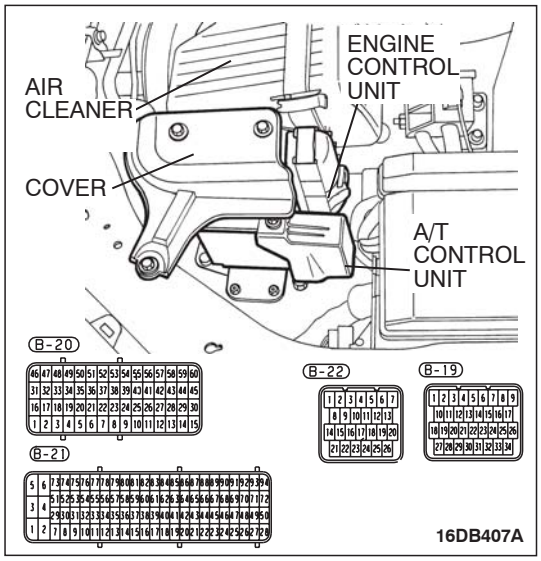
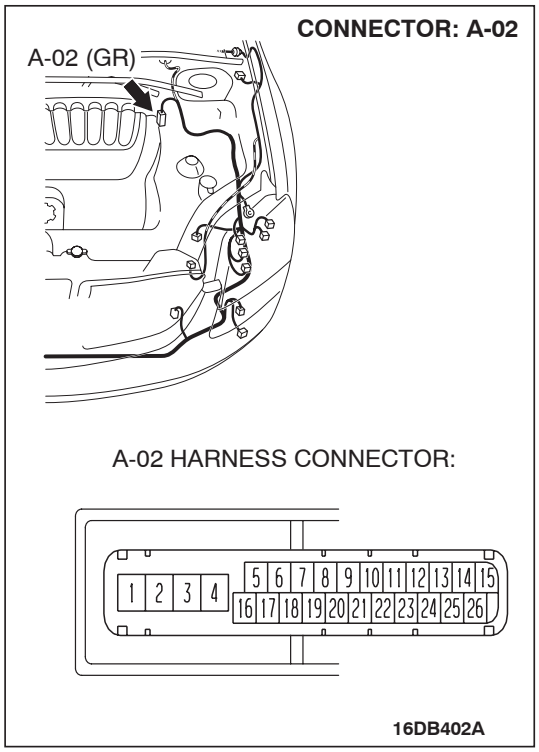
DIAGNOSTIC ITEM 6: Diagnose terminator resistors at both ends

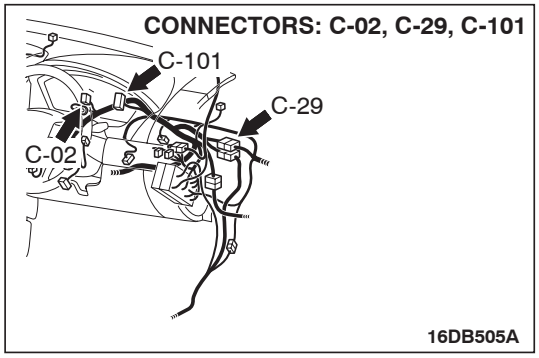
NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

⚠ 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

The terminator resistors at both ends of CAN bus lines may be damaged, when the resistance between the CAN bus lines (CAN_L and H lines) is more than 2 ohms.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus line harness wires or connectors may be damaged (open circuit may be present on CAN_L or CAN_H line between the data link connector and CAN main bus lines, or CAN main bus lines may be open at both sides), or the combination meter and the ENGINE-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 damage terminals, or terminals pushed back in the connector
- The combination meter may be defective
- The ABS-ECU may be defective
- The A/T-ECU may be defective
- The ENGINE-ECU may be defective

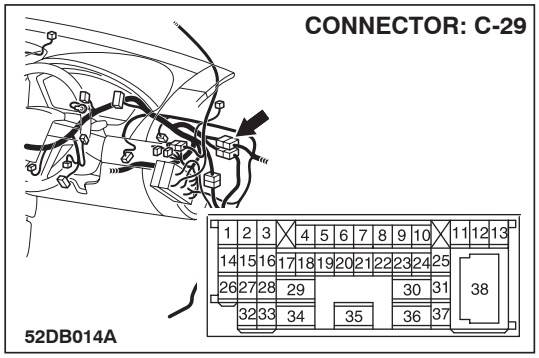
NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991219: Inspection Test Harness
- MB992045: A/T-ECU Check Harness
- MB992044: ENGINE-ECU Check Harness

STEP 1. 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 2.

NO : Repair the damaged parts.

STEP 2. Check the instrument panel wiring harness side CAN bus lines (communication line including the combination meter). Measure the resistance 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.

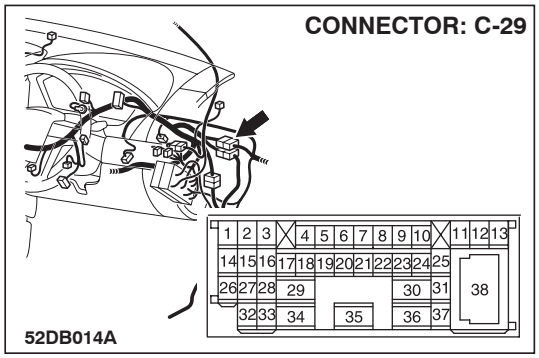
(1) Disconnect intermediate connector C-29, and measure the resistance at its female side connector (instrument panel wiring harness side).

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

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



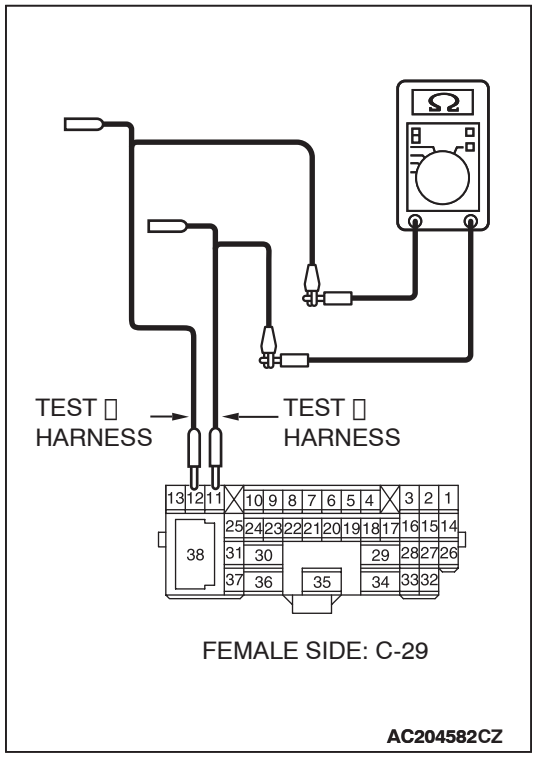
(4) Measure the resistance between intermediate connector terminals 11 and 12.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

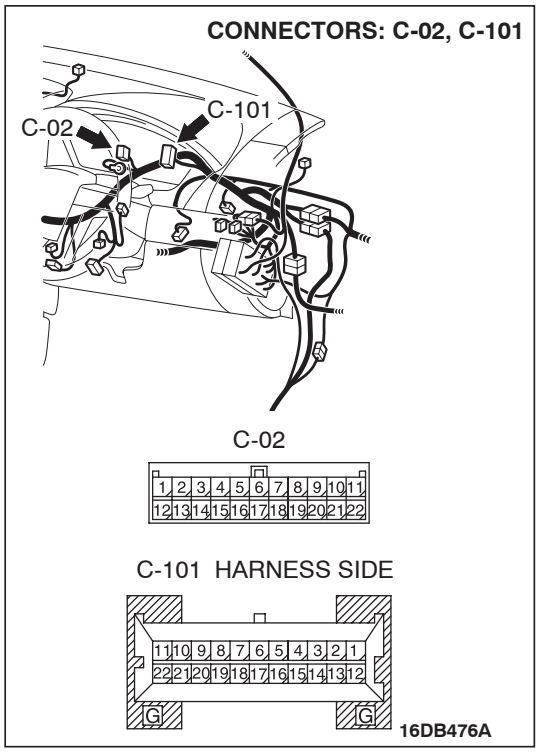
YES : If the resistance measures 120 ± 20 Ω, go to Step 8.

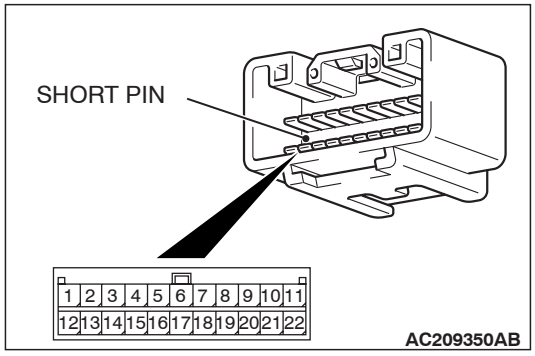
NO : If the resistance does not measure 120 ± 20 Ω, go to Step 3 .



STEP 3. Check joint connector (3) C-02 and combination meter connector C-101 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: Are joint connector (3) C-02 and combination meter connector C-101 in good condition?

YES : Go to Step 4.

NO : Repair the damaged parts. Replace the joint connector as necessary. Then go to Step 2.

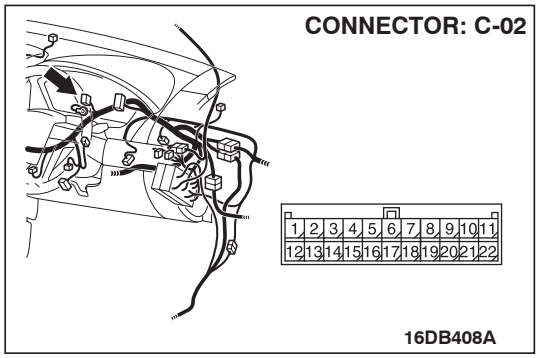
STEP 4. Check the CAN bus lines (communication line including the combination meter) between joint connector (3) and the combination meter. Measure the resistance at joint connector (3) C-02.

⚠ 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.



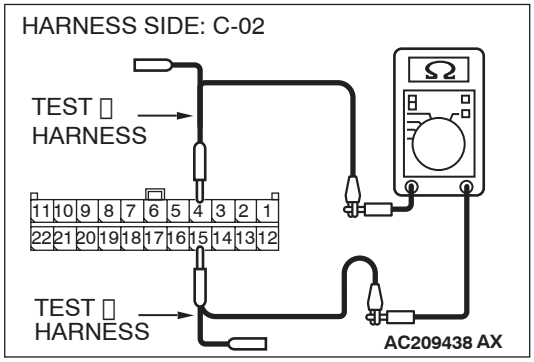
(1) Disconnect joint connector (3) C-02, and measure the resistance at the wiring harness side of joint connector (3) C-02.

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

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



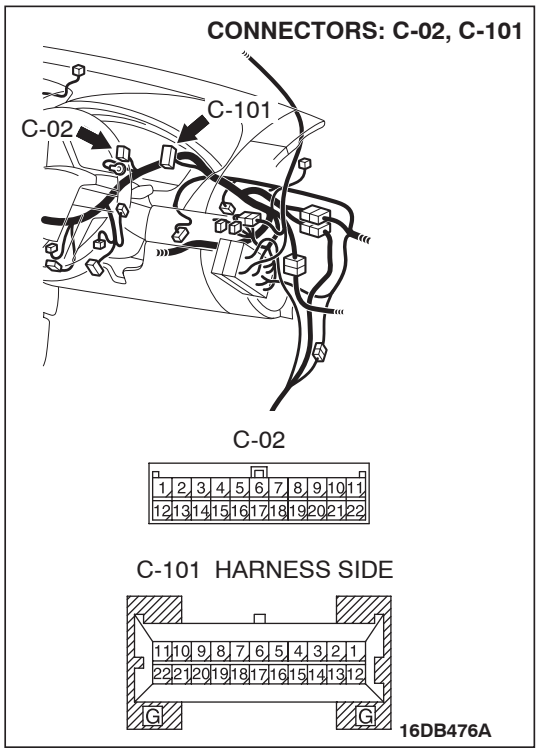
(4) Measure the resistance between joint connector (3) terminals 4 and 15.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, go to Step 7.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 5 .



STEP 5. Check the CAN bus lines (communication line only) between joint connector (3) and the combination meter. Measure the resistance at joint connector (3) C-02 and combination meter connector C-101.

⚠ 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.

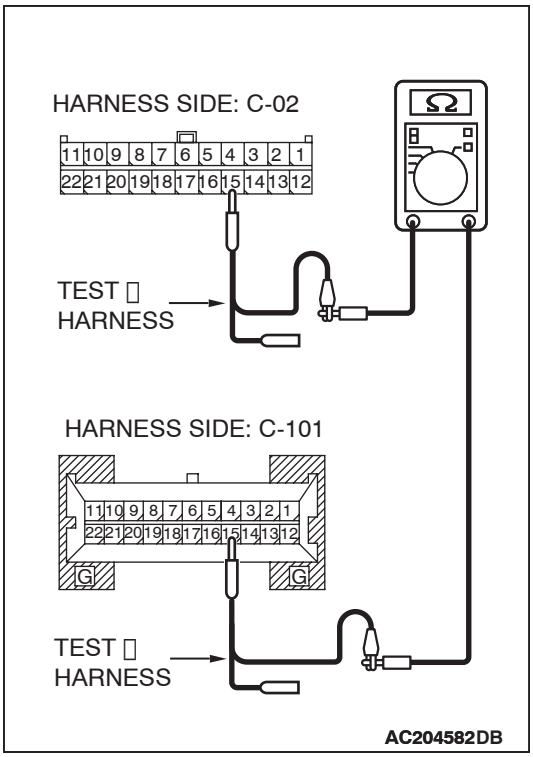
(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the resistance between each wiring harness side connector.

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

⚠ CAUTION

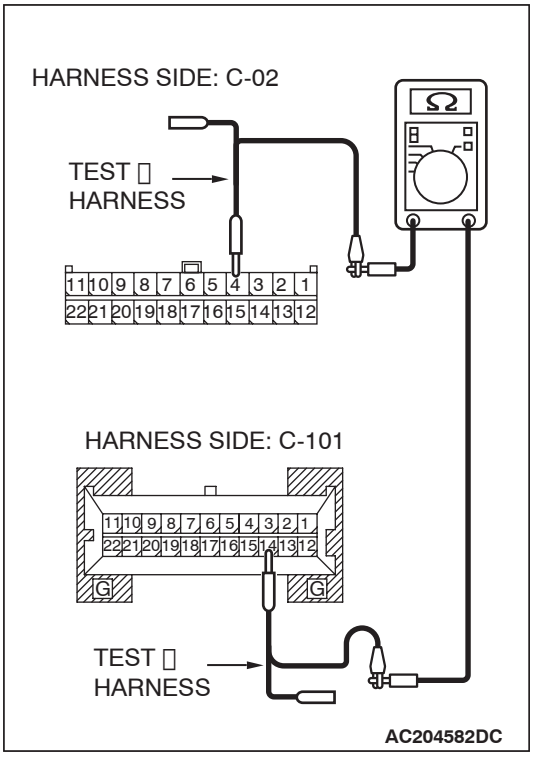
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 15 and combination meter connector terminal 15.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 4 and combination meter connector terminal 14.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

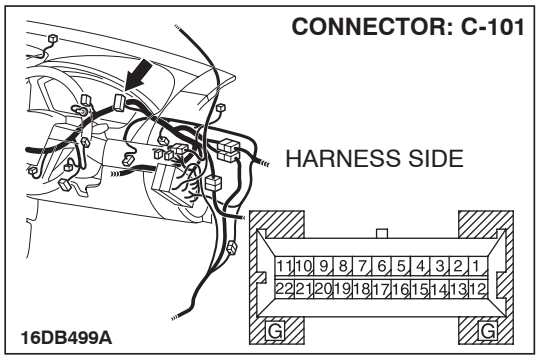
YES : If all the resistances measure 2 ohms or less, go to Step 6.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the combination meter connector, and then go to Step 2.

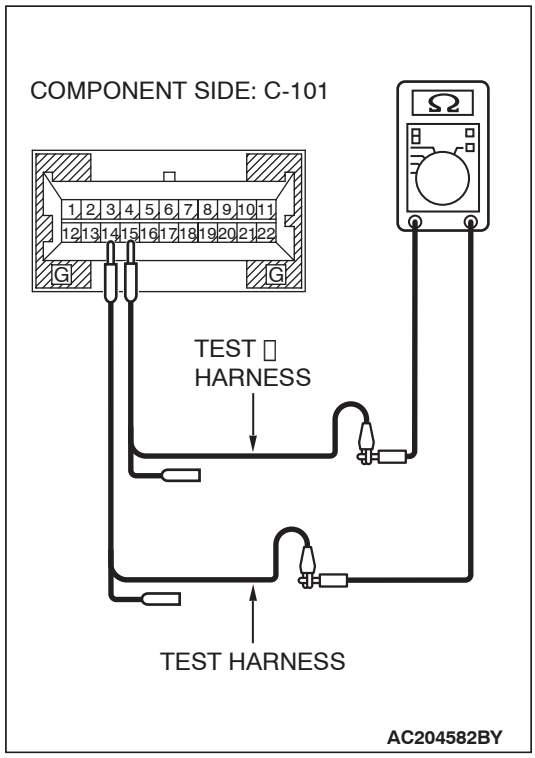
STEP 6. Check the terminator resistor inside the combination meter. Measure the resistance at combination meter connector C-101.

⚠ CAUTION

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



(1) Disconnect combination meter C-101, and measure the resistance at the component side of combination meter connector C-101.



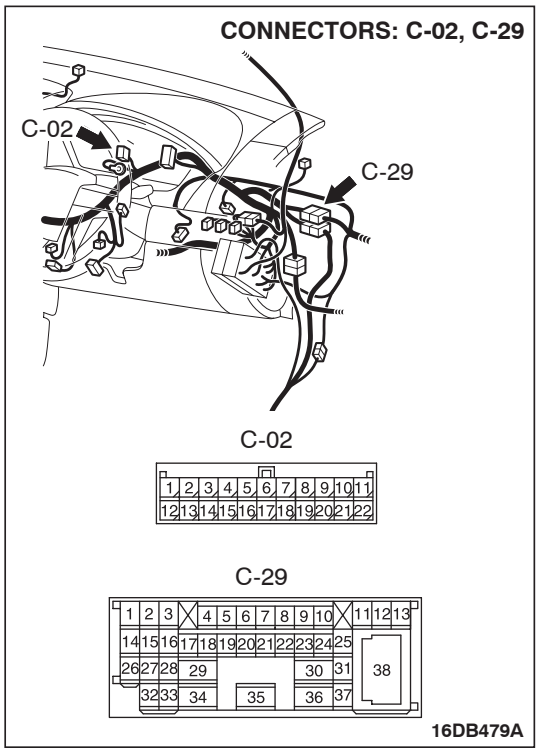
(2) Measure the resistance between combination meter connector terminals 14 and 15.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, go to Step 2.

NO : If the resistance does not measure 120 ± 20 Ω, replace the combination meter, and then go to Step 2.



STEP 7. Check the CAN bus lines (communication line only) between intermediate connector C-29 and joint connector (3). Measure the resistance at intermediate connector C-29 and 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.

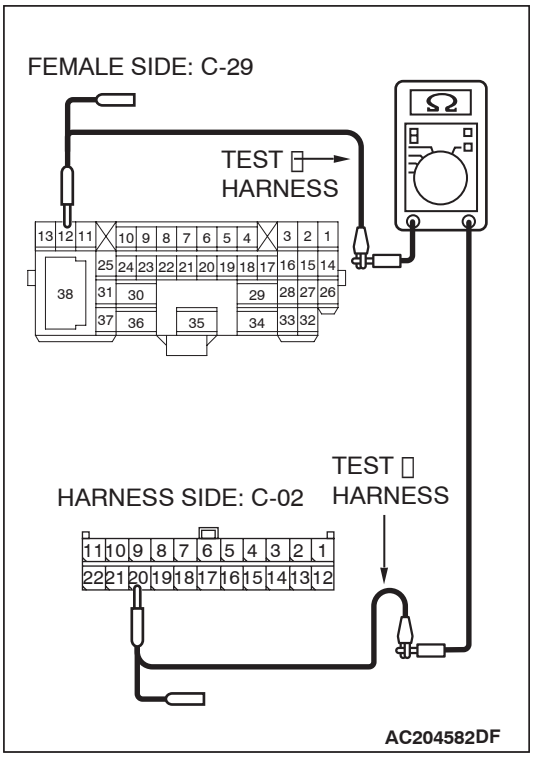
(1) Disconnect joint connector (3) C-02 and intermediate connector C-29, and measure the resistance between the wiring harness side connector of joint connector (3) C-02 and the female side connector of intermediate connector C-29 (instrument panel wiring harness side).

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

⚠ CAUTION

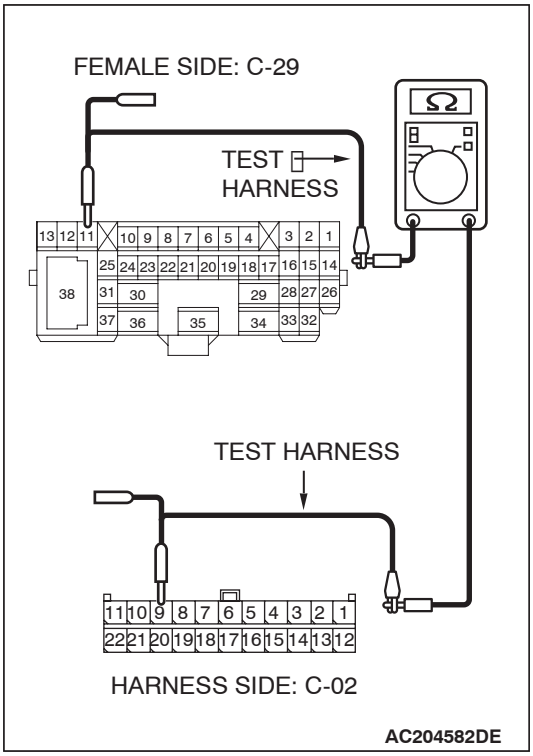
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between intermediate connector terminal 12 and joint connector (3) terminal 20.

OK: 2 ohms or less



(5) Measure the resistance between intermediate connector terminal 11 and joint connector (3) terminal 9.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 2.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the intermediate connector, and then go to Step 2.

STEP 8. Check the front wiring harness side CAN bus lines (communication line including the ENGINE-ECU, A/T-ECU and the ABS-ECU). Measure the resistance at intermediate connector C-29.

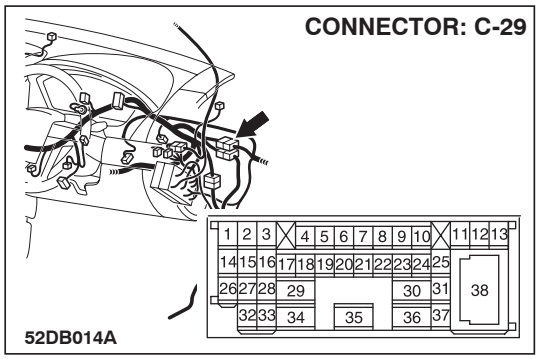
NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.



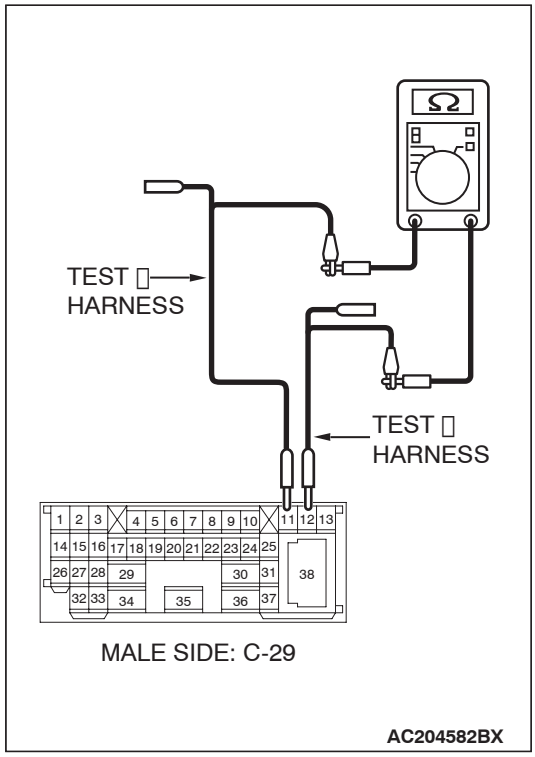
(1) Disconnect intermediate connector C-29, and measure the resistance at the male side (at front wiring harness side).

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

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between intermediate connector terminals 11 and 12.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, go to Step 15.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 9 .

STEP 9. Check ABS-ECU connector A-02 and A/T-ECU connector B-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

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

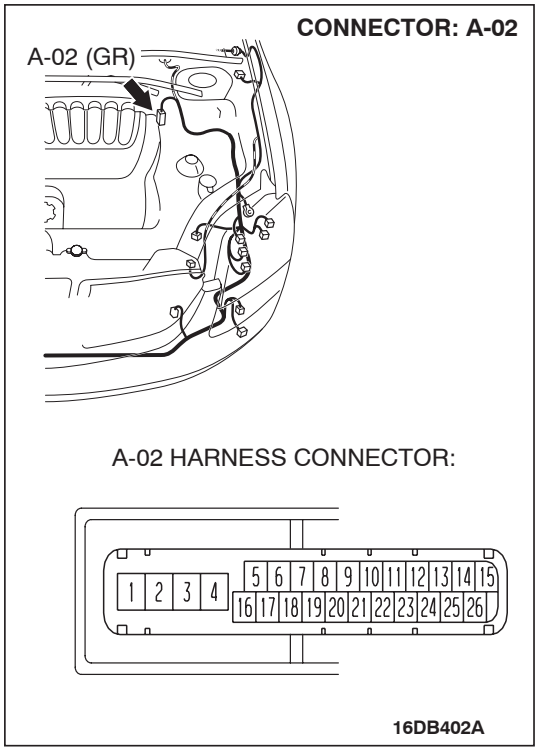
⚠ CAUTION

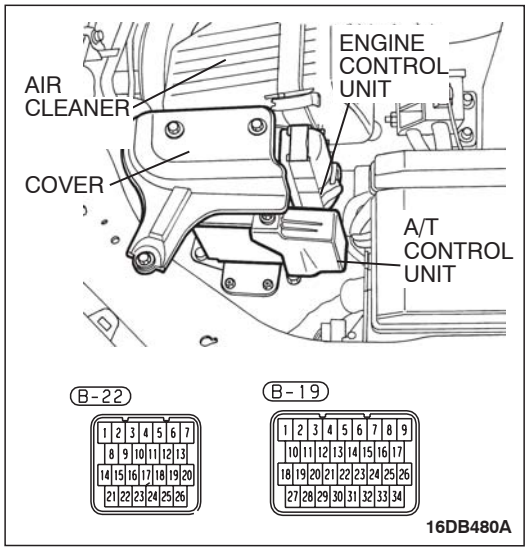
The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to P.54C-4.

Q: Are ABS-ECU connector A-02 and A/T-ECU connector B-19 in good condition?

YES : Go to Step 10.

NO : Repair the damaged parts. Then go to Step 8.





STEP 10. Check the CAN bus lines between the ABS-ECU and the A/T-ECU (communication line including the A/T-ECU). Measure the resistance at ABS-ECU connector A-02.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

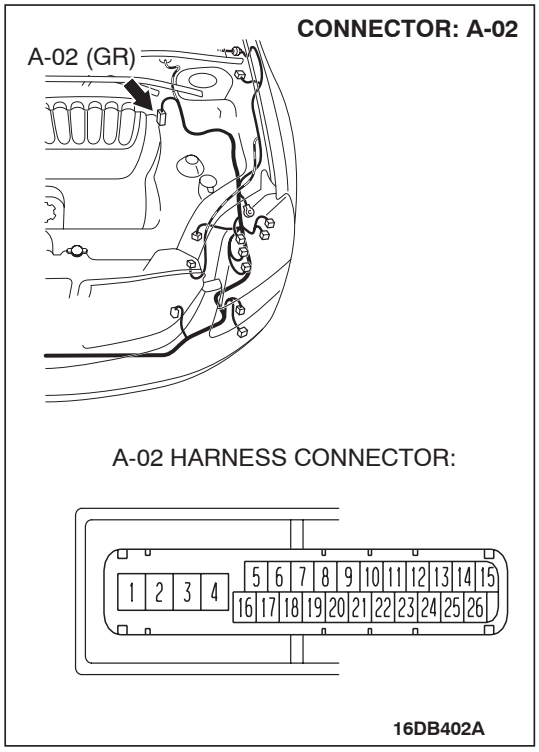
(1) Disconnect ABS-ECU connector A-02, and measure the resistance at the wiring harness side of ABS-ECU connector A-02.

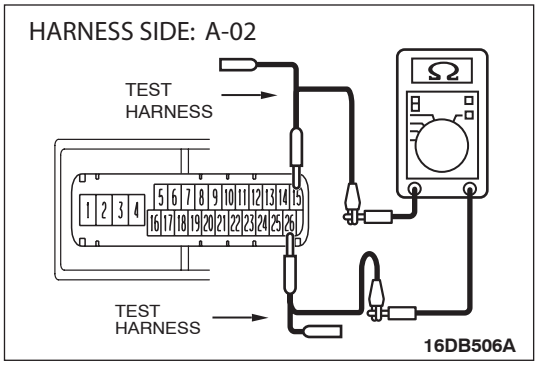
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.





(4) Measure the resistance between ABS-ECU connector terminals 15 and 26.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, go to Step 13.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 11 .

STEP 11. Check the CAN bus lines (communication line only) between ABS-ECU and the A/T-ECU. Measure the resistance at ABS-ECU connector A-02 and A/T-ECU connector B-19.

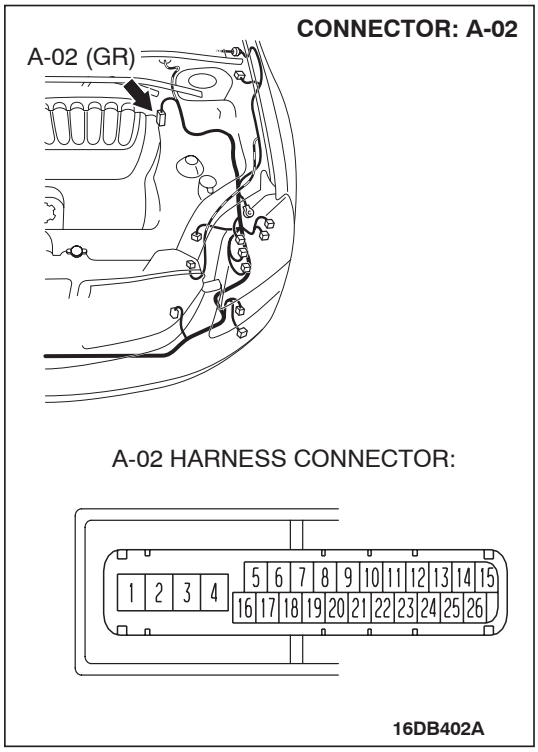
NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

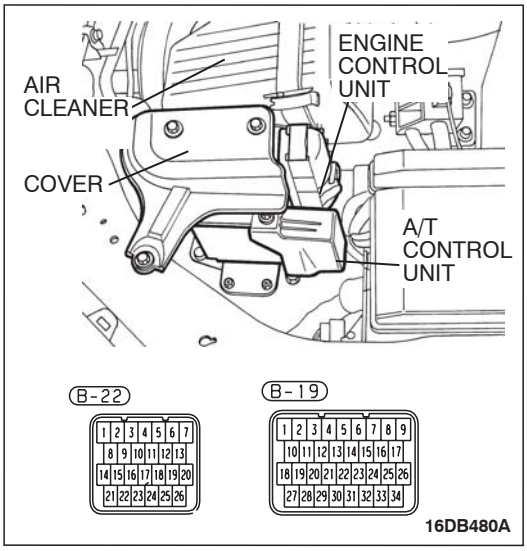
⚠ CAUTION

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.



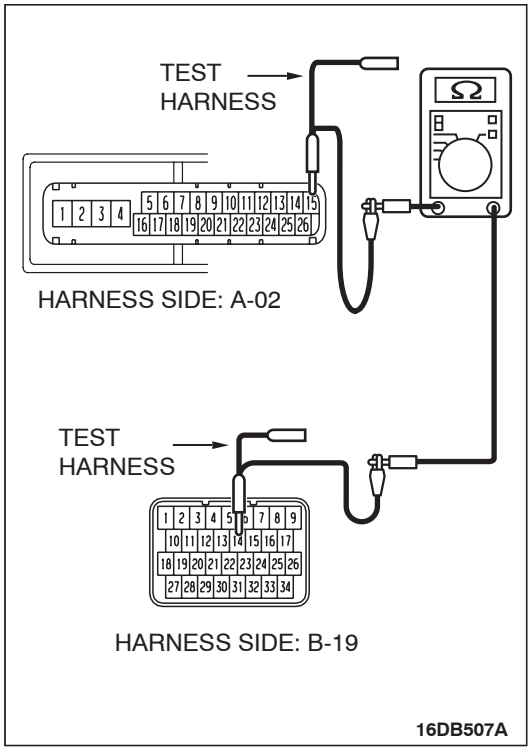


(1) Disconnect ABS-ECU connector A-02 and A/T-ECU connector B-19, and measure the resistance between each wiring harness side connector.
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

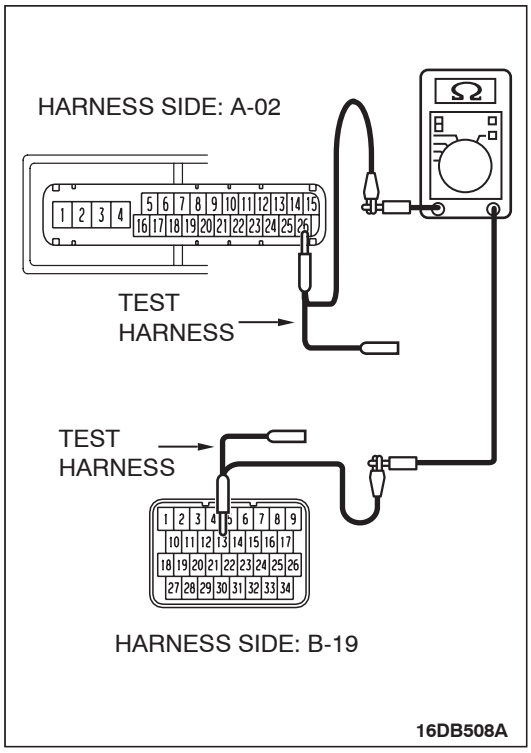
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between ABS-ECU connector terminal 15 and A/T-ECU B-19 connector terminal 14.

OK: 2 ohms or less



(5) Measure the resistance between ABS-ECU connector terminal 26 and A/T-ECU B-19 connector terminal 13.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

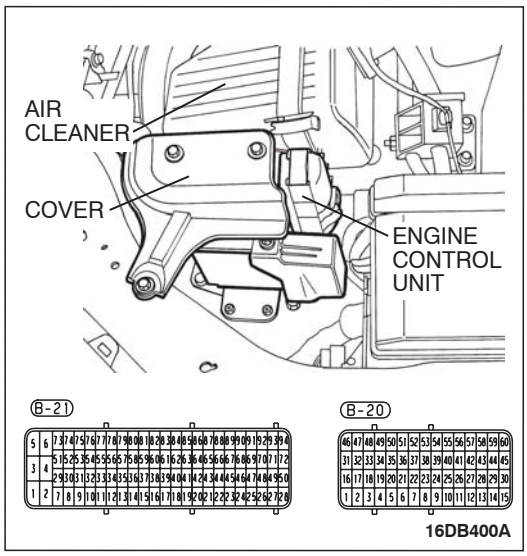
Q: Do all the resistances measure 2 ohms or less?

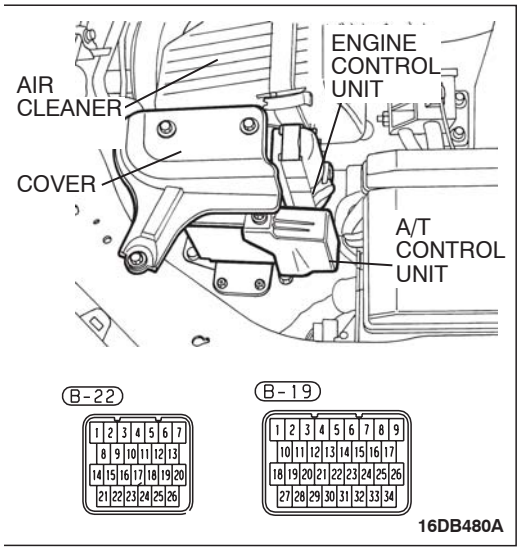
YES : If all the resistances measure 2 ohms or less, go to Step 12.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between the ABS-ECU connector and the A/T-ECU connector, and then go to Step 8.

