PEPS SYSTEM

GENERAL INFORMATION

Overview

Description

E4G15C/F4J16+DCT

1 - ENGINE START STOP Switch	2 - PEPS Module

3 - Immobilizer Coil	4 - Front Internal Low Frequency Antenna
5 - Front Left Door Handle Sensor	6 - Front Right Door Handle Sensor
7 - Rear Left Door Antenna	8 - Rear Right Door Antenna
9 - Rear Low Frequency Antenna (on Rear Bumper Crossmember)	10 - Back Door Release Switch

PEPS system consists of PEPS controller, ENGINE START STOP switch, built-in low frequency antenna (A total of 2 low-frequency antennas and 1 high-performance antenna are equipped in vehicle to detect key position), immobilizer coil for back up starting, front left/right door handle sensor (front left/right door handle), ESCL module (for MT models), back door microswitch, smart bracelet and remote controller (also called smart key).

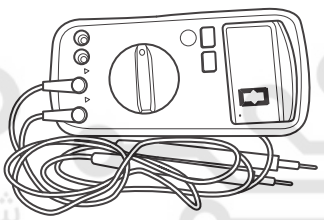
Specifications

Torque Specifications

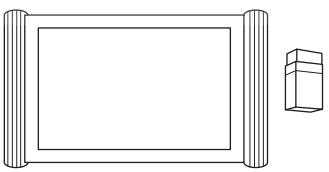
Description	Torque (N·m)
Hexagon Flange Nut	7 ± 1

Tools

General Tool

Digital Multimeter	 RCH0002006

Special Tool

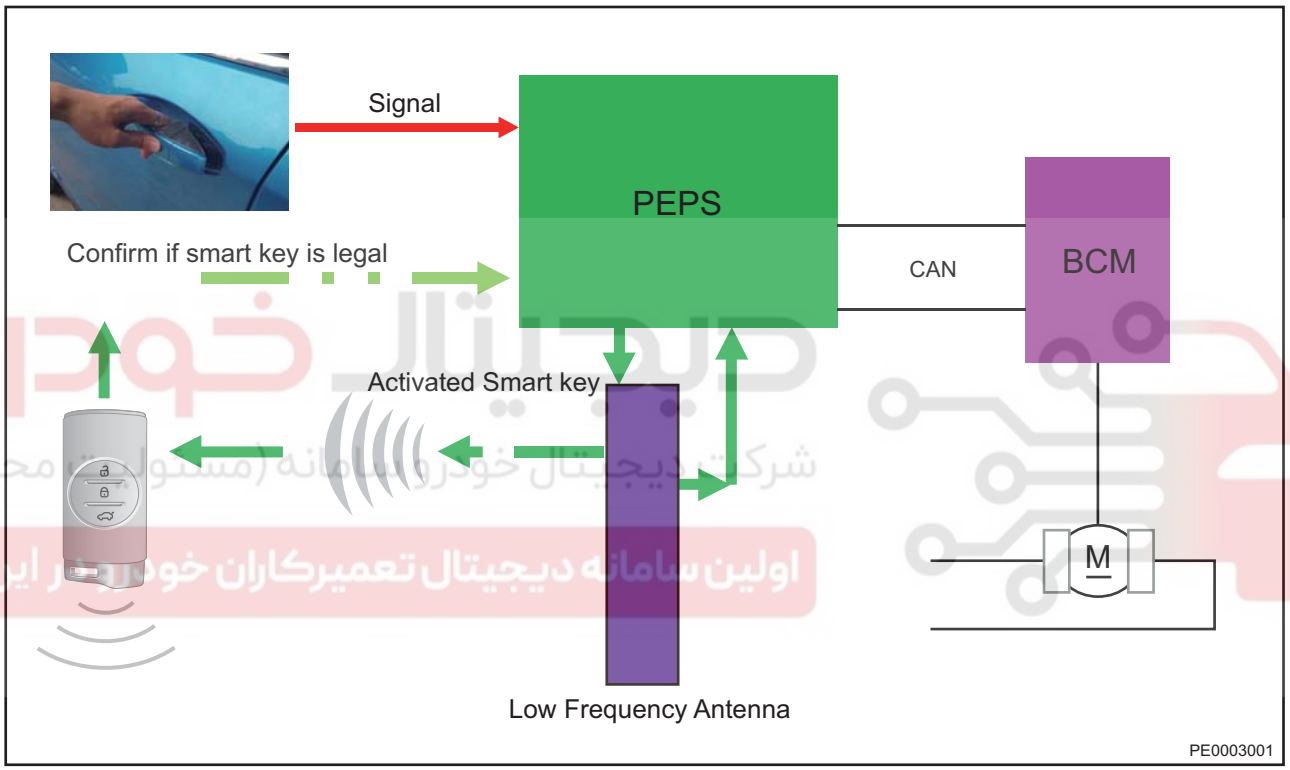
X-431 PAD Diagnostic Tester	 RCH000106

Function Description

PEPS Function Description

Function	
1 - Smart Entry Function	2 - Keyless Entry Function
3 - Mechanical Entry Function	4 - One-button Start Function
5 - One-button Stop Function	6 - Emergency Stop Function
7 - Back Up Start Function	8 - Emergency Start Function
9 - Starting Times Limit Function	10 - Electric Steering Column Lock Control Function
11 - Prompt Function	12 - Engine Immobilizer Function

Smart Entry Function

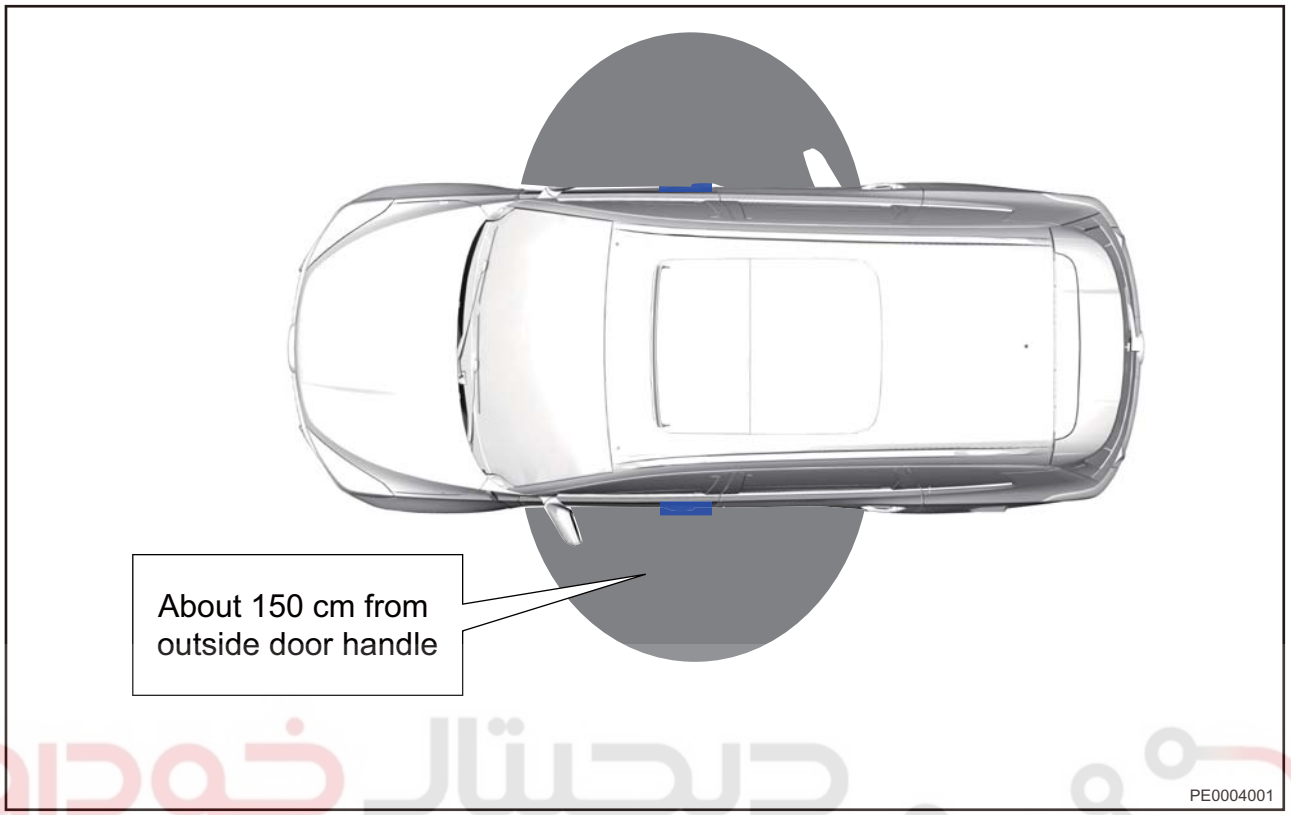


Smart Door Unlock (Keyless Fortifying Deactivation)

1. When the doors are locked, carry the smart key and touch the unlock sensing area of the door outside handle with four fingers. The system automatically recognizes the legitimacy of the smart key and the doors are automatically unlocked.

   Hint:
   Only front left and front right doors are equipped with sensing outside handle.
2. When bringing a smart key close to vehicle, the courtesy light turns on, the system automatically recognizes the legitimacy of the smart key and the doors are automatically unlocked.
3. No matter where the smart key is (put in pocket, hang in the belt or put in bag), as long as the key is within approximately 2.5 m of door handle, touch the sensing area of the door handle with four fingers, vehicle will enter fortifying deactivation mode (turn signal lights will flash twice and four doors will be unlocked).
4. If any of following operations is not performed within 30 seconds after touching the sensing area (fortifying deactivation) of the door handle under fortifying mode, all doors will be locked automatically.
   (a) Open any door.
   (b) Press the ENGINE START STOP switch.

(c) ENGINE START STOP switch is in ACC or ON position.



Smart Door Lock (Keyless Fortifying)

5. When the doors are unlocked, carry the smart key and touch the lock sensing area with fingers. The system automatically recognizes the legitimacy of the smart key and the doors are automatically locked.
6. When exiting vehicle with smart key, the system automatically recognizes the legitimacy of the smart key and the doors are automatically locked.

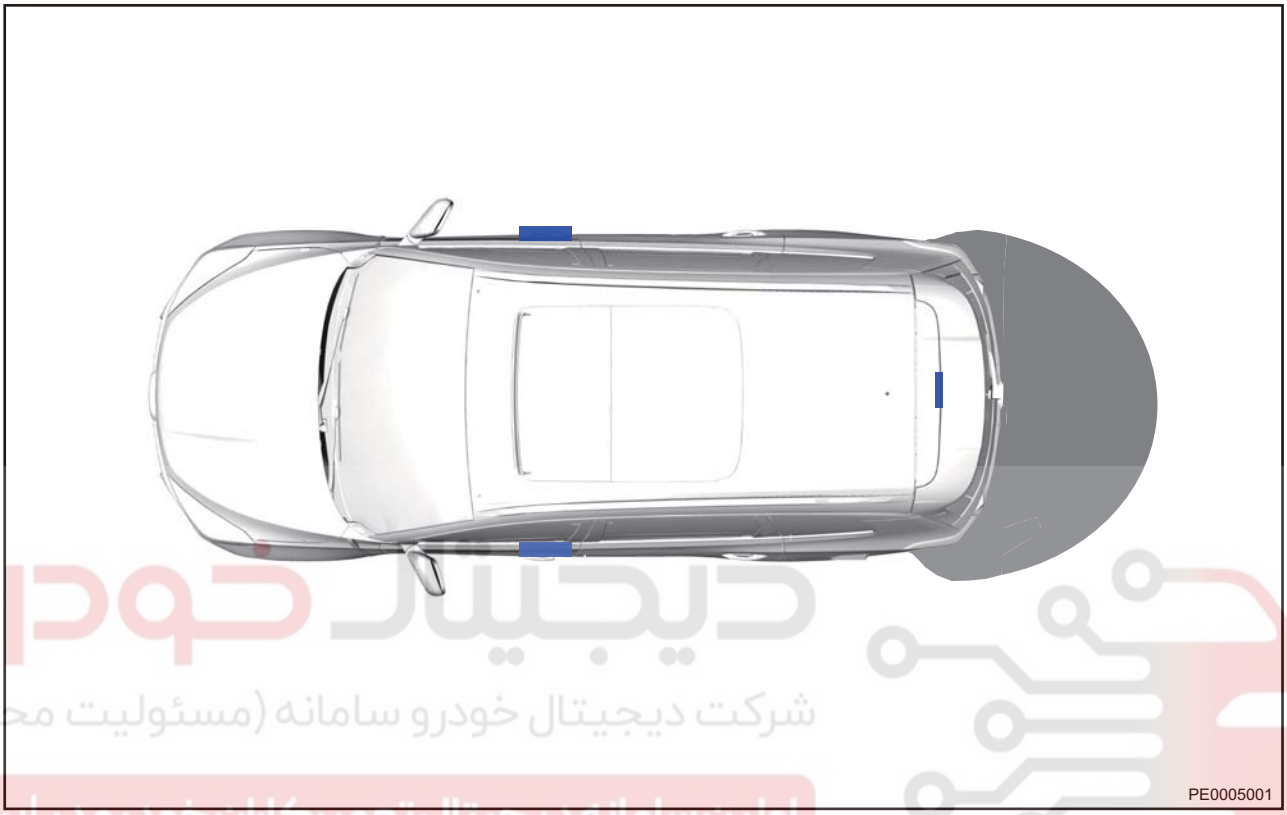
Hint:

If any door is not closed properly, it will be unlocked automatically after locking to avoid leaving key inside vehicle.

(a) Four doors & two covers are closed, and ENGINE START STOP switch is in OFF position.
(b) Touch the sensing area when the smart key is outside the vehicle and within a 1.5 m semicircle area around the front left door handle.
(c) Vehicle enters fortifying mode (turn signal lights will flash once, horn sounds once and all doors will be locked).

7. Operation range
   (a) Only distance between smart key and door outside handle is within specified operation range, smart key function can be used.
   (b) When smart key battery is discharged or there is strong radio wave in operation position, smart key system also will not operate normally.
   (c) It is recommended that do not place smart key together with mobile phone and other radio equipment.
   (d) Operation range is within about 150 cm from sensing areas of two front door handles.
   (e) If smart key is too close to door glass, handle or rear bumper, door handle sensor cannot be used.
   (f) When smart key is within operation range, any one even without carrying smart key can press door handle sensing area on corresponding side to lock/unlock door.
8. When using smart key system, door handle sensor will not function in following conditions.
   (a) When ENGINE START STOP switch is in following positions (ACC or ON position).

(b) Smart key is left in cab or luggage compartment (at this time, alarm will sound, turn signal lights will flash and "Smart Key inside Vehicle" will be prompted on instrument cluster if pressing door handle sensor.)
(c) When smart key is not within exterior operation range.
(d) When any door is opened or not closed properly.
(e) When the smart key battery is discharged.

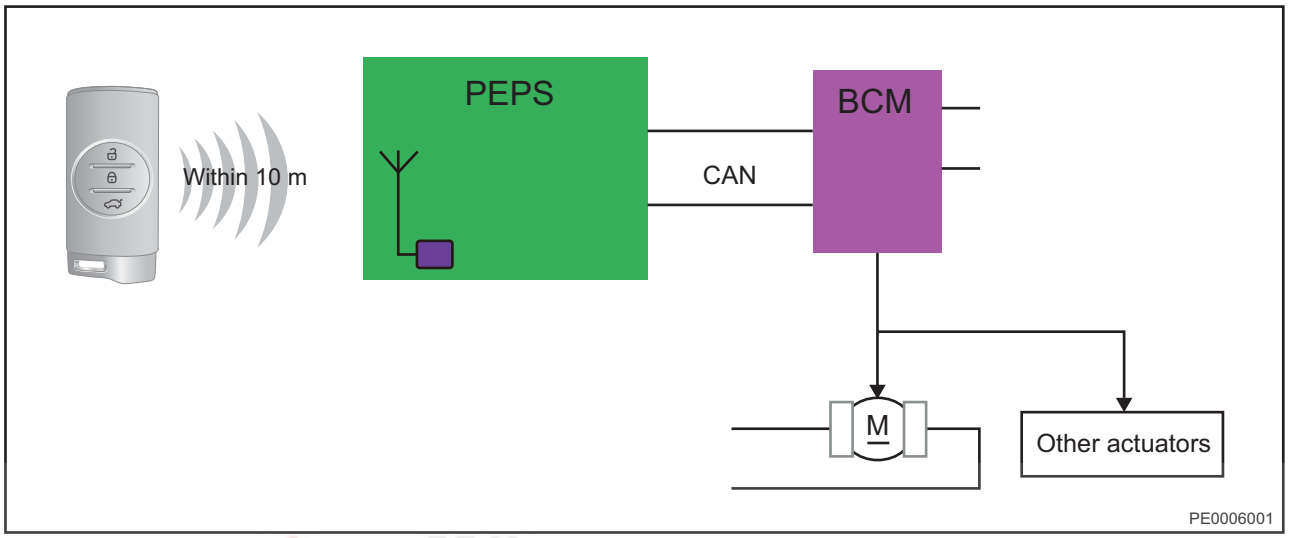


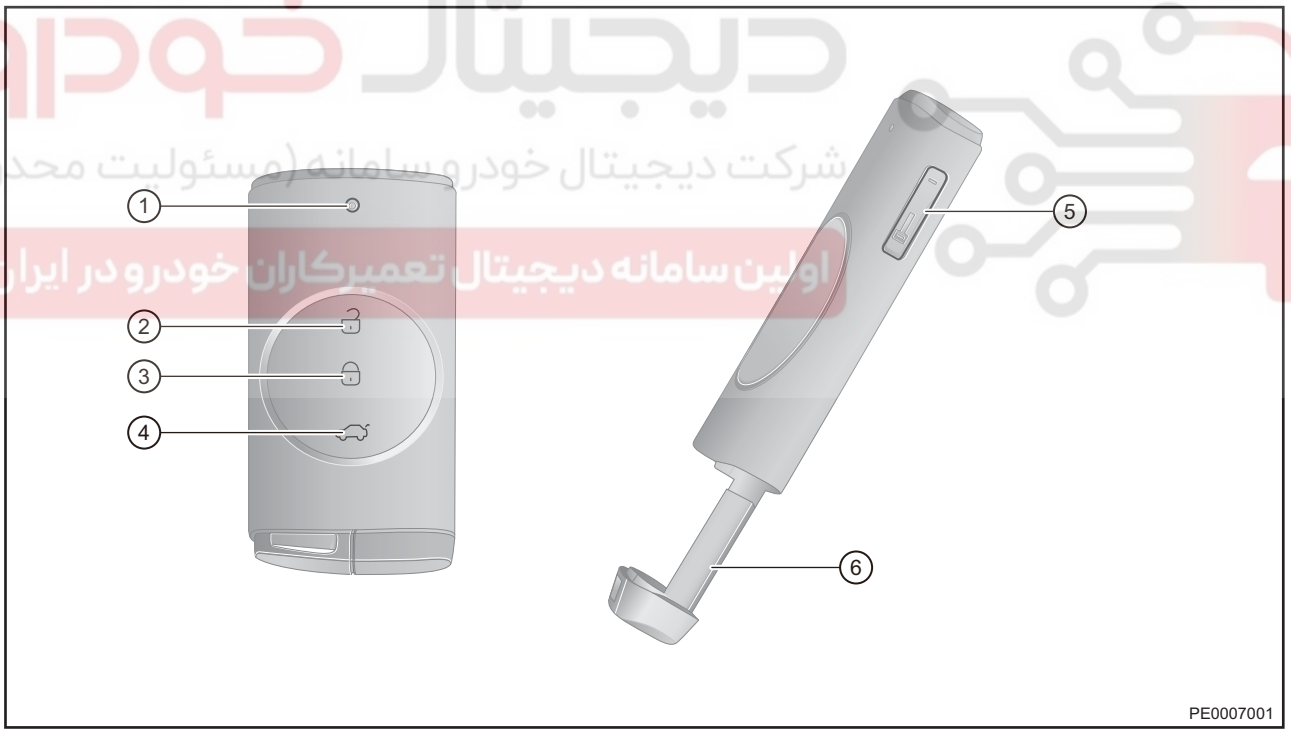
Smart Keyless Luggage Compartment Open

9. If all doors are unlocked, the luggage compartment external electronic switch is activated. At this time, press the switch to open luggage compartment without necessity of carrying smart key.
10. If door is under central lock state, luggage compartment external electronic switch will be disabled. At this time, it is necessary to bring smart key close to rear of vehicle and press electronic switch to open luggage compartment.
11. Precautions for smart entry function
    (a) For safety, when remote control/central control or mechanical control is used to lock vehicle, if there is a smart key inside vehicle, system will disable door handle switch while remote control still can be used.
    (b) In order to successfully perform door handle switch operation, do not rapidly operate door handle switch in succession within 0.5 second. And also do not rapidly operate luggage compartment external electronic switch.
    (c) Smart keyless unlock and lock are only valid when power supply is shut off and four doors are closed properly, or system will not operate.
    (d) Smart keyless unlock and lock are only valid when power supply is shut off and four doors are closed properly, or system will not operate.
    (e) For power saving purpose, after vehicle is parked for 15 days, smart entry for front right door handle will be invalid, only smart entry for front left door handle can be used (it will return to normal if performing remote control unlock once or front left door HSU (door handle sensor) unlock once).

