2011 CX20

Workshop Manual

Contents

Chapter 4 Electrical

Chapter 5 Vehicle Body

4. It says flammable and explosive liquid or vapor is nearby and use of fire is forbidden.

   Reference: Fire Protection


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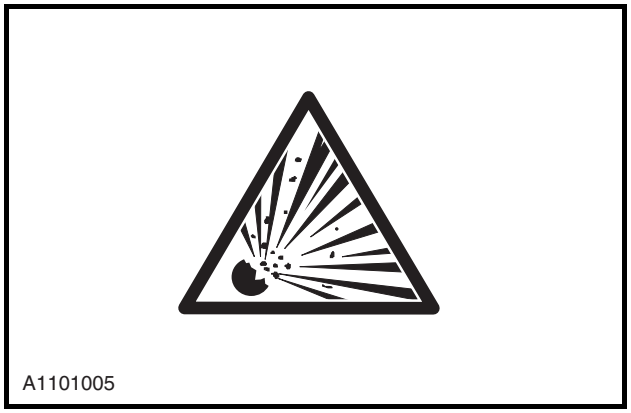
5. This sign (usually connected with above 5 warning signs) says that explosive objects might be nearby.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6. It says that children are forbidden enter unwatched places.


A1101006

White Spirit

Reference: Solvents

Standard Workshop Practise

Vehicles in the Workshop

Ensure as below when repairing vehicles in the workshop:

- Set the parking brake or fix wheels to prevent the vehicle moving back and forth.
- Remove the ignition system key before operation on the vehicle.
- If you want to start the engine, you should ensure good ventilation or get the waste gas exhausted by the exhaust tract.
- Enough space should be provided when lifting and replacing the tires if necessary.
- Wing pad should be offered when repairing in the engine compartment.
- Cut off the battery power when repairing the engine, repairing under the vehicle or lifting the car.

⚠ Warning: When electric arc welding is conducted on the vehicle, disconnect the wire harness of the engine first, to avoid any possible high current damaging the internal components of the engine.

In the use of welding equipment on the vehicle, a fire extinguisher should be placed nearby.

Vehicle Traction

⚠ Warning: When towing the vehicle, the ignition system switchgear should be turned to the "**ACC**" position. (Open the steering lock and start the warning lights) Then the indicators, horn and brake lights work normally, otherwise it will cause injury.

⚠ Caution: The movable hitch has a left hand thread, which should be completely tightened before towing the vehicle. The traction hitch should be used when towing the vehicle. The traction lope must be fastened to the hitch tightly. And the traction lope should be connected to another vehicle to prevent the vehicle wrapped.

As towing an automatic-transmission vehicle, its gear must be set on the N position. The traction speed of an automatic-transmission vehicle should not be over 50km/h, or the traction distance should not be over 50 km. If a vehicle has to be towed over a very long distance, the driving wheels must be completely off the ground.

Vehicles can be transported by low-bed trailers or tractors.

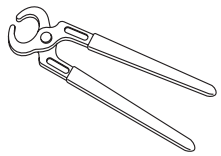
Use a jumper cables to connect the additional battery.

⚠ Warning: If the additional battery is charged and it gets gas-processed, the air vent should be covered by a plug or wet cloth when connecting the jumper cables. It can reduce the explosive hazards caused by the arc ignition system. If you don't follow this procedure, it will bring injury to people.

Outer constant velocity joint and rubber boot

Removal

Special Tools

 CA201-002	Pincers for removing the rubber boot of the half-axle CA201-002
 CA201-008	Pincers for installing the rubber boot of the half-axle CA201-008

Item	Model
High performance lubricating grease	2LN584/L0K575 GS

1. Remove the half-axle.

   Reference: Left Half-axle (2.2.2 Half-axle, Removal and Installation)

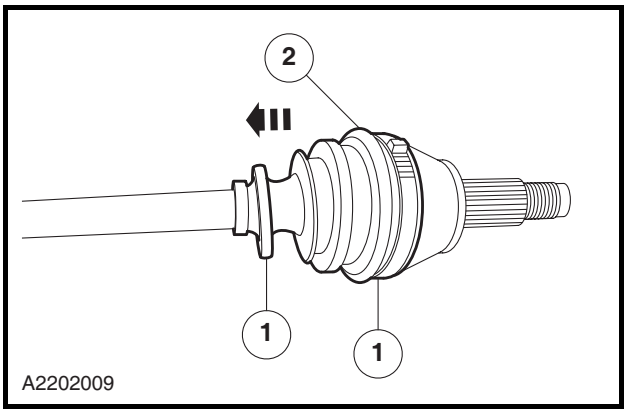
2. Remove the rubber boot clamp.

