MAINTENANCE INTERVALS / MAINTENANCE ITEM	Number of months or kilometers (miles), whichever comes first														
	Months	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	105
	Milesx1,000	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	105
	(Kmx1,000)	(12)	(24)	(36)	(48)	(60)	(72)	(84)	(96)	(108)	(120)	(132)	(144)	(156)	(168)
Drive belts					I				I				I		
Engine oil	**Replace every 7,500 miles or 12 Months**														
Engine oil filter	**Replace every 7,500 miles or 12 Months**														
Engine timing belt					I				R(1)				I		
Air cleaner element					R				R				R		
Spark plugs									R						
Transfer case oil (if equipped)	I	I	R	I	I	R	I	I	R	I	I	R	I	I	
Manual transmission fluid	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
Automatic transmission fluid		I		I		I		I		I		I		I	
Front differential fluid (if equipped)	I	I	R	I	I	R	I	I	R	I	I	R	I	I	
Rear differential fluid	I	I	R	I	I	R	I	I	R	I	I	R	I	I	
Cooling system				I				I				I			
Engine Coolant				R				R				R			
Ignition wires								I							
Idle speed				1(2)				1(2)				1(2)			
Fuel filter				1(3)				R(3)				1(3)			
Fuel line and hoses				1(2)				1(2)				1(2)			
Hose and tube for emission				1(2)				1(2)				1(2)			
Brake lines and connections		I		I		I		I		I		I			
Parking brake				I				I				I			
Disc brakes		I		I		I		I		I		I			I
Brake fluid / Clutch fluid (if equipped)		I		I		I		I		I		I			I
Steering operation and linkage				I				I				I			
Front suspension ball joints				I				I				I			
Driveshaft dust boots		I		I		I		I		I		I			I
Front and rear driveshaft u-joints		L		L		L		L		L		L			L
Chassis / body nuts and bolts				I				I				I			
Exhaust system heat shield				I				I				I			
All locks and hinges	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Air conditioner refrigerant (if equipped)	**Inspect refrigerant amount annually**														
Air conditioner compressor (if equipped)	**Inspect operation annually**														

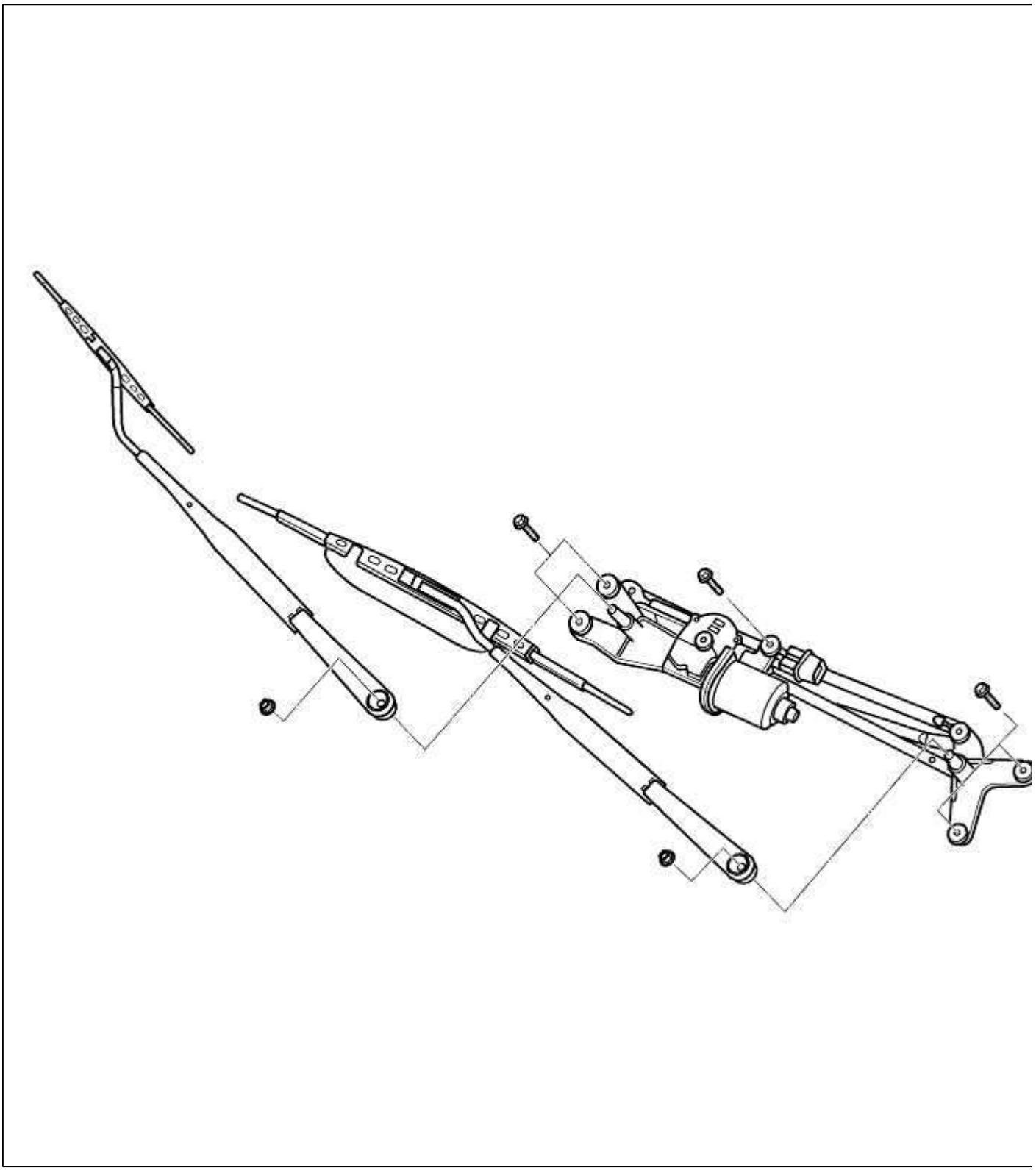
I : Inspect and, if necessary, adjust, correct, clean or replace.
R : Replace or change
L : Lubricate.

