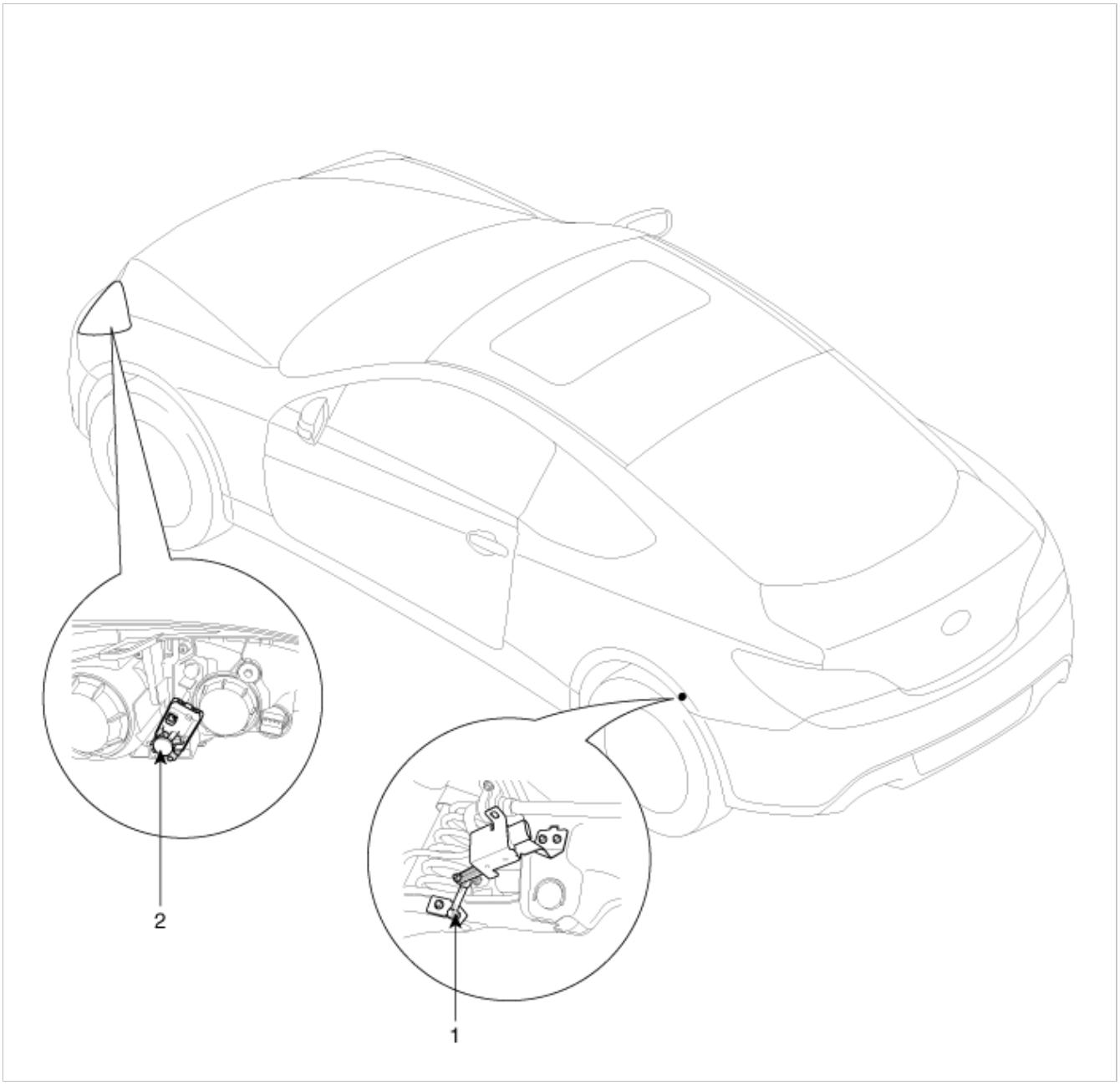
Component Location



1. Head lamp leveling unit	2. Head lamp leveling actuator

Troubleshooting

NO	DTC code	Description
1	C1212	Vehicle Speed Sensor Failure
2	C1255	Rear Height Sensor
3	C1260	Steering Angle Sensor-Signal
4	C1522	Head lamp Switch Fault
5	C1604	ECU Fault
6	C1606	ECU Software Error
7	C1620	First Setup Not Completed
8	C1621	Excessive Operating Temp.
9	C2226	Output Voltage Short to Battery or Short to Ground

GENESIS COUPE(BK) >2010 > G 2.0 DOHC > Body Electrical System > Head lamp leveling Device > C1212 Vehicle Speed Sensor Failure

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of ECM, Linkage and actuator. The ECM detects the vehicle speed to use it a compensation factor for the actuator control. In other words, when the vehicle speed is low the acutator needs to repond slowly though the linkage of height sensor moves quickly (reponse filter value is high) .But when the vehicle speed is high, ECM operates the actuator quickly in proportion to the height sensor variation.

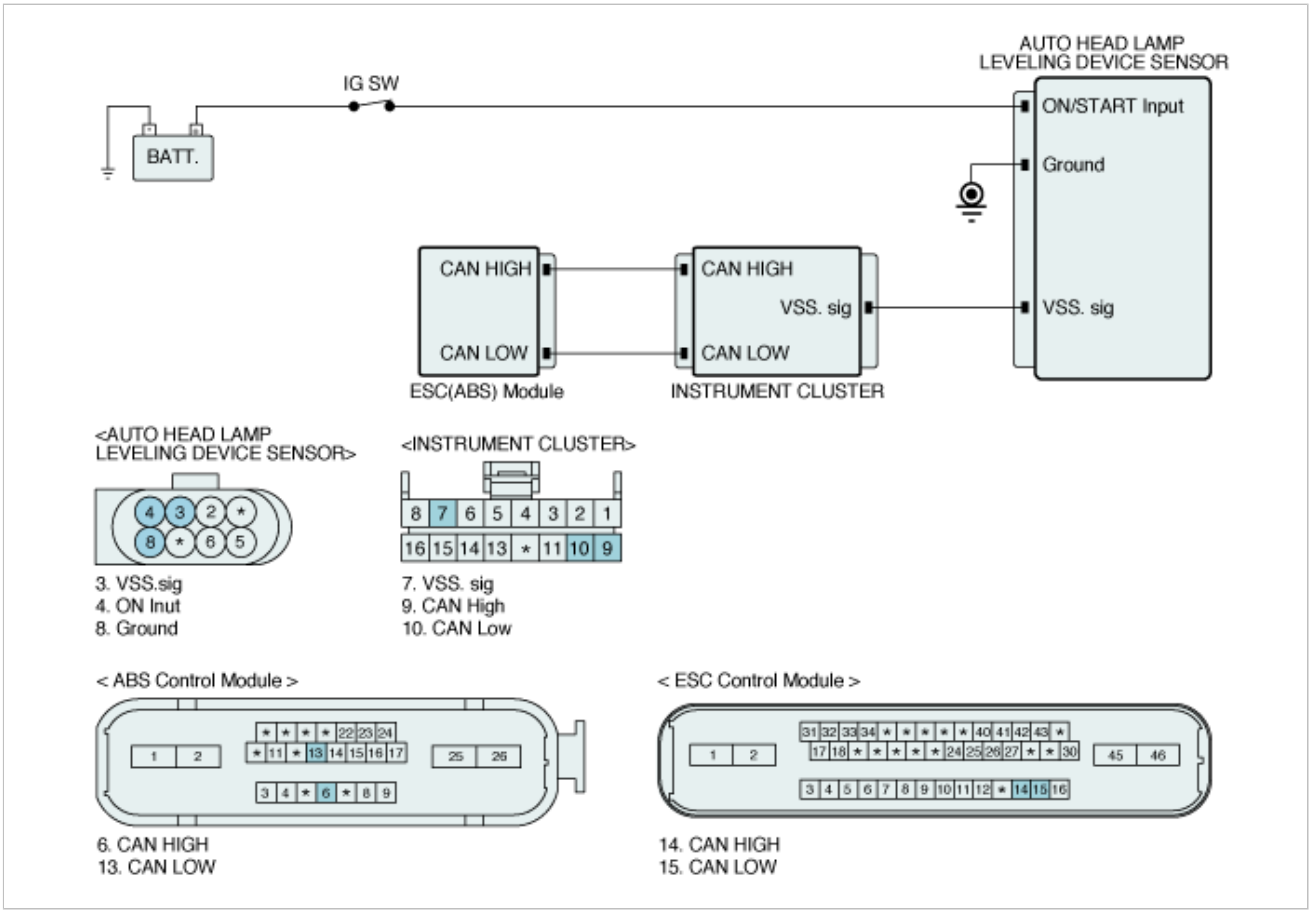
DTC Description

The ECM sets DTC C1212 if the speed signal line carries a higher frequency than defined maximum value(approx. 420Hz) for 2 seconds.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• Frequency check	• Poor connection • Faulty Vehicle speed sensor • AHLS-ECM faulty
Detecting mode	• When vehicle is driving	
Threshold Value	• Frequency >420Hz	
Detecting time	• 2 Sec	

Diagnostic Circuit Diagram



Signal Waveform & Data

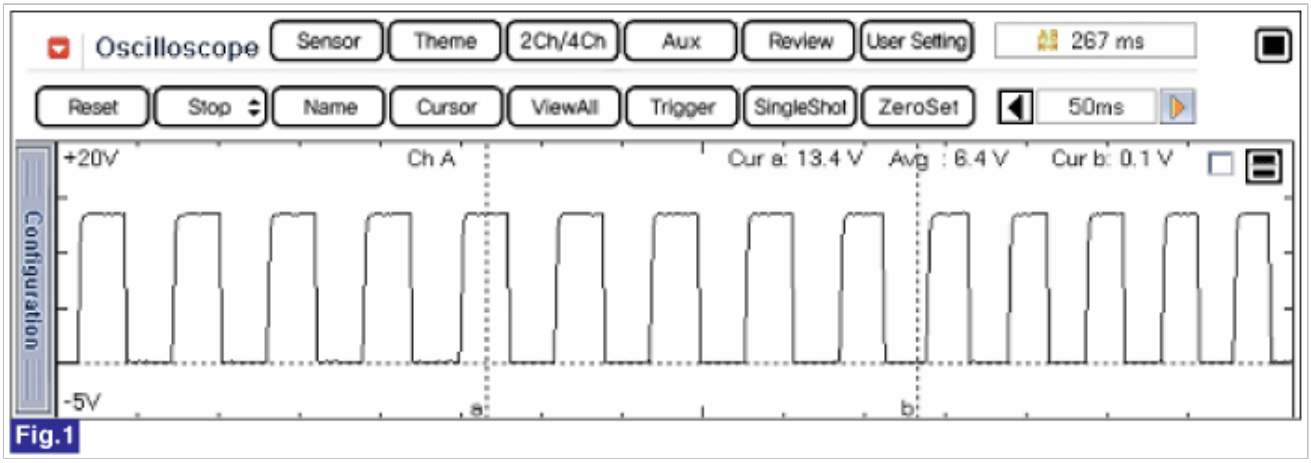


Fig.1) It shows Signal waveform at driving condition that changes frequncy according to vehicle speed.

