SERVICE BULLETIN

MITSUBISHI MOTORS

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : CHANGE	ISSUE NO. : MSB-15EXML00_42-001A	DATE : 2015-004-01
SUBJECT : Changes of the communication procedure between KOS/OSS and MUT-III/scan tool with the ignition switch OFF		<DESTINATION/MODEL> (As per attached sheet 1) <M/Y> 13-15
GROUP : Gr:00(General)/42(Body)		OUTLANDER(GF0W)/OUTLANDER PHEV(GG0W)

1. Description :

Please refer to the attached document for the information about the change of mention in the applicable service manual.

2. Affected service manuals :

Please refer to the attached document (Attached sheet 1)

3. About the details :

Please refer to the attached document (Attached sheet 7-22)

4. Effective time : From the initial vehicle.

		MSB No.	Issued Date	
Original		MSB-15EXML00_42-001	2015/3/2	
Revision	A	MSB-15EXML00_42-001A	2015/4/1	※This time

Attached sheet 1

For overseas market

MMNA

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2014 OUTLANDER Service Manual	MSCD-007B-2014 Mexico: DRAFT	TROUBLESHOOTING CONTENTS (M001-01-331-01000-01)	Attached sheet 7
		HOW TO PERFORM VIN WRITING FOR ENGINE CONTROL MODULE, KOS-ECU AND ETACS-ECU (M001-01-140-83601-01)	Attached sheet 8
		TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON (M429-62-830-04200-01)	Attached sheet 9
		FORCED POWER SUPPLY OUTPUT PROCEDURE (M429-62-740-05700-01)	Attached sheet 10
		Inspection Procedure 2: Vehicle power does not turn ON. (not possible with both of power supply mode ACC and ON) (M429-62-620-04900-01)	Attached sheet 11
		REGISTRATION WHEN REPLACING OSS-ECU (M429-62-720-03100-01)	Attached sheet 12
2015 OUTLANDER Service Manual	MSCD-007B-2015 Mexico: DRAFT	TROUBLESHOOTING CONTENTS (M001-01-331-01000-01)	Attached sheet 7
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		REGISTRATION WHEN REPLACING OSS-ECU (M429-62-720-03100-01)	Attached sheet 12

EU/RUSSIA/ARGENTINA/SOUTH AFRICA

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2013 OUTLANDER Workshop Manual	CGFE13E1-CD (English) CGFF13E1-CD (French) CGFG13E1-CD (German) CGFS13E1-CD (Spanish) CGFI13E1-CD (Italian) N/A (RUSSIA)	CONTENTS OF TROUBLESHOOTING (M001-01-330-82400-01)	Attached sheet 13
		HOW TO PERFORM CHASSIS NUMBER (CHASSIS NO.) WRITING FOR ENGINE-ECU, KOS-ECU AND ETACS-ECU (M001-01-140-83600-01)	Attached sheet 14
		TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON (M429-62-830-04200-01)	Attached sheet 15
		FORCED POWER SUPPLY OUTPUT PROCEDURE (M429-62-740-01300-01)	Attached sheet 16
		Inspection Procedure 2: Vehicle power does not turn ON. (not possible with both of power supply mode ACC and ON) (M429-62-620-04900-01)	Attached sheet 17
		REGISTRATION WHEN REPLACING OSS-ECU AND ELECTRIC STEERING LOCK (M429-62-720-03100-01)	Attached sheet 18
2014 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE14E2-CD (English) CGFF14E2-CD (French) CGFG14E2-CD (German) CGFS14E2-CD (Spanish) CGFI14E2-CD (Italian) N/A (RUSSIA) DRAFT (ARGENTINA, SOUTH AFRICA)	CONTENTS OF TROUBLESHOOTING <EXCEPT PHEV> (M001-01-331-02100-01)	Attached sheet 13
		CONTENTS OF TROUBLESHOOTING <PHEV> (M001-01-330-98700-01)	Attached sheet 19
		HOW TO PERFORM CHASSIS NUMBER (CHASSIS NO.) WRITING FOR ENGINE-ECU, KOS-ECU AND ETACS-ECU <EXCEPT PHEV> (M001-01-140-93300-01)	Attached sheet 14
		How to write the chassis number to the engine-ECU, the KOS-ECU, the OSS-ECU, the PHEV-ECU and the REMCU <PHEV> (M001-01-140-88101-01)	Attached sheet 20
		TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON (M429-62-830-04200-01)	Attached sheet 15
		FORCED POWER SUPPLY OUTPUT PROCEDURE (M429-62-740-01300-01)	Attached sheet 16
		Inspection Procedure 2: Vehicle power does not turn ON. (not possible with both of power supply mode ACC and ON) (M429-62-620-04901-01)	Attached sheet 17
		REGISTRATION WHEN REPLACING OSS-ECU AND ELECTRIC STEERING LOCK (M429-62-720-03101-01)	Attached sheet 18

EU/RUSSIA/ARGENTINA/SOUTH AFRICA

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2014.5 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE14E3-CD (English) CGFF14E3-CD (French) CGFG14E3-CD (German) CGFS14E3-CD (Spanish) CGFI14E3-CD (Italian) DRAFT (ARGENTINA, SOUTH AFRICA)	CONTENTS OF TROUBLESHOOTING <EXCEPT PHEV> (M001-01-331-02100-01)	Attached sheet 13
		CONTENTS OF TROUBLESHOOTING <PHEV> (M001-01-330-98700-01)	Attached sheet 19
		HOW TO PERFORM CHASSIS NUMBER (CHASSIS NO.) WRITING FOR ENGINE-ECU, KOS-ECU AND ETACS-ECU <EXCEPT PHEV> (M001-01-140-93300-01)	Attached sheet 14
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		TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON <EXCEPT PHEV> (M429-62-830-04200-01)	Attached sheet 15
		TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON <PHEV> (M429-62-830-09700-01)	Attached sheet 21
		FORCED POWER SUPPLY OUTPUT PROCEDURE (M429-62-740-01300-01)	Attached sheet 16
		Inspection Procedure 2: Vehicle power does not turn ON. (not possible with both of power supply mode ACC and ON) <EXCEPT PHEV> (M429-62-620-04901-01)	Attached sheet 17
		Inspection Procedure 3: Vehicle power does not turn ON (Not possible with power supply mode ACC only). <PHEV> (M429-62-630-06800-01)	Attached sheet 22 <Incorrect>
		REGISTRATION WHEN REPLACING OSS-ECU AND ELECTRIC STEERING LOCK (M429-62-720-03101-01)	Attached sheet 18

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Inspection Procedure 2: Vehicle power does not turn ON (not possible with both of power supply mode ACC and ON). <PHEV>
(M429-62-620-11300-01)

<Correct>

G.EXP/GCC/BRAZIL

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2014 OUTLANDER Workshop Manual	PWRE1303R (English) PWRS1304R (Spanish)	CONTENTS OF TROUBLESHOOTING (M001-01-330-82402-01)	Attached sheet 13
		HOW TO PERFORM CHASSIS NUMBER (CHASSIS NO.) WRITING FOR ENGINE-ECU, KOS-ECU AND ETACS-ECU (M001-01-140-83601-01)	Attached sheet 14
		TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON (M429-62-830-04200-01)	Attached sheet 15
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		REGISTRATION WHEN REPLACING OSS-ECU AND ELECTRIC STEERING LOCK (M429-62-720-03100-01)	Attached sheet 18

MMAL/NZ/CHINA

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2013 OUTLANDER Workshop Manual	AU900304 (MMAL) DRAFT (NZ, CHINA)	CONTENTS OF TROUBLESHOOTING (M001-01-330-82400-01)	Attached sheet 13
		HOW TO PERFORM CHASSIS NUMBER (CHASSIS NO.) WRITING FOR ENGINE-ECU, KOS-ECU AND ETACS-ECU (M001-01-140-83600-01)	Attached sheet 14
		TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON (M429-62-830-04200-01)	Attached sheet 15
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MMAL/NZ