STEP 12. Check A/T-ECU connector B-19 and ENGINE-ECU connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.





⚠ 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 A/T-ECU connector B-19 and ENGINE-ECU connector B-21 in good condition?

YES : Go to Step 13.

NO : Repair the damaged parts. Then go to Step 8.

STEP 13. Check the CAN bus lines between the A/T-ECU and the ENGINE-ECU (communication line including the ENGINE-ECU). Measure the resistance at A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

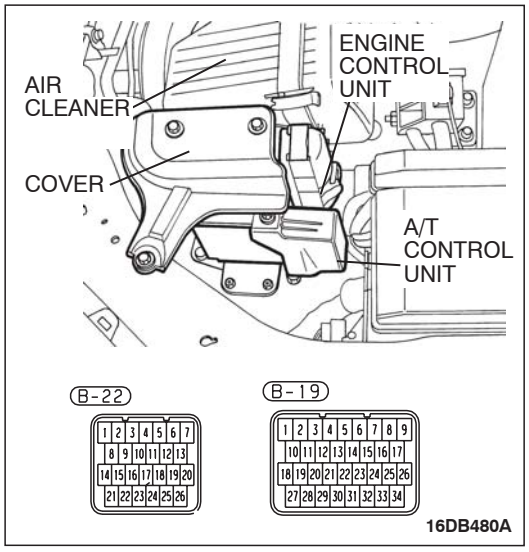
(1) Disconnect A/T-ECU connector B-19, and measure the resistance at the wiring harness side of A/T-ECU connector B-19.

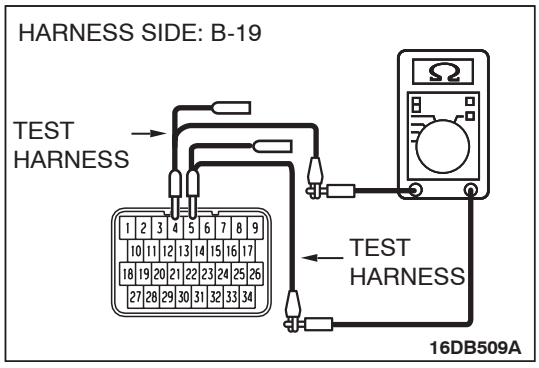
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.





(4) Measure the resistance between A/T-ECU connector terminals 4 and 5.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, go to Step 16.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 14 .

STEP 14. Check the CAN bus lines (communication line only) between A/T-ECU and the ENGINE-ECU. Measure the resistance at A/T-ECU connector B-19 and ENGINE-ECU connector B-21.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

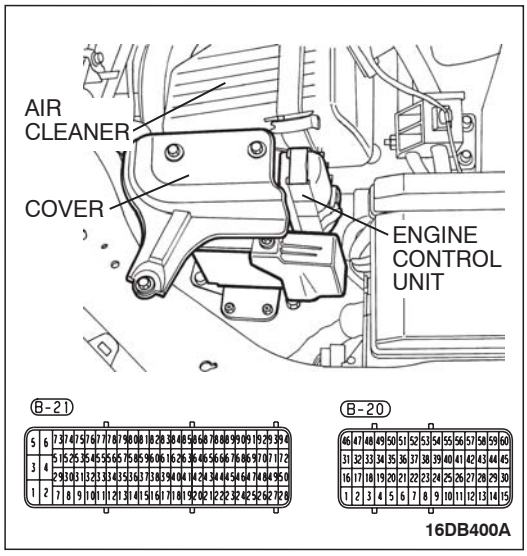
(1) Disconnect A/T-ECU connector B-19 and ENGINE-ECU connector B-21, and measure the resistance between each wiring harness side connector.

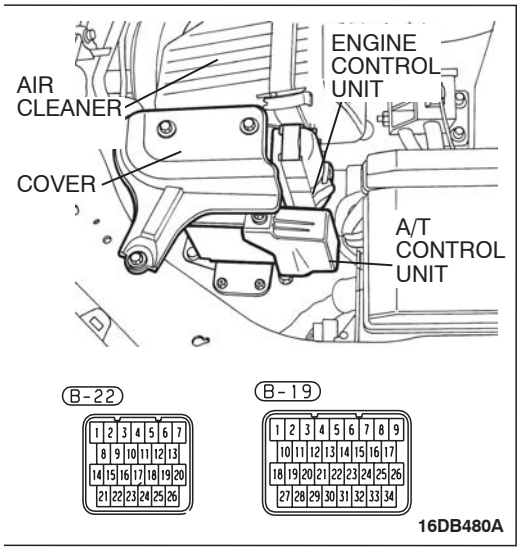
(2) Turn the ignition switch to the "LOCK" (OFF) position.

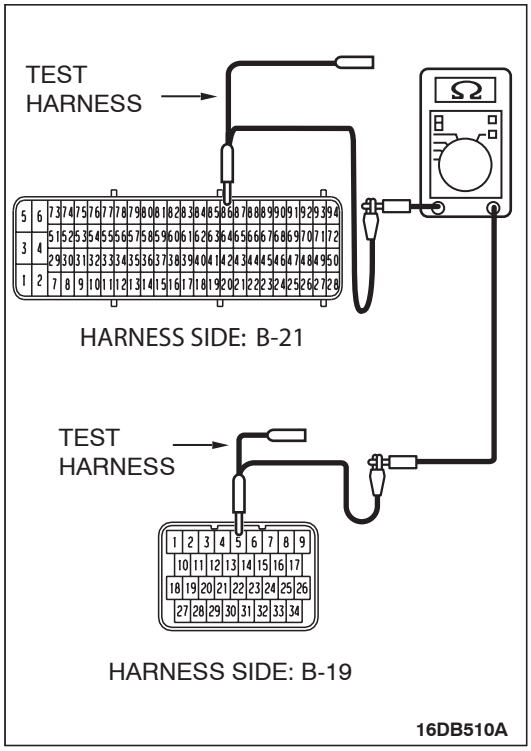
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

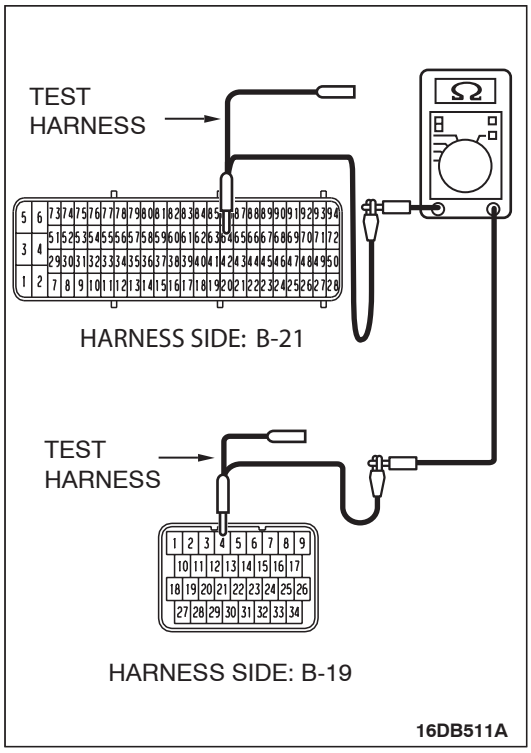






(4) Measure the resistance between A/T-ECU B-19 connector terminal 5 and ENGINE-ECU B-21 connector terminal 86.

OK: 2 ohms or less



(5) Measure the resistance between A/T-ECU B-19 connector terminal 4 and ENGINE-ECU B-21 connector terminal 64.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 15.

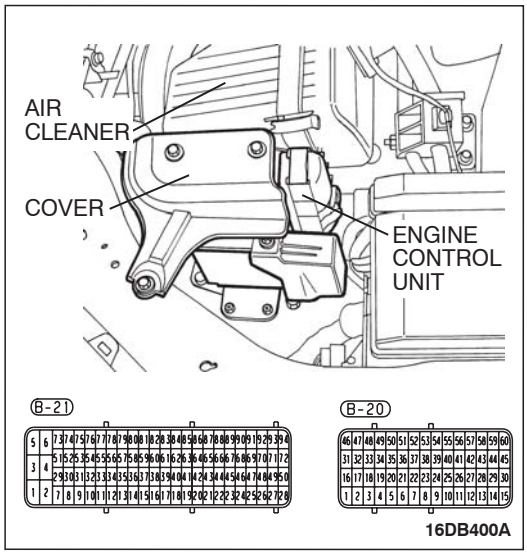
NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between the A/T-ECU B-19 connector and the ENGINE-ECU connector B-21, and then go to Step 8.

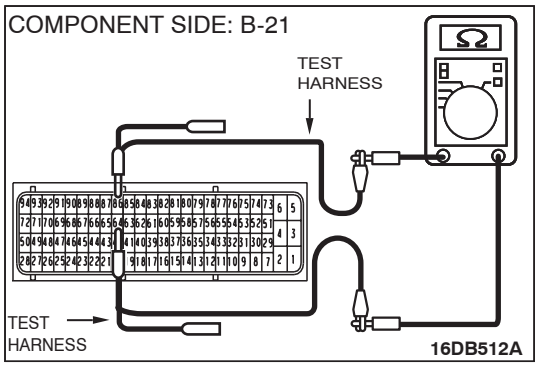
STEP 15. Check the terminator resistor inside the ENGINE-ECU. Measure the resistance at ENGINE-ECU connector B-21.

⚠ CAUTION

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

(1) Disconnect ENGINE-ECU connector B-21, and measure the resistance at the component side of ENGINE-ECU connector B-21.





(2) Measure the resistance between ENGINE-ECU B-21 connector terminals 64 and 86.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, go to Step 8.

NO : If the resistance does not measure 120 ± 20 Ω, replace the ENGINE-ECU, and then go to Step 8.

STEP 16. Check the CAN bus lines (communication line only) between intermediate connector C-29 and the ABS-ECU. Measure the resistance at intermediate connector C-29 and 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.

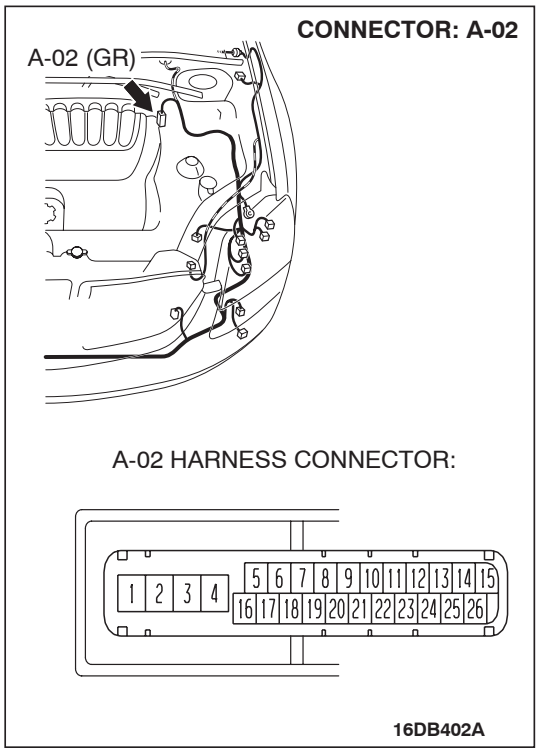
(1) Disconnect intermediate connector C-29 and ABS-ECU connector A-02, and measure the resistance between the wiring harness side connector of ABS-ECU connector A-02 and the male side connector of intermediate connector C-29 (at front wiring harness side).

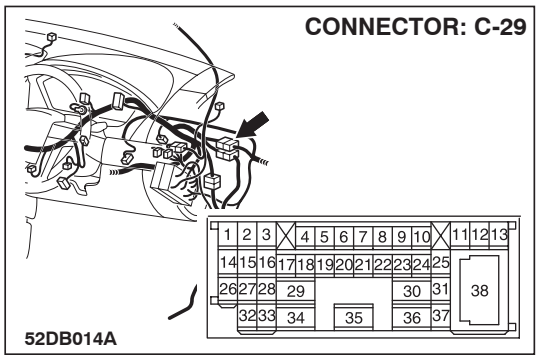
(2) Turn the ignition switch to the "LOCK" (OFF) position.

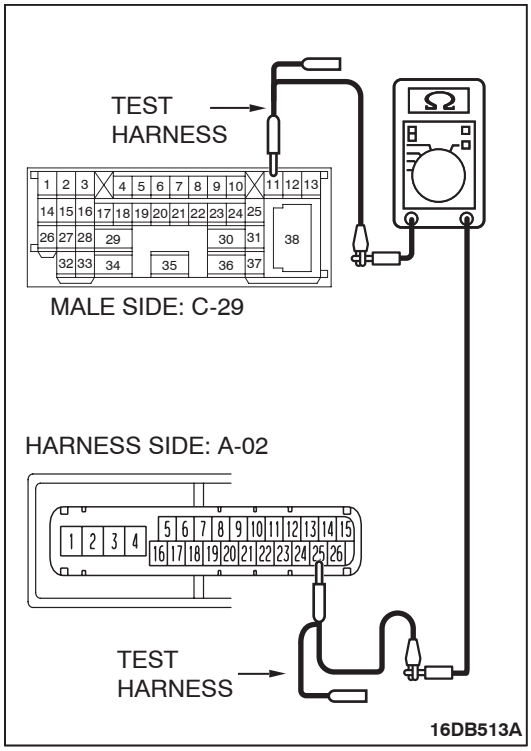
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

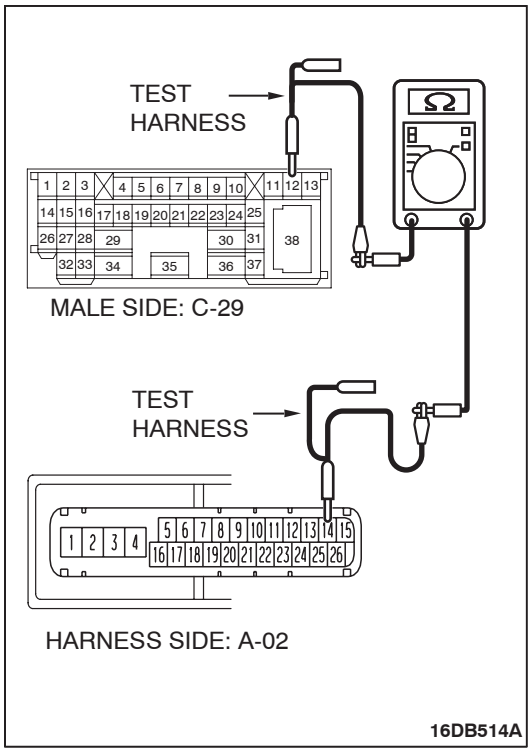






(4) Measure the resistance between intermediate connector terminal 11 and ABS-ECU connector terminal 25.

OK: 2 ohms or less



(5) Measure the resistance between intermediate connector terminal 12 and ABS-ECU connector terminal 14.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 17.

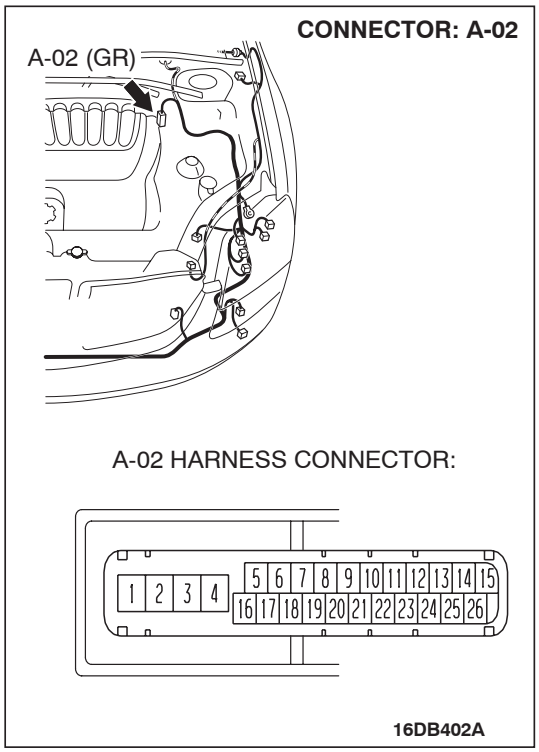
NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between intermediate connector C-29 and the ABS-ECU connector, and then go to Step 8.

STEP 17. Check the ABS-ECU for open circuit. Measure the resistance at ABS-ECU connector A-02.

⚠ CAUTION

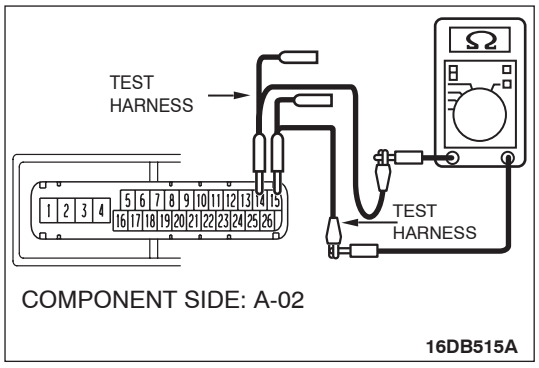
A digital multimeter should be used. For details refer to P.54C-4.

(1) Disconnect ABS-ECU connector A-02, and measure the resistance at the component side of ABS-ECU connector A-02.



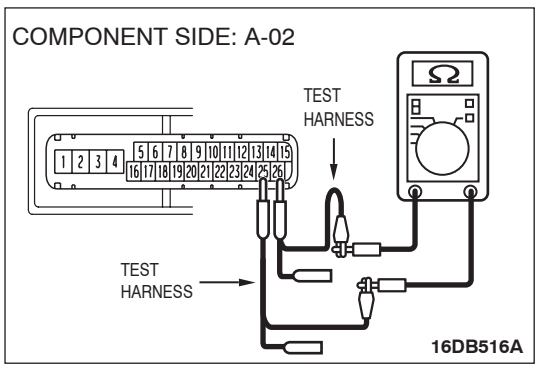
(2) Measure the resistance between ABS-ECU connector terminals 14 and 15.

OK: 2 ohms or less



(3) Measure the resistance between ABS-ECU connector terminals 25 and 26.

OK: 2 ohms or less



Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 8.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, replace the ABS-ECU.

STEP 18. Check the A/T-ECU for open circuit. Measure the resistance at A/T-ECU connector B-19.

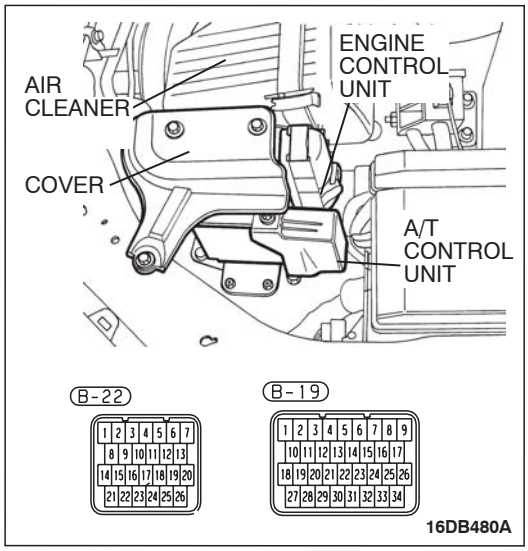
NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

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

⚠ CAUTION

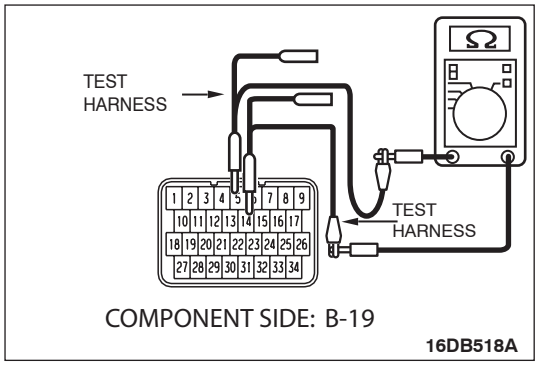
A digital multimeter should be used. For details refer to P.54C-4.

(1) Disconnect A/T-ECU connector B-19, and measure the resistance at the component side of A/T-ECU connector B-19.



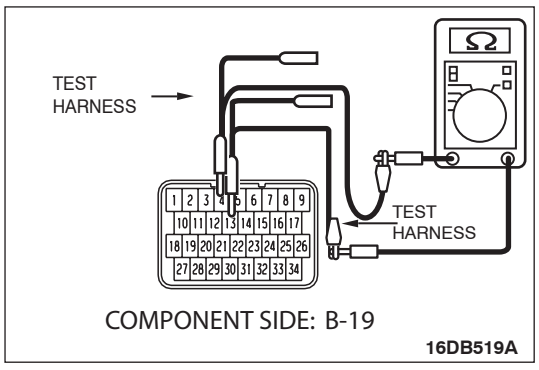
(2) Measure the resistance between A/T-ECU connector B-19 terminals 14 and 5.

OK: 2 ohms or less



(3) Measure the resistance between A/T-ECU connector B-19 terminals 13 and 4.

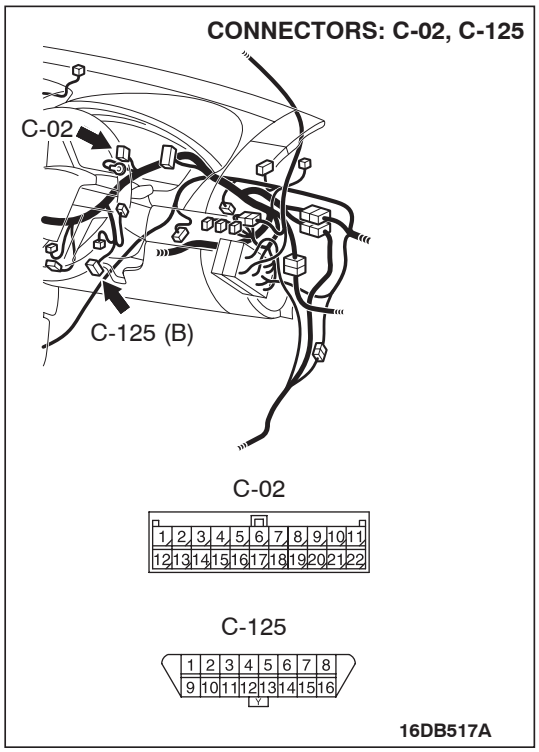
OK: 2 ohms or less



Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 8.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, replace the A/T-ECU.



Step 19. Check the CAN bus lines (communication line only) between joint connector (3) and the data link connector. Measure the resistance at joint connector (3) C-02 and 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.

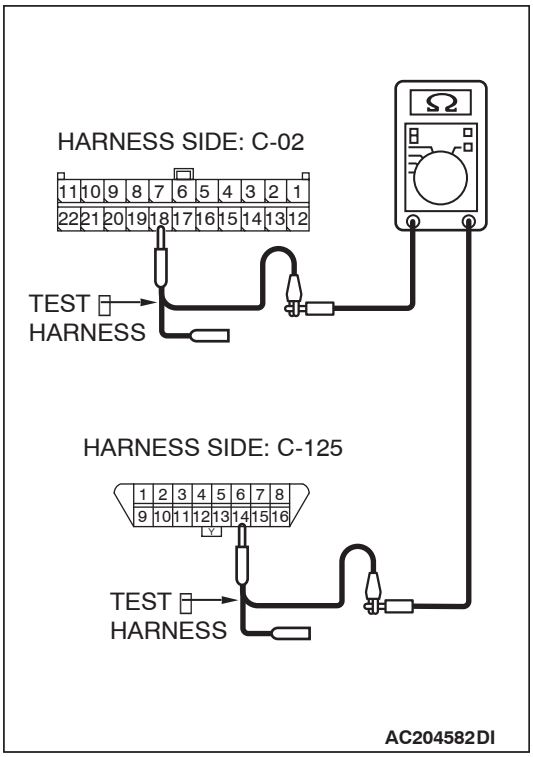
(1) Disconnect joint connector (3) C-02, and measure the resistance between the wiring harness side connector of joint connector (3) C-02 and wiring harness side connector of data link connector C-125.

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

⚠ CAUTION

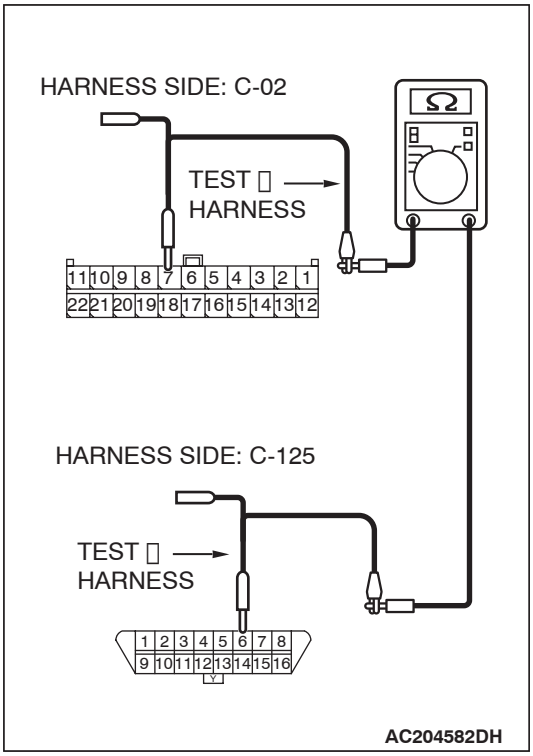
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 18 and data link connector terminal 14.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 7 and data link connector terminal 6.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES <all the resistances measure 2 ohms or less: When any repair done> : Retest the system.

YES <all the resistances measure 2 ohms or less: When no repair done> : Diagnose CAN bus lines thoroughly by referring to P.54C-323 <Vehicles with multi-center display >.

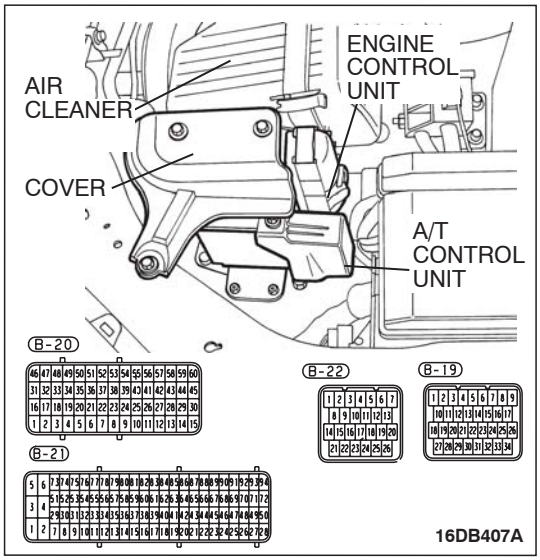
NO <If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms> : Repair the wiring harness wires between joint connector (3) and the data link connector.

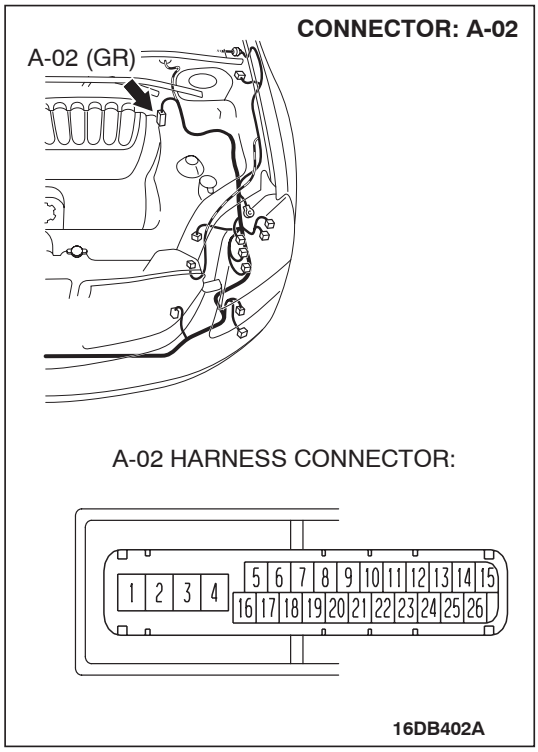
DIAGNOSTIC ITEM 7: Diagnose a terminator resistor at either end

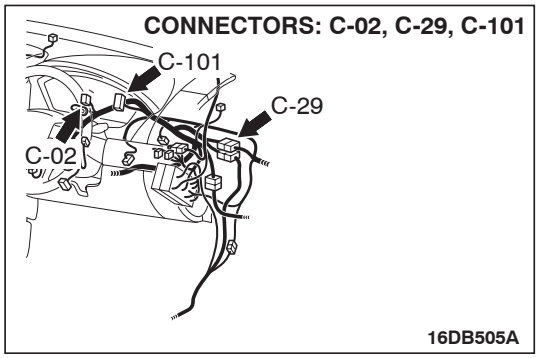
NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

⚠ 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 terminator resistor at either end (including the CAN bus lines) may be damaged, when the resistance between the CAN bus lines (CAN_L and H lines) is 120 ± 20 Ω.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus line harness wires or connectors may be damaged or the combination meter or the ENGINE-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 damage terminals, or terminals pushed back in the connector
- The combination meter may be defective
- The ABS-ECU may be defective
- The A/T-ECU may be defective
- The ENGINE-ECU may be defective

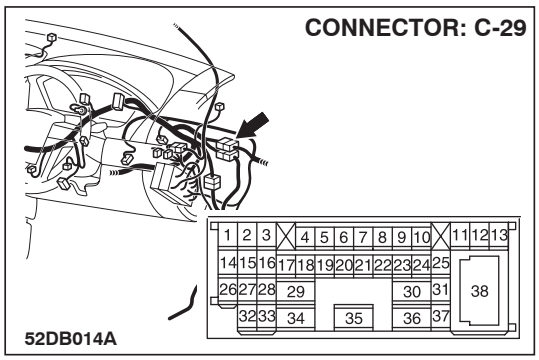
NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991219: Inspection Test Harness
- MB992045: A/T-ECU Check Harness
- MB992044: ENGINE-ECU Check Harness

STEP 1. 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 2.

NO : Repair the damaged parts.

STEP 2. Check the front wiring harness side CAN bus lines (communication line including the ENGINE-ECU). Measure the resistance 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.

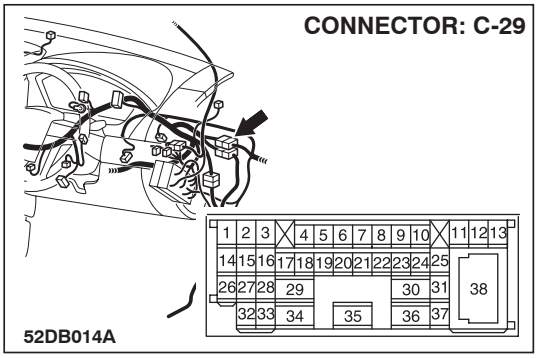
(1) Disconnect intermediate connector C-29, and measure the resistance at the male side (at front wiring harness side).

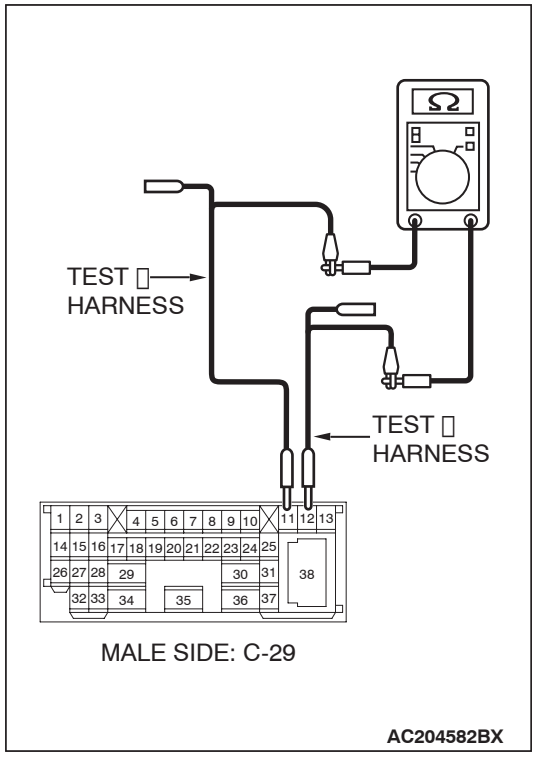
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.





(4) Measure the resistance between intermediate connector terminals 11 and 12.

OK: 120 ± 20 Ω

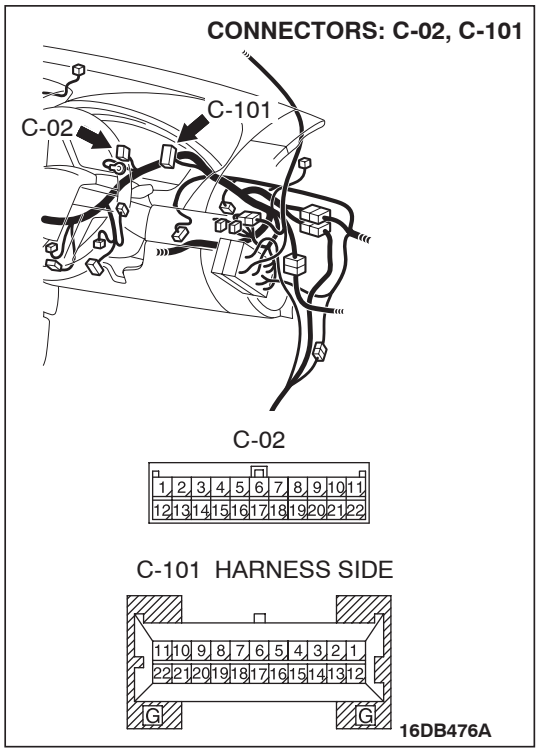
Q: Does the resistance measure 120 ± 20 Ω?

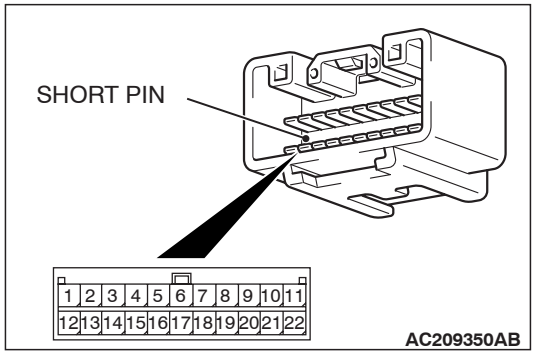
YES : If the resistance measures 120 ± 20 Ω, go to Step 3.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 7 .

STEP 3. Check joint connector (3) C-02 and combination meter connector C-101 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: Are joint connector (3) C-02 and combination meter connector C-101 in good condition?

YES : Go to Step 4.

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

STEP 4. Check the CAN bus lines (communication line including the combination meter) between joint connector (3) and the combination meter. Measure the resistance 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.

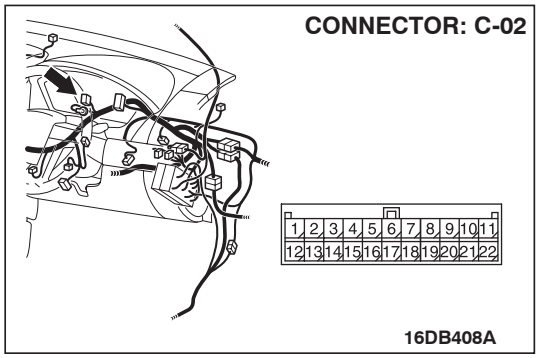
(1) Disconnect joint connector (3) C-02, and measure the resistance at the wiring harness side of joint connector (3) C-02.

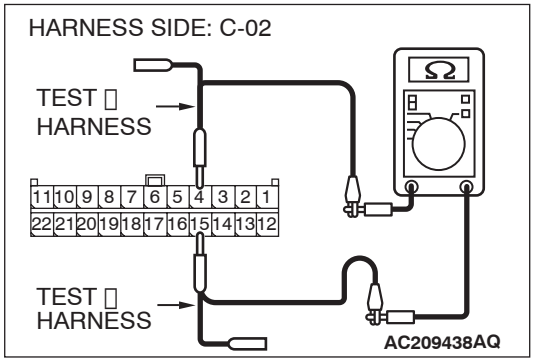
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.





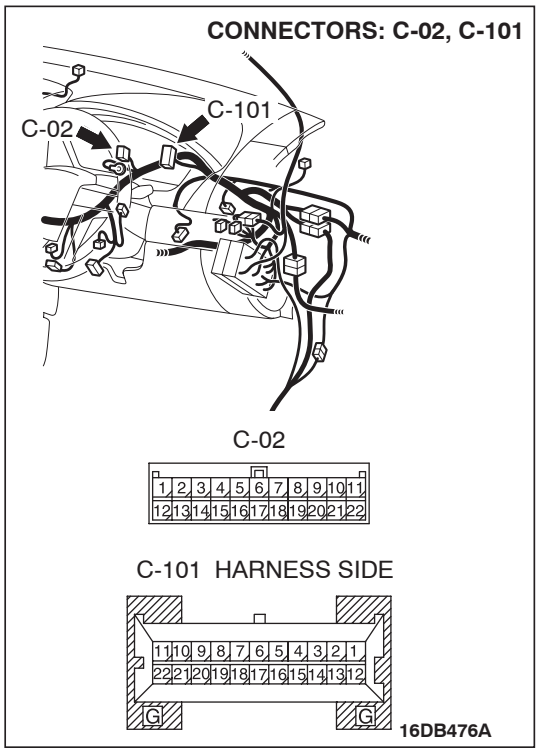
(4) Measure the resistance between joint connector (3) terminals 4 and 15.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, diagnose CAN bus lines thoroughly by referring to P.54C-323.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 5 .



