

ENGINE IMMOBILIZE

GENERAL INFORMATION	34-3	Diagnosis Procedure	34-6
Overview	34-3	DTC Confirmation Procedure	34-8
Description	34-3	Diagnostic Trouble Code (DTC) Chart	34-34
Components Description	34-3	Immobilizer Network Fault Code	34-35
Operation	34-3	ON-VEHICLE SERVICE	34-36
Specifications	34-4	Transponder	34-36
Tools	34-4	Removal	34-36
Anti-theft Matching and Diagnostic		Installation	34-37
Tester Operation Description	34-4	IMMO (BCM)	34-38
DIAGNOSIS & TESTING	34-6	Removal	34-38
Diagnostic Content	34-6	Installation	34-38
Problem Symptoms Table	34-6		

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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GENERAL INFORMATION

Overview

Description

Engine immobilizer system consists of key assembly (including transponder), anti-theft coil, BCM and engine management system (ECM). BCM is the main body, which used for communication between transponder and engine management system. When ignition switch is turned ON with the key, if authentication of engine controller to BCM and transponder is successful within specified time, engine management system will unlock engine to enable starting vehicle.

Components Description

Body Control Module

Main function of anti-theft control is performed in BCM. In order to describe expediently, only engine immobilizer function of BCM is described in this document. IMMO is used to indicate immobilizer function, and hardware represented by IMMO is BCM. This is an electronic control module that contains a microprocessor and a variety of semiconductor components. It stores authentication algorithm with transponder and ECM, and the necessary data of system normal operation and after-sale diagnostic services, such as key information, matching information, DTCs and so on. It controls the implementation mechanism of immobilizer function, contacts each component to coordinate work and sends commands and data.

Transponder and Anti-theft Coil

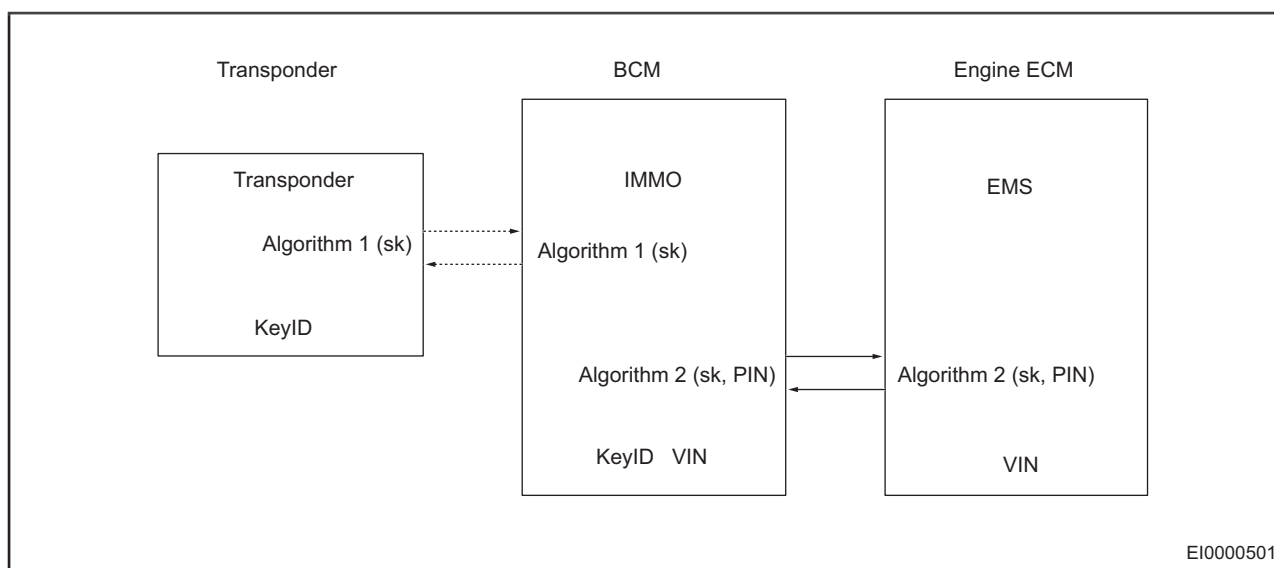
There is a transponder in each automobile key. It is a passive device that does not require battery power. During system operation, this component completes the encryption authentication to IMMO together with anti-theft coil. Effective transmission distance of transponder information is 2 cm ~ 3 cm.

Anti-theft coil is installed on ignition switch, it supplies energy to signal transmission between BCM and transponder by connecting wire harness and BCM.

Engine Control Module (ECM)

Engine control module is the service party of system. It implements the verification algorithm of IMMO, stores matching information, and makes an authentication request when powered on.

Operation



Insert the key to ignition switch and turn it from OFF position to ON position, then IMMO will enter wireless authentication status, and it outputs energy and data to transponder via anti-theft coil. And ECM will also make authentication request to IMMO. IMMO does not respond to ECM immediately after receiving the ECM authentication request, but it will respond to ECM after authentication of IMMO and transponder is completed. After transponder receives the correct wireless signal, it will perform encryption authentication together with IMMO. If the authentication is successful, IMMO will reply to the encrypted authentication initiated by ECM; If the authentication fails, IMMO does not reply to any information. After receiving the response from IMMO, ECM performs encryption authentication again. If the authentication is successful, ECM allows ignition; If the authentication fails, ECM does not start the engine.

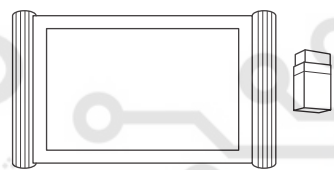
Specifications

Torque Specifications

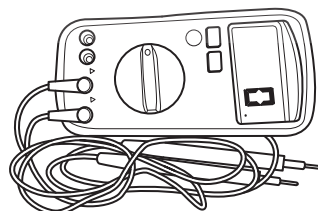
Description	Torque (N·m)
Instrument Panel Relay Box Fixing Bolt	0.7 ± 0.2
BCM Fixing Bolt	0.7 ± 0.2

34 Tools

Special Tool

Diagnostic Tester	 001
-------------------	--

General Tool

Digital Multimeter	 002
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Anti-theft Matching and Diagnostic Tester Operation Description

Warning:

- Never perform reset operation to any control module privately during operation (unless under the guidance of the after-sales service department).
- If diagnostic tester is PC diagnostic tester, the version must be 3.31 or higher, version of X-431 3G diagnostic tester must be 56.80 or higher.
- When wrong security codes are input continuously, turn ignition switch to ON and input it again after waiting for a specified time.

For example: if entering wrong security code twice continuously, but wrong security code is entered again after 10 seconds, internal counter will not record the current number and keep original number. If ignition switch is turned to OFF without waiting specified time, waiting time will be reset to 0 and recount, so be sure to wait and turn ignition switch to ON.

Waiting Time for Continuously Inputting Wrong Code

Number for Inputting Wrong Code	Recorded Number by Internal Calculator	Waiting Time
0	0	0 s
1	1	10 s
2	2	10 s
3	3	10 min
4	4	20 min
5	5	40 min
6	6	80 min
7	7	160 min
8	8	320 min
9	9	640 min
10	10	1280 min
> 10	10	1280 min

Management of Anti-theft System Security Code (PIN\SC)

Security code is the password that related to the safety of vehicle. It has been set at the delivery of each vehicle. It is controlled by the OEM and it corresponds to the vehicle identification number. The repair station is responsible for identifying whether the identity of vehicle and owner is legal. If it is legal, please apply for PIN code from Chery Automobile after-sales service management system. After confirming the maintenance qualification of repair station, OEM service center will approve the safety code. OEM and repair station must ensure the safety of security code.

34



DIAGNOSIS & TESTING

Diagnostic Content

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
Vehicle cannot be started	Vehicle wire harness
	Anti-theft coil
	Key assembly
	IMMO (BCM)
	ECM
	CAN network
Diagnostic tester cannot communicate with IMMO	Vehicle wire harness
	Vehicle diagnostic interface
	IMMO
	CAN network
Diagnostic tester cannot communicate with ECM	Vehicle wire harness
	Vehicle diagnostic interface
	ECM
	CAN network
Key cannot be matched	Vehicle wire harness
	Anti-theft coil
	Key assembly
	IMMO

Diagnosis Procedure

Hint:

Use following procedures to troubleshoot the brake control system.

1	Vehicle brought to workshop
---	-----------------------------

Result

Proceed to
NEXT

NEXT

2	Check battery voltage
---	-----------------------

Check if battery voltage is normal.

OK

Standard voltage: Not less than 12 V

Result

Proceed to
OK
NG

NG

Check and repair battery

OK

3 Customer problem analysis

Result

Proceed to
NEXT

NEXT

34

4 Check and clear DTCs

Result

Proceed to
NEXT

NEXT

5 Confirm and reappear problem

Result

Proceed to
No DTC
Current DTC
History DTC

History DTC

6 Problem Repair (No DTC)

Result

Proceed to
NEXT

NEXT

Go to step 8

7 Troubleshoot according to Diagnostic Trouble Code (DTC) chart

Result

Proceed to
NEXT

NEXT

Go to step 8

8 Troubleshoot according to Problem Symptoms Table

Result

Proceed to
NEXT

NEXT

9 Conduct test and confirm malfunction has been repaired

Result

Proceed to
NEXT

NEXT

End

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

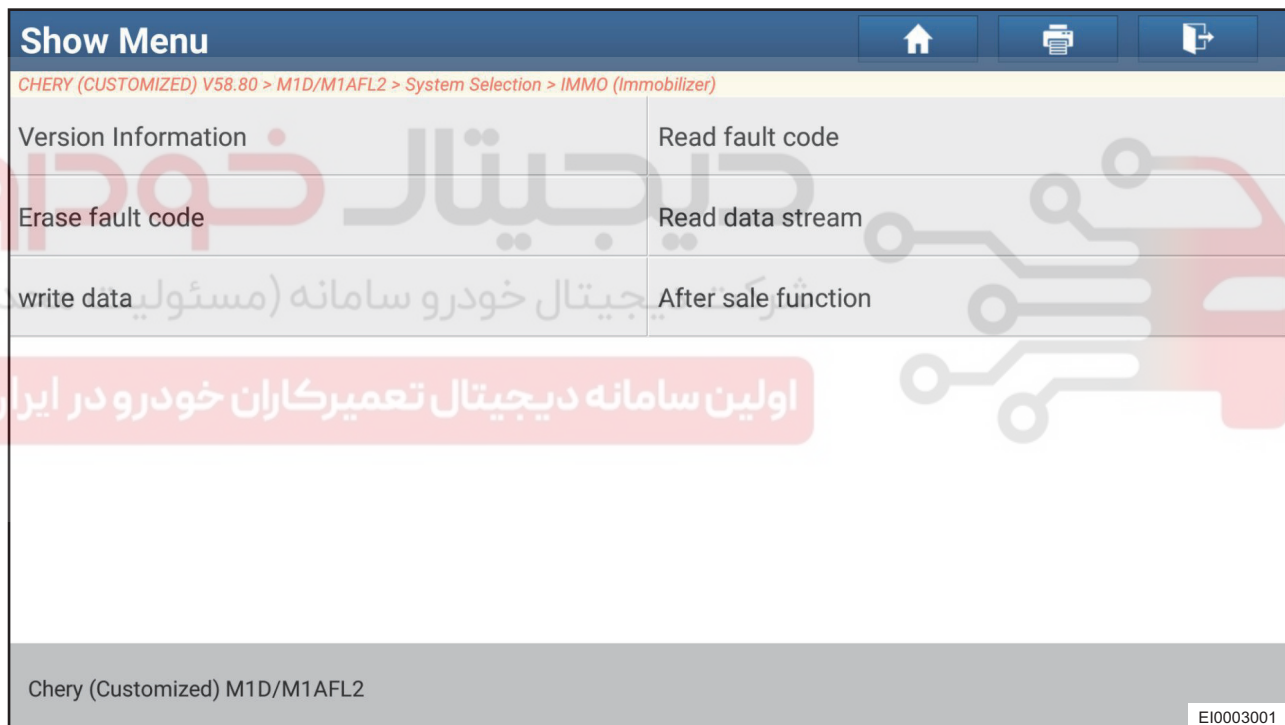
- Turn ENGINE START STOP switch to OFF.
- Connect diagnostic tester (the latest software) to diagnostic interface.
- Turn ENGINE START STOP switch to ON.
- Use the diagnostic tester to record and clear stored DTCs.
- Turn ENGINE START STOP switch to OFF and wait several seconds.
- Using the diagnostic tester, select Read DTCs.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If no DTC is detected, malfunction indicated by DTC is intermittent Please refer to Intermittent DTC Troubleshooting.

System Diagnostic

1. Description
 - (a) Engine immobilizer data and Diagnostic Trouble Code (DTC) can be read from OBD diagnostic interface of vehicle. When system seems to be malfunctioning, use diagnostic tester to check for a malfunction and perform repairs.
2. Check battery voltage
 - (a) Standard voltage:
Not less than 12 V
If voltage is below 12 V, check and repair battery before proceeding to next step.

