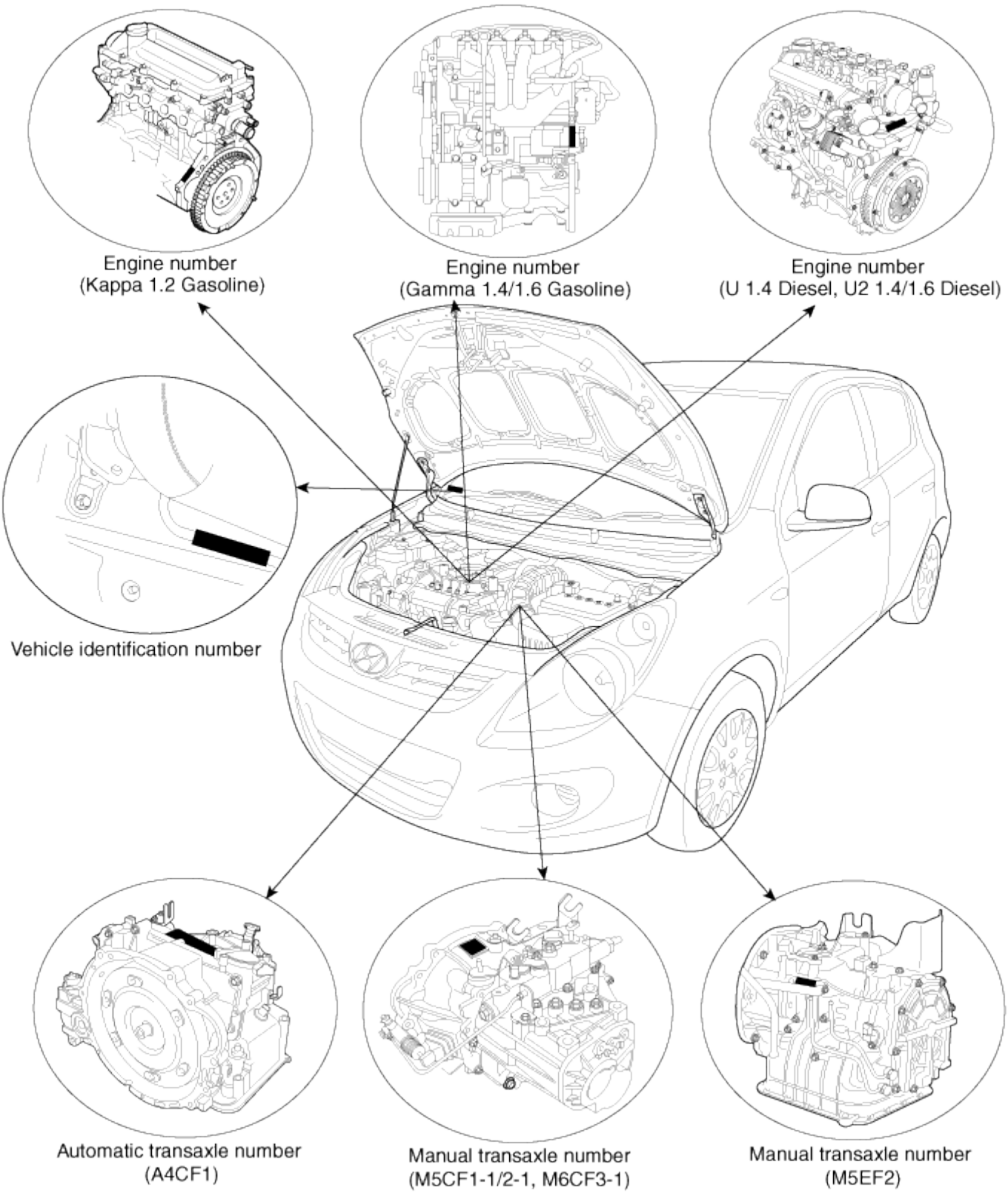
Identification Number Locations



Identification Number Description
Vehicle Identification Number

		130)	215)
M20	1.5	220 ~ 250 (2,200 ~ 2,500, 160 ~ 180)	360 ~ 420 (3,600 ~ 4,200, 260 ~ 300)
M22	1.5	290 ~ 330 (2,900 ~ 3,300, 210 ~ 240)	480 ~ 550 (4,800 ~ 5,500, 350 ~ 400)
M24	1.5	360 ~ 420 (3,600 ~ 4,200, 260 ~ 300)	610 ~ 700 (6,100 ~ 7,000, 440 ~ 505)

NOTE

1. The torques shown in the table are standard values under the following conditions.
   - Nuts and bolts are made of galvanized steel bar.
   - Galvanized plain steel washers are inserted.
   - All nuts, bolts and plain washers are dry.
2. The torques shown in the table are not applicable.
   - When spring washers, toothed washers and the like are inserted.
   - If plastic parts are fastened.
   - If self-tapping screws or self-locking nuts are used.
   - If threads and surfaces are coated with oil.
3. Reduce the torque values to the indicated percentage of the standard value under the following conditions.
   - If spring washers are used : 85%
   - If threads and bearing surfaces are stained with oil : 85%

General Service Information

Protection Of The Vehicle

Always be sure to cover fenders, seats, and floor areas before starting work.

CAUTION

The support rod must be inserted into the hole near the edge of the hood whenever you inspect the engine compartment to prevent the hood from falling and causing possible injury.