(1) For california, this maintenance is recommended, but not reguired.
(2) This maintenance is recommended by Kia. However, it is not necessary for emission warranty coverage or manufacturer recall liability.
(3) This maintenance is required in all states except California. However, we recommend that it also be performed on California vehicles.

MAINTENANCE SCHEDULE (SEVERE)

Body Electrical System > Windshield Wiper/Washer > Components and Components Location

COMPONENTS



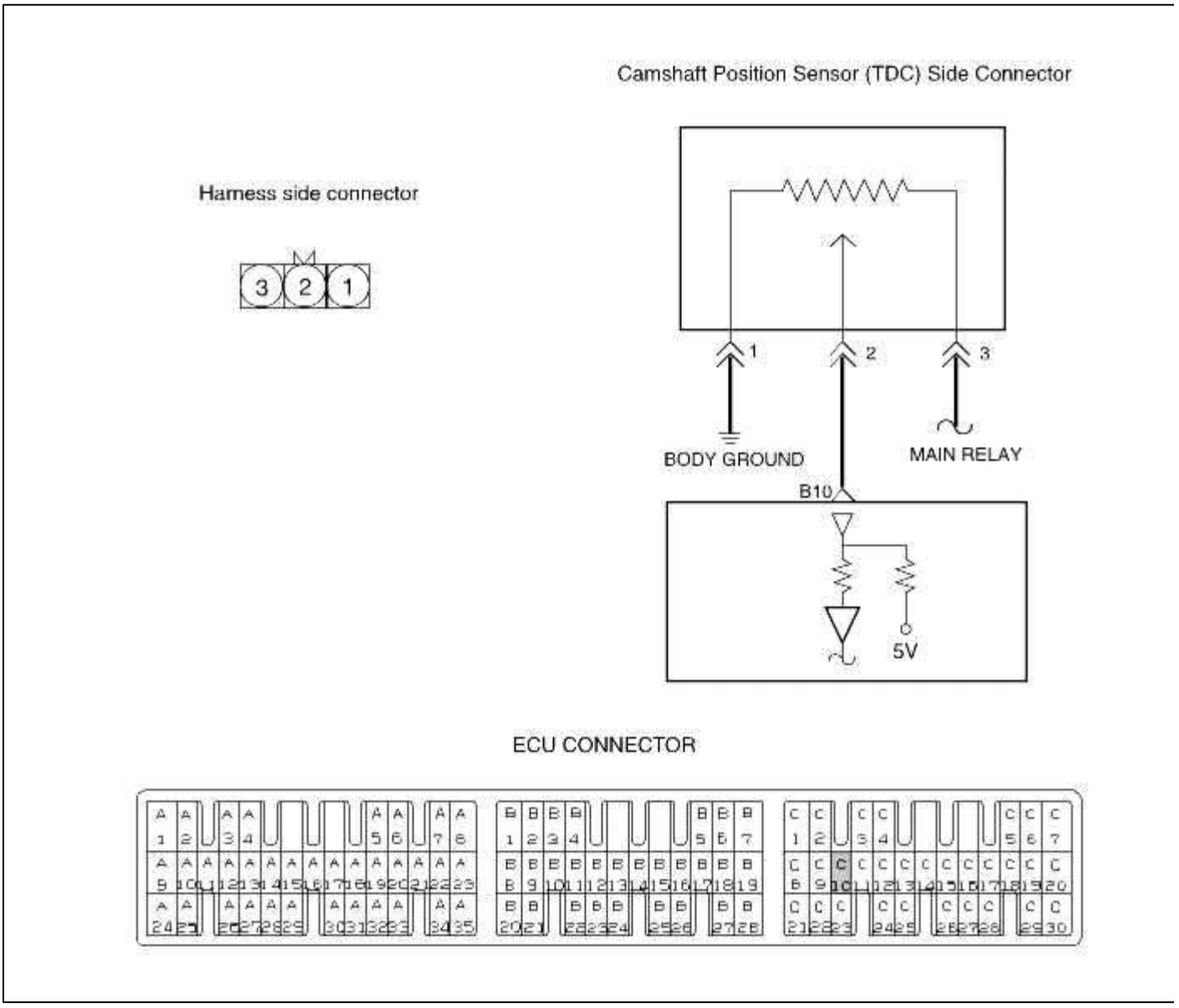
Body Electrical System > Windshield Wiper/Washer > Front Wiper Motor > Repair procedures