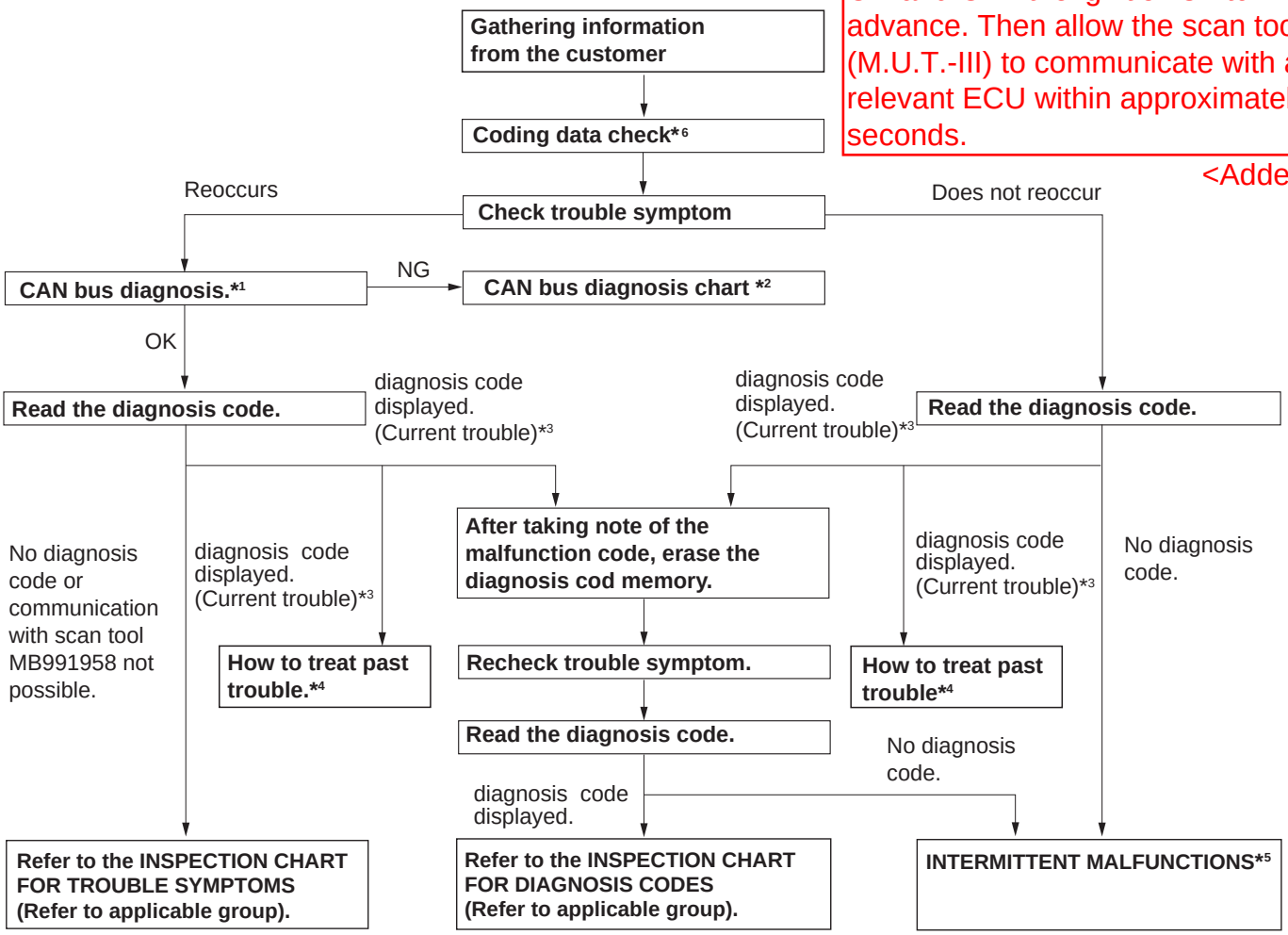
Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2014 OUTLANDER PHEV Workshop Manual	MMAL:AU900408 NZ:DRAFT	CONTENTS OF TROUBLESHOOTING (M001-01-331-03200-01)	Attached sheet 19
		How to write the chassis number to the engine-ECU, the KOS-ECU, the OSS-ECU, the PHEV-ECU and the REMCU (M001-01-140-94400-01)	Attached sheet 20

Attached sheet 7(1/2)

NOTE: For a service data item, which you should check with the ignition switch at LOCK (OFF) position, turn ON and OFF the ignition switch in advance. Then allow the scan tool (M.U.T.-III) to communicate with a relevant ECU within approximately 10 seconds.

<Added>

Diagnostic method



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- *1: For how to diagnose CAN bus lines, refer to GROUP 54C P.54C-7.
- *2: For the CAN bus diagnosis chart, refer to GROUP 54C P.54C-11.
- *3: When scan tool MB991958 detects a diagnostic trouble code, its display informs users whether a mechanical symptom currently exists or whether it existed before. The message for the former state identifies it as an "Active" and the message for the latter identifies it as a "Stored".
- *4: For how to treat past trouble, refer to P.00-16.
- *5: For how to cope with intermittent malfunctions, refer to P.00-15.
- *6: For coding data, refer to P.00-39.

2. SYSTEM OPERATION AND SYMPTOM VERIFICATION TESTS

If verification of the symptom(s) is difficult, procedures for checking operation and verifying symptoms are shown.

3. DIAGNOSTIC FUNCTION

The following trouble code diagnosis are shown.

- How to read diagnostic trouble codes
- How to erase diagnostic trouble codes
- Input inspection service points

4. DIAGNOSTIC TROUBLE CODE CHART

If the scan tool displays a diagnostic trouble code, find the applicable inspection procedure according to this chart.

5. SYMPTOM CHART

If there are symptoms, even though the scan tools show that no DTCs are stored, inspection procedures for each symptom will be found by using this chart.

6. DIAGNOSTIC TROUBLE CODE PROCEDURES

Indicates the inspection procedures corresponding to each diagnostic trouble code. (Refer to P.00-9).

TSB Revision

7. SYMPTOM PROCEDURES

Indicates the inspection procedures corresponding to each symptom listed in the Symptom Chart. (Refer to P.00-9).

8. SERVICE DATA REFERENCE TABLE

Inspection items and normal judgment values have been provided in this chart as reference information.

9. CHECK AT ECU TERMINALS

Terminal numbers for the ECU connectors, inspection items, and standard values have been provided in this chart as reference information.

TERMINAL VOLTAGE CHECKS

1. Connect a needle-nosed wire probe to a voltmeter probe.

⚠ CAUTION

Short-circuiting the positive (+) probe between a connector terminal and ground could damage the vehicle wiring, the sensor, the ECU, or all three. Use care to prevent this!

2. Insert the needle-nosed wire probe into each of the ECU connector terminals from the wire side, and measure the voltage while referring to the check chart.

   NOTE: Measure voltage with the ECU connectors connected.
   You may find it convenient to pull out the ECU to make it easier to reach the connector terminals. Checks don't have to be carried out in the order given in the chart.

3. If voltage readings differ from normal condition values, check related sensors, actuators, and wiring. Replace or repair as needed.
4. After repair or replacement, recheck with the voltmeter to confirm that the repair has corrected the symptom.

TERMINAL RESISTANCE AND CONTINUITY CHECKS

1. Turn the ignition switch to the "LOCK" (OFF) position.
2. Disconnect the ECU connector.

⚠ CAUTION

If resistance and continuity checks are performed on the wrong terminals, damage to the vehicle wiring, sensors, ECU, and/or ohmmeter may occur. Use care to prevent this!

3. Measure the resistance and check for continuity between the terminals of the ECU harness-side connector while referring to the check chart.

   NOTE: Checks don't have to be carried out in the order given in the chart.

4. If the ohmmeter shows any deviation from the Normal Condition value, check the corresponding sensor, actuator and related electrical wiring, then repair or replace.
5. After repair or replacement, recheck with the ohmmeter to confirm that the repair has corrected the symptom.

10. INSPECTION PROCEDURES USING AN OSCILLOSCOPE

When there are inspection procedures using an oscilloscope, these are listed.

HOW TO USE THE INSPECTION PROCEDURES

M1001013500947

The causes of many of the symptoms occurring in electric circuitry are generally the connectors, components, the ECU, and the harnesses between connectors, in that order. These inspection procedures follow this order. They first try to discover a symptom with a connector or a defective component.

<Added>

NOTE: For a service data item, which you should check with the ignition switch at LOCK (OFF) position, turn ON and OFF the ignition switch in advance. Then allow the scan tool (M.U.T.-III) to communicate with a relevant ECU within approximately 10 seconds.

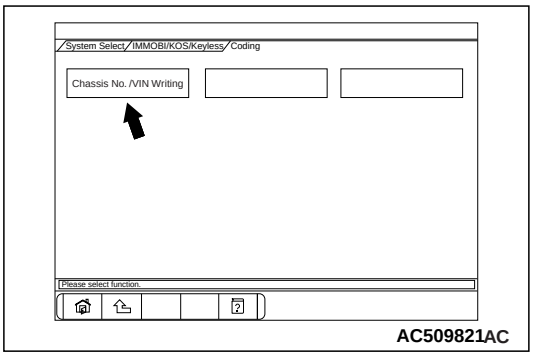
Attached sheet 8

NOTE: For details on how to use the scan tool (M.U.T.-III), refer to the "M.U.T.-III Owner's Manual."

