BODY & ACCESSORIES
15

CONTENTS

BODY INTERIOR

AUDIO SYSTEM

Description

The audio system consists of the following components:

- Audio Unit
- Front Speakers
- Front Tweeters
- Rear Speakers
- Window Antenna (audio)

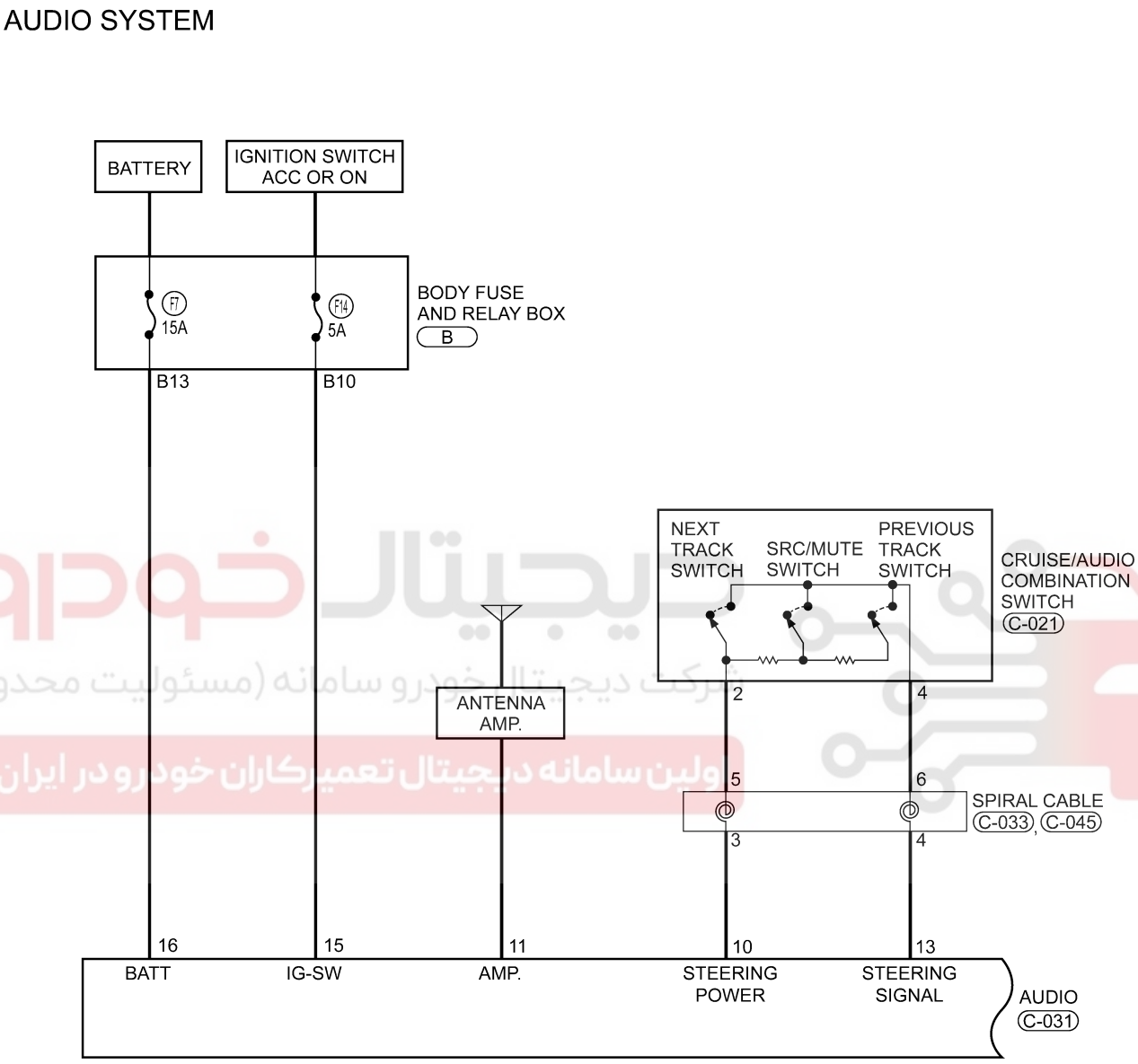
The audio system is standard factory-installed equipment. The system uses an ignition switched source of battery current so that the system will operate when the ignition switch is in the LOCK/ACC/ON positions. The system will also operate in the OFF position for one hour.

Operation

With the audio system on, radio signals are received by the window antenna, the audio unit then sends audio signals to front speakers and rear speakers.

Electrical Schematics

Audio System (Page 1 of 3)



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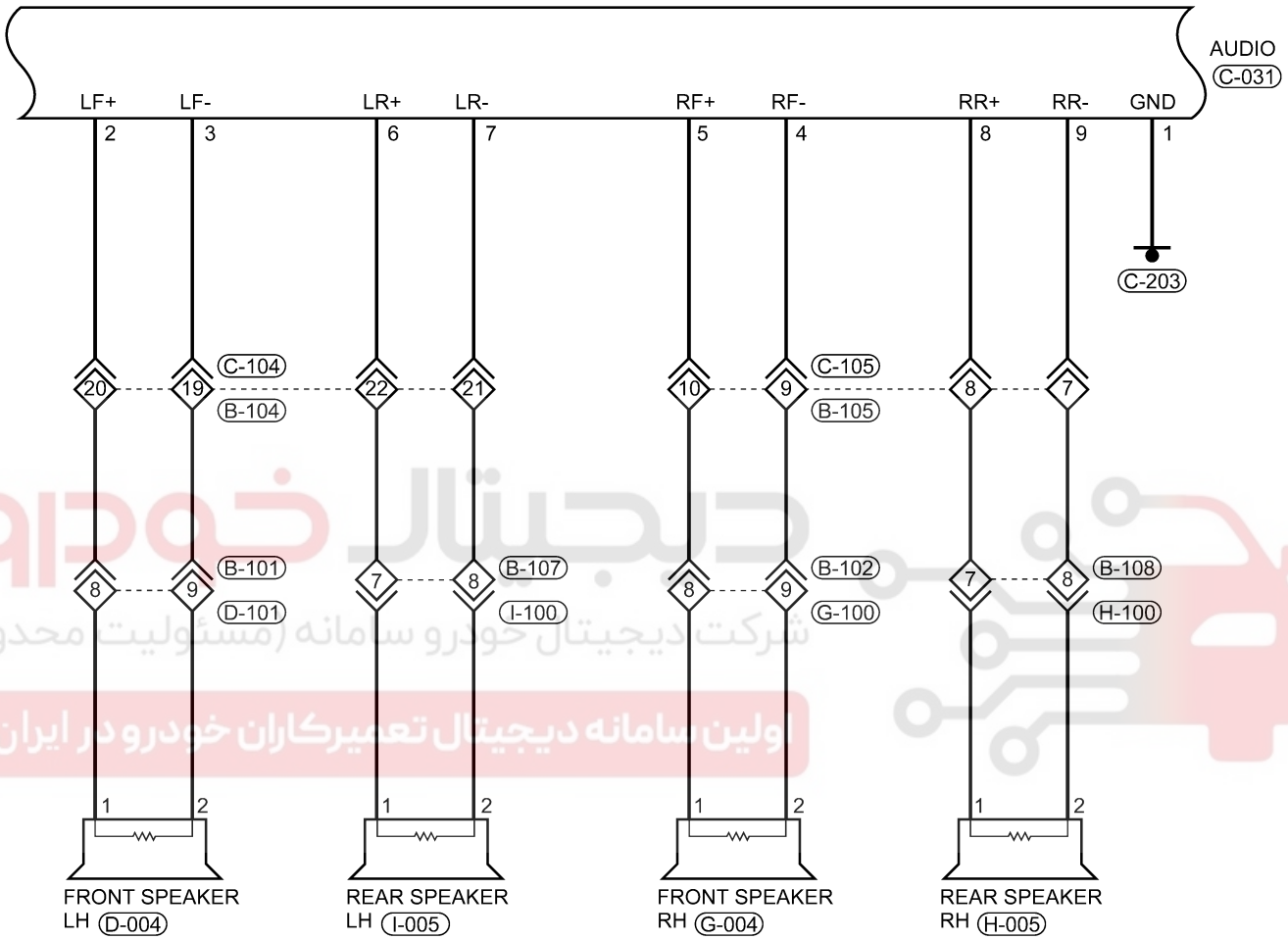
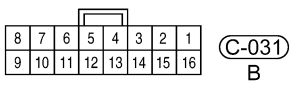
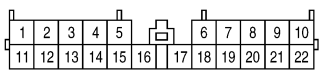
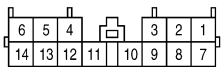
Audio System (Page 2 of 3)




C-031
B


C-104 , C-105
W W


B-101 , B-102 , H-100 , I-100
W W W W


D-004 , G-004 , I-005 , H-005
B B B B

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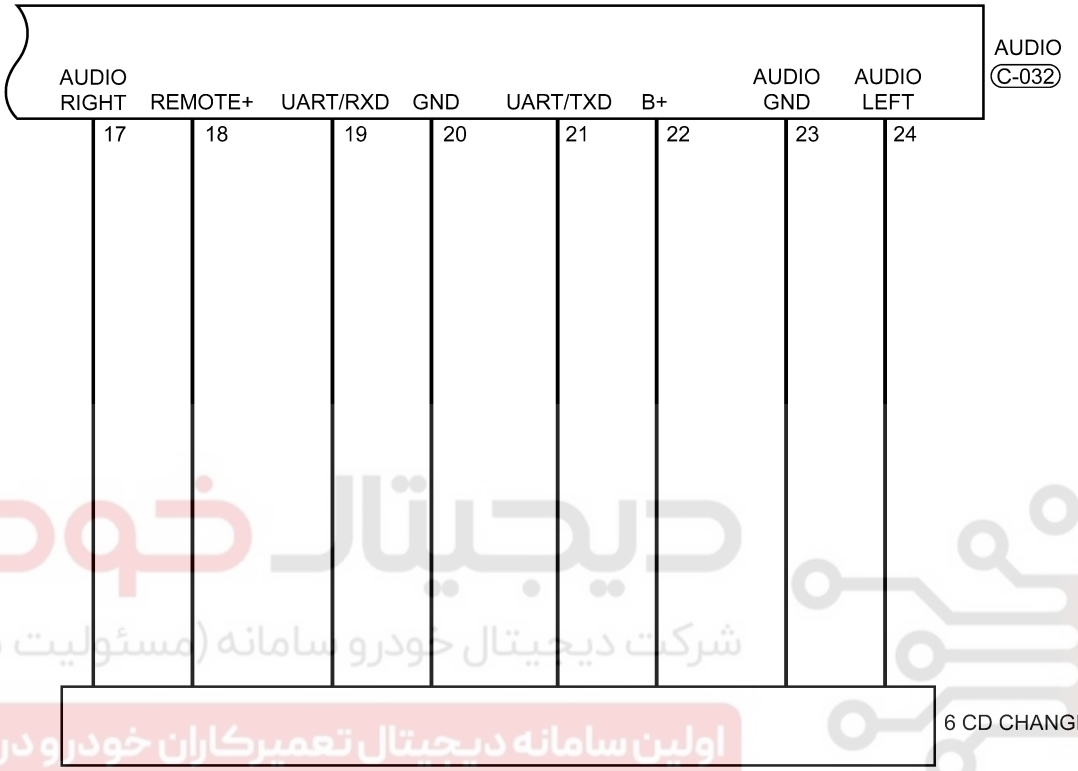
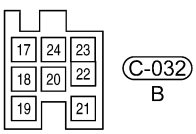
Audio System (Page 3 of 3)





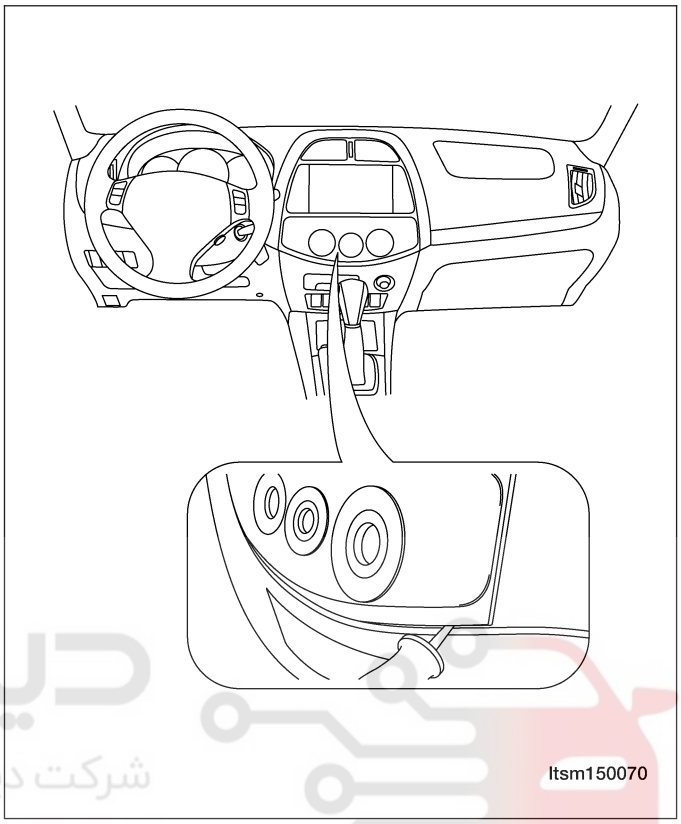
C-032
B

ltsmw150085t

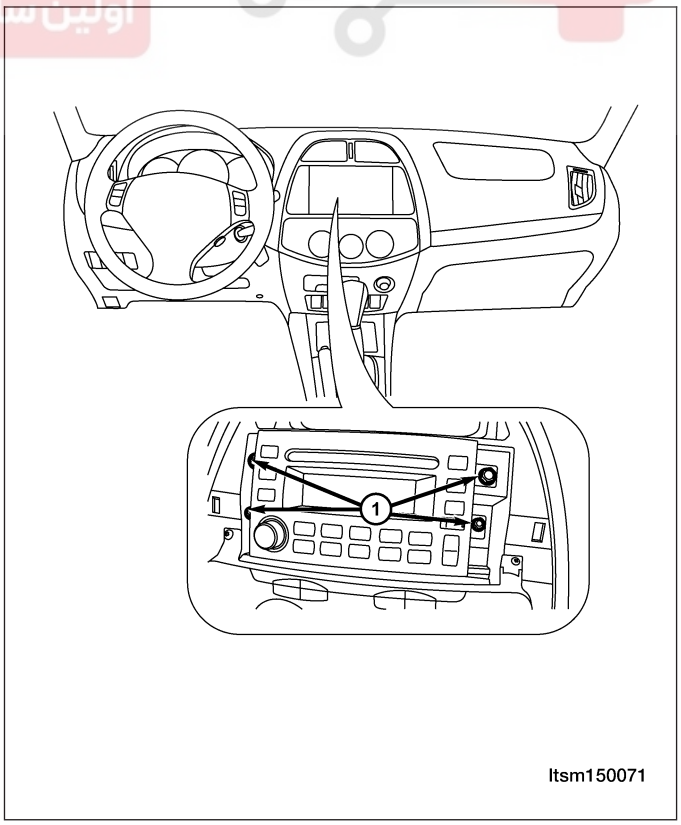
Radio

Removal & Installation

1. Lift one corner of the radio trim cover with a trim stick, and remove the radio trim cover.



2. Remove the radio mounting bolts (1) from the radio.
(Tighten: Radio mounting bolts to 9 ± 3 N·m)

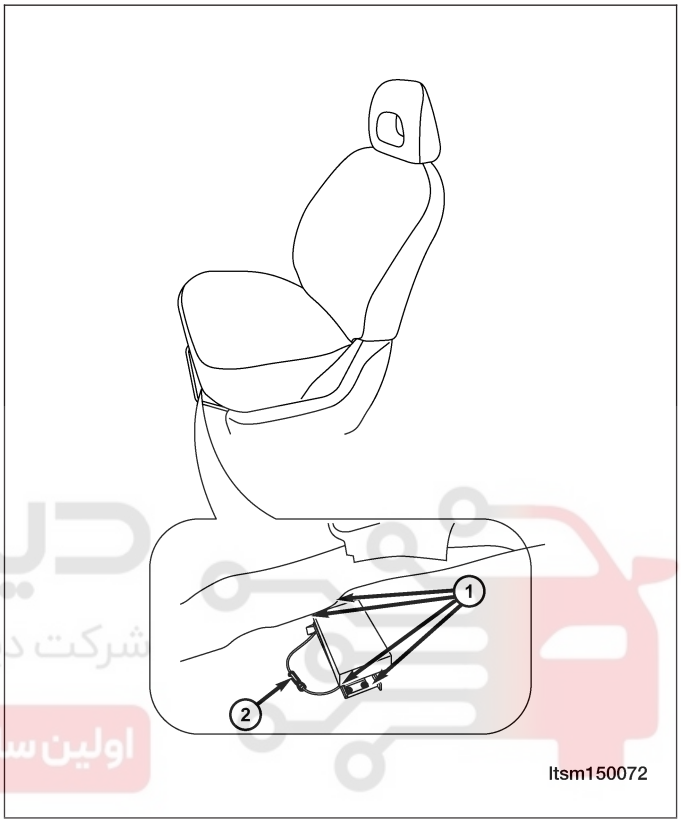


3. Disconnect the electrical connectors.
4. Remove the radio.
5. Installation is in the reverse order of removal.

6 CD Changer

Removal & Installation

1. Remove the passenger seat.
2. Remove the CD changer 4 mounting bolts (1). (Tighten: CD changer mounting bolts to 9 ± 3 N·m)
3. Disconnect the CD changer electrical connector (2).

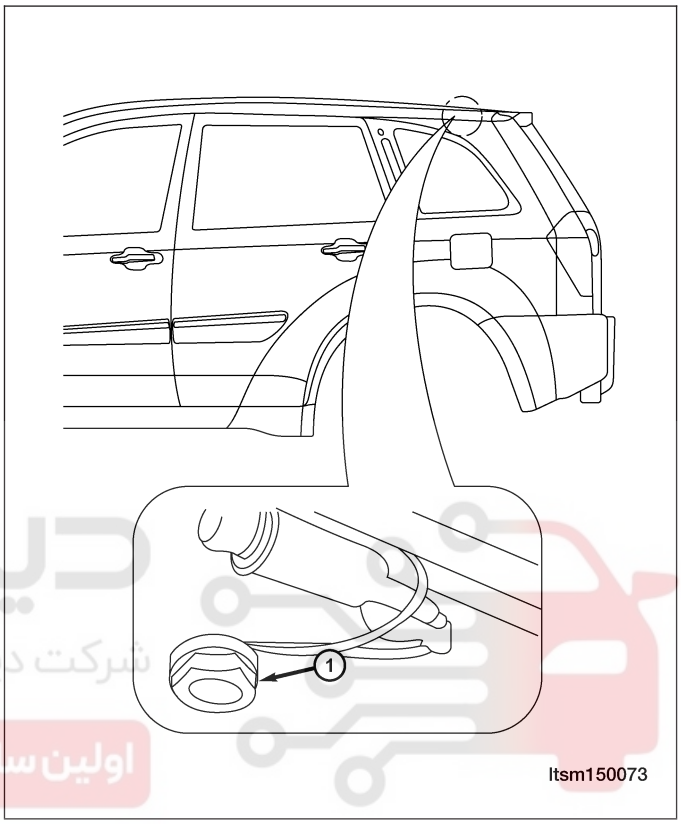


4. Remove the CD changer.
5. Installation is in the reverse order of removal.

Antenna

Removal & Installation

1. Disconnect the negative battery cable.
2. Pull the rear edge of the headliner down.
3. Disconnect the antenna electrical connector.
4. Remove the antenna mounting nut (1).



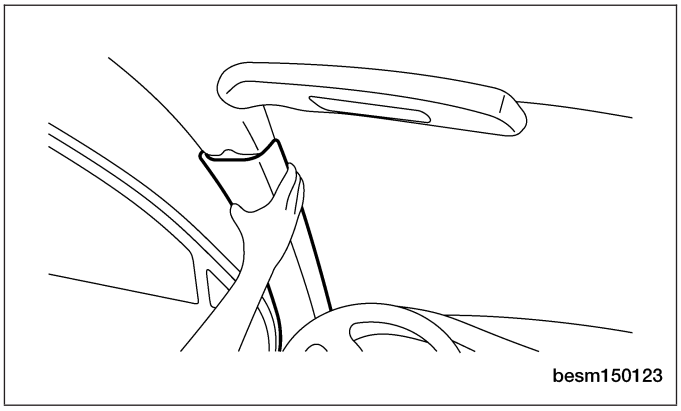
5. Installation in the reverse order of removal.

BODY INTERIOR TRIM

A-Pillar Trim Panel

Removal & Installation

1. Grasp the trim panel and gently pull it away to release the retaining clips.
2. Using a trim stick, remove the A-pillar trim panel.
3. Installation is in the reverse order of removal.



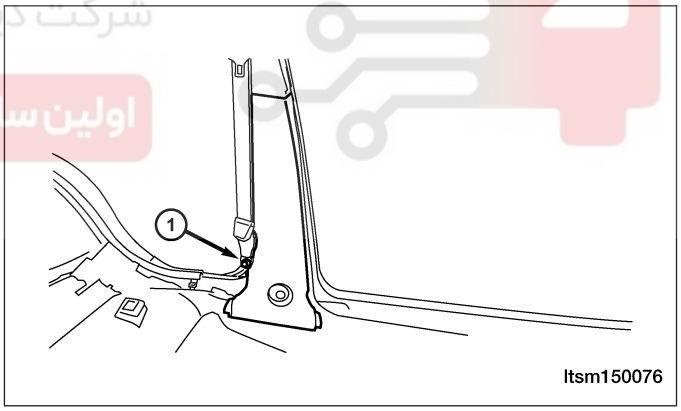
Installation Notes:

- The A-pillar trim panel retaining clips should be installed to allow the trim panel to fit tightly between the headliner and the weatherstrip.

B-Pillar Lower Trim Panel

Removal & Installation

1. Remove the front seat belt lower mounting bolt (1).

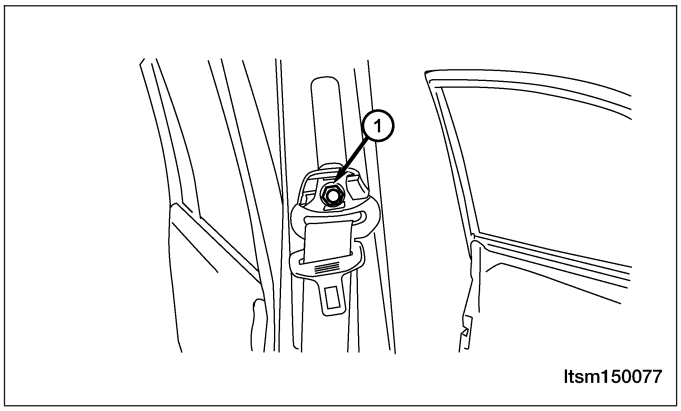


2. Using a trim stick, remove the lower trim panel from the B-pillar.
3. Installation is in the reverse order of removal.

B-Pillar Upper Trim Panel

Removal & Installation

1. Remove the front seat belt upper mounting bolt (1).

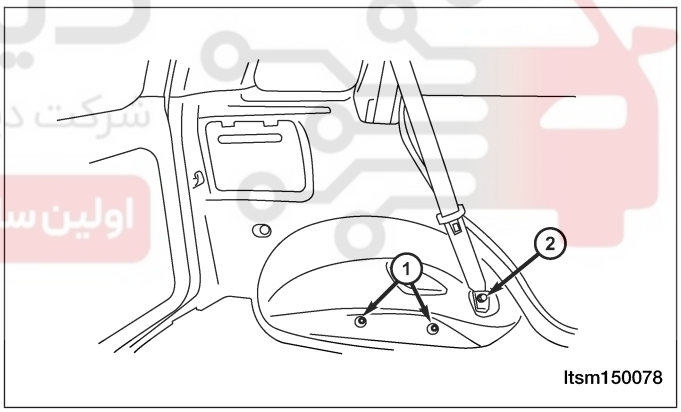


2. Using a trim stick, remove the B-pillar upper trim panel.
3. Installation is in the reverse order of removal.

C-Pillar Lower Trim Panel

Removal & Installation

1. Remove the rear seat belt mounting bolt (2).
2. Remove the mounting screws (1) under the panel.

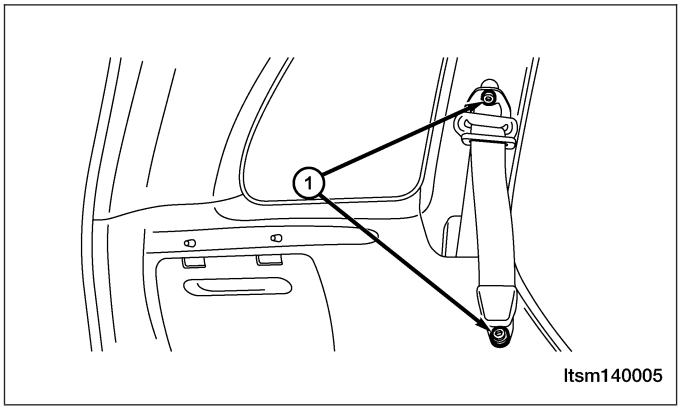


3. Remove the storage box.
4. Disconnect the power outlet electrical connector.
5. Using a trim stick, remove the lower trim panel.
6. Installation is in the reverse order of removal.

C-Pillar Upper Trim Panel

Removal & Installation

1. Remove the C-Pillar lower trim panel (See C-Pillar Lower Trim Panel Removal & Installation in Section 15 Body & Accessories).
2. Remove the rear seat belt mounting bolts (1).

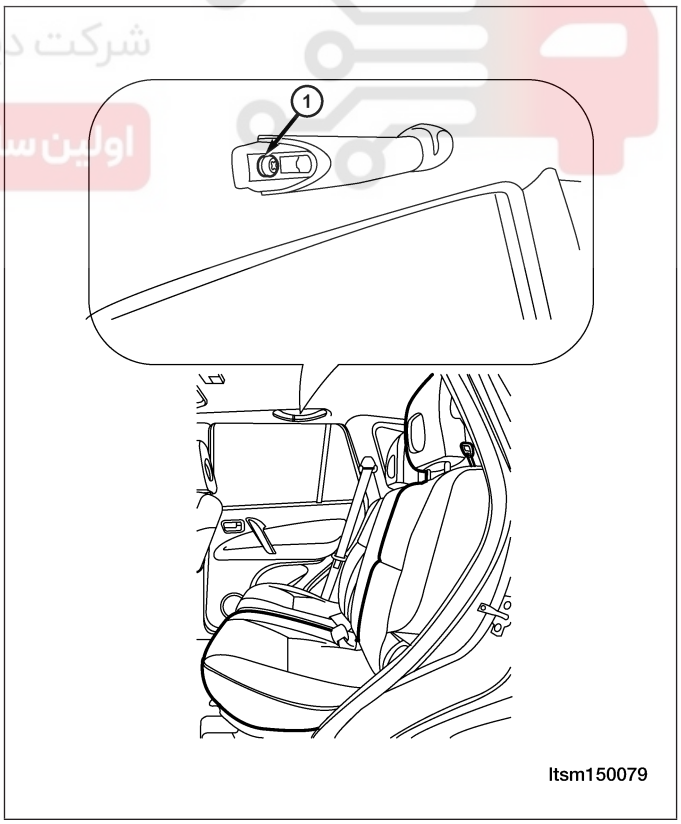


3. Using a trim stick, remove the C-Pillar upper trim panel.
4. Installation is in the reverse order of removal.

Assist Handle

Removal & Installation

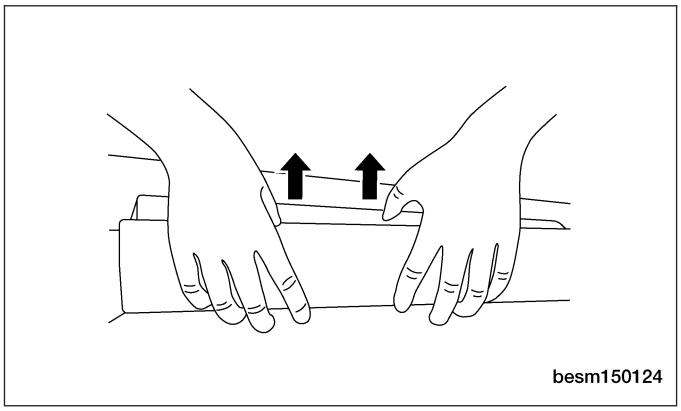
1. Remove the assist handle mounting screws trim cover from the assist handles.
2. Remove the mounting screws (1).
   (Tighten: Assist handle screws to 2 N·m)
3. Remove the assist handle.
4. Installation is in the reverse order of removal.



Scuff Plate

Removal & Installation

1. Grasp the scuff plate and gently pull it away to release the retaining clips.
2. Using a trim stick, remove the scuff plate from the front door sill.
3. Installation is in the reverse order of removal.



Pedal Pad

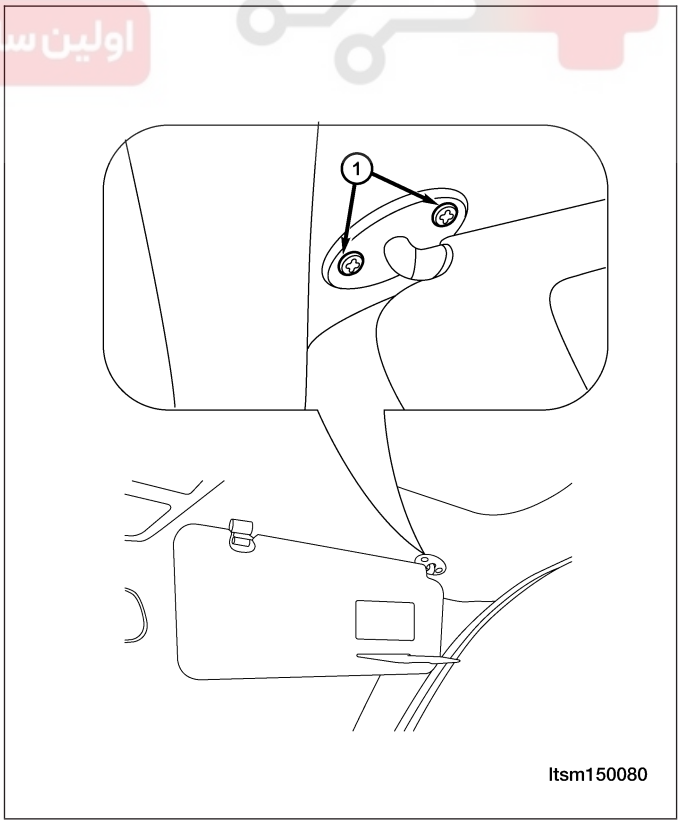
Removal & Installation

1. Remove the pedal pad mounting screws.
2. Remove the pedal pad.
3. Installation is in the reverse order of removal.

Sun Visor

Removal & Installation

1. Remove the two sun visor mounting screws (1).
(Tighten: Sun visor screws to 2 N·m)



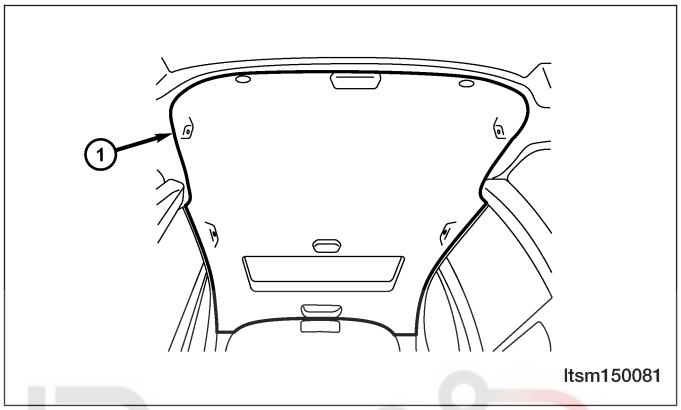
2. Remove the sun visor.

3. Installation is in the reverse order of removal.

Headliner

Removal & Installation

1. Remove the assist handles (See Assist Handle Removal & Installation in Section 15 Body & Accessories).
2. Remove the courtesy lamps.
3. Remove the air discharge cover.
4. Remove the trim panels from the A, B and C pillars.
5. Pry the headliner retainer clips from the mounting brackets.
6. Remove the headliner (1).



7. Installation is in the reverse order of removal.

CAN VEHICLE COMMUNICATIONS

Description

Controller Area Network (CAN) communication is a multiplex communication system. The CAN system allows the vehicles electronic modules to transmit and receive data. The following electronic modules are located on the CAN network:

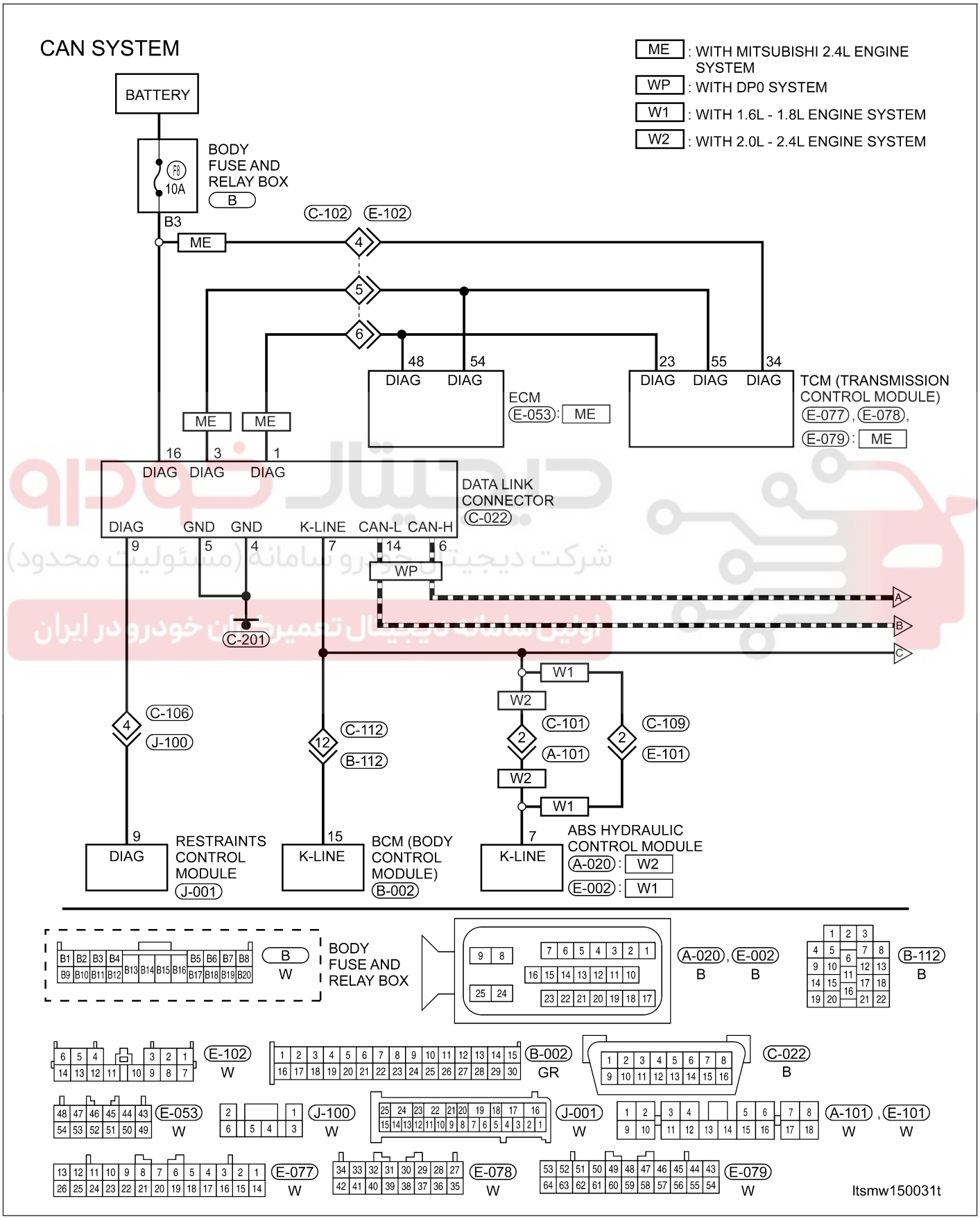
- Transaxle Control Module (TCM)
- Engine Control Module (ECM)
- CAN Converter

Operation

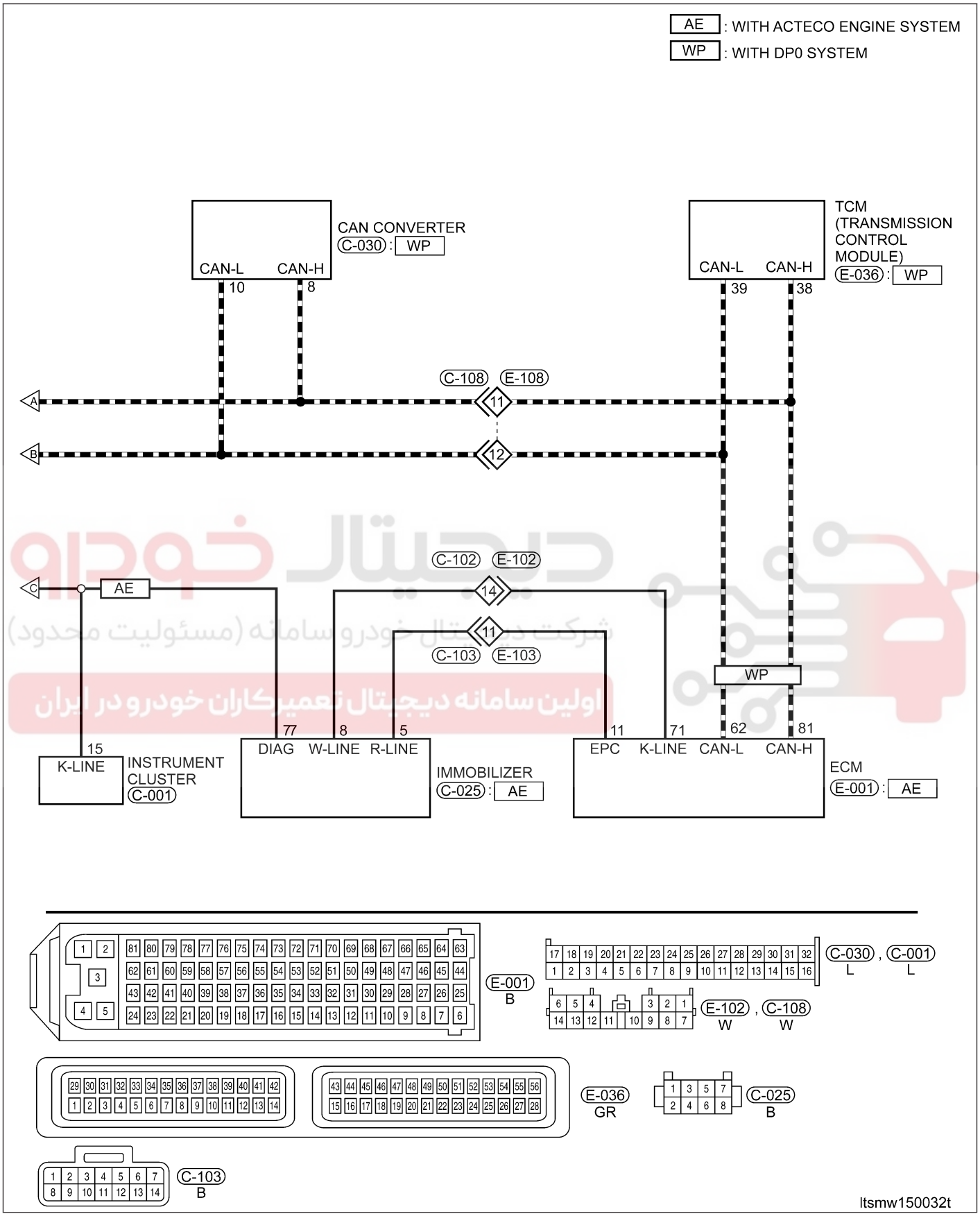
The CAN network uses a twisted pair of circuits to transmit data (+) and data (-). The data (+) and the data (-) circuits are each regulated to approximately 2.5 volts during neutral or rested network traffic. As bus messages are sent on the data (+) circuit, voltage is increased by approximately 1.0 volt. Inversely, the data (-) circuit is reduced by approximately 1.0 volt when a bus message is sent. Multiple bus messages can be sent over the CAN circuits allowing multiple modules to communicate with each other.

Electrical Schematics

CAN Vehicle Communications (Page 1 of 2)



CAN Vehicle Communications (Page 2 of 2)



CHIME

Description

The chime is located in the Instrument Cluster (IC). The chime warning system is an audible notification to the driver. The chime warning system is designed to alert the driver of a vehicle problem or condition.