   1. Use the special tool to remove the rubber boot clamp.

   Special Tool: CA201-002

   2. Take off the rubber boot.

   3. Remove the lubricating grease.



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General Inspection

Adjust the parking brake cable.

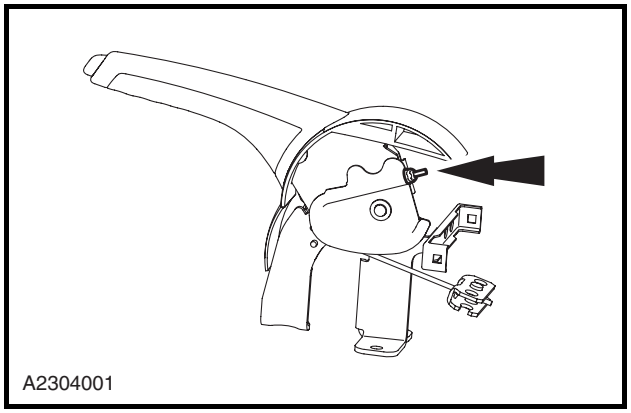
⚠ Notes: Before adjustment, inspect if the wear of the rear drum brake shoe exceeds the limit.

1. Remove the control cover.

Reference: Dashboard (5.1.6 Dashboard and Console, Removal and Installation).

2. Lower the parking brake handle.

3. Loosen the adjusting nut.



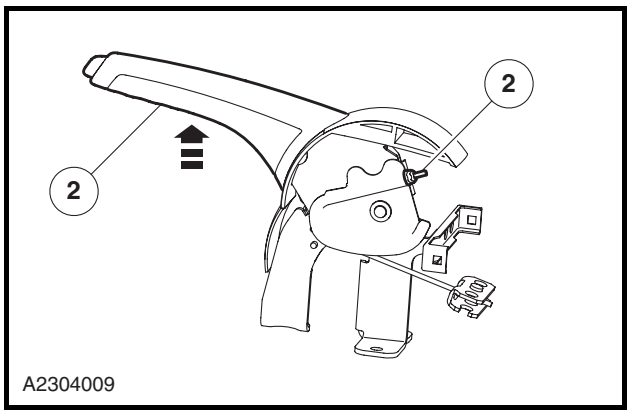
4. Repeatedly step on the brake pedal 6 times and then release it.

5. Draw back the parking cable with all your strength 4 times and then adjust the cable.

1. Draw back the parking brake handle until you hear four clicks.

2. Fasten the adjusting nut.

Torque: 5Nm



6. Test if the parking brake works normally.

7. Install the control cover.

11. Fasten the fixing bolts of the camshaft cover according to the sequence shown in the figure.

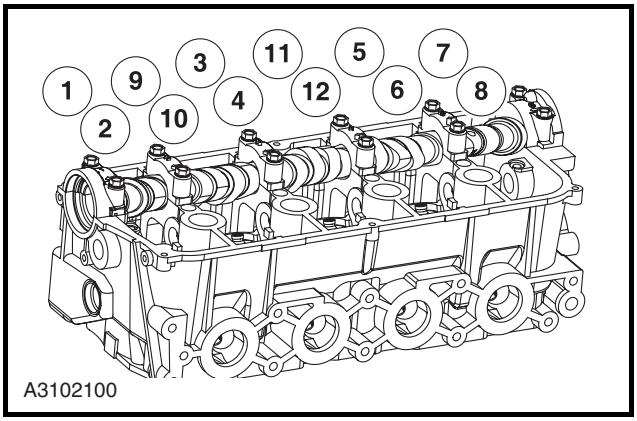
1. Coat a proper amount of engine oil on the fixing bolts of the camshaft cover.

2. Screw up the fixing bolts of the camshaft cover, but do not fasten them.

3. Fasten the fixing bolts according to the sequence shown in the figure.

⚠ Notes: The force shall be uniform, the bolt is fastened a little bit each time, and repeat three to fours times according to the sequence shown in the figure to finally fasten the bolt with the specified torque.