1. Start up the personal computer.
2. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
3. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
4. Connect special tool MB992745 or special tool MB991910 to the data link connector.

   NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.
5. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
6. Start the M.U.T.-III system on the personal computer.
7. Select "F.A.S.T./IMMO/Keyless" button from the "System Select" screen. Then, select the applicable option code item and push the OK button.
   - For vehicles with KOS, select "IMMOBI&F.A.S.T." For vehicles without KOS, select "Immobi&Keyless."
8. Select "Coding" on the next screen.



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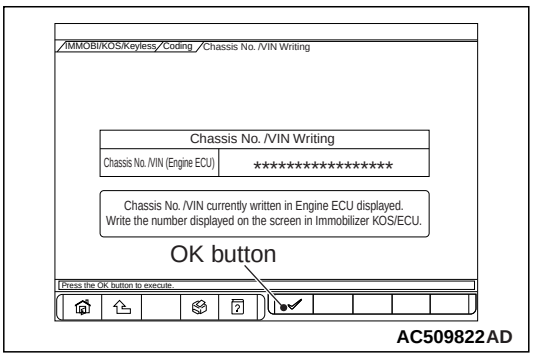
<Added>

NOTE: If the M.U.T.-III system cannot be activated, disconnect and reconnect the negative battery terminal, and then proceed to the following operations within approximately 30 seconds.

9. Select "Chassis No. /VIN Writing" on "Coding" screen.



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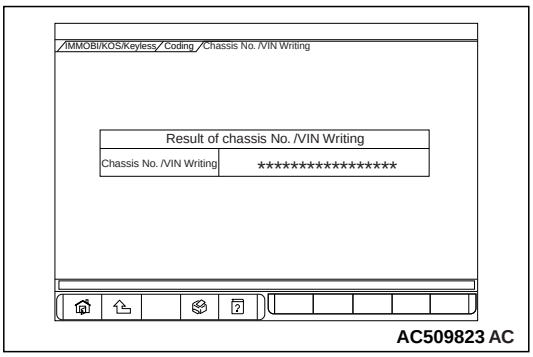
10. Push the OK button after the Chassis No./VIN written in the ECM is displayed.
11. Push the OK button after "Chassis No./VIN Writing will start. Are you sure?" is displayed.
12. Push the OK button after "Completed." is displayed.



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13. Result of Chassis No./VIN writing is displayed.
14. Resister the other ID code. (Refer to GROUP 42A, On-vehicle service – ID Codes Registration Procedure P.42A-168 <Vehicles without KOS>, GROUP 42B, On-vehicle service – ID Codes Registration Procedure P.42B-153 <Vehicles with KOS> or GROUP 54A, On-vehicle service – ID Codes Registration Procedure P.54A-40 <Vehicles without KOS>.)

Attached sheet 9

TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON

M1429628300042

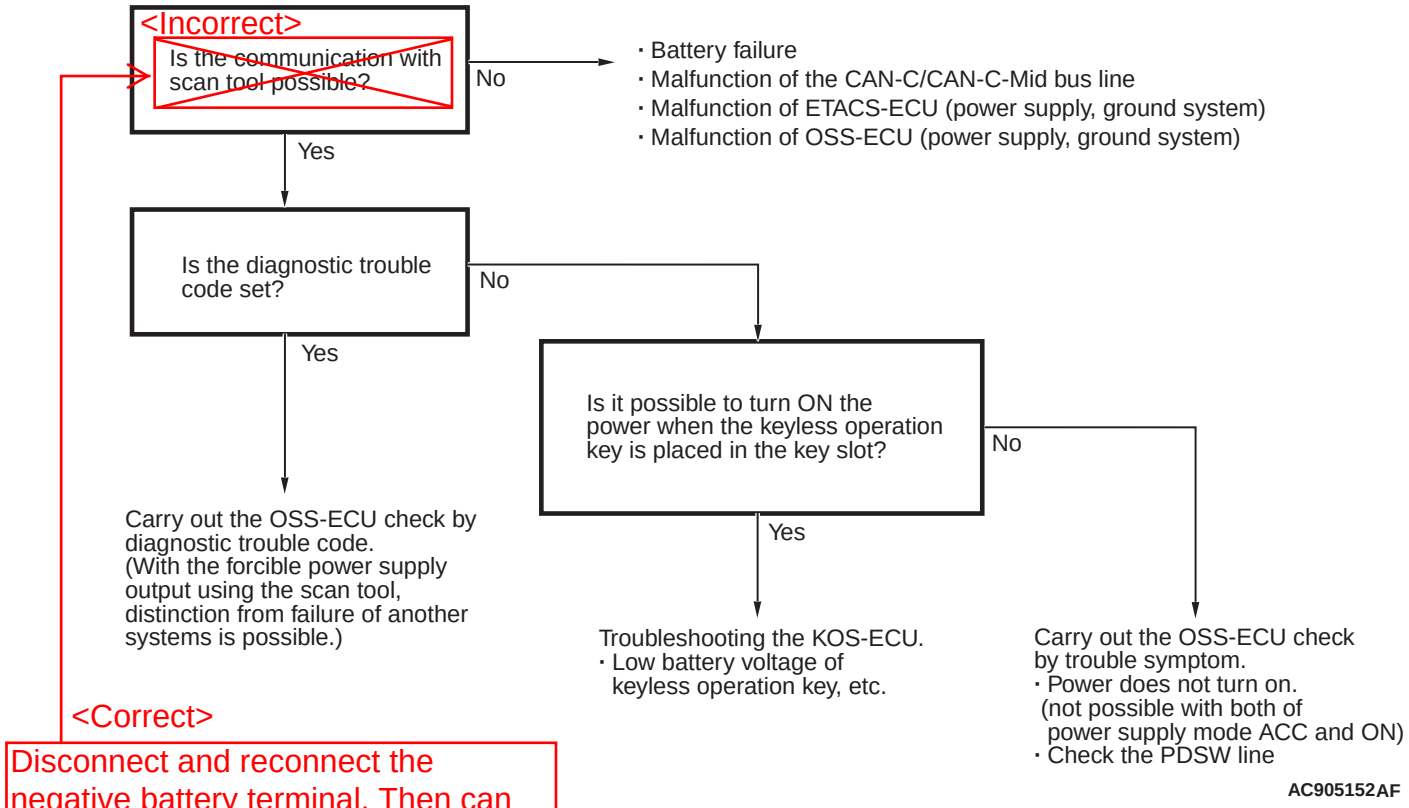
<Incorrect>

When the power does not turn ON, open and close the driver's door several times. Then, check the communication between OSS-ECU and scan tool and others as shown in the flowchart below. (OSS-ECU can communicate with the scan tool even when the power supply is OFF.)

<Correct>

When the vehicle power supply is not turned on, check the communication between the OSS-ECU and the scan tool according to the flowchart below.

Simplified troubleshooting flow chart



<Correct>

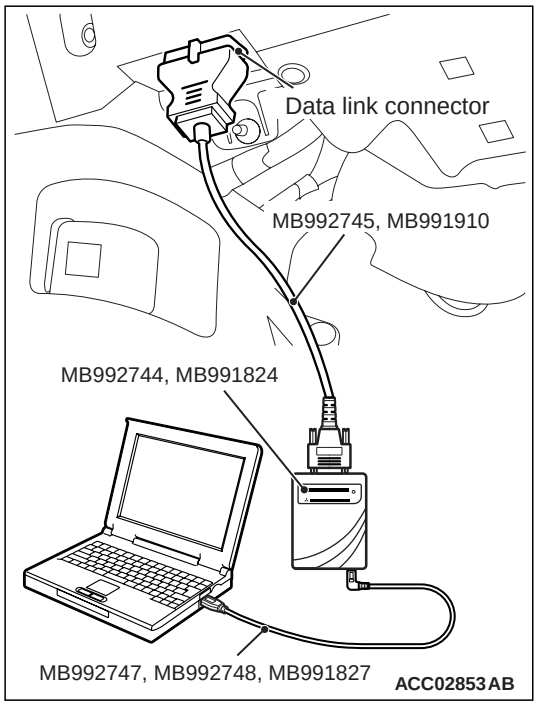
Disconnect and reconnect the negative battery terminal. Then can the OSS-ECU communicate with the scan tool within 30 seconds?