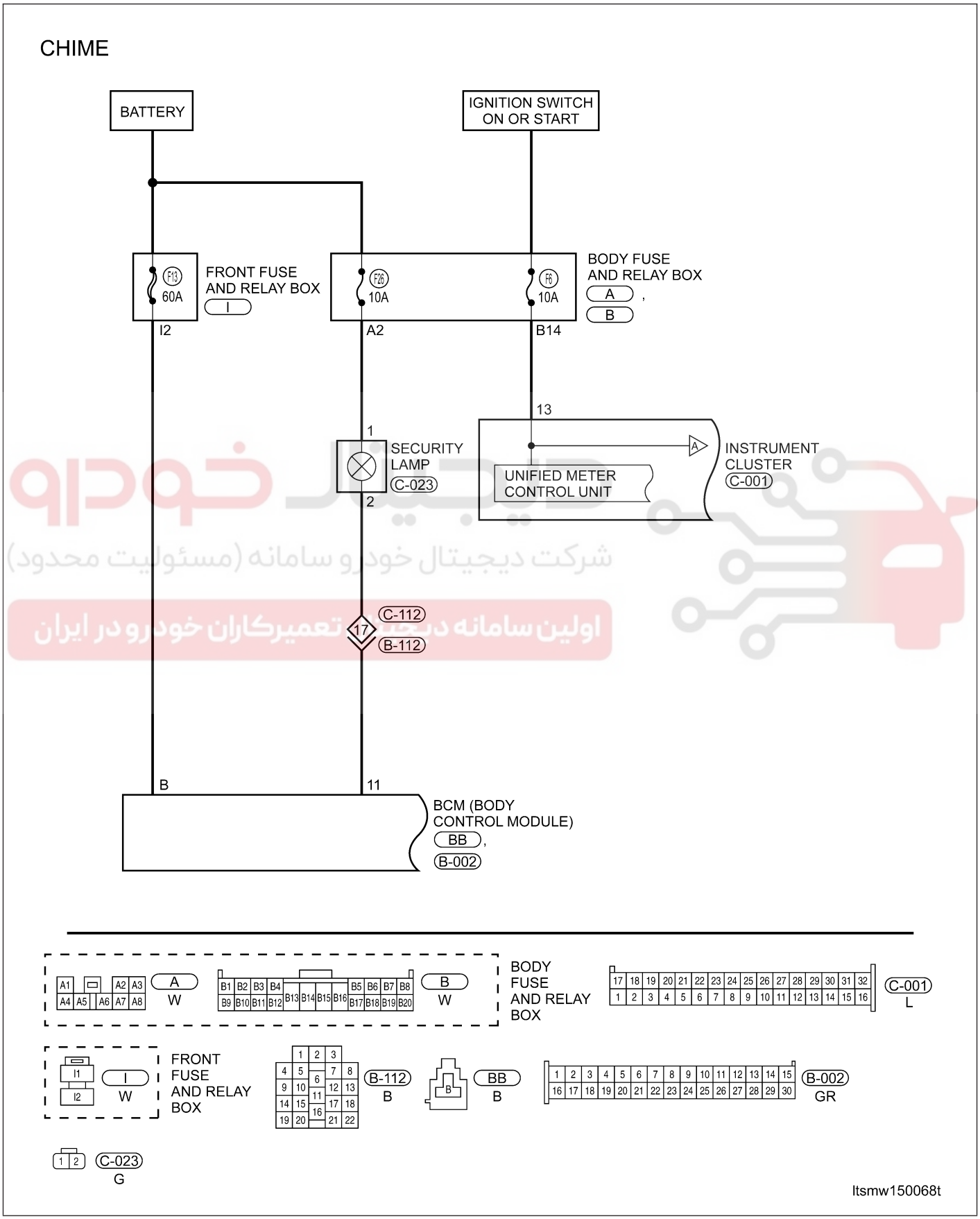
Operation

The Instrument Cluster (IC) uses hard wired inputs from various sensors and switches to activate the chime. The sensors and switches are located throughout the vehicle. The following conditions will cause the chime to operate:

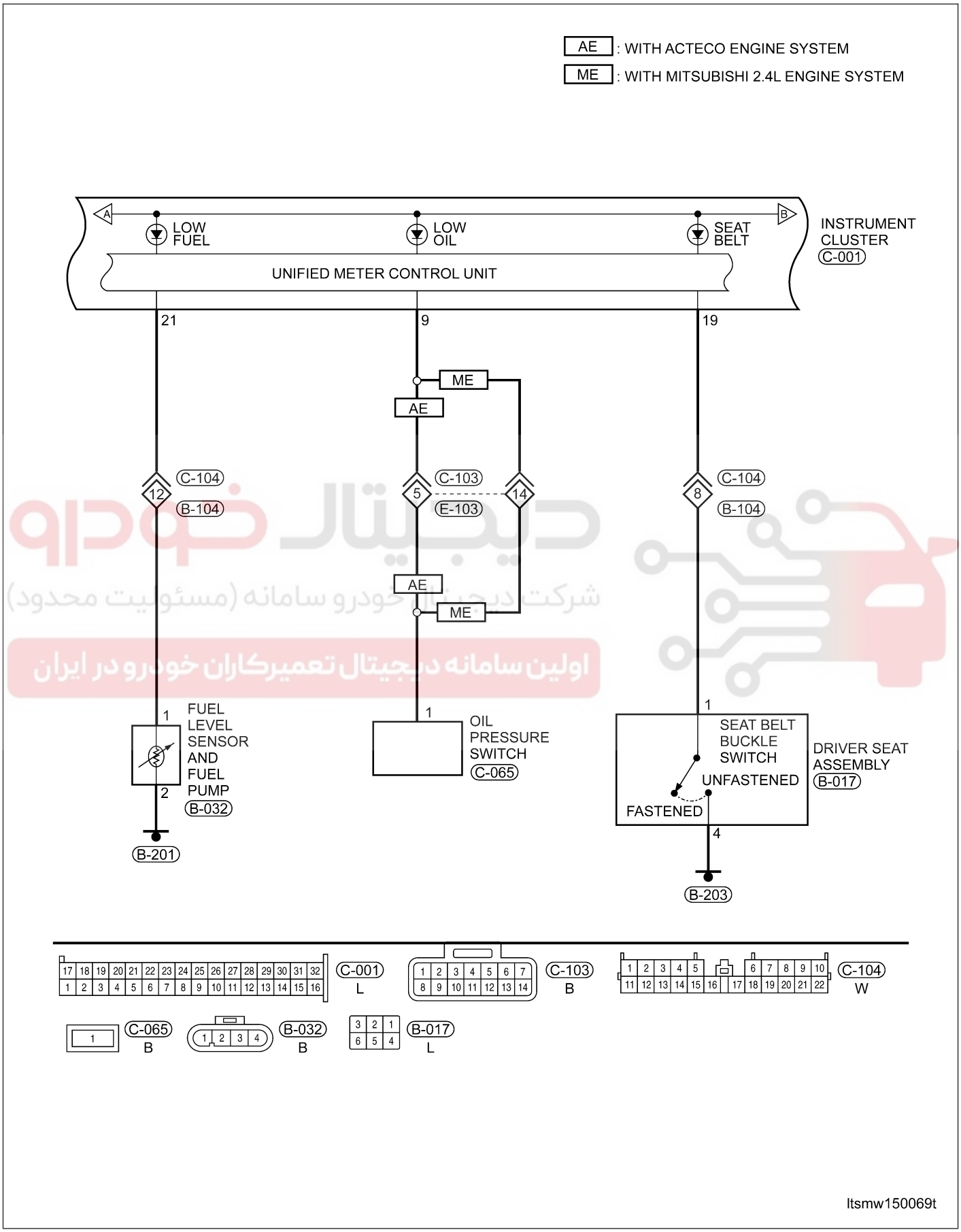
- Turn signal on
- Hazard warning flashers on
- Seat belt unbuckled
- Low fuel level
- Low oil pressure
- Low brake fluid level
- Doors unlocked

Electrical Schematics

Chime (Page 1 of 9)



Chime (Page 2 of 9)



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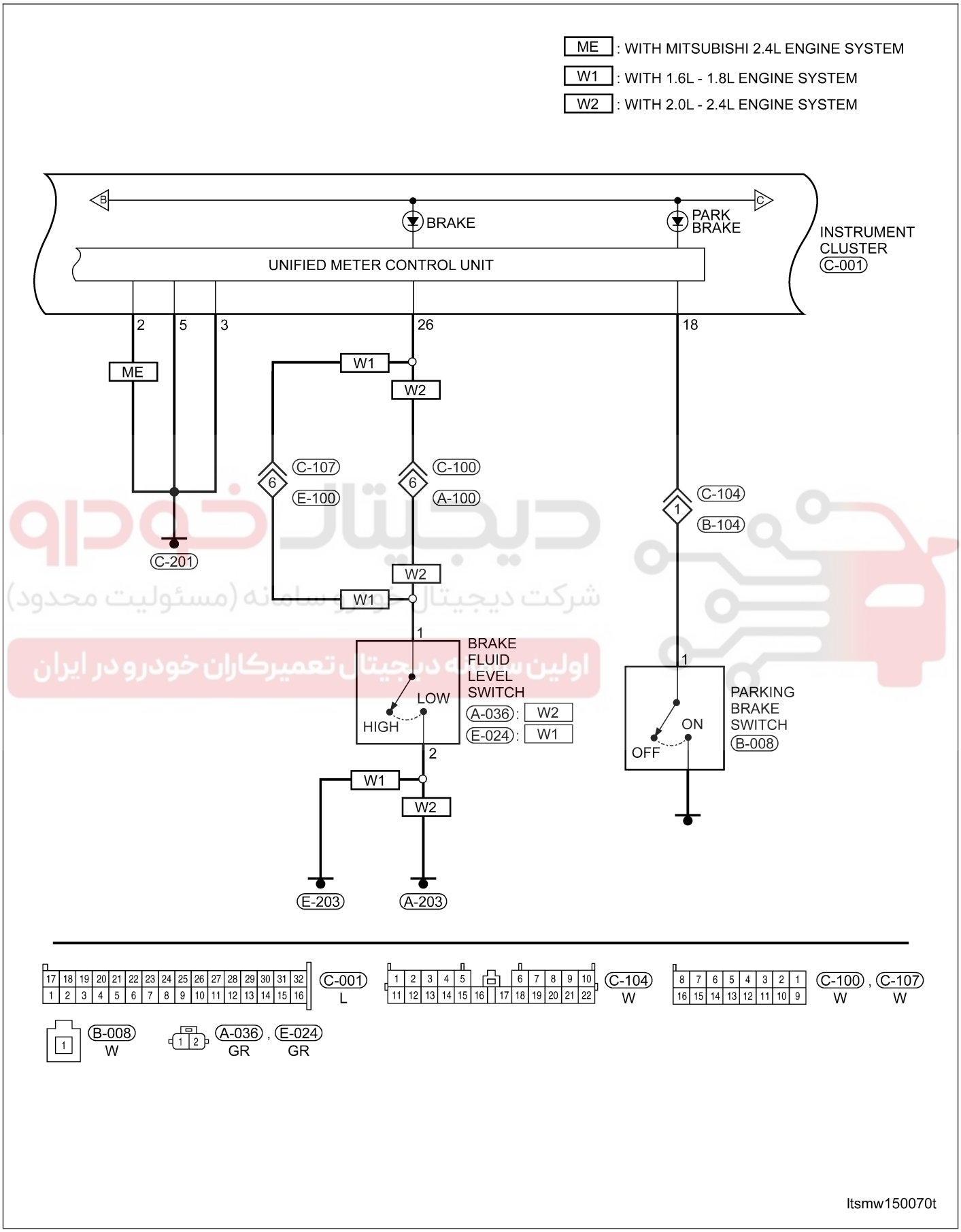
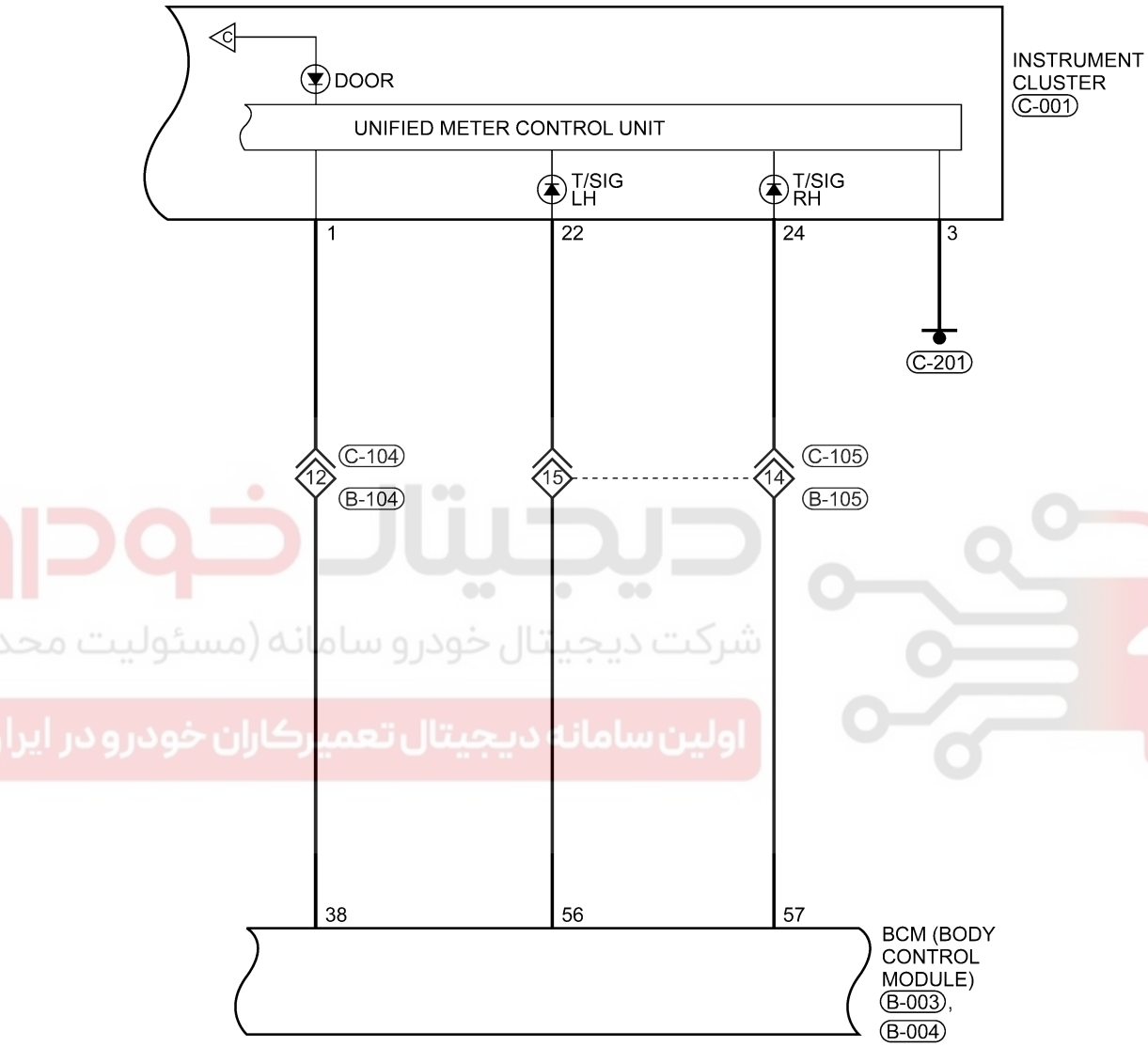
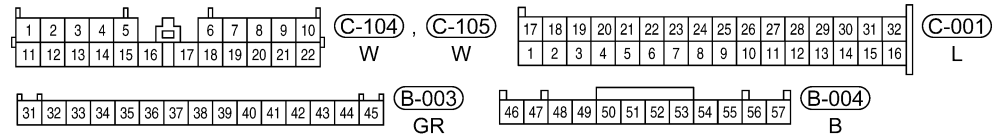
Chime (Page 3 of 9)



Chime (Page 4 of 9)





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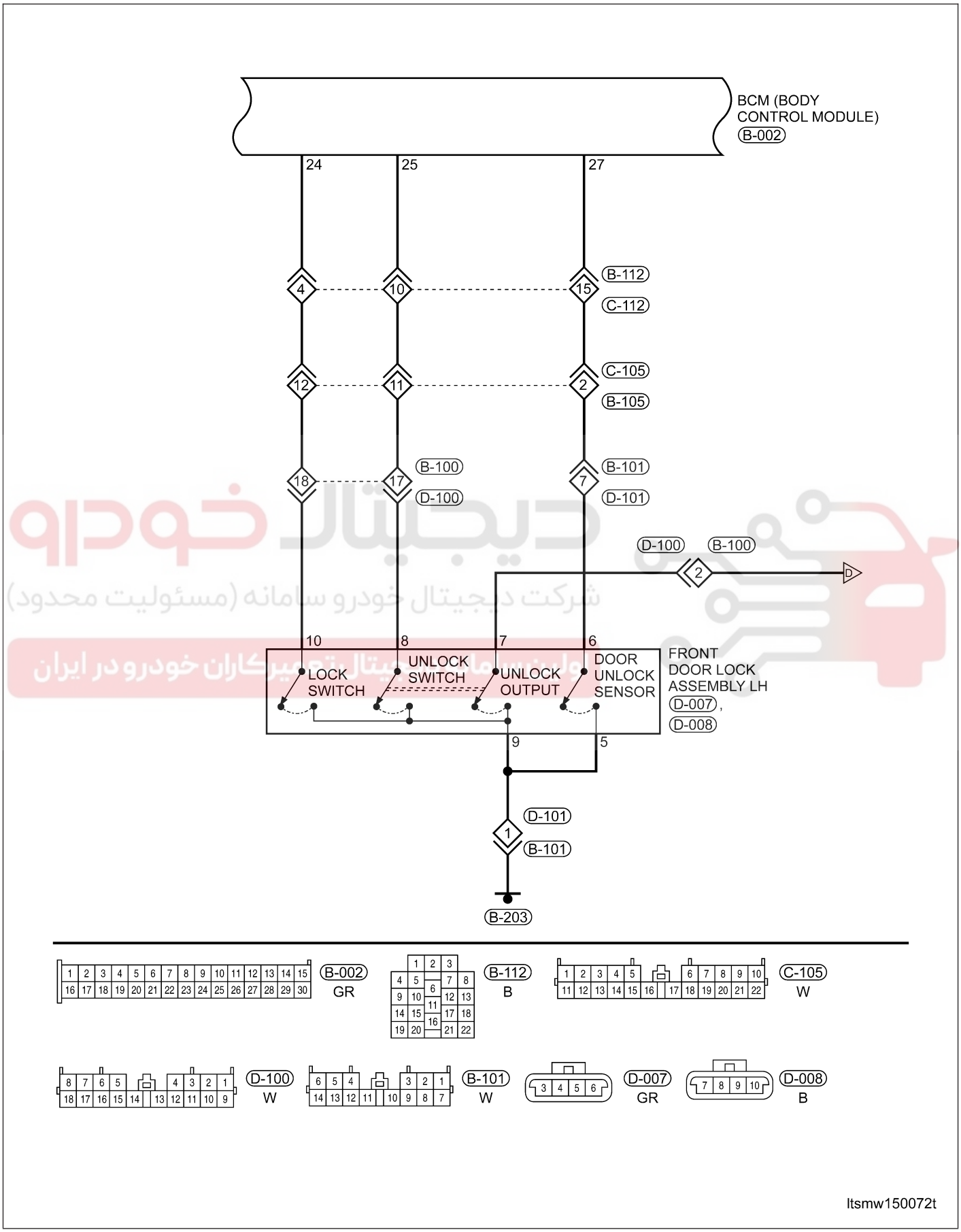
Chime (Page 5 of 9)



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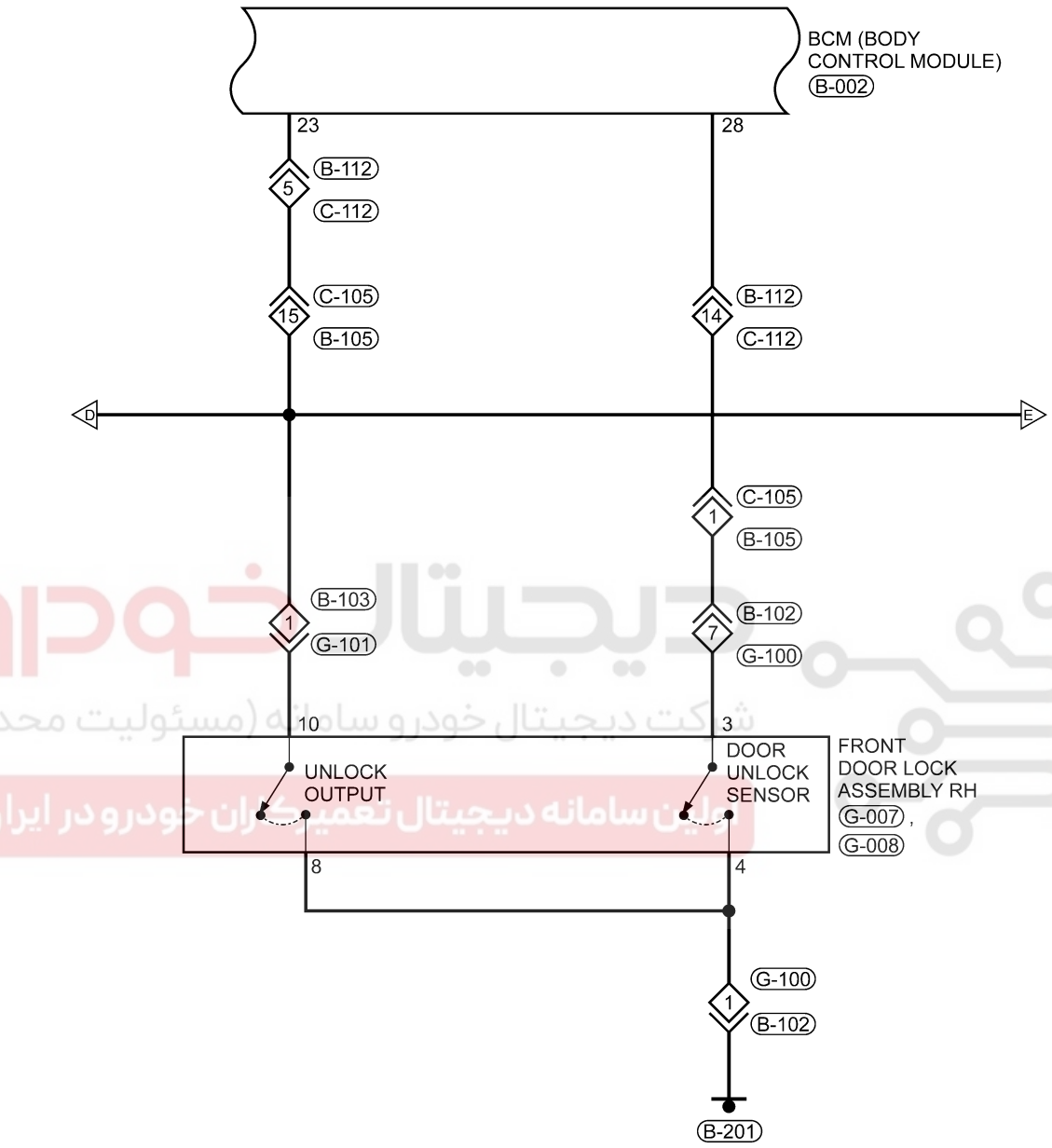
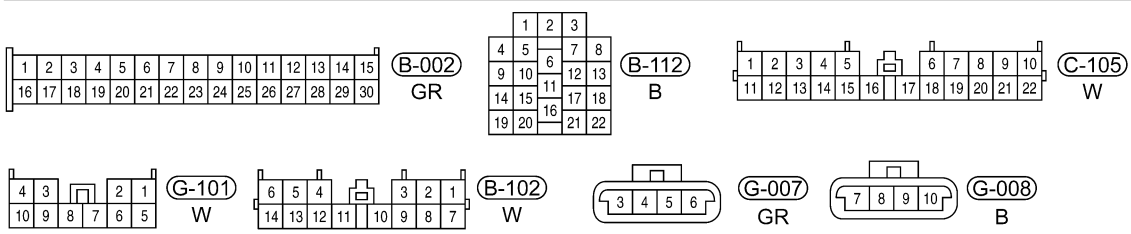
Chime (Page 6 of 9)





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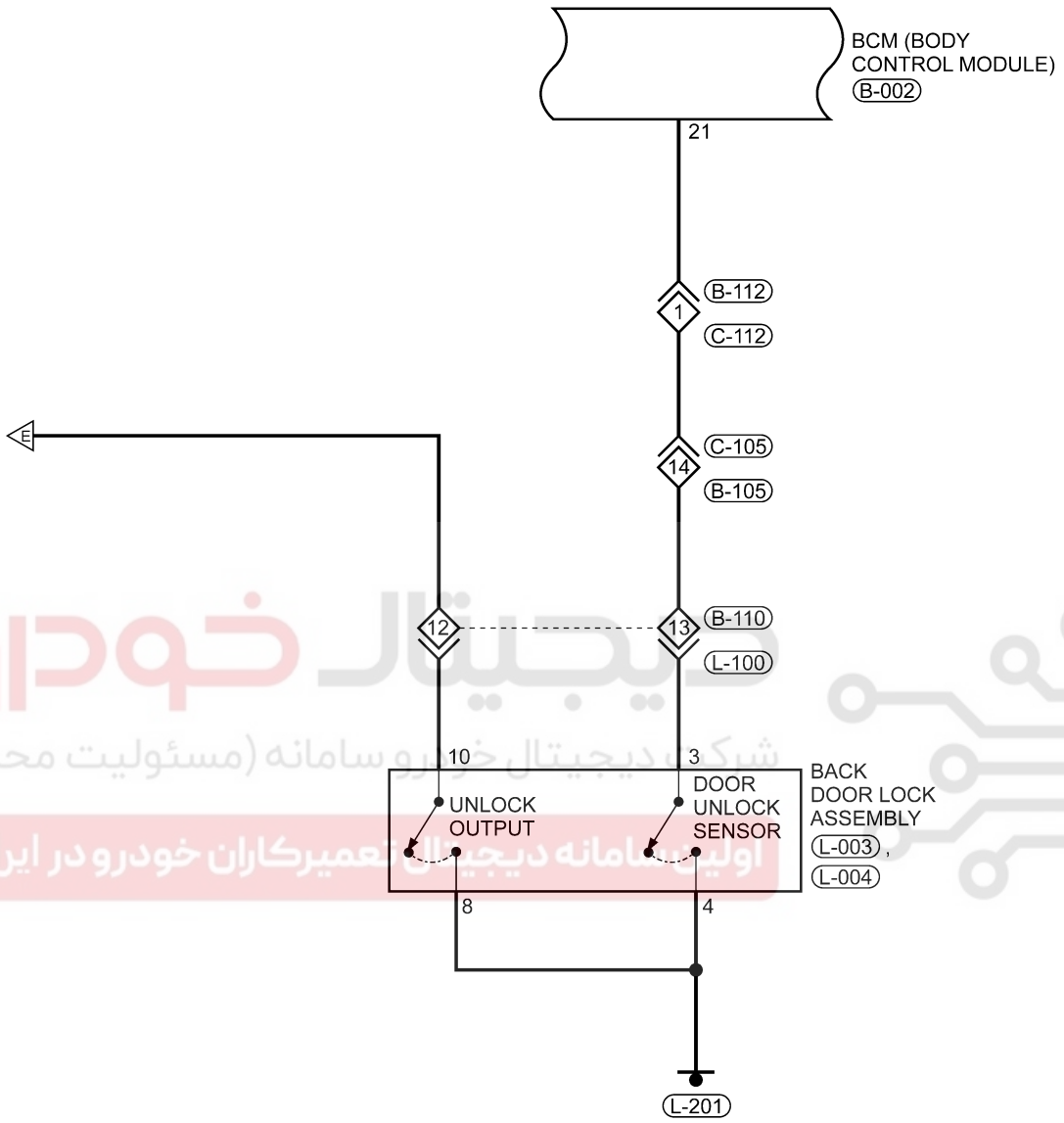
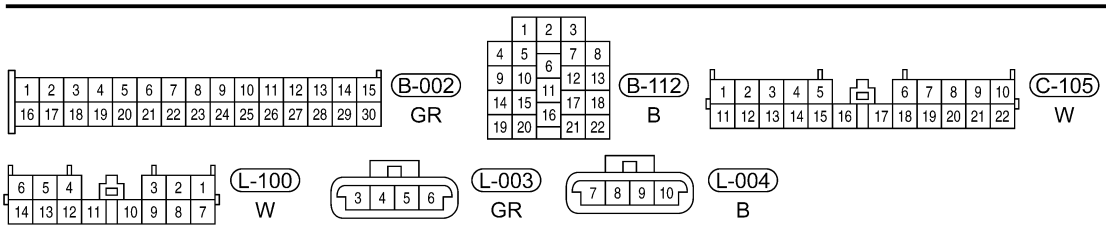
Chime (Page 7 of 9)





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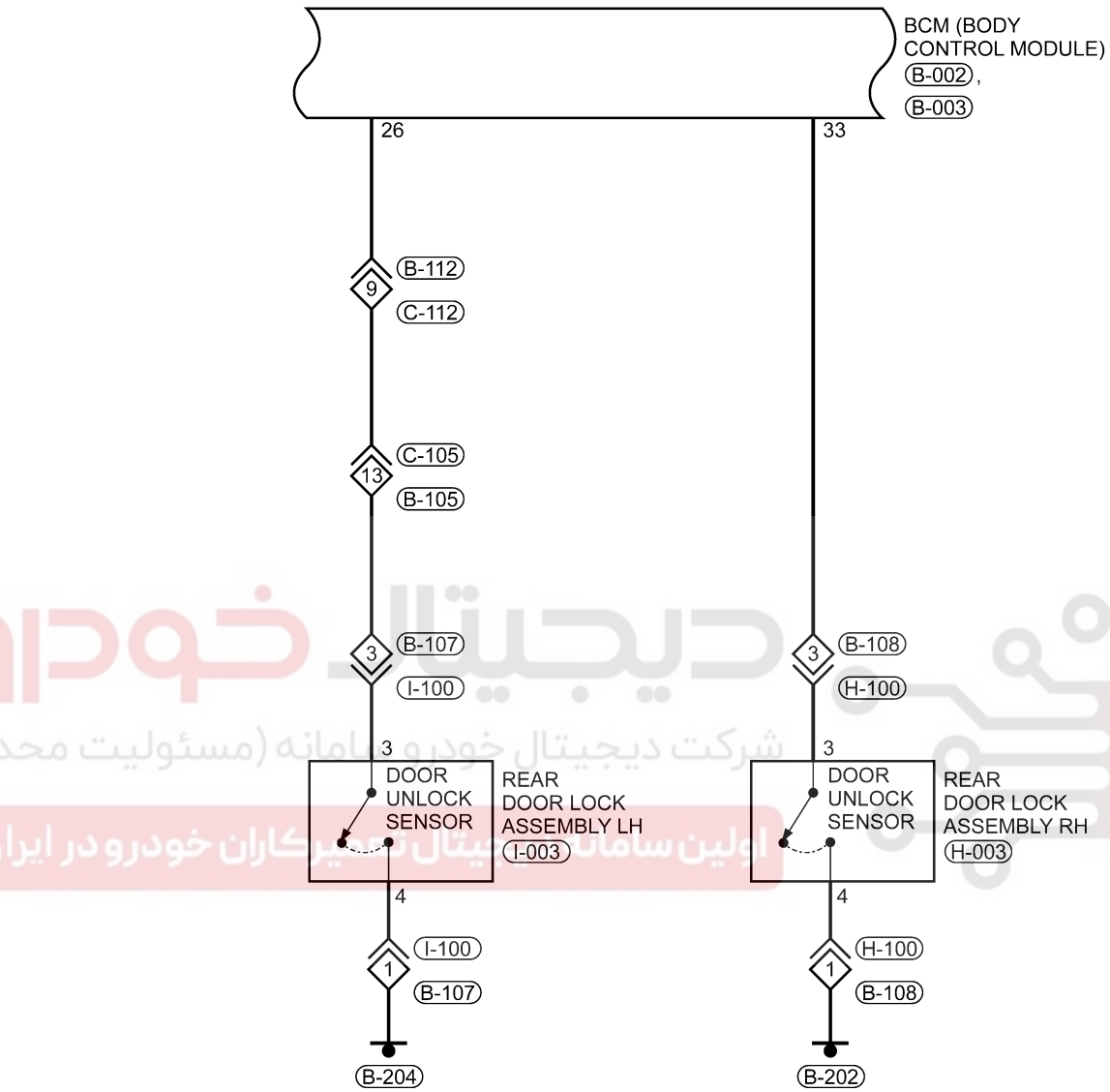
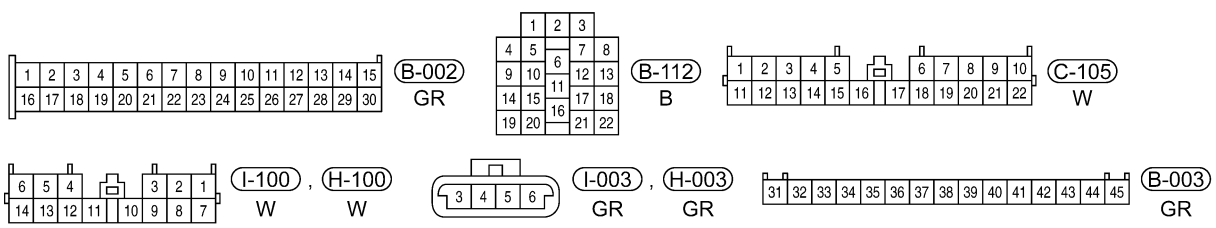
Chime (Page 8 of 9)





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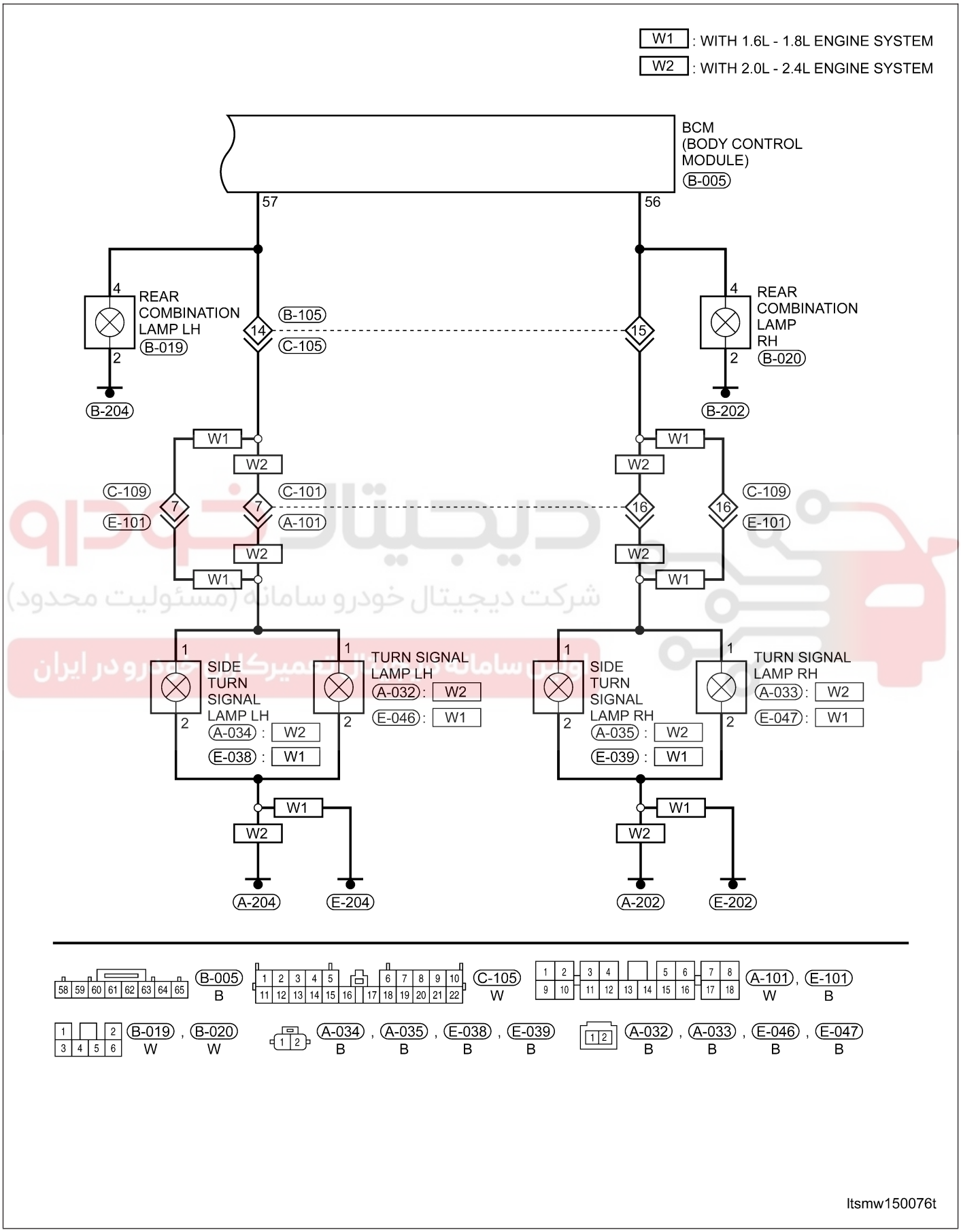
Chime (Page 9 of 9)



DOOR LOCKS

Description

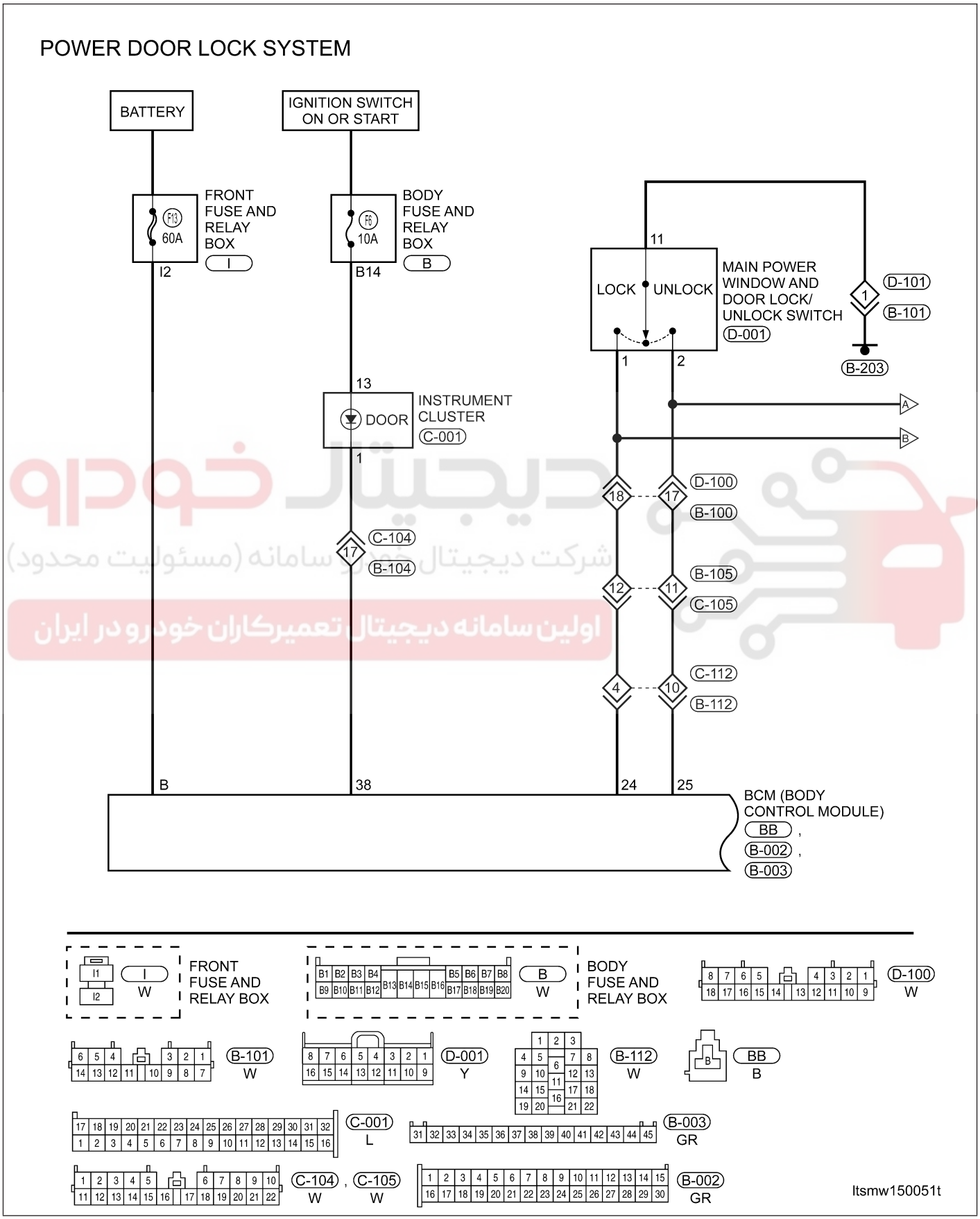
The power door locks allow the doors to be locked or unlocked electronically. The power door lock switch is located on the front door trim panel. The power door locks can also be operated by the Remote Keyless Entry (RKE) transmitter.

Operation

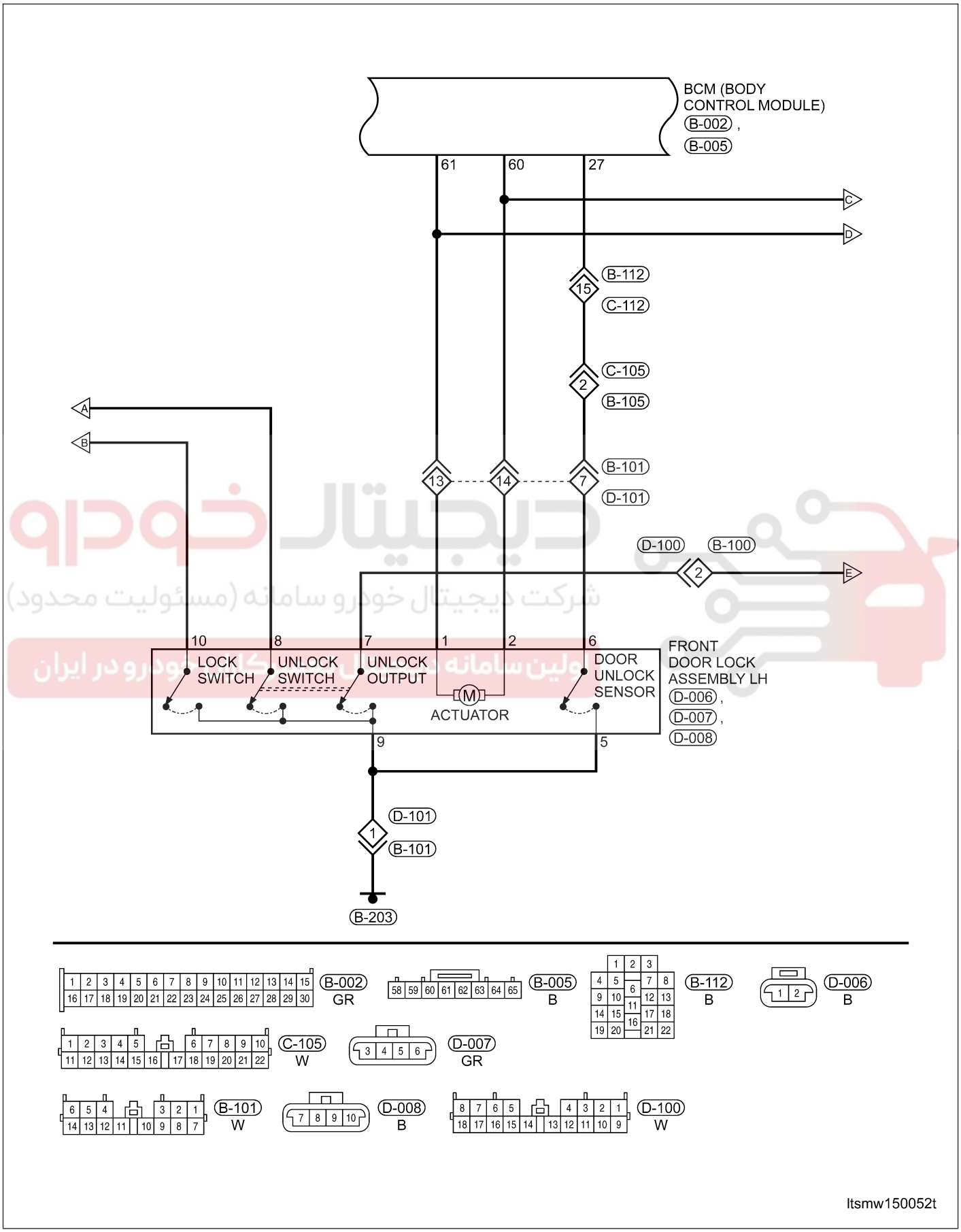
The power lock system receives non-switched battery current, so that the power locks remain operational, regardless of the ignition switch position. The power lock system is controlled by BCM.

Electrical Schematics

Power Door Lock System (Page 1 of 5)



Power Door Lock System (Page 2 of 5)



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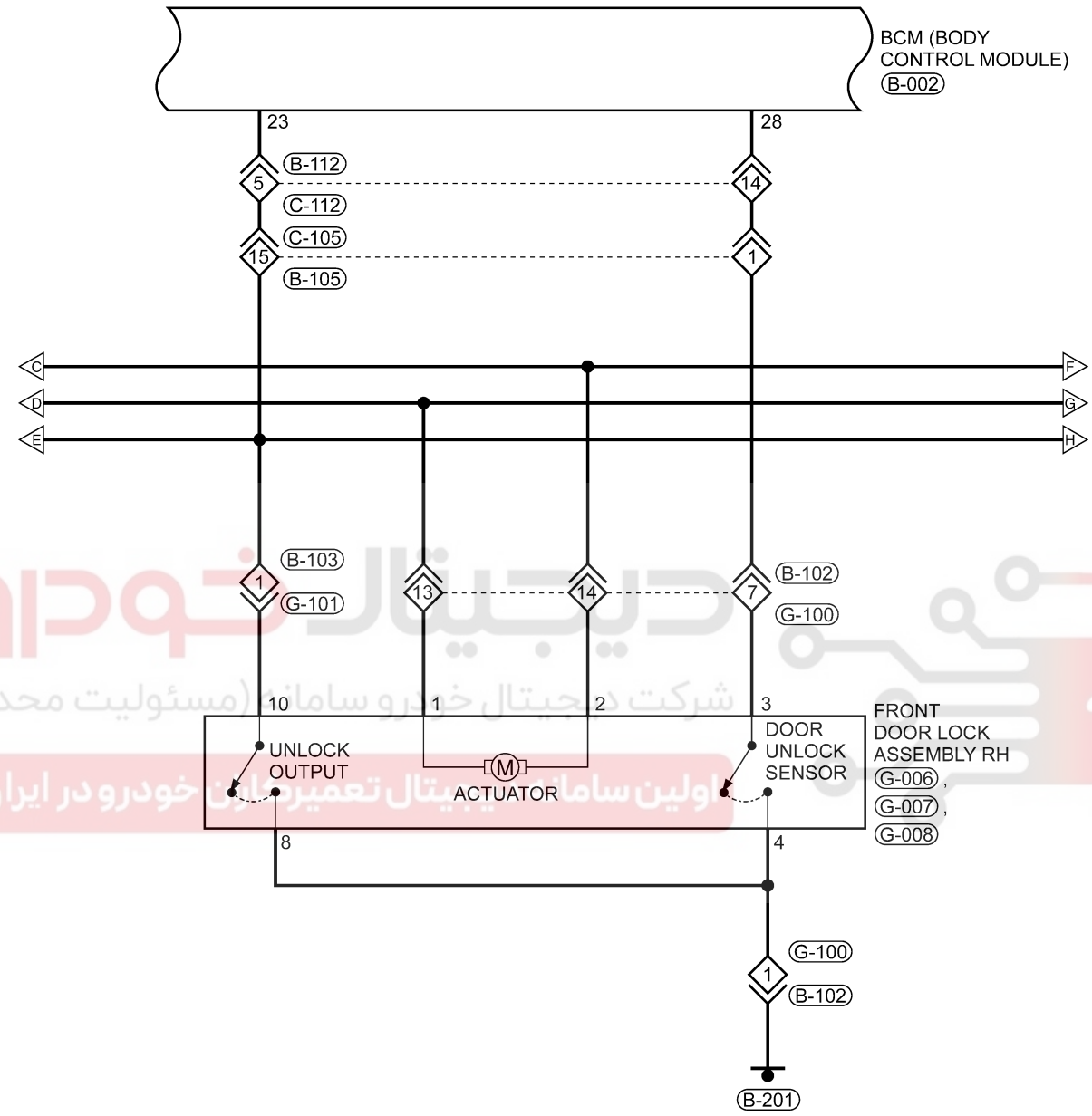
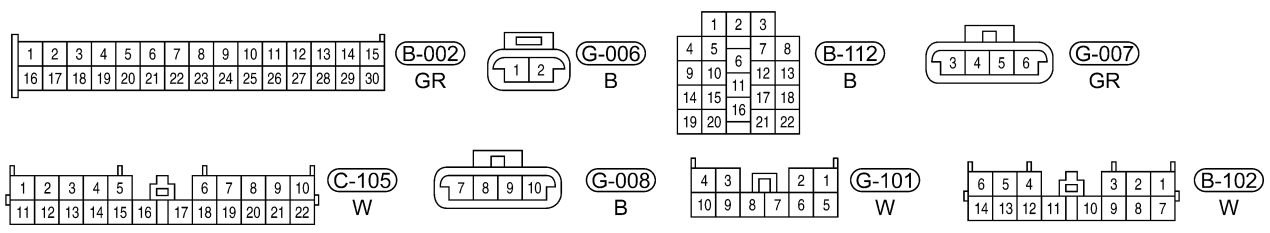
Power Door Lock System (Page 3 of 5)





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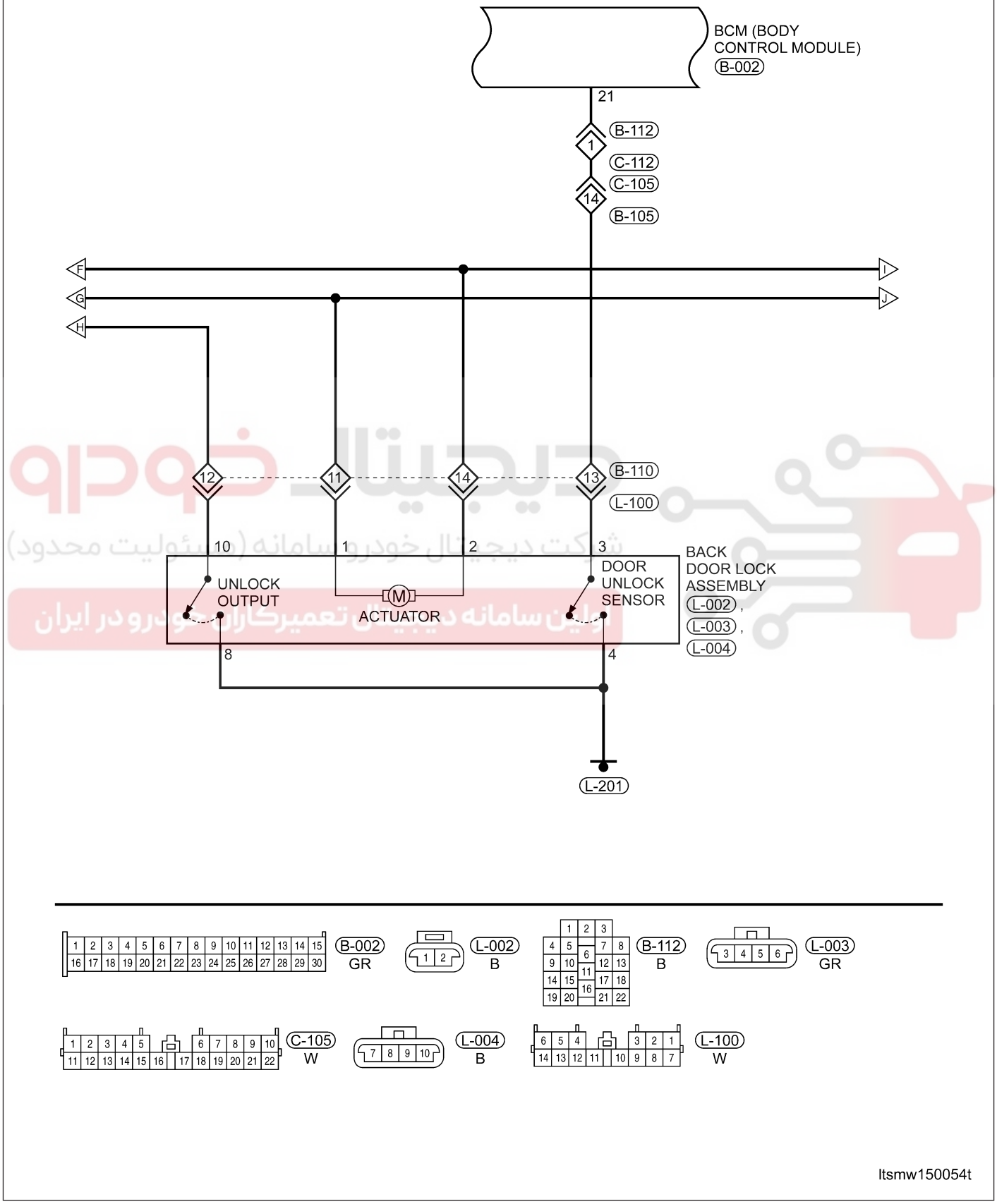
Power Door Lock System (Page 4 of 5)