Torque: 11Nm



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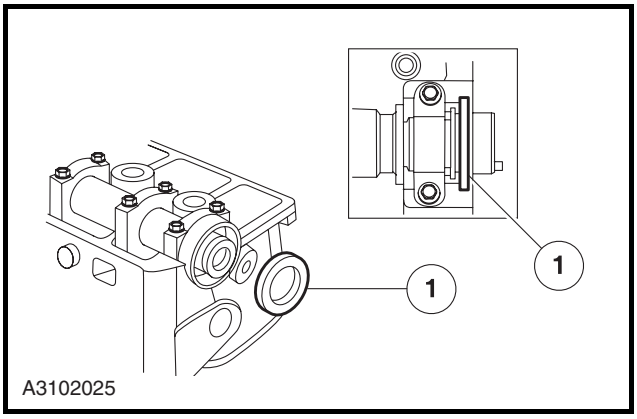
12. Use the special tool to install the camshaft seal.

1. Coat a proper amount of engine oil on lip of the camshaft seal.

2. Use the proper tool to press and mount the camshaft seal.

⚠ Notes: The camshaft seal is pressed and mounted until the seal surface is leveled to the cover surface.



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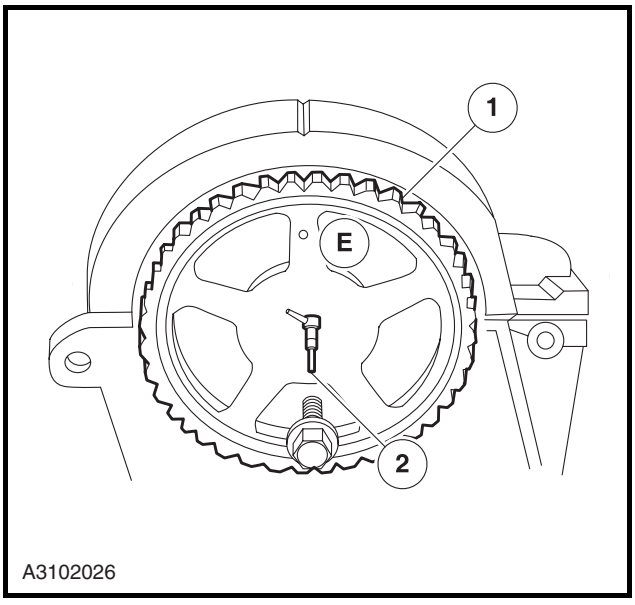
13. Install the camshaft timing pulley 1 on the camshaft.

14. Install the stop pin 2 of the camshaft into the key groove with an “E” mark.



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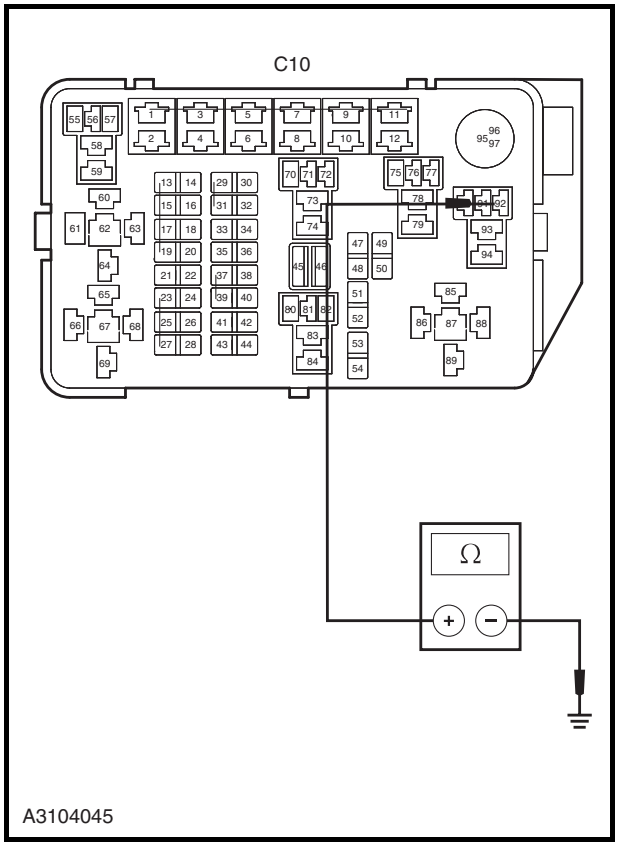
Electric Fan High-Speed Rotation Diagnosis Flow

