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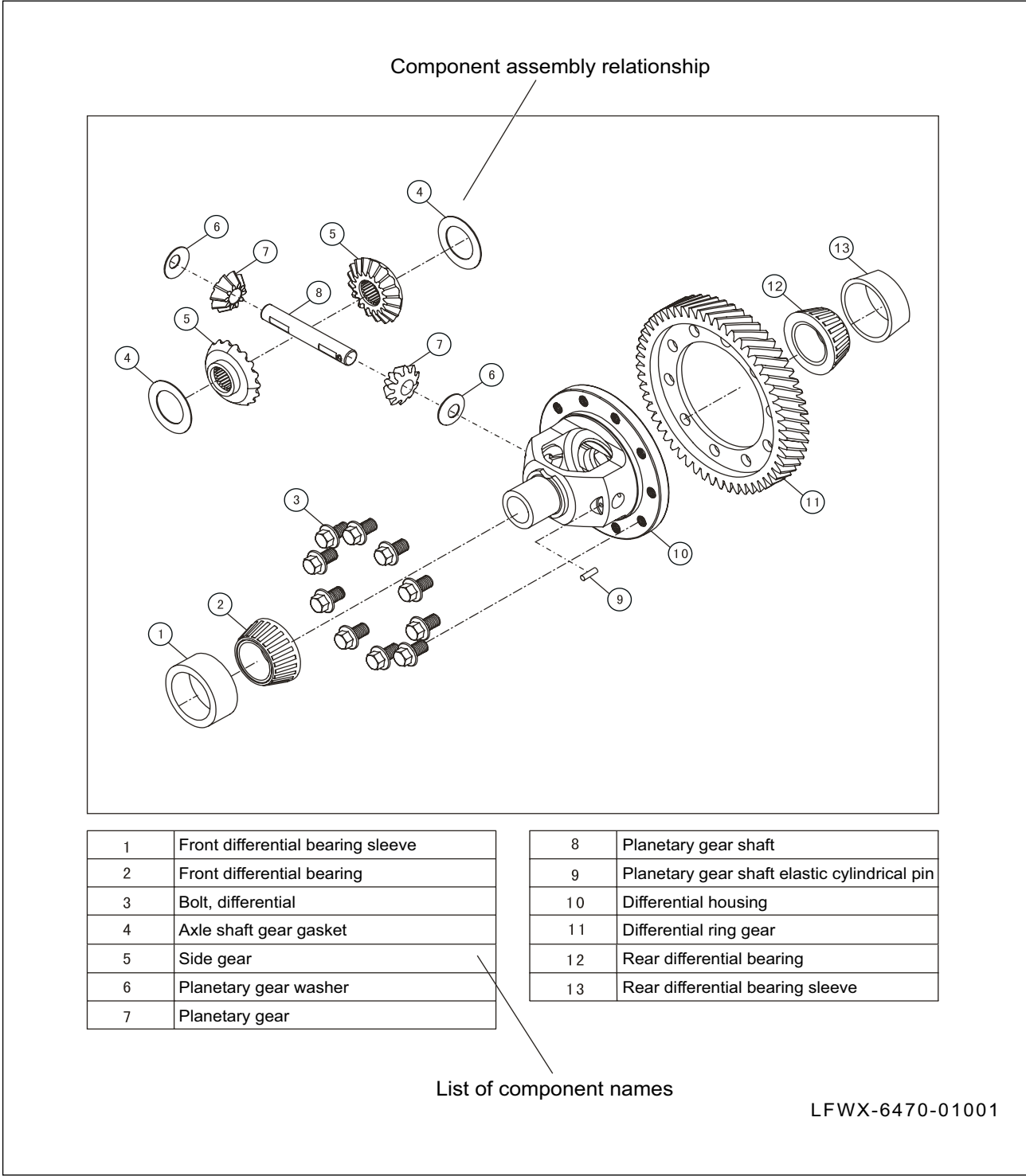
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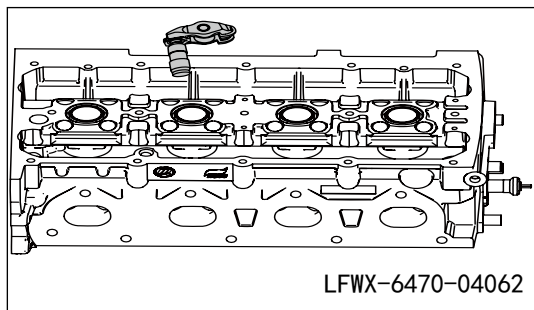
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3. If the installation steps are just opposite to the removal steps, only the important components are described.
4. In this manual, only important components and their operations are provided with illustrations, detail description, operation methods, reference data and precautions.
5. The procedure is described in the following order:
- Illustration, to show “What to do” and “Where to do”.
 - Operation procedure heading, to show “What to do”.
 - Operation procedure, to show “How to complete the task” and provide the operation information, such as “Warning”, “Caution” and “Tip”.

