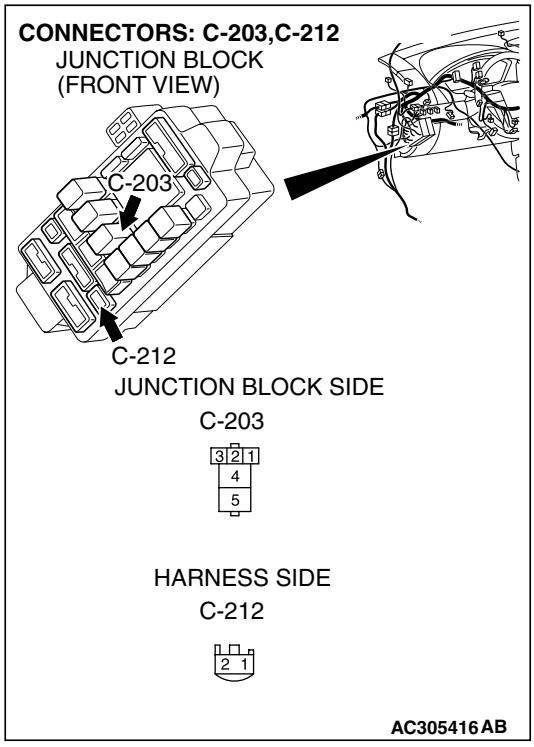
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 7.

NO : Go to Step 6.

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





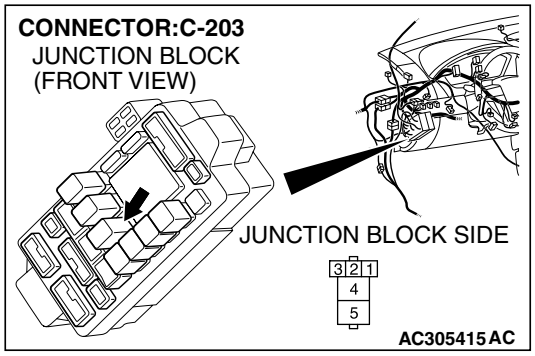
NOTE: Also check junction block connector C-212 for loose, corroded or damaged terminals, or terminals pushed back in the connectors. If junction block connector C-212 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

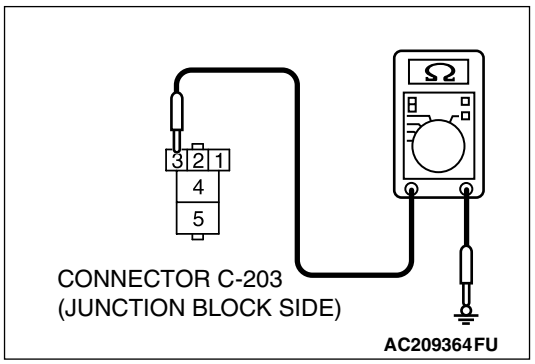
YES : No action is necessary and testing is complete.

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

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



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

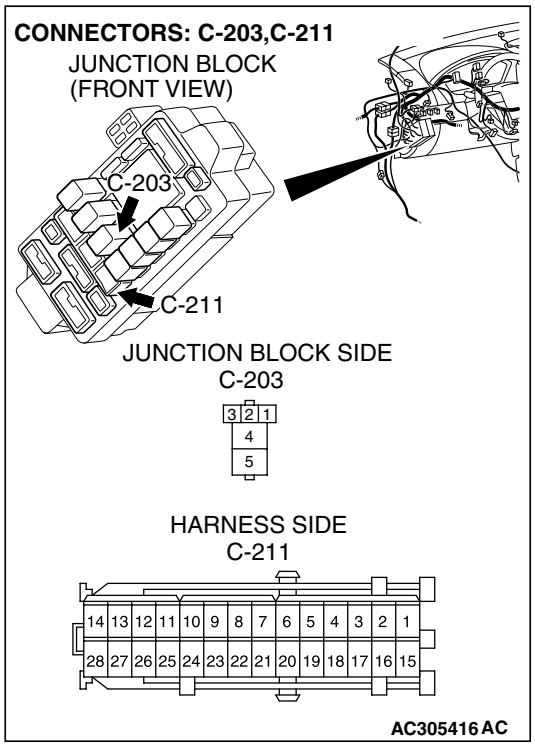


(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

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

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



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

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

YES : No action is necessary and testing is complete.

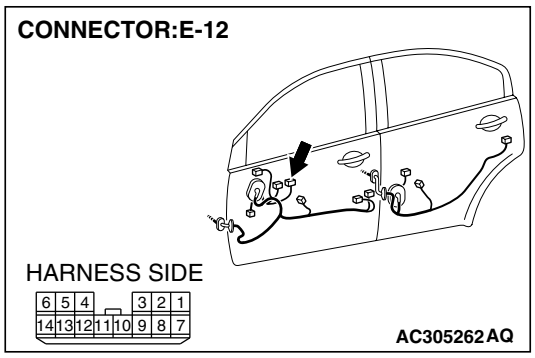
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The power windows function should now work normally.

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

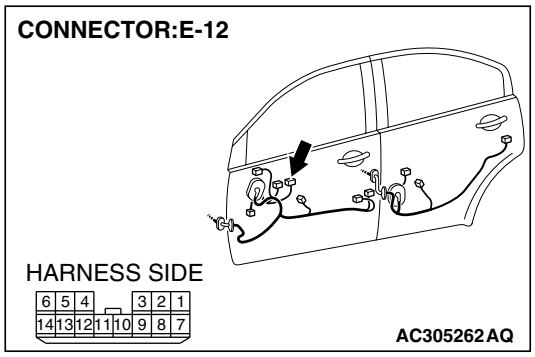
Q: Is power window main switch connector E-12 in good condition?

YES : Go to Step 10.

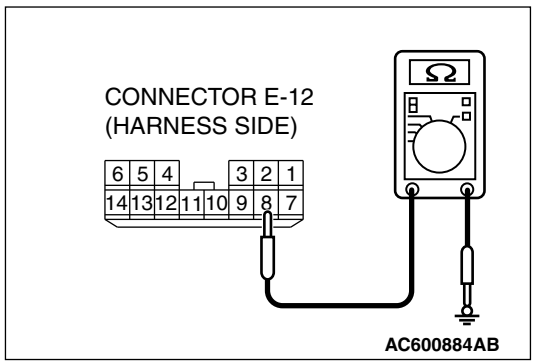
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The power windows function should now work normally.



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



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

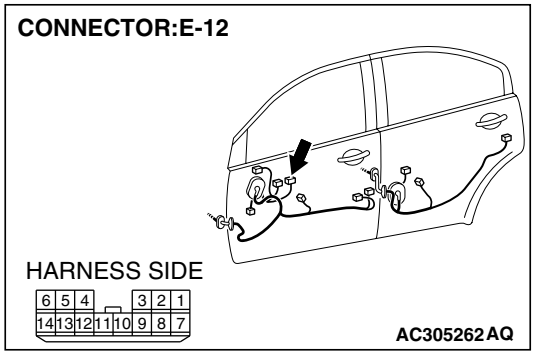


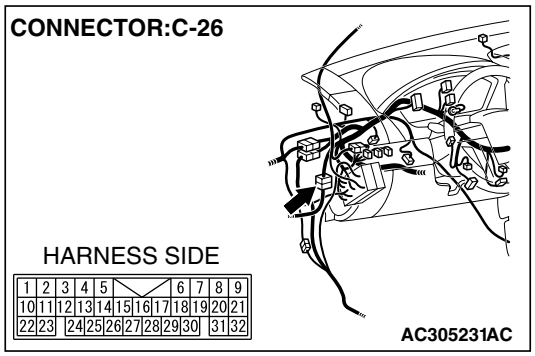
(2) Measure the resistance value between terminal 8 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.
NO : Go to Step 11.

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





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

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

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

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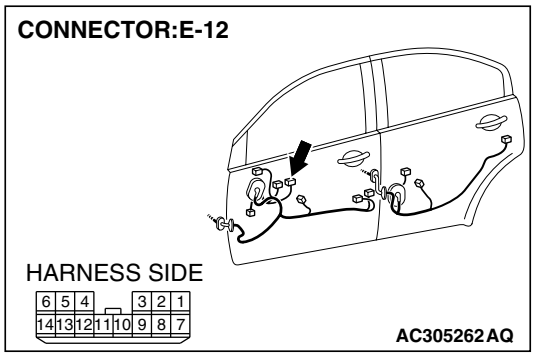
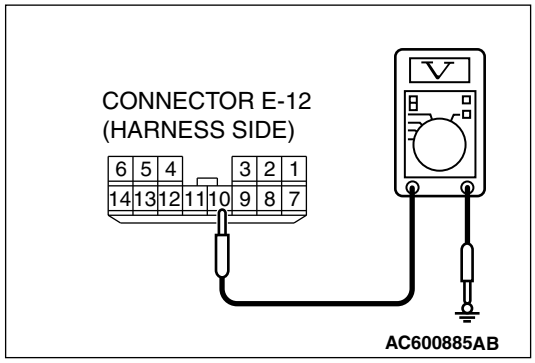


STEP 12. Check the battery power supply circuit to the power window main switch. Measure the voltage at power window main switch connector E-12.

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

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



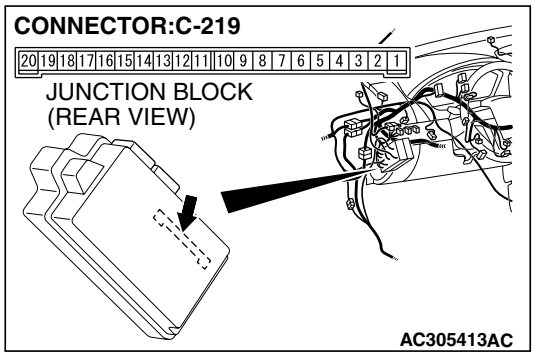
(3) Measure the voltage between terminal 10 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

NO : Go to Step 13.

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

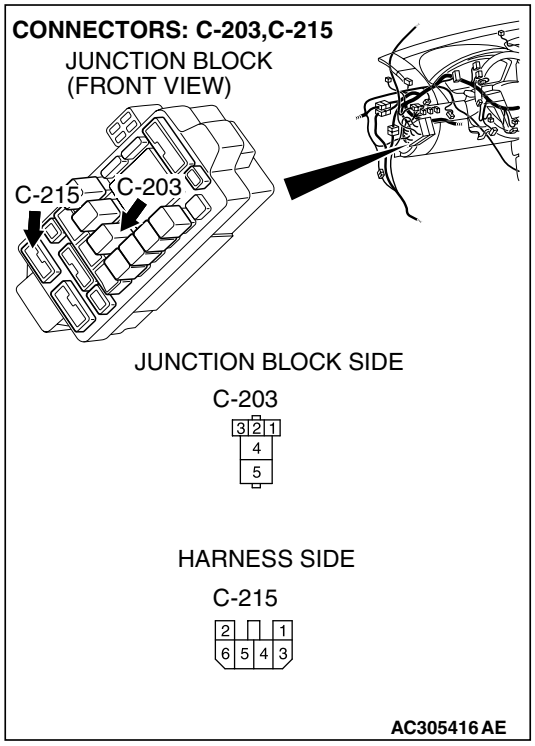


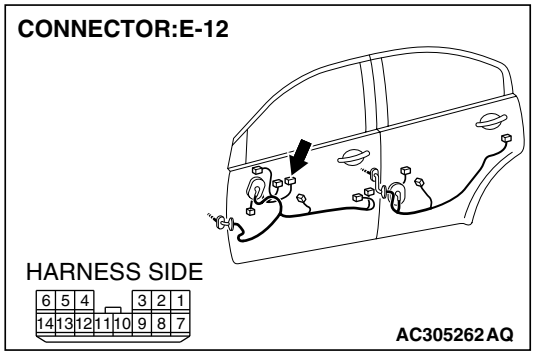
Q: Is ETACS-ECU connector C-219 in good condition?

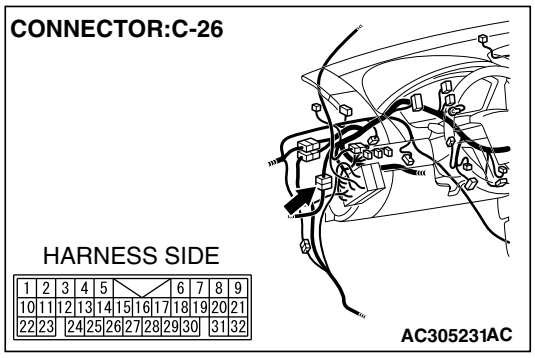
YES : Go to Step 14.

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

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







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

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

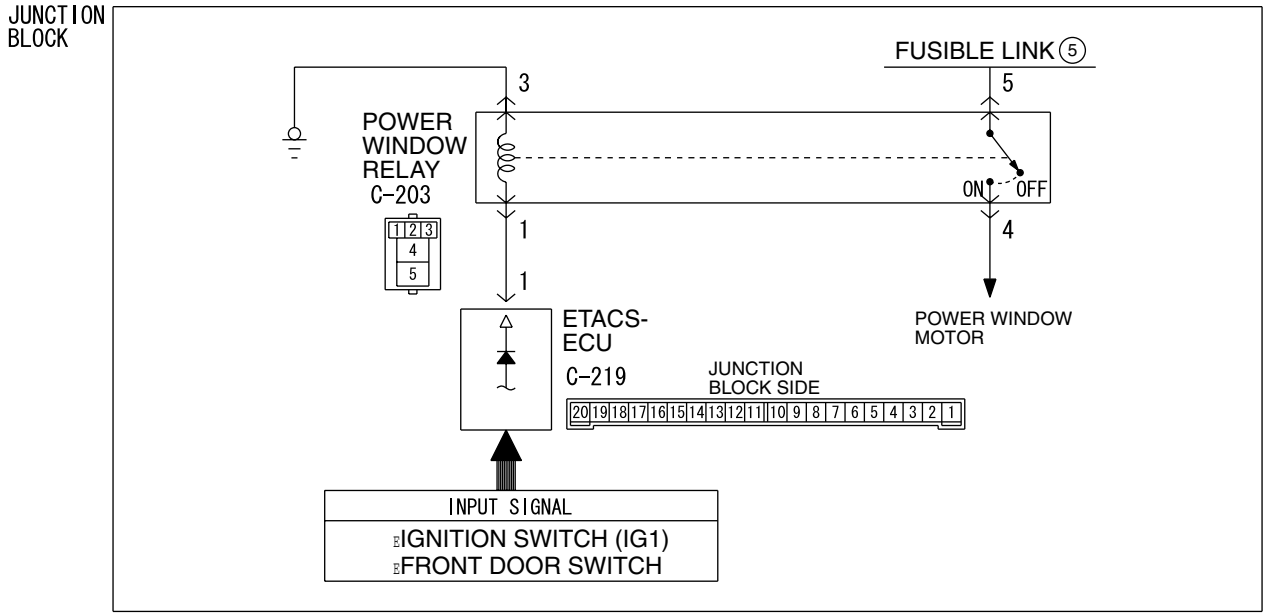
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. The power windows function should now work normally.

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-18."

Power Window Timer Function Circuit



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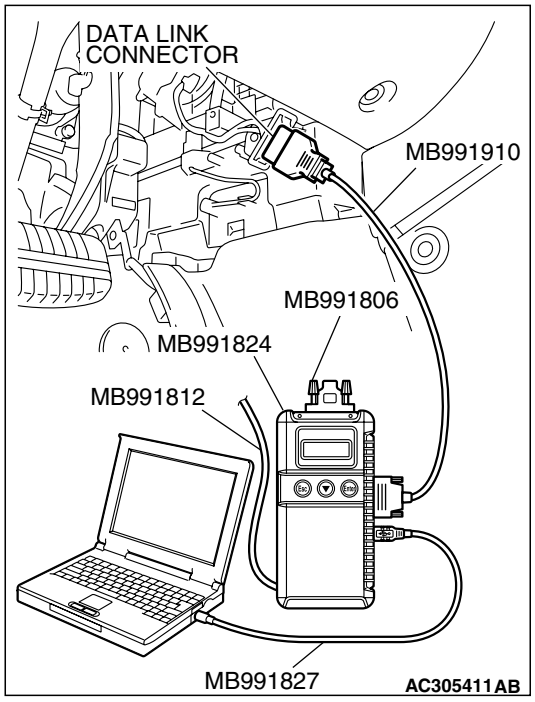
CIRCUIT OPERATION
The ETACS-ECU operates the power window timer function according to the following signals:
- Ignition switch (IG1)
- Front door switch

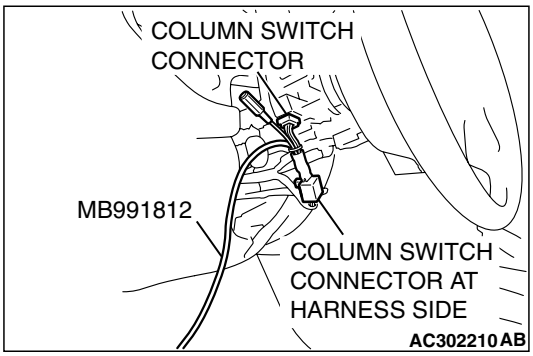
TECHNICAL DESCRIPTION (COMMENT)
If the power window timer function does not work normally, its input circuit, the ETACS-ECU or the front-ECU may be defective.

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





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

Check the ETACS-ECU.

⚠ CAUTION

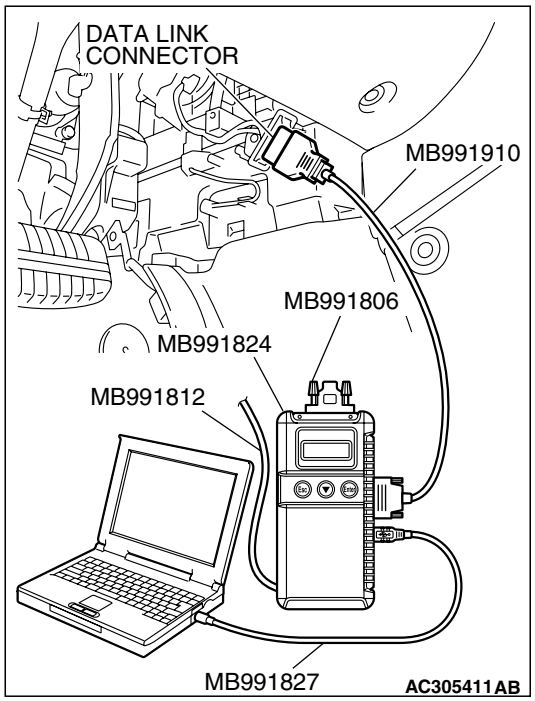
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

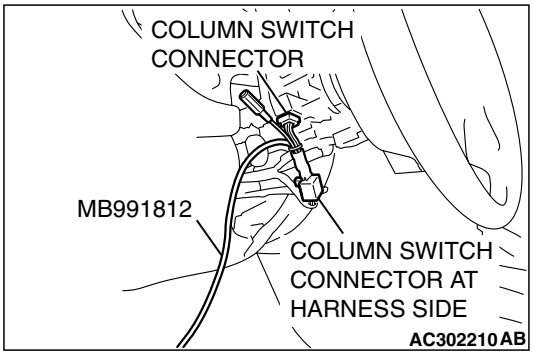
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Operate the scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System Select."
  c. Select "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-82."





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

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

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

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

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

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

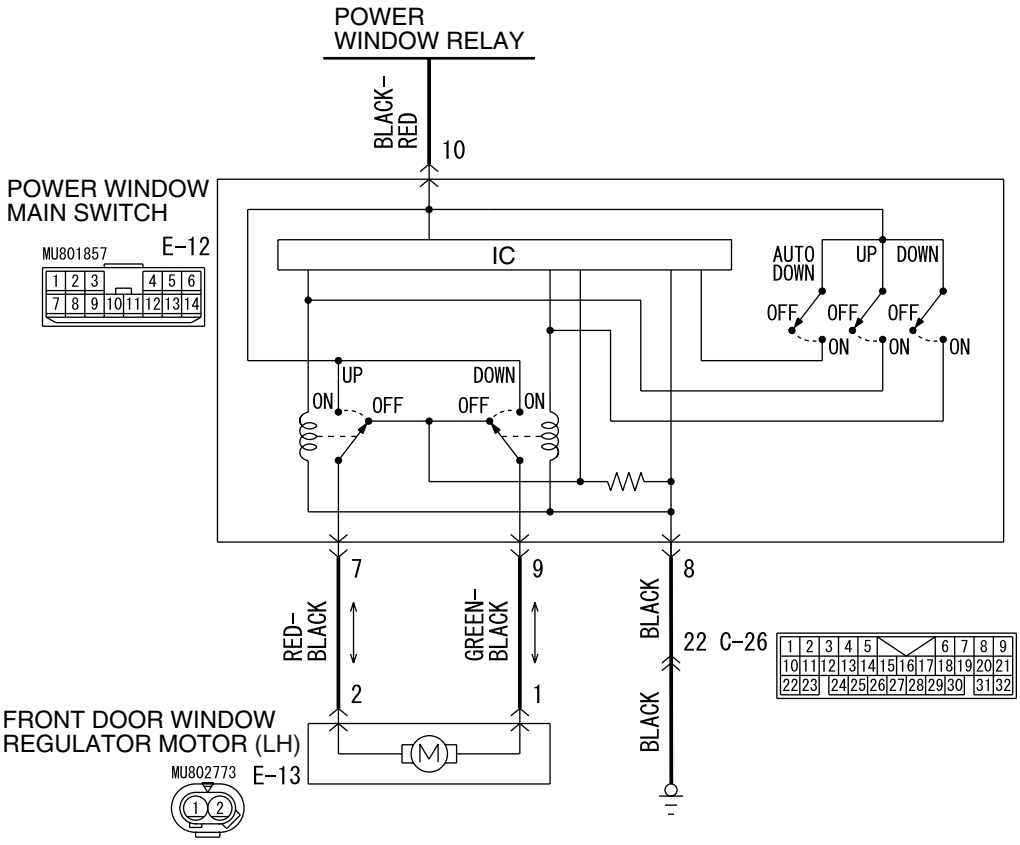
Normal condition displayed for all the items : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Verify that the power window timer works normally.

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-497."

Normal condition is not displayed for "DR DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."

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

Power Window (front: LH) Circuit



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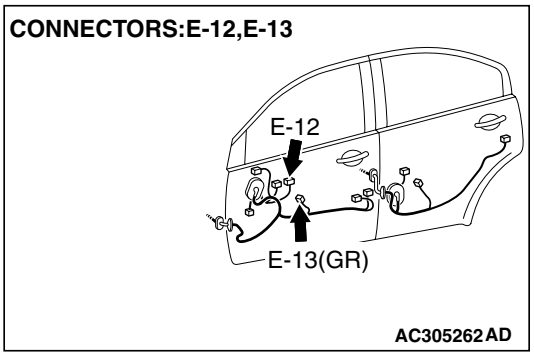

CIRCUIT OPERATION
The front power window regulator motor (LH) lower or raises the door window (LH) when the power window main switch is moved to "UP" or "DOWN" position.

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

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

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DIAGNOSIS

Required Special Tool:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

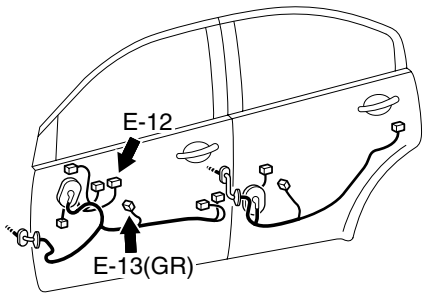
STEP 1. Check power window main switch connector E-12 and front power window regulator motor (LH) connector E-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

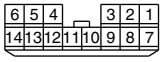
YES : Go to Step 2.

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

CONNECTORS: E-12, E-13

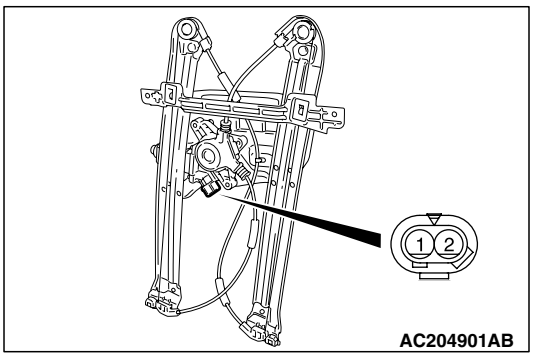


HARNESS SIDE
E-12



HARNESS SIDE
E-13

AC600886AB



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

(1) Remove the front power window regulator motor (LH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

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

BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 1 to the negative battery terminal • Connect terminal 2 to the positive battery terminal	UP
• Connect terminal 2 to the negative battery terminal • Connect terminal 1 to the positive battery terminal	DOWN

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

YES : Go to Step 3.

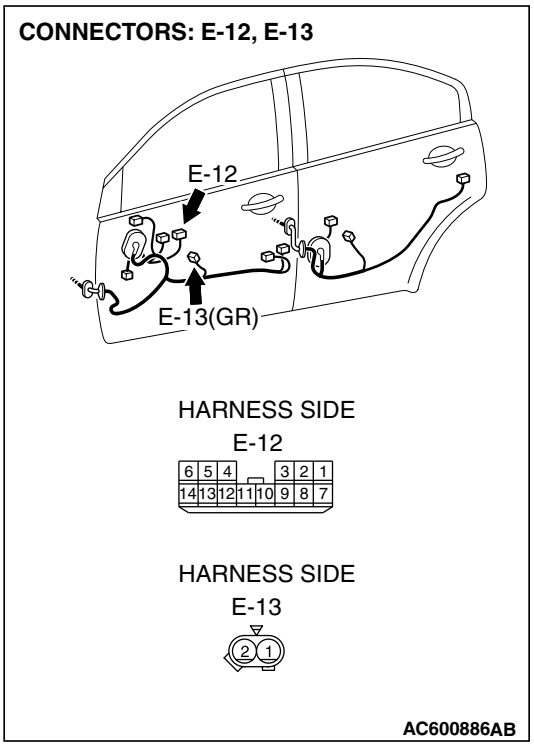
NO : Replace the front power window regulator motor (LH). When the power window main switch is operated, the front power window (LH) should lower or raise normally.

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

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

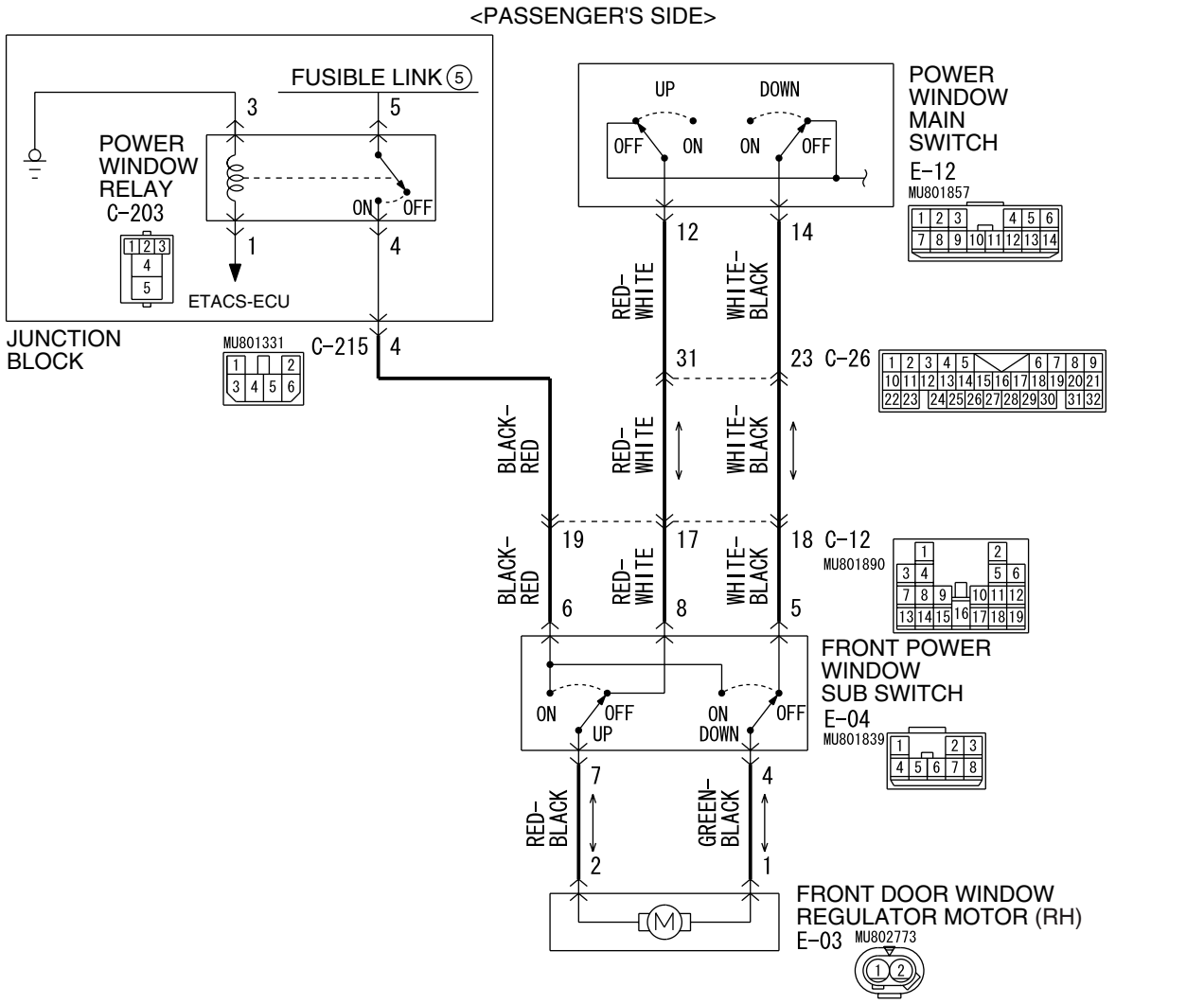
YES : Replace the power window main switch. When the power window main switch is operated, the front power window (LH) should lower or raise normally.

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



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

Power Window (front: RH) Circuit



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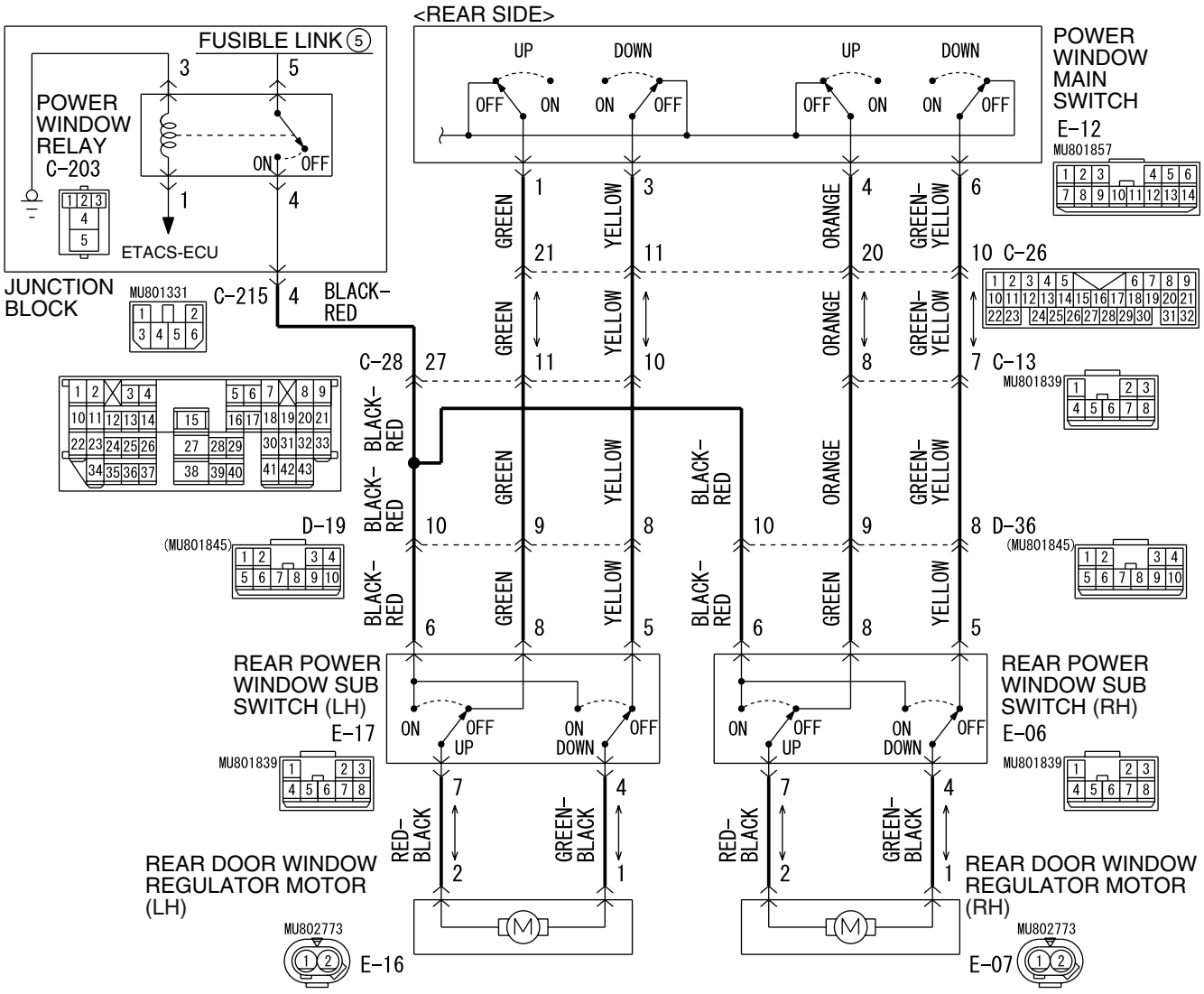
Power Window (rear) Circuit



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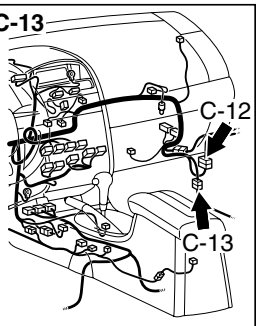
CONNECTORS: C-12,C-13



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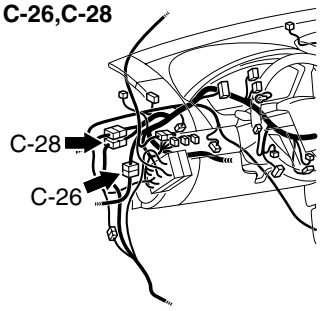
CONNECTORS: C-26,C-28



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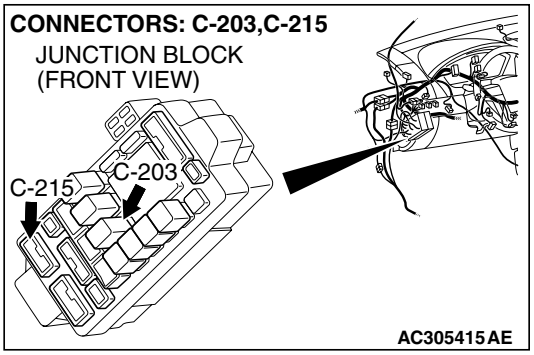

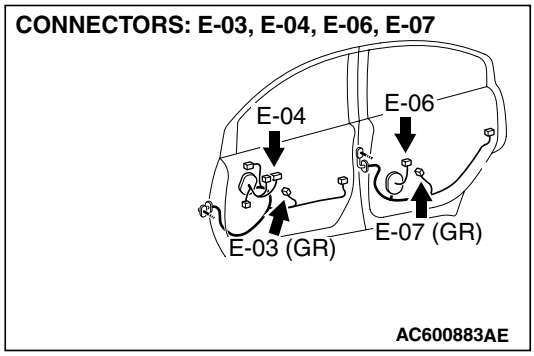

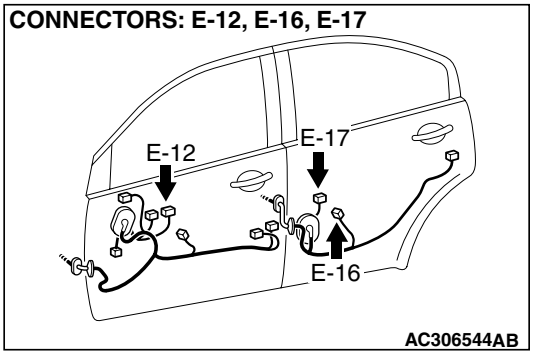

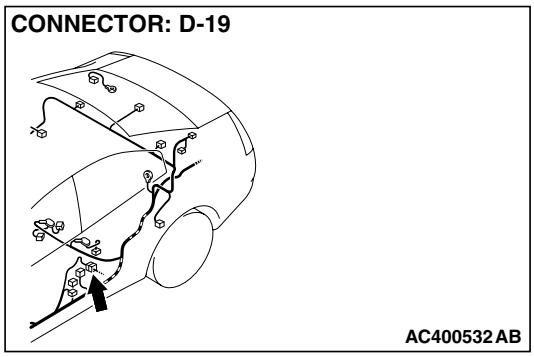

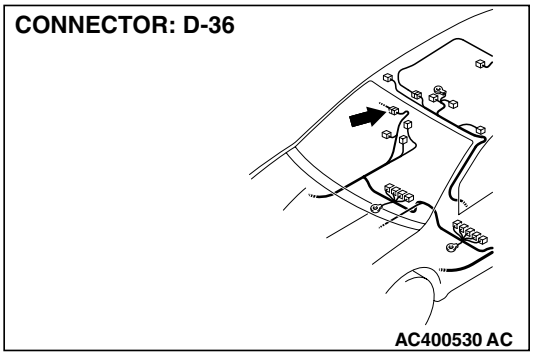

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

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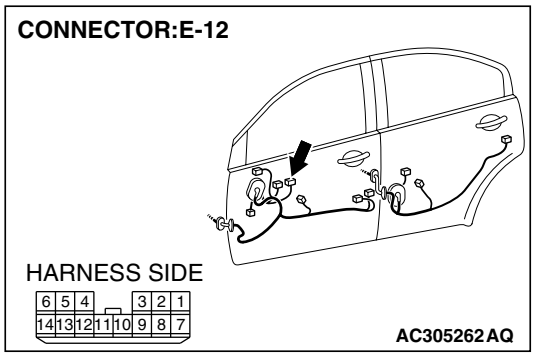
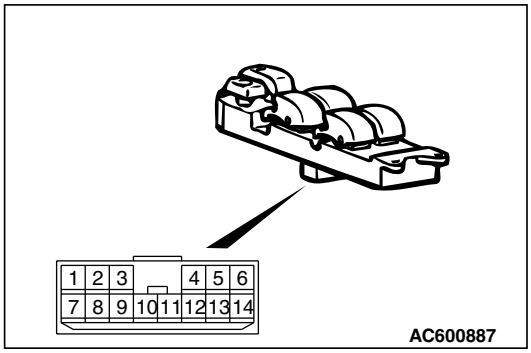


STEP 1. Check power window main switch connector E-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 2.

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



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

(1) Remove the power window main switch. Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

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

SWITCH POSITION		TESTER CONNECTION	SPECIFIED CONDITION
FRONT (RH)	UP	8 – 14*, 10 – 12	Less than 2 ohms
	OFF	8 – 14*, 8 – 12*, 12 – 14	
	DOWN	8 – 12*, 10 – 14	
REAR (LH)	UP	1 – 10, 3 – 8*	
	OFF	1 – 8*, 1 – 3, 3 – 8*	
	DOWN	1 – 8*, 3 – 10	
REAR (RH)	UP	4 – 10, 6 – 8*	
	OFF	4 – 8*, 4 – 6, 6 – 8*	
	DOWN	4 – 8*, 6 – 10	

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

Q: Is the power window main switch normal?

YES : Go to Step 3.

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

STEP 3. Check the power window lock switch.

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

YES : Go to Step 4.

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

STEP 4. Check which door window does not move.

Q: Which door window does not move?

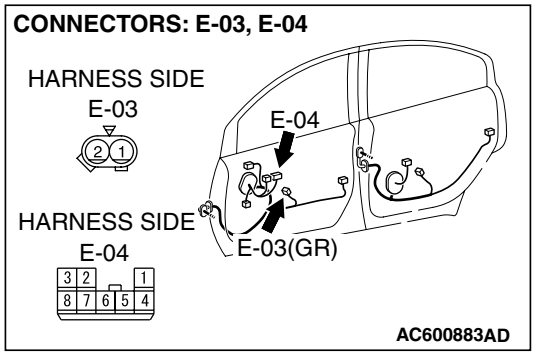
Front passenger's side : Go to Step 5.
Rear passenger (LH) : Go to Step 14.
Rear passenger (RH) : Go to Step 23.

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

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

YES : Go to Step 6.

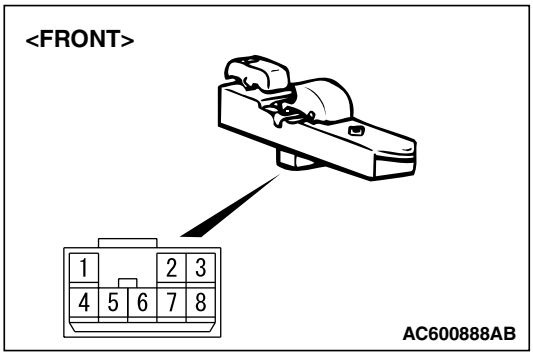
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the front power window sub switch (RH) is operated, the front power window (RH) should raise and lower normally.



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

(1) Remove the front power window sub switch. Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

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

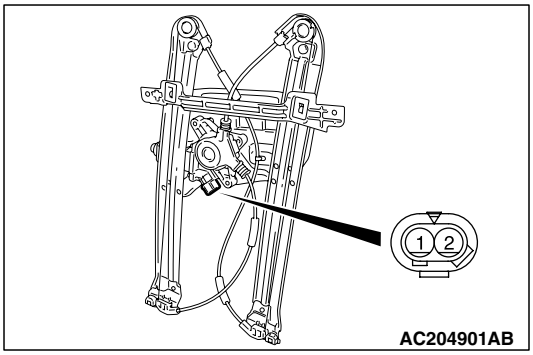


SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	4 – 5, 6 – 7	Less than 2 ohms
OFF	4 – 5, 7 – 8	
DOWN	4 – 6, 7 – 8	

Q: Is the front power window sub switch normal?

YES : Go to Step 7.

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



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

(1) Remove the front power regulator assembly (RH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

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

BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 1 to the negative battery terminal • Connect terminal 2 to the positive battery terminal	UP
• Connect terminal 2 to the negative battery terminal • Connect terminal 1 to the positive battery terminal	DOWN

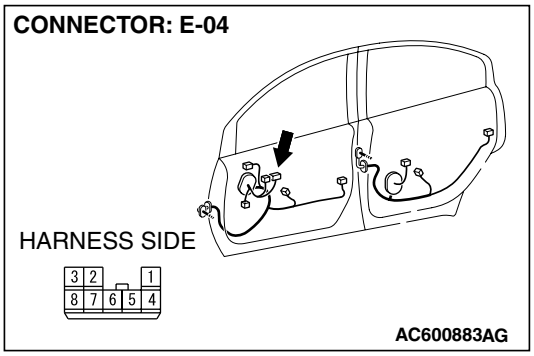
Q: Is the front power window regulator motor (RH) normal?

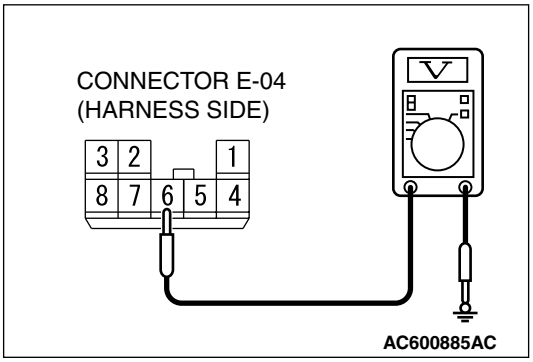
YES : Go to Step 8.

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

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

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



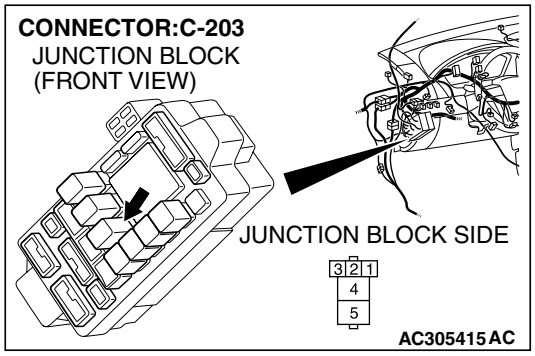


(2) Measure the voltage between terminal 6 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 11.

NO : Go to Step 9.

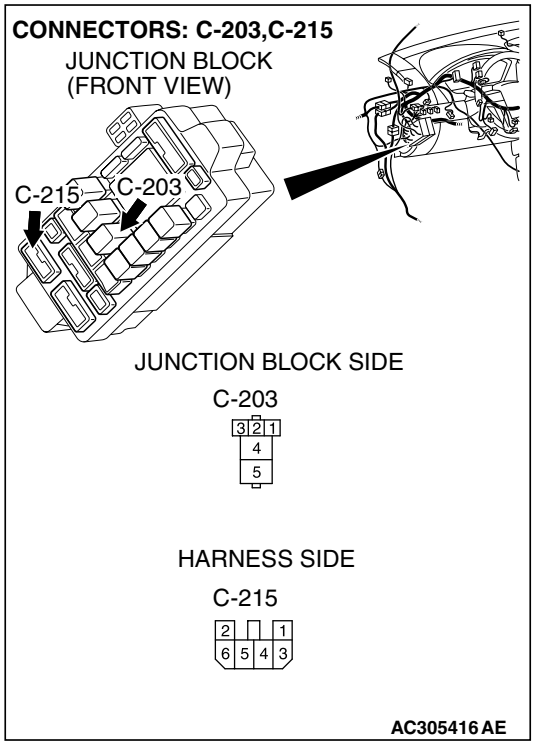


STEP 9. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

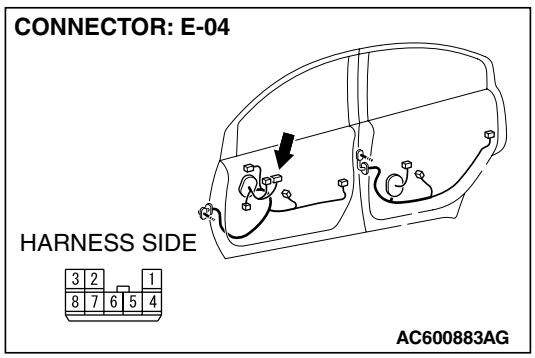
Q: Is power window relay connector C-203 in good condition?

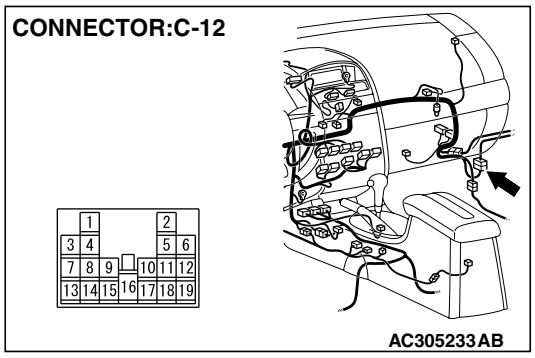
YES : Go to Step 10.

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



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





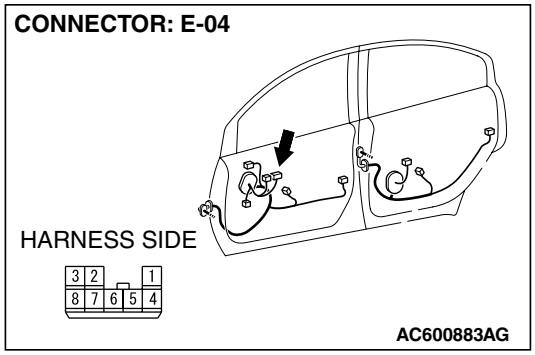
NOTE: Also check junction block connector C-215 and intermediate connector C-12. If junction block connector C-215 or intermediate connectors C-12 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

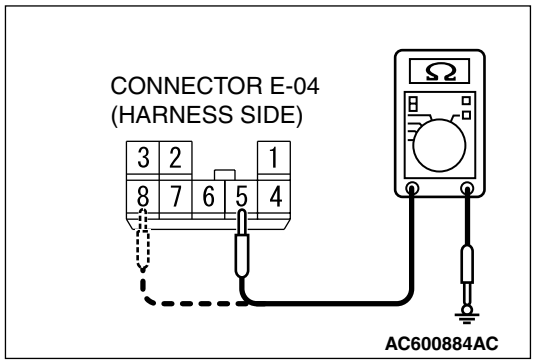
YES : No action is necessary and testing is complete.

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

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



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



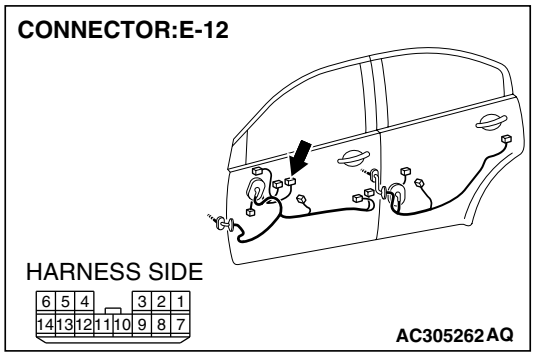
(2) Measure the resistance value between terminal 5 and ground, and also between terminal 8 and ground.
- The resistance should be 2 ohms or less.

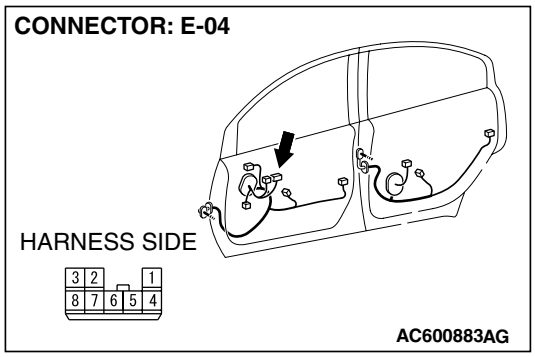
Q: Is the measured resistance 2 ohms or less?

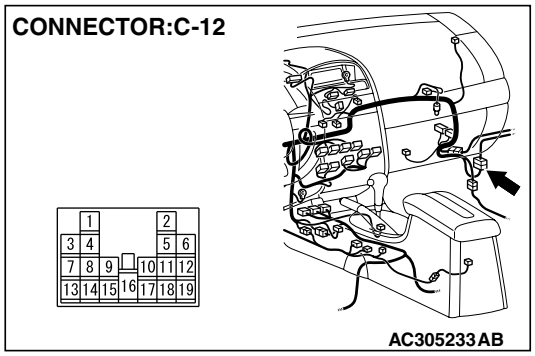
YES : Go to Step 13.

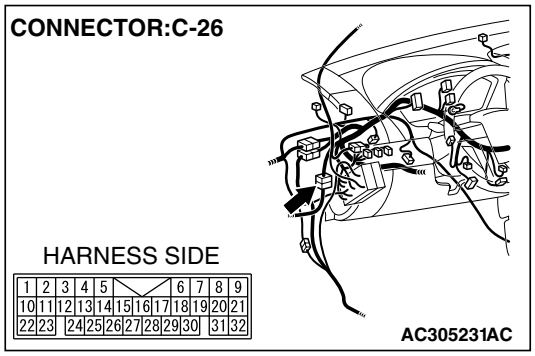
NO : Go to Step 12.

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







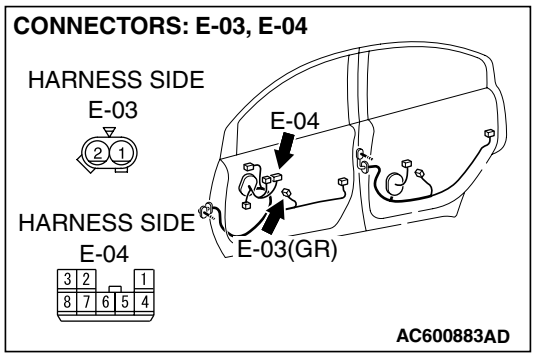


NOTE: Also check intermediate connectors C-12 and C-26. If intermediate connector C-12 or C-26 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

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

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

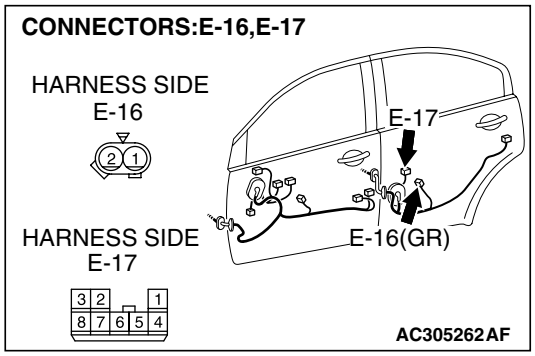


STEP 13. Check the wiring harness between front power window sub switch connector E-04 (terminals 4 and 7) and front power window regulator motor (RH) connector E-03 (terminals 1 and 2).

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

YES : No action is necessary and testing is complete.

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

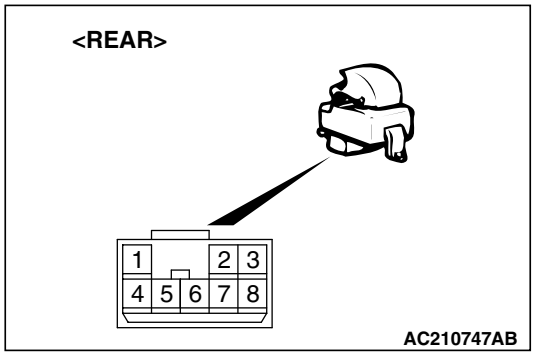


STEP 14. Check rear power window sub switch (LH) connector E-17 and rear power window regulator motor (LH) connector E-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 15.

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



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

(1) Remove the rear power window sub switch (LH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

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

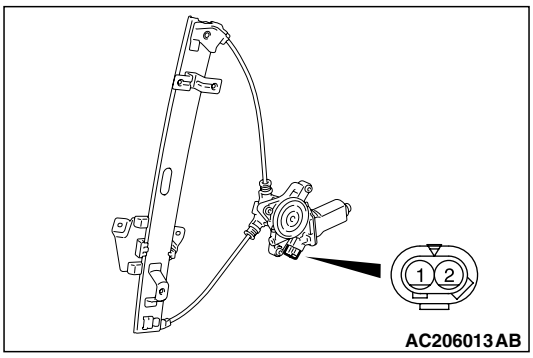
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	4 – 5, 6 – 7	Less than 2 ohms
OFF	4 – 5, 7 – 8	
DOWN	4 – 6, 7 – 8	

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

YES : Go to Step 16.

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

TSB Revision



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

(1) Remove the rear power window regulator assembly (LH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

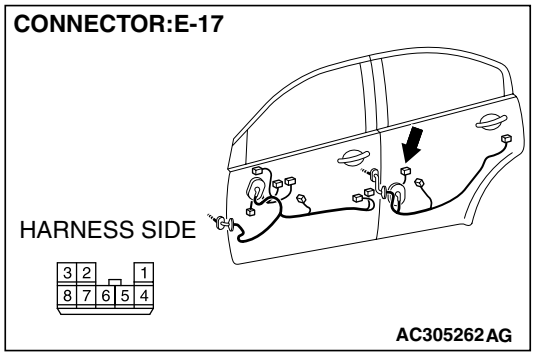
(2) Connect a battery to the motor terminal, and check that the motor runs freely.

BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 1 to the negative battery terminal • Connect terminal 2 to the positive battery terminal	UP
• Connect terminal 2 to the negative battery terminal • Connect terminal 1 to the positive battery terminal	DOWN

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

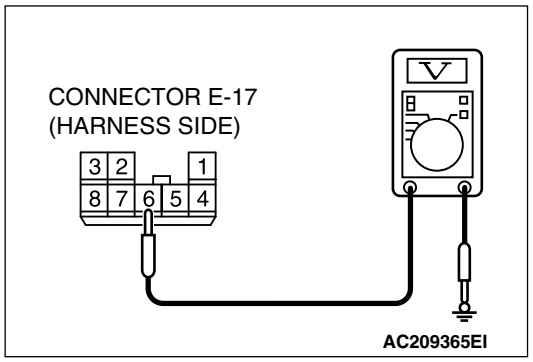
YES : Go to Step 17.

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



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

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

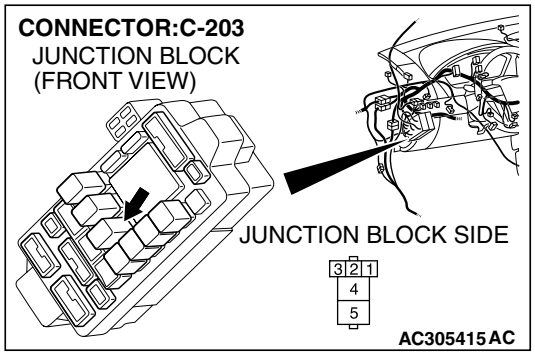


(2) Measure the voltage between terminal 6 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 20.

NO : Go to Step 18.

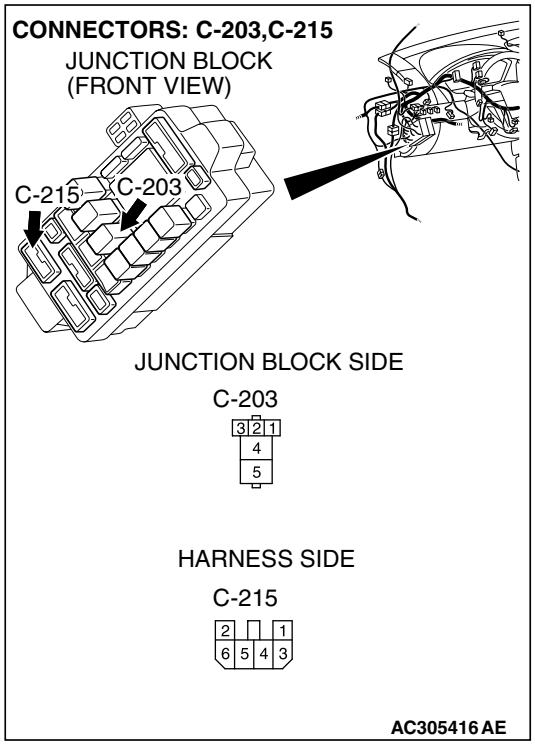


STEP 18. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

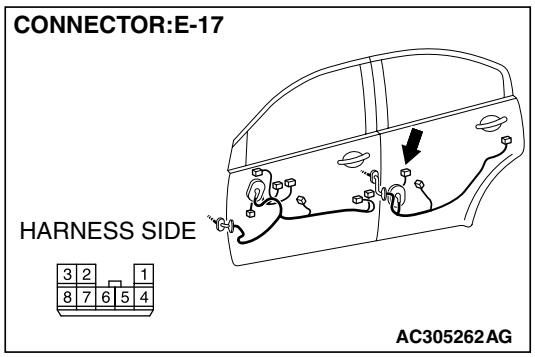
Q: Is power window relay connector C-203 in good condition?

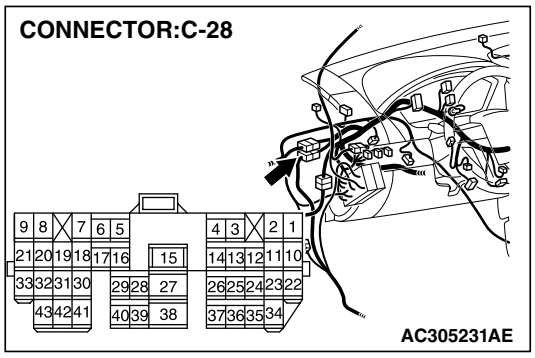
YES : Go to Step 19.

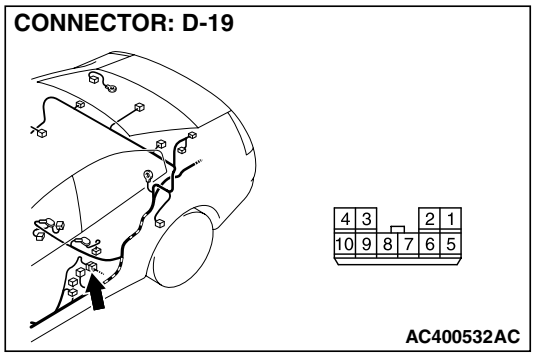
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.



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







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

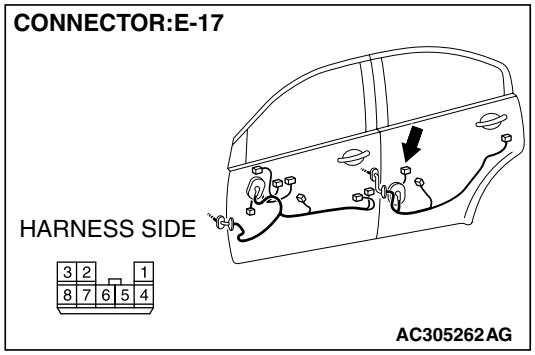
Q: Is the wiring harness between power window relay connector C-203 (terminal 4) and rear power window sub switch (LH) connector E-17 (terminal 6) in good condition?

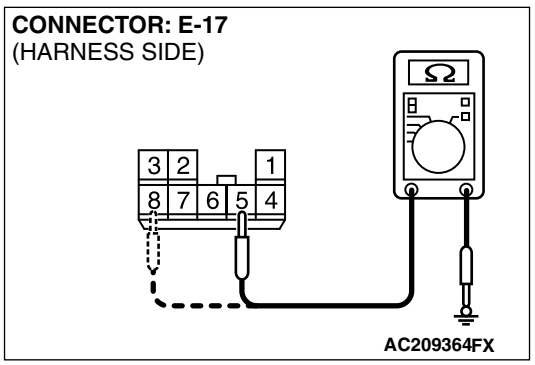
YES : No action is necessary and testing is complete.

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

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

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





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

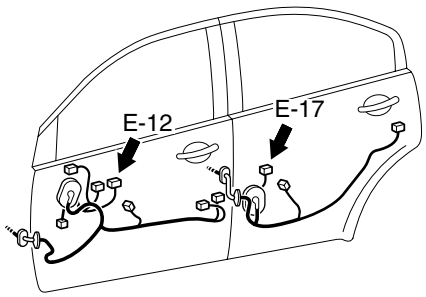
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 22.

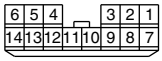
NO : Go to Step 21.

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

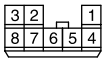
CONNECTORS: E-12, E-17



HARNESS SIDE
E-12

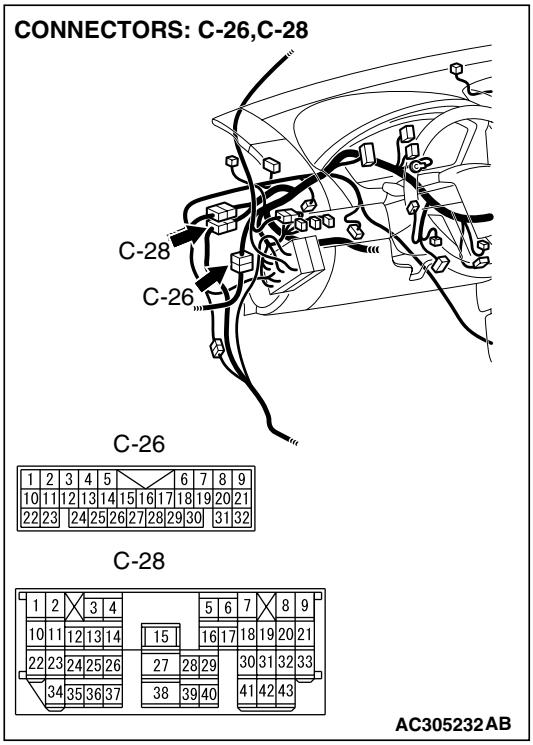


HARNESS SIDE
E-17



AC600886AC

CONNECTORS: C-26,C-28



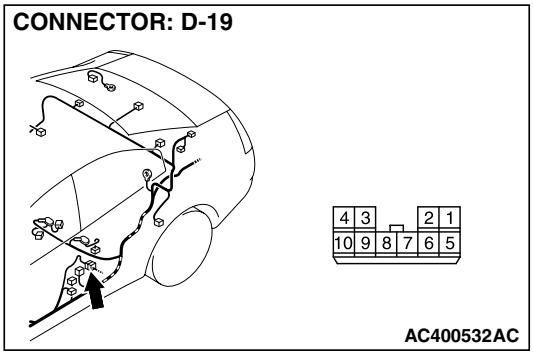
NOTE: Also check intermediate connectors C-26, C-28 and D-19. If intermediate connector C-26, C-28 or D-19 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

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

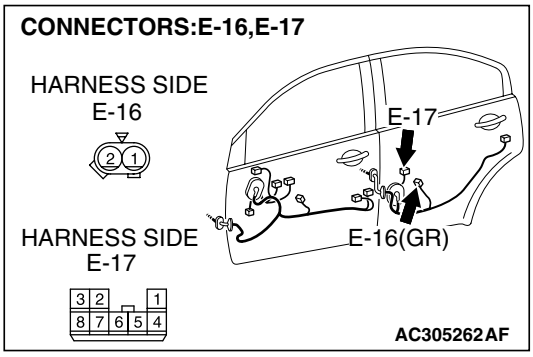
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. When the rear power window sub switch (LH) is operated, the rear power window (LH) should raise and lower normally.

CONNECTOR: D-19



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

CONNECTORS:E-16,E-17



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

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

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

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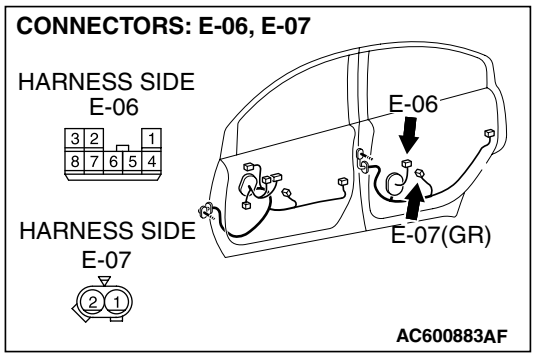
STEP 23. Check rear power window sub switch (RH) connector E-06 and rear power window regulator motor (RH) connector E-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



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

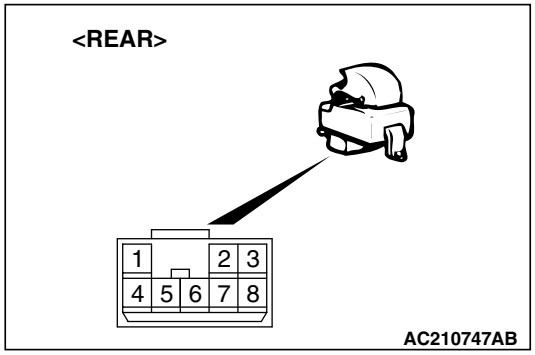
YES : Go to Step 24.

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

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

(1) Remove the rear power window sub switch (RH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

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

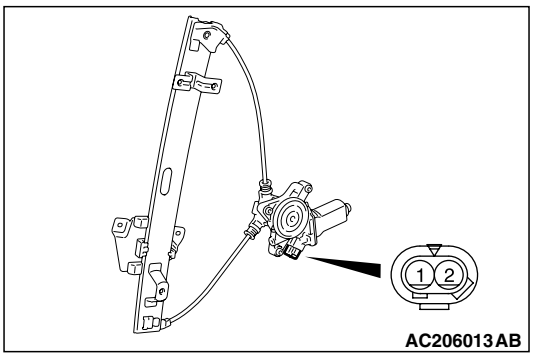


SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UP	4 – 5, 6 – 7	Less than 2 ohms
OFF	4 – 5, 7 – 8	
DOWN	4 – 6, 7 – 8	

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

YES : Go to Step 25.

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



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

(1) Remove the rear power window regulator assembly (RH). Refer to GROUP 42, Door, Door Glass and Regulator P.42-38.

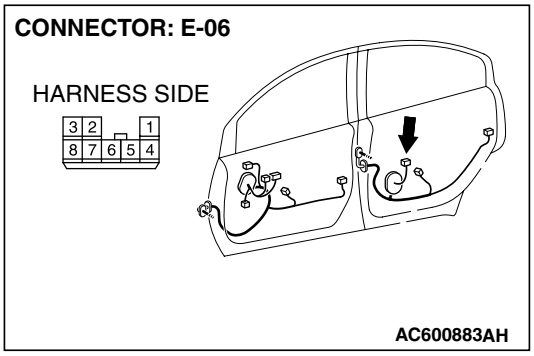
(2) Connect a battery to the motor terminal, and check that the motor runs freely.

BATTERY CONNECTION	SLIDER POSITION
• Connect terminal 1 to the negative battery terminal • Connect terminal 2 to the positive battery terminal	UP
• Connect terminal 2 to the negative battery terminal • Connect terminal 1 to the positive battery terminal	DOWN

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

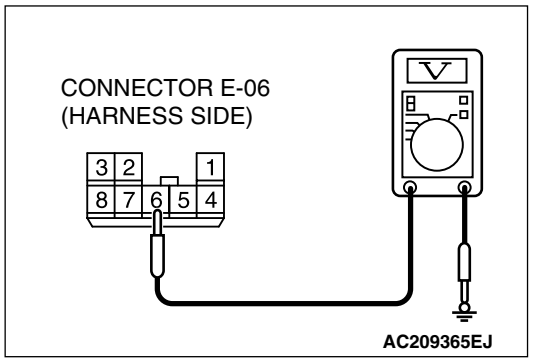
YES : Go to Step 26.

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



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

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

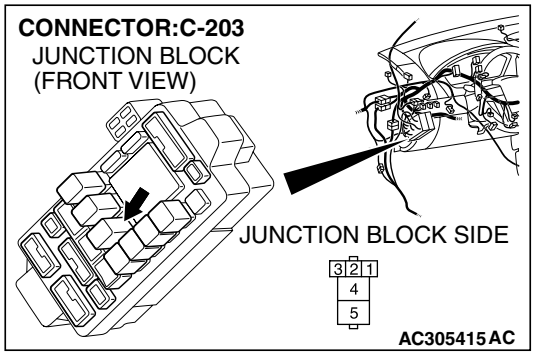


(2) Measure the voltage between terminal 6 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 29.

NO : Go to Step 27.

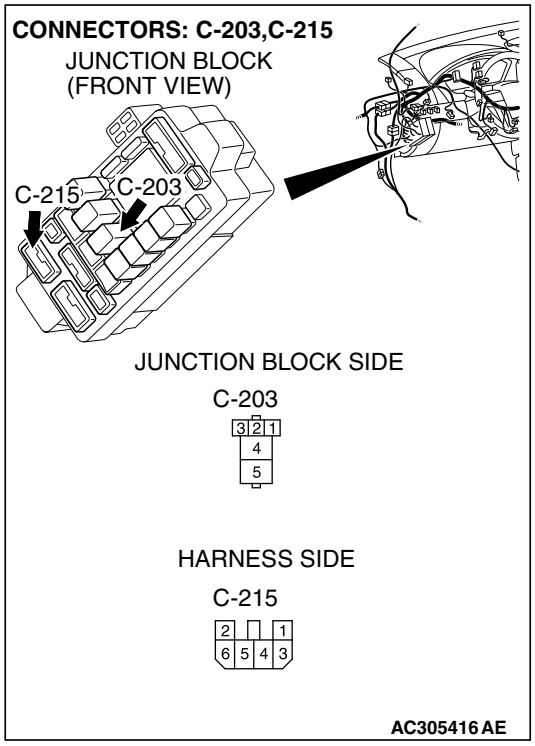


STEP 27. Check power window relay connector C-203 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

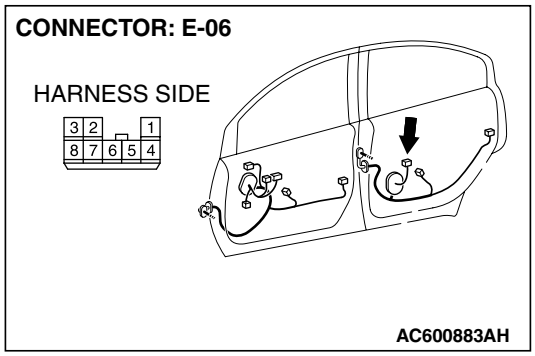
Q: Is power window relay connector C-203 in good condition?

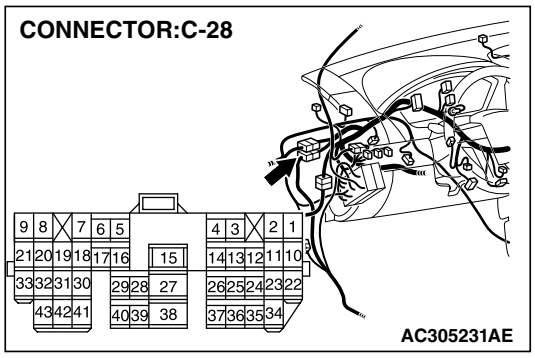
YES : Go to Step 28.

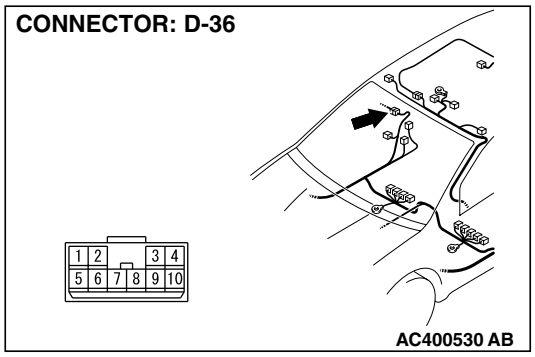
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. When the rear power window sub switch (RH) is operated, the rear power window (RH) should raise and lower normally.



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







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

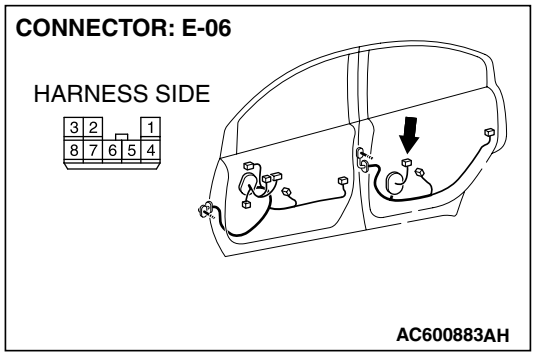
Q: Is the wiring harness between power window relay connector C-203 (terminal 4) and rear power window sub switch (RH) connector E-06 (terminal 6) in good condition?

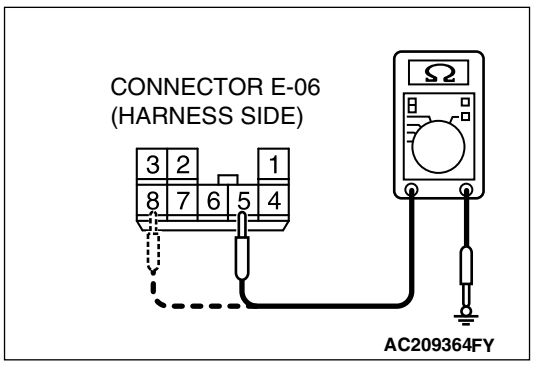
YES : No action is necessary and testing is complete.

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

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

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





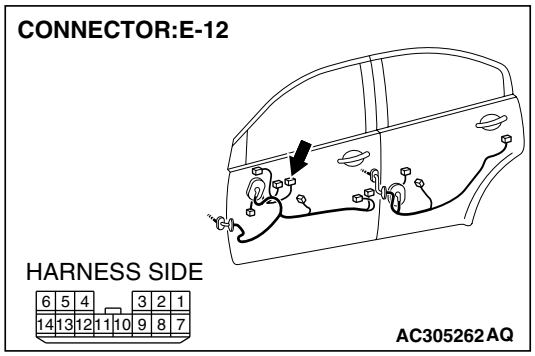
(2) Measure the resistance value between terminal 5 and ground, and also between terminal 8 and ground.
- The resistance should be 2 ohms or less.

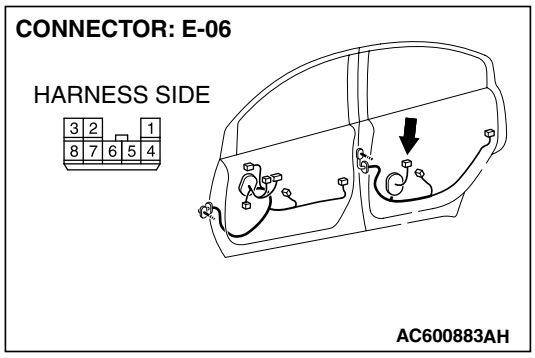
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 31.

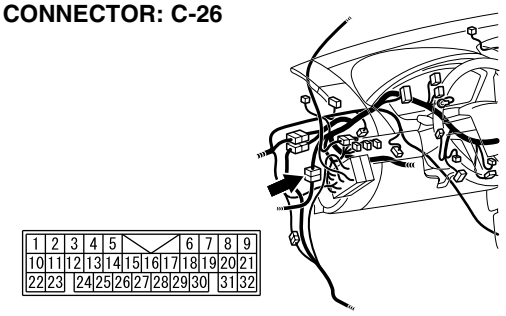
NO : Go to Step 30.

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



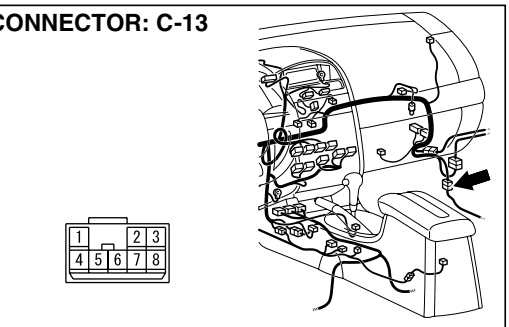


CONNECTOR: C-26



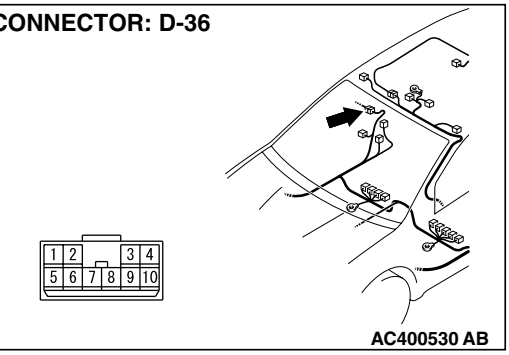
AC305231AF

CONNECTOR: C-13



AC305233 AC

CONNECTOR: D-36



AC400530 AB

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

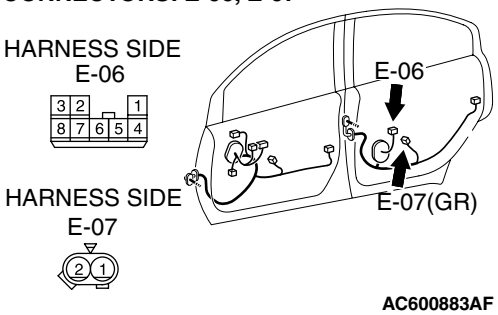
Q: Is the wiring harness between power window main switch connector E-12 (terminals 6 and 4) and rear power window sub switch (RH) connector E-06 (terminals 5 and 8) in good condition?

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

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

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

CONNECTORS: E-06, E-07



AC600883AF

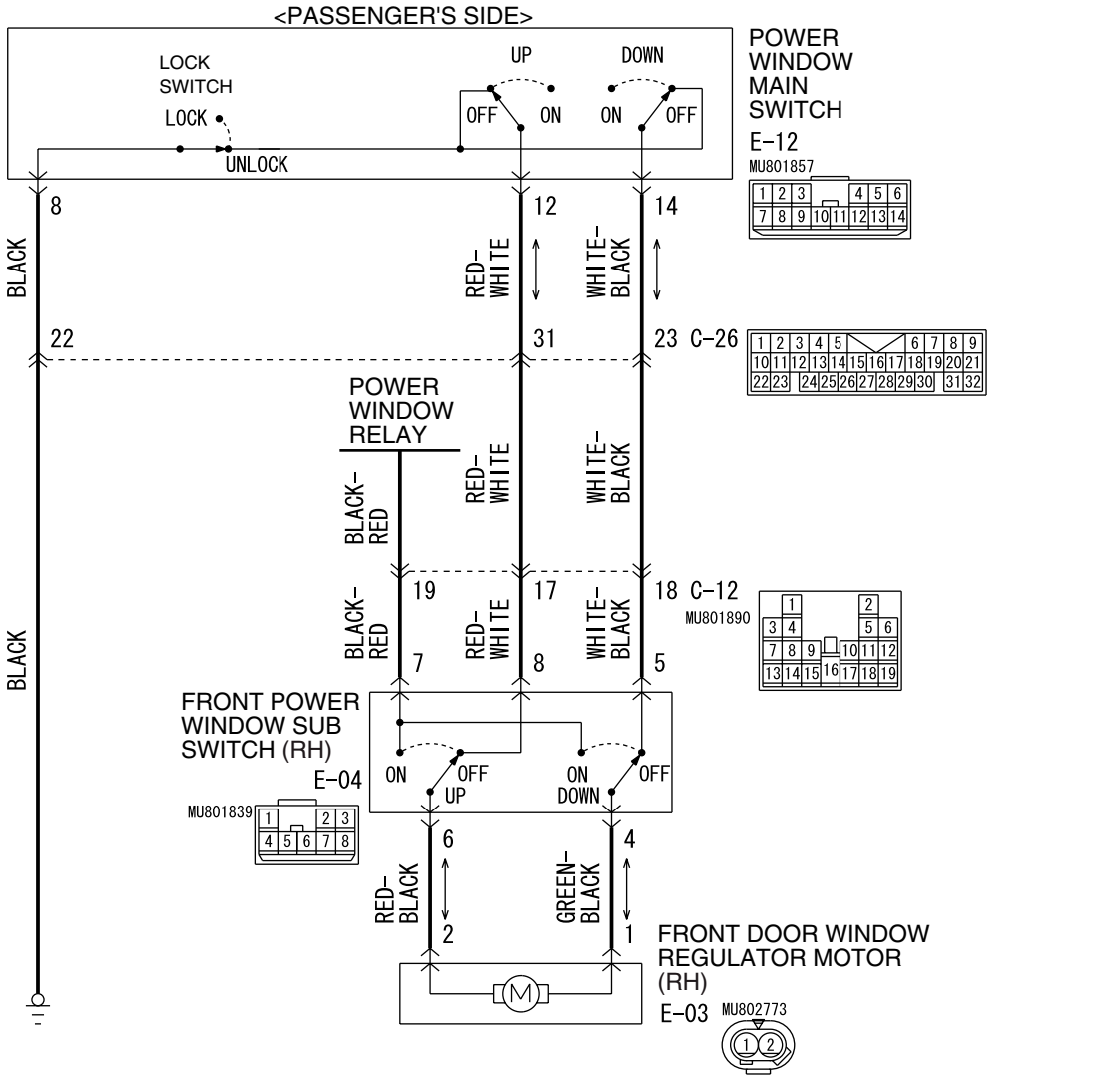
Q: Is the wiring harness between rear power window sub switch (RH) connector E-06 (terminals 4 and 7) and rear power window regulator motor (RH) connector E-07 (terminals 1 and 2) in good condition?

YES : No action is necessary and testing is complete.

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

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

Power Window (front: RH) Circuit



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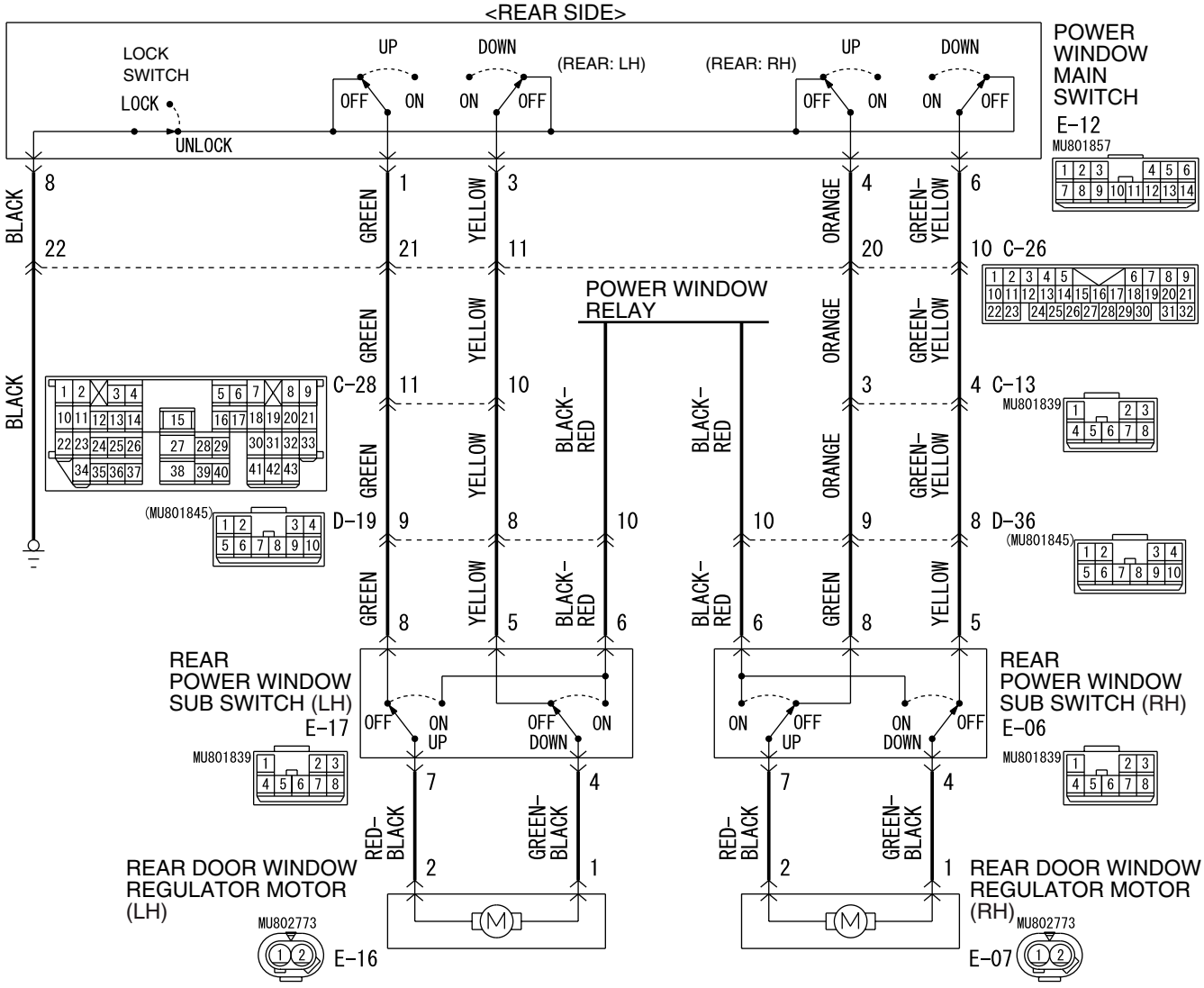
Power Window (rear) Circuit



W7P54M129A

CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINT

The power window main switch may be defective

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DIAGNOSIS

Check that power window sub switches operate normally.

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

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

NO : Refer to Symptom Chart P.54B-61 before resolving this trouble.

KEYLESS ENTRY SYSTEM

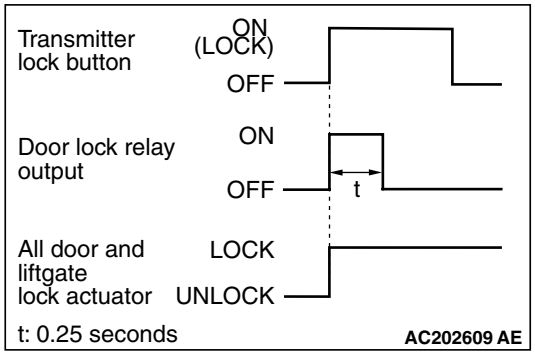
GENERAL DESCRIPTION CONCERNING THE KEYLESS ENTRY SYSTEM

M1549022000330

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

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

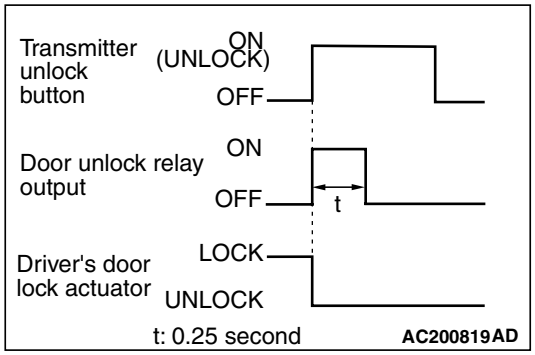
ALL DOOR LOCK FUNCTION



PRESSING THE TRANSMITTER LOCK BUTTON

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

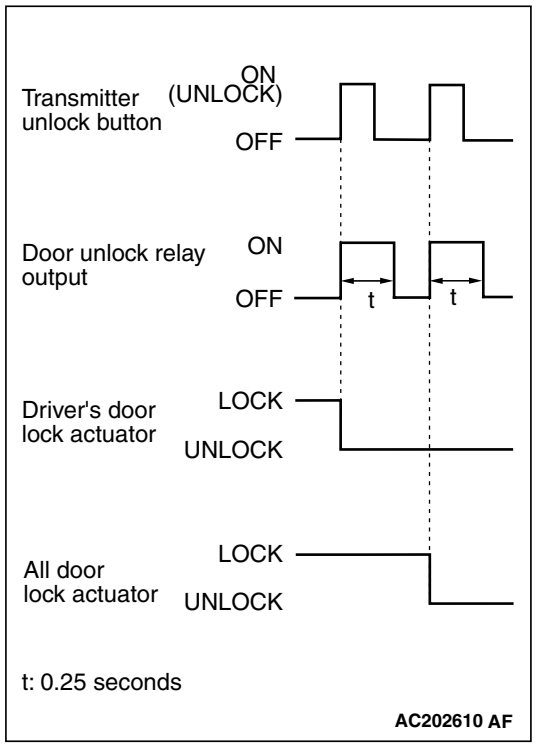
DRIVER'S DOOR UNLOCK FUNCTION



PRESSING THE TRANSMITTER UNLOCK BUTTON ONCE

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

ALL DOOR UNLOCK FUNCTION



PRESSING THE TRANSMITTER UNLOCK BUTTON TWICE

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

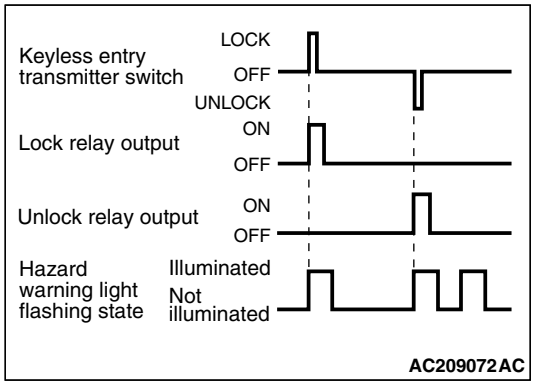
NOTE: If the timed locking function is available, the doors will be locked in 30 seconds after the initial unlocking. Therefore, the second door unlocking should be done within 30 seconds after that initial unlocking.

TRUNK UNLOCK FUNCTION

PRESSING THE TRANSMITTER TRUNK BUTTON

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

KEYLESS ENTRY HAZARD ANSWERBACK AND HORN ANSWERBACK FUNCTION

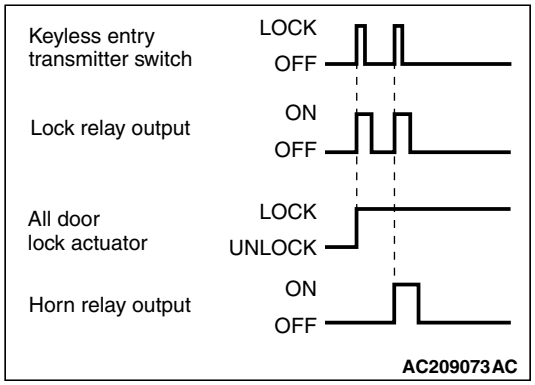


KEYLESS ENTRY HAZARD ANSWERBACK FUNCTION*1

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

*NOTE: *1: The hazard answerback function can be customized using the keyless entry transmitter (Refer to Group 42 P.42-69, Keyless Entry System) or by using the multi center display (middle grade type). Refer to P.54B-587.*

*NOTE: *2: Vehicles with a multi center display (middle grade type) can be customized so that a single unlock operation will unlock all doors. Refer to P.54B-587.*



KEYLESS ENTRY HORN ANSWERBACK FUNCTION

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

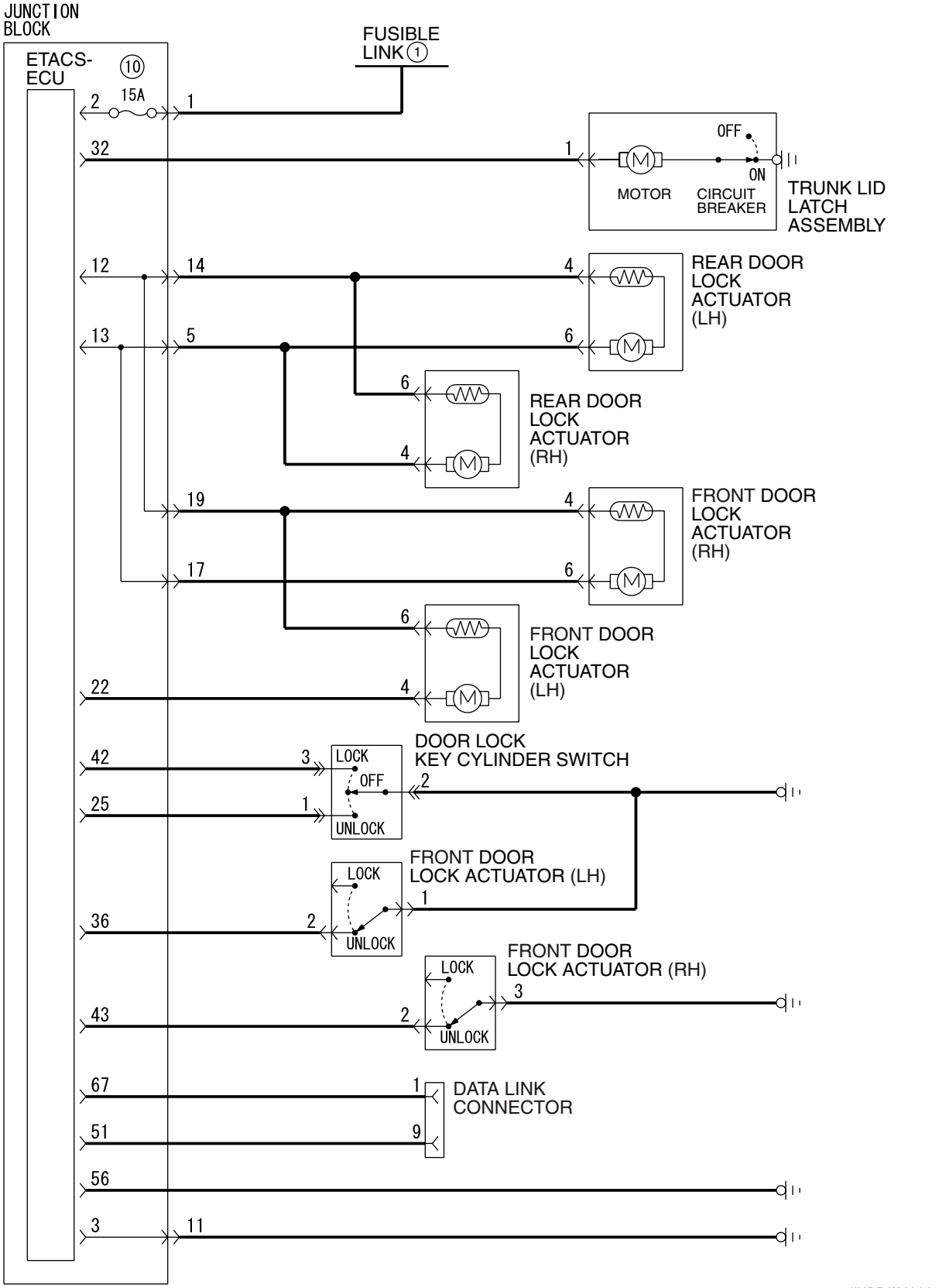
NOTE: : The horn answerback function can be customized by using the keyless entry transmitter (Refer to Group 42 P.42-69, Keyless Entry System) or by using the multi center display (middle grade type). Refer to P.54B-587.

TIMED LOCKING MECHANISM

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

NOTE: The timed locking function can be customized on vehicles equipped with a multi center display (middle grade type). Refer to P.54B-587.

GENERAL CIRCUIT DIAGRAM FOR THE KEYLESS ENTRY SYSTEM



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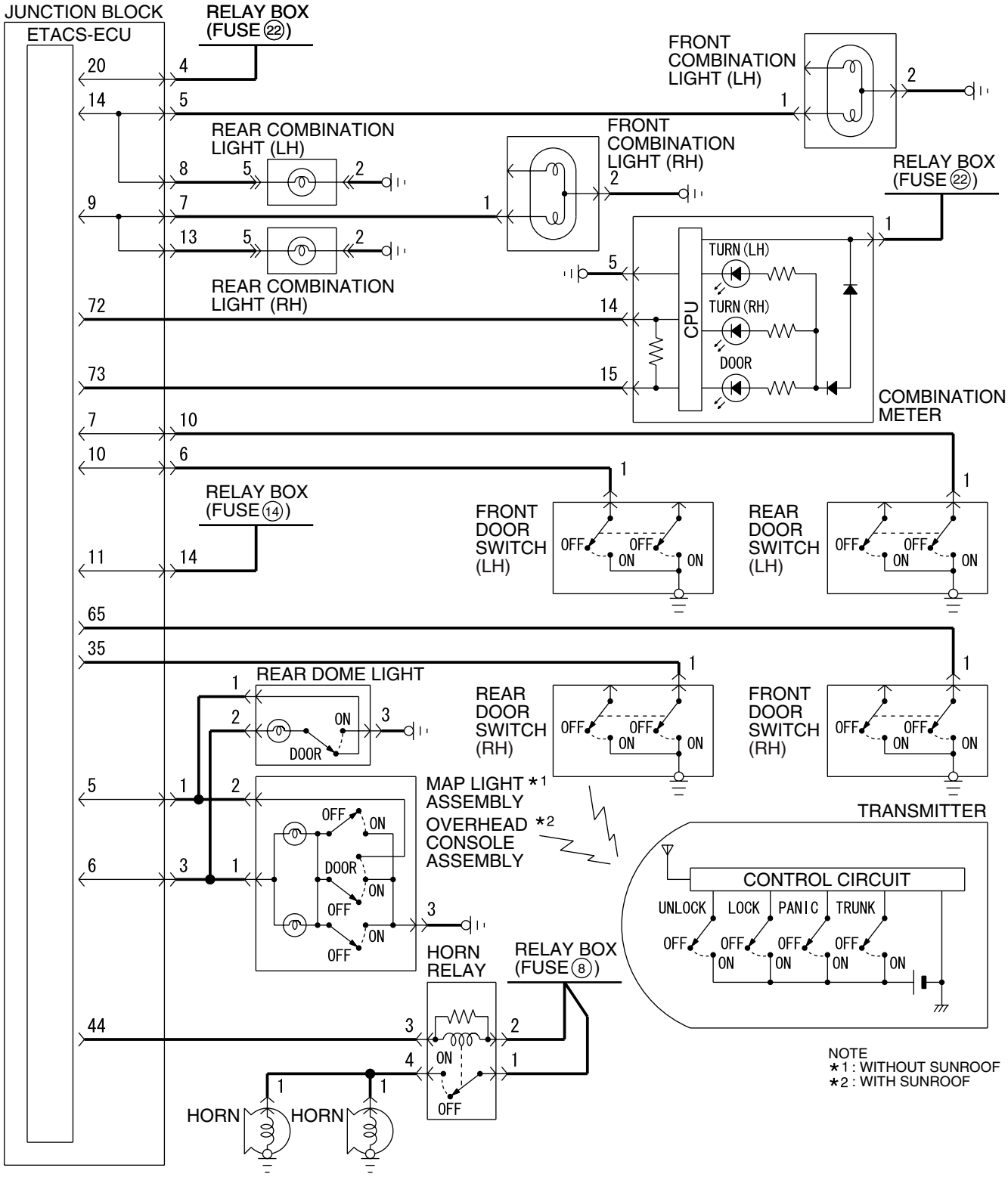

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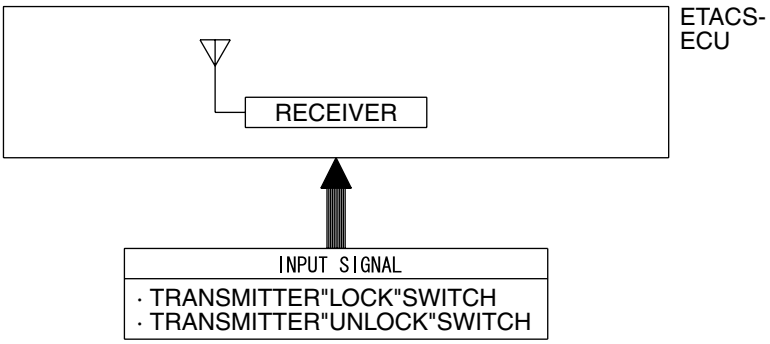
INSPECTION PROCEDURE E-1: Keyless Entry System: Keyless entry system does not operate.

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



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

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

DIAGNOSIS

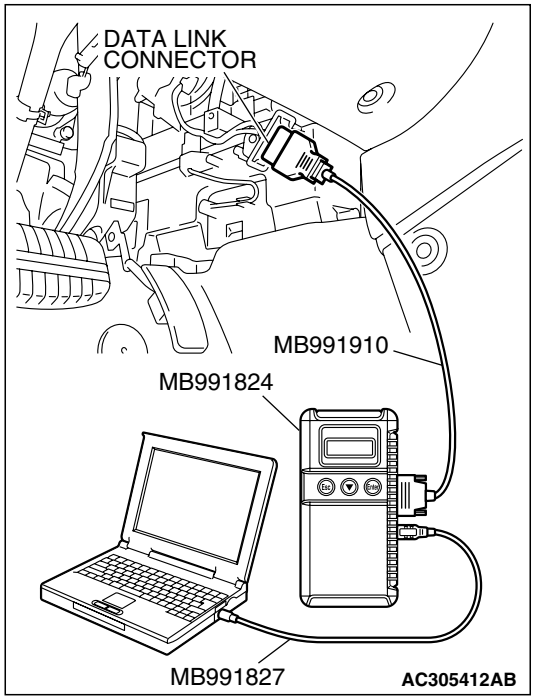
Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Verify the central door locking system.

Q: Does the central door locking system work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure C-1 "The central door locking system does not work at all P.54B-141."



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-17."
(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

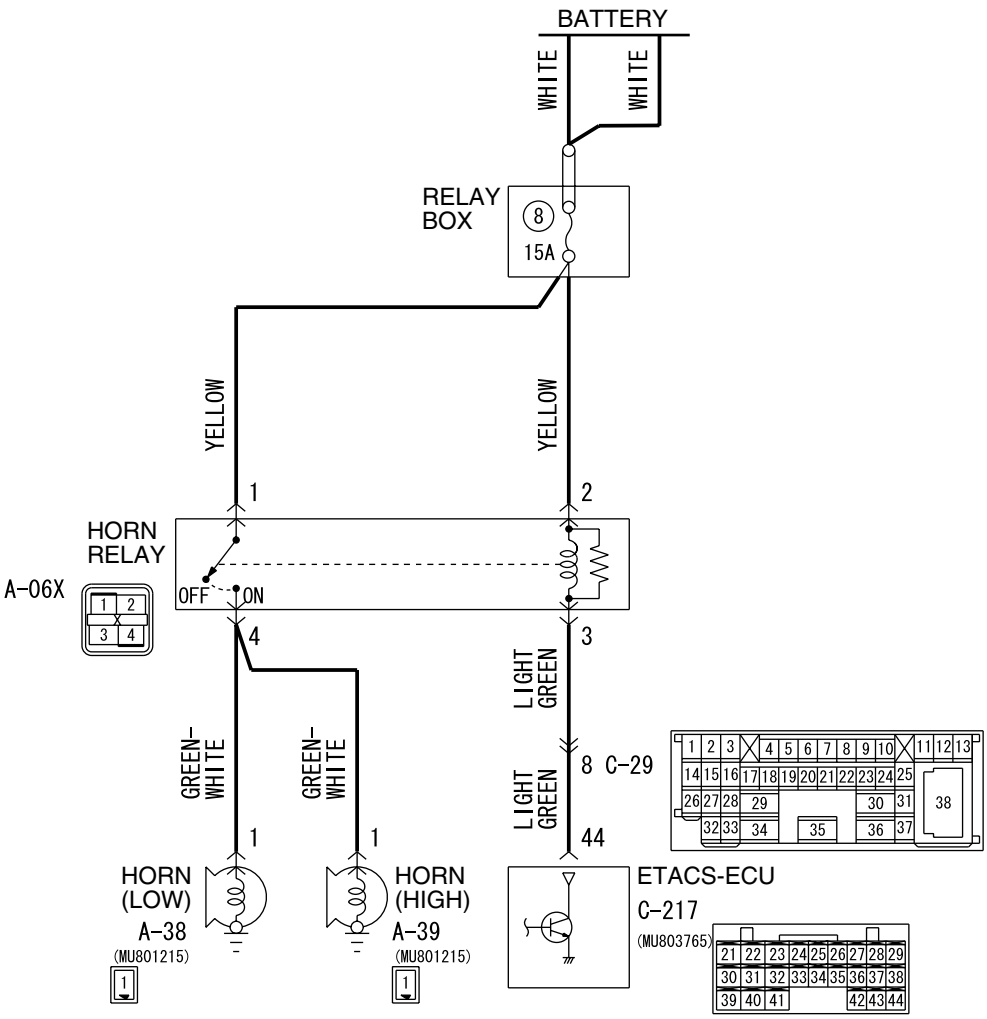
Q: When the transmitter "LOCK" or "UNLOCK" button is turned ON, does scan tool MB991958 sound?

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-11. 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, trunk or panic switch P.54B-570."

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



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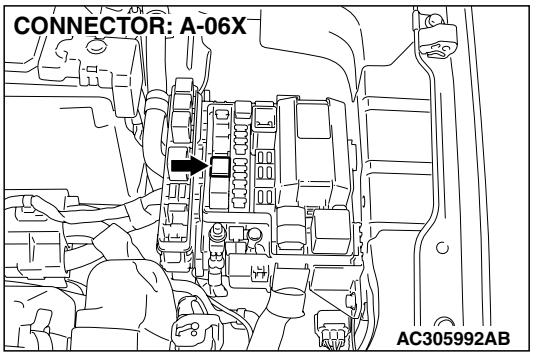

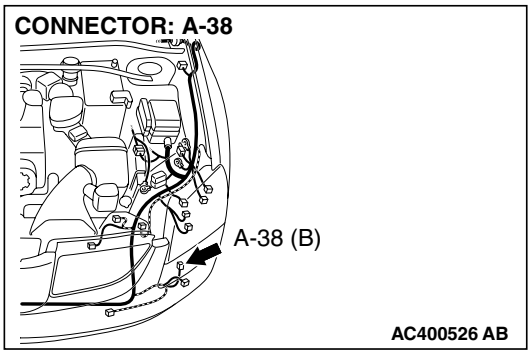

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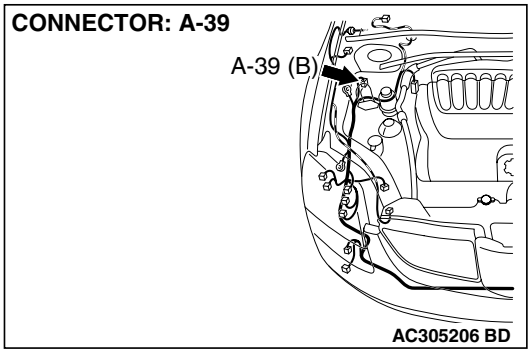

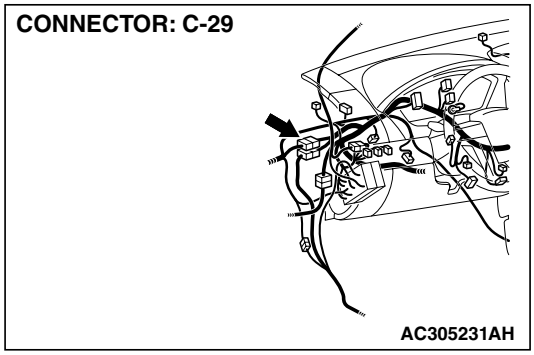

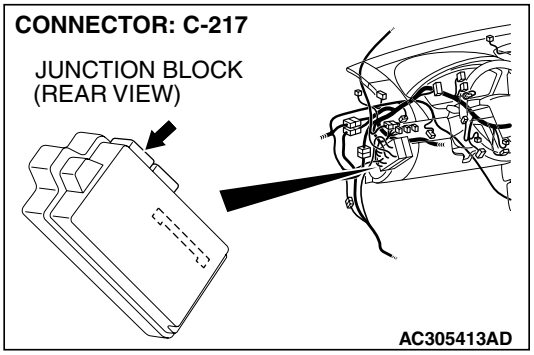

CIRCUIT OPERATION

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

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

STEP 1. Verify the keyless entry system.

Q: Does the keyless entry system work normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate P.54B-222."

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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-11. 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-11. Verify that the answerback functions work normally.

NO : Refer to Inspection Procedure K-1 "The dome light do not illuminate and go out normally P.54B-426."

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-11. Verify that the answerback functions work normally.

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

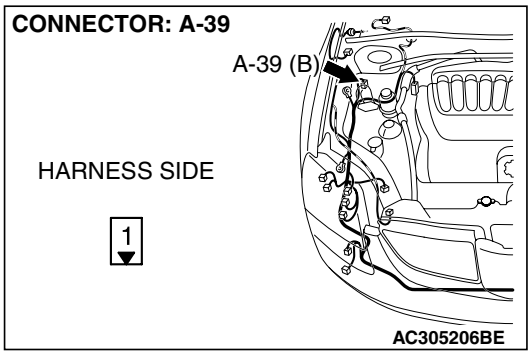
STEP 6. Verify which horn is defective.

Q: Which horn does not sound?

Horn (HIGH) : Go to Step 7.

Horn (LOW) : Go to Step 11.

Both horns : Go to Step 15.

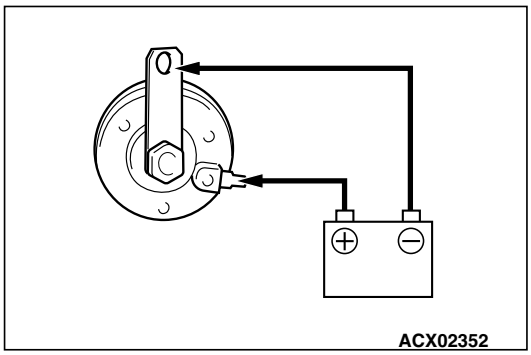


STEP 7. Check horn connector A-39 (HIGH) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 8.

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



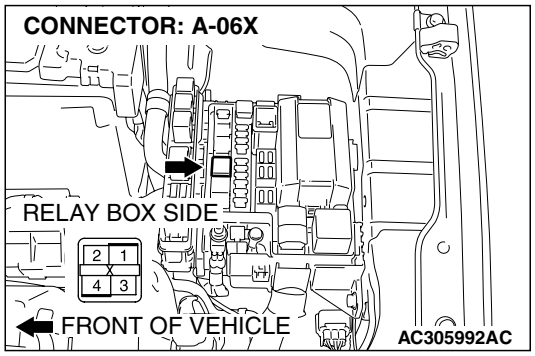
STEP 8. Check the horn (HIGH).

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

Q: Is the horn normal?

YES : Go to Step 9.

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

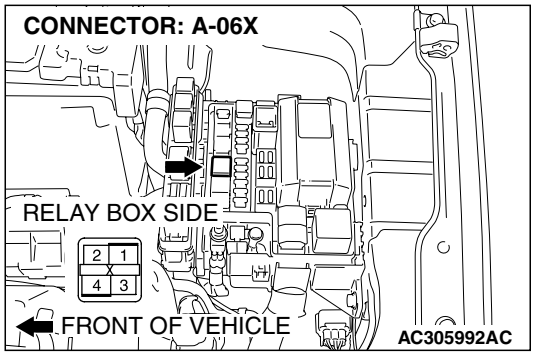


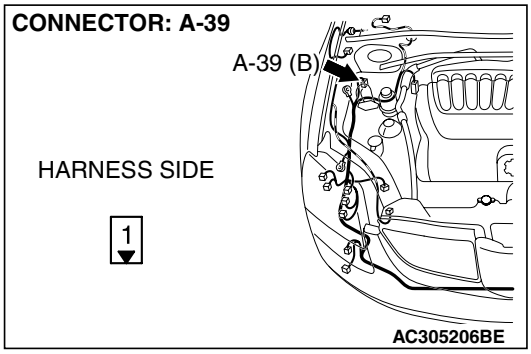
STEP 9. Check horn relay connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 10.

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



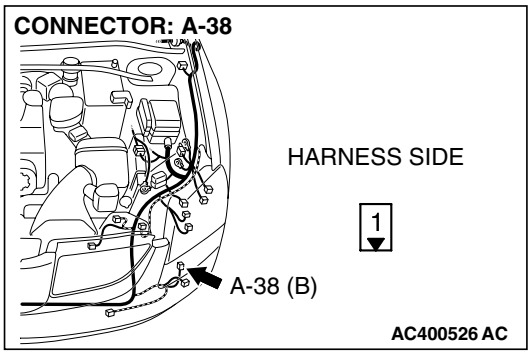


STEP 10. Check the wiring harness between horn relay connector A-06X (terminal 4) and horn (HIGH) connector A-39 (terminal 1).

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

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Verify that the horn sounds normally.

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

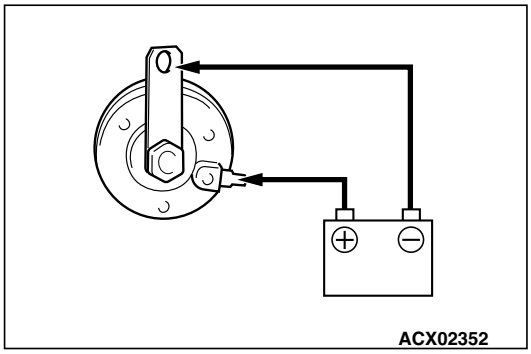


STEP 11. Check horn connector A-38 (LOW) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 12.

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



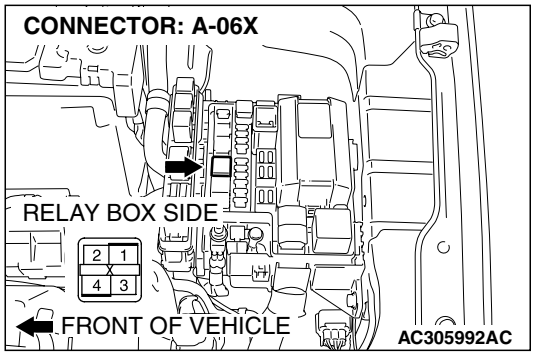
STEP 12. Check the horn (LOW).

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

Q: Is the horn normal?

YES : Go to Step 13.

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

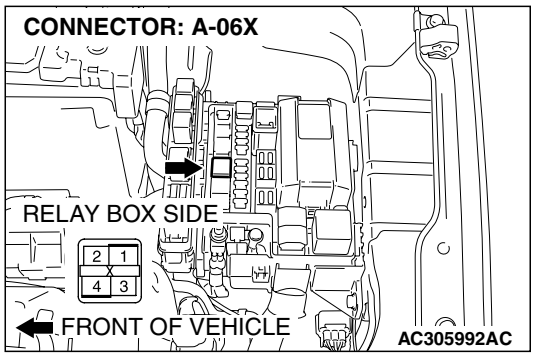


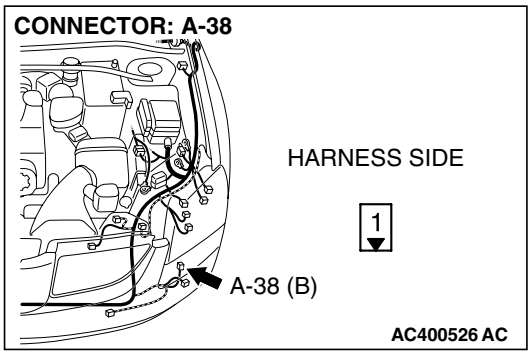
STEP 13. Check horn relay connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 14.

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



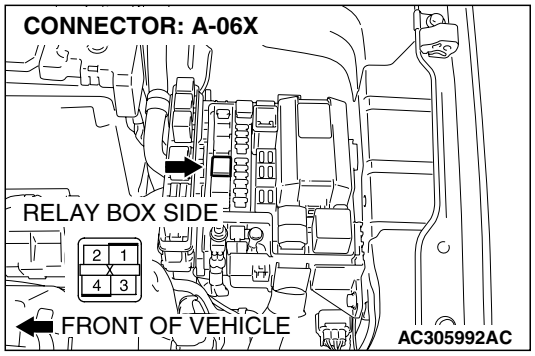


STEP 14. Check the wiring harness between horn relay connector A-06X (terminal 4) and horn (LOW) connector A-38 (terminal 1).

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

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Verify that the horn sounds normally.

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

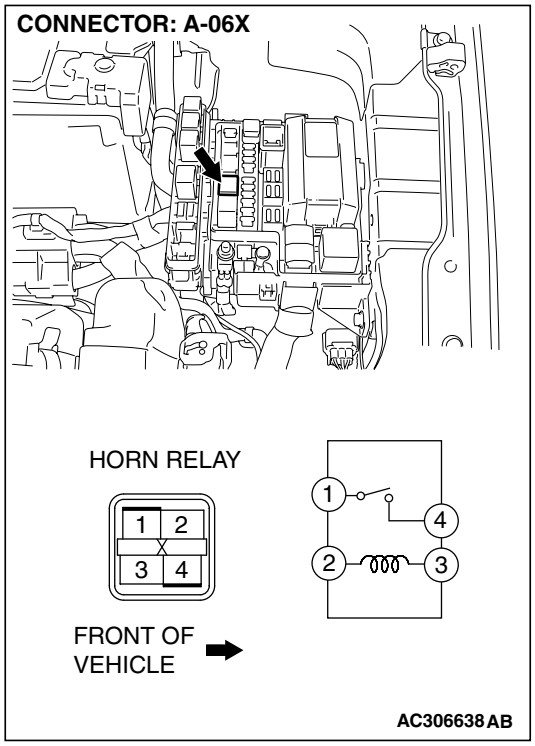


STEP 15. Check horn relay connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 16.

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



STEP 16. Check the horn relay.

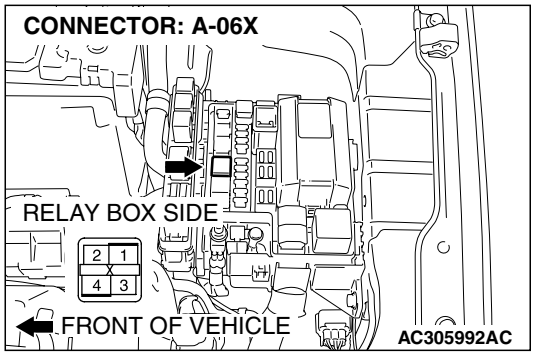
BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	1 – 4	Open circuit
• Connect terminal 2 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	1 – 4	Less than 2 ohms

Q: Is the horn relay normal?

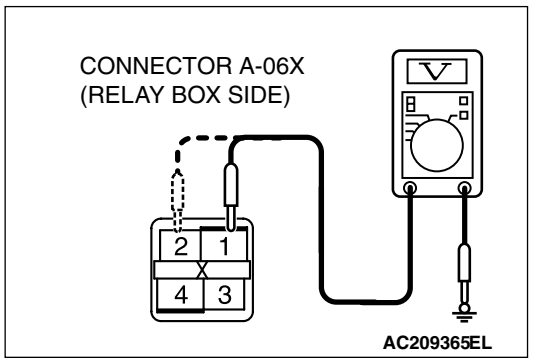
YES : Go to Step 17.

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-06X.



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

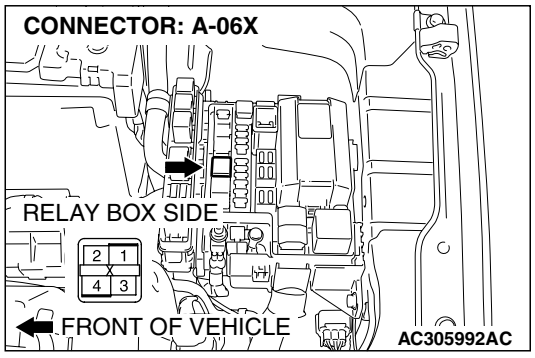


(2) Measure the voltage between terminal 1 and ground, and also between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

YES : Go to Step 19.
NO : Go to Step 18.

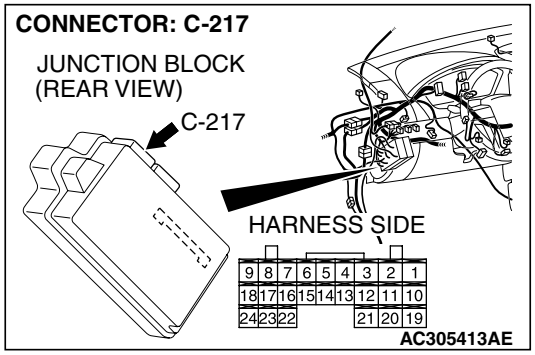
STEP 18. Check the wiring harness between horn relay connector A-06X (terminals 1 and 2) and the battery.



