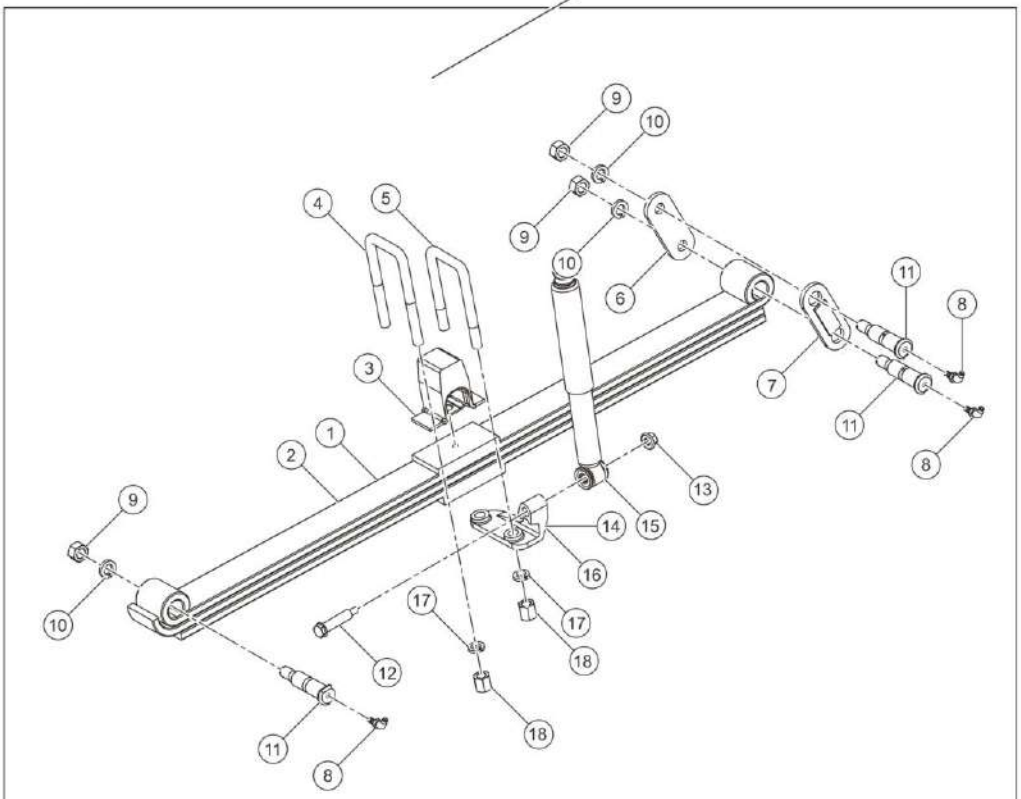
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Steering system..... ST
Brake system ..... BP
Body ..... BW
Electric system ..... EL

Example:

Assembling relationship

Department chart



1	Front leaf spring assembly	10	Heavy-duty spring washer
2	Front leaf spring assembly	11	Front leaf spring pin
3	Front dumping block assembly	12	Shock absorber lower pin shaft
4	Front spring U-bolt	13	Hexagon nut with flange
5	Front spring U-bolt	14	Right front shock absorber lower bracket
6	Lifting lug inner plate	15	Front shock absorber assembly
7	Shackle outer panel assembly	16	Left front shock absorber lower bracket
8	Joint-typed forced filling oil cup	17	Flat washer
9	1-type hexagon nut,	18	Hexagon thick nut

Part name list

RM.OMKC.IN.000001

c. If the installation procedure opposite to the removal, only describe the key parts.

d. Repair procedures in this Manual only describe the important parts and illustrate the operation objects and operation contents with the illustrations. Details and standard values of operating method and precautions for operation, etc. are listed in the procedure instruction.

Basic check

When the fault can't be confirmed by DTC inspection, troubleshooting analysis shall be performed to all circuit that considered to be the possible causes. In many cases, it can be quickly and effectively find the position that causes fault by performing the basic inspection of engine shown in the flow chart below. Therefore, use this detection method is very necessary for the troubleshooting of engine.

1. Inspect battery voltage

⚠ Warning

This inspection shall be performed when engine is shut down or the ignition switch is in LOCK.

Inspect the results

Result	Go to
About 12V	Go to step 2
Below 12V	Replace battery or charge the battery

2. Inspect whether the engine is start

Check if results are normal?

Yes > Go to step 3.

No > Go to the symptom table.

3. Inspect the air filter

Whether the inspection result is acceptable (Whether containing dust, dirt or oil)?

Yes > Go to step 4.

No > Replace or clean the filter.

4. Inspect the idle speed

Check if results are normal?

Yes > Go to step 5.

No > Go to the symptom table.

5. Inspect the fuel pressure

Check if results are normal?

Yes > Inspection is over.

No > Eliminate fuel pressure fault.

