PEPS SYSTEM

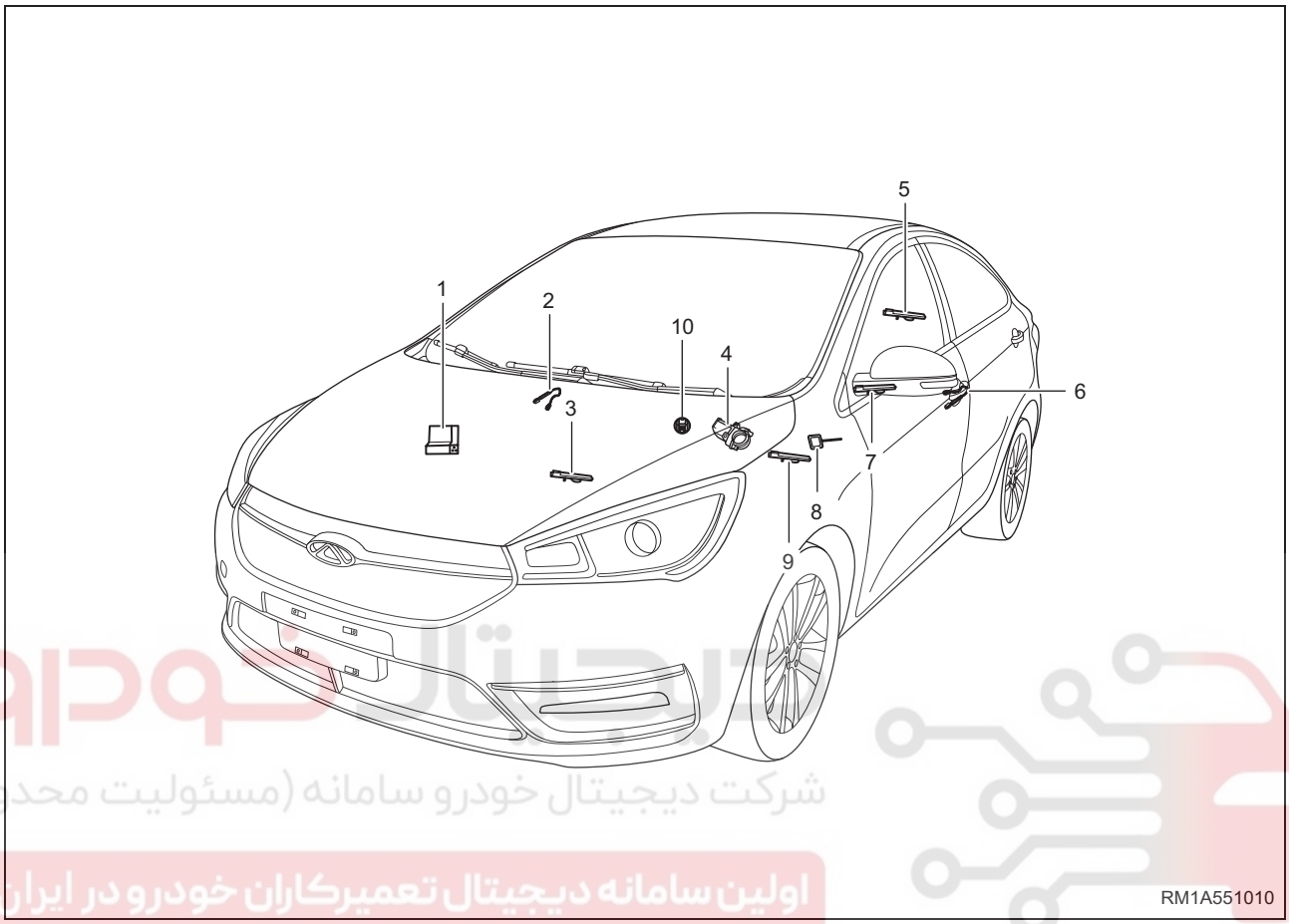
GENERAL INFORMATION 34-3
- **Description** 34-3
- **Operation** 34-7
- **Tools** 34-7
- **Circuit Diagram** 34-8
- **PEPS Terminal Definition** 34-13

DIAGNOSIS & TESTING 34-15
- **Problem Symptoms Table** 34-15
- **Diagnosis Procedure** 34-15
- **DTC Confirmation Procedure** 34-17
- **Intermittent DTC Troubleshooting** 34-17
- **Ground Inspection** 34-17
- **Diagnostic Trouble Code (DTC) Chart** 34-18
- **B1506-00** 34-19
- **B1507-00** 34-24
- **B1508-00** 34-29
- **B150D-00** 34-33
- **B150E-00** 34-33
- **B150F-00** 34-33
- **B1511-00** 34-33
- **B1512-00** 34-33
- **B1513-00** 34-33

ON-VEHICLE SERVICE 34-42
- **PEPS Low Frequency Antenna** 34-42
  - Removal 34-42
  - Installation 34-42
- **PEPS Control Module** 34-43
  - Removal 34-43
  - Installation 34-43
- **Immobilizer Coil** 34-44
  - Removal 34-44
  - Installation 34-44
- **Passive Entry & Passive Start Button** 34-45
  - Removal 34-45
  - Installation 34-45
- **Electronic Steering Column Lock** 34-46
  - Removal 34-46
  - Installation 34-46
- **Front Low Frequency Antenna** 34-47
  - Removal 34-47
  - Installation 34-47

GENERAL INFORMATION

Description



1 - PEPS Module	2 - Front Right Door Handle Sensor
3 - Front Internal Low Frequency Antenna	4 - Electronic Steering Column Lock
5 - Rear Low Frequency Antenna	6 - Front Left Door Handle Sensor
7 - Rear Low Frequency Antenna (Rear Bumper Crossmember)	8 - Immobilizer Coil
9 - Center Low Frequency Antenna	10 - Passive Entry & Passive Start Switch

PEPS system consists of passive entry & passive start controller, passive entry & passive start switch, built-in low frequency antenna (3 antennas are equipped in vehicle to sense where the key is), immobilizer coil, front left/right door handle sensor (if equipped), ESCL module (for MT model) and smart key.

System has 5 functions as followings:

1. Keyless entry function;
2. Compatible general remote function;
3. One-button keyless start function;
4. Luggage compartment door smart open function;
5. Engine immobilizer function.
   a. PEPS matching process

Note:
It is necessary to wait for 10 seconds to enter again when inputing wrong security code twice continuously. If wrong security code is input again after 10 seconds, wrong numbers cannot be accumulated. For example, if inputing wrong security code twice continuously, but wrong security code is input again within 10 seconds, internal counter will not record the current number and keep original number. If turning off ignition switch without waiting specified time, the waiting time will be reset and recount, so be sure to turn ignition switch to ON and wait.

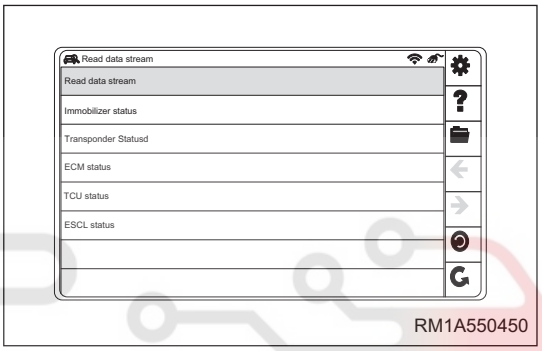
PEPS system menu operation instruction on X-431 3G diagnostic tester

- X-431 3G main function menu
  - Read DTCs

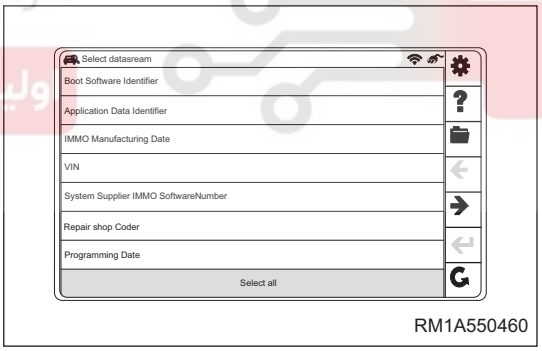
    As shown in illustration 5, check current DTCs for immobilizer system by reading Diagnostic Trouble Codes (DTCs).
  - Clear DTCs

    If DTCs are read, DTC clearing can be used. If the DTC can be read again after clearing, find out the cause of malfunction. As shown in illustration 5, perform DTC clearing after clearing DTC, read DTC again to confirm whether the DTC has been repaired.
  - Read Datastream

    As shown in illustrations 6 and 7, dynamic datastream for immobilizer system, immobilizer controller status, key status, engine ECU status, transmission TCU status and ESCL status can be checked by reading datastream.



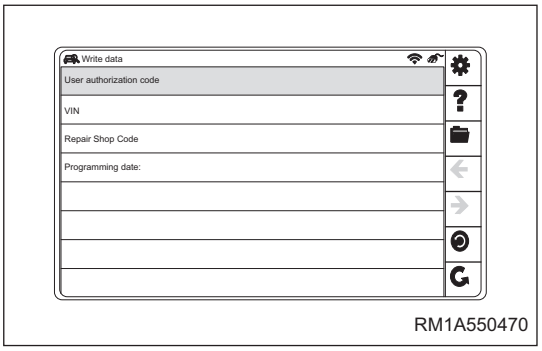
RM1A550450



RM1A550460

  - Write Datastream

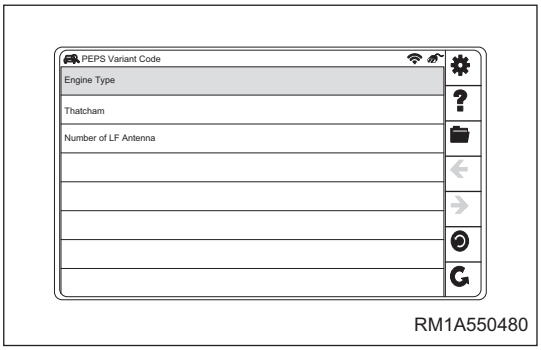
    As shown in illustration 8, select Write Datastream and enter Write data screen. User authorization code, VIN, Repair Shop Code and Programming date can be written.



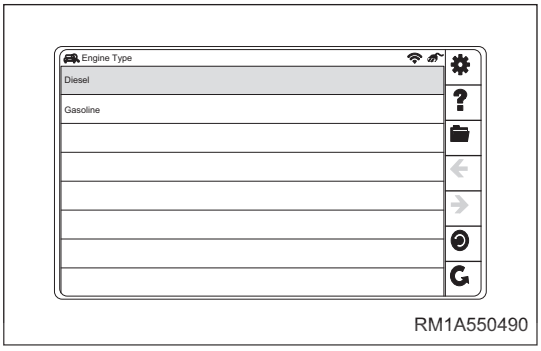
RM1A550470

- PEPS Matching (Immobilizer System Matching)

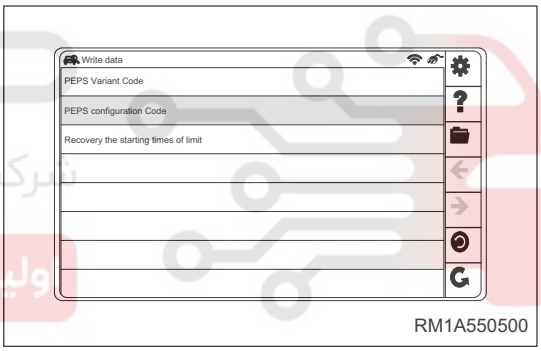
  As shown in illustrations 9, 10 and 11, select PEPS matching and enter PEPS Variant Code screen.



RM1A550480



RM1A550490



RM1A550500

i. As shown in illustration 9, PEPS matching also called immobilizer system matching, and perform matching in this menu for engine immobilizer system (w/ PEPS and w/o PEPS).

