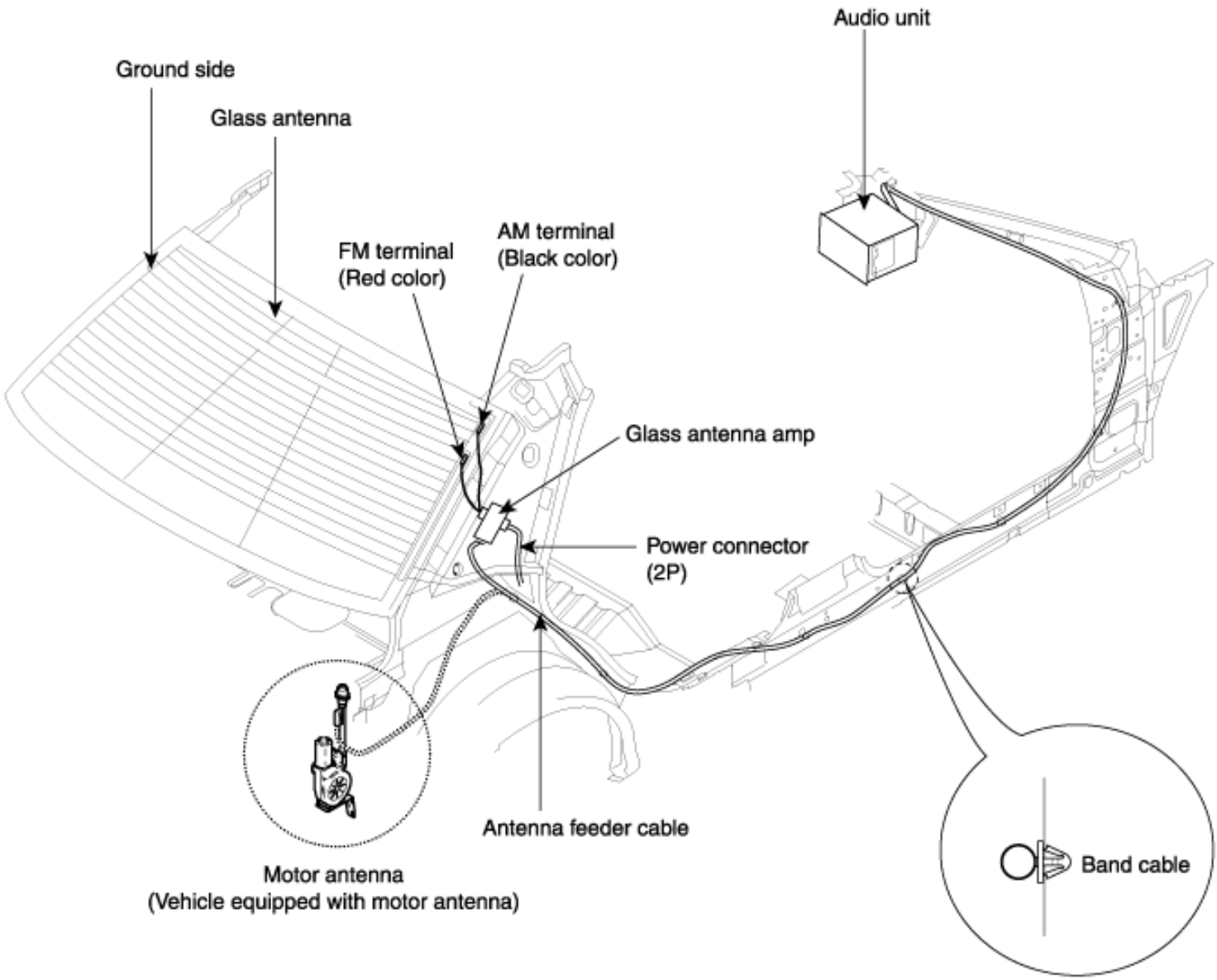
HYUNDAI

Elantra

Workshop Manual
2001 - 2006

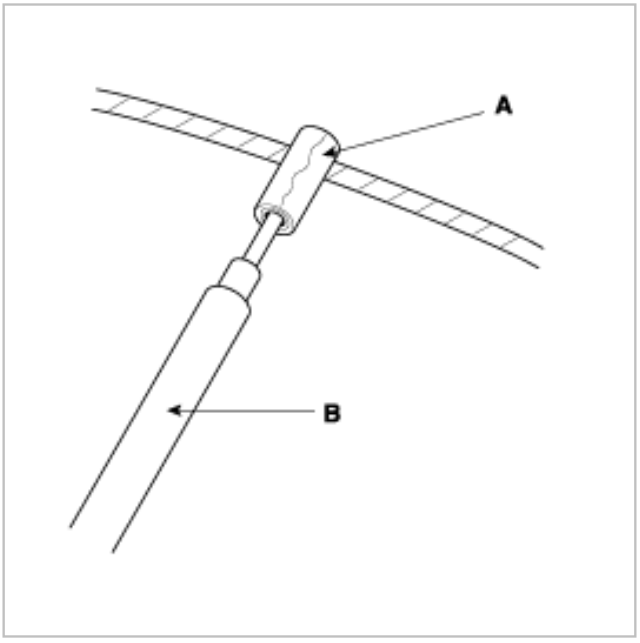
COMPONENTS


Audio unit
Ground side
Glass antenna
FM terminal
(Red color)
AM terminal
(Black color)
Glass antenna amp
Power connector
(2P)
Antenna feeder cable
Band cable
Motor antenna
(Vehicle equipped with motor antenna)

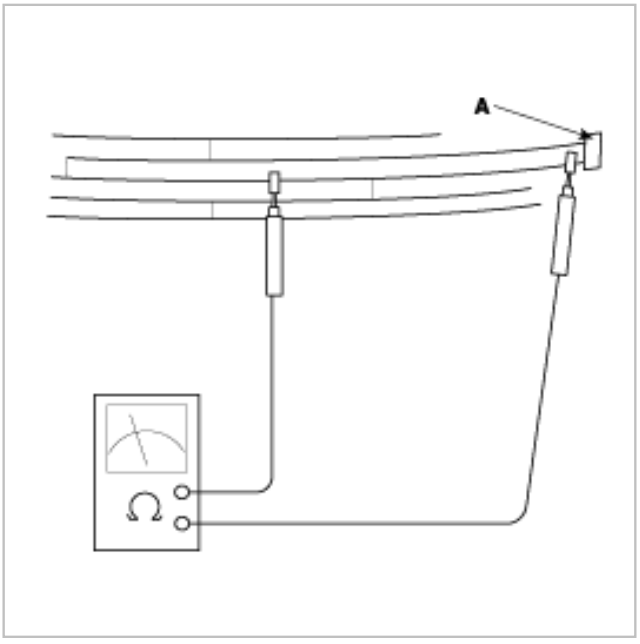
INSPECTION

GLASS ANTENNA TEST

1. Wrap aluminum foil (A) around the tip of the tester probe (B) as shown.



2. Touch one tester probe to the glass antenna terminal (A) and move the other tester probe along the antenna wires to check that continuity exists.

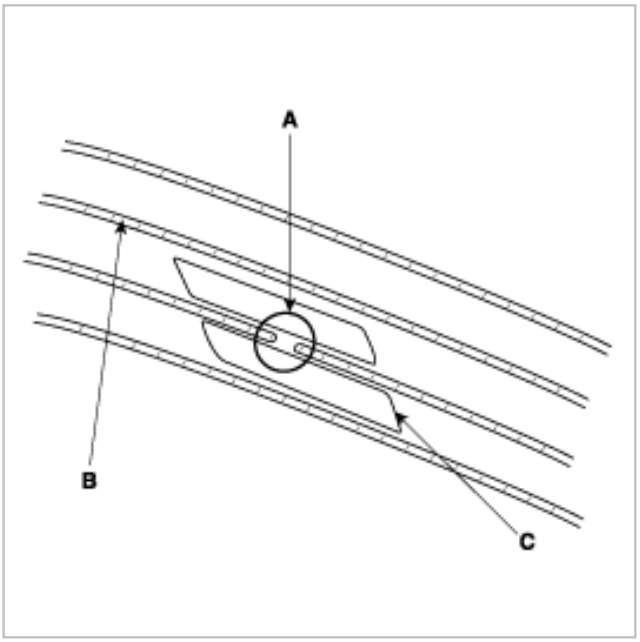


GLASS ANTENNA REPAIR

NOTE

To make an effective repair, the broken section must be no longer than one inch.

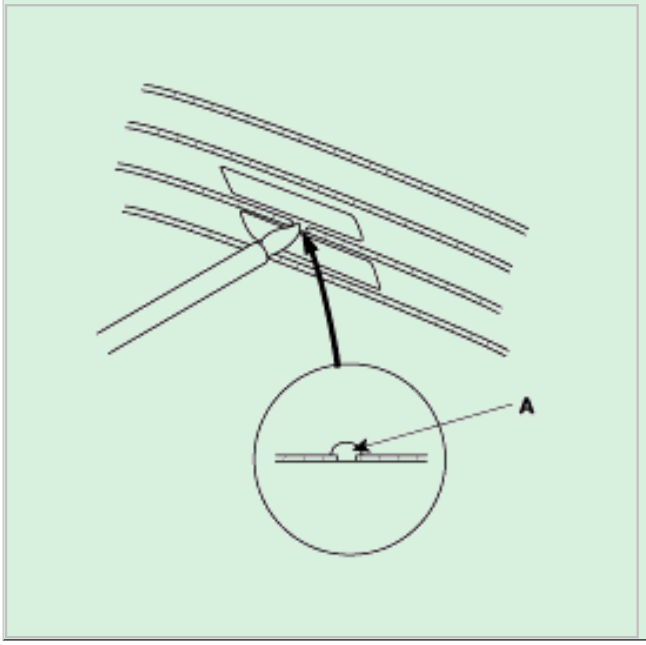
1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.



2. Carefully mask above and below the broken portion of the glass antenna wire (B) with cellophane tape (C).
3. Using a small brush, apply a heavy coat of silver conductive paint (A) extending about 1/8″on both sides of the break. Allow 30 minutes to dry.

NOTE

Thoroughly mix the paint before use.

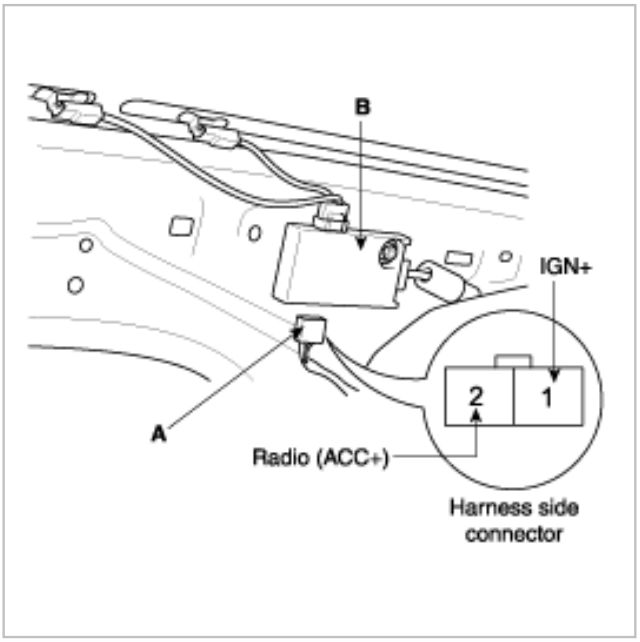


4. Check for continuity in the repaired wire.
5. Apply a second coat of paint in the same way. Let it dry three hours before removing the tape.

GLASS ANTENNA CIRCUIT INSPECTION

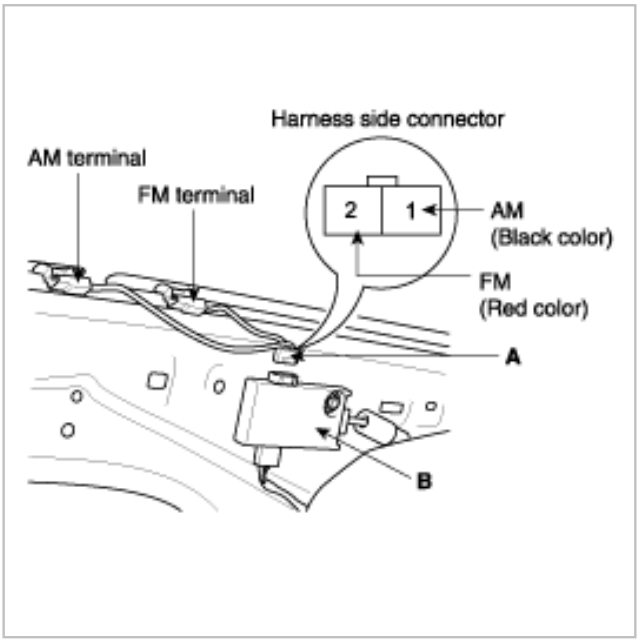
1. Remove the right side rear pillar trim, then disconnect the 2P power connector (A) from the glass antenna amp (B).

2. Turn the radio ON.
   Measure the voltage between terminal 2 of the harness side power connector (A) and body ground.



OK : approximately 12V (ACC+)

3. Disconnect the 2P connector (A) from the glass antenna amp (B).
4. Check for continuity between terminals of harness side connector (A) and antenna grid terminals (AM, FM).

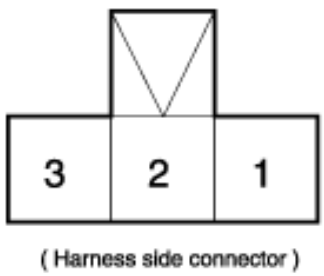


5. Check the grid lines that continuity exists. (see page BE-49).
6. If poor radio reception is not repaired through the above inspection methods, replace the amp.
   If the radio reception is still poor, check the radio cable for short and radio head unit for failure.

MOTOR ANTENNA INSPECTION

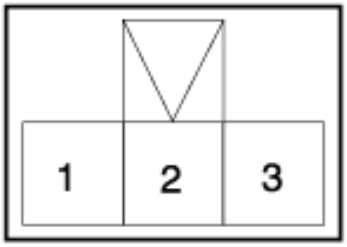
1. Disconnect the connector from the antenna assembly.
2. Check if the battery voltage is measured between terminal 1 and 3 of harness side at all time.