Slow response, stagnancy, imbalance of acceleration

Symptom table

Symptom	Possible cause	Troubleshooting
Slow response, stagnancy, imbalance of engine acceleration	1. Intake system fault	• Check air filter and intake pipe • Check intake manifold pressure sensor • Check the crankshaft/camshaft position sensor • Check the coolant temperature sensor
	2. Fuel supply system fault	• Check whether the high-pressure fuel pump is able to provide sufficient fuel rail pressure • Check the fuel volume metering unit for damage • Check whether the low-pressure fuel line is able to supply fuel smoothly, the fuel injector is stuck, the high-pressure fuel pipe for crack etc. • Check the rail pressure sensor for damage
	3. Fuel injector fault	• Check the drive line (includes connector) of fuel injection for being open-circuited/short-circuited • Check the high-pressure fuel pipe for leakage • Check the fuel injector for damage/soot deposit
	4. Accelerator pedal sensor fault	• Check the accelerator pedal sensor
	5. ECM fault	• Replace the ECM

DI

Diagnostic procedure

1. Check the intake system of the engine

a. Check the intake pipe for crack, and the pipe connection for air leakage.

b. Check whether the air filter is clean, has no blockage and foreign object.

c. Check whether the intake manifold pressure sensor has fault. (Refer to "Chapter DI Diagnosis - Fault diagnosis of engine electronic control - Intake manifold pressure sensor fault")

Check if results are normal?

Yes > Go to next Step 2.

No > Inspect and repair the related fault.

2. Check the fuel supply system of the engine

a. Check the high-pressure fuel pump for fuel leakage and being stuck.

b. Check whether the fuel pipe has crack, and the interface is firm and reliable.

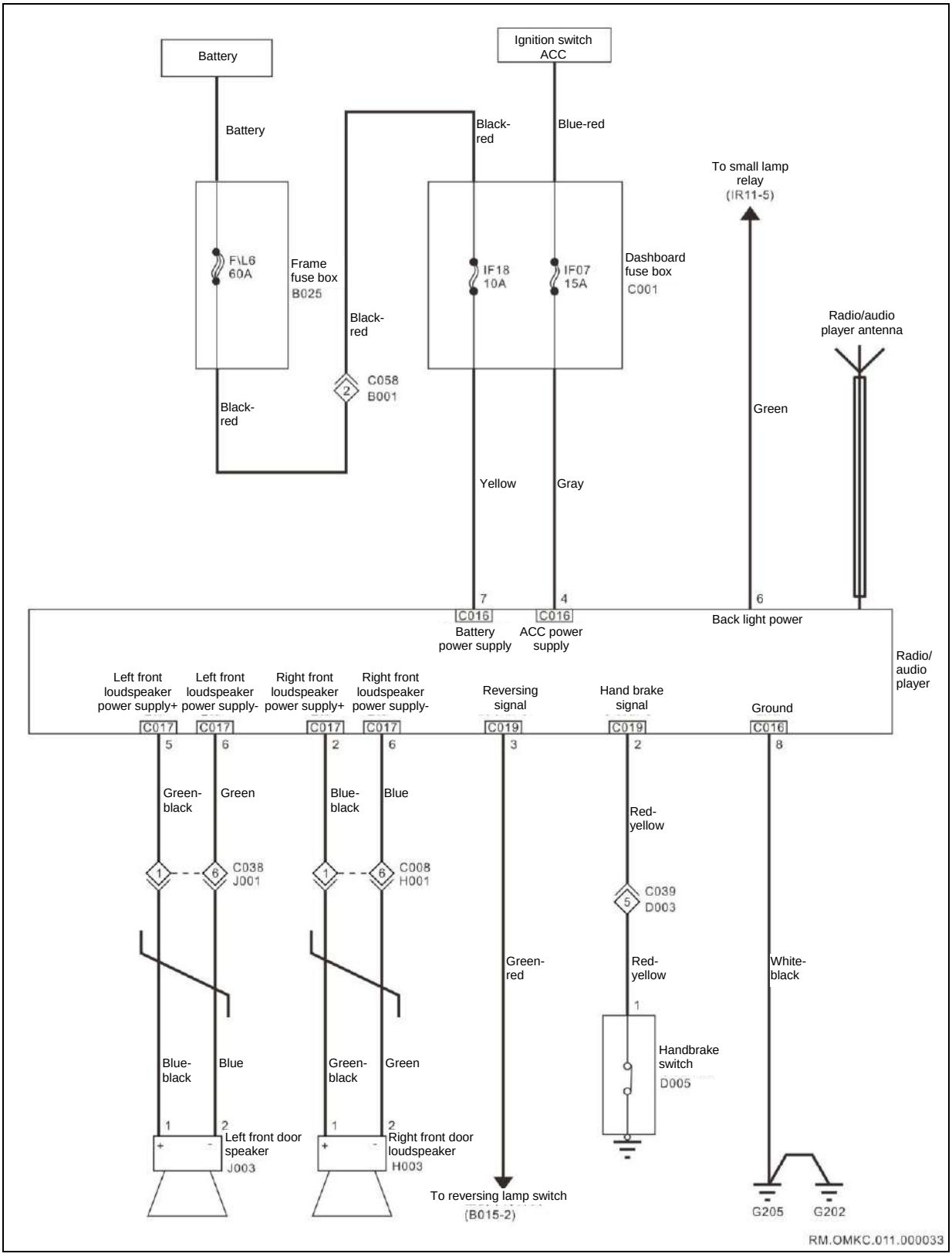
c. Check the fuel volume metering unit and its wire harness for faults.