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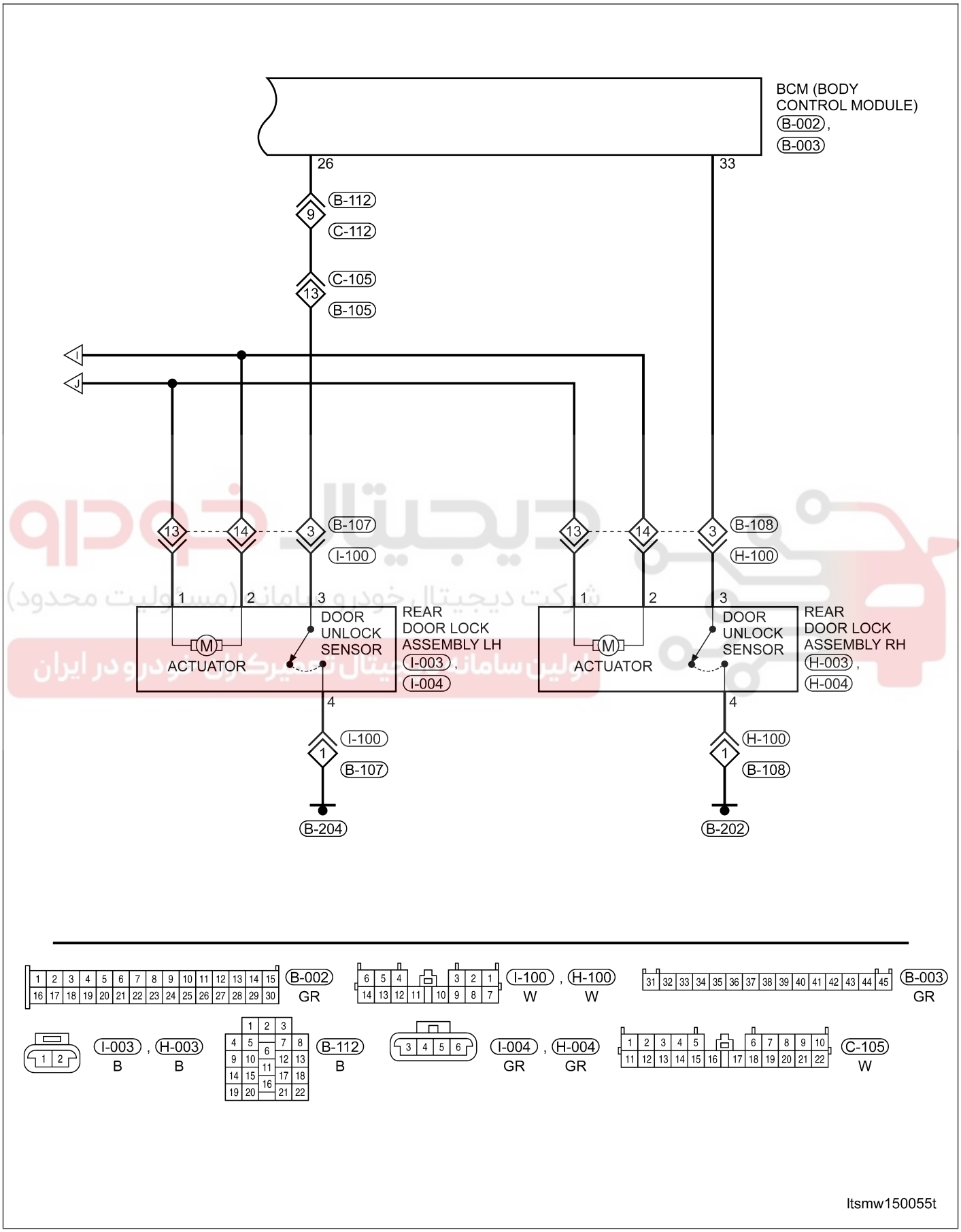
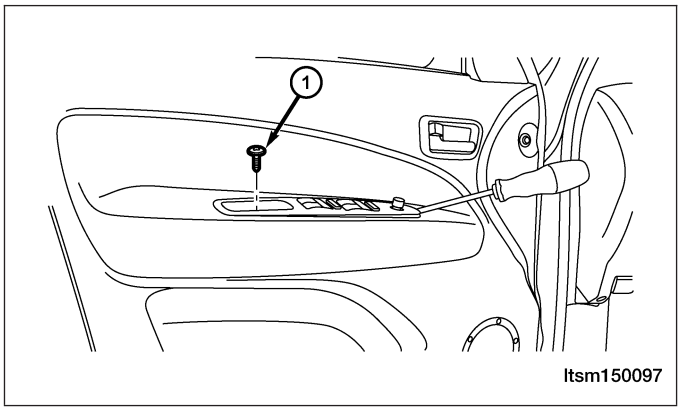
Power Door Lock System (Page 5 of 5)



Door Lock Switch

Removal & Installation

1. Turn the ignition switch off.
2. Remove the power window and door lock/unlock switch bezel mounting screw (1).



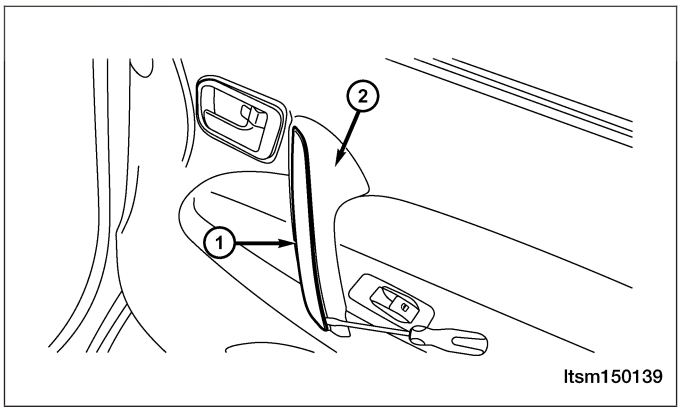
3. Using a trim stick, pry out the power window and door lock/unlock switch assembly from the front door.
4. Disconnect the power window and door lock/unlock switch electrical connectors.
5. Remove the power window and door lock/unlock switch retaining screws to remove the power window and door lock/unlock switch.
6. Installation is in the reverse order of removal

Door Lock Assembly

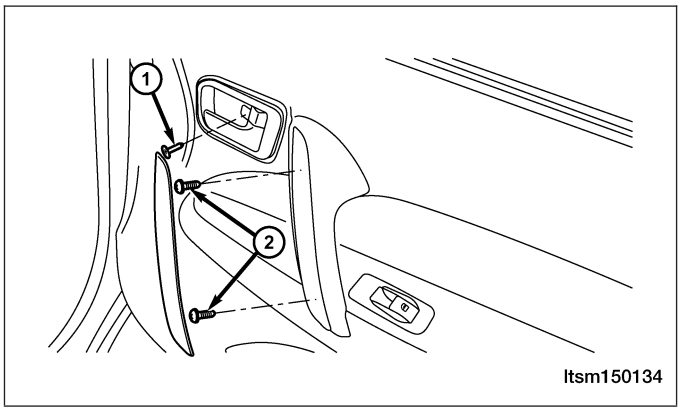
Removal & Installation

NOTE :
The passenger door is shown, all other doors are similar.

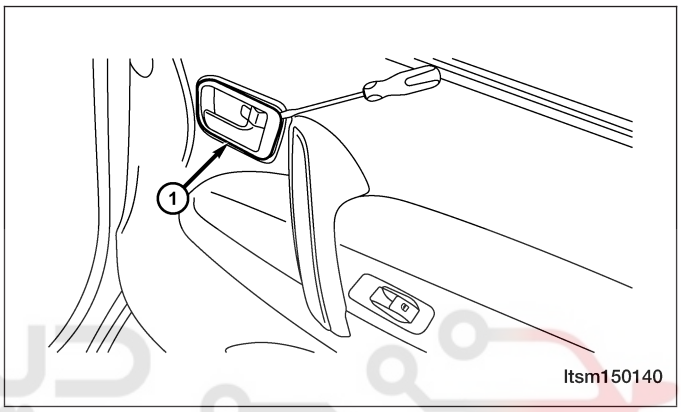
1. Disconnect the negative battery cable.
2. Turn the ignition switch off.
3. Using a small trim stick, remove the pull handle cover (1) from the pull handle (2).



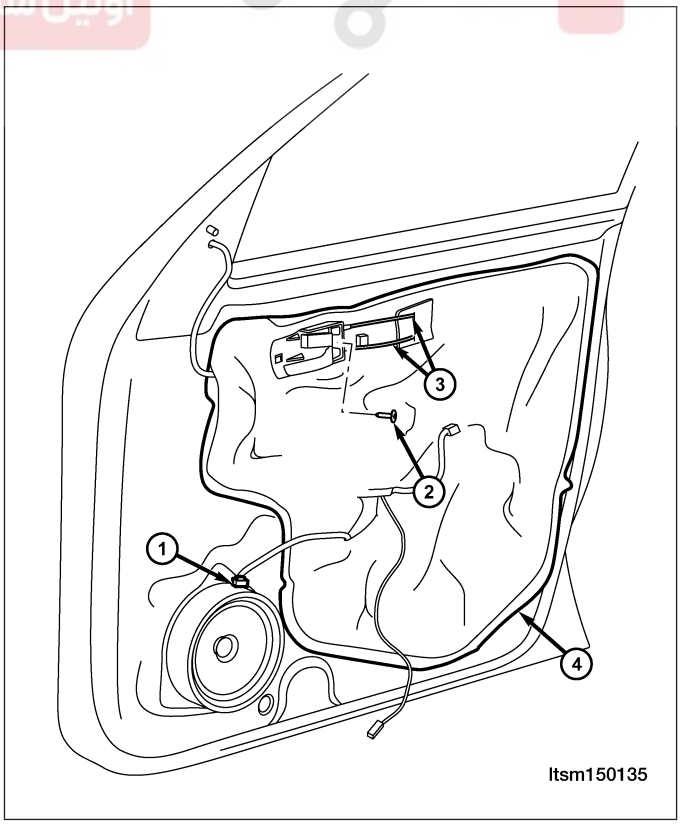
4. Remove the inner door handle mounting screw (1).
5. Remove the pull handle mounting screws (2).



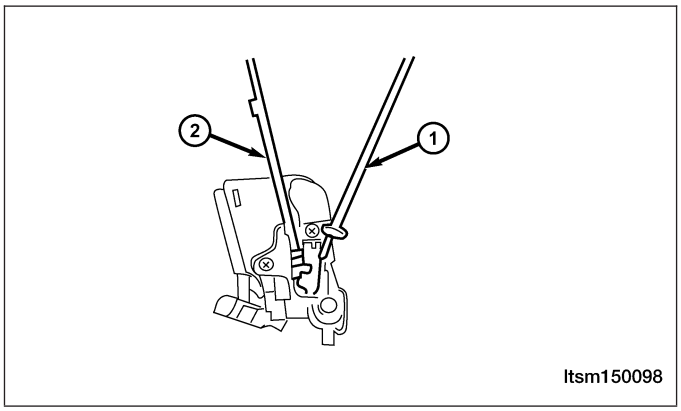
6. Using a small trim stick, remove the inner door handle trim bezel (1).



7. Carefully pry the door trim panel clips from the door.
8. Disconnect the power window switch and the door lamp electrical connector.
9. Remove the door trim panel.
10. Disconnect the speaker connector (1).
11. Remove the inner door handle assembly mounting screw (2).
12. Disconnect the inner door handle cables (3).
13. Remove the protective film (4).



14. Remove three door lock assembly retaining bolts.
(Tighten: Door lock assembly retaining bolts to 9 ± 1 N·m)
15. Remove the internal unlock cable (1) and lock cable (2).



16. Remove the lock buckle with a screwdriver.
(Tighten: Lock buckle screws to 12 ± 2 N·m)
17. Installation is in the reverse order of removal.

Door Lock Assembly Inspection

1. Using the following table, apply battery voltage to the specified connector terminals.
2. Verify that the door lock assembly operates in the lock and unlock position when voltage is applied to the specified terminals.
3. If the test results are not as specified, replace the motor.

MEASURING CONDITION	OPERATIONAL DIRECTION
Battery positive (+) to terminal – 1 Battery negative (-) to terminal – 2	Lock
Battery positive (+) to terminal – 2 Battery negative (-) to terminal – 1	Unlock

BODY CONTROL MODULE - BCM

Description

The Body Control Module (BCM) is located behind the glove box. The BCM controls many electrical components and systems for the vehicle electrical system. The BCM is the primary hub that controls functions such as internal and external lighting, power windows and power door locks.

Operation

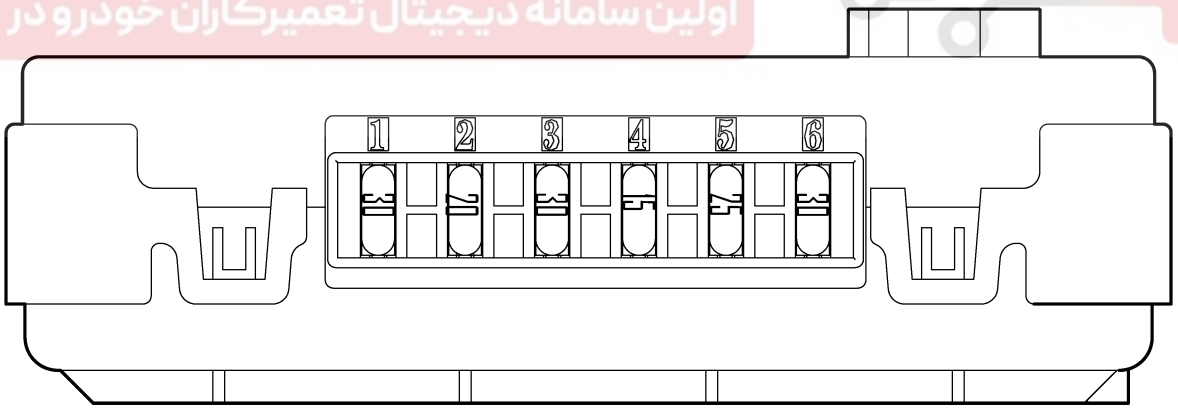
The Body Control Module (BCM) uses hard wired inputs from various sensors and switches. The sensors and switches are located throughout the vehicle.

The following components are inputs to the BCM:

- Key switch
- Rear defroster switch
- Hazard lamp switch
- Power window switches
- Power door lock switches
- Seat belt switch
- Vehicle speed
- Door ajar switches
- Turn signal switch

The following components are outputs from the BCM:

- Key lamp
- Stop lamp relay
- Rear defroster grid
- Courtesy lamps
- Power window motor
- Power door lock motor
- Turn signal lamps



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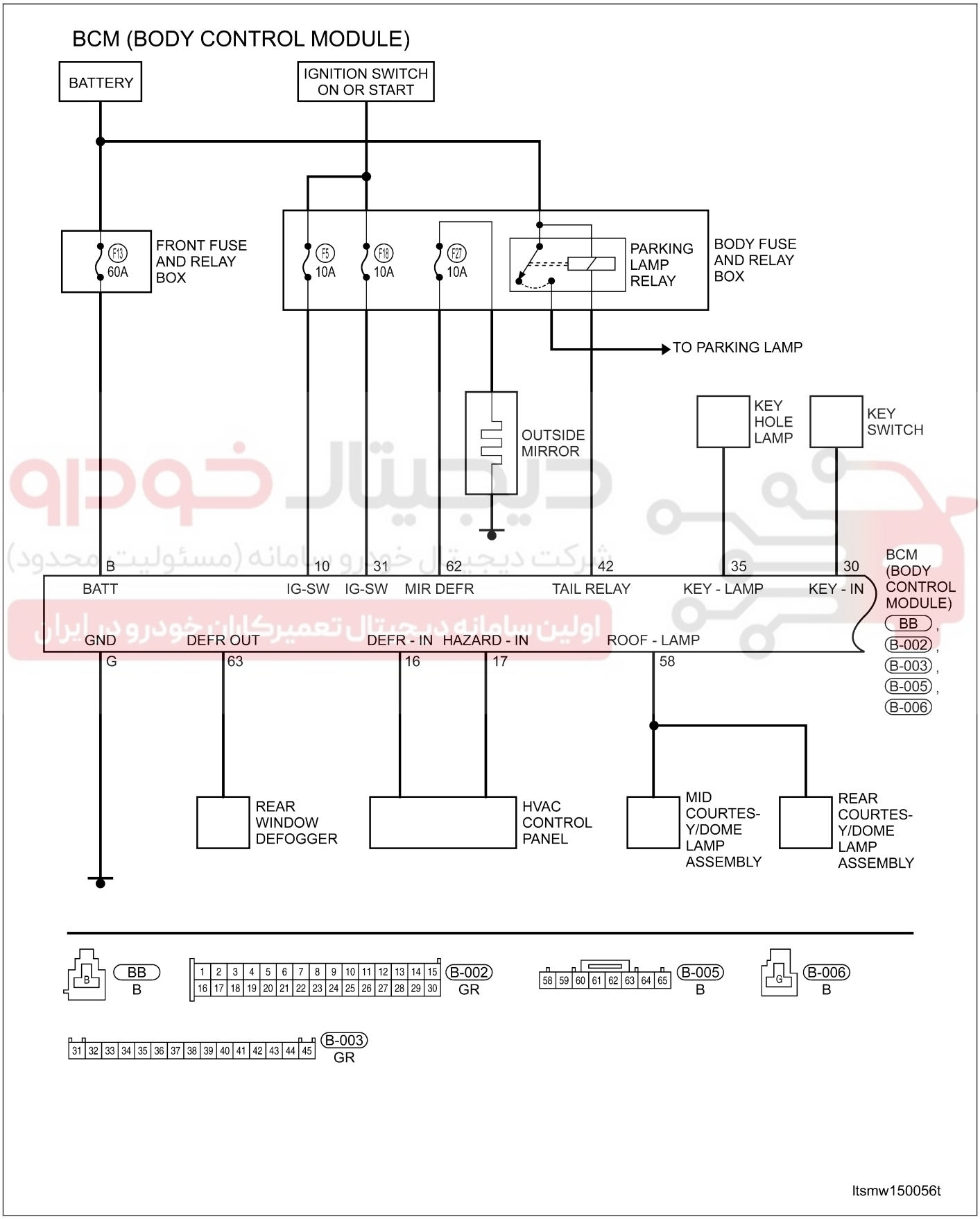
FUSE NO.	AMPERAGE RATING	FUNCTION
1	30 A	Front Fog
2	20 A	CNT Lock
3	30 A	Spare
4	15 A	Spare
5	25 A	Spare
6	30 A	Front WIN

Electrical Schematics

Body Control Module (Page 1 of 5)



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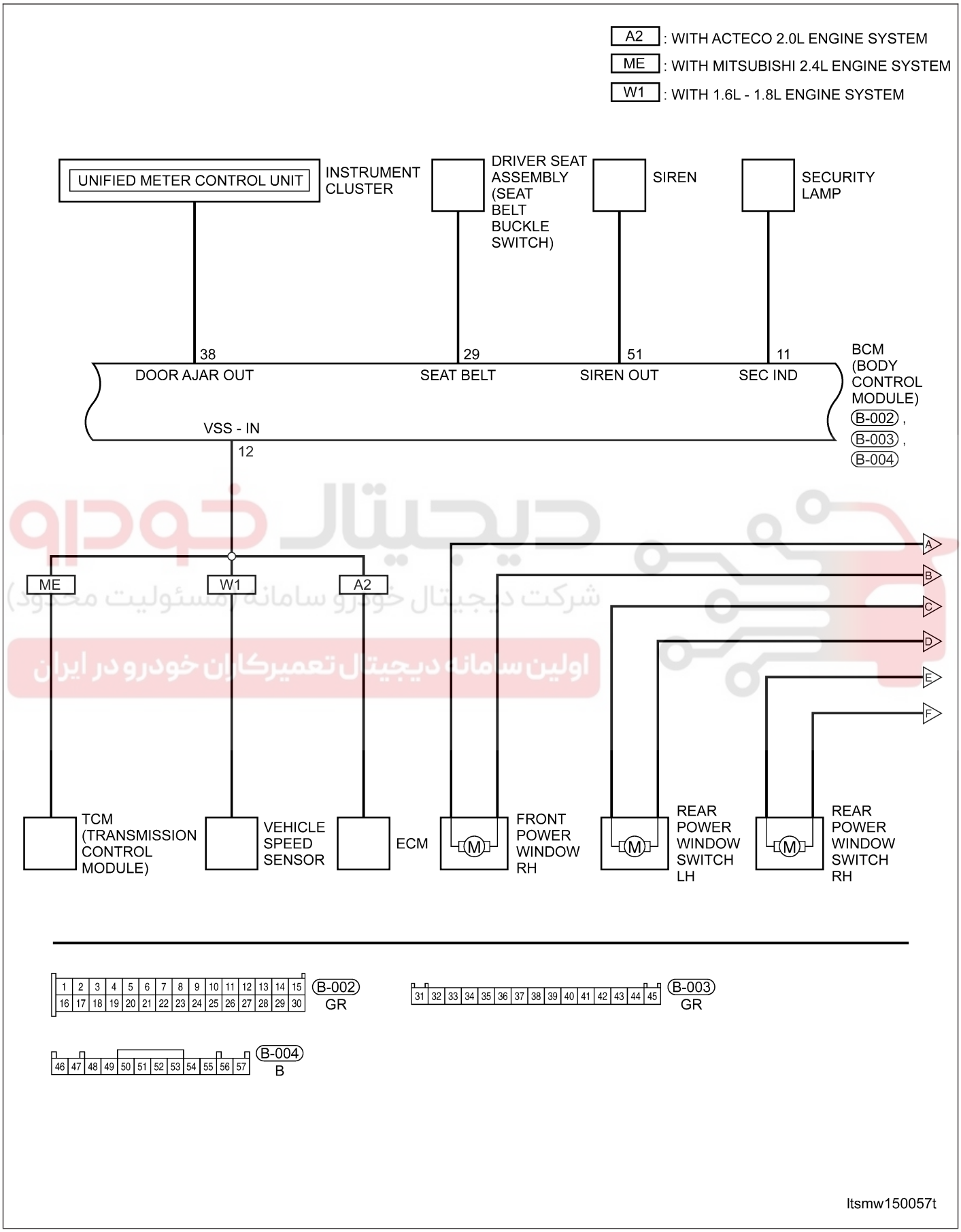
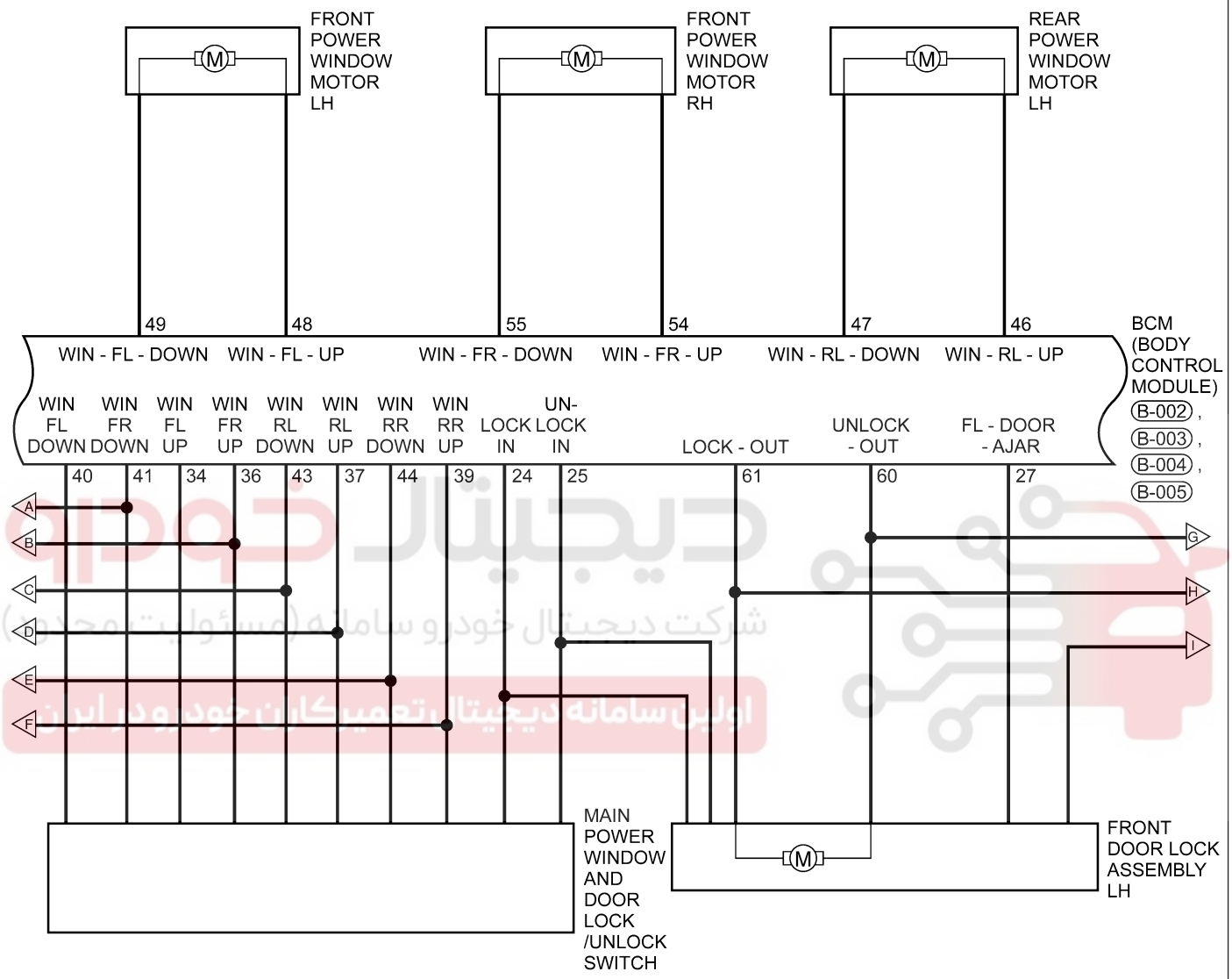
Body Control Module (Page 2 of 5)



Body Control Module (Page 3 of 5)



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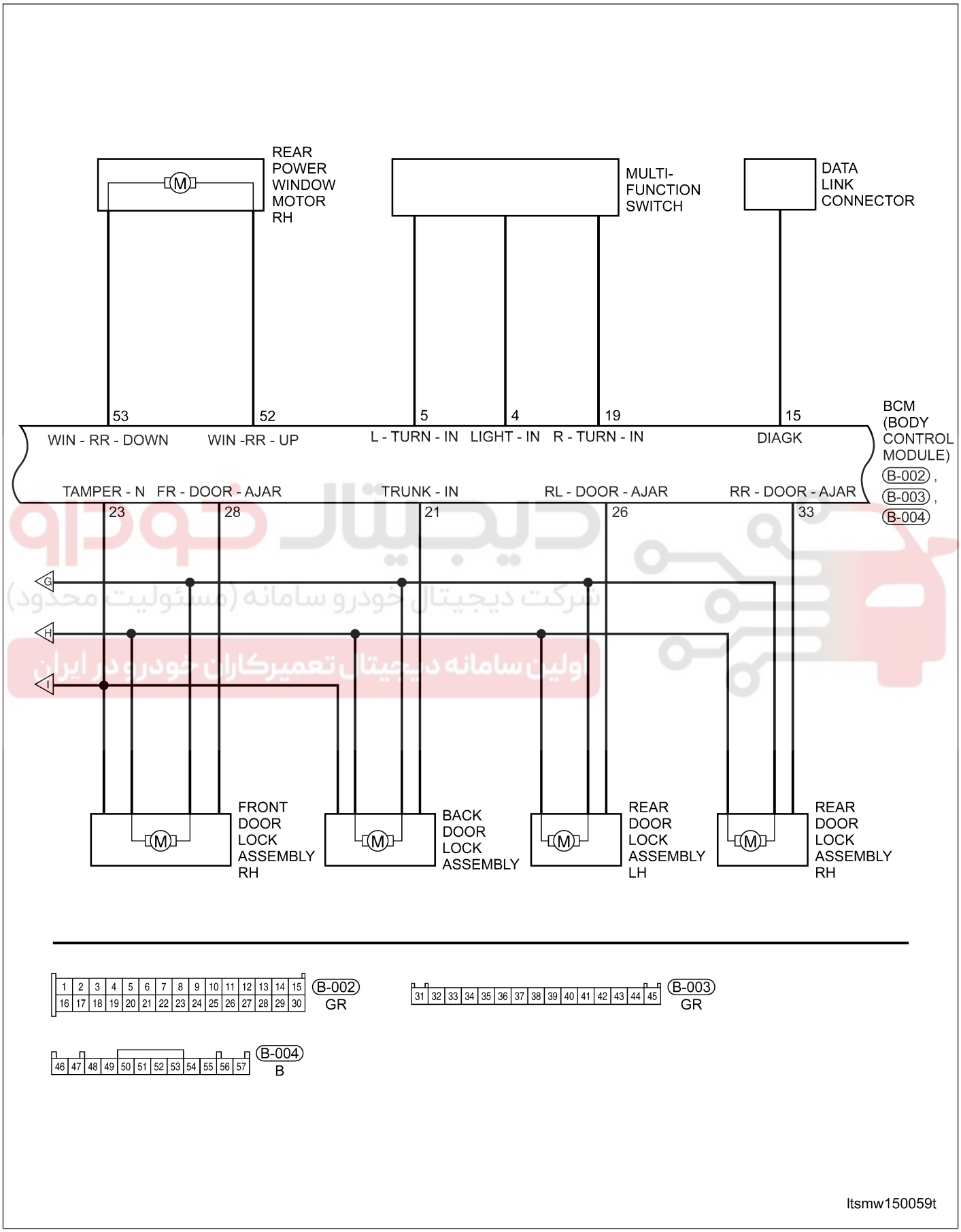
Body Control Module (Page 4 of 5)



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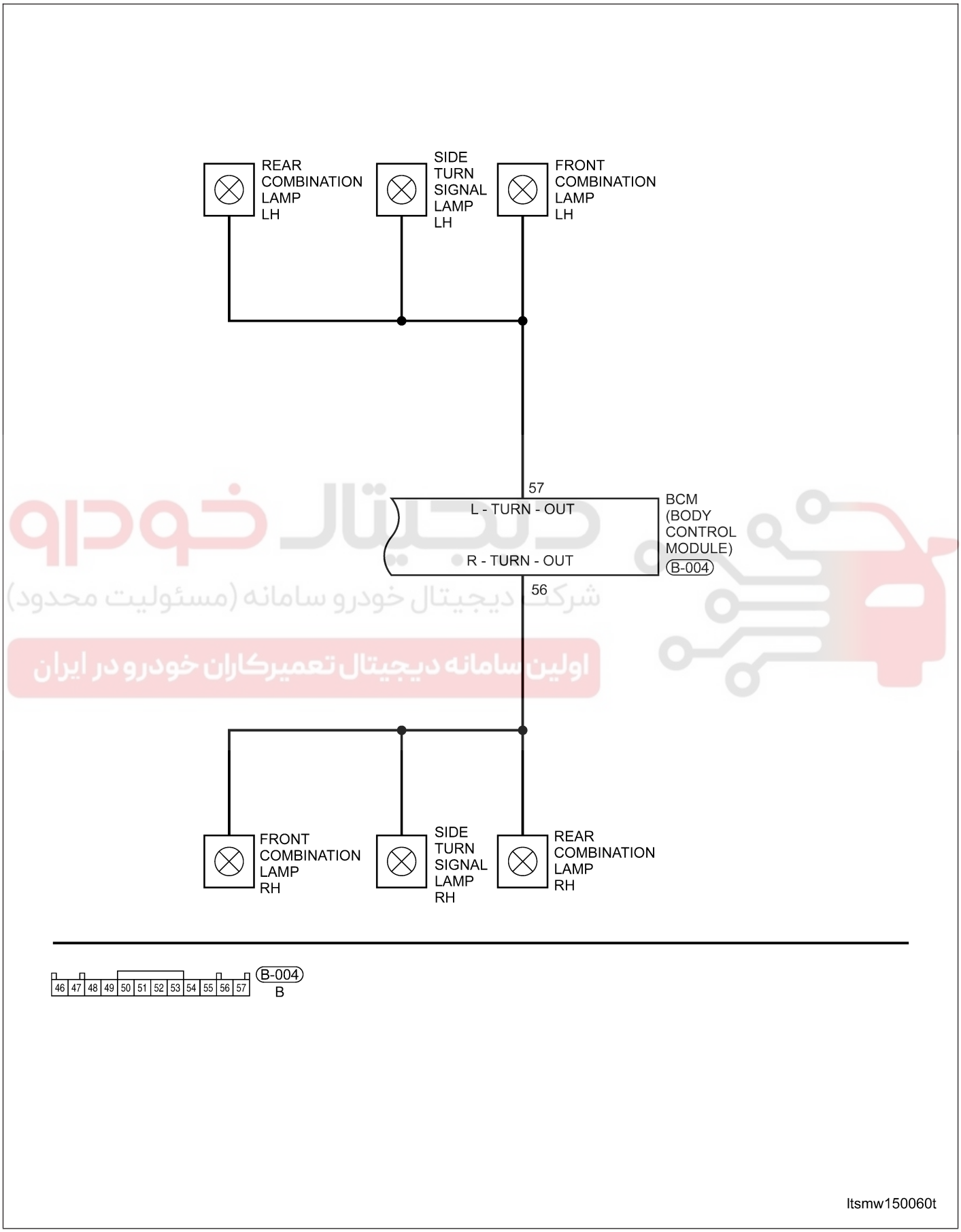
Body Control Module (Page 5 of 5)

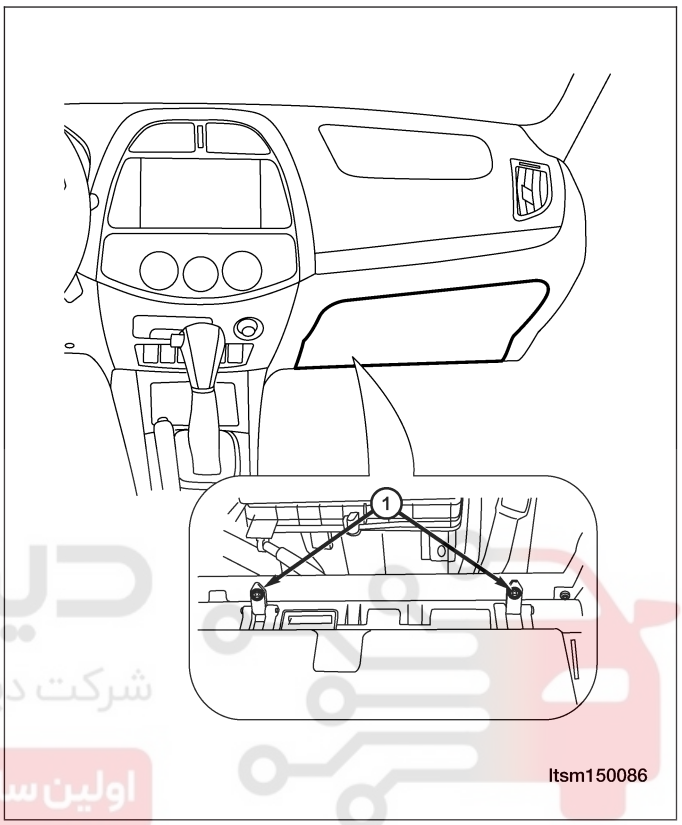


ON-VEHICLE SERVICE

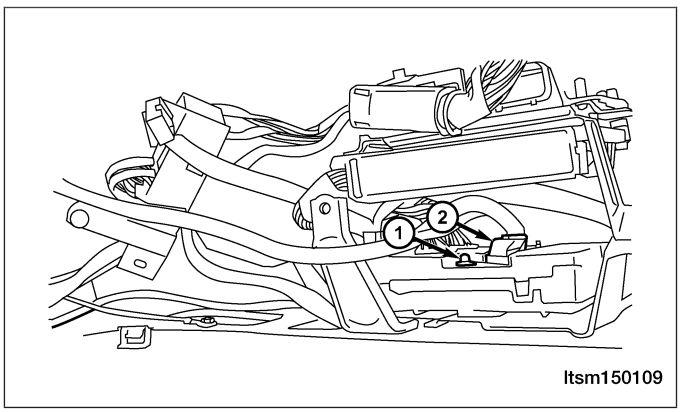
Body Control Module (BCM)

Removal & Installation

1. Disconnect the negative battery cable.
2. Remove the glove box mounting bolts (1).



3. Remove the BCM and ECM mounting bracket retaining bolts.
4. Remove the BCM mounting bolts (1).
   (Tighten: BCM mounting bolts to 5 N·m)
5. Disconnect the BCM electrical connector (2).

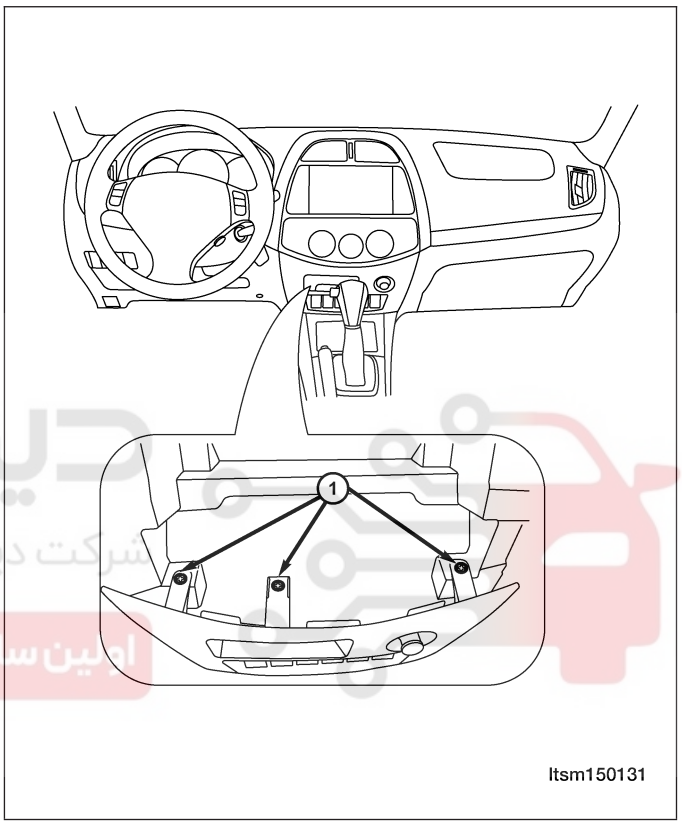


6. Remove the BCM.
7. Installation is in the reverse order of removal.

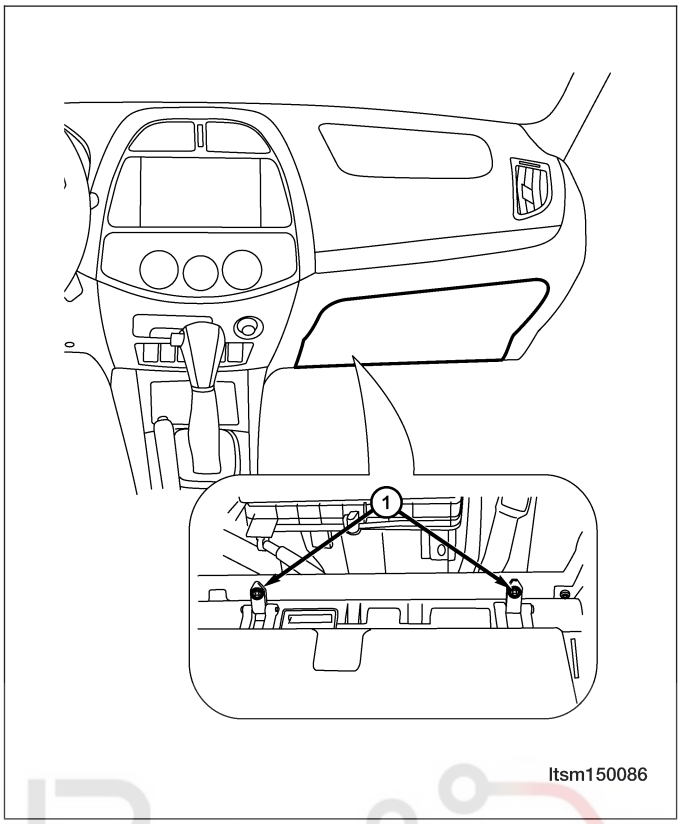
INSTRUMENT PANEL

Removal & Installation

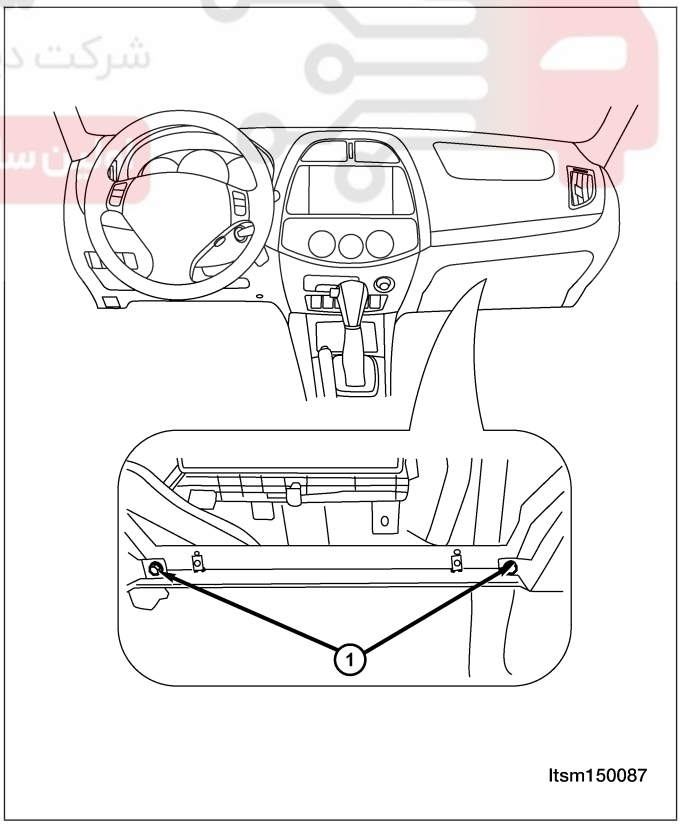
1. Remove the steering wheel (See Steering Wheel Removal & Installation in Section 11 Steering).
2. Remove the multi-function switch and the wiper switch.
3. Remove the instrument cluster (See Instrument Cluster Removal & Installation in Section 15 Body & Accessories).
4. Remove the radio (See Radio Removal & Installation in Section 15 Body & Accessories).
5. Remove the HVAC control panel (See HVAC Control Panel Removal & Installation in Section 13 Heating & Air Conditioning).
6. Remove lower center bezel retaining screws (1).



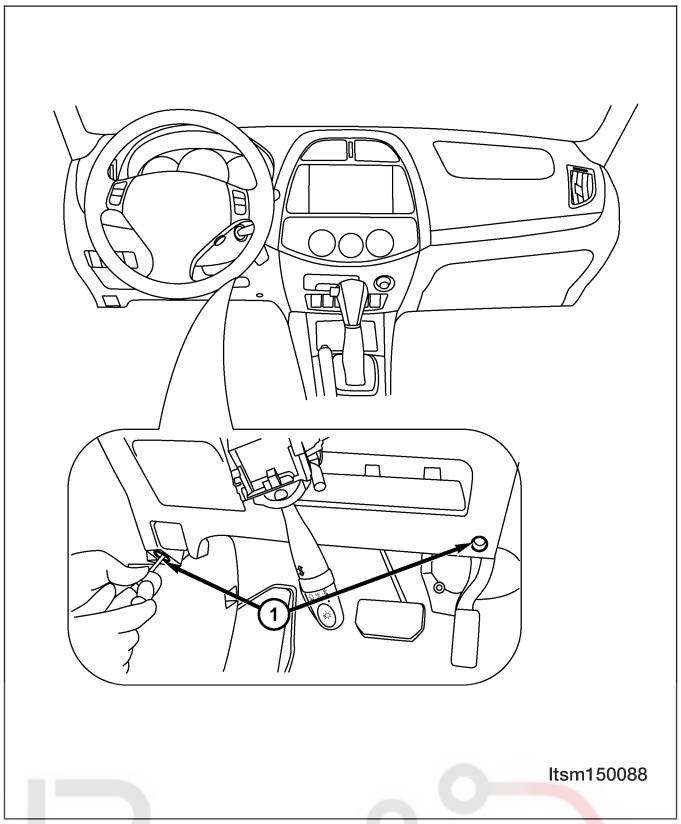
7. Remove the glove box retaining bolts (1).



8. Remove the bolts (1) under the glove box.



9. Remove the knee bolster mounting screws (1).



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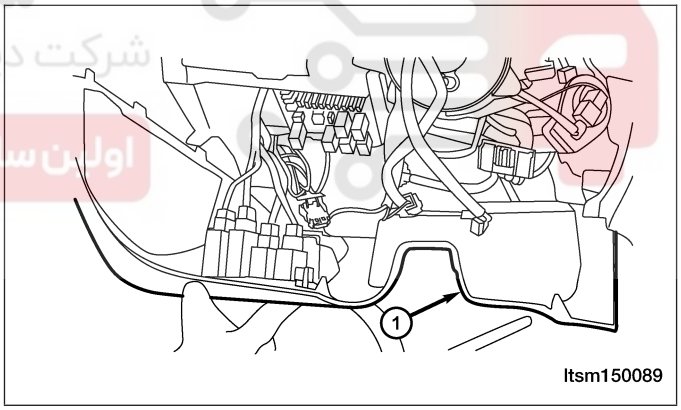
10. Remove the knee bolster (1) from the instrument panel.