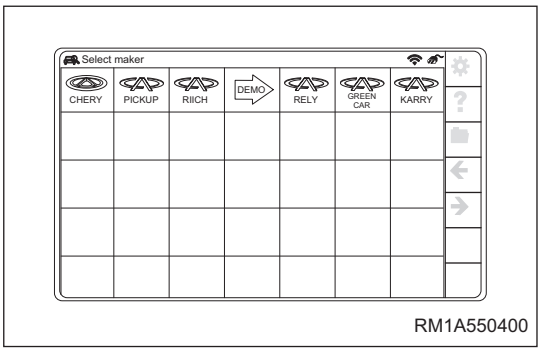
ii. Matching for engine immobilizer system and body anti-theft system (for MIA model equipped with PEPS system) is synchronous, in other words, perform matching for engine immobilizer key in this menu. Also, matching for body anti-theft system is completed simultaneously.

iii. When performing matching for engine immobilizer key, it is necessary to put key in cup holder on auxiliary fascia console with key front side facing upward, then perform matching (key matching for engine immobilizer (w/ PEPS)).

iv. Matching method for engine immobilizer system and body anti-theft system (for MIA model not equipped with PEPS system) is the same as that of conventional model, and difference with MIA model equipped with PEPS system: matching for engine immobilizer system and body anti-theft system is not synchronous, perform matching for engine immobilizer system in its diagnostic menu, while performing remote key matching in BCM system menu for body anti-theft system, regardless of order.

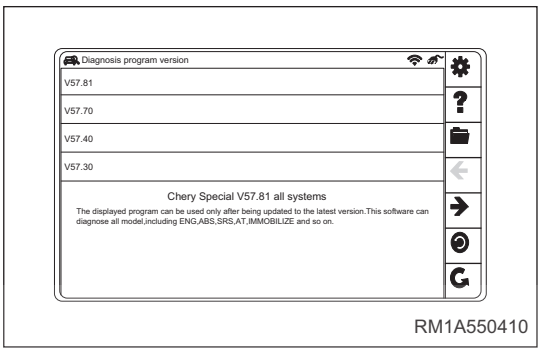
- Diagnosis procedure and menu instruction

  Use X-431 3G to enter PEPS system, first select Chery model as shown in illustration 1.



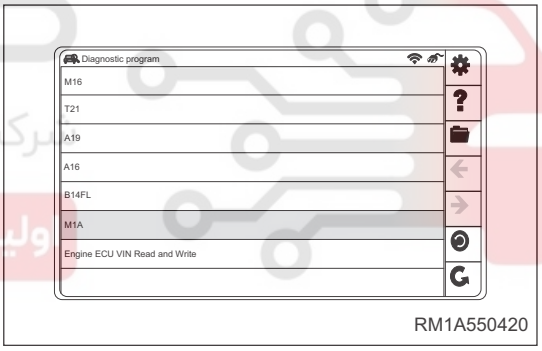
RM1A550400

Select Diagnosis program version as shown in illustration 2.

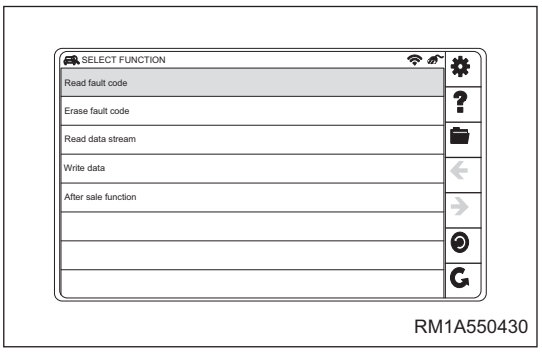


RM1A550410

Enter model select menu and select MIA model. Click and enter Diagnostic program for this model as shown in illustrations 3 and 4.

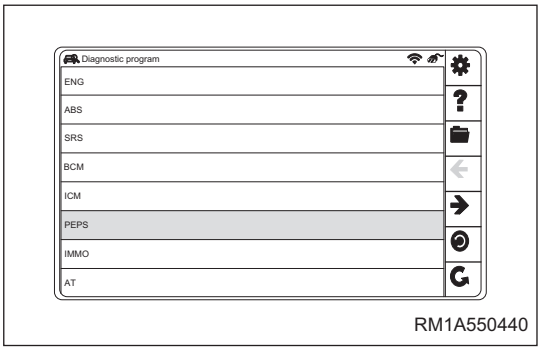


RM1A550420



RM1A550430

Click and enter PEPS and its function menu is shown as illustration 5.



RM1A550440

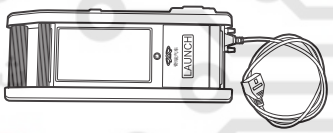
b. Wireless key match (See page 38-6)

Operation

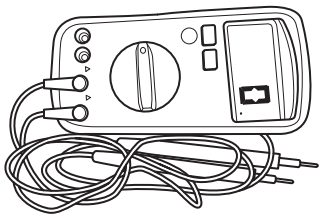
Low frequency wakeup signal from sensing antenna on door handle is sent to PEPS, low frequency certification signal is sent to remote key by PEPS after a signal is sensed to confirm if the key is legal. If legal, PEPS sends corresponding signal to body controller, then body controller controls each actuator to perform corresponding operations.