(f) In some particular situations, such as smart key is too close to door, system may determine the key is inside vehicle, induced door handle to be disabled. In this case, keyless entry function will not operate normally. At this time, it is necessary to use remote control to lock and unlock vehicle.

Remote Entry Function





1 - LED Indicator	2 - Luggage Compartment Door Release Button
3 - Unlock Button	4 - Mechanical Key Release Button
5 - Lock Button	6 - Mechanical Key

Remote Lock (Fortifying) Function

1. Press lock button on smart key with power supply OFF, door will be locked, turn signal lights will flash (once), horn will sound (once) and vehicle will enter fortifying mode.
   (a) Press lock button with four doors & two covers closed properly, door will be locked, body anti-theft system will be turned on and vehicle will enter fortifying mode.
   (b) If any door is not closed properly, lock system will not operate.

(c) If power supply is in ACC or ON position, remote lock function will not operate to avoid misoperation.

(d) If doors are closed properly while hood or luggage compartment door is not closed properly, lock system will lock doors, but body anti-theft system cannot be turned on and vehicle will not enter fortifying mode.

Remote Lock (Fortifying Deactivation) Function

2. Press the remote control unlock button, 4 door locks are unlocked, and turn signal lights flash twice, the vehicle enters the fortifying deactivation state.

Hint:

If any of following operations is not performed within 30 seconds after pressing remote unlock button (fortifying deactivation) under fortifying mode, all doors will be locked automatically.

(a) Open any door.

(b) Press the ENGINE START STOP switch.

(c) ENGINE START STOP switch is in ACC or ON position.

Hint:

- Description

  Press unlock button, so that door will be unlocked and luggage compartment door external switch will be activated (at this time, press luggage compartment external switch to open luggage compartment even if user does not bring valid key).

  Under fortifying or anti-theft alarm mode, press unlock button to cancel body anti-theft alarm system.

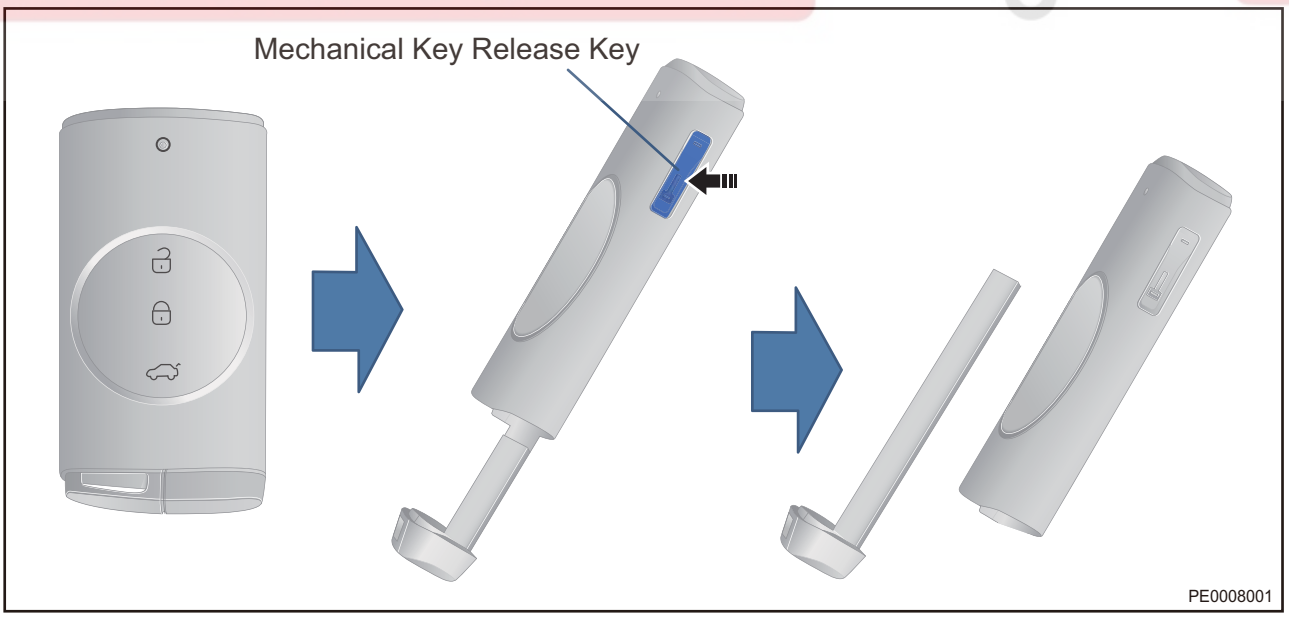
Remote Back Door Function

3. Long press remote luggage compartment button (about 1.5 seconds), luggage compartment door will be unlocked, at this time, it is still necessary to press back door release switch to open back door (for vehicles without power back door). For vehicles with power back door, the back door will be unlocked automatically.

Hint:

Opening back door by remote control cannot cancel vehicle fortifying.

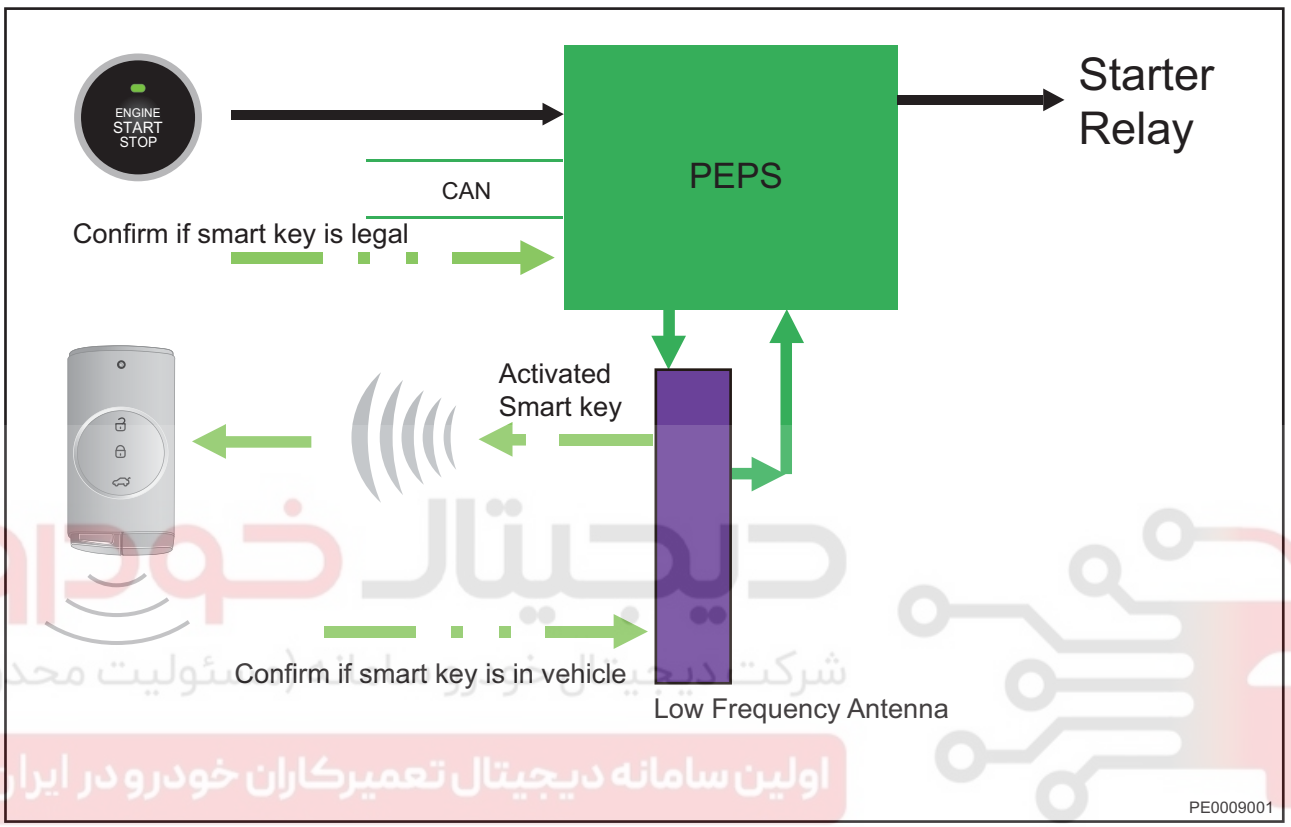
Mechanical Key Entry Function



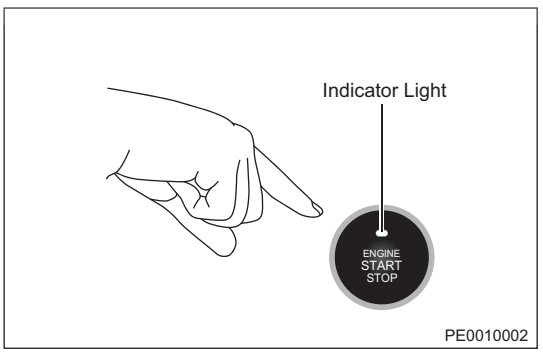
1. When key battery is weak or remote control function cannot operate normally caused by radio interference, it is possible to use mechanical key to lock and unlock vehicle.

2. Slide mechanical key release slider on back side of key and pull out mechanical key, then insert the key into front left door key cylinder and turn it clockwise or counterclockwise to lock or unlock vehicle.
Hint:
When vehicle fortifying is successful, mechanical key can be used to unlock, but it is illegal entry, and alarm will sound and turn signal lights will flash at that time.

One-button Start Function



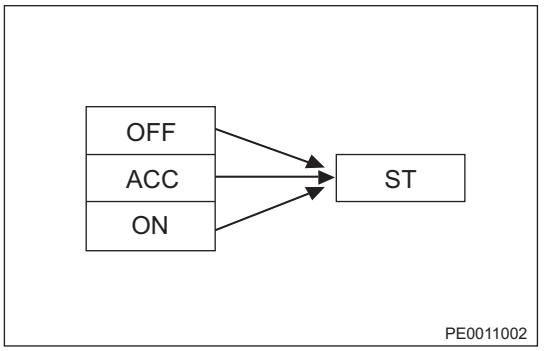
1. Indicator does not come on
   (a) Power supply is OFF and brake pedal (for DCT models) or clutch pedal (for MT models) is not depressed, or engine has been started.



2. Amber
   (a) Power supply state: ACC or ON, brake pedal (for DCT models) or clutch pedal (for MT models) is not depressed.
3. Green
   (a) Brake pedal (for DCT models) or clutch pedal (for MT models) is depressed, and engine will start once pressing the button.

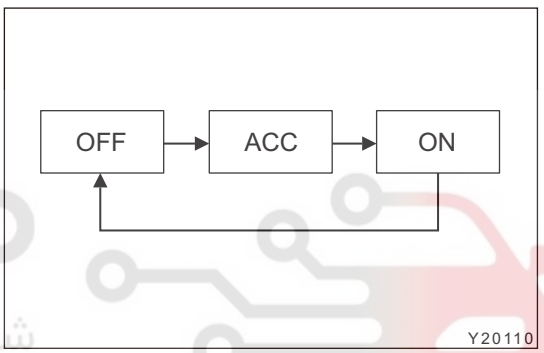
4. One-button start function: It can be activated at any power supply state (OFF, ACC, IGN) with legal smart key inside vehicle. Depress brake pedal (for DCT models) or clutch pedal (for MT models), press ENGINE START STOP switch to start engine.

   (a) Power supply state switching



5. There are four positions for vehicle power supply: OFF, ACC, ON, ST (ignition). When brake pedal (for DCT models) or clutch pedal (for MT models) is not depressed, press ENGINE START STOP switch:

   (a) Power supply state switching



1. Precautions for one-button start function

   (a) For MT models: If clutch pedal is not depressed fully, system will not perform starting operation. For DCT models, if it is not in P or N position, system will not perform starting operation.

   (b) During starting, if brake pedal (for DCT models) or clutch pedal (for MT models) is released halfway, system will suspend starting.

   (c) Press ENGINE START STOP switch then release it when starting, system will judge if starting is successful and stop starting properly.

   (d) For AT models, if it is not in P position, vehicle power supply state (ACC, IGN) will not return to OFF state.

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One-button Stop Function

1. For common engine stop mode, 4 km/h of vehicle speed must be met.

   Hint:

   - For DCT models, if it is not in P position, vehicle power supply mode cannot return to OFF, you must shift to P position before leaving vehicle after stopping. And check if power supply state is in OFF. Make sure that vehicle power supply is in OFF state and then leave vehicle. Otherwise, door cannot be locked.
   - Simple method for distinguishing power supply in ACC or OFF:
     (a) Judged by color of indicator on ignition switch.
     (b) Under ACC state, instrument cluster will illuminate center display edge of LCD.
     (c) Operate buttons on remote controller, if lock operation is failed and unlock operation is successful, it indicates that vehicle power supply is not in OFF position.

Emergency Stop Function

1. In order to stop engine in emergency, this system has emergency stop mode.

   Hint:
   - When vehicle speed is more than 4 km/h, press ENGINE START STOP switch for more than 3 seconds in succession.
   - If pressing ENGINE START STOP switch for 3 times within 2 seconds with vehicle speed more than 4 km/h, engine will stop and power supply will return to ACC.

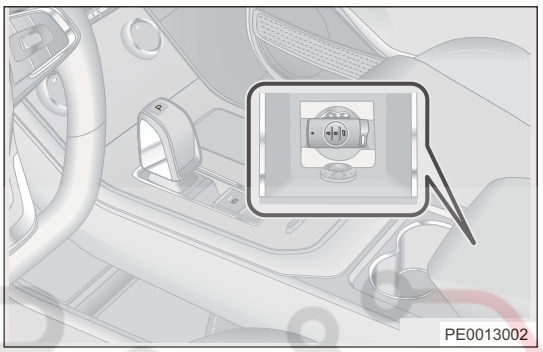
   Caution:
   - If this condition is not met, engine will not shut down and ignition switch is kept in ON.
   - During driving, emergency stop will seriously affect normal driving. Do not use this function unless in emergency.

Back Up Start Function

1. If key can not be recognized by system due to weak battery or interference, PEPS system will not operate normally. At this time, system provides a method to back up start engine, following method can be used to start engine or turn on power supply.

   (a) Lay key on bottom of rear cup holder with face up, and do not depress brake pedal (for DCT models) or clutch pedal (for MT models).

   (b) Press the ENGINE START STOP switch once. Power supply state will switch to ON, and "Verification is Successful, it is Possible to Start" is displayed on instrument cluster.



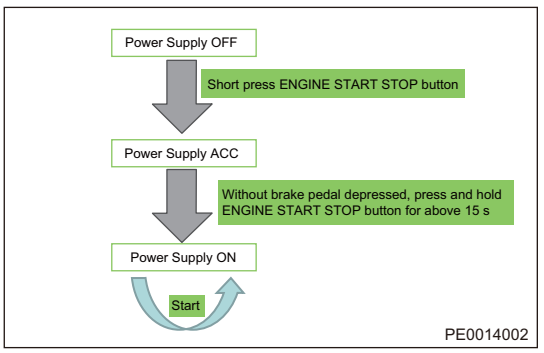
   (c) Depress brake pedal (for DCT/CVT models) or clutch pedal (for MT models) fully, press ENGINE START STOP switch to start engine.

   Hint:
   For MT models, communication between ESCL and PEPS is failed or verification does not pass, electric steering column lock cannot be unlocked successfully, power supply cannot switch to ON, engine cannot be started, so back up start function is invalid.

Emergency Start Function

1. To prevent engine cannot be started due to signal failure of brake pedal position (for DCT models) or clutch pedal position (For MT models) detected, this system has emergency start mode.

   Caution:
   - Please contact service station for inspection and repair as soon as possible.



Starting Times Limit Function

1. When serious damage occurs in system, in order to ensure driving safety and prevent steering system locking incorrectly, system will not allow user to start engine limitlessly and engine only can be started for 10 time. And each time engine starts successfully and travel, rest times will reduce one. Please contact Chery service station for repair as soon as possible.

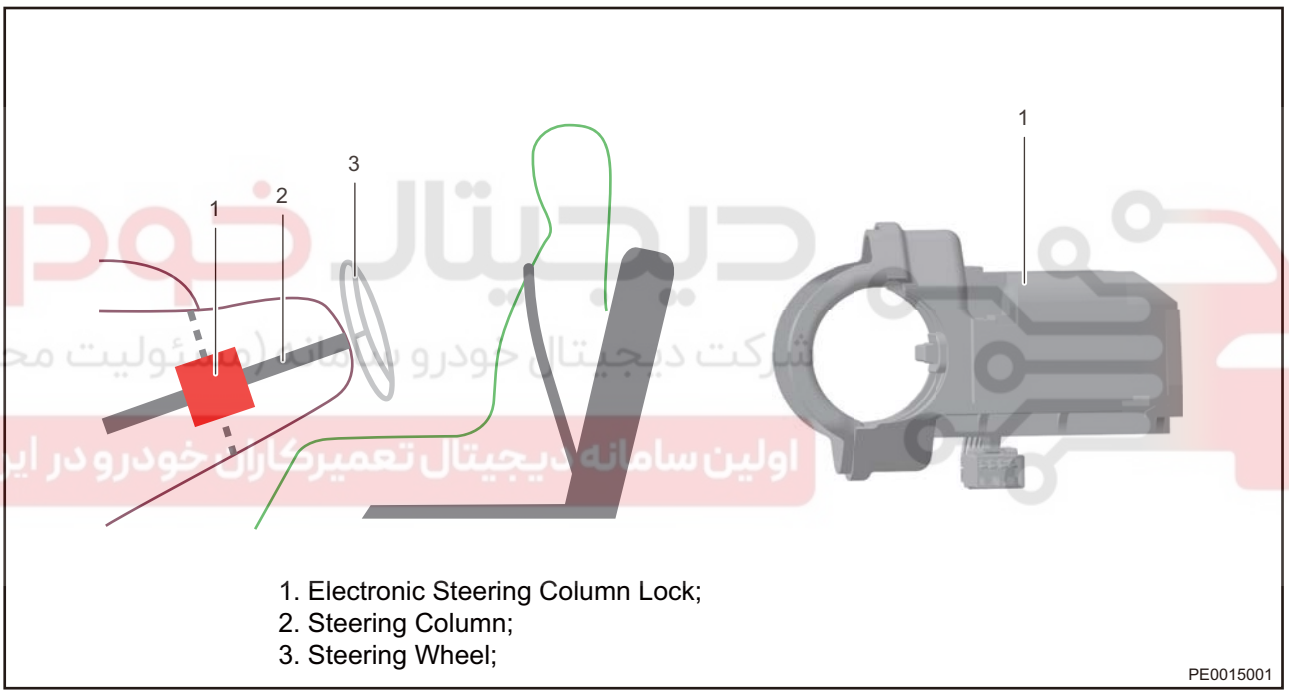
   Caution:
   Only MT models have this function.