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11. Remove the left trim cover of the instrument panel.

12. Remove the left instrument panel mounting bolt (1).

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13. Remove the right trim cover of the instrument panel.
14. Remove the right instrument panel mounting bolt (1).

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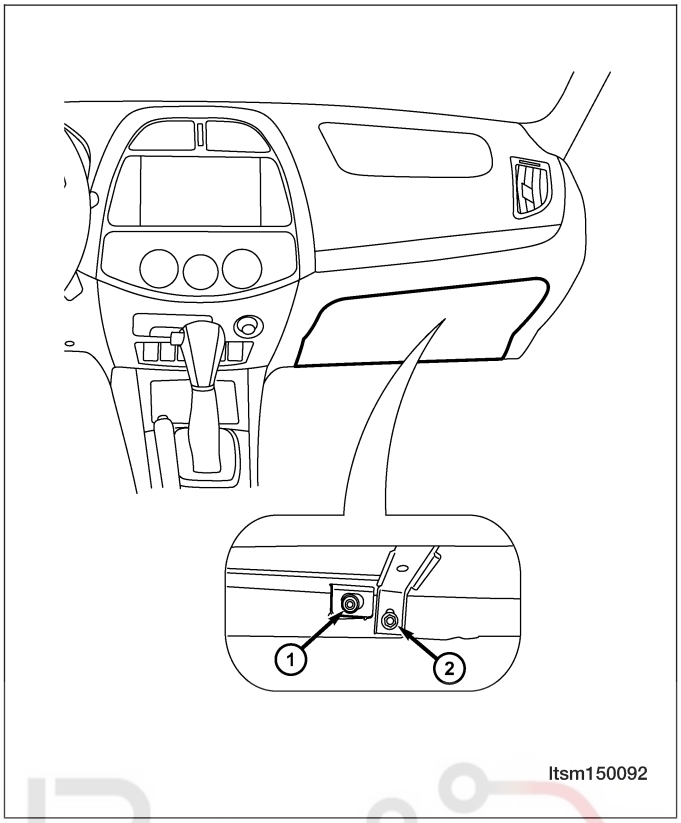
15. Remove two instrument panel mounting nuts (1) and bolts (2) in the glove box.

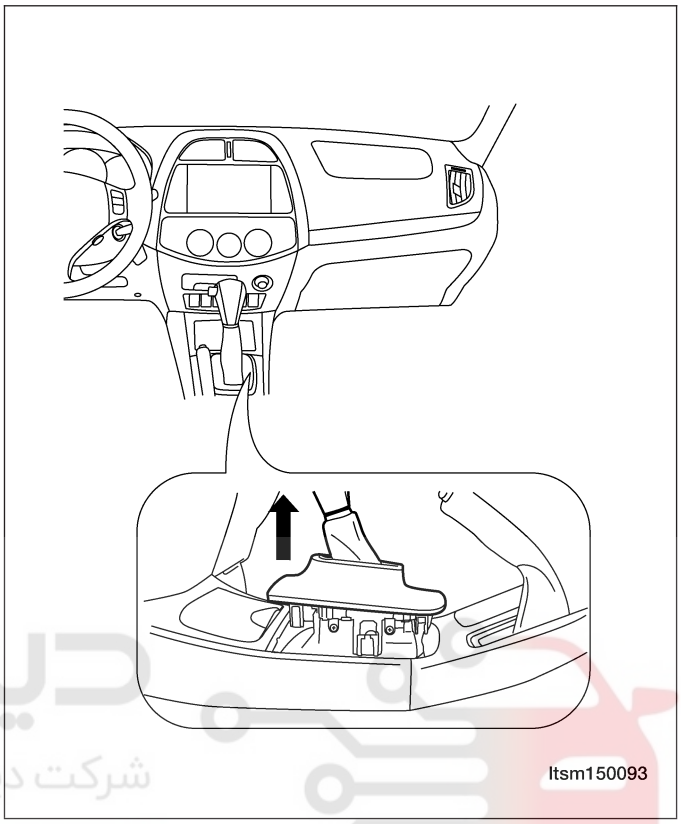


16. Remove the A-pillar trim panel (See A-Pillar Removal & Installation in Section 15 Body & Accessories).
17. Remove the lower console (See Lower Console Removal & Installation in Section 15 Body & Accessories).
18. Carefully remove the instrument panel.
19. Installation is in the reverse order of removal.

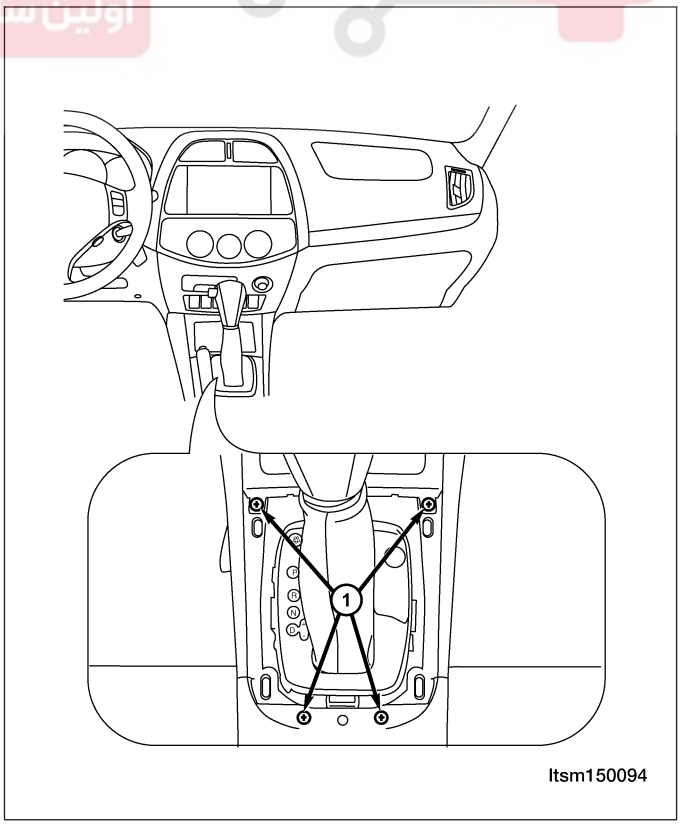
Lower Console

Removal & Installation

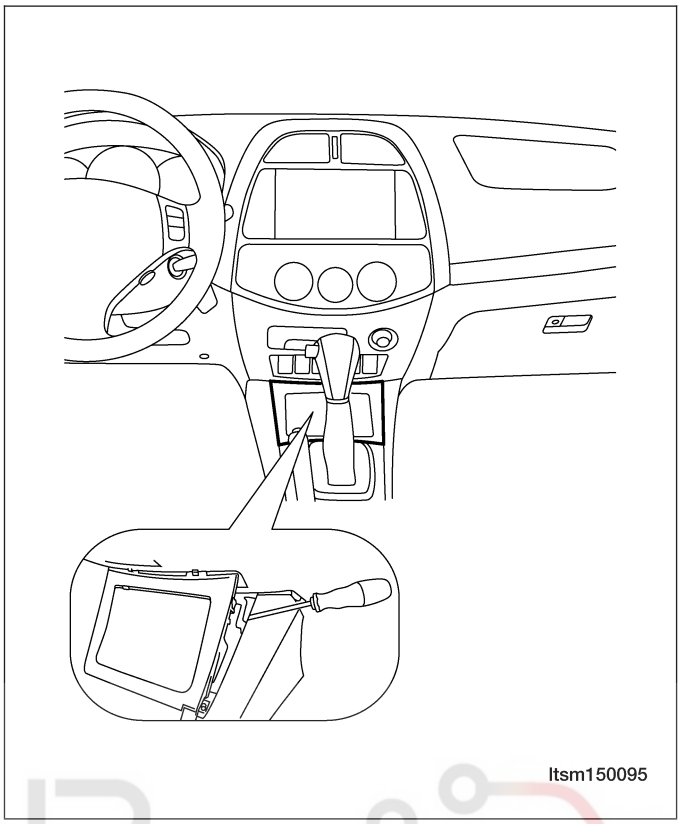
1. Gently pry the gearshift knob bezel off of the console cover.



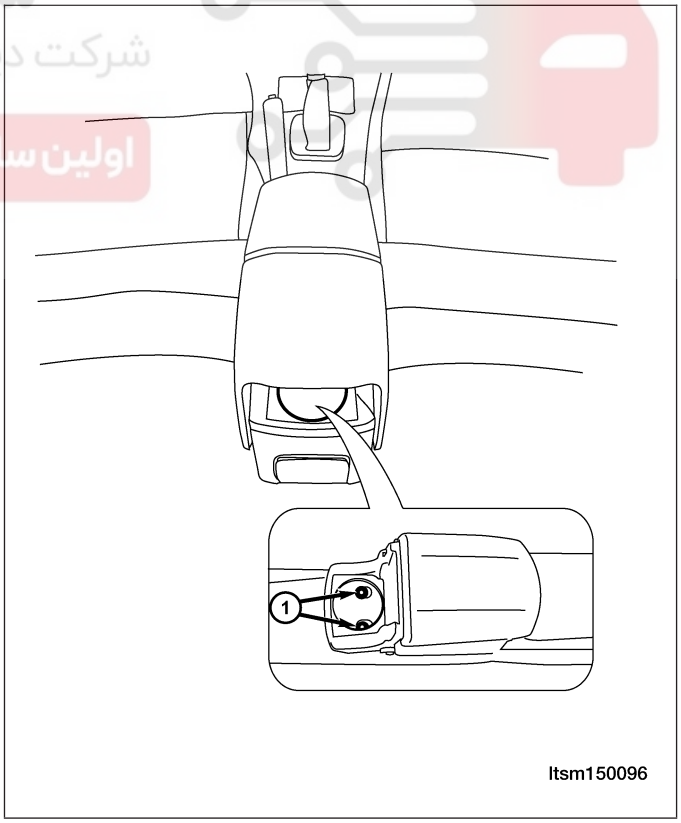
2. Remove the console mounting bolts (1) under the gearshift knob bezel.



3. Remove the storage box.



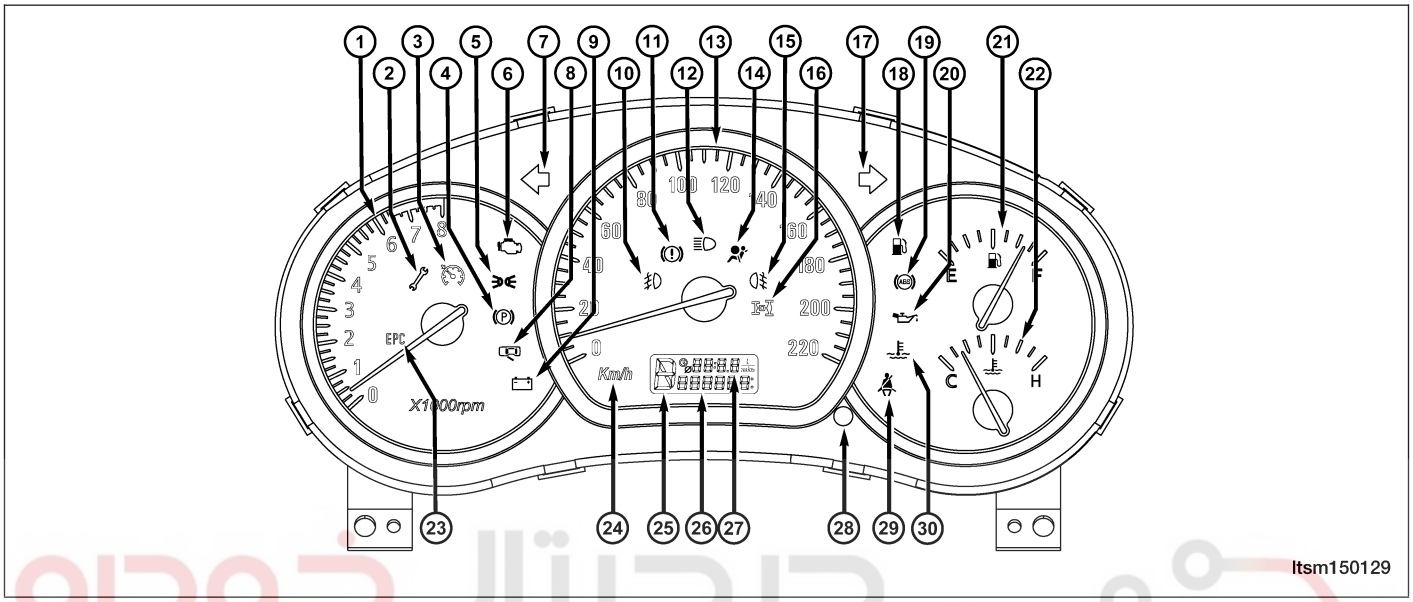
4. Remove the bolts (1) under the rubber cushion.
5. Remove the lower console.
6. Installation is in the reverse order of removal.



INSTRUMENT CLUSTER

Description

The Instrument Cluster (IC) is located in the instrument panel directly in front of the driver. The IC is used to inform the driver of specific vehicle information. The IC uses indicator lamps and gauges to warn the driver of potentially critical operating conditions.



1 - Tachometer	16 - 4WD Warning Light (If Equipped)
2 - Maintenance Indicator Light	17 - Right-Turn Light
3 - Cruise Indicator Light	18 - Low Fuel Warning Light
4 - Parking Brake System Warning Light	19 - ABS Warning Light
5 - Parking Light	20 - Oil Pressure Warning Light
6 - Malfunction Indicator Light	21 - Fuel Gauge
7 - Left-Turn Light	22 - Temperature Gauge
8 - Door/Trunk Lid Open Warning Display	23 - Electronic Throttle Control Indicator Light
9 - Charging System Light	24 - Km/h Light
10 - Front Fog Light Indicator Light	25 - Transaxle Range Indicator (If Equipped)
11 - Brake System Warning Light	26 - Odometer/Trip Odometer
12 - High Beam Indicator Light	27 - Digital Clock
13 - Speedometer	28 - Adjust Button
14 - Airbag Light	29 - Seat Belt Reminder Light
15 - Rear Fog Light Indicator Light	30 - Coolant Temperature Warning Light

Operation

The Instrument Cluster (IC) uses hard wired inputs from various sensors and switches. The sensors and switches are located throughout the vehicle. The IC displays the following gauges:

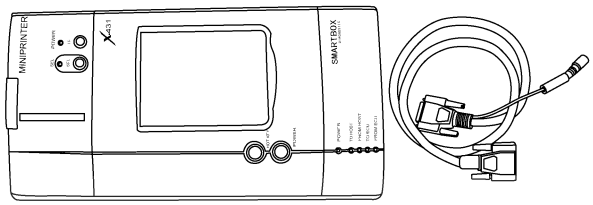
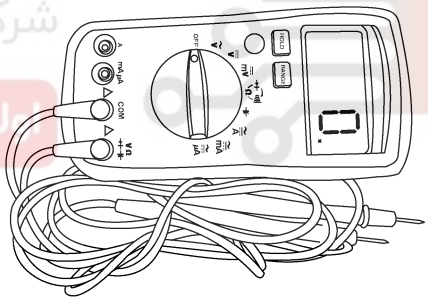
- Speedometer - The IC displays the vehicle speed as determined by the Engine Control Module (ECM).
- Tachometer - The IC displays the engine speed as determined by the Engine Control Module (ECM).
- Temperature Gauge - The IC displays the engine coolant temperature as determined by the Engine Control Module (ECM).
- Fuel Gauge - The IC displays the amount of fuel in the fuel tank as determined by the fuel level sensor.

Specifications

Torque Specifications

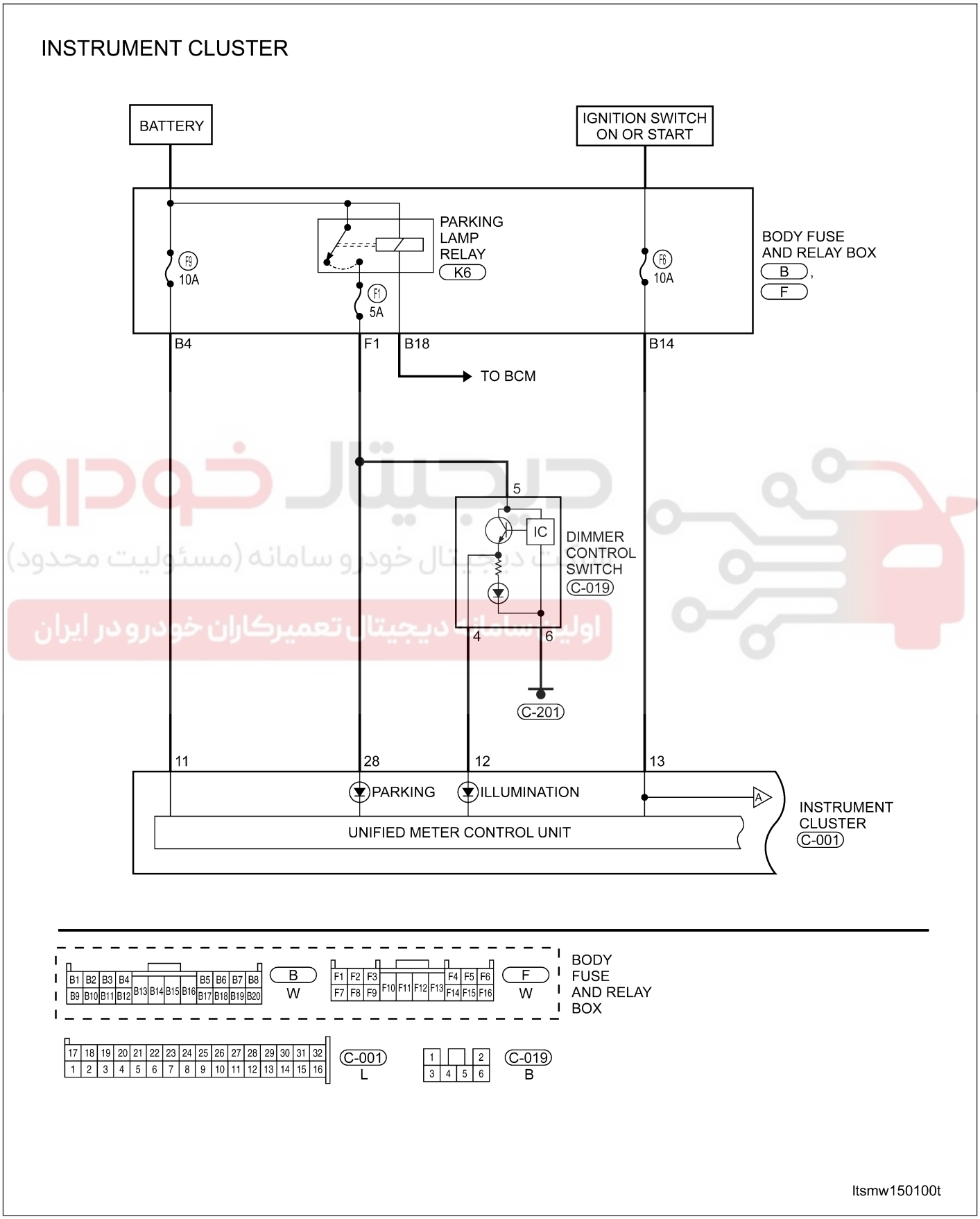
DESCRIPTION	TORQUE (N·m)
Instrument Cluster Bezel Fasteners	2
Instrument Cluster Fasteners	9

Special Tools

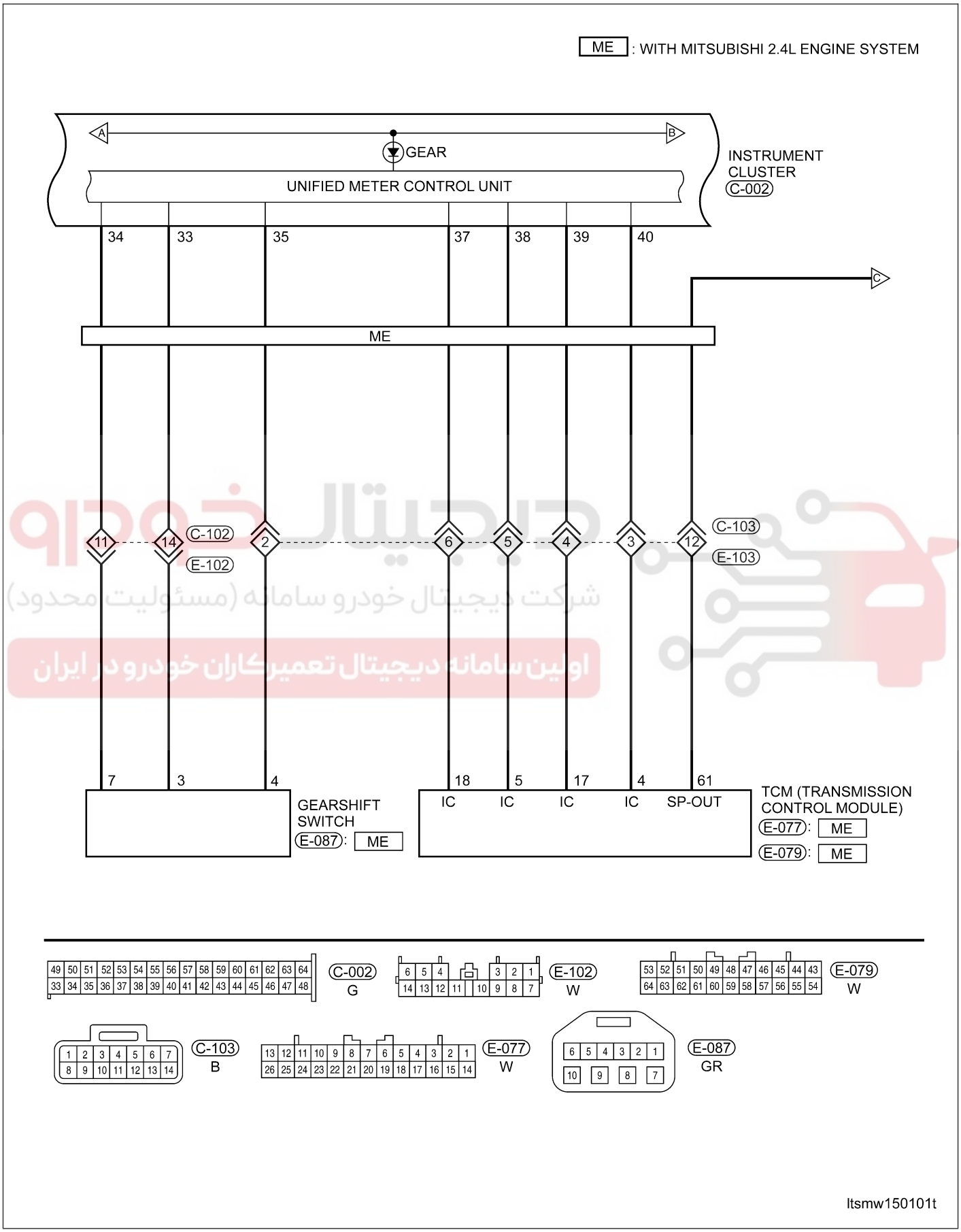
Diagnostic Scan Tool X-431	 besm030001
Digital Multimeter Fluke 15B & 17B	 besm030002

Electrical Schematics

Instrument Cluster (Page 1 of 8)



Instrument Cluster (Page 2 of 8)



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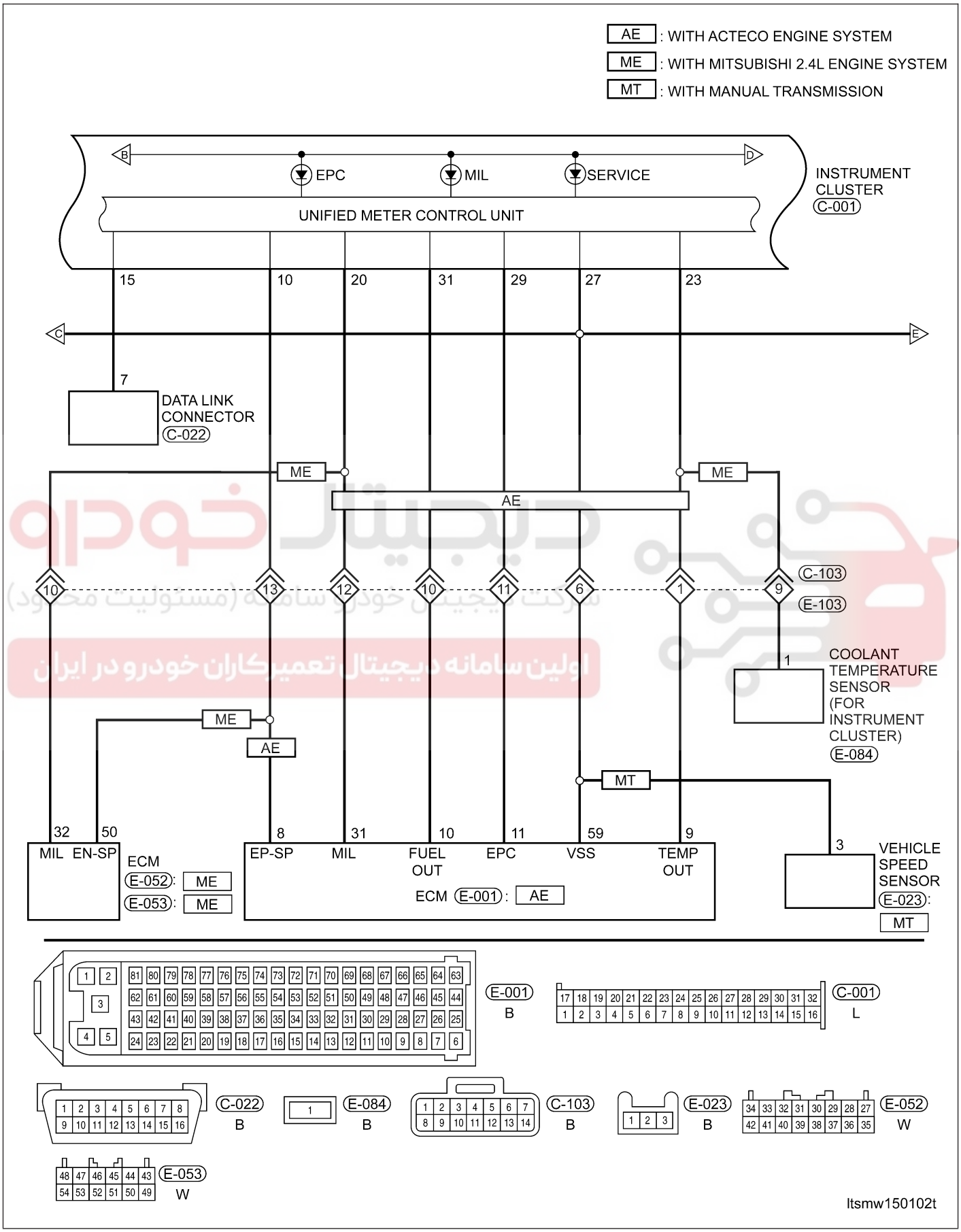
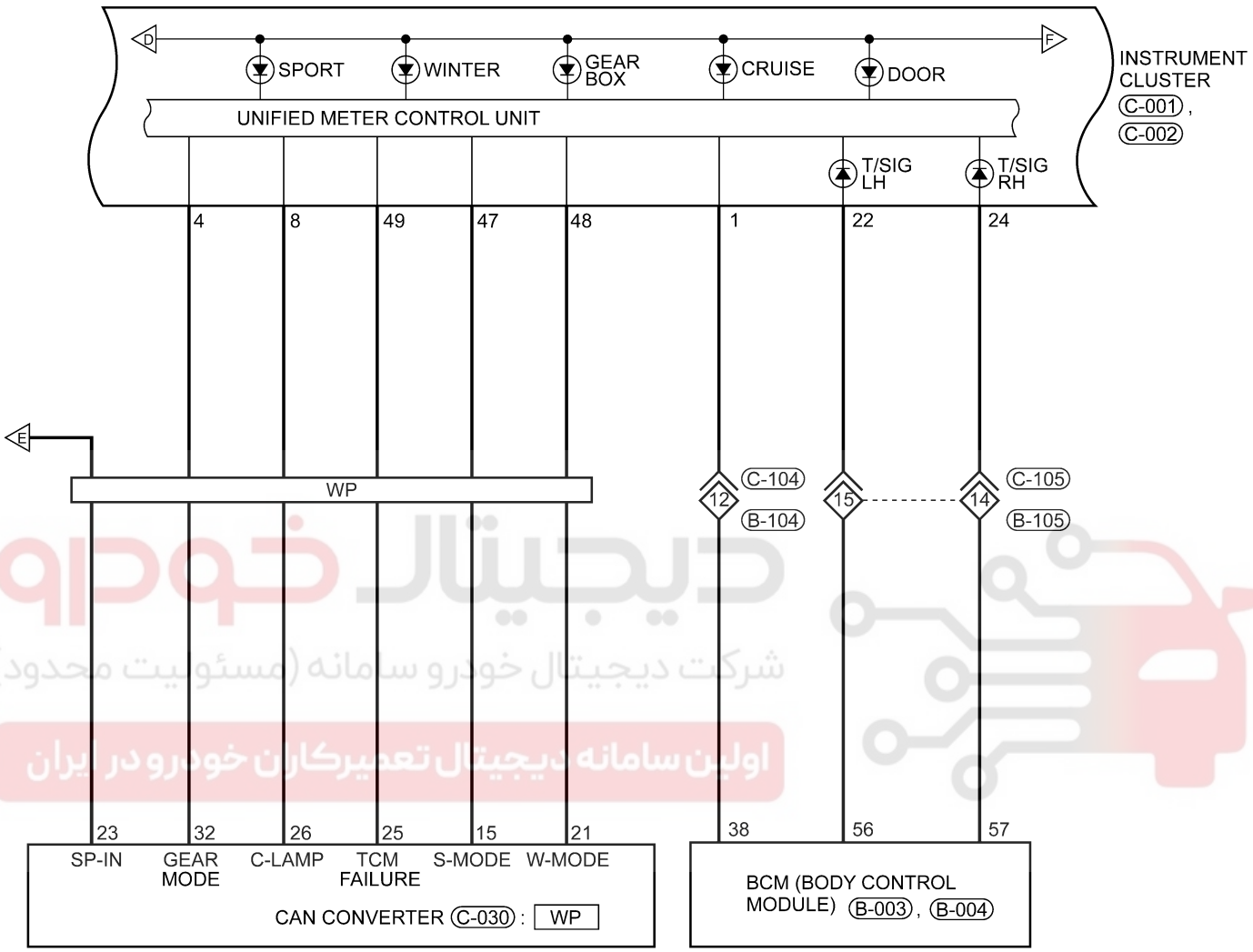
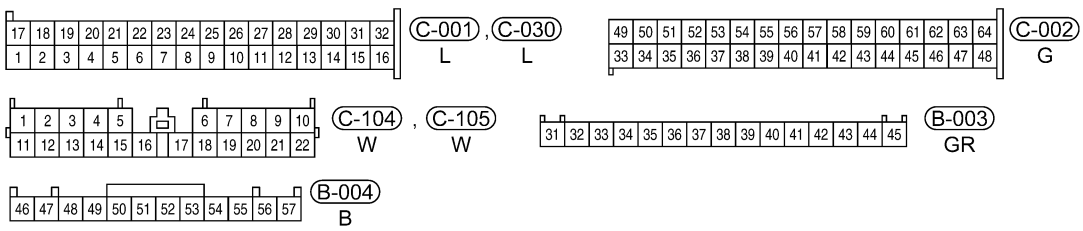
Instrument Cluster (Page 3 of 8)



Instrument Cluster (Page 4 of 8)

WP : WITH DP0 SYSTEM





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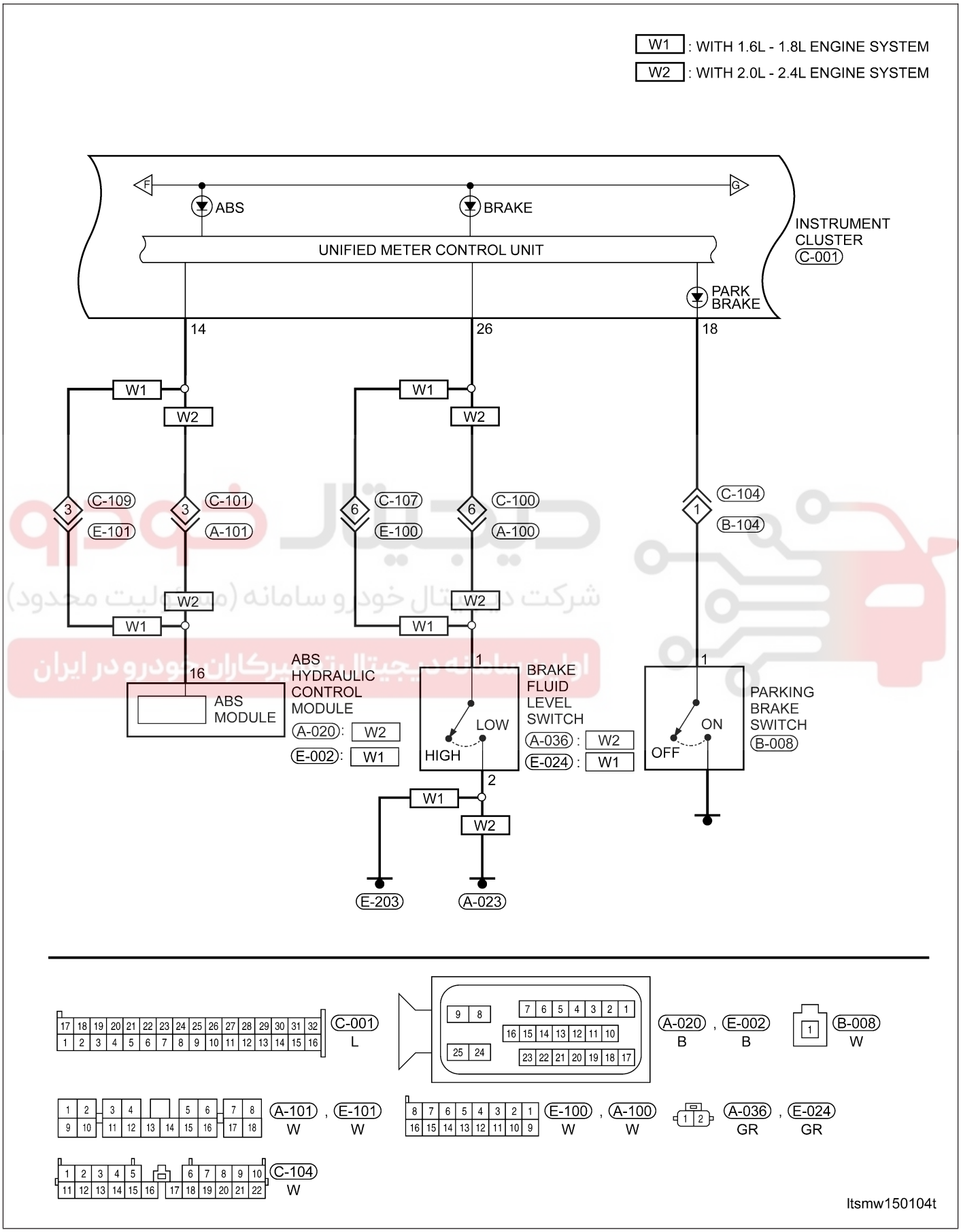
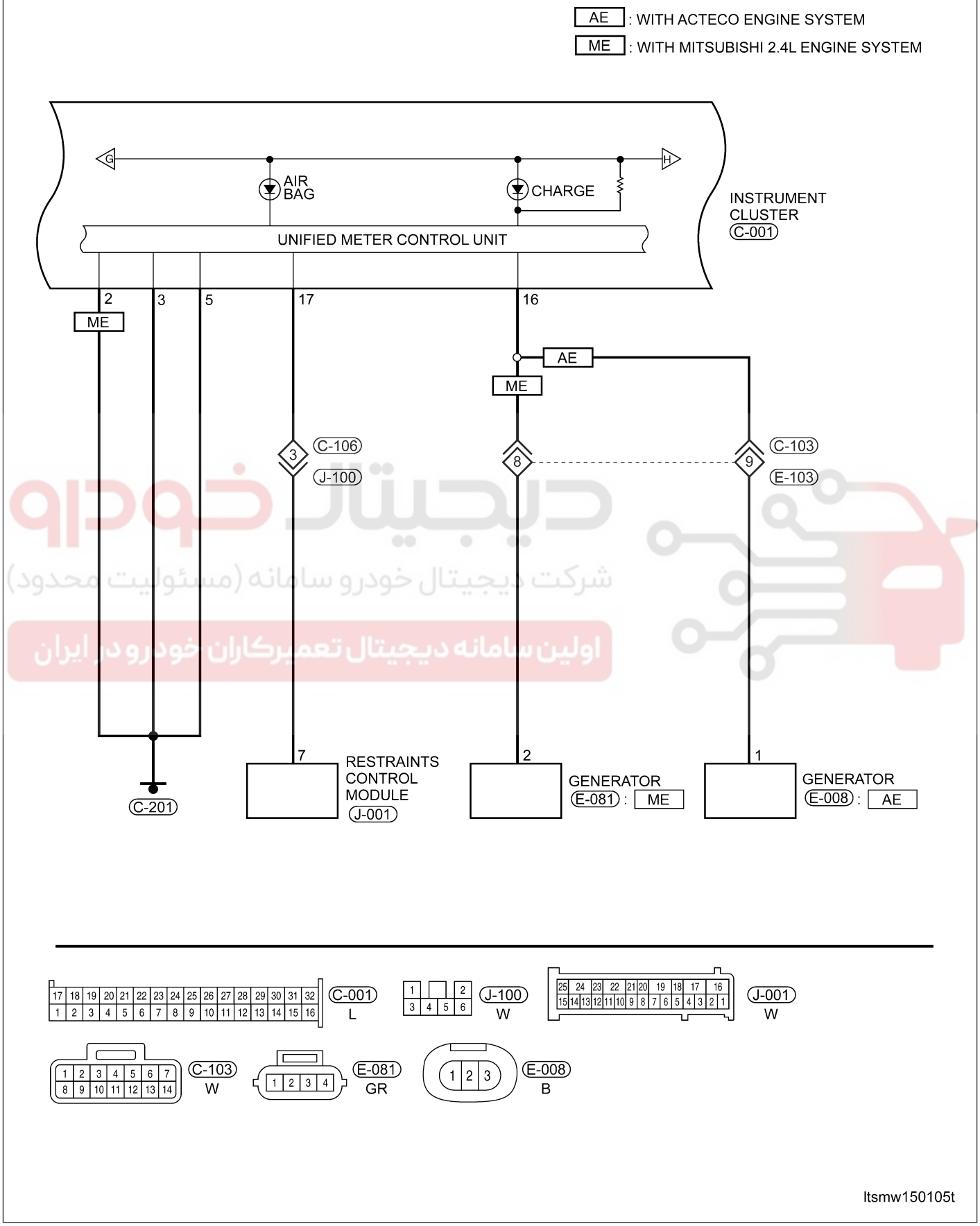
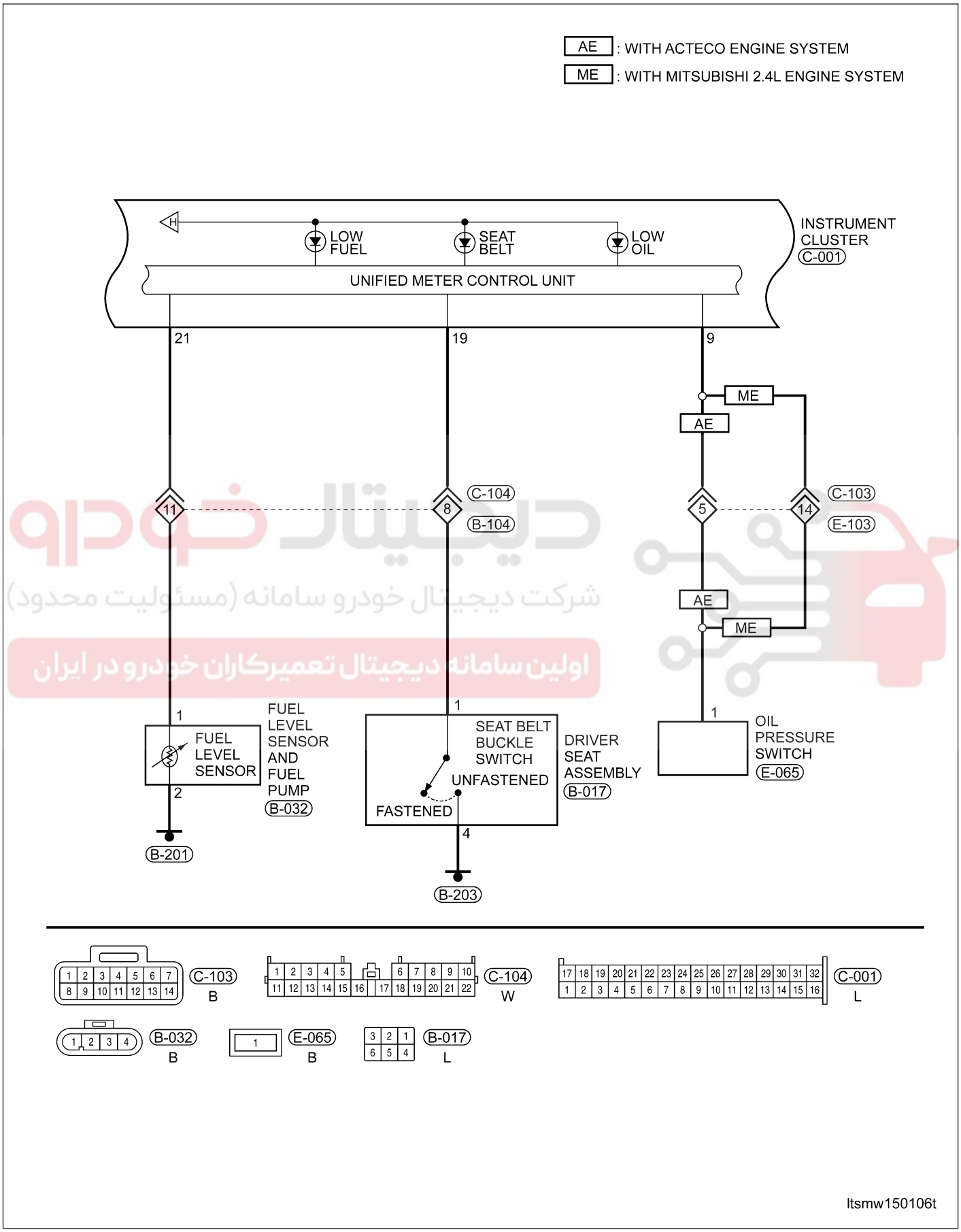
Instrument Cluster (Page 5 of 8)



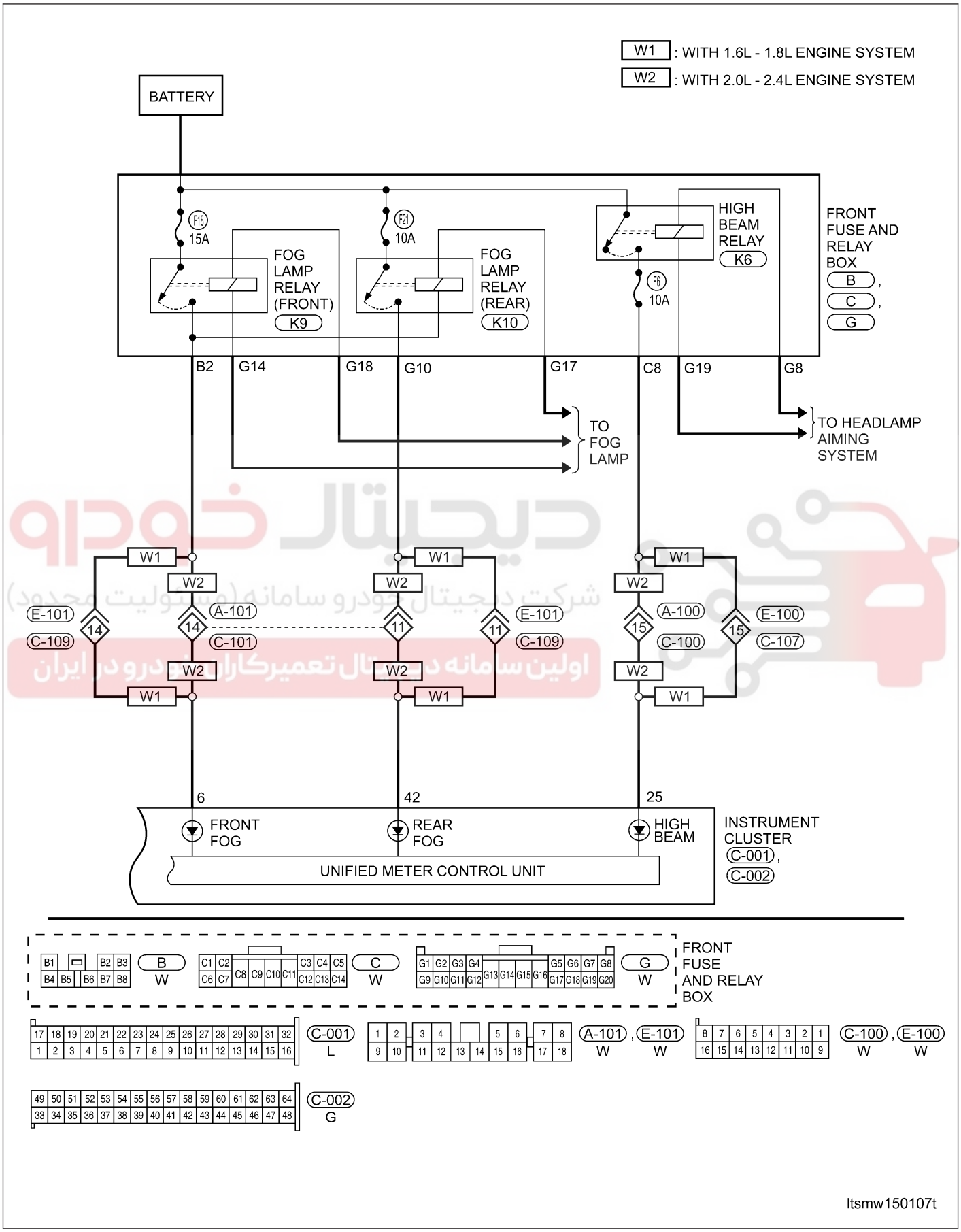
Instrument Cluster (Page 6 of 8)



Instrument Cluster (Page 7 of 8)



Instrument Cluster (Page 8 of 8)



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Instrument Cluster Connector Pin-Out Table

Instrument Cluster Connector Pin-Out Table

PIN	CIRCUIT IDENTIFICATION	PIN	CIRCUIT IDENTIFICATION
1	Door Lamp	33	N/A (With ACTECO Engine)
			P (With MITSUBISHI Engine)
2	N/A (With ACTECO Engine)	34	N/A (With ACTECO Engine)
	GND (With MITSUBISHI Engine)		R (With MITSUBISHI Engine)
3	GND (Power)	35	N/A (With ACTECO Engine)
			N (With MITSUBISHI Engine)
4	PWM Gear Mode	36	N/A (With ACTECO Engine)
			Auto Mode (With MITSUBISHI Engine)
5	GND (Sensor)	37	N/A (With ACTECO Engine)
			4 (With MITSUBISHI Engine)
6	Front Fog Lamp	38	N/A (With ACTECO Engine)
			3 (With MITSUBISHI Engine)
7	—	39	N/A (With ACTECO Engine)
			2 (With MITSUBISHI Engine)
8	Cruise Lamp	40	N/A (With ACTECO Engine)
			1 (With MITSUBISHI Engine)
9	Low Oil Pressure Lamp	41	—
10	Speed Input	42	Rear Fog Lamp
11	Continuous Supply Voltage	43	—
12	Illumination Lamp	44	—
13	Ignition Switch	45	—
14	ABS Lamp	46	—
15	Diagnostic Link K	47	Sport Mode (With ACTECO Engine)
			N/A (With MITSUBISHI Engine)
16	Charge Lamp	48	Winter Mode (With ACTECO Engine)
			N/A (With MITSUBISHI Engine)
17	Airbag Lamp	49	TCM Failure (With ACTECO Engine)
			N/A (With MITSUBISHI Engine)
18	Parking Brake Lamp	50	—
19	Seatbelt Lamp	51	—
20	MIL Lamp	52	—
21	Low Fuel Level Lamp	53	—
22	Left Turn Lamp	54	—
23	Coolant Temperature Input	55	—
24	Right Turn Lamp	56	—
25	High Beam Lamp	57	—
26	Low Brake Fluid Level Lamp	58	—
27	Vehicle Speed Input	59	—
28	Parking Lamp	60	—
29	EPC Lamp	61	—

PIN	CIRCUIT IDENTIFICATION	PIN	CIRCUIT IDENTIFICATION
30	—	62	—
31	Fuel Consumption Input	63	—
32	—	64	—

DIAGNOSIS & TESTING

Clearing Service Monitor Lamp

Perform the following to clear the service monitor lamp:

1. Turn the ignition switch off.
2. Press down and hold the Mode switch.
3. Turn the ignition switch on.
4. Release the Mode switch.
5. Press the Mode switch and the Clock switch simultaneously within 30 seconds and hold less than 2 seconds to clear the mileage maintenance identification.

