Body Electrical System > DIS(Driver Information System) > Specifications

Specification

Item	Specification
Power supply	DC 14.4V
Output voltage	2.0Vrms (CD 0dB)
Tuning type	PLL synthesized typ
Antenna	80PF 75Ω
Dark current	6mA

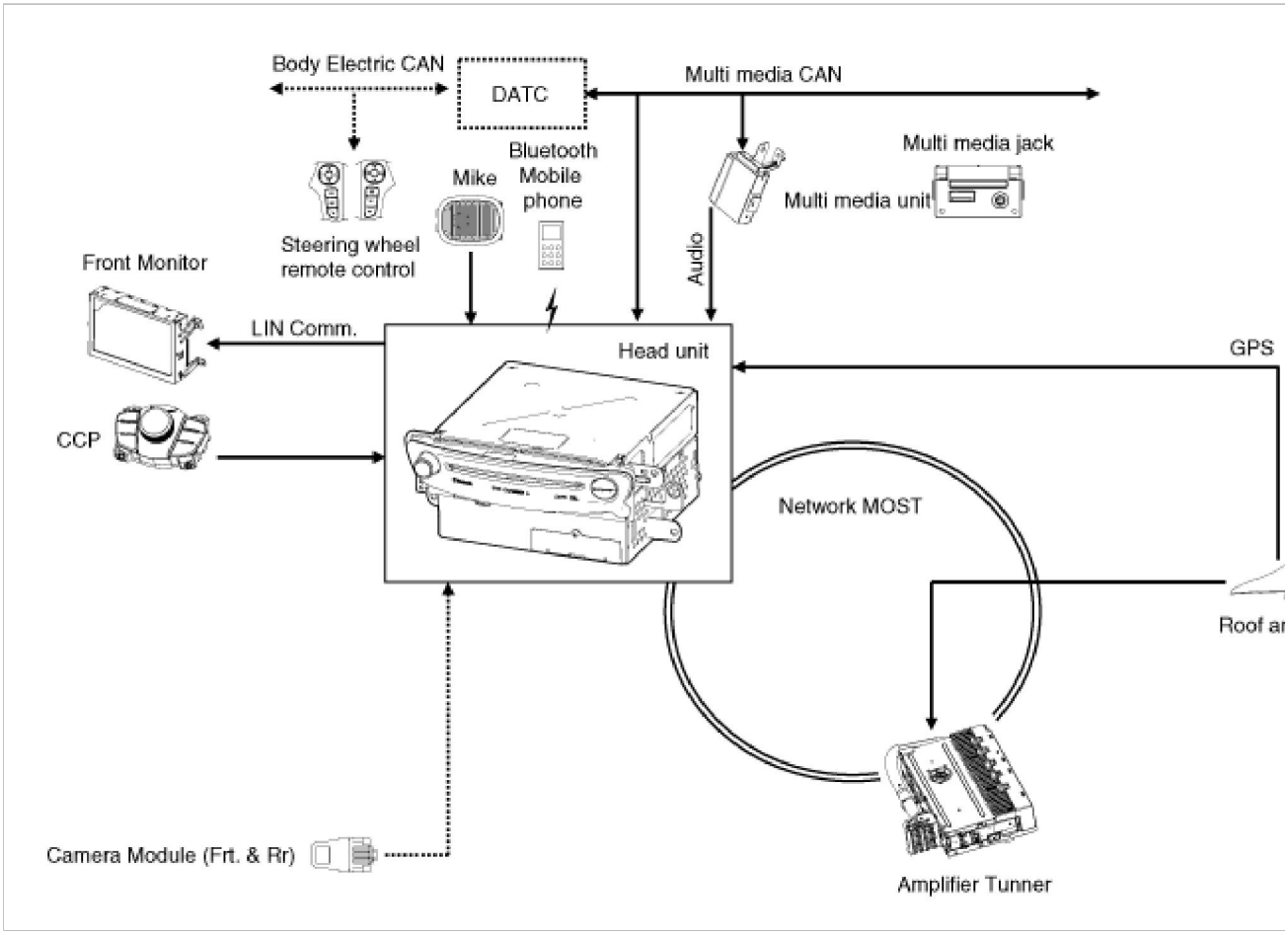
Body Electrical System > DIS(Driver Information System) > Description and Operation

DIS (Driver Information System)

- With the increasing complexity of electronic system in modern vehicles, we deliver the necessary expertise in total system integration such as multi media, air conditioning, trip computer and drive information.

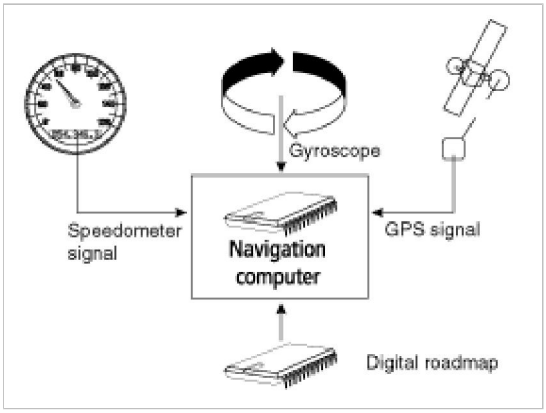
1. DIS Concept : Adapted the interface to center keyboard → Possible to change 8 directions. (Jog dial type)
2. MOST & Optical Fiber Communication : Faster transmission of data, reduced wiring weight and cost due to communication standard.
   ※ MOST : Media Orientated System Transport
3. Integrate a state of art Multi media : Navigation, Bluetooth hands free, USB & i-Pod connector.
   Main Features
   A. Navigation
      Storage the map information in Head Unit (HDD:30GB) which is apply to an unified navigation with Global Positioning System. (N/America, China)
      Head unit is a combined with navigation in order to reduce the cost and weight.
      Detecting the data is more 10 times fast than previous DVD navigation.
   B. Voice Recognition (Only North America)
      SDS : Speech Dialogue System that will allow drivers to get voice navigation guidance without having to manually enter in any information or take driver’s eyes off the road to read a monitor’s screen, it is possible to listen to radio, make a call, order to navigation.
   C. Bluetooth Hands-free
      Equipped with Bluetooth Hands-Free capability allow you to use voice command or steering mounted controls to make and receive calls, keeping your hands on the wheel and your eyes on the road. After completing the initial set-up, you can then pair up 15 cell phones with the system for multiple drivers.
   D. i-Pod & USB
      Such as i-Pod, mp3 and Walkman are popular with people, therefore, it is possible to operate these devices just connect with it and play through each speaker in the car.
      Possible to play mp3 data with USB memory.
      i-Pod is able to operate with control keyboard.

System Components



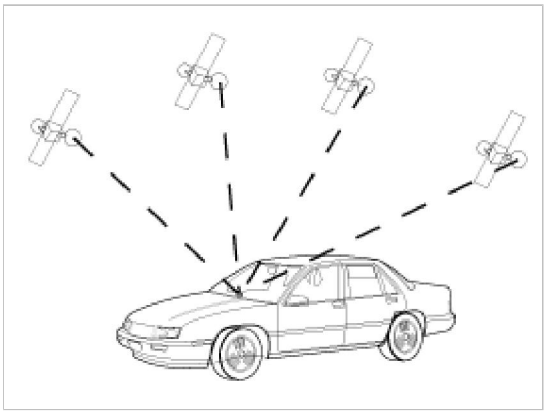
Navigation

Description

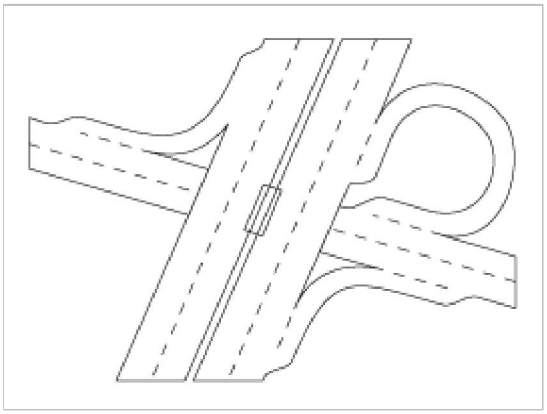


How Does The Navigation System Work?

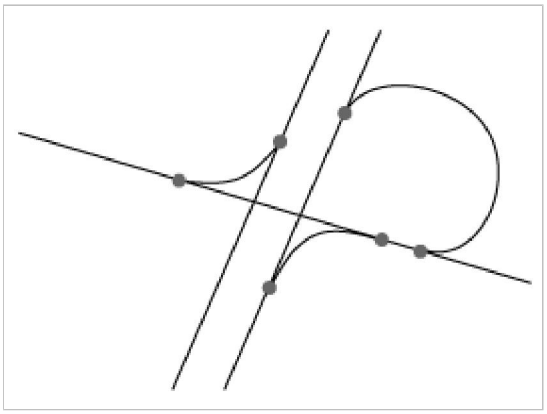
The position and movements of the vehicle are recorded by the navigation system's sensors. The distance travelled is determined by the vehicle speedometer signal, rotary motion in bends is detected by a gyro sensor (inertial compass). The position is determined via the GPS (Global Positioning System) satellites. The position can be calculated within a range of approx. 10 m by comparing the sensor signals with the digital map on the navigation CD.



