GROUP 54C

CONTROLLER AREA NETWORK (CAN)

CONTENTS

SPECIAL TOOL 54C-2

TEST EQUIPMENT 54C-3

SERVICE PRECAUTIONS 54C-4

PRECAUTIONS ON HOW TO REPAIR THE CAN BUS LINES 54C-5

EXPLANATION ABOUT THE DIAGNOSTIC TOOL (MUT-III) CAN BUS DIAGNOSTICS 54C-6

DIAGNOSTIC TROUBLE CODE DIAGNOSIS 54C-13

DIAGNOSIS 54C-15

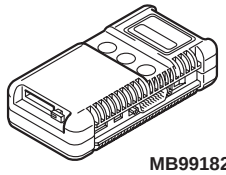
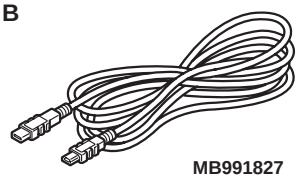
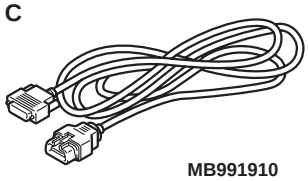
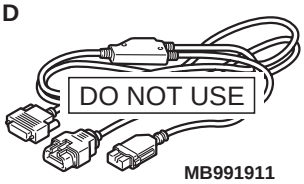
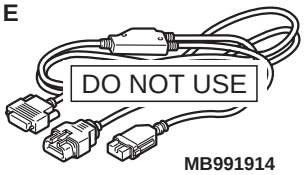
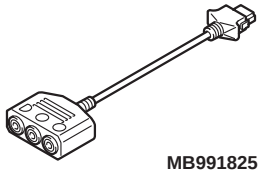
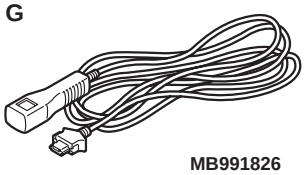
- CAN BUS DIAGNOSTICS TABLE 54C-15
- CAN BUS DIAGNOSTICS 54C-31

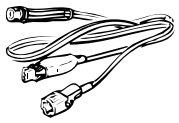
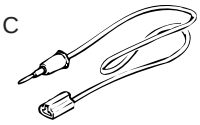
CAN COMMUNICATION SIGNAL TABLE 54C-405

CAN COMMUNICATION-RELATED DTC CODE (U CODE) TABLE 54C-408

SPECIAL TOOL

M1548304200057

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

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A B  C  D MB991223AD	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

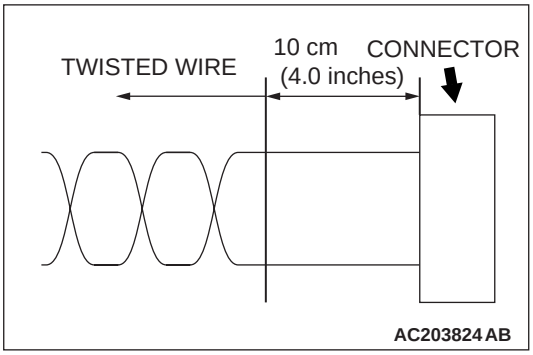
TEST EQUIPMENT

M1548304300054

TEST EQUIPMENT	NAME	USE
 AC000019	Digital multimeter	Checking CAN bus circuit (for resistance and voltage measurements)

SERVICE PRECAUTIONS

M1548302100043

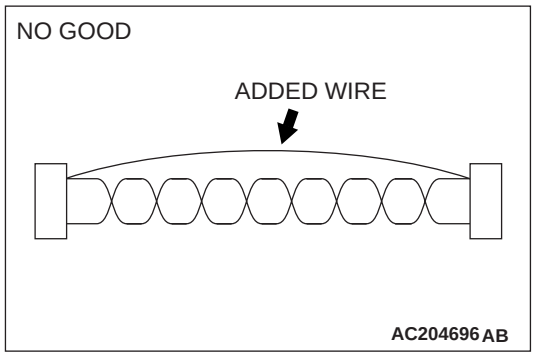
WARNINGS IN DIAGNOSIS SECTION	DETAILS REGARDING WARNINGS
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.	–
⚠ CAUTION **A digital multimeter should be used.**	**When measuring resistance value or voltage in CAN bus lines, use a digital multimeter. If not using a digital multimeter, the equipment connected through the CAN communication lines, may be damaged.**
⚠ CAUTION **Disconnect the negative battery terminal.**	**Disconnect the negative battery terminal when measuring the resistance value in the CAN bus line. If you fail to do so, a component connected through the CAN communication lines may be damaged.**
⚠ 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 twisted wire should be within 10 cm (4 inches) from the connector.**	 **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 twisted wire should be within 10 cm (4 inches) from the connector as shown. If it exceeds 10cm, twist the wiring harness just like the original twisted wire. If the strand end exceeds 10 cm, a communication error may be caused.**

WARNINGS IN DIAGNOSIS SECTION	DETAILS REGARDING WARNINGS
⚠ 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-5). 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.**

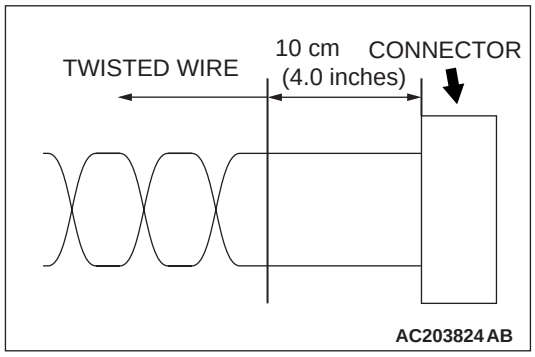
PRECAUTIONS ON HOW TO REPAIR THE CAN BUS LINES

M1548301900057

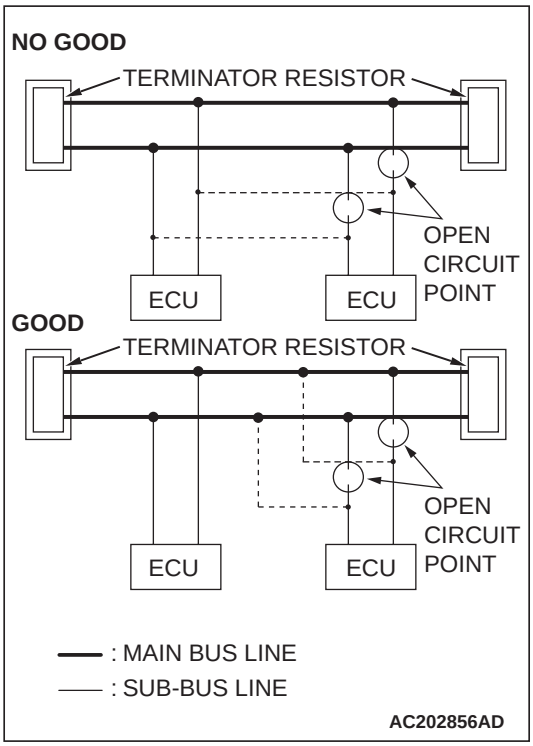
Precautions on how to repair the CAN bus lines



- If the CAN_L or CAN_H line on the main bus line or sub-bus line is repaired, replace 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 strand end of the twisted wire should be within 10 cm from the connector. If it exceeds 10 cm, twist the wiring harness just like the original twisted wire. If the strand end exceeds 10 cm, 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.

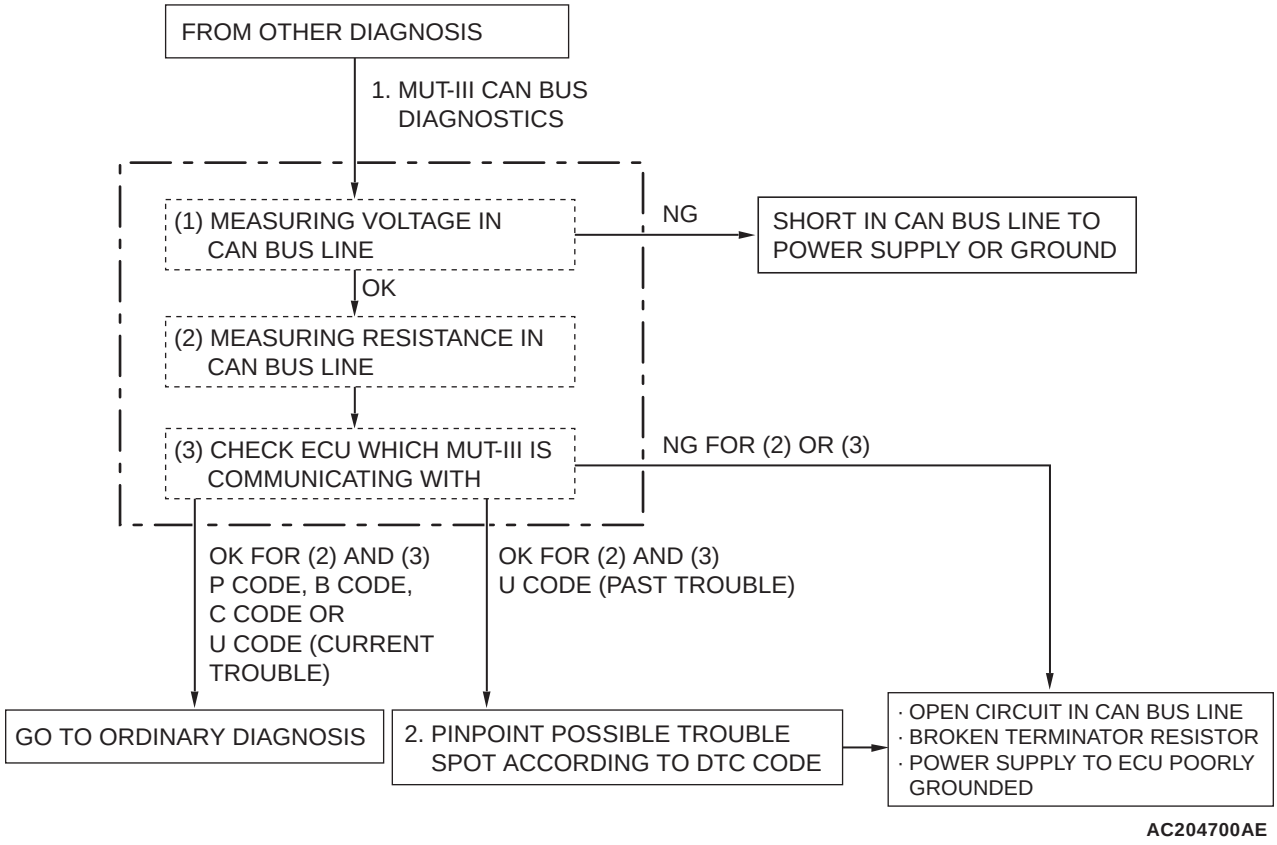
Precautions on how to repair the terminator resistor

If one-side of the terminator resistors is broken, the CAN communication will continue, although noise suppression is deteriorated. In this case, no DTC may be set. Check the system regardless of whether a DTC is set or not. If damage is found, replace the terminator resistor.

EXPLANATION ABOUT THE DIAGNOSTIC TOOL (MUT-III) CAN BUS DIAGNOSTICS

M1548300100058

The MUT-III CAN bus diagnostics carries out the three checks below automatically, and then displays the current condition of the CAN bus lines according to the check results.



1. MUT-III CAN bus diagnostics

   The MUT-III diagnoses CAN bus lines in accordance with the following strategy.

   (1) Measuring voltage in CAN bus line

   Diagnoses the power supply (such as wires of higher voltage than CAN communication line) and grounding (such as wires of lower voltage than CAN communication line) of CAN bus lines for short circuit by measuring the voltages between the CAN_L line or H line and body ground.

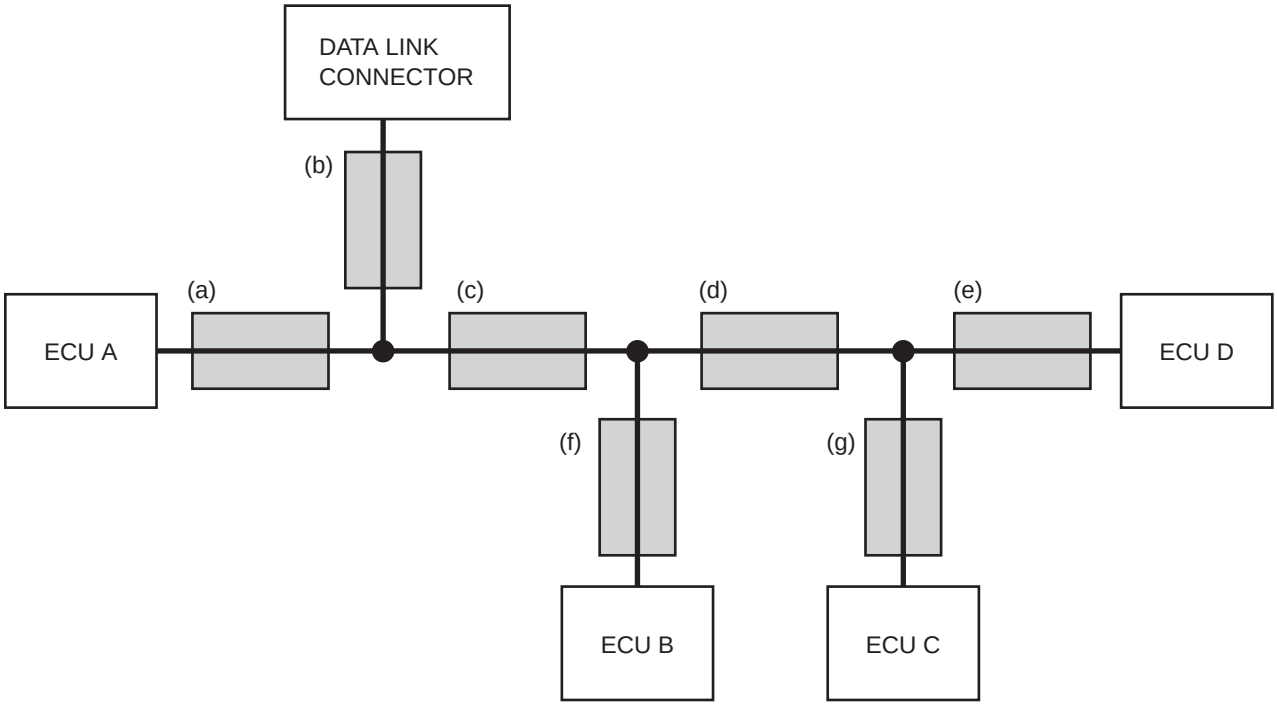
MEASURE THE VOLTAGE	NORMAL VALUE	MEASUREMENT VALUE	TROUBLE WHEN THE MEASUREMENT VALUE DOES NOT MEET THE NORMAL VALUE	NOTE
Between the CAN_L line and body ground	1.0 V or more and 4.0 V or less	Less than 1.0 V	Short to ground of the CAN_L line	If the CAN_L or H line is shorted to ground or power supply, a DTC may not be set.
		More than 4.0 V	A short to the power supply of the CAN_L line	
Between the CAN_H line and body ground	1.0 V or more and 4.0 V or less	Less than 1.0 V	Short to ground of the CAN_H line	
		More than 4.0 V	A short to the power supply of the CAN_H line	

(2) Measuring resistance in CAN bus line
Checks the terminator resistors (incorporated in the combination meter or the ENGINE-ECU), which are connected to each end of a CAN bus line, for breakage and a CAN bus main line for open circuit by measuring the resistance value between a CAN_L line and H line.

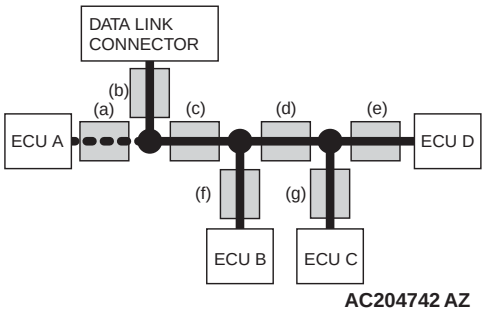
NORMAL VALUE	MEASUREMENT VALUE	TROUBLE WHEN THE MEASUREMENT VALUE DOES NOT MEET THE NORMAL VALUE	NOTE
60 ± 10 Ω	120 ± 20 Ω	Trouble in a CAN main bus line or terminator resistor	If only one terminator resistor is broken at either side, the CAN communication will continue although noise suppression is deteriorated. If a CAN main bus line is open circuit, the CAN communication is suspended at that open circuit point.
	No continuity	Trouble in CAN main bus line or between the data link connector and main bus line	–
	2 ohms or less	CAN bus line (between CAN_L and H lines) is shorted	If a CAN bus line is shorted, all ECUs cease communicating each other (This fail-safe function is called "Bus off").
	Other than above	Poorly engaged connector	–

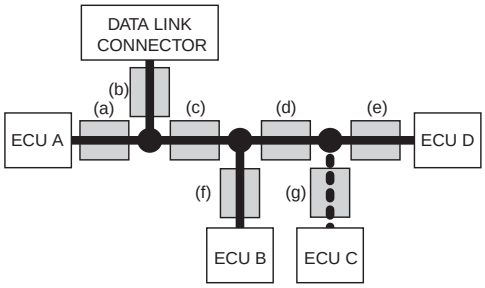
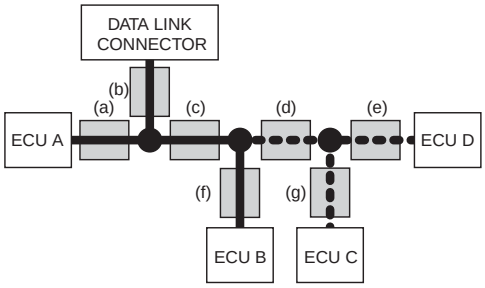
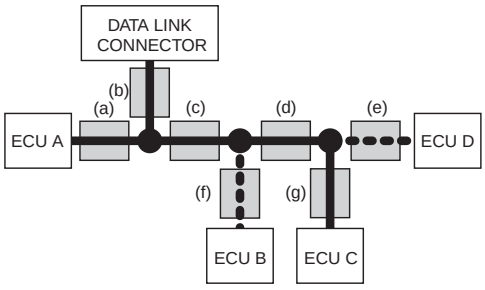
(3) Checking the communication condition of ECUs
The MUT-III narrows down troubles in circuit by itself. Its strategy is as follows:

REFERENCE CIRCUIT



AC204741 AC

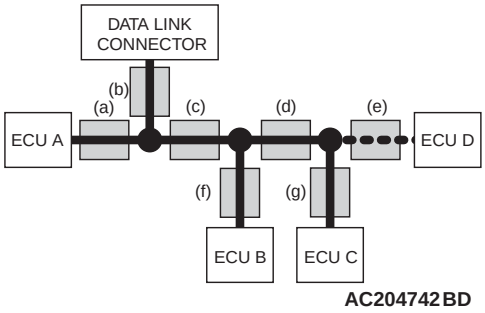
ECU WHICH CAN NOT COMMUNICATE WITH THE MUT-III	POSSIBLE TROUBLE SPOT	LOGIC FOR DETERMINING DOWN TROUBLE SPOT	
ECU A	CAN bus line (a) and power supply system to ECU A	ECU A communicates with the MUT-III via CAN bus lines (a) and (b). The MUT-III judges that CAN bus line (b) is normal, because it can communicate with other ECUs. Possible trouble may be present in CAN bus line (a) or the power supply system to ECU A.	 AC204742 AZ

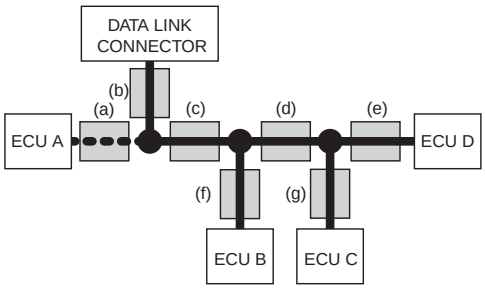
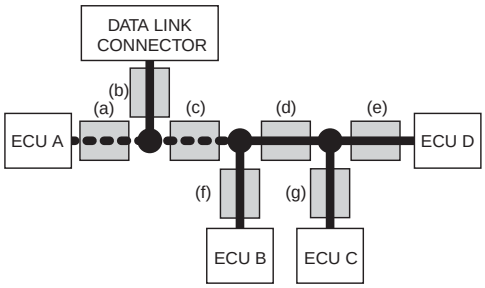
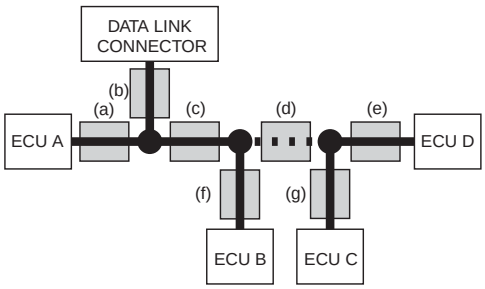
ECU WHICH CAN NOT COMMUNICATE WITH THE MUT-III	POSSIBLE TROUBLE SPOT	LOGIC FOR DETERMINING DOWN TROUBLE SPOT	
ECU C	CAN bus line (g) and power supply system to ECU C	ECU C communicates with the MUT-III via CAN bus lines (b), (c), (d) and (g). The MUT-III judges that CAN bus lines (b), (c) and (d) are 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.	 AC204742BA
ECU C and ECU D	Trouble in CAN bus line (d)	ECUs C and D communicate with the MUT-III via CAN bus lines (b), (c), (d), (e) and (g). The MUT-III 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 D. CAN bus line (d) is shared by ECUs C and D when they communicate with the MUT-III, 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.	 AC204742BB
ECU B and ECU D	CAN bus line (e) or (f) or power supply system to ECU B or D	ECUs C and D communicate with the MUT-III via CAN bus lines (b), (c), (d), (e) and (g). The MUT-III judges that CAN bus lines (b), (c) and (d) are normal, because it can communicate with ECU C. Possible trouble may be present in CAN bus line (f) or (e) or the power supply system to ECU B or D.	 AC204742BC

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

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

DTC CODE TO BE SET	POSSIBLE TROUBLE SPOT	LOGIC FOR DETERMINING TROUBLE SPOT	
Time-out DTC 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 DTC code associated with ECU D is stored in ECU A, B and C, or time-out DTC code associated with ECUs A, B and C is stored in ECU D, or "bus off" DTC code is stored in ECU D, CAN bus line (e) is suspected. When DTC code is not stored in ECU D, the power supply to ECU D is suspected.	 AC204742BD
Time-out DTC code associated with ECUs A, B and C is stored in ECU D			
"Bus off" DTC code is stored in ECU D			

DTC CODE TO BE SET	POSSIBLE TROUBLE SPOT	LOGIC FOR DETERMINING TROUBLE SPOT	
Time-out DTC code associated with ECU A is stored in ECUs B, C and D Time-out DTC code associated with ECUs B, C and D is stored in ECU A "Bus off" DTC code is stored in ECU A	Trouble in CAN bus line (a) and power supply system to ECU A	When time-out DTC code associated with ECU A is stored in ECUs B, C and D, or time-out DTC code associated with ECUs B, C and D is stored in ECU A, or "bus off" DTC code is stored in ECU A, CAN bus line (a) or (c) is suspected. When DTC code is not stored in ECU A, the power supply to ECU A is suspected.	 AC204742 BE  AC204742 BF
Time-out DTC codes associated with ECUs C and D are stored in ECU A and ECU B Time-out DTC codes associated with ECUs A and B are stored in ECU C and ECU D	Trouble in CAN bus line (d)	If time-out DTC 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.	 AC204742 BG

DIAGNOSTIC TROUBLE CODE DIAGNOSIS

M1548304500025

ON-BOARD DIAGNOSTICS

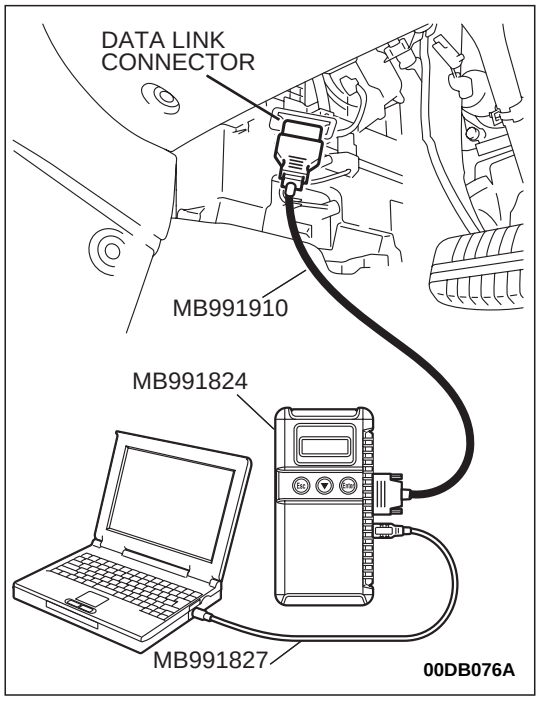
The CAN is a communication method which the ECUs use in order to communicate each other. The CAN-related diagnostic trouble codes will be stored in the following ECUs, which use the CAN communication.

- Engine ECU
- A/T ECU
- ABS-ECU
- ETACS-ECU
- A/C-ECU
- SRS-ECU
- Combination meter
- Multi-center display

HOW TO CONNECT THE DIAGNOSTIC TOOL (MUT-III)

Required Special Tools:

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



⚠ CAUTION

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

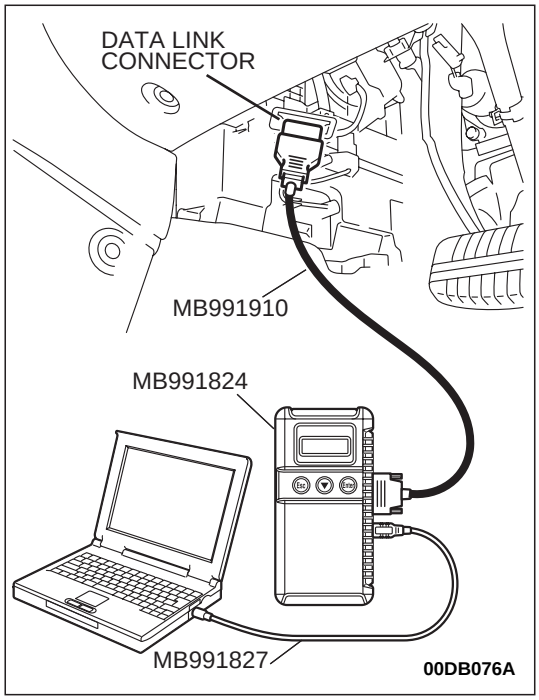
   NOTE: When special tool MB991824 is energised, special tool MB991824 indicator lamp will be illuminated in a green color.
7. Start the MUT-III system on the personal computer.

NOTE: Disconnecting diagnostic 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: Diagnostic Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A



⚠ CAUTION

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

1. Connect diagnostic 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

M1548300200055

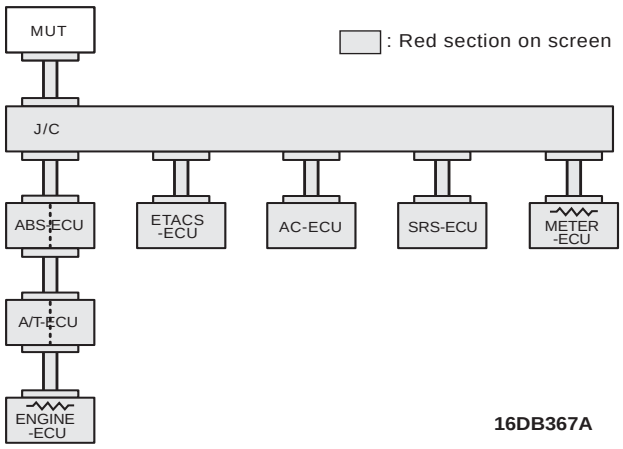
This diagnosis applies only to the CAN bus lines. If a different system is defective, proceed to the applicable diagnosis section for each system. Observe the diagnosis procedure below only when the CAN bus line is defective.

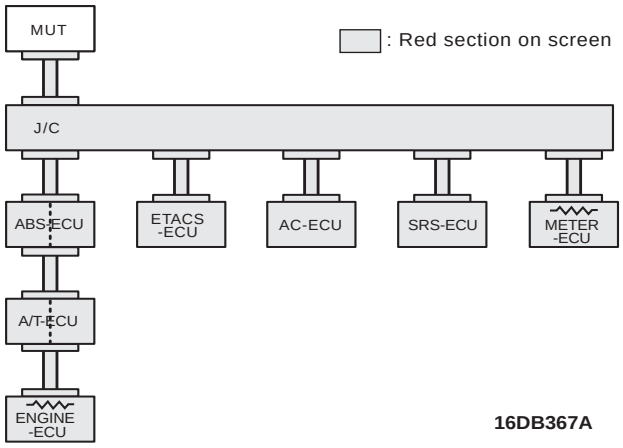
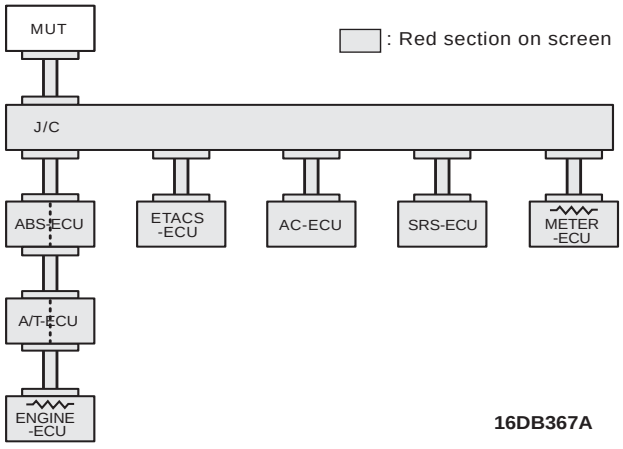
⚠ CAUTION

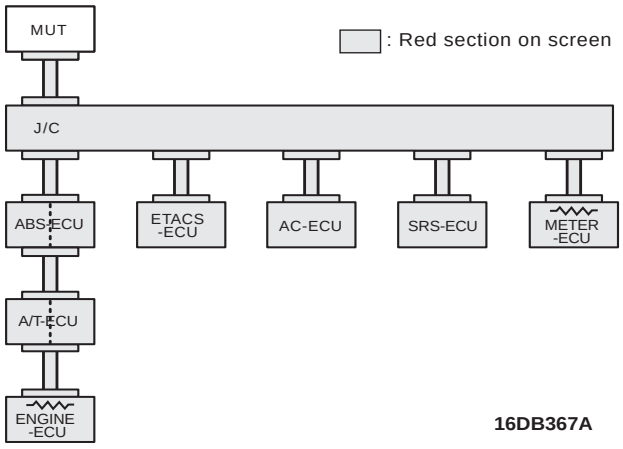
During diagnosis, a DTC code associated with another system may be set when the ignition switch is turned on with connector(s) disconnected. After completing the repair, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

NOTE: all screens below appear with vehicles incorporating automatic transmisssion ECU, therefore when diagnosing can bus on vehicles with manual transmission (M/T), the A/T ECU will not be displayed on screens.