Diagnostic Help

1. The X-431 scan tool connects to the Data Link Connector (DLC) and communicates with the vehicle electronic modules through the class two serial data circuit.
2. Confirm that the malfunction is current and carry-out the diagnostic tests and repair procedures.
3. If the DTC cannot be deleted, it is a current fault.
4. Use a digital multimeter to perform voltage readings on electronic systems.
5. Refer to any Technical Bulletins that issued.
6. Visually inspect the related electrical wiring harness.
7. Inspect and clean all Instrument Cluster (IC) grounds that are related to the DTC.
8. If numerous trouble codes were set, use the electrical schematic and look for any common ground circuits or voltage supply circuits that may apply to the DTC.

Intermittent DTC Troubleshooting

If the failure is intermittent, perform the following:

- Check for loose connectors.
- Look for any chafed, pierced, pinched, or partially broken wires.
- Monitor the scan tool data relative to this circuit.
- Wiggle the related electrical wiring harness and connectors while looking for an interrupted signal on the affected circuit.
- If possible, try to duplicate the conditions under which the DTC set.
- Look for the data to change or for the DTC to reset during the wiggle test.
- Look for broken, bent, pushed out or corroded terminals.
- Inspect the sensor and mounting area for any condition that would result in an incorrect signal, such as damage or foreign material.
- A data recorder, and/or oscilloscope should be used to help diagnose intermittent conditions.

Ground Inspection

Ground connections are very important to the proper operation of electrical and electronic circuits. Ground connections are often exposed to moisture, dirt and other corrosive elements. The corrosion (rust) can become an unwanted resistance. This added resistance can alter the way a circuit works.

Electronically controlled circuits are very sensitive to proper grounding. A loose or corroded ground can drastically affect an electronically controlled circuit. A poor or corroded ground can effect the circuit. Perform the following when inspecting a ground connection:

1. Remove the ground bolt or screw.
2. Inspect all mating surface for tarnish, dirt, rust, etc.
3. Clean as required to assure good contact.
4. Reinstall bolt or screw securely.
5. Inspect for ″add-on″ accessories which may be interfering with the ground circuit.
6. If several wires are crimped into one ground eyelet terminal, check for proper crimps. Make sure all of the wires are clean, securely fastened and providing a good ground path. If multiple wires are crimped to one eyelet, make sure no excess wire insulation has been crimped creating a bad ground.

Diagnostic Tools

- Diagnostic Scan Tool X-431
- Digital Multimeter
- Jumper Wire

Diagnostic Trouble Code (DTC) List

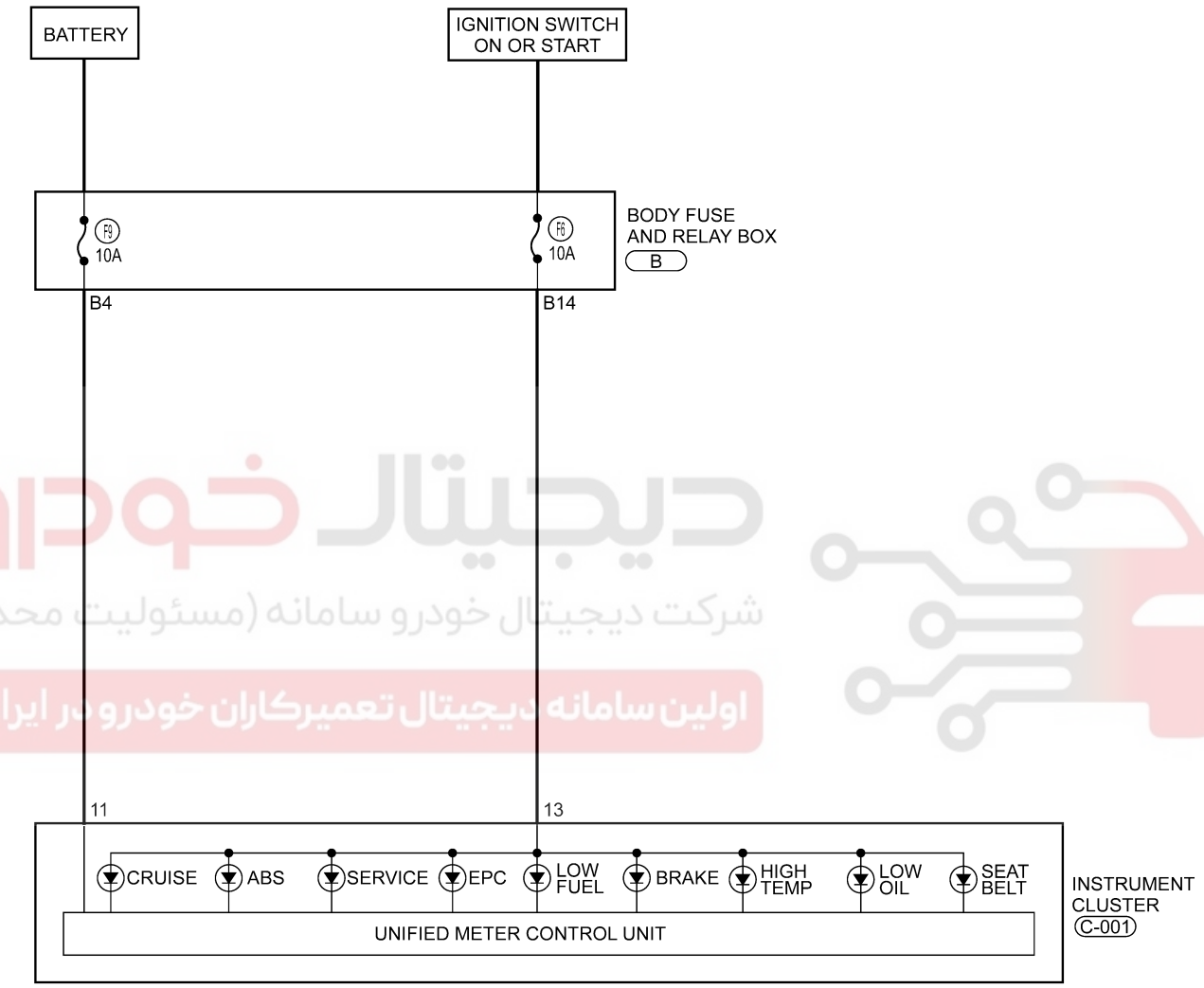
Instrument Cluster DTC List

DTC	DTC DEFINITION
U0303	Fuel Sensor O/C or Shorted To Supply
U0303	Fuel Sensor Shorted To Ground
U040F	Temperature Sensor O/C or Shorted To Supply
U040F	Temperature Sensor Shorted To Ground
U029C	Battery Over Voltage Error
U029C	Battery Under Voltage Error
U050F	EEPROM Checksum Error

Diagnostic Trouble Code (DTC) Tests

U029C - Battery Over Voltage Error
U029C - Battery Under Voltage Error

IC - PWR - 01



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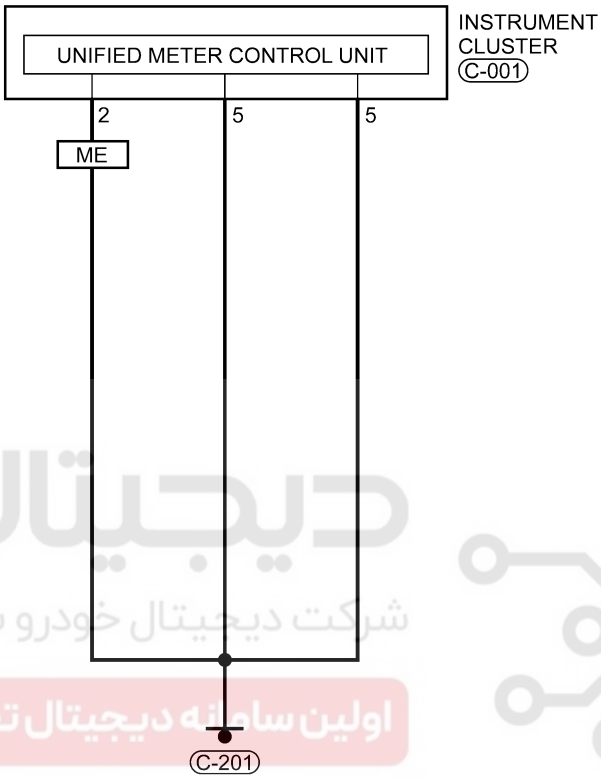
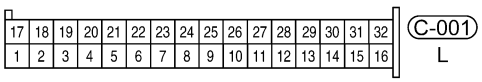
IC - PWR - 02

ME : WITH MITSUBISHI 2.4L ENGINE SYSTEM





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On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	DTC SET CONDITION	POSSIBLE CAUSE
U029C	Battery over voltage error	Turn ignition switch on	Instrument Cluster (IC) detected that the battery voltage is excessively high.	• Charge system • Instrument Cluster (IC)
U029C	Battery under voltage error		Instrument Cluster (IC) detected that the battery voltage is excessively low.	• Battery • Charge system • Harness or connector • Instrument Cluster (IC)

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn ignition switch on, select view, record and erase DTC.
- Start engine and warm it up to the normal operating temperature.
- Select view DTC and data stream.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).
-

NOTE :

- Inspect the vehicle for aftermarket accessories that may exceed the Generator System output.
- Inspect the fuses. If an open fuse is found, use the wiring schematics as a guide and inspect the wiring and connectors for damage.
- Troubleshoot any Engine Control Module (ECM) charging/cranking DTCs before proceeding.

NOTE :

While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch off.
- Loosen and retighten ground screws on the body (See Ground Inspection in Section 15 Body & Accessories).
- Inspect ground connection C-201 mounting position (See Vehicle Wiring Harness Information - Main Harness in Section 16 Wiring).

Is the ground connection OK?

Yes >> Go to the next step.

No >> Repair or replace ground harness or connections.

2. CHECK INSTRUMENT CLUSTER (IC) ELECTRICAL CONNECTOR

- Disconnect Instrument Cluster (IC) electrical connector.
- Inspect the electrical connector for damage.

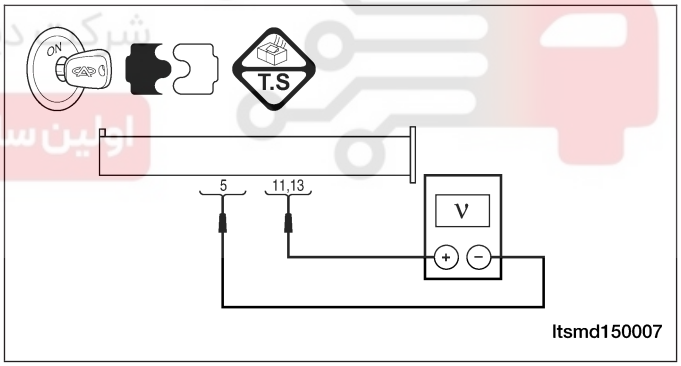
Is the electrical connector OK?

Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.

3. CHECK INSTRUMENT CLUSTER (IC) POWER SUPPLY

- Turn ignition switch on.
- If the vehicle is not equipped with Mitsubishi 2.4L engine system, check IC power supply between terminal 11, 13 and terminal 5 in the IC electrical connector C-001 terminal side.



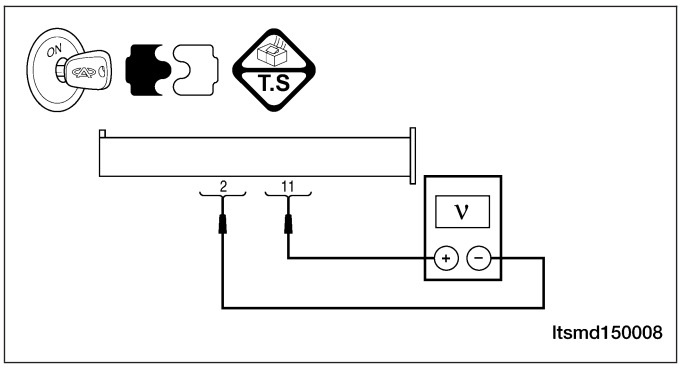
ltsmd150007

- If the vehicle is equipped with Mitsubishi 2.4L engine system, check IC power supply between terminal 11 and terminal 2 in the IC electrical connector C-001 terminal side.

Is the voltage between 9 - 17 V?

Yes >> Replace the IC.

No >> Go to the next step.



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4. CHECK SYSTEM VOLTAGE

- Start the engine, raise the speed over 1000 RPM.
- Measure the charging voltage with the voltmeter at the battery positive and negative terminals.

Is the voltage less than 9 V?

Yes >> Check the charging system.

No >> Go to the next step.

5. CHECK THE BATTERY

- Start the engine, raise the speed over 1000 RPM for a few minutes.
- Turn ignition switch off.
- Measure the voltage drop with the voltmeter at the battery positive and negative terminals while cranking the engine.
- Battery voltage should be more than approximate 9 V.

Is the check result normal?

Yes >> Go to the next step.

No >> Charge or replace the battery.

6. CHECK INSTRUMENT CLUSTER (IC) SUPPLY CIRCUIT

- Disconnect the battery negative cable.
- Disconnect the battery positive cable.
- Measure the resistance between IC terminal 11, 13 and battery positive cable.
- Continuity should exist.

Is the check result normal?

Yes >> Go to the next step.

No >> Check fuse.
Check the harness open or short to ground.
Check related components.

7. CHECK SYSTEM VOLTAGE

- Start the engine, raise the speed over 1000 RPM.
- Measure the charging voltage with the voltmeter at the battery positive and negative terminals.

Is the voltage more than 17 V?

Yes >> Replace the AC generator.

No >> Go to the next step.

8. CHECK DTC

- With the X-431 scan tool, read IC DTCs.
- Refer to ″DTC Confirmation Procedure″.

Is the DTC U029C still present?

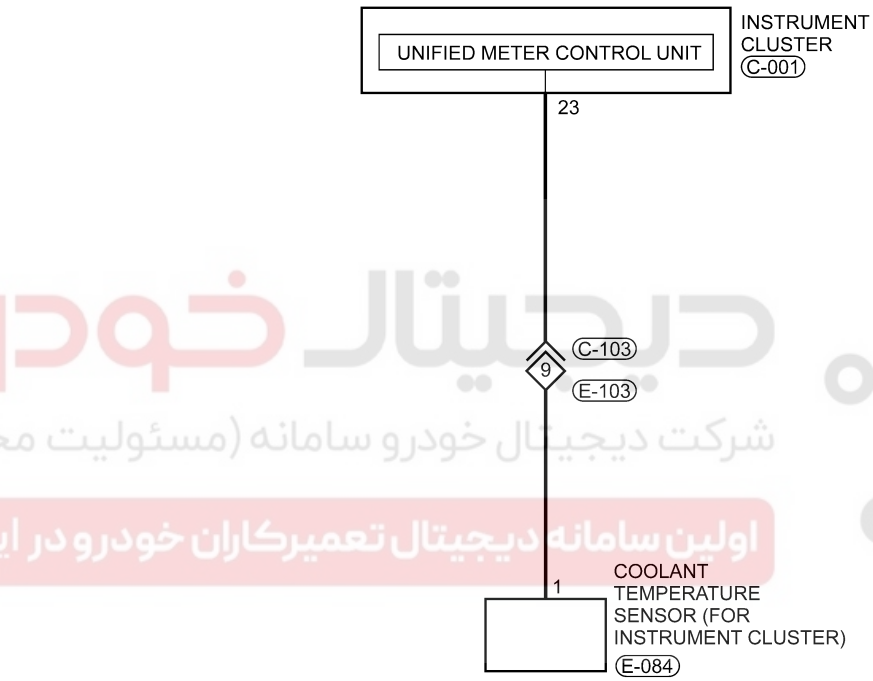
Yes >> Replace IC.

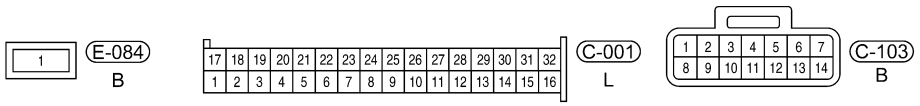
No >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

U040F - Temperature Sensor Shorted To Supply
U040F - Temperature Sensor Shorted To Ground (With Mitsubishi 2.4L Engine System)

Instrument Cluster (IC)

IC - COOL/T - 01 - 2.4L





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On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	DTC SET CONDITION	POSSIBLE CAUSE
U040F	Temperature sensor open circuit or shorted to supply	Turn ignition switch on	The Instrument Cluster (IC) detects the temperature sensor (for instrument cluster) circuit open or shorted to supply condition.	• Coolant temperature sensor (For Instrument Cluster) • Harness or connectors (The sensor circuit is open or short to supply) • Instrument cluster
U040F	Temperature sensor shorted to ground		The Instrument Cluster (IC) detects the temperature sensor (for instrument cluster) circuit shorted to ground condition.	• Coolant temperature sensor (For instrument cluster) • Harness or connectors (The sensor circuit is short to ground) • Instrument cluster

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn ignition switch on and record and erase DTC.
- Start engine and warm it up to the normal operating temperature.
- Select view DTC and data stream.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :

Before performing any DTC diagnostic procedures, verify the IC power and ground circuits are properly connected.

NOTE :

While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK DTC

- Turn ignition switch on, with the scan tool, view and erase stored DTCs in the IC module.
- Turn ignition switch off, and wait a few seconds, then turn ignition switch on.
- With the scan tool, view active DTCs in the IC module.

Is DTC U040F present?

Yes >> Go to the next step.

No >> The conditions that caused this DTC to set are not present at this time (See Intermittent DTC Trouble-shooting in Section 15 Body & Accessories for more information).

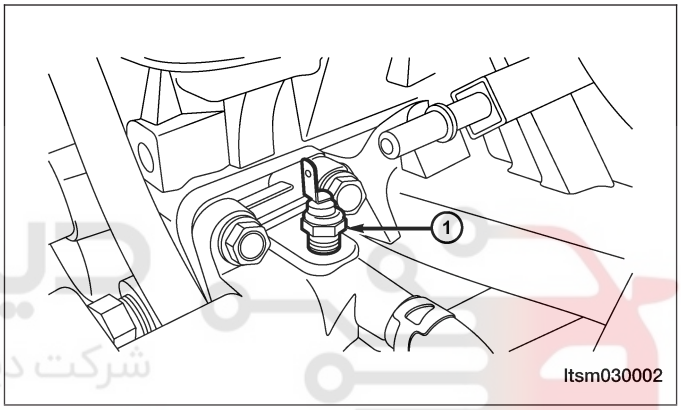
2. CHECK COOLANT TEMPERATURE SENSOR (FOR INSTRUMENT CLUSTER) ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the coolant temperature sensor (for instrument cluster) (1) electrical connector E-084.
- Inspect the electrical connector for damage.

Is the electrical connector OK?

Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.



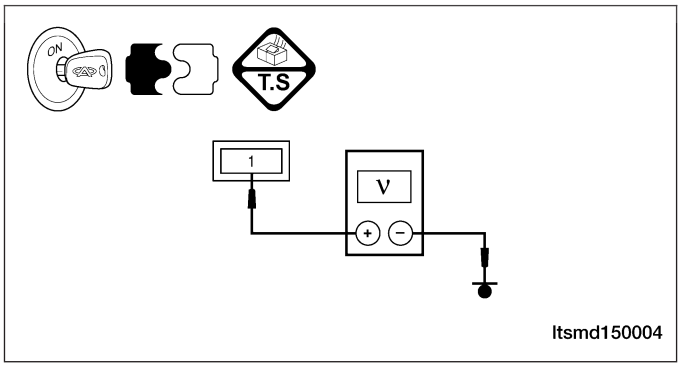
3. CHECK COOLANT TEMPERATURE SENSOR (FOR INSTRUMENT CLUSTER) REFERENCE VOLTAGE

- Turn ignition switch on.
- Check reference voltage between the coolant temperature sensor (for instrument cluster) connector E-084, terminal 1 and ground.
- Approximately 5 V should exist.

Is the reference voltage normal?

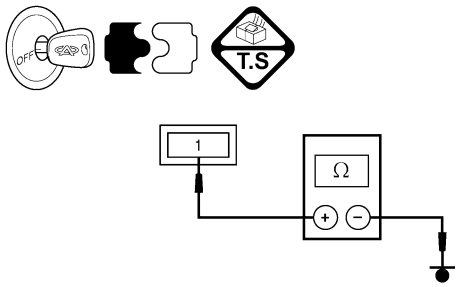
Yes >> Go to step 5.

No >> Go to the next step.

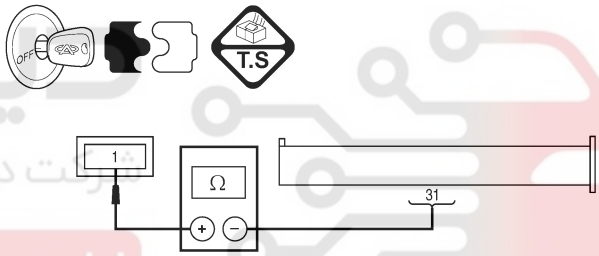


4. CHECK COOLANT TEMPERATURE SENSOR (FOR INSTRUMENT CLUSTER) REFERENCE VOLTAGE

- Turn ignition switch off.
- Disconnect the IC module connector.
- Check harness for a short to ground.
- Check the coolant temperature sensor circuit for voltage.

COOLANT TEMPERATURE SENSOR (FOR INSTRUMENT CLUSTER) TERMINAL	GROUND	
1	Ground	 ltsmd150006

- Check the coolant temperature sensor circuit for resistance.

COOLANT TEMPERATURE SENSOR (FOR INSTRUMENT CLUSTER) TERMINAL	IC TERMINAL	CONTINUITY	
1	31	Yes	 ltsmd150005

- Check harness for a short to power.

Is the check result normal?

Yes >> Go to the next step.

No >> Repair or replace the coolant temperature sensor (for instrument cluster) supply circuit as necessary.

5. CHECK COOLANT TEMPERATURE METER INDICATOR

- Turn ignition switch off.
- Connect the IC connector.
- Connect the coolant temperature sensor (for instrument cluster) electrical connector E-084.
- Turn ignition switch on.
- With the scan tool, view active DTCs and data stream in the IC.

Is DTC U040F still present?

Yes >> Replace the coolant temperature sensor (for instrument cluster).
With the scan tool, view active DTCs and data stream in the IC.
– If the DTC U040F is not present, the system is now normal.
– If the DTC U040F is present, go to the next step.

No >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

6. CHECK DTC

- With the X-431 scan tool, read IC DTCs.
- Refer to ″DTC Confirmation Procedure″.

Is DTC U040F still present?

Yes >> Replace the IC.

No >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

U050F - EEPROM Checksum Error

On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	POSSIBLE CAUSE
U050F	EEPROM checksum error	Instrument Cluster (IC) detected an internal failure	• Instrument Cluster (IC)

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn ignition switch on and record and erase DTC.
- Start engine and warm it up to the normal operating temperature.
- Select view DTC and data stream.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :

While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK DTC

- Perform DTC confirmation procedure.

Is DTC U050F present?

Yes >> Go to the next step.

No >> The conditions that caused this DTC to set are not present at this time (See Intermittent DTC Trouble-shooting in Section 15 Body & Accessories for more information).

2. CHECK INSTRUMENT CLUSTER (IC) POWER SUPPLY AND GROUND

- Check the Instrument Cluster (IC) supply voltage circuit and ground circuits for open, high resistance or short circuits.

Is the check result normal?

Yes >> Go to the next step.

No >> Repair the circuit for an open or short in harness and connectors.

3. CHECK DTC

- With the X-431 scan tool, read Instrument Cluster (IC) DTCs.
- Refer to ″DTC Confirmation Procedure″.

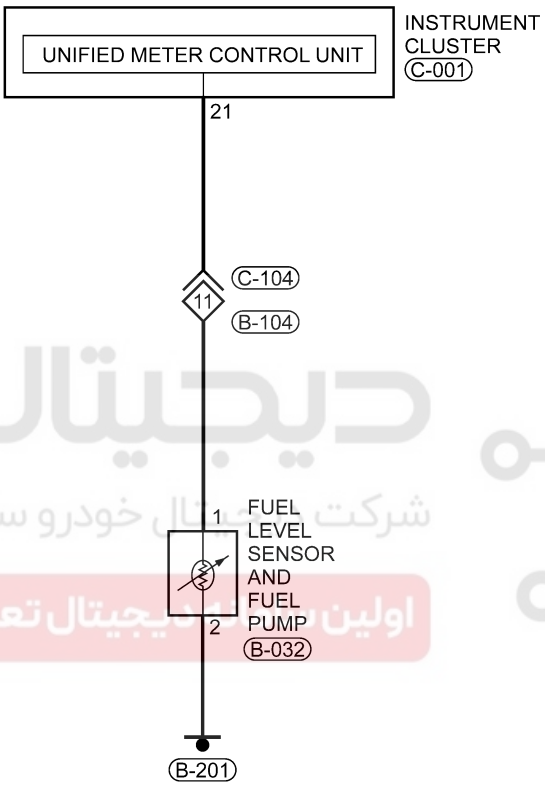
Is DTC U050F present?

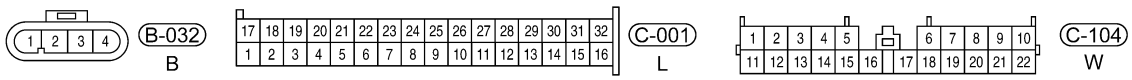
Yes >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

No >> Replace Instrument Cluster (IC).

U0303 - Fuel Sensor Open Circuit Or Shorted To Supply
U0303 - Fuel Sensor Short To Ground

IC - FLS - 01





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On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	DTC SET CONDITION	POSSIBLE CAUSE
U0303	Fuel sensor open circuit or shorted to supply	Turn ignition switch on	The Instrument Cluster (IC) detects the fuel sensor shorted to ground condition.	• Fuel level sensor • Harness or connectors (The sensor circuit is open or short to power) • Instrument cluster
U0303	Fuel sensor shorted to ground		The Instrument Cluster (IC) detects the fuel sensor circuit open or shorted to voltage condition.	• Fuel level sensor • Harness or connectors (The sensor circuit is shorted to ground) • Instrument cluster

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn ignition switch on and record and erase DTC.
- Start engine and warm it up to the normal operating temperature.
- Select view DTC and data stream.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :

Before performing any DTC diagnostic procedures, verify the IC power and ground circuits are properly connected.

NOTE :

While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK DTC

- Turn ignition switch on, with the scan tool, view and erase stored DTCs in the IC.
- Turn ignition switch off, and wait a few seconds, then turn ignition switch on.
- With the scan tool, view DTCs in the IC.

Is DTC U0303 present?

Yes >> Go to the next step.

No >> The conditions that caused this DTC to set are not present at this time (See Intermittent DTC Trouble-shooting in Section 15 Body & Accessories for more information).

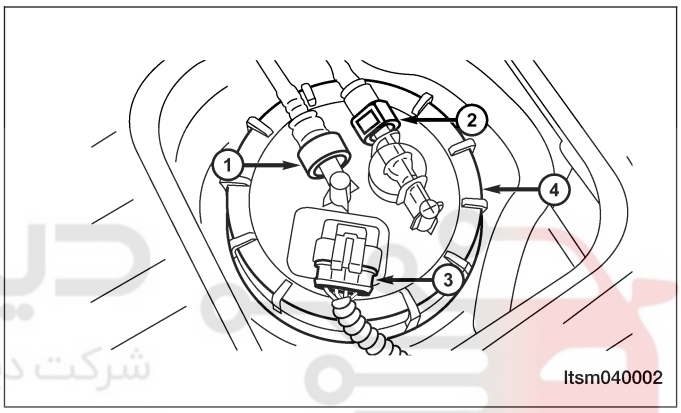
2. CHECK FUEL LEVEL SENSOR ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the fuel level sensor and fuel pump assembly electrical connector (3).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.



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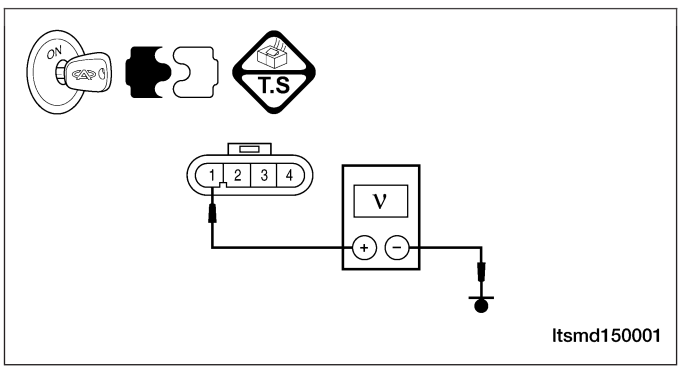
3. CHECK FUEL LEVEL SENSOR REFERENCE VOLTAGE

- Turn ignition switch on.
- Check the fuel level sensor reference voltage between the fuel level sensor connector B-032, terminal 1 and ground.
- The voltage (less than 1 V) should exist.

Is there voltage present?

Yes >> Go to step 5.

No >> Go to the next step.



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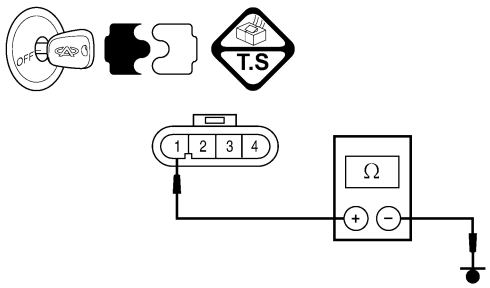
4. CHECK FUEL LEVEL SENSOR CIRCUIT FOR OPEN OR SHORT

- Turn ignition switch off.
- Disconnect the IC connector.
- Check harness for a short to ground.

FUEL LEVEL SENSOR TERMINAL	GROUND
1	Ground



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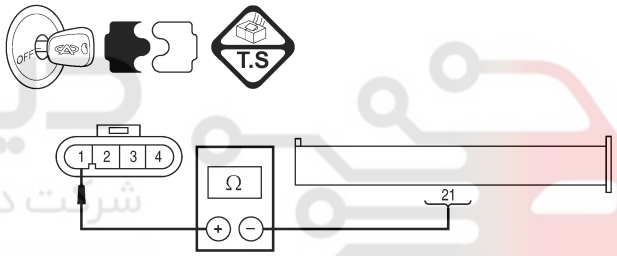
- Check for continuity between the following terminals:

FUEL LEVEL SENSOR TERMINAL	IC TERMINAL	CONTINUITY
1	21	Yes



ltsmd150002

- Continuity should exist.
- Check the harness for a short to power.

Is the check result normal?

Yes >> Go to the next step.

No >> Repair or replace the fuel level sensor supply circuit as necessary.

5. CHECK FUEL LEVEL SENSOR GROUND CIRCUIT

- Using a 12 V test light connected to battery (+), probe fuel level sensor ground circuit.

Does the test light illuminate brightly?

Yes >> Go to the next step.

No >> Repair or replace the fuel level sensor ground circuit for an open.

6. CHECK FUEL LEVEL SENSOR RESISTANCE

- Turn ignition switch off.
- Check fuel level sensor as follows:

FUEL GAUGE POINTER POSITION	TANK (LITERS)	SENDER RESISTANCE (OHM)	POINTER TOLERANCE
EMPTY	5	283	±3 °
RESERVE	11	189	±3 °
1/4	16.5	137	±3 °
1/2	28	89	±3 °
3/4	39.5	62	±3 °
FULL	51	40	±3 °

Is the check result normal?

Yes >> Go to the next step.

No >> Replace the fuel level sensor.

7. CHECK DTC

- With the X-431 scan tool, read IC DTCs.
- Refer to "DTC Confirmation Procedure".

Is the DTC U0303 still present?

Yes >> Replace the IC.

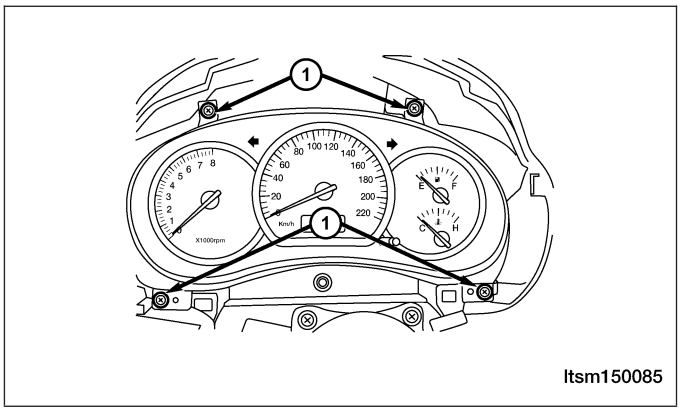
No >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

ON-VEHICLE SERVICE

Instrument Cluster

Removal & Installation

1. Disconnect he negative battery cable.
2. Carefully remove the instrument cluster trim panel.
3. Remove the instrument cluster screws (1).
   (Tighten: Instrument cluster screws to 5 N·m)



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4. Disconnect the instrument cluster electrical connector.
5. Remove the instrument cluster.
6. Installation is in the reverse order of removal.

INTERIOR LAMPS

Description

The interior lamps consist of the following:

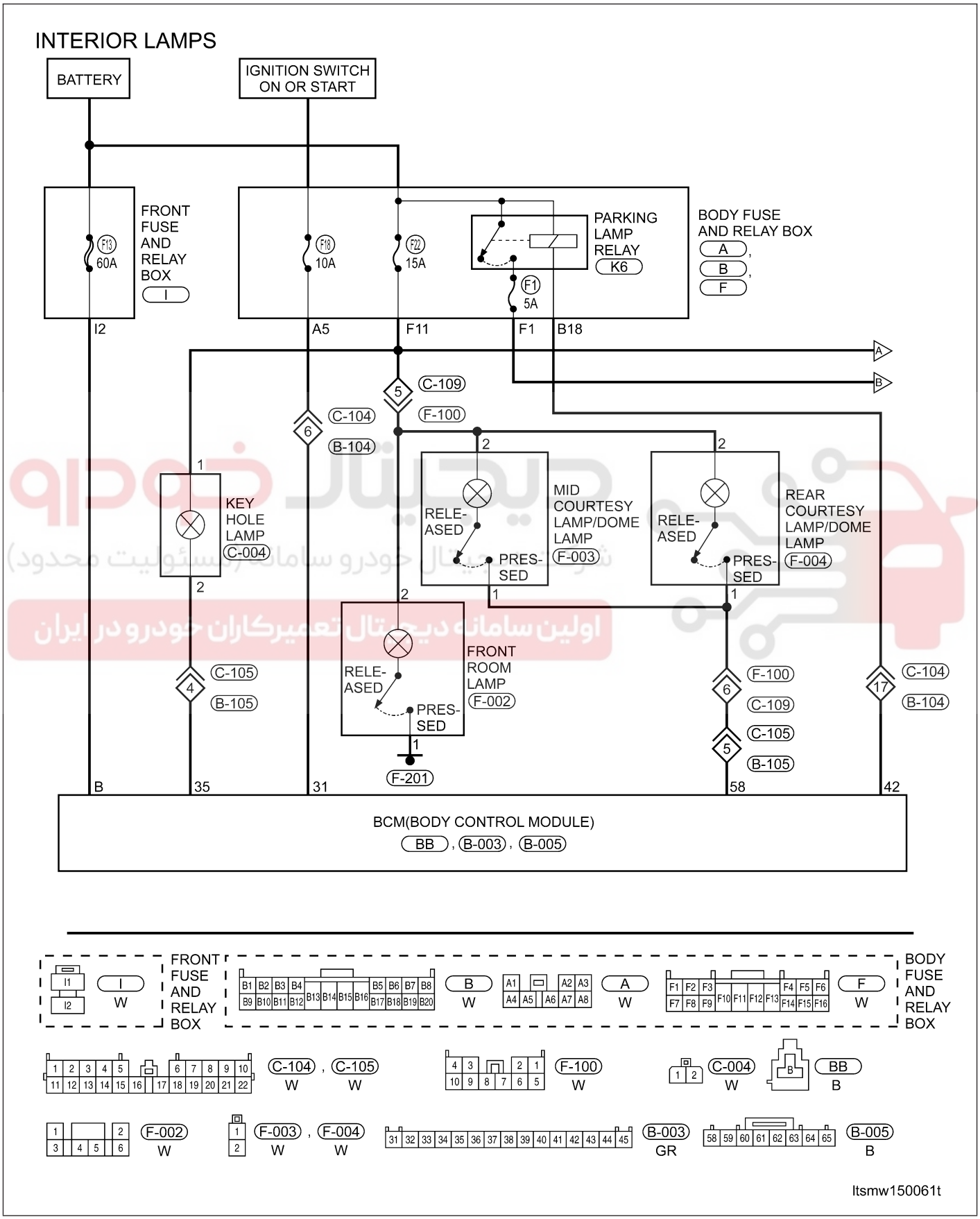
- Key Hole Lamp
- Front Room Lamp
- Middle/Rear Courtesy/Dome Lamp
- Front Step Lamp
- Backlight Adjusting Switch
- Instrument Cluster
- Headlamp Aiming Switch
- Heated Seat Switch (LH)
- Heated Seat Switch (RH)
- Air Control Panel
- Front Fog Lamp Switch
- Rear Fog Lamp Switch
- Console Power Socket (Illumination)
- Door Mirror Remote Control Switch
- Main Power Window And Door Lock/Unlock Switch
- Front Power Window Switch (RH)
- Rear Power Window Switch (LH)
- Rear Power Window Switch (RH)
- Audio

Operation

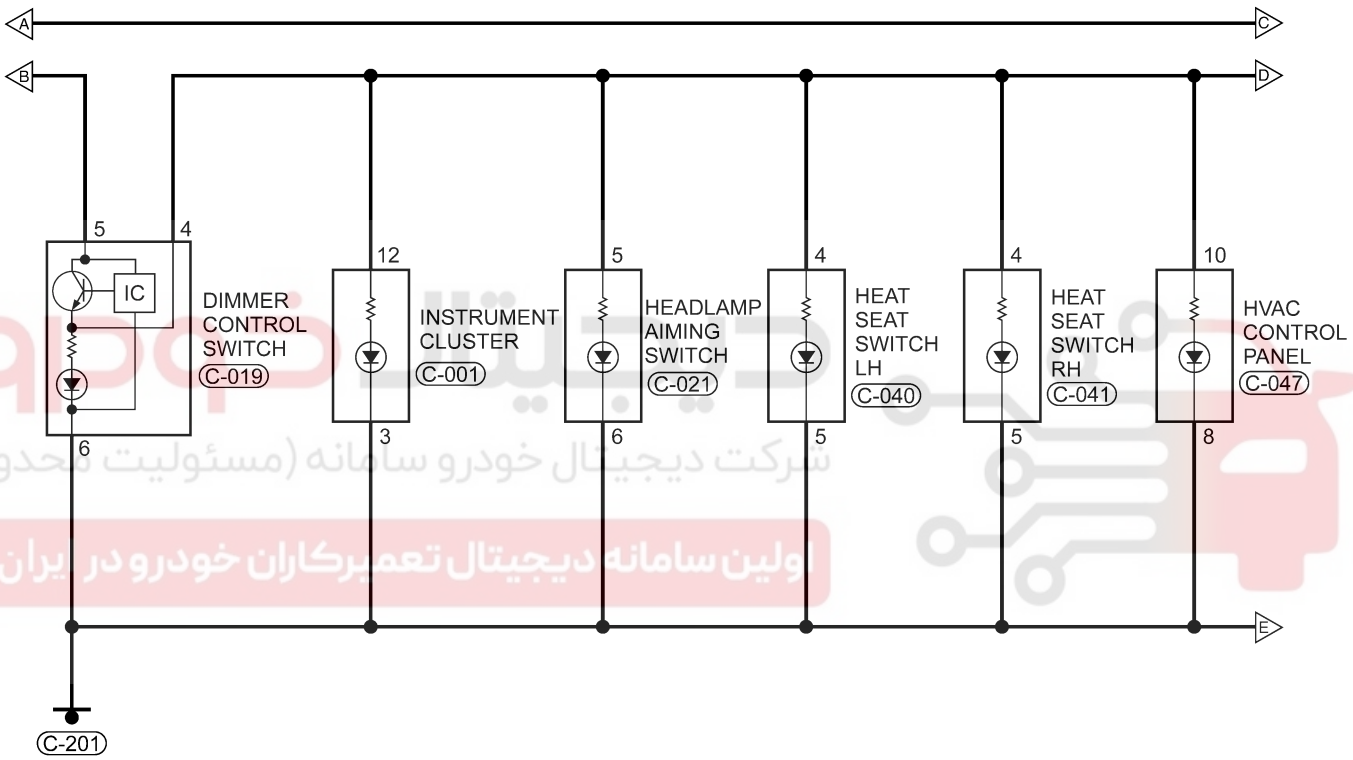
The key hole lamp and front/middle/rear courtesy lamps are controlled by the BCM. Front step lamps are controlled by the door lock switch. When the door is open, the front step lamp will light up automatically. Other lamps are controlled by the lighting and turn signal switch.