STEP 5. Check the CAN bus lines (communication line only) between joint connector (3) and the combination meter. Measure the resistance at joint connector (3) C-02 and combination meter connector C-101.

⚠ 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.

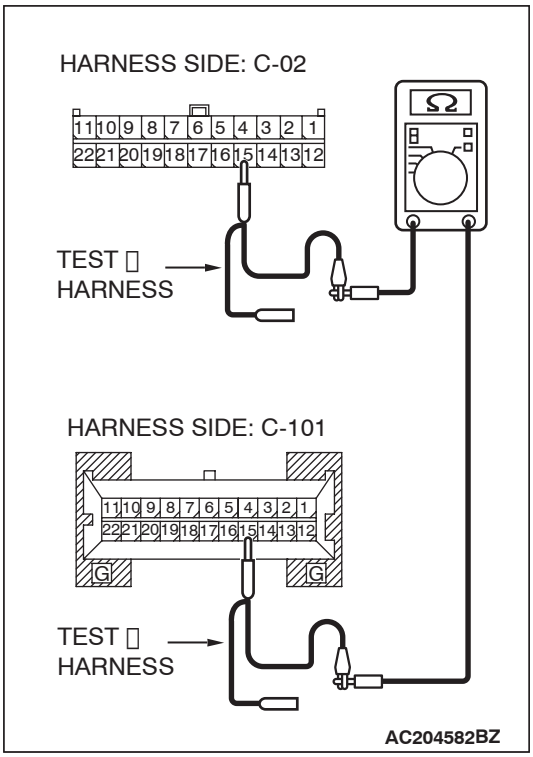
(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the resistance between each wiring harness side connector.

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

⚠ CAUTION

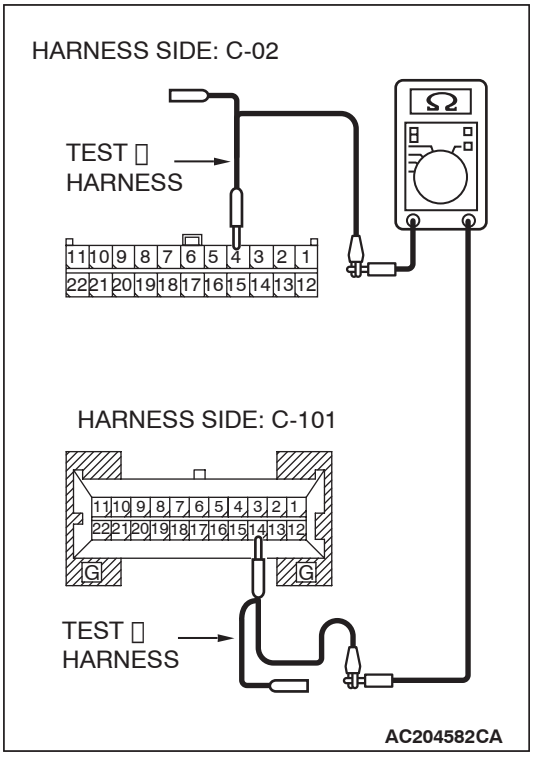
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 15 and combination meter connector terminal 15.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 4 and combination meter connector terminal 14.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

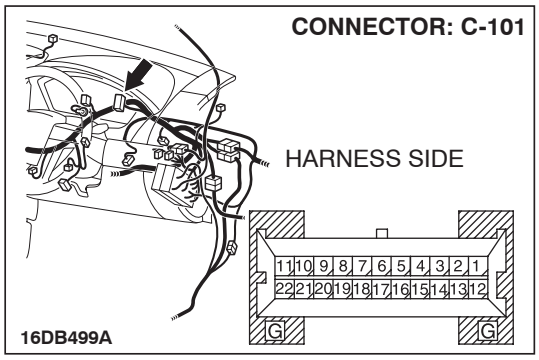
YES : If all the resistances measure 2 ohms or less, go to Step 6.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the combination meter connector.

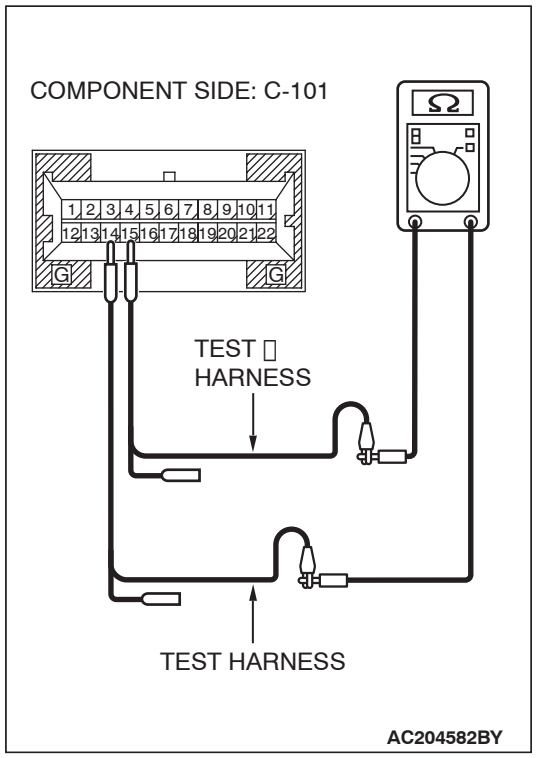
STEP 6. Check the terminator resistor inside the combination meter. Measure the resistance at combination meter connector C-101.

⚠ CAUTION

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



(1) Disconnect combination meter C-101, and measure the resistance at the component side of combination meter connector C-101.



(2) Measure the resistance between combination meter connector terminals 14 and 15.

OK: 120 ± 20 Ω

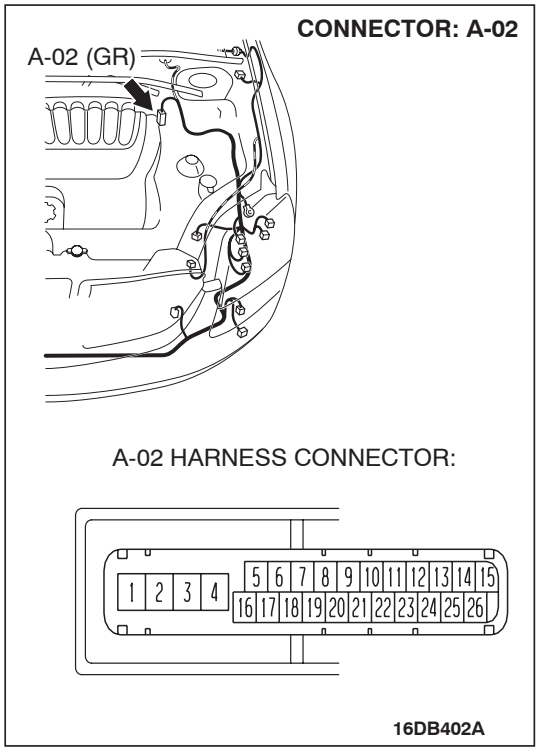
Q: Does the resistance measure 120 ± 20 Ω?

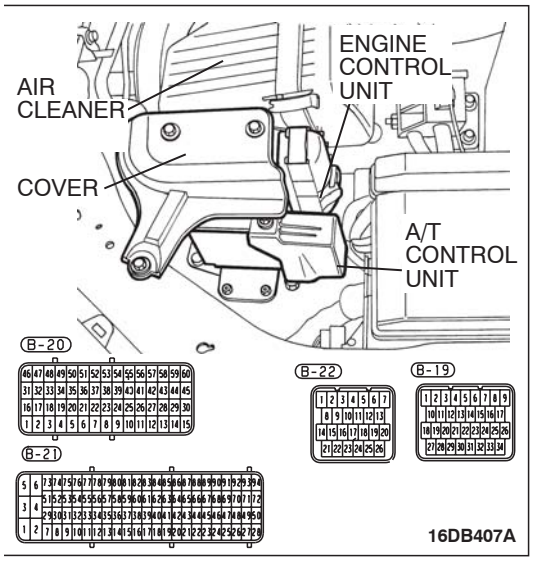
YES : If the resistance measures 120 ± 20 Ω, diagnose CAN bus lines thoroughly by referring to P.54C-323 <Vehicles with multi-center display >.

NO : If the resistance does not measure 120 ± 20 , replace the combination meter.

STEP 7. Check ENGINE-ECU connector B-21, A/T-ECU connector B-19 and ABS-ECU connector A-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.





⚠ 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, A/T-ECU connector B-19 and ABS-ECU connector A-02 in good condition?

YES : Go to Step 8.

NO : Repair the damaged parts.

STEP 8. Check the CAN bus lines between the ABS-ECU, A/T-ECU and the ENGINE-ECU (communication line including the ENGINE-ECU). Measure the resistance at ABS-ECU connector A-02.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

- 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.

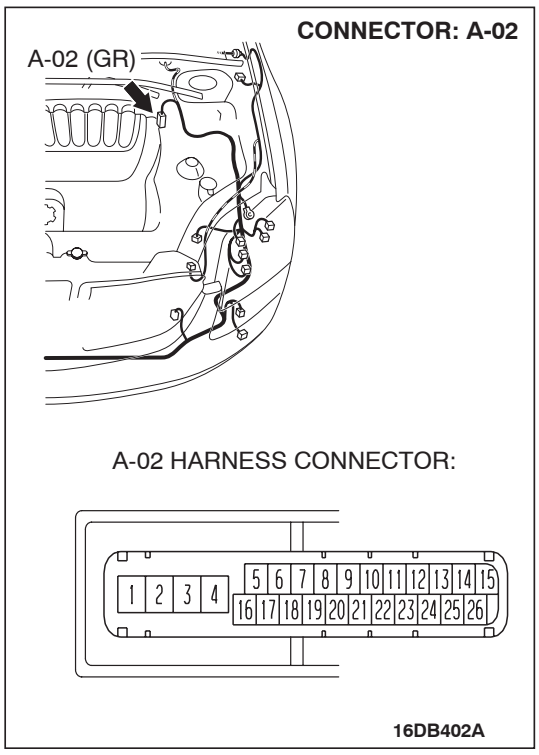
(1) Disconnect ABS-ECU connector A-02, and measure the resistance at the wiring harness side of ABS-ECU connector A-02.

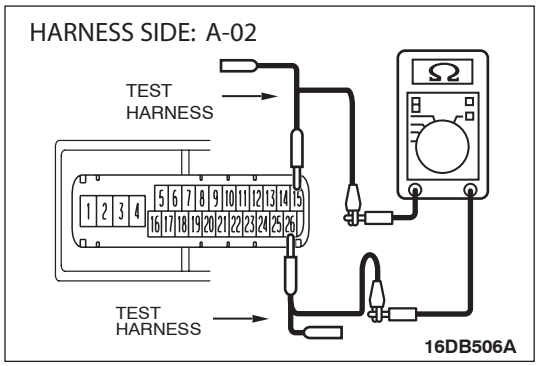
(2) Turn the ignition switch to the "LOCK" (OFF) position. position

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.





(4) Measure the resistance between ABS-ECU connector terminals 15 and 26.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, diagnose CAN bus lines thoroughly by referring to P.54C-323 <Vehicles with multi-center display >.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 9 .

STEP 9. Check the CAN bus lines (communication line only) between ABS-ECU and the A/T-ECU. Measure the resistance between ABS-ECU connector A-02 and A/T-ECU connector B-19.

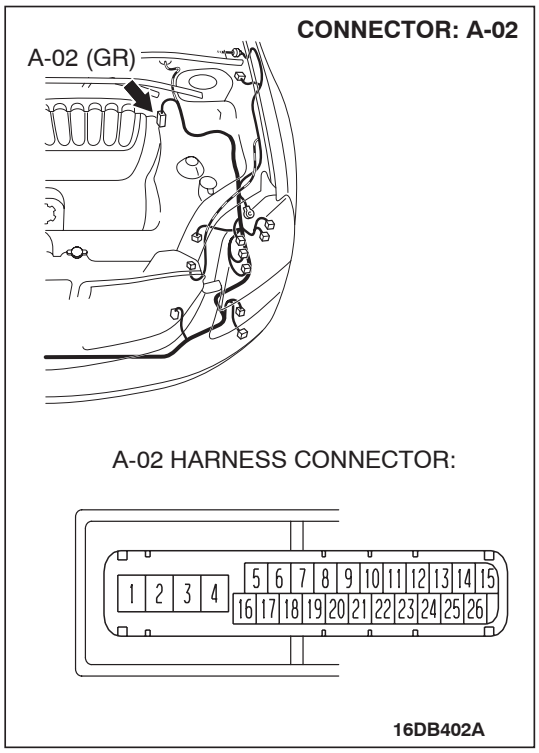
NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

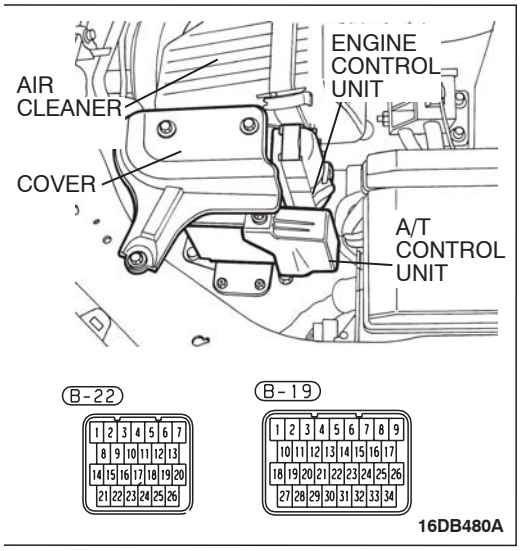
⚠ CAUTION

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.



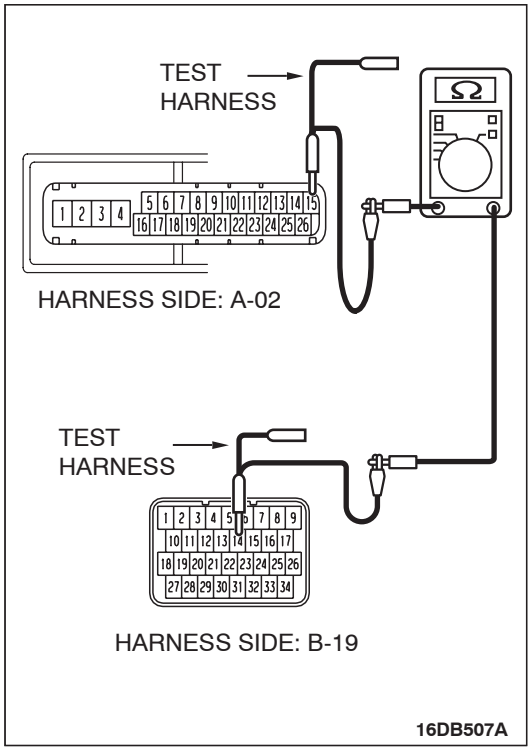


(1) Disconnect ABS-ECU connector A-02 and A/T-ECU connector B-19, and measure the resistance between each wiring harness side connector.
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

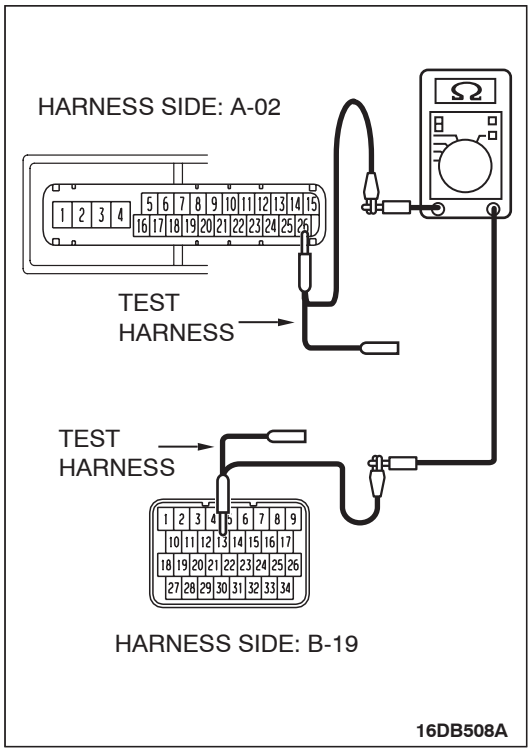
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between ABS-ECU connector terminal 15 and A/T-ECU B-19 connector terminal 14.

OK: 2 ohms or less



(5) Measure the resistance between ABS-ECU connector terminal 26 and A/T-ECU B-19 connector terminal 13.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 10.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between ABS-ECU connector and the A/T-ECU connector B-19.

STEP 10. Check the CAN bus lines between the A/T-ECU and the ENGINE-ECU (communication line including the ENGINE-ECU). Measure the resistance at A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

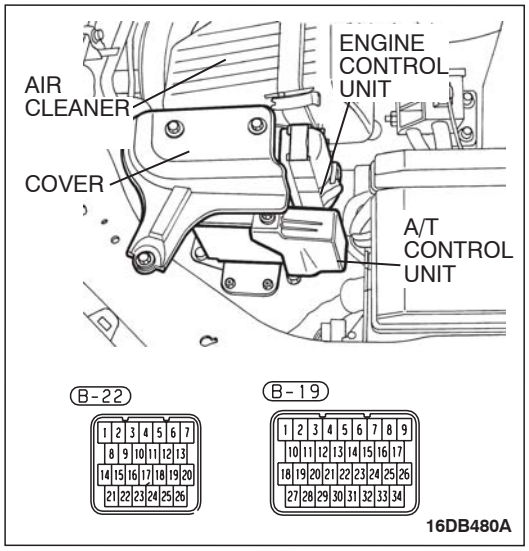
(1) Disconnect A/T-ECU connector B-19, and measure the resistance at the wiring harness side of A/T-ECU connector B-19.

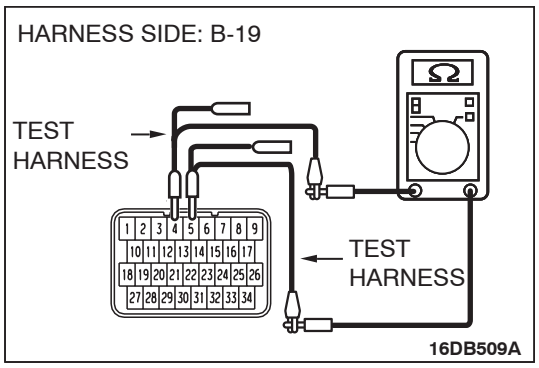
(2) Turn the ignition switch to the "LOCK" (OFF) position. position

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.





(4) Measure the resistance between A/T-ECU connector terminals 4 and 5.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, diagnose CAN bus lines thoroughly by referring to P.54C-323 <Vehicles with multi-center display >.

NO : If the resistance does not measure 120 ± 20 Ω, go to Step 11 .

STEP 11. Check the CAN bus lines (communication line only) between A/T-ECU and the ENGINE-ECU. Measure the resistance between A/T-ECU connector B-19 and ENGINE-ECU connector B-21.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

- 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.

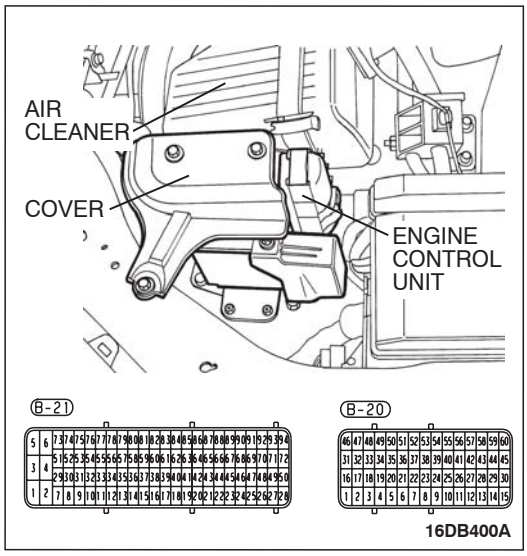
(1) Disconnect A/T-ECU connector B-19 and ENGINE-ECU connector B-21, and measure the resistance between each wiring harness side connector.

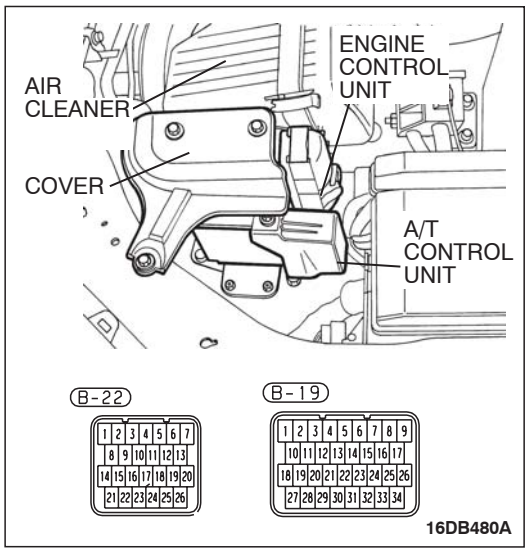
(2) Turn the ignition switch to the "LOCK" (OFF) position.

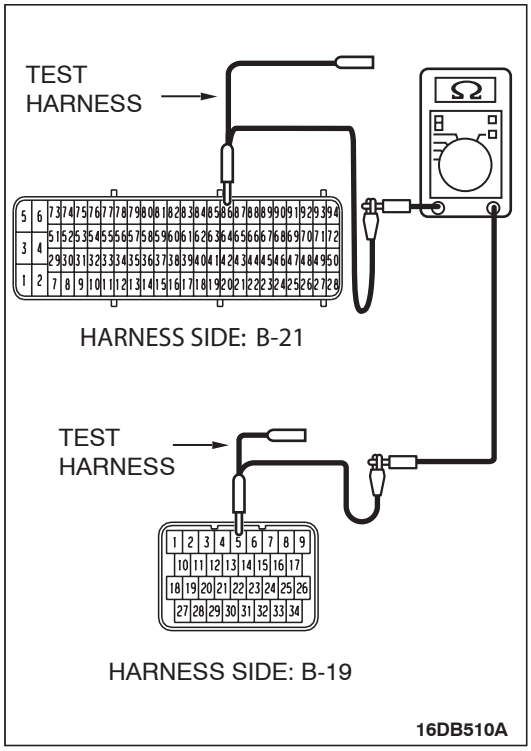
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

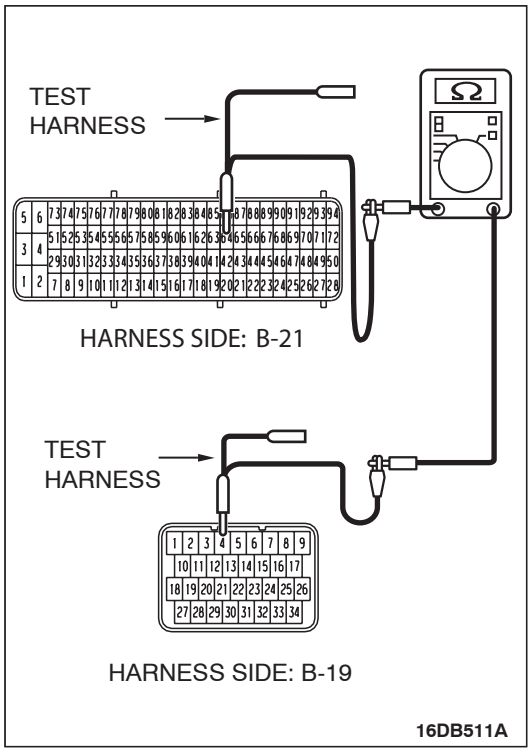






(4) Measure the resistance between A/T-ECU connector B-19 terminal 5 and ENGINE-ECU B-21 connector terminal 86.

OK: 2 ohms or less



(5) Measure the resistance between A/T-ECU connector B-19 terminal 4 and ENGINE-ECU B-21 connector terminal 64.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 12.

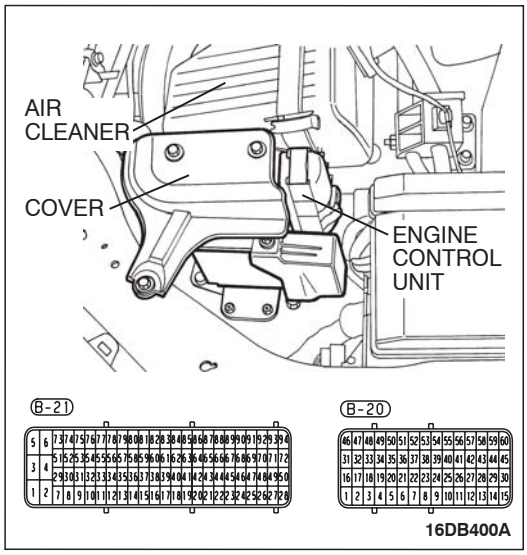
NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between A/T-ECU connector B-19 and the ENGINE-ECU connector B-21.

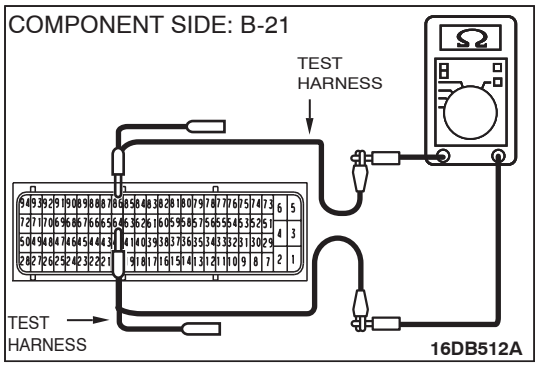
STEP 12. Check the terminator resistor inside the ENGINE-ECU. Measure the resistance at ENGINE-ECU connector B-21.

⚠ CAUTION

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

(1) Disconnect ENGINE-ECU connector B-21, and measure the resistance at the component side of ENGINE-ECU connector B-21.





(2) Measure the resistance between ENGINE-ECU connector B-21 terminals 64 and 86.

OK: 120 ± 20 Ω

Q: Does the resistance measure 120 ± 20 Ω?

YES : If the resistance measures 120 ± 20 Ω, go to Step 13.

NO : If the resistance does not measure 120 ± 20 , replace the ENGINE-ECU.

STEP 13. Check the CAN bus lines inside the ABS-ECU. Measure the resistance at ABS-ECU connector A-02.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

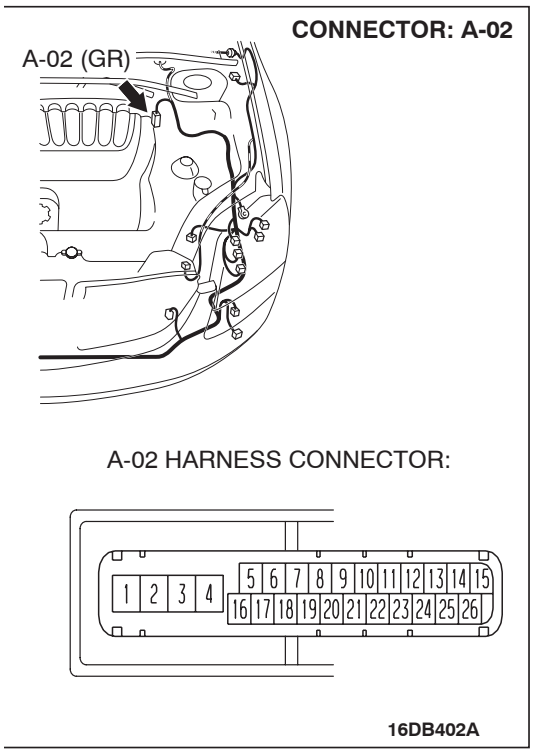
(1) Disconnect ABS-ECU connector A-02, and measure the resistance at the component side of ABS-ECU connector A-02.

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

⚠ CAUTION

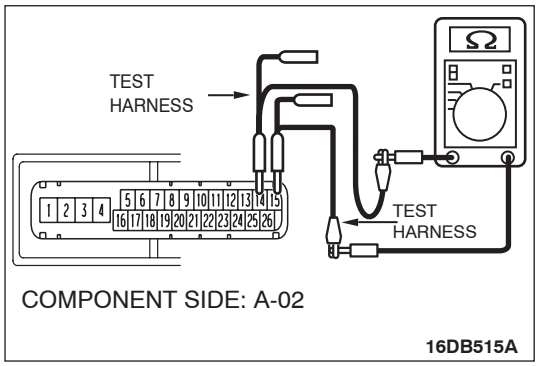
Disconnect the negative battery terminal. For details refer to P.54C-4.

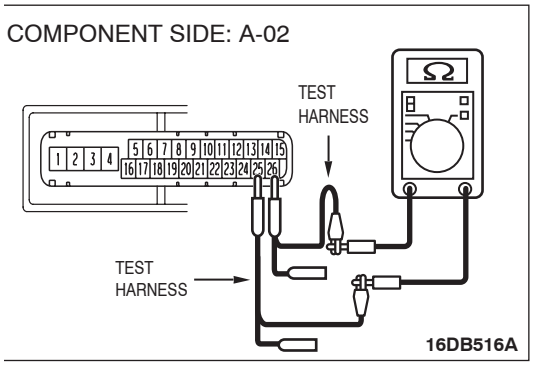
(3) Disconnect the negative battery terminal.



(4) Measure the resistance between ABS-ECU connector terminals 14 and 15.

OK: 2 ohms or less





(5) Measure the resistance between ABS-ECU connector terminals 25 and 26.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If the voltage measures 2 V or less, go to Step 14 or diagnose CAN bus lines thoroughly by referring to P.54C-323 <Vehicles with multi-center display >.

NO : Replace the ABS-ECU.

STEP 14. Check the CAN bus lines inside the A/T-ECU. Measure the resistance at A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

- 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.

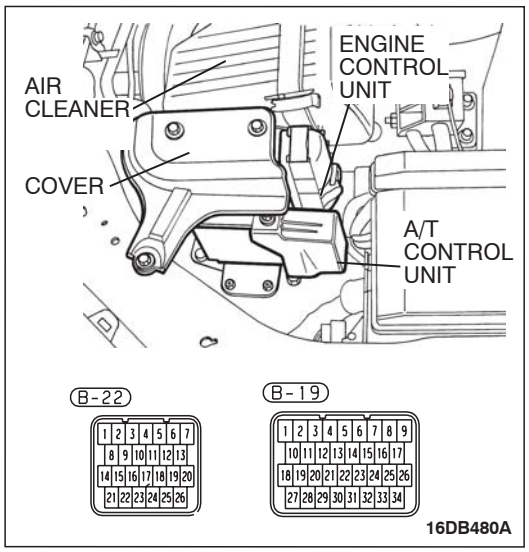
(1) Disconnect A/T-ECU connector B-19, and measure the resistance at the component side of A/T-ECU connector B-19.

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

⚠ CAUTION

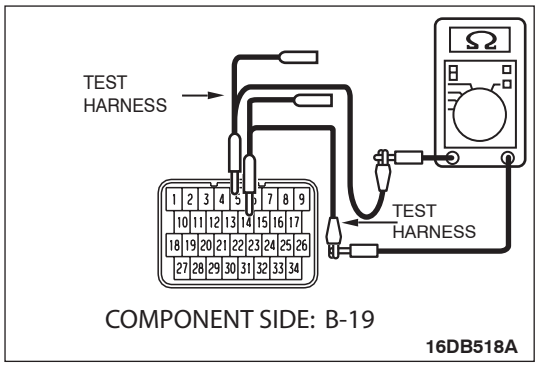
Disconnect the negative battery terminal. For details refer to P.54C-4.

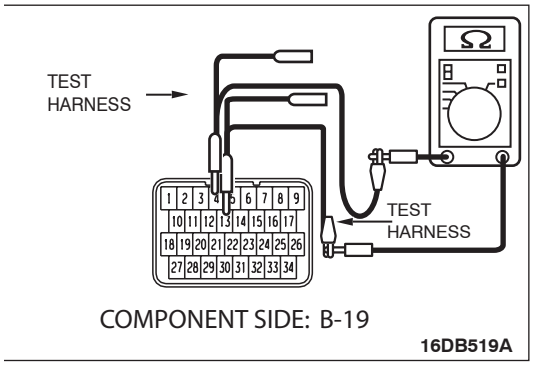
(3) Disconnect the negative battery terminal.



(4) Measure the resistance between A/T-ECU connector B-19 terminals 14 and 5.

OK: 2 ohms or less





(5) Measure the resistance between A/T-ECU connector B-19 terminals 13 and 4.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If the voltage measures 2 V or less, diagnose CAN bus lines thoroughly by referring to P.54C-323 <Vehicles with multi-center display >.

NO : Replace the A/T-ECU.

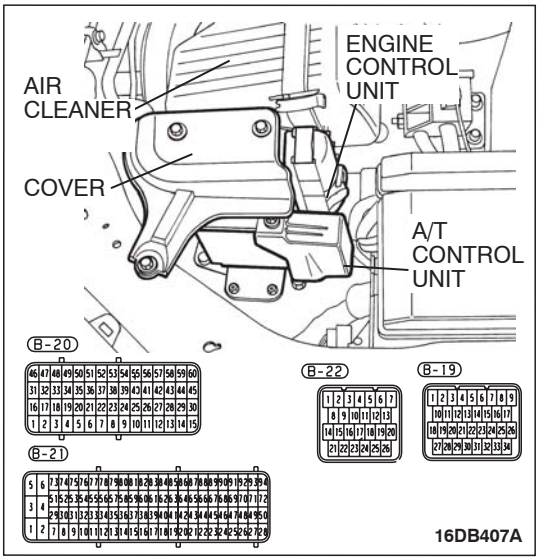
DIAGNOSTIC ITEM 8: Diagnose CAN bus lines thoroughly

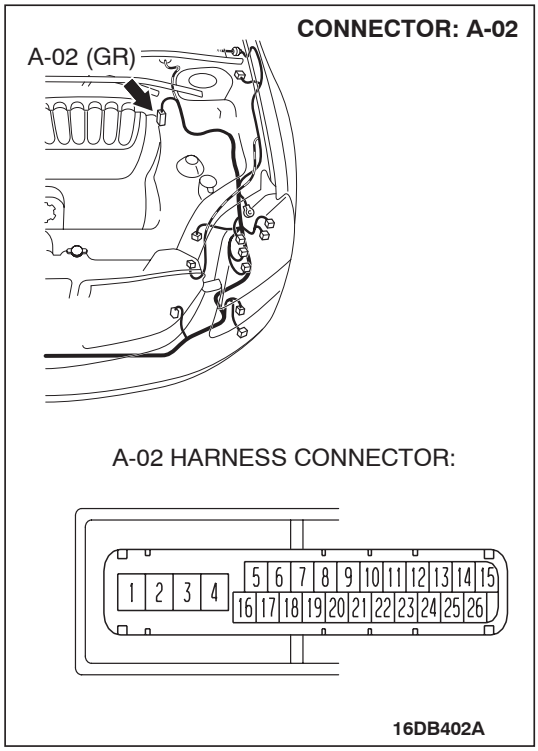
NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

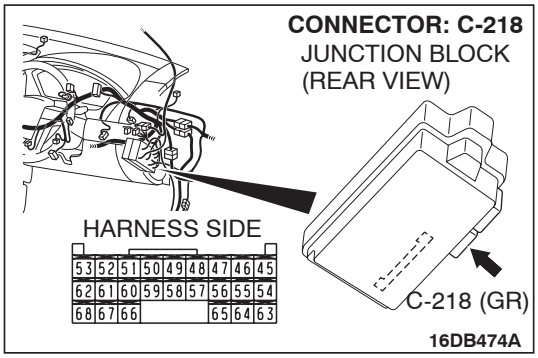
NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

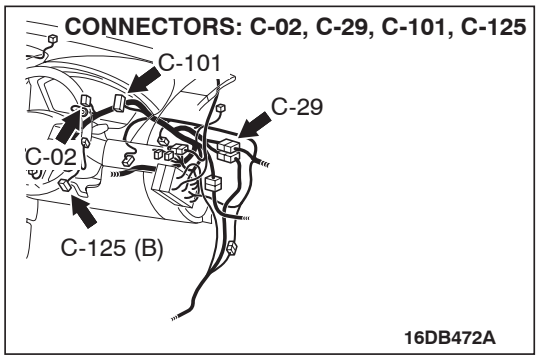
⚠ CAUTION

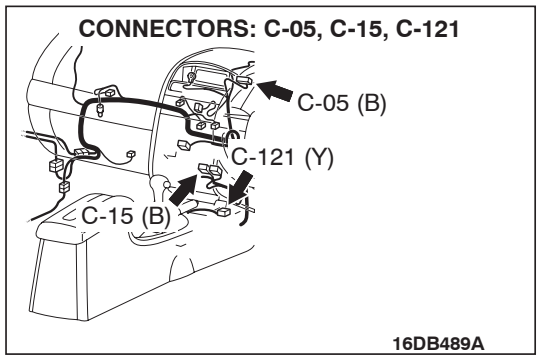
When servicing a CAN bus line, ground yourself by touching a metal object such as an unpainted water pipe. If you fail to do so, a component connected to the CAN bus line may be damaged.