1. Inspect the trouble code.	
	A. Connect the scanner, and turn the ignition switch to the 'ON' position. B. Diagnosing the engine system. Are there cooling system trouble codes? → **Yes** Reference: DTC Diagnosis Flow Index (3.1.13 Electronic Control System-MT22.1, DTC Diagnosis and Test). → **No** Turn to step 2.
2. Inspect the lines of the fan high-speed relay ER08 and ER05.	
	A. Turn the ignition switch to the 'LOCK' position. B. Disconnect the negative wire from the battery. C. Remove the fan high-speed relays EF08 and ER05 and disconnect the wire harness connector E01 of the engine control module (ECM). D. Measure the resistance between the No.92 terminal of the engine compartment fuse and relay box wiring harness connector C10 and the ground. **The standard resistance is 10 MΩ or higher.** Is the resistance normal? → **Yes** Replace the engine control module (ECM). Reference: Engine Control Module (3.1.13. Electronic Control System-MT22U, Removal and Installation) → **No** • Repair grounding short-circuit trouble of the line from the No.92 terminal of the engine compartment fuse and relay box wiring harness connector C10 to the No.77 terminal of the engine compartment fuse and relay box wiring harness connector C10; • Repair the grounding short-circuit trouble of the line from the No.92 terminal of the engine compartment fuse and relay box wiring harness connector C10 to the No.50 terminal of the ECM wire harness connector E01 of the engine control module.

Instruction and Operation

System Overview

Self-discharge of Battery

Theoretically, the self-discharge of the battery is inevitable. Though the self-discharge of the maintenance-free battery is far smaller than that of the common battery, there still is some of it. Even if the circuit opening is delayed, the charge of the battery is obviously consumed if the time is too long. The self-discharge of the battery is mainly influenced by the following factors:

1. The higher the temperature, the higher the self - discharge rate. Generally, the self - discharge rate is increased by 2.7 times each time the temperature rises by 10 °C, so that the difference of the self-discharge rate of the battery of the vehicle in summer and in winter is big.
2. The conditions of the storage site have large influences. High humidity and dust levels will increase the self-discharge of the battery.

Lost Capacitance of Battery after Vehicle Assembly

After the vehicle is assembled, the power loss of the battery is mainly comprised of the following aspects:

1. Power loss in debugging process.
2. Power loss of the continuously used apparatus in the vehicle, such as the antitheft alarm;
3. Leakage of electricity caused by poor insulation of elements on the vehicle;
4. Power loss caused by static current and the leakage current in the line of which the wire of the negative electrode is not plugged.

⚠ Notes: The standing time of the battery is related to many factors. Under normal conditions, the vehicle can still be started after the full battery is stood for 6 months with the wire of the negative electrode plugged in.

Charging System

The generator is characterized in that a solid regulator is installed inside. All parts of the regulator are installed in an airtight box. The regulator together with the electric brush assembly is installed on the slip ring and the frame, and the set voltage of the generator cannot be regulated.

The rotor bearing of the generator rotor has enough lubricating grease and does not need regular lubrication. The two electric brushes allow the current to flow to the exciter coils on the rotor through two slip rings. Under normal conditions, the electric brush can be free from the maintenance for a long time.

The stator winding is installed in the laminated iron core, which is the frame element of the generator. The commutator connected to the stator winding consists of 6 diodes, which converts the alternating current voltage on the stator into the direct current voltage on the output terminal of the generator. The pivotal diode is used for converting the fluctuation of the neutral solution voltage into the direct current to increase the output of the generator.

The capacitor installed on the regulator assembly performs voltage protection on the diode and restrains the interference of radio waves.

Component Description

Battery

The vehicle adopts the maintenance-free battery, which is different from the traditional battery in that: the battery cover has no vent hole plugs and. except for small vent holes on two sides of the battery, the battery is completely sealed.

