

2009 Kia Borrego EX

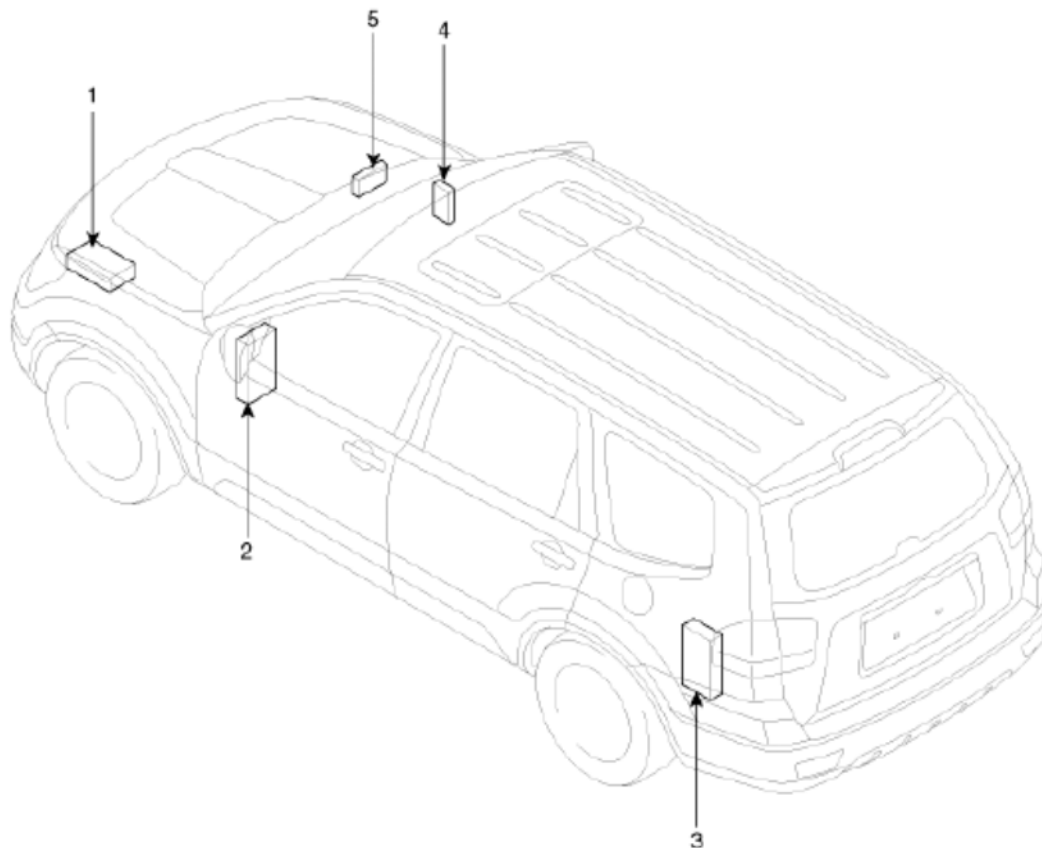
2009-10 ELECTRICAL Fuses and Relays - Borrego + 2010 Canadian

2009-10 ELECTRICAL

Fuses and Relays - Borrego + 2010 Canadian

COMPONENTS AND COMPONENT LOCATIONS

COMPONENT LOCATION



- 1. Front area module (FAM)
- 2. In-Panel module (IPM)
- 3. Rear area module (RAM)

- 4. Power distribution module (PDM)
- 5. Sub box (Engine room)

Fig. 1: Locating Modules

Courtesy of KIA MOTORS AMERICA, INC.

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COMPONENTS AND COMPONENT LOCATIONS

Components

FAM (Front Area Module)



Fig. 2: Identifying FAM Fuse & Relay Box (Engine Compartment)

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Courtesy of KIA MOTORS AMERICA, INC.

For fuse locations within the Front Area Module (FAM) fuse box, refer to **Fig. 2**.

NOTE: Use designated fuses only.