Installation

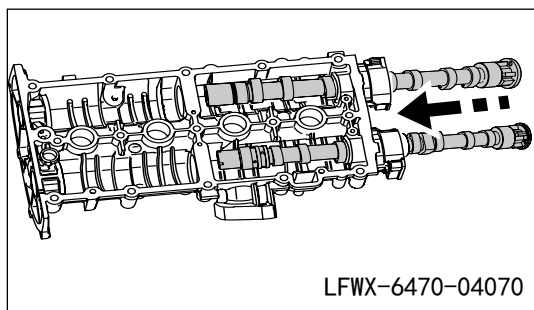
1. Install the camshaft and the hydraulic rocker components.



- (a). Use an oil pot to coat evenly layer of oil in the hydraulic tappet hole.
- (b). Install the roller rocker onto the hydraulic tappet, and then install it into the hydraulic tappet hole in the cylinder head.

Note:

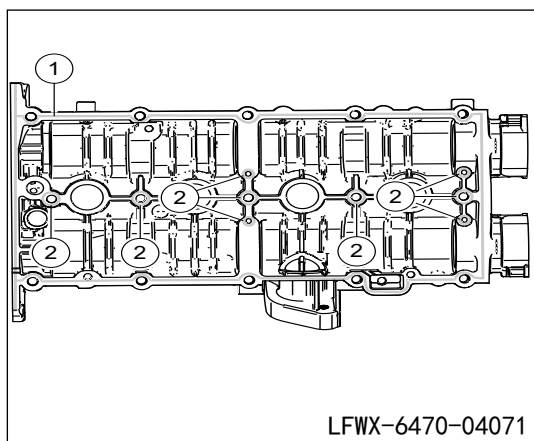
- Install it with the corresponding mark, and confirm that the roller rocker and the hydraulic tappet are installed reliably.
- Do not install the rocker aslant.
- Coat a little oil on the roller of the roller rocker and in the shaft hole.



- (c). Install the inlet and exhaust camshaft assemblies onto the camshaft cap.

Note:

- Coat evenly a layer of now oil on the contact surface of the camshaft assembly.
- Must distinguish the intake and exhaust camshaft assemblies.

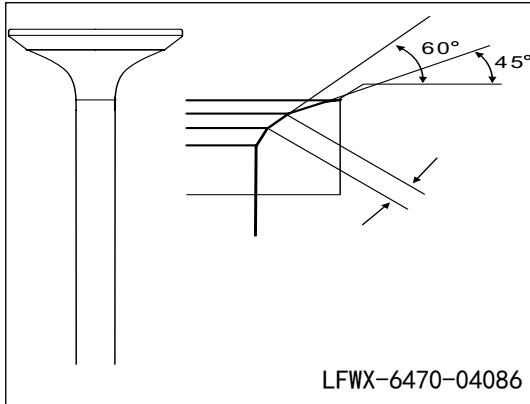


- (d). Put camshaft cover stably, then coat plane sealant 1596 as track and line shown in item (1), and coat anaerobic plane sealant 1515 on the periphery of high pressure oil hole of camshaft cover and on the periphery of the middle 5 bolt holes as track shown in item (2).

Note:

The sealant width is 1. 5 - 3. 0 mm. After the application, check the sealant bar for holiday, discontinuity or unevenness. Finish the components assembly within 3 minutes after the sealant application.

- (e). Install the camshaft cover.
- (f). Install the high pressure fuel pump.
- (g). Install the timing chain and sprocket components.

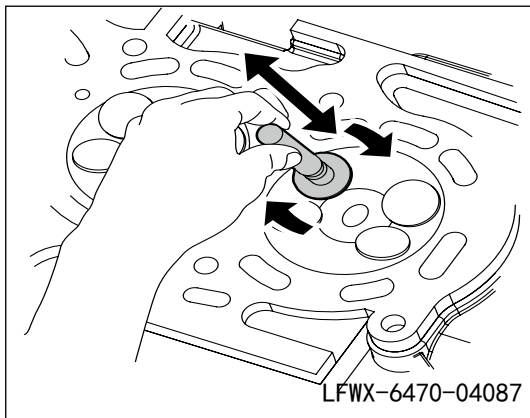


Intake valve seat: use a air valve seat reamer to repair it two times. Must use two reamers to repair it: the first reamer has an angle of 15°, and the second reamer has an angle of 45°. In the second repair, must achieve the required air valve seat width.