REMOVAL

TROUBLESHOOTING GUIDE

DTC detection condition	Probable cause
Normal Operation • When the engine is running, the Camshaft Position sensor outputs a pulse signal. • ECU checks whether the pulse signal is input. Malfunction • Normal signal pattern has not been input for cylinder identification from the TDC sensor signal for 4 sec.	• TDC sensor malfunction • Open or shorted TDC sensor circuit or loose connector • ECU failed

CIRCUIT DIAGRAM



TEST PROCEDURE

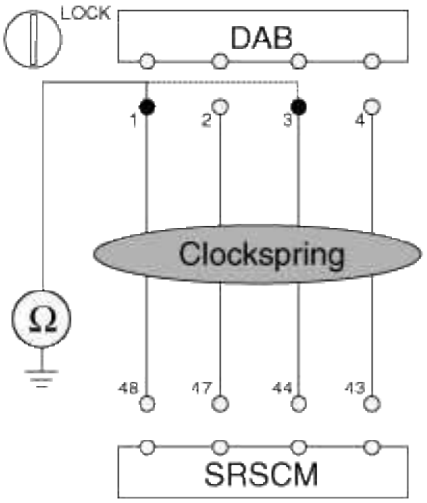
1. PREPARATION

1. Turn the ignition switch to LOCK.
2. Disconnect the negative (-) terminal from the battery and wait for at least 3 minutes.
3. Remove the DAB module and disconnect the DAB connector.
4. Disconnect the connectors of the PAB, CAB, BPT, FIS and SIS.
5. Disconnect the SRSCM connector.

Go to next step.

2. CHECK SHORT TO GROUND

1. Measure resistance between the terminal 1 of DAB harness connector and chassis ground.
   - **Specification (Resistance): infinite**



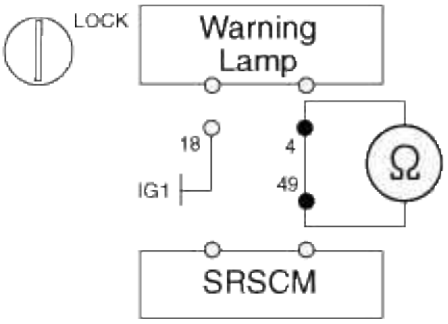
Is the measured resistance within specification?

Yes	
No	Repair the short to ground circuit on wiring harness between the DAB and the clockspring or between the clockspring and the SRSCM.

Yes	No	Repair the short or short to ground circuit on wiring harness between the Warning Lamp and the SRSCM.

7. CHECK OPEN CIRCUIT

1. Measure resistance between the terminal 4 of the Instrument Cluster harness (A) connector and the terminal 49 of SRSCM harness connector.
   - **Specification (Resistance): below 1Ω**



Is the measured resistance within specification?

Yes	No	Repair the open circuit on wiring harness between the Warning Lamp and the SRSCM.

8. CLEAR THE DTC AND CHECK THE VEHICLE AGAIN

1. Install the DAB module and connect the DAB connector.
2. Connect the connectors of the PAB, CAB, BPT, FIS and SIS.
3. Connect the SRSCM connector.
4. Connect the negative (-) terminal to the battery.
5. Connect a Hi-Scan (Pro) to the data link connector.
6. Turn the ignition switch to ON.
7. Clear the DTC stored in the SRSCM memory with the Hi-Scan (Pro).
8. Turn the ignition switch to LOCK and wait for at least 30 seconds.
9. Turn the ignition switch to ON and wait for at least 30 seconds.
10. Check the vehicle again with the Hi-Scan (Pro)

Does the above DTC(s) go off?

Yes	No	Replace the SRSCM with a new one, and then check the vehicle again. At this time, if the vehicle normally operates with a new SRSCM, the fault may be the SRSCM (Replace SRSCM).

Problem is intermittent or was repaired and SRSCM memory was not cleared.

