
BODY ELECTRICAL

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36.1 INSTRUMENT CLUSTER SYSTEM

1 Warnings and Precautions

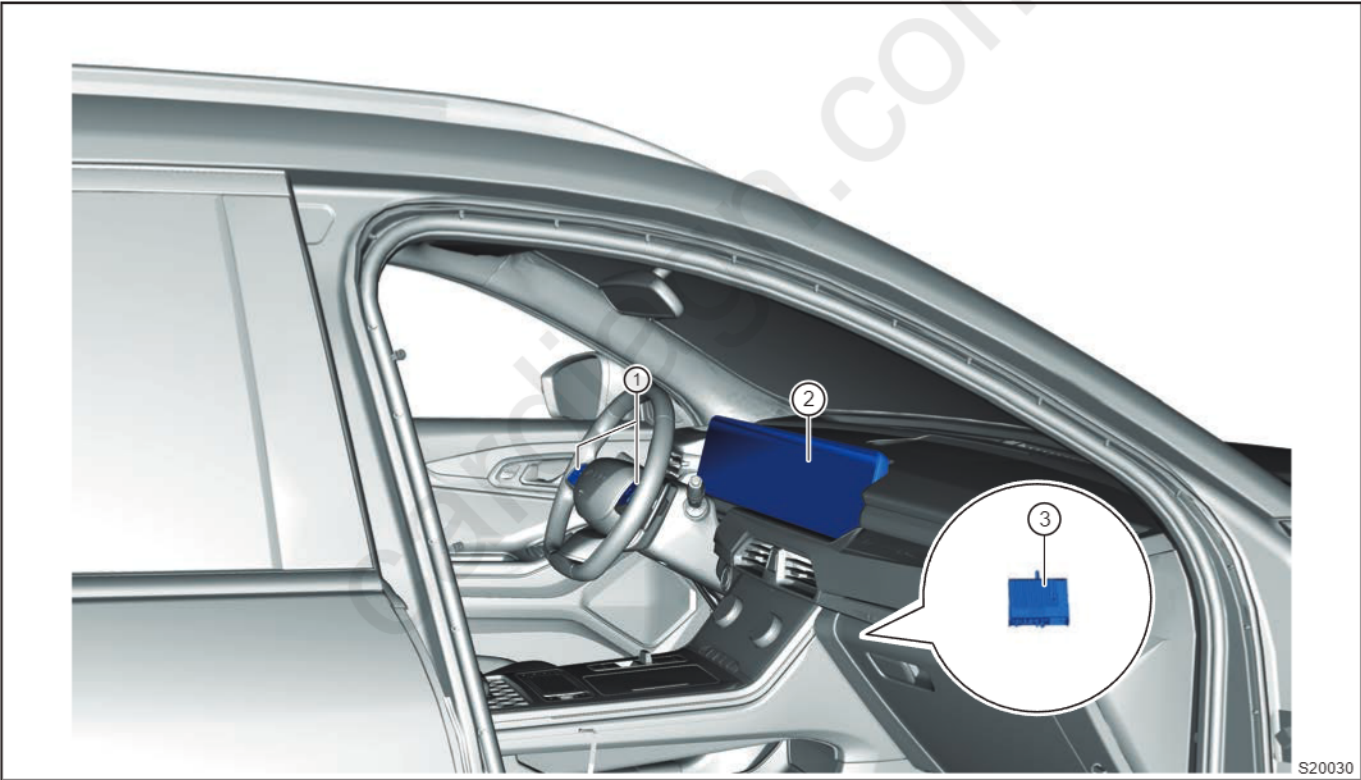
1.1 Precautions

In order to avoid possible property loss, personal injury or death, always follow the instructions below before repair.

- (1) Try to prevent interior and body paint from being scratched, when removing instrument cluster.
- (2) Be sure to wear necessary safety equipment to prevent accidents, when removing instrument cluster.
- (3) Appropriate force should be applied, when removing instrument cluster. Be careful not to operate roughly.
- (4) When removing the instrument cluster, handle it with care, so as to avoid bump caused by meter needle and dial looseness or deviation to initial position.