3. Check if the battery voltage is measured between terminal 2 and 3 of the harness side when the audio turned on.



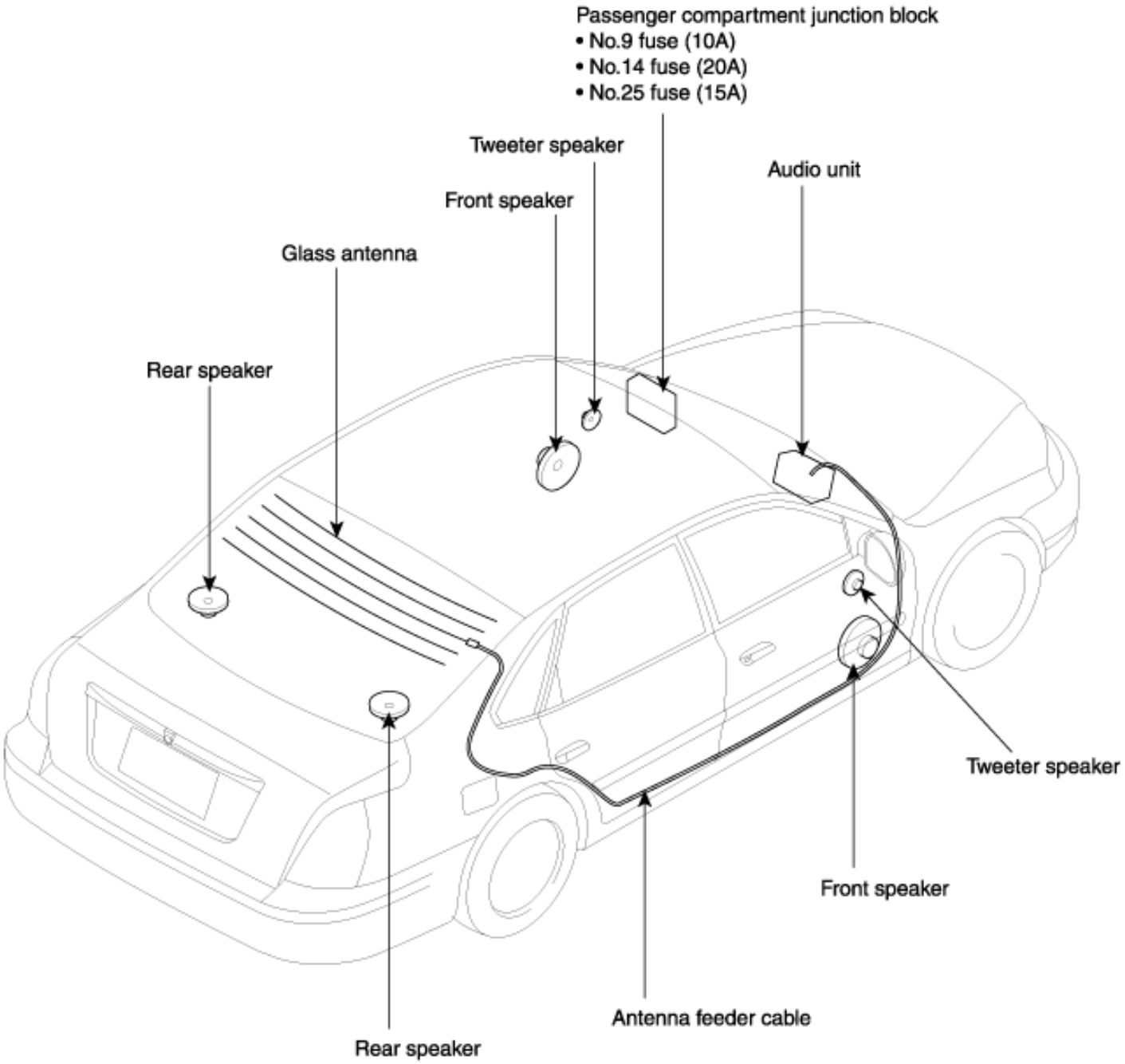
(Harness side connector)

4. After connecting battery source to terminal 1 and 2 of the component side and terminal 3 to ground check if the motor operates properly. (Antenna moves up)
5. Check if the motor operates (antenna moves down) when terminal 2 is disconnected from battery source.



(Component side connector)

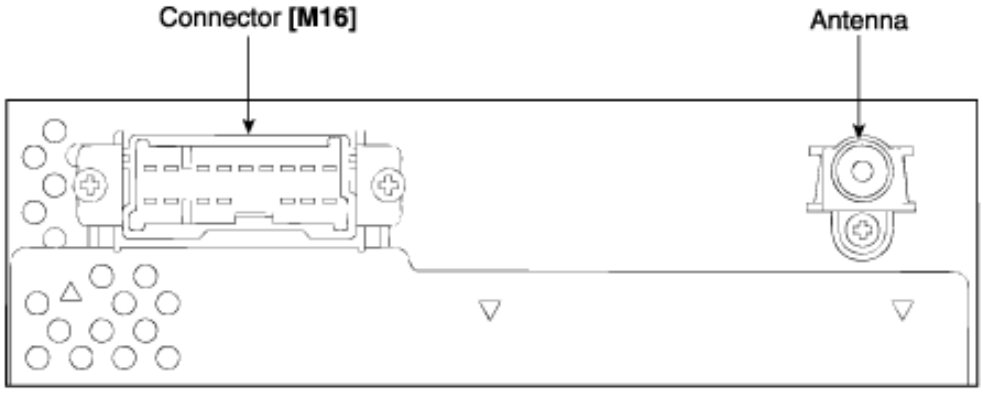
COMPONENTS


Passenger compartment junction block
• No.9 fuse (10A)
• No.14 fuse (20A)
• No.25 fuse (15A)
Tweeter speaker
Audio unit
Front speaker
Glass antenna
Rear speaker
Tweeter speaker
Front speaker
Antenna feeder cable
Rear speaker

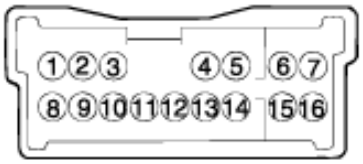
COMPONENTS

[H220]

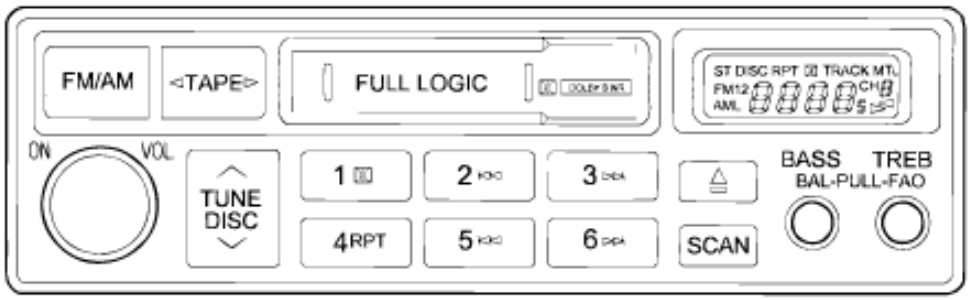
ETKA010A



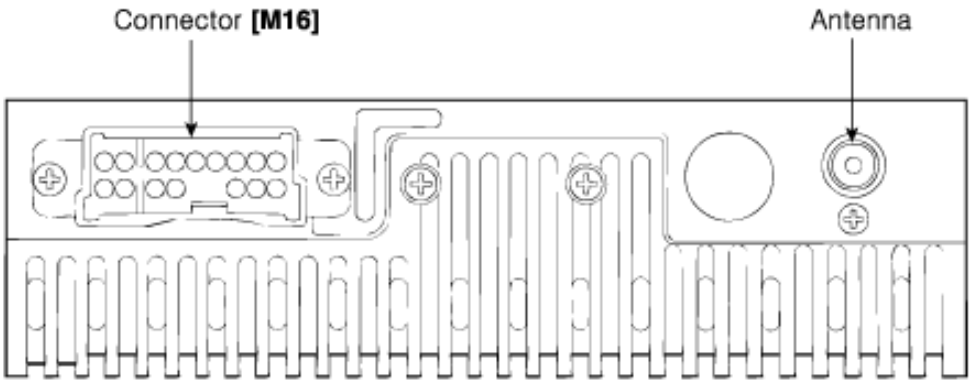
ETKA010B

Connector [M16]	Terminal	Description
 ETJA001C	1	Antenna
	2	Rear left speaker(-)
	3	Front left speaker(-)
	4	Front right speaker(-)
	5	Rear right speaker(-)
	6	Illumination(-)
	7	ACC(+)
	8	Ground
	9	Rear left speaker(+)
	10	Front left speaker(+)
	11	N.C.
	12	N.C.
	13	Front right speaker(+)
	14	Rear right speaker(+)
	15	Illumination(+)
	16	Battery(+)

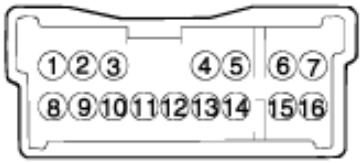
[H240]



ETJA001B

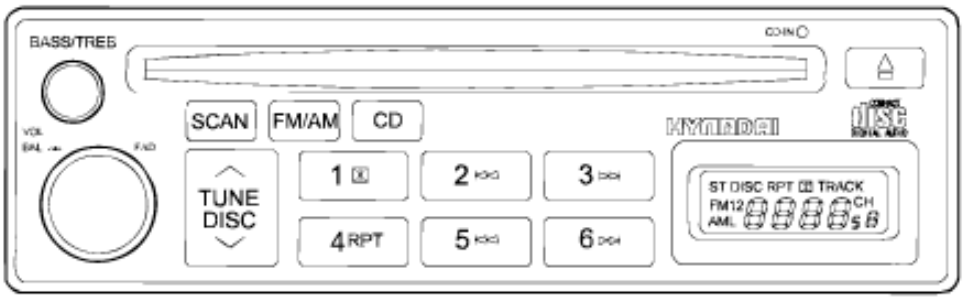


ETJA001A

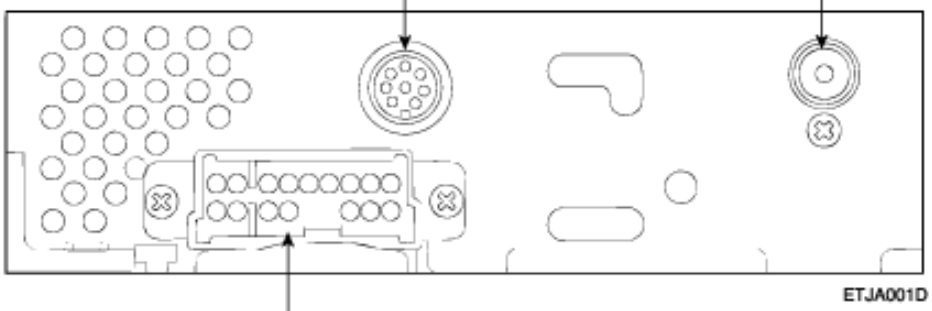
Connector [M16]	Terminal	Description
	1	Antenna
	2	Rear left speaker(-)
	3	Front left speaker(-)
	4	Front right speaker(-)
	5	Rear right speaker(-)
	6	Illumination(-)
	7	ACC(+)
	8	Ground
	9	Rear left speaker(+)
	10	Front left speaker(+)
	11	N.C.
	12	N.C.
	13	Front right speaker(+)
	14	Rear right speaker(+)
	15	Illumination(+)
	16	Battery(+)

ETJA001C

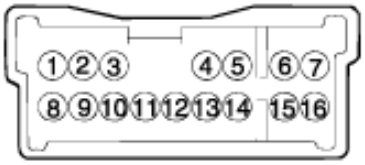
[H260]



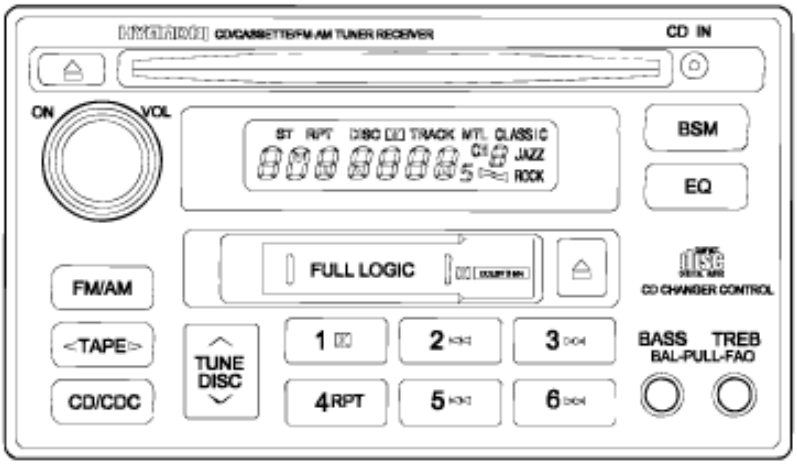
ETJA001E



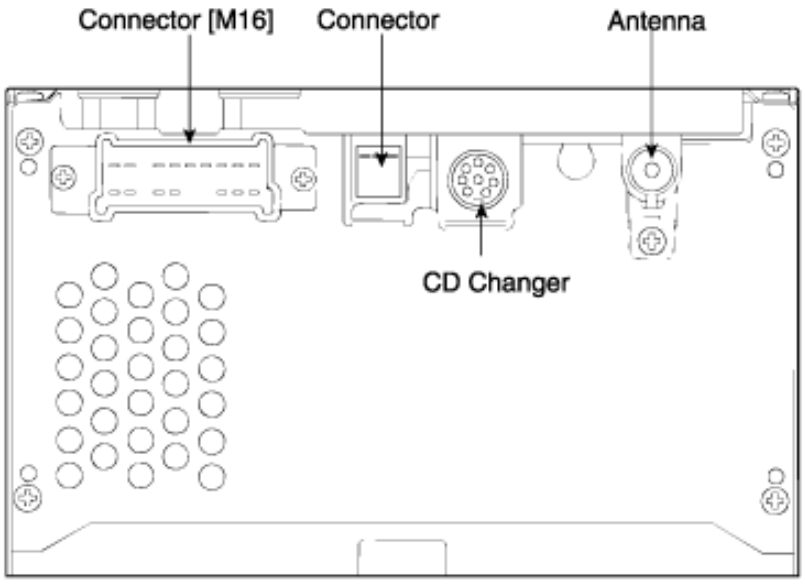
ETJA001D

Connector [M16]	Terminal	Description
 ETJA001C	1	N.C.
	2	Rear left speaker(-)
	3	Front left speaker(-)
	4	Front right speaker(-)
	5	Rear right speaker(-)
	6	Illumination(-)
	7	ACC(+)
	8	Ground
	9	Rear left speaker(+)
	10	Front left speaker(+)
	11	N.C.
	12	N.C.
	13	Front right speaker(+)
	14	Rear right speaker(+)
	15	Illumination(+)
	16	Battery(+)

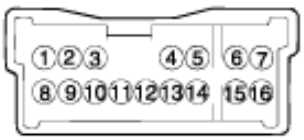
Connector	Terminal	Description
(CD Changer)  ETJA001G	1	R
	2	CD ON
	3	BUS
	4	B+
	5	M. Ground
	6	N.C.
	7	L
	8	A.Ground

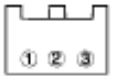


ETJA001I



ETJA001H

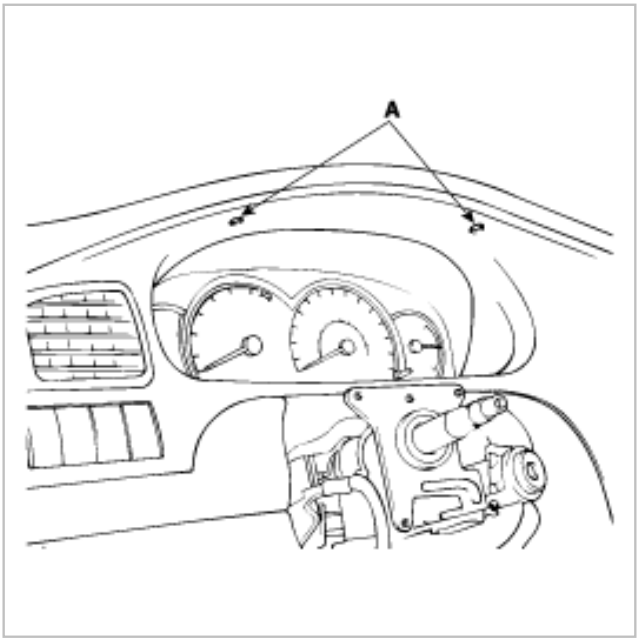
Connector[M16]	Terminal	Description
 ETJA001C	1	Antenna
	2	Rear left amp(-)
	3	Front left amp(-)
	4	Front right amp(-)
	5	Rear right amp(-)
	6	Illumination(-)
	7	ACC(+)
	8	Ground
	9	Rear left amp(+)
	10	Front left amp(+)
	11	N.C.
	12	Amp remote
	13	Front right amp(+)
	14	Rear right amp(+)
	15	Illumination(+)
	16	Battery(+)

Connector	Terminal	Description
 ETJA001K	1	Ground
	2	Signal
	3	Ground

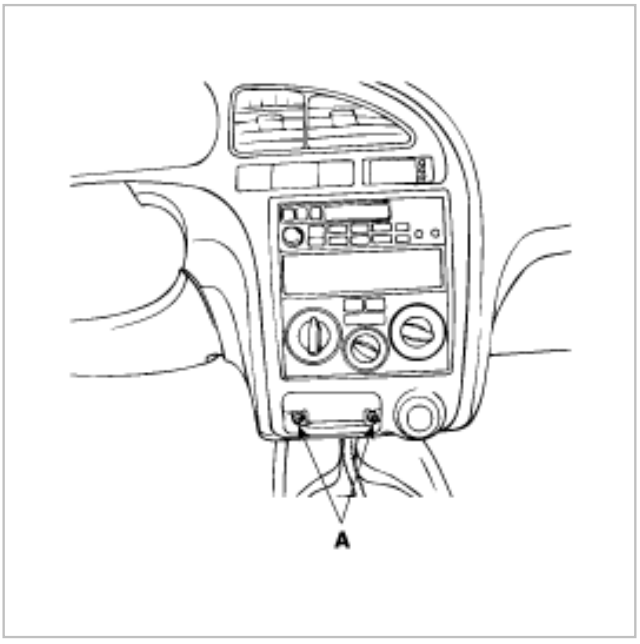
Connector	Terminal	Description
(CD Changer)  ETJA001G	1	R
	2	CD ON
	3	BUS
	4	B+
	5	M. Ground
	6	N.C.
	7	L
	8	A.Ground

REMOVAL

1. Disconnect the negative(-) battery terminal.
2. Remove the 2 screws(A) holding the instrument facia panel.

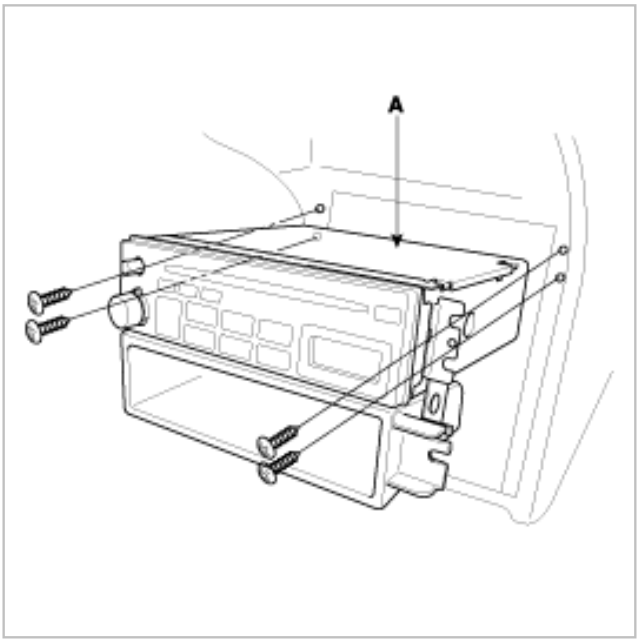


3. Open the ashtray then remove the ashtray assembly after pushing the plate down.
4. Remove the 2 screws(A) after removing the ashtray.