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

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

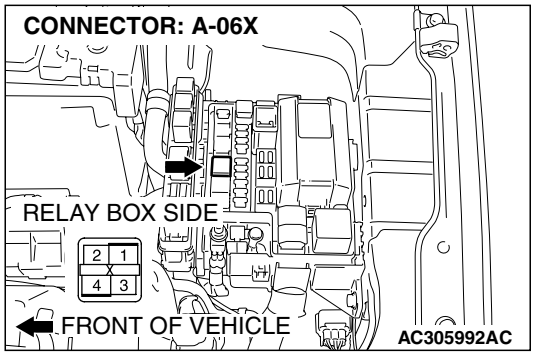
STEP 19. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

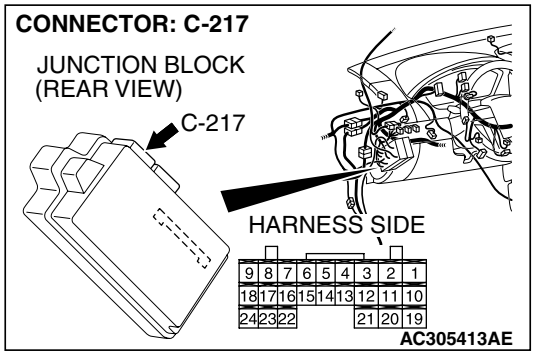


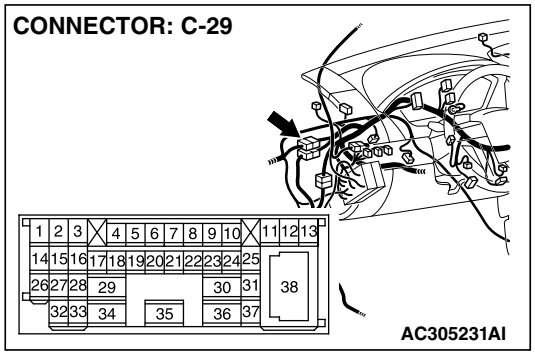
Q: Is ETACS-ECU connector C-217 in good condition?

YES : Go to Step 20.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the horn sounds normally.

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





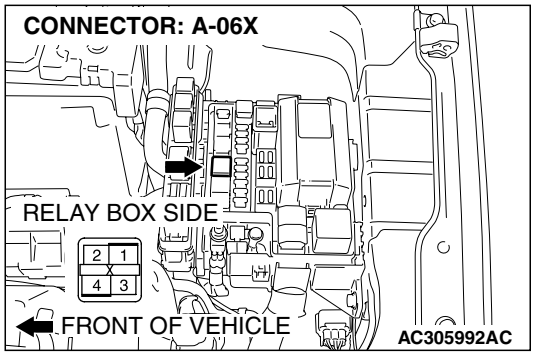


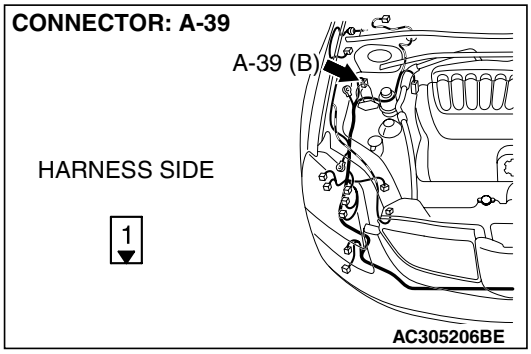
NOTE: Also check intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

YES : Go to Step 21.

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





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

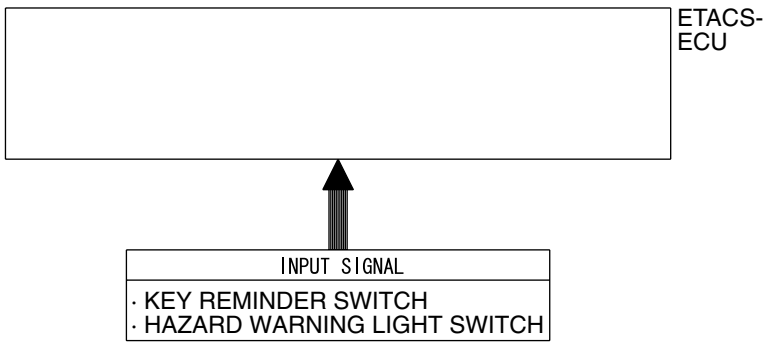
Q: Is the wiring harness between horn relay connector A-06X (terminal 4) and horn (HIGH) connector A-39 (terminal 1) in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. 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



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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.

TSB Revision

TROUBLESHOOTING HINTS

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

DIAGNOSIS

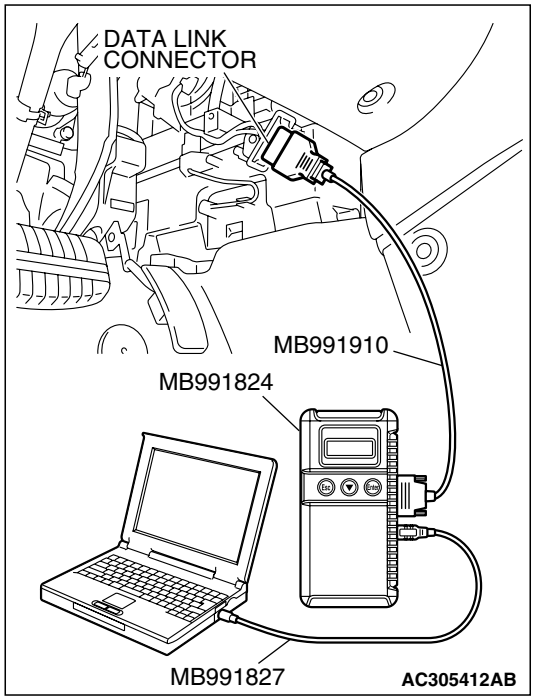
Required Special Tools:

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

STEP 1. Verify trouble symptom.

Q: Can the encrypted code register mode be set?

YES : Go to Step 3.
NO : Go to Step 2.



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

Check the input signals from the following switches:

- Key reminder switch
- Hazard warning light switch

⚠ CAUTION

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

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."

(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-11. 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-525."

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-529."

STEP 3. Check the transmitter.

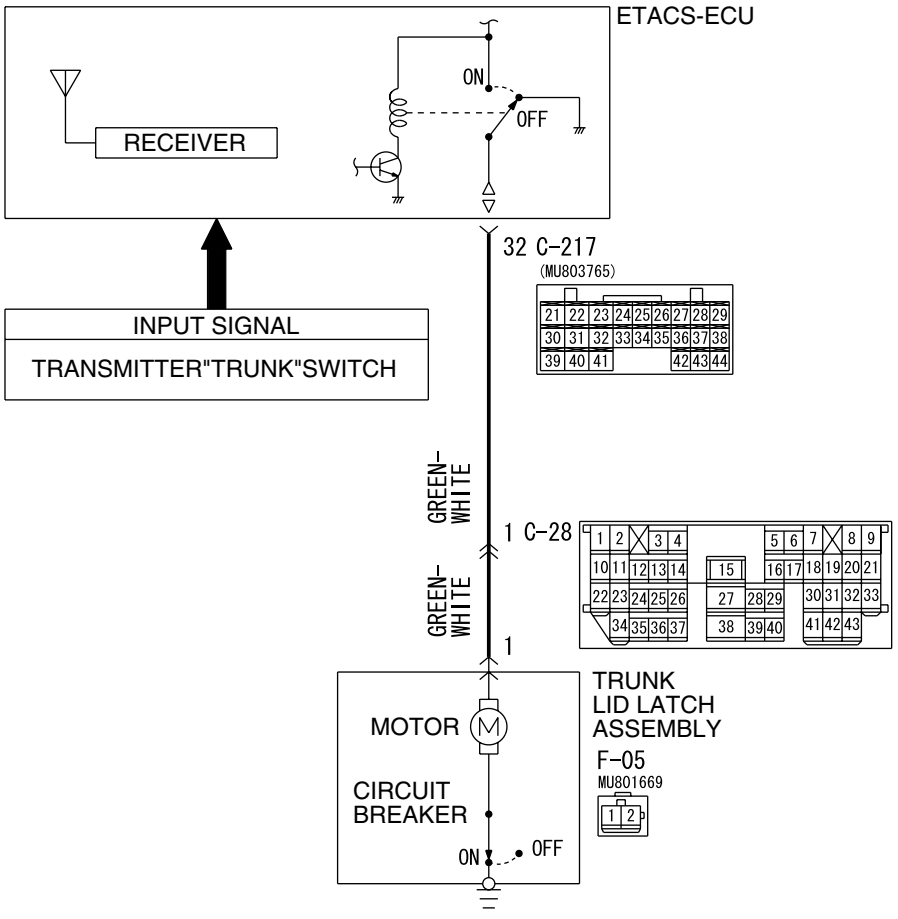
Q: When the transmitter's battery is replaced, can the encrypted code be registered?

YES : No action is necessary and testing is complete.

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

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

Transmitter "TRUNK" Input Signal



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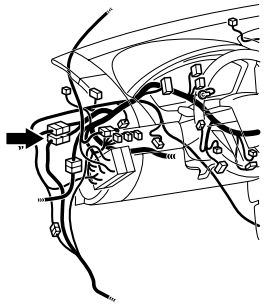
CONNECTOR: C-28



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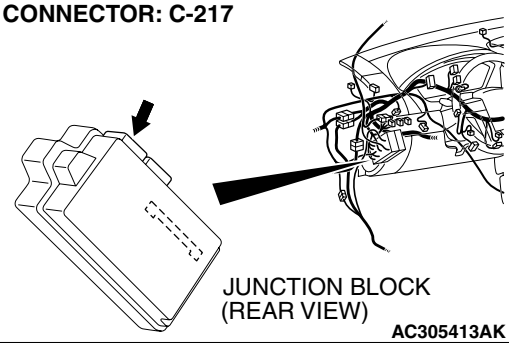
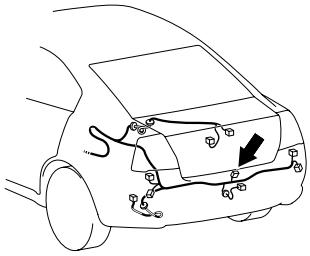
CONNECTOR: C-217



AC305413AK

CONNECTOR: F-05



AC305260AC

CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

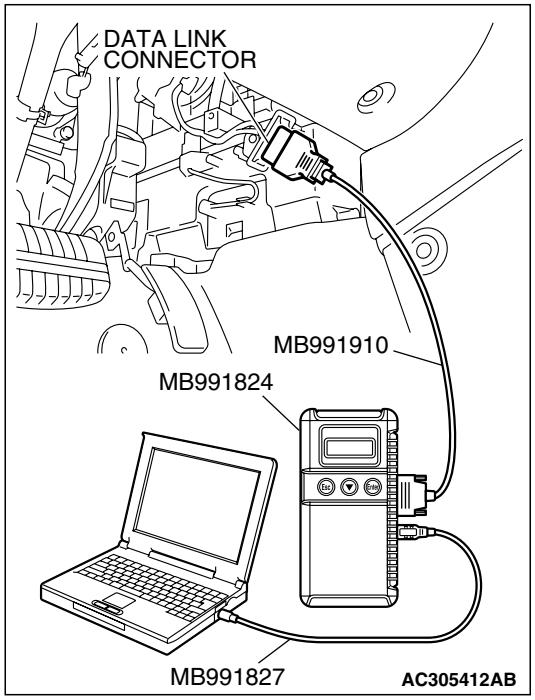
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

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

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate P.54B-222."



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

Check input signals from the transmitter.

⚠ CAUTION

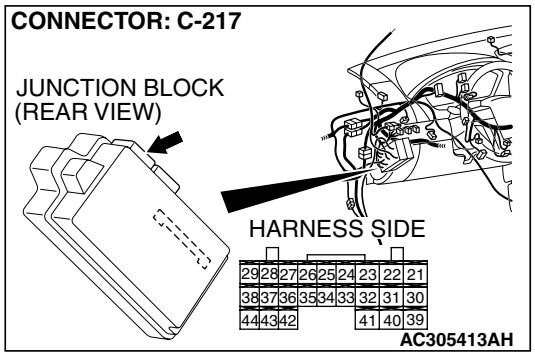
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."
(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "Pulse Checking."
(3) Push the transmitter "TRUNK" button.
(4) Check that scan tool MB991958 sounds

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

YES : Go to Step 3.

NO : Refer to Inspection Procedure N-8 "ETACS-ECU does not receive any signal from the lock, unlock, trunk or panic switch P.54B-570."

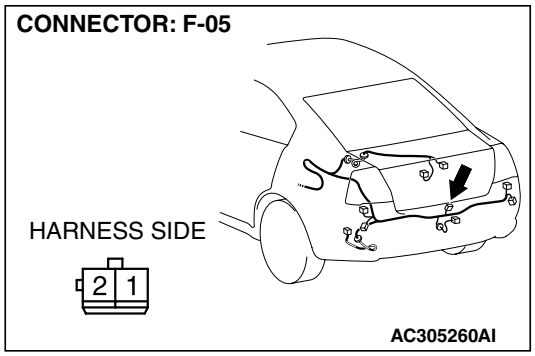


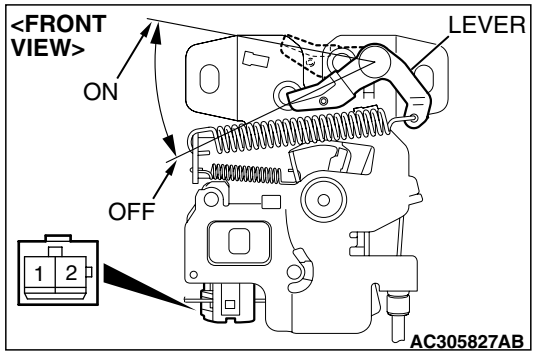
STEP 3. Check trunk lid latch assembly connector F-05 and ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 4.

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





STEP 4. Check the trunk lid latch assembly.

Remove the trunk lid latch assembly. Refer to GROUP 42, Trunk lid, Trunk lid latch inspection P.42-64.

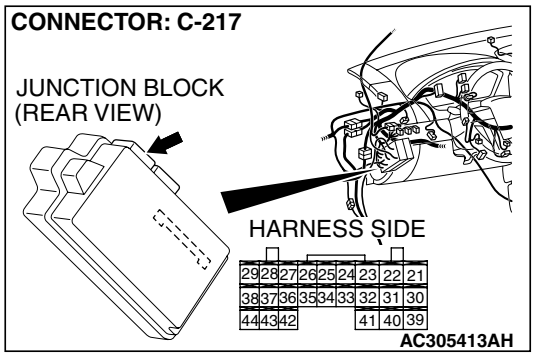
LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
ON (Latch open)	2 – Ground	Less than 2 ohms
OFF (Latch shut)	2 – Ground	Open circuit

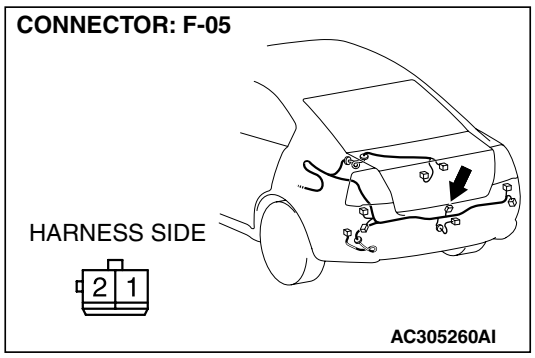
Q: Does the windshield washer motor operate normally?

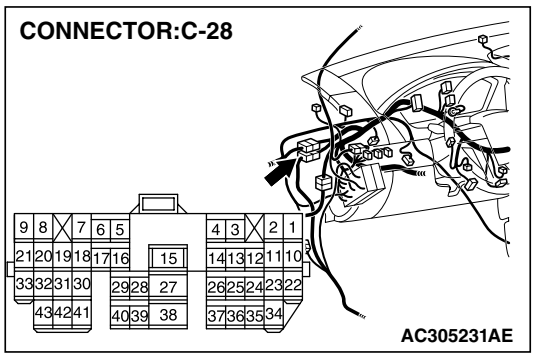
YES : Go to Step 5.

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

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







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

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

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. All the doors can be locked or unlocked by means of the transmitter.

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

SUNROOF

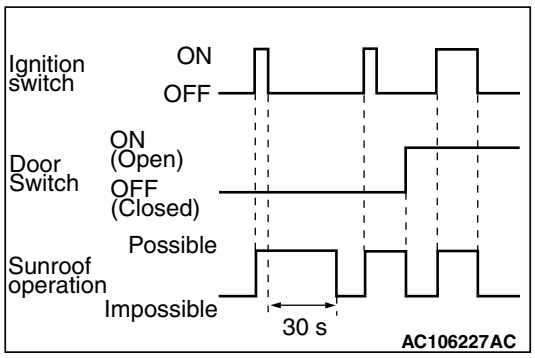
GENERAL DESCRIPTION CONCERNING THE SUNROOF

M1549021200290

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

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

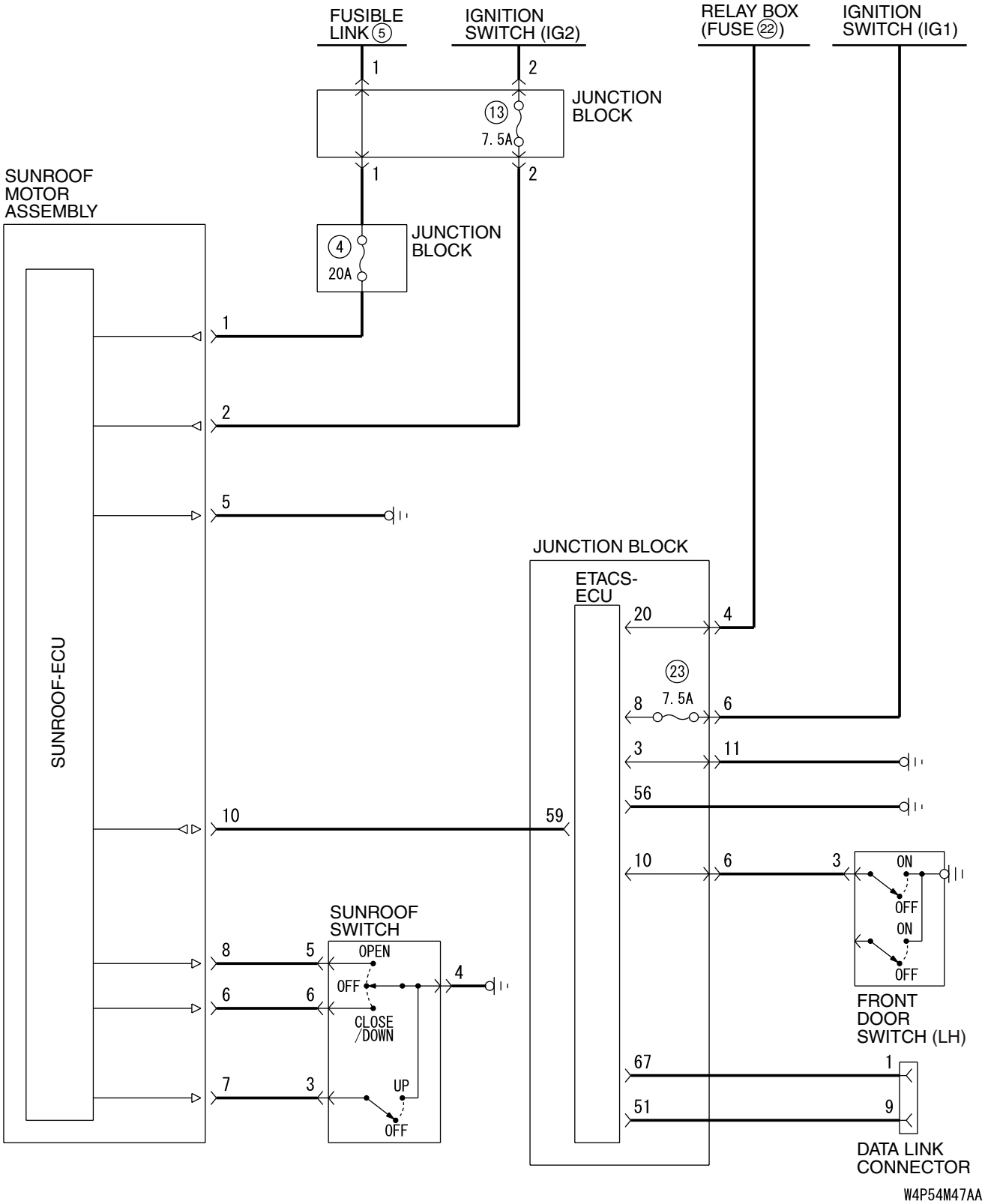
TSB Revision



Sunroof timer function

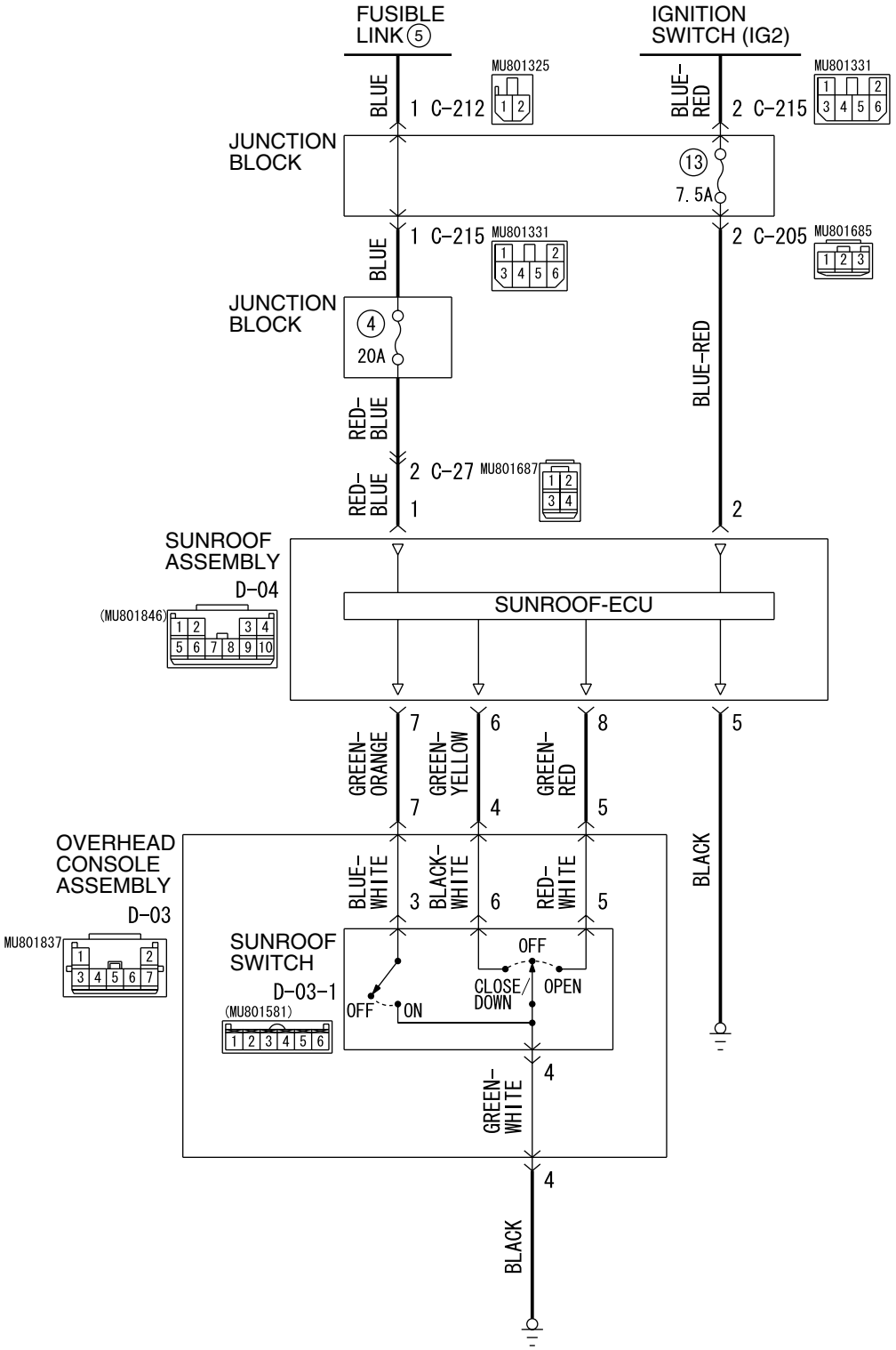
The ETACS-ECU enables opening and closing of the sunroof for 30 seconds after the ignition is switched off.
During this timed operation, if the driver's door or passenger's door is opened, the sunroof timer function is deactivated from that moment.

GENERAL CIRCUIT DIAGRAM REGARDING THE SUNROOF



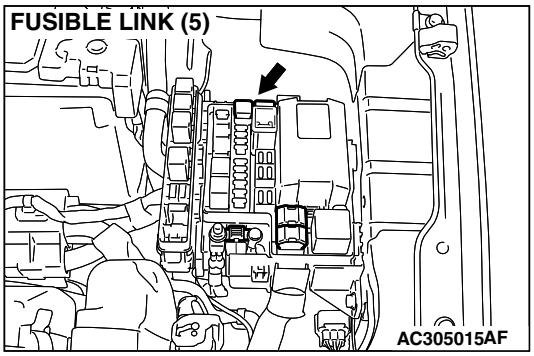
INSPECTION PROCEDURE F-1: Sunroof: Sunroof does not operate.

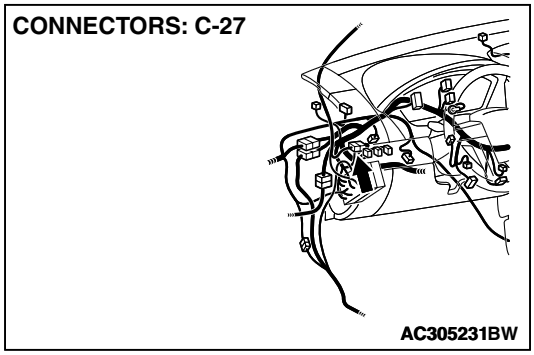
Sunroof Motor Assembly Power Supply Circuit

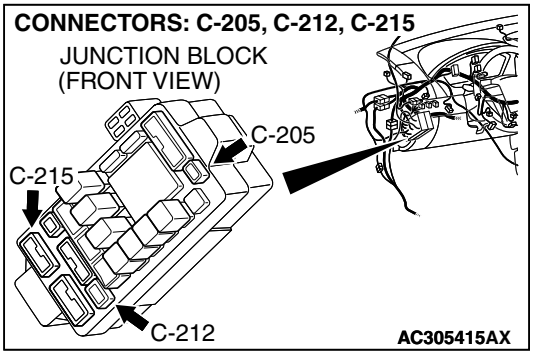


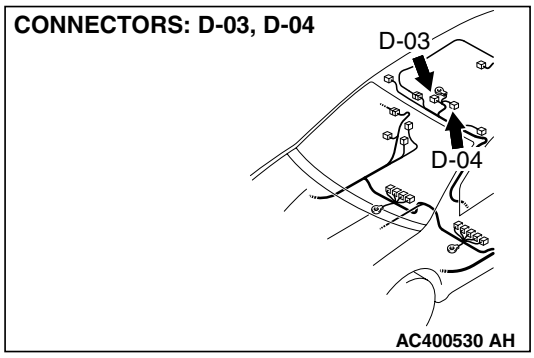
W4P54M200A

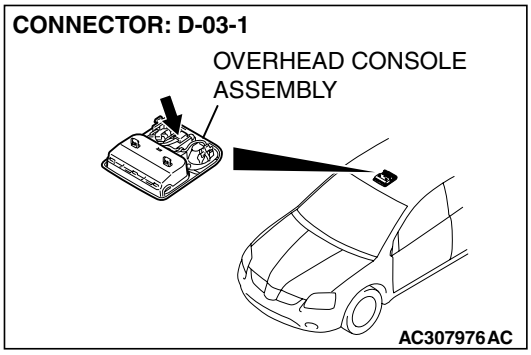
TSB Revision











CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

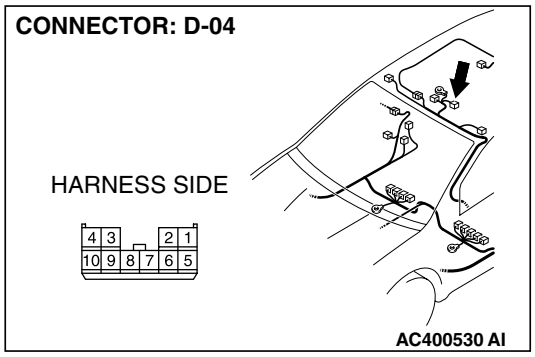
- The sunroof switch may be defective
- The sunroof motor assembly may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

TSB Revision

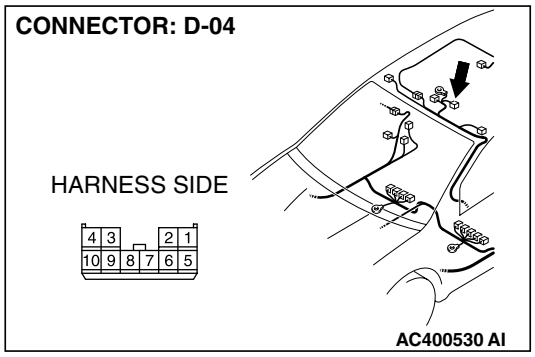


STEP 1. Check sunroof motor assembly connector D-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

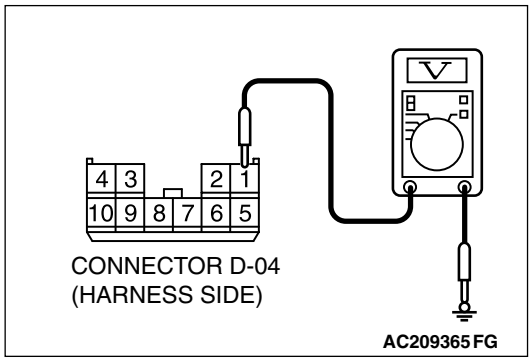
YES : Go to Step 2.

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



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

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



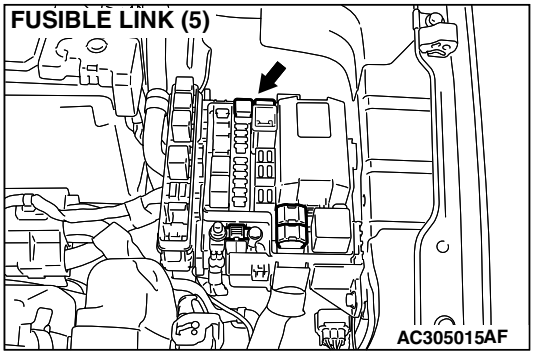
(2) Measure the voltage between terminal 1 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

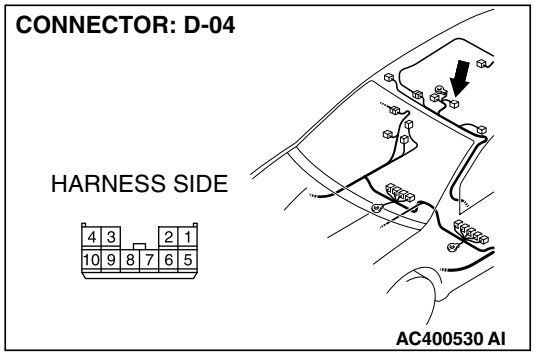
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

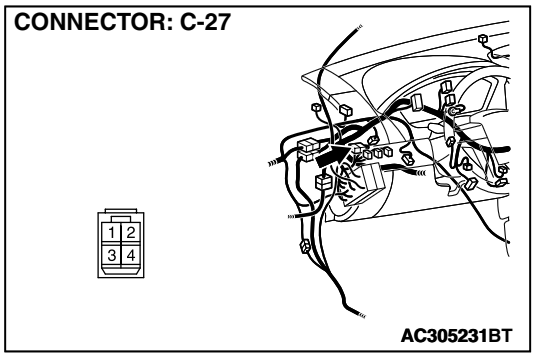
YES : Go to Step 4.

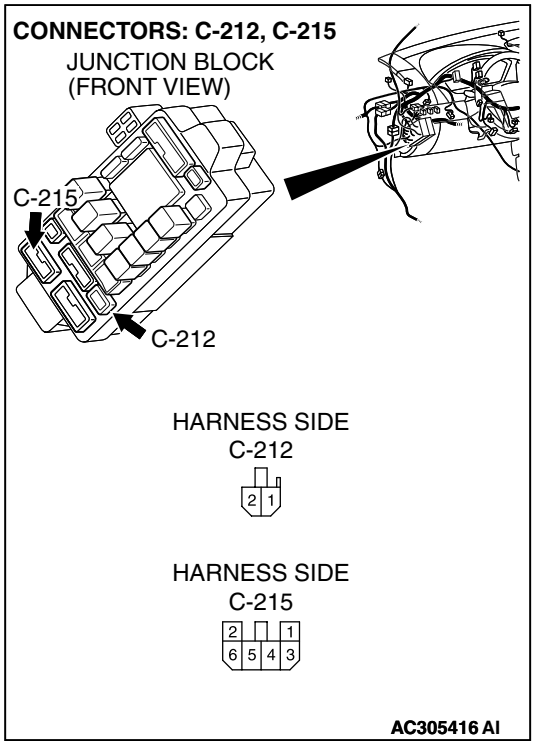
NO : Go to Step 3.

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









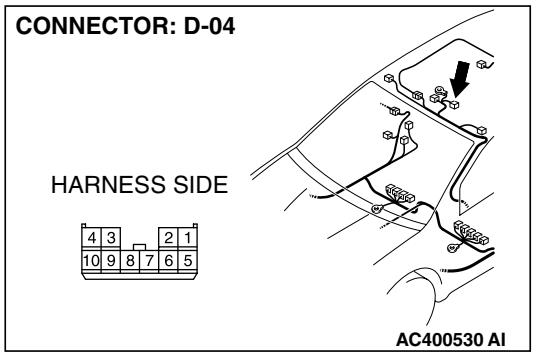
NOTE: Also check junction block connectors C-212, C-215 and intermediate connector C-27 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-212, C-215 or intermediate connector C-27 is damaged, repair or replace the damaged component(s)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

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

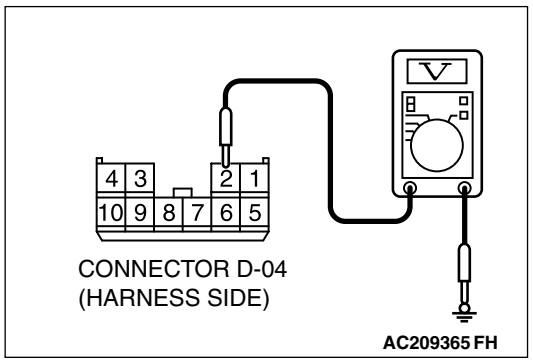
YES : No action is necessary and testing is complete.

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

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



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

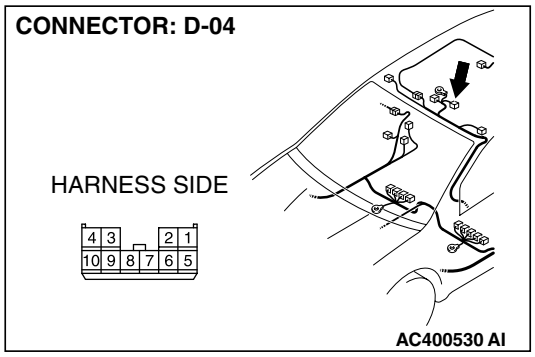


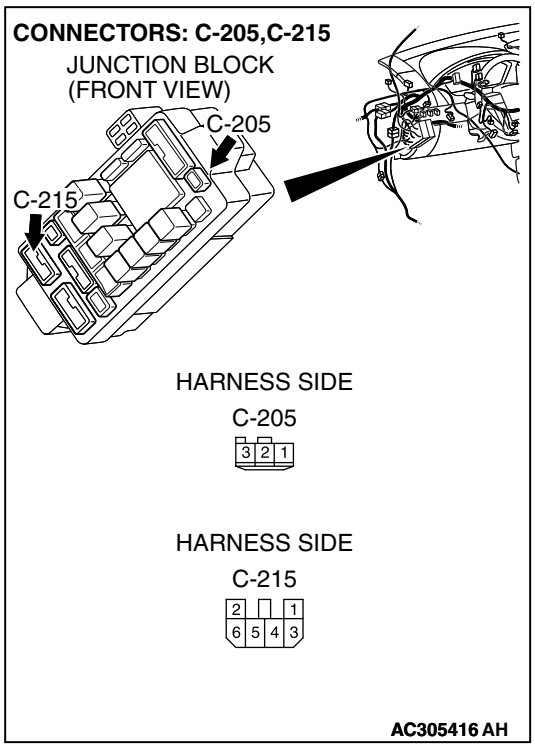
(3) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

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





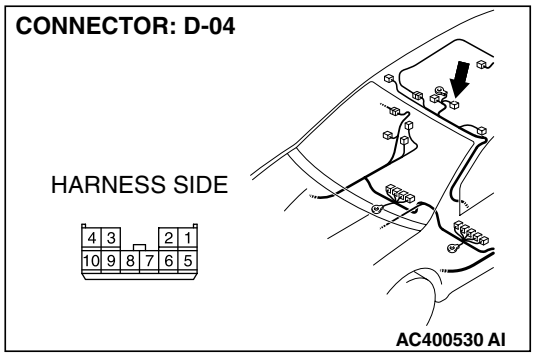
NOTE: Also check junction block connectors C-215 and C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 or C-205 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

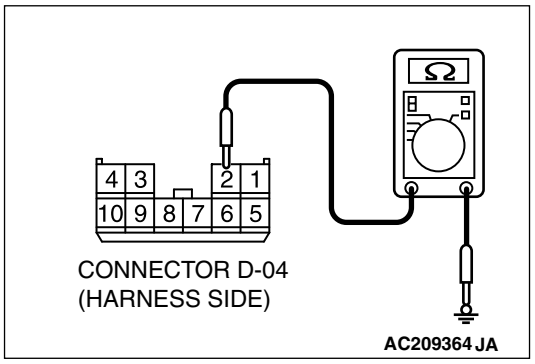
YES : No action is necessary and testing is complete.

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

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



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

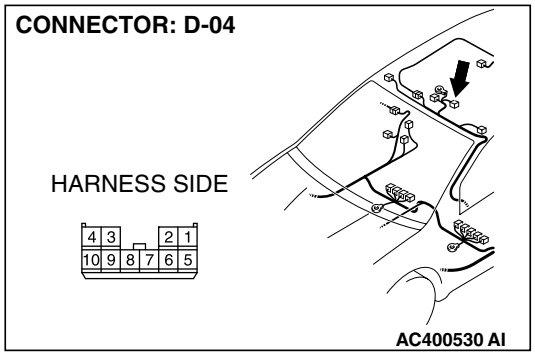


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.

NO : Go to Step 7.

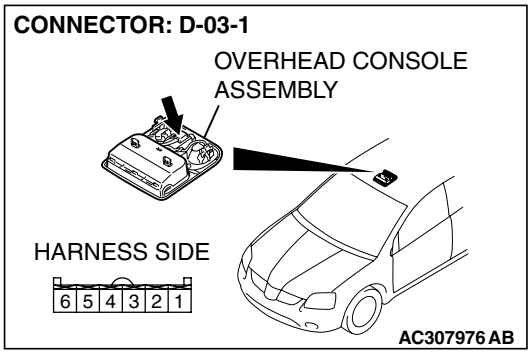


STEP 7. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 5) and ground.

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

YES : No action is necessary and testing is complete.

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

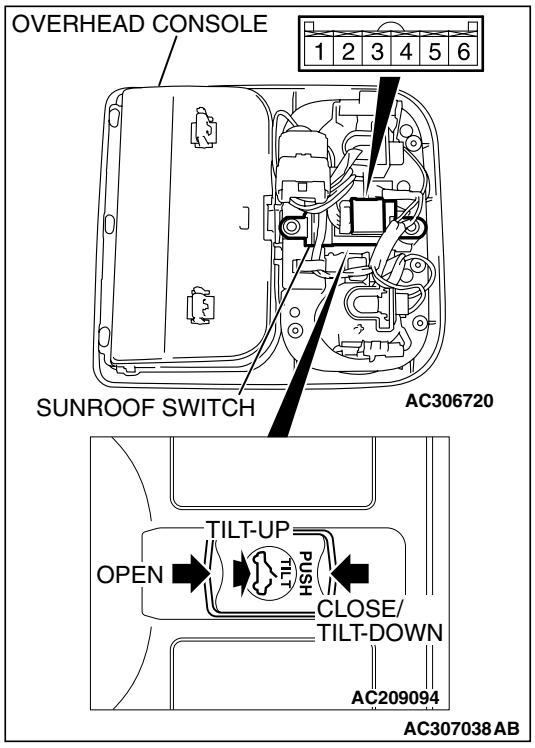


STEP 8. Check the sunroof switch connector D-03-1 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 9.

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



STEP 9. Check the sunroof switch.

(1) Remove the sunroof switch. Refer to GROUP 42, Sunroof Assembly P.42-81.

(2) Check continuity when the sunroof switch is operated to "OPEN", "TILT UP" or "CLOSE/TILT DOWN" positions.

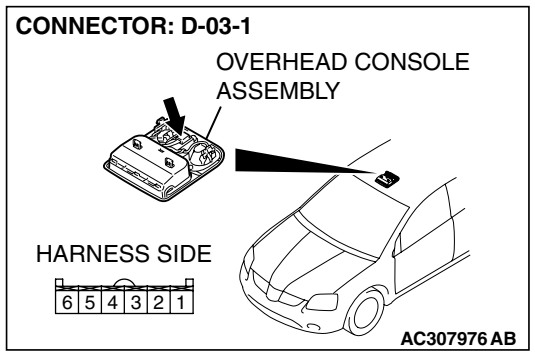
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OPEN	4 – 5	Less than 2 ohms
OFF	3 – 4, 3 – 5, 3 – 6, 4 – 5, 4 – 6, 5 – 6	Open circuit
TILT UP	3 – 4	Less than 2 ohms
CLOSE/TILT-DOWN	4 – 6	Less than 2 ohms

Q: Does the check meet the specified conditions?

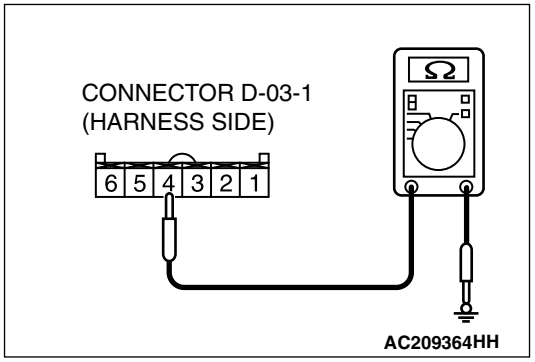
YES : Go to Step 10.

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-03-1.



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



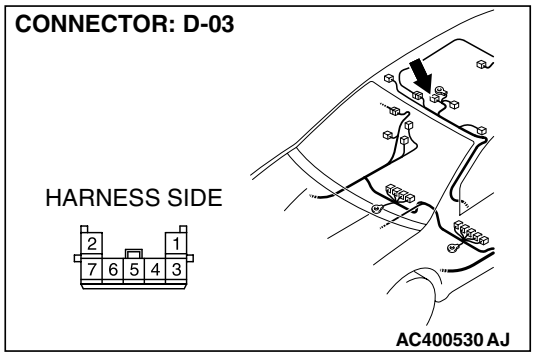
(2) Measure the resistance between terminal 4 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 14.

NO : Go to Step 11.

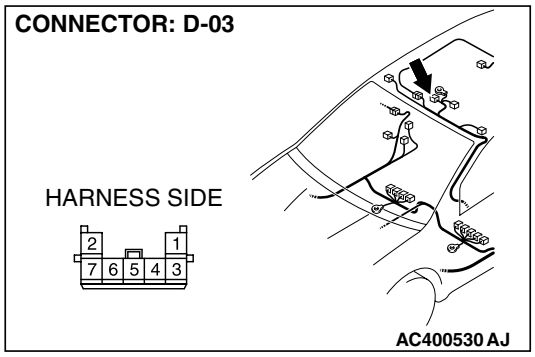


STEP 11. Check overhead console assembly connector D-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 12.

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

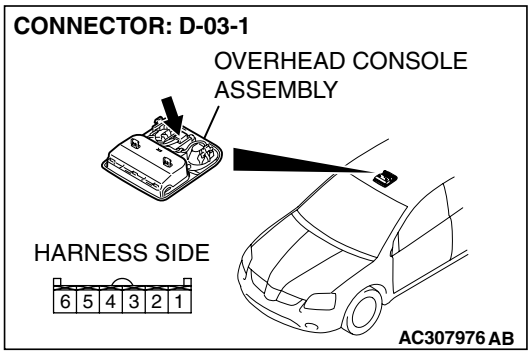


STEP 12. Check the wiring harness between sunroof switch connector D-03-1 (terminal 4) and overhead console assembly connector D-03 (terminal 6).

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

YES : Go to Step 13.

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

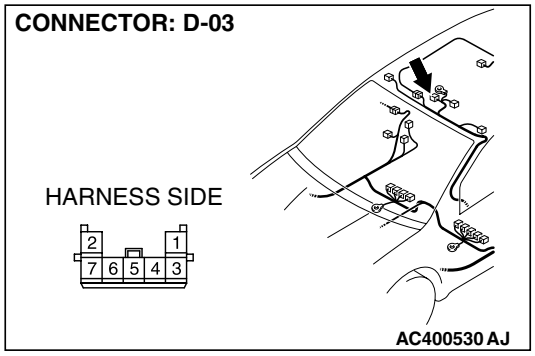


STEP 13. Check the wiring harness between overhead console assembly connector D-03 (terminal 6) and ground.

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

YES : No action is necessary and testing is complete.

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



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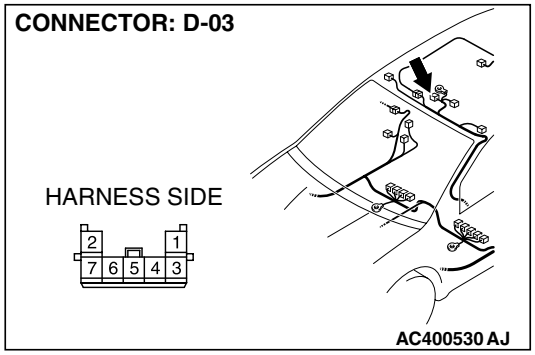
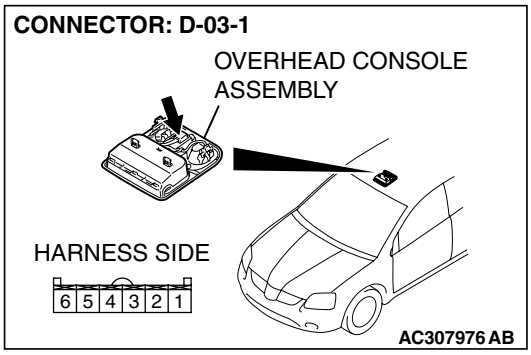
STEP 14. Check the wiring harness between sunroof switch connector D-03-1 (terminals 3, 5 and 6) and overhead console assembly connector D-03 (terminals 7, 5 and 4).



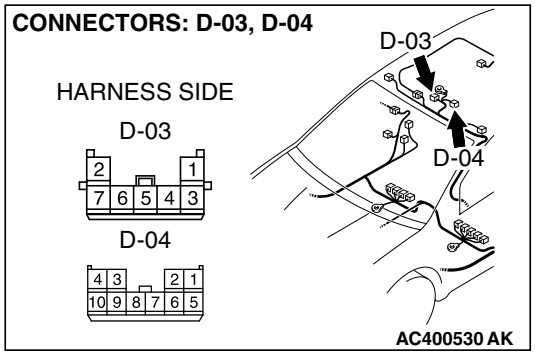
Q: Is the wiring harness between sunroof switch connector D-03-1 (terminals 3, 5 and 6) and overhead console assembly connector D-03 (terminals 7, 5 and 4) in good condition?

YES : Go to Step 15.

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



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



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

YES : Go to Step 16.

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

STEP 16. Replace the sunroof switch.

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

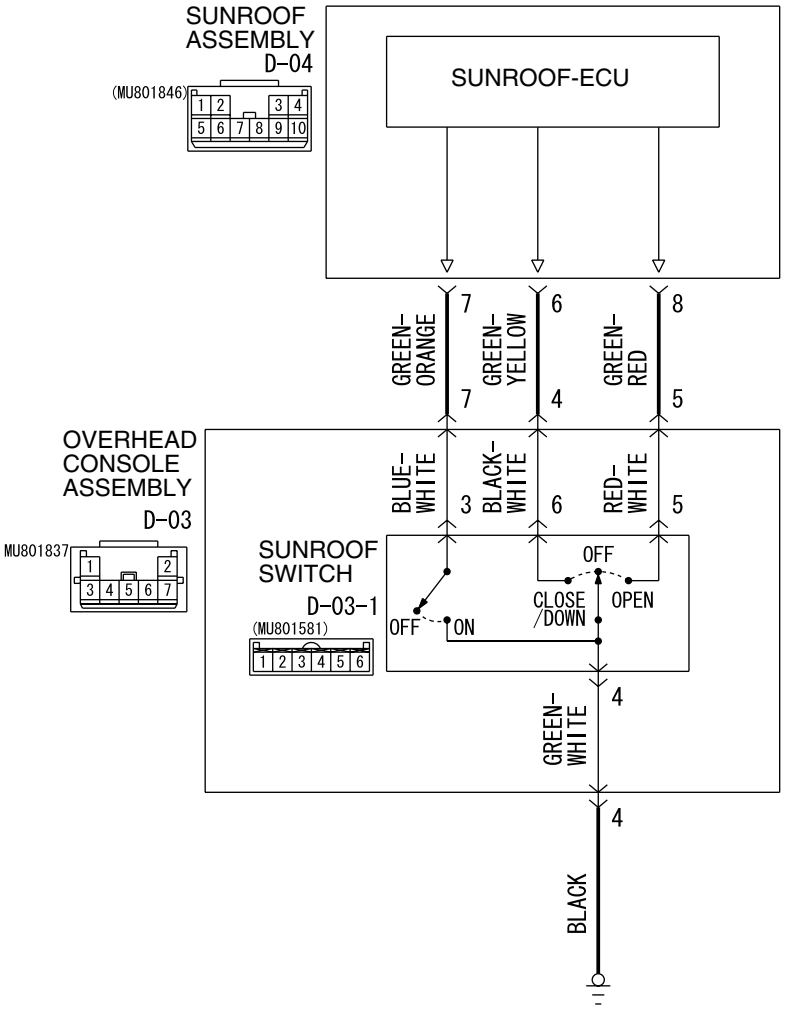
Q: Does the sunroof works normally?

YES : No action is necessary and testing is complete.

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

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

Sunroof Switch Circuit



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TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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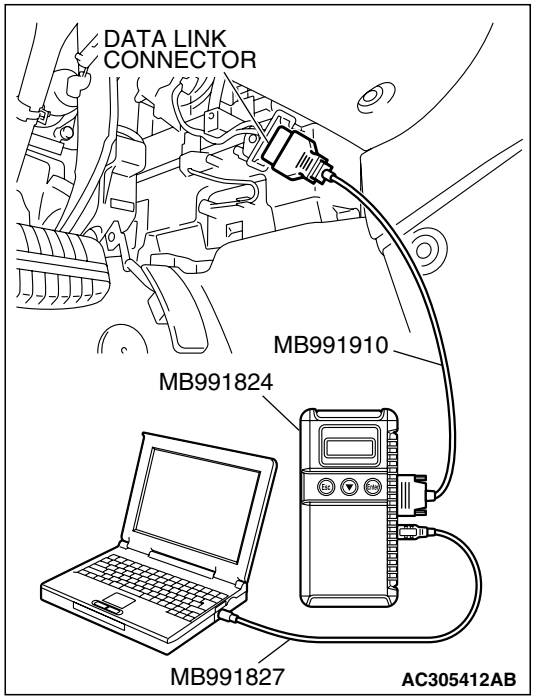


Check the input signal (by using the pulse check mode of the monitor).

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-17."
(2) Operate the scan tool MB991958 according to the procedure below to display "Pulse check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "Pulse Checking."
(3) When each function of the sunroof switch is operated (turned on), check that scan tool MB991958 sounds.

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

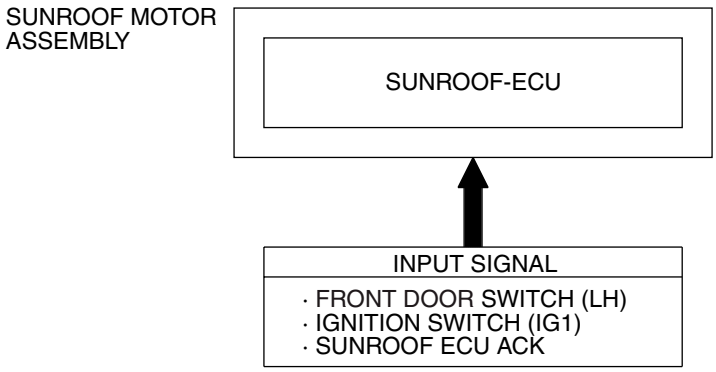
YES : Replace the sunroof motor assembly. Check that the sunroof works at all positions normally.

NO : Refer to Inspection Procedure M-8 "ETACS-ECU does not receive any signal from the up, open or close/down switch P.54B-521."

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-18."

Sunroof Timer Function



W4P54M50AA

CIRCUIT OPERATION

- The sunroof timer function works according to the signals from the following switches:

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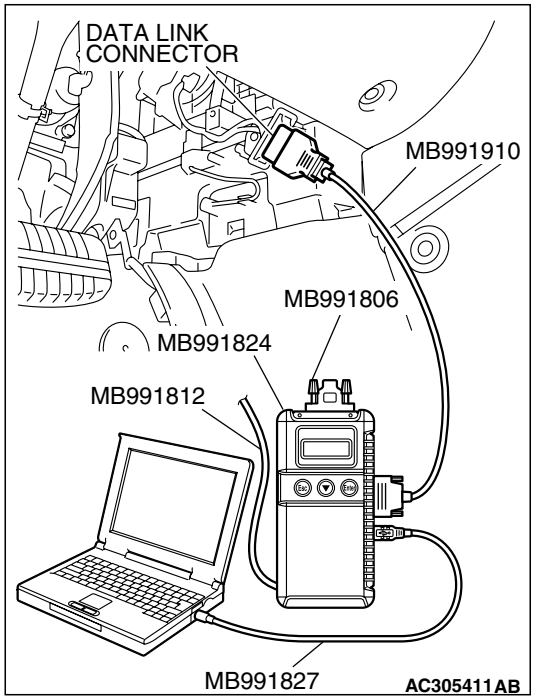
  - Ignition switch (IG1): OFF
  - Front door switch: OFF
- Vehicle condition
  - Ignition switch: LOCK position
  - Front door: Closed
- When the driver's door is opened and closed while the sunroof timer function is on, the sunroof operative duration will be changed.

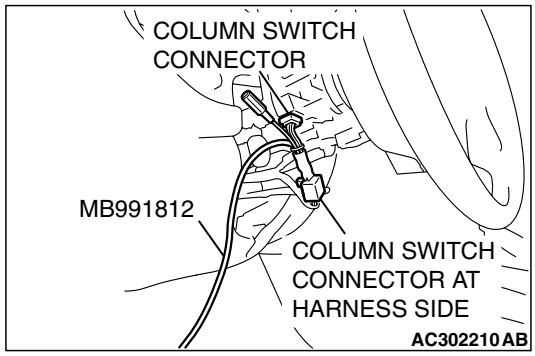
TECHNICAL DESCRIPTION (COMMENT)
Is the sunroof timer function does not work normally, the input circuits from the switches described in "CIRCUIT OPERATION", the sunroof motor assembly, the ETACS-ECU or the SWS communication line may be defective.

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

DIAGNOSIS

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





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

Check the following ECUs:

- ETACS-ECU
- Sunroof-ECU

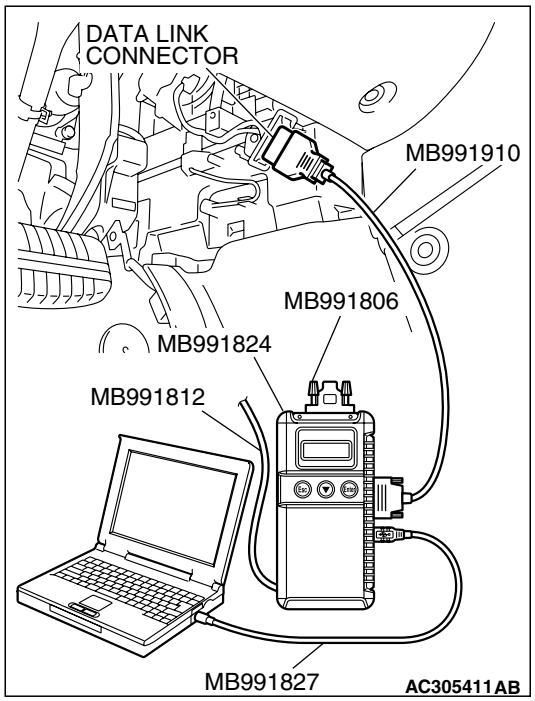
⚠ CAUTION

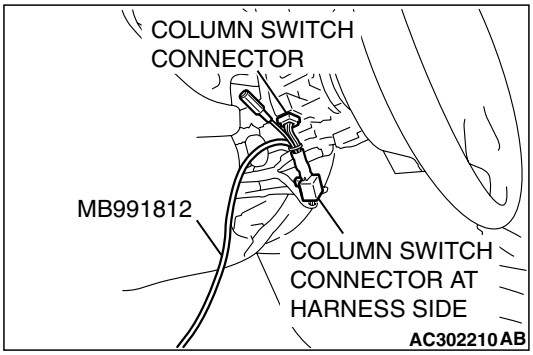
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-82."
"NG" is displayed for the "SUNROOF ECU" menu : Refer to Inspection Procedure A-5 "Communication with the sunroof-ECU is not possible P.54B-97."





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

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

(1) Operate the M.U.T.-III according to the procedure below to display "SUNROOF-OPE."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "SUNROOF."
   g. Select "SUNROOF-OPE."

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

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

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

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

Normal condition is not displayed for the "IG SW (IG1)" : Refer to Inspection Procedure M-2 "ETACS-ECU does not receive a signal from the ignition switch (IG1) P.54B-497."

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

M1549021500343

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

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

Windshield wiper and washer control function

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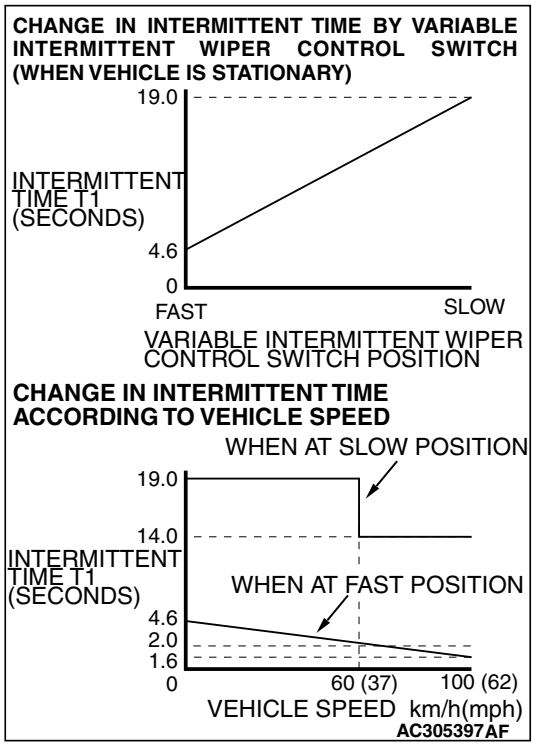
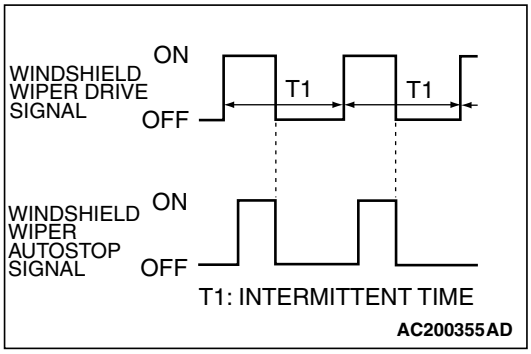


INTERMITTENT CONTROL (VEHICLE SPEED-DEPENDENT VARIABLE TYPE)

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

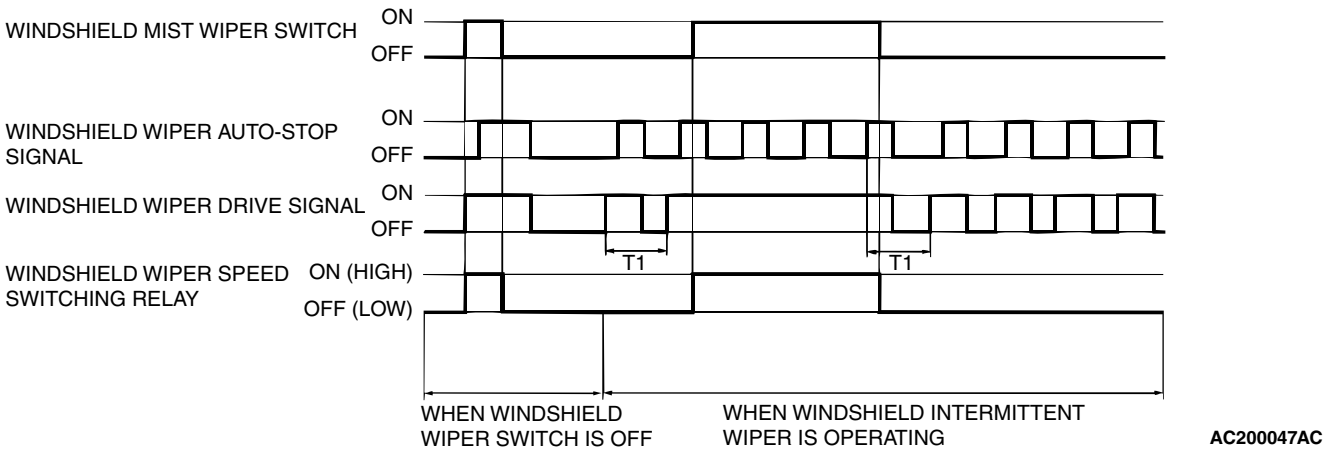
NOTE: The speed-sensitive wiper can be customized on vehicles equipped with a multi center display (middle grade type). Refer to P.54B-587.



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

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

Mist wiper control

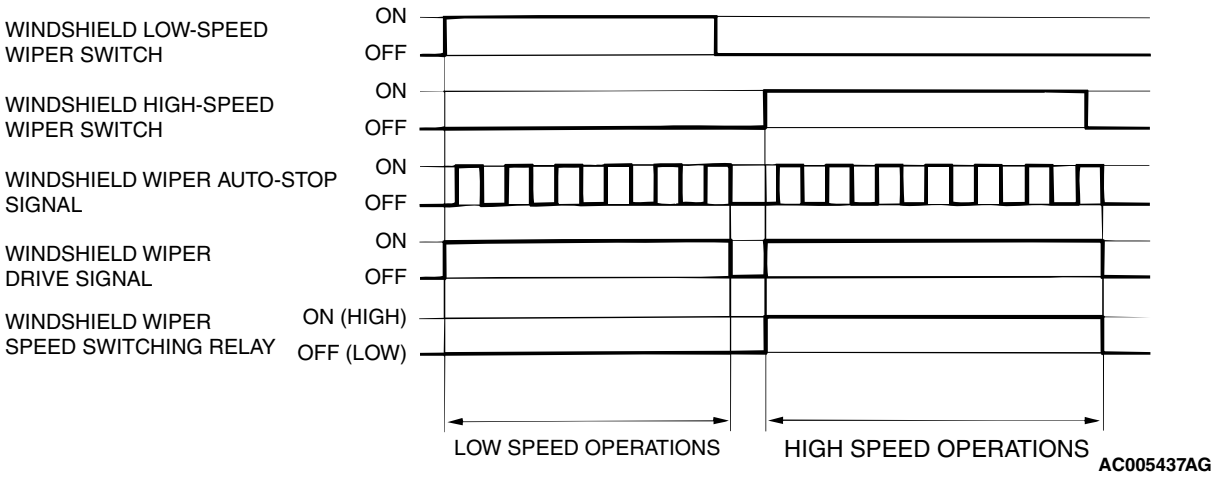


T1: INTERMITTENT TIME

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

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

Low speed wiper and high speed wiper control



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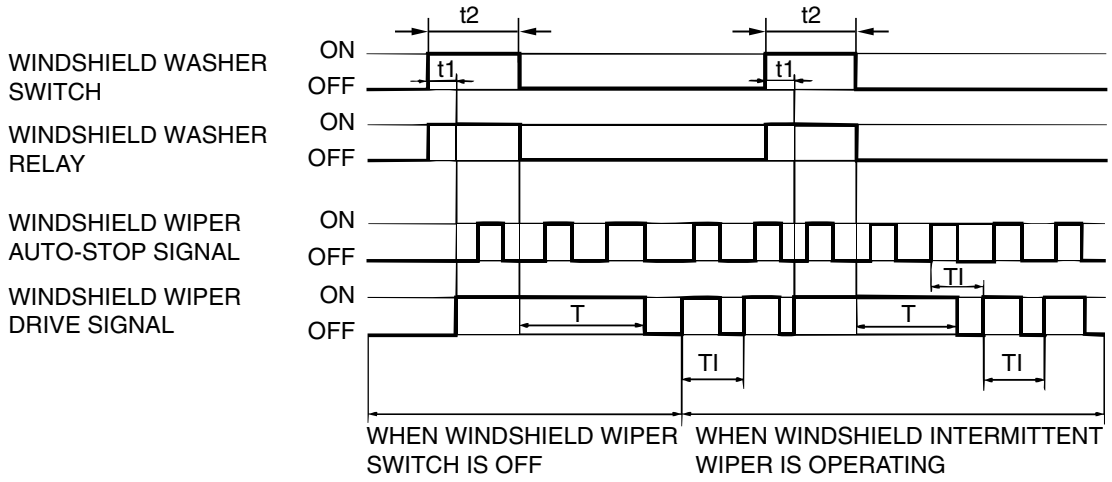
When the ignition switch is at the ACC or ON position, and the windshield low speed wiper switch of the column switch is turned ON, the front-ECU turns ON the windshield wiper drive signal, turns OFF (LO) the windshield wiper speed relay, and operates the windshield wiper at low speed. Next, when the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

Washer control



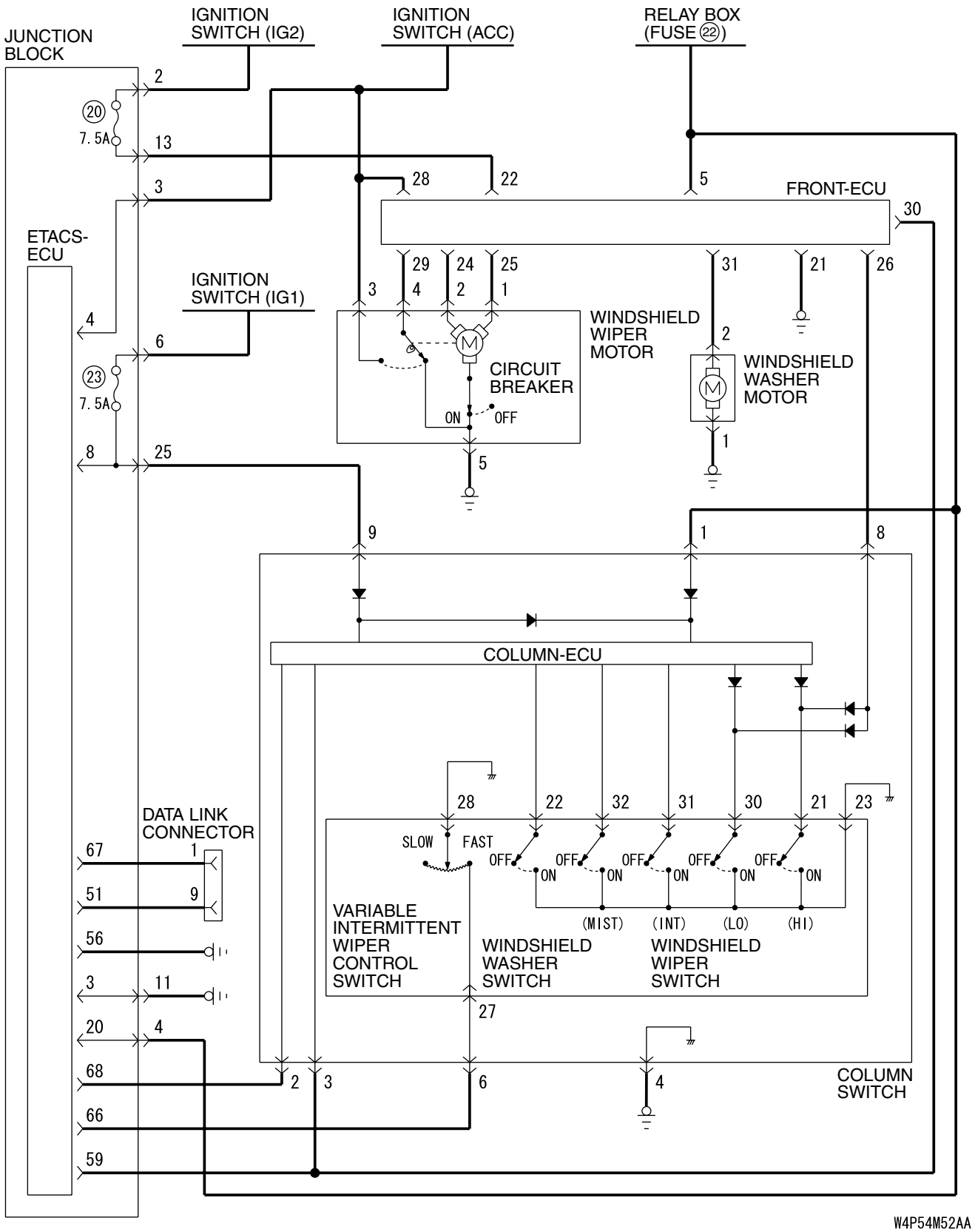
T: WIPER OPERATING TIME AFTER WINDSHIELD WASHER SWITCH IS OFF
TI: INTERMITTENT TIME t1: 0.15 SECONDS t2: WINDSHIELD WASHER OPERATING TIME
AC306460AB

When the ignition switch is in the ACC or ON position, and the windshield washer switch is turned ON, the front-ECU turns ON the windshield washer relay. The windshield wiper drive signal is turned ON after 0.15 second until 2 seconds after the windshield washer switch goes OFF to operate the windshield wiper continuously. When the windshield washer switch is turned ON, if the windshield wiper is operating intermittently, intermittent operations will be continued after continuous operations.

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

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

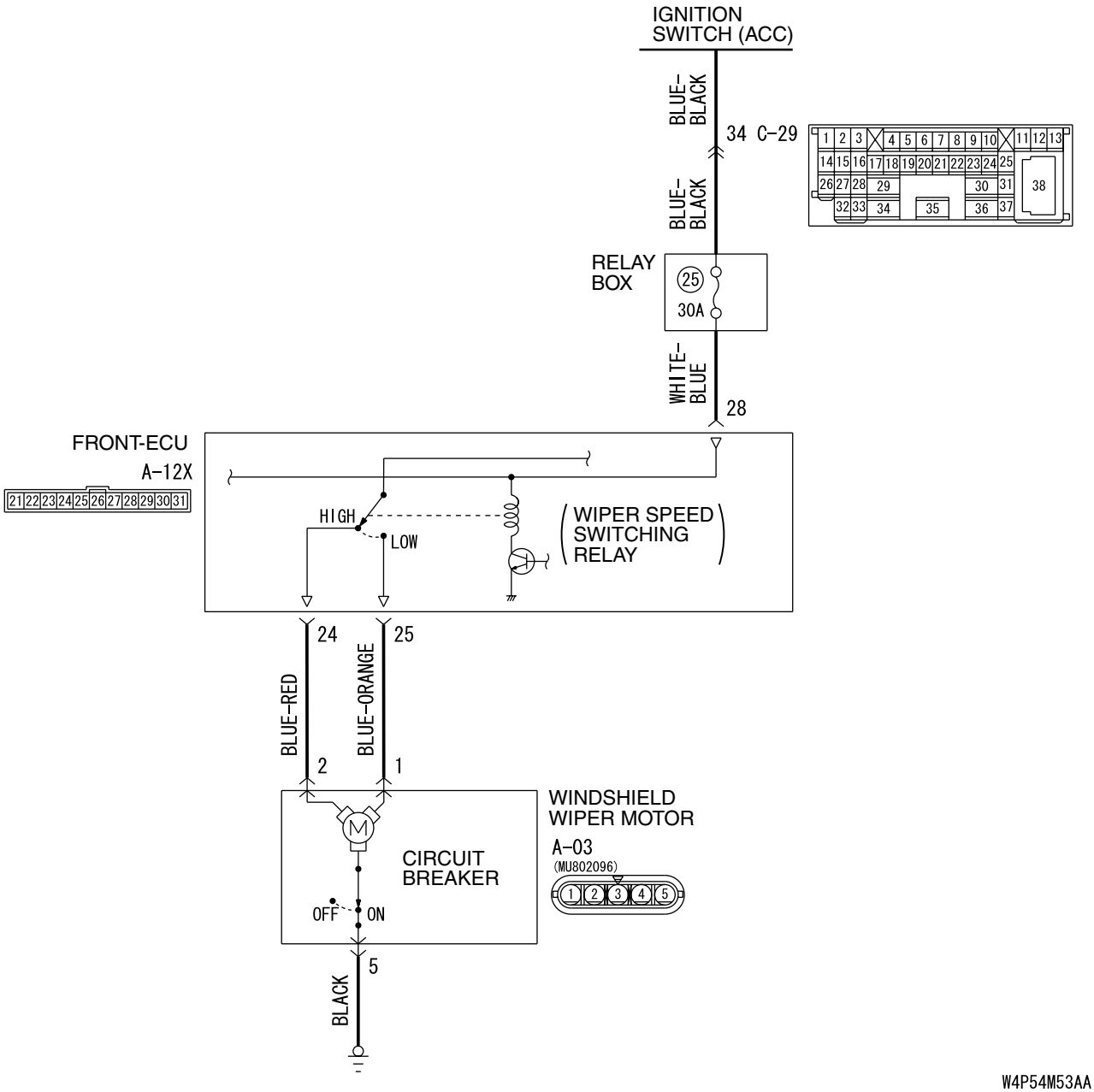
GENERAL CIRCUIT DIAGRAM FOR THE WINDSHIELD WIPER AND WASHER

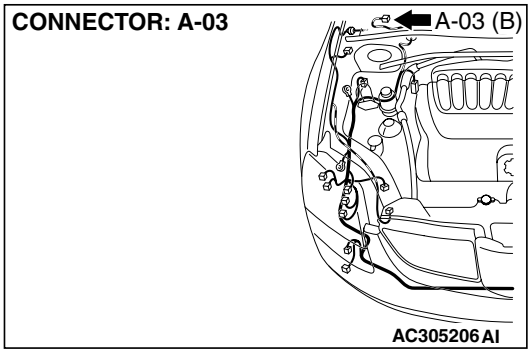


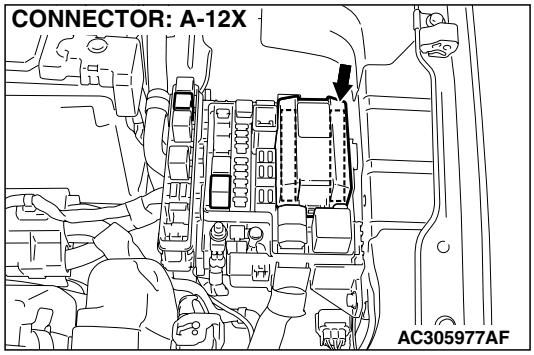
INSPECTION PROCEDURE G-1: Windshield Wiper and Washer: The windshield wiper do not work at all.

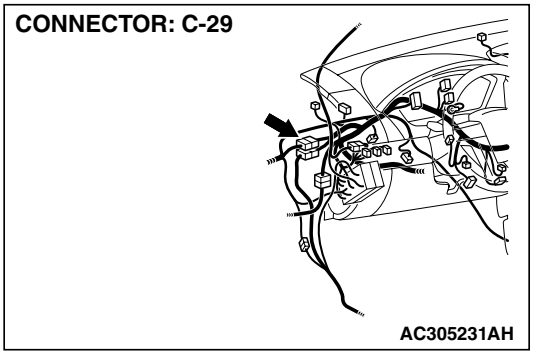
NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Windshield Wiper Motor Circuit









CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

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

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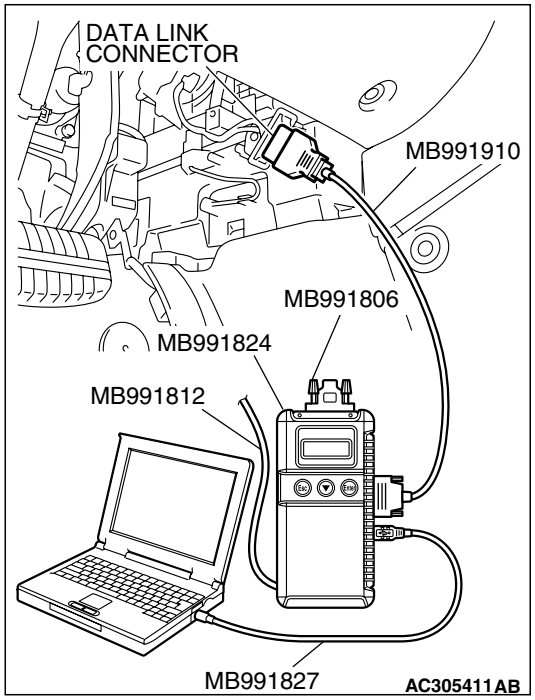
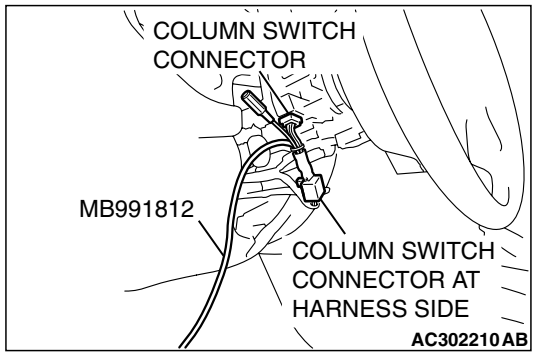




STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the following ECUs:

- Column-ECU
- Front-ECU

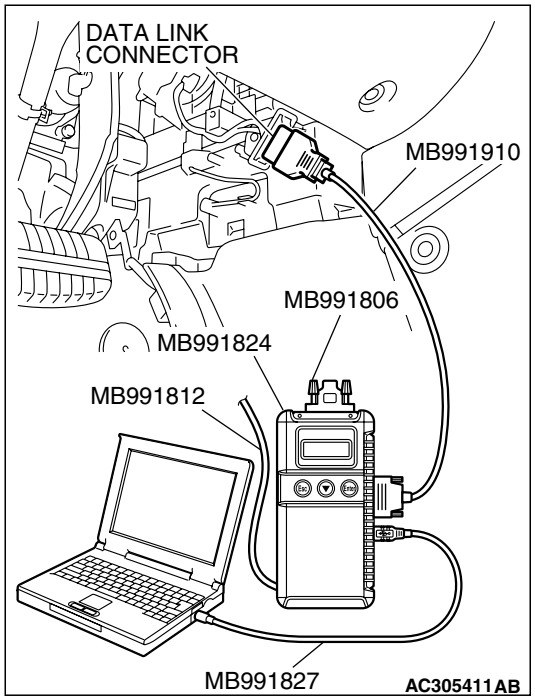
⚠ CAUTION

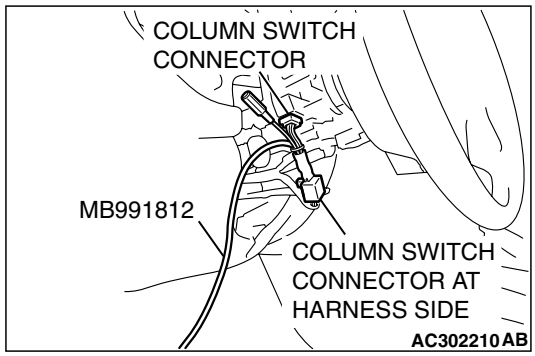
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-73."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible P.54B-89."





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

Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield wiper switch: INT

(1) Operate the M.U.T.-III according to the procedure below to display "F.WIPER INT."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "WIPER."
   g. Select "F.WIPER INT."

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

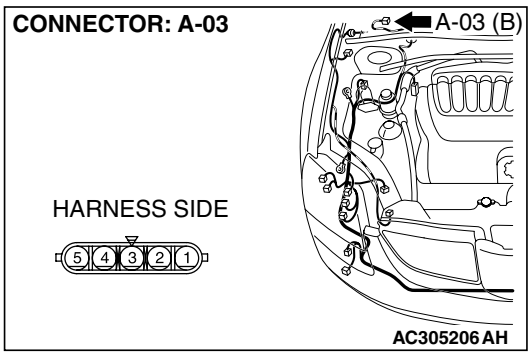
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 05	INT WIPER SW	ON
ITEM 70	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

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

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

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

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

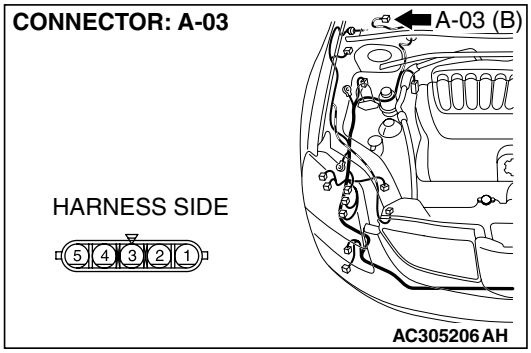


STEP 3. Check windshield wiper motor connector A-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

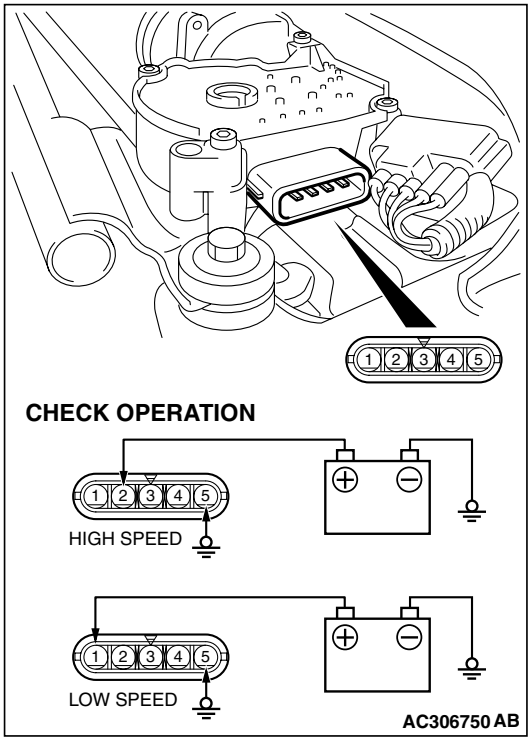
YES : Go to Step 4.

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



STEP 4. Check the windshield wiper motor.

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



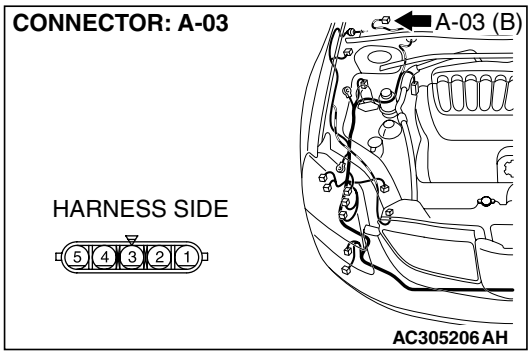
(2) Connect a battery to the windshield wiper motor as shown. Then check that the windshield wiper motor operates normally at high and low speeds.

Q: Does the windshield wiper motor operate normally?

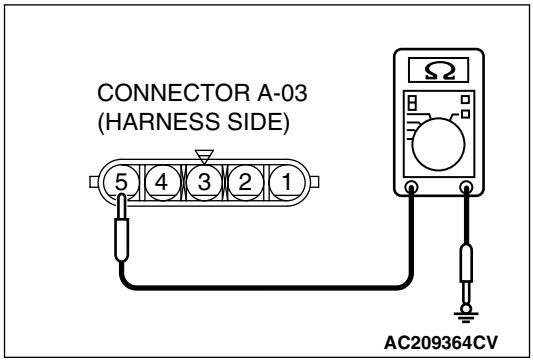
YES : Go to Step 5.

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

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



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

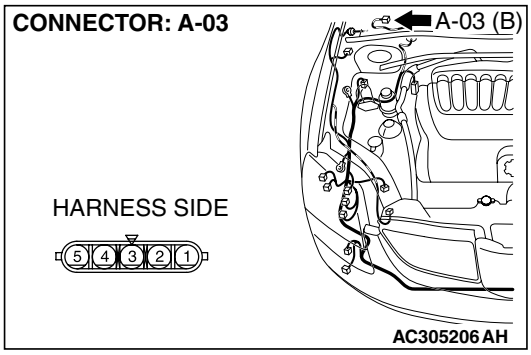


(2) Measure the resistance value between terminal 5 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.
NO : Go to Step 6.

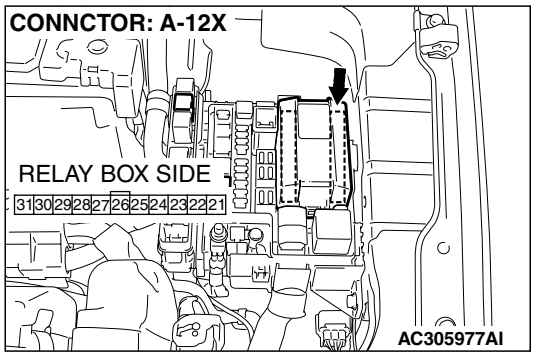
STEP 6. Check the wiring harness between windshield wiper motor connector A-03 (terminal 5) and ground.



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

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

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

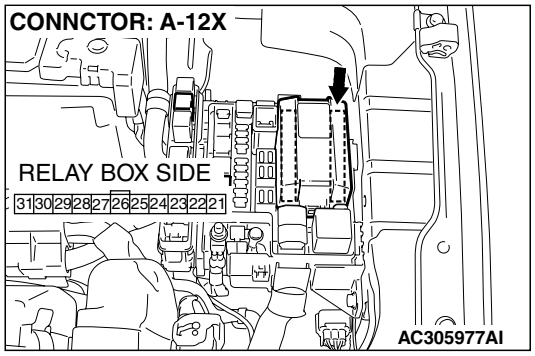


Q: Is front-ECU connector A-12X in good condition?

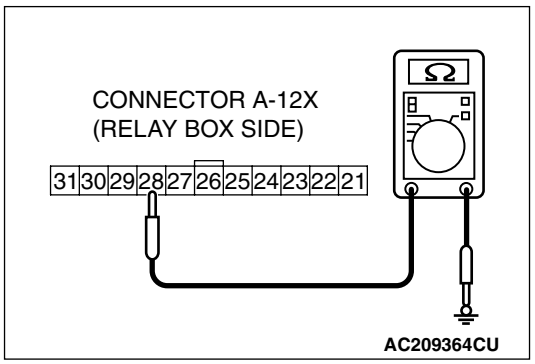
YES : Go to Step 8.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the windshield wiper works normally.

TSB Revision

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



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



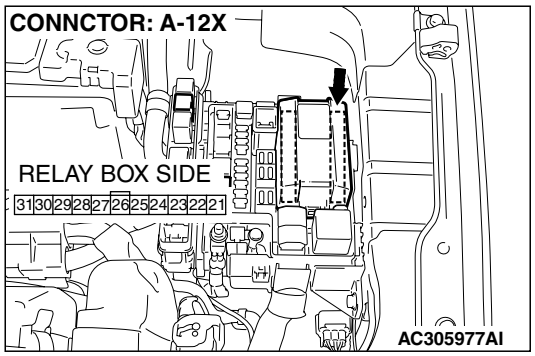
(3) Measure the voltage between terminal 28 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

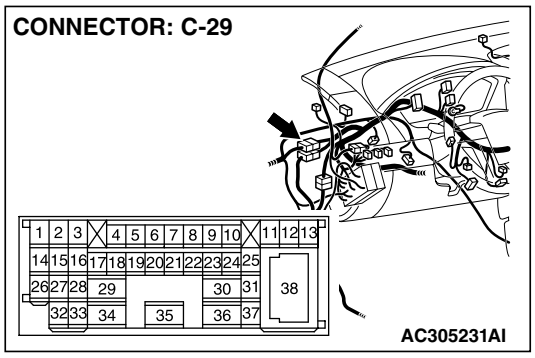
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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

NO : Go to Step 9.

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





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

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

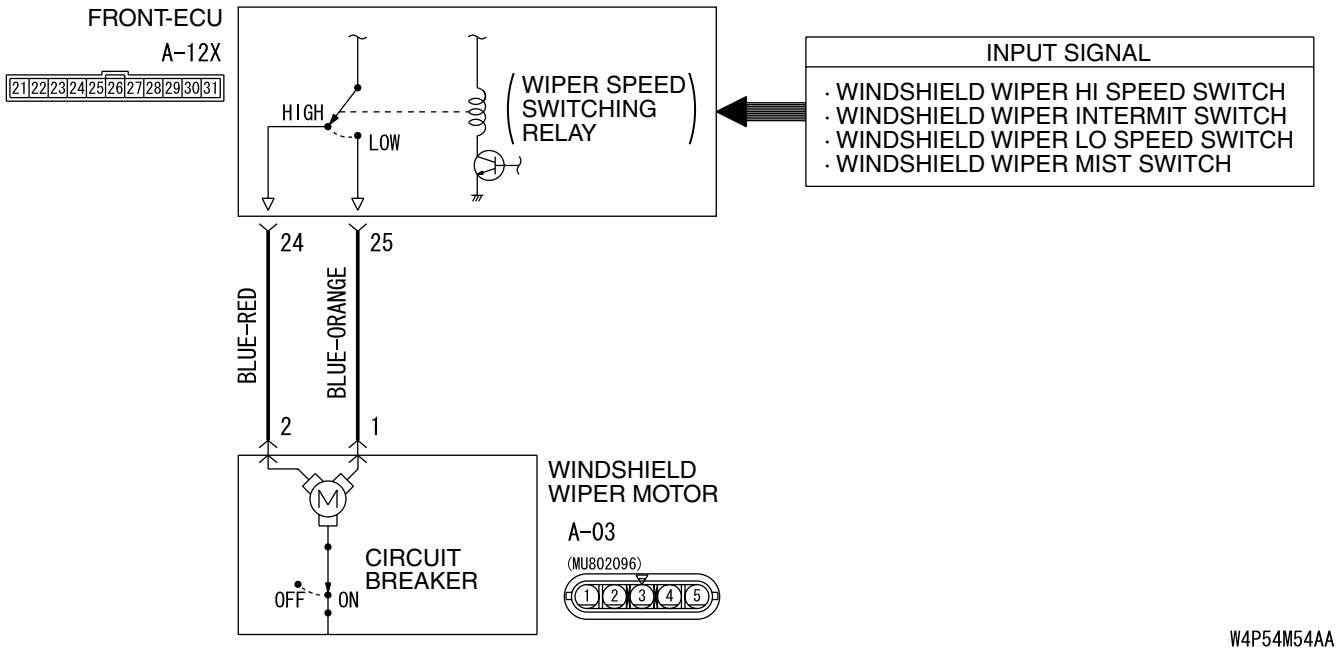
YES : No action is necessary and testing is complete.

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

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

NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Windshield Wiper Motor Circuit



TECHNICAL DESCRIPTION (COMMENT)

This system may be at fail-safe mode as the SWS communication line is defective.

If the system cannot receive any signal from the column switch (windshield wiper and washer switch) due to 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.

TSB Revision

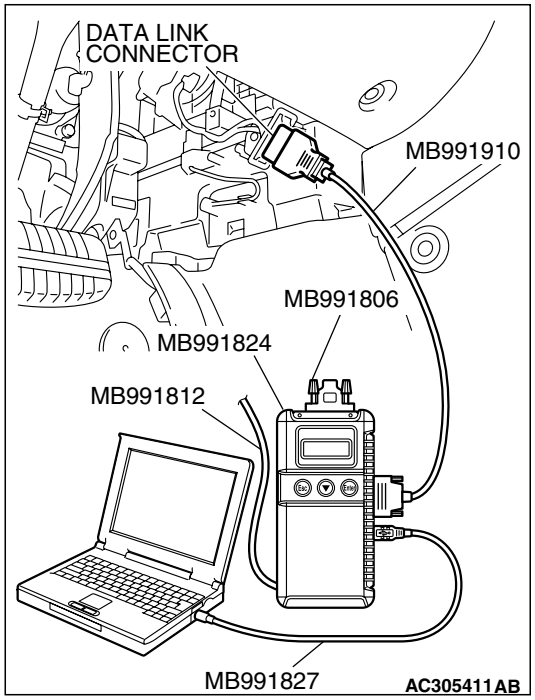
TROUBLESHOOTING HINTS

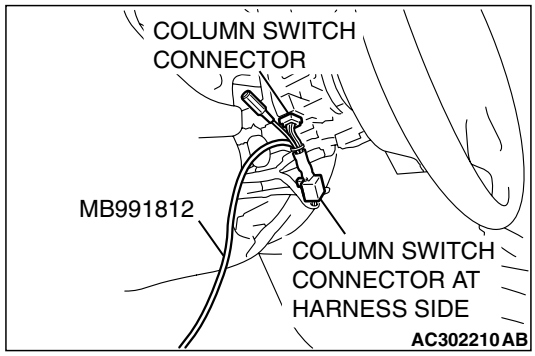
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The column switch may be defective
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

- Column-ECU
- Front-ECU

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-73."

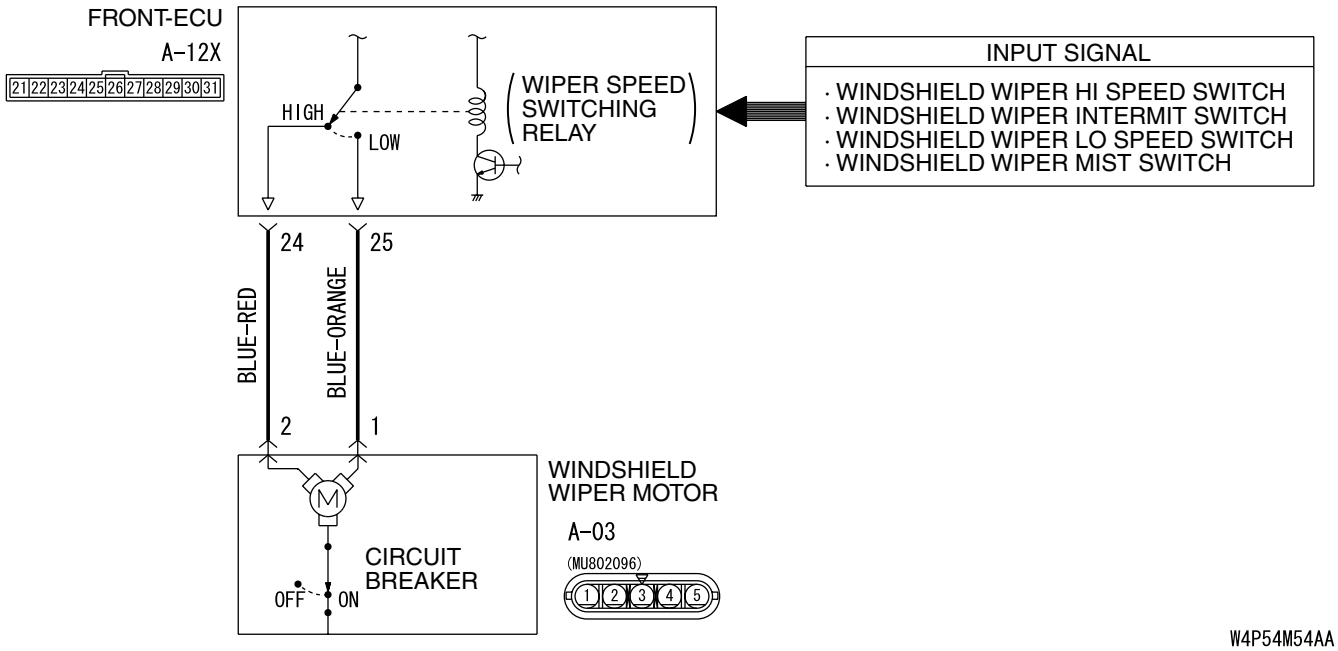
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible P.54B-89."

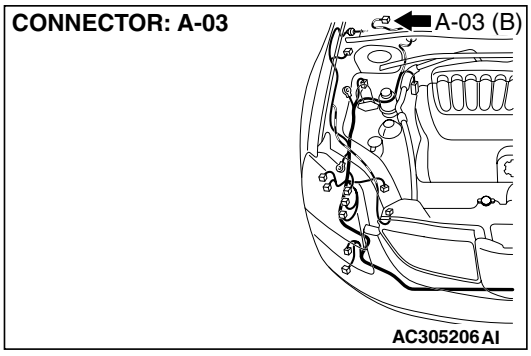
INSPECTION PROCEDURE G-3: Windshield Wiper and Washer: All of the windshield wiper switch positions are defective.

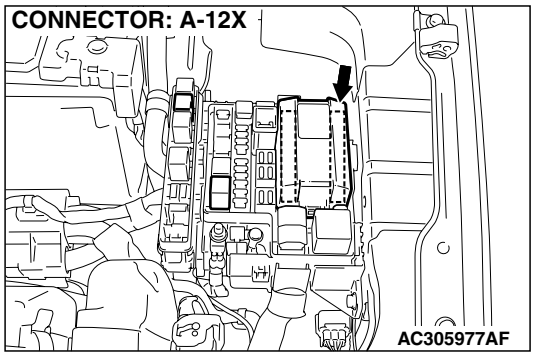
NOTE: This troubleshooting procedure requires use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

TSB Revision

Windshield Wiper Motor Circuit







TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

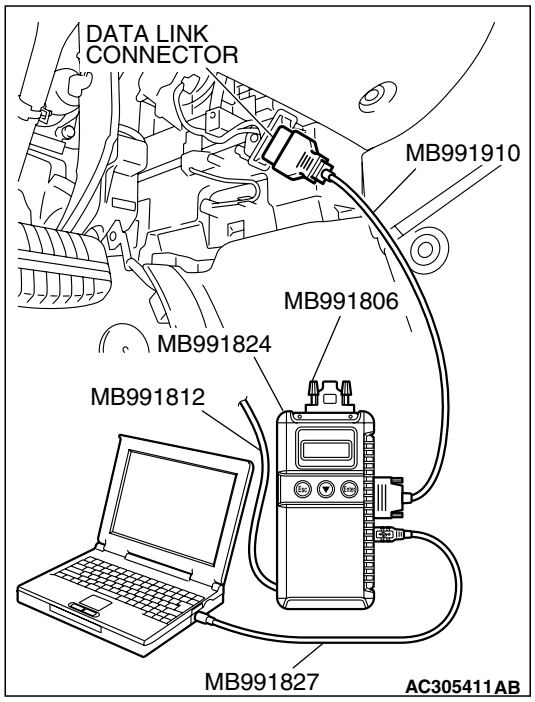
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The wiper motor may be defective
- The front-ECU may be defective

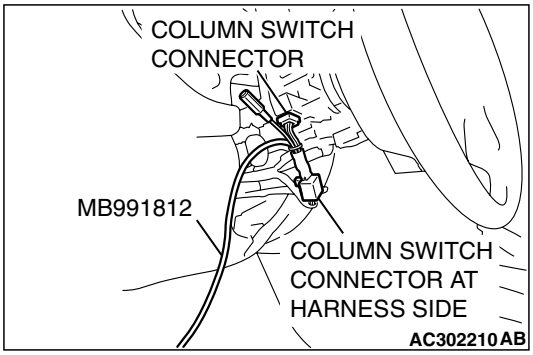
DIAGNOSIS

Required Special Tools:

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

TSB Revision





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-17."

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

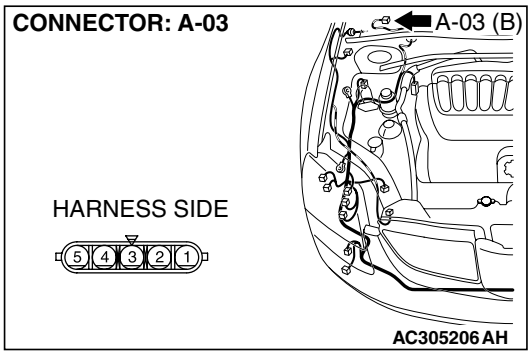
(3) Check that normal conditions are displayed for the items described in the table below.

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

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

YES : Go to Step 2.

NO : Refer to Inspection Procedure M-6 "ETACS-ECU does not receive any signal from the windshield mist wiper switch P.54B-515."

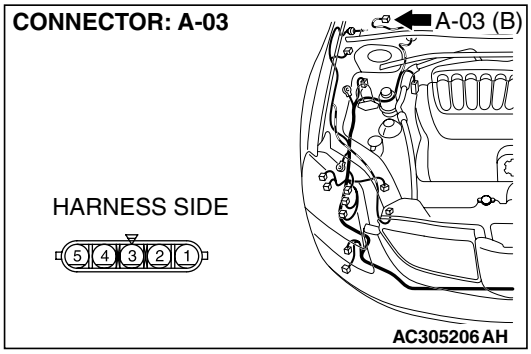


STEP 2. Check windshield wiper motor connector A-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

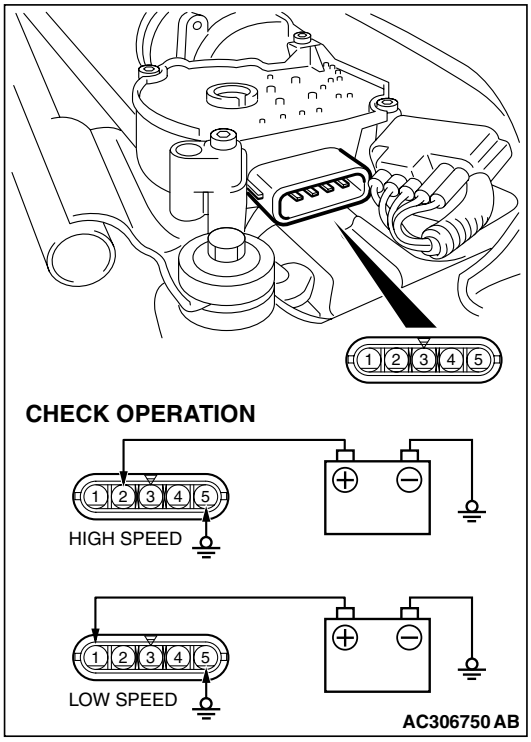
YES : Go to Step 3.

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



STEP 3. Check the windshield wiper motor.

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

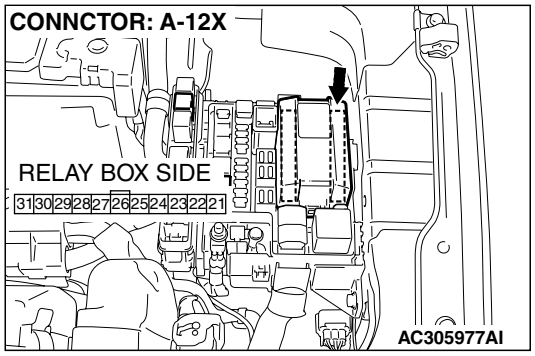


(2) Connect a battery to the windshield wiper motor as shown. Then check the windshield wiper motor operates normally at high and low speeds.

Q: Does the windshield wiper motor operate normally?

YES : Go to Step 4.

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

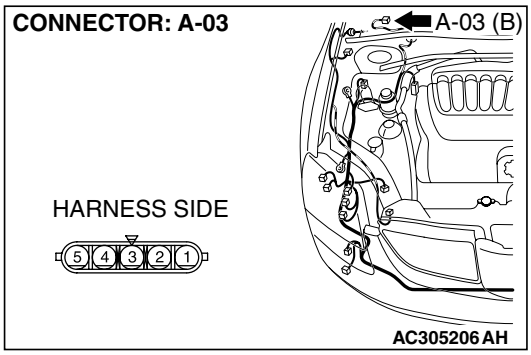


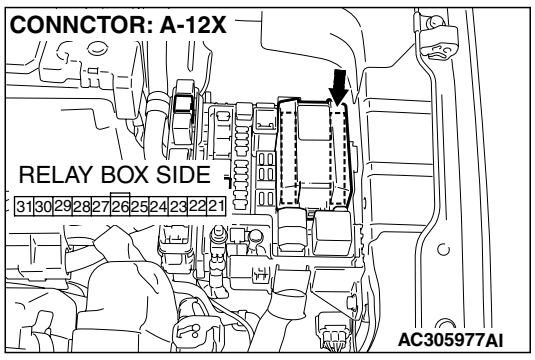
STEP 4. Check front-ECU connector A-12X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 5.

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





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

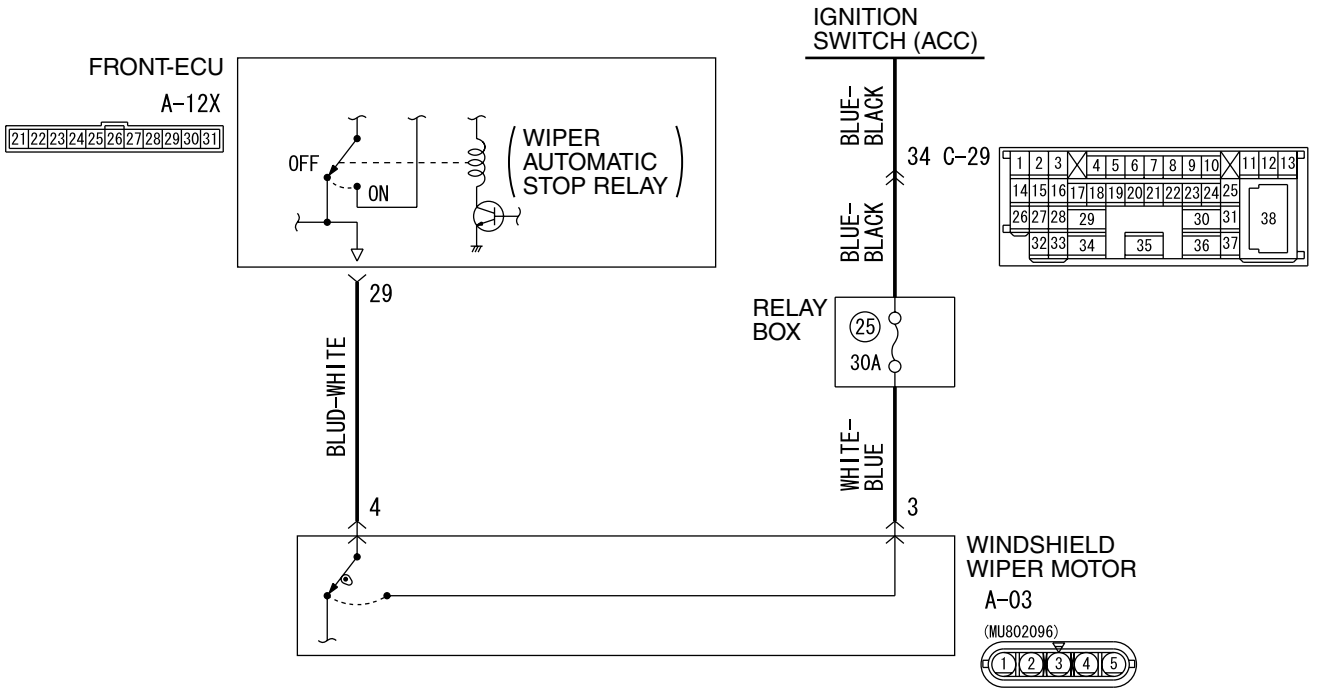
Q: Is the wiring harness between windshield wiper motor connector A-03 (terminals 1 and 2) and front-ECU connector A-12X (terminals 25 and 24) in good condition?

YES : No action is necessary and testing is complete.

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

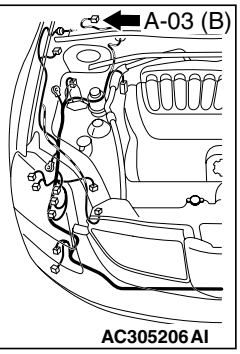
INSPECTION PROCEDURE G-4: Windshield Wiper and Washer: Windshield wipers does not stop at the predetermined park position.

Windshield Wiper Automatic Stop Relay Circuit



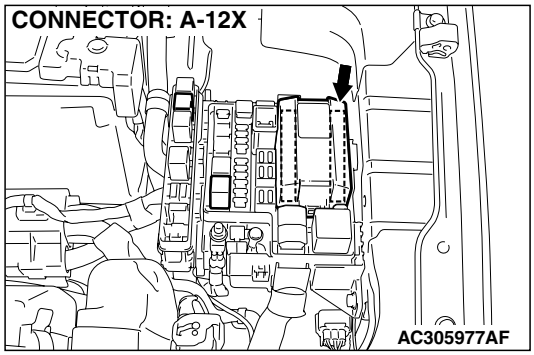
W4P54M55AA

CONNECTOR: A-03



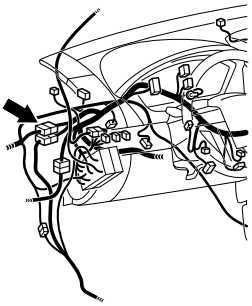
AC305206AI

CONNECTOR: A-12X



AC305977AF

CONNECTOR: C-29



AC305231AH

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

TSB Revision

- The windshield wiper motor may be defective
- The front-ECU may be defective

DIAGNOSIS

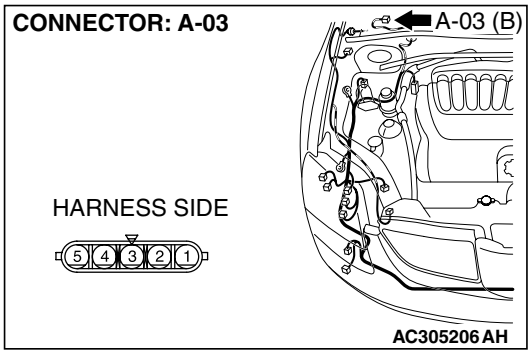
Required Special Tool:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

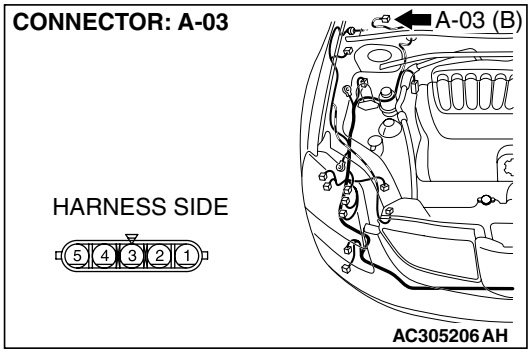
STEP1. Check windshield wiper motor connector A-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 2.

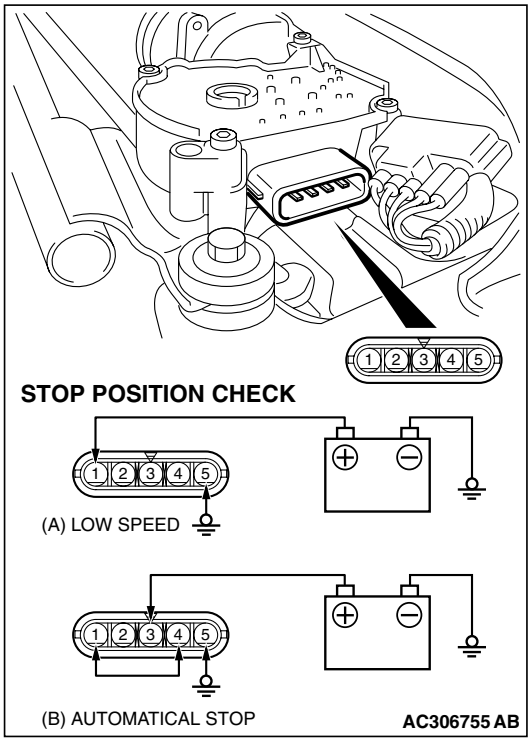
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the windshield wiper works normally.





STEP 2. Check the windshield wiper motor.

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



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

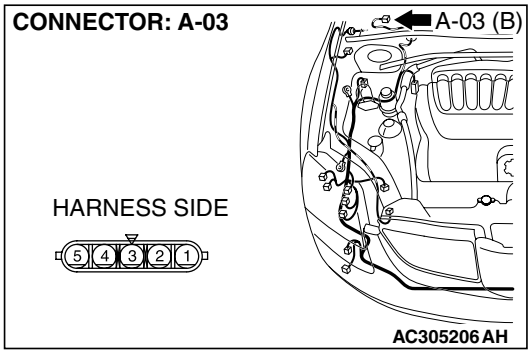
(3) When the battery is connected as shown, the motor should run at low speed, and then stop at the predetermined park position.

Q: Does the windshield wiper motor operate normally?

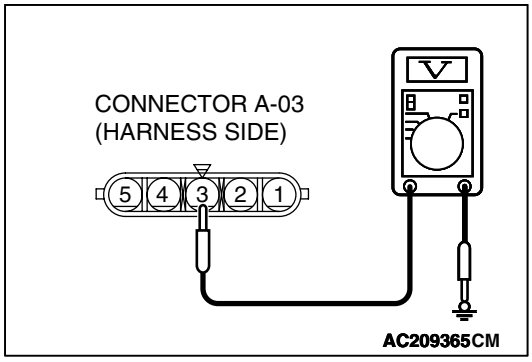
YES : Go to Step 3.

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

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



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

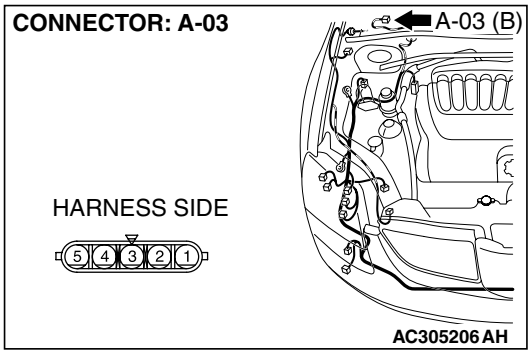


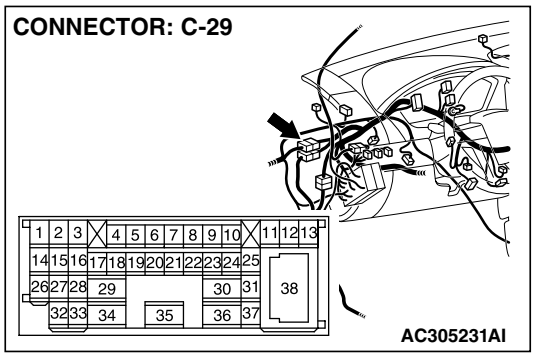
(3) Measure the voltage between terminal 3 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

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





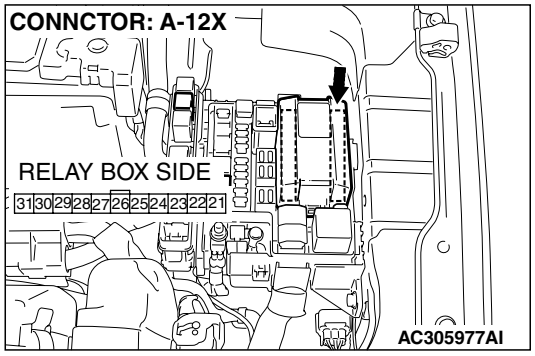
NOTE: Also check intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

YES : No action is necessary and testing is complete.

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

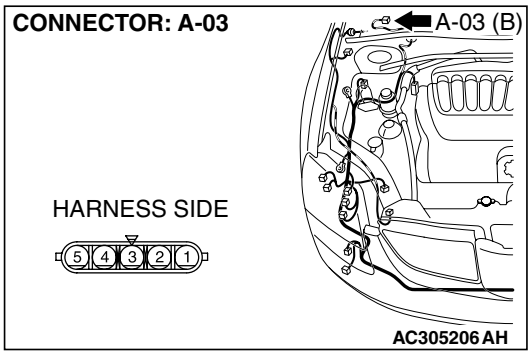
STEP 5. Check front-ECU connector A-12X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

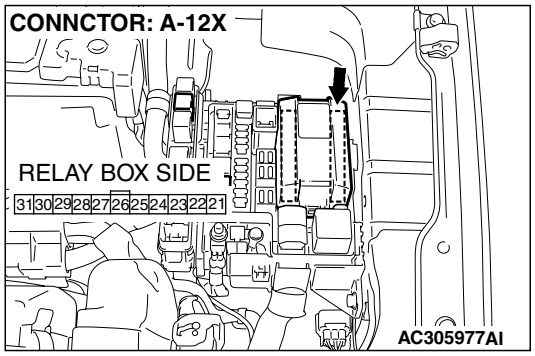


Q: Is front-ECU connector A-12X in good condition?

YES : Go to Step 6.

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





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

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

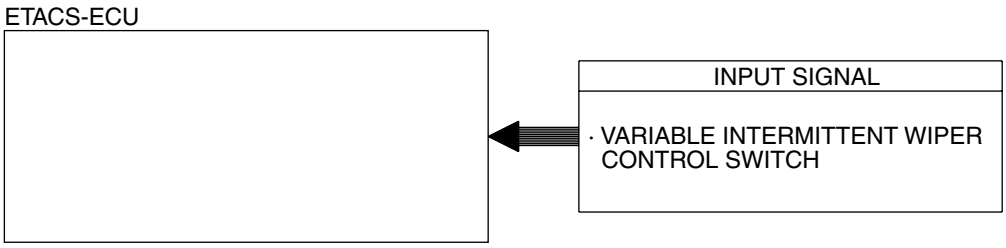
YES : Replace the front-ECU. The windshield wiper should stop at the predetermined park position.

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

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Variable Intermittent Wiper Control Switch Input Signal



W4P54M56AA

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

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DIAGNOSIS

Required Special Tools:

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

Check the 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

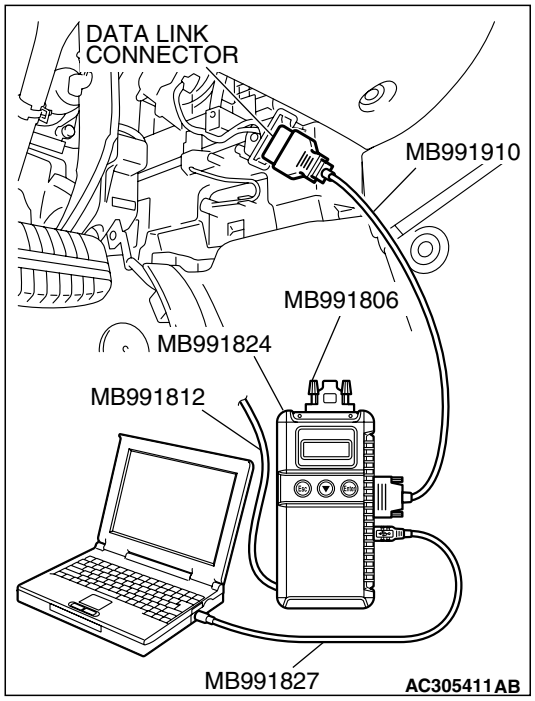
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

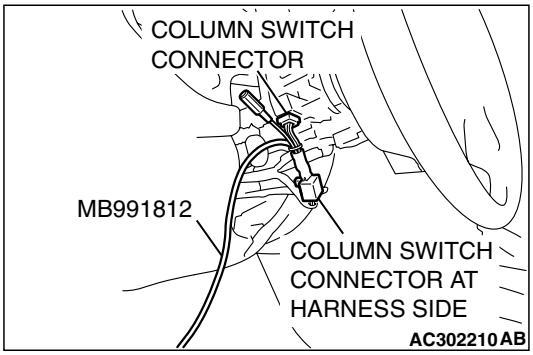
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."

(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-7 "ETACS-ECU does not receive any signal from the variable intermittent wiper control switch P.54B-518."

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-18."

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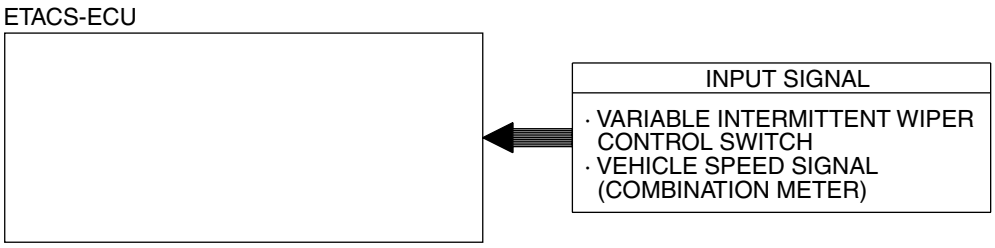
Variable Intermittent Wiper Control Switch Input Signal



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.

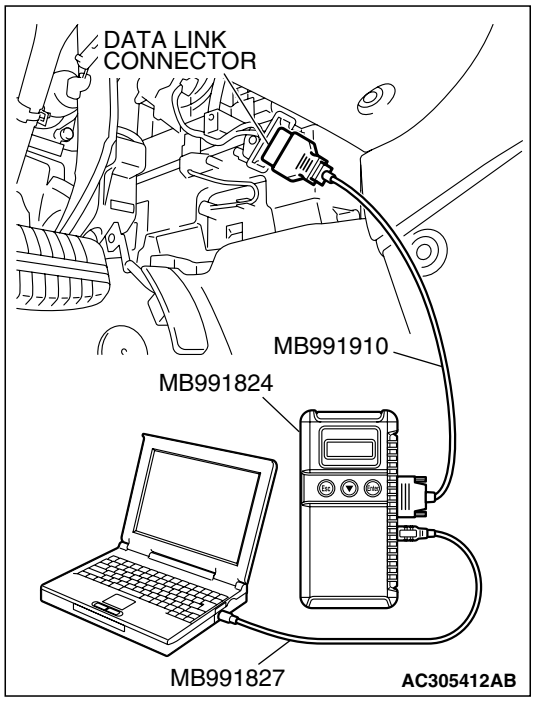
TROUBLESHOOTING HINTS

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



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

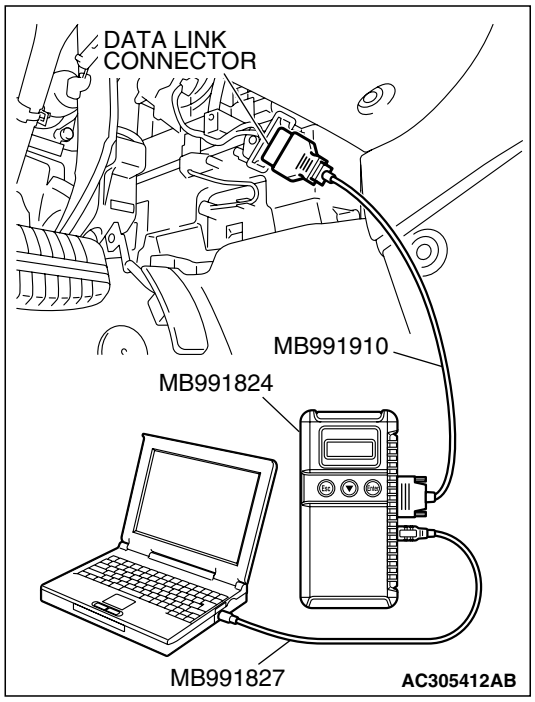
⚠ CAUTION

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

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."
(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-16).