Tools

Special Tool

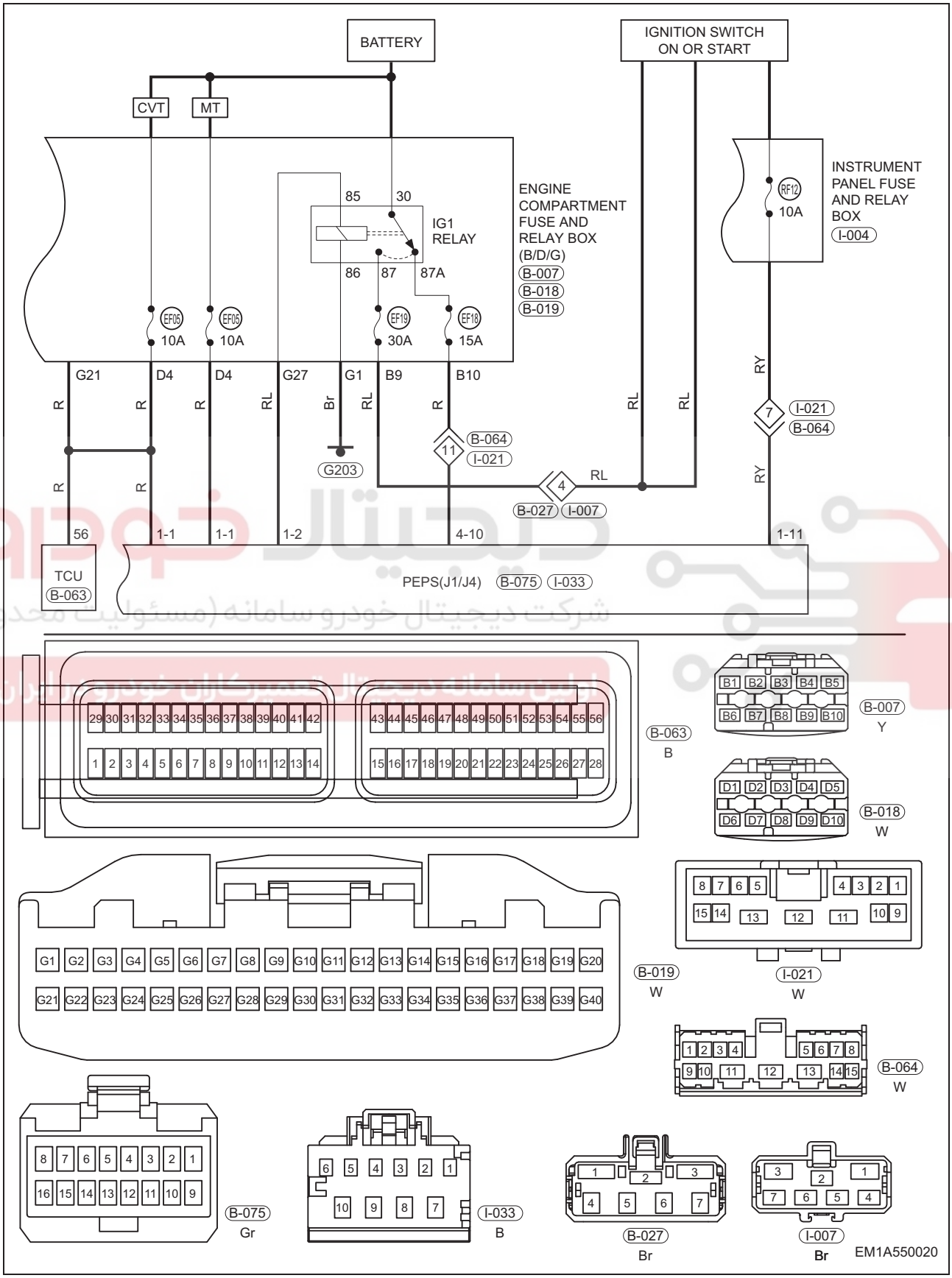
X-431 3G Diagnostic Tester	 RCH0000001

General Tool

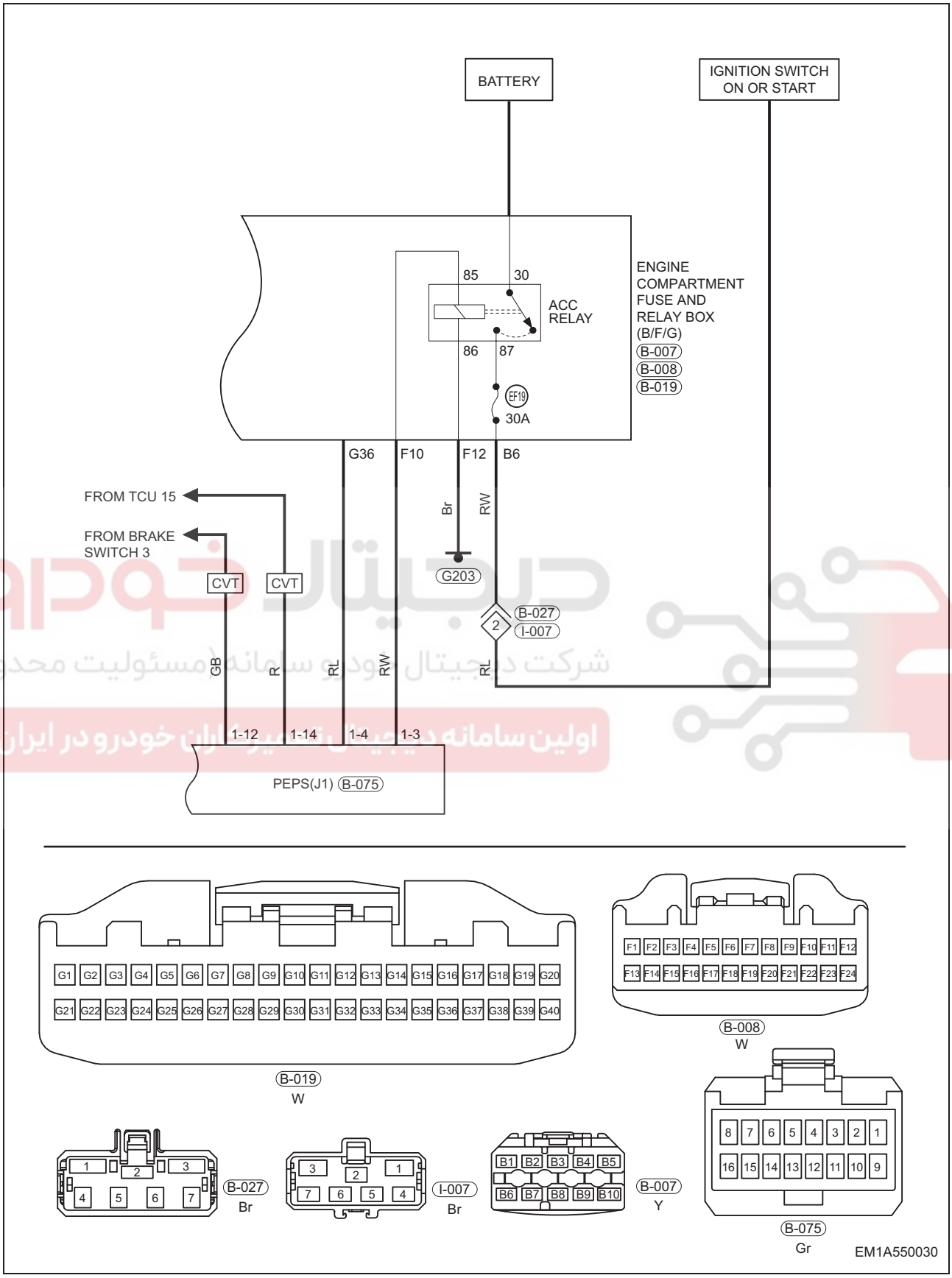
Digital Multimeter	 RCH0000002

Circuit Diagram

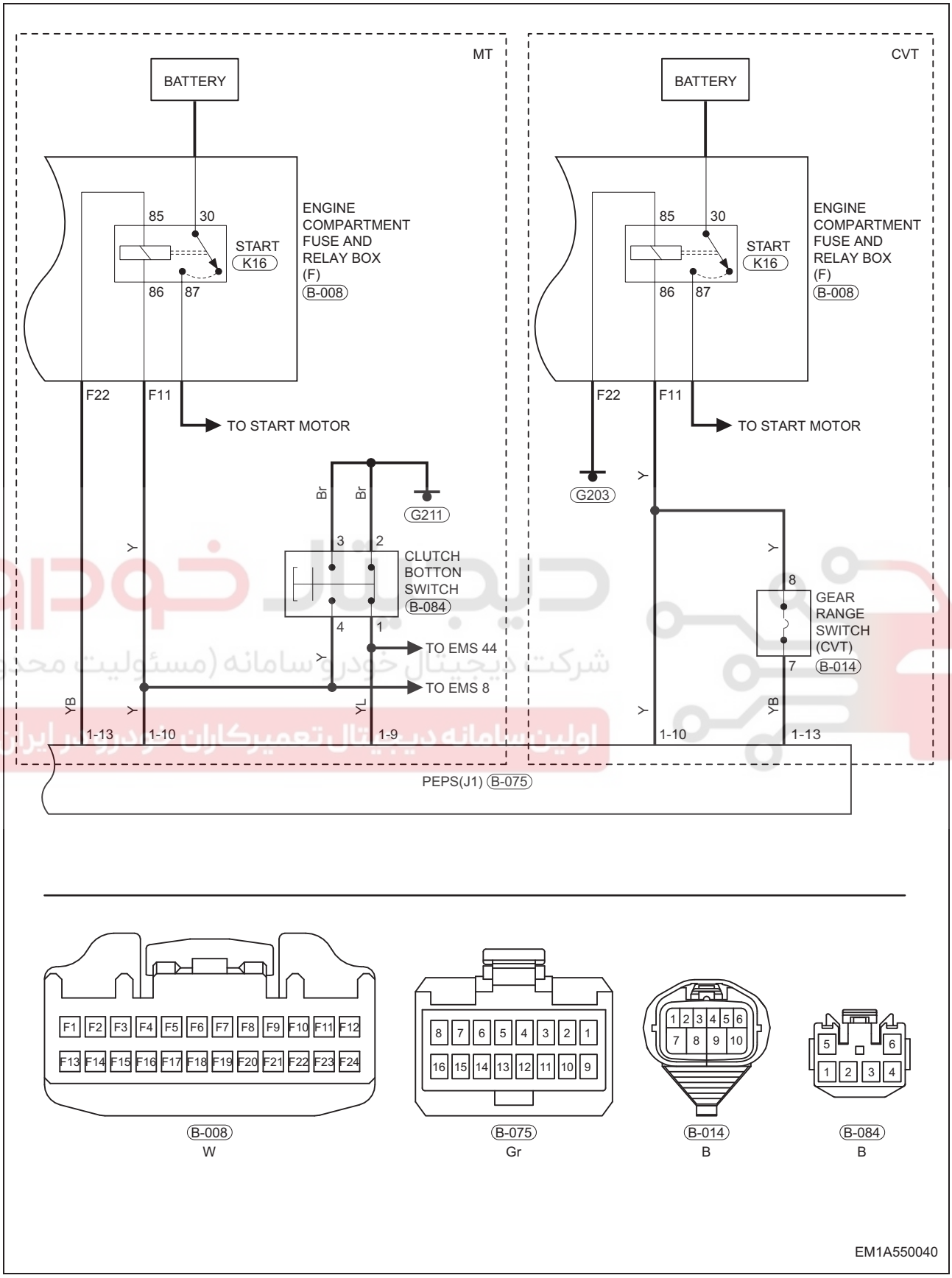
PEPS System (Page 1 of 5)



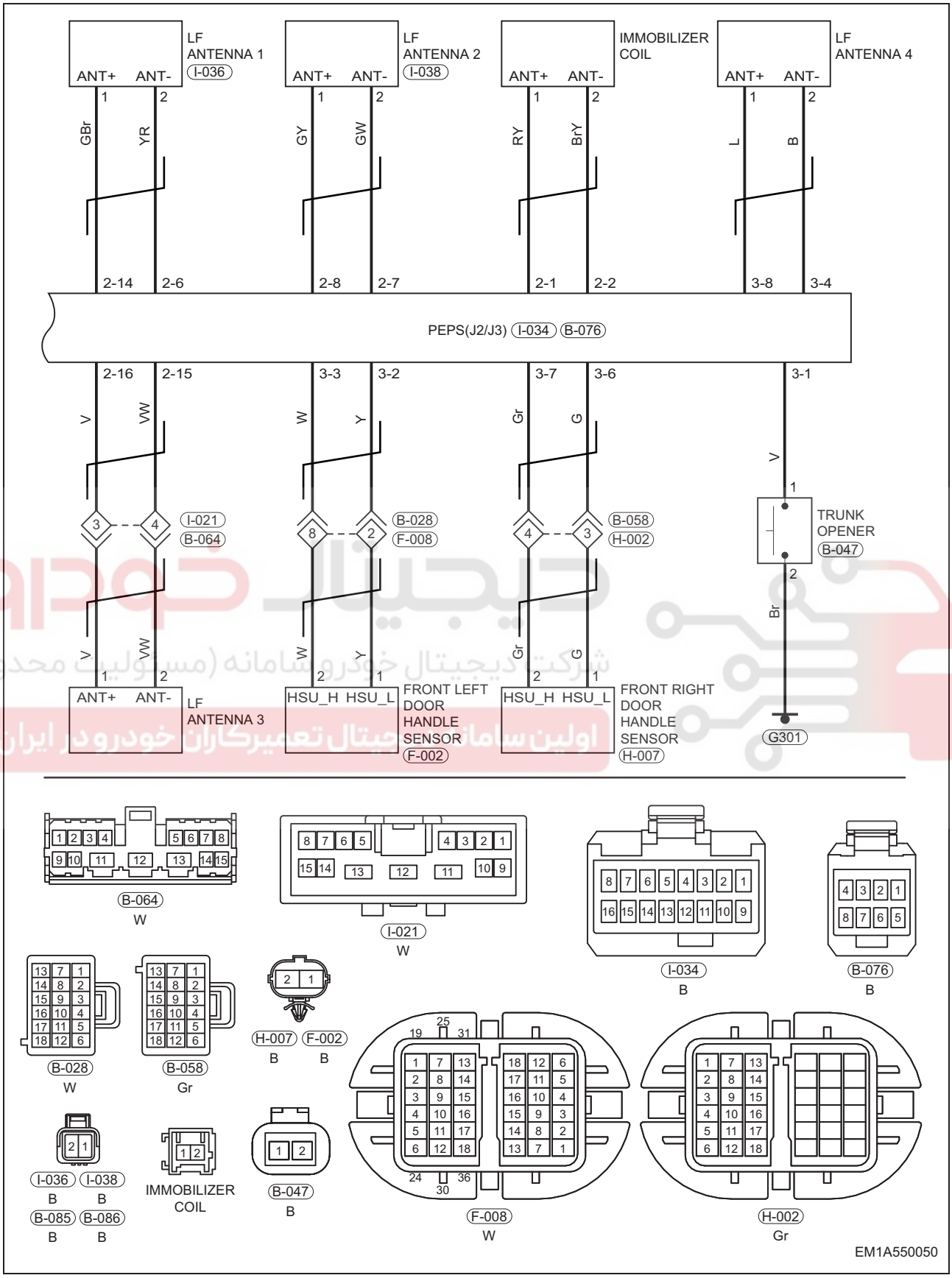
PEPS System (Page 2 of 5)



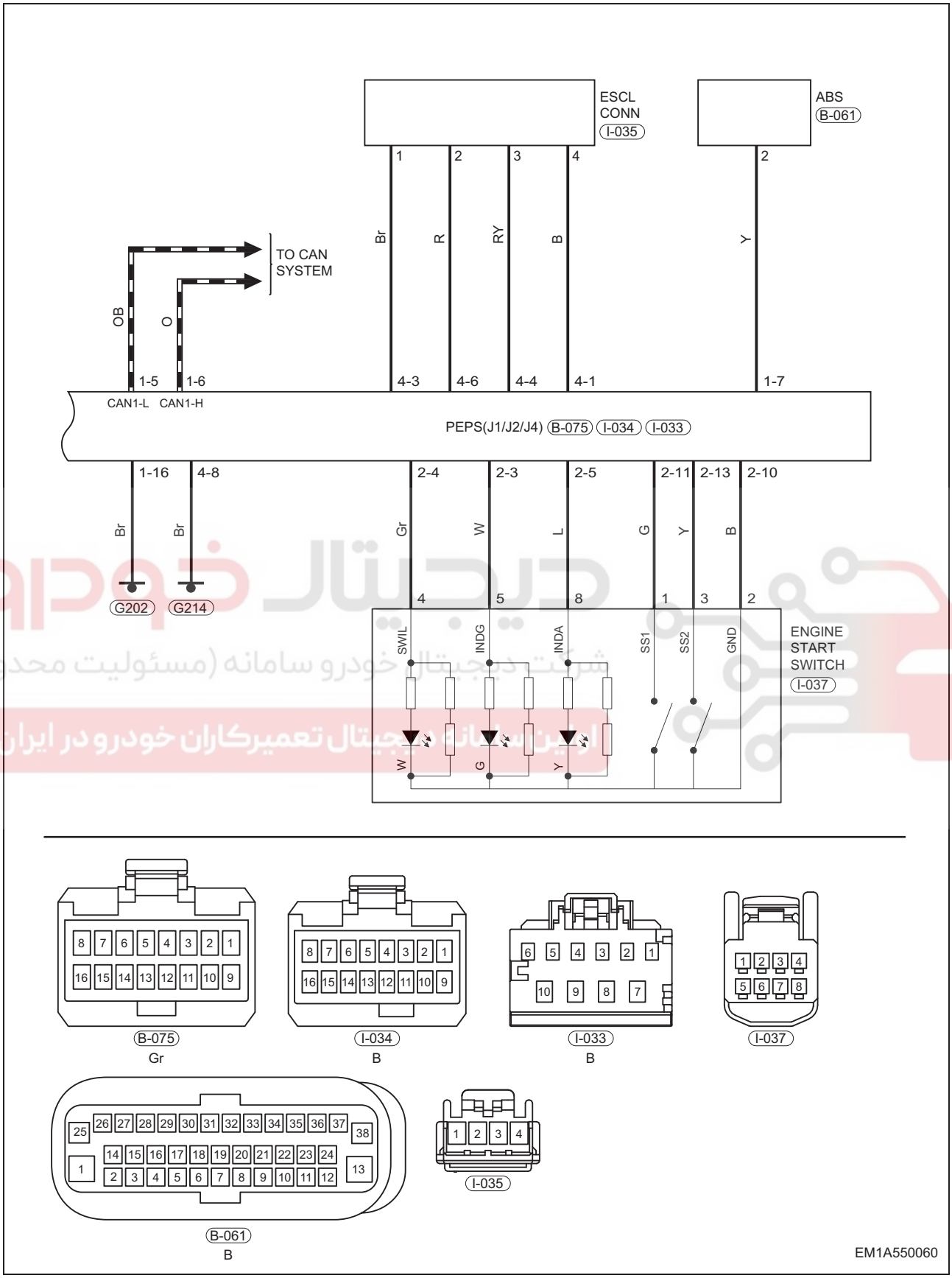
PEPS System (Page 3 of 5)