Hint:

- This system malfunction may be caused by any or several of the following reasons:
  (a) Serious malfunction in the electric steering column lock
  (b) Speed signal malfunction of front right wheel
  (c) Speed signal malfunction of other three wheels

1. Precautions for starting times limit function
   (a) Keyless entry and PEPS system obtains wheel speed signal from brake controller (ABS/ESP), if any wheel speed signal is malfunctioning, ABS/ESP system warning light in instrument cluster will come on.
   (b) If malfunction does not be repaired and maximum start times is reached, it is not allowed to start vehicle. Please contact Chery service station for repair immediately and reset "rest start times" with diagnostic tester. Otherwise, if same malfunction occurs next time, start times offered by system will be less than 10 times. (Specific value depends on residual times last time malfunction occurs.)

Electric Steering Column Lock Control Function



1. Electronic Steering Column Lock;
2. Steering Column;
3. Steering Wheel;

PE0015001

1. Electric steering column lock is actuator of vehicle anti-theft system, consisting of mechanical locking mechanism and electronic control unit. It performs lock and unlock operation according to command from controller.

Hint:

Only MT models have this function.

(a) Locking
   (1) If any door is opened or closed and vehicle speed is 0 within 10 minutes after power supply is turned from ON to OFF, electric steering column lock will be locked.
   (2) If any door is not operated within 10 minutes after power supply is turned from ON to OFF, electric steering column lock will not be locked. And even if a door is operated 10 minutes later, electric steering column lock also will not be locked.

(b) Unlocking
   (1) When pressing ENGINE START STOP switch with smart key in vehicle, steering column lock will be unlocked.
   - In some conditions, such as vehicle is parked on slope, large stress will apply to locking pin and steering column, so that, locking pin will be stuck. At this time:

(a) System will try to unlock for 3 times within 3 seconds.
(b) If steering column lock has not been successfully unlocked, perform related operation according to message "Please press ENGINE START STOP switch, restart power supply" and "Please press ENGINE START STOP switch and turn steering wheel to unlock steering column lock".

1. Precautions for electric steering column lock control function
   (a) If unlock is failed, try to shake steering wheel after pressing ENGINE START STOP switch, but do not forcibly turn steering wheel.
   (b) If electric steering column lock cannot be unlocked successfully, system power supply will not be turned on and engine cannot be started for safety, please contact Chery service station for repair in time.
   (c) After replacing electric steering column lock, it is necessary to use diagnostic tester to perform matching and learning.

Prompt Function

To reduce misunderstanding of PEPS features from users and to facilitate the daily diagnosis of simple problems, system will prompt corresponding message to users through instrument cluster display, buzzer and external horn. Regardless of power supply state (OFF, ACC or ON), once PEPS sends information, instrument cluster will handle and display it.

Text Message Prompt	Buzzer	External Horn	Possible Cause
Smart key is not detected	Sound	\	There is no key in vehicle
Smart key is not detected	Sound	\	If you are in vehicle, find smart key and place it in vehicle, or check if passenger brings the key outside
System malfunction, it is allowed to start X times	Sound	\	Please contact Chery Repair Shop for repair immediately.
Please check and repair PEPS system	Sound	\	Please contact Chery Service Station for repair immediately
Please shift to P or N to start	Sound	\	If you want to start engine, shift to P or N
Please depress clutch pedal to start/ depress brake pedal to start	Sound	\	If you want to start engine, depress brake pedal (for DCT models) or clutch pedal (for MT models)
Please turn steering wheel to unlock steering column	Sound	\	Turn power supply on while shaking steering wheel to help steering column unlock successfully
Please press ENGINE START STOP switch to turn power supply on again	Sound	\	Turn power supply on while shaking steering wheel to help steering column unlock successfully
Please shift to P	Sound	\	Please shift to P and press ENGINE START STOP switch to turn off power supply.
Please pay attention that smart key is in vehicle	Sound	Sound 6 times	Be sure to carry smart key on person when leaving vehicle. Caution: Door handle switch will be disabled by system temporarily, please use remote controller to lock and unlock
Verification is successful and it is possible to start	Sound	\	It is displayed only when performing back up start and verification passed, and key battery is fully discharged usually
Please turn off power supply	Sound	\	User may leave vehicle with shift position not in P and power supply not in OFF
Smart key battery is low	Sound	\	Key battery still can be used, but it comes to failure due to low voltage, it is necessary to replace battery

Engine and Vehicle Anti-theft Function

1. Anti-theft for models with PEPS can be divided into two types.
2. For DCT models, anti-theft can be divided into two separate parts - "PEPS and ECU encryption engine immobilizer".
3. For MT models, anti-theft can be divided into two separate parts - "PEPS and ECU encryption engine immobilizer" and "PEPS and ESCL encryption steering column lock anti-theft".

1. For DCT models
   (a) After power supply is turned to ON, ECU will send one frame of validation data to PEPS via CAN bus to verify. Then PEPS will feedback one frame of validation data as response and send to ECU. If response from PEPS is correct, ECU will determine anti-theft can be canceled. Otherwise, ECU will not inject fuel and ignite.
2. For MT models
   (a) After power supply is turned to ACC, PEPS will perform encrypted anti-theft validation with ESCL via special LIN line. If validation passes, ESCL will unlock, or ESCL keeps locking and steering wheel cannot be turned. And power supply cannot be turned to ON.
   (b) After power supply is turned to ON, ECU will send one frame of validation data to PEPS via CAN bus to verify. Then PEPS will feedback one frame of validation data as response and send to ECU. If response from PEPS is correct, ECU will determine anti-theft can be canceled. Otherwise, ECU will not inject fuel and ignite.

Anti-theft Match

Smart Key Replacement After Vehicle Sold

1. Description
   (a) There are two match methods between smart key and system: "Replace with new key" and "Add old key".
      (1) "Add new key" refers to match blank key (never match with any system) with system. It usually happens when user would have additional new key on the basis of the old ones.
      (2) "Add old key" refers to rematch learned key with system (it is must be previous system).

Caution:

- If user lost a smart key with one key left, when replacing with a new smart key, perform as follows to replace with a new one: Learn the new key by "Add new key" service, delete all smart keys by "Delete all keys" service, then learn the remain two smart keys in order by "Add old key" service. If user finds the lost key, it can be reactivated by "Add old key" service on diagnostic tester. If not, even if the lost one is found, it cannot be used normally.

1. Match Operation

Caution:

Perform "Add new key" and "Add old key" when the ignition switch is in OFF position.

(a) Anti-theft match description for "Add new key" is as follows:
   (1) Technician reads VIN in EMS of user's vehicle with diagnostic tester, then obtain PIN through VIN.
   (2) Place the smart key to be matched on the key mark in cup holder, enter anti-theft control system program on diagnostic tester, select "Add new key" menu, input PIN, diagnostic tester will perform "Add new key" program automatically.
   (3) After that, press unlock button and check if left and right turn signal light indicators on instrument cluster blink. If the indicators blink, new key is matched successfully, otherwise, new key is not matched successfully.

(b) Anti-theft match description for "Add old key" is as follows:
   (1) Technician reads VIN in EMS of user's vehicle with diagnostic tester, then obtain PIN through VIN.
   (2) Enter anti-theft control system program on diagnostic tester, select "Delete all keys" menu.
   (3) Place the smart key to be matched on the key mark in cup holder, enter anti-theft control system program on diagnostic tester, select "Add old key" menu, input PIN, diagnostic tester will perform "Add old key" program automatically.
   (4) After that, press unlock button and check if left and right turn signal light indicators on instrument cluster blink. If the indicators blink, new key is matched successfully, otherwise, new key is not matched successfully.

   Caution:

   - When performing "Add old key", it is necessary to carry previous matched smart key and perform match operation one by one according to match procedures, or previous matched key will be disabled.
   - Regardless of "Add new key" or "Add old key", only one smart key can be kept in vehicle and keep key on key mark in cup holder. Make sure that there is no other key in vehicle. If there is other key, bring it to a position 2 m away from vehicle.

PEPS Module Replacement After Vehicle Sold

1. Technician reads VIN in EMS with diagnostic tester, then obtains PIN through VIN.
2. If vehicle is equipped with ESCL, make sure that ESCL is unlocked. After new PEPS is assembled successfully, press ignition switch (IG) to turn on power supply.
3. Enter anti-theft control system program on diagnostic tester, select "Program IMMO" menu; input PIN according to prompt on diagnostic tester, after "Program IMMO" is performed successfully, it will display "Program IMMO is successful".
4. Then match previous keys one by one according to instructions of "Add old key".
5. If vehicle is equipped with ESCL, enter anti-theft control system program on diagnostic tester and complete "Add old key", then keep power supply in OFF position, check state of ESCL with diagnostic tester, if ESCL is not in Anti-scanning state, replacement is completed, if ESCL is in Anti-scanning state, select "Delete ESCL", input PIN according to prompt on diagnostic tester, ESCL will be deleted successfully after about 10 minutes, then match ESCL according to description for ESCL replacement.

   Caution:
   - Please contact Chery service station to obtain PIN.
   - Unmatched smart keyless entry and PEPS can switch power supply from IGN OFF to IGN ON for 50 times. Once it exceeds 50 times, PEPS cannot be used. So, do not turn on and off power supply at will with PEPS unmatched.
   - If ESCL accidentally enters "Anti-scanning" protection mode, it is necessary to perform "Erase ESCL".

EMS Replacement After Vehicle Sold

1. Technician reads VIN in old EMS or smart keyless entry and PEPS unit with diagnostic tester, then obtains PIN through VIN.
2. After new EMS is assembled successfully, press ignition switch (IG) to turn on power supply.
3. Enter anti-theft control system program on diagnostic tester, select "Program EMS" menu; input VIN and PIN according to prompts on diagnostic tester. After "Program EMS" is performed successfully, it will display "Match EMS is successful".
4. Depress brake pedal (for DCT models)/clutch pedal (for MT models), press ignition switch once to check if vehicle can be started successfully. If vehicle can be started successfully, EMS replacement is completed, if vehicle cannot be started successfully, EMS replacement is not completed.

Electric Steering Column Lock (ESCL) Replacement After Vehicle Sold

Caution:

- Only apply to PEPS + MT models

1. Technician reads VIN in old EMS or smart keyless entry and PEPS unit with diagnostic tester, then obtains PIN through VIN.
2. After new ESCL is assembled successfully, keep power supply in OFF position.
3. Enter immobilizer control system program on diagnostic tester, select Program ESCL menu; Input PIN according to prompt on diagnostic tester, after Program ESCL is successful, "ESCL matching is successful" will be displayed on diagnostic tester.
4. Press ignition switch to switch power supply to IGN OFF state, open driver door and close it again, check if lock sound can be heard, then check if steering wheel can be turned. If lock sound can be heard and steering wheel cannot be turned, electric steering column lock is locked successfully.
5. Press ignition switch to switch vehicle power supply to IGN ON state, check if unlock sound can be heard, then check if steering wheel can be turned. If unlock sound can be heard and steering wheel can be turned, electronic steering column lock is unlocked successfully, ESCL matching is successful, or matching fails.

   Caution:

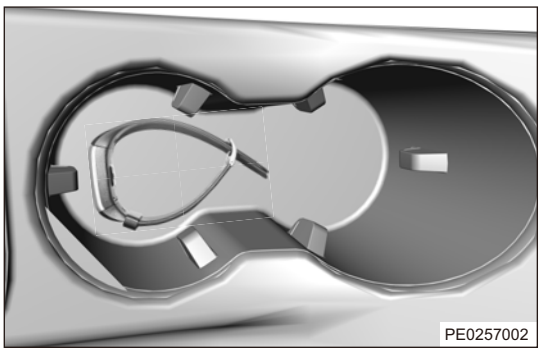
   - Please contact Chery service station to obtain PIN.

Smart Bracelet Key (If Equipped)

Matching Procedure

The smart bracelet key does not match with vehicle at the factory. Match the bracelet with vehicle before delivering the vehicle to user. Matching procedure has the similar method with adding new smart key. The operating method is as follows:

1. Obtain the Vehicle Identification Number (VIN), so as to use it to obtain the corresponding Personal Identification Number (PIN).
2. Take out the smart bracelet key (regardless of the ON/OFF status of bracelet), and place the bracelet into the cup holder with key mark or onto the storage box.



3. On diagnostic tester, enter "IMMO (Immobilizer)" - Key match - Add new key - input PIN, and diagnostic tester will perform "Add new key" program automatically.
4. After a successful matching, long press the button on back side of smart bracelet key for 3 s to turn on the smart bracelet (if the bracelet cannot be turned on due to low battery, please charge it before use).
5. Enter the smart bracelet "Vehicle key" menu, select "unlock" function, and short press the "unlock icon" once to establish RF connection between smart bracelet key and PEPS controller, at this time, the smart bracelet key is matched successfully.
6. To ensure the intact function of smart bracelet key, please check the "Vehicle key" remote control function, keyless entry function and one-button start function of smart bracelet.
7. For vehicle with remote start configuration, you can set the "start engine function" of bracelet to ON using the APP "CHERY wearing" in phone. After the function is turned on, you can start engine using bracelet within a remote control range of 20 m.
8. Generally, the fully charged smart bracelet key can be used for about 2 weeks. When battery power drops to 10% or less, the bracelet will enter low battery mode. In this mode, the screen and conventional functions of bracelet will be turned off with the remote control (short pressing the button on back side can unlock vehicle) and PEPS function being kept. The low battery mode can be used for 2 weeks, please charge the battery as soon as possible.

Diagnostic Content

Problem Symptoms Table

Hint:

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

Symptom	Suspected Area
Remote controller fails	Remote controller battery is weak
	There is remote control signal interference
	Remote controller enters failure mode (it is necessary to exit)
	Code is lost (add old key)
	PEPS malfunction
	Wireless key malfunction
	BCM malfunction
Vehicle cannot enter fortifying mode	Four doors & two covers are abnormal
	Power supply is not in OFF state
	Door lock malfunction
	PEPS malfunction
	BCM malfunction
Vehicle cannot be unlocked	Door lock malfunction
	PEPS malfunction
	BCM malfunction
Microswitch cannot enter fortifying mode and be unlocked	Smart key is not within range
	Open or sticking in microswitch
	Power supply is not in OFF state
	Four doors & two covers are abnormal
	Smart key in vehicle
	Smart key battery is low
Luggage compartment cannot be opened	Back door switch fails (open, water leakage or sticking)
	Back door lock malfunction
	PEPS malfunction
	Short or open in wire harness
	BCM malfunction
Vehicle cannot be started (PEPS) (starter runs)	Anti-theft verification does not pass
Vehicle cannot be started (PEPS) (starter does not run)	Gear position is not in P/N (for DCT models)
	Clutch (for MT models)/brake switch (for DCT models) is abnormal
	ENGINE START STOP switch malfunction
	Circuit or starter relay is abnormal
	Starter malfunction
	Start times limit is activated
ESCL cannot be locked or unlocked	Vehicle is parked on slope (lock pin is stuck)
	Door signal is abnormal
	ENGINE START STOP switch cannot be turned on or off
	Short or open in wire harness
	Anti-theft verification fails
	Network communication malfunction

Diagnosis Procedure

Hint

Use following procedures to troubleshoot the PEPS system.

1	Vehicle brought to workshop

Result

Go to
NEXT

NEXT

2	Check battery voltage

Check if battery voltage is normal.

OK

Standard voltage: Not less than 12 V.

Result

Go to
OK
NG

NG → Replace battery

OK

3	Customer problem analysis

Result

Go to
NEXT

NEXT

4	Read DTCs

Result

Go to
DTC
No DTC

No DTC → Repair according to Problem Symptoms Table

DTC

5	Read the DTCs (current DTC and history DTC)

Result

Go to
Current DTC
History DTC

History DTC → **Troubleshoot according to intermittent DTC**

Current DTC

6	Repair according to Diagnostic Trouble Code (DTC) Chart

Result

Go to
NEXT

NEXT

7	Adjust, repair or replace

Result

Go to
NEXT

NEXT

8	Conduct test and confirm malfunction has been repaired

Result

Go to
NEXT

NEXT → **End**

Problem Repair (No DTC)

If PEPS system has problems, but no DTC is stored in PEPS system, this problem is called a problem without DTC. Problems without DTC for PEPS system are divided into following types:

1. Indicator in instrument cluster does not come on or illuminates constantly (incorrect wire harness connection or indicator is damaged).
2. Troubleshooting recommendation: Check corresponding components according to problem symptom, and troubleshoot following the vehicle repair manual.

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.
- Using diagnostic tester, record and clear DTCs stored in PEPS control module assembly.
- 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 DTC chart, and perform troubleshooting.
- If no DTC is detected, malfunction indicated by DTC is intermittent Please refer to Intermittent DTC Troubleshooting.

Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

- Check if connector is loose.
- Check if wire harness is worn, pierced, pinched or partially broken.
- Wiggle related wire harness and connector and observe if signal in related circuit is interrupted.
- If possible, try to duplicate conditions under which DTC was set.
- Look for data that has changed or DTC to reset during wiggle test.
- Check for broken, bent, protruded or corroded terminals.
- Check and clean all wire harness connectors and body ground parts related to DTC.
- If multiple trouble codes were set, refer to circuit diagrams to look for any common body ground circuit or power supply circuit applied to DTC.
- Refer to any Technical Bulletin that may apply to this malfunction.