IDENTIFYING FUSIBLE LINKS & FUSES (ENGINE COMPARTMENT)

DESCRIPTION		FUSE (A)	CIRCUIT PROTECTED
FUSE	FRT/RR WASHER	10A	Front/Rear Washer Motor Relay, Washer Motor
	TRAILER 4	15A	Tail Lamp Converter (Turn/Stop)
	TRAILER 5	15A	Tail Lamp Converter (Turn/Stop)
	STOP LAMP	20A	Stop Lamp Switch, DBC Relay
	KEY SW 1	25A	Ignition Switch, PDM Relay Box(IG1 Relay , ACC Relay)
	STOP SIGNAL	7.5A	ABS Control Module, ESC Control Module, ECM, Smart Key Control Module
	A/CCOMP	7.5A	A/C Comp Relay
	FRT DEICER	15A	Front Deicer Relay
	HORN	15A	Horn Relay
	ECU 1	10A	ECM, Mass Air Flow Sensor, Immobilizer Module, A/C Comp Relay
	O2 DN	10A	Oxygen Sensor #3, #4
	ECU 2	15A	Oil Control Valve, ECM, Variable Intake Manifold Valve, Purge Control Solenoid Valve, Canister Close Valve
	O2 UP	10A	Oxygen Sensor #1, #2
	IGN COIL	20A	Ignition Coil #1 - #6, Condenser #1, #2
	INJECTOR	15A	ECM, Injector #1 - #6, Camshaft Position Sensor #1 - #3 (G8BA)
	P/TRAIN	7.5A	ECM, Main Relay, Relay Box (Burglar Horn Relay), Generator (G8BA)
	FUEL PUMP	15A	Fuel Pump Relay, Fuel Sender & Fuel Pump Motor
	A/SUSP	15A	Air Suspension Control Module
	ATM	15A	TCM
	ABS 2	40A	ABS Control Module
	ABS 1	40A	ABS Control Module
	PDM	20A	PDM
	FRT WIPER	30A	Front Wiper ON Relay, Front Wiper HI/LO Relay
	KEY SW 2	30A	Start Relay #1, Ignition Switch, PDM Relay Box (IG2 Relay)

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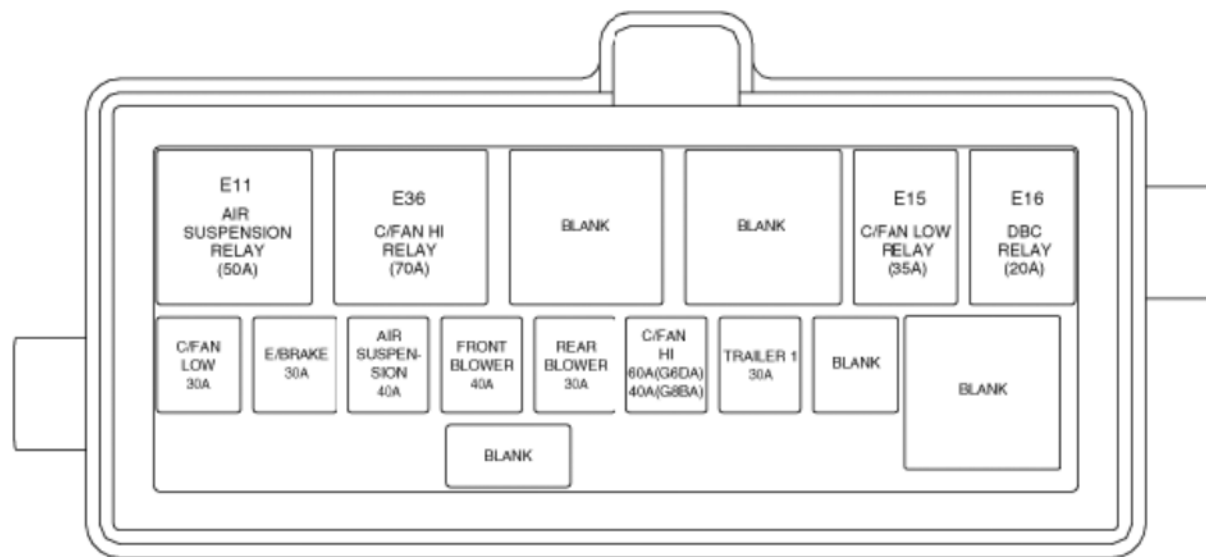
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FUSIBLE LINK	RAM 1	50A	RAM (CTR P/OUT FUSE 15A, RR P/OUT FUSE 15A, FUEL DR FUSE 15A, RR P/WIN-LH FUSE 20A, RR P/WIN-RH FUSE 20A, LUGGAGE FUSE 7.5A)
	RAM 2	50A	RAM (RR DEFOG FUSE 25A, T/G POWER LATCH FUSIBLE LINK 30A, DOOR LOCK FUSE 15A, RR WIPER FUSE 15A)
	RAM 3	50A	RAM (AMP FUSIBLE LINK 30A, TRAILER 2 FUSIBLE LINK 30A)
	IPM 1	50A	IPM (ILLUMI FUSE 7.5A, DDM FUSIBLE LINK 30A, FRT S/WARMER FUSE 20A, OBD-II FUSE 7.5A, SUNROOF FUSE 25A, KEY LOCK FUSE 7.5A)
	IPM 2	50A	IPM (ADM FUSIBLE LINK 30A, F/PWR OUTLET FUSE 15A, PEDAL FUSE 15A, S/TILT & TELE FUSE 20A)
	IPM 3	50A	IPM (MEMORY FUSE 7.5A, DRIVER P/SEAT FUSE 30A, PASS P/SEAT FUSE 20A, RR S/WARMER FUSE 20A, ROOM FUSE 75A, AUDIO FUSE 15A)
	4WD	30A	4WD ECM
	AC 110W	30A	AC Inverter Module

