

GROUP 54

CHASSIS ELECTRICAL

GENERAL

OUTLINE OF CHANGE

The following service procedures have been revised due to the change in the immobilizer-ECU.

- Troubleshooting
- Encrypted code registration method

IMMOBILIZER SYSTEM

TROUBLESHOOTING

INSPECTION CHART FOR DIAGNOSIS CODES <4G6>

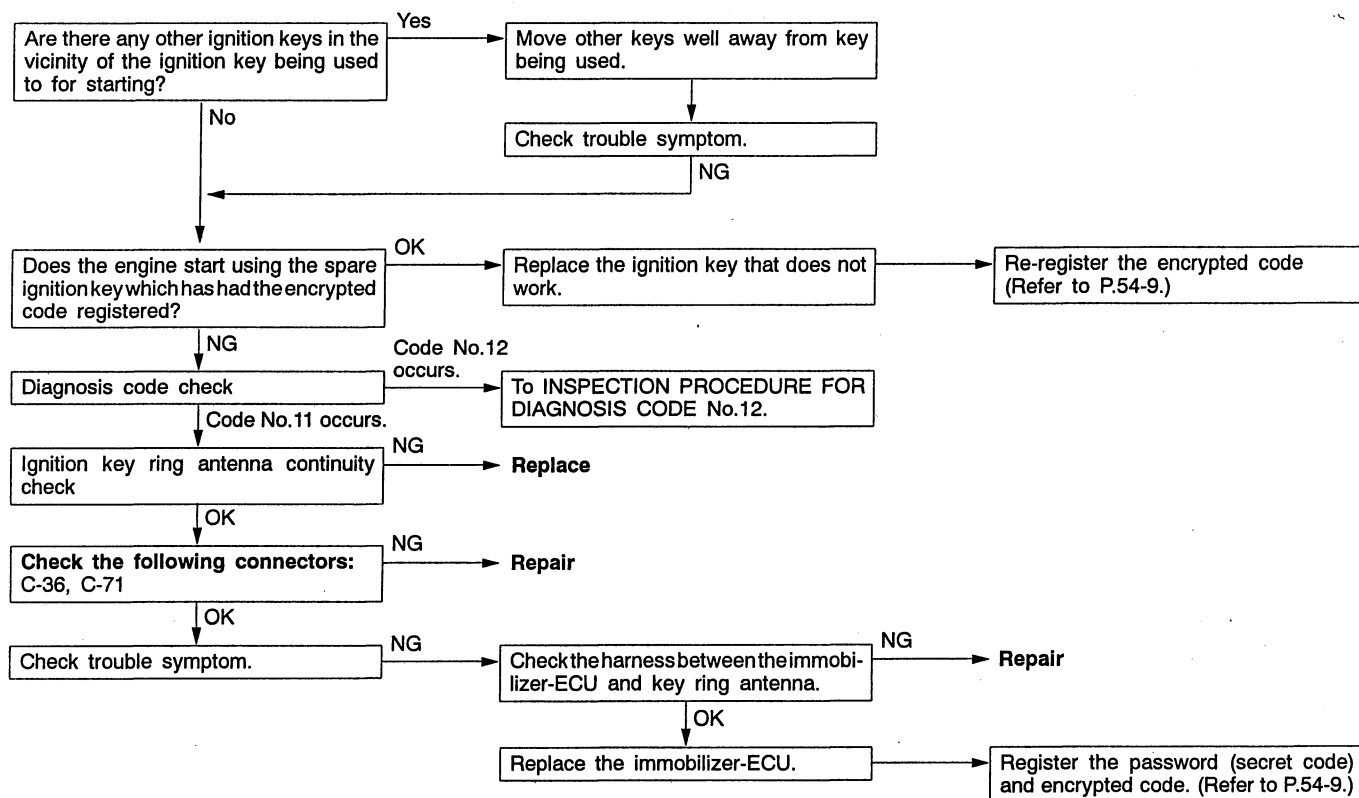
Diagnosis code No.	Inspection items	Reference page
11	Transponder communication system or radio interference of encrypted code	54-2
12	Encrypted code are not the same or are not registered	54-2

NOTE

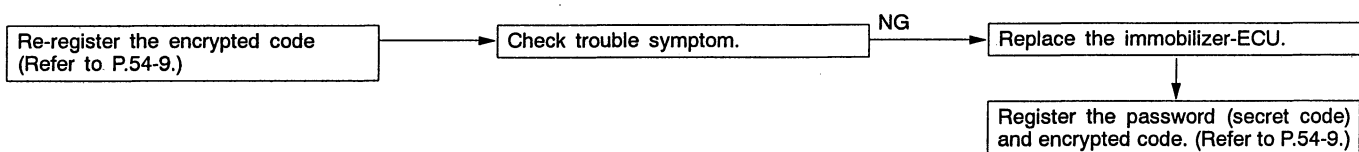
Diagnosis code is not recorded.

