

GROUP 54C

CONTROLLER AREA NETWORK (CAN)

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GENERAL INFORMATION

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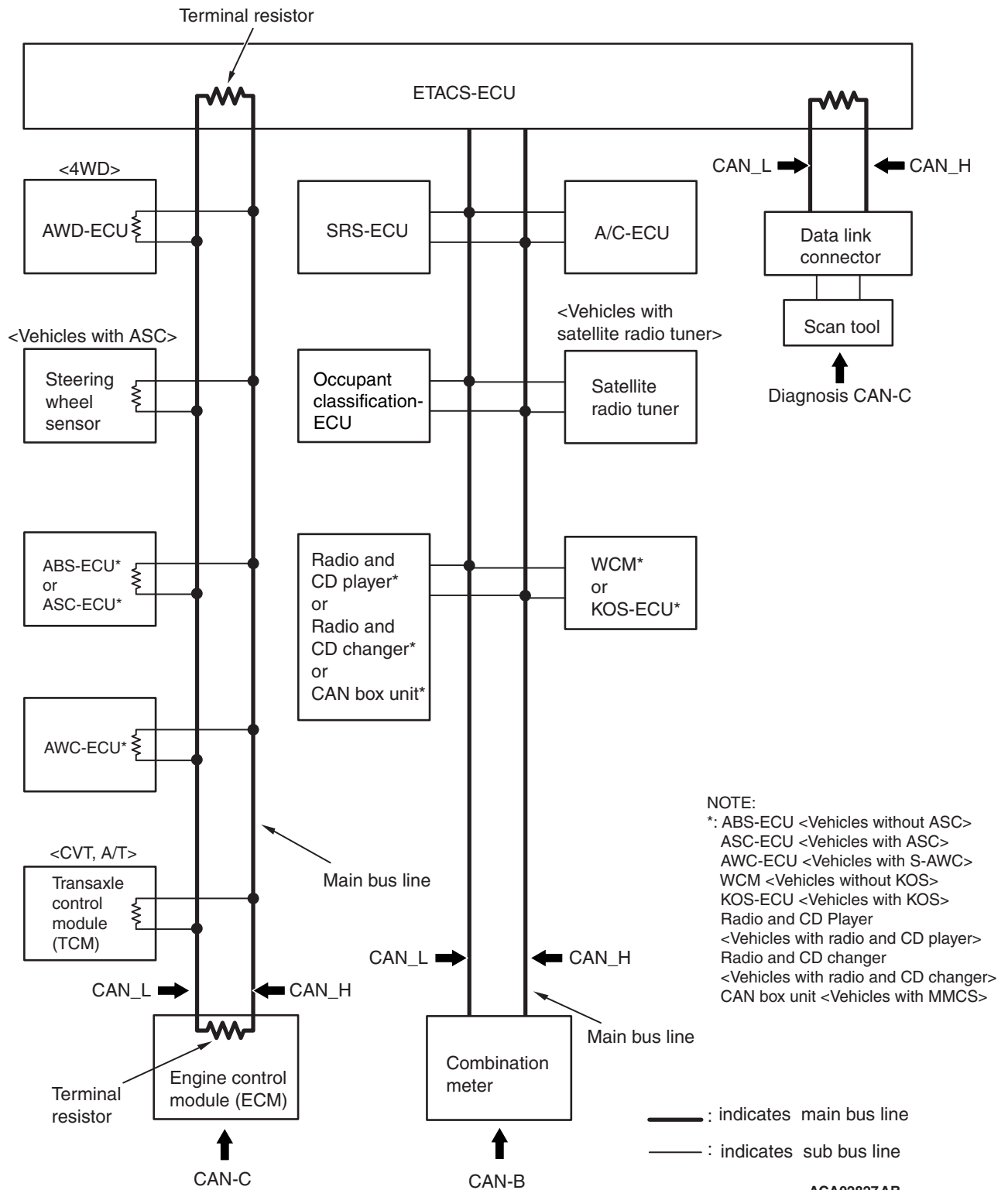
CAN, an abbreviation for Controller Area Network, is an ISO-certified international standard for a serial multiplex communication protocol*. A communication circuit employing the CAN protocol connects each electric control module (ECU), and sensor data can be shared among, which enables more reduction in wiring.

*NOTE: *: The regulations have been decided in detail, from software matters such as the necessary transmission rate for communication, the system, data format, and communication timing control method to hardware matters such as the harness type and length and the resistance values.*

CAN offers the following advantages.

- Transmission rates are much faster than those in conventional communication (up to 1 Mbps), allowing much more data to be sent.
- It is exceptionally immune to noise, and the data obtained from each error detection device is more reliable.
- Each ECU connected via the CAN communicates independently, therefore if the ECU enters damaged mode, communications can be continued in some cases.

STRUCTURE



ACA02827 AB

- With OUTLANDER, for the first time with MMC, a gateway function has been integrated to ETACS-ECU as the network central ECU.
- The CAN system consists of the following three networks: CAN-B (middle-speed body network), CAN-C (high-speed power train network), and the diagnosis CAN-C (diagnosis exclusive network). Each ECU is connected to one of the networks depending on its functions.

- The CAN bus line consists of two lines, CAN_L and CAN_H (CAN Low and CAN High, respectively), as well as two terminal resistors (A twisted-pair cable, highly resistant to noise, is used for the communications line).
- The CAN bus line connecting two dominant ECUs is the main bus line, and the CAN bus line connecting each ECU is the sub-bus line.
- With CAN-C, the terminal resistors are incorporated in ECU. Resistors with approximately 120 ohms is used for the dominant ECU, and that with 3.0 k Ω is used for the non-dominant ECU.

NOTE:

- *Dominant ECU: ETACS-ECU and engine control module*
- *Non-dominant ECU: ECU and sensor on CAN-C network, excluding ETACS-ECU and engine control module*
- To the CAN bus line, ECU, sensor, and data link connector are connected as follows for each network.

CAN-B

- A/C-ECU

- SRS-ECU
- Occupant classification-ECU
- Radio and CD player <vehicles with radio and CD player>
- Radio and CD changer <vehicles with radio and CD changer>
- CAN box unit <vehicles with MMCS>
- Satellite radio tuner <vehicles with satellite radio>
- WCM <vehicles without KOS>
- KOS-ECU <vehicles with KOS>
- Combination meter

CAN-C

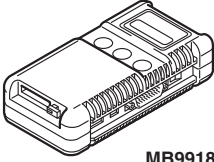
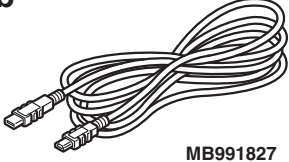
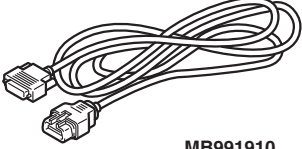
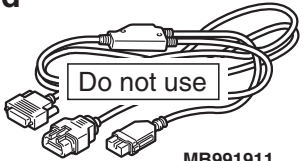
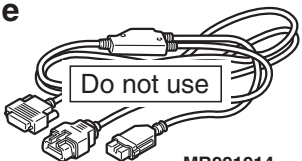
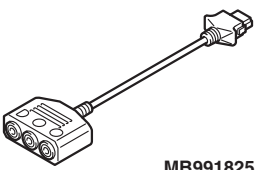
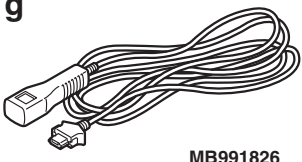
- AWD-ECU <Electric controlled AWD>
- AWC-ECU <S-AWC>
- Steering wheel sensor <vehicles with ASC>
- ABS-ECU <vehicles without ASC>
- ASC-ECU <vehicles with ASC>
- Transaxle control module (TCM) <CVT, A/T>
- Engine control module (ECM)

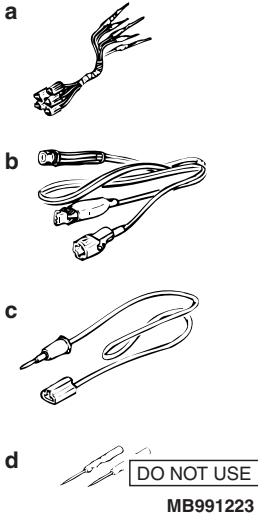
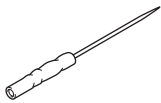
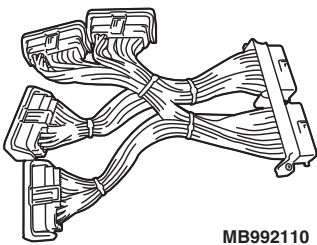
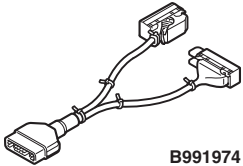

DIAGNOSIS CAN-C

- Data link connector

SPECIAL TOOLS


M1548304200400

Tool	Tool number and name	Supersession	Application
<p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>a. MB991824</p> <p>b. MB991827</p> <p>c. MB991910</p> <p>d. MB991911</p> <p>e. MB991914</p> <p>f. MB991825</p> <p>g. MB991826</p> <p>M.U.T.-III sub assembly</p> <p>a. Vehicle communication interface (V.C.I.)</p> <p>b. M.U.T.-III USB cable</p> <p>c. M.U.T.-III main harness A (Vehicles with CAN communication system)</p> <p>d. M.U.T.-III main harness B (Vehicles without CAN communication system)</p> <p>e. M.U.T.-III main harness C (for Chrysler models only)</p> <p>f. M.U.T.-III measurement adapter</p> <p>g. M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>⚠ CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>CAN bus diagnostics</p>

Tool	Tool number and name	Supersession	Application
	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	—	Continuity check and voltage measurement at harness wire or connector for loose, corroded or damaged terminals, or terminals pushed back in the connector.
 MB992110	MB992110 Power plant ECU check harness	—	Measure the voltage and resistance at the ECM
 B991974	MB991974 ABS check harness	—	Measure the voltage and resistance at the ABS-ECU
 MB991997	MB991997 ASC check harness	—	Measure the voltage and resistance at the ASC-ECU

TEST EQUIPMENT

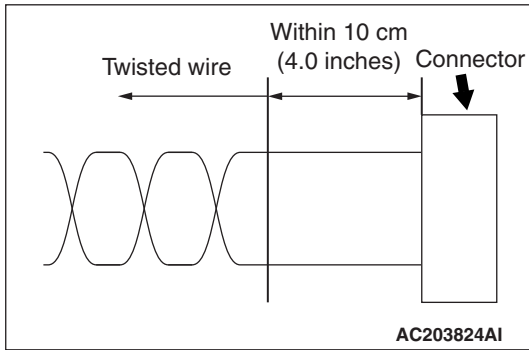
M1548304300258

Test equipment	Name	Application
 <p>AC000019</p>	Digital multimeter	Checking CAN bus circuit (for resistance and voltage measurements)

SERVICE PRECAUTIONS

M1548302100269

Warnings in diagnosis section	Details regarding warnings
<p>⚠ CAUTION</p> <p>When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do, a component connected to the CAN bus line may be broken.</p>	—
<p>⚠ CAUTION</p> <p>A digital multimeter should be used.</p>	When measuring resistance value or voltage in CAN bus lines, use a digital multimeter. If not using a digital multimeter, the equipments, which are connected through the CAN communication lines, may be damaged.
<p>⚠ CAUTION</p> <p>When measuring the resistance, disconnect the negative battery terminal.</p>	Disconnect the negative battery terminal when measuring the resistance value in the CAN bus line. If you fail to do so, the equipments, which are connected through the CAN communication lines, may be damaged.

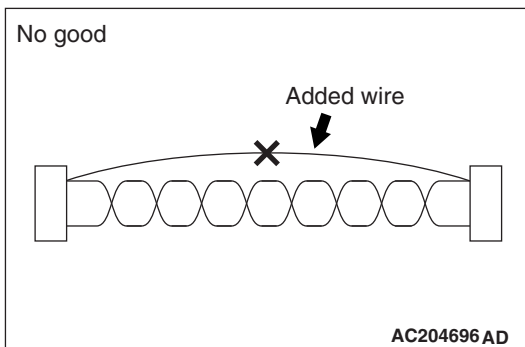
Warnings in diagnosis section	Details regarding warnings
⚠ CAUTION The test wiring harness should be used.	Always use the test harness when measuring the voltage or resistance value at the female connector. If you fail to do so, connectors may be damaged.
⚠ CAUTION The strand end of the twist wire should be within 10 cm from the connector.	 <p>If you repair the wire due to a defective connector or its terminal or harness wire, you should cut the wire so that the strand end of the twist wire should be within 10 cm (4 inches) from the connector as shown. If it exceeds 10 cm (4 inches), twist the wiring harness just like the original twisted wire. If the strand end exceeds 10 cm (4 inches), a communication error may be caused.</p>
⚠ CAUTION Strictly observe the specified wiring harness repair procedure.	When you repair a CAN bus line, observe the precautions on how to repair the CAN bus line strictly. Refer to P.54C-8 . If a new wire is added or a splice point is modified for the CAN_L or CAN_H line, an error in the CAN communication may be caused.

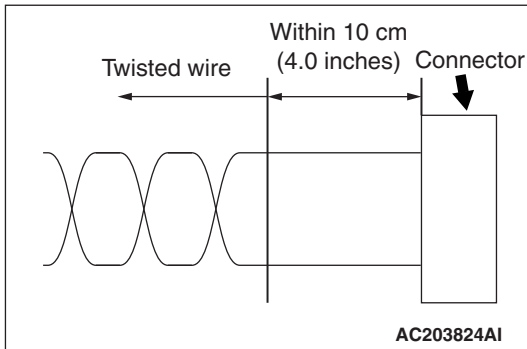
PRECAUTIONS ON HOW TO REPAIR THE CAN BUS LINES

M1548301900370

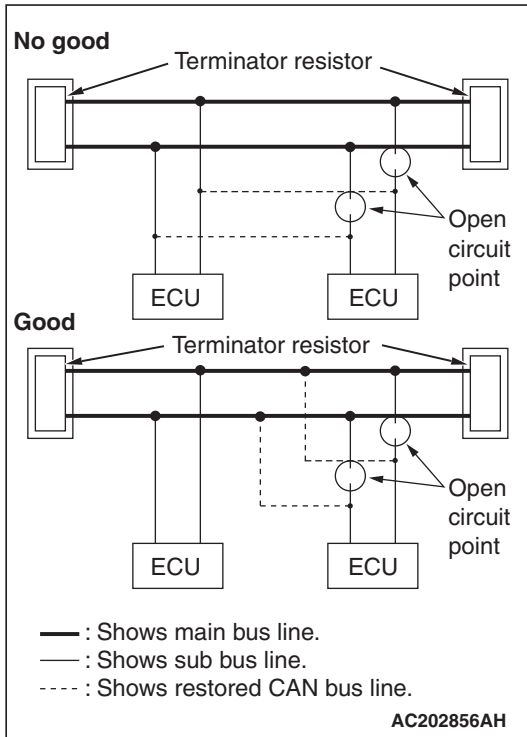
PRECAUTIONS ON HOW TO REPAIR THE CAN BUS LINES

- If the CAN bus line(s) are repaired, renew all the twisted wires between the end connectors. If the wiring harness is partially repaired, or only CAN_L or CAN_H line is repaired, noise suppression is deteriorated, causing a communication error.





- If the connector or wire on the main bus line or the sub-bus wire is replaced, the frayed end of the twisted wire should be within 10 cm (4 inches) from the connector. If it exceeds 10 cm (4 inches), twist the wiring harness just like the original twisted wire. If the frayed end exceeds 10 cm (4 inches), noise suppression is deteriorated, causing a communication error.



- If a sub-bus line is repaired, splice a new wire directly into the main bus line. If a new wire is spliced into the sub-bus line, which is connected to another device, the CAN communication will be disabled.

PRECAUTIONS ON HOW TO REPAIR THE TERMINATOR RESISTOR

If one-side terminator resistor is broken, the CAN communication will continue although noise suppression is deteriorated. No diagnostic trouble code may be set even if the terminator resistor was broken. If a damage is found, replace the ECU which incorporates the defective terminator resistor.

CAN BUS LINE REPAIR HARNESS (PART NAME AND NUMBER)

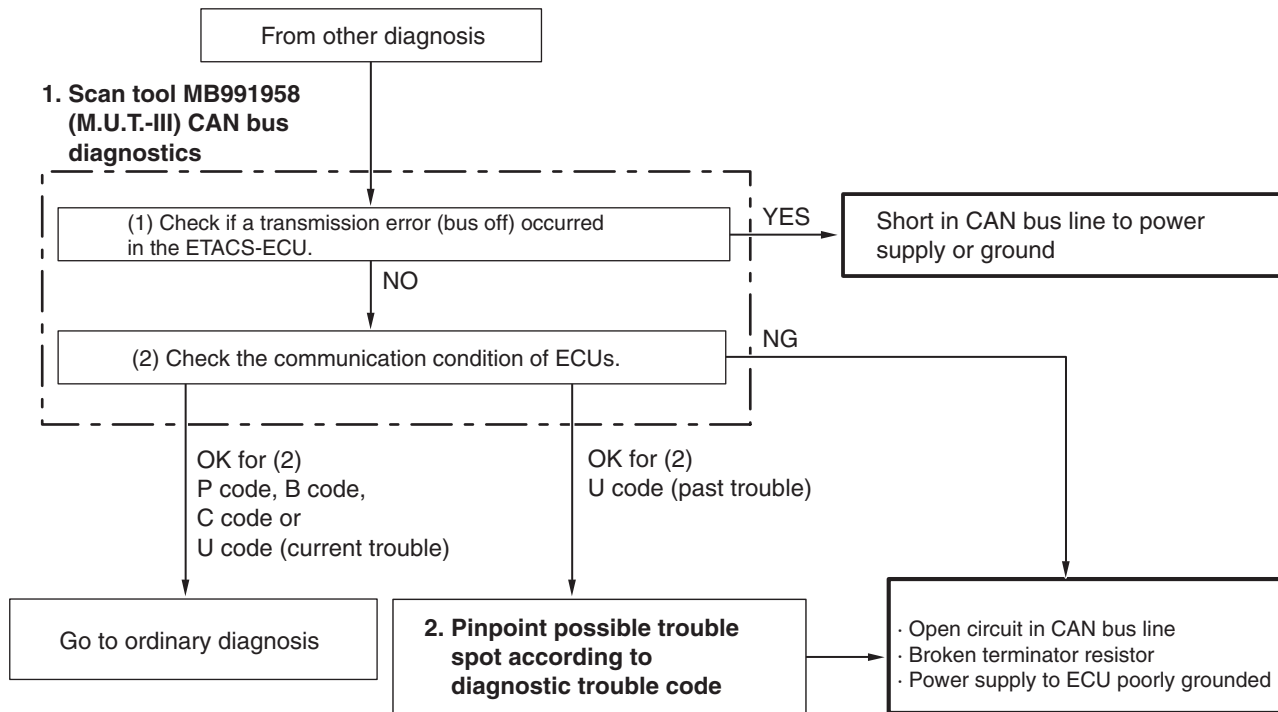
Part name	Part number
Twist pair cable	MN151514

EXPLANATION ABOUT THE SCAN TOOL (M.U.T.-III) CAN BUS DIAGNOSTICS

M1548300100586

Scan tool MB991958 CAN bus diagnostics carries out the two checks below automatically, and then displays current condition of the CAN bus lines according to the check results.

CAN BUS LINE DIAGNOSTIC FLOW



AC507612AE

1. Scan tool CAN bus diagnostics

Scan tool MB991958 diagnoses CAN bus lines in accordance with the following strategy.

NOTE: After you determine whether the CAN-C lines are in good condition, then determine whether the CAN-B lines are in good condition. Then confirm each judgment result on the scan tool screen.

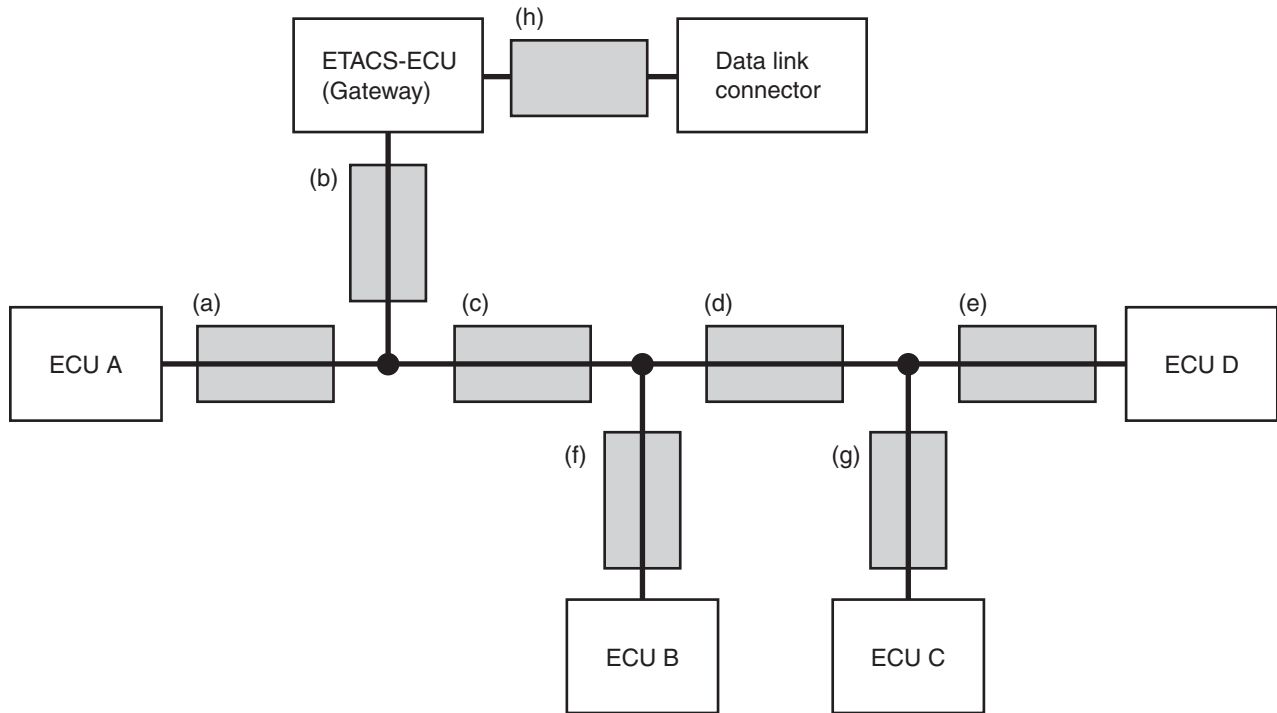
(1) Check that the ETACS-ECU sets a diagnostic trouble code.

You can narrow down the points to be diagnosed by confirming an ETACS-ECU diagnostic trouble code.

(2) Checking the communication condition of ECUs

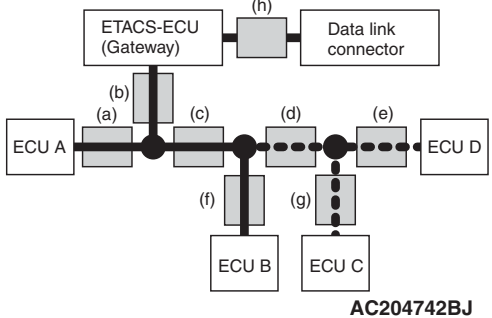
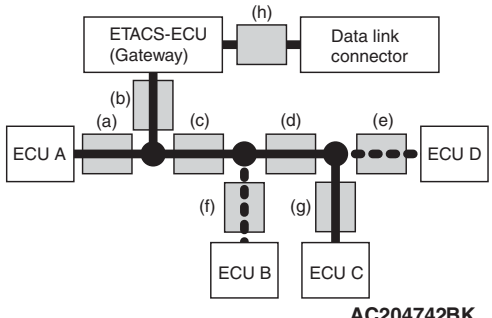
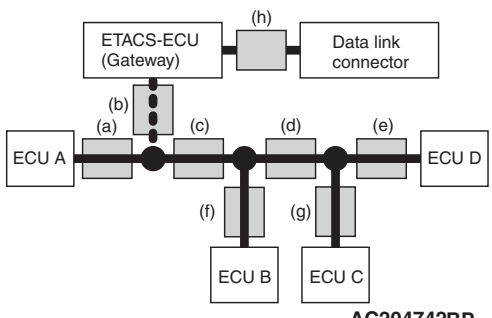
Scan tool MB991958 narrows down troubles in circuit by itself. Its strategies are as follows.

Reference circuit



AC204741AD

ECU which cannot communicate with the scan tool	Possible trouble spot	Logic for narrowing down trouble spot
ETACS-ECU and all ECUs	CAN bus line (h) and power supply system to ETACS-ECU	<p>The ETACS-ECU and the other ECUs use the CAN bus line (h) when they communicate with scan tool MB991958. Since none of the ETACS-ECU and the other ECUs can communicate with scan tool MB991958, CAN bus line (h) or the power supply circuit to the ETACS-ECU may be faulty.</p> <p style="text-align: right;">AC204742BO</p>
ECU A	CAN bus line (a) and power supply system to ECU A	<p>ECU A communicates with the scan tool MB991958 via CAN bus lines (a) and (b). Scan tool MB991958 judges that CAN bus line (b) is normal, because it can communicate with other ECUs. Possible trouble may be present in CAN bus line (a) or the power supply system to ECU A.</p> <p style="text-align: right;">AC204742BH</p>
ECU C	CAN bus line (g) and power supply system to ECU C	<p>The ECU C communicates with scan tool MB991958 via CAN bus lines (b), (c), (d) and (g). Scan tool MB991958 judges that CAN bus lines (b), (c) and (d) are normal, because it can communicate with ECUs B and D. Possible trouble may be present in CAN bus line (g) or the power supply system to ECU C.</p> <p style="text-align: right;">AC204742BI</p>

ECU which cannot communicate with the scan tool	Possible trouble spot	Logic for narrowing down trouble spot
ECU C and ECU D	Trouble in CAN bus line (d)	<p>ECUs C and D communicate with scan tool MB991958 via CAN bus lines (b), (c), (d), (e) and (g). Scan tool MB991958 judges that CAN bus lines (b) and (c) are normal, because it can communicate with ECU B. Possible trouble may be present in CAN bus line (d), (e) or (g) or the power supply system to ECU C and ECU D. CAN bus line (d) is shared by ECUs C and D when they communicate with scan tool MB991958, so CAN bus line (d) is suspected as ultimate cause. CAN bus line (g) or (e) and power supply systems to ECU C or D are also suspected as second cause.</p>  <p align="right">AC204742BJ</p>
ECU B and ECU D	CAN bus line (e) or (f) or power supply system to ECU B or D	 <p align="right">AC204742BK</p>
All ECU (except ETACS-ECU)	CAN bus line (b)	<p>The other ECUs except the ETACS-ECU use CAN bus lines (b) and (h) when they communicate with scan tool MB991958. It must be assumed that CAN bus line (b) is defective since the ETACS-ECU can communicate with scan tool MB991958.</p>  <p align="right">AC204742BP</p>

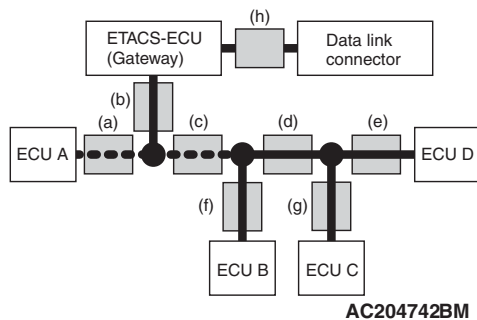
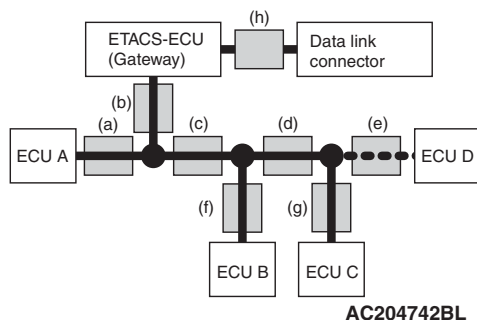
2. Pinpoint possible trouble spot according to diagnostic trouble code

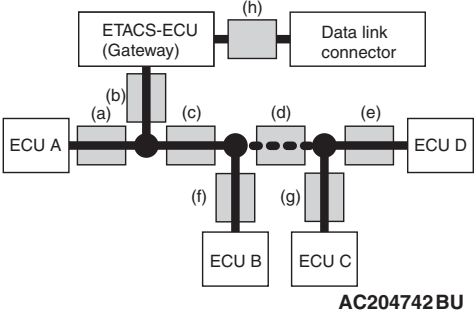
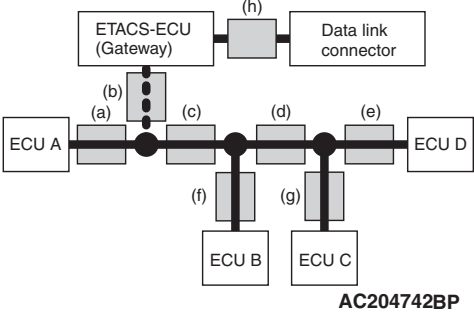
If diagnostic trouble code related to CAN communication is set as past trouble, isolate opens as described below.

NOTE: If you pinpoint trouble spot according to diagnostic trouble code, you should use time-out diagnostic trouble code. Diagnostic trouble code related to failure information is set when the data to be set contains an error, so CAN bus line itself is probably normal.

NOTE: Time-out diagnostic trouble codes are stored in each ECU memory individually. Therefore, it is possible that these diagnostic trouble codes have not been set simultaneously. If the trouble spot cannot be found when you diagnose by judging from multiple diagnostic trouble codes, check the communication lines between each ECU.

Diagnostic trouble code to be set	Possible trouble spot	Logic for narrowing down trouble spot
Time-out diagnostic trouble code associated with ECU D is stored in ECU A, ECU B and ECU C.	Trouble in CAN bus line (e) and power supply system to ECU D	When time-out diagnostic trouble code associated with ECU D is stored in ECU A, B and C, or time-out diagnostic trouble code associated with ECUs A, B and C is stored in ECU D, or "bus off" diagnostic trouble code is stored in ECU D, CAN bus line (e) is suspected. When diagnostic trouble code is not stored in ECU D, the power supply to ECU D is suspected.
Time-out diagnostic trouble code associated with ECUs A, B and C is stored in ECU D.		
"Bus off" diagnostic trouble code is stored in ECU D.		
Time-out diagnostic trouble code associated with ECU A is stored in ECUs B, C and D.	Trouble in CAN bus line (a) or (c) and power supply system to ECU A.	When time-out diagnostic trouble code associated with ECU A is stored in ECUs B, C and D, or time-out diagnostic trouble code associated with ECUs B, C and D is stored in ECU A, or "bus off" diagnostic trouble code is stored in ECU A, CAN bus line (a) or (c) is suspected. When diagnostic trouble code is not stored in ECU A, the power supply to ECU A is suspected.
Time-out diagnostic trouble code associated with ECUs B, C and D is stored in ECU A.		
"Bus off" diagnostic trouble code is stored in ECU A.		



Diagnostic trouble code to be set	Possible trouble spot	Logic for narrowing down trouble spot
Time-out diagnostic trouble codes associated with ECUs C and D are stored in ECU A and ECU B.	Trouble in CAN bus line (d)	<p>If time-out diagnostic trouble codes associated with ECUs C and D are stored in ECUs A and B, or time-out codes associated with ECUs A and B are stored in ECUs C and D, CAN bus line (d) is suspected. CAN bus line (g) or (e) and power supply systems to ECU C or D are also suspected as second cause.</p>  <p style="text-align: right;">AC204742BU</p>
Time-out diagnostic trouble codes associated with ECUs A and B are stored in ECU C and ECU D.		
Time-out diagnostic trouble codes associated with ECUs A, B, C and D are stored in ETACS-ECU.	Trouble in CAN bus line (b)	<p>It must be assumed that a fault was present in CAN bus line (b) when the ETACS-ECU has set a time-out diagnostic trouble code for ECU A, B, C or D.</p>  <p style="text-align: right;">AC204742BP</p>
Time-out diagnostic trouble codes associated with ETACS-ECU is stored in ECU A, B, C and ECU D.		

DIAGNOSTIC TROUBLE CODE DIAGNOSIS

M1548304500326

ON-BOARD DIAGNOSTICS

The CAN is a communication method which the ECUs use in order to communicate each other. The CAN-related diagnostic trouble codes will be stored in the following ECUs, which use the CAN communication.

- ETACS-ECU
- ECM
- TCM <CVT, A/T>
- ABS-ECU <vehicles without ASC>
- ASC-ECU <vehicles with ASC>
- AWD-ECU <Electric control AWD>
- AWC-ECU <S-AWC>
- Steering wheel sensor <vehicles with ASC>
- A/C-ECU
- SRS-ECU
- Occupant classification-ECU
- Radio and CD player <vehicles with radio and CD player>
- Radio and CD changer <vehicles with radio and CD changer>
- CAN box unit <vehicles with MMCS>
- Satellite radio tuner <vehicles satellite radio>
- WCM <vehicles without KOS>
- KOS-ECU <vehicles with KOS>
- Combination meter

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

Required Special Tools:

- 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

CAUTION

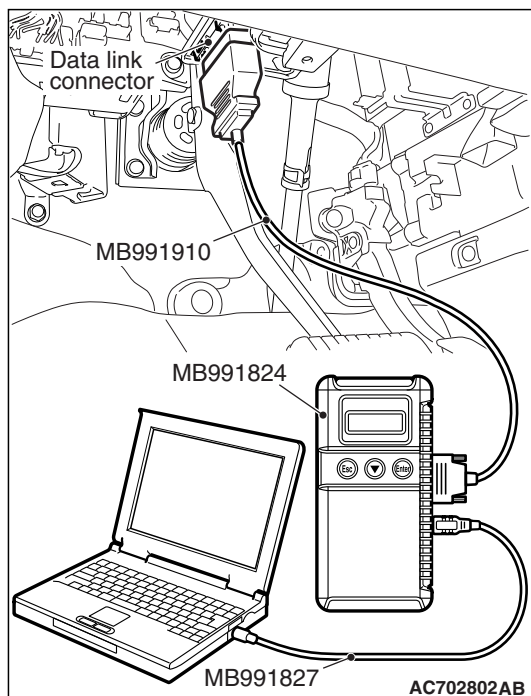
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

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 scan tool system on the personal computer.

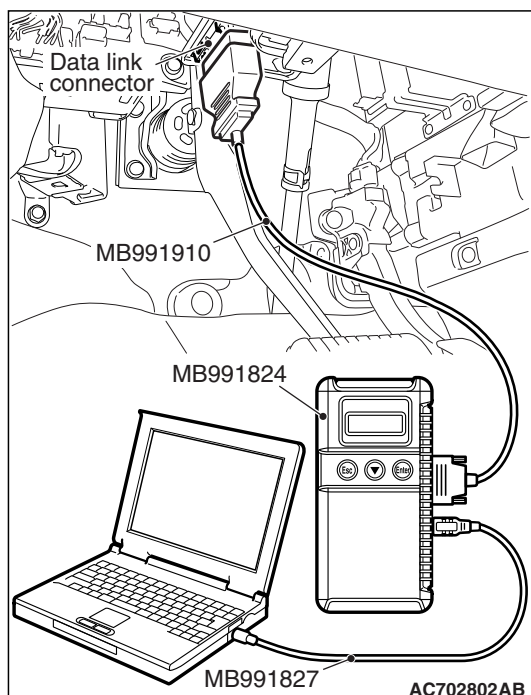
NOTE: Disconnecting scan tool MB991958 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.



HOW TO DIAGNOSE THE CAN BUS LINE

Required Special Tools:

- 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



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 whose CAN bus lines will be 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 whose CAN bus lines will be 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.

DIAGNOSIS

CAN BUS DIAGNOSTICS TABLE

M1548300202374

CAUTION

A diagnostic trouble code may not also be set in the CAN-B lines under the conditions below. If no diagnostic trouble code has been set due to electrical noise, confirm diagnostic item 26

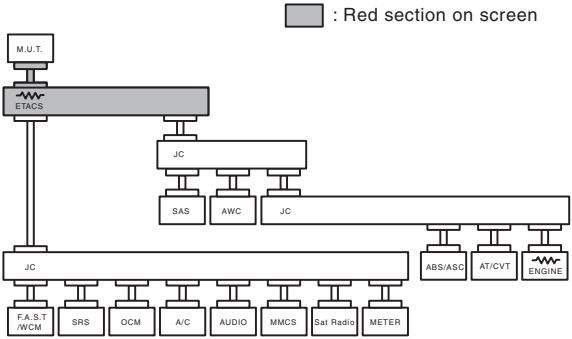
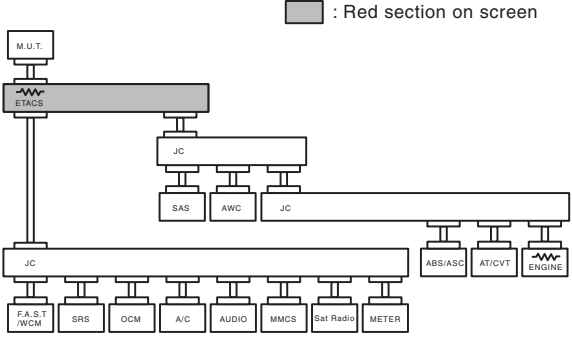
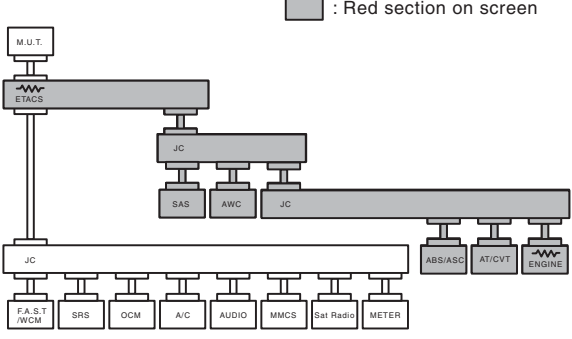
P.54C-171.

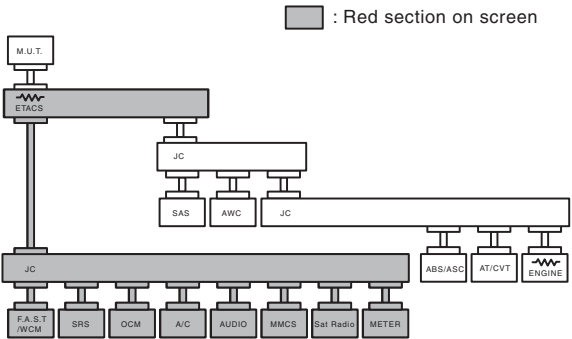
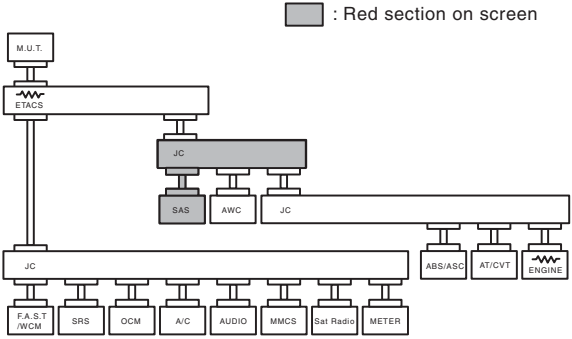
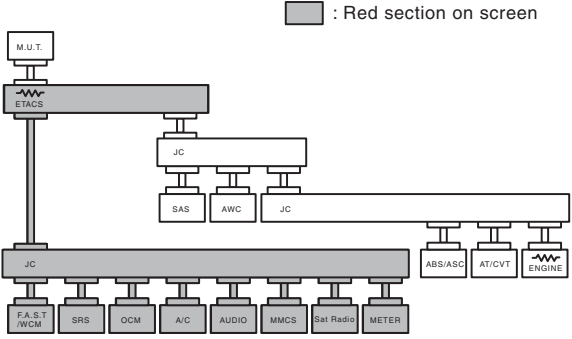
- Open circuit at the CAN_H side of the CAN-B bus lines
- Open circuit at the CAN_L side of the CAN-B bus line
- Short to ground at the CAN_H side of the CAN-B bus line

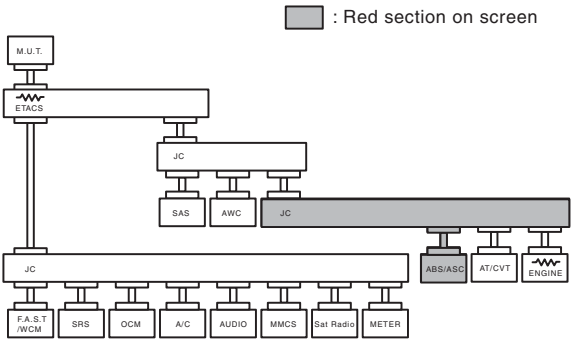
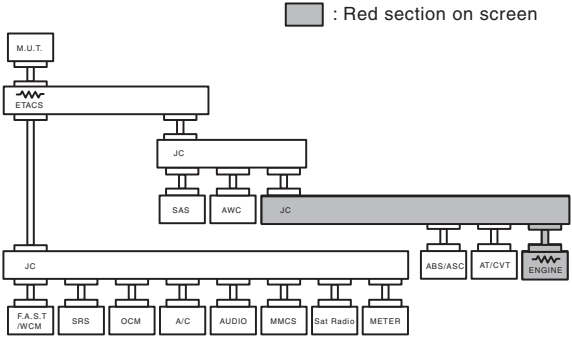
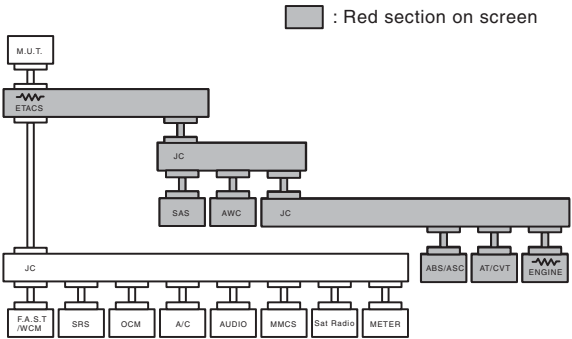
CAUTION

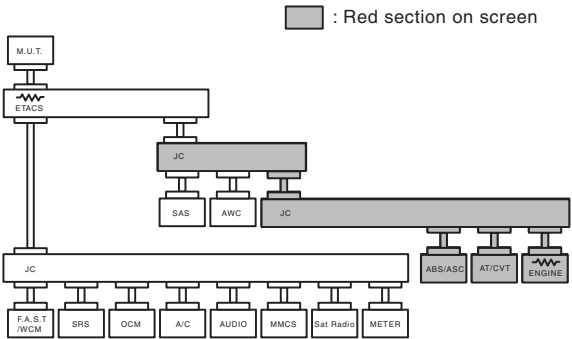
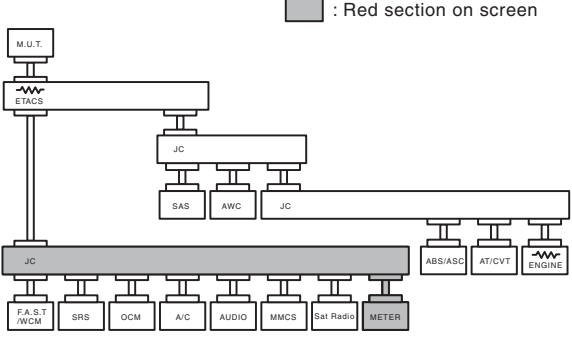
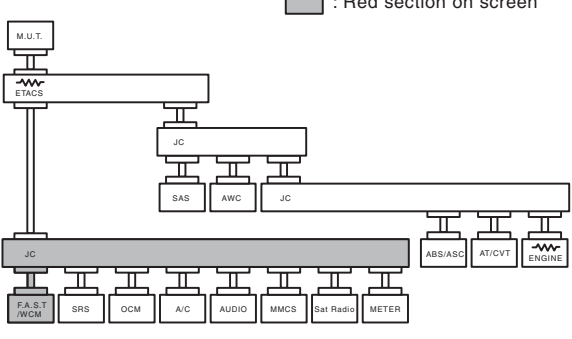
During diagnosis, a diagnostic trouble code associated with another system may be set when the ignition switch is turned on with connector(s) disconnected. After completing the repair, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all. This diagnosis applies only to the CAN bus lines. If a different system is defective, proceed to the applicable diagnosis section for each system. Observe the

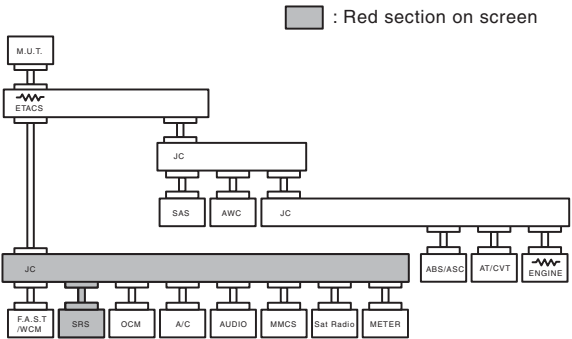
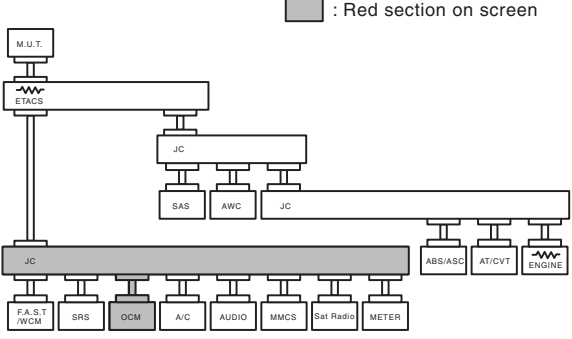
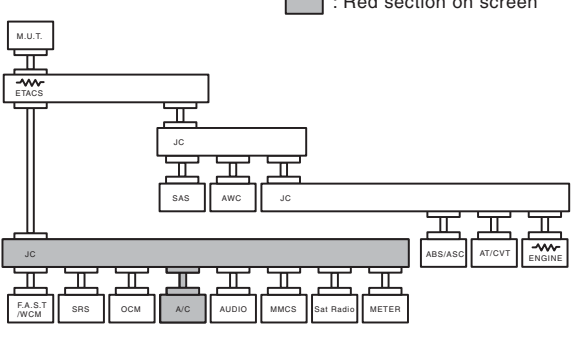
diagnostic procedure below only when the CAN bus line is defective.

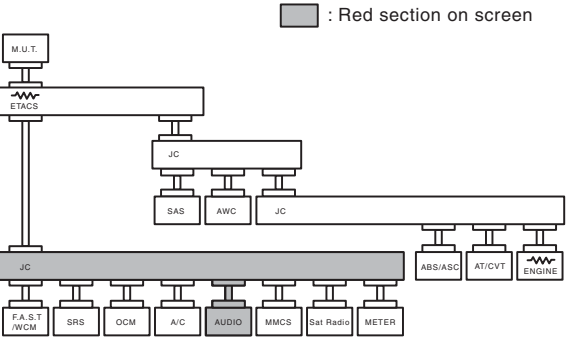
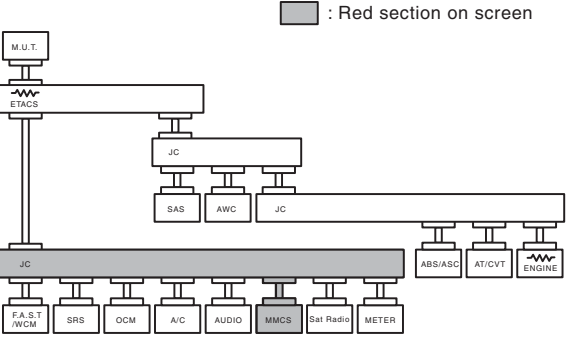
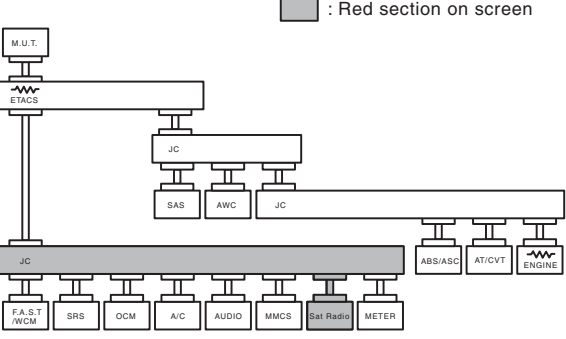
Scan tool screen (The ECUs that are not adopted are not displayed).	Comment	Diagnosis detail	Reference page
 <p>ACA02828AB</p>	Short circuit to battery in red displayed area is estimated.	Diagnostic item 1 Diagnose when the scan tool cannot receive the data sent by ETACS-ECU	P.54C-27
 <p>ACA02828AD</p>	Grounding in red displayed area is estimated.	Diagnostic item 2 Malfunction of the ETACS-ECU	P.54C-33
 <p>ACA02828AE</p>	CAN-C: A bus-off failure is present in the gateway ECU.	Diagnostic item 3 Abnormal short between the CAN-C bus lines	P.54C-34
	CAN-C: Grounding in red displayed area is estimated	Diagnostic item 4 Diagnose shorts in the ground to CAN-C bus line	P.54C-47
	CAN-C: Short circuit to battery in red displayed area is estimated	Diagnostic item 5 Diagnose shorts in the power supply to CAN-C bus line	P.54C-63

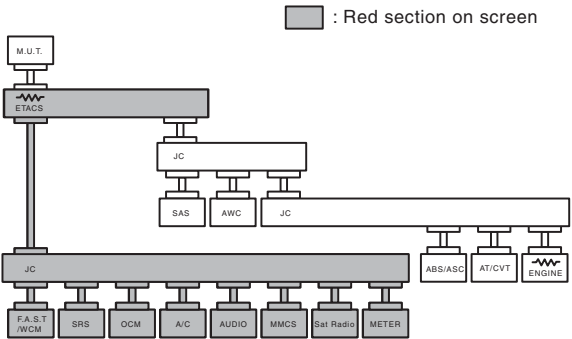
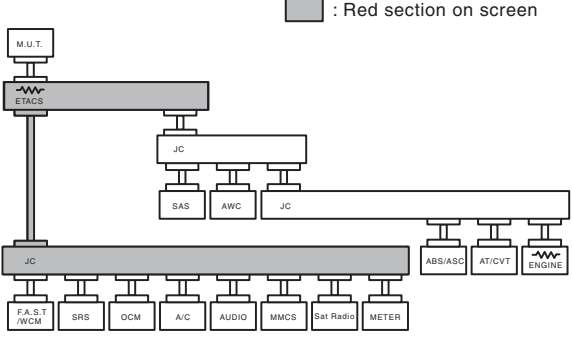
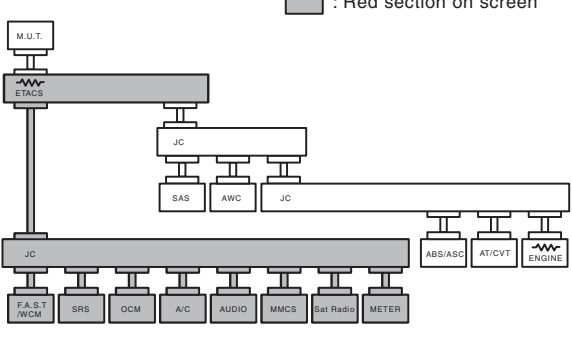
Scan tool screen (The ECUs that are not adopted are not displayed).	Comment	Diagnosis detail	Reference page
 <p align="center">ACA02828AL</p>	<p>CAN-C: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 6 Diagnose when the scan tool cannot receive the data sent by AWD-ECU <Electric controlled AWD></p> <p>Diagnostic item 7 Diagnose when the scan tool cannot receive the data sent by AWC-ECU <S-AWC></p>	<p>P.54C-79</p> <p>P.54C-82</p>
 <p align="center">ACA02828AG</p>	<p>CAN-C: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 8 Diagnose when the scan tool cannot receive the data sent by steering wheel sensor <Vehicles with ASC></p>	<p>P.54C-85</p>
 <p align="center">ACA02828AL</p>	<p>CAN-C: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 9 Diagnose when the scan tool cannot receive the data sent by TCM <CVT, A/T></p>	<p>P.54C-88</p>

Scan tool screen (The ECUs that are not adopted are not displayed).	Comment	Diagnosis detail	Reference page
 <p>ACA02828AI</p>	CAN-C: Disconnection in red displayed area is estimated.	Diagnostic item 10 Diagnose when the scan tool cannot receive the data sent by ABS-ECU <Vehicles without ASC> Diagnostic item 11 Diagnose when the scan tool cannot receive the data sent by ASC-ECU <Vehicles with ASC>	P.54C-91 P.54C-94
 <p>ACA02828AJ</p>	CAN-C: Disconnection in red displayed area is estimated.	Diagnostic item 12 Diagnose when the scan tool cannot receive the data sent by ECM	P.54C-97
 <p>ACA02828AE</p>	CAN-C: Disconnection in red displayed area is estimated.	Diagnostic item 13 Diagnose the lines between the ETACS-ECU and joint connector (CAN2)	P.54C-100

Scan tool screen (The ECUs that are not adopted are not displayed).	Comment	Diagnosis detail	Reference page
 <p align="center">■ : Red section on screen</p> <p align="center">ACA02828AK</p>	<p>CAN-C: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 14 Diagnose the lines between joint connector (CAN2) and joint connector (CAN3)</p>	<p>P.54C-104</p>
 <p align="center">■ : Red section on screen</p> <p align="center">ACA02828AM</p>	<p>CAN-B: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 15 Diagnose when the scan tool cannot receive the data sent by combination meter</p>	<p>P.54C-107</p>
 <p align="center">■ : Red section on screen</p> <p align="center">ACA02828AN</p>	<p>CAN-B: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 16 Diagnose when the scan tool cannot receive the data sent by KOS-ECU <Vehicles with KOS></p> <p>Diagnostic item 17 Diagnose when the scan tool cannot receive the data sent by WCM <Vehicles without KOS></p>	<p>P.54C-110</p> <p>P.54C-113</p>

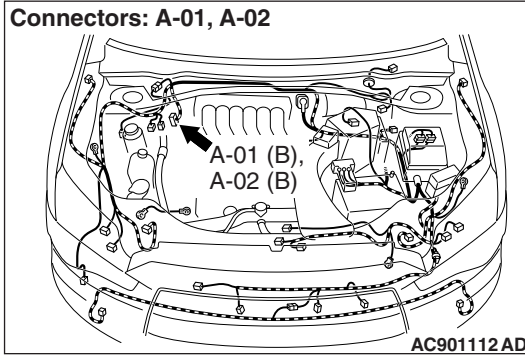
Scan tool screen (The ECUs that are not adopted are not displayed).	Comment	Diagnosis detail	Reference page
 <p>■ : Red section on screen</p> <p>ACA02828AO</p>	CAN-B: Disconnection in red displayed area is estimated.	Diagnostic item 18 Diagnose when the scan tool cannot receive the data sent by SRS-ECU	P.54C-116
 <p>■ : Red section on screen</p> <p>ACA02828AP</p>	CAN-B: Disconnection in red displayed area is estimated.	Diagnostic item 19 Diagnose when the scan tool cannot receive the data sent by occupant classification-ECU	P.54C-119
 <p>■ : Red section on screen</p> <p>ACA02828AQ</p>	CAN-B: Disconnection in red displayed area is estimated.	Diagnostic item 20 Diagnose when the scan tool cannot receive the data sent by A/C-ECU	P.54C-122

Scan tool screen (The ECUs that are not adopted are not displayed).	Comment	Diagnosis detail	Reference page
 <p align="center">ACA02828AR</p>	<p>CAN-B: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 21 Diagnose when the scan tool cannot receive the data sent by radio and CD player <Vehicles with radio and CD player> or radio and CD changer <Vehicles with radio and CD changer></p>	<p>P.54C-125</p>
 <p align="center">ACA02828AT</p>	<p>CAN-B: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 22 Diagnose when the scan tool cannot receive the data sent by CAN box unit <Vehicles with MMCS></p>	<p>P.54C-128</p>
 <p align="center">ACA02828AU</p>	<p>CAN-B: Disconnection in red displayed area is estimated.</p>	<p>Diagnostic item 23 Diagnose when the scan tool cannot receive the data sent by satellite radio tuner <Vehicles with satellite radio></p>	<p>P.54C-131</p>