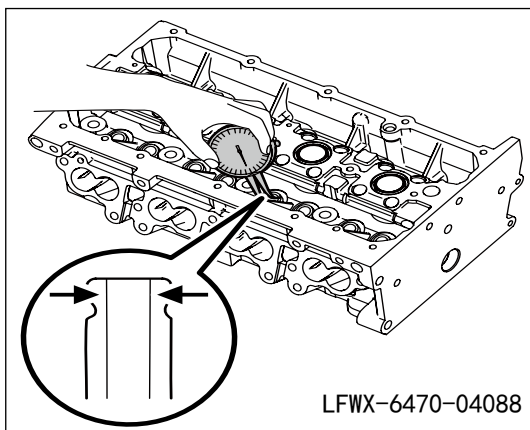
Intake valve holder width: 2.40 ~ 3.25 mm

Exhaust valve seat: the repair procedure is the same as one for the intake valve.

Exhaust valve seat width: 2.19 ~ 2.90 mm



- (j) Grind the air valve. First coat a layer of coarse grinding paste on the surface of the valve seat, and use the grinding tool to grind the air valve; and then coat a layer of fine grinding paste to grind it, until a perfect fit between the air valve and the air valve seat is obtained.



- (k). After grinding, thoroughly clean the air valve, air valve seat, and use an inside diameter micrometer to measure the air valve duct inner diameter.

Air valve duct inner diameter: 6~6.012 mm

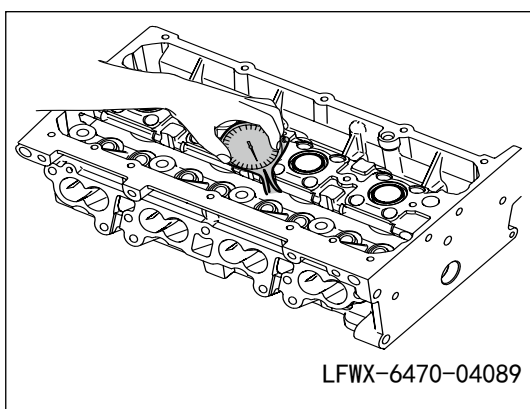
- (l). Deduce the air valve stem diameter from the air valve duct, to obtain the air valve guide duct clearance. If the oil clearance value is greater than the maximum value, replace the air valve and the air valve duct.

Intake valve: 0.027 mm

Exhaust valve: 0.047 mm

Intake valve: 0.047 mm

Exhaust valve: 0.066 mm



- (m). Use the inside micrometer to measure the air valve installation hole diameter.

Inside diameter: 11 ~ 11.018 mm

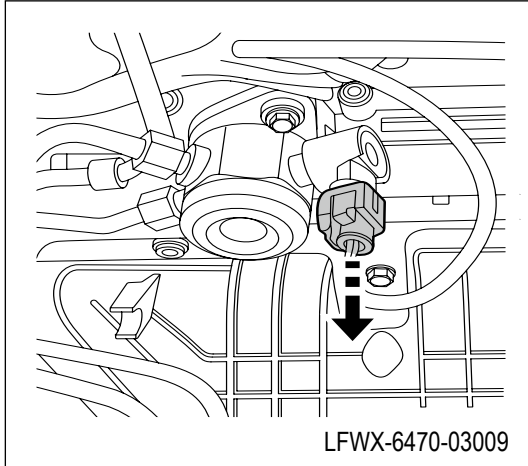
Steps	Check contents	Inspection result		
	Check whether the battery voltage is the normal working voltage Voltage: 11V~14V	Go to Step 1	The detected voltage is out of the reasonable range	Charge the battery or replace the battery
1	Read DTC	Normal	Faulty	Instruction
	<ul style="list-style-type: none"> •Connect the vehicle diagnostic tester, read and clear DTC •Read DTC again to check whether DTC can be read 	It is incidental fault	There is DTC; go to Step 2	The fault is incidental. Check the front oxygen sensor connector for looseness or damage; check the harness terminals for corrosion.
2	Check the electronic throttle circuit	Normal	Faulty	Instruction
	<ul style="list-style-type: none"> •With the ignition switch in OFF position, disconnect the electronic throttle connector E14 and engine control module connector E1 and E2 •Measure whether there is short circuit or open circuit between E14 terminal 1 and E4 terminal 87; E14 terminal 4 and E2 terminal 75 	Go to Step 3	The circuit has short circuit or open circuit	Repair the fault harness
3	Check the electronic throttle	Normal	Faulty	Instruction
	<ul style="list-style-type: none"> • Replace the electronic throttle and carry out road test • Perform the diagnosis again to read DTC and check whether DTC and symptom exist 	Go to Step 4	DTC still exists	Replace the electronic throttle and carry out the throttle self-learning
4	Inspection by replacement	Normal	Faulty	Instruction
	<ul style="list-style-type: none"> •Replace the engine control module and carry out road test. • Perform the diagnosis again to read DTC and check whether DTC and symptom exist 	Replace ECM	The fault still exists	Locate the causes from other symptom