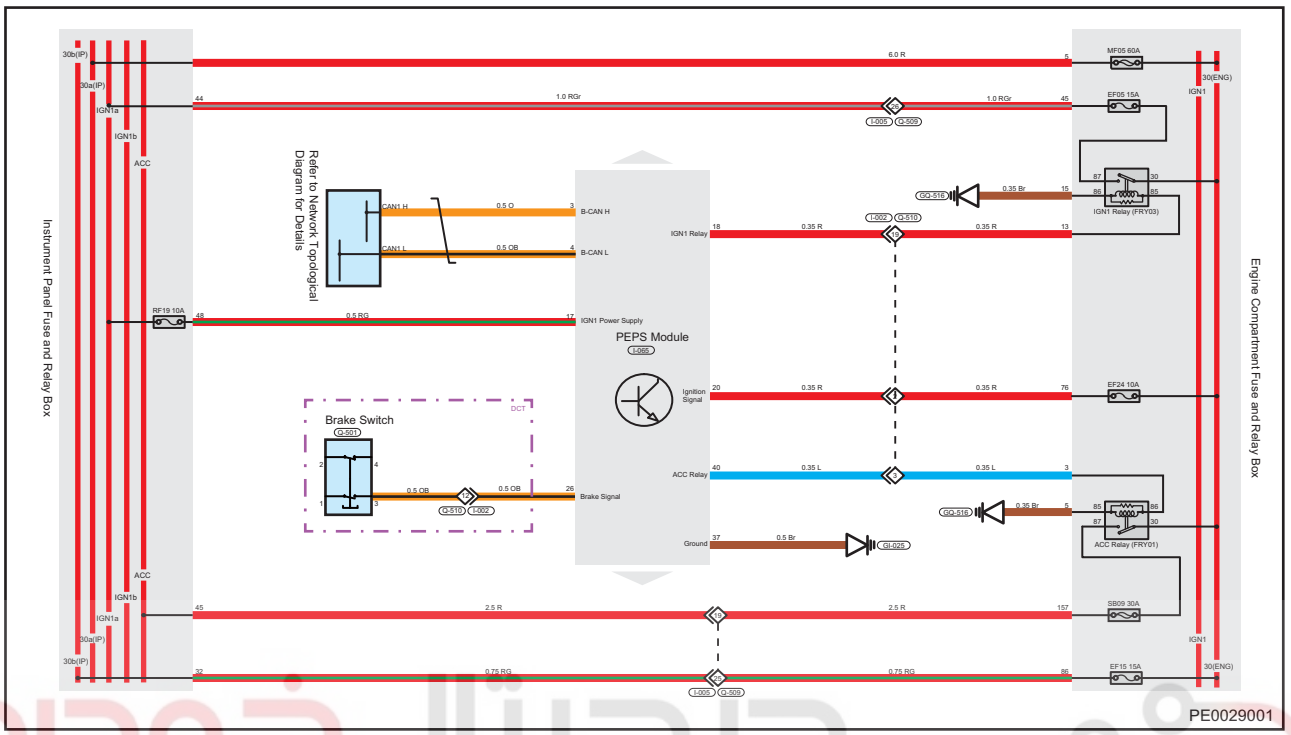
Body Ground Inspection

Body ground points are very important to the proper operation of circuits. Body ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) may increase load resistance. This situation may change the way in which a circuit works. Circuits are very sensitive to proper body grounding. A loose or corroded body ground can affect the control circuit. Check the body ground points as follows:

1. Remove body ground bolt or nut.
2. Check all contact surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that contact is in good condition.
4. Reinstall body ground bolt or nut securely.
5. Check if there are add-on accessories that interfere with body ground circuit.
6. If several wire harnesses are crimped into one body ground terminal, check for proper crimps. Make sure all wire harnesses are clean, securely fastened with providing a good body ground path.

PEPS Circuit Diagram

E4T15C



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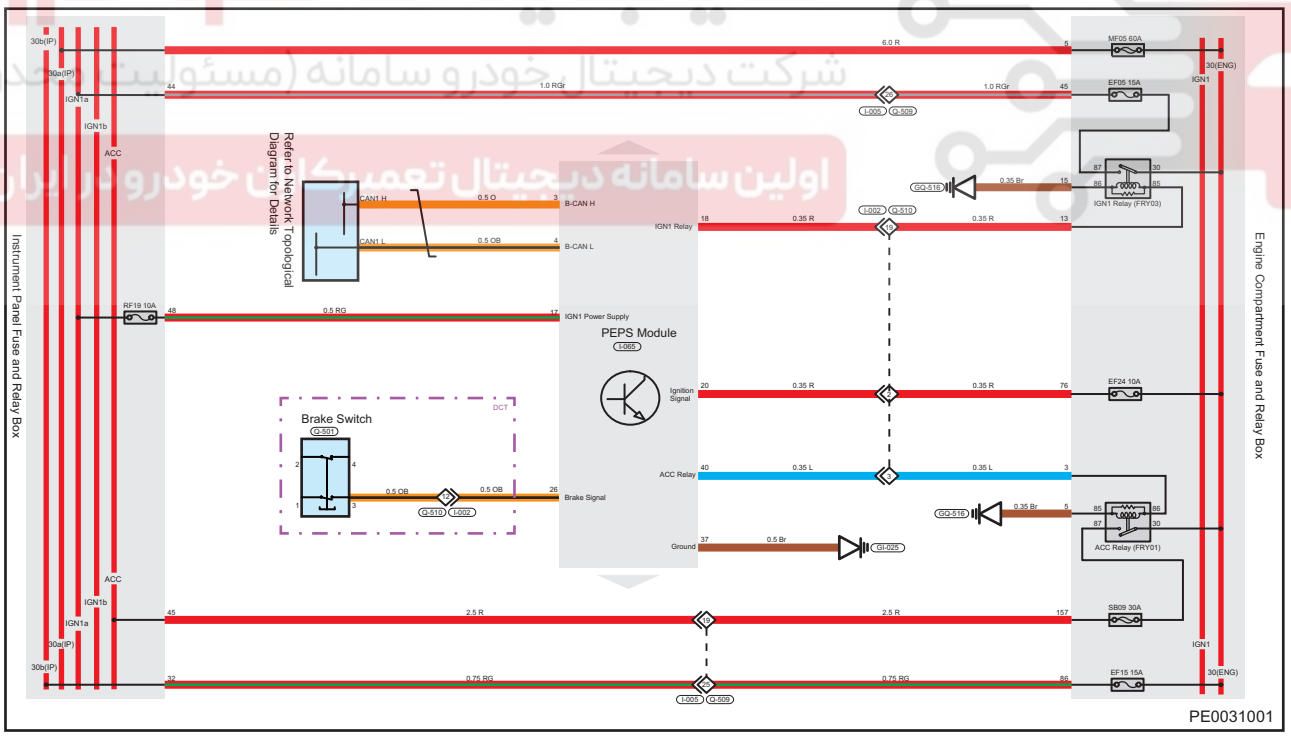
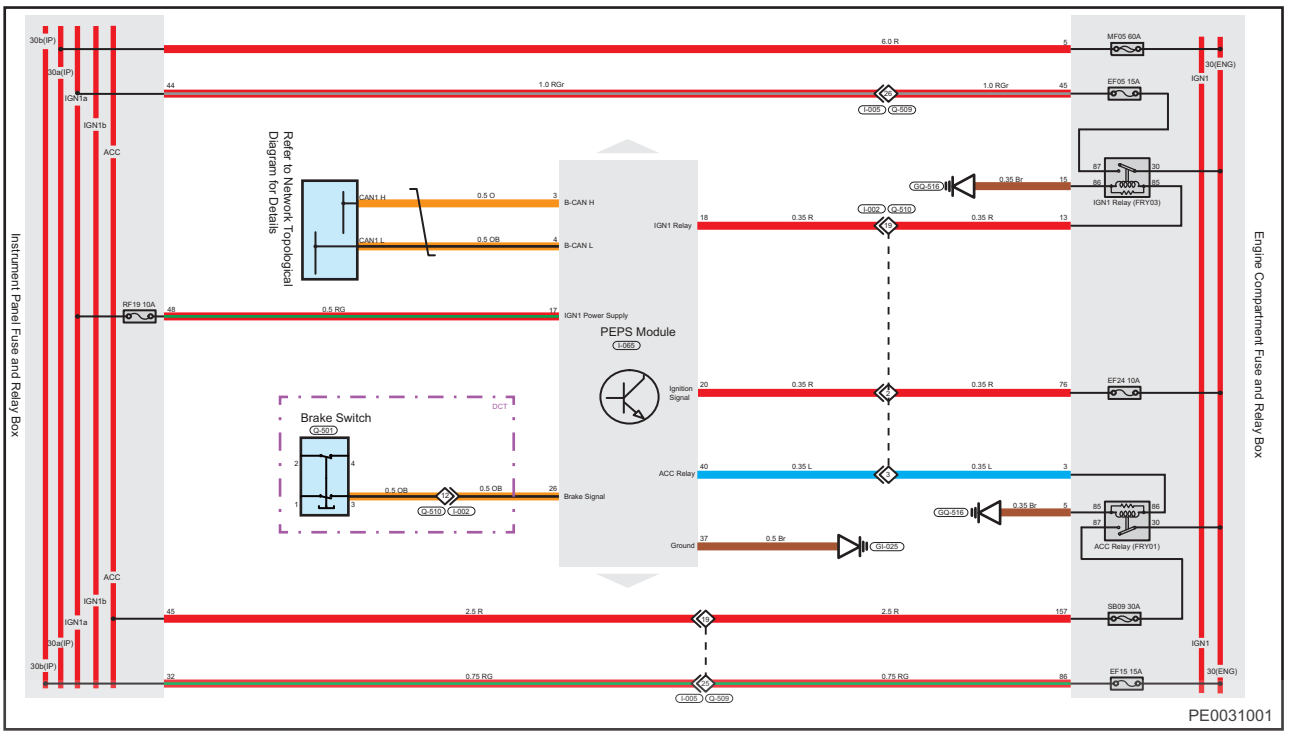
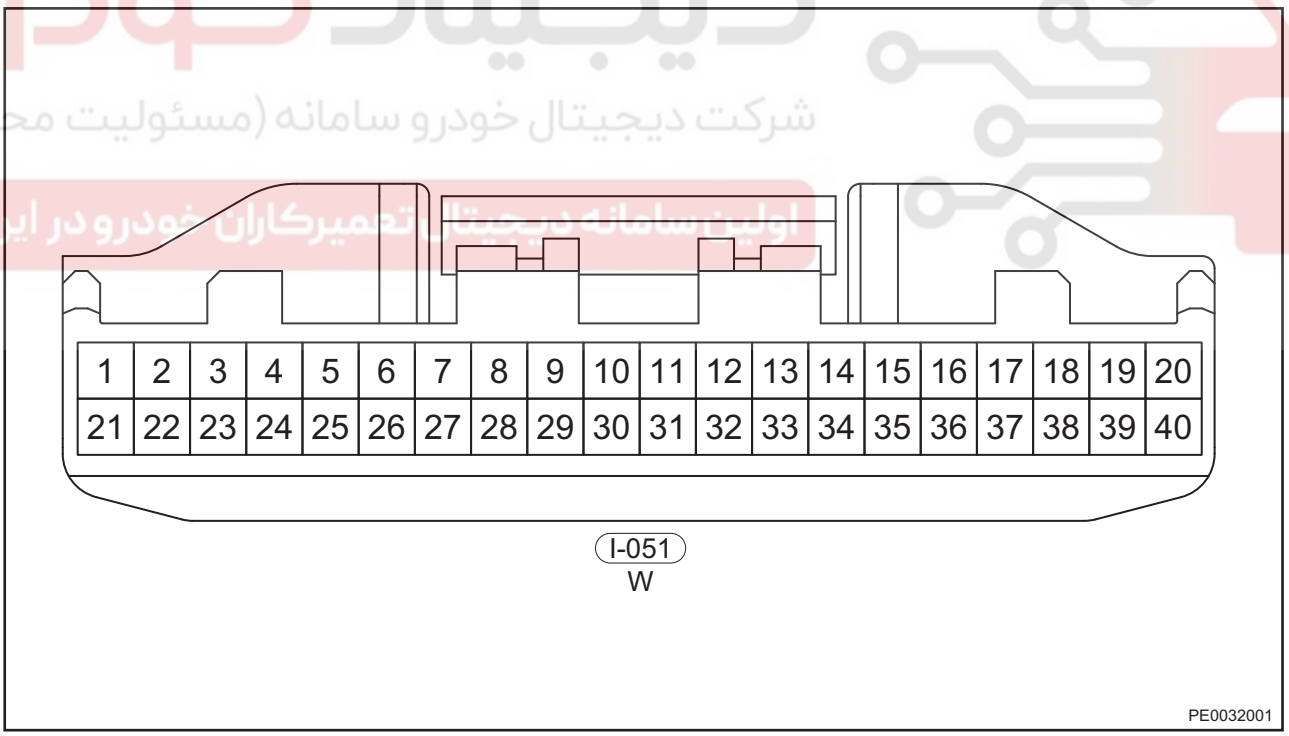




PEPS Control Module Assembly Terminal List



Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
1	Reserved	21	LIN2 Reserved
2	Reserved	22	Clutch Switch (Normal Close)
3	CAN H	23	ENGINE START STOP Switch Indicator (Yellow)
4	CAN L	24	ENGINE START STOP Switch Indicator (Green)
5	Start Relay Detection	25	ENGINE START STOP Switch Indicator (White)
6	Back Door Opener Switch	26	Brake Switch
7	SW2 ENGINE START STOP Switch 2	27	Reserved

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
8	SW1 ENGINE START STOP Switch 1	28	ENGINE START STOP Switch (-)
9	Reserved	29	Reserved
10	Rear Left PEPS Antenna Positive End	30	Rear Left PEPS Antenna Negative End
11	Anti-theft Coil DCT Negative End	31	Anti-theft Coil DCT Positive End
12	Rear Right PEPS Antenna Positive End	32	Rear Right PEPS Antenna Negative End
13	Front Low-frequency Antenna Positive End	33	Front Low-frequency Antenna Negative End
14	Low-frequency Antenna 4 Positive End	34	Low-frequency Antenna 4 Negative End
15	Front Right Door Handle Sensor Positive End	35	Front Right Door Handle Sensor Negative End
16	Front Left Door Handle Sensor Positive End	36	Front Left Door Handle Sensor Negative End
17	IGN1 Power Supply	37	GND
18	IGN1 Relay	38	Start Relay
19	Reserved	39	Start Relay (High)
20	Ignition Signal	40	ACCD Relay Drive (High)

Diagnostic Trouble Code (DTC) Chart

DTC	DTC Definition
B1300	Internal Control Module EEPROM Error
B1301	Immobilizer and ECM Authentication Failed
B1302	VIN Not Programmed
B1305	Immobilizer Has None Key was Storage
B1306	Security Code was not Programmed
B1500	Driver Door Outside LF Antenna Circuit Open
B1501	Passenger Door Outside LF Antenna Circuit Open
B1502	Front Internal LF Antenna Circuit Open
B1505	Bumper LF Antenna Circuit Open
B1521	Open Circuit of Backup Antenna
B1522	Open Circuit on Drive Door PSU
B1523	Open Circuit on Passenger Door PSU
B1524	Short Circuit of (Driver Side) Rear Left LF Antenna
B1525	Short Circuit of (Passenger Side) Rear Right LF Antenna
B1526	Short Circuit of Front Internal LF Antenna
B1527	Short Circuit of Bumper LF Antenna
B1528	Short Circuit of Backup Antenna
B1529	Short Circuit on Driver Door HSU/PSU
B152A	Short Circuit on Passenger Door HSU/PSU
B152B	Stuck on Driver Door HSU/PSU
B152C	Stuck on Passenger Door HSU/PSU
B1518	Trunk/Back Door Unclock Switch Stuck Failure
B152D	SSB Stuck
B1506	Abnormality on Switches of Engine Switch
B1507	Abnormality in IG Circuit
B1508	Abnormality in ACC Circuit
B152E	START Fail
B1509	Abnormality in Brake Signal
B150C	Clutch Switch Signal Error
B1515	ROM Checksumm Failure
B152F	Battery Voltage Low Detection
B1530	Battery Voltage High Detection

DTC	DTC Definition
U0073	CAN Bus Off
U0100	Lost of Communication with Engine Control System Module
U0101	Lost of Communication with Transmission Control Unit
U0129	Lost Communication with Brake System Module
U0140	Lost Communication with Body Control Module
U1190	Lost Communication with ESCL
U0155	Lost Communication with ICM
U0230	Lost Communication with PLG
U0531	Invalid Data Received From PLG
U0401	Invalid Data Received From EMS
U0418	Invalid Data Received From BSM
U0402	Invalid Data Received From TCU
U059C	Invalid Data Received From ESCL
U1300	Software Configuration Error-Not Configured

DTC	B1300	Internal Control Module EEPROM Error

Description

DTC	DTC Definition	DTC Definition
B1300	Internal Control Module EEPROM Error	Control module internal data error

Procedure

1	Check for DTCs

(a) Using diagnostic tester, clear DTC and read IMMO control module assembly DTC.
(b) Check if DTC occurs again.

Result

Go to
OK
NG

OK → System is normal

NG

2	Check if vehicle PEPS control is normal

Result

Go to
OK
NG

OK → Turn off vehicle power supply (disconnect the negative battery cable), then clear DTC again

NG → Replace PEPS module

DTC	B1301	Immobilizer and ECM Authentication Failed

DTC	B1515	ROM Checksumm Failure

Description

DTC	DTC Definition	DTC Definition
B1300	Internal Control Module EEPROM Error	It may be necessary to perform anti-theft match for PEPS and ECU module again
B1515	ROM Checksumm Failure	

Procedure

1	Check for DTCs

(a) Using diagnostic tester, clear DTC and read IMMO control module assembly DTC.
(b) Check if DTCs occur again.

Result

Go to
OK
NG

OK → **System is normal**

NG

2	Check if engine can be started normally

Result

Go to
OK
NG

OK → **Turn off vehicle power supply (disconnect the negative battery cable), then clear DTC again**

NG → **Perform anti-theft match for PEPS and ECU module again**

DTC	B1302	VIN Not Programmed

Description

DTC	DTC Definition	DTC Definition
B1302	VIN Not Programmed	It may be necessary to input VIN into PEPS again

Procedure

1	Check for DTCs

(a) Using diagnostic tester, clear DTC and read IMMO control module assembly DTC.
(b) Check if DTCs occur again.

Result

Go to
OK
NG

OK → System is normal

NG

2	Turn off vehicle power supply (disconnect the negative battery cable), then clear DTC

Result

Go to
OK
NG

OK → System is normal

NG → Input VIN into PEPS again

DTC	B1305	None Transponder was Detected

Description

DTC	DTC Definition	Possible Cause
B1304	None Transponder was Detected	PEPS control module assembly is damaged

Procedure

1	Check for DTCs

(a) Using diagnostic tester, clear DTC and read IMMO control module assembly DTC.
(b) Check if DTCs occur again.

Result

Go to
OK
NG

NG → Enter anti-theft system and add key

OK

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Check if the same DTCs are still output.

Result

Go to
OK
NG

OK → System operates normally

NG → Replace PEPS control module assembly

DTC	B1306	Security Code was not Programmed

Description

DTC	DTC Definition	Possible Cause
B1306	Security Code was not Programmed	PEPS control module assembly is damaged

Procedure

1	Check for DTCs

(a) Using diagnostic tester, clear DTC and read IMMO control module assembly DTC.
(b) Check if DTCs occur again.

Result

Go to
OK
NG

NG → **Rematch PEPS module**

OK

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Check if the same DTCs are still output.