The Digital Road Map



To be able to plan a route to a destination address, the navigation system not only requires the current position of the vehicle but also a digital road map containing the destination address itself and the roads leading to the destination address. This digital road map is on the memory which is located in navigation unit.



The road system is stored on the map data as a line model, i.e. even large junctions have only one focal point that is approached by all roads in point-to-point fashion. Thus the navigation system indicates the distance to the turn-off point as the distance to the centre of the junction. This is why the distances for motorway exits indicated on road signs may not agree with those of the navigation system. The road signs indicate the distance to the beginning of the exit.

Areas with limited road information

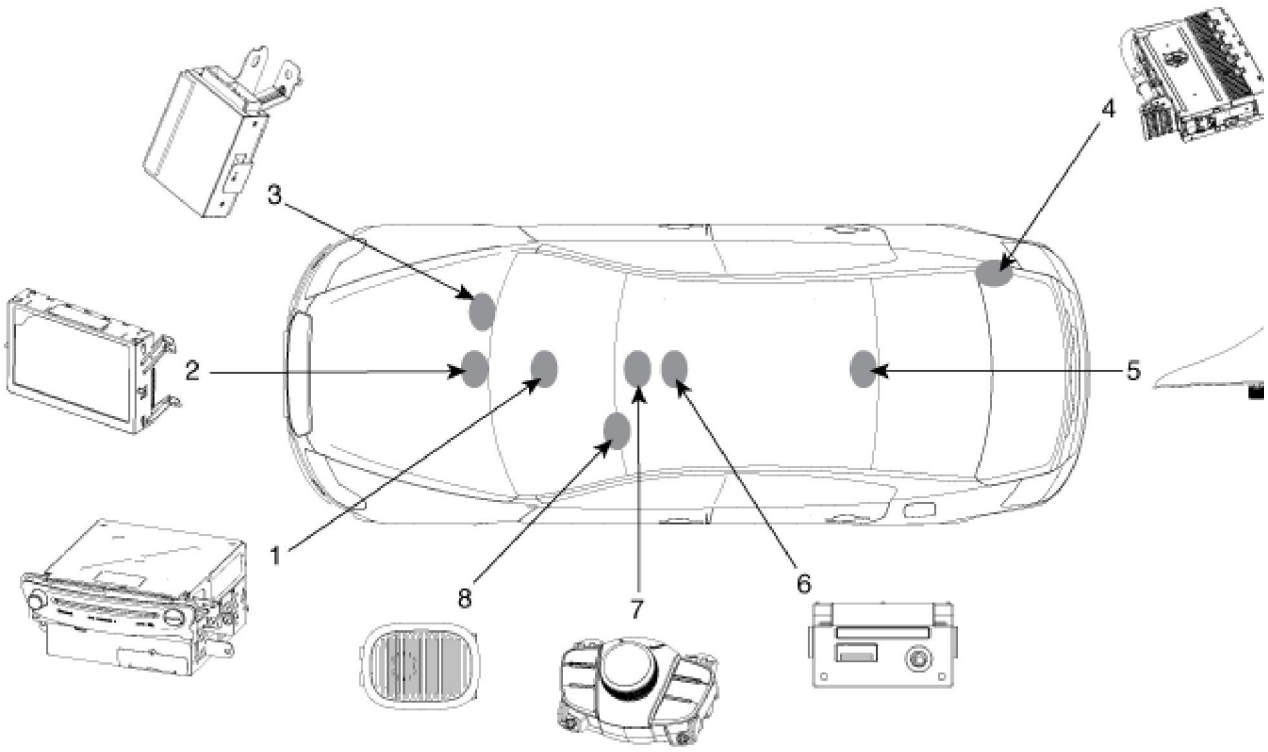
In some areas, not all of the information on a road is available on the map data. Thus, for example, turn-off prohibitions, information on the direction of travel in a one-way street or prohibited entry into a pedestrian zone may be missing. The navigation system will display a warning if you drive into such an area. Local traffic laws always take precedence over navigation system instructions. Always observe the road signs and motor vehicle traffic regulations.

Topicality of the map data

Roughly 10 - 15% of the road system characteristics change each year. Due to these constantly changing traffic conditions (construction of new roads, traffic calming, etc.) we cannot guarantee that the digital road map will be in 100 % agreement with existing traffic conditions. We recommend that you always use the most current version of the map data for navigation.

Body Electrical System > DIS(Driver Information System) > Components and Components Location

Component Location

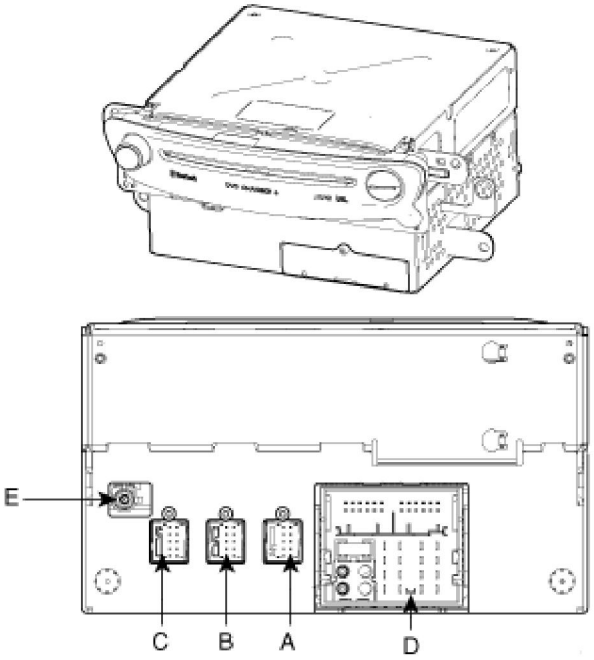


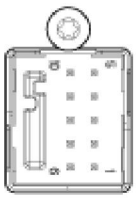
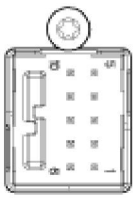
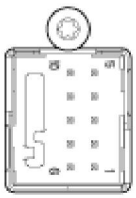
1. A/V & Navigation head unit	5. Roof antenna (GPS)
2. Front LCD monitor	6. Multi media jack
3. Media unit	7. CCP (Central Control Panel)
4. AV Amplifier Tuner	8. Mic

Body Electrical System > DIS(Driver Information System) > DIS Head Unit > Components and Components Location

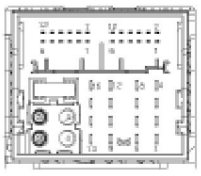
Component Location

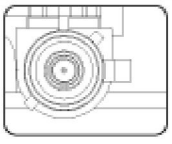
[DIS head unit]



Connector A (Front LCD monitor)	Connector B (Rear LCD monitor)	Connector C (MTS)	Pin	Description
			1	Tx 0 -
			2	Tx 0 +
			3	Tx 1 -
			4	Tx 1 +
			5	Data
			6	Tx CLK -
			7	Tx CLK +
			8	Tx 2 -
			9	Tx 2 +
			10	GND

Connector D				
D-A	D-B	Pin	D-C	D-D
CU Wakeup	Mic input	1	Video input	MOST Rx
CU GND	Mic GND	2	Video input GND	MOST Tx
CU reset	-	3	-	MOST NC
CU power	-	4	-	MOST NC
CU Rx	K line	5	Camera Video input	
CU Tx	Vehicle speed	6	Camera GND/Shield	
-	-	7	-	
-	ACC	8	-	
CAN low	IG1	9	-	
RBD	Monitor ON	10	Audio L	
CAN high	Illumination +	11	Audio R	
GND	Illumination -	12	Audio GND	
-		13		
CU Shield		14		
B+		15		
-		16		



Connector E	Pin	Description
	1	NAVI/GPS input

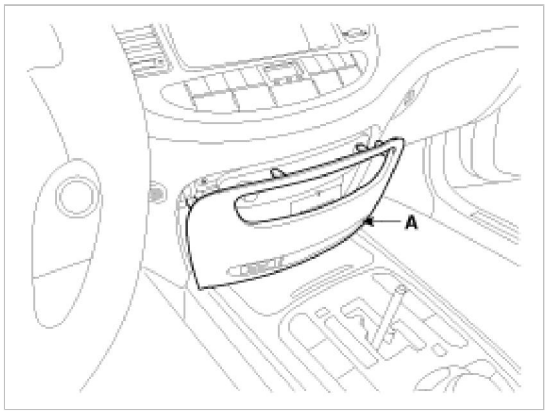
Body Electrical System > DIS(Driver Information System) > DIS Head Unit > Repair procedures