Removal and Installation

High pressure fuel pump

Disassembly

1. Remove the high pressure fuel pump.

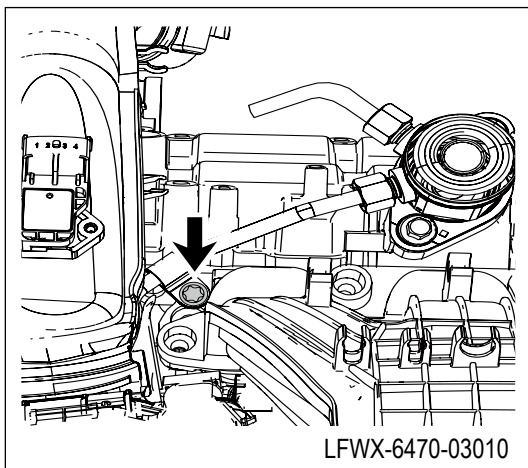


- (a). Disconnect the high pressure fuel pump wiring harness plug.

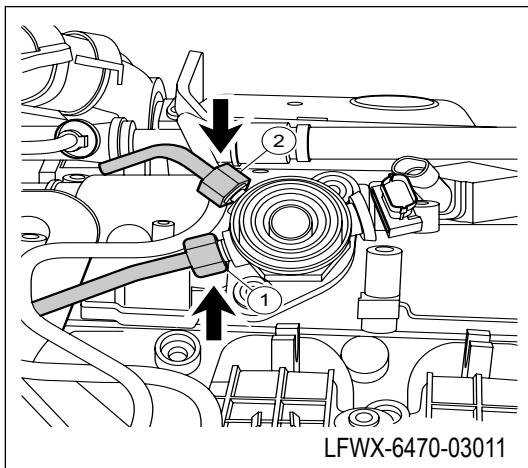
⚠ Warning:

Before the high pressure components are removed, such as, high pressure fuel pump, fuel rail, fuel injector and fuel pipe or fuel pressure sensor, the fuel pressure within the high pressure range must be relieved, to eliminate the fuel pressure and prevent any risk.

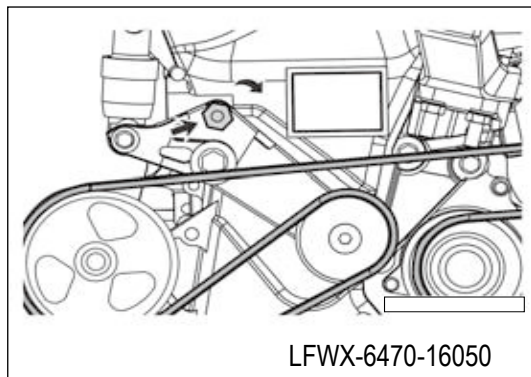
- (b). Disconnect the battery negative connector.



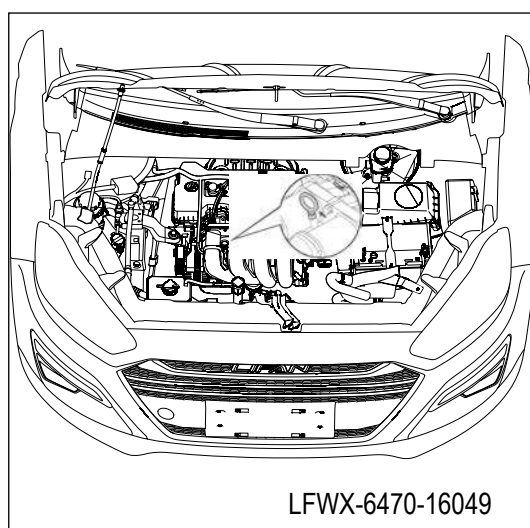
- (c). Remove the high pressure fuel pipe component bracket bolt.



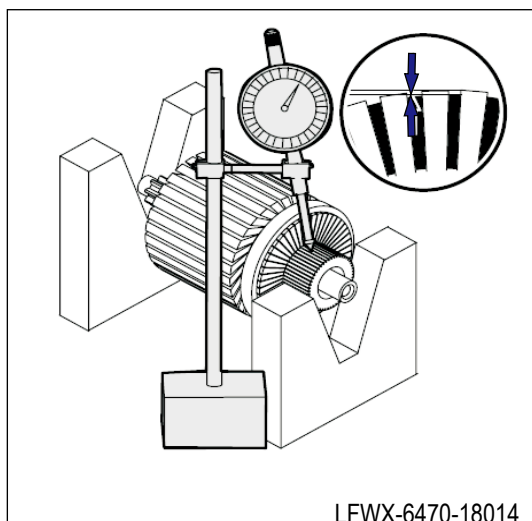
- (d). Remove the high pressure oil pipe component (1) on the high pressure fuel pump.
- (e). Remove the low pressure oil pipe components (2).