Result

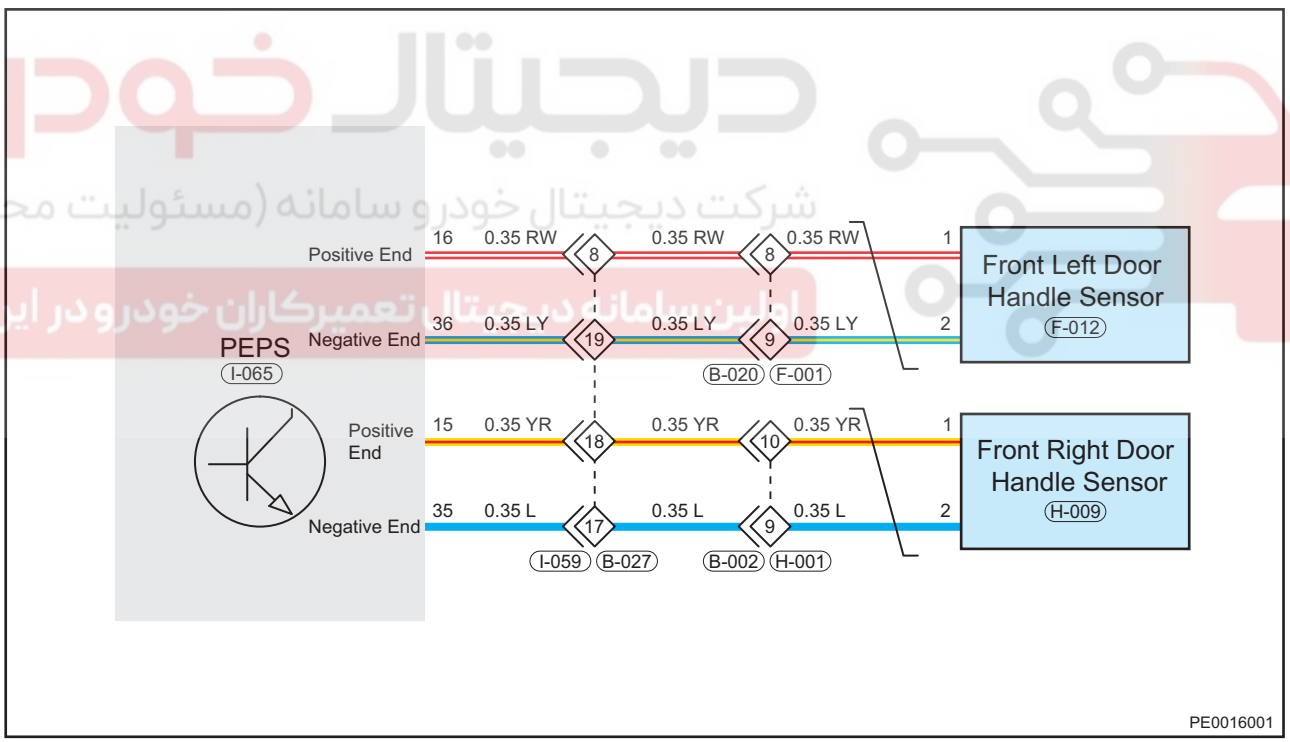
Go to
OK
NG

OK → **System operates normally**

NG → **Replace PEPS control module assembly**

DTC	B1500	Driver Door Outside LF Antenna Circuit Open
DTC	B1501	Passenger Door Outside LF Antenna Circuit Open
DTC	B1522	Open Circuit on Drive Door PSU
DTC	B1523	Open Circuit on Passenger Door PSU
DTC	B1529	Short Circuit on Driver Door HSU/PSU
DTC	B152A	Short Circuit on Passenger Door HSU/PSU
DTC	B152B	Stuck on Driver Door HSU/PSU
DTC	B152C	Stuck on Passenger Door HSU/PSU

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
B1500	Driver Door Outside LF Antenna Circuit Open	PEPS control module or interior wire harness is damaged
B1501	Passenger Door Outside LF Antenna Circuit Open	
B1522	Open Circuit on Drive Door PSU	
B1523	Open Circuit on Passenger Door PSU	
B1529	Short Circuit on Driver Door HSU/PSU	
B152A	Short Circuit on Passenger Door HSU/PSU	

Caution:
Take driver side low frequency antenna as an example to explain troubleshooting procedures for reference.
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	**Check if PEPS module output voltage is normal.**

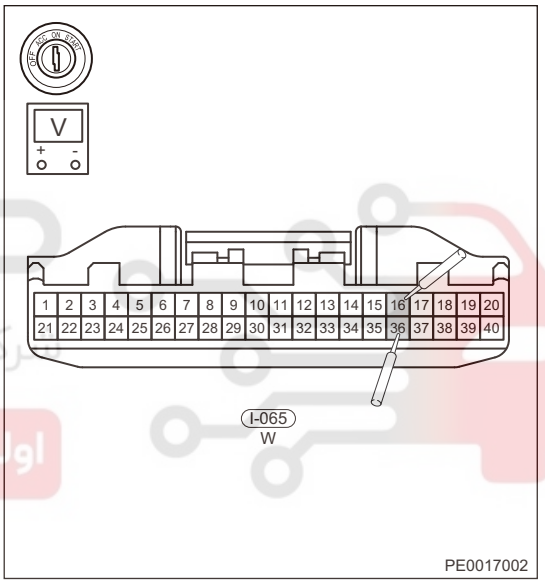
(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the PEPS module connector I-065.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Connect the negative battery cable, turn ENGINE START STOP switch to ON, use DC voltage band of digital multimeter to measure if voltage between terminals I-065 (16) and I-065 (36) of PEPS is normal.

OK

Multimeter Connection	Condition	Specified Condition
I-065 (16) - I-065 (36)	Always	12 V

Result

Go to
OK
NG



NG → **Replace PEPS control module assembly**

OK

2	**Check door handle sensor**

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the front left door sensor connector F-012.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.

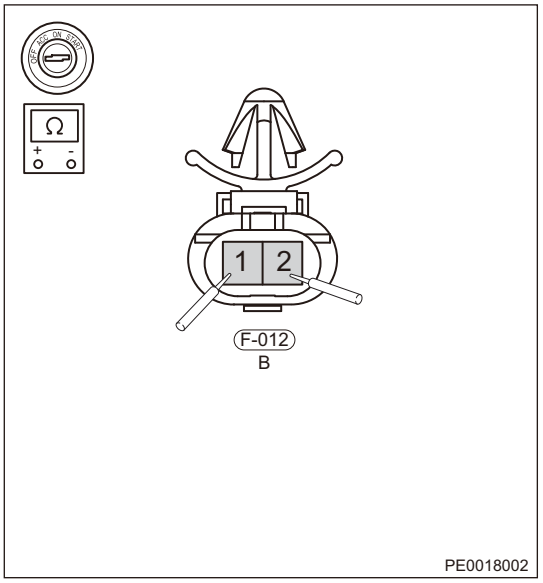
(g) The outside handle is capacitive sensing type. Using ohm band of digital multimeter, measure the resistance of front left door outside handle.

OK

Multimeter Connection	Condition	Specified Condition
F-012 (1) - F-012 (2)	OK	No Continuity

Result

Go to
OK
NG



NG → **Replace left door handle sensor**

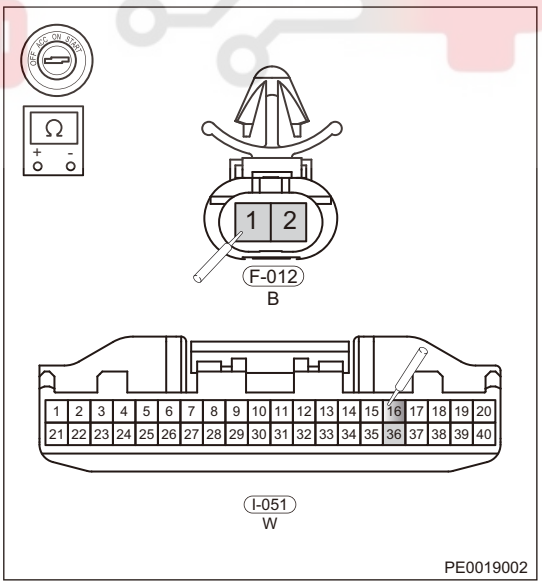
OK

3 Check front left door wire harness for open or short

(a) Disconnect the front left door outside handle wire harness connector F-012.
(b) Check if wire harnesses are worn, pierced, pinched or partially broken.
(c) Check for broken, bent, protruded or corroded terminals.
(d) Check if related connector pins are in good condition.
(e) Using ohm band of digital multimeter, check for continuity between terminals (1), (2) of connector F-012 and terminals (16), (36) of PEPS module connector I-065 to check front left door wire harness for open.

OK

Multimeter Connection	Condition	Specified Condition
F-012 (1) - I-065 (16)	Always	⩽ 1 Ω
F - 012 (2) - I-065 (36)	Always	⩽ 1 Ω



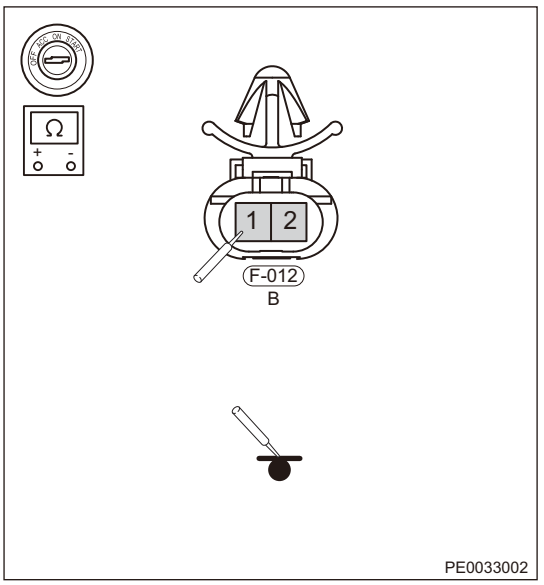
(f) Using ohm band of digital multimeter, measure resistance between terminals 1, 2 of front left door wire harness connector F-012 and body ground to check front left door wire harness for short to body ground.

OK

Multimeter Connection	Condition	Normal Condition
F-012 (1) - Body ground	Always	No Continuity
F-012 (2) - Body ground	Always	No Continuity

Result

Go to
OK
NG

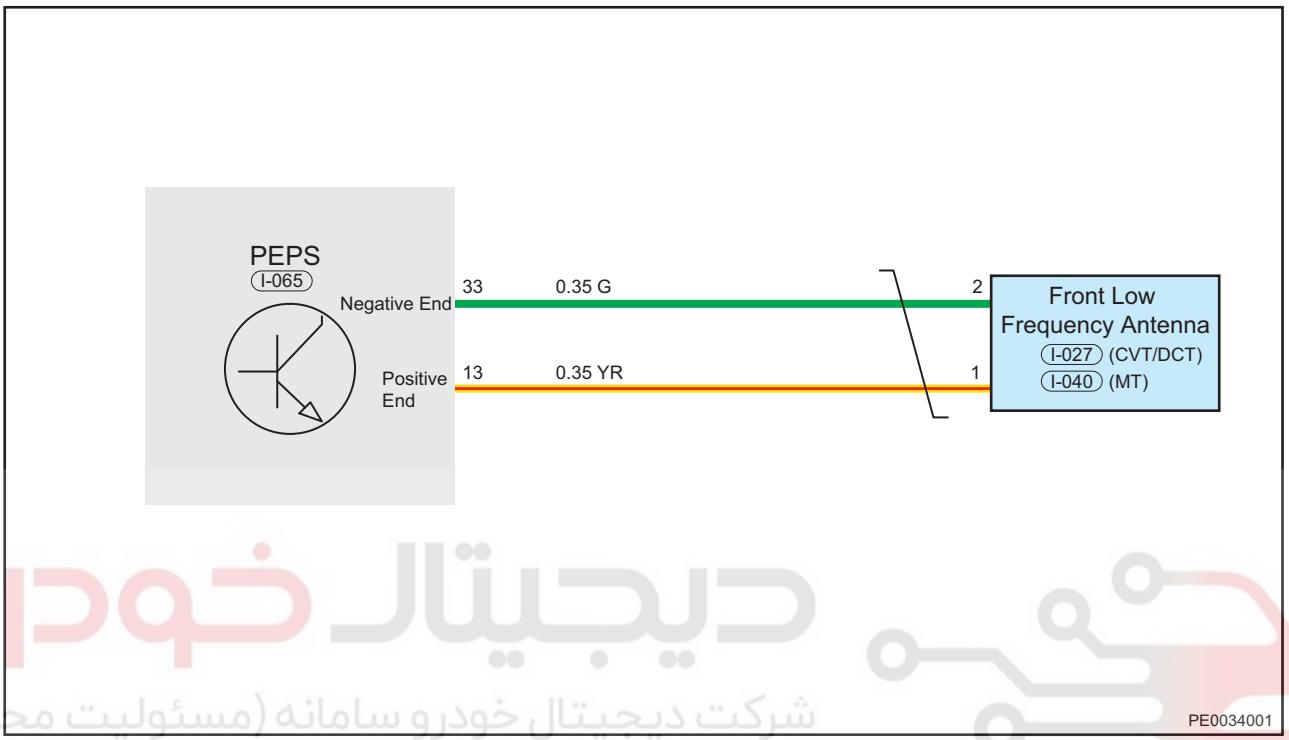


OK	Replace PEPS module
NG	Replace interior wire harness

DTC	B1502	Front Internal LF Antenna Circuit Open

DTC	B1526	Short Circuit of Front Internal LF Antenna

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
B1502	Front Internal LF Antenna Circuit Open	Front internal low frequency antenna or interior wire harness is damaged
B1526	Short Circuit of Front Internal LF Antenna	

42

Hint:

Caution:

When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	Check if PEPS module software configuration code is correct

(a) Using diagnostic tester, enter PEPS system.

(b) Read software configuration code and check if it is correct.

Result

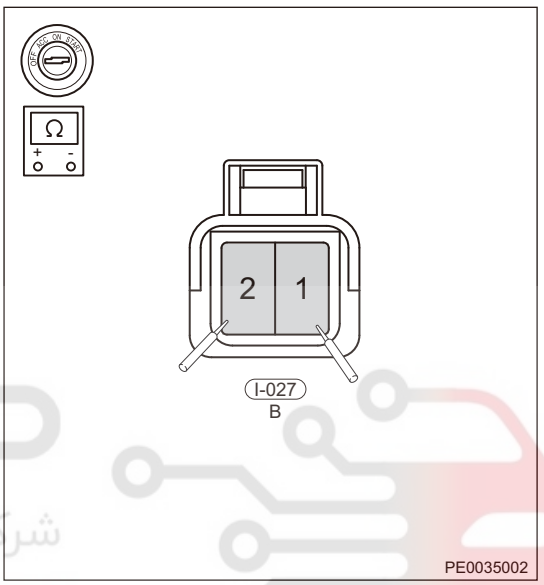
Go to
OK
NG

NG → **Input configuration code again and clear DTC**

OK

2	Measure resistance of front low frequency antenna

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the front low frequency antenna connector I-027.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Using ohm band of digital multimeter, measure if resistance between terminals (1) and (2) of front low frequency antenna connector I-027 is normal.



OK

Multimeter Connection	Condition	Normal Condition
I-027 (1) - I-027 (2)	Always	≈ 10 KΩ

Result

Go to
OK
NG

NG → **Replace low frequency antenna**

OK

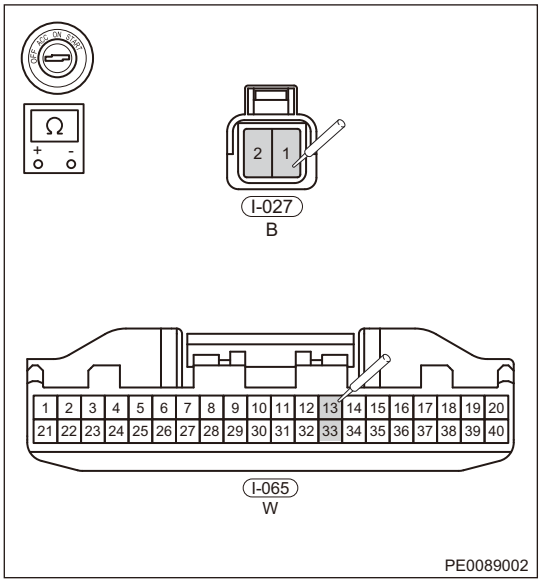
3	Check interior wire harness for open or short

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect front low frequency antenna connector I-027 and PEPS module connector I-065.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.

(g) Using ohm band of digital multimeter, check for continuity between terminals (1), (2) of connector I-027 and terminals (13), (33) of I-065 to check instrument panel wire harness for open.

OK

Multimeter Connection	Condition	Normal Condition
I-027 (1) - I-065 (13)	Always	⩽ 1 Ω
I-027 (2) - I-065 (33)	Always	⩽ 1 Ω



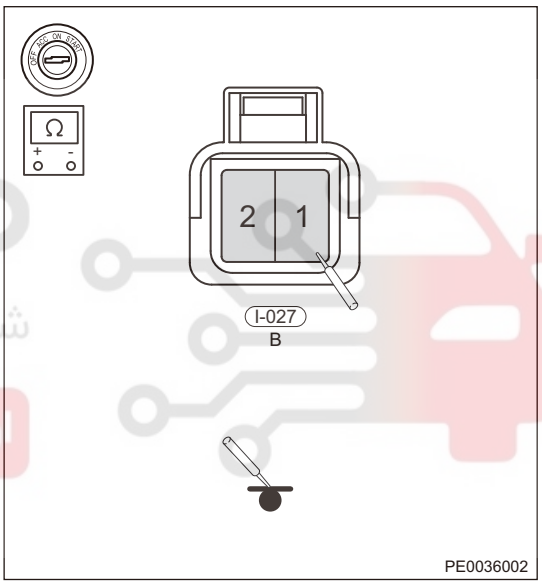
(h) Using ohm band of digital multimeter, check for continuity between terminals (1), (2) of connector I-027 and body ground to check instrument panel wire harness for short to ground.

OK

Multimeter Connection	Condition	Specified Condition
I-027 (1) - Body ground	Always	No Continuity
I-027 (2) - Body ground	Always	No Continuity

Result

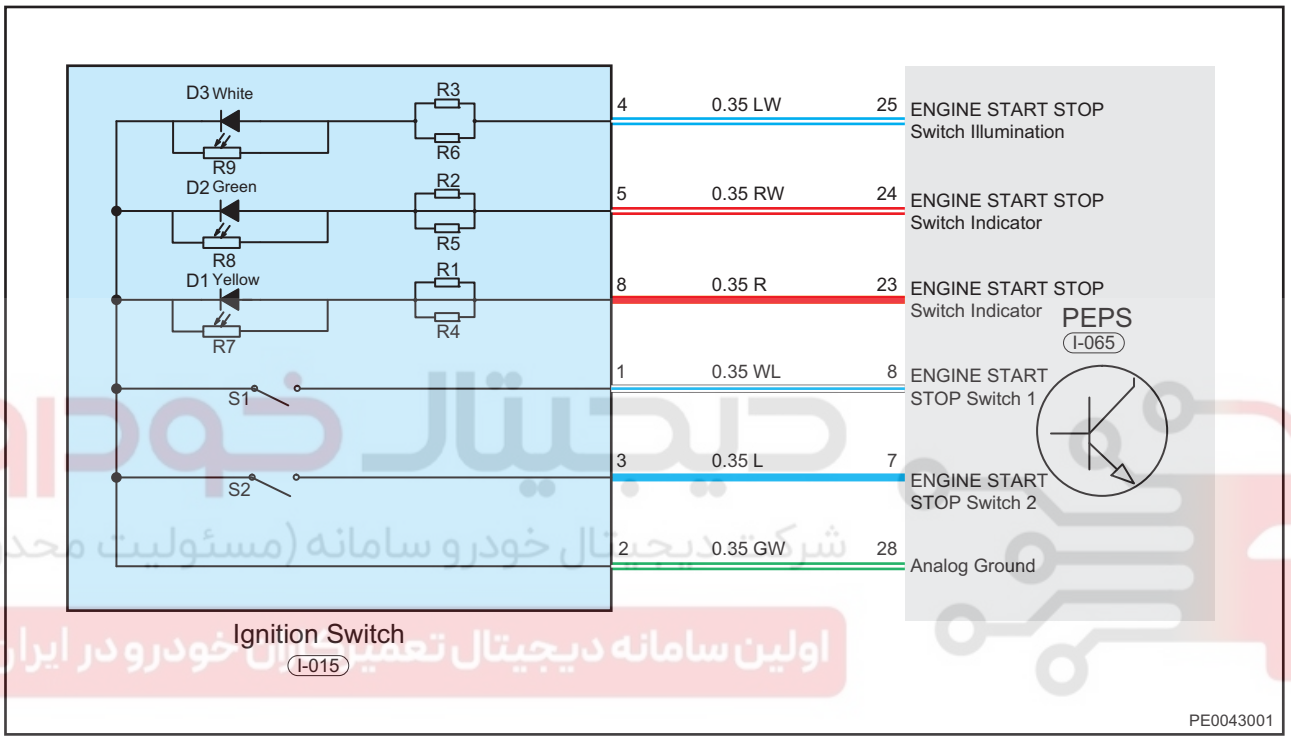
Go to
OK
NG



OK	**Replace PEPS module**
NG	**Replace instrument panel wire harness**

DTC	B152D	SSB Stuck
DTC	B1506	Abnormality on Switches of Engine Switch
DTC	B1507	Abnormality in IG Circuit
DTC	B152E	START Fail

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
B152D	SSB Stuck	PEPS control module is damaged, ignition switch has failed, wire harness is damaged
B1506	Abnormality on Switches of Engine Switch	
B1507	Abnormality in IG Circuit	
B152E	START Fail	

Caution:
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	Enter PEPS system and read related datastream

(a) Read datastream "Power Supply Management and Starting State" and "Engine Switch Backlight State".
(b) Press ENGINE START STOP switch, check datastream conversion activation state and backlight illumination state, to check if ENGINE START STOP switch input is normal.