5. Disconnect the connectors from the instrument facia panel.

6. Remove the audio unit(A) after removing 4 screws.



7. Installation is the reverse of removal.

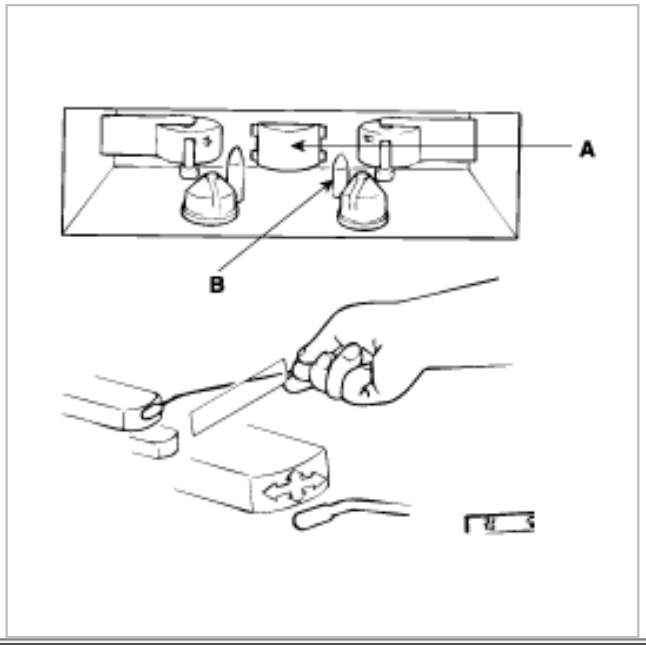
CD AUTO CHANGER

1. Disconnect the negative(-) battery terminal.
2. Remove the CD auto changer from the left side of trunk room, after removing 4 bolts.
3. Installation is the reverse of removal.

INSPECTION

TAPE HEAD AND CAPSTAN CLEANING

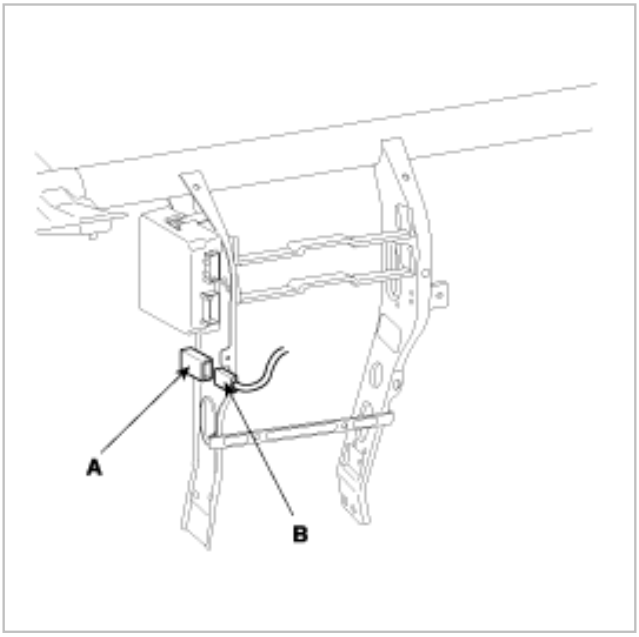
1. To obtain optimum performance, clean the head(A), and capstan(B) as often as necessary, depending on frequency of use and tape cleanliness.
2. To clean the tape head and capstan, use a cotton swab dipped in ordinary rubbing alcohol. Wipe the head(A) and capstan(B).



INSPECTION

AUTO LIGHT UNIT

1. Remove the auto light unit (A) from the center support bracket left side.



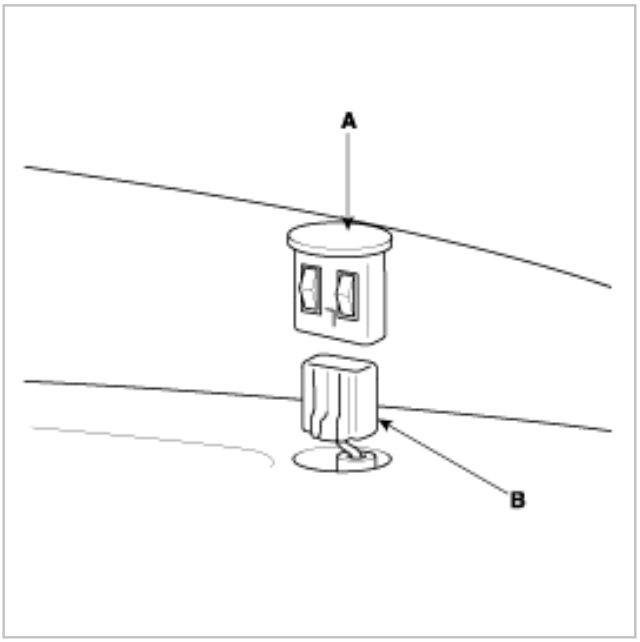
2. Disconnect the 8P connector (B) from the auto light unit then inspect the connector on the wire harness side, as shown in the chart.

Tester connection	Condition	Specified condition
2-Ground	Constant	5V
	Tail lamp switch ON	0V
3-Ground	Ignition switch ON	12V
4-Ground	Sensor power	5V
5-Ground	Auto light switch ON	Continuity
6-Ground	Ignition switch ON	12V
8-Ground	Constant	Continuity

3. If the circuit is not as specified, inspect the circuits connected to other parts.

PHOTO & AUTO LIGHT SENSOR

1. Remove the photo & auto light sensor (A) from the right side crash pad upper.



2. After ignition switch ON, measure the voltage between terminal No.2 of the photo & auto light sensor harness side connector (B) and body ground.

OK : Sensor power (+5V)

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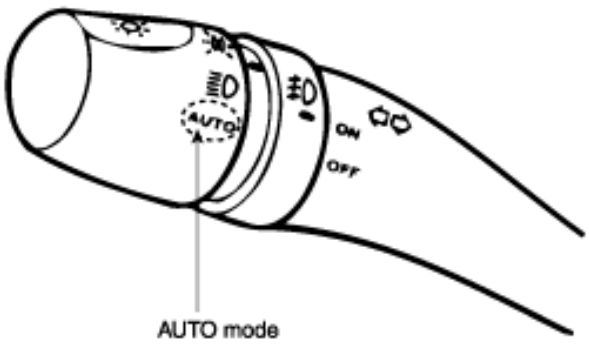
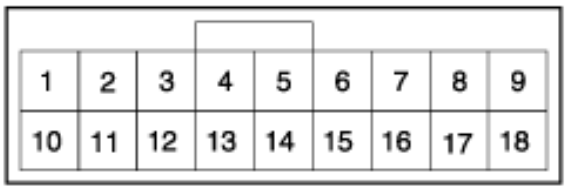
3. Check for continuity between terminal No.1 of the photo & auto light sensor harness side connector (B) and body ground.
4. If the circuit is not as specified, inspect the circuits connected to other parts.

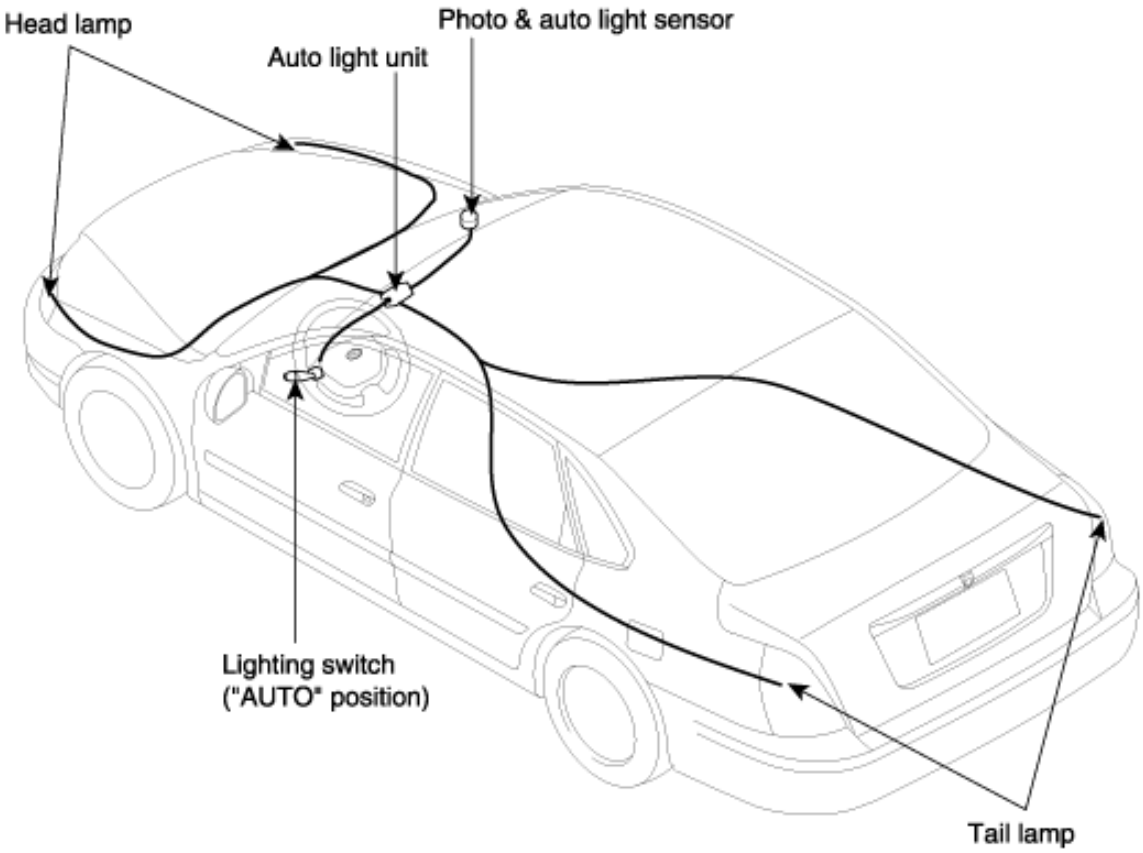
INSPECTION





Terminal / Position	14	15	16	17
OFF				
I	○			○
II	○	○	○	○
AUTO			○	○

COMPONENTS


Head lamp
Photo & auto light sensor
Auto light unit
Lighting switch
("AUTO" position)
Tail lamp

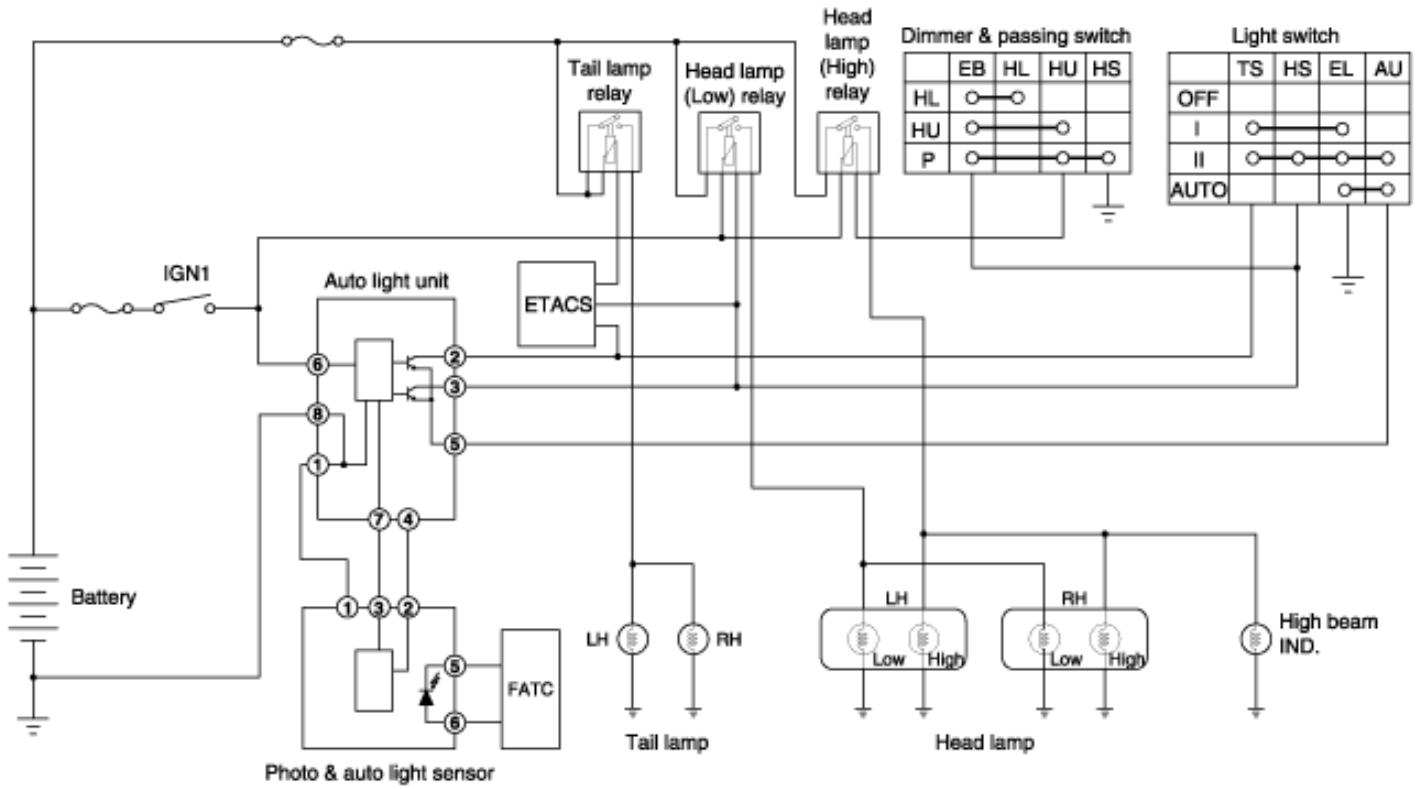
DESCRIPTION

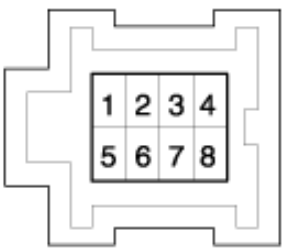
The auto light control system operates by using the auto light switch.
If you set the multi-function switch to "AUTO" position, the tail lamp and head lamp will be turned automatically on or off according to external illumination.