- (c). As shown in the figure, apply the force to the tensioner clockwise with the box wrench to remove the belt.



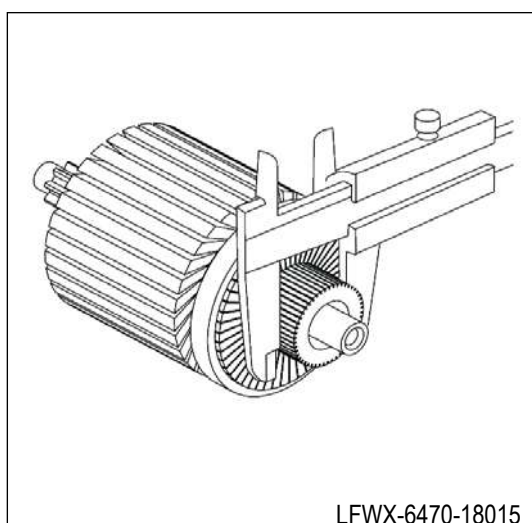
- (d). Install the oil dipstick.



4. Check the commutator

- (a). Check the commutator surface for oil dirt or burns; if any, use a sand paper to repair it.
- (b). Put the commutator on a V-shaped block, and use a dial gauge to measure the commutator ring gear turnout; if the turnout is greater than the maximum value, must repair or replace it.

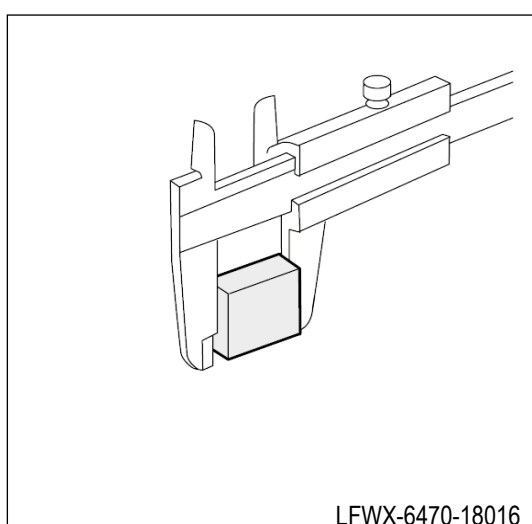
Maximum gear ring runout: 0.05mm



- (c). Use a vernier caliper to measure the commutator diameter ; if it is smaller than the minimum value, must replace the armature.

Standard diameter:30mm

Minimum diameter:29mm



5. Check the starter brush

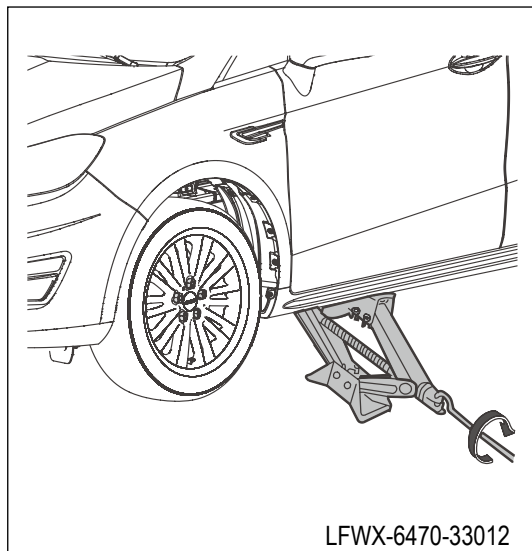
- (a). Use a vernier caliper to measure the brush length; if the length is less than the minimum value, replace the brush; if necessary, replace brush holder and the starter magnetic moment assembly.