2 SYSTEM OVERVIEW

2.1 Instrument Cluster



1	Steering Wheel Quick Button	2	Dual-screen
3	Domain Controller		

2.2 System Principle

- (1) A domain controller indicates that at least one server is responsible for the verification of each computer and user connected to the network in "domain" mode, which is equivalent to the guard of a unit, called "- Domain Controller (abbreviated for DCM)". In T1D model, the domain controller integrates the instrument cluster module (ICM) and the audio head unit module (RRM) into one module, but both the modules still operate independently by their independent ECU.
- (2) The domain controller (instrument cluster) part still maintains the traditional instrument cluster function.

- (3) ESP function has a setting item on instrument cluster. Customer can set it to ON or OFF by themselves. The instrument cluster sends out the state set by customer, and ESP module receives the state and sends out the actual state signal. The setting item of instrument cluster is displayed according to the feedback signal of ESP module.
- (4) The data between domain controller (instrument cluster) and instrument cluster display is transmitted via low voltage differential signal (LDVS).
- (5) The multi-function steering wheel controls the domain controller (instrument cluster) by transmitting signal to the central gateway module (CGW) via LIN line, and then transmitting information via CAN line network.
- (6) The multi-function steering wheel (standard type) controls the domain controller (instrument cluster) by transmitting information directly via ordinary dedicated line.
- (7) The oil pressure switch/driver seat belt switch/fuel pump and sensor/brake fluid level are transmitted to the domain controller (instrument cluster) via ordinary dedicated line.
- (8) Central console switch (driving mode) is transmitted to the domain controller (instrument cluster) via ordinary dedicated line.
- (9) Central console switch (audio power supply switch (standard and comfort models)/LDW/LKA (luxury and honourable models) is transmitted to the domain controller (instrument cluster) via ordinary dedicated line.

2.3 Operation/Malfunction Indicator

Operation indicator is used to prompt the driver that some system on vehicle is operating and corresponding operation indicator will come on. Malfunction indicator is used to warn the driver that some system on vehicle is operating and corresponding malfunction indicator will come on or flash.

Daytime Running Indicator		When engine is started, daytime running indicator comes on.
Position Indicator		When position light is turned on, the indicator comes on.
Turn Light Indicator		When left turn signal light or right turn signal light is turned on, the corresponding turn signal indicator will also flash together. When hazard warning light switch is turned on, the left and right turn signal indicators will flash at the same time.
High Beam Indicator		When high beam light is turned on or high beam light flashes, the indicator comes on.
Automatic Headlight Operating Indicator		The indicator is used to indicate the current operating status of automatic headlight.
Automatic Headlight Malfunction Indicator		The indicator is used to indicate the current malfunction status of automatic headlight. Please go to EXEED service station for inspection and repair as soon as possible.
Front Fog Indicator		When front fog light is turned on, the rear fog indicator comes on.
Rear Fog Indicator		When rear fog light is turned on, the rear fog indicator comes on.

Front Seat Belt Indicator		When ENGINE START STOP switch is switched to ON mode, if driver and front passenger seat belts are not fastened or not fastened in place, the indicator remains on. When vehicle speed is 25 km/h or more, the indicator flashes to remind driver to fasten the seat belt. For detailed information, please refer to "2-7. Seat Belt" .
Rear Seat Belt Indicator		When ENGINE START STOP switch is switched to ON mode, if rear seat belt is not fastened or not fastened in place, the indicator remains on in red (the indicator comes on in green after the rear seat belt is fastened) to remind the rear occupants to fasten their seat belts. For detailed information, please refer to "2-7. Seat Belt".
Road Ice Indicator		The indicator is used to remind driver that the road is easy to freeze, please drive with caution.
Door Opening Reminder Indicator		The indicator is used to remind driver the opening and closing statuses of door.
ECO Mode Indicator		When ECO mode is turned on, the indicator comes on.
NORMAL Mode Indicator		When NORMAL mode is turned on, the indicator comes on.
SPORT Mode Indicator		When SPORT mode is turned on, the indicator comes on.
Pre-collision System Operating Indicator		The indicator is used to indicate the operating status of pre-collision system.
Pre-collision System Malfunction Indicator		The indicator is used to indicate the malfunction status of pre-collision system. Please go to EXEED service station for inspection and repair as soon as possible.
Electrical Parking Indicator		The indicator is used to indicate the current operating status of electrical parking of vehicle. For detailed information, please refer to "3-4. Brake System".
ESC OFF Indicator		After ESC function is turned off, ESC OFF indicator comes on, indicating that electronic body stability system (ESC) is in the shielding status.