d. Check the fuel pressure sensor. (Refer to "Chapter DI Diagnosis - Fault diagnosis of engine electronic control - Rail pressure sensor fault")

DI

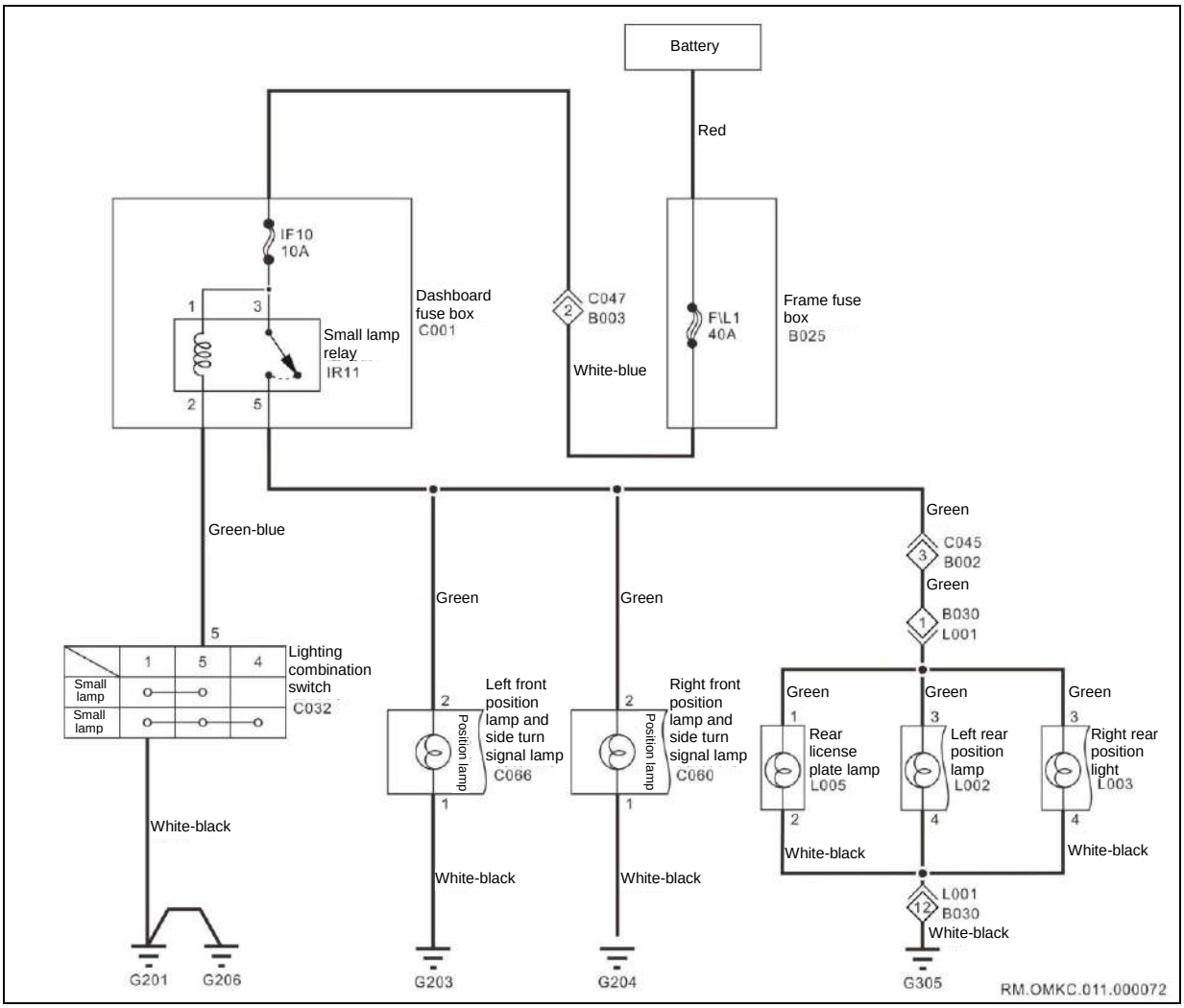
Press the power switch, and then the radio player cannot work.