Standard value:15.5mm

Minimum value:10mm

DTC	Description	TCU taking measures	Diagnostic procedure	Troubleshooting	Terminal
P0711	Temperature sensor signal value untrue	Transmission MIL on	1. Connect the diagnostic meter and read the DTC. 2. Clear DTC. 3. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.	1. Check the connection harness 2. Check or replace the temperature sensor	
P0706	Position sensor signal value untrue	Go to limp home mode OBD MIL on	1. Connect the diagnostic meter and read the DTC. 2. Clear DTC. 3. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.	1. Check the connection harness 2. Temperature sensor or replace the temperature sensor	
U0400	EMS_Engine TorqueStatus Signal check sum error	OBD MIL on	1. Connect the diagnostic meter and read the DTC. 2. Clear DTC. 3. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.	Engine ECM1 signal check sum incorrect	
U0401	EMS_EngineRPM signal check and error	OBD MIL on	1. Connect the diagnostic meter and read the DTC. 2. Clear DTC. 3. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.	Engine ECM2 signal check sum incorrect	
P1830	SubRom The chip is empty or the chip is connected poorly.	OBD MIL on	1. Connect the diagnostic meter and read the DTC. 2. Clear DTC. 3. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.	TCU unable to identify due to cylinder-through harness pin K27 - K30 bending or admission of water	
P1831	SubROM Data check and error	OBD MIL on	1. Switch on and off the vehicle power for 3 cycles at an interval of 10s 2. Connect the diagnostic meter and read the DTC. 3. Clear DTC. 4. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.		
P1832	SubROM Data out of range	OBD MIL on	1. Switch on and off the vehicle power for 3 cycles at an interval of 10s 2. Connect the diagnostic meter and read the DTC. 3. Clear DTC. 5. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.		
U0442	CAN message key signal is invalid	Go to limp home mode OBD MIL on	1. Connect the diagnostic meter and read the DTC. 2. Clear DTC. 3. Read the DTC again. If any DTC occurs, locate the possible causes or contact the technician of the manufacturer.		

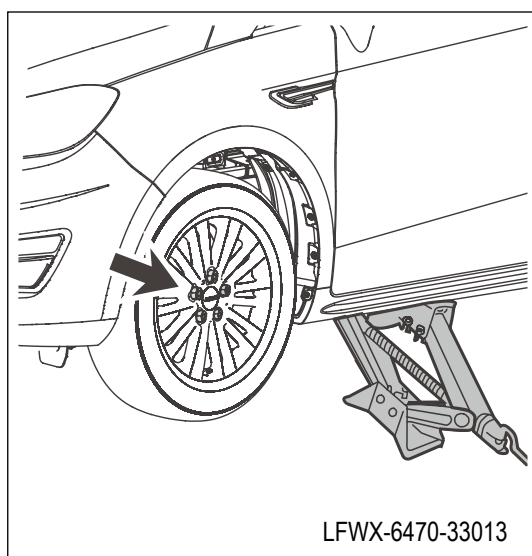
P0962	Transmission MIL on The vehicle does not move with a gear engaged Powerless acceleration	1. Oil pressure control solenoid valve A harness fault 2. Oil pressure control solenoid valve A failure	Refer to P0960.
P0963	Transmission MIL on The vehicle does not move with a gear engaged Powerless acceleration	1. Oil pressure control solenoid valve A harness fault 2. Oil pressure control solenoid valve A failure	Refer to P0960.
P0964	Transmission MIL on The vehicle does not move with a gear engaged Powerless acceleration	1. Oil pressure control solenoid valve B harness fault 2. Oil pressure control solenoid valve B failure	Inspection of oil pressure control solenoid valve failure Inspection of oil pressure control solenoid valve harness Clear the DTC.
P0966	Transmission MIL on The vehicle does not move with a gear engaged Powerless acceleration	1. Oil pressure control solenoid valve B harness fault 2. Oil pressure control solenoid valve B failure	Refer to P0964.
P0967	Transmission MIL on The vehicle does not move with a gear engaged Powerless acceleration	1. Oil pressure control solenoid valve B harness fault 2. Oil pressure control solenoid valve B failure	Refer to P0964.
P0968	Transmission MIL on Hydraulic torque converter clutch slips	1. Oil pressure control solenoid valve C harness fault 2. Oil pressure control solenoid valve C failure	Inspection of oil pressure control solenoid valve failure Inspection of oil pressure control solenoid valve harness Clear the DTC.
P0970	Transmission MIL on Hydraulic torque converter clutch slips	1. Oil pressure control solenoid valve C harness fault 2. Oil pressure control solenoid valve C failure	Refer to P0964.
P0971	Transmission MIL on Hydraulic torque converter clutch slips	1. Oil pressure control solenoid valve C harness fault 2. Oil pressure control solenoid valve C failure	Refer to P0964.
P1706	Transmission MIL on Powerless acceleration	1. Electrical device failure; 2. Hydraulic system fault 3. Engine torque over-adjustment 4. The gearbox parts are abnormally worn.	Inspection of electrical part failure Inspection of hydraulic system Inspection of engine torque over control Gearbox parts abnormal wear check
P1745	Transmission MIL on Steel belt slips Powerless acceleration	1. The speed sensor wiring is in poor contact or short-circuited. 2. Speed sensor failure	Inspection of speed sensor Harness continuity check Clear the DTC.
P2797	Transmission MIL on Powerless acceleration The vehicle does not move with a gear engaged	1. The pressure sensor signal fault; 2. Pressure sensor solenoid valve 3. Hydraulic system fault	Inspection of pressure sensor failure Inspection of pressure control solenoid valve failure Inspection of hydraulic system fault
P2798	Transmission MIL on Powerless acceleration Gear shift impact Brake and stall engine	1. The pressure sensor signal fault; 2. Pressure sensor solenoid valve 3. Hydraulic system fault	Inspection of pressure sensor failure Inspection of pressure control solenoid valve failure Inspection of hydraulic system fault
U0100	Powerless acceleration	1. Engine sensor failure; 2. CAN circuit fault	Detect the fault by referring to the vehicle service manual.
U0121	Brake and stall engine ABS alarm light on	ABS sensor failure; CAN loop failure	Detect the fault by referring to the vehicle service manual.
U0401	Engine warning lamp on After confirming the engine speed fault, shut down the main relay and enter the limp home mode	1. Engine sensor failure; 2. CAN circuit fault	Detect the fault by referring to the vehicle service manual.