Sub Box (Engine Room)

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FUSIBLE LINK	(A)	Circuit Protected
C/FAN LOW	30A	C/Fan Low Relay
E/BRAKE	30A	Electric Brake Module
FRONT BLOWER	40A	Front Blower Relay
REAR BLOWER	30A	Rear Blower Relay
C/FAN HI	60A(G6DA) 40A(G8BA)	C/Fan Hi Relay
TRAILER 1	30A	Trailer Relay

※ USE THE DESIGNATED FUSE ONLY

Fig. 3: Identifying Sub Box Fuses & Relays (Engine Room)
Courtesy of KIA MOTORS AMERICA, INC.

For fusible link locations within the Sub Box, refer to **Fig. 3**.

NOTE: Use the designated fuses only.

IDENTIFYING FUSES (ENGINE COMPARTMENT SUB BOX)

Fusible Link	Fuse Rating	Circuit Protected
C/FAN LOW	30A	C/Fan Low Relay
E/BRAKE	30A	Electric Brake Module
FRONT BLOWER	40A	Front Blower Relay
REAR BLOWER	30A	Rear Blower Relay

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C/FAN HI	60A (G6DA) 40A (G8BA)	C/Fan High Relay
TRAILER 1	30A	Trailer Relay

REPAIR PROCEDURES

Inspection

Fuse

1. Be sure there is no play in the fuse holders, and that the fuses are held securely.
2. Are the fuse capacities for each circuit correct?
3. Are there any blown fuses?

If a fuse is to be replaced, be sure to use a new fuse of the same capacity. Always determine why the fuse blew first and completely eliminate the problem before installing a new fuse.

Relay

1. Ensure that relays are securely installed.
2. Are the relay types for each circuit correct?

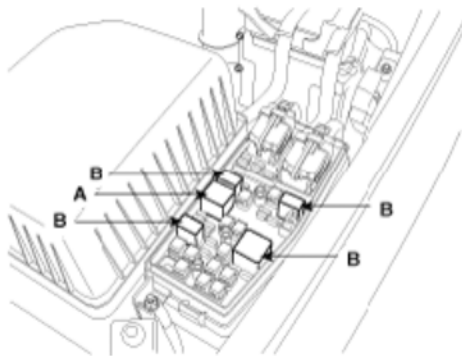


Fig. 4: Identifying Relays

Courtesy of KIA MOTORS AMERICA, INC.

[TYPE A]

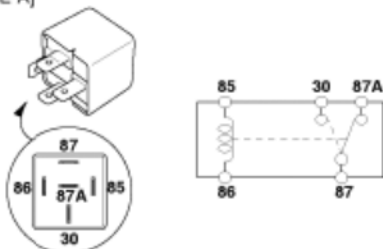


Fig. 5: Identifying Relay (Type A)

Courtesy of KIA MOTORS AMERICA, INC.

Terminal	86	85	87	87a	30
Power					
Disconnected	○	○			
Connected	○ ⁻	○ ⁺	○	○	○

Fig. 6: Relay Continuity Chart (Type A)
Courtesy of KIA MOTORS AMERICA, INC.