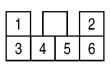
Electrical Schematics

Interior Lamps (Page 1 of 5)



Interior Lamps (Page 2 of 5)





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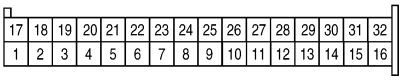

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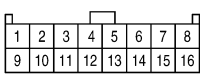

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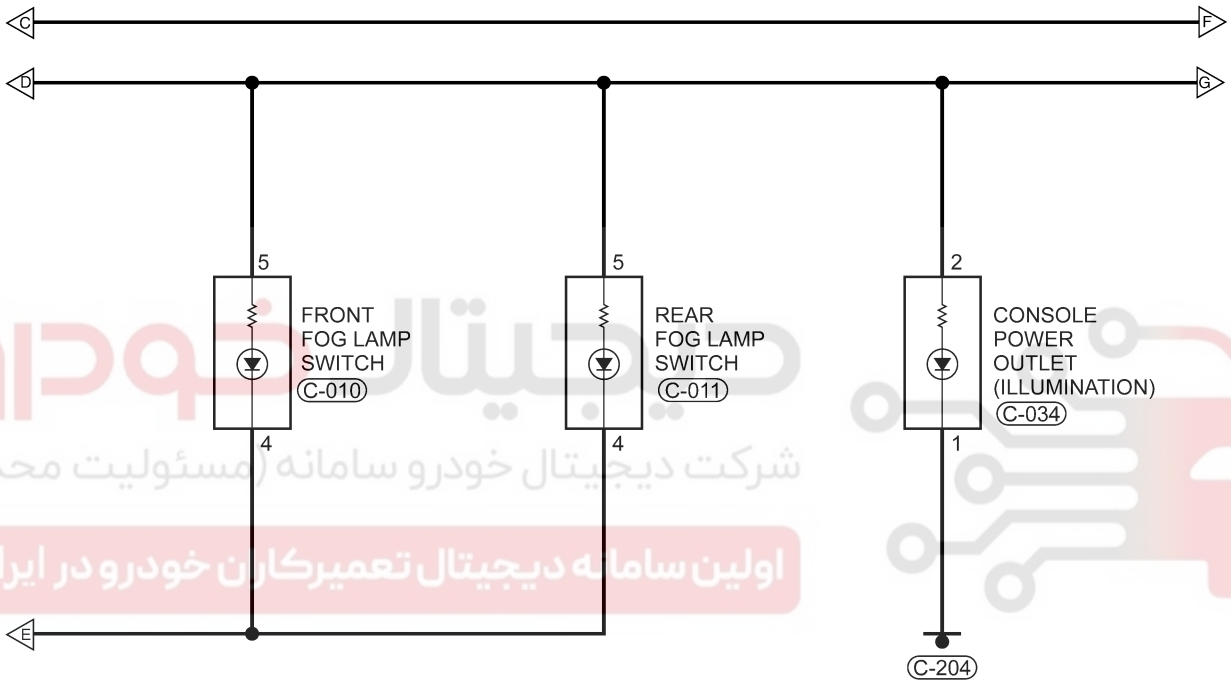
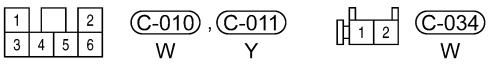
Interior Lamps (Page 3 of 5)





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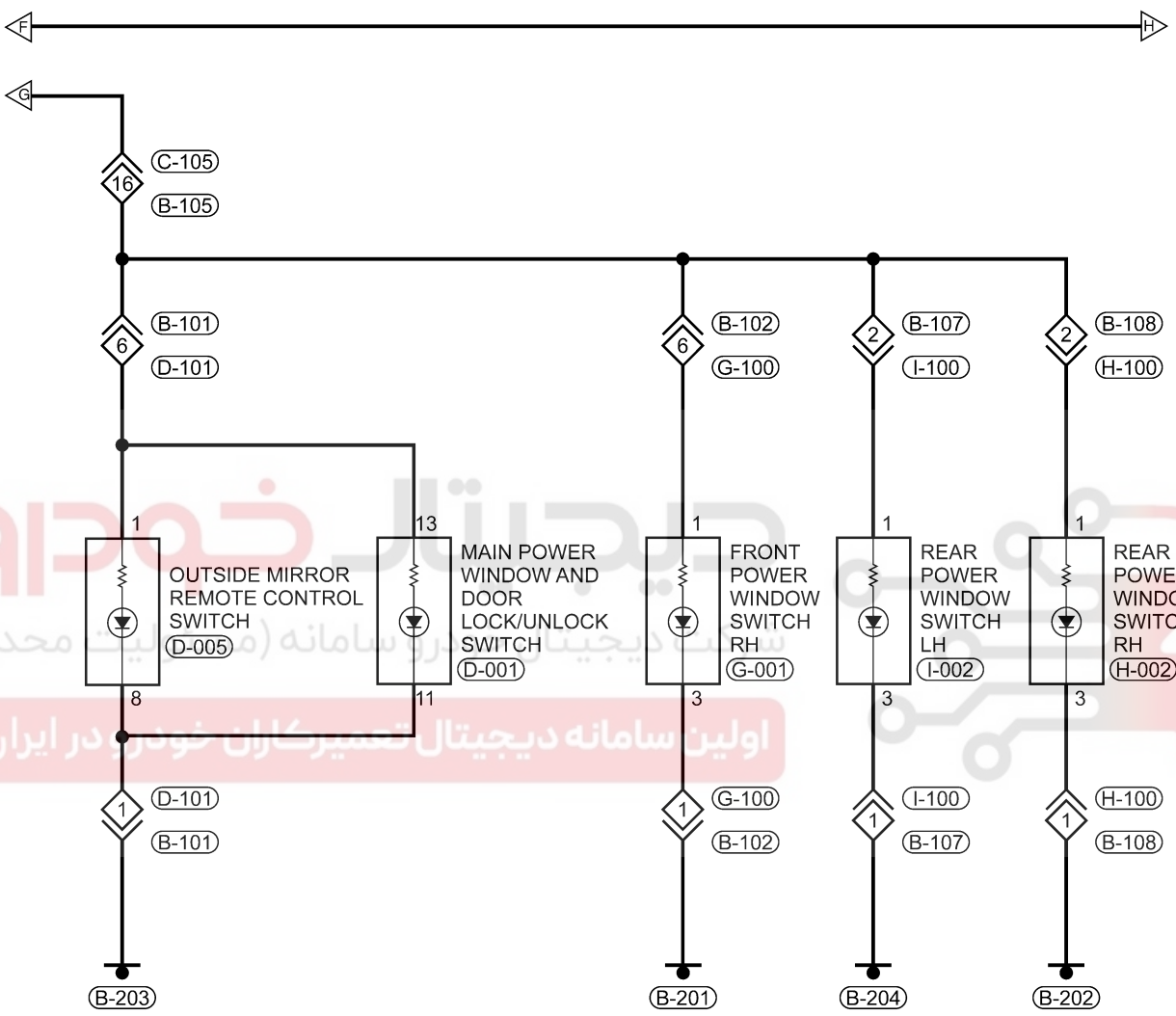
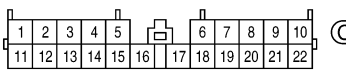
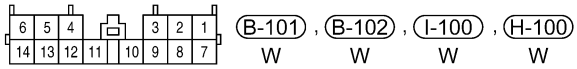
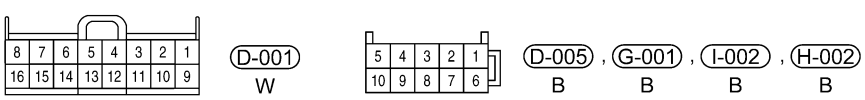
Interior Lamps (Page 4 of 5)









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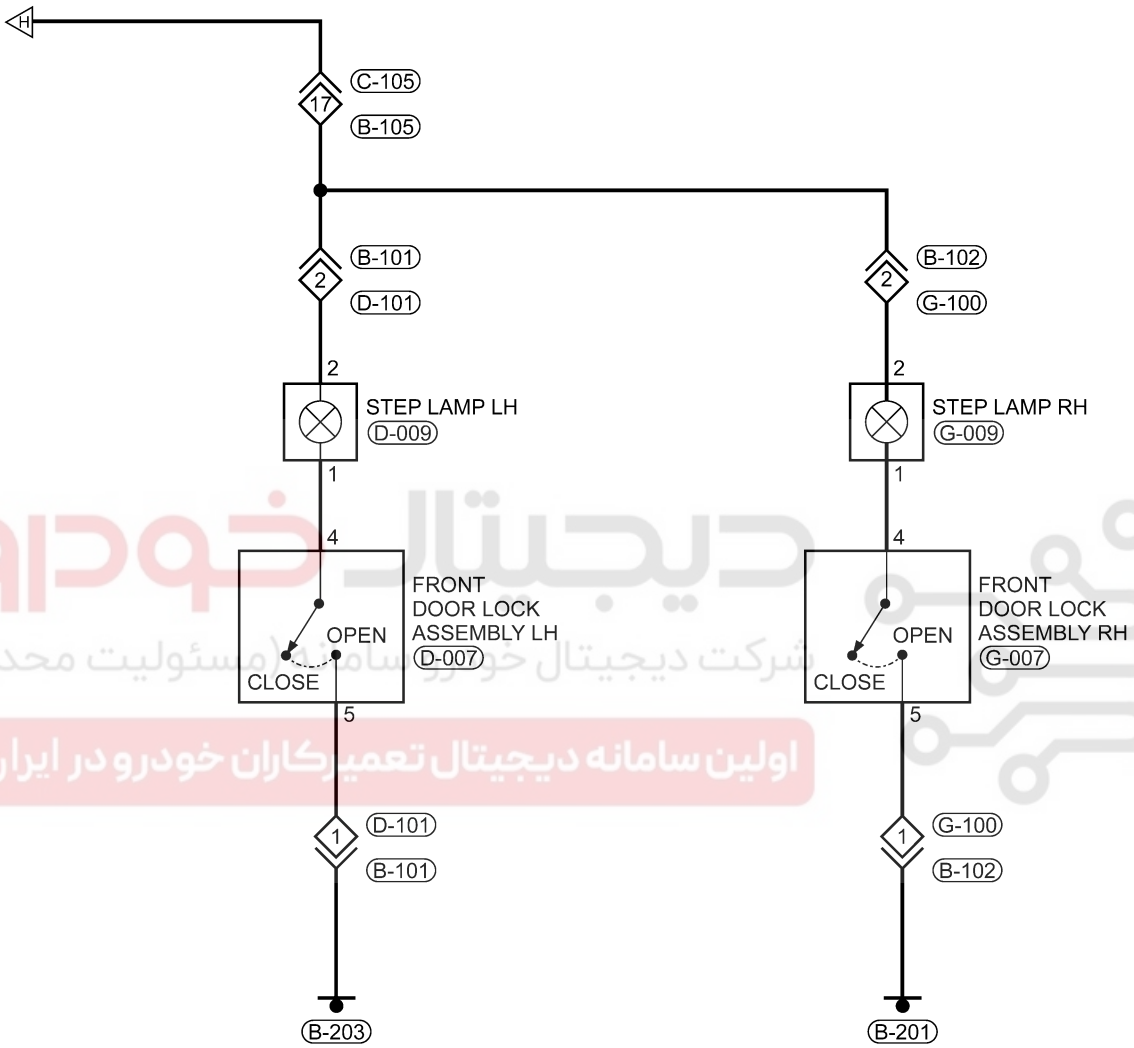
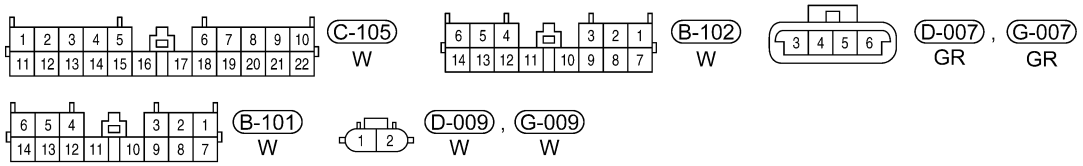
Interior Lamps (Page 5 of 5)





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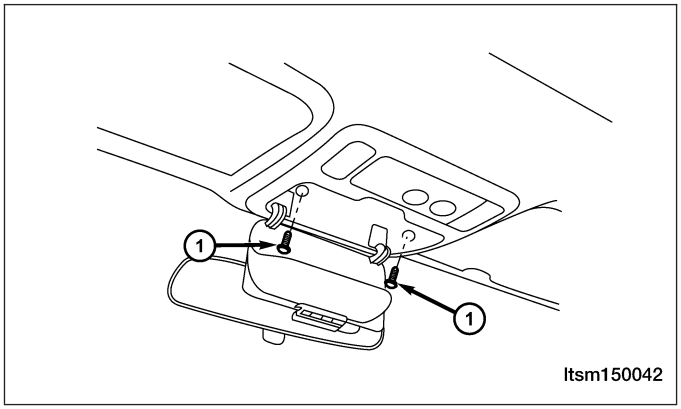
Front Room Lamp

Removal & Installation

1. Open the overhead eye glass compartment.
2. Remove the eye glass compartment screws (1).

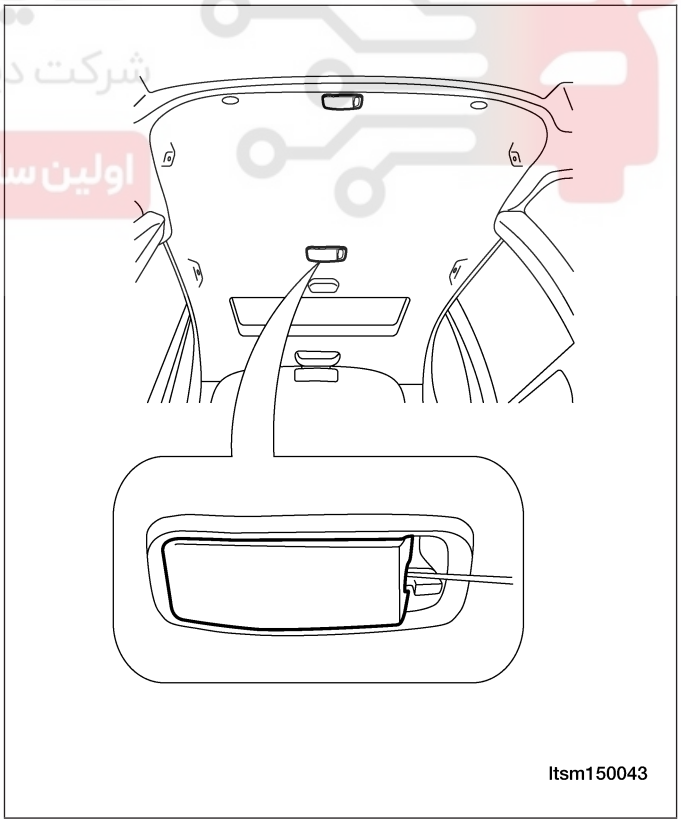


3. Carefully remove the front room lamp and disconnect the electrical connector.
4. Installation is in the reverse order of removal.

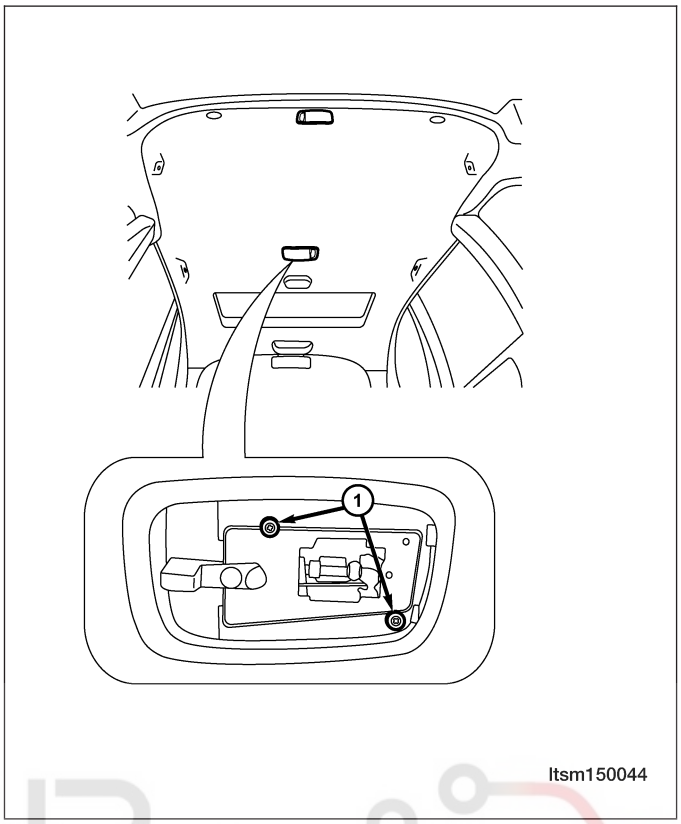
Middle/Rear Courtesy/Dome Lamp

Removal & Installation

1. Carefully pry the lamp cover from the lamp housing.



2. Remove the lamp mounting screws (1).



3. Remove the courtesy/dome lamp.

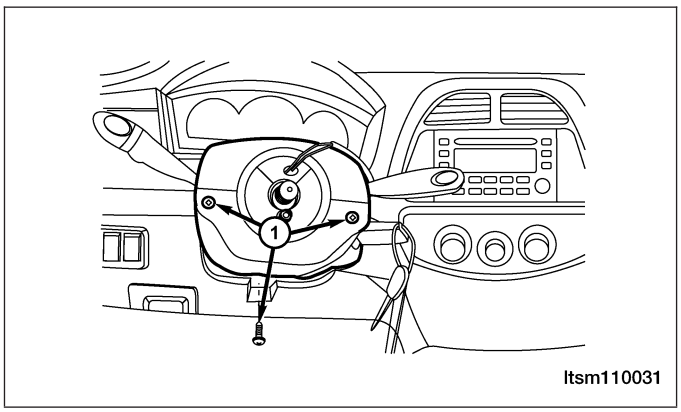
NOTE :
The rear courtesy/dome lamp is similar to the middle courtesy/dome lamp.

4. Installation is in the reverse order of removal.

Key Hole Lamp

Removal & Installation

1. Disconnect the negative battery cable.
2. Turn the ignition switch off.
3. Remove the steering column shroud retaining screws (1).



4. Disconnect the key hole lamp electrical connector.
5. Remove the key hole lamp.
6. Installation is in the reverse order of removal.

POWER OUTLET

Description

There are two 12 V electrical outlets. One is under the center console which is for the cigarette lighter. The other is located on the left lower C-pillar trim panel.

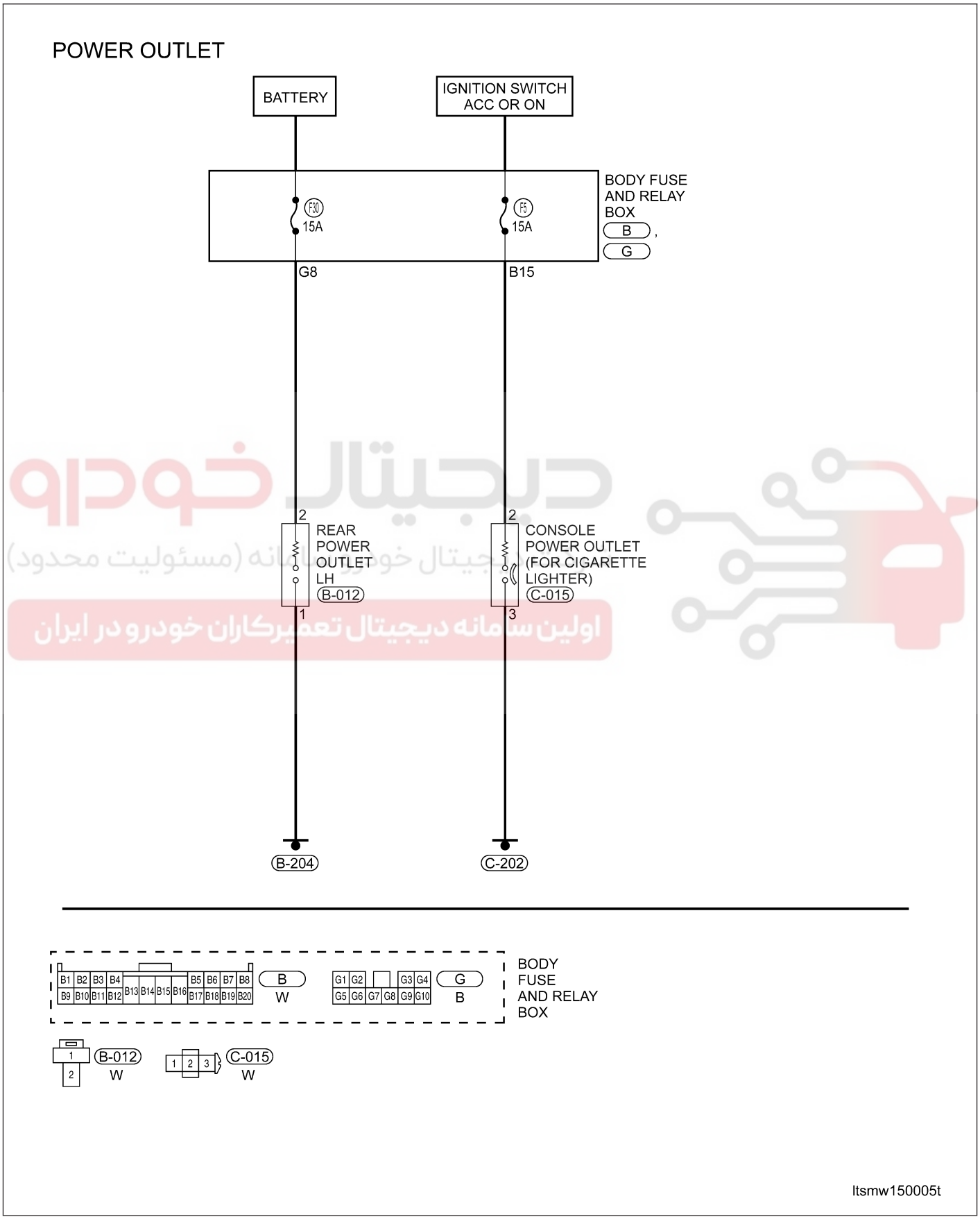
CAUTION:
This power outlet is designed for 12 V (120W) only. Do not use any type of accessory above this rating.

Operation

The power outlets are powered at all times.

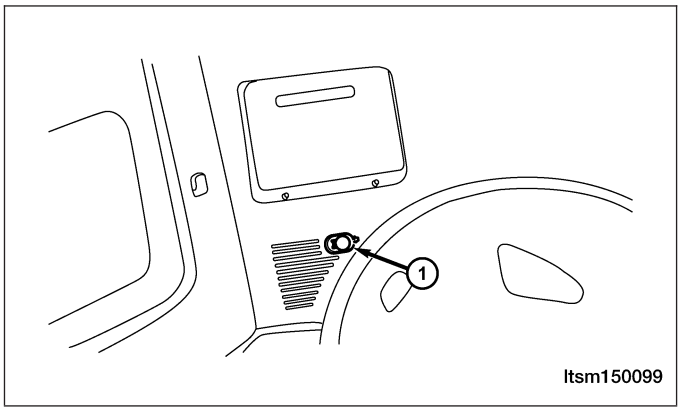
Electrical Schematics

Power Outlet (Page 1 of 1)



Removal & Installation

1. Disconnect the negative battery cable.
2. Remove the power outlet (1).
3. Disconnect the power outlet electrical connector.
4. Installation is in the reverse order of removal.



POWER WINDOW

Description

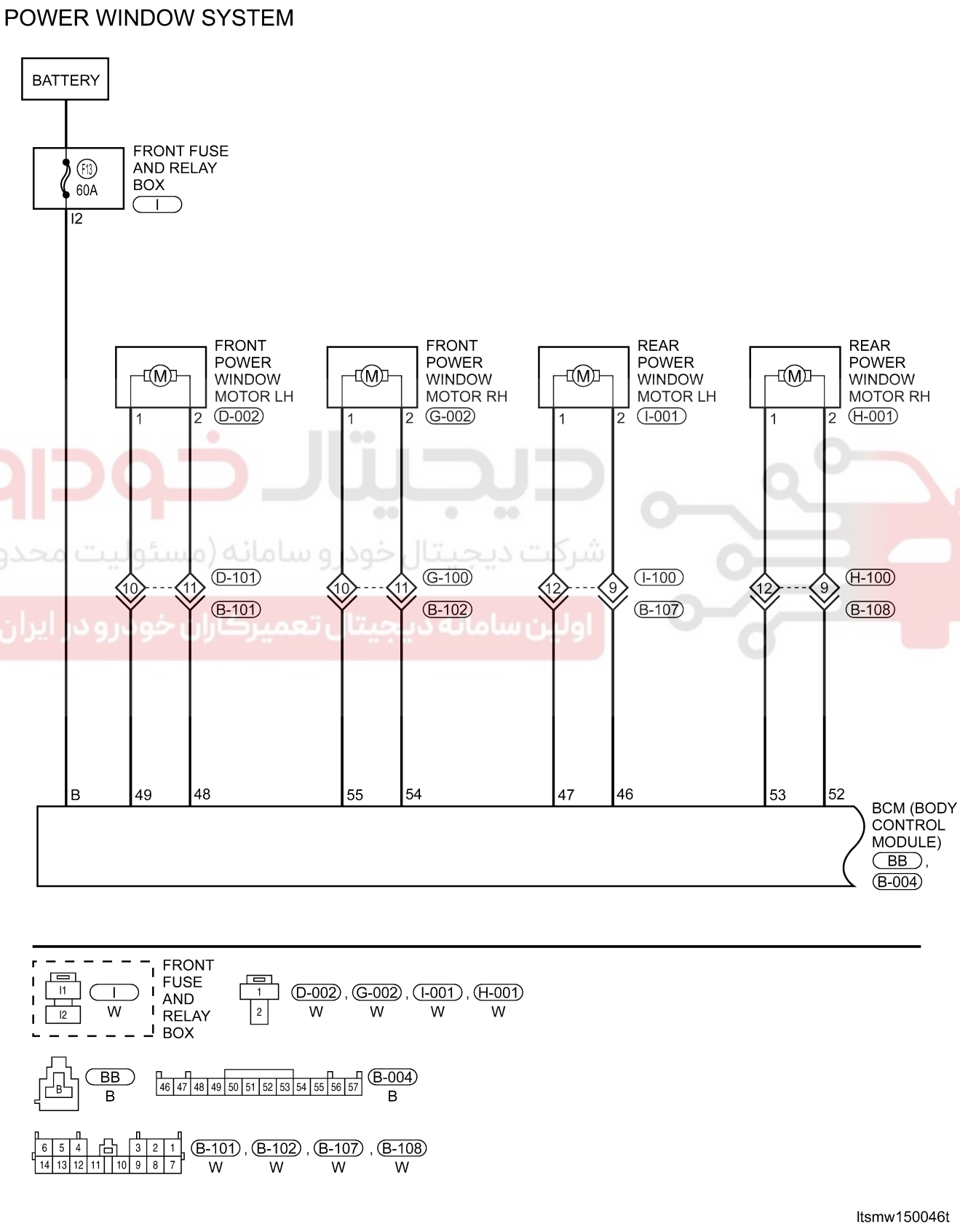
The power window system allows each of the door windows to be raised and lowered electrically by actuating a switch on each door trim panel. The driver window switch allows the driver to lock out the front passenger window and rear window from operation. The power window system includes the power window switches on the driver door trim panel, front passenger door and rear doors, and the power window motors.

Operation

The front and rear power window motors are permanent magnet type. A battery positive and negative connection to either of the two motor terminals will cause the motor to rotate in one direction. Reversing current through these same two connections will cause the motor to rotate in the opposite direction. Each individual motor is grounded through the BCM.

Electrical Schematics

Power Window System (Page 1 of 3)



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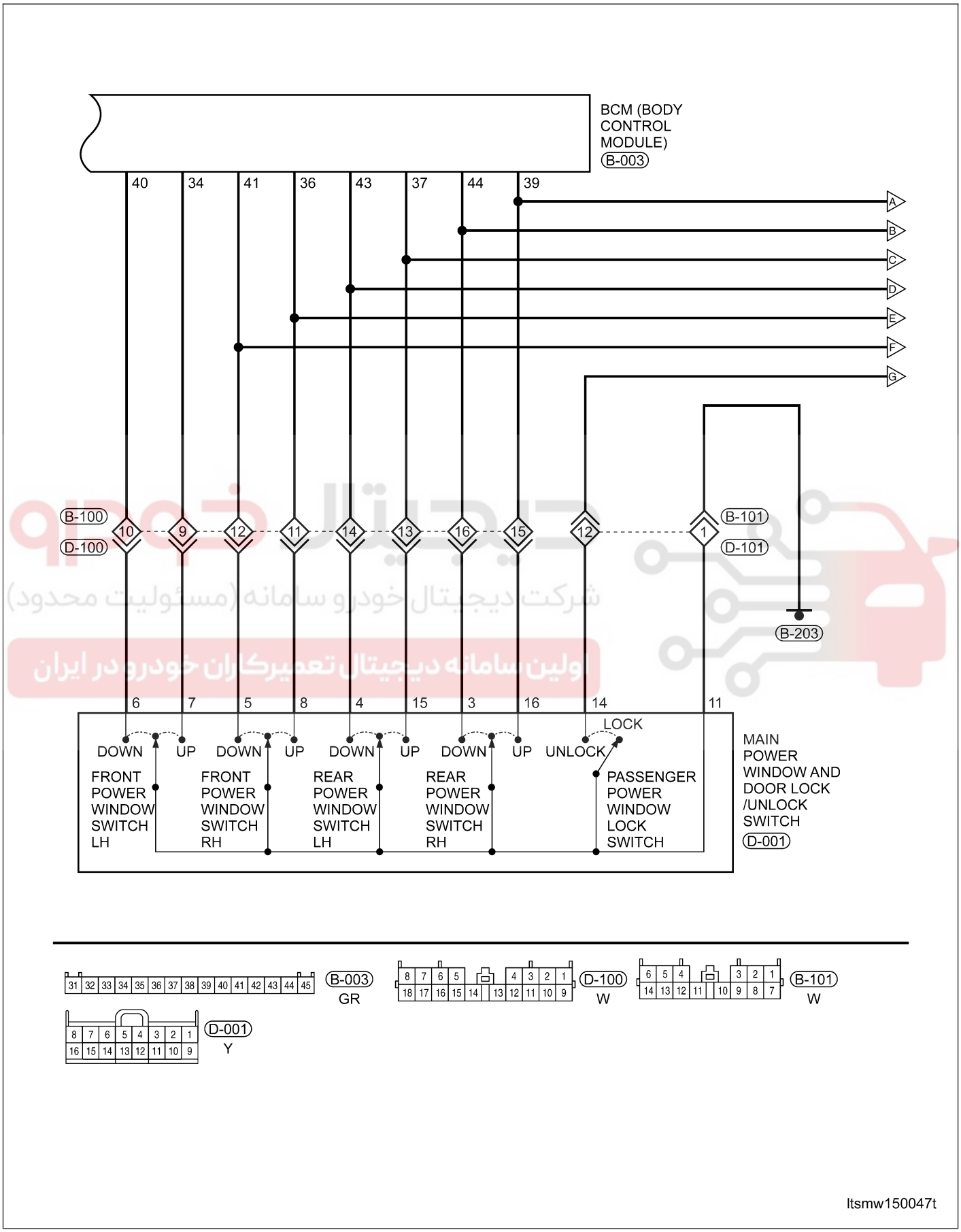
Power Window System (Page 2 of 3)



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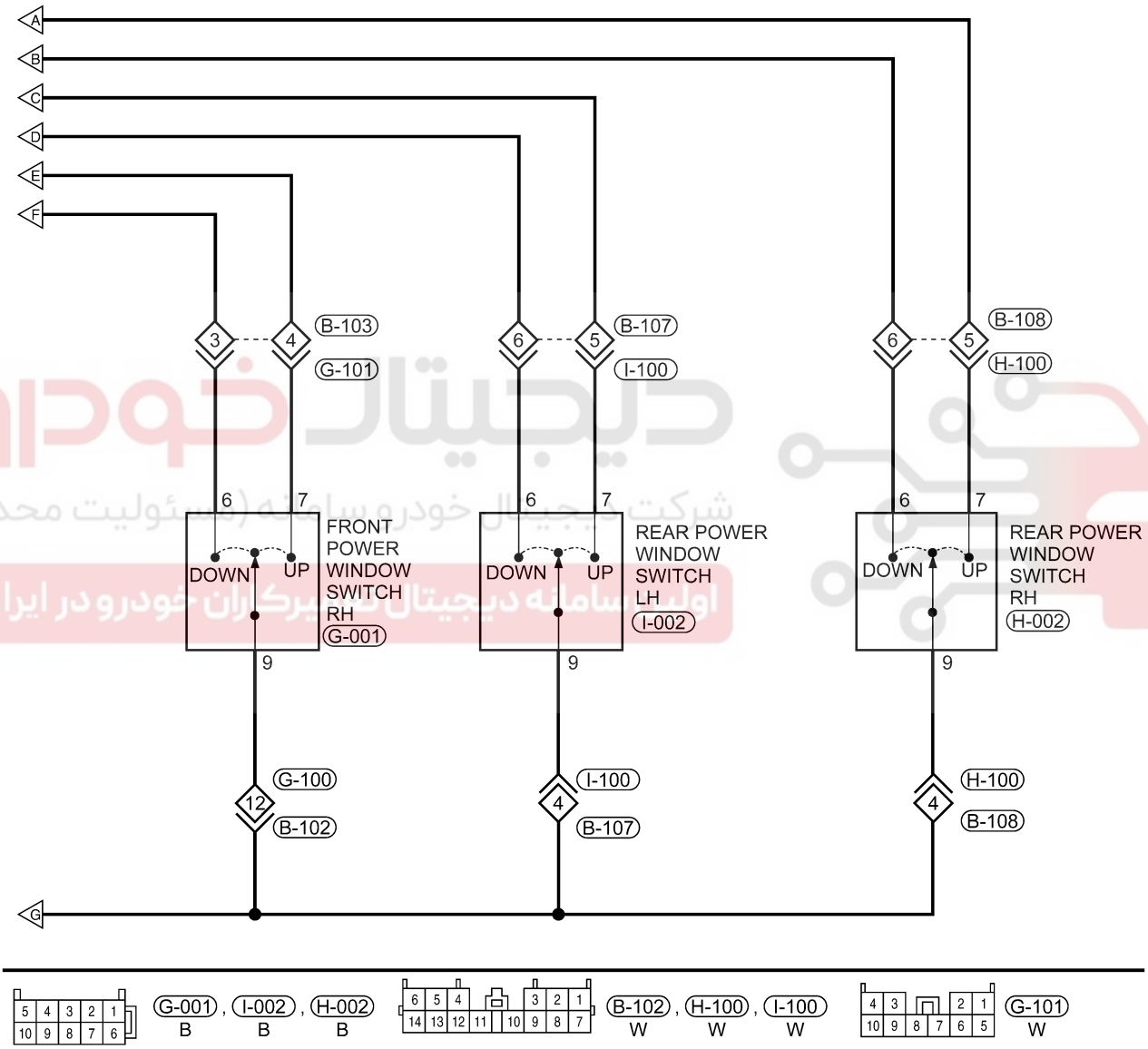
Power Window System (Page 3 of 3)



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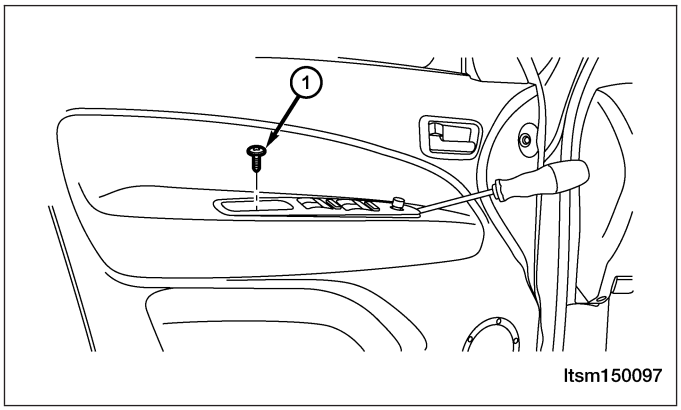
Power Window Switch

Removal & Installation

1. Turn the ignition switch off.
2. Remove the power window and door lock/unlock switch bezel mounting screw (1).



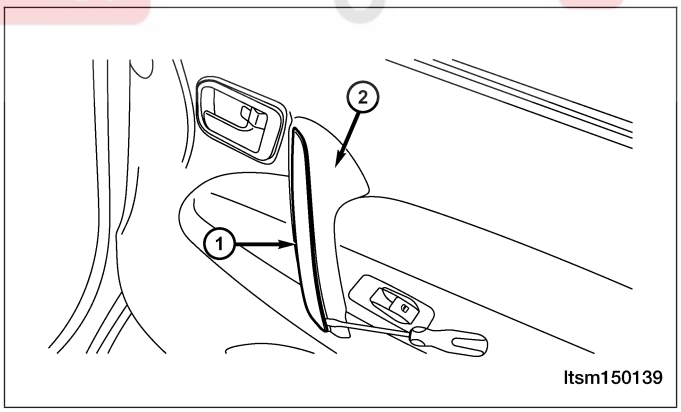
3. Using a trim stick, pry out the power window and door lock/unlock switch assembly from the front door.
4. Disconnect the power window and door lock/unlock switch electrical connectors.
5. Remove the power window and door lock/unlock switch retaining screws to remove the power window and door lock/unlock switch.
6. Installation is in the reverse order of removal.

Power Window Motor

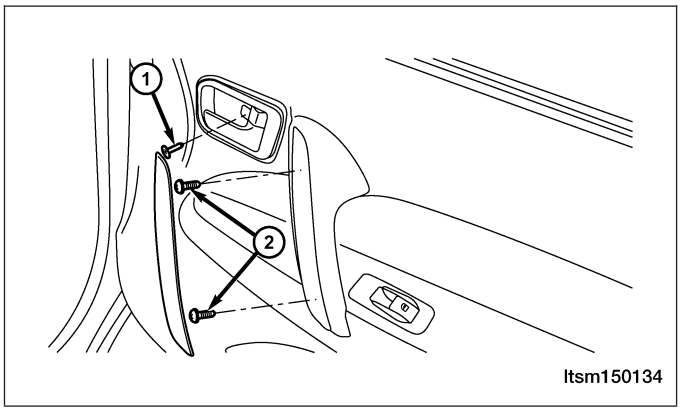
Removal & Installation

NOTE :
The passenger door is shown, all other doors are similar.

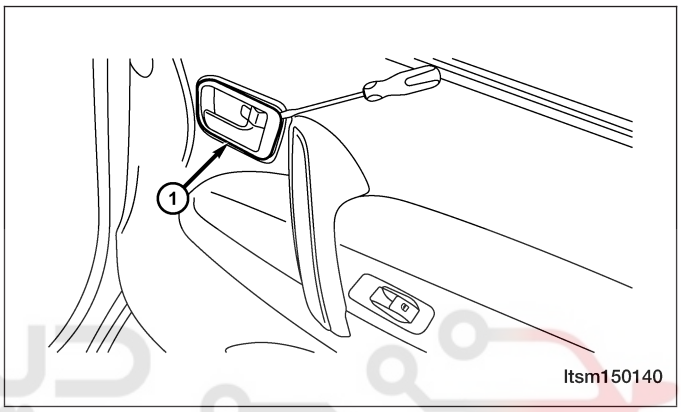
1. Turn the ignition switch off.
2. Using a small trim stick, remove the pull handle cover (1) from the pull handle (2).



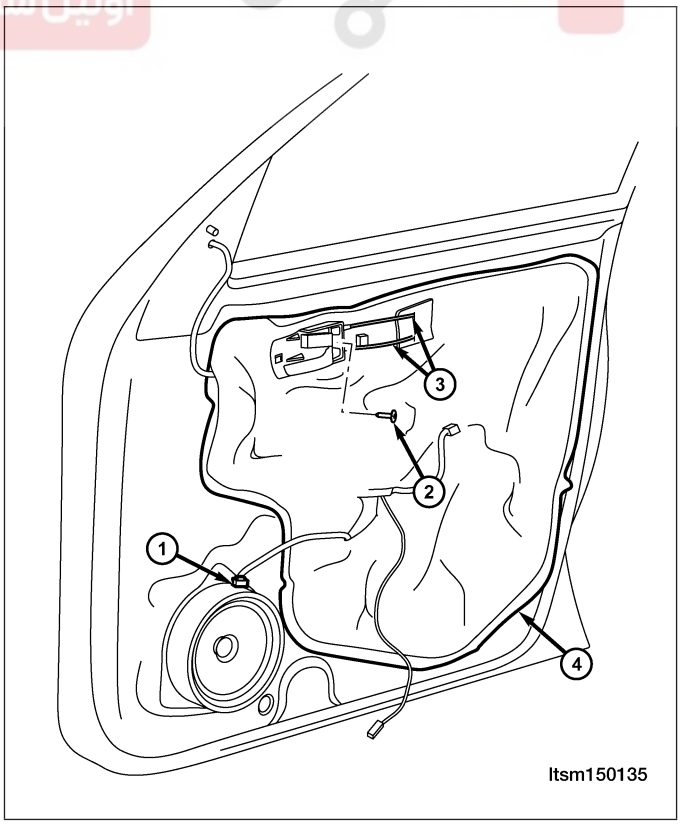
3. Remove the inner door handle mounting screw (1).
4. Remove the pull handle mounting screws (2).



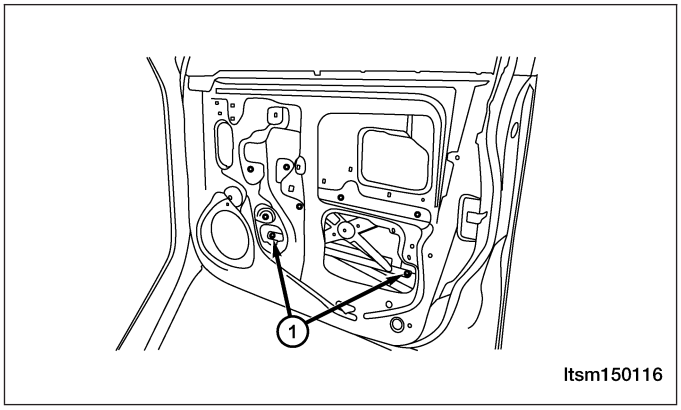
5. Using a small trim stick, remove the inner door handle trim bezel (1).



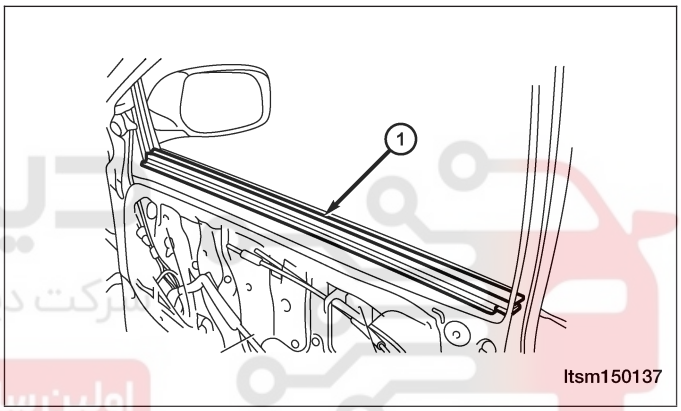
6. Carefully pry the door trim panel clips from the door.
7. Disconnect the power window switch and the door lamp electrical connector.
8. Remove the door trim panel.
9. Disconnect the speaker connector (1).
10. Remove the inner door handle assembly mounting screw (2).
11. Disconnect the inner door handle cables (3).
12. Remove the protective film (4).



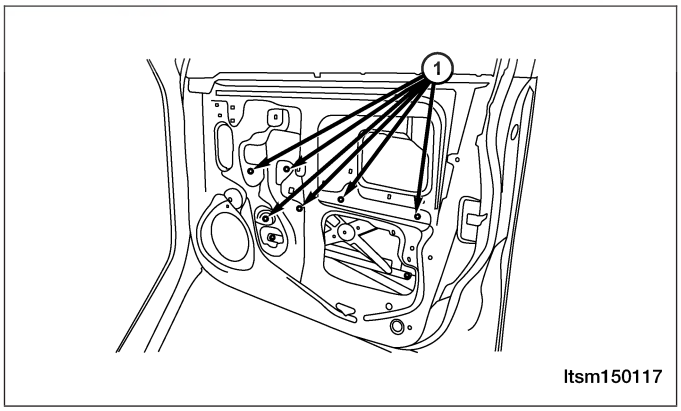
13. Temporarily connect the power window switch.
14. Turn the ignition switch on and use the power window switch to move the front door glass to a position so the door glass bolts can be removed.
15. Turn the ignition switch off and disconnect the power window switch.
16. Remove the two door glass mounting bolts (1).
    (Tighten: Door glass mounting bolts to 11 N·m)
    NOTE: Properly support the door glass when removing the mounting bolts. The door glass may drop and be damaged.



17. Remove the door glass weatherstrip (1).
18. Lift the door glass and remove the door glass from the door.
    NOTE: Take care not to damage the door glass.



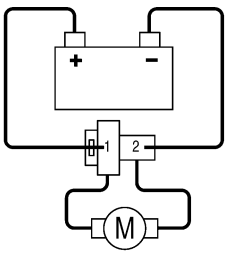
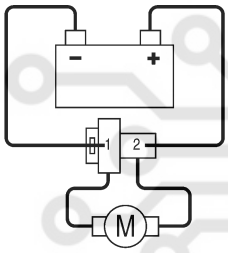
19. Disconnect the power window motor electrical connector.
20. Remove the six power window regulator mounting bolts (1).
    (Tighten: Power window regulator mounting bolts to 11 N·m)



21. Carefully remove the power window regulator.
22. Remove the power window motor from the regulator.
23. Installation is in the reverse order of removal.

Power Window Motor Inspection

1. Using the following table, apply battery voltage to the specified connector terminals.
2. Verify that the motor operates smoothly when voltage is applied in each direction.
3. If the test results are not as specified, replace the motor.

MEASURING CONDITION	OPERATIONAL DIRECTION	INSPECTION DIAGRAM
Battery positive (+) to terminal – 1 Battery negative (-) to terminal – 2	Clockwise rotation	 ltsm150136
Battery positive (+) to terminal – 2 Battery negative (-) to terminal – 1	Counterclockwise rotation	 ltsm150138

SEATS

General Information

Description

The seat movement is controlled by an adjustment bar. The seat can be adjusted to six different seating positions. The vehicle may be equipped with heated seats. Heated seats provide comfort and warmth in cold weather. The heaters provide the same heat level for both the seat cushion and back. The driver seat and front passenger seat are heated.

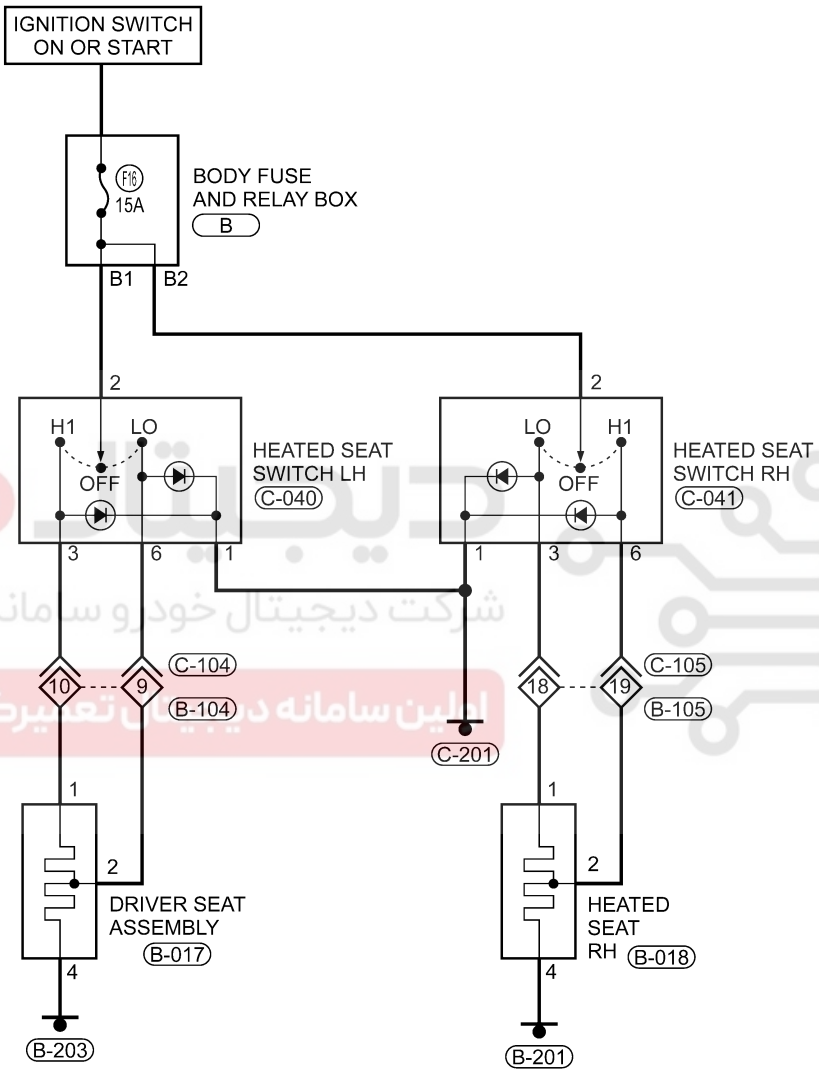
Operation

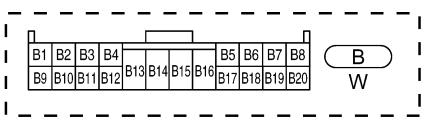
The manual seat adjustment bar is at the front of the seat, near the floor. Pull the bar upward and slide the seat forward or rearward. Release the bar once the seat is in the desired position. To confirm the seat is locked into place, attempt to move the seat forward and rearward after adjusting the seat. The heated seat controls for each seat are located near the bottom center of the instrument panel. After turning the ignition ON, the seat heater can be activated to High or Low heat settings. When the switch is in the middle position, the seat heater is OFF. Each switch is equipped with LED lights to indicate the level of heat at which each seat is set.