- (b). Jack the vehicle body at the wheel removal side, to allow the wheel off the ground.
- (c). Remove the wheel fastening nuts, and remove the wheel.

Note:

Don't loosen the excessively tightened wheel in the heating way, because the heating operation may shorten the service life of the wheel.



2. Install the wheel

- (a). Install the wheel into the installation position, and install and tighten manually the wheel fastening nuts.
- (b). Decrease the vehicle on the ground, and tighten diagonally the wheel fastening nuts.

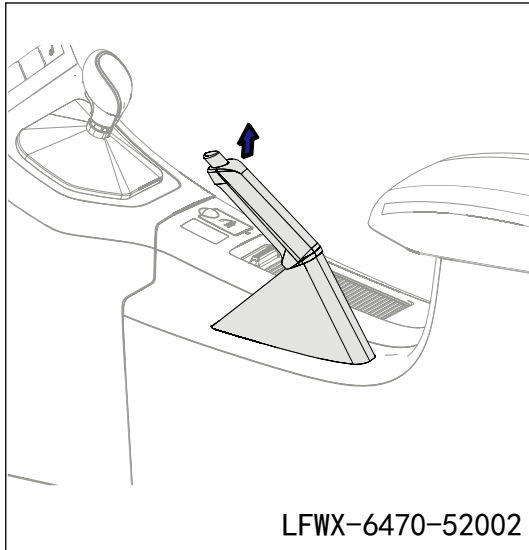
Torque: 120 N. m

Note:

- **Before installing the wheel, must remove the rust deposited on the wheel installation surface and the brake disc surface with a wire brush.**
- **When installing the wheel, must match fully the wheel installation surface with the brake disc surface; otherwise it will cause that the wheel nuts are loosened.**
- **Must tighten diagonally the wheel nuts to the appropriate torque, so as to avoid that the wheel or brake disc is bent.**
- **Do not coat the oil or lubricant on the bolts or nuts; otherwise it will cause that the nuts are tightened excessively and their threads are damaged.**

Part function and fault

Part name	Part function	Common part fault	Vehicle fault phenomenon
Parking brake control lever	Apply the parking brake	Parking brake lever spring failure, excessive wear of parking brake lever pawl and ratchet, parking brake lever deformation	The parking brake lever can not be positioned
Brake cable	Play the force transmission role	Breakage or damage	The parking brake is ineffective or faulty
Bolt	Fix the cable	Looseness	/
Adjusting nut	Adjust the parking brake	Improper adjustment.	The parking brake performance is poor

On-board Inspection**1. Check the travel of the parking brake lever**

- (a). After completion of the adjustment, pull up the parking brake control lever with a 100N force. Otherwise it should be adjusted again.

Standard value: 5 ~ 7 teeth

△ Tips:

A “Click” will issue at each tooth; listen and count the sound from the pawl to check the parking brake.

2. Check the braking conditions of the parking brake

- (a). If the brake is normally operated, drive the vehicle onto the slope with about 20%, depress

the parking brake pedal and depress the parking brake to park the vehicle on the slope.

- (b). Slowly release the brake pedal, the vehicle should not slip down within at least 5min; if the vehicle slips down, adjust the parking brake (see Section 52B - Parking Brake - Parking Brake Operating Mechanism, Adjustment).

3. Check the parts

- (a). Confirm whether each part is fastened normally.
 (b). Check the parking brake control lever assembly for bending, damage or cracks; If any, must replace it.
 (c). Check the parking brake cable for wear and damage; If any, replace it.