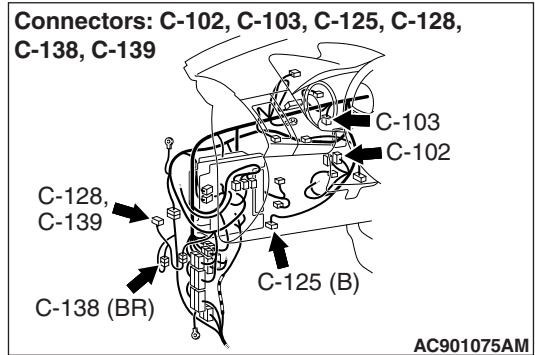
Scan tool screen (The ECUs that are not adopted are not displayed).	Comment	Diagnosis detail	Reference page
 <p>ACA02828AL</p>	CAN-B: A failure in the red section, or a bus-off failure is present in the gateway ECU.	Diagnostic item 24 Short to power supply or ground in both CAN_H and CAN_L lines of the CAN-B bus lines.	P.54C-134
 <p>ACA02828AV</p>	CAN-B: Disconnection in red displayed area is estimated.	Diagnostic item 25 Diagnose the ETACS-ECU, joint connector (CAN1) or lines between ETACS-ECU and joint connector (CAN1)	P.54C-167
 <p>ACA02828AL</p>	CAN-B: Disconnection in red displayed area is estimated.	Diagnostic item 26 Short to power supply or ground, open circuit or line-to-line short in the CAN-B bus lines	P.54C-171

CAN-RELATED CONNECTOR POSITION

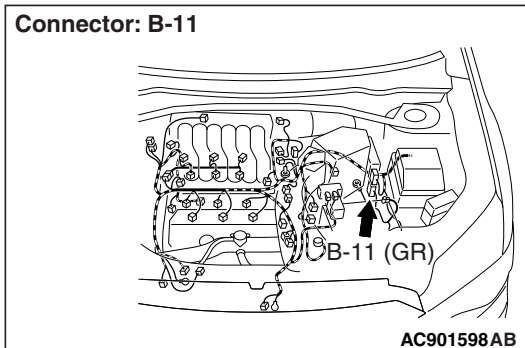
Connectors: A-01, A-02



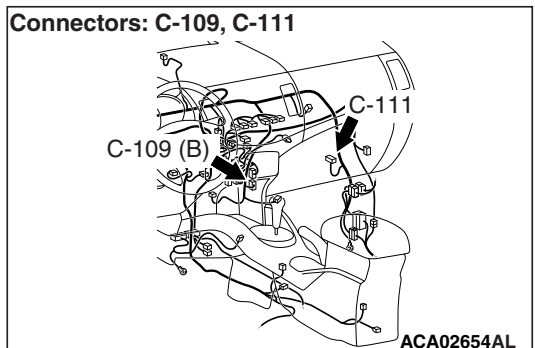
Connectors: C-102, C-103, C-125, C-128, C-138, C-139



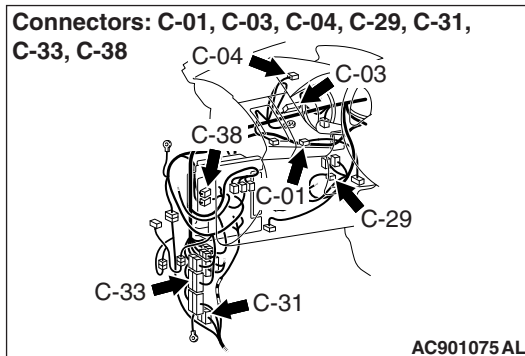
Connector: B-11



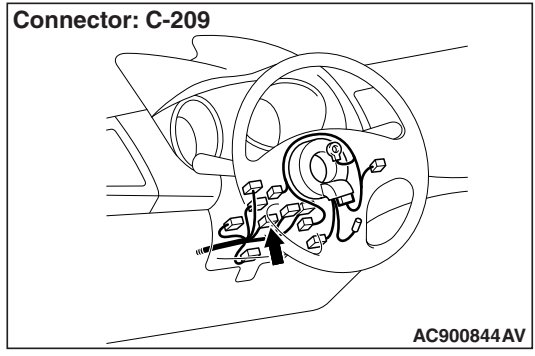
Connectors: C-109, C-111



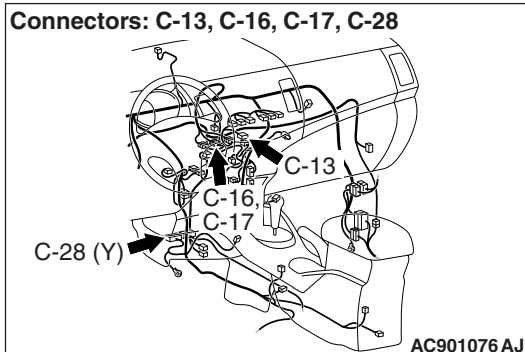
Connectors: C-01, C-03, C-04, C-29, C-31, C-33, C-38



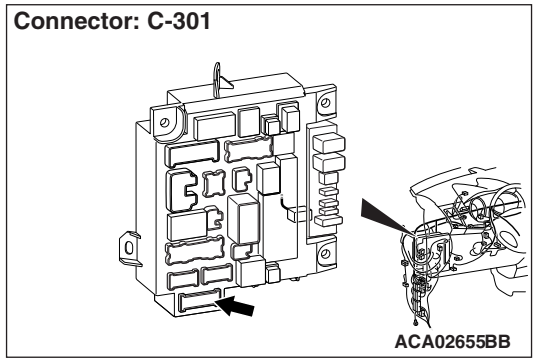
Connector: C-209



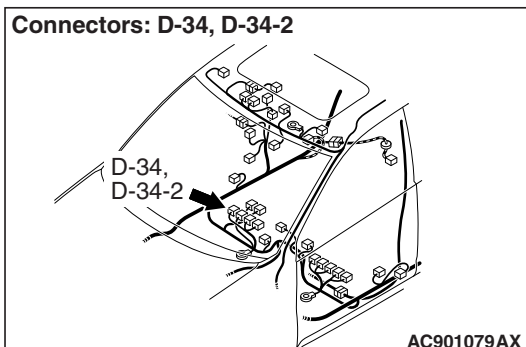
Connectors: C-13, C-16, C-17, C-28



Connector: C-301



Connectors: D-34, D-34-2



Connector No.	Connector name
A-01	ABS-ECU <Vehicles without ASC>
A-02	ASC-ECU <Vehicles with ASC>
B-11	Engine control module (ECM)
C-01	Joint connector (CAN3)
C-03	Combination meter
C-04	Joint connector (CAN2)
C-13	CAN box unit <Vehicles with MMCS>
C-16	Radio and CD player or CD changer <Vehicles without MMCS>
C-17	Intermediate connector (Instrument panel wiring harness and navigation harness combination)
C-28	SRS-ECU
C-29	Wireless control module (WCM) <Vehicles without KOS>
C-31	Intermediate connector (Instrument panel wiring harness and floor wiring harness combination)
C-33	Intermediate connector (Instrument panel wiring harness and front wiring harness combination)

Connector No.	Connector name
C-38	Transaxle control module (TCM) <CVT and 6A/T>
C-102	KOS-ECU <Vehicles with KOS>
C-103	Joint connector (CAN1)
C-109	A/C-ECU
C-111	Satellite radio tuner <Vehicles with satellite radio>
C-125	Data link connector
C-128	AWD-ECU <Electric controlled AWD>
C-138	Intermediate connector (Front wiring harness and AWD sub wiring harness combination) <Electric controlled AWD and S-AWC>
C-139	AWC-ECU <S-AWC>
C-209	Steering wheel sensor
C-301	ETACS-ECU
D-34	Front seat assembly (LH)
D-34-2	Occupant classification-ECU

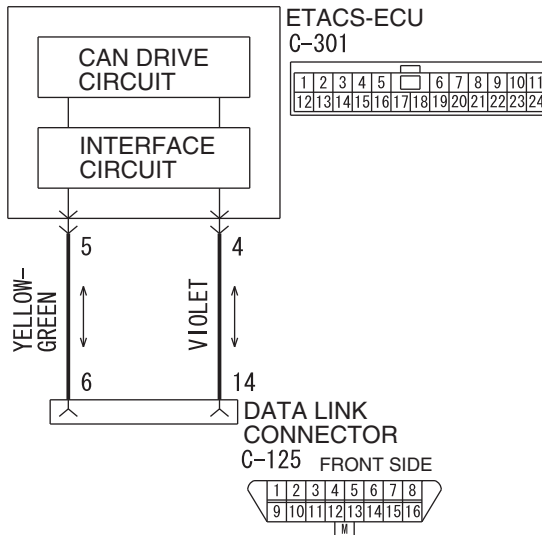
CAN BUS DIAGNOSTICS

DIAGNOSTIC ITEM 1: Diagnose when the scan tool cannot receive the data sent by ETACS-ECU

⚠ CAUTION

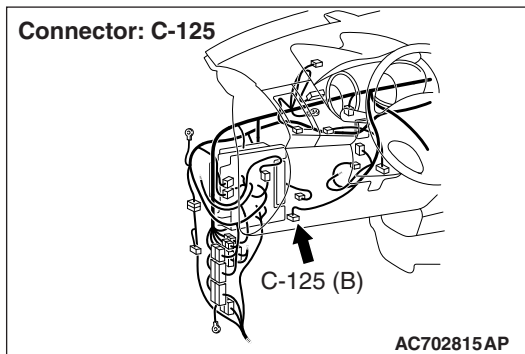
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit

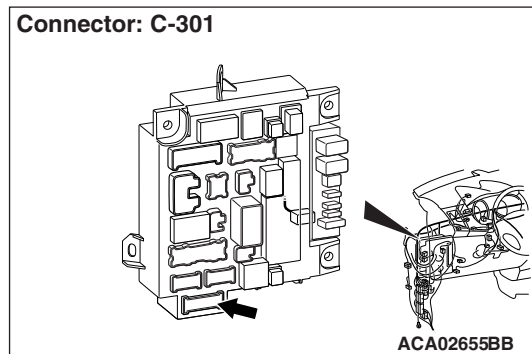


W8G54M145A

Connector: C-125



Connector: C-301



FUNCTION

When the CAN bus diagnosis is carried out, the scan tool communicates with the ETACS-ECU. If a communication flag is not set for the ETACS-ECU, the ETACS-ECU will be diagnosed as a communication error.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the ETACS-ECU, the Scan Tool determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector (data link connector or ETACS-ECU connector improperly connected)
- Malfunction of the wiring harness (open circuit, short to ground, short to power supply between the data link connector and the ETACS-ECU connector, line-to-line short, or power supply to the ETACS-ECU)
- Malfunction of ETACS-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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

STEP 1. Check data link connector C-125 and ETACS-ECU connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

⚠ CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are data link connector C-125 and ETACS-ECU connector C-301 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

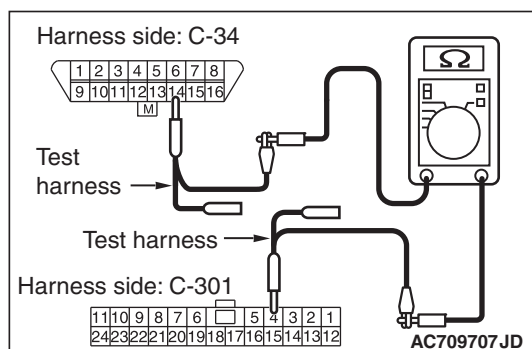
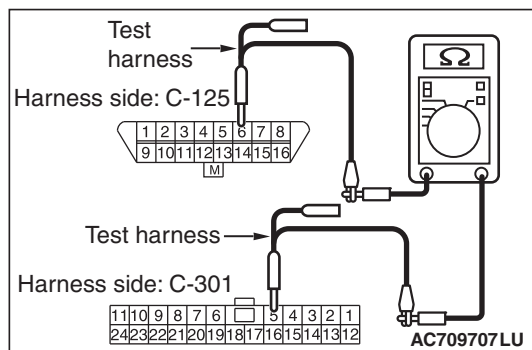
STEP 2. Check the wiring harness between data link connector C-125 and ETACS-ECU connector C-301 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

- (1) Disconnect the scan tool and ETACS-ECU connector C-301, and check the wiring harness.
- (2) Check the wiring harness between data link connector C-125 (terminal No.6) and ETACS-ECU connector C-301 (terminal No.5) <CAN_H>

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between data link connector C-125 (terminal No.14) and ETACS-ECU connector C-301 (terminal No.4) <CAN_L>

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between data link connector C-125 and ETACS-ECU connector C-301 in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness between data link connector C-125 and ETACS-ECU connector C-301.

STEP 3. Check the wiring harness between data link connector C-125 and ETACS-ECU connector C-301 for a short to ground. Measure the resistance at data link connector C-125.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to [P.54C-7](#).

⚠ CAUTION

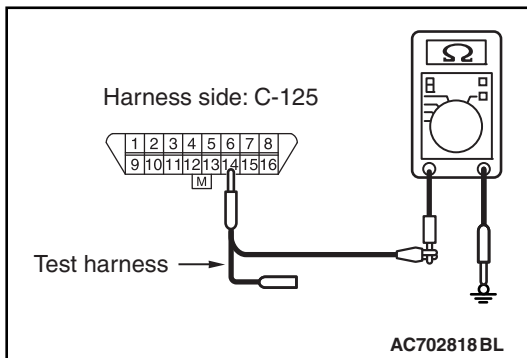
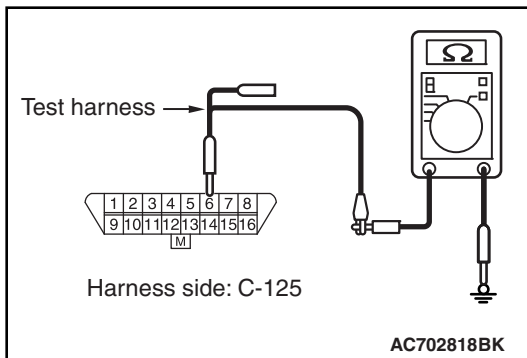
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect the scan tool and ETACS-ECU connector C-301, and measure the resistance at the wiring harness side of data link connector C-125.
- (2) Measure the resistance between data link connector terminal 6 and body ground. <CAN_H>

OK: 1 k Ω or more



- (3) Measure the resistance between data link connector terminal 14 and body ground. <CAN_L>

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 4.

NO : Repair the wiring harness between data link connector C-125 and ETACS-ECU connector C-301.

STEP 4. Check the wiring harness between data link connector C-125 and ETACS-ECU connector C-301 for a short to the power supply. Measure the voltage at data link connector C-125.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to [P.54C-7](#).

⚠ CAUTION

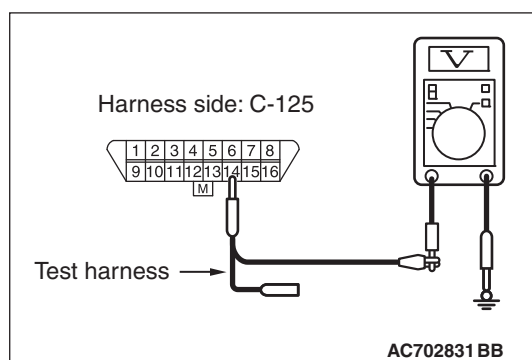
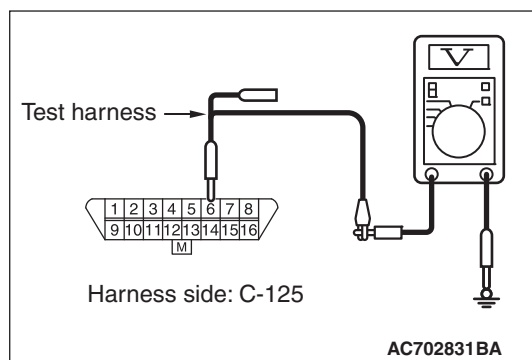
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect the scan tool and ETACS-ECU connector C-301, and measure the resistance at the wiring harness side of data link connector C-125.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between data link connector terminal 6 and body ground. <CAN_H>

OK: 1 volts or less



- (4) Measure the voltage between data link connector terminal 14 and body ground. <CAN_L>

OK: 1 volts or less

Q: Do all the voltage measure 5 volts or less?

YES : Go to Step 5.

NO : Repair the wiring harness between data link connector C-125 and ETACS-ECU connector C-301.

STEP 5. Check the wiring harness between data link connector C-125 and ETACS-ECU connector C-301 for line-to-line short. Measure the resistance at data link connector C-125.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to [P.54C-7](#).

⚠ CAUTION

A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

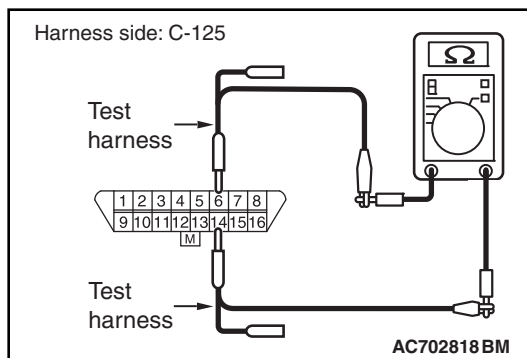
- (1) Disconnect the scan tool and ETACS-ECU connector C-301, and measure the resistance at the wiring harness side of data link connector C-125.
- (2) Measure the resistance between data link connector terminal 6 and 14.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness between data link connector C-125 and ETACS-ECU connector C-301.

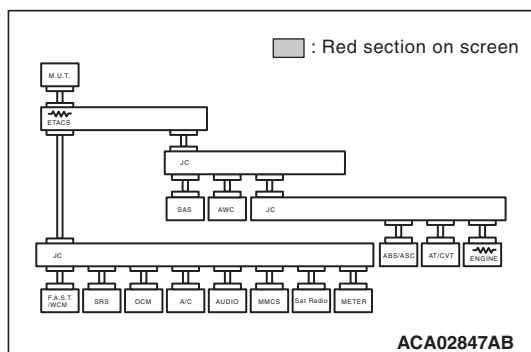
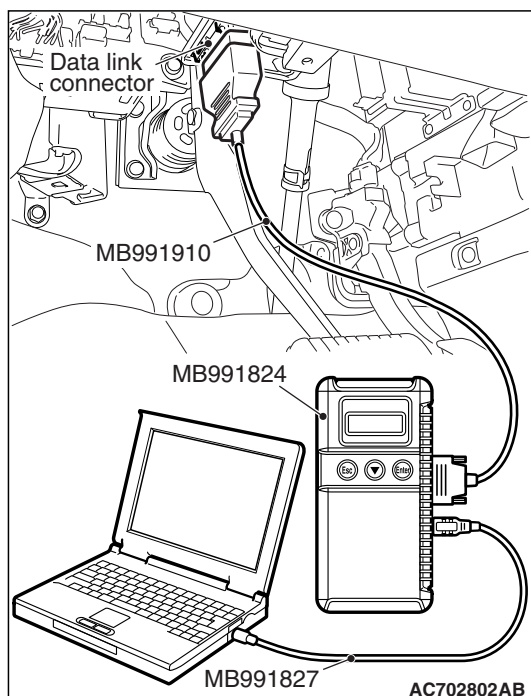


STEP 6. Using scan tool MB991958, diagnose the CAN bus line.

⚠ 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 CAN bus lines, and check if the scan tool screen is as shown in the illustration.

Q: Does the scan tool screen correspond to the illustration?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-15](#)).

NO : Replace the ETACS-ECU.

DIAGNOSTIC ITEM 2: Malfunction of the ETACS-ECU.

CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do, a component connected to the CAN bus line may be broken.

FUNCTION

When the CAN bus diagnosis is carried out, the scan tool sets communication "OK" flags in the patch between the ETACS-ECU and active other ECUs. If a communication "OK" flag is not set for the ECUs other than the ETACS-ECU, this diagnosis result will be set.

TROUBLE JUDGEMENT CONDITIONS

If no communication flags are set for the ECUs (on the CAN-B or CAN-C lines) other than the ETACS-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINT

- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

- 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

Recheck for other system diagnostic trouble code.

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.

Check whether ETACS-ECU-related DTC is set.

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

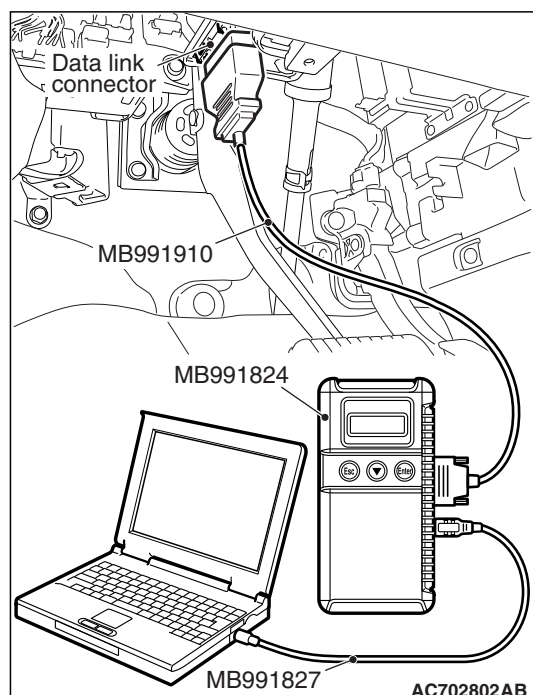
Q: Is the DTC set?

YES (The DTC other than the U code is set.) :

Troubleshoot the ETACS-ECU. Refer to GROUP 54A, ETACS-ECU [P.54A-733](#).

YES (Only U-code DTC is set.) : Check the power supply circuit of the ETACS-ECU. Refer to GROUP 54A, ETACS-ECU [P.54A-782](#).

NO (The DTC is not set.) : Check the power supply circuit of the ETACS-ECU. Refer to GROUP 54A, ETACS-ECU [P.54A-782](#).

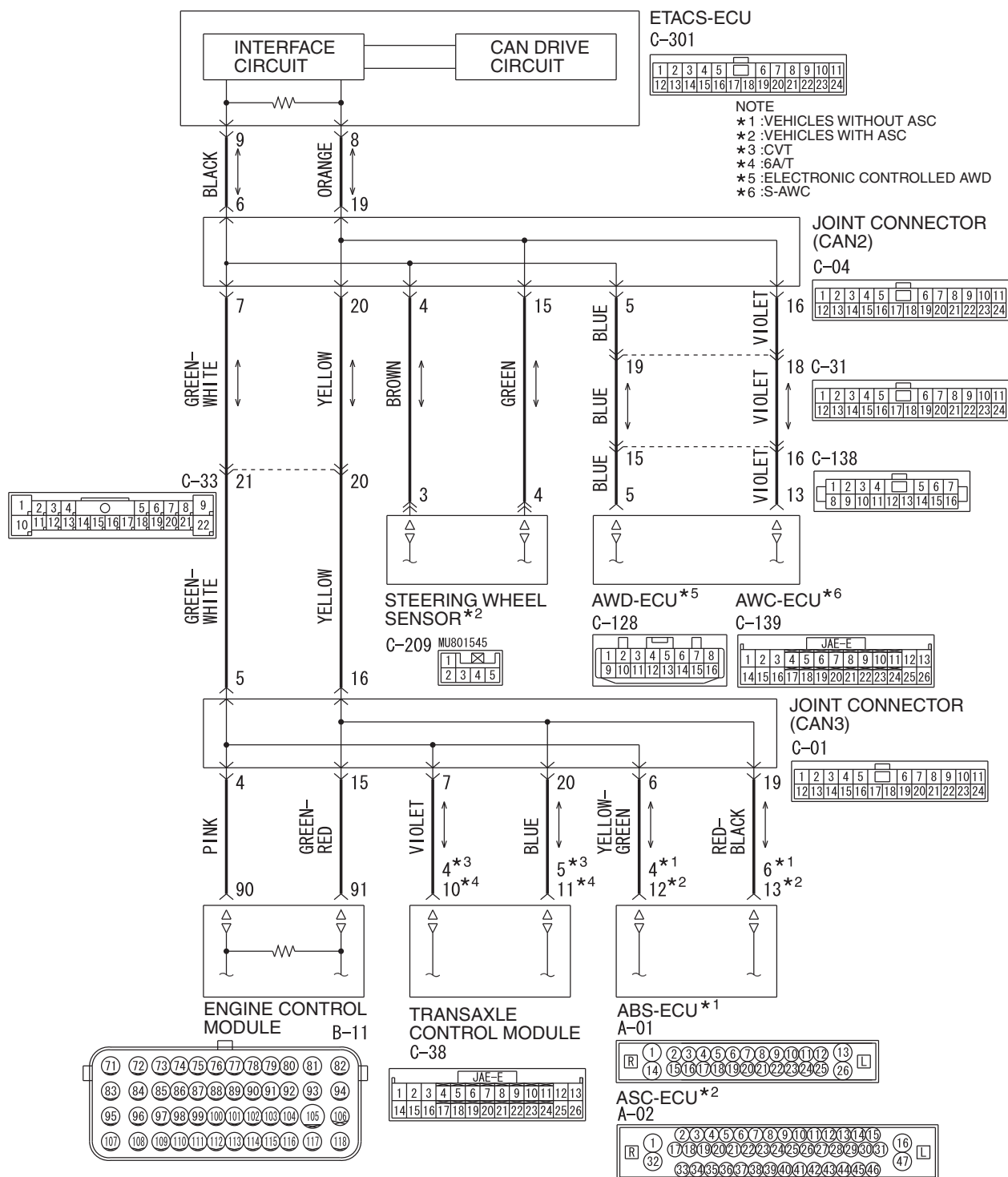


DIAGNOSTIC ITEM 3: Abnormal short between the CAN-C bus lines.

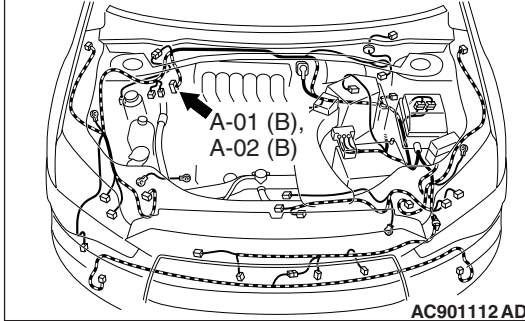
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

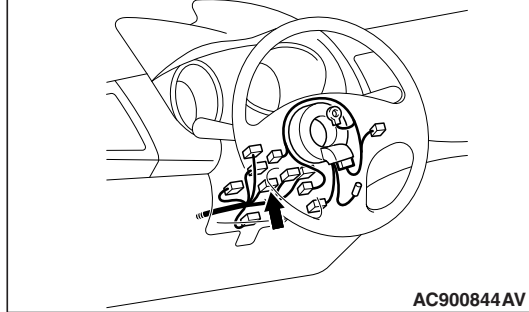
CAN Communication Circuit



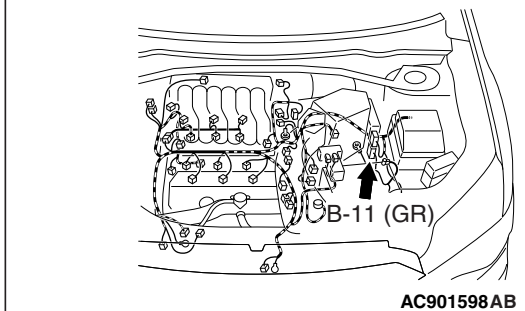
Connectors: A-01, A-02



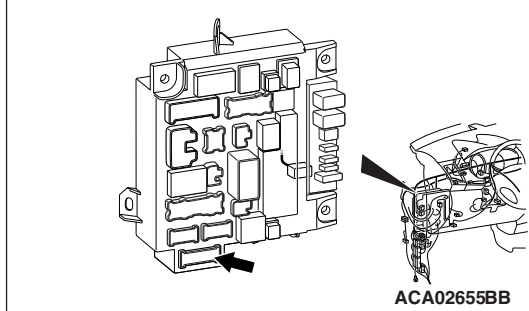
Connector: C-209



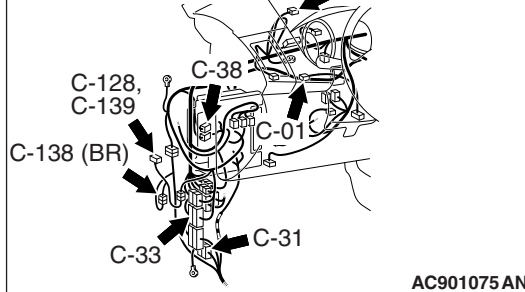
Connector: B-11



Connector: C-301



Connectors: C-01, C-04, C-31, C-33, C-38,
C-128, C-138, C-139



FUNCTION

If a line-to-line short is present in the CAN-C lines, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If only diagnostic trouble code U0001 is set, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector (joint connectors or ECU connectors improperly connected)
- Malfunction of the wiring harness (line-to-line short in the CAN-C main or sub bus lines)
- Malfunction of the ECU (ECU on CAN-C lines failed)

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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
- MB991970: ABS Check Harness

STEP 1. Check joint connector (CAN2) C-04 and joint connector (CAN3) for loose, corroded or damaged terminals, or terminals pushed back in the connector.

⚠ CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN2) C-04 and joint connector (CAN3) C-01 in good condition?

YES <vehicles with ASC> : Go to Step 2.

YES <vehicles without ASC (FWD)> : Go to Step 5.

YES <vehicles without ASC (Electric controlled AWD)> :
Go to Step 3.

NO : Repair the damaged parts.

STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and steering wheel sensor connector C-209 for line-to-line short. Measure the resistance at joint connector (CAN2) C-04.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to [P.54C-7](#).

⚠ CAUTION

A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN2), and check that there is continuity at the harness side of joint connector (CAN2).
- (2) Check that there is continuity between joint connector (CAN2) terminals 4 and 15.

OK: No continuity

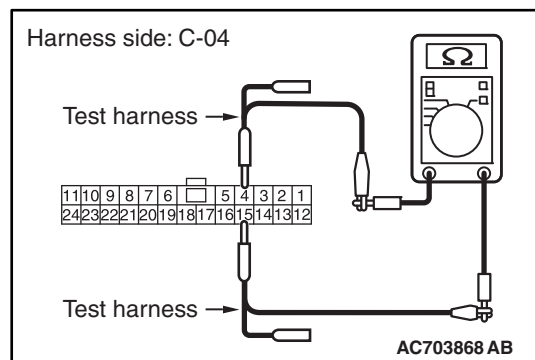
Q: Is the check result normal?

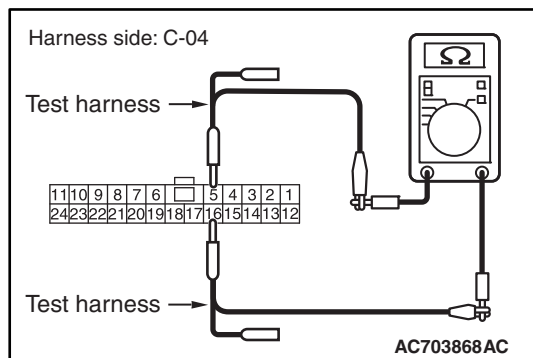
YES <FWD> : Go to Step 5.

YES <Electric controlled AWD> : Go to Step 3.

YES <S-AWC> : Go to Step 4.

NO : Go to Step 9.





STEP 3. Check the wiring harness between joint connector (CAN2) C-04 and AWD-ECU connector C-128 for line-to-line short. Measure the resistance at joint connector (CAN2) C-04.

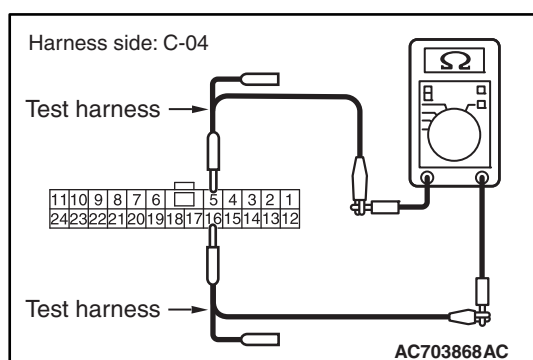
- (1) Disconnect joint connector (CAN2), and check that there is continuity at the harness side of joint connector (CAN2).
- (2) Check that there is continuity between joint connector (CAN2) terminals 5 and 16.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 10.



STEP 4. Check the wiring harness between joint connector (CAN2) C-04 and AWC-ECU connector C-139 for line-to-line short. Measure the resistance at joint connector (CAN2) C-04.

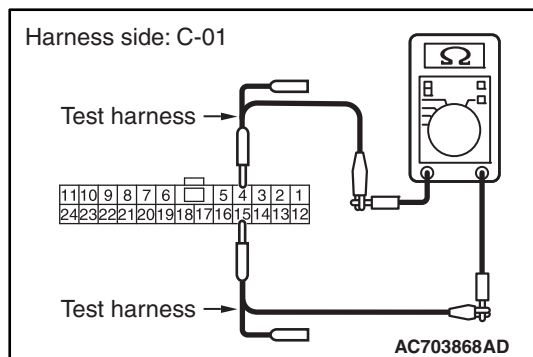
- (1) Disconnect joint connector (CAN2), and check that there is continuity at the harness side of joint connector (CAN2).
- (2) Check that there is continuity between joint connector (CAN2) terminals 5 and 16.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 11.



STEP 5. Check the wiring harness between joint connector (CAN3) C-01 and ECM connector B-11 for line-to-line short. Measure the resistance at joint connector (CAN3) C-01.

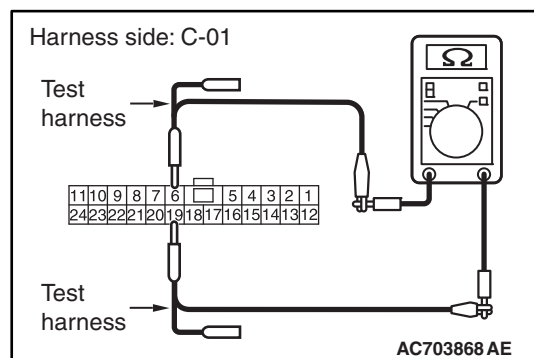
- (1) Disconnect joint connector (CAN3), and check that there is continuity at the harness side of joint connector (CAN3).
- (2) Check that there is continuity between joint connector (CAN3) terminals 4 and 15.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 12.



STEP 6. Check the wiring harness between joint connector (CAN3) C-01 and ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC> for line-to-line short. Measure the resistance at joint connector (CAN3) C-01.

- (1) Disconnect joint connector (CAN3), and check that there is continuity at the harness side of joint connector (CAN3).
- (2) Check that there is continuity between joint connector (CAN3) terminals 6 and 19.

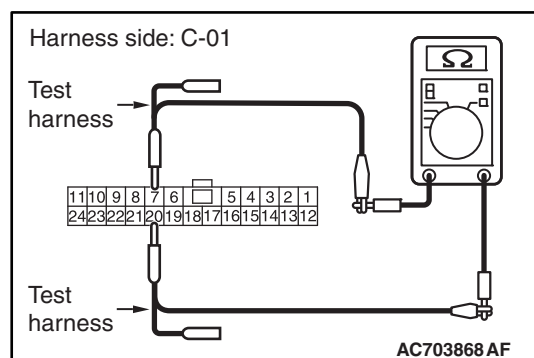
OK: No continuity

Q: Is the check result normal?

YES <CVT, A/T> : Go to Step 7.

YES <M/T> : Go to Step 8.

NO : Go to Step 13.



STEP 7. Check the wiring harness between joint connector (CAN3) C-01 and TCM connector C-38 for line-to-line short. Measure the resistance at joint connector (CAN3) C-01.

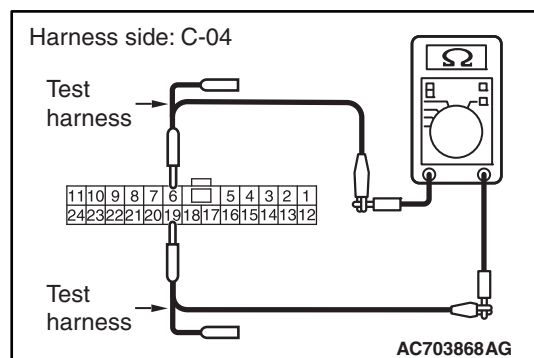
- (1) Disconnect joint connector (CAN3), and check that there is continuity at the harness side of joint connector (CAN3).
- (2) Check that there is continuity between joint connector (CAN3) terminals 7 and 20.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 14.



STEP 8. Check the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for line-to-line short. Measure the resistance at joint connector (CAN2) C-04.

- (1) Disconnect joint connector (CAN2), and check that there is continuity at the harness side of joint connector (CAN2).
- (2) Check that there is continuity between joint connector (CAN2) terminals 6 and 19.

OK: No continuity

Q: Is the check result normal?

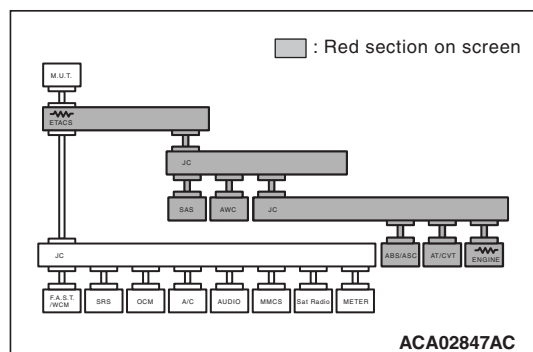
YES : Check intermediate connector C-33, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01.

NO : Go to Step 15.

CAUTION

CAUTION

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

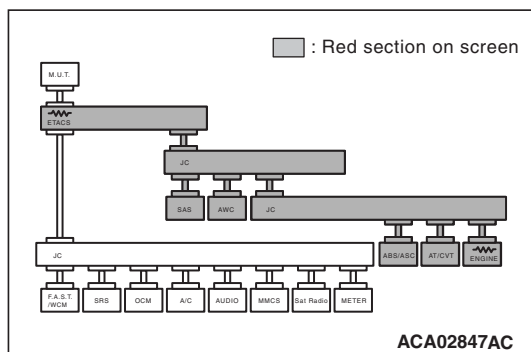


- NO :** Check steering wheel sensor connector C-209, and repair if necessary. If the steering wheel sensor connector is in good condition, replace the steering wheel sensor.

CAUTION

CAUTION

- (1) Disconnect AWD-ECU connector C-128.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- OK: The display of the scan tool MB991958 is as shown in the figure.**

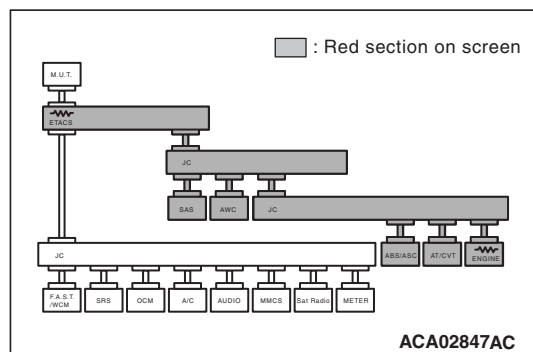
YES : Check intermediate connectors C-31 and C-138, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between AWD-ECU connector C-128 and joint connector (CAN2) C-04.

NO : Check AWD-ECU connector C-128, and repair if necessary. If the AWD-ECU connector is in good condition, replace the AWD-ECU.

CAUTION

CAUTION

- (1) Disconnect AWC-ECU connector C-139.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- OK: The display of the scan tool MB991958 is as shown in the figure.**

YES : Check intermediate connector C-31 and C-138, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between AWC-ECU connector C-139 and joint connector (CAN2) C-04.

NO : Check AWC-ECU connector C-139, and repair if necessary. If the AWC-ECU connector is in good condition, replace the AWC-ECU.

STEP 12. Using scan tool MB991958, diagnose the CAN bus line. (checking the ECM for internal short)

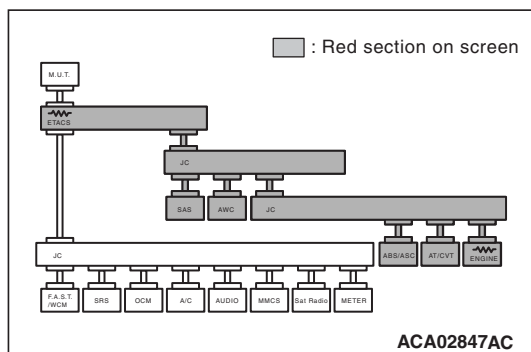
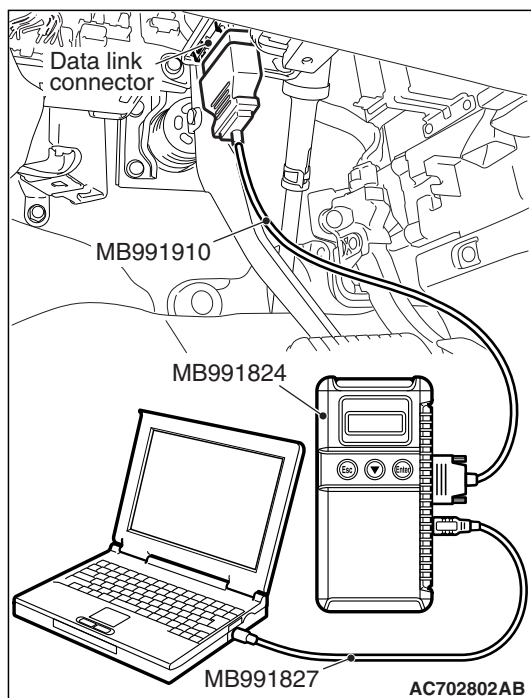
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect ECM connector B-11.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between ECM connector B-11 and joint connector (CAN3) C-01.

NO : Check ECM connector B-11, and repair if necessary. If the ECM connector is in good condition, replace the ECM.

STEP 13. Using scan tool MB991958, diagnose the CAN bus line. (checking the ABS-ECU <vehicles without ASC> or ASC-ECU <vehicles with ASC> for internal short)

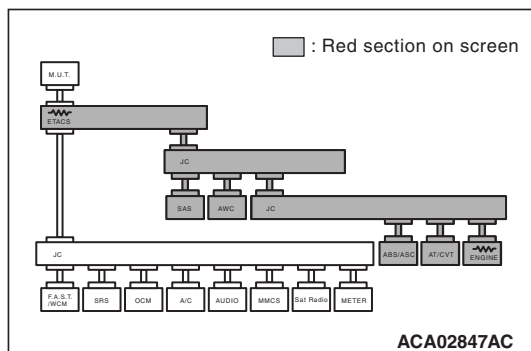
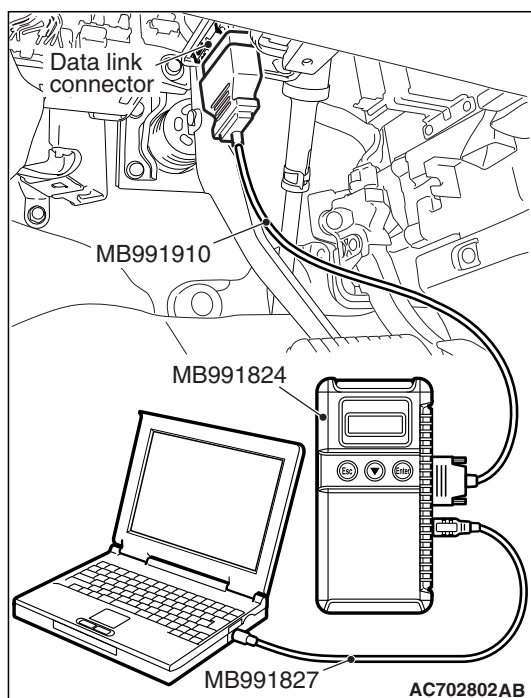
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC>.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC> and joint connector (CAN3) C-01.

NO : Check ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC>, and repair if necessary. If the ABS-ECU <vehicles without ASC> or ASC-ECU <vehicles with ASC> connector is in good condition, replace the ABS-ECU <vehicles without ASC> or ASC-ECU <vehicles with ASC>.

STEP 14. Using scan tool MB991958, diagnose the CAN bus line. (checking the TCM for internal short)

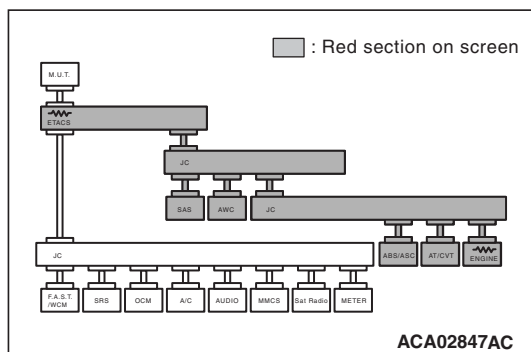
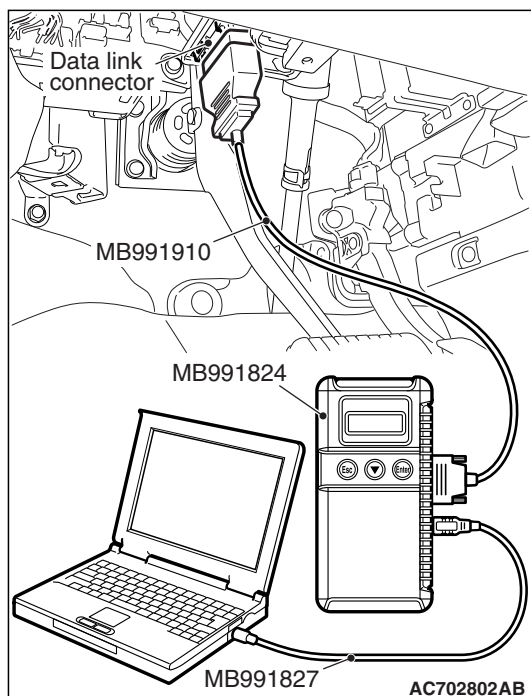
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect TCM connector C-38.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between TCM connector C-38 and joint connector (CAN3) C-01.

NO : Check TCM connector C-38, and repair if necessary. If the TCM connector is in good condition, replace the TCM.

STEP 15. Check the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for line-to-line short. Measure the resistance at joint connector (CAN2) C-04.

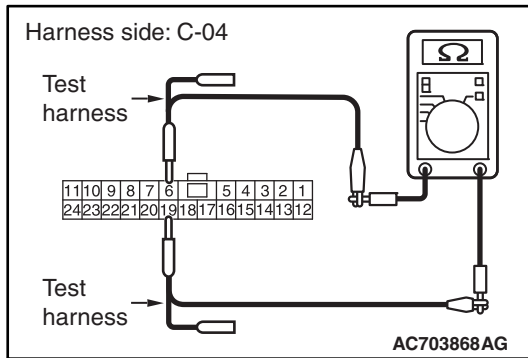
- (1) Disconnect joint connector (CAN2) and ETACS-ECU connector, and check that there is continuity at the harness side of joint connector (CAN2).
- (2) Check that there is continuity between joint connector (CAN2) terminals 6 and 19.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 16.

NO : Repair the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301.

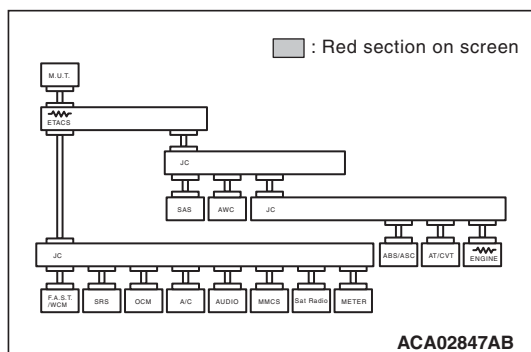
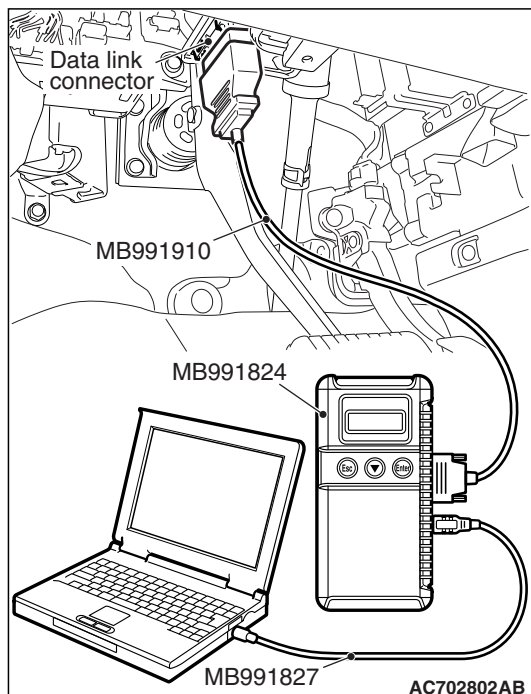


STEP 16. Using scan tool MB991958, diagnose the CAN bus line.

⚠ 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 CAN bus lines, and check if the scan tool screen is as shown in the illustration.

Q: Does the scan tool screen correspond to the illustration?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-15](#)).

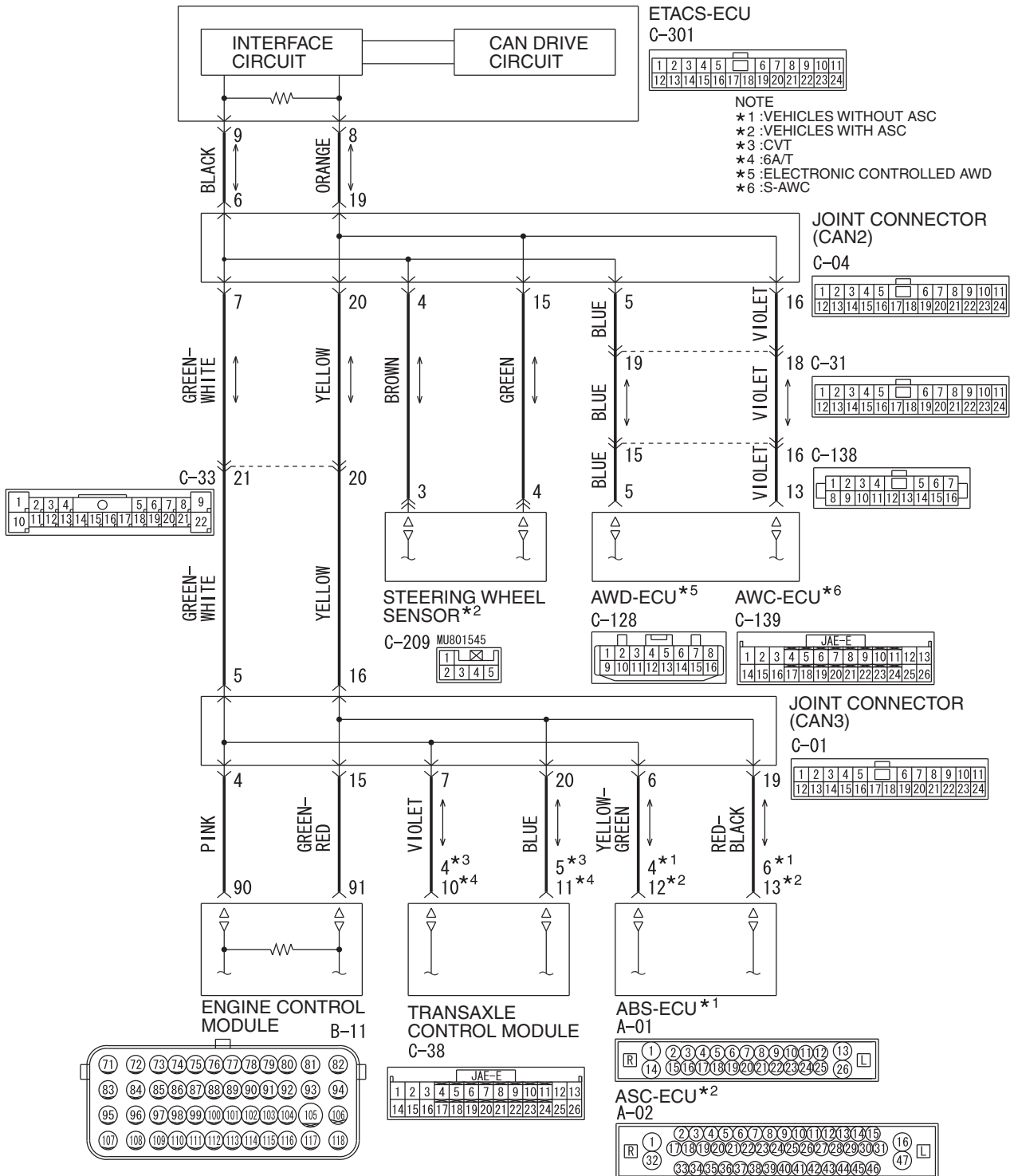
NO : Replace the ETACS-ECU.

DIAGNOSTIC ITEM 4: Diagnose shorts in the ground to CAN-C bus line.

CAUTION

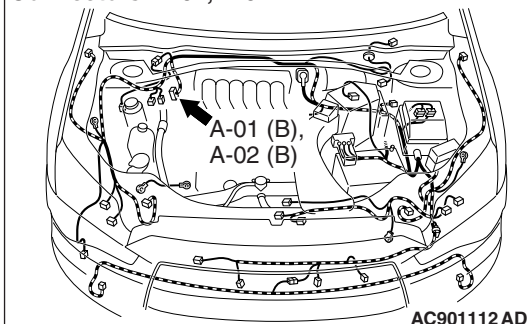
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit

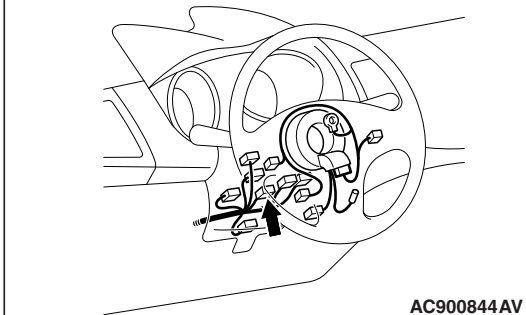


WAG54M048A

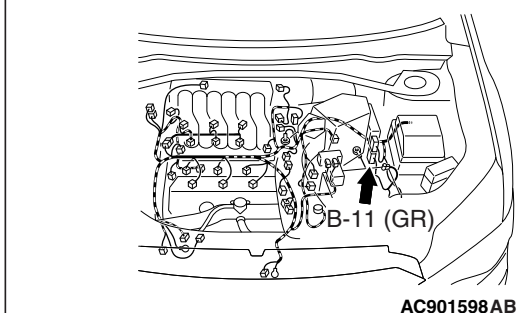
Connectors: A-01, A-02



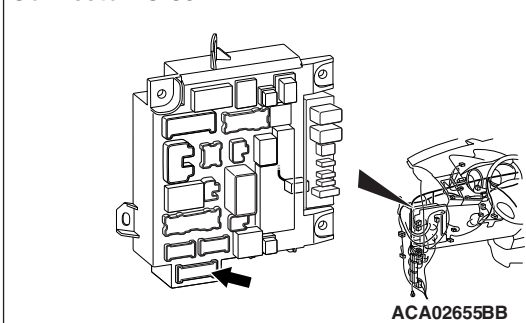
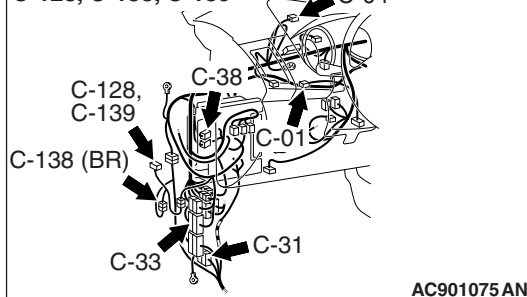
Connector: C-209



Connector: B-11



Connector: C-301

Connectors: C-01, C-04, C-31, C-33, C-38,
C-128, C-138, C-139**FUNCTION**

If a short to ground is present in the CAN-C lines, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If DTC U1120 is set, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector (short to ground inside connector)
- Malfunction of the wiring harness (short to ground in the CAN-C main or sub bus lines)
- Malfunction of the ECU (ETACS-ECU, or ECUs on CAN-C lines failed)

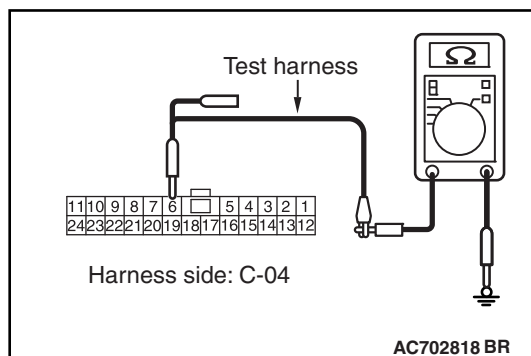
DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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

STEP 1. Check the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for a short to ground. Measure the resistance at joint connector (CAN2) C-04.

- (1) Disconnect joint connector (CAN2), and measure the resistance at the wiring harness side of joint connector (CAN2).
- (2) Measure the resistance between joint connector (CAN2) terminal 6 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN2) terminal 19 and body ground.

OK: 1 k Ω or more

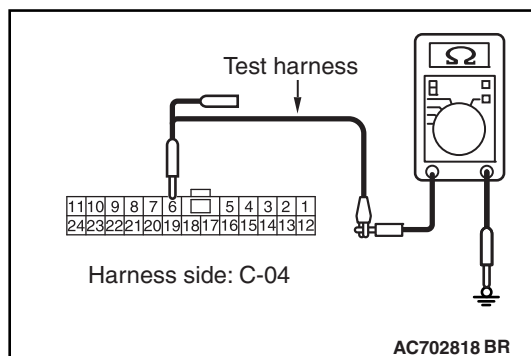
Q: Do all the resistances measure 1 k Ω or more?

YES <vehicles with ASC> : Go to Step 2.

YES <vehicles without ASC (FWD)> : Go to Step 5.