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-54.
NO : Go to Step 3.

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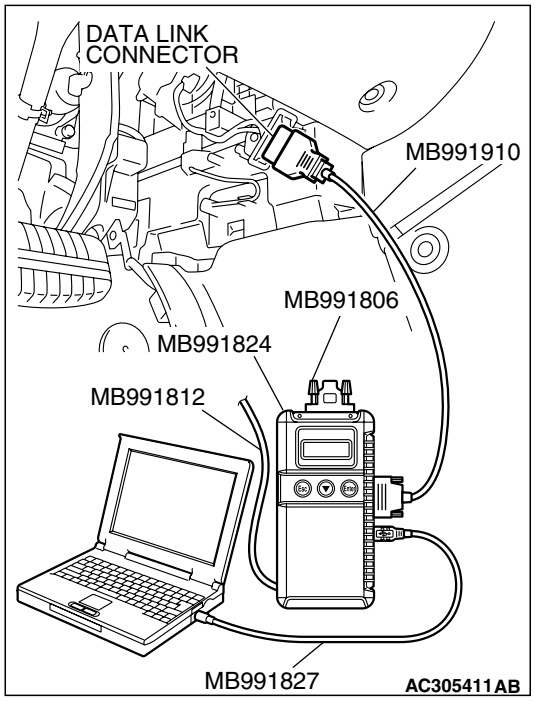
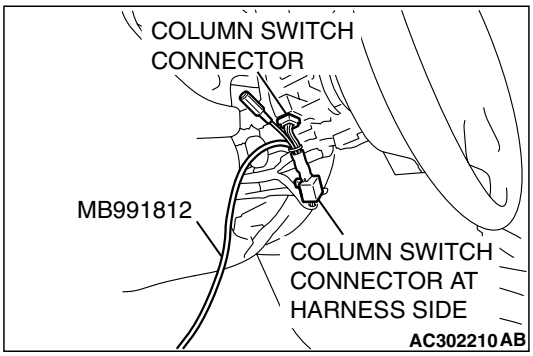




STEP 3. Check the input signal by using "DATA LIST" menu of the SWS monitor.

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?

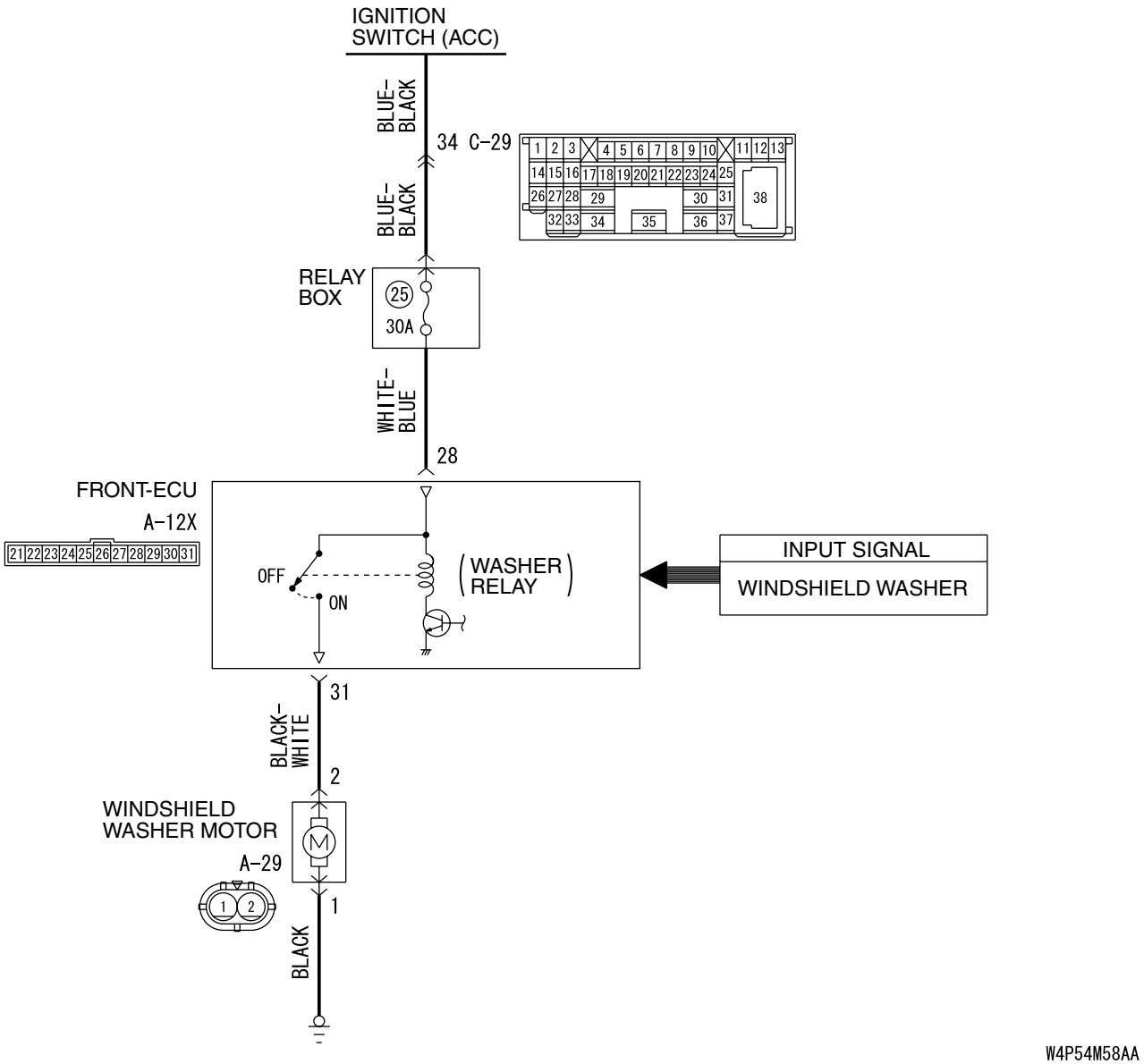
YES : Replace the front-ECU. The windshield intermittent wiper interval should change according to the vehicle speed.

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-11. 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-18."

Windshield Washer Motor Circuit



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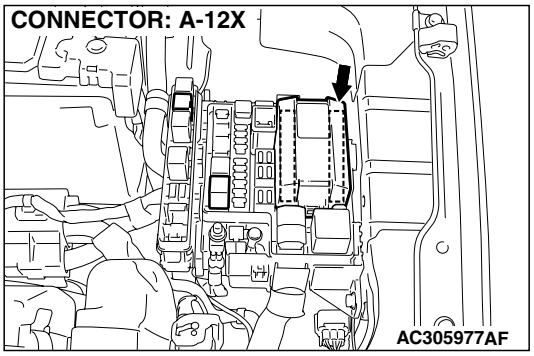

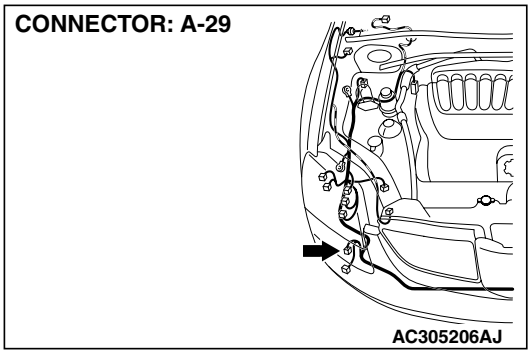

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CIRCUIT OPERATION
The windshield washer switch sends a signal through the column-ECU (incorporated in the column switch) to the front-ECU. If the column-ECU sends a windshield washer switch "ON" signal to the front-ECU, the front-ECU turns on the relay (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

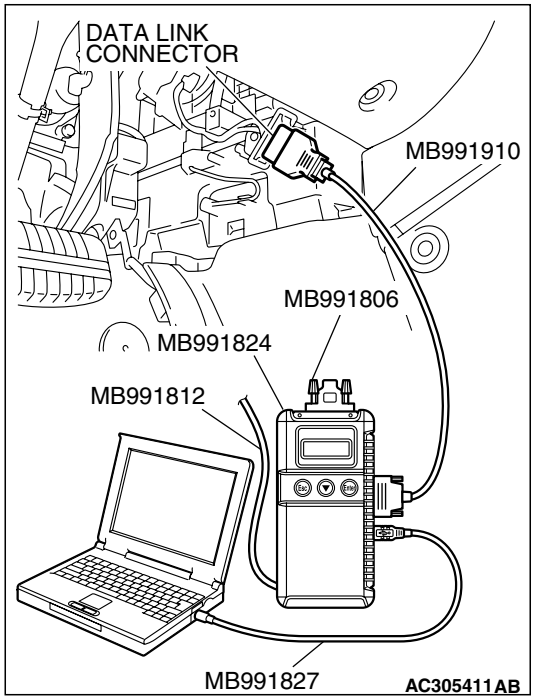
Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS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

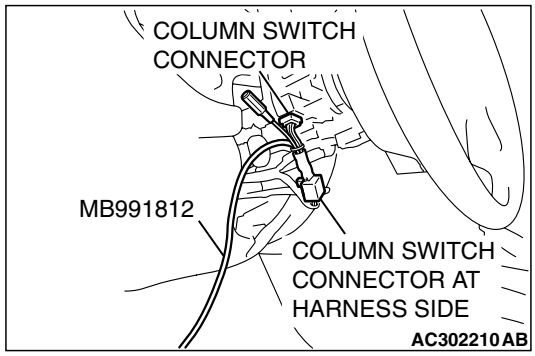
STEP 1. Verify the windshield wiper operation.

Q: Does the windshield wiper operate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure G-1 "The windshield wiper do not work at all P.54B-263."





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

Check the following ECUs:

- Column-ECU
- Front-ECU

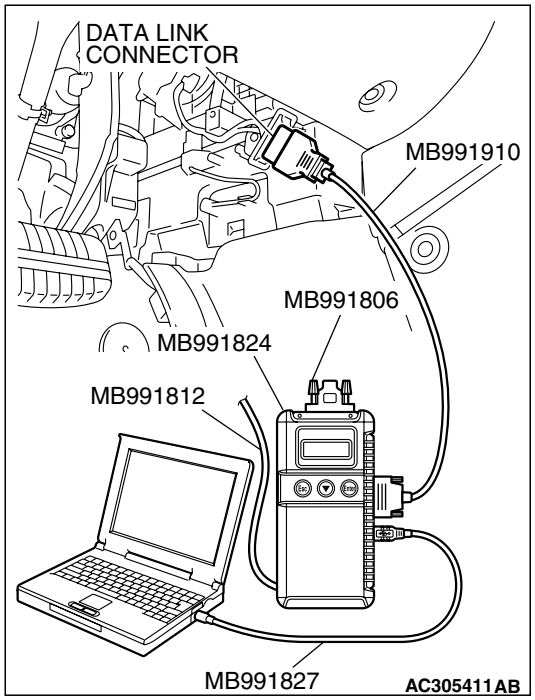
⚠ CAUTION

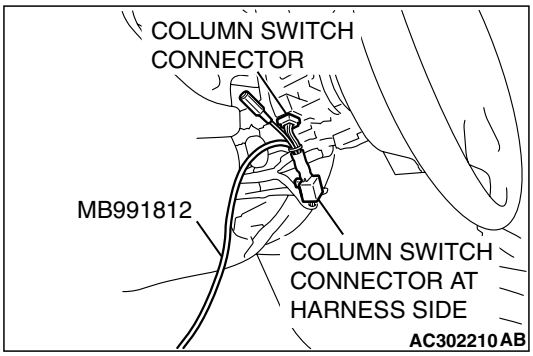
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-73."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection procedure A-4 "Communication with the front-ECU is not possible P.54B-89."





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

Check the input signals from the following switches:

- Ignition switch: ACC
- Windshield washer switch: ON

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

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

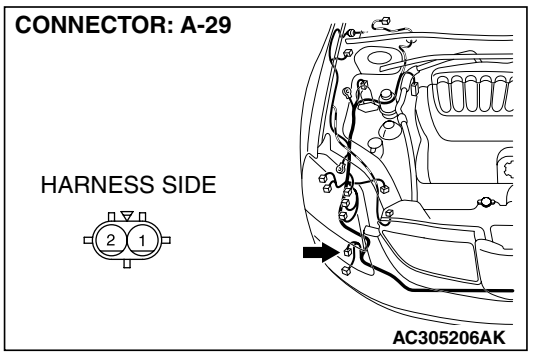
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 09	FRONT WASH.SW	ON
ITEM 70	FRONT ECU ACK	NORMAL ACK or HI-BEAM ACK

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

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

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

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

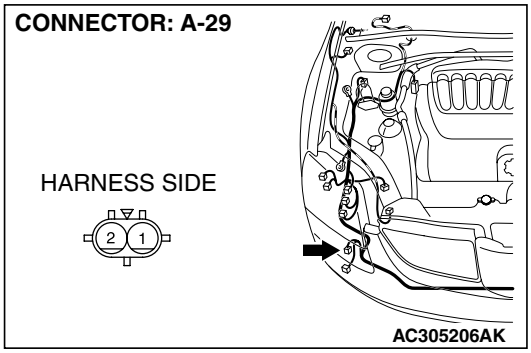


STEP 4. Check windshield washer motor connector A-29 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

YES : Go to Step 5.

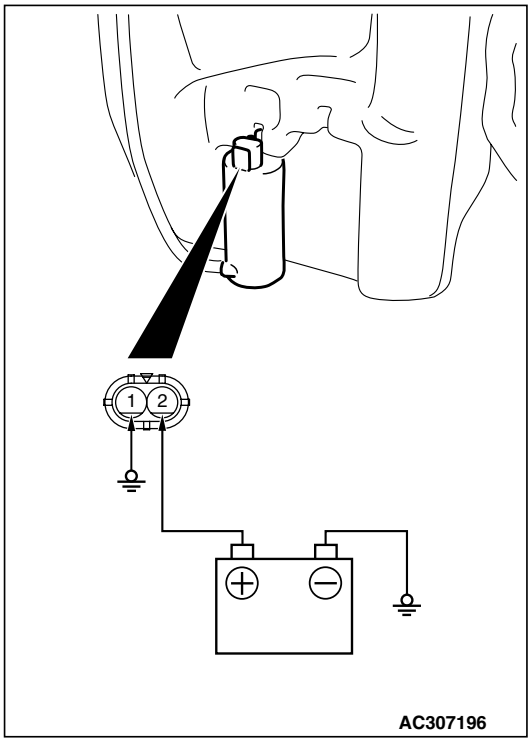
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the windshield washer works normally.



STEP 5. Check the windshield washer motor.

(1) Disconnect windshield washer motor connector A-29, and check at windshield washer motor connector side.

(2) Fill the windshield washer tank with washer fluid.



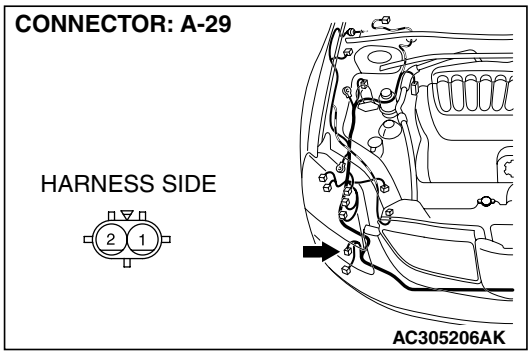
(3) When battery voltage is applied between terminals 1 and 2, washer fluid should spray out.

Q: Does the windshield washer motor operate normally?

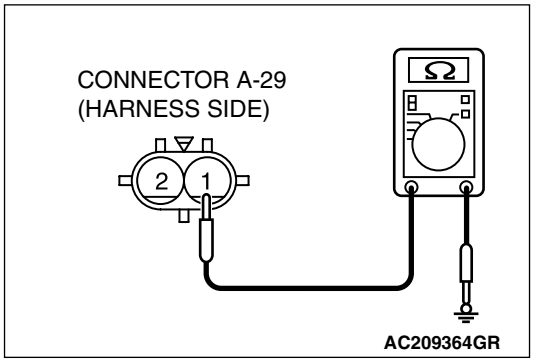
YES : Go to Step 6.

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

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



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

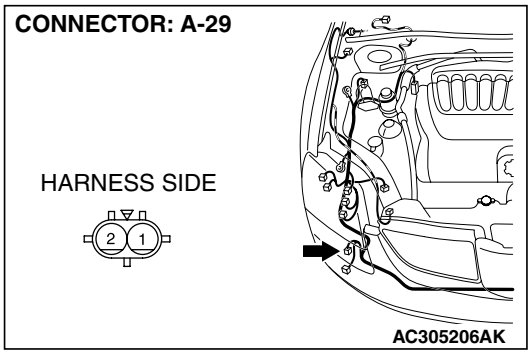


(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.
NO : Go to Step 7.

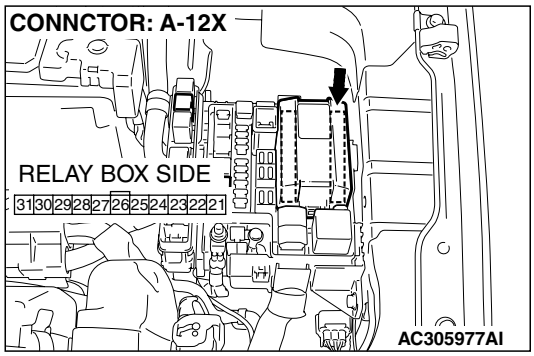
STEP 7. Check the wiring harness between windshield washer motor connector A-29 (terminal 1) and ground.



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

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

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



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

YES : Go to Step 9.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the windshield washer works normally.

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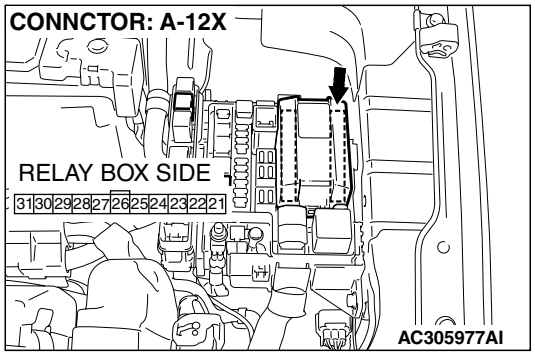
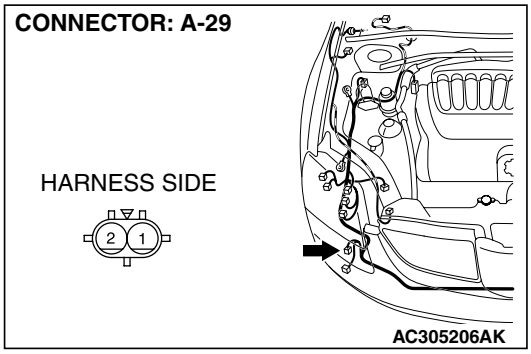




STEP 9. Check the wiring harness between windshield washer motor connector A-29 (terminal 2) and front-ECU connector A-12X (terminal 31).

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

YES : No action is necessary and testing is complete.

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

HEADLIGHT AND TAILLIGHT

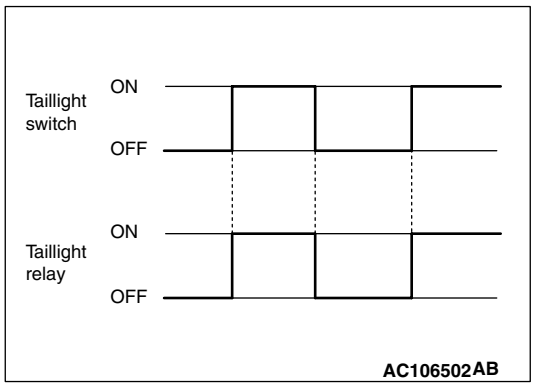
GENERAL DESCRIPTION CONCERNING THE HEADLIGHTS AND TAILLIGHTS

M1549021300361

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

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

Taillights and headlights illumination

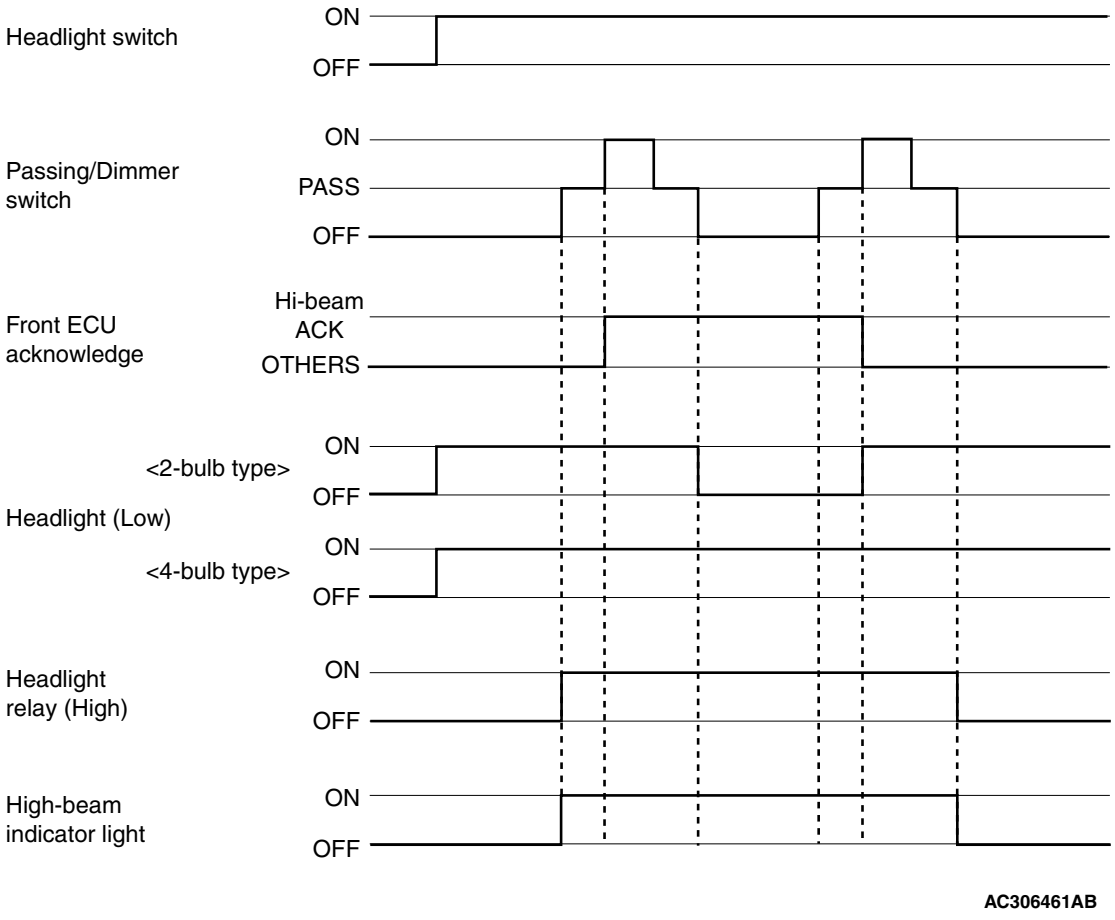


TAILLIGHTS

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

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

Headlights



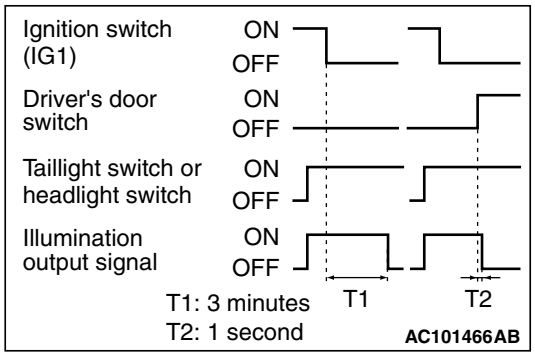
If the column switch sends a headlight switch "ON" signal to the front-ECU, the front-ECU turns on its headlight relay (LOW), causing the low-beam headlights to illuminate. If the dimmer switch is turned on while the headlight relay (LOW) is on, the front-ECU turns on the headlight relay (HIGH), causing 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 the details of the headlight automatic shut-off function, refer to .

High-beam indicator light

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.

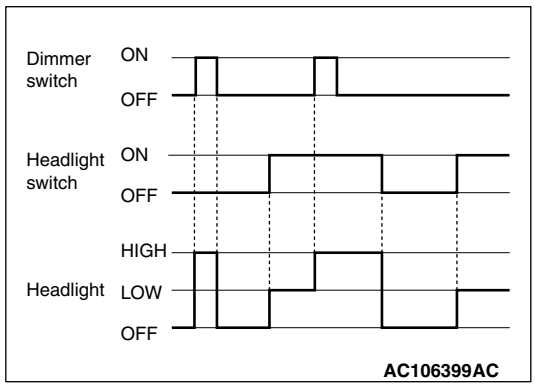
Headlight automatic-shutdown function



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

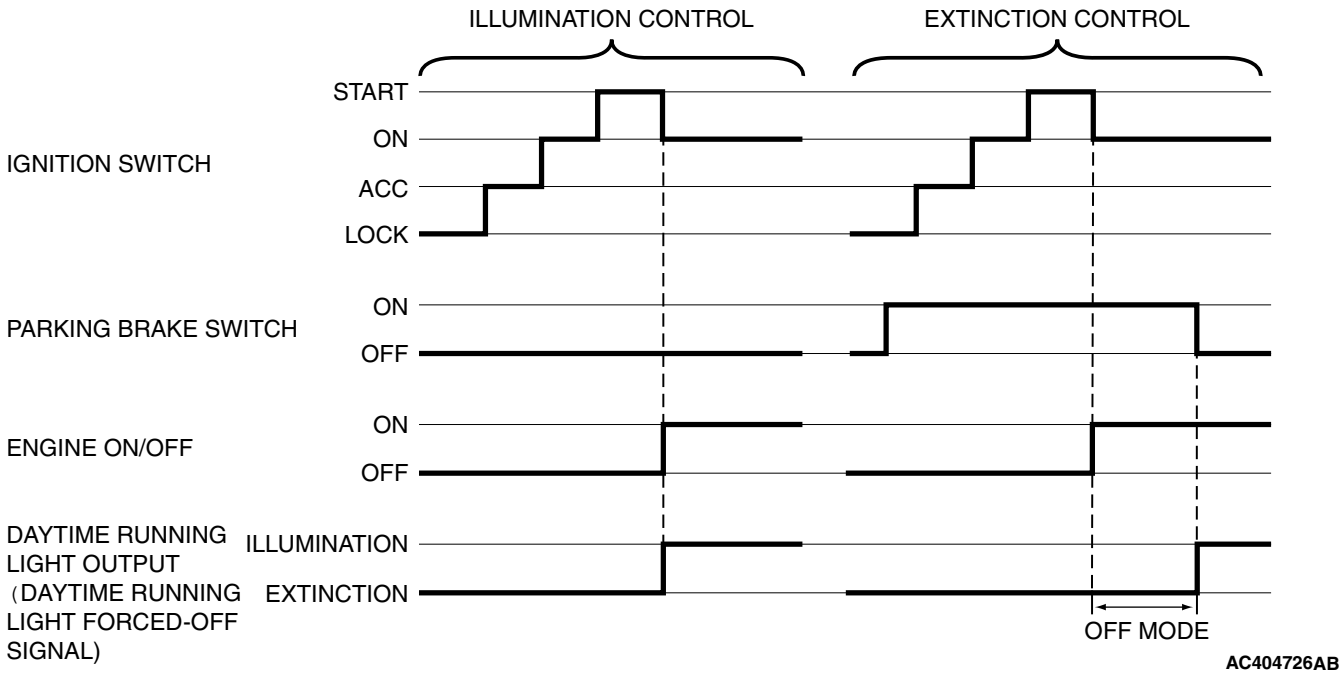
NOTE: The headlight automatic-shutoff function can be customized on vehicles equipped with a multi center display (middle grade type). Refer to P.54B-587.

Dimmer automatic reset function



If the headlight switch is turned off while the high-beam headlights are on, the dimmer switch will be reset. Because of this, the headlights will illuminate at low beam the next time that they are turned on. The dimmer switch will be also reset if the dimmer switch is turned on unintentionally while the passing switch is operated.

Daytime running light function

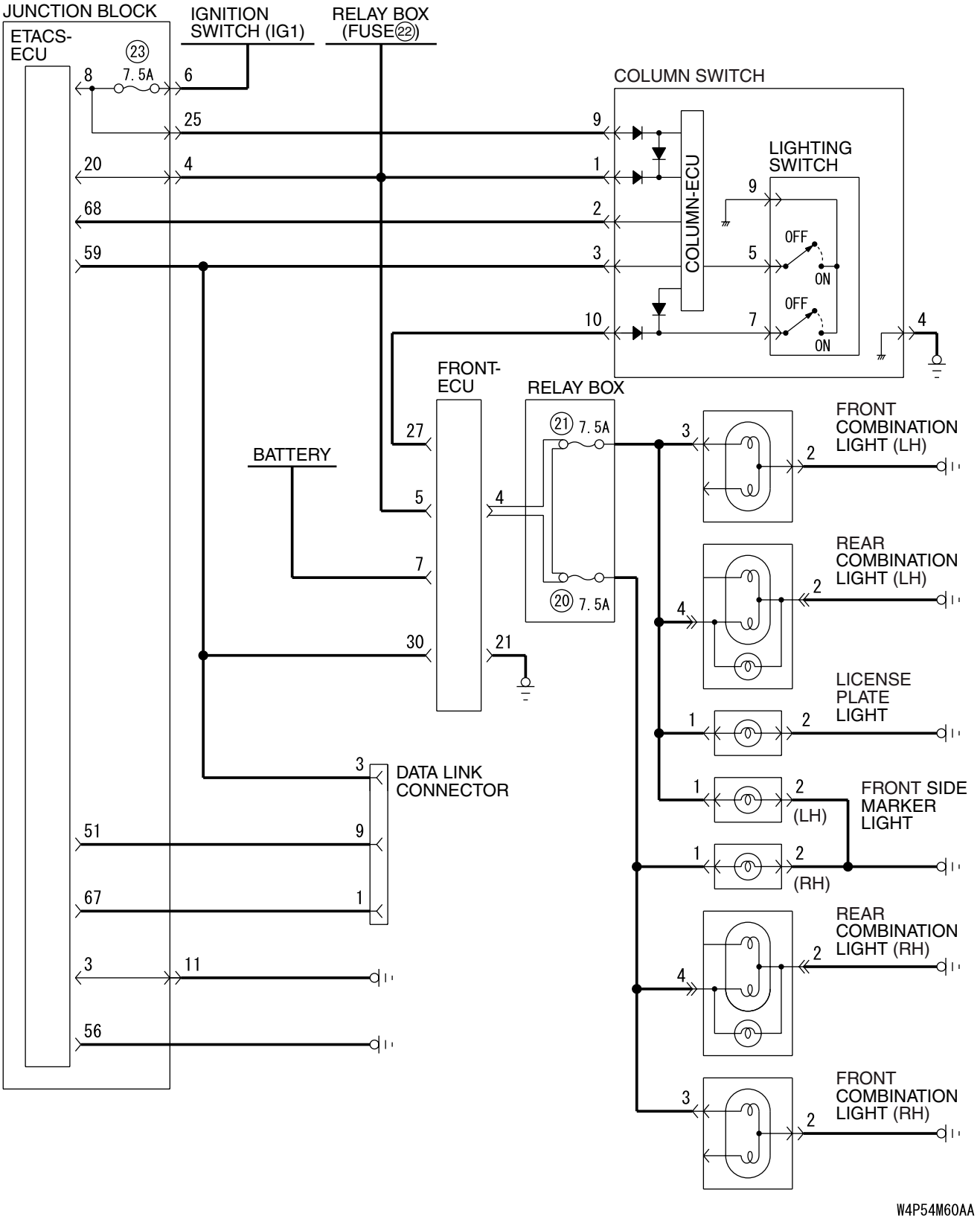


The ETACS-ECU outputs the daytime running light forced-OFF signal to the front-ECU based on the input signal sent via CAN communication. The front-ECU controls illumination and extinction of the daytime running light according to the daytime running light forced-OFF signal.

Illumination control of daytime running lights

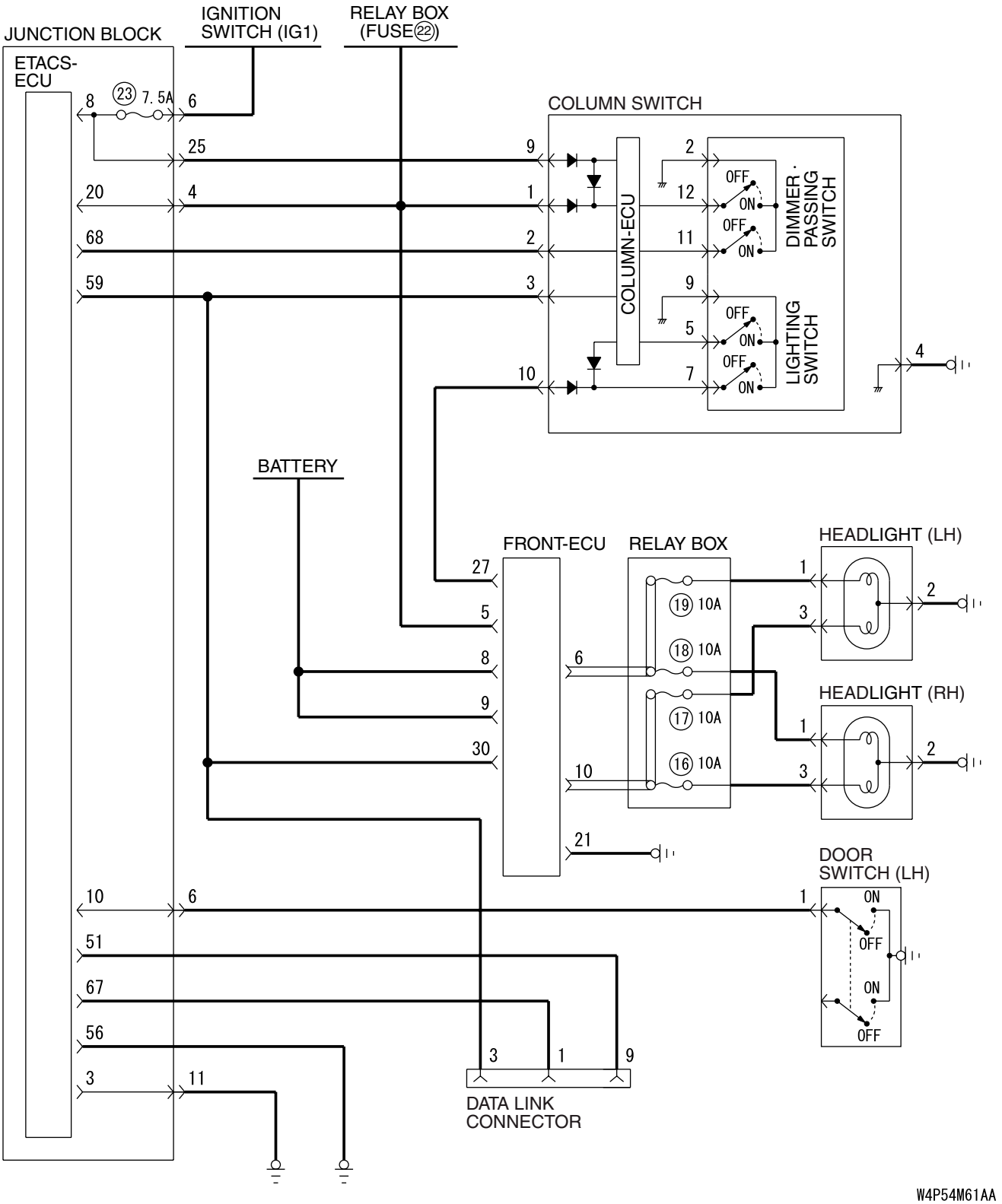
- If the engine is started when the parking brake is not pulled, the headlights illuminate with the brightness reduced.
- If the engine is started while the parking brake is pulled, the daytime running light function OFF mode is entered and the headlights do not illuminate. If the parking brake is released,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

General circuit diagram for the taillights

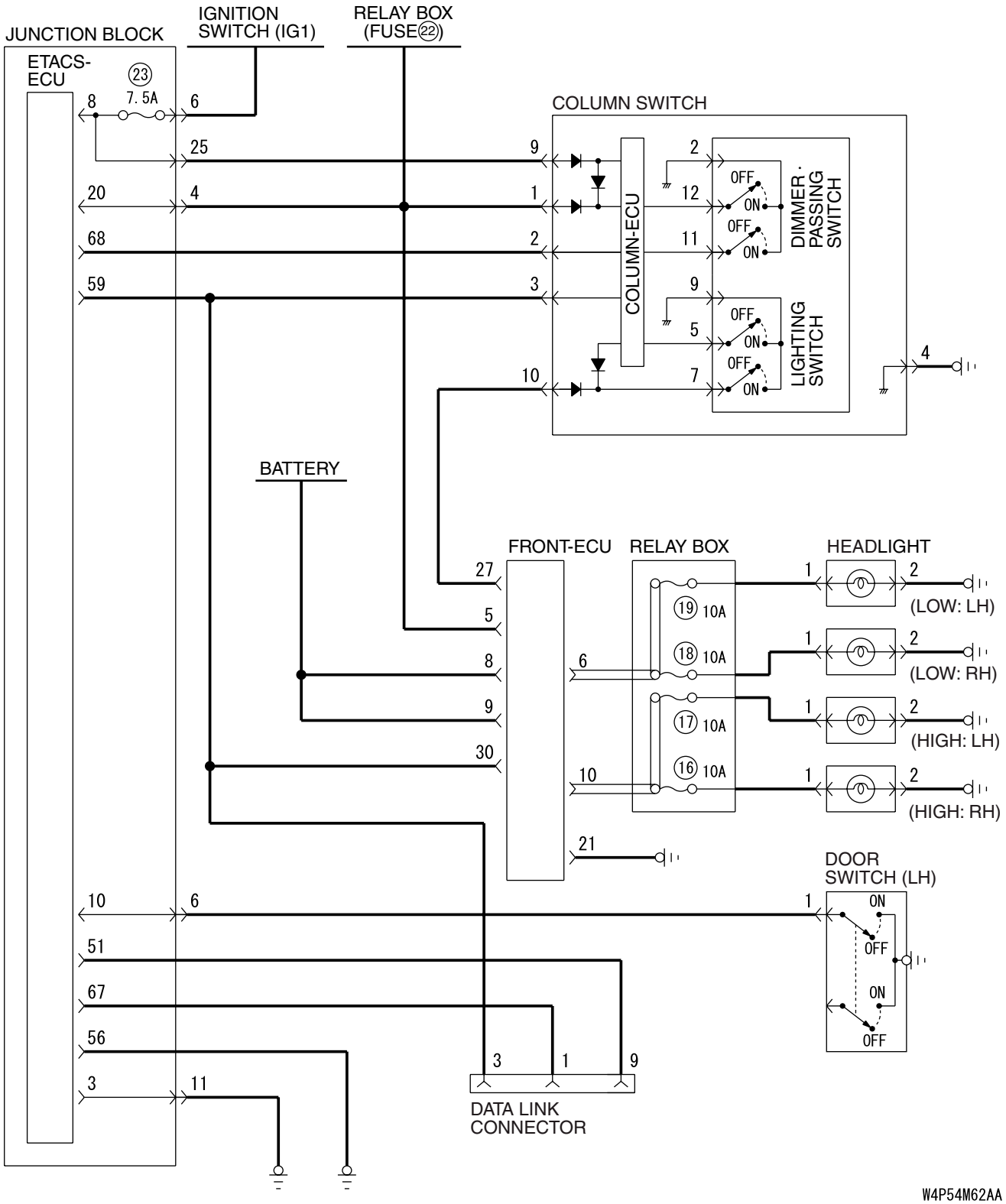


General circuit diagram for the headlights

2-bulb type



4-bulb type



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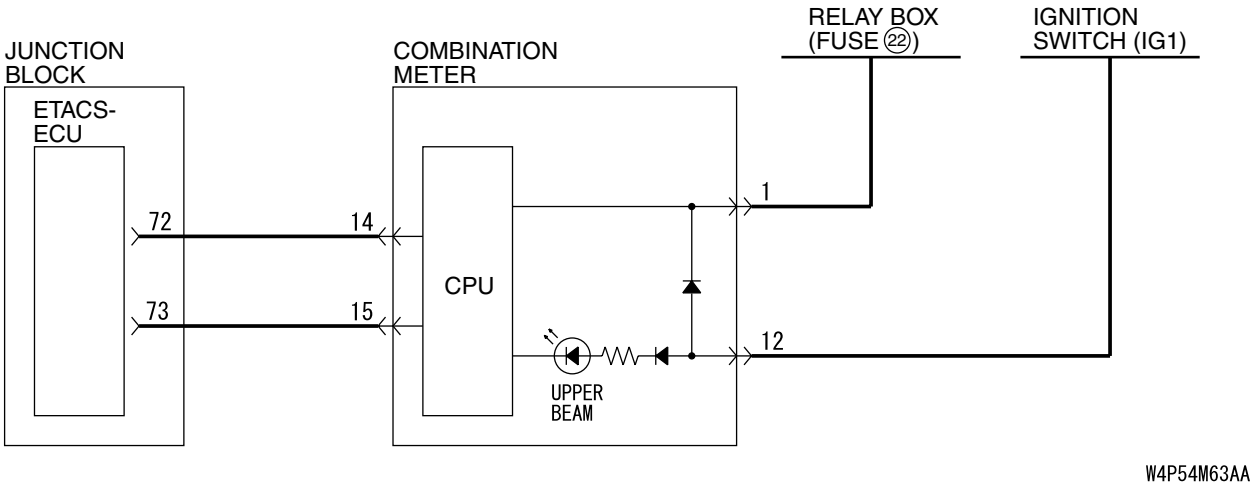
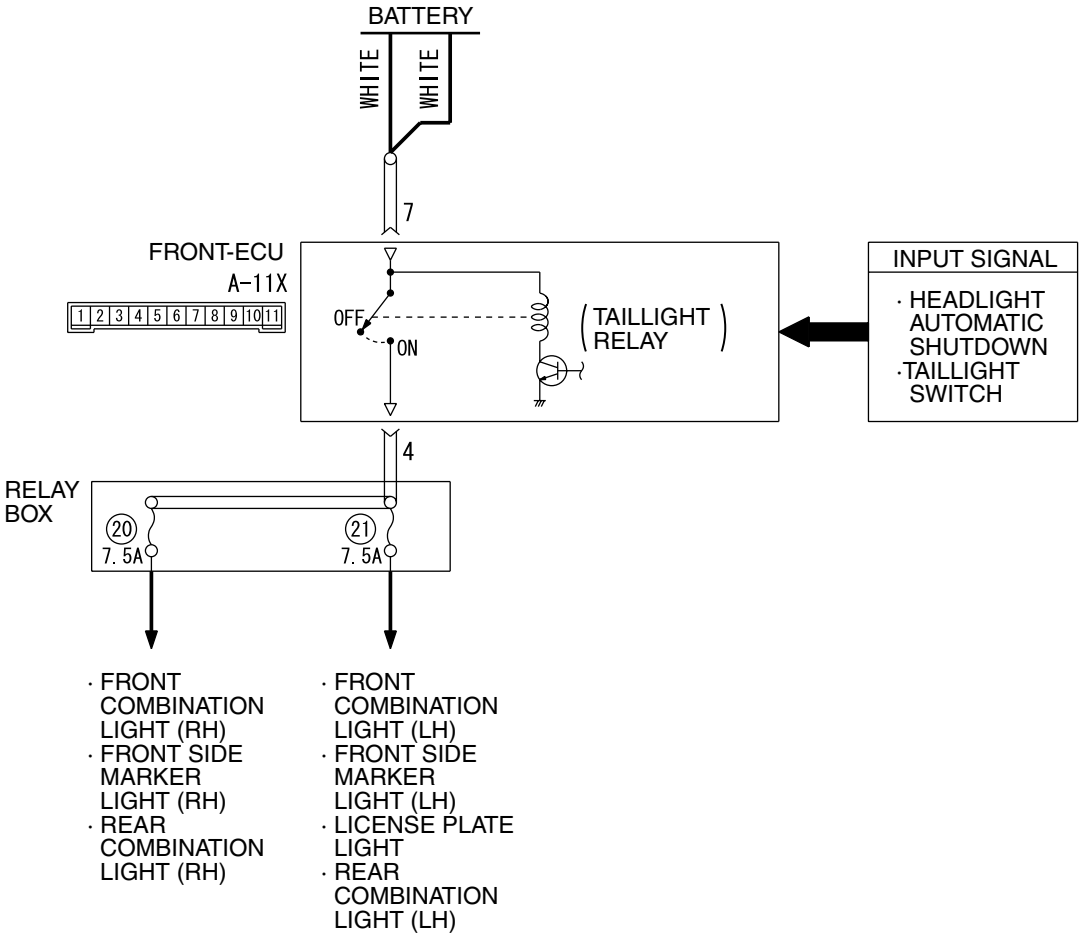


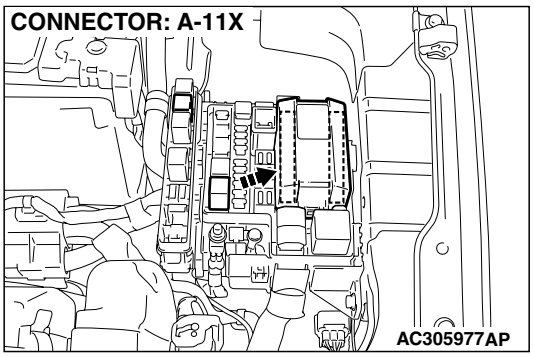
INSPECTION PROCEDURE H-1: Headlight and Taillight: The taillights do not illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Taillight Relay Circuit



W4P54M64AA



CIRCUIT OPERATION

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

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

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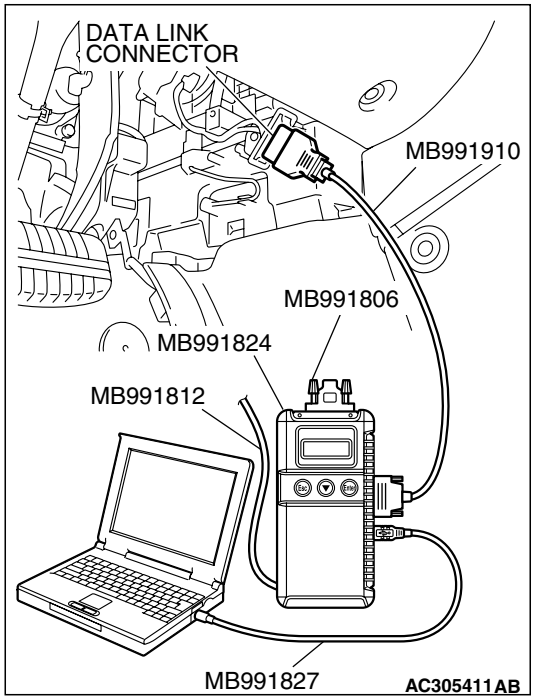
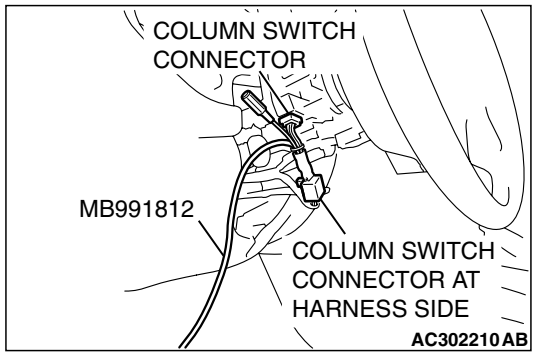
DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

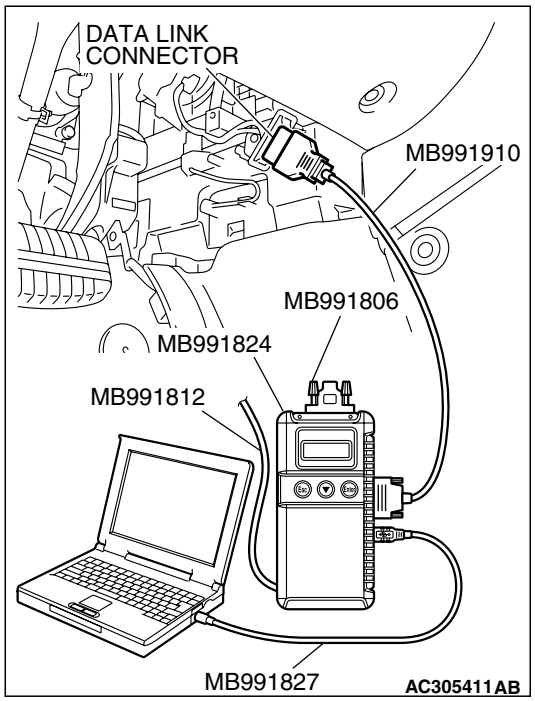
⚠ CAUTION

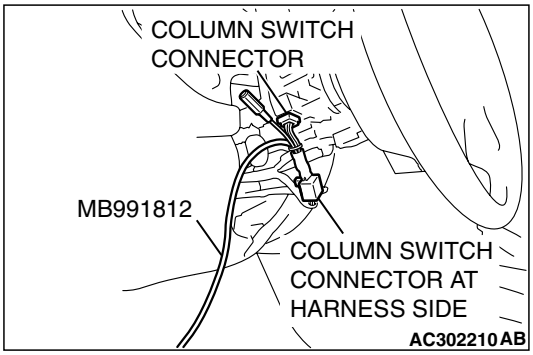
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-73."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-89."





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

Check the input signals from the following switches:

- Ignition switch: ON
- Lighting switch: TAIL

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

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

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

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

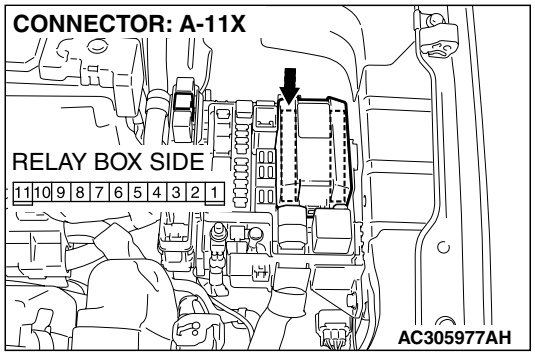
Q: Does the scan tool MB991958 display the items "TAILLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

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

Normal condition is not displayed for "TAILLIGHT SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the taillight switch P.54B-511."

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

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

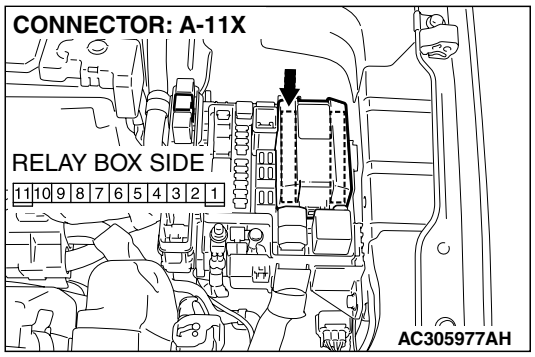


STEP 3. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

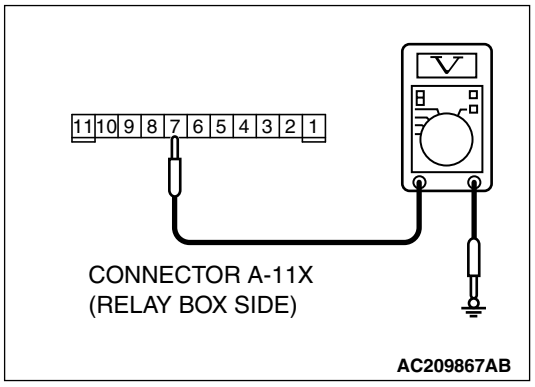
YES : Go to Step 4.

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



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

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

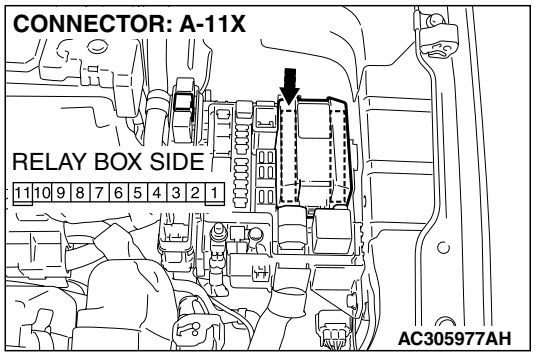


(2) Measure the voltage between terminal 7 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

NO : Go to Step 5.



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

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

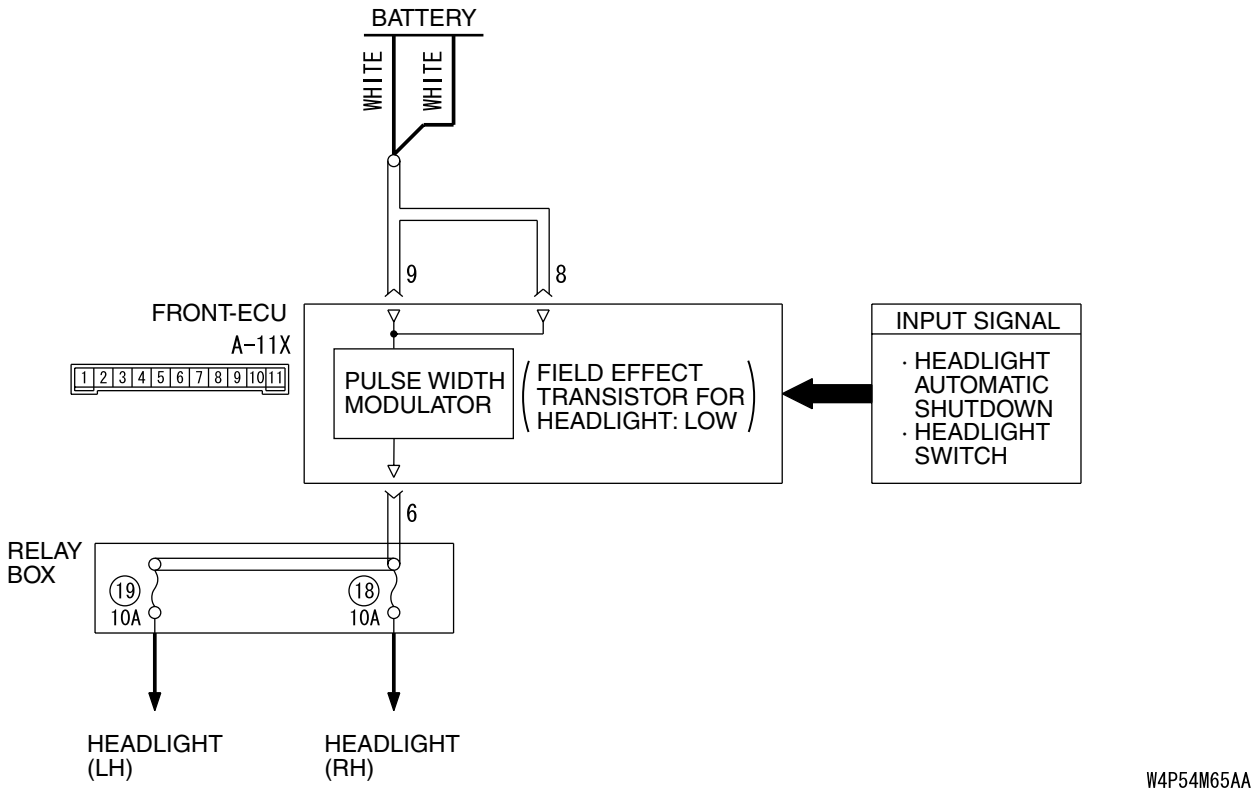
YES : No action is necessary and testing is complete.

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

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

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Headlight Relay (Low-Beam) Circuit



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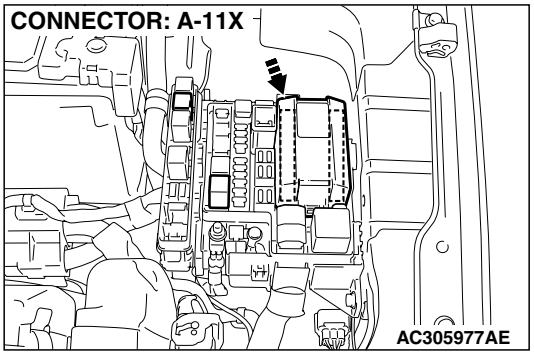


CIRCUIT OPERATION

- 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.

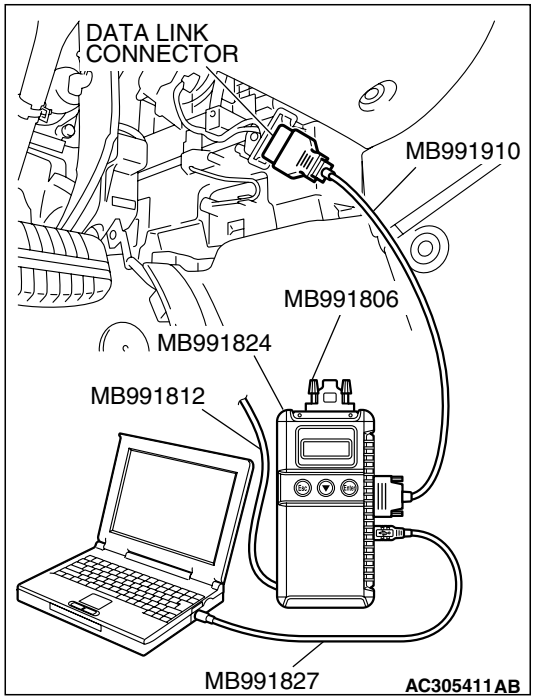
TROUBLESHOOTING HINTS

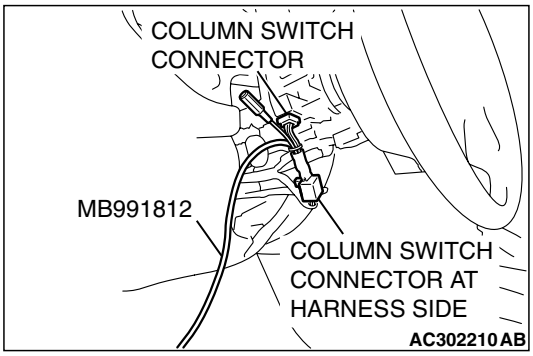
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

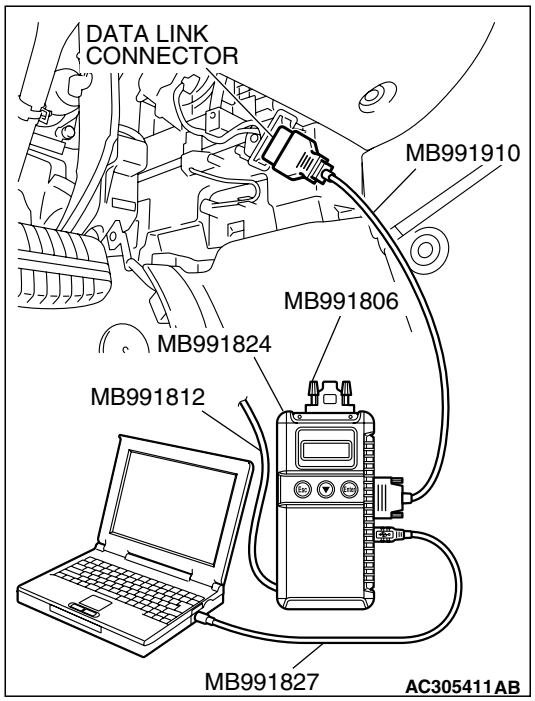
⚠ CAUTION

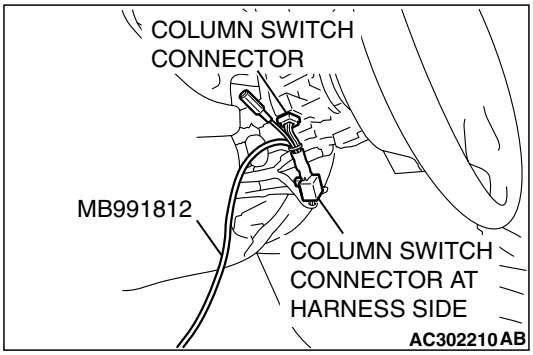
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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-73."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-89."





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

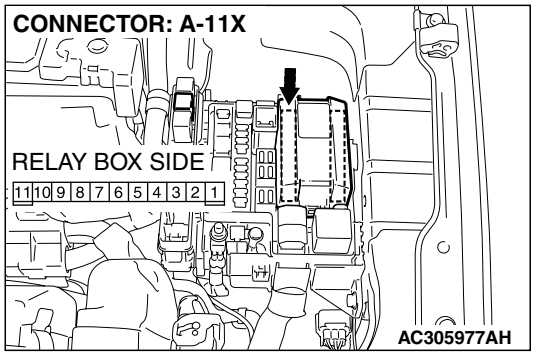
Q: Does the scan tool MB991958 display the items "HEADLIGHT SW", "H/L AUTO-CUT" and "FRONT ECU ACK" as normal condition?

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-5 "ETACS-ECU does not receive any signal from the headlight switch P.54B-511."

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

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

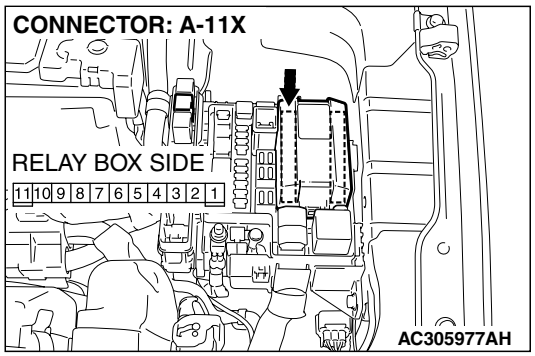


STEP 3. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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

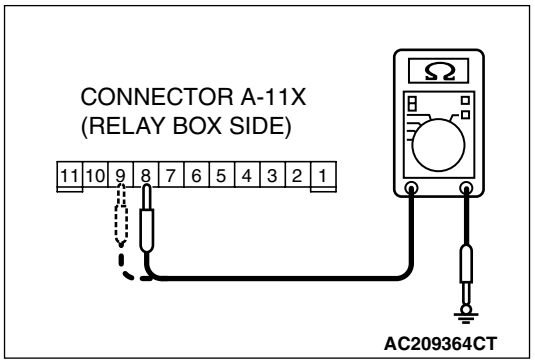
YES : Go to Step 4.

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



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

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

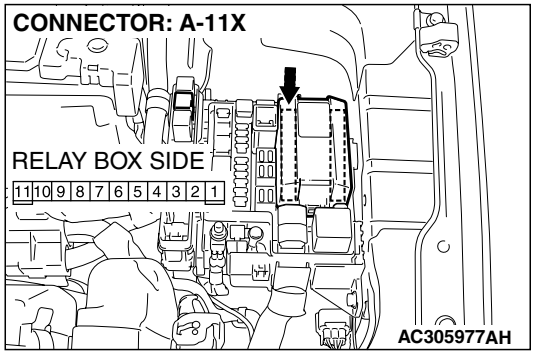


(2) Measure the voltage between terminal numbers 8 and ground, and also between terminal 9 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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

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

NO : Go to Step 5.



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

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

YES : No action is necessary and testing is complete.

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

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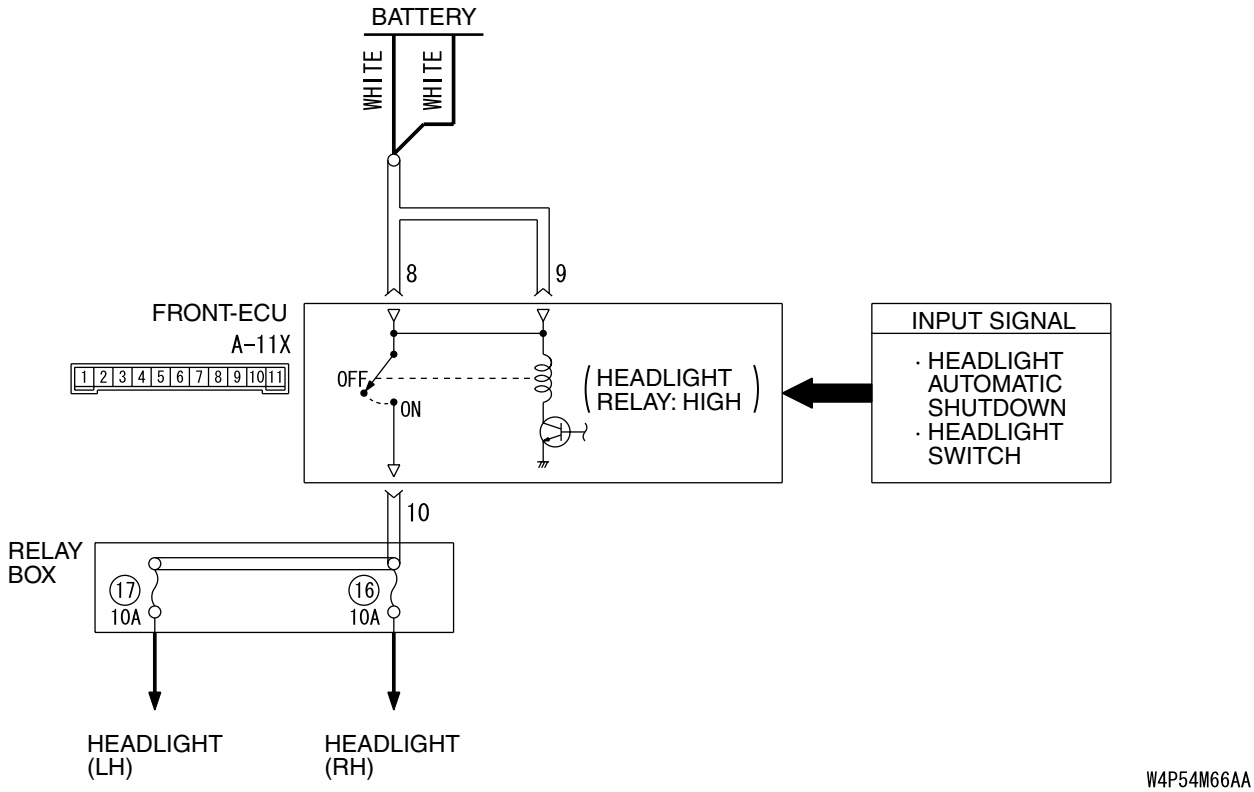
INSPECTION PROCEDURE H-3: Headlight and Taillight: The headlights (high-beam) do not Illuminate normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

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- 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

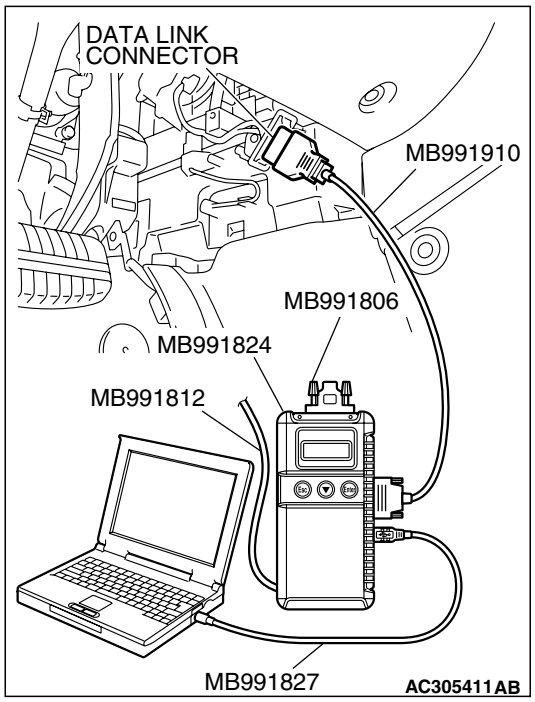
⚠ CAUTION

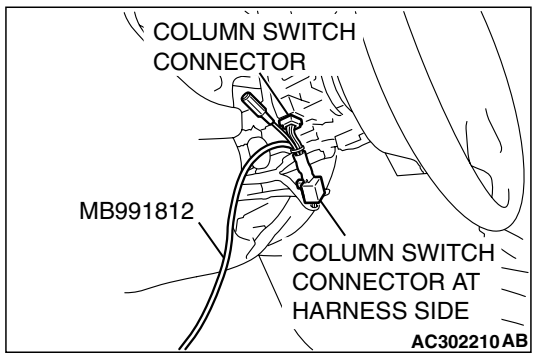
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

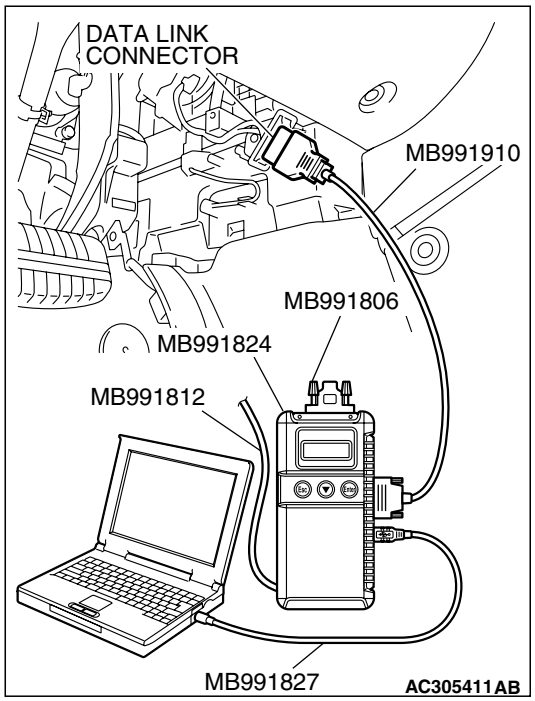
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   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.

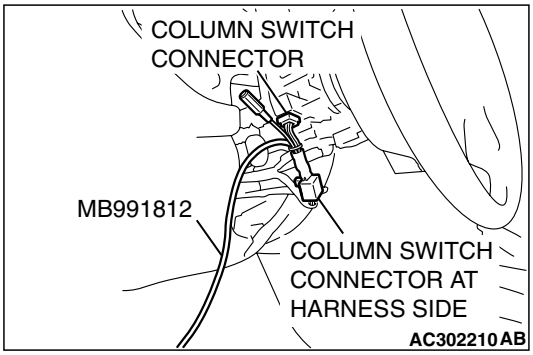
Q: Is "OK" displayed for both the "COLUMN ECU" and "FRONT ECU" menus?

"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-73."
"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-89."









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

Check the input signals from the following switches:

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

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

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

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

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

Normal conditions are displayed for all the items : Replace the front-ECU. Verify that the headlights (high-beam) illuminate normally.

Normal condition is not displayed for "HEADLIGHT SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the headlight switch P.54B-511."

Normal condition is not displayed for "DIMMER SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the dimmer switch P.54B-511."

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

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

INSPECTION PROCEDURE H-4: Headlight and Taillight: When the passing switch is turned "ON," the headlights (low-beam 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-18."

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

STEP 1. Check the headlights.

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

The headlights illuminate normally. : Go to Step 2.
Headlights (low-beam) do not illuminate normally : Refer to Inspection Procedure H-2 "The headlights (low-beam) do not illuminate normally P.54B-307.
Headlights (high-beam) do not illuminate normally : Refer to Inspection Procedure H-3 "The headlights (high-beam) do not illuminate normally P.54B-312.

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.

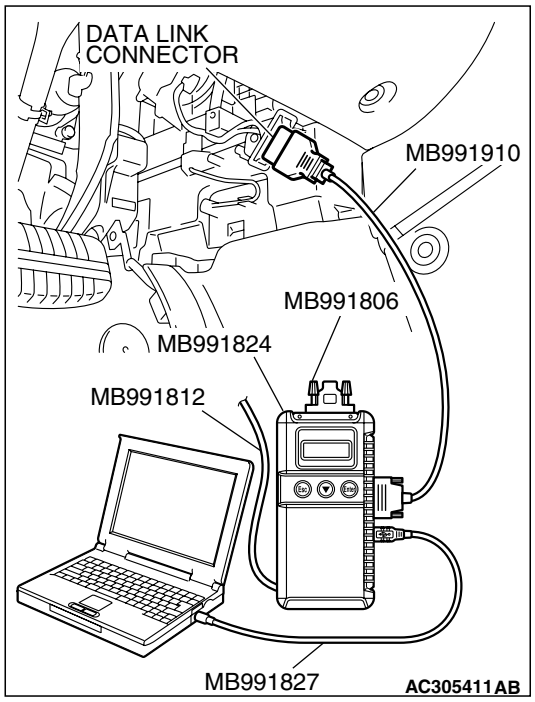
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Operate scan tool MB991958 according to the procedure below to display "COLUMN ECU."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Data List."
   f. Select "COLUMN ECU."
(3) Check that normal conditions are displayed for the items described in the table below.

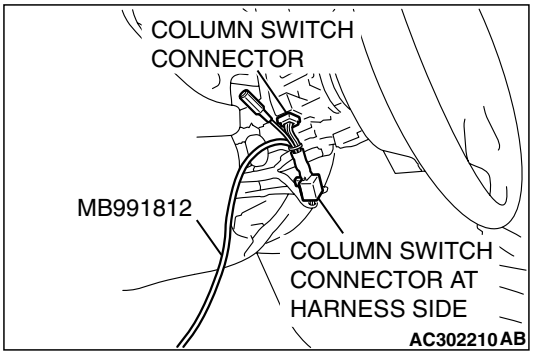
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 03	PASSING SW	ON

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

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

NO : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the passing switch P.54B-511."





INSPECTION PROCEDURE H-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-18."

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TECHNICAL DESCRIPTION (COMMENT)

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

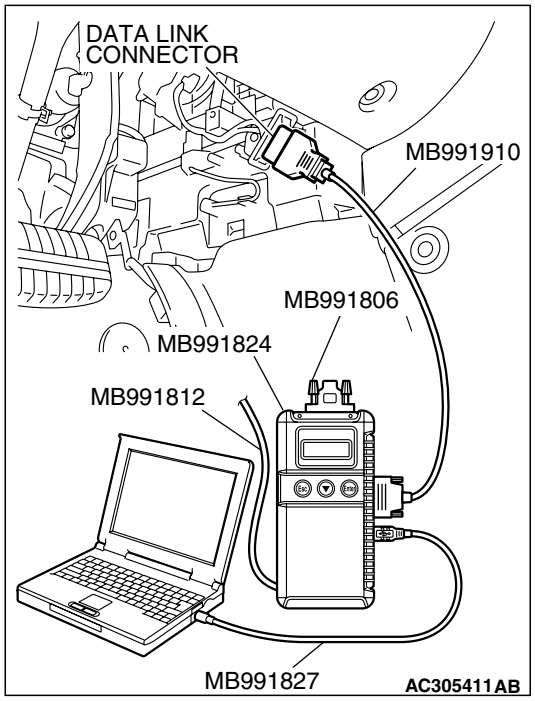
TROUBLESHOOTING HINTS

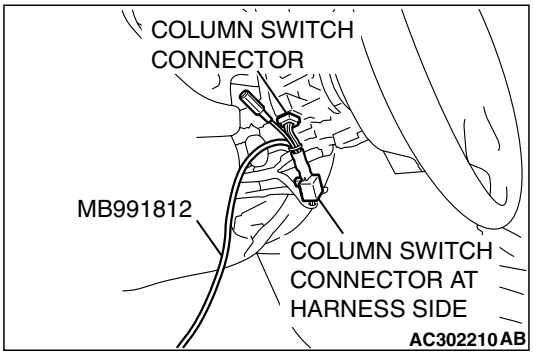
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

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





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

Check the following ECUs:

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

⚠ CAUTION

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

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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.

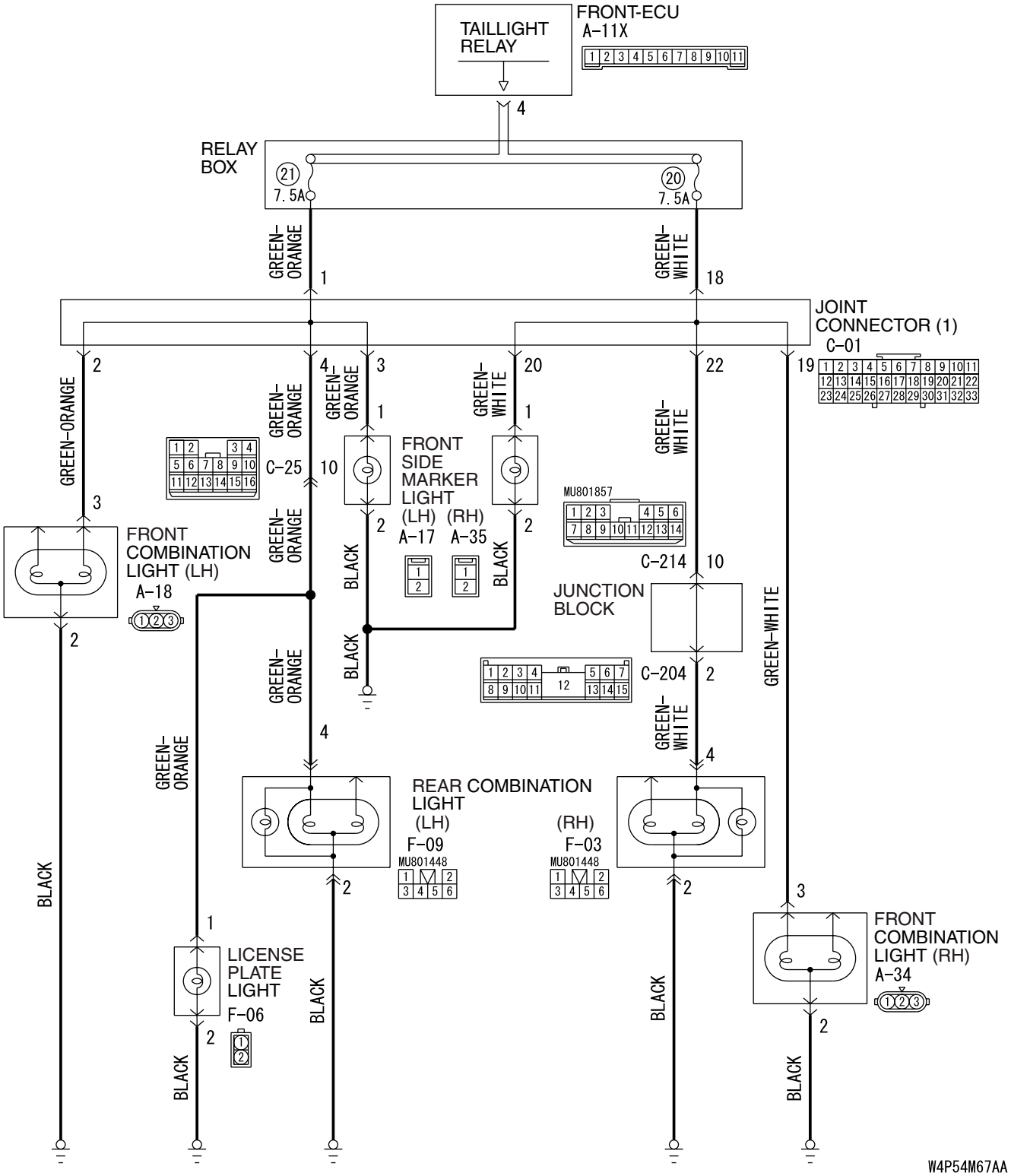
"NG" is displayed for the "ETACS ECU" menu : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."

"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-73."

"NG" is displayed for the "FRONT ECU" menu : Refer to Inspection Procedure A-4 "Communication with the front-ECU is not possible P.54B-89."

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

Taillights, Front Parking Lights, Front Side Marker Lights and License Plate Light Circuit



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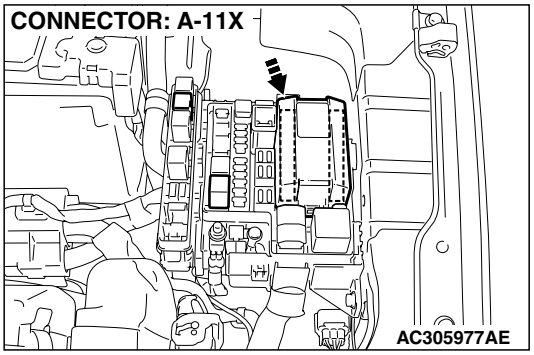
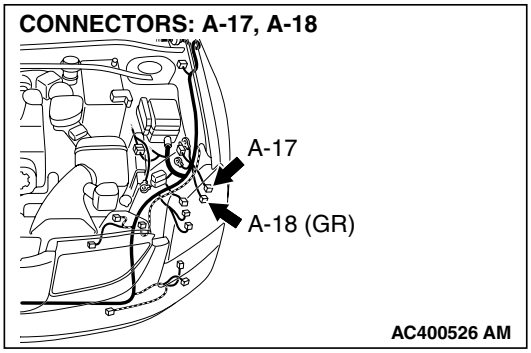
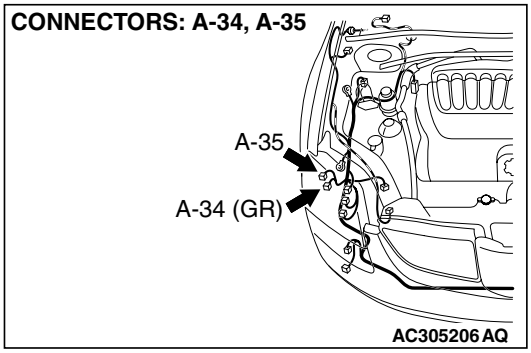
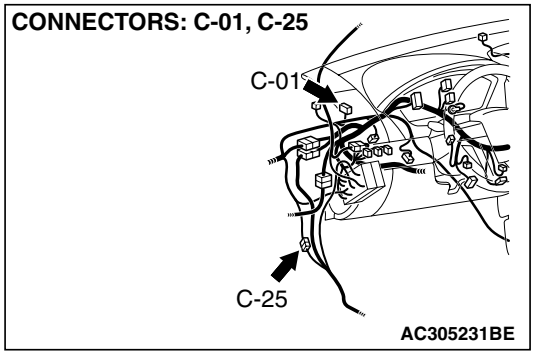
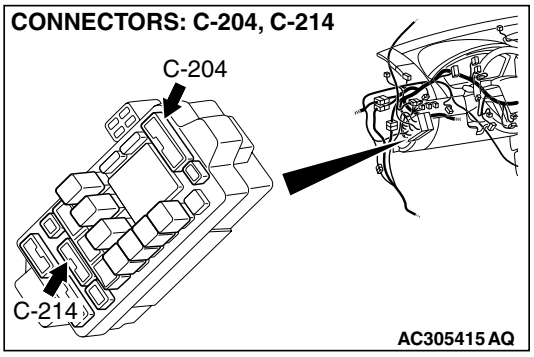
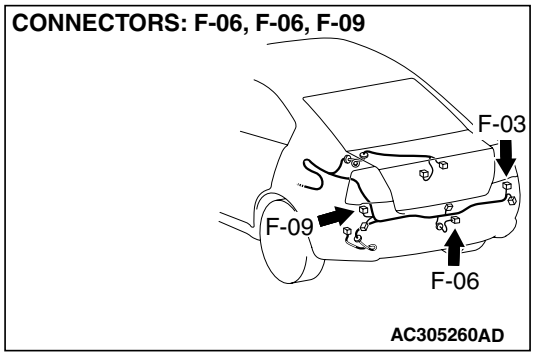












TECHNICAL DESCRIPTION (COMMENT)

If the front parking lights the front side marker 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 front side marker light bulb may be defective
- The stop/taillight bulb may be defective
- The license plate light bulb may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the operation of each light.

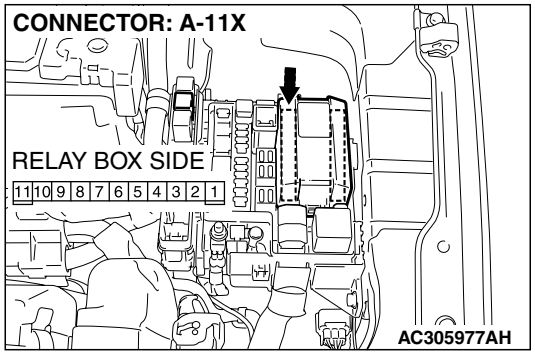
Q: Which light does not illuminate?

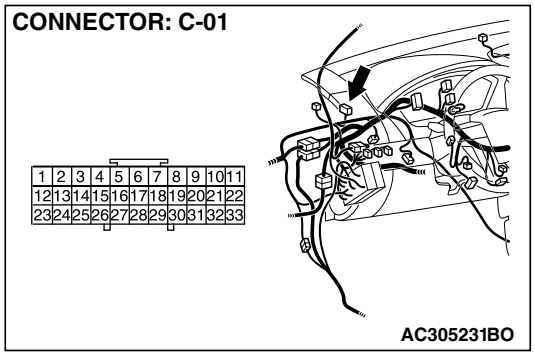
front parking light (LH), taillight (LH), front side marker light (LH) and license plate light : Go to Step 2.
front parking light (RH), taillight (RH) and front side marker light (RH) : Go to Step 4.
taillight (LH) and license plate light : Go to Step 6.
taillight (LH) : Go to Step 8.
taillight (RH) : Go to Step 13.
front parking light (LH) : Go to Step 19.
front parking light (RH) : Go to Step 25.
license plate light : Go to Step 31.
front side marker lights : Go to Step 37.
front side marker light (LH) : Go to Step 38.
front side marker light (RH) : Go to Step 44.
All lights : Refer to Inspection Procedure H-1 "The taillights do not illuminate normally P.54B-301."

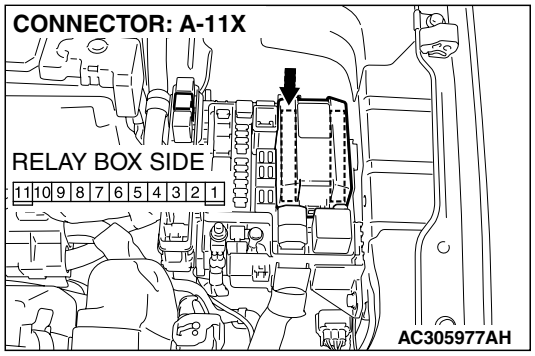
STEP 2. Check joint connector C-01 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

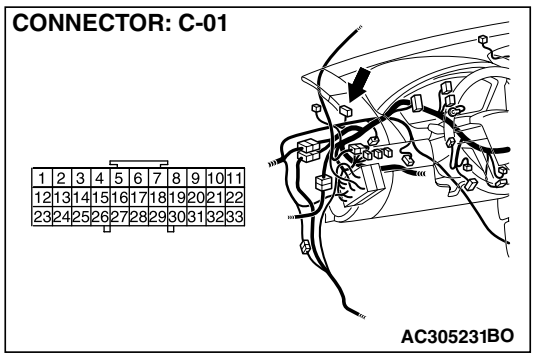
Q: Are joint connector C-01 and front-ECU connector A-11X in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The front parking light (LH), taillight (LH), front side marker light (LH) and the license plate light should illuminate normally.







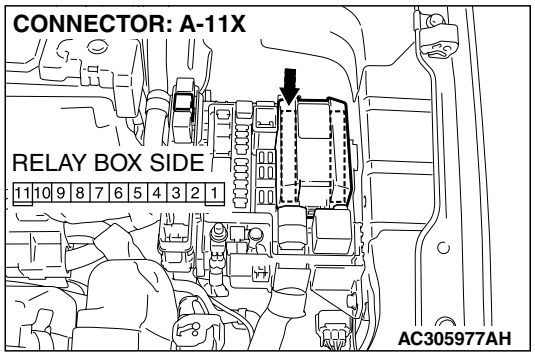


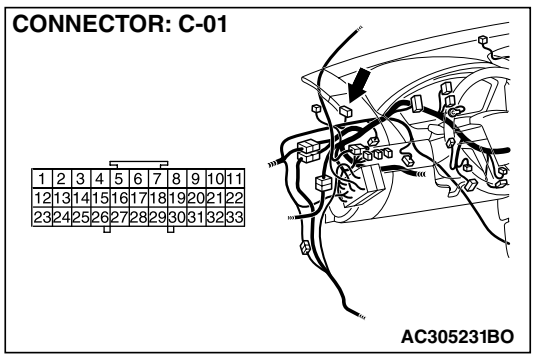
STEP 3. Check the wiring harness between joint connector C-01 (terminal 1) and front-ECU connector A-11X (terminal 4).

Q: Is the wiring harness between joint connector C-01 (terminal 1) and front-ECU connector A-11X (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The front parking light (LH), taillight (LH), front side marker light (LH) and the license plate light should illuminate normally.



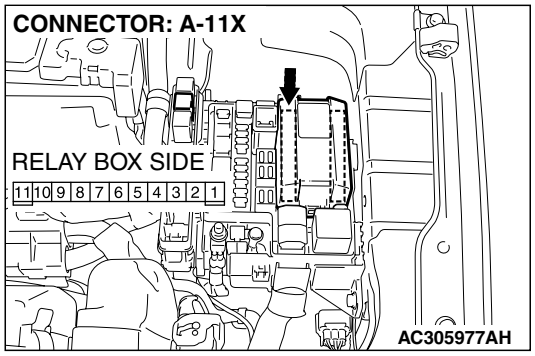


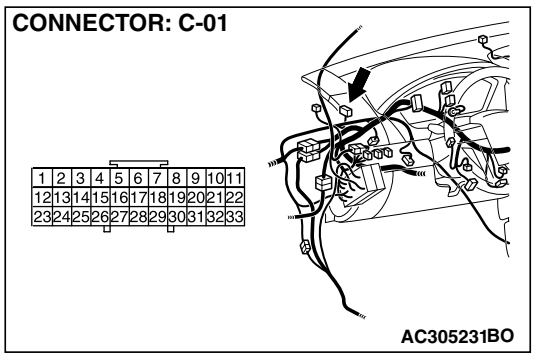
STEP 4. Check joint connector C-01 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are joint connector C-01 and front-ECU connector A-11X in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The front parking light (RH), the front side marker light (RH) and the taillight (RH) should illuminate normally.



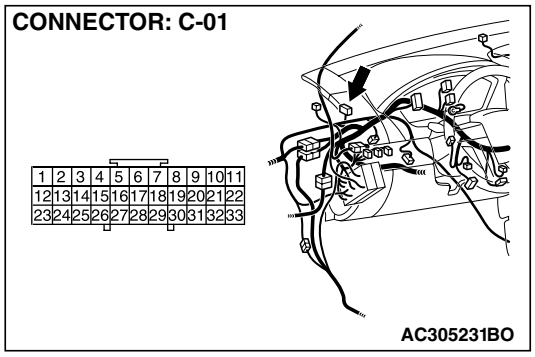


STEP 5. Check the wiring harness between joint connector C-01 (terminal 18) and front-ECU connector A-11X (terminal 4).

Q: Is the wiring harness between joint connector C-01 (terminal 18) and front-ECU connector A-11X (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The front parking light (RH), the front side marker light (RH) and the taillight (RH) should illuminate normally.



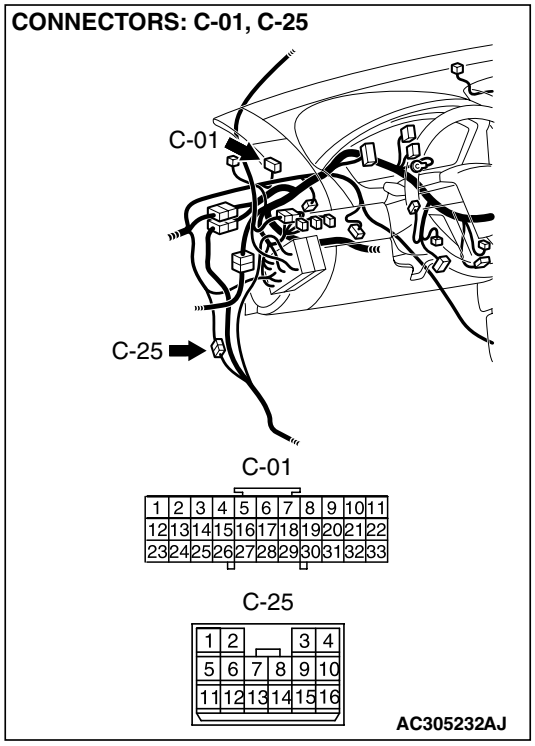
STEP 6. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

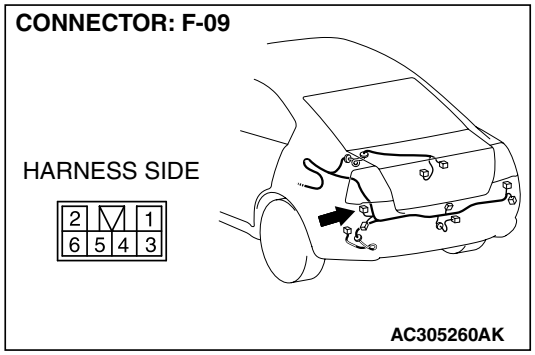
Q: Is joint connector C-01 in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The taillight (LH) and the license plate light should illuminate normally.

STEP 7. Check the wiring harness between joint connector C-01 (terminal 4) and rear combination light (LH) connector F-09 (terminal 4).



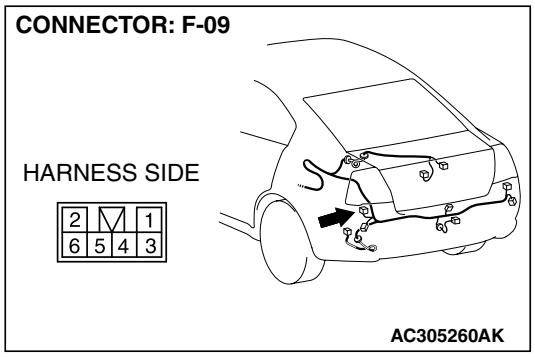


NOTE: Also check intermediate connector C-25 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-25 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between joint connector C-01 (terminal 4) and rear combination light (LH) connector F-09 (terminal 4) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The taillight (LH) and the license plate light should illuminate normally.



STEP 8. Check rear combination light (LH) connector F-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (LH) connector F-09 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the taillight (LH) illuminates normally.

STEP 9. Check the stop/taillight bulb (LH).

(1) Remove the stop/taillight bulb (LH).

(2) Verify that the stop/taillight bulb (LH) is not damaged or burned out.

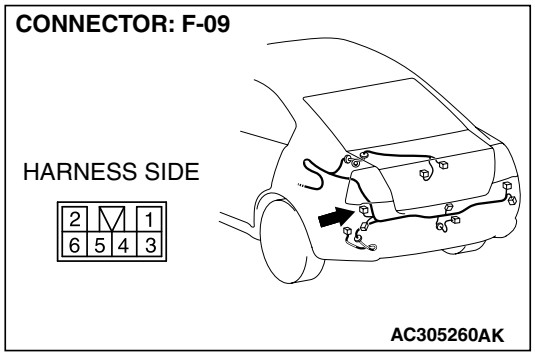
Q: Is the stop/taillight bulb (LH) in good condition?

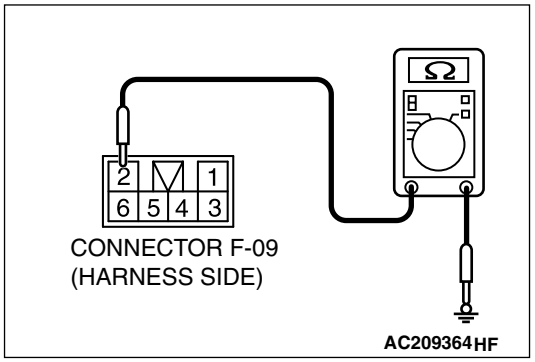
YES : Go to Step 10.

NO : Replace the stop/taillight bulb (LH). Verify that the taillight (LH) illuminates normally.

STEP 10. Check the ground circuit to the rear combination light (LH). Measure the resistance at rear combination light (LH) connector F-09.

(1) Disconnect rear combination light (LH) connector F-09 and measure the resistance available at the wiring harness side of the connector.



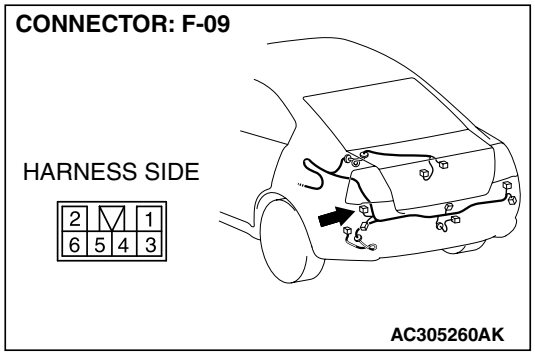


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.

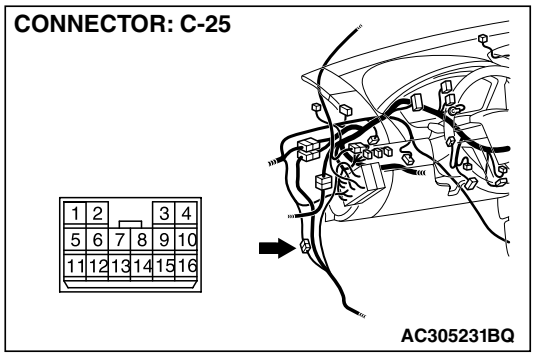


STEP 11. Check the wiring harness between rear combination light (LH) connector F-09 (terminal 2) and ground.

Q: Is the wiring harness between rear combination light (LH) connector F-09 (terminal 2) and ground in good condition?

YES : Replace the rear combination light socket (LH). Verify that the taillight (LH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the taillight (LH) illuminates normally.

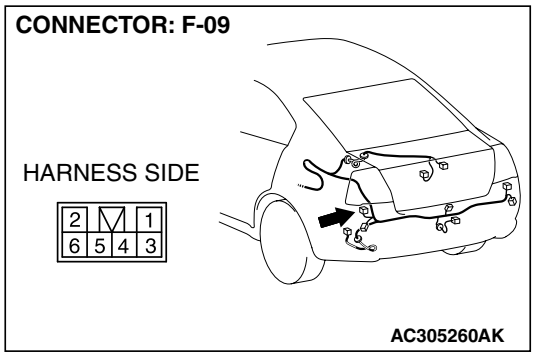


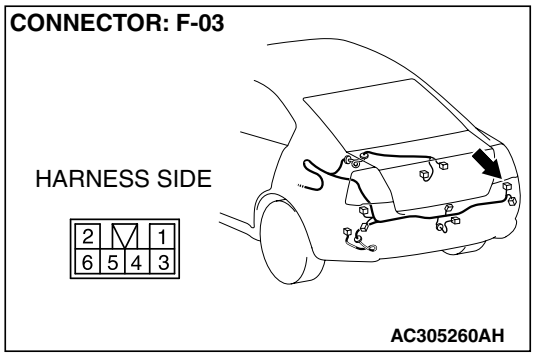
STEP 12. Check the wiring harness between rear combination light (LH) connector F-09 (terminal 4) and intermediate connector C-25 (terminal 10).

Q: Is the wiring harness between rear combination light (LH) connector F-09 (terminal 4) and intermediate connector C-25 (terminal 10) in good condition?

YES : Replace the rear combination light socket (LH). Verify that the taillight (LH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the taillight (LH) illuminates normally.





STEP 13. Check rear combination light (RH) connector F-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear combination light (RH) connector F-03 in good condition?

YES : Go to Step 14.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the taillight (RH) illuminates normally.

STEP 14. Check the stop/taillight bulb (RH).

(1) Remove the stop/taillight bulb (RH).

(2) Verify that the stop/taillight bulb (RH) is not damaged or burned out.

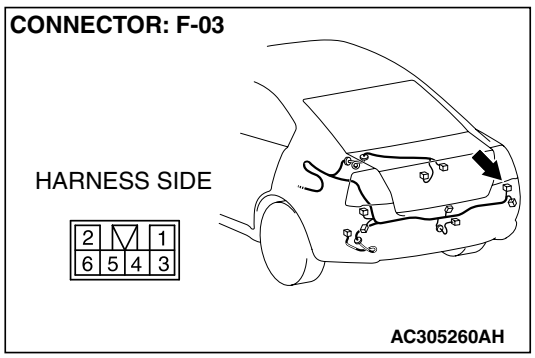
Q: Is the stop/taillight bulb (RH) in good condition?

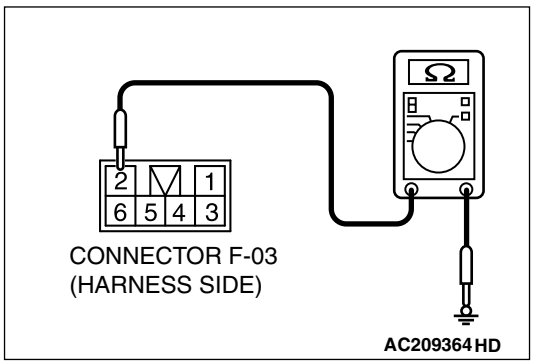
YES : Go to Step 15.

NO : Replace the stop/taillight bulb (RH). Verify that the taillight (RH) illuminates normally.

STEP 15. Check the ground circuit to the rear combination light (RH). Measure the resistance at rear combination light (RH) connector F-03.

(1) Disconnect rear light (RH) connector F-03 and measure the resistance available at the wiring harness side of the connector.





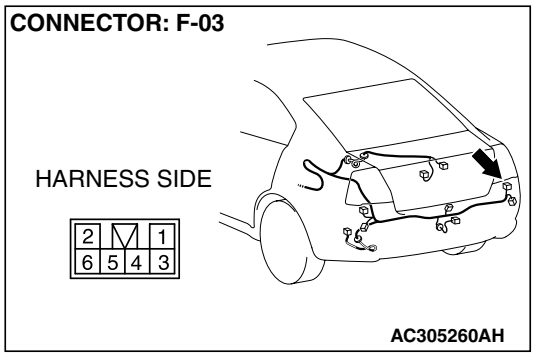
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 17.

NO : Go to Step 16.

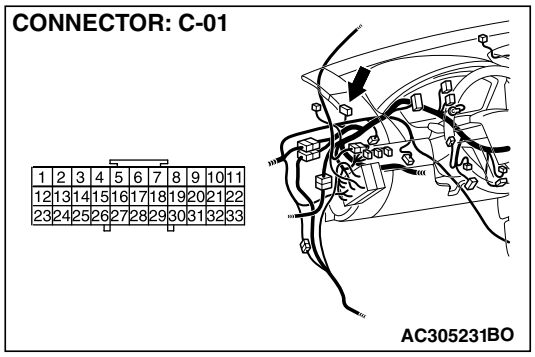


STEP 16. Check the wiring harness between rear combination light (RH) connector F-03 (terminal 2) and ground.

Q: Is the wiring harness between rear combination light (RH) connector F-03 (terminal 2) and ground in good condition?

YES : Replace the rear combination light socket (RH). Verify that the taillight (RH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the taillight (RH) illuminates normally.



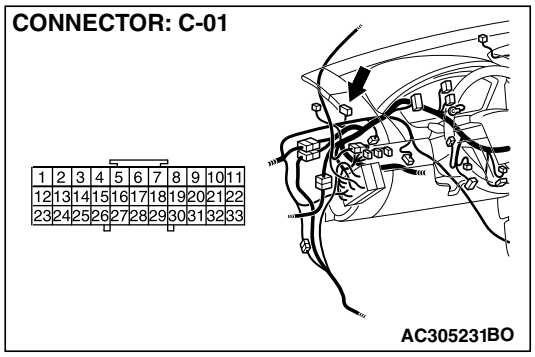
STEP 17. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

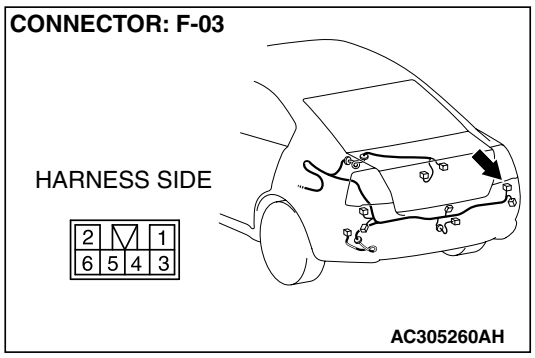
Q: Is joint connector C-01 in good condition?

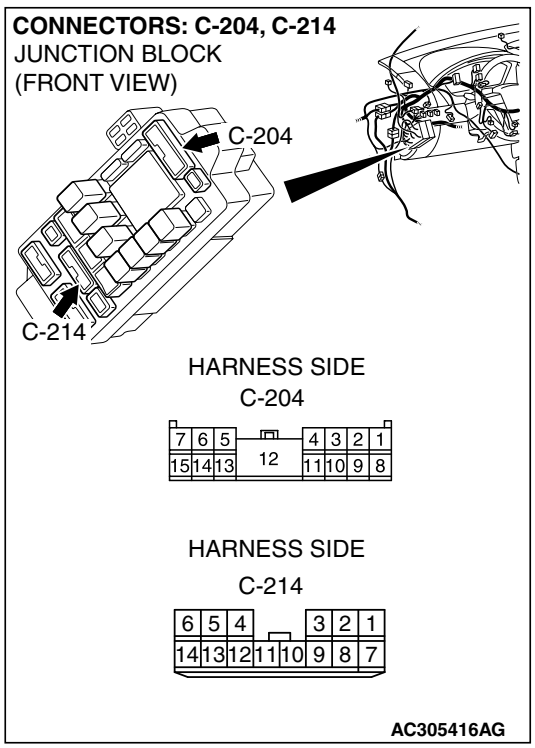
YES : Go to Step 18.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the taillight (RH) illuminates normally.

STEP 18. Check the wiring harness between rear combination light (RH) connector F-03 (terminal 4) and joint connector C-01 (terminal 22).





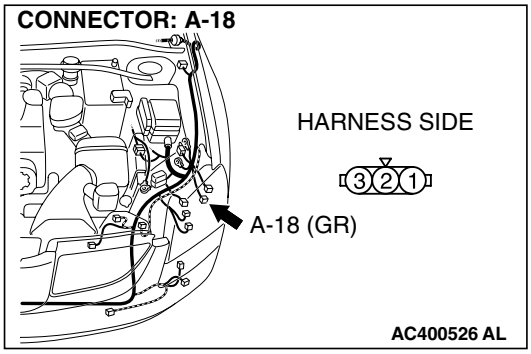


NOTE: Also check junction block connectors C-214 and C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light (RH) connector F-03 (terminal 4) and joint connector C-01 (terminal 22) in good condition?

YES : Replace the rear combination light socket (RH). Verify that the taillight (RH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the taillight (RH) illuminates normally.



STEP 19. Check front combination light (LH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light (LH) connector A-18 in good condition?

YES : Go to Step 20.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (LH) illuminates normally.

STEP 20. Check the front parking light bulb (LH).

(1) Remove the front parking light bulb (LH).

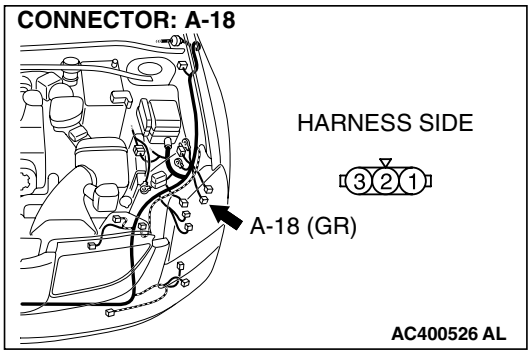
(2) Verify that the front parking light bulb (LH) is not damaged or burned out.

Q: Is the front parking light bulb (LH) in good condition?

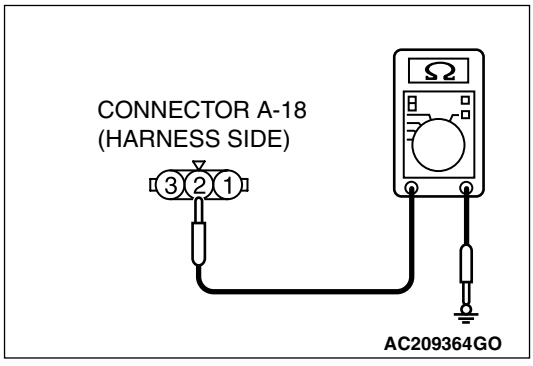
YES : Go to Step 21.

NO : Replace the front parking light bulb (LH). Verify that the front parking light (LH) illuminates normally.

STEP 21. Check the ground circuit to the front parking light (LH). Measure the resistance at front combination light (LH) connector A-18.



(1) Disconnect front combination light (LH) connector A-18 and measure the resistance available at the wiring harness side of the connector.



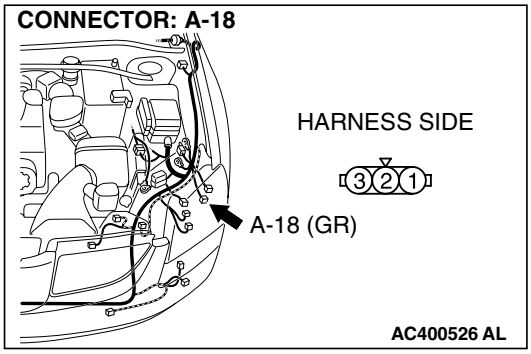
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 23.

NO : Go to Step 22.

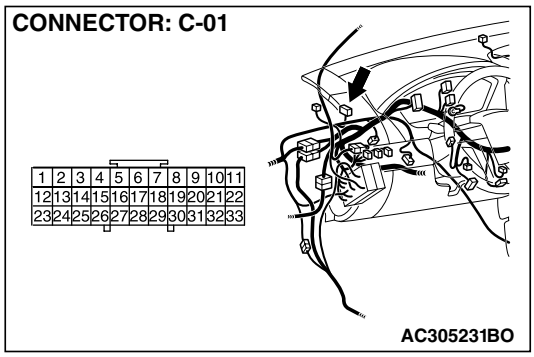


STEP 22. Check the wiring harness between front combination light (LH) connector A-18 (terminal 2) and ground.

Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the front parking light (LH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (LH) illuminates normally.

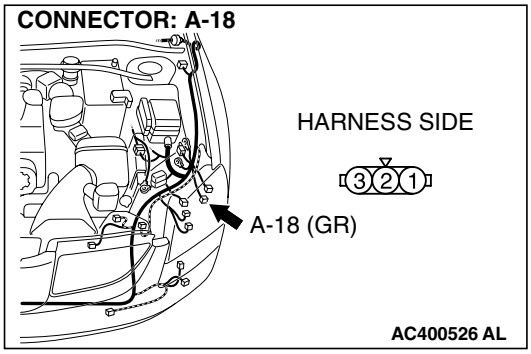


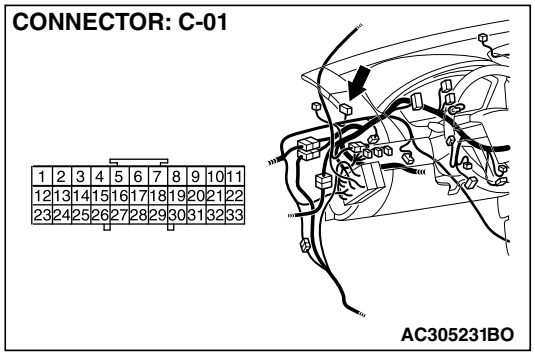
STEP 23. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-01 in good condition?

YES : Go to Step 24.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (LH) illuminates normally.



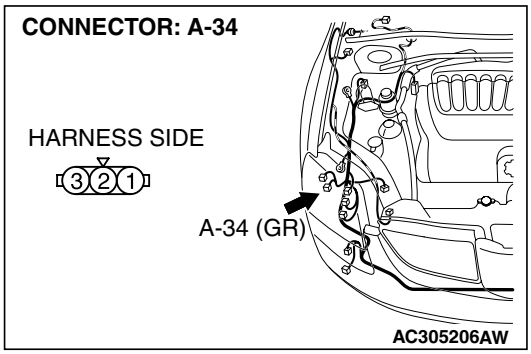


STEP 24. Check the wiring harness between front combination light (LH) connector A-18 (terminal 3) and joint connector C-01 (terminal 15).

Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 3) and joint connector C-01 (terminal 15) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (LH) illuminates normally.



STEP 25. Check front combination light (RH) connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front combination light (RH) connector A-34 in good condition?

YES : Go to Step 26.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (RH) illuminates normally.

STEP 26. Check the front parking light bulb (RH).

(1) Remove the front parking light bulb (RH).

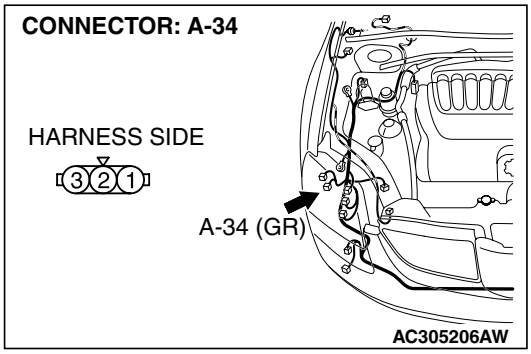
(2) Verify that the front parking light bulb (RH) is not damaged or burned out.

Q: Is the front parking light bulb (RH) in good condition?

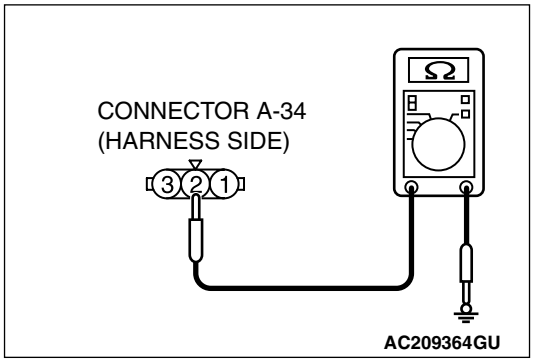
YES : Go to Step 27.

NO : Replace the front side marker light bulb (RH). Verify that the front parking light (RH) illuminates normally.

STEP 27. Check the ground circuit to the front parking light (RH). Measure the resistance at front combination light (RH) connector A-34.



(1) Disconnect front combination light (RH) connector A-34, and measure the resistance available at the harness side of the connector.

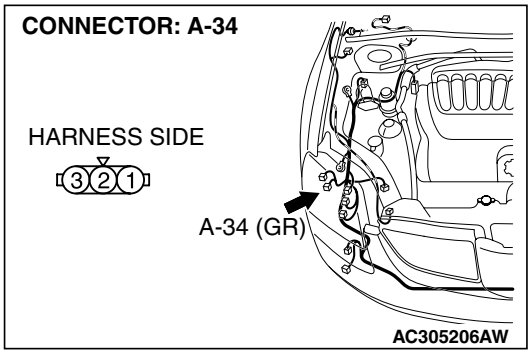


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

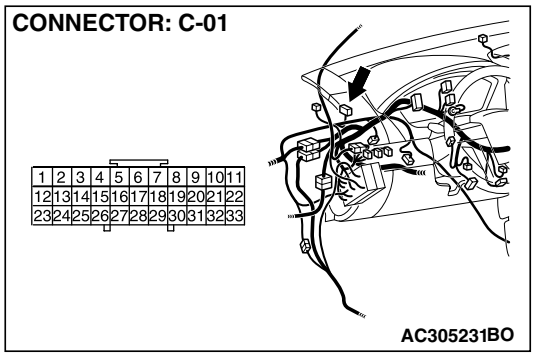
YES : Go to Step 29.
NO : Go to Step 28.

STEP 28. Check the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground.



Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (RH). Verify that the front parking light (RH) illuminates normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (RH) illuminates normally.

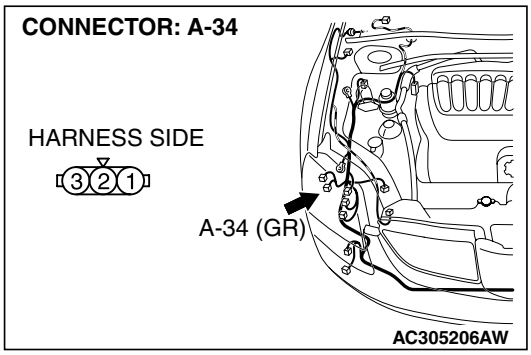


STEP 29. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-01 in good condition?

YES : Go to Step 30.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front parking light (RH) illuminates normally.

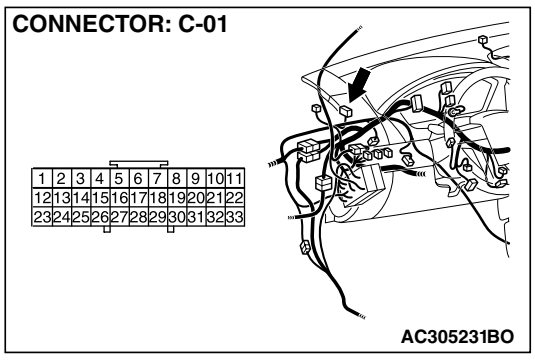


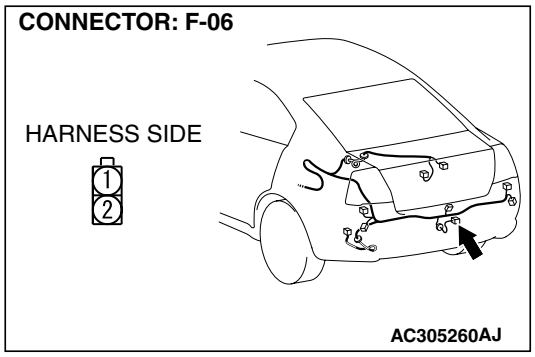
STEP 30. Check the wiring harness between front combination light (RH) connector A-34 (terminal 3) and joint connector C-01 (terminal 19).

Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 3) and joint connector C-01 (terminal 19) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front parking light (RH) illuminates normally.





STEP 31. Check license plate light connector F-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is license plate light connector F-06 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.

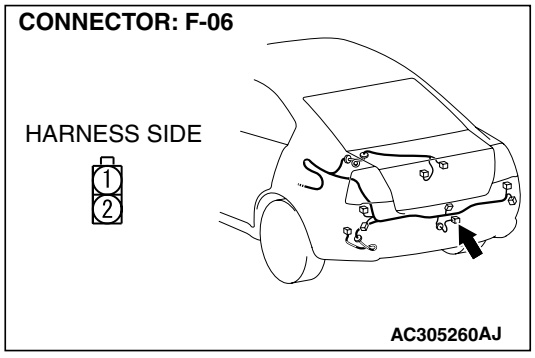
Q: Is the license plate light bulb in good condition?

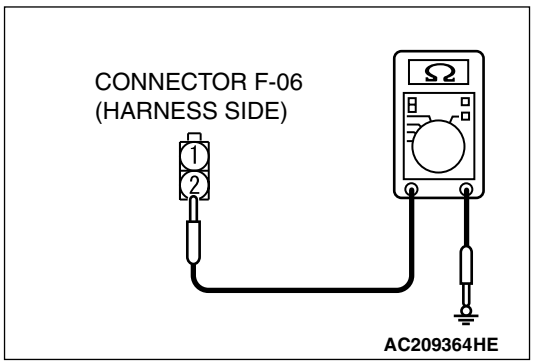
YES : Go to Step 33.

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-06.

(1) Disconnect license plate light connector F-06 and measure the resistance available at the wiring harness side of the connector.





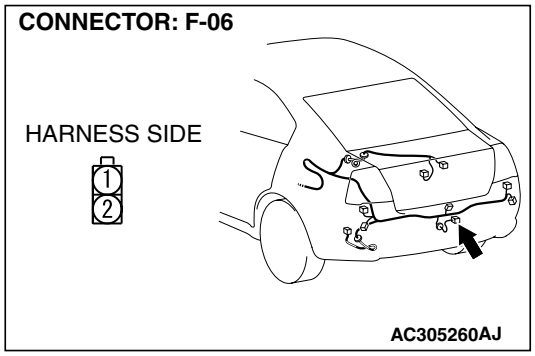
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 35.

NO : Go to Step 34.

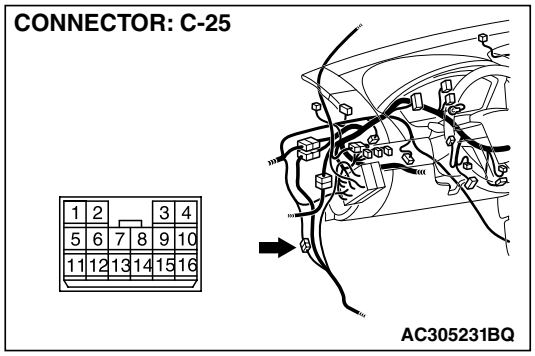


STEP 34. Check the wiring harness between license plate light connector F-06 (terminal 2) and ground.

Q: Is the wiring harness between license plate light connector F-06 (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.

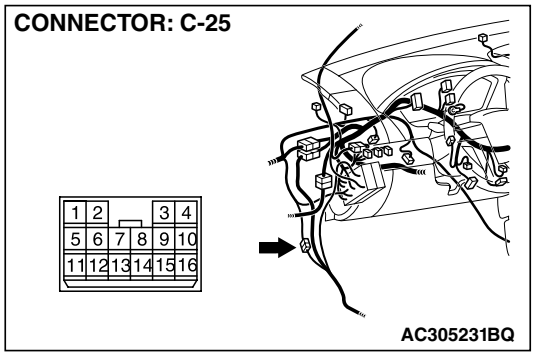


STEP 35. Check intermediate connector C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is intermediate connector C-25 in good condition?

YES : Go to Step 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.