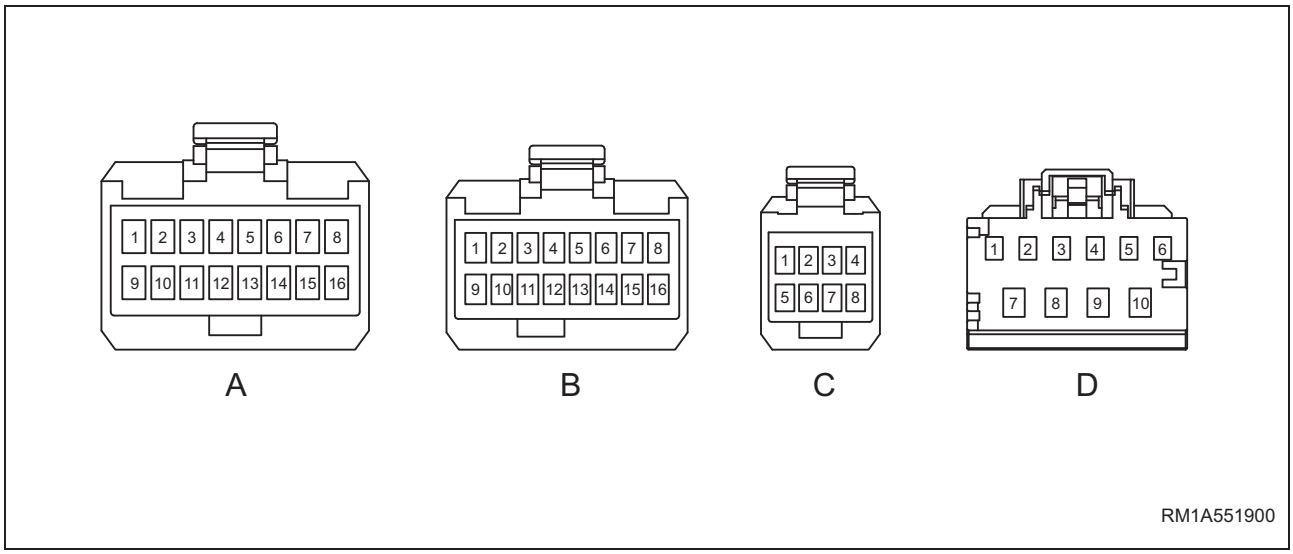
PEPS System (Page 4 of 5)



PEPS System (Page 5 of 5)



EM1A550060



PEPS Terminal Definition

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
A1	Battery Power Supply	B10	Ground
A2	IG1 Relay Drive (High)	B11	Starting Switch 1
A3	ACC Relay Drive (High)	B12	Reserved (Ant6-)
A4	IG2 Relay Drive (High)	B13	Starting Switch 2
A5	High-speed CAN Low	B14	Low Frequency Antenna 1 Positive Frequency Signal
A6	High-speed CAN High	B15	Low Frequency Antenna 3 Negative Frequency Signal
A7	ABS (ESP)	B16	Low Frequency Antenna 3 Positive Frequency Signal
A8	-	C1	Luggage Compartment Unlock Signal
A9	Clutch Switch Signal	C2	-
A10	Starter Relay Detection	C3	Front Left Door Handle Sensor (Low Frequency Antenna) Positive Frequency Signal
A11	Ignition Signal	C4	Luggage Compartment (Low Frequency Antenna) Negative Frequency Signal
A12	-	C5	-
A13	Starter Relay High	C6	Front Right Door Handle Sensor (Low Frequency Antenna) Negative Frequency Signal
A14	-	C7	Front Right Door Handle Sensor (Low Frequency Antenna) Positive Frequency Signal

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
A15	-	C8	Luggage Compartment (Low Frequency Antenna) Positive Frequency Signal
A16	Ground	D1	Electric Steering Column Lock Module Control Ground
B1	Backup Antenna Positive Frequency Signal	D2	-
B2	Backup Antenna Negative Frequency Signal	D3	Electronic Steering Column Lock Ground
B3	Starting Switch Indicator (Green)	D4	Electric Steering Column Lock Control Line
B4	Starting Switch Indicator (White)	D5	-
B5	Starting Switch Indicator (Amber)	D6	Electric Steering Column Lock Power Supply
B6	Low Frequency Antenna 1 Negative Frequency Signal	D7	-
B7	Low Frequency Antenna 2 Negative Frequency Signal	D8	Ground
B8	Low Frequency Antenna 2 Positive Frequency Signal	D9	-
B9	-	D10	Power Supply

DIAGNOSIS & TESTING

Problem Symptoms Table

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

Symptom	Suspected Area	See page
Unable to start vehicle	Immobilizer coil	33-30
	Key assembly	38-56
	Immobilizer control module	33-28
	ECM	-
	Wire harness and connector	-

Diagnosis Procedure

HINT:
Use following procedures to troubleshoot the brake control system.

1	**Vehicle brought to workshop**

NEXT

2	**Check battery voltage**

Standard voltage: 11 to 14 V

If voltage is below 11 V, recharge or replace the battery before proceeding to next step.

NEXT

3	**Customer problem analysis**

NEXT

4	**Check and clear DTCs**

NEXT

5	**Confirm and duplicate malfunction: accelerate vehicle to 15 km/h or more, simulate malfunction conditions and read DTCs again**

DTC occurs	**For current DTC, go to step 7**

No DTC	For history DTC, go to step 8

6	Problem repair (no DTC), then go to step 9

NEXT

7	Troubleshoot according to Diagnostic Trouble Code (DTC) chart, then go to step 9

NEXT

8	Troubleshoot according to Problem Symptoms Table, then go to step 9

NEXT

9	Conduct test and confirm malfunction has been repaired

NEXT

10	End

Problem Repair (No DTC)

If there is a problem in PEPS system, but no DTC is stored in PEPS system, it is called a problem without DTC. Problem without DTC is divided to following types:

Indicator on instrument cluster does not come on or remains on (error occurs when connecting wire harness or indicator on instrument cluster may be damaged).

Troubleshooting recommendation: check corresponding components according to problem symptom, and troubleshoot following the vehicle repair manual.

Problem Repair (Random)

For electronic system, momentary poor contact may occur in electric circuit and input/output signal, thus causing random problem. Sometimes, the problem may disappear automatically, so it is difficult to find out the cause. When random problem occurs, simulate problem symptom according to following method and check if the same problem occurs again.

No.	Possible Cause	Problem Simulation	Note
1	When vibration may be the main cause	1 - Gently wiggle connectors of PEPS system up, down, left and right 2 - Gently wiggle wire harnesses of PEPS system up, down, left and right	If wire harness has break or cracks due to too tight, replace with a new one.

No.	Possible Cause	Problem Simulation	Note
2	When temperature may be the main cause	1 - Heat suspected malfunction part with heater 2 - Check if there is cold welding phenomenon with cold spray	
3	When high electrical load may be the main cause	1 - Turn on all electric switches (including headlight and wiper), operate vehicle in high power supply load	

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to record and clear DTCs stored in ABS/ESP control module assembly.
- Turn ignition switch to LOCK and wait for a few seconds.
- Start engine, drive vehicle at 20 km/h or more and perform road test with X-431 3G diagnostic tester connected to Data Link Connector (DLC).
- Use X-431 3G diagnostic tester to read DTCs.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not 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 connectors are loose.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Wiggle related wire harnesses and connectors and observe if signal is interrupted in related circuit.
- 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.
- Inspect wheel speed sensors and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- Check and clean all wire harness connectors and grounding parts related to the current DTC.
- If multiple trouble codes were set, refer to circuit diagrams to look for any common ground circuit or power supply circuit applied to the DTC.
- Refer to any Technical Bulletin that may apply to the malfunction.

Ground Inspection

Ground points are very important to proper operation of circuits. Ground points are often exposed to moisture, dirt or other corrosive environments. Corrosion (rust) may increase load resistance. This situation may change the way in which a circuit works.

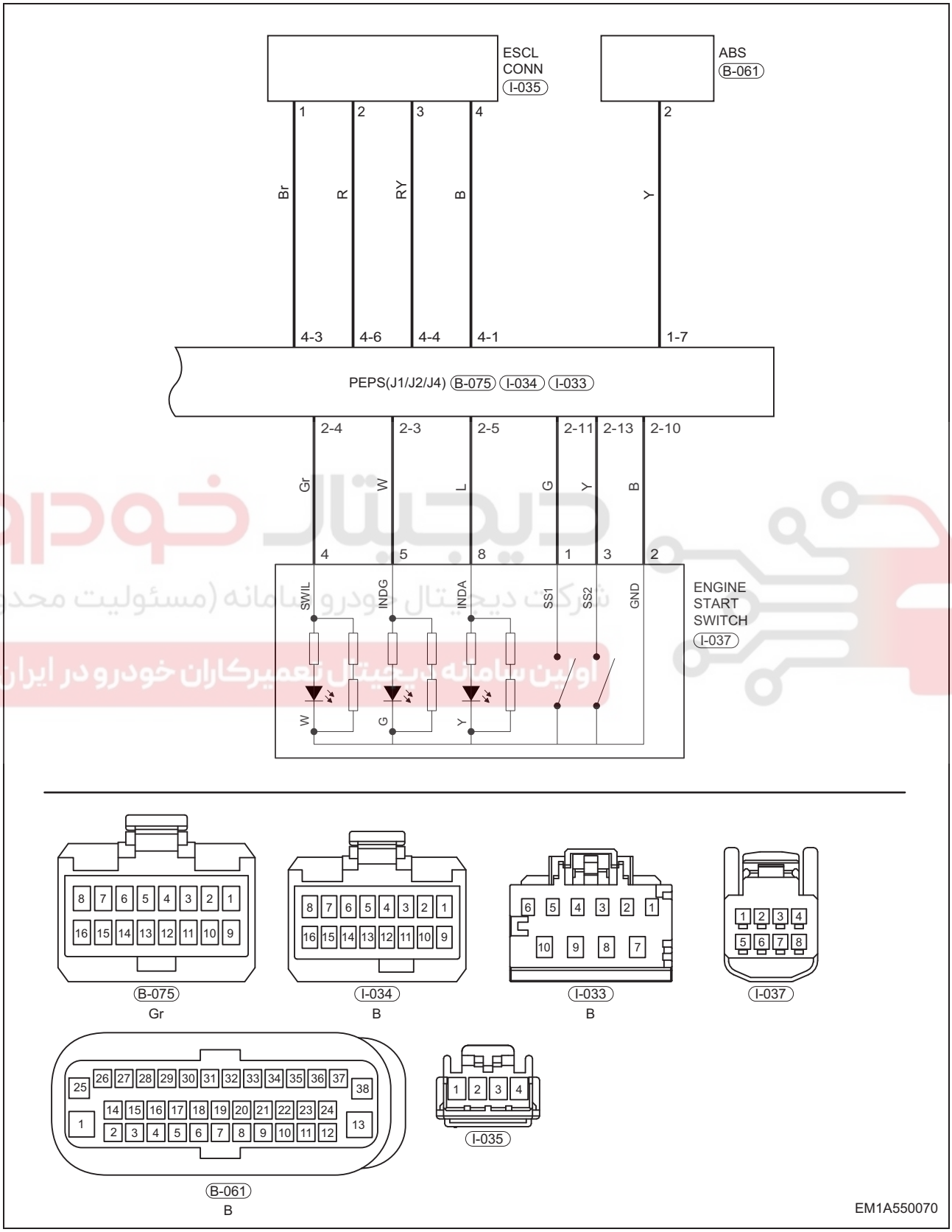
Circuits are very sensitive to proper grounding. A loose or corroded ground can affect control circuit. Check ground points as follows:

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

Diagnostic Trouble Code (DTC) Chart

DTC	DTC Definition
B1503-13	Middle Internal LF Antenna Circuit Open
B1504-13	Rear Internal LF Antenna Circuit Open
B1505-13	Bumper LF Antenna Circuit Open
B1506-00	Abnormality on Switches of Engine Switch No Subtype Information
B1507-00	Abnormality in IG Circuit No Subtype Information
B1508-00	Abnormality in ACC Circuit No Subtype Information
B1509-00	Abnormality in Brake Signal No Subtype Information
B150A-00	Abnormality in Vehicle Speed Signal No Subtype Information
B150C-00	Clutch Switch Signal Error No Subtype Information
B150D-00	Abnormality on ESCL LCK_GND No Subtype Information
B150E-00	Abnormality on ESCL LCK_PS No Subtype Information
B150F-00	ESCL Anti-scanning No Subtype Information
B1510-00	Abnormality on Wheel Speed Signal No Subtype Information
B1511-00	Abnormality in ESCL Lock No Subtype Information
B1512-00	Abnormality in ESCL Unlock No Subtype Information
B1513-00	ESCL External Failure No Subtype Information
B1514-00	Abnormality on STAR Power Supply No Subtype Information
B1515-45	ROM for Checksum Failure
B1516-19	HSU Overload
B1517-23	HSU Switch Continuously Pressed Failure
U0073-88	Control Module Communication Bus Off Bus Off
U0100-87	Lost Communication With EMS Missing Message
U0101-87	Lost Communication With TCM Missing Message
U0129-87	Lost Communication With BSM Missing Message
U0140-87	Lost Communication With BCM Missing Message
U0329-87	Lost Communication with ESCL Missing Message
U1300-55	Software Configuration Error Not Configured

DTC	B1506-00	Abnormality on Switches of Engine Switch No Subtype Information



DTC Definition	DTC Definition	DTC Detection Condition	Possible Cause
B1506-00	Abnormality on Switches of Engine Switch No Subtype Information	Ignition switch ON	• Wire harness or connector • Engine switch • PEPS controller

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to record and clear DTCs stored in PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to read DTCs.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 34-17).