SPECIFICATIONS

Items	Specifications
Rated voltage	12V
Load	Max. 200mA (Relay load)
Detection illuminations Tail lamp Head lamp	ON : 24 ± 5.2 (Lux) OFF : 48 ± 10.5 (Lux) ON : 6 ± 1.4 (Lux) OFF : 12 ± 2.7 (Lux)

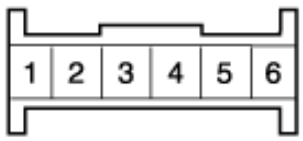
CIRCUIT DIAGRAM





[Auto light unit side connector]

1. Sensor ground
2. Tail lamp relay
3. Head lamp relay
4. Sensor power
5. Auto light switch
6. IGN 1
7. Signal input
8. Ground

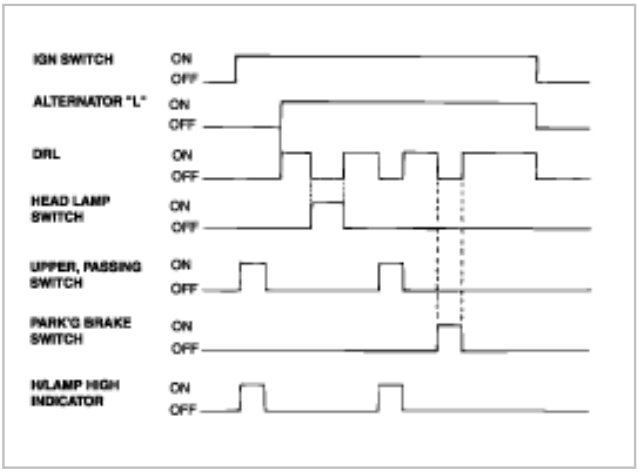


[Photo & auto light sensor side connector]

1. Sensor ground
2. Sensor power
3. Signal
4. Photo (+)
5. Photo (-)

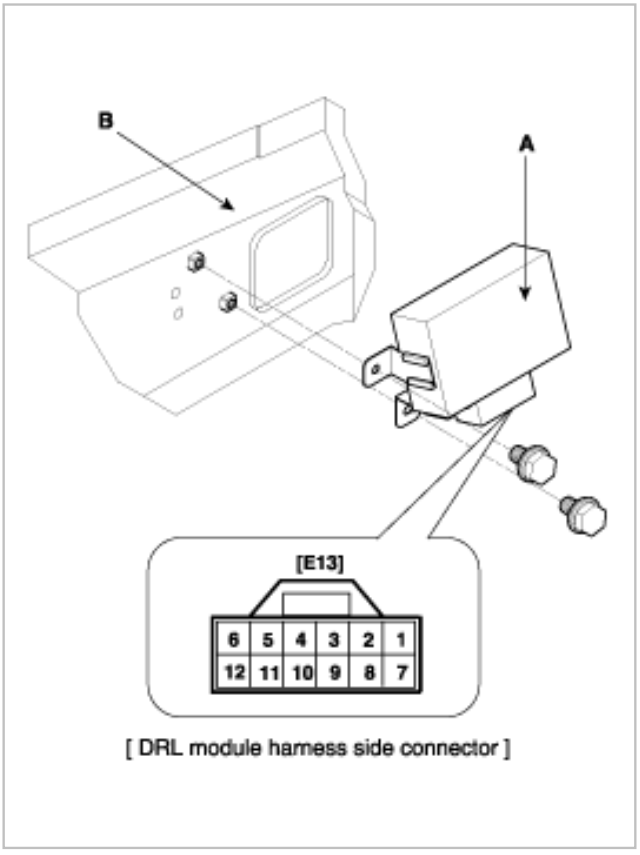
INSPECTION

OPERATION CHECK



INSPECT CIRCUITS FOR DAYTIME RUNNING LIGHT SYSTEM

1. Disconnect the wire connector to DRL module(A) from the right side fender inner panel (B).
2. Inspect the connector on wire harness side as shown.



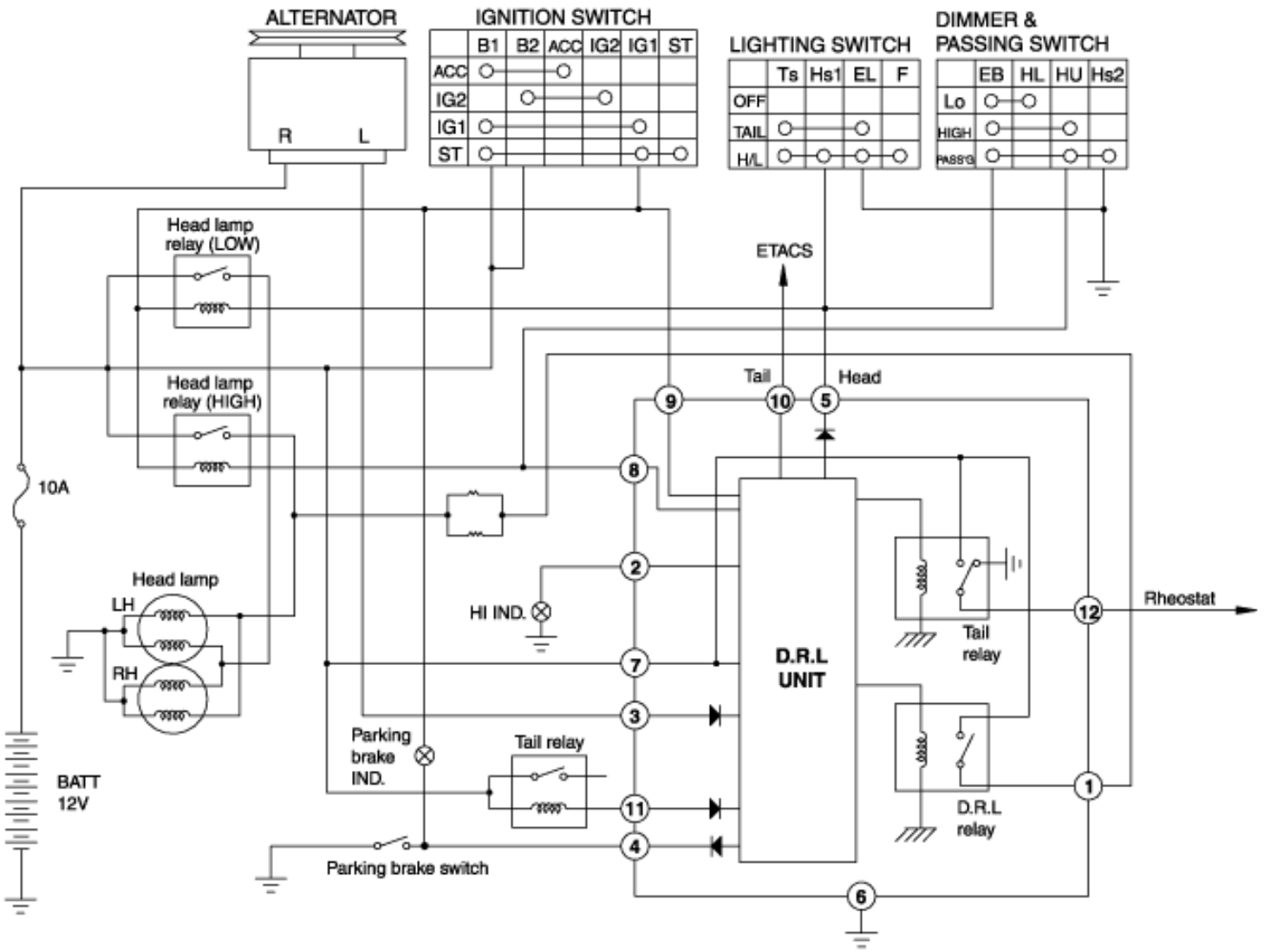
[DRL module harness side connector]

Tester connection	Condition	Specified condition
1-Ground	Constant	Continuity

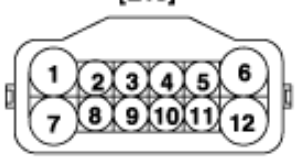
5-Ground	Head lamp switch OFF	No continuity
	Head lamp switch ON	Continuity
6-Ground	Constant	Continuity
7-Ground	Constant	Battery voltage
9-Ground	Ignition switch ON or START	Battery voltage
	Ignition switch ACC or LOCK	No voltage
11-Ground	Constant	Battery voltage
3-Ground	Engine Stop	No voltage
	Engine Running	Battery voltage
4-Ground	Parking brake switch ON	Continuity
	Parking brake switch OFF	No continuity

If circuit is not as specified, refer to schematic diagram and inspect short or circuits.

CIRCUIT DIAGRAM

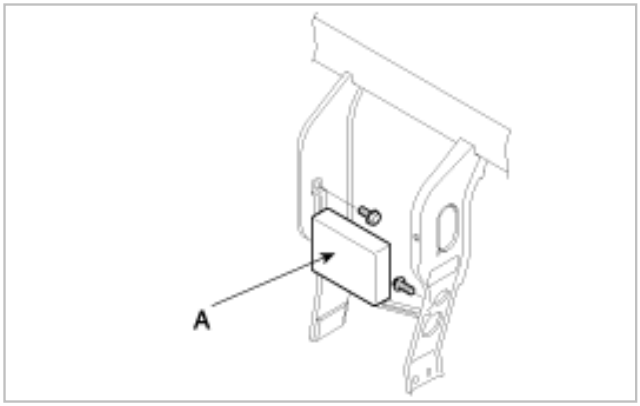


[E13]



DESCRIPTION

ETACS module(A) receives various input switch signals, and controls time and alarm such as intermittent wiper timer, washer timer, rear defogger timer, seat belts warning, decayed out room lamp, central door lock, ignition key reminder, power window timer, door warning, tail lamp auto cut, crash door unlock, ignition key hole illumination, panic alarm and keyless entry & burglar alarm automatically.

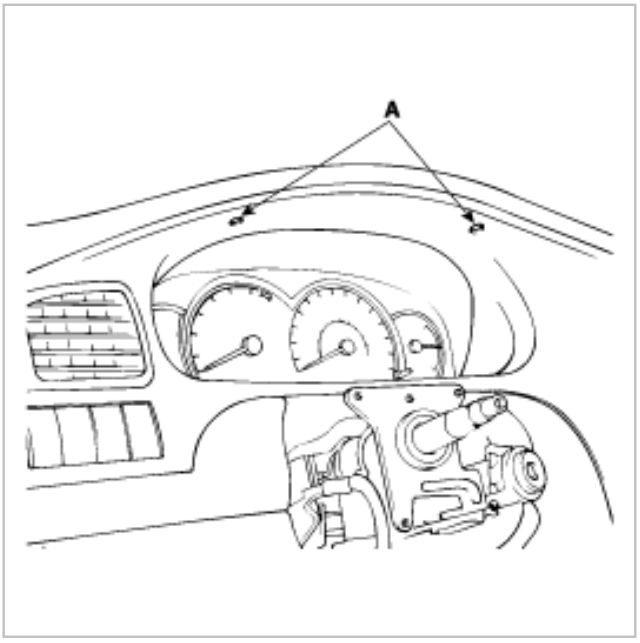


SPECIFICATIONS

Items	Specifications
Rated voltage	DC 12V
Operating voltage	DC 9 ~ 16V
Operating temperature	-30°C ~ 80°C
Insulation resistance	100MΩ or more
Rated load	DC 12V, 260mA (Inductance load)
Siren	DC 12V, 350mA (Inductance load)
Chime bell	DC 12V, 200mA (Inductance load)
Rear defogger relay	DC 12V, 200mA (Inductance load)
Hazard lamp relay	DC 12V, 200mA (Inductance load)
Tail lamp relay	DC 12V, 1.4W (Lamp load)
Seat belt warning indicator	DC 12V, 21W (Lamp load)
Room lamp	DC 12V, 200mA (Inductance load)
Power window relay	DC 12V, 200mA (Inductance load)
Intermittent wiper relay	DC 12V, 5W (Lamp load)
Trunk lamp	DC 12V, 1.4W (Lamp load)
Key hole illumination lamp	

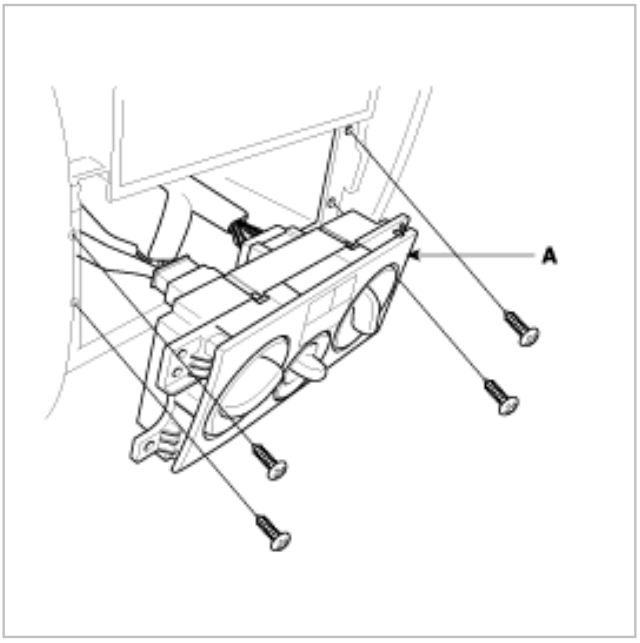
REMOVAL

1. Disconnect the negative (-) battery terminal.
2. Remove the 2 screws(A) holding the instrument facia panel.

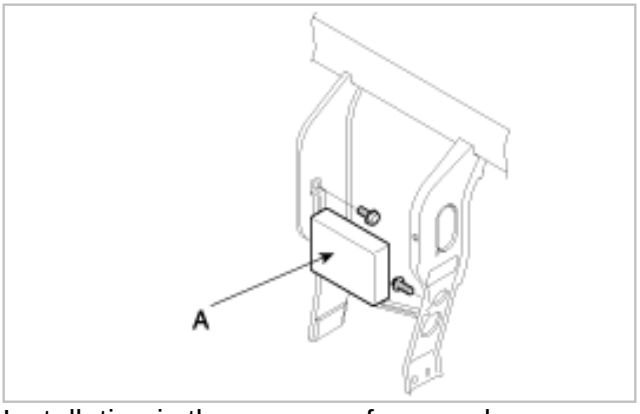


3. Remove the ash tray then remove the 2 screws(A) holding the instrument facia panel.

4. Remove the instrument facia panel.
   Remove the air conditioner switch panel(A) after removing 4 screws.



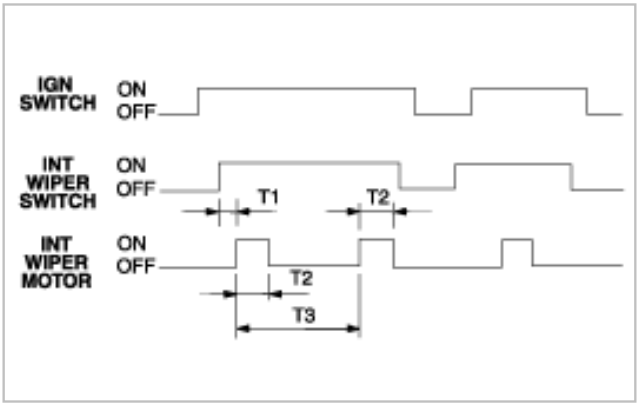
5. Remove the ETACS module (A) after removing 2 bolts.



6. Installation is the reverse of removal.

INSPECTION

1. VARIABLE INTERMITTENT WIPER



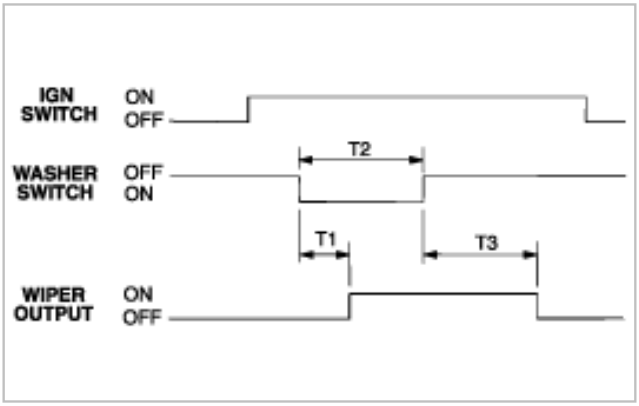
Time specification

T1 : Max. 0.3sec.