ESC Indicator		The indicator flashes to indicate the current operating status of vehicle ESC. The indicator remains on to remind the driver that there is a malfunction in ESC. Please go to EXEED service station for inspection and repair as soon as possible. When ESC malfunction indicator comes on, and the vehicle still has conventional braking capability (without ESC), please go to EXEED service station for inspection and repair as soon as possible. Drive with caution and avoid high speed driving.
Fatigue Driving Indicator		The indicator is used to remind driver that it is necessary to take a break.
EPS Malfunction Indicator		The indicator remains on to indicate that the electronic power steering system is malfunctioning.
4WD Malfunction Indicator		The indicator is used to remind driver that there is a malfunction in 4WD. Please go to EXEED service station for inspection and repair as soon as possible.
Lane Keeping Assist System (LKA) Malfunction Indicator		The indicator is used to indicate that there is a malfunction in Lane Keeping Assist (LKA). Please go to EXEED service station for inspection and repair as soon as possible.
Lane Departure Warning System (LDW) Malfunction Indicator		The indicator is used to indicate that there is a malfunction in Lane Departure Warning System (LDW). Please go to EXEED service station for inspection and repair as soon as possible.
Idle Start and Stop System Malfunction Indicator		The indicator is used to indicate that the idle start and stop system is in malfunction status. Please go to EXEED service station for inspection and repair as soon as possible.
Blind Spot Detection (BSD) Malfunction Indicator		The indicator is used to indicate that the Blind Spot Detection (BSD) system is in malfunction status. Please go to EXEED service station for inspection and repair as soon as possible.
Maintenance Reminder Indicator		The indicator is used to remind driver that vehicle needs to be maintained. Please go to EXEED service station for inspection and repair as soon as possible.

Automatic Parking System Operating Indicator		The indicator is used to indicate the operating status that vehicle is in automatic parking.
Following Operating Indicator		The indicator is used to remind driver that adaptive cruise system detects a vehicle ahead, please drive carefully.
Steering Angle Initialization Uncompleted Indicator		The indicator remains on to indicate that the electronic power steering system is not initialized or not calibrated currently.
HDC Indicator		The indicator is used to indicate that the hill descent function of vehicle is in operating status.
HDC Malfunction Indicator		The indicator is used to indicate that the hill descent control of vehicle is in malfunction status. Please go to EXEED service station for inspection and repair as soon as possible.
ABS Malfunction Indicator		The indicator is used to remind driver that ABS is malfunctioning. Please go to EXEED service station for inspection and repair as soon as possible. When ABS malfunction indicator comes on, and the vehicle still has conventional braking capability (without ABS), please go to EXEED service station for inspection and repair as soon as possible. Drive with caution and avoid high speed driving.
Charging System Indicator		The indicator is used to indicate the operating status of charging system. If the indicator does not come on when ENGINE START STOP switch is switched to ON mode or the indicator comes on after starting, please go to EXEED service station for inspection and repair as soon as possible.
High Coolant Temperature Warning Indicator		The indicator is used to remind driver that engine coolant temperature is too high, drive vehicle to a safe area and stop it, turn off ENGINE START STOP switch after idling for several minutes, then contact EXEED service station for inspection and repair immediately.
Low Fuel Level Warning Light		The indicator is used to remind driver that the fuel is insufficient. Please add fuel as soon as possible.