Removal

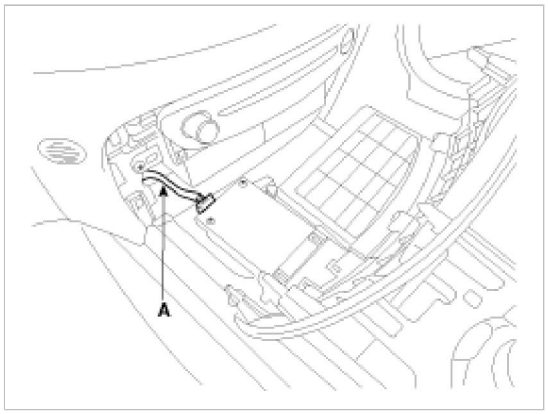
Dis Head Unit

1. Disconnect the negative (-) battery terminal.

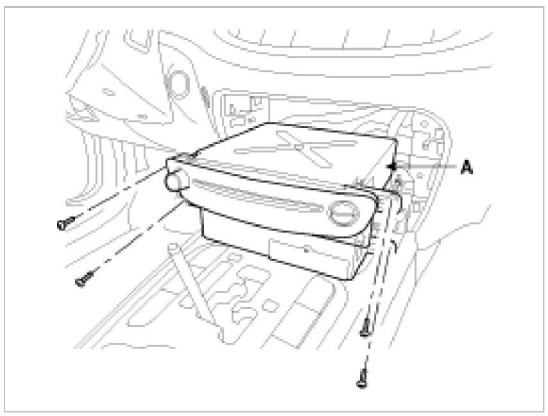
2. Remove the crash pad lower panel (A).



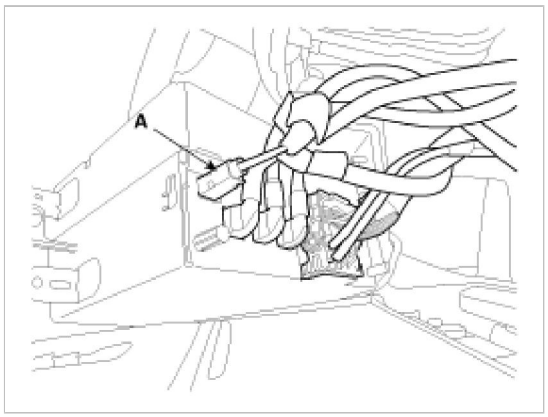
3. Remove the connector (A).



4. Remove the mounting screws and then remove the DIS head unit (A).



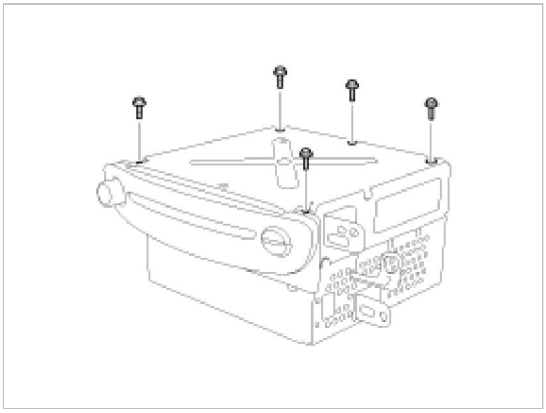
5. Remove the DIS head unit connectors (A).



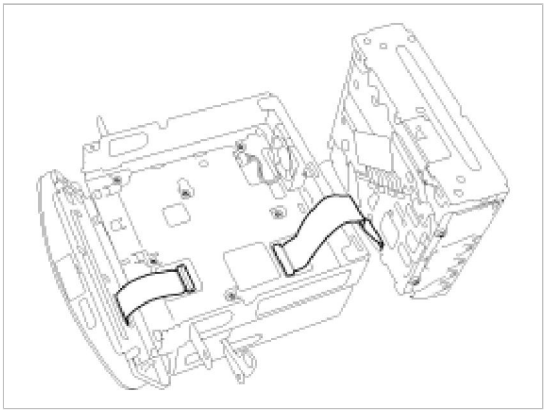
CAUTION

When the compact disc is not ejected, do not remove it forcibly.

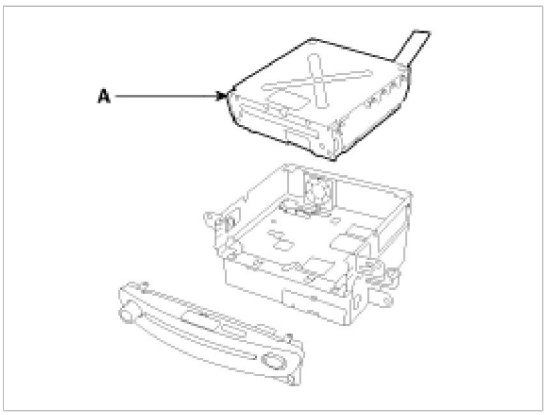
6. When separate the CD/DVD rom drive, if necessary, remove the screws (5EA) on the head unit.



7. Remove the connector (A).



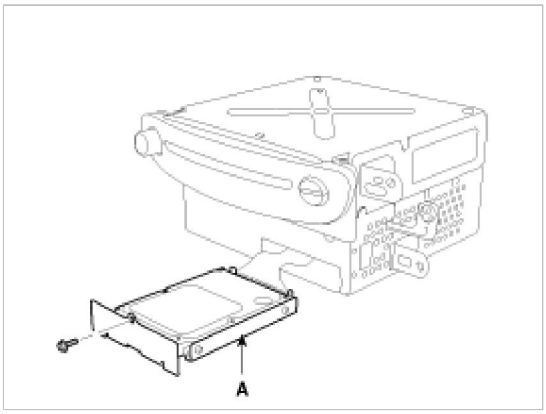
8. Remove the CD/DVD rom drive (A).



CAUTION

When the HDD(hard disc drive) is not ejected, do not remove it forcibly.

9. Replace the HDD (A) after removing the screw.



Installation

DIS Head Unit

1. Install the A/V & Navigation head unit after connecting the connectors.
2. Istall the crash pad lower pannel.
3. Connect the negative (-) battery terminal.

Variant coding when replace the DIS head unit

DIS head unit delivers the necessary expertise such as multi media, air conditioning, trip computer and drive information.
For these reasons, further information of vehicle have to be inputed to new DIS head unit when the DIS head unit is replaced.

> NOTE
>
> Below description is only using the GDS.

Variant Coding

In case replacement the new head unit, should be variant coding at the engineering mode.

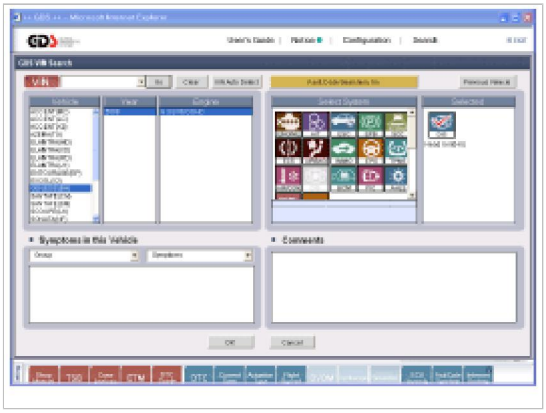
1. Check below information about hardware devices in system or vehicle with GDS.

Information	Setting
CCP	NA/CANADA
DVD Region Code	Region code (01)
DVD Language	English
Navigation	ON
MTS	OFF
SDS	ON
RSE	OFF
TV Analog	OFF
DMB	OFF
Media Unit	ON
XM Radio	ON
HD Radio	ON
Rear Camera	ON
Front Camera	ON

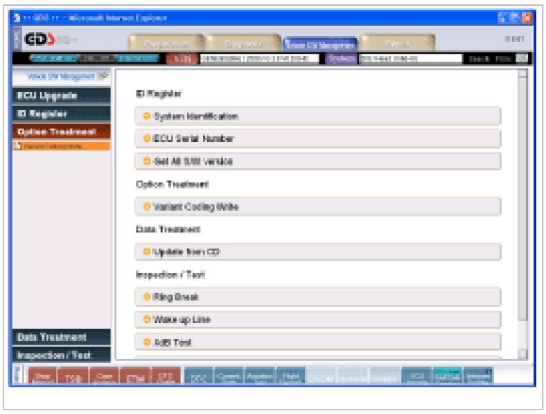
ECS Height	ON
ECS Suspension	ON
US Unit	ON (mile)
	OFF (Km)
AQS	ON
Bluetooth	ON
Steering Easy Access	ON or OFF
Seat Easy Access	ON
Door Lock Sound	ON

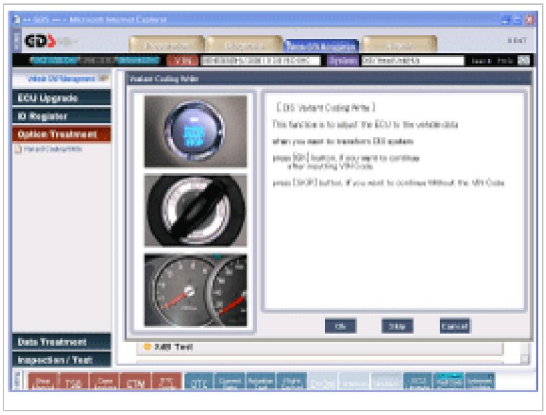
2. Select the "GDS VIN Search".