Scantool Diagnostics

1. Connect scantool and Engine "ON"
2. Select "Vehicle Speed" parameter on the scantool.

> NOTE
>
> (check wheel speed output value at ABS(ESC) system. And, check vehicle speed at ECM and Air conditioner system.)

3. Check the "vehicle speed' parameter on the scantool.

Specification : It is changable according to vehicle speed.

Fig.1) Engine ON, Idle status after starting - ESC, Idle status after starting - Air conditioner system

4. Are all the parameters normal ?

YES	▸ Fault is intermittent caused by poor contact in the sensor's and/or AHLS ECM connector or was repaired and AHLS ECM memory was not cleared. Throughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration or damage.Repair or replace as necessary and go to "Verification Vehicle Repair" procedure.
NO	▸ Incorrect Vehicle Speed Output (Including ABS(ESC) wheel speed output) : → Repair or replace wheel speed sensor and ABS(ESC) system according to ABS(ESC) troubleshooting guide as necessary and then, go to "Verification of Vehicle Repair" procedure. ▸ Incorrect Vehicle Speed Output after Cluster : → Substitute with a known-good Cluster and check for proper operation. If the problem is corrected, replace Cluster as necessary and then go to "Verification of Vehicle Repair" procedure. ▸ Incorrect Vehicle Speed Output only at AHLS ECM : → Go to "Verification of Vehicle Repair" procedure.

Terminal and Connector Inspection

1. Many malfunctions in the electrical system are caused by poor harness and terminals. Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration,or damage.

3. Has a problem been found?

YES	▸ Repair as necessary and go to "Verification of Vehicle Repair" procedure.
NO	▸ Go to "Signal circuit Inspection" procedure.

Signal circuit Inspection

■ Check vehicle speed sensor

1. Ignition "OFF"
2. Disconnect Auto Head Lamp Leveling Sensor harness connector.
3. After lifting up the vehicle, keep the engine "ON" for measurement condition.
4. Measure signal waveform at AHLS ECM harness connector.

Specification : Signal Waveform & Data

5. Is "waveform" measured near the specified form in General information?

YES	▸ This is a intermittent problem caused by poor contact of component or Control Unit ▸ Thoroughly check the looseness, poor connection, bent, corrison, contamination, deformation or damage of connector. ▸ Repair or replace as necessary and then, go to "Verification of Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.
NO	▸ Check the dashboard, wheel speed sensor and ABS(ESC) system. ▸ Check for open/short in harness. ▸ Repair as necessary and then go to "Verification of Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

GENESIS COUPE(BK) >2010 > G 2.0 DOHC > Body Electrical System > Head lamp leveling Device > C1255 Rear Height Sensor

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of ECM, Linkage and actuator. The height sensor measures the angular displacement of lever by measuring the magnetic field of stator parts formed by rotation of rotor.

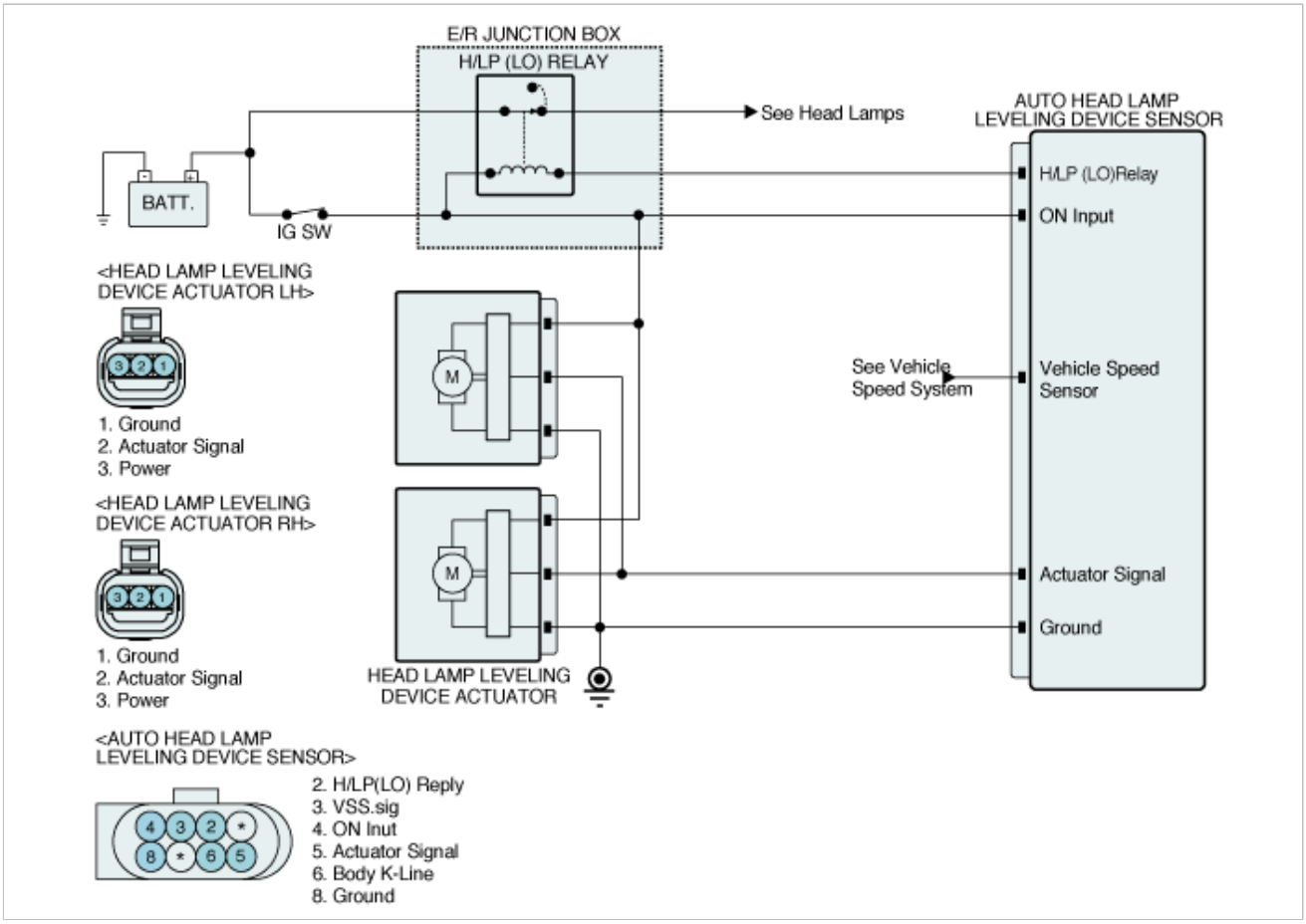
DTC Description

The ECM sets DTC C1255 if the useable range of 45° is overridden caused by separation of actuator clamping bolt or lifting of vehicle.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• Leveling road angle check	• Loosened Actuator fixing bolt • Faulty height sensor
Enable Conditions	• IG KEY ON, ENGINE ON, HEAD LAMP ON	
Threshold Value	• Angle >45°	
Detecting time	• 2 Sec	

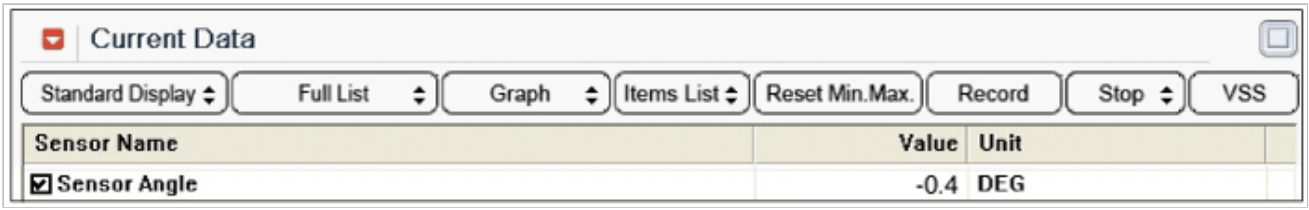
Diagnostic Circuit Diagram



Scantool Diagnostics

1. Park the vehicle in a flat land and remove all the loads from the vehicle.
2. Connect scantool to Data Link Connector(DLC).
3. Monitor DTC(Diagnostics Trouble Code) on the scantool.
4. Monitor the "SENSOR ANGLE" Parameter on the Scantool.

Specification : Below - 0.4 ± 2 DEG (Unloaded Vehicle Condition)



5. Is parameter displayed within the Specification?

YES	▸ This is a intermittent problem caused by poor contact of component or Control Unit. ▸ Thoroughly check the looseness, poor connection, bent, corrison, contamination, deformation or damage of connector. ▸ Repair or replace as necessary and then, go to "Verification of Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.
NO	▸ Go to "Inspection and Repair" procedure.

Component Inspection

■ Check Status of Linkage of height sensor

1. Check the separation or faulty assemblage of linkage of heightsensor with the vehicle lifted.


Fig.1


Fig.2

Fig.1 .2) Component : Height sensor .

2. Has the problem found ?

YES	▸ Repair as necessary and go to "Verification Vehicle Repair" procedure.
NO	▸ Go to "AHLS-ECU" procedure .