INSPECTION PROCEDURE FOR DIAGNOSIS CODES <4G6>

Code No.11 Transponder communication system or radio interference of encrypted code	Probable cause
- The encrypted code of the transponder is not sent to the immobilizer-ECU immediately after the ignition switch is turned to ON position. - If the engine is started while several ignition keys are in the vicinity, then interference between the different keys may occur, which will cause this code to be generated.	- Radio interference of encrypted code - Malfunction of transponder - Malfunction of ignition key ring antenna - Malfunction of harness or connector - Malfunction of immobilizer-ECU



Code No.12 Encrypted codes are not the same or not registered.	Probable cause
The encrypted code which is sent from the transponder is not the same as the encrypted code which is registered in the immobilizer-ECU.	- The encrypted code in the ignition key being used has not been properly registered. - Malfunction of immobilizer-ECU



INSPECTION CHART FOR DIAGNOSIS CODES <4D5>

Diagnosis code No.	Inspection items	Reference page
11*	Transponder communication system or radio interference of encrypted code	54-2
12*	Encrypted codes are not the same or not registered	54-2
21	Communication system between fuel cut valve controller and immobilizer-ECU	54-3
22	Malfunction of fuel cut valve controller system	54-4
23*	Identification codes are not identical	54-4

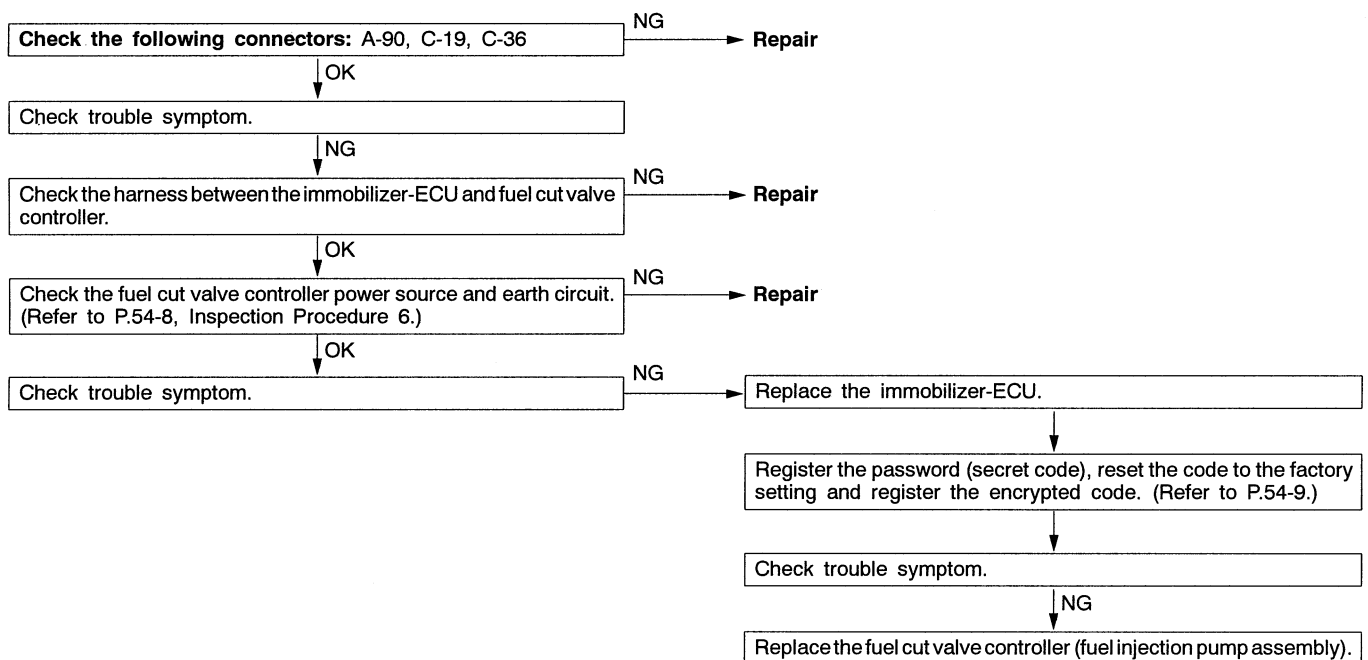
NOTE

*: diagnosis code Nos. 11, 12, 23 are recorded.