Electrical Schematics

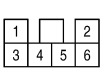
Heated Seat (Page 1 of 1)

HEATED SEAT



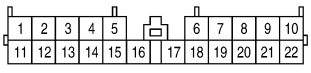


BODY FUSE AND RELAY BOX



C-040 , C-041
L G

B-017 , B-018
L L



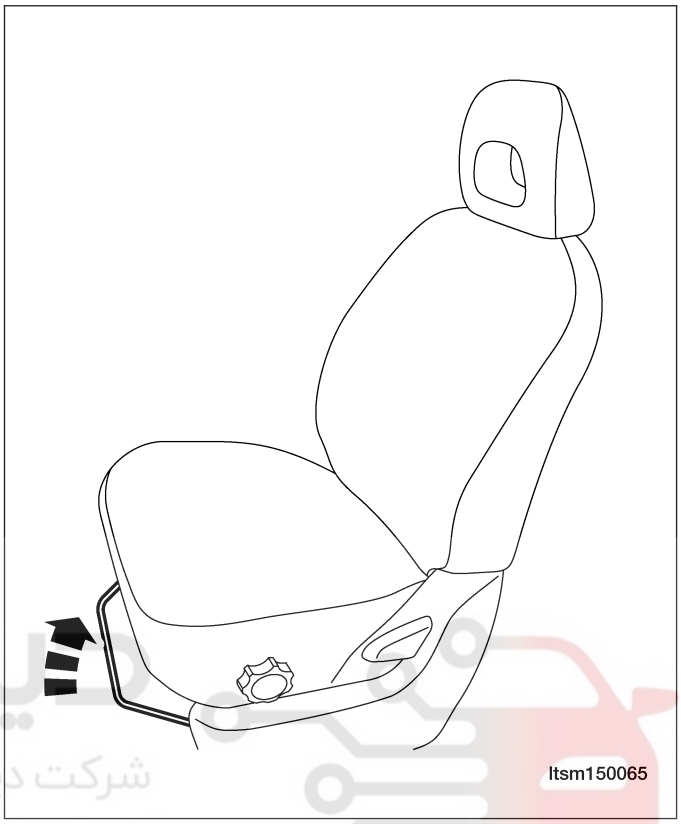
C-104 , C-105
W W

ltsmw150004t

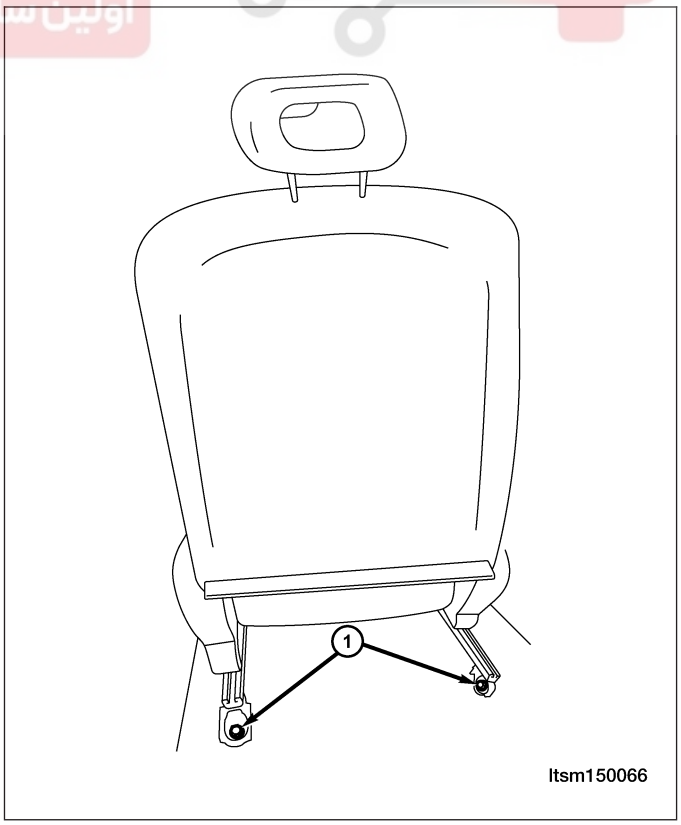
Front Seat

Removal & Installation

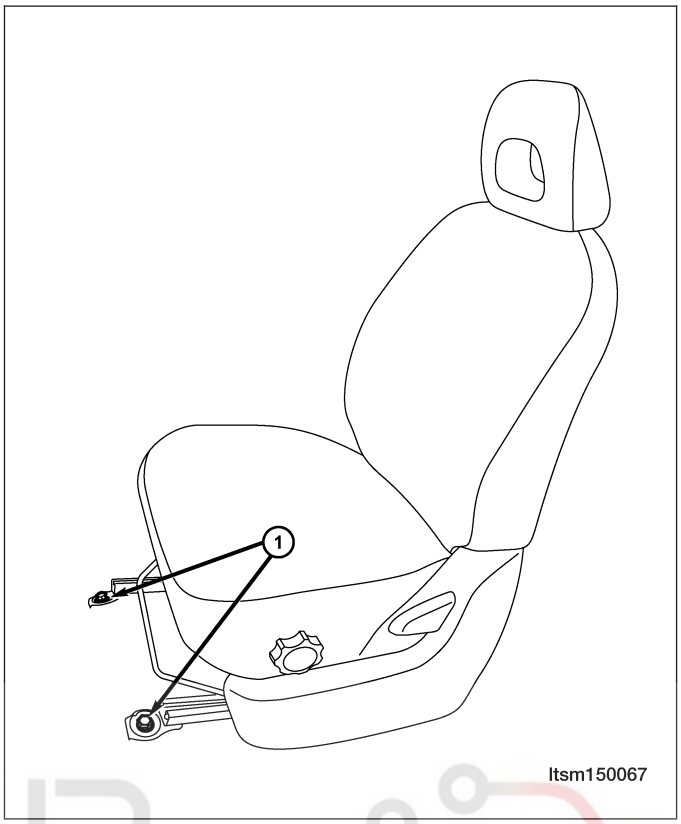
1. Move the seat to the furthest forward position and remove the protective cover from the seat guide rail.



2. Remove the guide rail mounting bolts (1).
   (Tighten: Guide rail mounting bolts to 32 N·m)



3. Move seat to the furthest rearward position and remove the protective cover from the guide rail.
4. Remove the guide rail mounting bolts (1).
5. Disconnect seat heating element electrical connector and remove the front seat.
6. Installation is in the reverse order of removal.



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Rear Seats

Removal & Installation

1. Open the back door.
2. Pull the seat release (1) upward to fold the rear seat.

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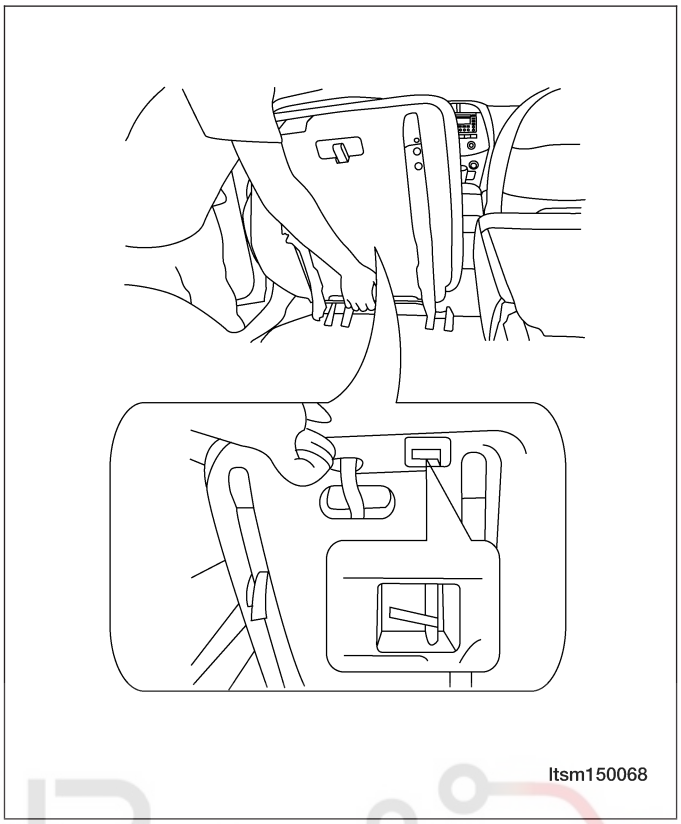
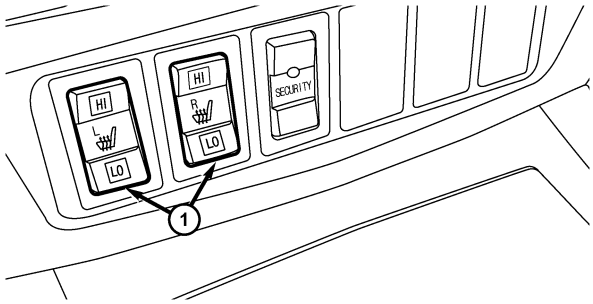
3. Press the seat latch rod to separate the back of the seat from the clamp rod.
4. Pull up the seat strap behind the seat and unlock the latch in front of the seat.



5. Installation is in the reverse order of removal.

Heated Seat Switch

Removal & Installation



ltsm150127

1. Using a trim stick, carefully remove the switches (1) from the mounting bezel.
2. Disconnect the heated seat switch electrical connector.
3. Installation is in the reverse order of removal.

Heated Seat Element

Removal & Installation

1. Disconnect the negative battery cable.
2. Remove the appropriate seat cushion.
3. Disconnect the inoperative heated seat cushion electrical connector.
4. Remove the inoperative heating element from the seat.
5. Installation is in the reverse order of removal.

IMMOBILIZER CONTROL MODULE

Description

The vehicle security system uses an Immobilizer control module as an anti-theft device that prevents the engine from starting if an incorrect key is inserted into the ignition switch.

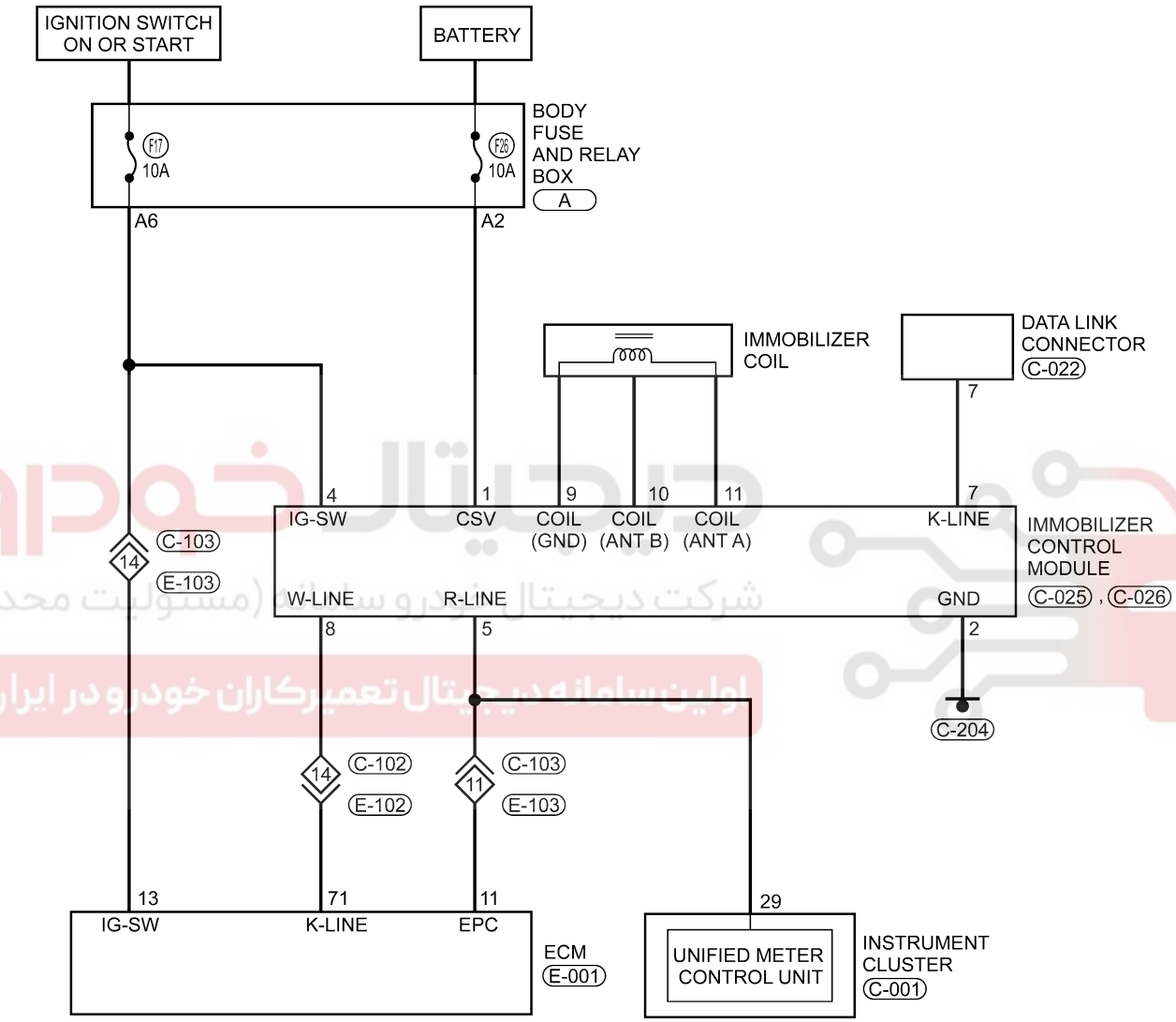
Operation

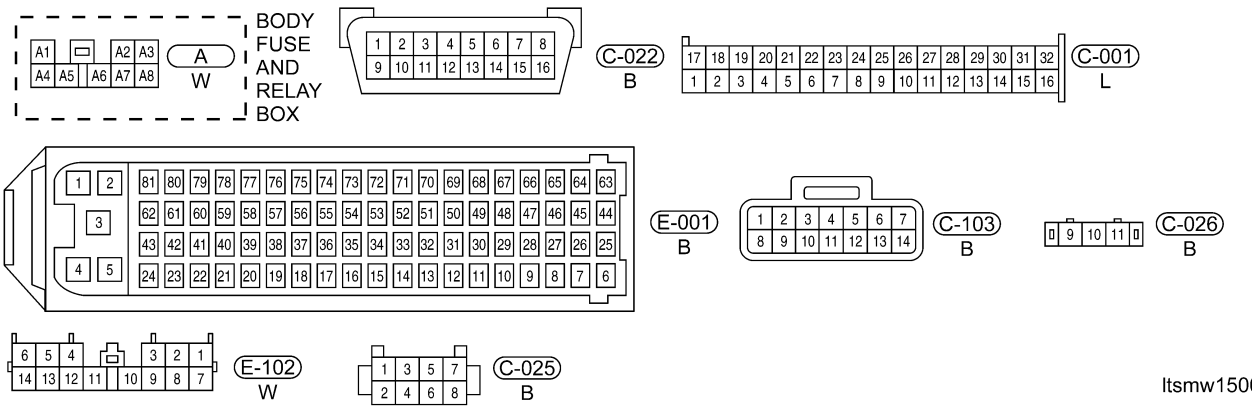
When an incorrect key is inserted into the ignition switch, the vehicle security system senses the incorrect key and sends a signal to the Immobilizer control module. The Engine Control Module (ECM) receives the signal from Immobilizer control module via the R-Line. The ECM then disables the engine from starting.

Electrical Schematics

Immobilizer Control Module (Page 1 of 1)

IMMOBILIZER - WITH ACTECO ENGINE SYSTEM





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Immobilizer Control Module Connector Pin-Out Table

PIN	CIRCUIT IDENTIFICATION	PIN	CIRCUIT IDENTIFICATION
1	Continuous Supply Voltage	7	Diagnostic Link K
2	GND	8	W-Line
3	-	9	Coil (GND)
4	Ignition Switch	10	Coil (ANT B)
5	R-Line	11	Coil (ANT A)
6	-	—	-

DIAGNOSIS & TESTING

Diagnostic Help

1. The X-431 scan tool connects to the Data Link Connector (DLC) and communicates with the vehicle electronic modules through the class two serial data circuit.
2. Confirm that the malfunction is current and carry-out the diagnostic tests and repair procedures.
3. If the DTC cannot be deleted, it is a current fault.
4. Use a digital multimeter to perform voltage readings on electronic systems.
5. Refer to any Technical Bulletins that issued.
6. Visually inspect the related electrical wiring harness.
7. Inspect and clean all Immobilizer control module grounds that are related to the DTC.
8. If numerous trouble codes were set, use the electrical schematic and look for any common ground circuits or voltage supply circuits that may apply to the DTC.

Intermittent DTC Troubleshooting

If the failure is intermittent, perform the following:

- Check for loose connectors.
- Look for any chafed, pierced, pinched, or partially broken wires.
- Monitor the scan tool data relative to this circuit.
- Wiggle the related electrical wiring harness and connectors while looking for an interrupted signal on the affected circuit.
- If possible, try to duplicate the conditions under which the DTC set.
- Look for the data to change or for the DTC to reset during the wiggle test.
- Look for broken, bent, pushed out or corroded terminals.
- Inspect the sensor and mounting area for any condition that would result in an incorrect signal, such as damage or foreign material.
- A data recorder, and/or oscilloscope should be used to help diagnose intermittent conditions.

Ground Inspection

Ground connections are very important to the proper operation of electrical and electronic circuits. Ground connections are often exposed to moisture, dirt and other corrosive elements. The corrosion (rust) can become an unwanted resistance. This added resistance can alter the way a circuit works.

Electronically controlled circuits are very sensitive to proper grounding. A loose or corroded ground can drastically affect an electronically controlled circuit. A poor or corroded ground can effect the circuit. Perform the following when inspecting a ground connection:

1. Remove the ground bolt or screw.
2. Inspect all mating surface for tarnish, dirt, rust, etc.
3. Clean as required to assure good contact.
4. Reinstall bolt or screw securely.
5. Inspect for ″add-on″ accessories which may be interfering with the ground circuit.
6. If several wires are crimped into one ground eyelet terminal, check for proper crimps. Make sure all of the wires are clean, securely fastened and providing a good ground path. If multiple wires are crimped to one eyelet, make sure no excess wire insulation has been crimped creating a bad ground.

Diagnostic Tools

- Diagnostic Scan Tool X-431
- Digital Multimeter
- Jumper Wire

Diagnostic Trouble Code (DTC) List

Immobilizer Control Module DTC List

DTC	DTC DEFINITION
B1000	ECU Defect, Internal Errors
B3040	Communication Error On W-Line, ECM Doesn't Answer On Challenge Or Response Requests
B3042	W-Line Short Circuit To Ground
B3043	W-Line Short Circuit To Battery
B3045	DWA Line Short Circuit To Ground Or Open Circuit, DWA Line Malfunction
B3048	DWA Line Short Circuit To Battery
B3050	Relay Extern Line Short Circuit To Ground Or Open Circuit, Relay Extern Line Malfunction
B3053	Relay Extern Line Short Circuit To Battery
B3055	No Transponder Modulation Or No Transponder
B3056	No Transponder Fix Code Programmed
B3057	No Security Code Programmed
B3060	Unprogrammed Transponder Fix Code Received
B3061	Disturbed Or No Challenge / Response Transponder Communication
B3077	Read-Only Transponder Detected

Remote Keyless Entry (RKE) Inoperative

No Response From Remote Keyless Entry (RKE) Transmitter

1. CHECK BATTERY

- Check battery of the RKE transmitter.

Is the battery voltage of the RKE transmitter normal?

Yes >> Go to the next step.

No >> This concern has been caused by the transmitter battery. Go to step 4.

2. CHECK THE IGNITION LOCK CYLINDER CONDITION

- Check the ignition lock cylinder for proper operation.

Is the check result normal?

Yes >> Go to the next step.

No >> Repair or replace the ignition lock cylinder key switch.

3. PERFORM THE RKE TRANSMITTER MATCH PROCEDURE

- Close all the doors.
- Insert the ignition key into the ignition switch which has lost synchronization in LOCK position.
- Press any button on the RKE transmitter within 5 seconds.
- Pull the ignition key out of the ignition switch.
- Try to operate the RKE transmitter.

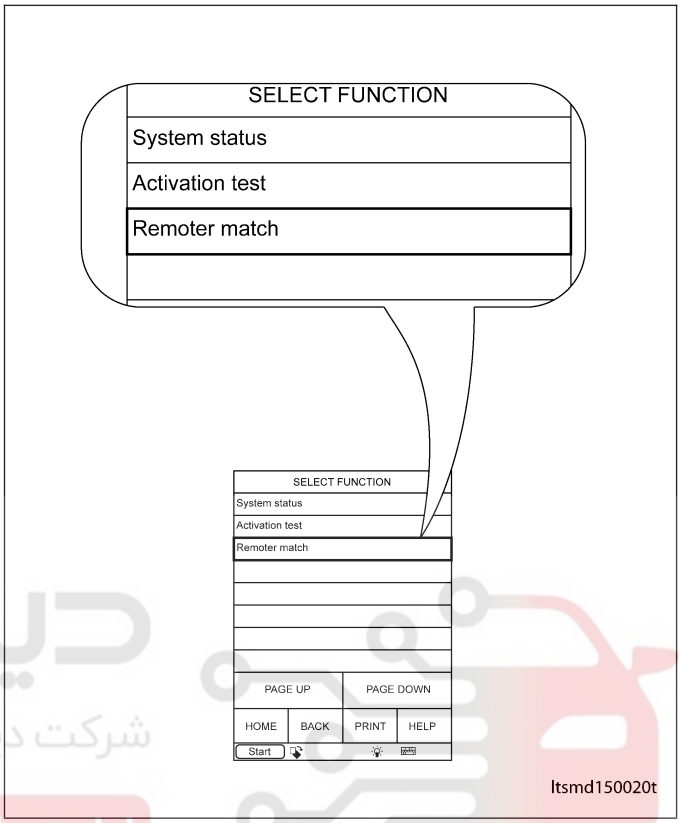
Does the RKE transmitter operate properly?

Yes >> Erase all codes before returning the vehicle to the customer.

No >> Go to the next step.

4. PERFORM THE RKE TRANSMITTER MATCH WITH THE X-431

- Replace the RKE transmitter.
- Connect the X-431 scan tool to the Data Link Connector (DLC), press the POWER key to start the X-431 (use the most current software available).
- Turn ignition switch on.
  - Enter the Diagnostic Program.
  - Select Chery main program.
  - Select diagnostic version.
  - Enter download program.
  - Select T11 series, and then select ISU.
  - Select ″Remoter Match″.



- Press the lock button on the RKE transmitter for less than 2 seconds.
- Pull out the ignition switch.
- Try to operate the RKE transmitter.

Does the RKE transmitter operate properly?

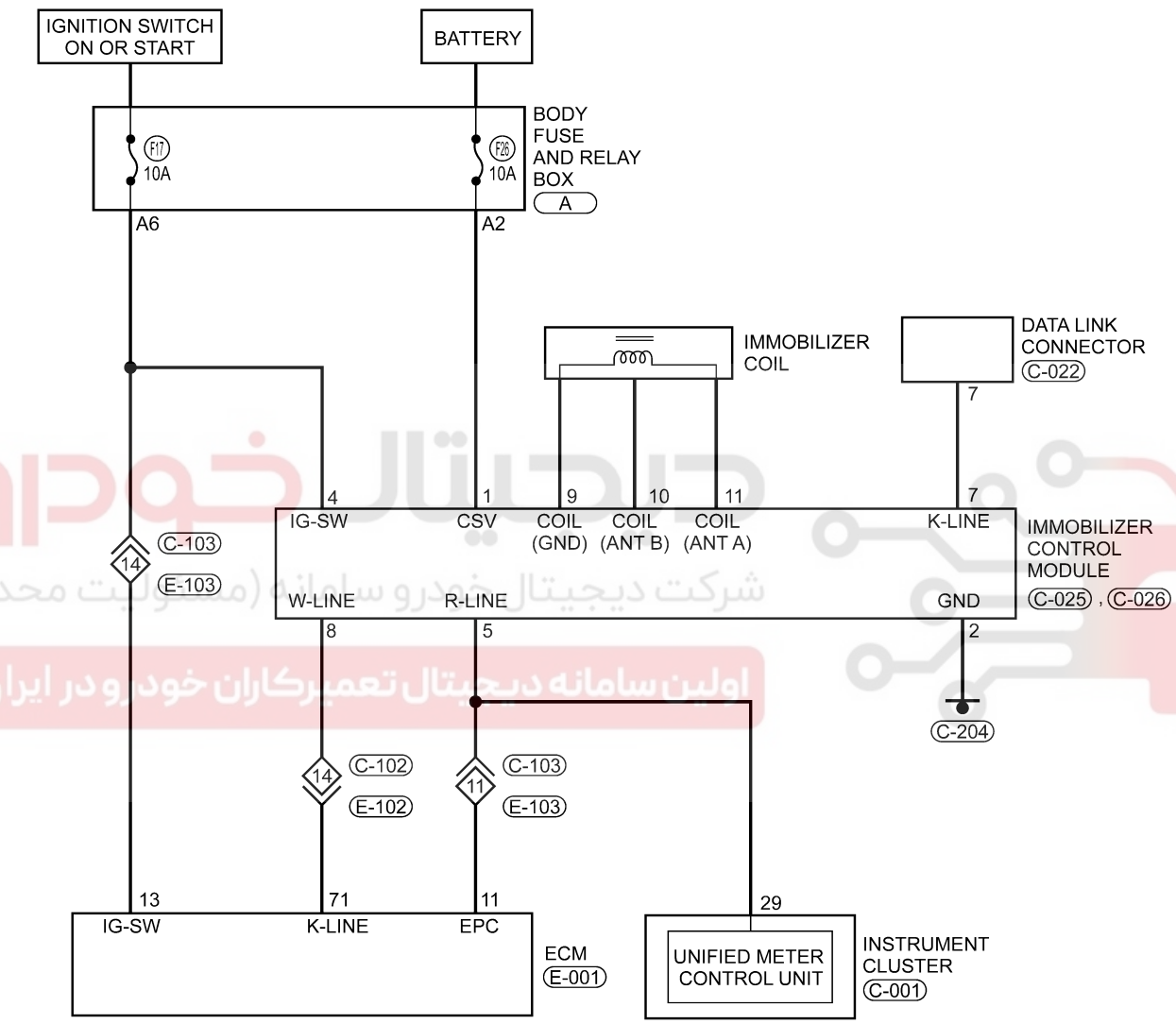
Yes >> Erase all codes before returning the vehicle to the customer.
The concern was caused by the RKE transmitter.

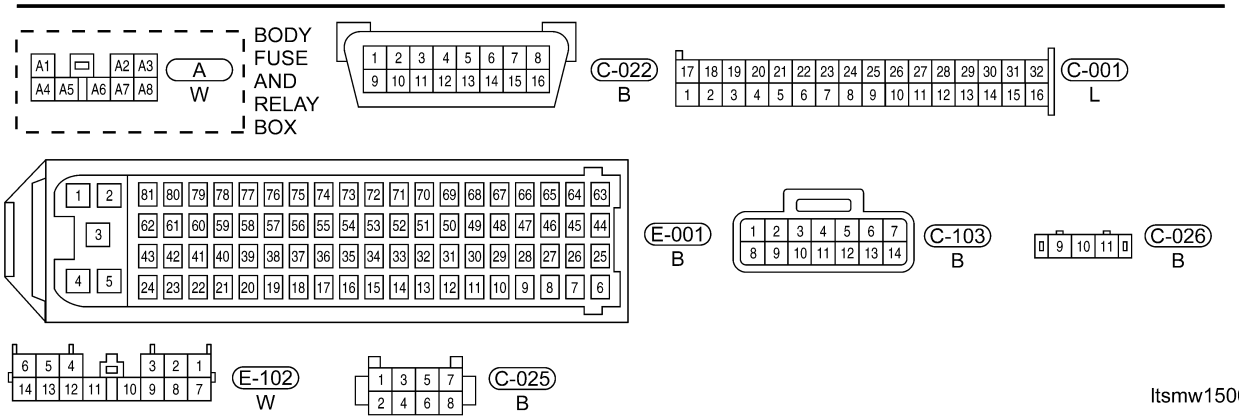
No >> Replace the FBCM (See FBCM Removal & Installation in Section 15 Body & Accessories).
Refer to the RKE transmitter match procedure with X-431 as the description.
Perform match between the RKE transmitter and FBCM with X-431.

Diagnostic Trouble Code (DTC) Tests

B1000 - ECU Defect: Internal Errors

IMMOBILIZER - WITH ACTECO ENGINE SYSTEM





ltsmw150081t

On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	POSSIBLE CAUSE
B1000	ECU Defect, Internal Errors	Immobilizer control module detects an internal failure.	• Immobilizer control module

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn ignition switch on, with the scan tool, view and erase stored DTCs in the Immobilizer control module.
- Try to start the engine.
- Turn ignition switch off, and wait a few seconds, then turn ignition switch on.
- With the scan tool, view DTCs in the Immobilizer control module.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :
While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK DTC

- Perform DTC confirmation procedure.

Is DTC B1000 present?

Yes >> Go to the next step.

No >> The condition that caused the DTC to set is currently not present (See Diagnosis & Testing Diagnostic Help in Section 15 Body & Accessories).

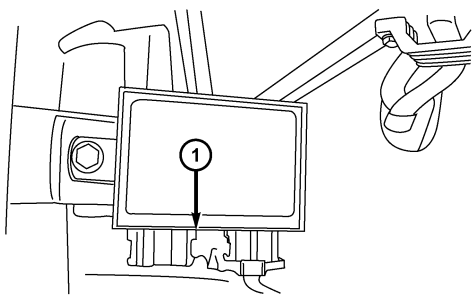
2. CHECK IMMOBILIZER CONTROL MODULE ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the Immobilizer control module electrical connector C-025 (1).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.

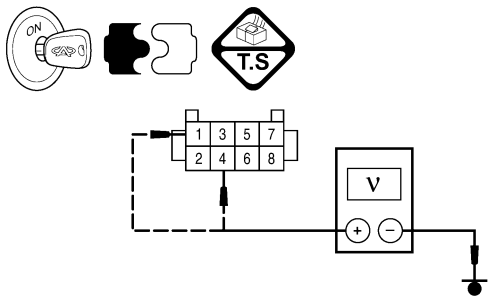


ltsmd150019

3. CHECK IMMOBILIZER CONTROL MODULE POWER SUPPLY

- Turn ignition switch on.
- Check if voltage is present on the Immobilizer control module connector C-025, pin 4,1 and ground.

IMMOBILIZER CONTROL MODULE TERMINAL	GROUND
1	Ground
4	



ltsmd150012

Is 12 V present?

Yes >> Replace and program the Immobilizer control module. Refer to DTC B3077 Diagnostic Procedure.

No >> For DTC B3050, go to the next step.
For DTC B3053, go to the step 6.

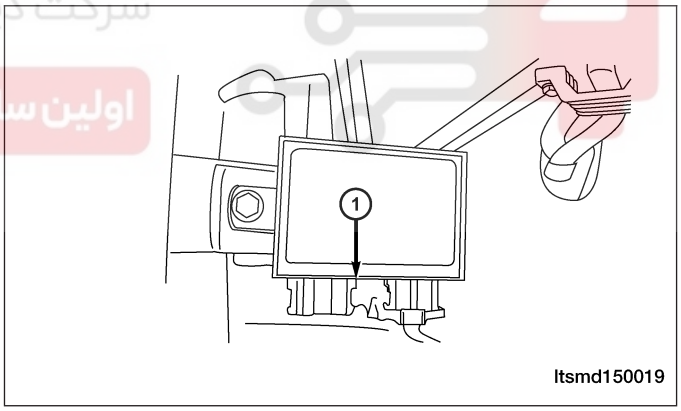
4. CHECK IMMOBILIZER CONTROL MODULE ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the Immobilizer control module electrical connector C-026 (1).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

Yes >> Go to the next step.

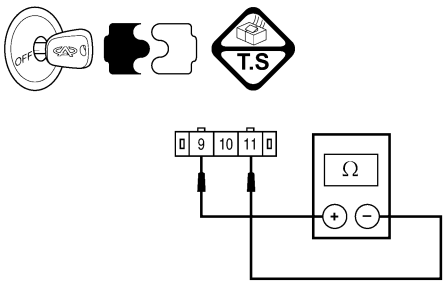
No >> Repair or replace the electrical connector as necessary.



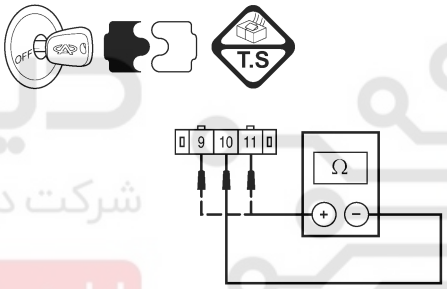
ltsmd150019

5. CHECK IMMOBILIZER COIL

- Check the resistance between the Immobilizer coil connector C-026, pin 9 and pin 11.

IMMOBILIZER COIL TERMINAL	IMMOBILIZER COIL TERMINAL	RESISTANCE	
9	11	5 - 20 ohms	

- The resistance should be 5 to 20 ohms.
- Check the resistance between the Immobilizer coil connector C-026, pin 9 and pin 10.
- Check the resistance between the Immobilizer coil connector C-026, pin 11 and pin 10.

IMMOBILIZER COIL TERMINAL	IMMOBILIZER COIL TERMINAL	CONTINUITY	
9	10	Not	
11	10		

Is the check result normal?

Yes >> Go to the next step.

No >> Replace the Immobilizer coil.

6. CHECK DTC

- With the X-431 scan tool, read the Immobilizer control module DTCs.
- Refer to ″DTC Confirmation Procedure″.

Is DTC B1000 still present?

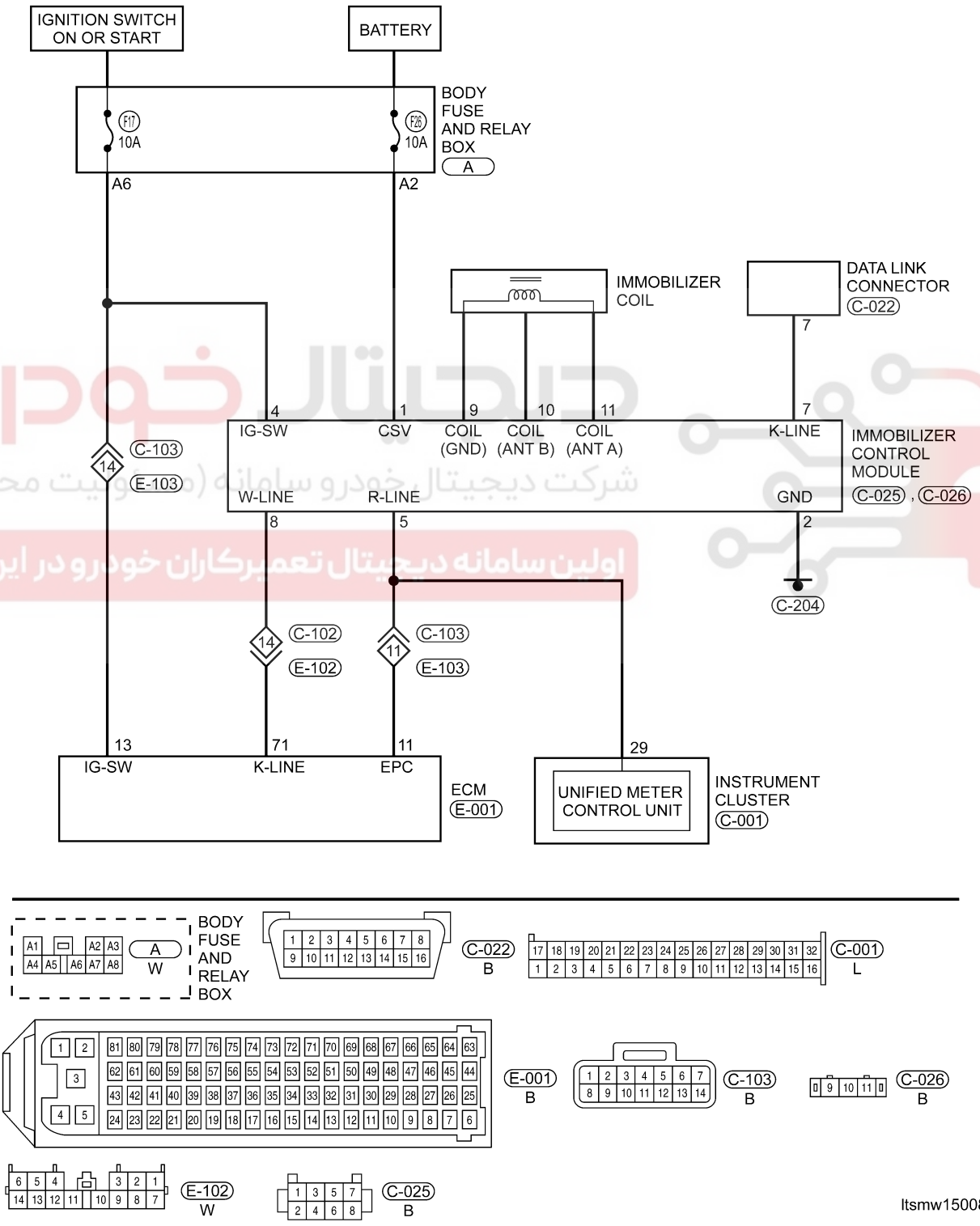
Yes >> Replace and program the Immobilizer control module.
Refer to DTC B3077 Diagnostic Procedure.

No >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

B3042 - W-Line Short Circuit To Ground
B3043 - W-Line Short Circuit To Battery

Immobilizer Control Module

IMMOBILIZER - WITH ACTECO ENGINE SYSTEM



On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	DTC SET CONDITION	POSSIBLE CAUSE
B3042	W-line short circuit to ground	Ignition switch: ON	The Immobilizer control module detects a short ground condition on the W-Line for at least 3 seconds.	• Harness or connectors • Immobilizer control module • ECM
B3043	W-Line short circuit to battery		The Immobilizer control module detects a short battery condition on the W-Line for at least 3 seconds.	• Harness or connectors • Immobilizer control module • ECM

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn ignition switch on, with the scan tool, view and erase stored DTCs in the Immobilizer control module.
- Try to start the engine.
- Turn ignition switch off, and wait a few seconds, then turn the ignition switch on.
- With the scan tool, view active DTCs in the Immobilizer control module.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :
While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch off.
- Loosen and retighten ground screws on the body (See Ground Inspection in Section 15 Body & Accessories).
- Inspect ground connection C-204 mounting position (See Vehicle Wiring Harness Layout - Main Harness in Section 16 Wiring).

Is the ground connection OK?

Yes >> Go to the next step.

No >> Repair or replace ground connection.

2. CHECK IMMOBILIZER CONTROL MODULE DTC

- With the scan tool, view DTCs in the Immobilizer control module. Refer to DTC confirmation procedure.

Is the warning light flashing and DTC B3042 or B3043 present?

Yes >> Go to the next step.

No >> The conditions that caused this code to set are not present at this time (See Diagnostic Help in Section 15 Body & Accessories).

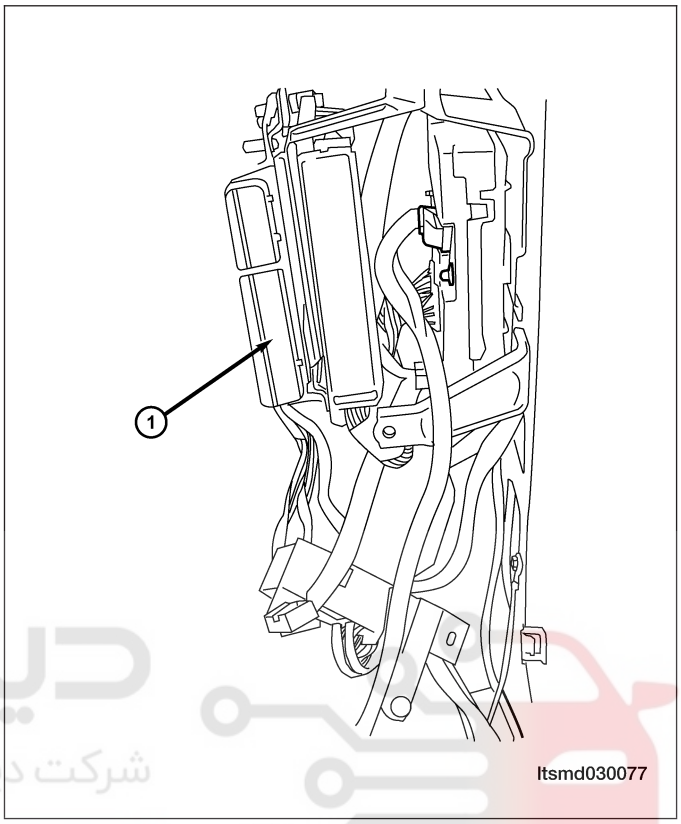
3. CHECK ENGINE CONTROL MODULE (ECM) ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the Engine Control Module (ECM) electrical connector E-001 (1).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.



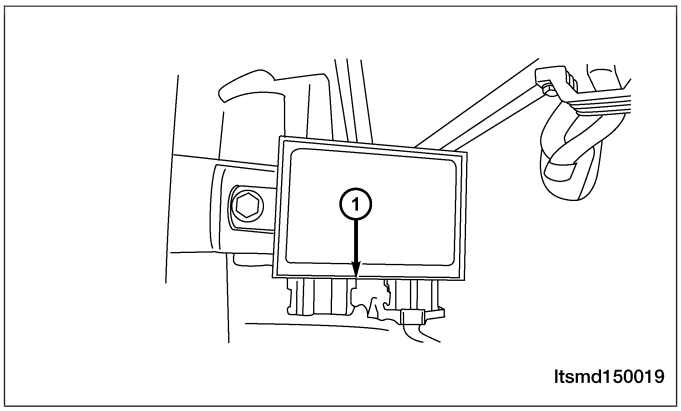
4. CHECK IMMOBILIZER CONTROL MODULE ELECTRICAL CONNECTOR

- Disconnect the Immobilizer control module electrical connectors C-025 and C-026 (1).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

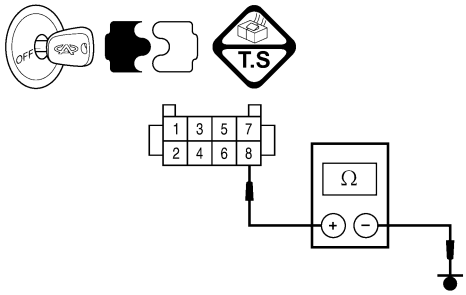
Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.

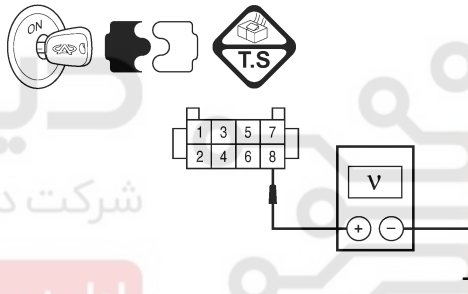


5. CHECK IMMOBILIZER CONTROL MODULE AND ECM COMMUNICATION CIRCUIT

- For DTC B3042, check the resistance of W-Line between the Immobilizer control module connector C-025, pin 8 and ground.

IMMOBILIZER CONTROL MODULE TERMINAL	TERMINAL	RESULT	
8	Ground	Continuity should not exist	 ltsmd150010

- For DTC B3043, turn ignition switch on, check voltage between the Immobilizer control module connector C-025, pin 8 and ground.

IMMOBILIZER CONTROL MODULE TERMINAL	TERMINAL	RESULT	
8	Ground	12 V should not exist	 ltsmd150011

Is the check result normal?

Yes >> Go to the next step.

No >> Repair the circuits fault as necessary.

6. REPLACE AND PROGRAM THE IMMOBILIZER CONTROL MODULE

- Replace and program the Immobilizer control module with the X-431.
- Reconnect all disconnected electrical harness connectors.
- With the X-431 scan tool, view the DTCs in the Immobilizer control module.

Is DTC B3042 or B3043 present again?

Yes >> Go to the next step.

No >> The system is now operating properly.
The DTC was caused by Immobilizer control module.

7. REPLACE AND PROGRAM THE ECM

- With the X-431 scan tool, view active DTCs in the ECM.
- Refer to ″DTC Confirmation Procedure″.

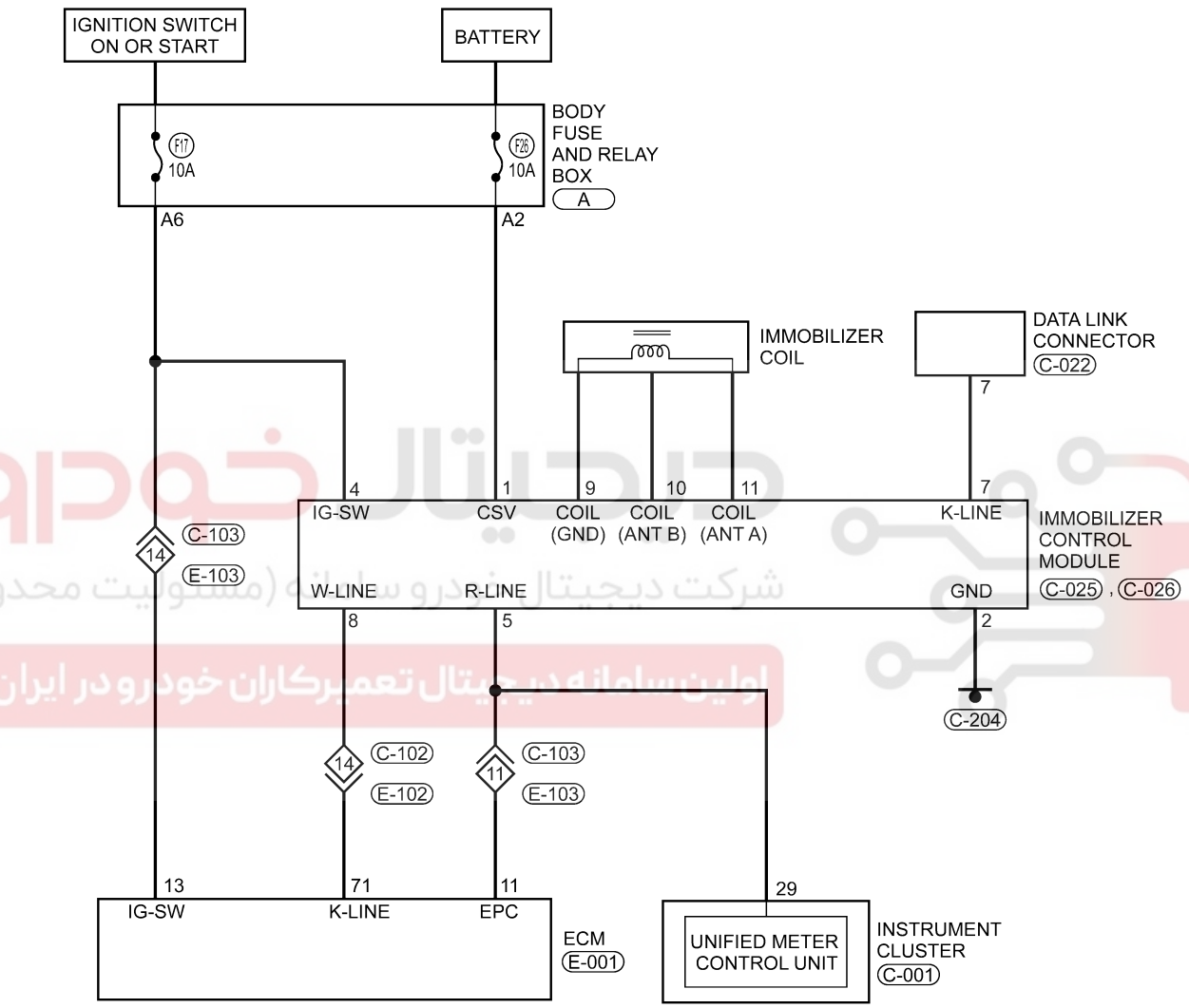
Is DTC B3042 or B3043 still present?