DTC Check/Clear

1. Check for DTCs
 - (a) Connect diagnostic tester to diagnostic interface.
 - (b) Turn the ENGINE START STOP switch to ON, and turn on the diagnostic tester.
 - (c) Select following menu items to read the current malfunctions: M1D/M1AF12 / IMMO (Immobilizer) / Read DTCs.
 - (d) Read DTCs by following indications on tester screen.
2. Clear DTCs
 - (a) Connect diagnostic tester to diagnostic interface.
 - (b) Turn the ENGINE START STOP switch to ON, and turn on the diagnostic tester.
 - (c) Select following menu items: M1D/M1AF12 / IMMO (Immobilizer) / Clean DTCs.
 - (d) Clear DTCs by following the directions on tester screen.
- Read data stream
 - (e) Connect diagnostic tester, turn ENGINE START STOP switch to ON, select "M1D/M1AF12" model to enter System Selection.
3. Enter next screen and click "IMMO (Immobilizer)"
4. Enter next screen and click "Read data stream"



5. Enter next screen and click "Immobilizer status"

Show Menu

CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)

Immobilizer status	Transponder Statusd
ECM status	TCU status
ESCL status	

Chery (Customized) M1D/M1AFL2

EI0004001

6. Diagnostic tester screen is shown in figure at this time

Data Stream

CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)

Name	Value	Unit	
Ignition	on		
Immobilizer condition	Immobilizer not in delivery condition		
Immobilizer security code	programmed		
Last time IMMO and Key authentication	failed		
Last time IMMO authentication ECM	succeeded		
Last time IMMO authentication TCU	succeeded		

(1 / 1)

Chery (Customized) M1D/M1AFL2

Graph Report Record Help

EI0005001

Data Stream			
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)			
Name	Value	Unit	
Last time IMMO authentication ECM	succeeded		
Last time IMMO authentication TCU	succeeded		
number of key was learnt	2		
The number of unsuccessful security access	0		
VIN	programmed		
Wait loop And Security code	Wait loop is inactive, the Security code can be en (1 / 1)		
Chery (Customized) M1D/M1AFL2		Graph	Report
		Record	Help
		EI0006001	

7. Click "Transponder status" to return

Show Menu	
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)	
Immobilizer status	Transponder Statusd
ECM status	TCU status
ESCL status	
Chery (Customized) M1D/M1AFL2	
EI0007001	

8. Diagnostic tester screen is shown in figure at this time

Data Stream			
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)			
Name	Value	Unit	
Last received transponder Id at a transponder position 4	not programmed		
Last received transponder Id at a transponder position 5	not programmed		
Legal Transponder	No Legal Transponder detected		
Ring antenna	succeeded		
SK	correct		
Transponder	No Transponder detected (1 / 2)		
Chery (Customized) M1D/M1AFL2		Graph	Report
		Record	Help
		EI0007101	

Data Stream			
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)			
Name	Value	Unit	
Transponder ID	Transponder ID not in the Immobilizer		
Transponder Id at transponderat transponder position 1	programmed		
Transponder Id at transponderat transponder position 2	programmed		
Transponder Id at transponderat transponder position 3	not programmed		
Transponder Id at transponderat transponder position 4	not programmed		
Transponder Id at transponderat transponder position 5	not programmed (2 / 2)		
Chery (Customized) M1D/M1AFL2		Graph	Report
		Record	Help
		EI0007301	

Data Stream			
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)			
Name	Value	Unit	
Last received transponder Id at at a transponder position 4	not programmed		
Last received transponder Id at at a transponder position 5	not programmed		
Legal Transponder	No Legal Transponder detected		
Ring antenna	succeeded		
SK	correct		
Transponder	No Transponder detected (1 / 2)		
Chery (Customized) M1D/M1AFL2		Graph	Report
		Record	Help
		EI0007401	

34

Data Stream			
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)			
Name	Value	Unit	
Last received transponder Id at at a transponder position	not programmed		
Last received transponder Id at at a transponder position 1	not programmed		
Last received transponder Id at at a transponder position 2	not programmed		
Last received transponder Id at at a transponder position 3	not programmed		
Last received transponder Id at at a transponder position 4	not programmed		
Last received transponder Id at at a transponder position 5	not programmed		
		(1 / 2)	
Chery (Customized) M1D/M1AFL2		Graph	Report
		Record	Help
		EI0007501	

9. Click "ECM status" to return

Show Menu

CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)

Immobilizer status	Transponder Statusd
ECM status	TCU status
ESCL status	

Chery (Customized) M1D/M1AFL2

EI0008001

10. Diagnostic tester screen is shown in figure at this time

Data Stream

CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)

Name	Value	Unit
ECM Secret Key is programmed	YES	
ECM Security code is programmed	YES	
ECM staus	ECM is programmed	
ECM VIN code is programmed	YES	
Ignition staus	ON	
Immo-function is supported	YES	

(1 / 2)

Chery (Customized) M1D/M1AFL2

Graph Report Record Help

EI0009001

Data Stream			
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)			
Name	Value	Unit	
Ignition staus	ON		
Immo-function is supported	YES		
Last ECM authentication IMMO failed	NO		
Latest level access(27 03) SecurityAccess is successful	NO		
Latest level access(27 05) SecurityAccess is successful	NO		
Numbers of failed level access(27 05) SecurityAccess	(1 / 2) 0		
Chery (Customized) M1D/M1AFL2		Graph	Report
		Record	Help
		EI0010001	

Data Stream			
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)			
Name	Value	Unit	
Wait loop of level access(27 05) SecurityAccess is active	NO		
		(2 / 2)	
Chery (Customized) M1D/M1AFL2		Graph	Report
		Record	Help
		EI0010701	

Data Stream Explanation:

Information	Description
Ignition status	Whether ignition switch is turned ON
Engine module match information	Whether ECM is in delivery status
	Whether ECM VIN code is programmed
	Whether ECM PIN code is programmed
	Whether ECM Secret Key is programmed
Authentication status of ECM	Whether last ECM authentication IMMO is successful
Tachometer is abnormal	Engine speed sensor

Information	Description
Problem record of ECM	Whether latest level access (27 03) SecurityAccess is successful
	Whether latest level access (27 05) SecurityAccess is successful
	Whether IMMO function is supported
	Whether wait loop of level access (27 05) SecurityAccess is active
	Number of failed level access (27 05) SecurityAccess

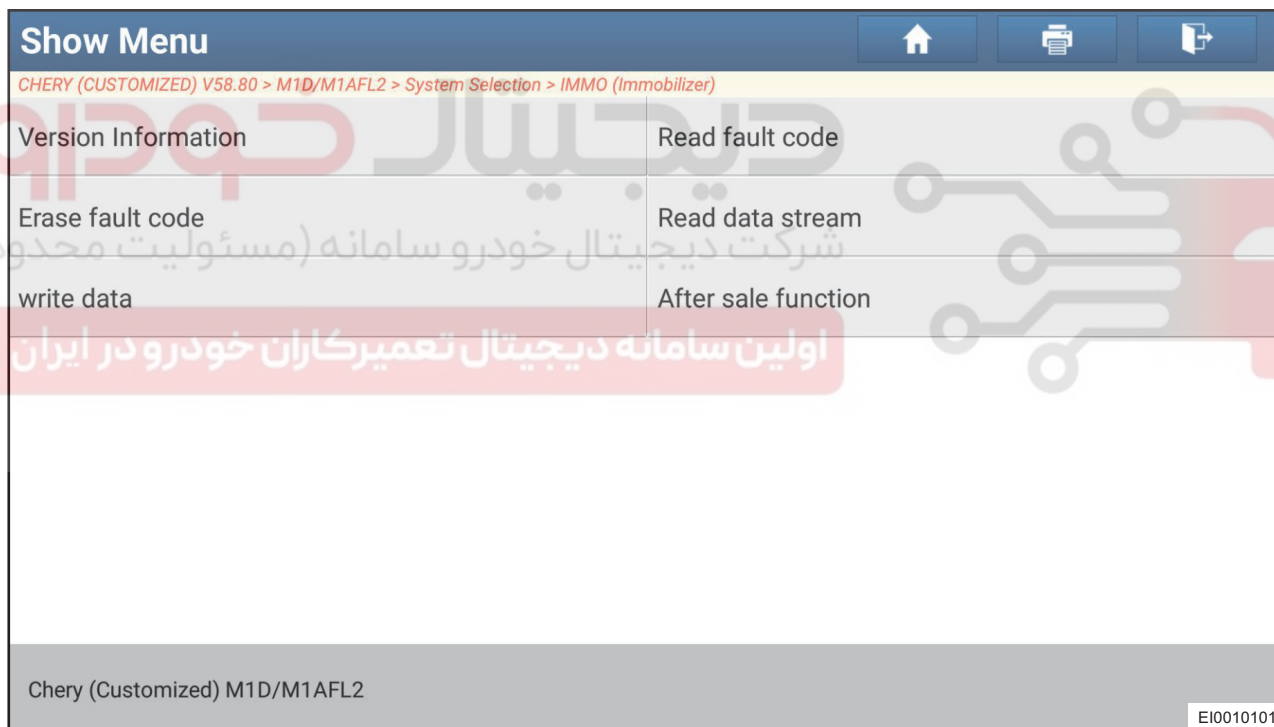
"Latest level access (27 05) SecurityAccess is successful": When PIN code is entered, if the result calculated by ECU with its own PIN code is inconsistent with the result calculated by diagnostic tester with PIN code, it is unsuccessful, "NO" will be displayed, indicating that the entered PIN code is inconsistent with the PIN code of ECU.

"Latest level access (27 03) SecurityAccess is successful": When writing VIN or PIN to ECU, the diagnostic tester and ECU will perform an algorithm calculation. If it is not successful, it will prompt "NO".

Write data

(a) Connect diagnostic tester, turn ENGINE START STOP switch to ON, select "M1D/M1AF12" model.

11. Enter next screen and click "IMMO (Immobilizer)"
12. Enter next screen and click "write data".



13. Diagnostic tester screen is shown in figure at this time

Show Menu	
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)	
User authorization code	VIN
Repair Shop Code	Programming date:
Chery (Customized) M1D/M1AFL2	
EI0010201	

34

1. When IMMO is reset, stored VIN and PIN in it are deleted. SK of the original vehicle is still saved before new SK is learned. Therefore, input VIN and PIN of original vehicle according to this menu, IMMO can still be used on original vehicle.
2. If "Programming IMMO (learn SK from ECM)" or "Programming IMMO (learn SK from TCU)" operation is performed when IMMO is matched with EMS or TCU of other vehicles, IMMO will learn new SK. Never use "Write data" menu if it is necessary to use IMMO on original vehicle. In this case, it should be operated according to normal matching procedure. It is required to perform "Programming IMMO (learn SK from ECM)" or "Programming IMMO (learn SK from TCU)" menu, but only for ECM or TCU of original vehicle and they have not been reset.

Warning:

- The input VIN code and PIN code must be same as VIN and PIN code of original vehicle.

14. It is required to perform "Add the old keys" operation after this menu is performed. Otherwise, key of original vehicle cannot be used. Operations are as follows: Menu: IMMO (Immobilizer) → After sale function → Add the old keys.

Warning:

- After matching is completed, turn ignition switch to OFF, disconnect diagnostic tester and wait for approximately 10 seconds, then turn ignition switch to ON and wait for approximately 10 seconds so that system certification is successful.

The "Write data" menu can also be used in the following two conditions (provided that no new SK is learned in IMMO)

- (a) Misoperation: models without PEPS reset IMMO and ECM simultaneously;
- (b) The extreme situation of missing PIN code and VIN code caused by other unknown circumstances. Operation procedures (models without PEPS) are as follows:
 - (1) Write VIN
 - (2) Write PIN
 - (3) Menu: IMMO (Immobilizer) → After sale function → Programming ECM
 - (4) Menu: IMMO (Immobilizer) → After sale function → Add the old keys

After Sale Function

Match vehicle immobilizer system. Add or erase keys, etc.

(c) Connect diagnostic tester, turn ENGINE START STOP switch to ON, select "M1D/M1AF12" model.

15. Enter next screen and click "IMMO (Immobilizer)"

Show Menu	
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection	
IHU (Infotainment Head Unit)	T-BOX (Telematics Box)
SAM (Steering Angle Module)	ABM/ACU (Air Bag Module)
BCM (Body Control Module)	PEPS (Passive Entry And Passive Start System)
AVM/LDW (Around View Monitor Module / Lane Departure Warning)	BSD (Blind Spot Detection)
RADAR (Radar Module)	EPS (Electronic Power Steering)
TPMS (Tire Pressure Monitor System)	IMMO (Immobilizer)
CLM (Climate Module)	
Chery (Customized) M1D/M1AFL2	
EI0002001	

16. Enter next screen and click "After sale function"

Show Menu	
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)	
Version Information	Read fault code
Erase fault code	Read data stream
write data	After sale function
Chery (Customized) M1D/M1AFL2	
EI0012001	

17. Enter next screen and click "Match all the systems"

Show Menu	
CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)	
Match all the systems.	Programming ECM
Programming IMMO(learn SK from EMS)	Programming IMMO(learn SK from TCU)
Reprogramming ECM	Reprogramming IMMO
Key match	Erase keys.
Write PIN	Programming TCU
Reset TCU	Programming ESCL
Erase ESCL	
Chery (Customized) M1D/M1AFL2	
EI0013001	

34

18. Match all the systems

Corresponding menu: IMMO (Immobilizer) → After sale function → Match all the systems.