INSPECTION PROCEDURE FOR DIAGNOSIS CODES <4D5>

For diagnosis code numbers other than those listed below, refer to “INSPECTION PROCEDURE FOR DIAGNOSIS CODES <4G6>”.

Code No.21 Communication system between fuel cut valve controller and immobilizer-ECU	Probable cause
The confirmation code is not sent from the fuel cut valve controller within the specified time after the ignition key is turned to ON or, an incorrect code is sent.	• Malfunction of harness or connector • Malfunction of fuel cut valve controller • Malfunction of immobilizer-ECU



Code No.22 Malfunction of fuel cut valve controller system	Probable cause
The cause is probably a malfunction of the fuel cut valve controller.	Malfunction of fuel cut valve controller

Check the fuel cut valve controller power source and earth circuit.
(Refer to P.54-8, Inspection Procedure 6.)

OK

Check trouble symptom.

NG

Replace the fuel cut valve controller (fuel injection pump assembly).

Code No.23 Identification codes are not identical	Probable cause
The identification code received from the immobilizer-ECU is not identical to the identification code that has been recorded in the fuel cut valve controller.	- Resetting the code to the factory setting is not made using the MUT-II - Malfunction of fuel cut valve controller

Use the MUT-II to reset the code to the factory setting.
(Refer to P.54-10.)

↓

Check trouble symptom.

NG

Replace the fuel cut valve controller (fuel injection pump assembly).

↓

Check trouble symptom.

NG

Replace the immobilizer-ECU.

↓

Register the password (secret code), reset the code to the factory setting and register the encrypted code. (Refer to P.54-9.)

INSPECTION CHART FOR TROUBLE SYMPTOMS

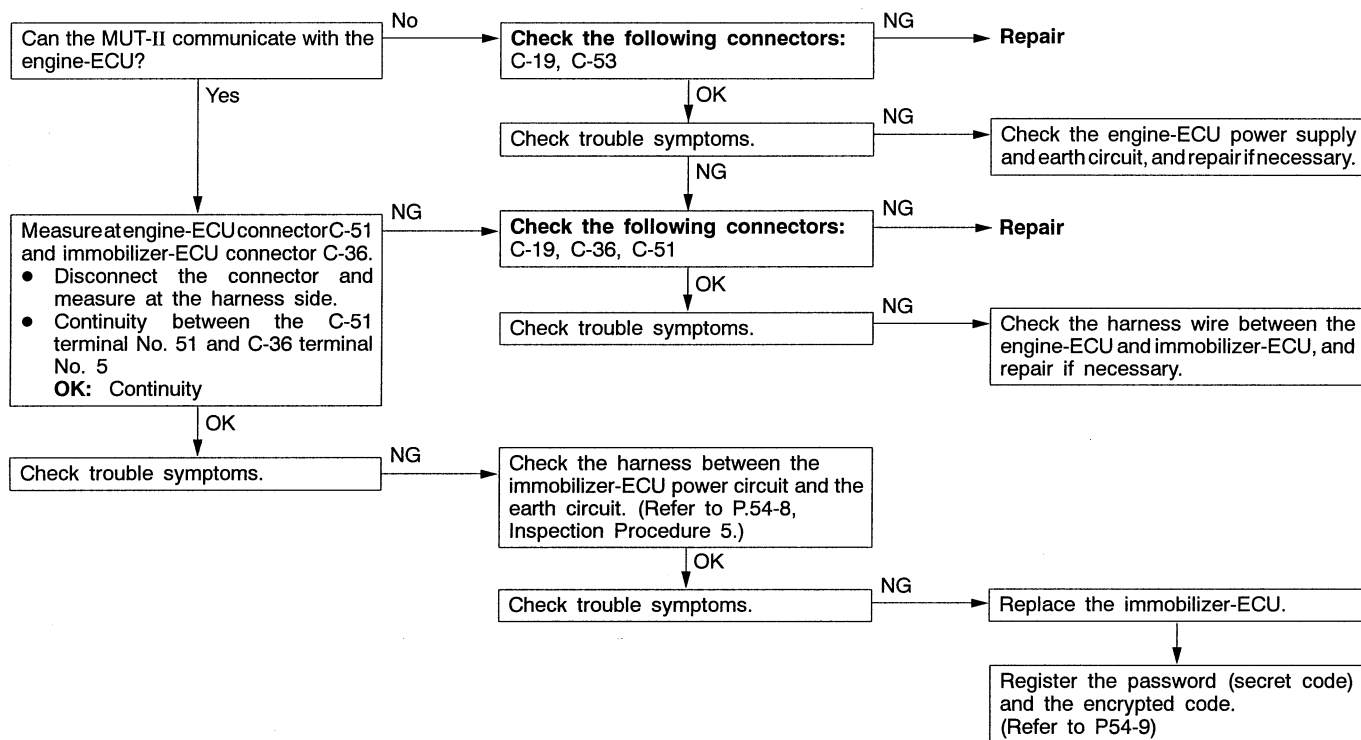
Trouble symptom	Inspection procedure No.	Reference page
Communication with MUT-II is impossible	1	54-5
Encrypted code cannot be registered using the MUT-II	2	54-6
Engine does not start (Cranking but no initial combustion). <4G6>	3	54-6
Engine does not start (Cranking but no initial combustion). <4D5>	4	54-7
Malfunction of the immobilizer-ECU power source and earth circuit	5	54-8
Malfunction of the fuel cut valve controller power source and earth circuit <4D5>	6	54-8