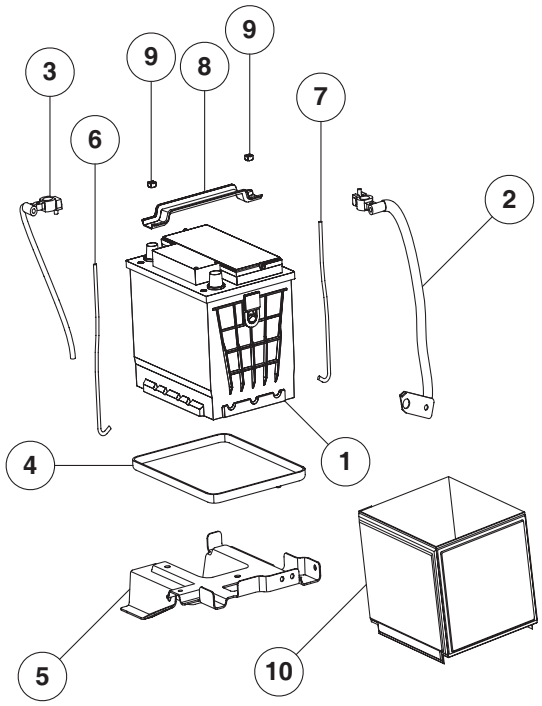
Compared with the regular battery, this battery has the following advantages:

1. Supplemental liquid is not required to be added during the life span of the battery.
2. Overcharge protection is performed.
3. Unlike the regular battery, it is not susceptible to electricity leakage.
4. The less the weight and capacity, the larger the capacitance.

If the test conditions of the battery are normal, but the voltage of the battery is not enough and the vehicle cannot be started after staying overnight, etc., you can find the reasons for the troubles from the following aspects:

1. The electric equipment in the vehicle is not turned off for a whole night.
2. The vehicle speed is slow, and the vehicle runs and stops frequently.
3. The electric load of the vehicle exceeds the generator output, in particular the vehicle equipped with after-sale installing devices.
4. The charging system has problems, such as electric short circuits, generator belt slipping, generator failure or regulator failure.
5. The battery use is unreasonable, comprising failure to keep cleaning and fastening of the cable terminal of the battery or the loosening of the fixing pressure plate of the battery.
6. The electric system has mechanical problems, such as lead short circuits or clamping.

Battery and Accessory



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Item	Description	Item	Description
1	Battery negative cable	6	Battery
2	Fixing Pressure Plate of Battery	7	Heat Shield of Battery
3	Nut	8	Battery Bracket
4	Battery positive cable	9	Battery Tray
5	Fixing Bolt II of Battery	10	Fixing Bolt I of Battery

Flowchart for Diagnosing that the Start Is Normal, but Idling Is too High.

Test Conditions	Details/Results/Measures
1. Inspect the trouble code.	
	A. Connect the scanner. B. Turn the ignition switch to the 'ON' position and diagnose the engine system. Is there a trouble code? → **Yes** Turn to the DTC diagnosis flowchart. Reference: DTC Diagnosis Flow Index (3.1.14 Electronic Control System-MT22.1, DTC Diagnosis and Test). → **No** Turn to step 2.
2. Inspect if the accelerator pedal is stuck or overly tightened.	
	A. Turn the ignition switch to the 'LOCK' position. B. Inspect if the accelerator pedal is stuck or overly tightened. Is it normal? → **Yes** Repair or replace the accelerator pedal or the cable. → **No** Turn to step 3.
3. Inspect the vacuum pipe.	
	A. Inspect if the air intake system leaks. Does the exhaust system leak? → **Yes** Repair the air intake system. Reference: Air Intake Leakage Diagnosis Flow (3.1.5 Suspension System-Overview, Trouble Diagnosis and Test) → **No** Turn to step 4.
4. Inspect the water temperature sensor.	
	A. Switch off the connector of the water temperature sensor. B. Start the engine and observe the engine idling. Is the idling of the engine too high? → **Yes** Turn to step 5. → **No** Turn to step 6.