■ Check ECU(AHLS)

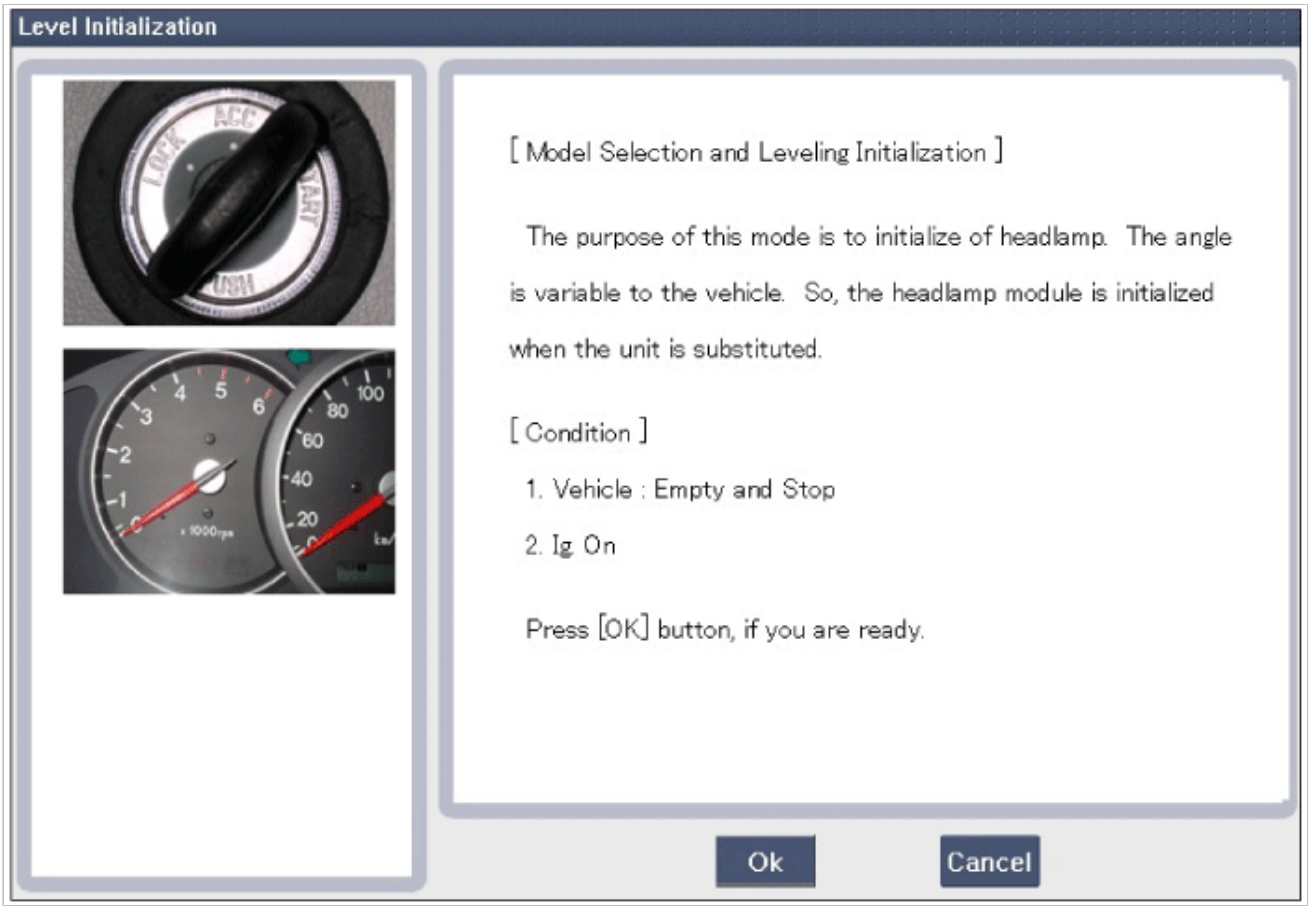
1. Engine "ON" and Head lamp"ON"
2. Lift the vehicle.
3. Disconnect the linkage of height sensor.
4. Monitor the "SENSOR ANGLE" Parameter on the Scantool while moving linkage vertically.
5. Is there any change in "SENSOR ANGLE" Parameter?

YES	▸ Fault is intermittent caused by poor contact in the AHLS ECM connector or was repaired and AHLS ECM memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure. ▸ Check Head Lamp movement with actuation test and then, go to 'Verification of Vehicle Repair"procedure.

NO	▸ Substitute with a known-good "AHLS-ECM(SENSOR)" and check for proper operation. If the problem is corrected, replace "AHLS-ECM(SENSOR)" and then go to "Verification Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

CAUTION

Perform Vehicle Selection and Level Initialization with scantool if AHLS ECM is repalce. (Auto Levelling Sensor)



Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

GENESIS COUPE(BK) >2010 > G 2.0 DOHC > Body Electrical System > Head lamp leveling Device > C1260 Steering Angle Sensor-Signal

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of ECM, Linkage and actuator. The height sensor measures the angular displacement of lever by measuring the magnetic field of stator parts formed by rotation of rotor .

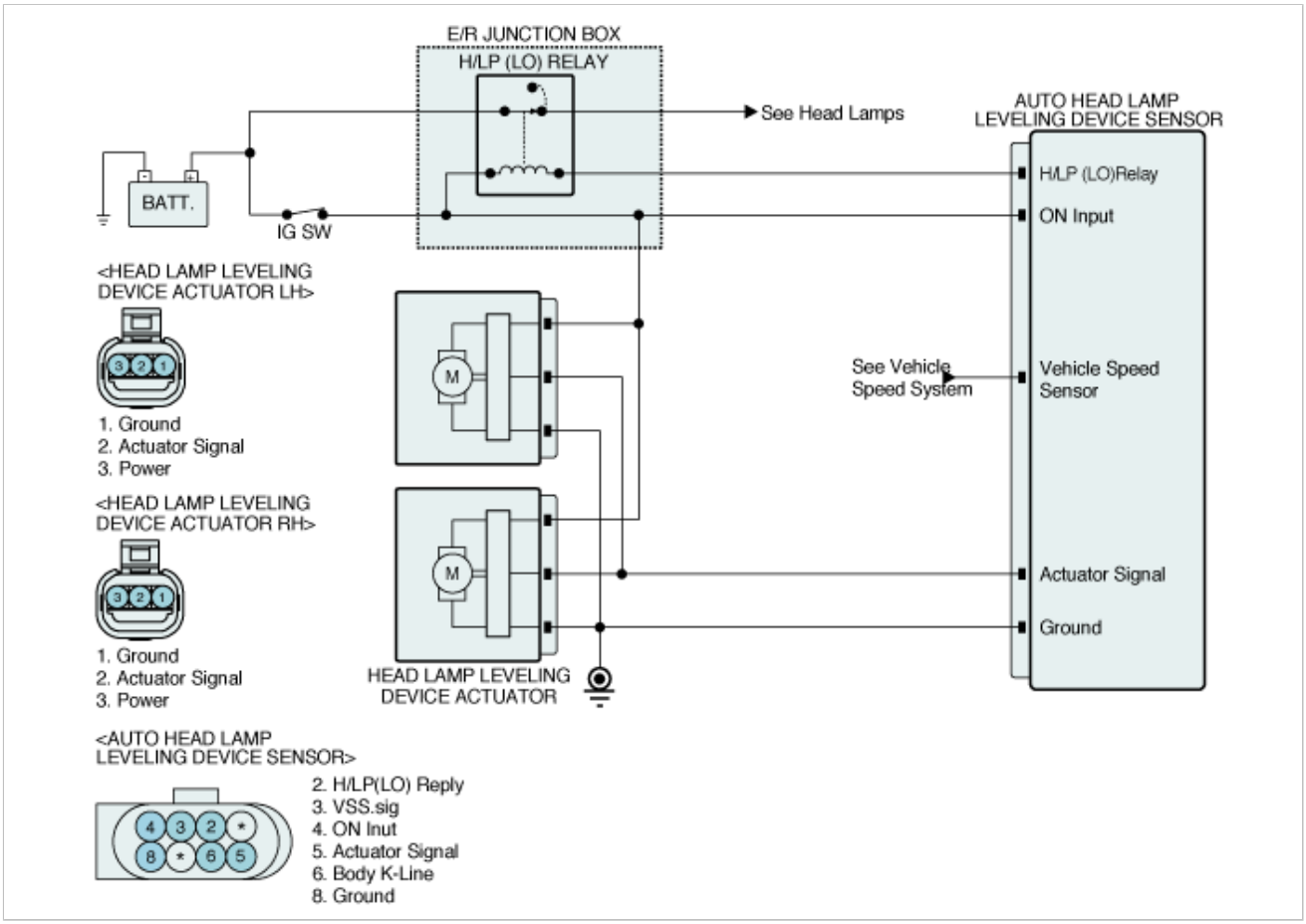
DTC Description

AHLS ECM sets DTC C1260 if AHLS ECM detects no signal changes inside of axle(height) sensor while vehicle is driving over 30km/h for 5min.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• Check time for no signal movement	• AHLS-ECM faulty
Enable Conditions	• IG ON, Engine ON, Head Lamp ON, Vehicle Speed >30km/h	
Threshold Value	• Time for no signal movement > 5min	
Detecting time	• 5 min.	

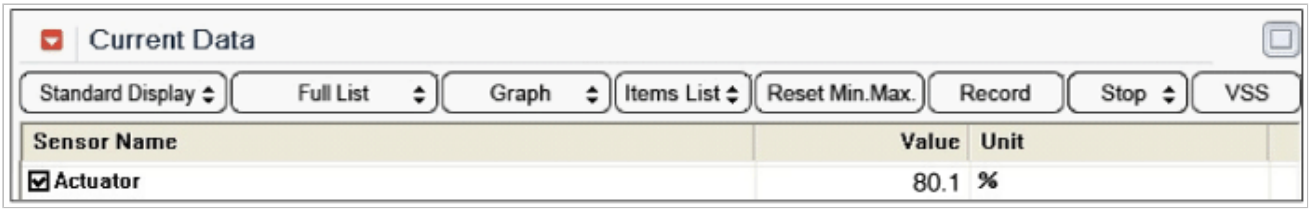
Diagnostic Circuit Diagram



Scantool Diagnostics

1. Connect scantool with Diagnostic Connector.
2. Engine "ON" and Turn on the auto head light system.
3. Check "Actuator" parameter on scantool. (It should be checked while the vehicle is unloaded condition)

Specification : 80%±2%



4. Is parameter displayed within the Specification?

YES	▸ This is a intermittent problem caused by poor contact of component or Control Unit ▸ Thoroughly check the looseness, poor connection, bent, corrison, contamination, deformation or damage of connector. ▸ Repair or replace as necessary and then, go to "Verification of Vehicle Repair" procedure.
NO	▸ Go to "Inspection and Repair" procedure.

