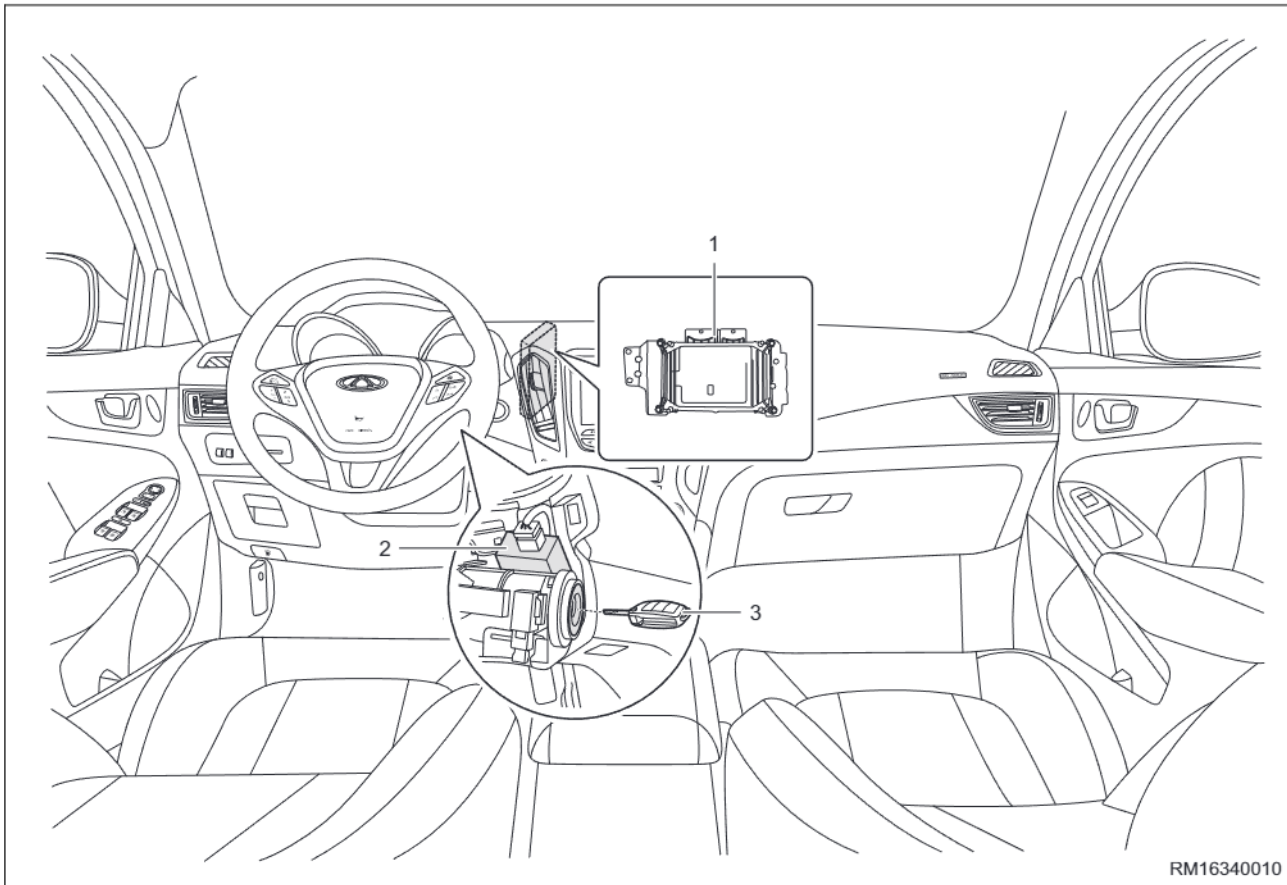


ENGINE IMMOBILIZER

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GENERAL INFORMATION

Description



34

1 - Engine Control Module (ECM)	2 - Immobilizer Control Module
3 - Ignition Key (Built-in Transponder)	

The vehicle is equipped with engine immobilizer system. The anti-theft features of the vehicle have improved due to the integration technology of ignition key identification and engine start-up. When the engine is started with unprogrammed ignition key, the engine immobilizer sends the detected signal to the engine control module and the engine control module outputs the prohibit starting command, thus effectively reduces the possibility of being stolen.

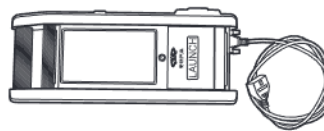
Operation

When the ignition key is inserted into the ignition switch, the immobilizer coil can detect the data information of the ignition key, and sends the data information to the immobilizer control module. The immobilizer control module communicates with the engine control module (ECM) via BCM, realizing codes verification and mutual certification. The battery supply power to the immobilizer control module continuously, allowing the immobilizer to save the trigger memory that has been generated and the malfunctioning content.