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

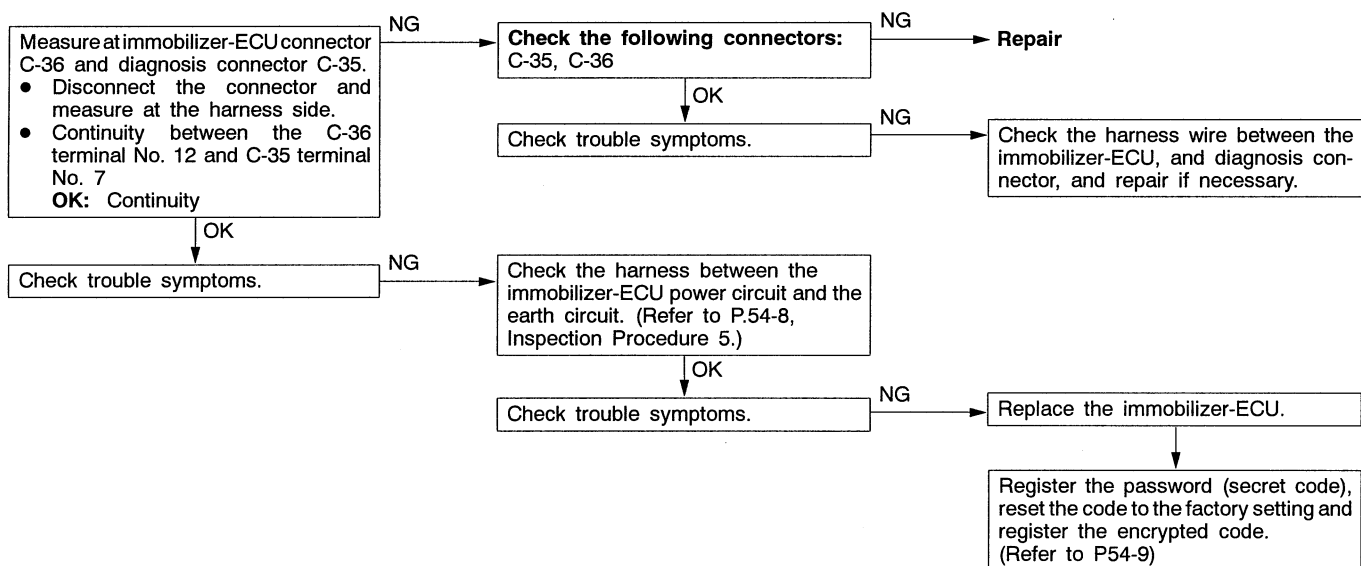
Inspection Procedure 1

Communication with MUT-II is impossible	Probable cause
The cause is probably that a malfunction of the diagnosis line or the immobilizer-ECU is not functioning.	• Malfunction of diagnosis line • Malfunction of harness or connector • Malfunction of immobilizer-ECU