Result

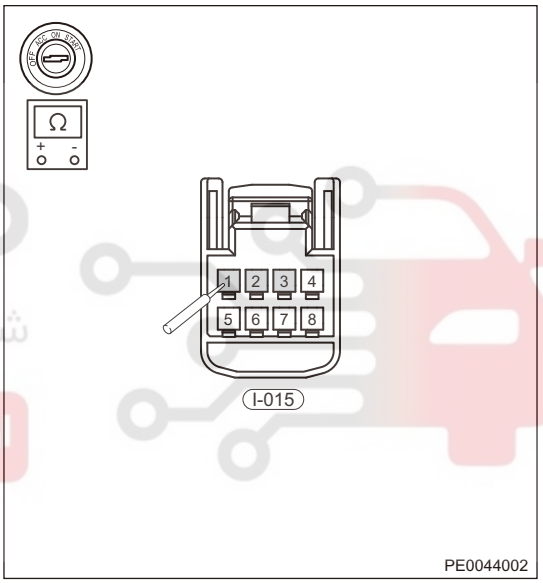
Go to
OK
NG

OK → **Turn off vehicle power supply (disconnect the negative battery cable), then clear DTC again**

NG

2 Check the ENGINE START STOP switch

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the ENGINE START STOP switch connector I-015.
(d) Using ohm band of digital multimeter, measure resistance of ENGINE START STOP switch to check if ENGINE START STOP switch is normal.



OK

Multimeter Connection	Condition	Specified Condition
ENGINE START STOP switch terminal 2 - 1	Not pressed	No Continuity
ENGINE START STOP switch terminal 2 - 1	Pushed	⩽ 1 Ω
ENGINE START STOP switch terminal 2 - 1	Not pressed	No Continuity
ENGINE START STOP switch terminal 2 - 3	Pushed	⩽ 1 Ω
ENGINE START STOP switch terminal 1 - 3	Not pressed	No Continuity
ENGINE START STOP switch terminal 1 - 3	Pushed	⩽ 1 Ω
ENGINE START STOP switch terminal 4 - 2	Not pressed	≈ 6.33 KΩ
ENGINE START STOP switch terminal 5 - 2	Not pressed	≈ 6.21 KΩ
ENGINE START STOP switch terminal 8 - 2	Not pressed	≈ 5.84 KΩ

Result

Go to
OK
NG

NG → **Replace ENGINE START STOP switch**

OK

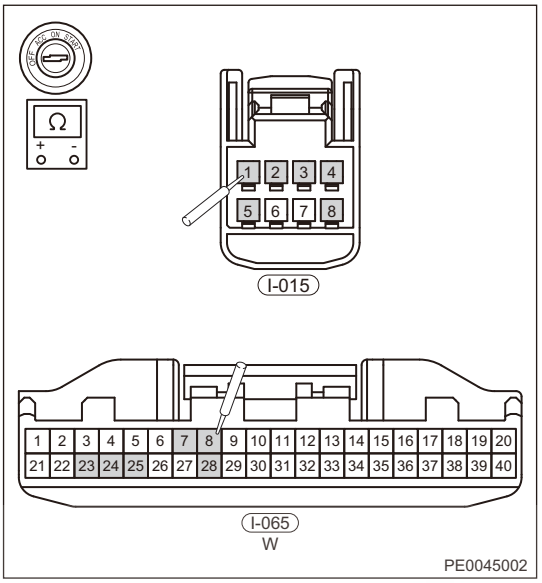
3 Check instrument panel wire harness for open or short

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.
(c) Disconnect ENGINE START STOP switch connector I-015 and PEPS module connector I-065.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Using ohm band of digital multimeter, check for continuity between I-015 (1) and I–051 (8), I-015 (2) and I–051 (28), I-015 (3) and I–051 (7), I-015 (4) and I–051 (25), I-015 (5) and I–051 (24), I-015 (8) and I–051 (23), check wire harness for open.

OK

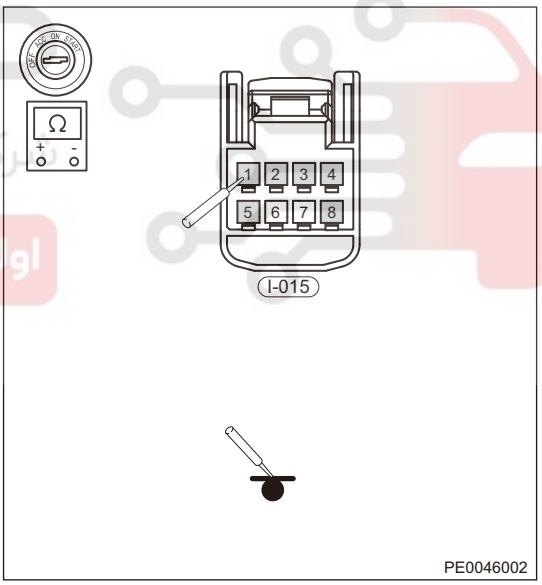
Multimeter Connection	Condition	Specified Condition
I-015 (1) - I-065 (8)	Always	⩽ 1 Ω
I-015 (2) - I-065 (28)	Always	⩽ 1 Ω
I-015 (3) - I-065 (7)	Always	⩽ 1 Ω
I-015 (4) - I-065 (25)	Always	⩽ 1 Ω
I-015 (5) - I-065 (24)	Always	⩽ 1 Ω
I-015 (8) - I-065 (23)	Always	⩽ 1 Ω



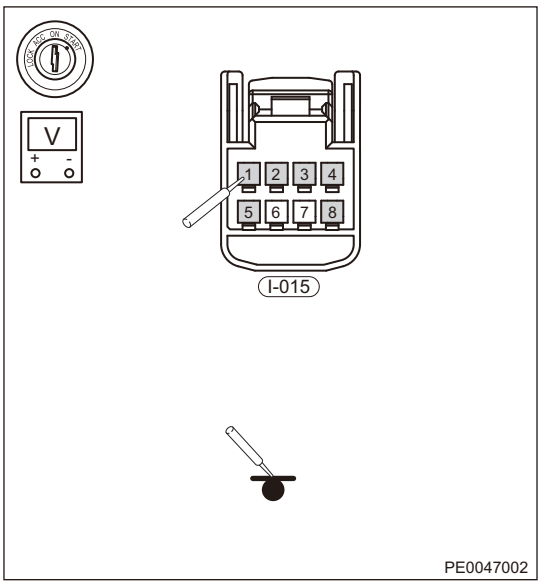
(h) Using ohm band of digital multimeter, check for continuity between terminals (1), (2), (3), (4), (5) and (8) of connector I-015 and body ground to check instrument panel wire harness for short to ground.

OK

Multimeter Connection	Condition	Specified Condition
I-015 (1) - Body ground	Always	No Continuity
I-015 (2) - Body ground	Always	No Continuity
I-015 (3) - Body ground	Always	No Continuity
I-015 (4) - Body ground	Always	No Continuity
I-015 (5) - Body ground	Always	No Continuity
I-015 (8) - Body ground	Always	No Continuity



(i) Connect the negative battery cable (confirm that connectors I-015 and I-065 are disconnected). Bridge joint ACC relay and IGN1 relay (ENGINE START STOP switch is disabled). Using DC voltage band of digital multimeter, measure voltage between terminals (1), (2), (3), (4), (5) and (8) of connector I-015 and body ground to check instrument panel wire harness for short to power supply.



OK

Multimeter Connection	Condition	Specified Condition
I-015 (1) - Body ground	Always	0V
I-015 (2) - Body ground	Always	0V
I-015 (3) - Body ground	Always	0V
I-015 (4) - Body ground	Always	0V
I-015 (5) - Body ground	Always	0V
I-015 (8) - Body ground	Always	0V

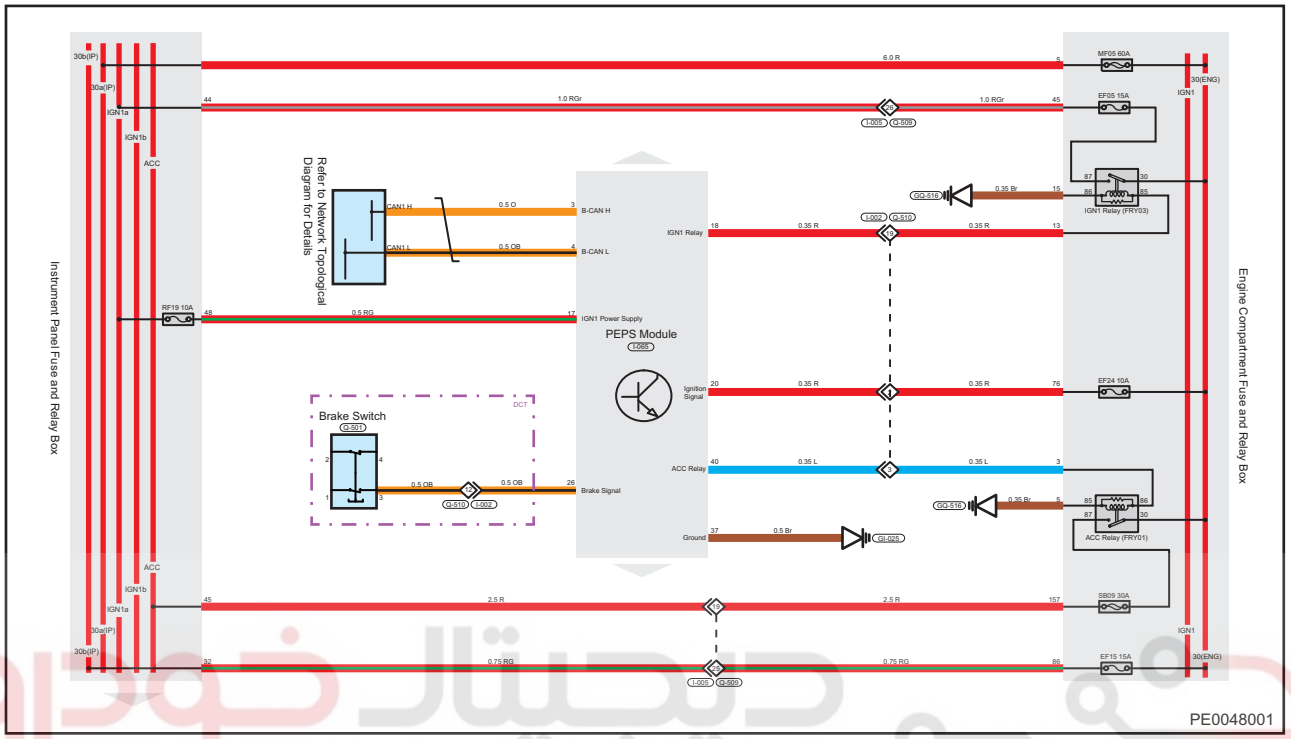
Result

Go to
OK
NG

OK	Replace PEPS module
NG	Replace instrument panel wire harness

DTC	B1508	Abnormality in ACC Circuit

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
B1508	Abnormality in ACC Circuit	ACC relay, body ground and wire harness malfunction

Caution:
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

42

Procedure

1	Check fuse

(a) Measure fuse SB02-15A in engine compartment fuse and relay box with 21 W test light to check if test light comes on.

Result

Go to
OK
NG

OK → **Turn off vehicle power supply (disconnect the negative battery cable), then turn on power supply again and clear DTC.**

NG

2	Check if fuse base jack is abnormal

(a) Remove fuse SB09-30A in engine compartment fuse and relay box and check fuse base jack for excessive clearance.

Result

Go to
OK
NG

NG → **Adjust fuse base jack**

OK →

3	Adjust ACC relay

Result

Go to
OK
NG

OK → **Replace ACC relay**

NG →

4	Check if relay switch power supply is normal

(a) Unplug ERLY14 relay in engine compartment fuse box.

(b) Using 21 W test light or digital multimeter, measure if power supply of ACC relay base No.30 jack is normal.

OK

Multimeter Connection	Condition	Specified Condition
ACC relay base 30 - Body ground (digital multimeter)	Always	Not less than 12 V
ACC relay base 30 - Body ground (21 W test light)	Always	ON

Result

Go to
OK
NG

NG → **Replace front bumper wire harness**

OK →

5	Short connect the ACC relay base jack control switch

(a) Use a wire to bridge joint jacks 30 and 87 of ERLY14 relay base in engine compartment fuse and relay box, and check engine compartment fuse and relay box for open.

Result

Go to
OK
NG

NG → **Replace front bumper wire harness**

OK

6	Check ACC relay control body ground

(a) Using ohm band of digital multimeter, check for continuity between jack 86 of ACC relay base and terminal (3) of engine compartment fuse and relay box to check engine compartment fuse and relay box for open.

OK

Multimeter Connection	Condition	Specified Condition
ACC relay base 86 - Engine compartment fuse and relay box (3)	Always	⩽ 1 Ω

(b) Using ohm band of digital multimeter, check for continuity between terminal (7) of engine compartment fuse and relay box and ground point GQ-518 to check if ground circuit is normal.

OK

Multimeter Connection	Condition	Specified Condition
Engine compartment fuse and relay box (7) - GQ-518	Always	⩽ 1 Ω

Result

Go to
OK
NG

NG → **Adjust GQ-518 ground position or replace front pumper wire harness.**

OK

7	Check ACC relay control power supply side

(a) Disconnect the negative battery cable.
(b) Disconnect the PEPS module connector I-065.
(c) Check if wire harnesses are worn, pierced, pinched or partially broken.
(d) Check for broken, bent, protruded or corroded terminals.
(e) Check if related connector pins are in good condition.

(f) Using ohm band of digital multimeter, measure resistance between terminal (8) of engine compartment fuse and relay box and terminal (40) of I-065.

OK

Multimeter Connection	Condition	Specified Condition
Engine compartment fuse and relay box (8) - I-065(40)	Always	⩽ 1 Ω

Result

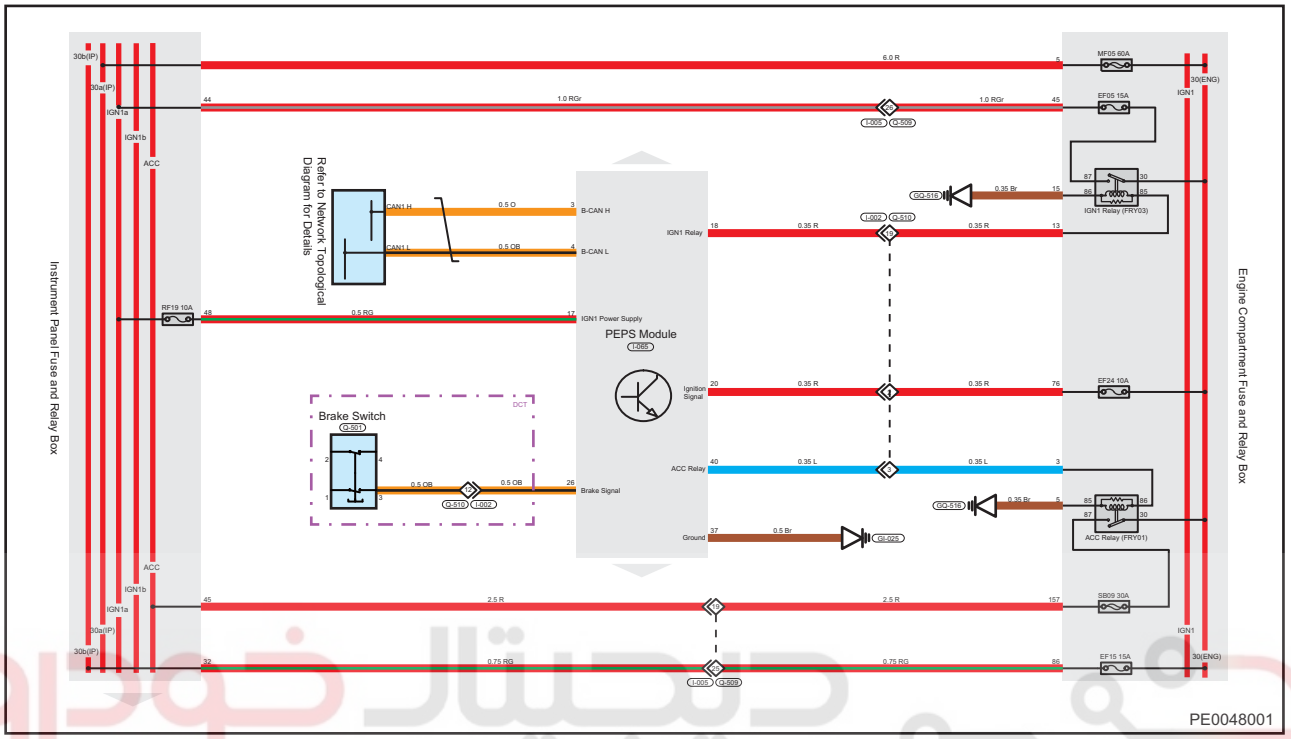
Go to
OK
NG

OK → **Replace PEPS module**

NG → **Replace wire harness**

DTC	B1509	Abnormality in Brake Signal

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
B1509	Abnormality in Brake Signal	Wire harness, PEPS controller or brake switch is damaged

42

Caution:
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	Check for DTCs

(a) Using diagnostic tester, clear DTC and read PEPS control module assembly DTC again.
(b) Check if DTCs occur again.

Result

Go to
OK
NG

OK → **System is normal**

NG

2	Using diagnostic tester, enter other system

(a) Using diagnostic tester, enter other system (such as ESP module, TCU) and check if same DTC occurs.