Circuit diagram

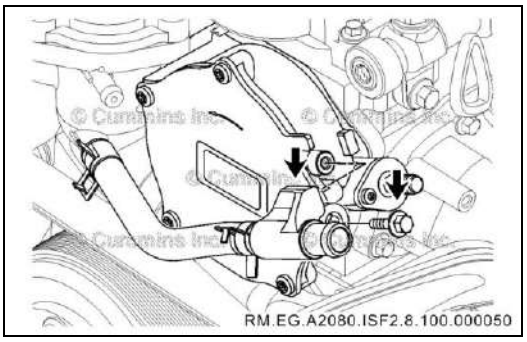


Some position lamp or license plate lamp do not illuminate

Circuit diagram



Symptom	Possible cause	Troubleshooting
Oil leakage of transmission	1. There are loose air holes, cracks or the screw hole is punched through	Change or repair
	2. Fasteners are loose	Check and fasten the loose parts
	3. Sealing elements are failed and broken (oil seal, washer, gasket)	Replace the failed and damaged parts
	4. Sealing elements are failed cause by blockage of the breather plug	Change and cleaning
	5. There is too much gear oil	Reduce the gear oil properly
	6. Housing has cracks	Replace the housing
	7. Bolts of oil filler plug and the oil drain plug are loose	Fasten corresponding parts, and apply sealant as necessary
Gear shifting is difficult	1. The clutch is not completely disengaged	Check the clutch clearance and adjust it, check the drive shaft or reduce gear oil properly
	2. Viscosity of gear oil is high and there is too much oil	Check adjusting rod or replace damaged parts
	3. Control lever series (drag link, shifting rocker arm, connecting plate, support rod) are improperly adjusted or worn	Check and replace the damaged parts, and repair the worn parts
	4. Parts of synchronizer or joint sleeve are damaged	Check and replace the damaged parts, and repair the worn parts
	5. It is not easy to shift to reverse gear	Check whether the reverse slide rail and reverse switch are stuck
Transmission too hot	1. The transmission gear oil is excessive	Replace bearing
	2. The synchronizer malfunctions	Replace synchronizer
	3. Mixed different oils	Inspection and replacement
	4. The clearance is too small (bearing, gear and components with relative movement)	Adjust the clutch
	5. The moving parts wear severely (bearing, gear, etc.)	Use the lubricating oil of specified grade
Transmission is difficult to shift gears.	1. Bearing wear or damage	Replace bearing
	2. The synchronizer malfunctions	Replace synchronizer
	3. Fork deformation or damage	Inspect, adjust or replace
	4. Abnormal clutch release	Adjust the clutch
	5. The viscosity of lubricating oil is too high.	Use the lubricating oil of specified grade

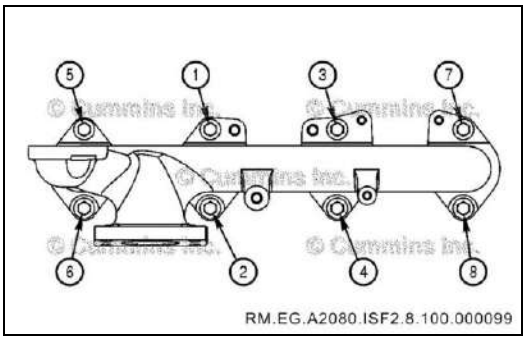


d. Fasten the cab heater hose on the protruding tongue of vacuum pump front cover

e. Install securing bolts to fasten the cab heater hose

f. Tighten the bolts.

Torque: 7N•m



18. Dry exhaust manifold

a. Apply high temperature anti-caking compound bolt threads of exhaust manifold.

b. Install the bolt and washer on the exhaust manifold. Be careful the washer is bidirectional.

c. Install the exhaust manifold on cylinder head and tighten with bolts

d. Tighten exhaust manifold mounting bolts from the central manifold as shown in the picture

Torque: 33N•m

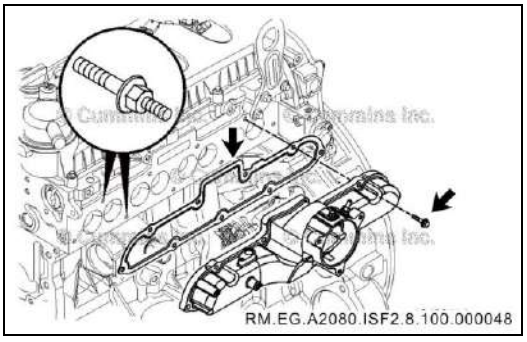
Note

Evenly compress exhaust washers evenly and tighten all bolts again

e. Install thermal shroud and tighten the securing bolt

f. Install the heat shield and tighten the fixing bolts.

Torque: 10N·m



19. Intake manifold

a. Change the sealing washer of air intake manifold

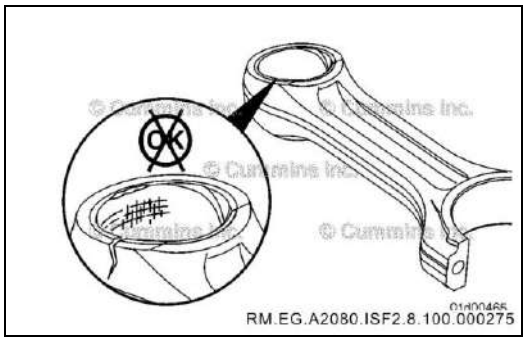
Note

The sealing strip on the air intake manifold to ensure correction installation of sealing washer

b. Install air intake manifold and bolt

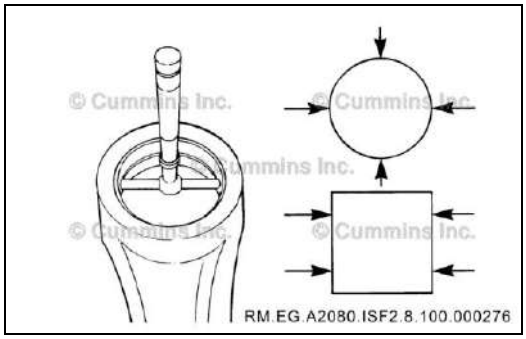
Note

- **The two bolts shall be installed at the position where they are removed.**
- **Apply a thin layer of sealing glue on the threads of bolt before installation.**



f. Inspect if the pin hole of the connection rod piston is damaged.