TROUBLE JUDGMENT

If the MUT-III cannot received signals from ECUs, CAN bus line connector(s) are broken or an open circuit has occurred.

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 an 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 damage 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 SRS-ECU may be defective
- The multi-center display unit may be defective
- The ABS-ECU may be defective
- The A/T-ECU may be defective
- The ENGINE-ECU may be defective

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

DIAGNOSIS

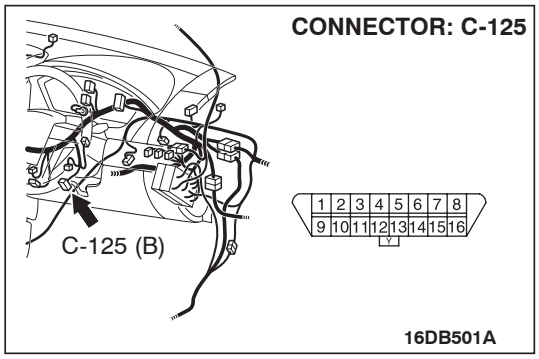
Required Special Tools:

- MB991223: Harness Set
- 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
- MB991219: Inspection Test Harness
- MB992045: A/T-ECU Check Harness
- MB992044: ENGINE-ECU Check Harness

STEP 1. Check 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: Is data link connector C-125 in good condition?

YES : Go to Step 2.

NO : Repair the damaged parts.

STEP 2. Check the CAN bus lines at the data link connector. Measure the resistance at the data link connector C-125.

⚠ CAUTION

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

⚠ CAUTION

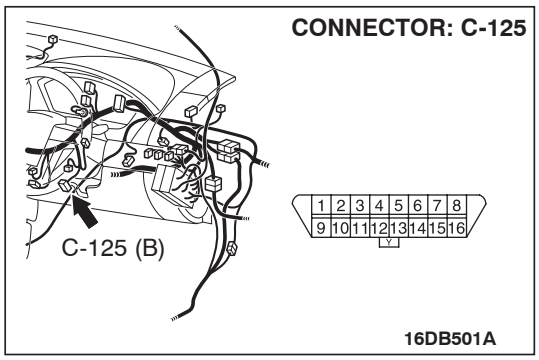
The test wiring harness should be used. For details refer to P.54C-4.

(1) Measure the resistance at the data link connector.
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

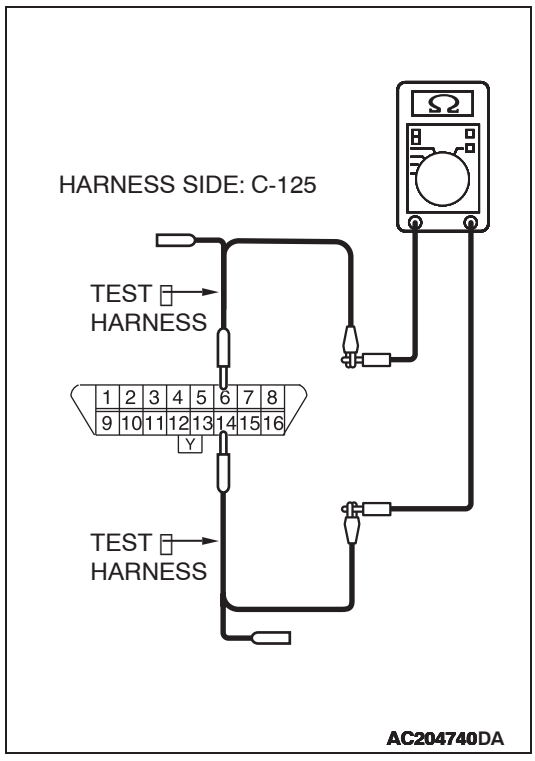
(3) Disconnect the negative battery terminal.

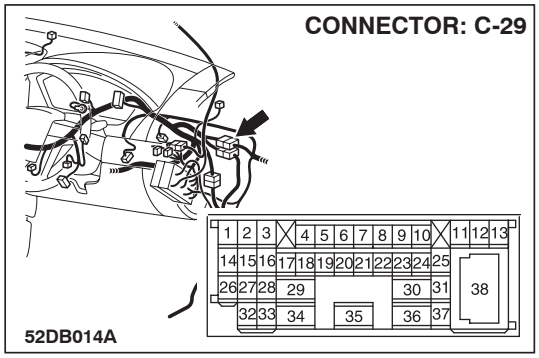


(4) Measure the resistance between data link connector terminals 6 and 14.

Q: How much resistance is measured?

2 ohms or less : Diagnostic Item 5: Check the CAN_L and H lines for a short circuit. Refer to P.54C-239.
No continuity : Diagnostic Item 6: Diagnose terminator resistors at both ends. Refer to P.54C-273.
More than 2 ohms but continuity exists : Go to Step 3.





STEP 3. 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.

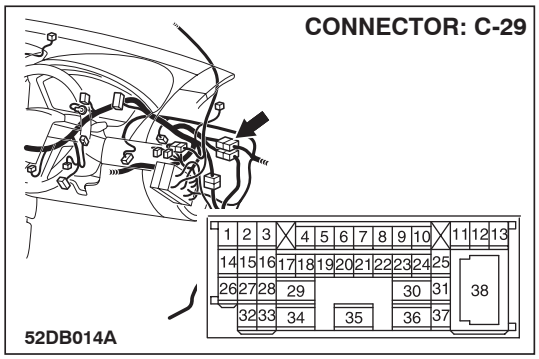
Q: Is intermediate connector C-29 in good condition?

YES : Go to Step 4.

NO : Repair the damaged parts.

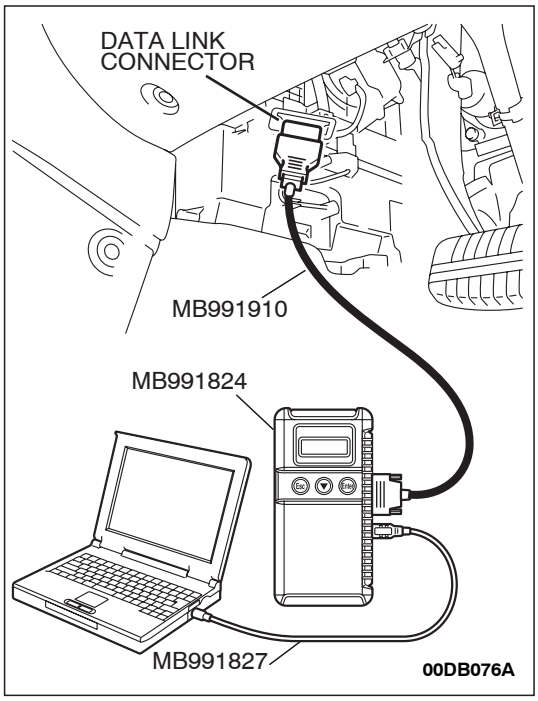
STEP 4. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect intermediate connector C-29, and then determine that a failure is present at either the front wiring harness side or the instrument panel wiring harness side).

(1) Disconnect intermediate connector C-29.



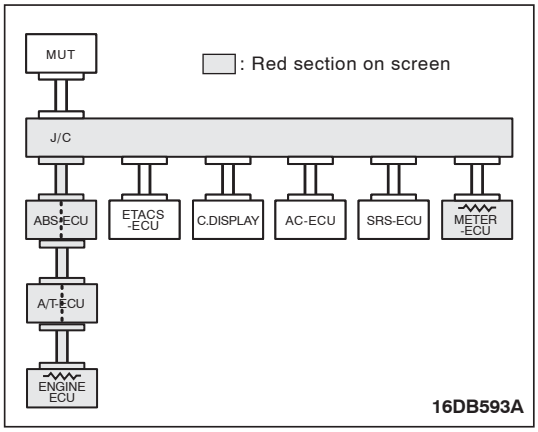
⚠ CAUTION

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



(2) Connect diagnostic tool MB991958 to the data link connector.

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



(4) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

(5) Turn the ignition switch to the "LOCK" (OFF) position.
(6) Connect intermediate connector C-29.

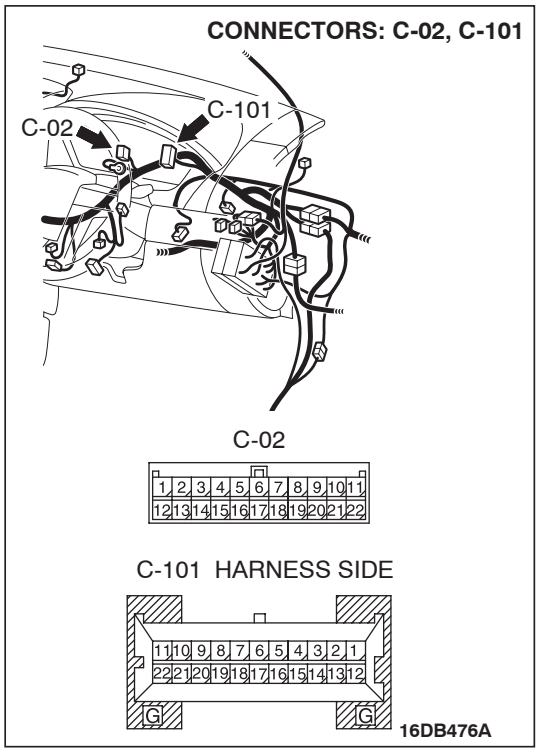
Q: Does the MUT-III screen correspond to the illustration?

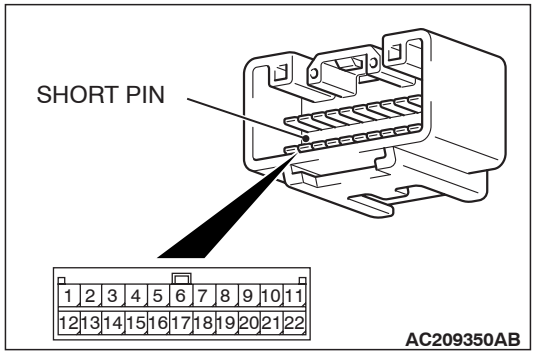
YES : If the MUT-III screen corresponds to the illustration, go to Step 23 .

NO : If the MUT-III screen does not correspond to the illustration, go to Step 5.

STEP 5. Check joint connector (3) C-02 and combination meter connector C-101 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.

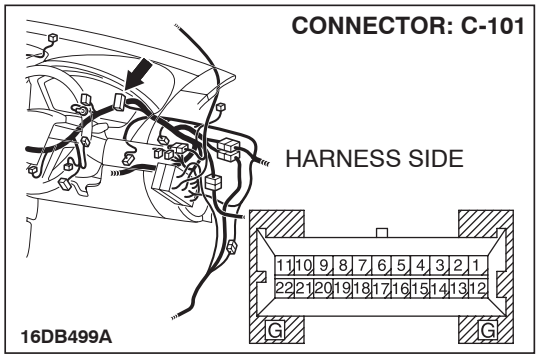
Q: Is joint connector (3) C-02 in good condition?

YES : Go to Step 6.

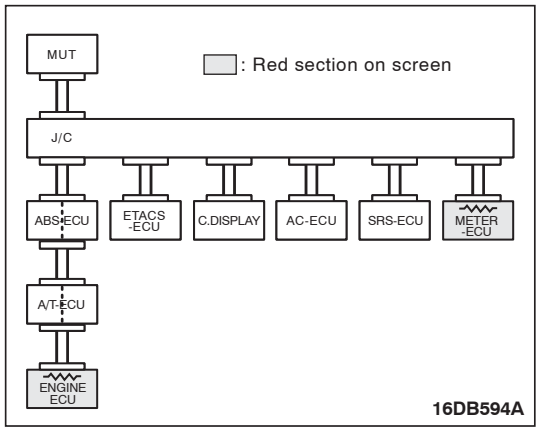
NO : Repair the damaged parts. Replace the joint connector as necessary.

STEP 6. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect combination meter connector C-101, and check the combination meter system).

(1) Disconnect combination meter connector C-101.
(2) Turn the ignition switch to the "ON" position.



(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.



NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

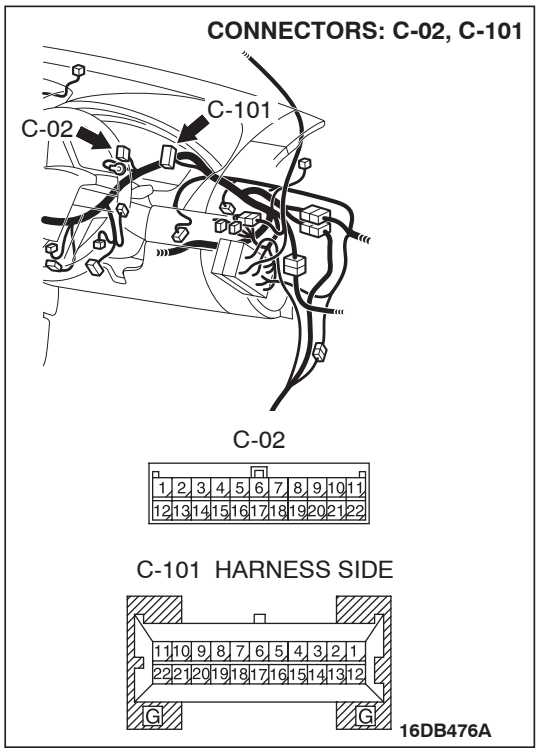
NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Disconnect combination meter connector C-101.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, go to Step 7 .

NO : If the MUT-III screen does not correspond to the illustration, go to Step 8.



STEP 7. Check the CAN bus lines between joint connector (3) and the combination meter. Measure the resistance between joint connector (3) C-02 and combination meter connector C-101.

⚠ 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.

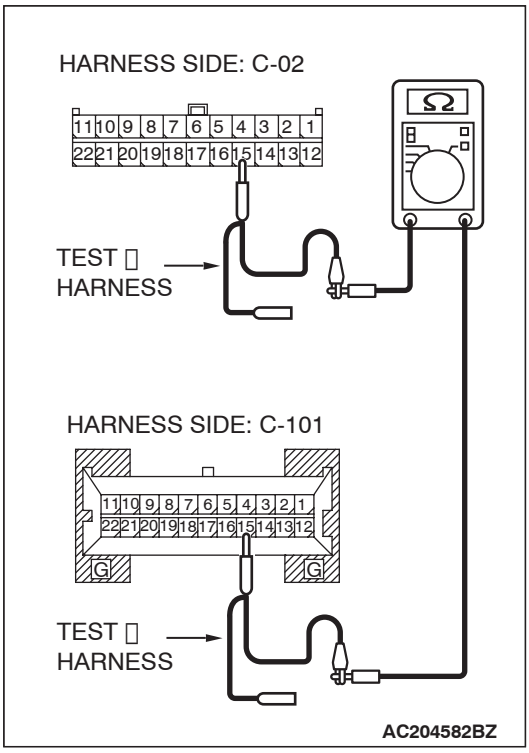
(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the resistance between each wiring harness side connector.

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

⚠ CAUTION

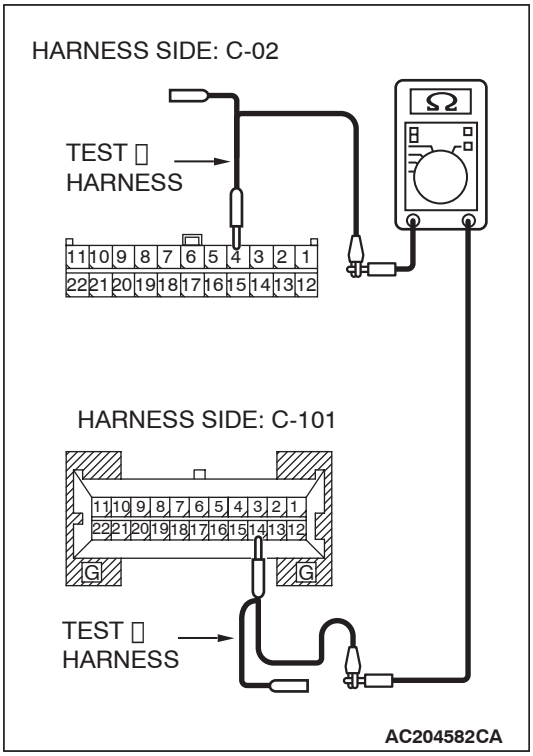
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 15 and combination meter connector terminal 15.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 4 and combination meter connector terminal 14.

OK: 2 ohms or less

⚠ CAUTION

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

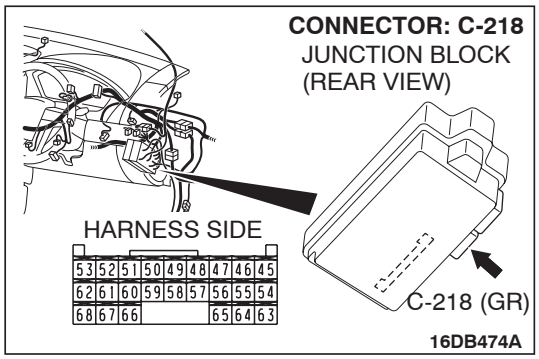
Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the combination meter may be suspected. Diagnose the combination meter by referring to GROUP 54A, Combination meter assembly P.54A-284.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the combination meter connector.

STEP 8. Check ETACS-ECU connector C-218 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

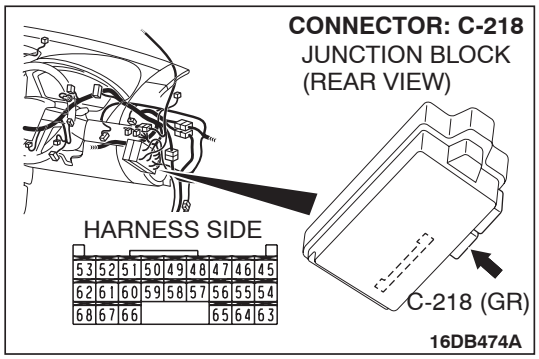
The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to P.54C-4.

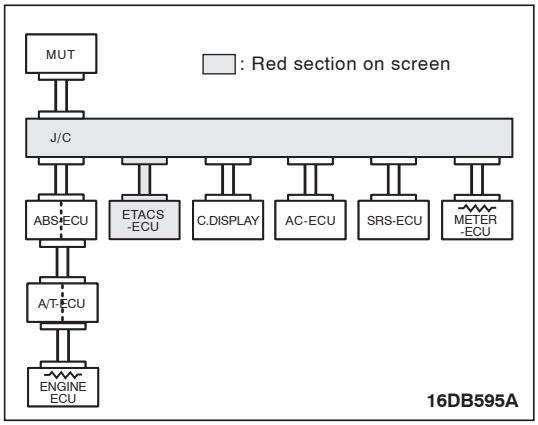
Q: Is ETACS-ECU connector C-218 in good condition?

YES : Go to Step 9.
NO : Repair the damaged parts.

STEP 9. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect ETACS-ECU connector C-218, and check the ETACS-ECU system).

(1) Disconnect ETACS-ECU connector C-218.
(2) Turn the ignition switch to the "ON" position.





(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Connect ETACS-ECU connector C-218.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, go to Step 10 .

NO : If the MUT-III screen does not correspond to the illustration, go to Step 11.

STEP 10. Check the CAN bus lines between joint connector (3) and the ETACS-ECU. Measure the resistance between joint connector (3) C-02 and ETACS-ECU connector C-218.

⚠ 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.

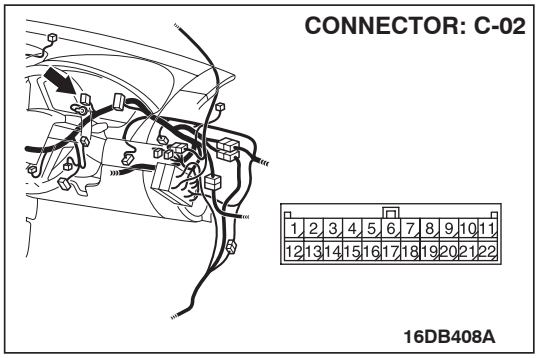
(1) Disconnect joint connector (3) C-02 and ETACS-ECU connector C-218, and measure the resistances at the wiring harness sides of joint connector (3) C-02 and ETACS-ECU connector C-218.

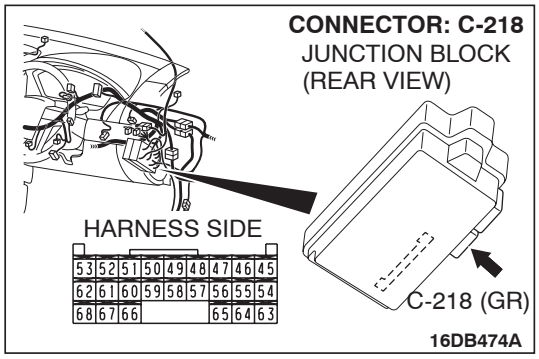
(2) Turn the ignition switch to the "LOCK" (OFF) position.

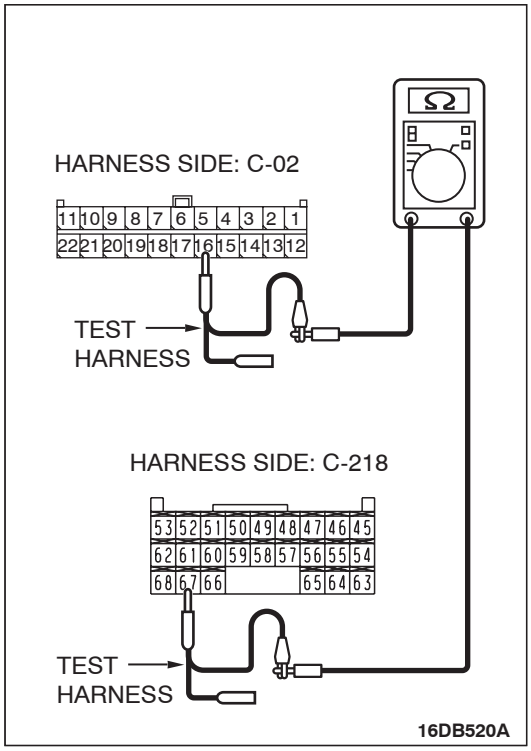
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

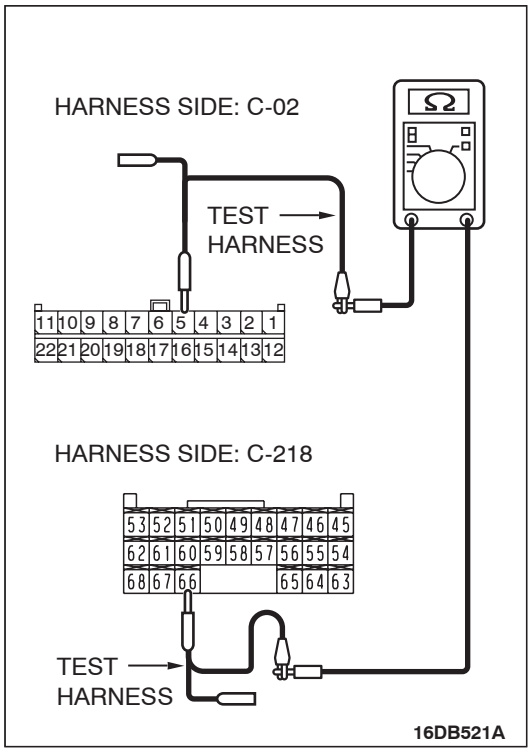






(4) Measure the resistance between joint connector (3) terminal 16 and ETACS-ECU connector terminal 67.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 5 and ETACS-ECU connector terminal 66.

OK: 2 ohms or less

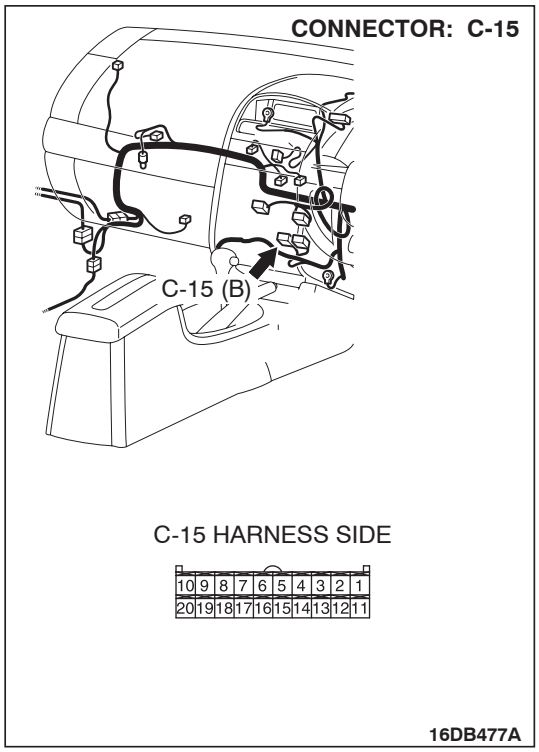
⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the ETACS-ECU may be suspected. Diagnose the ETACS-ECU by referring to GROUP 54B, Diagnosis P.54B-74.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the ETACS-ECU connector.



STEP 11. Check A/C-ECU connector C-15 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.

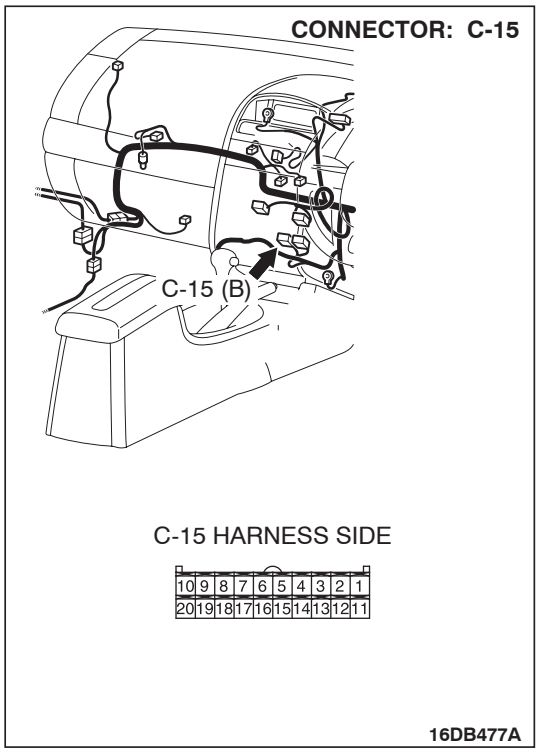
Q: Is A/C-ECU connector C-15 in good condition?

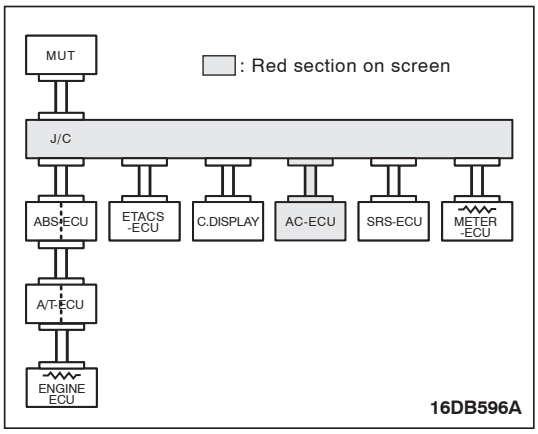
YES : Go to Step 12.

NO : Repair the damaged parts.

STEP 12. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect A/C-ECU connector C-15, and check the A/C-ECU system).

(1) Disconnect A/C-ECU connector C-15.
(2) Turn the ignition switch to the "ON" position.





(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Connect A/C-ECU connector C-15.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, go to Step 13 .
NO : If the MUT-III screen does not correspond to the illustration, go to Step 14.

STEP 13. Check the CAN bus lines between joint connector (3) and the A/C-ECU. Measure the resistance between joint connector (3) C-02 and A/C-ECU connector C-15.

- 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.

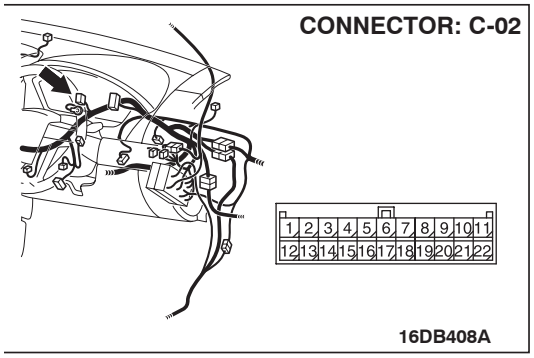
(1) Disconnect joint connector (3) C-02 and A/C-ECU connector C-15, and measure the resistances at the wiring harness sides of joint connector (3) C-02 and A/C-ECU connector C-15.

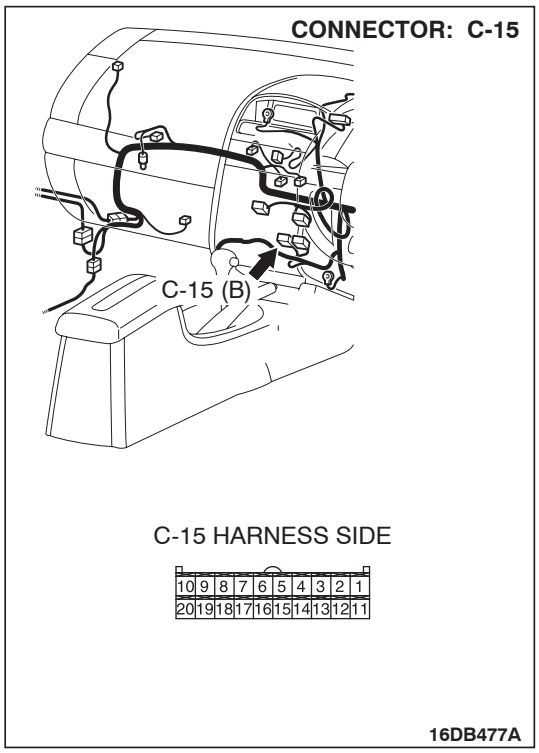
(2) Turn the ignition switch to the "LOCK" (OFF) position.

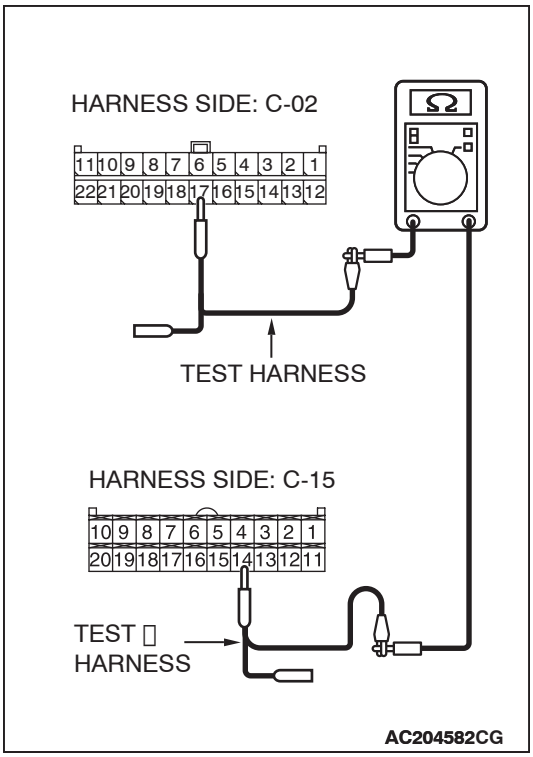
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

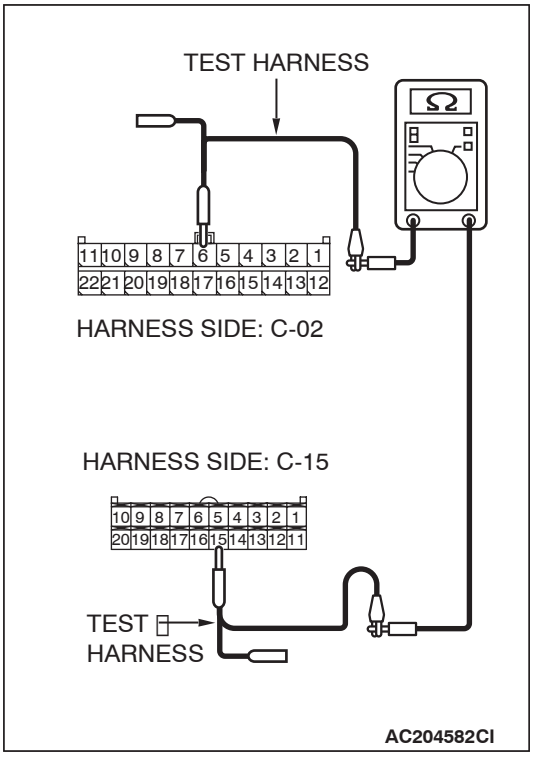






(4) Measure the resistance between joint connector (3) terminal 17 and A/C-ECU connector terminal 14.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 6 and A/C-ECU connector terminal 15.

OK: 2 ohms or less

⚠ CAUTION

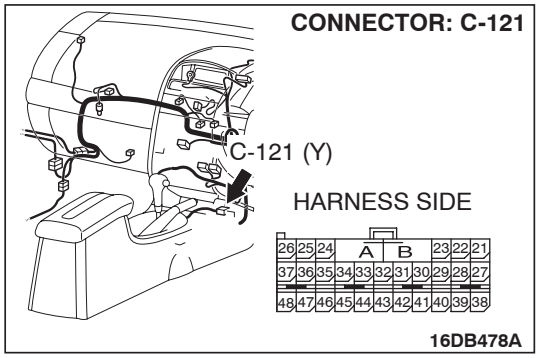
Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the A/C-ECU may be suspected. Diagnose the air conditioning system. Refer to GROUP 55, Auto-A/C diagnosis P.55-5.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the A/C-ECU connector.

STEP 14. Check SRS-ECU connector C-121 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



⚠ CAUTION

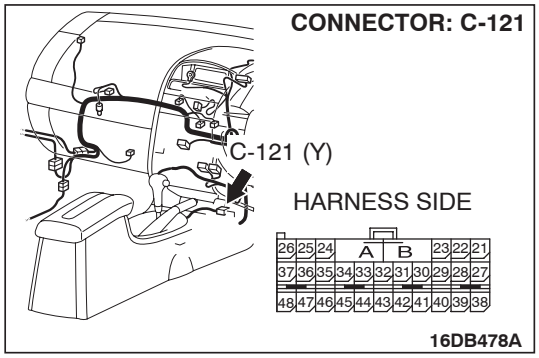
The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to P.54C-4.

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

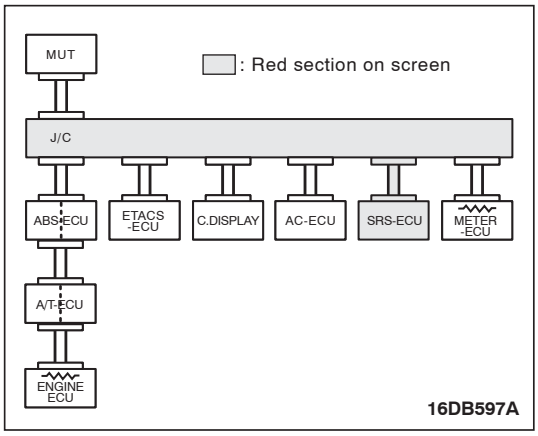
YES : Go to Step 15.

NO : Repair the damaged parts.

STEP 15. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect SRS-ECU connector C-121, and check the supplemental restraint system).



(1) Disconnect SRS-ECU connector C-121.
(2) Turn the ignition switch to the "ON" position.



(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

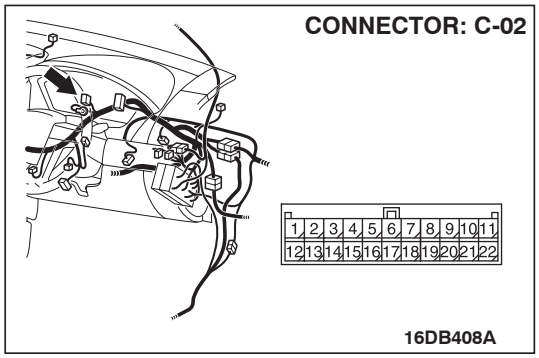
NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

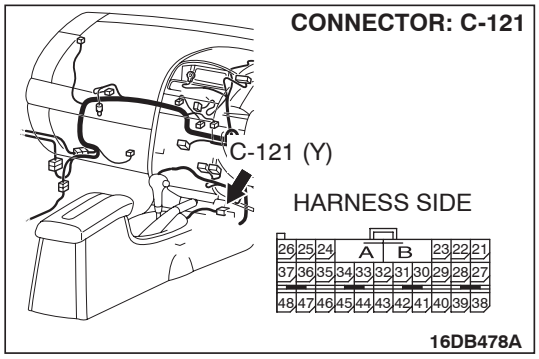
(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Connect the SRS-ECU connector C-121.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, go to Step 16 .