Result

Go to
OK
NG

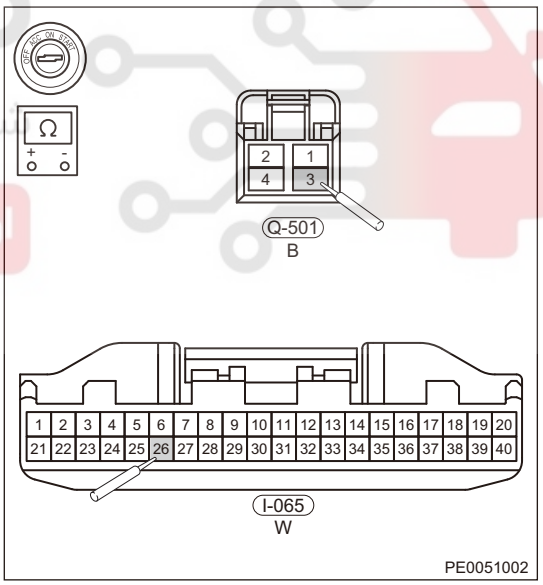
NG

3	Check interior wire harness and connector

(a) Turn ENGINE START STOP to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect instrument panel wire harness connector I-001, interior wire harness connector B-079 and PEPS module connector I-065.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Using ohm band of digital multimeter, check for continuity between terminal (26) of connector I-065 and terminal (3) of brake switch connector Q-501 to check for open.

OK

Multimeter Connection	Condition	Specified Condition
I-065 (26) - Q-501 (3)	Always	⩽ 1 Ω



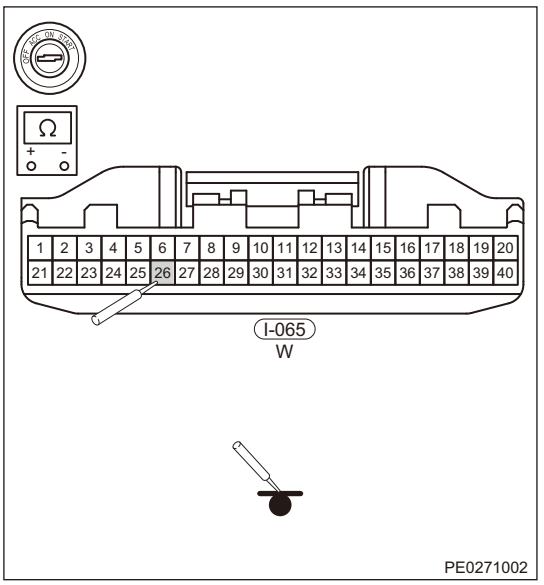
(h) Using ohm band of digital multimeter, check for continuity between terminals (26) of connector I-065 and body ground to check for short to body ground.

OK

Multimeter Connection	Condition	Specified Condition
I-065 (26) - Body ground	Always	No Continuity

Result

Go to
OK
NG



OK → **Replace PEPS module**

NG → **Replace interior wire harness**

4 Check fuse

(a) Measure fuse EF32-10A in engine compartment fuse and relay box with 21 W test light.

Result

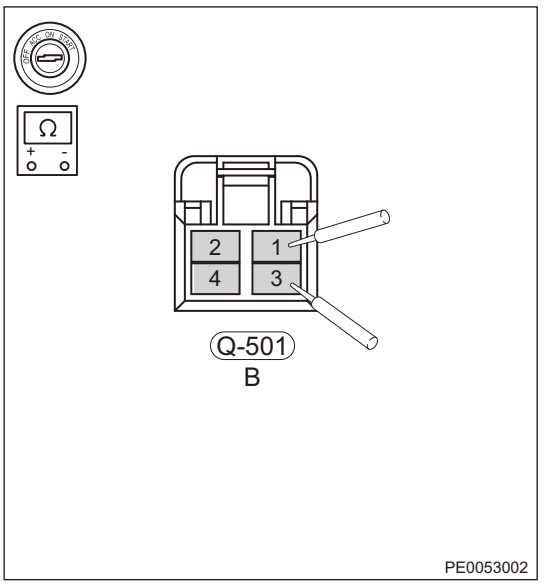
Go to
OK
NG

NG

5 Check brake switch

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the connector Q-501.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.

(g) Using digital multimeter, measure internal resistance of brake switch to check if brake switch is abnormal



OK

Multimeter Connection	Condition	Specified Condition
Q-501 (1) - Q-501 (3)	Brake pedal not depressed	No Continuity
Q-501 (1) - Q-501 (3)	Brake pedal depressed	⩽ 1 Ω
Q-501 (2) - Q-501 (4)	Brake pedal not depressed	⩽ 1 Ω
Q-501 (2) - Q-501 (4)	Brake pedal depressed	No Continuity

Result

Go to
OK
NG

OK → **Turn on power supply again and clear DTC**

NG → **Replace brake switch**

6 Check fuse base jack

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Remove fuse EF32-10A in engine compartment fuse and relay box and check base jack for excessive clearance.

Result

Go to
OK
NG

NG → **Adjust fuse jack clearance**

OK

7 Check fuse base jack input power supply

(a) Connect the negative battery cable.
(b) Turn ignition switch to ON.
(c) Measure fuse jack input power supply with 21 W test light and check if test light comes on.

Result

Go to
OK
NG

NG → **Replace fuse EF24-10A**

OK

8	Check brake switch power supply voltage

(a) Connect the negative battery cable.
(b) Turn ignition switch to ON.
(c) Use a digital multimeter to check whether there is 12 V voltage between terminal (82) of engine compartment fuse and relay box and body ground.
(d) Using a digital multimeter, check for continuity between terminal (82) of engine compartment fuse and relay box and terminal (1) of connector Q-501 to check wire harness for open.

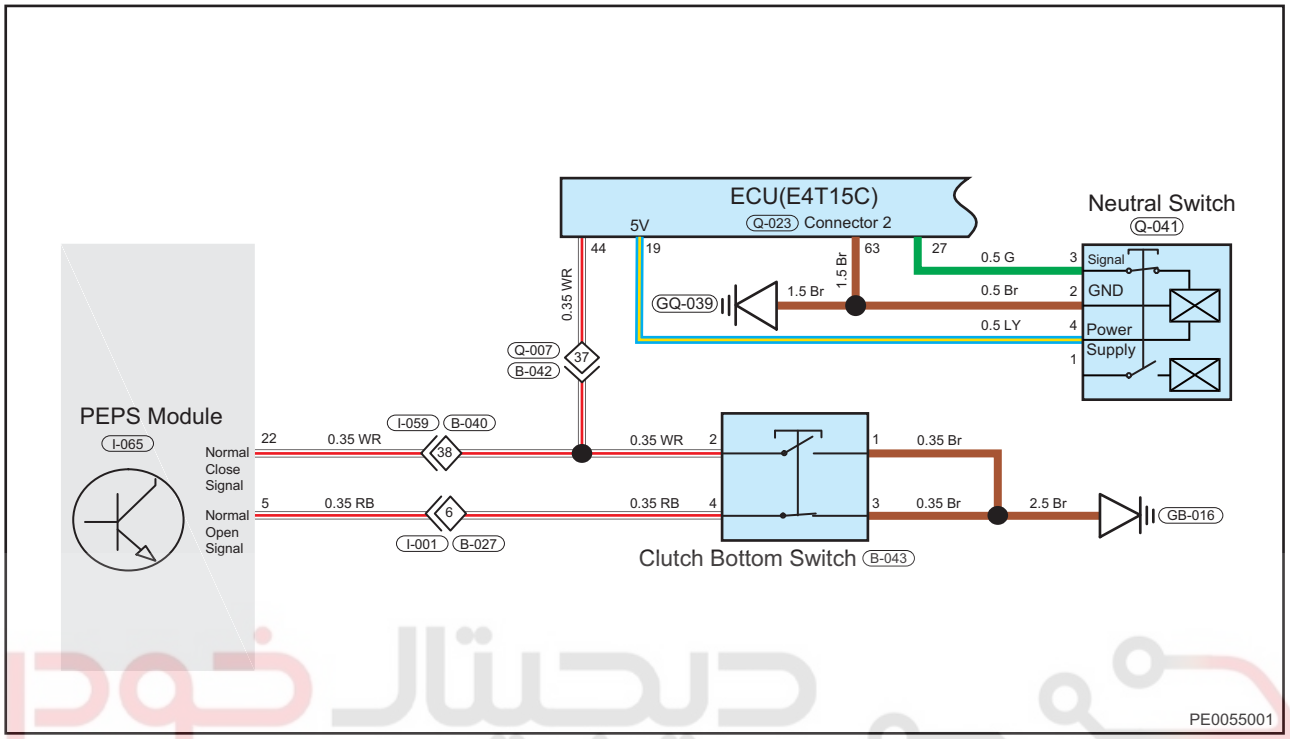
Result

Go to
OK
NG

OK	Replace PEPS module
NG	Replace interior wire harness

DTC	B150C	Clutch Switch Signal Error

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
B150C	Clutch Switch Signal Error	Wire harness, PEPS controller or brake bottom switch is damaged

Caution:
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	Check for DTCs

(a) Using diagnostic tester, clear DTC and read PEPS control module assembly DTC again.
(b) Check if DTCs occur again.

Result

Go to
OK
NG

OK → **System is normal**

NG

2	Using diagnostic tester, enter other system

(a) Using diagnostic tester, enter other system (such as ECU control unit) and check if same DTC occurs.

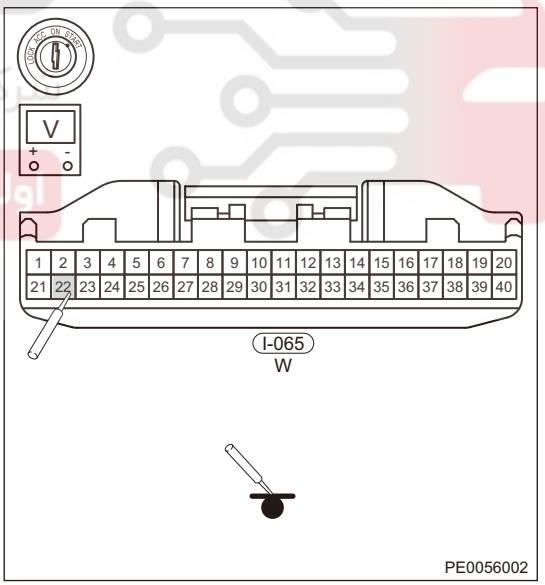
Result

Go to
OK
NG

NG

3	Check PEPS module connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the PEPS module connector I-065.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Connect the negative battery cable.
(h) Turn ENGINE START STOP switch to ON.
(i) Using DC voltage band of digital multimeter, measure if voltage at terminal (22) of connector I-065 jumps with the clutch being depressed (ECU monitors the clutch switch signal at the same time with high potential), so as to check whether the interior wire harness is open.



OK

Multimeter Connection	Condition	Normal Condition
I-065 (26) - Body ground	Clutch not depressed	Approx. 12V
I-065 (26) - Body ground	Clutch depressed	0 V

Result

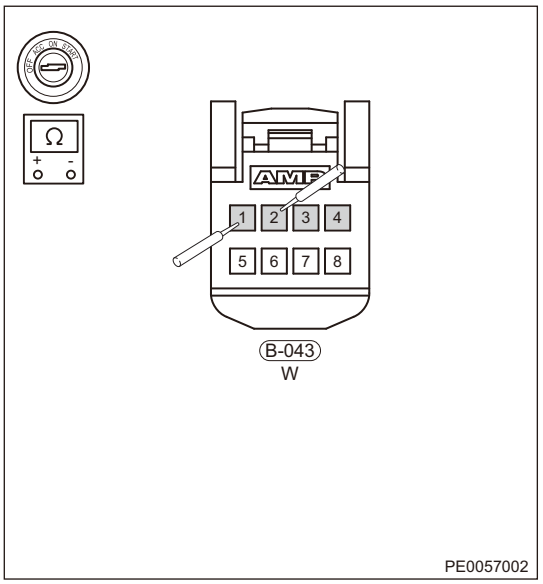
Go to
OK
NG

OK	Replace PEPS module
NG	Replace interior wire harness

4	Check clutch switch

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the clutch bottom switch connector B-043.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.

(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Using digital multimeter, measure internal resistance of clutch bottom switch to check if clutch bottom switch is abnormal



OK

Multimeter Connection	Condition	Specified Condition
B-043 (2) - B-043 (1)	Brake pedal not depressed	No Continuity
B-043 (4) - B-043 (3)	Brake pedal not depressed	⩽ 1 Ω
B-043 (4) - B-043 (3)	Brake pedal depressed	No Continuity
B-043 (2) - B-043 (1)	Brake pedal depressed	⩽ 1 Ω

Result

Go to
OK
NG

NG → **Replace clutch bottom switch**

OK

5 Check clutch bottom switch ground signal

(a) Using ohm band of digital multimeter, check for continuity between clutch bottom switch B-043 and ground point GB-106 to check if clutch bottom switch ground signal is normal.

OK

Multimeter Connection	Condition	Specified Condition
B-043 (1) - GB-106	Always	⩽ 1 Ω
B-043 (3) - GB-106	Always	⩽ 1 Ω

Result

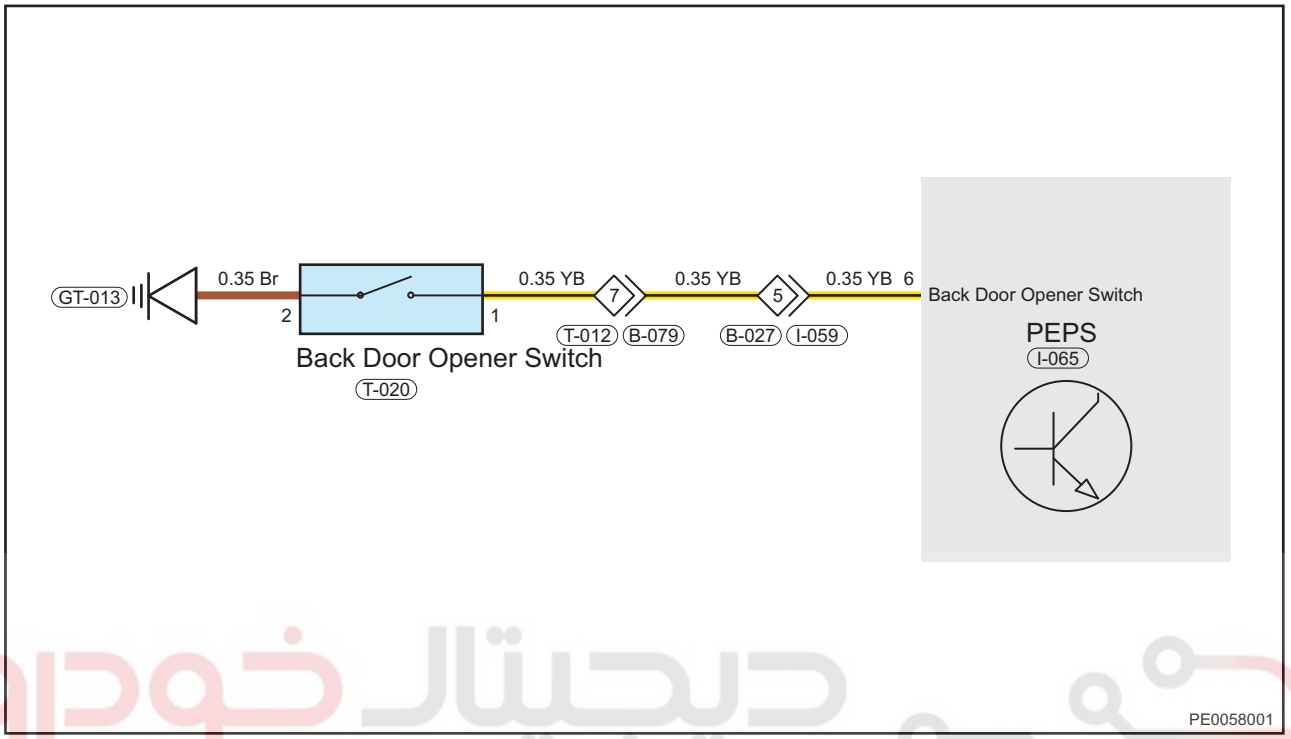
Go to
OK
NG

OK → **Replace interior wire harness**

NG → **Handle GB-083 ground signal**

DTC	B1518	Trunk/Back Door Unlock Switch Stuck Failure

Circuit Diagram



Description

DTC No.	DTC Definition	Possible Cause
B1518	Trunk/Back Door Unlock Switch Stuck Failure	Back door lock button, wire harness or PEPS control module is damaged
B1519	Back Door Lock Switch Continuously Pressed	

42

Caution:
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	Check vehicle malfunction condition

(a) Press back door release switch to check if back door is open.

Result

Go to
OK
NG

OK → **Turn off vehicle power supply (disconnect the negative battery cable), then turn on power supply again and clear DTC.**

NG

2	Check back door release switch

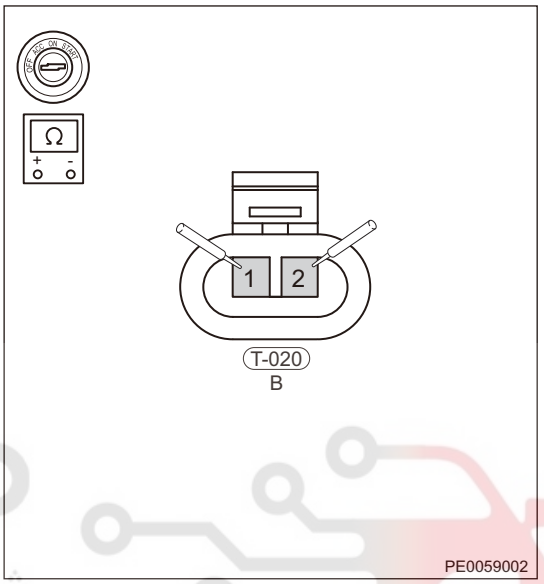
(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the back door release switch connector T-020.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Using ohm band of digital multimeter, measure resistance of back door release switch to check if back door release switch is damaged.

OK

Multimeter Connection	Condition	Specified Condition
T-020 (1) - T-020 (2)	Not pressed	No Continuity
T-020 (1) - T-020 (2)	Pushed	⩽ 1 Ω

Result

Go to
OK
NG



NG → **Replace back door release switch**

OK

3	Check back door release switch ground side

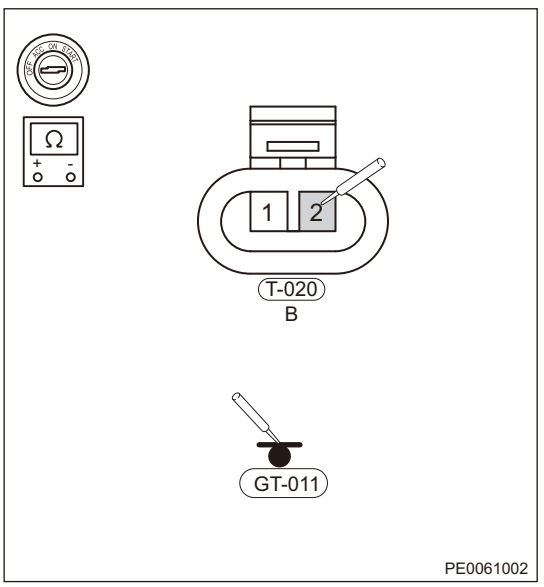
(a) Using ohm band of digital multimeter, check for continuity between terminal (2) of connector T-020 and ground point GT-013 to check if ground side is normal.