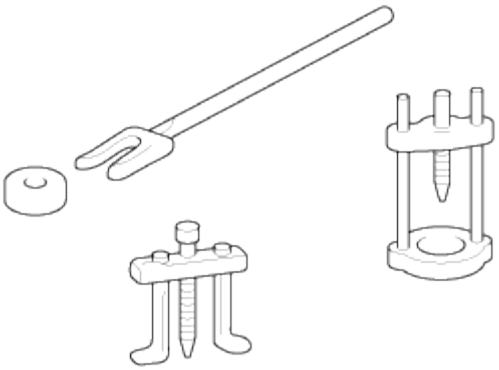
Make sure that the support rod has been released prior to closing the hood. Always check to be sure the hood is firmly latched before driving the vehicle.

Preparation Of Tools And Mesuring Equipment

Be sure that all necessary tools and measuring equipment are available starting work.

Special Tools

Use special tools when they are required.



Removal Of Parts

First find the cause of the problem and then determine whether removal or disassembly before starting the job.

Compressor - Discharge hose			
Compressor - Suction hose			
Expansion valve - Evaporator			

4. Evacuate air in refrigeration system and charge system with refrigerant.

Specified amount: 450 ± 25g (15.8 ± 0.88 oz.)

5. Inspect for leakage of refrigerant.
   Using a gas leak detector, check for leakage of refrigerant .
6. Inspect A/C operation.

2.2.10. Evaporator temperature sensor

2.2.10.1. Description and Operation

Description

The evaporator temperature sensor will detect the evaporator core temperature and interrupt compressor relay power in order to prevent evaporator freezing by excessive cooling.

2.2.10.2. Repair procedures

Inspection

1. Ignition "OFF"
2. Disconnect evaporator temperature sensor.
3. Using the multi-tester, Measure resistance between terminal "1" and "2" of evaporator temperature sensor.

Specification

Evaporator core temperature[°C(°F)]	Resistance[KΩ]	Voltage[V]
-10(14)	17.93	3.21
0(32)	11.36	2.66
10(50)	7.4	2.13
20(68)	4.94	1.66
30(86)	3.37	1.26
40(104)	2.35	0.95
50(122)	1.67	0.72

4. If the measured resistance is not specification, substitute with a known-good evaporator temperature sensor and check for proper operation.
5. If the problem is corrected, replace the evaporator temperature sensor.