Read data stream before matching to confirm that system components is in delivery status (make sure that it has not matched or reset). If it is required to replace transponder, BCM and ECM module with new ones at the same time during after-sales service, it is necessary to enter Match all the systems menu. After the complete new system is connected, connect diagnostic tester to vehicle diagnostic interface and turn ignition switch to ON. It is necessary to input manually except step a and b, and others are performed via diagnostic tester.

- Input VIN code to diagnostic tester;
- Input SC code (PIN code) to diagnostic tester;
- Diagnostic tester matches with IMMO;
- Diagnostic tester matches with engine control module;
- Add new key;
- Clear DTCs.
- After matching is completed, turn ignition switch to OFF, disconnect diagnostic tester and wait for approximately 10 seconds, then turn ignition switch to ON and wait for approximately 10 seconds so that system certification is successful.

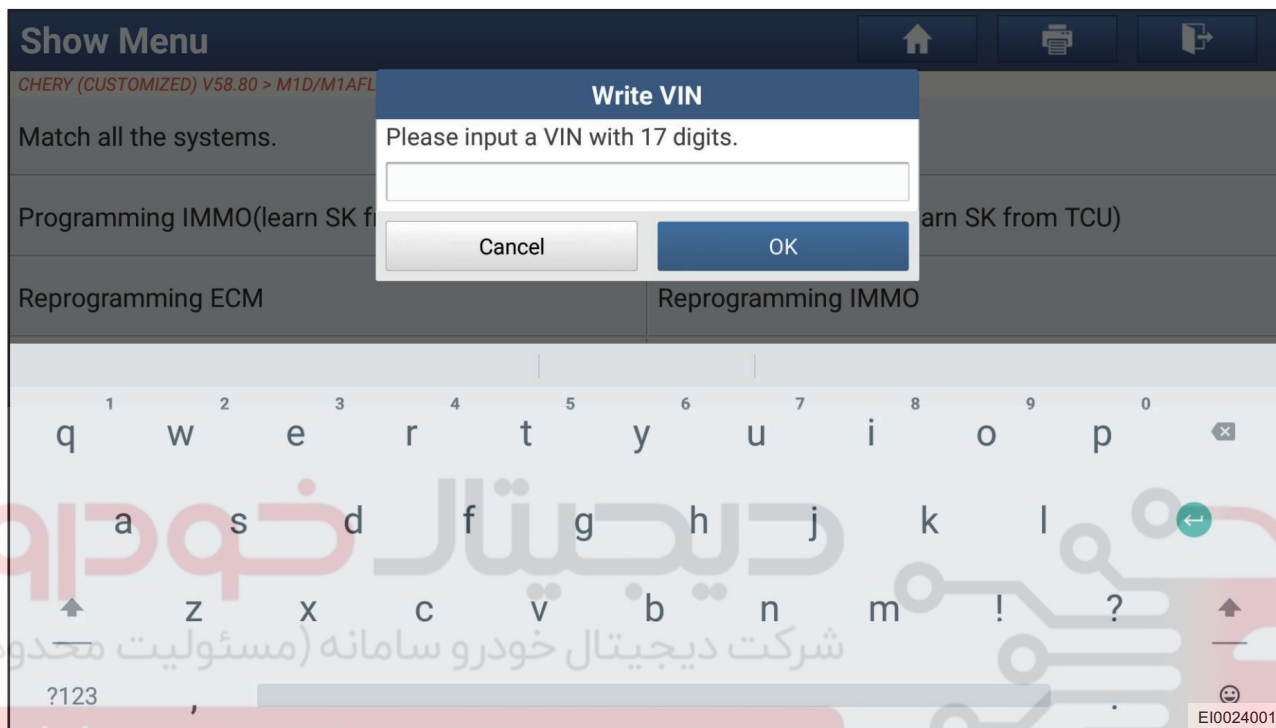
19. Replace engine control module

Corresponding menu: IMMO (Immobilizer) → After sale function → Programming ECM.

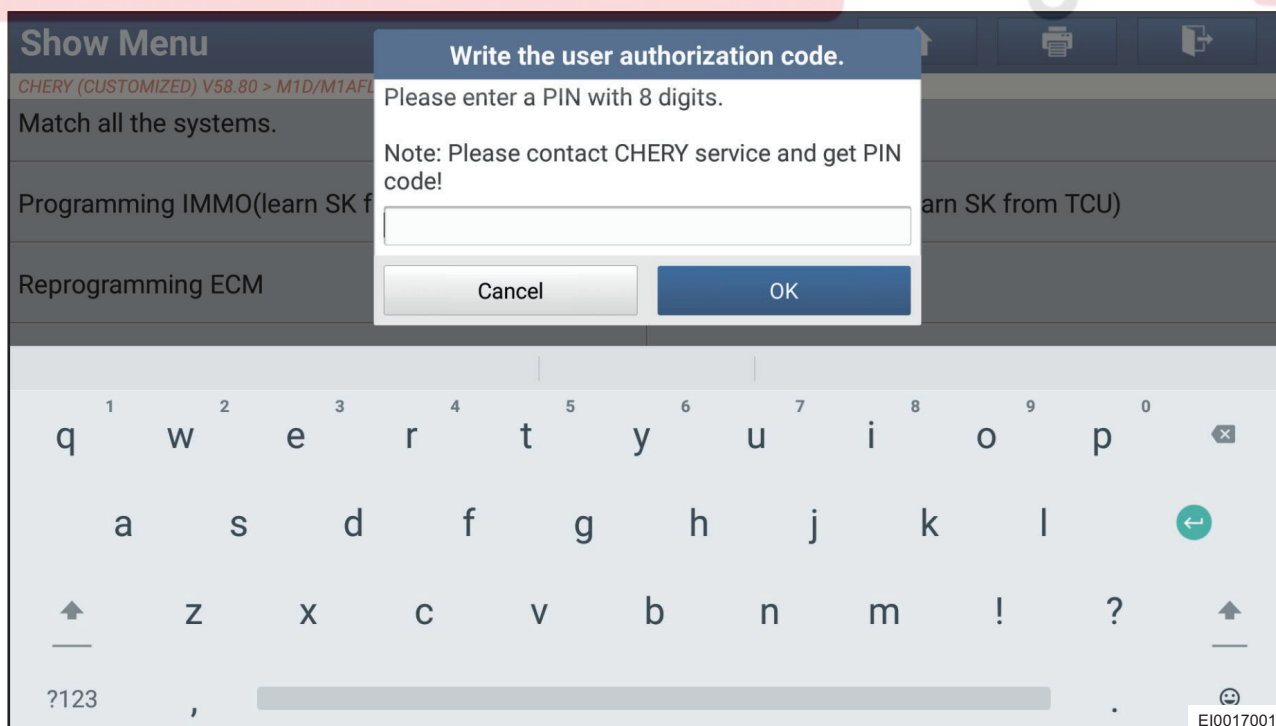
Read data stream before matching to confirm that ECM is in delivery status (make sure that it has not matched or reset). If there are irreparable faults on ECM in after-sales service, ECM must be replaced. It is necessary to perform matching operation to make the replaced ECM can work properly on original vehicle. The replaced ECM must be new or has been reset to factory status.

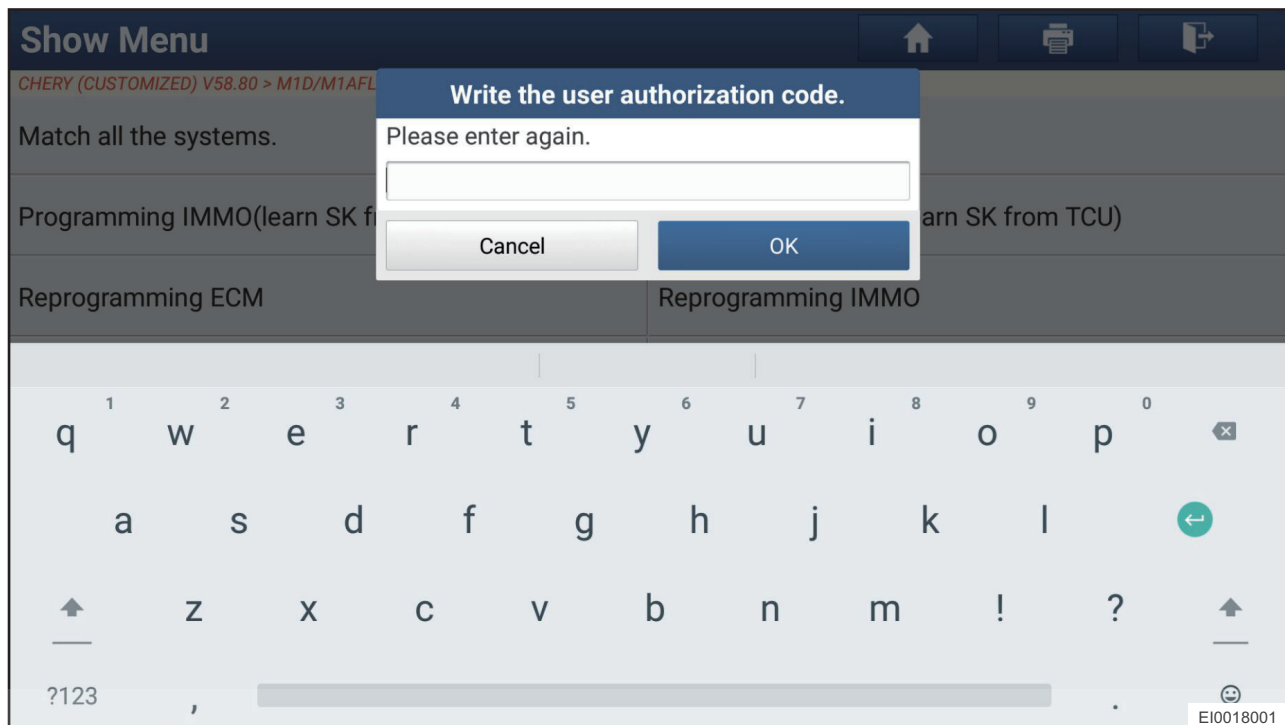
Matching procedure:

(a) Please input a VIN with 17 digits



(b) Input SC code (PIN code) to diagnostic tester;





34

(c) If SC code is correct, perform matching learning of ECM;



(d) After matching is completed, turn ignition switch to OFF, disconnect diagnostic tester and wait for approximately 10 seconds, then turn ignition switch to ON and wait for approximately 10 seconds so that system certification is successful.

20. Replace the BCM

Corresponding diagnostic tester menu: IMMO (Immobilizer) → After sale function → Programming IMMO.

If there are irreparable faults on BCM function in after-sales service, BCM must be replaced. It is necessary to perform matching operation to make the replaced BCM can work properly on original vehicle.

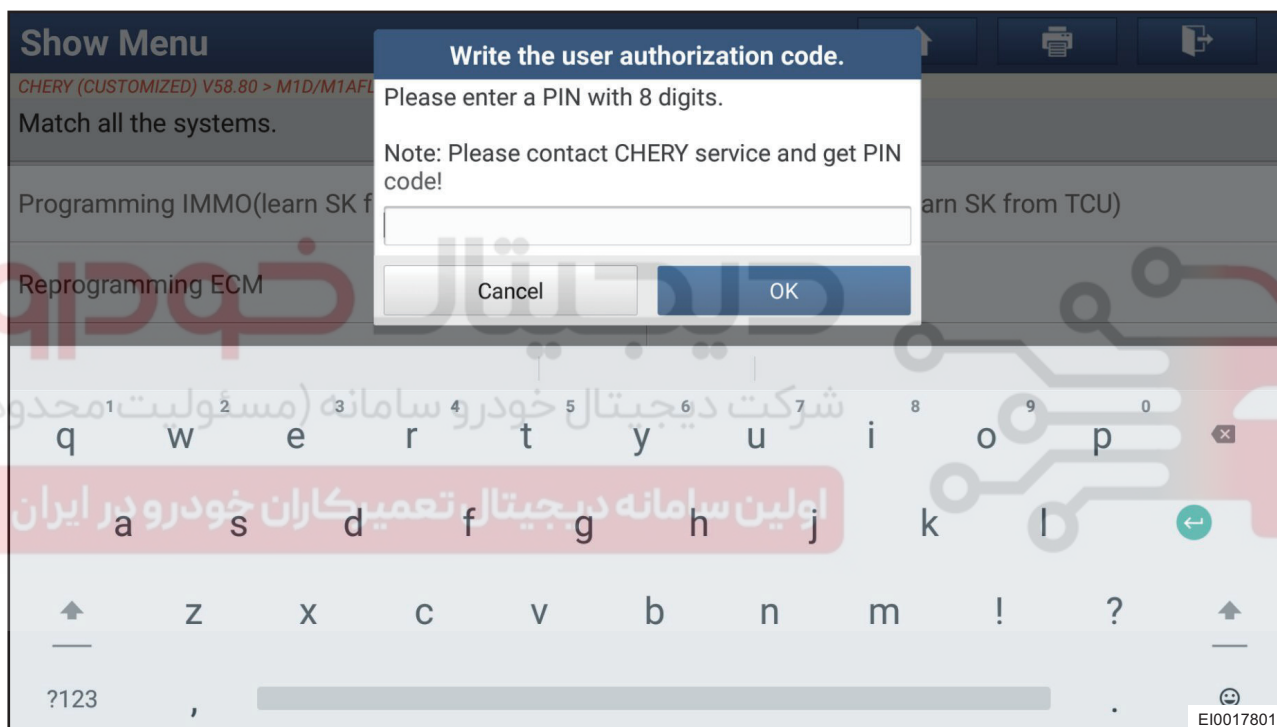
Warning:

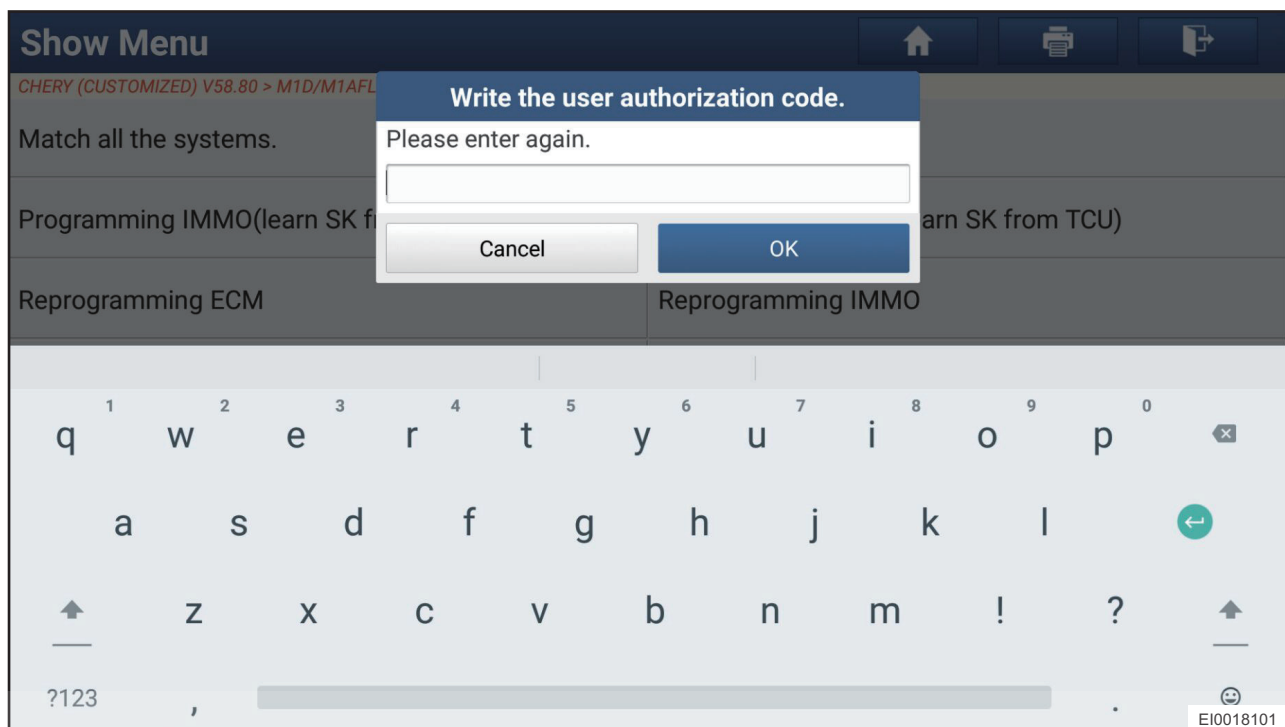
- It is also necessary to input BCM configuration code and perform remote controller matching when BCM is replaced for vehicle models without PEPS
- Make sure to input the correct VIN code and PIN code
- It is necessary to perform "Add the old keys" operation for original keys in order to use the original keys after replacing BCM

Matching procedure:

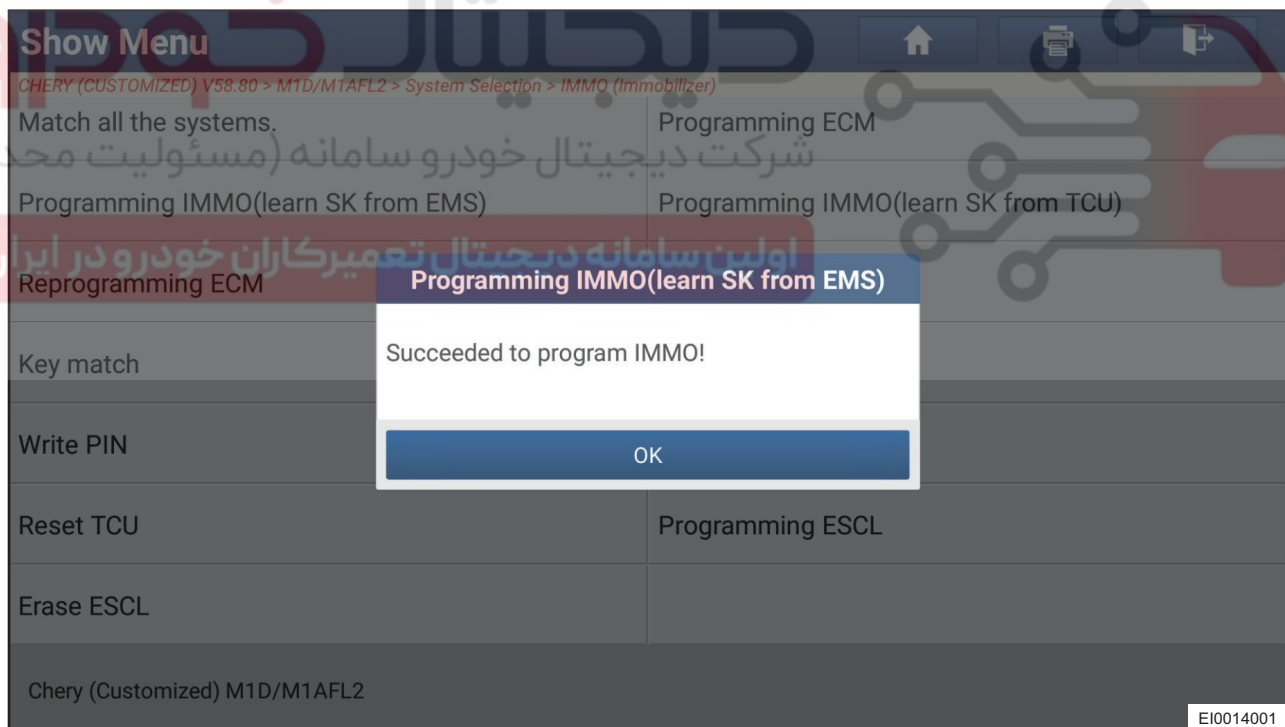
- Menu: IMMO (Immobilizer) → After sale function → Programming IMMO (learn SK from EMS);
- Please enter a PIN with 8 digits;

34





(c) Succeeded to program IMMO



- (d) M1D/M1AF12 → IMMO (Immobilizer) → After sale function → Key match → Add the old keys;
 (e) Matching is complete.
 (f) After matching is completed, turn ignition switch to OFF, disconnect diagnostic tester and wait for approximately 10 seconds, then turn ignition switch to ON and wait for approximately 10 seconds so that system certification is successful.

21. Replace BCM and ECM simultaneously

If it is necessary to replace BCM and ECM simultaneously, there are the following conditions:

- If the communication of BCM that needs to be replaced and ECM is good, replace ECM first and program ECM operation. After ECM and the BCM that needs to be replaced match learning is complete, then replace BCM module. After programming BCM operation, BCM is necessary to perform matching old keys operation. Refer to "Add the old keys" content;
- If communication of BCM that needs to be replaced is faulted and communication of ECM is good, it is necessary to replace BCM first and perform programming IMMO (learn SK from ECM); then replace ECM, perform programming ECM and then add the old keys;
- If communication of BCM that needs to be replaced is good but that of ECM is faulted, handling method is same as the first condition.
- If both communications of BCM that needs to be replaced and ECM are faulted, it is necessary to replace complete system (BCM, ECM and transponder) and perform match.

Explanation: "Communications of XX is faulted" mentioned here refers to communication failure due to the failure of module itself, communication can be resumed after this module is replaced.

22. Reset components

When immobilizer system components are faulted or replaced during after-sales service, make sure to reset IMMO or EMS to factory status before performing matching to other vehicles.

(a) Reset engine control module (ECM)

- (1) Corresponding diagnostic tester menu: IMMO (Immobilizer) → After sale function → Reset ECM.
- (2) When engine control module are faulted or replaced during after-sales service, make sure to reset immobilizer function of ECM to factory status before performing matching to other vehicles, which is ECM cleans information related to immobilizer on EEPROM (SK, PIN, VIN information) to return original information of ECM.
- (3) Input SC code (PIN code) (apply for it from after-sales service department) to diagnostic tester;
- (4) If SC code is correct, reset engine control module to factory status.

(b) Reset immobilizer control module (BCM)

- (1) Corresponding diagnostic tester menu: IMMO (Immobilizer) → After sale function → Reset IMMO.
- (2) When immobilizer function of BCM is faulted or replaced during after-sales service, make sure to reset BCM to factory status before performing matching to other vehicles, that is BCM cleans information related to immobilizer on EEPROM (matching information such as PIN, VIN, but SK is still reserved).
- (3) Input SC code (PIN code, apply for it from after-sales service department) to diagnostic tester
- (4) If SC code is correct, reset immobilizer function of BCM to factory status

23. Match keys

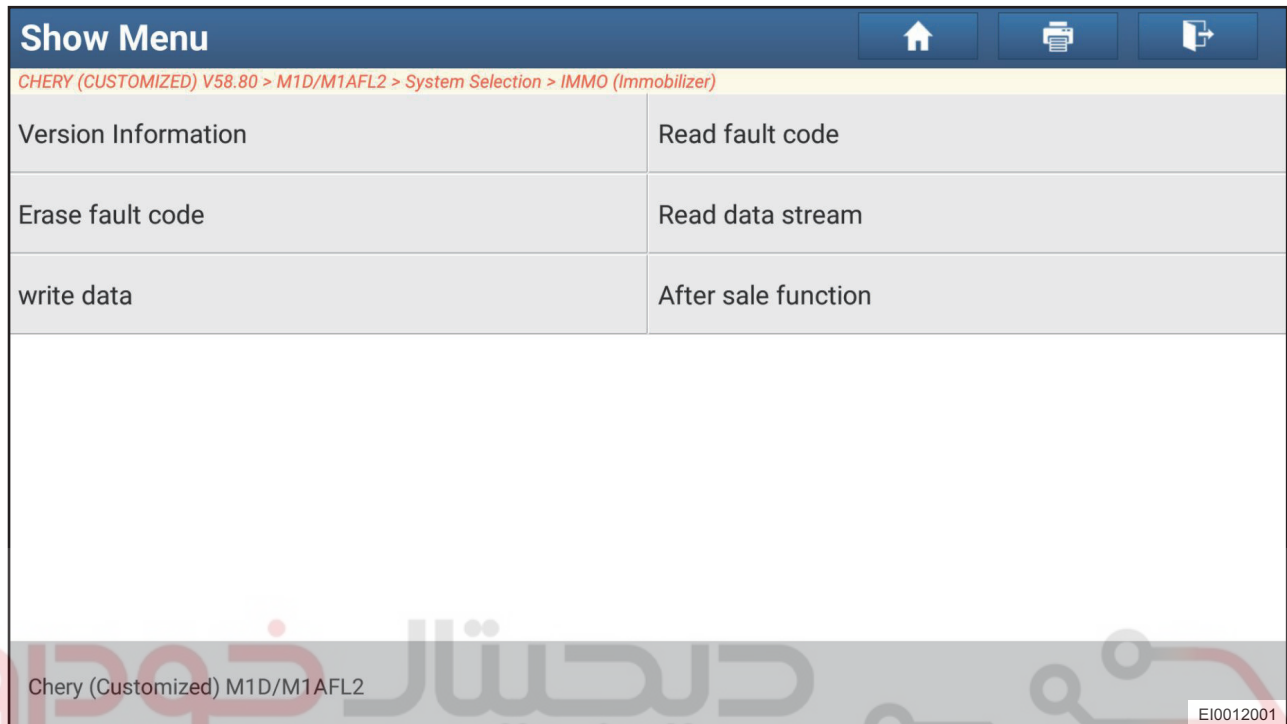
Corresponding diagnostic tester menu: IMMO (Immobilizer) → After sale function → Key match.

- There are many situations during after-sales service that key is required to relearn, such as key is lost, BCM is replaced, customer demand and so on.
- When learning the original key (old key), since the SK inside the key has been written, you only need to store the ID information of key in BCM.
- BCM can add up to 5 transponders for vehicles without PEPS. If you need to add keys, if the matching key has not reached 5, you can perform key matching directly executed; If 5 transponders have all been added, you must perform the erase key operation before matching the new key.