[TYPE B]

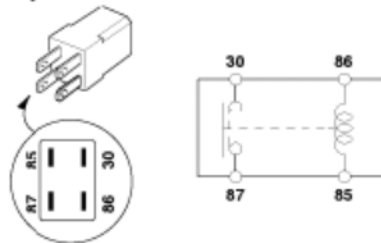


Fig. 7: Identifying Relay (Type B)
Courtesy of KIA MOTORS AMERICA, INC.

Terminal	30	87	85	86
Power				
Disconnected			○	○
Connected	○	○	○ ⁻	○ ⁺

Fig. 8: Relay Continuity Chart (Type B)
Courtesy of KIA MOTORS AMERICA, INC.

3. If a relay-operated system does not operate properly, verify the condition of the relay and replace the relay (if inoperative) before continuing with additional troubleshooting.

Replacement

FAM (Front Area Module)

1. Disconnect the negative (-) battery terminal.
2. Remove the FAM cover of engine room.
3. Remove the FAM connectors (2EA) (A) and battery terminal nut (1EA) (B).

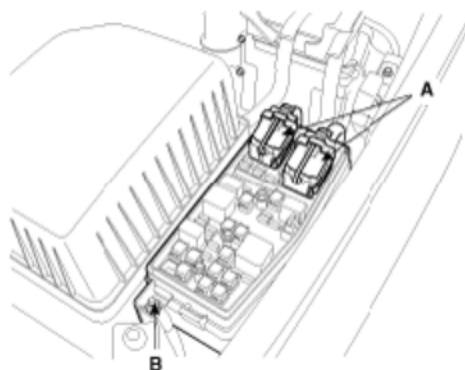


Fig. 9: Identifying FAM Connectors & Battery Terminal Nut
Courtesy of KIA MOTORS AMERICA, INC.

4. Remove FAM mounting bolts (3EA) (A) and remove the FAM mounting clips.

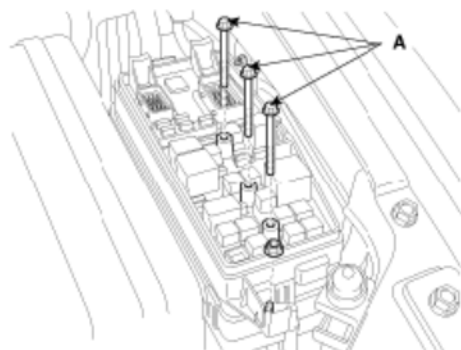


Fig. 10: Identifying FAM Mounting Bolts
Courtesy of KIA MOTORS AMERICA, INC.

5. Remove the FAM from splash shield (A).

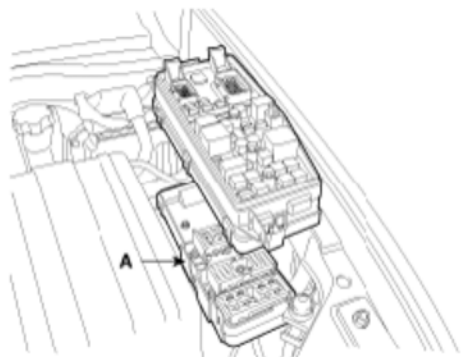


Fig. 11: Removing FAM From Splash Shield
Courtesy of KIA MOTORS AMERICA, INC.

6. Disconnect the connector from splash shield.

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7. Installation is the reverse of removal.

FUSE & RELAY BOX (PASSENGER COMPARTMENT)

COMPONENT AND COMPONENTS LOCATION

Components

IPM (Instrument Panel Module)

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For fuse locations within the Instrument Panel Module (IPM) fuse box, refer to **Fig. 12**.

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NOTE: Use designated fuses only.

IDENTIFYING FUSIBLE LINKS & FUSES (PASSENGER COMPARTMENT)