3. Select the "Vehicle / Year / Engine" and select item "DIS".

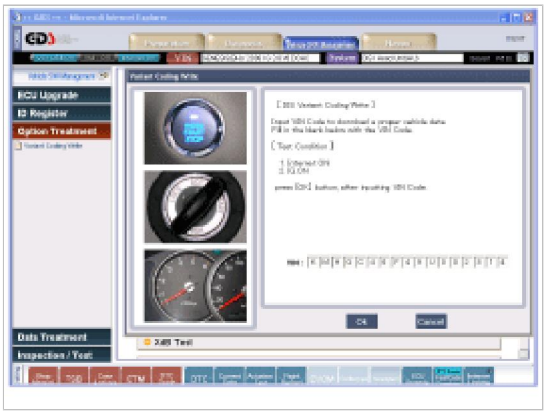


4. Select the "Variant coding write" then click the "OK".

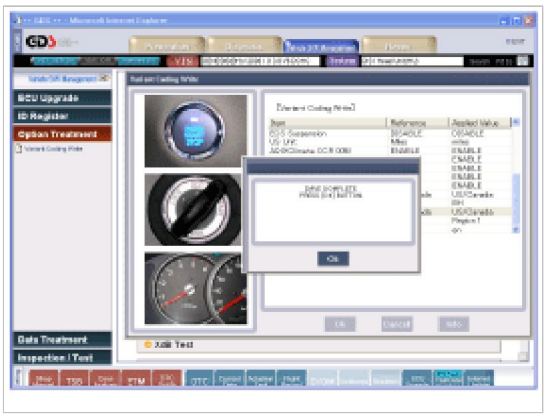




5. Input the VIN code and click the "OK".



6. Select the item which you want to change. And change the value within combo box.

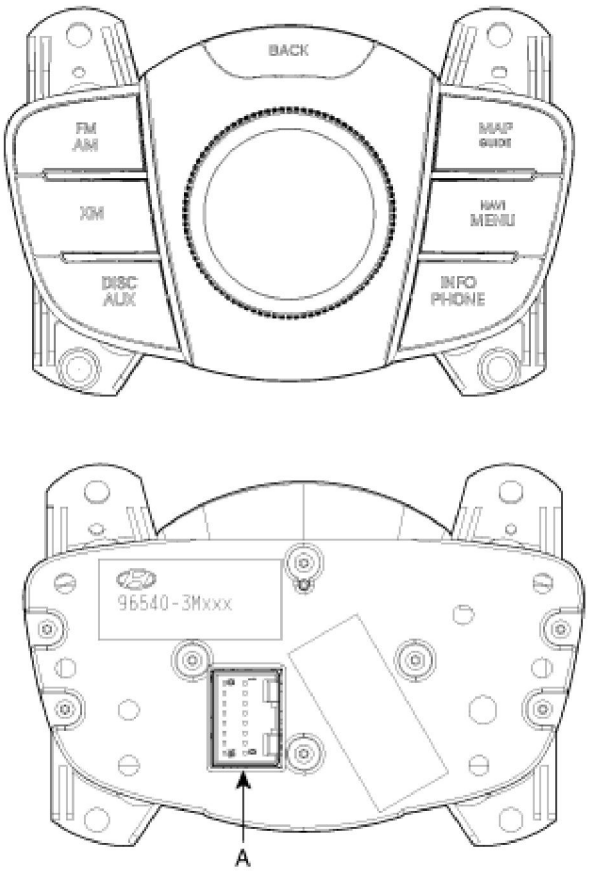


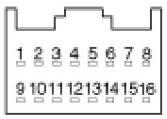
7. Click the "OK" then complete the variant coding write process.

Body Electrical System > DIS(Driver Information System) > Keyboard Unit > Components and Components Location

Component Location

[CCP (Central Control Pad)]



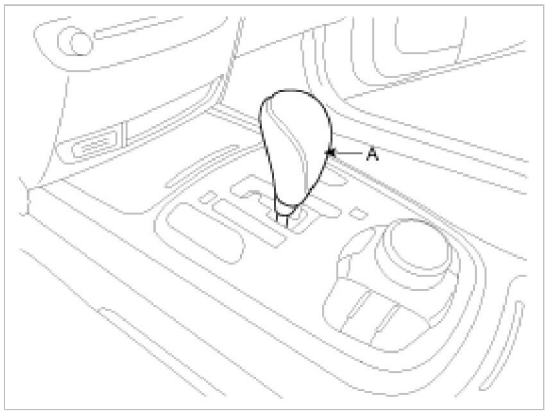
Connector A	Pin	Description	Pin	Description
	1	-	9	-
	2	-	10	-
	3	Illumination +	11	-
	4	Illumination -	12	-
	5	GND/Shield	13	Reset head unit
	6	WakeUp signal	14	-
	7	Power	15	Rx
	8	GND/Shield	16	Tx

Body Electrical System > DIS(Driver Information System) > Keyboard Unit > Repair procedures

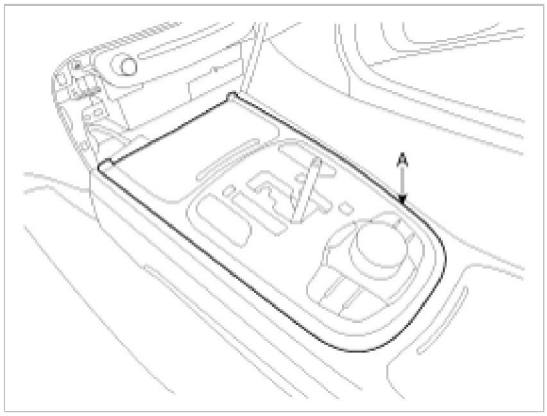
Removal

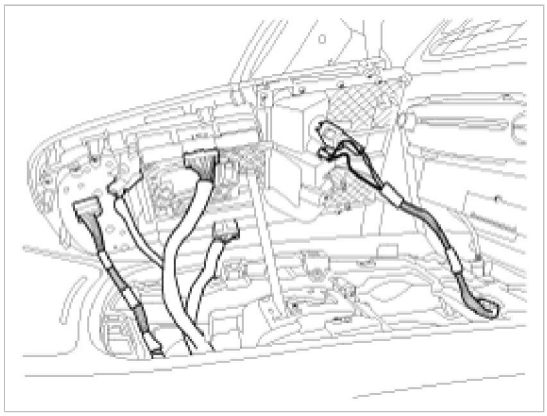
CCP (Central Control Panel)