Vehicles without multi-center display

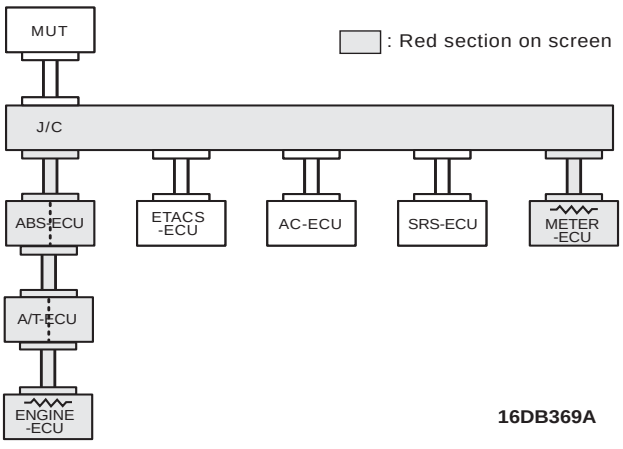
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Short circuit to battery in red displayed area is estimated.  	Diagnostic Item 1 Diagnose shorts in the power supply to CAN bus line <Vehicles without multi-center display >	P.54C-31

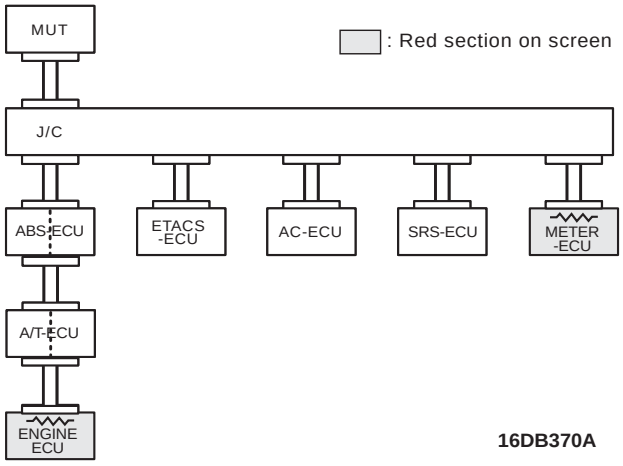
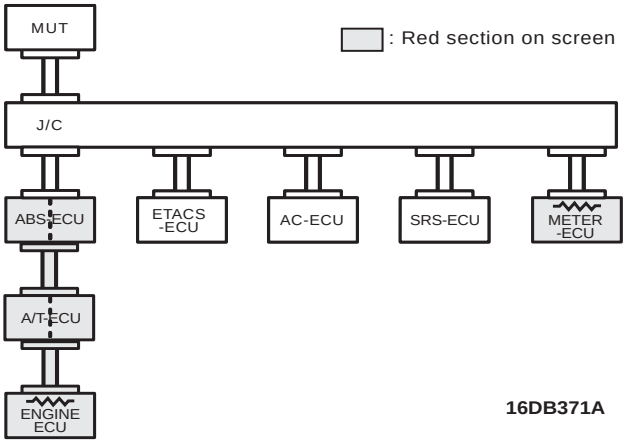
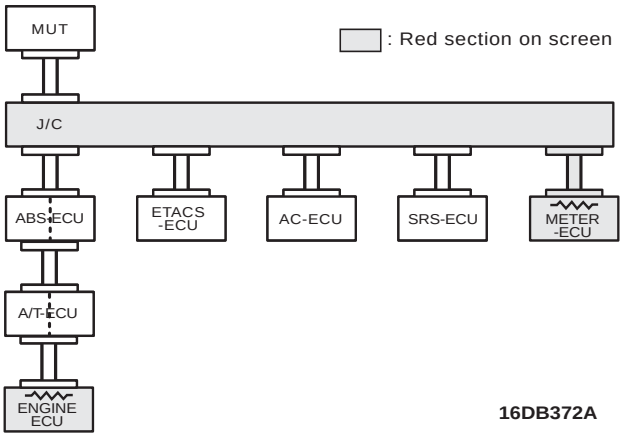
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Grounding in red displayed area is estimated.  	Diagnostic Item 3 Diagnose shorts in the ground to CAN bus line <Vehicles without multi-center display >	P.54C-134
<Comment> Short circuit between CAN_H and CAN_L in red displayed area is estimated.  	Diagnostic Item 5 Diagnose shorts between CAN_L and H lines <Vehicles without multi-center display >	P.54C-239

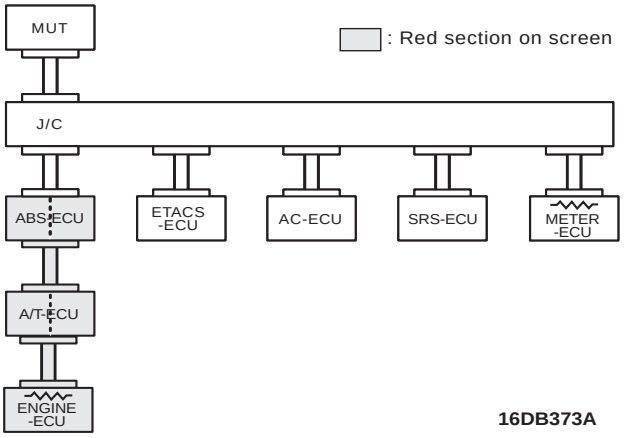
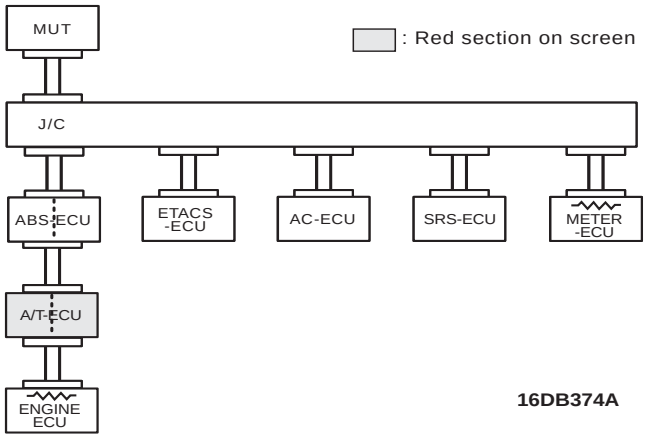
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Malfunction in red displayed area is estimated. Please refer to service manual and inspect with 'CAN Detail Diagnosis'. 	Diagnostic Item 8 Diagnose CAN bus lines thoroughly <Vehicles without multi-center display >	P.54C-323

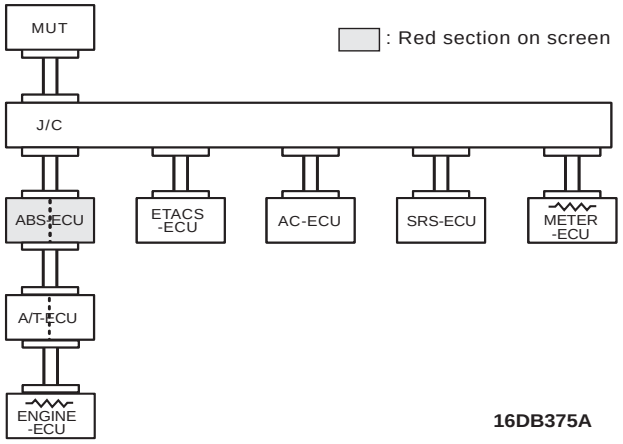
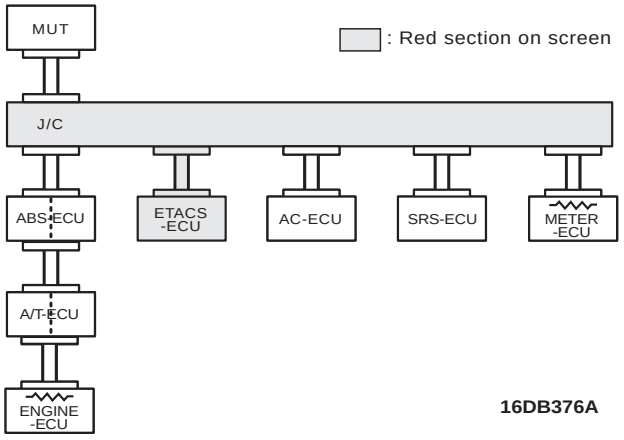
NOTE: If the screen other than above is displayed, problems are present at two or more spots. In this case, diagnose CAN bus lines by referring to the trouble spot pinpoint procedures.

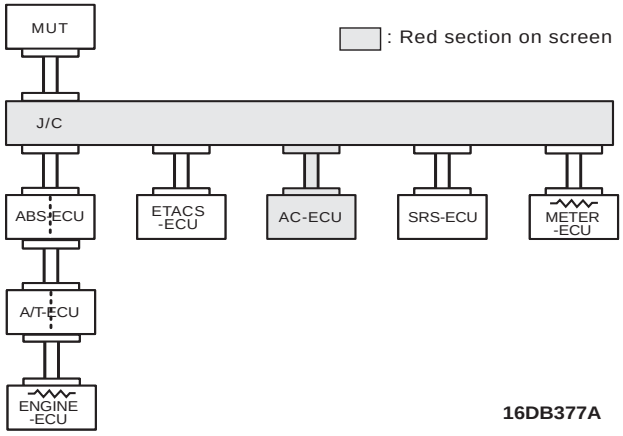
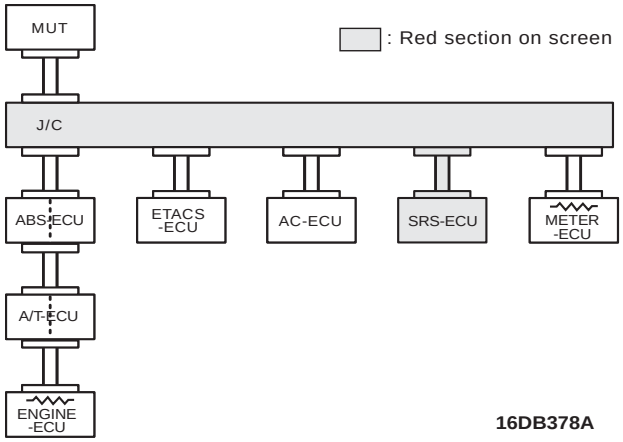
NOTE: If trouble cannot be solved after performing the diagnosis other than item 14, diagnose CAN bus line thoroughly.

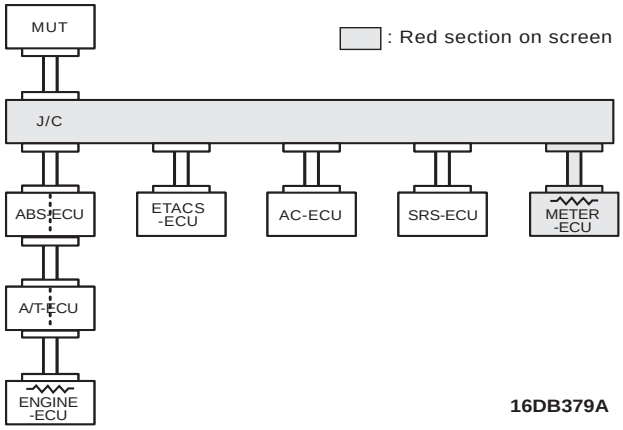
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Disconnection in red displayed area is estimated. 	Diagnostic Item 6 Diagnose terminator resistors at both ends.	P.54C-273

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Malfunction of terminating resistance is estimated.  	Diagnostic Item 7 Diagnose a terminator resistor at either end.	P.54C-301
<Comment> Disconnection, loose connection or terminating resistance in red displayed area is estimated.  		
<Comment> Disconnection, loose connection or terminating resistance in red displayed area is estimated.  		

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 9 Diagnose the lines between CAN main bus line and the Engine ECU.	P.54C-367
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 12 Diagnose the lines between CAN main bus line and the A/T-ECU.	P.54C-373

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 11 Diagnose the lines between CAN main bus line and the ABS-ECU.	P.54C-378
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 14 Diagnose the lines between CAN main bus line and the ETACS-ECU.	P.54C-385

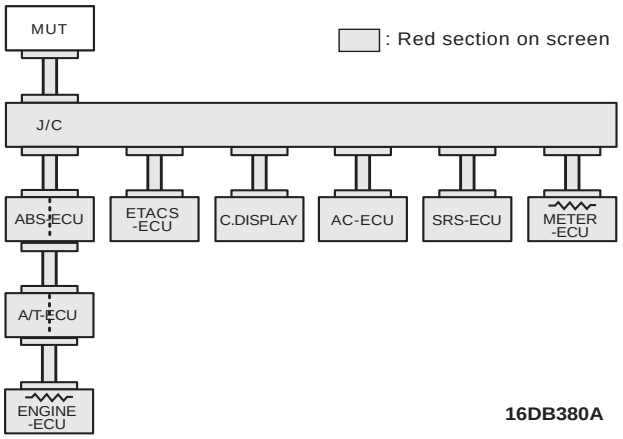
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 16 Diagnose the lines between CAN main bus line and the A/C-ECU.	P.54C-393
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 15 Diagnose the lines between CAN main bus line and the SRS-ECU.	P.54C-397

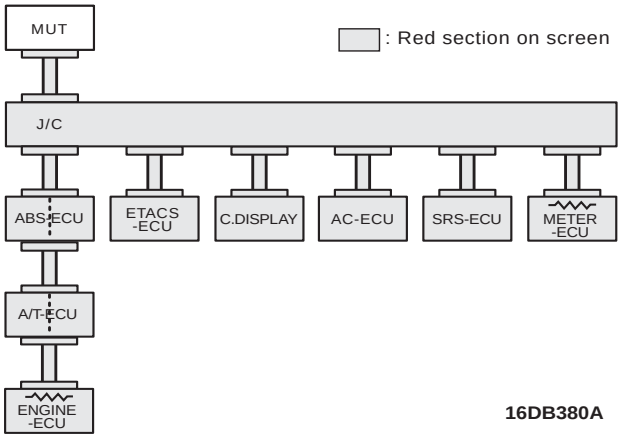
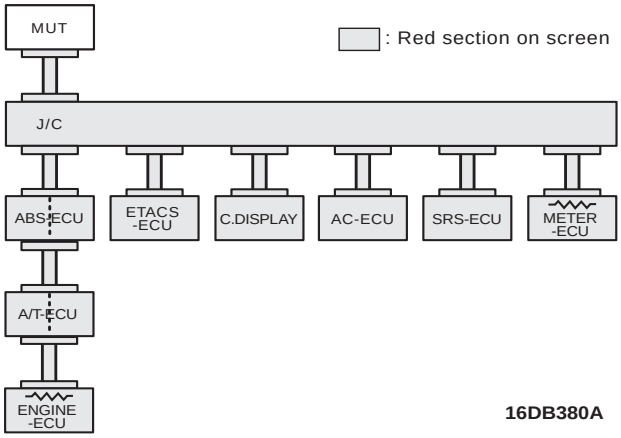
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated.  	Diagnostic Item 16 Diagnose the lines between CAN main bus line and the combination meter.	P.54C-402

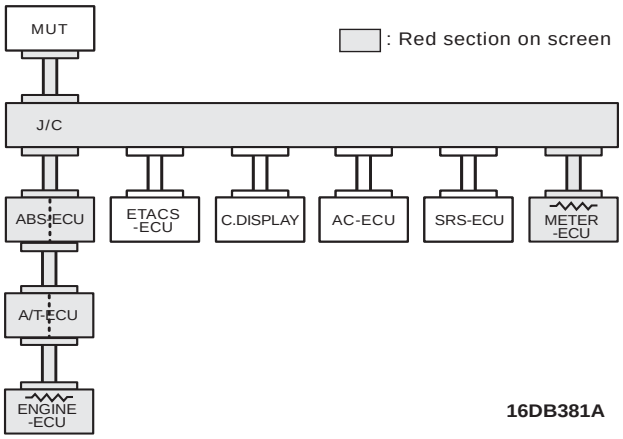
NOTE: If the screen other than above is displayed, troubles are present at two or more spots. In this case, diagnose CAN bus lines by referring to the trouble spot pinpoint procedures.

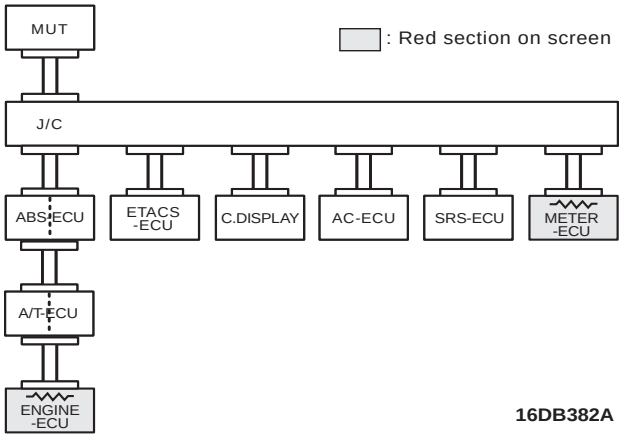
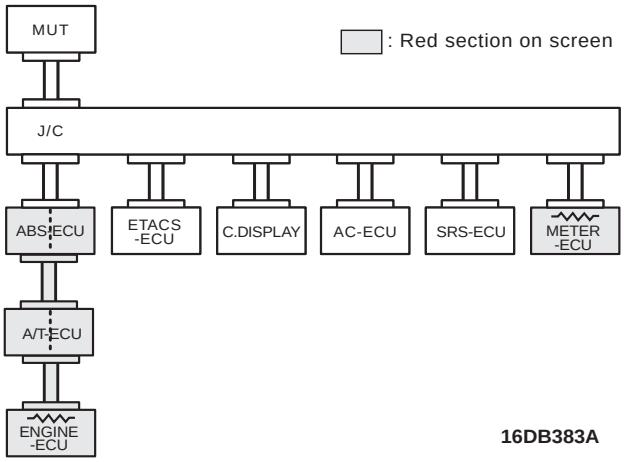
NOTE: If a trouble cannot be solved after performing the diagnosis other than item 15, diagnose CAN bus line thoroughly.

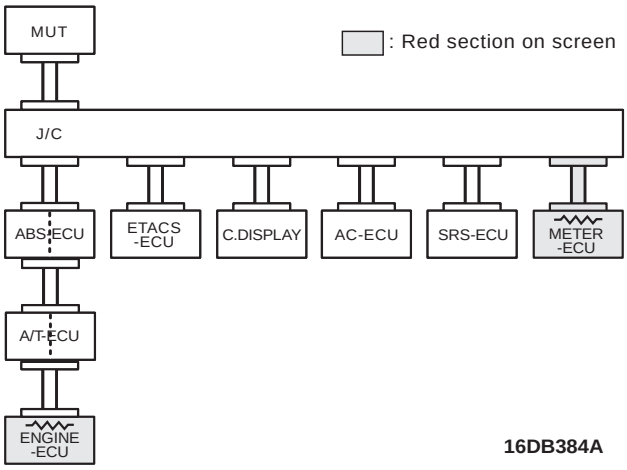
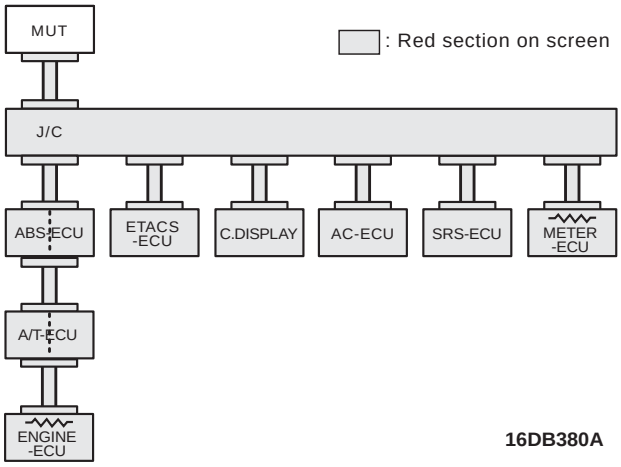
Vehicles with multi-center display

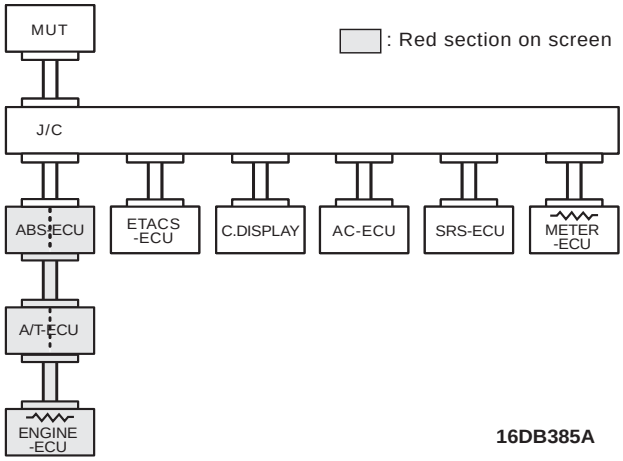
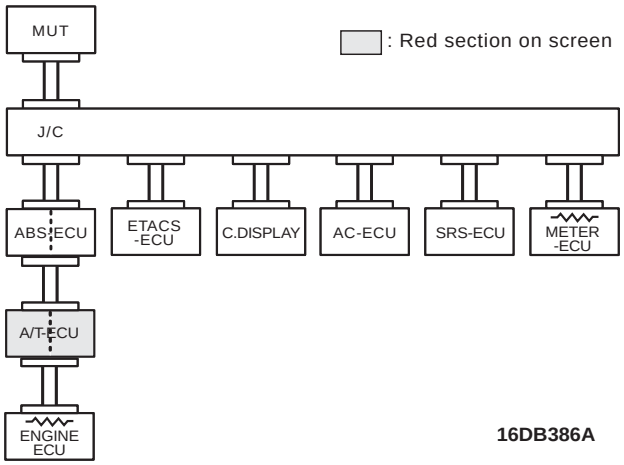
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Short circuit to battery in red displayed area is estimated.  	Diagnostic Item 2 Diagnose shorts in the power supply to CAN bus line <Vehicles with multi-center display >	P.54C-81

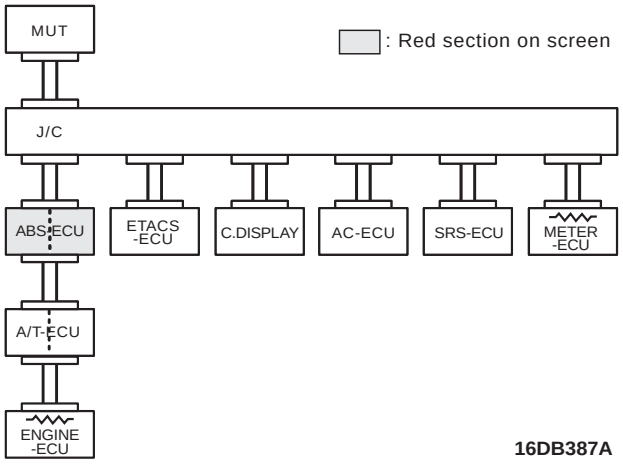
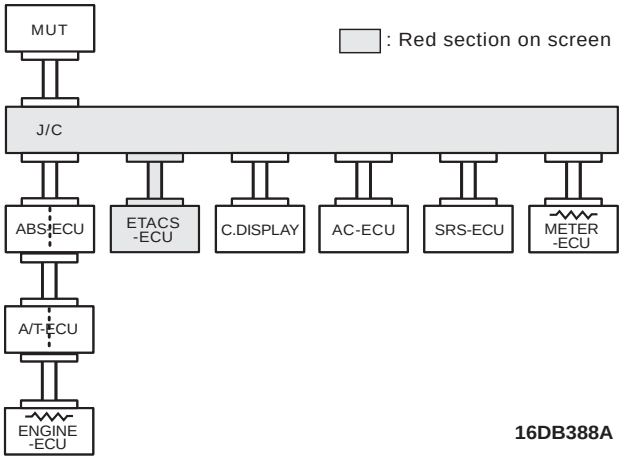
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Grounding in red displayed area is estimated.  	Diagnostic Item 4 Diagnose shorts in the ground to CAN bus line <Vehicles with multi-center display >	P.54C-184
<Comment> Short circuit between CAN_H and CAN_L in red displayed area is estimated.  	Diagnostic Item 5 Diagnose shorts between CAN_L and H lines <Vehicles with multi-center display >	P.54C-239

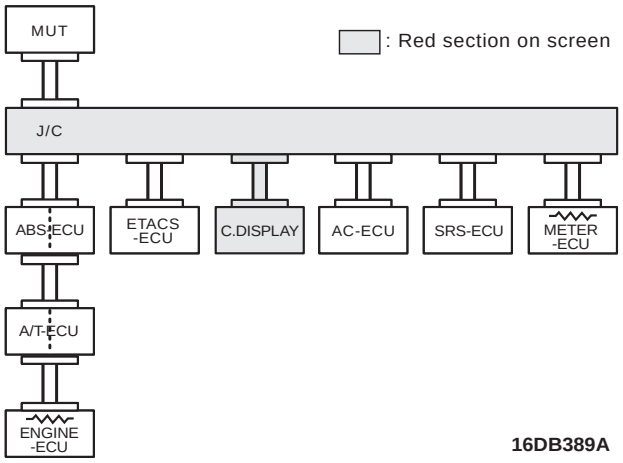
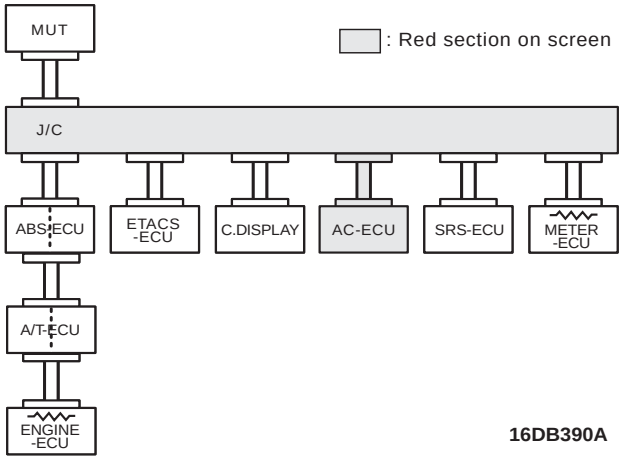
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Disconnection in red displayed area is estimated.  	Diagnostic Item 6 Diagnose terminator resistors at both ends <Vehicles with multi-center display >	P.54C-273

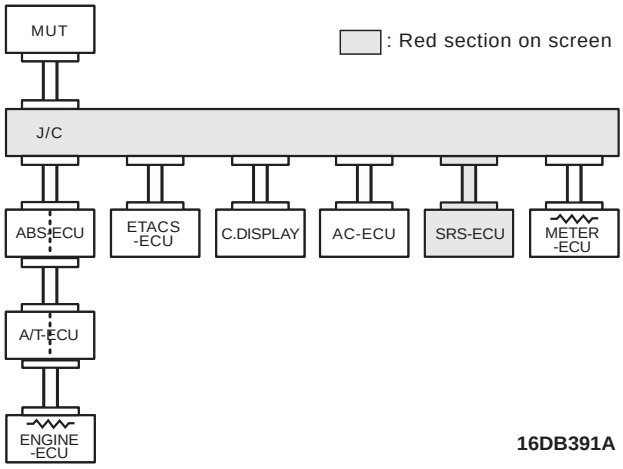
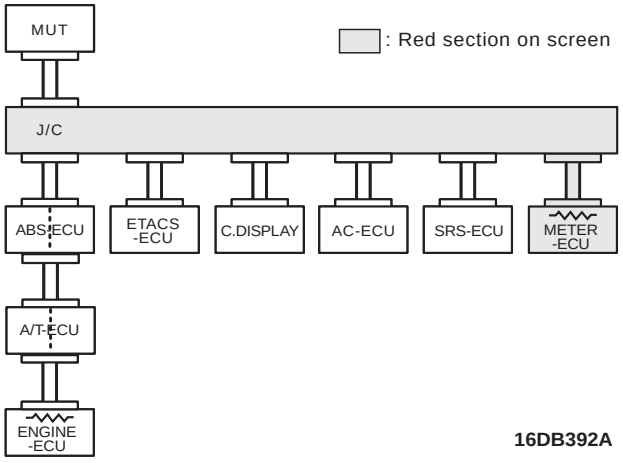
MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Malfunction of terminating resistance is estimated.  	Diagnostic Item 7 Diagnose a terminator resistor at either end <Vehicles with multi-center display >	P.54C-301
<Comment> Disconnection, loose connection or terminating resistance in red displayed area is estimated.  		

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Disconnection, loose connection or terminating resistance in red displayed area is estimated.  	Diagnostic Item 7 Diagnose a terminator resistor at either end <Vehicles with multi-center display >	P.54C-301
<Comment> Malfunction in red displayed area is estimated. Please refer to service manual and inspect with 'CAN Detail Diagnosis'.  	Diagnostic Item 8 Diagnose CAN bus lines thoroughly <Vehicles with multi-center display >	P.54C-323

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 9 Diagnose the lines between CAN main bus line and the Engine-ECU.	P.54C-367
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 12 Diagnose the lines between CAN main bus line and the A/T-ECU.	P.54C-373

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated.  	Diagnostic Item 11 Diagnose the lines between CAN main bus line and the ABS-ECU.	P.54C-378
<Comment> Harness disconnection or loose connection in red displayed area is estimated.  	Diagnostic Item 14 Diagnose the lines between CAN main bus line and the ETACS-ECU.	P.54C-385

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 13 Diagnose the lines between CAN main bus line and the multi-center display	P.54C-389
<Comment> Harness disconnection or loose connection in red displayed area is estimated. 	Diagnostic Item 16 Diagnose the lines between CAN main bus line and the A/C-ECU.	P.54C-393

MUT-III SCREEN	DIAGNOSIS DETAILS	REFERENCE PAGE
<Comment> Harness disconnection or loose connection in red displayed area is estimated.  	Diagnostic Item 15 Diagnose the lines between CAN main bus line and the SRS-ECU.	P.54C-397
<Comment> Harness disconnection or loose connection in red displayed area is estimated.  	Diagnostic Item 16 Diagnose the lines between CAN main bus line and the combination meter.	P.54C-402

NOTE: If the screen other than above is displayed, troubles are present at two or more spots. In this case, diagnose CAN bus lines by referring to the trouble spot pinpoint procedures.

NOTE: If a trouble cannot be solved after performing the diagnosis other than item 16, diagnose CAN bus line thoroughly.

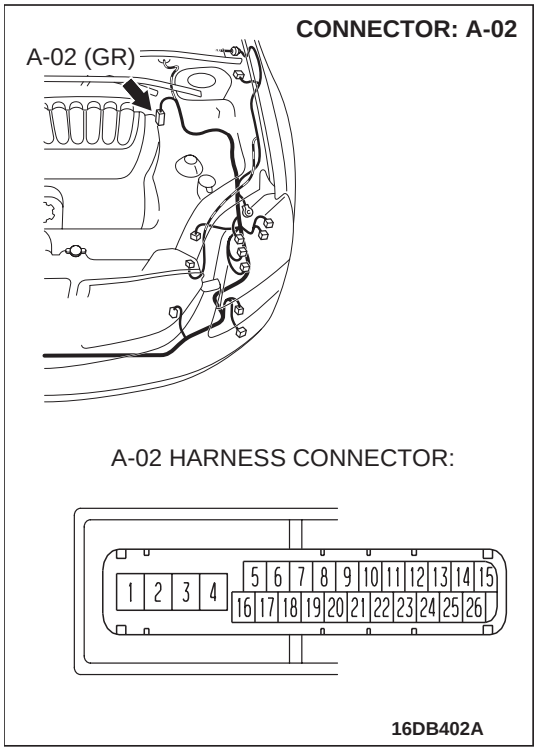
NOTE: all screens above appear with vehicles incorporating automatic transmisssion ECU, therefore when diagnosing can bus on vehicles with manual transmission (M/T), the A/T ECU will not be displayed on screens.

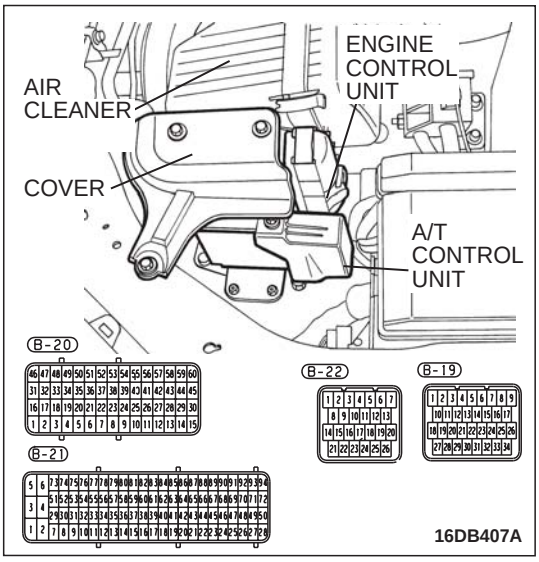
CAN BUS DIAGNOSTICS

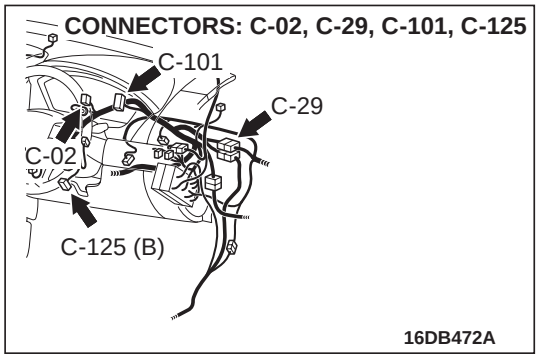
DIAGNOSTIC ITEM 1: Diagnose shorts in the power supply to CAN bus line <Vehicles without multi-center display >

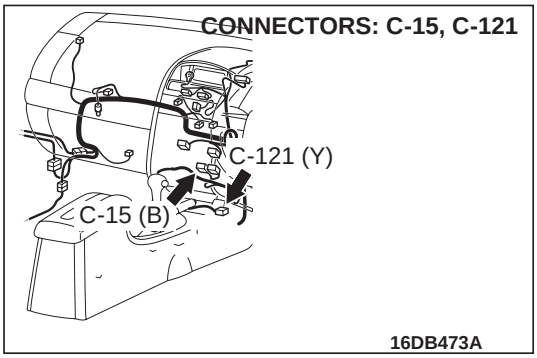
⚠ CAUTION

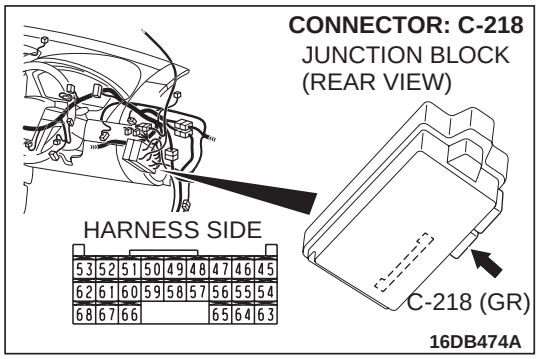
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.











TROUBLE JUDGMENT

A short to the power supply may be present when the voltage between the CAN bus line (CAN_L or CAN_H) and body ground is more than 4.0 V. In this condition, an abnormal voltage may be measured at CAN_L and CAN_H lines.