FORCED POWER SUPPLY OUTPUT PROCEDURE

M1429627400057

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicles Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

With OSS, the power supply cannot be turned ON until the certification communication with KOS is complete. However, using the scan tool, the power can be forced ON even when the certification communication with KOS is not completed. Through this process, the error in certification with KOS can be distinguished from the malfunction in power supply. In addition, the process allows the CAN bus diagnosis as well as the reading of diagnostic trouble code, belonging to systems other than OSS, to be performed.

FORCED POWER SUPPLY OUTPUT PROCEDURE

1. Connect special tool MB992747/MB991748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
2. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
3. Connect special tool MB992745 or special tool MB991910 to the data link connector.

   NOTE: when the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color

<Added> •

<Added>
• Disconnect and reconnect the negative battery terminal, and then proceed to the following operations within approximately 30 seconds.

4. On the "M.U.T.-III system" selection screen, select "OSS."
5. Select "Special Function" from OSS screen.
6. Select "Forced power supply output" from Special Function screen.
7. From the forced power supply output screen, select the status with which the control is desired. (Selection can be made from IG-ACC, IG-ON, and IG-ST.)
8. On the execution confirmation screen, select OK.
9. While the process is executed, the selected control status is maintained.

   NOTE: During the forced power supply output, the indicator flashes in orange.
10. To cancel the forced power supply output, select "Forced power supply output (stop)" on the Special Function screen, or operate the engine switch.

WARNING AND WARNING INDICATOR LIST <Standard meter>

M1429612300645

When OSS failed or operated improperly, OSS-ECU warns the driver to that effect by displaying the one-touch start system warning indicator on the combination meter.

Attached sheet 11

STEP 2. Using scan tool (M.U.T.-III), communicates with this system.

Check that the communication with scan tool (M.U.T.-III) is possible.

NOTE: If ETACS-ECU is not active, OSS-ECU cannot communicate with the scan tool (M.U.T.-III).

⚠ CAUTION

To prevent damage to scan tool (M.U.T-III), always turn the power supply mode of the engine switch to the OFF position before connecting or disconnecting scan tool (M.U.T-III).

(1) Connect scan tool (M.U.T-III). Refer to "How to connect scan tool (M.U.T.-III) P.42B-83."

<Incorrect>

(2) Turn the power supply mode of the engine switch to ON.
(3) Perform the ON/OFF operation of any of the door switches for several times, or open any of the doors.
(4) Check that OSS-ECU can communicate with the scan tool (M.U.T.-III).

<Correct>

(2) Disconnect the negative battery terminal, and connect it again.
(3) After the negative terminal is connected, the OSS-ECU should communicate with the scan tool (M.U.T.-III) within approximately 30 seconds.

<Correct> (4)

(5) Turn the power supply mode of the engine switch to OFF.

<Incorrect>

Q: Is the check result normal?

YES : Go to Step 3.
NO : Carry out the troubleshooting of "OSS-ECU power supply or ground circuit malfunction" (Refer to P.42B-136).

STEP 3. Using scan tool (M.U.T-III), diagnose the CAN bus line.

⚠ CAUTION

To prevent damage to scan tool (M.U.T-III), always turn the power supply mode of the engine switch to the OFF position before connecting or disconnecting scan tool (M.U.T-III).

(1) Connect scan tool (M.U.T-III). Refer to "How to connect scan tool (M.U.T.-III) P.42B-83."
(2) Turn the power supply mode of the engine switch to ON.
(3) Diagnose the CAN bus line.
(4) Turn the power supply mode of the engine switch to OFF.

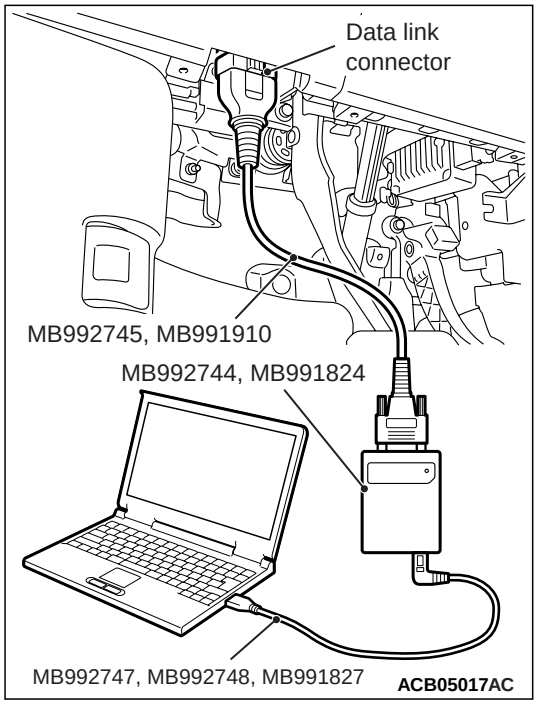
Q: Is the CAN bus line found to be normal?

YES : Go to Step 4.
NO : Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-11).

VIN REGISTRATION PROCEDURE

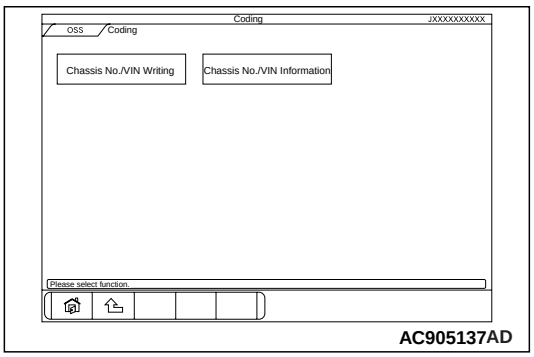
1. Replace the OSS-ECU.

⚠ CAUTION



To prevent damage to scan tool (M.U.T-III), always turn the power supply mode of the engine switch to the OFF position before connecting or disconnecting scan tool (M.U.T-III).

2. Connect scan tool (M.U.T-III) to the data link connector.
3. From the system selection screen of scan tool (M.U.T-III), select "OSS".
4. From the OSS function menu screen, select "Coding".



5. From the coding menu screen, select "Chassis No./VIN Writing."

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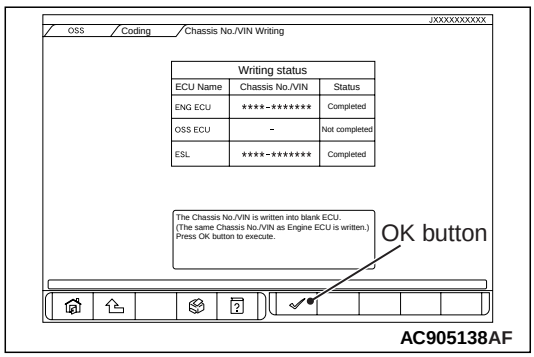
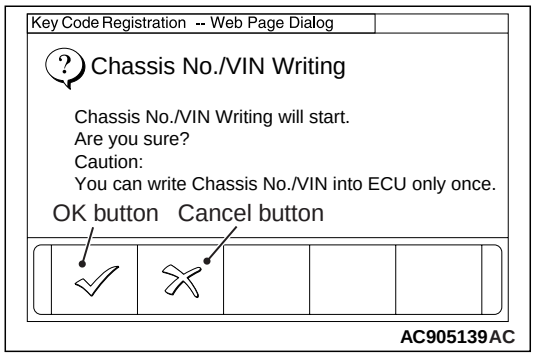
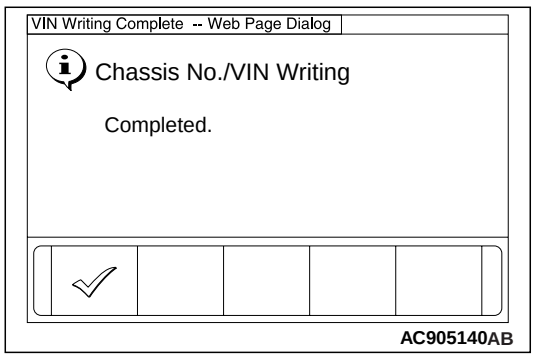
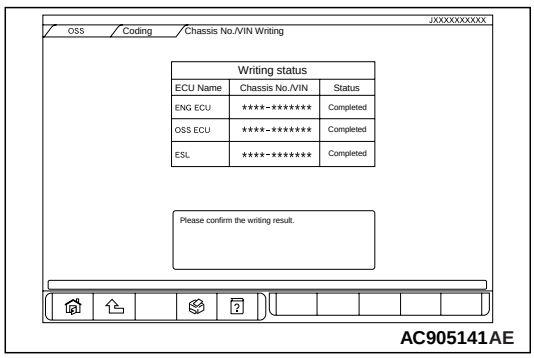
NOTE: Disconnect and reconnect the negative battery terminal, and then proceed to the following operations within approximately 30 seconds.