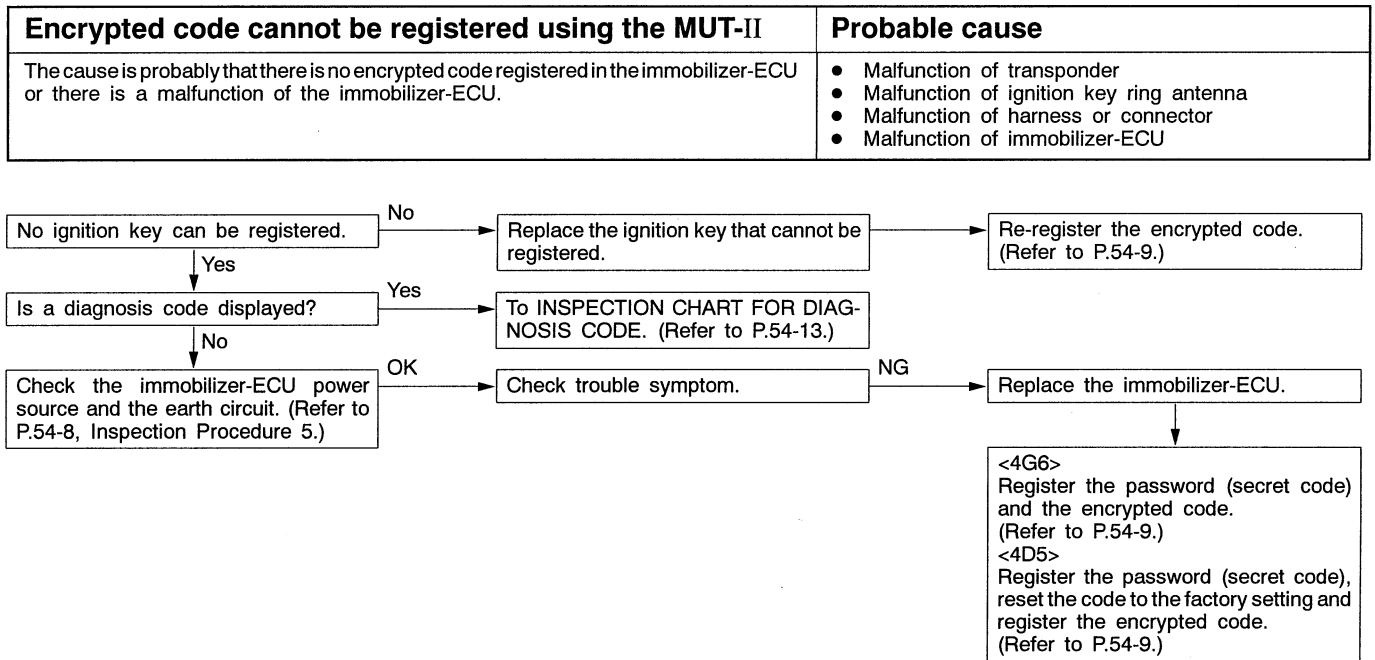
<4G6>



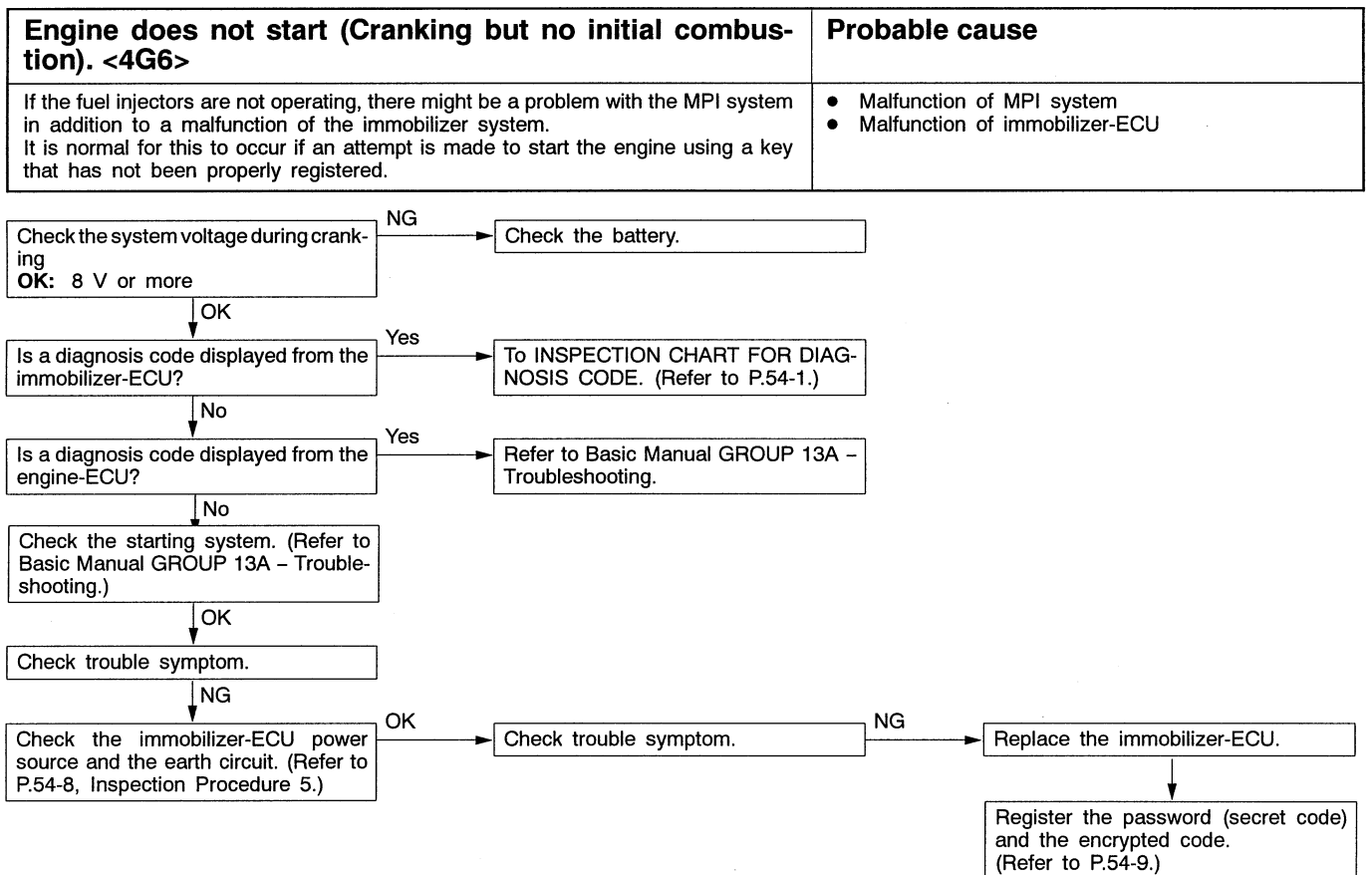
<4D5>



Inspection Procedure 2

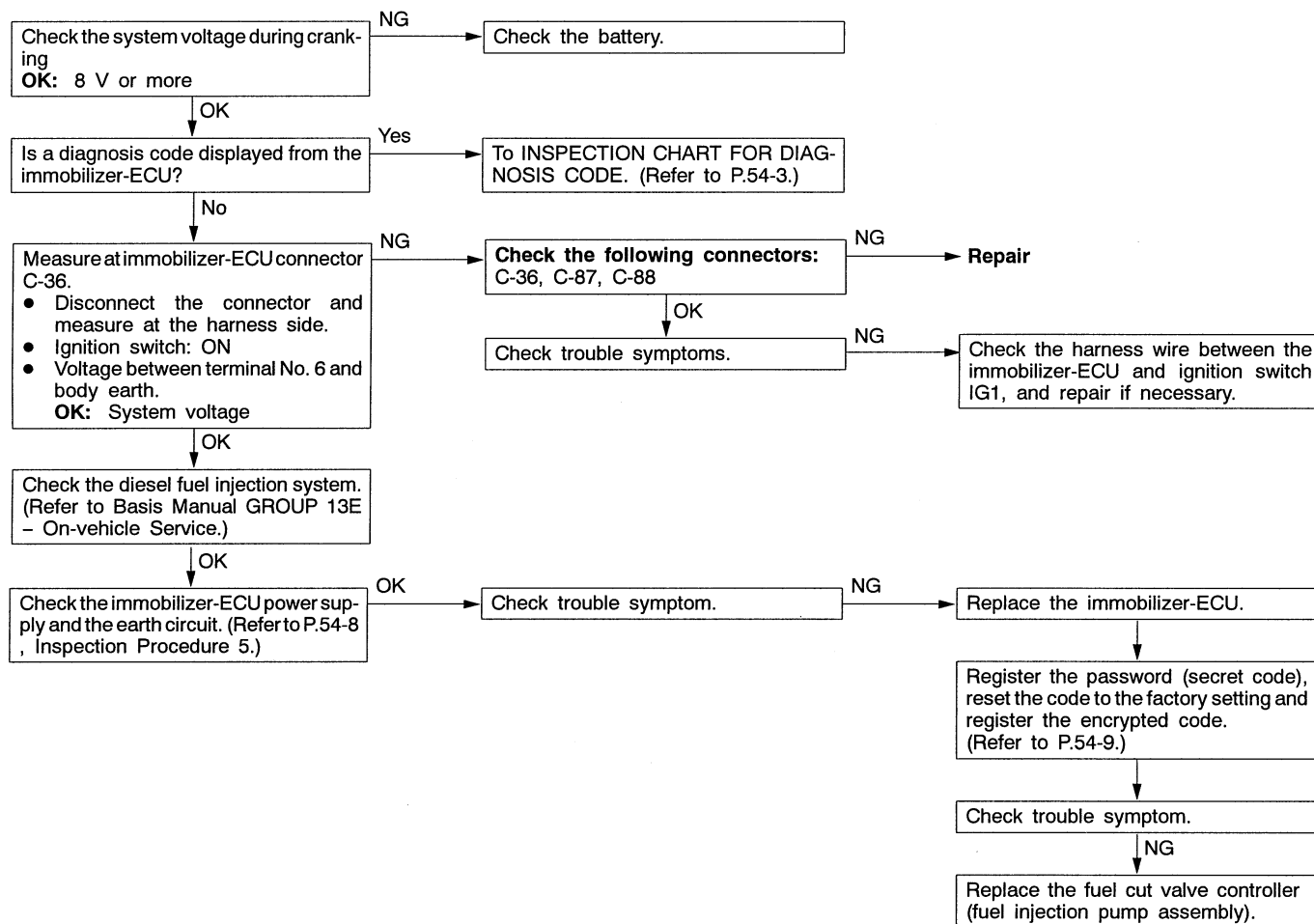


Inspection Procedure 3



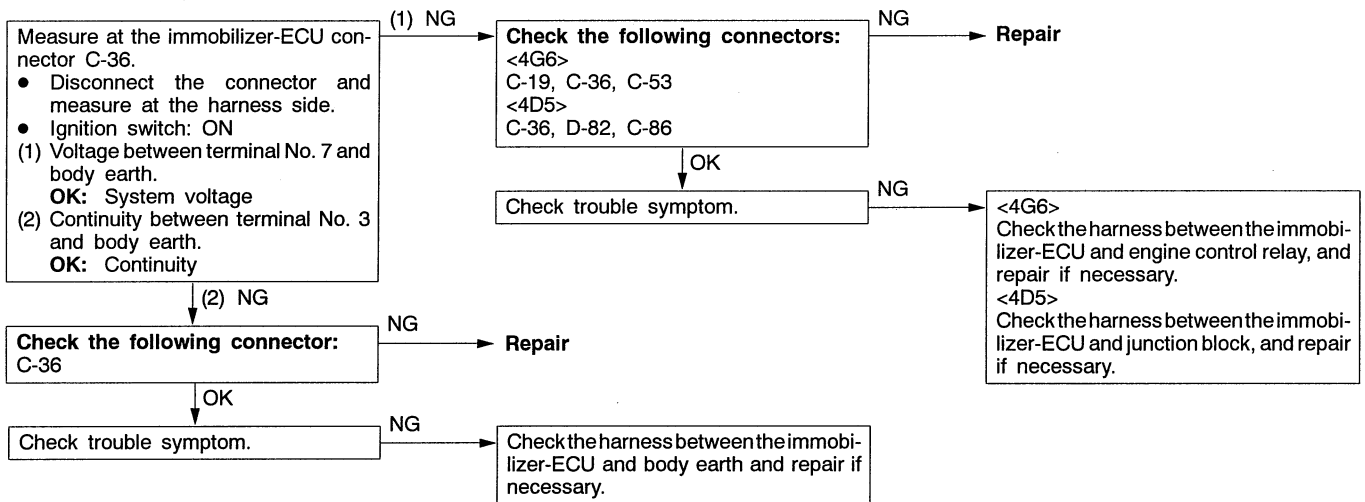
Inspection Procedure 4

Engine does not start (Cranking but no initial combustion). <4D5>	Probable cause
If no fuel injection, there might be a problem with the fuel injection system in addition to a malfunction of the immobilizer system. It is normal for this to occur if an attempt is made to start the engine using a key that has not been properly registered.	• Malfunction of diesel fuel injection system • Malfunction of immobilizer-ECU