**YES <vehicles without ASC (Electric controlled AWD)> :
Go to Step 3.**

NO : Go to Step 11.



STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and steering wheel sensor connector C-209 for a short to ground. Measure the resistance at joint connector (CAN2) C-04.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to [P.54C-7](#).

⚠ CAUTION

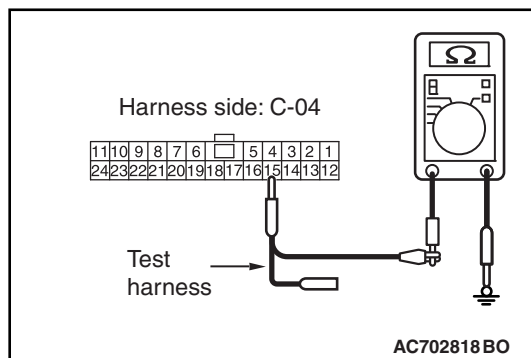
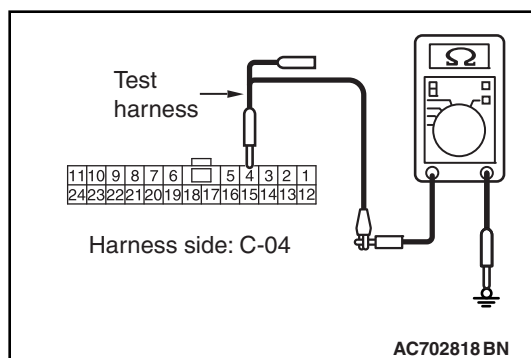
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN2), and measure the resistance at the wiring harness side of joint connector (CAN2).
- (2) Measure the resistance between joint connector (CAN2) terminal 4 and body ground.

OK: 1 kΩ or more



- (3) Measure the resistance between joint connector (CAN2) terminal 15 and body ground.

OK: 1 kΩ or more

Q: Do all the resistances measure 1 kΩ or more?

YES <FWD> : Go to Step 5.

YES <Electric controlled AWD> : Go to Step 3.

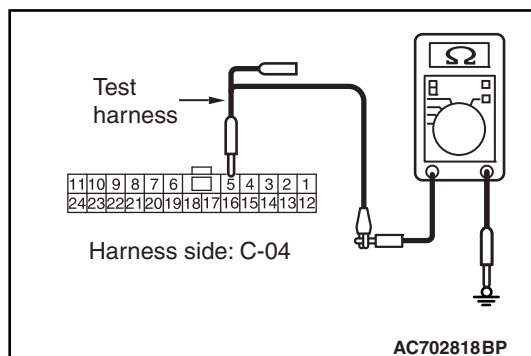
YES <S-AWC> : Go to Step 4.

NO : Go to Step 8.

STEP 3 Check the wiring harness between joint connector (CAN2) C-04 and AWD-ECU connector C-128 for a short to ground. Measure the resistance at joint connector (CAN2) C-04.

- (1) Disconnect joint connector (CAN2), and measure the resistance at the wiring harness side of joint connector (CAN2).
- (2) Measure the resistance between joint connector (CAN2) terminal 5 and body ground.

OK: 1 k Ω or more



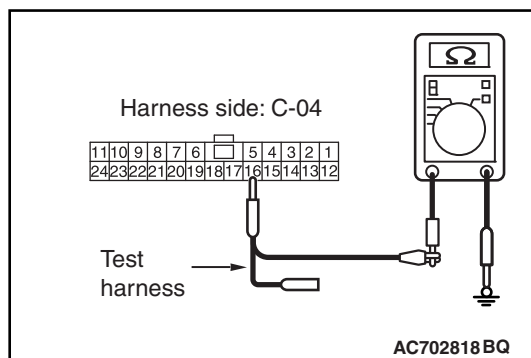
- (3) Measure the resistance between joint connector (CAN2) terminal 16 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 5.

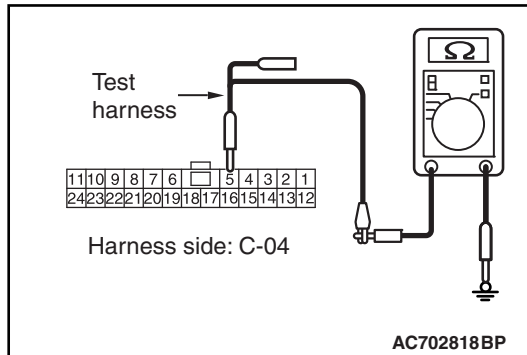
NO : Go to Step 9.



STEP 4 Check the wiring harness between joint connector (CAN2) C-04 and AWC-ECU connector C-139 for a short to ground. Measure the resistance at joint connector (CAN2) C-04.

- (1) Disconnect joint connector (CAN2), and measure the resistance at the wiring harness side of joint connector (CAN2).
- (2) Measure the resistance between joint connector (CAN2) terminal 5 and body ground.

OK: 1 k Ω or more



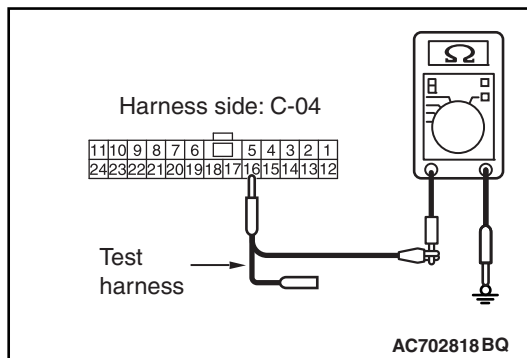
- (3) Measure the resistance between joint connector (CAN2) terminal 16 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 5.

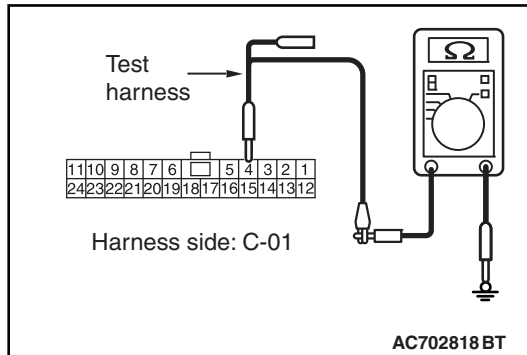
NO : Go to Step 10.



STEP 5. Check the wiring harness between joint connector (CAN3) C-01 and ECM connector B-11 for a short to ground. Measure the resistance at joint connector (CAN3) C-01.

- (1) Disconnect joint connector (CAN3), and measure the resistance at the wiring harness side of joint connector (CAN3).
- (2) Measure the resistance between joint connector (CAN3) terminal 4 and body ground.

OK: 1 k Ω or more



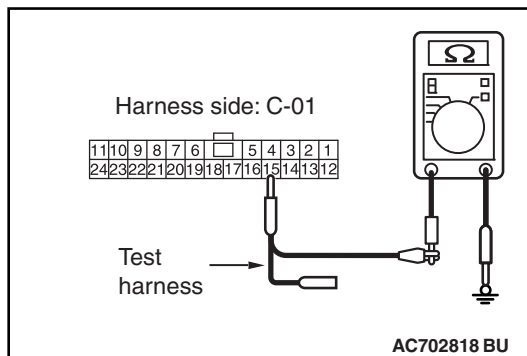
- (3) Measure the resistance between joint connector (CAN3) terminal 15 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 6.

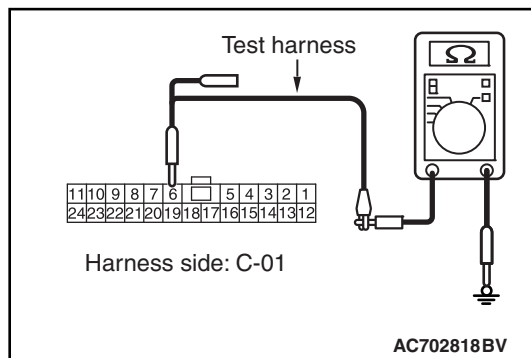
NO : Go to Step 12.



STEP 6. Check the wiring harness between joint connector (CAN3) C-01 and ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC> for a short to ground. Measure the resistance at joint connector (CAN3) C-01.

- (1) Disconnect joint connector (CAN3), and measure the resistance at the wiring harness side of joint connector (CAN3).
- (2) Measure the resistance between joint connector (CAN3) terminal 6 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN3) terminal 19 and body ground.

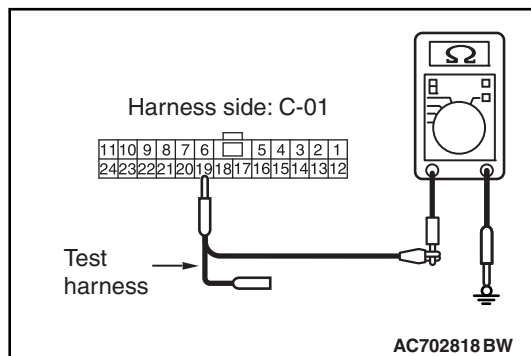
OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES <CVT, A/T> : Go to Step 7.

YES <M/T> : Check intermediate connector C-33, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01.

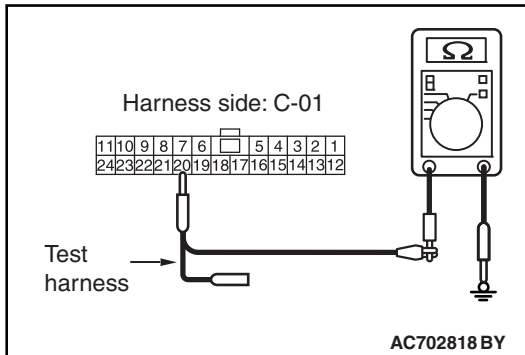
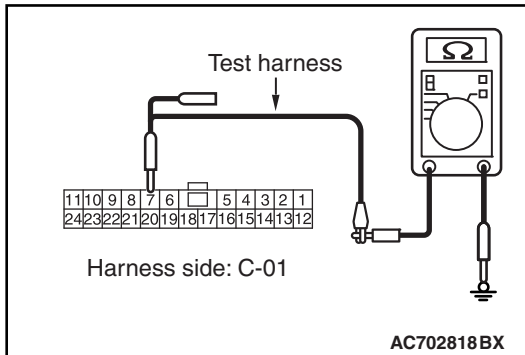
NO : Go to Step 13.



STEP 7. Check the wiring harness between joint connector (CAN3) C-01 and TCM connector C-38 for a short to ground. Measure the resistance at joint connector (CAN3) C-01.

- (1) Disconnect joint connector (CAN3), and measure the resistance at the wiring harness side of joint connector (CAN3).
- (2) Measure the resistance between joint connector (CAN3) terminal 7 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN3) terminal 20 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Check intermediate connector C-27, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01.

NO : Go to Step 14.

STEP 8. Using scan tool MB991958, diagnose the CAN bus line. (checking the steering wheel sensor for internal short to ground)

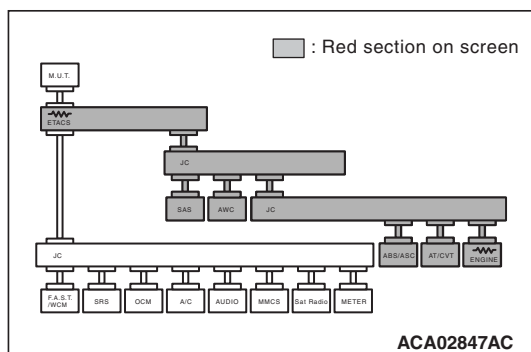
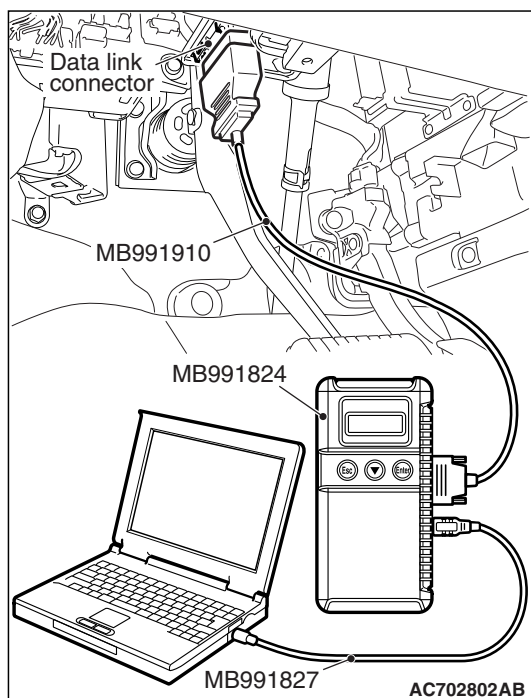
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect steering wheel sensor connector C-209.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between steering wheel sensor connector C-209 and joint connector (CAN2) C-04.

NO : Check steering wheel sensor connector C-209, and repair if necessary. If the steering wheel sensor connector is in good condition, replace the steering wheel sensor.

STEP 9. Using scan tool MB991958, diagnose the CAN bus line. (checking the AWD-ECU for internal short to ground)

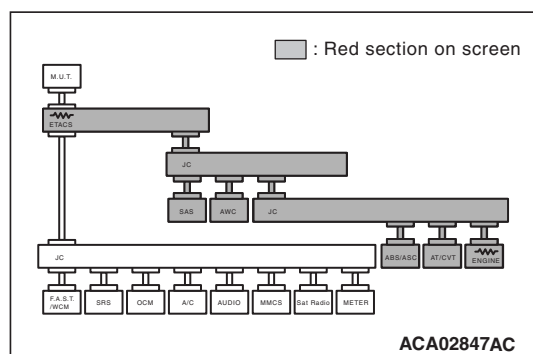
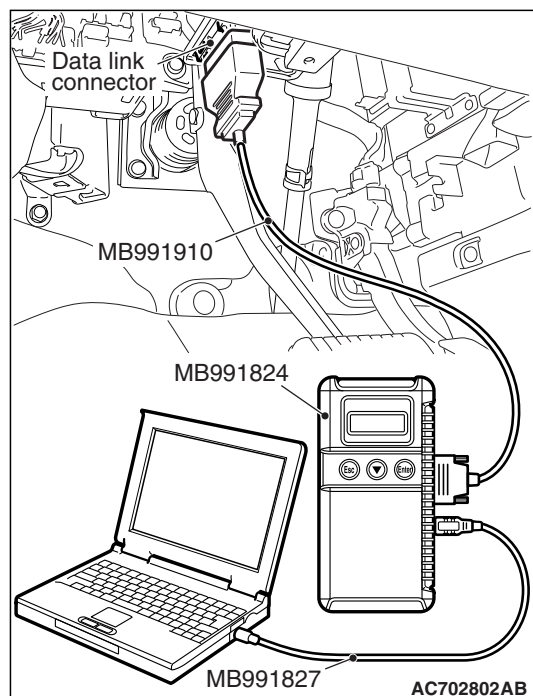
CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

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) Disconnect AWD-ECU connector C-128.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Check intermediate connector C-31 and C-138, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between AWD-ECU connector C-128 and joint connector (CAN2) C-04.

NO : Check AWD-ECU connector C-128, and repair if necessary. If the AWD-ECU connector is in good condition, replace the AWD-ECU.

STEP 10. Using scan tool MB991958, diagnose the CAN bus line. (checking the AWC-ECU for internal short to ground)

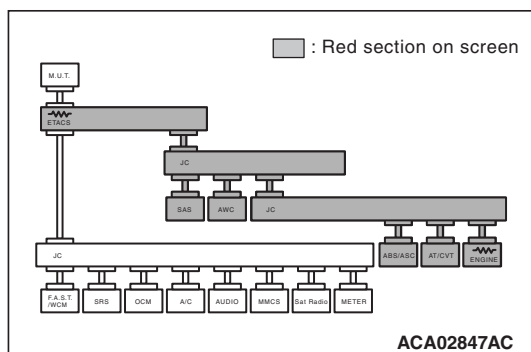
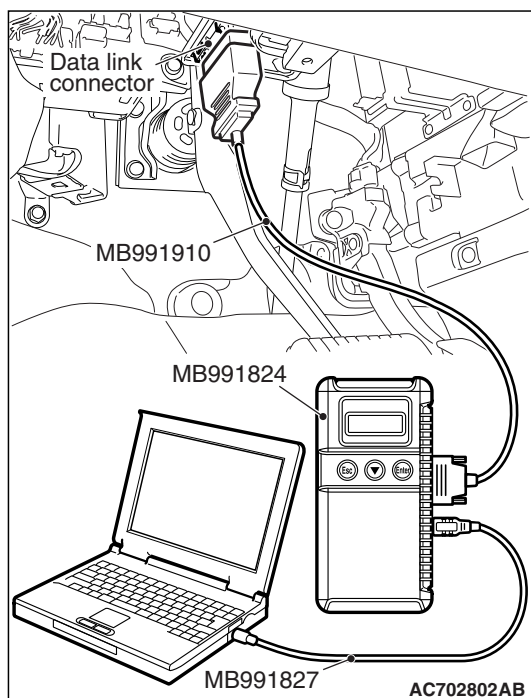
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect AWC-ECU connector C-139.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Check intermediate connector C-31 and C-138, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between AWC-ECU connector C-139 and joint connector (CAN2) C-04.

NO : Check AWC-ECU connector C-139, and repair if necessary. If the AWC-ECU connector is in good condition, replace the AWC-ECU.

STEP 11. Check the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for a short to ground.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to [P.54C-7](#).

⚠ CAUTION

A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

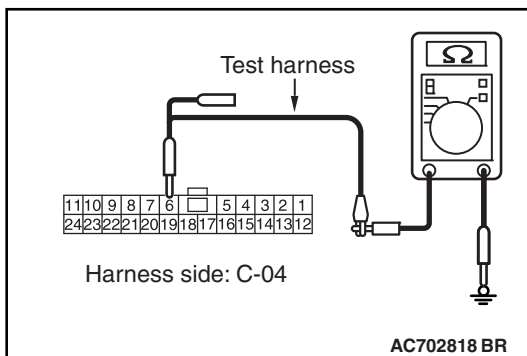
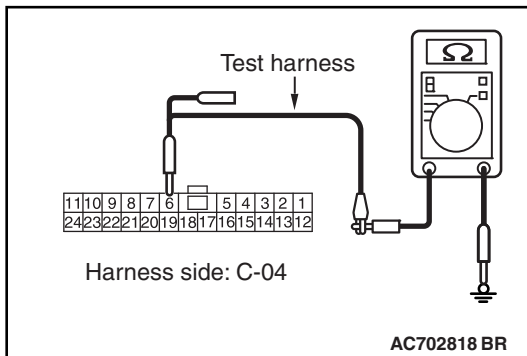
The test wiring harness should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

- (1) Disconnect ETACS-ECU connector and joint connector (CAN2), and measure at the wiring harness side.
- (2) Measure the resistance between joint connector (CAN2) terminal 6 and body ground.

OK: 1 kΩ or more



- (3) Measure the resistance between joint connector (CAN2) terminal 19 and body ground.

OK: 1 kΩ or more

Q: Do all the resistances measure 1 kΩ or more?

YES : Check ETACS-ECU connector C-301, and repair if necessary. If the ETACS-ECU connector is in good condition, replace the ETACS-ECU.

NO : Repair the wiring harness between ETACS-ECU connector C-301 and joint connector (CAN2) C-04.

STEP 12. Using scan tool MB991958, diagnose the CAN bus line. (checking the ECM for internal short to ground)

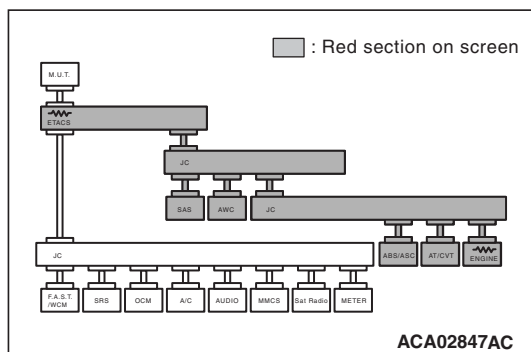
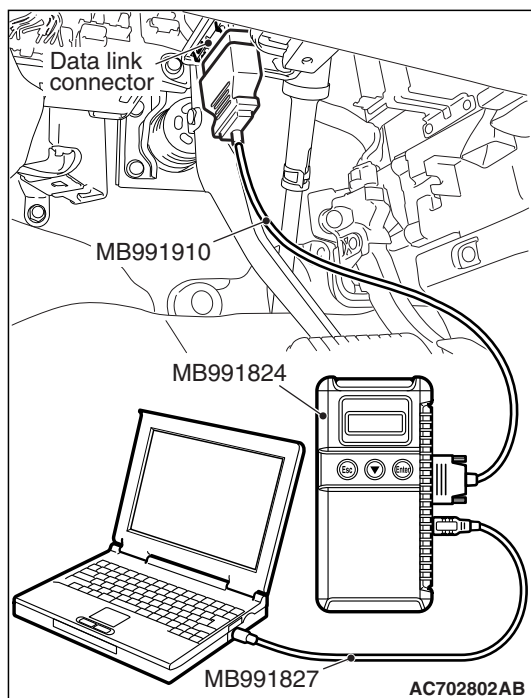
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect ECM connector B-11.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between ECM connector B-11 and joint connector (CAN3) C-01.

NO : Check ECM connector B-11, and repair if necessary. If the ECM connector is in good condition, replace the ECM.

STEP 13. Using scan tool MB991958, diagnose the CAN bus line. (checking the ABS-ECU <vehicles without ASC> or ASC-ECU <vehicles with ASC> for internal short to ground)

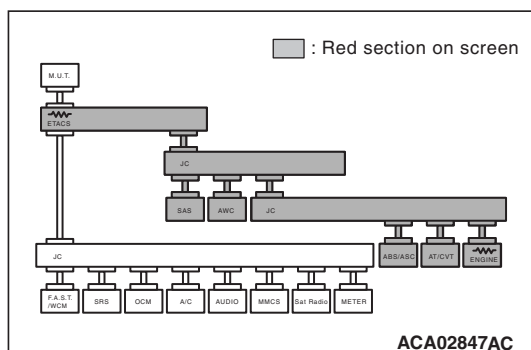
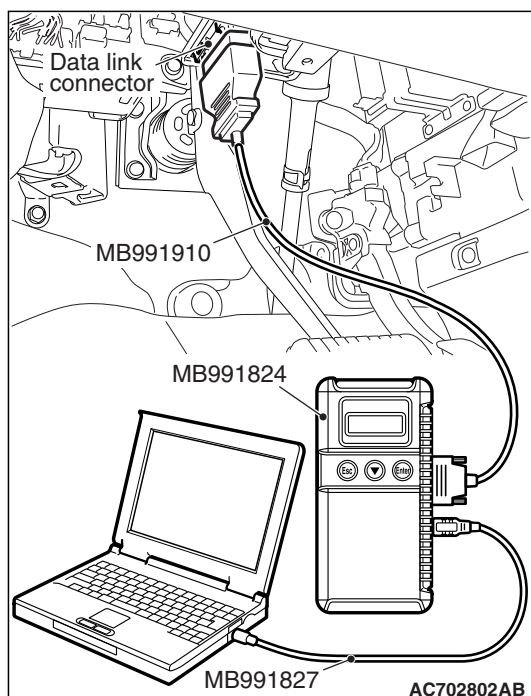
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC>.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

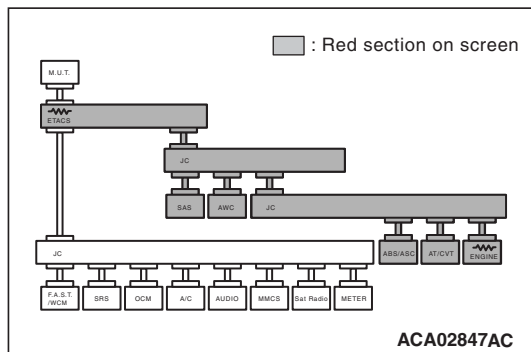
YES : Repair the wiring harness between ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC> and joint connector (CAN3) C-01.

NO : Check ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC>, and repair if necessary. If the ABS-ECU connector <vehicles without ASC> or ASC-ECU connector <vehicles with ASC> is in good condition, replace the ABS-ECU <vehicles without ASC> or ASC-ECU <vehicles with ASC>.

CAUTION

CAUTION

- (1) Disconnect TCM connector C-38.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



OK: The display of the scan tool MB991958 is as shown in the figure.

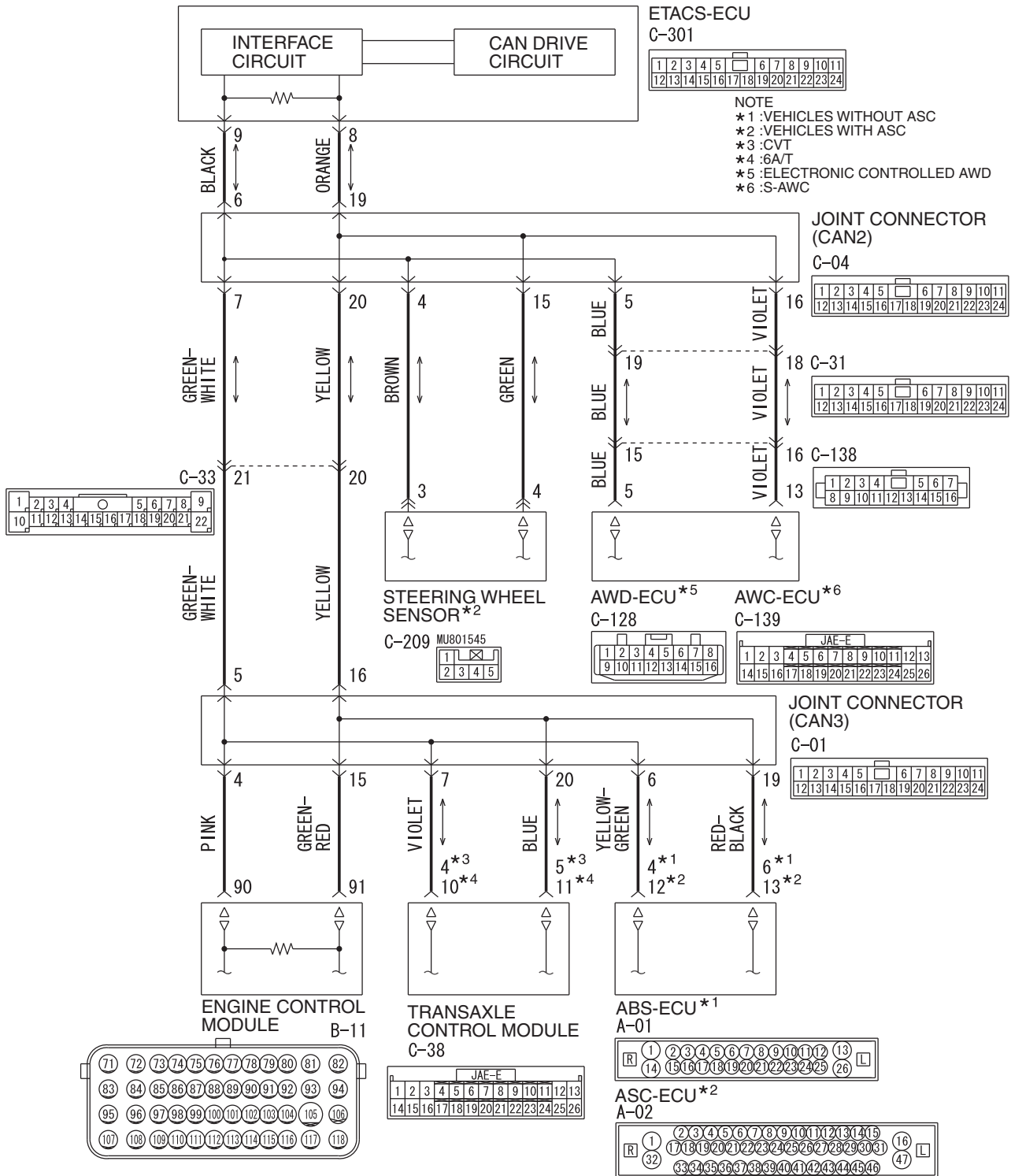
NO : Check TCM connector C-38, and repair if necessary.
If the TCM connector is in good condition, replace the TCM.

DIAGNOSTIC ITEM 5: Diagnose shorts in the power supply to CAN-C bus line.

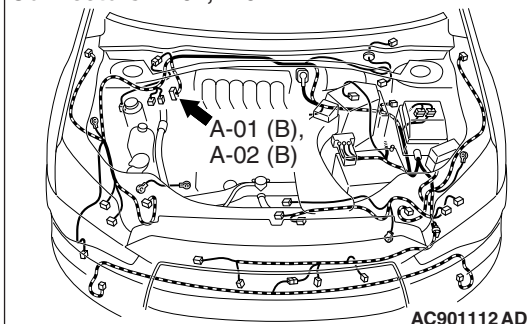
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

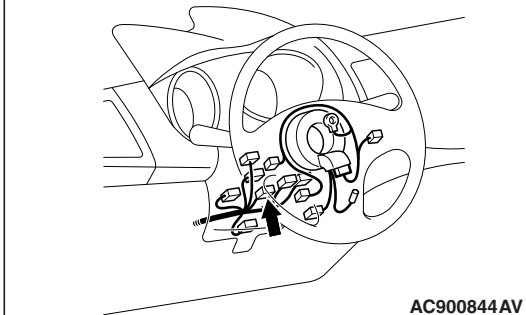
CAN Communication Circuit



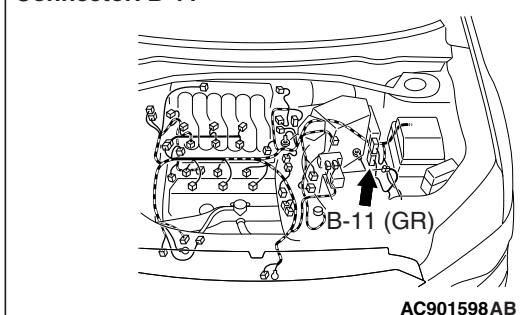
Connectors: A-01, A-02



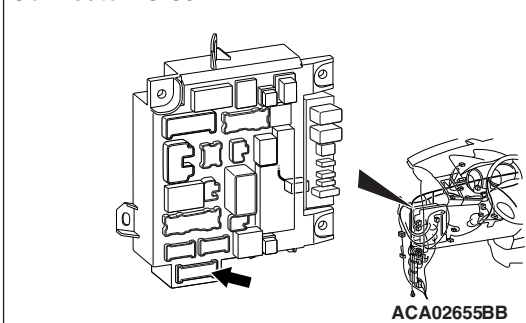
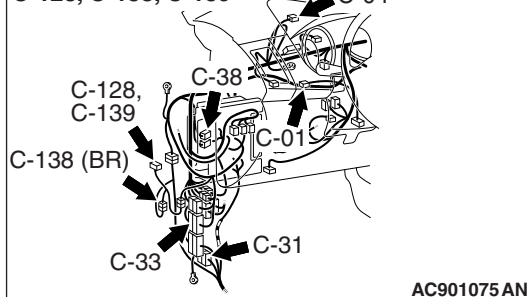
Connector: C-209



Connector: B-11



Connector: C-301

Connectors: C-01, C-04, C-31, C-33, C-38,
C-128, C-138, C-139

FUNCTION

If a short to power supply is present in the CAN-C lines, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

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

TROUBLESHOOTING HINTS

- Malfunction of the connector (short to power supply in connector)
- Malfunction of the wiring harness (short to power supply in the CAN-C main or sub bus lines)
- Malfunction of the ECU (ETACS-ECU, or ECUs on CAN-C lines failed)

DIAGNOSIS

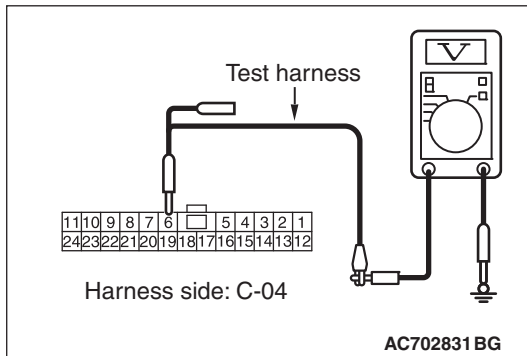
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- 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

STEP 1. Check the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for a short to power supply. Measure the voltage at joint connector (CAN2) C-04.

- (1) Disconnect joint connector (CAN2), and measure the voltage at the wiring harness side of joint connector (CAN2).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN2) terminal 6 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN2) terminal 19 and body ground.

OK: 4.7 volts or less

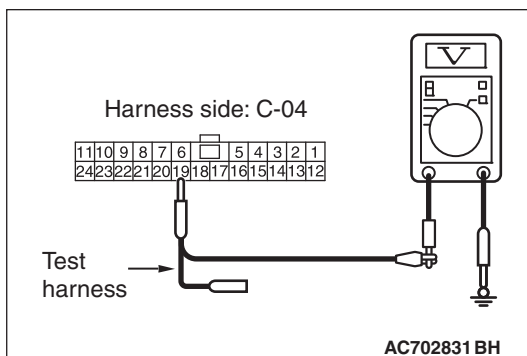
Q: Do all the voltages measure 4.7 volts or less?

YES <vehicles with ASC> : Go to Step 2.

YES <vehicles without ASC (FWD)> : Go to Step 5.

**YES <vehicles without ASC (Electric controlled AWD)> :
Go to Step 3.**

NO : Go to Step 11.



STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and steering wheel sensor connector C-209 for a short to power supply. Measure the voltage at joint connector (CAN2) C-04.

⚠ CAUTION

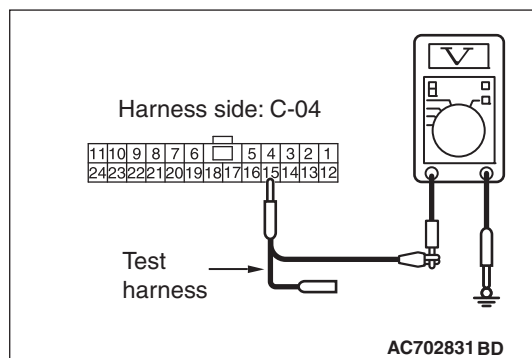
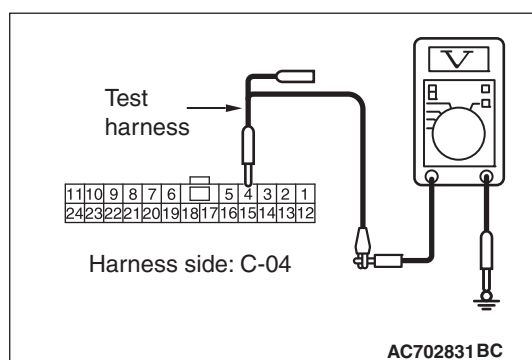
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN2), and measure the voltage at the wiring harness side of joint connector (CAN2).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN2) terminal 4 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN2) terminal 15 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES <FWD> : Go to Step 5.

YES <Electric controlled AWD> : Go to Step 3.

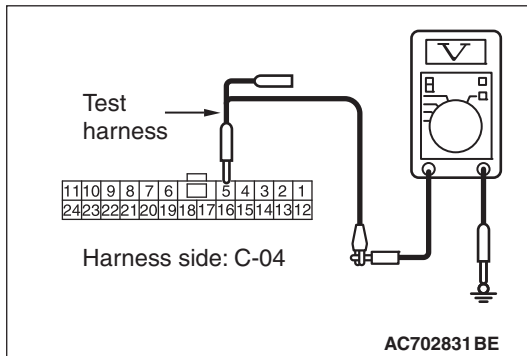
YES <S-AWC> : Go to Step 4.

NO : Go to Step 8.

STEP 3. Check the wiring harness between joint connector (CAN2) C-04 and AWD-ECU connector C-128 for a short to power supply. Measure the voltage at joint connector (CAN2) C-04.

- (1) Disconnect joint connector (CAN2), and measure the voltage at the wiring harness side of joint connector (CAN2).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN2) terminal 5 and body ground.

OK: 4.7 volts or less



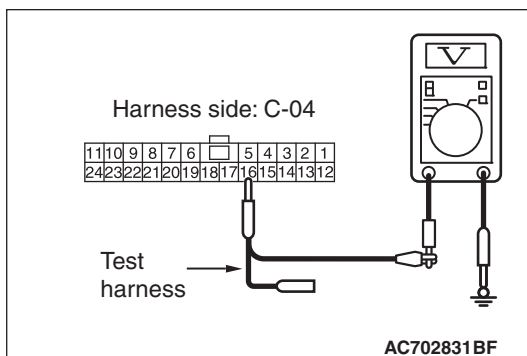
- (4) Measure the voltage between joint connector (CAN2) terminal 16 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 5.

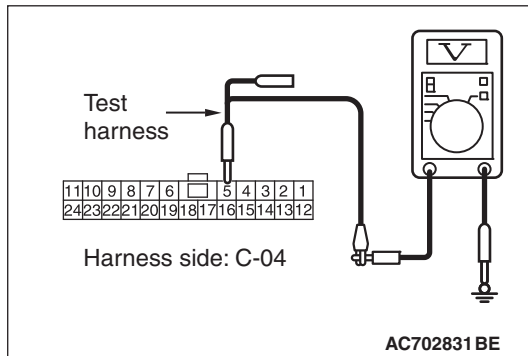
NO : Go to Step 9.



STEP 4. Check the wiring harness between joint connector (CAN2) C-04 and AWC-ECU connector C-139 for a short to power supply. Measure the voltage at joint connector (CAN2) C-04.

- (1) Disconnect joint connector (CAN2), and measure the voltage at the wiring harness side of joint connector (CAN2).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN2) terminal 5 and body ground.

OK: 4.7 volts or less



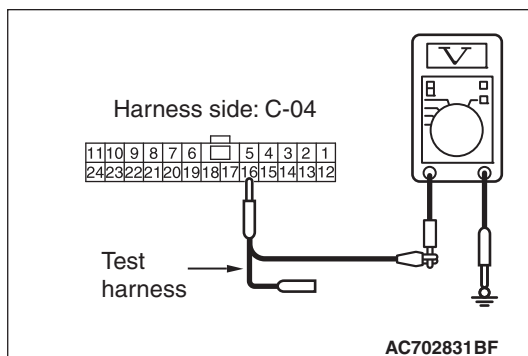
- (4) Measure the voltage between joint connector (CAN2) terminal 16 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 5.

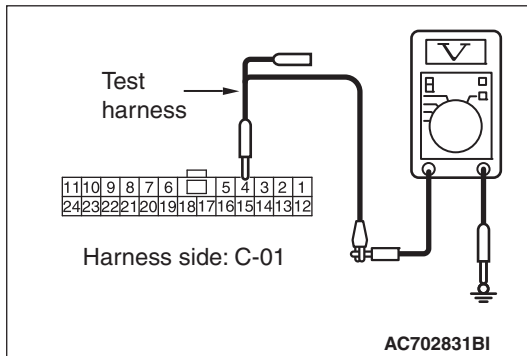
NO : Go to Step 10.



STEP 5. Check the wiring harness between joint connector (CAN3) C-01 and ECM connector B-11 for a short to power supply. Measure the voltage at joint connector (CAN3) C-01.

- (1) Disconnect joint connector (CAN3), and measure the voltage at the wiring harness side of joint connector (CAN3).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN3) terminal 4 and body ground.

OK: 4.7 volts or less



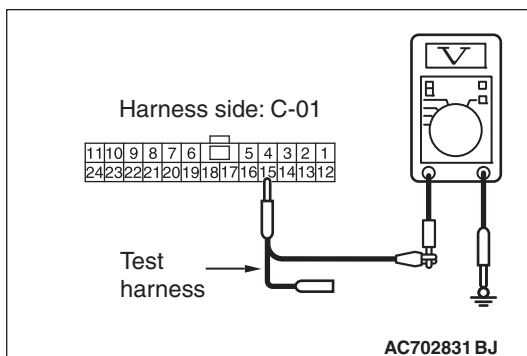
- (4) Measure the voltage between joint connector (CAN3) terminal 15 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 6.

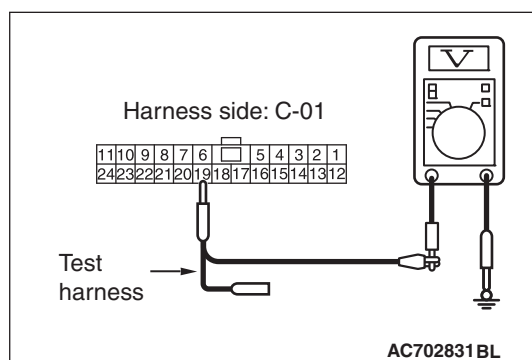
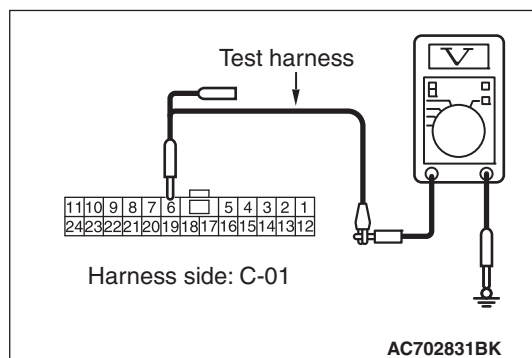
NO : Go to Step 12.



STEP 6. Check the wiring harness between joint connector (CAN3) C-01 and ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC> for a short to power supply. Measure the voltage at joint connector (CAN3) C-01.

- (1) Disconnect joint connector (CAN3), and measure the voltage at the wiring harness side of joint connector (CAN3).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN3) terminal 6 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN3) terminal 19 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES <CVT, A/T> : Go to Step 7.

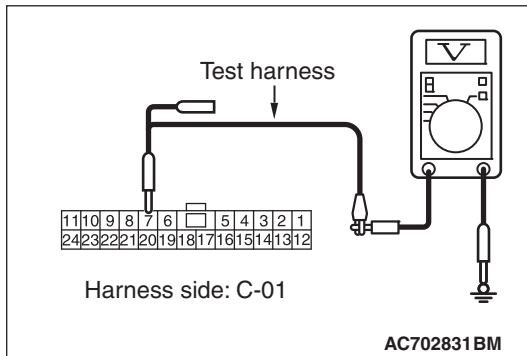
YES <M/T> : Check intermediate connector C-33, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01.

NO : Go to Step 13.

STEP 7. Check the wiring harness between joint connector (CAN3) C-01 and TCM connector C-38 for a short to power supply. Measure the voltage at joint connector (CAN3) C-01.

- (1) Disconnect joint connector (CAN3), and measure the voltage at the wiring harness side of joint connector (CAN3).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN3) terminal 7 and body ground.

OK: 4.7 volts or less



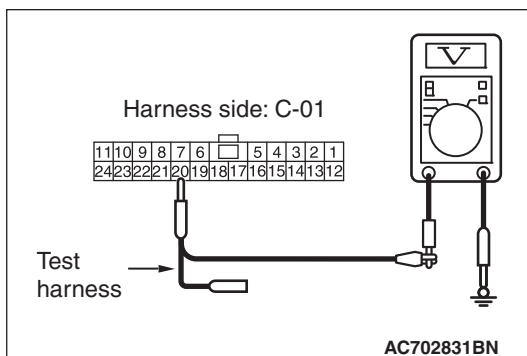
- (4) Measure the voltage between joint connector (CAN3) terminal 20 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Check intermediate connector C-27, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01.

NO : Go to Step 14.



STEP 8. Using scan tool MB991958, diagnose the CAN bus line. (checking the steering wheel sensor for internal short to ground)

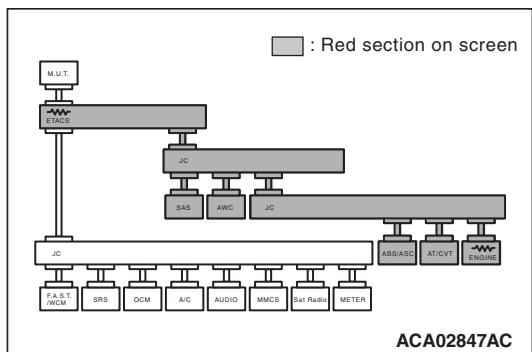
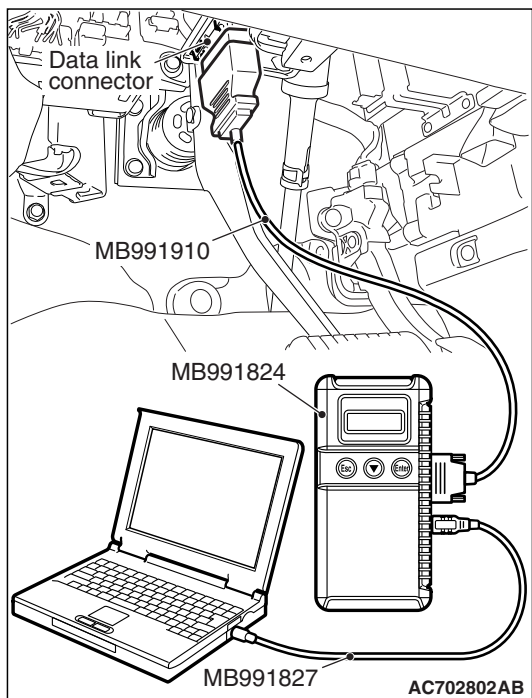
CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

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) Disconnect steering wheel sensor connector C-209.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between steering wheel sensor connector C-209 and joint connector (CAN2) C-04.

NO : Check steering wheel sensor connector C-209, and repair if necessary. If the steering wheel sensor connector is in good condition, replace the steering wheel sensor.

STEP 9. Using scan tool MB991958, diagnose the CAN bus line. (checking the AWD-ECU for internal short to ground)

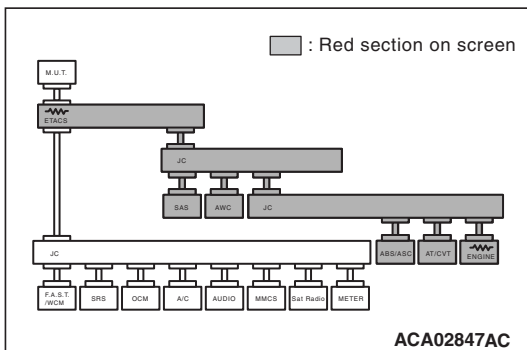
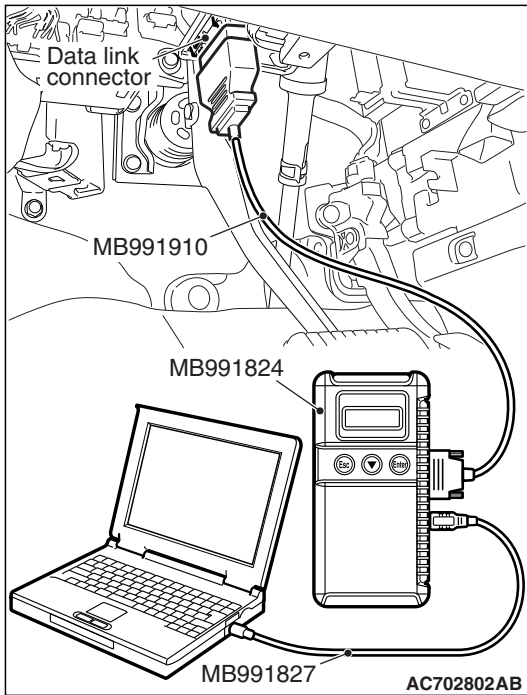
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect AWD-ECU connector C-128.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Check intermediate connector C-31 and C-138, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between AWD-ECU connector C-128 and joint connector (CAN2) C-04.

NO : Check AWD-ECU connector C-128, and repair if necessary. If the AWD-ECU connector is in good condition, replace the AWD-ECU.

STEP 10. Using scan tool MB991958, diagnose the CAN bus line. (checking the AWC-ECU for internal short to ground)

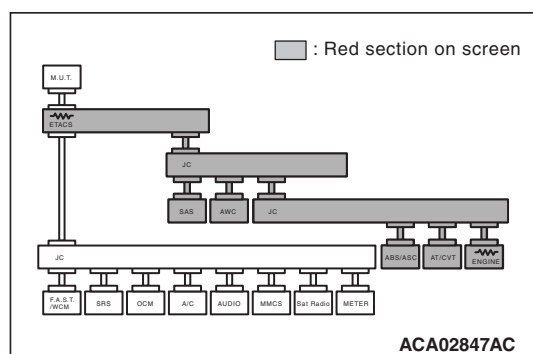
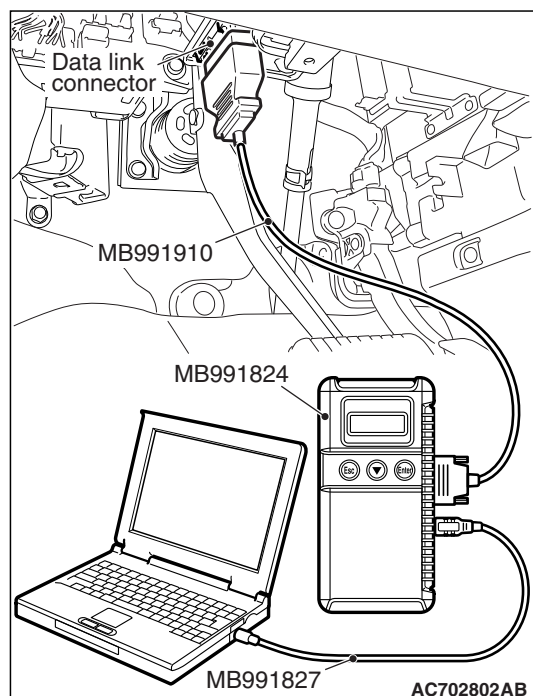
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect AWC-ECU connector C-139.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Check intermediate connector C-31 and C-138, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between AWC-ECU connector C-139 and joint connector (CAN2) C-04.

NO : Check AWC-ECU connector C-139, and repair if necessary. If the AWC-ECU connector is in good condition, replace the AWC-ECU.

STEP 11. Check the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for short to power supply (voltage measurement).

⚠ CAUTION

A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

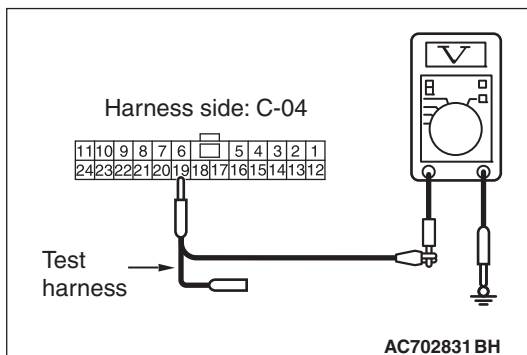
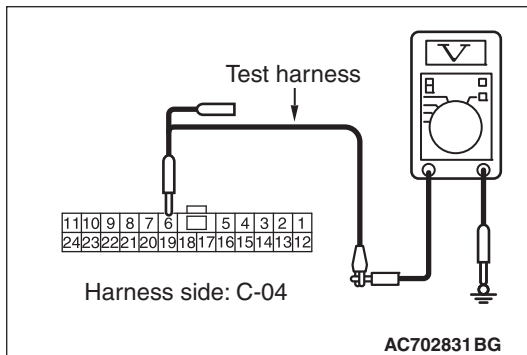
The test wiring harness should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

- (1) Disconnect ETACS-ECU connector and joint connector (CAN2), and measure at the wiring harness side.
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN2) terminal 6 and body ground.

OK: 1.0 volts or less



- (4) Measure the voltage between joint connector (CAN2) terminal 19 and body ground.

OK: 1.0 volts or less

Q: Do all the voltages measure 1.0 volts or less?

YES : Check ETACS-ECU connector C-301, and repair if necessary. If the ETACS-ECU connector is in good condition, replace the ETACS-ECU.

NO : Repair the wiring harness between ETACS-ECU connector C-301 and joint connector (CAN2) C-04.

STEP 12. Using scan tool MB991958, diagnose the CAN bus line. (checking the ECM for internal short to ground)

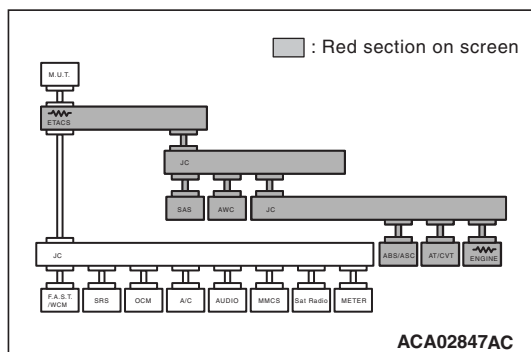
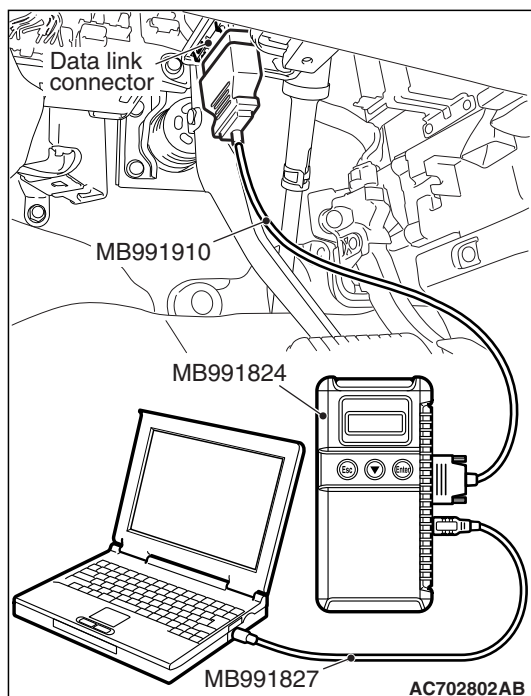
CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

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) Disconnect ECM connector B-11.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between ECM connector B-11 and joint connector (CAN3) C-01.

NO : Check ECM connector B-11, and repair if necessary.
If the ECM connector is in good condition, replace the ECM.

STEP 13. Using scan tool MB991958, diagnose the CAN bus line. (checking the ABS-ECU <vehicles without ASC> or ASC-ECU <vehicles with ASC> for internal short to ground)

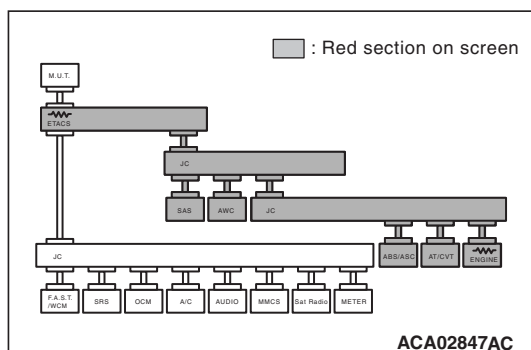
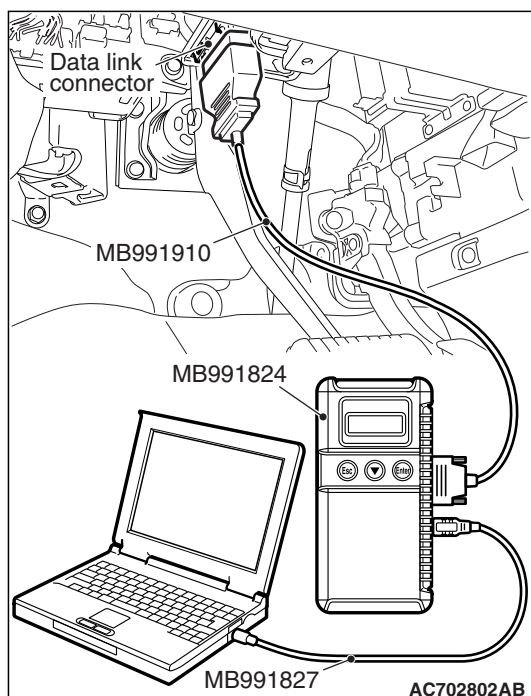
CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

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) Disconnect ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC>.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC> and joint connector (CAN3) C-01.

NO : Check ABS-ECU connector A-01 <vehicles without ASC> or ASC-ECU connector A-02 <vehicles with ASC>, and repair if necessary. If the ABS-ECU connector <vehicles without ASC> or ASC-ECU connector <vehicles with ASC> is in good condition, replace the ABS-ECU <vehicles without ASC> or ASC-ECU <vehicles with ASC>.