3. Diagnosis Flowchart

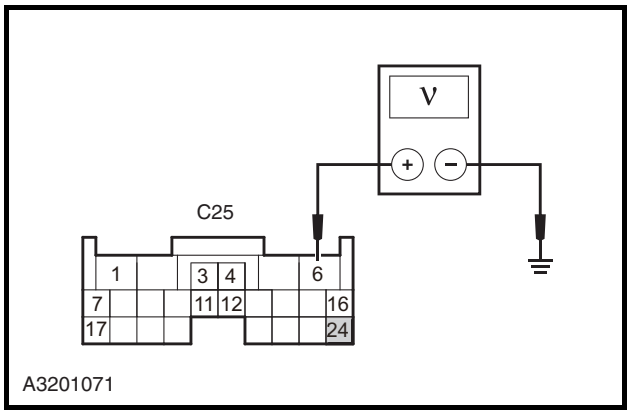
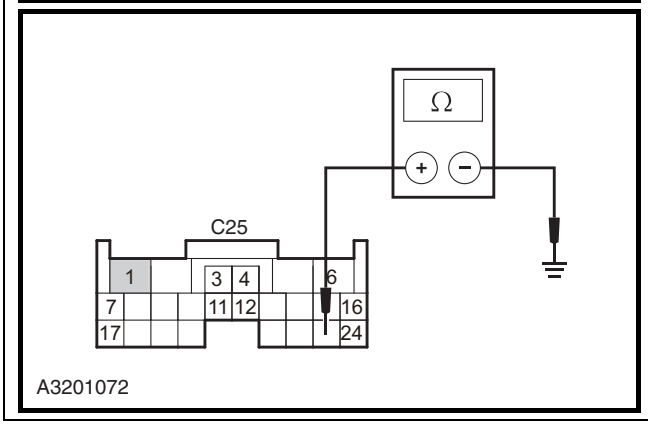
⚠ Notes: Before executing the diagnosis flowchart you must first observe the data table of the scanner and analyze the accuracy of all data so as to quickly solve the problems.

Test Conditions	Details/Results/ Measures
1. Inspect the trouble code.	
	A. Connect the trouble-scanner. B. Turn the ignition switch to the ‘ON’ position. C. Start the engine and diagnose the engine system with the trouble-scanner. D. Click 'engine’/trouble code' in turn, and read the trouble-diagnostic code. Are there trouble codes besides P0506 or P0507? → **Yes** Reference: DTC Diagnosis Flow Index (3.1.14 Electronic Control System-MT22.1, DTC Diagnosis and Test). → **No** Turn to step 2.
2. Inspect the generator.	
	A. Use the scanner and observe if the voltage parameter of the system is normal. Does the generator generate power normally? → **Yes** Turn to step 3. → **No** Overhaul the problem generator.
3. Inspect the parameters of the air intake temperature and pressure sensor.	
	A. Use the scanner and observe if the parameters of the air intake temperature and pressure sensor are normal. Are the parameters of the air intake temperature and pressure sensor normal? → **Yes** Turn to step 4. → **No** Turn to step 5.
4. Inspect the working state of the air conditioning.	
	A. Use the instrument and observe if the working state of the air conditioning is consistent with the actual operation of the air conditioning. B. When the air conditioning is turned on, the idling will be increased by 150rpm. Does the engine increase the speed? → **Yes** Turn to step 7. → **No** Turn to step 5.