COMMENTS ON TROUBLE SYMPTOM

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

TROUBLESHOOTING HINTS

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective
- The combination meter may be defective
- The A/C-ECU may be defective
- The ABS-ECU may be defective
- The SRS-ECU may be defective
- The ENGINE-ECU may be defective
- The A/T-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991219: Inspection Test Harness

STEP 1. Check ENGINE-ECU connector B-21, combination meter connector C-101 and data link connector C-125 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

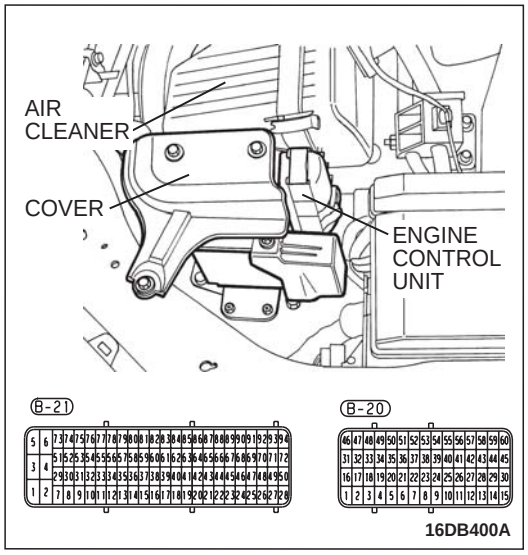
⚠ CAUTION

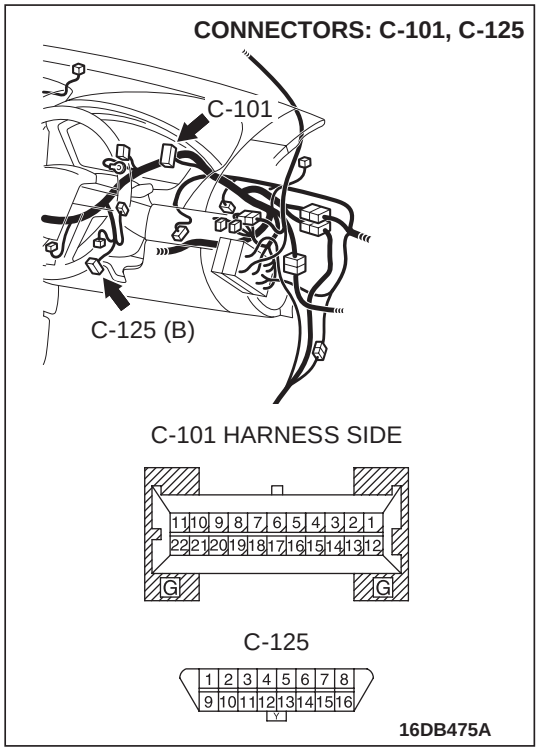
The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to P.54C-4.

Q: Are ENGINE-ECU connector B-21, combination meter connector C-101 and data link connector C-125 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.





STEP 2. Check the CAN_H-side bus line (communication line including ECUs) for a short to the power supply. Measure the voltage at data link connector C-125.

⚠ CAUTION

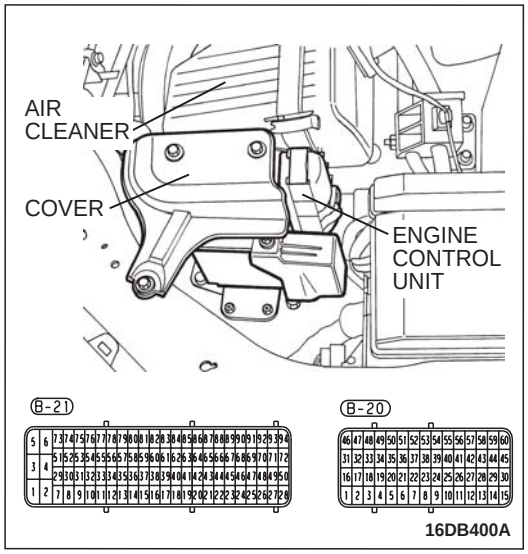
A digital multimeter should be used. For details refer to P.54C-4.

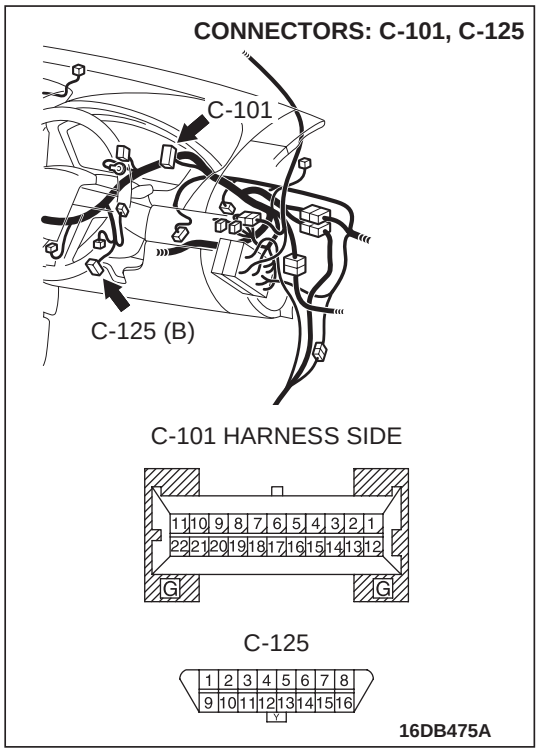
⚠ CAUTION

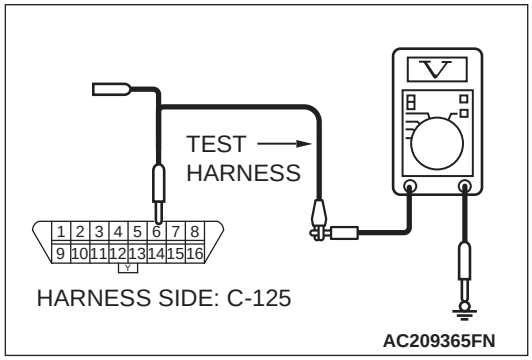
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ENGINE-ECU connector B-21 and combination meter connector C-101, and measure the voltage at the 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.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 3.
NO : If the voltage measures more than 4.0 V, go to Step 4.

STEP 3. Check the CAN_L-side bus line (communication line including ECUs) for a short to the power supply. Measure the voltage at data link connector C-125.

⚠ CAUTION

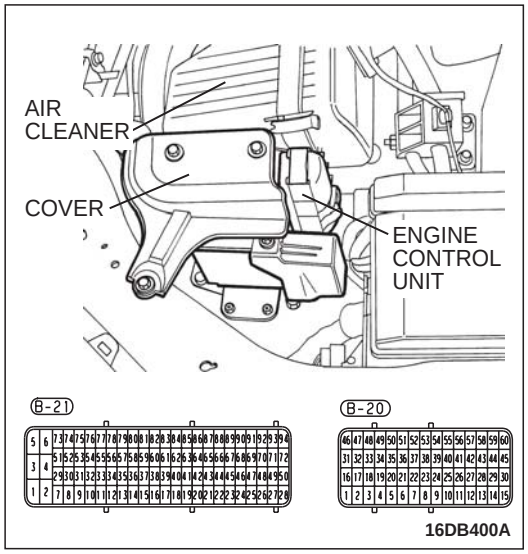
A digital multimeter should be used. For details refer to P.54C-4.

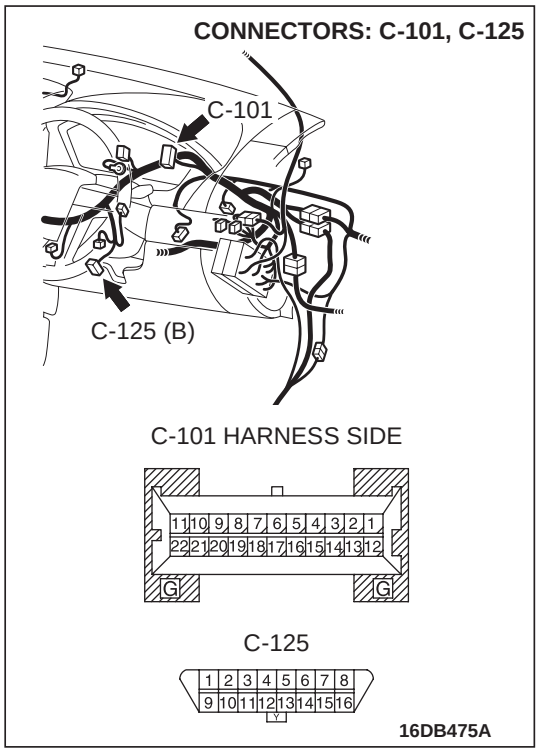
⚠ CAUTION

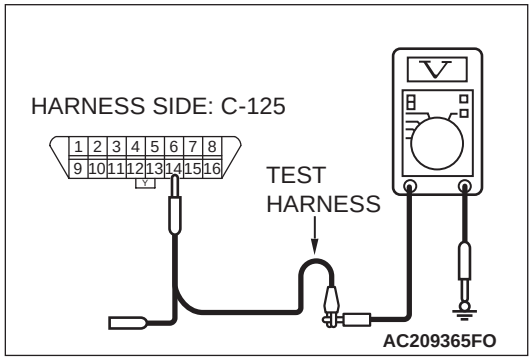
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ENGINE-ECU connector B-21 and combination meter connector C-101, and measure the voltage at the 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 14 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

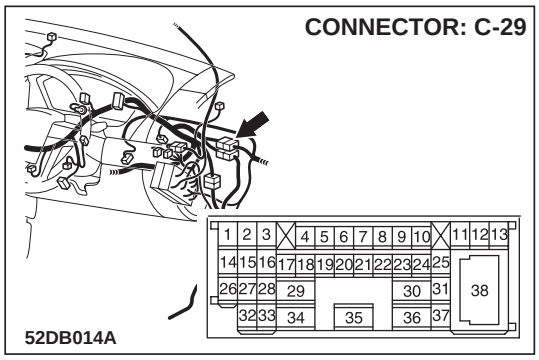
YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 4.0 V, go to Step 27.

STEP 4. Check intermediate 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-4.



Q: Is intermediate connector C-29 in good condition?

YES : Go to Step 5.

NO : Repair the damaged parts.

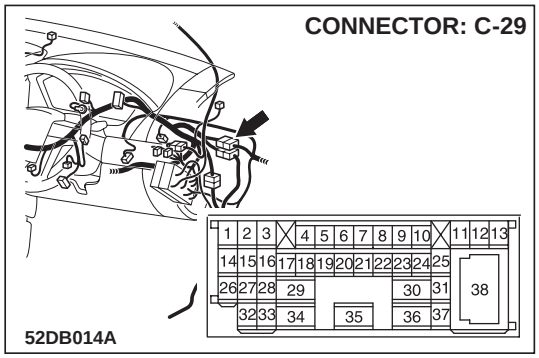
STEP 5. Check the CAN_H-side bus line (communication line including ECUs) of the front wiring harness for a short to the power supply. Measure the voltage at intermediate connector C-29.

⚠ CAUTION

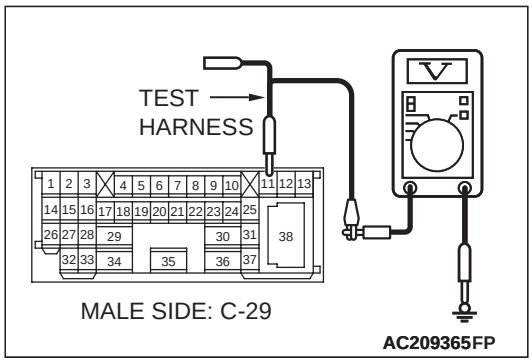
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect intermediate connector C-29, and measure the voltage at the male side (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between intermediate connector terminal 11 and body ground.

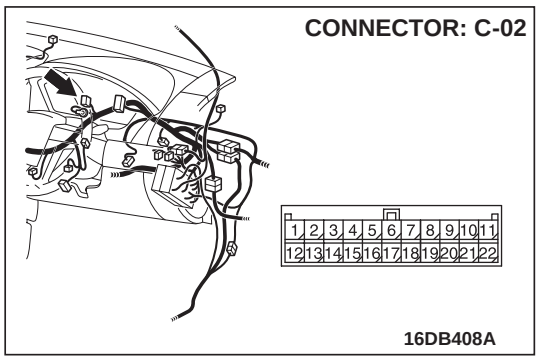
OK: 4.0 V or less

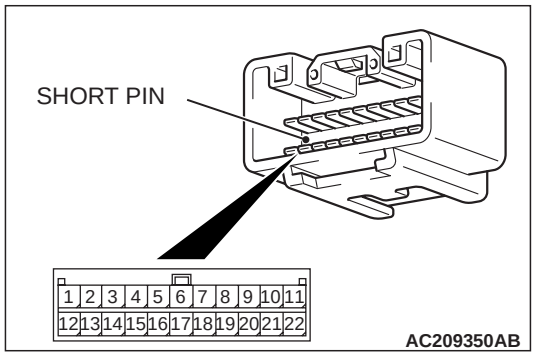
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 6.
NO : If the voltage measures more than 4.0 V, go to Step 23.

STEP 6. Check joint connector (3) C-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-4.





Check the joint connector at the wiring harness side for loose, corroded or damaged terminals, or terminals pushed back in the connector, and also check the short pin behind the connector for corrosion, deformation and delamination.

Q: Is joint connector (3) C-02 in good condition?

YES : Go to Step 7.

NO : Repair the damaged parts. Replace the joint connector as necessary.

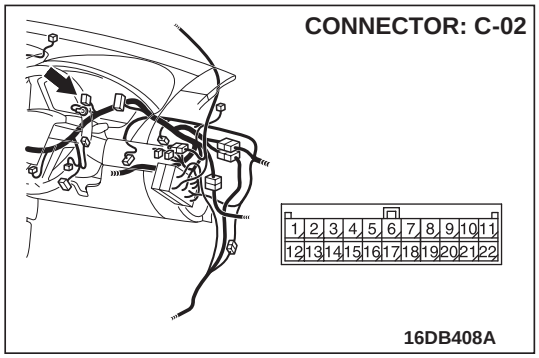
STEP 7. Check the CAN_H line (communication line including the combination meter) between joint connector (3) and the combination meter for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

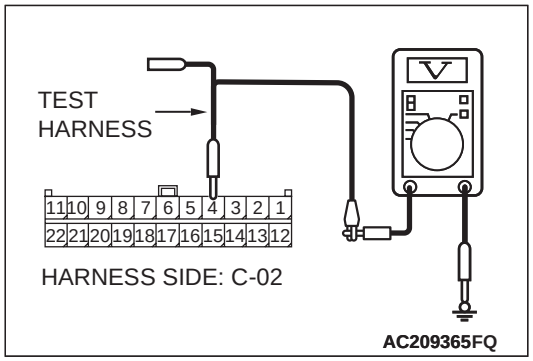
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 4 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 9.
NO : If the voltage measures more than 4.0 V, go to Step 8.

STEP 8. Check the CAN_H line (communication line only) between joint connector (3) and the combination meter connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

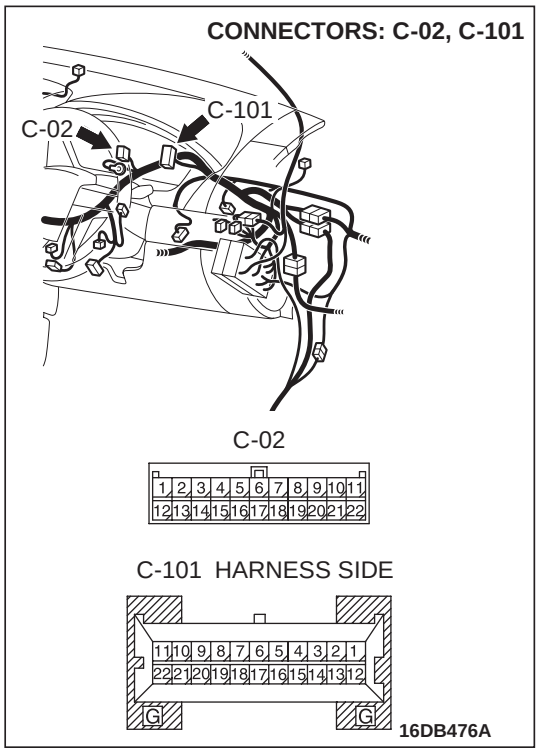
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

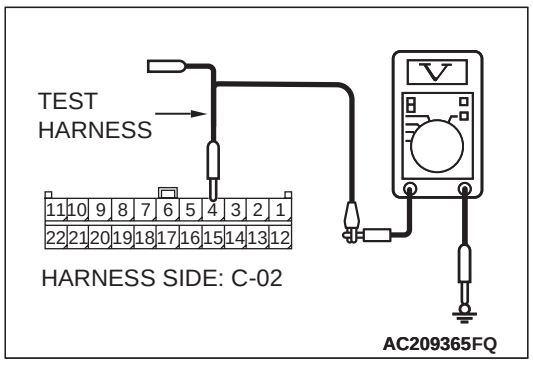
(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 4 and body ground.

OK: 1.0 V or less



⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the combination meter connector.

STEP 9. Check the CAN_H line (communication line including the ETACS-ECU) between joint connector (3) and the ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

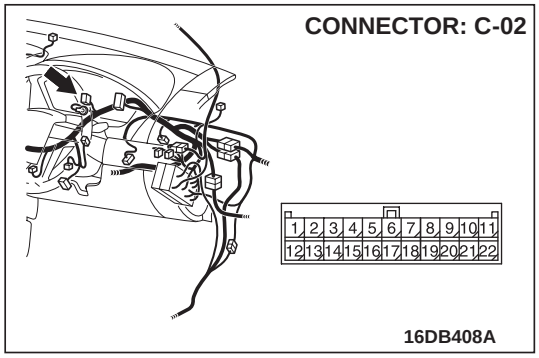
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

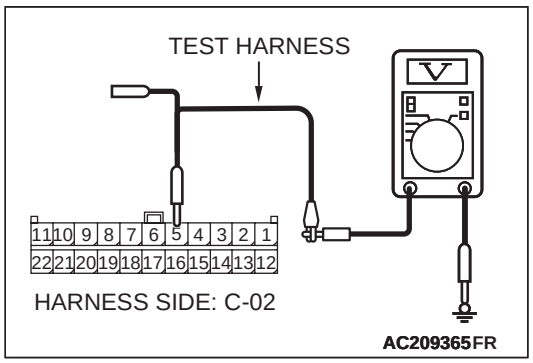
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 5 and body ground.

OK: 4.0 V or less

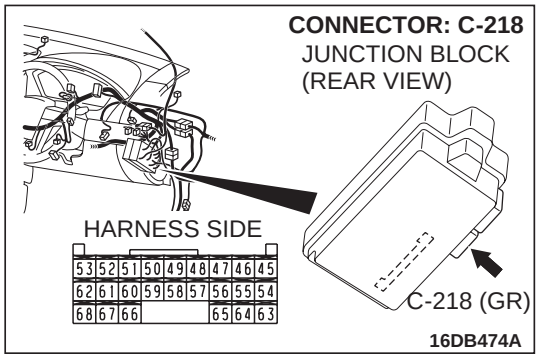
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 12.
NO : If the voltage measures more than 4.0 V, go to Step 10.

STEP 10. Check ETACS-ECU connector C-218 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-4.



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

YES : Go to Step 11.
NO : Repair the damaged parts.

STEP 11. Check the CAN_H line (communication line only) between joint connector (3) and ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

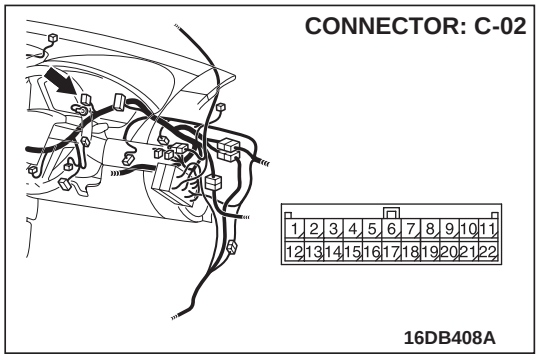
A digital multimeter should be used. For details refer to P.54C-4.

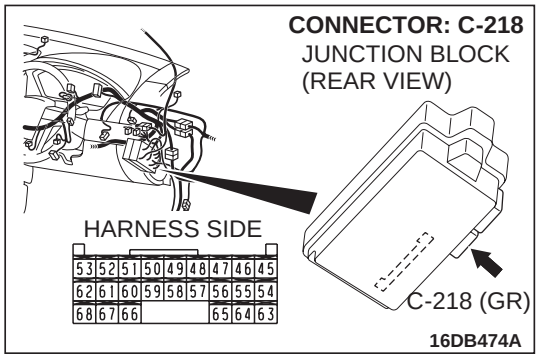
⚠ CAUTION

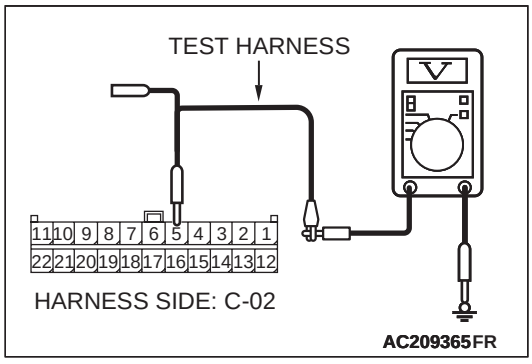
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and ETACS-ECU connector C-218, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 5 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the ETACS-ECU connector.

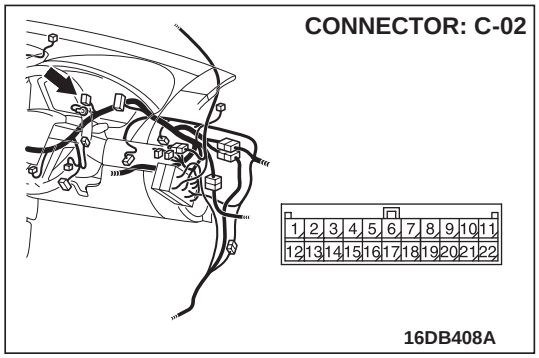
STEP 12. Check the CAN_H line (communication line including the A/C-ECU) between joint connector (3) and the A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

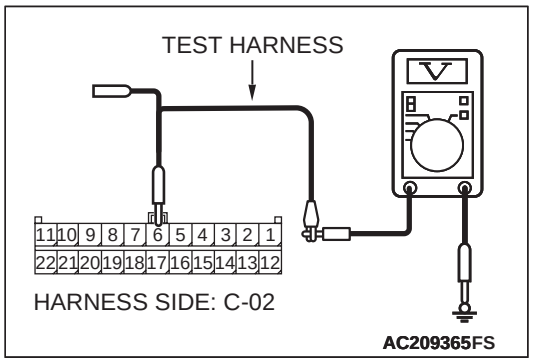
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



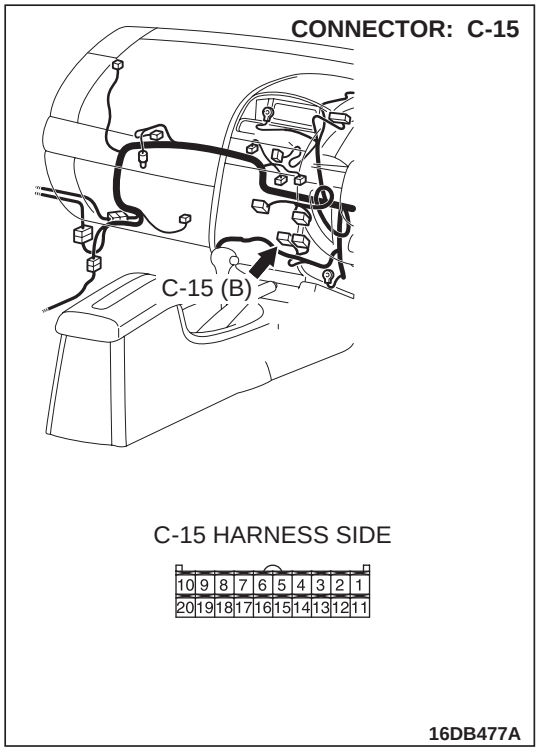
(3) Measure the voltage between joint connector (3) terminal 6 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 15.

NO : If the voltage measures more than 4.0 V, go to Step 13.



STEP 13. Check A/C-ECU connector C-15 automatic air conditioning system for loose, corroded or damaged terminals, or terminals pushed back in the connector.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

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

Q: Is A/C-ECU connector C-15 automatic air conditioning system in good condition?

YES : Go to Step 14.

NO : Repair the damaged parts.

STEP 14. Check the CAN_H line (communication line only) between joint connector (3) and A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

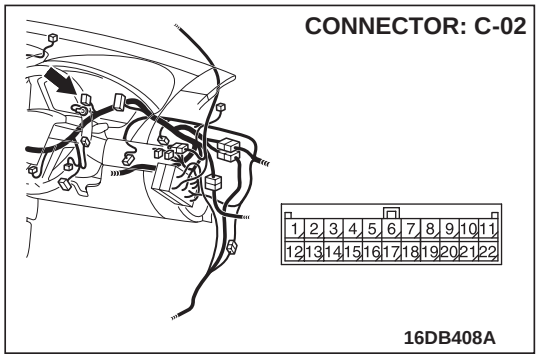
A digital multimeter should be used. For details refer to P.54C-4.

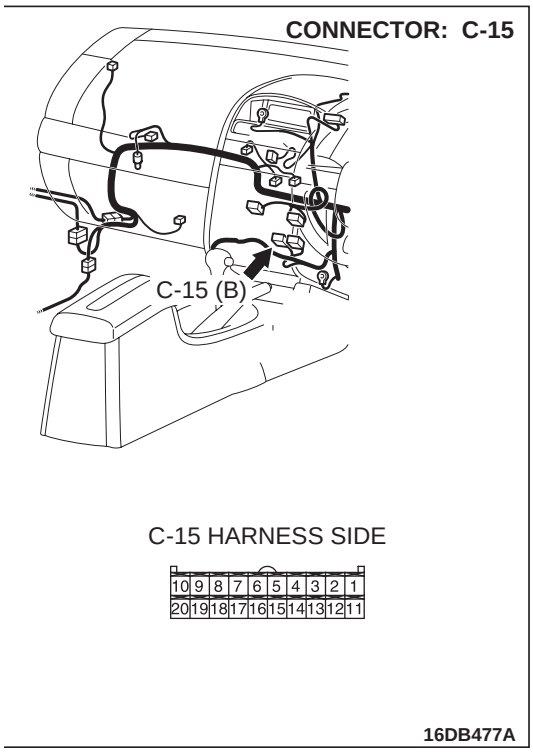
⚠ CAUTION

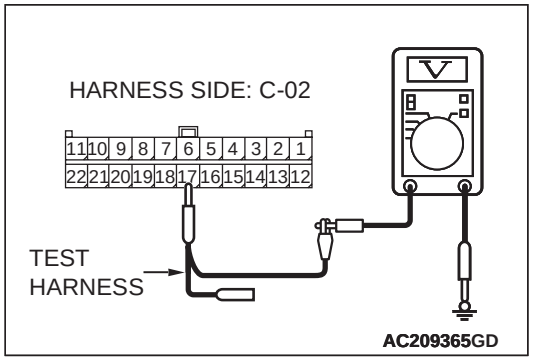
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 17 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the A/C-ECU connector.

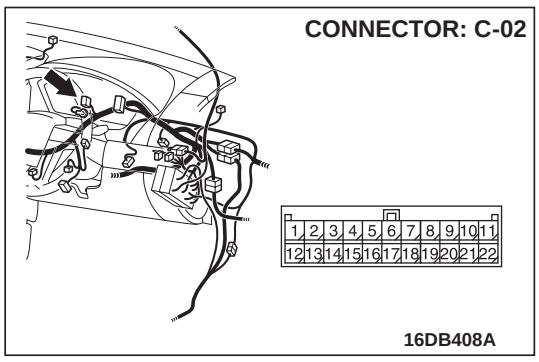
STEP 15. Check the CAN_H line (communication line including the SRS-ECU) between joint connector (3) and the SRS-ECU connector for short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

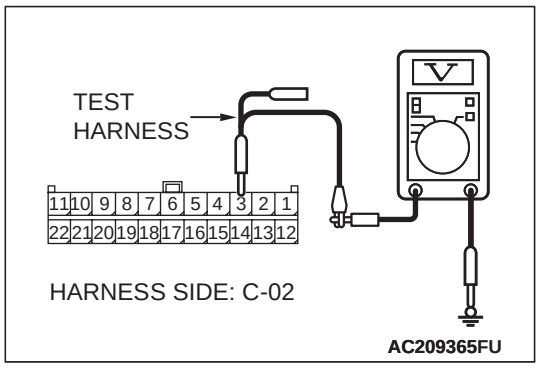
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 3 and body ground.

OK: 4.0 V or less

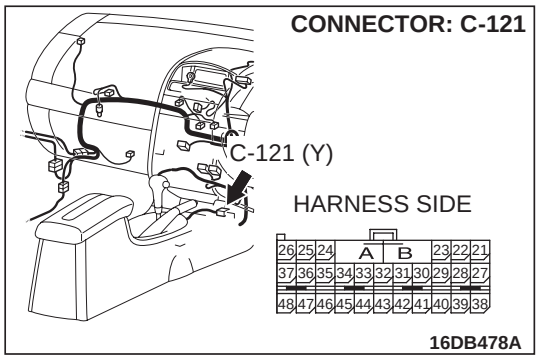
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 18.

NO : If the voltage measures more than 4.0 V, go to Step 16.

STEP 16. Check SRS-ECU connector C-121 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80



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

Q: Is SRS-ECU connector C-121 in good condition?

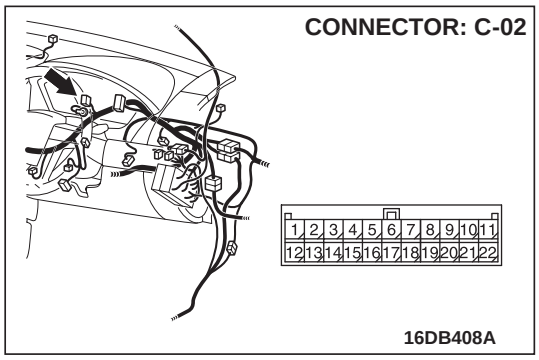
YES : Go to Step 17.
NO : Repair the damaged parts.

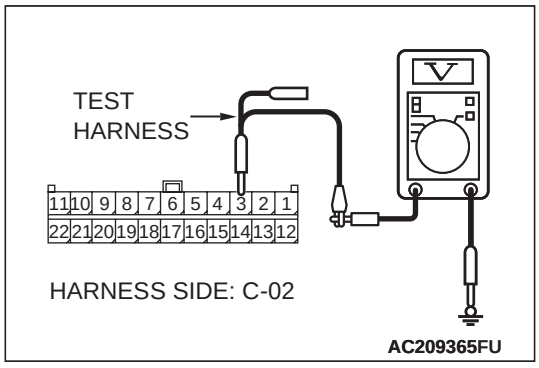
STEP 17. Check the CAN_ H line (communication line only) between the SRS-ECU connector and the joint connector for a short circuit. Measure the voltage at joint connector C-03.

⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector C-03 and SRS-ECU connector C-121, and measure the voltage at joint connector C-03.
(2) Turn the ignition switch to the "ON" position.





(3) Measure the voltage between joint connector terminal 3 and body ground.

OK: 1.0 V or less

⚠ CAUTION
Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector C-03 and SRS-ECU connector C-121.

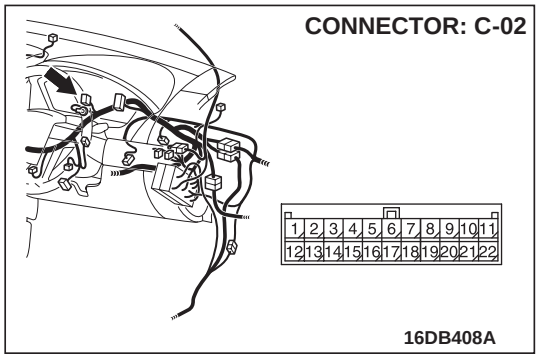
STEP 18. Check the CAN_H line (communication line only) between joint connector (3) and the data link connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

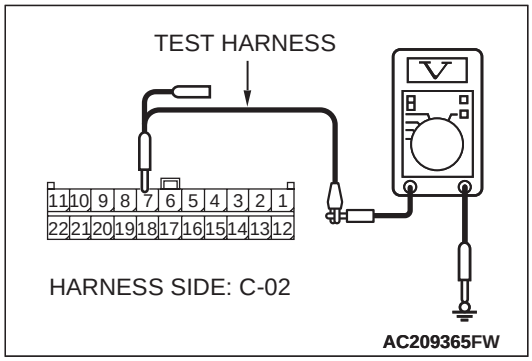
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 7 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 19.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the data link connector.

STEP 19. Check the CAN_H line (communication line only) between intermediate connector C-29 and joint connector (3) for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

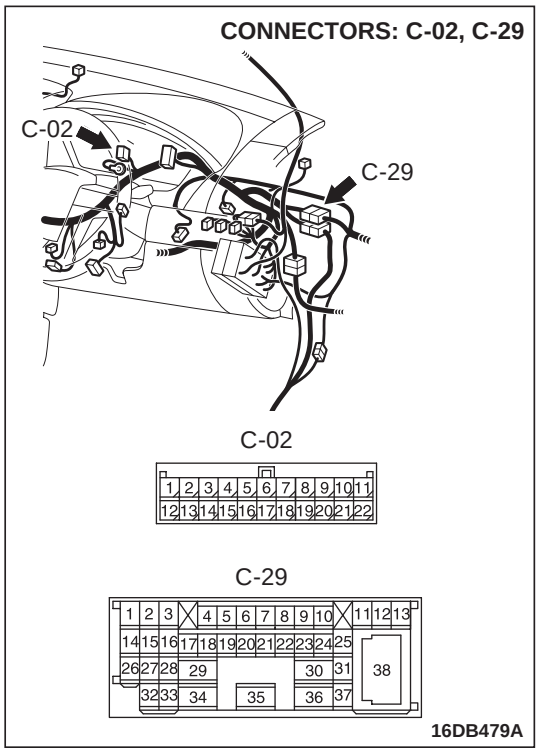
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

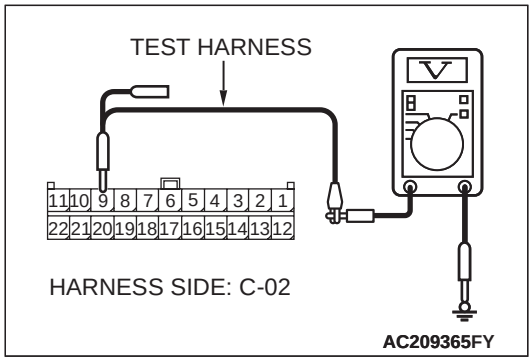
(1) Disconnect intermediate connector C-29 and joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 9 and body ground.