Tools

Special Tool

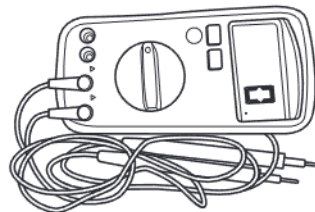
X-431 3G Diagnostic Tester



RCH0000001

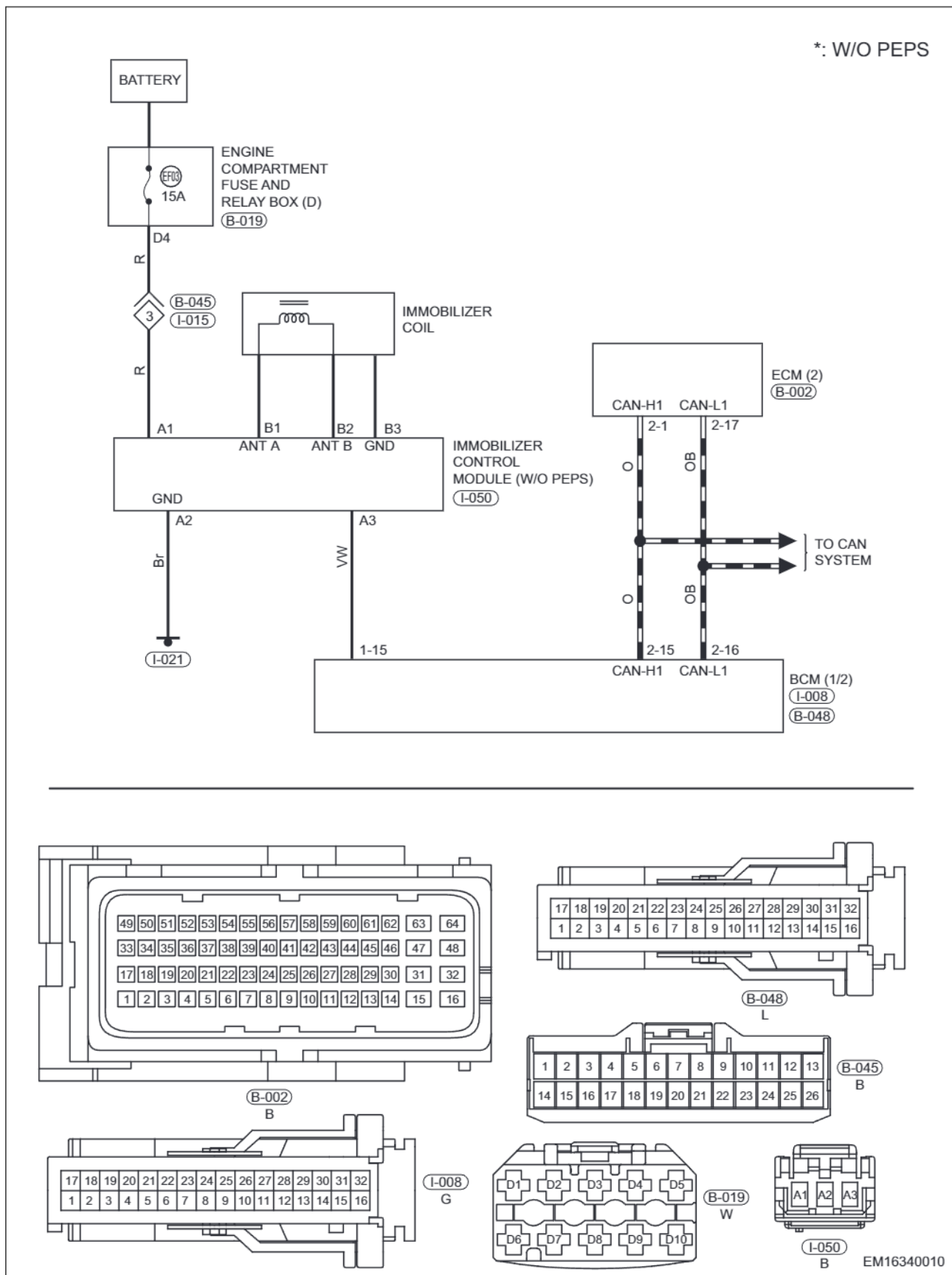