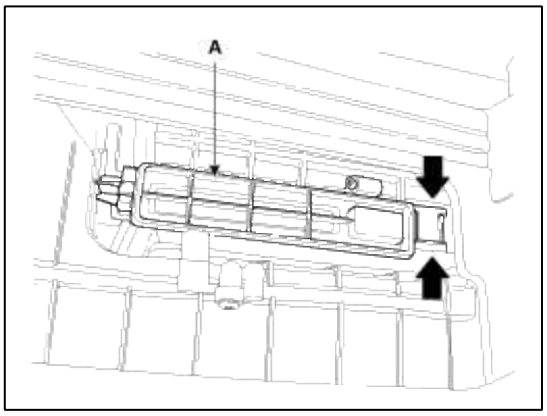
Restraint > Troubleshooting > B2502

INSPECTION PROCEDURE FOR DIAGNOSTIC TROUBLE CODES

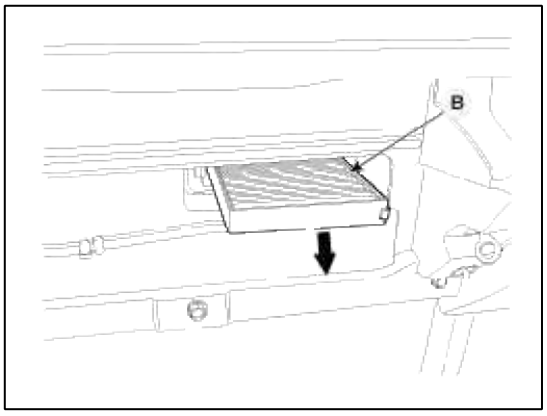
DTC	B2502 Telltale Lamp Failure

DTC DETECTING CONDITION

3. Remove the filter cover (A) with pushing the knob.



4. Replace the air filter (B), install it after making sure of the direction of air filter.



NOTE

In case of driving in an air-polluted area or rugged terrain, check and replace the air filter as frequently as possible.

Replacement period: 15,000 km (9320 mile)

Heating,Ventilation, Air Conditioning > Blower > Intake Actuator > Description and Operation

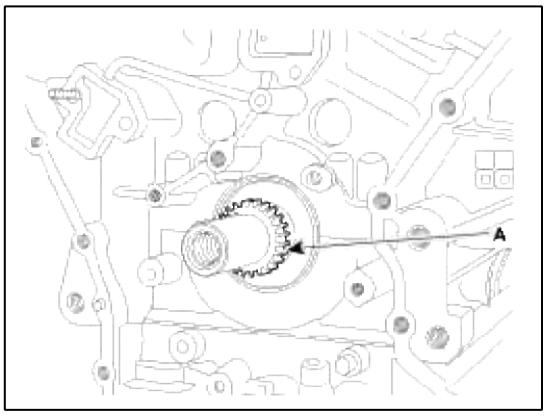
DESCRIPTION

1. The intake actuator is located at the blower unit.
2. It regulates the intake door by signal from control unit.
3. Pressing the intake selection switch will shift between recirculation and fresh air modes.

Heating,Ventilation, Air Conditioning > Blower > Intake Actuator > Components and Components Location

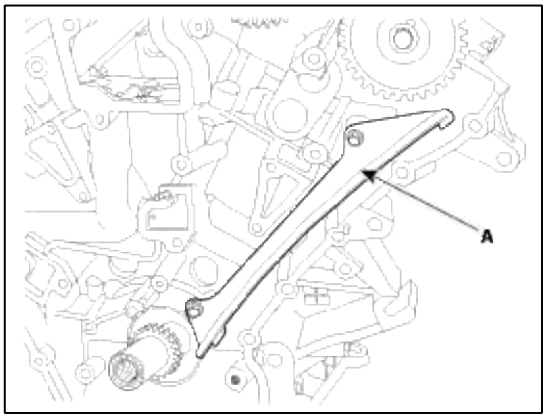
COMPONENT LOCATION

3. Install crankshaft sprocket(A)(LH camshaft drive).

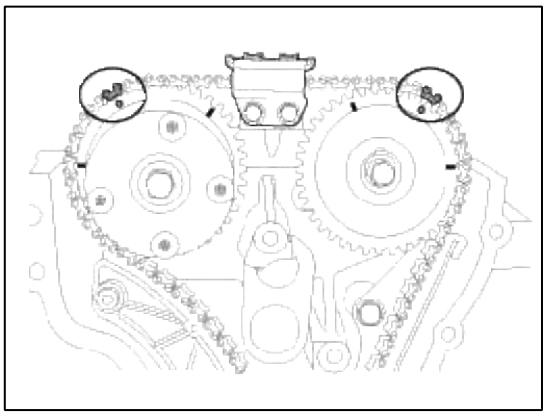


4. Install LH timing chain guide(A).

Tightening torque
19.60 ~ 24.50Nm(2.0 ~ 2.5kgf.m, 14.17 ~ 18.08lb-ft)



5. Install LH timing chain.
To install the timing chain with no slack between each shaft (cam, crank), follow the below procedure.
Crankshaft sprocket(A) → Timing chain guide(B) → Exhaust camshaft sprocket(C) → Intake camshaft sprocket(D).
The timing mark of each sprockets should be matched with timing mark (color link) of timing chain at installing timing chain.