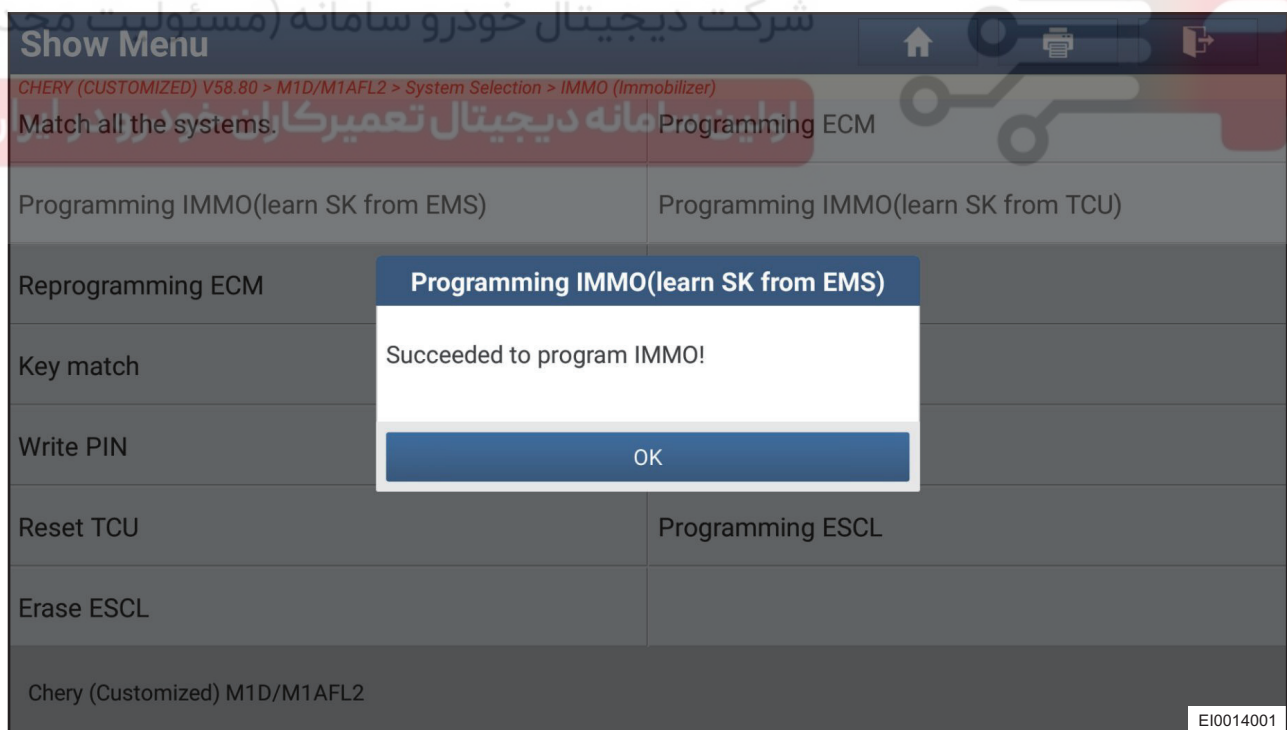
(a) Add new key

- (1) Read VIN of Engine Management System (EMS) and Body Control Module (BCM) with the diagnostic tester, then get the corresponding PIN via VIN.

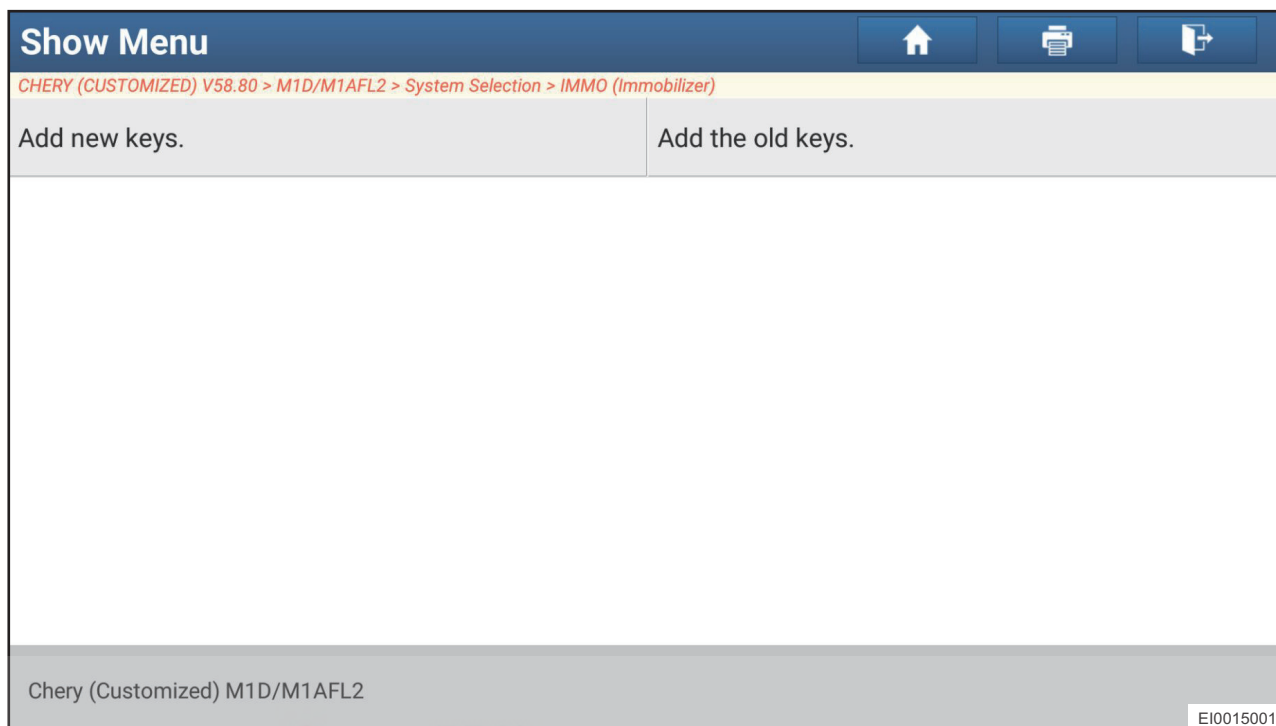
- (2) Connect X-431 3G diagnostic tester (the latest software) to diagnostic connector (DLC), and then make it communicate with vehicle electronic module through data network. Select corresponding vehicle model (M1D/M1AF12) on X-431 3G diagnostic tester (the latest software) to enter system, then select "After sale function".



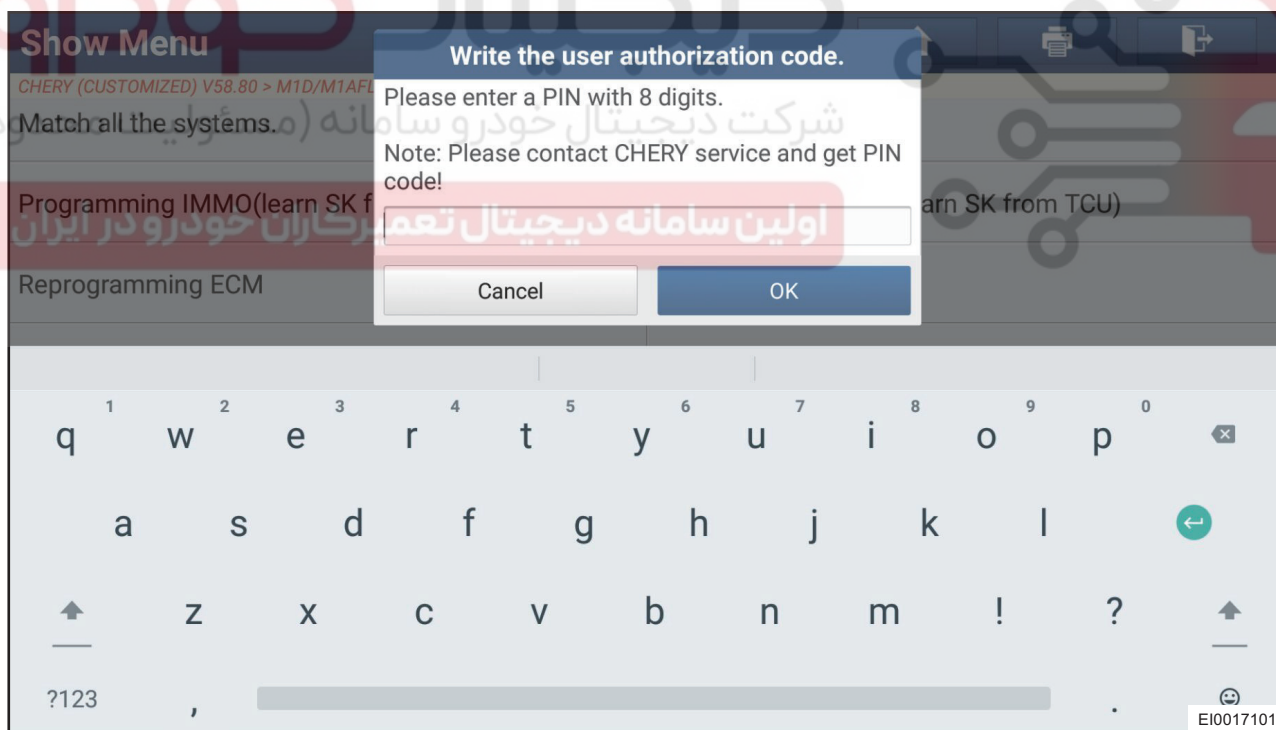
- (3) Please select "Key match" on screen.



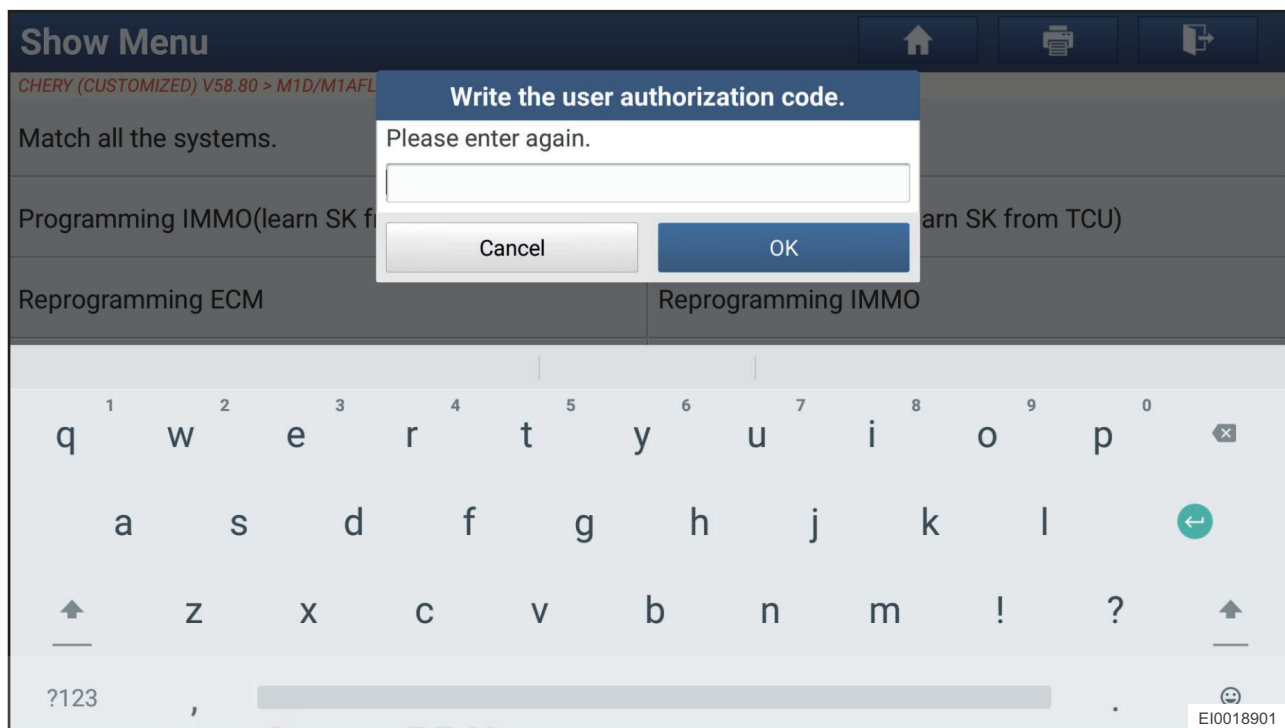
(4) Please select "Add new keys" on screen.