General Tool

Digital Multimeter

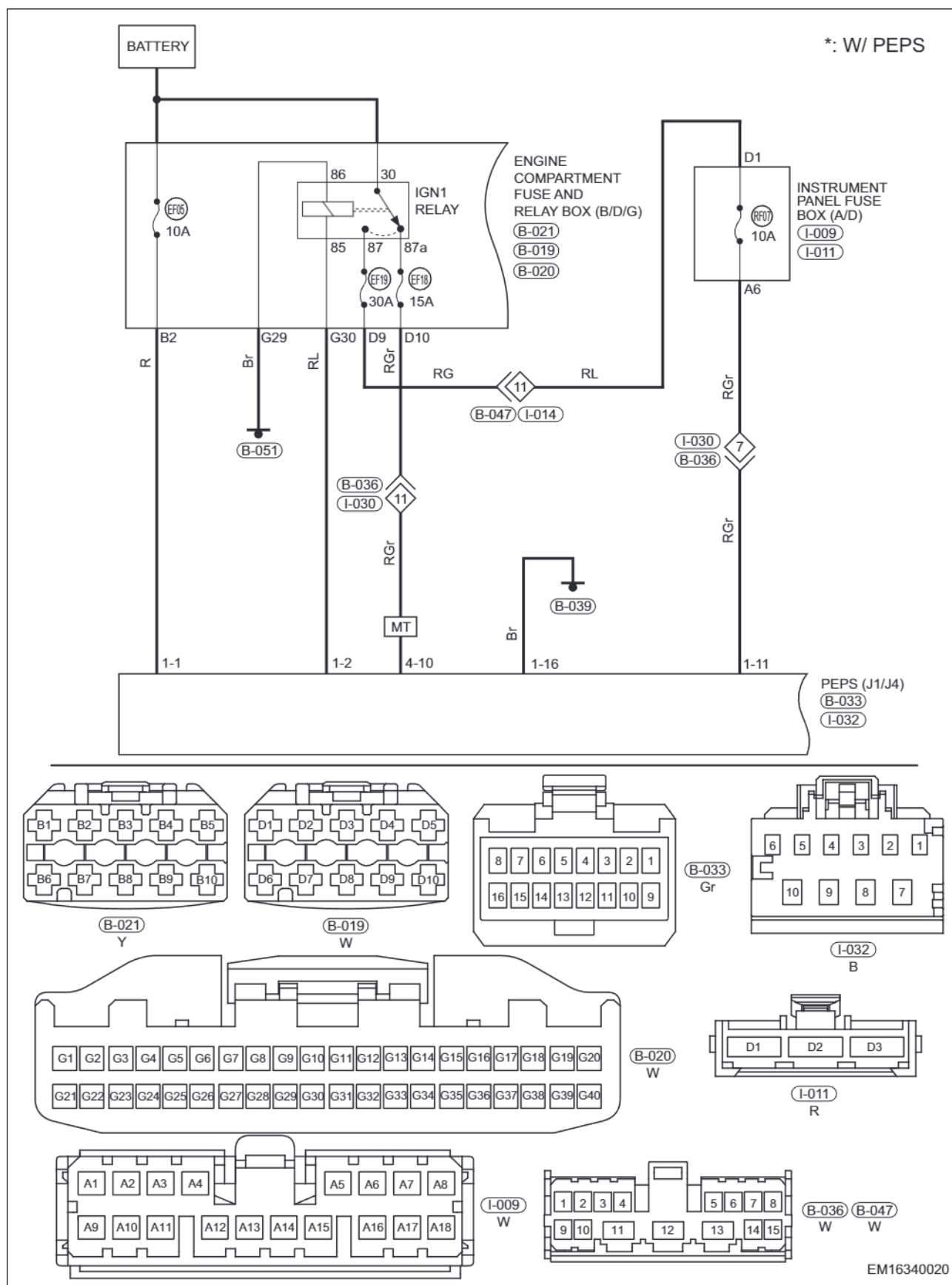


RCH0000002

Engine Immobilizer System (W/O PEPS)