6. Following the instruction on the screen, press the OK button to execute the VIN writing. (M.U.T. screen above indicates when OSS-ECU is replaced.)



7. On the writing result confirmation screen, check that the chassis number is written, and finish the registration.
8. Operate the engine switch to turn OFF the power supply.

2. SYSTEM OPERATION AND SYMPTOM VERIFICATION TESTS
If verification of the symptom(s) is difficult, procedures for checking operation and verifying symptoms are shown.

3. DIAGNOSIS FUNCTION
Details specific to individual systems are described.

4. DIAGNOSIS CODE CHART
Diagnostic trouble codes and diagnostic items are shown.

5. DIAGNOSIS CODE PROCEDURES
Indicates the inspection procedures corresponding to each diagnosis code (Refer to How to Use Inspection Procedures).

6. TROUBLE SYMPTOM CHART
If there are trouble symptoms even though the M.U.T.-III does not find any diagnosis codes, Inspection procedures for each trouble symptom will be found by means of this chart.

7. SYMPTOM PROCEDURES
Indicates the inspection procedures corresponding to each symptom classified in the Symptom Chart (Refer to How to Use Inspection Procedures).

8. DATA LIST REFERENCE TABLE
Inspection items and normal judgement values have been provided in this chart as reference information.

9. ACTUATOR TEST TABLE
The Actuator Test item numbers, inspection items, and judgement values have been provided in this chart as reference information.

10. CHECK AT ECU TERMINALS
Terminal numbers for the ECU connectors, inspection items, and judgement values have been provided in this chart as reference information.

11. INSPECTION PROCEDURE BY USING AN OSCILLOSCOPE
When there are inspection procedures using an oscilloscope, these are described here.

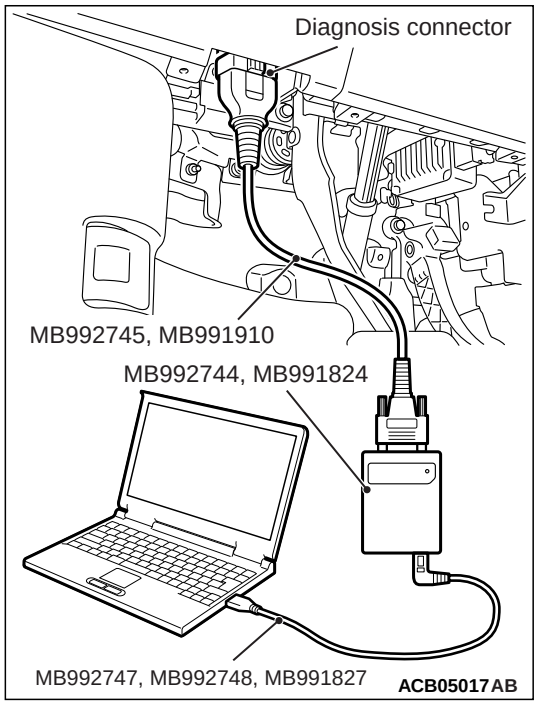
<Added>

NOTE: For a service data item, which you should check with the ignition switch at LOCK (OFF) position, turn ON and OFF the ignition switch in advance. Then allow the M.U.T.-III to communicate with a relevant ECU within approximately 10 seconds.

CHASSIS NO. WRITING STEPS FOR ETACS-ECU AND KOS-ECU

⚠ CAUTION

- **Before the chassis No. registration to ETACS-ECU, check that the chassis Nos. of engine-ECU and vehicle are matched.**
- **Check that diagnosis code No. B2416 "ECU internal error" is not stored. When diagnosis code No. B2416 "ECU internal error" is stored, the ETACS-ECU and the KOS-ECU cannot store the Chassis No. even if the Chassis No. is written. If this diagnosis code is stored, troubleshoot the immobiliser system or the KOS-ECU and repair, and then write the Chassis No. to the ETACS-ECU or the KOS-ECU.**
- **Before connecting or disconnecting the M.U.T.-III, turn the ignition switch to the "LOCK" (OFF) position.**



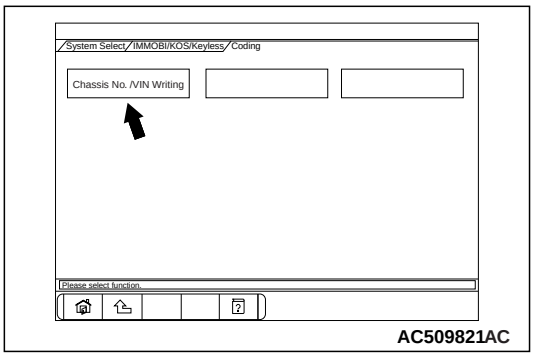
Connect the M.U.T.-III to the 16-pin diagnosis connector as follows.

NOTE: For details on how to use the M.U.T.-III, refer to the "M.U.T.-III operation manual."

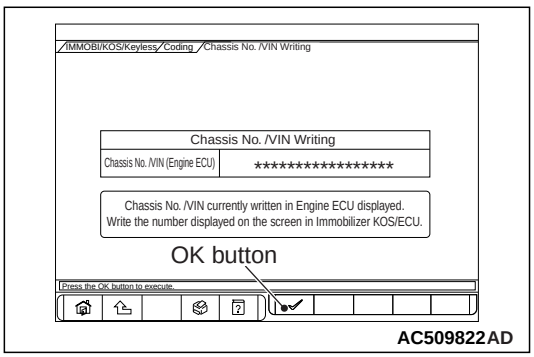
1. Start up the personal computer.
2. Connect special tool V.C.I.-Lite USB cable (MB992747/MB992748) or M.U.T.-III USB cable (MB991827) to V.C.I.-Lite (MB992744) or V.C.I. (MB991824) and the personal computer.
3. Connect V.C.I.-Lite main harness A (MB992745) or M.U.T.-III main harness A (MB991910) to the V.C.I.-Lite or V.C.I.
4. Connect the V.C.I.-Lite main harness A or M.U.T.-III main harness A to the diagnosis connector of the vehicle.

   NOTE: When the V.C.I.-Lite is connected to the diagnosis connector, the V.C.I.-Lite indicator lamp will be illuminated in a green colour.
5. Turn the V.C.I. power switch to the "ON" position. <When using the V.C.I.>

   NOTE: When the V.C.I. is energised, the V.C.I. indicator lamp will be illuminated in a green colour.
6. Start the M.U.T.-III system on the personal computer.
7. Select "KOS/IMMO/Keyless" button from the "System Select" screen. Then, select the applicable option code item and push the OK button.
   - For vehicles with KOS, select "IMMOBI&KOS." For vehicles without KOS, select "IMMOBI&Keyless."
8. Select "Coding" on the next screen.



9. Select "Chassis No. /VIN Writing" on "Coding" screen.



10. Push the OK button after the Chassis No./VIN written in the engine-ECU is displayed.
11. Push the OK button after "Chassis No./VIN Writing will start. Are you sure?" is displayed.
12. Push the OK button after "Completed." is displayed.

<Added>

NOTE: If the M.U.T.-III system cannot be activated, disconnect and reconnect the negative battery terminal, and then proceed to the following operations within approximately 30 seconds.