STEP 14. Using scan tool MB991958, diagnose the CAN bus line. (checking the TCM for internal short to ground)

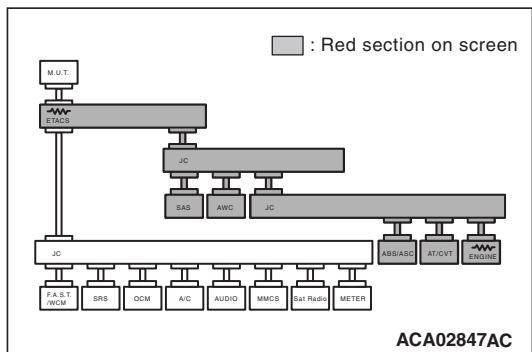
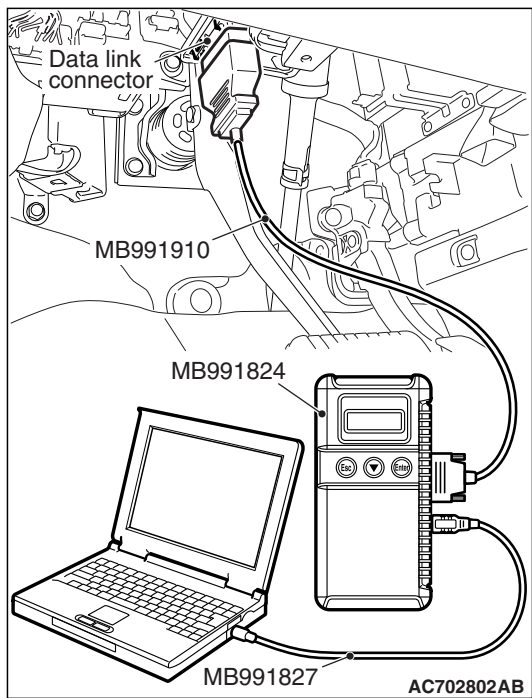
CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

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) Disconnect TCM connector C-38.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between TCM connector C-38 and joint connector (CAN3) C-01.

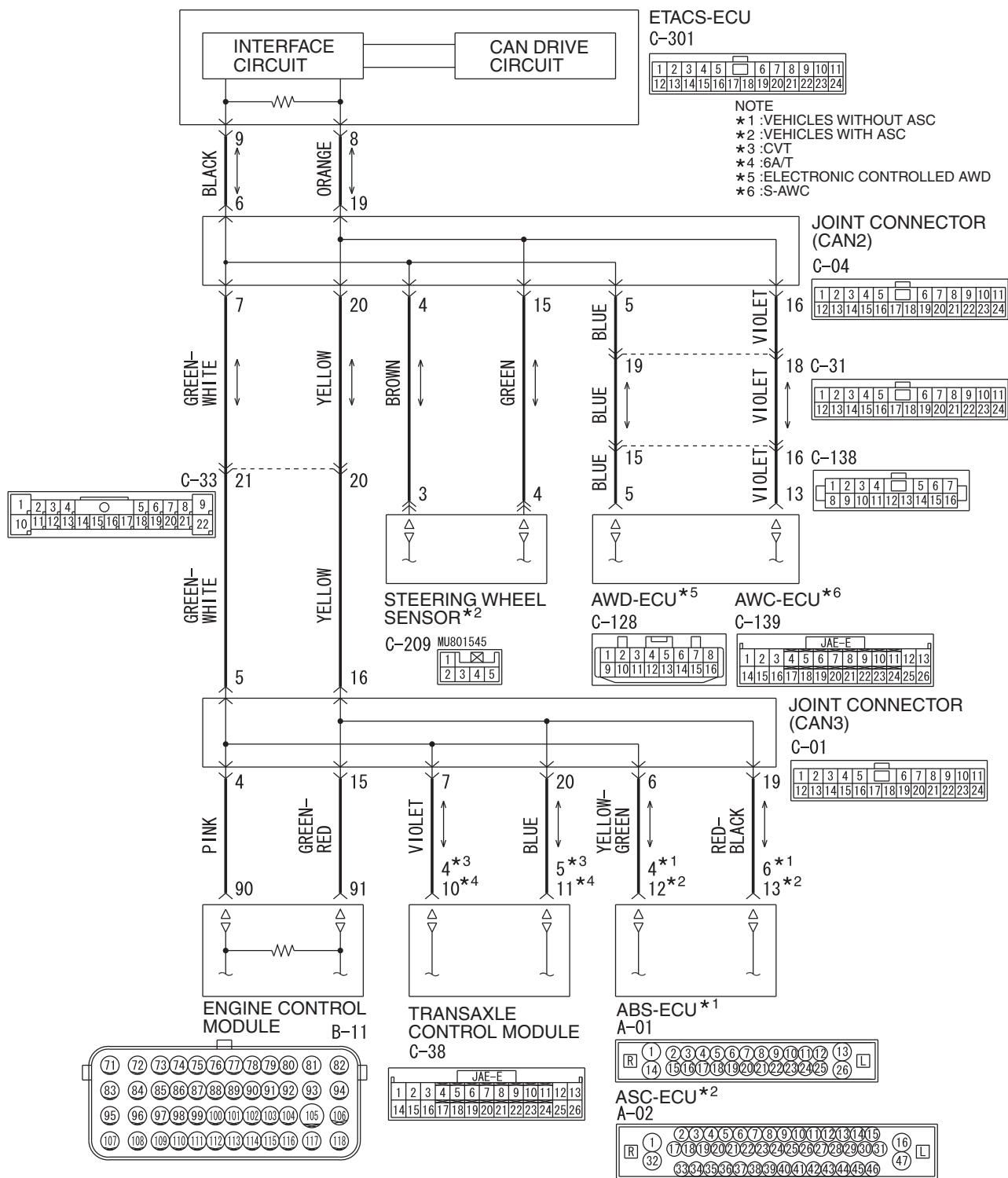
NO : Check TCM connector C-38, and repair if necessary.
If the TCM connector is in good condition, replace the TCM.

**DIAGNOSTIC ITEM 6: Diagnose when the scan tool cannot receive the data sent by AWD-ECU
<Electronic controlled AWD>.**

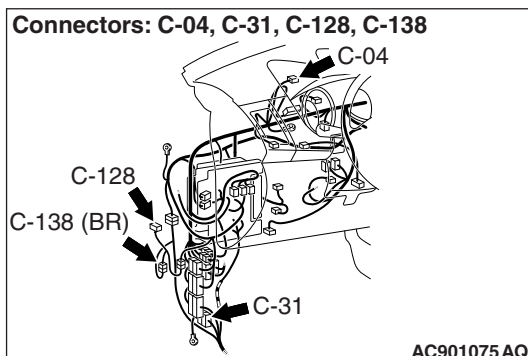
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit



WAG54M048A



FUNCTION

If the scan tool MB991958 cannot communicate with the AWD-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the AWD-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN2) or AWD-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the AWD-ECU and the joint connector (CAN2), power supply circuit to the AWD-ECU]
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN2) C-04, AWD-ECU connector C-128, intermediate connector C-138 and intermediate connector C-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN2) C-04, AWD-ECU connector C-128, intermediate connector C-138 and intermediate connector C-31 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

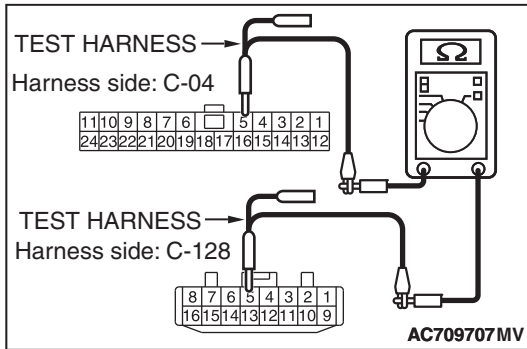
STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and AWD-ECU connector C-128 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN2) C-04 and AWD-ECU connector C-301, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.5) and AWD-ECU connector C-128 (terminal No.5)

OK: Continuity exists (2 ohms or less)



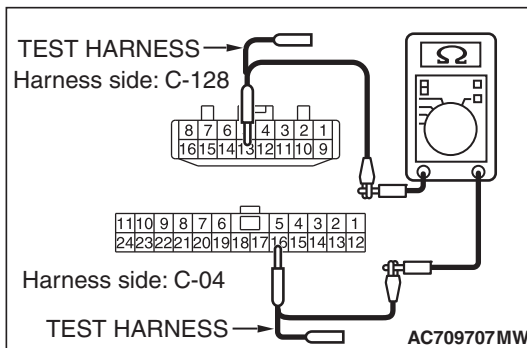
- (3) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.16) and AWD-ECU connector C-128 (terminal No.13)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN2) C-04 and AWD-ECU connector C-128 in good condition?

YES : Check the power supply circuit of the AWD-ECU.
Refer to GROUP 27C, Multiselect AWD Diagnosis P.27C-11.

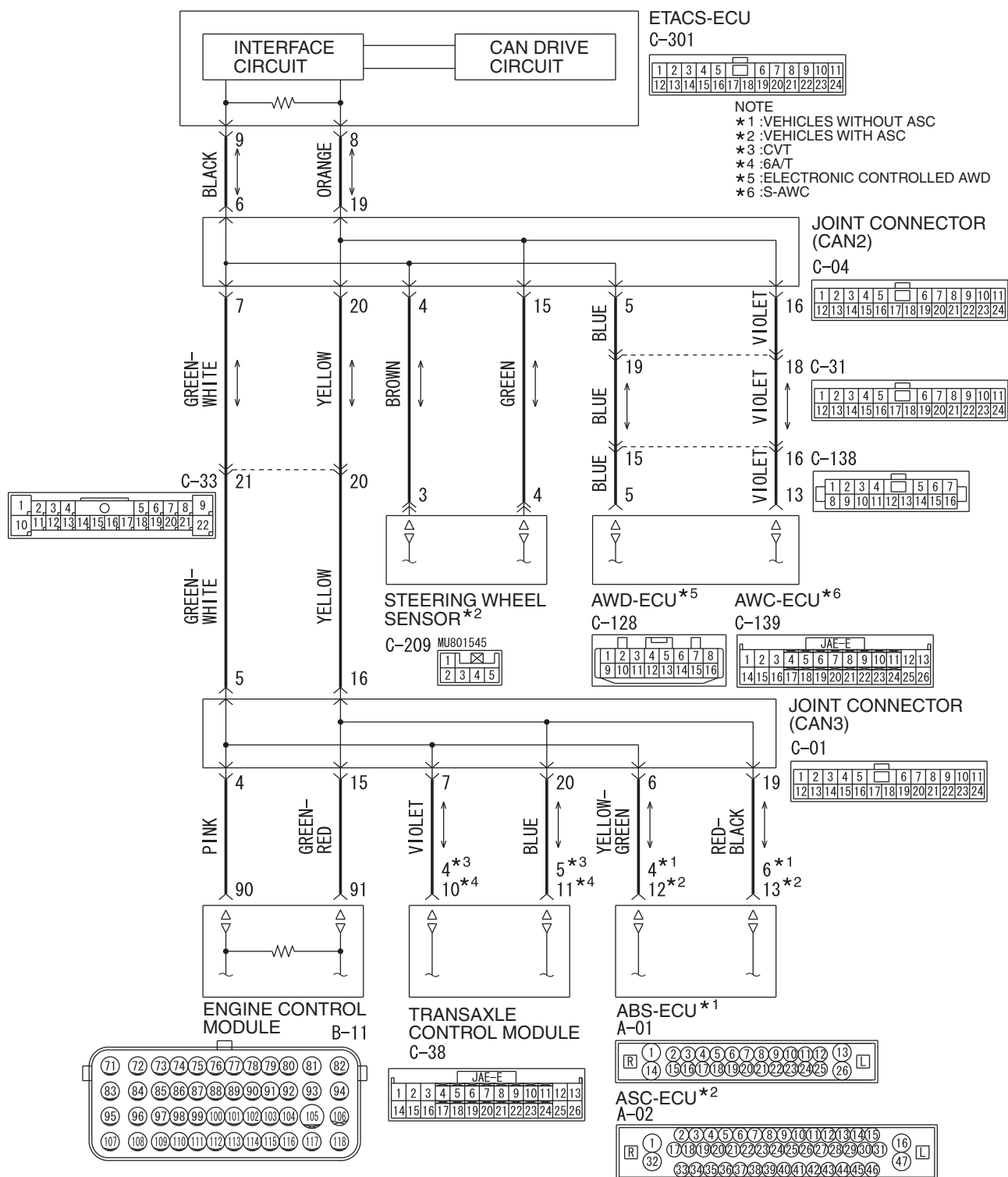
NO : Repair the wiring harness between joint connector (CAN2) C-04 and AWD-ECU connector C-128.

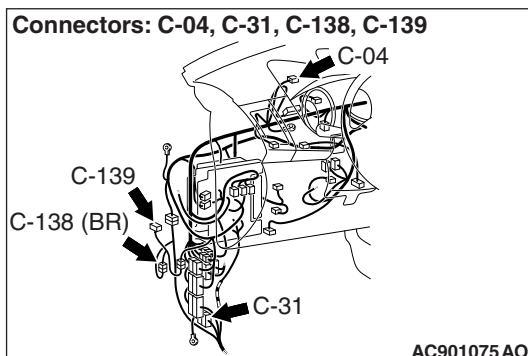


DIAGNOSTIC ITEM 7: Diagnose when the scan tool cannot receive the data sent by AWC-ECU <S-AWC>.**CAUTION**

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit





FUNCTION

If the scan tool MB991958 cannot communicate with the AWC-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the AWC-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN2) or AWC-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the AWC-ECU and the joint connector (CAN2), power supply circuit to the AWC-ECU]
- Malfunction of the AWC-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN2) C-04, AWC-ECU connector C-139, intermediate connector C-138 and intermediate connector C-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN2) C-04, AWC-ECU connector C-139, intermediate connector C-138 and intermediate connector C-31 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

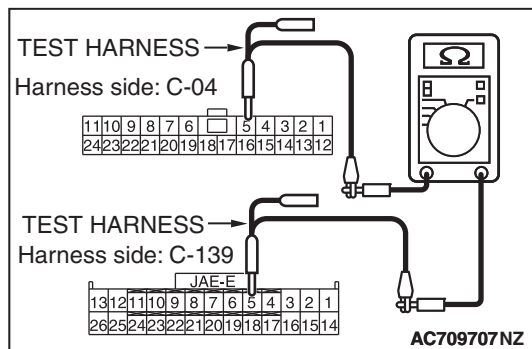
STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and AWC-ECU connector C-139 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN2) C-04 and AWC-ECU connector C-301, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.5) and AWC-ECU connector C-139 (terminal No.5)

OK: Continuity exists (2 ohms or less)



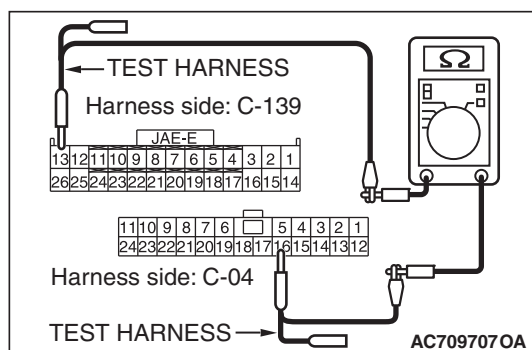
- (3) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.16) and AWC-ECU connector C-139 (terminal No.13)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN2) C-04 and AWC-ECU connector C-139 in good condition?

YES : Check the power supply circuit of the AWC-ECU.
Refer to GROUP 23C, S-AWC Diagnosis P.23C-241.

NO : Repair the wiring harness between joint connector (CAN2) C-04 and AWC-ECU connector C-139.

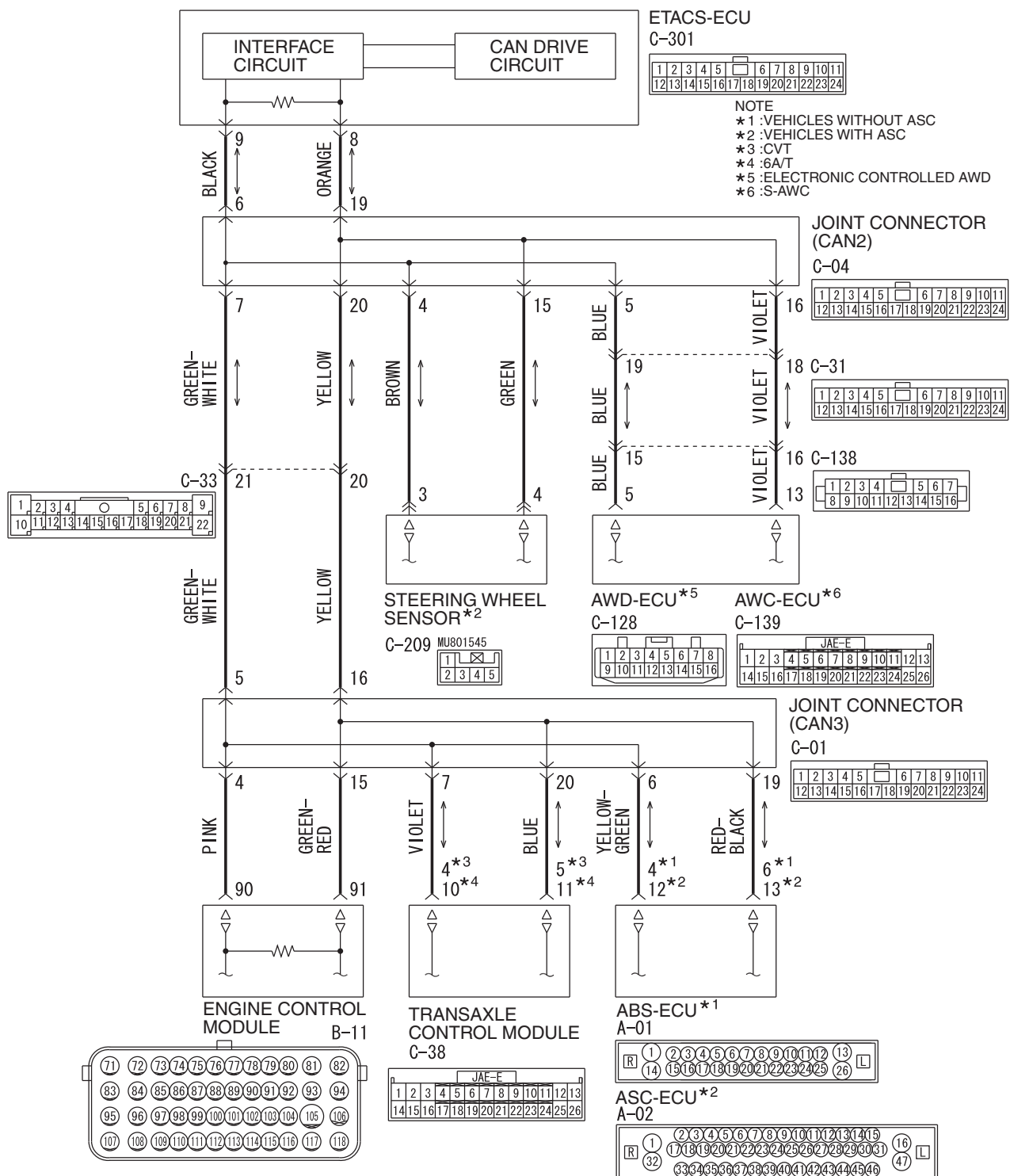


DIAGNOSTIC ITEM 8: Diagnose when the scan tool cannot receive the data sent by steering wheel sensor <Vehicles with ASC>.

CAUTION

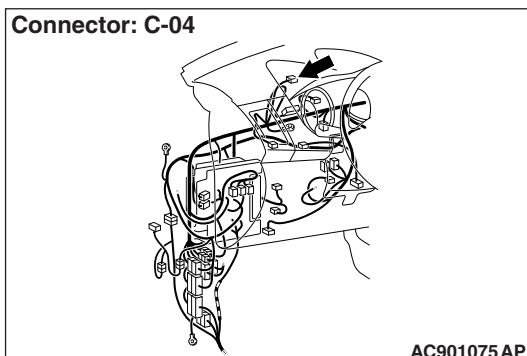
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit

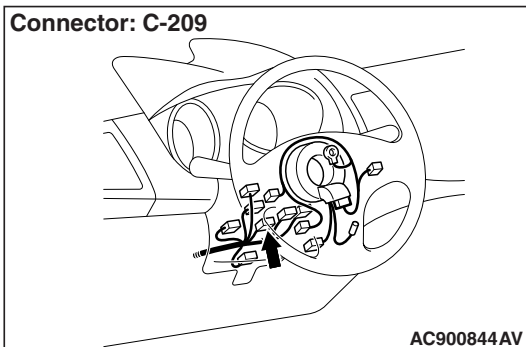


WAG54M048A

Connector: C-04



Connector: C-209



FUNCTION

If the scan tool MB991958 cannot communicate with the steering wheel sensor, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the steering wheel sensor, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN2) or steering wheel sensor connector improperly connected]
- Malfunction of the wiring harness [open circuit between the steering wheel sensor and the joint connector (CAN2), power supply circuit to the steering wheel sensor]
- Malfunction of the steering wheel sensor

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN2) C-04 and steering wheel sensor connector C-209 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN2) C-04 and steering wheel sensor connector C-209 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

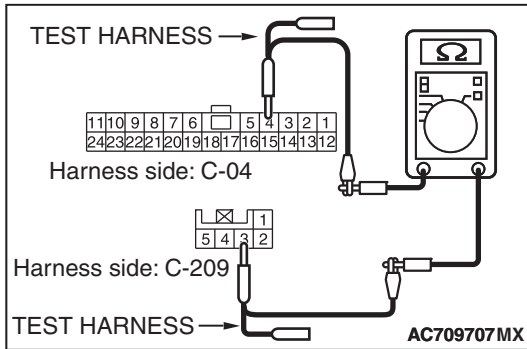
STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and steering wheel sensor connector C-209 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN2) C-04 and steering wheel sensor connector C-209, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.4) and steering wheel sensor connector C-209 (terminal No.3)

OK: Continuity exists (2 ohms or less)



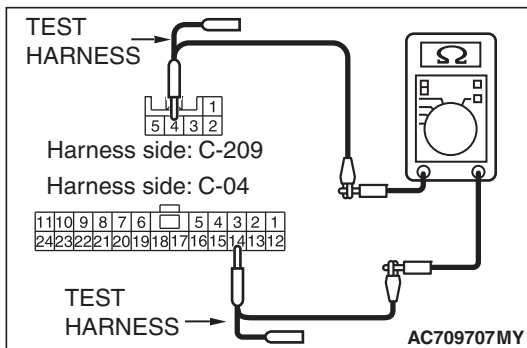
- (3) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.15) and steering wheel sensor connector C-209 (terminal No.4)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN2) C-04 and steering wheel sensor connector C-209 in good condition?

YES : Check the power supply circuit of the steering wheel sensor. Refer to GROUP 35C, Troubleshooting P.35C-216.

NO : Repair the wiring harness between joint connector (CAN2) C-04 and steering wheel sensor connector C-209.

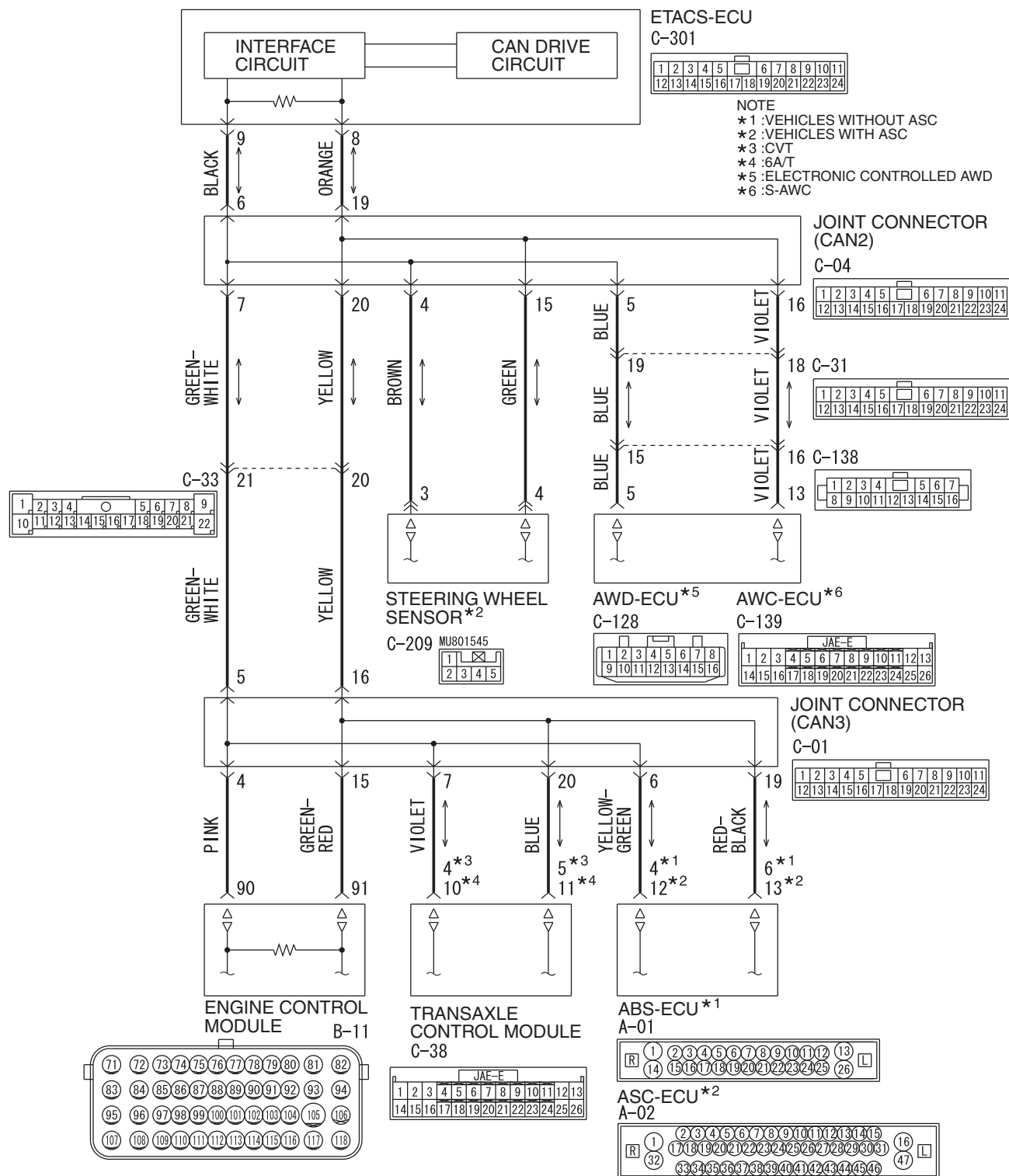


DIAGNOSTIC ITEM 9: Diagnose when the scan tool cannot receive the data sent by TCM <CVT, A/T>.

CAUTION

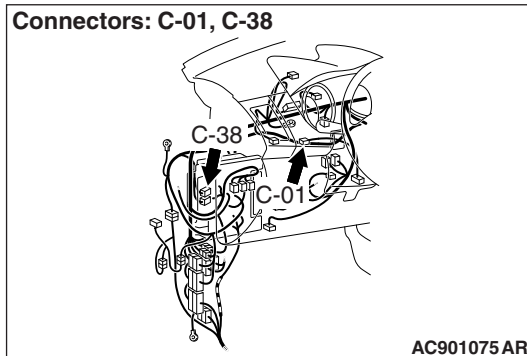
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit



WAG54M048A

Connectors: C-01, C-38



FUNCTION

If the scan tool MB991958 cannot communicate with the TCM, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the TCM, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN3) or TCM connector improperly connected]
- Malfunction of the wiring harness [open circuit between the TCM and the joint connector (CAN3), power supply circuit to the TCM]
- Malfunction of the TCM

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN3) C-01 and TCM connector C-38 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN3) C-01 and TCM connector C-38 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

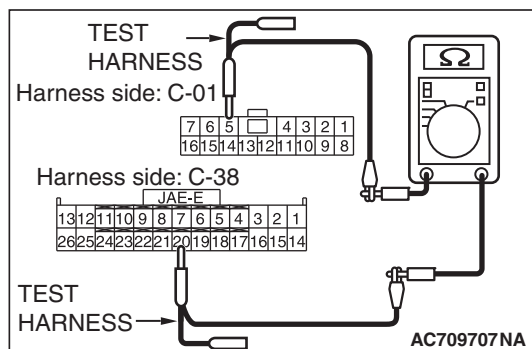
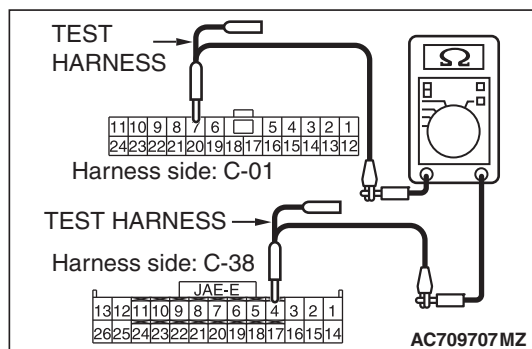
STEP 2. Check the wiring harness between joint connector (CAN3) C-01 and TCM connector C-38 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

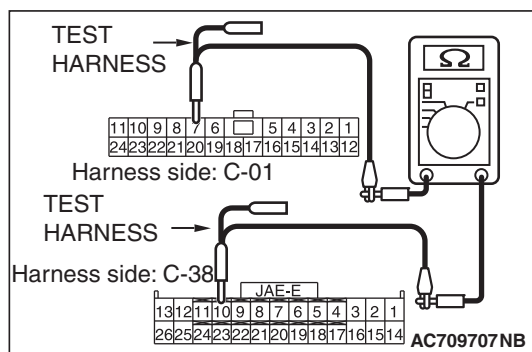
- (1) Disconnect joint connector (CAN3) C-01 and TCM connector C-38, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.7) and TCM connector C-38 (terminal No.4) <CVT>

OK: Continuity exists (2 ohms or less)



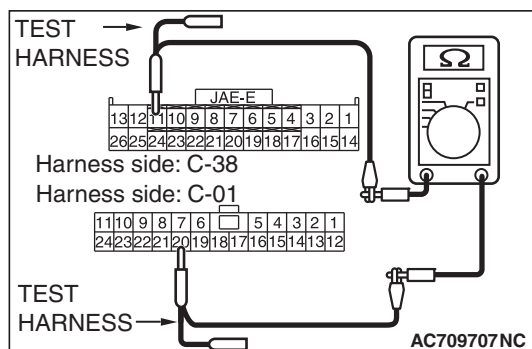
- (3) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.20) and TCM connector C-38 (terminal No.5) <CVT>

OK: Continuity exists (2 ohms or less)



- (4) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.7) and TCM connector C-38 (terminal No.10) <A/T>

OK: Continuity exists (2 ohms or less)



- (5) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.20) and TCM connector C-38 (terminal No.11) <A/T>

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN3) C-01 and TCM connector C-38 in good condition?

YES : Check the power supply circuit of the TCM. Refer to GROUP 23A, Troubleshooting P.23A-30 <CVT> or GROUP 23C, Troubleshooting P.23C-28 <A/T>.

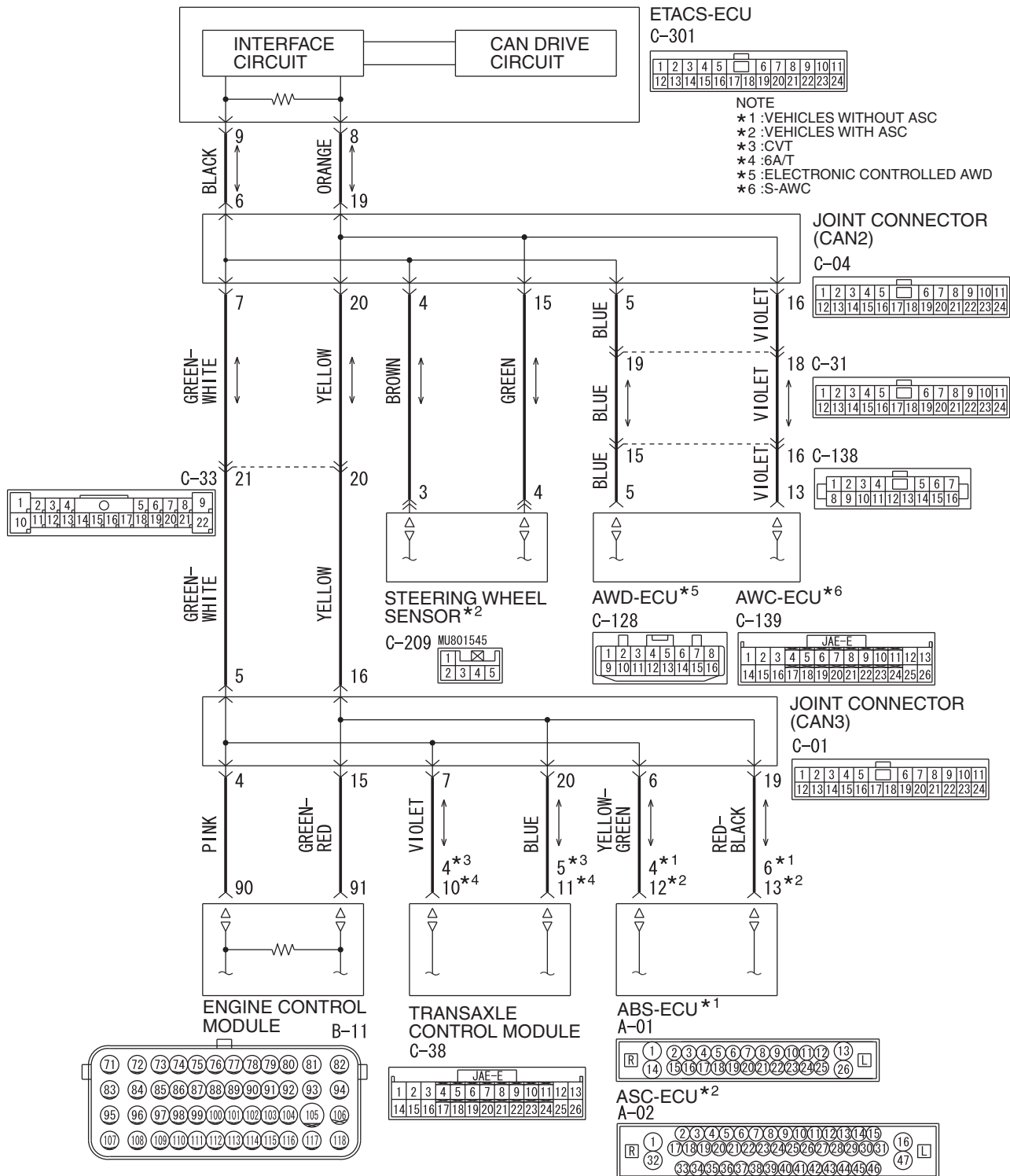
NO : Repair the wiring harness between joint connector (CAN3) C-01 and TCM connector C-38.

**DIAGNOSTIC ITEM 10: Diagnose when the scan tool cannot receive the data sent by ABS-ECU
<vehicles without ASC>.**

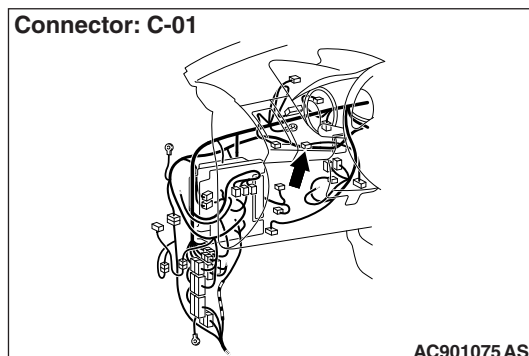
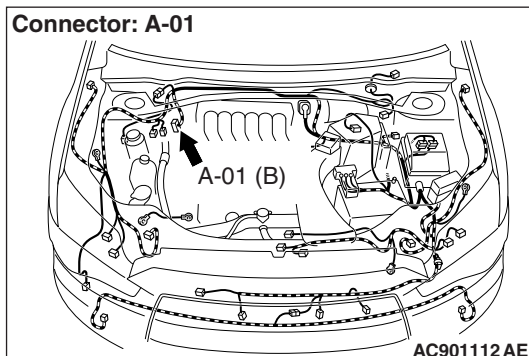
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit



WAG54M048A



FUNCTION

If the scan tool MB991958 cannot communicate with the ABS-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the ABS-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN3) or ABS-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the ABS-ECU and the joint connector (CAN3), power supply circuit to the ABS-ECU]
- Malfunction of the ABS-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN3) C-01 and ABS-ECU connector A-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN3) C-01 and ABS-ECU connector A-01 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

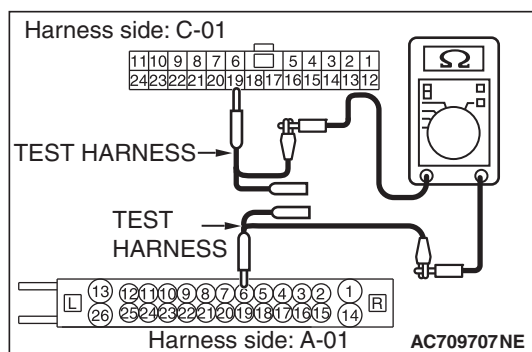
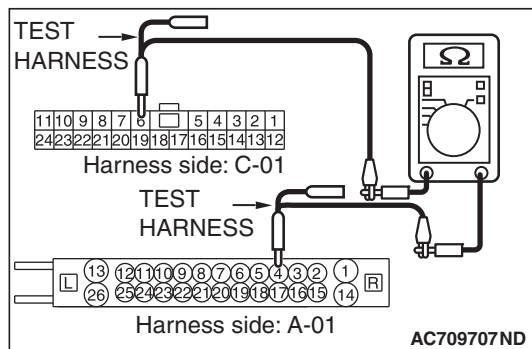
STEP 2. Check the wiring harness between joint connector (CAN3) C-01 and ABS-ECU connector A-01 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN3) C-01 and ABS-ECU connector A-01, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.6) and ABS-ECU connector A-01 (terminal No.4)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.19) and ABS-ECU connector A-01 (terminal No.6)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN3) C-01 and ABS-ECU connector A-01 in good condition?

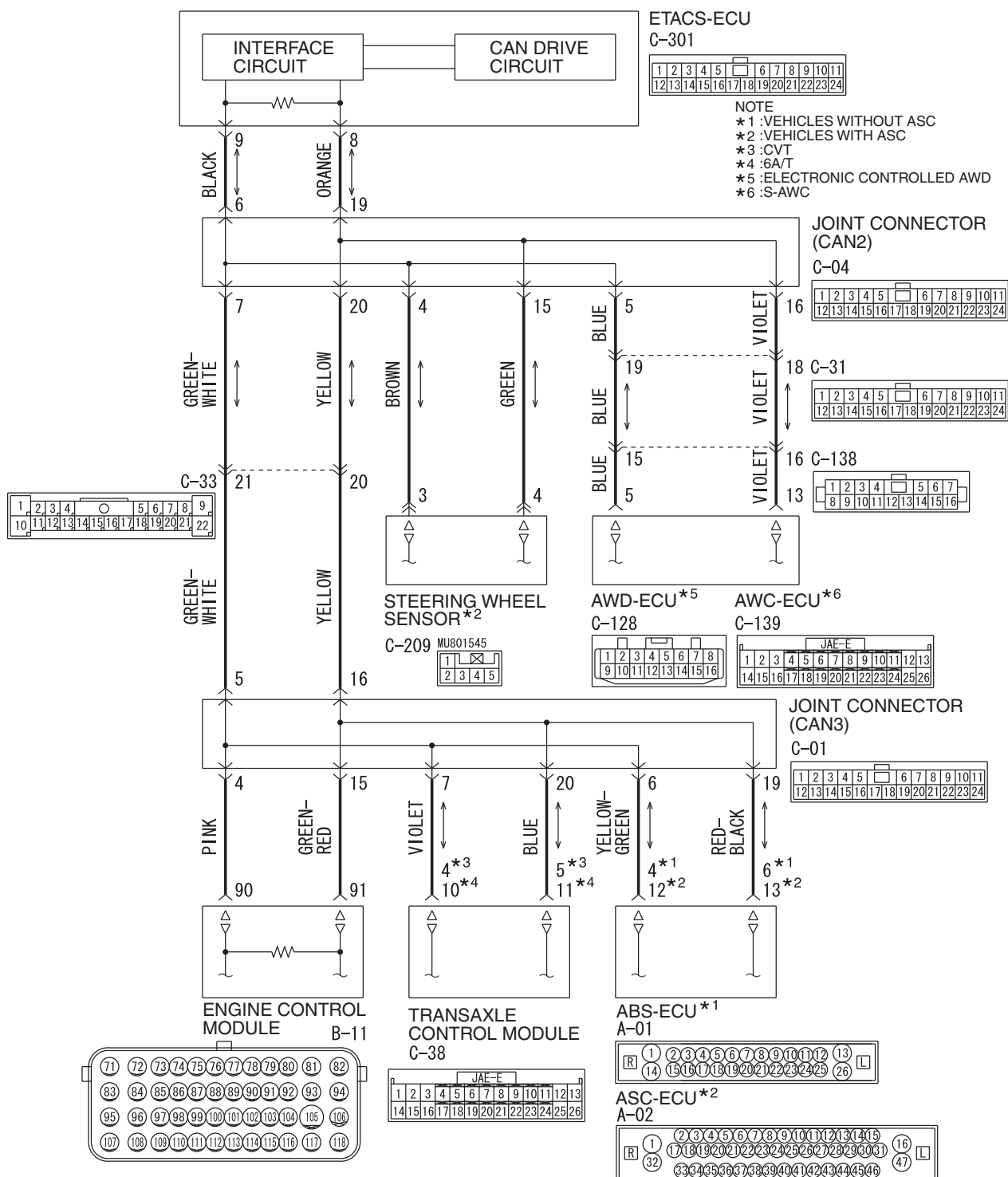
YES : Check the power supply circuit of the ABS-ECU. Refer to GROUP 35B, Troubleshooting P.35B-149.

NO : Repair the wiring harness between joint connector (CAN3) C-01 and ABS-ECU connector A-01.

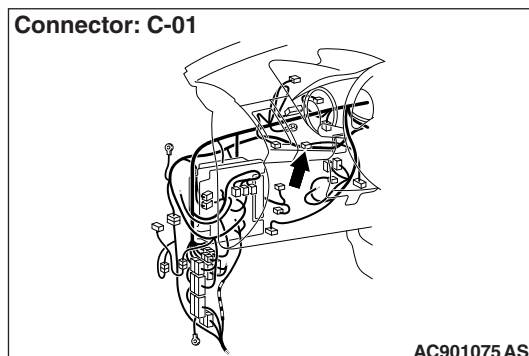
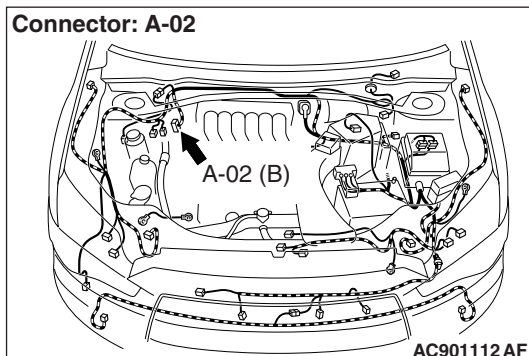
DIAGNOSTIC ITEM 11: Diagnose when the scan tool cannot receive the data sent by ASC-ECU <vehicles with ASC>.**CAUTION**

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit



WAG54M048A



FUNCTION

If the scan tool MB991958 cannot communicate with the ASC-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the ASC-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN3) or ASC-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the ASC-ECU and the joint connector (CAN3), power supply circuit to the ASC-ECU]
- Malfunction of the ASC-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN3) C-01 and ASC-ECU connector A-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN3) C-01 and ASC-ECU connector A-02 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

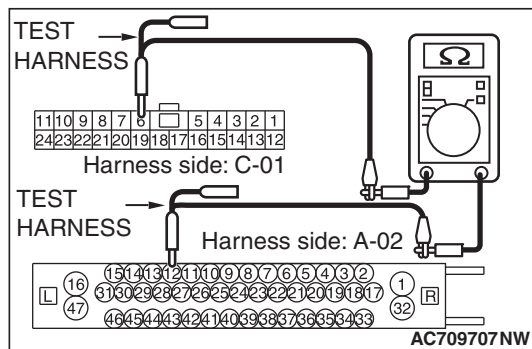
STEP 2. Check the wiring harness between joint connector (CAN3) C-01 and ASC-ECU connector A-02 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN3) C-01 and ASC-ECU connector A-02, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.6) and ASC-ECU connector A-02 (terminal No.12)

OK: Continuity exists (2 ohms or less)

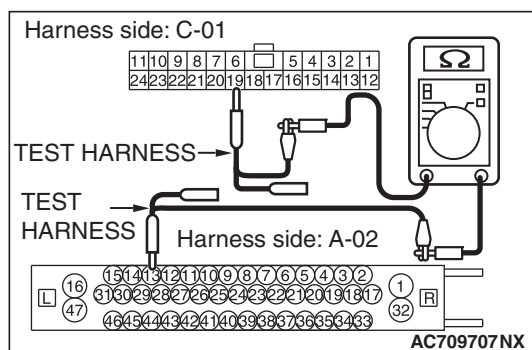


- (3) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.19) and ASC-ECU connector A-02 (terminal No.13)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN3) C-01 and ASC-ECU connector A-02 in good condition?

- YES :** Check the power supply circuit of the ASC-ECU.
Refer to GROUP 35C, Troubleshooting P.35C-216.
- NO :** Repair the wiring harness between joint connector (CAN3) C-01 and ASC-ECU connector A-02.

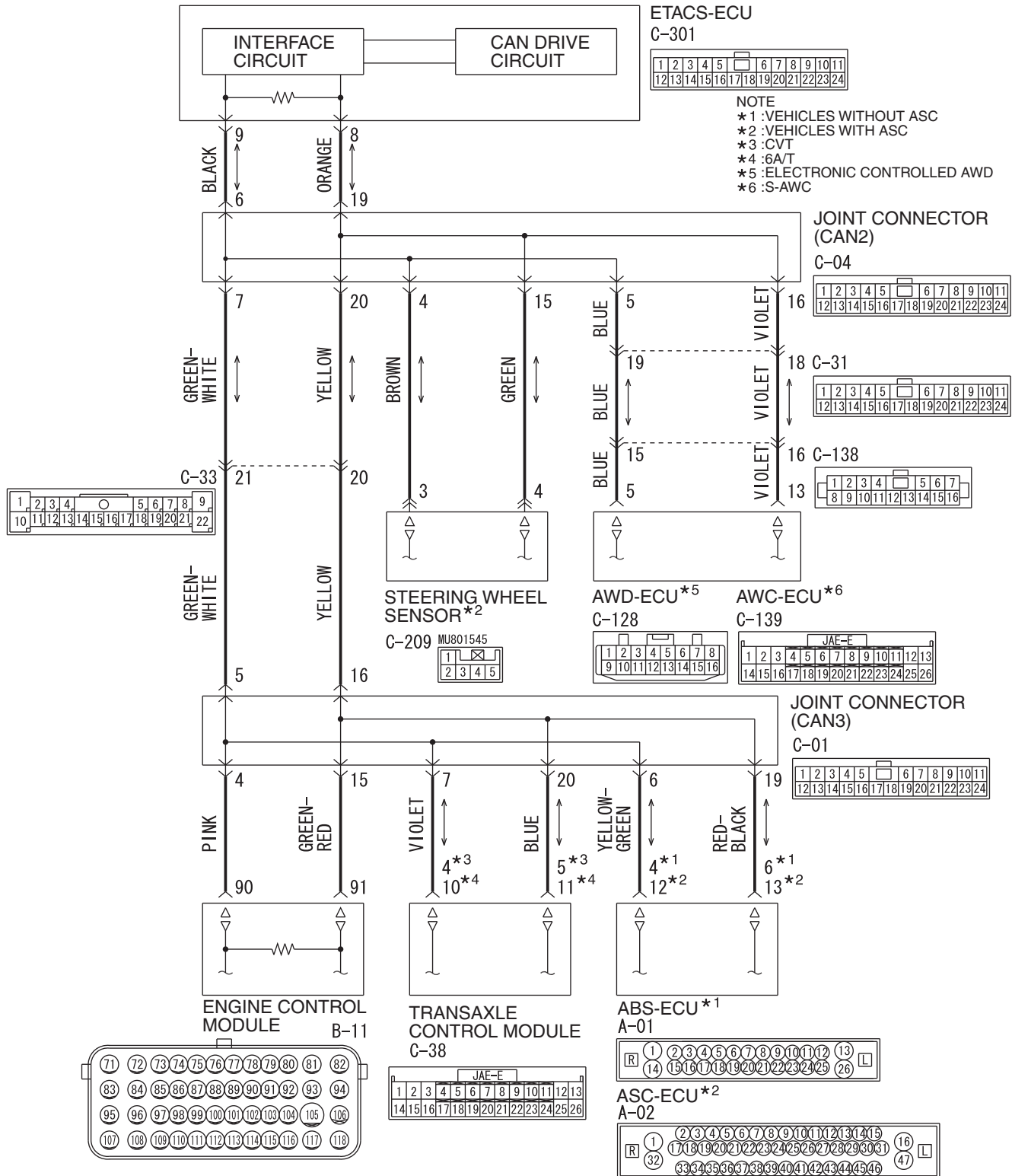


DIAGNOSTIC ITEM 12: Diagnose when the scan tool cannot receive the data sent by ECM.

CAUTION

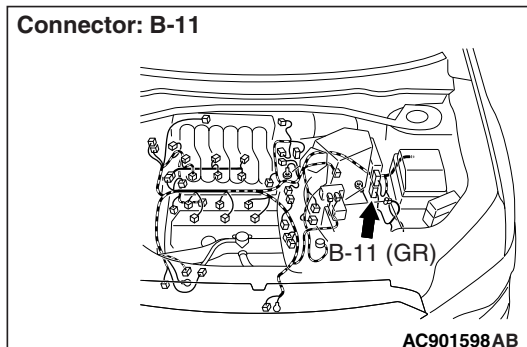
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit

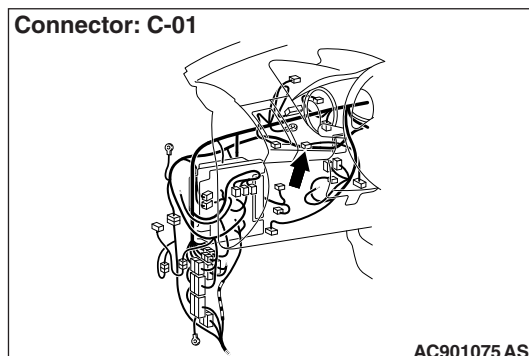


WAG54M048A

Connector: B-11



Connector: C-01



FUNCTION

If the scan tool MB991958 cannot communicate with the ECM, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the ECM, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN3) or ECM connector improperly connected]
- Malfunction of the wiring harness [open circuit between the ECM and the joint connector (CAN3), power supply circuit to the ECM]
- Malfunction of the ECM

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN3) C-01 and ECM connector B-11 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN3) C-01 and ECM connector B-11 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

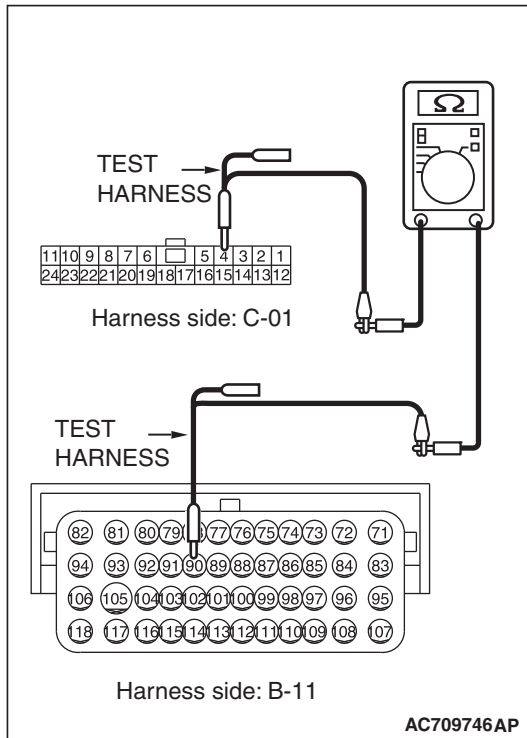
STEP 2. Check the wiring harness between joint connector (CAN3) C-01 and ECM connector B-11 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN3) C-01 and ECM connector B-11, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.4) and ECM connector B-11 (terminal No.90)

OK: Continuity exists (2 ohms or less)



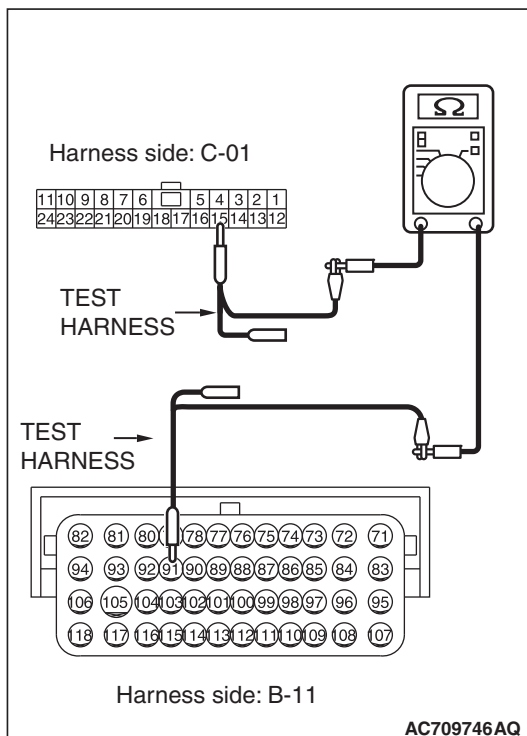
- (3) Check the wiring harness between joint connector (CAN3) C-01 (terminal No.15) and ECM connector B-11 (terminal No.91)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN3) C-01 and ECM connector B-11 in good condition?

YES : Check the power supply circuit of the ECM. Refer to GROUP 13A, Troubleshooting P.13A-54 <2.4L Engine> or GROUP 13B, Troubleshooting P.13B-55 <3.0L Engine>.

NO : Repair the wiring harness between joint connector (CAN3) C-01 and ECM connector B-11.

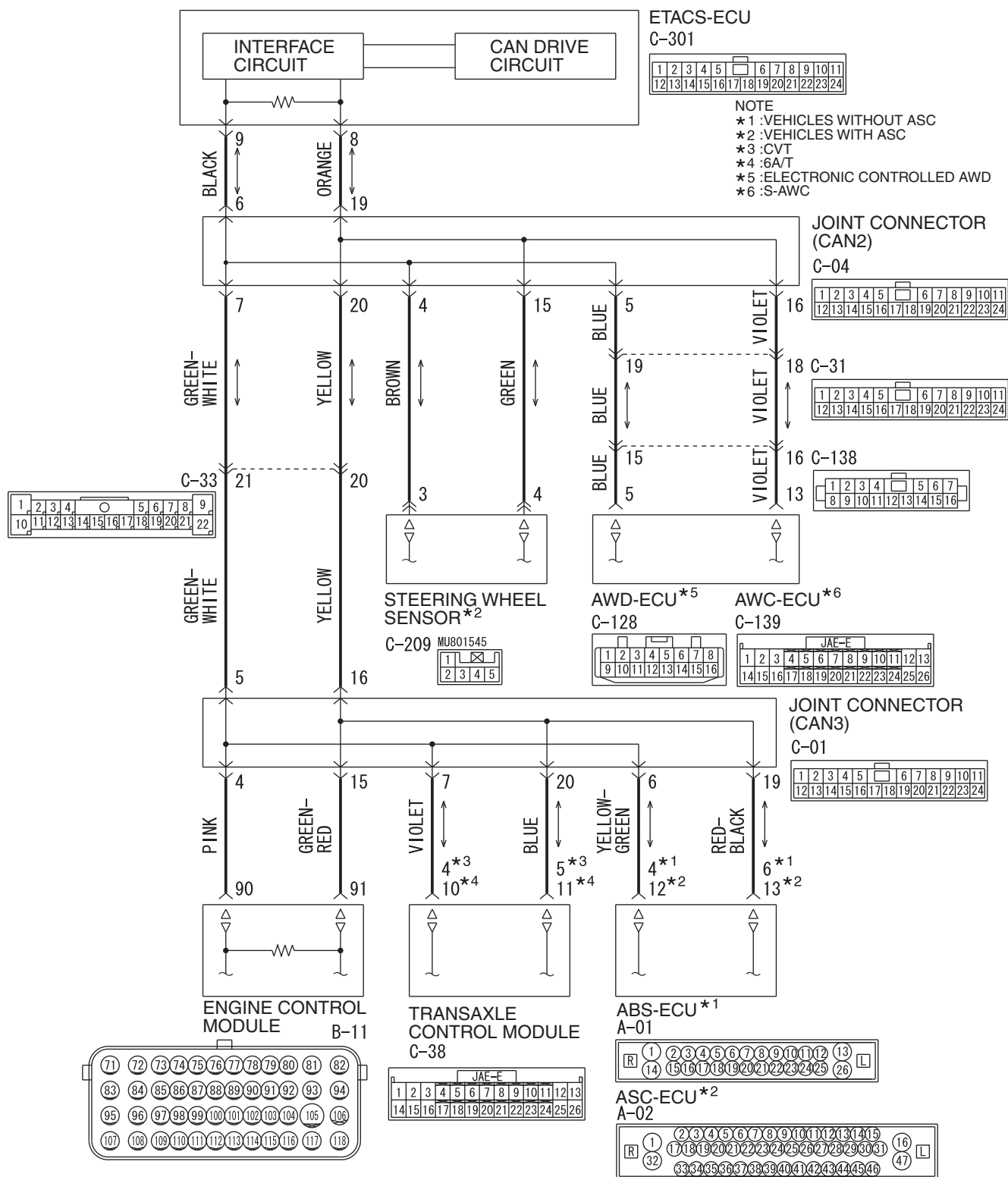


DIAGNOSTIC ITEM 13: Diagnose the lines between the ETACS-ECU and joint connector (CAN2).