Component Inspection

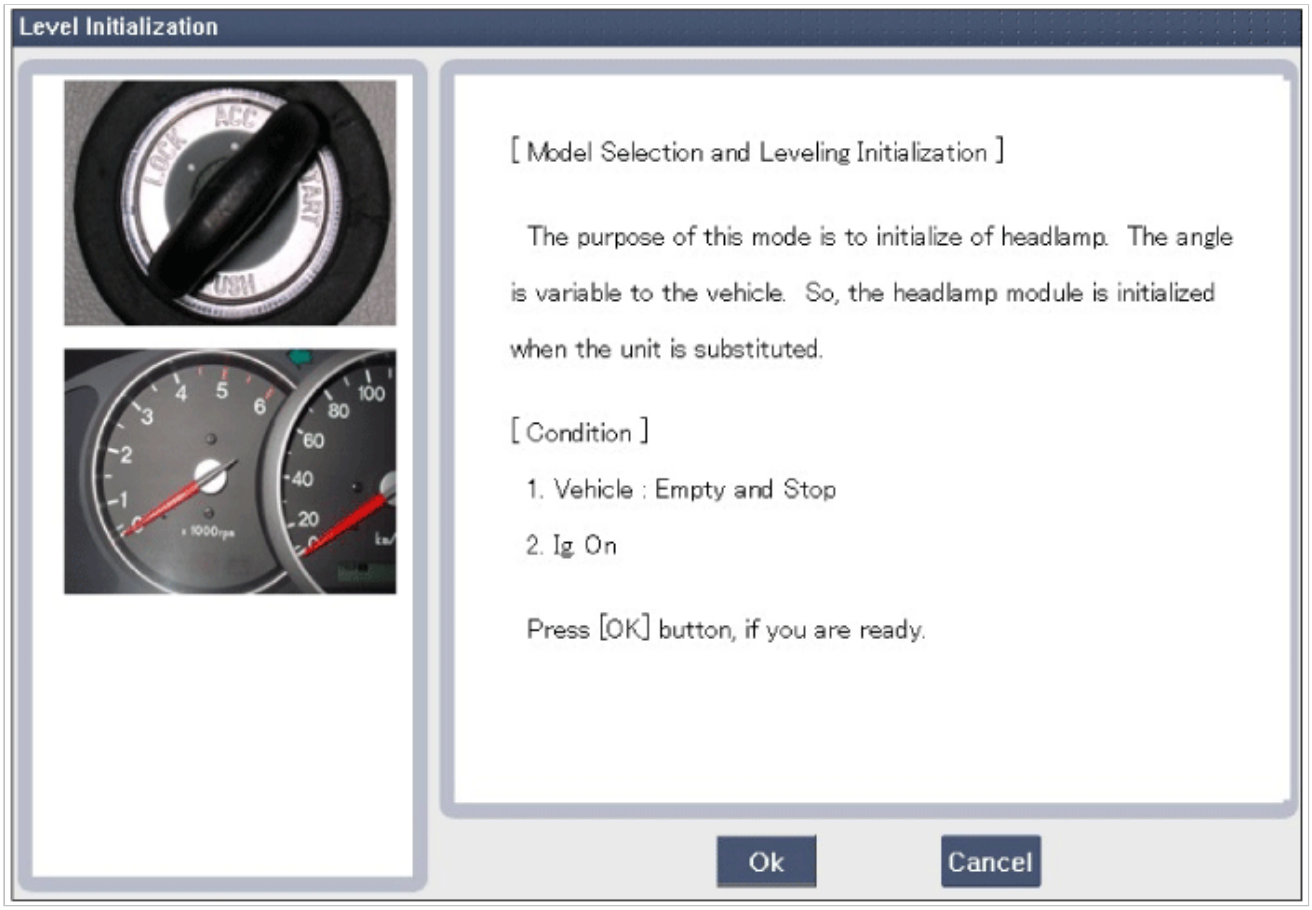
■ Check ECU(AHLS)

1. Engine "ON" and Head lamp"ON"
2. Lift the vehicle.
3. Disconnect the linkage of height sensor.
4. Monitor the "SENSOR ANGLE" Parameter on the Scantool while moving linkage vertically.
5. Is there any change in "SENSOR ANGLE" Parameter?

YES	▸ This is a intermittent problem caused by poor contact of component or Control Unit. ▸ Thoroughly check the looseness, poor connection, bent, corrison, contamination, deformation or damage of connector. ▸ Repair or replace as necessary and then, go to "Verification of Vehicle Repair" procedure.
NO	▸ Substitute with a known-good "AHLS-ECM(SENSOR)" and check for proper operation. If the problem is corrected, replace "AHLS-ECM(SENSOR)" and then go to "Verification Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

CAUTION

Perform Vehicle Selection and Level Initialization with scantool if AHLS ECM is repalce. (Auto Levelling Sensor)



Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

GENESIS COUPE(BK) >2010 > G 2.0 DOHC > Body Electrical System > Head lamp leveling Device > C1522 Head lamp Switch Fault

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of ECM, Linkage and actuator. ECM detects the signal of headlamp switch which is operated by multi-function switch to diagnose the Headlamp light singal line.

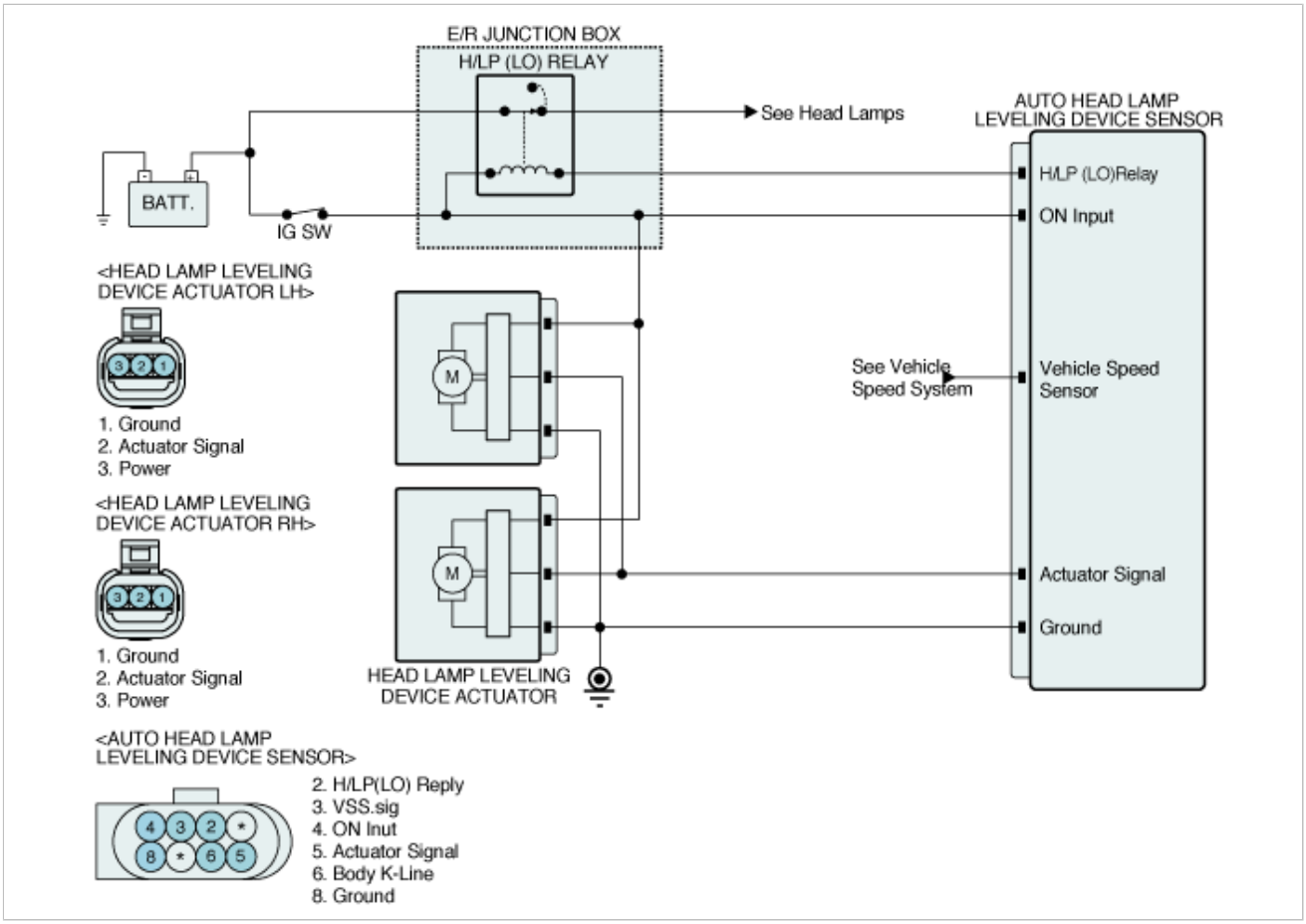
DTC Description

AHLS ECM sets DTC C1522 if AHLS ECM detects HEAD Lamp signal circuit is open.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• Voltage check	• Poor connection • Open circuit in H/Lamp switch signal • Faulty AHLS ECU
Enable Conditions	• IG KEY ON, ENGINE ON, HEAD LAMP ON	
Threshold Value	• 2V < Signal Voltage< 6V	
Detecting time	• 2 Sec	

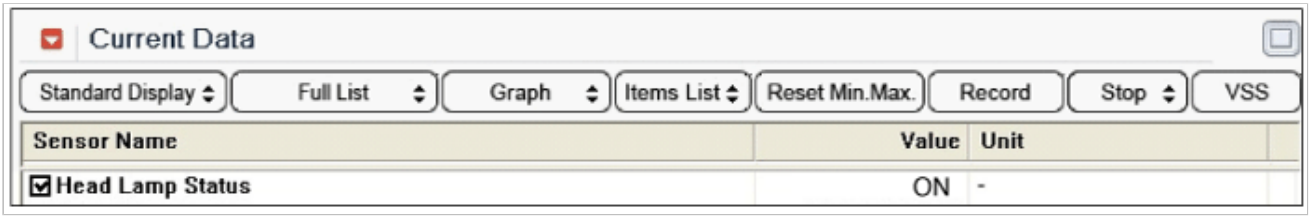
Diagnostic Circuit Diagram



Scantool Diagnostics

1. Connect scantool with Diagnostic Connector.
2. Engine "ON" and Turn on the auto head light system.
3. Check "HEAD LAMP status" parameter on Scantool.

Specification : When Head Lamp is ON : "ON"



4. Is the current data normal ?

YES	▸ This is a intermittent problem caused by poor contact of component or Control Unit ▸ Thoroughly check the looseness, poor connection, bent, corrison, contamination, deformation or damage of connector. ▸ Repair or replace as necessary and then, go to "Verification of Vehicle Repair" procedure.
NO	▸ Go to "Inspection and Repair" procedure.

Terminal and Connector Inspection

1. Many malfunctions in the electrical system are caused by poor harness and terminals. Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration,or damage.
3. Has a problem been found?

YES	▸ Repair as necessary and go to "Verification of Vehicle Repair" procedure.
NO	▸ Go to "Signal circuit Inspection" procedure.

Signal circuit Inspection

■ Check power in harness

1. Ignition "OFF"
2. Disconnect Auto Head Lamp Leveling Sensor harness connector.
3. Ignition "ON", HEAD LAMP "ON"(ENGINE "OFF").
4. Measure voltage between H/LP (LO) Relay terminal of AHLS ECM harness connector and chassis ground.

Specification : B+

5. Is "voltage" display near the specified value?

YES	▸ Check the condition of connected part and go to "Verification Vehicle Repair" procedure.
NO	▸ Check for circuit in harness between ECM and headlamp switch signal line. ▸ Repair as necessary and then go to "Verification of Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of AHLS ECU, Linkage and Headlamp actuator. AHLS ECU is composed of many IC components, such as A/D(AD converter), EEPROM, ROM, RAM and others.It also contains several different parameter-sets which defines the behavior in different car types and respect different mounting places. For efficient operation of system, The internal components of ECM (A/D , EEPROM, ROM, RAM) are checked internally during every start-up sequence.