CAUTION

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

Diagnosis Procedure

1	**Check PEPS controller ground**

a. Turn ignition switch to LOCK.

b. Check the PEPS controller ground point G-202.

NG → **Repair or replace PEPS controller ground wire harness or ground point**

OK

2	**Check wire harness and connector**

a. Disconnect the negative battery cable.

b. Disconnect the PEPS controller connector I-034.

c. Disconnect the engine switch connector I-037.

d. Check if wire harnesses are worn, pierced, pinched or partially broken.

e. Look for broken, bent, protruded or corroded terminals.

f. Check if related connector pins are in good condition.

NG → **Repair or replace related wire harness and connector**

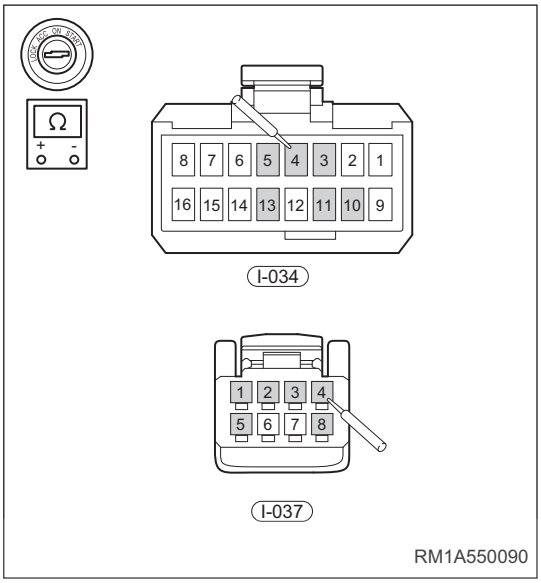
OK

3	Check instrument panel wire harness and connector

a. Check wire harness between instrument panel wire harness connectors I-034 and I-037.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-034 (4) - I-037 (4)	Always	Continuity
I-034 (3) - I-037 (5)	Always	Continuity
I-034 (5) - I-037 (8)	Always	Continuity
I-034 (11) - I-037 (1)	Always	Continuity
I-034 (13) - I-037 (3)	Always	Continuity
I-034 (10) - I-037 (2)	Always	Continuity



Check for Short

Multimeter Connection	Condition	Specified Condition
I-034 (4) or I-037 (4) - Body ground/ battery positive	Always	No continuity
I-034 (3) or I-037 (5) - Body ground/ battery positive	Always	Continuity
I-034 (5) or I-037 (8) - Body ground/ battery positive	Always	Continuity
I-034 (11) or I-037 (1) - Body ground/ battery positive	Always	Continuity
I-034 (13) or I-037 (3) - Body ground/ battery positive	Always	Continuity
I-034 (10) or I-037 (2) - Body ground/ battery positive	Always	Continuity

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

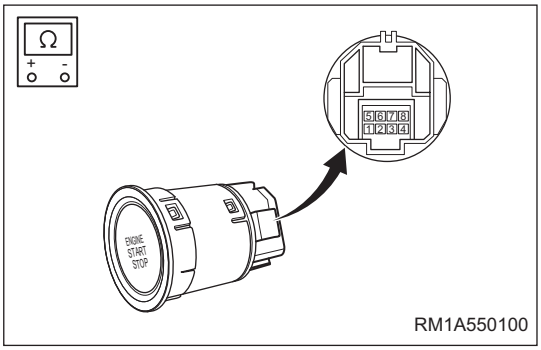
34

OK

4	Check engine switch

a. Check the engine switch

- Using a digital multimeter, check continuity of engine switch according to table below.



RM1A550100

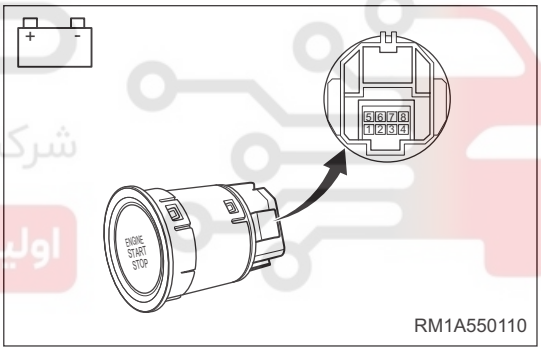
Multimeter Connection	Switch Condition	Specified Condition
Terminal 1 - Terminal 2	Not pushed	No continuity
Terminal 3 - Terminal 2	Not pushed	No continuity
Terminal 1 - Terminal 2	Pushed	Continuity
Terminal 3 - Terminal 2	Pushed	Continuity

34

- Apply battery voltage to terminals of engine switch and check illumination condition of engine switch.

HINT:

- If positive (+) lead and negative (-) lead are incorrectly connected, engine switch indicator will not illuminate.
- If battery voltage is too low, engine switch indicator will not illuminate.



RM1A550110

Multimeter Connection	Switch Condition	Specified Condition
Battery positive (+) - Terminal 4 Battery negative (-) - Terminal 2	Always	Illuminate (printed words come on)
Battery positive (+) - Terminal 5 Battery negative (-) - Terminal 2	Always	Illuminate (green)
Battery positive (+) - Terminal 8 Battery negative (-) - Terminal 2	Always	Illuminate (amber)

NG → Repair or replace engine switch

OK

5	Confirm DTCs

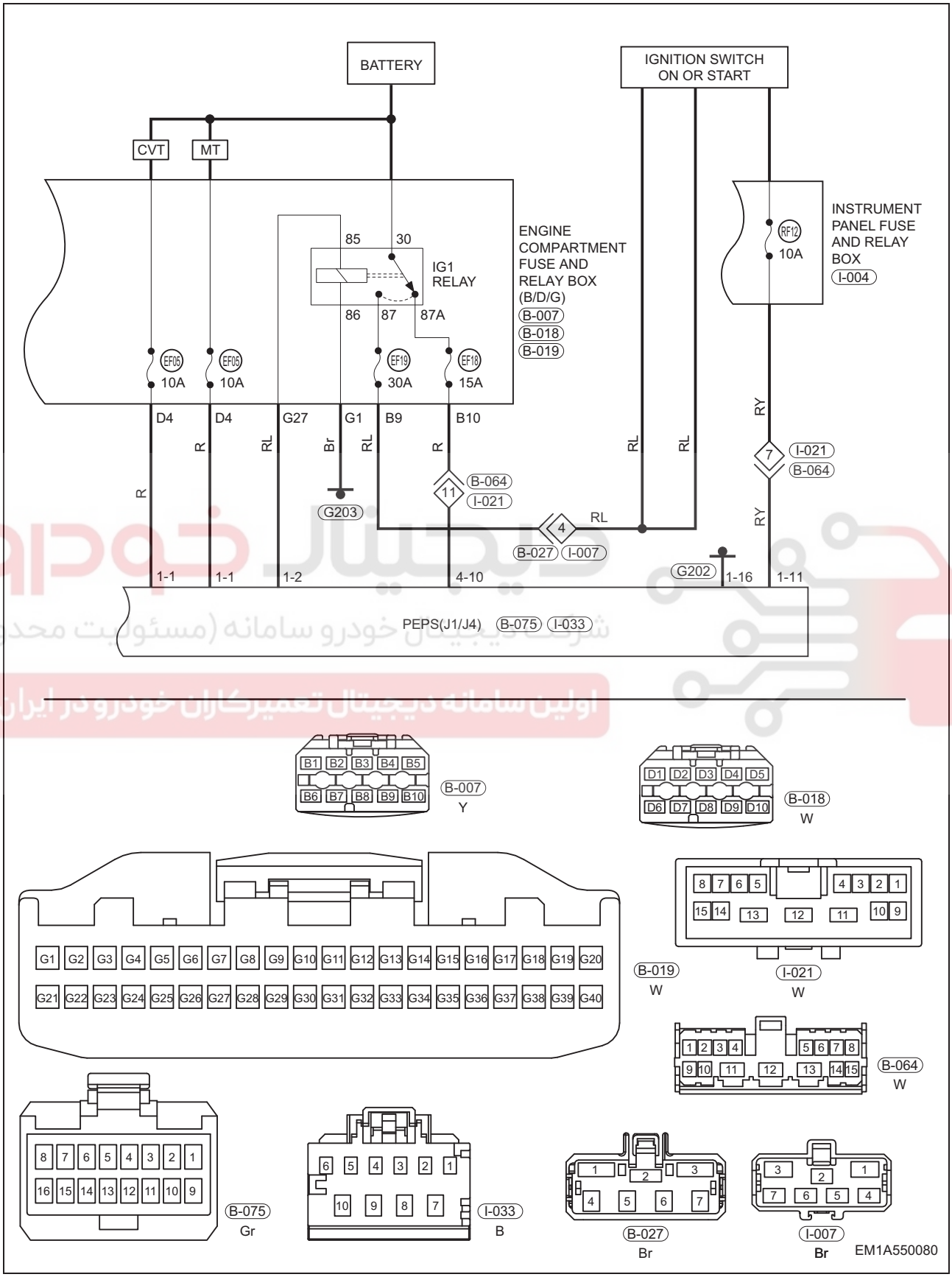
a. Connect the related wire harness connectors.
b. Connect the negative battery cable.
c. Turn ignition switch to ON.
d. Connect X-431 3G diagnostic tester to Data Link Connector, check if any DTC is detected.

NG → **Repair or replace PEPS controller**

OK

System operates normally

DTC	B1507-00	Abnormality in IG Circuit No Subtype Information



DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1507-00	Abnormality in IG Circuit No Subtype Information	Ignition switch ON	• Wire harness or connector • Fuse • IGN1 relay • Engine switch • PEPS controller

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to record and clear DTCs stored in PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to read DTCs.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 34-17).

CAUTION

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

Diagnosis Procedure

1	**Check fuse and relay**

a. Turn off all electrical equipment and the ignition switch.
b. Disconnect the negative battery cable.
c. Remove fuses EF19 (30A), EF05 (10A) (for MT model) and EF06 (10A) (for CVT model) from engine compartment fuse and relay box.
d. Remove IGN1 relay from engine compartment fuse and relay box.
e. Remove fuse RF12 (10A) from instrument panel fuse box.
f. Check if fuse and relay are blown or damaged.

NG → **Repair or replace damaged fuse and relay**

OK

2	**Check engine compartment fuse and relay box ground point and PEPS controller ground point**

a. Check engine compartment fuse and relay box ground point B-051.
b. Check the PEPS controller ground point B-039.

NG → **Repair or replace ground wire harness or ground point**

OK ↓

3	**Check wire harness between battery and engine compartment fuse and relay box**

a. Remove ING1 relay from engine compartment fuse and relay box.
b. Connect the negative battery cable.
c. Turn digital multimeter to DC voltage band, and check that output voltage at terminal 30 of relay is 12 V.

NG → **Repair or replace wire harness between battery and engine compartment fuse and relay box**

OK ↓

4	**Check body wire harness**

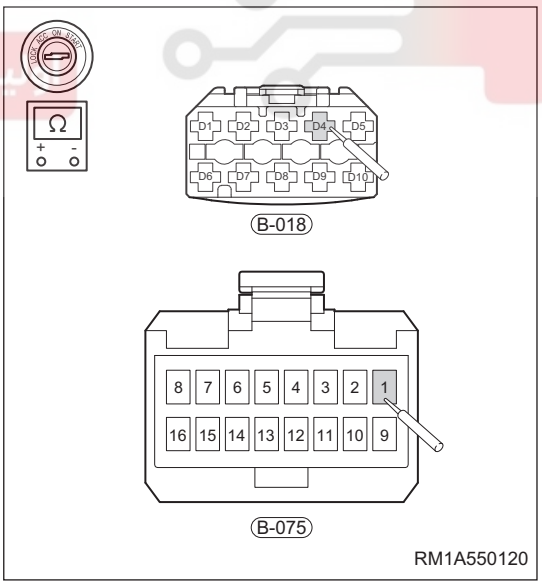
a. Check wire harness between engine compartment fuse and relay box connector B-018 and PEPS controller connector J1 (B-075).