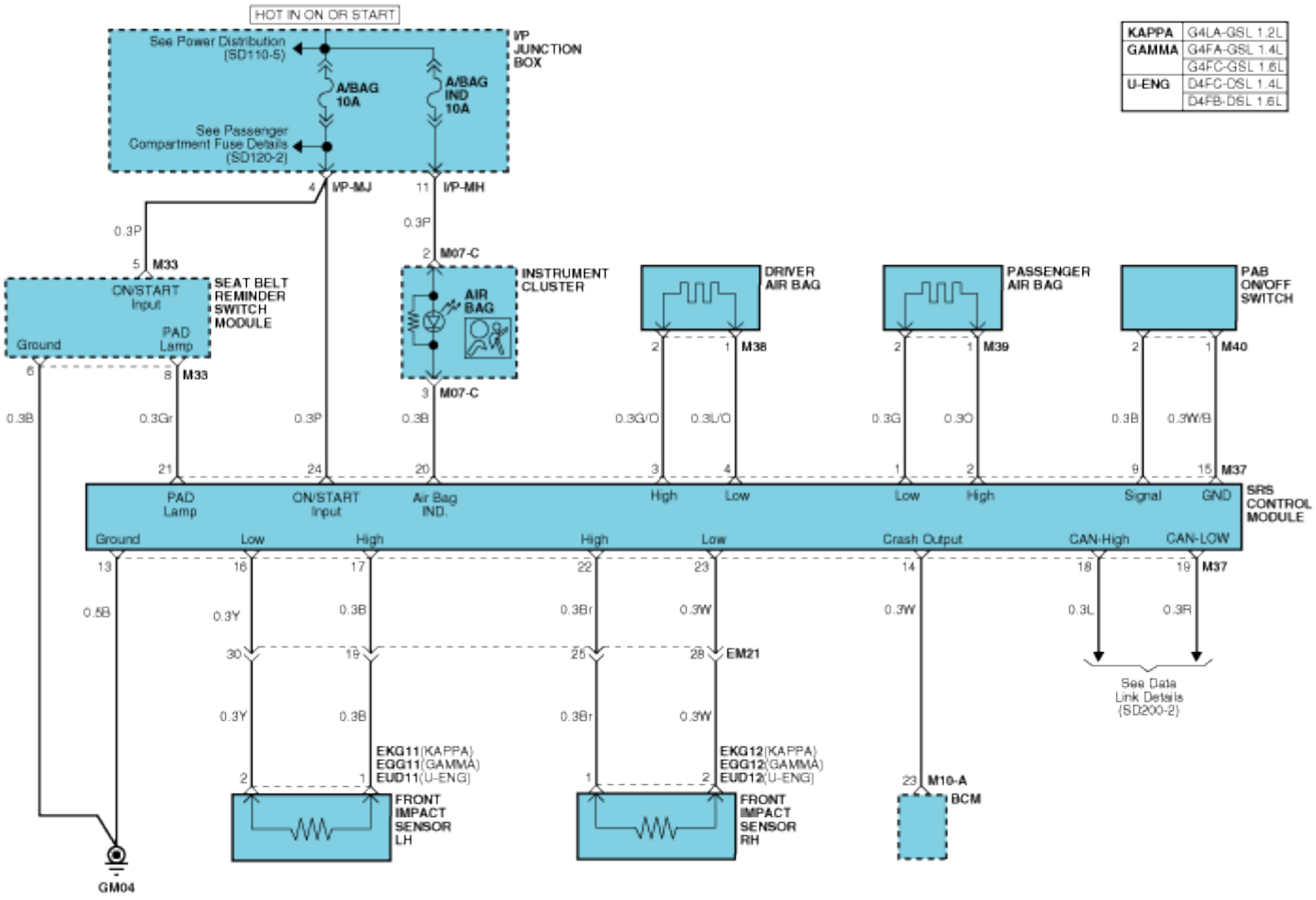
Replacement

1. Disconnect the negative (-) battery terminal.
2. Remove the crash pad. (refer to BD group-crash pad)
3. Remove the heater unit.
4. Disconnect the evaporator sensor connector (A).

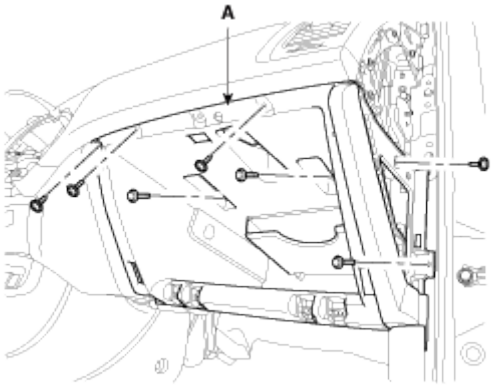
2. Disconnect the battery negative cable and wait for at least three minutes before beginning work.
3. Install the PAB ON/OFF switch to the crash pad side cover.
4. Connect the PAB ON/OFF switch connector to the crash pad side cover.
5. Install the crash pad side cover. (Refer to the Body group – crash pad)
6. After installing the SRSCM, confirm proper system operation:
   A. Turn the ignition switch ON; the SRS indicator light should be turned on for about six seconds and then go off.

3.2.5. Schematic Diagrams

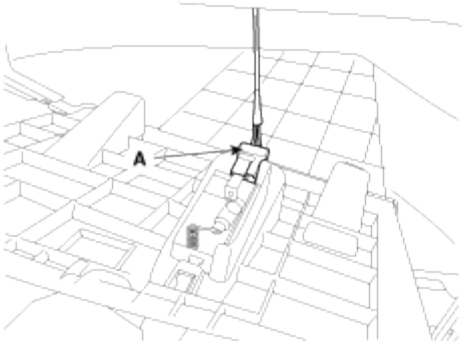
Circuit Diagram (1)



Circuit Diagram (2)



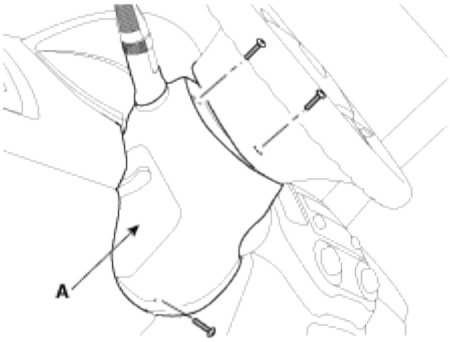
6. Disconnect the connector (A).



7. Installation is the reverse of removal.

Shroud Replacement

1. Loosen the screws.
2. Remove the shroud assembly (A).



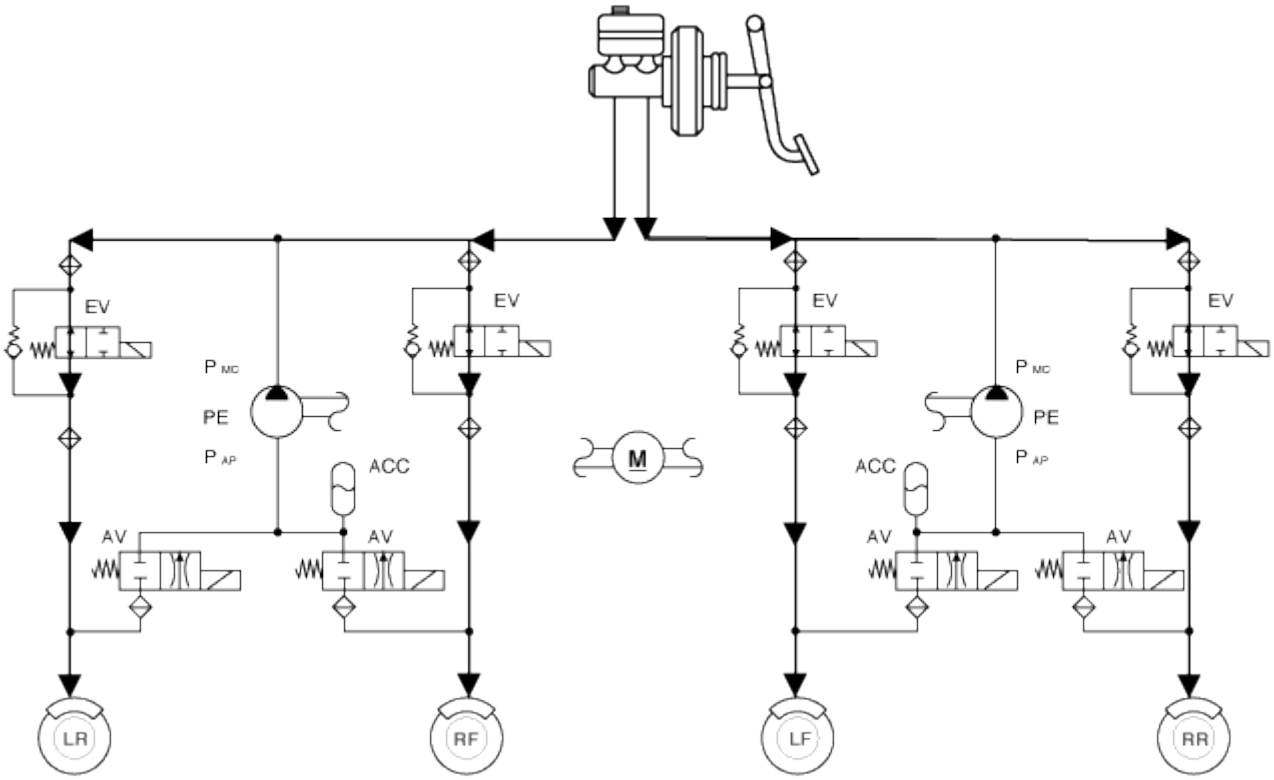
3. Installation is the reverse of removal.