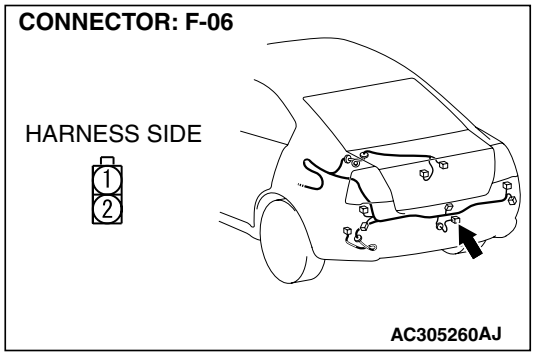


STEP 36. Check the wiring harness between license plate light connector F-06 (terminal 1) and intermediate connector C-25 (terminal 10).

Q: Is the wiring harness between license plate light connector F-06 (terminal 1) and intermediate connector C-25 (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.



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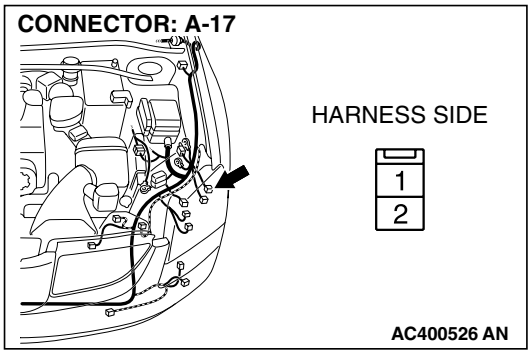
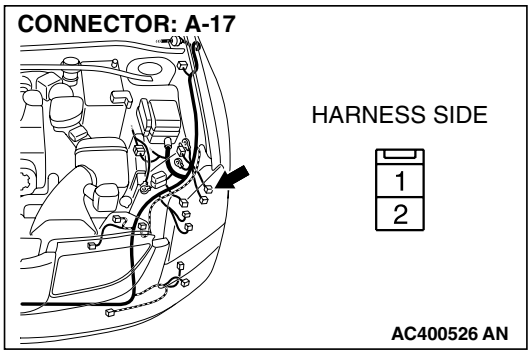


STEP 37. Check the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground.

Q: Is the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground in good condition?

YES : Replace the side marker light socket. Verify that the side marker light illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the side marker light illuminate normally.



STEP 38. Check front side marker light (LH) connector A-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front side marker light (LH) connector A-17 in good condition?

YES : Go to Step 39.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front side marker light (LH) illuminates normally.

STEP 39. Check the front side marker light bulb (LH).

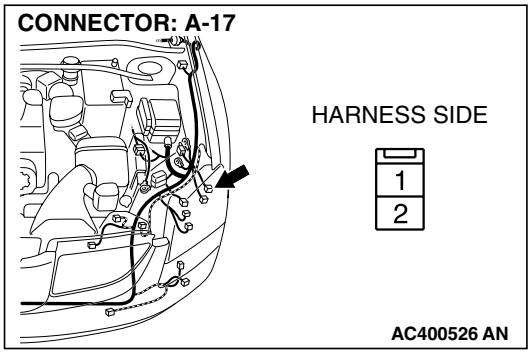
(1) Remove the front side marker light bulb (LH).
(2) Verify that the front side marker light bulb (LH) is not damaged or burned out.

Q: Is the front side marker light bulb (LH) in good condition?

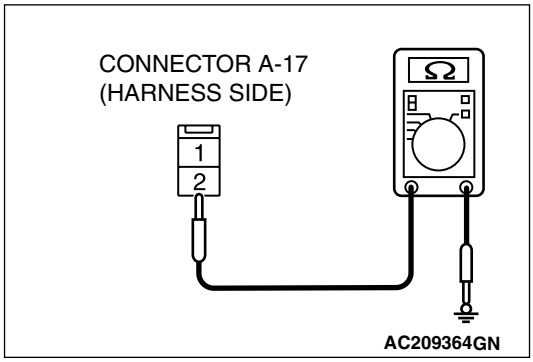
YES : Go to Step 40.

NO : Replace the front side marker light bulb (LH). Verify that the front side marker light (LH) illuminates normally.

STEP 40. Check the ground circuit to the front side marker light (LH). Measure the resistance at front side marker light (LH) connector A-17.



(1) Disconnect front side marker light (LH) connector A-17 and measure the resistance available at the wiring harness side of the connector.

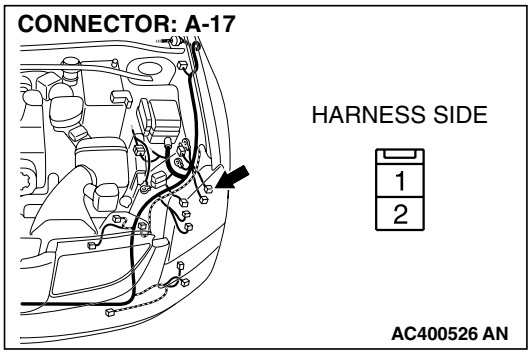


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

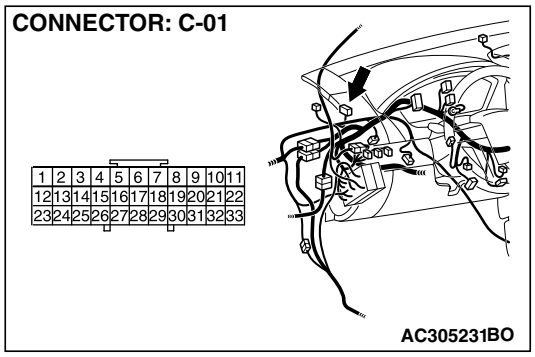
YES : Go to Step 42.
NO : Go to Step 41.

STEP 41. Check the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground.



Q: Is the wiring harness between front side marker light (LH) connector A-17 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the front side marker light (LH) illuminates normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (LH) illuminates normally.

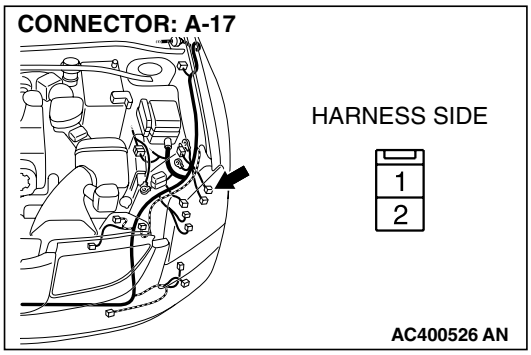


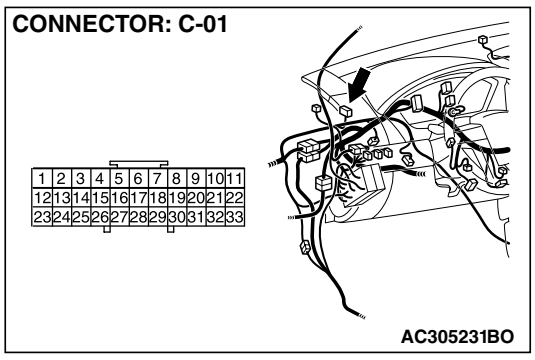
STEP 42. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-01 in good condition?

YES : Go to Step 43.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front side marker light (LH) illuminates normally.



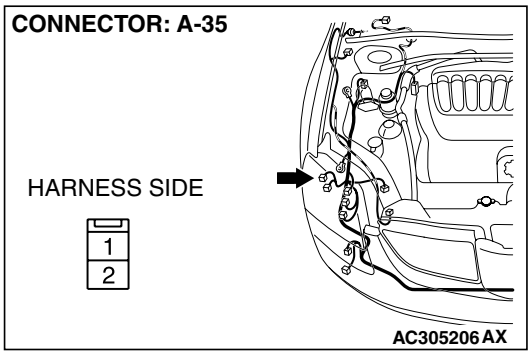


STEP 43. Check the wiring harness between front side marker light (LH) connector A-17 (terminal 1) and joint connector C-01 (terminal 3).

Q: Is the wiring harness between front side marker light (LH) connector A-17 (terminal 1) and joint connector C-01 (terminal 3) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (LH) illuminates normally.



STEP 44. Check front side marker light (RH) connector A-35 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front side marker light (RH) connector A-35 in good condition?

YES : Go to Step 45.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front side marker light (RH) illuminates normally.

STEP 45. Check the front side marker light bulb (RH).

(1) Remove the front side marker light bulb (RH).

(2) Verify that the front side marker light bulb (RH) is not damaged or burned out.

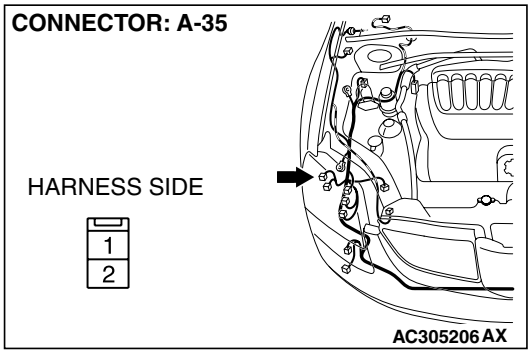
Q: Is the front side marker light bulb (RH) in good condition?

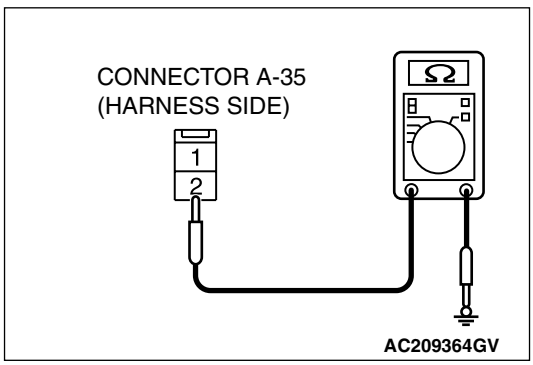
YES : Go to Step 46.

NO : Replace the front side marker light bulb (LH). Verify that the front side marker light (LH) illuminates normally.

STEP 46. Check the ground circuit to the front side marker light (RH). Measure the resistance at front side marker light (RH) connector A-35.

(1) Disconnect front side marker light (RH) connector A-35 and measure the resistance available at the wiring harness side of the connector.





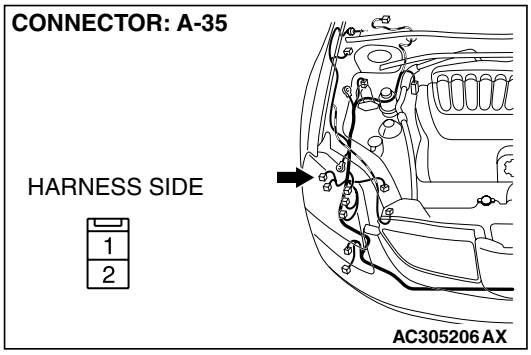
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 48.

NO : Go to Step 47.

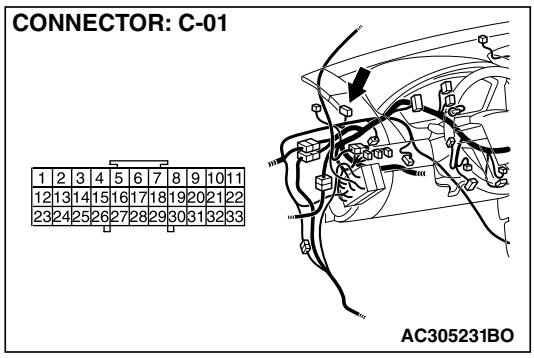


STEP 47. Check the wiring harness between front side marker light (RH) connector A-35 (terminal 2) and ground.

Q: Is the wiring harness between front side marker light (RH) connector A-35 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (RH). Verify that the front side marker light (RH) illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (RH) illuminates normally.

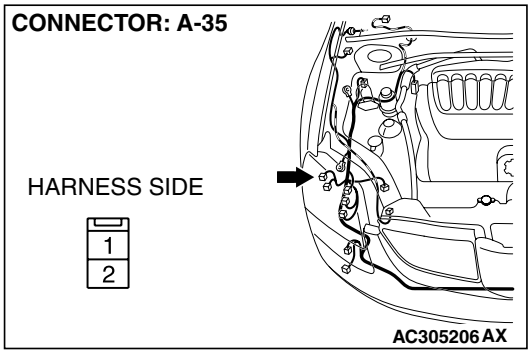


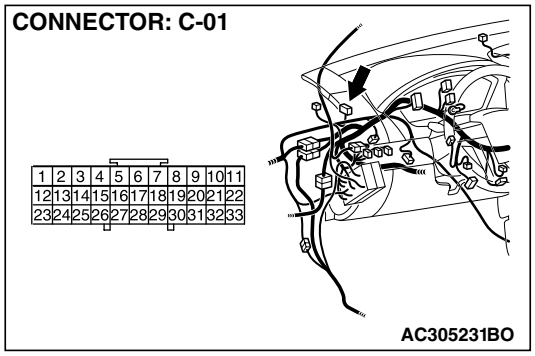
STEP 48. Check joint connector C-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is joint connector C-01 in good condition?

YES : Go to Step 49.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the front side marker light (RH) illuminates normally.





STEP 49. Check the wiring harness between front side marker light (RH) connector A-35 (terminal 1) and joint connector C-01 (terminal 3).

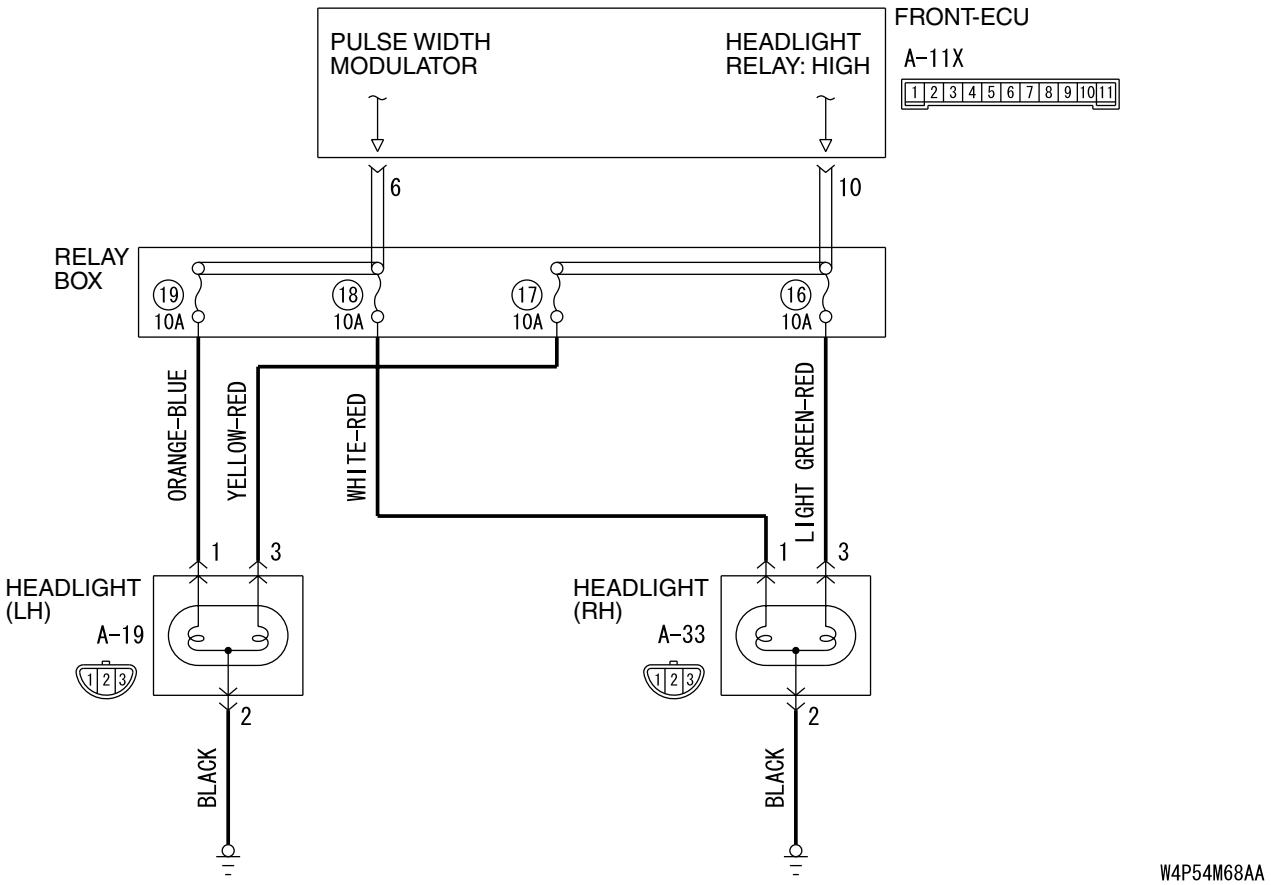
Q: Is the wiring harness between front side marker light (RH) connector A-35 (terminal 1) and joint connector C-01 (terminal 3) in good condition?

YES : No action is necessary and testing is complete.

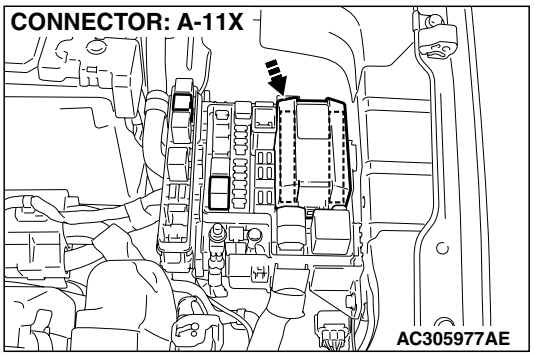
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the front side marker light (RH) illuminates normally.

INSPECTION PROCEDURE H-7: Headlight and Taillight: One of the headlights does not illuminate. <2-bulb type>

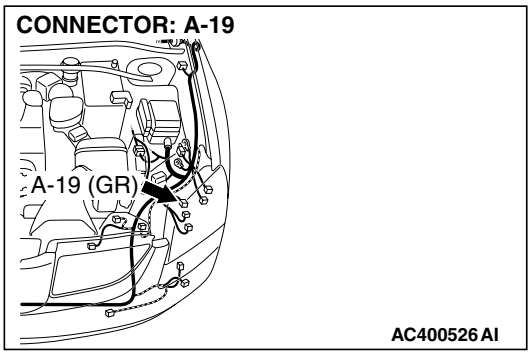
Headlights Circuit <2-bulb type>



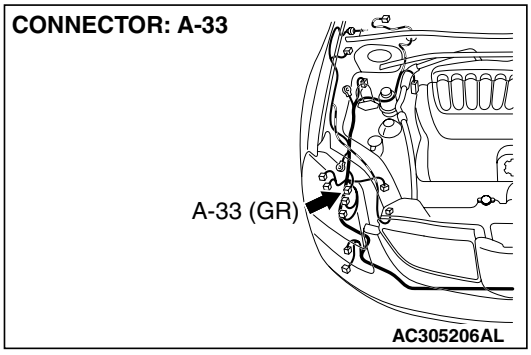
CONNECTOR: A-11X



CONNECTOR: A-19



CONNECTOR: A-33



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TECHNICAL DESCRIPTION (COMMENT)

If one of the headlights does not illuminate, a headlight bulb may be defective.

TROUBLESHOOTING HINTS

- The headlight bulb may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the headlight operation.

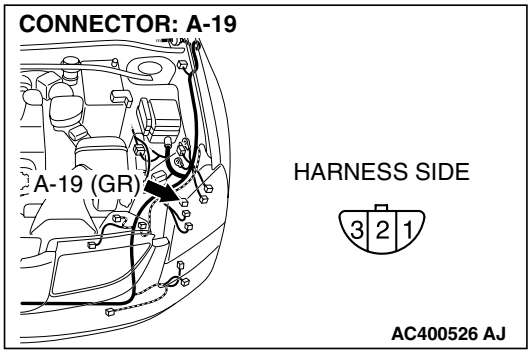
Q: Which of the headlights does not illuminate?

LH (low and high beam) : Go to Step 2.
RH (low and high beam) : Go to Step 5.
LH (only low-beam) : Go to Step 8.
RH (only low-beam) : Go to Step 11.
LH (only high beam) : Go to Step 14.
RH (only high beam) : Go to Step 17.
Low beam only (both RH and LH) : Refer to Inspection Procedure H-2 "The headlights (low-beam) do not illuminate normally P.54B-307."
High beam only (both RH and LH) : Refer to Inspection Procedure H-3 "The headlights (high-beam) do not illuminate normally P.54B-312."
High beam indicator light : Refer to Inspection Procedure H-8 "The high-beam indicator light does not illuminate P.54B-362."

STEP 2. Check headlight (LH) connector A-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (LH) connector A-19 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlights illuminate normally.



STEP 3. Check headlight (LH) bulb.

(1) Remove the headlight (LH) bulb.
(2) Verify that the headlight (LH) bulb is not damaged or burned out.

Q: Is headlight (LH) bulb normal?

YES : Go to Step 4.
NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.

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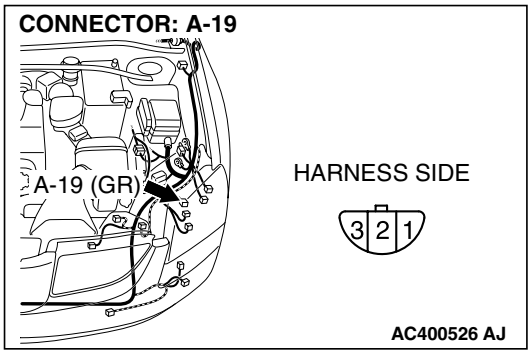
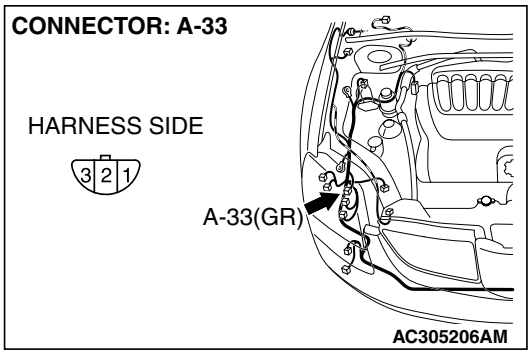


STEP 4. Check the wiring harness between headlight (LH) connector A-19 (terminal 2) and ground.

Q: Is the wiring harness between headlight (LH) connector A-19 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.



STEP 5. Check headlight (RH) connector A-33 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (RH) connector A-33 in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlights illuminate normally.

STEP 6. Check the headlight (RH) bulb.

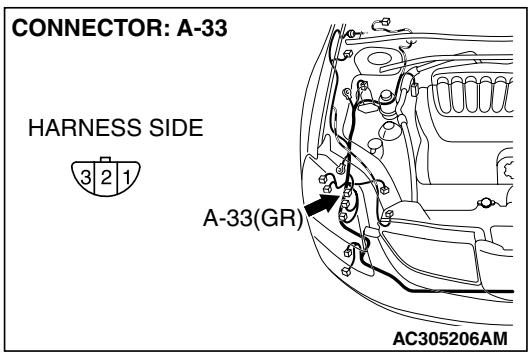
(1) Remove the headlight (RH) bulb.

(2) Verify that the headlight (RH) bulb is not damaged or burned out.

Q: Is headlight (RH) bulb normal?

YES : Go to Step 7.

NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.

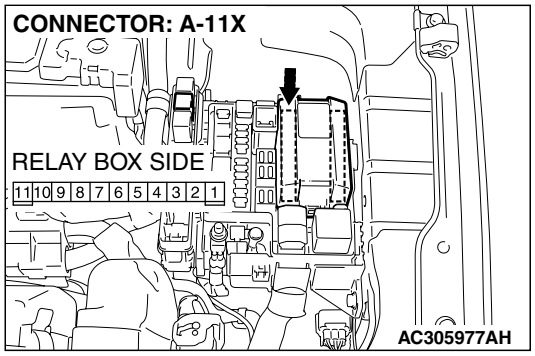


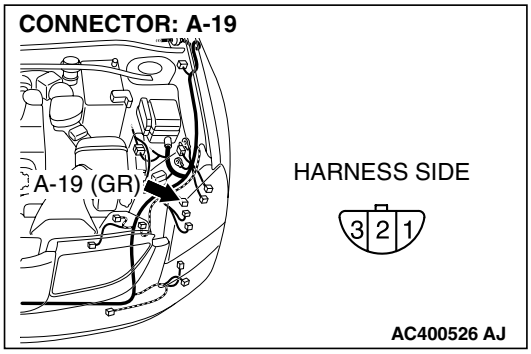
STEP 7. Check the wiring harness between headlight (RH) connector A-33 (terminal 2) and ground.

Q: Is the wiring harness between headlight (RH) connector A-33 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.





STEP 8. Check headlight (LH) connector A-19 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (LH) connector A-19 and front-ECU connector A-11X in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlights illuminate normally.

STEP 9. Check headlight (LH) bulb.

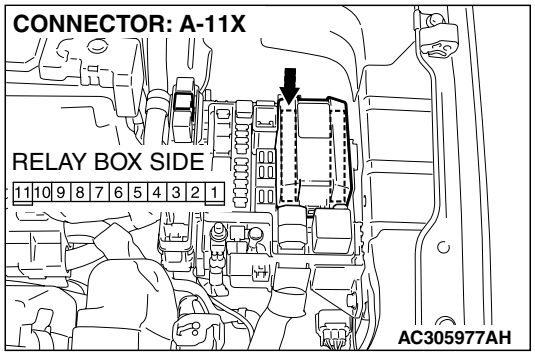
(1) Remove the headlight (LH) bulb.

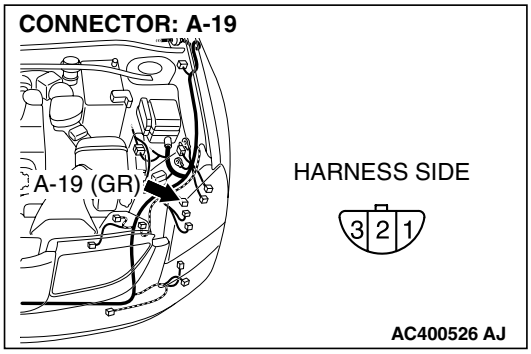
(2) Verify that the headlight (LH) bulb is not damaged or burned out.

Q: Is headlight (LH) bulb normal?

YES : Go to Step 10.

NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.



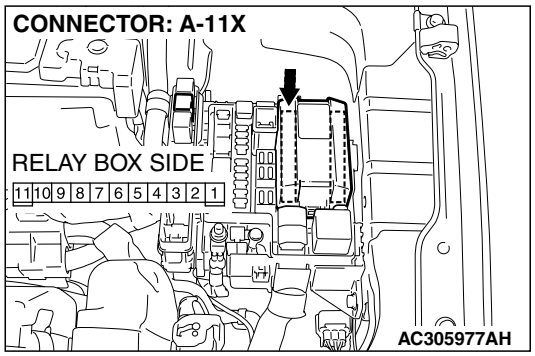


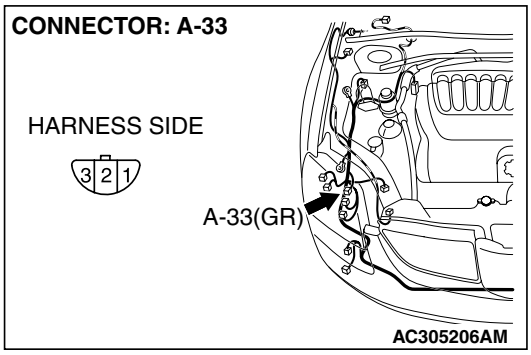
STEP 10. Check the wiring harness between headlight (LH) connector A-19 (terminal 1) and front-ECU connector A-11X (terminal 6).

Q: Is the wiring harness between headlight (LH) connector A-19 (terminal 1) and front-ECU connector A-11X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.





STEP 11. Check headlight (RH) connector A-33 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-33 and front-ECU connector A-11X in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlights illuminate normally.

STEP 12. Check the headlight (RH) bulb.

(1) Remove the headlight (RH) bulb.
(2) Verify that the headlight (RH) bulb is not damaged or burned out.

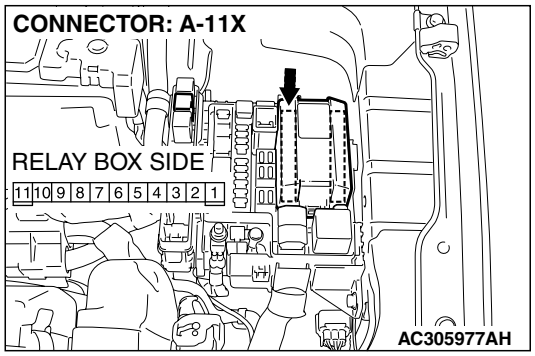
Q: Is headlight (RH) bulb normal?

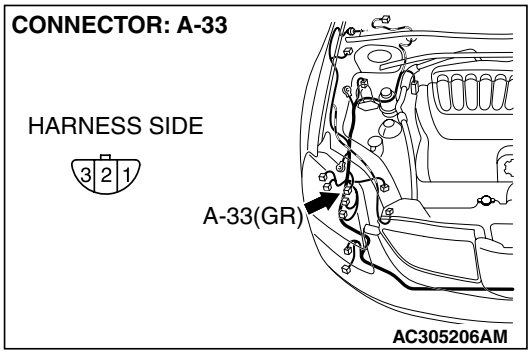
YES : Go to Step 13.
NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.

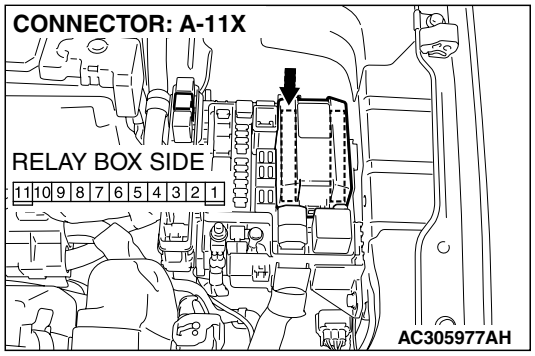
STEP 13. Check the wiring harness between headlight (RH) connector A-33 (terminal 1) and front-ECU connector A-11X (terminal 6).

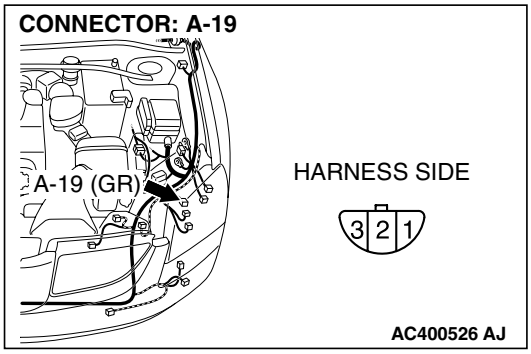
Q: Is the wiring harness between headlight (RH) connector A-33 (terminal 1) and front-ECU connector A-11X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.









STEP 14. Check headlight (LH) connector A-19 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (LH) connector A-19 and front-ECU connector A-11X in good condition?

YES : Go to Step 15.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the headlights illuminate normally.

STEP 15. Check headlight (LH) bulb.

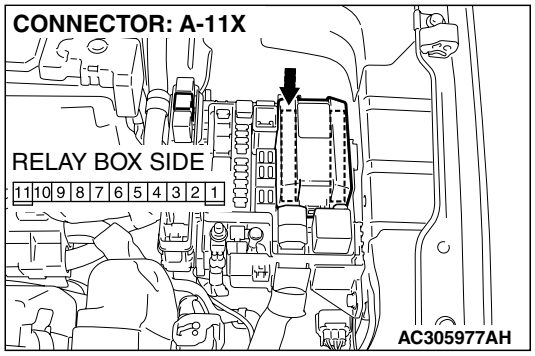
(1) Remove the headlight (LH) bulb.

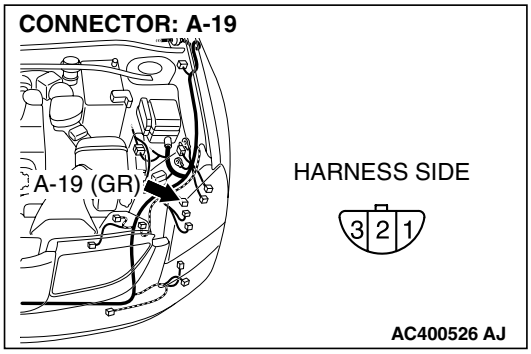
(2) Verify that the headlight (LH) bulb is not damaged or burned out.

Q: Is headlight (LH) bulb normal?

YES : Go to Step 16.

NO : Replace the headlight (LH) bulb. Verify that the headlights illuminate normally.



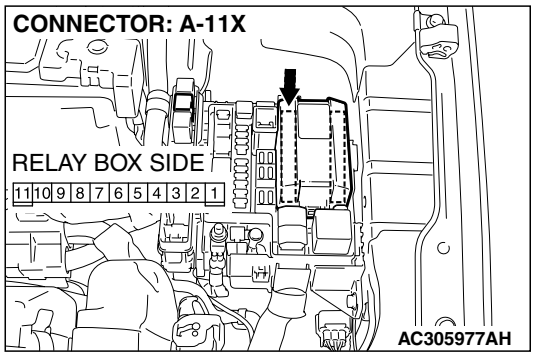


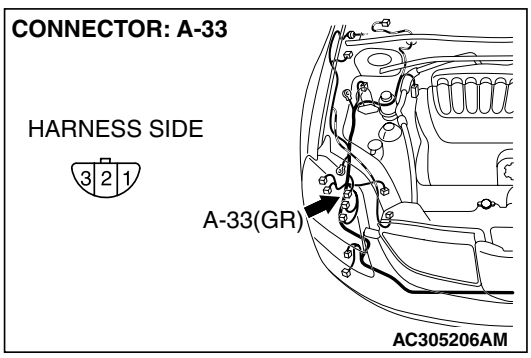
STEP 16. Check the wiring harness between headlight (LH) connector A-19 (terminal 3) and front-ECU connector A-11X (terminal 10).

Q: Is the wiring harness between headlight (LH) connector A-19 (terminal 3) and front-ECU connector A-11X (terminal 10) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.





STEP 17. Check headlight (RH) connector A-33 and front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are headlight (RH) connector A-33 and front-ECU connector A-11X in good condition?

YES : Go to Step 18.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the headlights illuminate normally.

STEP 18. Check the headlight (RH) bulb.

(1) Remove the headlight (RH) bulb.
(2) Verify that the headlight (RH) bulb is not damaged or burned out.

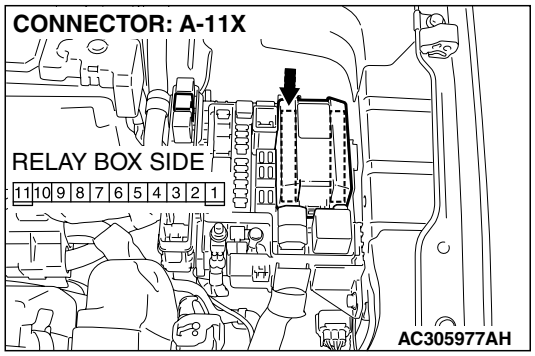
Q: Is headlight (RH) bulb normal?

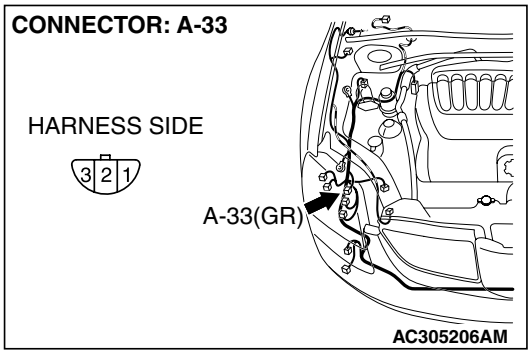
YES : Go to Step 19.
NO : Replace the headlight (RH) bulb. Verify that the headlights illuminate normally.

STEP 19. Check the wiring harness between headlight (RH) connector A-33 (terminal 3) and front-ECU connector A-11X (terminal 10).

Q: Is the wiring harness between headlight (RH) connector A-33 (terminal 3) and front-ECU connector A-11X (terminal 10) in good condition?

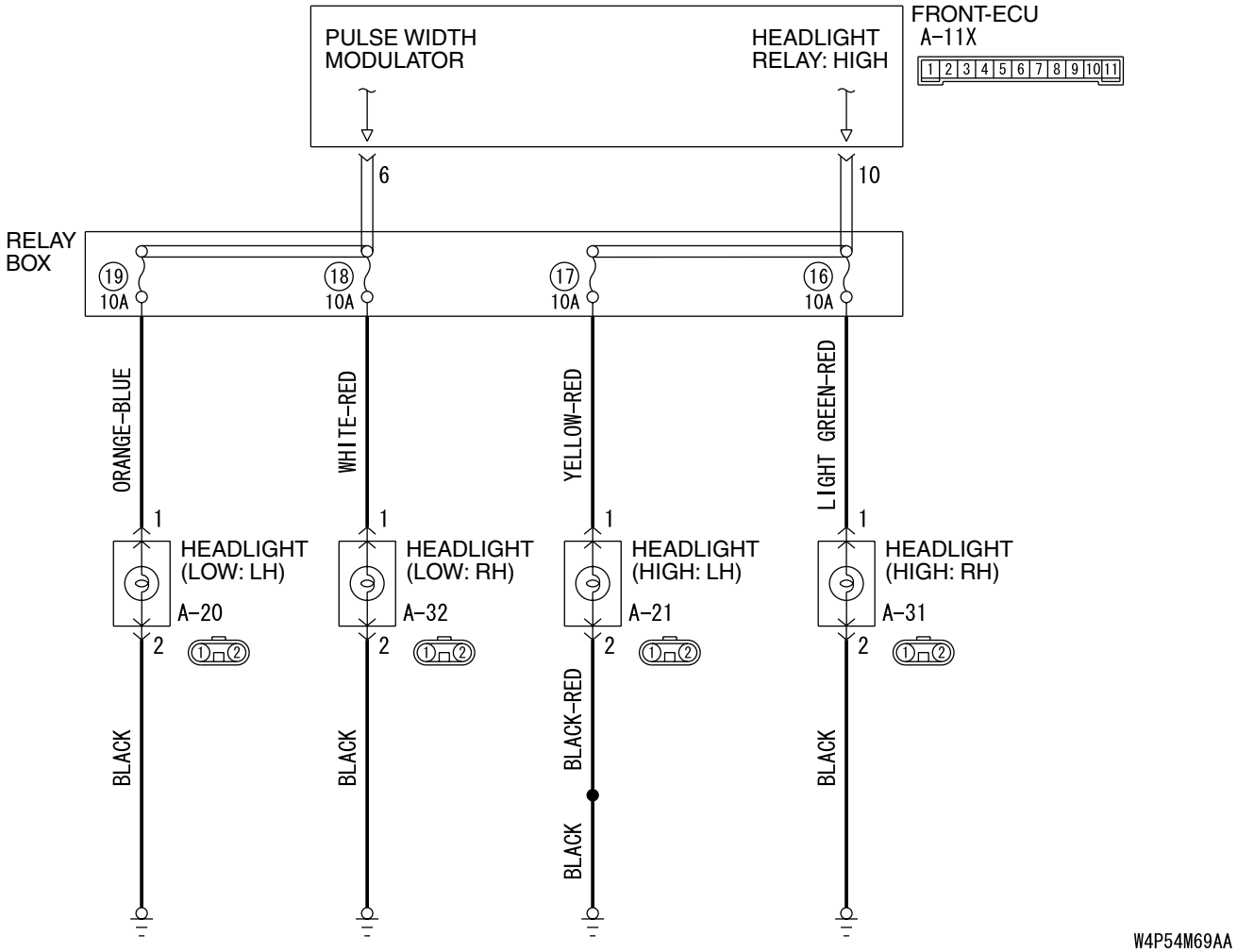
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlights illuminate normally.



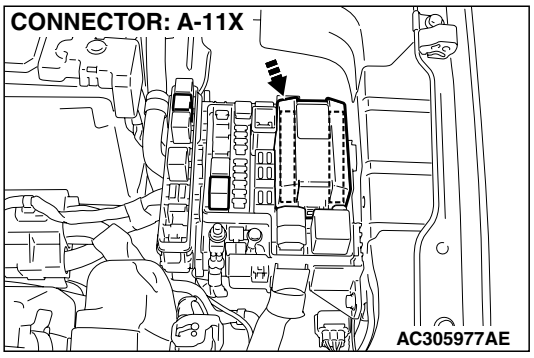


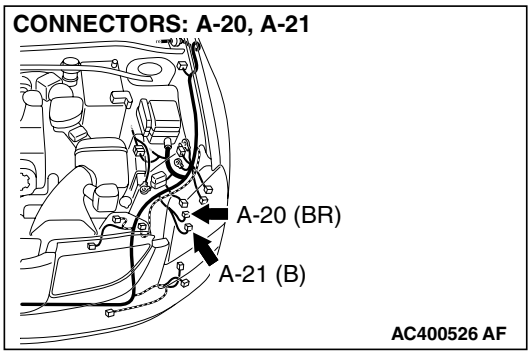
INSPECTION PROCEDURE H-7: Headlight and Taillight: One of the headlights does not illuminate. <4-bulb type>

Headlights Circuit <4-bulb type>

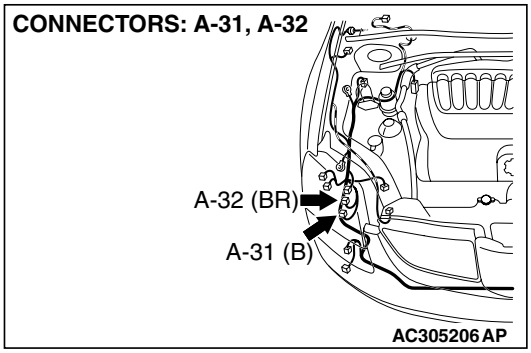


W4P54M69AA





TSB Revision



TECHNICAL DESCRIPTION (COMMENT)

If one of the headlights does not illuminate, a headlight bulb may be defective.

TROUBLESHOOTING HINTS

- The headlight bulb may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the headlight operation.

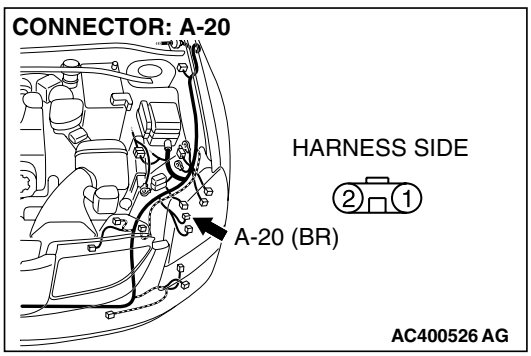
Q: Which of the headlights does not illuminate?

Low (LH) : Go to Step 2.
Low (RH) : Go to Step 8.
High (LH) : Go to Step 14.
High (RH) : Go to Step 20.
Low beam only (both RH and LH) : Refer to Inspection Procedure H-2 "The headlights (low-beam) do not illuminate normally P.54B-307."
High beam only (both RH and LH) : Refer to Inspection Procedure H-3 "The headlights (high-beam) do not illuminate normally P.54B-312."
High beam indicator light : Refer to Inspection Procedure H-8 "The high-beam indicator light does not illuminate P.54B-362."

STEP 2. Check headlight (LOW: LH) connector A-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (LOW: LH) connector A-20 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 headlight (LOW: LH) illuminates normally.



STEP 3. Check the headlight bulb (LOW: LH).

(1) Remove the headlight bulb (LOW: LH).

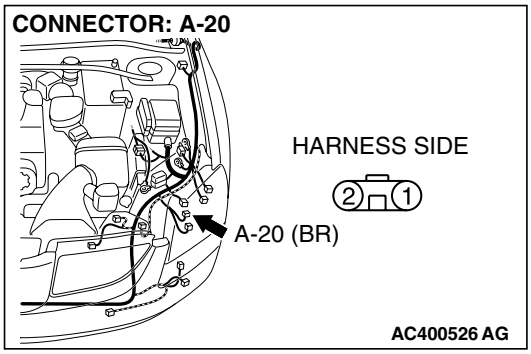
(2) Verify that the headlight bulb (LOW: LH) is not damaged or burned out.

Q: Is the headlight bulb (LOW: LH) in good condition?

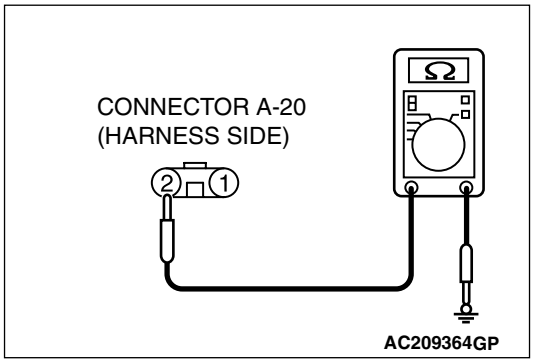
YES : Go to Step 4.

NO : Replace the headlight bulb (LOW: LH). Verify that the headlight (LOW: LH) illuminates normally.

STEP 4. Check the ground circuit to the headlight (LOW: LH). Measure the resistance at headlight (LOW: LH) connector A-20.



(1) Disconnect headlight (LOW: LH) connector A-20 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

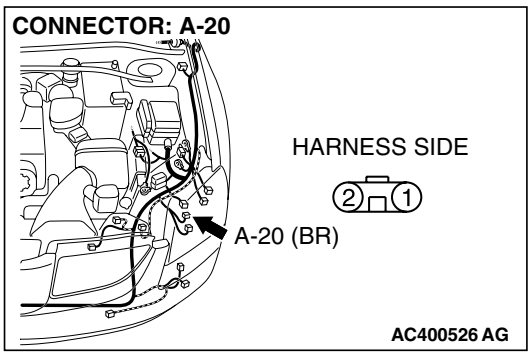
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

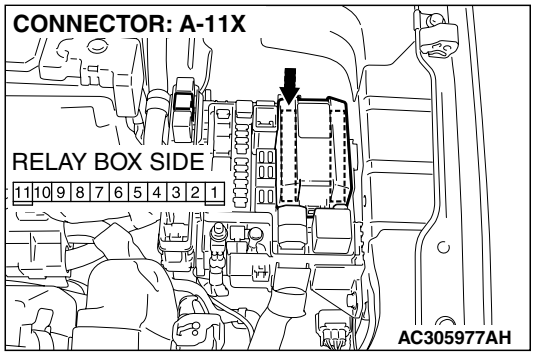
STEP 5. Check the wiring harness between headlight (LOW: LH) connector A-20 (terminal 2) and ground.

Q: Is the wiring harness between headlight (LOW: LH) connector A-20 (terminal 2) and ground in good condition?



YES : Replace the headlight socket (LOW: LH). Verify that the headlight (LOW: 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 headlight (LOW: LH) illuminates normally.

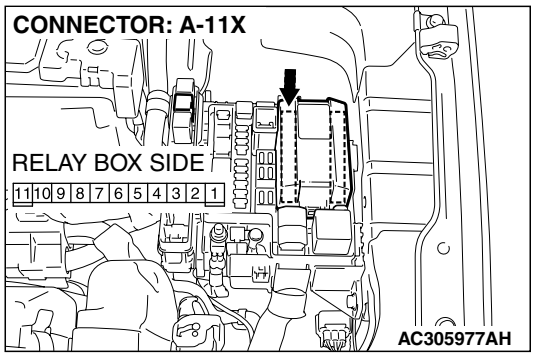


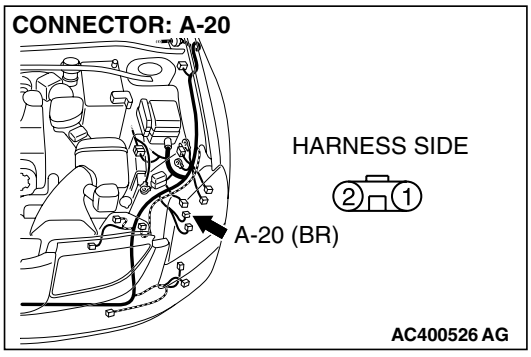
STEP 6. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-11X in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlight (LOW: LH) illuminates normally.



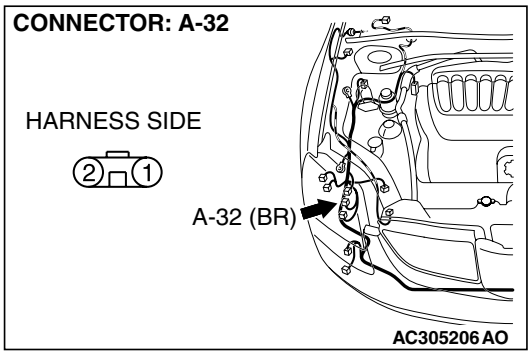


STEP 7. Check the wiring harness between headlight (LOW: LH) connector A-20 (terminal 1) and front-ECU connector A-11X (terminal 6).

Q: Is the wiring harness between headlight (LOW: LH) connector A-20 (terminal 1) and front-ECU connector A-11X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlight (LOW: LH) illuminates normally.



STEP 8. Check headlight (LOW: RH) connector A-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (LOW: RH) connector A-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 headlight (LOW: RH) illuminates normally.

STEP 9. Check the headlight bulb (LOW: RH).

(1) Remove the headlight bulb (LOW: RH).

(2) Verify that the headlight bulb (LOW: RH) is not damaged or burned out.

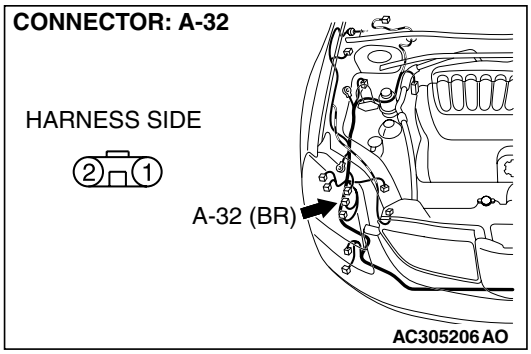
Q: Is the headlight bulb (LOW: RH) in good condition?

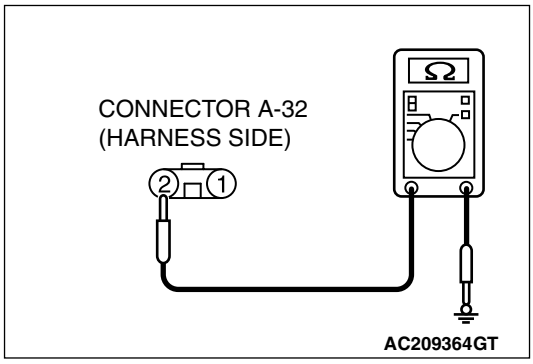
YES : Go to Step 10.

NO : Replace the headlight bulb (LOW: RH). Verify that the headlight (LOW: RH) illuminates normally.

STEP 10. Check the ground circuit to the headlight (LOW: RH). Measure the resistance at headlight (LOW: RH) connector A-32.

(1) Disconnect headlight (LOW: RH) connector A-32 and measure the resistance available at the wiring harness side of the connector.





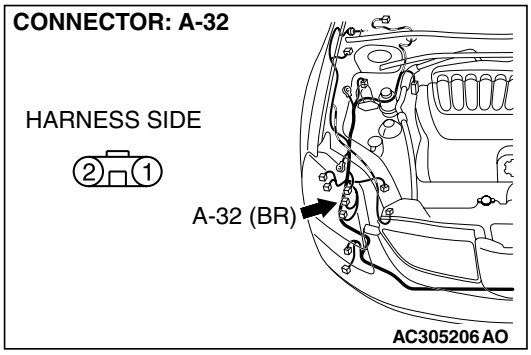
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.

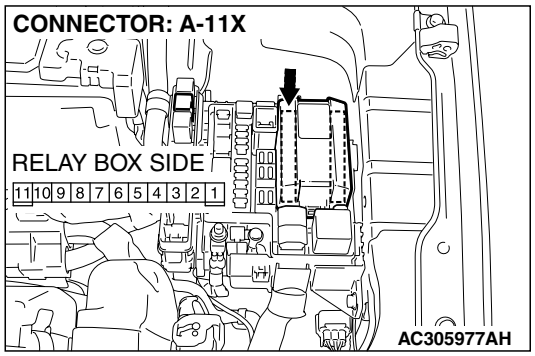


STEP 11. Check the wiring harness between headlight (LOW: RH) connector A-32 (terminal 2) and ground.

Q: Is the wiring harness between headlight (LOW: RH) connector A-32 (terminal 2) and ground in good condition?

YES : Replace the headlight socket (LOW: RH). Verify that the headlight (LOW: 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 headlight (LOW: RH) illuminates normally.

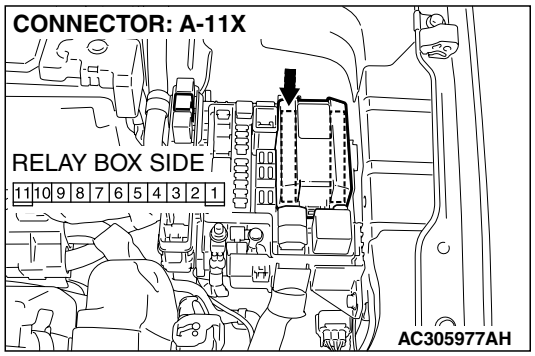


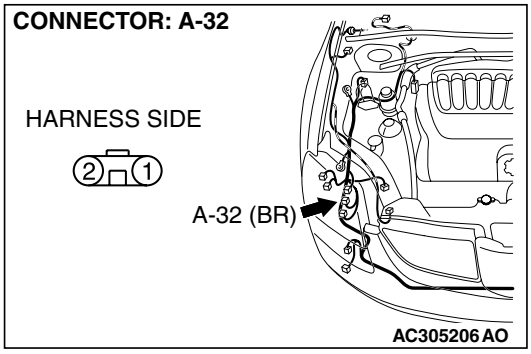
STEP 12. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-11X in good condition?

YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlight (LOW: RH) illuminates normally.





STEP 13. Check the wiring harness between headlight (LOW: RH) connector A-32 (terminal 1) and front-ECU connector A-11X (terminal 6).

Q: Is the wiring harness between headlight (LOW: RH) connector A-32 (terminal 1) and front-ECU connector A-11X (terminal 6) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlight (LOW: RH) illuminates normally.

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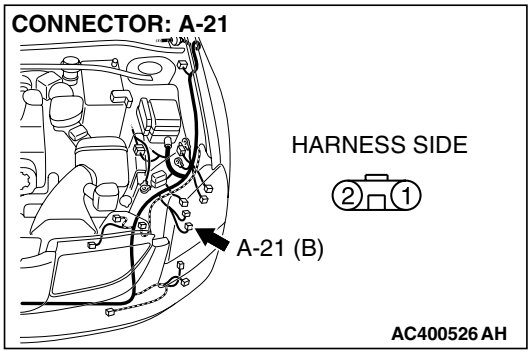


STEP 14. Check headlight (HIGH: LH) connector A-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (HIGH: LH) connector A-21 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. Check that the headlight (HIGH: LH) illuminates normally.

STEP 15. Check the headlight bulb (HIGH: LH).

(1) Remove the headlight bulb (HIGH: LH).

(2) Verify that the headlight bulb (HIGH: LH) is not damaged or burned out.

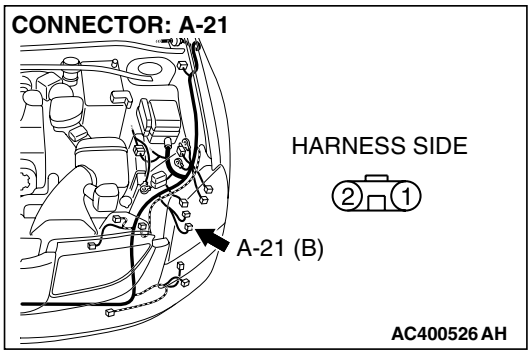
Q: Is the headlight bulb (HIGH: LH) in good condition?

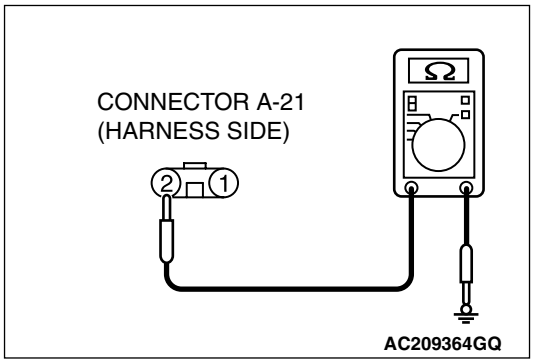
YES : Go to Step 16.

NO : Replace the headlight bulb (HIGH: LH). Verify that the headlight (HIGH: LH) illuminates normally.

STEP 16. Check the ground circuit to the headlight (HIGH: LH). Measure the resistance at headlight (HIGH: LH) connector A-21.

(1) Disconnect headlight (HIGH: LH) connector A-21 and measure the resistance available at the wiring harness side of the connector.





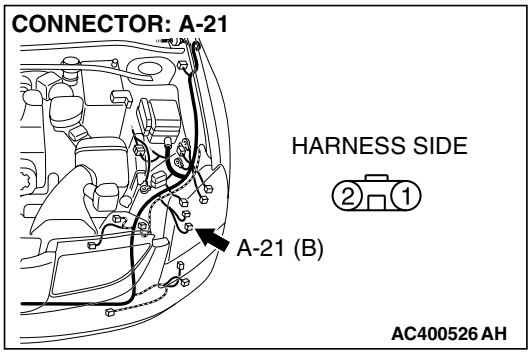
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 18.

NO : Go to Step 17.

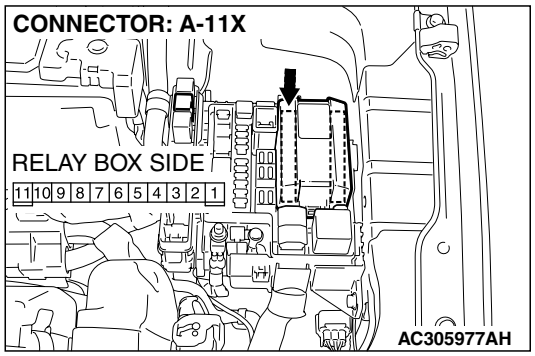


STEP 17. Check the wiring harness between headlight (HIGH: LH) connector A-21 (terminal 2) and ground.

Q: Is the wiring harness between headlight (HIGH: LH) connector A-21 (terminal 2) and ground in good condition?

YES : Replace the headlight socket (HIGH: LH). Verify that the headlight (HIGH: 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 headlight (HIGH: LH) illuminates normally.

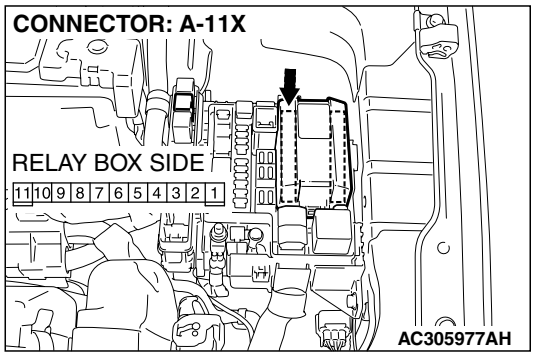


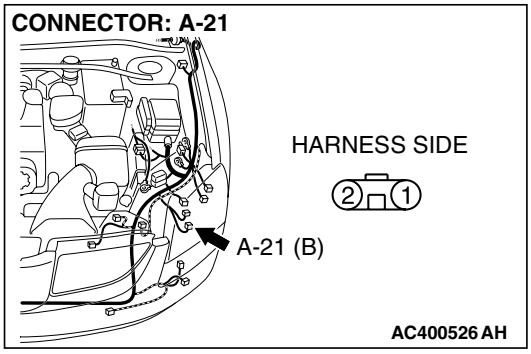
STEP 18. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-11X in good condition?

YES : Go to Step 19.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlight (HIGH: LH) illuminates normally.



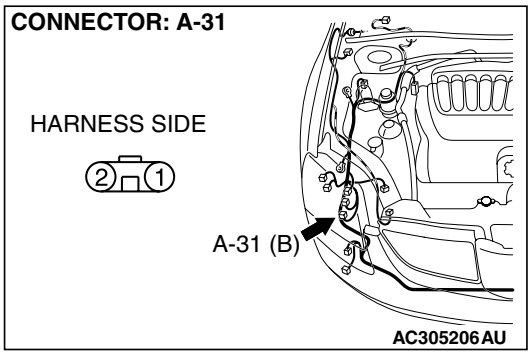


STEP 19. Check the wiring harness between headlight (HIGH: LH) connector A-21 (terminal 1) and front-ECU connector A-11X (terminal 10).

Q: Is the wiring harness between headlight (HIGH: LH) connector A-21 (terminal 1) and front-ECU connector A-11X (terminal 10) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlight (HIGH: LH) illuminates normally.



STEP 20. Check headlight (HIGH: RH) connector A-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is headlight (HIGH: RH) connector A-31 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. Check that the headlight (HIGH: RH) illuminates normally.

STEP 21. Check the headlight bulb (HIGH: RH).

(1) Remove the headlight bulb (HIGH: RH).

(2) Verify that the headlight bulb (HIGH: RH) is not damaged or burned out.

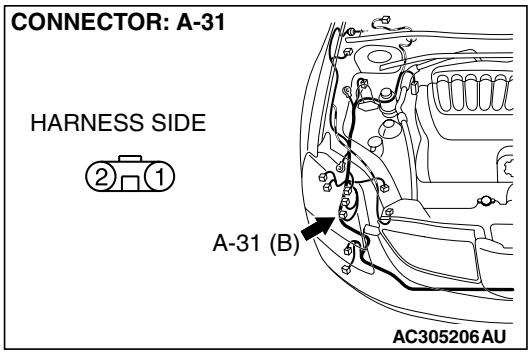
Q: Is the headlight bulb (HIGH: RH) in good condition?

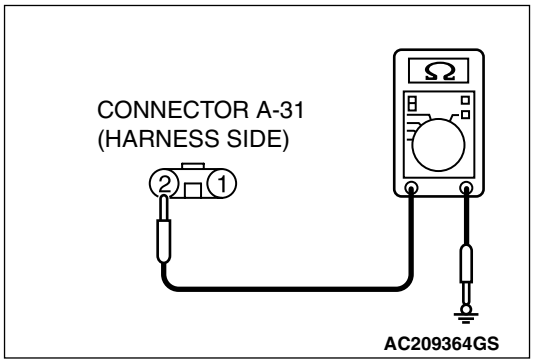
YES : Go to Step 22.

NO : Replace the headlight bulb (HIGH: RH). Verify that the headlight (HIGH: RH) illuminates normally.

STEP 22. Check the ground circuit to the headlight (HIGH: RH). Measure the resistance at headlight (HIGH: RH) connector A-31.

(1) Disconnect headlight (HIGH: RH) connector A-31 and measure the resistance available at the wiring harness side of the connector.





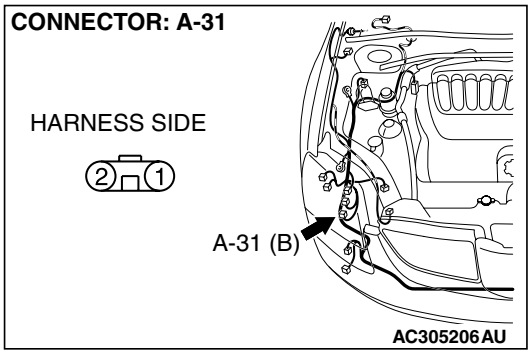
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 24.

NO : Go to Step 23.

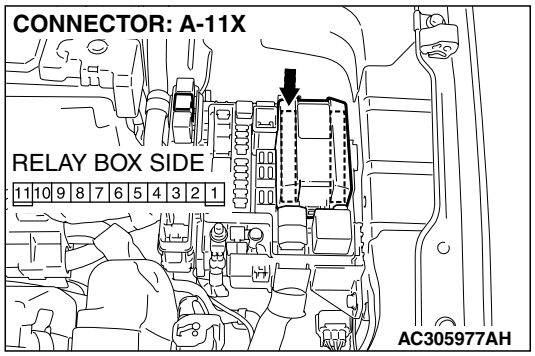


STEP 23. Check the wiring harness between headlight (HIGH: RH) connector A-31 (terminal 2) and ground.

Q: Is the wiring harness between headlight (HIGH: RH) connector A-31 (terminal 2) and ground in good condition?

YES : Replace the headlight socket (HIGH: RH). Verify that the headlight (HIGH: 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 headlight (HIGH: RH) illuminates normally.

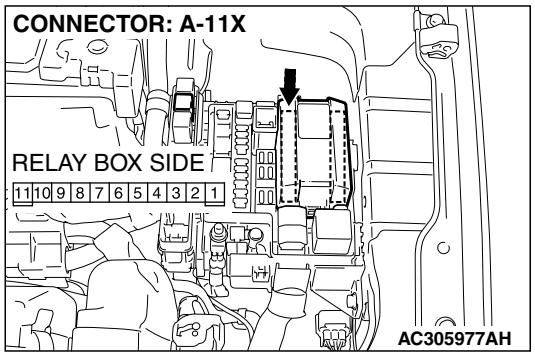


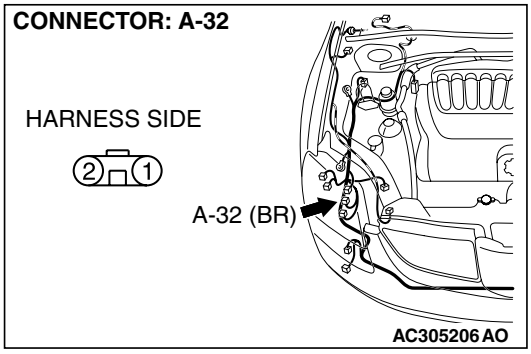
STEP 24. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-11X in good condition?

YES : Go to Step 25.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the headlight (HIGH: RH) illuminates normally.





STEP 25. Check the wiring harness between headlight (LOW: RH) connector A-32 (terminal 1) and front-ECU connector A-11X (terminal 10).

Q: Is the wiring harness between headlight (LOW: RH) connector A-32 (terminal 1) and front-ECU connector A-11X (terminal 10) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the headlight (HIGH: RH) illuminates normally.

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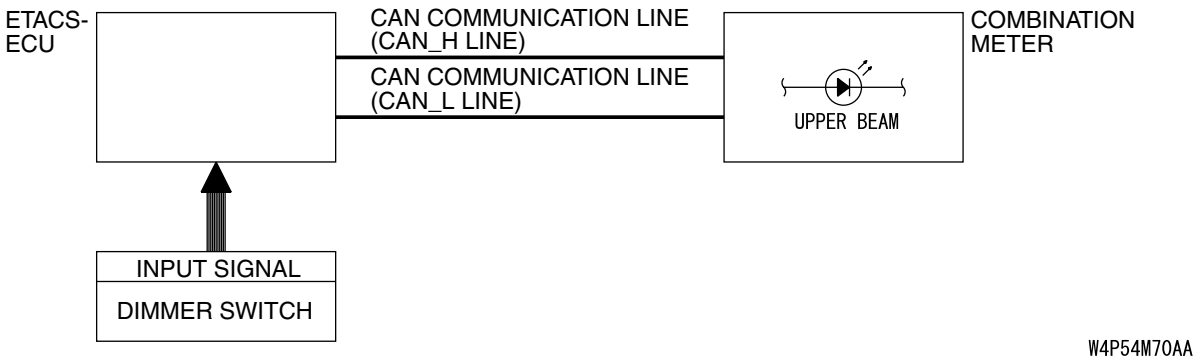
INSPECTION PROCEDURE H-8: Headlight and Taillight: The High-beam indicator light does not illuminate.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

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.

TECHNICAL DESCRIPTION (COMMENT)
If the high beam indicator does not illuminate normally, connector(s), wiring harness in the CAN bus lines, the ETACS-ECU or the combination meter may be defective.

TROUBLESHOOTING HINTS
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The combination meter may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

STEP 1. Check the headlights.
When the lighting switch is operated, check that the headlights illuminate/go off normally.

Q: Are the headlights in good condition?

YES : Go to Step 2.
NO : First, repair the headlights. Refer to Inspection Procedure H-7 "One of the headlights does not illuminate <2-bulb type>P.54B-343 " or "One of the headlights does not illuminate <4-bulb type>P.54B-352."

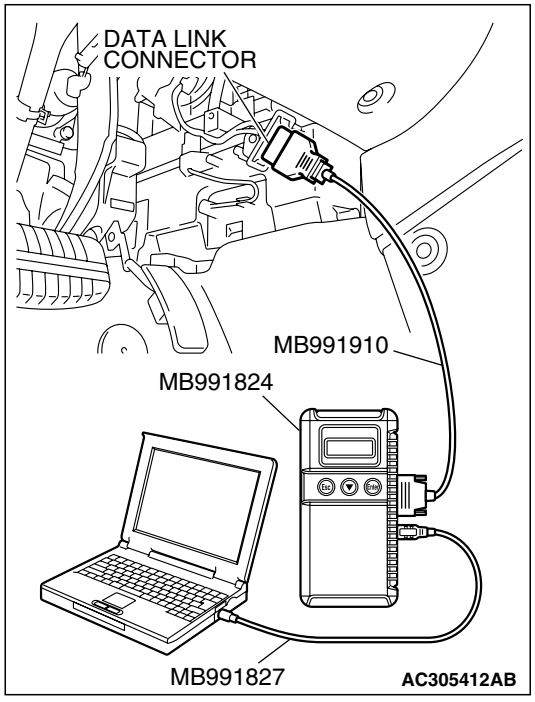
STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

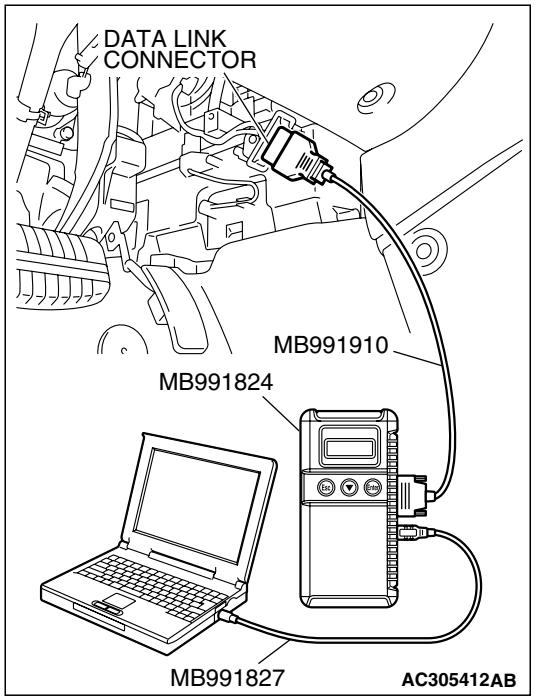
⚠ CAUTION
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."
(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-16).





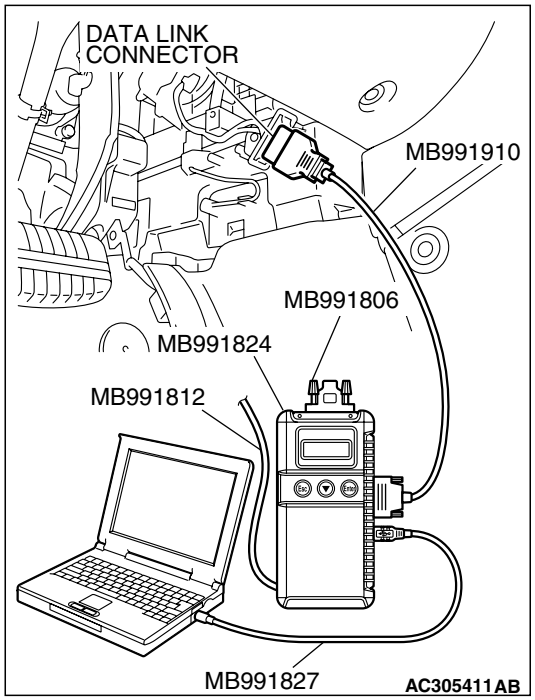
STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

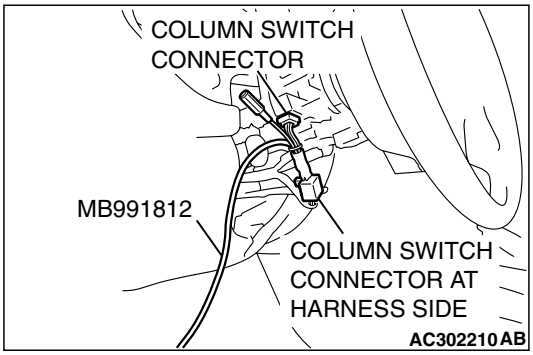
Check whether a combination meter-related DTC is set.

(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-54.
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-17."
(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-82."

STEP 5. Replace the combination meter.

(1) Replace the combination meter.
(2) Check that the high beam indicator light illuminates normally.

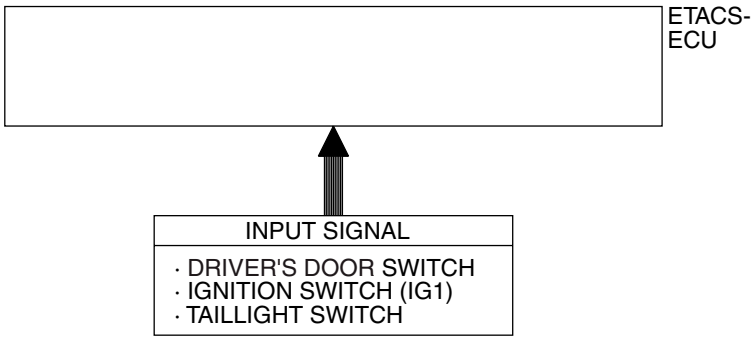
Q: Does the high beam indicator light illuminate normally?

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-11. Check that the high beam indicator light illuminates normally.

INSPECTION PROCEDURE H-9: Headlight and Taillight: Headlight automatic shutoff function does not work normally.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Headlight Automatic Shutt-Down Function



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CIRCUIT OPERATION

The ETACS-ECU operates the headlight automatic shutdown function according to the following signals:

- Ignition switch (IG1): OFF
- Driver's door switch: ON
- Taillight switch: ON
- Headlight switch: ON

The ETACS-ECU operates the headlight automatic shutdown function under the following conditions:

- Ignition key: Other than "ON" position
- Driver's door: open
- Taillights or headlights: on

TECHNICAL DESCRIPTION (COMMENT)

If the function does not work normally, the input circuit system from the switches, the ETACS-ECU or the front-ECU may be defective (refer to "CIRCUIT OPERATION").

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The front-ECU may be defective

DIAGNOSIS

Required Special Tools:

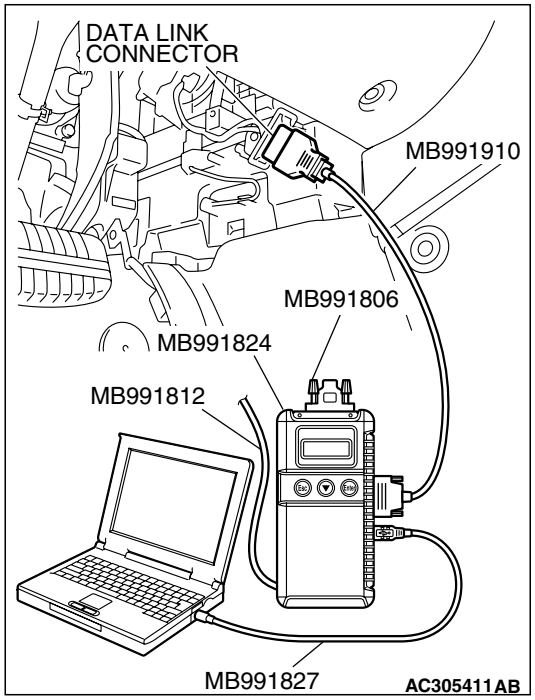
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

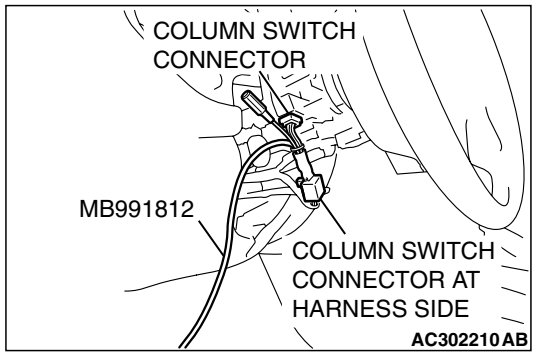
STEP 1. Check the adjustment function.

Q: Has a setting other than "No auto-shutoff" been selected for the headlight automatic shutdown function?

YES : Go to Step 2.

NO : Set the headlight automatic shutdown function to another setting other than "No auto-shutoff".





STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: "ON" to "OFF"
- Lighting switch: "TAIL" or "HEAD"

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "H/L AUTO-CUT."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. Select "SWS."
   d. Select "SWS MONITOR."
   e. Select "Function Diag."
   f. Select "LIGHTING."
   g. Select "H/L AUTO-CUT."
(4) Check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 01	TAILLIGHT SW	ON
ITEM 30	IG SW (IG1)	OFF

(5) When the driver's door is opened, check that normal conditions are displayed for the items described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 32	FRONT DOOR SW	ON
ITEM 35	H/L AUTO-CUT	ON

Q: Does the scan tool MB991958 display the items "TAILLIGHT SW", "IG SW IG1", "FRONT DOOR SW" and "H/L AUTO-CUT" as normal condition?

Normal conditions are displayed for all the items :
Replace the front-ECU. Verify that the headlight automatic shutdown function works normally.

Normal condition is not displayed for "TAILLIGHT SW" :
Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the taillight switch P.54B-511."

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

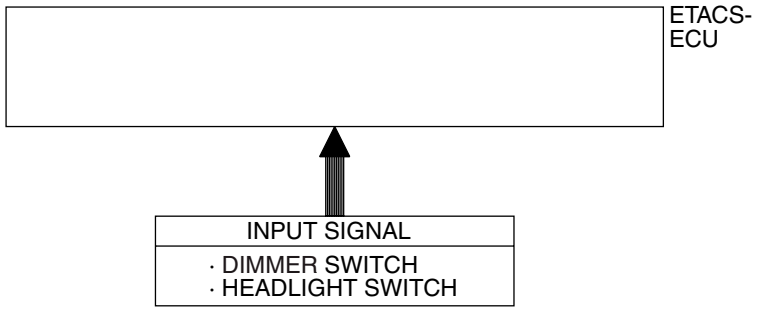
(IG1) P.54B-497."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."

Normal condition is not displayed for "H/L AUTO-CUT" : Replace the front-ECU. Check that the headlight automatic shutdown function works normally.

INSPECTION PROCEDURE H-10: Headlight and Taillight: Headlight dimmer switch automatic resetting function does not work normally.

Headlight (Dimmer/Passing) Input Signal



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CIRCUIT OPERATION
The headlight dimmer switch automatic resetting function is controlled by the front-ECU.

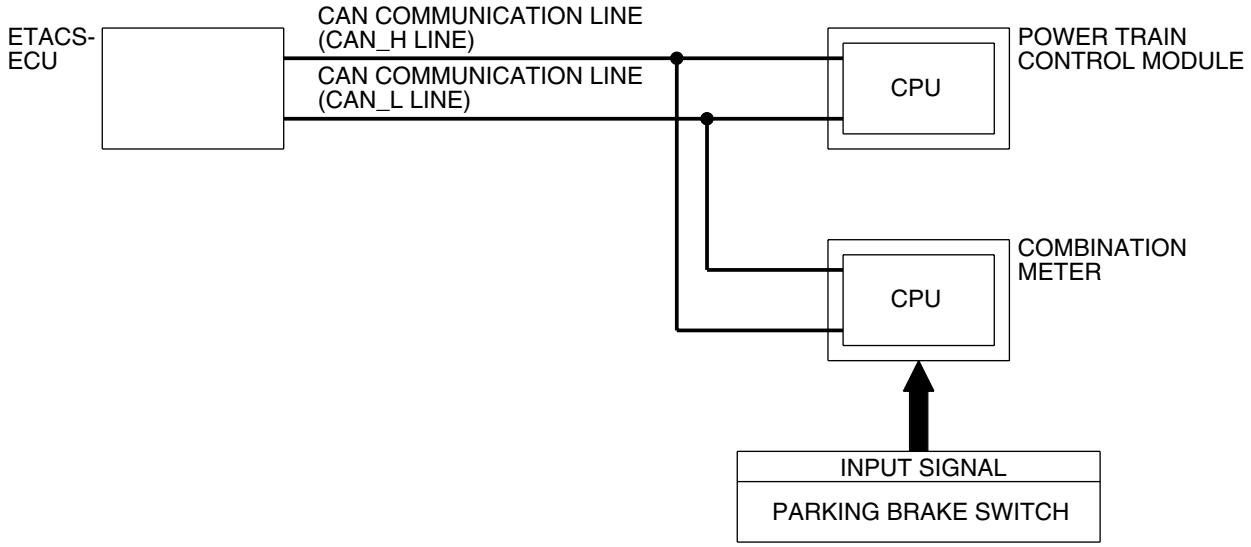
TECHNICAL DESCRIPTION (COMMENT)
If the headlight dimmer switch automatic resetting function does not work normally, the front-ECU may be defective.

TROUBLESHOOTING HINT
The front-ECU may be defective

DIAGNOSIS
Replace the front-ECU.
Check that the headlight dimmer switch automatic resetting function works normally.

INSPECTION PROCEDURE H-11: Headlight and Taillight: Daytime running light function does not work normally.

Daytime Running Light



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TECHNICAL DESCRIPTION (COMMENT)
If the daytime running light function does not work, connector(s), wiring harness in the CAN bus lines, the powertrain control module, the combination meter, the ETACS-ECU or the input signal circuit may be defective.

TROUBLESHOOTING HINTS
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Verify the headlight (low-beam) operation.
Check to see that the headlight (low-beam) lights up properly when operating the dimmer switch while the headlight switch is ON.

Q: Do the headlights (low-beam) illuminate normally?

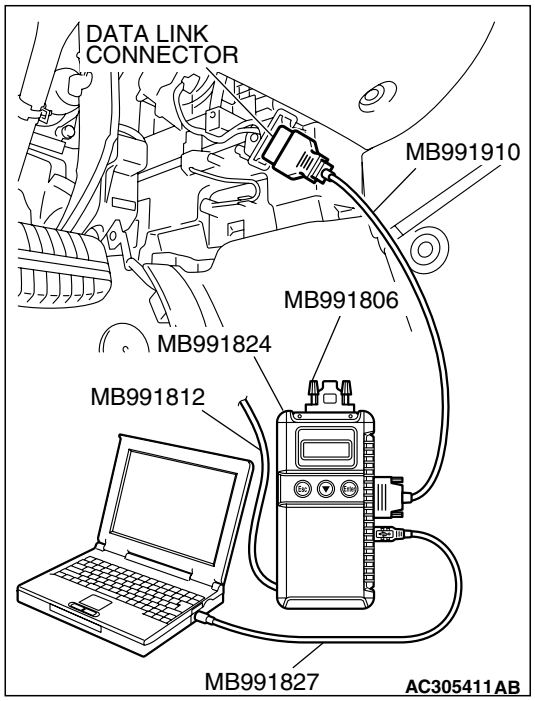
YES : Go to Step 2.

NO : Refer to Inspection Procedure H-2 "Headlights (low-beam) do not illuminate normally P.54B-307."

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.



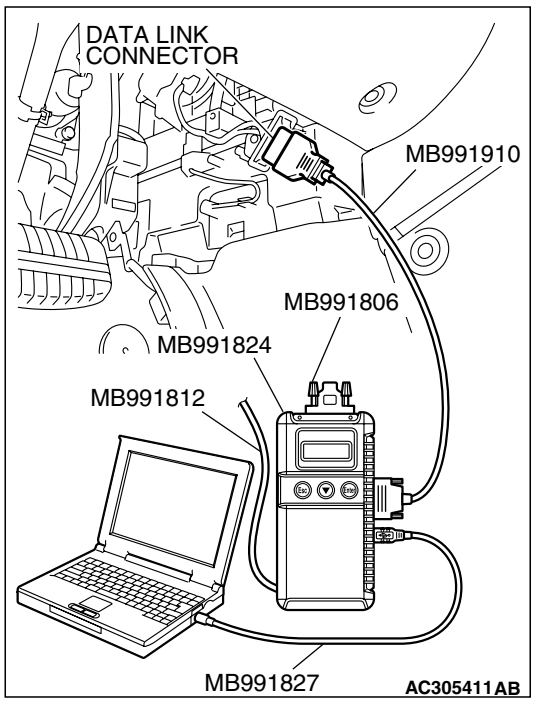
(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-16).

STEP 3. Using scan tool MB991958, read the MFI system diagnostic trouble code.

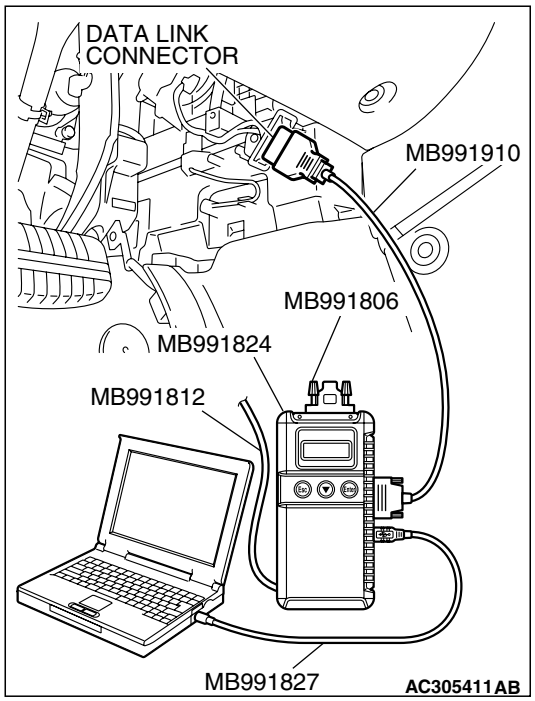
Check whether engine and transaxle DTCs are set or not.



(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the MFI system by referring to GROUP 13A, MFI Diagnosis – Diagnostic Trouble Code Chart P.13A-45 or GROUP 13B, MFI Diagnosis – Diagnostic Trouble Code Chart P.13B-46.
NO : Go to Step 4.



STEP 4. Using scan tool MB991958, read the combination meter diagnostic trouble code.

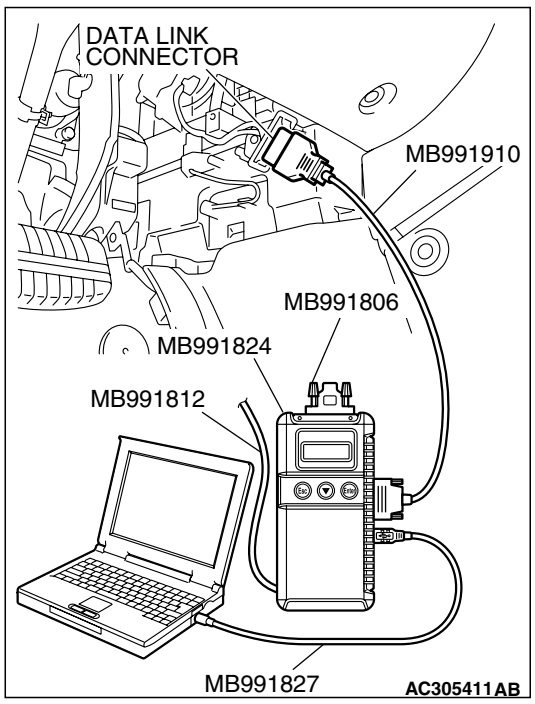
Check whether the combination meter-related DTC is set.

(1) Turn the ignition switch to the "ON" position.
(2) Check whether the combination meter-related DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the combination meter (Refer to GROUP 54A, Diagnostic trouble code chart P.54A-54).

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-11. The ignition key reminder tone alarm function should now work normally.

NO : Refer to GROUP 36, troubleshooting P.36-2.

FLASHER TIMER

GENERAL DESCRIPTION CONCERNING THE FLASHER TIMER

M1549023600313

The following ECUs affect the functions and control of the flasher timer.

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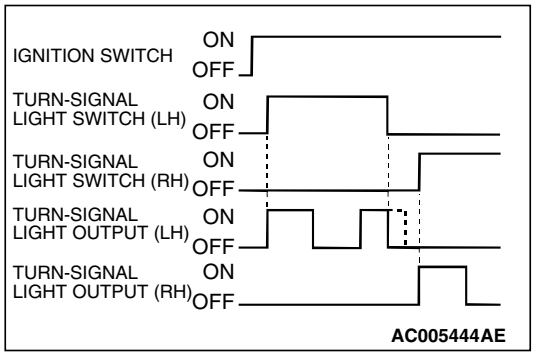
FUNCTION	CONTROL ECU
Turn-signal light	ETACS-ECU, column switch
Turn-signal indicators	ETACS-ECU, column switch
Hazard warning light	ETACS-ECU

FLASHER TIMER FUNCTION

TURN-SIGNAL LIGHT

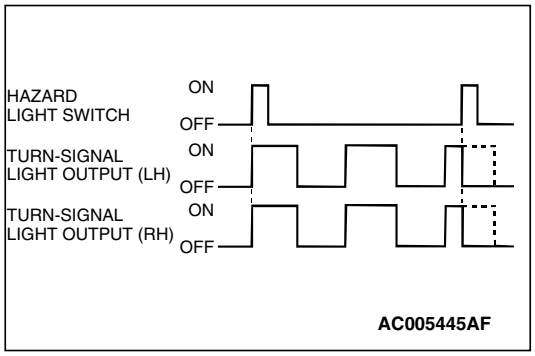


The turn-signal light output (flashing signal) is turned ON when the ignition switch is ON and the turn-signal light switch is ON (LH or RH). If the front turn-signal light or rear turn-signal light bulb has burned out, the flashing speed increases to indicate that the bulb has burned out.

TURN-SIGNAL INDICATORS

At the same time that the turn-signal lights are illuminated, the ETACS-ECU sends a signal to illuminate the turn-signal light indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the turn-signal light indicator on and off.

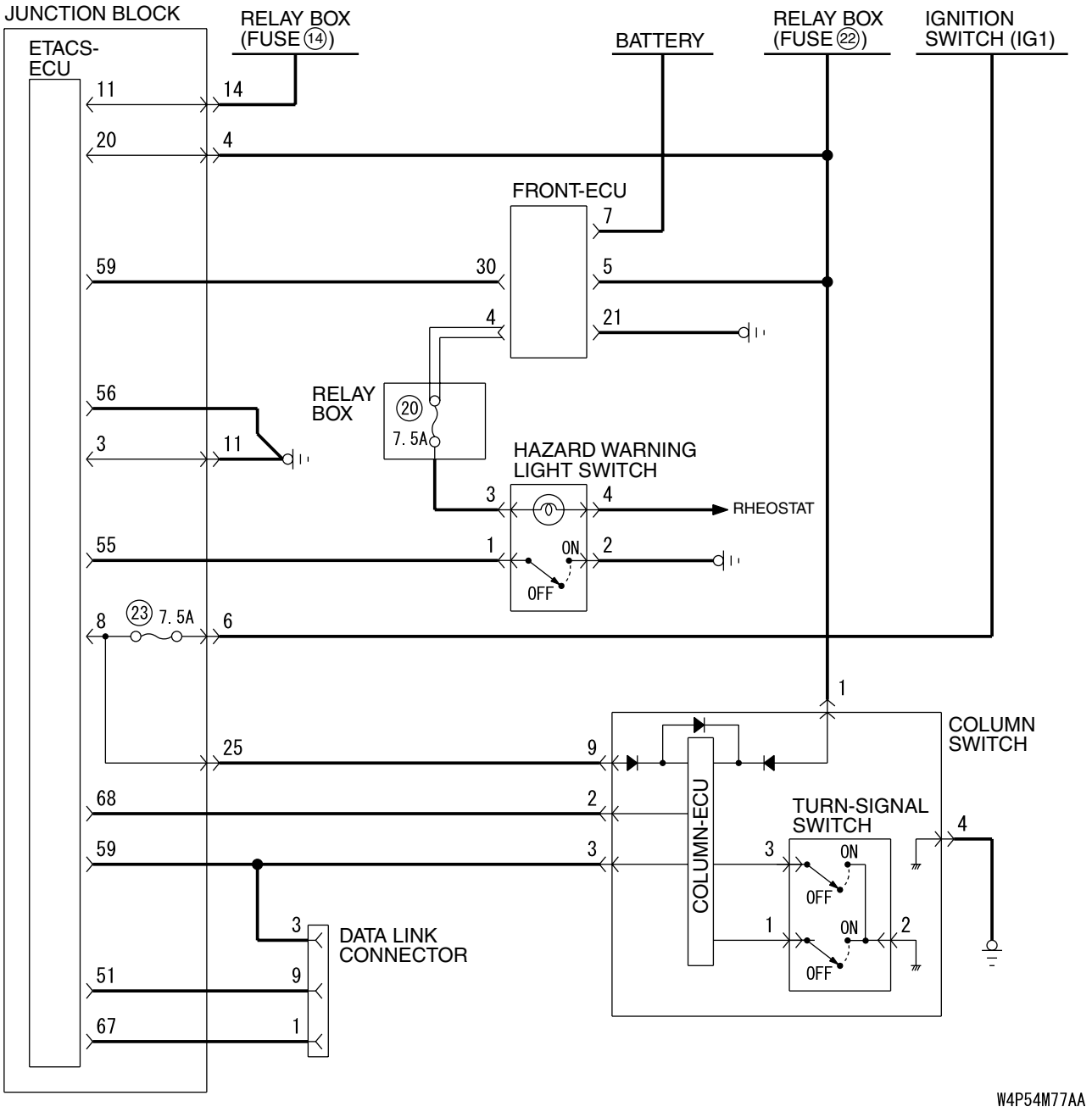
HAZARD WARNING LIGHT

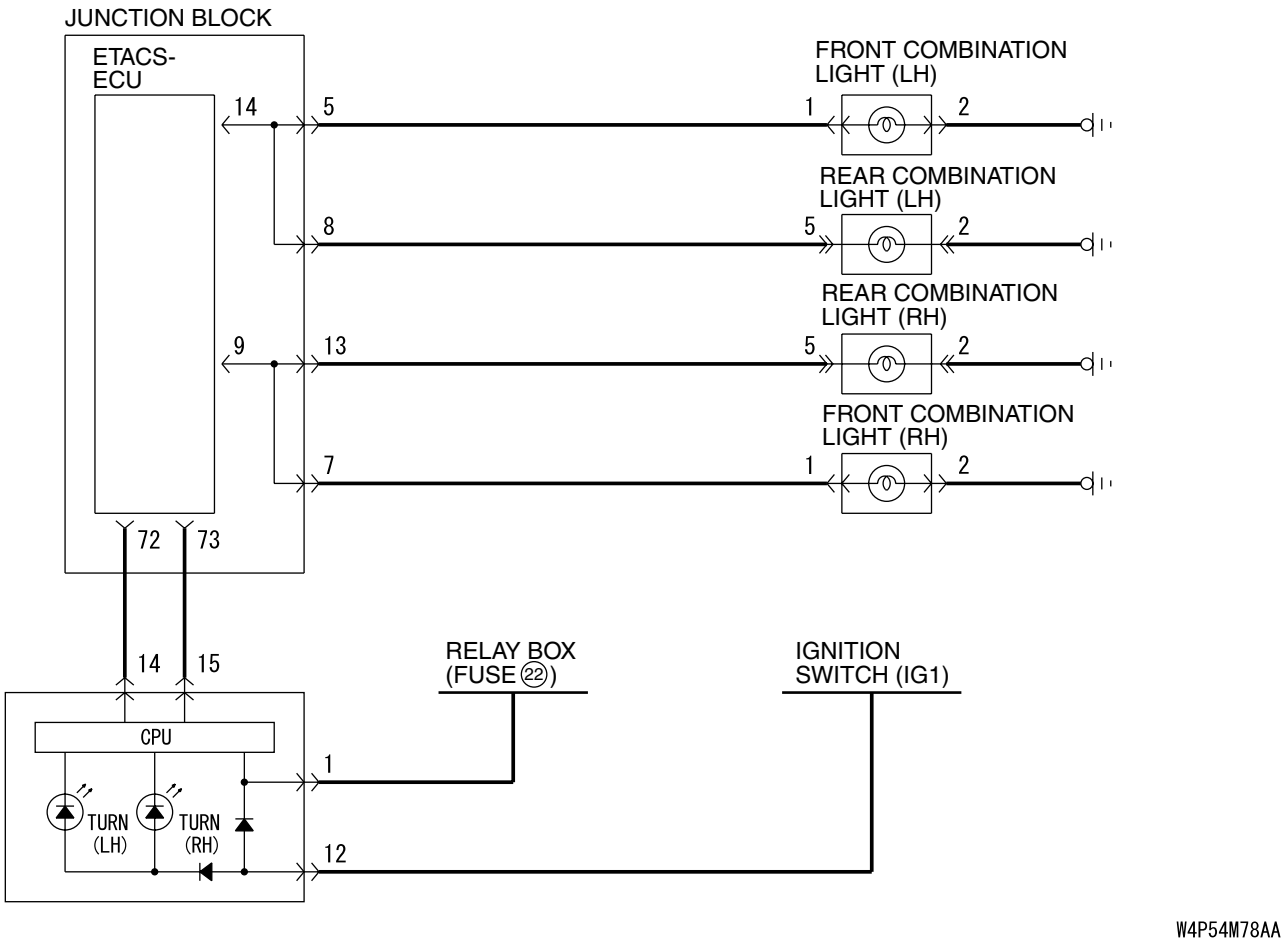


Detects the signal where the hazard warning light switch input changes from OFF to ON, and reverse the flashing state according to this signal. The hazard warning lights toggle on and off whenever the hazard warning light switch is operated.

NOTE: The hazard warning light switch is a push-return type toggle switch.

General circuit diagram for the turn-signal light and hazard light

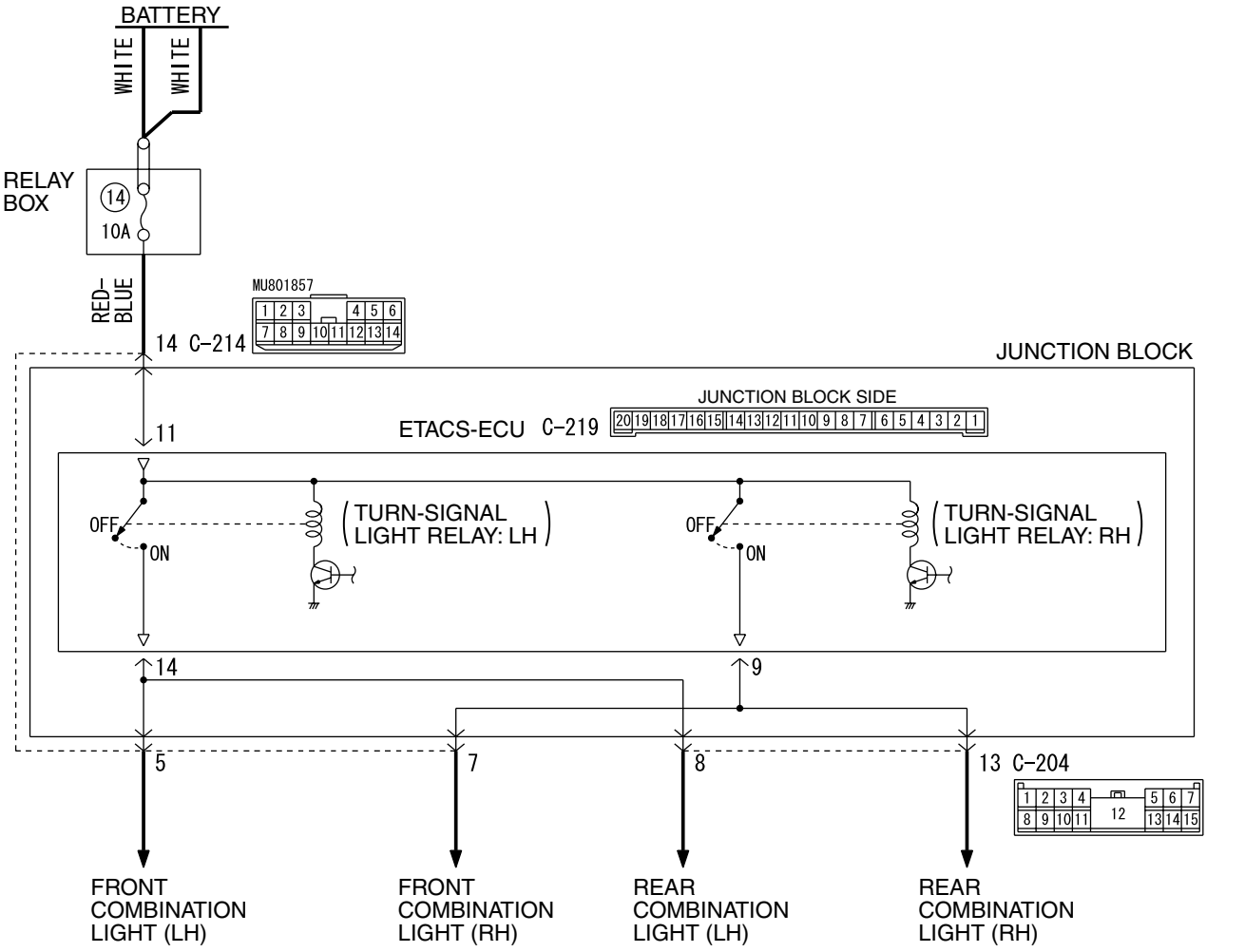




INSPECTION PROCEDURE I-1: Flasher Timer: Turn-signal lights do not flash when the turn-signal light switch is turned on.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Turn-Signal Light Power Supply Circuit



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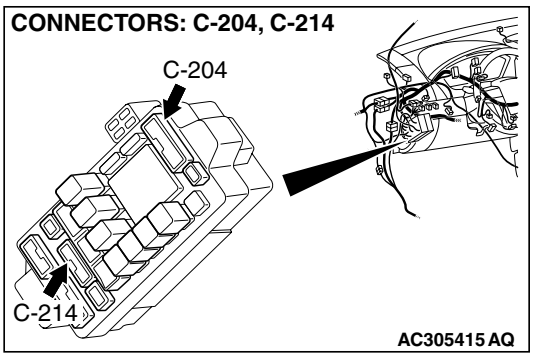

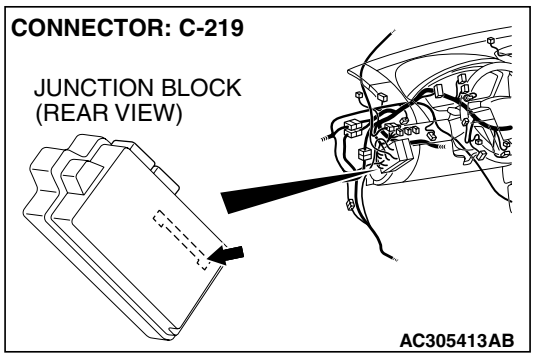

CIRCUIT OPERATION

- 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

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TECHNICAL DESCRIPTION (COMMENT)

If the turn-signal lights do not flash normally, the input circuits from the switches described in "CIRCUIT OPERATION" or the ETACS-ECU may be defective. If the hazard warning lights do not flash, the power supply line to the ETACS-ECU (dedicated to the turn-signal lights) may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

STEP 1. Check the hazard warning light.

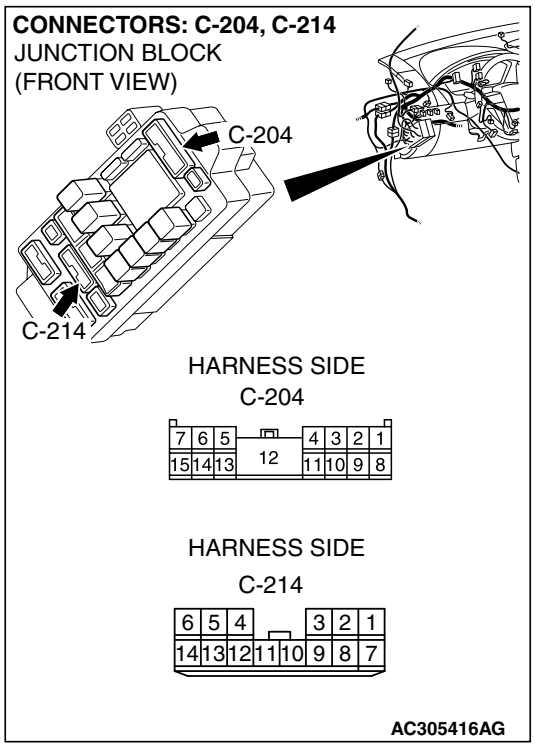
Q: Do the hazard warning lights work normally?

YES : Go to Step 7.
NO : Go to Step 2.

STEP 2. Check the turn-signal lights.

Q: Does either of the turn-signal lights illuminate?

Only right or left side light does not illuminate. : Go to Step 3.
Turn-signal lights do not illuminate at all : Go to Step 4.

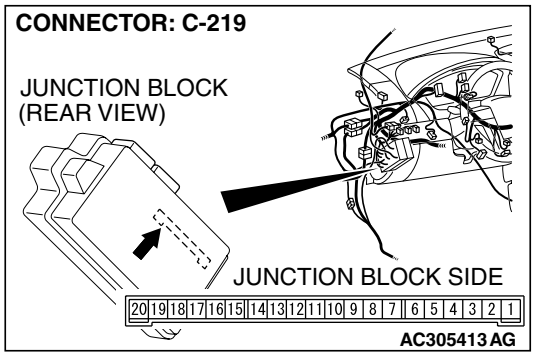


STEP 3. Check ETACS-ECU connector C-219, junction block connectors C-214 and C-204 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are ETACS-ECU connector C-219, junction block connectors C-214 and C-204 in good condition?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Verify that the turn-signal lights illuminate normally.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

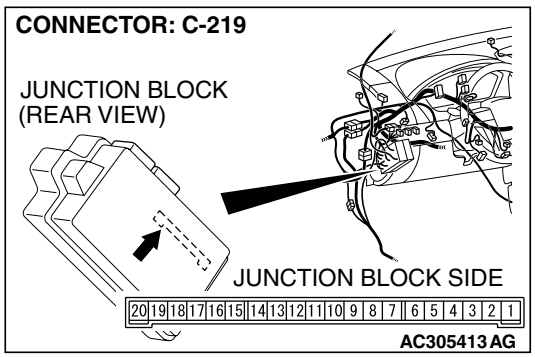


STEP 4. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

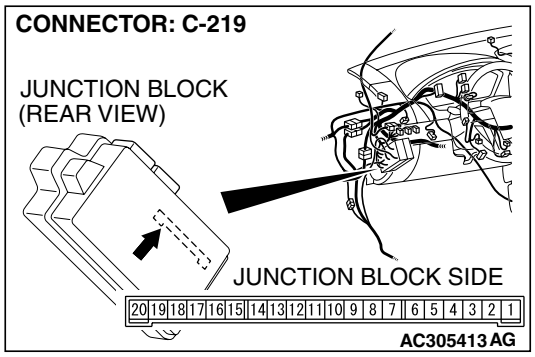
Q: Is ETACS-ECU connector C-219 in good condition?

YES : Go to Step 5.

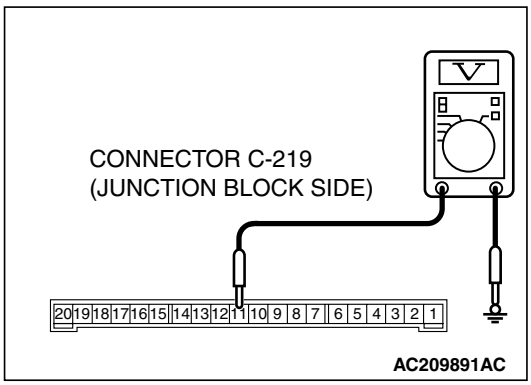
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 5. Check the battery power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-219.



(1) Disconnect ETACS-ECU connector C-219, and measure the voltage available at the junction block side of the connector.



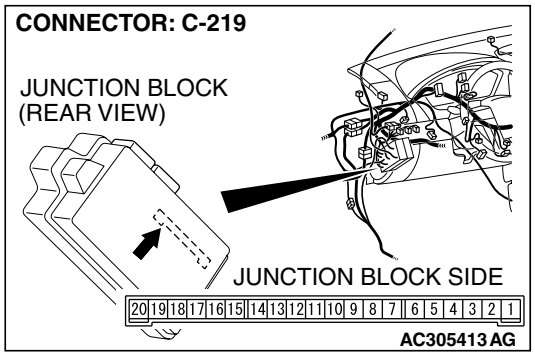
(2) Measure the voltage between terminal 11 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

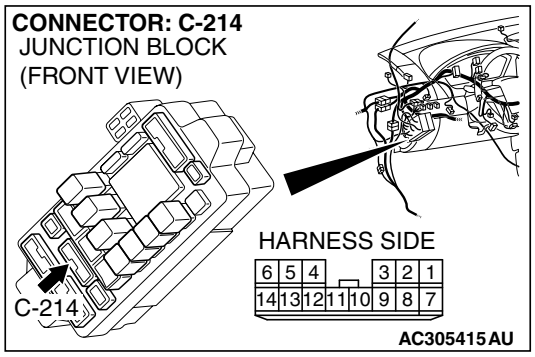
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Verify that the turn-signal lights illuminate normally.

NO : Go to Step 6.

STEP 6. Check the wiring harness between ETACS-ECU connector C-219 (terminal 11) and the battery.



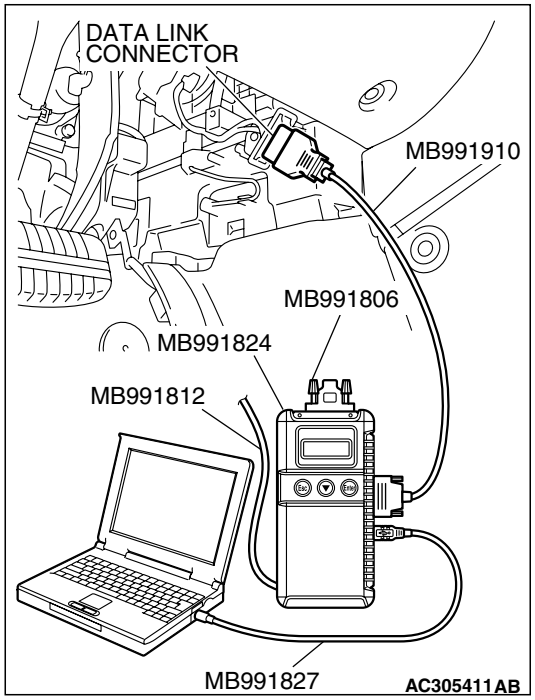


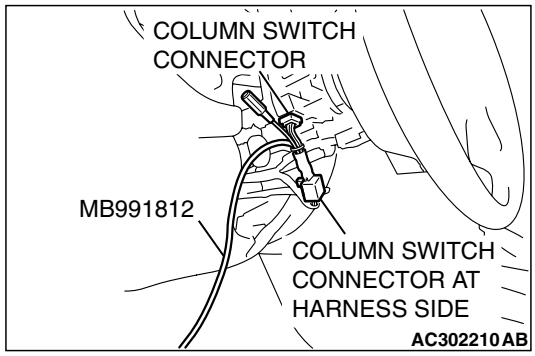
NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 11) and the battery in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.





STEP 7. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: ON
- Turn-signal light switch: RH

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "TURN SIG.RH."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "SWS MONITOR."
  e. Select "Function Diag."
  f. Select "TURN SIGNAL."
  g. Select "TURN SIG.RH."
(4) Check that normal conditions are displayed for the items described in the table below.

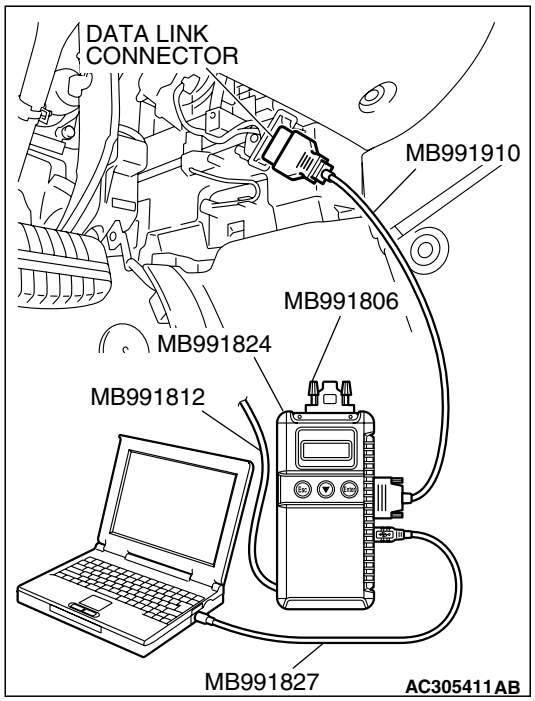
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 10	T/S RH SW	ON
ITEM 30	IG SW (IG1)	ON

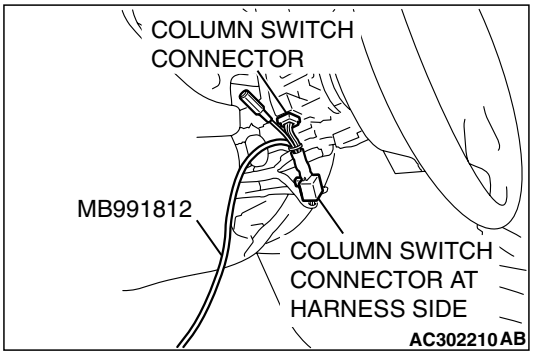
Q: Does the scan tool MB991958 display the items "T/S RH SW" and "IG SW (IG1)" as normal condition?

Normal conditions are displayed for all the items : Go to Step 8.

Normal condition is not displayed for "T/S RH SW" : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the turn-signal light switch P.54B-511."

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-497."





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

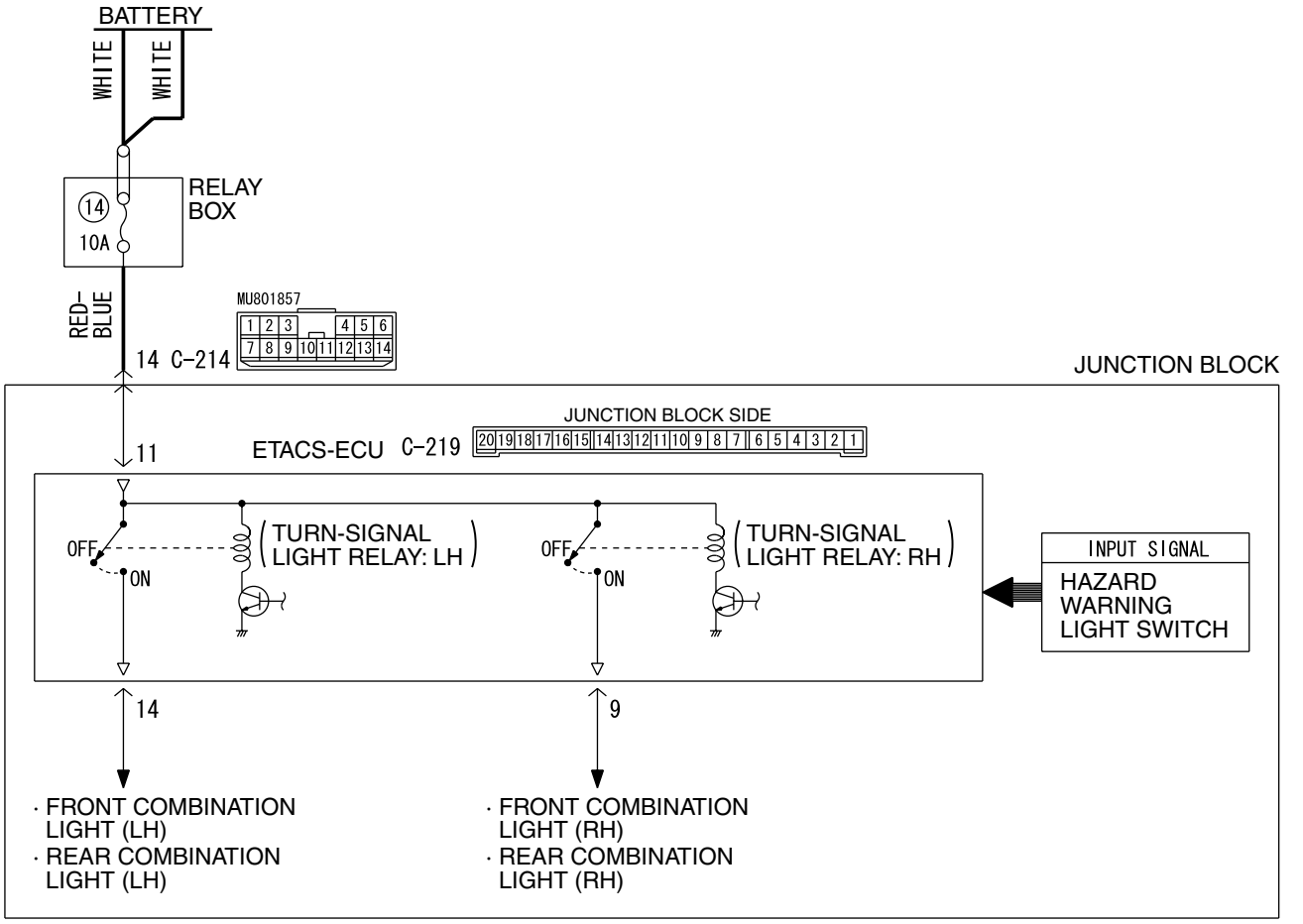
Q: Do the scan tool display the item "T/S LH SW" as normal condition?

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-11. Verify that the turn-signal lights illuminate normally.

NO : Refer to Inspection Procedure M-5 "ETACS-ECU does not receive any signal from the turn-signal light switch P.54B-511."

INSPECTION PROCEDURE I-2: Flasher Timer: Hazard warning lights do not flash when the hazard warning light switch is turned on.

Hazard Warning Light Circuit



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CIRCUIT OPERATION

If the ETACS-ECU receives "ON" signal from the hazard warning light switch, the ETACS-ECU turns on the flasher timer (incorporated in the ETACS-ECU), thus causing the turn-signal lights to flash.

TECHNICAL DESCRIPTION (COMMENT)

If the hazard warning lights do not flash, the power supply line to the ETACS-ECU (dedicated to the turn-signal lights) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable

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- MB991910: M.U.T.-III Main Harness A

STEP 1. Check the turn-signal lights.

Q: Do the turn-signal lights illuminate normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure I-1 "Turn-signal lights do not flash when the turn-signal light switch is turned on P.54B-375."

STEP 2. Check the input signal (by using the pulse check mode of the monitor).

Check input signal from the hazard warning light switch.

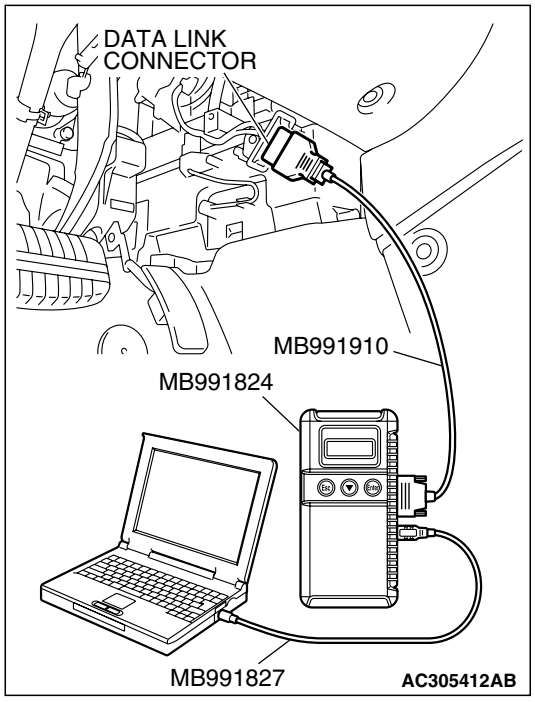
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."

(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."



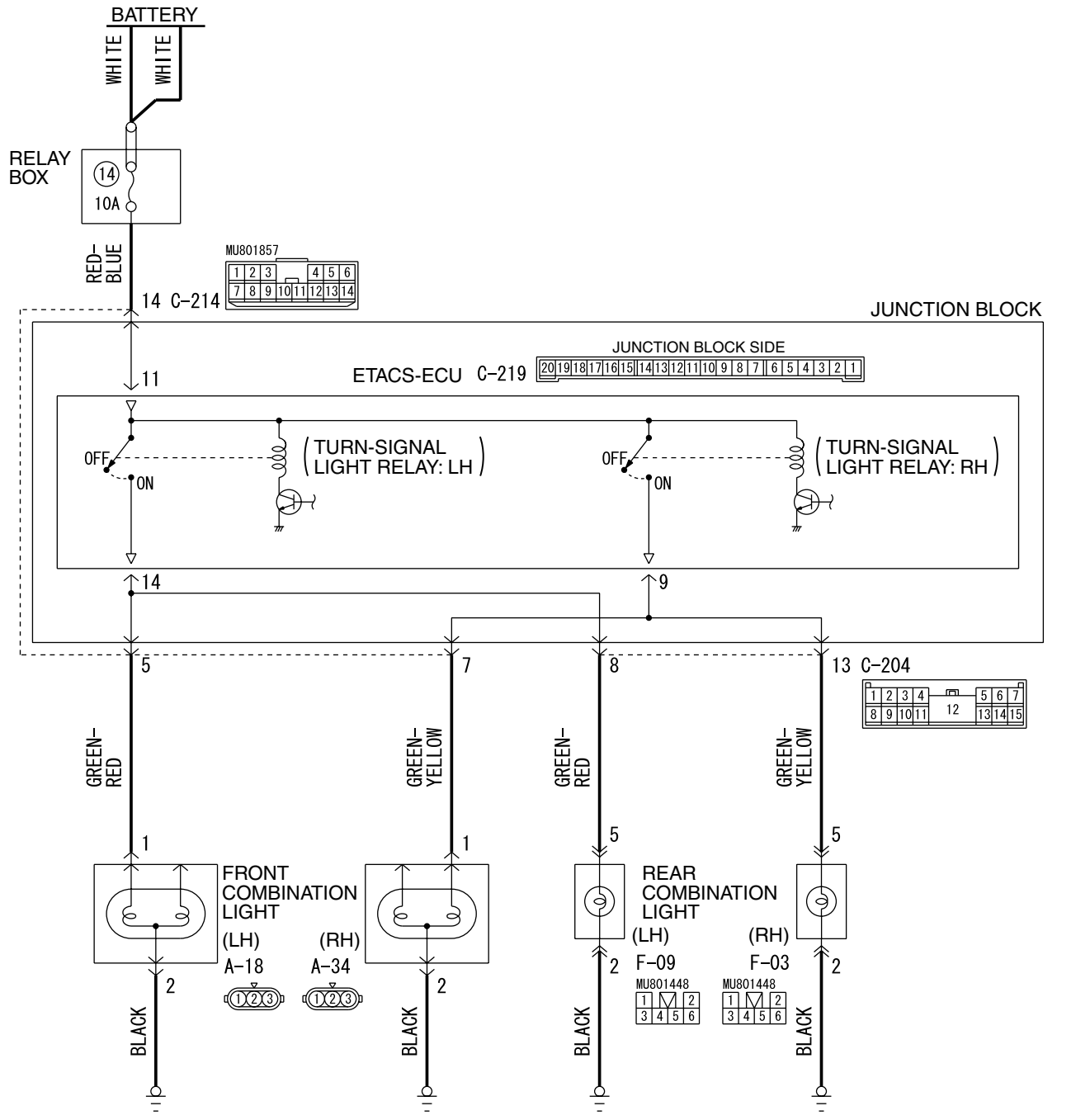
Q: Does scan tool MB991958 sound when the hazard warning light switch is turned from "OFF" to "ON"?