EG

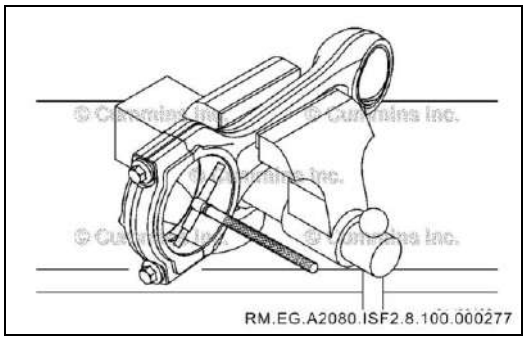


g. Measure the inner diameter of pin lining of connection rod piston.

Diameter of pin lining of connection rod piston:

Minimum 34.54mm, maximum 34.56mm

If the lining is damaged or different from the technical specification, change the connection rod, instead of the lining.



h. Lubricate the connection rod bolts with clean 15W-40 oil.

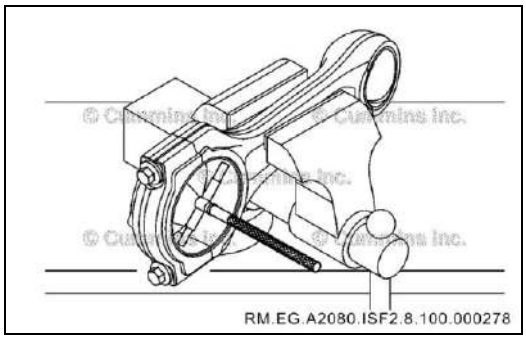
i. Assemble the connection rod, cover and bolts and tighten the bolts.

j. Use a internal diameter dial indicator to measure the internal diameter at 20°arc of each side of parting line and measure the internal diameter at 90°arc of each side of parting line.

Hole diameter of connection rod crankshaft (with bearing removed):

Minimum 62.26mm, maximum 62.52mm

If the hole diameter of connection rod crankshaft does not conform to the technical specification, change the connection rod.