NO : ***If the MUT-III screen does not correspond to the illustration, go to Step 17 if vehicle equipped with multi-centre display or go to Step 20 if not equipped with multi-centre display..***





STEP 16. Check the CAN bus lines between joint connector (3) and the SRS-ECU connector. Measure the resistance between joint connector (3) C-02 and SRS-ECU connector C-121.

⚠ 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.

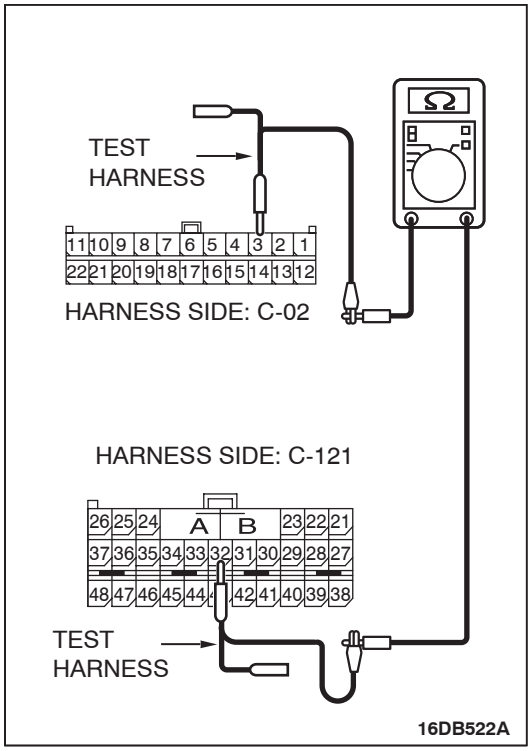
(1) Disconnect joint connector (3) C-02 and SRS-ECU connector C-121, and measure the resistance at the wiring harness sides of joint connector (3) C-02 and SRS-ECU connector C-121.

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

⚠ CAUTION

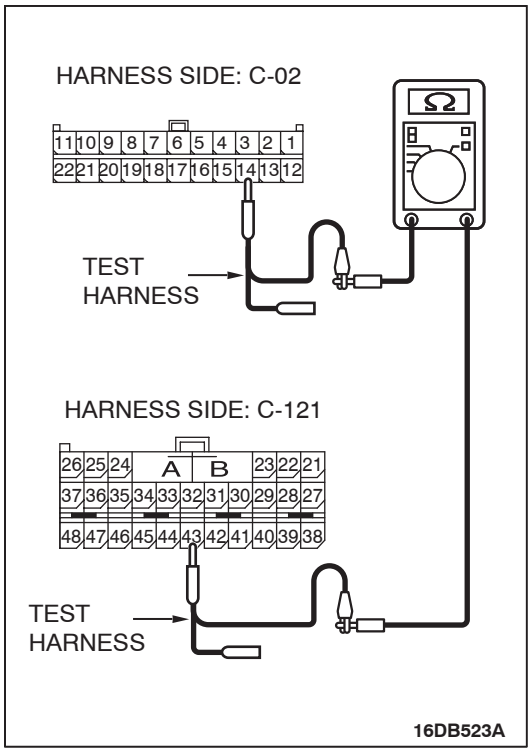
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 3 and SRS-ECU connector C-121 terminal 32.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 14 and SRS-ECU connector C-121 terminal 43.

OK: 2 ohms or less

⚠ CAUTION

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

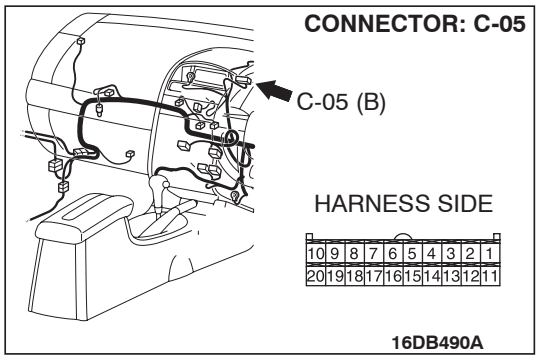
Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the SRS-ECU may be suspected. Diagnose the supplemental restraint system. Refer to GROUP 52B, SRS air bag diagnosis, equipment diagnosis P.52B-18.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the SRS-ECU connector C-121.

STEP 17. Check multi-center display unit connector C-05 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

NOTE: If diagnosing CAN-BUS on vehicle not equipped with multi-centre display, go to Step 20.



⚠ 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?

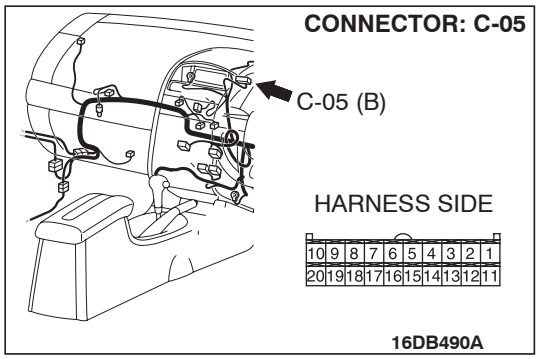
YES : Go to Step 18.

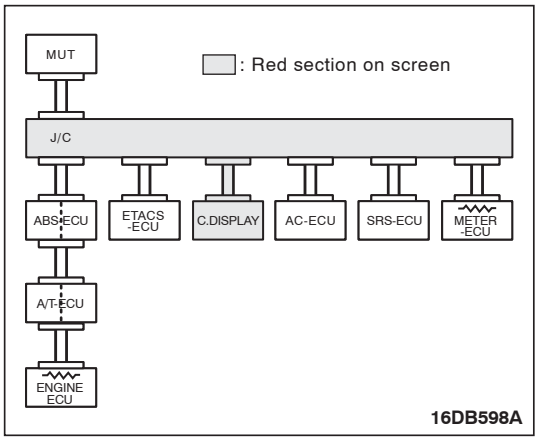
NO : Repair the damaged parts.

STEP 18. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect multi-center display unit connector C-05, and check the multi-center display unit system).

NOTE: If diagnosing CAN-BUS on vehicle not equipped with multi-centre display, go to Step 20.

(1) Disconnect multi-center display unit connector C-05.
(2) Turn the ignition switch to the "ON" position.





(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

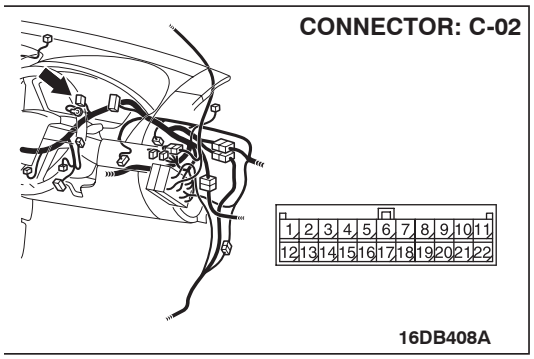
NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

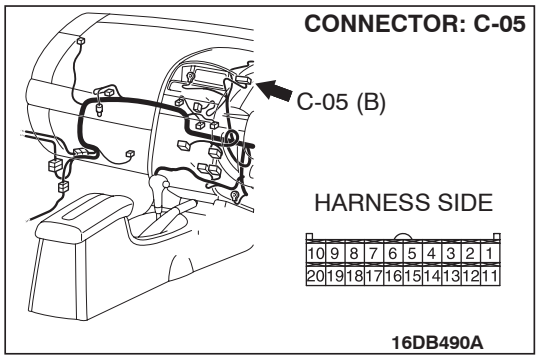
(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Connect the multi-center display unit connector C-05.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, go to Step 19 .

NO : If the MUT-III screen does not correspond to the illustration, go to Step 20.





STEP 19. Check the CAN bus lines between joint connector (3) and the multi-center display unit . Measure the resistance between joint connector (3) C-02 and multi-center display unit connector C-05.

NOTE: If diagnosing CAN-BUS on vehicle not equipped with multi-centre display, go to Step 20.

- 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.

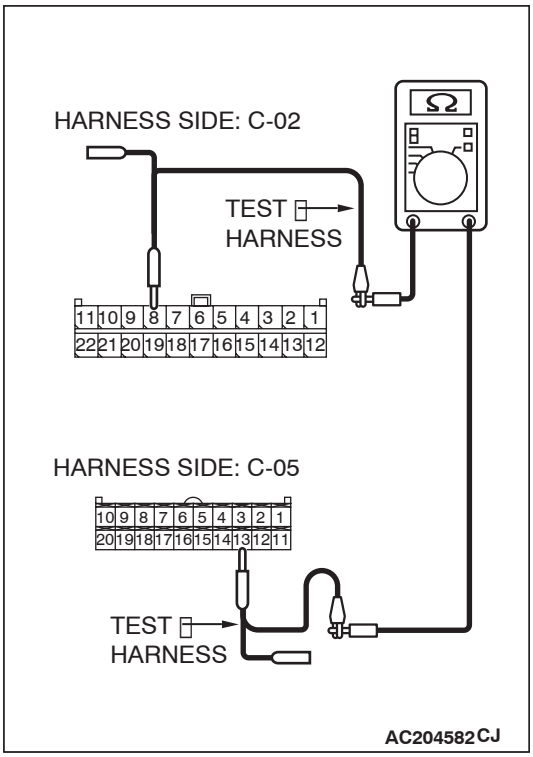
(1) Disconnect joint connector (3) C-02 and multi-center display unit connector C-05, and measure the resistance at the wiring harness sides of joint connector (3) C-02 and multi-center display unit connector C-05.

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

⚠ CAUTION

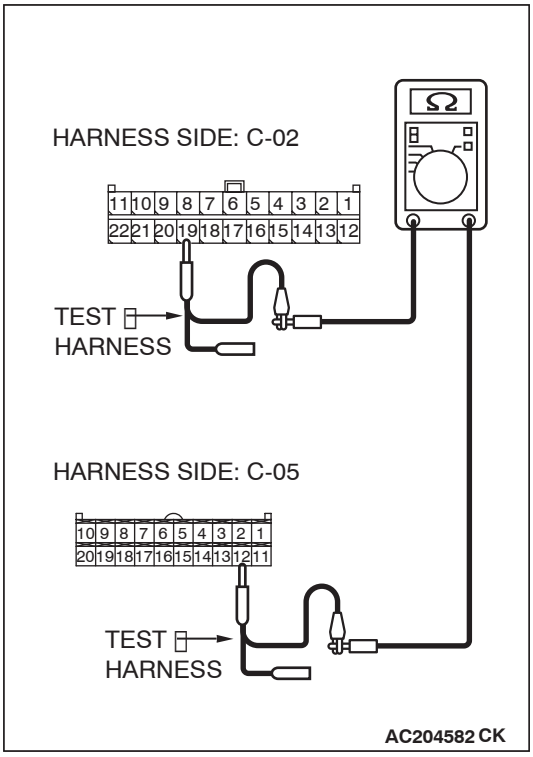
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 8 and middle-grade multi-center display connector terminal 13.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 19 and middle-grade multi-center display connector terminal 12.

OK: 2 ohms or less

NOTE: If diagnosing CAN-BUS on vehicle not equipped with multi-centre display, go to Step 20.

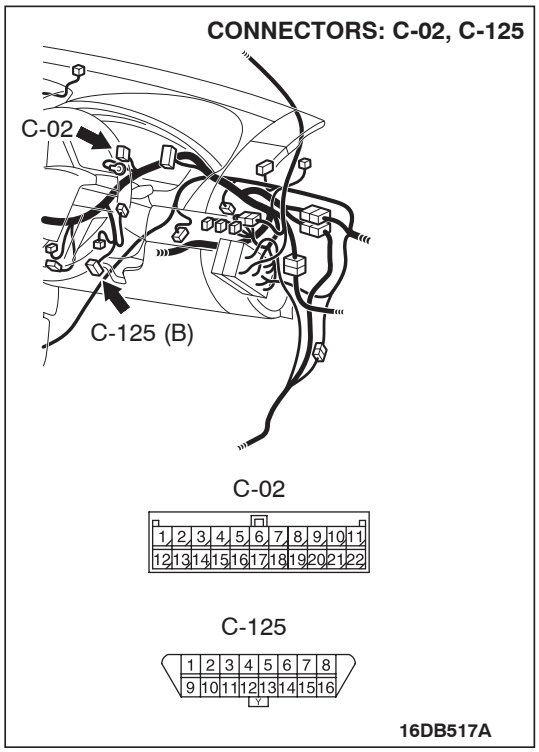
⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the multi-center display may be suspected. Diagnose the multi-center display . Refer to GROUP 54A, Multi-center display, equipment diagnosis P.54A-284.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the multi-center display unit connector.



STEP 20. Check the CAN bus lines between joint connector (3) and the data link connector. Measure the resistance between joint connector (3) C-02 and 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.

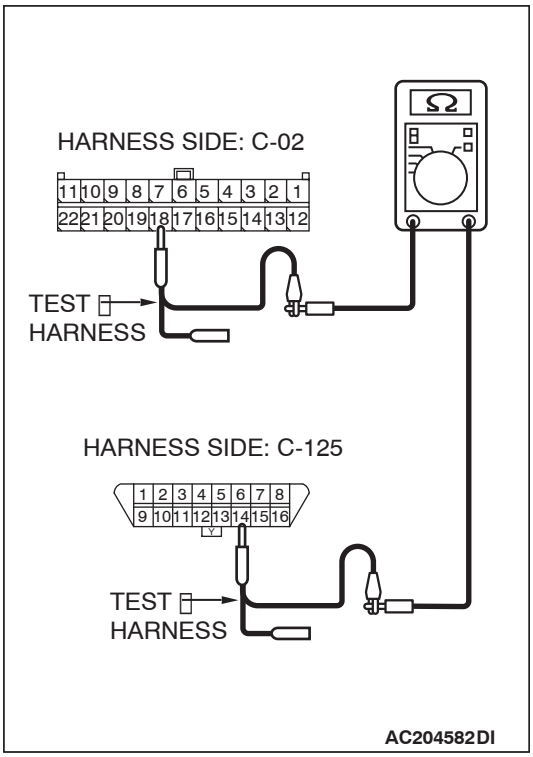
(1) Disconnect joint connector (3) C-02, and measure the resistance between the wiring harness side connector of joint connector (3) C-02 and wiring harness side connector of data link connector C-125.

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

⚠ CAUTION

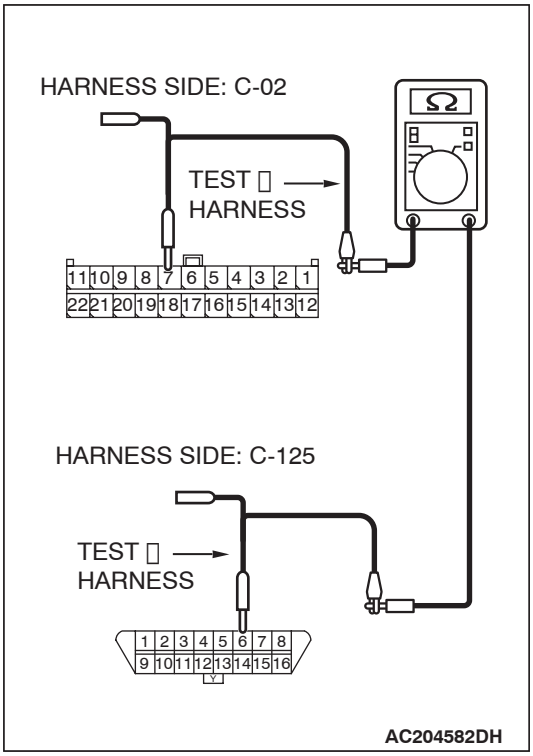
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 18 and data link connector terminal 14.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 7 and data link connector terminal 6.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, refer to diagnostics item 9: Check the CAN_L and H lines for a short circuit (Refer to P.54C-239).

NO : If all the resistances measure 2 ohms or less, repair the wiring harness between joint connector (3) and the data link connector.

STEP 21. Check ABS-ECU connector A-02, A/T-ECU connector B-19 and ENGINE-ECU connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

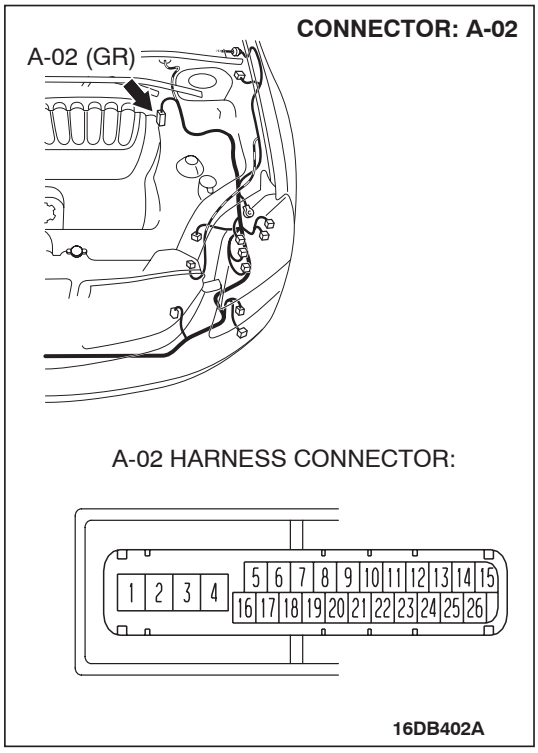
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80

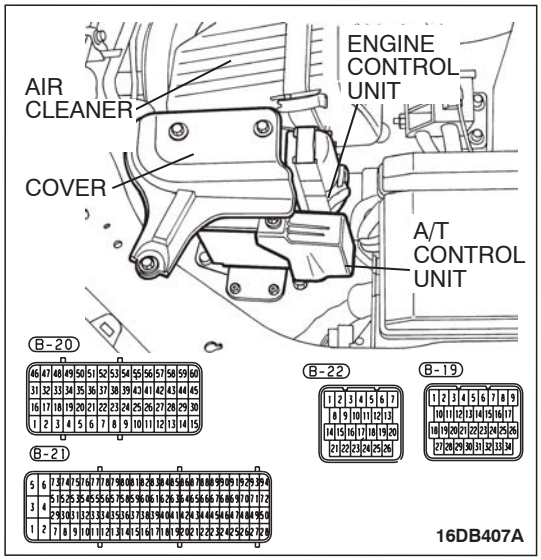
⚠ CAUTION

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: Are ABS-ECU connector A-02, A/T-ECU connector B-19 and ENGINE-ECU connector B-21 in good condition?

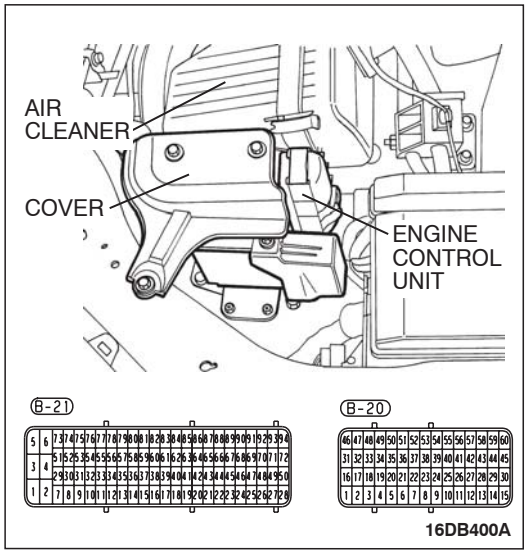
YES : Go to Step 22.
NO : Repair the damaged parts.



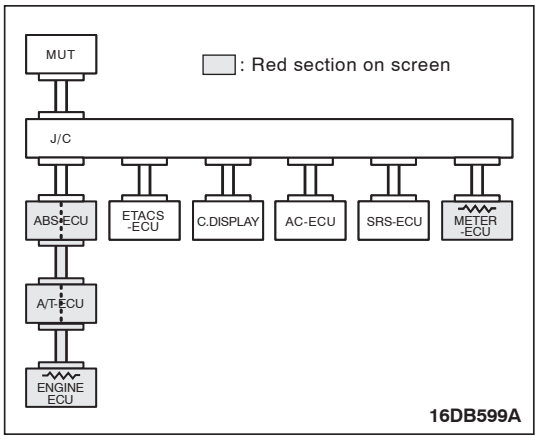


STEP 22. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect ENGINE-ECU connector B-21, and check the ENGINE-ECU system).

(1) Disconnect ENGINE-ECU connector B-21.
(2) Turn the ignition switch to the "ON" position.



(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.



NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Connect ENGINE-ECU connector B-21.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, go to Step 23 .
NO : If the MUT-III screen does not correspond to the illustration, go to Step 25.

STEP 23. Check the CAN bus lines between the ABS-ECU and the A/T-ECU. Measure the resistance between ABS-ECU connector A-02 and A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

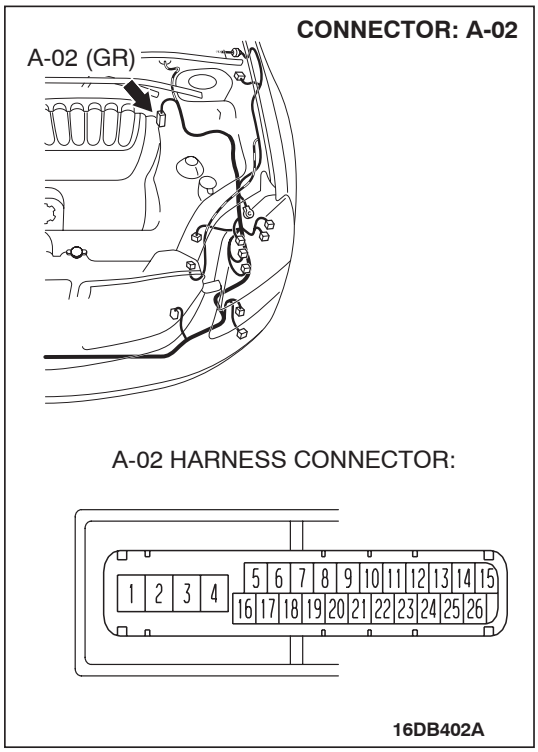
(1) Disconnect ABS-ECU connector A-02 and A/T-ECU connector B-19 (vehicles with A/T) or Engine-ECU connector B-21 (vehicles with M/T), and measure the resistance between each wiring harness side connector.

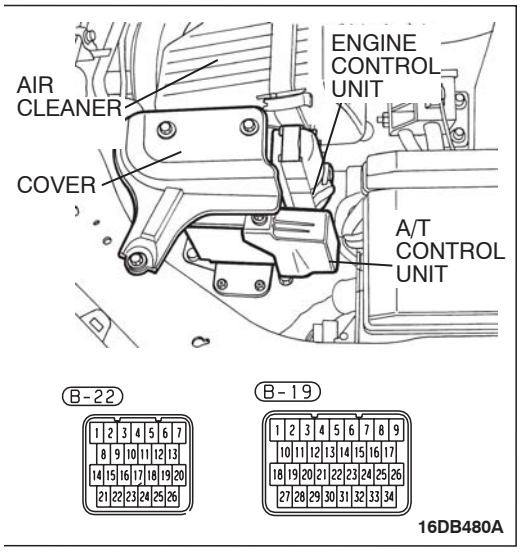
(2) Turn the ignition switch to the "LOCK" (OFF) position.

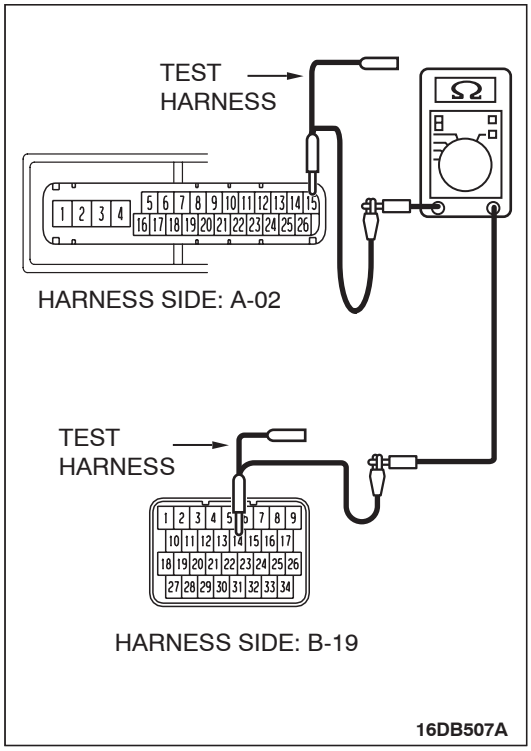
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

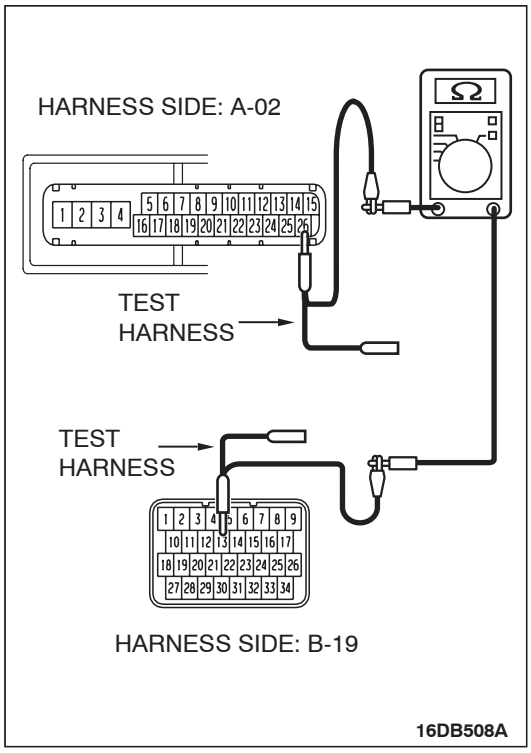






(4) Measure the resistance between ABS-ECU connector terminal 15 and A/T-ECU connector B-19 terminal 14.

OK: 2 ohms or less



(5) Measure the resistance between ABS-ECU connector terminal 26 and A/T-ECU connector B-19 terminal 13.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 24.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between ABS-ECU connector and the A/T-ECU connector B-19.

STEP 24. Check the CAN bus lines inside the ABS-ECU. Measure the resistance at ABS-ECU connector A-02.

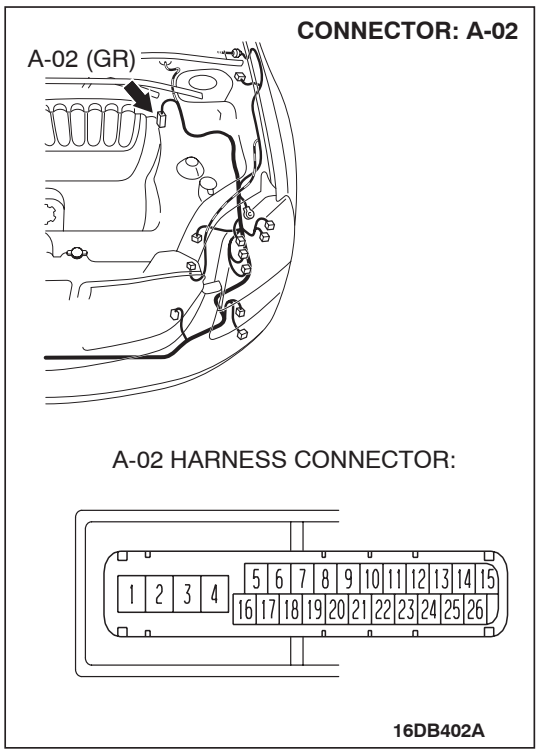
⚠ CAUTION
A digital multimeter should be used. For details refer to P.54C-4.

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

(1) Disconnect ABS-ECU connector A-02, and measure the resistance at the component side of ABS-ECU connector A-02.
(2) Turn the ignition switch to the "LOCK" (OFF) position.

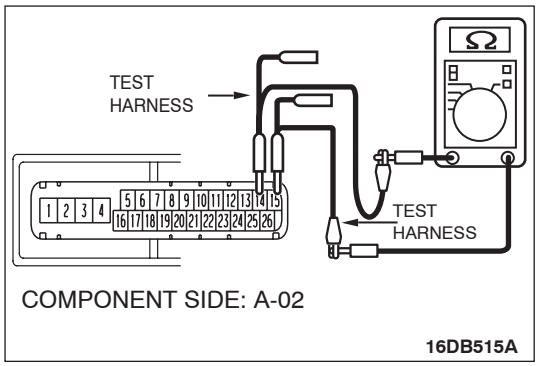
⚠ CAUTION
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



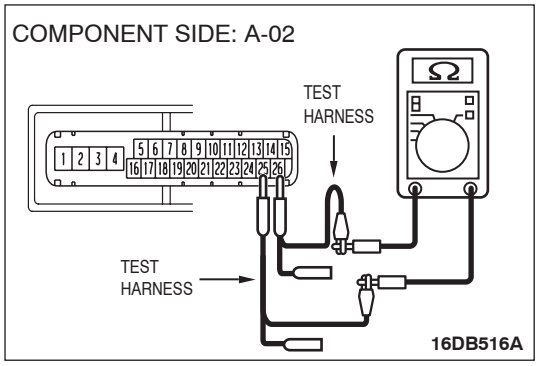
(4) Measure the resistance between ABS-ECU connector terminals 14 and 15.

OK: 2 ohms or less



(5) Measure the resistance between ABS-ECU connector terminals 25 and 26.

OK: 2 ohms or less



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

Q: Do all the resistances measure 2 ohms or less?

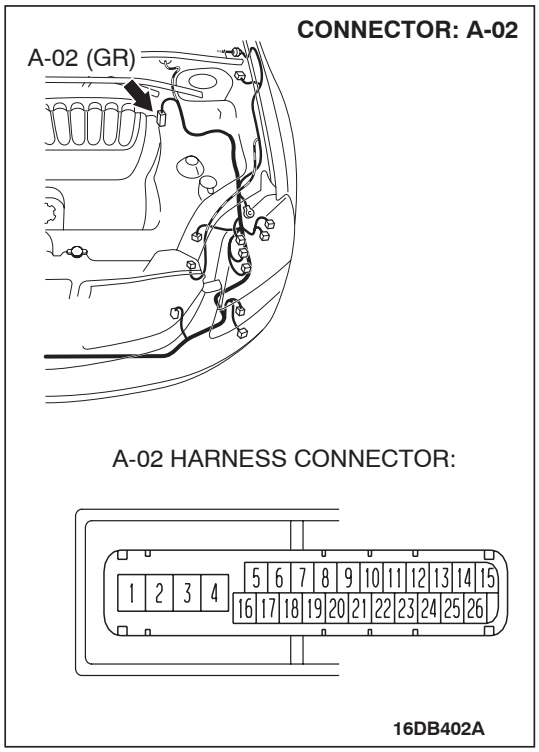
YES : If all the resistances measure 2 ohms or less, go to Step 25 or power supply to the ENGINE-ECU may be suspected. Diagnose the engine. Refer to GROUP

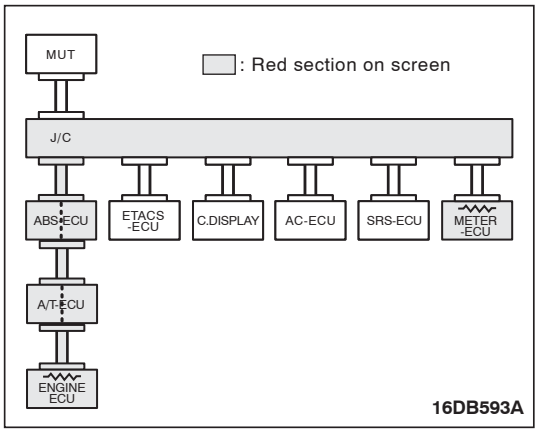
13A, MPI diagnosis P.13A-571 <3.8L engine>.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, replace the ABS-ECU.

STEP 25. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect ABS-ECU connector A-02, and check the ABS-ECU system).

(1) Disconnect ABS-ECU connector A-02.
(2) Turn the ignition switch to the "ON" position.





(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Check ABS-ECU connector A-02.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, go to Step 26 .

NO : If the MUT-III screen does not correspond to the illustration, refer to diagnostics item 5: Check the CAN_L and H lines for a short circuit (Refer to P.54C-239).

STEP 26. Check the CAN bus lines between intermediate connector C-29 and the ABS-ECU. Measure the resistance between intermediate connector C-29 and ABS-ECU connector A-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 intermediate connector C-29 and ABS-ECU connector A-02, and measure the resistance between the wiring harness side connector of ABS-ECU connector A-02 and the male side connector of intermediate connector C-29 (at front wiring harness side).

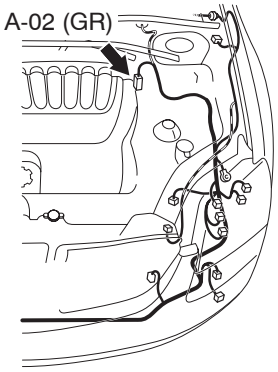
(2) Turn the ignition switch to the "LOCK" (OFF) position.

⚠ CAUTION

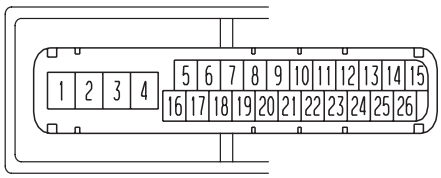
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

CONNECTOR: A-02

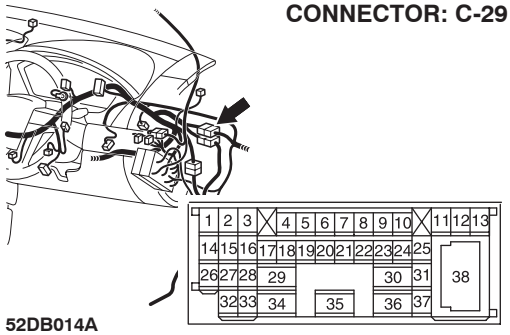


A-02 HARNESS CONNECTOR:

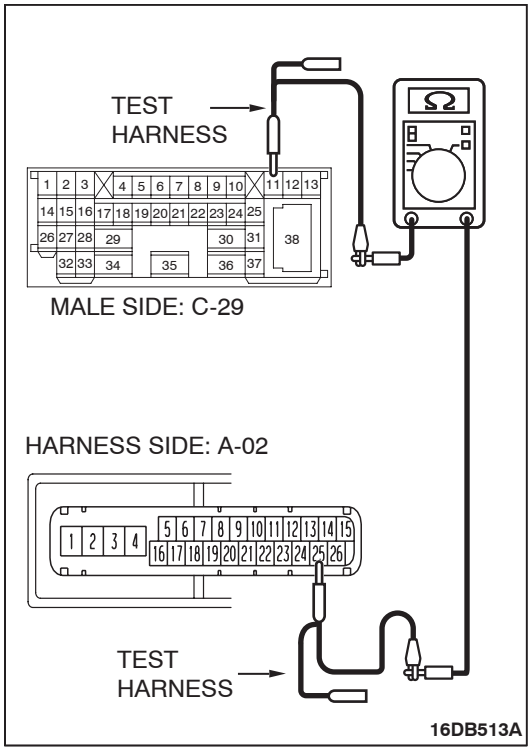


16DB402A

CONNECTOR: C-29

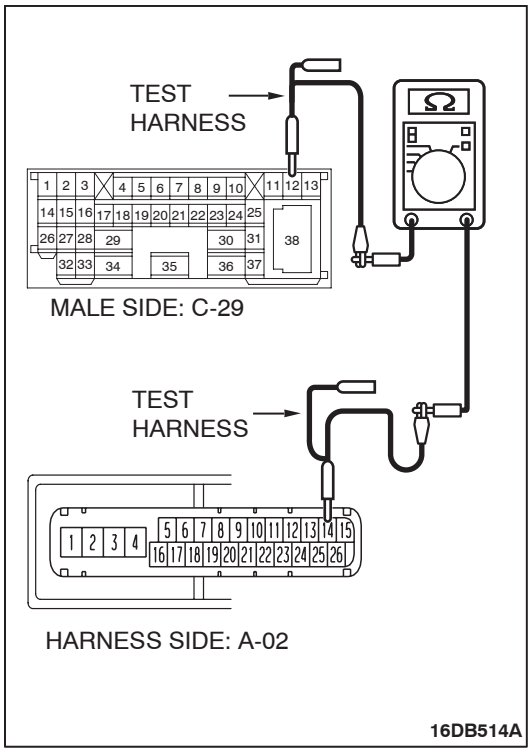


52DB014A



(4) Measure the resistance between intermediate connector terminal 11 and ABS-ECU connector terminal 25.

OK: 2 ohms or less



(5) Measure the resistance between intermediate connector terminal 12 and ABS-ECU connector terminal 14.