Crash Pad Replacement

NOTE

- When prying with a flat-up screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Put on gloves to protect your hands.

1. Remove the following items.
   A. Front seat
   B. Cluster fascia panel, cluster
   C. Audio assembly
   D. Glove box
   E. Crash pad side cover



NOTE

EV : Inlet Valve

AV : Outlet Valve

LR : Rear left wheel

RF : Front right wheel

LF : Front left wheel

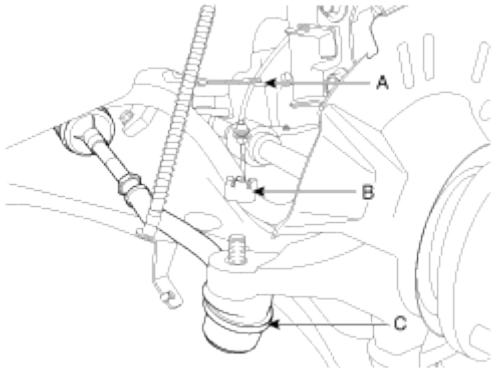
RR : Rear right wheel

PE : Pump motor

2. Decrease mode

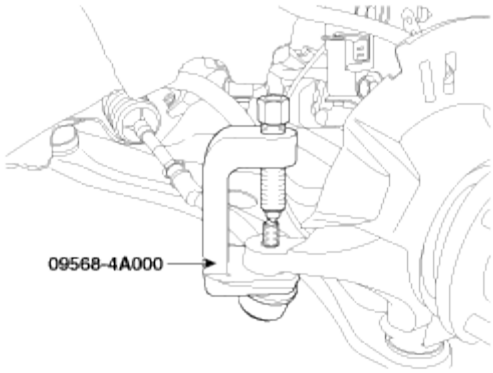
	Inlet valve(EV)	Outlet valve(AV)	Pump motor
Operation	Close	Open	ON(Motor speed control)

Tightening torque :
15.6~33.3N.m(1.6~3.4Kgf.m, 11.5~24.6lb-ft)



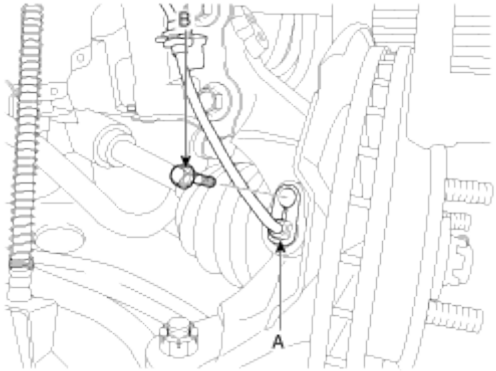
CAUTION

Apply a few drops of oil to the special tool. (Boot contact part)



6. Remove the wheel speed sensor(A) and the lower arm mounting nut(C) from the knuckle.

Tightening torque :
6.8~10.8N.m(0.7~1.1Kgf.m,5.1~7.9lb-ft)



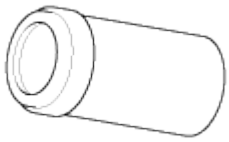
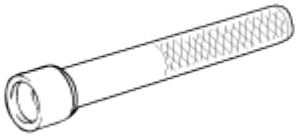
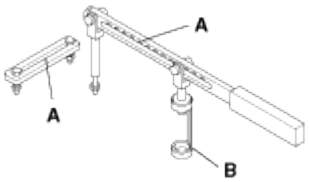
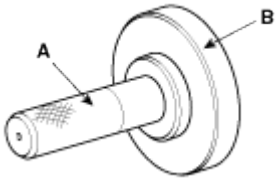
7. Loosen the brake disc mount screw and then remove the brake disc(A).

Tightening torque :
60~72N.m(6.0~7.2Kgf.m,43~52lb-ft)

		Repair as required.
	Foreign material in cylinder. • Broken valve. • Piston material. • Foreign material.	Inspect cylinder for damaged components and/or foreign materials. Repair or replace as required.
	Seized crankshaft or connecting rod bearings.	Inspect crankshaft and connecting rod bearing. Repair or replace as required.
	Bent or broken connecting rod.	Inspect connecting rods. Repair or replace as required.
	Broken crankshaft.	Inspect crankshaft. Repair or replace as required.