6. Install LH timing chain tensioner arm(B).

Tightening torque
18.62 ~ 21.56Nm(1.9 ~ 2.2kgf.m, 13.74 ~ 15.91lb-ft)

2. CHECK TCM
   (1) Ignition "ON" & Engine "OFF".
   (2) Disconnect the "ATF 1 [C106-1] " connector.
   (3) Install scantool and access "SIMU-SCAN" mode.
   (4) Simulate voltage (0→5V) to "TRANSMISSION FLUID TEMPERATURE SENSOR 1, 2" signal circuit.

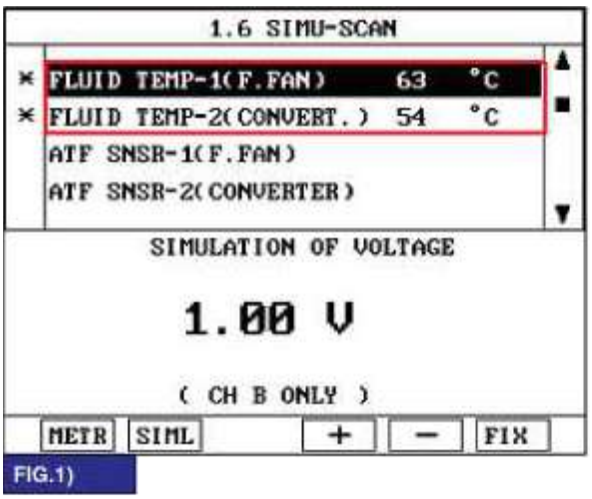


FIG.1)

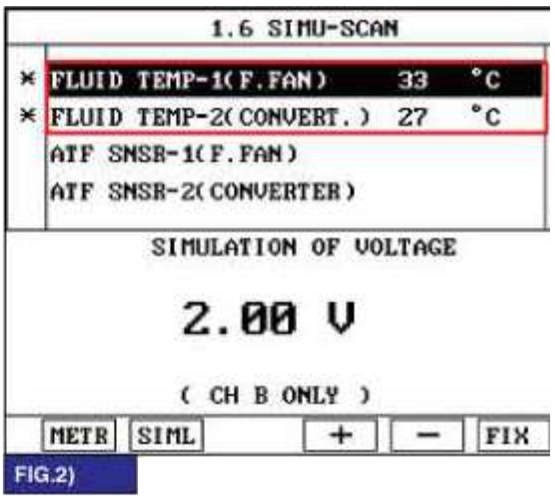


FIG.2)

FIG.1) INPUT 1.02V → 63°C
FIG.2) INPUT 2.00V → 33°C

※The values are subject to change according to vehicle model or conditions.

   (5) Is FLUID TEMP. SENSOR signal value changed according to simulation voltage?

YES

Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deteriorat damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good TCM and check for proper operation. If the problem is corrected, replace T as necessary and go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using a scantool, Clear DTC.
3. Operate the vehicle within DTC Enable conditions in General information.
4. Are any DTCs present?

YES

Go to the applicable troubleshooting procedure.

NO

System performing to specification at this time.

Automatic Transaxle System > Troubleshooting > P0716

COMPONENT LOCATION

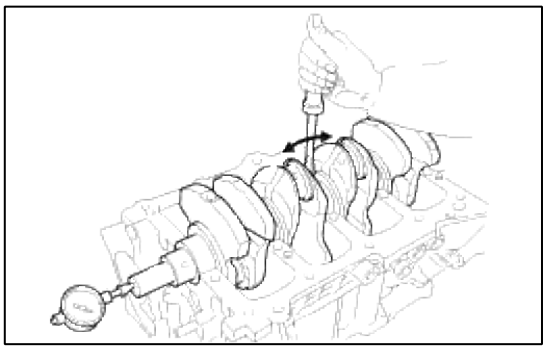
CLASS	MARK	THICKNESS OF BEARING
E	BLUE	2.277 ~ 2.280mm (0.0896 ~ 0.0897in.)
D	BLACK	2.274 ~ 2.277mm (0.0895 ~ 0.0896in.)
C	BROWN	2.271 ~ 2.274mm (0.0894 ~ 0.0895in.)
B	GREEN	2.268 ~ 2.271mm (0.0893 ~ 0.0894in.)
A	YELLOW	2.265 ~ 2.268mm (0.0892 ~ 0.0893in.)

SELECTION

		CRANKSHAFT BORE IDENTIFICATION MARK		
		a(A)	b(B)	c(C)
CRANKSHAFT IDENTIFICATION MARK	1 or A	A (YELLOW)	B (GREEN)	C (BROWN)
	2 or B	B (GREEN)	C (BROWN)	D (BLACK)
	3 or C	C (BROWN)	D (BLACK)	E (BLUE)

4. Check crankshaft end play.
   Using a dial indicator, measure the thrust clearance while prying the crankshaft back and forth with a screwdriver.