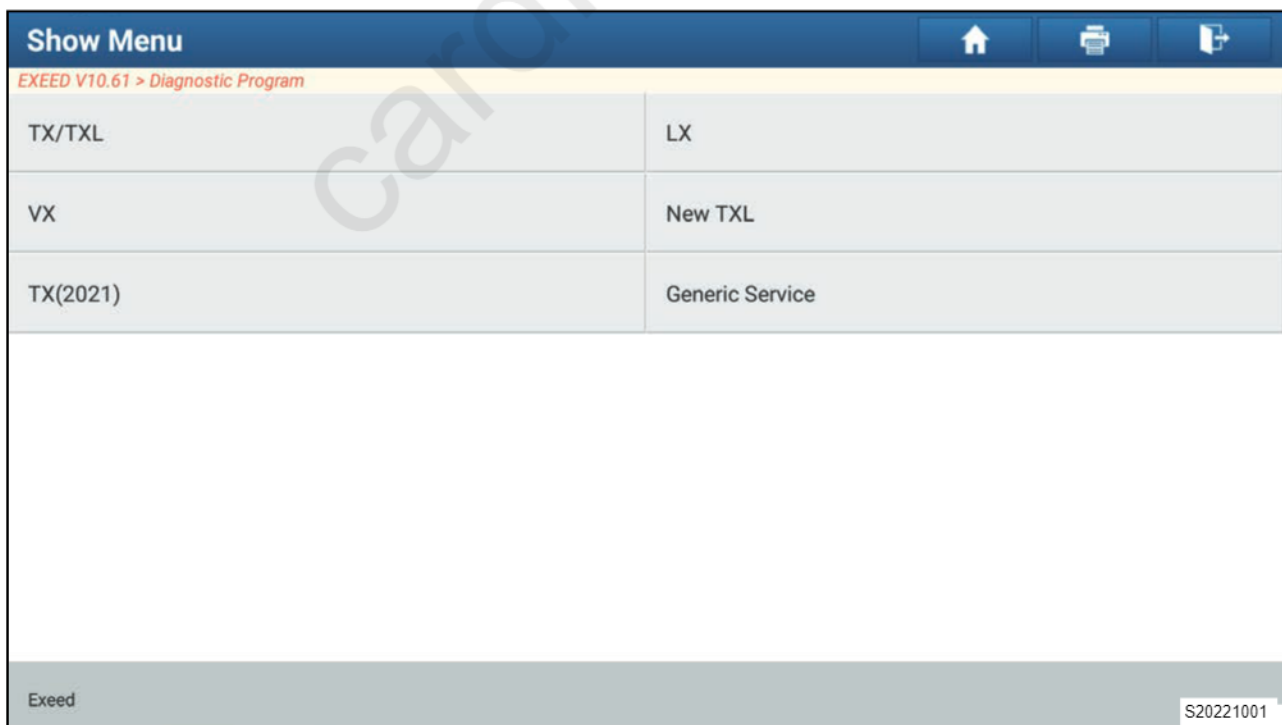
Airbag Malfunction Indicator		The indicator is used to remind driver that airbag system is malfunctioning. Please go to EXEED service station for inspection and repair as soon as possible.
Tire Pressure Malfunction Indicator		The indicator is used to remind driver that tire pressure is malfunctioning. Please check if tire pressure is too low or too high. If tire pressure is normal, please go to EXEED service station for inspection and repair as soon as possible.
Brake System Malfunction Indicator		The indicator is used to remind driver that brake fluid level is too low or brake system is malfunctioning. Please contact EXEED service station for inspection and repair immediately.
Low Oil Pressure Warning Indicator		The indicator is used to remind driver that engine oil pressure is low. Please drive vehicle to a safe area and stop it, then contact EXEED service station for inspection and repair immediately.
Engine Malfunction Indicator		The indicator is used to remind driver that engine is malfunctioning. Please contact EXEED service station for inspection and repair immediately.
Security Indicator		The indicator comes on to indicate that there is a malfunction in a certain system of vehicle. Please go to EXEED service station for inspection and repair as soon as possible.
Gasoline Particulate Filter (GPF) Indicator		When the indicator comes on and "Gasoline Particulate Filter (GPF) is full, please increase vehicle speed and clean it" is displayed by flashing and then disappears, in order to make particles in GPF oxidize and burn completely, the driver needs to take the following actions: Drive at high speed (at speed of 80 km/h or more for up to 1 hour or at speed of more than 50 km/h for up to 2 hours) as much as possible if road conditions permit until particles are cleared and GPF indicator goes off automatically. Finally, please subject to the light off. If the indicator still comes on, please contact EXEED service station for inspection and repair as soon as possible.