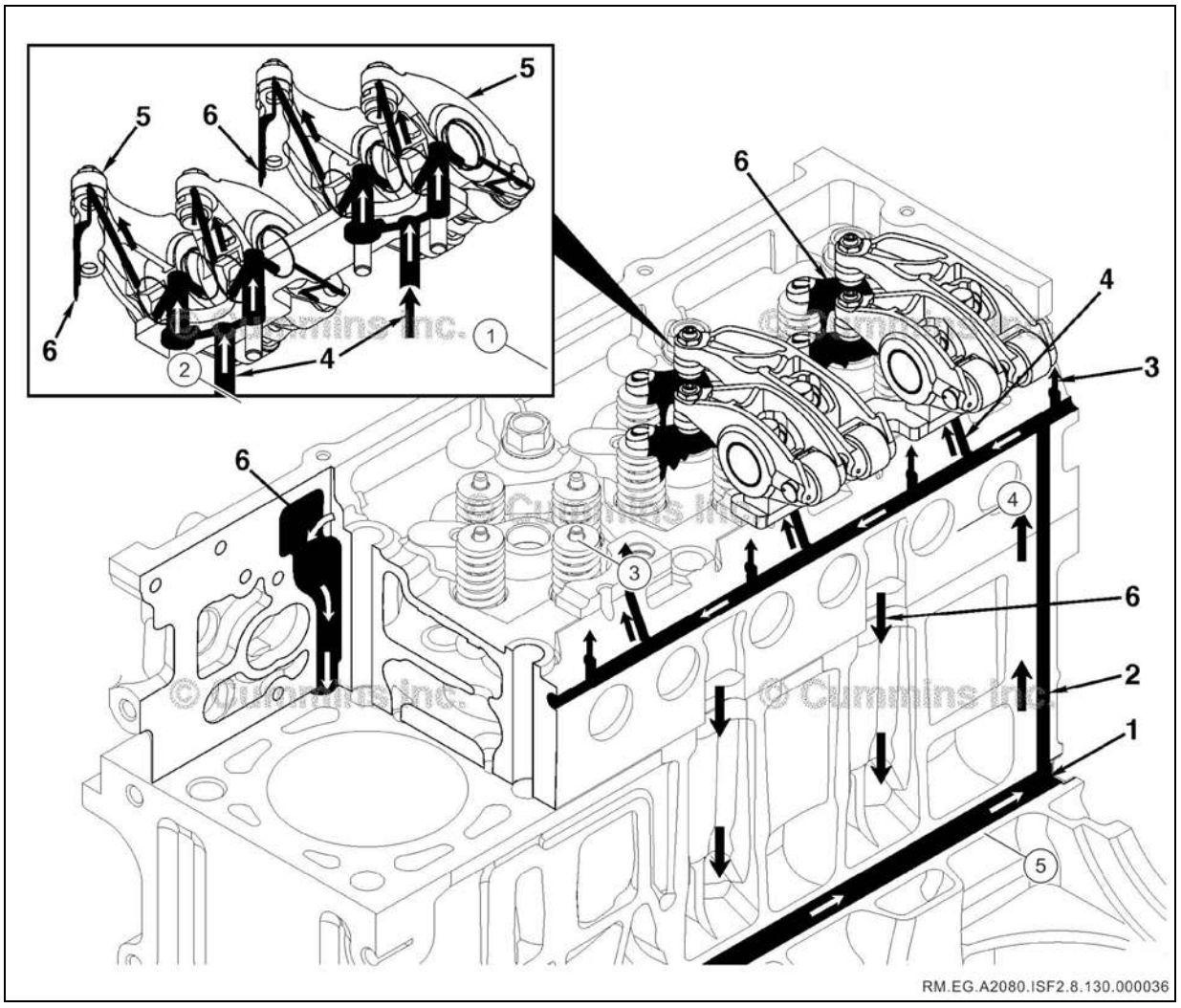


k. Install connection rod bearing and repeat above inspection.

Hole diameter of connection rod crankshaft (with bearing installed):

Minimum 62.37mm, maximum 62.41mm

System diagram (III)



1	Main oil channel
2	The oil flows to the cylinder head
3	The oil flows to camshaft

4	Oil flowing to the overhead mechanism
5	Rocker arm
6	Oil returns from the overhead mechanism

EGR control valve

General

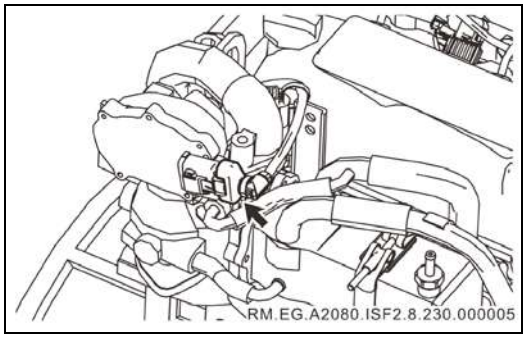
The EGR control valve for this vehicle adopts the electromagnetic drive mode and is installed on the exhaust manifold. The ECM can independently control the opening and closing of the EGR control valve to accurately control the exhaust gas flow from recirculation to engine and allow the certain volume of exhaust gas flow into the intake manifold for recirculation, regardless of the vacuum pressure of the manifold. It's an actuator for control of exhaust gas recirculation rate.

Replacement

1. Turn off the ignition switch.

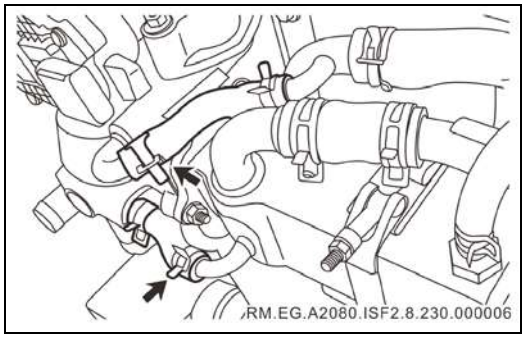
2. Disconnect the battery negative cable.

3. Discharge the coolant (Refer to "Chapter EG Engine part - Engine (Cummins ISF2.8)- Cooling system - Change, coolant")

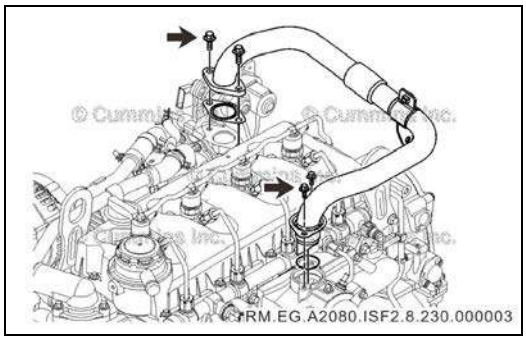


4. Remove the EGR control valve

a. Disconnect the EGR control valve connector.