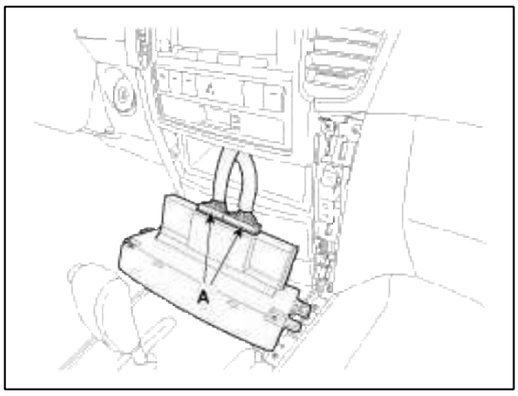
Standard end play
0.10 ~ 0.28mm (0.0039 ~ 0.0110in.)



If the end play is greater than maximum, replace the thrust bearings as a set.

Thrust bearing thickness
2.41 ~ 2.45mm(0.0949 ~ 0.0964in)

3. Disconnect the connector (A).



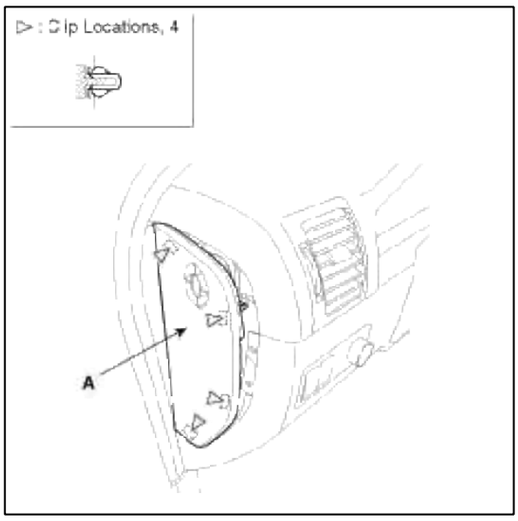
4. Installation is the reverse of removal.

NOTE

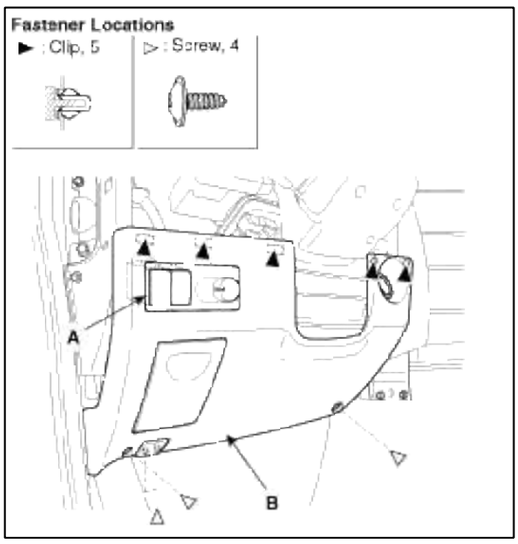
- Make sure the connector is plugged in properly.

LOWER PANEL REPLACEMENT

1. Remove the crash pad side cover (A).



2. Loosen the mounting screw, remove the lower panel (B).
3. Disconnect the connector (A).



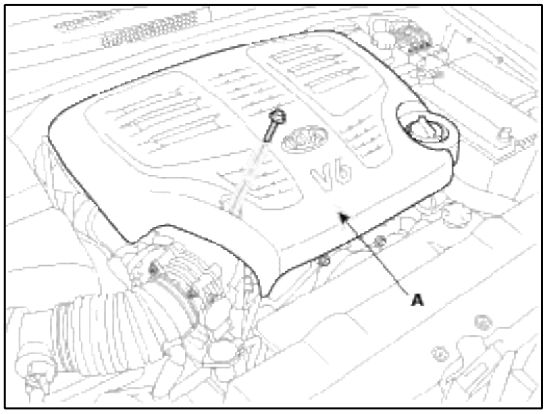
CAUTION

- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.

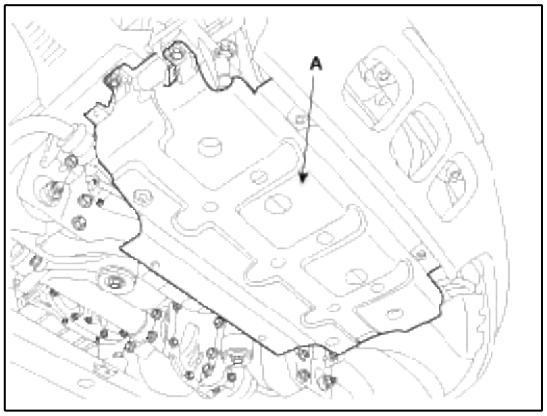
NOTE

- Mark all wiring and hoses to avoid misconnection.
- Turn the crankshaft pulley so that the No.1 piston is at top dead center.