DESCRIPTION		FUSE(A)	CIRCUIT PROTECTED
FUSE	AUDIO	15A	Audio, Rear Monitor, RSE Control Box, DVD Player Can
	MEMORY	7.5A	Front A/C Control Module, Rear A/C Control Module, Instrument Cluster (IND.), RF Receiver, FAM, RAM, Driver Door Module, Assistant Door Module, Tilt & Telescopic Module, IMS Control Module
	IG2-1	7.5A	Front A/C Control Module, Incar Temperature Sensor, PDM, Multifunction Switch (Wiper/Washer), Driver/Passenger Seat Warmer Module, Driver/Passenger Seat Warmer Module, Front Blower Relay, Electro Chromic Mirror, Rear Blower Relay, AC Inverter Switch, Trailer Relay, C/FAN HI/LOW Relay
	IG2-2	7.5A	Rear A/C Control Module, Driver Door Module, FAM, Assistant Door Module, IMS Control Module, Tilt & Telescopic Module
	OBD-II	7.5A	Start Stop Button Switch, Data Link Connector, PDM, Multipurpose Check Connector, Smart Key Control Module, Fob Holder
	ROOM	7.5A	Electronic Chrome Mirror, Map Lamp, Vanity Lamp Switch LH/RH, Front/Rear A/C Control Module, Center Room Lamp, Rear Room Lamp
	KEY LOCK	7.5A	Sport Mode Switch, Ignition Lock Switch
	ILLUMI	7.5A	IPM
	RR S/WARMER	20A	Rear Seat Warmer Relay
	FRT S/WARMER	20A	Driver Seat Warmer Module, Passenger Seat Warmer Module
	SUNROOF	25A	Sunroof Module
	TPMS	7.5A	Tire Pressure Monitoring Module
	PEDAL	15A	Adjustable Pedal Relay
	F/PWR OUTLET	15A	Front Power Outlet
	S/TILT & TELE	20A	Tilt & Telescopic Module
	PASS P/SEAT	20A	Passenger Power Seat Switch
	DRIVER P/SEAT	30A	Driver Power Seat Switch, Lumbar Support Switch, IMS Control Module
			Audio, Front A/C Control Module, Rear monitor,

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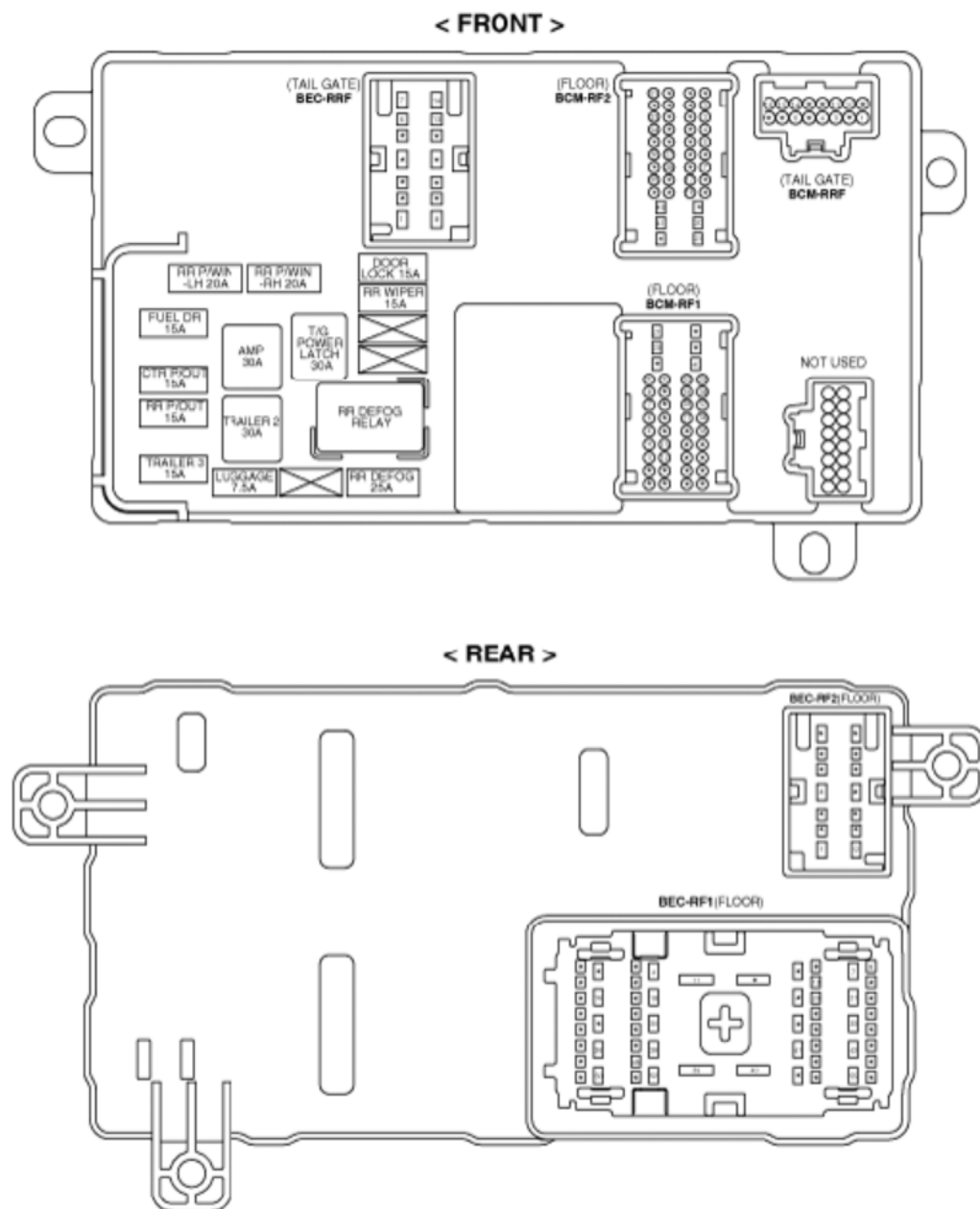
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	ACC	7.5A	RSE Control Box, Smart Key Control Module, DVD Player Can
	START	7.5A	Burglar Alarm Relay, Start Relay
	AIRBAG IND	7.5A	Instrument Cluster (Air Bag IND.)
	ABS	7.5A	ABS Control Module, ESC Control Module, DBC Relay, Steering Angle Sensor, Crash Pad Switch LH, Smart Key Control Module, Rear Parking Assist Control Module
	IGN 1	7.5A	Rheostat, Instrument Cluster (MICOM), Multifunction Switch (Cruise Remocon), Generator, Rear Parking Assist Buzzer, Rear Parking Assist Switch, Audio, PODS Module, Tire Pressure Monitoring Module
	ENG	7.5A	Multipurpose Check Connector, ECM, TCM, Front Wiper Motor, 4WD ECM, Stop Lamp Switch, Free Running Differential Air Pump, Generator (G8BA)
	AIRBAG	15A	Front Wiper ON Relay, Front Wiper HI/LO Relay
FUSIBLE LINK	DDM	30A	Start Relay #1, Ignition Switch, PDM Relay Box (1G2 Relay)
	ADM	30A	AC Inverter Module