Gasoline Particulate Filter (GPF) Malfunction Indicator		The indicator comes on to indicate that Gasoline Particulate Filter (GPF) is full, (particles are too much). In order to make particles in GPF oxidize and burn completely, the driver needs to take the following actions: Drive at high speed (at speed of 80 km/h or more for up to 1 hour or at speed of more than 50 km/h for up to 2 hours) as much as possible if road conditions permit until particles are cleared and GPF indicator goes off automatically. Finally, please subject to the light off. If the indicator still comes on, please contact EXEED service station for inspection and repair as soon as possible.
Transmission Malfunction Indicator		The indicator is used to remind driver that transmission system is malfunctioning. Please contact EXEED service station for inspection and repair immediately.
Transmission P Position Malfunction Indicator		The indicator is used to indicate that transmission P position is malfunctioning. Please contact EXEED service station for inspection and repair immediately.

2.4 Maintenance Indicator Clearing

■ Diagnostic tester clearing

(1) Click "New TXL" to enter "Show Menu".



(2) Click "System Selection".

Show Menu	
EXEED V10.61 > New TXL	
Health Report	
System Selection	
ECU Online Programming	
Exeed New TXL	
S20222001	

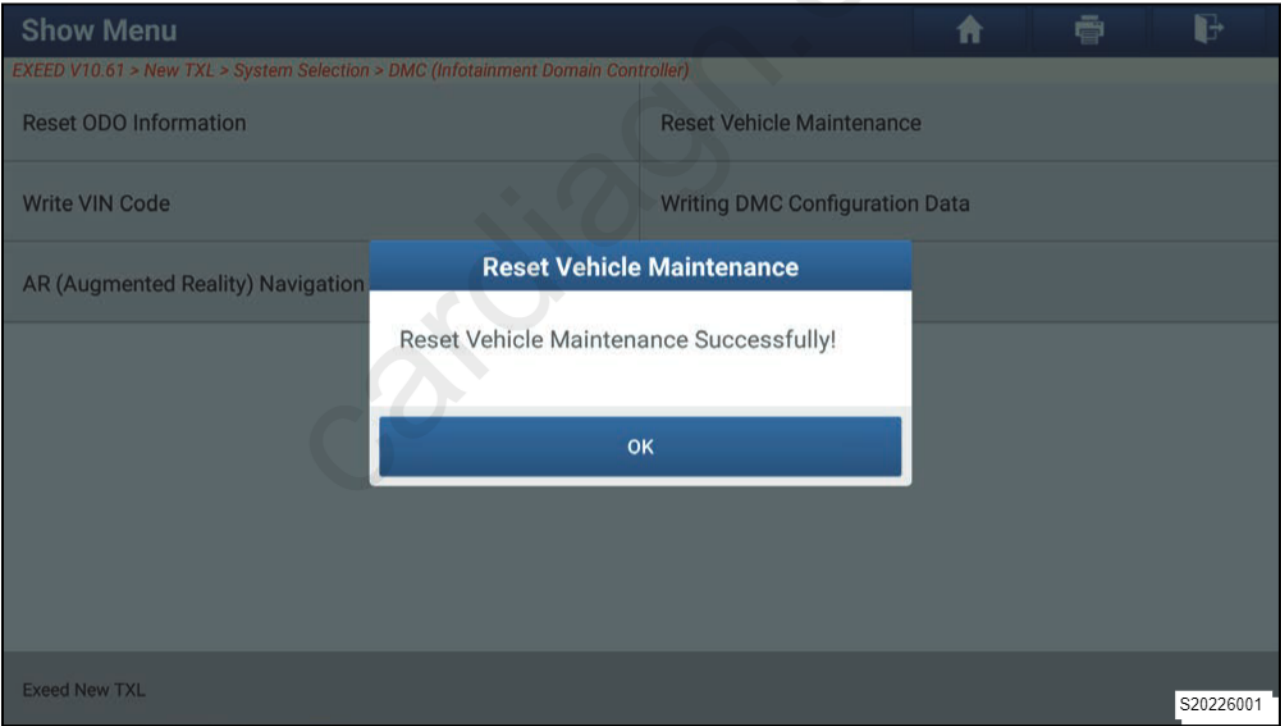
(3) Click “DMC (Infotainment Domain Controller)”