T2 : 0.6~0.8 sec. (Time of wiper motor 1 rotation)

T3 : 2.2±0.2 sec. (VR=0kΩ)~10.0±1 sec. (VR=50kΩ)

2. WASHER



A. Time specification
   T1 : 0.3 sec.
   T2 : 0.2 sec. or more
   T3 : 2.5~3.8 sec.

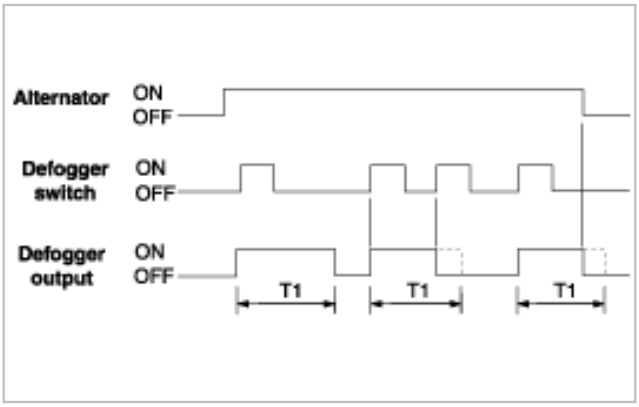
B. Time specification
   T1 : 0.3 sec.
   T2 : 0.2 sec. or less
   T3 : 0 sec.

C. This function should be operated preferentially even though the variable intermittent wiper is operating.

3. DEFOGGER TIMER (Including Outside Mirror Demister)

(1) After ALT "L" ON, if the defogger is switched ON, the defogger output is ON for 20 minutes duration.

(2) If the defogger switch is pressed again, or if the ignition is switched OFF during this time, the defogger output is OFF.



T1 : 20 ± 1min.

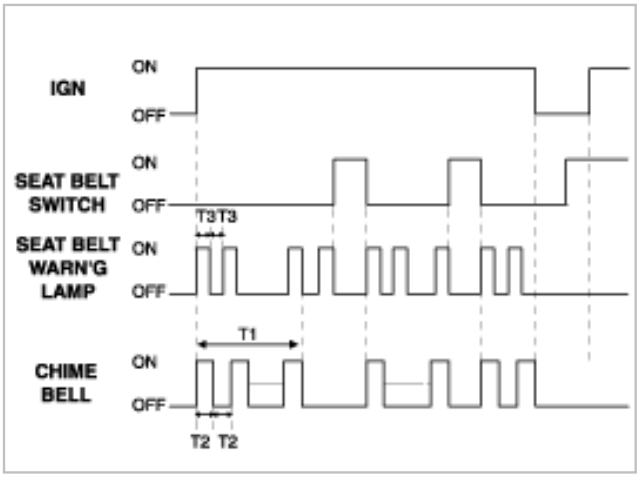
4. SEAT BELT WARNING TIMER

(1) Since the ignition is switched ON, the seat belt warning indicator is illuminated (with period : 0.6 sec., duty rate : 50%) until the seat belt switch is ON and the chime bell is sounded (with period : 0.9 sec., duty rate : 50%) for 6 seconds.

(2) If the ignition is swithced off during the indicator and the chime bell output, the indicator and the chime bell are switched OFF.

If the seat belt is sensed as fastened during the indicator and the chime bell output, the chime bell and seat belt warning indicator are switched OFF immediately.

(3) When the ignition is already switched ON, if the seat belt is removed, the warning indicator is illuminated until the seat belt is fastened and the chime bell is output for 6 seconds.



T1 : 6±1 sec., T2 : 0.45 ± 0.1 sec., T3 : 0.3 ± 0.1 sec.

5. DECAYED ROOM LAMP & KEYLESS UNLOCK TIMER

(1) When the first door (driver's or assist) is opened, the room lamp shall brighten. When the last door is closed, the room lamp will drop to 75% intensity, then fade out over 5-6 seconds.

(2) If the door switch is ON for less than 0.1 sec., then no illumination occurs.

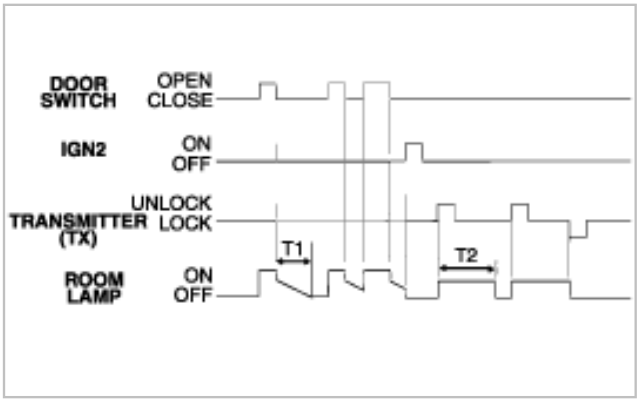
(3) The fade resolution is over 32 steps.

(4) The room lamp must not flicker during fade operation, if the ignition is switched ON.

(5) With keyless UNLOCK, when the door is closed, the room lamp is turned ON, then OFF after about 30 seconds. While the room lamp is ON due to keyless UNLOCK, if another UNLOCK is received, the room lamp is again ON for 30 seconds.

While the room lamp is ON, If the door is opened, the lamp is continued to ON. If the door is closed, the lamp follows as the above step 1.

If keyless LOCK (ARM state) is received during fade out, the room lamp is switched off immediately.



T1 : 5.5 ± 0.5 sec., T2 : 30 ± 3 sec.

6. CENTRAL DOOR LOCK/UNLOCK

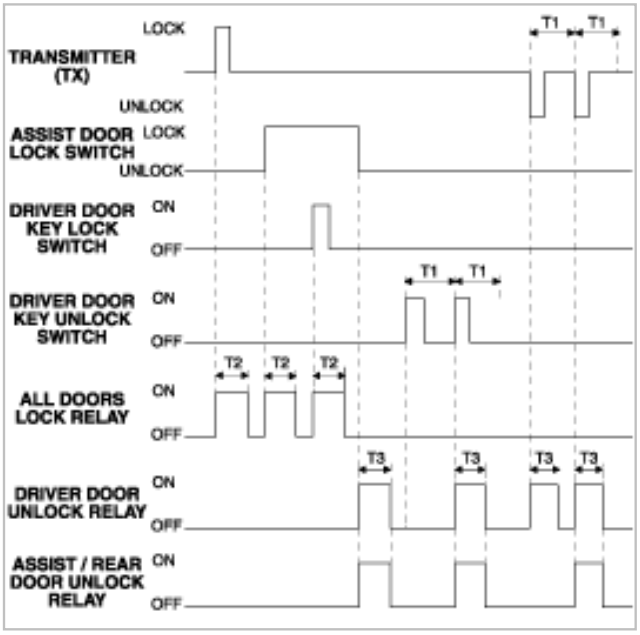
(1) If the assist door is switched LOCK to UNLOCK or UNLOCK to LOCK, the all doors' lock and unlock outputs will follow.

(2) If the driver's door key lock switch is OFF to ON, the all doors' lock output is ON for 0.5 second.

(3) If the transmitter's lock signal is received, the all doors' lock output is ON for 0.5 second.

(4) If the driver's door key unlock switch is OFF to ON, the driver's door unlock output is ON and then if the driver's door key unlock switch is ON within 4 seconds, the all doors' unlock output is ON for 0.5 second.

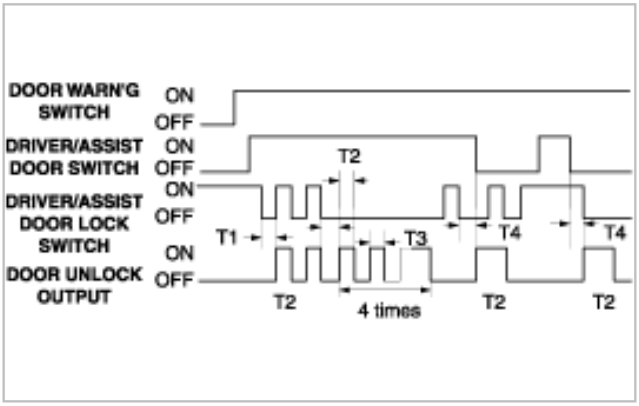
(5) If the transmitter's unlock signal is received, the driver's door unlock output is ON and then if the transmitter's another unlock signal is received, within 4 seconds, the all doors' unlock output is ON for 0.5 second.



T1 : within 4 ± 1 sec.

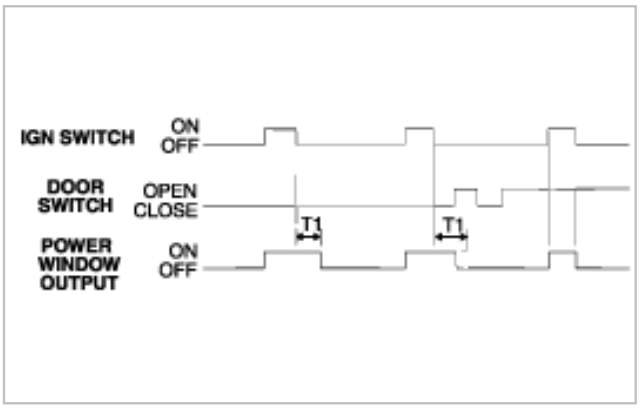
T2 : 0.5 ± 0.1 sec

7. IGNITION KEY REMINDER



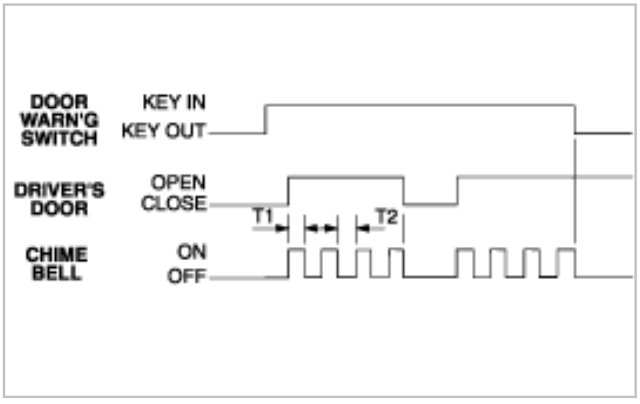
T1,T3 : 0.5 sec., T2 : 1 sec., T4 : Max.0.5 sec.

8. POWER WINDOW TIMER
   (1) When the ignition is switched ON, the power window relay output is turned ON.
   (2) When the ignition is switched OFF, the power window output is maintained ON for 30 seconds and then turned OFF.
   (3) With the state of step 2, if the driver's door or assist door is opened, the output shall be turned OFF immediately.



   T1 : 30 ± 3 sec.

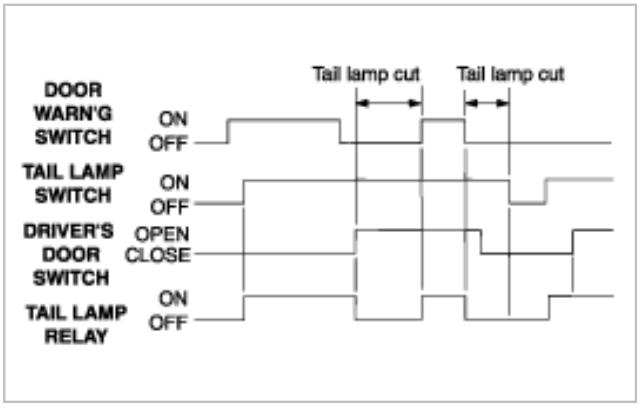
9. DOOR OPEN WARNING
   (1) If the key is in the ignition key cylinder and the driver's door is opened, the chime bell sounds continually (period:0.9 sec. Duty rate:50%).
   (2) If the door is closed or the key is removed, the chime stops immediately.



   T1,T2 : 0.45 ± 0.1 sec.

10. TAIL LAMP AUTO CUT
   (1) When the tail lamp is switched ON, if the ignition is switched OFF and the driver's door is opened, the tail lamp should be automatically OFF.
   (2) With the ignition switched ON, if the driver's door is opened and the ignition is switched OFF, the tail lamp should be automatically OFF.

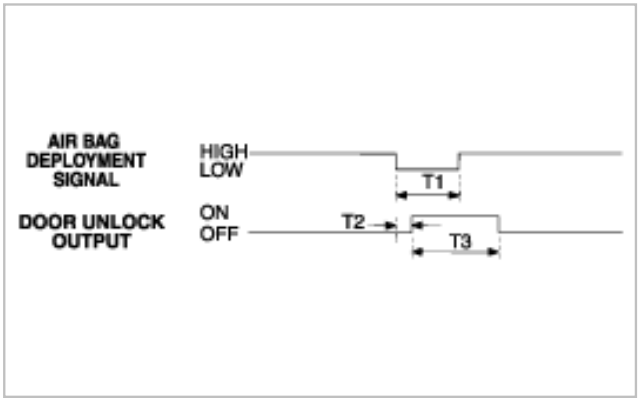
(3) When the tail lamp is cut automatically, if the tail lamp switch is turned OFF and ON, the tail lamp is illuminated and auto cut function is cancelled.



11. CRASH DOOR UNLOCK

(1) With the ignition turned ON, if the air bag is deployed, a crash signal is received and send an UNLOCK output to all doors UNLOCK.

(2) After UNLOCK output, when LOCK is set, UNLOCK pulse is output for 5 second period again.



T1 : 200 msec.

T2 : 40 msec.

T3 : 5±0.5sec.

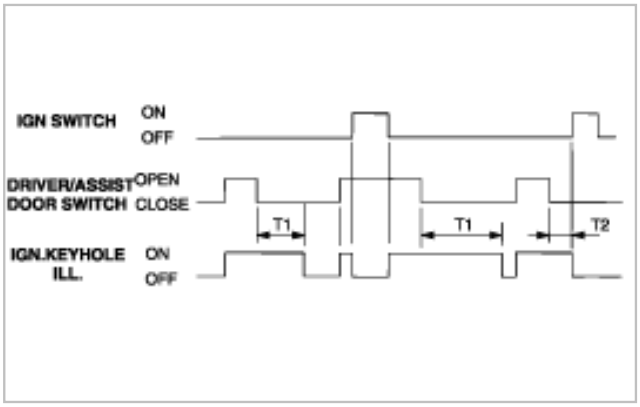
12. IGNITION KEY HOLE ILLUMINATION

(1) Ignition key hole illumination is turned ON when driver door or assist door is opened with ignition switch OFF.

(2) Delaying "ON" state of ignition key hole illumination for 10 seconds when the door is closed in case of (1) state.

(3) Ignition key hole illumination is turned off if the ignition switch turned ON in case of (1), (2) state.

(4) Ignition key hole illumination is turned off if arm state is entered in case of (1), (2) state.



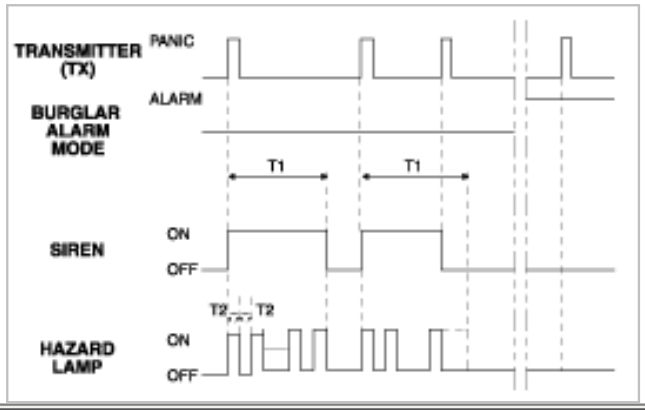
T1 : 10±1 sec.

T2 : 0~10 sec.