9.1.4. Special Service Tools

Special Service Tools

Tool (Number and name)	Illustration	Use
Crankshaft front oil seal installer (09455-21200)		Installation of the front oil seal
Valve stem oil seal installer (09222-2B100)		Installation of the valve stem oil seal
Valve spring compressor and holder A : (09222-3K000) B : (09222-3K100)		Removal and installation of the intake or exhaust valve
Crankshaft rear oil seal installer A : (09231-H1100) B : (09231-2B200)		Installation of the crankshaft rear oil seal

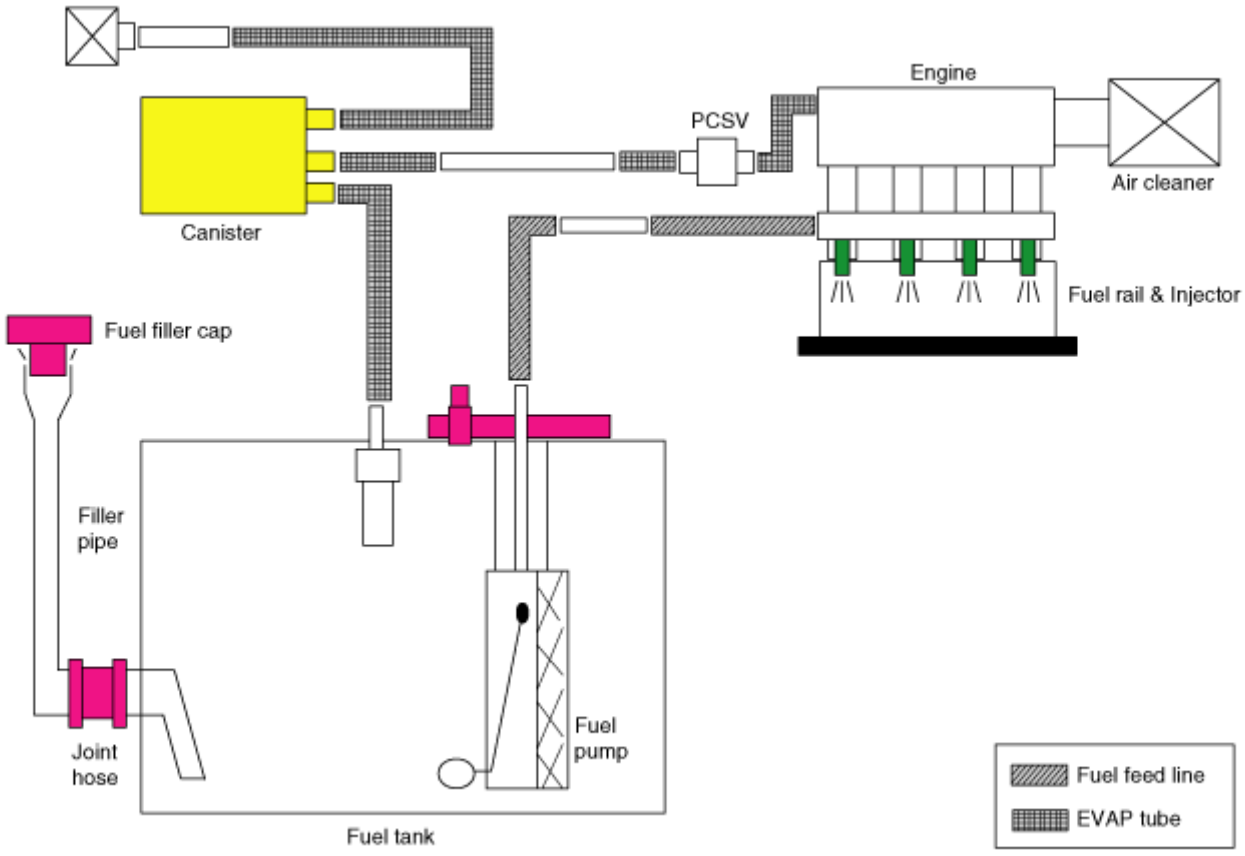
10.3.1. Description and Operation

Description

Evaporative Emission Control System prevents fuel vapor stored in fuel tank from vaporizing into the atmosphere. When the fuel evaporates in the fuel tank, the vapor passes through vent hoses or tubes to the canister filled with charcoal and the canister temporarily holds the vapor in the charcoal. If ECM determines to draw the gathered vapor into the combustion chambers during certain operating conditions, it will use vacuum in intake manifold to move it.

10.3.2. Schematic Diagrams

Schematic Diagram



Canister

Canister is filled with charcoal and absorbs evaporated vapor in fuel tank. The gathered fuel vapor in canister is drawn into the intake manifold by the ECM/PCM when appropriate conditions are set.

Purge Control Solenoid Valve (PCSV)

Purge Control Solenoid Valve (PCSV) is installed in the passage connecting canister and intake manifold. It is a duty type solenoid valve and is operated by ECM/PCM signal.

To draw the absorbed vapor into the intake manifold, the ECM/PCM will open the PCSV, otherwise the passage remains closed.

Fuel Filler Cap

A ratchet tightening device on the threaded fuel filler cap reduces the chances of incorrect installation, which would seal the fuel filler. After the gasket on the fuel filler cap and the fill neck flange contact each other, the ratchet produces a loud clicking noise indicating the seal has been set.