OK

Multimeter Connection	Condition	Specified Condition
T-020 (2) – GT-013	Always	⩽ 1 Ω

Result

Go to
OK
NG



NG → **Handle GT-013 ground point**

OK

4	Check back door release switch circuit signal voltage

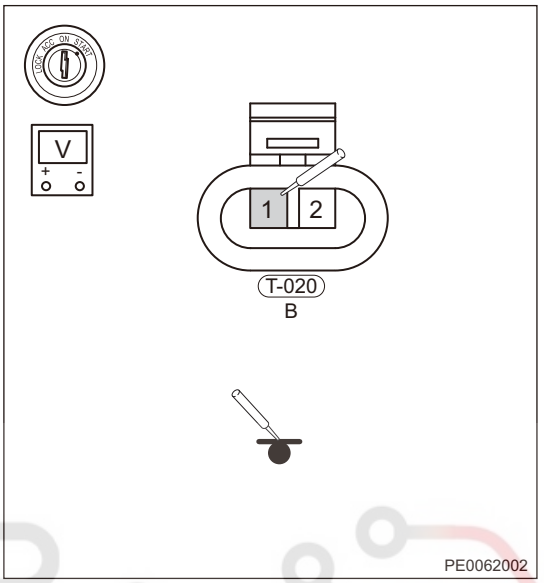
(a) Connect the negative battery cable.
(b) Turn ENGINE START STOP switch to ON.
(c) Using DC voltage band of digital multimeter, measure if signal voltage at terminal (1) of connector T-020 is normal.

OK

Multimeter Connection	Condition	Specified Condition
T-020 (1) - Body ground	ON state	Approximately 12 V

Result

Go to
OK
NG



OK → Repair or replace back door wire harness

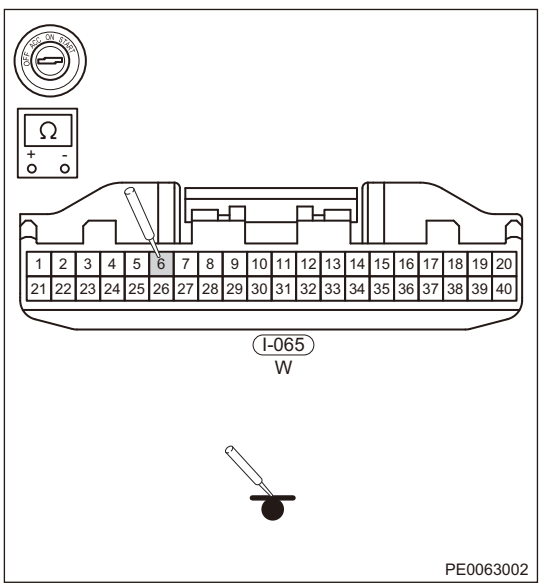
NG

5	Check interior wire harness for open or short

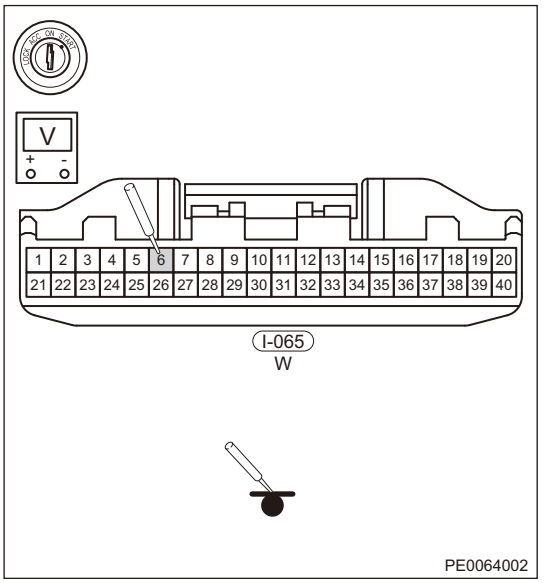
(a) Disconnect the PEPS module connector I-065.
(b) Check if wire harnesses are worn, pierced, pinched or partially broken.
(c) Check for broken, bent, protruded or corroded terminals.
(d) Check if related connector pins are in good condition.
(e) Using ohm band of digital multimeter, measure resistance between terminal (6) of PEPS module connector I-065 and body ground to check interior wire harness for short to ground.

OK

Multimeter Connection	Condition	Normal Condition
I-065 (6) - Body ground	Always	No Continuity



(f) Using voltage band of digital multimeter, measure voltage between terminal (6) of PEPS module connector I-065 and body ground to check interior wire harness for short to power supply.



OK

Multimeter Connection	Condition	Normal Condition
I-065 (6) - Body ground	Always	Approx. 0V

Result

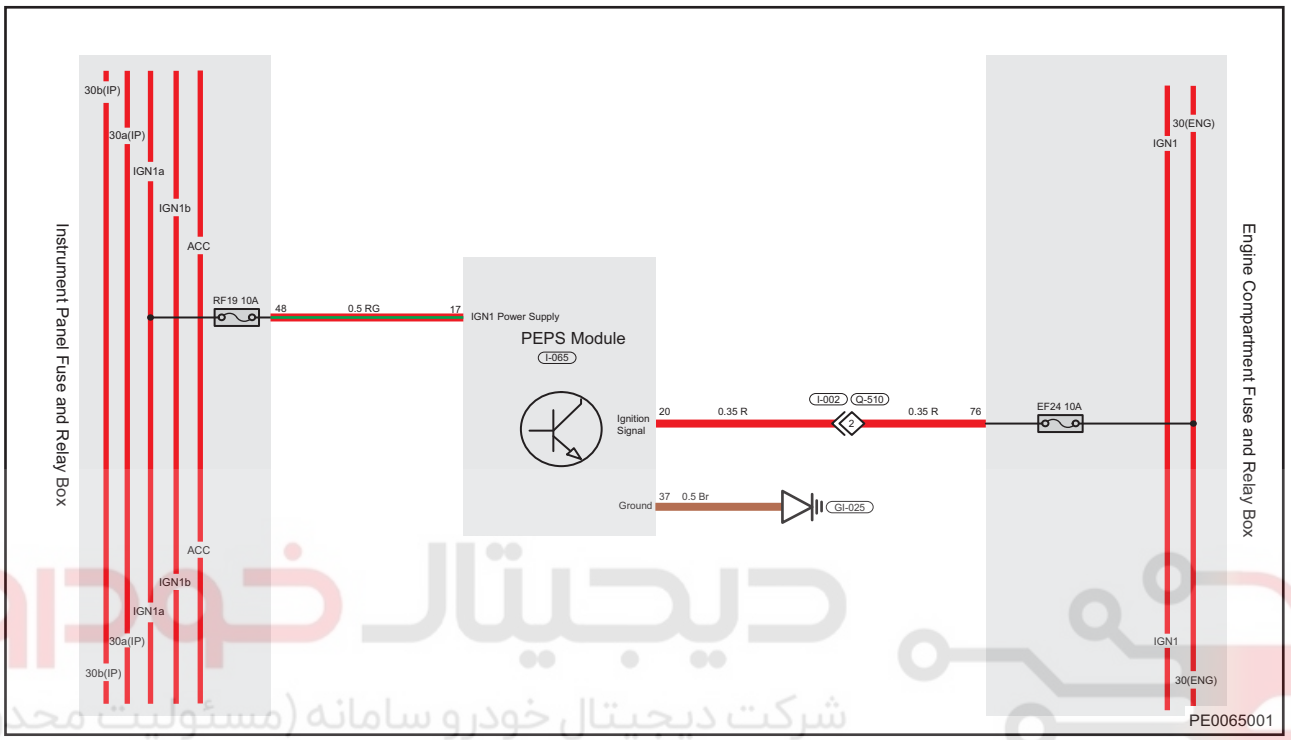
Go to
OK
NG

OK	**Replace PEPS module**
NG	**Replace interior wire harness**

DTC	B152F	Battery Voltage Low Detection

DTC	B1530	Battery Voltage High Detection

Circuit Diagram



Description

DTC No.	DTC Definition	Possible Cause
B152F	Battery Voltage Low Detection	Battery, wire harness or PEPS control module is damaged
B1530	Battery Voltage High Detection	

42

Caution:
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	Check battery voltage

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Check battery voltage (Not less than 12 V) with a digital multimeter.

Result

Go to
OK
NG

NG	Replace battery

OK

2	Check charging system

(a) Turn ENGINE START STOP switch to OFF.
(b) Check positive and negative battery cables for broken or damage.
(c) Turn ENGINE START STOP switch to ON.
(d) Start the engine.
(e) Using a digital multimeter, check voltage between positive and negative battery cables is normal (13.5 V - 14.8 V).

Result

Go to
OK
NG

NG → **Repair or replace positive and negative battery cables and alternator**

OK

3	Check PEPS module power supply fuse

(a) Turn ENGINE START STOP switch to OFF.
(b) Check if PEPS module power supply fuses EF24 10 A and RF19 7.5 A are blown.

Result

Go to
OK
NG

NG → **Replace power supply fuse**

OK

4	Check engine compartment fuse and relay box

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the engine compartment fuse and relay box connector.
(c) Using digital multimeter, check for continuity between fuse EF24 and Pin No.76 of engine compartment fuse and relay box.
(d) Using digital multimeter, check for continuity between fuse RF19 and Pin No.17 of engine compartment fuse and relay box.

OK

Multimeter Connection	Condition	Normal Condition
EF24 – Engine compartment fuse and relay box (7)	Always	⩽ 1 Ω
RF19 – Engine compartment fuse and relay box (7)	Always	⩽ 1 Ω

Result

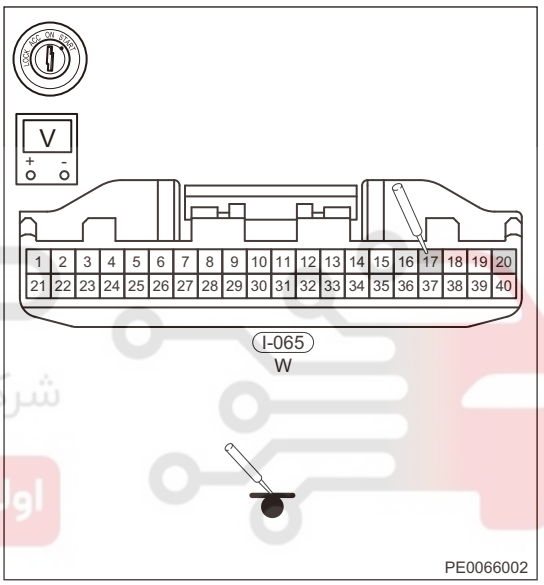
Go to
OK
NG

NG → **Replace engine compartment fuse and relay box**

OK

5 Check PEPS module power wire harness

(a) Turn ENGINE START STOP switch to ON.
(b) Disconnect the PEPS connector I-065.
(c) Using digital multimeter, check if voltage between terminals (17) and (20) of connector I-065 and body ground is normal.



OK

Multimeter Connection	Condition	Normal Condition
I-065 (17) - Body ground	Always	Not less than 12 V
I-065 (20) - Body ground	Always	Not less than 12 V

(d) Using digital multimeter, check for continuity between terminal (17) of PEPS module connector I-065 and terminal (48) of instrument panel fuse and relay box, terminal (20) of connector I-065 and terminal (76) of engine compartment fuse and relay box to check power supply wire harness for open.

OK

Multimeter Connection	Condition	Normal Condition
I-065(17) - Instrument panel fuse and relay box (48)	Always	⩽ 1 Ω
I-065 (20) - Engine compartment fuse and relay box (76)	Always	⩽ 1 Ω

Result

Go to
OK
NG

NG → **Repair or replace instrument panel wire harness**

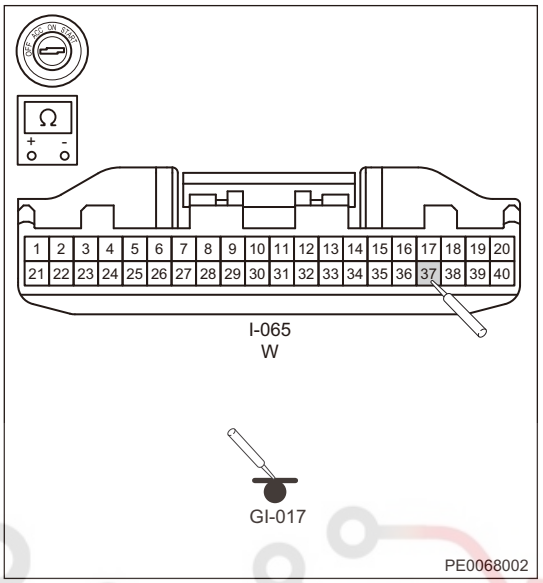
OK

6	Check the PEPS module ground circuit

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the PEPS module connector.
(c) Using digital multimeter, check for continuity between terminals (37) of connector I-065 and ground wire harness connector GI-025 to check ground wire harness for open.

OK

Multimeter Connection	Condition	Normal Condition
I-065 (37) - GI–025	Always	⩽ 1 Ω



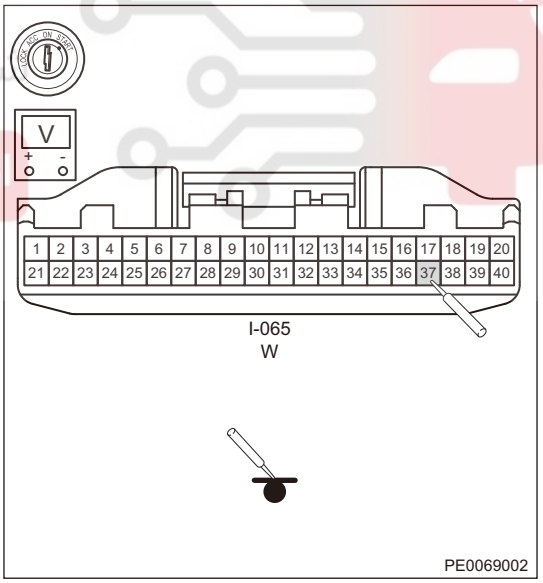
(d) Using voltage band of digital multimeter, measure voltage between terminal (37) of connector I-065 and body ground to check for short to power supply.

OK

Multimeter Connection	Condition	Normal Condition
I-065 (37) - Body ground	Always	0V

Result

Go to
OK
NG



OK	Replace PEPS module
NG	Replace instrument panel wire harness

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DTC	B150F	ESCL Anti Scanning

Description

DTC No.	DTC Definition	Possible Cause
B150F	ESCL Anti Scanning	Wire harness, PEPS control module or ESCL is damaged

Procedure

1	Electric steering column lock enters anti-scanning state

(a) Enter anti-theft control system, delete and learn ESCL.

PEPS Control Module Assembly

Removal

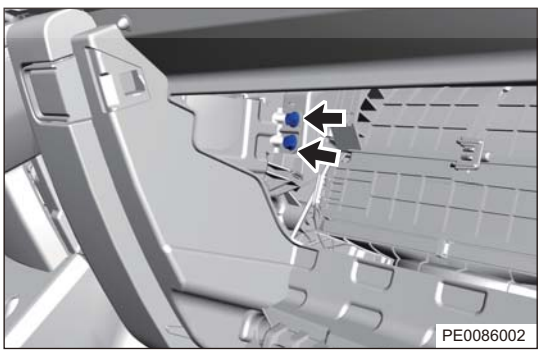
Warning/Caution/Hint

Caution:

- DO NOT separate PEPS controller and fixing bracket at will, or clamping structure of controller will be damaged, unless controller malfunction is confirmed by troubleshooting result, it can be removed and cannot be reused.
- DO NOT replace PCB board of PEPS controller at will, or it cannot be traced back and may make abnormal sound.
- After replacing PEPS controller assembly, before performing key learning and anti-theft matching, do not press ENGINE START STOP switch at will if nor necessary (it is set that keyless start can be performed for 50 times), to prevent PEPS controller from being locked and causing vehicle power supply not to be turned on.

1. Turn ENGINE START STOP switch to OFF.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly.
4. Remove the PEPS module.

(a) Disconnect the PEPS module connector.



(b) Remove 2 coupling bolts (arrow) between PEPS module mounting bracket and instrument panel crossmember.

Tightening torque

7 ± 1 N·m

(c) Carefully remove the PEPS module and mounting bracket assembly.

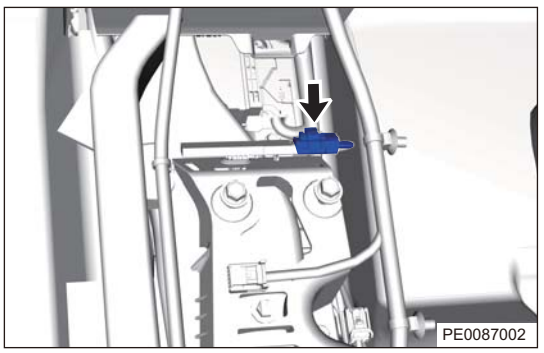
Installation

1. Installation is in the reverse order of removal.

Front Low Frequency Antenna

Removal

1. Turn ENGINE START STOP to OFF.
2. Disconnect the negative battery terminal cable.
3. Remove the auxiliary fascia console assembly.
4. Remove the front low frequency antenna.
   (a) Disconnect the connector (arrow) from front low frequency antenna.



   (b) Using an interior crow plate, detach low frequency antenna fixing clip from mounting bracket, and remove low frequency antenna assembly.
   Caution:
   - DO NOT repeatedly remove and install it, and dispose it if it becomes loosen.

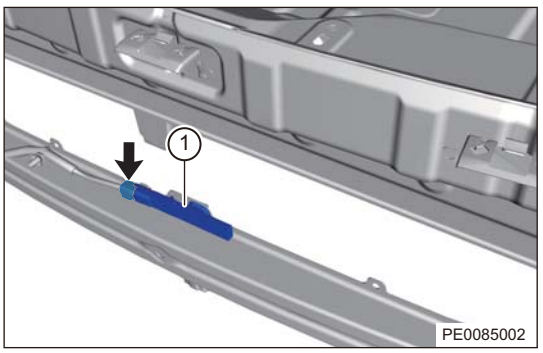
Installation

1. Installation is in the reverse order of removal.

Rear Bumper Low Frequency Antenna

Removal

1. Turn ENGINE START STOP switch to OFF.
2. Disconnect the negative battery cable.
3. Remove the rear bumper assembly.
4. Remove the rear low frequency antenna assembly.
   (a) Disconnect the connector (arrow) from rear bumper low frequency antenna.



   (b) Using a tool, detach low frequency antenna fixing clip (1) from rear bumper crossmember.
   Caution:
   - DO NOT repeatedly remove and install it, and dispose it if it becomes loosen.

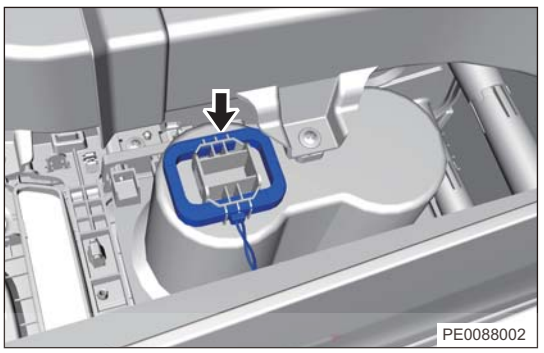
Installation

1. Installation is in the reverse order of removal.

Anti-theft Coil

Removal

1. Turn ENGINE START STOP switch to OFF.
2. Disconnect the negative battery cable.
3. Remove the A/C panel assembly.
4. Remove the auxiliary fascia console assembly.
5. Remove the anti-theft coil.
   (a) Disconnect the anti-theft coil connector.
   (b) Press two clips with left hand while holding coil with right hand, and unplug it in opposite direction of installation direction with large force to remove anti-theft coil (arrow).



Installation

1. Installation is in the reverse order of removal.

Caution:

- The anti-theft coil must be installed with a smooth surface against the mounting surface, and ensure it is installed in place, otherwise it may fall off from the bracket, thus failing to carry out normal key learning and anti-theft matching.

- MEMO -