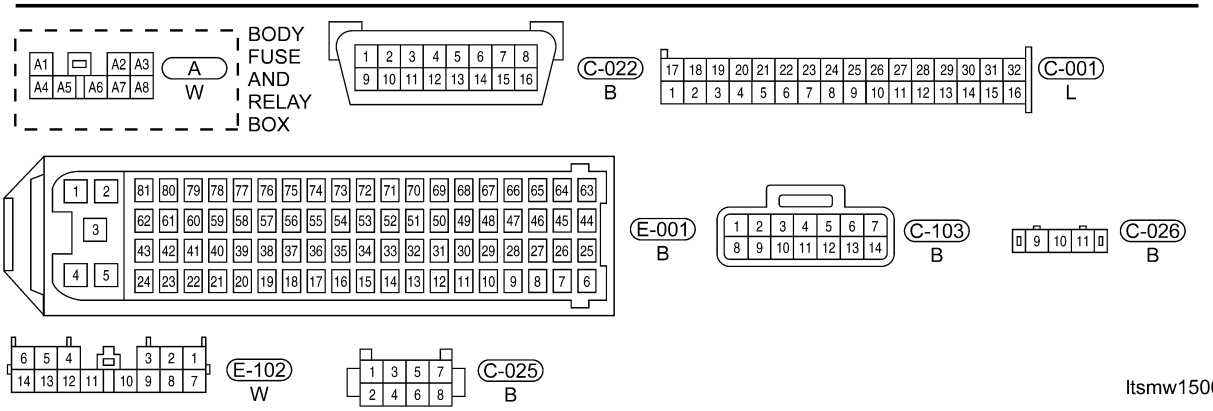
Yes >> Replace and program ECM.

No >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

B3050 - Relay External Line Short Circuit To Ground Or Open Circuit, Relay External Line Malfunction
B3053 - Relay External Line Short Circuit To Battery

IMMOBILIZER - WITH ACTECO ENGINE SYSTEM





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On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	DTC SET CONDITION	POSSIBLE CAUSE
B3050	Relay external line short circuit to ground or open circuit, relay external line malfunction	Ignition switch: ON	The Immobilizer control module detects a short to ground condition on the W-Line for at least 3 seconds.	• Harness or connectors • Immobilizer control module
B3053	Relay external line short circuit to battery	Ignition switch: ON	The Immobilizer control module detects a short to battery condition on the relay external line.	• Harness or connectors • Immobilizer control module

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn ignition switch on, with the scan tool, view and erase stored DTCs in the Immobilizer control module.
- Try to start the engine.
- Turn ignition switch off, and wait a few seconds, then turn ignition switch on.
- With the scan tool, view active DTCs in the Immobilizer control module.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :
While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch off.
- Loosen and retighten ground screws on the body (See Ground Inspection in Section 15 Body & Accessories).
- Inspect ground connection C-204 mounting position (See Vehicle Wiring Harness Layout - Main Harness in Section 16 Wiring).

Is the ground connection OK?

Yes >> Go to the next step.

No >> Repair or replace ground connection.

2. CHECK IMMOBILIZER CONTROL MODULE DTC

- With the scan tool, view DTCs in the Immobilizer control module. Refer to DTC confirmation procedure.

Is DTC B3050 or B3053 present?

Yes >> Go to the next step.

No >> The condition that caused the DTC to set is currently not present (See Diagnosis & Testing Diagnostic Help in Section 15 Body & Accessories).

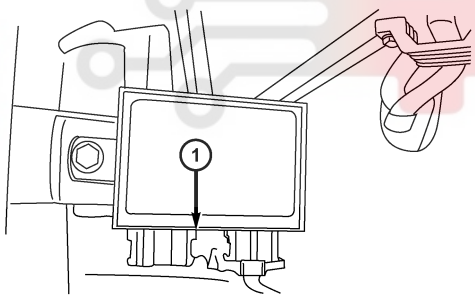
3. CHECK IMMOBILIZER CONTROL MODULE ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the Immobilizer control module electrical connectors C-025 (1).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.



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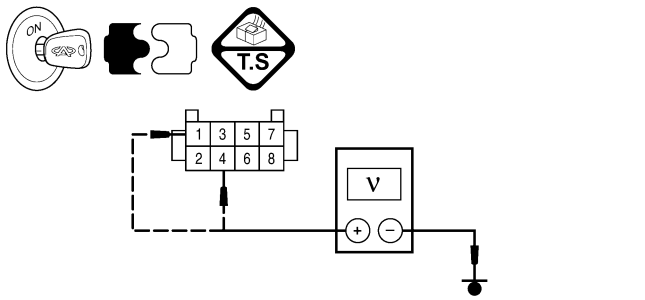
4. CHECK IMMOBILIZER CONTROL MODULE POWER SUPPLY

- Turn ignition switch on.
- Check if voltage is present on the Immobilizer control module connector C-025, pin 4,1 and ground.

IMMOBILIZER CONTROL MODULE TERMINAL	GROUND
1	Ground
4	



Is 12 V present?

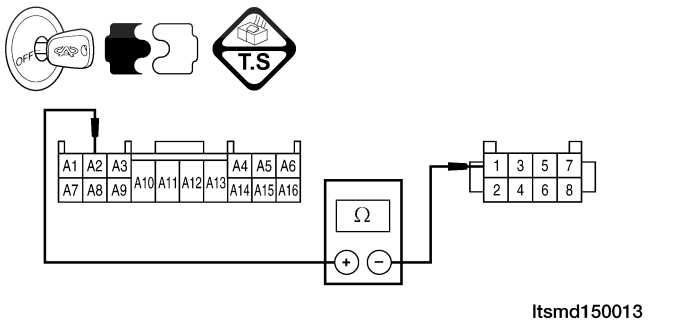
Yes >> Replace and program the Immobilizer control module. Refer to DTC B3077 Diagnostic Procedure.

No >> For DTC B3050, go to the next step.
For DTC B3053, go to the step 6.

5. CHECK IMMOBILIZER CONTROL MODULE POWER SUPPLY CIRCUIT

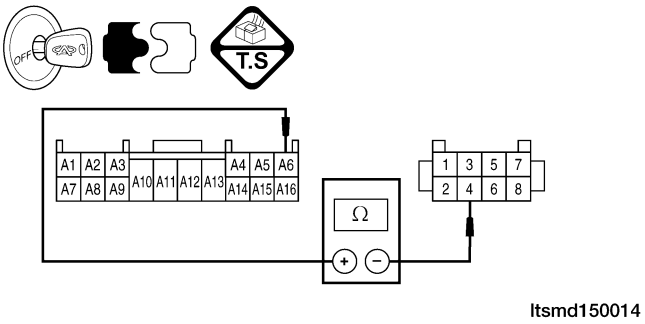
- Turn ignition switch off.
- Disconnect the negative battery cable.
- Disconnect the body fuse and relay box electrical connector A.
- Check harness continuity between the following terminals:
- Continuity should exist.

BODY FUSE AND RELAY BOX TERMINAL	IMMOBILIZER CONTROL MODULE TERMINAL	CONTINUITY
A2	1	Yes



- Check for harness continuity between the following terminals:
- Continuity should exist.

BODY FUSE AND RELAY BOX TERMINAL	IMMOBILIZER CONTROL MODULE TERMINAL	CONTINUITY
A6	4	Yes



ltsmd150014

- Check harness for a short to ground.
- Continuity between Immobilizer control module power supply and ground should not exist.

Is the check result normal?

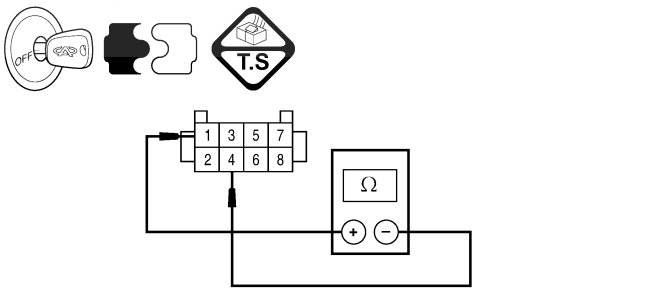
Yes >> Go to the step 7.

No >> Repair or replace the open or high resistance circuit or short to ground in harness or connectors.

6. CHECK IMMOBILIZER CONTROL MODULE POWER SUPPLY CIRCUIT

- Turn ignition switch off.
- Disconnect the negative battery cable.
- Disconnect the body fuse and relay box electrical connector A.
- Check the resistance between Immobilizer control module ignition switch circuit terminal 4 and Immobilizer control module battery supply circuit terminal 1.

IMMOBILIZER CONTROL MODULE TERMINAL	IMMOBILIZER CONTROL MODULE TERMINAL	CONTINUITY
1	4	No



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- Check resistance between Immobilizer control module ignition switch circuit and other power circuits.

Is the check result normal?

Yes >> Go to the step 8.

No >> Repair or replace short to power circuits in harness or connectors.

7. DETECT MALFUNCTIONING PART

- Check the following:
  - Body fuse and relay box
  - Fuse F17 (10A), fuse F26 (10A)
  - Harness between battery and body fuse and relay box

Is the check result normal?

Yes >> Go to the next step.

No >> Repair or replace damaged components.

8. REPLACE AND PROGRAM THE IMMOBILIZER CONTROL MODULE

- With the X-431 scan tool, view active DTCs in the Immobilizer control module.
- Refer to ″DTC Confirmation Procedure″.

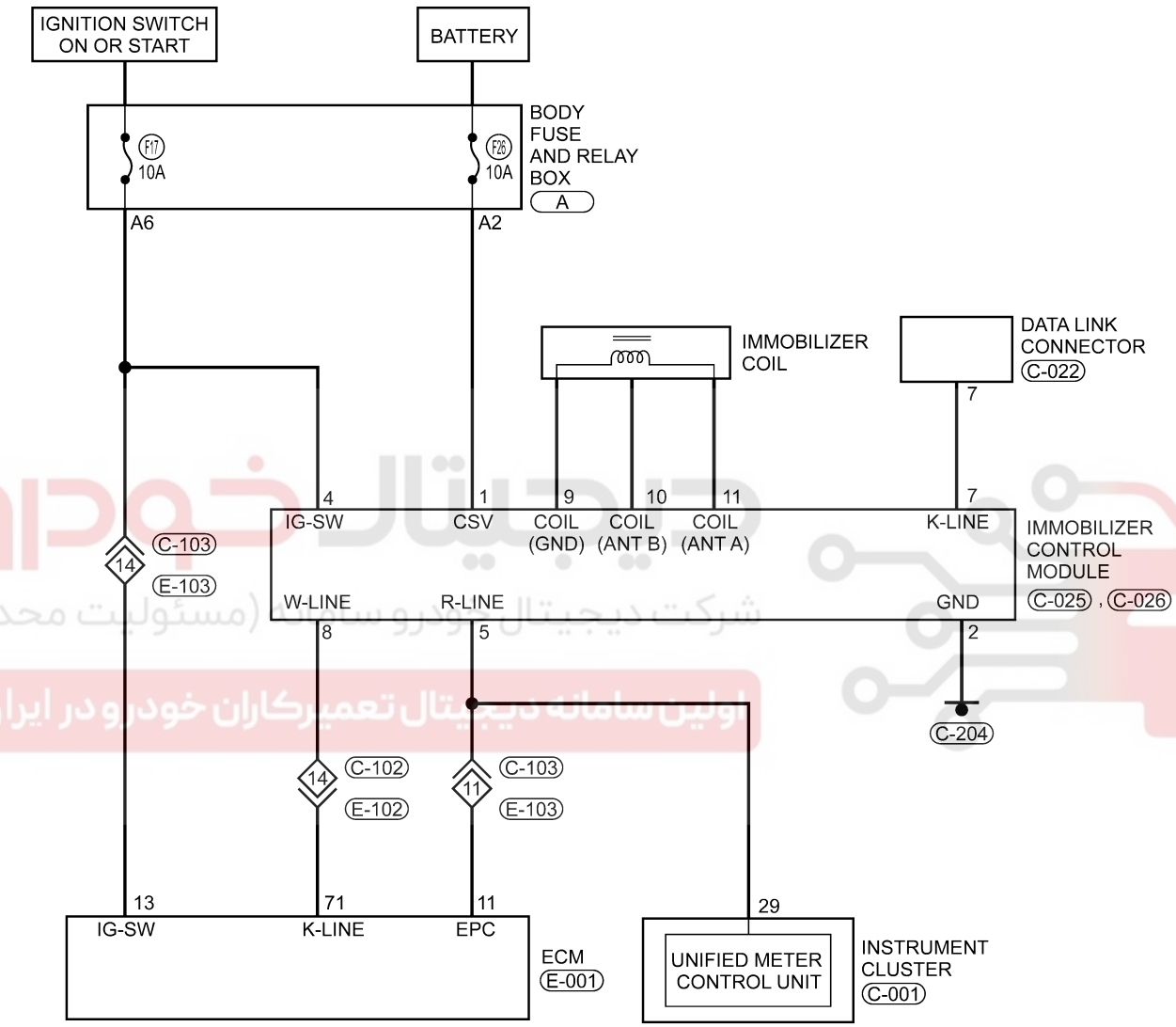
Is DTC B3050 or B3053 still present?

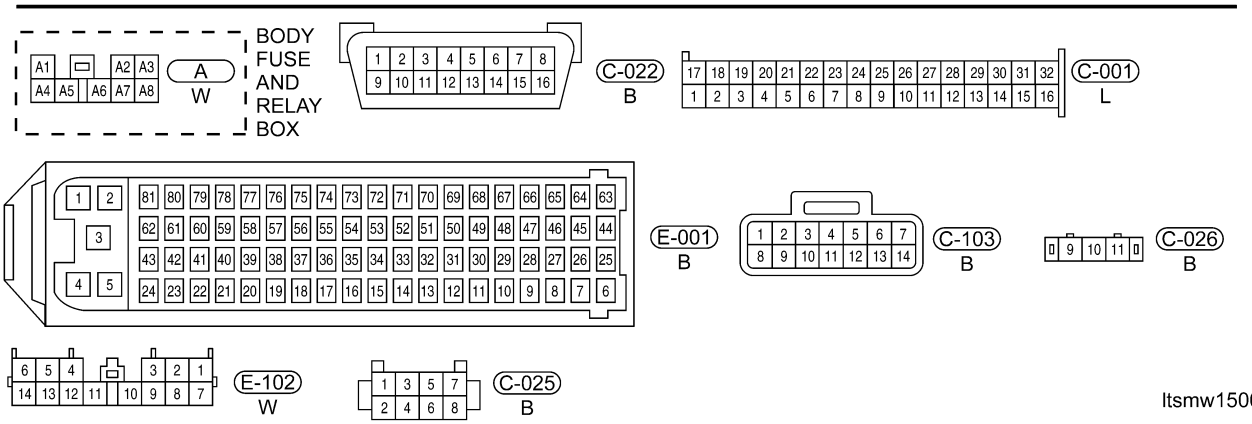
Yes >> Replace and program Immobilizer control module.

No >> The system is now operating properly.
Reassemble the vehicle and verify the customers complaint is repaired.

B3055 - No Transponder Modulation Or No Transponder
B3056 - No Transponder Fixed Code Programmed

IMMOBILIZER - WITH ACTECO ENGINE SYSTEM





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On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	DTC SET CONDITION	POSSIBLE CAUSE
B3055	No transponder modulation or no transponder	Ignition switch: ON	The Immobilizer control module detects no transponder or no transponder modulation condition.	• Transponder • Harness or connectors • Immobilizer control module
B3056	No transponder fixed code programmed	Ignition switch: ON	The Immobilizer control module detects that the transponder is not programmed.	• Transponder • Harness or connectors • Immobilizer control module

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn the ignition switch on, with the scan tool, view and erase stored DTCs in the Immobilizer control module.
- Try to start the engine.
- Turn ignition switch off, and wait a few seconds, then turn the ignition switch on.
- With the scan tool, view active DTCs in the Immobilizer control module.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :
While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch off.
- Loosen and retighten ground screws on the body (See Ground Inspection in Section 15 Body & Accessories).
- Inspect ground connection C-204 mounting position (See Vehicle Wiring Harness Layout - Main Harness in Section 16 Wiring).

Is the ground connection OK?

Yes >> Go to the next step.

No >> Repair or replace ground connection.

2. CHECK IMMOBILIZER CONTROL MODULE DTC

- With the scan tool, view DTCs in the Immobilizer control module. Refer to DTC confirmation procedure.

Is DTC B3055 present?

Yes >> Go to the next step.

No >> The condition that caused the DTC to set is currently not present (See Diagnosis & Testing Diagnostic Help in Section 15 Body & Accessories).

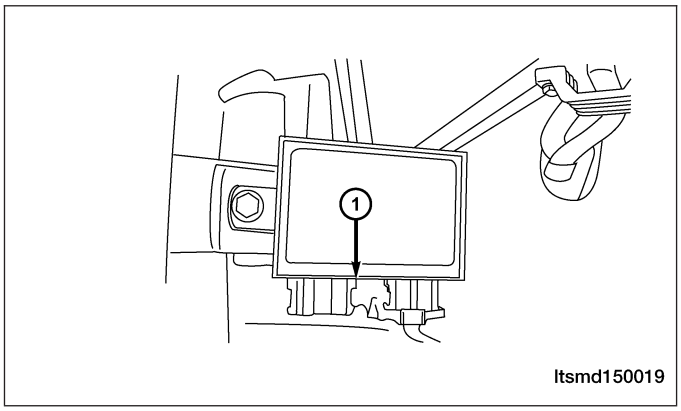
3. CHECK IMMOBILIZER CONTROL MODULE ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the Immobilizer control module electrical connectors C-026 (1).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

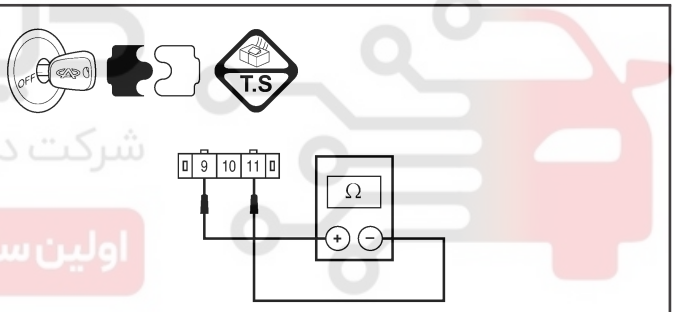
Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.



4. CHECK IMMOBILIZER COIL

- Check the resistance of the Immobilizer coil between the Immobilizer coil connector C-026, pin 9 and pin 11.

IMMOBILIZER COIL TERMINAL	IMMOBILIZER COIL TERMINAL	
9	11	

Is the resistance range from 5 to 20 ohms?

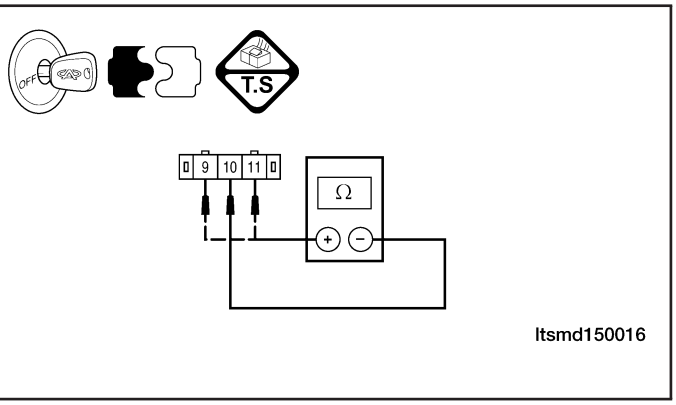
Yes >> Go to the next step.

No >> Replace the Immobilizer coil.

5. CHECK IMMOBILIZER COIL

- Check the resistance of the Immobilizer coil between the Immobilizer coil connector C-026, pin 9 and pin 10.
- Check the resistance of the Immobilizer coil between the Immobilizer coil connector C-026, pin 11 and pin 10.

IMMOBILIZER COIL TERMINAL	IMMOBILIZER COIL TERMINAL	CONTINUITY
9	10	Not
11	10	



- Continuity should not exist.

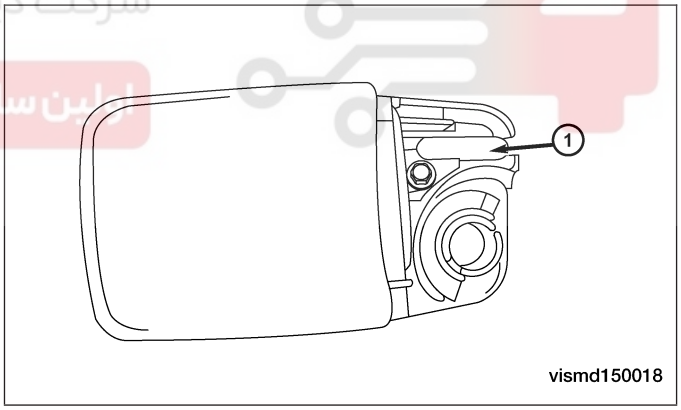
Is the check result normal?

Yes >> Go to the next step.

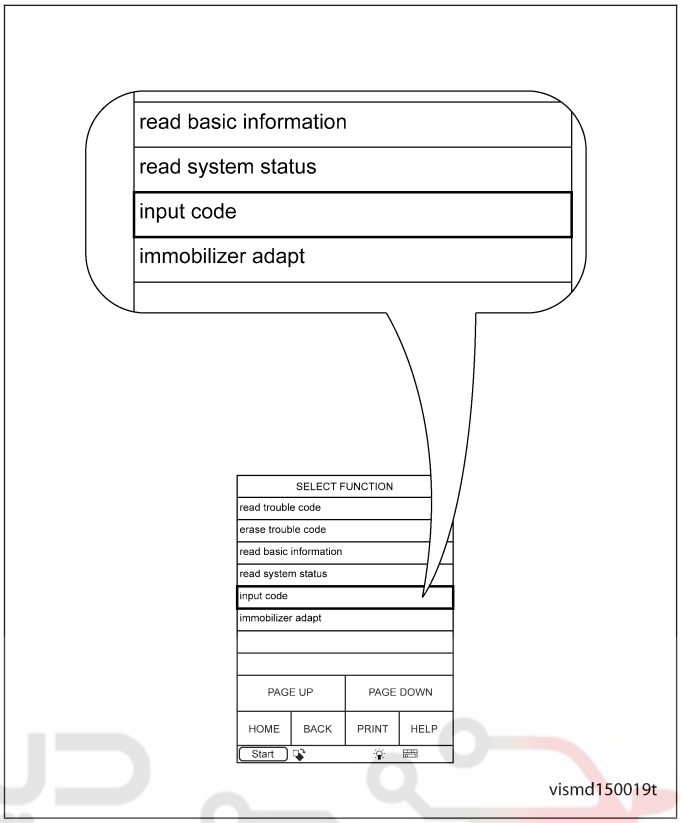
No >> Replace the Immobilizer coil.

6. REPLACE AND PROGRAM TRANSPONDER

- Reconnect the Immobilizer control module electrical connector C-026.
- Replace the chip (1) with a new one.



- Turn ignition switch on.
- With the X-431 scan tool, choose T11 series.
  - Choose ″immobilize″.
  - Choose ″input code″.
  - Input the safety code.
  - Click the small keyboard.
  - Click ″OK″.
  - Choose ″Immobilizer adapt″.
  - Choose ″Key learning″ immediately.
  - Click ″OK″.

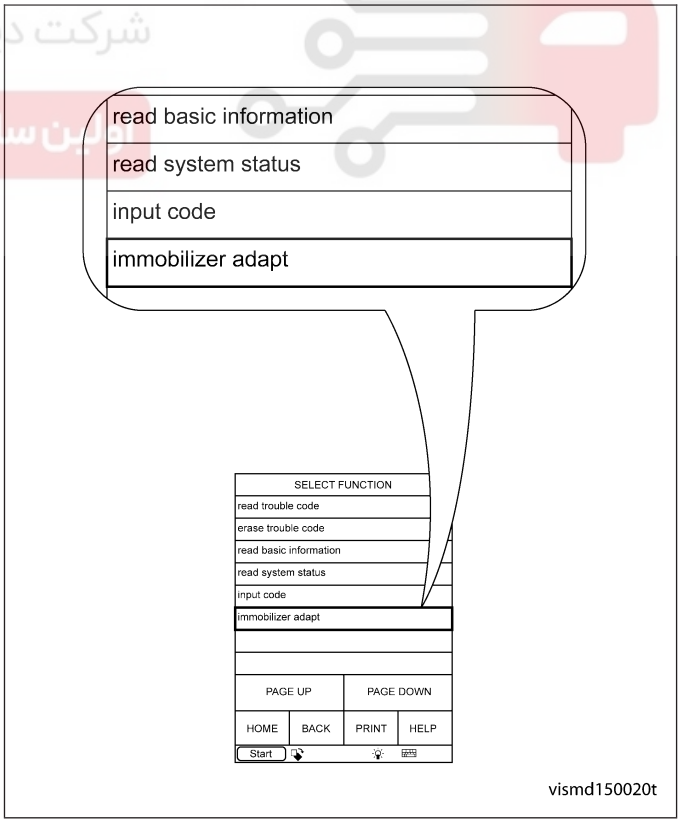


- Try to start the engine.

Is the warning light flashing and DTC B3055 present?

Yes >> Go to the next step.

No >> No problem found at this time.
This concern may have been caused by the transponder.
Erase all codes before returning the vehicle to the customer.



7. REPLACE AND PROGRAM IMMOBILIZER CONTROL MODULE

- Using the wiring schematic as a guide, inspect the related wiring and connectors of the Immobilizer control module.
- Verify that there is good terminal contact in the related connectors.
- Try to start the engine.
- With the X-431 scan tool, view active DTCs in the Immobilizer control module.

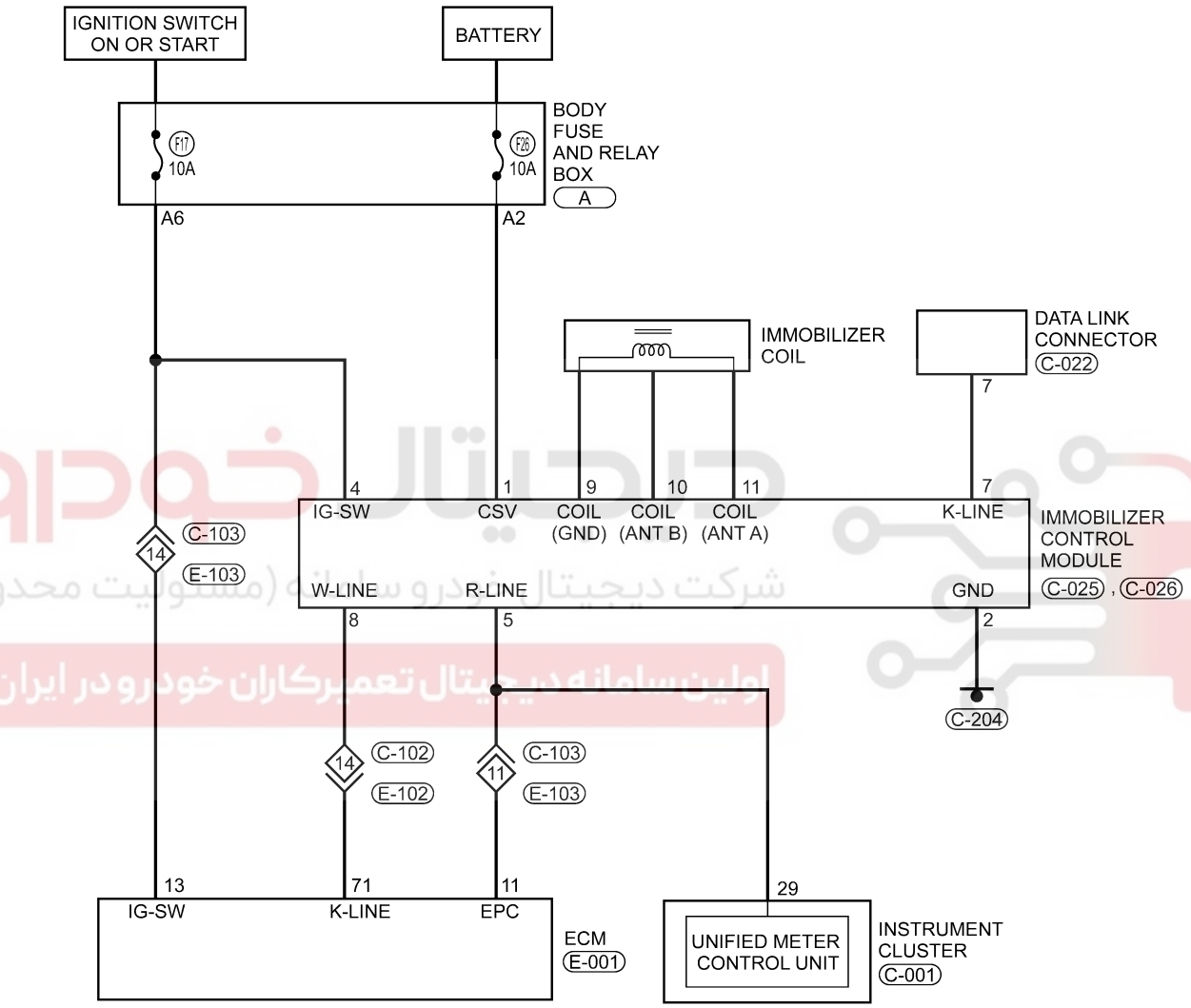
Is the warning light flashing and DTC B3055 or B3056 still present?

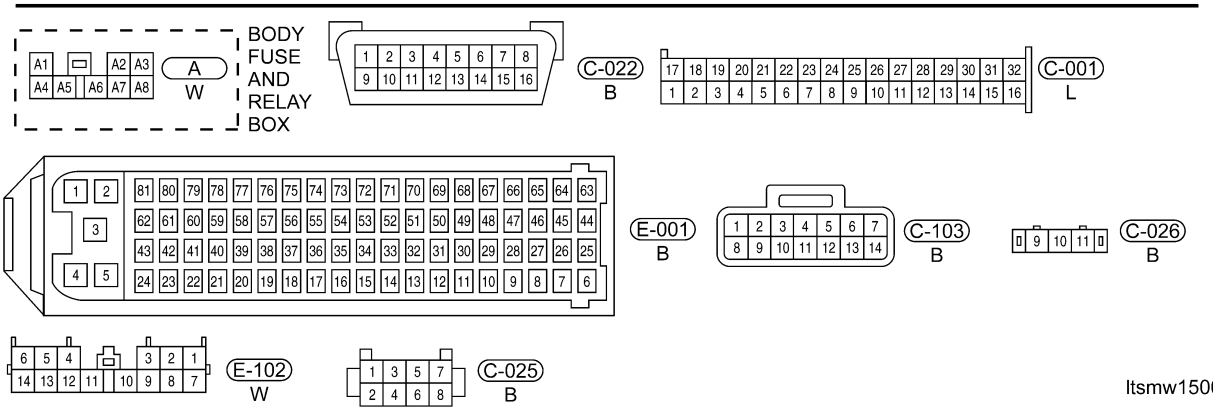
Yes >> Replace and match the Immobilizer control module (This concern may have been caused by Immobilizer control module internal fault). Refer to DTC B3077 Diagnostic Procedure.

No >> No problem found at this time.
This concern may have been caused by a loose or corroded terminal or connector.
Erase all codes before returning the vehicle to the customer.

B3060 - Unprogrammed Transponder Fixed Code Received
B3061 - Disturbed Or No Challenge/Response Transponder Communication
B3077 - Read-Only Transponder Detected

IMMOBILIZER - WITH ACTECO ENGINE SYSTEM





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On Board Diagnostic Logic

- Self-diagnosis detection logic.

DTC NO.	DTC DEFINITION	DTC DETECTION CONDITION	DTC SET CONDITION	POSSIBLE CAUSE
B3060	Unprogrammed transponder fixed code received	Ignition switch: ON	The Immobilizer control module detects the received unprogrammed transponder condition.	• Transponder • Harness or connectors • Immobilizer control module • ECM
B3061	Disturbed or no challenge/response transponder communication		The Immobilizer control module detects the received unprogrammed transponder condition.	
B3077	Read-only transponder detected		The Immobilizer control module detects a read-only transponder condition.	

DTC Confirmation Procedure:

Before performing the following procedure, confirm that battery voltage is more than 12 V.

- Turn ignition switch off.
- Connect the X-431 scan tool to the Data Link Connector (DLC) - use the most current software available.
- Turn the ignition switch on, with the scan tool, view and erase stored DTCs in the Immobilizer control module.
- Try to start the engine.
- Turn the ignition switch off, and wait a few seconds, then turn the ignition switch on.
- With the scan tool, view active DTCs in the Immobilizer control module.
- If the DTC is detected, the condition is current. Go to Diagnostic Procedure - Step 1.
- If the DTC is not detected, the DTC condition is intermittent (See Diagnostic Help and Intermittent DTC Troubleshooting in Section 15 Body & Accessories for more information).

NOTE :
While performing electrical diagnosis & testing, always refer to the electrical schematics for specific circuit and component information.

Diagnostic Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch off.
- Loosen and retighten ground screws on the body (See Ground Inspection in Section 15 Body & Accessories).
- Inspect ground connection C-204 mounting position (See Vehicle Wiring Harness Layout - Main Harness in Section 16 Wiring).

Is the ground connection OK?

Yes >> Go to the next step.

No >> Repair or replace ground connection.

2. CHECK IMMOBILIZER CONTROL MODULE DTC

- With the scan tool, view DTCs in the Immobilizer control module. Refer to DTC confirmation procedure.

Is DTC B3060, B3061 or B3077 present?

Yes >> For DTC B3060, go to step 5.
For DTC B3061, go to the next step.
For DTC B3077, go to step 6.

No >> The condition that caused the DTC is currently not present. Monitor the scan tool data relative to this circuit while wiggle testing the wiring and connectors and looking for the DTC to reset.
Using the wiring schematic as a guide, inspect the related wiring and connectors of the Immobilizer control module.
Verify that there is good terminal contact in the related connectors.

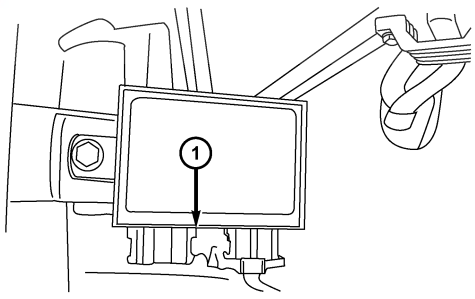
3. CHECK IMMOBILIZER CONTROL MODULE ELECTRICAL CONNECTOR

- Turn ignition switch off.
- Disconnect the Immobilizer control module electrical connectors C-026 (1).
- Inspect the electrical connector for damage.

Is the electrical connector OK?

Yes >> Go to the next step.

No >> Repair or replace the electrical connector as necessary.



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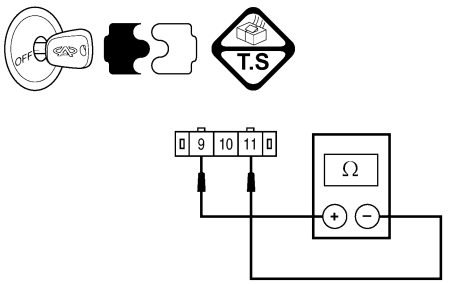
4. CHECK THE IMMOBILIZER COIL

- Check the resistance of the Immobilizer coil between the Immobilizer coil connector C-026, pin 9 and pin 11.

IMMOBILIZER COIL TERMINAL	IMMOBILIZER COIL TERMINAL
9	11



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Is the resistance range from 5 to 20 ohms?

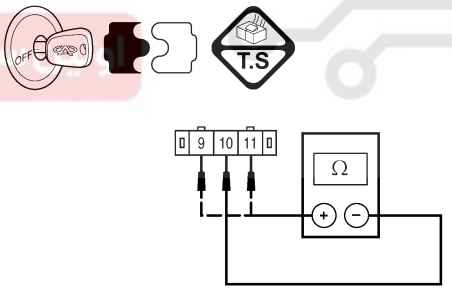
Yes >> Go to the next step.

No >> Replace the Immobilizer coil.

5. CHECK IMMOBILIZER COIL

- Check the resistance between the Immobilizer coil connector C-026, pin 9 and pin 10.
- Check the resistance between the Immobilizer coil connector C-026, pin 11 and pin 10.

IMMOBILIZER COIL TERMINAL	IMMOBILIZER COIL TERMINAL	CONTINUITY
9	10	Not
11	10	



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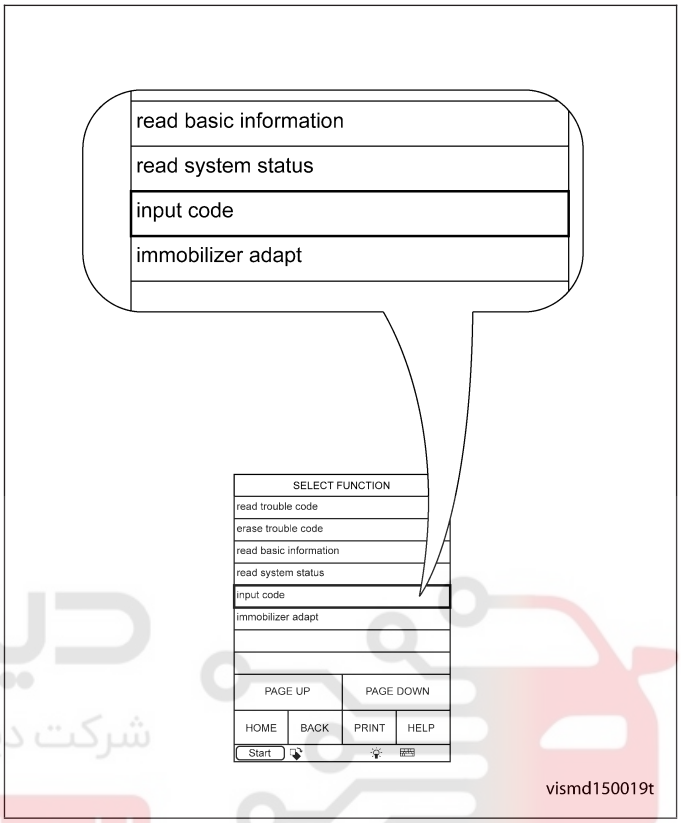
Is the check result normal?

Yes >> Go to the next step.

No >> Replace the Immobilizer coil.

6. PROGRAM THE TRANSPONDER

- Turn ignition switch on.
- Using the X-431 scan tool, program the vehicle security system.
-
- Turn ignition switch on and perform the following:
  - With the X-431 scan tool, choose T11 series.
  - Choose ″immobilize″.
  - Input the safety code.
  - Click the small keyboard.
  - Click ″OK″.
  - Choose ″Immobilizer adapt″.
  - Choose ″Key learning″ immediately.
  - Click ″OK″.



- Try to start the engine.
- With the X-431 scan tool, view active DTCs in the Immobilizer control module.

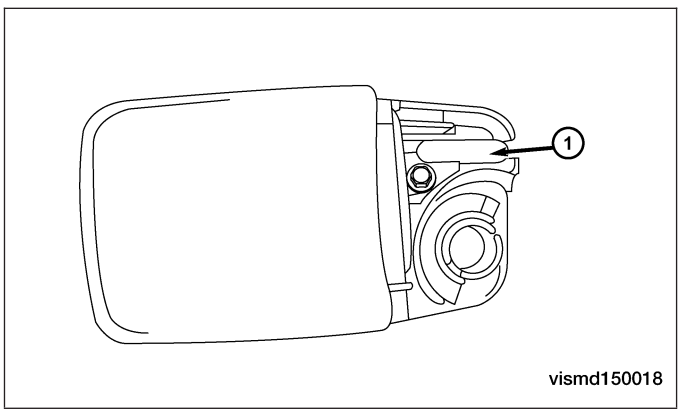
Is DTC B3060, B3061 or B3077 present?

Yes >> Go to the next step.

No >> No problem found at this time.
This concern may have been caused by the not programmed transponder.
Erase all codes before returning the vehicle to the customer.

7. REPLACE AND PROGRAM THE TRANSPONDER

- Replace the chip (1) with a new one.

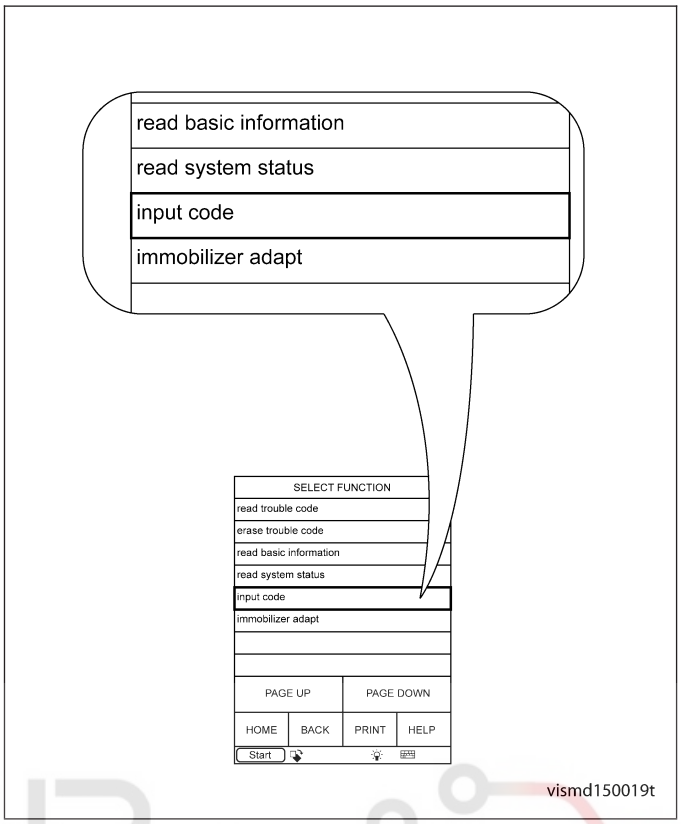


- Turn ignition switch on.
- Repeat step 5.
- Try to start the engine.
- With the X-431 scan tool, view DTCs in the Immobilizer control module.

Is DTC B3060, B3061 or B3077 present?

Yes >> Replace and program the Immobilizer control module (See Immobilizer Control Module Removal & Installation in Chapter 15 Body & Accessories). Go to the next step.

No >> No problem found at this time.
This concern may have been caused by the transponder fault.
Erase all codes before returning the vehicle to the customer.



8. VERIFY NEW IMMOBILIZER CONTROL MODULE

- Try to start the engine.
- With the X-431 scan tool, view active DTCs in the Immobilizer control module.

Is DTC B3060, B3061 or B3077 present?

Yes >> Go to the next step.

No >> No problem found at this time.
This concern may have been caused by the Immobilizer control module fault.
Erase all codes before returning the vehicle to the customer.

9. REPLACE AND MATCH ECM

- Using the wiring schematic as a guide, inspect the related wiring and connectors of the ECM.
- Verify that there is good terminal contact in the related connectors.
- Try to start the engine.
- With the X-431 scan tool, view active DTCs in Immobilizer control module.

Is DTC B3060, B3061 or B3077 still present?

Yes >> Replace the ECM and match the ECM to the Immobilizer control module (See Electronic Control Module Removal & Installation in Section 03 Electronic Engine Controls) (This concern may have been caused by an ECM internal fault).

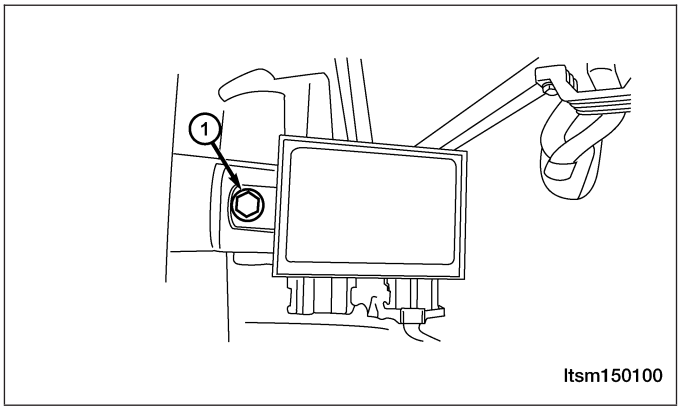
No >> No problem found at this time.

ON-VEHICLE SERVICE

Immobilizer Control Module

Removal & Installation

1. Remove the instrument panel (See Instrument Panel Removal & Installation in Section 15 Body & Accessory).
2. Remove the steering column mounting bolts.
3. Remove the Immobilizer control module mounting bolt (1).



4. Disconnect the Immobilizer control module electrical harness.
5. Installation is in the reverse order of removal.

Installation Notes:

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NOTE :
The Immobilizer control module must be matched to the ECM before the vehicle will start.

Matching Engine Control Module (ECM) To New Immobilizer Control Module

Perform the following to match the ECM to the Immobilizer control module:

- With the X-431 scan tool, choose T11 series.
- Choose ″immobilize″.
- Choose ″input code″.
- Input the safety code.
- Click the small keyboard.
- Click ″OK″.
- Choose ″Immobilizer adapt″.
- Choose ″read EMS to Immobilizer″ immediately.
- Click ″OK″.