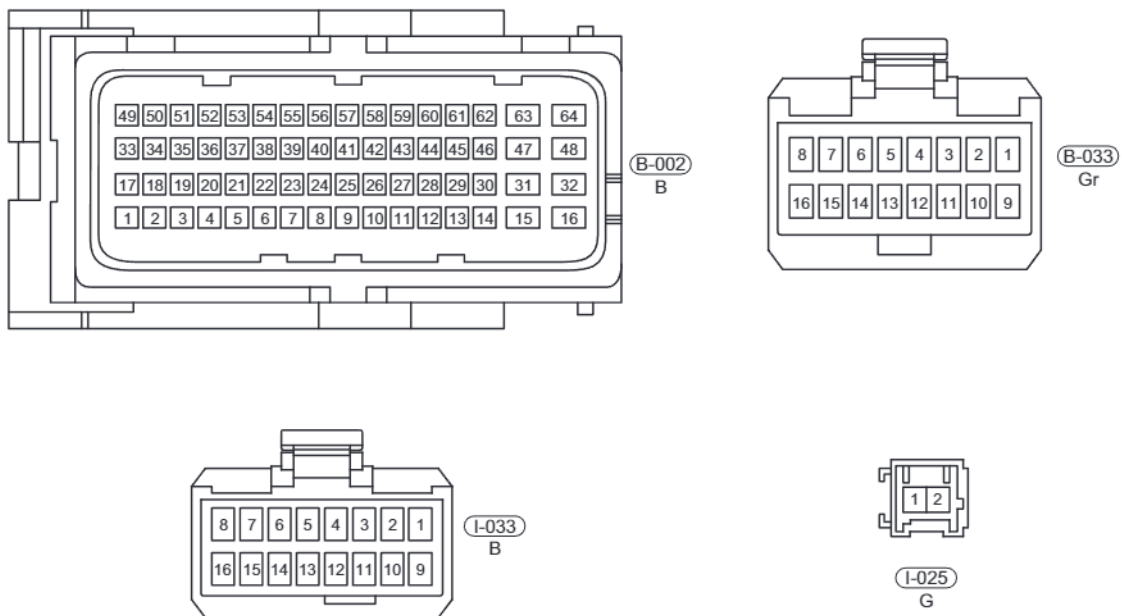
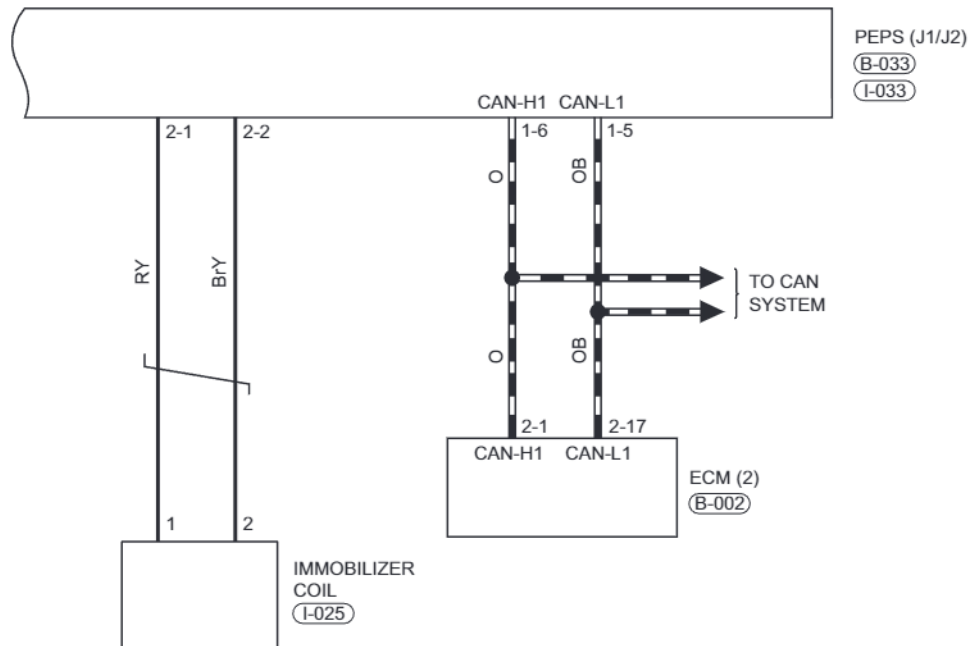


Engine Immobilizer System (W/ PEPS)



EM16340020

*: W/ PEPS



EM16340030

Immobilizer Control Module Terminal List

No.	Definition	Description
A1	BATT	Battery Power Supply
A2	GND	Ground
A3	-	BCM

DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:

Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair or adjust faulty components, or replace as necessary.

Symptom	Suspected Area	See page
Immobilizer system causes the engine cannot start or immobilizer system has failed	Fuse	53-37
	Ignition key (transponder)	-
	Wire harness or connector	-
	Immobilizer control module	34-26
	BCM	-
	ECM	06-281

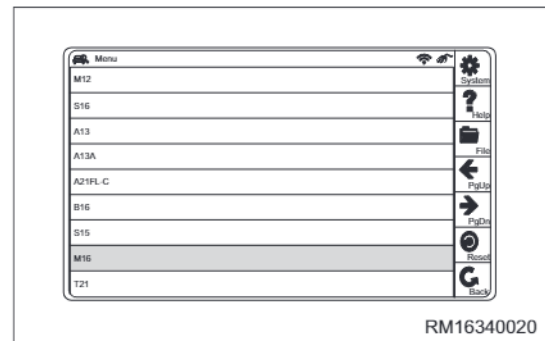
34

Engine Immobilizer System Match

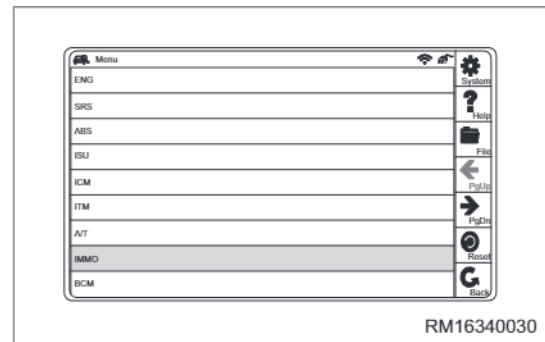
If the transponder, ECM or immobilizer control module is replaced, match the system again using diagnostic tester. When matching the engine immobilizer system, please send the VIN of the vehicle to After-Sales Service Department of Chery International to get the safety code.