OK: 1.0 V or less



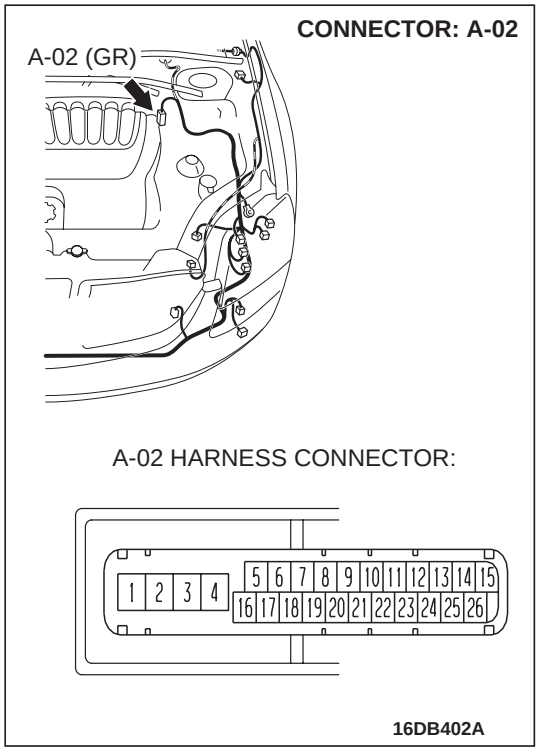
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and joint connector (3).



STEP 20. Check ABS-ECU connector A-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

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

Q: Is ABS-ECU connector A-02 in good condition?

YES : Go to Step 21.
NO : Repair the damaged parts.

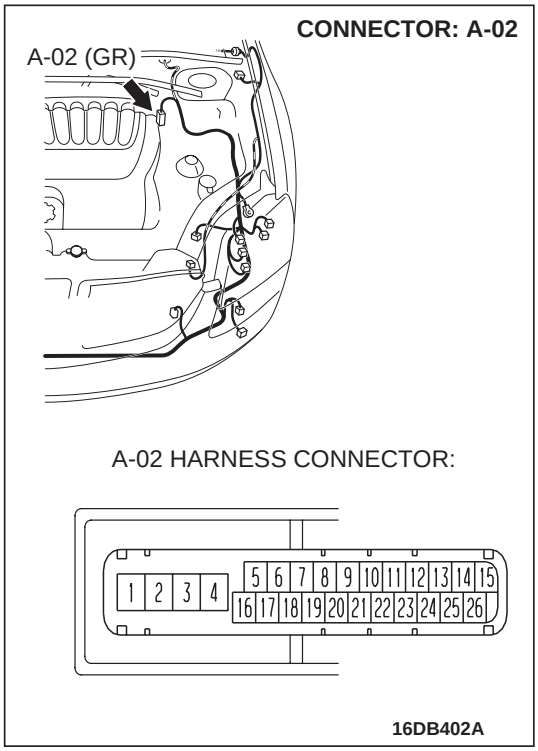
STEP 21. Check the CAN_H line (communication line only) between intermediate connector C-29 and ABS-ECU connector for a short to the power supply. Measure the voltage at intermediate connector C-29.

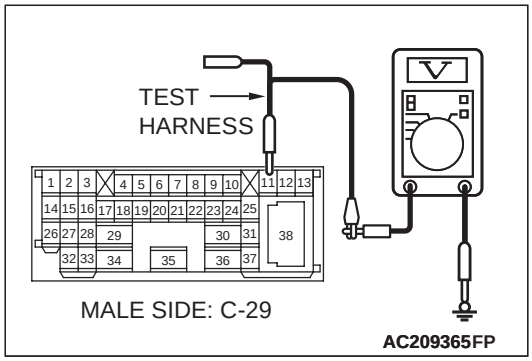
⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.





(1) Disconnect intermediate connector C-29 and ABS-ECU connector A-02, and measure the voltage at the male side of intermediate connector C-29 (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.

(3) Measure the voltage between intermediate connector terminal 11 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 22.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and ABS-ECU connector.

STEP 22. Check the CAN_H line (communication line only) between the A/T-ECU connector and ABS-ECU connector for a short to the power supply. Measure voltage at A/T-ECU connector B-19.

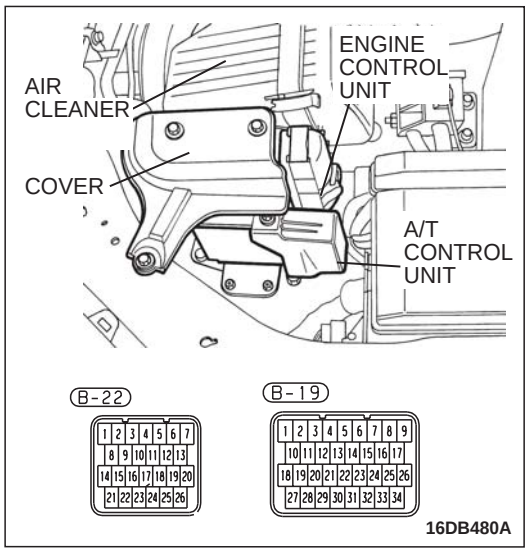
⚠ CAUTION

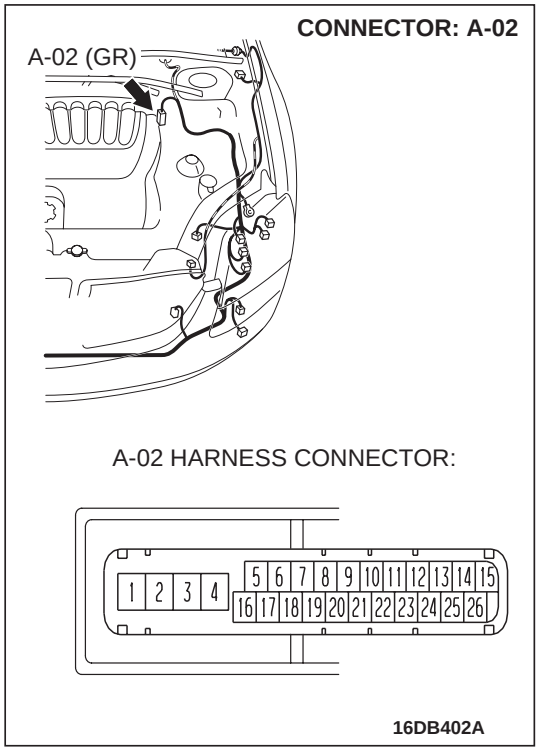
A digital multimeter should be used. For details refer to P.54C-4.

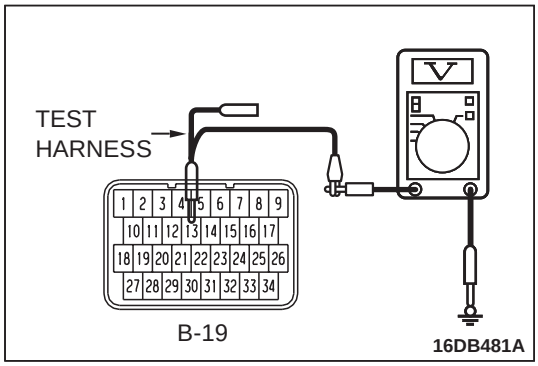
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect A/T-ECU connector B-19 and ABS-ECU connector A-02, and measure the voltage at the harness side of A/T-ECU connector B-19.
(2) Turn the ignition switch to the "ON" position.







(3) Measure the voltage between A/T-ECU connector terminal 13 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 23.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and ABS-ECU connector.

STEP 23. Check the CAN_H line inside the ABS-ECU for a short to the power supply. Measure the voltage at ABS-ECU connector A-02.

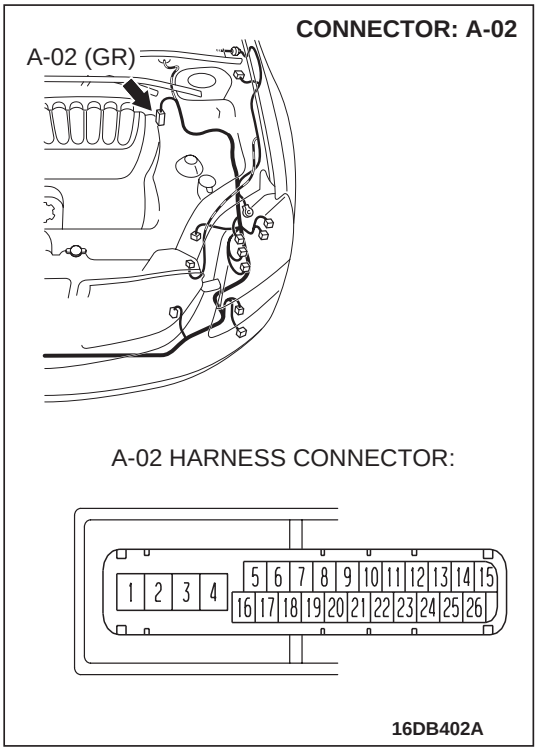
⚠ CAUTION

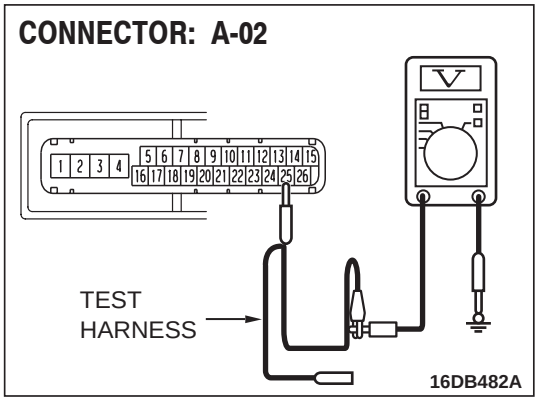
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ABS-ECU connector A-02.





(2) Measure the voltage using special tool MB991219 (Inspection test harness), by inserting probe into the wiring harness-side connector A-02.

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

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

(4) Measure the voltage between connector A-02 terminal 25 and body ground, using inspection test harness (MB991219).

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 24. Diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 4.0 V, replace the ABS-ECU.

STEP 24. Check the CAN_H line (communication line only) between the ENGINE-ECU connector and A/T-ECU connector for a short to the power supply. Measure voltage at ENGINE-ECU connector B-21.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

NOTE: ***When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.***

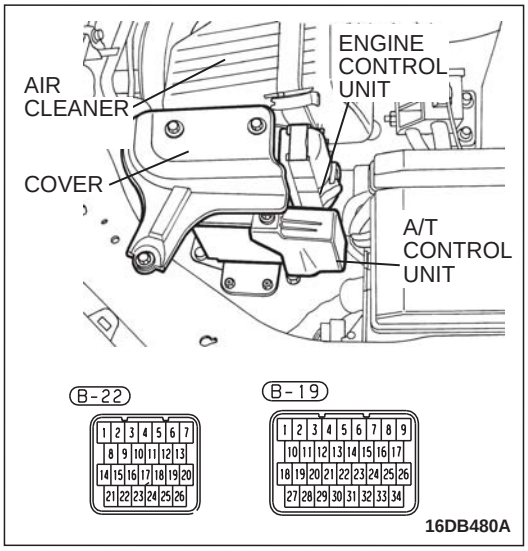
⚠ CAUTION

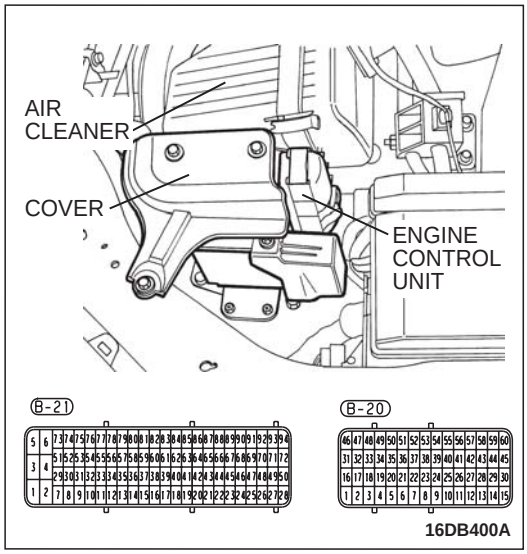
A digital multimeter should be used. For details refer to P.54C-4.

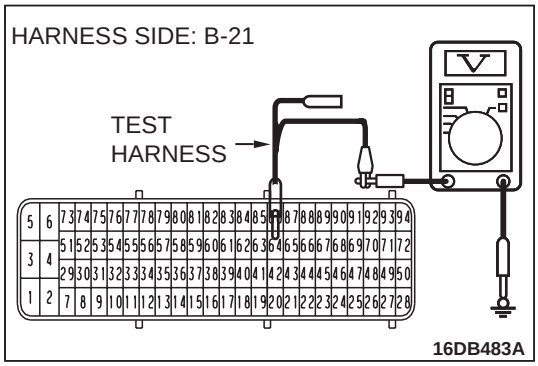
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ENGINE-ECU connector B-21 and A/T-ECU connector B-19, and measure the voltage at the harness side of ENGINE-ECU connector B-21.
(2) Turn the ignition switch to the "ON" position.







(3) Measure the voltage between ENGINE-ECU connector terminal 64 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 25.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and A/T-ECU connector.

STEP 25. Check the CAN_H line inside the A/T-ECU for a short to the power supply. Measure the voltage at A/T-ECU connector B-19.

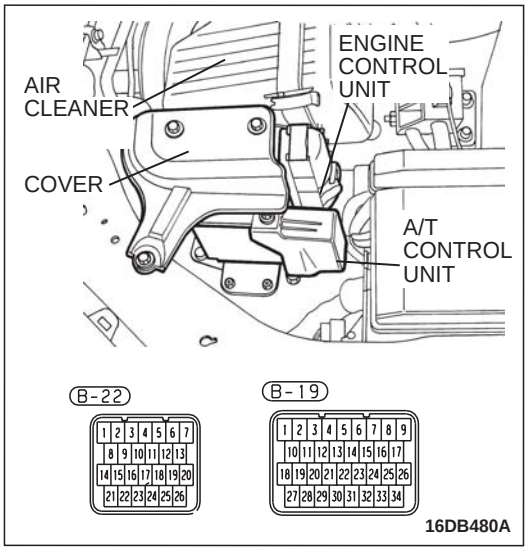
⚠ CAUTION

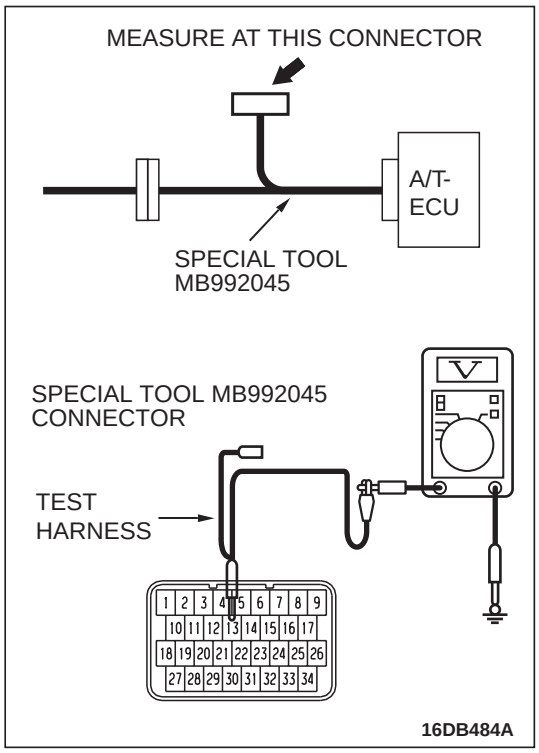
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect A/T-ECU connector B-19.





(2) Connect special tool MB992045 (A/T check harness) to the A/T-ECU and the wiring harness, and measure the voltage at special tool MB992045 (A/T check harness) connector B-19.
(3) Turn the ignition switch to the "ON" position.
(4) Measure the voltage between special tool MB992045 (A/T check harness) connector B-19 terminal 13 and body ground.

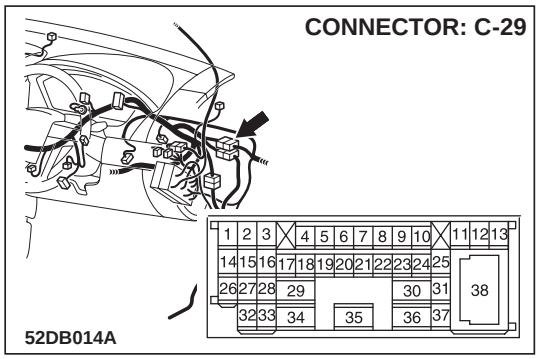
OK: 4.0 V or less

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.
NO : If the voltage measures more than 4.0 V, replace the A/T-ECU.

STEP 26. Check intermediate 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-4.

Q: Is intermediate connector C-29 in good condition?

YES : Go to Step 27.
NO : Repair the damaged parts.

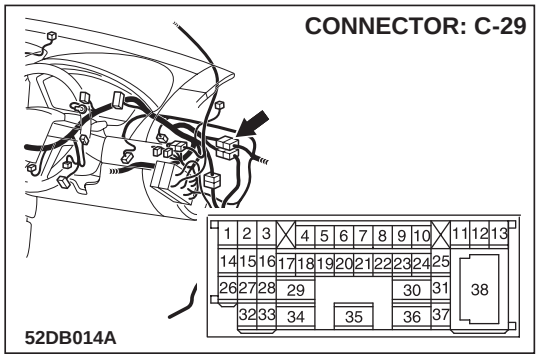
STEP 27. Check the CAN_L-side bus line (communication line including) of the front wiring harness for a short to the power supply. Measure the voltage at intermediate connector C-29.

⚠ CAUTION

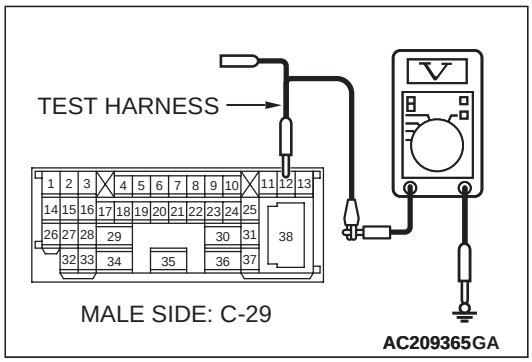
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect intermediate connector C-29, and measure the voltage at the male side (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between intermediate connector terminal 12 and body ground.

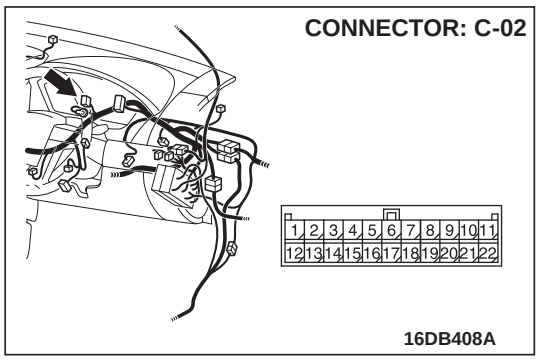
OK: 4.0 V or less

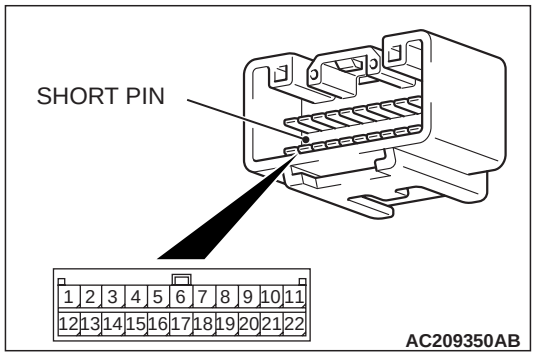
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 28.
NO : If the voltage measures more than 4.0 V, go to Step 42.

STEP 28. Check joint connector (3) C-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-4.





Check the joint connector at the wiring harness side for loose, corroded or damaged terminals, or terminals pushed back in the connector, and also check the short pin behind the connector for corrosion, deformation and delamination.

Q: Is joint connector (3) C-02 in good condition?

YES : Go to Step 29.

NO : Repair the damaged parts. Replace the joint connector as necessary.

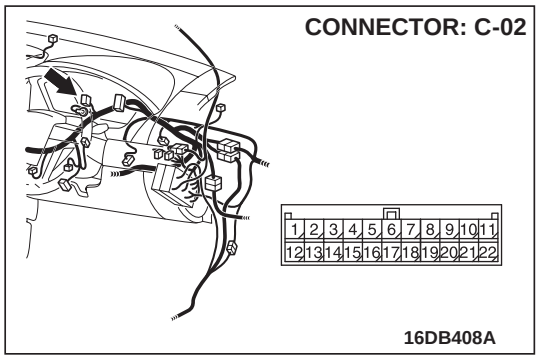
STEP 29. Check the CAN_L line (communication line including the combination meter) between joint connector (3) and the combination meter connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

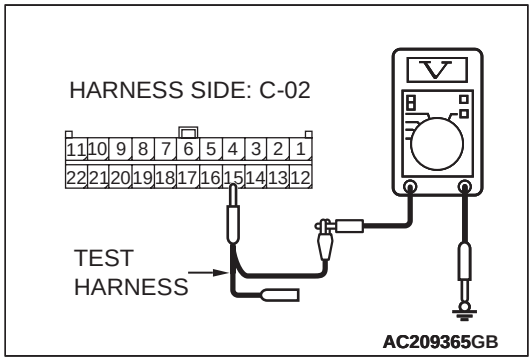
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 15 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 31.

NO : If the voltage measures more than 4.0 V, go to Step 30.

STEP 30. Check the CAN_L line (communication line only) between joint connector (3) and the combination meter connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

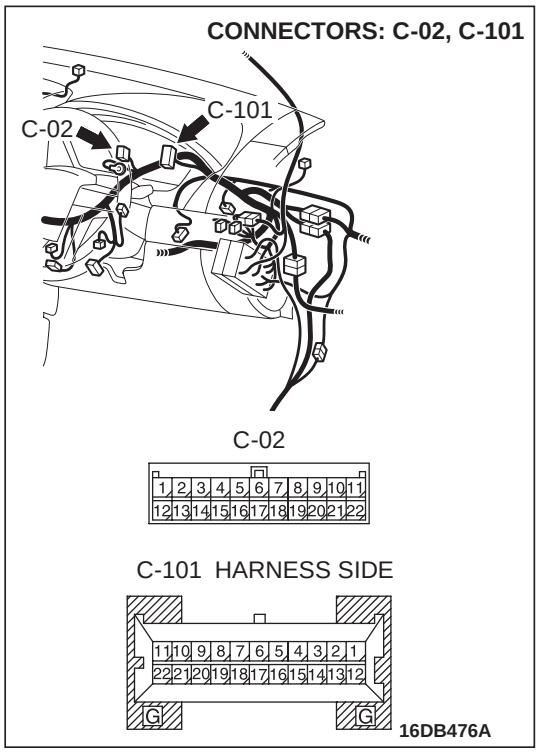
A digital multimeter should be used. For details refer to P.54C-4.

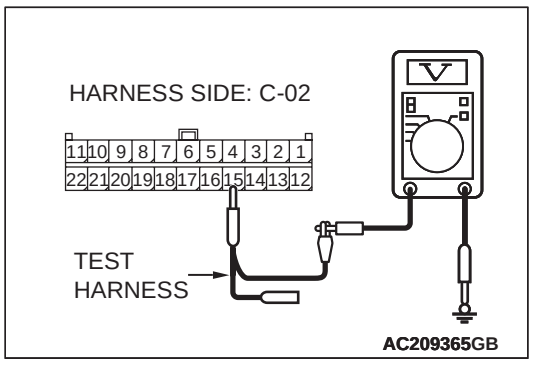
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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





(3) Measure the voltage between joint connector (3) terminal 15 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the combination meter connector.

STEP 31. Check the CAN_L line (communication line including the ETACS-ECU) between joint connector (3) and the ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

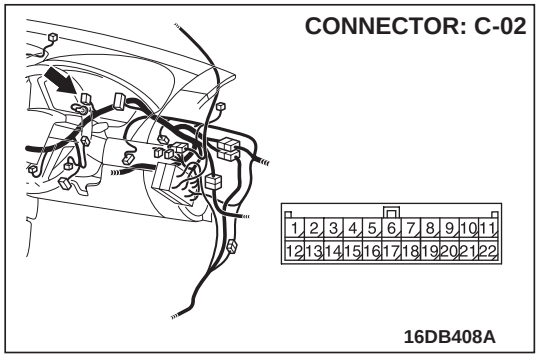
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

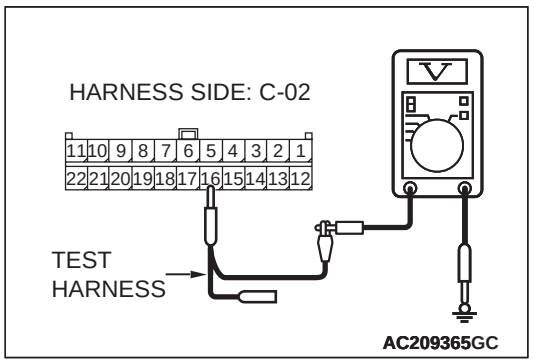
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 16 and body ground.

OK: 4.0 V or less

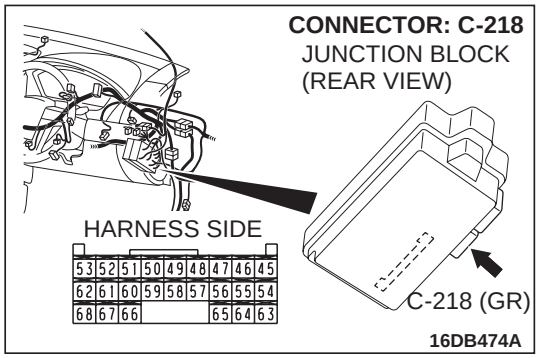
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 34.
NO : If the voltage measures more than 4.0 V, go to Step 32.

STEP 32. Check ETACS-ECU connector C-218 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-4.



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

YES : Go to Step 33.
NO : Repair the damaged parts.

STEP 33. Check the CAN_L line (communication line only) between joint connector (3) and ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

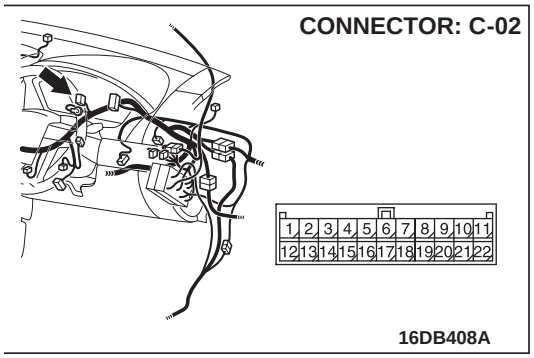
A digital multimeter should be used. For details refer to P.54C-4.

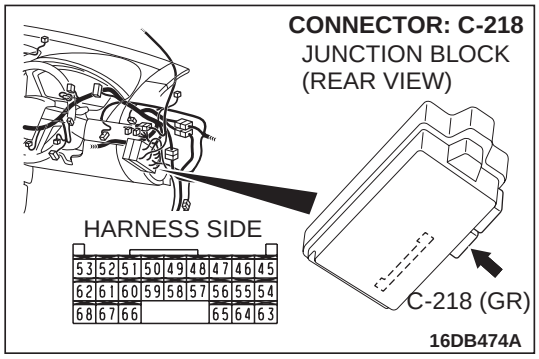
⚠ CAUTION

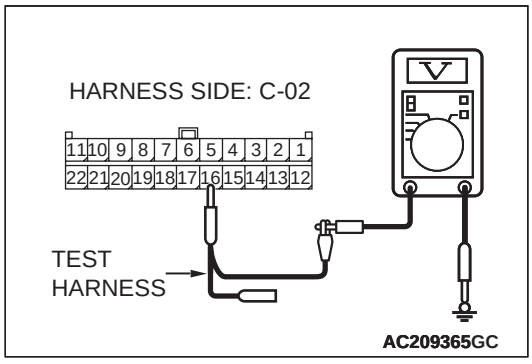
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and ETACS-ECU connector C-218, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 16 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the ETACS-ECU connector.

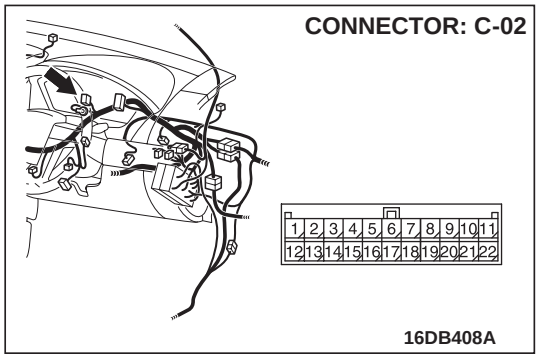
STEP 34. Check the CAN_L line (communication line including the A/C-ECU) between joint connector (3) and the A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

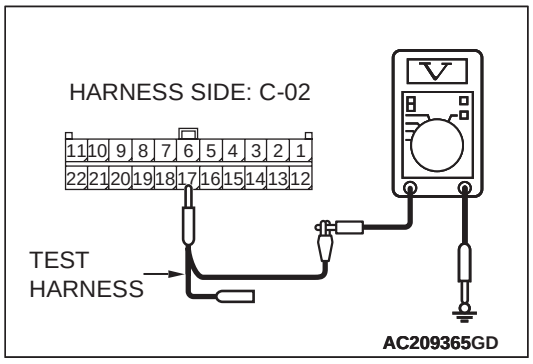
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.

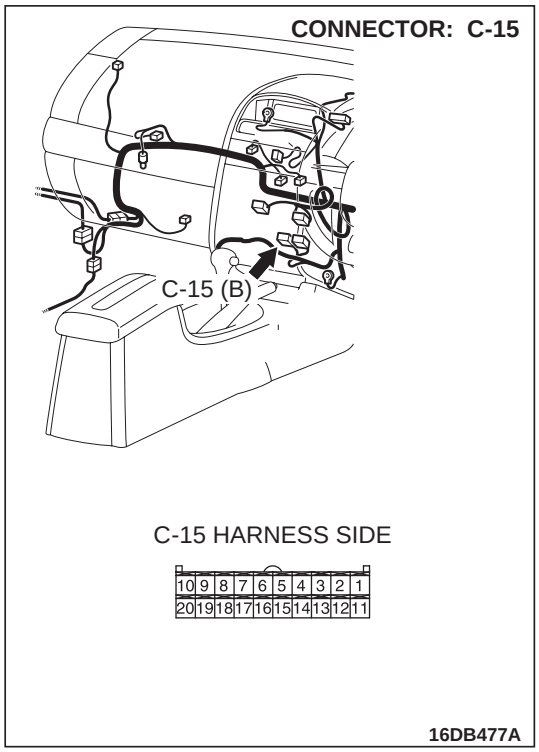


(3) Measure the voltage between joint connector (3) terminal 17 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 37.
NO : If the voltage measures more than 4.0 V, go to Step 35.



STEP 35. Check A/C-ECU connector C-15 automatic air conditioning system 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-4.

Q: Is A/C-ECU connector C-15 automatic air conditioning system in good condition?

YES : Go to Step 36.
NO : Repair the damaged parts.

STEP 36. Check the CAN_L line (communication line only) between joint connector (3) and A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

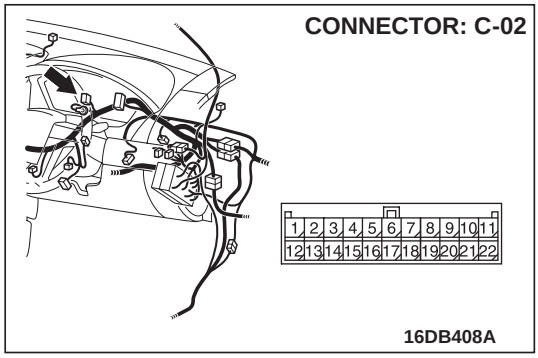
A digital multimeter should be used. For details refer to P.54C-4.