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-11. 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-529."

INSPECTION PROCEDURE I-3: Flasher Timer: One of the turn-signal lights does not illuminate.

Turn-Signal Lights Circuit



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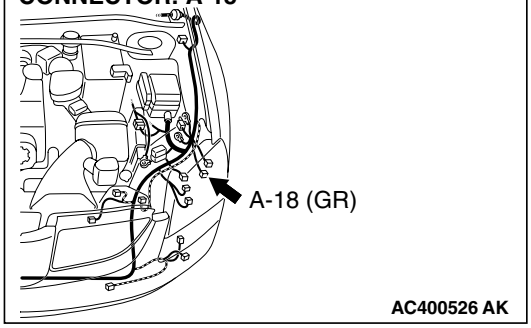
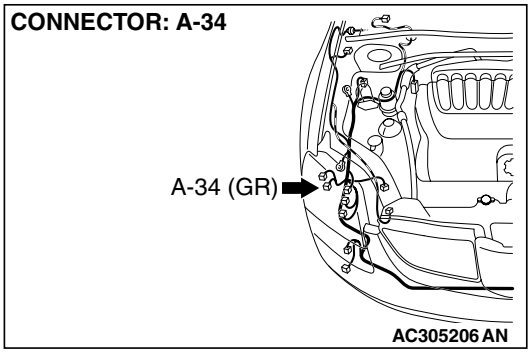
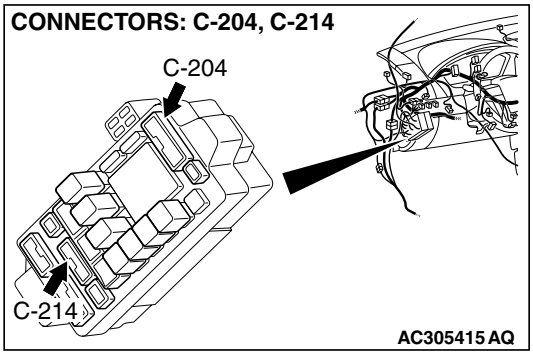
CONNECTOR: A-18



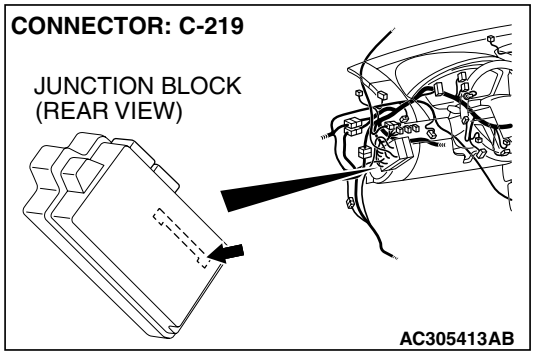
CONNECTOR: A-34



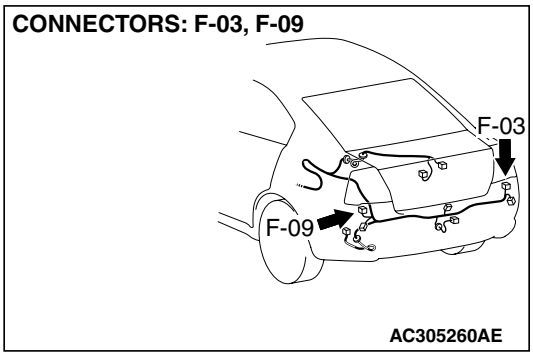
CONNECTORS: C-204, C-214



CONNECTOR: C-219



CONNECTORS: F-03, F-09



TECHNICAL DESCRIPTION (COMMENT)

If the right or left turn-signal light does not illuminate, their bulb may be defective.

TROUBLESHOOTING HINTS

- The turn-signal light bulb may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

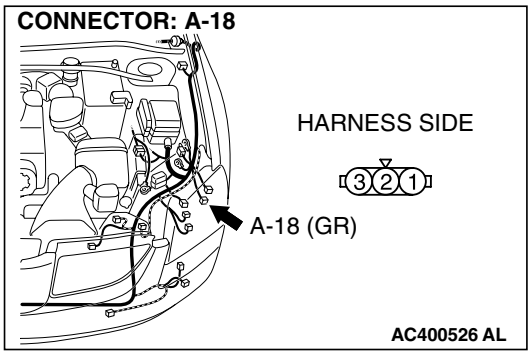
TSB Revision

STEP 1. Check the hazard warning light.

Q: Which turn-signal light does not illuminate?

Front turn-signal light (LH) : Go to Step 2.
Front turn-signal light (RH) : Go to Step 8.
Rear combination light (LH) : Go to Step 14.
Rear combination light (RH) : Go to Step 20.
Turn-signal indicators : Refer to Inspection Procedure I-4 "The turn-signal light indicator does not illuminate normally P.54B-398."
LH side only : Refer to Inspection Procedure I-1 "Turn-signal lights do not flash when the turn-signal light switch is turned on P.54B-375."
RH side only : Refer to Inspection Procedure I-1 "Turn-signal lights do not flash when the turn-signal light switch is turned on P.54B-375."
Both LH and RH sides : Refer to Inspection Procedure I-2 "Hazard warning lights do not flash when the hazard warning light switch is turned on P.54B-382."

STEP 2. Check front combination light (LH) connector A-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is front combination light (LH) connector A-18 in good condition?

YES : Go to Step 3.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

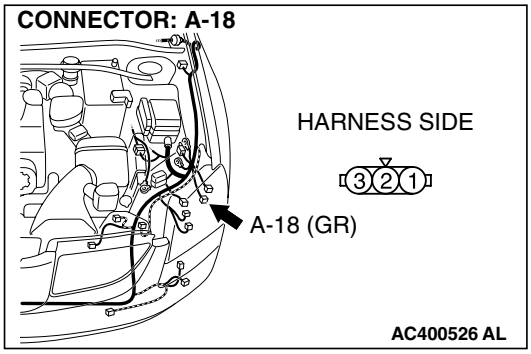
STEP 3. Check the front turn-signal light bulb (LH).

(1) Remove the front turn-signal (LH) light bulb.
(2) Verify that the front turn-signal light bulb (LH) is not damaged or burned out.

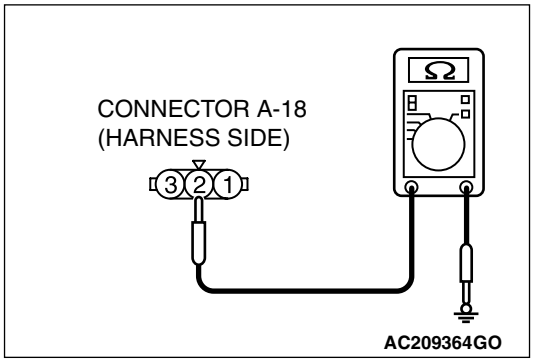
Q: Is the front turn-signal (LH) light bulb in good condition?

YES : Go to Step 4.
NO : Replace the front turn-signal (LH) light bulb. Verify that the turn-signal lights illuminate normally.

STEP 4. Check the ground circuit to the ETACS-ECU. Measure the resistance at front combination light (LH) connector A-18.



(1) Disconnect front combination light (LH) connector A-18 and measure the resistance available at the wiring harness side of the connector.

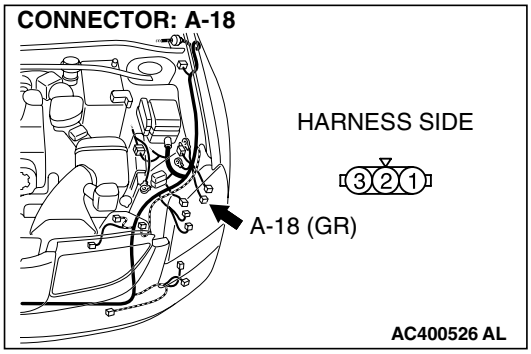


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

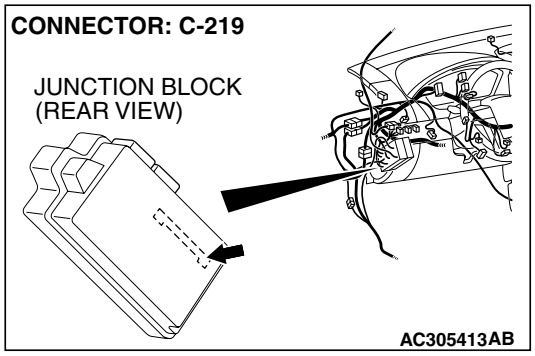
YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check the wiring harness between front combination light (LH) connector A-18 (terminal 2) and ground.



Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (LH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.



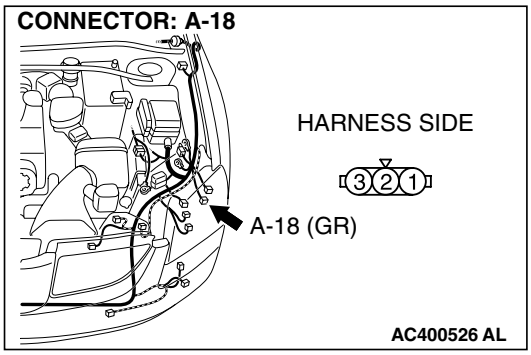
STEP 6. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

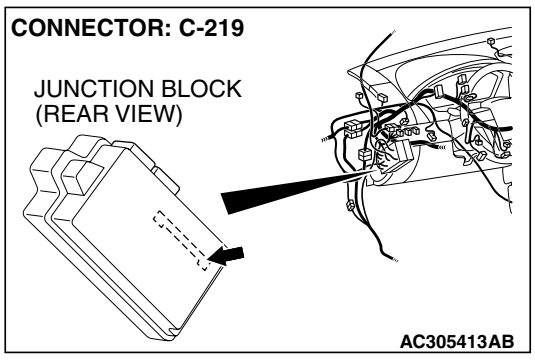
Q: Is ETACS-ECU connector C-219 in good condition?

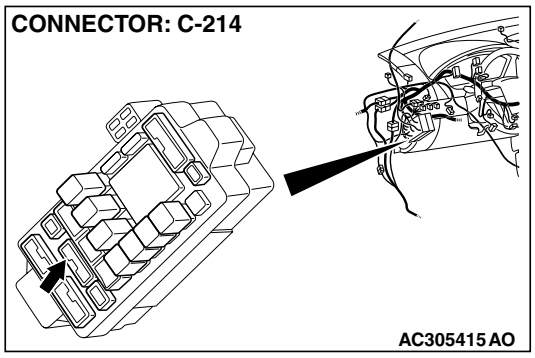
YES : Go to Step 7.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

STEP 7. Check the wiring harness between front combination light (LH) connector A-18 (terminal 1) and ETACS-ECU connector C-219 (terminal 14).







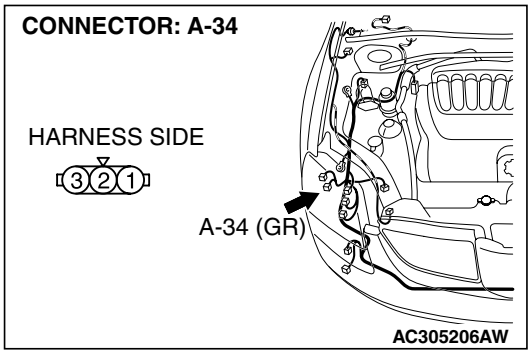
NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front combination light (LH) connector A-18 (terminal 1) and ETACS-ECU connector C-219 (terminal 14) in good condition?

YES : Replace the front combination light socket (LH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 8. Check front combination light (RH) connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is front combination light (RH) connector A-34 in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.

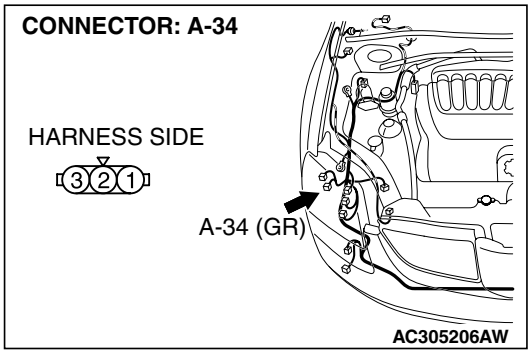
STEP 9. Check the front turn-signal light bulb (RH).

(1) Remove the front turn-signal (RH) light bulb.
(2) Verify that the front turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the front turn-signal (RH) light bulb in good condition?

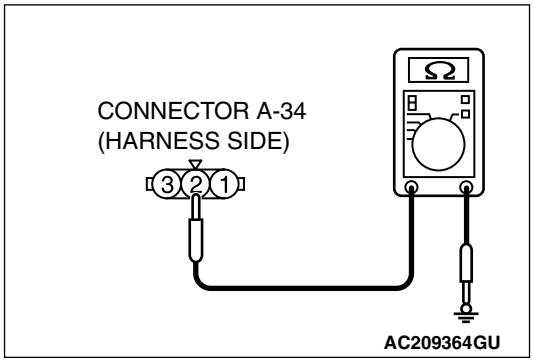
YES : Go to Step 10.

NO : Replace the front turn-signal (RH) light bulb. Verify that the turn-signal lights illuminate normally.



STEP 10. Check the ground circuit to the front combination light (RH). Measure the resistance at front combination light (RH) connector A-34.

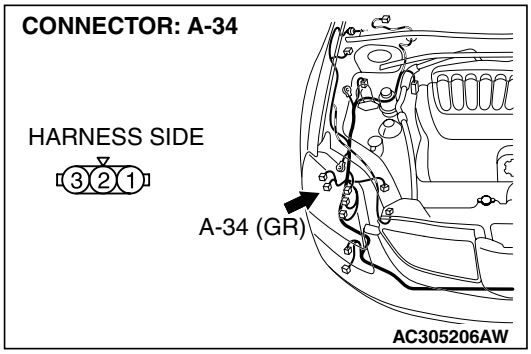
(1) Disconnect front combination light (RH) connector A-34 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

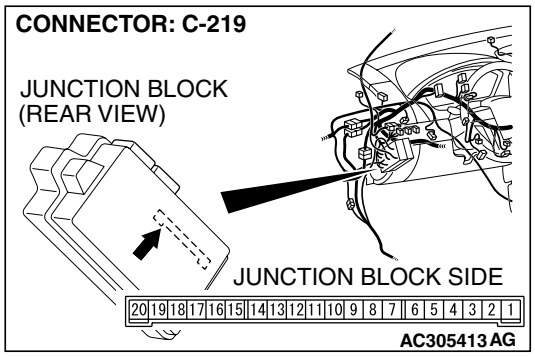
YES : Go to Step 12.
NO : Go to Step 11.



STEP 11. Check the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground.

Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 2) and ground in good condition?

YES : Replace the front combination light socket (RH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

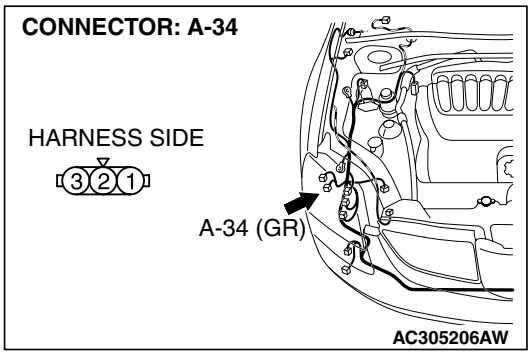


STEP 12. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

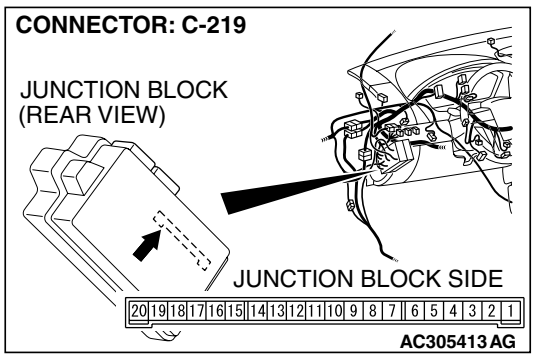
Q: Is ETACS-ECU connector C-219 in good condition?

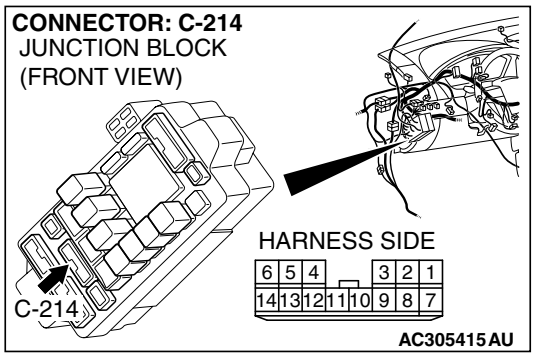
YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 13. Check the wiring harness between front combination light (RH) connector A-34 (terminal 1) and ETACS-ECU connector C-219 (terminal 9).





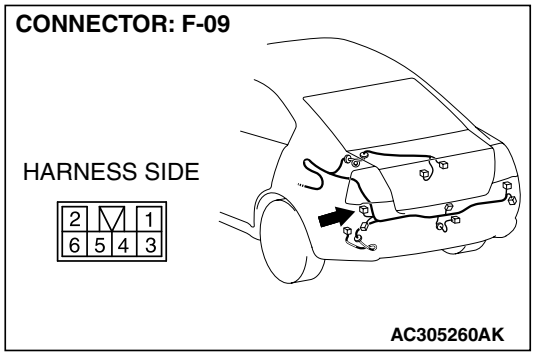
NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front combination light (RH) connector A-34 (terminal 1) and ETACS-ECU connector C-219 (terminal 9) in good condition?

YES : Replace the front combination light socket (RH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 14. Check rear combination light (LH) connector F-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is rear combination light (LH) connector F-09 in good condition?

YES : Go to Step 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).

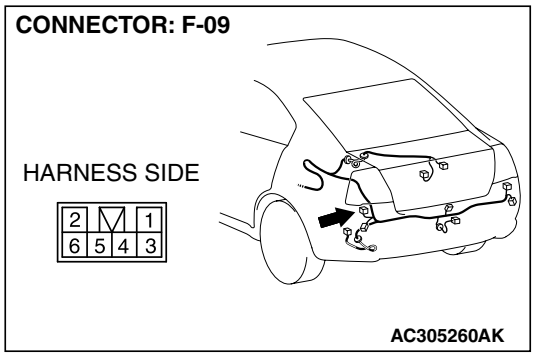
(1) Remove the rear turn-signal (LH) light bulb.
(2) Verify that the rear turn-signal light bulb (LH) is not damaged or burned out.

Q: Is the rear turn-signal (LH) light bulb in good condition?

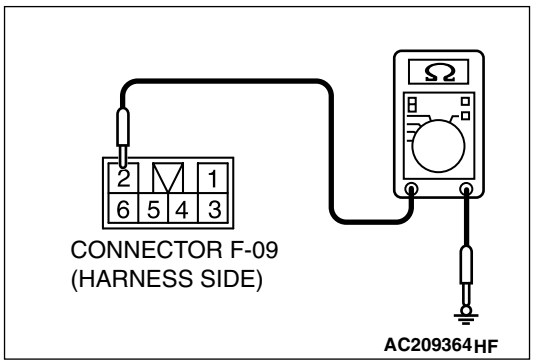
YES : Go to Step 16.

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-09.



(1) Disconnect rear combination light (LH) connector F-09 and measure the resistance available at the wiring harness side of the connector.

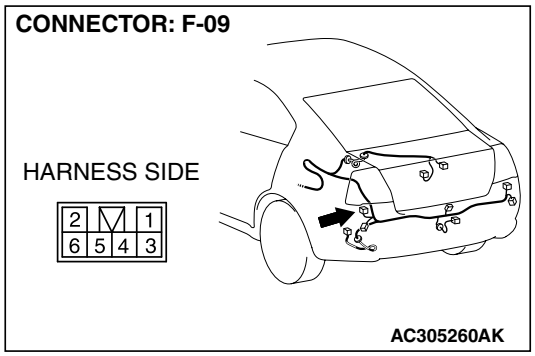


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

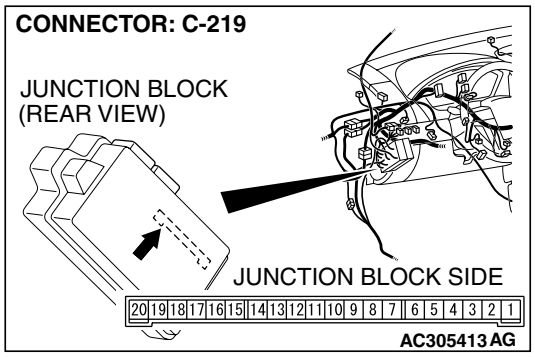
YES : Go to Step 18.
NO : Go to Step 17.

STEP 17. Check the wiring harness between rear combination light (LH) connector F-09 (terminal 2) and ground.



Q: Is the wiring harness between rear combination light (LH) connector F-09 (terminal 2) and ground in good condition?

YES : Replace the rear combination light socket assembly (LH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

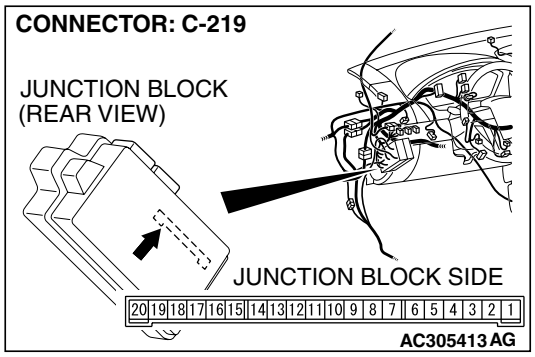


STEP 18. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

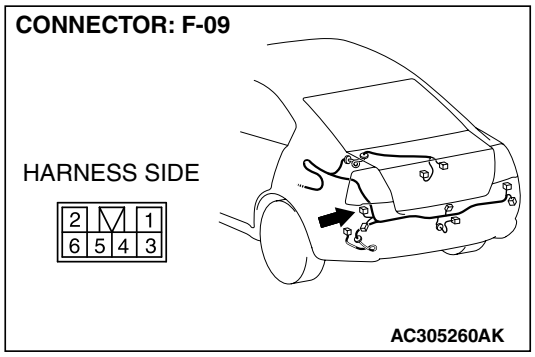
Q: Is ETACS-ECU connector C-219 in good condition?

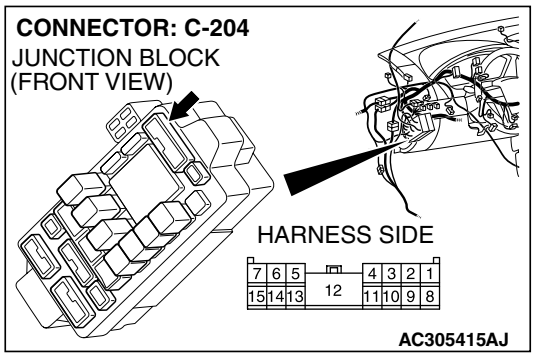
YES : Go to Step 19.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 19. Check the wiring harness between rear combination light (LH) connector F-09 (terminal 5) and ETACS-ECU connector C-219 (terminal 14).





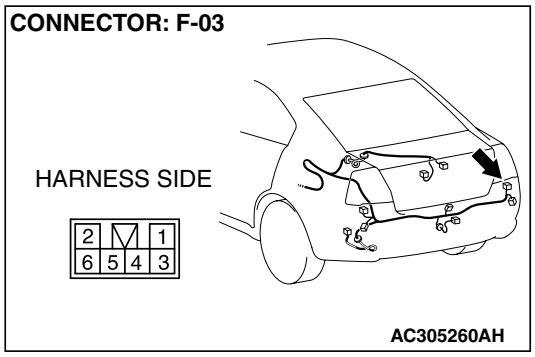
NOTE: Also check junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light (LH) connector F-09 (terminal 1) and ETACS-ECU connector C-219 (terminal 14) in good condition?

YES : Replace the rear combination light socket assembly (LH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 20. Check rear combination light (RH) connector F-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is rear combination light (RH) connector F-03 in good condition?

YES : Go to Step 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).

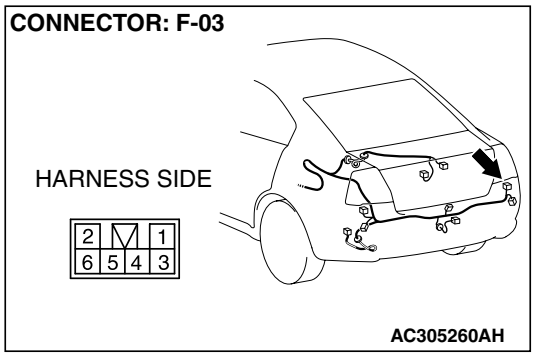
(1) Remove the rear turn-signal (RH) light bulb.
(2) Verify that the rear turn-signal light bulb (RH) is not damaged or burned out.

Q: Is the rear turn-signal (RH) light bulb in good condition?

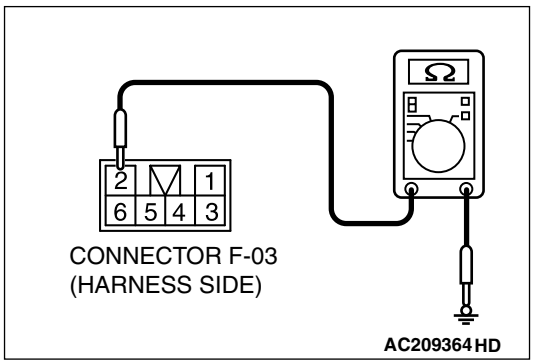
YES : Go to Step 22.

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-03.



(1) Disconnect rear combination light (RH) connector F-03 and measure the resistance available at the harness side of the connector.

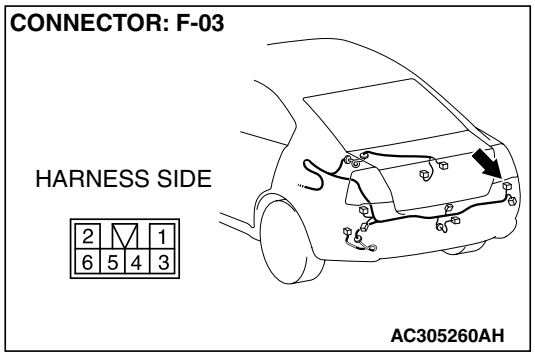


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 24.
NO : Go to Step 23.

STEP 23. Check the wiring harness between rear combination light (RH) connector F-03 (terminal 2) and ground.



Q: Is the wiring harness between rear combination light (RH) connector F-03 (terminal 2) and ground in good condition?

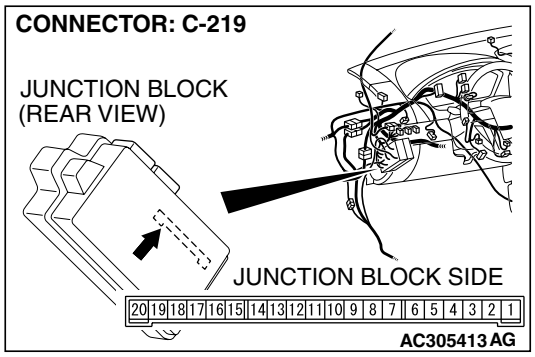
YES : Replace the rear combination light socket assembly (RH). Verify that the turn-signal lights illuminate normally.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

STEP 24. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

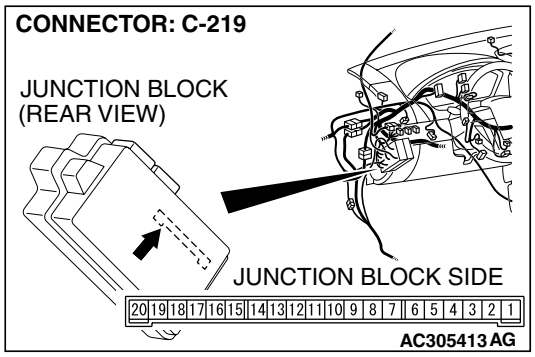
Q: Is ETACS-ECU connector C-219 in good condition?

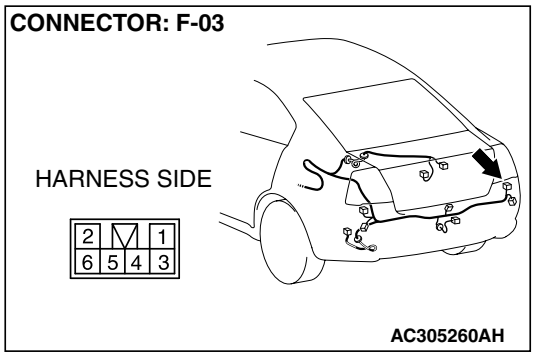
YES : Go to Step 25.

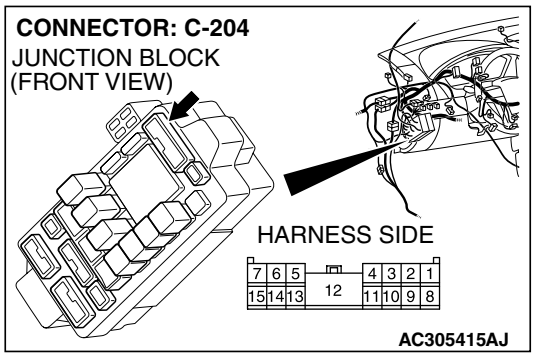
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the turn-signal lights illuminate normally.



STEP 25. Check the wiring harness between rear combination light (RH) connector F-03 (terminal 5) and ETACS-ECU connector C-219 (terminal 9).







NOTE: Also check junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear combination light (RH) connector F-03 (terminal 5) and ETACS-ECU connector C-219 (terminal 9) in good condition?

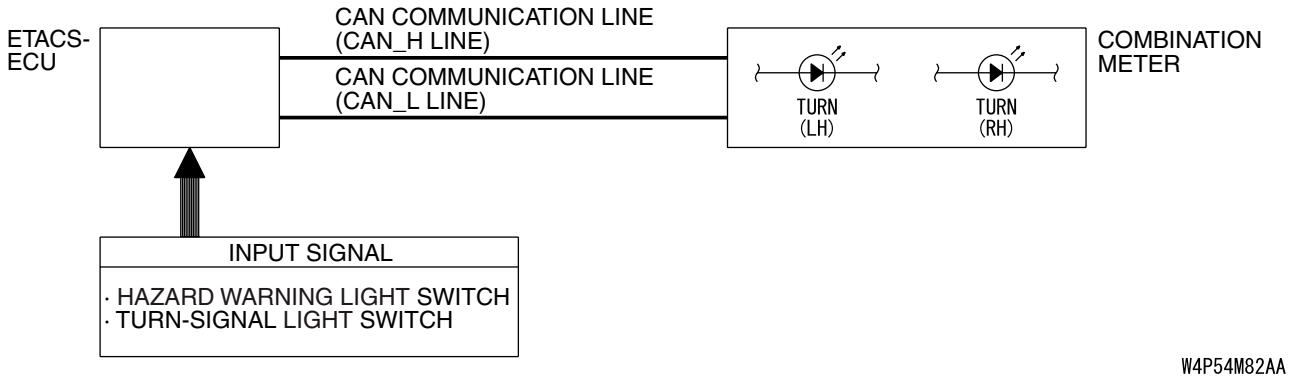
YES : Replace the rear combination light socket assembly (RH). Verify that the turn-signal lights illuminate normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the turn-signal lights illuminate normally.

INSPECTION PROCEDURE I-4: 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-18."

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

STEP 1. Check the turn-signal lights.

When the column switch or the hazard warning light switch are operated, check that the turn-signal lights illuminate and go off normally.

Q: Are the turn-signal lights in good condition?

YES : Go to Step 2.

NO : First, repair the turn-signal light(s). Refer to Inspection Procedure I-3 "One of the turn-signal lights does not illuminate P.54B-384."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

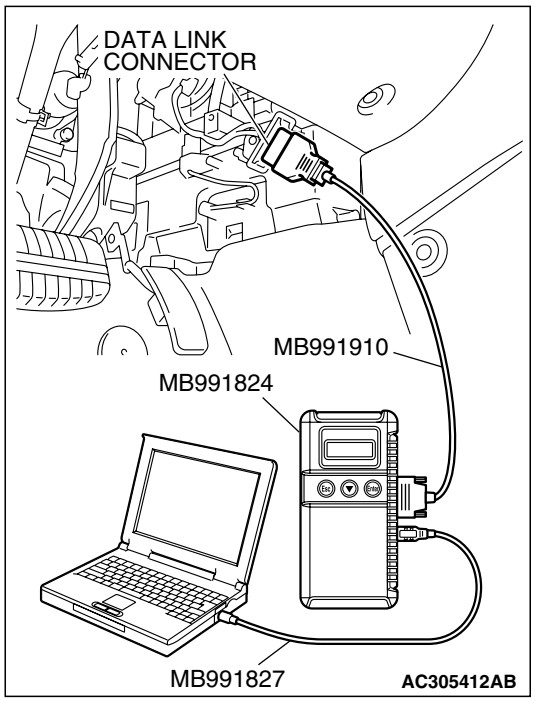
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

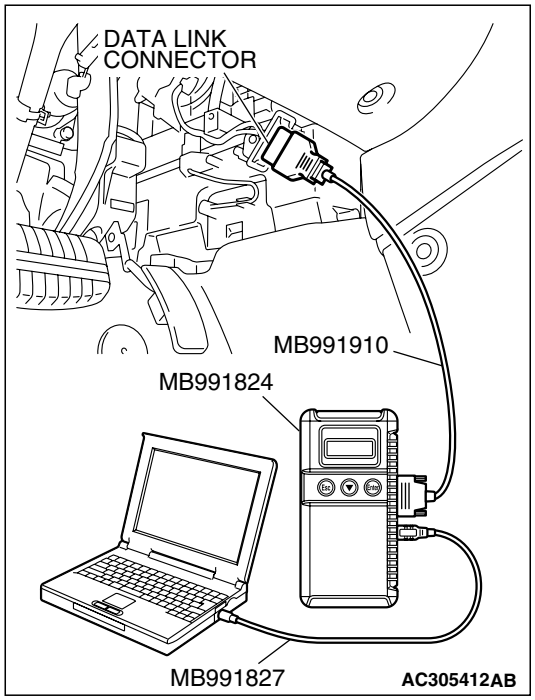
(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

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-16).





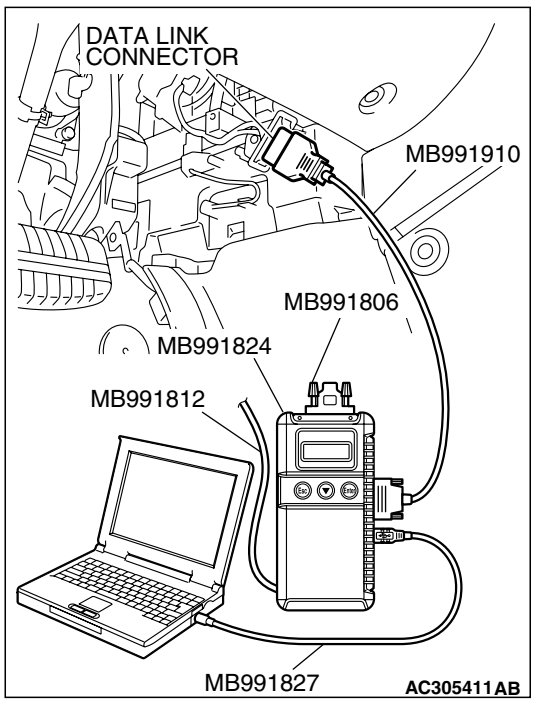
STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

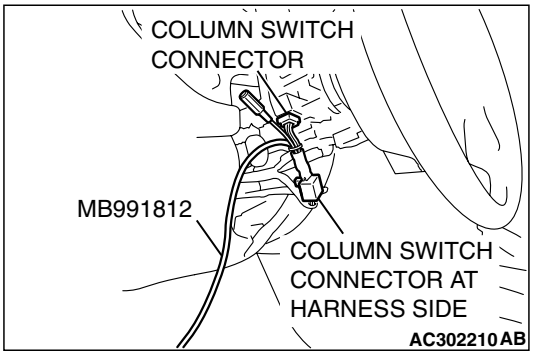
Check whether the combination meter-related DTC is set.

(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-54.
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-17."
(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-82."

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-11. Check that the turn-signal light indicator lights illuminate normally.

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FOG LIGHT

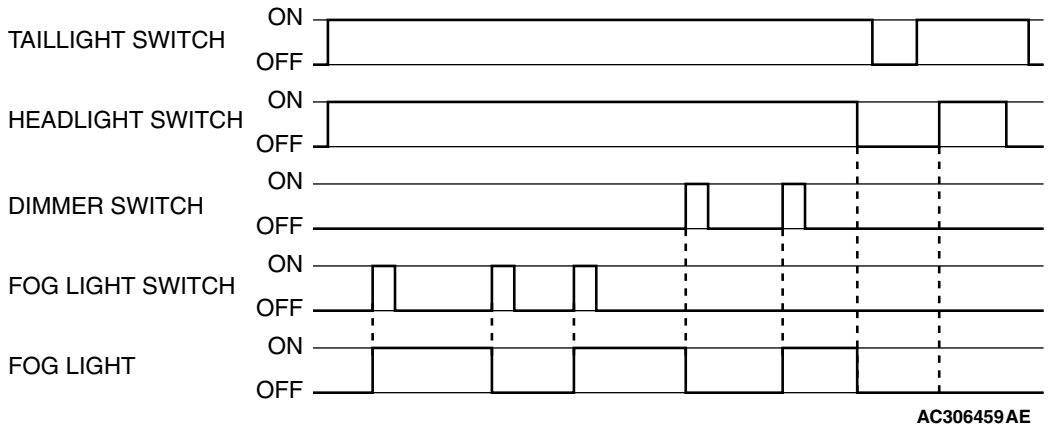
GENERAL DESCRIPTION CONCERNING THE FOG LIGHTS

M1549021400283

The following ECUs affect the functions and control of the fog lights.

FUNCTION	CONTROL ECU
Fog light	ETACS-ECU, front-ECU, column switch
Fog light indicator	ETACS-ECU, column switch

Fog light



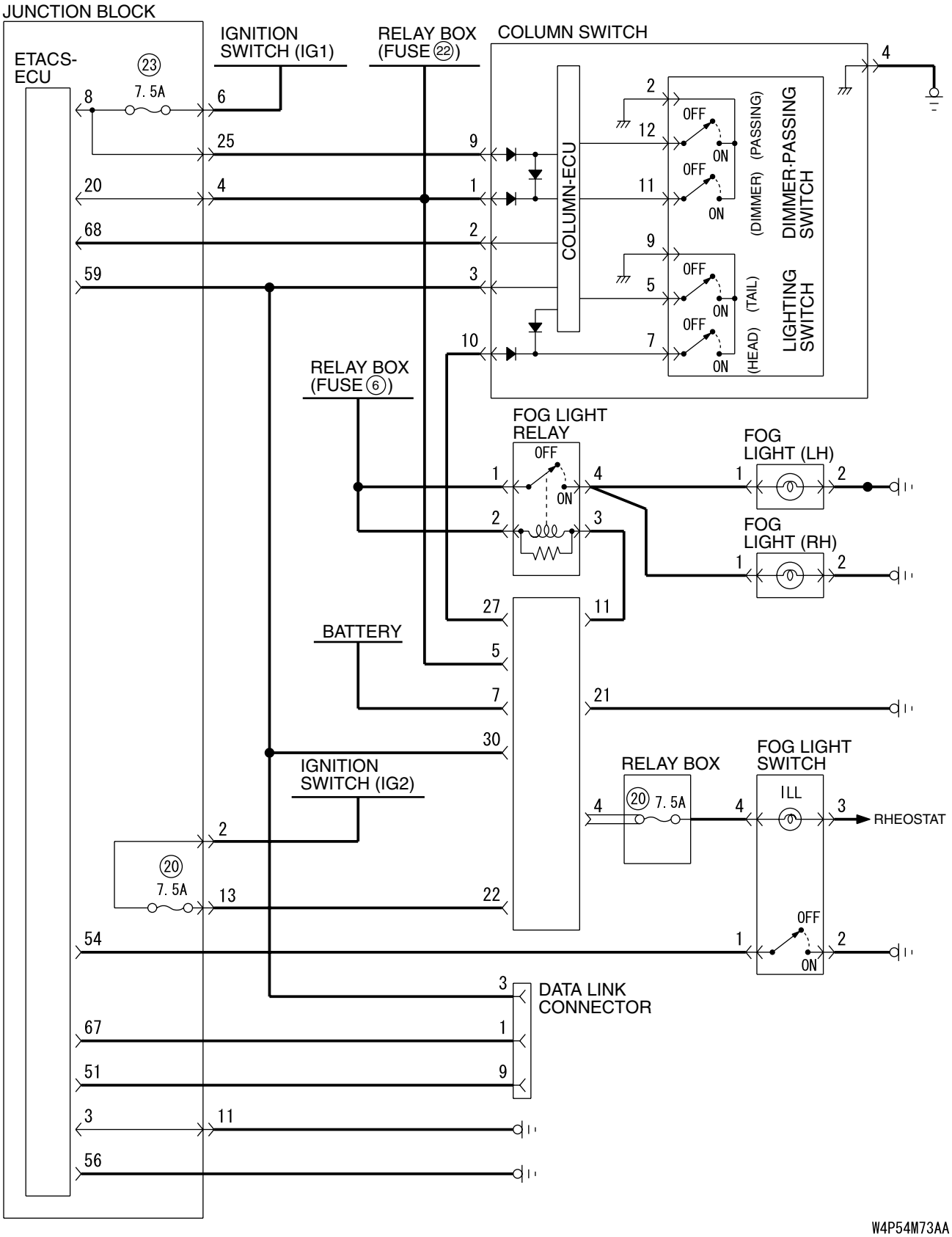
The fog lights will illuminate only when the fog light switch is operated while the low-beam headlights are on.
The fog lights will be switched off when any of the following conditions is met. The fog lights will also be switched off automatically by headlight automatic shutoff function.

- When the high-beam headlights are switched on, the fog lights will be switched off. If the low-beam headlights are switched on again, the fog lights will illuminate again.
- When the headlight switch is turned off or the taillights and headlights are off, the fog lights will be switched off. If the low-beam headlights are switched on again, the fog lights will not illuminate again.

Fog light indicator

At the same time that the fog lights are illuminated, the ETACS-ECU sends a signal to illuminate the fog light indicator via the CAN bus line. The combination meter receives the transmitted signal and turns the fog light indicator on and off.

General circuit diagram for the fog lights



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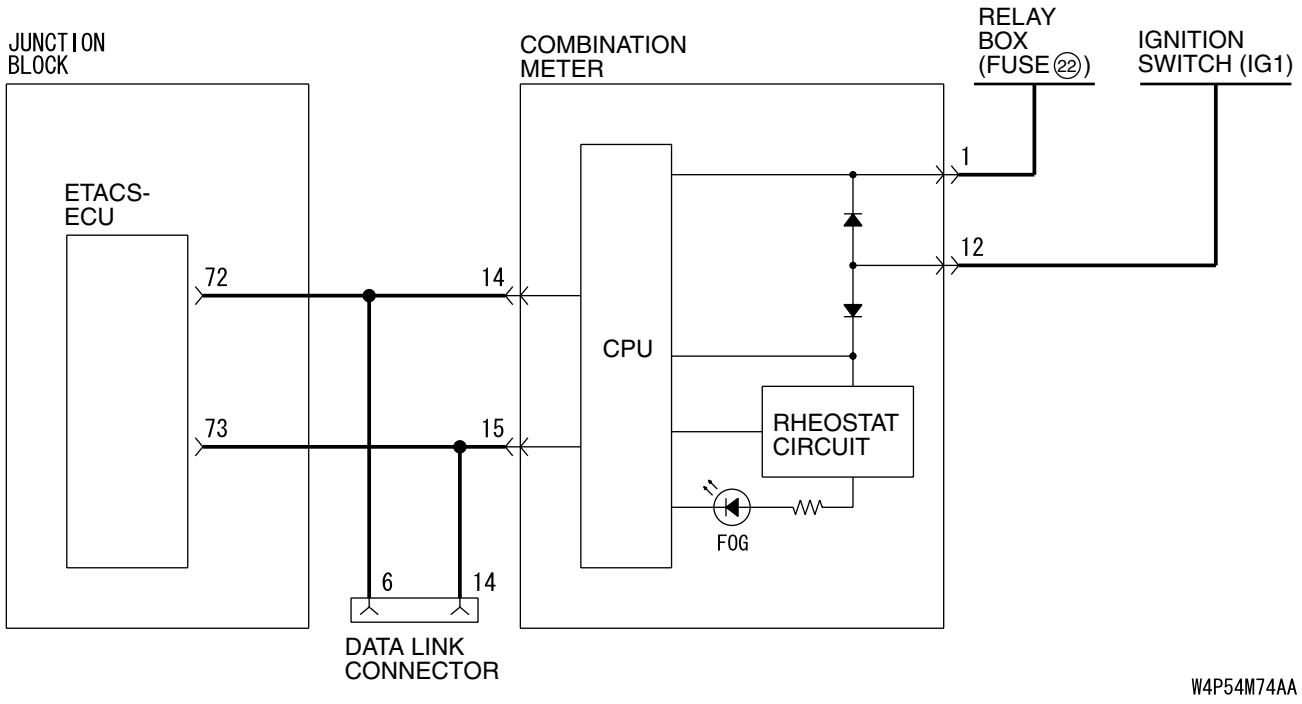
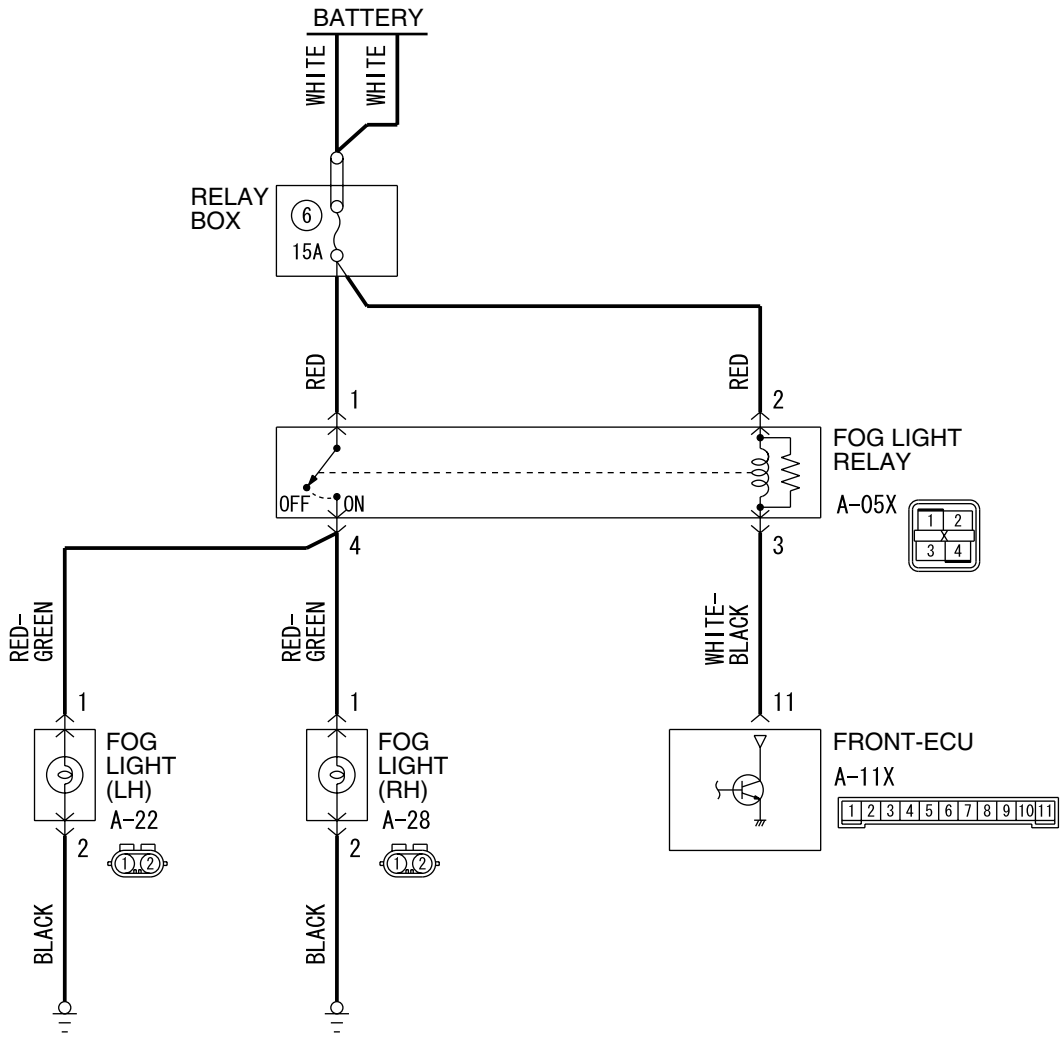


INSPECTION PROCEDURE J-1: Fog Light: Fog lights do not illuminate when the fog light switch is turned on.

NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

Fog Light Circuit



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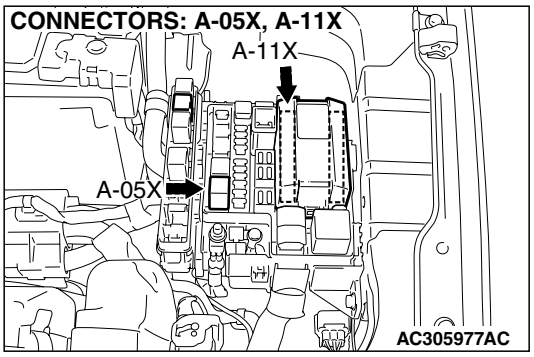

CIRCUIT OPERATION

- The ETACS-ECU sends a fog light illumination request signal ("LIGHT ON" signal) to the front-ECU when the fog light switch is turned on while the headlights are illuminating at low beam.
- Then the front-ECU switches on its relay to illuminate the fog lights.

TECHNICAL DESCRIPTION (COMMENT)

If the headlights illuminate at low beam, the fog light relay, the fog light switch, the front-ECU or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system

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- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

STEP 1. Check the headlight (low-beam) operation.

Q: Do the headlights illuminate at low beam normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure H-2 "The headlights (low-beam) do not illuminate normally P.54B-307."

STEP 2. Check the input signal by using "FUNCTION DIAG." menu of the SWS monitor.

Set each switch to the following condition before checking input signal from the fog light switch:

- Ignition switch: ON
- Fog light switch: ON

NOTE: Turn the ignition switch to the "ON" position in order to disable the headlight automatic shutdown function.

⚠ CAUTION

To prevent damage to scan tool 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-17."

(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.

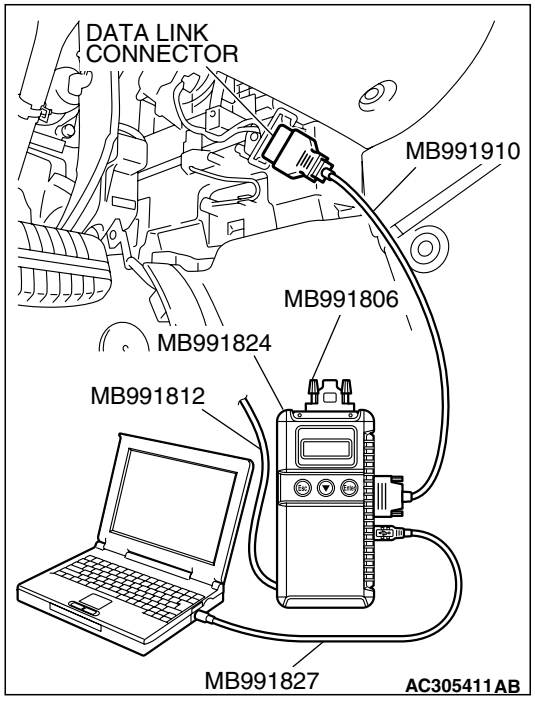
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 36	F.FOG LIGHT	ON

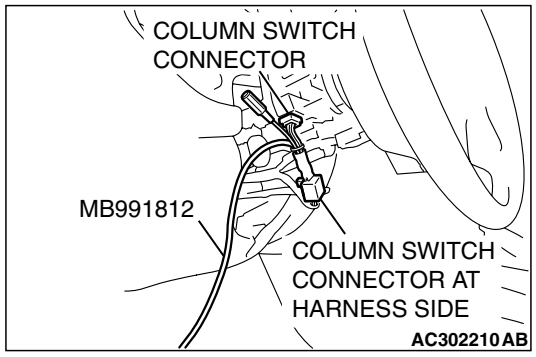
Q: Does the scan tool MB991958 display the items "IG SW (IG1)" and "F.FOG LIGHT" as normal condition?

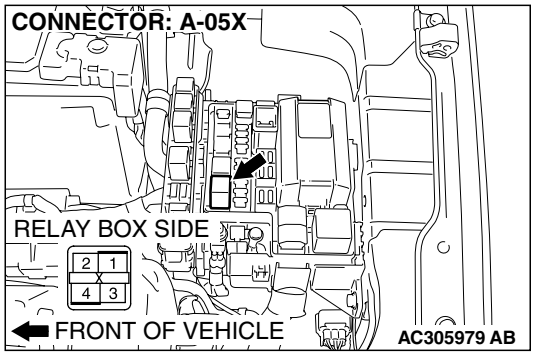
Normal conditions are displayed for all the items : Go to Step 3.

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-497."

Normal condition is not displayed for "F.FOG LIGHT" : Refer to Inspection Procedure M-3 "ETACS-ECU does not receive any signal from the fog light switch P.54B-500."





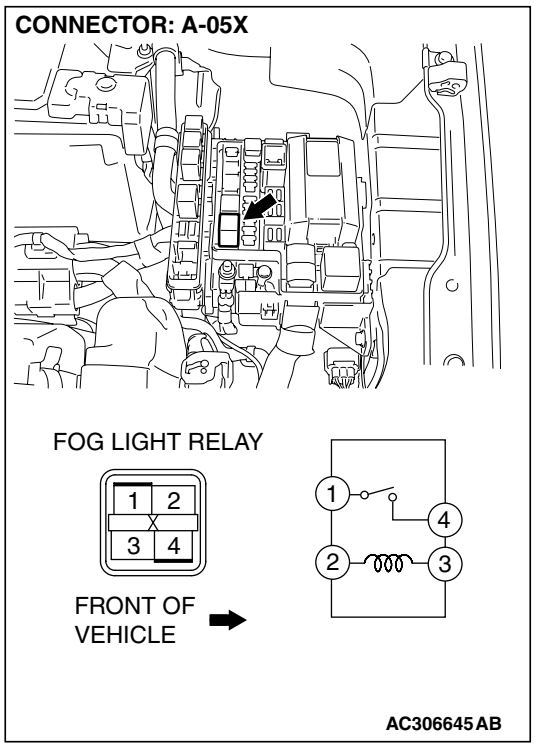


STEP 3. Check fog light relay connector A-05X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-05X 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 fog lights illuminate normally.



STEP 4. Check the fog light 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 fog light relay in good condition?

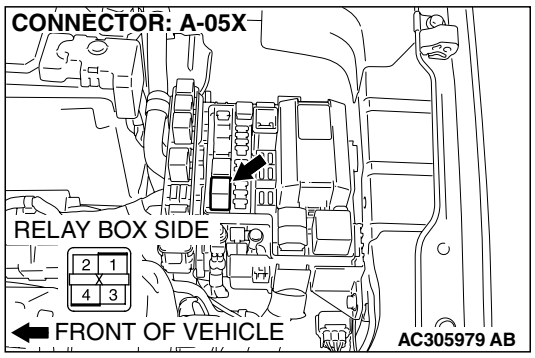
YES : Go to Step 5.

NO : Replace the fog light relay. Verify that the fog lights illuminate normally.

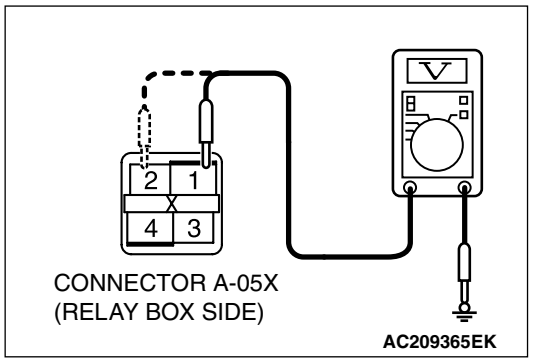
STEP 5. Check the battery power supply circuit to the fog light relay. Measure the voltage at fog light relay connector A-05X.

⚠ CAUTION

The top and bottom of the fog light relay are difficult to identify. Prior to inspection, confirm the triangle mark on the relay box.



(1) Disconnect fog light relay connector A-05X and measure the voltage available at the relay box side of the connector.

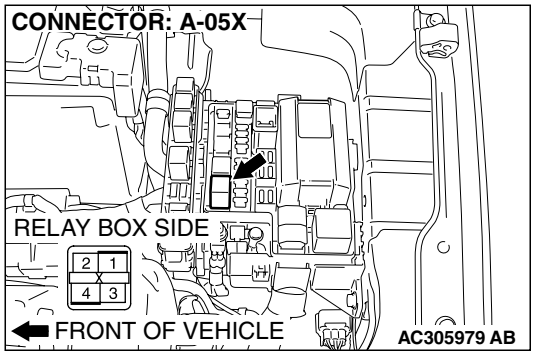


(2) Measure the voltage between terminal 1 and ground, and also between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

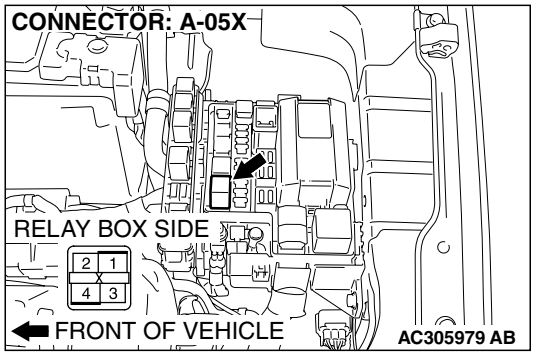
YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Check the wiring harness between fog light relay connector A-05X (terminals 1 and 2) and the battery.



Q: Is the wiring harness between fog light relay connector A-05X (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 fog lights illuminate normally.

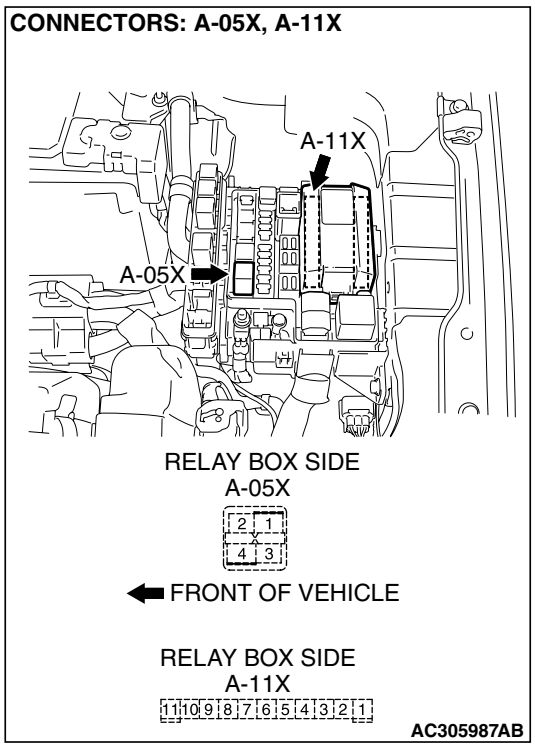


STEP 7. Check front-ECU connector A-11X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front-ECU connector A-11X in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the fog lights illuminate normally.



STEP 8. Check the wiring harness between fog light relay connector A-05X (terminal 3) and front-ECU connector A-11X (terminal 11).

Q: Is the wiring harness between fog light relay connector A-05X (terminal 3) and front-ECU connector A-11X (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 fog lights illuminate normally.

STEP 9. Replace the ECU.

(1) Replace the front-ECU.

(2) The fog lights should illuminate normally.

Q: Do the 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-11. Verify that the front fog lights illuminate normally.

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INSPECTION PROCEDURE J-2: Fog Light: Fog lights do not go out when the headlights (low-beam) are turned off while the fog lights are on.

TECHNICAL DESCRIPTION (COMMENT)
If the trouble above occurs, the front-ECU may be defective.

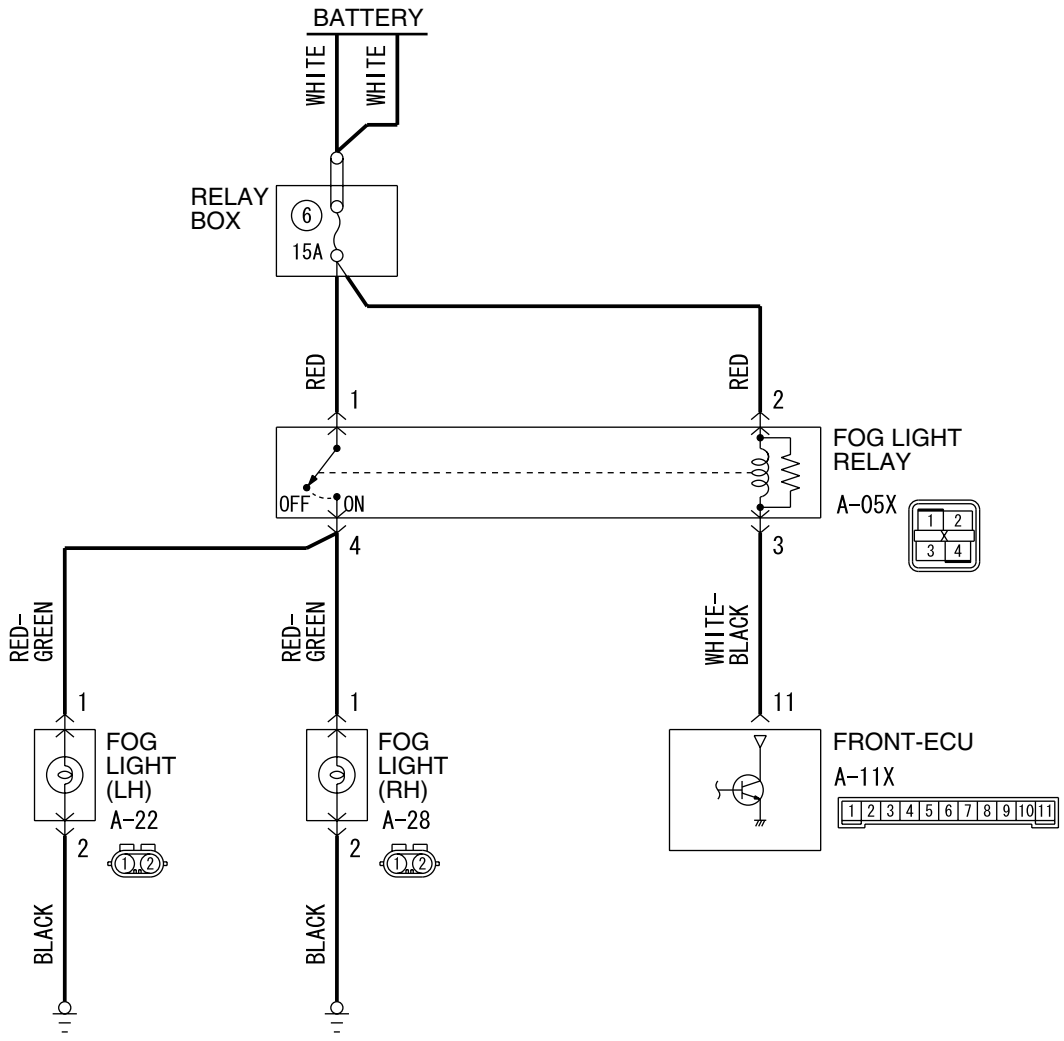
TROUBLESHOOTING HINT
The front-ECU may be defective

DIAGNOSIS

Replace the front-ECU.
The fog lights should go out when the headlights (low-beam) are turned off while the fog lights are on.

INSPECTION PROCEDURE J-3: Fog Light: One of the fog lights does not illuminate.

Fog Light Circuit



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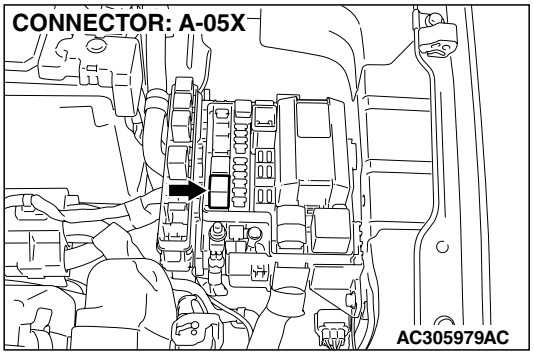
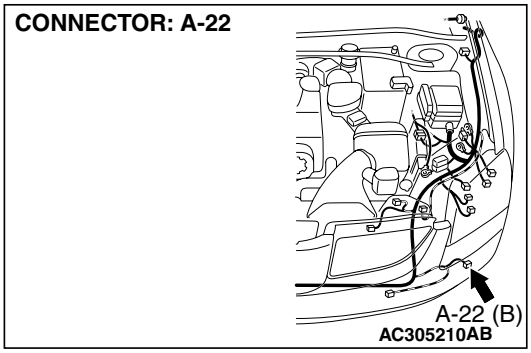
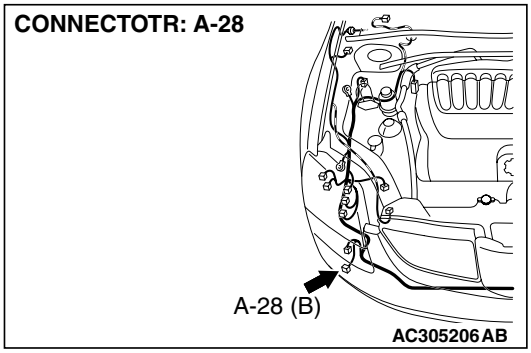






TECHNICAL DESCRIPTION (COMMENT)

If one of the fog lights does not illuminate, the fog light relay or the fog light bulb may be defective. If the fog light indicator light does not illuminate, the combination meter may be defective.

TROUBLESHOOTING HINTS

- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The fog light bulb may be defective

DIAGNOSIS

Required Special Tool:

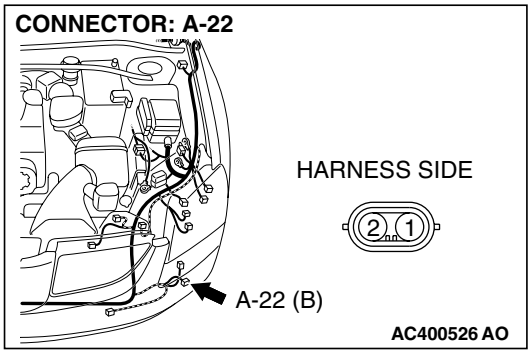
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Verify that the fog lights and the fog light indicator light illuminate.

Q: Do the fog lights and the fog light indicator light illuminate normally?

Only the fog light (LH) does not illuminate : Go to Step 2.
Only the fog light (RH) does not illuminate : Go to Step 8.
Only the fog light indicator does not illuminate : Refer to Inspection Procedure J-4 "The fog light indicator does not illuminate normally P.54B-417."
Both of the fog lights do not illuminate : Refer to Inspection Procedure J-1 "Fog lights do not illuminate when the fog light switch is turned on P.54B-404."

STEP 2. Check fog light (LH) connector A-22 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is fog light (LH) connector A-22 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 fog lights illuminate normally.

STEP 3. Check the fog light bulb (LH).

(1) Remove the fog light bulb (LH).

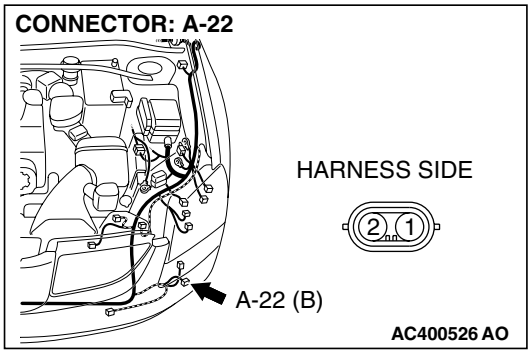
(2) Verify that the fog light bulb (LH) is not damaged or burned out.

Q: Is the fog light bulb (LH) in good condition?

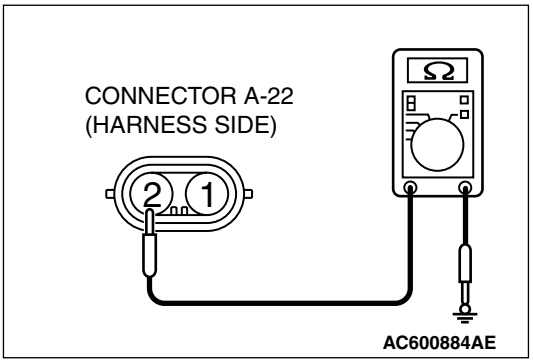
YES : Go to Step 4.

NO : Replace the fog light bulb (LH). Verify that the fog lights illuminate normally.

STEP 4. Check the ground circuit to the fog light (LH). Measure the resistance at fog light (LH) connector A-22.



(1) Disconnect fog light (LH) connector A-22 and measure the resistance available at the wiring harness side of the connector.

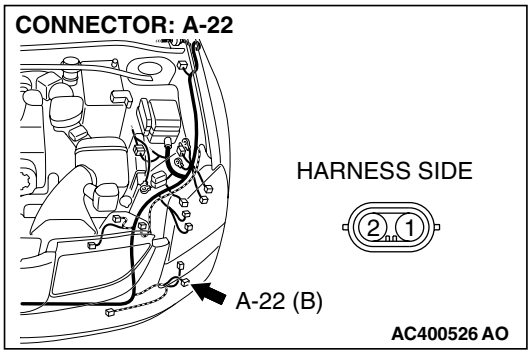


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

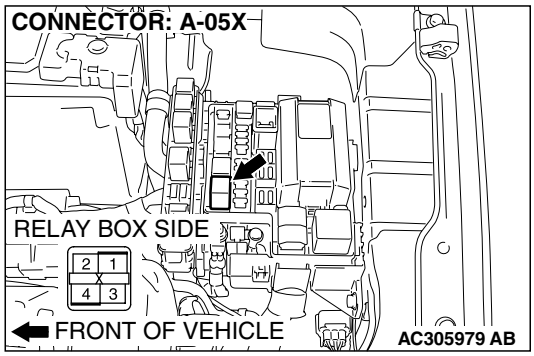


STEP 5. Check the wiring harness between fog light (LH) connector A-22 (terminal 2) and ground.

Q: Is the wiring harness between fog light (LH) connector A-22 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the fog lights illuminate normally.

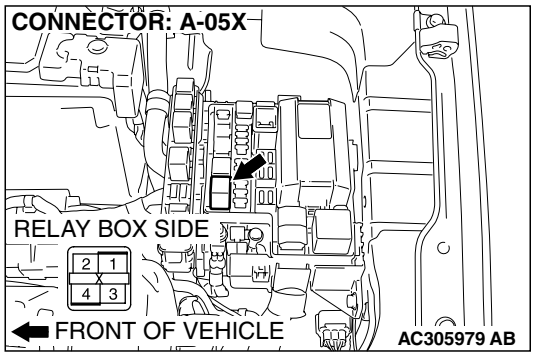


STEP 6. Check fog light relay connector A-05X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-05X 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 fog lights illuminate normally.

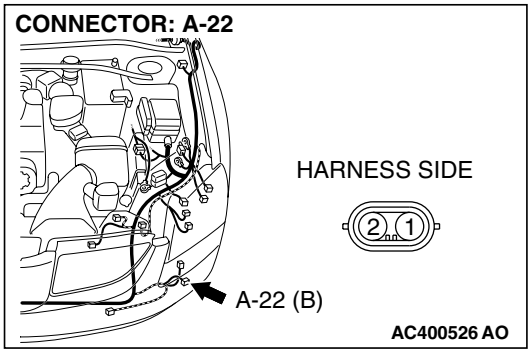


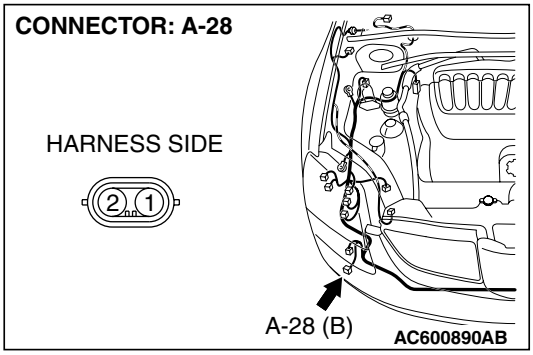
STEP 7. Check the wiring harness between fog light relay connector A-05X (terminal 4) and fog light (LH) connector A-22 (terminal 1).

Q: Is the wiring harness between fog light relay connector A-05X (terminal 4) and fog light (LH) connector A-22 (terminal 1) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the fog lights illuminate normally.





STEP 8. Check fog light (RH) connector A-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light (RH) connector A-28 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 fog lights illuminate normally.

STEP 9. Check the fog light bulb (RH).

(1) Remove the fog light bulb (RH).

(2) Verify that the fog light bulb (RH) is not damaged or burned out.

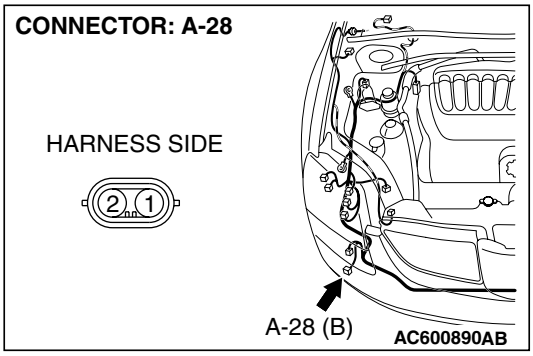
Q: Is the fog light bulb (RH) in good condition?

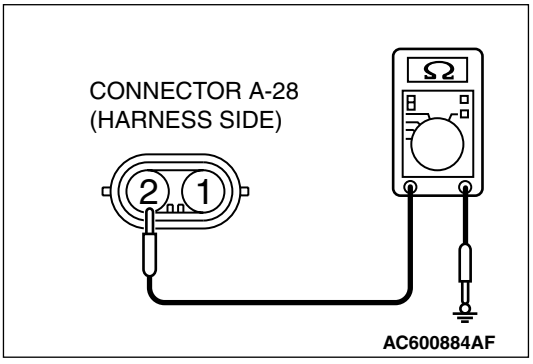
YES : Go to Step 10.

NO : Replace the fog light bulb (RH). Verify that the fog lights illuminate normally.

STEP 10. Check the ground circuit to the fog light (RH). Measure the resistance at fog light (RH) connector A-28.

(1) Disconnect fog light (RH) connector A-28 and measure the resistance available at the wiring harness side of the connector.





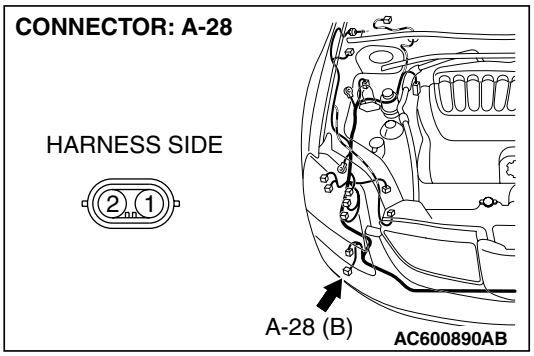
(2) Measure the resistance value between terminal 2 and ground.

- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.

NO : Go to Step 11.

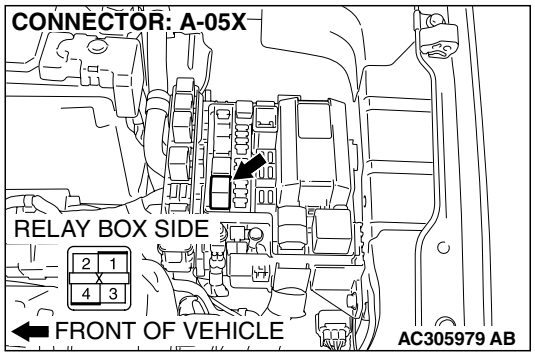


STEP 11. Check the wiring harness between fog light (RH) connector A-28 (terminal 2) and ground.

Q: Is the wiring harness between fog light (RH) connector A-28 (terminal 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the fog lights illuminate normally.

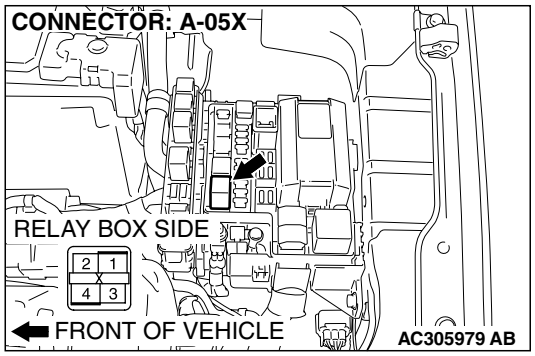


STEP 12. Check fog light relay connector A-05X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light relay connector A-05X 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 fog lights illuminate normally.

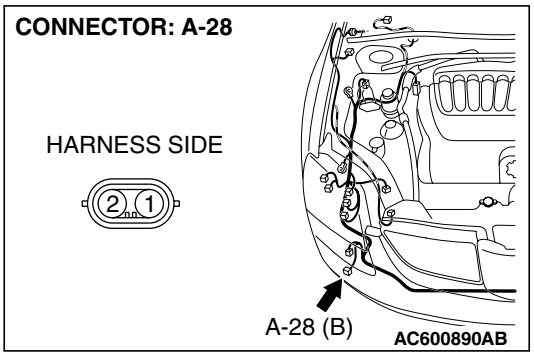


STEP 13. Check the wiring harness between fog light relay connector A-05X (terminal 4) and fog light (RH) connector A-28 (terminal 1).

Q: Is the wiring harness between fog light relay connector A-05X (terminal 4) and fog light (RH) connector A-28 (terminal 1) in good condition?

YES : No action is necessary and testing is complete.

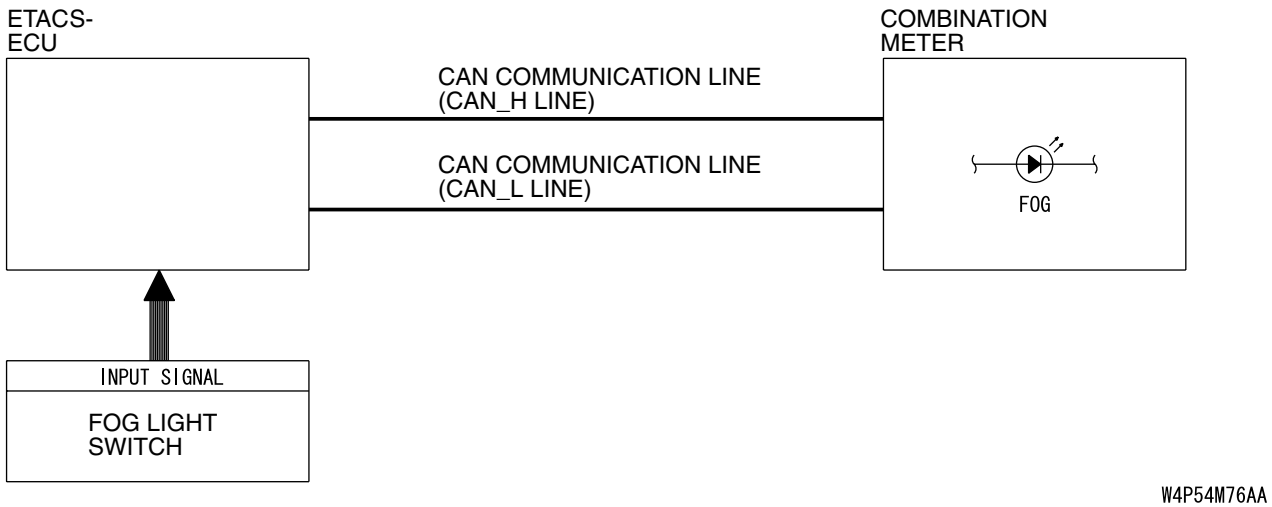
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the fog lights illuminate normally.



INSPECTION PROCEDURE J-4: The 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-18."

Fog Light Indicator Light Circuit



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CIRCUIT OPERATION
At the same time that the fog lights are illuminated, the ETACS-ECU sends a signal to illuminate the fog light indicator via the CAN bus line.

TECHNICAL DESCRIPTION (COMMENT)
If the 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

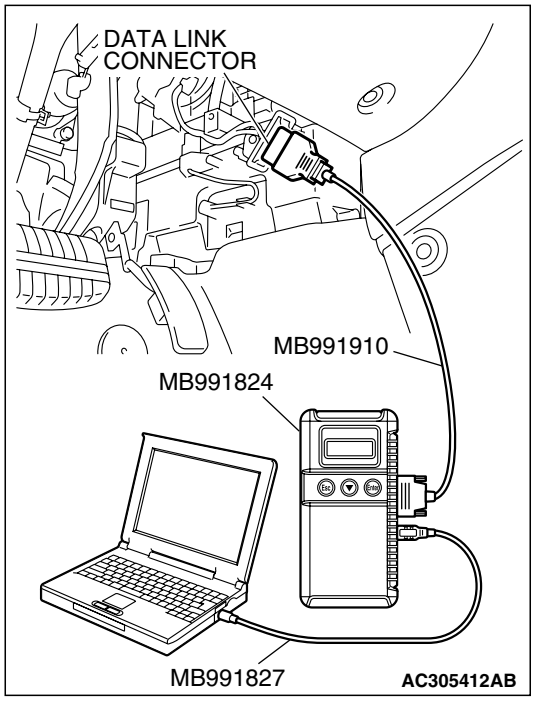
STEP 1. Check the fog lights.
When the fog light switch is operated, check that the fog lights illuminate/go off normally.

Q: Are the fog lights operating properly?

YES : Go to Step 2.
NO : First, repair the fog lights. Refer to Inspection Procedure J-3 "One of the fog lights does not illuminate P.54B-411."

STEP 2. Using scan tool MB991958, diagnose the CAN bus line.

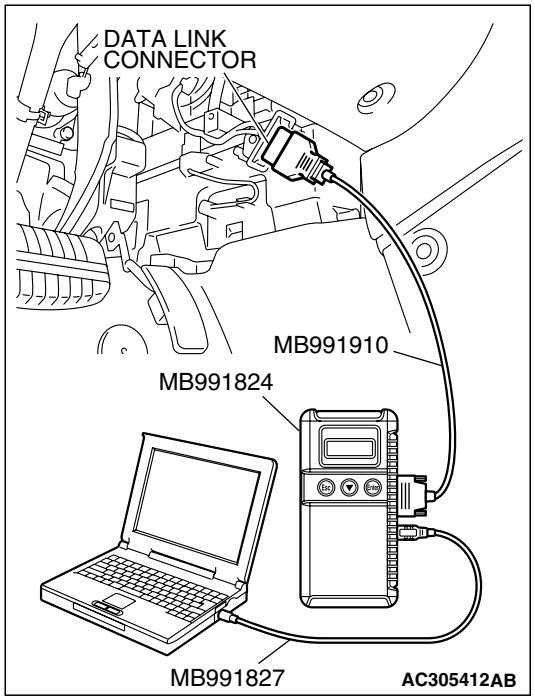
⚠ CAUTION
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.



(1) Connect scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(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-16).

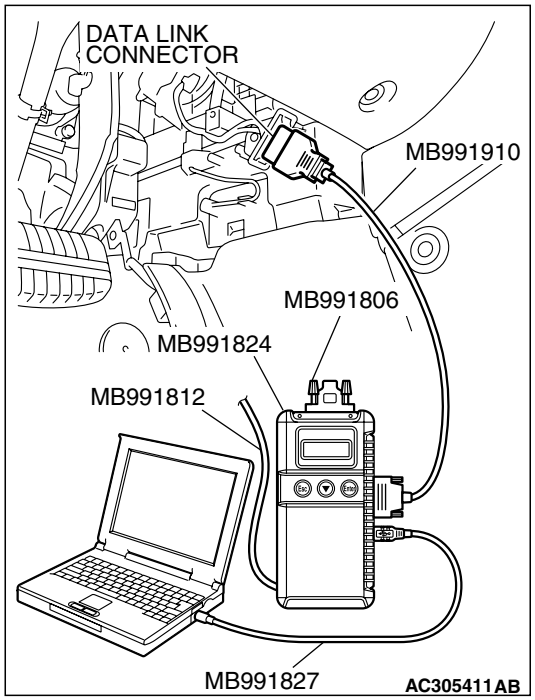


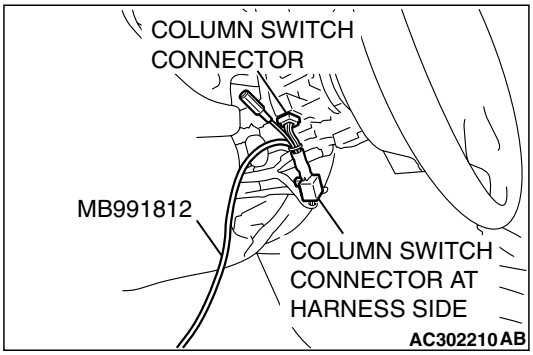
STEP 3. Using scan tool MB991958, read the combination meter diagnostic trouble code.

(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-54.
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-17."
(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-82."

STEP 5. Replace the combination meter.

(1) Replace the combination meter.
(2) Check that the fog light indicator light illuminates normally.

Q: Is the 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-11. Check that the front fog light indicator light illuminates normally.

INTERIOR LIGHT

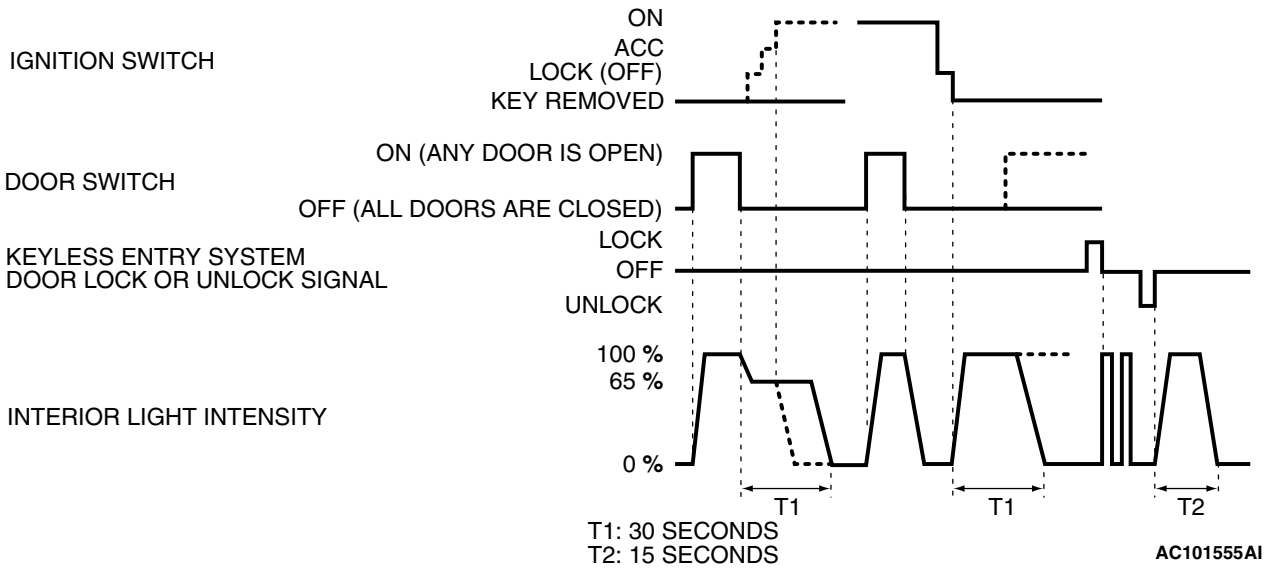
GENERAL DESCRIPTION CONCERNING THE INTERIOR LIGHT

M1549021800333

The following ECUs affect the functions and control of the interior lights.

FUNCTION	CONTROL ECU
Interior light control function	ETACS-ECU
Interior light automatic-shutoff function	ETACS-ECU
Ignition key hole illumination light function	ETACS-ECU
Door ajar indicator	ETACS-ECU
Seat belt indicator	ETACS-ECU

Interior light control function



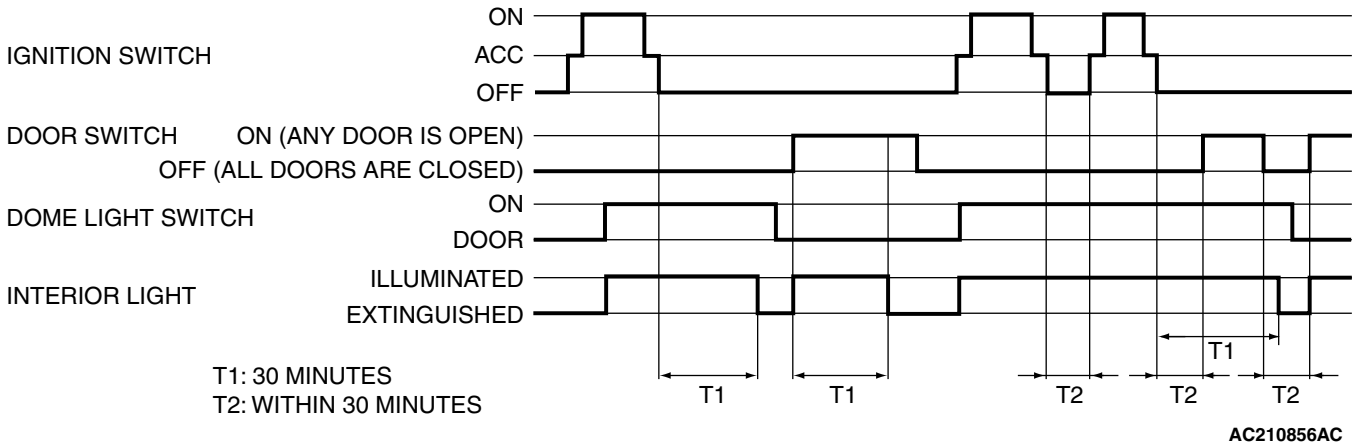
The ETACS-ECU controls the interior lights by turning them on and off in the following way:

- 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 dims at a luminance of 65 percent, and goes off 30 seconds later. However if the ignition switch is turned ON or if a door is locked while the interior lights is 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 is flashed 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 dimmer function can be customized on vehicles equipped with a multi center display (middle grade type). Refer to P.54B-587.

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



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 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.

NOTE: The interior light automatic shutoff function can be customized on vehicles equipped with a multi center display (middle grade type). Refer to P.54B-587.

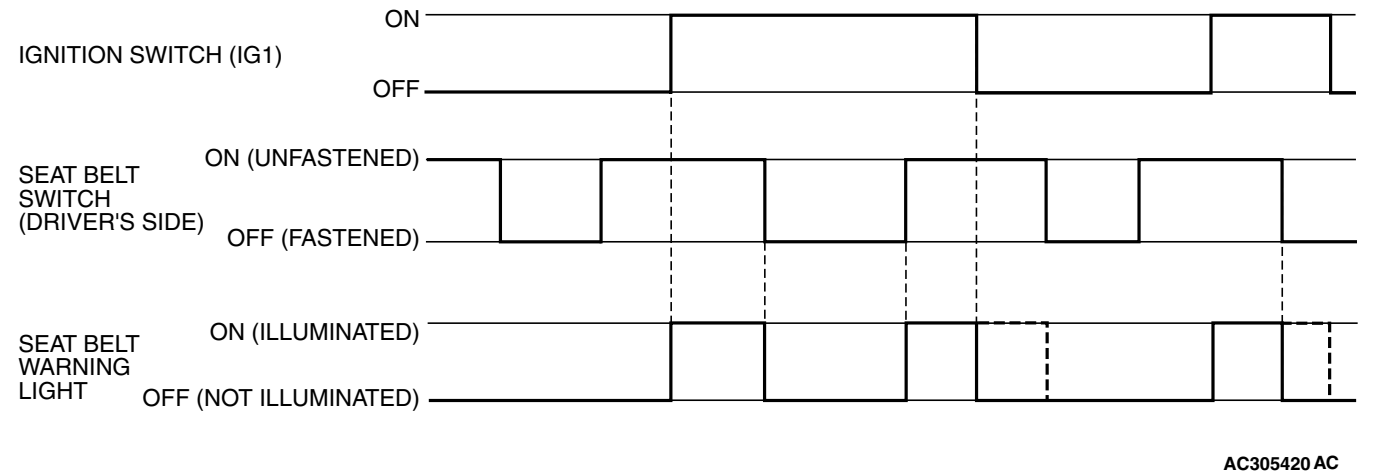
Ignition key hole illumination light function

The ignition key hole 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.

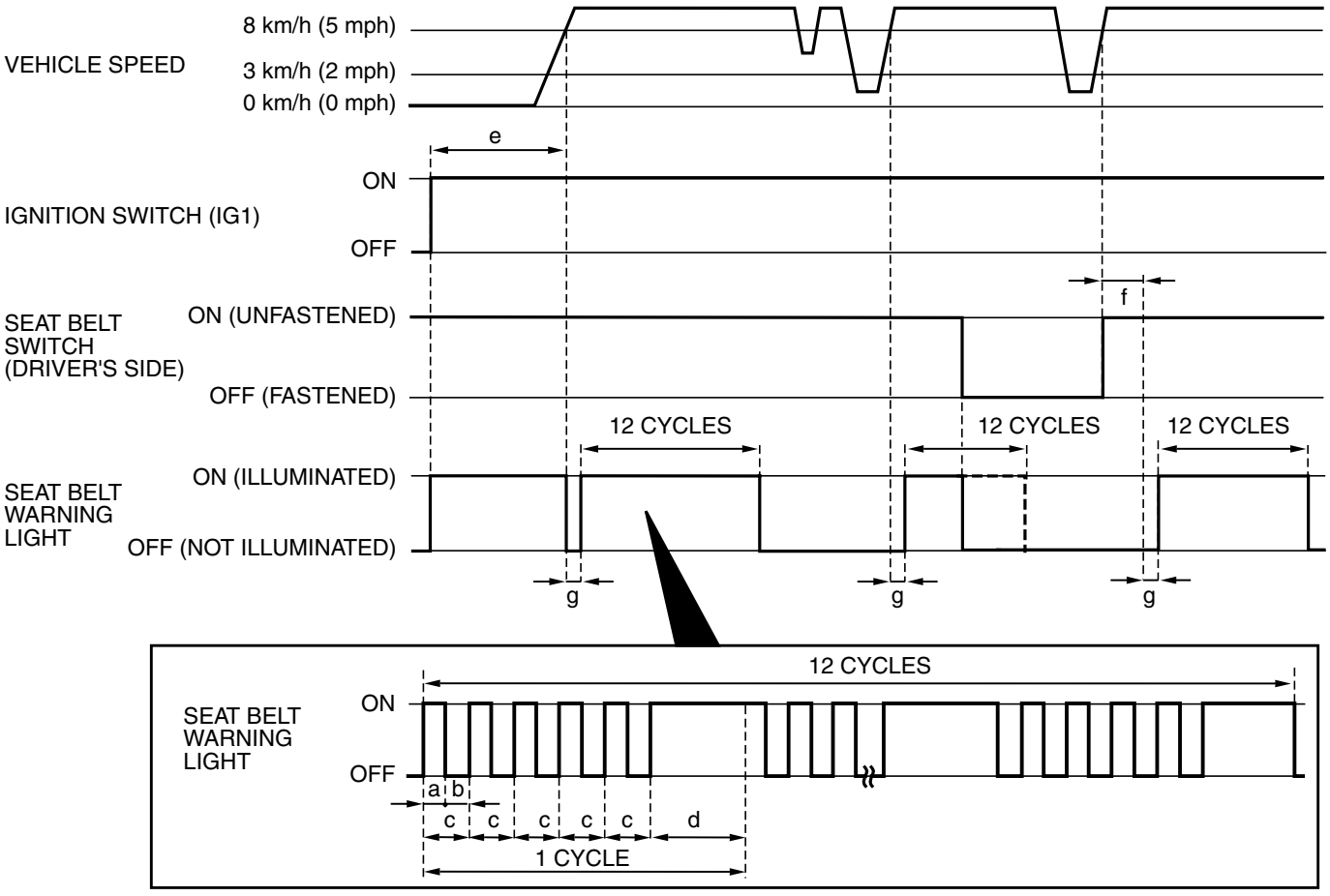
Door ajar indicator

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 warning 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.

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

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If any of the following conditions is met with the ignition switch at "ON" or "ST", the ETACS-ECU illuminates, flashes or extinguishes the seat belt indicator by using the driver's seat belt switch signal and the vehicle speed signal sent from the combination meter.

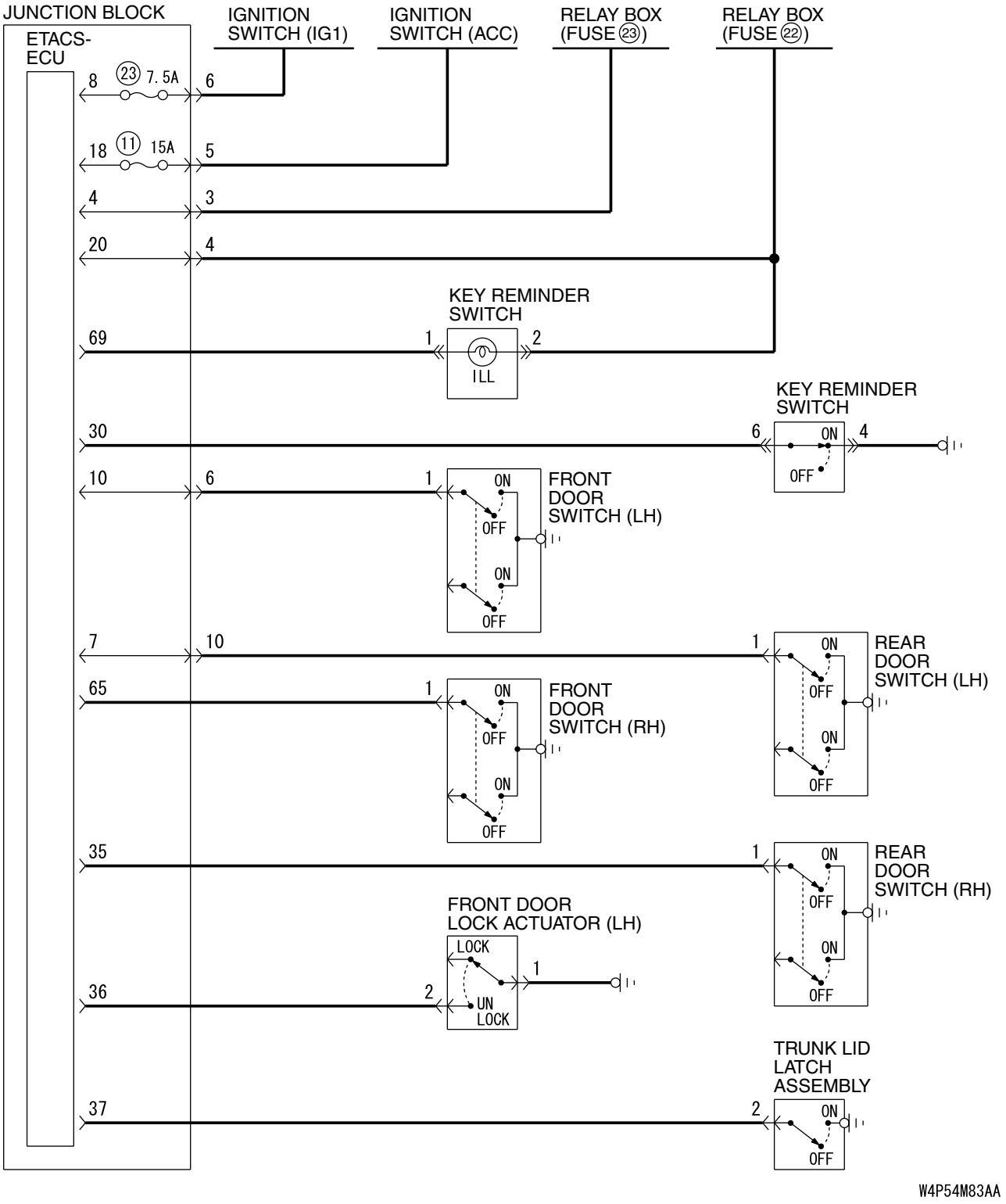
- Illuminates when the ignition switch is at "ON" and the seat belt switch is turned on (the driver's seat belt is unfastened).

TSB Revision

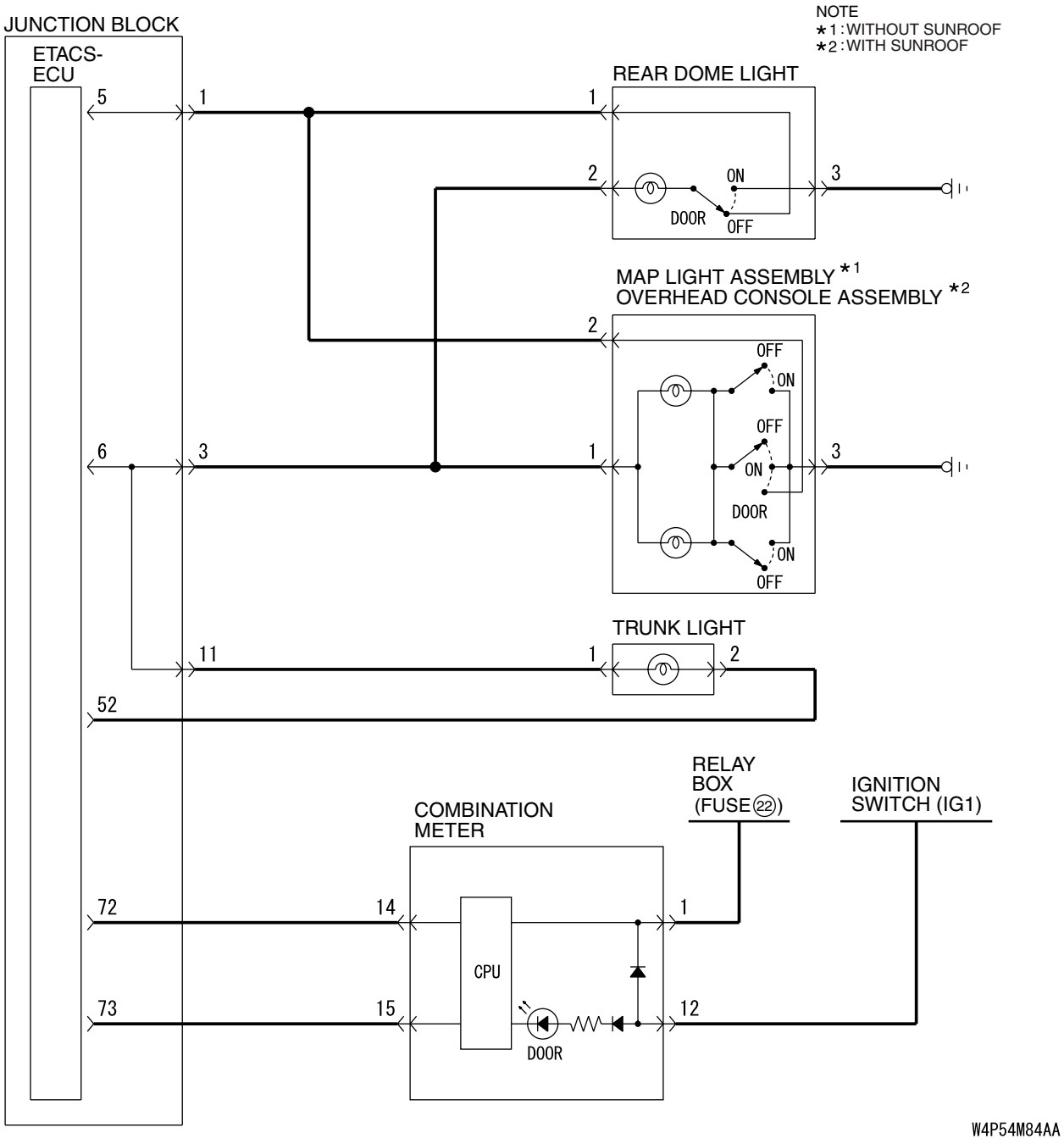
- Flashes and illuminates the indicator 12 cycles (after 0.5 seconds) if any of the following conditions is met when sixty seconds or more have elapsed since the ignition switch is turned "ON". One cycle consists of five-second "flashing" and then three-second "illumination".
  a. The vehicle speed has 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 stops illuminating if the ignition switch or the seat belt switch is turned off (the driver's seat belt is fastened) while the timer operation is active.

General circuit diagram for interior lights



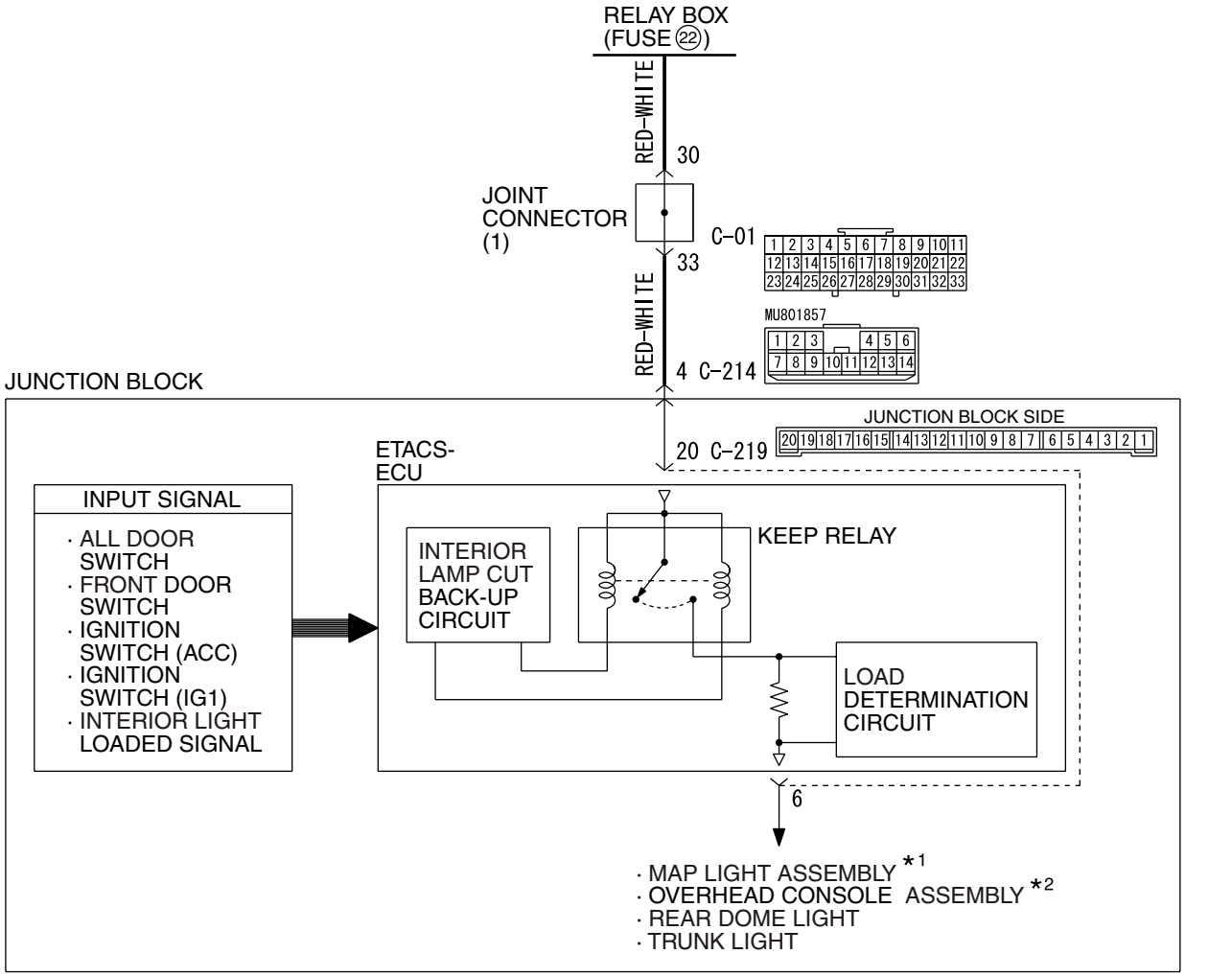
TSB Revision



INSPECTION PROCEDURE K-1: Interior Light: The dome light 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-18."

Interior Light Circuit



NOTE
*1 : WITHOUT SUNROOF
*2 : WITH SUNROOF

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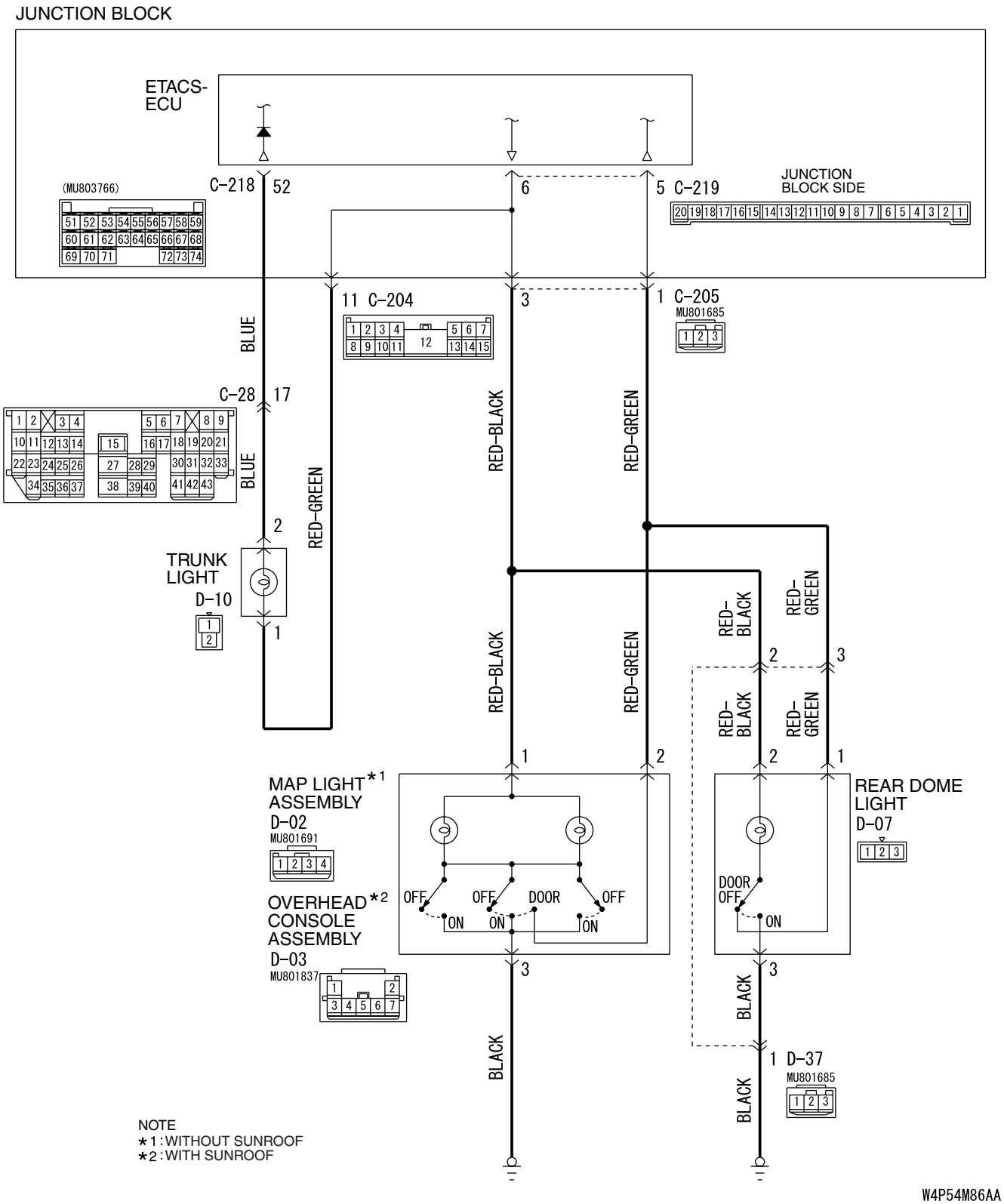
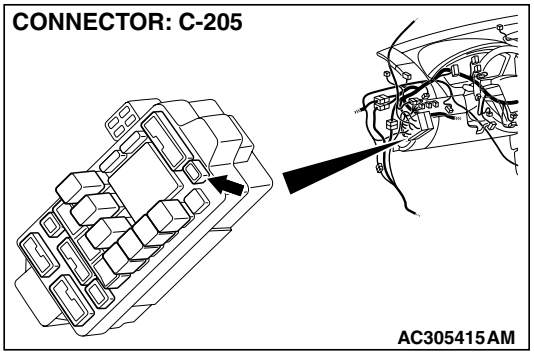
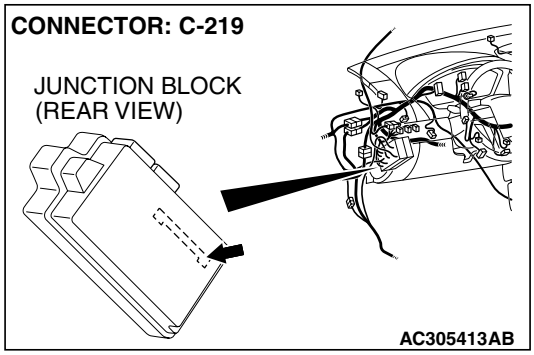
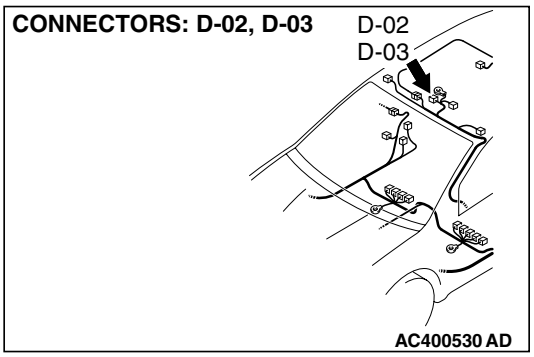
Interior Light Circuit



TSB Revision







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.

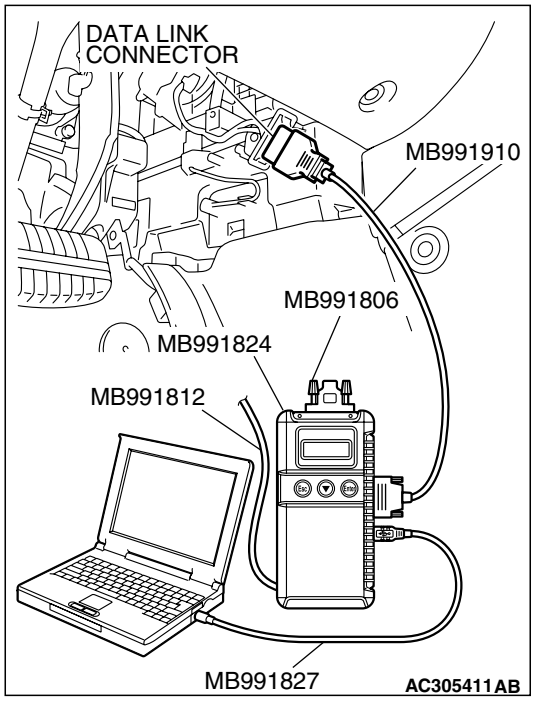
TROUBLESHOOTING HINTS

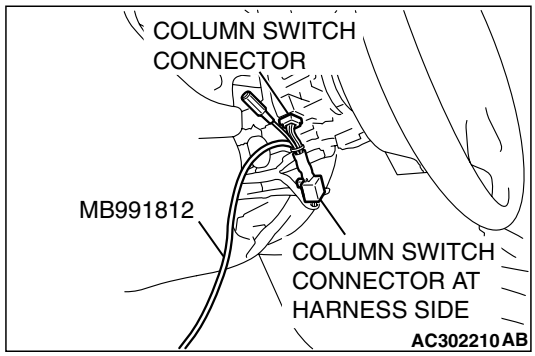
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness





STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

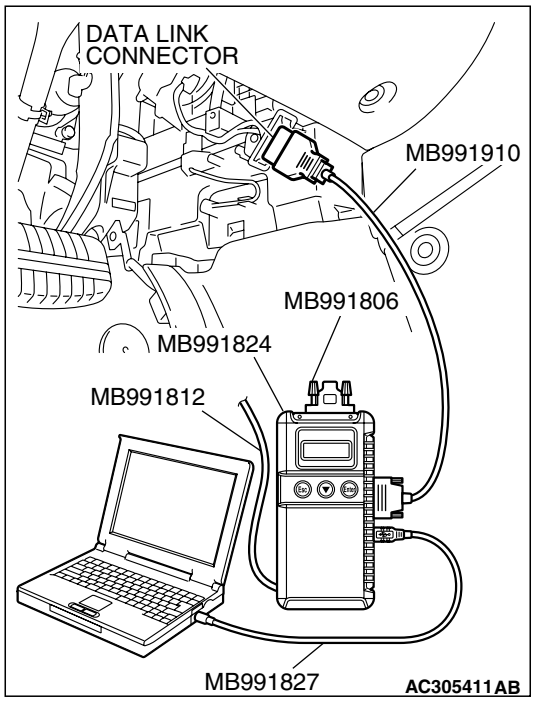
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

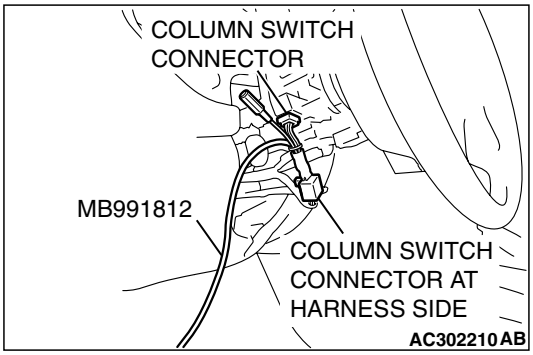
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. 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-82."





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 front 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.

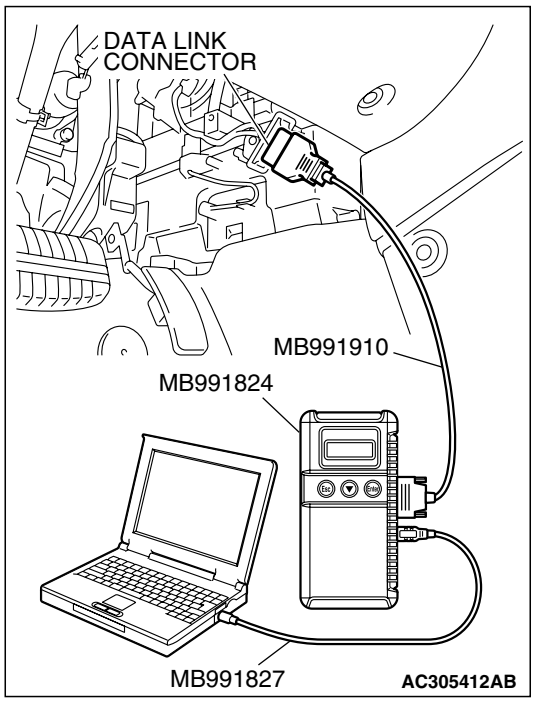
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	ON
ITEM 32	FRONT DOOR SW	ON

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-497."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."



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
- Door switches

(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
Door switches	Open or close one of the doors

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. : Go to Step 4.

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-525."

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-572."

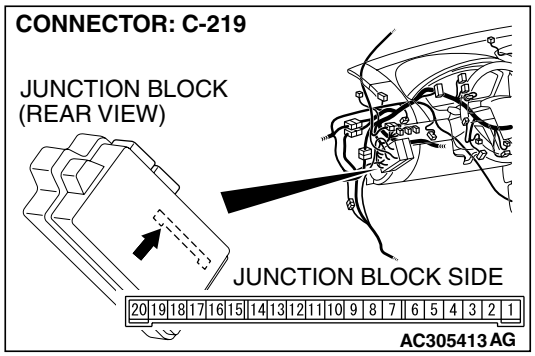
When one of the doors is opened and closed, scan tool MB991958 does not sound : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from any of the door switches P.54B-534."

STEP 4. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-219 in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the dome light illuminates normally.



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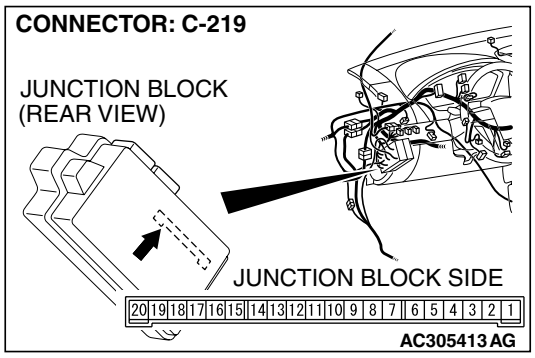
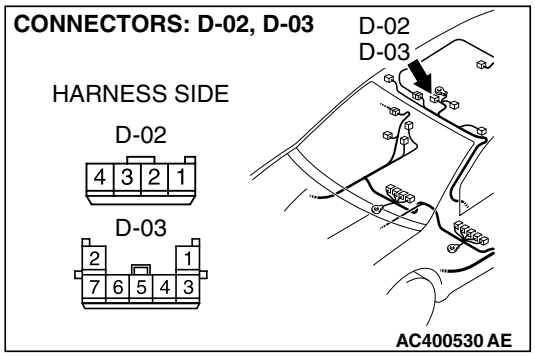
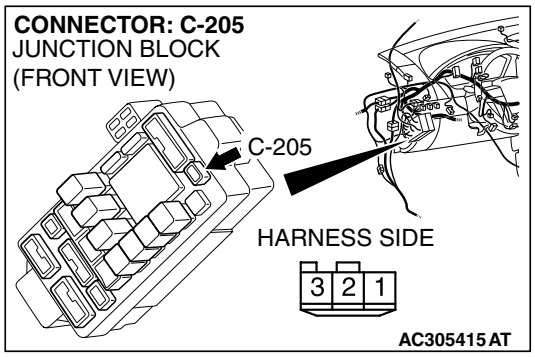
STEP 5. Check the wiring harness between map light assembly connector D-02 (terminal 1) <without sunroof> or overhead console assembly connector D-03 (terminal 1) <with sunroof> and ETACS-ECU connector C-219 (terminal 6).