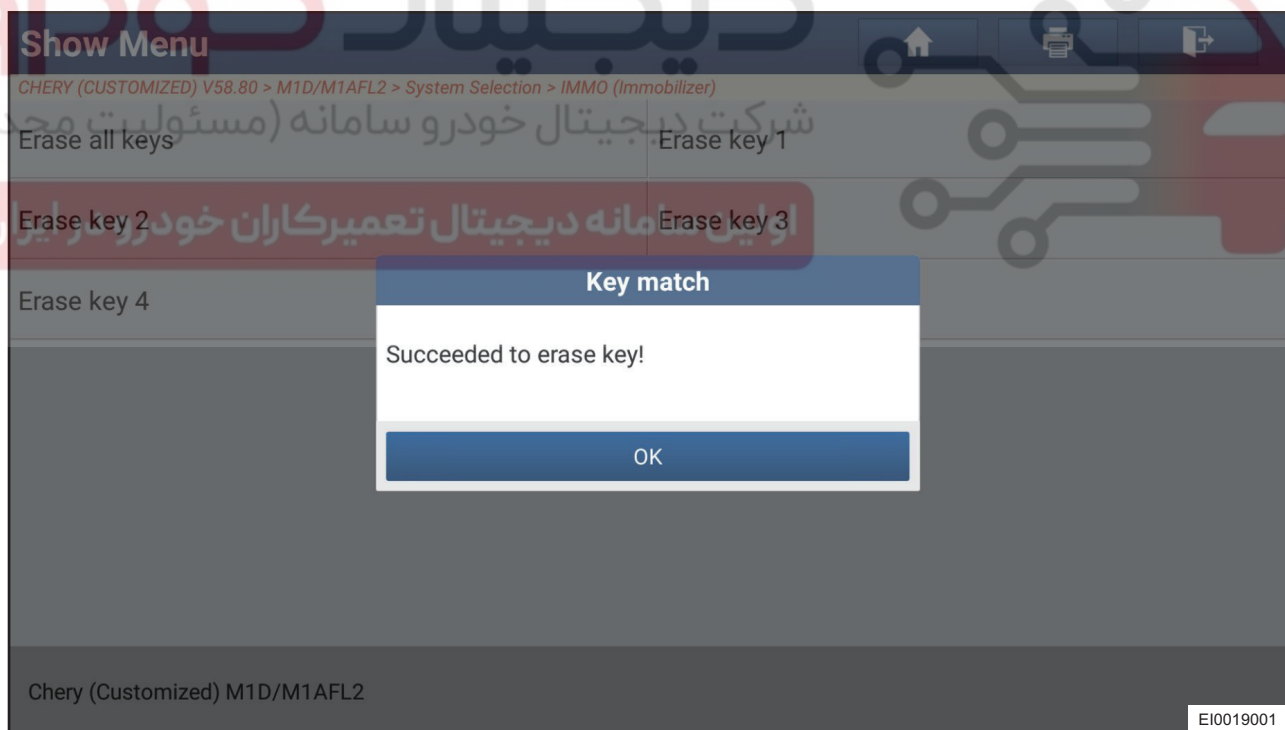
(5) "Please enter a PIN with 8 digits" is displayed on screen, click "OK" after inputting PIN.



(6) "Please enter again" is displayed on screen, click "OK" after inputting PIN.



(7) "Add new keys" procedure is performed automatically by diagnostic tester.

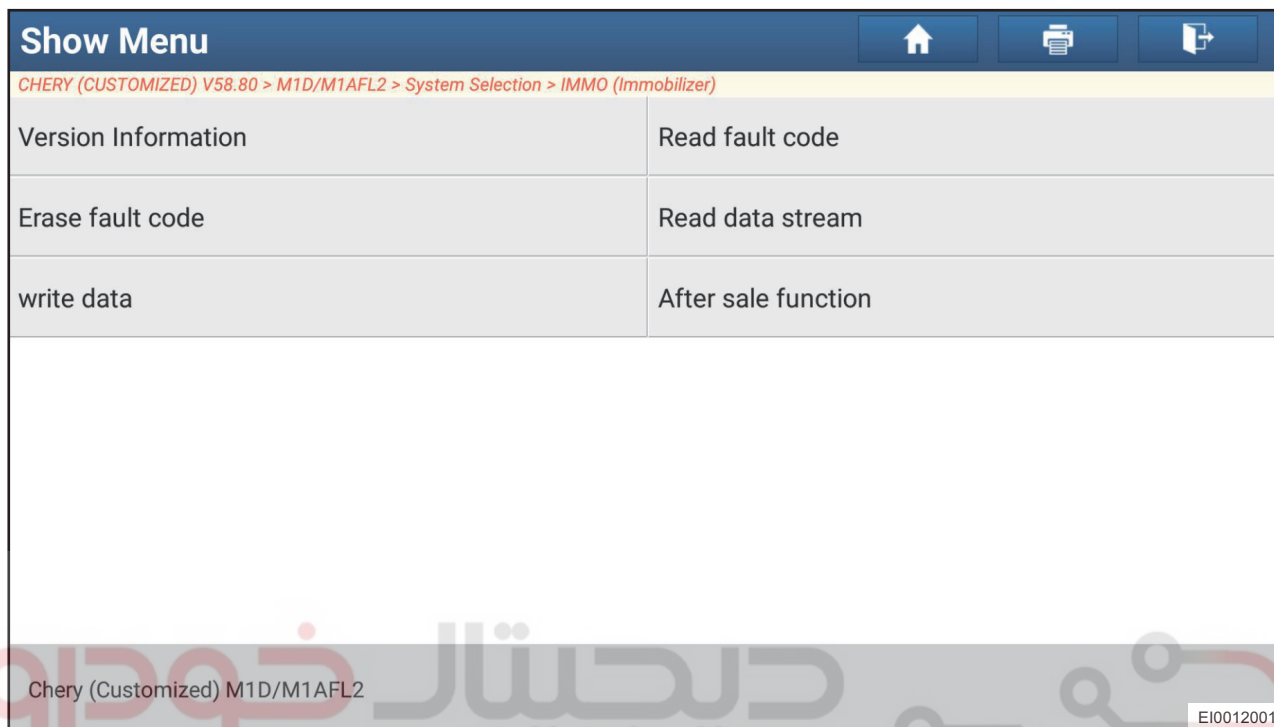


After matching is completed, turn ignition switch to OFF, disconnect diagnostic tester and wait for approximately 10 seconds, then turn ignition switch to ON and wait for approximately 10 seconds so that system certification is successful.

(b) Add the old keys

(1) Read VIN of Engine Management System (EMS) and Body Control Module (BCM) with the diagnostic tester, then get the corresponding PIN via VIN.

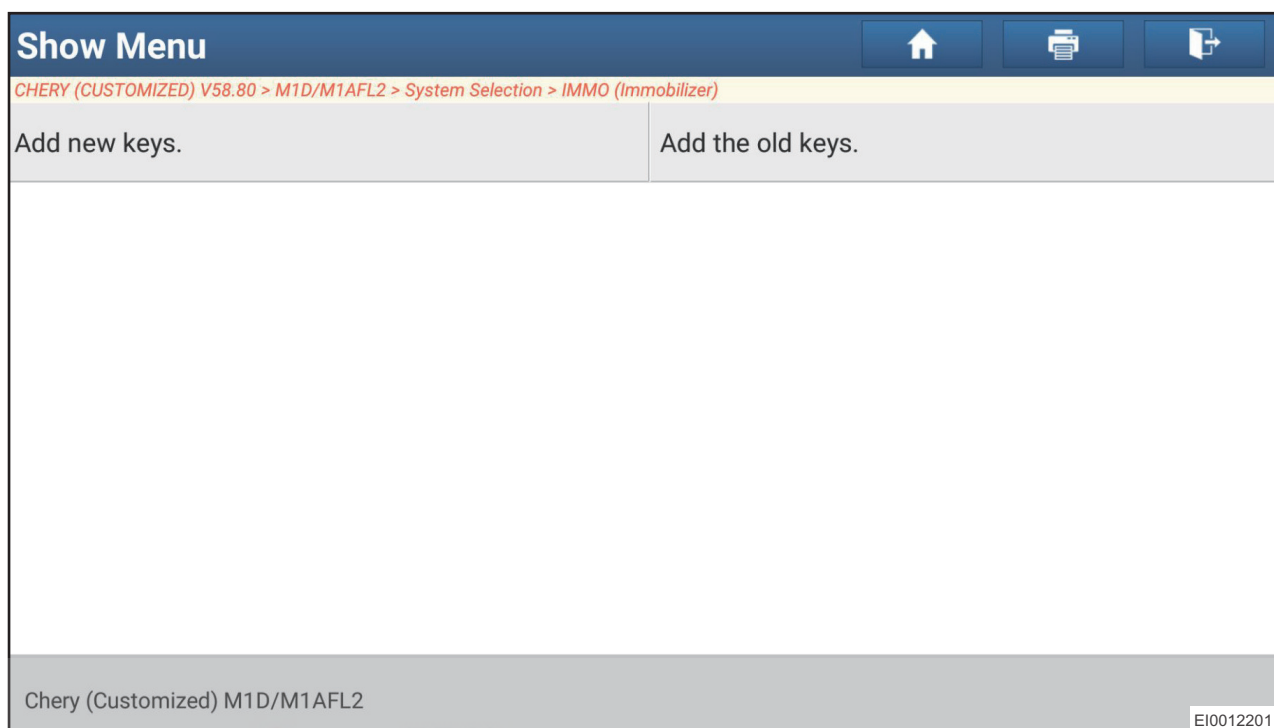
- (2) Connect X-431 3G diagnostic tester (the latest software) to diagnostic connector (DLC), and then make it communicate with vehicle electronic module through data network. Select corresponding vehicle model (M1D/M1AF12) on X-431 3G diagnostic tester (the latest software) to enter system, then select "After sale function".



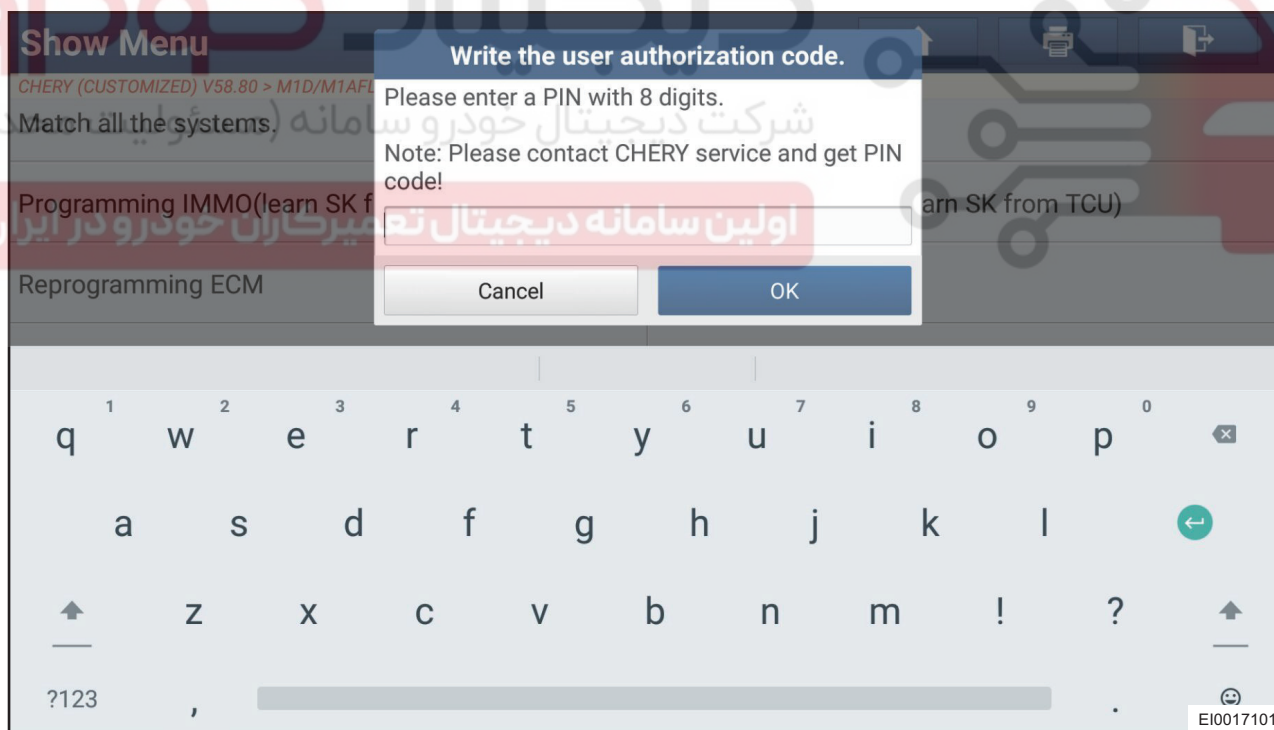
- (3) Please select "Key match" on screen.