1. Remove the knob (A).

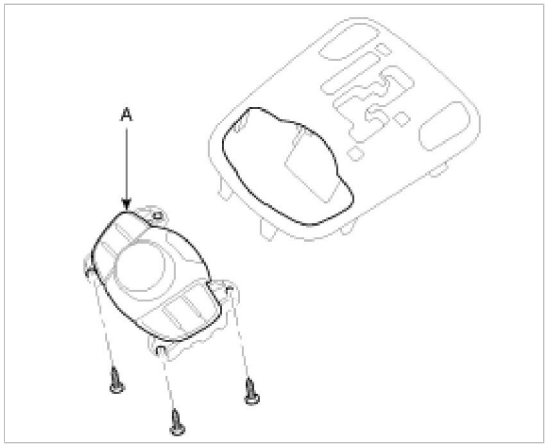


2. Remove the console under cover (A) and remove the connector.





3. Remove the central control panel (A).



Installation

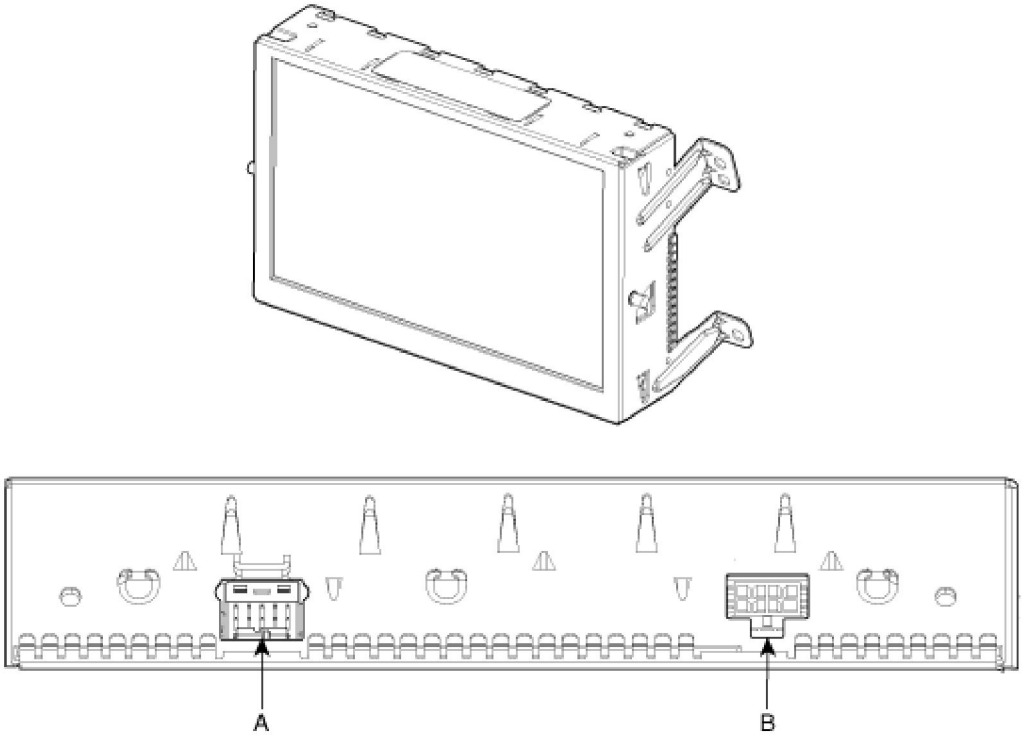
CCP (Central Control Panel)

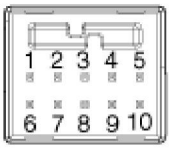
1. Install the central control panel to the console under cover.
2. Install the console under cover and knob.

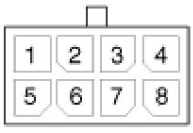
Body Electrical System > DIS(Driver Information System) > LCD Monitor > Components and Components Location

Component Location

[Front LCD monitor]



Connector A	Pin	Description	Pin	Description
	1	Tx 1+	6	Tx CLK+
	2	Tx 1-	7	Tx CLK-
	3	Tx 0+	8	GND
	4	Tx 0-	9	Tx 2+
	5	Data	10	Tx 2-

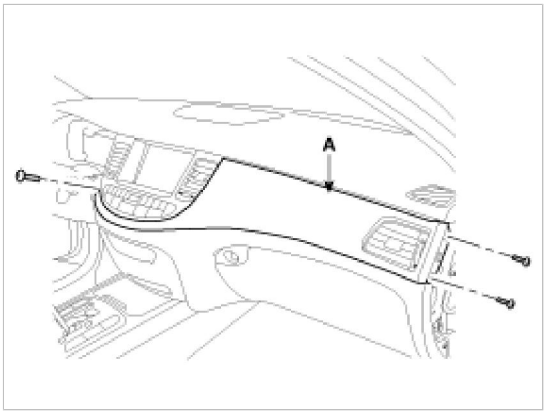
Connector B	Pin	Description	Pin	Description
	1	-	5	B+
	2	-	6	GND
	3	-	7	B+
	4	-	8	GND

Body Electrical System > DIS(Driver Information System) > LCD Monitor > Repair procedures

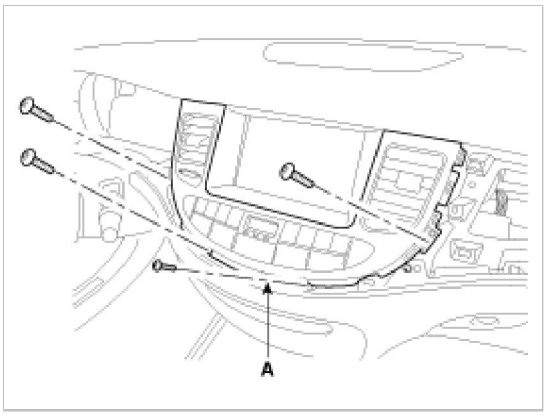
Removal

Front LCD Monitor

1. Disconnect the negative (-) battery terminal.
2. Remove the crash pad lower panel. (Refer to the Body group - crash pad)
3. Remove the cluster fascia panel.
4. Remove the crash pad side garnish (A) after removing the screws.



5. Remove the center fascia panel (A) after removing the screws.



6. Remove the LCD monitor unit after removing the screws.

Installation

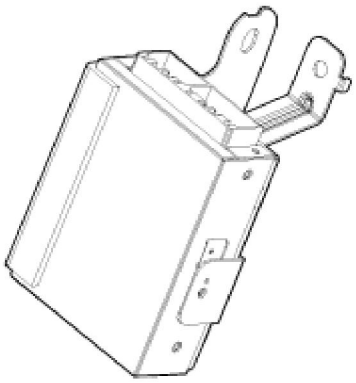
Front LCD Monitor

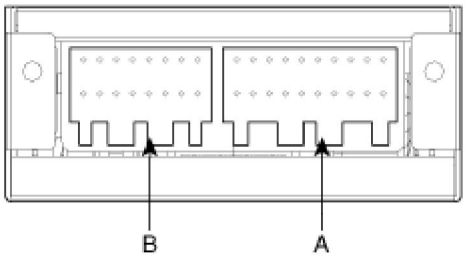
1. Install the LCD monitor unit after connecting the connectors.
2. Install the center fascia panel.
3. Install the crash pad side garnish, cluster fascia pannel and crash pad lower panel.

Body Electrical System > DIS(Driver Information System) > Media Unit > Components and Components Location

Component Location

[Media unit]





Connector A	Pin	Description	Pin	Description
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1	B+	11	GND
	2	ACC	12	GND
	3	-	13	-
	4	CAN2 high	14	CAN2 low
	5	-	15	-
	6	CAN1 high	16	CAN1 low
	7	-	17	-
	8	-	18	-
	9	AUX L output	19	AUX R output
	10	AUX GND	20	-

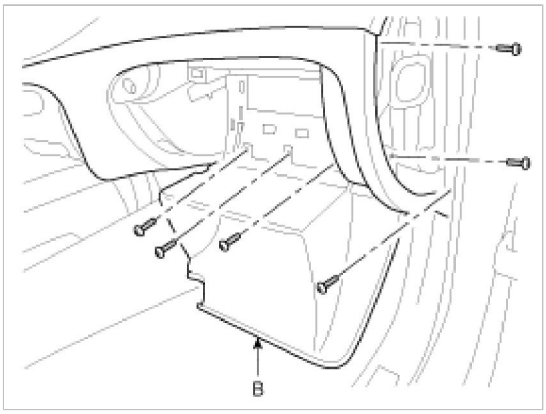
Connector B	Pin	Description	Pin	Description
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	1	USB D- /IPOD Tx	9	GND
	2	USB D- /IPOD Rx	10	-
	3	USB /IPOD 5V	11	-
	4	USB /IPOD GND	12	-
	5	-	13	-
	6	AUX L input	14	-
	7	AUX R input	15	-
	8	AUX 1 REF	16	AUX 1 detect

Body Electrical System > DIS(Driver Information System) > Media Unit > Repair procedures

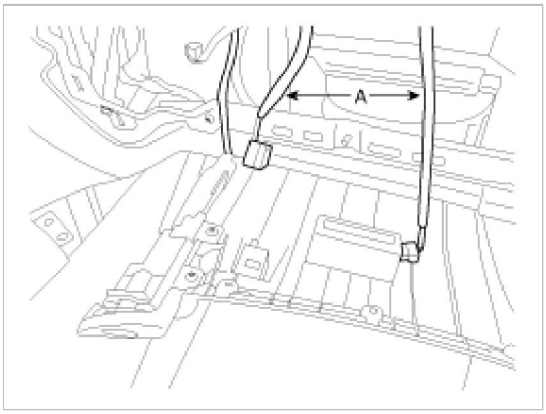
Removal

Media Unit

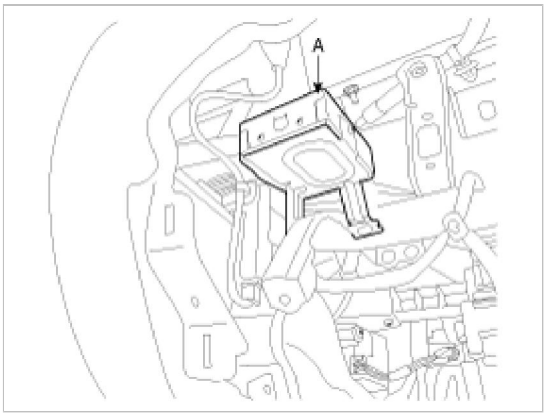
1. Disconnect the negative (-) battery terminal.
2. Disconnect the pine, then remove the glove box (B). (Refer to the Body group - crash pad)