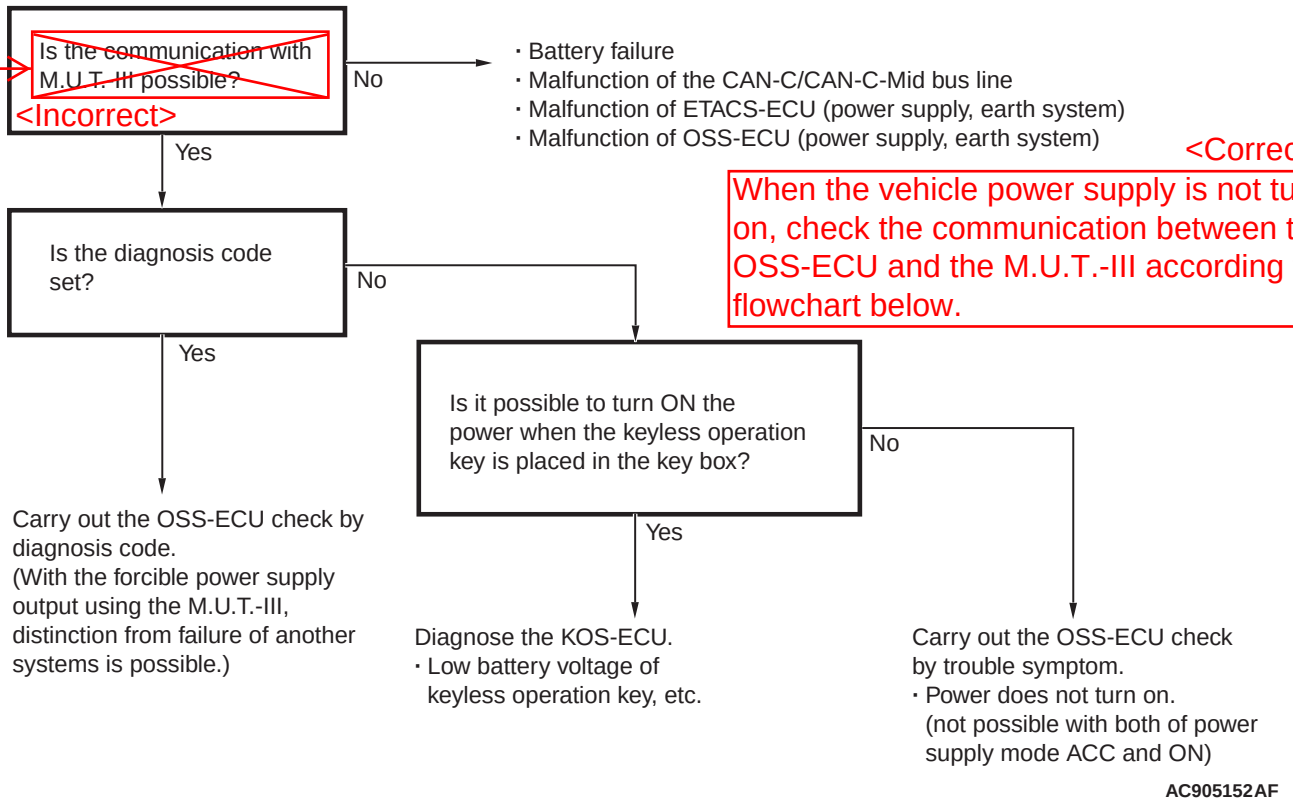
Attached sheet 15

<Incorrect>

TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON

When the power does not turn ON, open and close the driver's door several times. Then, check the communication between OSS-ECU and M.U.T.-III and others as shown in the flowchart below. (OSS-ECU can communicate with the M.U.T.-III even when the power supply is OFF.)

Simplified troubleshooting flow chart



<Correct>

When the vehicle power supply is not turned on, check the communication between the OSS-ECU and the M.U.T.-III according to the flowchart below.

<Correct>

Disconnect and reconnect the negative battery terminal. Then can the OSS-ECU communicate with the M.U.T.-III within 30 seconds?

FORCED POWER SUPPLY OUTPUT PROCEDURE

With OSS, the power supply cannot be turned ON until the certification communication with KOS and electrical steering lock is complete. However, using the M.U.T.-III, the power can be forced ON even when the certification communication with KOS and electrical steering lock is not completed. (However, locking/unlocking of the electrical steering lock is not performed.) Through this process, the error in certification with KOS or electrical steering lock can be distinguished from the malfunction in power supply. In addition, the process allows the CAN bus diagnosis as well as the reading of diagnosis code, belonging to systems other than OSS, to be performed.

FORCED POWER SUPPLY OUTPUT PROCEDURE

1. Connect the M.U.T.-III to the diagnosis connector.

<Added>

NOTE: Disconnect and reconnect the negative battery terminal, and then proceed to the following operations within approximately 30 seconds.

2. On the M.U.T.-III system selection screen, select "OSS."
3. Select "Special Function" from OSS screen.
4. Select "Forced power supply output" from Special Function screen.
5. From the forced power supply output screen, select the status with which the control is desired. (Selection can be made from IG-ACC, IG-ON, and IG-ST.)
6. On the execution confirmation screen, select OK.
7. While the process is executed, the selected control status is maintained.

   NOTE: During the forced power supply output, the indicator flashes in orange.
8. To cancel the forced power supply output, select "Forced power supply output (stop)" on the Special Function screen, or operate the engine switch.

Attached sheet 17

Inspection Procedure 2: Vehicle power does not turn ON. (not possible with both of power supply mode ACC and ON)

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the earth circuit and the communication circuit are normal.

COMMENTS ON TROUBLE SYMPTOM
When the vehicle power does not turn ON (not possible with both of power supply mode ACC and ON), the battery, CAN bus line, OSS-ECU, OSS-ECU power supply, or earth circuit may have a problem.

NOTE: OSS-ECU can communicate with the M.U.T.-III even when the engine switch is in the "OFF" position.

PROBABLE CAUSES
- Malfunction of battery
- Damaged wiring harness and connectors
- Malfunction of engine switch (poor connector contact, poor engine switch contact)
- Malfunction of the CAN bus line
- Malfunction of OSS-ECU
- ETACS-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. Battery check
Perform the battery test to check the battery status. (Refer to GROUP 54A – Battery.)

Q: Is the check result normal?
YES : Go to Step 2.
NO : Replace the battery.

STEP 2. Check that the M.U.T.-III communicates with this system.
Check that the communication with M.U.T.-III is possible.

NOTE: If ETACS-ECU is not active, OSS-ECU

<Incorrect> *cannot communicate with the M.U.T.-III.*
(1) Perform the ON/OFF operation of any of the door switches for several times, or open any of the doors.
(2) Check that OSS-ECU can communicate with the M.U.T.-III.

<Correct>
(1) Disconnect the negative battery terminal, and connect it again.
(2) After the negative terminal is connected, the OSS-ECU should communicate with the M.U.T.-III within approximately 30 seconds.

Q: Is the check result normal?
YES : Go to Step 3.
NO : Carry out the troubleshooting of "OSS-ECU power supply or earth circuit malfunction".(Refer to.)

STEP 3. M.U.T.-III CAN bus diagnostics
Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting).

STEP 4. M.U.T.-III diagnosis code
Check if the diagnosis code is set to OSS-ECU.

Q: Is the diagnosis code set?
YES : Diagnose the OSS. Refer to.
NO : Go to Step 5.

STEP 5. Engine switch check
Continuity check of engine switch (Refer to.)

Q: Is the check result normal?
YES : Go to Step 6.
NO : Replace the engine switch.

STEP 6. Check of the troubles
Check that the vehicle power can be turned ON.

Q: Is the check result normal?
YES : Intermittent malfunction is suspected (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction).
NO : Carry out the troubleshooting relevant to the input signal of ETACS-ECU. (Refer to GROUP 54A – ETACS.) Then, go to Step 7.

REGISTRATION WHEN REPLACING OSS-ECU AND ELECTRIC STEERING LOCK

⚠ CAUTION

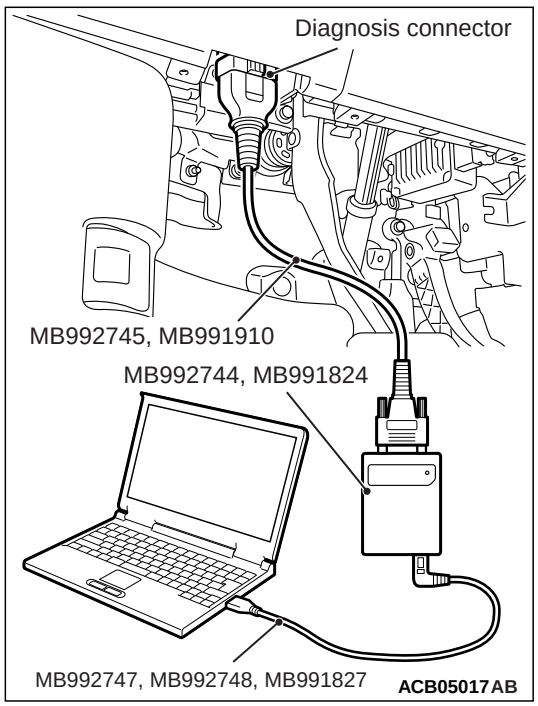
- **When KOS-ECU is replaced, all the registrations that need to be performed at KOS-ECU replacement must be completed before the registration of OSS-ECU and electric steering lock.**
- **Be sure to check that the diagnosis code No.B1157 OSS EEPROM error and No.B1155 ESL EEPROM error are not set. If the diagnosis code No.B1157 "OSS EEPROM error" and No.B1155 "ESL EEPROM error" are set, the chassis number cannot be stored in memory even when it is written. Therefore, when these diagnosis codes are set, be sure to carry out the troubleshooting first to repair the trouble, and then write the chassis number to OSS-ECU or electric steering lock.**

When OSS-ECU or electric steering lock is replaced, the chassis number needs to be registered to the replaced ECU.