RAM (Rear Area Module)

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※ **USE THE DESIGNATED FUSE ONLY**

Fig. 13: Identifying Rear Area Module

Courtesy of KIA MOTORS AMERICA, INC.

For fuse locations within the Rear Area Module (RAM) fuse box, refer to **Fig. 13**.

NOTE: Use designated fuses only.

IDENTIFYING FUSIBLE LINKS & FUSES (PASSENGER COMPARTMENT)

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DESCRIPTION		FUSE (A)	CIRCUIT PROTECTED
FUSE	RR DEFOG	25A	RR Defog Relay, Rear Defogger (+)
	RR WIPER	15A	Rear Wiper Motor Relay (+), Rear Wiper Motor
	DOOR LOCK	15A	Rear Door Lock Actuator LH/RH, Rear Door Lock/Unlock Relay
	CTR P/OUT	15A	Console Power Outlet
	RR P/OUT	15A	Rear Power Outlet
	FUEL DR	15A	Fuel Door Relay, Fuel Filler Door Actuator
	TRAILER 3	15A	Tail Lamp Converter (Back up)
	RR P/WIN-LH	20A	Rear Power Window Relay LH (UP/DN), Rear Power Window Motor LH
	RR P/WIN-RH	20A	Rear Power Window Relay RH (UP/DN), Rear Power Window Motor RH
FUSIBLE LINK	LUGGAGE	7.5A	Luggage Lamp
	T/G POWER LATCH	30A	Tail Gate Control Module
	AMP	30A	AMP
	TRAILER 2	30A	Tail Lamp Converter (Tail)

REPAIR PROCEDURES**Inspection****Fuse**

1. Be sure there is no play in the fuse holders, and that the fuses are held securely.
2. Are the fuse capacities for each circuit correct?
3. Are there any blown fuses?

If a fuse is to be replaced, be sure to use a new fuse of the same capacity. Always determine why the fuse blew first and completely eliminate the problem before installing a new fuse.