3. Disconnect the connector (A) on the glove box.



4. Remove the media unit (A) after disconnecting the connectors.



Installation

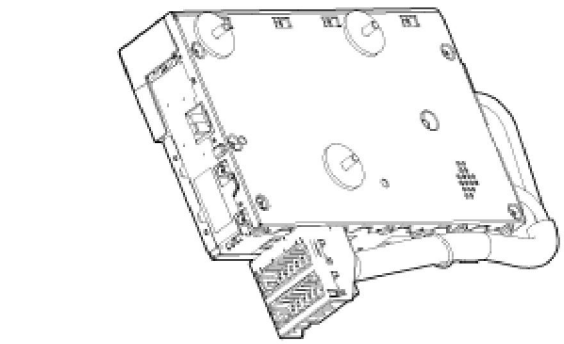
Media Unit

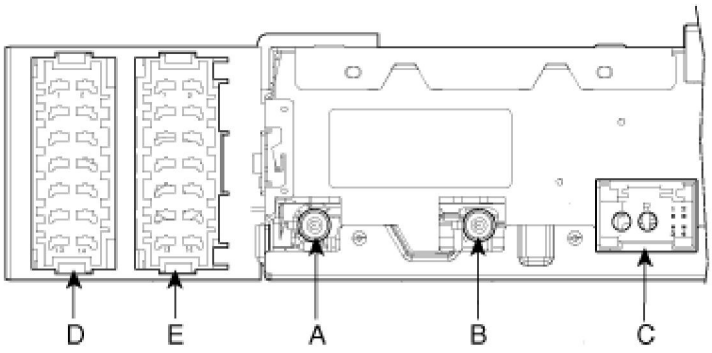
1. Install the media unit after connecting the connectors.
2. Install the glove box and glove box housing.
3. Connect the negative (-) battery terminal.

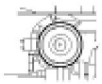
Body Electrical System > DIS(Driver Information System) > AMP Unit > Components and Components Location

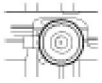
Component Location

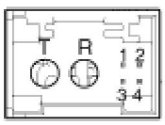
[AV Amplifier]

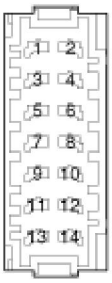


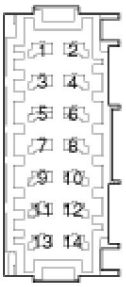


Connector A	Pin	Description
	1	Antenna 1

Connector B	Pin	Description
	1	Antenna 2

Connector C	Pin	Description
	T	Tx LWL
	R	Rx LWL

Connector D	Pin	Description	Pin	Description
	1	Sub woofer 1+	8	Rear left door Spea
	2	Sub woofer 1-	9	Rear right door Spea
	3	Sub woofer 2+	10	Rear right door Spea
	4	Sub woofer 2-	11	Front right middle Spe
	5	Front left middle Speaker +	12	Front right middle Spe
	6	Front left middle Speaker -	13	GND
	7	Rear left door Speaker +	14	BAT +

Connector E	Pin	Description	Pin	Description
	1	Surround speaker LH +	8	Front left door speak
	2	Surround speaker LH -	9	Front left door speak
	3	Surround speaker RH +	10	Front left door speak
	4	Surround speaker RH -	11	Front right door speal
	5	Center speaker +	12	Front right door spea
	6	Center speaker -	13	Front right door speal
	7	Front left door speaker 1 +	14	Front right door spea

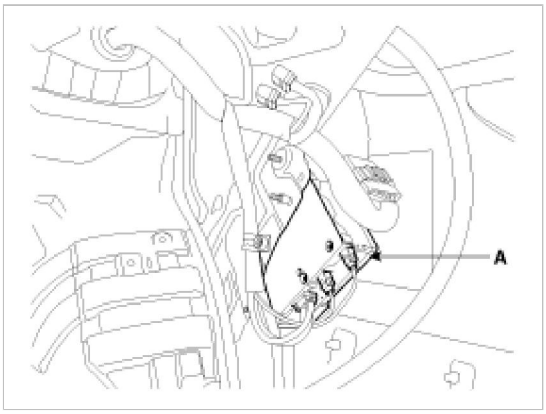
Body Electrical System > DIS(Driver Information System) > AMP Unit > Repair procedures

Removal

External Amp

1. Disconnect the negative (-) battery terminal.
2. Open the trunk and remove the right trunk trim. (Refer to the Body group - Trunk)

3. Remove the external amp unit (A) after removing the connectors and nuts.



Installation

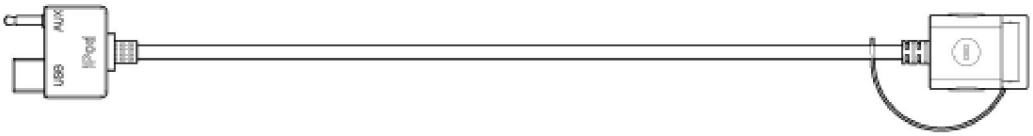
External Amp

1. Install the external amp unit after connecting the connectors.
2. Install the right trunk trim.
3. Connect the negative (-) battery terminal.

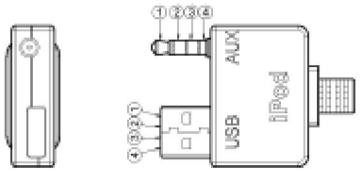
Body Electrical System > DIS(Driver Information System) > A/V Jack > Schematic Diagrams

Circuit Diagram

[AUX, USB, iPod Jack]

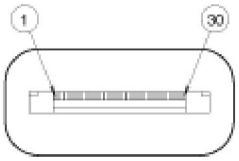


USB & AUX Jack



Pin	USB	AUX
1	USB/iPod 5V	AUX1 L in
2	USB D-/iPod Tx	AUX1 R in
3	USB D+/iPod Rx	Option/Video
4	USB/iPod GND	AUX1 GND

iPod Connector (30P, Male)



Pin	iPod Male	Pin	iPod Male
1	GND	16	GND
2		17	-
3	-	18	Rx
4	D+	19	Tx
5	-	20	ACC-DET
6	D-	21	-
7	-	22	-
8	5V	23	Video
9	-	24	-
10	ACC ID	25	-
11	-	26	-
12	-	27	AUX1 L IN
13	-	28	AUX1 R IN
14	-	29	AUX1 GND
15	GND	30	Signal wire GND

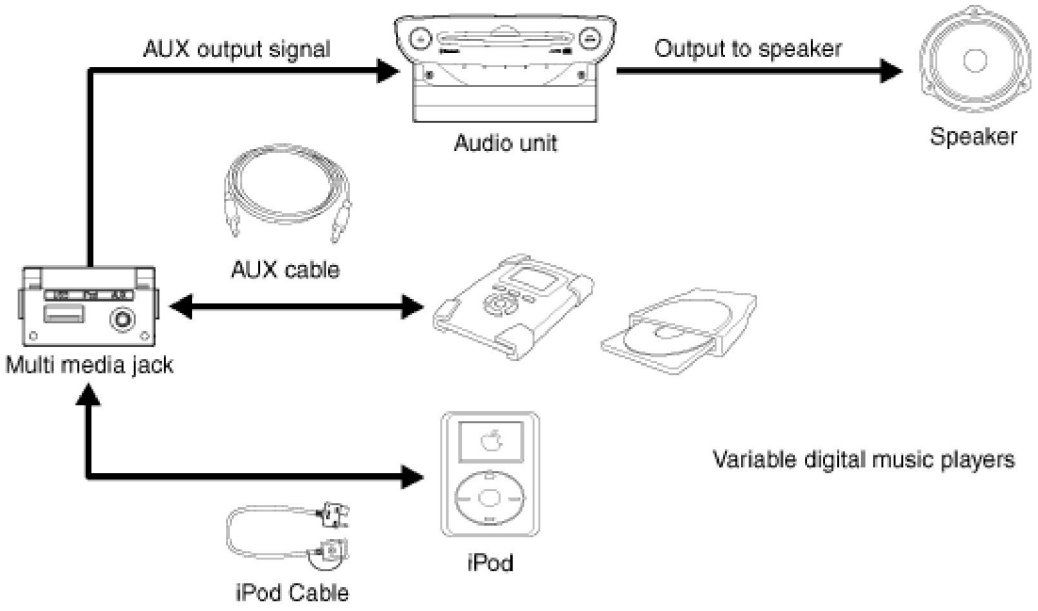
Body Electrical System > DIS(Driver Information System) > A/V Jack > Description and Operation

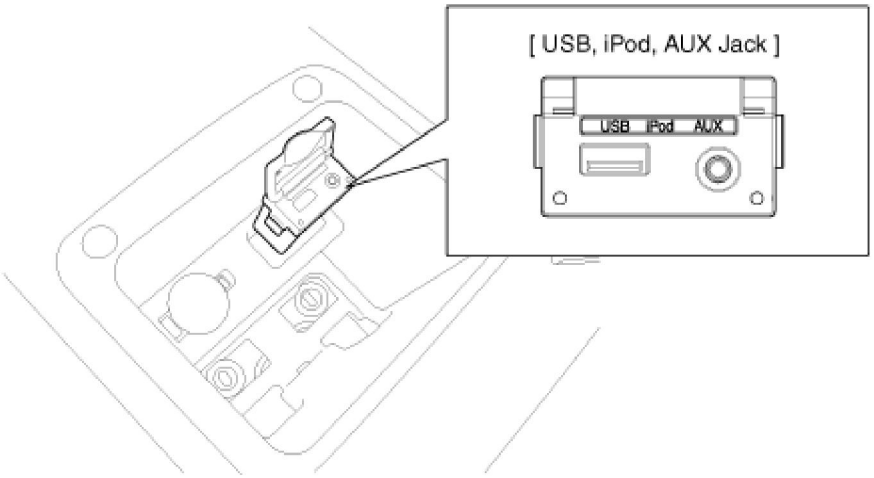
Description

The AUX JACK on the center console is for customers who like to listen to external portable music players like the MP3, iPOD and etc., through the vehicle's sound system when it is linked to this jack. The customer has this added option.
In case of distortions from media connected to the AUX source, the audio unit may not be defect but the output level of the used media does not match the specification of the AUX input.