DTC Description

The ECM sets DTC C1604 if one of component self-test result is negative.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• ECM internal component monitoring	• Faulty AHLS ECU
Enable Conditions	• Engine "ON" and Head lamp"ON"	
Threshold Value	• ECU Hardware error (A/D converter Fail) • ECU의 Software error (EEPROM/ROM Fail)	
Detecting time	• -	

Component Inspection

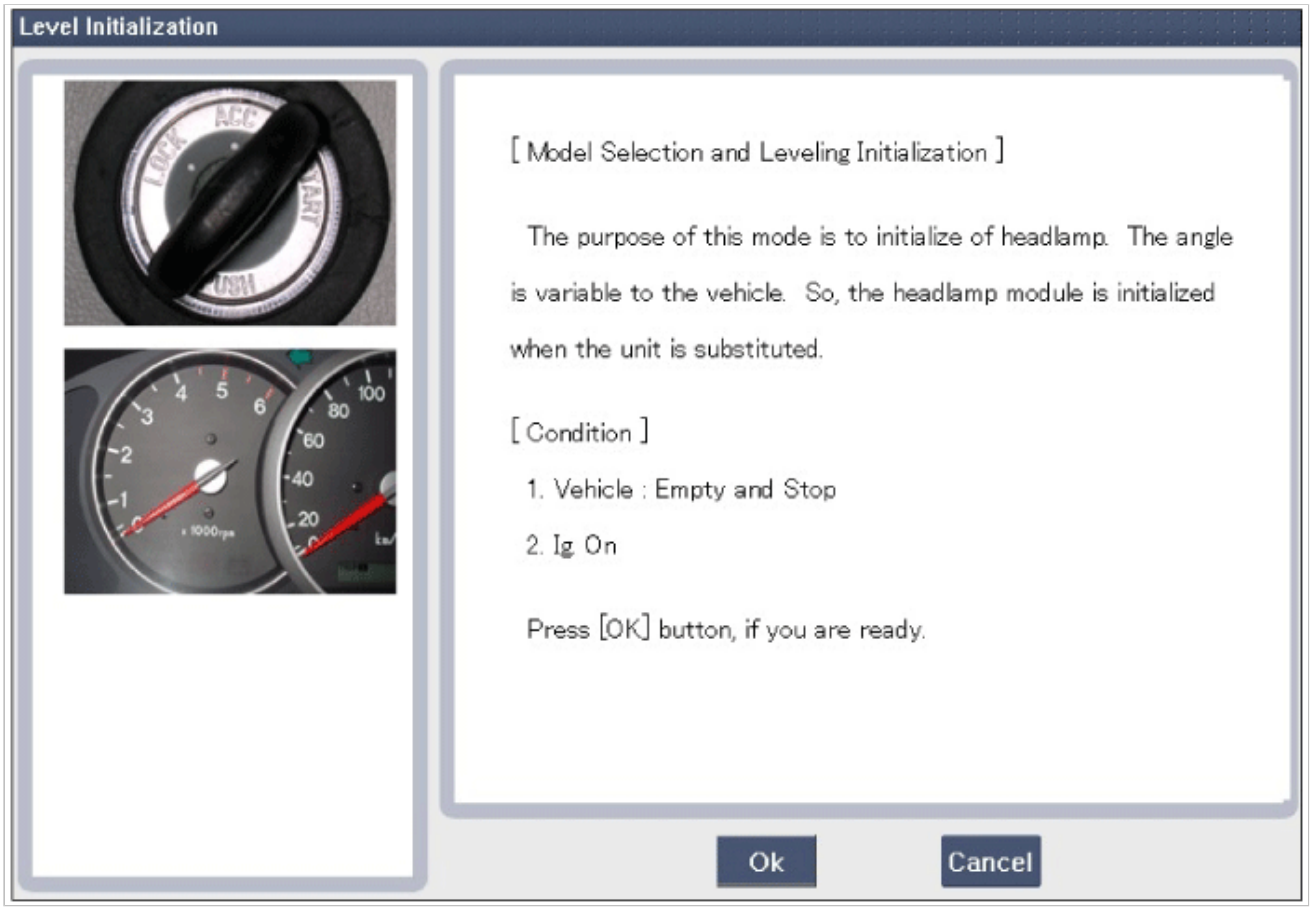
■ Check ECU(AHLS)

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON" and Head lamp"ON".
3. Erase the DTC with scantool.
4. Is it possible to erase the DTC with Scantool ?

YES	▸ Check head lamp movement with actuation test, and then, go to "Verification of Vehicle Repair" Procedure.
NO	▸ Substitute with a known-good "AHLS-ECM(SENSOR)" and check for proper operation. If the problem is corrected, replace "AHLS-ECM(SENSOR)" and then go to "Verification Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

CAUTION

Perform Vehicle Selection and Level Initialization with scantool if AHLS ECM is repalce. (Auto Levelling Sensor)



Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of AHLS ECU, Linkage and Headlamp actuator. AHLS ECU is composed of many IC components, such as A/D(AD converter), EEPROM, ROM, RAM and others.It also contains several different parameter-sets which defines the behavior in different car types and respect different mounting places. For efficient operation of system, The internal components of ECM (A/D , EEPROM, ROM, RAM) are checked internally during every start-up sequence.

DTC Description

The ECM sets DTC C1606 if the parameter-sets are incompletely coded.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• ECM internal component monitoring	• Selecting Invaid vehicle model • Faulty AHLS ECU
Enable Conditions	• Engine "ON" and Head lamp"ON"	
Threshold Value	• Detected Initialized status	
Detecting time	• -	

Component Inspection

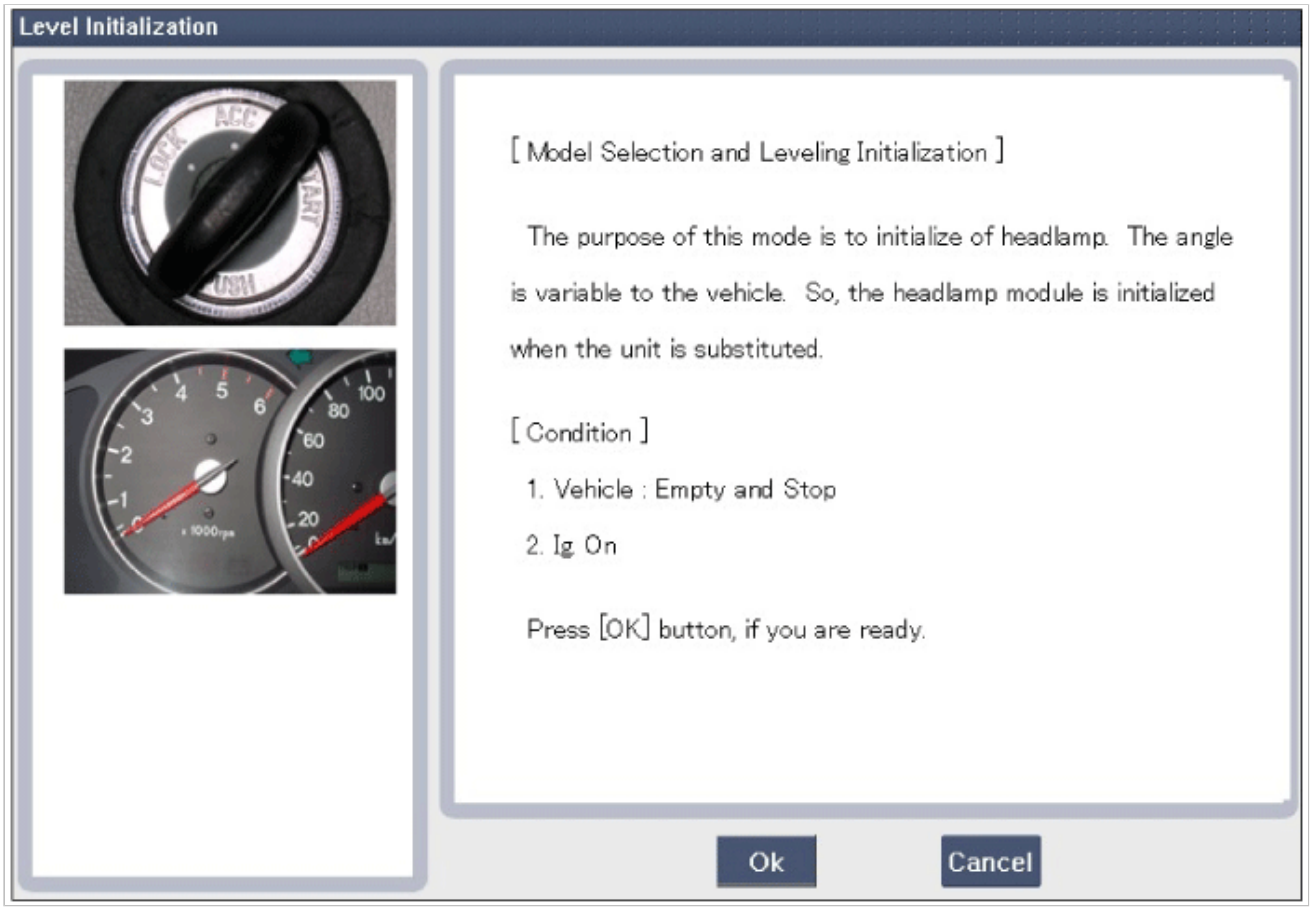
■ Check ECU(AHLS)

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON" and Head lamp"ON".
3. Erase the DTC with scantool.
4. Is it possible to erase the DTC with Scantool ?

YES	▸ Check head lamp movement with actuation test, and then, go to "Verification of Vehicle Repair" Procedure.
NO	▸ Substitute with a known-good "AHLS-ECM(SENSOR)" and check for proper operation. If the problem is corrected, replace "AHLS-ECM(SENSOR)" and then go to "Verification Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

CAUTION

Perform Vehicle Selection and Level Initialization with scantool if AHLS ECM is repalce. (Auto Levelling Sensor)



Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

GENESIS COUPE(BK) >2010 > G 2.0 DOHC > Body Electrical System > Head lamp leveling Device > C1620 First Setup Not Completed

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp.To ensure an optimum operation of the system, The HLS (Headlamp Levelling System) has to be adjusted at end-of line procedure.The mechanical basic setting of the headlamps is to be performed with ignition being switched ON. It is important to adjust the system electronically and mechanically at the same place. Only by this way it is quaranteed that the car is in the same suspension condition.