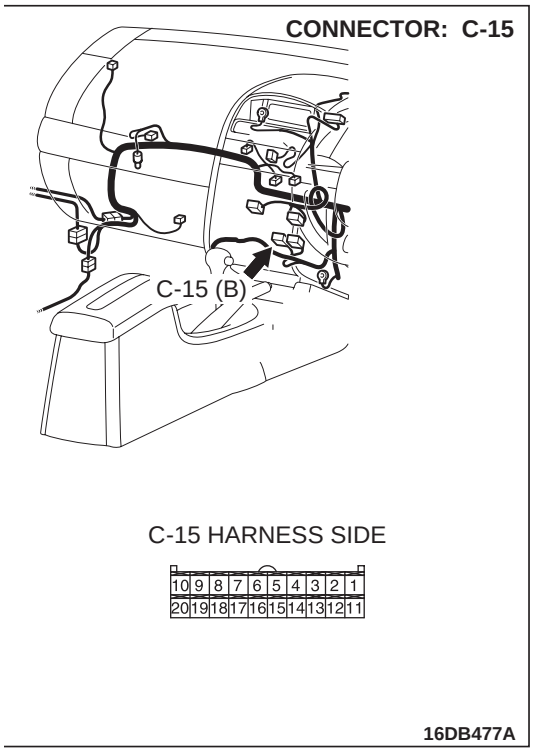
⚠ CAUTION

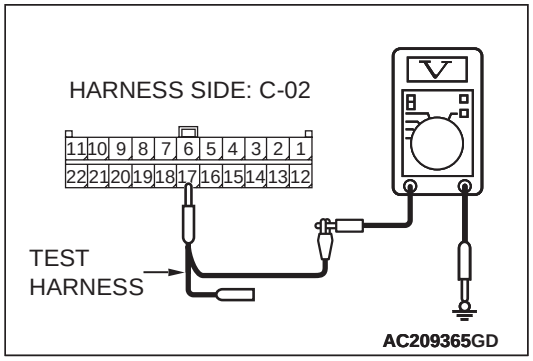
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 17 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the A/C-ECU connector.

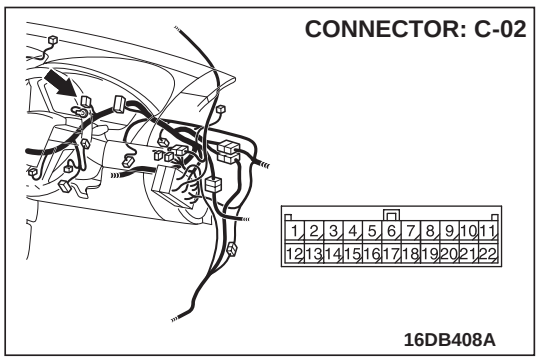
STEP 37. Check the CAN_L line (communication line including the SRS-ECU) between joint connector (3) and the SRS-ECU connector for short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

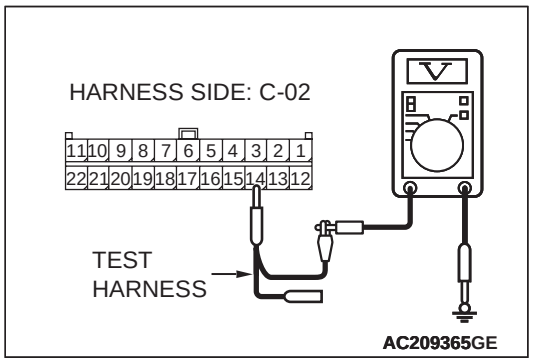
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 14 and body ground.

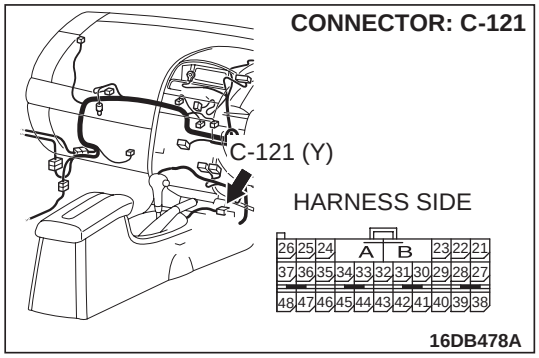
OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 40.

NO : If the voltage measures more than 4.0 V, go to Step 38.

STEP 38. Check SRS-ECU connector C-121 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-4.

Q: Is SRS-ECU connector C-121 in good condition?

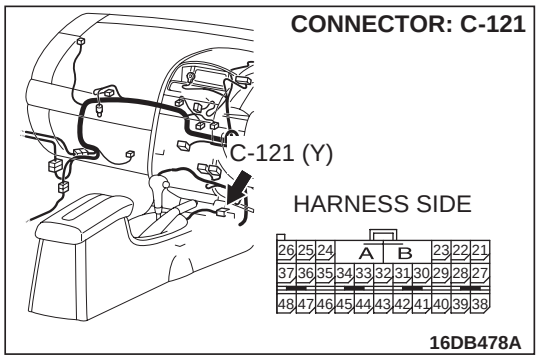
YES : Go to Step 39.
NO : Repair the damaged parts.

STEP 39. Check the CAN_L line (communication line only) between the SRS-ECU connector and joint connector (3) for a short to the power supply. Measure the voltage at joint connector (3) C-02.

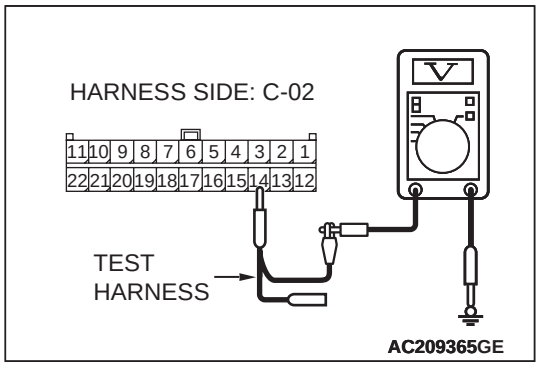
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02 and SRS-ECU connector C-121, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) C-02 terminal 14 and body ground.

OK: 1.0 V or less

⚠ CAUTION
Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) C-02 and SRS-ECU connector C-121.

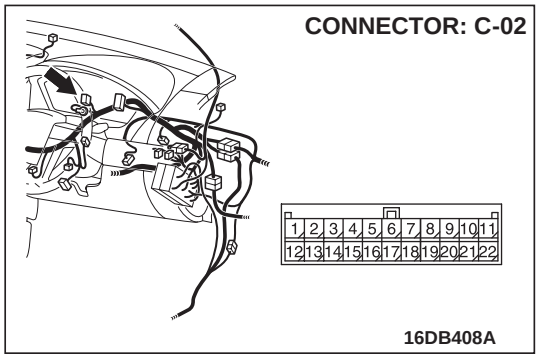
STEP 40. Check the CAN_L line (communication line only) between joint connector (3) and the data link connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

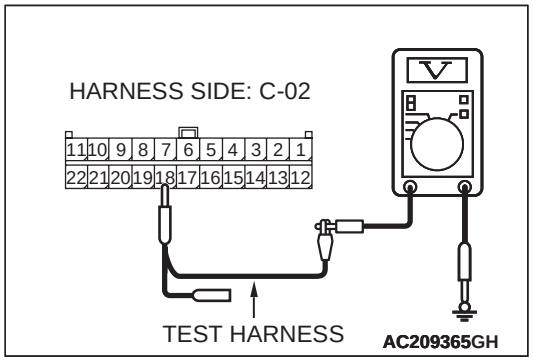
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 18 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 41.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the data link connector.

STEP 41. Check the CAN_L line (communication line only) between intermediate connector C-29 and joint connector (3) for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

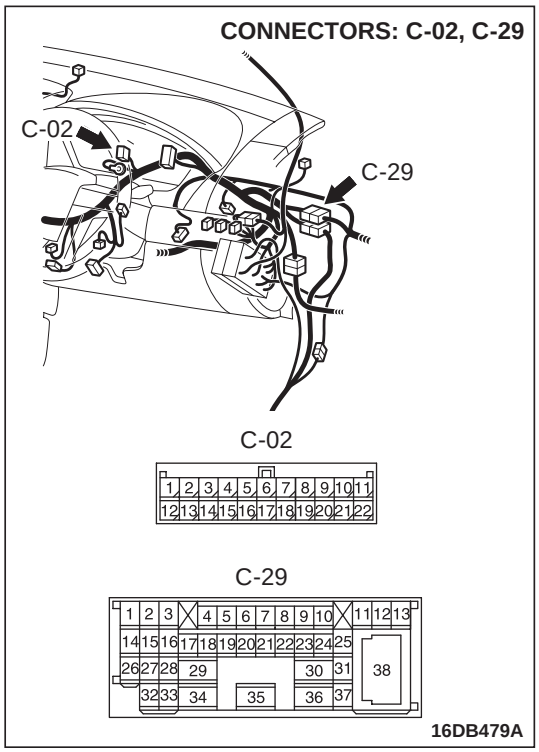
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

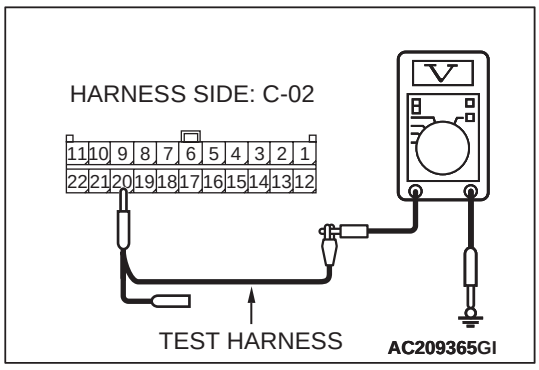
(1) Disconnect intermediate connector C-29 and joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 20 and body ground.

OK: 1.0 V or less



⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

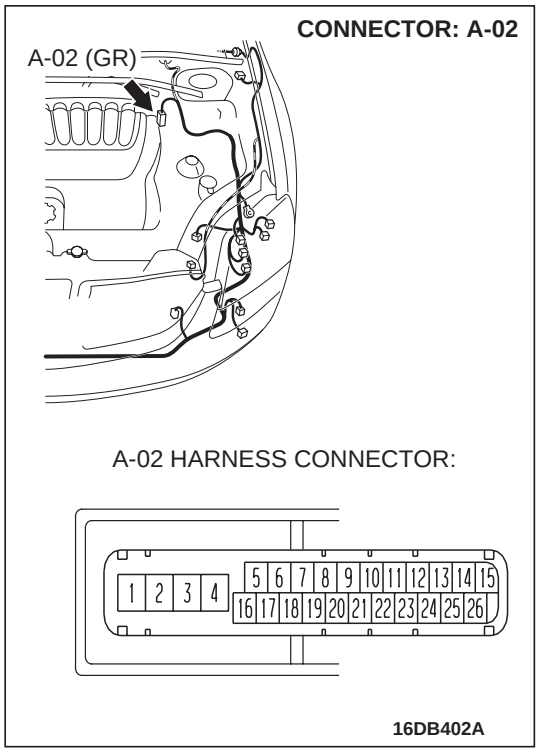
NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and joint connector (3).

STEP 42. Check ABS-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-4.

Q: Is ABS-ECU connector A-02 in good condition?

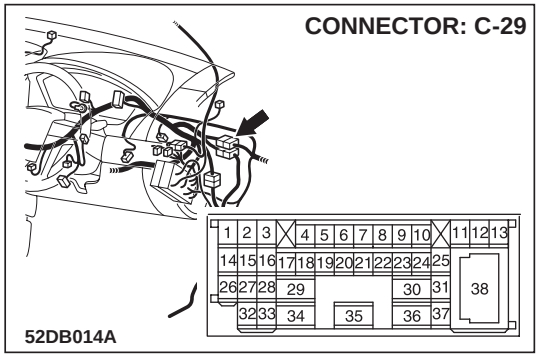
YES : Go to Step 43.
NO : Repair the damaged parts.

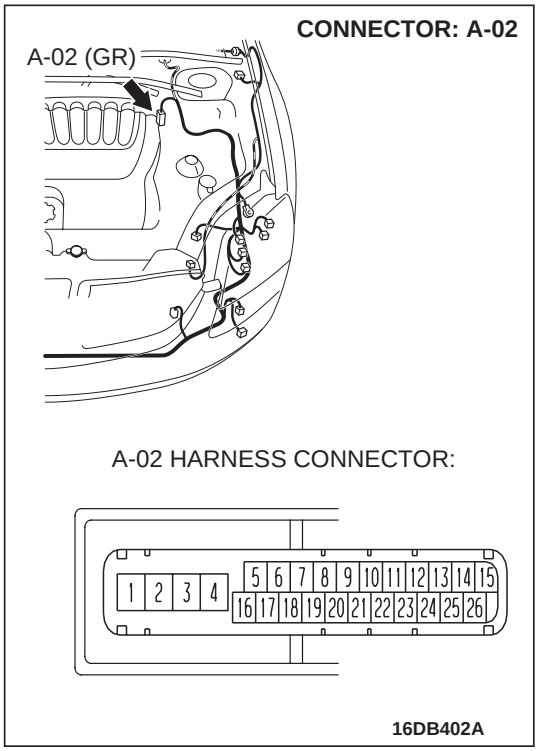


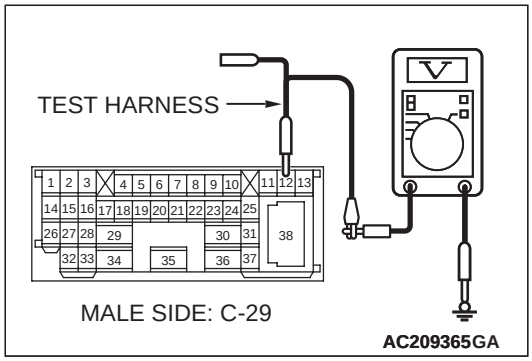
STEP 43. Check the CAN_L line (communication line only) between intermediate connector C-29 and ABS-ECU connector for a short to the power supply. Measure the voltage at intermediate connector C-29.

⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.







(1) Disconnect intermediate connector C-29 and ABS-ECU connector A-02, and measure the voltage at the male side of intermediate connector C-29 (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.

(3) Measure the voltage between intermediate connector terminal 12 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 44.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and ABS-ECU connector.

STEP 44. Check the CAN_L line (communication line only) between the A/T-ECU connector and ABS-ECU connector for a short to the power supply. Measure voltage at A/T-ECU connector B-19.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

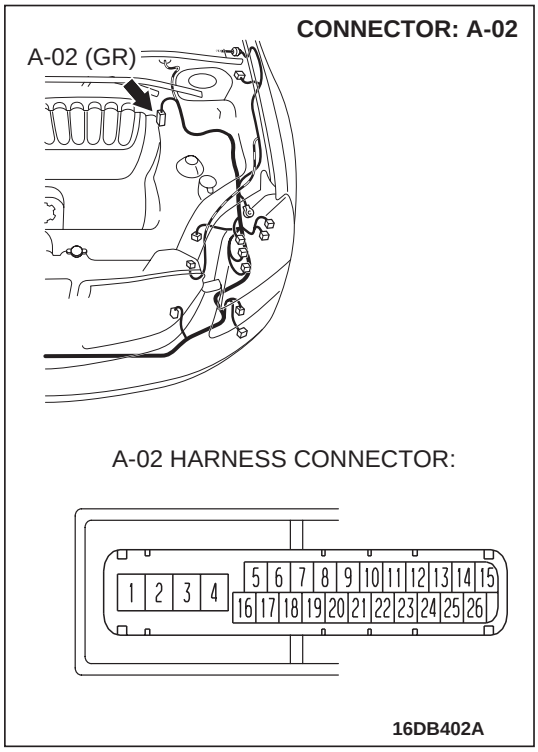
NOTE: ***When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.***

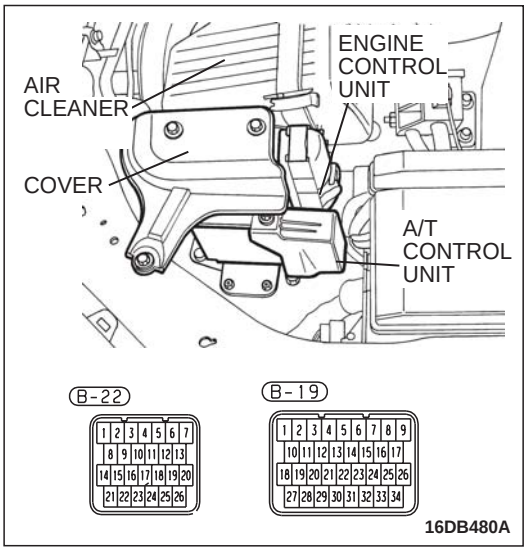
⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

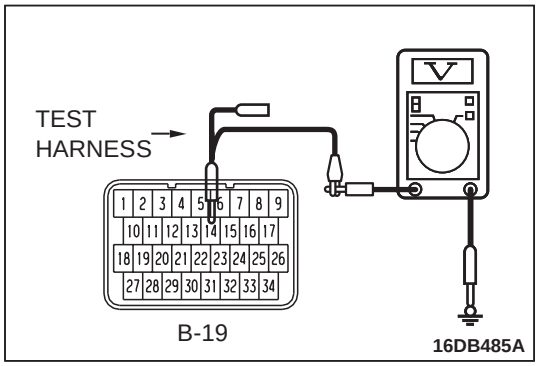
The test wiring harness should be used. For details refer to P.54C-4.





(1) Disconnect A/T-ECU connector B-19 and ABS-ECU connector A-02, and measure the voltage at the harness side of A/T-ECU connector B-19.
(2) Turn the ignition switch to the "ON" position.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.



(3) Measure the voltage between A/T-ECU connector terminal 14 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 45.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and ABS-ECU connector.

STEP 45. Check the CAN_L line inside the ABS-ECU for a short to the power supply. Measure the voltage at ABS-ECU connector A-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

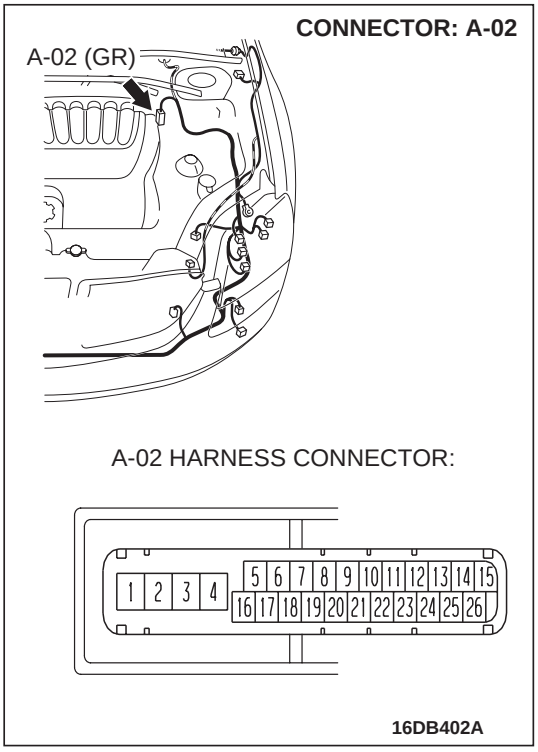
⚠ CAUTION

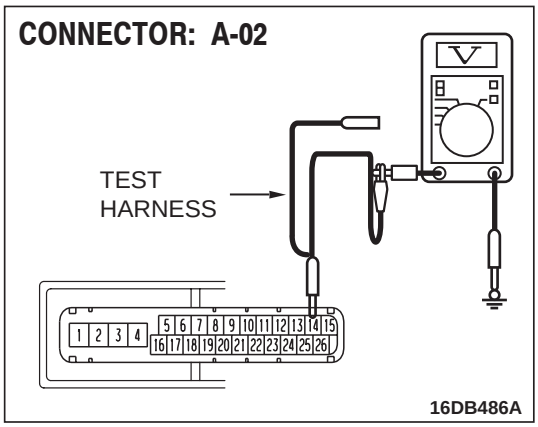
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ABS-ECU connector A-02.





(2) Measure the voltage using special tool MB991219 (Inspection test harness), by inserting probe into the wiring harness-side connector A-02.

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

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

(4) Measure the voltage between connector A-02 terminal 14 and body ground, using inspection test harness (MB991219).

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 4.0 V, replace the ABS-ECU.

STEP 46. Check the CAN_L line (communication line only) between the ENGINE-ECU connector and A/T-ECU connector for a short to the power supply. Measure voltage at ENGINE-ECU connector B-21.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

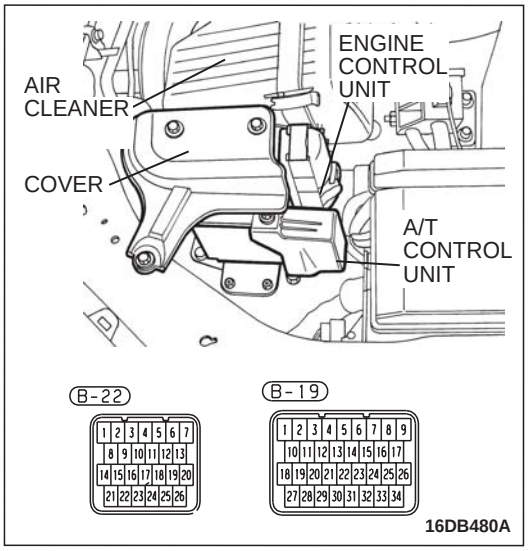
⚠ CAUTION

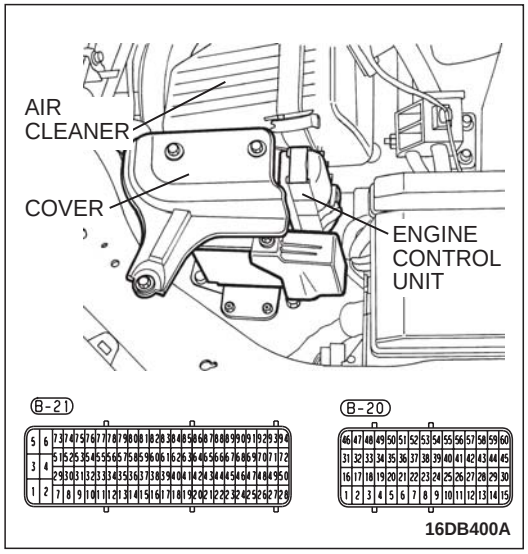
The test wiring harness should be used. For details refer to P.54C-4.

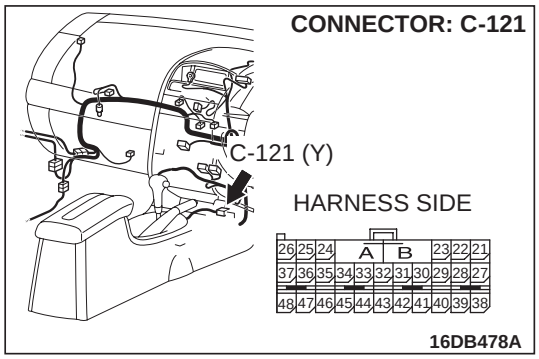
(1) Disconnect ENGINE-ECU connector B-21 and A/T-ECU connector B-19, and measure the voltage at the harness side of ENGINE-ECU connector B-21.

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

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.







(3) Measure the voltage between ENGINE-ECU connector terminal 86 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 47.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and A/T-ECU connector.

STEP 47. Check the CAN_L line inside the A/T-ECU for a short to the power supply. Measure the voltage at A/T-ECU connector B-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

⚠ CAUTION

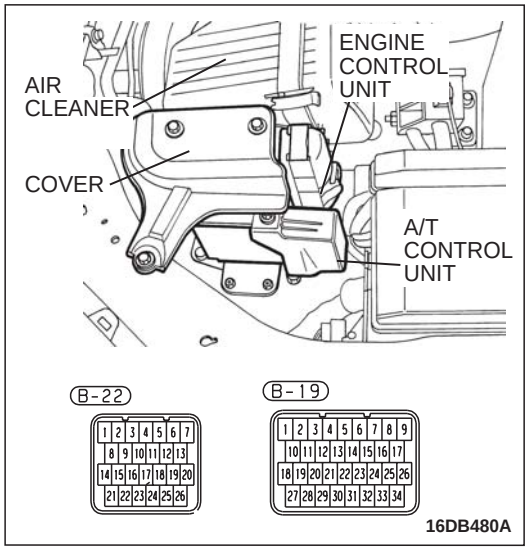
A digital multimeter should be used. For details refer to P.54C-4.

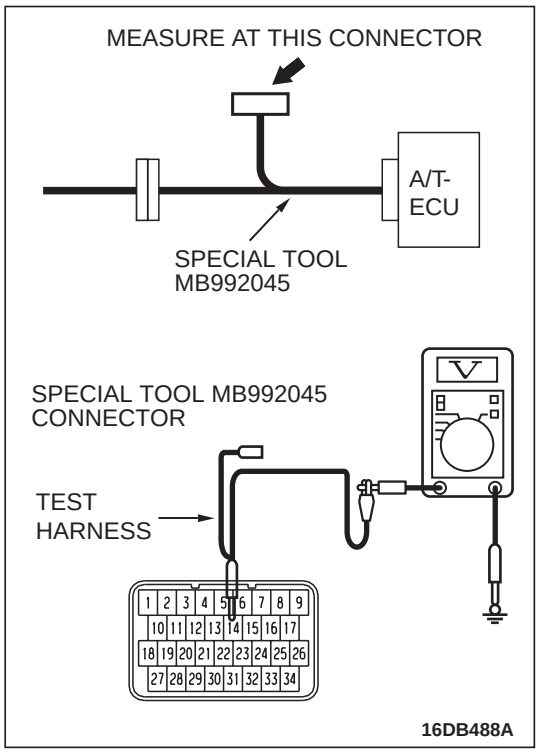
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect A/T-ECU connector B-19.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.





(2) Connect special tool MB992045 (A/T check harness) to the A/T-ECU and the wiring harness, and measure the voltage at special tool MB992045 (A/T check harness).
(3) Turn the ignition switch to the "ON" position.
(4) Measure the voltage between special tool MB992045 (A/T check harness) connector terminal 14 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

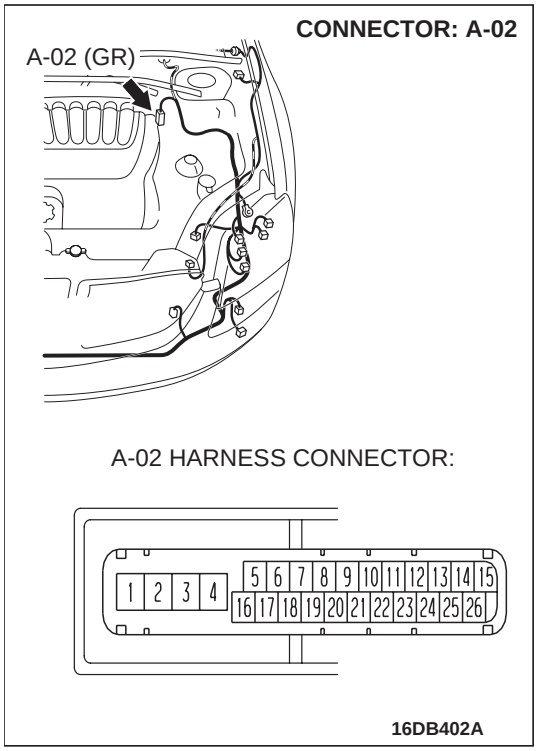
NO : If the voltage measures more than 4.0 V, replace the A/T-ECU.

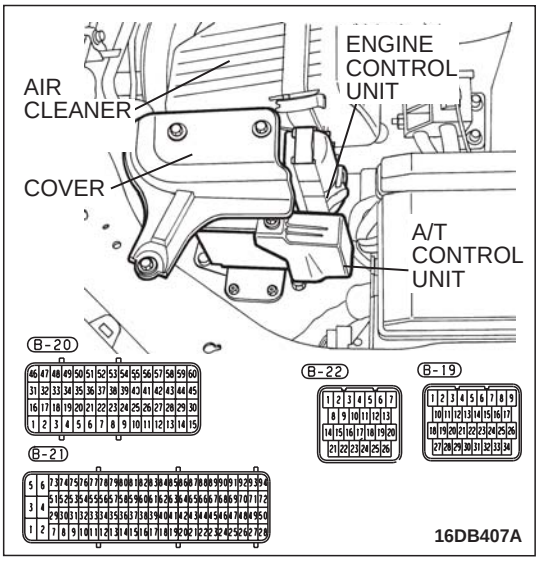
NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.

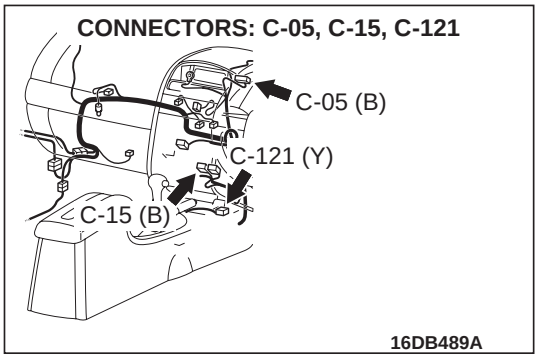
DIAGNOSTIC ITEM 2: Diagnose shorts in the power supply to CAN bus line <Vehicles with multi-center display >

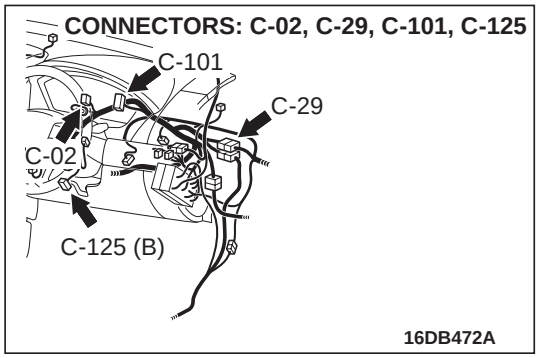
⚠ CAUTION

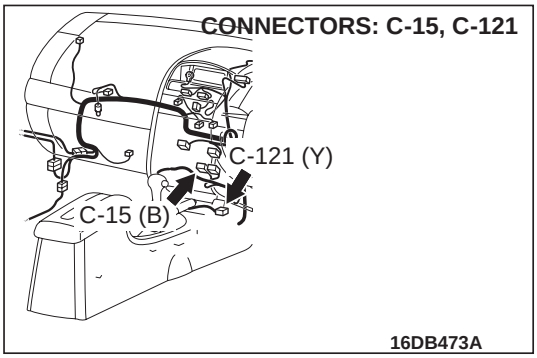
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.

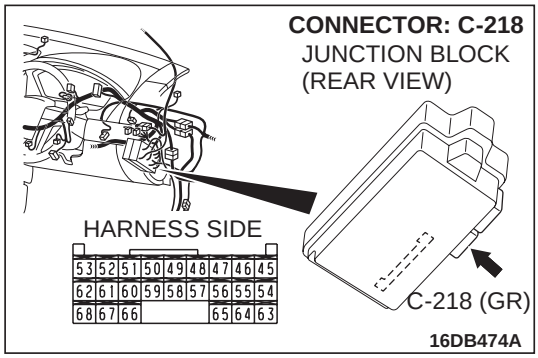












TROUBLE JUDGMENT

A short to the power supply may be present when the voltage between the CAN bus line (CAN_L or CAN_H) and body ground is more than 4.0 V. In this condition, an abnormal voltage may be measured at CAN_L and CAN_H lines.

COMMENTS ON TROUBLE SYMPTOM

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

TROUBLESHOOTING HINTS

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective
- The combination meter may be defective
- The A/C-ECU may be defective
- The ABS-ECU may be defective
- The SRS-ECU may be defective
- The multi-centre display unit (middle-grade type may be defective
- The ENGINE-ECU may be defective
- The A/T-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991219: Inspection Test Harness

STEP 1. Check ENGINE-ECU connector B-21, combination meter connector C-101 and data link connector C-125 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

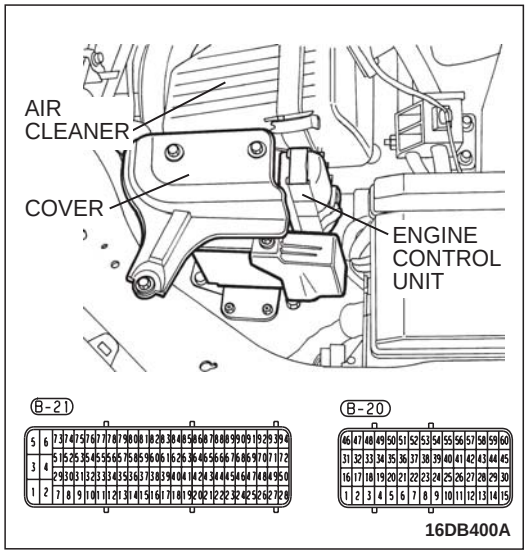
⚠ CAUTION

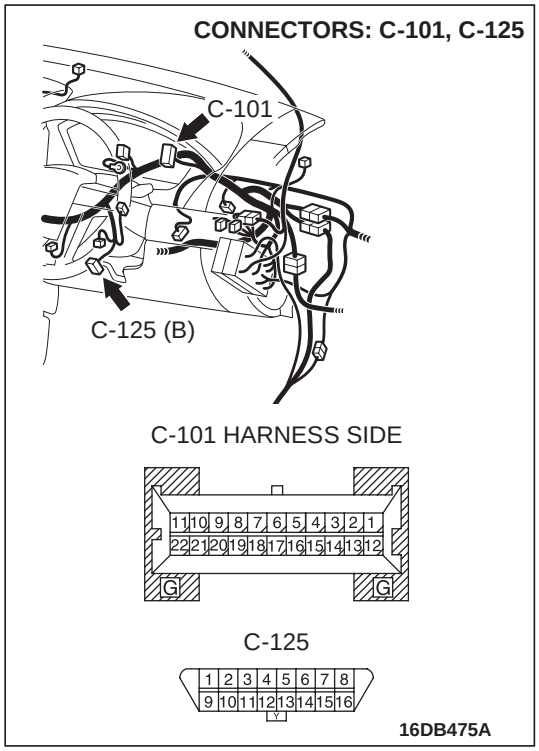
The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to P.54C-4.