NOTE: Also check junction block connector C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-205 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

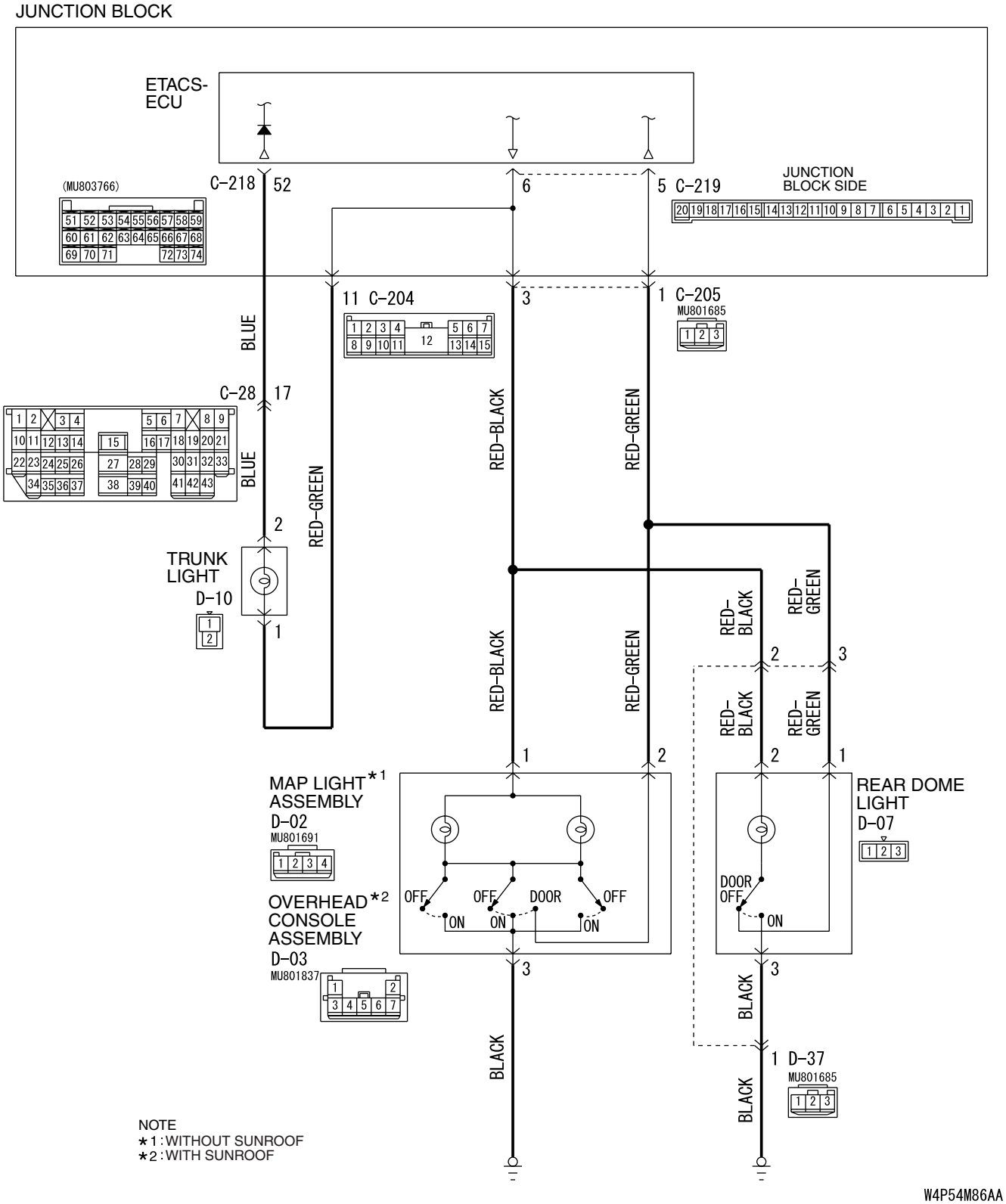
Q: Is the wiring harness between map light assembly connector D-02 (terminal 1) <without sunroof> or overhead console assembly connector D-03 (terminal 1) <with sunroof> and ETACS-ECU connector C-219 (terminal 6) in good condition?

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-11. Verify that the dome light illuminates normally.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the dome light illuminates normally.

INSPECTION PROCEDURE K-2: Interior Light: The map light, rear dome light or trunk light do not illuminate or go out normally.

Interior Light Circuit



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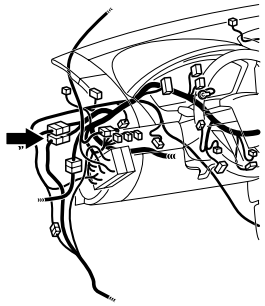
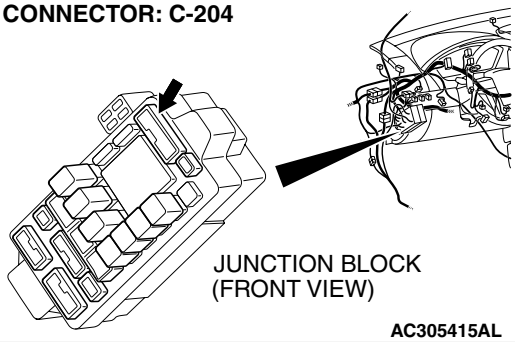
CONNECTOR: C-28



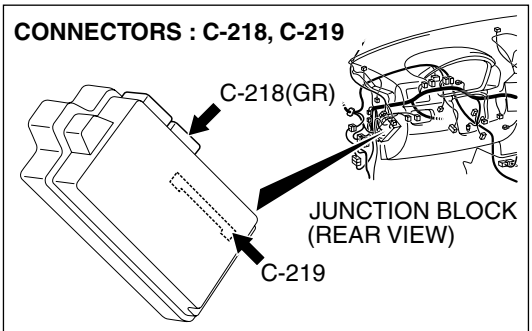
AC305231BA

CONNECTOR: C-204



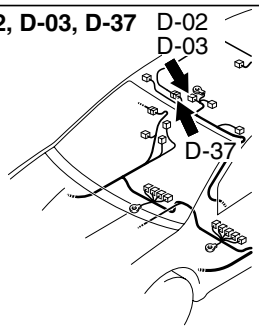
AC305415AL

CONNECTORS : C-218, C-219



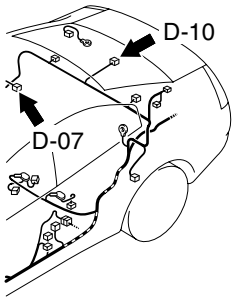
AC207121 AG

CONNECTORS: D-02, D-03, D-37



AC400530 AF

CONNECTORS: D-07, D-10



AC400532 AD

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
- Trunk lid latch assembly: 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 map light bulb may be defective
- The rear dome light bulb may be defective
- The trunk 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

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- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Check which of the map light, rear dome light or trunk light do not illuminate normally.

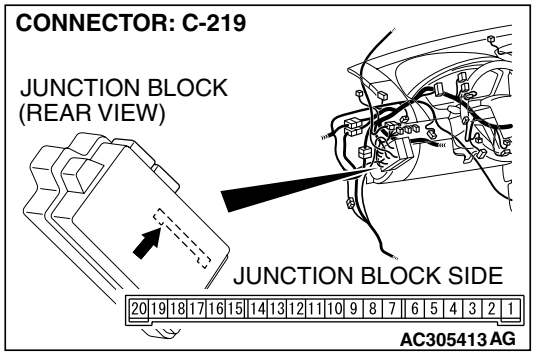
Q: Which of the map light, rear dome light or trunk light fail to illuminate normally?

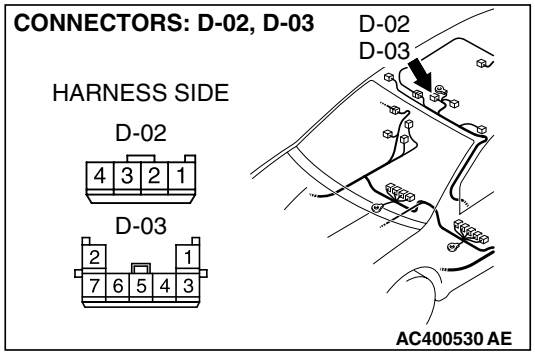
Map light and rear dome light : Go to Step 2.
Map light : Go to Step 4.
Rear dome light : Go to Step 9.
Trunk light : Go to Step 14.

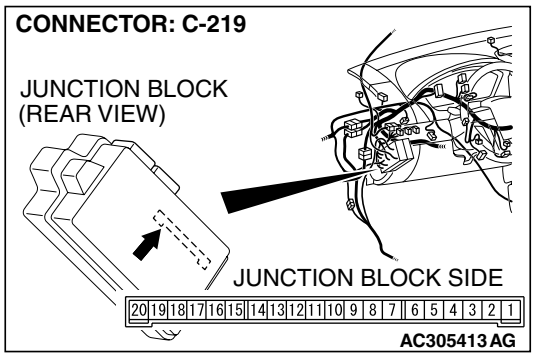
STEP 2. Check map light assembly connector D-02 <without sunroof>, overhead console assembly connector D-03 <with sunroof> and ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

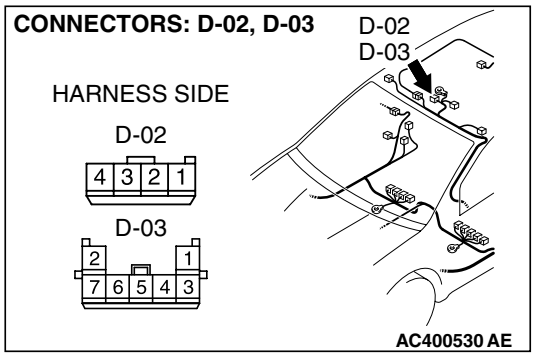
Q: Is map light assembly connector D-02 <without sunroof>, overhead console assembly connector D-03 <with sunroof> and ETACS-ECU connector C-219 in good condition?

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 map light and rear dome light illuminates normally.







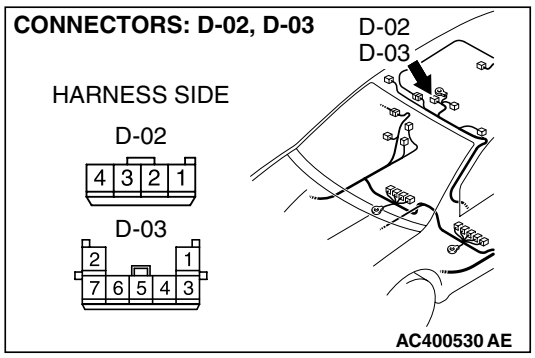


STEP 3. Check the wiring harness between map light assembly connector D-02 (terminals 1 and 2) <without sunroof> or overhead console assembly connector D-03 (terminals 1 and 2) <with sunroof> and ETACS-ECU connector C-219 (terminals 6 and 5).

Q: Is the wiring harness between map light assembly connector D-02 (terminals 1 and 2) <without sunroof> or overhead console assembly connector D-03 (terminals 1 and 2) <with sunroof> and ETACS-ECU connector C-219 (terminals 6 and 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 map light and rear dome light illuminates normally.



STEP 4. Check map light assembly connector D-02 <without sunroof> or overhead console assembly connector D-03 <with sunroof> for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is map light assembly connector D-02 <without sunroof> or overhead console assembly connector D-03 <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 map light illuminates normally.

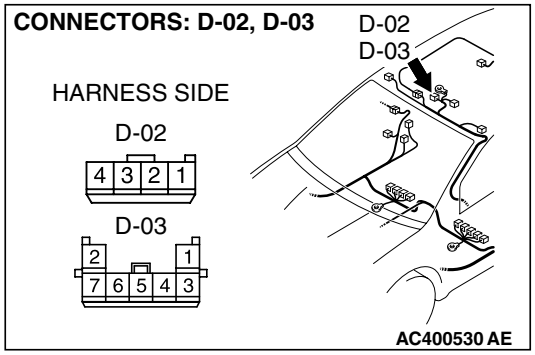
STEP 5. Check the map light bulb.

Q: Is the map light bulb in good condition?

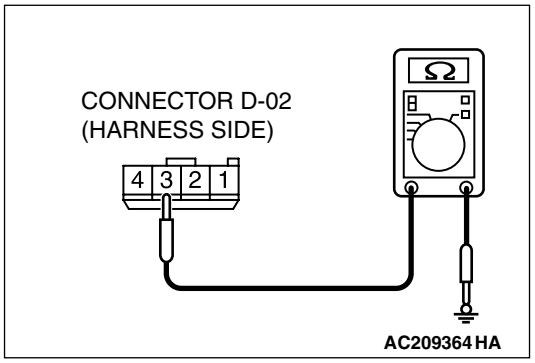
YES : Go to Step 6.

NO : Replace the map light bulb. Check that the map light illuminates normally.

STEP 6. Check the ground circuit to the map light. Measure the resistance at map light assembly connector D-02 <without sunroof> or overhead console assembly connector D-03 <with sunroof>.



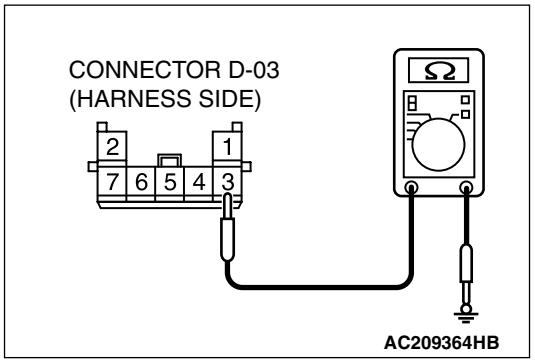
(1) Disconnect map light assembly connector D-02 <without sunroof> or overhead console assembly connector D-03 <with sunroof> and measure the resistance available at the wiring harness side of the connector.



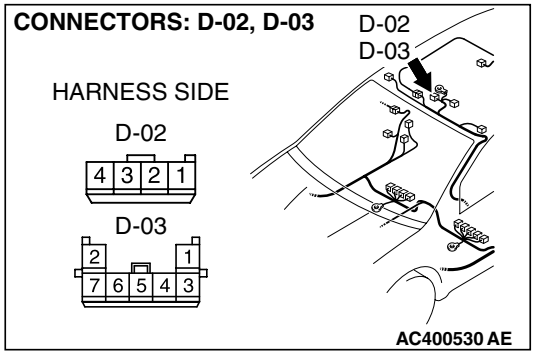
(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 8.
NO : Go to Step 7.



STEP 7. Check the wiring harness between map light assembly connector D-02 (terminal 3) <without sunroof> or overhead console assembly connector D-03 (terminal 3) <with sunroof> and ground.



Q: Is the wiring harness between map light assembly connector D-02 (terminal 3) <without sunroof> or overhead console assembly connector D-03 (terminal 3) <with sunroof> and ground in good condition?

YES : Replace the overhead console assembly. Check that the map 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 map light illuminates normally.

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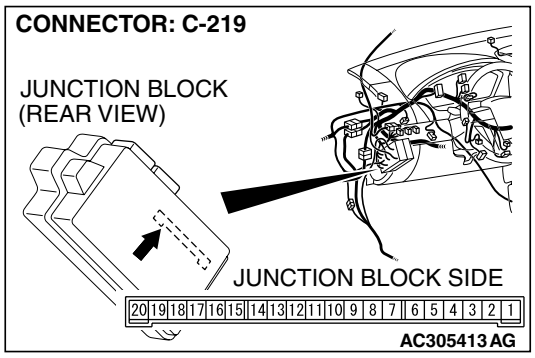
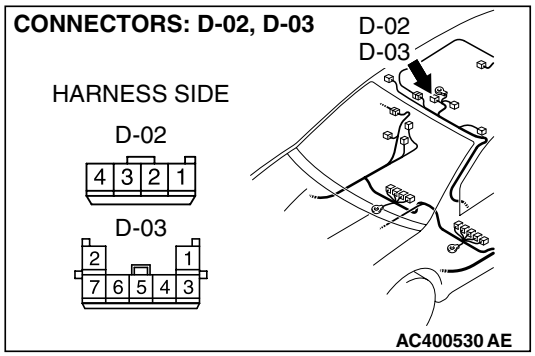


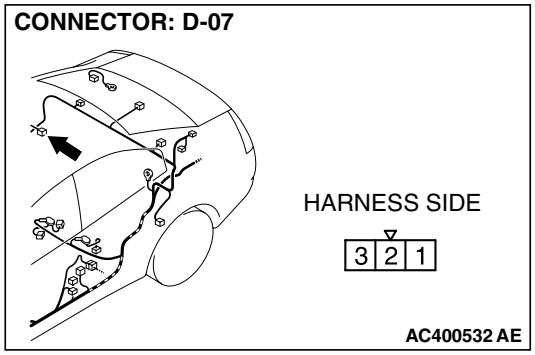


STEP 8. Check the wiring harness between map light assembly connector D-02 (terminals 1 and 2) <without sunroof> or overhead console assembly connector D-03 (terminals 1 and 2) <with sunroof> and ETACS-ECU connector C-219 (terminals 6 and 5).

Q: Is the wiring harness between map light assembly connector D-02 (terminals 1 and 2) <without sunroof> or overhead console assembly connector D-03 (terminals 1 and 2) <with sunroof> and ETACS-ECU connector C-219 (terminals 6 and 5) in good condition?

YES : Replace the map light assembly <without sunroof> or overhead console assembly <with sunroof>. Check that the map 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 map light illuminates normally.



STEP 9. Check rear dome light connector D-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear dome light connector D-07 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.

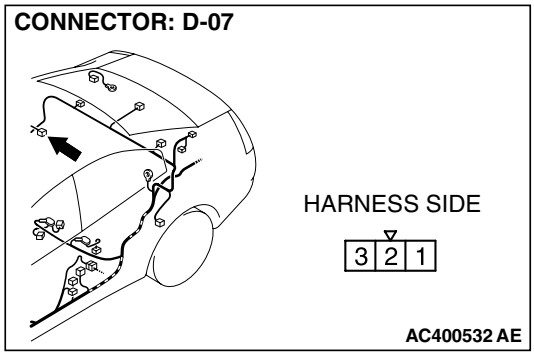
STEP 10. Check the rear dome light bulb.

Q: Is the rear dome light bulb in good condition?

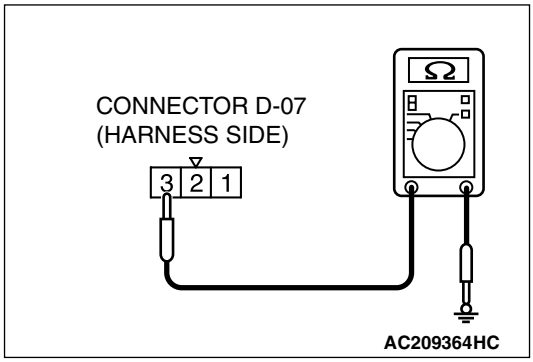
YES : Go to Step 11.

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-07.



(1) Disconnect rear dome light connector D-07 and measure the resistance available at the wiring harness side of the connector.

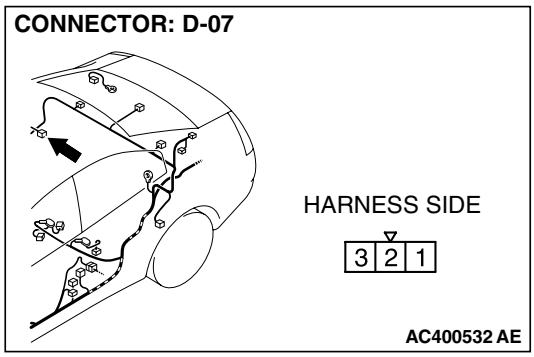


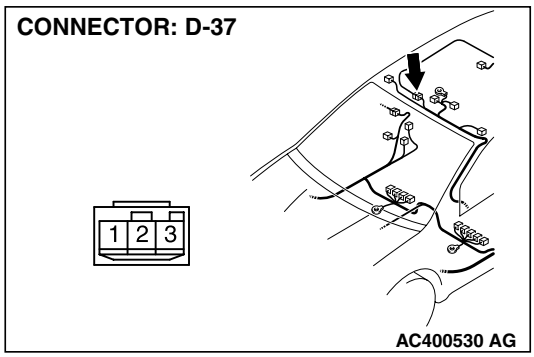
(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 13.
NO : Go to Step 12.

STEP 12. Check the wiring harness between rear dome light connector D-07 and ground.



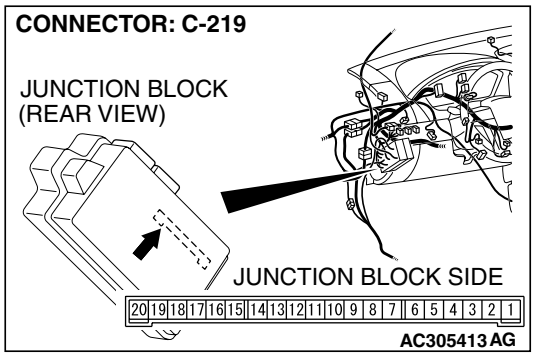


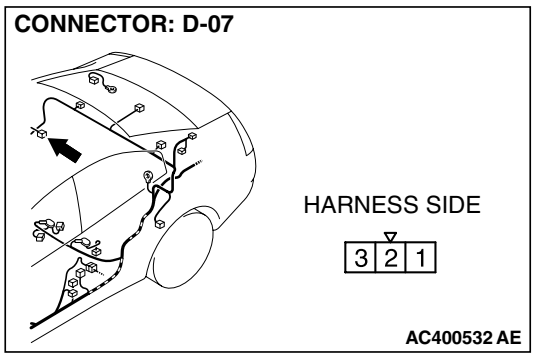
NOTE: Also check intermediate connector D-37 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-37 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

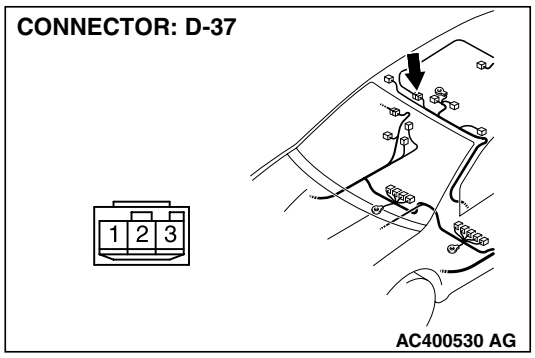
Q: Is the wiring harness between rear dome light connector D-07 and ground in good condition?

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-07 (terminals 1 and 2) and ETACS-ECU connector C-219 (terminals 6 and 5).





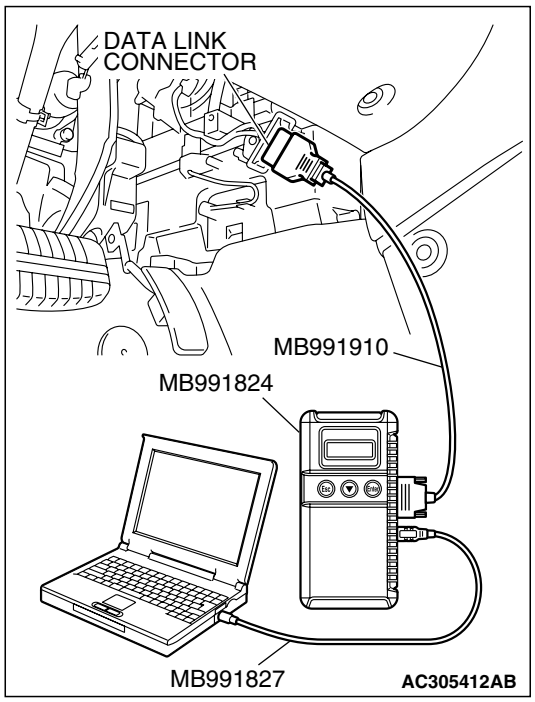


NOTE: Also check intermediate connector D-37 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector D-37 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear dome light connector D-07 (terminals 1 and 2) and ETACS-ECU connector C-219 (terminals 6 and 5) 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 14. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the trunk lid latch assembly.

- Check whether scan tool MB991958 sounds or not when the trunk is opened.

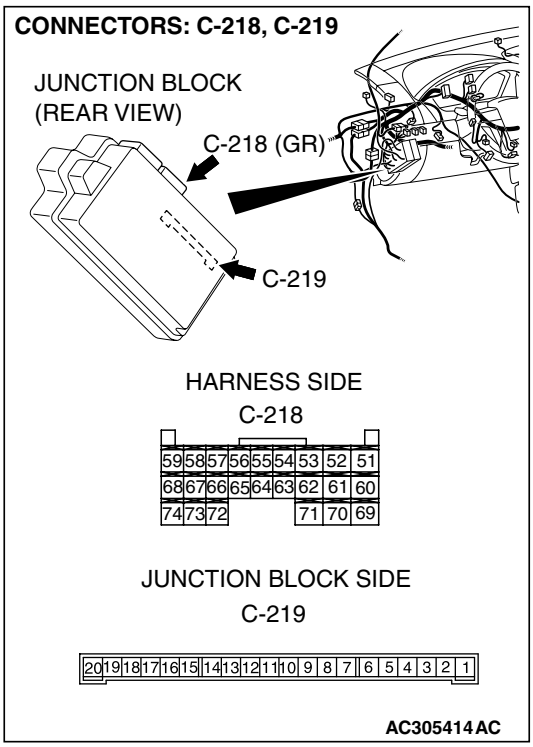
(1) Operate scan tool MB991958 according to the procedure below to display "Pulse checking."
   a. Select "Interactive Diagnosis."
   b. Select "System Select."
   c. Select "SWS."
   d. Select "Pulse Checking."

Q: Does scan tool MB991958 sound when the trunk is opened and closed?

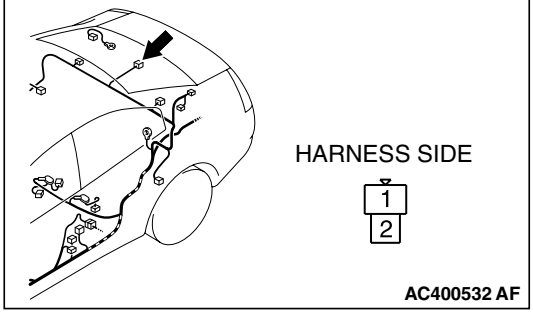
YES : Go to Step 15.

NO : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive any signal from the trunk lid latch assembly P.54B-567."

CONNECTORS: C-218, C-219



CONNECTOR: D-10



STEP 15. Check trunk light connector D-10, ETACS-ECU connectors C-218 and C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is trunk light connector D-10, ETACS-ECU connectors C-218 and C-219 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. Check that the trunk light illuminates normally.

STEP 16. Check the trunk light bulb.

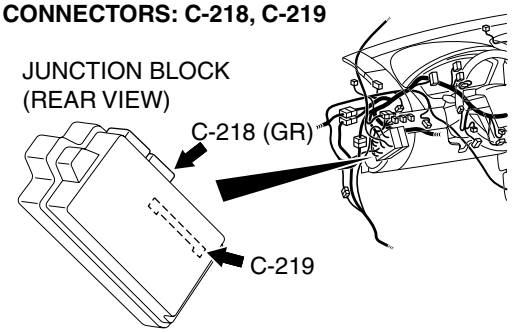
Q: Is the trunk light bulb in good condition?

YES : Go to Step 17.

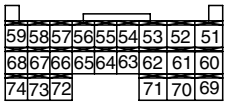
NO : Replace the trunk light bulb. Check that the trunk light illuminates normally.

STEP 17. Check the wiring harness between trunk light connector D-10 (terminals 1 and 2) and ETACS-ECU connector C-219 (terminal 6) or C-218 (terminal 52).

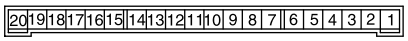
CONNECTORS: C-218, C-219



HARNESS SIDE
C-218

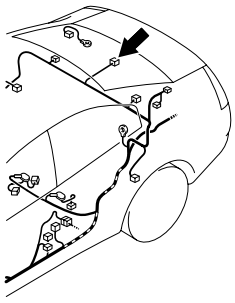


JUNCTION BLOCK SIDE
C-219



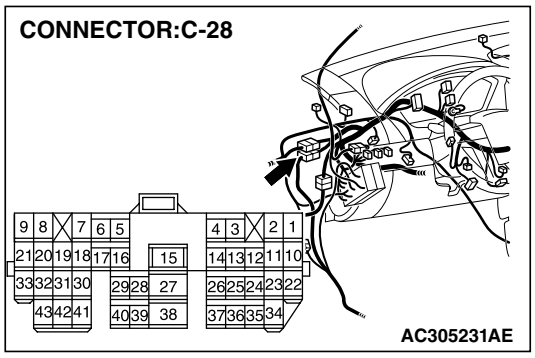
AC305414AC

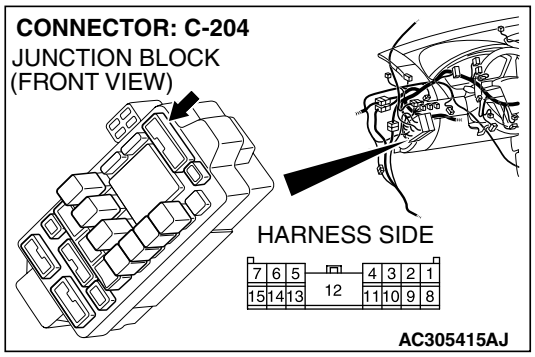
CONNECTOR: D-10



HARNESS SIDE

AC400532AF





NOTE: Also check intermediate connector C-28 and junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-28 or junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between trunk light connector D-10 (terminals 1 and 2) and ETACS-ECU connector C-219 (terminal 6) or C-218 (terminal 52) in good condition?

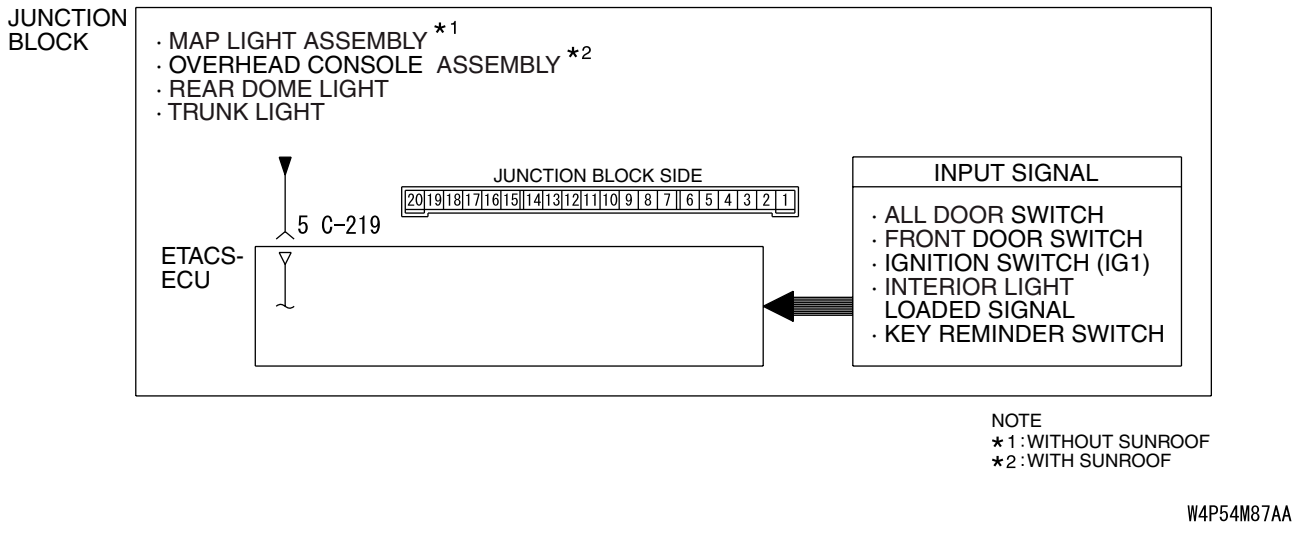
YES : Replace the trunk light. Check that the trunk light illuminates normally.

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 trunk light illuminates normally.

INSPECTION PROCEDURE K-3: 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-18."

Ignition Dimming Function



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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness

STEP 1. Check the 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.

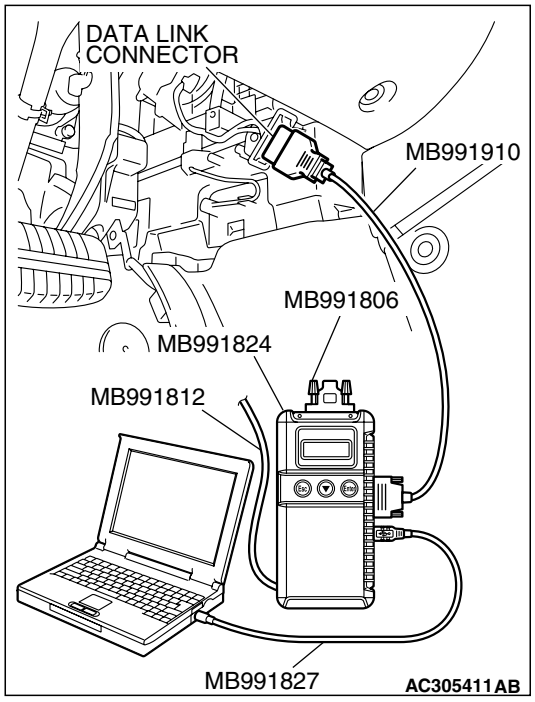
NO : Refer to Inspection Procedure K-1 "The dome light do not illuminate and go out normally P.54B-426."

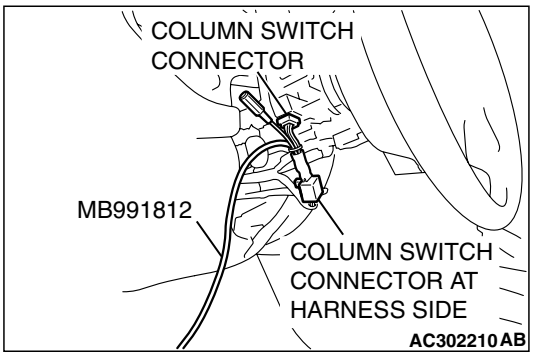
STEP 2. Check the adjustment function.

Q: Has the dome light delay-off time been set to other than "0 second" by the adjustment function?

YES : Go to Step 3.

NO : Set the dome light delay-off time to "0 second."





STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

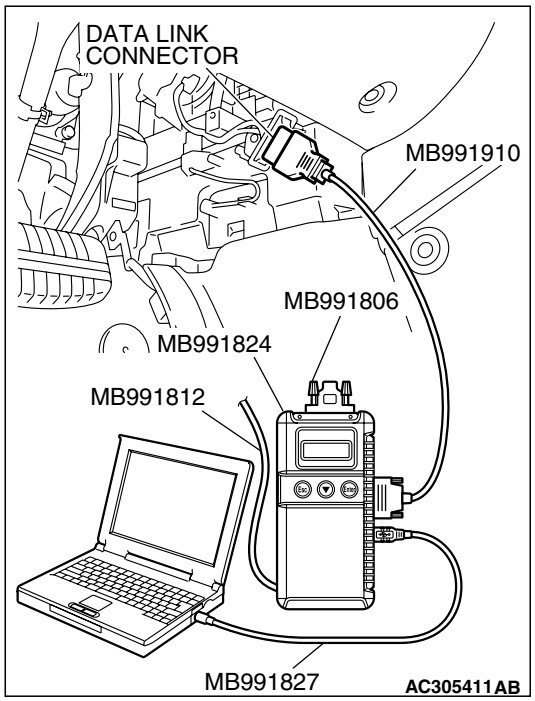
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

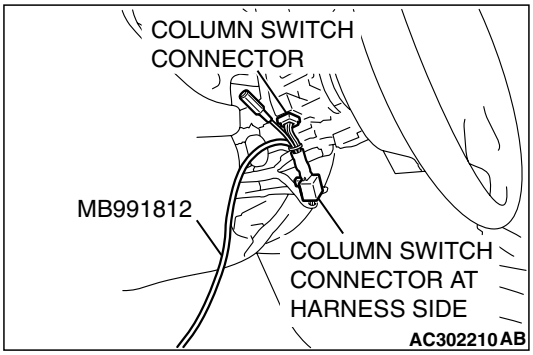
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. 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-82."





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: OFF
- Driver's or front 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."

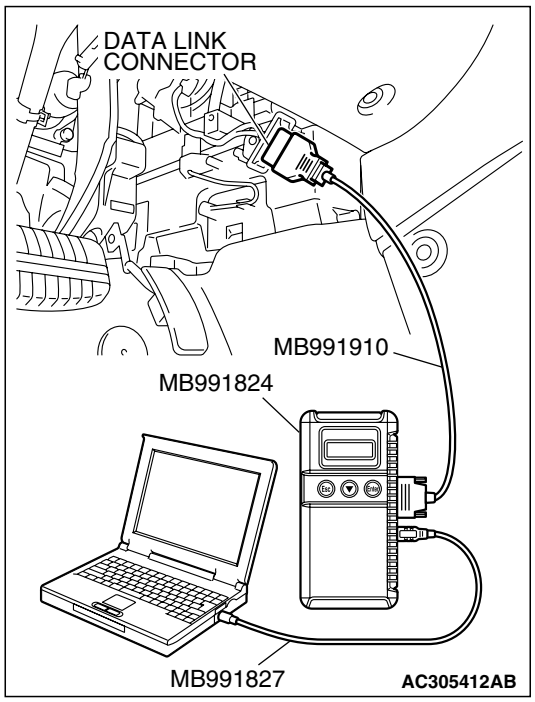
(2) Check that normal conditions are displayed for the item described in the table below.

ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW (IG1)	OFF

Q: Does the scan tool MB991958 display "IG SW (IG1)" as 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-497."



STEP 5. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the following switches:

- Key reminder switch
- Door switches
- Trunk lid latch assembly

(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
Door switches	Open or close one of the doors
Trunk lid latch assembly	Open or close the trunk lid

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-11. 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-525."

Scan tool MB991958 does not sound whenever a door switch is operated : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from any of the door switches P.54B-534."

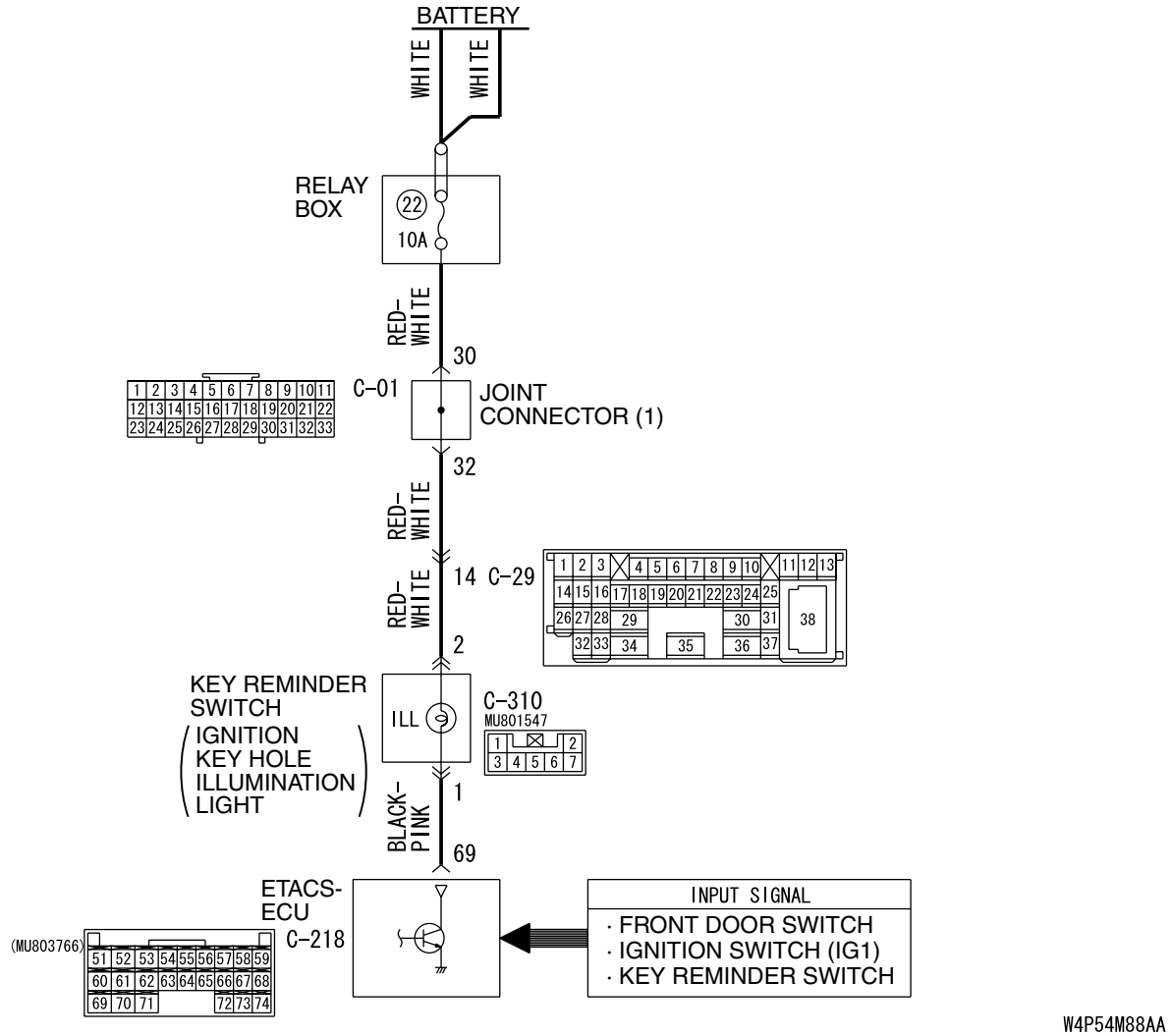
When the trunk lid is opened and closed, scan tool MB991958 does not sound. : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive any signal from trunk lid latch assembly P.54B-567."

INSPECTION PROCEDURE K-4: Interior Light: The ignition key hole illumination light does not illuminate or go out normally.

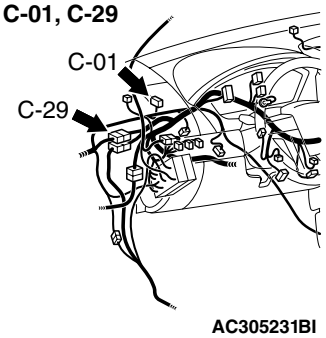
NOTE: This troubleshooting procedure requires the use of scan tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to use SWS monitor P.54B-18."

TSB Revision

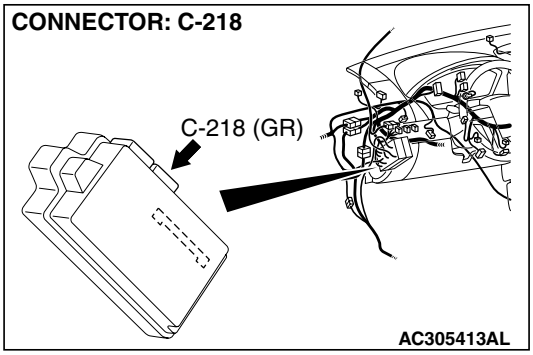
Ignition Key Hole Illumination Light Circuit



CONNECTORS: C-01, C-29



CONNECTOR: C-218



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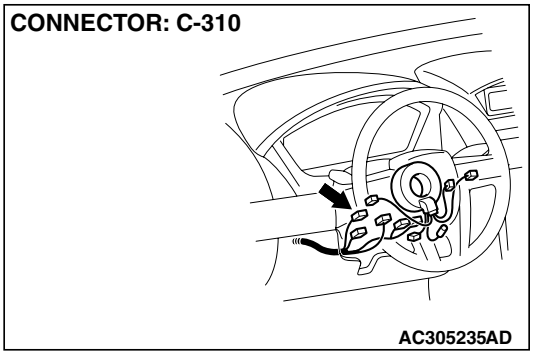


CIRCUIT OPERATION

- 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.

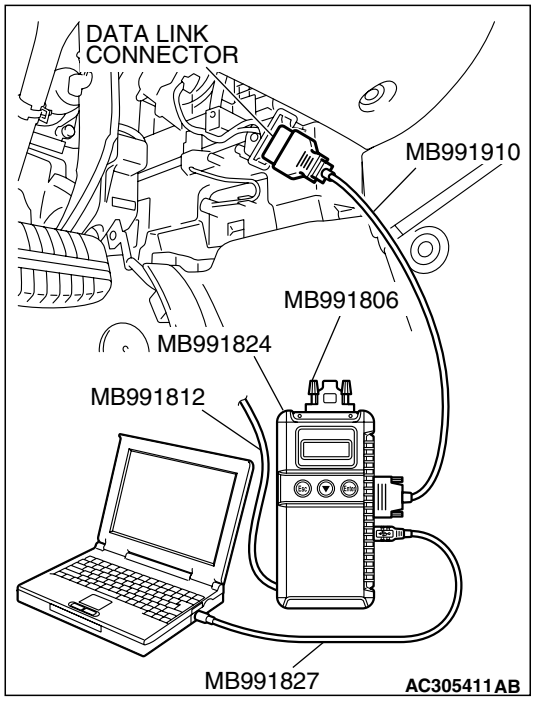
TROUBLESHOOTING HINTS

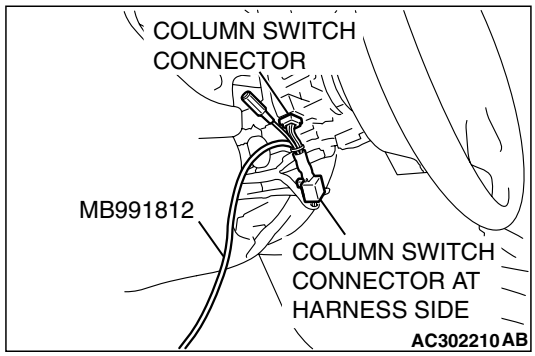
- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness





STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

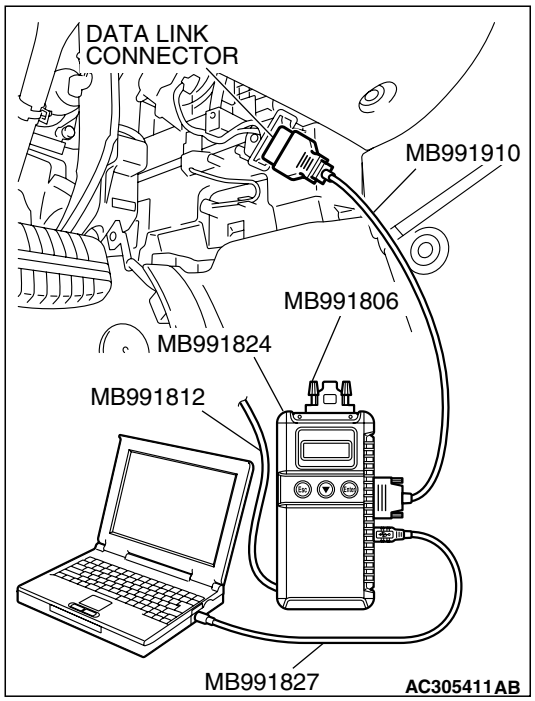
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

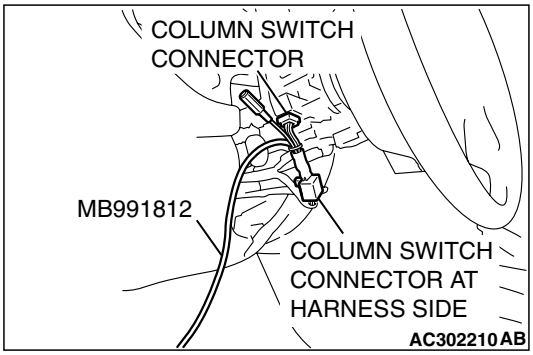
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. 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-82."





STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Check the input signals from the following switches:

- Ignition switch: OFF
- Driver's door: open
- Front passenger's door: closed

(1) Operate scan tool 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.

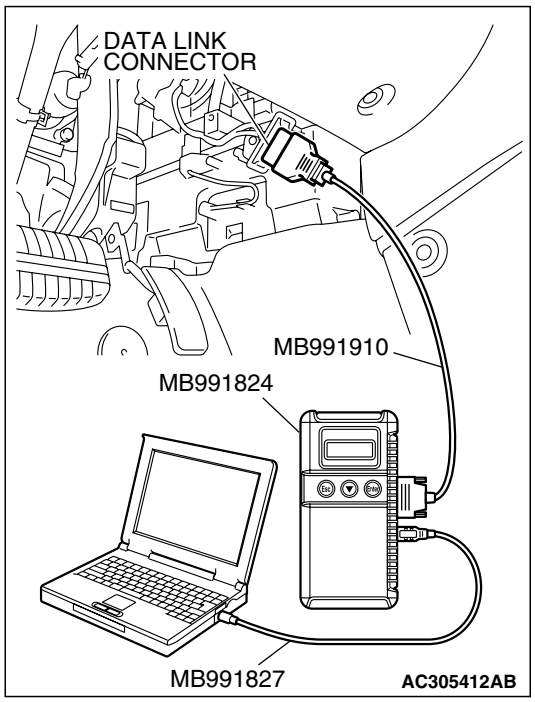
ITEM NO.	ITEM NAME	NORMAL CONDITION
ITEM 30	IG SW(IG1)	OFF
ITEM 32	FRONT DOOR SW	ON

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-497."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."



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.

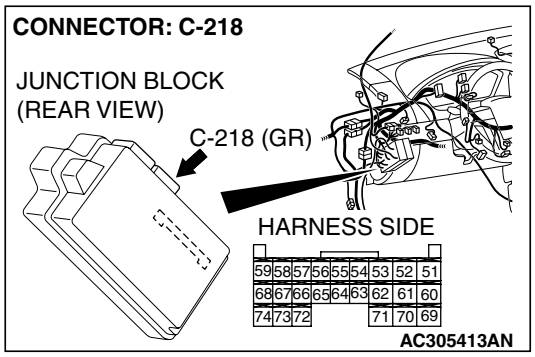
ITEM NAME	CONDITION
Key reminder switch	Remove and reinsert the ignition key
Interior light loaded signal	Turn on one of the interior lights

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-525."

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-572."

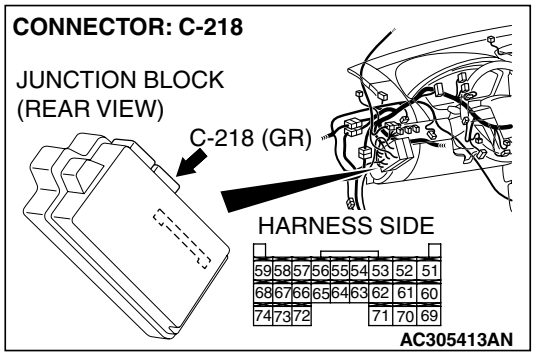


STEP 4. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-218 in good condition?

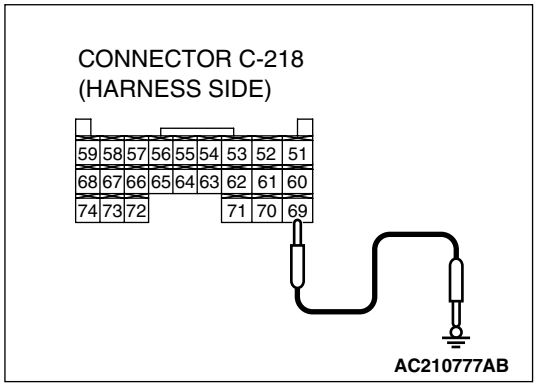
YES : Go to Step 5.

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.

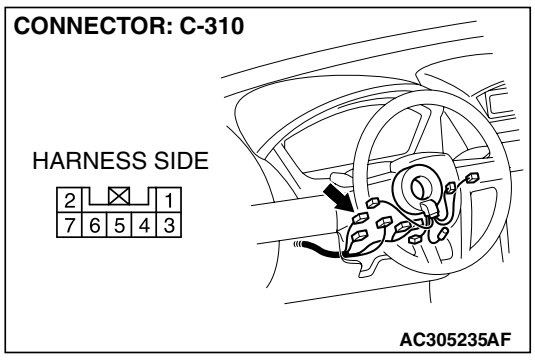


(2) The ignition key hole illumination light should illuminate when terminal 69 is grounded.

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-11. 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.

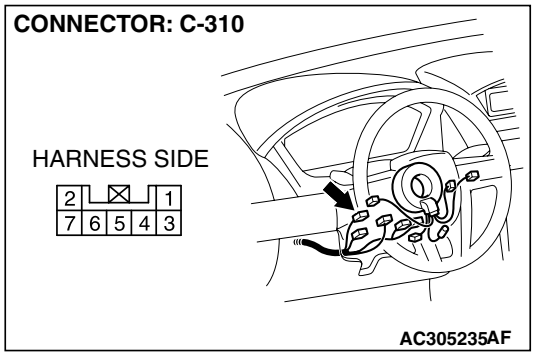
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Verify that the ignition key hole illumination light illuminates normally.

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.



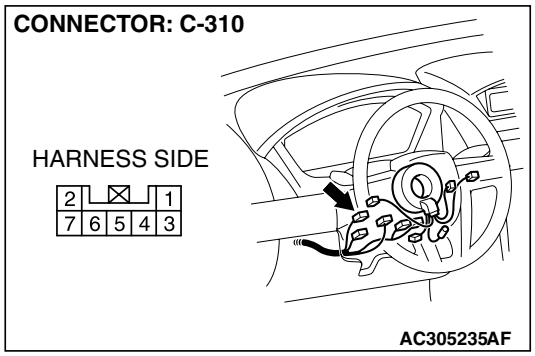
STEP 8. Check the key reminder switch (ignition key hole illumination).

(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).

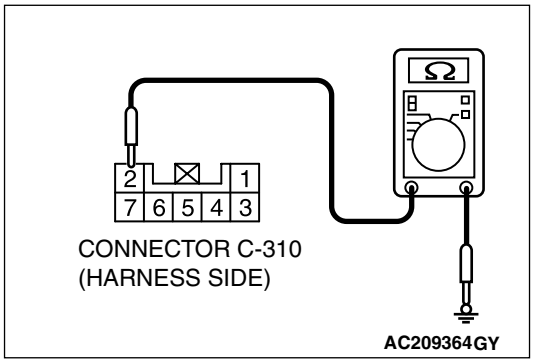
Q: Are these two resistance values extremely different?

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.

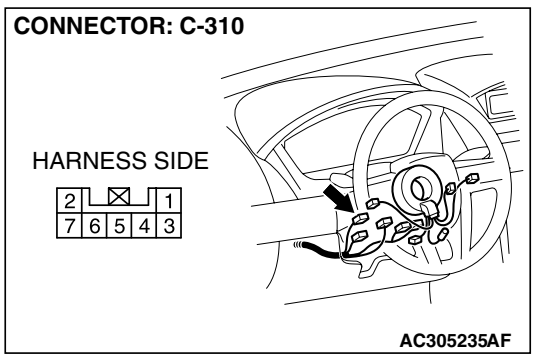


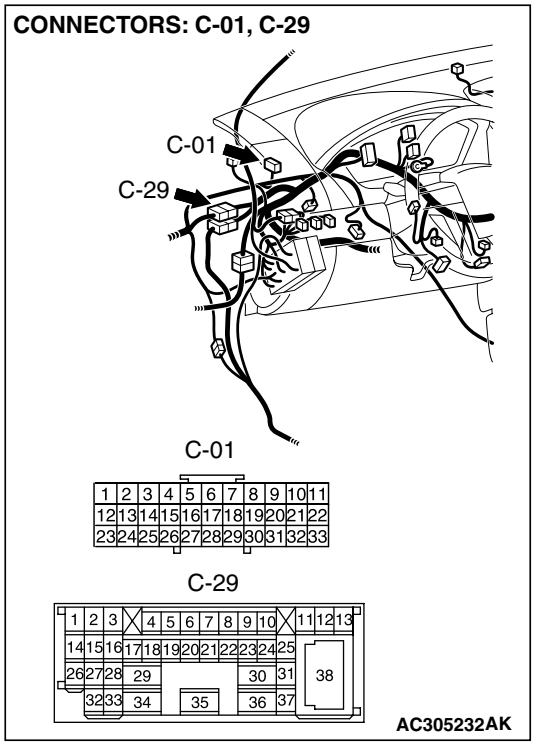
(2) Measure the voltage between terminal 2 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

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.





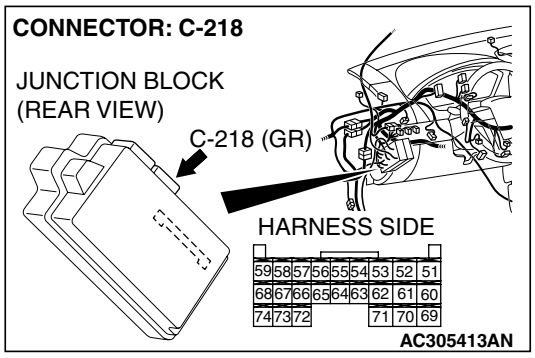
NOTE: Also check joint connector C-01 and intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 or intermediate connector C-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection 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.

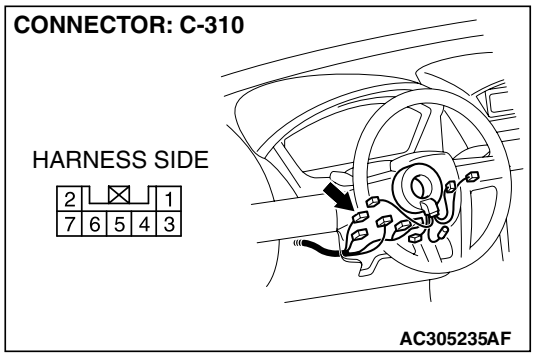
STEP 11. Check the wiring harness between key reminder switch connector C-310 (terminal 1) and ETACS-ECU connector C-218 (terminal 69).



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.

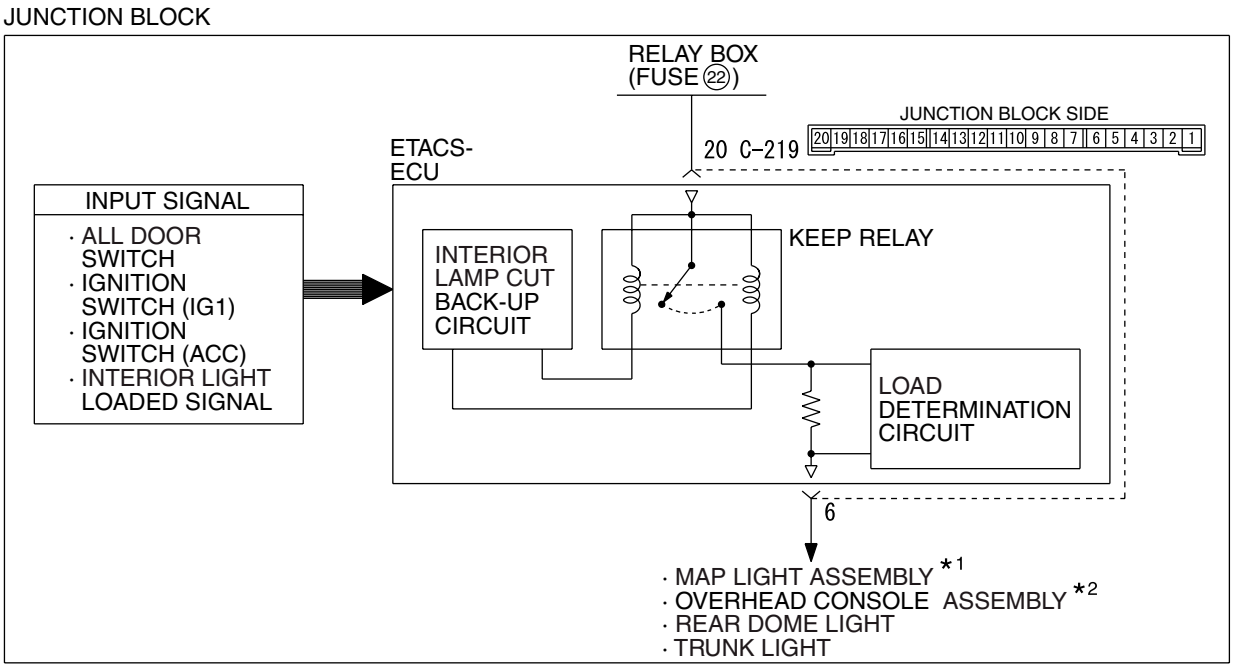
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify that the ignition key hole illumination light illuminates normally.



INSPECTION PROCEDURE K-5: 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-18."

Interior Light Automatic Shutoff Function Circuit



NOTE
*1: WITHOUT SUNROOF
*2: WITH SUNROOF

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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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge

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- 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 K-1 "The dome light do not illuminate and go out normally P.54B-426."

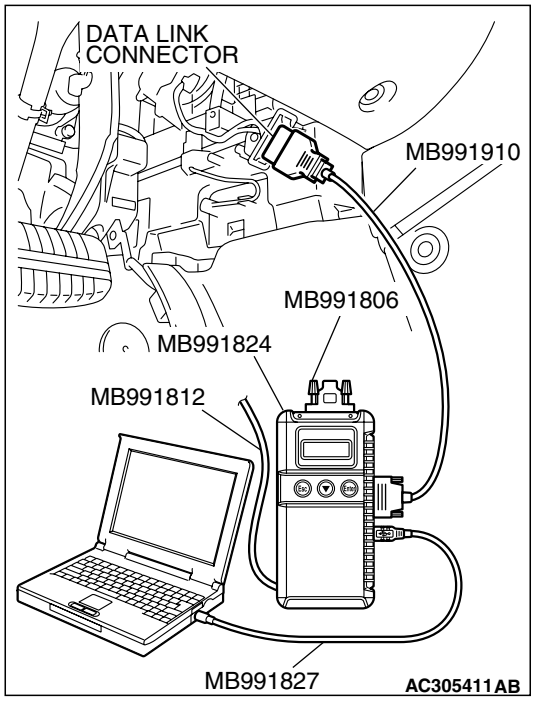
Some of the interior lights do not illuminate normally. : Refer to Inspection Procedure K-2 "The front dome light, rear dome light or trunk light do not illuminate or go out normally P.54B-434."

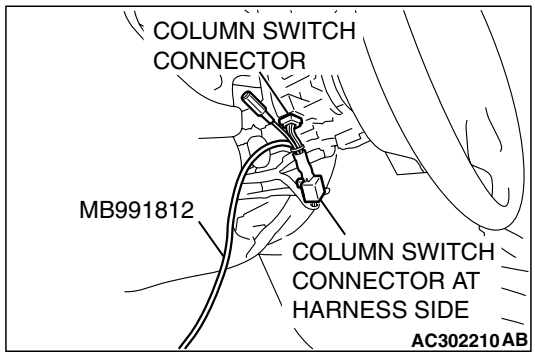
STEP 2. Check the adjustment function.

Q: Has a setting other than "No auto-shutoff" been selected for the interior light automatic shutdown function by the adjustment function?

YES : Go to Step 3.

NO : Set the interior light automatic shutdown function to another setting other than "No auto-shutoff".





STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

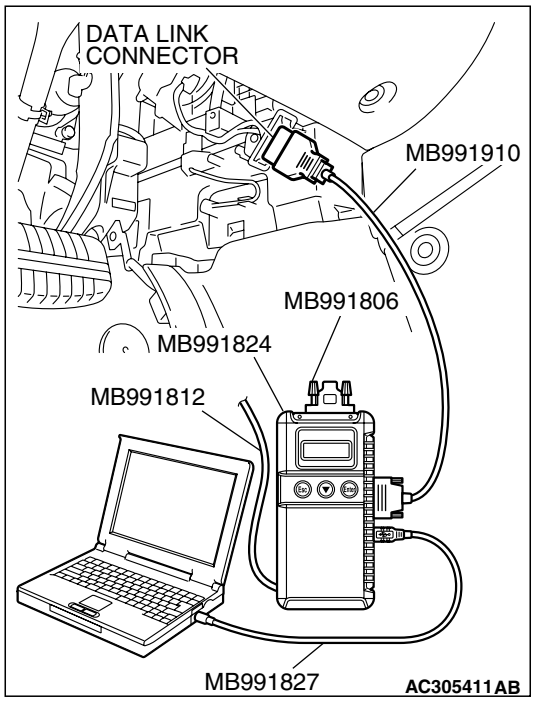
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

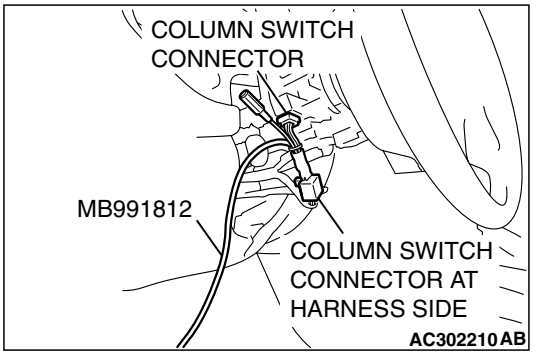
(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. 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 Step4.

NO : Refer to Inspection Procedure A-3 "Communication with the ETACS-ECU is not possible P.54B-82."





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: OFF
- Driver's or front 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

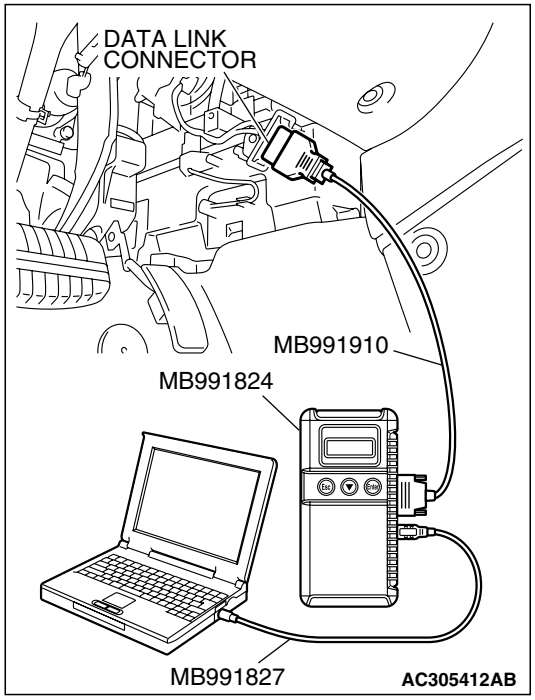
Q: Does the scan tool MB991958 display the items "IG SW (IG1)", "IG SW (ACC)" and "FRONT DOOR SW" as normal condition?

Normal conditions are displayed for all the items : Go to Step 5.

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-497."

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-494."

Normal condition is not displayed for "FRONT DOOR SW" : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."



STEP 5. Check the input signal (by using the pulse check mode of the monitor).

Check the following switches and input signals:

- Door switches
- 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
Door switch	Open or close one of the doors

Q: When any door switch, interior light, the liftgate latch or glass hatch latch 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-11. Verify that the dome light illuminates normally.

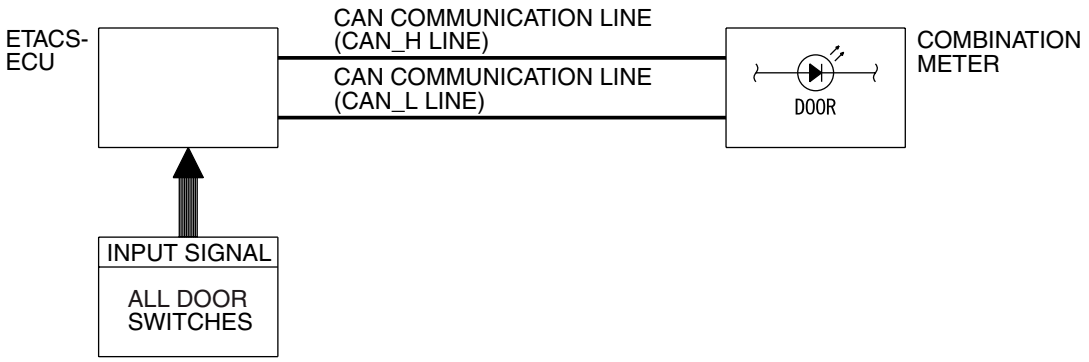
When one of the doors is opened and closed, scan tool MB991958 does not sound : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from any of the door switches P.54B-534."

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-572."

INSPECTION PROCEDURE K-6: 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-18."

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.

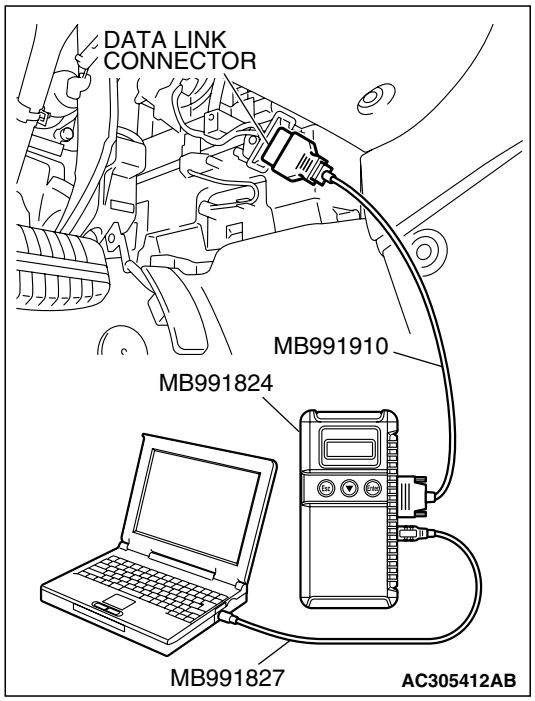
TROUBLESHOOTING HINTS

- 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness



STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

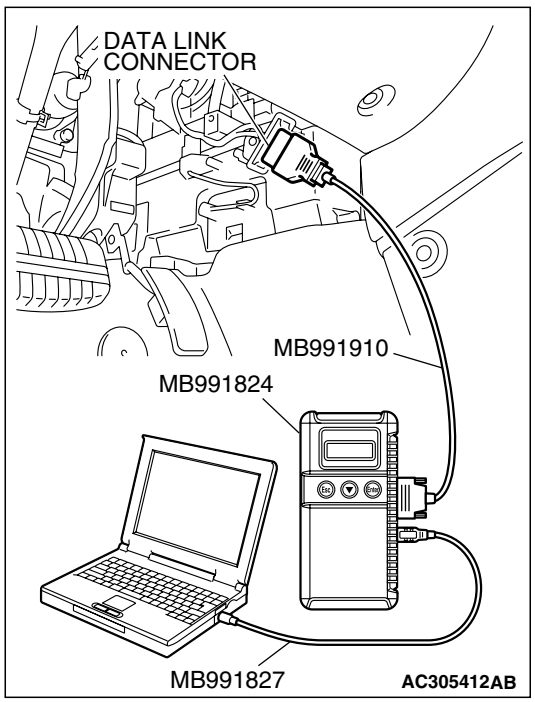
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."
(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-16).



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-54.
NO : Go to Step 3.

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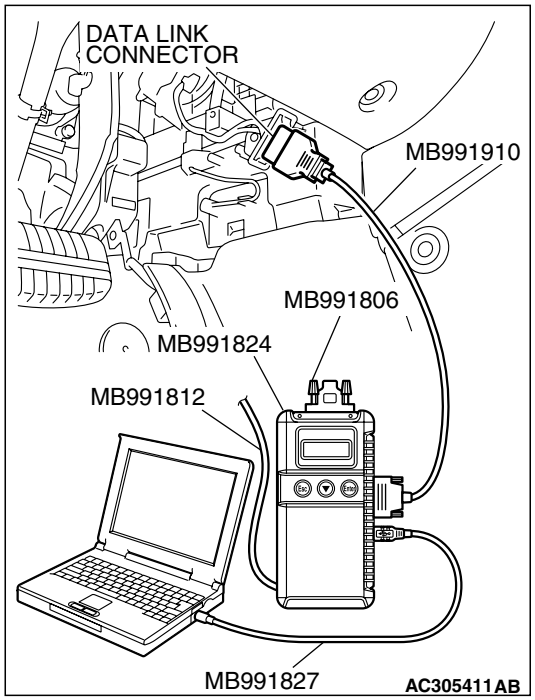
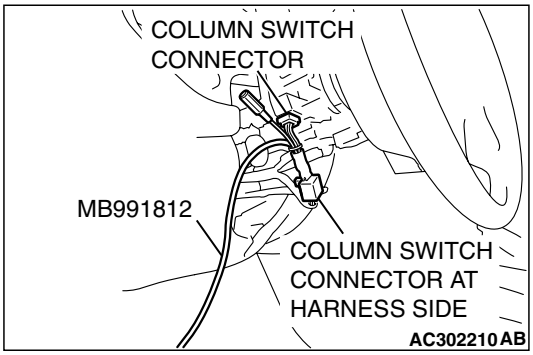




STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

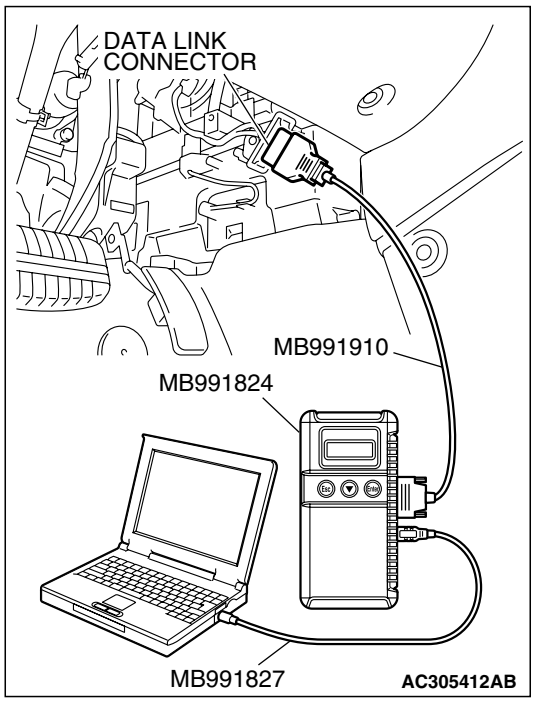
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-17."
(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-82."



STEP 4. Check the input signal (by using the pulse check mode of the monitor).

Check the following switches and input signals:

- Door switches

(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
Door switches	Open or close one of the doors

Q: When any door switch is operated, does scan tool MB991958 sound?

YES : Go to Step 5.

NO : Refer to Inspection Procedure N-3 "ETACS-ECU does not receive any signal from any of the door switches P.54B-534."

STEP 5. 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?

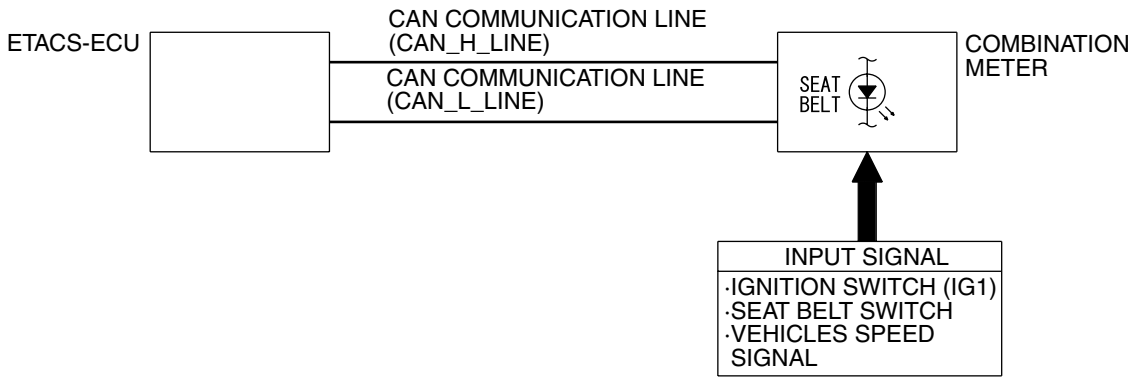
YES : No action is necessary and testing is complete.

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-11. Check that the door ajar indicator light illuminates normally.

INSPECTION PROCEDURE K-7: Interior Light: The seat belt warning light 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-18."

Seat Belt Warning Light Circuit



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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.

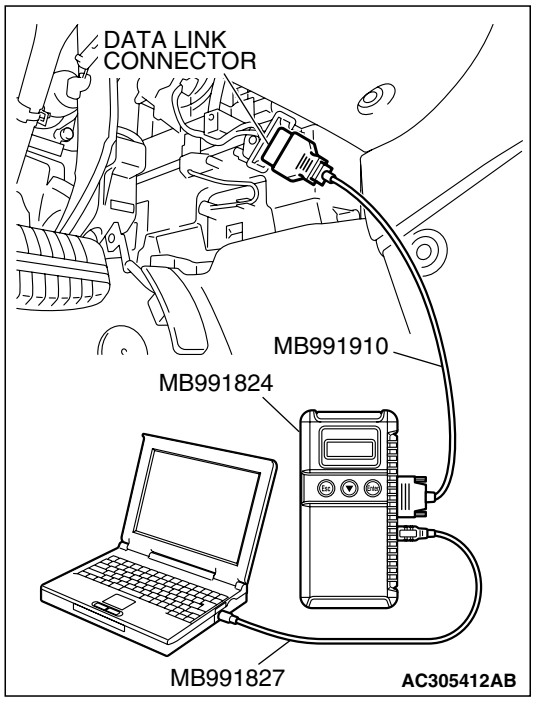
TROUBLESHOOTING HINTS

- 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness



STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

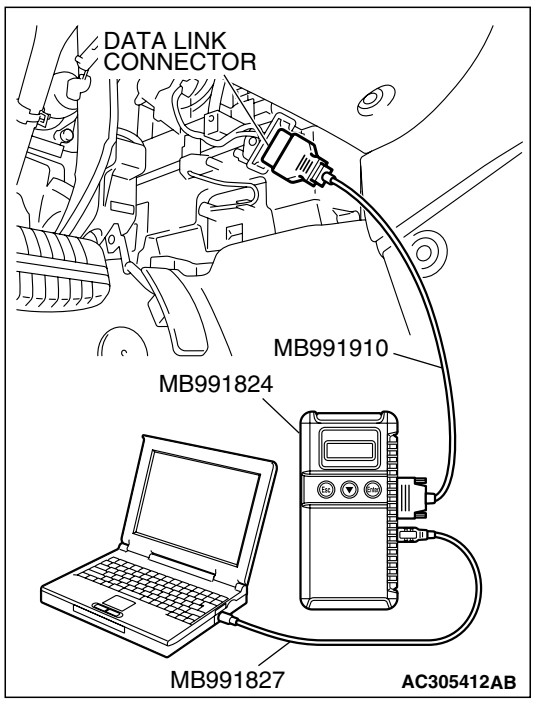
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."
(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-16).



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-54.
NO : Go to Step 3.

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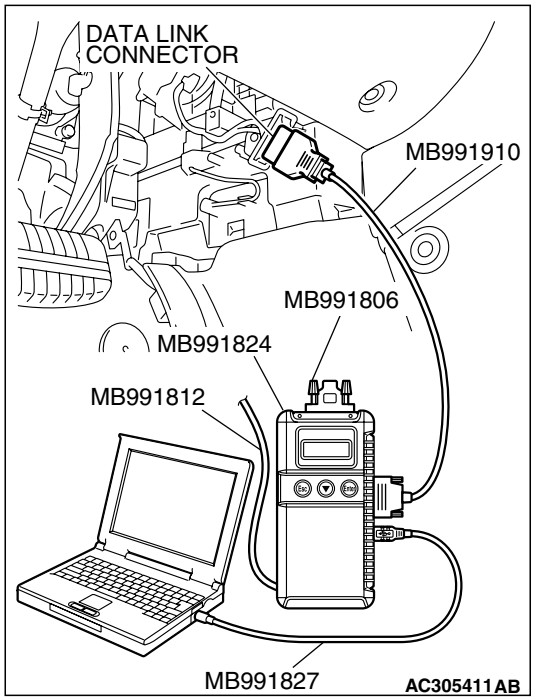
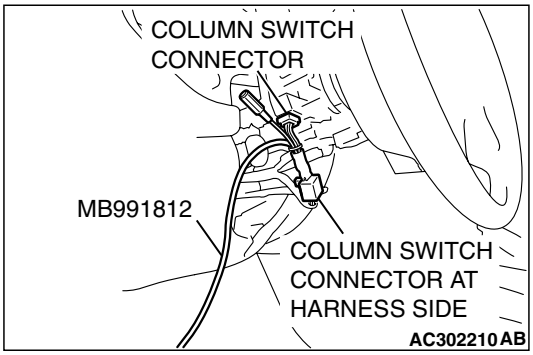




STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

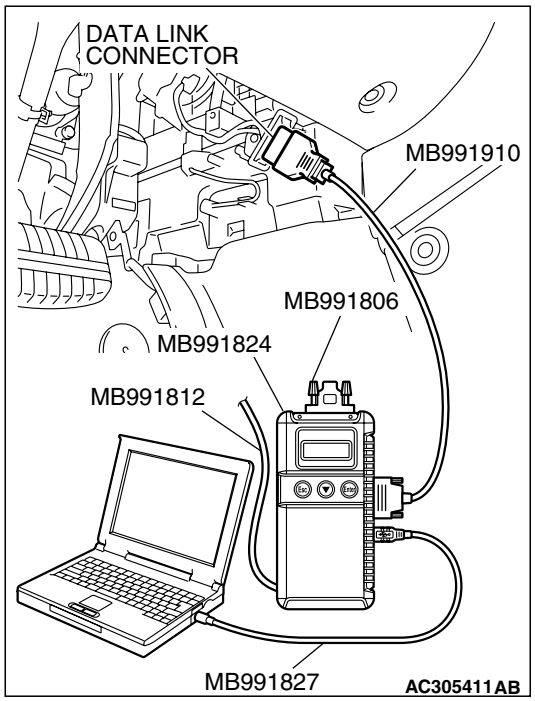
Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

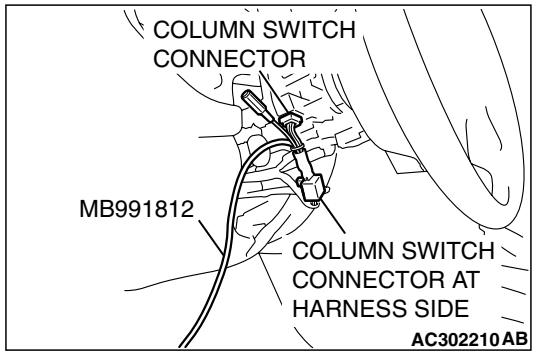
(1) Connect the SWS monitor. Refer to "How to connect SWS monitor P.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "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-82."





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-497."

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-11. Verify that the seat belt warning light illuminates normally.

INSPECTION PROCEDURE L-1: Can not customize the functions by operating the multi-center display (middle-grade type) or Mitsubishi Multi Communication system.

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-18."

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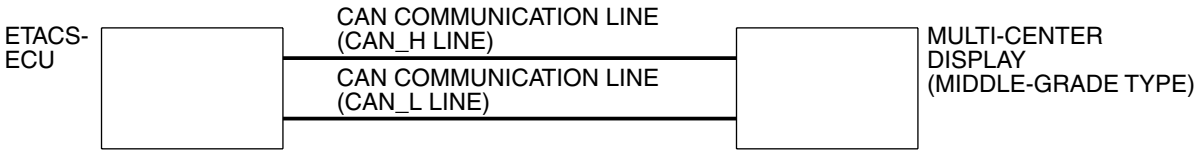
Configuration Function



W4P54M205A

CIRCUIT OPERATION

The ETACS-ECU enables/disables the functions and changes their operation time, based on the information sent from the multi-center display.

TECHNICAL DESCRIPTION (COMMENT)

If it is impossible to customize the functions by operating the multi-center display, connector(s) or wiring harness in the CAN bus lines, the ETACS-ECU or the multi-center display unit may be defective.

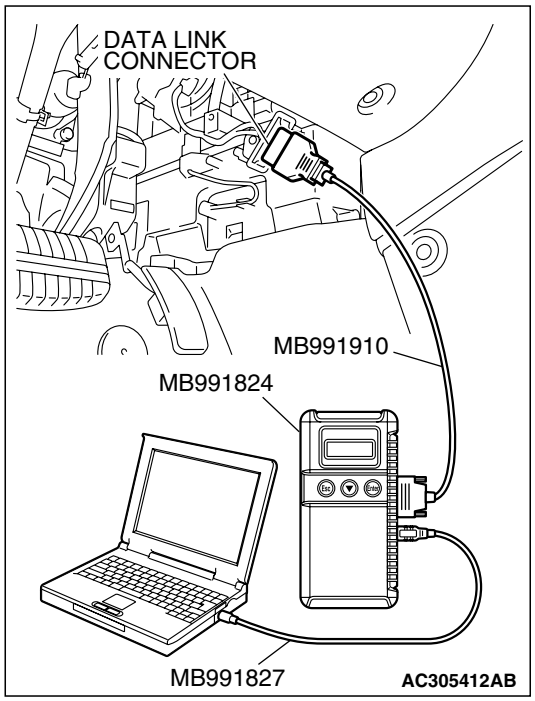
TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- Malfunction of the multi-center display
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness



STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

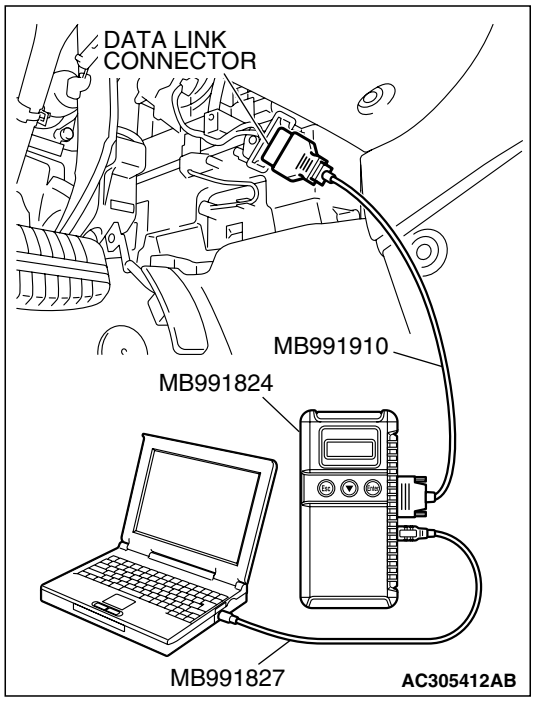
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958.Refer to "How to connect SWS monitor P.54B-17."
(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-16).



STEP 2. Using scan tool MB991958, read the multi-center display (middle-grade type) or mitsubishi multi communication system diagnostic trouble code.

(1) Turn the ignition switch to the "ON" position.
(2) Check if the multi-center display (middle-grade type) or mitsubishi multi communication system sets a DTC.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Diagnose the multi-center display (middle-grade type) unit. Refer to P.54A-253.or Diagnose the mitsubishi multi communication system. Refer to P.54A-253.
NO : Go to Step 3.

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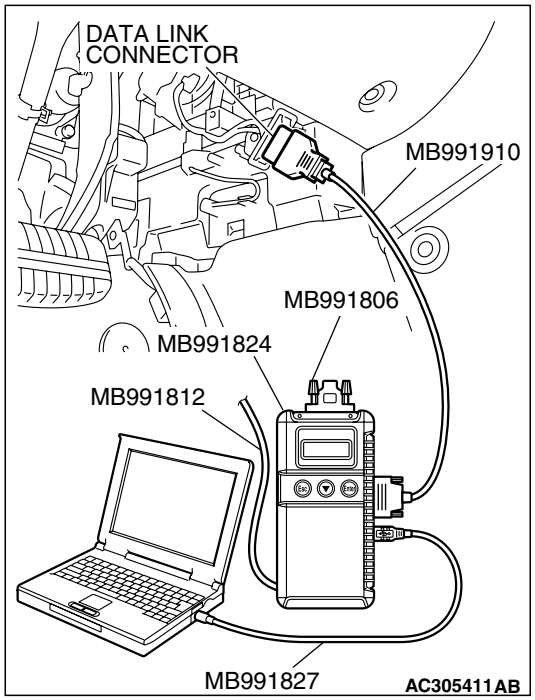
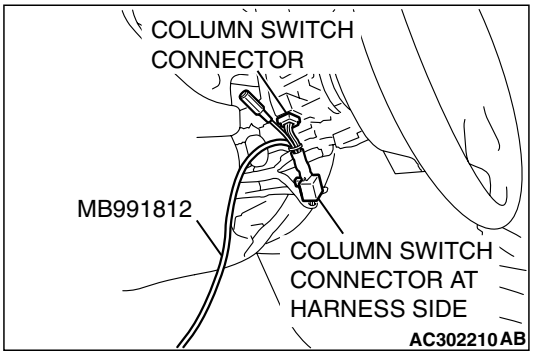




STEP 3. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

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-17."
(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-82."

STEP 4. Replace the multi-center display.
(1) Replace the multi-center display.
(2) Check if it is possible to customize the functions by operating the new multi-center display.

Q: Is it possible to customize the functions by operating the multi-center display?

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-11. Verify that it is possible to customize the functions by operating the multi-center display (middle-grade type) or mitsubishi multi communication system.

THEFT-ALARM SYSTEM

GENERAL DESCRIPTION CONCERNING THE THEFT-ALARM SYSTEM

M1549022100177

The following ECUs affect the functions and control of the theft-alarm function.

FUNCTION	CONTROL ECU
Theft-alarm system	ETACS-ECU, front-ECU

THEFT-ALARM SYSTEM

ARMED STAGE

Park the vehicle and stop the engine. Arm the system as described below:

- Remove the key from the ignition switch.
- Make sure that the engine hood is closed.
- Lock all doors and the trunk lid using power door lock switch, the remote control transmitter, or using the key. After completion of the steps above, the theft-alarm indicator will illuminate for approximately 20 seconds and then continuously blink on and off, indicating that the system is armed.

NOTE:

- *The system will be armed even if the engine hood is open, but when the system is set, be sure that the engine hood is closed.*
- *The system will be disarmed if, while the theft-alarm indicator (located in the front center of the dashboard) is illuminated, all doors or the trunk lid are unlocked by transmitter or using the key.*
- *The system will be disarmed if, while the theft-alarm indicator is illuminated, the ignition key is turned to the "ON" or "ACC."*
- *The system will not be armed if a door is not completely closed. Ensure that all the doors and trunk lid are closed, and arm the system again as described above.*

- *Ensure that all passengers exit the vehicle before arming the system. If the driver arms system with passengers in the vehicle, the alarm will be activated when the passengers open the door.*

DISARMED STAGE

The system will be disarmed when either of the following steps are taken:

- All doors or the trunk lid are unlocked by the transmitter or using the key.
- The ignition key is turned to "ACC" or "ON."
- If the UNLOCK button is pressed when all doors and the ltrunk lid are closed and no door is opened within approximately 30 seconds, re-arming will automatically occur.

NOTE: Once the system has been disarmed, it cannot be rearmed except by repeating the arming procedure.

ALARM STAGE

The alarm will be activated if any of the following occur while the vehicle is parked and the system is armed:

- One of the doors or the trunk lid is opened without the transmitter or using the key.
- The engine hood is opened from the outside or inside.

TYPE OF ALARM

When the alarm is activated:

- The headlights blink on and off for approximately 3 minutes. After approximately 3 minutes the headlights automatically shut off.
- The horn will sound intermittently for approximately 3 minutes.

NOTE: The alarm will continue to operate for approximately 3 minutes. At the end of that period, the alarm will automatically shut off. The system will then be rearmed until the proper disarming step is taken.

ALARM DEACTIVATION

The alarm can be deactivation in the following ways.

- By turning the key (in the driver’s door) in either direction (toward lock or unlock).
- By using the transmitter to lock or unlock the door or the trunk lid.

TESTING THE THEFT-ALARM SYSTEM

Use the following procedure to test the system:

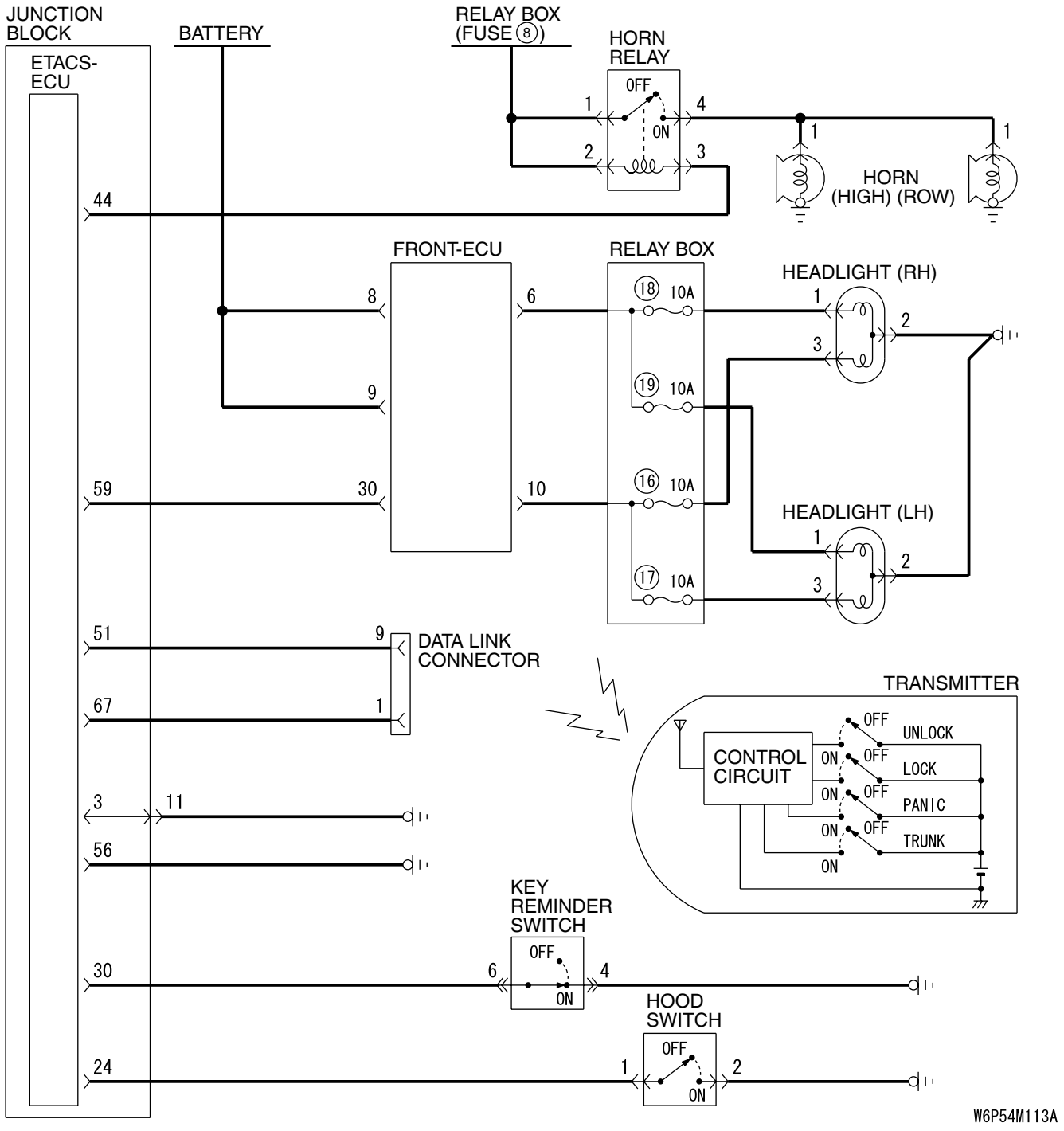
- Lower the driver’s window.
- Arm the system as explained in "Armed stage."
- Make sure that the theft-alarm indicator comes on and flashes in approximately 20 seconds.
- Wait a few seconds and then unlock the driver’s side door by using the inside door lock knob and open the door.

- Check to be sure that the horn sounds intermittently and the headlights blink on and off when the door is opened.
- Disarm the system by unlocking doors or the trunk lid by the transmitter or using the key.

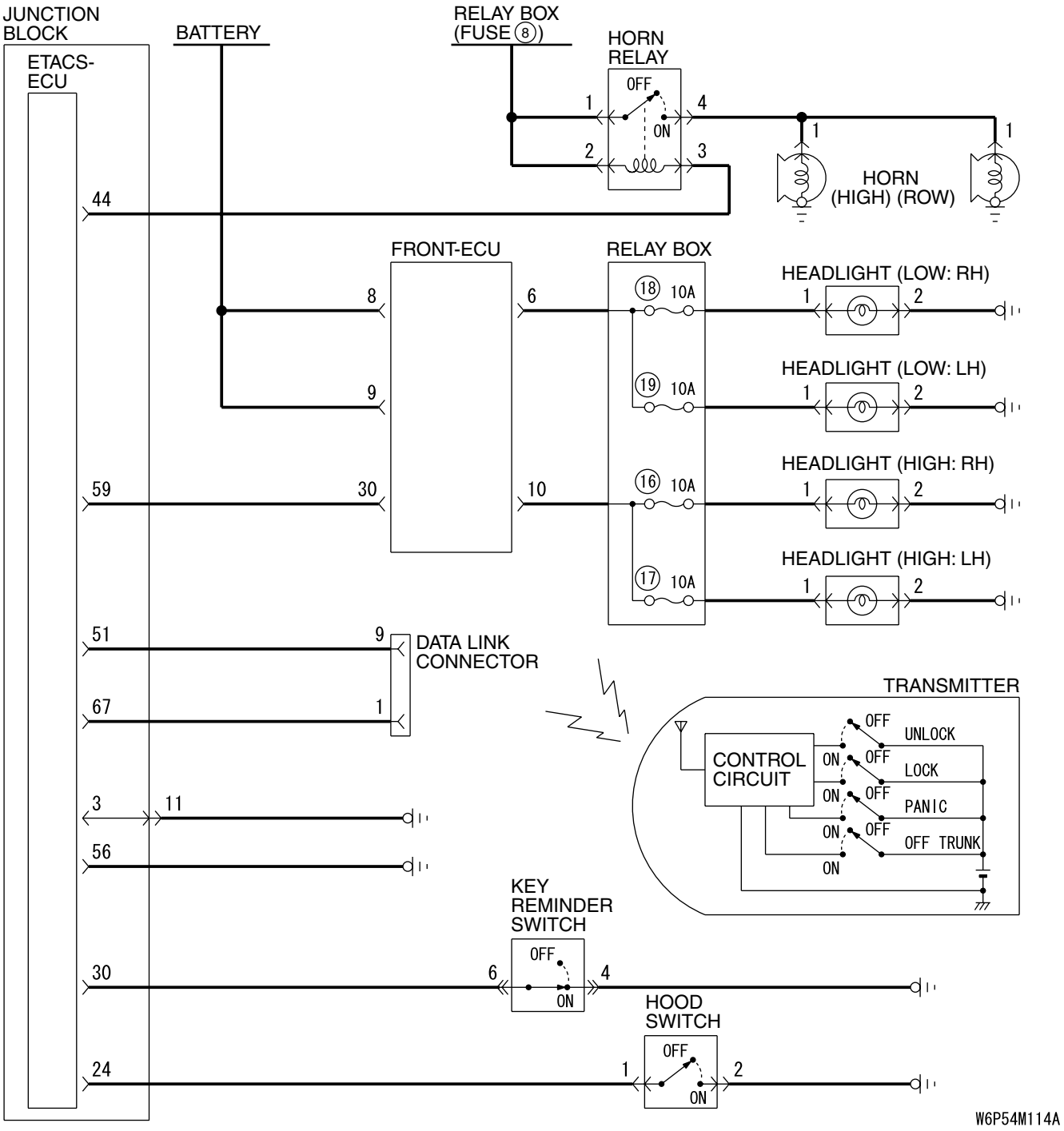
NOTE: To make sure the alarm sounds when the engine hood is opened, open the engine hood by using the engine hood release lever when the system is in the "armed" stage.

GENERAL CIRCUIT DIAGRAM FOR THE THEFT-ALARM

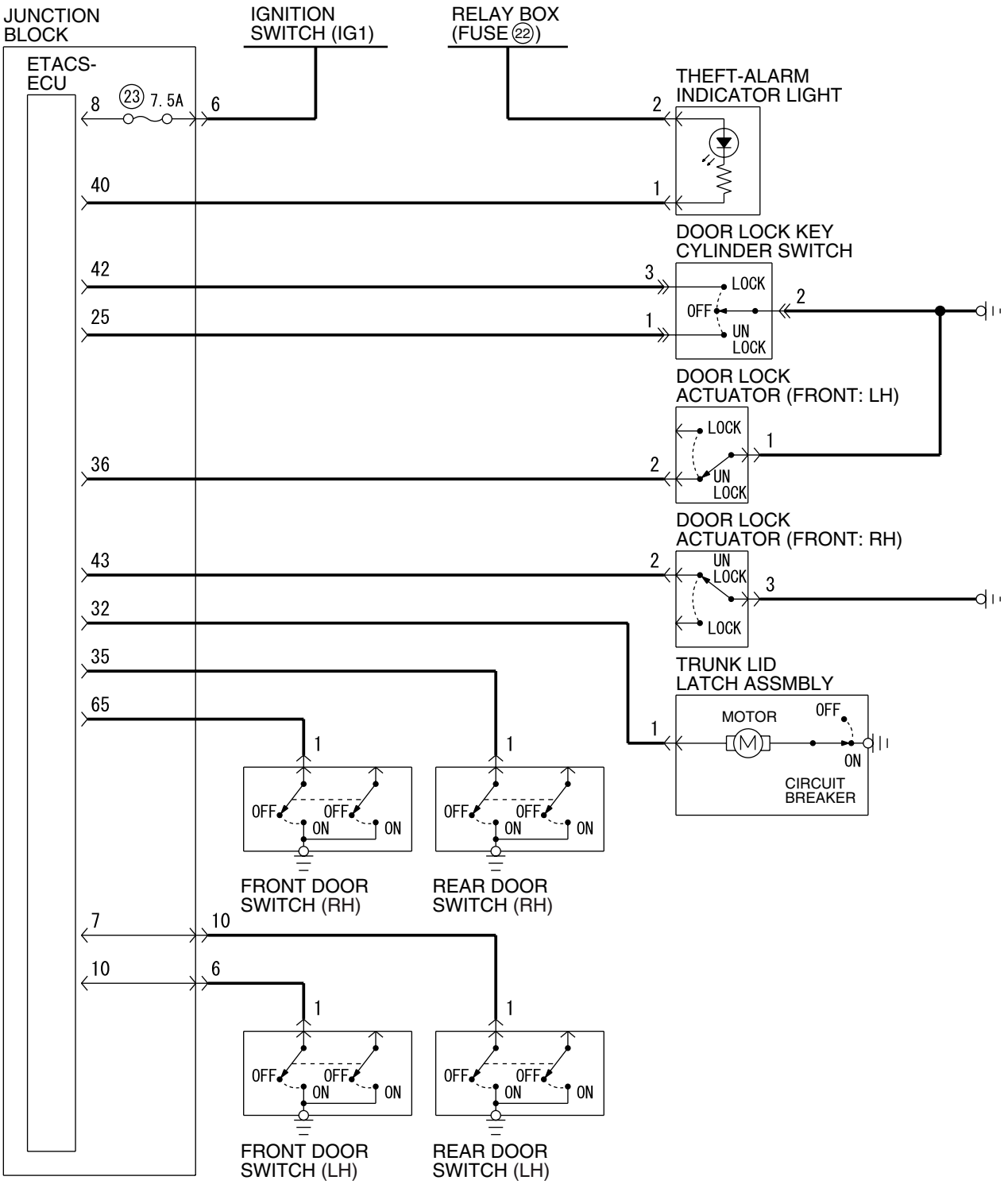
<2-Blub Type Headlight>



<4-Blub Type Headlight>



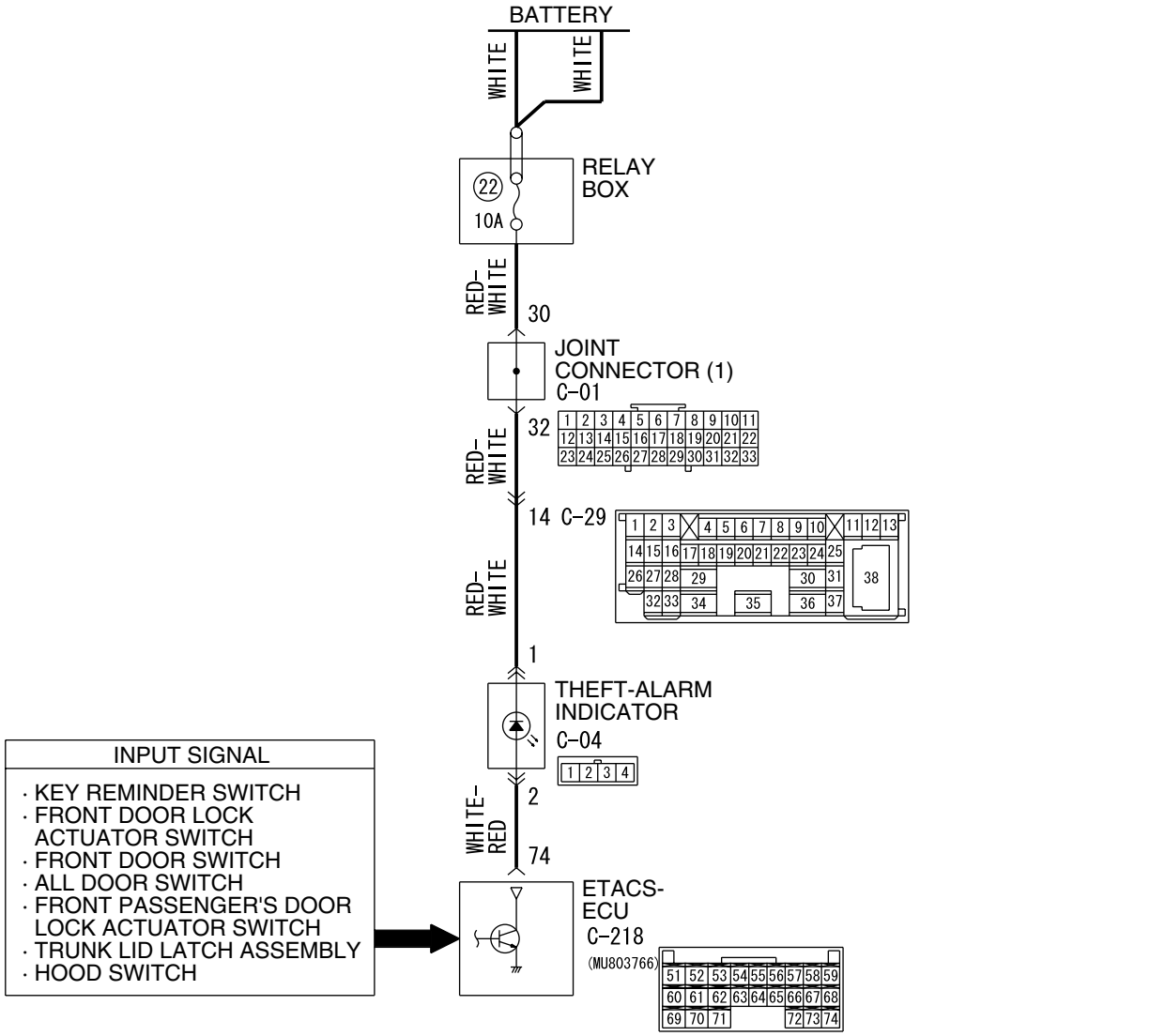
TSB Revision


JUNCTION BLOCK
ETACS-ECU
IGNITION SWITCH (IG1)
RELAY BOX (FUSE 22)
23 7.5A
THEFT-ALARM INDICATOR LIGHT
DOOR LOCK KEY CYLINDER SWITCH
LOCK
OFF
UN LOCK
DOOR LOCK ACTUATOR (FRONT: LH)
DOOR LOCK ACTUATOR (FRONT: RH)
TRUNK LID LATCH ASSMBLY
MOTOR
CIRCUIT BREAKER
FRONT DOOR SWITCH (RH)
REAR DOOR SWITCH (RH)
FRONT DOOR SWITCH (LH)
REAR DOOR SWITCH (LH)
W6P54M115A

INSPECTION PROCEDURE O-1: Theft-alarm System: Theft-alarm system is not armed (theft-alarm indicator 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.00-14."

Theft-alarm Indicator Drive Circuit



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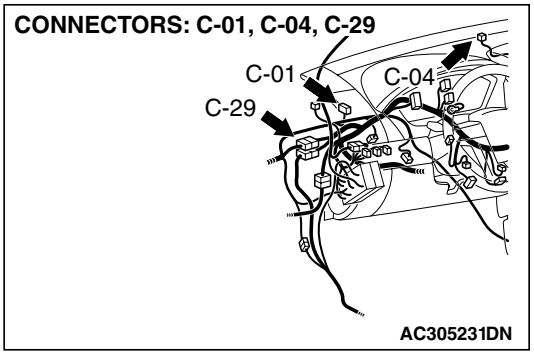
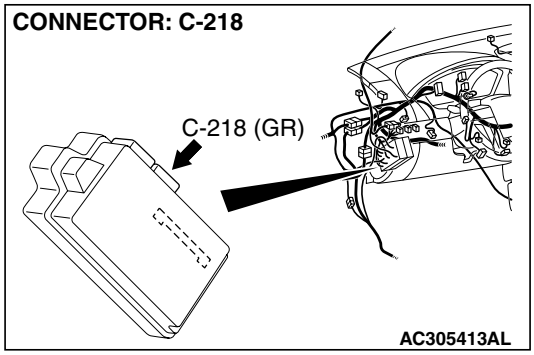
TSB Revision





CIRCUIT OPERATION

- When the ETACS-ECU receives a "LOCK" signal from the door lock actuator switch, it illuminates the theft-alarm indicator for approximately 18 seconds, and then set the theft-alarm system.
- The ETACS-ECU sets the theft-alarm system according to the input signals from the following signals:
  - Ignition key reminder switch: ON
  - Driver's and front passenger's door switch: OFF
  - Rear door switches: OFF
  - Driver's door lock key cylinder switch: OFF
  - Driver's, front passenger's, rear doors actuator switch: LOCK
  - Trunk lid assembly: ON
  - Hood switch: OFF
  - Transmitter switch: LOCK
- Vehicle condition:
  - Ignition key: Removed from the ignition key cylinder
  - All doors: Closed
  - Driver's, front passenger's door lock key cylinder: Not being operated
  - Trunk lid latch assembly: Not being operated
  - Hood: Closed
  - Transmitter: Turn to the "LOCK" position

TECHNICAL DESCRIPTION (COMMENT)

If the theft-alarm system is set normally, the input signal circuit, the theft-alarm indicator or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

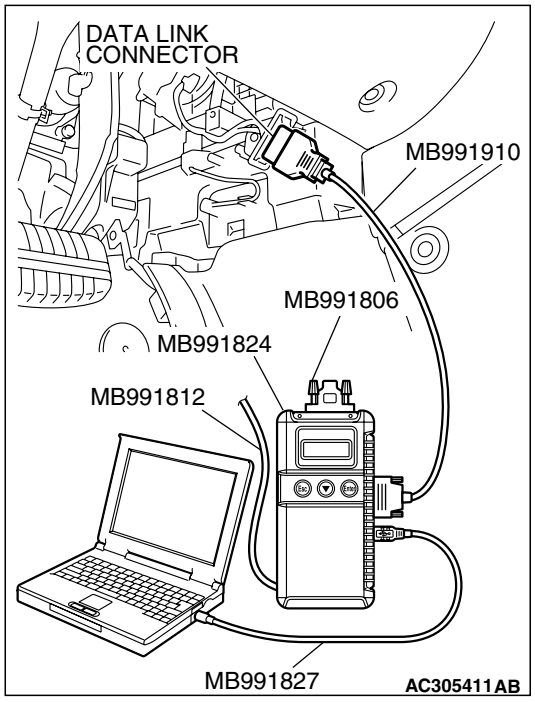
- The theft-alarm indicator may be defective
- The ignition key reminder switch may be defective
- The driver's or front passenger's door switch may be defective
- The door switches may be defective
- The driver's door lock key cylinder switch may be defective
- The driver's, front passenger's or the rear door lock actuator switch may be defective
- The trunk lid latch assembly may be defective
- The hood switch may be defective
- The transmitter may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

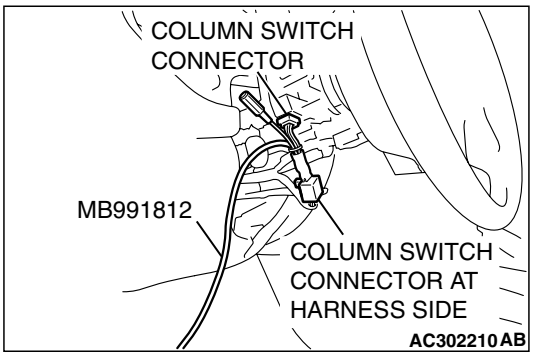
DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991911: M.U.T.-III Main Harness B
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness
- MB991854: SWS Monitor Harness (For 13-pin)

TSB Revision





STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

⚠ CAUTION

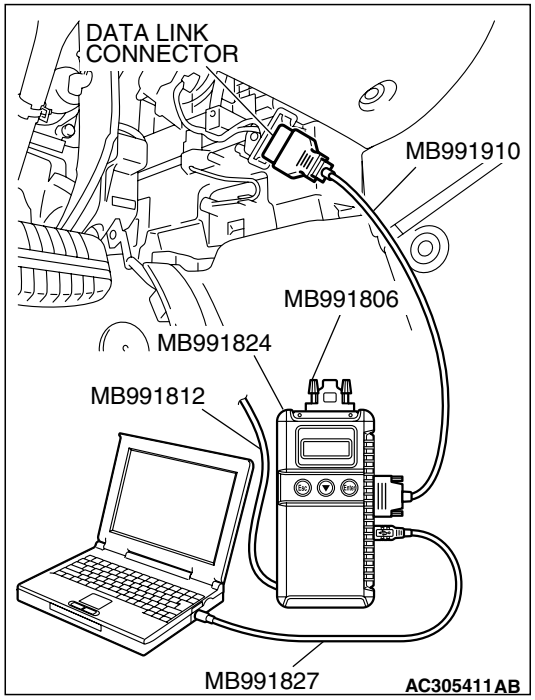
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

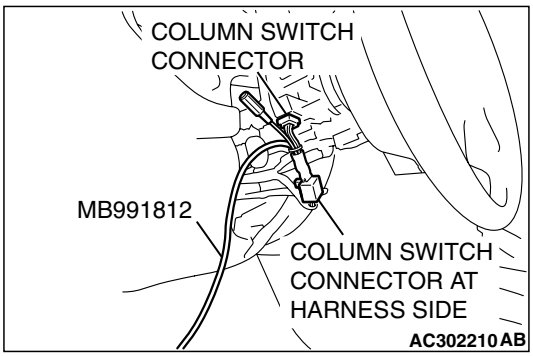
(1) Connect the special tool. Refer to "How to connect SWS monitorP.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "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-82."





STEP 2. Check the input signal by using "DATA LIST" menu of the SWS monitor.

Satisfy the following conditions to check the driver's and front passenger's door switches.

- Driver's door: Open [front door switch (LH) is on]
  However, the door should be closed when checking the front door switch (RH).
- Front passenger's door: Open [front door switch (RH) is on]
  However, the door should be closed when checking the front door switch (LH).

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."

(2) 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."

(3) Scan tool should show the following values when each switch is operated.

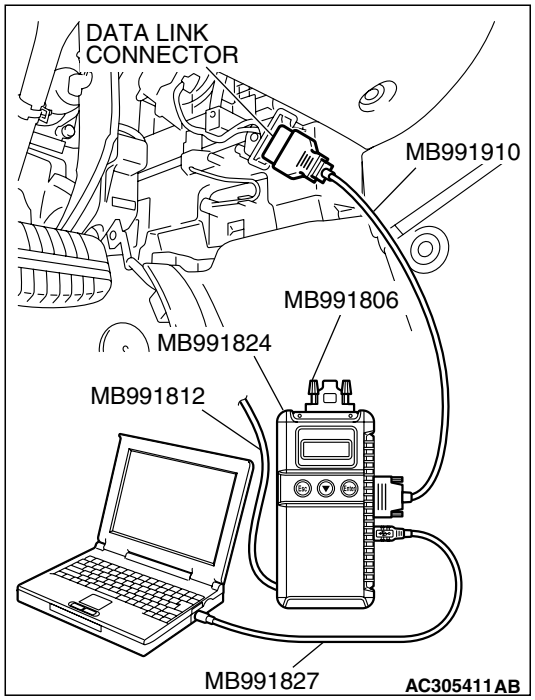
NOTE: The scan tool MB991958 displays changes when the driver's or the front passenger's door is opened. If any of the doors is open, the system cannot be checked correctly.

ITEM No.	ITEM NAME	NORMAL CONDITION
ITEM 32	DR DOOR SW	ON

Q: Does the scan tool show the respective normal condition for item "DR DOOR SW."?

YES : Go to Step 3.

NO : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."



STEP 3. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the following switches:

- Key reminder switch
- Front and rear door lock actuator
- Door lock key cylinder switch
- Hood switch
- Trunk lid assembly

(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
Driver's, front passenger's and rear door lock actuator switches	Lock or unlock each door
Driver's door lock key cylinder switch	Operate the door lock key cylinder at each door
Hood switch	Open and close the hood
Trunk lid latch assembly	Open or close the trunk lid

Q: When the key reminder switch, front and rear door lock actuator, door look key cylinder switch, hood switch, liftgate latch and glass hatch latch are operated, does scan tool MB991958 sound in all cases?

Buzzer of scan tool MB991958 sounds normally. : Go to Step 4.

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-525."

Scan tool MB991958 does not sound when the driver's, the front passenger's or the rear door lock actuator switches are operated : Refer to Inspection Procedure N-5 "ETACS-ECU does not receive any signal from the front door lock actuator P.54B-547."

Scan tool MB991958 does not sound when the driver's door lock key cylinder switch is operated : Refer to Inspection Procedure N-4 "ETACS-ECU does not receive any signal from the door lock key cylinder switch P.54B-542."

Scan tool MB991958 does not sound when the hood switch is operated : Refer to Inspection Procedure N-10 "ETACS-ECU does not receive any signal from the

hood switch P.54B-578."

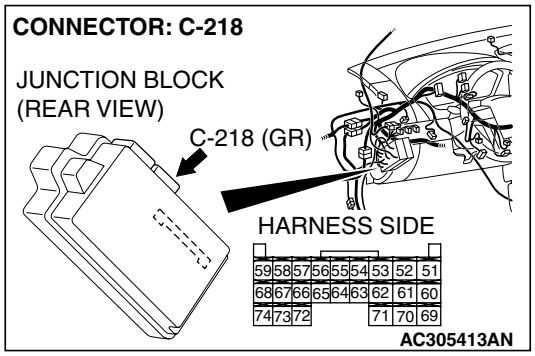
When the trunk lid is opened and closed, scan tool MB991958 does not sound. : Refer to Inspection Procedure N-7 "ETACS-ECU does not receive any signal from the trunk lid latch assembly P.54B-567."

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?

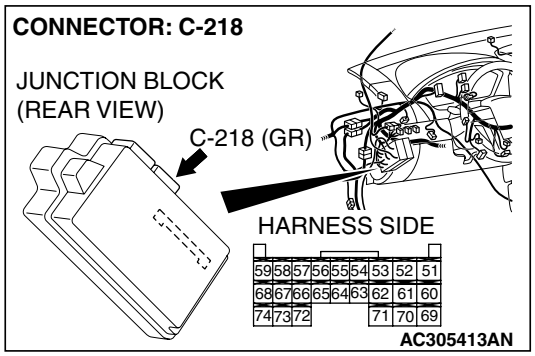
YES : Go to Step 5.

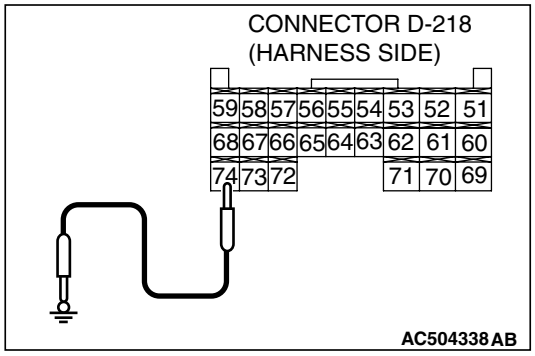
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The theft-alarm indicator should illuminate, and the theft-alarm system should be set normally.



STEP 5. Check at ETACS-ECU connector C-218 in order to check the theft-alarm indicator circuit.

(1) Disconnect ETACS-ECU connector C-218, and measure at the wiring harness side.



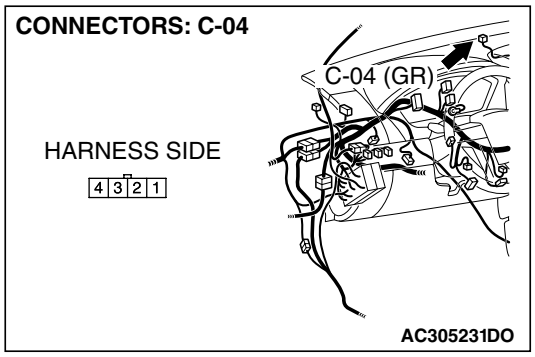


(2) The theft-alarm indicator should illuminate when terminal 74 is grounded.

Q: Does the theft-alarm indicator 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-11. Verify that the theft-alarm indicator should illuminate, and the theft-alarm system should be set normally.

NO : Go to Step 6.