NOTE

Hyundai-iPod cable must be used to iPod playback. The Apple-iPod cable supplied with the player will NOT work.

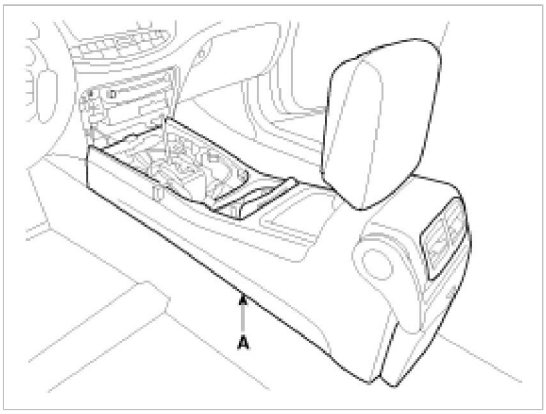




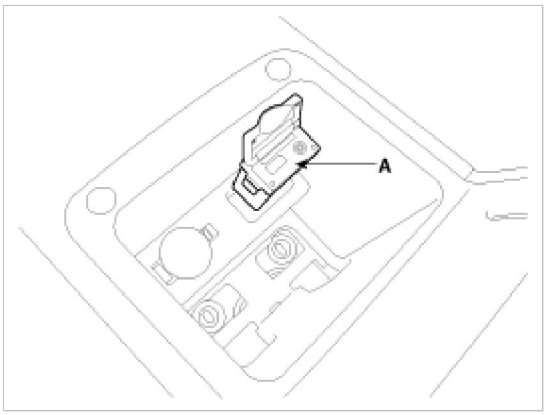
Body Electrical System > DIS(Driver Information System) > A/V Jack > Repair procedures

Removal

1. Remove the floor console (A). (Refer to Body group - Console)



2. Disconnect the jack assembly connector from the floor console.
3. Remove the Multi media Jack (A) from the floor console.

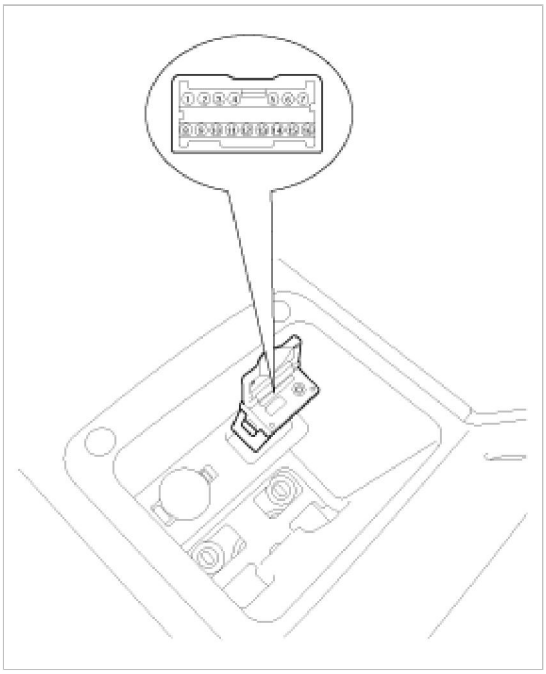


Installation

1. Install the Multi media Jack.
2. Connect the Multi Media Jack connector.
3. Install the under cover to the floor console.

Inspection

1. Disconnect the negative(-) battery terminal.
2. Disconnect the Multi Media Jack connector after from the floor console.



3. To inspect USB/IPOD port, check the voltage between NO.1 and 4 terminal of.

Standard value: 5V

4. To inspect AUX Jack, check the voltage between NO.14 terminal of Jack output connector and NO.4 terminal of USB/IPOD input port at AUX input.

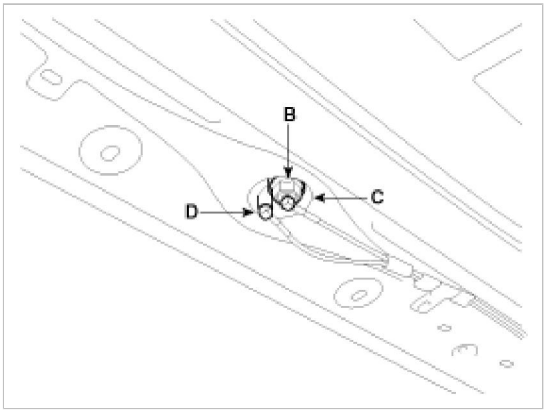
Standard value: 5V

Body Electrical System > DIS(Driver Information System) > The Other DIS Component > Repair procedures

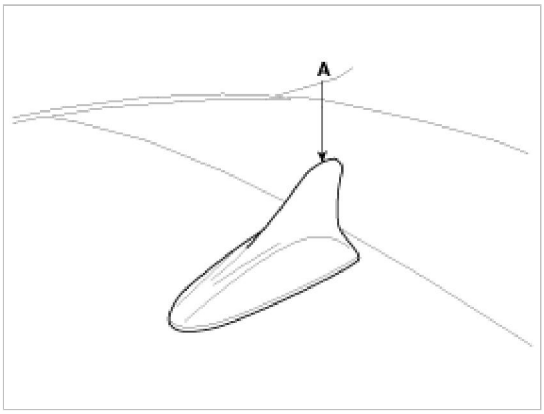
Removal

Roof Antenna

1. Remove the rear roof trim. (Refer to the Body group - Roof trim)
2. Disconnect the GPS cable (C) and XM radio cable (D) after removing a nut (B).

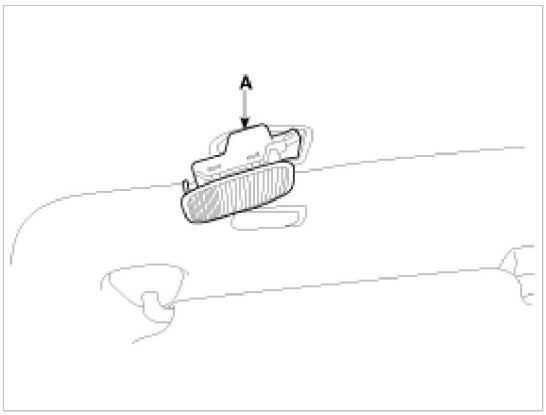


3. Remove the roof antenna (A).



Hands free Mic

1. Remove the hands free mic.



Installation

Roof Antenna

1. Connect the GPS cable and XM radio cable.
2. Install the roof trim.

Hands free Mic

1. Install the hands free mic.

Body Electrical System > DIS(Driver Information System) > The Other DIS Component > Description and Operation

Media Orientated System Transport(MOST)

1. The outline
   A. MOST(Media Orientated System Transport) is the agreement or high lan system to operate and connect multimedia unit distance of light foundation with 1 POF.
   B. Optical Fiber Communication is the communication process that transmit the information through Optical Fiber Cable in a different way with wire communication using metal center wire wireless communication using frequency.
   C. POF(Plastic Optical Fiber) : It is used in vehicles with plastic fiber cable using plastic with core and clading materials.
   D. System outline
   1) Structure : ring type
   2) Transmision speed : 24.8Mbps
   3) Interface : standardization in MOST organization(Germany)