The operation procedures are as follows:

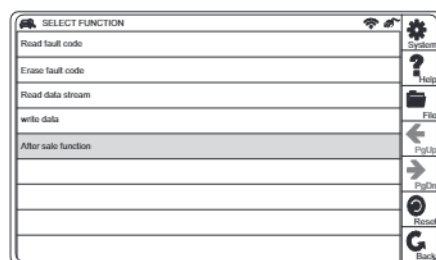
1. Connect the X-431 3G diagnostic tester to the Data Link Connector (DLC).
2. Turn ignition switch to ON.
3. Turn the X-431 3G diagnostic tester on, then select "T21".



4. Select "IMMO".

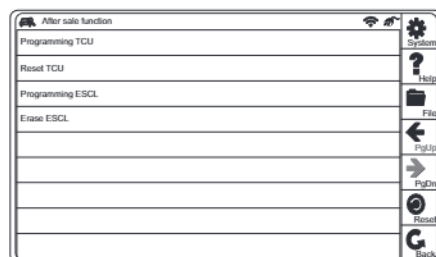
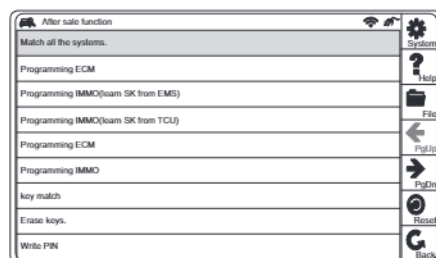


5. Select "After sale function".



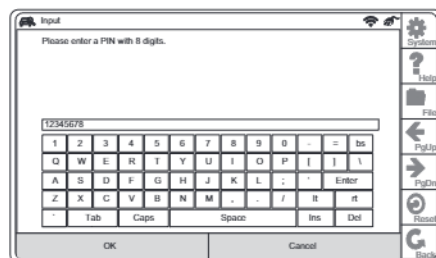
RM16340040

6. Select the required match item.



RM16340050

7. Input the Security Code or PIN Code (from Chery), and then click "OK".

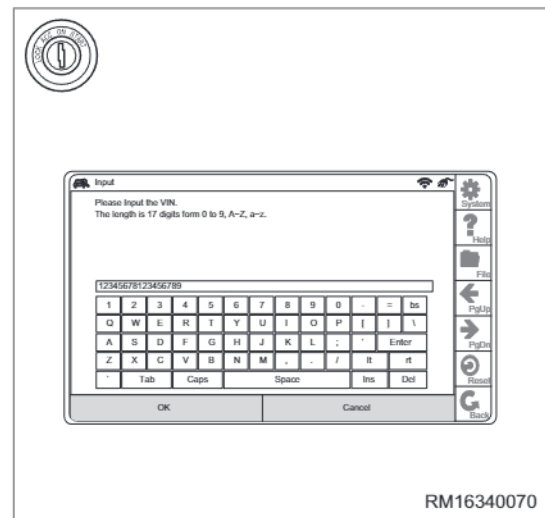


RM16340060

CAUTION

- The code in the illustration is only an example.

8. Input the VIN code, and then click "OK".



9. Match all the systems.

If the transponder, immobilizer control module and ECM have been all replaced, select "Match all the systems" and finish the procedures according the following steps.

- Input the VIN code to the diagnostic tester;
- Input the SC (Security Code) code to the diagnostic tester;
- Match the immobilizer control module with diagnostic tester;
- Match the ECM with diagnostic tester;
- Add the key;
- Clear the code.

10. Programming ECM.

If the ECM has been replaced, select "Programming ECM" and finish the procedures according the following steps.

- Input the VIN code to the diagnostic tester;
- Input the SC code to the diagnostic tester;
- Match the ECM with diagnostic tester;
- Input the service station code;
- Input program date.

11. Programming IMMO.

If the immobilizer control module has been replaced, select "Programming IMMO" and finish the procedures according the following steps.

- Input the VIN code to the diagnostic tester;
- Input the SC code to the diagnostic tester;
- Match the immobilizer control module with diagnostic tester;
- Input the service station code;
- Input program date.

CAUTION

- Add the old key ([See page 34-9](#)) after programming immobilizer control module.
- If both ECM and immobilizer control module are replaced at the same time, there are two cases, one, if the immobilizer control module has no communication problem, replace the ECM first, and then perform the ECM programming and match with immobilizer control module that need to be replaced, after that, replace the immobilizer control module and programming the IMMO, and finally, immobilizer control module matches the old key, there is no need to replace a new key. Two, if the immobilizer control module has communication problem, replace the ECM, immobilizer control module and key with new one and perform match all the systems.

12. Programming TCU.

If the TCU has been replaced, select "Programming TCU" and finish the procedures according the following steps.

- Input the VIN code to the diagnostic tester;
- Input the SC code to the diagnostic tester;
- Match the TCU with diagnostic tester;
- Input the service station code;
- Input program date.

13. Key match

- Add new key.
 - Input the SC code to the diagnostic tester;
 - Perform add new key procedure.
- Add old key.
 - Input the SC code to the diagnostic tester;
 - Perform add old key procedure.
- Erase key
 - Erase all key
 - Input the SC code to the diagnostic tester;
 - Perform erase all key procedure.
 - Erase key X
 - Input the SC code to the diagnostic tester;
 - Perform erase key X (X = 1, 2, 3, 4, 5) procedure.