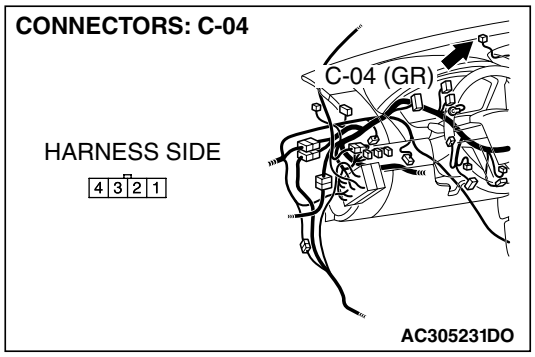


STEP 6. Check theft-alarm indicator connector C-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is theft-alarm indicator connector C-04 in good condition?

YES : Go to Step 7.

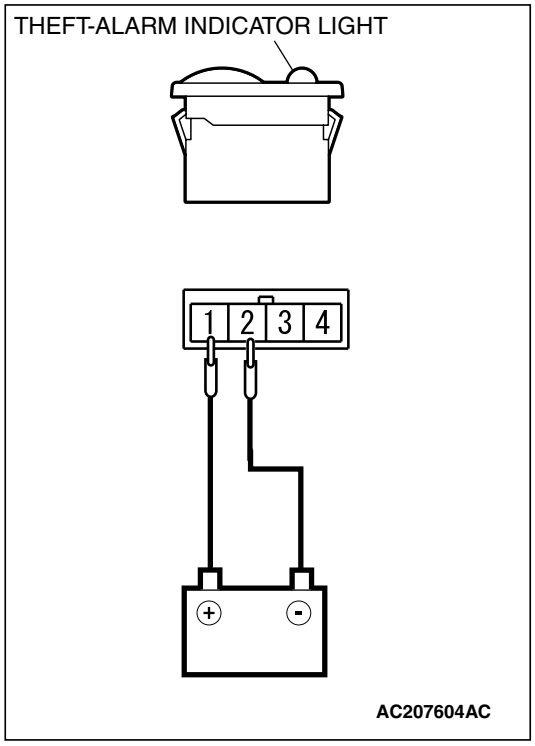
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The theft-alarm indicator should illuminate, and the theft-alarm system should be set normally.



STEP 7. Check the theft-alarm indicator.

(1) Remove the theft-alarm indicator (phto sensor). Refer to GROUP 54A, Theft-alarm P.54A-391.

(2) Disconnect theft-alarm indicator connector C-04.



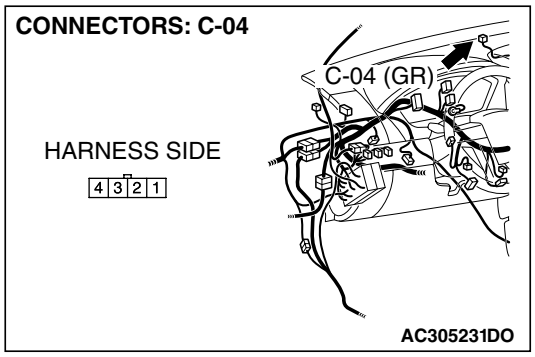
(3) The theft-alarm indicator should illuminate when battery voltage is applied between terminals 1 and 2.

Q: Does the theft-alarm indicator illuminate?

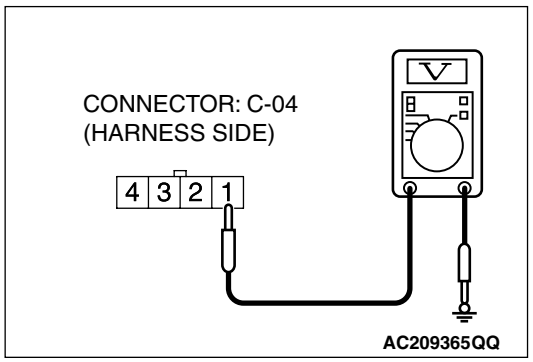
YES : Go to Step 8.

NO : Replace the theft-alarm indicator (phto sensor). The theft-alarm indicator should illuminate, and the theft-alarm system should be set normally.

STEP 8. Check the battery line of power supply circuit to the theft-alarm indicator circuit. Test at theft-alarm indicator connector C-04.



(1) Disconnect theft-alarm indicator connector C-04 and measure the voltage available at the wiring harness side of the connector.

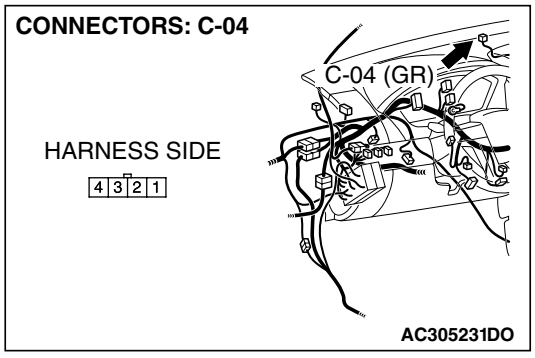


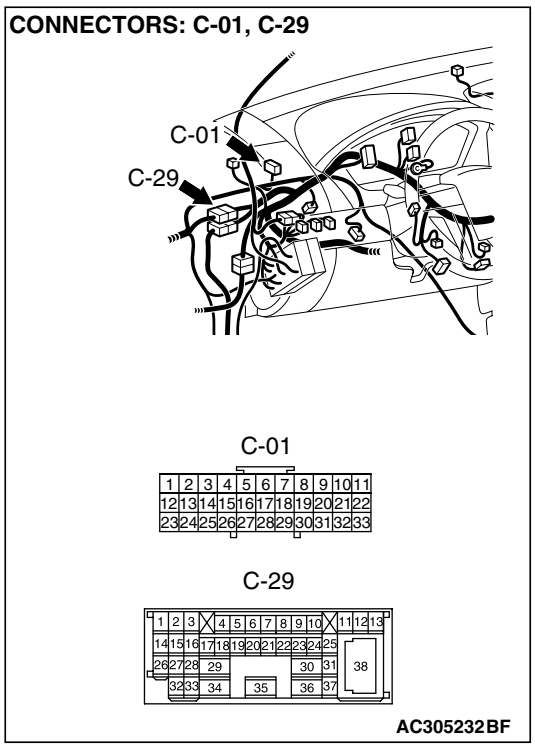
(2) Measure the voltage between terminal 1 and ground.
- The voltage should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 10.
NO : Go to Step 9.

STEP 9. Check the wiring harness between theft-alarm indicator connector C-04 (terminal 1) and the battery.



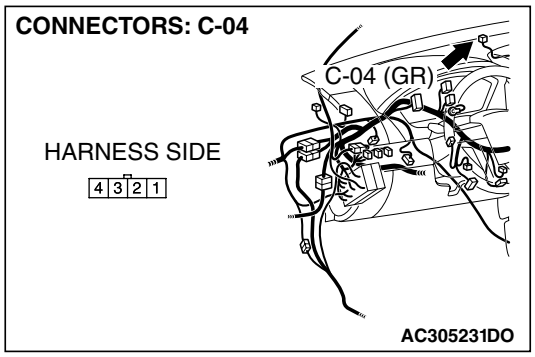


NOTE: Also check intermediate connector C-29, joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29, joint connector C-01 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between theft-alarm indicator connector C-04 (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 theft-alarm indicator should illuminate, and the theft-alarm system should be set normally.

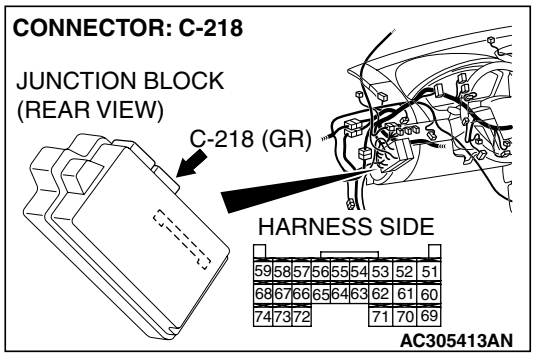


STEP 10. Check the wiring harness between theft-alarm indicator connector C-04 (terminal 2) and ETACS-ECU connector C-218 (terminal 74).

Q: Is the wiring harness between theft-alarm indicator connector C-04 (terminal 2) and ETACS-ECU connector C-218 (terminal 74) in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The theft-alarm indicator should illuminate, and the theft-alarm system should be set normally.



INSPECTION PROCEDURE O-2: Theft-alarm System: The theft-alarm system is not armed.

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.00-14."

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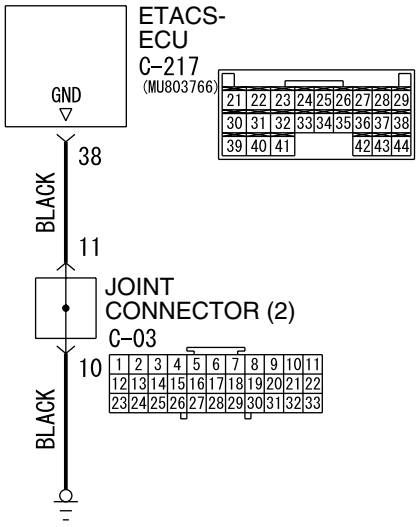
Theft-alarm Ground Circuit



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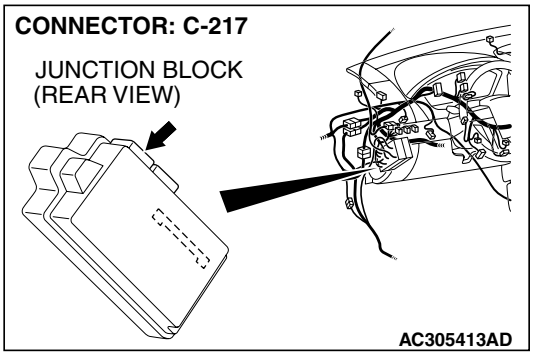

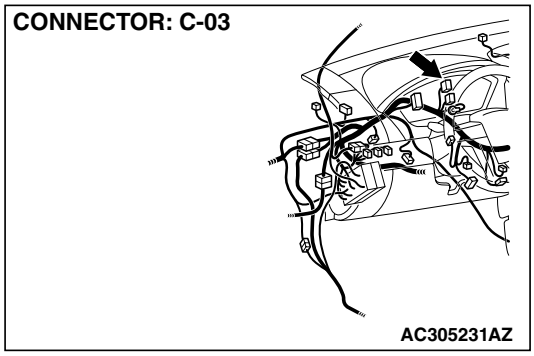

CIRCUIT OPERATION
When the theft alarm operates, the horn sounds and the headlights high-beam flashes.

TECHNICAL DESCRIPTION (COMMENT)
With all the theft alarm operation conditions satisfied, if the horn does not sound and the headlight high-beam does not flash at all (when theft alarm indicator and panic alarm are normal), the ground wire for ETACS-ECU theft alarm or ETACS-ECU may be faulty.

TROUBLESHOOTING HINTS
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991911: M.U.T.-III Main Harness B
- MB991813: SWS Monitor Kit

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- MB991806: SWS Monitor Cartridge
- MB991812: SWS Monitor Harness (For Column-ECU)
- MB991822: Probe Harness
- MB991854: SWS Monitor Harness (For 13-pin)

STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the ETACS-ECU.

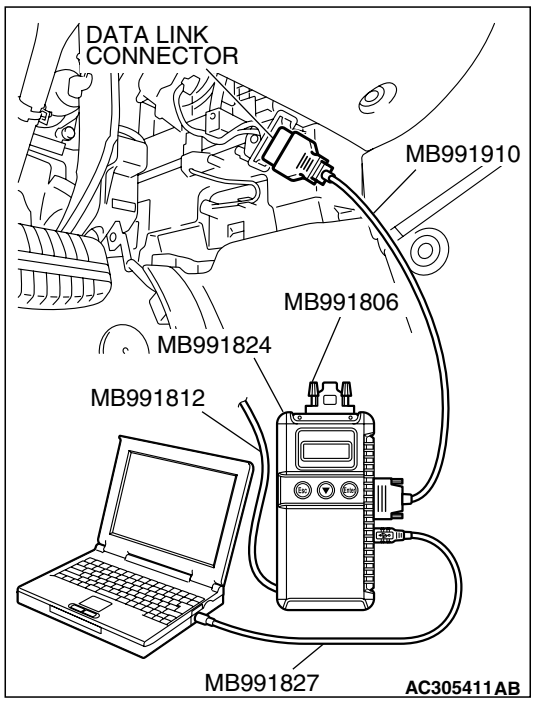
⚠ CAUTION

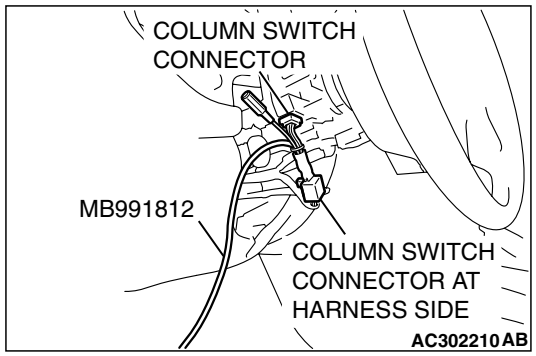
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

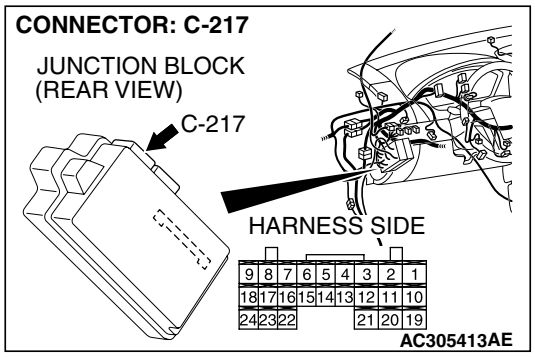
(1) Connect the special tool. Refer to "How to connect SWS monitorP.54B-17."
(2) Turn the ignition switch to the "LOCK" (OFF) position.
(3) Operate scan tool MB991958 according to the procedure below to display "ECU COMM Check."
   a. Select "Interactive Diagnosis."
   b. Select "System select."
   c. 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-82."





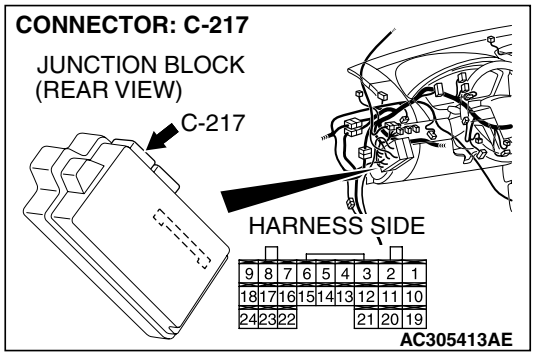


STEP 2. Check the ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

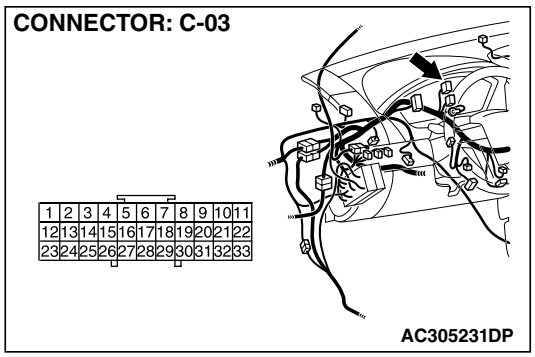
Q: Is the ETACS-ECU connector C-217 in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. All the vehicle horn (including the theft-alarm horn) should sound when the theft-alarm system is triggered.



STEP 3. Check the wiring harness between ETACS-ECU connector C-217 (terminal 38) and body erath.



NOTE: Also check joint connector C-03 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-03 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 38) and body erath 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-11. The horns should sound when the theft-alarm system is triggered.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. The horns should sound when the theft-alarm system is triggered.

INSPECTION PROCEDURE O-3: Theft-alarm System: Horn does not sound when the theft-alarm is triggered.

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CIRCUIT OPERATION
When the theft-alarm system is triggered, the ETACS-ECU sounds the theft-alarm horn and all the vehicle horns.

TECHNICAL DESCRIPTION (COMMENT)
If the horns do not sound when the theft-alarm system is triggered, the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS
- The horn may be defective
- The horn relay may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

Verify the keyless entry hazard answerback and horn answerback function.

Q: Does the keyless entry hazard answerback and horn answerback function 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-11. The horns should sound when the theft-alarm system is triggered.

NO : Refer to Inspection Procedure E-2 "The dome light, the turn-signal lights and the horn do not operate through the answerback function P.54B-224."

INSPECTION PROCEDURE O-4: Theft-alarm System: Headlights (high-beam) do not flash when the theft-alarm system is triggered.

TECHNICAL DESCRIPTION (COMMENT)
If the headlights (high-beam) illuminate normally, the front-ECU or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS
- The front-ECU may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

STEP 1. Check the headlight (high-beam) operation.

Q: Do the headlights illuminate at high beam normally?

YES : Go to Step 2.

NO : Refer to Inspection Procedure H-3 "Headlights (high-beam) does not illuminate P.54B-312."

STEP 2. Replace the ECU.

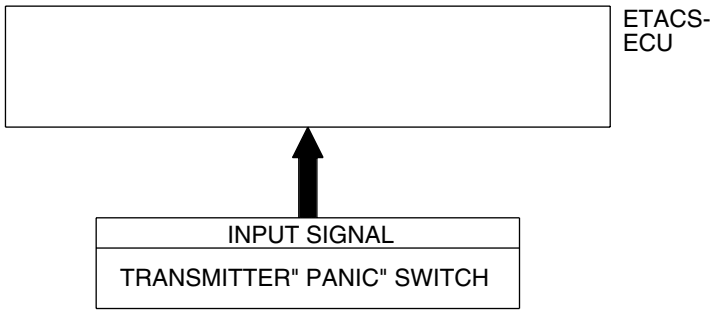
(1) Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11.
(2) The headlights should flash at high beam when the theft-alarm system is triggered.

Q: Do the headlights flash at high beam when the theft-alarm system is triggered?

YES : No action is necessary and testing is complete.
NO : Replace the front-ECU. The headlights should flash at high-beam when the theft-alarm system is triggered.

INSPECTION PROCEDURE O-5: Theft-alarm System: Panic alarm function does not work.

Panic Alarm Function



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TECHNICAL DESCRIPTION (COMMENT)
If the keyless entry system is normal, the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991911: M.U.T.-III Main Harness B

STEP 1. Check the keyless entry system.

Q: Does the keyless entry system work normally?

YES : Go to Step 2.
NO : Refer to Inspection Procedure E-1 "Keyless entry system does not operate P.54B-222."

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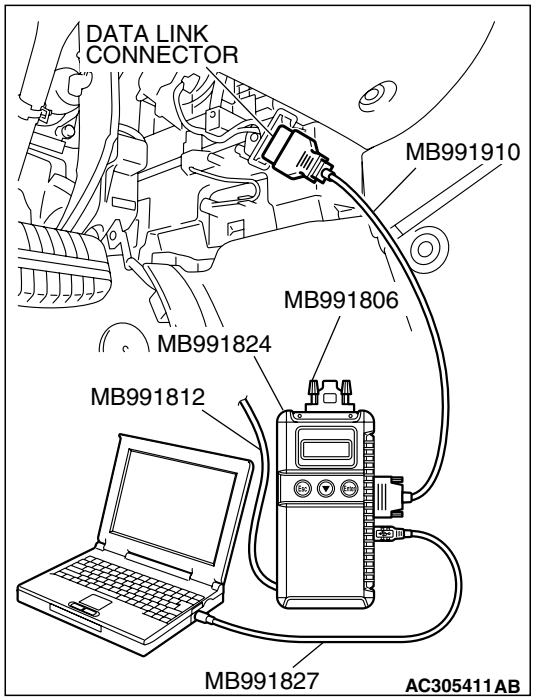


STEP 2. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the transmitter "PANIC" switch:

⚠ CAUTION

To prevent damage to scan tool 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-17."
(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 the transmitter "PANIC" button is pressed?

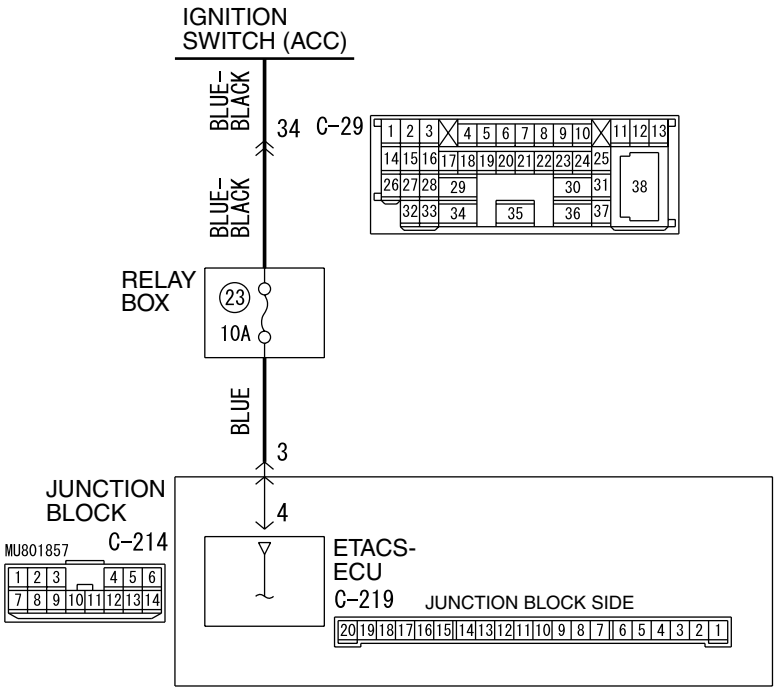
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. Verify that the panic alarm works normally.

NO : Refer to Inspection Procedure N-8 "ETACS-ECU does not receive any signal from the lock, unlock or panic switch P.54B-570.

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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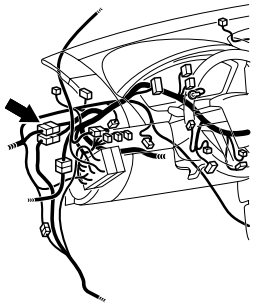
CONNECTOR: C-29



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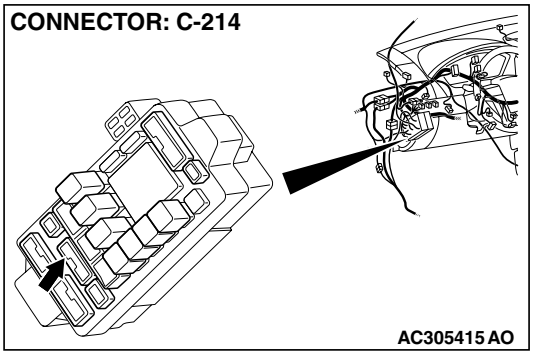
CONNECTOR: C-214



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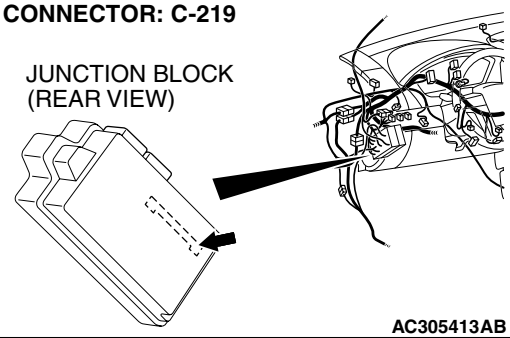
CONNECTOR: C-219

JUNCTION BLOCK (REAR VIEW)



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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-30.

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

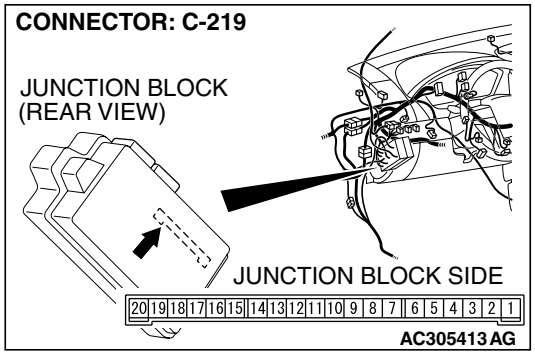
Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

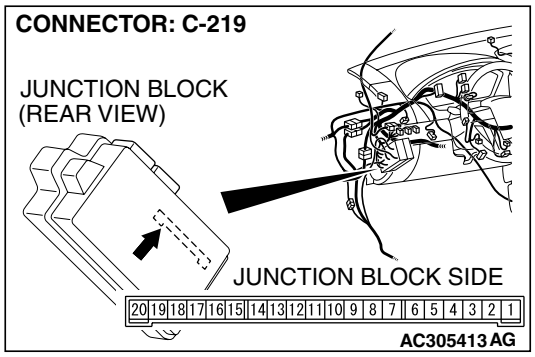
Q: Is ETACS-ECU connector C-219 in good condition?

YES : Go to Step 2.

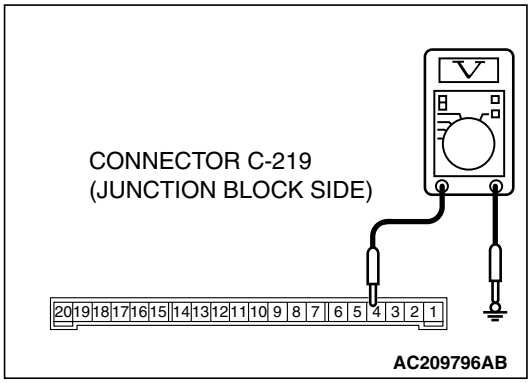
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the equipment described in "CIRCUIT OPERATION" works normally, the input signal from the ignition switch (ACC) should be normal.



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-219.



(1) Disconnect ETACS-ECU connector C-219 and measure the voltage available at the junction block side of the connector.
(2) Turn the ignition switch to the "ACC" position.



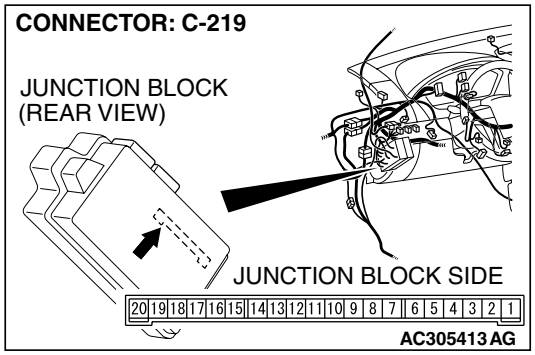
(3) Measure the voltage between terminal 4 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

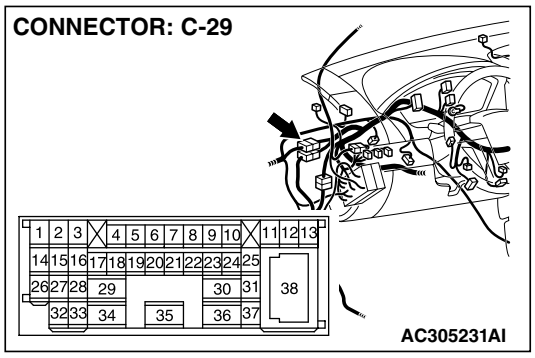
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

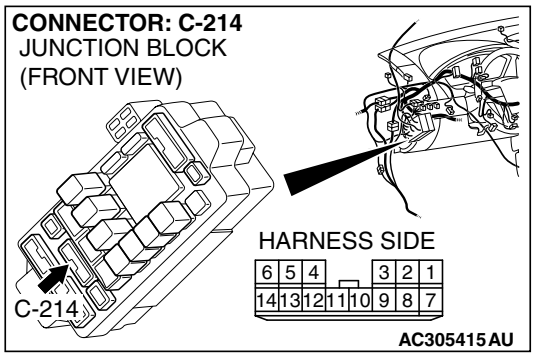
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. If the equipment described in "CIRCUIT OPERATION" works normally, the input signal from the ignition switch (ACC) should be normal.

NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-219 (terminal 4) and the ignition switch (ACC).







NOTE: Also check intermediate connector C-29 and junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 or junction block connector C-214 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

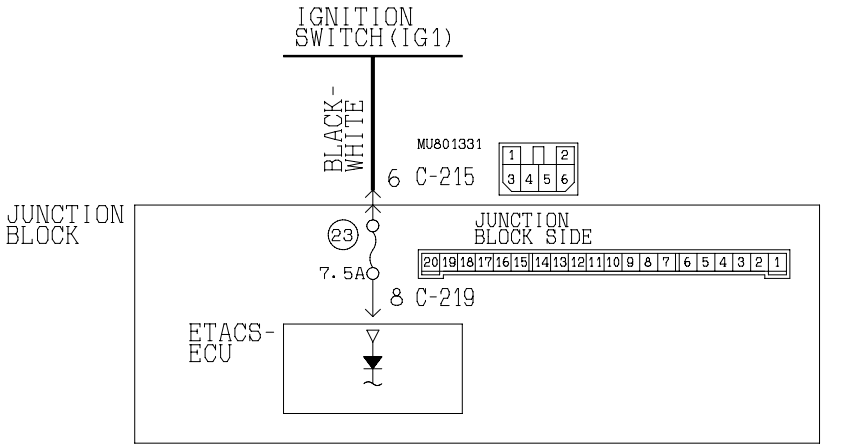
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 4) and ignition switch (ACC) in good condition?

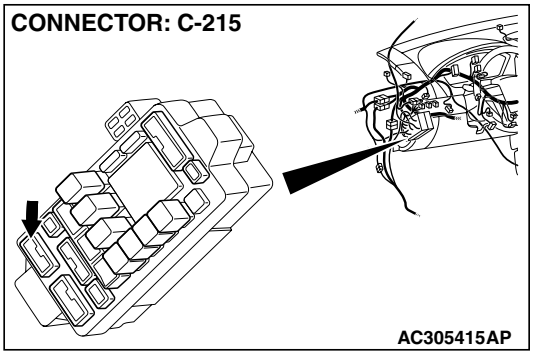
YES : No action is necessary and testing is complete.

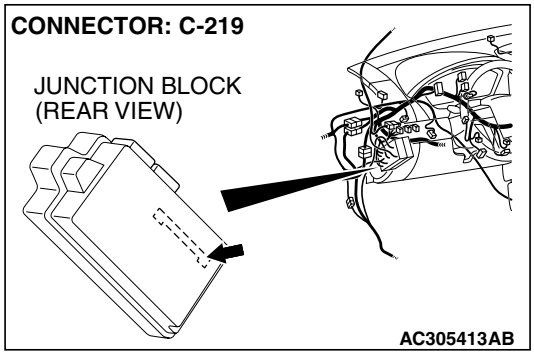
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment described in "CIRCUIT OPERATION" works normally, the input signal from the ignition switch (ACC) should be normal.

INSPECTION PROCEDURE M-2: ETACS-ECU does not receive any signal from the ignition switch (IG1).

Ignition Switch (IG1) Input Circuit







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
- Turn-signal light buzzer
- Multi center display operation tone <vehicles with multi center display (middle grade type)>
- Power window timer function
- Sunroof timer function
- Headlight automatic shutdown function
- Turn-signal light
- Dome light dimming function
- Ignition key hole 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-30.

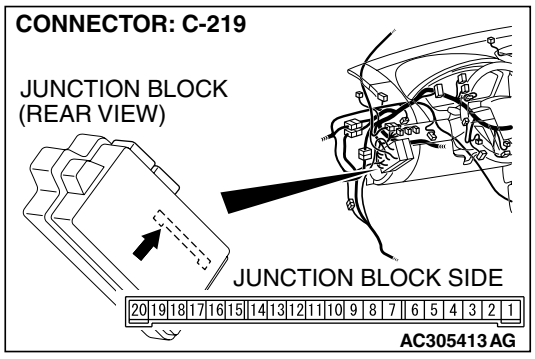
TROUBLESHOOTING HINTS

- 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-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

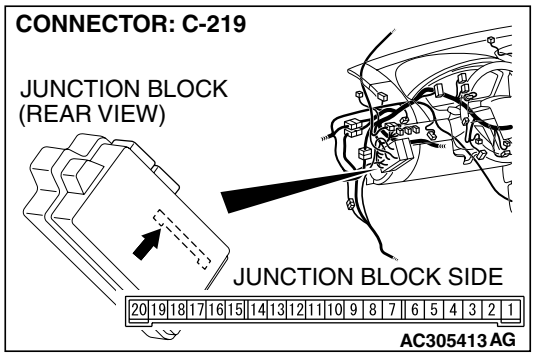
Q: Is ETACS-ECU connector C-219 in good condition?

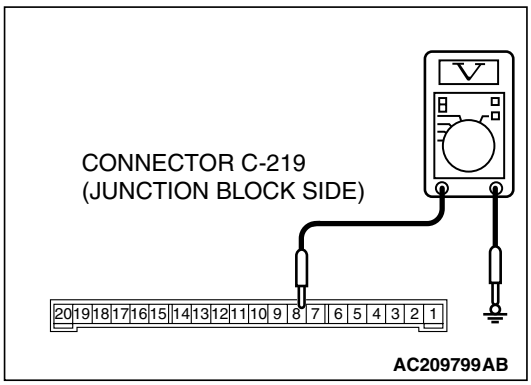
YES : Go to Step 2.

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-219.

(1) Disconnect ETACS-ECU connector C-219 and measure the voltage available at the junction block side of the connector.
(2) Turn the ignition switch to the "ON" position.





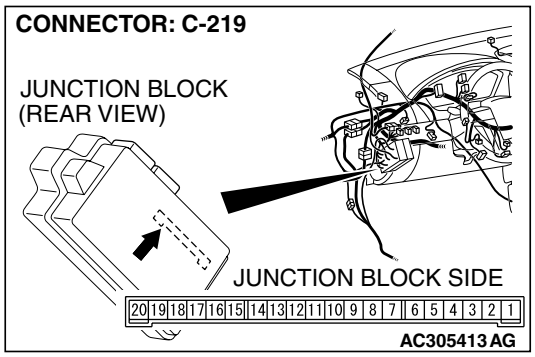
(3) Measure the voltage between terminal 8 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

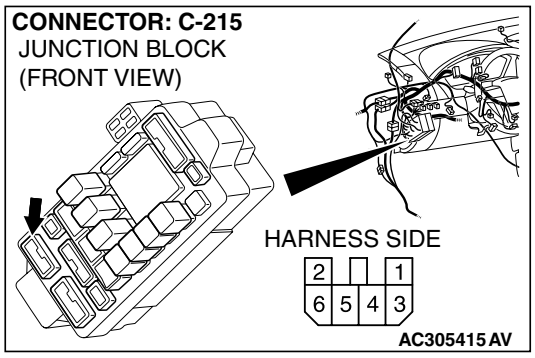
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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-11. 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-219 (terminal 8) and the ignition switch (IG1).





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.

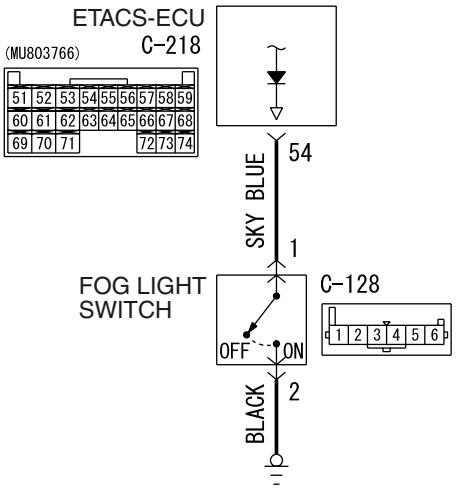
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 8) and ignition switch (IG1) in good condition?

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 fog light switch.

Fog Light Switch Input Circuit



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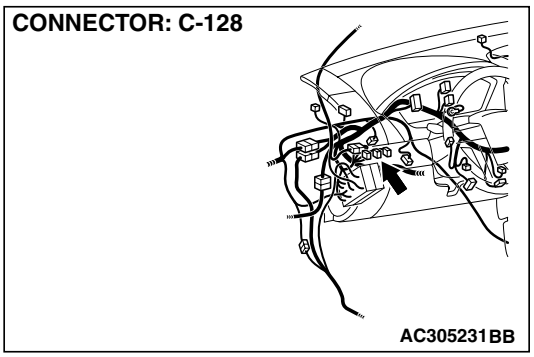

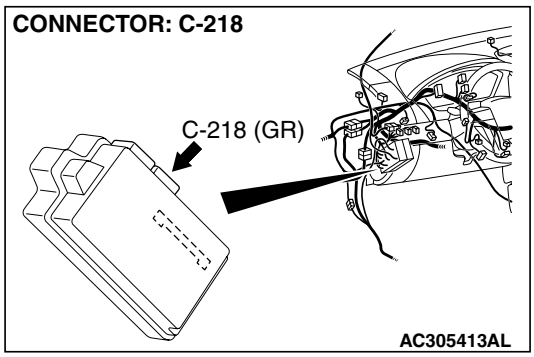

CIRCUIT OPERATION

The ETACS-ECU operates the fog lights according to signal from the fog light switch.

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TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the fog lights do not work normally. If the signal is not normal, the fog light switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The fog light switch may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

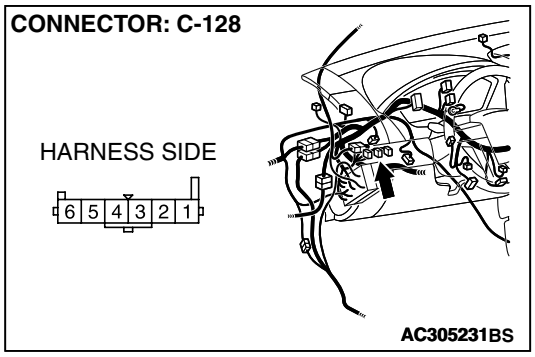
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check fog light switch connector C-128 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is fog light switch connector C-128 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 fog light switch. If the fog light switch operates normally, a correct signal is sent from the fog light switch.



STEP 2. Check the fog light switch.

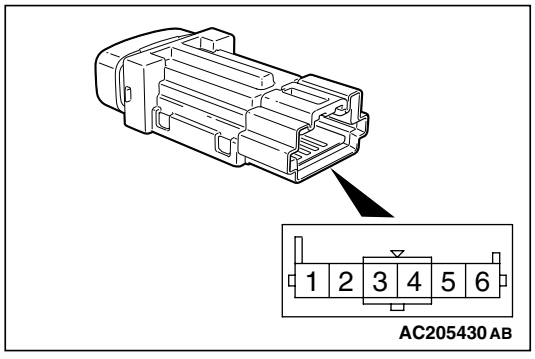
Remove the fog light switch. Refer to GROUP 54A, Fog light P.54A-143. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – 2	Open circuit
Pressed	1 – 2	Less than 2 ohms

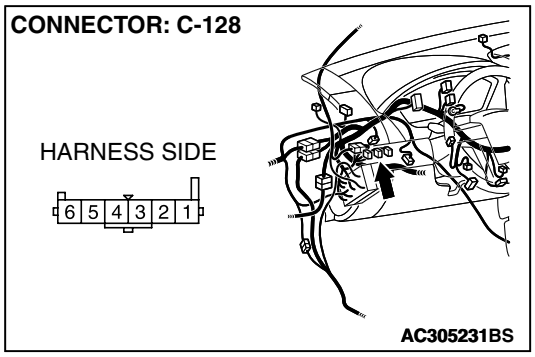
Q: Is the fog light switch in good condition?

YES : Go to Step 3.

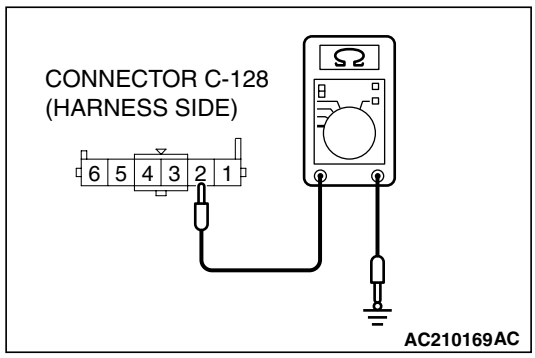
NO : Repair the fog light switch. If the fog light switch operates normally, a correct signal is sent from the fog light switch.



STEP 3. Check the ground circuit to the fog light switch. Measure the resistance at fog light switch connector C-128.



(1) Disconnect fog light switch connector C-128 and measure the resistance available at the wiring harness side of the connector.

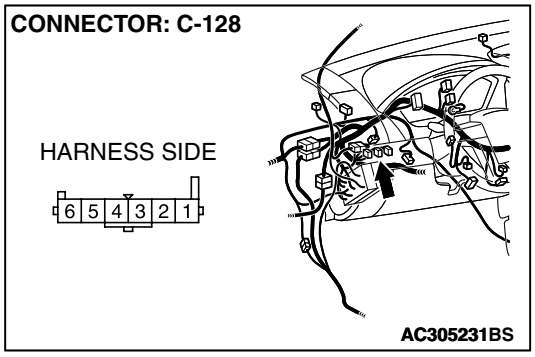


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.
NO : Go to Step 4.

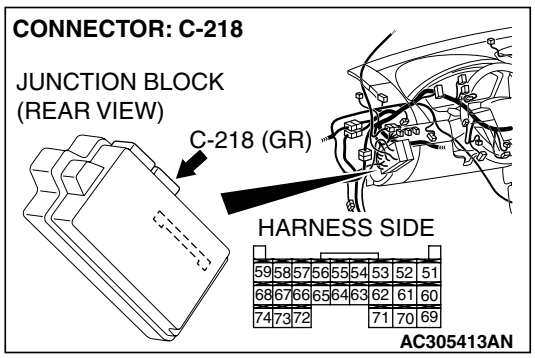
STEP 4. Check the wiring harness between fog light switch connector C-128 (terminal 2) and ground.



Q: Is the wiring harness between fog light switch connector C-128 (terminal 2) and ground in good condition?

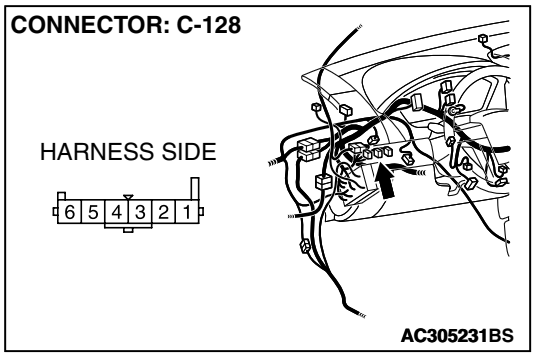
YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the fog light switch operates normally, a correct signal is sent from the fog light switch.

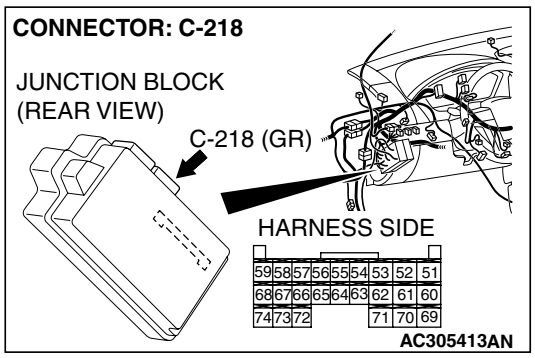
STEP 5. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



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 fog light switch operates normally, a correct signal is sent from the fog light switch.





STEP 6. Check the wiring harness between fog light switch connector C-128 (terminal 1) and ETACS-ECU connector C-218 (terminal 54).

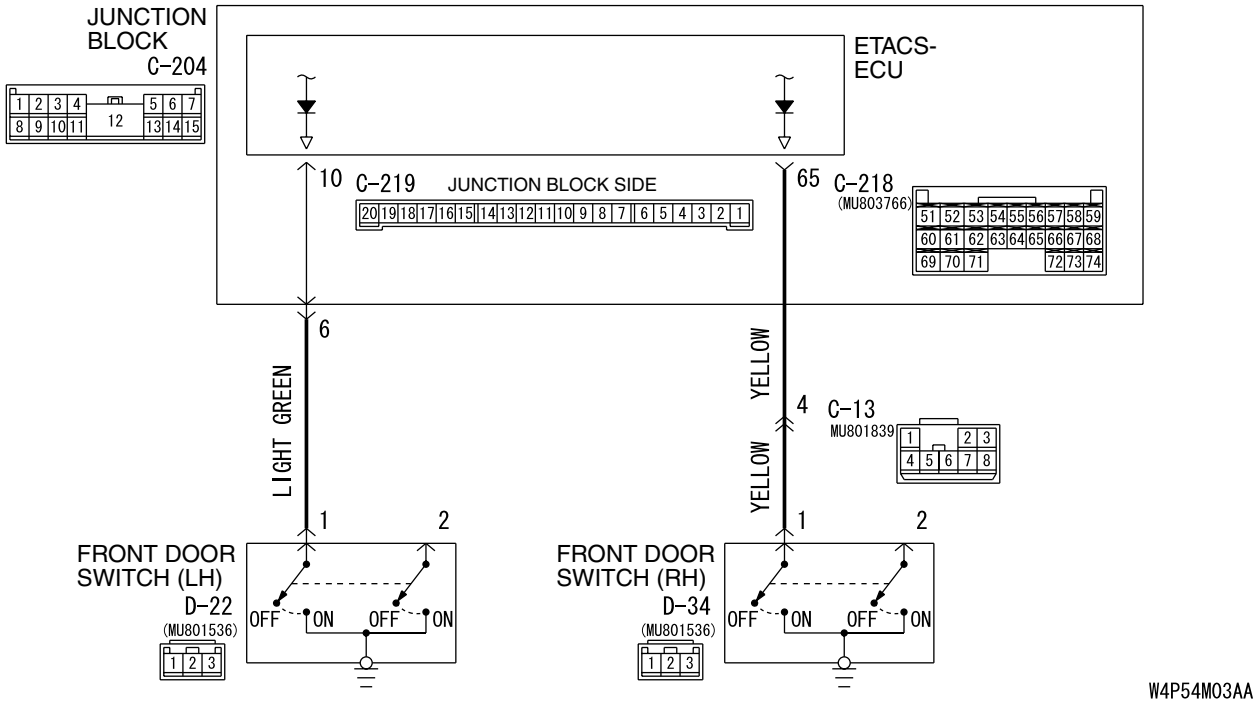
Q: Is the wiring harness between fog light switch connector C-128 (terminal 1) and ETACS-ECU connector C-218 (terminal 54) in good condition?

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-11. If the fog light switch operates normally, a correct signal is sent from the fog light switch.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the fog light switch operates normally, a correct signal is sent from the fog light switch.

INSPECTION PROCEDURE M-4: ETACS-ECU does not receive any signal from the front door switches.

Front Door Switches Input Circuit



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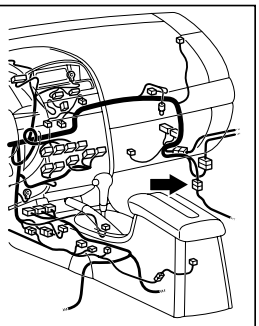
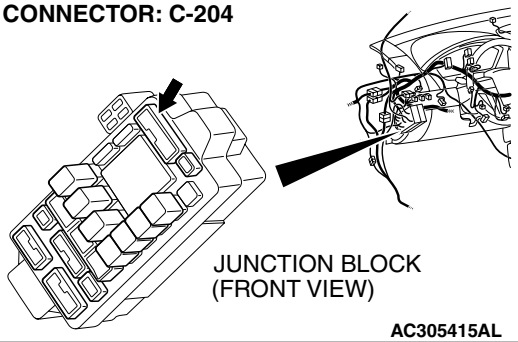
CONNECTOR: C-13



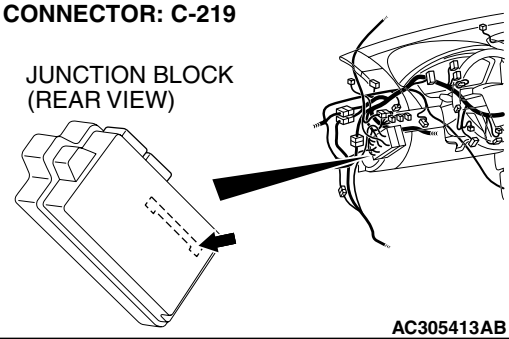
AC305233AR

CONNECTOR: C-204



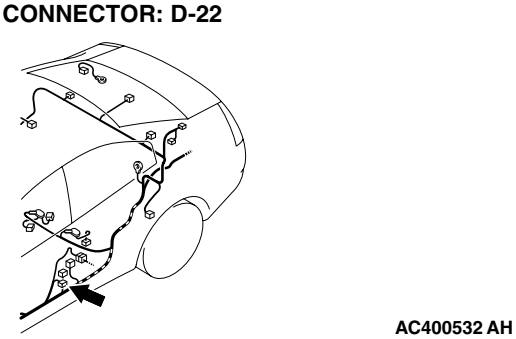
AC305415AL

CONNECTOR: C-219



AC305413AB

CONNECTOR: D-22



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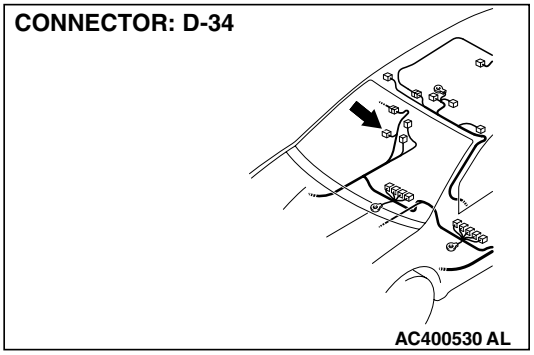


CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the front door switches:

- Ignition key reminder tone alarm function <front door switch (LH)>
- Light reminder tone alarm function <front door switch (LH)>
- Door ajar warning buzzer
- Forgotten key reminder
- Power window timer function
- Sunroof timer function <front door switch (LH)>
- Keyless entry system
- Timed locking mechanism
- Headlight automatic shutdown function <front door switch (LH)>
- Dome light
- Interior light automatic-shutdown function
- Ignition key hole illumination light <front 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 front door switches or the ETACS-ECU may be defective.

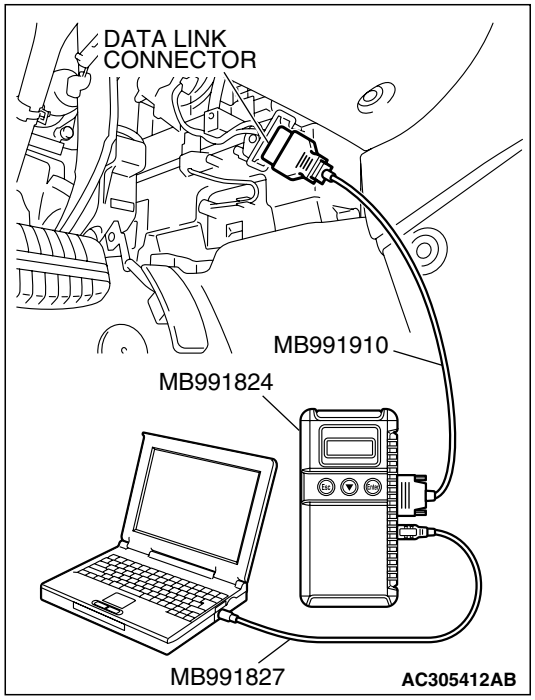
TROUBLESHOOTING HINTS

- The front door switches may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the front door switches.

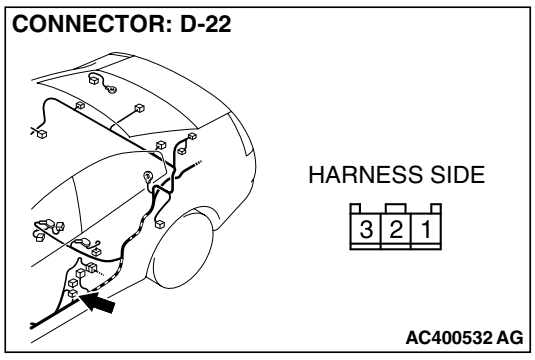
⚠ CAUTION

To prevent damage to scan tool 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-17."
(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 front door is opened and closed?

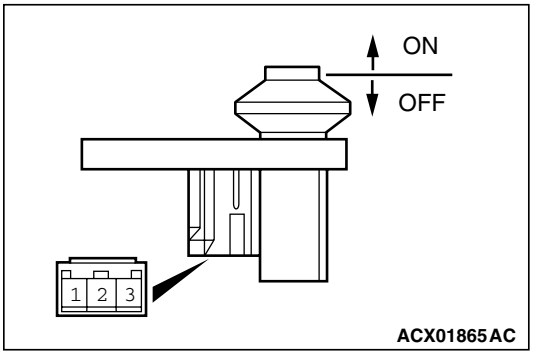
When the front door (LH) is opened and closed, scan tool MB991958 does not sound. : Go to Step 2.
When the front door (RH) is opened and closed, scan tool MB991958 does not sound. : Go to Step 7.
When either front door is opened and closed, scan tool MB991958 sounds. : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door switches should be normal.



STEP 2. Check front door switch (LH) connector D-22 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door switch (LH) connector D-22 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 front door switch (LH) should be normal.



STEP 3. Check the front door switch (LH).

Remove the front door switch (LH). Refer to GROUP 42, Door, Door Assembly P.42-36. Then check continuity between the switch terminals and the body ground.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – body ground	Less than 2 ohms
Pressed (OFF)	1 – body ground	Open circuit

Q: Is the front door switch (LH) in good condition?

YES : Go to Step 4.

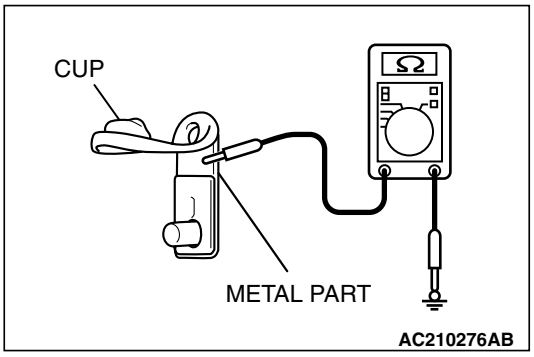
NO : Replace the front door switch (LH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door switch (LH) should be normal.

STEP 4. Measure resistance at the lower metal part of the front door switch (LH) in order to check the ground circuit to the front door switch (LH).

NOTE: Check that the front 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.

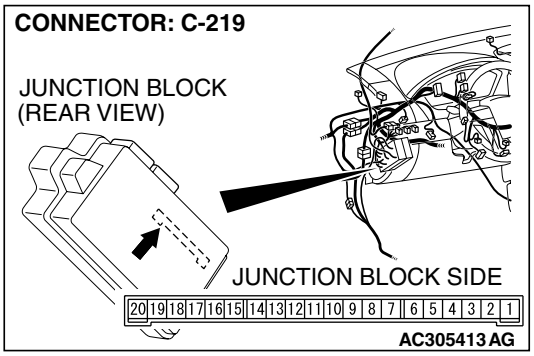
NO : Check the installation of the switch, and repair if necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door switch (LH) should be normal.

STEP 5. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

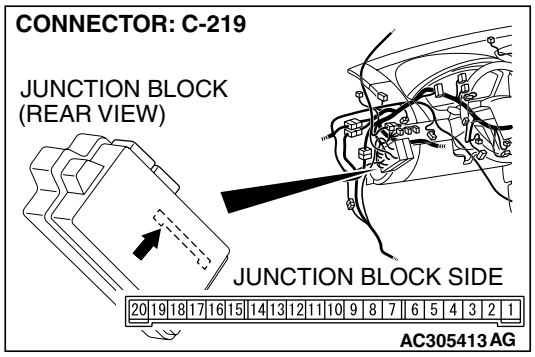
Q: Is ETACS-ECU connector C-219 in good condition?

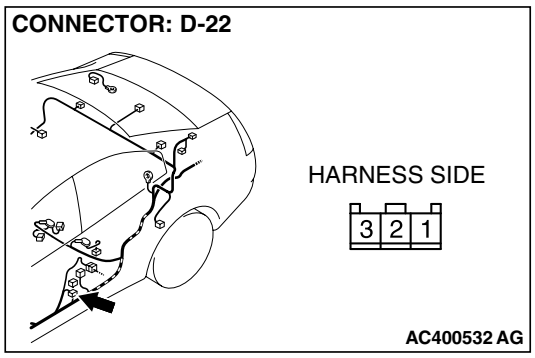
YES : Go to Step 6.

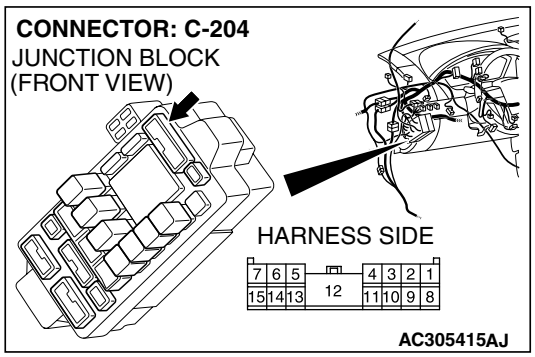
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door switch (LH) should be normal.



STEP 6. Check the wiring harness between front door switch (LH) connector D-22 (terminal 1) and ETACS-ECU connector C-219 (terminal 10).





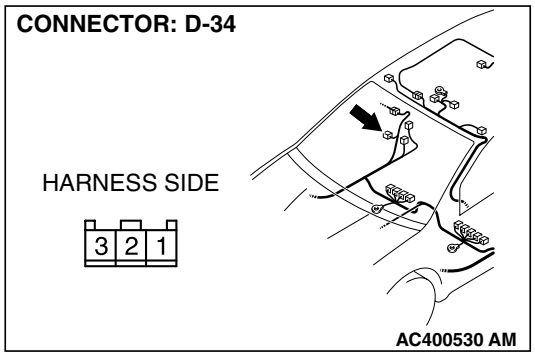


NOTE: Also check junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front door switch (LH) connector D-22 (terminal 1) and ETACS-ECU connector C-219 (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-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front 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 front door switch (LH) should be normal.

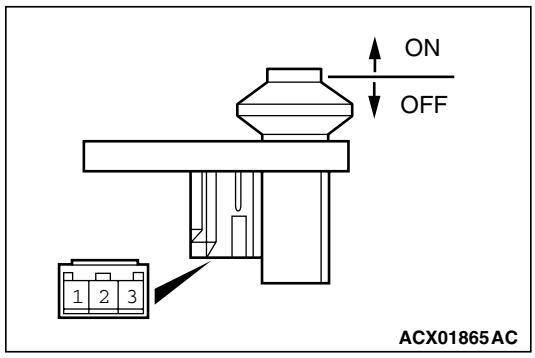


STEP 7. Check front door switch (RH) connector D-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door switch (RH) connector D-34 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 front door switch (RH) should be normal.



STEP 8. Check the front door switch (RH).

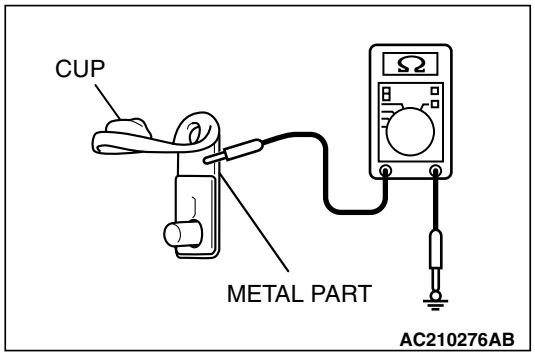
Remove the front door switch (RH). Refer to GROUP 42, Door, Door Assembly P.42-36. Then check continuity between the switch terminals and the body ground.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – body ground	Less than 2 ohms
Pressed (OFF)	1 – body ground	Open circuit

Q: Is the front door switch (RH) in good condition?

YES : Go to Step 9.

NO : Replace the front door switch (RH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door switch (RH) should be normal.



STEP 9. Measure resistance at the lower metal part of the front door switch (RH) in order to check the ground circuit to the front door switch (RH).

NOTE: Check that the front door switch (RH) is grounded to the vehicle body via its mounting screw.

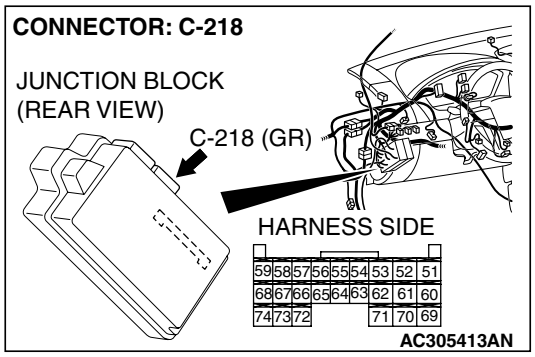
Remove the cap, and measure the resistance value between the lower metal part and ground.

- 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 front door switch (RH) should be normal.

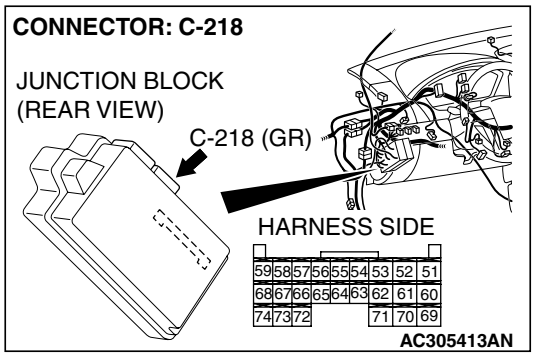


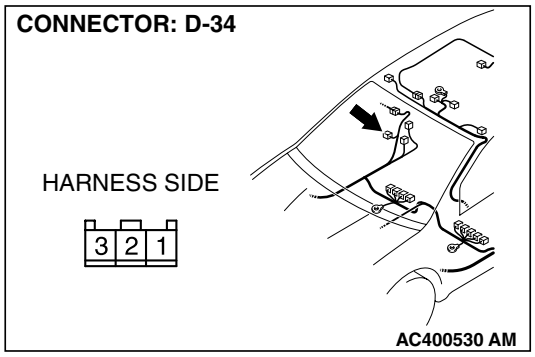
STEP 10. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-218 in good condition?

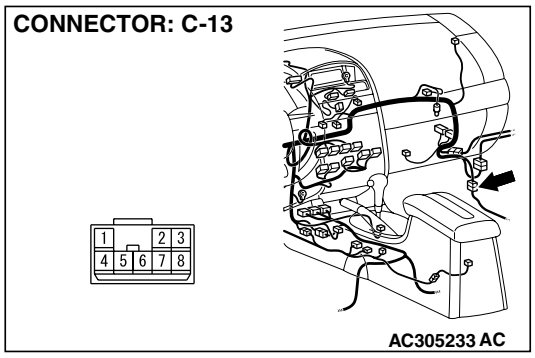
YES : Go to Step 11.

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 front door switch (RH) should be normal.





STEP 11. Check the wiring harness between front door switch (RH) connector D-34 (terminal 1) and ETACS-ECU connector C-218 (terminal 65).



NOTE: Also check intermediate connector C-13 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-13 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 door switch (RH) connector D-34 (terminal 1) and ETACS-ECU connector C-218 (terminal 65) in good condition?

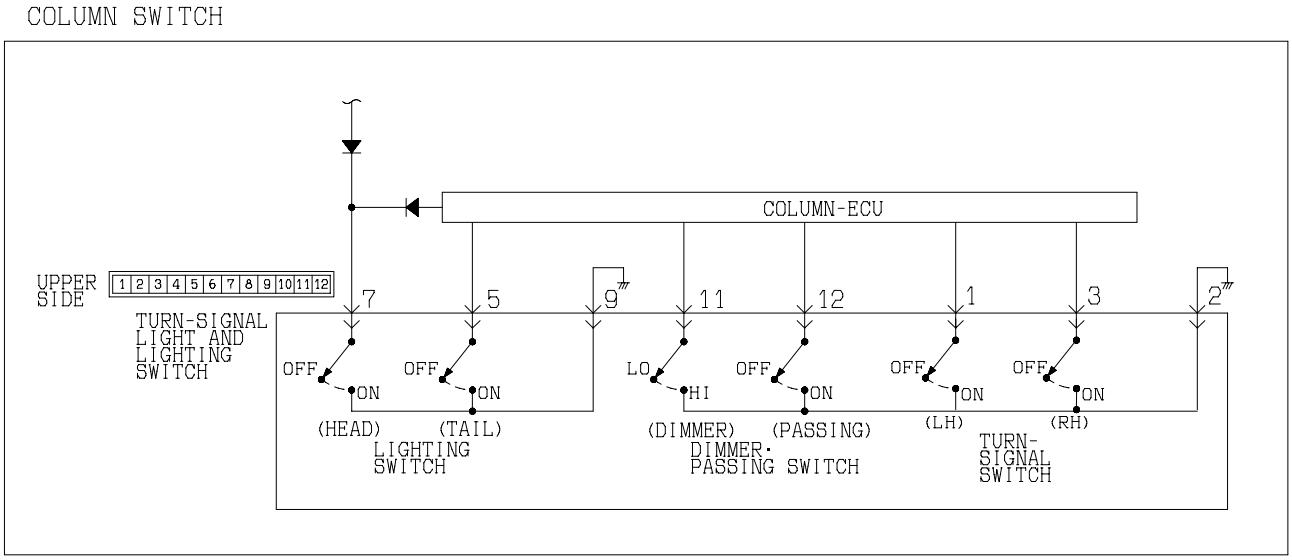
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door switch (RH) should be normal.

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 front door switch (RH) should be normal.

INSPECTION PROCEDURE M-5: 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-18."

Turn-signal Light and Lighting Switch Input Circuit



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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
- Turn-signal light buzzer
- 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.

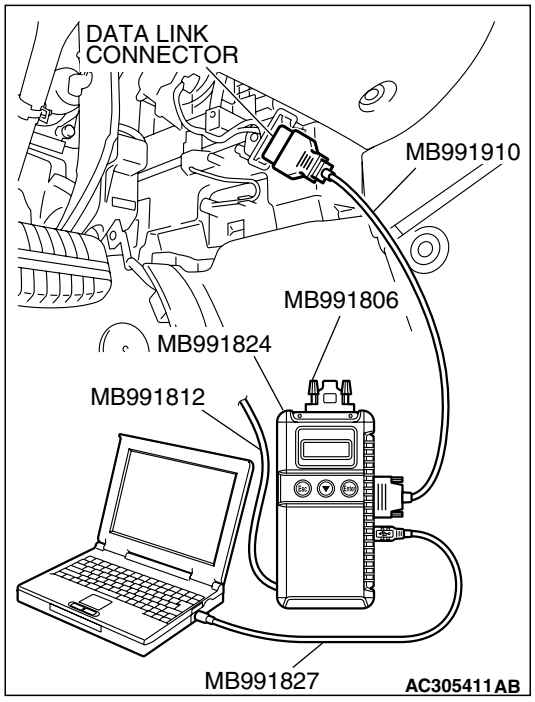
TROUBLESHOOTING HINTS

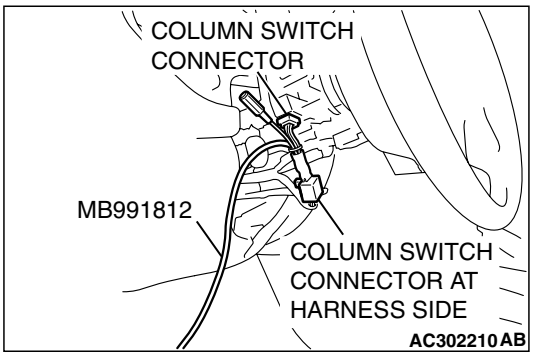
- The column switch (turn-signal light and lighting switch) may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness





STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the column-ECU.

⚠ CAUTION

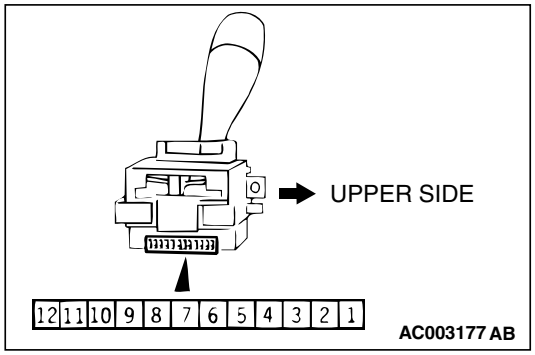
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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 (M.U.T.-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-73."



STEP 2. Check the turn-signal light and lighting switch.
Remove the turn-signal light and the lighting switch. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	1 – 2, 2 – 3, 2 – 11, 2 – 12, 5 – 9, 7 – 9	Open circuit
Taillight switch	5 – 9	Less than 2 ohms
Headlight switch	5 – 9, 7 – 9	
Passing switch	2 – 12	
Dimmer switch	2 – 11, 2 – 12	
Turn-signal light switch (LH)	1 – 2	
Turn-signal light switch (RH)	2 – 3	

Q: Are the turn-signal light and lighting switch in good condition?

YES : Go to Step 3.

NO : Replace the turn-signal light and the lighting switch. 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.

STEP 3. 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?

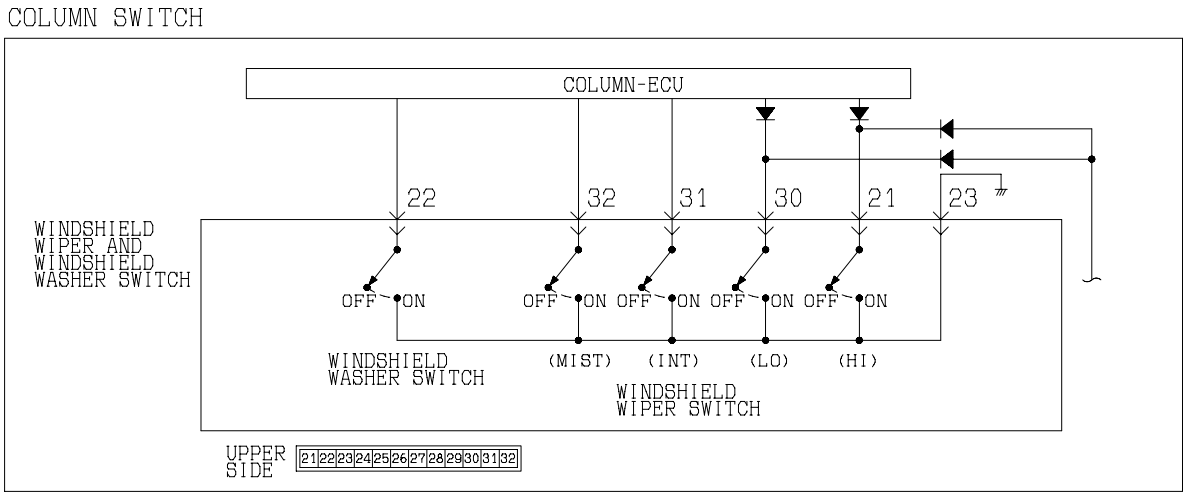
YES : No action is necessary and testing is complete.

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-11. 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-6: 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 or the windshield 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-18."

Windshield Wiper and Windshield Washer Switch Input Circuit



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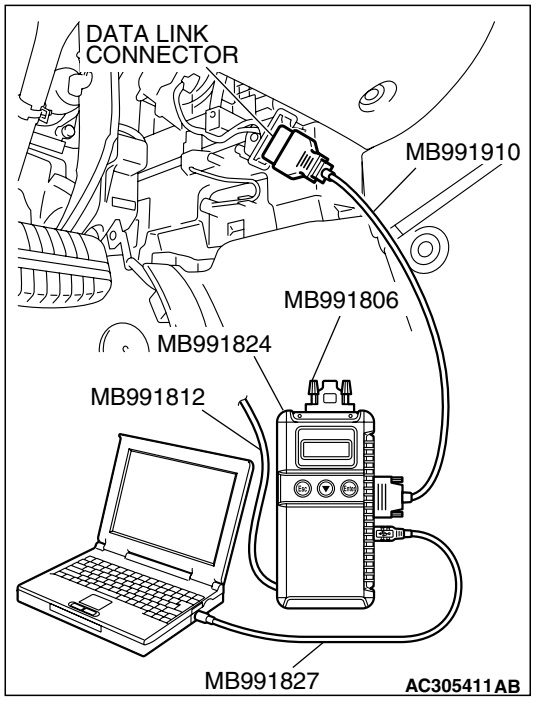
CIRCUIT OPERATION
The ETACS-ECU operates the windshield wiper and washer according to signal from the windshield wiper and washer switch.

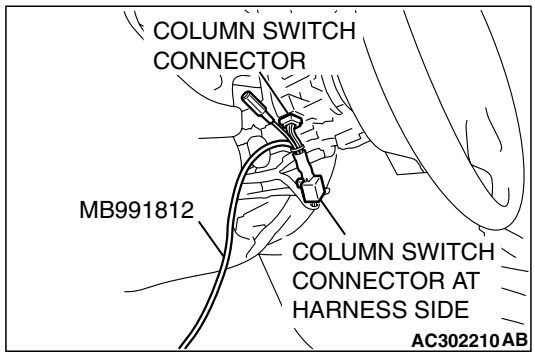
TECHNICAL DESCRIPTION (COMMENT)
If the signal is not normal, the windshield wiper and washer do not work normally.

TROUBLESHOOTING HINTS
- The column switch may be defective (windshield wiper and washer switch)
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A
- MB991813: SWS Monitor Kit
  - MB991806: SWS Monitor Cartridge
  - MB991812: SWS Monitor Harness (For Column-ECU)
  - MB991822: Probe Harness





STEP 1. Use scan tool MB991958 to select "ECU COMM Check" on the SWS monitor display.

Check the column-ECU.

⚠ CAUTION

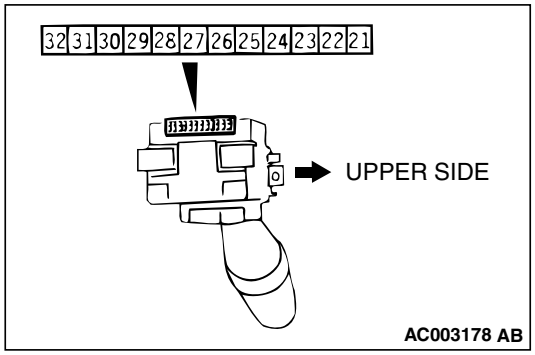
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958. Connect special tool MB991910 before connecting special tool MB991812. Be sure to connect special tool MB991806 after turning on special tool MB991824.

(1) Connect the special tool. Refer to "How to connect SWS monitor P.54B-17."
(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 (M.U.T.-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-73."



STEP 2. Check the windshield wiper and washer switch.
Remove the windshield wiper and washer switch. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	21 – 23, 22 – 23, 23 – 30, 23 – 31, 23 – 32, 25 – 26, 25 – 29	Open circuit
Windshield mist wiper switch	23 – 32	Less than 2 ohms
Windshield intermittent wiper switch	23 – 31	
Windshield low-speed wiper switch	23 – 30	
Windshield high-speed wiper switch	21 – 23	
Windshield washer switch	22 – 23	

Q: Are the windshield wiper and washer switch in good condition?

YES : Go to Step 3.

NO : Replace the windshield wiper and washer switch. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the column switch (windshield wiper and washer switch) should be normal.

STEP 3. 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 (windshield wiper and washer switch) should be normal.

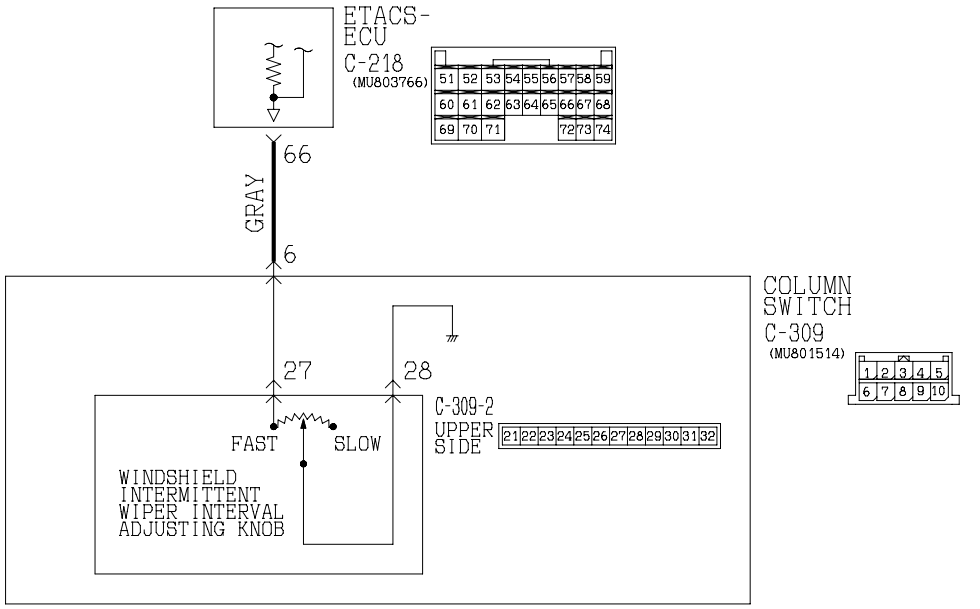
Q: Does the column switch (windshield wiper and washer switch) send a normal signal to the ECU?

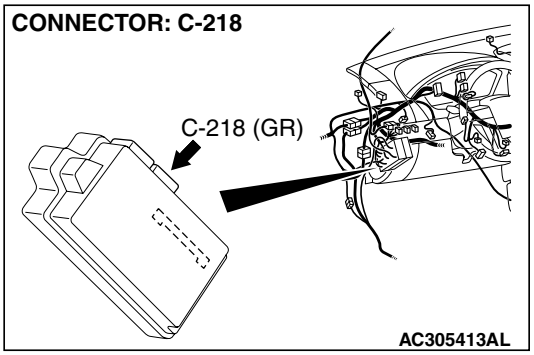
YES : No action is necessary and testing is complete.

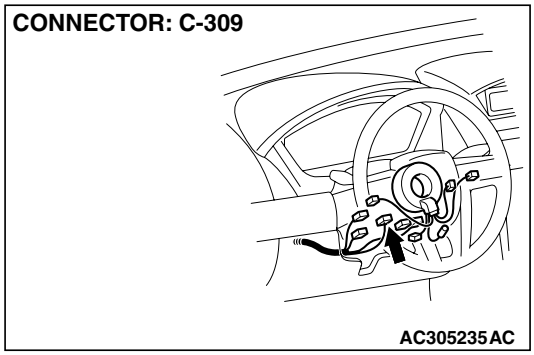
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the column switch (windshield wiper and washer switch) should be normal.

INSPECTION PROCEDURE M-7: Column Switch: ETACS-ECU does not receive any signal from the variable intermittent wiper control switch.

Windshield Intermittent Wiper Interval Adjusting Knob Input Circuit







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

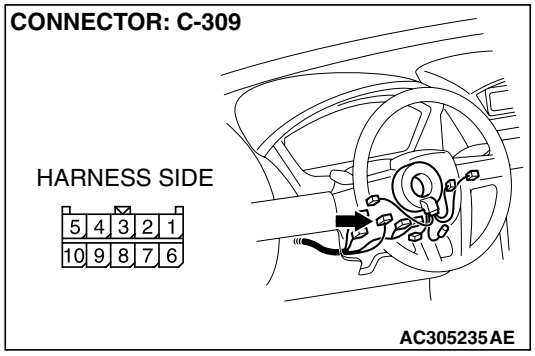
Required Special Tool:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

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.

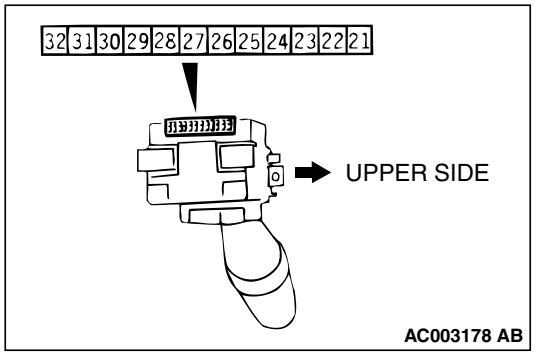
(1) Remove the windshield wiper and washer switch, and check at the switch side.

(2) Measure the resistance value between terminals 27 and 28. 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.

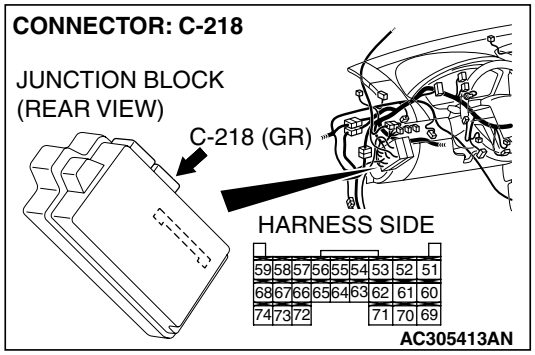


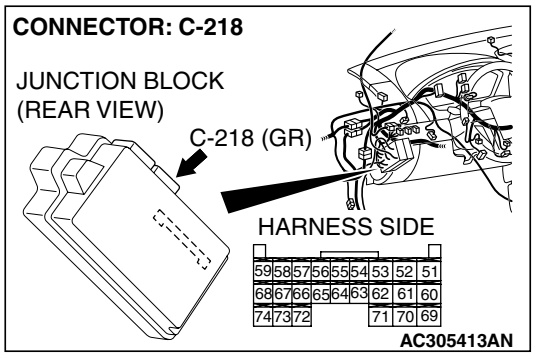
STEP 3. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

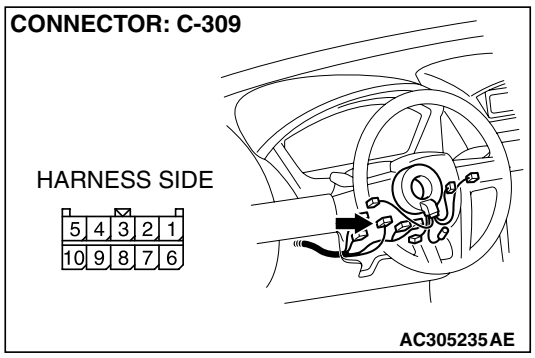
Q: Is ETACS-ECU connector C-218 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the wiper interval can be adjusted normally, that the variable intermittent wiper control switch should send a signal to the ECU.







STEP 4. 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 5.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the wiper interval can be adjusted normally, the variable intermittent wiper control switch should send a signal to the ECU.

STEP 5. 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.

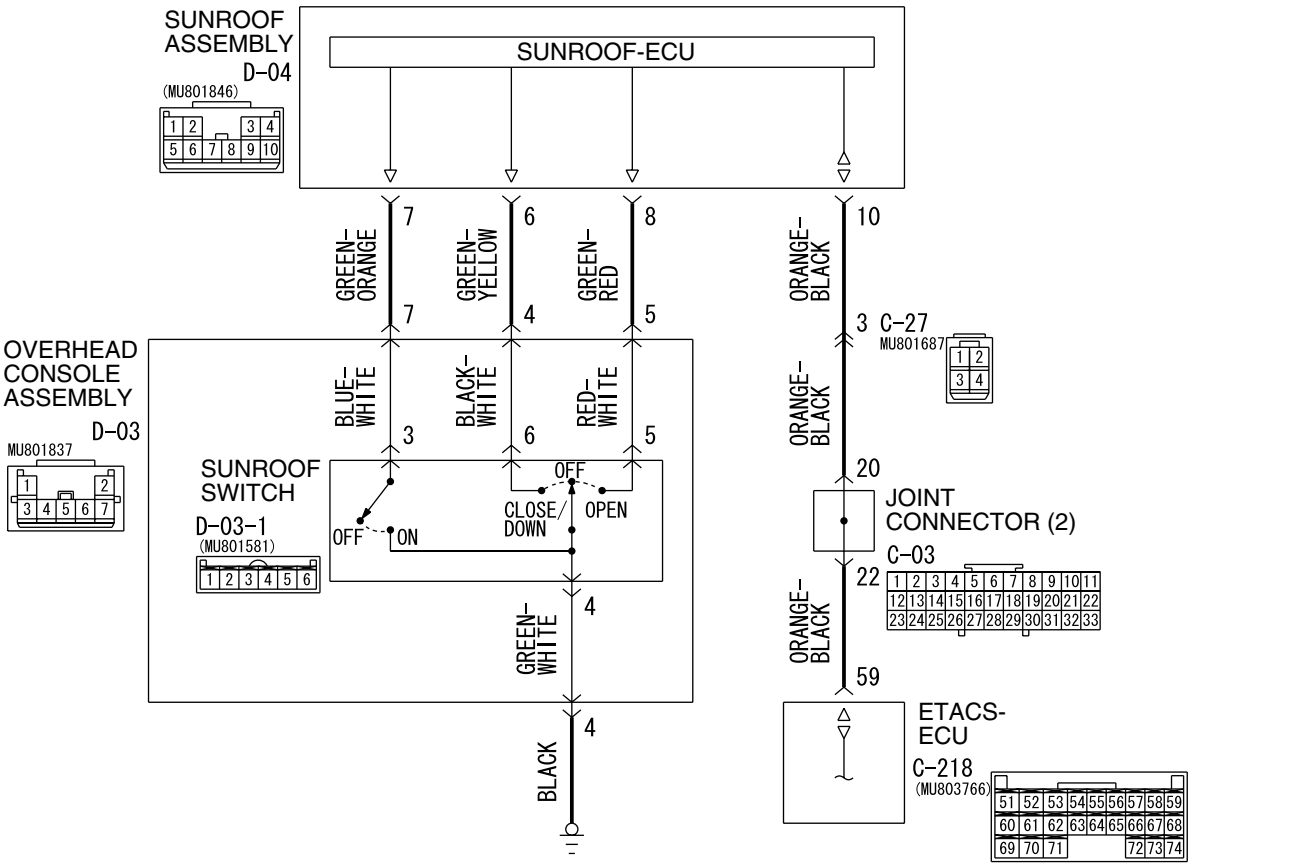
Q: Can input signal be confirmed when the variable intermittent wiper control switch is operated?

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-11. If the wiper interval can be adjusted normally, the variable intermittent wiper control switch should send a signal to the ECU.

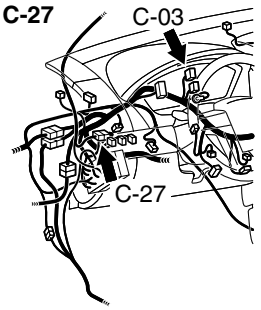
INSPECTION PROCEDURE M-8: Sunroof Switch: ETACS-ECU does not receive any signal from the up, open or close/down switch.

Sunroof Switch Input Circuit



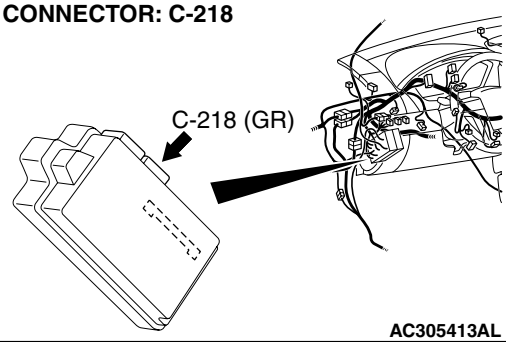
W7P54M131A

CONNECTORS: C-03, C-27



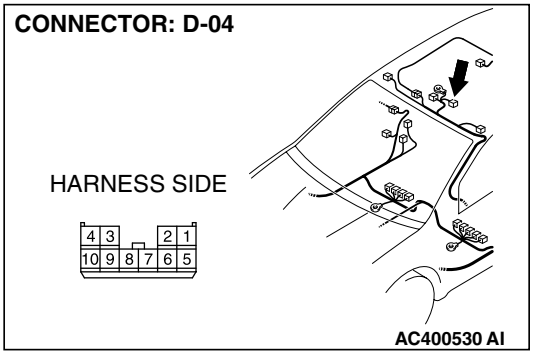
AC305231BV

CONNECTOR: C-218



AC305413AL

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: Test Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the sunroof operation.

Q: Does the sunroof work normally?

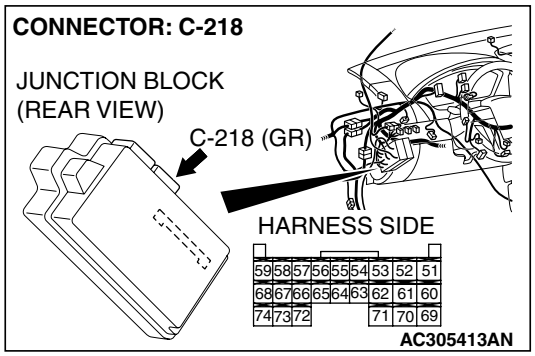
YES : Go to Step 2.
NO : Refer to Inspection Procedure F-1 "Sunroof does not operate P.54B-243."

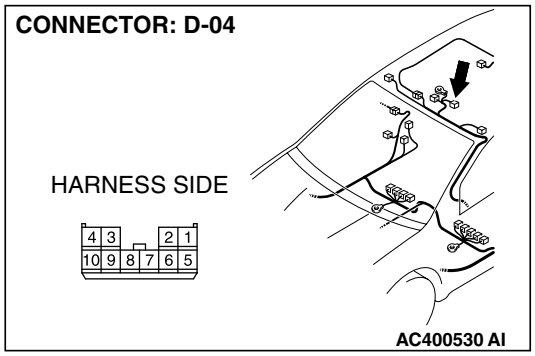
STEP 2. Check sunroof motor assembly connector D-04 and ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are sunroof motor assembly connector D-04 and ETACS-ECU connector C-218 in good condition?

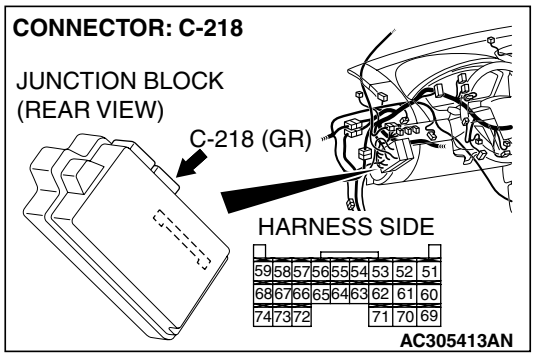
YES : Go to Step 3.

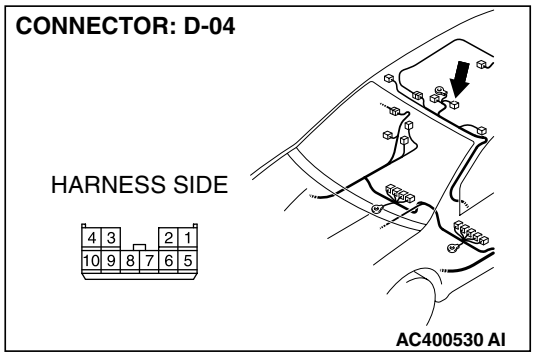
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the sunroof operates normally, a correct signal is sent from the sunroof switch.



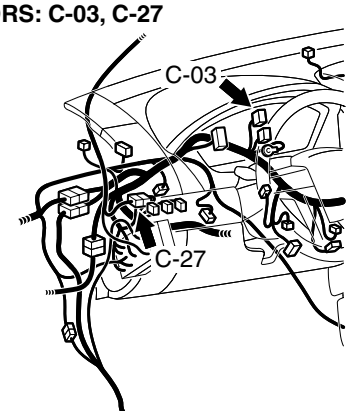


STEP 3. Check the wiring harness between sunroof motor assembly connector D-04 (terminal 10) and ETACS-ECU connector C-218 (terminal 59).

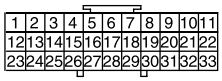




CONNECTORS: C-03, C-27



C-03 HARNESS SIDE



C-27

AC305232 AI

NOTE: Also check intermediate connector C-27 and joint connector C-03. If intermediate connector C-27 or joint connector C-03 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-04 (terminal 10) 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.

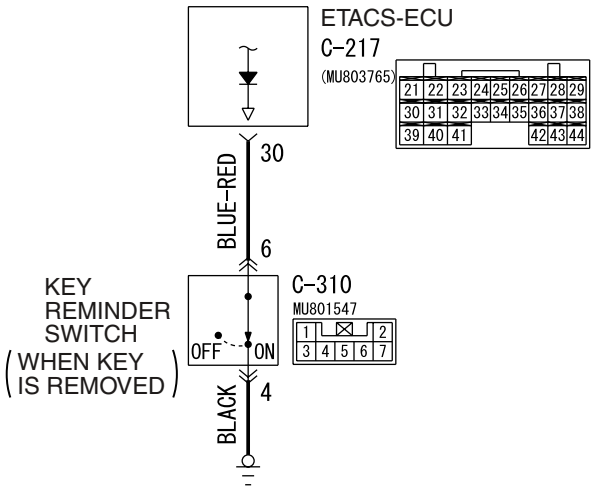
Q: Does the ETACS-ECU receive correct signals from the sunroof switch?

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-11. If the sunroof operates normally, a correct signal is sent from the sunroof switch.

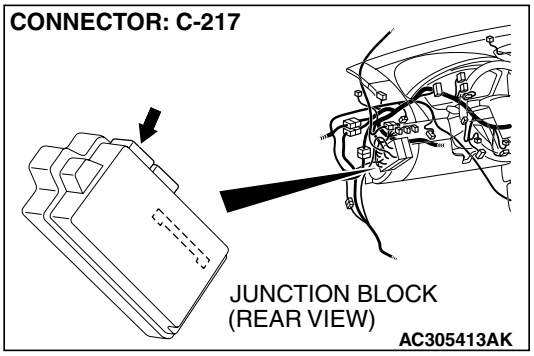
INSPECTION PROCEDURE N-1: ETACS-ECU does not receive any signal from the key reminder switch.

Key Reminder Switch Input Circuit



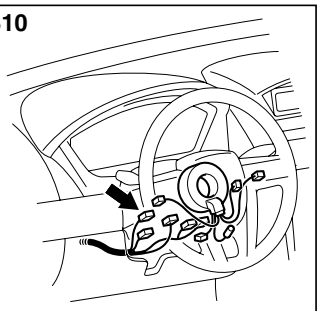
W4P54M05AA

CONNECTOR: C-217



AC305413AK

CONNECTOR: C-310



AC305235AD

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 hole illumination light

TECHNICAL DESCRIPTION (COMMENT)

If the signal is not normal, the functions or systems described in "CIRCUIT OPERATION" do not work normally.

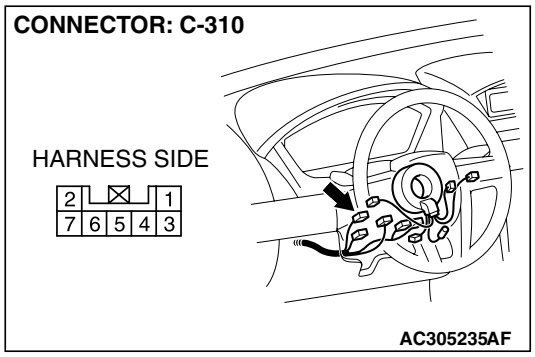
TROUBLESHOOTING HINTS

- 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

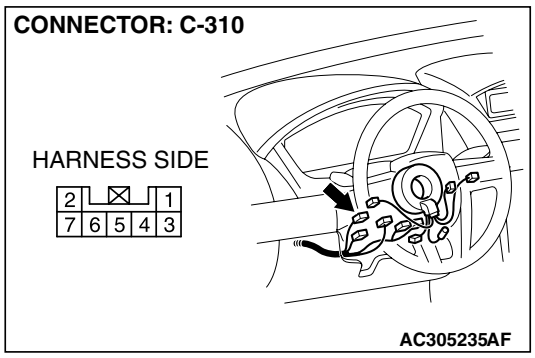


STEP 1. Check key reminder switch connector C-310 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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.

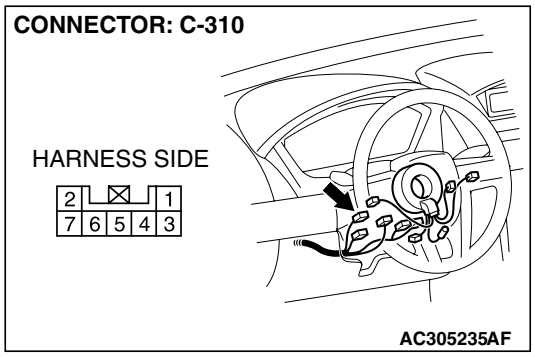
IGNITION KEY	TESTER CONNECTION	SPECIFIED CONDITION
Removed	4 – 6	Open circuit
Inserted	4 – 6	Less than 2 ohms

Q: Is the key reminder switch in good condition?

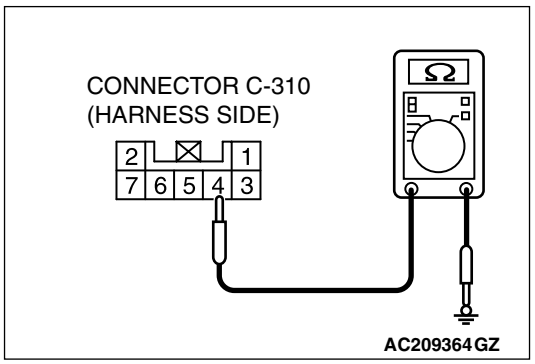
YES : Go to Step 3.

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.

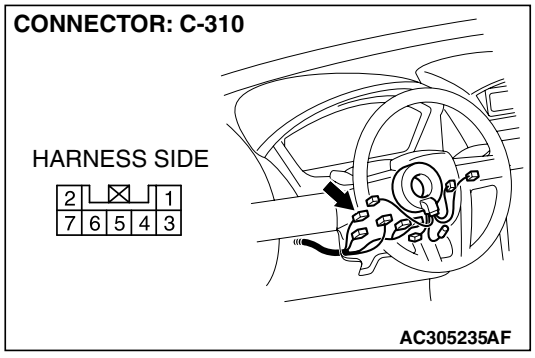


(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

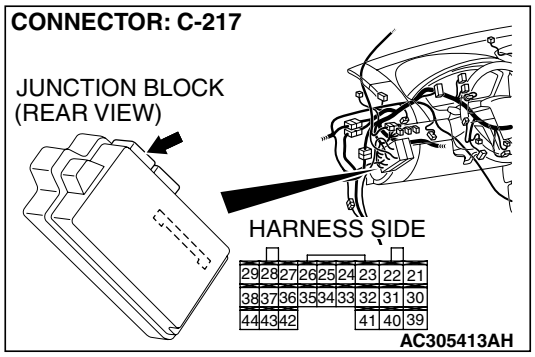
YES : Go to Step 5.
NO : Go to Step 4.

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.

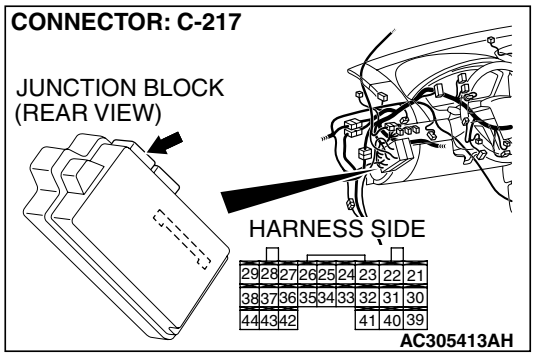


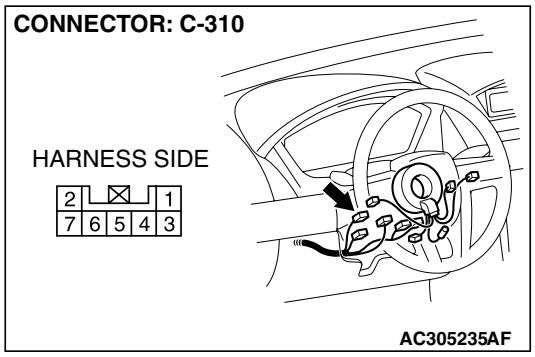
STEP 5. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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 key reminder switch should be normal.



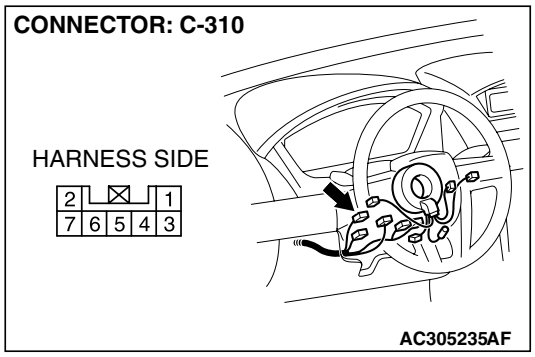


STEP 6. Check the wiring harness between key reminder switch connector C-310 (terminal 6) and ETACS-ECU connector C-217 (terminal 30).

Q: Is the wiring harness between key reminder switch connector C-310 (terminal 6) and ETACS-ECU connector C-217 (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.

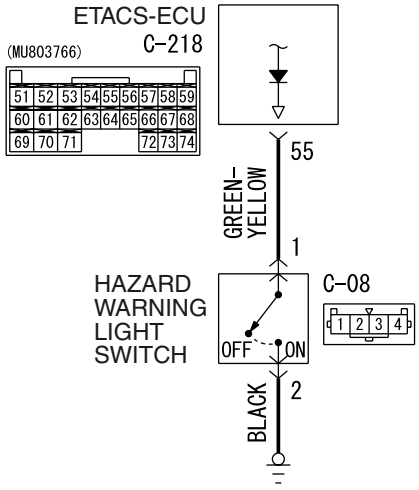
Q: Does continuity exist between the terminals?

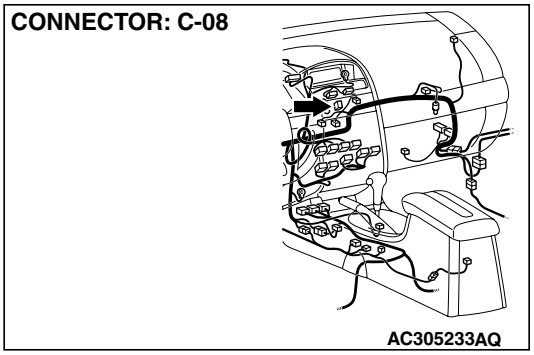
NO : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.

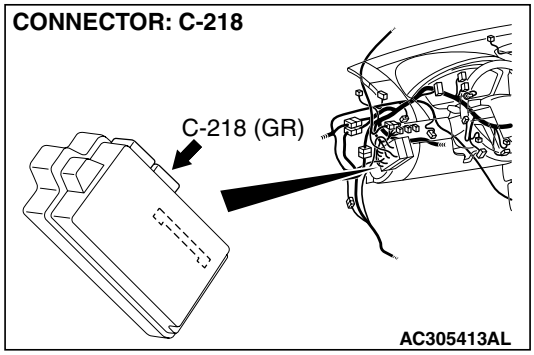
YES : Replace the key reminder switch. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the key reminder switch should be normal.

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:

- Turn-signal light buzzer
- 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:

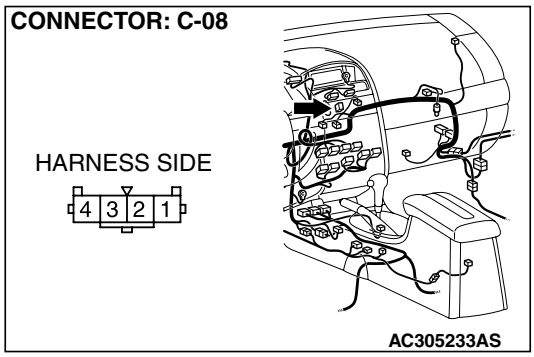
- MB991223: Harness Set
- MB992006: Extra Fine Probe

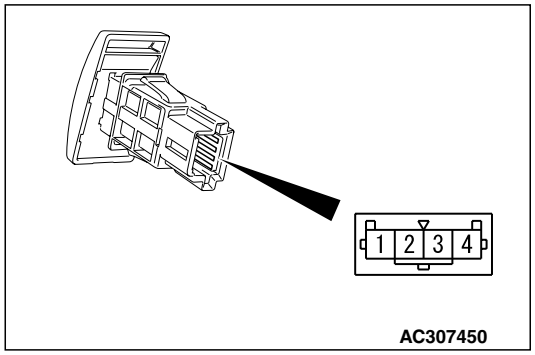
STEP 1. Check hazard warning light switch connector C-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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-143. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – 2	Open circuit
Pressed	1 – 2	Less than 2 ohms

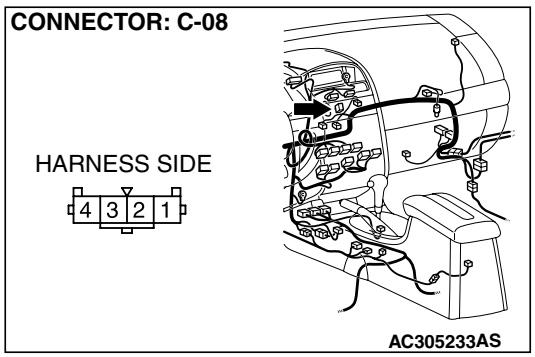
Q: Is the hazard warning light switch in good condition?

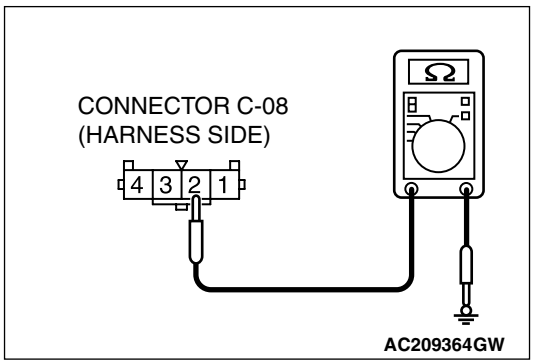
YES : Go to Step 3.

NO : Replace the hazard warning light switch. If the equipment 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.



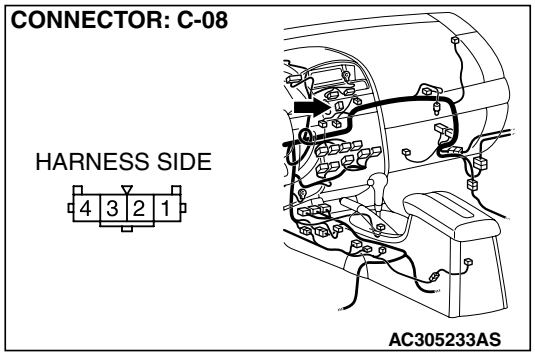


(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

NO : Go to Step 4.

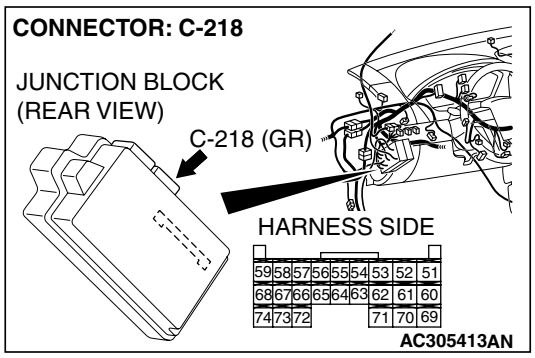


STEP 4. Check the wiring harness between hazard warning light switch connector C-08 (terminal 2) and ground.

Q: Is the 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.

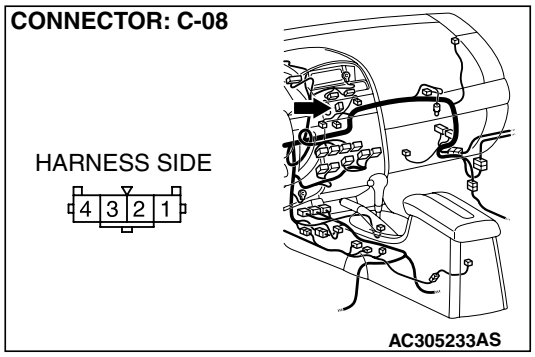


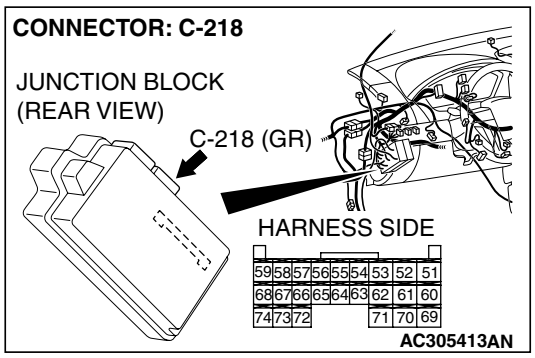
STEP 5. Check ETACS-ECU connector C-218 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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).

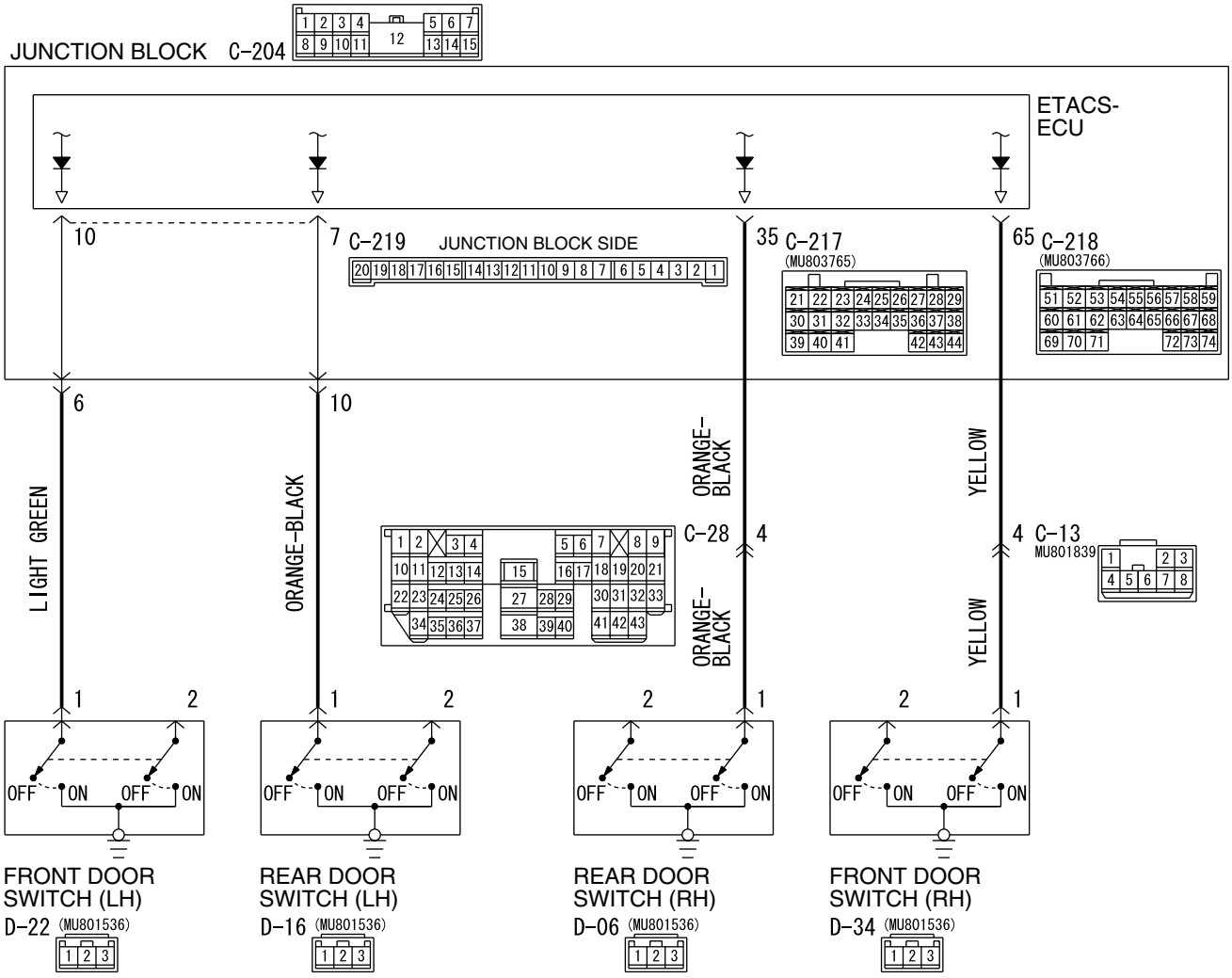
Q: Is the wiring harness between hazard warning light switch connector C-08 (terminal 1) and ETACS-ECU connector C-218 (terminal 55) in good condition?

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-11. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the hazard warning light switch should be normal.

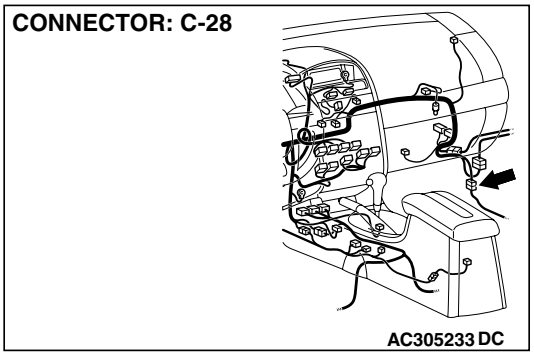
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the equipment described in "CIRCUIT OPERATION" work normally, the input signal from the hazard warning light switch should be normal.

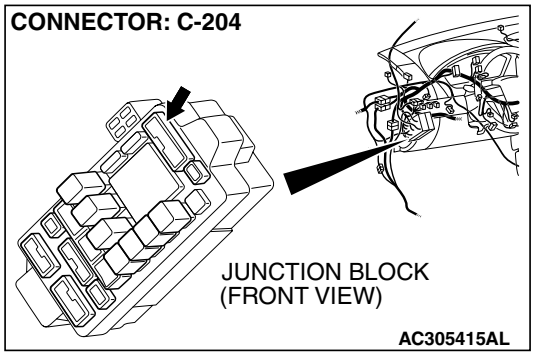
INSPECTION PROCEDURE N-3: ETACS-ECU does not receive any signal from any of the door switches.

Door Switches Input Circuit



W5P54M001A





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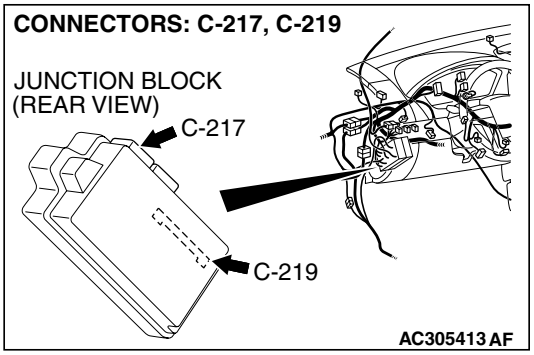
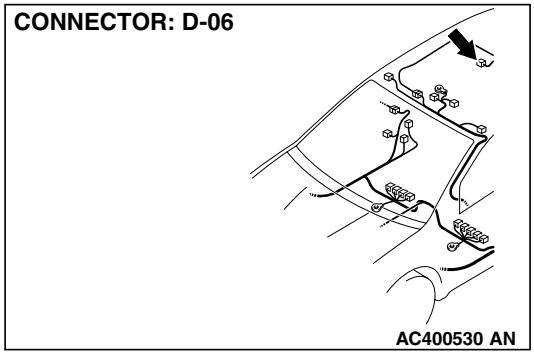
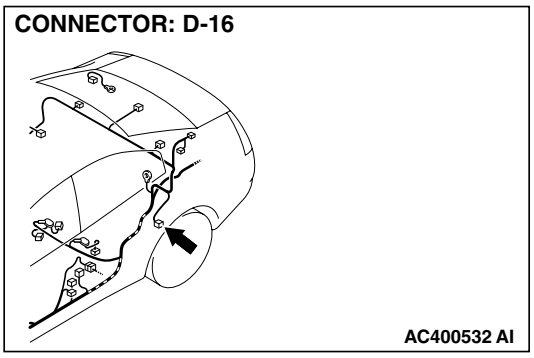






CIRCUIT OPERATION

The ETACS-ECU operates the following functions or systems according to signal from the front or rear door switches:

- Ignition key reminder tone alarm function <front door switch (LH)>
- Light reminder tone alarm function <front door switch (LH)>
- Door ajar warning buzzer <all door switches>
- Ignition key reminder tone alarm <front door switches>
- Power window timer function <front door switches>
- Sunroof timer function <front door switch (LH)>
- Headlight automatic shutdown function <front door switch (LH)>
- Keyless entry system <all door switches>
- Timer lock <all door switches>
- Dome light <all door switches>
- Interior light automatic-shutdown function <all door switches>
- Ignition key hole illumination light <front door switch (LH)>
- Door-ajar indicator light <all door switches>

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 front or rear door switches or the ETACS-ECU may be defective.

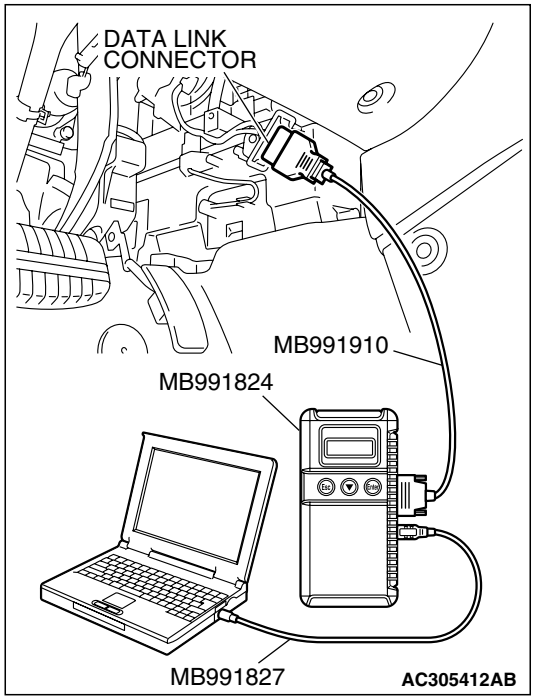
TROUBLESHOOTING HINTS

- The front or rear 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the all door switches.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

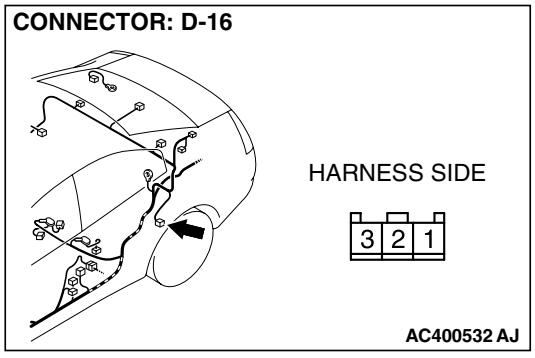
(1) Connect the scan tool MB991958. Refer to "How to connect SWS monitor P.54B-17."
(2) Operate scan tool MB991958 according to the procedure below to display "Pulse check."
  a. Select "Interactive Diagnosis."
  b. Select "System select."
  c. Select "SWS."
  d. Select "Pulse Checking."
(3) Check that scan tool MB991958 sounds.

Q: When the front and rear doors are opened/closed, does the scan tool MB991958 sound?

When the front doors are opened and closed, scan tool MB991958 does not sound. : Refer to Inspection Procedure M-4 "ETACS-ECU does not receive any signal from the front door switches P.54B-504."

When the rear door (LH) is opened and closed, scan tool MB991958 does not sound. : Go to Step 2.

When the rear door (RH) is opened and closed, scan tool MB991958 does not sound. : Go to Step 7.

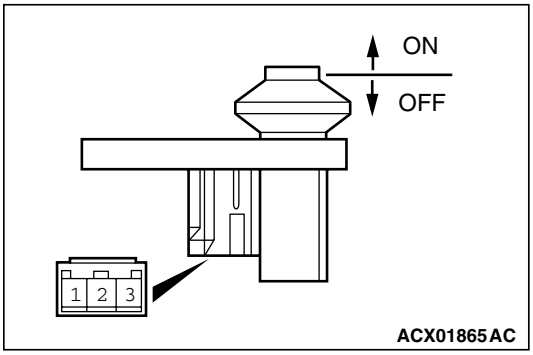


STEP 2. Check rear door switch (LH) connector D-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door switch (LH) connector D-16 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 rear door switch (LH) should be normal.



STEP 3. Check the rear door switch (LH).

Remove the rear door switch (LH). Refer to GROUP 42, Door, Door Assembly P.42-36. Then check continuity between the switch terminals and the body ground.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – body ground	Less than 2 ohms
Pressed (OFF)	1 – body ground	Open circuit

Q: Is the rear door switch (LH) in good condition?

YES : Go to Step 4.

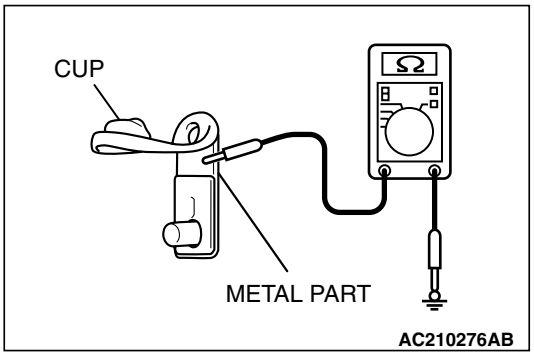
NO : Replace the rear door switch (LH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the rear door switch (LH) should be normal.

STEP 4. Measure resistance at the lower metal part of the rear door switch (LH) in order to check the ground circuit to the rear door switch (LH).

NOTE: Check that the rear door switch (LH) is grounded to the vehicle body 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.

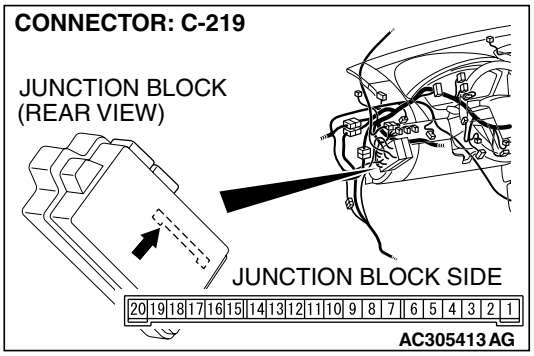
NO : Check the installation of the switch, and repair if necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the rear door switch (LH) should be normal.

STEP 5. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

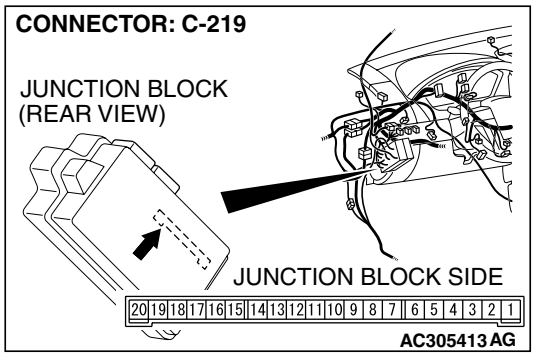
Q: Is ETACS-ECU connector C-219 in good condition?