OK: 2 ohms or less

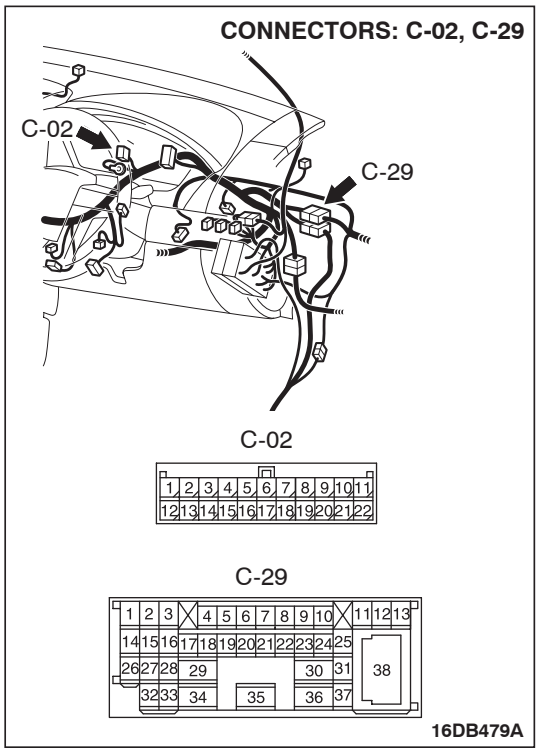
⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 27.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between intermediate connector C-29 and the ABS-ECU connector.



STEP 27. Check the CAN bus lines between intermediate connector C-29 and the joint connector (3). Measure the resistance between intermediate connector C-29 and 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.

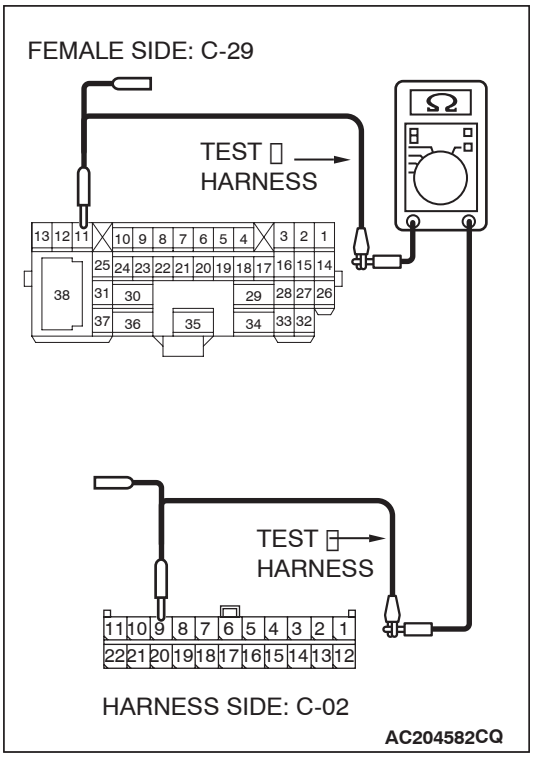
(1) Disconnect joint connector (3) C-02 and intermediate connector C-29, and measure the resistance between the wiring harness side connector of joint connector (3) C-02 and the female side connector of intermediate connector C-29 (instrument panel wiring harness side).

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

⚠ CAUTION

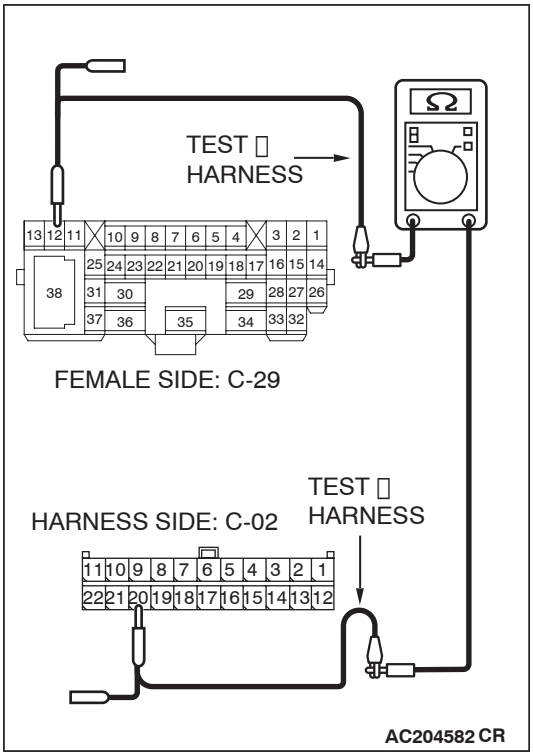
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between intermediate connector terminal 11 and joint connector (3) terminal 9.

OK: 2 ohms or less



(5) Measure the resistance between intermediate connector terminal 12 and joint connector (3) terminal 20.

OK: 2 ohms or less

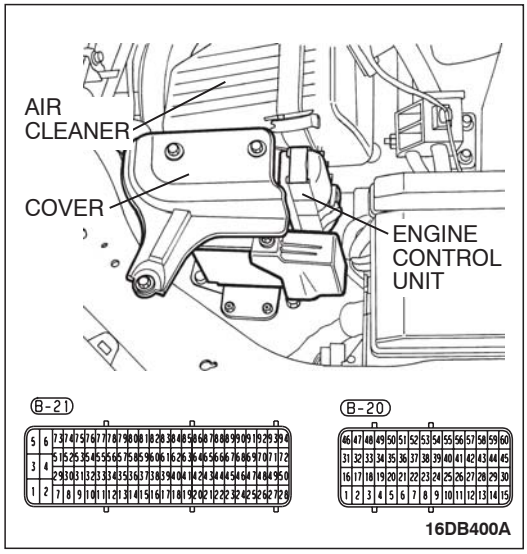
⚠ CAUTION

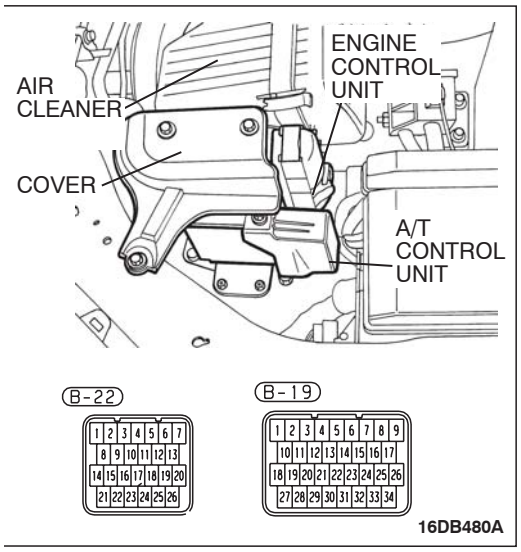
Strictly observe the specified wiring harness repair procedure. For details refer to P.54C-5.

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 28 or power supply to the ABS-ECU may be suspected. Diagnose the ABS system. Refer to GROUP 35B, ABS diagnosis P.35B-72.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and intermediate connector C-29.





STEP 28. Check the CAN bus lines between the A/T-ECU and the ENGINE-ECU. Measure the resistance between A/T-ECU connector B-19 and ENGINE-ECU connector B-21.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

- 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.

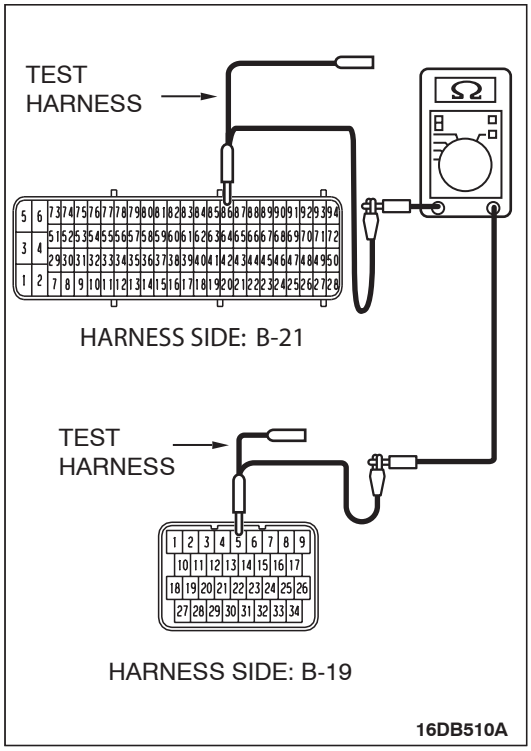
(1) Disconnect A/T-ECU connector B-19 and ENGINE-ECU connector B-21, and measure the resistance between each wiring harness side connector.

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

⚠ CAUTION

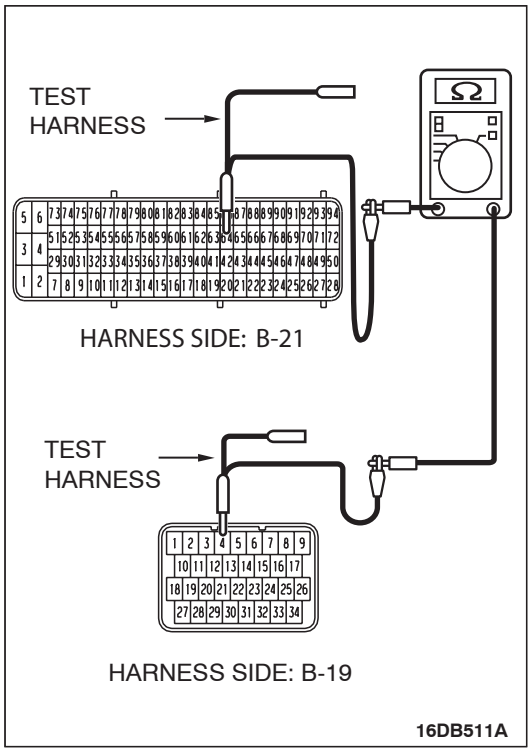
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between A/T-ECU connector B-19 terminal 5 and ENGINE-ECU connector B-21 terminal 86.

OK: 2 ohms or less



(5) Measure the resistance between A/T-ECU connector B-19 terminal 4 and ENGINE-ECU connector B-21 terminal 64.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 29.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between A/T-ECU connector B-19 and the ENGINE-ECU connector B-21.

STEP 29. Check the CAN bus lines inside the A/T-ECU. Measure the resistance at A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

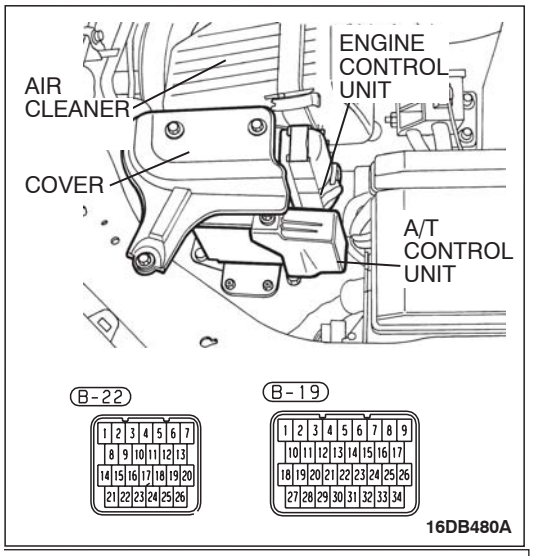
(1) Disconnect A/T-ECU connector B-19, and measure the resistance at the component side of A/T-ECU connector B-19.

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

⚠ CAUTION

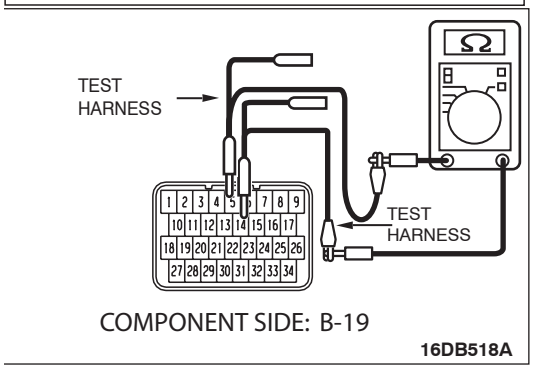
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between A/T-ECU connector B-19 terminals 5 and 14.

OK: 2 ohms or less

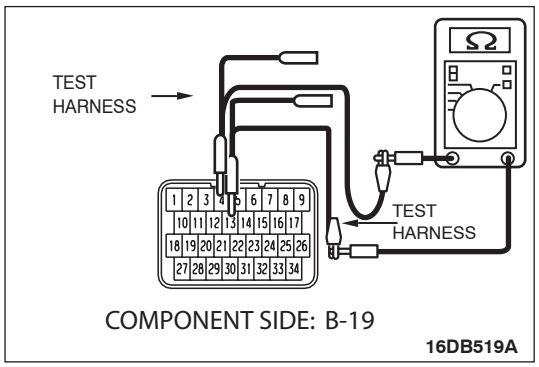


(5) Measure the resistance between A/T-ECU connector B-19 terminals 4 and 13.

OK: 2 ohms or less

⚠ CAUTION

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



Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, or go to Step 30 power supply to the ENGINE-ECU may be suspected. Diagnose the engine. Refer to GROUP 13A, MPI diagnosis P.13A-571 <3.8L engine>.

NO : If either of the resistances measures more than 2

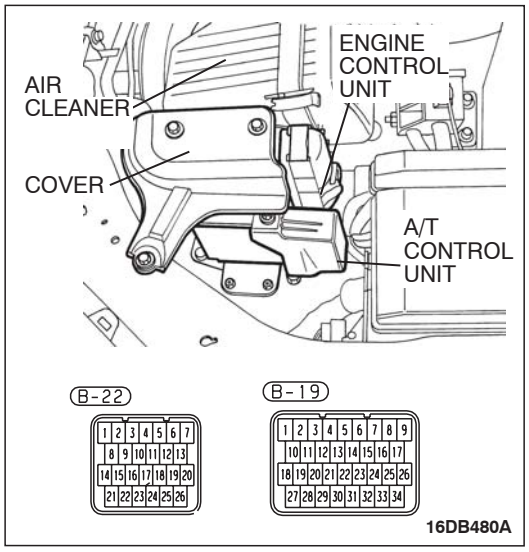
ohms or all the resistances measure more than 2 ohms, replace the A/T-ECU.

STEP 30. Using diagnostic tool MB991958, diagnose the CAN bus line (Disconnect A/T-ECU connector B-19, and check the A/T-ECU system).

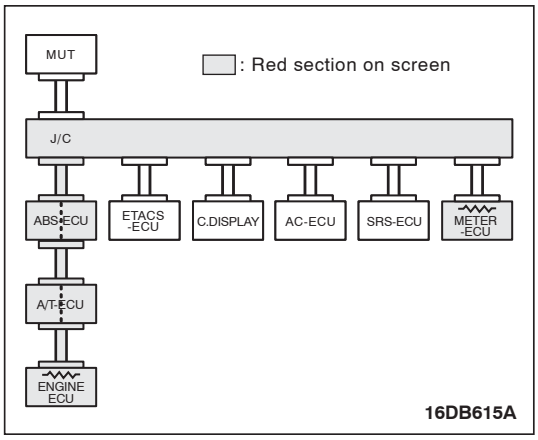
NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

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

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



(3) Diagnose CAN bus lines, and check if the MUT-III screen is as shown in the illustration.



NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

(4) Turn the ignition switch to the "LOCK" (OFF) position.
(5) Check A/T-ECU connector B-19.

Q: Does the MUT-III screen correspond to the illustration?

YES : If the MUT-III screen corresponds to the illustration, power supply to the A/T-ECU may be suspected Diagnose the A/T-ECU system.

NO : If the MUT-III screen does not correspond to the illustration, refer to diagnostics item 3: Check the CAN_L and H lines for a short circuit (Refer to P.54C-239).

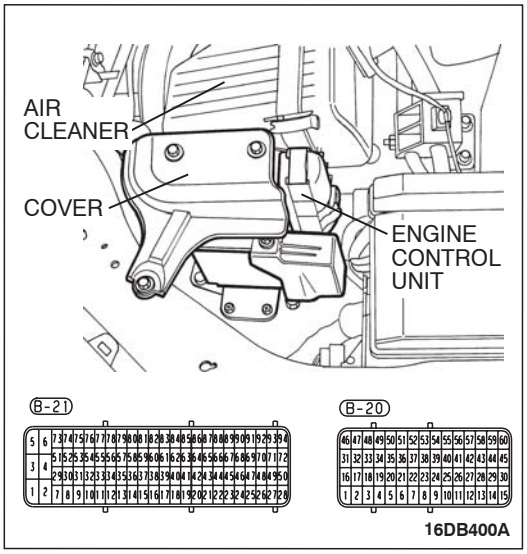
DIAGNOSTIC ITEM 9: Diagnose the lines between CAN main bus line and the ENGINE-ECU

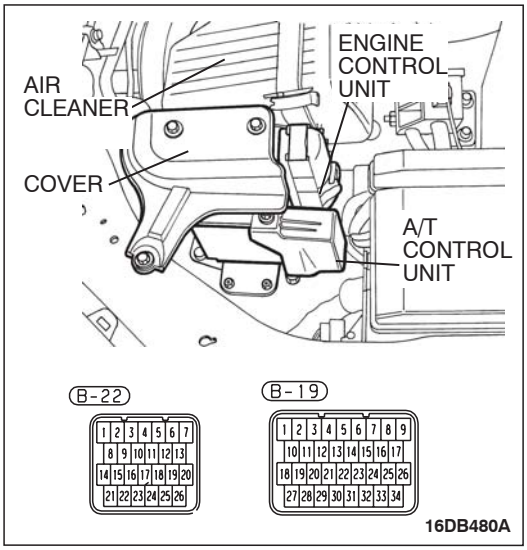
NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

⚠ 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

If the MUT-III cannot receive signals from the ENGINE-ECU, CAN bus line connector(s) are broken or an open circuit has occurred.

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 the ENGINE-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 damage terminals, or terminals pushed back in the connector
- The ENGINE-ECU may be defective
- The A/T-ECU may be defective

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991219: Inspection Test Harness
- MB992044: ENGINE-ECU Harness
- MB992045: A/T-ECU Harness

STEP 1. Check A/T-ECU connector B-19 and ENGINE-ECU connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

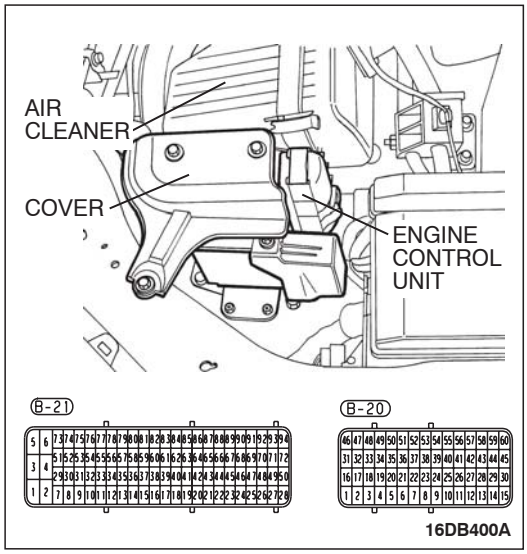
NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

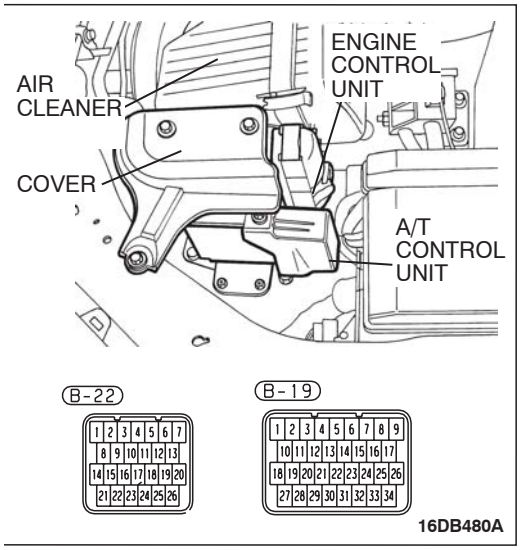
⚠ CAUTION

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 A/T-ECU connector B-19 and ENGINE-ECU connector B-21 in good condition?

YES : Go to Step 2.
NO : Repair the damaged parts.





STEP 2. Check the CAN bus lines between the ENGINE-ECU and the A/T-ECU. Measure the resistance between ENGINE-ECU connector B-21 and A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

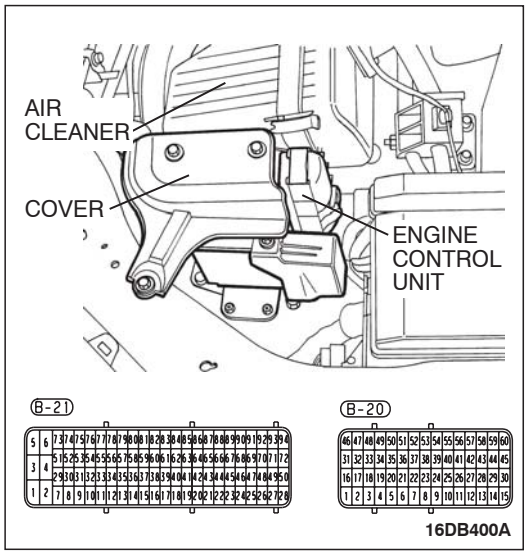
(1) Disconnect ENGINE-ECU connector B-21 and A/T-ECU connector B-19, and measure the resistance between each wiring harness side connector.

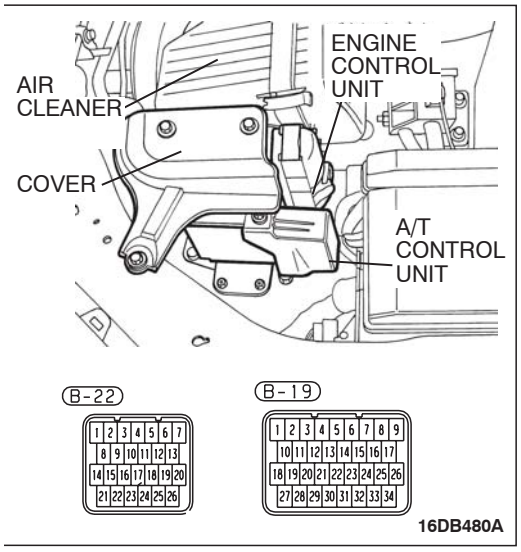
(2) Turn the ignition switch to the "LOCK" (OFF) position.

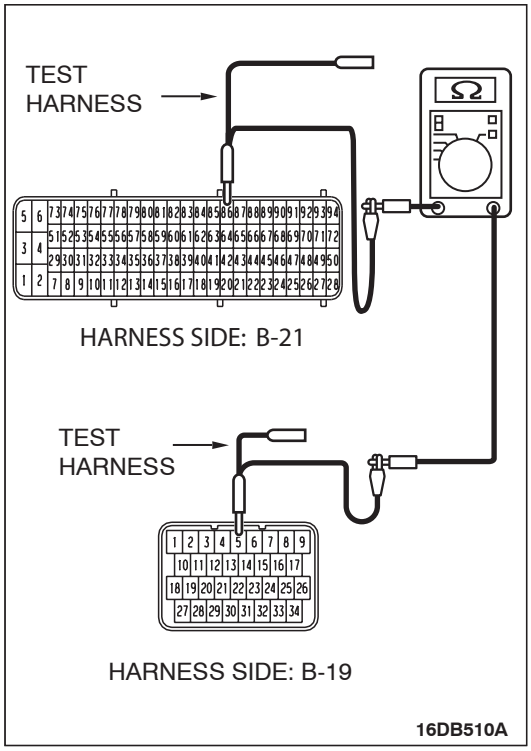
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

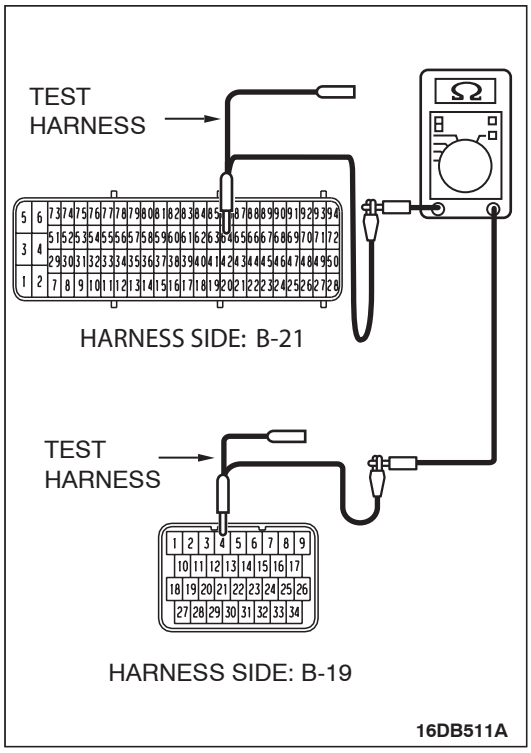






(4) Measure the resistance between ENGINE-ECU connector B-21 terminal 86 and A/T-ECU connector B-19 terminal 5.

OK: 2 ohms or less



(5) Measure the resistance between ENGINE-ECU connector B-21 terminal 64 and A/T-ECU connector B-19 terminal 4.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 3.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between ENGINE-ECU connector B-21 and the A/T-ECU connector B-19.

STEP 3. Check the CAN bus lines inside the A/T-ECU. Measure the resistance at A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

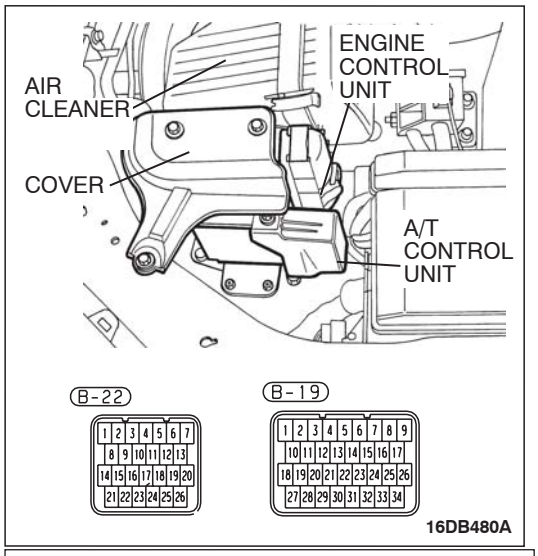
(1) Disconnect A/T-ECU connector B-19, and measure the resistance at the component side of A/T-ECU connector B-19.

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

⚠ CAUTION

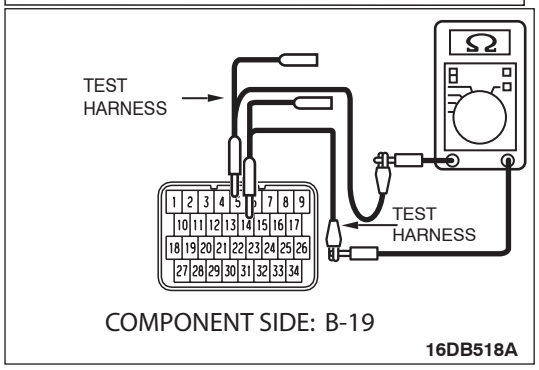
Disconnect the negative battery terminal. For details refer to P.54C-4.

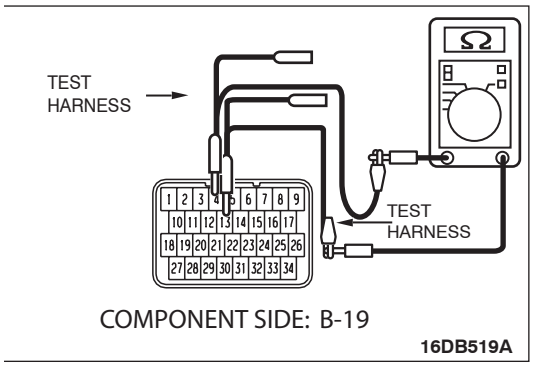
(3) Disconnect the negative battery terminal.



(4) Measure the resistance between A/T-ECU connector B-19 terminals 14 and 5.

OK: 2 ohms or less





(5) Measure the resistance between A/T-ECU connector B-19 terminals 4 and 13.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the ENGINE-ECU may be suspected. Diagnose the engine. Refer to GROUP 13A, MPI diagnosis P.13A-571.

NO : If either or all of the resistances measures more than 2 ohms, replace the A/T-ECU.

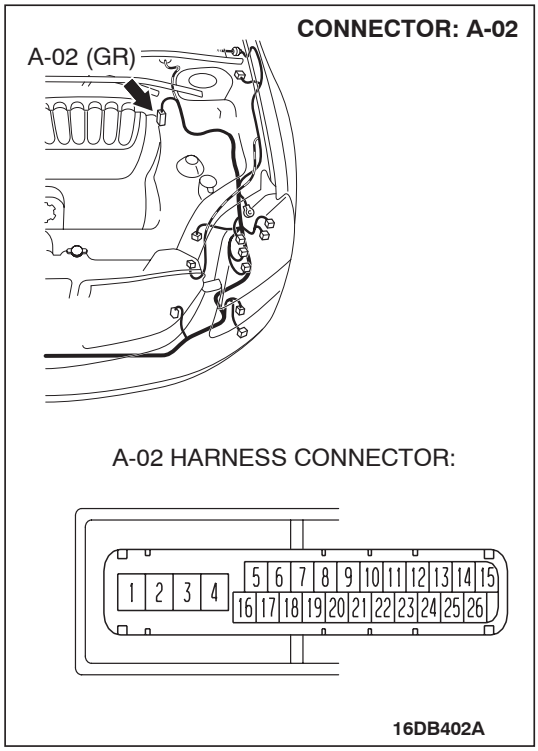
DIAGNOSTIC ITEM 12: Diagnose the lines between CAN main bus line and the A/T-ECU

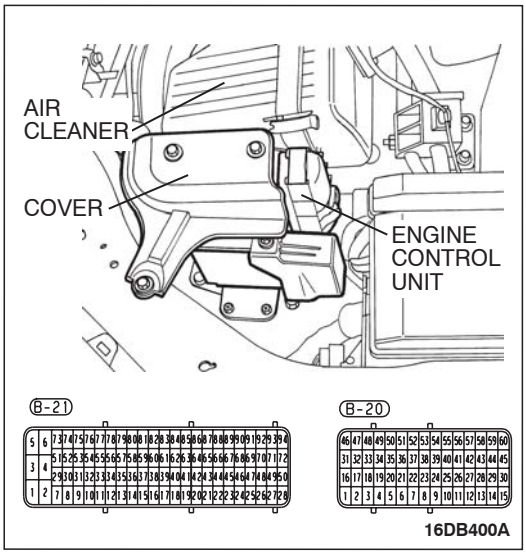
NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

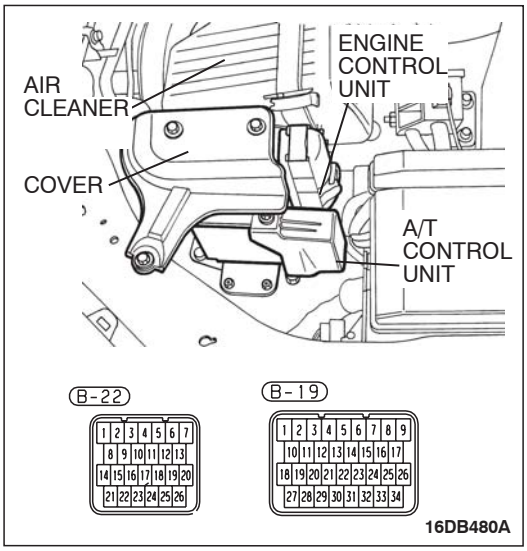
NOTE: When diagnosing CAN-BUS on vehicles not equipped with a multi-centre display, disregard the multi-centre display and it's wiring circuits.

⚠ 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

If the MUT-III cannot received signals from the ENGINE-ECU, CAN bus line connector(s) are broken or an open circuit has occurred.

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 the ENGINE-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 damage terminals, or terminals pushed back in the connector
- The ABS-ECU may be defective
- The A/T-ECU may be defective

NOTE: When diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and measure between ABS-ECU and ENGINE-ECU only.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991219: Inspection Test Harness
- MB992044: ENGINE-ECU Harness
- MB992045: A/T-ECU Harness

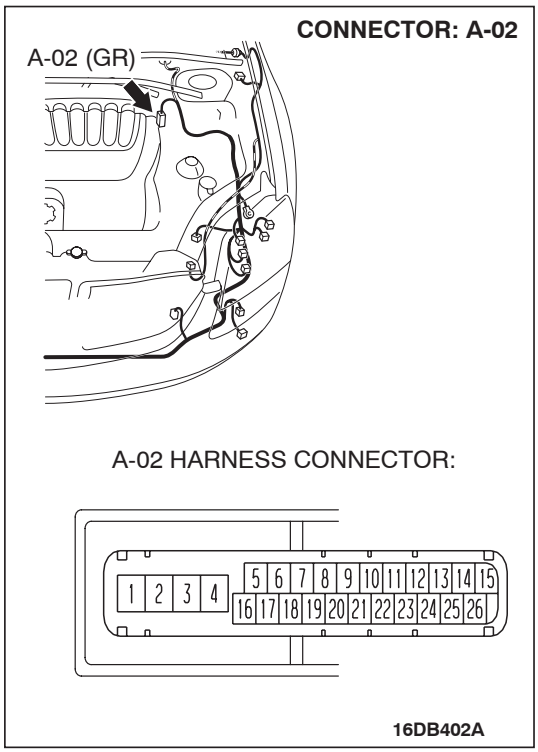
STEP 1. Check ABS-ECU connector A-02, A/T-ECU connector B-19 and ENGINE-ECU connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

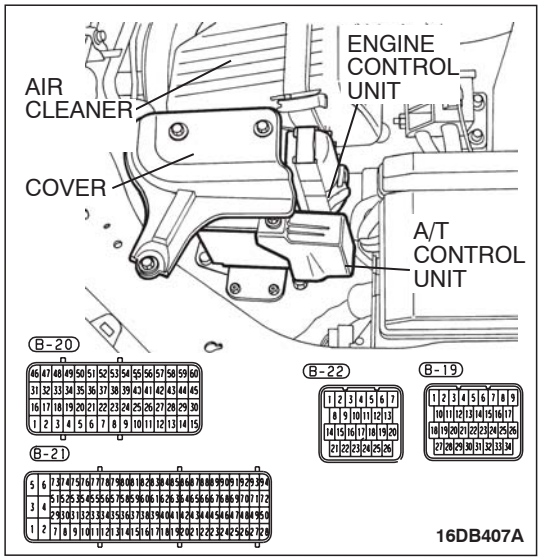
⚠ CAUTION

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 ABS-ECU connector A-02, A/T-ECU connector B-19 and ENGINE-ECU connector B-21 in good condition?

YES : Go to Step 2.
NO : Repair the damaged parts.





STEP 2. Check the CAN bus lines between the ABS-ECU and the A/T-ECU. Measure the resistance between ABS-ECU connector A-02 and A/T-ECU connector B-19.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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.

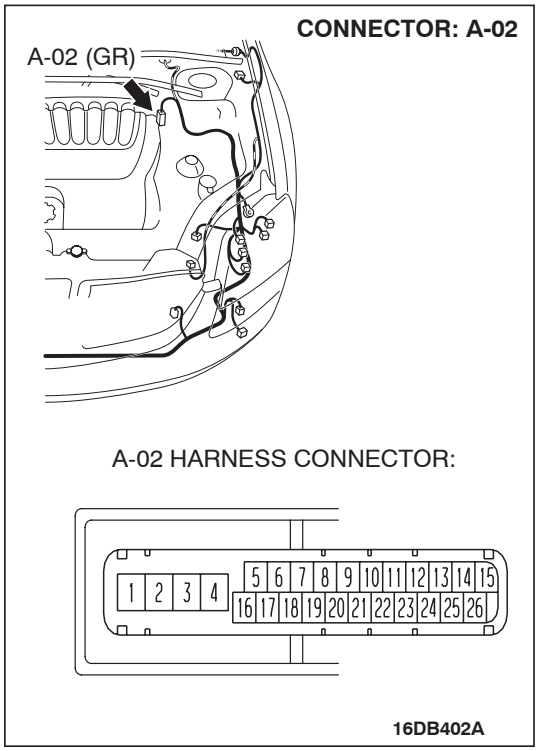
(1) Disconnect ABS-ECU connector A-02 and A/T-ECU connector B-19, and measure the resistance between each wiring harness side connector.

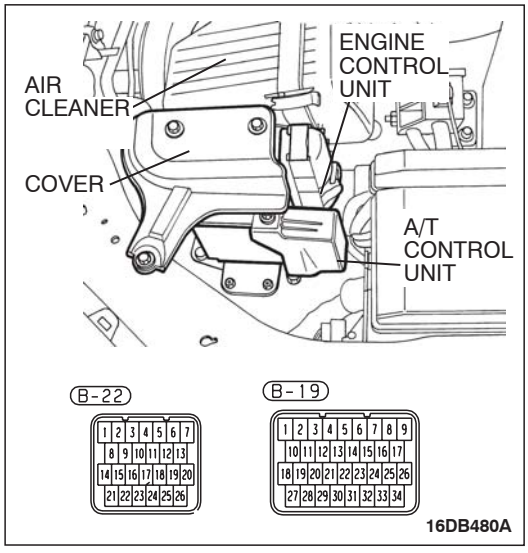
(2) Turn the ignition switch to the "LOCK" (OFF) position.