Show Menu	
EXEED V10.61 > New TXL > System Selection	
EMS (Engine Management System)	TCU (Transmission Control Unit)
BCM (Body Control Module)	ESP(IEPB)(Electronic Stability Program (Integration Electrical Park Brake))
EPS (Electronic Power Steering)	AIPM (Integrated Panel Module)
CLM (Climate Module)	DMC (Infotainment Domain Controller)
AVM (Around View Monitor Module)	PDC (Parking Distance Control)
BSDL (Blind Spot Detection Left)	BSDR (Blind Spot Detection Right)
PEPS (Passive Entry And Passive Start System)	FCM (Front Camera Module)
Exeed New TXL	
S20223001	

(4) Click “Reset Vehicle Maintenance”

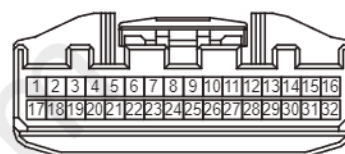
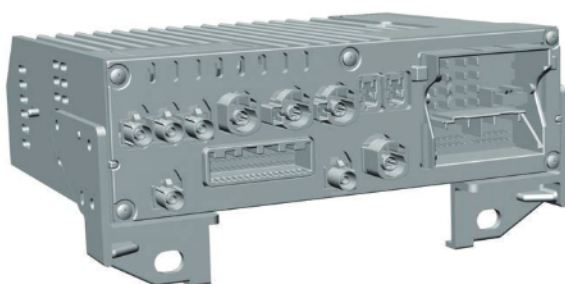


(5) Reset Vehicle Maintenance Successfully



3 DIAGNOSIS & TESTING

3.1



S20060

Pin	Definition	Pin	Definition
1	-	17	-
2	-	18	-
3	-	19	-
4	Driving Mode Signal	20	-
5	-	21	-
6	-	22	-
7	-	23	-
8	-	24	-
9	Oil Pressure Signal	25	-
10	-	26	Brake Fluid Level Signal
11	-	27	-
12	-	28	-

Pin	Definition	Pin	Definition
13	-	29	CAN-L
14	-	30	CAN-H
15	-	31	-
16	-	32	-

3.2 Problem Symptoms Table

Hint:

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

Symptom	Suspected Area
Entire instrument cluster does not operate	Fuse
	Domain controller
	Wire harness or connector
Vehicle speed displays abnormally	Wheel speed sensor
	Wire harness or connector
	Domain controller
Tachometer is abnormal	Engine speed sensor
	Domain controller
	Wire harness or connector
	Engine Control Module (ECM)
Fuel gauge is abnormal	Fuel level sensor
	Domain controller
	Wire harness or connector
Position indicator is abnormal	Position light switch (combination light switch assembly)
	Wire harness or connector
	Domain controller
	Body Control Module (BCM)
Turn signal indicator is abnormal	Turn signal light switch (combination light switch assembly)
	Body Control Module (BCM)
	Domain controller
	Wire harness or connector
High beam indicator is abnormal	High beam switch (combination light switch assembly)
	Body Control Module (BCM)
	Domain controller
	Wire harness or connector
Rear fog indicator is abnormal	Rear fog light switch (combination light switch assembly)

Symptom	Suspected Area
	Body Control Module (BCM)
	Domain controller
	Wire harness or connector
Charging system warning light is abnormal	Alternator
	Domain controller
	Wire harness or connector
Low engine oil pressure warning light is abnormal	Engine oil level
	Engine oil pressure switch
	Wire harness or connector
	Domain controller
ABS warning light is abnormal	ABS control unit assembly
	CAN line or connector
	Domain controller
Coolant temperature warning light is abnormal	Coolant level
	Extremely high engine coolant temperature
	Coolant Temperature Sensor
	Wire harness or connector
	Domain controller
	Body Control Module (BCM)
Engine malfunction warning light is abnormal	CAN line or connector
	Engine Control Module (ECM)
	Domain controller
SRS warning light is abnormal	CAN line or connector
	Airbag control module (SRS)
	Domain controller
Driver seat belt reminder light is abnormal	Driver seat belt buckle switch
	Wire harness or connector
	Domain controller
Front passenger seat belt reminder light is abnormal (If equipped)	Front passenger seat belt buckle switch
	Wire harness or connector
	Domain controller
Brake system warning light is abnormal	Low brake fluid level
	Parking brake switch
	Domain controller
Cruise Indicator is abnormal	Cruise switch (multi-function switch)