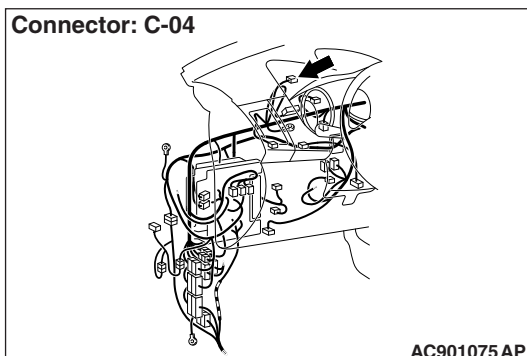
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

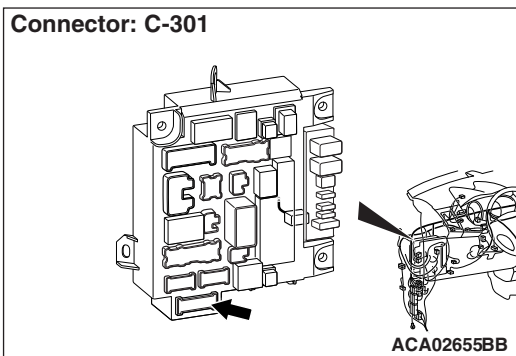
CAN Communication Circuit



Connector: C-04



Connector: C-301



FUNCTION

If a failure is present in the wiring harness between the ETACS-ECU connector and the joint connector (CAN2), this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for some of the ECUs on the CAN-C line, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN2) or ETACS-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the ETACS-ECU connector and the joint connector (CAN2), power supply circuit to the engine control module]
- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN2) C-04 and ETACS-ECU connector C-301 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

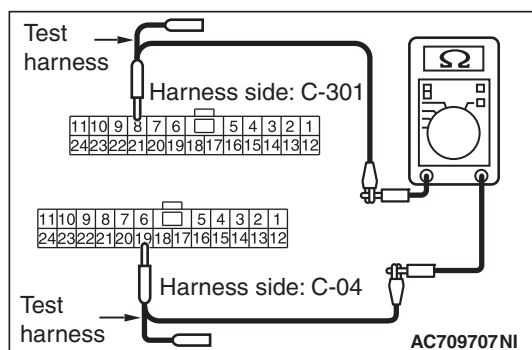
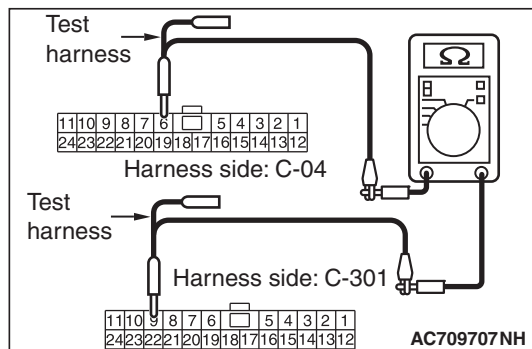
STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN2) C-04 and ETACS-ECU connector C-301, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.6) and ETACS-ECU connector C-301 (terminal No.9)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.19) and ETACS-ECU connector C-301 (terminal No.8)

OK: Continuity exists (2 ohms or less)

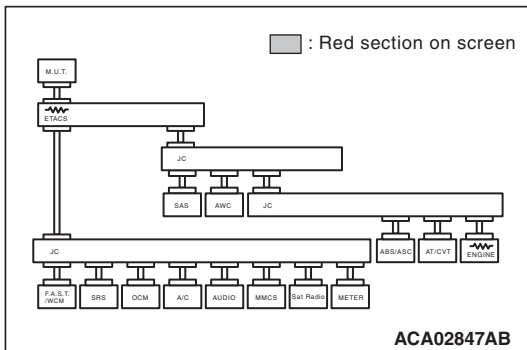
Q: Is the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301 in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness between joint connector (CAN2) C-04 and ETACS-ECU connector C-301.

CAUTION

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.



Q: Does the scan tool screen correspond to the illustration?

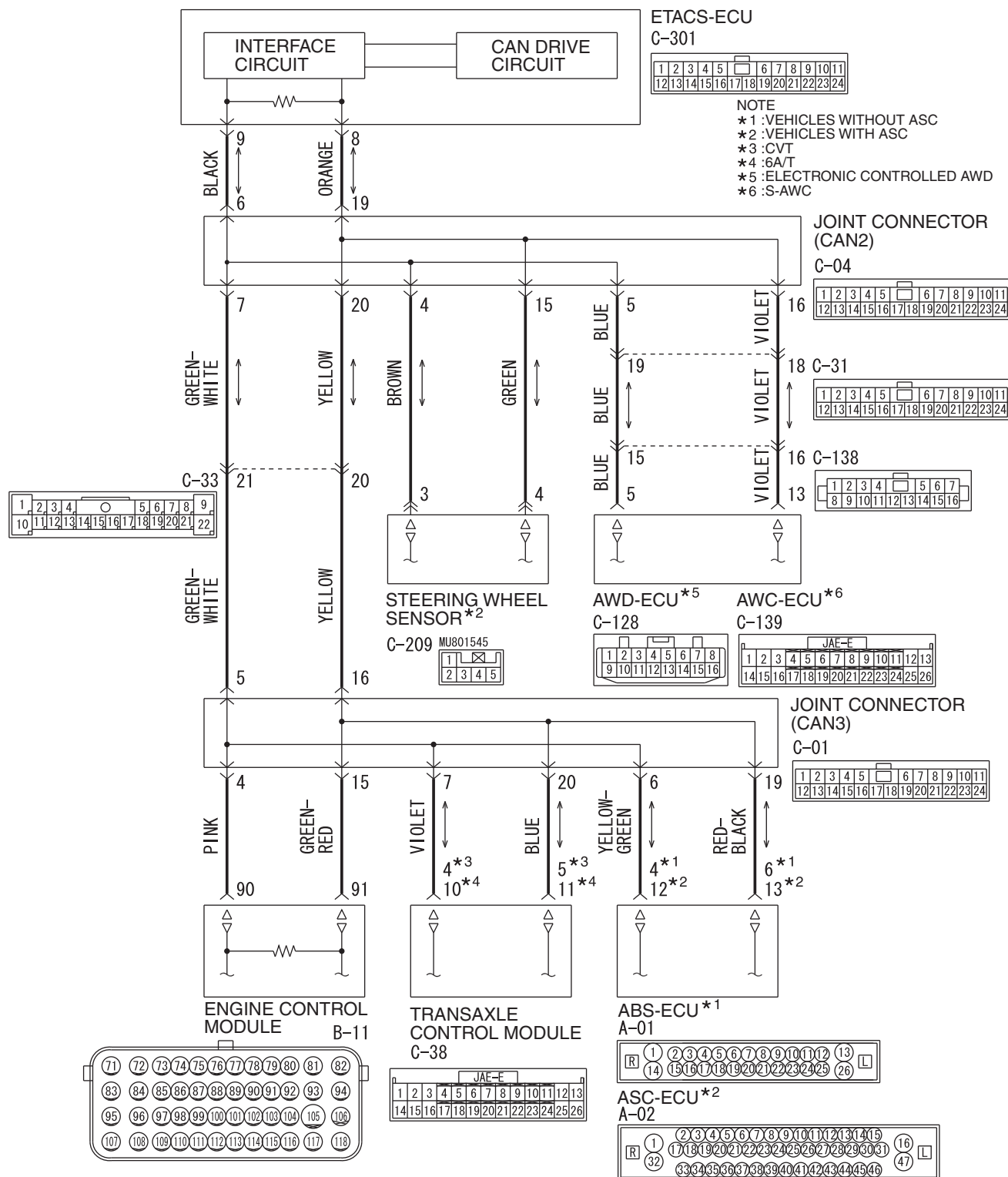
NO : Replace the ETACS-ECU.

DIAGNOSTIC ITEM 14: Diagnose the lines between joint connector (CAN2) and joint connector (CAN3).

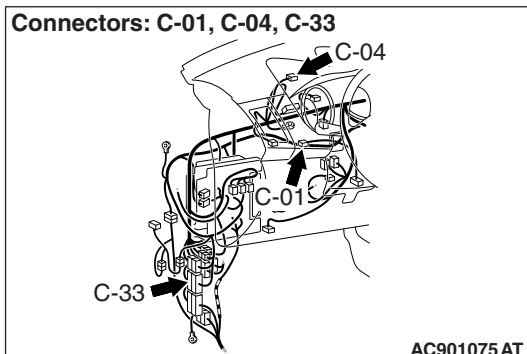
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit



WAG54M048A



FUNCTION

If a failure is present in the wiring harness between the joint connector (CAN2) and the joint connector (CAN3), this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for some of the ECUs on the CAN-C line, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN2), joint connector (CAN3) or intermediate connector failed]
- Malfunction of the wiring harness [open circuit between joint connector (CAN2) and joint connector (CAN3)]

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN2) C-04, joint connector (CAN3) C-01 and intermediate connector C-33 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

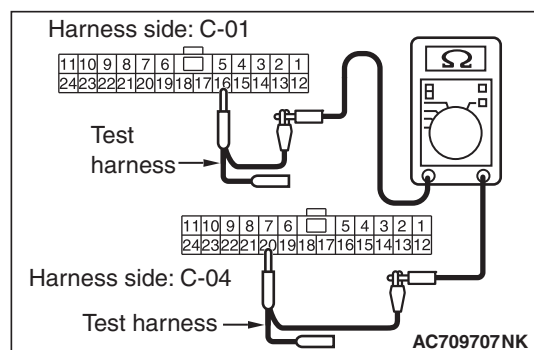
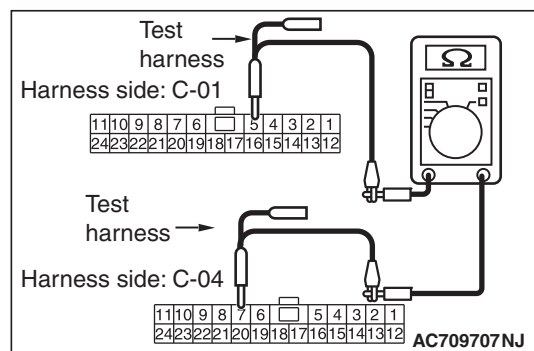
CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN2) C-04, joint connector (CAN3) C-01 and intermediate connector C-33 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.



STEP 2. Check the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN2) C-04 and joint connector (CAN3) C-01, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.7) and joint connector (CAN3) C-01 (terminal No.5)

OK: Continuity exists (2 ohms or less)

- (3) Check the wiring harness between joint connector (CAN2) C-04 (terminal No.20) and joint connector (CAN3) C-01 (terminal No.16)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01 in good condition?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use

Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction P.00-15).

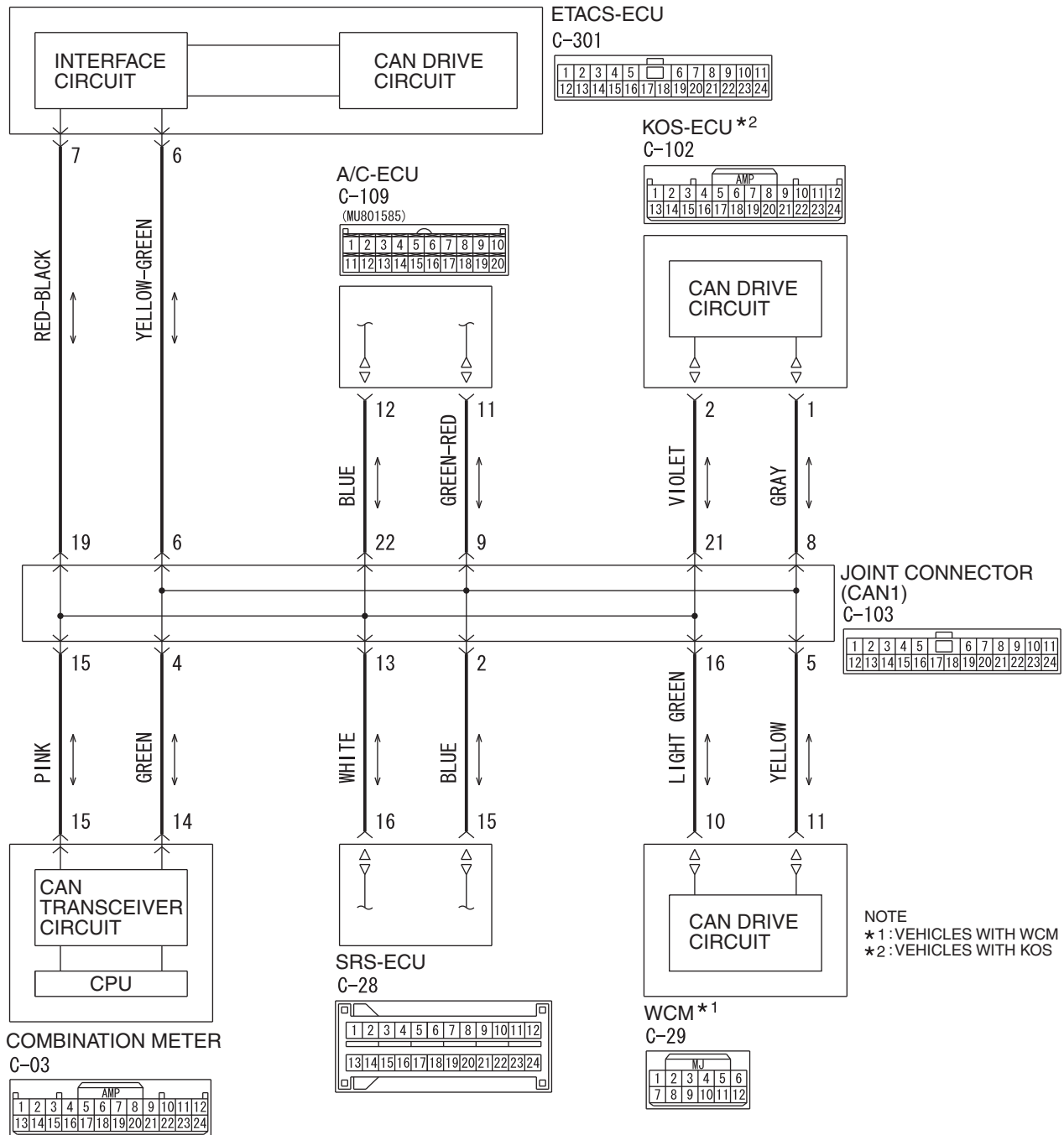
NO : Repair the wiring harness between joint connector (CAN2) C-04 and joint connector (CAN3) C-01.

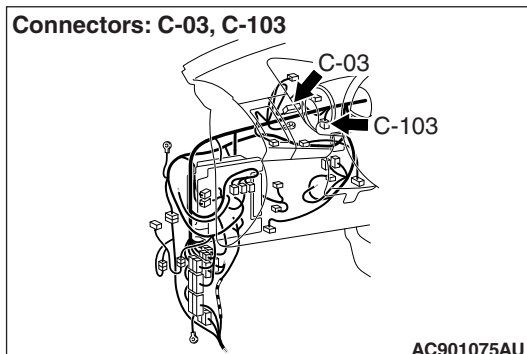
DIAGNOSTIC ITEM 15: Diagnose when the scan tool cannot receive the data sent by combination meter.

CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit





FUNCTION

If the scan tool MB991958 cannot communicate with the combination meter, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the combination meter, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), combination meter connector improperly connected]
- Malfunction of the wiring harness [open circuit between the combination meter connector and the joint connector (CAN1), power supply circuit to the combination meter]
- Malfunction of the combination meter

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and combination meter connector C-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and combination meter connector C-03 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

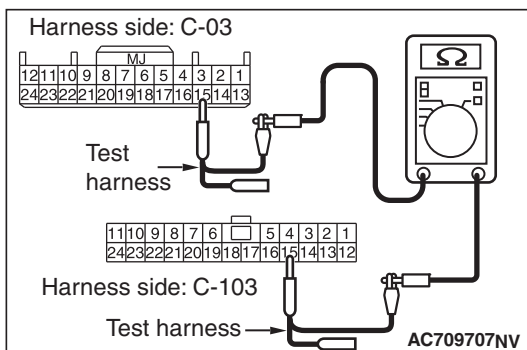
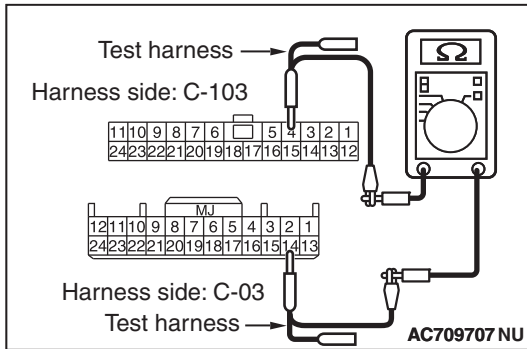
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and combination meter connector C-03, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.4) and combination meter connector C-03 (terminal No.14)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.15) and combination meter connector C-03 (terminal No.15)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 in good condition?

YES : Check the power supply circuit of the combination meter. Refer to GROUP 54A, Combination meter – Diagnosis P.54A-69.

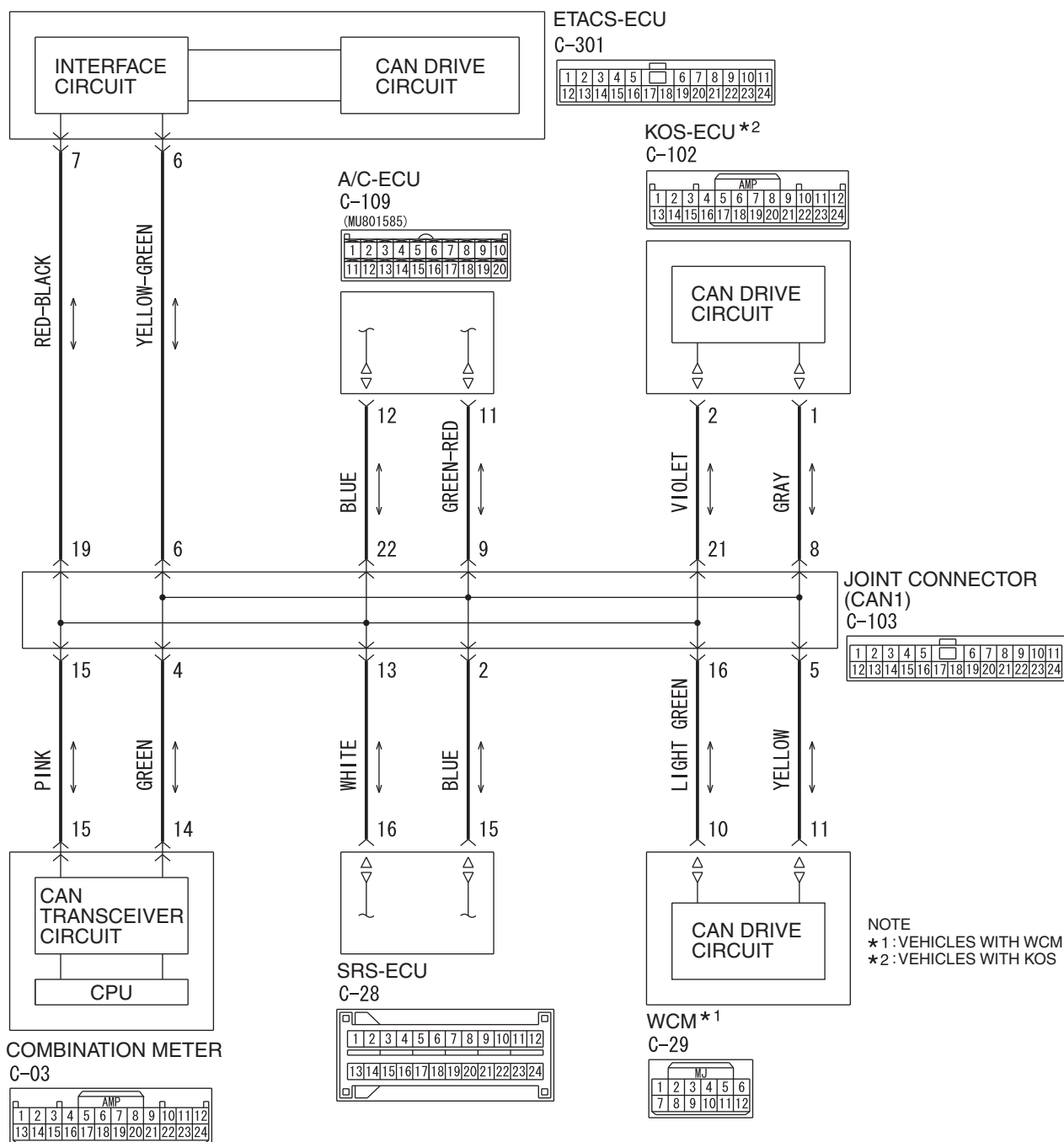
NO : Repair the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03.

DIAGNOSTIC ITEM 16: Diagnose when the scan tool cannot receive the data sent by KOS-ECU
<vehicles with KOS>.

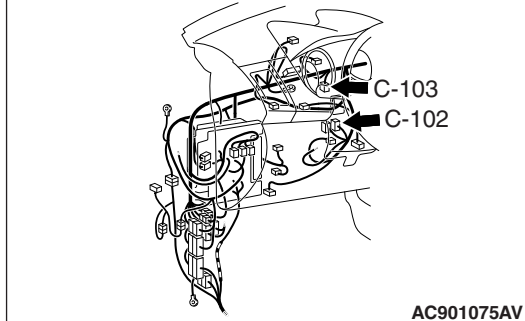
⚠ CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit



Connectors: C-102, C-103



FUNCTION

If the scan tool MB991958 cannot communicate with the KOS-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the KOS-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), KOS-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the KOS-ECU connector and the joint connector (CAN1), power supply circuit to the KOS-ECU]
- Malfunction of the KOS-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and KOS-ECU connector C-102 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and KOS-ECU connector C-102 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

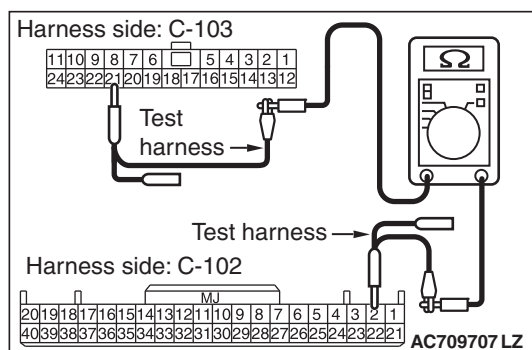
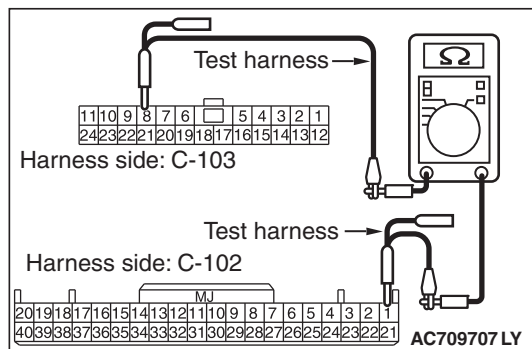
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and KOS-ECU connector C-102, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.8) and KOS-ECU connector C-102 (terminal No.1)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.21) and KOS-ECU connector C-102 (terminal No.2)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 in good condition?

YES : Check the power supply circuit of the KOS-ECU.
Refer to GROUP 42B, KOS-ECU – Diagnosis
[P.42B-128.](#)

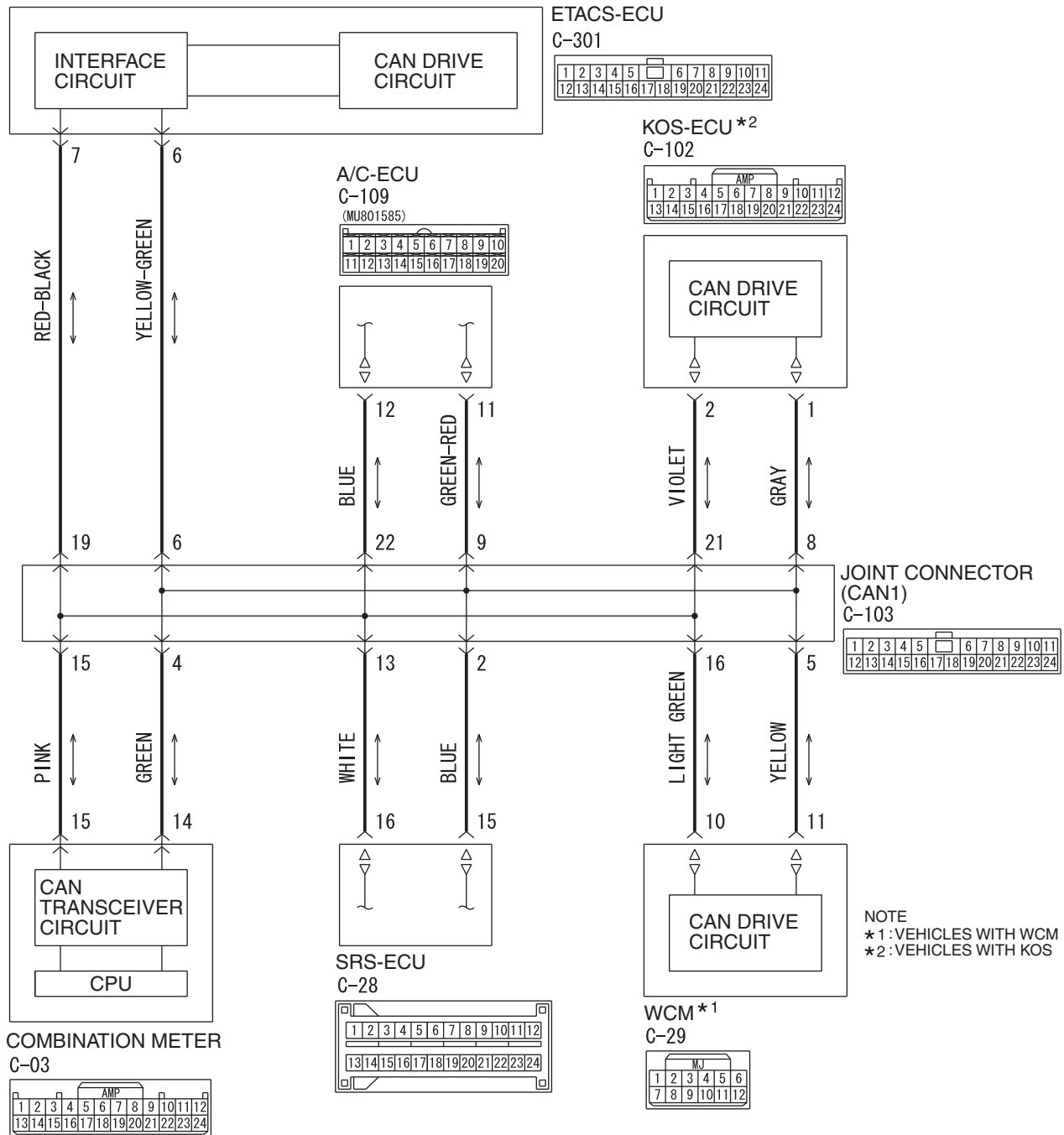
NO : Repair the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102.

DIAGNOSTIC ITEM 17: Diagnose when the scan tool cannot receive the data sent by WCM <vehicles without KOS>.

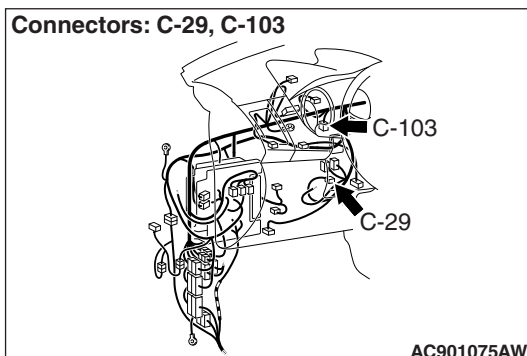
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit



Connectors: C-29, C-103



FUNCTION

If the scan tool MB991958 cannot communicate with the WCM, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the WCM, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), WCM connector improperly connected]
- Malfunction of the wiring harness [open circuit between the WCM connector and the joint connector (CAN1), power supply circuit to the WCM]
- Malfunction of the WCM

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and WCM connector C-29 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and WCM connector C-29 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

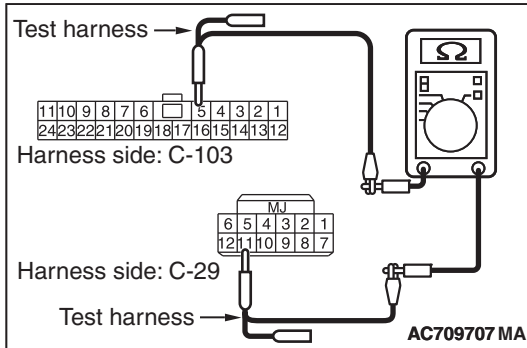
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and WCM connector C-29, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.5) and WCM connector C-29 (terminal No.11)

OK: Continuity exists (2 ohms or less)



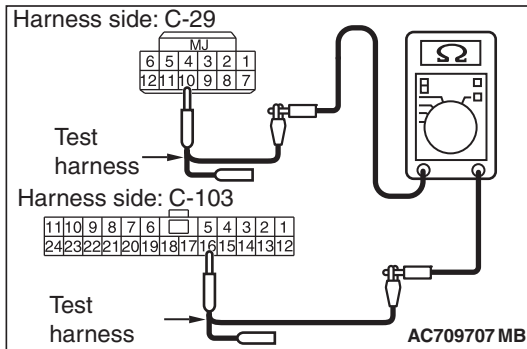
- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.16) and WCM connector C-29 (terminal No.2)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 in good condition?

YES : Check the power supply circuit of the WCM. Refer to GROUP 42C, WCM – Diagnosis P.42C-80.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29.

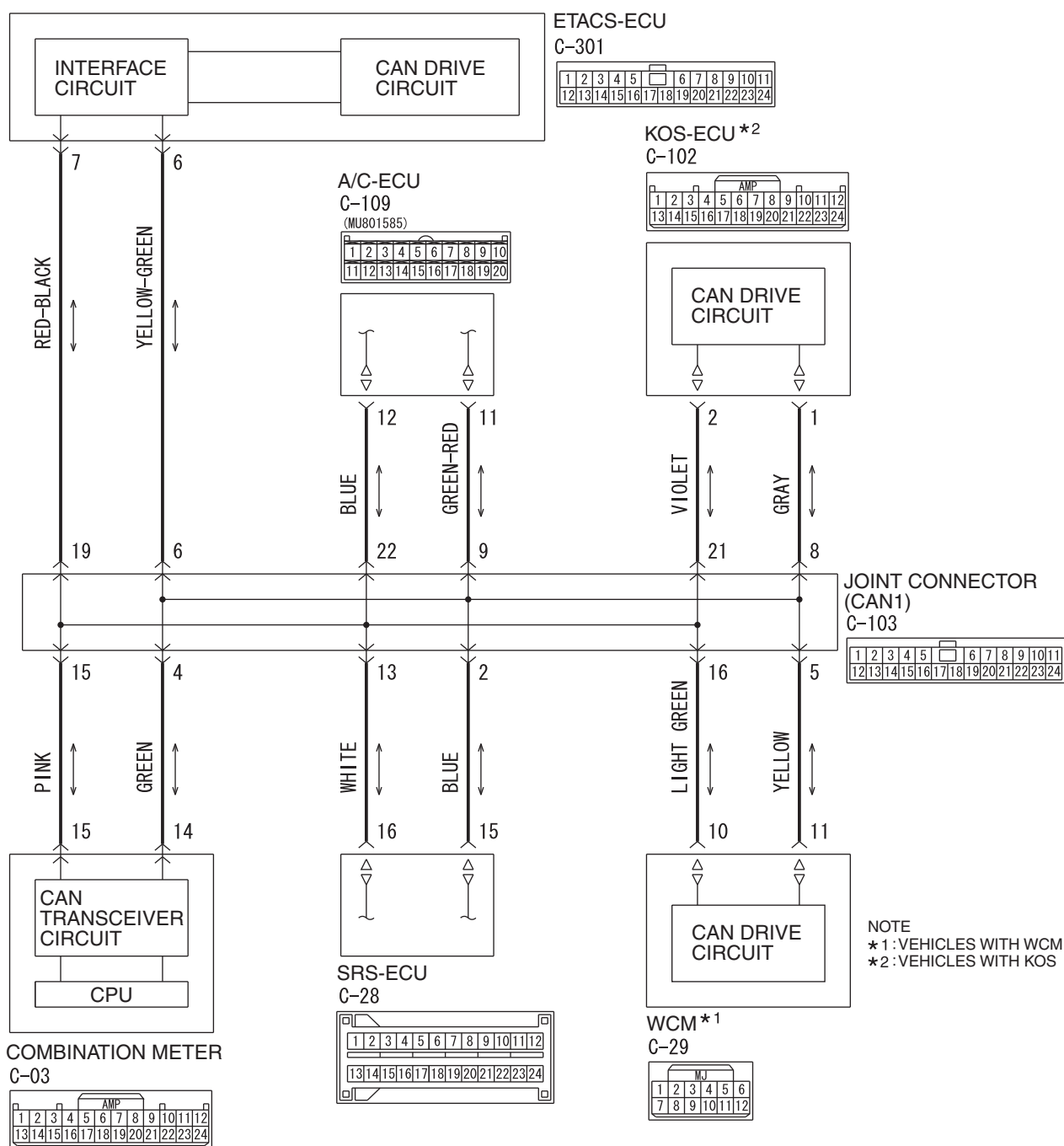


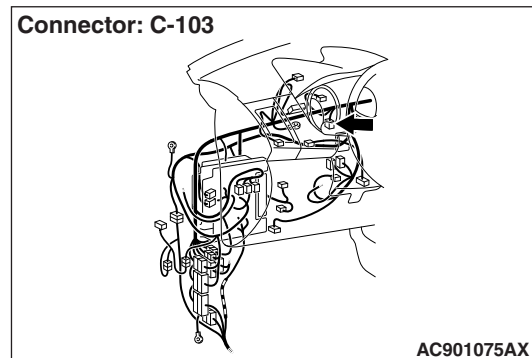
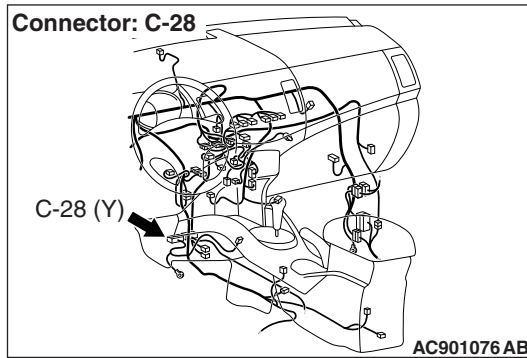
DIAGNOSTIC ITEM 18: Diagnose when the scan tool cannot receive the data sent by SRS-ECU.

CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit





FUNCTION

If the scan tool MB991958 cannot communicate with the SRS-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the SRS-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), SRS-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the SRS-ECU connector and the joint connector (CAN1), power supply circuit to the SRS-ECU]
- Malfunction of the SRS-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and SRS-ECU connector C-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and SRS-ECU connector C-28 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

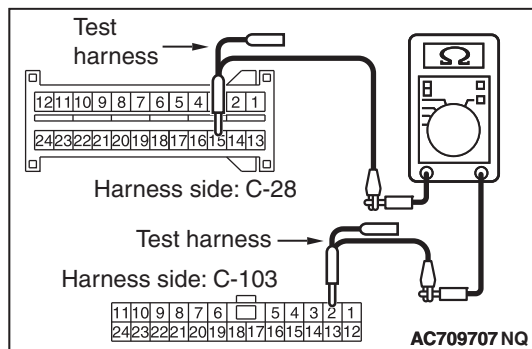
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and SRS-ECU connector C-28, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.2) and SRS-ECU connector C-28 (terminal No.15)

OK: Continuity exists (2 ohms or less)



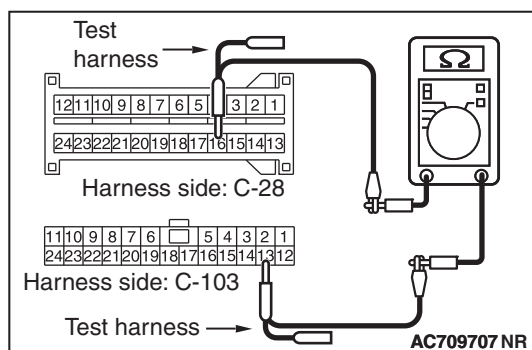
- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.13) and SRS-ECU connector C-28 (terminal No.16)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 in good condition?

YES : Check the power supply circuit of the SRS-ECU.
Refer to GROUP 52B, SRS – Troubleshooting
[P.52B-409.](#)

NO : Repair the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28.

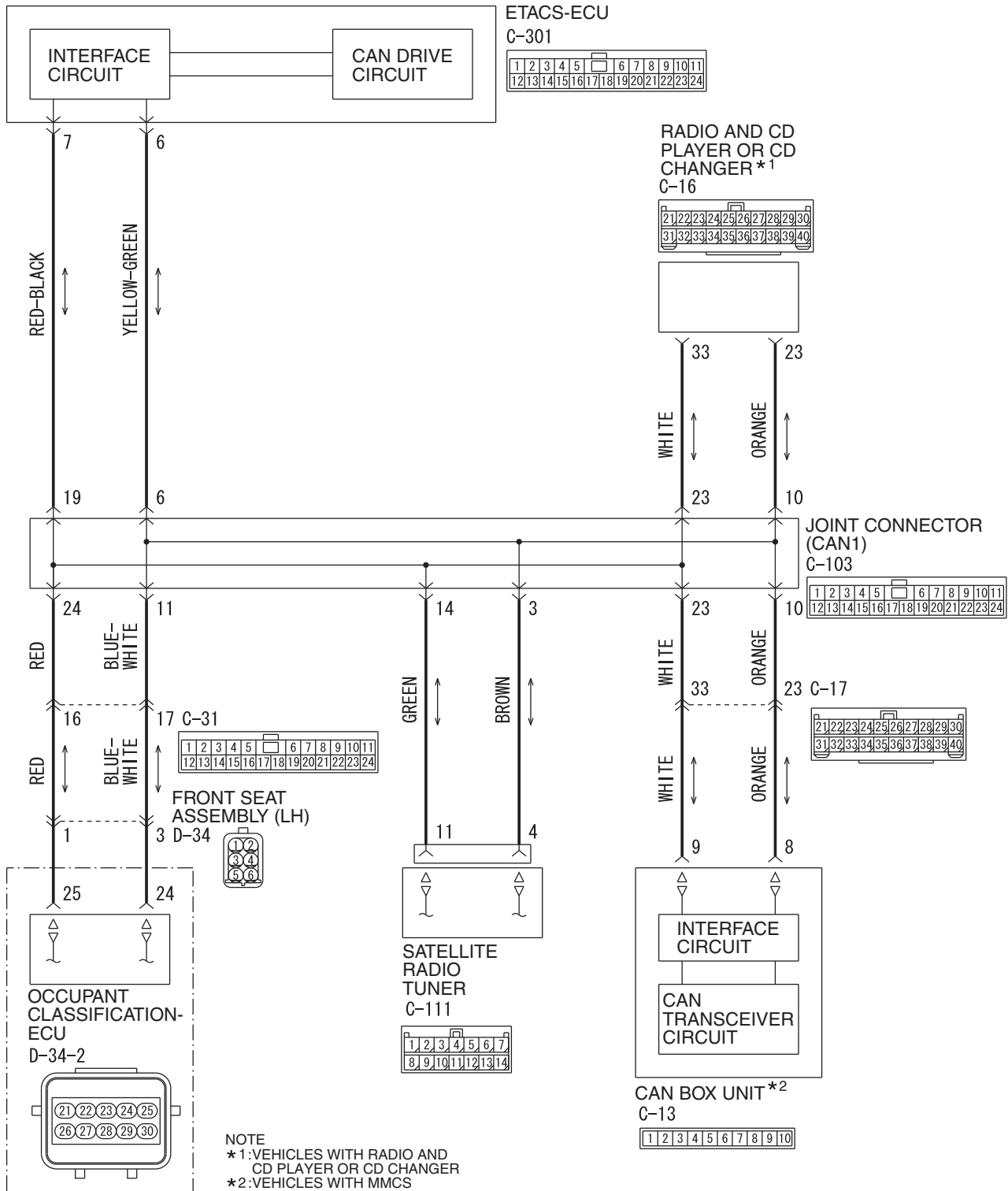


DIAGNOSTIC ITEM 19: Diagnose when the scan tool cannot receive the data sent by occupant classification-ECU.

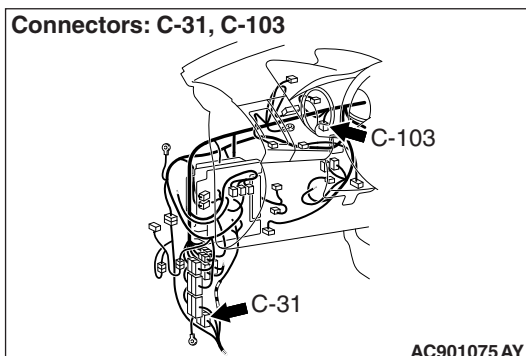
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

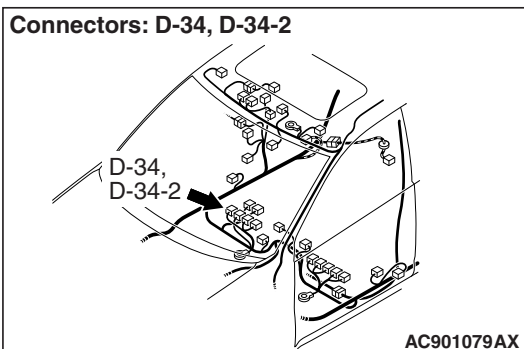
CAN Communication Circuit



Connectors: C-31, C-103



Connectors: D-34, D-34-2



FUNCTION

If the scan tool MB991958 cannot communicate with the occupant classification-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the occupant classification-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), occupant classification-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the occupant classification-ECU connector and the joint connector (CAN1), power supply circuit to the occupant classification-ECU]
- Malfunction of the occupant classification-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103, occupant classification-ECU connector D-34-2, front seat assembly (LH) connector D-34 and intermediate connector C-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103, occupant classification-ECU connector D-34-2, front seat assembly (LH) connector D-34 and intermediate connector C-31 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

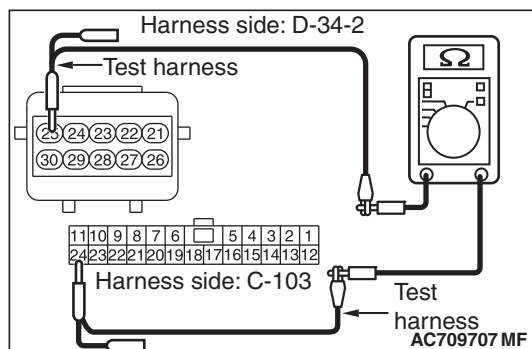
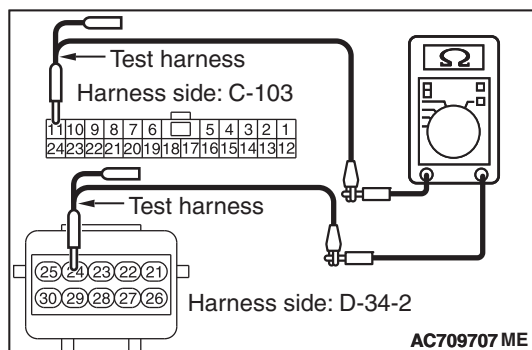
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.11) and occupant classification-ECU connector D-34-2 (terminal No.24)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.24) and occupant classification-ECU connector D-34-2 (terminal No.25)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 in good condition?

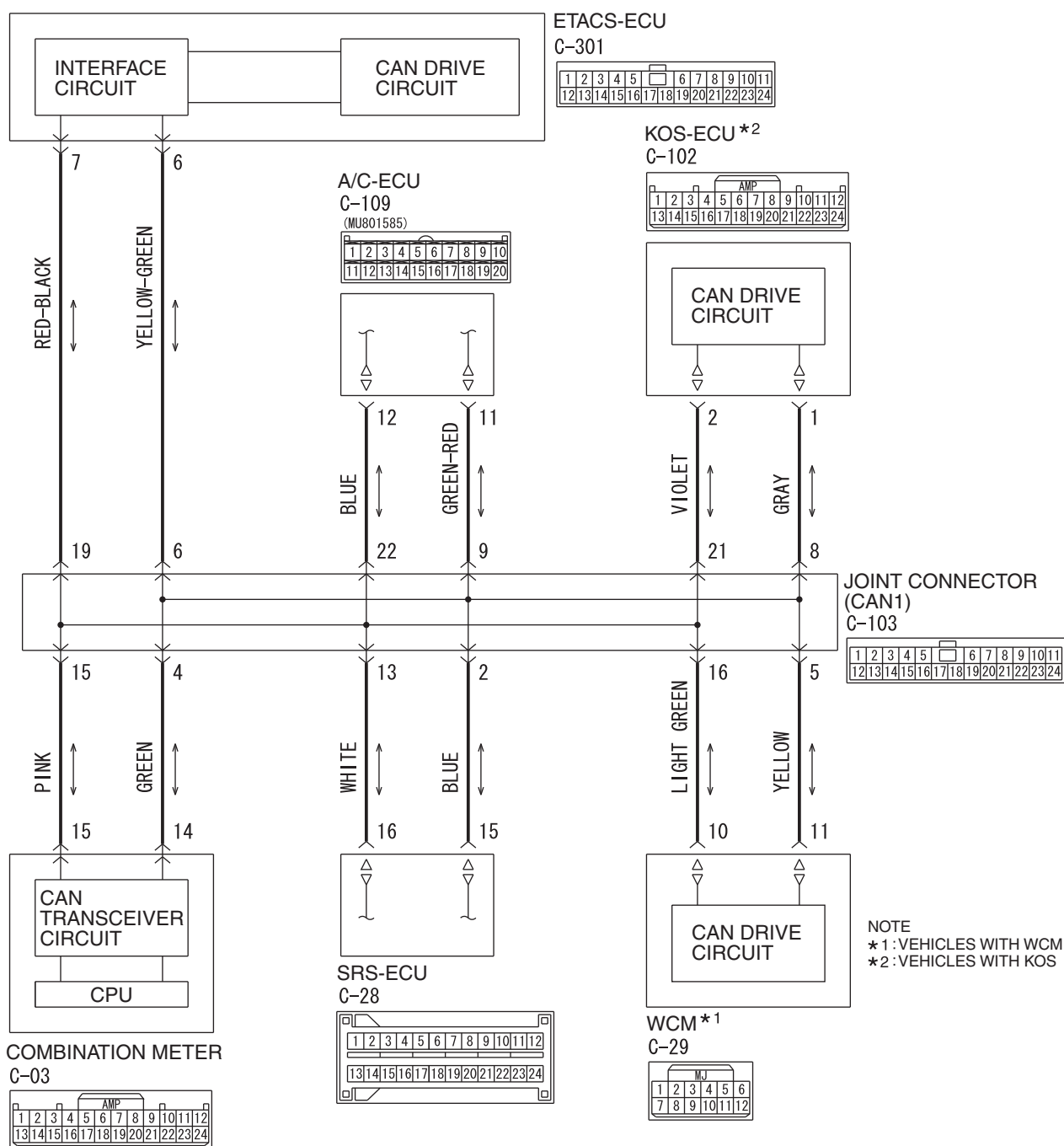
YES : Check the power supply circuit of the occupant classification-ECU. Refer to GROUP 52B, SRS air bag Diagnosis P.52B-409.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2.

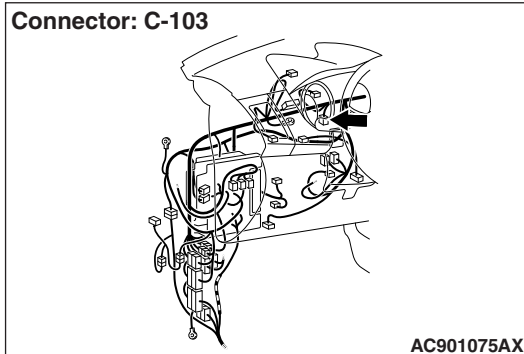
DIAGNOSTIC ITEM 20: Diagnose when the scan tool cannot receive the data sent by A/C-ECU.**CAUTION**

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

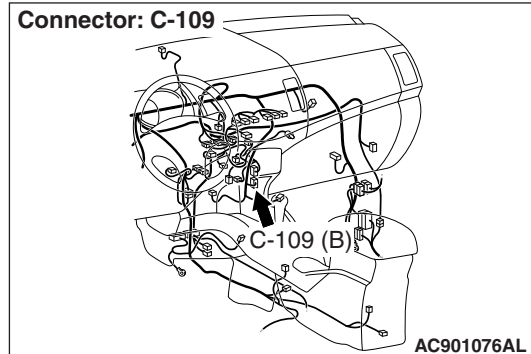
CAN Communication Circuit



Connector: C-103



Connector: C-109



FUNCTION

If the scan tool MB991958 cannot communicate with the A/C-ECU, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the A/C-ECU, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), A/C-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the A/C-ECU connector and the joint connector (CAN1), power supply circuit to the A/C-ECU]
- Malfunction of the A/C-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and A/C-ECU connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and A/C-ECU connector C-109 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

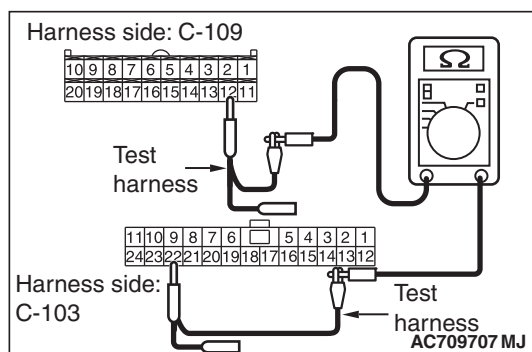
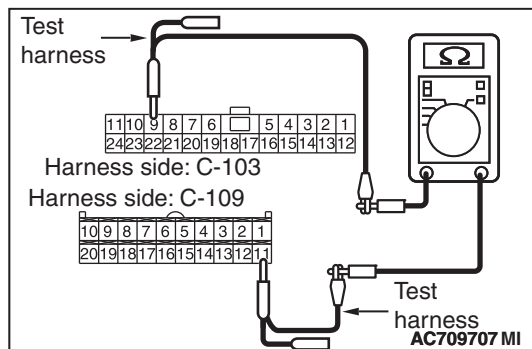
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and A/C-ECU connector C-109, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.9) and A/C-ECU connector C-109 (terminal No.11)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.22) and A/C-ECU connector C-109 (terminal No.12)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 in good condition?

YES : Check the power supply circuit of the A/C-ECU. Refer to GROUP 55A, Diagnosis P.55A-63.

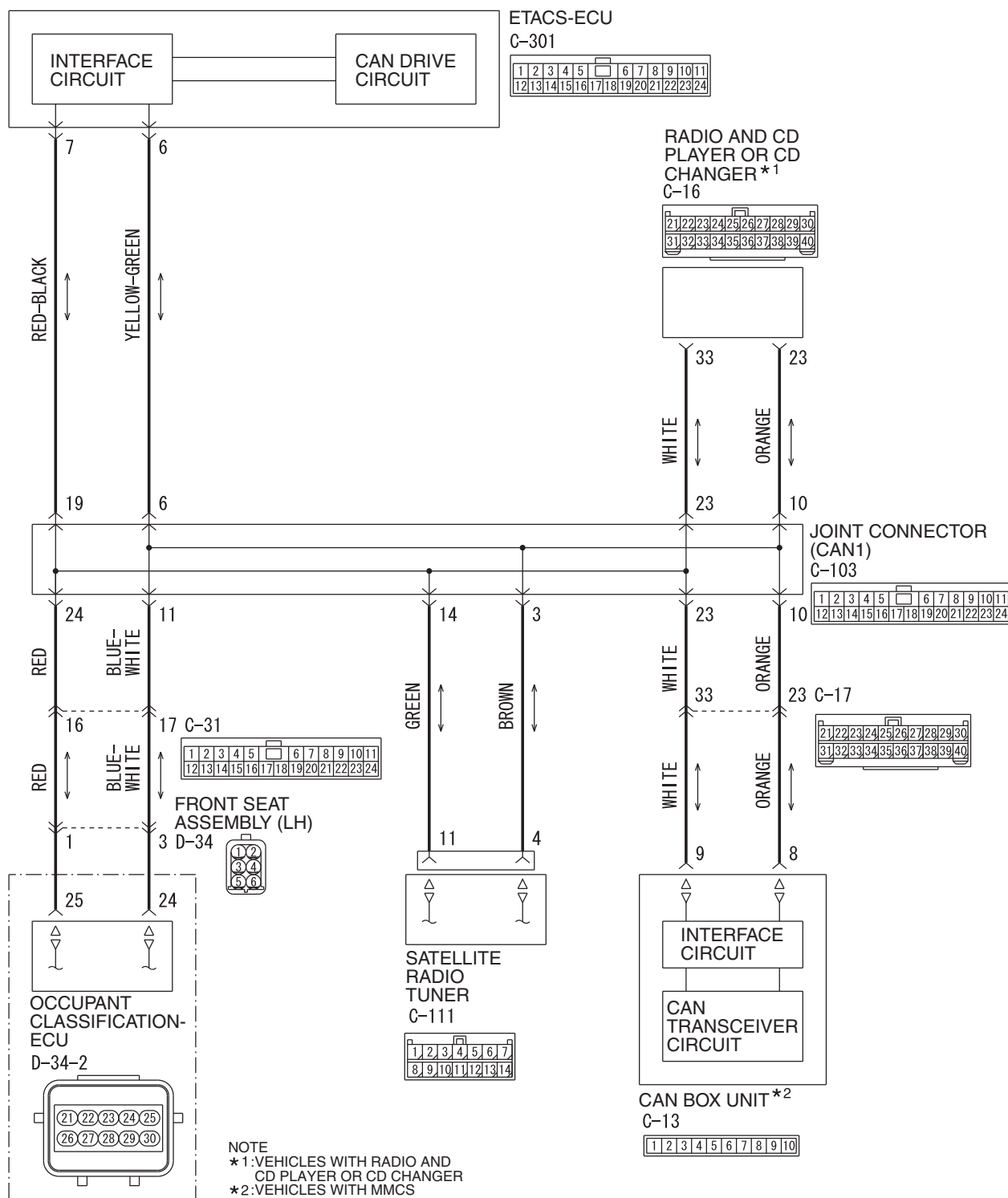
NO : Repair the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109.

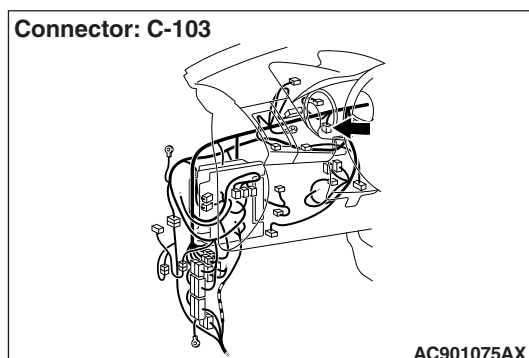
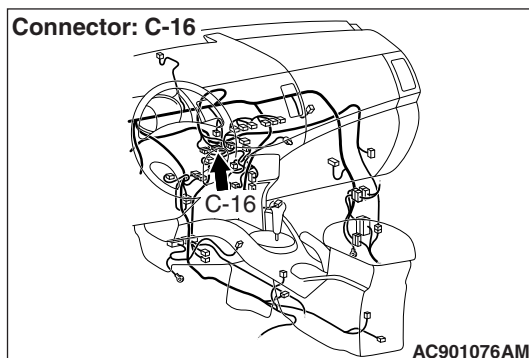
DIAGNOSTIC ITEM 21: Diagnose when the scan tool cannot receive the data sent by radio and CD player <vehicles with radio and CD player> or radio and CD changer <vehicles with radio and CD changer>.

CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit





FUNCTION

If the scan tool MB991958 cannot communicate with the radio and CD player or radio and CD changer, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the radio and CD player or radio and CD changer, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), radio and CD player or radio and CD changer connector improperly connected]
- Malfunction of the wiring harness [open circuit between the radio and CD player or radio and CD changer connector and the joint connector (CAN1), power supply circuit to the radio and CD player or radio and CD changer]
- Malfunction of the radio and CD player or radio and CD changer

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

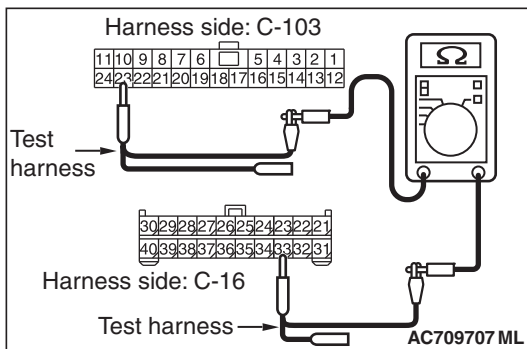
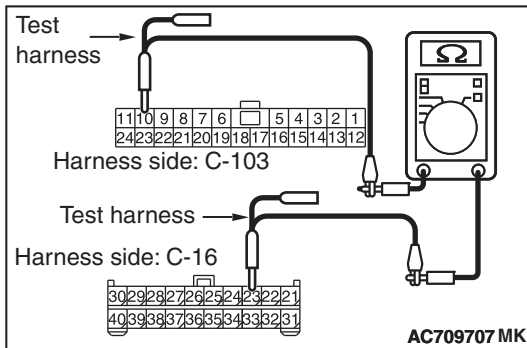
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.10) and radio and CD player or radio and CD changer connector C-16 (terminal No.23)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.23) and radio and CD player or radio and CD changer connector C-16 (terminal No.33)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 in good condition?

YES : Check the power supply circuit of the radio and CD player or radio and CD changer. Refer to GROUP 54A, Radio and CD player – Troubleshooting P.54A-363.

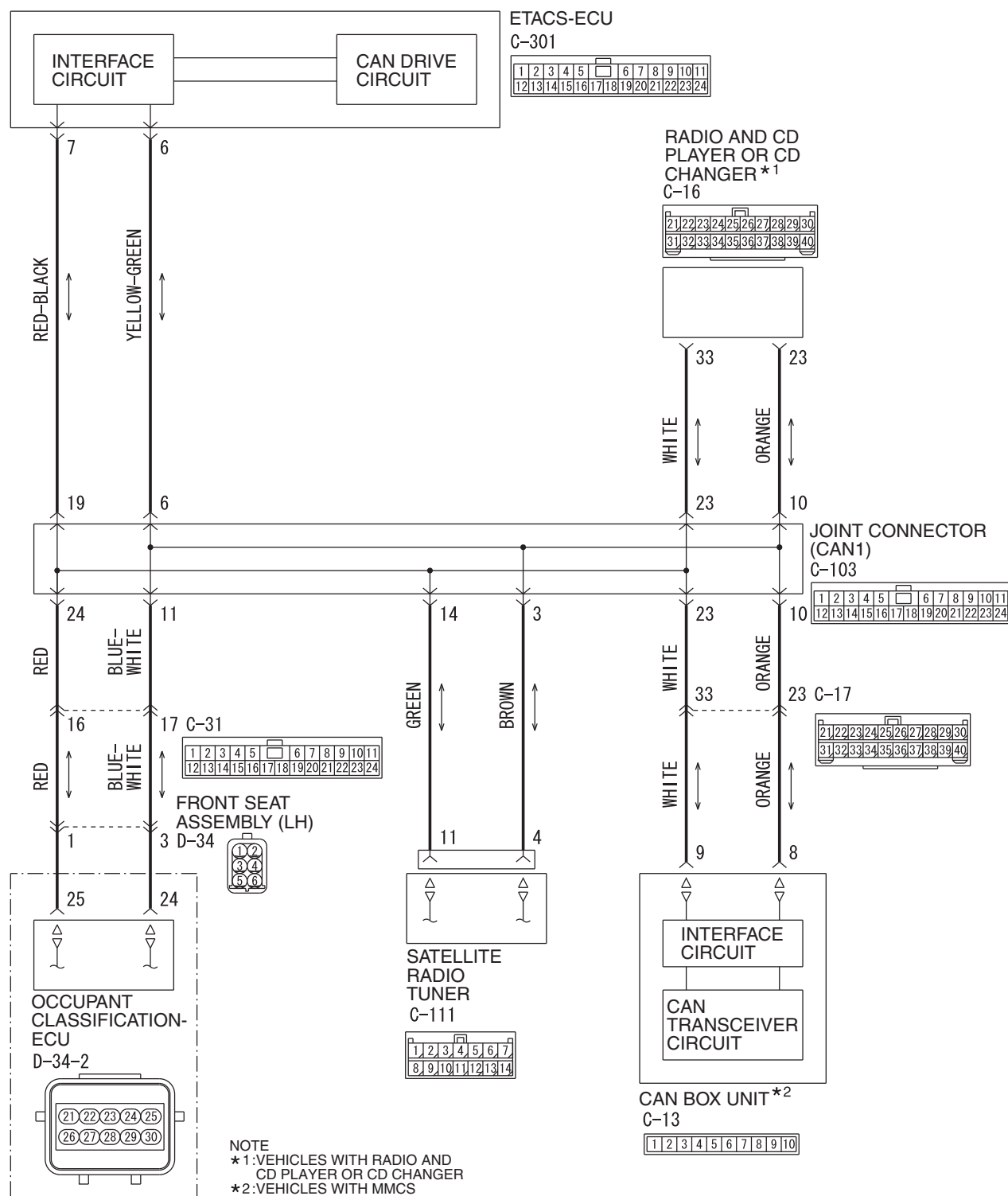
NO : Repair the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16.

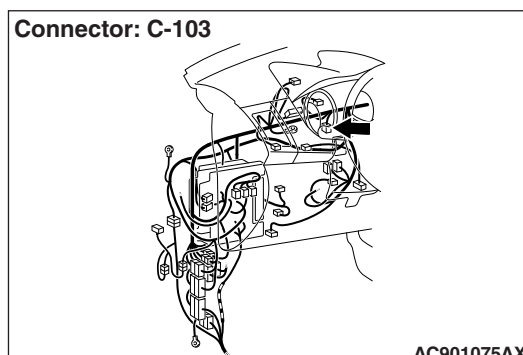
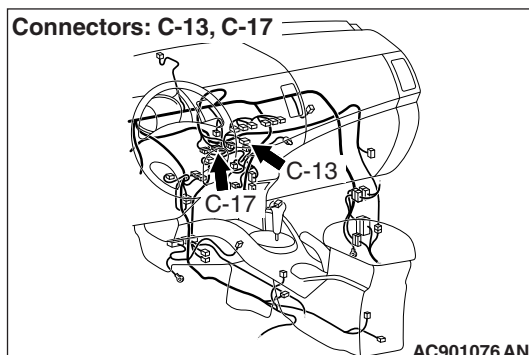
DIAGNOSTIC ITEM 22: Diagnose when the scan tool cannot receive the data sent by CAN box unit <vehicles with MMCS>.

CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit





FUNCTION

If the scan tool MB991958 cannot communicate with the CAN box unit, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the CAN box unit, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), CAN box unit connector improperly connected]
- Malfunction of the wiring harness [open circuit between the CAN box unit connector and the joint connector (CAN1), power supply circuit to the CAN box unit]
- Malfunction of the CAN box unit

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103, CAN box unit connector C-13 and intermediate connector C-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

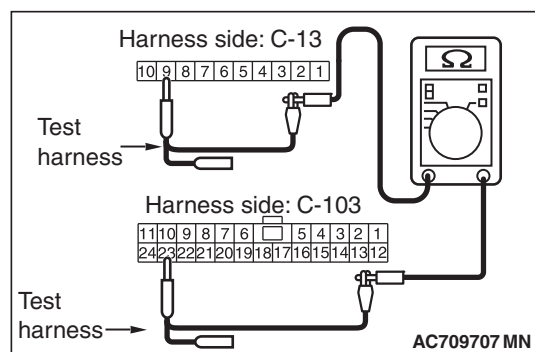
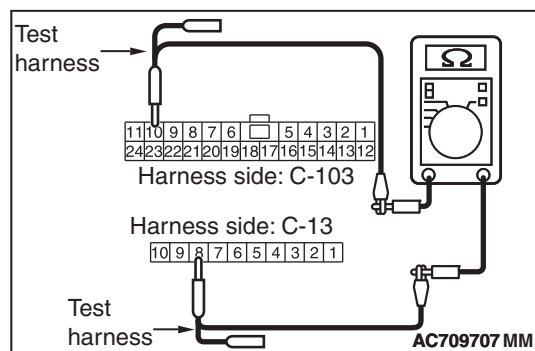
CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103, CAN box unit connector C-13 and intermediate connector C-17 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.



STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and CAN box unit connector C-13, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.10) and CAN box unit connector C-13 (terminal No.8)

OK: Continuity exists (2 ohms or less)

- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.23) and CAN box unit connector C-13 (terminal No.9)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 in good condition?

YES : Check the power supply circuit of the CAN box unit. Refer to GROUP 54A, MMCS – Diagnosis

[P.54A-486.](#)

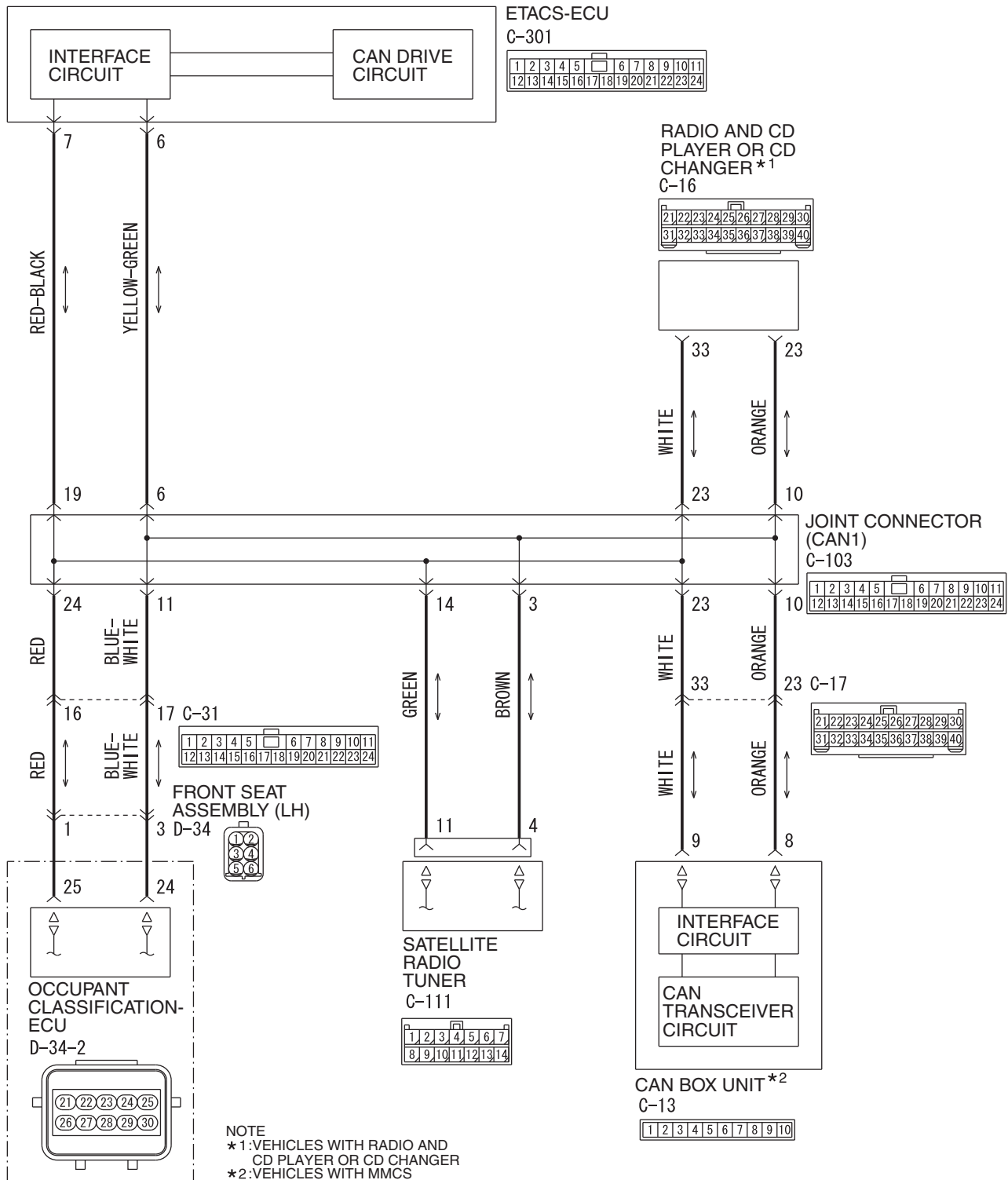
NO : Repair the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13.

DIAGNOSTIC ITEM 23: Diagnose when the scan tool cannot receive the data sent by satellite radio tuner <vehicles with satellite radio>.

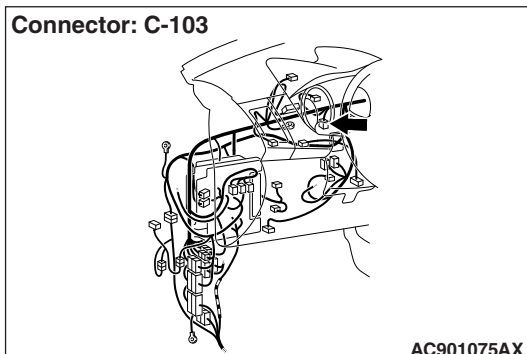
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

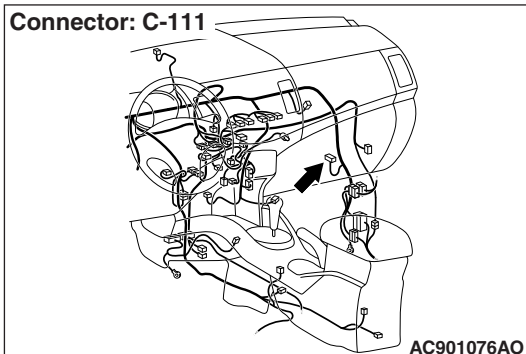
CAN Communication Circuit



Connector: C-103



Connector: C-111



FUNCTION

If the scan tool MB991958 cannot communicate with the satellite radio tuner, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is not set for the satellite radio tuner, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1), satellite radio tuner connector improperly connected]
- Malfunction of the wiring harness [open circuit between the satellite radio tuner connector and the joint connector (CAN1), power supply circuit to the satellite radio tuner]
- Malfunction of the satellite radio tuner

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and satellite radio tuner connector C-111 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

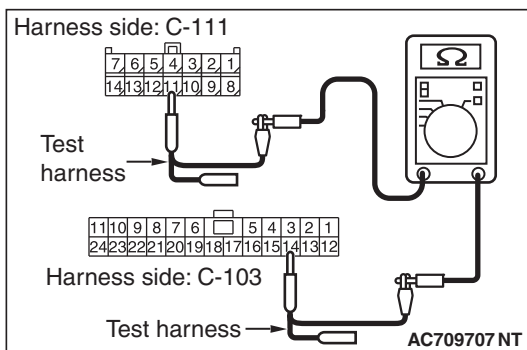
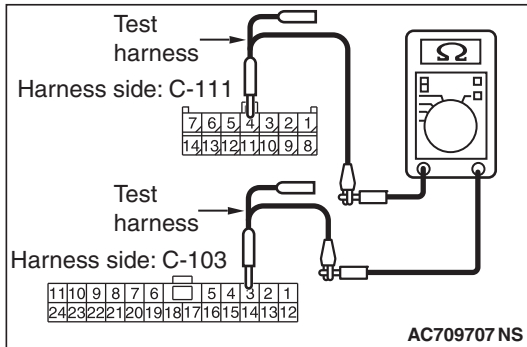
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and satellite radio tuner connector C-111, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.3) and satellite radio tuner connector C-111 (terminal No.4)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.14) and satellite radio tuner connector C-111 (terminal No.11)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 in good condition?

YES : Check the power supply circuit of the satellite radio tuner. Refer to GROUP 54A, Satellite Radio Tuner – Diagnosis P.54A-675.

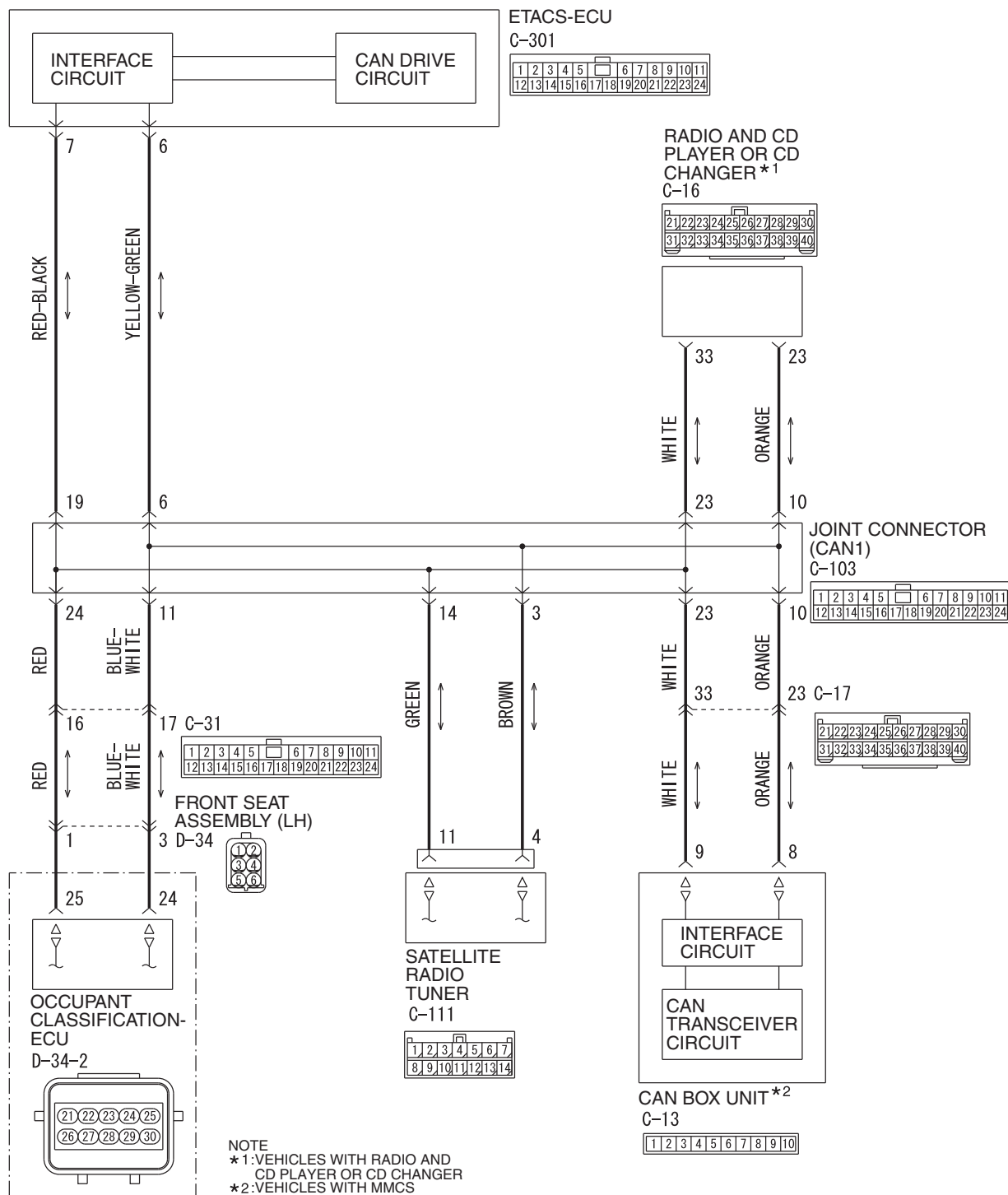
NO : Repair the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111.

DIAGNOSTIC ITEM 24: Short to power supply or ground in both CAN_H and CAN_L lines of the CAN-B bus lines.

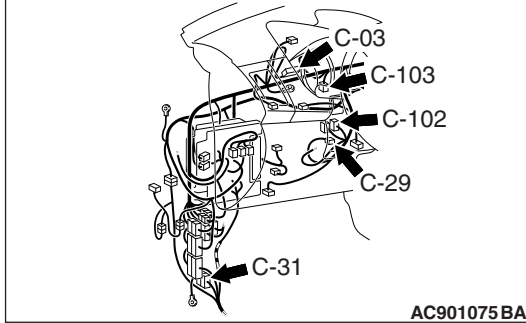
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

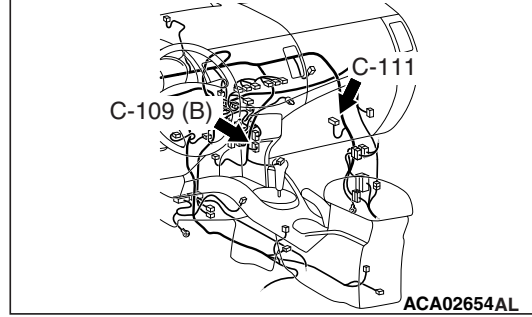
CAN Communication Circuit



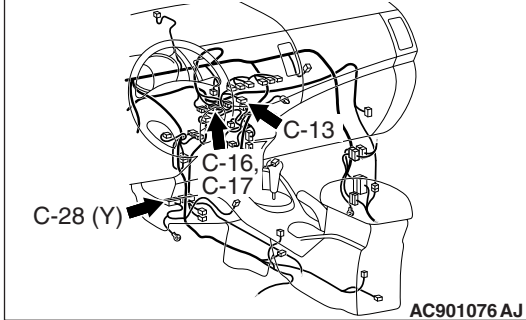
Connectors: C-03, C-29, C-31, C-102, C-103



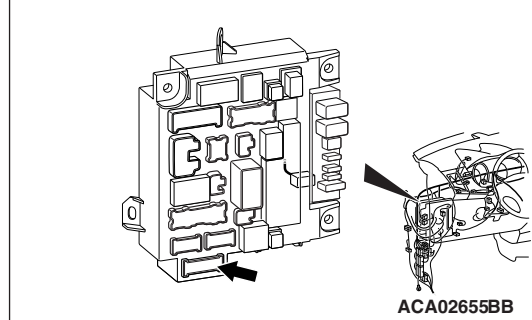
Connectors: C-109, C-111



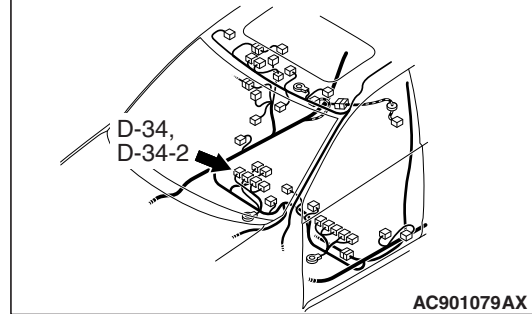
Connectors: C-13, C-16, C-17, C-28



Connector: C-301



Connectors: D-34, D-34-2



FUNCTION

If a short to power supply or ground is present in both CAN_H and CAN_L lines, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is set for the ETACS-ECU, no communication is present through the CAN-B line, and diagnostic trouble code U0019 is set, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector (ETACS-ECU connector improperly connected)
- Malfunction of the wiring harness (CAN_H and CAN_L lines are short to power supply or ground on the CAN-B line.)
- Malfunction of ECUs

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the wiring harness between ETACS-ECU connector C-301 and body ground for a short to power supply. Measure the voltage at ETACS-ECU connector C-301.

⚠ CAUTION

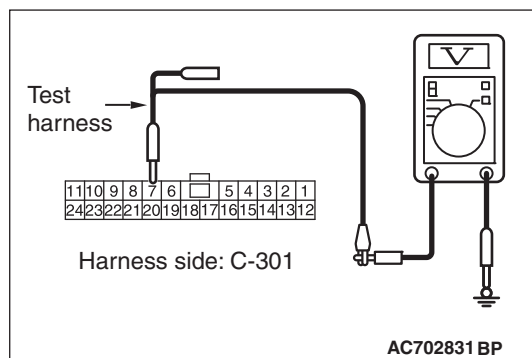
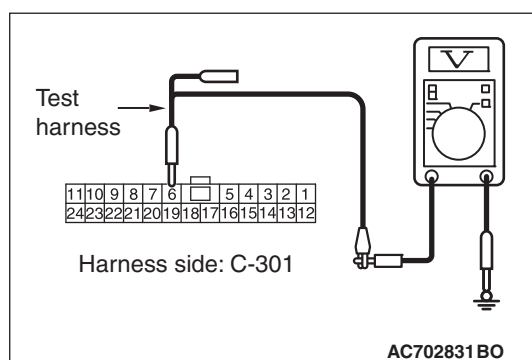
A digital multimeter should be used. For details refer to **P.54C-7**.

⚠ CAUTION

The test wiring harness should be used. For details refer to **P.54C-7**.

- (1) Disconnect ETACS-ECU connector C-301, and measure the voltage at the wiring harness side of ETACS-ECU connector.
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between ETACS-ECU connector terminal 6 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between ETACS-ECU connector terminal 7 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

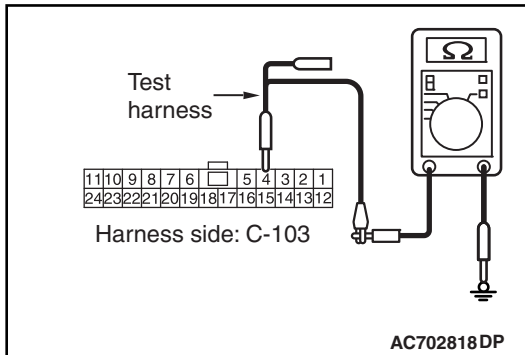
YES : Go to Step 2.

NO : Go to Step 12.

STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 4 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 15 and body ground.

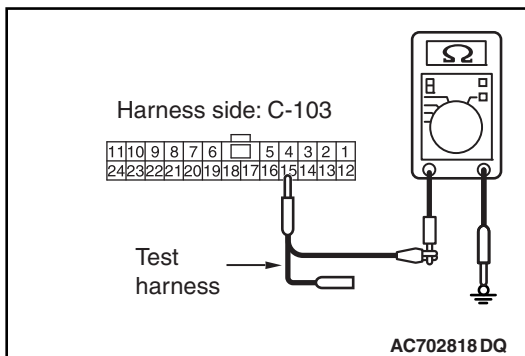
OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles with KOS) : Go to Step 3.

YES (vehicles with WCM) : Go to Step 4.

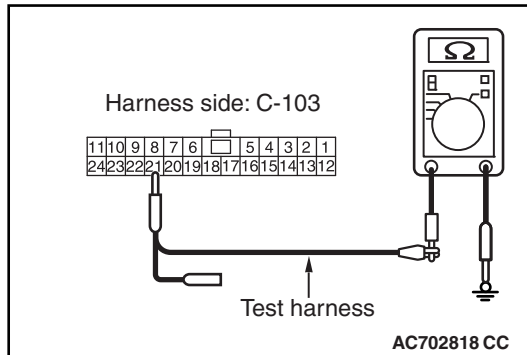
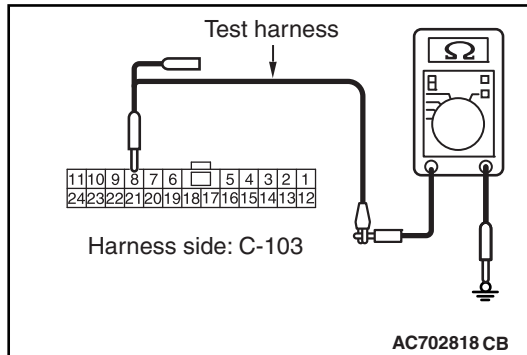
NO (vehicles with KOS or WCM) : Go to Step 22.



STEP 3. Check the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 8 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 21 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

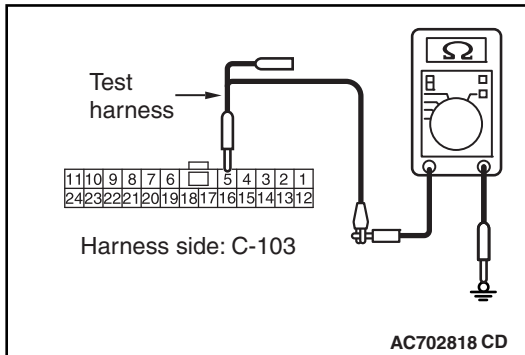
YES : Go to Step 5.

NO : Go to Step 23.

STEP 4. Check the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 5 and body ground.

OK: 1 k Ω or more



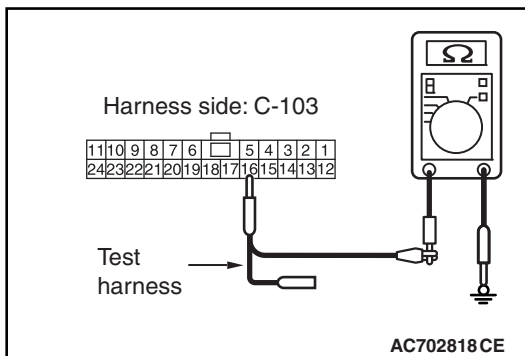
- (3) Measure the resistance between joint connector (CAN1) terminal 16 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 5.

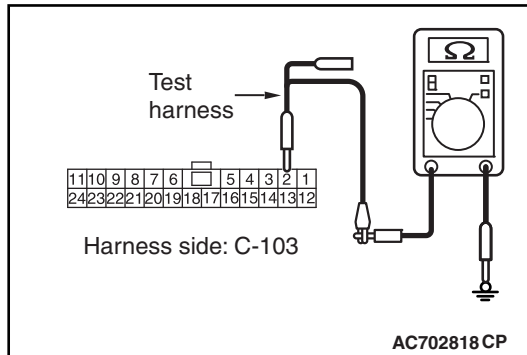
NO : Go to Step 24.



STEP 5. Check the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 2 and body ground.

OK: 1 k Ω or more



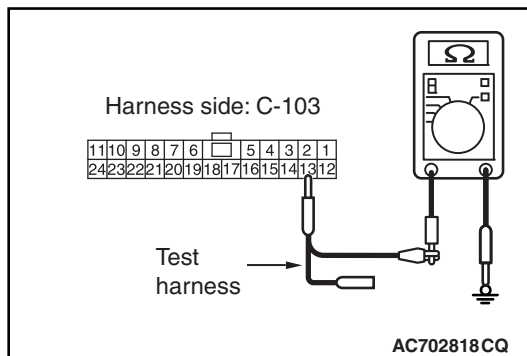
- (3) Measure the resistance between joint connector (CAN1) terminal 13 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 6.

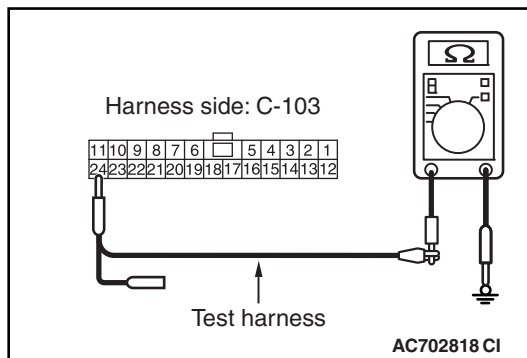
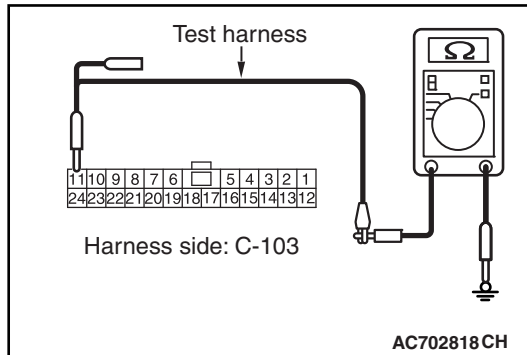
NO : Go to Step 25.



STEP 6. Check the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 11 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 24 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

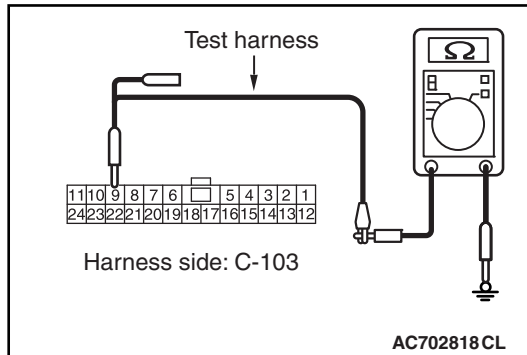
YES : Go to Step 7.

NO : Go to Step 26.

STEP 7. Check the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 9 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 22 and body ground.

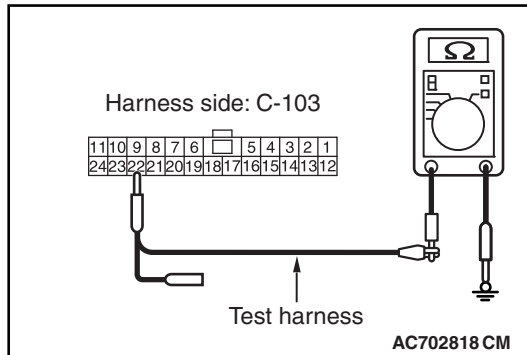
OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles without MMCS) : Go to Step 8.

YES (vehicles with MMCS) : Go to Step 9.

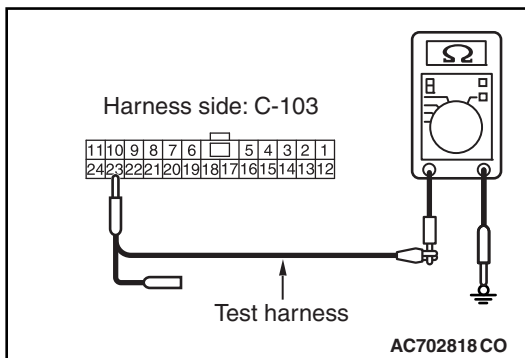
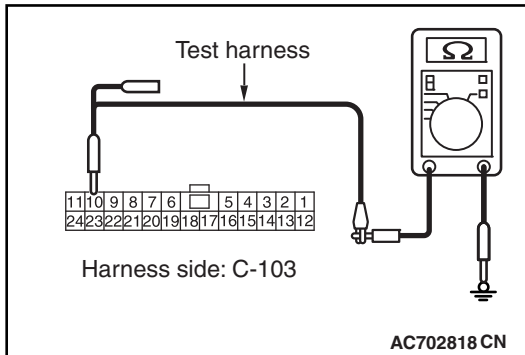
NO : Go to Step 27.



STEP 8. Check the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 10 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 23 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles without satellite radio) : Go to Step 11.

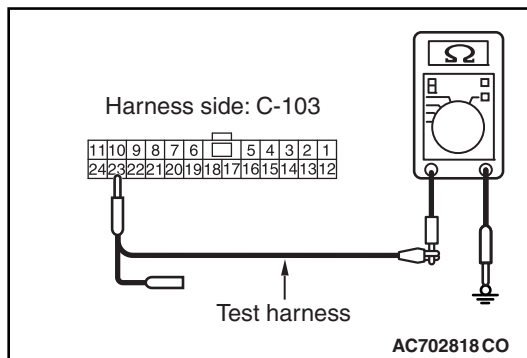
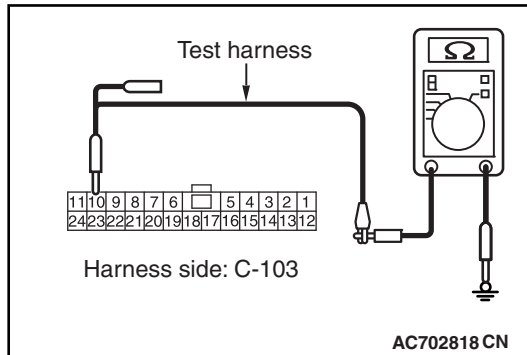
YES (vehicles with satellite radio) : Go to Step 10.

NO : Go to Step 28.

STEP 9. Check the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 10 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 23 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles without satellite radio) : Go to Step 11.

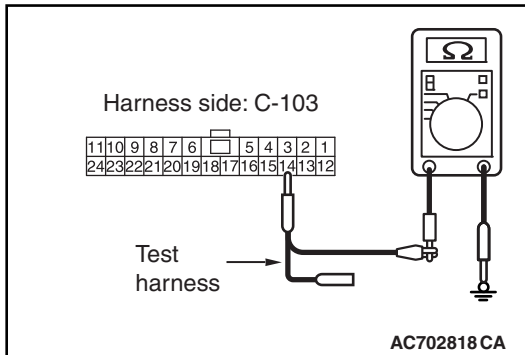
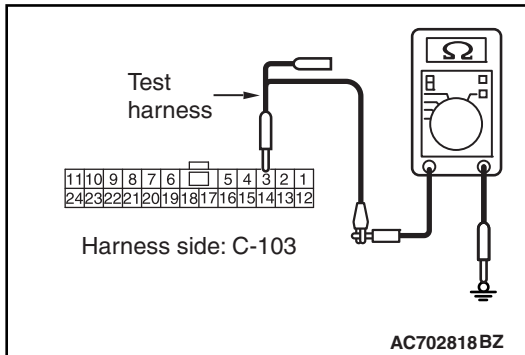
YES (vehicles with satellite radio) : Go to Step 10.

NO : Go to Step 29.

STEP 10. Check the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 3 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 14 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

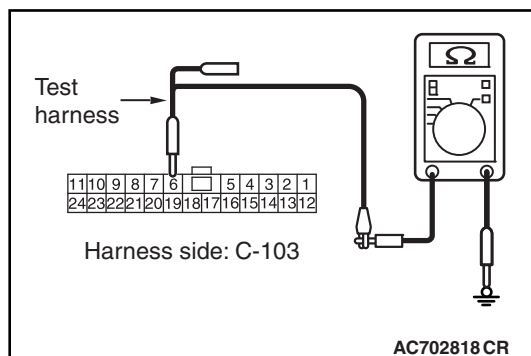
YES : Go to Step 11.

NO : Go to Step 30.

STEP 11. Check the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1) and ETACS-ECU connector C-301, and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 6 and body ground.

OK: 1 k Ω or more



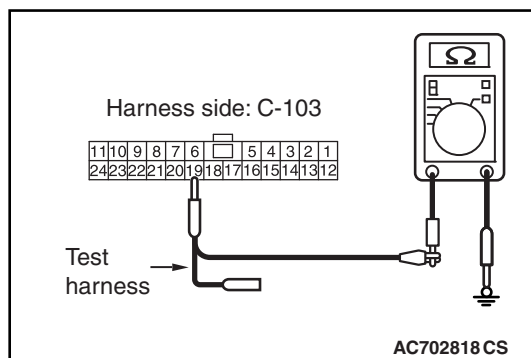
- (3) Measure the resistance between joint connector (CAN1) terminal 19 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 31.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301.



STEP 12. Check the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

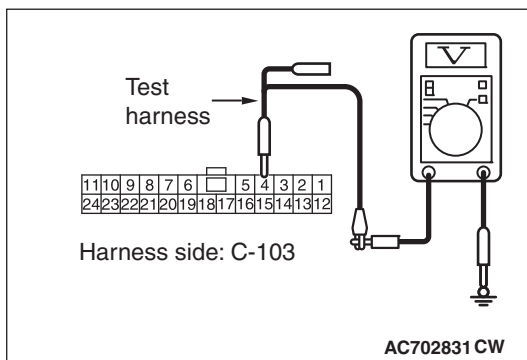
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 4 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 15 and body ground.

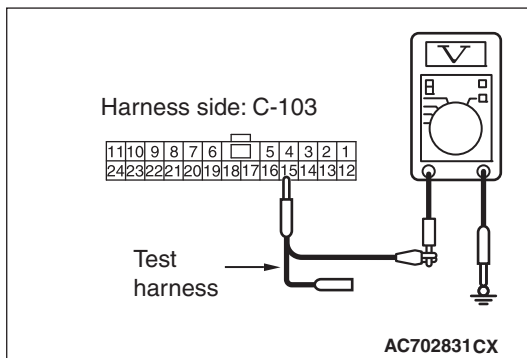
OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles with KOS) : Go to Step 13.

YES (vehicles with WCM) : Go to Step 14.

NO (vehicles with KOS and WCM) : Go to Step 22.



STEP 13. Check the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

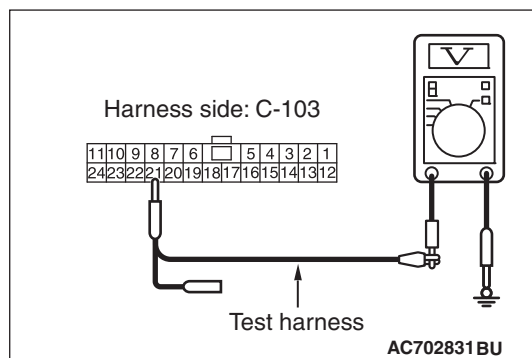
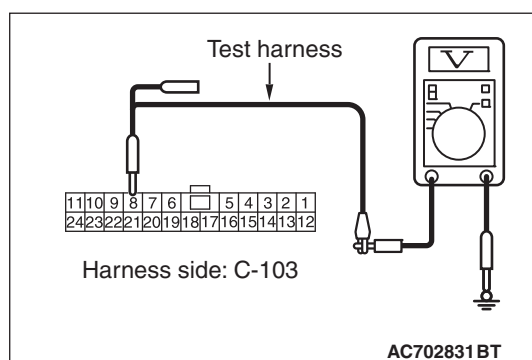
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 8 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 21 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 15.

NO : Go to Step 23.

STEP 14. Check the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

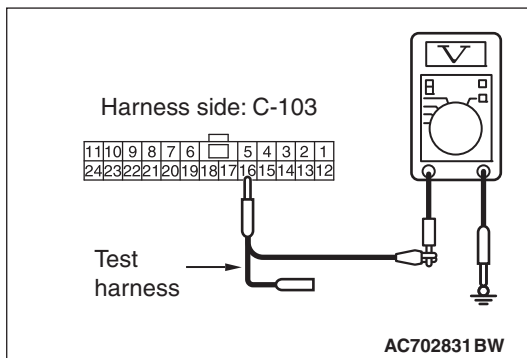
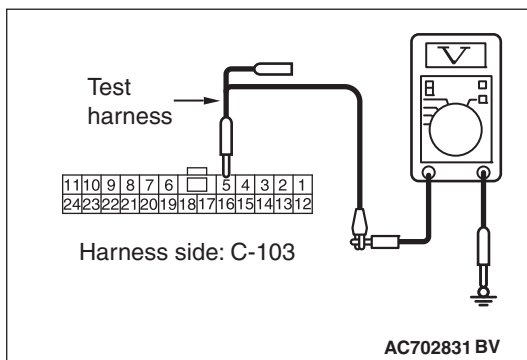
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 5 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 16 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 15.

NO : Go to Step 24.

STEP 15. Check the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

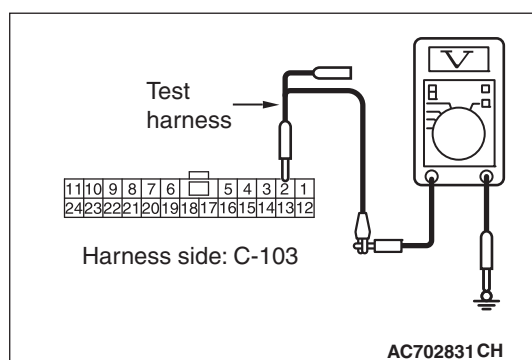
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 2 and body ground.

OK: 4.7 volts or less



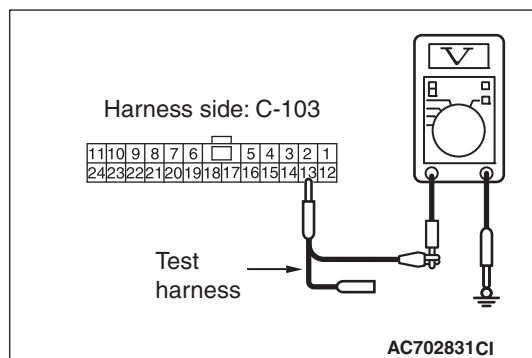
- (4) Measure the voltage between joint connector (CAN1) terminal 13 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 16.

NO : Go to Step 25.



STEP 16. Check the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

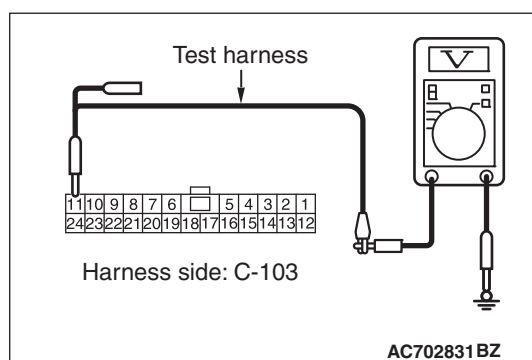
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 11 and body ground.

OK: 4.7 volts or less



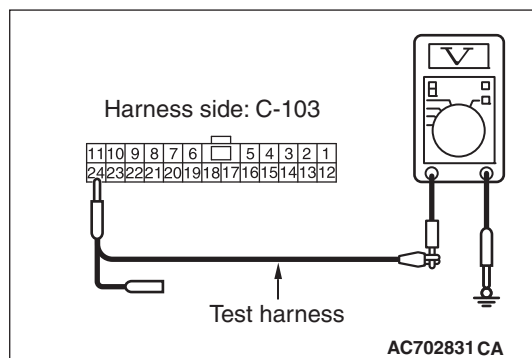
- (4) Measure the voltage between joint connector (CAN1) terminal 24 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 17.

NO : Go to Step 26.



STEP 17. Check the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

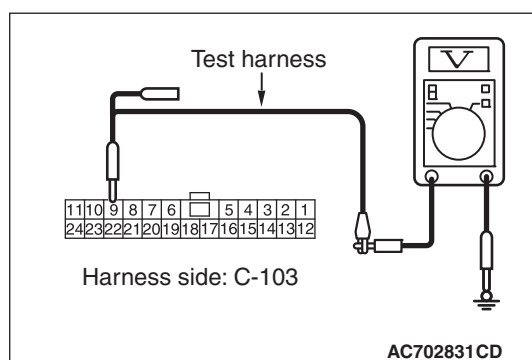
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 9 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 22 and body ground.

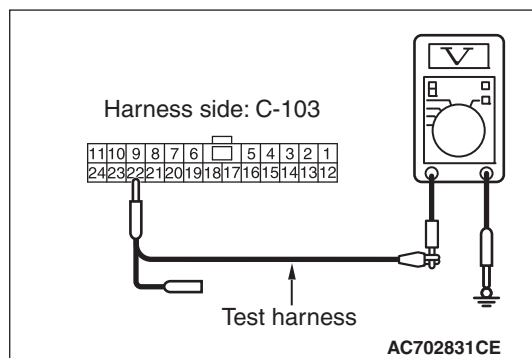
OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles without MMCS) : Go to Step 18.

YES (vehicles with MMCS) : Go to Step 19.

NO : Go to Step 27.



STEP 18. Check the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

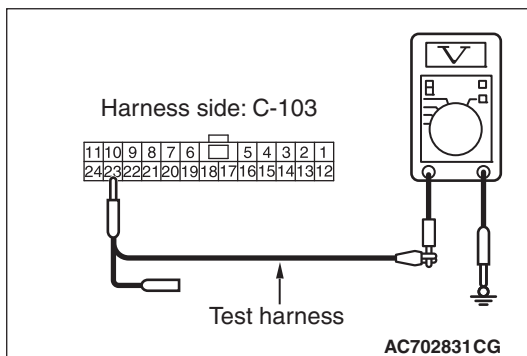
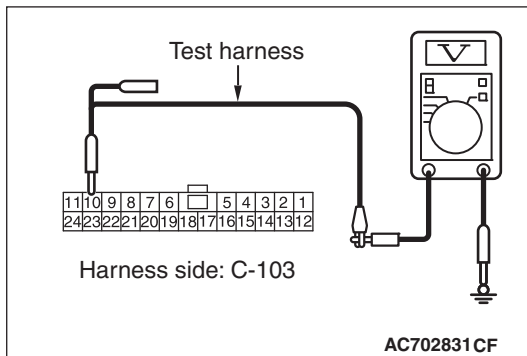
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 10 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 23 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles without satellite radio) : Go to Step 21.

YES (vehicles with satellite radio) : Go to Step 20.

NO : Go to Step 28.

STEP 19. Check the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

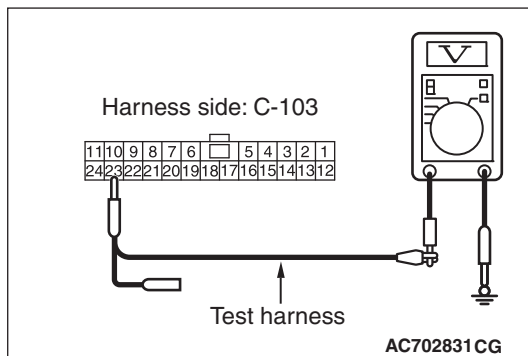
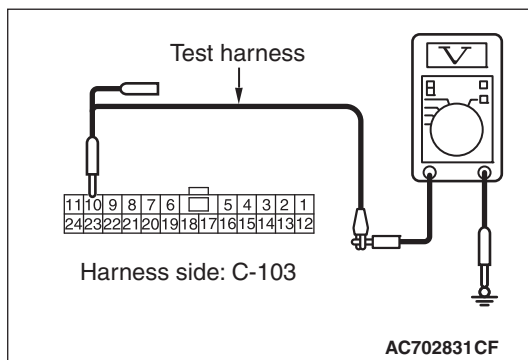
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 10 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 23 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles without satellite radio) : Go to Step 21.

YES (vehicles with satellite radio) : Go to Step 20.

NO : Go to Step 29.

STEP 20. Check the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

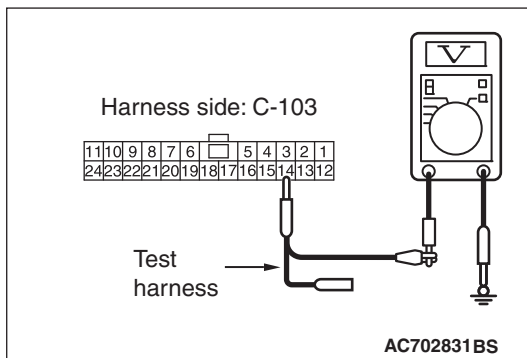
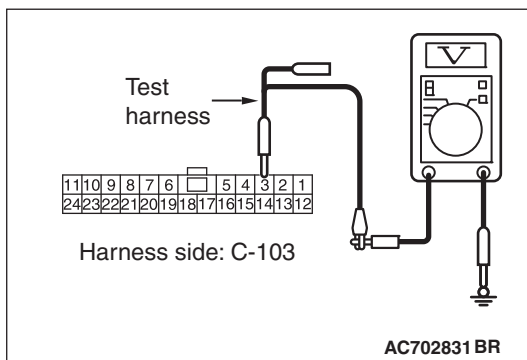
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 3 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 14 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 21.

NO : Go to Step 30.

STEP 21. Check the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

⚠ CAUTION

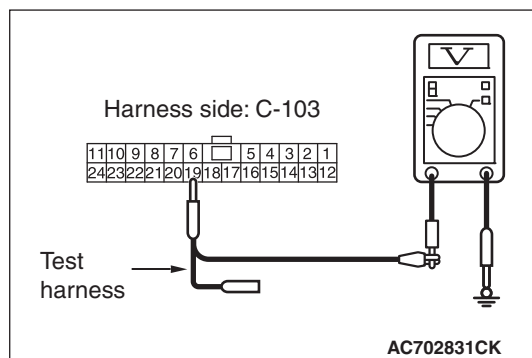
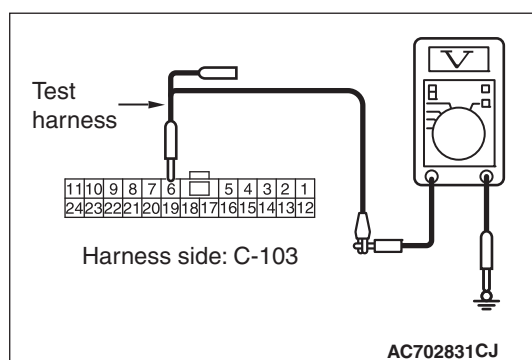
A digital multimeter should be used. For details refer to [P.54C-7](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect joint connector (CAN1) and ETACS-ECU connector C-301, and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 6 and body ground.

OK: 1.0 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 19 and body ground.

OK: 1.0 volts or less

Q: Do all the voltages measure 1.0 volts or less?

YES : Go to Step 31.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301.

STEP 22. Using scan tool MB991958, diagnose the CAN bus line. (checking the combination meter for internal failure)

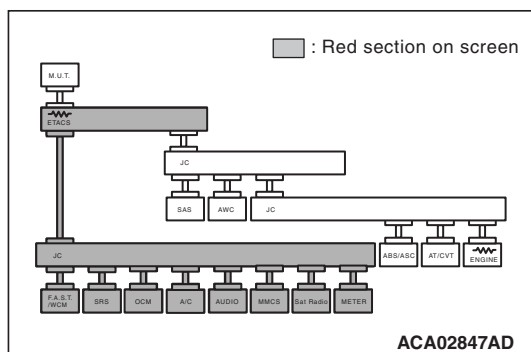
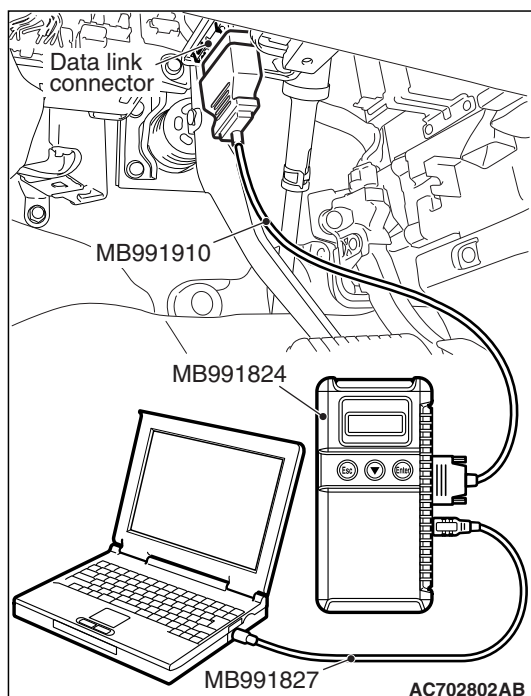
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect combination meter connector C-03.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03.

NO : Check combination meter connector C-03, and repair if necessary. If the combination meter connector is in good condition, replace the combination meter.

STEP 23. Using scan tool MB991958, diagnose the CAN bus line. (checking the KOS-ECU for internal failure)

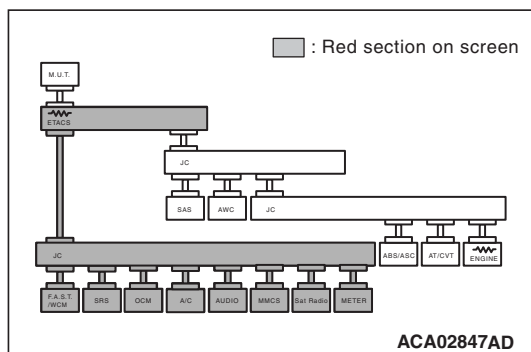
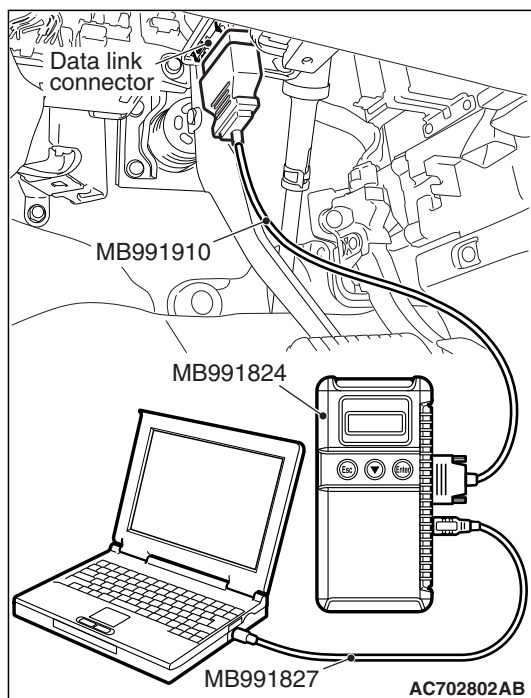
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect KOS-ECU connector C-102.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102.

NO : Check KOS-ECU connector C-102, and repair if necessary. If the KOS-ECU connector is in good condition, replace the KOS-ECU.