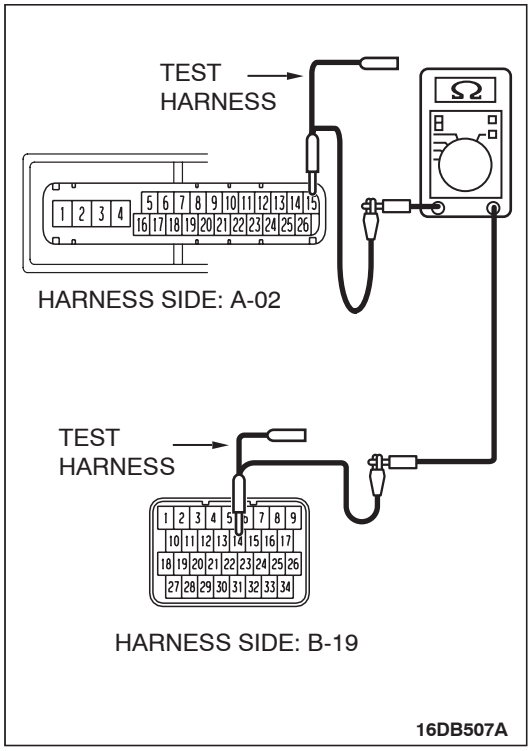
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

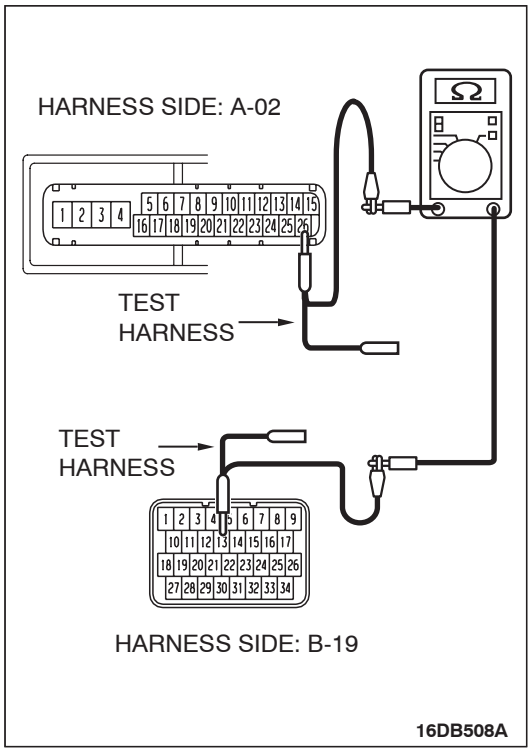






(4) Measure the resistance between ABS-ECU connector terminal 15 and A/T-ECU connector B-19 terminal 14.

OK: 2 ohms or less



(5) Measure the resistance between ABS-ECU connector terminal 26 and A/T-ECU connector B-19 terminal 13.

OK: 2 ohms or less

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, go to Step 3.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between ABS-ECU connector and the A/T-ECU connector B-19.

STEP 3. Check the CAN bus lines inside the ABS-ECU. Measure the resistance at ABS-ECU connector A-02.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

⚠ 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, and measure the resistance at the component side of ABS-ECU connector A-02.

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

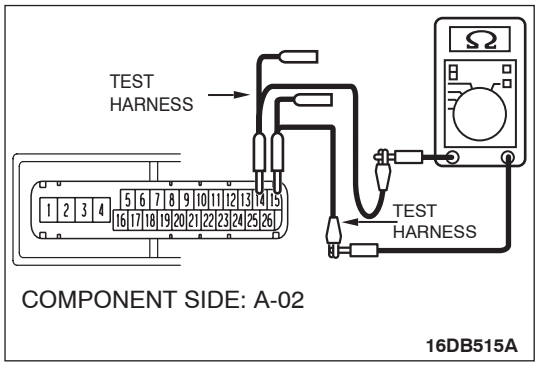
⚠ CAUTION

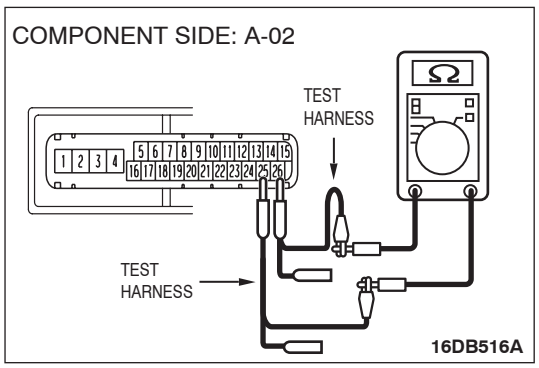
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

(4) Measure the resistance between ABS-ECU connector A-02 terminals 14 and 15.

OK: 2 ohms or less





(5) Measure the resistance between ABS-ECU connector terminals 25 and 26.

OK: 2 ohms or less

⚠ CAUTION

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

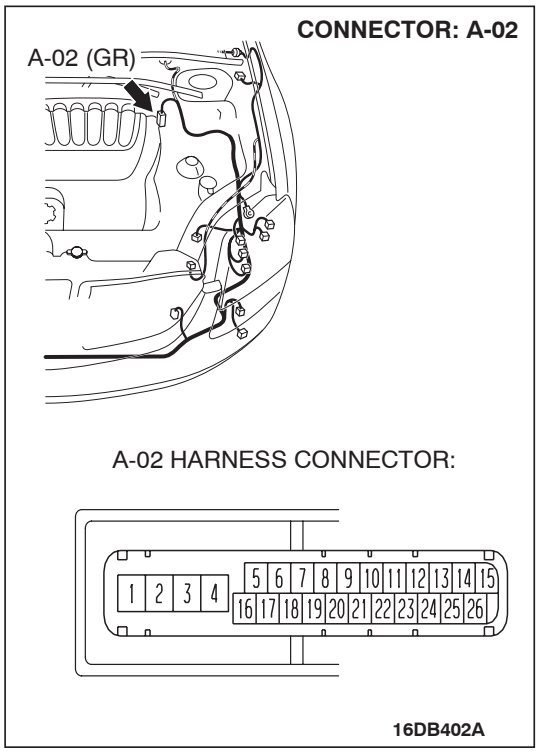
Q: Do all the resistances measure 2 ohms or less?

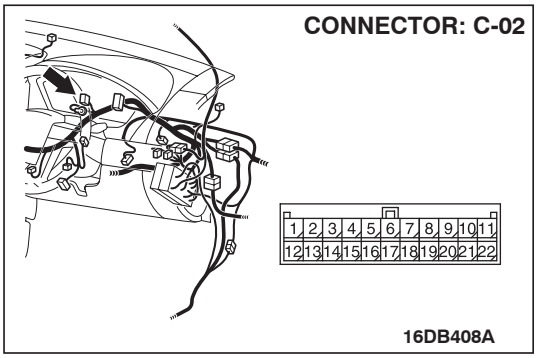
YES : If all the resistances measure 2 ohms or less, power supply to the A/T-ECU may be suspected. Diagnose the automatic transmission. Refer to GROUP 13A, MPI diagnosis P.13A-571 <3.8L engine>.

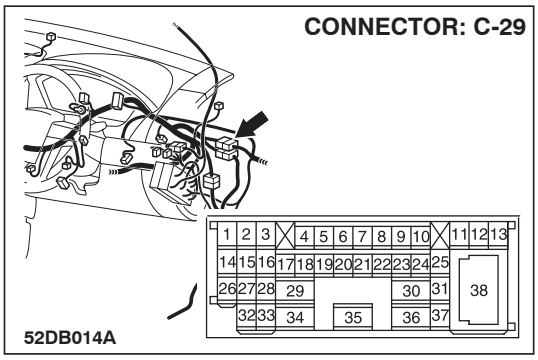
NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, replace the ABS-ECU.

DIAGNOSTIC ITEM 11: Diagnose the lines between CAN main bus line and the ABS-ECU.

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







TROUBLE JUDGMENT

If the MUT-III cannot received signals from ABS-ECU, CAN bus line connector(s) are broken or an open circuit has occurred.

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 the ABS-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 damage terminals, or terminals pushed back in the connector
- The ABS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB991219: Inspection Test Harness

STEP 1. Check intermediate connector C-29 and ABS-ECU connector A-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

⚠ CAUTION

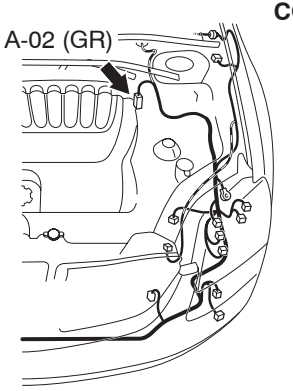
The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to P.54C-4.

Q: Are intermediate connector C-29 and ABS-ECU connector A-02 in good condition?

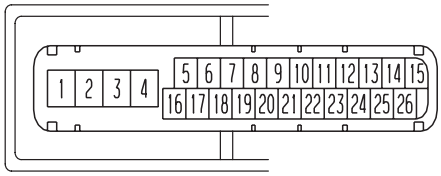
YES : Go to Step 2.

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

CONNECTOR: A-02

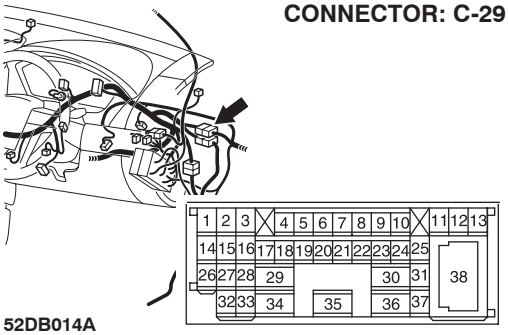


A-02 HARNESS CONNECTOR:



16DB402A

CONNECTOR: C-29



52DB014A

STEP 2. Check the CAN bus lines between intermediate connector C-29 and the ABS-ECU. Measure the resistance between intermediate connector C-29 and 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.

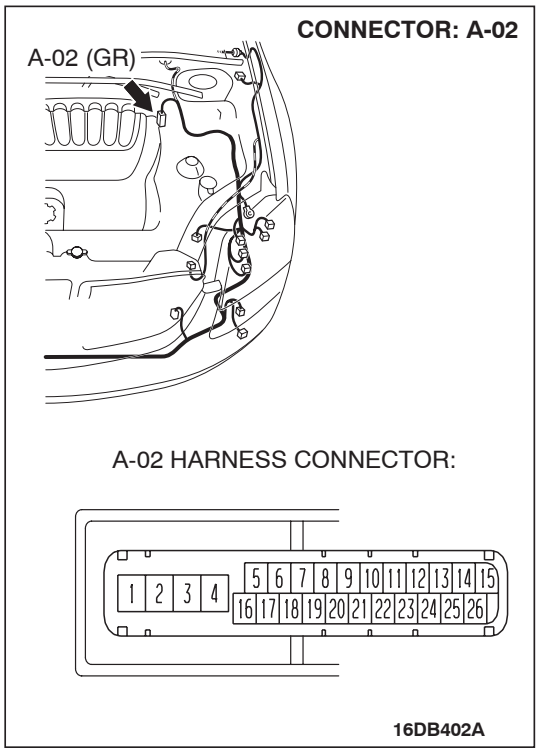
(1) Disconnect intermediate connector C-29 and ABS-ECU connector A-02, and measure the resistance between the wiring harness side connector of ABS-ECU connector A-02 (using MB991219) and the male side connector of intermediate connector C-29 (at front wiring harness side).

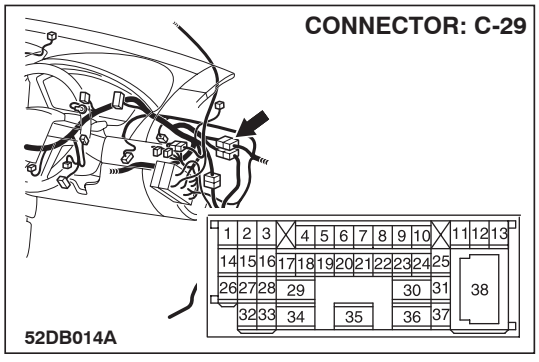
(2) Turn the ignition switch to the "LOCK" (OFF) position.

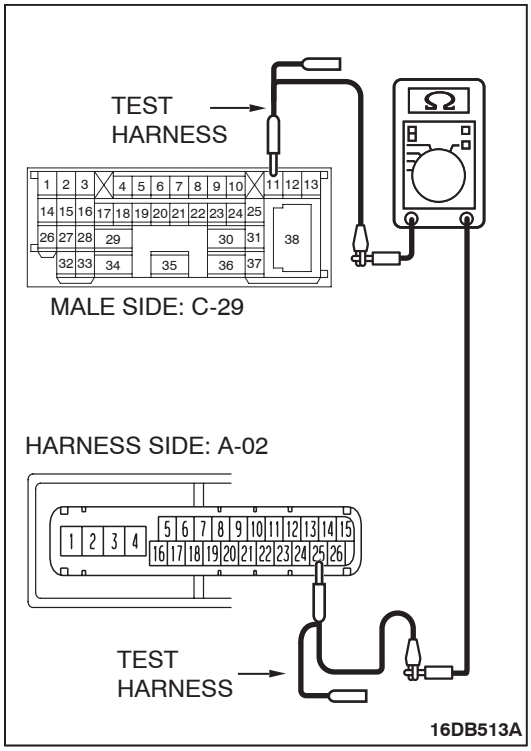
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

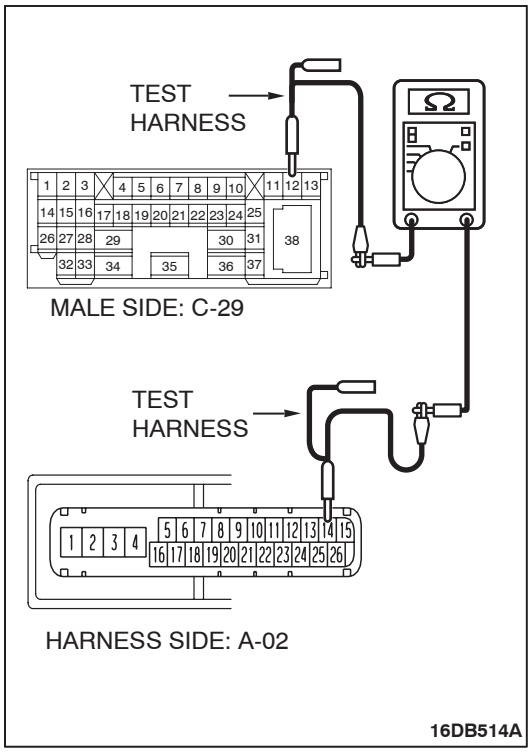






(4) Measure the resistance between intermediate connector terminal 11 and ABS-ECU connector terminal 25.

OK: 2 ohms or less



(5) Measure the resistance between intermediate connector terminal 12 and ABS-ECU connector terminal 14.

OK: 2 ohms or less

⚠ CAUTION

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

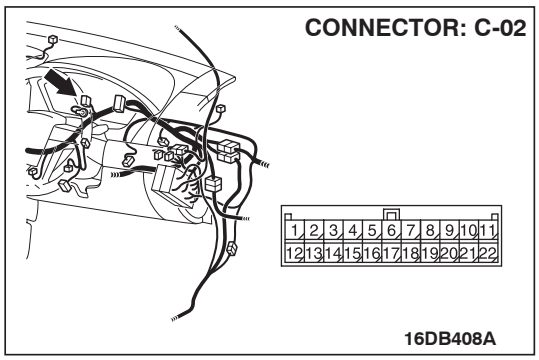
Q: Do all the resistances measure 2 ohms or less?

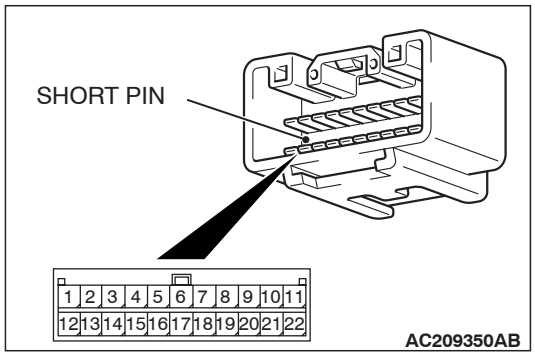
YES : If all the resistances measure 2 ohms or less, go to Step 3.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between intermediate connector C-29 and the ABS-ECU connector.

STEP 3. 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.



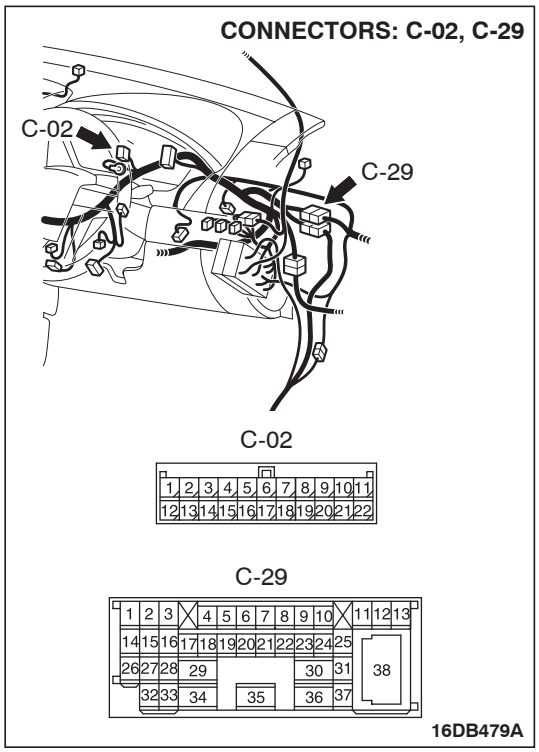


Check the joint connector at the wiring harness side for loose, corroded or damaged terminals, or terminals pushed back in the connector, and also check the short pin behind the connector for corrosion, deformation and delamination.

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

YES : Go to Step 4.

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



STEP 4. Check the CAN bus lines between intermediate connector C-29 and the joint connector (3). Measure the resistance between intermediate connector C-29 and 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.

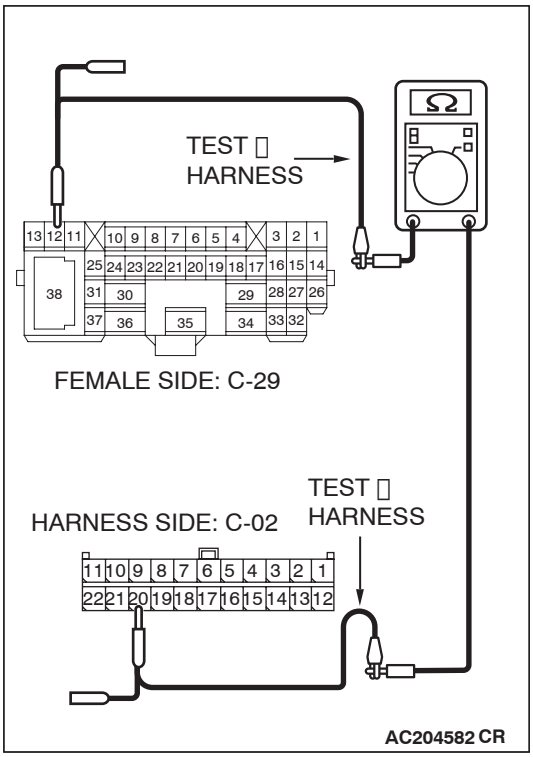
(1) Disconnect joint connector (3) C-02 and intermediate connector C-29, and measure the resistance between the wiring harness side connector of joint connector (3) C-02 and the female side connector of intermediate connector C-29 (instrument panel wiring harness side).

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

⚠ CAUTION

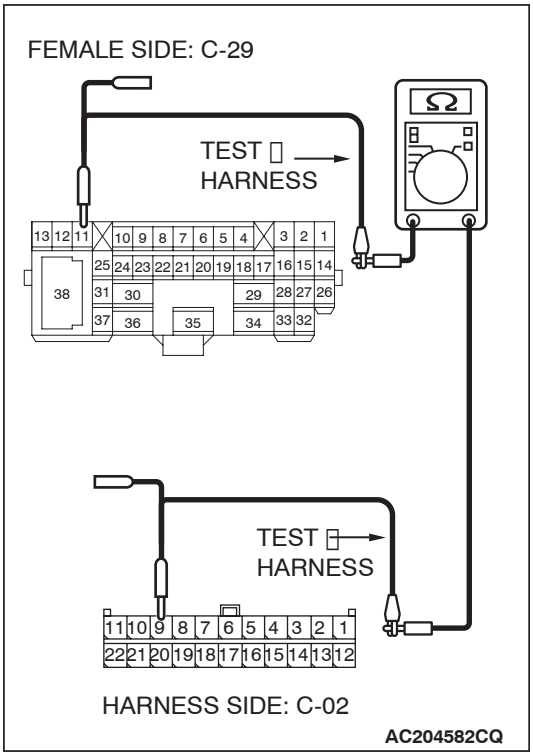
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between intermediate connector terminal 12 and joint connector (3) terminal 20.

OK: 2 ohms or less



(5) Measure the resistance between intermediate connector terminal 11 and joint connector (3) terminal 9.

OK: 2 ohms or less

⚠ CAUTION

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

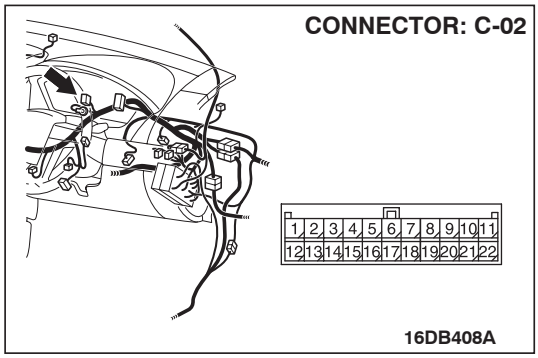
Q: Do all the resistances measure 2 ohms or less?

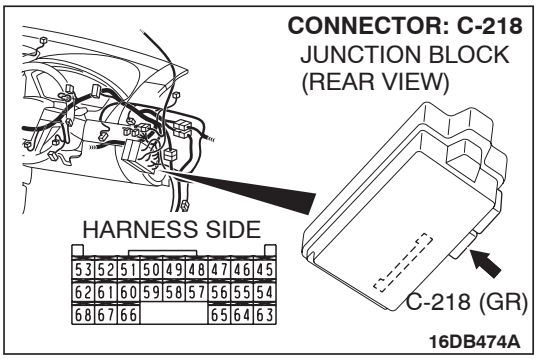
YES : If all the resistances measure 2 ohms or less, power supply to the ABS-ECU may be suspected. Diagnose the ABS system. Refer to GROUP 35B ABS diagnosis P.35B-74.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and intermediate connector C-29.

DIAGNOSTIC ITEM 14: Failure in the lines between CAN main bus line and the ETACS-ECU.

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





TROUBLE JUDGMENT

If the MUT-III cannot received signals from ETACS-ECU, CAN bus line connector(s) are broken or an open circuit has occurred.

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 the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

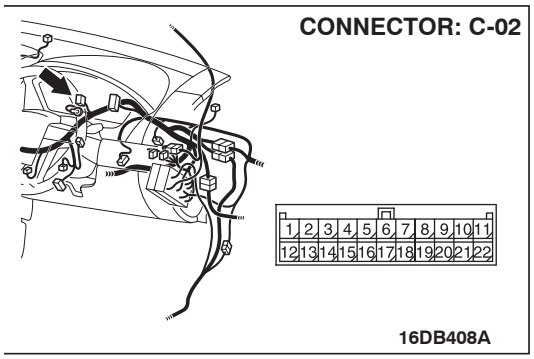
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80
- The wiring harness or connectors may have loose, corroded, or damage terminals, or terminals pushed back in the connector
- The ETACS-ECU may be defective

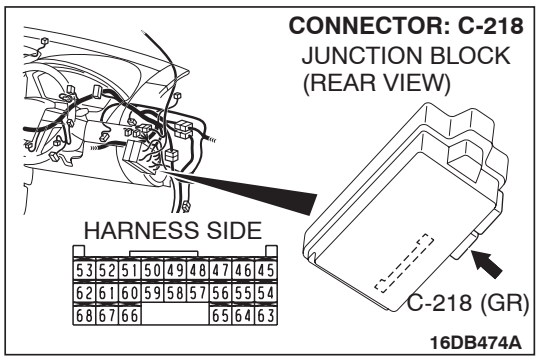
DIAGNOSIS

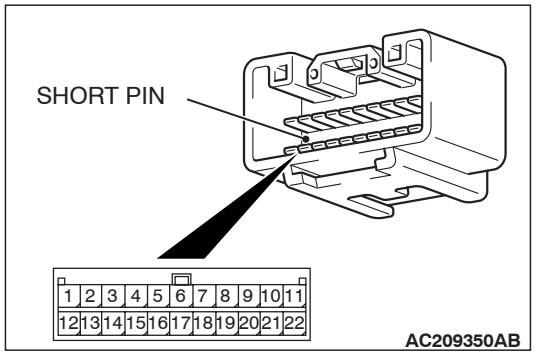
Required Special Tool:
- MB991223: Harness Set

STEP 1. Check joint connector (3) C-02 and 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.







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: Are joint connector (3) C-02 and ETACS-ECU connector C-218 in good condition?

YES : Go to Step 2.
NO : Repair the damaged parts. Replace the joint connector as necessary.

STEP 2. Check the CAN bus lines between joint connector (3) and the ETACS-ECU. Measure the resistance between joint connector (3) C-02 and ETACS-ECU connector C-218.

⚠ 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.

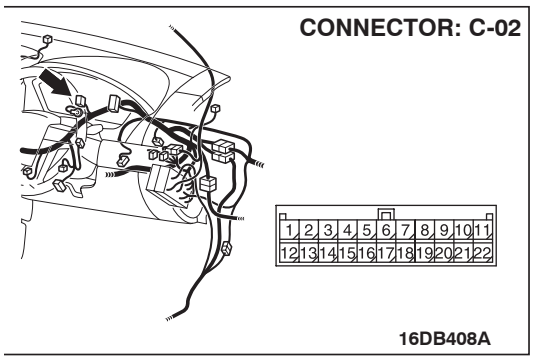
(1) Disconnect joint connector (3) C-02 and ETACS-ECU connector C-218, and measure the resistances at the wiring harness sides of joint connector (3) C-02 and ETACS-ECU connector C-218.

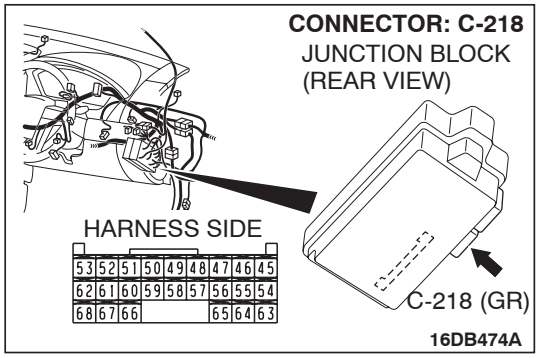
(2) Turn the ignition switch to the "LOCK" (OFF) position.

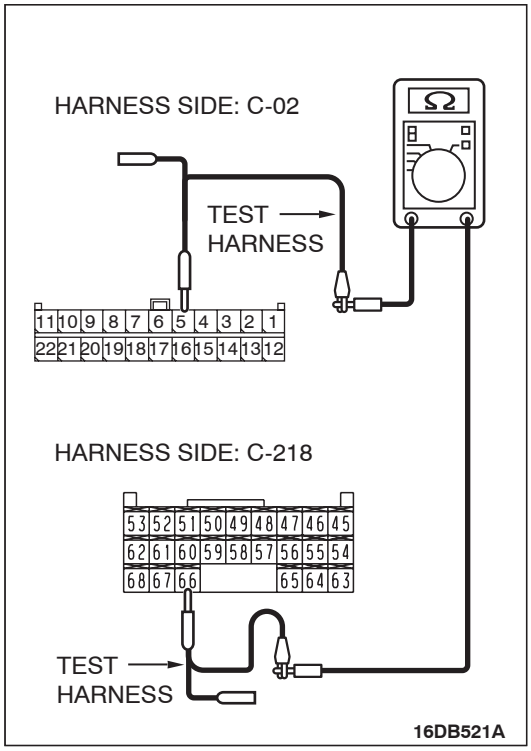
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

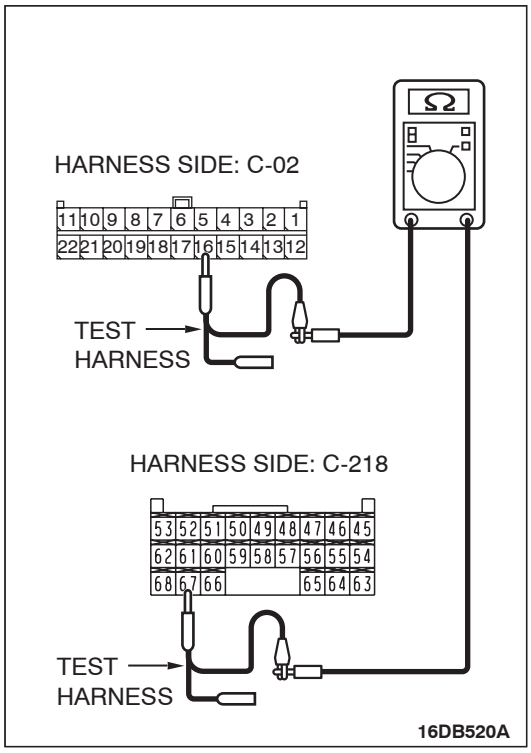






(4) Measure the resistance between joint connector (3) terminal 5 and ETACS-ECU connector terminal 66.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 16 and ETACS-ECU connector terminal 67.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the ETACS-ECU may be suspected. Diagnose the SWS. Refer to GROUP 54B, Symptom procedures P.54B-74.

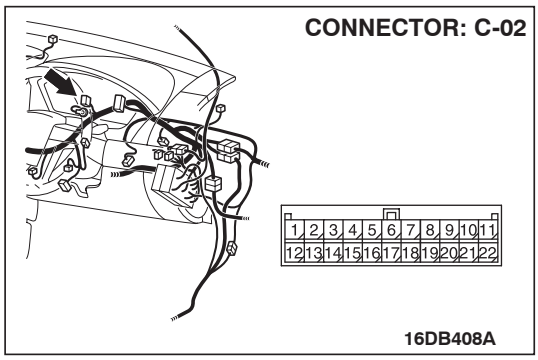
NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the ETACS-ECU connector.

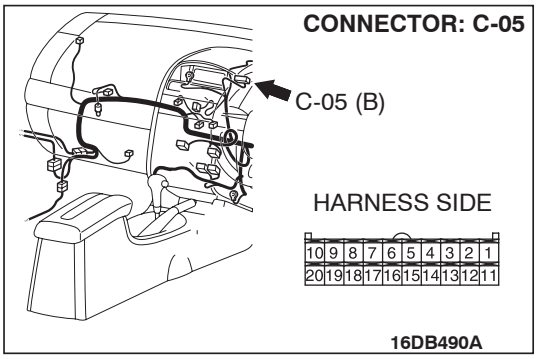
DIAGNOSTIC ITEM 13: Diagnose the lines between CAN main bus line and the multi-center display [only for vehicles with multi-centre display]

NOTE: When diagnosing CAN-BUS on vehicles without a multi-centre display, disregard this diagnostic item completely.

⚠ 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

If the MUT-III cannot received signals from the multi-center display unit , CAN bus line connector(s) are broken or an open circuit has occurred.

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 multi-center display unit may be defective.

TROUBLESHOOTING HINTS

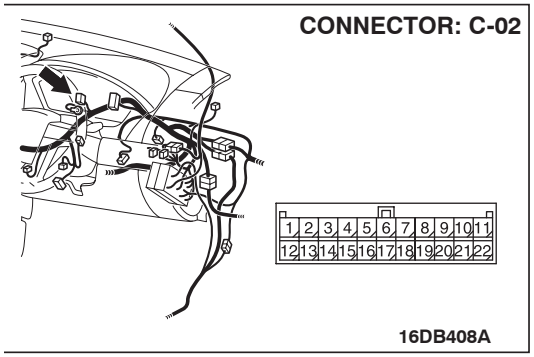
- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80
- The wiring harness or connectors may have loose, corroded, or damage terminals, or terminals pushed back in the connector
- The multi-center display unit may be defective

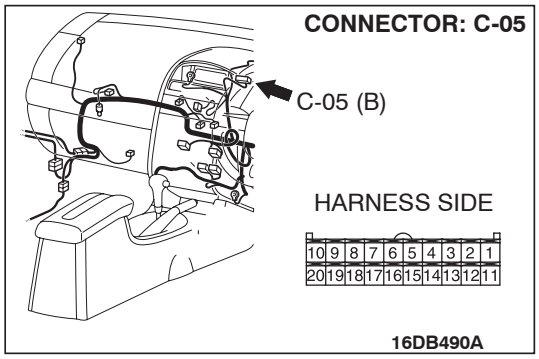
DIAGNOSIS

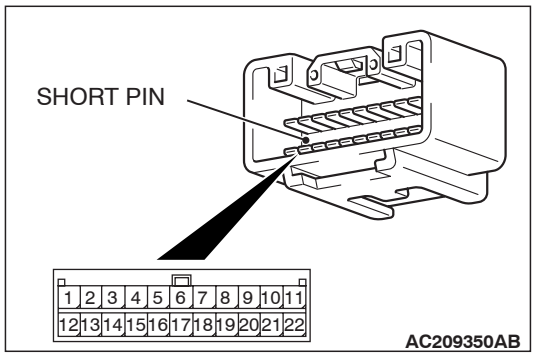
Required Special Tool:
- MB991223: Harness Set

STEP 1. Check joint connector (3) C-02 and 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.





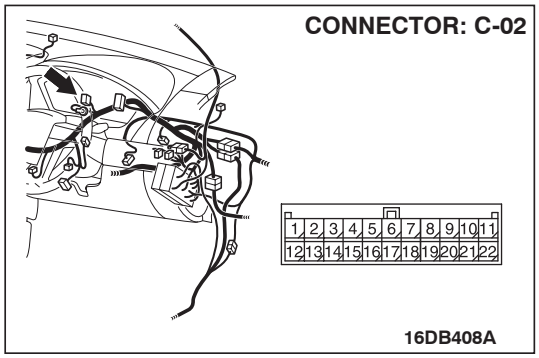


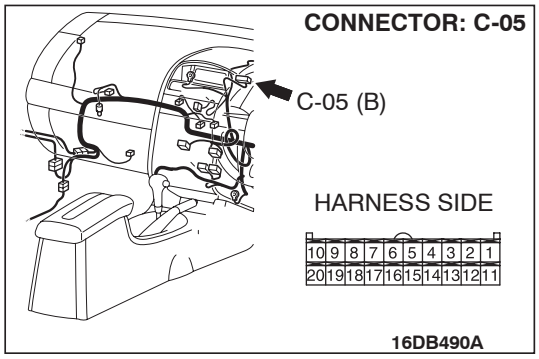
Check the joint connector at the wiring harness side for loose, corroded or damaged terminals, or terminals pushed back in the connector, and also check the short pin behind the connector for corrosion, deformation and delamination.

Q: Are joint connector (3) C-02 and multi-center display unit connector C-05 in good condition?

YES : Go to Step 2.

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





STEP 2. Check the CAN bus lines between joint connector (3) and the multi-center display unit . Measure the resistance between joint connector (3) C-02 and multi-center display unit connector C-05.

⚠ 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.

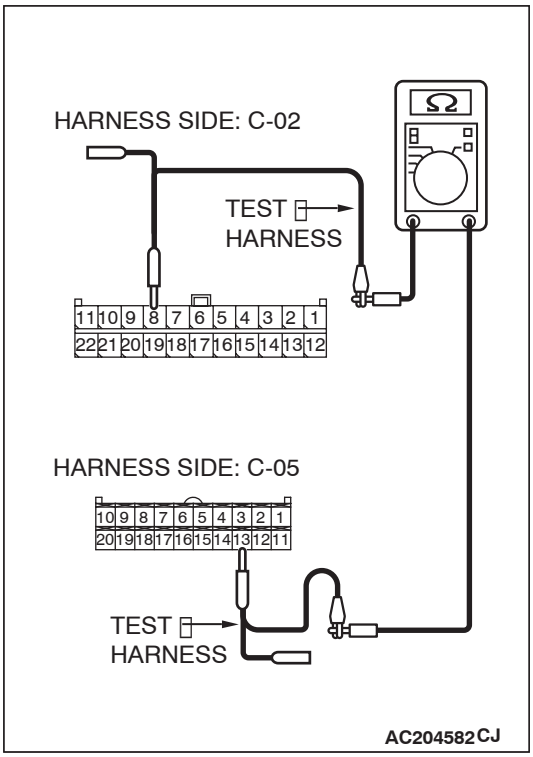
(1) Disconnect joint connector (3) C-02 and multi-center display unit connector C-05, and measure the resistance at the wiring harness sides of joint connector (3) C-02 and multi-center display unit connector C-05.