Check for Open

Multimeter Connection	Condition	Specified Condition
B-018 (D4) - B-075 (1)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-018 (D4) or B-075 (1) - Body ground	Always	No continuity
B-018 (D4) or B-075 (1) - Battery positive	Always	No continuity



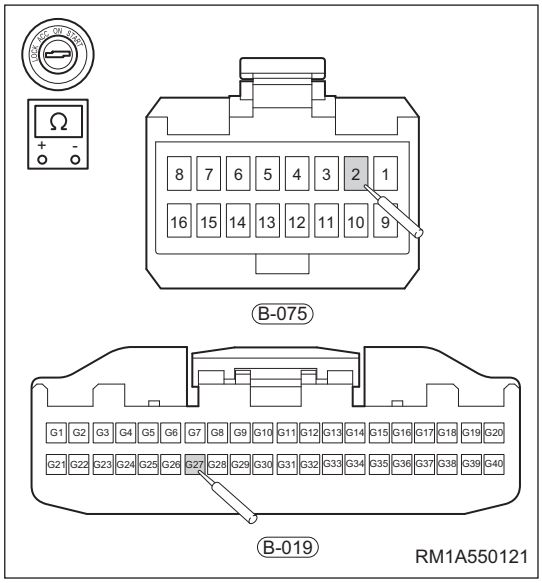
b. Check wire harness between engine compartment fuse and relay box connector B-019 and PEPS controller connector J1 (B-075).

Check for Open

Multimeter Connection	Condition	Specified Condition
B-019 (G27) - B-075 (2)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-019 (G27) or B-075 (2) - Body ground	Always	No continuity
B-019 (G27) or B-075 (2) - Battery positive	Always	No continuity



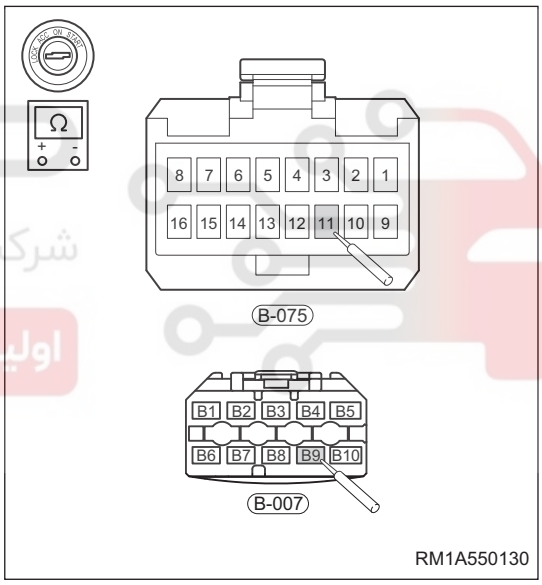
c. Check wire harness between body wire harness connector B-007 and PEPS controller connector J1 (B-075).

Check for Open

Multimeter Connection	Condition	Specified Condition
B-007 (B9) - B-075 (11)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-007 (B9) or B-075 (11) - Body ground	Always	No continuity
B-007 (B9) or B-075 (11) - Battery positive	Always	No continuity



NG → **Repair or replace body wire harness**

OK

5	**Check ignition starting switch (See page 15-13)**

NG → **Repair or replace ignition starting switch**

OK

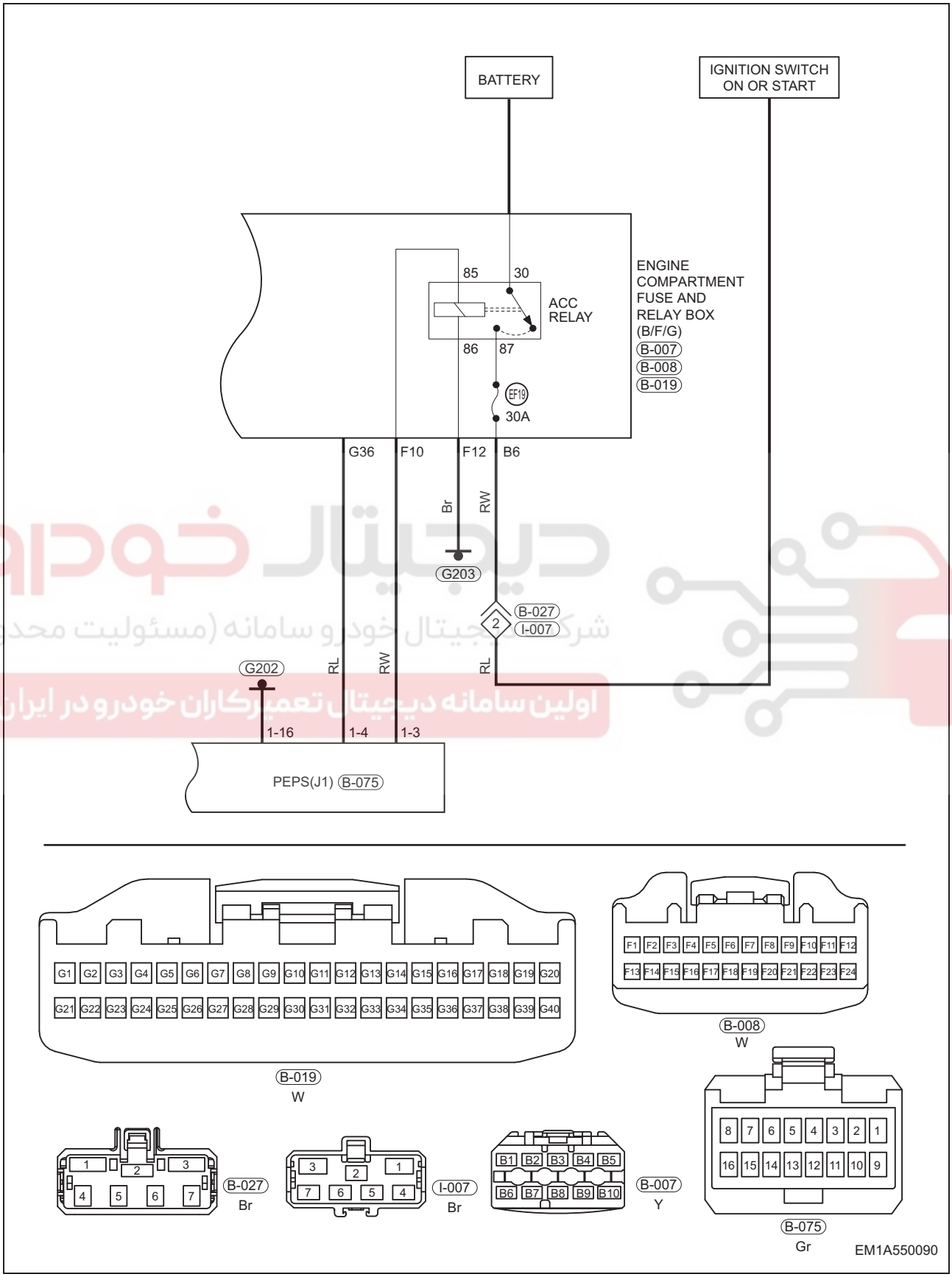
6	Confirm DTCs

a. Connect the related wire harness connectors.
b. Connect the negative battery cable.
c. Turn ignition switch to ON.
d. Connect X-431 3G diagnostic tester to Data Link Connector, check if any DTC is detected.

NG → **Repair or replace PEPS controller**

OK → **System operates normally**

DTC	B1508-00	Abnormality in ACC Circuit No Subtype Information



DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1508-00	Abnormality in ACC Circuit No Subtype Information	Ignition switch ON	• Wire harness or connector • Fuse • ACC relay • Engine switch • PEPS controller

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to record and clear DTCs stored in PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to read DTCs.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 34-17).

CAUTION

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

Diagnosis Procedure

1	**Check fuse and relay**

a. Turn off all electrical equipment and the ignition switch.
b. Disconnect the negative battery cable.
c. Remove fuse EF19 (30A) from engine compartment fuse and relay box.
d. Remove ACC relay from engine compartment fuse and relay box.
e. Check if fuse and relay are blown or damaged.

NG → **Repair or replace damaged fuse and relay**

OK

2	Check engine compartment fuse and relay box ground point and PEPS controller ground point

a. Check engine compartment fuse and relay box ground point G-203.
b. Check the PEPS controller ground point G-202.

NG → **Repair or replace ground wire harness or ground point**

OK ↓

3	Check wire harness between battery and engine compartment fuse and relay box

a. Remove ACC relay from engine compartment fuse and relay box.
b. Connect the negative battery cable.
c. Turn digital multimeter to DC voltage band, and check that output voltage at terminal 30 of relay is 12 V.

NG → **Repair or replace wire harness between battery and engine compartment fuse and relay box**

OK ↓

4	Check body wire harness

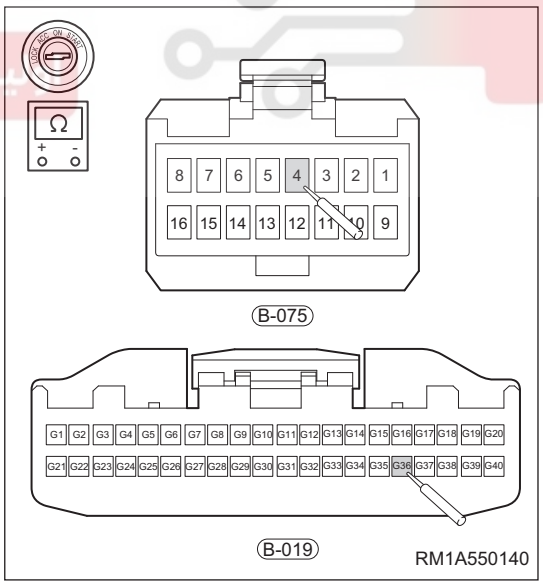
a. Check wire harness between engine compartment fuse and relay box connector B-019 and PEPS controller connector J1 (B-075).

Check for Open

Multimeter Connection	Condition	Specified Condition
B-019 (G36) - B-075 (4)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-019 (G36) or B-075 (4) - Body ground	Always	No continuity
B-019 (G36) or B-075 (4) - Battery positive	Always	No continuity



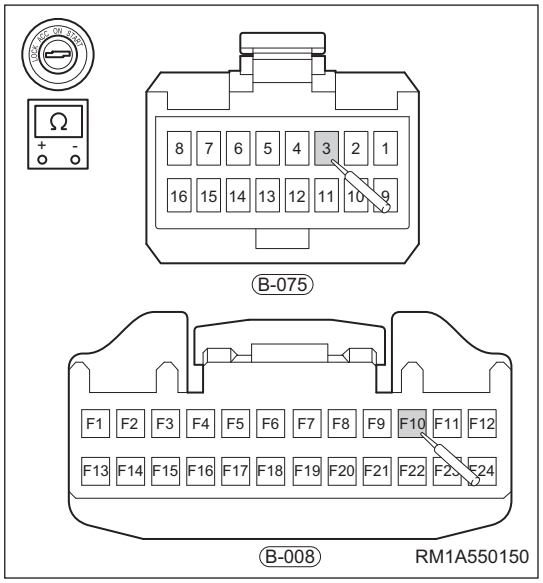
b. Check wire harness between engine compartment fuse and relay box connector B-008 and PEPS controller connector J1 (B-075).