4. Parking brake indicator light switch

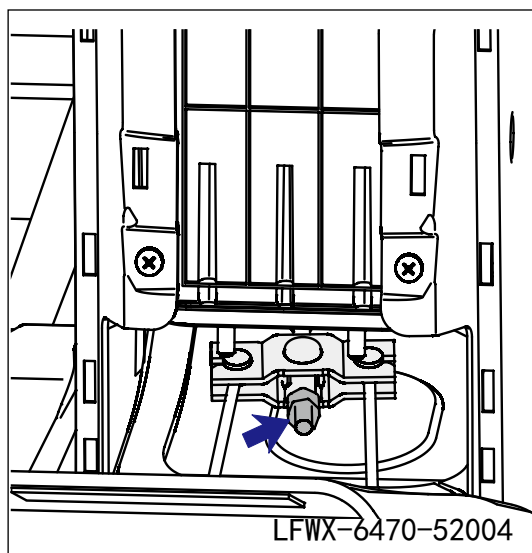
- (a). Check whether the parking brake alarm indicator switch is operated correctly; If necessary, must check or replace it.
- If pulling up the parking brake control lever, the parking brake indicator will be turned on.
 - If releasing the parking brake control lever, the parking brake indicator will be turned off.

Parking brake control lever Inspection



1. Check whether the parking operating mechanism for flexible operation, if it can not be returned automatically, please replace it.
2. Check parking brake operating mechanism pawl for wear.

Adjustment



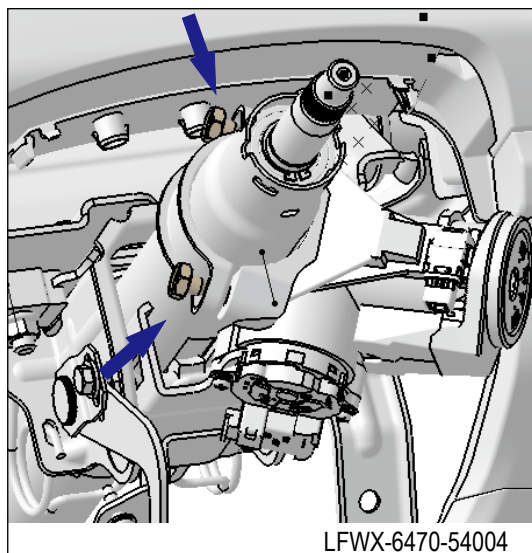
- (a). Remove the sub-dashboard body (See Section 85 - Dashboard and Sub-dashboard – Sub-dashboard Body, Replacement)
- (b). Adjust the brake cable adjustment nut.
- (c). After the adjustment is completed, pull the parking brake lever in the direction perpendicular to the lever with the force of 100N, to pass through 5 ~ 7 teeth; otherwise it should be adjusted again.

△ Tips:

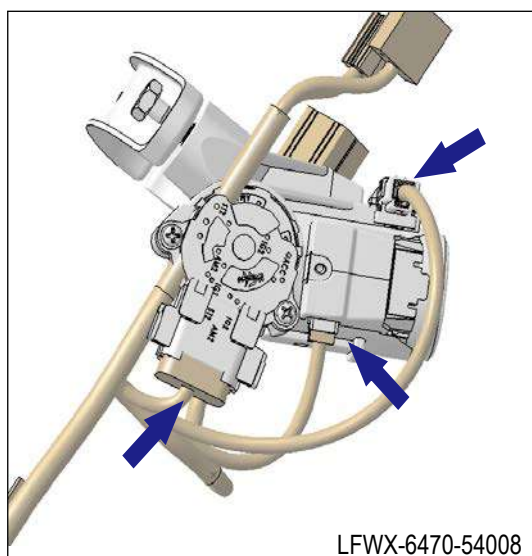
When passing through each tooth, there will be a “Click” sound; the inspection can be carried out by hear “Click” sound from the pawl.

- (d) Install the sub-dashboard body. (See Section 85 - Dashboard and Sub-dashboard – Sub-dashboard Body, Replacement)

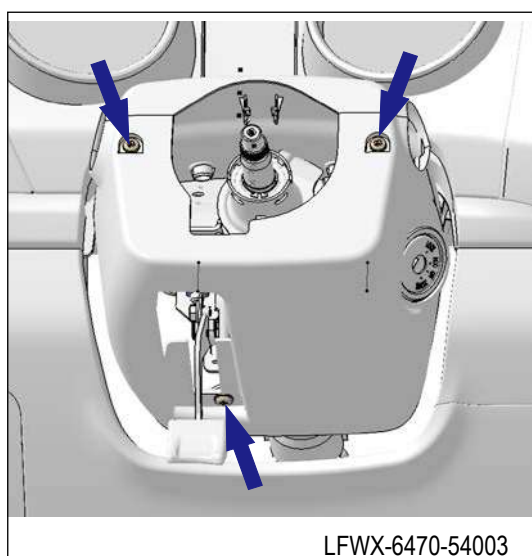
52B

**2. Install ignition switch assembly**

- (a). Install ignition switch on installation site, and install ignition switch mounting bolt.



- (b). Connect connector clips of ignition switch, anti-theft read-write recognition coil and key plugging remind switch.



- (c). Install upper and lower shields of steering column on their installation sites, and install their fastening screws and fasten them.