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

⚠ CAUTION

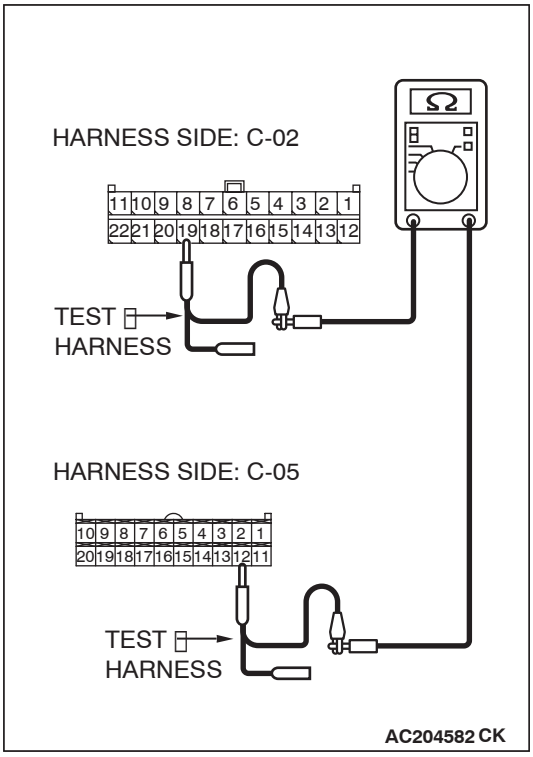
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 8 and multi-center display unit connector terminal 13.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 19 and multi-center display unit connector terminal 12.

OK: 2 ohms or less

⚠ CAUTION

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

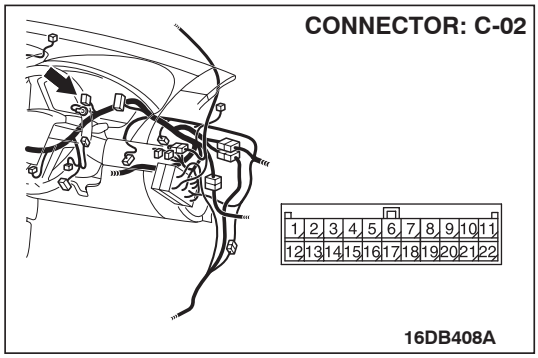
Q: Do all the resistances measure 2 ohms or less?

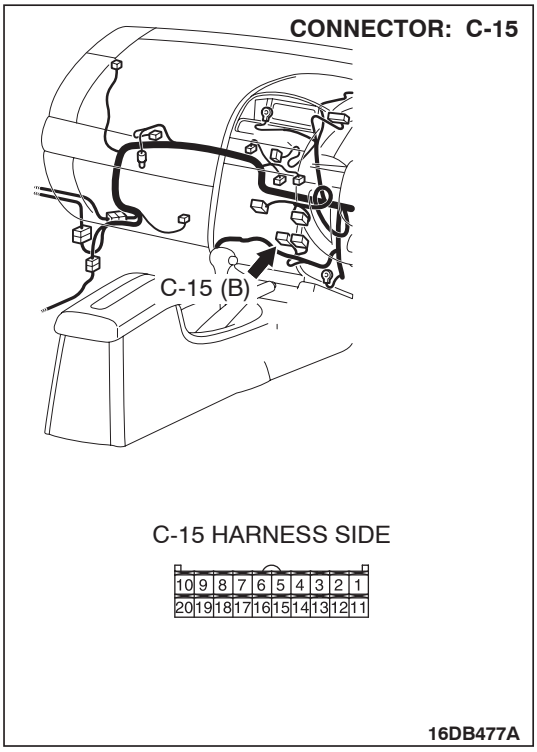
YES : If all the resistances measure 2 ohms or less, power supply to the multi-center display may be suspected. Diagnose the multi-center display . Refer to GROUP 54A, P.54A-284.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the multi-center display unit connector.

DIAGNOSTIC ITEM 16: Diagnose the lines between CAN main bus line and the A/C-ECU.

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





TROUBLE JUDGMENT

If the MUT-III cannot received signals from the A/C-ECU, CAN bus line connector(s) are broken or an open circuit has occurred.

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 the A/C-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 damage terminals, or terminals pushed back in the connector
- The A/C-ECU may be defective

DIAGNOSIS

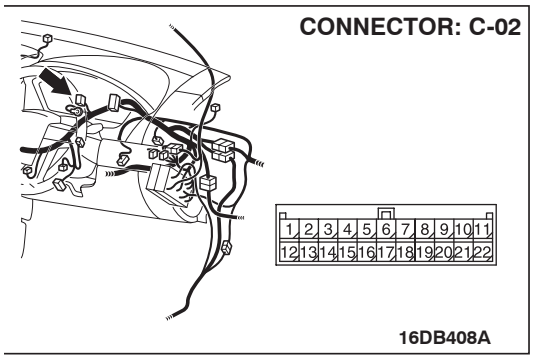
Required Special Tool:

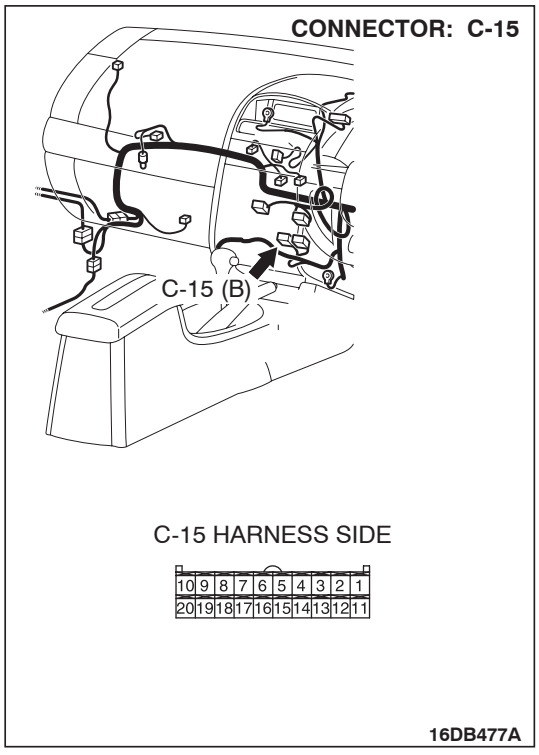
- MB991223: Harness Set

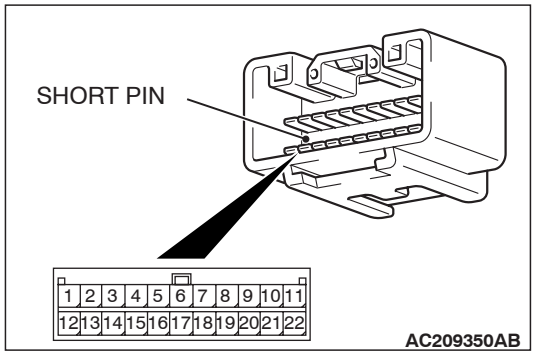
STEP 1. Check joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system for loose, corroded or damaged terminals, or terminals pushed back in the connector.

⚠ 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.







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: Are joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system in good condition?

YES : . Go to Step 2.

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

STEP 2. Check the CAN bus lines between joint connector (3) and the A/C-ECU. Measure the resistance between joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system.

⚠ 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.

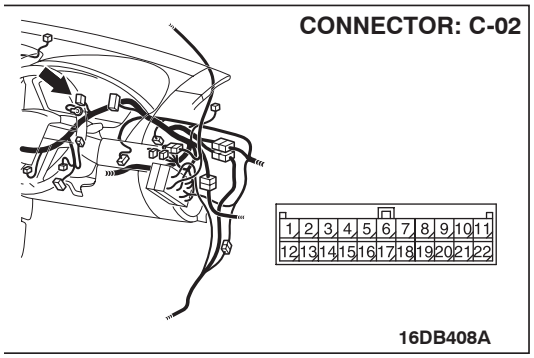
(1) Disconnect joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system, and measure the resistances at the wiring harness sides of joint connector (3) C-02 and A/C-ECU connector C-15 automatic air conditioning system>.

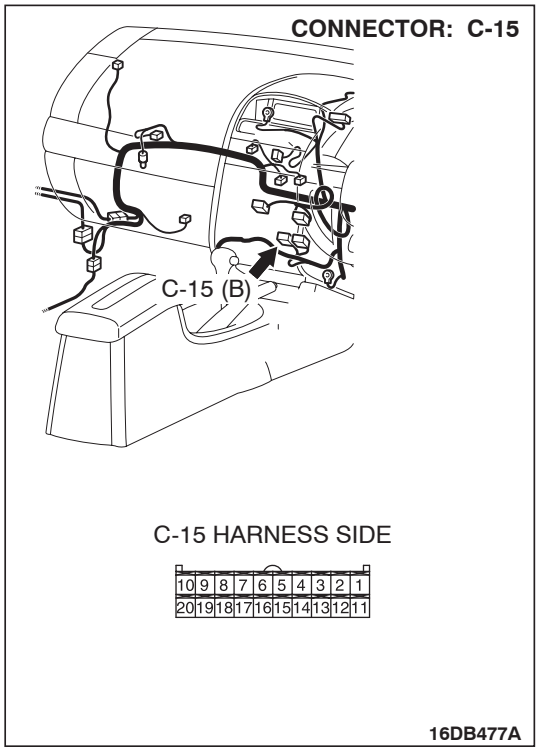
(2) Turn the ignition switch to the "LOCK" (OFF) position.

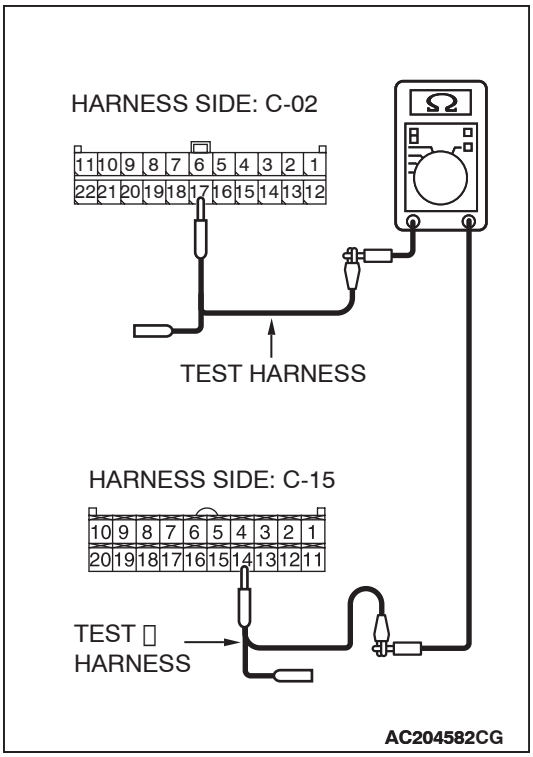
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

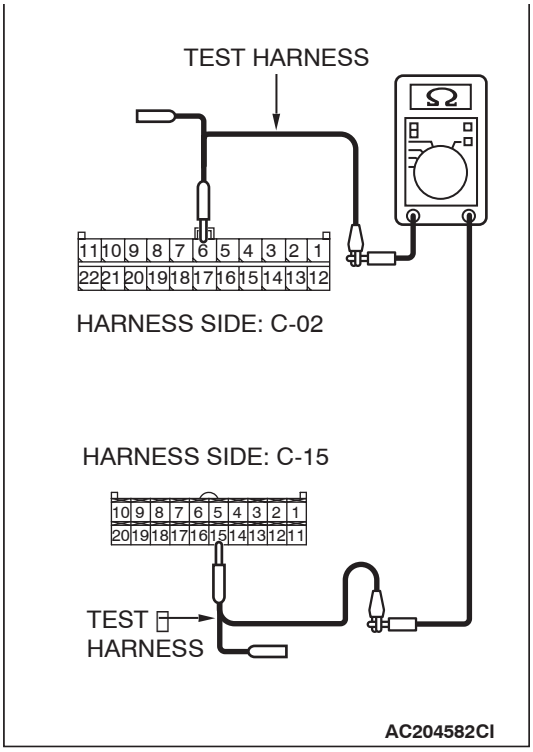






(4) Measure the resistance between joint connector (3) terminal 17 and A/C-ECU connector C-15 terminal 14 automatic air conditioning system.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 6 and A/C-ECU connector C-15 terminal 15 automatic air conditioning system>.

OK: 2 ohms or less

⚠ CAUTION

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

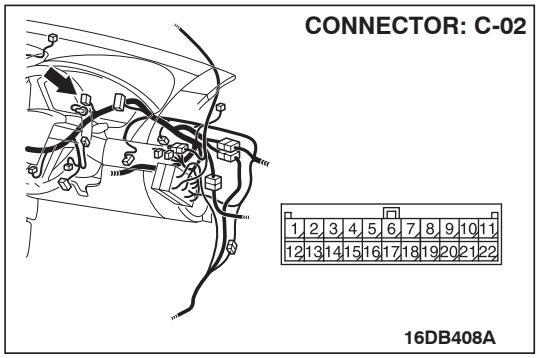
Q: Do all the resistances measure 2 ohms or less?

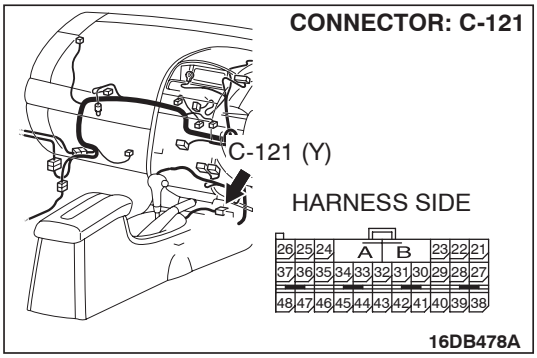
YES : If all the resistances measure 2 ohms or less, power supply to the A/C-ECU may be suspected. Diagnose the air conditioning system. Refer to GROUP 55, Auto-A/C diagnosis P.55-5.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the A/C-ECU connector.

DIAGNOSTIC ITEM 15: Diagnose the lines between CAN main bus line and the SRS-ECU.

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





TROUBLE JUDGMENT

If the MUT-III cannot received signals from the SRS-ECU, CAN bus line connector(s) are broken or an open circuit has occurred.

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 the SRS-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 damage terminals, or terminals pushed back in the connector
- The SRS-ECU may be defective

DIAGNOSIS

Required Special Tool:

- MB991223: Harness Set

STEP 1. Check joint connector C-02 and SRS-ECU connector C-121 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

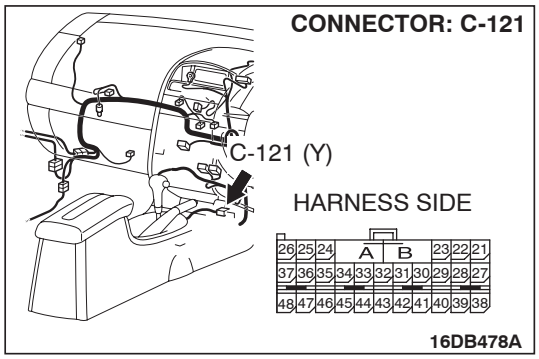
⚠ CAUTION

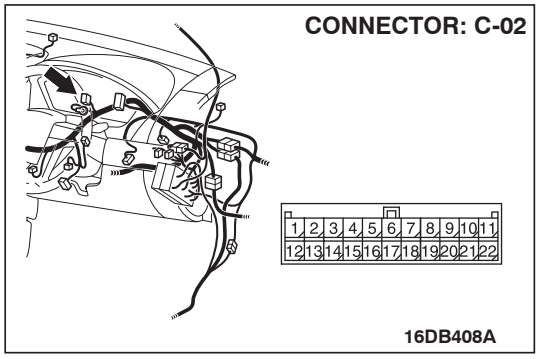
The strand end of the twisted wire should be within 10 cm (4 inches) from the connector. For details refer to P.54C-4.

Q: Are joint connector C-02 and SRS-ECU connector C-121 in good condition?

YES : Go to Step 2.

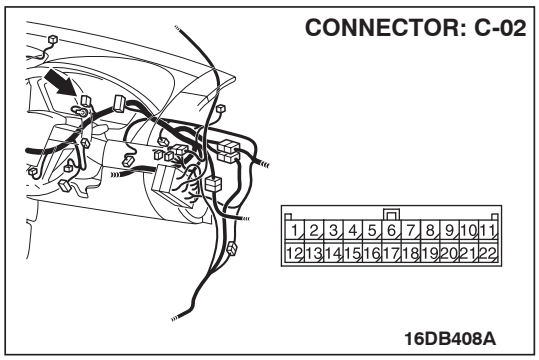
NO : Repair the damaged parts. Replace the joint connector as necessary.

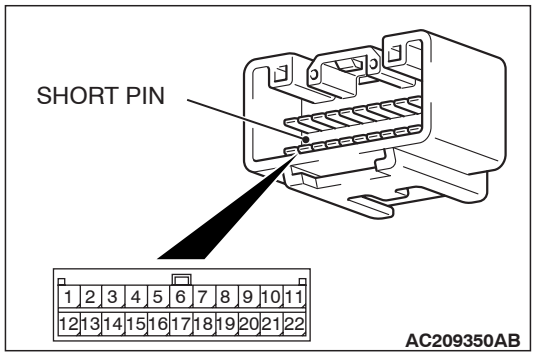




STEP 2. Check joint connector (3) C-02 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

⚠ 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 3.

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

STEP 3. Check the CAN bus lines between joint connector C-02 and the SRS-ECU. Measure the resistance between joint connector C-02 and SRS-ECU connector C-121.

⚠ 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.

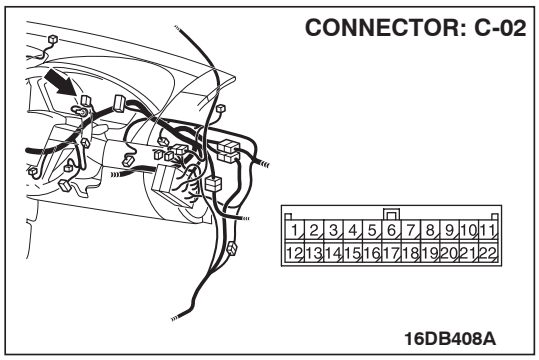
(1) Disconnect joint connector C-02 and SRS-ECU connector C-121, and measure the resistance between the wiring harness sides of SRS-ECU connector C-121 and the joint connector C-02.

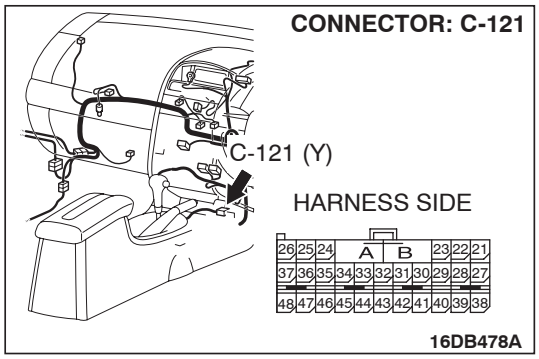
(2) Turn the ignition switch to the "LOCK" (OFF) position.

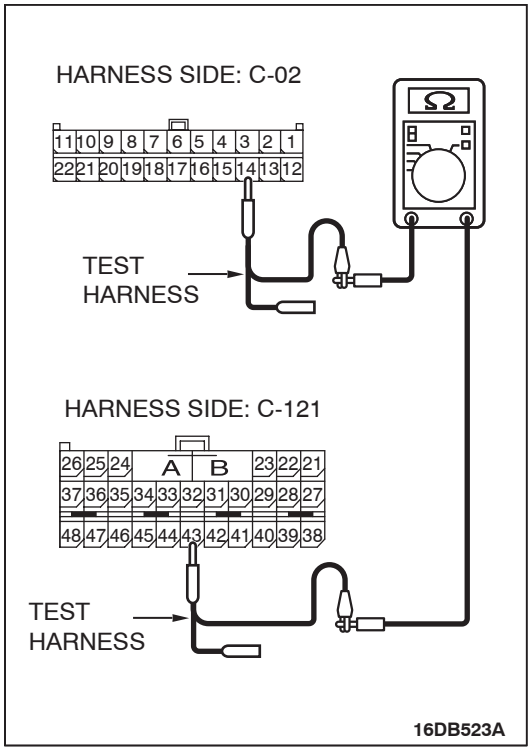
⚠ CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.

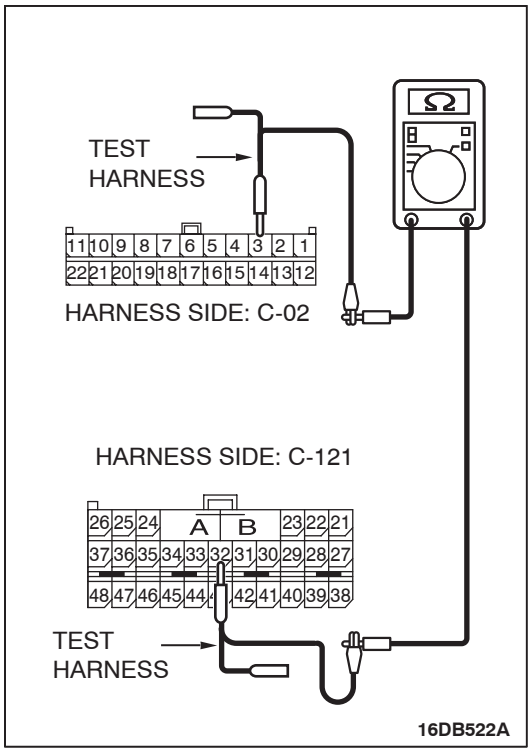






(4) Measure the resistance between joint connector C-02 terminal 14 and SRS-ECU connector C-121 terminal 43.

OK: 2 ohms or less



(5) Measure the resistance between joint connector C-02 terminal 3 and SRS-ECU connector C-121 terminal 32.

OK: 2 ohms or less

⚠ CAUTION

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

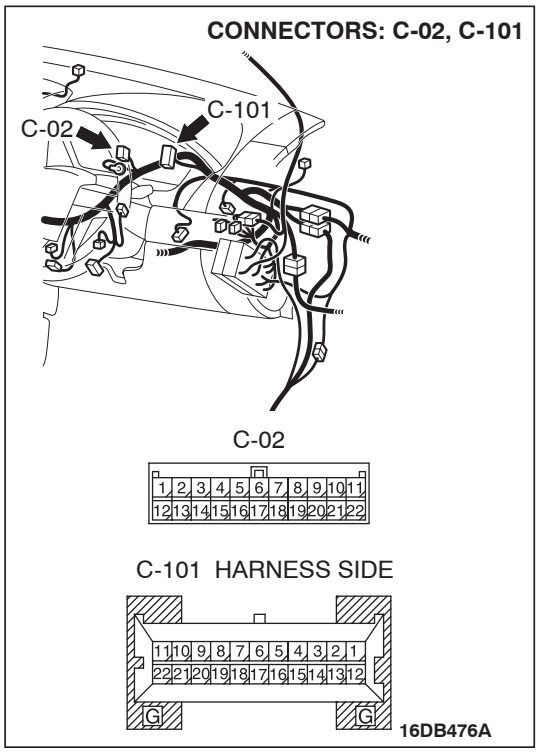
Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the SRS-ECU may be suspected. Diagnose the supplemental restraint system. Refer to GROUP 52B, SRS air bag diagnosis P.52B-18.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector C-02 and the SRS-ECU connector C-121.

DIAGNOSTIC ITEM 16: Failure in the lines between CAN main bus line and the combination meter.

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



TROUBLE JUDGMENT

If the MUT-III cannot received signals from the combination meter, CAN bus line connector(s) are broken or an open circuit has occurred.

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 the combination meter 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 damage terminals, or terminals pushed back in the connector
- The combination meter may be defective

DIAGNOSIS

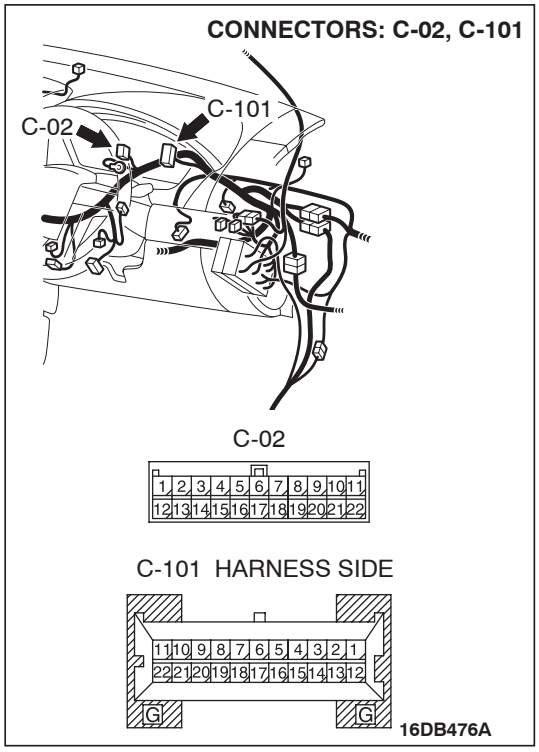
Required Special Tool:

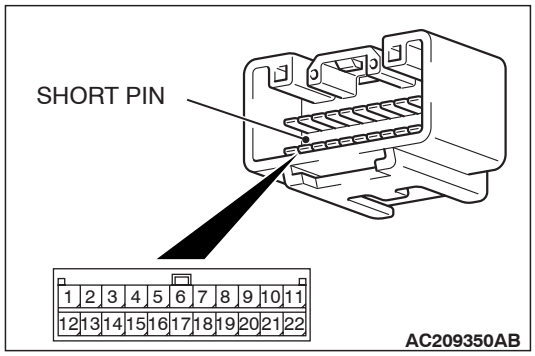
- MB991223: Harness Set

STEP 1. Check joint connector (3) C-02 and combination meter connector C-101 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.



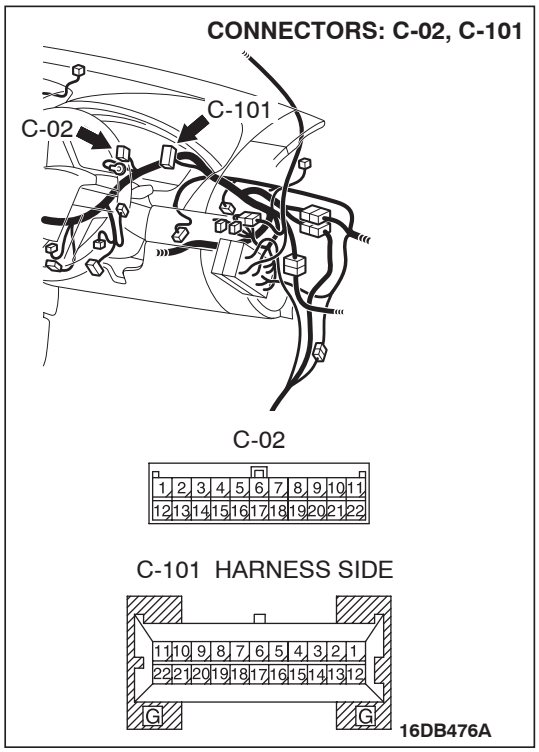


Check the joint connector at the wiring harness side for loose, corroded or damaged terminals, or terminals pushed back in the connector, and also check the short pin behind the connector for corrosion, deformation and delamination.

Q: Are joint connector (3) C-02 and combination meter connector C-101 in good condition?

YES : Go to Step 2.

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



STEP 2. Check the CAN bus lines between joint connector (3) and the combination meter. Measure the resistance between joint connector (3) C-02 and combination meter connector C-101.

⚠ 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.

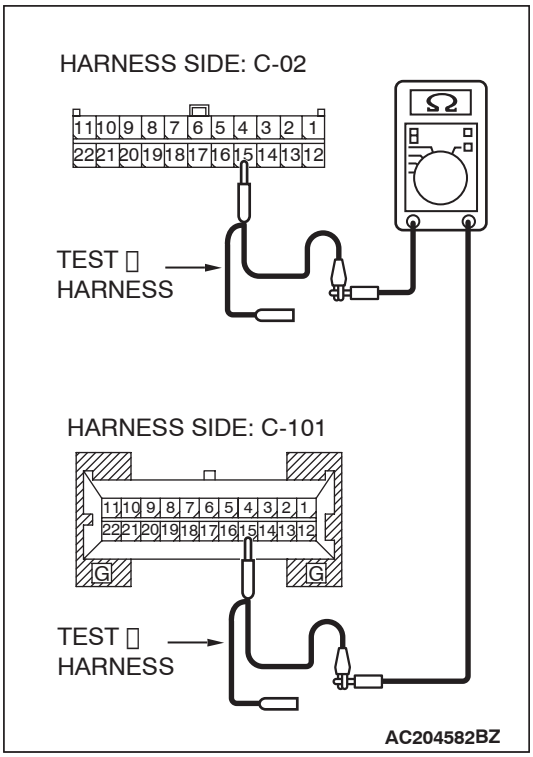
(1) Disconnect joint connector (3) C-02 and combination meter connector C-101, and measure the resistance between each wiring harness side connector.

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

⚠ CAUTION

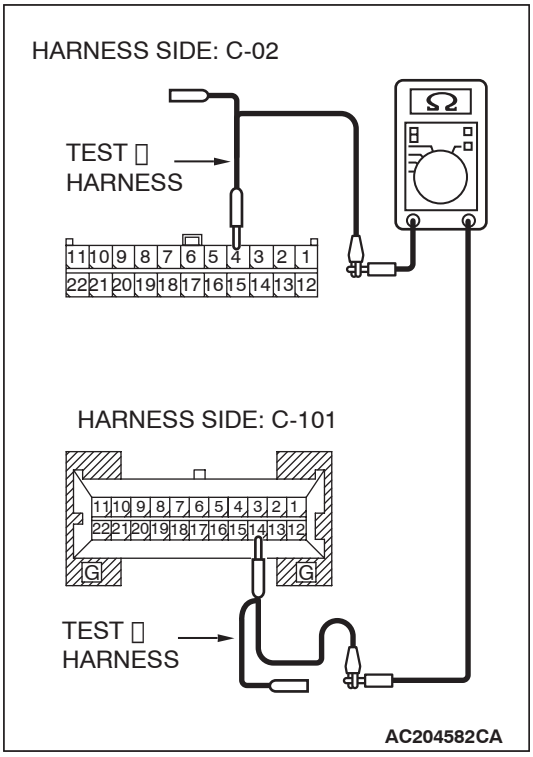
Disconnect the negative battery terminal. For details refer to P.54C-4.

(3) Disconnect the negative battery terminal.



(4) Measure the resistance between joint connector (3) terminal 15 and combination meter connector terminal 15.

OK: 2 ohms or less



(5) Measure the resistance between joint connector (3) terminal 4 and combination meter connector terminal 14.

OK: 2 ohms or less

⚠ CAUTION

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

Q: Do all the resistances measure 2 ohms or less?

YES : If all the resistances measure 2 ohms or less, power supply to the combination meter may be suspected. Diagnose the combination meter. Refer to GROUP 54A, Combination meter assembly P.54A-45.

NO : If either of the resistances measures more than 2 ohms or all the resistances measure more than 2 ohms, repair the wiring harness between joint connector (3) and the combination meter connector.

CAN COMMUNICATION SIGNAL TABLE

M1548300400059

SIGNAL	TRANSMITTER ECU	RECEIVER ECU						
		ENGINE-ECU	A/T-ECU	ABS-ECU	MULTI-CENTER DISPLAY UNIT (MIDDLE-GRADE TYPE)	COMBINATION METER	A/C-ECU	ETACS-ECU
Engine speed signal	Engine-ECU	–	–	×	–	×	×	–
A/C information signal		–	–	–	–	–	×	–
Vehicle speed signal		–	×	–	–	×	×	–
Vehicle stop signal		–	–	–	×	×	×	×
Malfunction indicator lamp request signal		–	–	–	–	×	–	–
Auto-cruise control indicator lamp signal		–	–	–	–	×	–	–
Engine coolant temperature signal		–	–	–	–	×	×	–
Selector position signal	A/T-ECU	–	–	×	–	×	×	×
ABS warning light request signal	ABS-ECU	–	–	–	–	×	–	–
SRS warning light request signal	SRS-ECU	–	–	–	–	×	–	–
Communication continuation request signal	Multi-center display unit	–	–	–	–	–	×	×
Ignition switch (ACC) signal		–	–	–	–	–	×	×
Adjustment request signal		–	–	–	–	–	×	×
Customize signal		–	–	–	–	–	×	×
Tone alarm sound signal		–	–	–	–	–	×	×
Communication continuation request signal	Combination meter	–	–	–	–	–	–	×
Vehicle speed signal		–	–	–	–	–	–	×
Ignition switch (IG1) signal		–	–	–	–	–	–	×
Seat belt signal		–	–	–	–	–	–	×
Fuel information signal		×	–	–	–	–	–	–
Communication continuation request signal	A/C-ECU	–	–	–	–	–	–	×
Compressor signal		×	–	–	–	–	–	–
Idle-up request signal		×	–	–	–	–	–	–

SIGNAL	TRANSMITTER ECU	RECEIVER ECU						
		ENGINE-ECU	A/T-ECU	ABS-ECU	MULTI-CENTER DISPLAY UNIT (MIDDLE-GRADE TYPE)	COMBINATION METER	A/C-ECU	ETACS-ECU
Cooling fan request signal		×	–	–	–	–	–	–
Cooling fan signal		×	–	–	–	–	–	–
Set temperature signal		–	–	–	×	–	–	–
Ambient temperature signal		–	–	–	×	–	–	–
Fan air volume signal		–	–	–	×	–	–	–
Air outlet mode signal		–	–	–	×	–	–	–
Communication standby signal	ETACS-ECU	–	–	–	–	×	–	–
Ignition switch (ACC) signal		–	–	–	–	–	–	–
Ignition switch (IG1) signal		–	–	–	–	×	–	–
High-beam indicator request signal		–	–	–	–	×	–	–
Turn-signal indicator request signal		–	–	–	–	×	–	–
Fog light indicator request signal		–	–	–	–	×	–	–
Illumination signal		–	–	–	–	×	–	–
Door "open" signals		–	–	–	–	×	–	–
Interior light shut-off signal		–	–	–	–	×	–	–
Customize signal		–	–	–	×	–	–	–

CAN COMMUNICATION-RELATED DTC CODE (U CODE) TABLE

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OUTPUT ECU	CODE NO.	DIAGNOSTIC ITEM	ACTION
ENGINE- ECU	U1073	Bus Off	CAN main bus line diagnostics
	U1102	ABS-ECU time-out	
	U1108	Combination meter time-out	
	U1110	A/C-ECU time-out	
A/T-ECU	U1073	Bus Off	CAN main bus line diagnostics
	U1100	Engine-ECU time-out <vehicles with TCL>	
	U1102	ABS-ECU time-out	
	U1120	Failure information on Engine-ECU <vehicles with TCL>	Diagnose CAN main bus lines and confirm input signals.
	U1122	Failure information on ABS-ECU <vehicles with TCL>	Diagnose CAN main bus lines and confirm input signals.
ABS-ECU	U1073	Bus Off	CAN main bus line diagnostics
ABS/TCL-ECU	U1073	Bus Off	CAN main bus line diagnostics
	U1100	Engine-ECU time-out <vehicles with TCL>	
	U1101	A/T-ECU time-out <vehicles with TCL>	
	U1120	Failure information on Engine-ECU <vehicles with TCL>	Diagnose CAN main bus lines and confirm input signals.
	U1121	Failure information on A/T-ECU <vehicles with TCL>	Diagnose CAN main bus lines and confirm input signals.
Combination meter	U1073	Bus Off	CAN main bus line diagnostics
	U1100	Engine-ECU time-out	
	U1101	A/T-ECU time-out	
	U1102	ABS-ECU time-out	
	U1109	ETACS-ECU time-out	
	U1120	Failure information on Engine-ECU <vehicles with TCL>	Diagnose CAN main bus lines and confirm input signals.
	U1121	Failure information on A/T-ECU <vehicles with TCL>	Diagnose CAN main bus lines and confirm input signals.
Multi-center display unit	010	Bus Off	CAN main bus line diagnostics
	011	Engine-ECU time-out	
	012	A/T-ECU time-out	
	013	A/C-ECU time-out	
	014	Combination meter time-out	
	019	ETACS-ECU time-out	
	020	Failure information on Engine-ECU	Diagnose CAN main bus lines and confirm input signals.
	021	Failure information on combination meter	
	022	Failure information on A/C-ECU	

OUTPUT ECU	CODE NO.	DIAGNOSTIC ITEM	ACTION
ETACS-ECU	010	Bus Off	CAN main bus line diagnostics
	011	Engine-ECU time-out	
	012	A/T-ECU time-out	
	013	A/C-ECU time-out	
	014	Combination meter time-out	
	015	Multi-center display unit time-out	
	021	Failure information on combination meter	Diagnose CAN main bus lines and confirm input signals.
A/C-ECU	U1073	Bus Off	CAN main bus line diagnostics
	U1100	Powertrain control module time-out (related to engine)	
	U1111	Multi-center display unit time-out	
	U1120	Failure information on ENGINE-ECU (related to engine)	Diagnose CAN main bus lines and confirm input signals.
SRS-ECU	U1073	Bus Off	CAN main bus line diagnostics