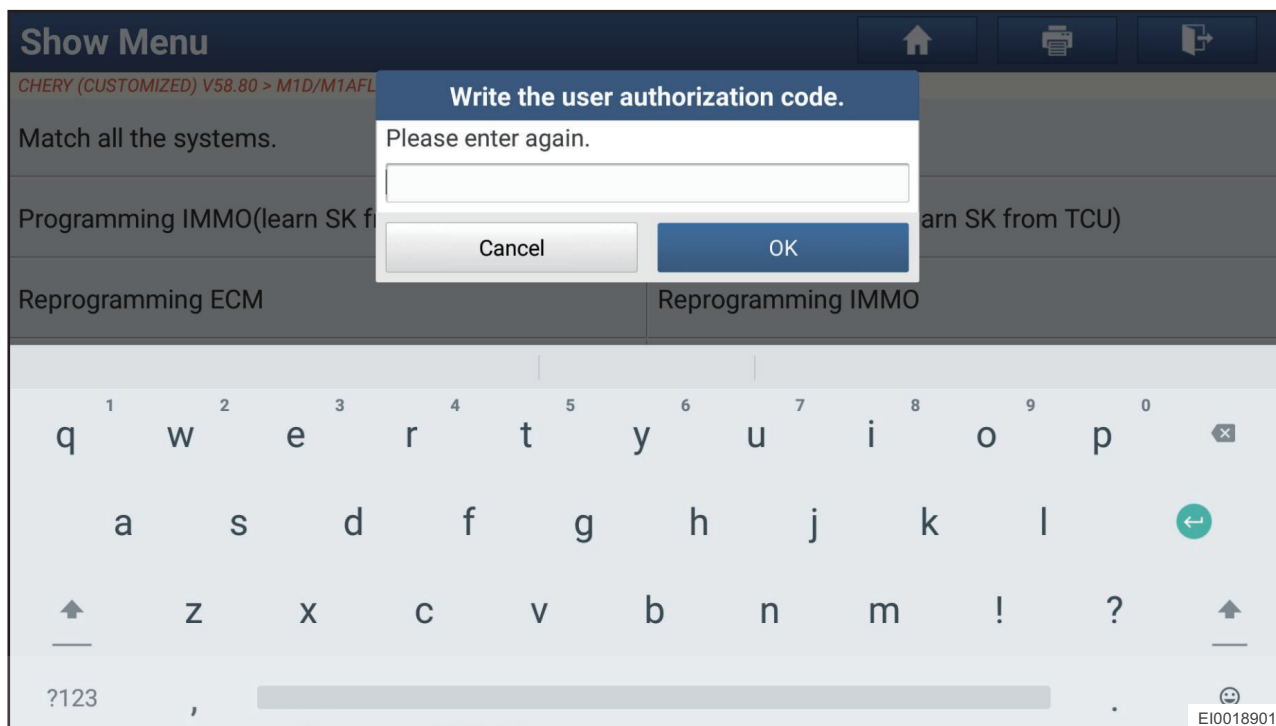
(4) Please select "Add the old keys" on screen.



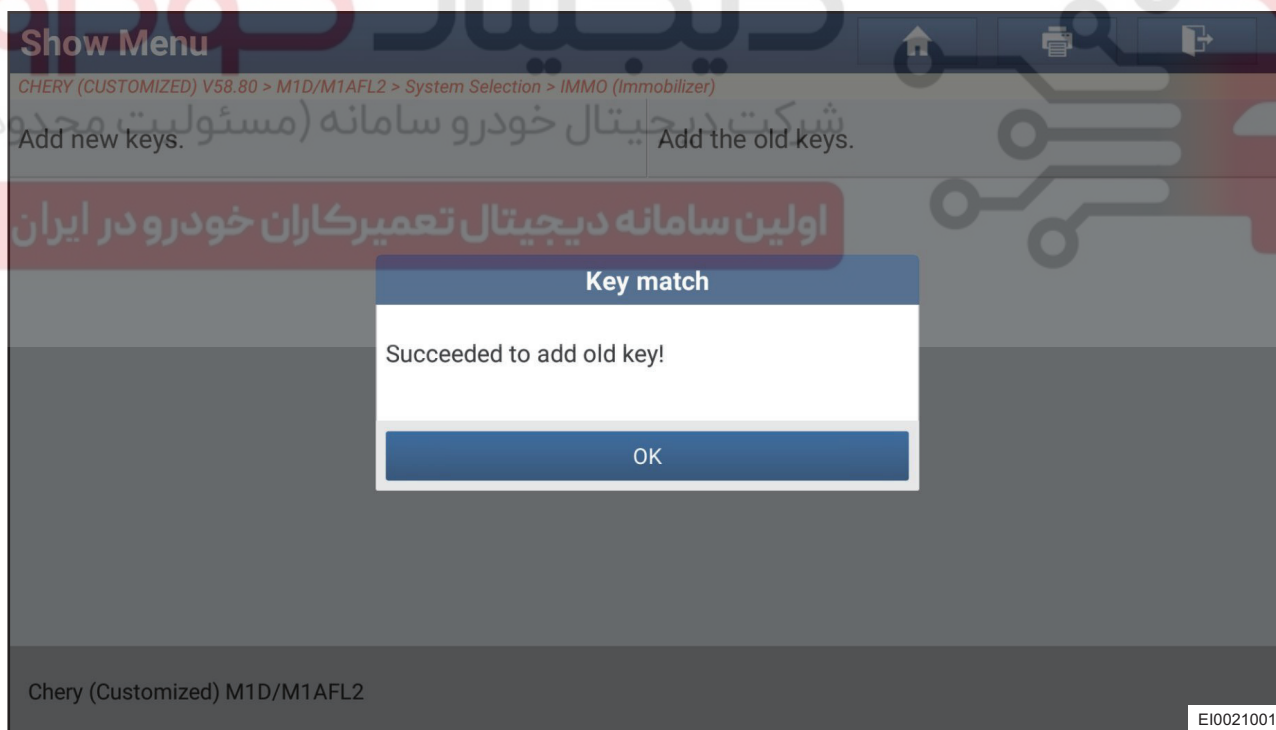
(5) "Please enter a PIN with 8 digits" is displayed on screen, click "OK" after inputting PIN.



(6) "Please enter again" is displayed on screen, click "OK" after inputting PIN.



(7) "Add the old keys" procedure is performed automatically by diagnostic tester.

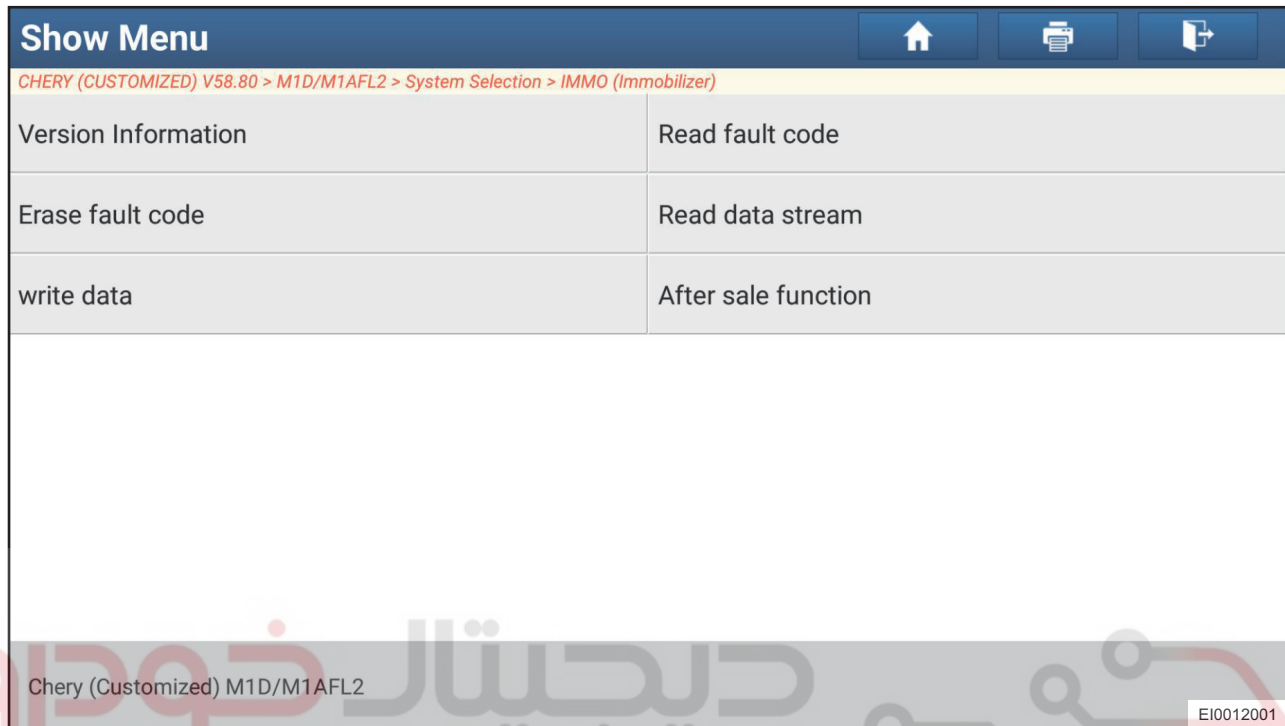


After matching is completed, turn ignition switch to OFF, disconnect diagnostic tester and wait for approximately 10 seconds, then turn ignition switch to ON and wait for approximately 10 seconds so that system certification is successful.

(c) Erase keys

(1) Read VIN of Engine Management System (EMS) and Body Control Module (BCM) with the diagnostic tester, then get the corresponding PIN via VIN.

- (2) Connect X-431 3G diagnostic tester (the latest software) to diagnostic connector (DLC), and then make it communicate with vehicle electronic module through data network. Select corresponding vehicle model (M1D/M1AF12) on X-431 3G diagnostic tester (the latest software) to enter system, then select "After sale function".



- (3) Please select "Erase keys" on screen.



(4) Please select the key to be erased.

Show Menu

CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)

Erase all keys	Erase key 1
Erase key 2	Erase key 3
Erase key 4	Erase key 5

Chery (Customized) M1D/M1AFL2

EI0022101

(5) "Please enter a PIN with 8 digits" is displayed on screen, click "OK" after inputting PIN.

Show Menu

CHERY (CUSTOMIZED) V58.80 > M1D/M1AFL2 > System Selection > IMMO (Immobilizer)

Match all the systems.

Programming IMMO(learn SK f

Reprogramming ECM

Write the user authorization code.

Please enter a PIN with 8 digits.

Note: Please contact CHERY service and get PIN code!

Cancel OK

q w e r t y u i o p

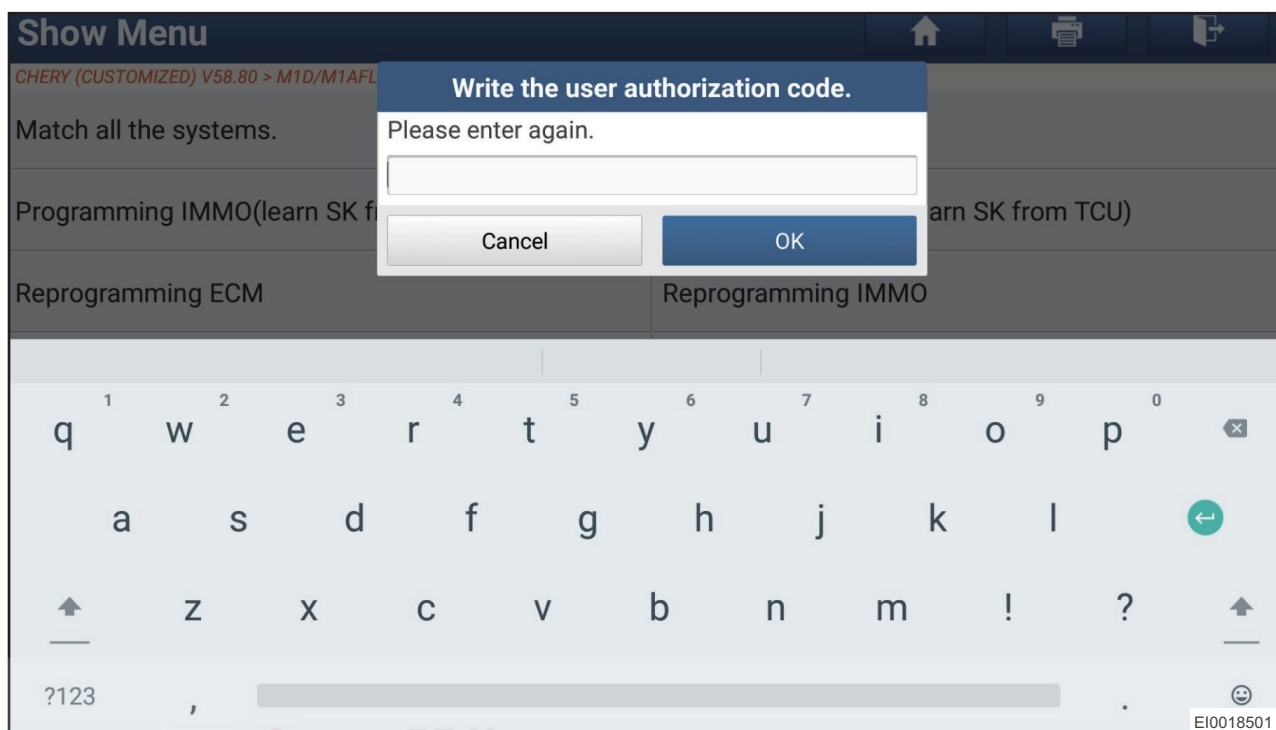
a s d f g h j k l

z x c v b n m ! ?

?123 , .