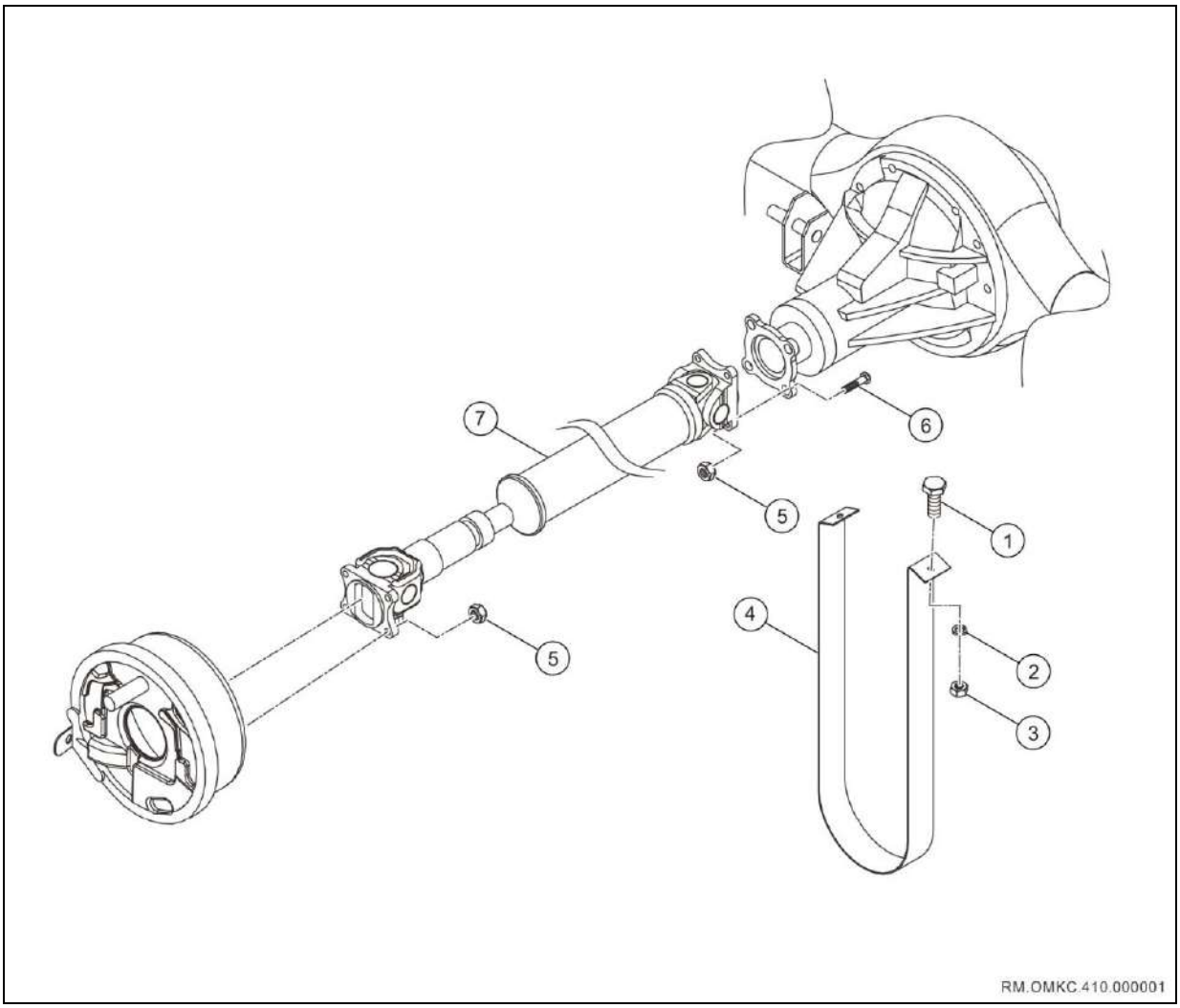


b. Disconnect the water inlet and outlet pipes of EGR control valve.



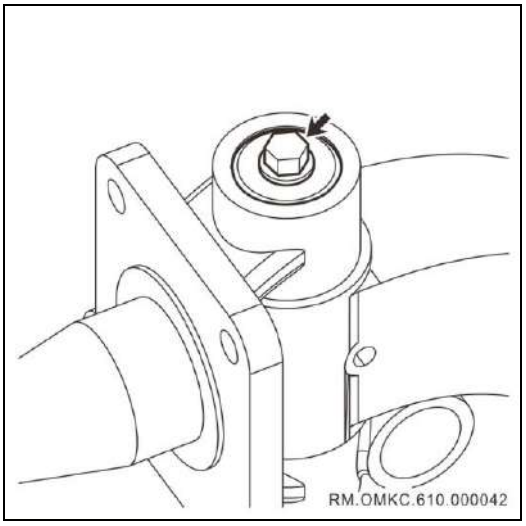
c. Remove the EGR connecting pipe.

Part diagram



1	Hexagon bolt
2	Spring washer
3	Type 1 hexagon nut
4	Drive shaft retainer

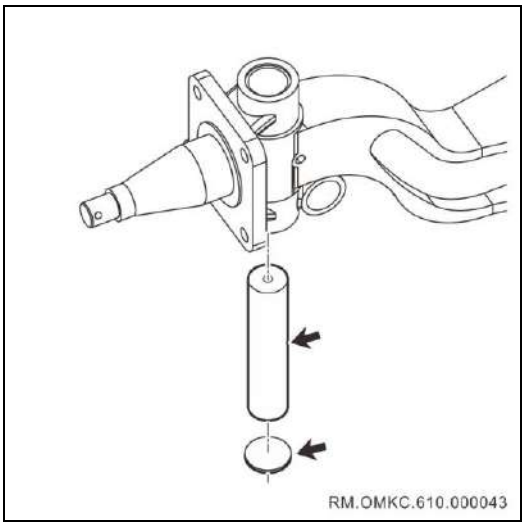
5	Self-locking nut
6	Drive shaft bolt
7	Propeller shaft assembly (RR)



e. Remove the fastening bolts of steering knuckle pin upper dustproof cap and take out the upper dustproof cap.