Q: Are ENGINE-ECU connector B-21, combination meter connector C-101 and data link connector C-125 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.





STEP 2. Check the CAN_H-side bus line (communication line including ECUs) for a short to the power supply. Measure the voltage at data link connector C-125.

⚠ CAUTION

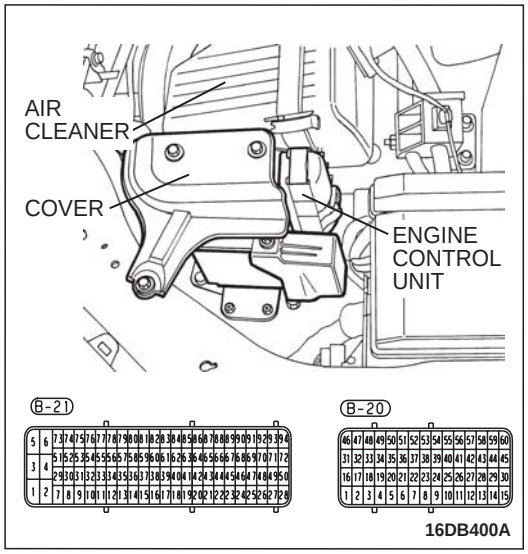
A digital multimeter should be used. For details refer to P.54C-4.

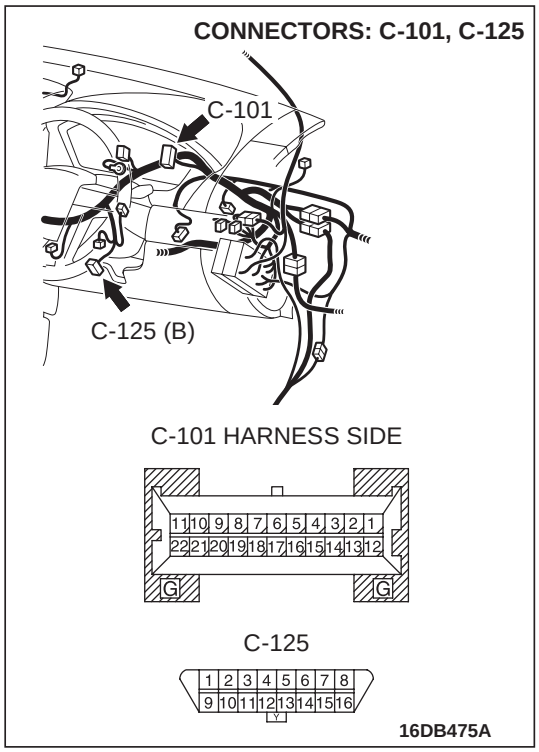
⚠ CAUTION

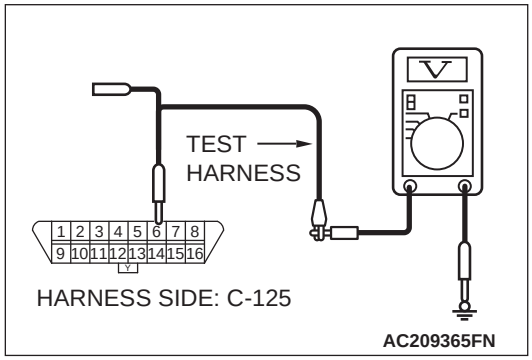
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ENGINE-ECU connector B-21 and combination meter connector C-101, and measure the voltage at the 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.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 3.
NO : If the voltage measures more than 4.0 V, go to Step 4.

STEP 3. Check the CAN_L-side bus line (communication line including ECUs) for a short to the power supply. Measure the voltage at data link connector C-125.

⚠ CAUTION

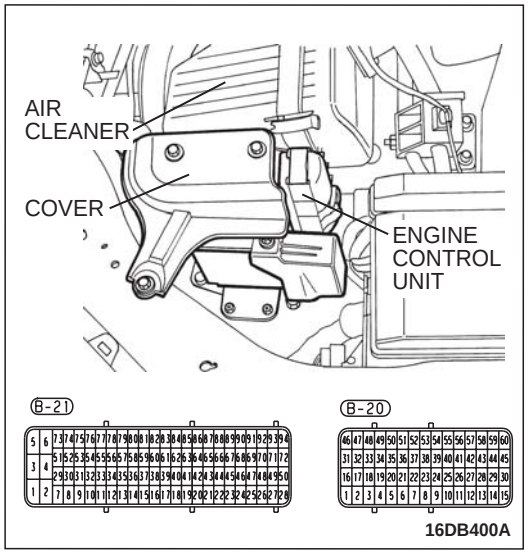
A digital multimeter should be used. For details refer to P.54C-4.

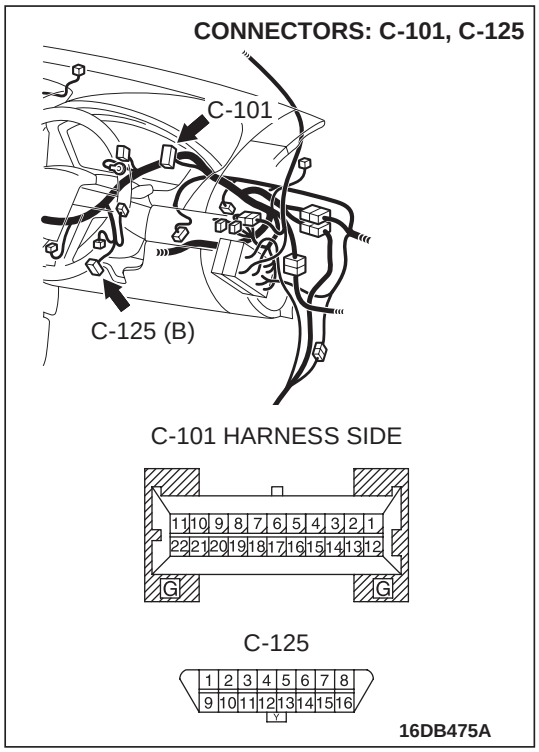
⚠ CAUTION

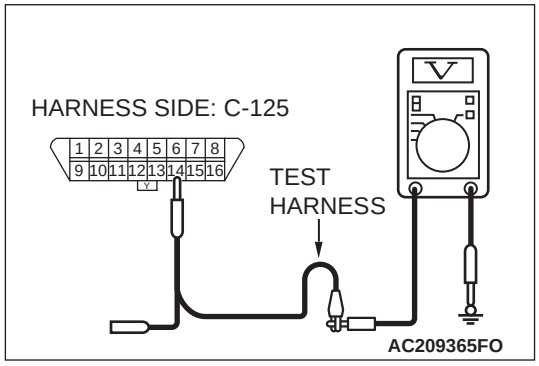
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ENGINE-ECU connector B-21 and combination meter connector C-101, and measure the voltage at the 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 14 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

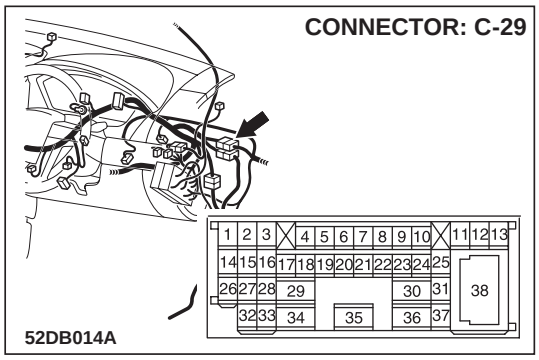
YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 4.0 V, go to Step 27.

STEP 4. Check intermediate 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-4.



Q: Is intermediate connector C-29 in good condition?

YES : Go to Step 5.

NO : Repair the damaged parts.

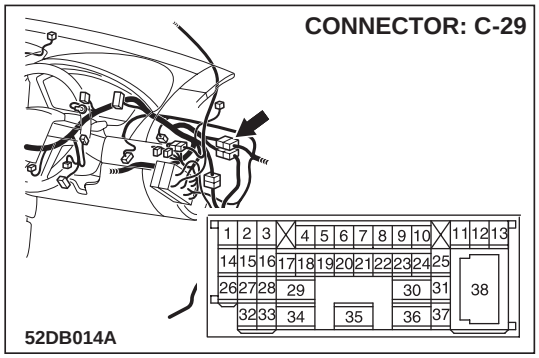
STEP 5. Check the CAN_H-side bus line (communication line including ECUs) of the front wiring harness for a short to the power supply. Measure the voltage at intermediate connector C-29.

⚠ CAUTION

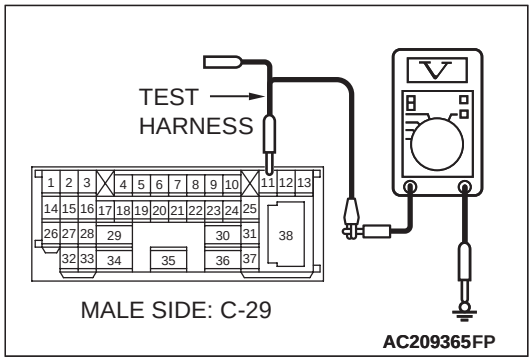
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect intermediate connector C-29, and measure the voltage at the male side (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between intermediate connector terminal 11 and body ground.

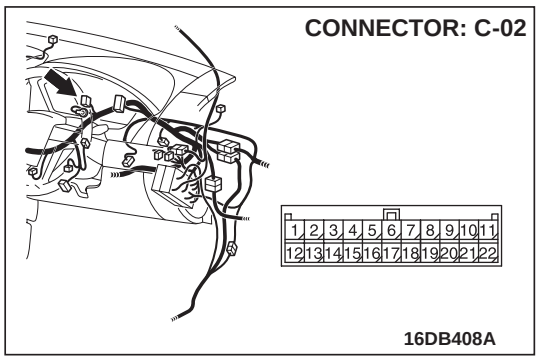
OK: 4.0 V or less

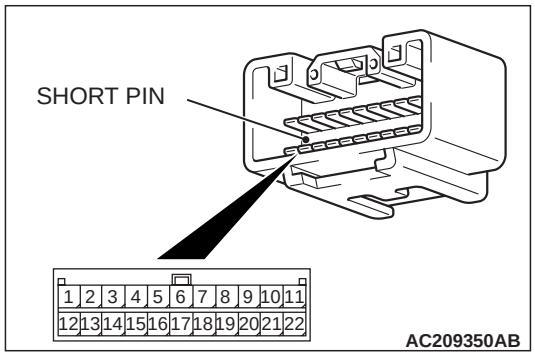
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 6.
NO : If the voltage measures more than 4.0 V, go to Step 23.

STEP 6. Check joint connector (3) C-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-4.





Check the joint connector at the wiring harness side for loose, corroded or damaged terminals, or terminals pushed back in the connector, and also check the short pin behind the connector for corrosion, deformation and delamination.

Q: Is joint connector (3) C-02 in good condition?

YES : Go to Step 7.

NO : Repair the damaged parts. Replace the joint connector as necessary.

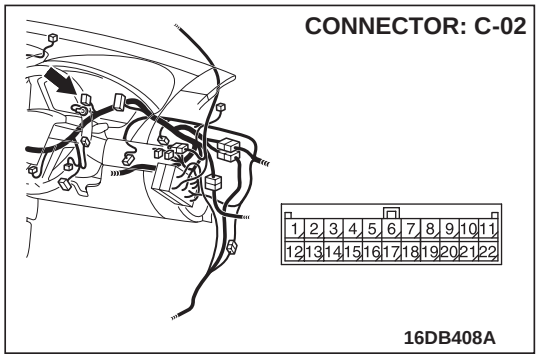
STEP 7. Check the CAN_H line (communication line including the combination meter) between joint connector (3) and the combination meter for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

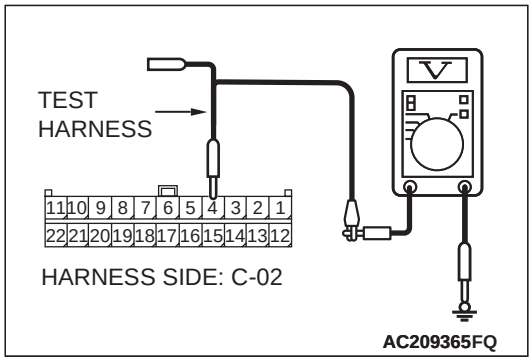
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 4 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 9.
NO : If the voltage measures more than 4.0 V, go to Step 8.

STEP 8. Check the CAN_H line (communication line only) between joint connector (3) and the combination meter connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

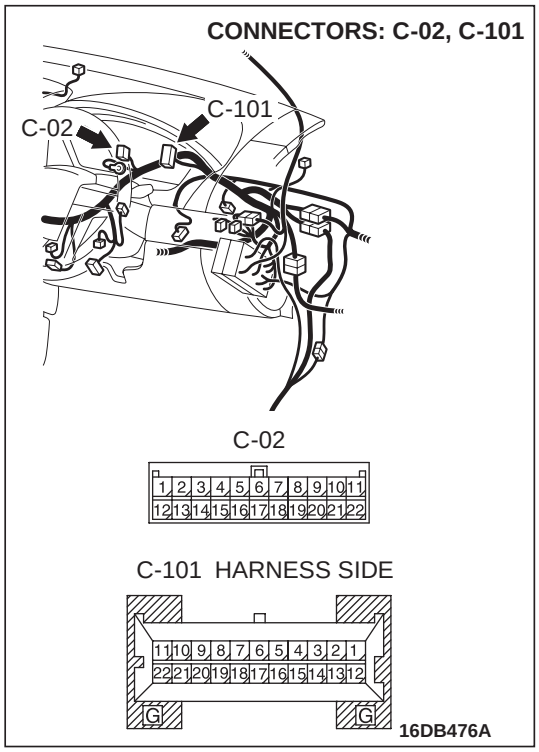
A digital multimeter should be used. For details refer to P.54C-4.

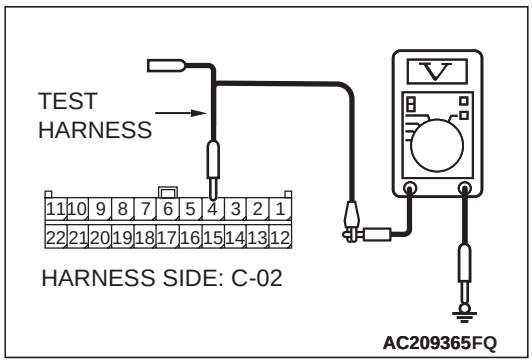
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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





(3) Measure the voltage between joint connector (3) terminal 4 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the combination meter connector.

STEP 9. Check the CAN_H line (communication line including the ETACS-ECU) between joint connector (3) and the ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

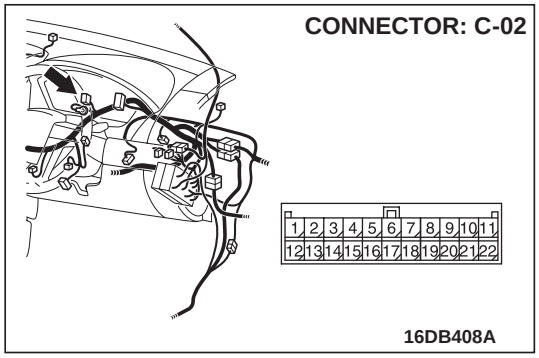
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

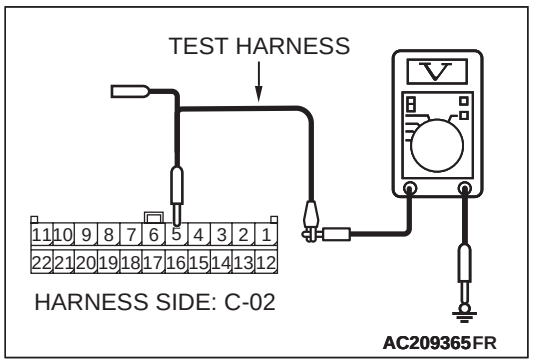
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 5 and body ground.

OK: 4.0 V or less

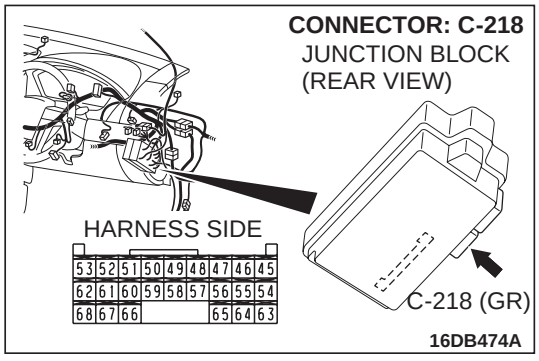
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 12.
NO : If the voltage measures more than 4.0 V, go to Step 10.

STEP 10. Check ETACS-ECU connector C-218 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-4.



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

YES : Go to Step 11.
NO : Repair the damaged parts.

STEP 11. Check the CAN_H line (communication line only) between joint connector (3) and ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

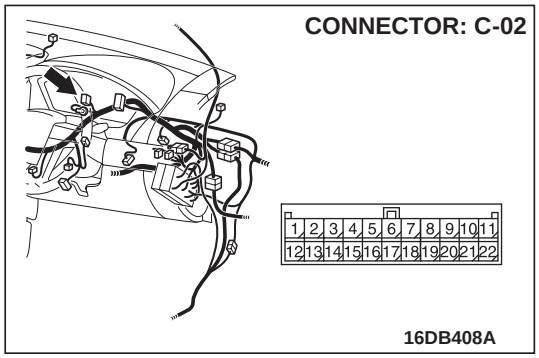
A digital multimeter should be used. For details refer to P.54C-4.

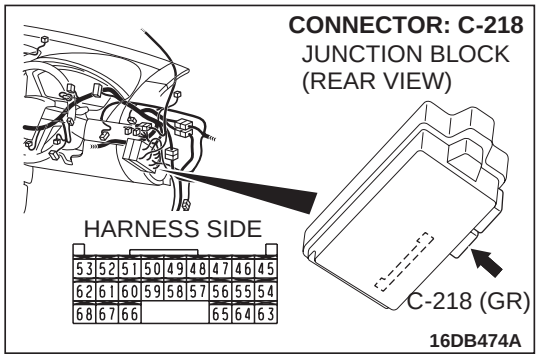
⚠ CAUTION

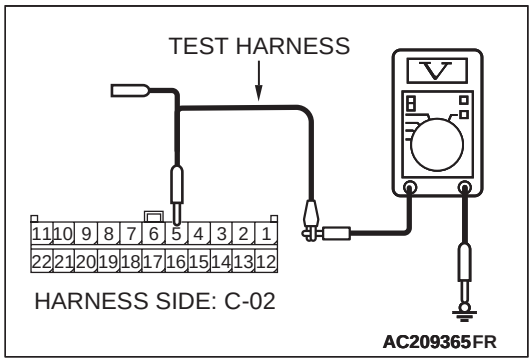
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and ETACS-ECU connector C-218, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 5 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the ETACS-ECU connector.

STEP 12. Check the CAN_H line (communication line including the A/C-ECU) between joint connector (3) and the A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

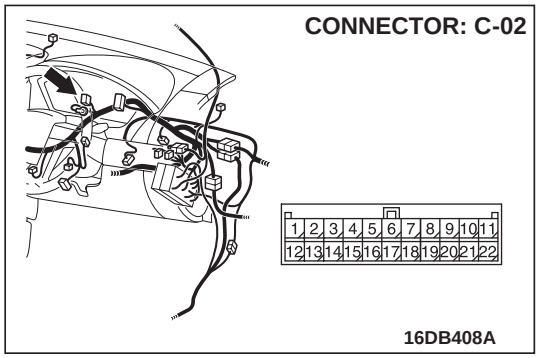
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

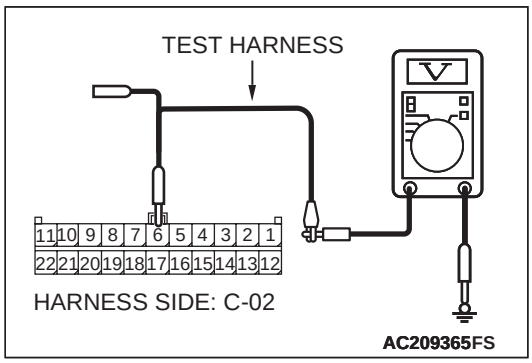
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



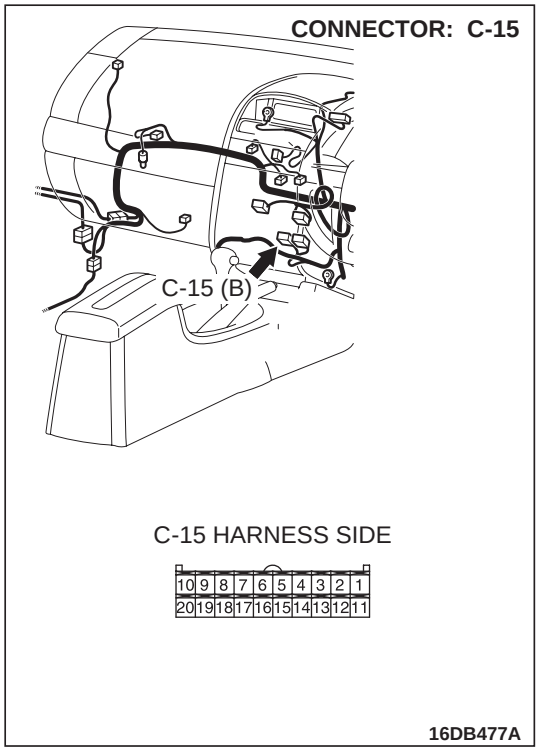
(3) Measure the voltage between joint connector (3) terminal 6 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 15.

NO : If the voltage measures more than 4.0 V, go to Step 13.



STEP 13. Check A/C-ECU connector C-15 automatic air conditioning system for loose, corroded or damaged terminals, or terminals pushed back in the connector.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

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

Q: Is A/C-ECU connector C-15 automatic air conditioning system in good condition?

YES : Go to Step 14.

NO : Repair the damaged parts.

STEP 14. Check the CAN_H line (communication line only) between joint connector (3) and A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

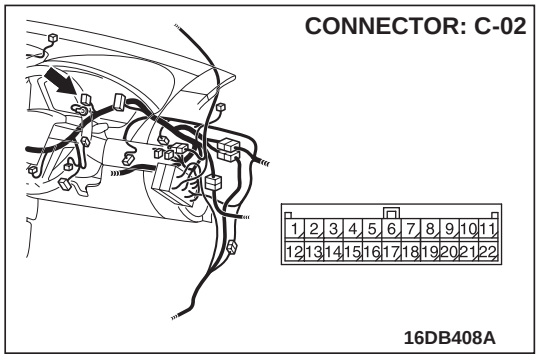
A digital multimeter should be used. For details refer to P.54C-4.

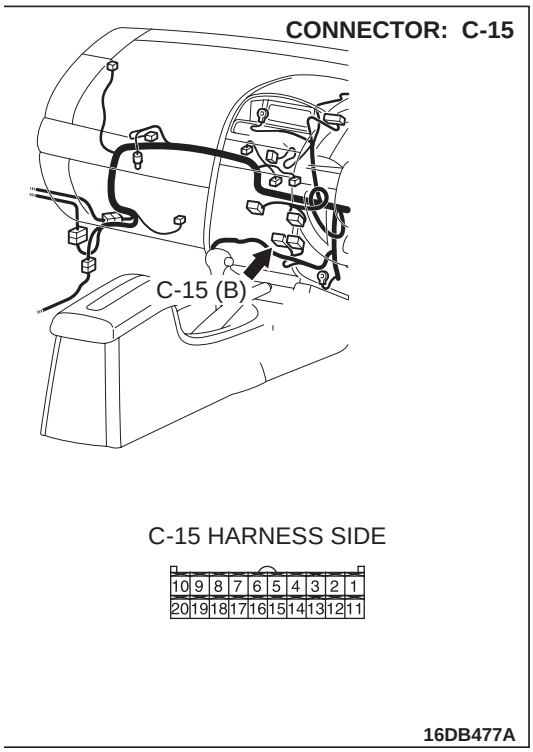
⚠ CAUTION

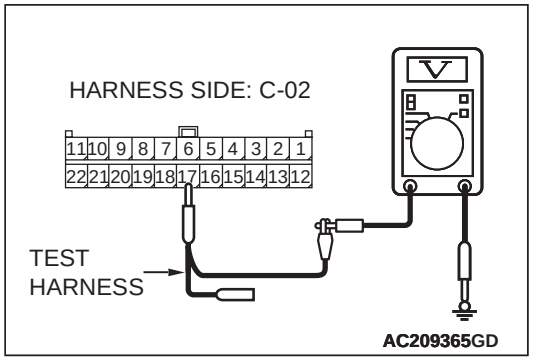
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 17 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the A/C-ECU connector.

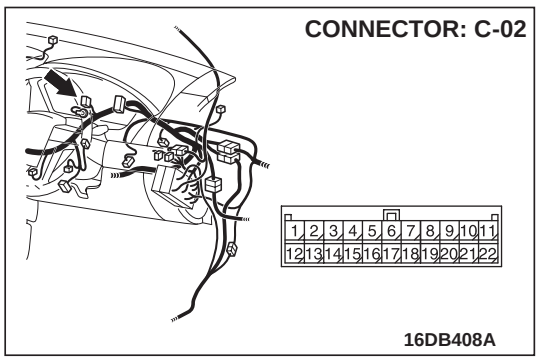
STEP 15. Check the CAN_H line (communication line including the SRS-ECU) between joint connector (3) and the SRS-ECU connector for short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

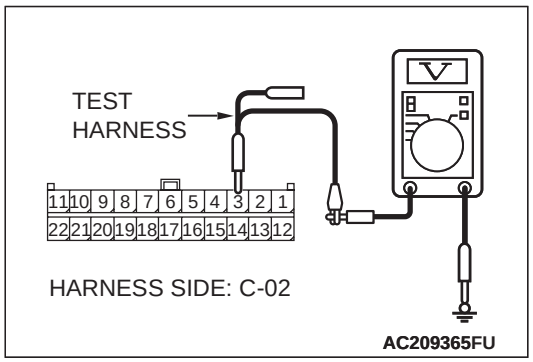
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 3 and body ground.

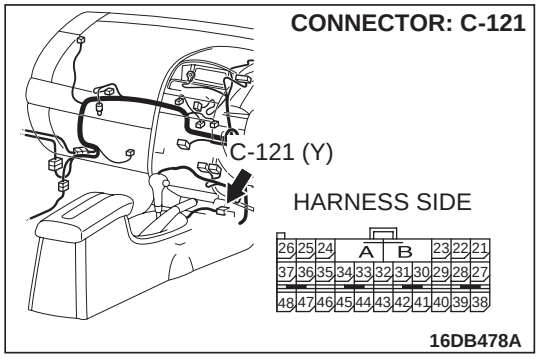
OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 18.

NO : If the voltage measures more than 4.0 V, go to Step 16.

STEP 16. Check SRS-ECU connector C-121 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-4.

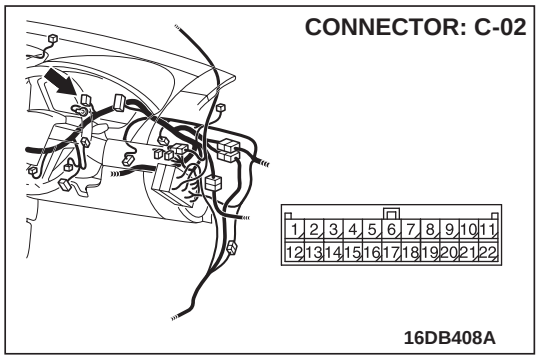
Q: Is SRS-ECU connector C-121 in good condition?

YES : Go to Step 17.
NO : Repair the damaged parts.

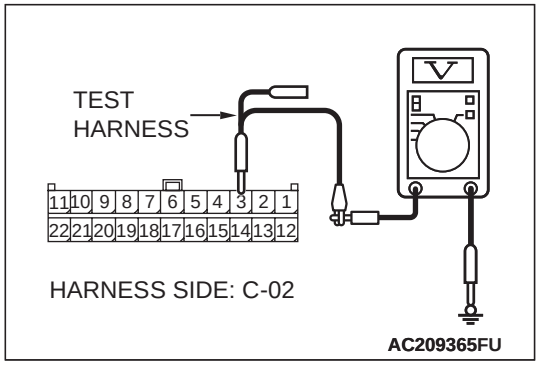
STEP 17. Check the CAN_ H line (communication line only) between the SRS-ECU connector and the joint connector for a short circuit. Measure the voltage at joint connector C-03.

⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector C-03 and SRS-ECU connector C-121, and measure the voltage at joint connector C-03.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector terminal 3 and body ground.

OK: 1.0 V or less

⚠ CAUTION
Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

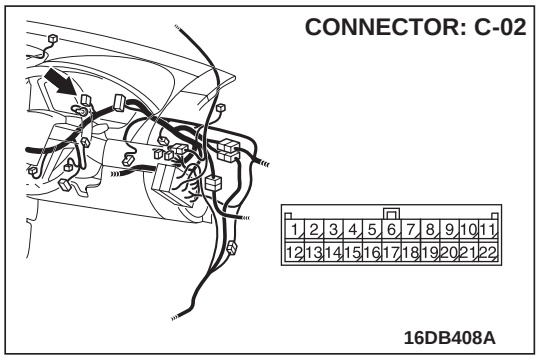
Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector C-03 and SRS-ECU connector C-121.

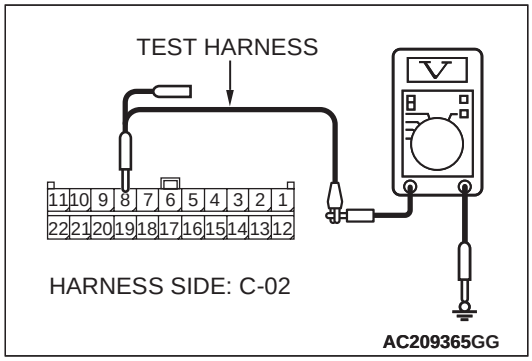
STEP 18. Check the CAN_H line (communication line including the multi-center display unit) between joint connector (3) and multi-center display connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 8 and body ground.

OK: 4.0 V or less

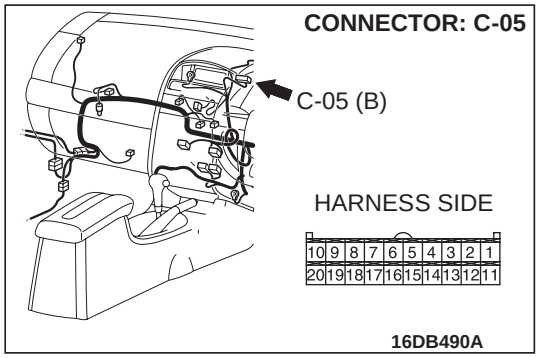
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 21.
NO : If the voltage measures more than 4.0 V, go to Step 19.

STEP 19. Check multi-center display unit connector C-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

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



Q: Is multi-center display unit connector C-05 in good condition?

YES : Go to Step 20.
NO : Repair the damaged parts.

STEP 20. Check the CAN_H line (communication line only) between joint connector (3) and multi-center display unit connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

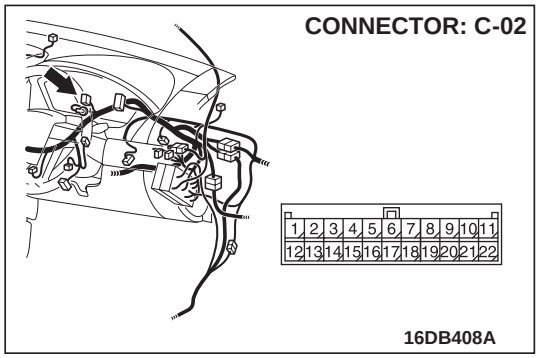
A digital multimeter should be used. For details refer to P.54C-4.

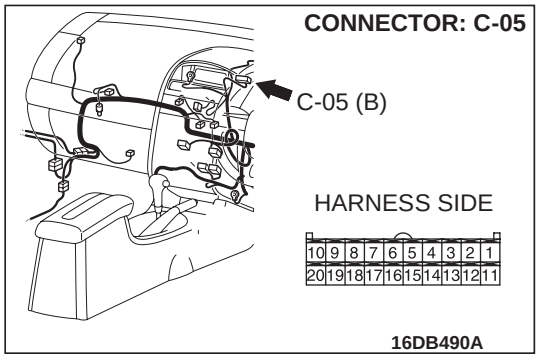
⚠ CAUTION

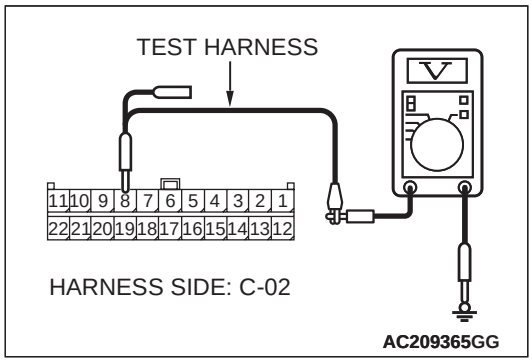
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and multi-center display unit connector C-05, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 8 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the multi-center display unit connector.