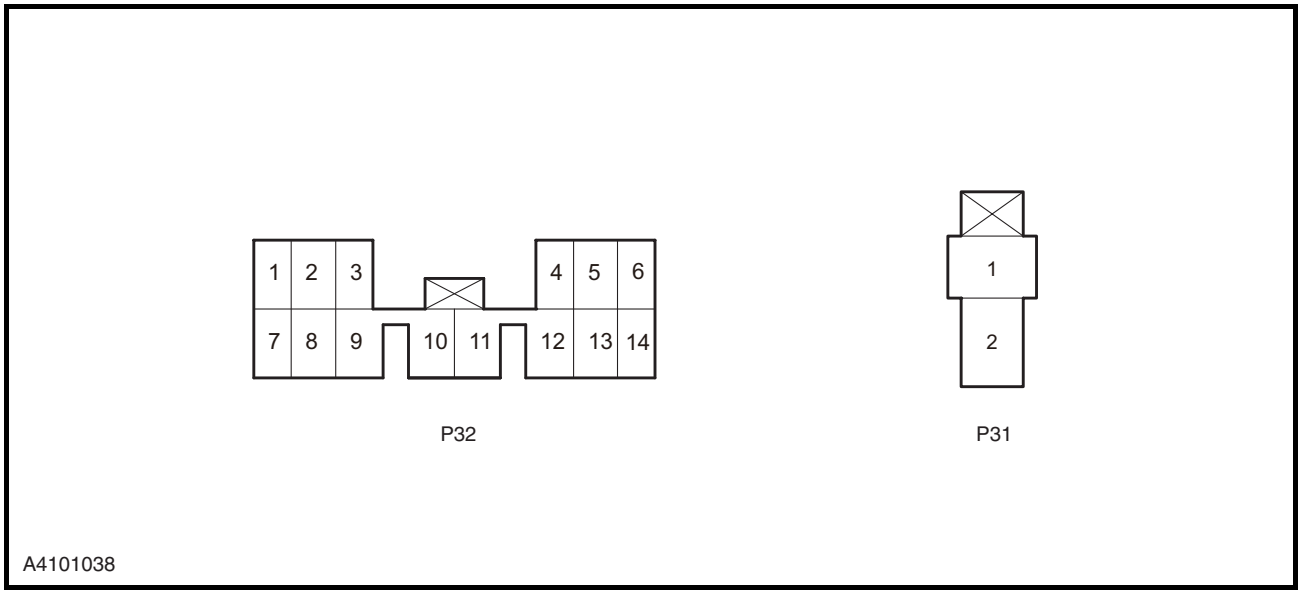
2. Possible Reasons

Problem Code	Detection Method	Set Conditions (Control Method)	Problem Parts
P0601	Hardware of the control module inspection	• The ignition switch is on and the ROM has calculation or inspect errors.	• Circuit of the control module • TCM
P0604		• The ignition switch is on and the RAM cannot read or write correctly.	
P0603		• The ignition switch is on and the EEPROM has calculation or inspect errors.	

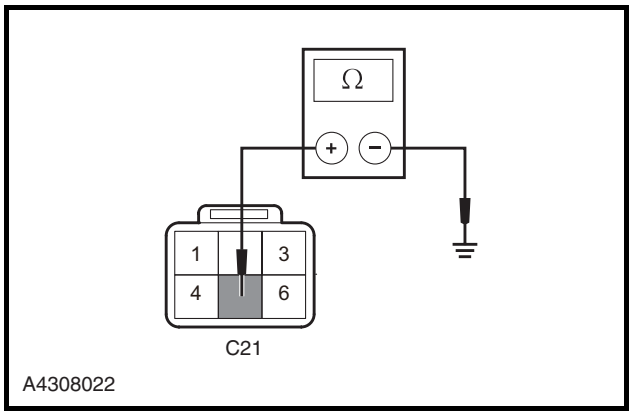
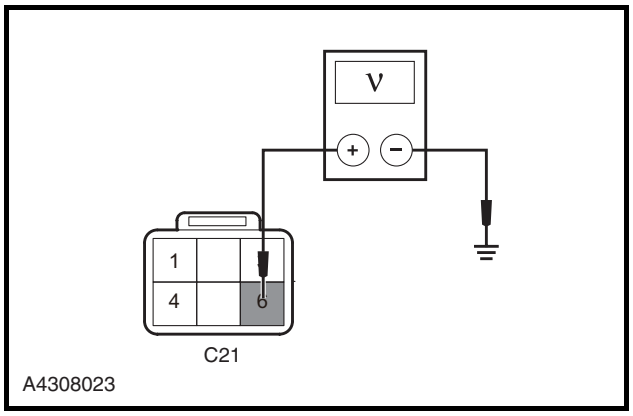
3. Diagnosis Flowchart

Test Conditions	Details/Results/Measures
1. Inspect the problem code.	
	A. Connect the scanner. B. Use the scanner to diagnose the automatic transmission system. Are there problem codes besides P0601, P01602 or P0603? → **Yes** Reference: DTC Diagnosis Flow Index (3.2.1 Automatic Transmission, DTC Diagnosis and Test). → **No** Turn to step 2.
2. Inspect the power supply and grounding of the TCM.	
 A3201071  A3201072	A. Use the multimeter to measure the voltage value between the No.6/No.24 terminals of the wire harness connector C25 of the TCM and the reliable ground terminal. **Standard voltage value:11-14V** B. Use the multimeter to measure the resistance between the No.1/No.23 terminals of the wire harness connector C25 of the TCM and the reliable ground terminal. **Standard resistance: less than 5 Ω** Are the power supply and the grounding of the TCM normal? → **Yes** Turn to step 6. → **No** Repair the power supply or grounding problem of the TCM.