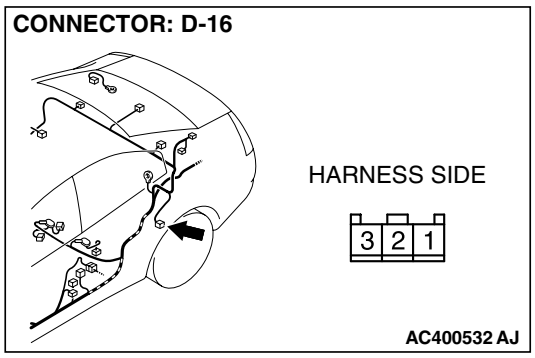
YES : Go to Step 6.

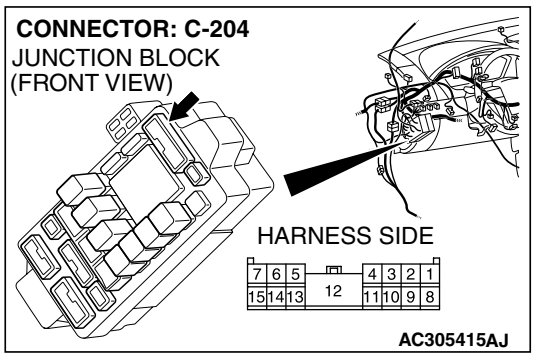
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the rear door switch (LH) should be normal.



STEP 6. Check the wiring harness between rear door switch (LH) connector D-16 (terminal 1) and ETACS-ECU connector C-219 (terminal 7).





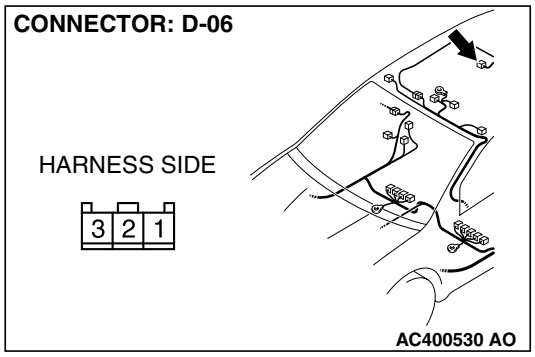


NOTE: Also check junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-204 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear door switch (LH) connector D-16 (terminal 1) and ETACS-ECU connector C-219 (terminal 7) 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-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the rear 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 rear door switch (LH) should be normal.

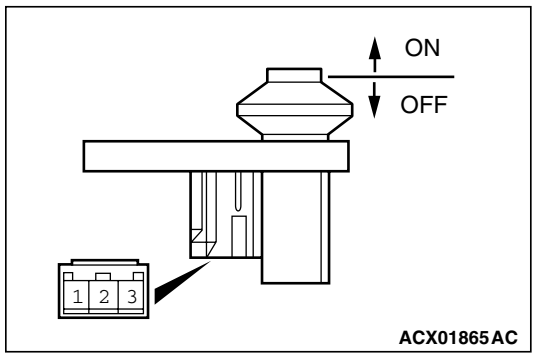


STEP 7. Check rear door switch (RH) connector D-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear door switch (RH) connector D-06 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 rear door switch (RH) should be normal.



STEP 8. Check the rear door switch (RH).

Remove the rear door switch (RH). Refer to GROUP 42, Door, Door Assembly P.42-36. Then check continuity between the switch terminals and the body ground.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released (ON)	1 – body ground	Less than 2 ohms
Pressed (OFF)	1 – body ground	Open circuit

Q: Is the rear door switch (RH) in good condition?

YES : Go to Step 9.

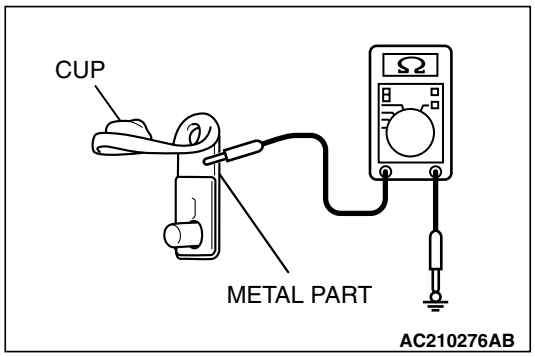
NO : Replace the rear door switch (RH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the rear door switch (RH) should be normal.

STEP 9. Measure resistance at the lower metal part of the rear door switch (RH) in order to check the ground circuit to the rear door switch (RH).

NOTE: Check that the rear 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.

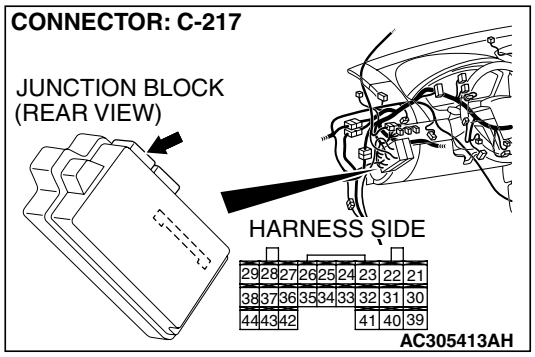
- The resistance should be 2 ohms or less.



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 rear door switch (RH) should be normal.

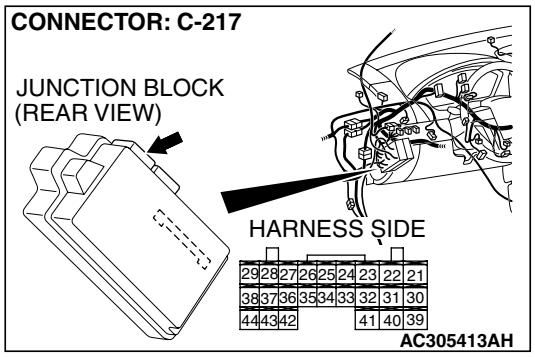


STEP 10. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

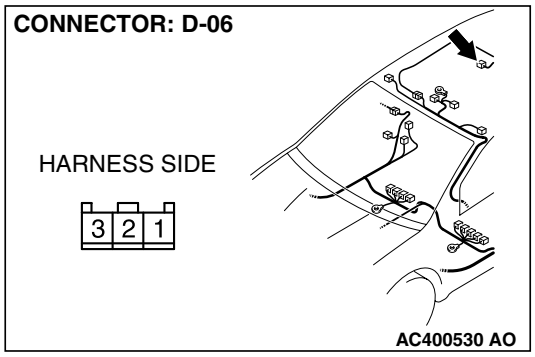
Q: Is ETACS-ECU connector C-217 in good condition?

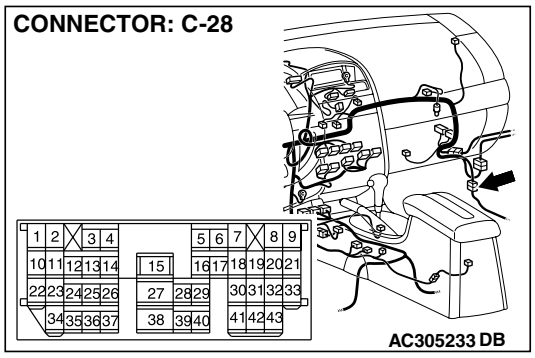
YES : Go to Step 11.

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 rear door switch (RH) should be normal.



STEP 11. Check the wiring harness between rear door switch (RH) connector D-06 (terminal 1) and ETACS-ECU connector C-217 (terminal 35).





NOTE: Also check intermediate connector C-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-28 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

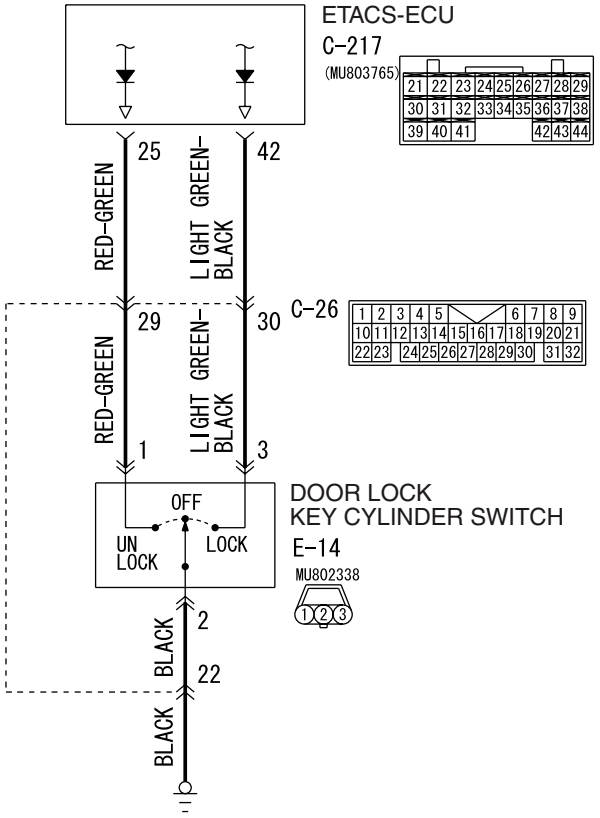
Q: Is the wiring harness between rear door switch (RH) connector D-06 (terminal 1) and ETACS-ECU connector C-217 (terminal 35) in good condition?

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-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the rear 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 rear door switch (RH) should be normal.

INSPECTION PROCEDURE N-4: ETACS-ECU does not receive any signal from the door lock key cylinder switch.

Door Lock Key Cylinder Switch Input Circuit



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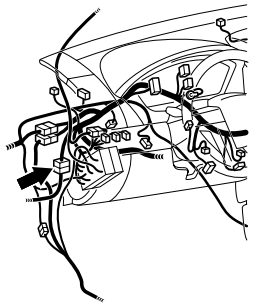
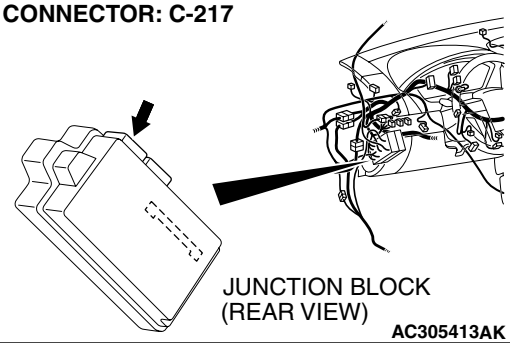
CONNECTOR: C-26



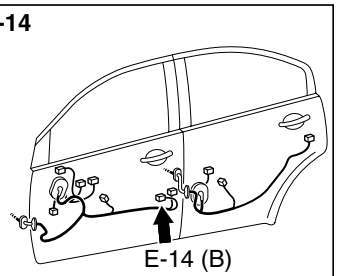
AC305231AL

CONNECTOR: C-217



AC305413AK

CONNECTOR: E-14



AC305262AL

TSB Revision

CIRCUIT OPERATION
The ETACS-ECU operates the central door locking system according to signal from the door lock key cylinder switch.

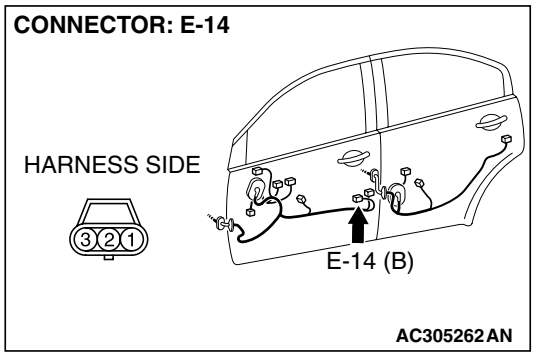
TECHNICAL DESCRIPTION (COMMENT)
If the signal is not normal, the systems, which are described in "CIRCUIT OPERATION", do not work normally.

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-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



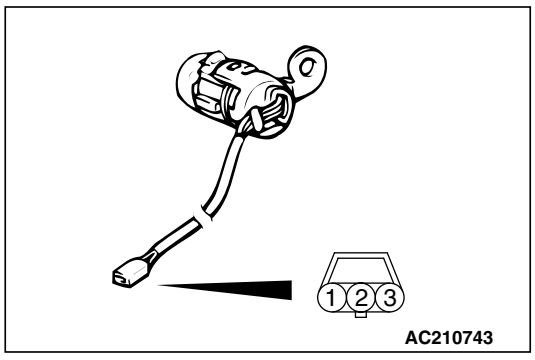
Q: Is door lock key cylinder switch connector E-14 in good condition?

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.

Disconnect door lock key cylinder switch connector E-14. Then check continuity between the switch terminals.



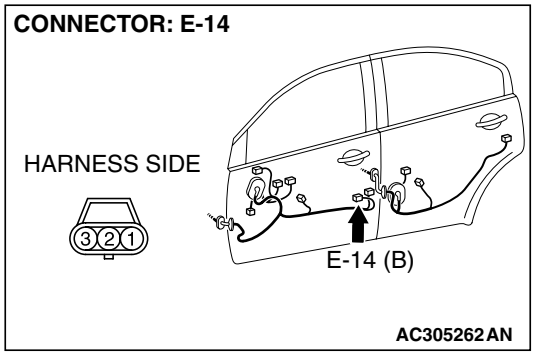
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
LOCK	2 – 3	Less than 2 ohms
Neutral (OFF)	1 – 2, 2 – 3	Open circuit
UNLOCK	1 – 2	Less than 2 ohms

Q: Is the door lock key cylinder switch in good condition?

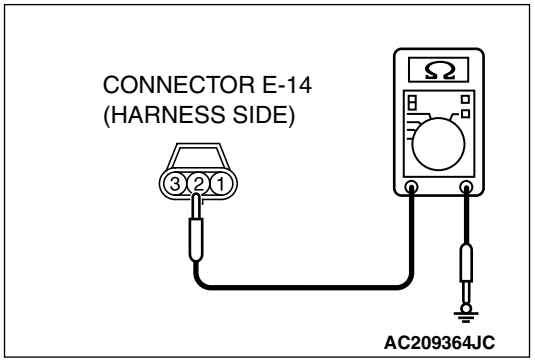
YES : Go to Step 3.

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-14.



(1) Disconnect door lock key cylinder switch connector E-14 and measure the resistance available at the wiring harness side of the connector.

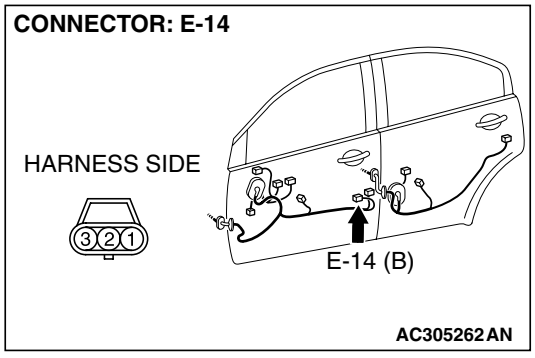


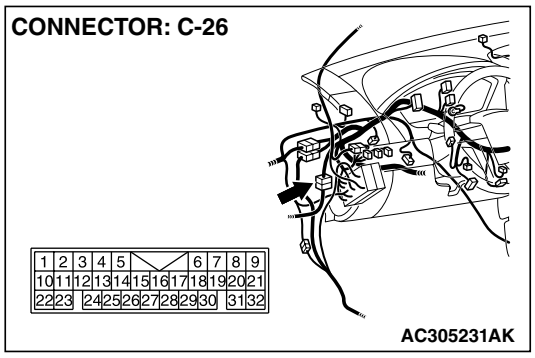
(2) Measure the resistance value between terminal 2 and ground.
- The resistance should be 2 ohms or less.

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-14 (terminal 2) and ground.





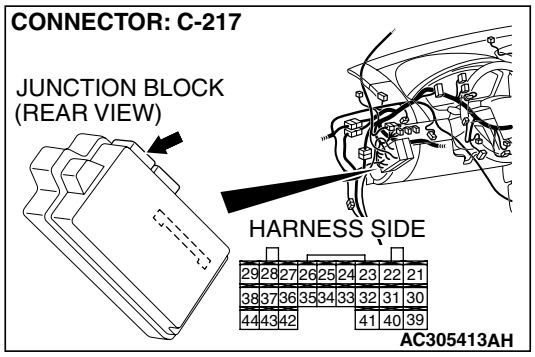
NOTE: Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between door lock key cylinder switch connector E-14 (terminals 2) and ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the systems 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-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

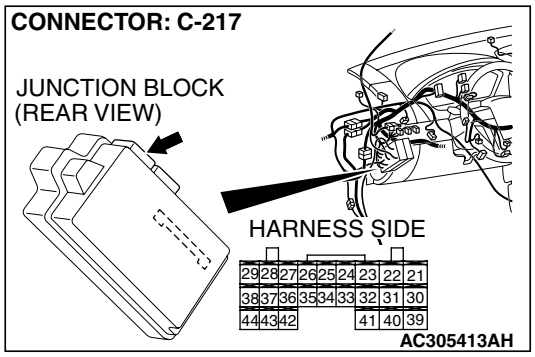


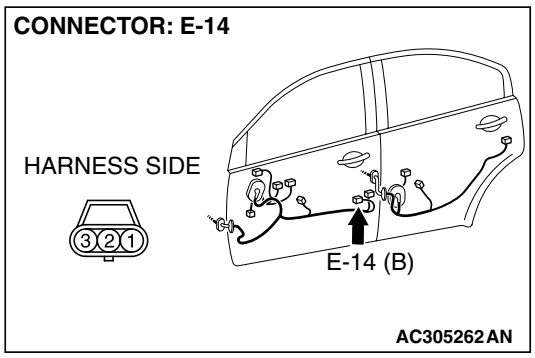
Q: Is ETACS-ECU connector C-217 in good condition?

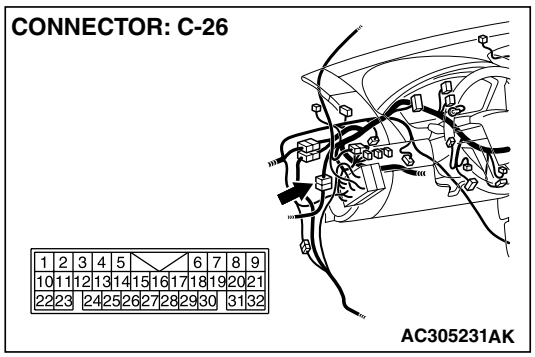
YES : Go to Step 6.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the 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-14 (terminals 1 and 3) and ETACS-ECU connector C-217 (terminals 25 and 42).







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 connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

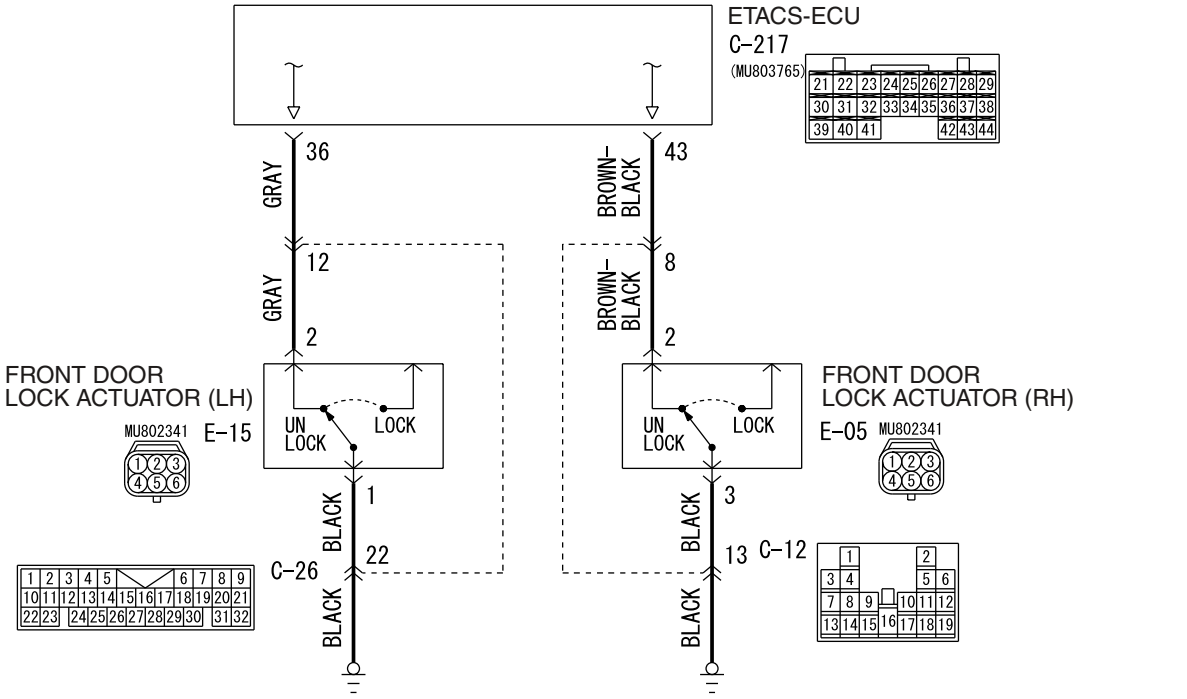
Q: Is the wiring harness between door lock key cylinder switch connector E-14 (terminals 1 and 3) and ETACS-ECU connector C-217 (terminals 25 and 42) in good condition?

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-11. 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.

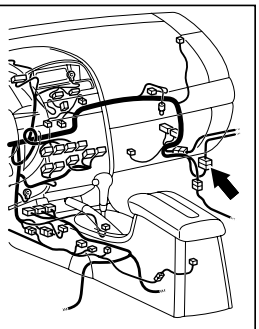
INSPECTION PROCEDURE N-5: ETACS-ECU does not receive any signal from the front door lock actuator.

Door Lock Actuator Input Circuit



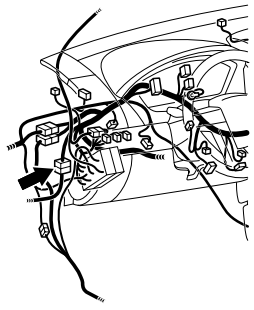
W4P54M09AA

CONNECTOR: C-12



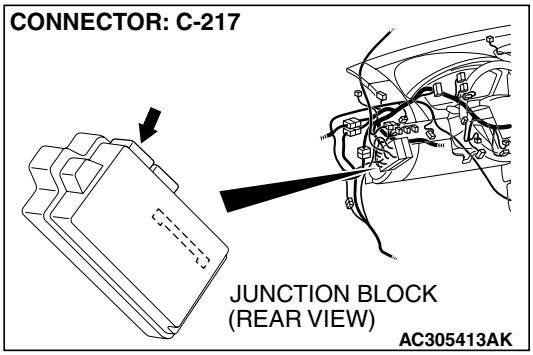
AC305233AE

CONNECTOR: C-26



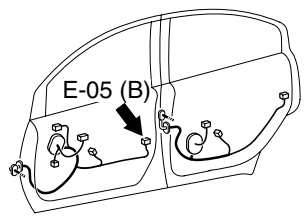
AC305231AL

CONNECTOR: C-217



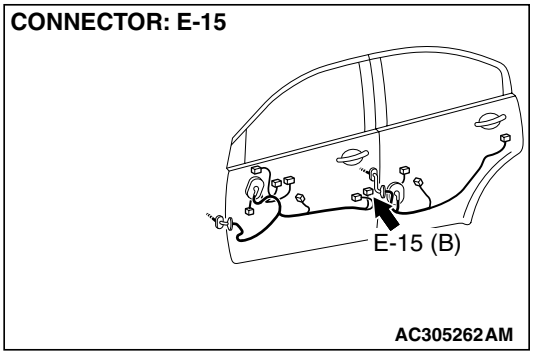
AC305413AK

CONNECTOR: E-05



AC305333AG

TSB Revision



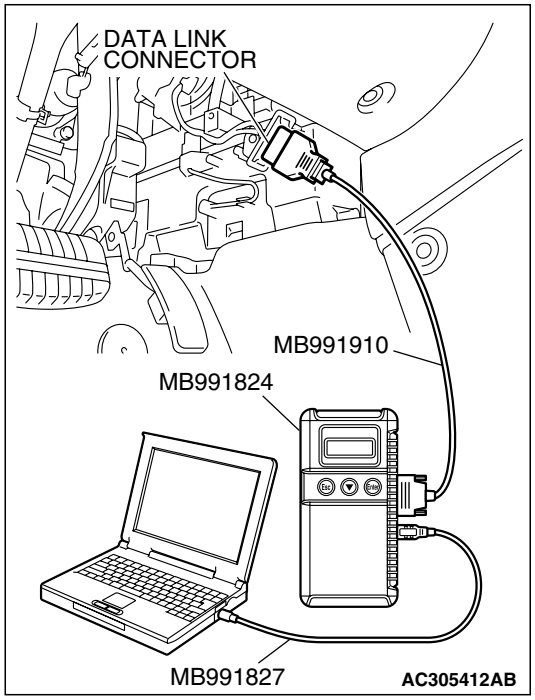
CIRCUIT OPERATION
The ETACS-ECU operates the following functions or systems according to signal from the front door lock actuator:
- Central door locking system
- Ignition key reminder tone alarm
- Keyless entry system
- Dome light <front door lock actuator (LH)>

TECHNICAL DESCRIPTION (COMMENT)
If the signal is not normal, the functions or systems described in "CIRCUIT OPERATION" do not work normally.

TROUBLESHOOTING HINTS
- The front 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the front door lock actuators.

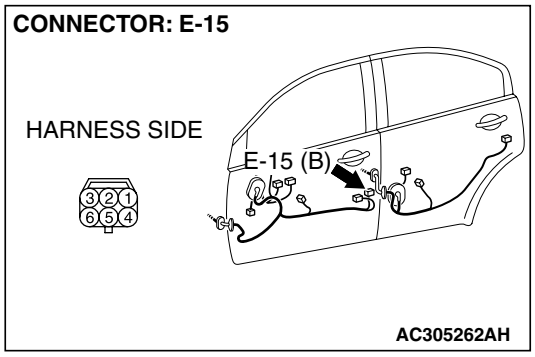
⚠ CAUTION

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-17."
(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 front door lock actuators are operated, does the scan tool MB991958 sound?

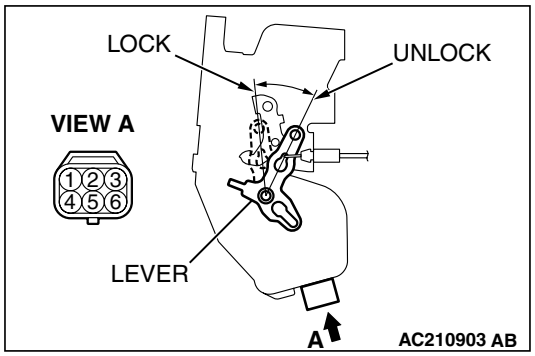
When the front door lock actuator (LH) is operated, the scan tool MB991958 does not sound. : Go to Step 2.
When the front door lock actuator (RH) is operated, the scan tool MB991958 does not sound. : Go to Step 8.



STEP 2. Check front door lock actuator (LH) connector E-15 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front door lock actuator (LH) connector E-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 front door lock actuator (LH) should be normal.



STEP 3. Check the front door lock actuator (LH).

Disconnect front door lock actuator (LH) connector E-15. Then check continuity between the terminals.

LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UNLOCK	1 – 2	Less than 2 ohms
LOCK	1 – 2	Open circuit

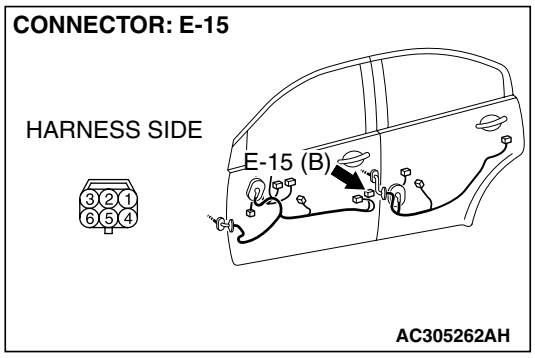
Q: Is the front door lock actuator (LH) in good condition?

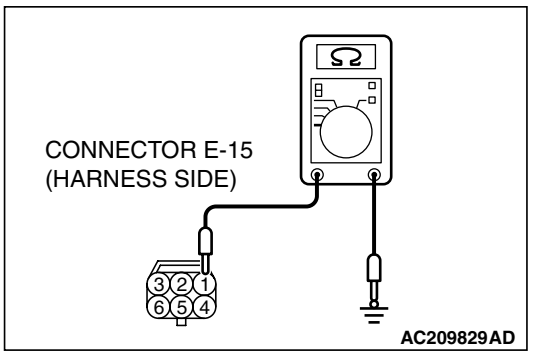
YES : Go to Step 4.

NO : Replace the front door lock actuator (LH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door lock actuator (LH) should be normal.

STEP 4. Check the ground circuit to the front door lock actuator (LH). Measure the resistance at front door lock actuator (LH) connector E-15.

(1) Disconnect front door lock actuator (LH) connector E-15 and measure the resistance available at the wiring harness side of the connector.





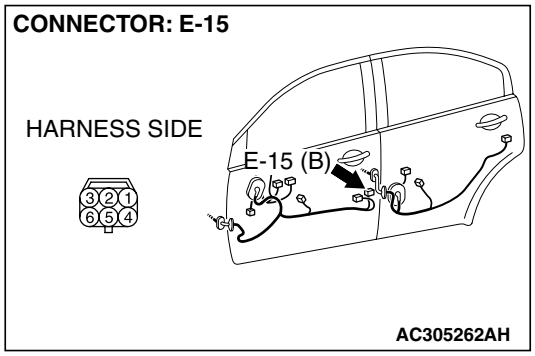
(2) Measure the resistance value between terminal 1 and ground.
- The resistance should be 2 ohms or less.

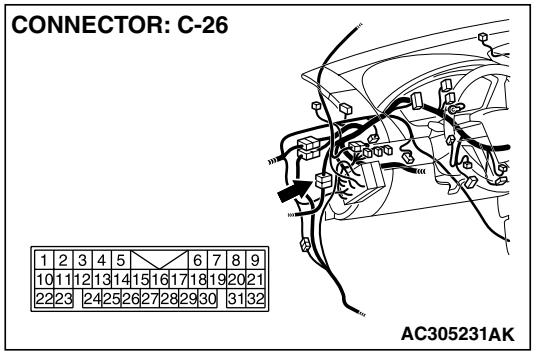
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between front door lock actuator (LH) connector E-15 (terminal 1) and ground.





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 connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front door lock actuator (LH) connector E-15 (terminal 1) and ground in good condition?

YES : No action is necessary and testing is complete.

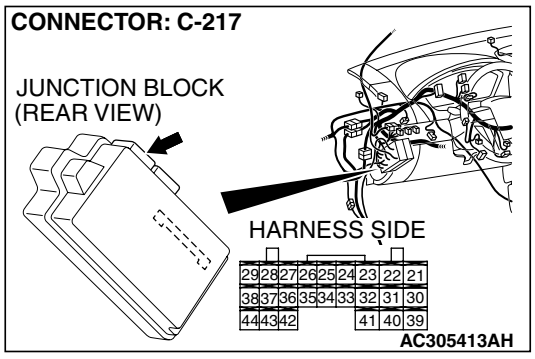
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door lock actuator (LH) should be normal.

STEP 6. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

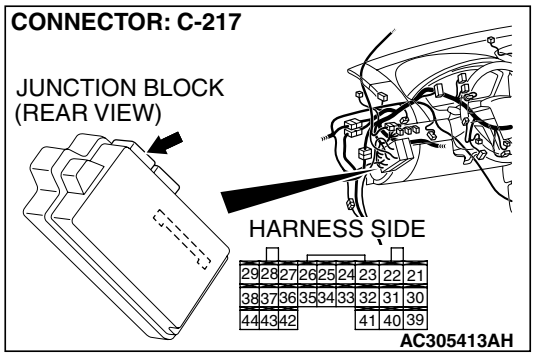
Q: Is ETACS-ECU connector C-217 in good condition?

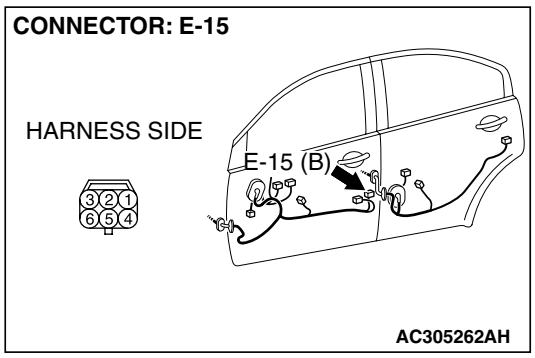
YES : Go to Step 7.

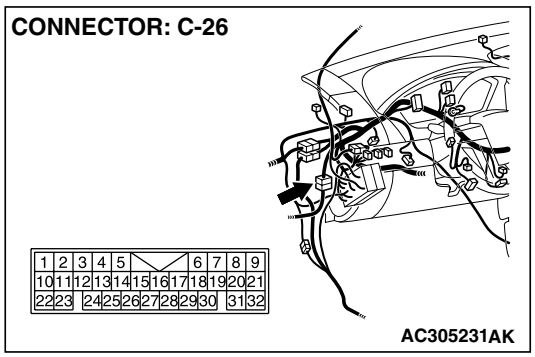
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door lock actuator (LH) should be normal.



STEP 7. Check the wiring harness between front door lock actuator (LH) connector E-15 (terminal 2) and ETACS-ECU connector C-217 (terminal 36).





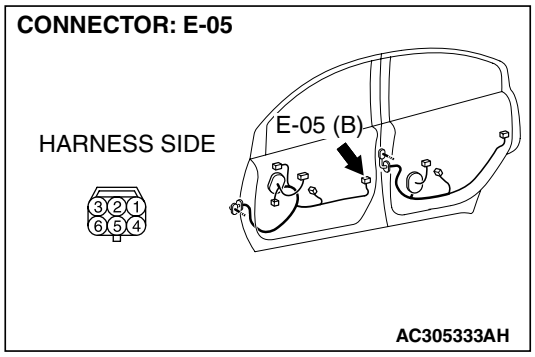


NOTE: Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front door lock actuator (LH) connector E-15 (terminal 2) and ETACS-ECU connector C-217 (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-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front 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 front door lock actuator (LH) should be normal.

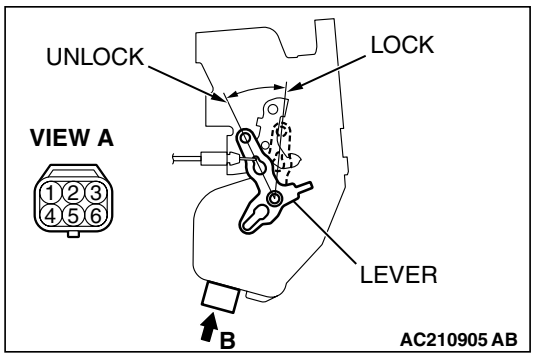


STEP 8. Check front door lock actuator (RH) connector E-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front 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 front door lock actuator (RH) should be normal.



STEP 9. Check the front door lock actuator (RH).

Disconnect front door lock actuator (RH) connector E-05. Then check continuity between the terminals.

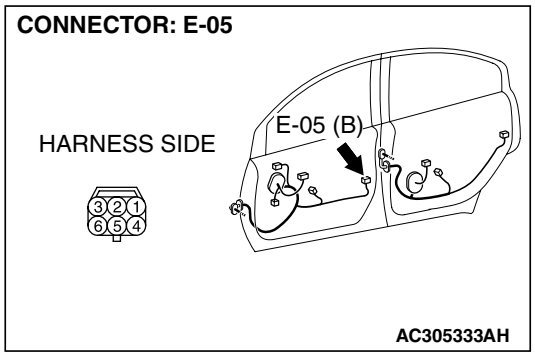
LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
UNLOCK	2 – 3	Less than 2 ohms
LOCK	2 – 3	Open circuit

Q: Is the front door lock actuator (RH) in good condition?

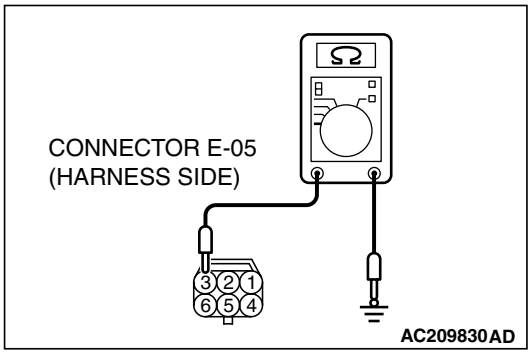
YES : Go to Step 10.

NO : Replace the front door lock actuator (RH). If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door lock actuator (RH) should be normal.

STEP 10. Check the ground circuit to the front door lock actuator (RH). Measure the resistance at front door lock actuator (RH) connector E-05.



(1) Disconnect front door lock actuator (RH) connector E-05 and measure the resistance available at the wiring harness side of the connector.

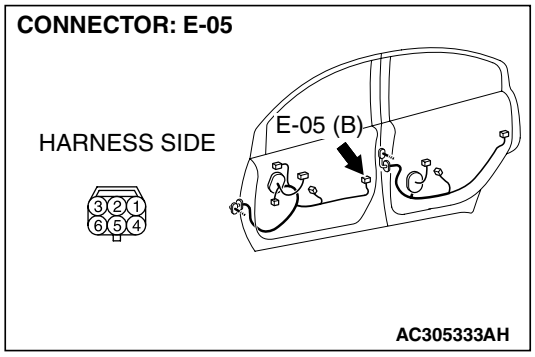


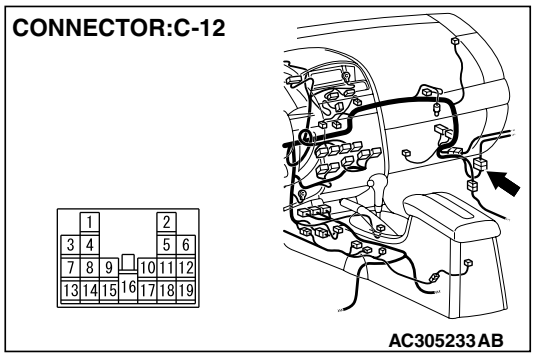
(2) Measure the resistance value between terminal 3 and ground.
- The resistance should be 2 ohms or less.

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 front door lock actuator (RH) connector E-05 (terminal 3) and ground.





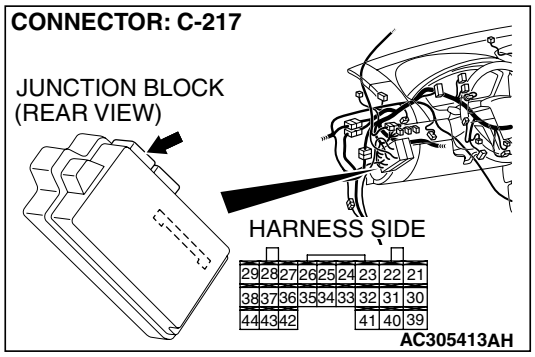
NOTE: Also check intermediate connector C-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-12 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front 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 front door lock actuator (RH) should be normal.

STEP 12. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

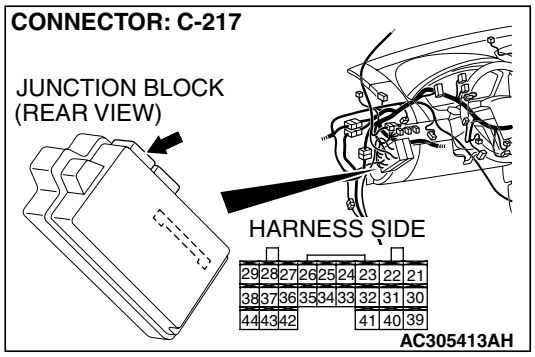


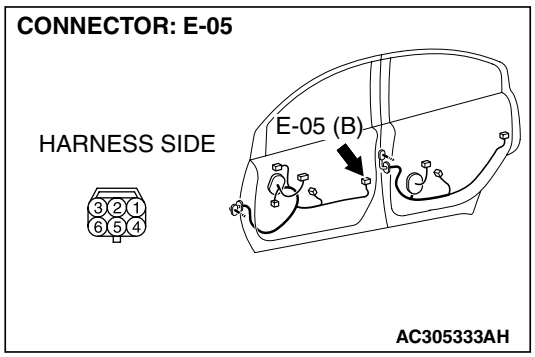
Q: Is ETACS-ECU connector C-217 in good condition?

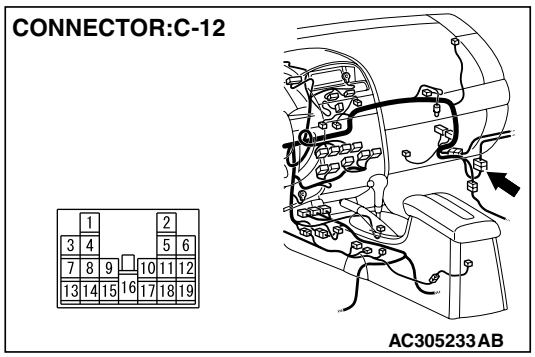
YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front door lock actuator (RH) should be normal.

STEP 13. Check the wiring harness between front door lock actuator (RH) connector E-05 (terminal 2) and ETACS-ECU connector C-217 (terminal 43).







NOTE: Also check intermediate connector C-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-12 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

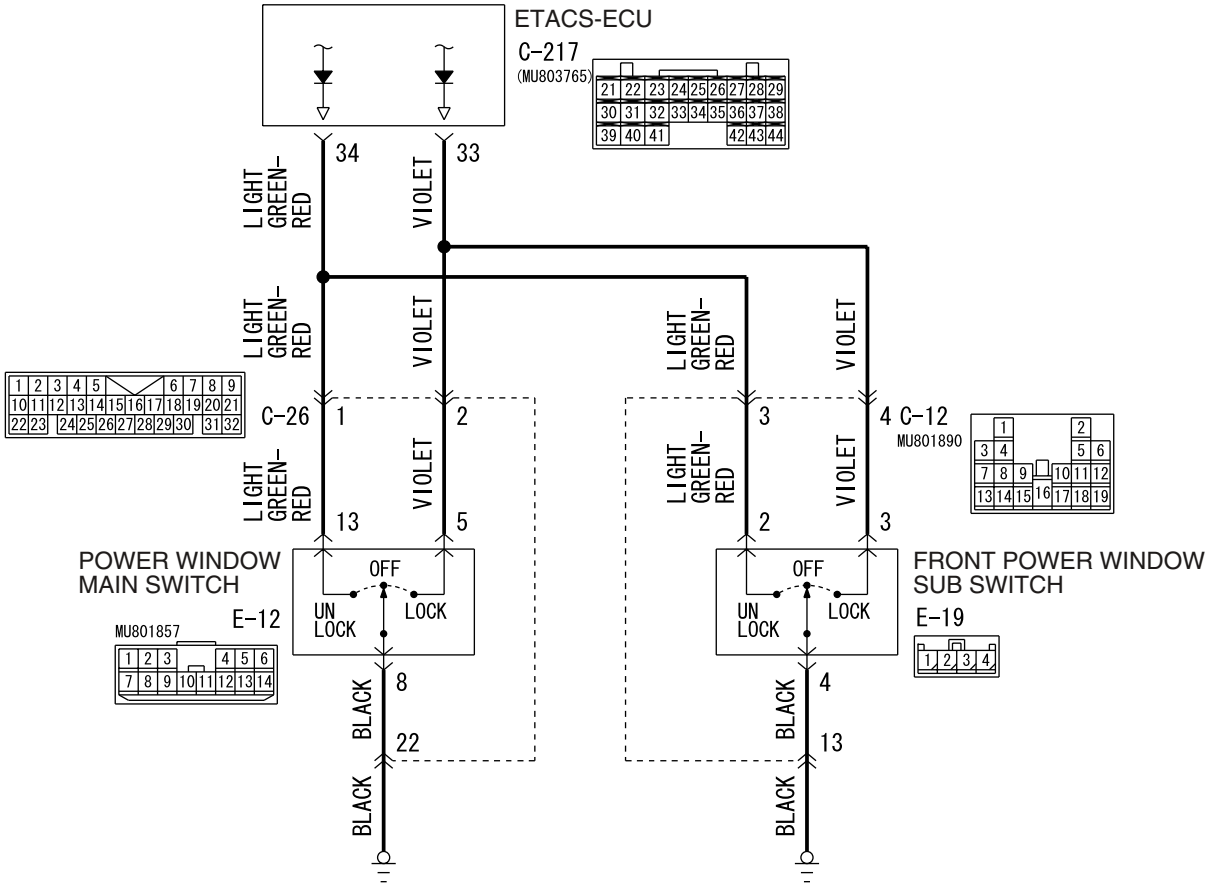
Q: Is the wiring harness between front door lock actuator (RH) connector E-05 (terminal 2) and ETACS-ECU connector C-217 (terminal 43) in good condition?

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-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the front 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 front door lock actuator (RH) should be normal.

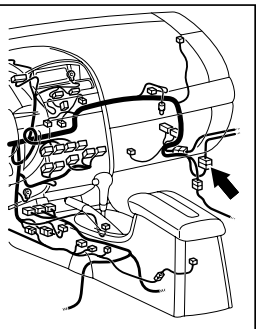
INSPECTION PROCEDURE N-6: ETACS-ECU does not receive any signal from the door lock switch (incorporated in the power window main switch and front power window sub switch).

Door Lock Switch Input Circuit



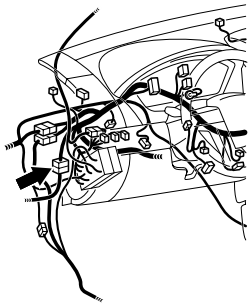
W7P54M134A

CONNECTOR: C-12



AC305233AE

CONNECTOR: C-26



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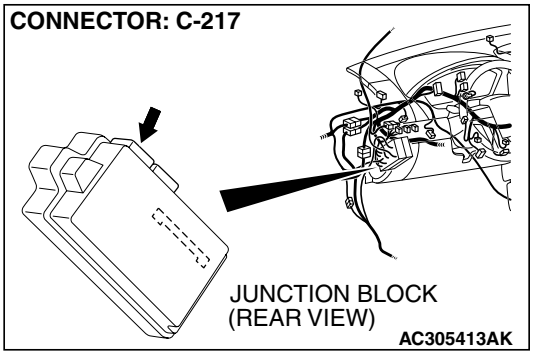
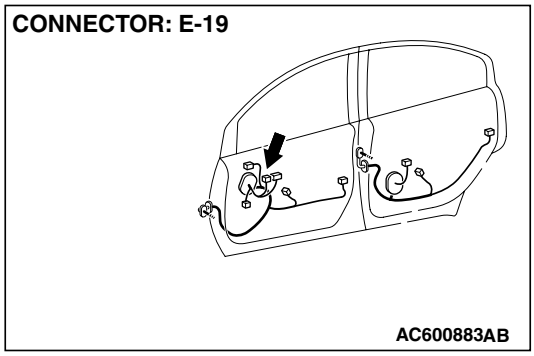
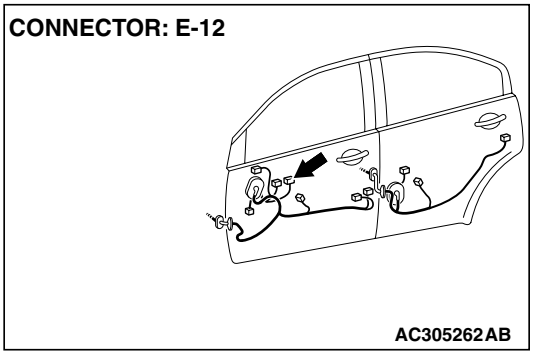






CIRCUIT OPERATION

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 front 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, front power window sub switch or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- The power window main switch or front 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 (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

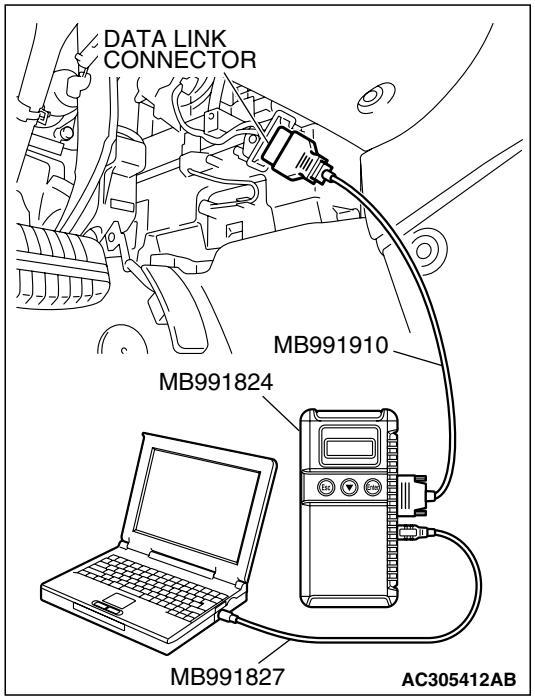
STEP 1. Check the input signal (by using the pulse check mode of the monitor).

Check the input signals from the door lock switch (incorporated in the power window main switch and front 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-17."
(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.



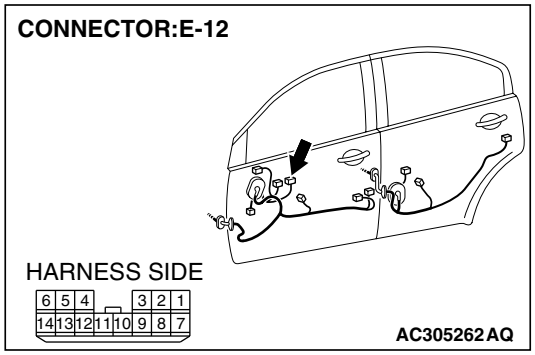
Q: When the door lock switch (incorporated in the power window main switch and front power window sub switch) is operated, does the scan tool MB991958 sound?

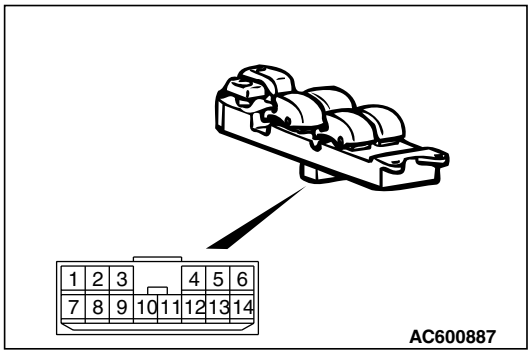
When the door lock switch (incorporated in the power window main switch) is operated, the scan tool MB991958 does not sound. : Go to Step 2.
When the door lock switch (incorporated in the front power window sub switch) is operated, the scan tool MB991958 does not sound. : Go to Step 8.

STEP 2. Check power window main switch connector E-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is power window main switch connector E-12 in good condition?

YES : Go to Step 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. Refer to GROUP 42, Door, Door Glass and Regulator P.42-38. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
LOCK	5 – 8	Less than 2 ohms
OFF	5 – 8, 8 – 13	Open circuit
UNLOCK	8 – 13	Less than 2 ohms

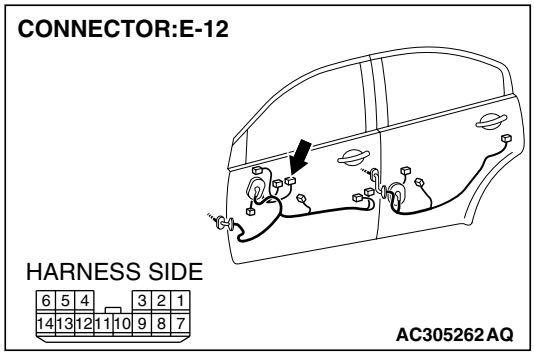
Q: Is the door lock switch (power window main switch) in good condition?

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.

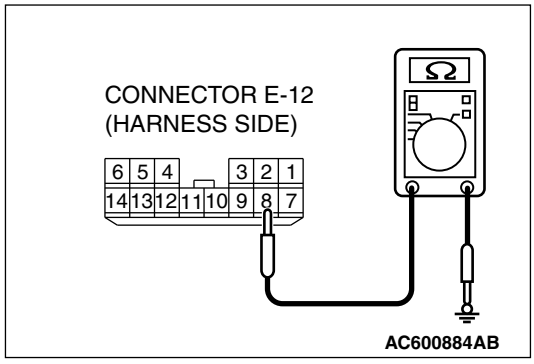
STEP 4. Check the ground circuit to the power window main switch. Measure the resistance at power window main switch connector E-12.

(1) Disconnect power window main switch connector E-12 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the resistance value between terminal 8 and ground.

- The resistance should be 2 ohms or less.

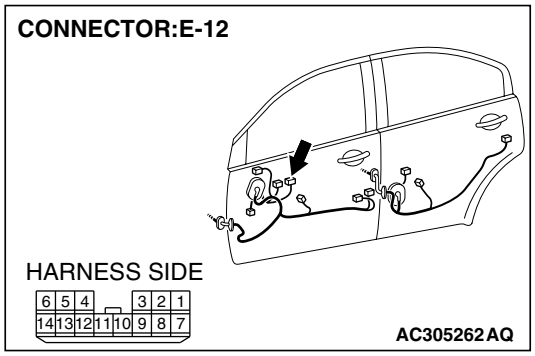


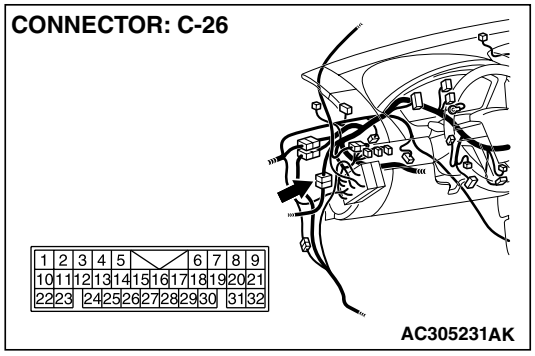
Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between power window main switch E-12 (terminal 8) and ground.





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 connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-12 (terminal 8) and ground in good condition?

YES : No action is necessary and testing is complete.

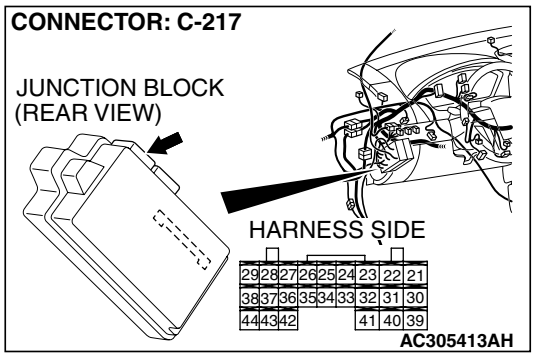
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.

STEP 6. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

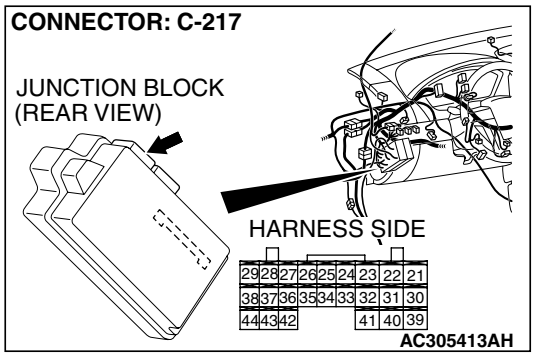
Q: Is ETACS-ECU connector C-217 in good condition?

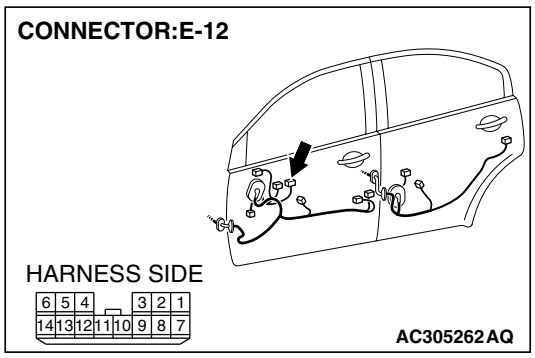
YES : Go to Step 7.

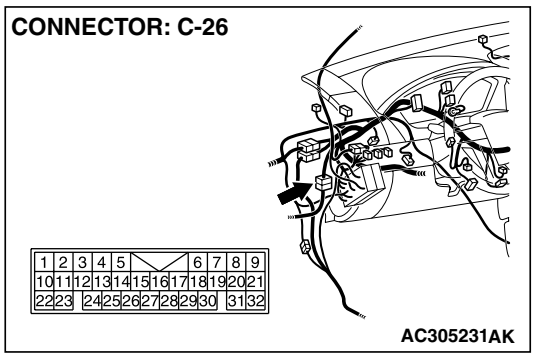
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the central door locking system works normally, input signal from the door lock switch (power window main switch) should be normal.



STEP 7. Check the wiring harness between power window main switch connector E-12 (terminals 5 and 13) and ETACS-ECU connector C-217 (terminals 33 and 34).





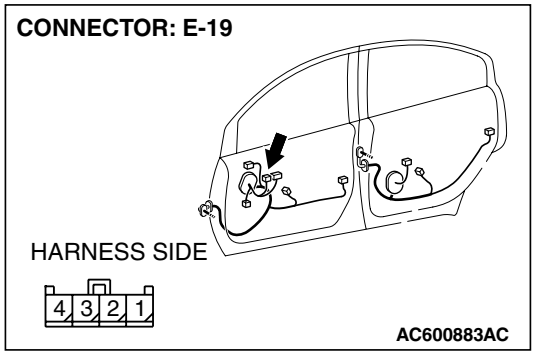


NOTE: Also check intermediate connector C-26 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-26 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between power window main switch connector E-12 (terminals 5 and 13) and ETACS-ECU connector C-217 (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-11. 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.

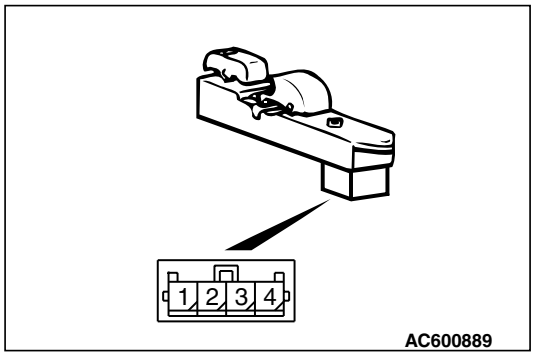


STEP 8. Check front power window sub switch connector E-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is front power window sub switch connector E-19 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 (front power window sub switch) should be normal.



STEP 9. Check the door lock switch (front power window sub switch).

Remove the front power window sub switch. Refer to GROUP 42, Door, Door Glass and Regulator P.42-38. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
LOCK	3 – 4	Less than 2 ohms
OFF	2 – 4, 3 – 4	Open circuit
UNLOCK	2 – 4	Less than 2 ohms

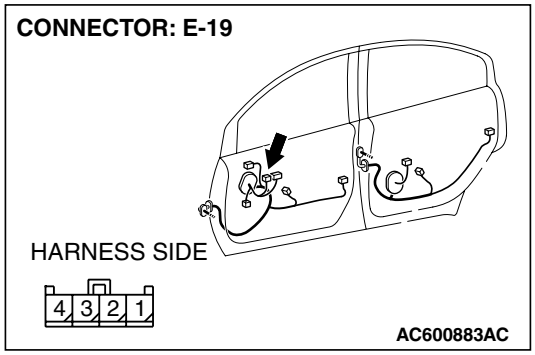
Q: Is the door lock switch (front power window sub switch) in good condition?

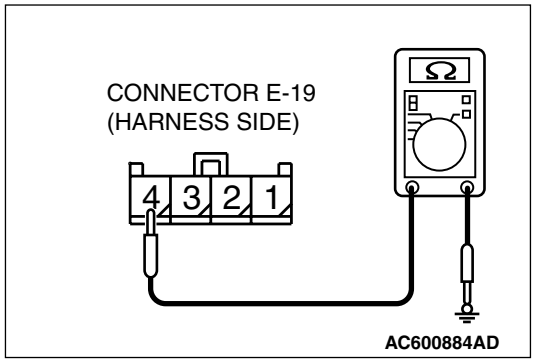
YES : Go to Step 10.

NO : Replace the front power window sub switch. If the central door locking system works normally, input signal from the door lock switch (front power window sub switch) should be normal.

STEP 10. Check the ground circuit to the front power window sub switch. Measure the resistance at front power window sub switch connector E-19.

(1) Disconnect front power window sub switch connector E-19 and measure the resistance available at the wiring harness side of the connector.



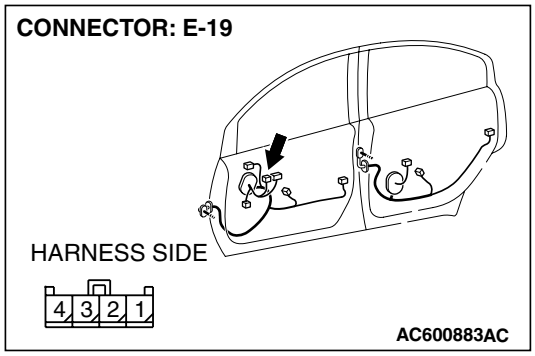


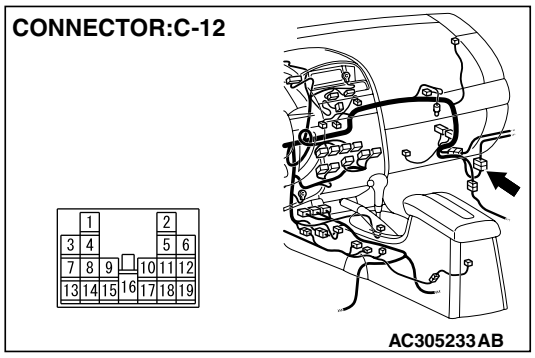
(2) Measure the resistance value between terminal 4 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 12.
NO : Go to Step 11.

STEP 11. Check the wiring harness between front power window sub switch E-19 (terminal 4) and ground.





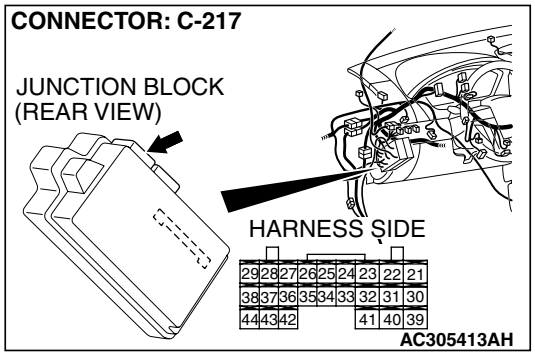
NOTE: Also check intermediate connector C-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-12 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between front power window sub switch connector E-19 (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 central door locking system works normally, input signal from the door lock switch should be normal.

STEP 12. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

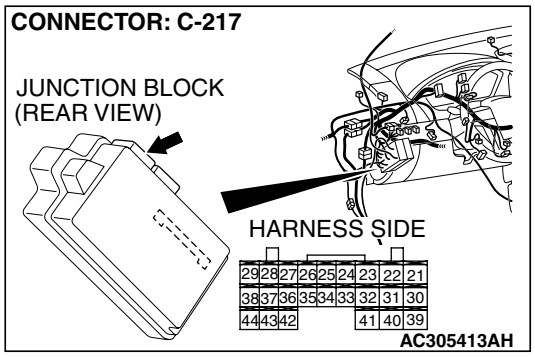


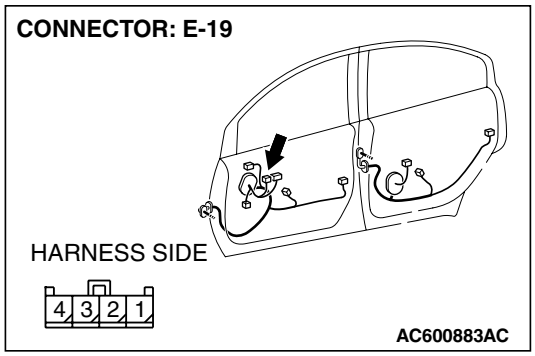
Q: Is ETACS-ECU connector C-217 in good condition?

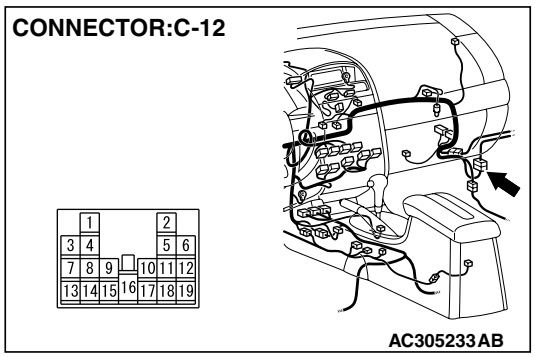
YES : Go to Step 13.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the central door locking system works normally, input signal from the door lock switch (front power window sub switch) should be normal.

STEP 13. Check the wiring harness between front power window sub switch connector E-19 (terminals 2 and 3) and ETACS-ECU connector C-217 (terminals 34 and 33).







NOTE: Also check intermediate connector C-12 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-12 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

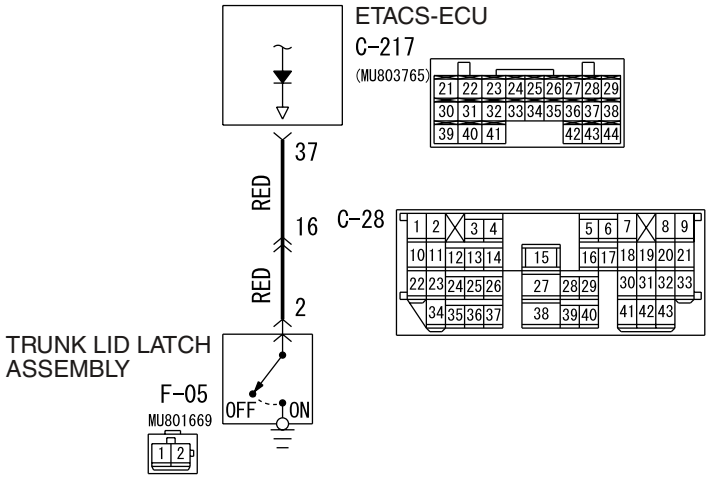
Q: Is the wiring harness between front power window sub switch connector E-19 (terminal 2 and 3) and ETACS-ECU connector C-217 (terminals 34 and 33) in good condition?

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-11. If the central door locking system works normally, input signal from the door lock switch (front 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 (front power window sub switch) should be normal.

INSPECTION PROCEDURE N-7: ETACS-ECU does not receive any signal from the trunk lid latch assembly.

Trunk Lid Latch Assembly Input Circuit



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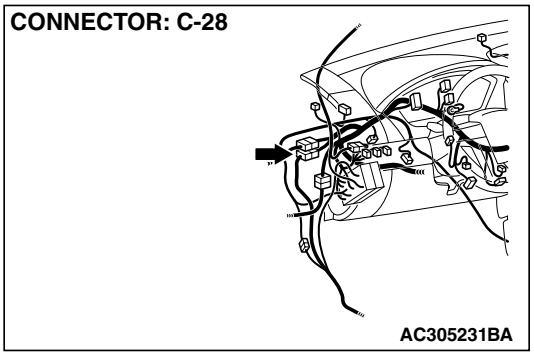
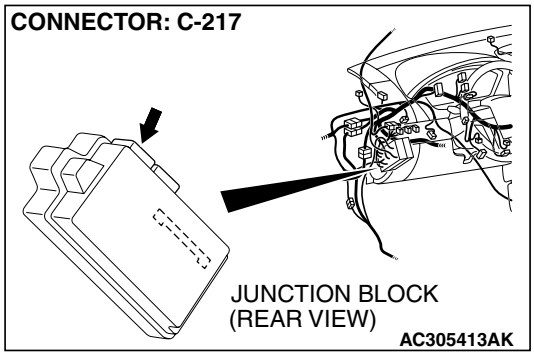
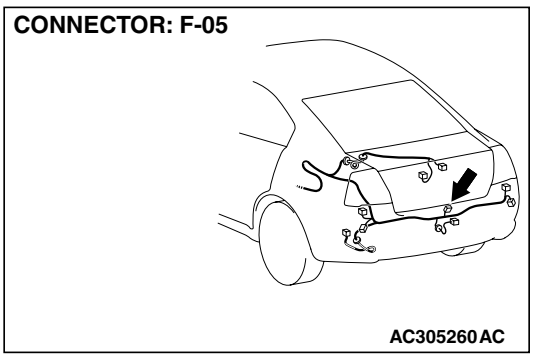






CIRCUIT OPERATION
The ETACS-ECU operates the trunk light according to signal from the trunk lid latch assembly.

TECHNICAL DESCRIPTION (COMMENT)
The trunk lid latch assembly input signal is used to operate the trunk light. If the signal fails, this function will not work normally.

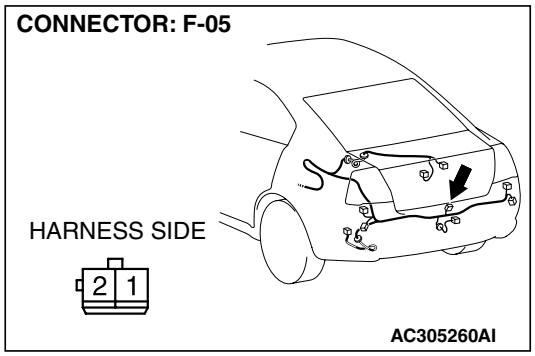
TROUBLESHOOTING HINTS
- The trunk lid latch assembly may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

TSB Revision

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check trunk lid latch assembly connector F-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



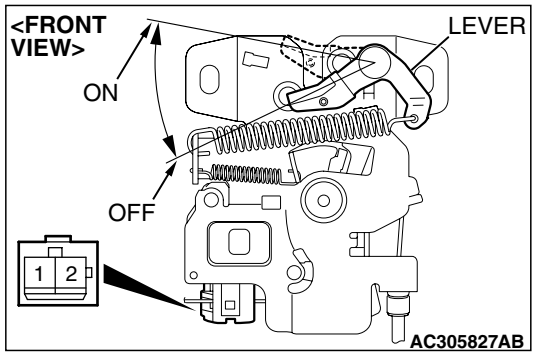
Q: Is trunk lid latch assembly connector F-05 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the trunk lid latch assembly should be normal.

STEP 2. Check the trunk lid latch assembly.

Remove the trunk lid latch assembly. Refer to GROUP 42, Trunk lid, Trunk lid latch inspection P.42-64.



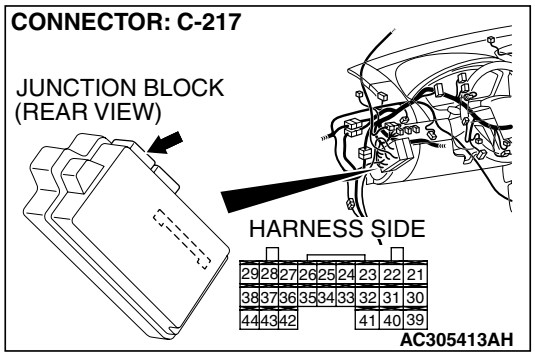
LEVER POSITION	TESTER CONNECTION	SPECIFIED CONDITION
ON (Latch open)	2 – Ground	Less than 2 ohms
OFF (Latch shut)	2 – Ground	Open circuit

Q: Is the trunk lid latch assembly in good condition?

YES : Go to Step 3.

NO : Replace the trunk lid latch assembly. The input signal from the trunk lid latch assembly should be able to be checked and the functions, which are described in the "Technical Description (comment)," should work normally.

STEP 3. Check ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

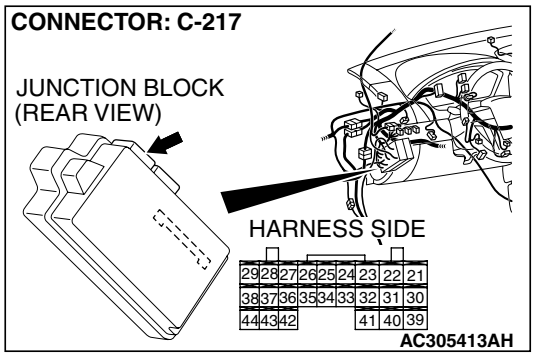


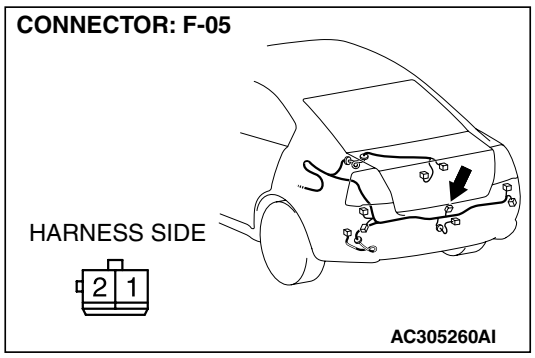
Q: Is ETACS-ECU connector C-217 in good condition?

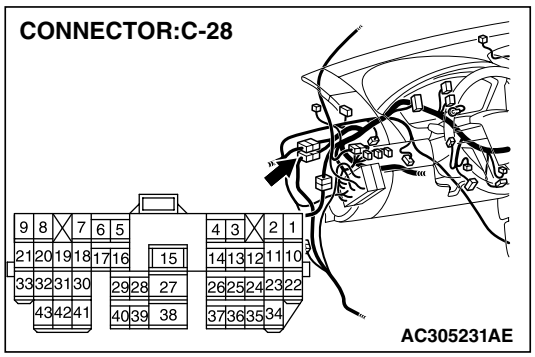
YES : Go to Step 4.

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 trunk lid latch assembly should be normal.

STEP 4. Check the wiring harness between trunk lid latch assembly connector F-05 (terminal 2) and ETACS-ECU connector C-217 (terminal 37).







NOTE: Also check intermediate connector C-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-28 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

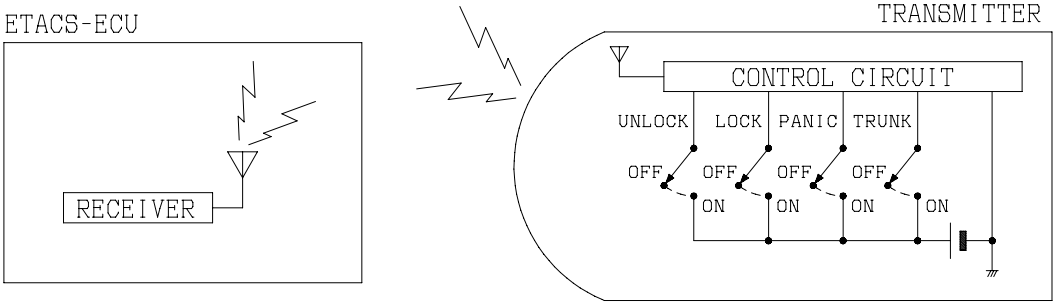
Q: Is the wiring harness between trunk lid latch assembly connector F-05 (terminal 2) and ETACS-ECU connector C-217 (terminal 37) in good condition?

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-11. If the functions described in "CIRCUIT OPERATION" work normally, the input signal from the trunk lid latch assembly 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 trunk lid latch assembly should be normal.

INSPECTION PROCEDURE N-8: Transmitter: ETACS-ECU does not receive any signal from the lock, unlock, trunk 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

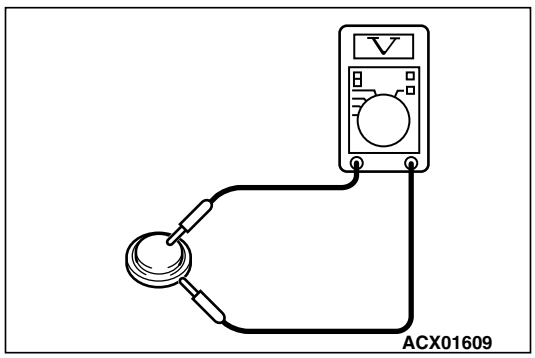
STEP 1. Register the transmitter.
Register the transmitter. Refer to GROUP 42, Keyless Entry System, On-vehicle Service, How to register secret code P.42-71.

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.



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Q: Is the measured voltage approximately 2.5 - 3.2 volts (battery positive voltage)?

YES : Go to Step 3.

NO : Replace the battery. If the transmitter can be registered normally, and operates normally, it indicates that the transmitter is sending normal signal to the ECU.

TSB Revision

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.42-71.

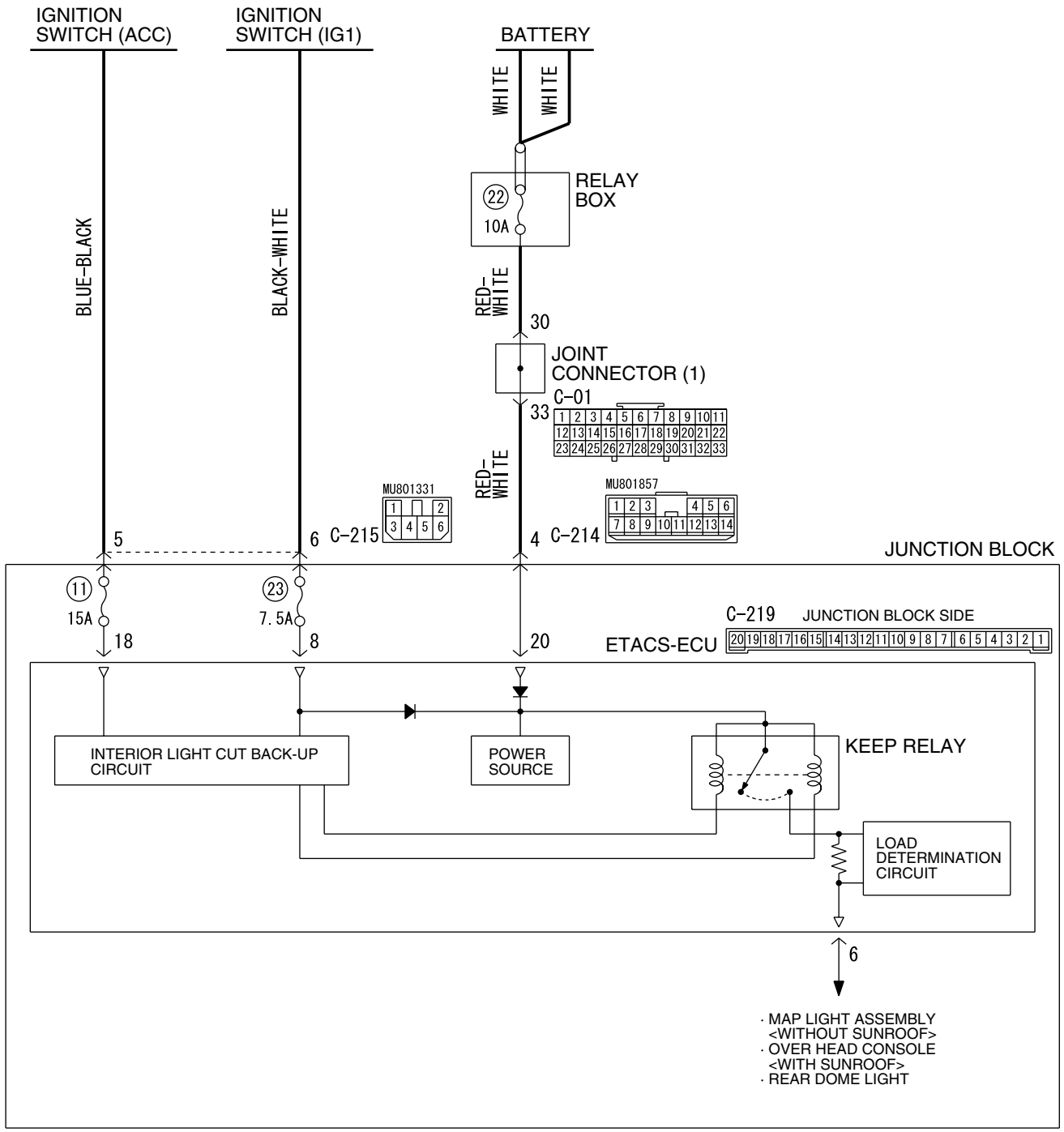
Q: Can the transmitter be registered correctly?

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-11. If the transmitter works normally, the input signal from the transmitter should be normal.

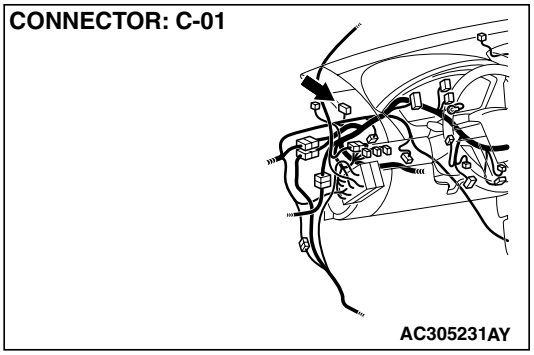
INSPECTION PROCEDURE N-9: ETACS-ECU does not receive any interior light loaded signal.

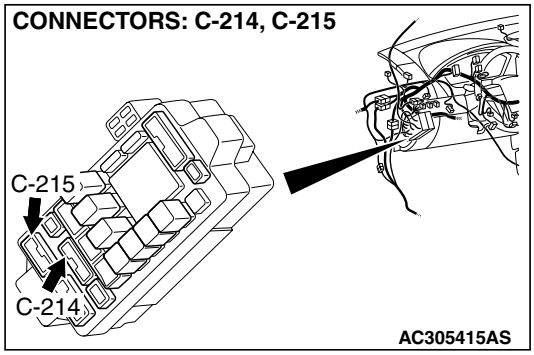
Interior Light Automatic Shut-Down Function Circuit

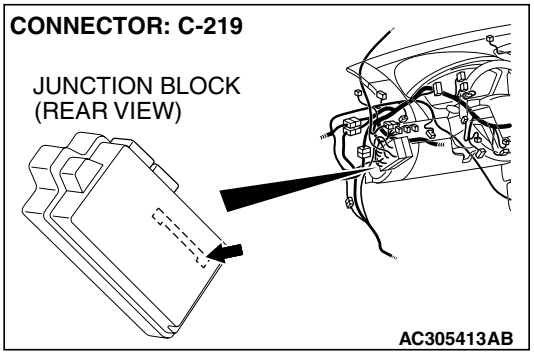


W4P54M203A

TSB Revision







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 hole 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:

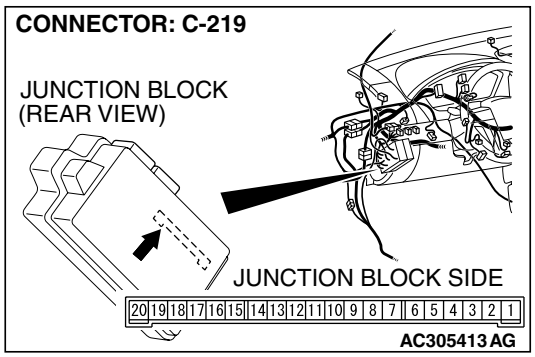
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check ETACS-ECU connector C-219 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-219 in good condition?

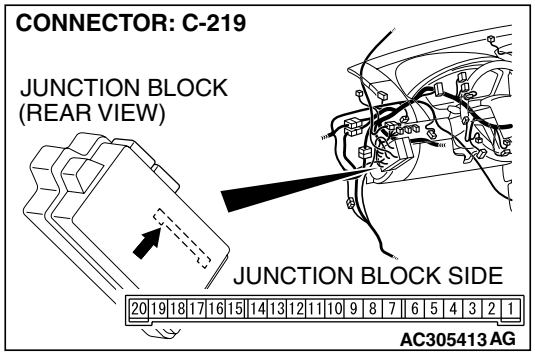
YES : Go to Step 2.

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.

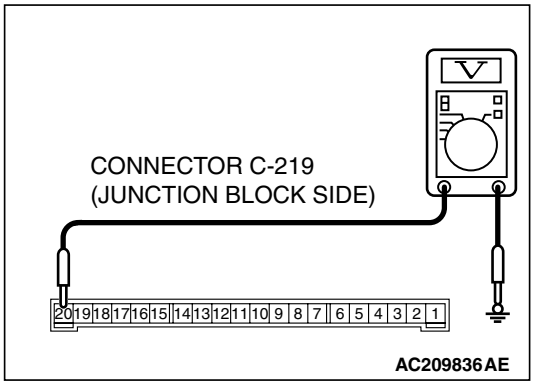


TSB Revision

STEP 2. Check the battery line of power supply circuit to the ETACS-ECU. Measure the voltage at ETACS-ECU connector C-219.



(1) Disconnect ETACS-ECU connector C-219 and measure the voltage available at the junction block side of the connector.

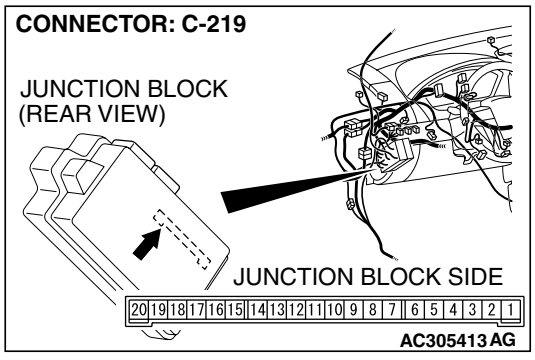


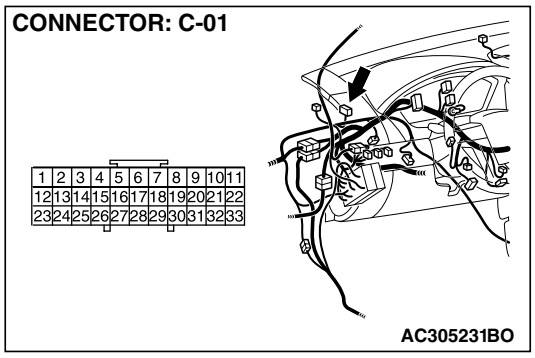
(2) Measure the voltage between terminal 20 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

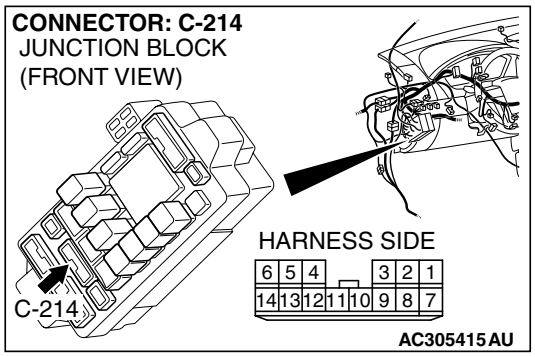
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check the wiring harness between ETACS-ECU connector C-219 (terminal 20) and battery.







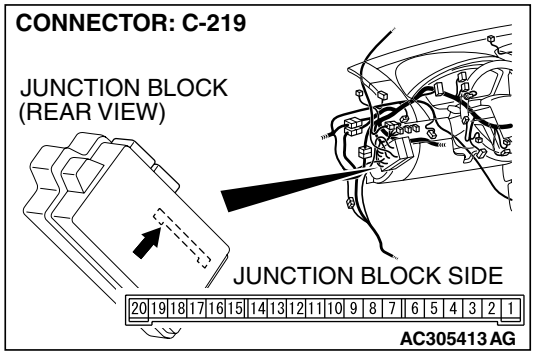
NOTE: Also check junction block connector C-214 and joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 or joint connector C-01 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 20) and battery in good condition?

YES : No action is necessary and testing is complete.

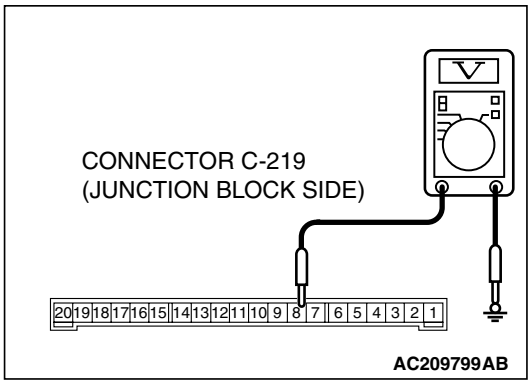
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the functions or equipment described in "CIRCUIT OPERATION" work normally, the interior light loaded signal should 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-219.



(1) Disconnect ETACS-ECU connector C-219 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.

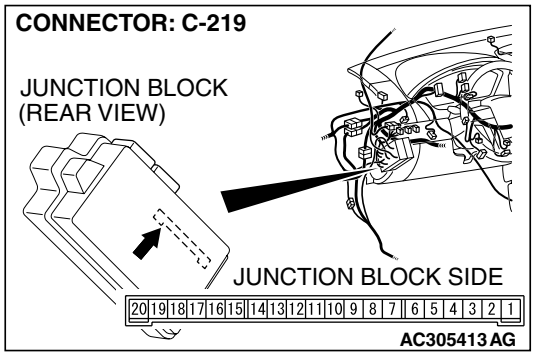
- The voltage should measure approximately 12 volts (battery positive voltage).

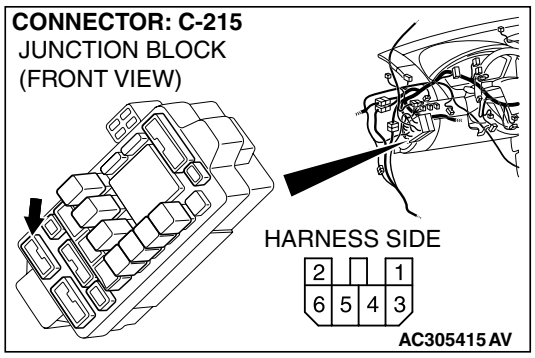
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the wiring harness between ETACS-ECU connector C-219 (terminal 8) and the ignition switch (IG1).





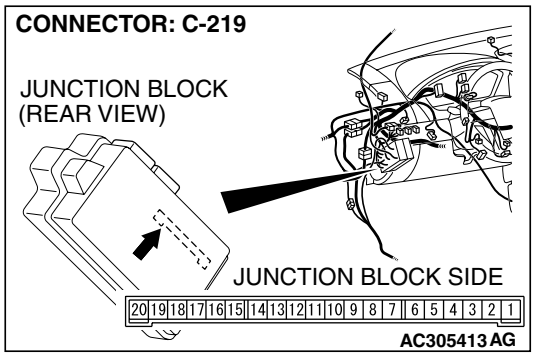
NOTE: Also check junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 is damaged, repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 8) and the ignition switch (IG1) in good condition?

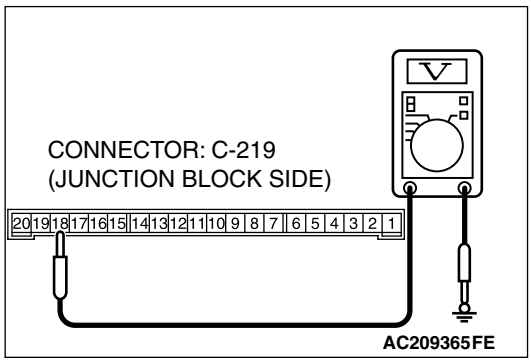
YES : No action is necessary and testing is complete.

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-219.



(1) Disconnect ETACS-ECU connector C-219 and measure the voltage available at the junction block side of the connector.
(2) Turn the ignition switch to the "ACC" position.



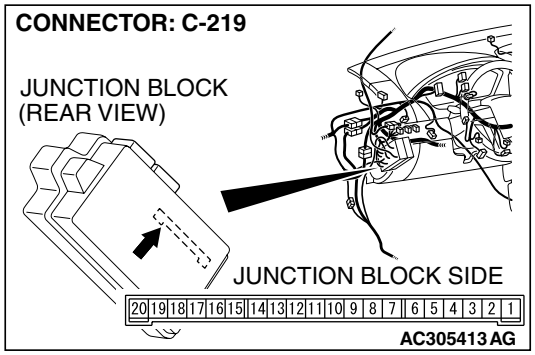
(3) Measure the voltage between terminal 18 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

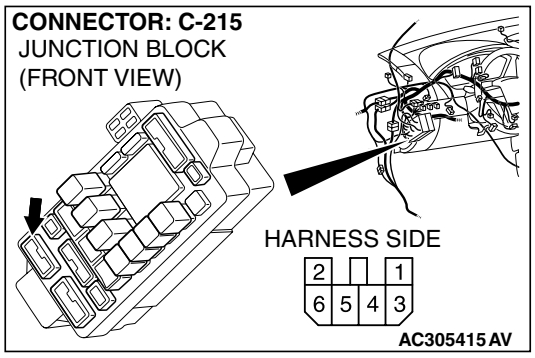
Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

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-11. 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-219 (terminal 18) and the ignition switch (ACC).





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

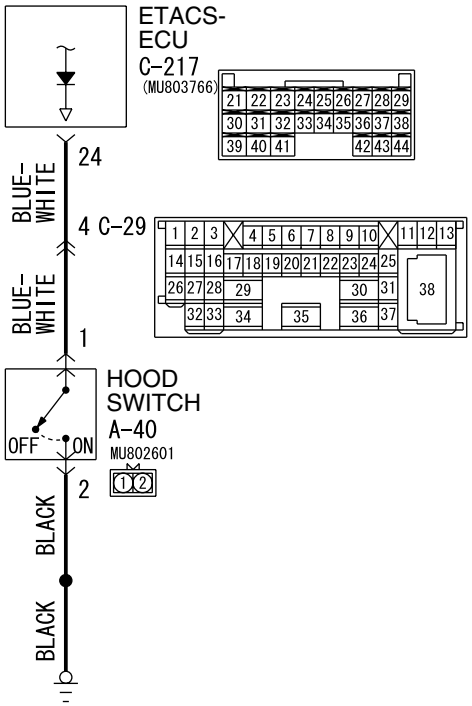
Q: Is the wiring harness between ETACS-ECU connector C-219 (terminal 18) and ignition switch (ACC) in good condition?

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 any signal from hood switch.

Hood Switch Circuit



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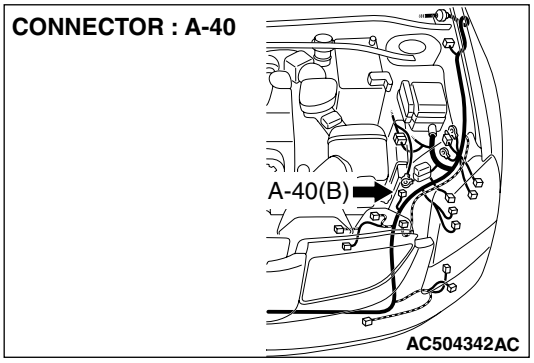
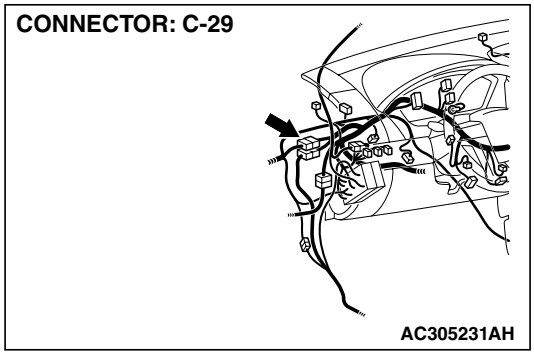
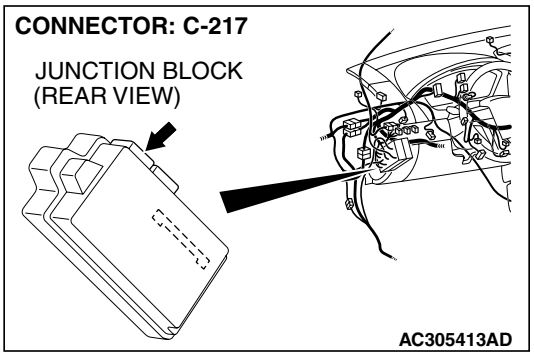






CIRCUIT OPERATION
The ETACS-ECU operates the theft-alarm system according to signal from the hood switch.

TECHNICAL DESCRIPTION (COMMENT)
If the signal is not normal, the theft-alarm system does not work normally.

TROUBLESHOOTING HINTS
- The hood switch may be defective
- The ETACS-ECU may be defective
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

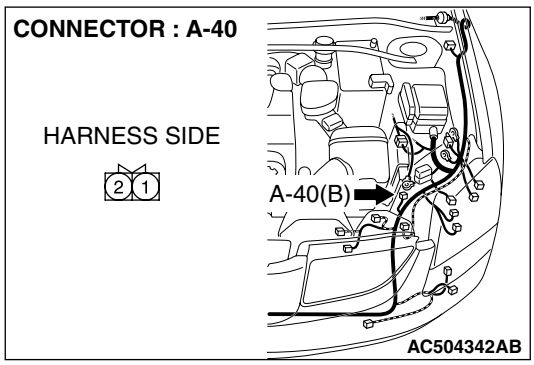
Required Special Tools:
- MB991223: Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991911: M.U.T.-III Main Harness B

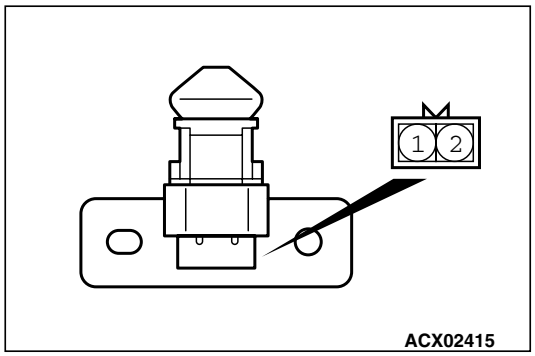
STEP 1. Check hood switch connector A-40 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is hood switch connector A-40 in good condition?

YES : Go to Step 2.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the theft-alarm system operates normally, it indicates that a correct signal is sent from the hood switch.





STEP 2. Check the hood switch.

Remove the hood switch. Then check continuity between the switch terminals.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Released	1 – 2	Less than 2 ohms
Pressed	1 – 2	Open circuit

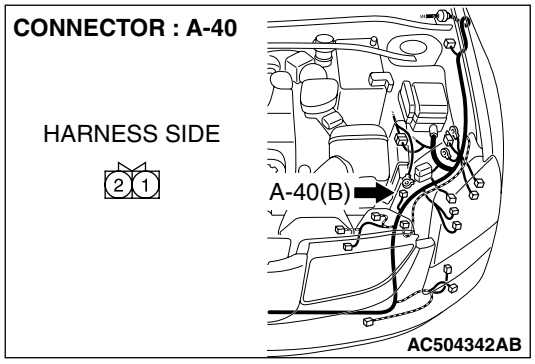
Q: Is the hood switch in good condition?

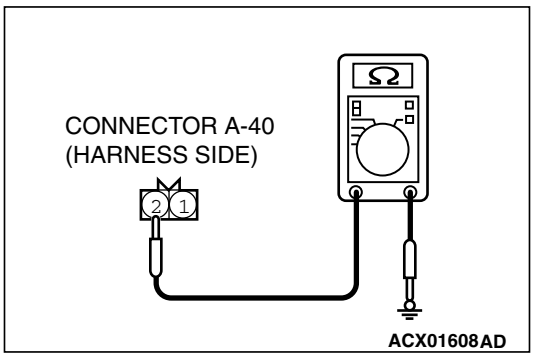
YES : Go to Step 3.

NO : Replace the hood switch. If the theft-alarm system operates normally, it indicates that a correct signal is sent from the hood switch.

STEP 3. Check the ground circuit to the hood switch. Test at hood switch connector A-40.

(1) Disconnect hood switch connector A-40 and measure the resistance available at the wiring harness side of the connector.





(2) Measure the resistance value between terminal 2 and ground.
- The resistance should equal 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 5.

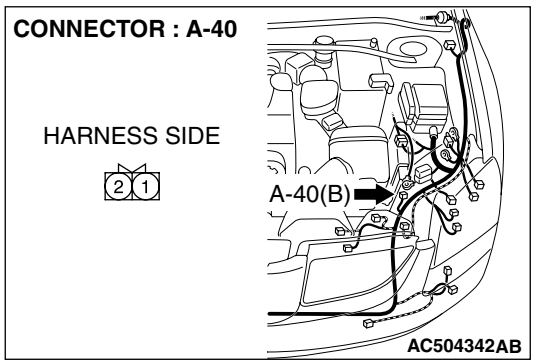
NO : Go to Step 4.

STEP 4. Check the wiring harness between hood switch connector A-40 (terminal 2) and ground.

Q: Is the wiring harness between hood switch connector A-40 (terminal 2) and the ground in good condition?

YES : No action is necessary and testing is complete.

NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. If the theft-alarm system operates normally, it indicates that a correct signal is sent from the hood switch.

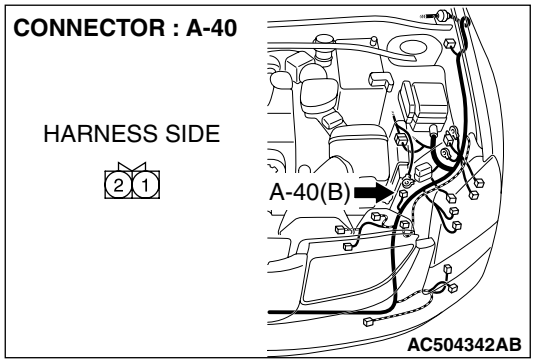


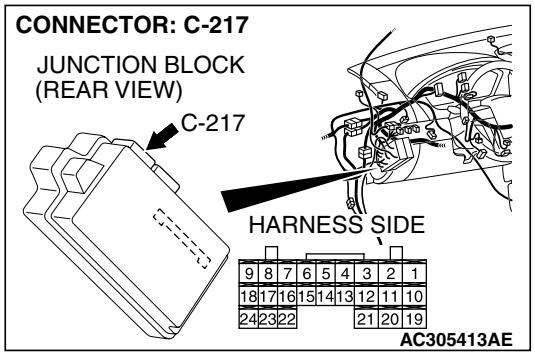
STEP 5. Check hood switch connector A-40 and ETACS-ECU connector C-217 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are hood switch connector A-40 and ETACS-ECU connector C-217 in good condition?

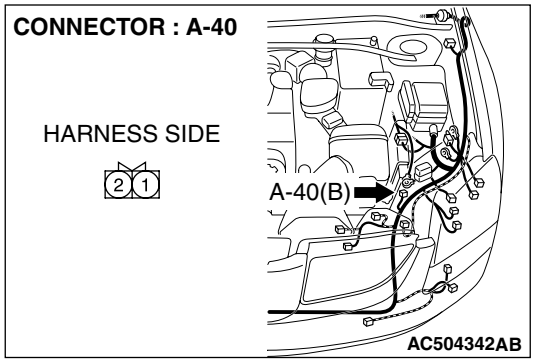
YES : Go to Step 6.

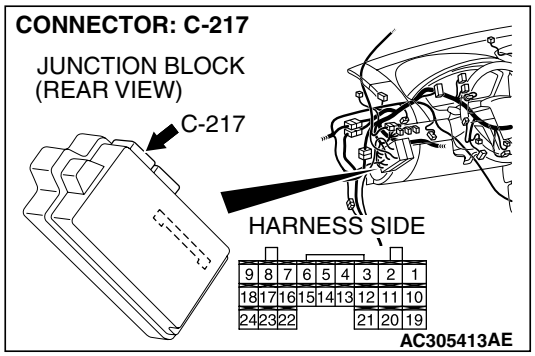
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection P.00E-2. If the theft-alarm system operates normally, it indicates that a correct signal is sent from the hood switch.

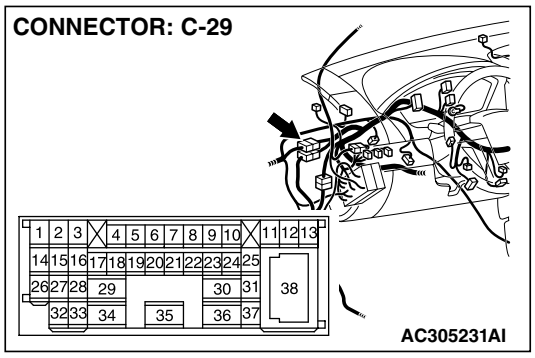




STEP 6. Check the wiring harness between hood switch connector A-40 (terminal 1) and ETACS-ECU connector C-217 (terminal 24).







NOTE: Also check intermediate connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-29 is damaged, Repair or replace the damaged component(s) as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between hood switch connector A-40 (terminal 1) and ETACS-ECU connector C-217 (terminal 24) in good condition?

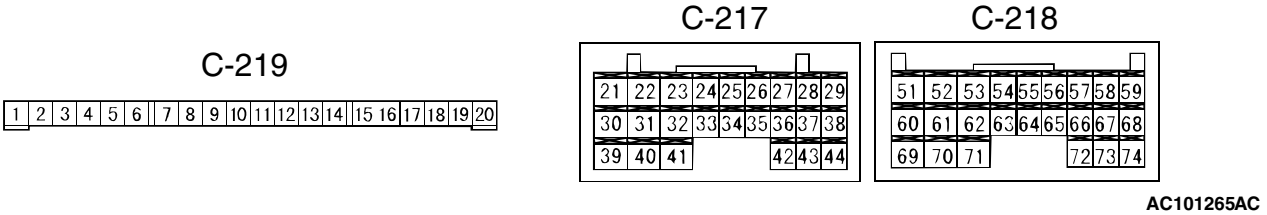
YES : Replace the ETACS-ECU. When the ETACS-ECU is replaced, register the encrypted code. Refer to GROUP 54A, Encrypted Code Registration Criteria Table P.54A-11. If the theft-alarm system operates normally, it indicates that a correct signal is sent from the hood switch.

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 theft-alarm system operates normally, it indicates that a correct signal is sent from the hood switch.

CHECK AT ECU TERMINAL

M1549001201495

ETACS-ECU



*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	Input from rear door switch (LH)	Rear door switch (LH): ON (rear door (LH) open)	0 V

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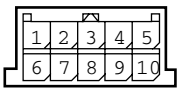
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
8	Power supply to ignition switch (IG1)	Ignition switch: "ON"	Battery positive voltage
9	Output to turn-signal light (RH)	When turn-signal light (RH) is on	Battery positive voltage
10	Input from driver’s door switch	Driver's door switch: ON (driver's door open)	0 V
11	Battery power supply for turn-signal light	Always	Battery positive voltage
12	Output to door lock	When door lock actuator is operating (doors locked)	Battery positive voltage
13	Output to door unlock (excluding driver's door)	When door lock actuator is operating (doors unlocked)	Battery positive voltage
14	Output to turn-signal light (LH)	When turn-signal light (LH) is on	Battery positive voltage
15 – 17	–	–	–
18	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
19	–	–	–
20	Battery power supply (for ECU)	Always	Battery positive voltage
21	–	–	–
22	Output to door unlock (for driver's door)	When driver's door lock actuator is operating (doors unlocked)	Battery positive voltage
23	–	–	–
24	Input of hood switch signal	Hood switch: ON (hood switch: Open)	0 V
25	Input of door lock key cylinder switch (UNLOCK) signal	Door lock key cylinder switch: UNLOCK	0 V
26 – 28	–	–	–
29	Input of rear door lock actuator (UNLOCK) signal	Rear door lock actuator: UNLOCK	0 V
30	Input of key reminder switch signal	Key reminder switch: ON (when ignition key is removed)	0 V
31, 32	–	–	–
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	Input from rear door switch (RH)	Rear door switch (RH): ON (rear door (RH) open)	0 V
36	Input of driver's door lock actuator (UNLOCK) signal	Driver's door lock actuator: UNLOCK	0 V
37	Input from trunk lid latch assembly	Trunk lid latch: ON (trunk open)	0 V
38	Ground (for sensor)	Always	0 V
39 – 41	–	–	–

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
42	Input of door lock key cylinder switch (LOCK) signal	Door lock key cylinder switch: LOCK	0 V
43	Input of front passenger's door lock actuator (UNLOCK) signal	Front 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 DTC sets	0 – 12 V (pulse signal)
		When input check signal is output	0 – 12 V (when input pulse signal is fluctuating)
52, 53	–	–	–
54	Input of fog light switch signal	Fog light switch: ON	0 V
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 ring antenna signal	Always	0 V
58	Input of 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 – 64	–	–	–
65	Input from front passenger's door switch	Front passenger's door switch: ON (front 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 – 73	–	–	–
74	Input of theft-alarm indicator signal	When theft-alarm indicator light is on	2 V or less

COLUMN SWITCH



C-309

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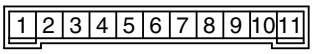
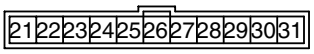
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Battery power supply	Always	Battery positive voltage
2	Input of data request signal	Always	0 – 12 V (pulse signal)
3	SWS communication line	Always	0 – 12 V (pulse signal)
4	Ground	Always	0 V
5	–	–	–
6	Output of signal from variable intermittent 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-11X



A-12X



AC210659AB

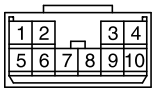
NOTE: Terminal voltages cannot be measured as the front-ECU is installed directly on the relay box. Therefore, this information is only for reference.

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Output to fog light relay	When the fog lights are on	Battery positive voltage
2	Output to headlight (high-beam)	When headlights (high-beam) are on	Battery positive voltage
3, 4	Battery power supply (for headlight)	Always	Battery positive voltage
5	Battery power supply (for taillight)	Always	Battery positive voltage
6	Output to headlight (low-beam)	When headlights (low-beam) are on	Battery positive voltage
7	Battery power supply (for ECU)	Always	Battery positive voltage

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
8	Output to taillights	When taillights are on	Battery positive voltage
9 – 11	–	–	–
21	Output to windshield washer	When windshield washer is on	Battery positive voltage
22	SWS communication line	Always	0 – 12 V (pulse signal)
23	Input of automatic stop signal to windshield wiper	When windshield wiper is on	Battery positive voltage
24	Power supply to ignition switch (ACC)	Ignition switch: "ACC"	Battery positive voltage
25	Input of backup signal from headlight switch	Headlight switch: ON	0 V
26	Input of backup signal to windshield wiper	Windshield low-speed wiper switch or windshield high-speed wiper switch: ON	0 V
27	Output to windshield wiper (low-speed)	When windshield wiper is on (at low speed)	Battery positive voltage
28	Output to windshield wiper (high-speed)	When windshield wiper is on (at high speed)	Battery positive voltage
30	Power supply to ignition switch (IG2)	Ignition switch: "ON"	Battery positive voltage
31	Ground	Always	0 V

SUNROOF-ECU

D-04



AC306356 AB

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL VALUE
1	Battery power supply (for motor)	Always	Battery positive voltage
2	Power supply to ignition switch (IG2)	Ignition switch: ON	Battery positive voltage
3, 4	–	–	–
5	Ground	Always	0 V
6	Input signal ("CLOSE/DOWN") from the sunroof switch	Sunroof switch: "CLOSE/DOWN"	0 V
7	Input signal ("UP") from the sunroof switch	Sunroof switch: "UP"	0 V
8	Input signal ("OPEN") from the sunroof switch	Sunroof switch: "OPEN"	0 V
9	–	–	–
10	SWS communication line	Always	0 – 12 V (pulse signal)

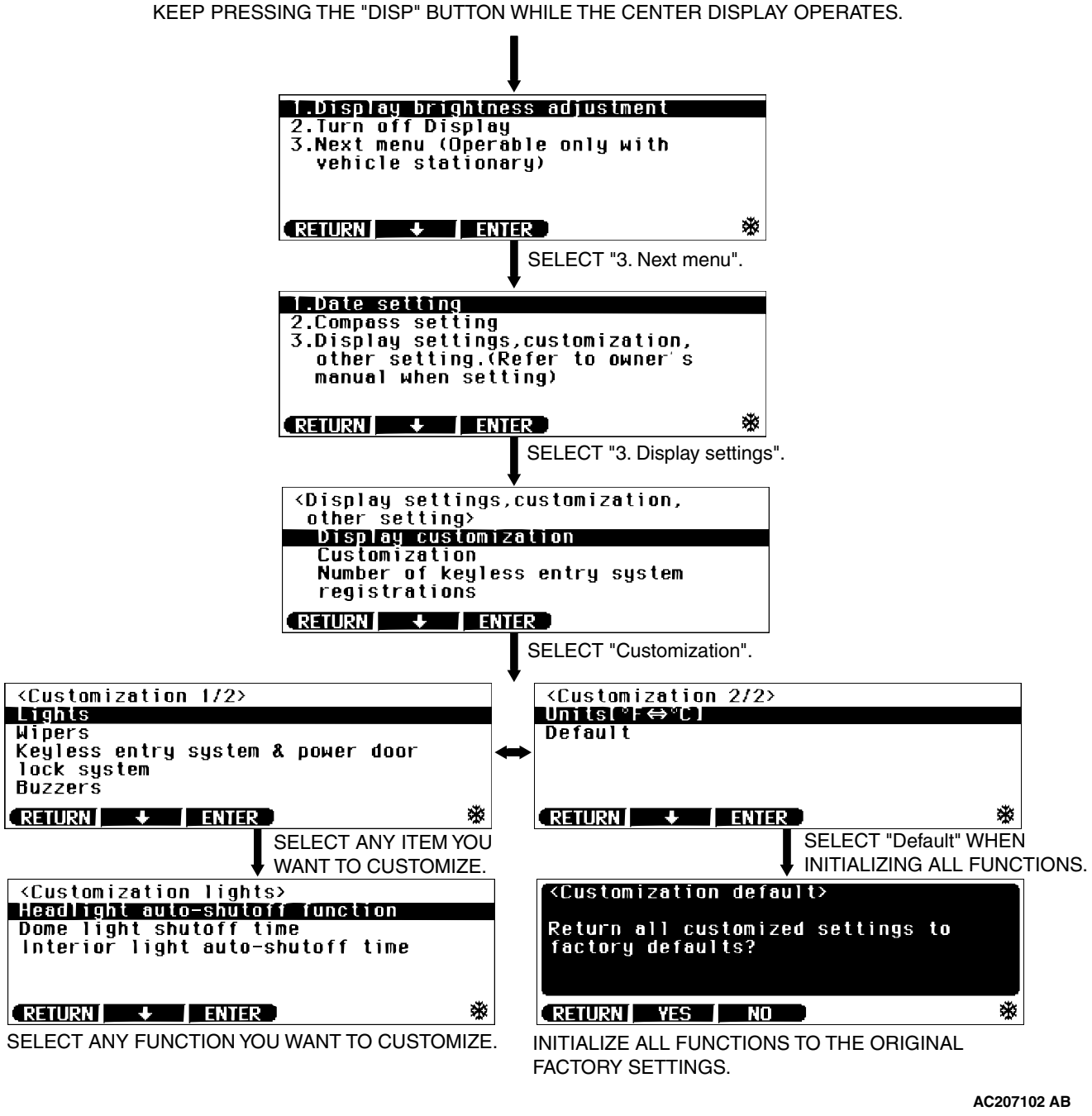
ON-VEHICLE SERVICE

CONFIGURATION FUNCTION

M1549002501392

ADJUSTMENT BY OPERATING THE MULTI-CENTER DISPLAY <VEHICLES WITH MIDDLE-GRADE MULTI-CENTER DISPLAY ONLY>

The following function and system customizations are possible by using the multi-center display.



AC207102 AB

TSB Revision

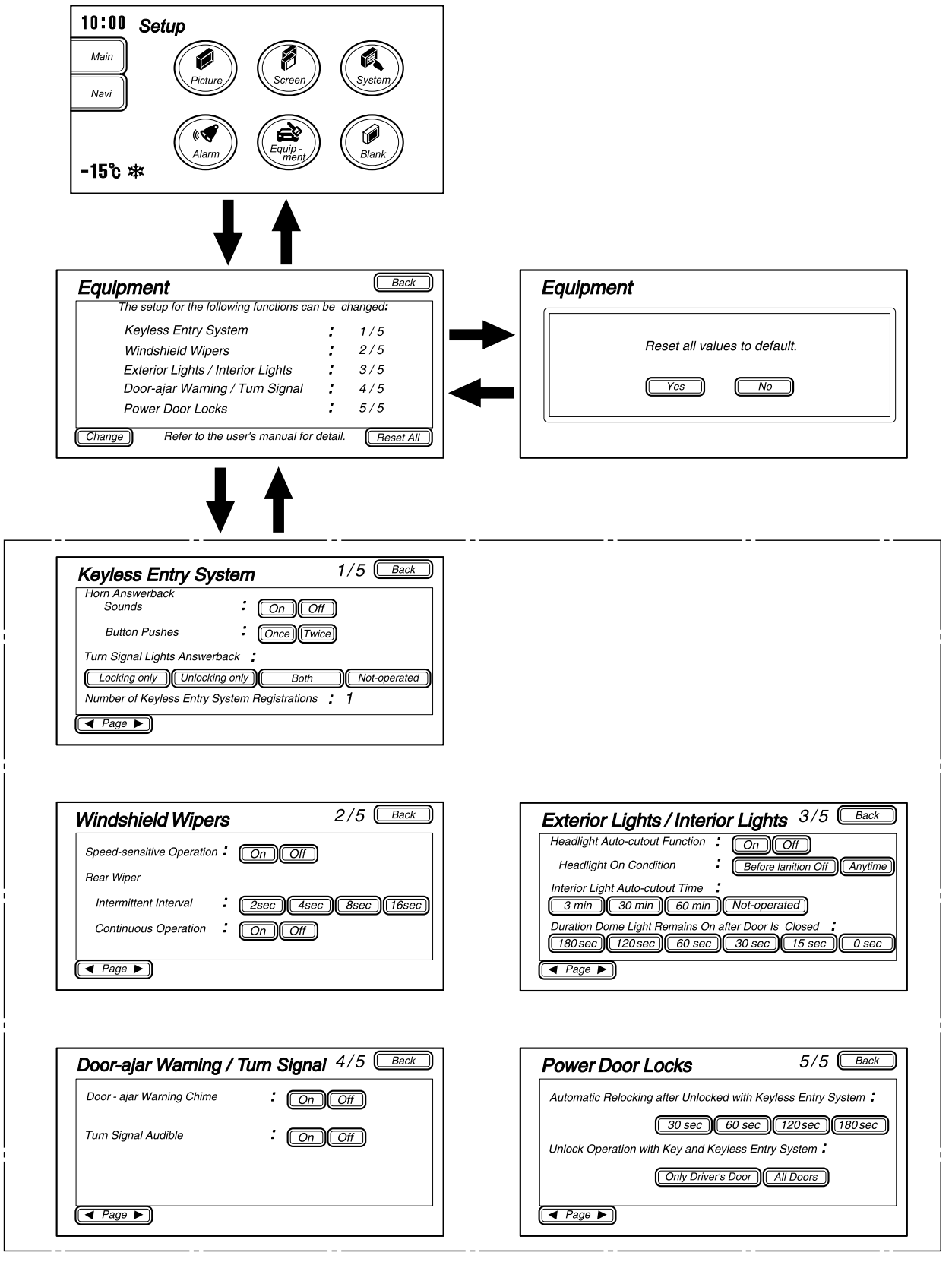
ITEM (multi-center display)		ADJUSTMENT DETAILS
Lights	Headlight auto-cutout function	The headlight automatic shutoff function can be set in the following ways. a. Auto-cutout only when the ignition is turned OFF while lights are on (default) b. Auto-cutout when ignition is turned OFF at any time c. No auto-cutout
	Dome light cutout time	The interior dimmer delay period can be set in the following ways. a. 0 second b. 15 seconds c. 30 seconds (default) d. 60 seconds e. 120 seconds f. 180 seconds
	Interior light auto-cutout time	The period before the interior illumination is turned off automatically can be set in the following ways. a. 3 minutes b. 30 minutes (default) c. 60 minutes d. No auto-cutout
Wipers	Windshield wiper speed-sensitive operation	The speed-sensitive wiper function can be activated or deactivated. (ON by default)
	Rear wiper intermittent interval*	–

ITEM (multi-center display)		ADJUSTMENT DETAILS
Keyless entry and power door lock system	Keyless entry system confirmation by horn	The horn answerback honking conditions can be set in the following ways. a. Horn sounds b. Horn sounds if doors are already locked (default) c. Horn does not sound
	Keyless entry system confirmation by turn-signal lights	The hazard answerback flashing conditions can be set in the following ways. a. Locking and unlocking (default) b. Locking only c. Unlocking only d. No indication
	Time until automatic relocking after unlock operation using keyless entry system	The timed lock period after unlocking with the keyless entry transmitter can be set to the following times. a. 30 seconds (default) b. 60 seconds c. 120 seconds d. 180 seconds
	Unlock operation using keyless entry system or door key	The unlocking operations after unlocking with or without a key can be set in the following ways. a. Unlock driver's door on first unlock operation, and unlock all doors on second unlock operation (default) b. Unlock all doors on first unlock operation
Buzzers	Turn-signal buzzer	The turn-signal buzzer function can be activated or deactivated. (OFF by default)
	Door-ajar warning buzzer	The door ajar warning buzzer function can be activated or deactivated (ON by default).
Default		Initialization of above mentioned functions

*NOTE: *The item of the rear wiper is shown on the display, but the rear wiper can not be customized because it is not equipped on GALANT.*

ADJUSTMENT BY OPERATING THE MULTI-CENTER DISPLAY <VEHICLES WITH MITSUBISHI MULTI COMMUNICATION SYSTEM>

The following function and system customizations are possible by using the multi-center display.



AC600907

TSB Revision

ITEM (multi-center display)			ADJUSTMENT DETAILS
Keyless entry system (Page1/5)	Horn Answerback	Sounds	The horn answerback can be enabled or disabled. a. ON b. OFF
		Button Pushes	The number of keyless entry button operation can be set when a horn answerback sounds. a. Once b. Twice
	Turn Signal Lights Answerback		The hazard answerback flashing conditions can be set in the following ways. a. Locking only b. Unlocking only c. Both d. Not-operated
Windshield Wipers (Page2/5)	Speed-sensitive Operation		The speed-sensitive wiper function can be activated or deactivated. (ON by default) a. ON b. OFF
	Rear Wiper	Intermittent Interval*	– a. 2sec b. 4sec c. 8sec d. 16sec
		Continuous Operation	– a. ON b. OFF
Exterior Lights / Interior Lights (Page3/5)	Headlight Auto-cutout Function		- a. ON b. OFF
	Headlight On Condition		- a. Before Ignition Off b. Anytime
	Interior Light Auto-cutout Time		The period before the interior illumination is turned off automatically can be set in the following ways. a. 3 minutes b. 30 minutes (default) c. 60 minutes d. No auto-cutout
	Duration Dome Light Remains On after Door is Closed		- a. 180 sec b. 120 sec c. 60 sec d. 30 sec e. 15 sec f. 0 sec

TSB Revision

ITEM (multi-center display)		ADJUSTMENT DETAILS
Door-ajar Warning / Turn Signal (Page4/5)	Door - ajar Warning Chime	- a. ON b. OFF
	Turn Signal Audible	- a. ON b. OFF
Power Door Locks (Page5/5)	Automatic Relocking after Unlocked with Keyless Entry System	- a. 30 sec b. 60 sec c. 120 sec d. 180 sec
	Unlock Operation with Key and Keyless Entry System	- a. Only Driver's Door b. All Doors
Equipment		Initialization of above mentioned functions

*NOTE: *The item of the rear wiper is shown on the display, but the rear wiper can not be customized because it is not equipped on GALANT.*