Diagnostic Help

- Connect X-431 3G diagnostic tester (the latest version) to the Data Link Connector (DLC), and make it communicate with the vehicle electronic module through data network.
- Confirm that malfunction is current, and carry out the diagnostic test and repair procedures.
- If DTC cannot be deleted, the malfunction is current.
- Only use a digital multimeter to measure the voltage of the electrical system.
- Refer to any Technical Bulletin that may apply to the malfunction.
- Visually check related wire harness.
- Check and clean all the immobilizer control module ground related to the current DTC.
- If multiple trouble codes were set, use the circuit diagrams and look for any common ground circuit or power supply circuit applied to the DTC.

Intermittent DTC Troubleshooting

If the malfunction is intermittent, perform the following:

- Check if connectors are loose.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Monitor the X-431 3G diagnostic tester (the latest version) data that is related to this circuit.
- Wiggle related wire harness and connector and observe if the signal is interrupt in the related circuit.
- If possible, try to duplicate the conditions under which the DTC was set.
- Look for data that has changed or the DTC to reset during the wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Inspect sensor and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- A data recorder and/or oscilloscope can be helpful in diagnosing the intermittent malfunction.

Ground Inspection

Groundings are very important to the proper operation of the electrical equipment and circuits. Groundings are often exposed to moisture, dirt and corrosive elements. Corrosion (rust) may form additional resistance. This additional resistance will change the way in which a circuit works.

Electronically controlled circuits are very sensitive to proper grounding. A loose or corroded ground can affect the electronically controlled circuit. Perform the following operations when checking the groundings:

1. Remove the ground bolt or nut.
2. Check all the contact surfaces for tarnish, dirt, rust, etc.
3. Clean as necessary to ensure that the contacting is in a good condition.
4. Reinstall the bolt or nut securely.
5. Check for the accessories which may interfere with the ground circuit.
6. If several wires are crimped into one ground terminal, check for proper crimps. Make sure that all the wire harnesses are clean, securely fastened and good contacted without crimping any excessive insulation coat.

Diagnostic Trouble Code (DTC) Chart

DTC Code	DTC Definition
B1300	Internal Control Module EEPROM Error
B1301	Immobilizer and ECM authentication failed
B1302	VIN Not Programmed
B1303	The antenna communication is disturbed
B1304	None transponder was detected
B1305	Immobilizer has none key was storage
B1306	Security code was not programmed
U0100	Lost communication With ECM authentication frame
U0073	Control Module communication Bus Off

DTC	B1300	Internal Control Module EEPROM Error
-----	-------	--------------------------------------

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
B1300	Internal Control Module EEPROM Error	Ignition switch ON	Immobilizer Control Module

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester ([See page 34-9](#)).

Diagnosis Procedure

1	Replace immobilizer control module
---	------------------------------------

OK

System is operating normally

DTC	B1301	Immobilizer and ECM authentication failed
------------	--------------	--

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
B1301	Immobilizer and ECM authentication failed	Ignition switch ON	• Wire harness or connector • Immobilizer control module • ECM

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

34

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester ([See page 34-9](#)).

Diagnosis Procedure

1	Check ground connection
----------	--------------------------------

- Turn ignition switch to LOCK.
- Loosen and retighten the ground bolt or nut.
- Check the installation position of the ground connection.

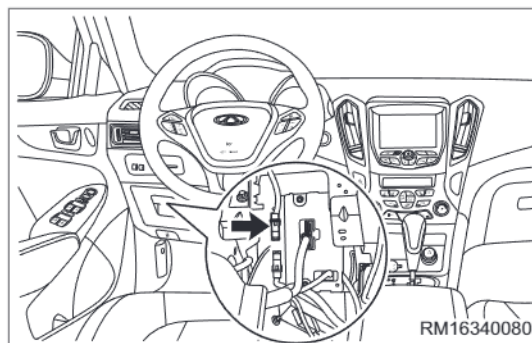
NG

Repair or replace ground connection

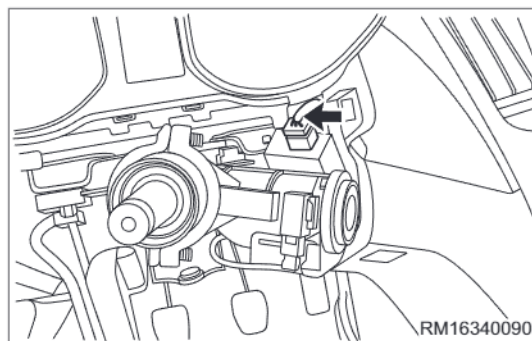
OK

2 Check body control module (BCM) connector

- Turn ignition switch to LOCK.
- Disconnect the BCM connector I-008.
- Check if connector is damaged.