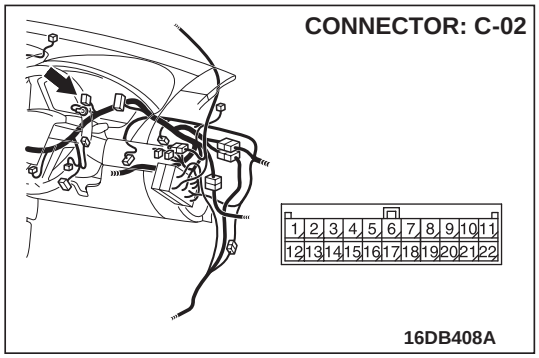
STEP 21. Check the CAN_H line (communication line only) between joint connector (3) and the data link connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

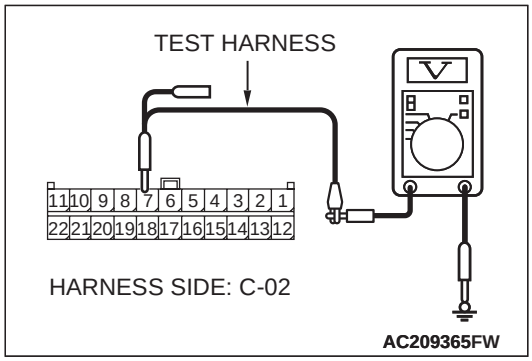
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 7 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 22.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the data link connector.

STEP 22. Check the CAN_H line (communication line only) between intermediate connector C-29 and joint connector (3) for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

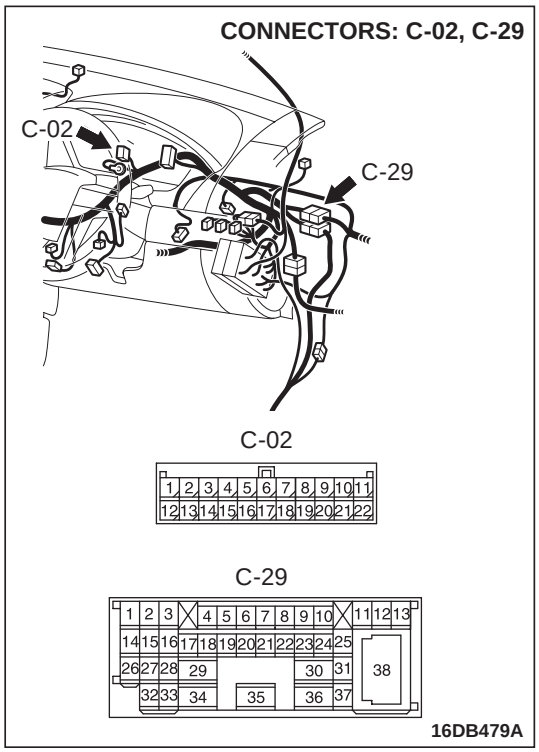
A digital multimeter should be used. For details refer to P.54C-4.

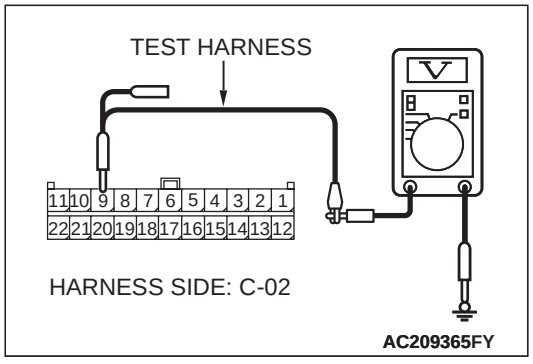
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect intermediate connector C-29 and joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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





(3) Measure the voltage between joint connector (3) terminal 9 and body ground.

OK: 1.0 V or less

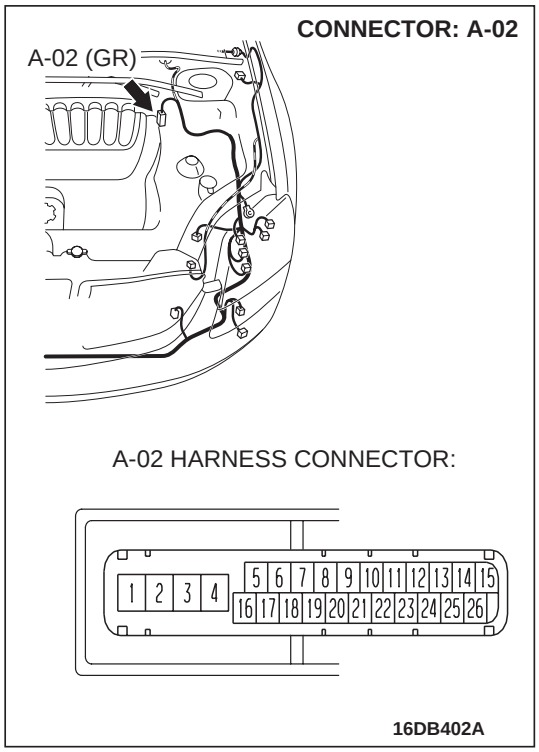
⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and joint connector (3).



STEP 23. Check ABS-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-4.

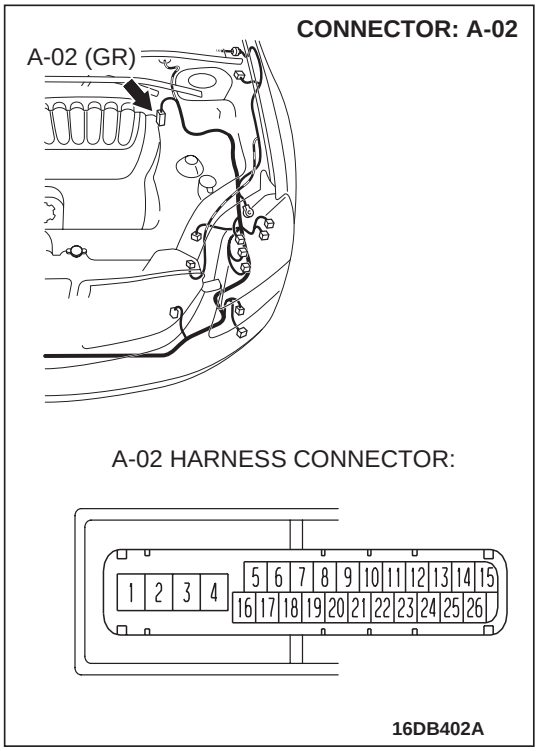
Q: Is ABS-ECU connector A-02 in good condition?

YES : Go to Step 24.
NO : Repair the damaged parts.

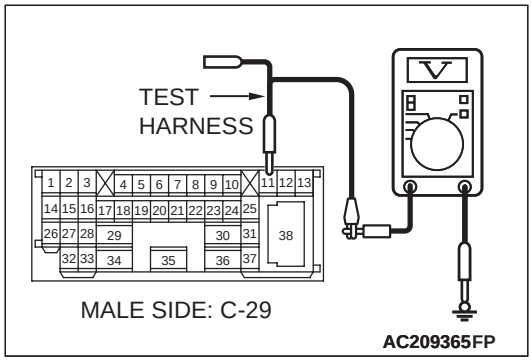
STEP 24. Check the CAN_H line (communication line only) between intermediate connector C-29 and ABS-ECU connector for a short to the power supply. Measure the voltage at intermediate connector C-29.

⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect intermediate connector C-29 and ABS-ECU connector A-02, and measure the voltage at the male side of intermediate connector C-29 (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between intermediate connector terminal 11 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 25.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and ABS-ECU connector.

STEP 25. Check the CAN_H line (communication line only) between the A/T-ECU connector and ABS-ECU connector for a short to the power supply. Measure voltage at A/T-ECU connector B-19.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

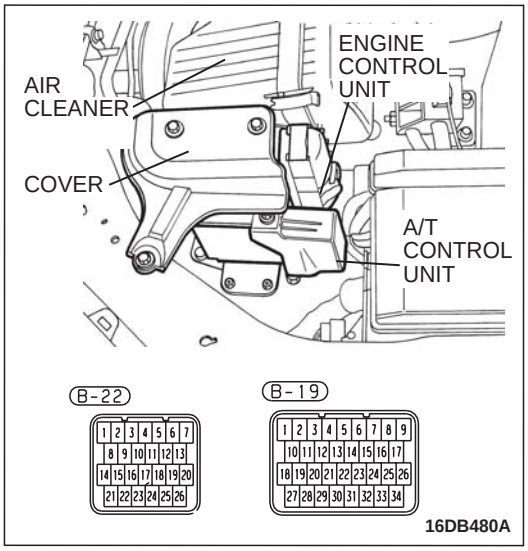
A digital multimeter should be used. For details refer to P.54C-4.

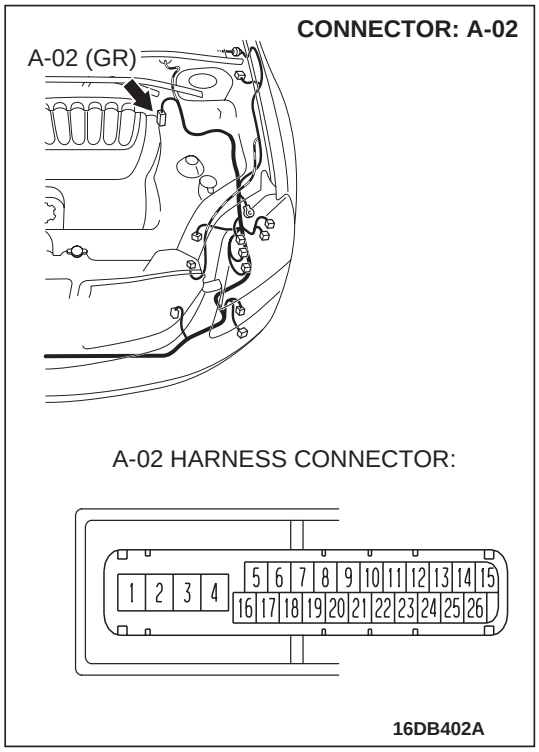
⚠ CAUTION

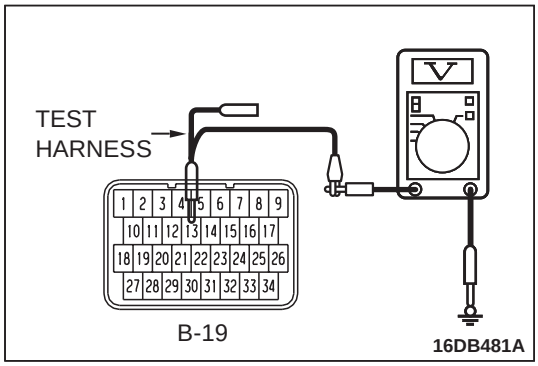
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect A/T-ECU connector B-19 and ABS-ECU connector A-02, and measure the voltage at the harness side of A/T-ECU connector B-19.

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







(3) Measure the voltage between A/T-ECU connector terminal 13 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 26.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and ABS-ECU connector.

STEP 26. Check the CAN_H line inside the ABS-ECU for a short to the power supply. Measure the voltage at ABS-ECU connector A-02.

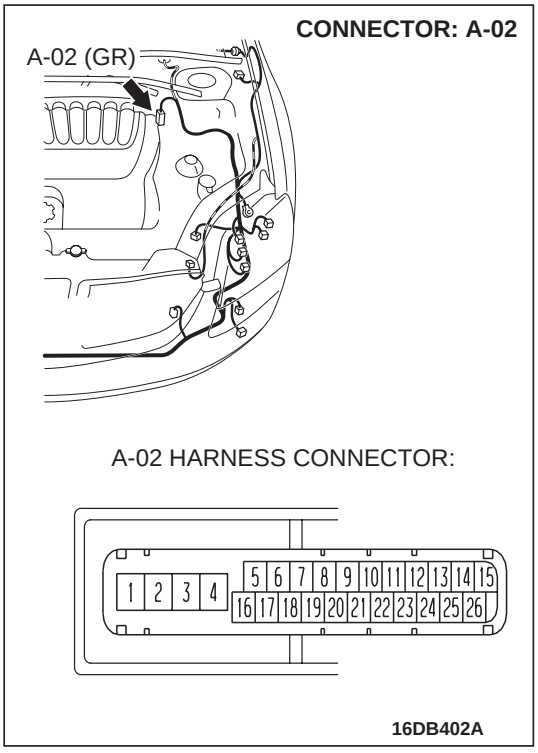
⚠ CAUTION

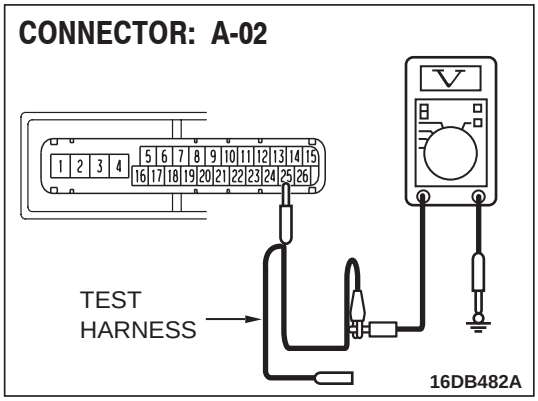
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ABS-ECU connector A-02.





(2) Measure the voltage using special tool MB991219 (Inspection test harness), by inserting probe into the wiring harness-side connector A-02.

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

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

(4) Measure the voltage between connector A-02 terminal 25 and body ground, using inspection test harness (MB991219).

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 27. Diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 4.0 V, replace the ABS-ECU.

STEP 27. Check the CAN_H line (communication line only) between the ENGINE-ECU connector and A/T-ECU connector for a short to the power supply. Measure voltage at ENGINE-ECU connector B-21.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.

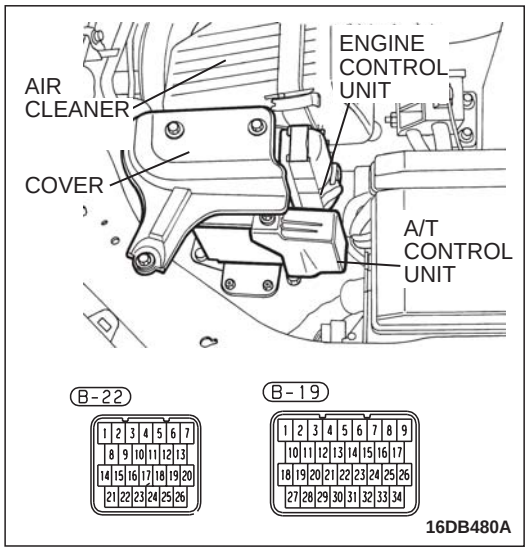
⚠ CAUTION

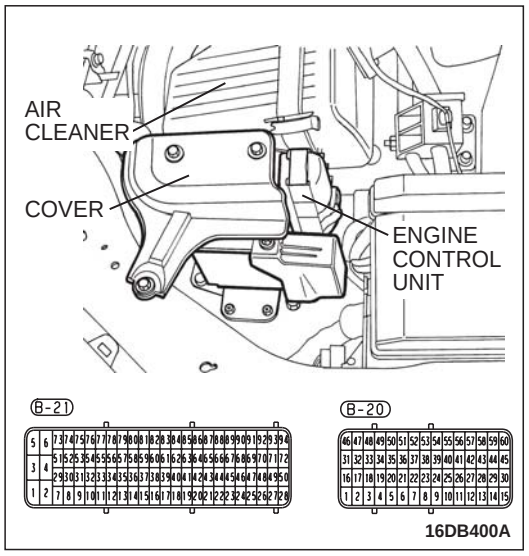
A digital multimeter should be used. For details refer to P.54C-4.

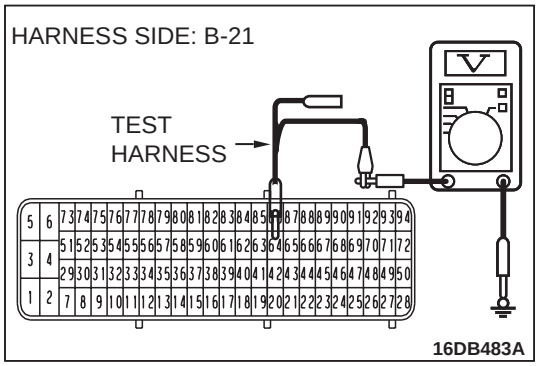
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ENGINE-ECU connector B-21 and A/T-ECU connector B-19, and measure the voltage at the harness side of ENGINE-ECU connector B-21.
(2) Turn the ignition switch to the "ON" position.







(3) Measure the voltage between ENGINE-ECU connector terminal 64 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 28.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and A/T-ECU connector.

STEP 28. Check the CAN_H line inside the A/T-ECU for a short to the power supply. Measure the voltage at A/T-ECU connector B-19.

⚠ CAUTION

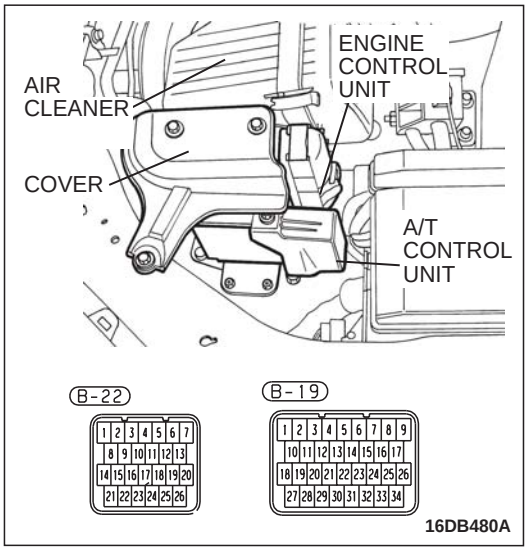
A digital multimeter should be used. For details refer to P.54C-4.

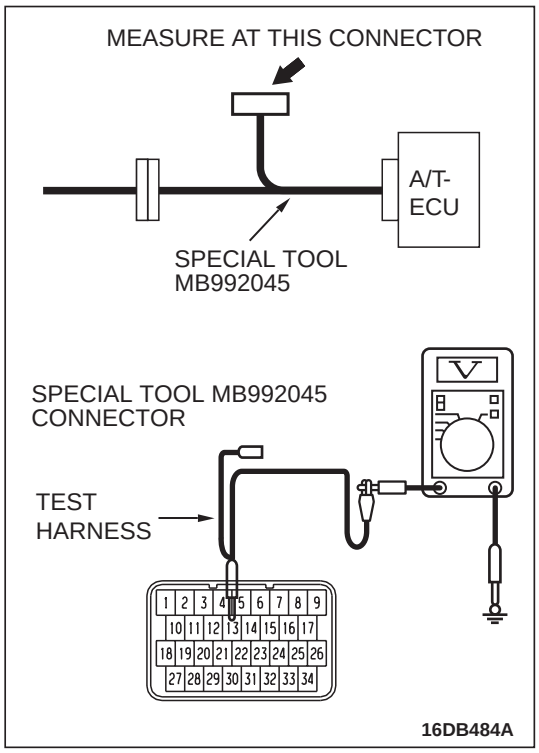
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect A/T-ECU connector B-19.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.





(2) Connect special tool MB992045 (A/T check harness) to the A/T-ECU and the wiring harness, and measure the voltage at special tool MB992045 (A/T check harness) connector B-19.
(3) Turn the ignition switch to the "ON" position.
(4) Measure the voltage between special tool MB992045 (A/T check harness) connector B-19 terminal 13 and body ground.

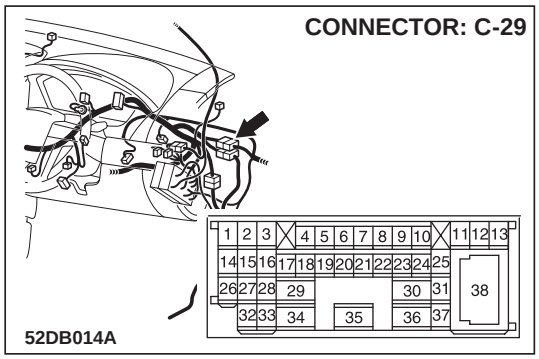
OK: 4.0 V or less

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.
NO : If the voltage measures more than 4.0 V, replace the A/T-ECU.

STEP 29. Check intermediate 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-4.

Q: Is intermediate connector C-29 in good condition?

YES : Go to Step 30.
NO : Repair the damaged parts.

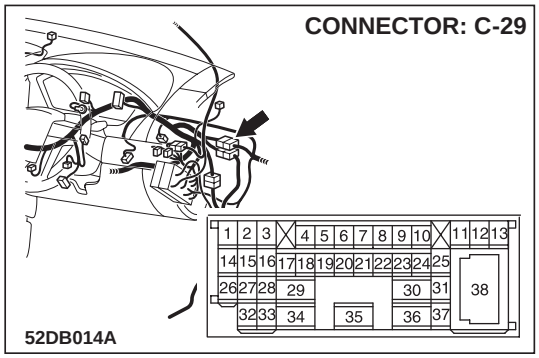
STEP 30. Check the CAN_L-side bus line (communication line including) of the front wiring harness for a short to the power supply. Measure the voltage at intermediate connector C-29.

⚠ CAUTION

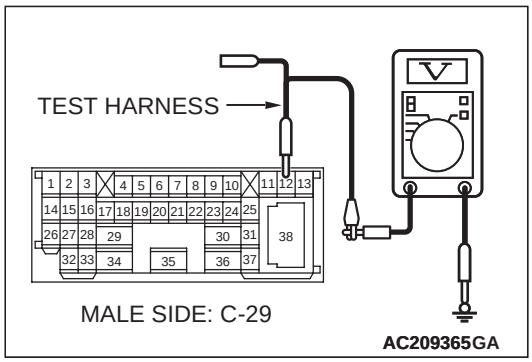
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect intermediate connector C-29, and measure the voltage at the male side (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between intermediate connector terminal 12 and body ground.

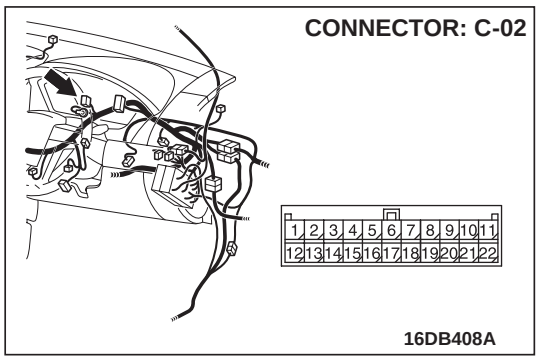
OK: 4.0 V or less

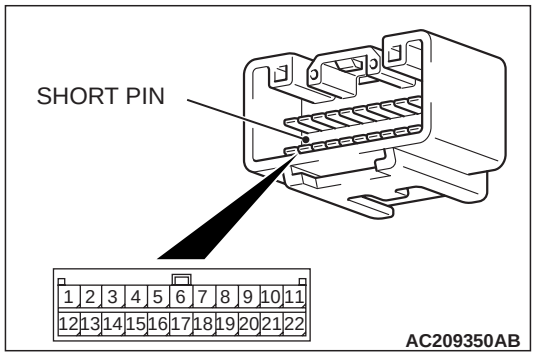
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 31.
NO : If the voltage measures more than 4.0 V, go to Step 48.

STEP 31. Check joint connector (3) C-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-4.





Check the joint connector at the wiring harness side for loose, corroded or damaged terminals, or terminals pushed back in the connector, and also check the short pin behind the connector for corrosion, deformation and delamination.

Q: Is joint connector (3) C-02 in good condition?

YES : Go to Step 32.

NO : Repair the damaged parts. Replace the joint connector as necessary.

STEP 32. Check the CAN_L line (communication line including the combination meter) between joint connector (3) and the combination meter connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

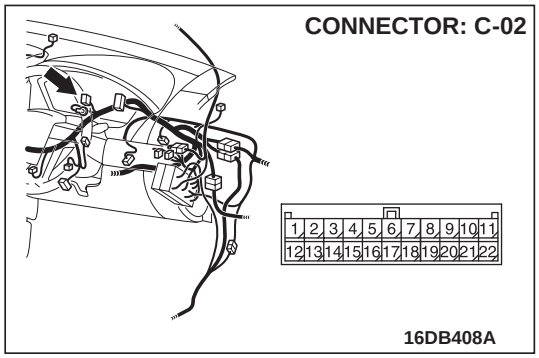
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

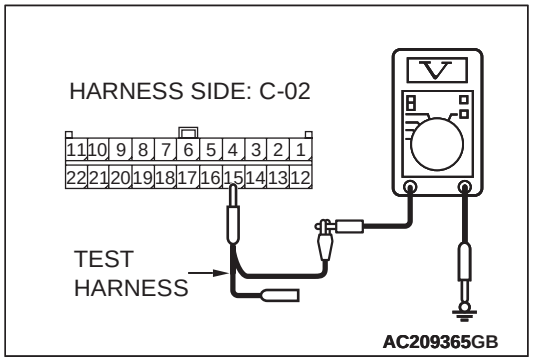
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 15 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 34.
NO : If the voltage measures more than 4.0 V, go to Step 33.

STEP 33. Check the CAN_L line (communication line only) between joint connector (3) and the combination meter connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

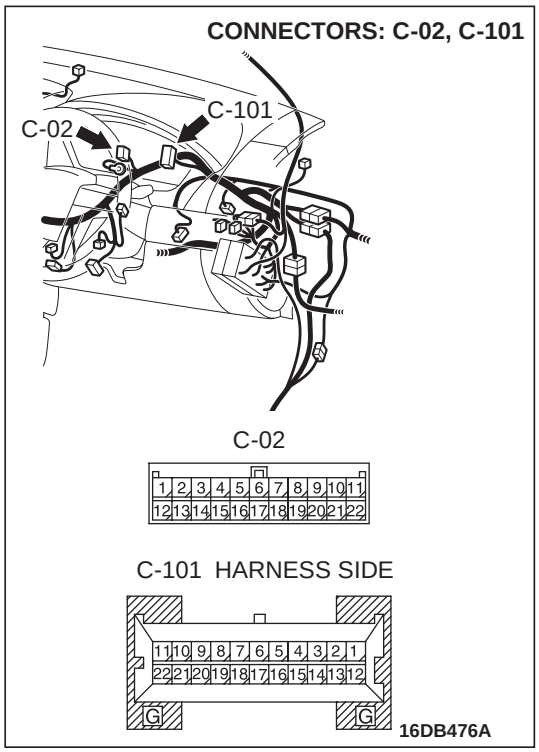
A digital multimeter should be used. For details refer to P.54C-4.

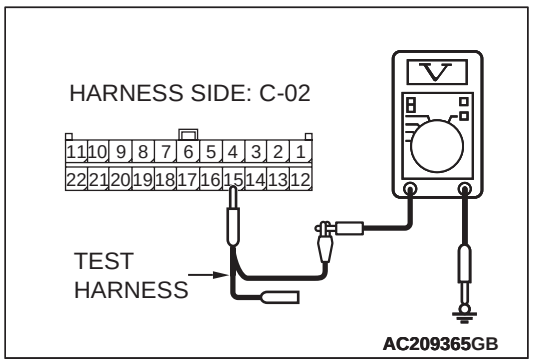
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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





(3) Measure the voltage between joint connector (3) terminal 15 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the combination meter connector.

STEP 34. Check the CAN_L line (communication line including the ETACS-ECU) between joint connector (3) and the ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

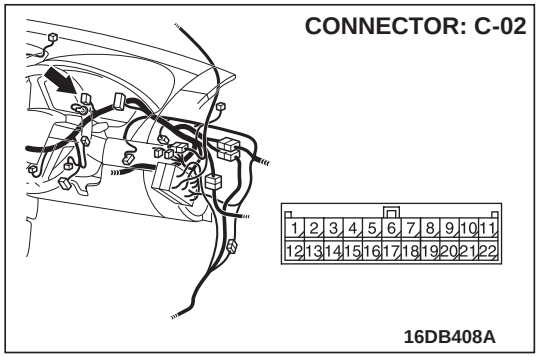
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

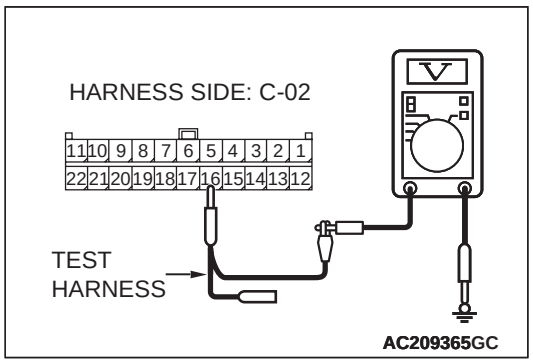
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 16 and body ground.

OK: 4.0 V or less

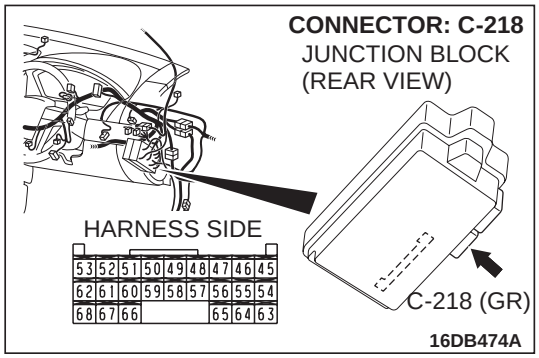
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 37.
NO : If the voltage measures more than 4.0 V, go to Step 35.

STEP 35. Check ETACS-ECU connector C-218 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-4.



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

YES : Go to Step 36.
NO : Repair the damaged parts.

STEP 36. Check the CAN_L line (communication line only) between joint connector (3) and ETACS-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

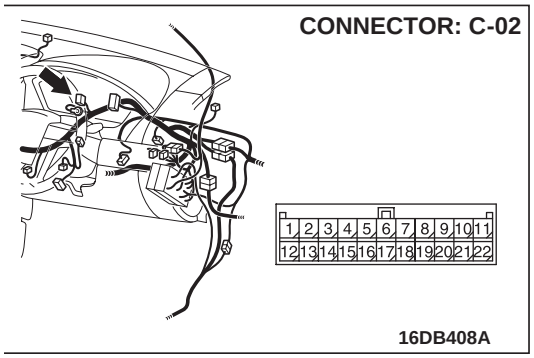
A digital multimeter should be used. For details refer to P.54C-4.

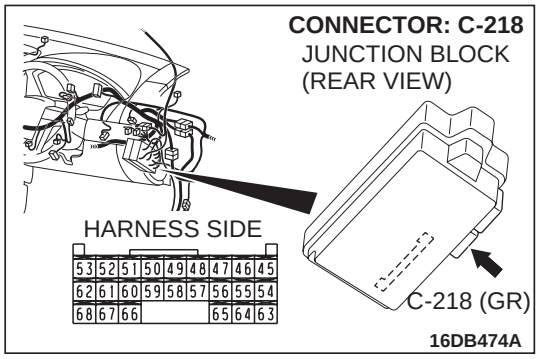
⚠ CAUTION

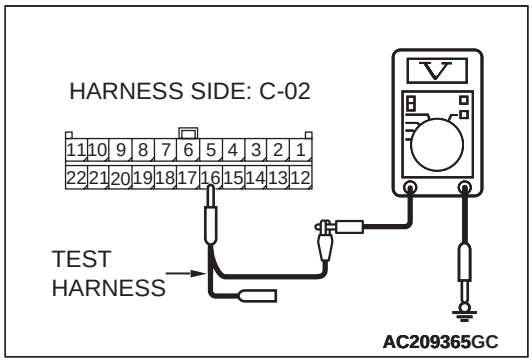
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and ETACS-ECU connector C-218, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 16 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the ETACS-ECU connector.

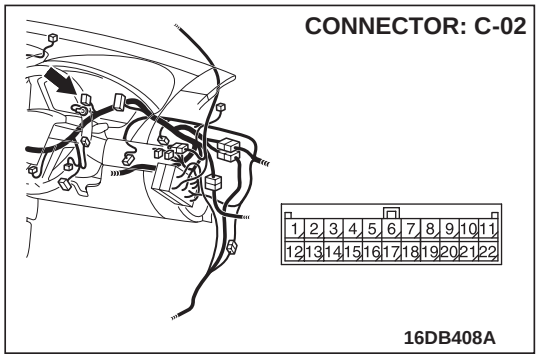
STEP 37. Check the CAN_L line (communication line including the A/C-ECU) between joint connector (3) and the A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

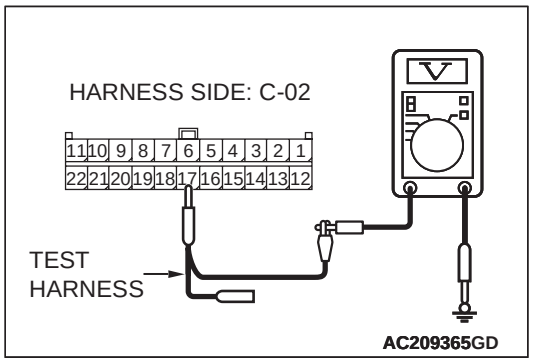
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.

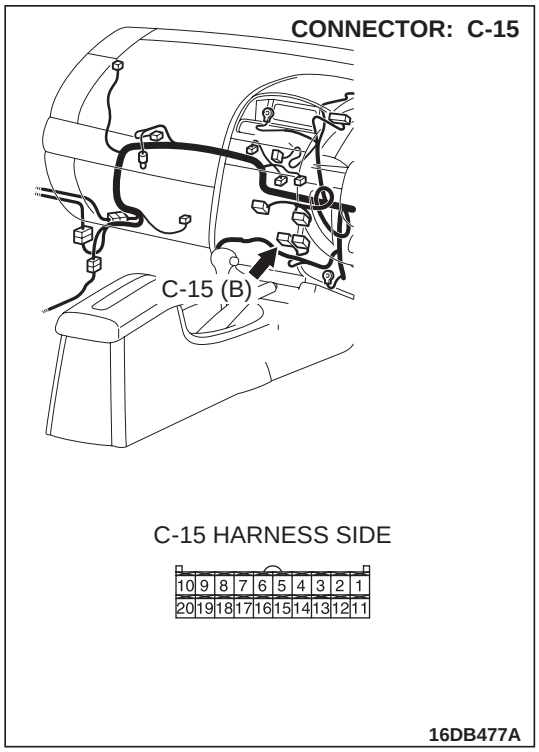


(3) Measure the voltage between joint connector (3) terminal 17 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 40.
NO : If the voltage measures more than 4.0 V, go to Step 38.