10.3.3. Repair procedures

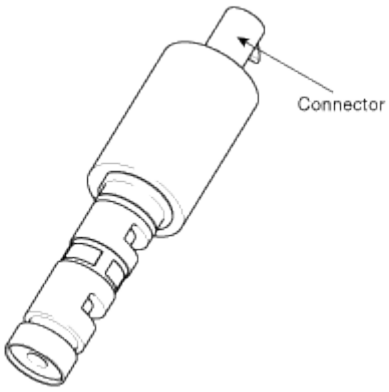
Inspection

11.2.15.1. Description and Operation

Description

The Continuously Variable Valve Timing (CVVT) system controls the amount of valve overlap by varying the amount of oil flow into an assembly mounted on the intake camshaft through ECM control of an oil control valve.
As oil is directed into the chambers of the CVVT assembly, the cam phase is changed to suit various performance and emissions requirements.

1. When camshaft rotates engine rotation-wise: Intake-Advance / Exhaust-Retard
2. When camshaft rotates counter engine rotation-wise: Intake- Retard / Exhaust- Advance



11.2.15.2. Specifications

Specification

Item	Specification
Coil Resistance (Ω)	6.9 ~ 7.9 [20°C(68°F)]

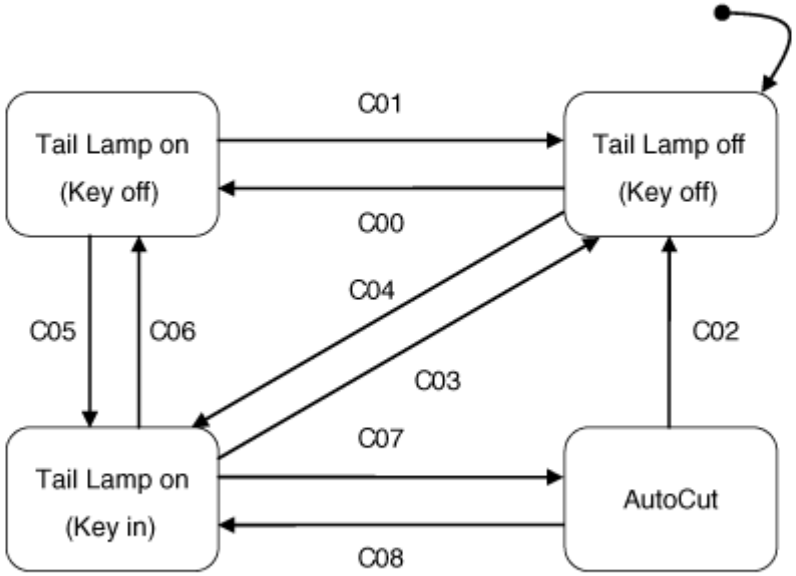
11.2.15.3. Schematic Diagrams

Circuit Diagram

[A/T]

Drive Door SW	

2. Behavior For Normal State



C00: Tail Lamp SW on & Key In SW off / Tail Lamp Relay on
C01: Tail Lamp SW off / Tail Lamp Relay off
C02: Tail Lamp SW off
C03: Tail Lamp SW off & Key In SW off / Tail Lamp Relay off
C04: Tail Lamp SW on & Key In SW on / Tail Lamp Relay on
C05: Key In SW on
C06: Key In SW off & Tail Lamp SW on
C07: Key In SW off & Driver Door SW on / Tail Lamp Relay off
C08: Key In SW on/ Tail Lamp Relay on

NOTE

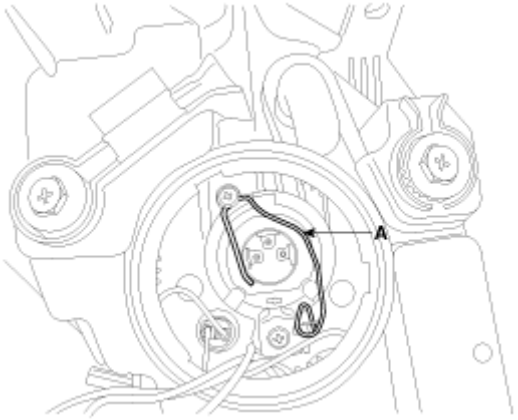
If Battery connect -> disconnect on 4 Type MODE {Tail Lamp on(Key off), Tail Lamp off(Key off), Tail Lamp on(Key in) above, Keep the previous Mode.

Delay Out Interior Lamp

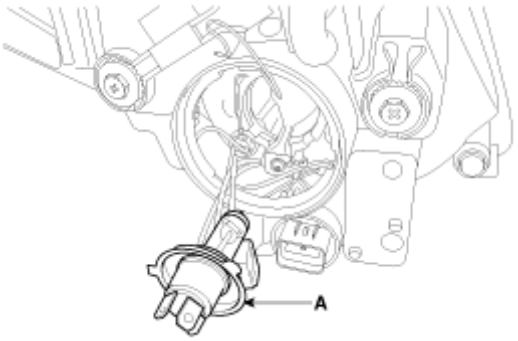
On the state of IGN1 off, if Door(Except for Tailgate) is opened, Room Lamp is ON, and if Door is closed, Room Lamp is Off after 30sec delay.
Under door is closed, in case of IGN1 off & Key Out, Room Lamp is Off after 30sec delay Room lamp is on only on Room Lamp Switch (Door).