Check for Open

Multimeter Connection	Condition	Specified Condition
B-008 (F10) - B-075 (3)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-008 (F10) or B-075 (3) - Body ground	Always	No continuity
B-008 (F10) or B-075 (3) - Battery positive	Always	No continuity



34

NG → **Repair or replace body wire harness**

OK ↓

5 Check ignition starting switch (See page 15-13)

NG → **Repair or replace ignition starting switch**

OK ↓

6 Confirm DTCs

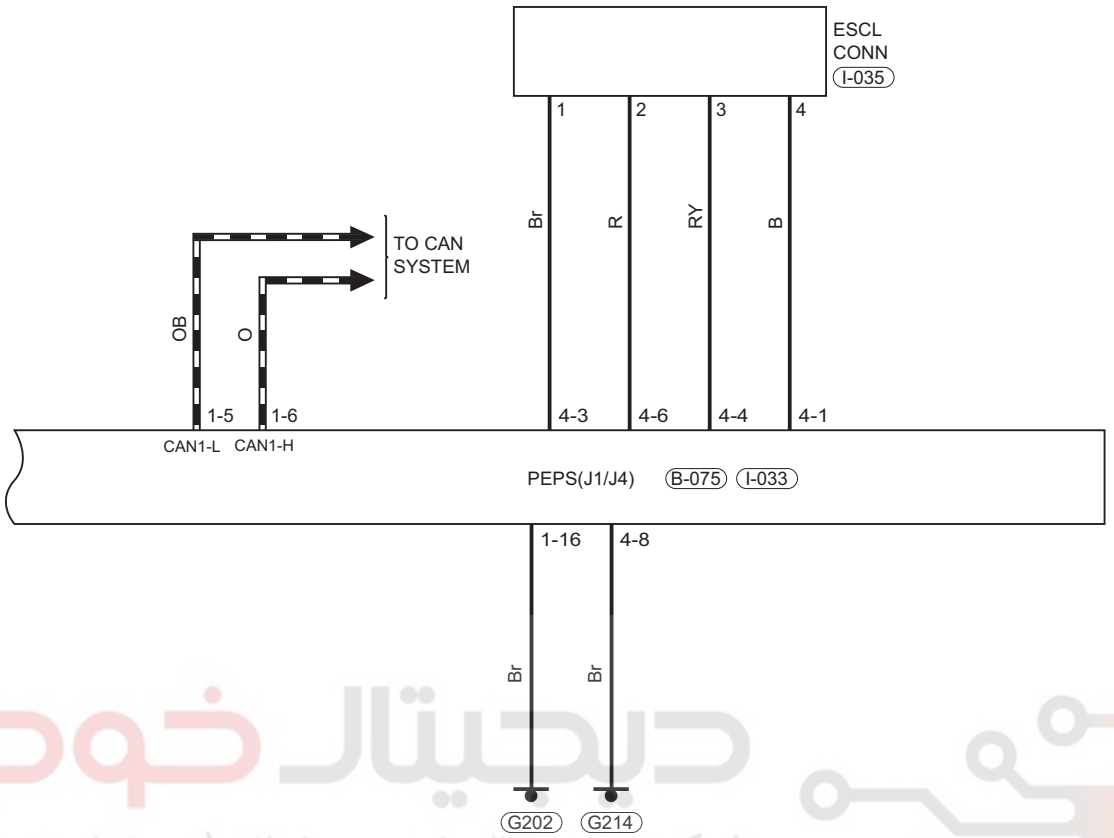
a. Connect the related wire harness connectors.
b. Connect the negative battery cable.
c. Turn ignition switch to ON.
d. Connect X-431 3G diagnostic tester to Data Link Connector, check if any DTC is detected.

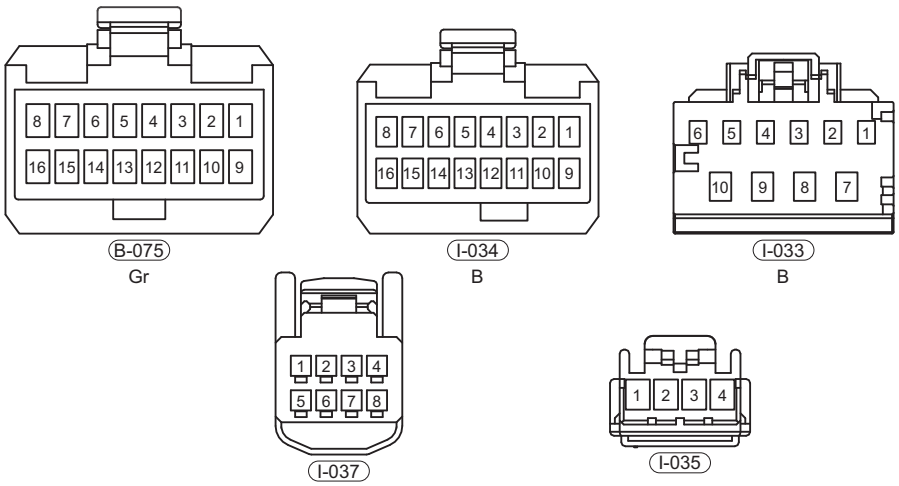
NG → **Repair or replace PEPS controller**

OK ↓

System operates normally

DTC	B150D-00	Abnormality on ESCL LCK_GND No Subtype Information
DTC	B150E-00	Abnormality on ESCL LCK_PS No Subtype Information
DTC	B150F-00	ESCL Anti-scanning No Subtype Information
DTC	B1511-00	Abnormality in ESCL Lock No Subtype Information
DTC	B1512-00	Abnormality in ESCL Unlock No Subtype Information
DTC	B1513-00	ESCL External Failure No Subtype Information





EM1A550110

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B150D-00	Abnormality on ESCL LCK_GND No Subtype Information	Ignition switch ON	• Wire harness or connector • Fuse • IGN1 relay • Electronic steering column lock • PEPS controller
B150E-00	Abnormality on ESCL LCK_PS No Subtype Information		
B150F-00	ESCL Anti-scanning No Subtype Information		
B1511-00	Abnormality in ESCL Lock No Subtype Information		
B1512-00	Abnormality in ESCL Unlock No Subtype Information		
B1513-00	ESCL External Failure No Subtype Information		
U0329-87	Lost Communication with ESCL Missing Message	Ignition switch ON	• Wire harness or connector • PEPS controller

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to record and clear DTCs stored in PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to read DTCs.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent.

CAUTION

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

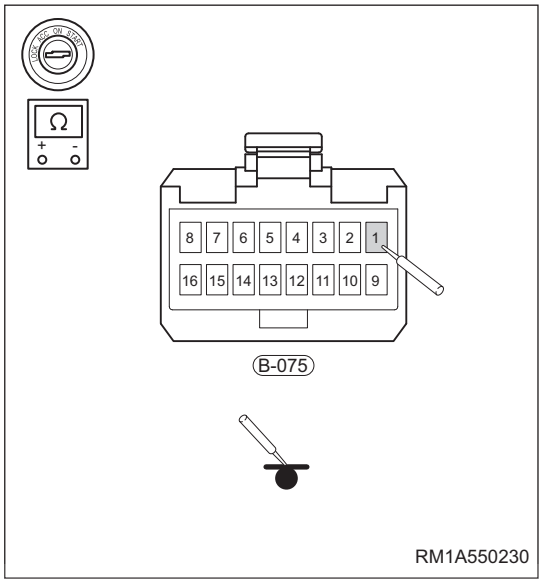
Diagnosis Procedure

1	Check PEPS control module power supply circuit (PEPS control module assembly - battery)

a. Connect the negative battery cable.
b. Turn ignition switch to LOCK.
c. Disconnect the PEPS control module assembly connector B-075.
d. Using a digital multimeter, measure voltage between PEPS control module assembly terminal 1 and body ground to check if power supply circuit is normal according to table below.

Standard Voltage

Multimeter Connection	Condition	Specified Condition
B-075 (1) - Body ground	Always	9 to 16 V



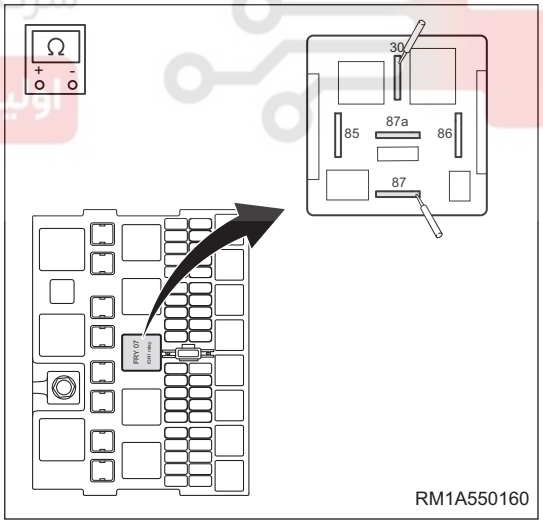
NG → **Repair or replace body wire harness and connector**

OK

2	Check fuse and relay

a. Turn off all electrical equipment and the ignition switch.
b. Disconnect the negative battery cable.
c. Remove fuse EF18 (15A) from engine compartment fuse and relay box.
d. Remove IGN1 relay from engine compartment fuse and relay box, and check IGN1 relay.

Multimeter Connection	Specified Condition
Terminal 30 - Terminal 87	No continuity
Terminal 30 - Terminal 87a	Continuity
Terminal 30 - Terminal 87	Continuity (when battery voltage is applied between terminal 85 and terminal 86)
Terminal 30 - Terminal 87a	No continuity (when battery voltage is applied between terminal 85 and terminal 86)



e. Check if fuse and relay are blown or damaged.

NG → **Repair or replace damaged fuse and relay**

OK

3	Check connector and wire harness

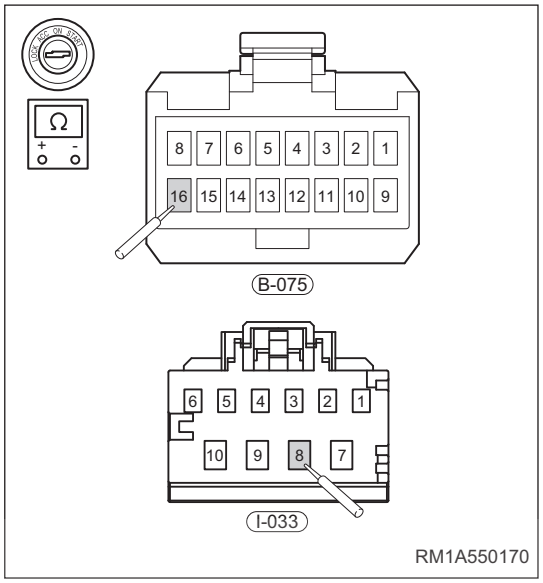
a. Check PEPS controller ground points G214 and G202.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-075 (16) - Body ground	Always	Continuity
I-033 (8) - Body ground	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-075 (16) or I-033 (8) - Battery positive	Always	No continuity



b. Disconnect PEPS controller connector I-033 and electronic steering column lock connector I-035.

c. Disconnect engine compartment fuse and relay box connector B-018.

d. Disconnect connector B-007/B-075/B-019 between instrument panel wire harness and body wire harness.

e. Check if wire harnesses are worn, pierced, pinched or partially broken.

f. Look for broken, bent, protruded or corroded terminals.

g. Check if related connector pins are in good condition.