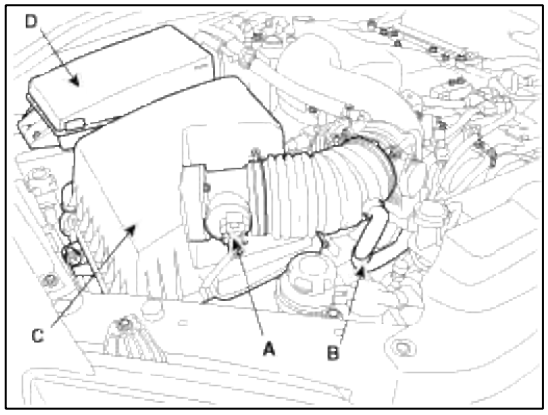
1. Remove the engine cover(A).



2. Recover refrigerant by opening the high & low pressure pipe caps and connecting the refrigerant station(Refer to Air conditioning system in HA Group).
3. Remove the under cover(A).



4. Drain engine oil, transaxle fluid and engine coolant.
5. Disconnect the neagative terminal from the battery and remove the battery(A).
6. Remove the intake air hose and air cleaner assembly.
   (1) Disconnect the MAF connector(A).
   (2) Disconnect the breather hose(B) from air cleaner hose.
   (3) Remove the intake air hose and air cleaner assembly(C) with the resonator(D).

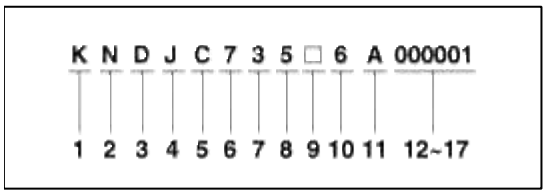


SORENTO(BL) > 2009 > G 3.3 DOHC > General Information

General Information > General Information > General Information

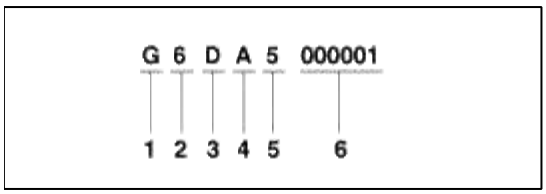
Identification number description

Vehicle identification number



1 : Geographic zone
- K = KOREA
2 : Manufacturer
- N = Kia motor company
3 : Vehicle type
- D = MPV
4 - 5 : Vehicle Line/Series
- JC = Sorento (4WD)
- JD = Sorento (2WD)
6 - 7 : Body Type
- 73 = 4 Door SUV & GRW 2271 ~ 2720 kg
8 : Engine type
- 5 = λ3.3
- 6 = λ3.8
9 : Check digit
10 : Model year
- 5 = 2005, 6 = 2006, 7 = 2007
11 : Plant location
- A = Hwasung Plant
12 - 17 : Production sequential number
- 000001 ~ 999999

Engine Identification Number



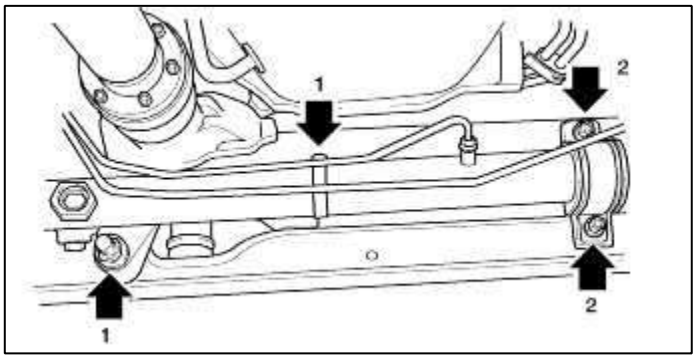
1. Engine fuel
   - G : Gasoline
2. Engine range
   - 6 : 4 cycle 6 cylinder
3. Engine development order
   - D : Lambda engine

Item		Detecting Condition	Possible cause
DTC Strategy		• Voltage monitoring	• Inoperative HECU
Case 1	Monitoring Period	• Continuous	
	Enable Conditions	• The electrical feedback signal does not match the actuation signal for the corresponding valve for more than 30 ms. - Current controlled valves and under voltage conditions :detection time is 80 ms	
Case 2	Monitoring Period	• Immediately after power on • every 20 s - The Test is canceled if any control, valve actuation takes place or if the Vehicle is in motion and the BLS is on.	
	Enable Conditions	• A Fault is found if UVR is not within 0.1*battery voltage < valve relay voltage < 0.8*battery voltage • A Fault is found if valve relay voltage ≥ 0.2*battery voltage. - After that all valves are switched on sequential, valve relay voltage and valve feedback is measured.	
Case 3	Monitoring Period	• The Valve and Pump motor Test is performed once after ignition on if vehicle speed is >= 30 km/h(18.6 mph).	
	Enable Conditions	• The valve and pump motor test detects electrical actuation malfunction of ABS valves. The test actuates all valves in series (to detect short cuts or shunts between the valve lines). Faults are detected if there is an error during the test.	
Case 4	Monitoring Period	• The drift test executes only once during an ignition Cycle. The test is triggered if the following conditions are fulfilled : 10min after power up or end of control 1. No BLS is applied 2. Brake pressure is < 10 bar 3. Vehicle speed >15 km/h(9.3 mph). 4. Vehicle acceleration > 0.5 m/s² 5. Supply voltage > 11 volts.	
	Enable Conditions	• The drift test is executed only once during an ignition Cycle.If it detects partly shorted valve coils,almost inoperative coils or malfunction of the valve driver, a failure is recognized.	
Fail Safe		• Valve cannot be actuated or valve is incorrectly actuated. This may result in locked wheels or wheels without pressure. • ABS/EBD/ESC function is prohibited. • ABS/EBD/ESC warning lamp is turned ON.	