1. Data Flow

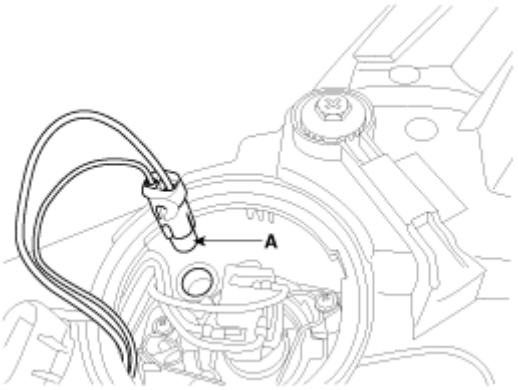
Delay Out Interior Lamp	
INPUT	OUTPUT
4Door SW	Room Lamp
IGN1	
TX Unlock	
Driver Door Unlock SW	
Assist Door Unlock SW	



7. Remove the head lamp bulb (A).



8. If necessary to remove the position lamp, remove the position bulb (A) without removing the head lamp bulb.



Installation

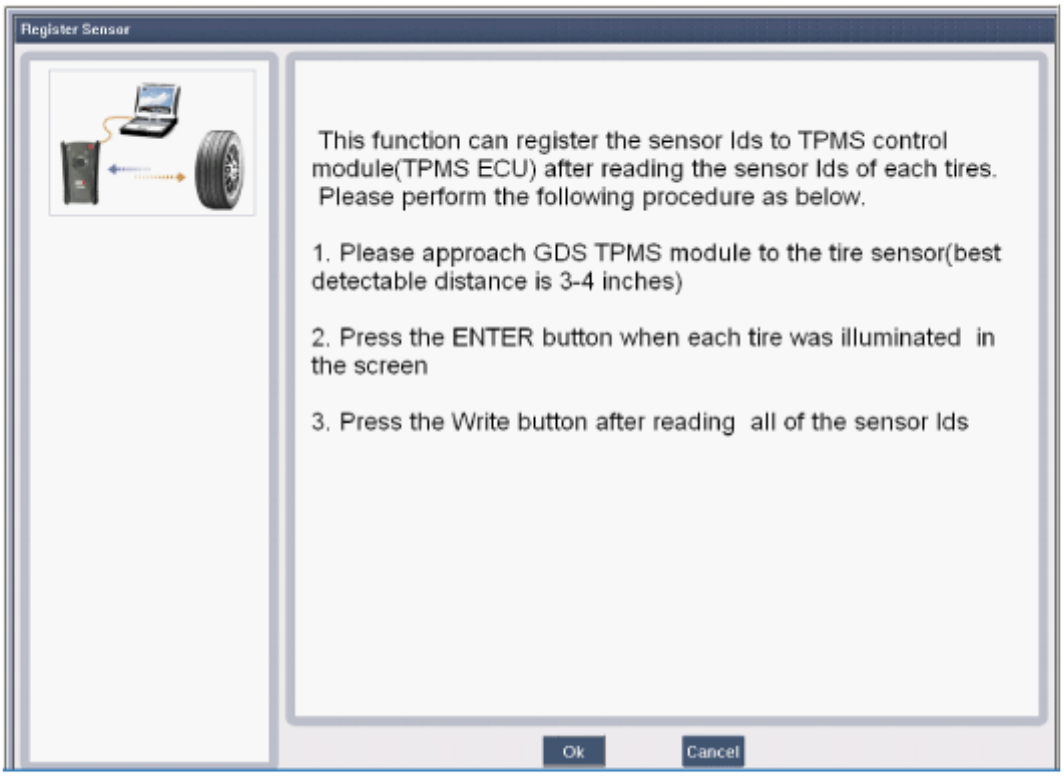
1. Install the head lamp bulbs.
2. Install the head lamp bulb caps.
3. Install the head lamp assembly after connecting the lamp connector.

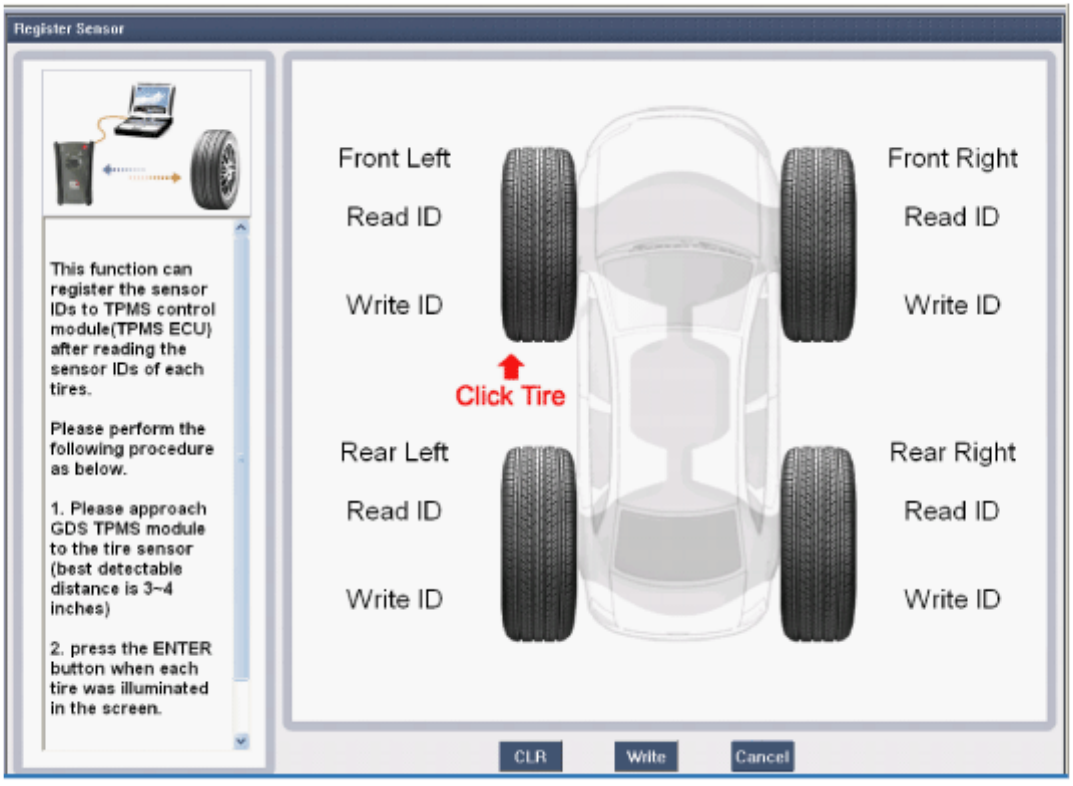
12.17.4. Turn Signal Lamp (Side repeater)