STEP 38. Check A/C-ECU connector C-15 automatic air conditioning system 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-4.

Q: Is A/C-ECU connector C-15 automatic air conditioning system in good condition?

YES : Go to Step 39.
NO : Repair the damaged parts.

STEP 39. Check the CAN_L line (communication line only) between joint connector (3) and A/C-ECU connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

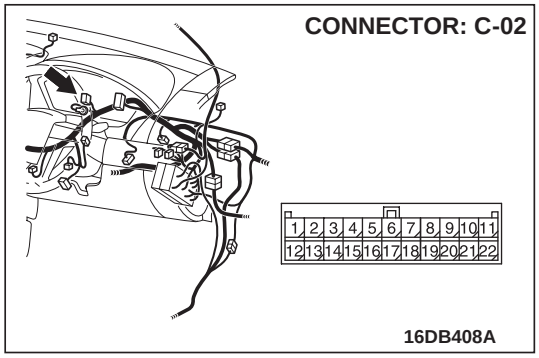
⚠ CAUTION

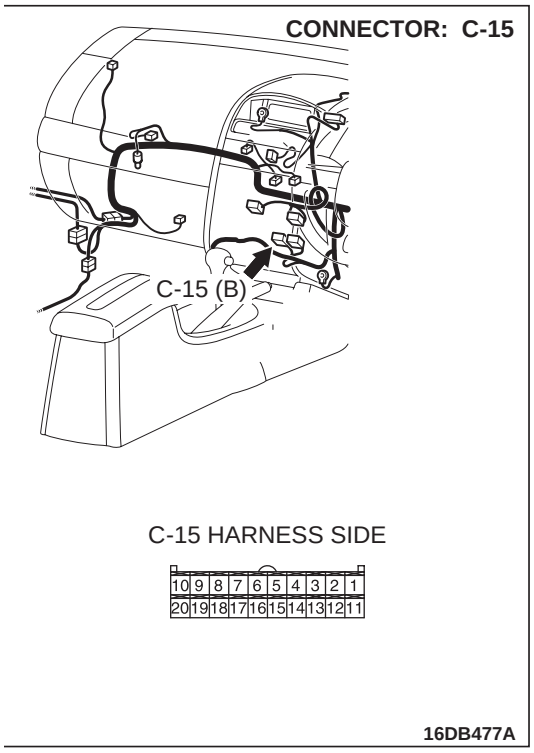
A digital multimeter should be used. For details refer to P.54C-4.

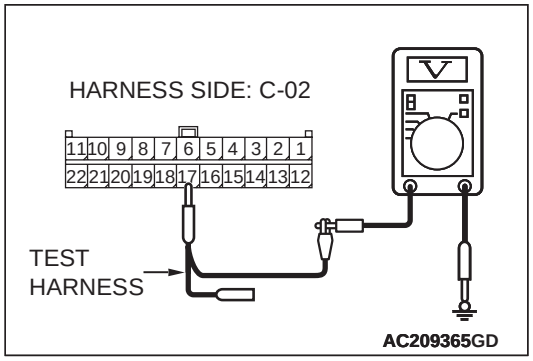
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.







(3) Measure the voltage between joint connector (3) terminal 17 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the A/C-ECU connector.

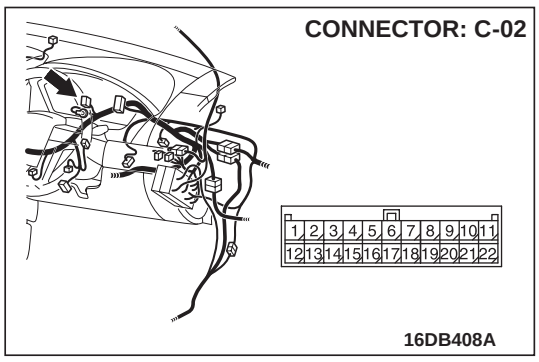
STEP 40. Check the CAN_L line (communication line including the SRS-ECU) between joint connector (3) and the SRS-ECU connector for short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

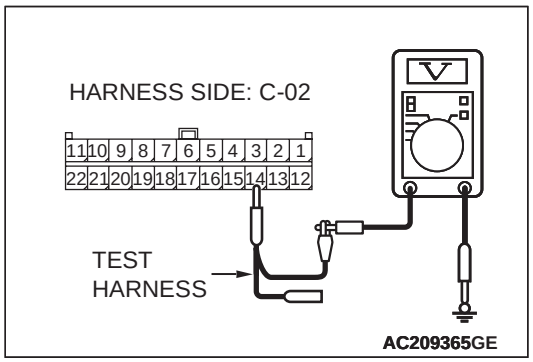
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 14 and body ground.

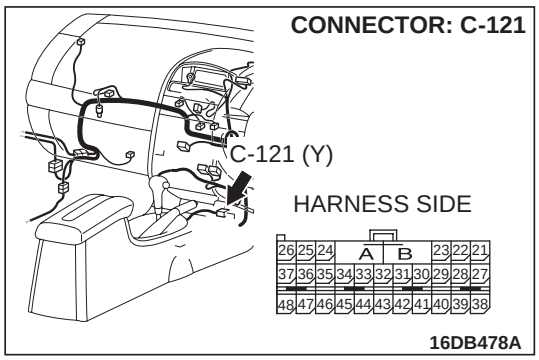
OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 43.

NO : If the voltage measures more than 4.0 V, go to Step 41.

STEP 41. Check SRS-ECU connector C-121 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-4.

Q: Is SRS-ECU connector C-121 in good condition?

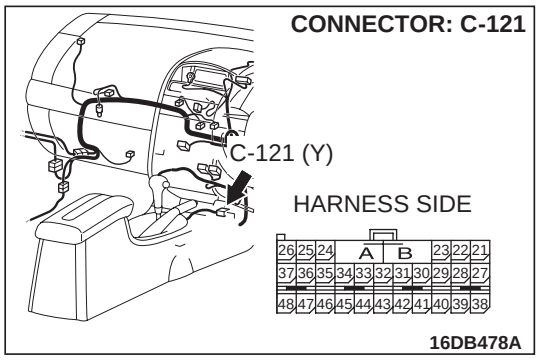
YES : Go to Step 42.
NO : Repair the damaged parts.

STEP 42. Check the CAN_L line (communication line only) between the SRS-ECU connector and joint connector (3) for a short to the power supply. Measure the voltage at joint connector (3) C-02.

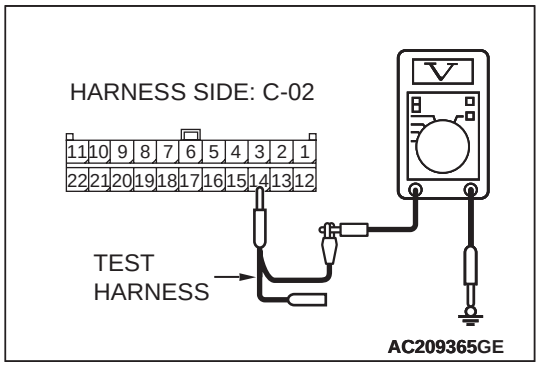
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02 and SRS-ECU connector C-121, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) C-02 terminal 14 and body ground.

OK: 1.0 V or less

⚠ CAUTION
Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) C-02 and SRS-ECU connector C-121.

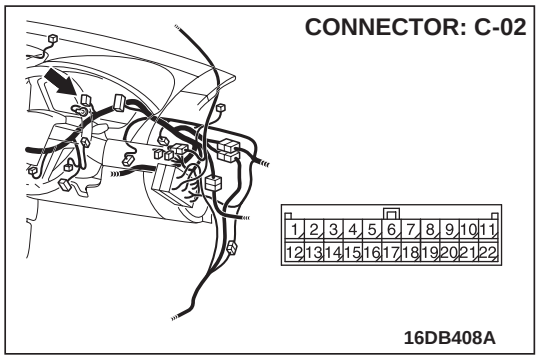
STEP 43. Check the CAN_L line (communication line including the multi-center display unit) between joint connector (3) and middle-grade multi-center display connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

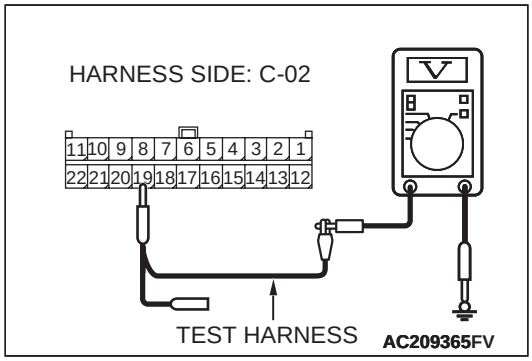
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between joint connector (3) terminal 19 and body ground.

OK: 4.0 V or less

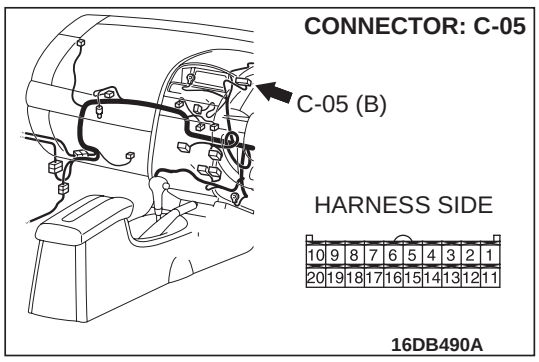
Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, go to Step 46.
NO : If the voltage measures more than 4.0 V, go to Step 44.

STEP 44. Check multi-center display unit connector C-05 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-4.



Q: Is multi-center display unit connector C-05 in good condition?

YES : Go to Step 45.
NO : Repair the damaged parts.

STEP 45. Check the CAN_L line (communication line only) between joint connector (3) and multi-center display unit connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

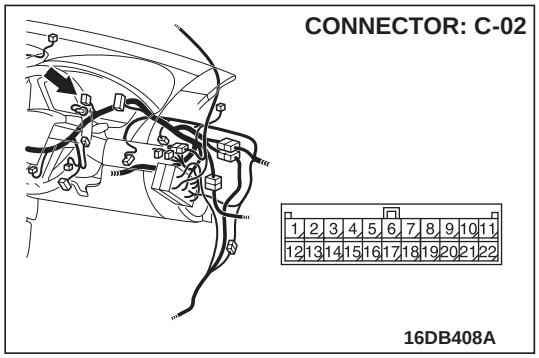
A digital multimeter should be used. For details refer to P.54C-4.

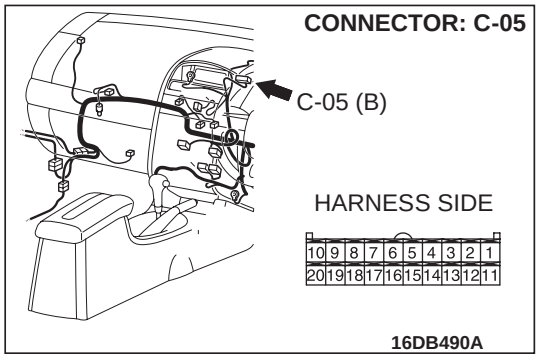
⚠ CAUTION

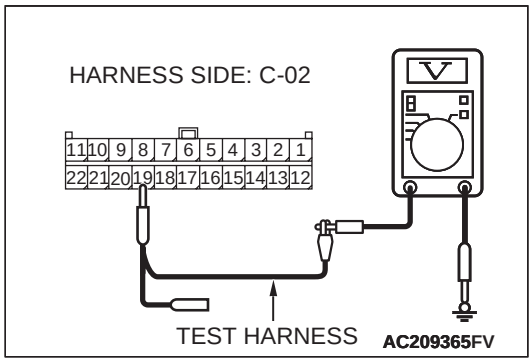
The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect joint connector (3) C-02 and multi-center display unit connector C-05, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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







(3) Measure the voltage between joint connector (3) terminal 19 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the multi-center display unit connector.

STEP 46. Check the CAN_L line (communication line only) between joint connector (3) and the data link connector for a short to the power supply. Measure the voltage at joint connector (3) C-02.

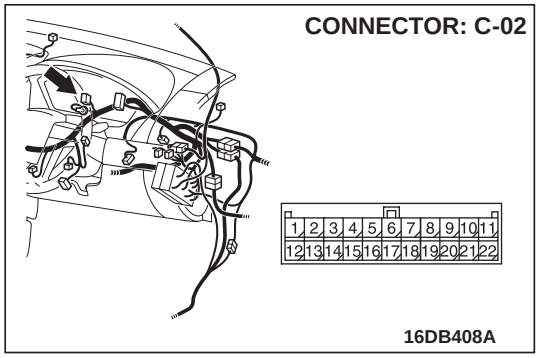
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

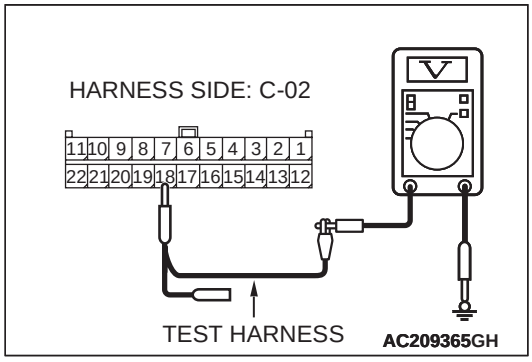
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.



(1) Disconnect joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 18 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 47.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between joint connector (3) and the data link connector.

STEP 47. Check the CAN_L line (communication line only) between intermediate connector C-29 and joint connector (3) for a short to the power supply. Measure the voltage at joint connector (3) C-02.

⚠ CAUTION

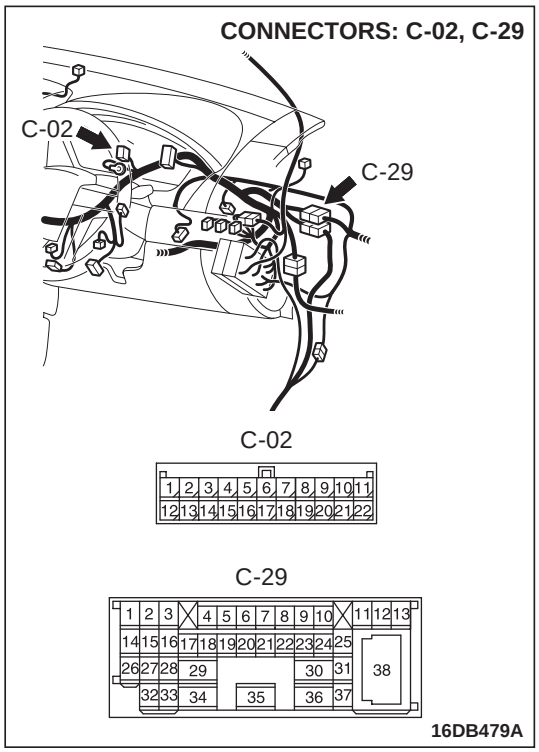
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

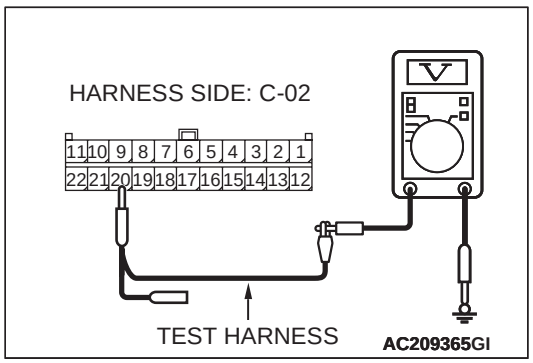
(1) Disconnect intermediate connector C-29 and joint connector (3) C-02, and measure the voltage at the wiring harness side of joint connector (3) C-02.

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



(3) Measure the voltage between joint connector (3) terminal 20 and body ground.

OK: 1.0 V or less



⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

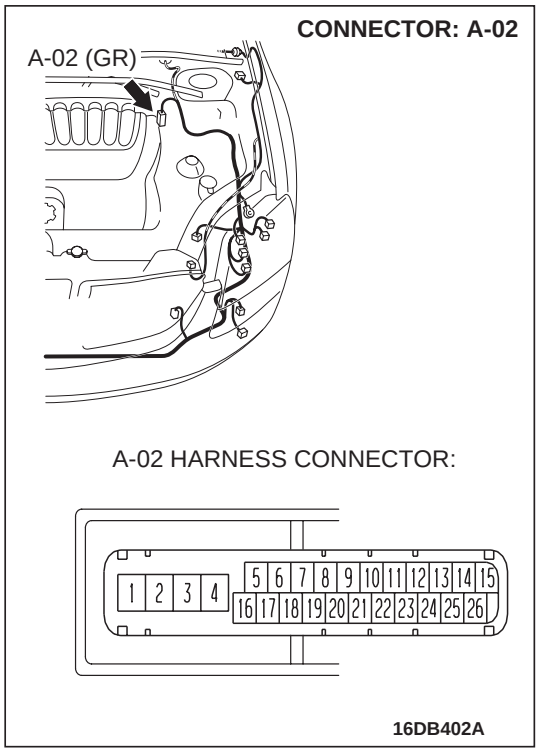
NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and joint connector (3).

STEP 48. Check ABS-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-4.

Q: Is ABS-ECU connector A-02 in good condition?

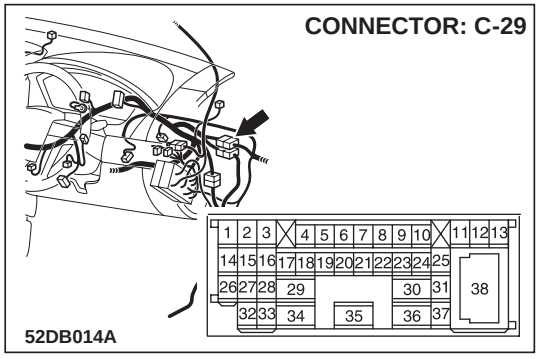
YES : Go to Step 49.
NO : Repair the damaged parts.

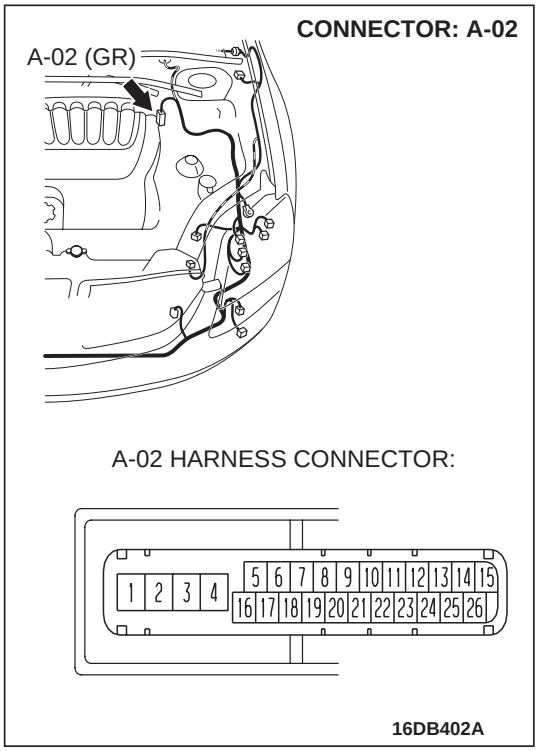


STEP 49. Check the CAN_L line (communication line only) between intermediate connector C-29 and ABS-ECU connector for a short to the power supply. Measure the voltage at intermediate connector C-29.

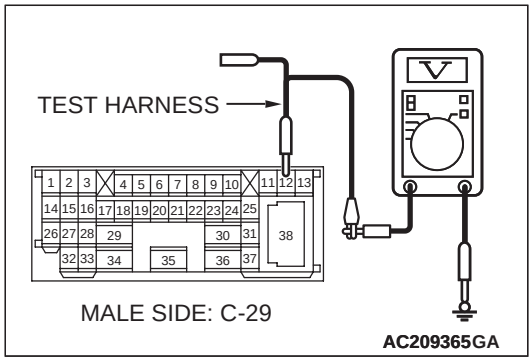
⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION
The test wiring harness should be used. For details refer to P.54C-4.





(1) Disconnect intermediate connector C-29 and ABS-ECU connector A-02, and measure the voltage at the male side of intermediate connector C-29 (at front wiring harness side).
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between intermediate connector terminal 12 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 50.
NO : If the voltage measures more than 1.0 V, repair the wiring harness between intermediate connector C-29 and ABS-ECU connector.

STEP 50. Check the CAN_L line (communication line only) between the A/T-ECU connector and ABS-ECU connector for a short to the power supply. Measure voltage at A/T-ECU connector B-19.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

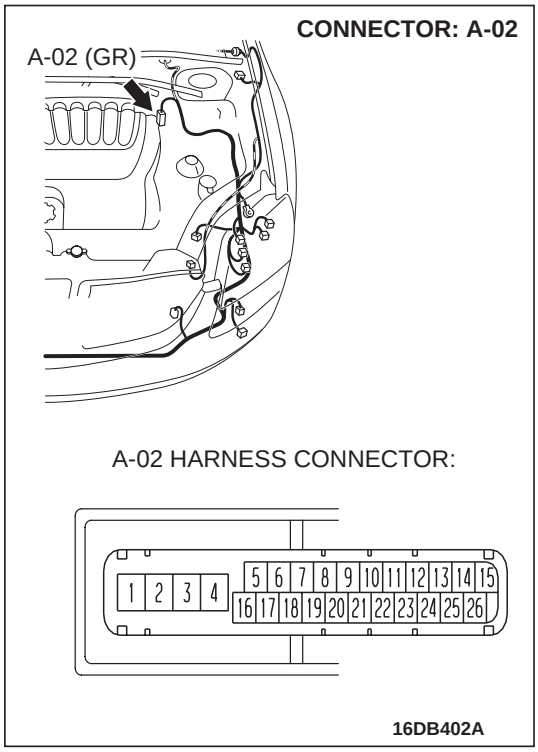
NOTE: ***When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.***

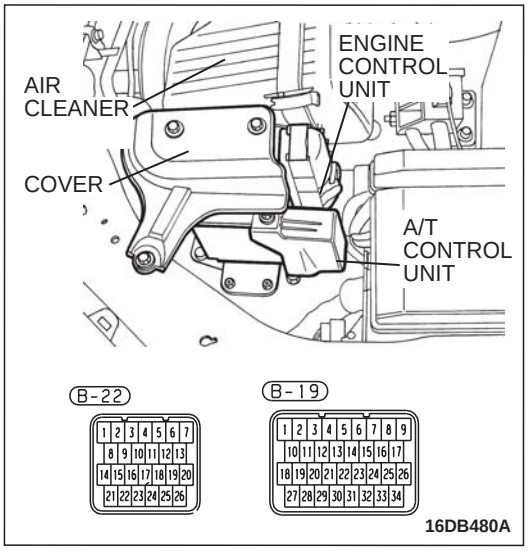
⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

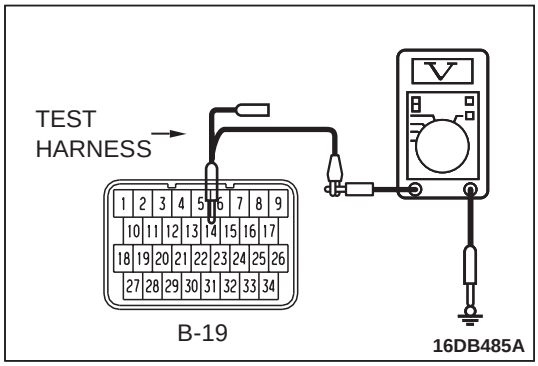
The test wiring harness should be used. For details refer to P.54C-4.





(1) Disconnect A/T-ECU connector B-19 and ABS-ECU connector A-02, and measure the voltage at the harness side of A/T-ECU connector B-19.
(2) Turn the ignition switch to the "ON" position.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.



(3) Measure the voltage between A/T-ECU connector terminal 14 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 51.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and ABS-ECU connector.

STEP 51. Check the CAN_L line inside the ABS-ECU for a short to the power supply. Measure the voltage at ABS-ECU connector A-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

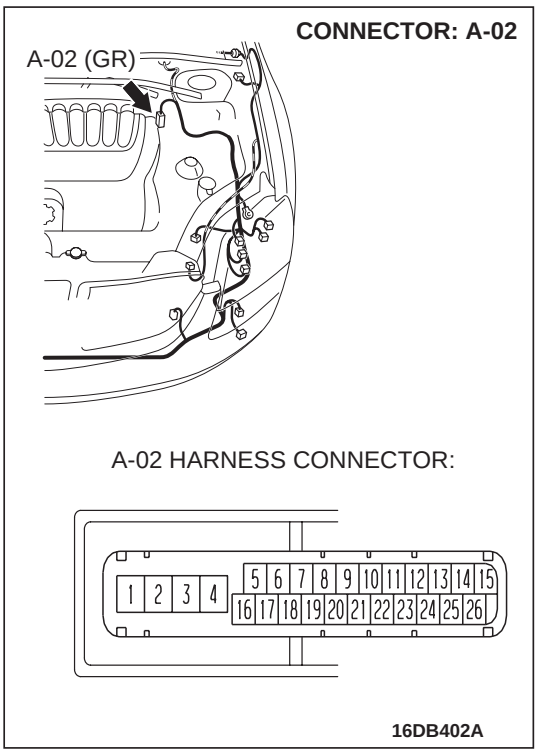
⚠ CAUTION

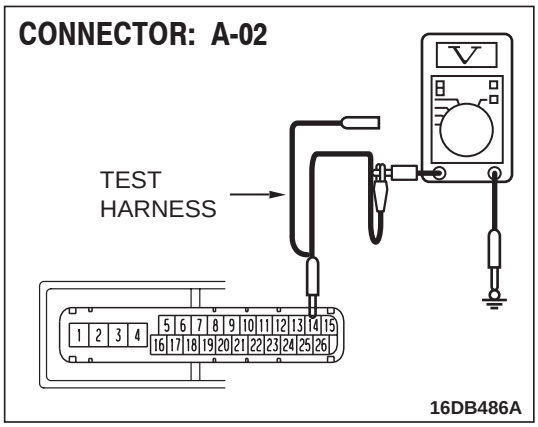
A digital multimeter should be used. For details refer to P.54C-4.

⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect ABS-ECU connector A-02.





(2) Measure the voltage using special tool MB991219 (Inspection test harness), by inserting probe into the wiring harness-side connector A-02.

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

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

(4) Measure the voltage between connector A-02 terminal 14 and body ground, using inspection test harness (MB991219).

NOTE: The special tool (Inspection test harness) MB991219 for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 4.0 V, replace the ABS-ECU.

STEP 52. Check the CAN_L line (communication line only) between the ENGINE-ECU connector and A/T-ECU connector for a short to the power supply. Measure voltage at ENGINE-ECU connector B-21.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

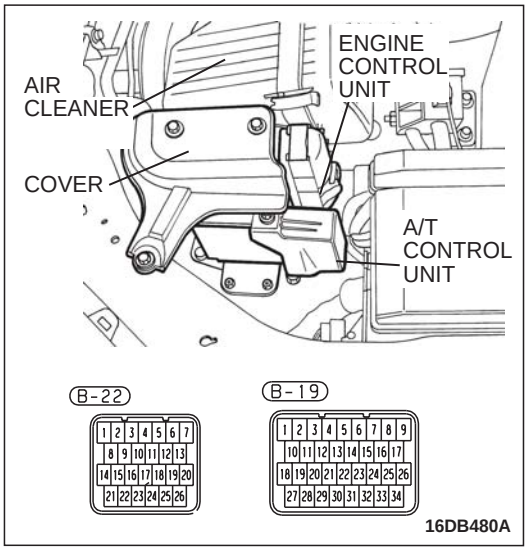
⚠ CAUTION

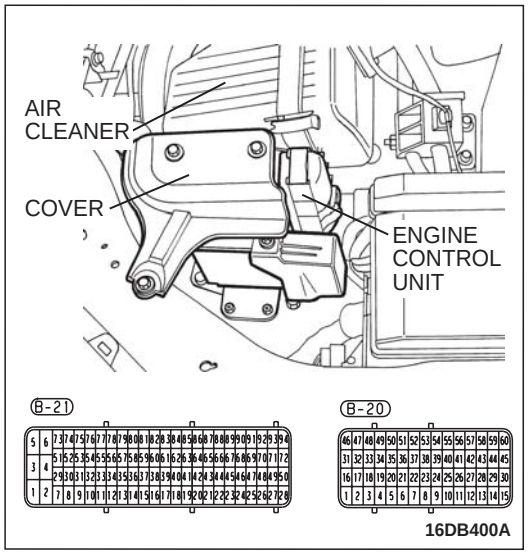
The test wiring harness should be used. For details refer to P.54C-4.

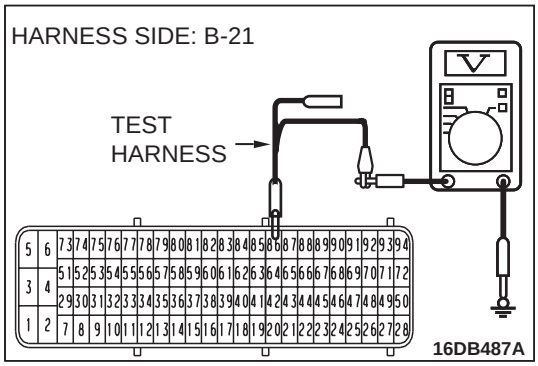
(1) Disconnect ENGINE-ECU connector B-21 and A/T-ECU connector B-19, and measure the voltage at the harness side of ENGINE-ECU connector B-21.

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

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.







(3) Measure the voltage between ENGINE-ECU connector terminal 86 and body ground.

OK: 1.0 V or less

⚠ CAUTION

Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Does the voltage measure 1.0 V or less?

YES : If the voltage measures 1.0 V or less, go to Step 53.

NO : If the voltage measures more than 1.0 V, repair the wiring harness between ENGINE-ECU connector and A/T-ECU connector.

STEP 53. Check the CAN_L line inside the A/T-ECU for a short to the power supply. Measure the voltage at A/T-ECU connector B-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

⚠ CAUTION

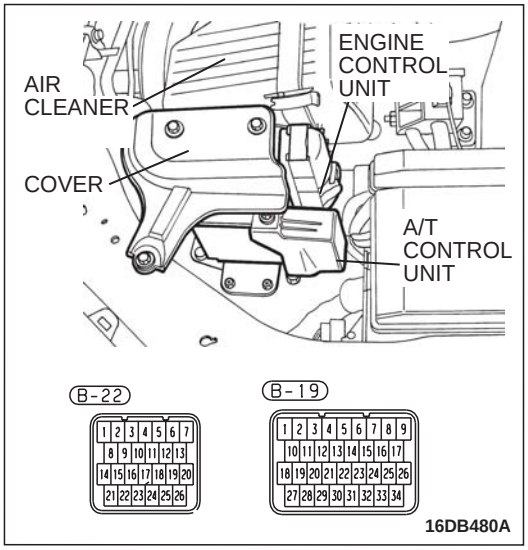
A digital multimeter should be used. For details refer to P.54C-4.

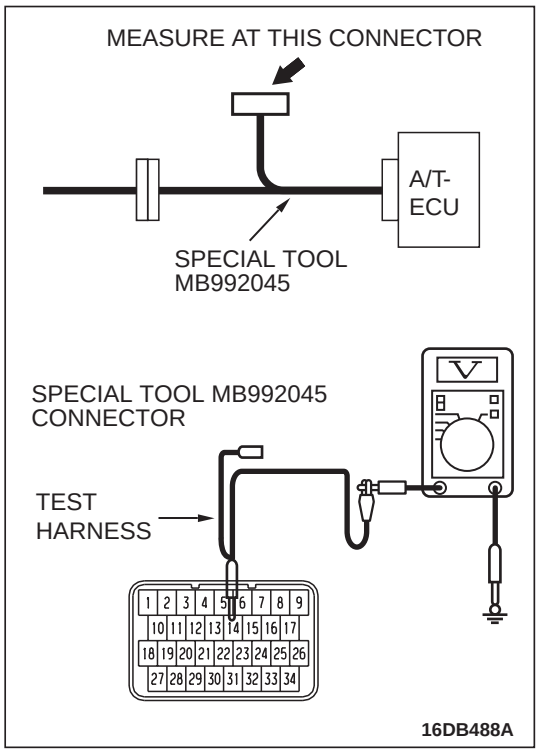
⚠ CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

(1) Disconnect A/T-ECU connector B-19.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.





(2) Connect special tool MB992045 (A/T check harness) to the A/T-ECU and the wiring harness, and measure the voltage at special tool MB992045 (A/T check harness).
(3) Turn the ignition switch to the "ON" position.
(4) Measure the voltage between special tool MB992045 (A/T check harness) connector terminal 14 and body ground.

OK: 4.0 V or less

Q: Does the voltage measure 4.0 V or less?

YES : If the voltage measures 4.0 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the voltage measures more than 4.0 V, replace the A/T-ECU.

NOTE: When diagnosing CAN BUS on vehicles with manual transmission (M/T) please disregard A/T ECU and its circuits.

NEXT PAGE