NG**Repair or replace connector if necessary****OK****34****3 Check immobilizer control module connector**

- Turn ignition switch to LOCK.
- Disconnect the immobilizer control module connector I-050.
- Check if connector is damaged.

NG**Repair or replace connector if necessary****OK****4 Replace immobilizer control module**

- Replace the immobilizer control module and match it with X-431 3G diagnostic tester ([See page 34-9](#)).
- Reconnect all the wire harness connectors that are disconnected.
- Check if DTC still exists.

NG**Replace BCM****OK****System is operating normally**

DTC	B1302	VIN Not Programmed
------------	--------------	---------------------------

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
B1302	VIN Not Programmed	Ignition switch ON	Immobilizer control module

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

34

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester (See page 34-9).

Diagnosis Procedure

1	Write VIN data
----------	-----------------------

- a. Using X-431 3G diagnostic tester, write the VIN data (See page 34-9).

NG

Replace immobilizer control module

OK

System is operating normally

DTC	B1303	The antenna communication is disturbed
------------	--------------	---

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
B1303	The antenna communication is disturbed	Ignition switch ON	- Wire harness or connector - Immobilizer control module

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester (See page 34-9).

Diagnosis Procedure

1	Replace immobilizer control module
----------	---

NG	Repair or replace harness if necessary
-----------	---

OK

System is operating normally

DTC	B1304	None transponder was detected
------------	--------------	--------------------------------------

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
B1304	None transponder was detected	Ignition switch ON	• Transponder • Wire harness or connector • Immobilizer control module

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

34

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester ([See page 34-9](#)).

Diagnosis Procedure

1	Start the engine with another ignition key
----------	---

- Try to restart the engine with another ignition key.
- Check if the engine can be started.

NG

Go to next step 3

OK

2	Replace first ignition key or transponder
----------	--

- Replace the first ignition key or transponder in it, and match it ([See page 34-9](#)).

OK



3	Replace immobilizer control module
---	------------------------------------

NG	Repair or replace harness if necessary
----	--

OK

System is operating normally

DTC	B1305	Immobilizer has none key was storage
------------	--------------	---

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
B1305	Immobilizer has none key was storage	Ignition switch ON	- Wire harness or connector - Immobilizer control module

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

34

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester ([See page 34-9](#)).

Diagnosis Procedure

1	Match ignition key
----------	---------------------------

- a. Using the X-431 3G diagnostic tester, match the ignition key ([See page 34-9](#)).

NG

Replace immobilizer control module

OK

System is operating normally

DTC	B1306	Security code was not programmed
------------	--------------	---

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
B1306	Security code was not programmed	Ignition switch ON	- Wire harness or connector - Immobilizer control module

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester ([See page 34-9](#)).

Diagnosis Procedure

1	Write security code
----------	----------------------------

- a. Using the X-431 3G diagnostic tester, write the security code ([See page 34-9](#)).

NG

Replace the immobilizer control module

OK

System is operating normally

DTC	U0100	Lost communication With ECM authentication frame
------------	--------------	---

DTC	U0073	Control Module communication Bus Off
------------	--------------	---

DTC Code	DTC Definition	DTC Detection Conditions	Possible Causes
U0100	Lost communication With ECM authentication frame	Ignition switch ON	- Wire harness or connector - ECM
U0073	Control Module communication Bus Off	Ignition switch ON	CAN Line

DTC Confirmation Procedure

Confirm that battery voltage is between 11 and 14 V before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the TCU.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON, and then select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

CAUTION

- If the ECM or immobilizer control module is replaced, match the system with the X-431 3G diagnostic tester ([See page 34-9](#)).

Diagnosis Procedure

1	Check the ground connection
----------	------------------------------------

- Turn ignition switch to LOCK.
- Loosen and retighten the ground bolt or nut.
- Check the installation position of the ground connection.

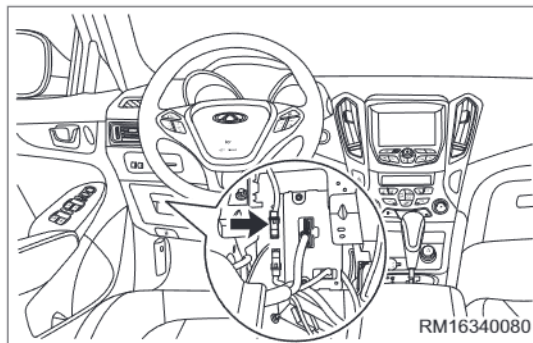
NG

Repair or replace ground connection

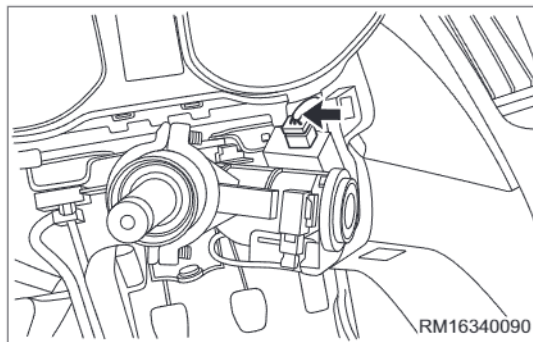
OK

2 Check body control module (BCM) connector

- a. Turn ignition switch to LOCK.
- b. Disconnect the BCM connector I-008.
- c. Check if the connector is damaged.