5. Remove the steering gear box mounting bolts and remove the steering gear box assembly together with mounting rubber.

> **CAUTION**
>
> When removing the gear box, pull it out carefully and slowly to avoid damaging the boot.

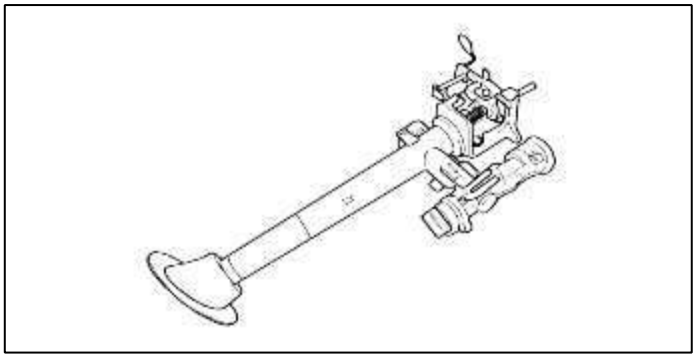
Tightening torque:
1) 122 - 158 N·m (12.2 - 15.8 kg-m, 88 - 114 lb-ft)
2) 85 - 110 N·m (8.5 - 11.0 kg-m, 62 - 80 lb-ft)



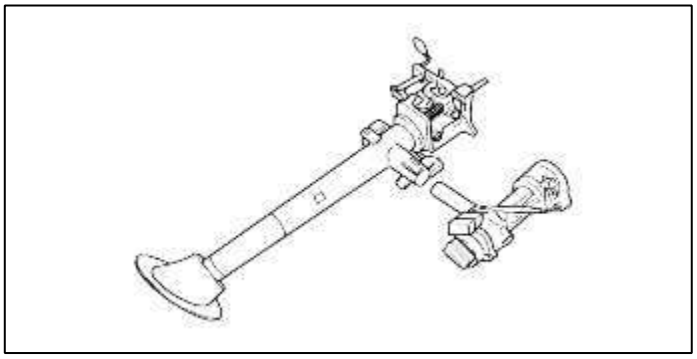
REASSEMBLY

DISASSEMBLY AND REASSEMBLY

1. If it is necessary to remove the key lock assembly, use a pinch to make a groove on the head of the special bolt, and then use a screwdriver to removethe key lock assembly mounting bracket.



2. Disassemble the key lock assembly from the steering column shaft.



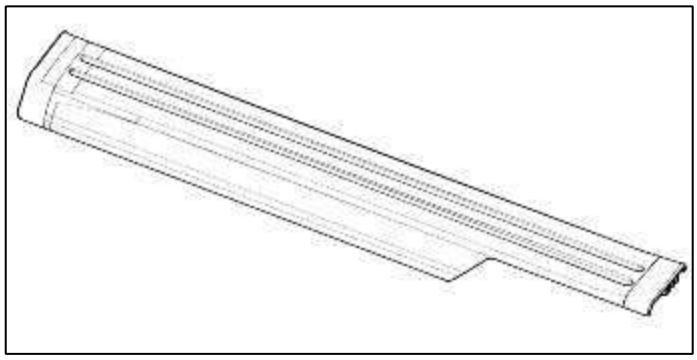
3. Reassembly is the reverse of disassembly.

INSPECTION

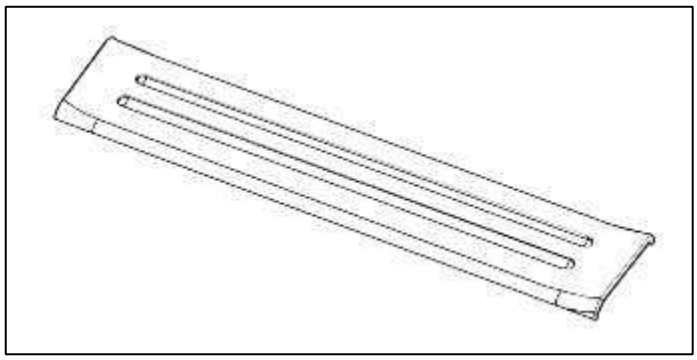
1. Check the steering column shaft for damage and deformation.
2. Check the connections for play, damage and smooth operation.
3. Check the ball joint bearing for wear and damage.

3. Remove B pillar lower trim

(1) Remove front door scuff trim.



(2) Remove rear door scuff trim.



(3) Remove B pillar lower trim screws (2).