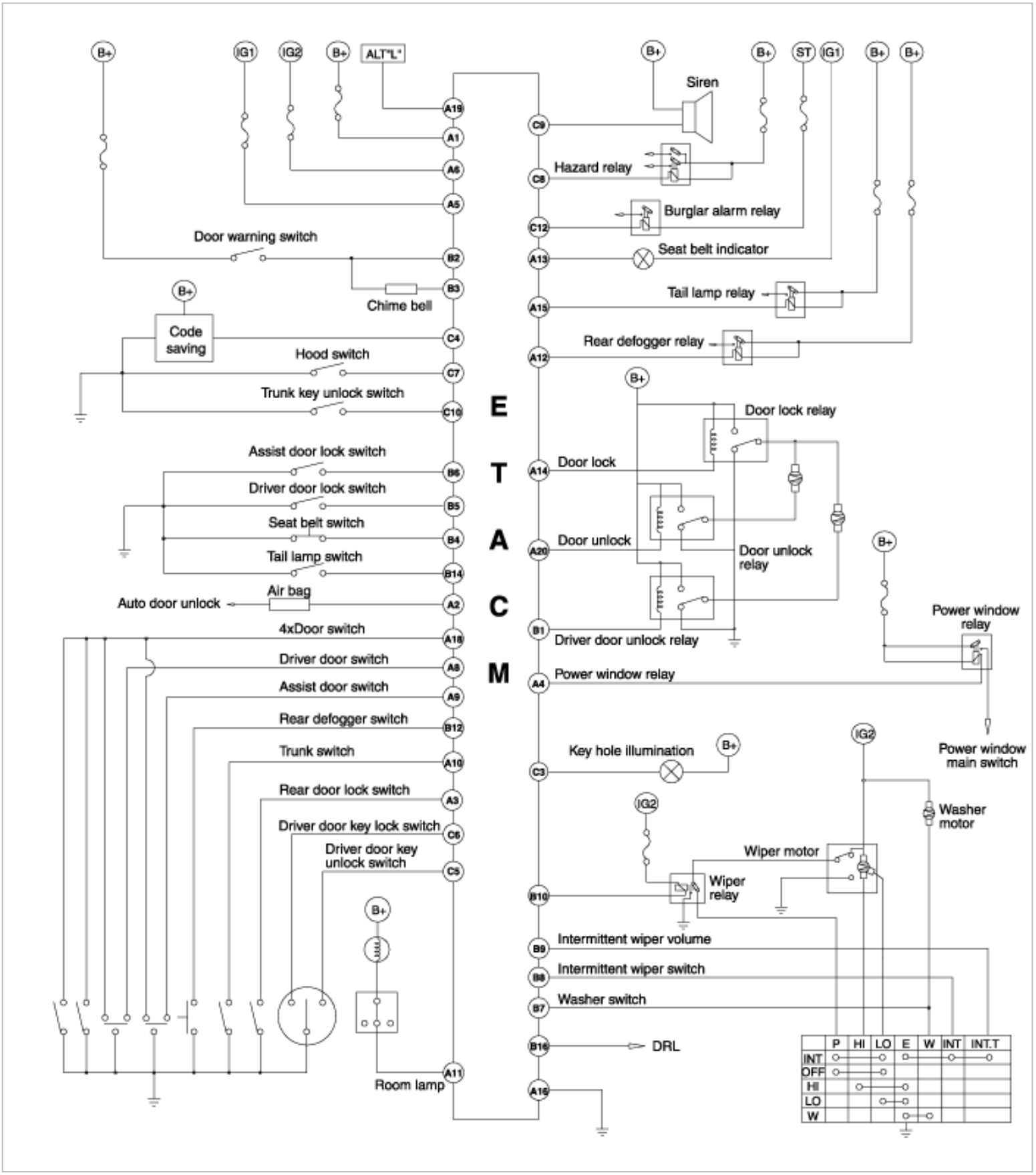
13. PANIC ALARM

(1) If transmitter's panic signal is received, the panic alarm output is ON for 30 seconds.

(2) If the transmitter's panic signal is received during panic alarming, the panic alarm output will turn OFF.

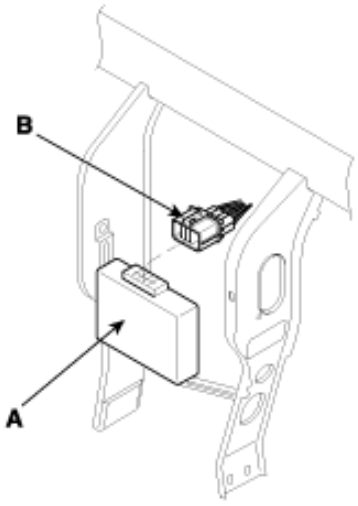


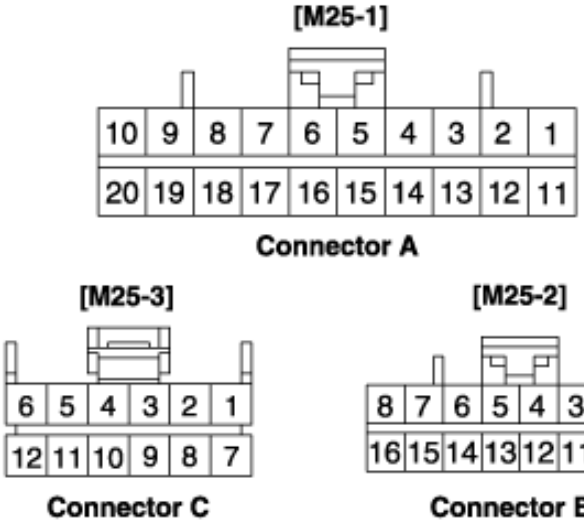
CIRCUIT DIAGRAM



ETACS MODULE INPUT SIGNAL TEST

1. Disconnect the wire connector(B) from the ETACS module(A).
2. Inspect the connector(B) on wire harness side as shown in the below.





Terminal No.	Connector A	Connector B	Connector C
1	B+	Driver door unlock relay	-
2	Air bag signal	Door warning switch	-
3	Rear door lock switch	Chime bell	Key hole illumination lamp
4	Power window relay	Seat belt switch	Code saving
5	IGN1	Driver door lock switch	Driver door key unlock switch
6	IGN2	Assist door lock switch	Driver door key lock switch
7	-	Washer switch	* Hood switch
8	Driver door switch	Intermittent wiper switch	* Hazard lamp relay
9	Assist door switch	Intermittent wiper volume	* Siren
10	Trunk switch	Wiper relay	* Trunk key unlock switch (only 4 doors)
11	Room lamp	-	-
12	Rear defogger relay	Rear defogger switch	* Burglar alarm relay
13	Seat belt-warning lamp	-	
14	Door lock relay	Tail lamp switch	
15	Tail lamp relay	-	
16	Ground	D.R.L	
17	-		
18	Door switch		
19	Alternator "L"		

20	Door unlock relay	Ebay User ID: reveleus1

NOTE

* : only Keyless entry & Burglar alarm system.

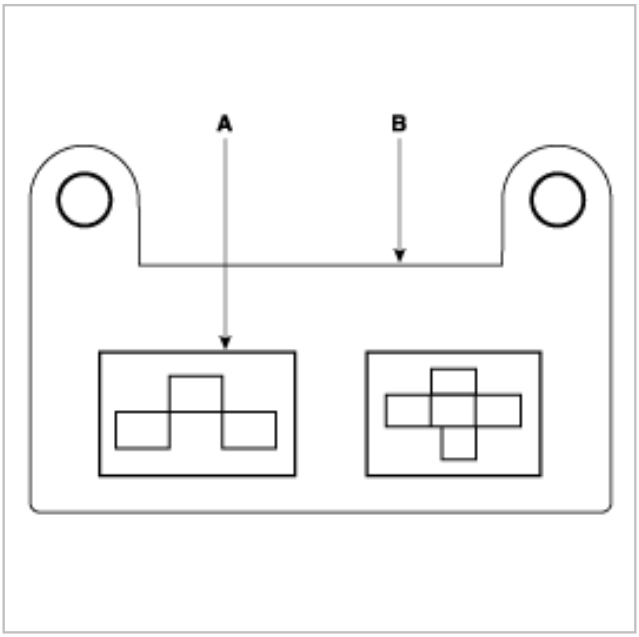
ETACS MODULE INPUT SIGNAL TEST

Pin No.	Input signal name	Test condition	Desired result
A5	IGN1	Ignition switch ON or START	Check for voltage to ground; There should be battery voltage
A6	IGN2	Ignition switch ON	Check for voltage to ground; There should be battery voltage
A19	Alternator "L"	Engine start condition	Check for voltage to ground; There should be battery voltage
B2	Door warning switch	Key is inserted into the ignition switch	Check for voltage to ground; There should be battery voltage
A18	All door switch	One of all doors is opened	Check for continuity to ground; There should be continuity
A8	Driver's door switch	Driver's door open	Check for continuity to ground; There should be continuity
A9	Assist door switch	Assist door open	Check for continuity to ground; There should be continuity
A3	Rear door lock switch	One of rear doors is unlock	Check for continuity to ground; There should be continuity
A10	Trunk switch	Turnk open	Check for continuity to ground; There should be continuity
C10	Trunk key unlock switch	Key is inserted into the trunk key cylinder and turned	Check for continuity to ground; There should be continuity
C7	Hood switch	Hood open	Check for continuity to ground; There should be continuity
B7	Washer switch	Washer switch ON	Check for continuity to ground; There should be continuity
B8	Intermittent wiper switch	INT. wiper switch ON	Check for continuity to ground; There should be continuity
B9	Intermittent wiper volume switch	INT. wiper volume switch ON	Resistance should vary from 0Ω to 50kΩ
B12	Rear defogger switch	Rear defogger switch ON	Check for continuity to ground; There should be continuity

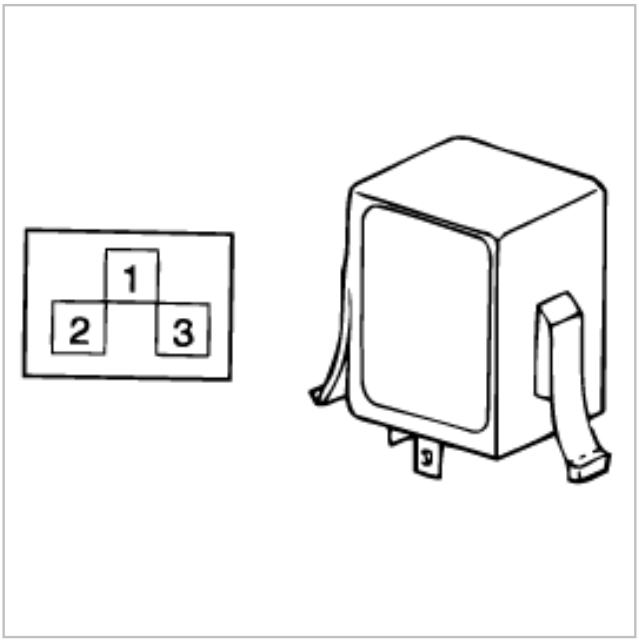
B14	Tail lamp switch	Tail lamp switch ON	Check for continuity to ground; There should be continuity
B4	Seat belt switch	Seat belt is unbuckled	Check for continuity to ground; There should be continuity
C4	Code saving tool	Code save signal	There should be open at unused
A1	Battery (+)	Constant	Check for voltage to ground ; There should be battery voltage
A16	Ground	Constant	Check for continuity to ground ; There should be continuity
B5	Driver's door lock switch	Driver's door is unlock	Check for continuity to ground ; There should be continuity
B6	Assist door lock switch	Assist door is unlock	Check for continuity to ground ; There should be continuity
C5	Driver's door key unlock switch	Driver's door is unlock with key	Check for continuity to ground ; There should be continuity
C6	Driver's door key lock switch	Driver's door is lock with key	Check for continuity to ground ; There should be continuity
A2	Air bag signal	Ignition switch ON	Check for voltage to ground ; There should be about 5V

INSPECTION

1. Remove the flasher unit(A) from the passenger compartment relay box(B).



2. Connect the positive (+) lead from the battery to terminal 2 and the negative (-) lead to terminal 3.



3. Connect the two turn signal lamps in parallel to terminal 1. Check that the bulbs turn on and off.

NOTE

The turn signal lamps should flash 60 to 120 times per minute. If one of the front or rear turn signal lamps has an open circuit, the number of flashes will be more than 120 per minute. If operation is not as specified, replace the flasher unit.

REMOVAL

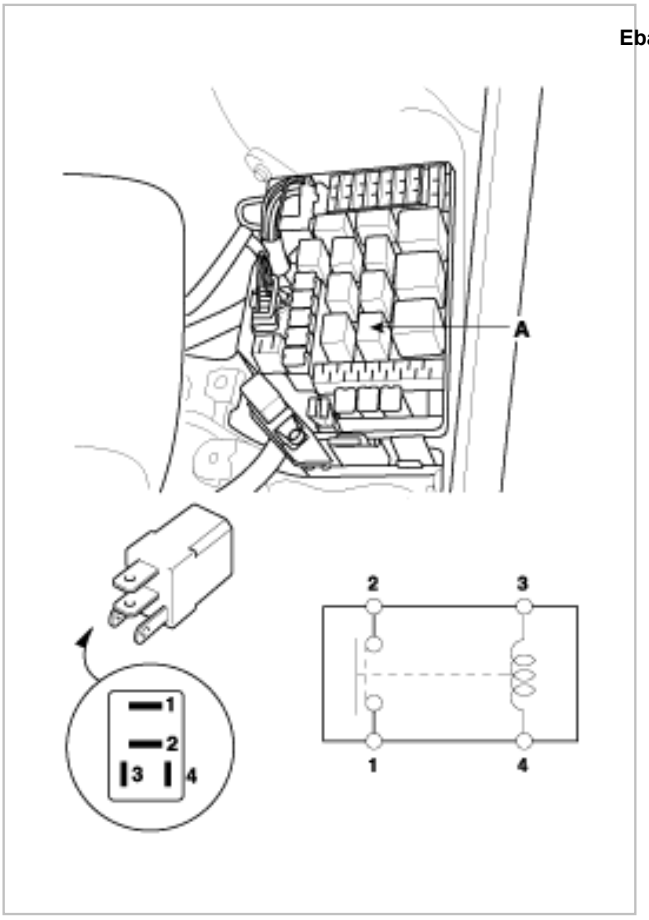
1. Disconnect the negative(-) battery terminal.
2. Disconnect the 2P connector (A) then remove the front fog lamp from the front bumper.

3. Installation is the reverse of removal.

INSPECTION

FRONT FOG LAMP RELAY

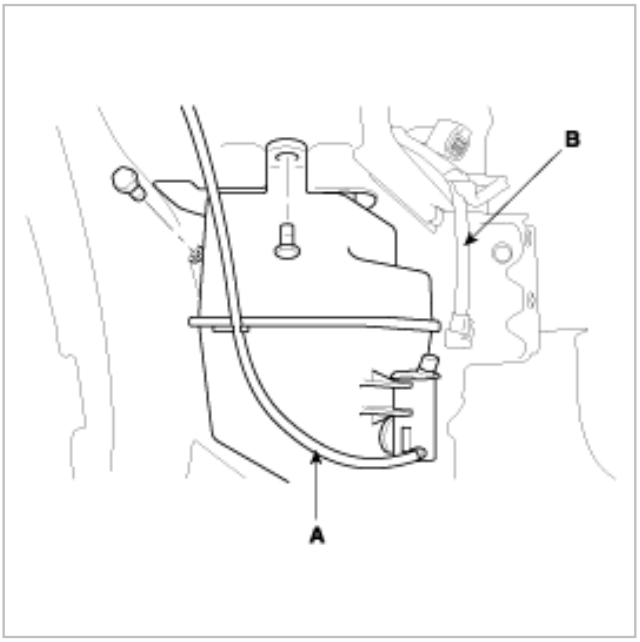
1. Remove the front fog lamp relay (A) from the engine compartment relay box.
2. There should be continuity between the No.1 and No.2 terminals when power and ground are connected to the No.4 and No.3 terminals.
3. There should be no continuity between the No.1 and No.2 terminals when power is disconnected.