NG**Repair or replace connector if necessary****OK****34****3 Check immobilizer control module connector**

- a. Turn ignition switch to LOCK.
- b. Disconnect the immobilizer control module connector I-050.
- c. Check if the connector is damaged.

NG**Repair or replace connector if necessary****OK**

4

Check immobilizer control module and BCM communication circuit

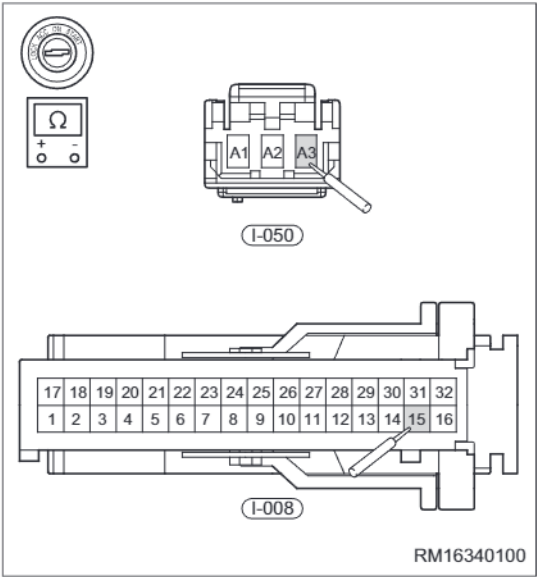
- a. Turn the ignition switch to LOCK.
- b. Disconnect the immobilizer control module connector I-050 and BCM connector I-008.
- c. Check the wire harness between terminals of immobilizer control module and BCM.

Check for open

Multimeter Connection	Condition	Specified Condition
I-050 (A3) - I-008 (15)	Always	Continuity

NG

Repair or replace CAN BUS line



OK

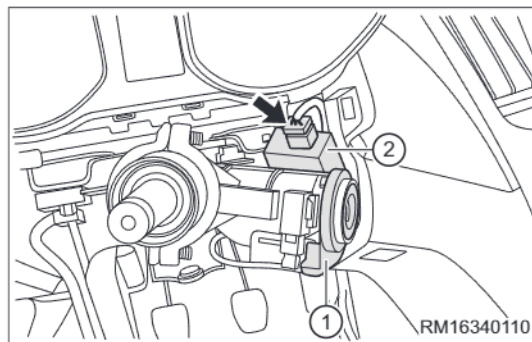
System is operating normally

ON-VEHICLE SERVICE

Immobilizer Control Module

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the combination switch cover ([See page 28-28](#)).
4. Disconnect the connector (arrow) and remove the ignition switch light (1) and immobilizer control module (2).



Installation

Installation is in the reverse order of removal.

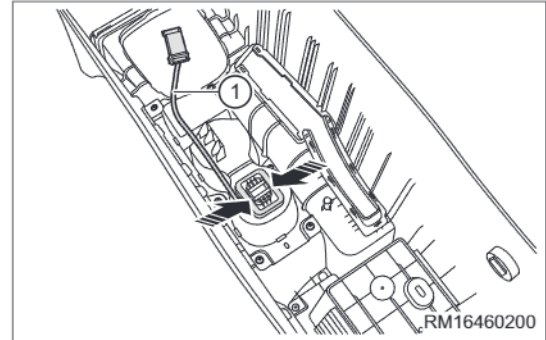
CAUTION

- Install the connectors in place.

Immobilizer Coil (W/PEPS)

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the auxiliary fascia console assembly ([See page 46-10](#)).
4. Remove the immobilizer coil.
 - a. Press the claw in the direction of arrow as shown in the illustration.
 - b. Remove the immobilizer coil (1) from the auxiliary fascia console.

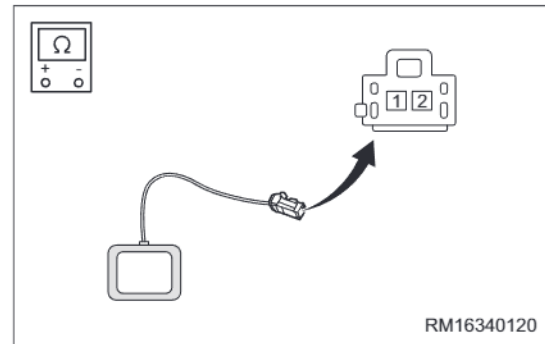


34

Inspection

1. Measure the immobilizer coil resistance.

Multimeter Connection	Condition	Specified Condition
1 - 2	Always	12.2 Ω



Installation

Installation is in the reverse order of removal.