12.17.4.1. Repair procedures

Removal

1. Disconnect the negative(-)battery terminal.
2. Remove the fender side repeater lamp (A).


Register Sensor
This function can register the sensor Ids to TPMS control module(TPMS ECU) after reading the sensor Ids of each tires. Please perform the following procedure as below.
1. Please approach GDS TPMS module to the tire sensor(best detectable distance is 3-4 inches)
2. Press the ENTER button when each tire was illuminated in the screen
3. Press the Write button after reading all of the sensor Ids
Ok
Cancel


Register Sensor
This function can register the sensor IDs to TPMS control module(TPMS ECU) after reading the sensor IDs of each tires.
Please perform the following procedure as below.
1. Please approach GDS TPMS module to the tire sensor (best detectable distance is 3~4 inches)
2. press the ENTER button when each tire was illuminated in the screen.
Front Left
Read ID
Write ID
Front Right
Read ID
Write ID
Click Tire
Rear Left
Read ID
Write ID
Rear Right
Read ID
Write ID
CLR
Write
Cancel

4. Connect the battery negative cable to the battery.
5. Perform the VIN and Vehicle name writing procedure. (Refer to VIN and Vehicle name writing.)
6. Perform the sensor registration procedure. (Refer to Sensor registration.)

15. Automatic Transaxle System (Automatic Transaxle)

15.1. General Information

15.1.1. Specifications

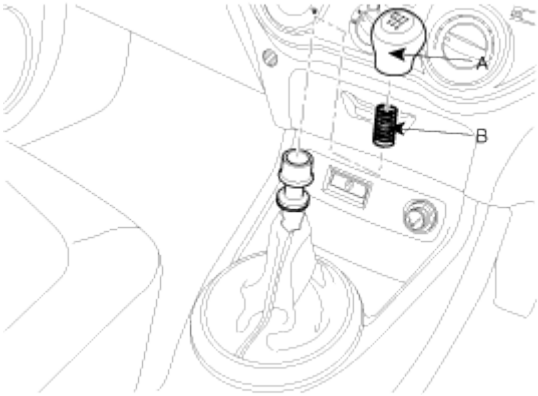
Specifications

Transaxle model		A4CF1
Engine model		Gasoline 1.4/ 1.6
T/con		3 elements 2 phases 1 stage
T/con size (Φ)		210
O/PUMP type		Parachoid
T/M CASE type		Separated
Friction elements		Clutch: 3EA
		Brake: 2EA
		OWC : 1EA
Planetary gear		2EA
Gear ratio	1st	2.919
	2nd	1.551
	3rd	1.000
	4th	0.713
	Reverse	2.480
Final gear ratio		4.121
Fluid pressure balance piston		2EA
Accumulator		4EA
Solenoid valve		6EA (PWM:5EA, VFS:1EA)
Gear shift position		6 range (P,R,N,D,2,L)
Oil filter		1EA

- PWM : Pulse Width Modulation
- VFS : Variable Force Solenoid

Tightening Torques

Item	Nm	kgf.m	lb-ft
Transaxle lower mounting bolts	43~55	4.3~5.5	31.1~39.8
Rear roll stopper mounting bolts	50~65	5.0~6.5	36.2~47.0



16.3.2. Back-up Lamp Switch

16.3.2.1. Description and Operation

Description

Back up lamp switch is pushed by the reverse lug sliding when shifting reverse, and switches the back up lamp.

16.3.2.2. Specifications

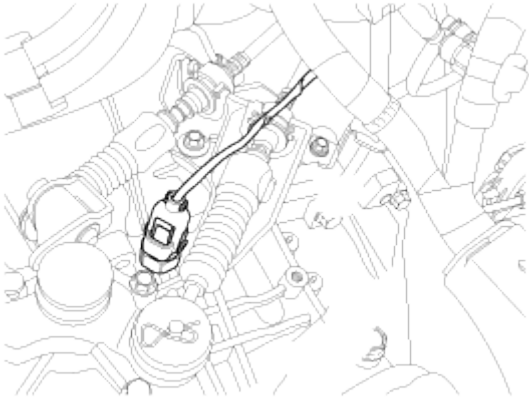
Specificaitons

1. Current voltage : 12V
2. Working voltage : 10~15V
3. Operating force : 1.0 kg +0.2kg Max. (at 2mm stroke position)
4. Voltage drop : Max 0.15V with rated load before test, Max 0.24V with rated load after test
5. Working temperature : -30°C ~ 80°C

16.3.2.3. Repair procedures

Inspection

1. Disconnect the back up lamp switch connector.



2. Check the continuity between no. 1 and 2 terminals of backup lamp switch.
   When the shift lever is in reverse, there should be contunuity.
3. If necessary, repair or replace the backup lamp switch.