STEP 24. Using scan tool MB991958, diagnose the CAN bus line. (checking the WCM for internal failure)

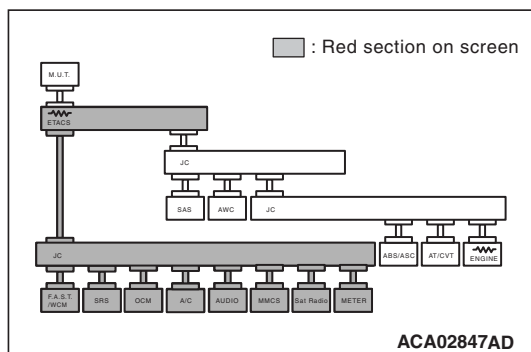
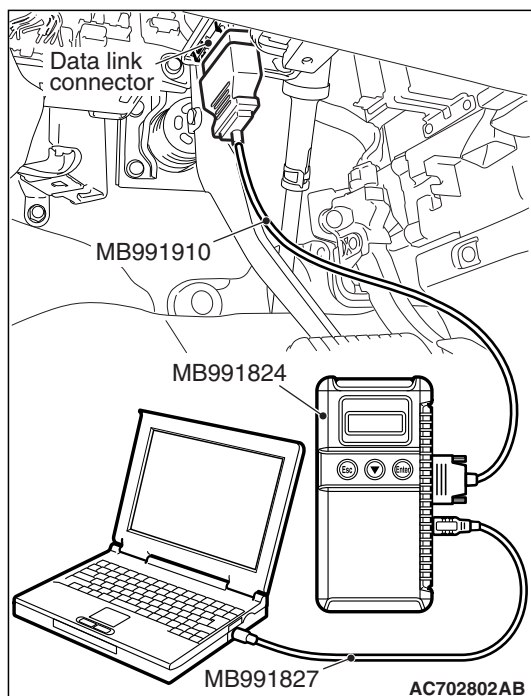
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect WCM connector C-29.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29.

NO : Check WCM connector C-29, and repair if necessary. If the WCM connector is in good condition, replace the WCM.

STEP 25. Using scan tool MB991958, diagnose the CAN bus line. (checking the SRS-ECU for internal failure)

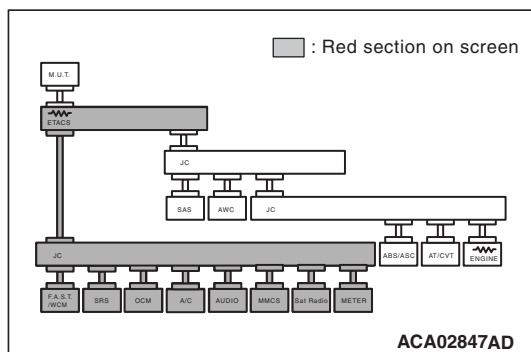
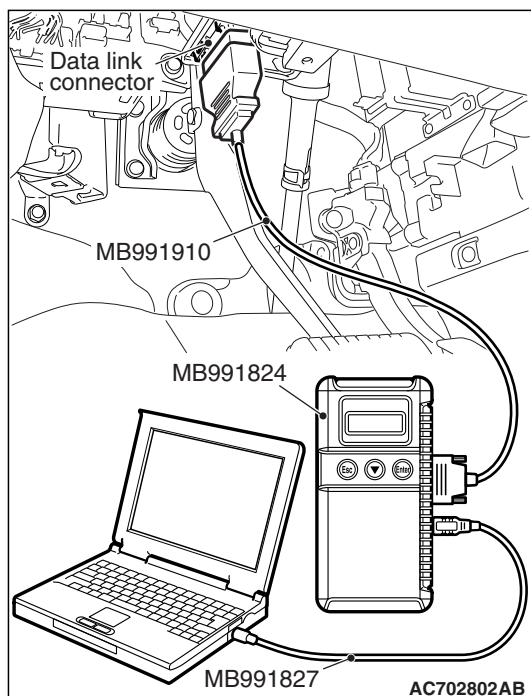
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

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) Disconnect SRS-ECU connector C-28.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28.

NO : Check SRS-ECU connector C-28, and repair if necessary. If the SRS-ECU connector is in good condition, replace the SRS-ECU.

STEP 26. Using scan tool MB991958, diagnose the CAN bus line. (checking the occupant classification-ECU for internal failure)

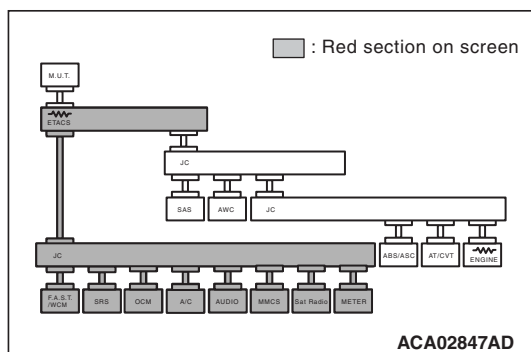
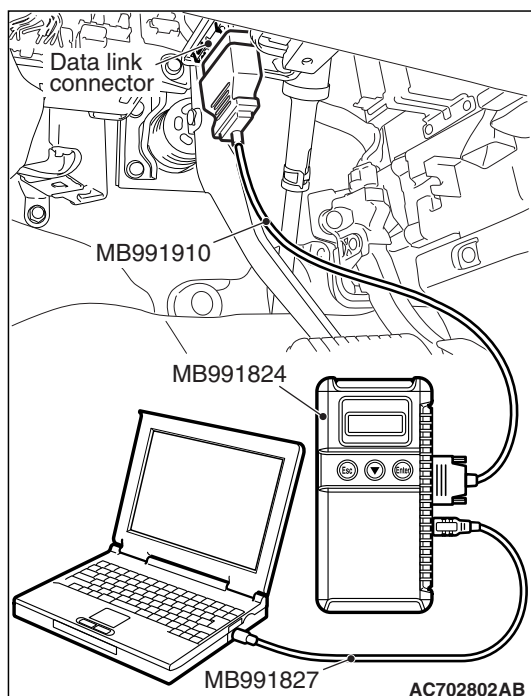
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect occupant classification-ECU connector D-34-2.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Check intermediate connectors C-31 and D-34, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2.

NO : Check occupant classification-ECU connector D-34-2, and repair if necessary. If the occupant classification-ECU connector is in good condition, replace the occupant classification-ECU.

STEP 27. Using scan tool MB991958, diagnose the CAN bus line. (checking the A/C-ECU for internal failure)

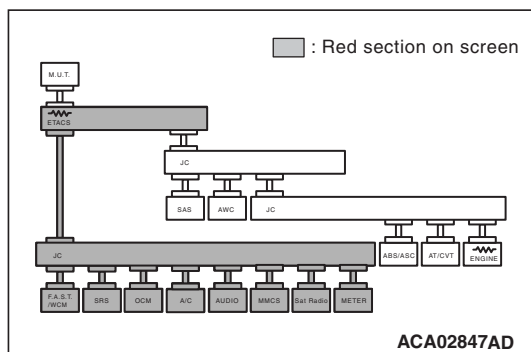
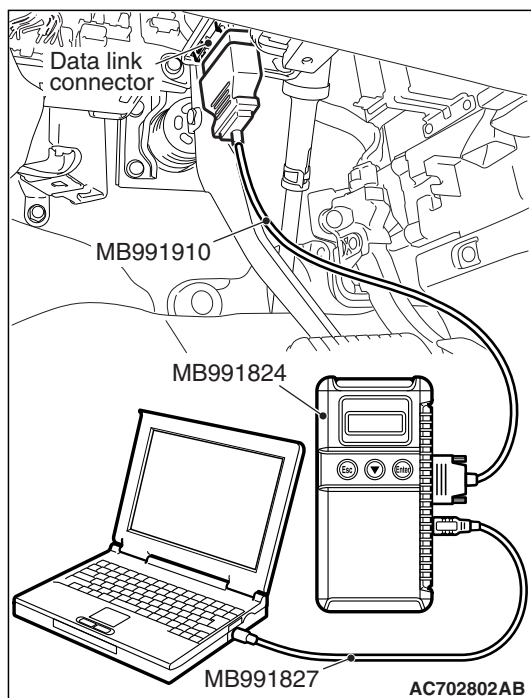
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect A/C-ECU connector C-109.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109.

NO : Check A/C-ECU connector C-109, and repair if necessary. If the A/C-ECU connector is in good condition, replace the A/C-ECU.

STEP 28. Using scan tool MB991958, diagnose the CAN bus line. (checking the radio and CD player or radio and CD changer for internal failure)

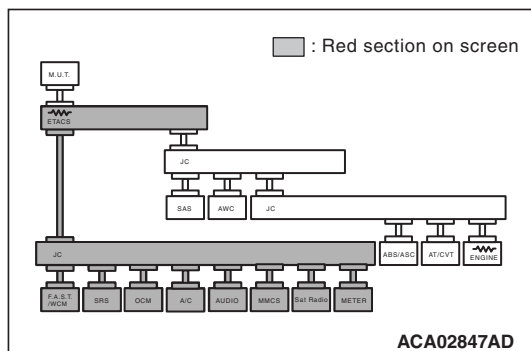
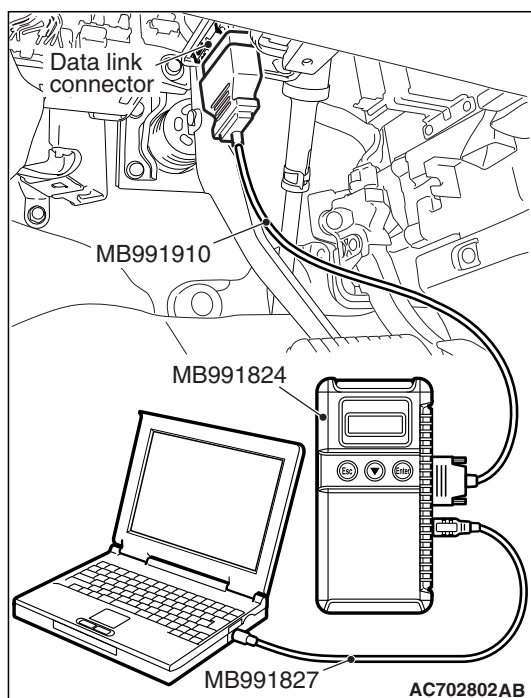
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect radio and CD player or radio and CD changer connector C-16.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16.

NO : Check radio and CD player or radio and CD changer connector C-16, and repair if necessary. If the radio and CD player or radio and CD changer connector is in good condition, replace the radio and CD player or radio and CD changer.

STEP 30. Using scan tool MB991958, diagnose the CAN bus line. (checking the satellite radio tuner for internal failure)

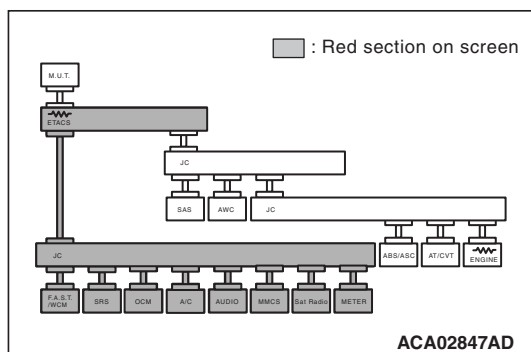
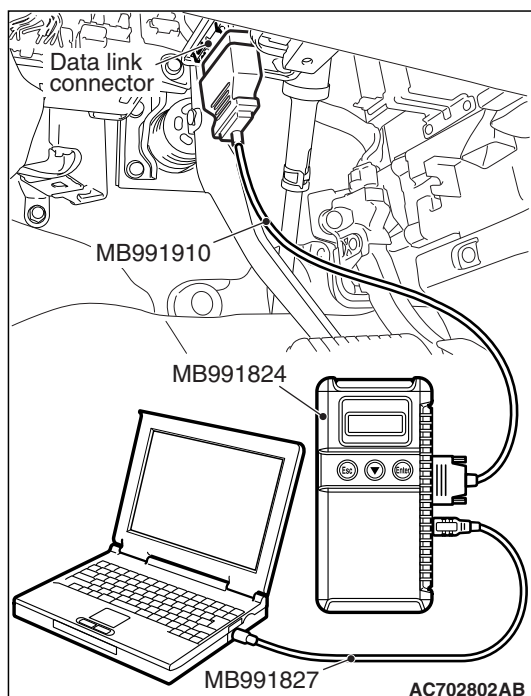
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect satellite radio tuner connector C-111.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111.

NO : Check satellite radio tuner connector C-111, and repair if necessary. If the satellite radio tuner connector is in good condition, replace the satellite radio tuner.

STEP 31. Using scan tool MB991958, diagnose the CAN bus line. (trouble symptom check)

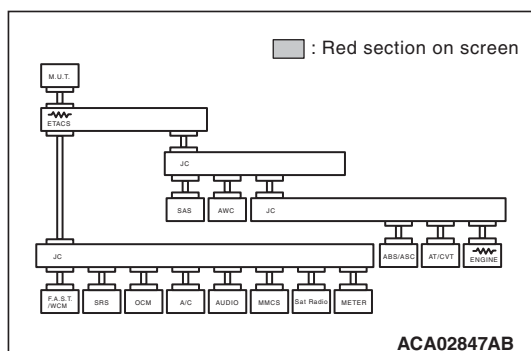
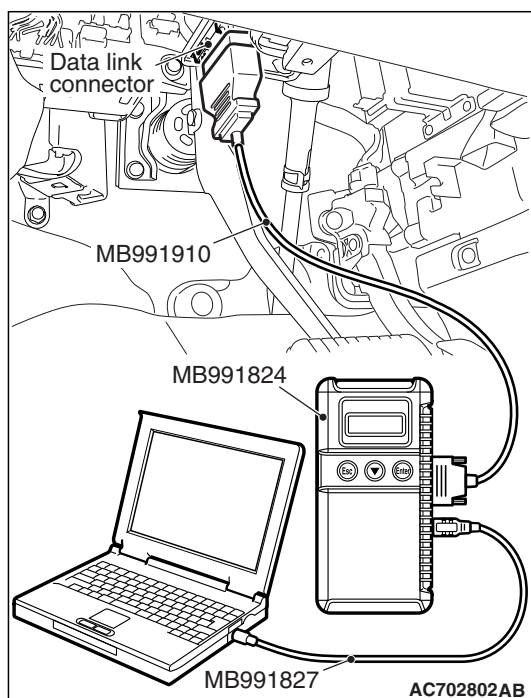
CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

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 CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-15](#)).

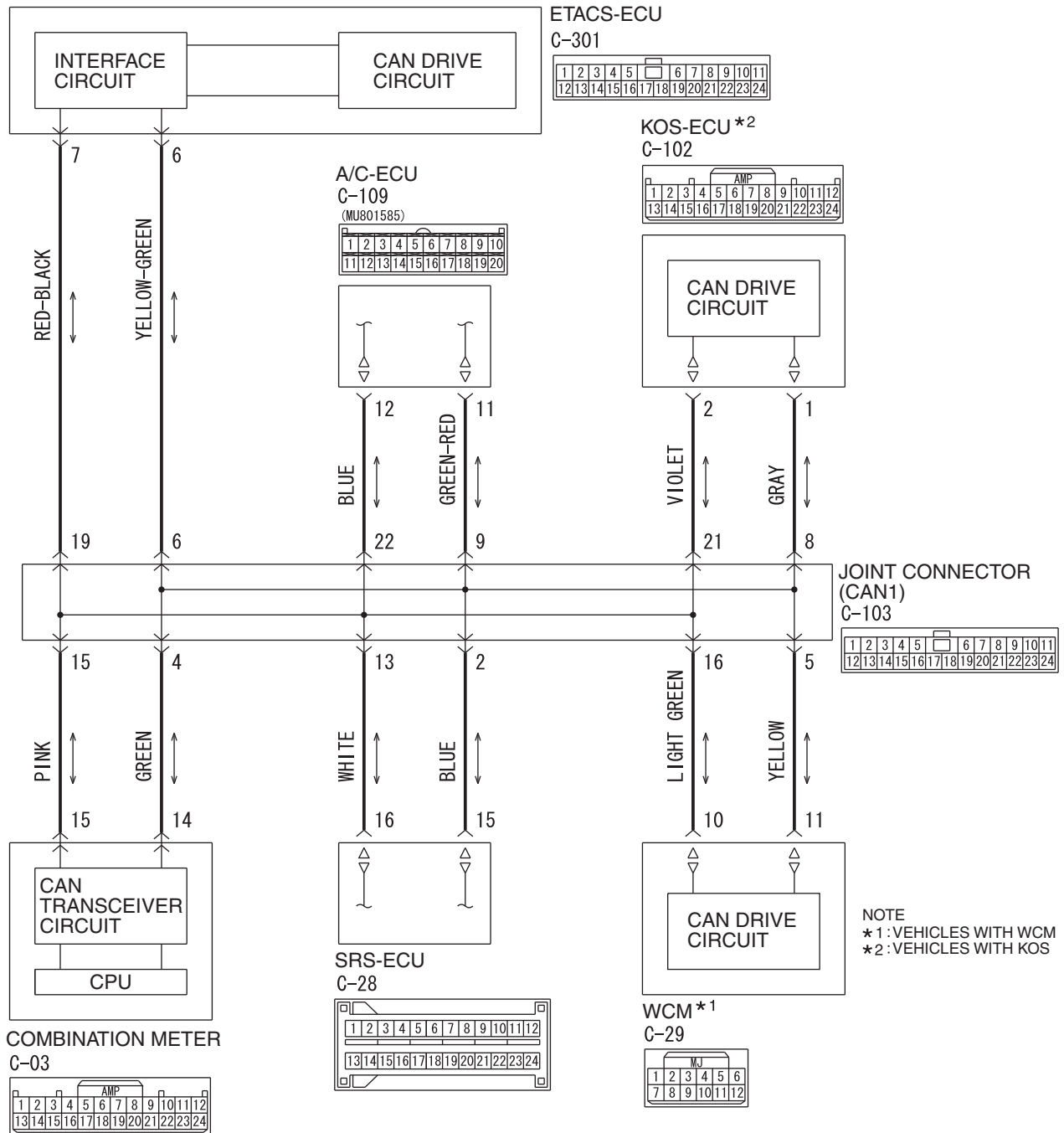
NO : Check the ETACS-ECU connector C-301, and repair if necessary. If the ETACS-ECU connector is in good condition, replace the ETACS-ECU.

DIAGNOSTIC ITEM 25: Diagnose the ETACS-ECU, joint connector (CAN1) or lines between ETACS-ECU and joint connector (CAN1).

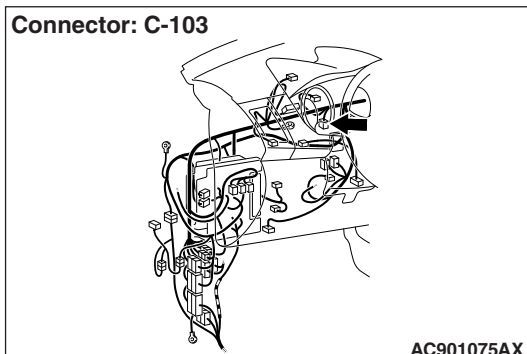
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

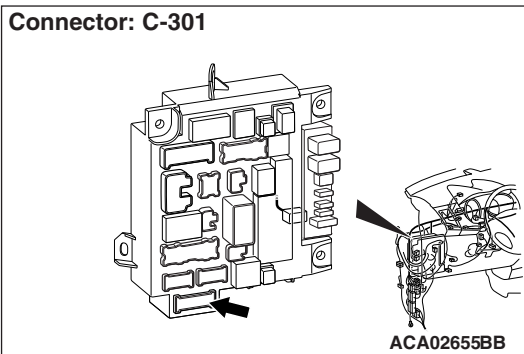
CAN Communication Circuit



Connector: C-103



Connector: C-301



FUNCTION

If a failure is present in the wiring harness wires between the ETACS-ECU connector, the joint connector (CAN1), the ETACS-ECU connector and the joint connector (CAN1), this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

If a communication flag is set for none of the ECUs on the CAN-B line, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector [joint connector (CAN1) or ETACS-ECU connector improperly connected]
- Malfunction of the wiring harness [open circuit between the ETACS-ECU connector and the joint connector (CAN1)]
- Malfunction of the ETACS-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check joint connector (CAN1) C-103 and ETACS-ECU connector C-301 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CAUTION

The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to [P.54C-7](#).

Q: Are joint connector (CAN1) C-103 and ETACS-ECU connector C-301 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

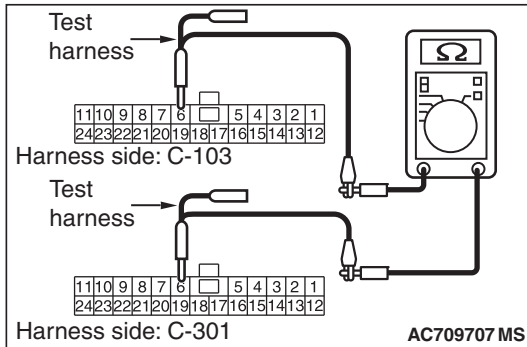
STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and ETACS-ECU connector C-301, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal 6) and ETACS-ECU connector C-301 (terminal 6)

OK: Continuity exists (2 ohms or less)



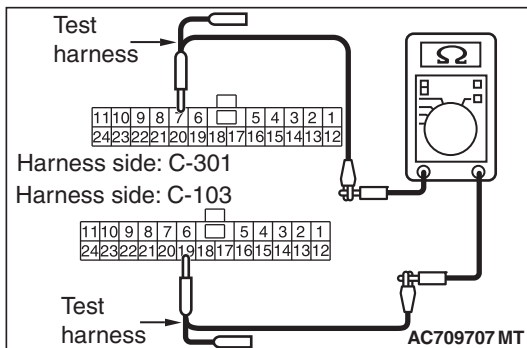
- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal 19) and ETACS-ECU connector C-301 (terminal 7)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301.



STEP 3. Using scan tool MB991958, diagnose the CAN bus line. (trouble symptom check)

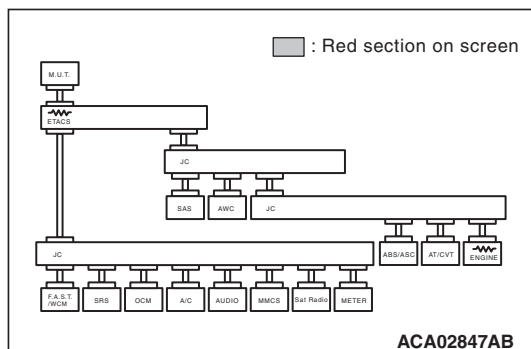
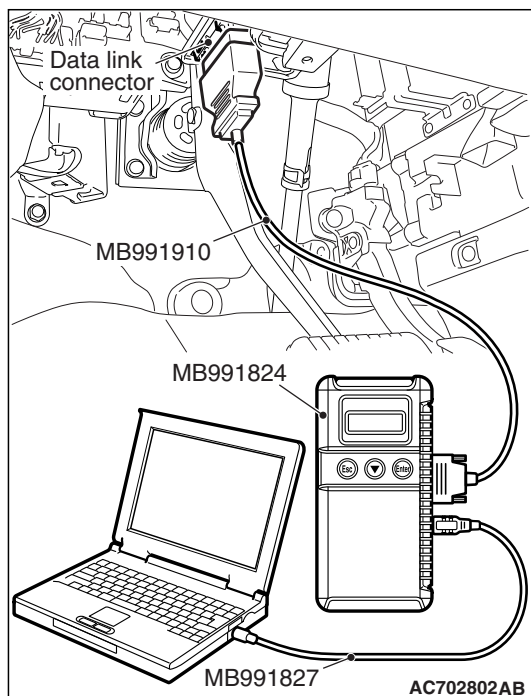
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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 CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-15](#)).

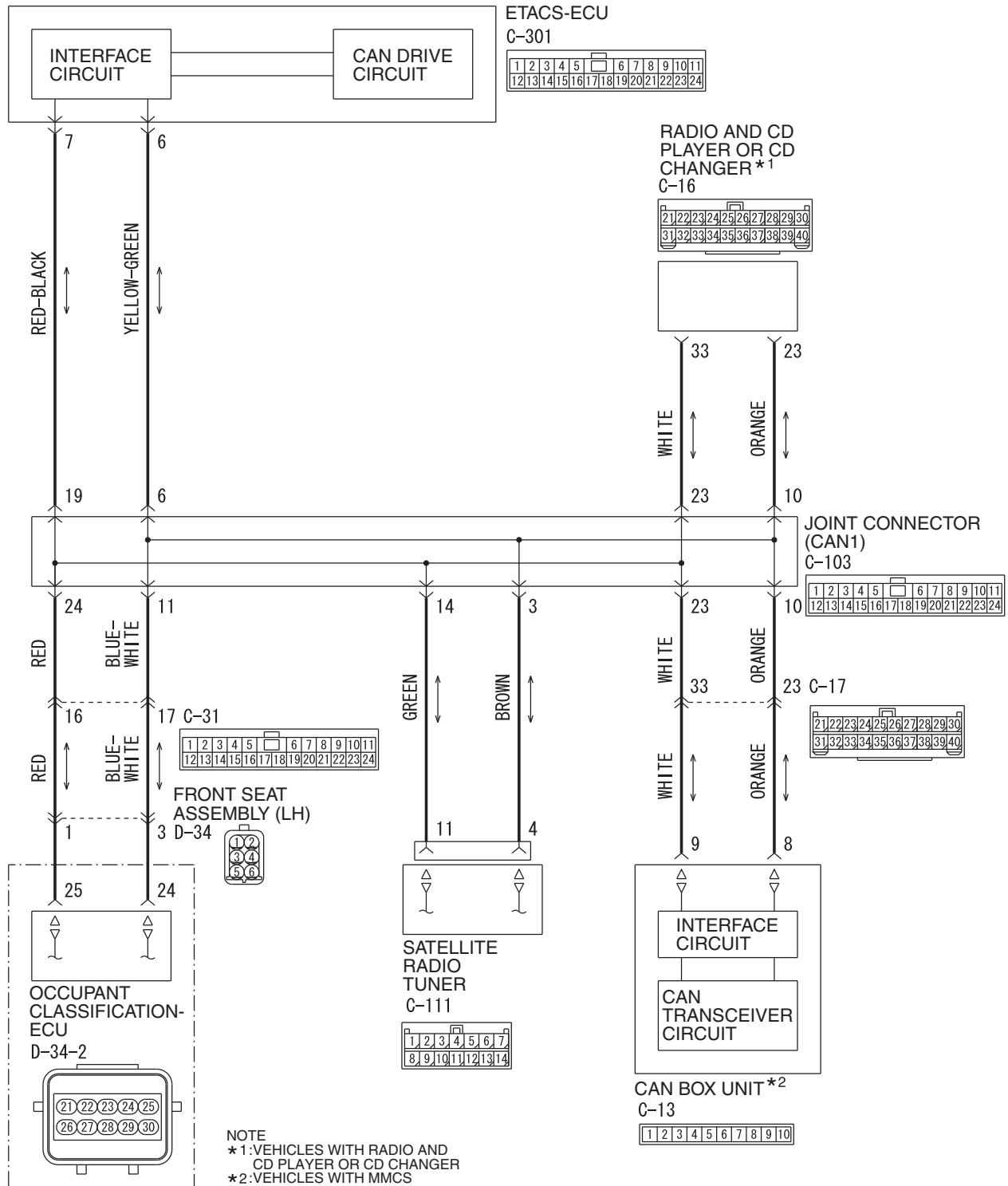
NO : Replace the ETACS-ECU.

DIAGNOSTIC ITEM 26: Short to power supply or ground, open circuit or line-to-line short in the CAN-B bus lines.

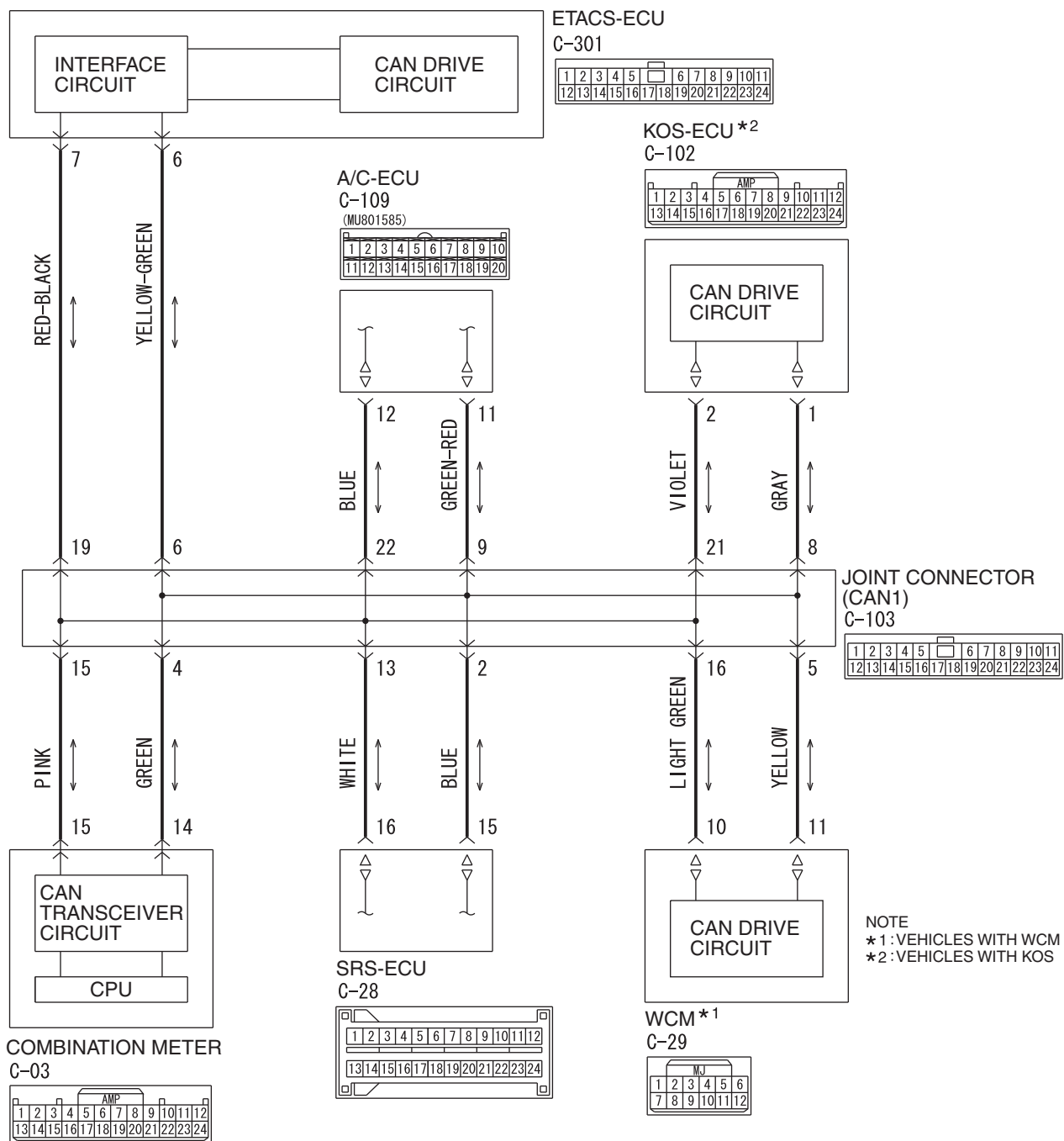
CAUTION

When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

CAN Communication Circuit

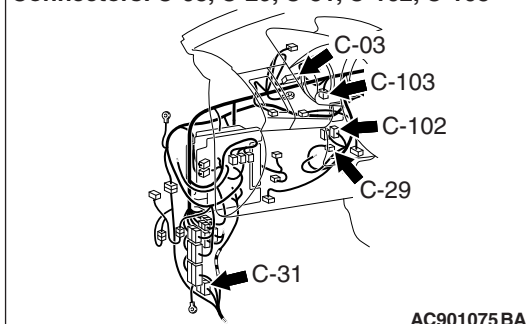


CAN Communication Circuit

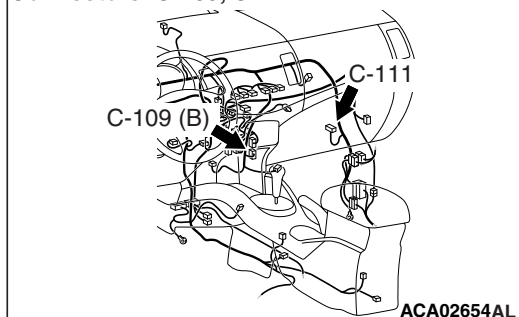


WBG54M012A

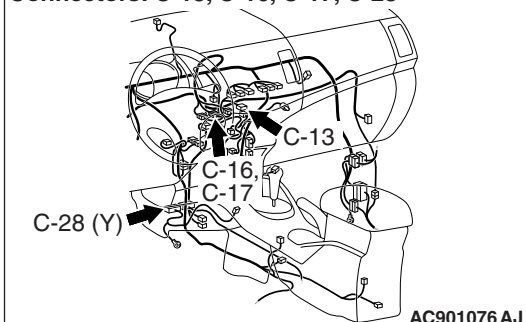
Connectors: C-03, C-29, C-31, C-102, C-103



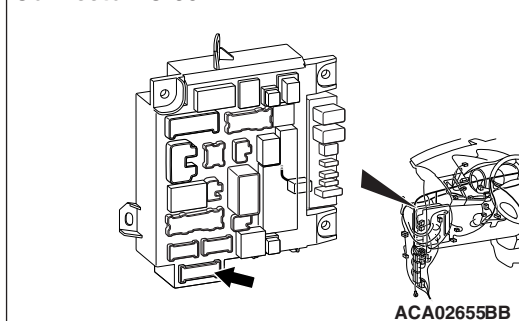
Connectors: C-109, C-111



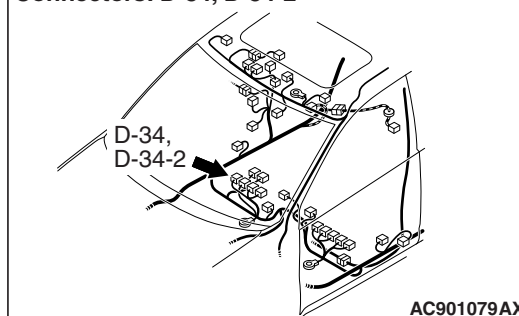
Connectors: C-13, C-16, C-17, C-28



Connector: C-301



Connectors: D-34, D-34-2



FUNCTION

If a short to power supply or ground, open circuit or line-to-line short is present at either CAN_H or CAN_L side on the CAN-B lines, this diagnosis result will be set.

TROUBLE JUDGMENT CONDITIONS

When CAN-B lines communication is normal, and diagnostic trouble code U0019 is set, the ETACS-ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- Malfunction of the connector (short to power supply or ground in connector or improperly connected)
- Malfunction of the wiring harness (short to power supply or ground, open circuit or line-to-line short in CAN bus lines)
- Faulty ECU(s) (internal short to power supply or ground)

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the wiring harness between ETACS-ECU connector C-301 and body ground for a short to ground. Measure the resistance at ETACS-ECU connector C-301.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to [P.42B-15](#).

⚠ CAUTION

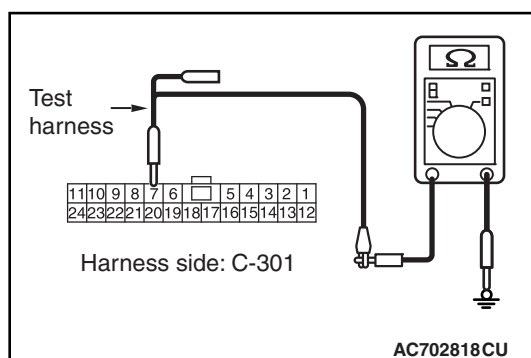
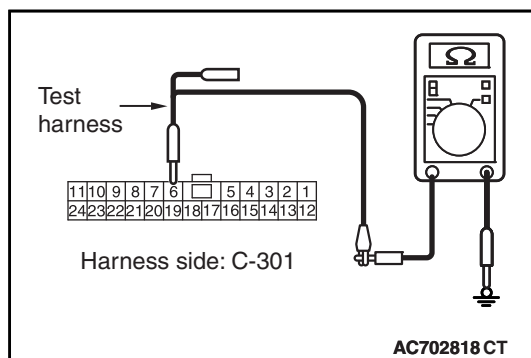
A digital multimeter should be used. For details refer to [P.42C-10](#).

⚠ CAUTION

The test wiring harness should be used. For details refer to [P.54C-7](#).

- (1) Disconnect ETACS-ECU connector C-301, and measure the voltage at the wiring harness side of ETACS-ECU connector.
- (2) Measure the resistance between ETACS-ECU connector terminal 6 and body ground.

OK: 1 kΩ or more



- (3) Measure the resistance between ETACS-ECU connector terminal 7 and body ground.

OK: 1 kΩ or more

Q: Do all the resistances measure 1 kΩ or more?

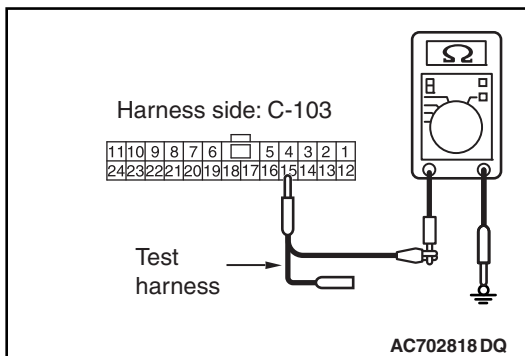
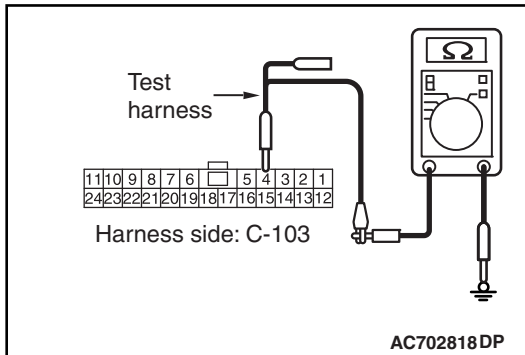
YES : Go to Step 2.

NO : Go to Step 12.

STEP 2. Check the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 4 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 15 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles with KOS) : Go to Step 3.

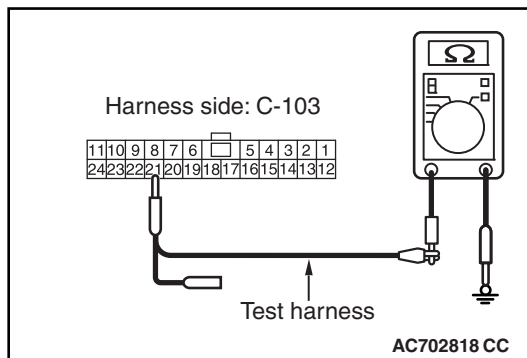
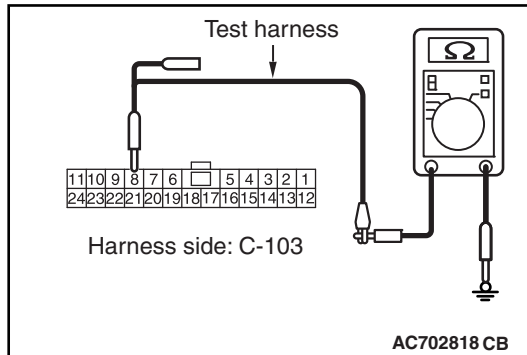
YES (vehicles with WCM) : Go to Step 4.

NO (vehicles with KOS or WCM) : Go to Step 44.

STEP 3. Check the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 8 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 21 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

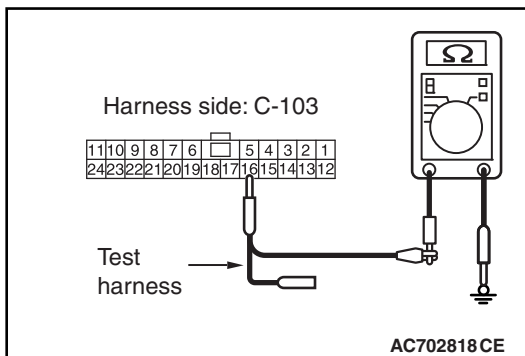
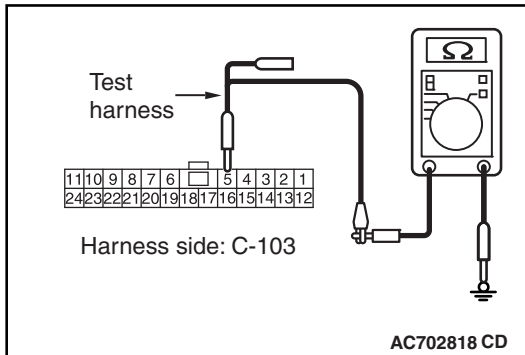
YES : Go to Step 5.

NO : Go to Step 45.

STEP 4. Check the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 5 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 16 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

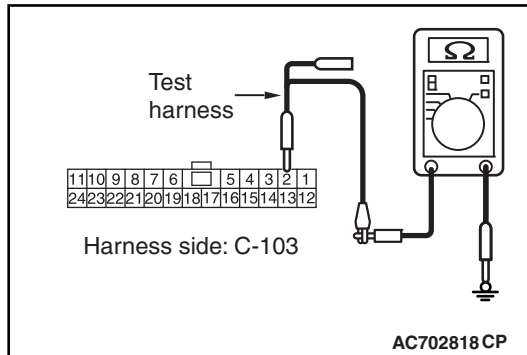
YES : Go to Step 5.

NO : Go to Step 46.

STEP 5. Check the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 2 and body ground.

OK: 1 k Ω or more



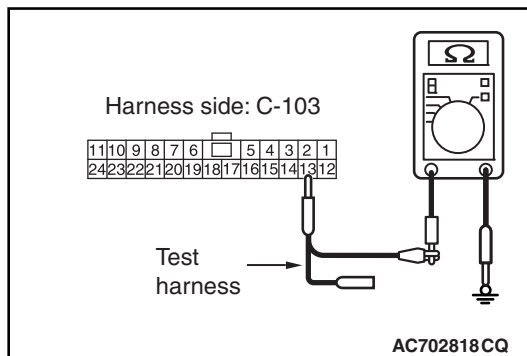
- (3) Measure the resistance between joint connector (CAN1) terminal 13 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 6.

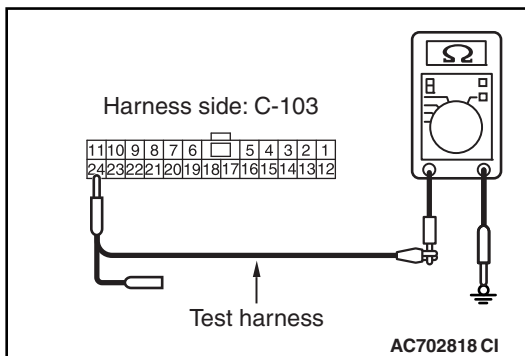
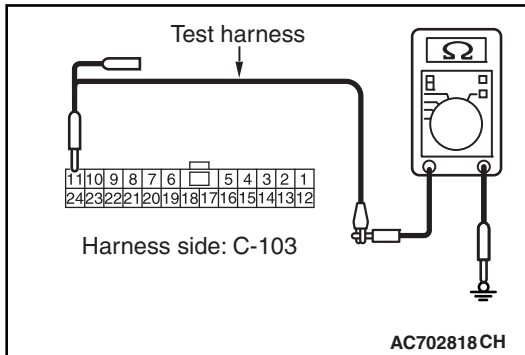
NO : Go to Step 47.



STEP 6. Check the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 11 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 24 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

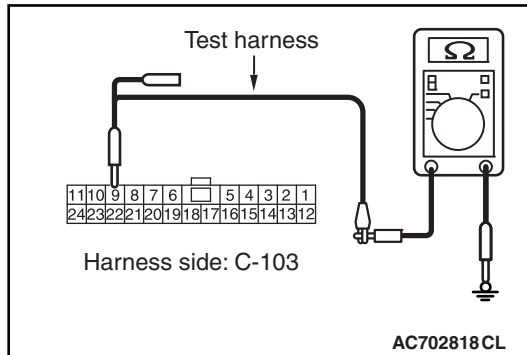
YES : Go to Step 7.

NO : Go to Step 48.

STEP 7. Check the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 9 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 22 and body ground.

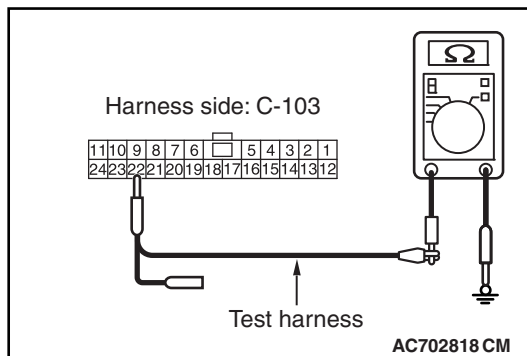
OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles without MMCS) : Go to Step 8.

YES (vehicles with MMCS) : Go to Step 9.

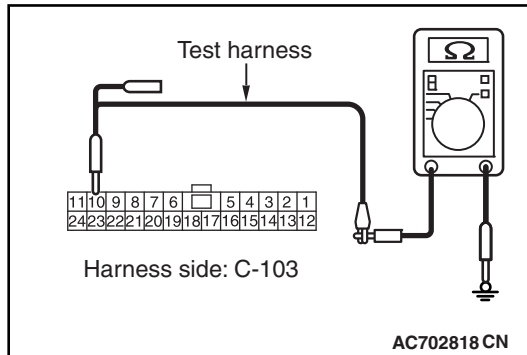
NO : Go to Step 49.



STEP 8. Check the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 10 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 23 and body ground.

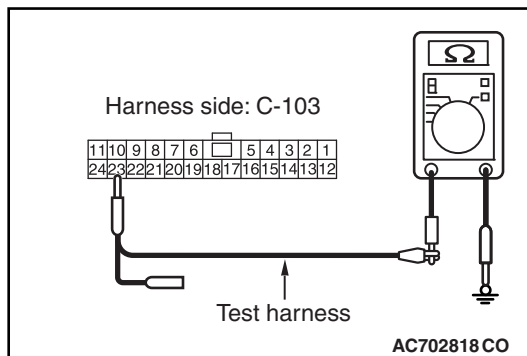
OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles without satellite radio) : Go to Step 11.

YES (vehicles with satellite radio) : Go to Step 10.

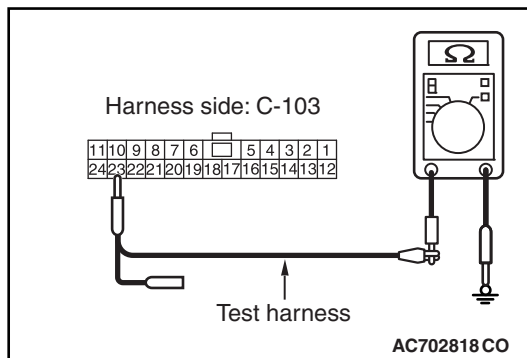
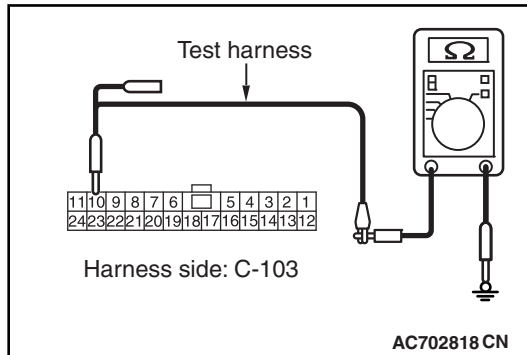
NO : Go to Step 50.



STEP 9. Check the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 10 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 23 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES (vehicles without satellite radio) : Go to Step 11.

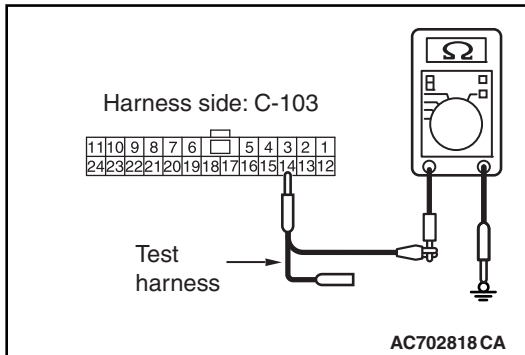
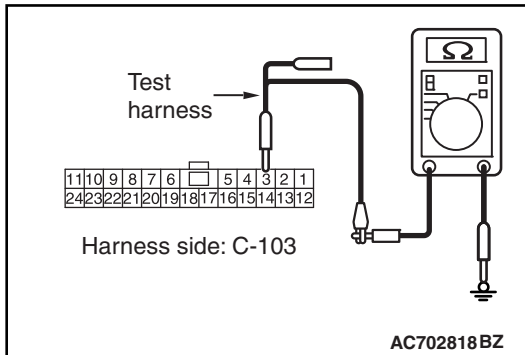
YES (vehicles with satellite radio) : Go to Step 10.

NO : Go to Step 51.

STEP 10. Check the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 3 and body ground.

OK: 1 k Ω or more



- (3) Measure the resistance between joint connector (CAN1) terminal 14 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

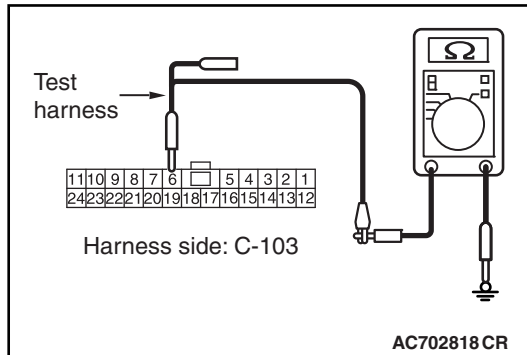
YES : Go to Step 11.

NO : Go to Step 52.

STEP 11. Check the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 for a short to ground. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1) and ETACS-ECU connector C-301, and measure the resistance at the wiring harness side of joint connector (CAN1).
- (2) Measure the resistance between joint connector (CAN1) terminal 6 and body ground.

OK: 1 k Ω or more



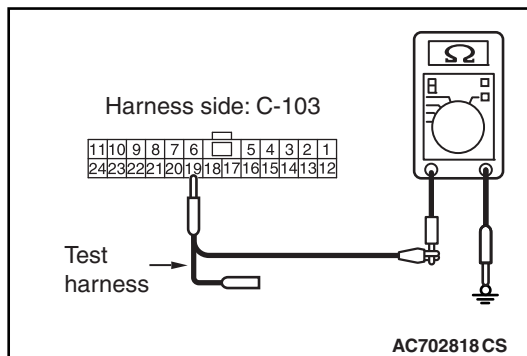
- (3) Measure the resistance between joint connector (CAN1) terminal 19 and body ground.

OK: 1 k Ω or more

Q: Do all the resistances measure 1 k Ω or more?

YES : Go to Step 53.

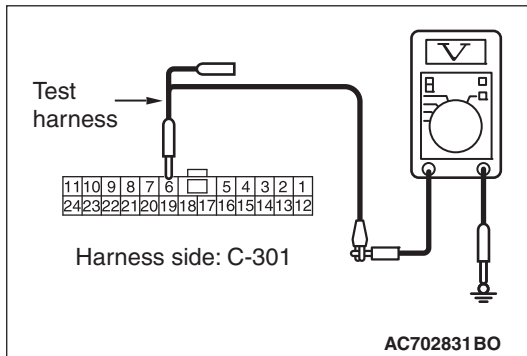
NO : Repair the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301.



STEP 12. Check the wiring harness between ETACS-ECU connector C-301 and body ground for a short to power supply. Measure the voltage at ETACS-ECU connector C-301.

- (1) Disconnect ETACS-ECU connector C-301, and measure the voltage at the wiring harness side of ETACS-ECU connector.
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between ETACS-ECU connector terminal 6 and body ground.

OK: 4.7 volts or less



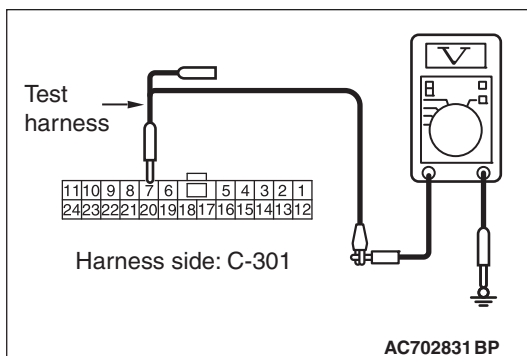
- (4) Measure the voltage between ETACS-ECU connector terminal 7 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 23.

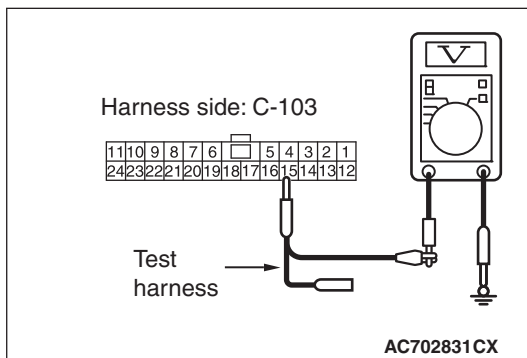
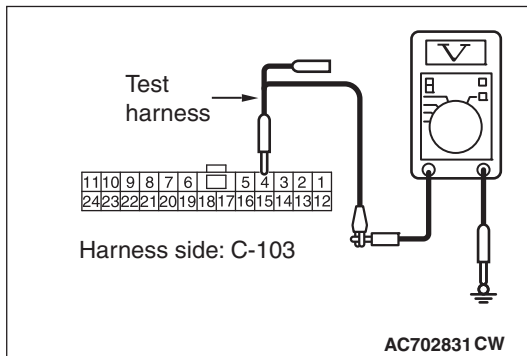
NO : Go to Step 13.



STEP 13. Check the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Connect the negative battery terminal.
- (3) Turn the ignition switch to the ON position.
- (4) Measure the voltage between joint connector (CAN1) terminal 4 and body ground.

OK: 4.7 volts or less



- (5) Measure the voltage between joint connector (CAN1) terminal 15 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles with KOS) : Go to Step 14.

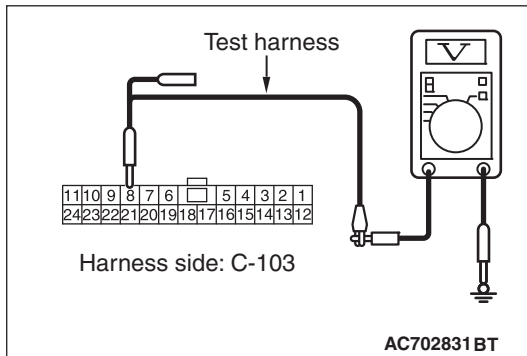
YES (vehicles with WCM) : Go to Step 15.

NO (vehicles with KOS and WCM) : Go to Step 44.

STEP 14. Check the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 8 and body ground.

OK: 4.7 volts or less



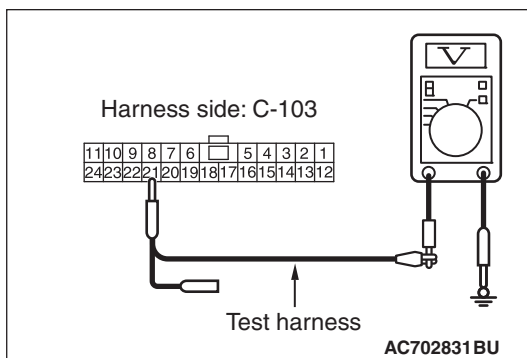
- (4) Measure the voltage between joint connector (CAN1) terminal 21 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 16.

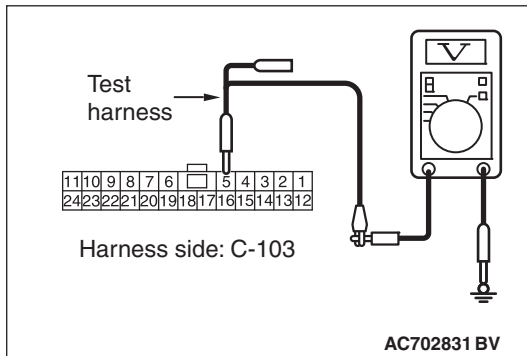
NO : Go to Step 45.



STEP 15. Check the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 5 and body ground.

OK: 4.7 volts or less



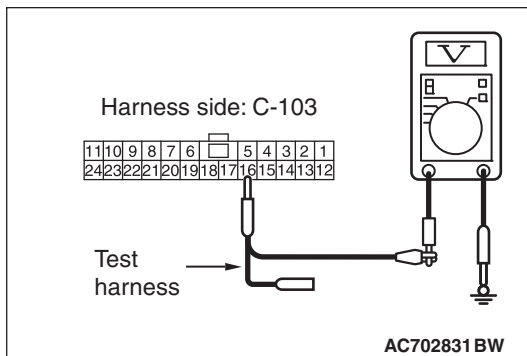
- (4) Measure the voltage between joint connector (CAN1) terminal 16 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 16.

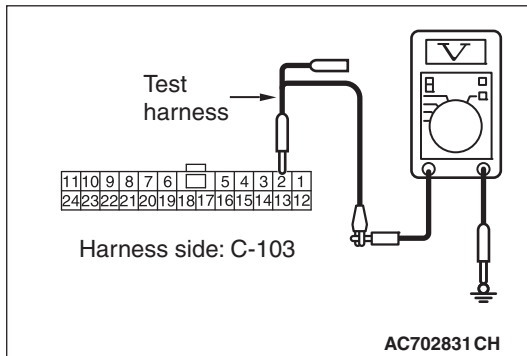
NO : Go to Step 46.