DTC Description

The ECM sets DTC C1620 if the headlamp leveling system has not been adjusted since installation.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• First Setup result monitoring	• Faulty ACTUATOR ADJUSTING • Faulty AHLS ECU
Detecting mode	• Engine "ON" and Head lamp"ON"	
Threshold Value	• When being not aware of the origin setting code input right after downloading parameter.	
Detecting time	• -	

Scantool Diagnostics

1. Connect scantool with Diagnostic Connector.
2. Perform vehicle selection and Level Initialization with scantool as follows. And then, check "Actuator" parameter on scantool (It must be unloaded vehicle condition)

Specification : 80%±2%

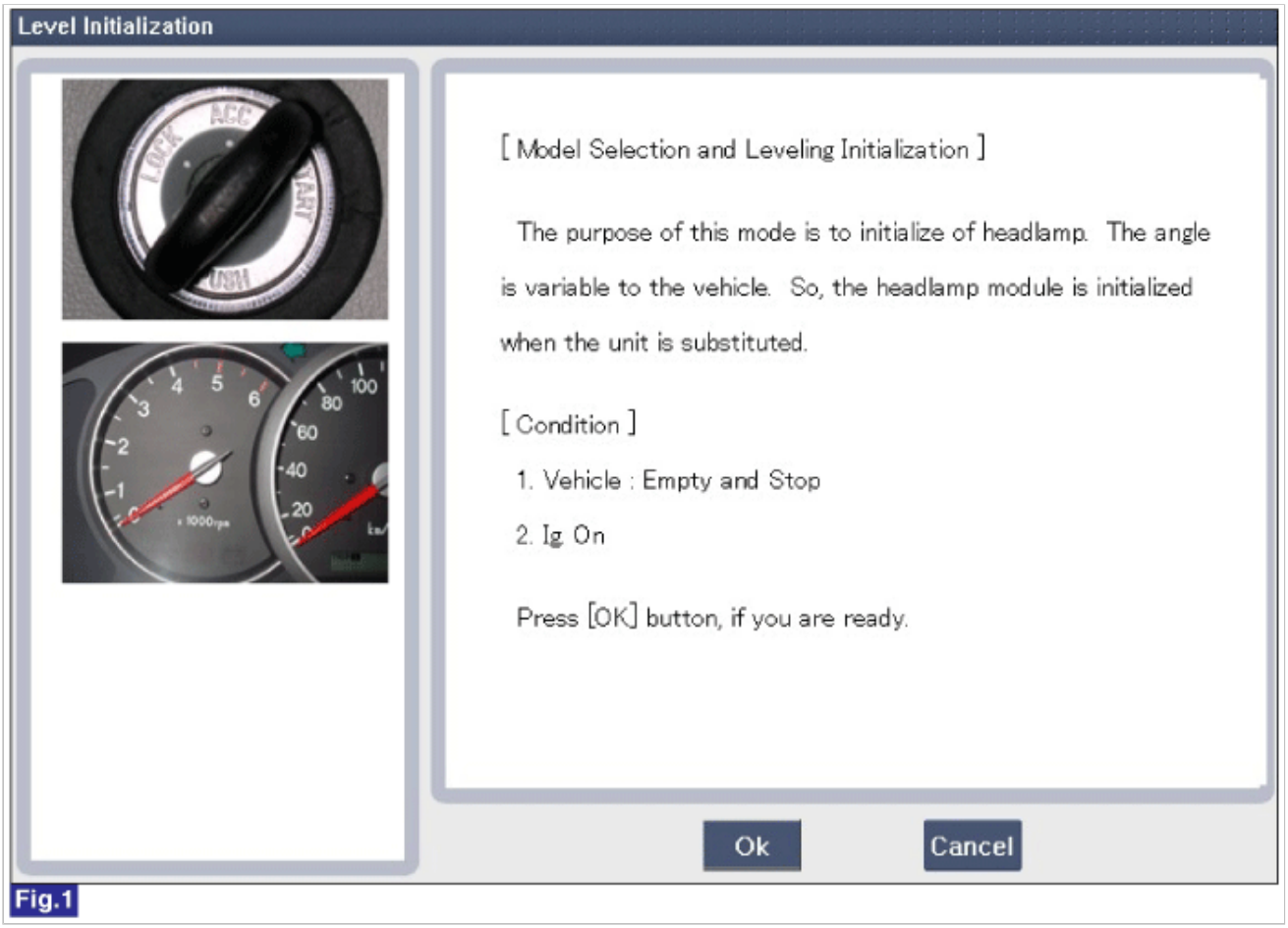


Fig.1) Vehicle Selection and Level Initialization

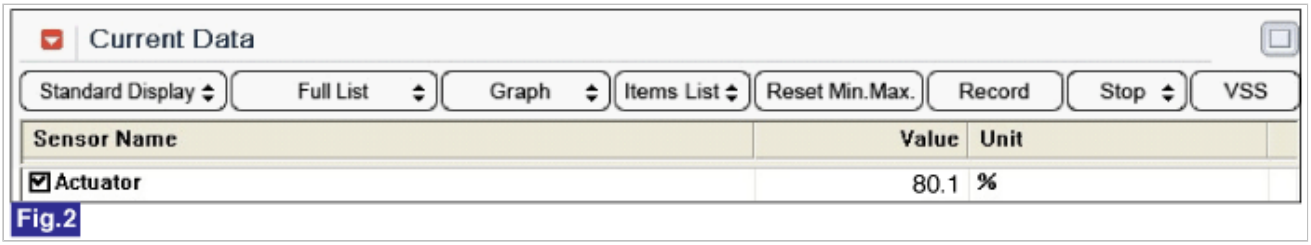


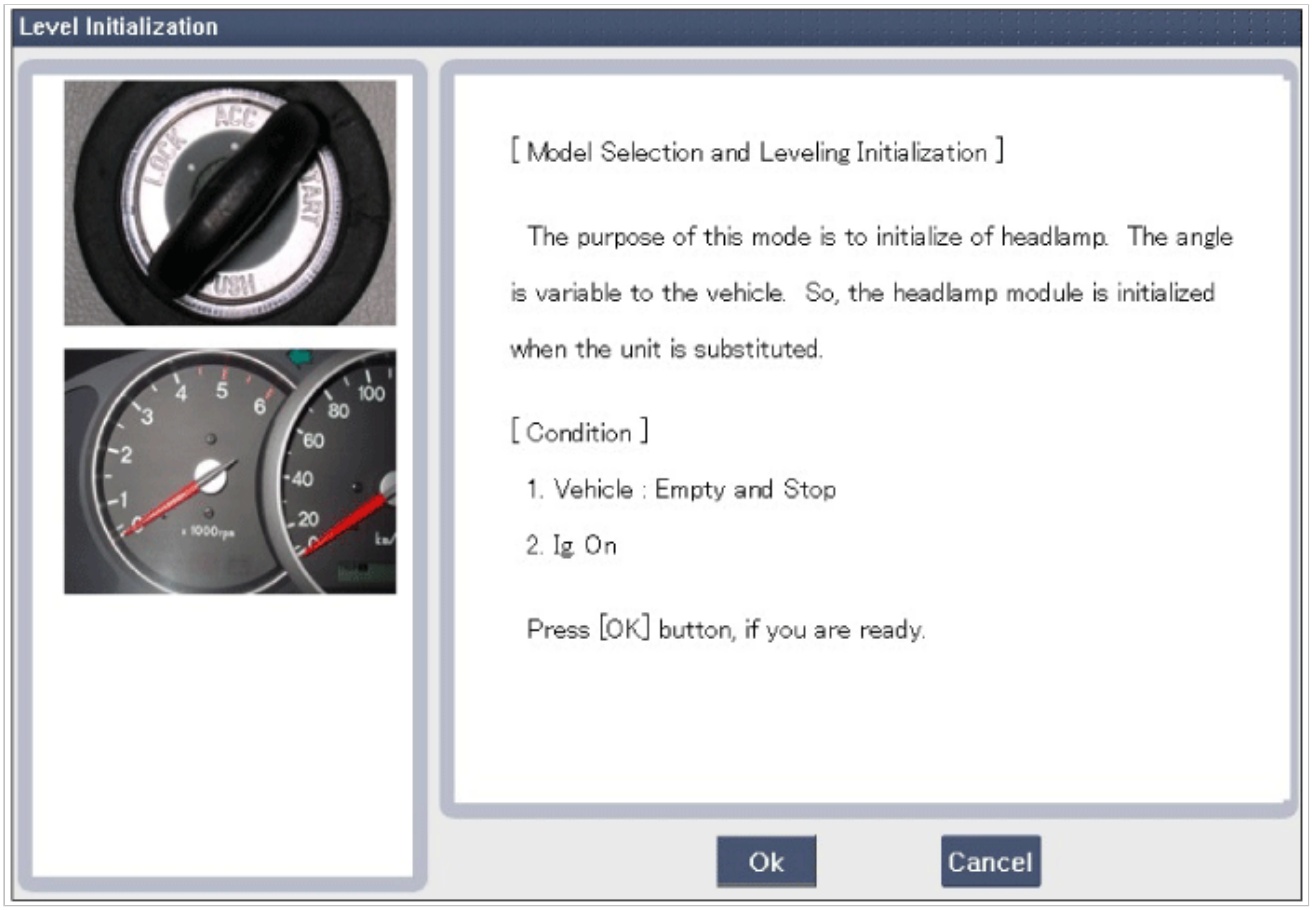
Fig.2) Engine ON

3. Are "Vehicle selection & Level Initalization" and current data normal ?

YES	▸ Go to "Verification of Vehicle Repair" procedure.
NO	▸ Substitute with a known-good "AHLS-ECM(SENSOR)" and check for proper operation. If the problem is corrected, replace "AHLS-ECM(SENSOR)" and then go to "Verification Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

CAUTION

Perform Vehicle Selection and Level Initialization with scantool if AHLS ECM is repalce. (Auto Levelling Sensor)



Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

GENESIS COUPE(BK) >2010 > G 2.0 DOHC > Body Electrical System > Head lamp leveling Device > C1621 Excessive Operating Temp.

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of ECM, Linkage and actuator. The SIECM which is mounted in rear wheel suspention detects the change of vehicle vertical location and control actuator (which changes the vertical direction of the headlamp) based on the driving and load condition.The EEPROM is equipped with a temperatutre sensor which is used to avoid damage related to overtemperature.