Terminal / Power (No.3-No.4)	1	2	3	4
Disconnected			○	○
Connected	○	○	⊖	⊕

REMOVAL

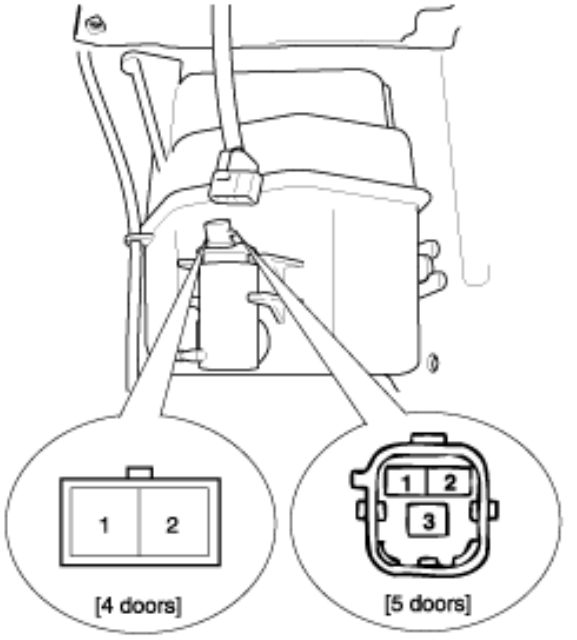
1. Disconnect the negative(-) battery terminal.
2. Remove the front bumper cover. (Refer to BD group)
3. Remove the washer hose(A) and the washer motor connector(B).
4. Remove the washer reservoir after removing 2 bolts.



5. Installation is the reverse of removal.

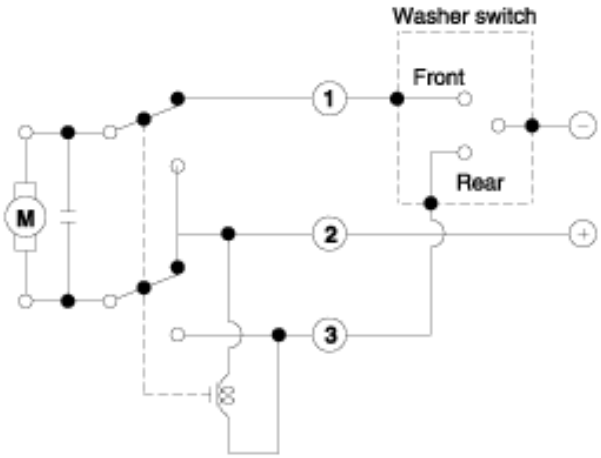
INSPECTION

1. With the washer motor connected to the reservoir tank, fill the reservoir tank with water.
2. Connect positive (+) and negative (-) battery cables to terminals 1 and 2 respectively to see that the washer motor runs and water sprays from the front nozzles.
3. Check that the motor operates normally.

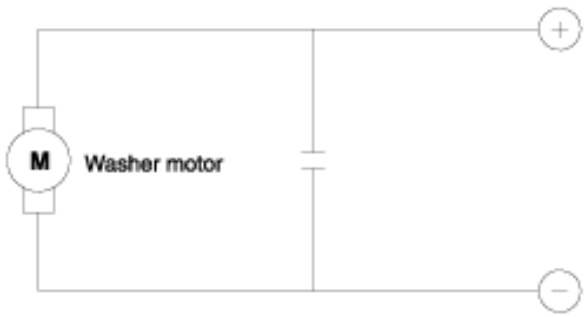


1. IGN (+)
2. Windshield washer (-)

1. Windshield washer (-)
2. IGN (+)
3. Rear washer (-)

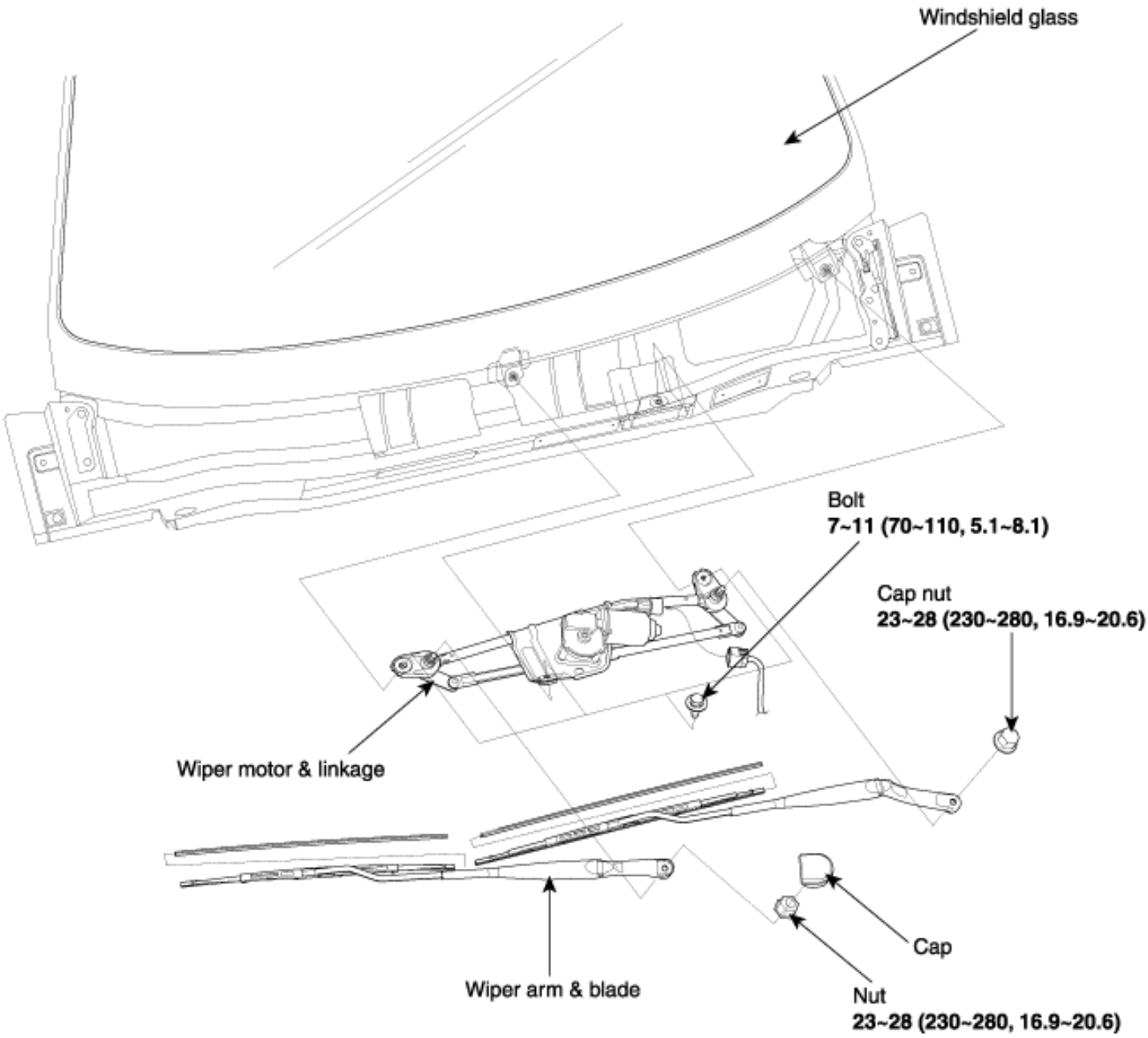


[Windshield & rear washer motor : 5 doors]



[Windshield washer motor : 4 doors]

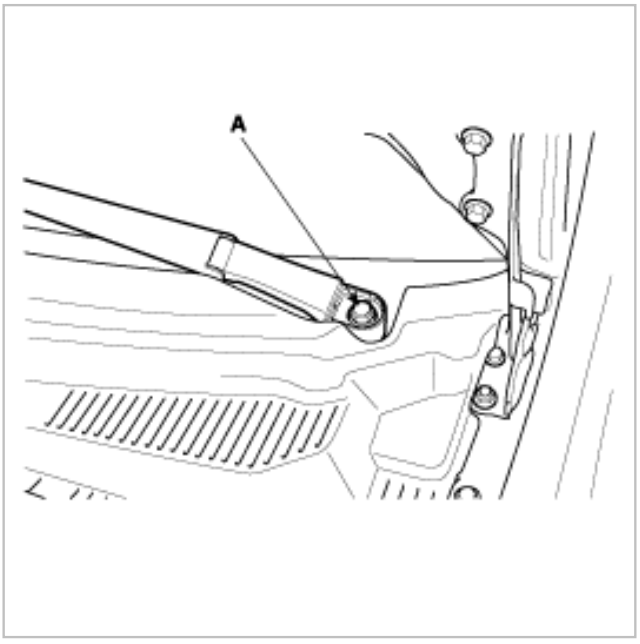
COMPONENTS



TORQUE : Nm (kg·cm, lb·ft)

REMOVAL

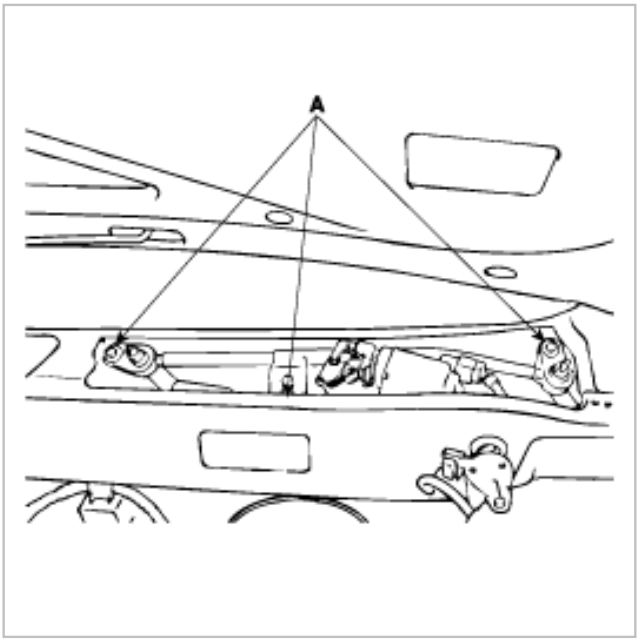
1. Remove the windshield wiper arm and blade after removing a nut(A).



Tightening torque

23~28 Nm (230~280 kg·cm, 16.9~20.6 lb·ft)

2. Remove the weatherstrip then remove the cowl top cover (A) after removing 3 clips (B).
3. Remove the windshield wiper motor and linkage assembly after removing 3 bolts(A).



Tightening torque

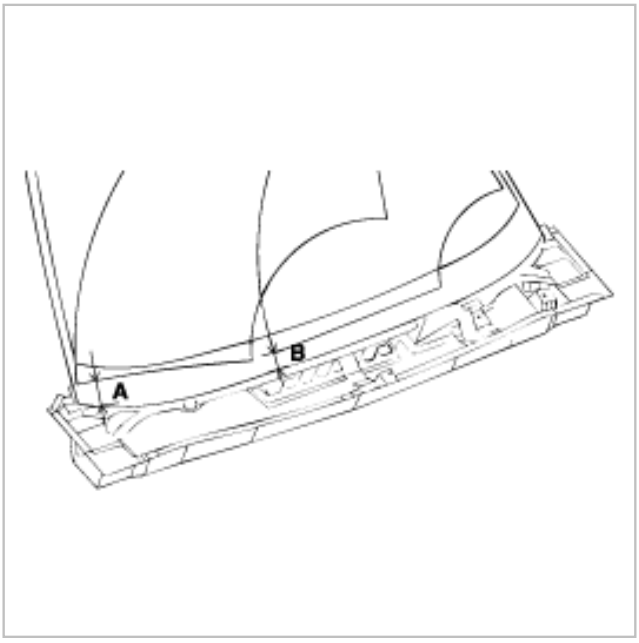
7~11 Nm (70~110 kg·cm, 5.1~8.1 lb·ft)

4. Installation is the reverse of removal.

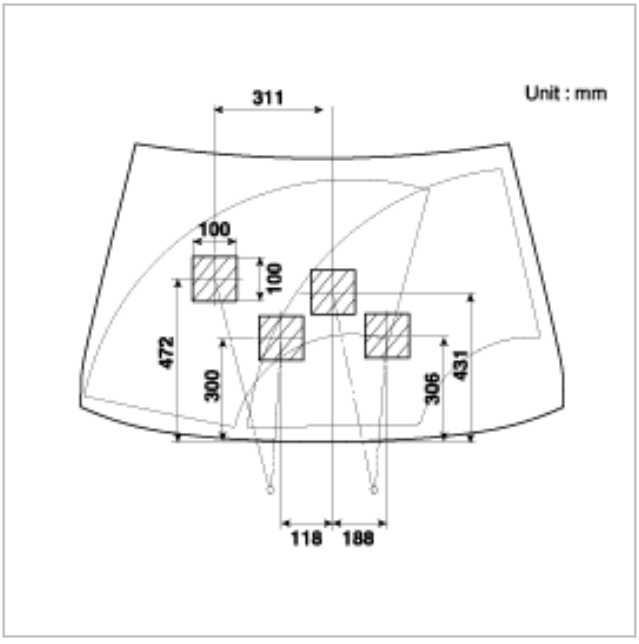
INSTALLATION

1. Install the wiper arm and blade to the specified position.

Specified position	A	B
Distance (mm)	30~40	30~40



2. Set the washer nozzle on the specified spray position.

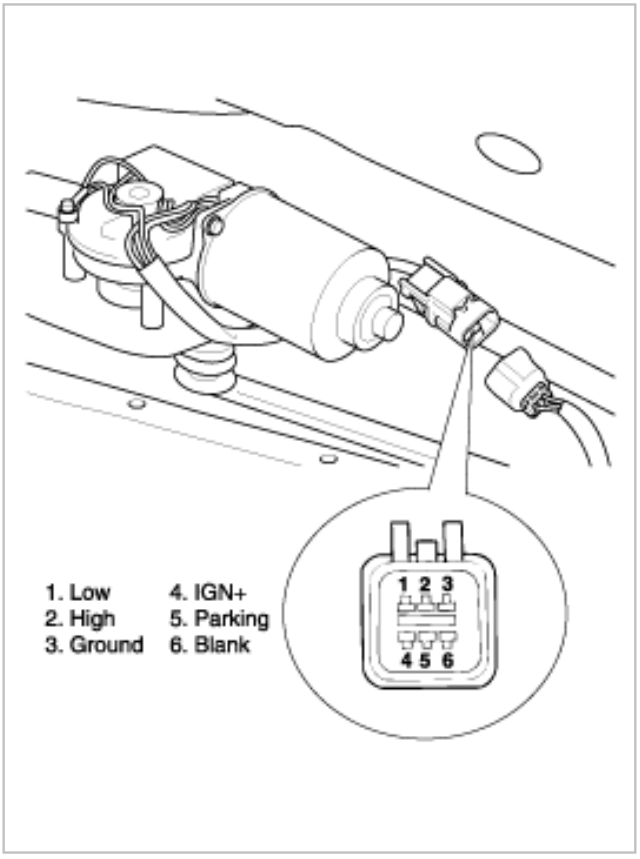


INSPECTION

SPEED OPERATION CHECK

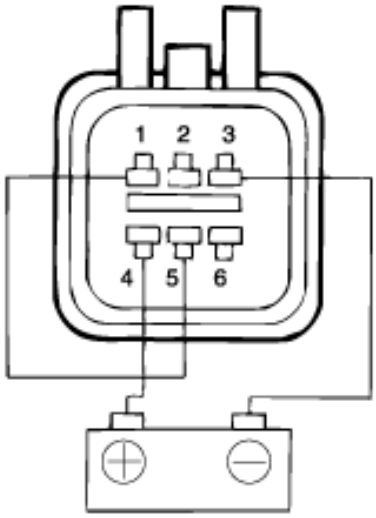
1. Remove the connector from the wiper motor.
2. Attach the positive (+) lead from the battery to terminal 4 and the negative (-) lead to terminal 1.
3. Check that the motor operates at low speed.
4. Connect the positive (+) lead from the battery to terminal 4 and the negative (-) lead to terminal 2.