HVAC Assembly Terminal



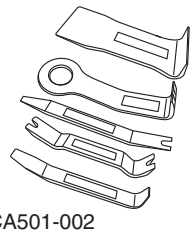
Terminal No.	Name	Wiring	Terminal Description	Condition
P32-1	MODE F/B	0.5 RD/BK	Mode Motor Feedback	-
P32-2	HEAT	0.5 GN/YE	Front Defrost CCW-	-
P32-3	VENT	0.5 BU/YE	FACE CCW+	-
P32-4	TEMP F/B	0.5 YE/GN	Temperature Motor Feedback	-
P32-5	HOT	0.5 BU/RD	Warmest CCW+	-
P32-6	COOL	0.5 GN/RD	Coldest CCW-	-
P32-7	VREF(5 V)	0.5 YE/BK	5 V Power	-
P32-8	FET - D	0.5 BU	Blower Voltage Feedback	-
P32-9	S - GND	0.5 WH/BK	Signal Grounding	-
P32-10	EVA SENSOR	0.5 WH	Evaporator Temperature Sensor	-
P32-11	FET - G	0.5 BN	Blower Speed Control	-
P32-12	REC F/B	0.5 PK	Circulation Motor Feedback	-
P32-13	REC	0.5 GN/BK	Internal Circulation CCW-	-
P32-14	FRE	0.5 BU/BK	External Circulation CCW+	-
P31-1	B+	3.0 BK/BU	Blower Power	I/O
P31-2	P-GND	3.0 BK	Blower Power Grounding	I/P

2. Inspect the fuse	
	A. Inspect the front wiper combination switch fuse IF30. **Nominal capacity: 20 A** Is the fuse normal? →**Yes** To step 2. →**No** Repair the fuse circuit and change the fuse of nominal capacity.
3. Inspect the ground circuit of the front wiper motor	
	A. Turn the ignition switch to the “LOCK” position. B. Disconnect the front wiper motor harness connector C21. C. Measure the resistance between the terminal 5 of the front wiper motor harness connector C21 and ground. Standard value**: less than 5 Ω** Is the resistance value normal? →**Yes** To step 4. →**No** Repair or change the related circuits.
4. Inspect the power circuit of the front wiper motor low speed gear	
	A. Turn the ignition switch to the “LOCK” position. B. Disconnect the front wiper motor harness connector C21. C. Turn the ignition switch to the “ON” position. D. Turn the wiper combination switch to the low speed gear position. E. Measure the voltage between the terminal 6 of the front wiper motor harness connector C21 and ground. Standard value**: 11 ~ 14 V** Is the voltage value normal? →**Yes** Wiper motor and driving arm. Reference: Wiper motor and driving arm (4.3.8 wiper and washer, removal and installation) →**No** To step 5.

Rear Seat Belt

Removing

Special Tool

 CA501-002	Interior and Exterior Trim panel removing tool CA501-002

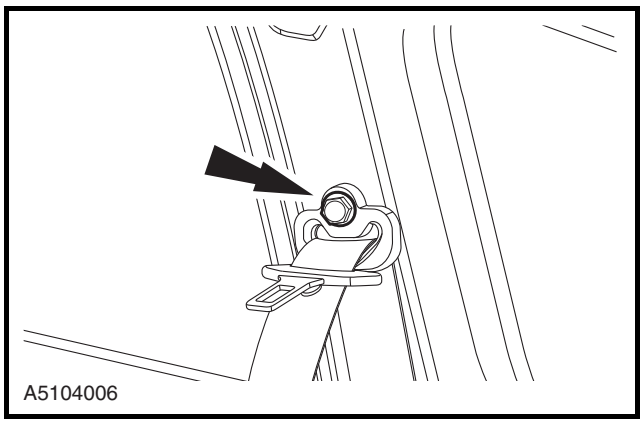
⚠ Notes: There is a protective-effect paper washer on the fastener bolt of the seat belt anchor. Always keep the paper washer and partition on the anchor.

1. Remove the C-pillar trim panel.

Reference: C-pillar trim (5.1.9 interior trim panel and trim, removing and installing)

2. Remove the upper anchor fastener bolts of the rear seat belts.

Torque: 39 Nm



3. Remove the retractor of the rear seat belt.

Torque: 39 Nm