Symptom	Suspected Area
Transmission malfunction warning light is abnormal	Wire harness or connector
	Domain controller
	Transmission Control Unit (TCU)
Low tire pressure warning light is abnormal	CAN line or connector
	Domain controller
	Low or high tire pressure (tire pressure is not within specified range)
	Domain controller

3.3 Diagnostic Help

- (1) Connect diagnostic tester X-431 3G (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- (2) Confirm that malfunction is current, and carry out diagnostic test and repair procedures.
- (3) If Diagnostic Trouble Code (DTC) cannot be cleared, it indicates that there is a current malfunction.
- (4) Only use a digital multimeter to measure voltage of electronic system.
- (5) Refer to any Technical Bulletin that may apply to this malfunction.
- (6) Visually check related wire harness and connector.
- (7) Check and clean all CD system grounds related to the latest DTCs.
- (8) If numerous trouble codes are set, refer to circuit diagram and look for any common ground circuit or power supply circuit applied to DTC.

3.4 Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

- Check if connector is loose.
- Check if wire harness is worn, pierced, pinched or partially broken.
- Monitor diagnostic tester (the latest software) data that is related to this circuit.
- Wiggle related wire harnesses and connectors and observe if signal is interrupt in related circuit.
- If possible, try to duplicate the conditions under which DTC was set.
- Look for data that has changed or DTC to reset during wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Inspect airbag components and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- Check and clean all wire harness connectors and ground parts related to DTC.
- If multiple trouble codes were set, refer to circuit diagrams to look for any common ground circuit or power supply circuit applied to DTC.
- Refer to any Technical Bulletin that may apply to this malfunction.

3.5 Ground Inspection

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

- (1) Remove ground bolt or nut.
- (2) Check all contact surfaces for tarnish, dirt and rust, etc.
- (3) Clean as necessary to ensure that contact is in good condition.
- (4) Reinstall ground bolt or nut securely.
- (5) Check if any additional accessories interfere with ground circuit.

- (6) If several wire harnesses are crimped into one ground terminal, check for proper crimp condition. Make sure that all wire harnesses are clean and securely fastened while providing a proper ground path.

3.6 Diagnostic Trouble Code (DTC) Chart

DTC	DTC Definition
B1104-41	Instrument Cluster EEPROM Data Checksum Error
U0073-88	BD CAN Busoff
U1010-88	IFT CAN Busoff
U0140-87	Lost Communication with Body Control Module
U0214-87	Lost Communication with Passive Entry Passive Start (PEPS)
U0164-87	Lost Communication with A/C Controller
U0141-87	Lost Communication with Reversing Radar
U0142-87	Lost Communication with Around View Monitor Module
U0230-87	Lost Communication with PLG-Missing Message
U0100-87	Lost Communication with EMS-Missing Message
U0129-87	Lost Communication With Brake System Module
U0101-87	Lost Communication with TCU
U0151-87	Lost Communication with ABM
U1157-87	Lost Communication with Blind Spot Detection
U0131-87	Lost Communication with Electronic Power Steering Module
U1162-87	Lost Communication with Front Camera Module
U1163-87	Lost Communication With FRM-Missing Message
U1193-87	Lost Communication with Electric Shifting Controller
U1189-87	Lost Communication with MFS-Missing Message
U0126-87	Lost Communication with SAM
U1300-55	Software Configuration Error

3.7 DTC Diagnosis Procedure

DTC	B1104-41	Instrument Cluster EEPROM Data Checksum Error
DTC	DTC Definition	Possible Causes
B1104-41	Instrument Cluster EEPROM Data Checksum Error	Instrument cluster internal fault

■ DTC Confirmation Procedure

Confirm that battery voltage is not less than 12 V before performing the following procedures.

- Turn ENGINE START STOP switch to OFF.
- Connect the diagnostic tester (the latest software).
- Start engine and warm it up, and then read DTC again. If DTC is detected, malfunction is current.
- If DTC is not detected, malfunction is intermittent.

Hint:

When performing circuit diagnosis and test, always refer to the circuit diagram for specific circuit and component information.

1 Power off test

- (a) Turn ENGINE START STOP switch to OFF.
 (b) Disconnect the negative battery cable and wait for 3 minutes to check if it recovers.

NG**Clear DTCs****OK****2 Reconfirm DTCs**

- (a) Connect diagnostic tester and clear DTCs.
 (b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.
 (c) Read the fault information and confirm that the fault has been solved.