DTC Description

The ECM sets DTC C1621 if measured temperature at temperature sensor in EEPROM is over 120 degree C for 2 seconds.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• Temperature check	• Faulty AHLS ECU
Detecting mode	• Every 100ms	
Enable Conditions	• - 40°C(-40°F)~ +70°C(158°F)	
Threshold Value	• Measured temperature > 120°C(248°F)	
Detecting time	• 2 Sec	

Component Inspection

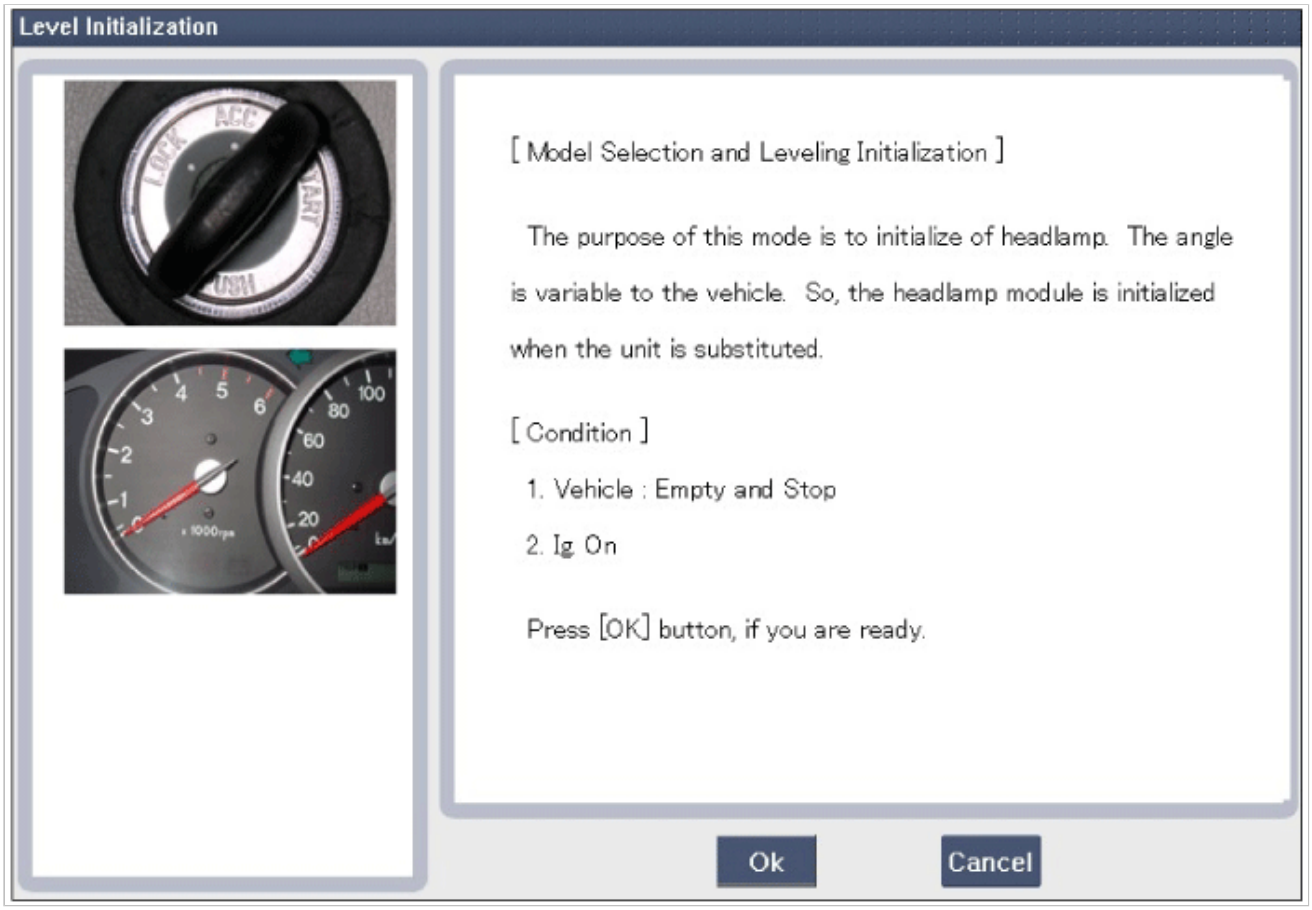
■ Check ECU(AHLS)

1. Connect scantool with Diagnostic Connector.
2. Engine 'ON" and Turn On the auto head light system.
3. Erase the DTC with Scantool.
4. Is it possible to erase the DTC with Scantool ?

YES	▸ Check head lamp movement with actuation test and then, go to 'Verification of Vehicle Repair" procedure.
NO	▸ Substitute with a known-good "AHLS-ECM(SENSOR)" and check for proper operation. If the problem is corrected, replace "AHLS-ECM(SENSOR)" and then go to "Verification Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

CAUTION

Perform Vehicle Selection and Level Initialization with scantool if AHLS ECM is repalce. (Auto Levelling Sensor)



Verification of Vehicle Repair

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

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

GENESIS COUPE(BK) >2010 > G 2.0 DOHC > Body Electrical System > Head lamp leveling Device > C2226 Output Voltage Short to Battery or Short to Ground

General Description

AHLS provides driver with the best visibility by adjusting vertical direction of the headlamp. It consists of ECM, Linkage and actuator. ECM ouputs the singal based on the driving and loading condition and delivers it to actuator, and then the actuator changes vertical direction of the headlamp .

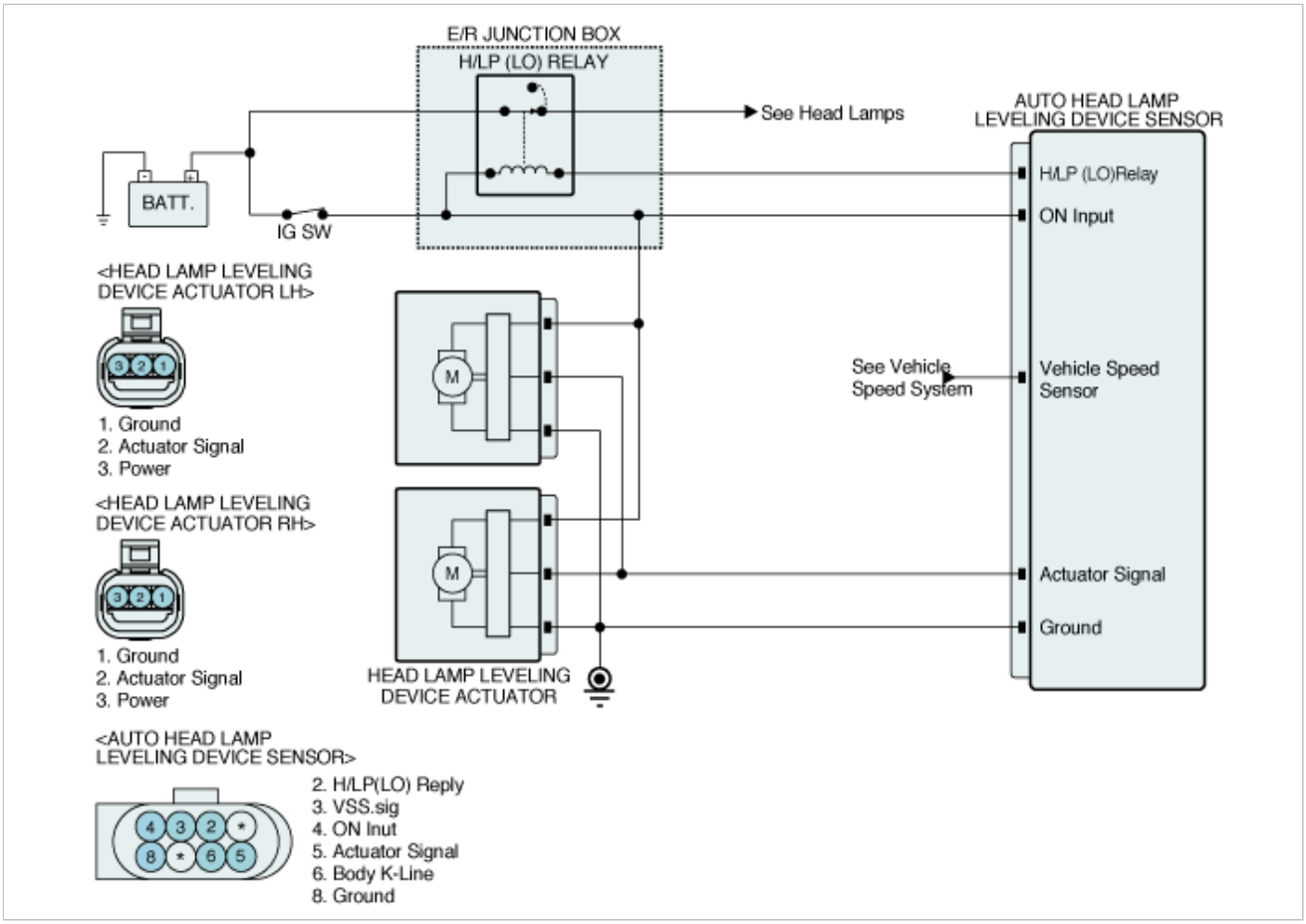
DTC Description

AHLS ECM sets DTC C2226 If AHLS ECM detects Signal circuit of Actuator is short to ground or battery.

DTC Detecting Condition

Item	Detecting Condition	Possible Cause
DTC Strategy	• Voltage check	• Poor connection • Short circuit to chasis ground and battery • Faulty AHLS ECU
Detecting mode	• IG KEY ON, ENGINE ON, HEAD LAMP ON	
Threshold Value	• Short to Battery AND Short to GND	
Detecting time	• 2 Sec	

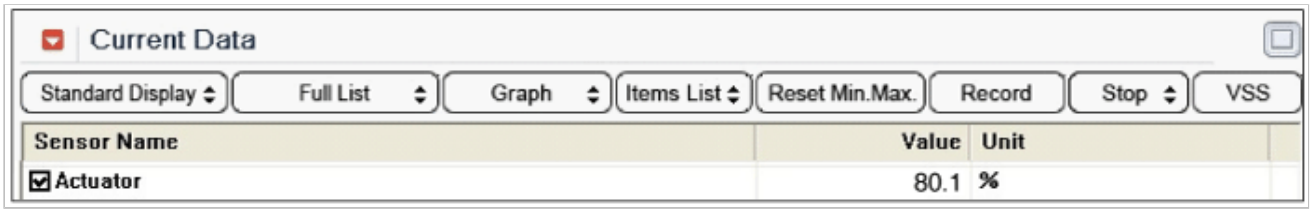
Diagnostic Circuit Diagram



Scantool Diagnostics

1. Connect scantool with Diagnostic Connector.
2. Engine "ON" and Turn on the auto head light system.
3. Check "Actuator" parameter on the scantool(It must be checked while vehicle is unloaded condition)

Specification : 80%±2%



4. Is the "actuator" parameter normal ?

YES	▸ This is a intermittent problem caused by poor contact of component or Control Unit ▸ Thoroughly check the looseness, poor connection, bent, corrison, contamination, deformation or damage of connector. ▸ Repair or replace as necessary and then, go to "Verification of Vehicle Repair" procedure.
NO	▸ Go to "Inspection and Repair" procedure.

Terminal and Connector Inspection

1. Many malfunctions in the electrical system are caused by poor harness and terminals. Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration,or damage.
3. Has a problem been found?