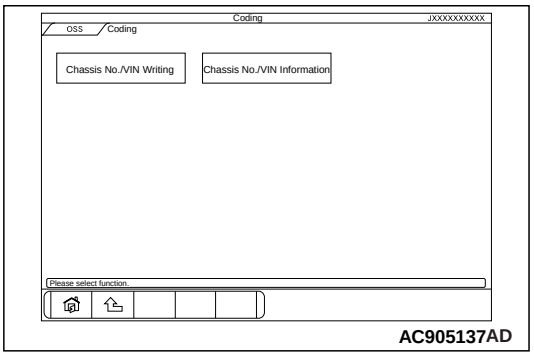
CHASSIS NUMBER REGISTRATION PROCEDURE

NOTE: Regardless of which of OSS-ECU or electric steering lock is replaced, the registration can be performed by executing the same menu selection. (Even when both OSS-ECU and electric steering lock were replaced as a set, they can be registered by performing the registration process only once.)

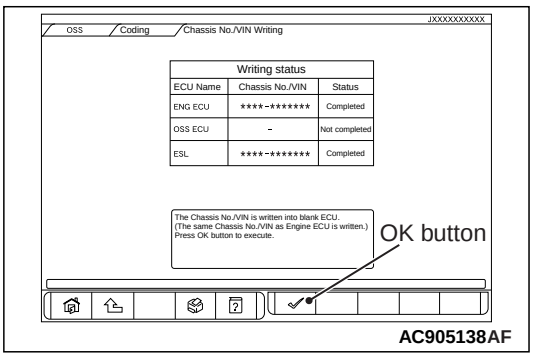
1. Replace the OSS-ECU or electric steering lock.

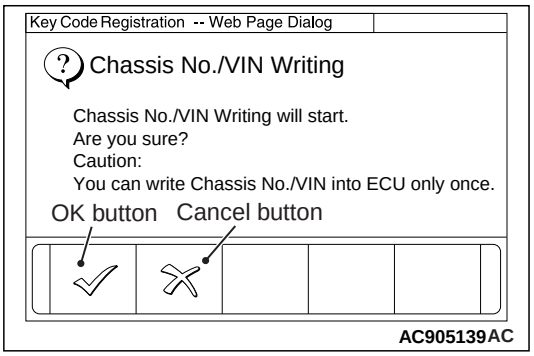


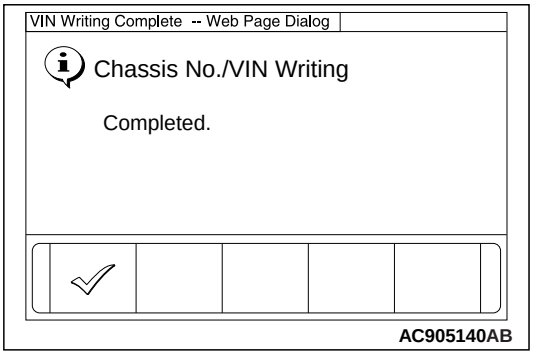
2. Connect M.U.T.-III to the diagnosis connector.
3. From the system selection screen of M.U.T.-III, select "OSS".
4. From the OSS function menu screen, select "Coding".



5. From the coding menu screen, select "Chassis No./VIN Writing."







<Added>

NOTE: Disconnect and reconnect the negative battery terminal, and then proceed to the following operations within approximately 30 seconds.

Attached sheet 19

2. SYSTEM OPERATION AND SYMPTOM VERIFICATION TESTS
If verification of the symptom(s) is difficult, procedures for checking operation and verifying symptoms are shown.

3. DIAGNOSIS FUNCTION
Details specific to individual systems are described.

4. DIAGNOSIS CODE CHART
Diagnosis codes and diagnostic items are shown.

5. DIAGNOSIS CODE PROCEDURES
Indicates the inspection procedures corresponding to each diagnosis code (Refer to How to Use Inspection Procedures).

6. TROUBLE SYMPTOM CHART
If there are trouble symptoms even though the M.U.T.-III does not find any diagnosis codes, Inspection procedures for each trouble symptom will be found by means of this chart.

7. SYMPTOM PROCEDURES
Indicates the inspection procedures corresponding to each symptom classified in the Symptom Chart (Refer to How to Use Inspection Procedures).

8. DATA LIST REFERENCE TABLE
Inspection items and normal judgement values have been provided in this chart as reference information.

9. ACTUATOR TEST TABLE
The Actuator Test item numbers, inspection items, and judgement values have been provided in this chart as reference information.

10. CHECK AT ECU TERMINALS
Terminal numbers for the ECU connectors, inspection items, and judgement values have been provided in this chart as reference information.

11. INSPECTION PROCEDURE BY USING AN OSCILLOSCOPE
When there are inspection procedures using an oscilloscope, these are described here.

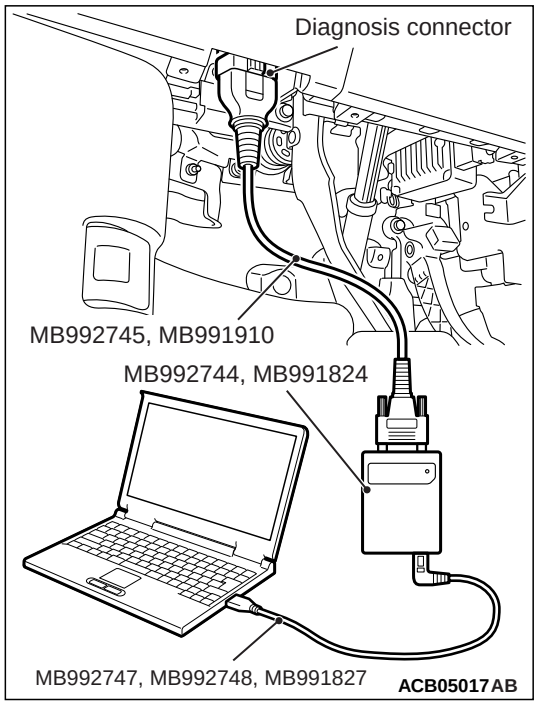
<Added>

NOTE: For a service data item, which you should check with the power supply mode of the electric motor switch OFF, turn ON and OFF the power supply mode in advance. Then allow the M.U.T.-III to communicate with a relevant ECU within approximately 10 seconds.

How to write the chassis number to the KOS-ECU

⚠ CAUTION

- **Check that B2416 "ECU internal error (EEPROM)" is not set. When diagnosis code No. B2416 "ECU internal error (EEPROM)" is set, even if you attempt to write the chassis number, it cannot be stored. Therefore, when this diagnosis code is set, perform troubleshooting and repair a defective component, and then write the chassis number to the KOS-ECU.**
- **While the M.U.T.-III is communicating with the vehicle, the electric motor switch may not be turned off and no normally. Therefore, when you turn off the electric motor switch for that communication, wait for several seconds and then turn on it again (do not turn on it immediately).**



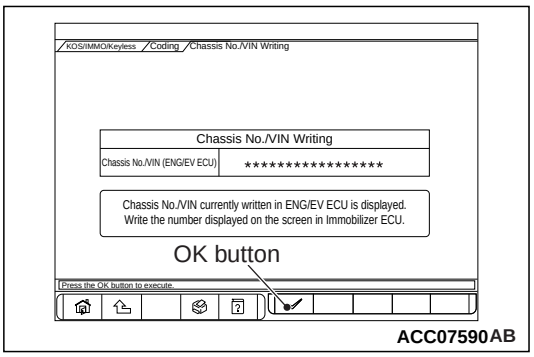
Connect the M.U.T.-III to the 16-pin diagnosis connector as follows.

NOTE: For details on how to use the M.U.T.-III, refer to the "M.U.T.-III Owner's manual."

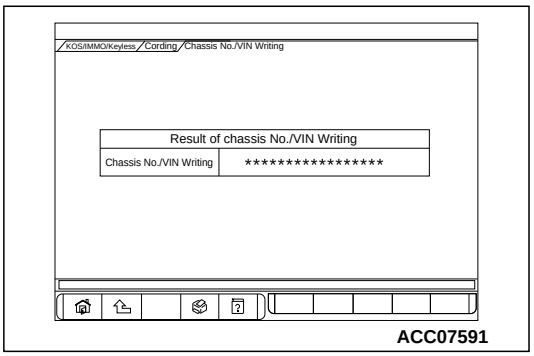
1. The power supply mode of the electric motor switch should be turned off.
2. Start up the personal computer.
3. Connect the special tool V.C.I.-Lite USB cable (MB992747/MB992748) or the M.U.T.-III USB cable (MB991827) to the vehicle communication interface lite (V.C.I.-Lite) (MB992744) or the vehicle communication interface (V.C.I.)(MB991824) and the PC.
4. Connect the special tool V.C.I.-Lite man wiring harness A or the M.U.T.-III main wiring harness A (MB991910) to the V.C.I.-Lite or the V.C.I.
5. Connect the V.C.I.-Lite man wiring harness A or the M.U.T.-III main wiring harness A (MB991910) to the vehicle diagnosis connector.