STEP 16. Check the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 2 and body ground.

OK: 4.7 volts or less



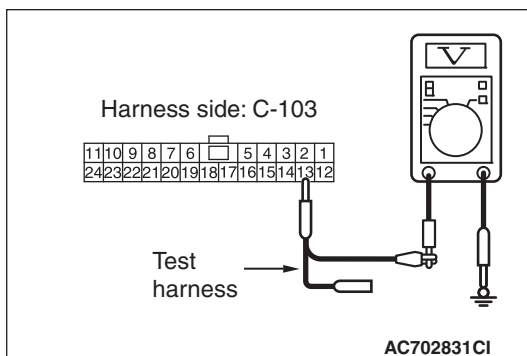
- (4) Measure the voltage between joint connector (CAN1) terminal 13 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 17.

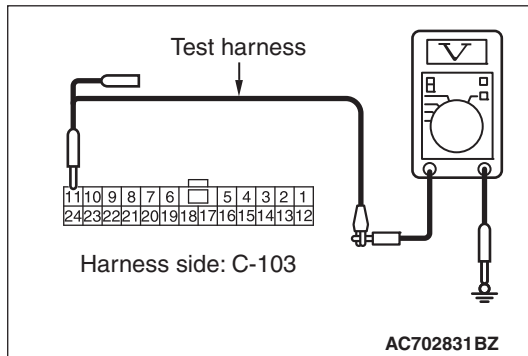
NO : Go to Step 47.



STEP 17. Check the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 11 and body ground.

OK: 4.7 volts or less



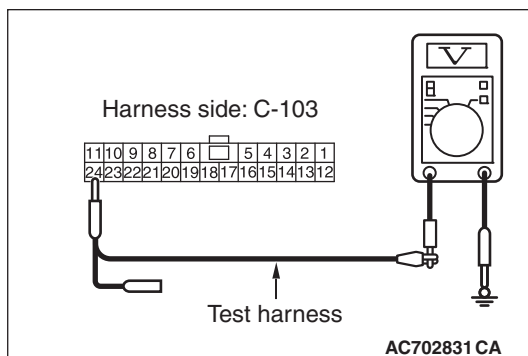
- (4) Measure the voltage between joint connector (CAN1) terminal 24 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES : Go to Step 18.

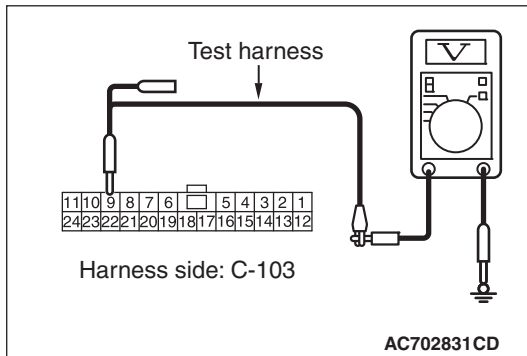
NO : Go to Step 48.



STEP 18. Check the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 9 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 22 and body ground.

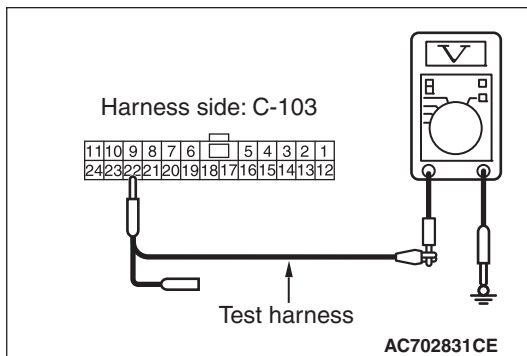
OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles without MMCS) : Go to Step 19.

YES (vehicles with MMCS) : Go to Step 20.

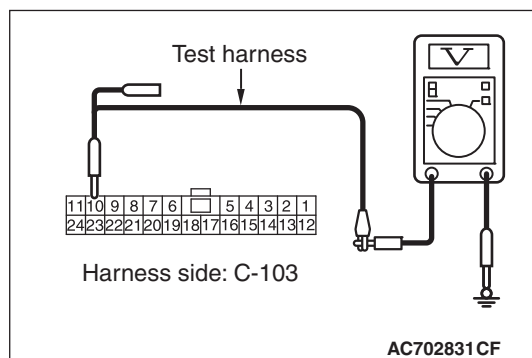
NO : Go to Step 49.



STEP 19. Check the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 10 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 23 and body ground.

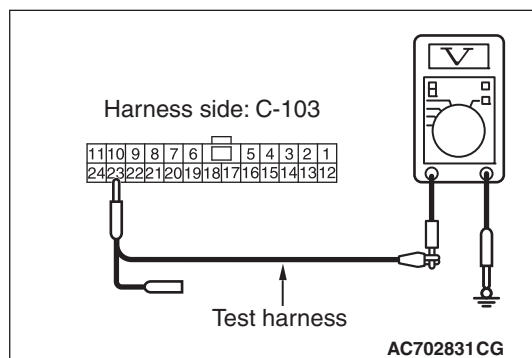
OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles without satellite radio) : Go to Step 22.

YES (vehicles with satellite radio) : Go to Step 21.

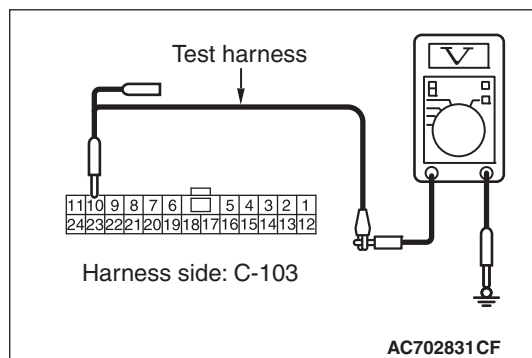
NO : Go to Step 50.



STEP 20. Check the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 10 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 23 and body ground.

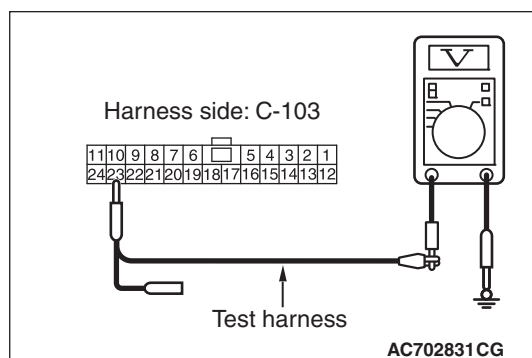
OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

YES (vehicles without satellite radio) : Go to Step 22.

YES (vehicles with satellite radio) : Go to Step 21.

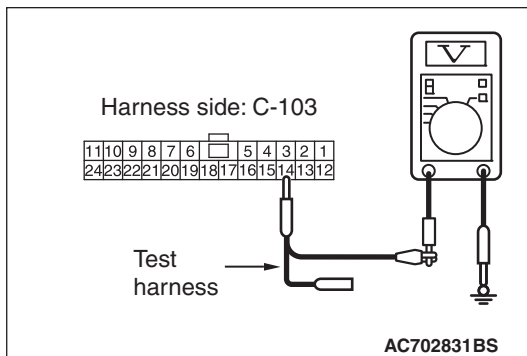
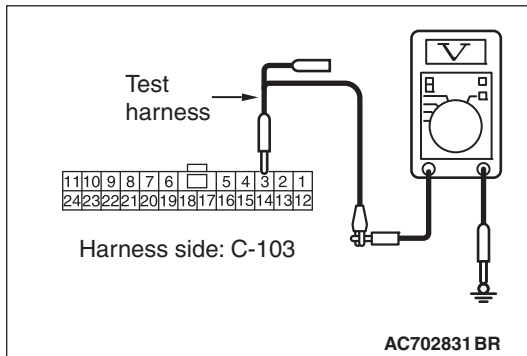
NO : Go to Step 51.



STEP 21. Check the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 3 and body ground.

OK: 4.7 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 14 and body ground.

OK: 4.7 volts or less

Q: Do all the voltages measure 4.7 volts or less?

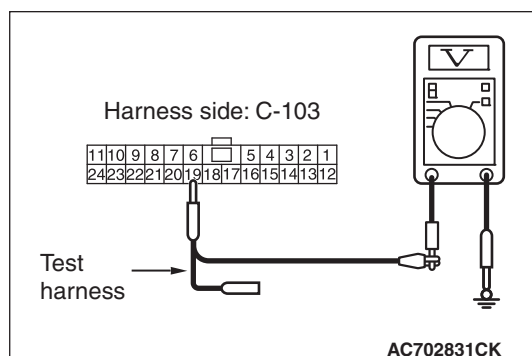
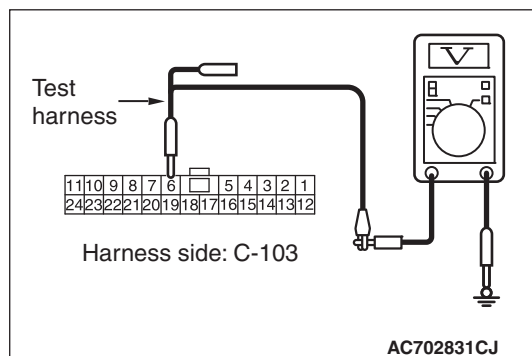
YES : Go to Step 22.

NO : Go to Step 52.

STEP 22. Check the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 for a short to power supply. Measure the voltage at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1) and ETACS-ECU connector C-301, and measure the voltage at the wiring harness side of joint connector (CAN1).
- (2) Turn the ignition switch to the ON position.
- (3) Measure the voltage between joint connector (CAN1) terminal 6 and body ground.

OK: 1.0 volts or less



- (4) Measure the voltage between joint connector (CAN1) terminal 19 and body ground.

OK: 1.0 volts or less

Q: Do all the voltages measure 1.0 volts or less?

YES : Go to Step 53.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301.

STEP 23. Check the wiring harness for line-to-line short. Measure the resistance at ETACS-ECU connector C-301

CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-7.

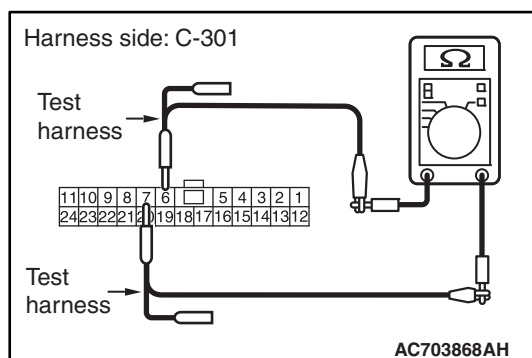
- (1) Disconnect ETACS-ECU connector C-301, and check that there is continuity at the harness side of ETACS-ECU.
- (2) Check that there is continuity between ETACS-ECU connector terminals 6 and 7.

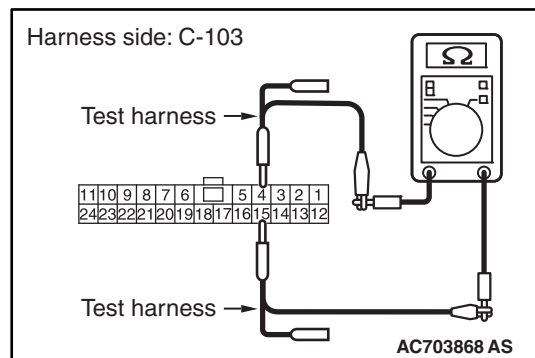
OK: No continuity

Q: Is the check result normal?

YES : Go to Step 34.

NO : Go to Step 24.





STEP 24. Check the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 4 and 15.

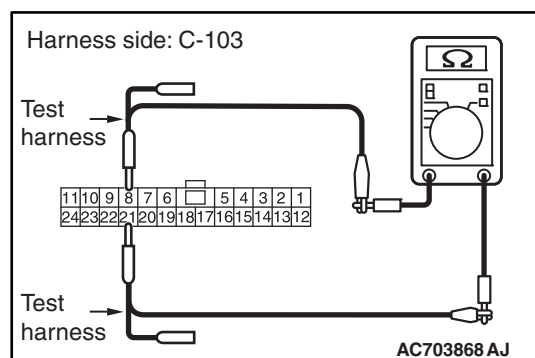
OK: No continuity

Q: Is the check result normal?

YES (vehicles with KOS) : Go to Step 25.

YES (vehicles with WCM) : Go to Step 26.

NO (vehicles with KOS or WCM) : Go to Step 44.



STEP 25. Check the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

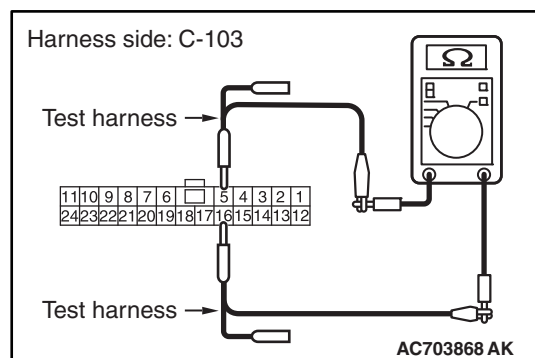
- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 8 and 21.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 27.

NO : Go to Step 45.



STEP 26. Check the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

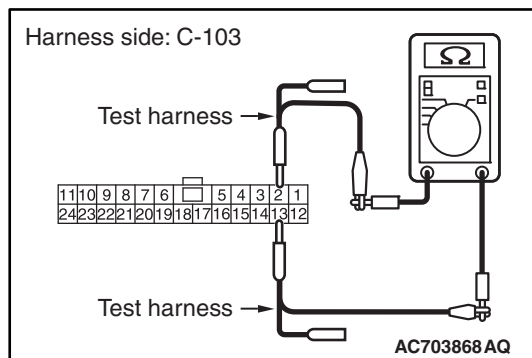
- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 5 and 16.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 27.

NO : Go to Step 46.



STEP 27. Check the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

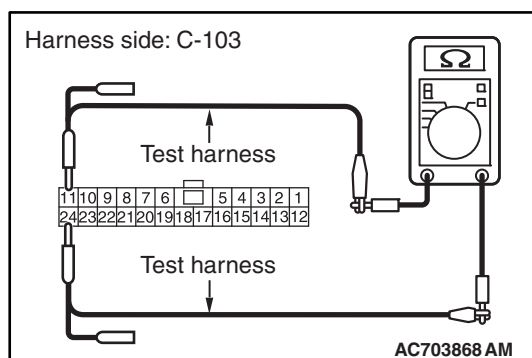
- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 2 and 13.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 28.

NO : Go to Step 47.



STEP 28. Check the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

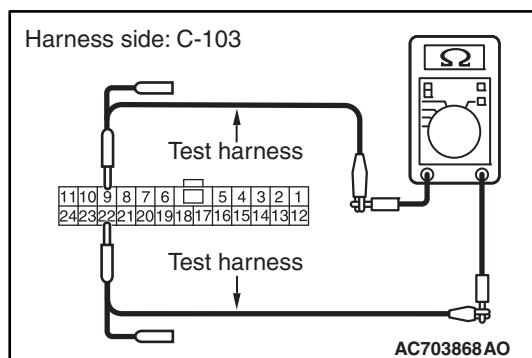
- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 11 and 24.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 29.

NO : Go to Step 48.



STEP 29. Check the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 9 and 22.

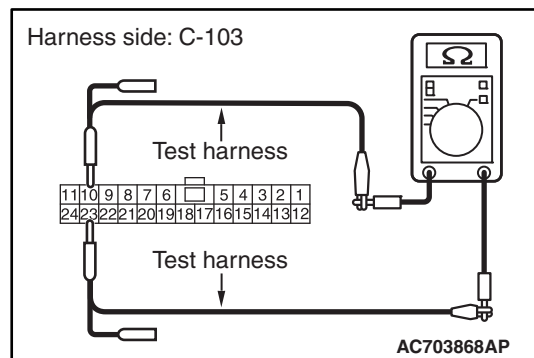
OK: No continuity

Q: Is the check result normal?

YES (vehicles without MMCS) : Go to Step 30.

YES (vehicles with MMCS) : Go to Step 31.

NO : Go to Step 49.



STEP 30. Check the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 10 and 23.

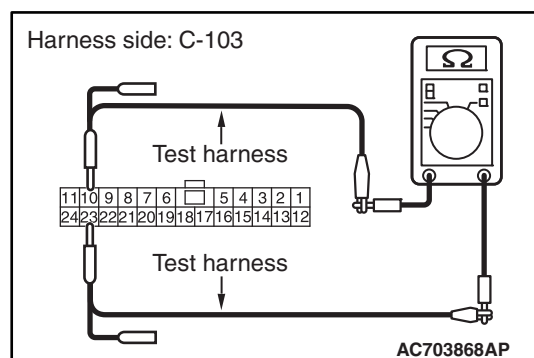
OK: No continuity

Q: Is the check result normal?

YES (vehicles without satellite radio) : Go to Step 33.

YES (vehicles with satellite radio) : Go to Step 32.

NO : Go to Step 50.



STEP 31. Check the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 10 and 23.

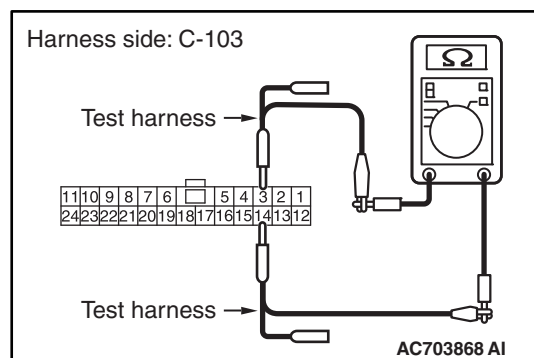
OK: No continuity

Q: Is the check result normal?

YES (vehicles without satellite radio) : Go to Step 33.

YES (vehicles with satellite radio) : Go to Step 32.

NO : Go to Step 51.



STEP 32. Check the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

- (1) Disconnect joint connector (CAN1), and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 3 and 14.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 33.

NO : Go to Step 52.

STEP 33. Check the wiring harness between joint connector (CAN1) C-103 and EATCS-ECU connector C-301 for line-to-line short. Measure the resistance at joint connector (CAN1) C-103.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

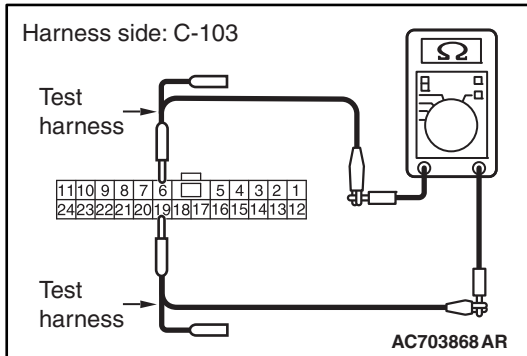
- (1) Disconnect joint connector (CAN1) and ETACS-ECU connector C-301, and check that there is continuity at the harness side of joint connector (CAN1).
- (2) Check that there is continuity between joint connector (CAN1) terminals 6 and 19.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 53.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301.



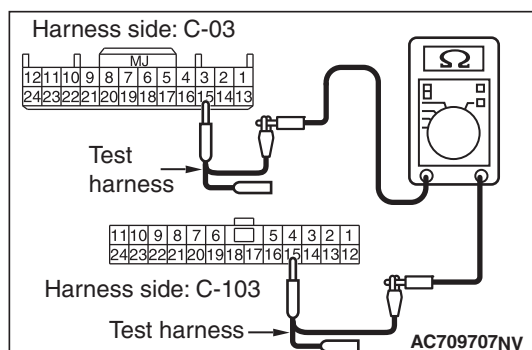
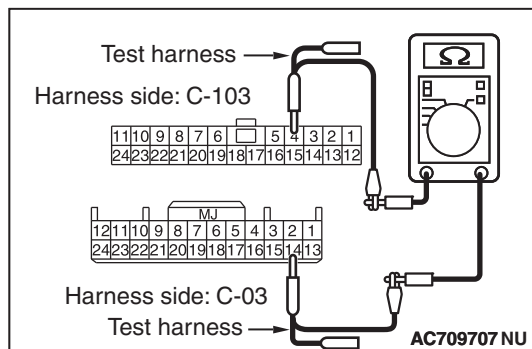
STEP 34. Check the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and combination meter connector C-03, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.4) and combination meter connector C-03 (terminal No.14)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.15) and combination meter connector C-03 (terminal No.15)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03 in good condition?

YES (vehicles with KOS) : Go to Step 35.

YES (vehicles with WCM) : Go to Step 36.

NO (vehicles with KOS or WCM) : Repair the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03.

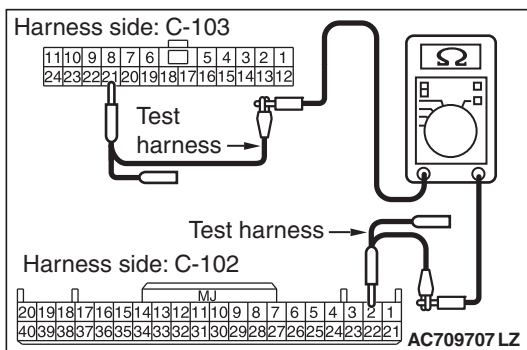
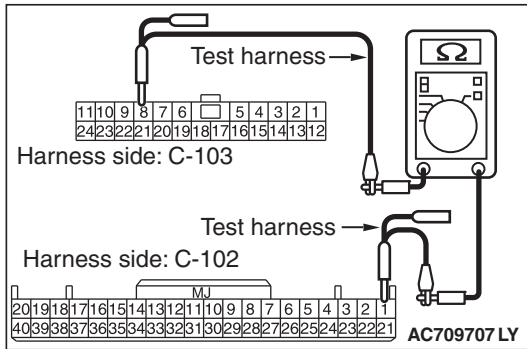
STEP 35. Check the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and KOS-ECU connector C-102, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.8) and KOS-ECU connector C-102 (terminal No.1)

OK: Continuity exists (2 ohms or less)



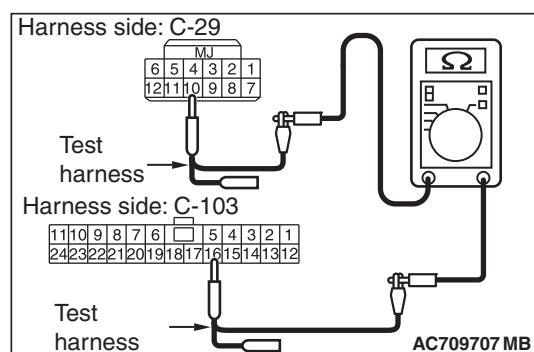
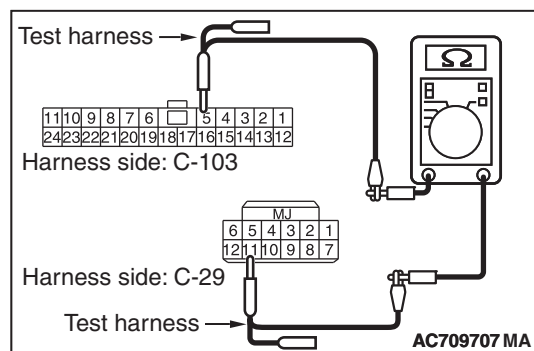
- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.21) and KOS-ECU connector C-102 (terminal No.2)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102 in good condition?

YES : Go to Step 37.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102.



STEP 36. Check the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and WCM connector C-29, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.5) and WCM connector C-29 (terminal No.11)

OK: Continuity exists (2 ohms or less)

- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.16) and WCM connector C-29 (terminal No.2)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29 in good condition?

YES : Go to Step 37.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29.

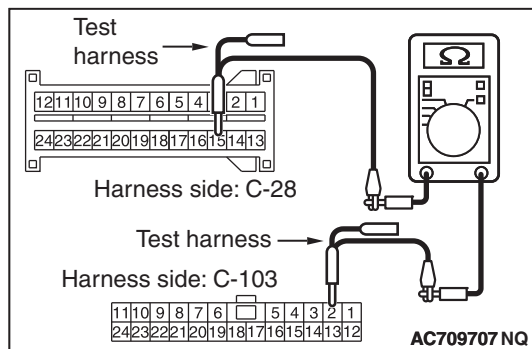
STEP 37. Check the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and SRS-ECU connector C-28, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.2) and SRS-ECU connector C-28 (terminal No.15)

OK: Continuity exists (2 ohms or less)



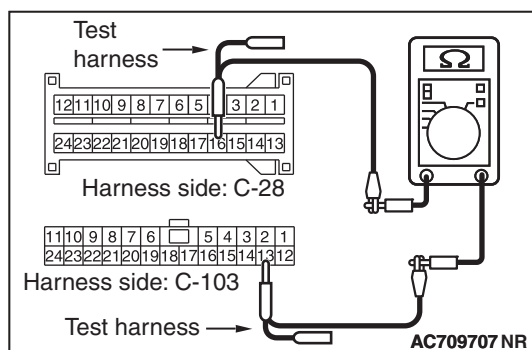
- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.13) and SRS-ECU connector C-28 (terminal No.16)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28 in good condition?

YES : Go to Step 38.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28.



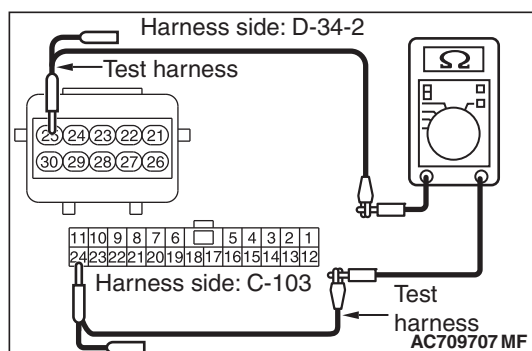
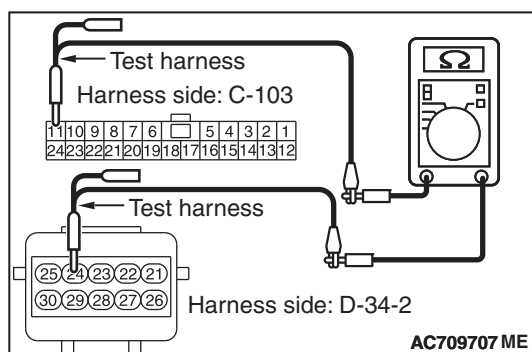
STEP 38. Check the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.11) and occupant classification-ECU connector D-34-2 (terminal No.24)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.24) and occupant classification-ECU connector D-34-2 (terminal No.25)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2 in good condition?

YES : Go to Step 39.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2.

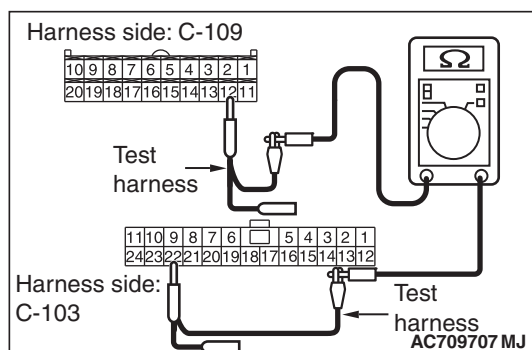
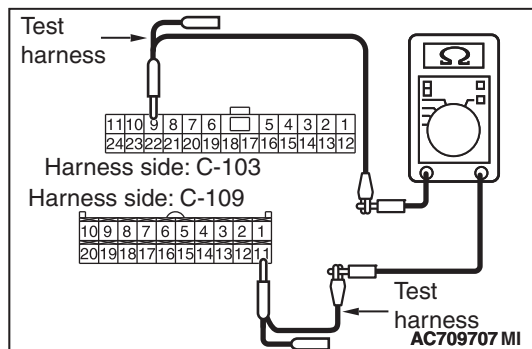
STEP 39. Check the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and A/C-ECU connector C-109, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.9) and A/C-ECU connector C-109 (terminal No.11)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.22) and A/C-ECU connector C-109 (terminal No.12)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109 in good condition?

YES (vehicles without MMCS) : Go to Step 40.

YES (vehicles with MMCS) : Go to Step 41.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109.

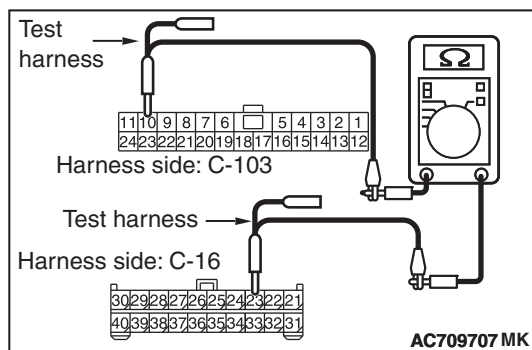
STEP 40. Check the wiring harness between joint connector (CAN1) C-103 and radio and CD player or CD changer connector C-16 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and radio and CD player or CD changer connector C-16, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.10) and radio and CD player or CD changer connector C-16 (terminal No.23)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.23) and radio and CD player or CD changer connector C-16 (terminal No.33)

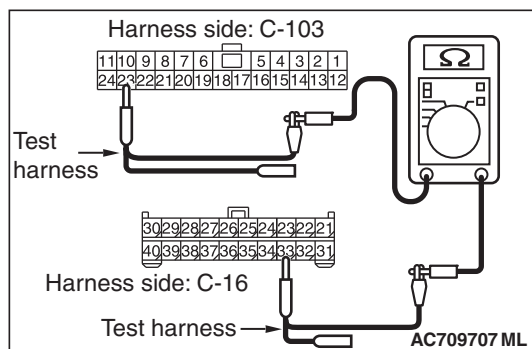
OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and radio and CD player or CD changer connector C-16 in good condition?

YES (vehicles without satellite radio) : Go to Step 43.

YES (vehicles with satellite radio) : Go to Step 42.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and radio and CD player or CD changer connector C-16.



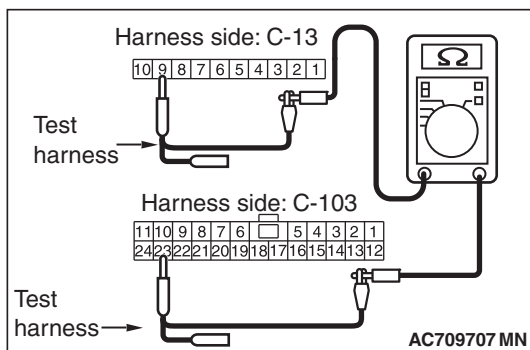
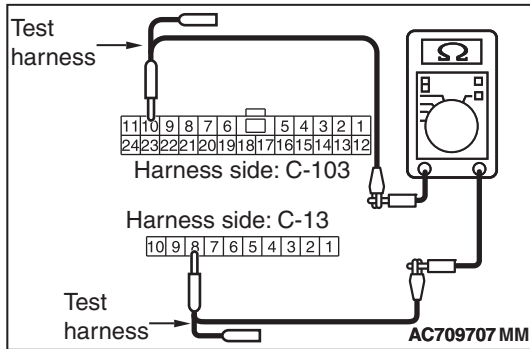
STEP 41. Check the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and CAN box unit connector C-13, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.10) and CAN box unit connector C-13 (terminal No.8)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.23) and CAN box unit connector C-13 (terminal No.9)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13 in good condition?

YES (vehicles without satellite radio) : Go to Step 43.

YES (vehicles with satellite radio) : Go to Step 42.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13.

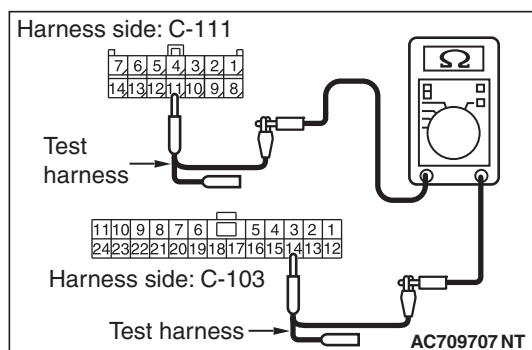
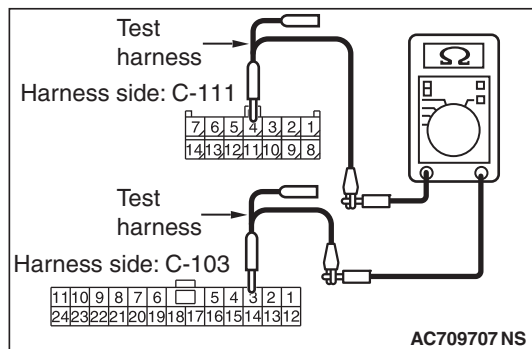
STEP 42. Check the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and satellite radio tuner connector C-111, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.3) and satellite radio tuner connector C-111 (terminal No.4)

OK: Continuity exists (2 ohms or less)



- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.14) and satellite radio tuner connector C-111 (terminal No.11)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111 in good condition?

YES : Go to Step 43.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111.

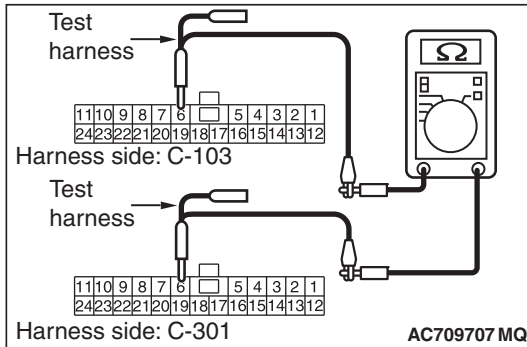
STEP 43. Check the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 for open circuit.

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-7.

- (1) Disconnect joint connector (CAN1) C-103 and ETACS-ECU connector C-301, and check the wiring harness.
- (2) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.6) and ETACS-ECU connector C-301 (terminal No.6)

OK: Continuity exists (2 ohms or less)



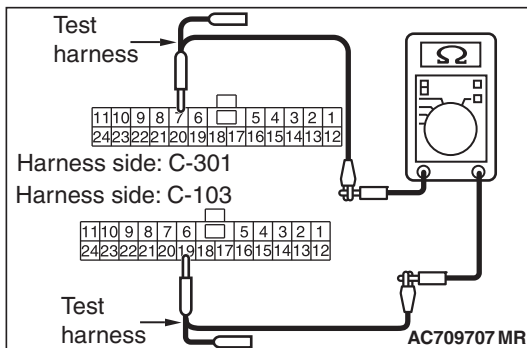
- (3) Check the wiring harness between joint connector (CAN1) C-103 (terminal No.19) and ETACS-ECU connector C-301 (terminal No.7)

OK: Continuity exists (2 ohms or less)

Q: Is the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301 in good condition?

YES : Go to Step 53.

NO : Repair the wiring harness between joint connector (CAN1) C-103 and ETACS-ECU connector C-301.



STEP 44. Using scan tool MB991958, diagnose the CAN bus line. (checking the combination meter for internal failure)

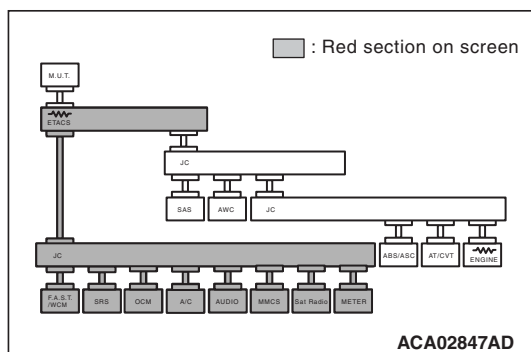
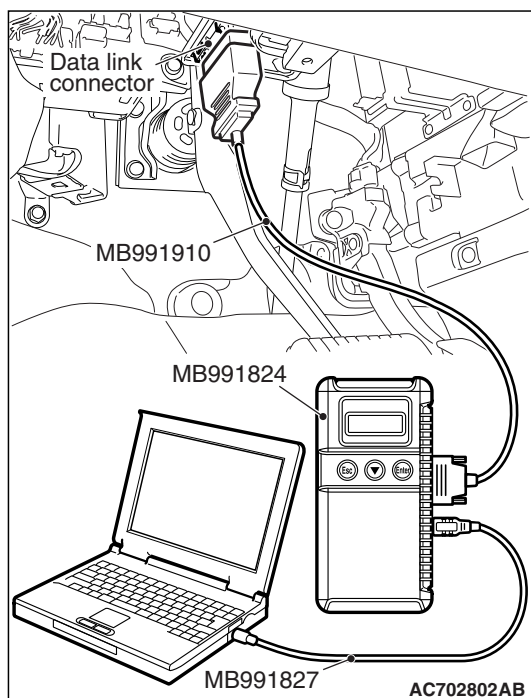
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect combination meter connector C-03.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and combination meter connector C-03.

NO : Check combination meter connector C-03, and repair if necessary. If the combination meter connector is in good condition, replace the combination meter.

STEP 45. Using scan tool MB991958, diagnose the CAN bus line. (checking the KOS-ECU for internal failure)

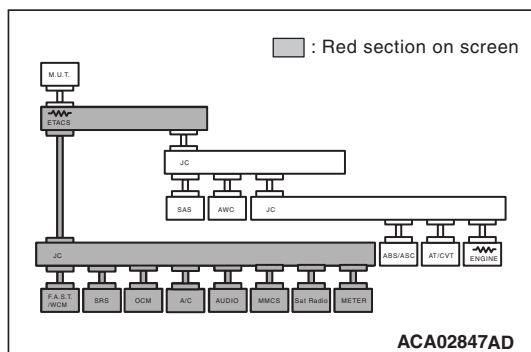
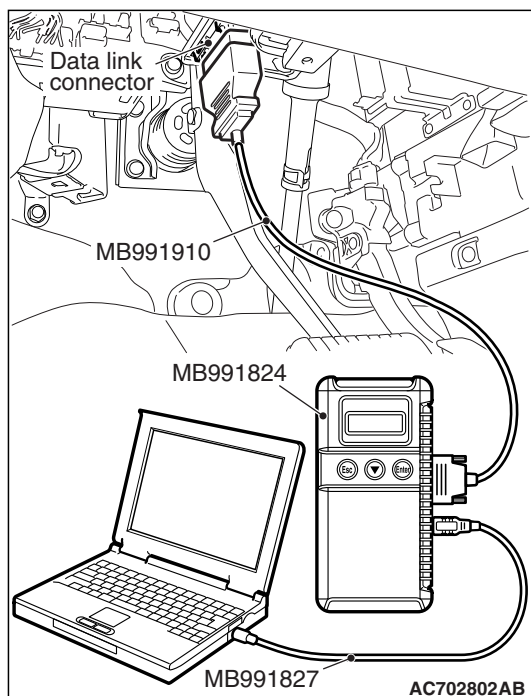
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect KOS-ECU connector C-102.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and KOS-ECU connector C-102.

NO : Check KOS-ECU connector C-102, and repair if necessary. If the KOS-ECU connector is in good condition, replace the KOS-ECU.

STEP 46. Using scan tool MB991958, diagnose the CAN bus line. (checking the WCM for internal failure)

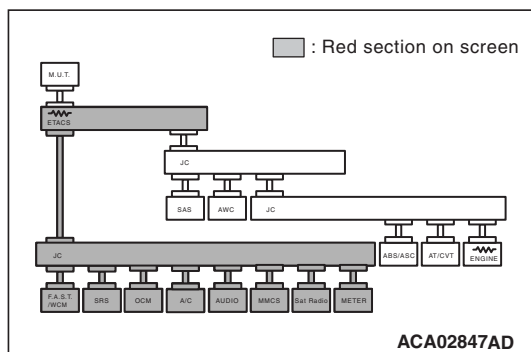
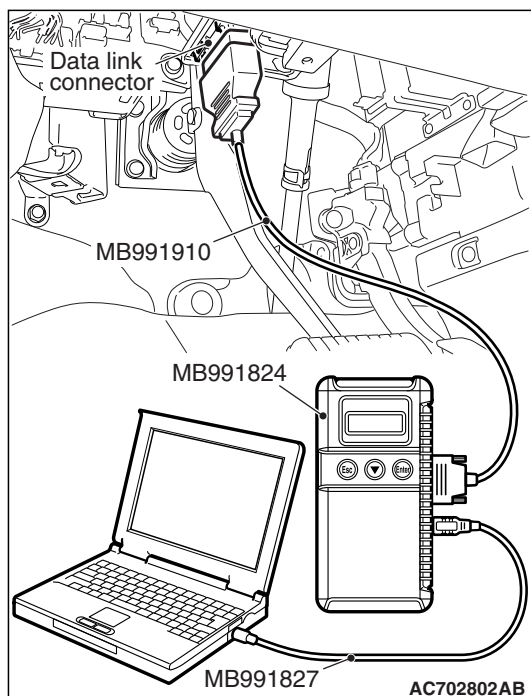
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect WCM connector C-29.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

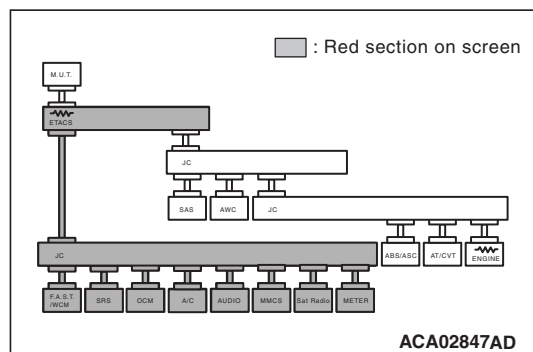
YES : Repair the wiring harness between joint connector (CAN1) C-103 and WCM connector C-29.

NO : Check WCM connector C-29, and repair if necessary. If the WCM connector is in good condition, replace the WCM.

CAUTION

CAUTION

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



- OK: The display of the scan tool MB991958 is as shown in the figure.**

Q: Does scan tool MB991958 screen correspond to the illustration?

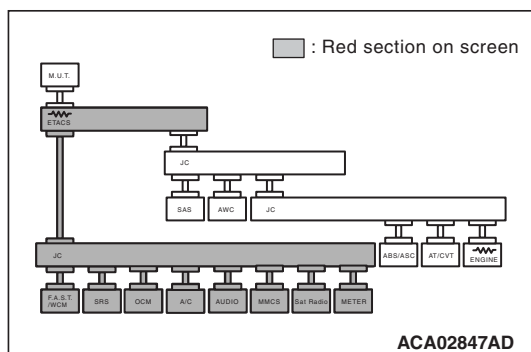
YES : Repair the wiring harness between joint connector (CAN1) C-103 and SRS-ECU connector C-28.

NO : Check SRS-ECU connector C-28, and repair if necessary. If the SRS-ECU connector is in good condition, replace the SRS-ECU.

CAUTION

CAUTION

- (1) Disconnect occupant classification-ECU connector D-34-2.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- OK: The display of the scan tool MB991958 is as shown in the figure.**

YES : Check intermediate connectors C-31 and D-34, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN1) C-103 and occupant classification-ECU connector D-34-2.

NO : Check occupant classification-ECU connector D-34-2, and repair if necessary. If the occupant classification-ECU connector is in good condition, replace the occupant classification-ECU.

STEP 49. Using scan tool MB991958, diagnose the CAN bus line. (checking the A/C-ECU for internal failure)

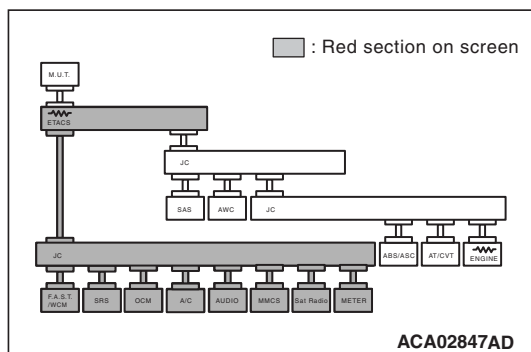
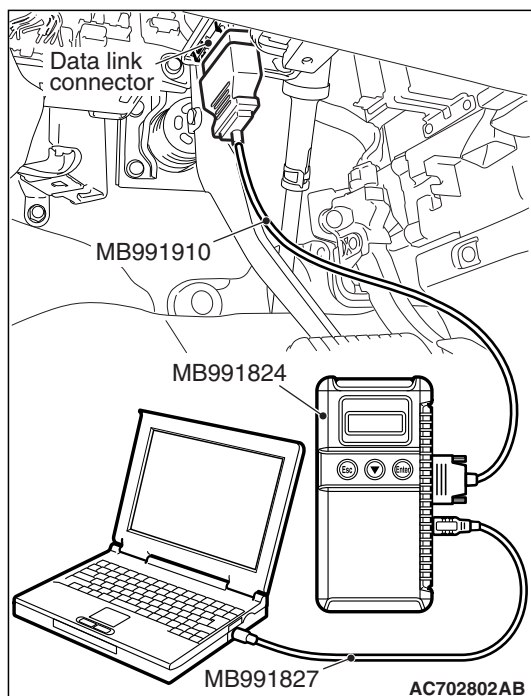
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect A/C-ECU connector C-109.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and A/C-ECU connector C-109.

NO : Check A/C-ECU connector C-109, and repair if necessary. If the A/C-ECU connector is in good condition, replace the A/C-ECU.

STEP 50. Using scan tool MB991958, diagnose the CAN bus line. (checking the radio and CD player or radio and CD changer for internal failure)

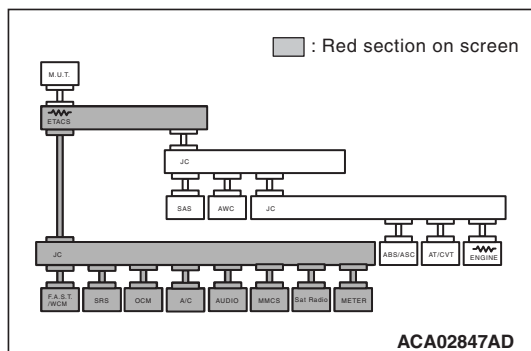
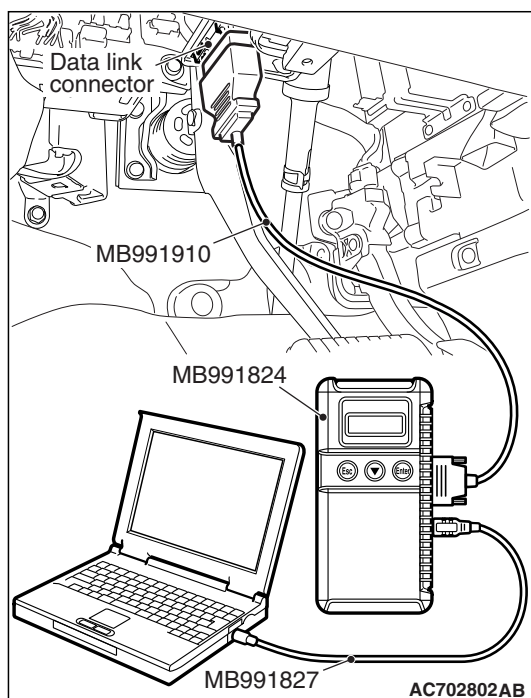
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect radio and CD player or CD changer connector C-16.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Repair the wiring harness between joint connector (CAN1) C-103 and radio and CD player or radio and CD changer connector C-16.

NO : Check radio and CD player or radio and CD changer connector C-16, and repair if necessary. If the radio and CD player or radio and CD changer connector is in good condition, replace the radio and CD player or radio and CD changer.

STEP 51. Using scan tool MB991958, diagnose the CAN bus line. (checking the CAN box unit for internal failure)

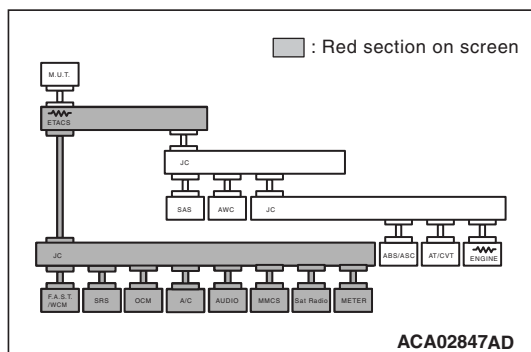
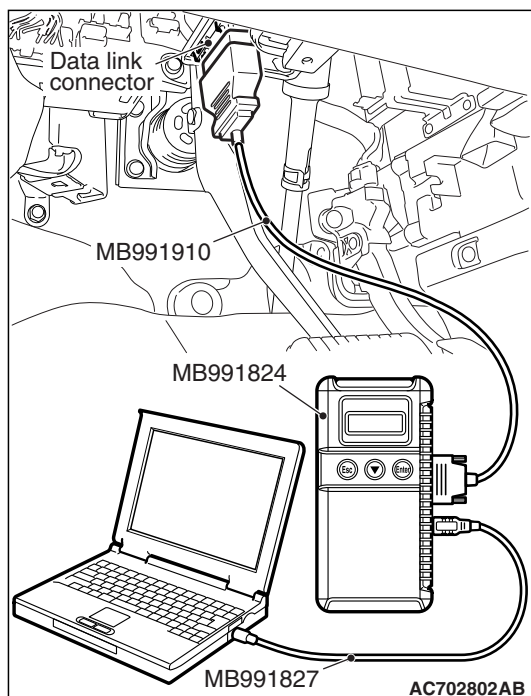
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect CAN box unit connector C-13.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

YES : Check intermediate connector C-17, and repair if necessary. If the intermediate connector is in good condition, repair the wiring harness between joint connector (CAN1) C-103 and CAN box unit connector C-13.

NO : Check CAN box unit connector C-13, and repair if necessary. If the CAN box unit connector is in good condition, replace the CAN box unit.

STEP 52. Using scan tool MB991958, diagnose the CAN bus line. (checking the satellite radio tuner for internal failure)

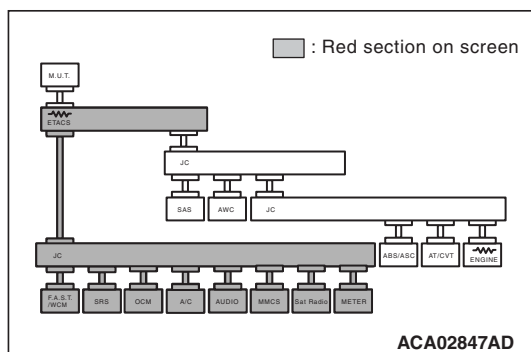
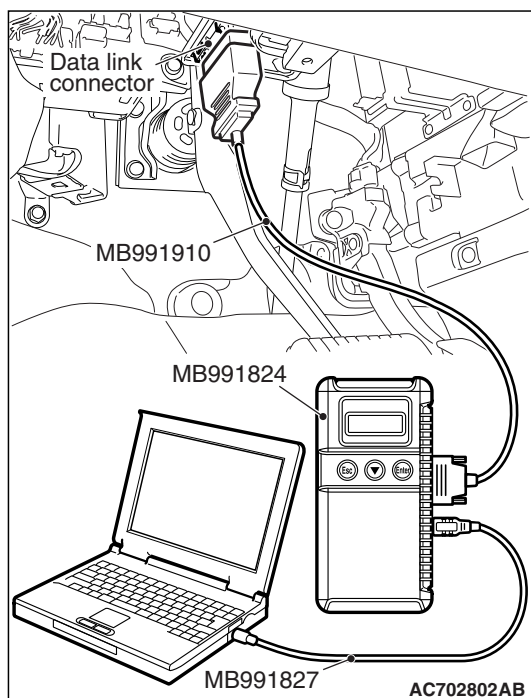
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to [P.54C-7](#).

⚠ 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) Disconnect satellite radio tuner connector C-111.
- (2) Connect scan tool MB991958 to the data link connector.
- (3) Turn the ignition switch to the "ON" position.



- (4) Diagnose CAN bus lines, and check if the scan tool MB991958 screen is as shown in the figure.

OK: The display of the scan tool MB991958 is as shown in the figure.

Q: Does scan tool MB991958 screen correspond to the illustration?

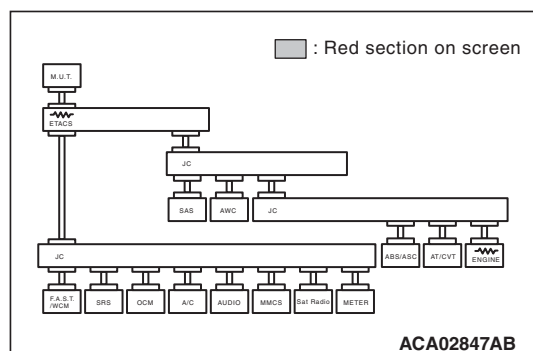
YES : Repair the wiring harness between joint connector (CAN1) C-103 and satellite radio tuner connector C-111.

NO : Check satellite radio tuner connector C-111, and repair if necessary. If the satellite radio tuner connector is in good condition, replace the satellite radio tuner.

CAUTION

CAUTION

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.



OK: The display of the scan tool MB991958 is as shown in the figure.

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to use Troubleshooting/inspection Service Points – How to Cope with Intermittent Malfunction [P.00-15](#)).

NO : Check the ETACS-ECU connector C-301, and repair if necessary. If the ETACS-ECU connector is in good condition, replace the ETACS-ECU.

CAN COMMUNICATION-RELATED DTC (U-CODE) TABLE

M1548300302207

Code No.	Diagnostic item	Output ECU	Action
U0001	Bus Off (CAN-C)	ECM, PCM, AWD-ECU, ABS-ECU, ASC-ECU, ETACS-ECU	CAN main bus line diagnostics
U0019	Bus Off (CAN-B)	KOS-ECU, WCM, SRS-ECU, Combination meter, Radio and CD player, Radio and CD changer, CAN box unit, Satellite radio tuner, A/C-ECU, ETACS-ECU	
U0100	Engine time-out	PCM, AWD-ECU, ABS-ECU, ASC-ECU, Combination meter, ETACS-ECU	
U0101	A/T time-out	ECM, ASC-ECU, ETACS-ECU	
U0114	AWD-ECU time-out	ECM <3.0L Engine>, ABS-ECU, ASC-ECU, ETACS-ECU	
U0121	ASC-ECU time-out	ECM, PCM, AWD-ECU, ETACS-ECU	
U0125	G and yaw rate sensor message time-out/ message abnormality	ASC-ECU	
U0126	Steering wheel sensor time-out	ASC-ECU, ETACS-ECU	
U0141	ETACS-ECU time-out	ECM, PCM, AWD-ECU, ABS-ECU, ASC-ECU, SRS-ECU, KOS-ECU, WCM, Combination meter, Radio and CD player, Radio and CD changer, CAN box unit, Satellite radio tuner, A/C-ECU	
U0151	SRS time-out	KOS-ECU, WCM, Combination meter, Radio and CD player, Radio and CD changer, CAN box unit, Satellite radio tuner, ETACS-ECU, A/C-ECU	
U0154	Occupant Classification-ECU time-out	SRS-ECU, KOS-ECU, WCM, Combination meter, Radio and CD player, Radio and CD changer, Satellite radio tuner, ETACS-ECU, A/C-ECU	
U0155	Meter time-out	KOS-ECU, WCM, SRS-ECU, Radio and CD player, Radio and CD changer, CAN box unit, Satellite radio tuner, ETACS-ECU, A/C-ECU	
U0164	A/C time-out	KOS-ECU, WCM, SRS-ECU, Combination meter, Radio and CD player, Radio and CD changer, CAN box unit, Satellite radio tuner, ETACS-ECU	
U0167	CAN immobilizer (communication)	ECM	
U0168	WCM/KOS time-out	SRS-ECU, Combination meter, Radio and CD player, Radio and CD changer, CAN box unit, Satellite radio tuner, ETACS-ECU, A/C-ECU	

Code No.	Diagnostic item	Output ECU	Action
U0184	Audio unit time-out	SRS-ECU, KOS-ECU, WCM, Combination meter, Satellite radio tuner, ETACS-ECU, A/C-ECU	CAN main bus line diagnostics
U0195	Satellite radio tuner time-out	SRS-ECU, WCM, Radio and CD player, Radio and CD changer, CAN box unit, ETACS-ECU, A/C-ECU	
U0212	Steering wheel sensor time-out	SRS-ECU	
U0245	Audio visual navigation unit time-out	KOS-ECU, WCM, Combination meter, ETACS-ECU	
U0401	Engine CAN data abnormality	AWD-ECU, ASC-ECU	Diagnose CAN main bus lines and confirm input signals.
U0415	ASC CAN data abnormality	AWD-ECU	
U0428	Steering wheel sensor communication abnormality	ASC-ECU	
U1003	G and yaw rate sensor bus off		
U1108	Excess CAN-B ECU detection	ETACS-ECU	
U1120	Bus line (CAN-C) low input		
U1121	Bus line (CAN-C) high input		
U113C	Lost wheel sensor message	AWD-ECU	
U1180	Combination meter time-out	ECM	CAN main bus line diagnostics
U1412	Implausible vehicle speed signal received	KOS-ECU, WCM	Diagnose CAN main bus lines and confirm input signals.
U1414	Defective coding data	SRS-ECU	
U1415	Coding not completed/Data fail	ABS-ECU, ASC-ECU, SRS-ECU, KOS-ECU, WCM, Combination meter, Radio and CD player, Radio and CD changer, CAN box unit, A/C-ECU	
U1417	Implausible coding data	ABS-ECU, ASC-ECU, KOS-ECU, WCM, CAN box unit	

NOTES