Relay (Rear Defogger)

1. Be sure that the relay (A) are held the each module securely.
2. Are the relay types for each circuit correct?



Fig. 14: Identifying Relay

Courtesy of KIA MOTORS AMERICA, INC.

3. If system of some relay is not operate accurately, replace with a new one and check the system.

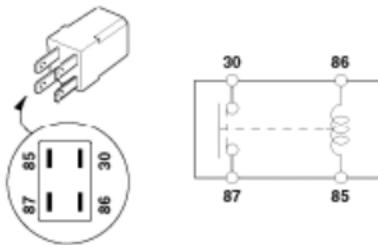


Fig. 15: Relay Circuit Diagram

Courtesy of KIA MOTORS AMERICA, INC.

Terminal	30	87	85	86
Power				
Disconnected			○ — ○	
Connected	○ — ○		○ — ⊕	

Fig. 16: Relay Continuity Chart

Courtesy of KIA MOTORS AMERICA, INC.

RAM (Rear Area Module)

1. Disconnect the negative (-) battery Terminal.
2. Remove the rear left luggage side trim. (Refer to **INTERIOR**)
3. Remove the woofer after disconnecting the connector (A) and loosening the mounting nuts (4EA).

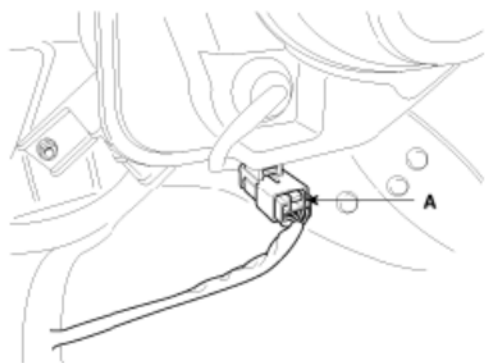


Fig. 17: Identifying Woofer Connector

Courtesy of KIA MOTORS AMERICA, INC.

4. Remove the RAM (A) after disconnecting the connectors (4EA) and loosening the mounting bolts (3EA).



Fig. 18: Identifying Rear Area Module

Courtesy of KIA MOTORS AMERICA, INC.

5. Disconnect the back side connector (A) of RAM.



Fig. 19: Identifying RAM Back Side Connector

Courtesy of KIA MOTORS AMERICA, INC.

6. Installation is the reverse of removal procedures.

Replacement**IPM (Instrument Panel Module)**

1. Disconnect the negative (-) battery terminal.
2. Remove the crash pad lower panel (A). (Refer to **CRASH PAD**).

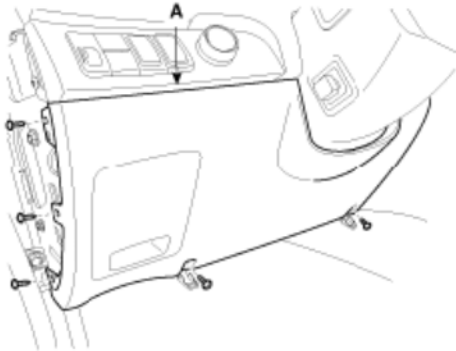


Fig. 20: Identifying Crash Pad Lower Panel
Courtesy of KIA MOTORS AMERICA, INC.

3. Disconnect the IPM connectors (A) and the receiver antenna cable.

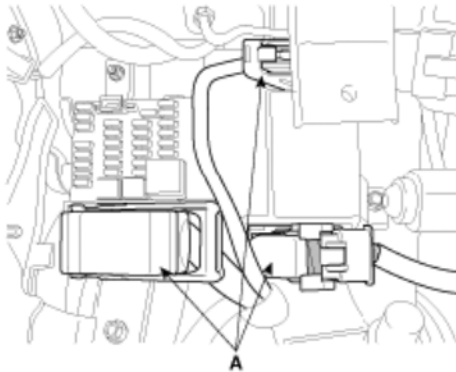


Fig. 21: Identifying IPM Connectors
Courtesy of KIA MOTORS AMERICA, INC.

4. Remove IPM mounting nuts (3EA) and IPM (A).



Fig. 22: Identifying IPM & Mounting Nuts
Courtesy of KIA MOTORS AMERICA, INC.

5. Disconnect the back side connector of IPM.
6. Installation is the reverse of removal procedures.