   NOTE: When the V.C.I.-Lite is connected to the diagnosis connector, the indicator lamp on the V.C.I.-Lite will illuminate in green.
6. Turn the V.C.I. power switch to the "ON" position <when using the V.C.I.>.

   NOTE: When the V.C.I. is turned ON, the V.C.I. indicator lamp will be illuminated in green.
7. Start the M.U.T.-III system on the personal computer.
8. Select "KOS/IMMO/Keyless" on "System selection" screen.
9. On the next screen, select "Coding".
10. On the "Coding" screen, select "Chassis number writing."



11. When the chassis number written to engine-ECU is displayed, press the OK button.
12. "Write the chassis number. Are you OK?" will be displayed. Then press the OK button.
13. When "Completed" is displayed, press the OK button.



14. Chassis number writing result is displayed.

<Added>

NOTE: If the M.U.T.-III system cannot be activated, disconnect and reconnect the auxiliary battery negative terminal, and then proceed to the following operations within approximately 30 seconds.

Attached sheet 21

TROUBLESHOOTING PROCEDURE WHEN VEHICLE POWER DOES NOT TURN ON

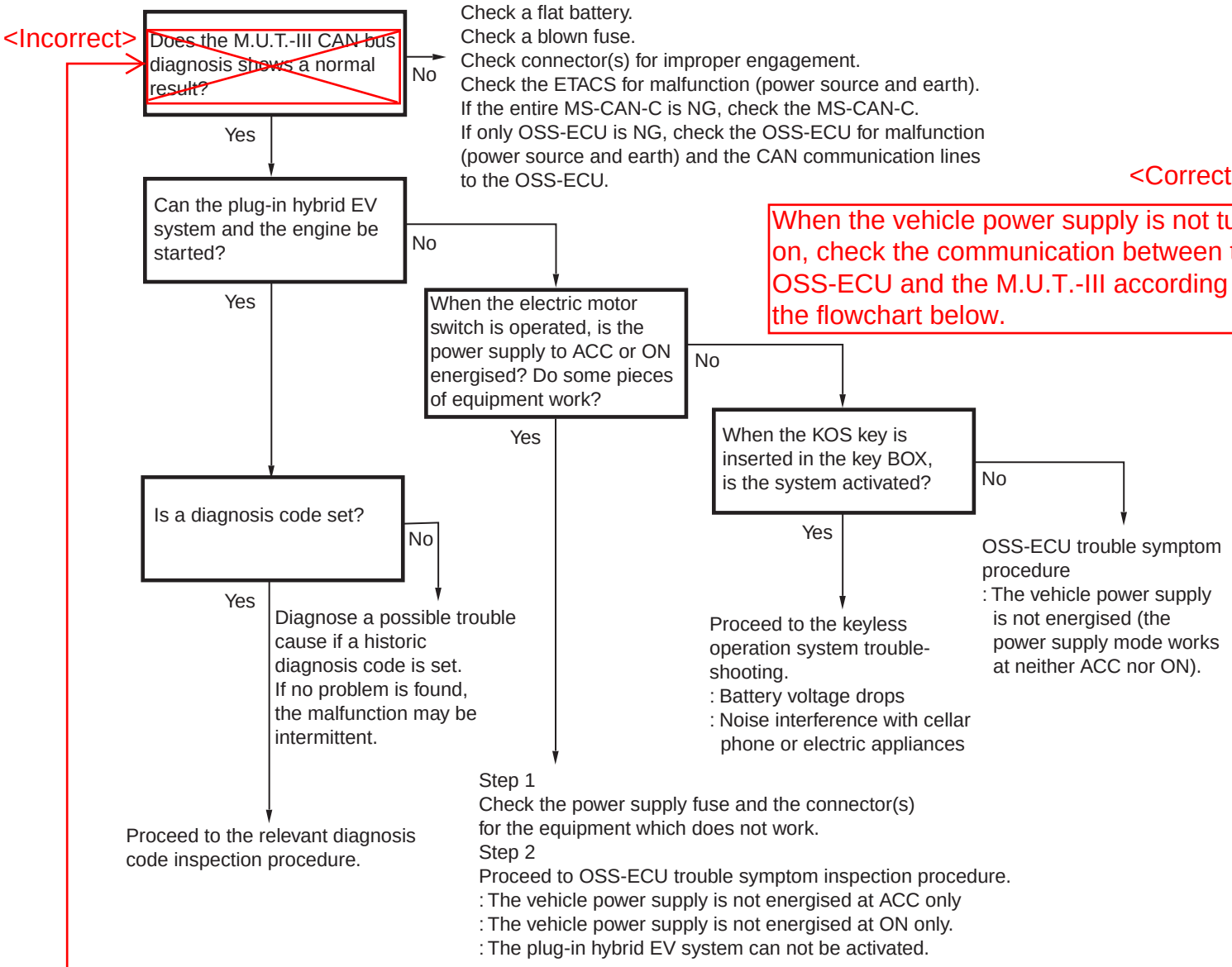
When the power does not turn ON, open and close the driver's door several times. Then, check the communication between OSS-ECU and M.U.T.-III and others as shown in the flowchart below. (OSS-ECU can communicate with the M.U.T.-III even when the power supply is OFF.)

<Incorrect>

<Correct>

When the vehicle power supply is not turned on, check the communication between the OSS-ECU and the M.U.T.-III according to the flowchart below.

Simple troubleshooting flow chart



ACE00039 AB

<Incorrect>

<Correct>

Disconnect and reconnect the negative battery terminal. Then can the OSS-ECU communicate with the M.U.T.-III within 30 seconds?

Attached sheet 22

Inspection Procedure 2: Vehicle power does not turn ON (not possible with both of power supply mode ACC and ON).

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the earth circuit and the communication circuit are normal.

COMMENTS ON TROUBLE SYMPTOM
When the vehicle power does not turn ON (not possible with both of power supply mode ACC and ON), the auxiliary battery, CAN bus line, OSS-ECU, OSS-ECU power supply, or earth circuit may have a problem.

NOTE: OSS-ECU can communicate with the M.U.T.-III even when the power switch is in the "OFF" position.

PROBABLE CAUSES
- Malfunction of auxiliary battery
- Damaged wiring harness and connectors
- Blown fuse, improperly engaged
- Malfunction of power switch (poor connector contact, poor power switch contact)
- Malfunction of the CAN bus line
- Malfunction of KOS-ECU
- Malfunction of OSS-ECU
- Malfunction of ETACS-ECU

DIAGNOSIS PROCEDURE

STEP 1. Check the fusible links and connectors.

(1) Check the fusible links and their terminals for looseness.
(2) Are any wiring harness connector(s) disconnected?

Q: Is the check result normal?
YES : Go to Step 2.
NO : Replace the fusible link box and retighten their terminals. Repair the wires and/or connector(s).

STEP 2. Auxiliary battery check
Perform the auxiliary battery test to check the auxiliary battery status (Refer to GROUP 54A – Battery).

Q: Is the check result normal?
YES : Go to Step 3.
NO : Replace the auxiliary battery.

STEP 3. Check that the M.U.T.-III communicates with this system.
Check that the communication with M.U.T.-III is possible.

NOTE: ETACS-ECU is not active, OSS-ECU cannot communicate with the M.U.T.-III.

<Incorrect>
~~(1) Perform the ON/OFF operation of any of the door switches for several times, or open any of the doors.~~
~~(2) Check that OSS-ECU can communicate with the M.U.T.-III.~~

Q: Is the check result normal?
YES : Go to Step 4.
NO : Carry out the troubleshooting of "OSS-ECU power supply or earth circuit malfunction" (Refer to).

STEP 4. M.U.T.-III CAN bus diagnostics
Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting).

STEP 5. M.U.T.-III diagnosis code
Check if the diagnosis code is set in the OSS-ECU.

Q: Is the diagnosis code set?
YES : Carry out troubleshooting for the OSS-ECU (Refer to).
NO : Go to Step 6.

STEP 6. Power switch check
Continuity check of power switch (Refer to).

Q: Is the check result normal?
YES : Go to Step 7.
NO : Replace the power switch.

<Correct>
(1) Disconnect the negative terminal of the auxiliary battery, and connect it again.
(2) After the negative terminal is connected, the OSS-ECU should communicate with the M.U.T.-III within approximately 30 seconds.