Note

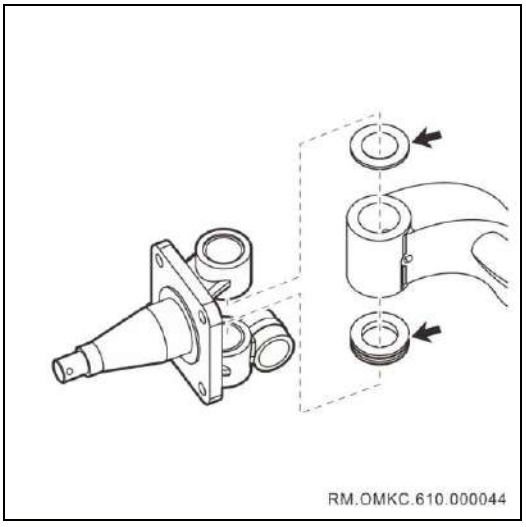
The removed dustproof cap can't be reused.



f. Knock out the steering knuckle pin and lower dustproof cap by a copper bar.

Note

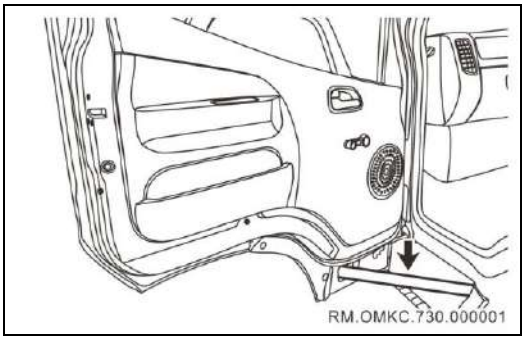
The removed dustproof cap can't be reused.



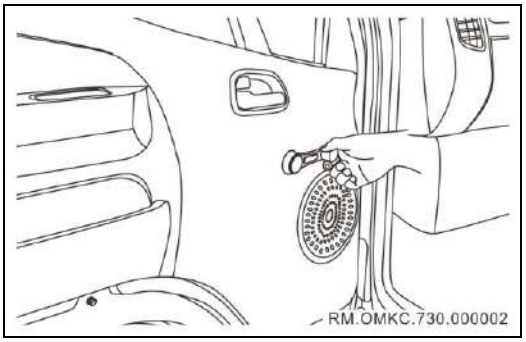
g. Take out the steering knuckle, thrust bearing, and adjustment shim.

Door inner guard board

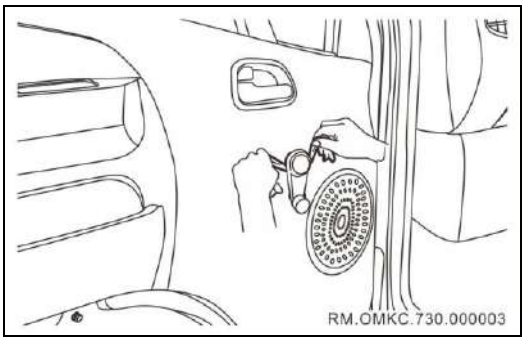
Replacement



1. **Open the door and fix it by a wood stick or equivalent, in order to prevent the closing of door from causing personal injury during repairs**



2. **Rotate the window lifter crank to lower the glass to lowest point**

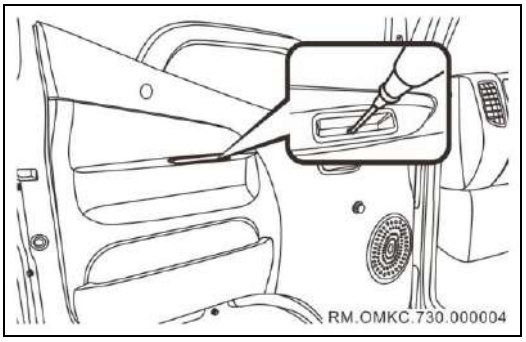


3. **Remove the inner guard panel assembly of front door**

   a. Remove the front door window lifter crank.

      - Grab the clamp position of window lifter crank by one cloth strip and pull upward alternatively by two hands to remove the clamp of the window lifter crank.

   b. Remove the fixing screws of front door inner handle and take out the inner handle.



System description:

When the ignition switch is at ON/ST position, the current is supplied to pin 85 of IG power relay IR14 via the pin 1 of ignition switch and the pin 86 of IG power relay IR14 is grounded so that the coil is energized to generate a magnetic field and close the contact of IG power relay IR14. The current is supplied to the pin 10 of combination instrument C050 via IG power relay IR14 contact and fuse F05 in the instrument panel fuse case and is outputted from pin 6 of combination instrument C050 via charging indicator lamp to the alternator pin L. Via the internal voltage regulator of the alternator, the current is supplied to the exciting winding of the alternator so that the exciting winding is energized to generate a magnetic field.

While the alternator is rotating, the stator coil cuts the magnetic lines of force to generate three-phase induced electromotive force, which is converted by rectifier composed of diodes to DC and then is outputted from pin B of alternator via fuse F\L5 in battery positive pole fuse case to charge the battery and power on other electric devices.

Service tips:

- Generator

  I - Ground: When the alternator rated speed is 6,000r/min, the outputted rated voltage of alternator is 13.8V.

□ : Locations of part

S/N	Reference harness	S/N	Reference harness
B016	Frame harness	C033	Body main harness
B020	Frame harness	C050	Body main harness

: Connector between harnesses

S/N	S/N	Reference harness (Location of connector)
B002	C045	Body main harness and frame harness (Intersection between instrument panel middle portion and front compartment)

: Ground

S/N	Location of grounding point	S/N	Location of grounding point
G001	Battery negative earthing point	G206	Body-frame grounding point