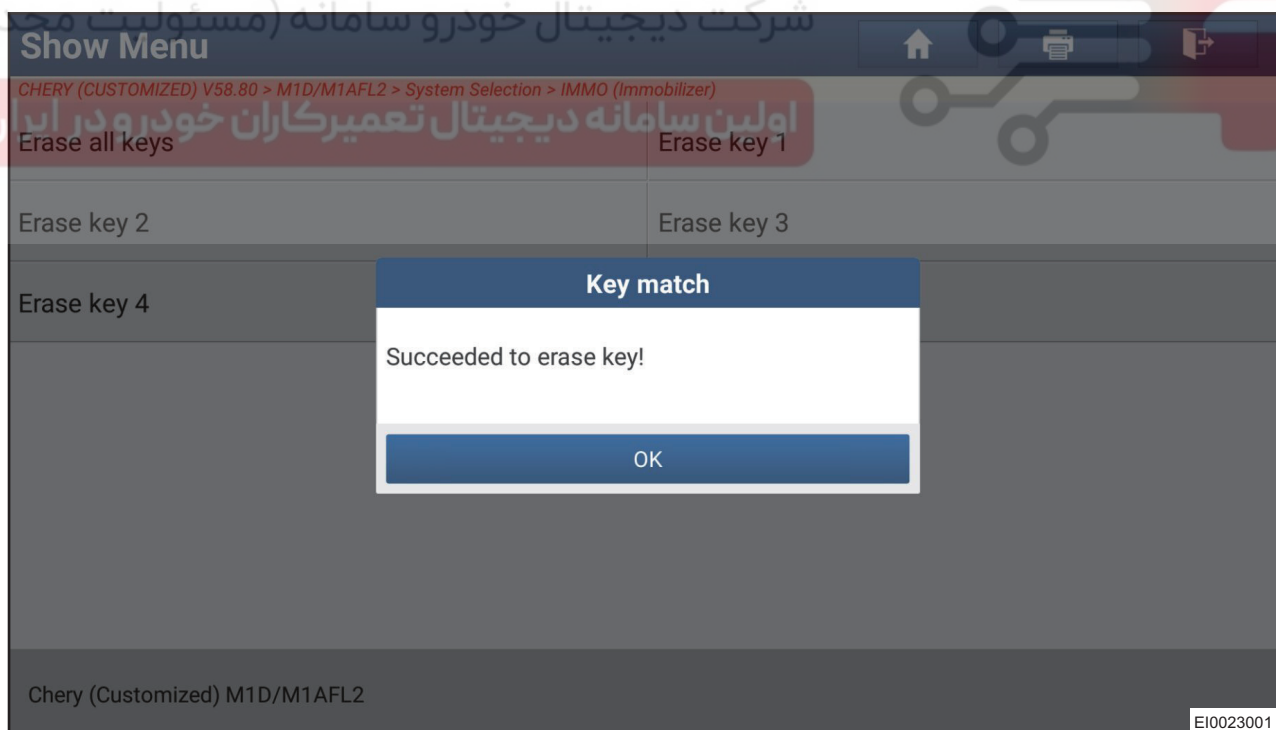
EI0017901

(6) "Please enter again" is displayed on screen, click "OK" after inputting PIN.



34

(7) Erase key operation is to erase the ID stored in IMMO. After clicking "Erase keys" menu, the IDs of all keys (transponders) in IMMO are erased, vehicle cannot be started. And in order to use the remaining keys, it is necessary to insert them into key hole in order, and perform "Add the old keys" service, the old keys can be used.



After matching is completed, turn ignition switch to OFF, disconnect diagnostic tester and wait for approximately 10 seconds, then turn ignition switch to ON and wait for approximately 10 seconds so that system certification is successful.

Warning:

- Add the remaining keys to system through this service and perform an ignition to determine if old keys are added successfully.

- If the lost keys are found, in order to use them after erasing keys, make sure to perform "Add the old keys" operation.
- "Erase keys" function in the immobilizer matching menu of diagnostic tester only enables that the lost key cannot be used to start vehicle, but does not disable the remote controller, and the lost mechanical key and remote controller can still open the door. Therefore, it is recommended that the customers replace vehicle lock cylinder and mechanical key meanwhile, and use the diagnostic tester to enter BCM system and re-match the remote controller.

Diagnostic Trouble Code (DTC) Chart

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1300-00	Internal Control Module EEPROM Error	Setting Conditions: DTCs are set when CRC error is found in EEPROM Clear Conditions: Clear DTCs when CRC error is removed	• IMMO
B1301-00	Immobilizer and ECM authentication failed	Setting Conditions: DTCs are set when IMMO and ECM authentication is failed Clear Conditions: Clear DTCs when IMMO and ECM authentication is successful	• Wire harness connector • Anti-theft coil • Key assembly • ECM • IMMO
B1302-00	VIN Not Programmed	Setting Conditions: When system is reset and powered-on, or it was found that VIN code is not written during self-check when vehicle leaves factory, this DTC will be set. Clear Conditions: Clear this DTC when VIN is written	• IMMO
B1303-00	The antenna communication is disturbed	Setting Conditions: When IMMO communicates with transponders, communication fails due to coil faults. This fault is usually detected when matching keys and authentication. Clear Conditions: If IMMO communicates with transponders successfully when matching keys and authentication, this DTC will be clear.	• Anti-theft coil
B1304-00	None transponder was detected	Setting Conditions: During authentication or matching between IMMO and transponders, transponders are not detected by IMMO even for 3 times, this DTC will be set.	• Anti-theft coil • Key assembly • IMMO
B1305-00	Immobilizer has none key was storage	Setting Conditions: During authentication between IMMO and transponders, it was found that the current transponder ID is not stored in IMMO, this DTC will be set. Clear Conditions: During authentication between IMMO and transponders, when the current transponder ID is stored in IMMO, this DTC will be clear.	• Key assembly • IMMO

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1306-00	Security code was not programmed	Setting Conditions: During IMMO SecurityAccess or self-check when vehicle leaves factory, it was found that SC is not written, this DTC will be set. Clear Conditions: When SC is written in IMMO, this DTC will be clear.	IMMO

Immobilizer Network Fault Code

DTC	DTC Definition	DTC Setting and Clear Condition	Trouble Area
U0100-00	Lost communication With ECM authentication frame	Setting Conditions: If IMMO does not receive the authentication message sent by ECM during authentication, this DTC will be set. Clear Conditions: IMMO receives the authentication message sent by ECM during authentication, this DTC will be clear.	- ECM - Wire harness connector - IMMO
U0073-00	Control Module communication Bus Off	Setting Conditions: When there are too many faults on the CAN bus so that the CAN bus is off, this DTC will be set. Clear Conditions: When CAN bus is normal, this DTC will be clear.	- Wire harness connector - CAN network

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



ON-VEHICLE SERVICE

Transponder

Removal

Warning/Caution/Hint

As transponder in key is an electronic part of high accuracy, pay attention to followings during service:

Caution:

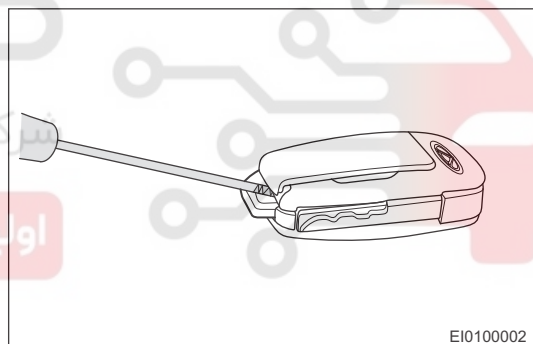
- As transponder in key is an electronic part of high accuracy, pay attention to followings during service:
- Do not put key in high temperature (90°C or more) for a long time;
- Do not put key in water or other fluid;
- Do not put key in strong magnetic field or electromagnetic field.

Warning:

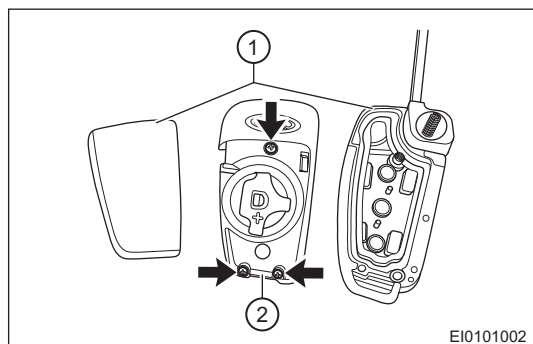
- DO NOT push the terminals with your hands, when removing wireless key cover.
- Make sure battery positive and negative are installed correctly, when removing wireless key cover.
- DO NOT pry up battery forcibly, after removing wireless key cover. Otherwise, terminals may be damaged.
- DO NOT touch battery with wet hands, after removing wireless key cover. Otherwise, water may cause rust.
- DO NOT touch or move any components inside transmitter, after removing wireless key cover. Failure to do so may interfere with proper operation.

1. Remove the transponder.

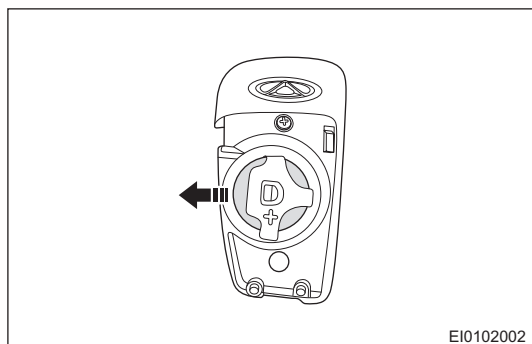
- (a) Using a screwdriver wrapped with protective tape, pry off wireless key cover as shown in illustration.



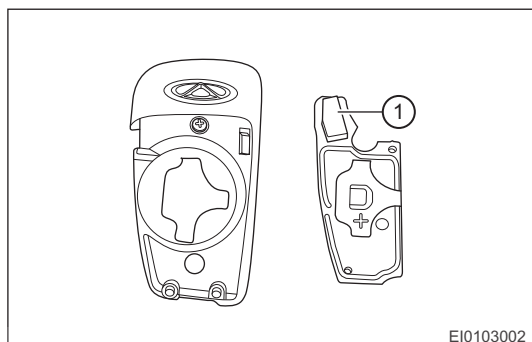
- (b) Remove 3 screws (arrow), separate wireless key covers (1) and chip (2).



- (c) Disengage claws from battery holder, and remove battery in direction of arrow.



- (d) Remove the transponder (1).



Installation

1. Installation is in the reverse order of removal.

Warning:

- Check that wireless key and transponder operate properly after installing transponder.
- If a new transponder to be installed, you need to perform "Add new keys" match.

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

IMMO (BCM)

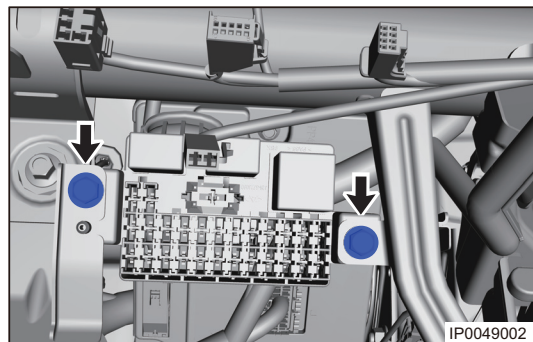
Removal

1. Turn off all electrical equipment and the ignition switch.
2. Turn off all electrical equipment and the ignition switch.
3. Remove the instrument panel left lower protector assembly (See page 48-11).
4. Remove the BCM assembly.

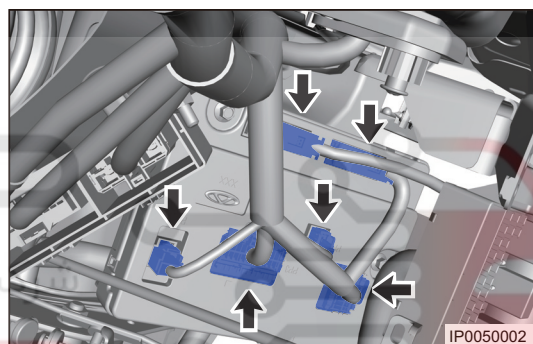
- (a) Remove 2 fixing bolts (arrow) from instrument panel and relay box.

Tightening torque

$9 \pm 1 \text{ N}\cdot\text{m}$



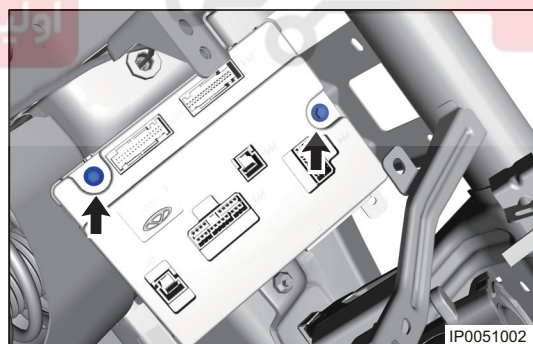
- (b) Disconnect 6 connectors (arrow) from Body Control Module (BCM).



- (c) Remove 2 fixing nuts (arrow) from Body Control Module (BCM).

Tightening torque

$5 \pm 0.5 \text{ N}\cdot\text{m}$



- (d) Remove the BCM.

Installation

1. Installation is in the reverse order of removal.

Warning:

- It is necessary to perform matching operation to make the replaced BCM can work properly on original vehicle. Make sure to input the correct VIN code and PIN code during operation. It is necessary to perform "Add the old keys" operation for original keys in order to use the original keys after replacing BCM. And learn the wireless key.