NG**Replace domain controller****OK****Conduct test and confirm that malfunction has been repaired**

DTC	U0073-88	BD CAN Busoff
DTC	U1010-88	IFT CAN Busoff
DTC	U0140-87	Lost Communication with Body Control Module
DTC	U0214-87	Lost Communication with Passive Entry Passive Start (PEPS)
DTC	U0164-87	Lost Communication with A/C Controller
DTC	U0141-87	Lost Communication with Reversing Radar
DTC	U0142-87	Lost Communication with Around View Monitor Module
DTC	U0230-87	Lost Communication with PLG-Missing Message
DTC	U0100-87	Lost Communication with EMS-Missing Message
DTC	U0129-87	Lost Communication With Brake System Module
DTC	U0101-87	Lost Communication with TCU
DTC	U0151-87	Lost Communication with ABM
DTC	U1157-87	Lost Communication with Blind Spot Detection
DTC	U0131-87	Lost Communication with Electronic Power Steering Module
DTC	U1162-87	Lost Communication with Front Camera Module
DTC	U1163-87	Lost Communication With FRM-Missing Message
DTC	U1193-87	Lost Communication with Electric Shifting Controller
DTC	U1189-87	Lost Communication with MFS-Missing Message

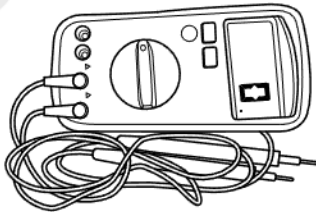
DTC	U0126-87	Lost Communication with SAM
DTC	U1300-55	Software Configuration Error

■ **DTC Confirmation Procedure**

Refer to CAN communication system

4 ON-VEHICLE SERVICE

4.1 Tools

Tool Name	Tool Drawing
X-431 PAD Diagnostic Tester	 RCH0001006
Digital Multimeter	 RCH000206

4.2 Dual Liquid Crystal Display

■ **Removal**

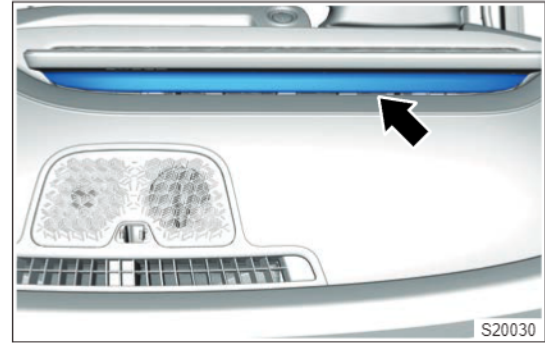
Warning

- **Be sure to wear necessary safety equipment to prevent accidents, when removing instrument cluster.**
- **Appropriate force should be applied, when removing instrument cluster. Be careful not to operate roughly.**
- **When removing the instrument cluster, handle it with care, so as to avoid bump caused by meter needle and dial looseness or deviation to initial position.**

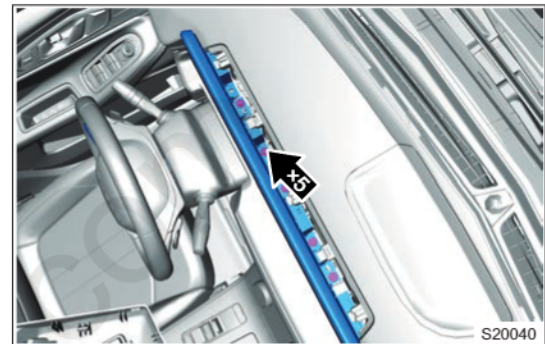
(1) Turn off all electrical equipment and ENGINE START STOP switch.

(2) Disconnect the negative battery cable.

- (3) Using an interior crow plate, pry off screw block cover.



- (4) Remove 5 fixing bolts from dual liquid crystal display.



- (5) Disconnect dual liquid crystal display connector, and remove dual liquid crystal display.

■ Installation

Caution

- Tighten fixing nut to specified torque, when installing dual liquid crystal display.
- Install connector into place, when installing dual liquid crystal display.
- Check audio system for proper operation, after installing dual liquid crystal display.

- (1) Installation is in the reverse order of removal.