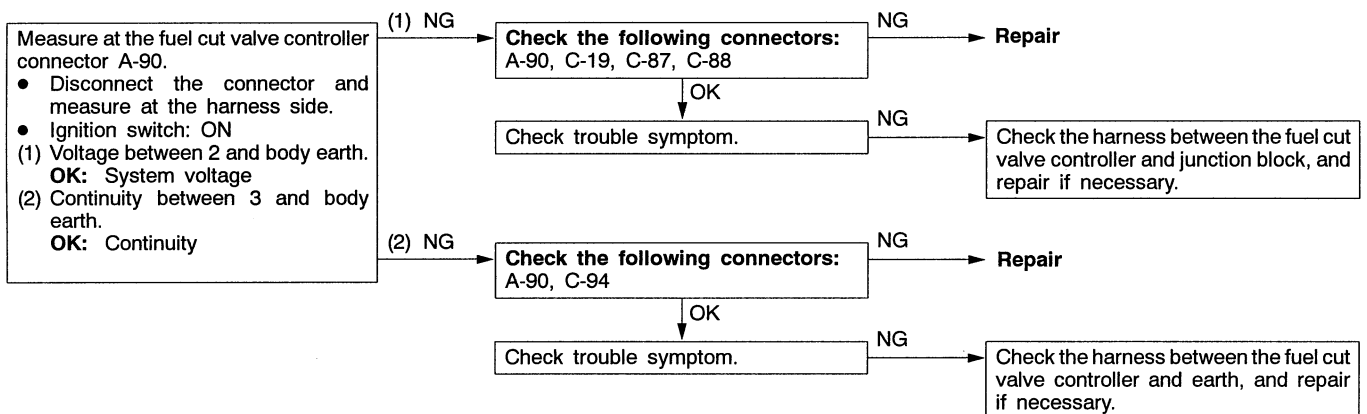


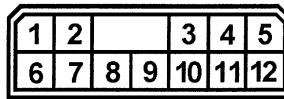
Inspection Procedure 5

Malfunction of the immobilizer-ECU power source and earth circuit



Inspection Procedure 6

Malfunction of the fuel cut valve controller power source and earth circuit
<4D5>

CHECK AT IMMOBILIZER-ECU**Terminal Voltage Check Chart**

20F0191

Terminal No.	Signal	Checking requirements	Terminal voltage
3	Immobilizer-ECU earth	Always	0 V
6	Ignition switch-IG <4D5>	Ignition switch: OFF	0 V
		Ignition switch: ON	System voltage
7	Immobilizer-ECU power supply <4G6>	Always	System voltage
	Immobilizer-ECU power supply <4D5>	Ignition switch: OFF or approx. 5 or more seconds after switch has been turned from ON to OFF.	0 V
		Ignition switch: ON or within approx. 5 seconds after switch has been turned from ON to OFF.	System voltage

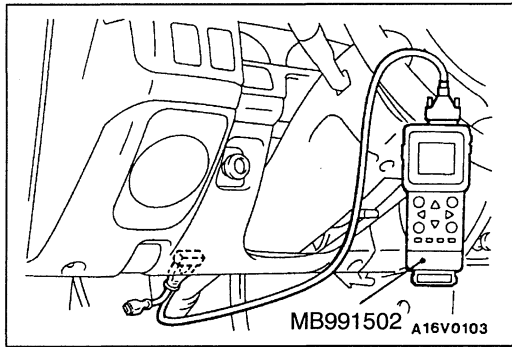
Encrypted Code Registration Method

If using an ignition key that has just been newly purchased, or if the immobilizer-ECU has been replaced, you will need to register the encrypted codes for each ignition key being used into the immobilizer-ECU. (A maximum of eight different encrypted codes can be registered.)

Moreover, when the immobilizer-ECU has been replaced, you will need to use the MUT-II to input the vehicle secret code and to register the password (secret code) that the user specifies into the immobilizer-ECU. (Refer to the "MUT-II REFERENCE MANUAL" or "MUT-II OPERATING INSTRUCTIONS")

Caution

Because registering of the encrypted codes is carried out after all previously-registered codes have been erased, you should have ready all of the ignition keys that have already been registered.



1. Connect the MUT-II to the diagnosis connector.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

2. Check that the diagnosis code No.54 is not being generated by the engine-ECU. If it is being generated check according to the Troubleshooting Procedures.

3. Use the ignition key that is to be registered to turn on the ignition switch.
4. Use the MUT-II to register the encrypted code. To register the second or subsequent key, leave the MUT-II connected and remove the first registered key. Within 5 seconds insert the key to be registered and turn on the ignition switch.

NOTE

After 5 seconds have elapsed, the key registration must be repeated from the beginning because the key registration mode terminates.

5. This complete the registration operation. Turn the ignition switch OFF and leave it for approx. 10 seconds.
6. Check that the engine can be started with each of the ignition keys.
7. Check the diagnosis output from the engine-ECU, and erase code No.54 if it appears.

Resetting the code to the factory setting <4D5>

Refer to the "MUT-II REFERENCE MANUAL" or "MUT-II OPERATING INSTRUCTIONS" on handling the MUT-II.

NOTE

Resetting the code to the factory setting refers to the process of clearing the identification code which has been recorded in the fuel cut valve controller and switching the controller to learning mode. After this resetting is carried out, the identification code in the immobilizer-ECU will be recorded in the controller the next time the ignition switch is turned to the ON.

1. Connect the MUT-II to the diagnosis connector.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

2. Turn on the ignition switch.
3. Use the MUT-II to reset the code to the factory setting.

NOTE

Approximately 16 minutes are required to complete resetting the code to the factory setting.

4. Disconnect the MUT-II.