NG → **Repair or replace related connector or wire harness**

OK

4	Check body wire harness

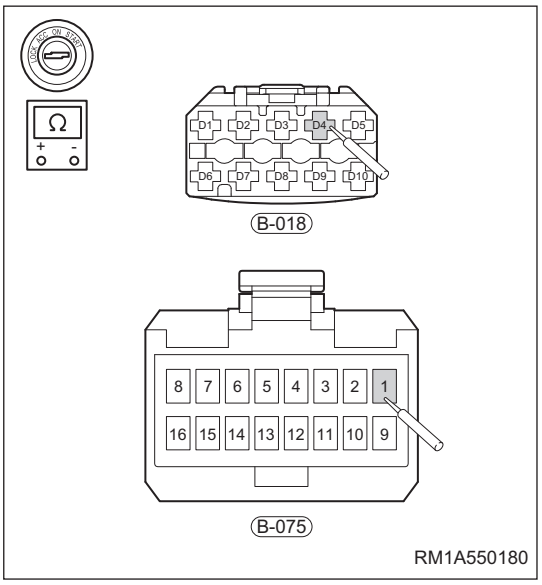
a. Check wire harness between engine compartment fuse and relay box connector B-018 and body wire harness connector B-075.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-018 (D4) - B-075 (1)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-018 (D4) or B-075 (1) - Body ground	Always	No continuity
B-018 (D4) or B-075 (1) - Battery positive	Always	No continuity



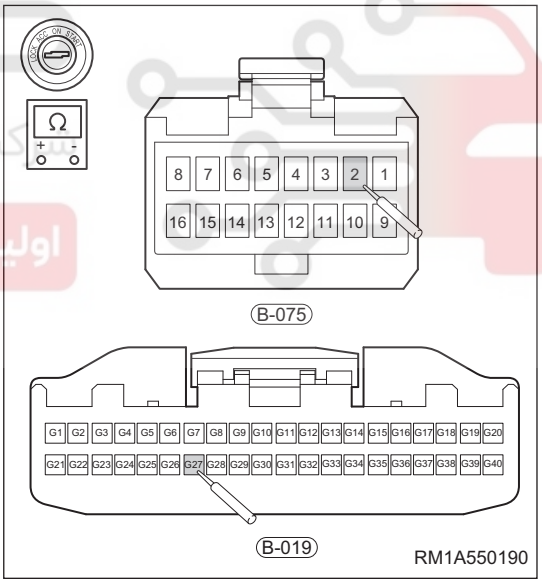
b. Check wire harness between engine compartment fuse and relay box connector B-019 and body wire harness connector B-075.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-019 (G27) - B-075 (2)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-019 (G27) or B-075 (2) - Body ground	Always	No continuity
B-019 (G27) or B-075 (2) - Battery positive	Always	No continuity



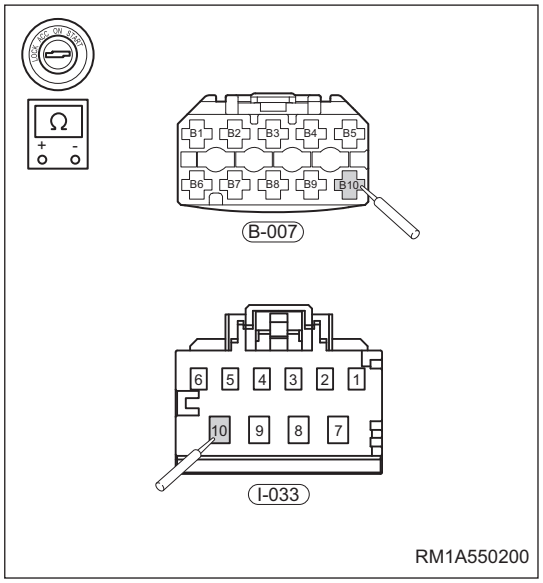
c. Check wire harness between engine compartment fuse and relay box connector B-007 and body wire harness connector I-033.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-007 (B10) - I-033 (10)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-007 (B10) or I-033 (10) - Body ground	Always	No continuity
B-007 (B10) or I-033 (10) - Battery positive	Always	No continuity



34

NG → **Repair or replace body wire harness**

OK

5 Check instrument panel wire harness

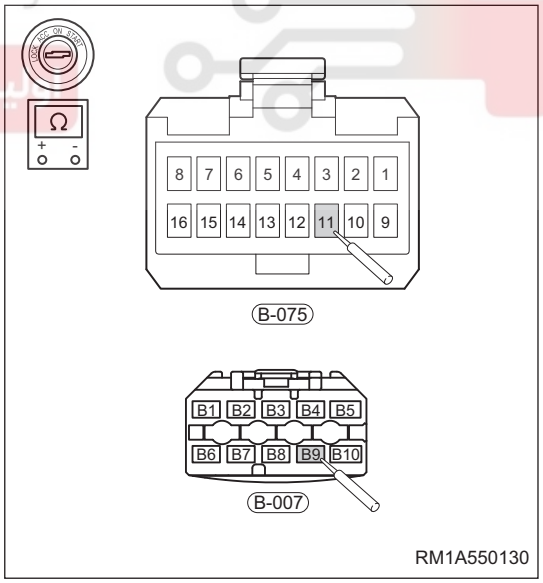
a. Check wire harness between body wire harness connector B-075 and engine compartment fuse and relay box connector B-007.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-007 (B9) - B-075 (11)	Always	Continuity

Check for Short

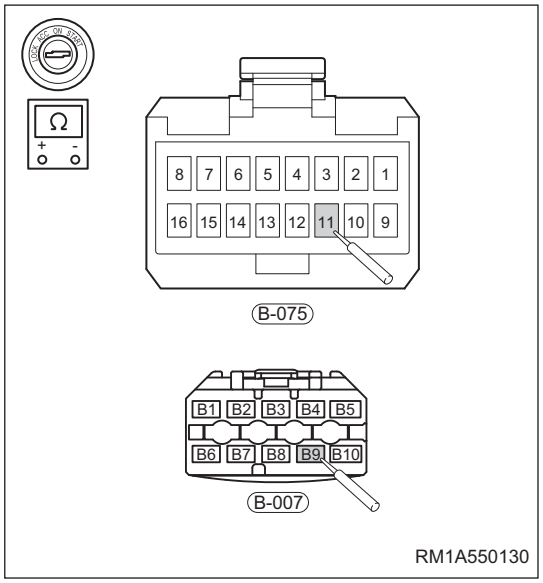
Multimeter Connection	Condition	Specified Condition
B-007 (B9) or B-075 (11) - Body ground	Always	No continuity
B-007 (B9) or B-075 (11) - Battery positive	Always	No continuity



b. Check wire harness between PEPS controller connector I-033 and electronic steering column lock connector I-035.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-033 (3) - I-035 (1)	Always	Continuity
I-033 (6) - I-035 (2)	Always	Continuity
I-033 (4) - I-035 (3)	Always	Continuity
I-033 (1) - I-035 (4)	Always	Continuity



34

Check for Short

Multimeter Connection	Condition	Specified Condition
I-033 (3/6/4/1) or I-035 (1/2/3/4) - Body ground	Always	No continuity
I-033 (3/6/4/1) or I-035 (1/2/3/4) - Battery positive	Always	No continuity

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

OK

6	**Check if electronic steering column lock is locked**

a. Connect the related wire harness connectors.

b. Connect the negative battery cable.

c. Perform lock and unlock procedures for electronic steering column lock, check if electronic steering column lock can be locked and unlocked.

NG → **Go to next step**

OK

System operates normally

7	Reconfirm DTCs

a. Use X-431 3G diagnostic tester to clear DTC.
b. Start the engine.
c. Use X-431 3G diagnostic tester to read DTCs stored in PEPS control module assembly again.
d. Check if same DTC is output.

NO → **System operates normally**

OK →

Replace PEPS control module assembly

Inspection Procedure for DTC B1503-13, B1504-13, B1505-13, B1515-45, B1516-19 and B1517-23 (See page 38-32)

Inspection Procedure for DTC U0100-87, U0140-87 (See page 31-82), U0329-87, U1300-55, U0073-88 and U0101-87 (See page 06-192)

ON-VEHICLE SERVICE

PEPS Low Frequency Antenna

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing PEPS low frequency antenna.
- Be careful not to damage antenna, when removing PEPS low frequency antenna.
- Be careful not to damage components, when removing PEPS components.

1. Remove the PEPS low frequency antenna (See page 38-53).

Installation

Installation is in the reverse order of removal.

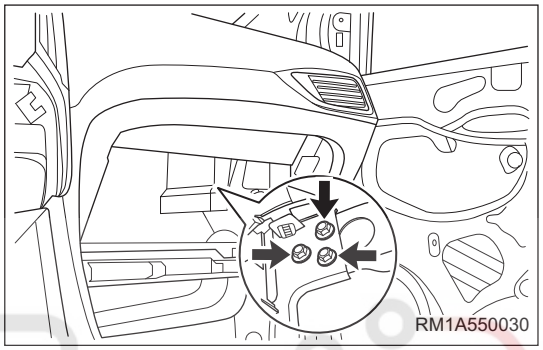
PEPS Control Module

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing PEPS low frequency antenna.
- Be careful not to damage antenna, when removing PEPS low frequency antenna.
- Be careful not to damage components, when removing PEPS components.

1. Remove the instrument panel assembly (See page 46-13).
2. Remove the PEPS control module.
   a. Disconnect 4 connectors from PEPS control module and remove 3 fixing bolts (arrow).



   b. Remove the PEPS control module.

Installation

Installation is in the reverse order of removal.

CAUTION

- When installing PEPS control module, make sure connectors on PEPS control module are well fitted with body wire harness.
- Check if functions are normal after installing PEPS control module.

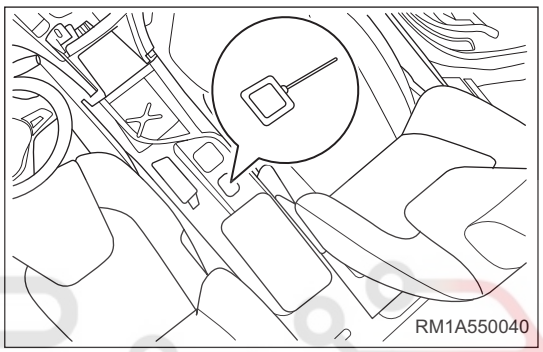
Immobilizer Coil

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing immobilizer coil.
- Be careful not to damage coil, when removing immobilizer coil.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the auxiliary fascia console assembly (See page 46-8).
4. Remove the immobilizer coil.
   a. Disconnect connector, remove fixing bolt and immobilizer coil.



Installation

Installation is in the reverse order of removal.

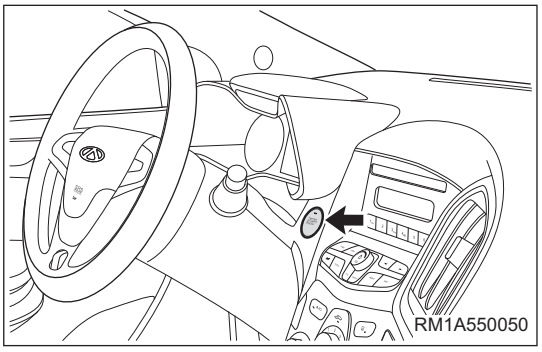
CAUTION

- Tighten fixing bolt to specified torque, when installing immobilizer coil.
- Install connector in place, when installing immobilizer coil.
- Check PEPS system for proper operation, after installing immobilizer coil.

Passive Entry & Passive Start Button

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the instrument panel assembly (See page 46-13).
4. Remove the passive entry & passive start button.
   a. As shown in illustration, disconnect connector and remove passive entry & passive start button (arrow).



Installation

Installation is in the reverse order of removal.

CAUTION

- Install fixing clamp to specified position, when installing passive entry & passive start button.
- Install connector in place, when installing passive entry & passive start button.
- Check PEPS system for proper operation, after installing passive entry & passive start button.

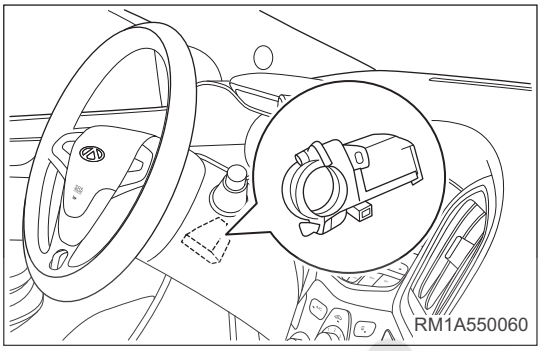
Electronic Steering Column Lock

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing steering column.
- Be careful not to damage steering column during removal.

1. Remove the steering column (See page 28-15).
2. Remove the electronic steering column lock.
   a. As shown in illustration, remove electronic steering column lock from steering column.



Installation

Installation is in the reverse order of removal.

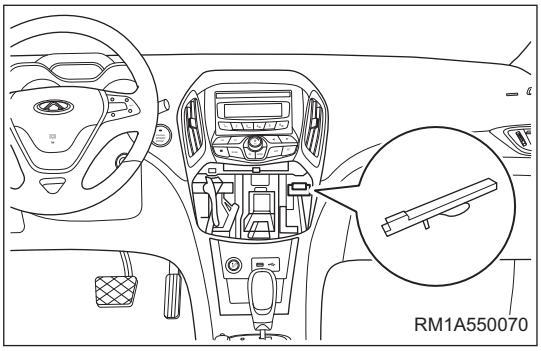
CAUTION

- Tighten fixing bolt to specified torque, when installing electronic steering column lock.
- Install connector in place, when installing electronic steering column lock.
- Check PEPS system for proper operation, after installing electronic steering column lock.

Front Low Frequency Antenna

Removal

1. Remove the A/C control panel assembly (See page 30-28).
2. Remove the front low frequency antenna.
   a. Disconnect connector and remove front low frequency antenna.



Installation

Installation is in the reverse order of removal.

CAUTION

- Install connector in place, when installing front low frequency antenna.
- Check PEPS system for proper operation, after installing front low frequency antenna.

- MEMO -