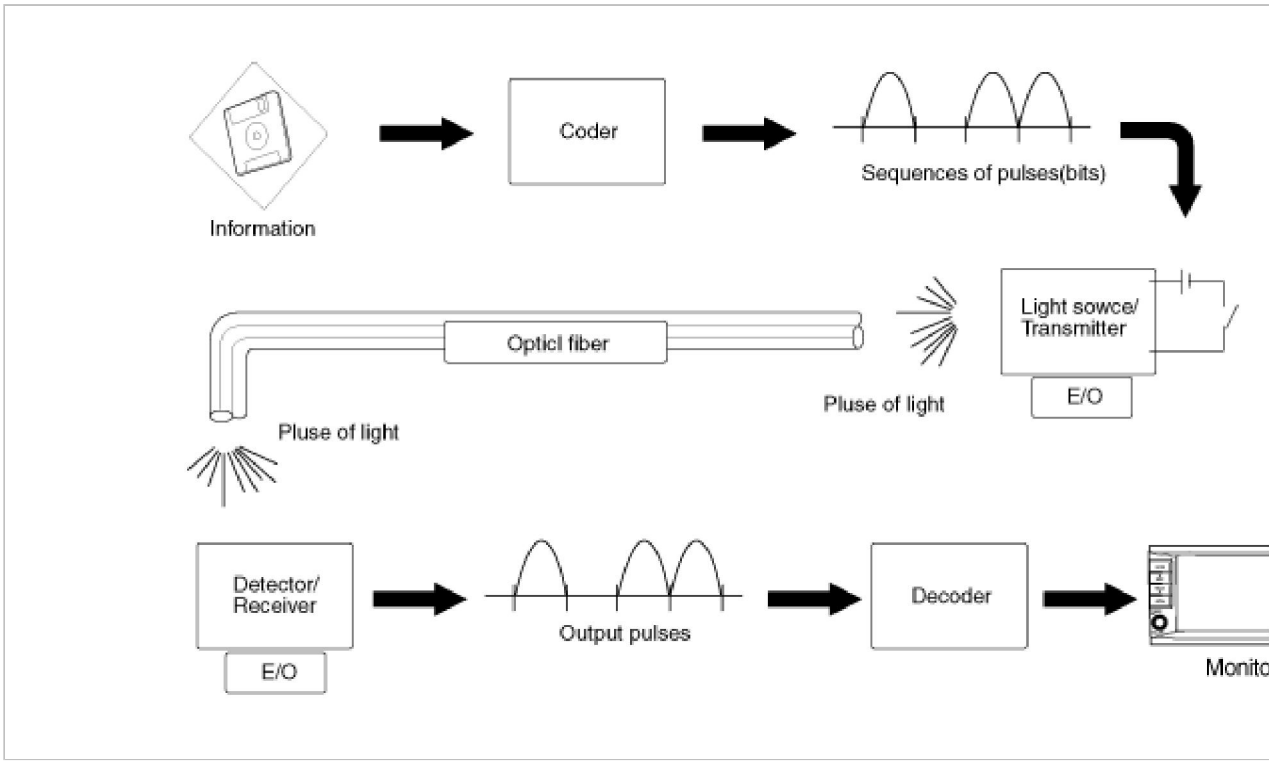
4) Application : digital audio, navigation

2. Characteristic
   A. Simple structure of ring type : It is easy to design and keep up and it has excellent module extension.
   B. Optical area lan system construction : possibility of mass storage high speed transmision.
   C. No barrier by noise : quantity upgrade for multimedia working.
   D. Reduction of circuit quantity and weight and connector quantity compared with wire : It is higher in assembly and maintenance relationed with working ability and fuel efficiency,
   E. Possibility of multi functional data transmision : digital audio, vedio, control sign and so on.

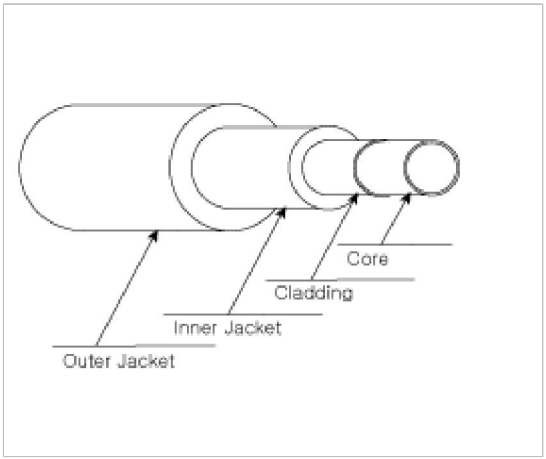
3. Organization of Optical Fiber Communication

1.Coder	conversion to electric sign that information makes code
2.Light source/Transceiver	coversion electric sign to optical sign and incidence to optical fiber.
3.Optical Fiber Cable	transmision optical sign to its destination.
4.Optical Fiber Repeater	coverage about distortion present situation of optical sign by optical damage and dispersion(optical sign → electric sign → amplification → optical sign)
5.Detector / Transceiver	conversion to electric sign by detector optical sign transferred through
6.Decorder	conversion coded electric sign to original information form.

4. Optical communication organization chart

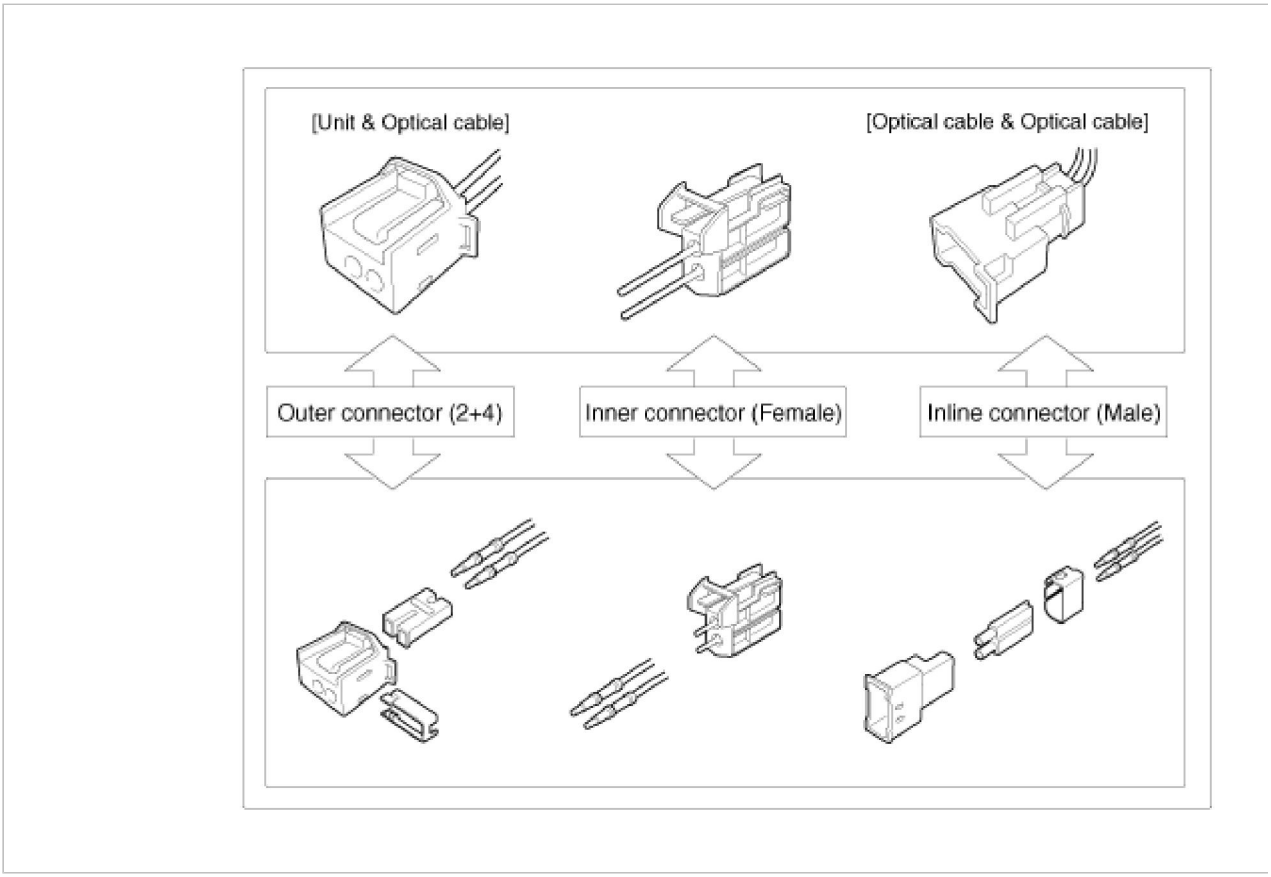


5. Structure and Characteristic of POF



A. Cable = fiber + outter jacket + inner jacket
B. Fiber = core + clading
C. Core = core to transfer light with PMMA(Poly methyl methacrylate)(light transit layer)
D. Clad : differ refraction rate to be whole total reflection of light and layer next to core with (F-PMMA : Fluorine Poly Methyl Methacrylate)(break layer)
E. Jacket : prevention and handle of optical fiber to prevent damage and wear and moisture with Polyamide. (coating layer)

6. Characteristic of POF
   A. Refraction rate of Clad is lower than core, so the light transferred from one end side of optical fiber causes total reflection in core and contact surface of clad and moves to end side of optical fiber.
   B. Light trasmit efficiency rate of POF is much higher because cross section that light is processing posseses 98% of whole optical fiber.
7. Main connector shape



8. Direction and caution in handling optical cable(general subject reference)
9. Method in optical cable's keeping for long(general subject reference)