YES	▸ Repair as necessary and go to "Verification of Vehicle Repair" procedure.
NO	▸ Go to "Signal circuit Inspection" procedure.

Signal circuit Inspection

■ Check short to ground in harness

1. Ignition "OFF"
2. Disconnect AHLS-ECM and leveling actuator(LH/RH) harness connector.
3. Measure resistance between Signal terminal of leveling actuator(LH/RH) harness connector and chassis ground .

Specification : Infinity

4. Is the measured resistance within specification?

YES	▸ Go to Check short to battery in harness as follows.
NO	▸ Check for short to ground in signal harness. ▸ Repair as necessary and then go to "Verification of Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

■ Check short to battery in harness

1. Ignition "OFF"
2. Disconnect AHLS-ECM and leveling actuator(LH/RH) harness connector.
3. Ignition "ON", HEAD LAMP "ON"(ENGINE "OFF").
4. Measure voltage between Signal(+) terminal of leveling actuator(LH/RH) harness connector and chassis ground.

Specification : 1 V below

5. Is the measured resistance within specification?

YES	▸ Check the condition of connected part and go to "Verification Vehicle Repair" procedure.
NO	▸ Check for short to battery circuit in leveling actuator output harness. Repair as necessary and go to

	"Verification Vehicle Repair" procedure. ▸ After its repair done, Perform the lamp actuation by GDS in order to verify its normal operation.

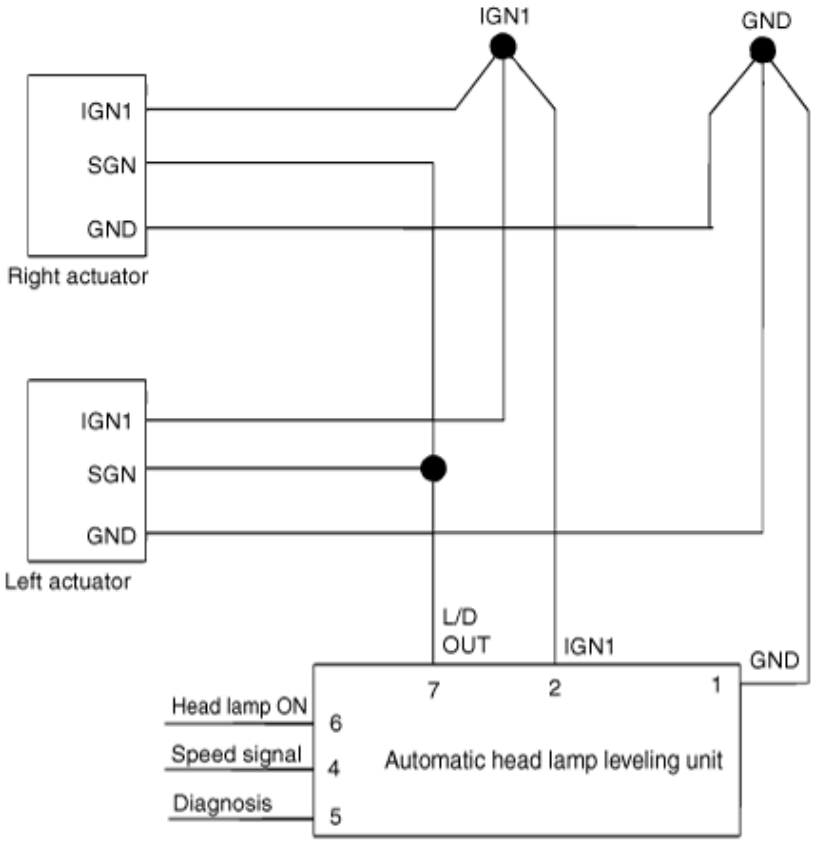
Verification of Vehicle Repair

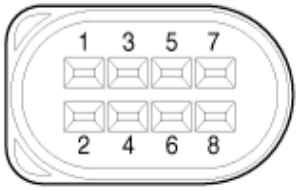
After a repair, it is essential to verifying that the fault has been corrected.

1. Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
2. Using 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 is performing to specification at this time.

Circuit Diagram





PIN CONNECTION

Terminal	Description
1	Ground
2	IGN1
3	-
4	Speed signal
5	Diagnosis
6	Head lamp ON
7	Leveling actuator
8	-

Description

According to driving environment and loading state of vehicle, head lamp lighting direction is changed to keep the driver's visibility range and to protect the driver's vision from glare, aiming at safety driving.
Sensor integrated ECU mounting on the rear center arm drives the actuator mounting on the head lamp since sensing the input signal following the vehicle's statically changes.
Head lamp beam is automatically operated by chassis tilt.

Operation

Operating Procedure

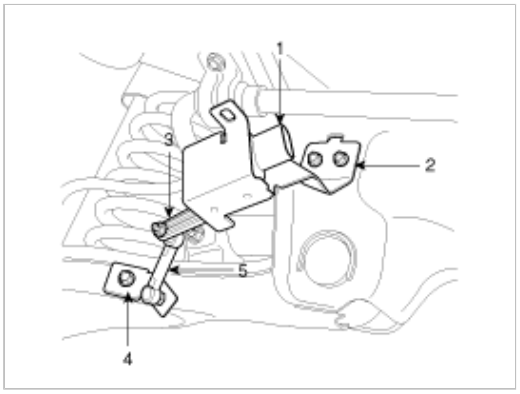
1. Suspension angle change resulted from vehicle's load change.
2. Sensor angle change.
3. Microprocessor calculates necessary head lamp angle change amount.
4. Sending a proper signal to head lamp leveling device and driving actuator.

Operating Condition

1. Ignition on
2. Low beam on
3. On stop : If sensor lever change is 2° and above, head lamp is operated after max. 1.5 sec.
4. On driving : If vehicle velocity is over 4km/h(2.48mile/h), velocity change is not over 0.8-1.6km/h(0.5 ~ 1.0mile/h) per second, and loading condition is changed, then head lamp is operated.

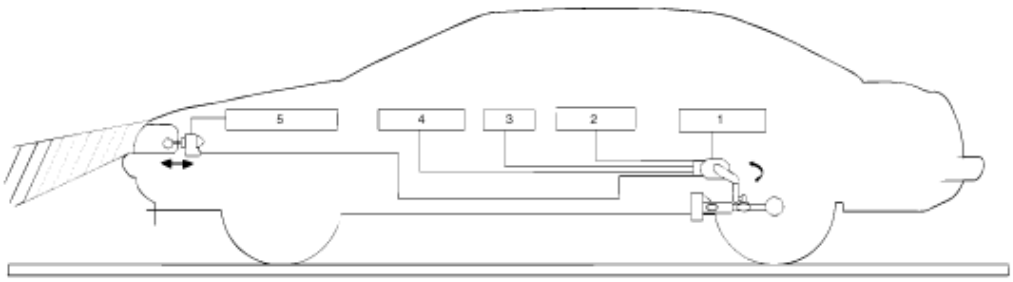
Components

1. Auto head lamp leveling unit
   1. Leveling unit & sensor
   2. Sensor mounting bracket
   3. Sensor linkage
   4. Linkage bracket
   5. Assist arm



   A. Using a Micro-processor, percept the operation lever's mechanical angle change or speed signal.
   B. As an actuator control device of inner control program, mounting on the rear center arm.

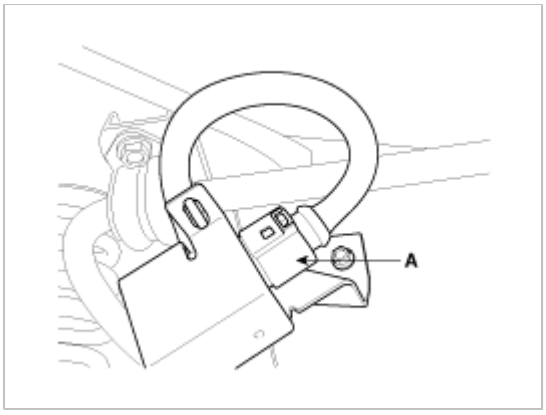
2. Actuator
   A. Change the head lamp lighting direction up or down since automatic head lamp leveling unit sensing the input signal following the vehicle's statically changes.



1. Automatic head lamp leveling unit
2. Speed signal (T/M)
3. Diagnosis
4. Head lamp ON
5. Actuator

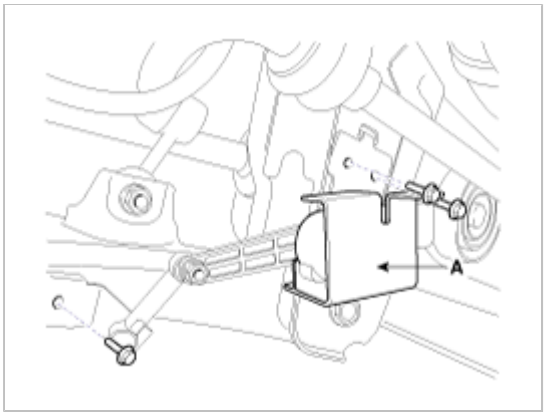
Removal

1. Remove the head lamp leveling unit connector(A).



2. Loosen the mounting bolts (3EA) of automatic head lamp leveling unit assembly.

Torque : 3-5 Nm (30~50 kg.cm, 2.21 ~ 3.68 lbf.ft)



3. Remove the head lamp leveling unit assembly.

Installation

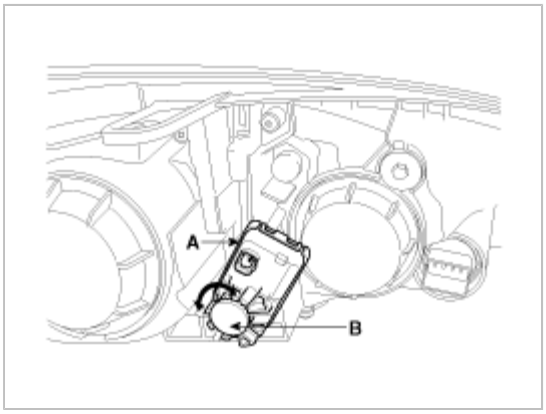
1. Install the head lamp leveling unit.
2. Reconnect the head lamp leveling unit connector.

Inspection

1. Ignition "ON".
2. Turn on the head lamp switch.
3. Check for operation. If the aim of the head lamps changes smoothly when the head lamp leveling switch is turned.
4. If the operation does not work well, inspect the connector and terminals to be sure they are all making good contact.
   If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   If the terminals look OK, go to step 5.
5. Substitute with a known-good head lamp assembly and check for proper operation.

Replacement

1. Disconnect the negative (-) battery terminal.
2. Remove the head lamp assembly (Refer to the head lamp).
3. Remove the head lamp leveling actuator (A) by loosening the adjusting bolt (B) after rotating it to an arrow direction.



4. Installation is the reverse of removal procedure.