5. Check that the motor operates at high speed.

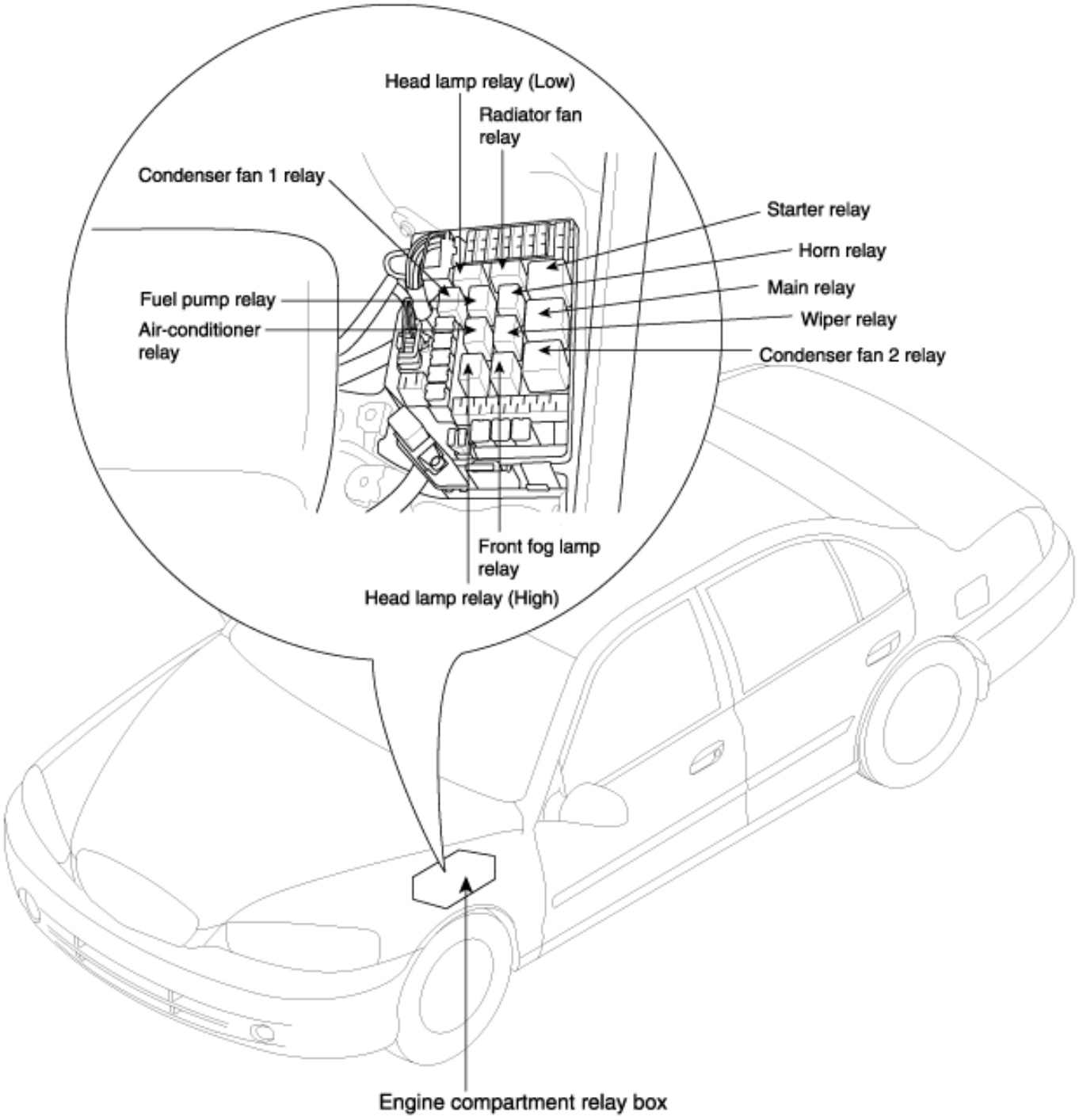


AUTOMATIC STOP OPERATION CHECK

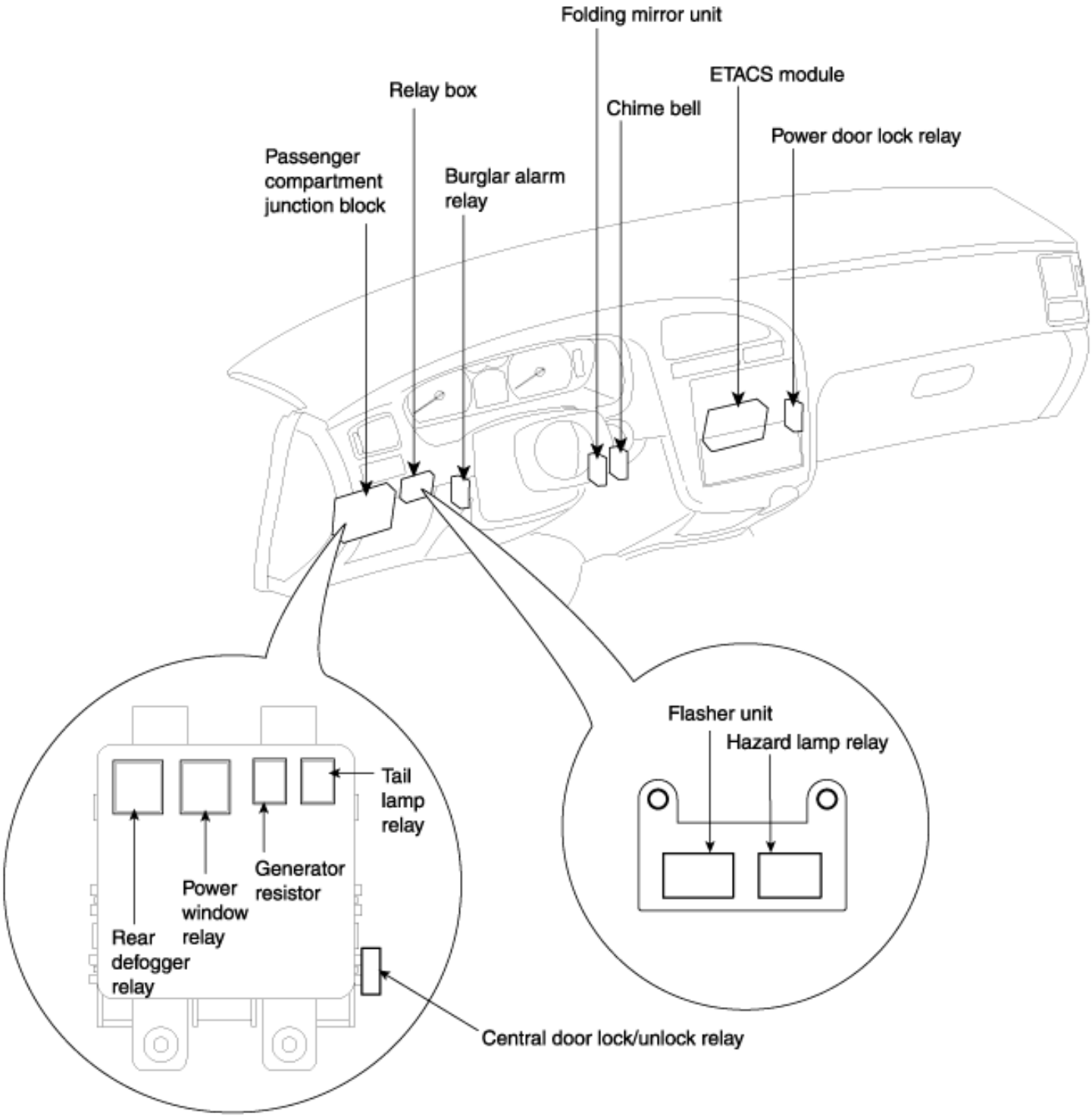
1. Operate the motor at low speed using the stalk control.
2. Stop the motor operation anywhere except at the off position by disconnecting terminal 1
3. Connect terminals 1and 5.
4. Connect the positive (+) lead from the battery to terminal 4 and the negative (-) lead to terminal 3.
5. Check that the motor stops running at the off position.


1 2 3
4 5 6

COMPONENTS


Head lamp relay (Low)
Radiator fan relay
Condenser fan 1 relay
Starter relay
Horn relay
Main relay
Wiper relay
Condenser fan 2 relay
Fuel pump relay
Air-conditioner relay
Front fog lamp relay
Head lamp relay (High)
Engine compartment relay box

[PASSENGER COMPARTMENT RELAY BOX]



GENERAL TROUBLESHOOTING INFORMATION

BEFORE TROUBLESHOOTING

1. Check applicable fuses in the appropriate fuse/relay box.
2. Check the battery for damage, state of charge, and clean and tight connections.

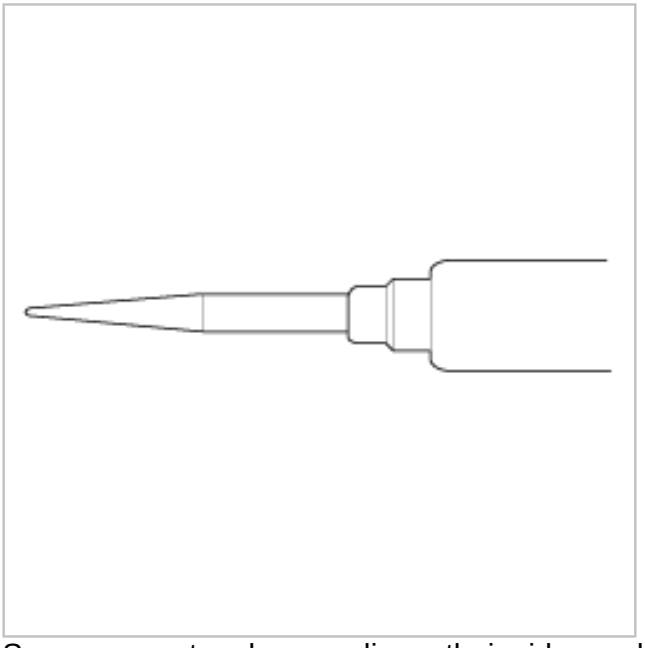
NOTE

- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

3. Check the alternator belt tension.

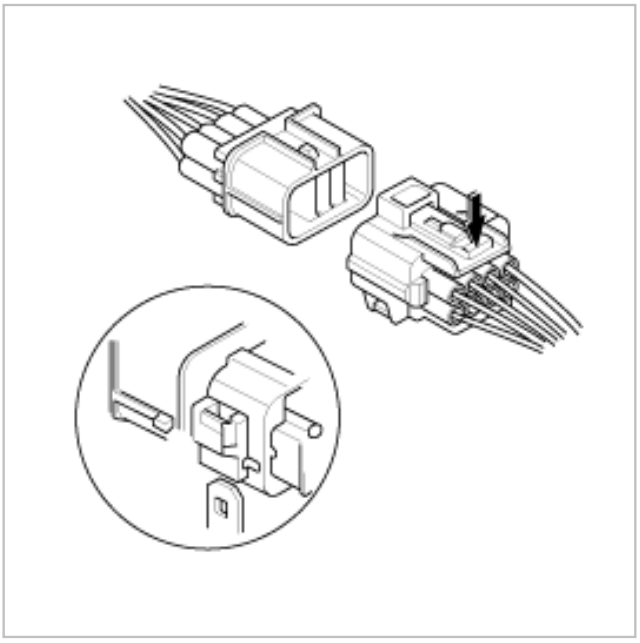
HANDLING CONNECTORS

1. Make sure the connectors are clean and have no loose wire terminals.
2. Make sure multiple cavity connectors are packed with grease (except watertight connectors).
3. All connectors have push-down release type locks (A).

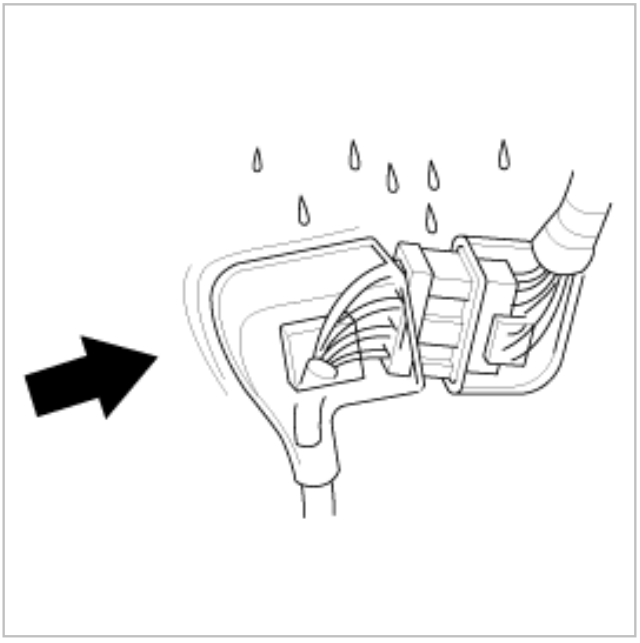


4. Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.

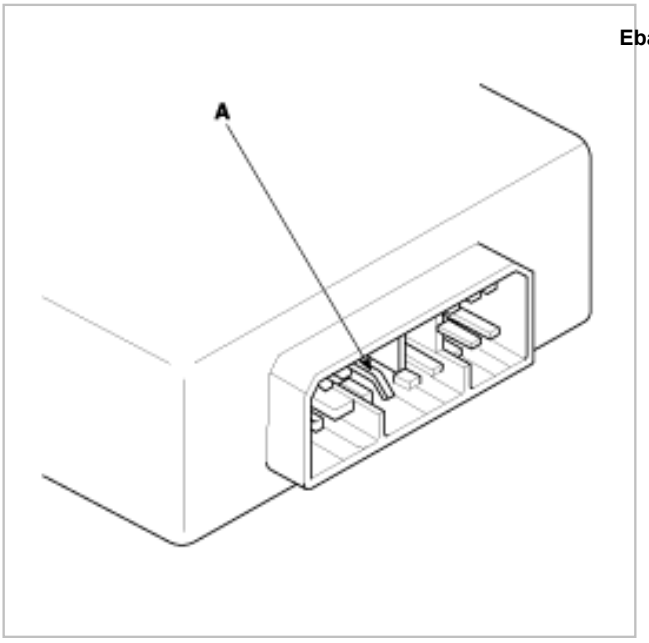
5. Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



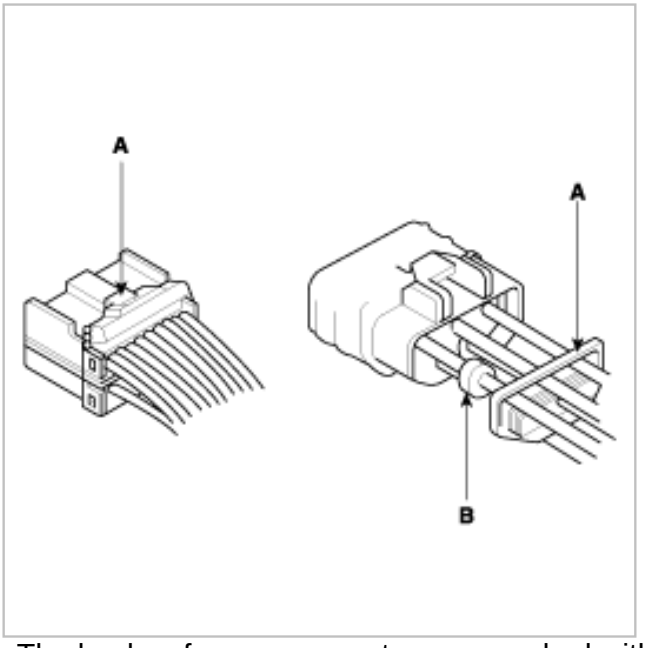
6. Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
7. Always reinstall plastic covers.



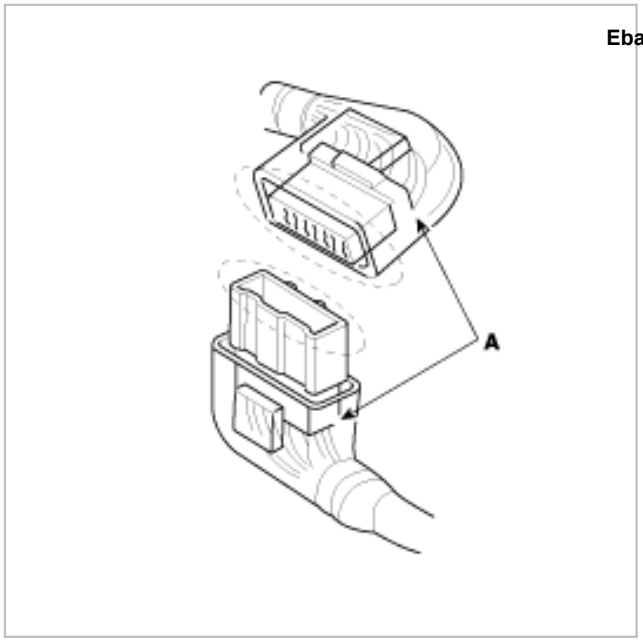
8. Before connecting connectors, make sure the terminals (A) are in place and not bent.



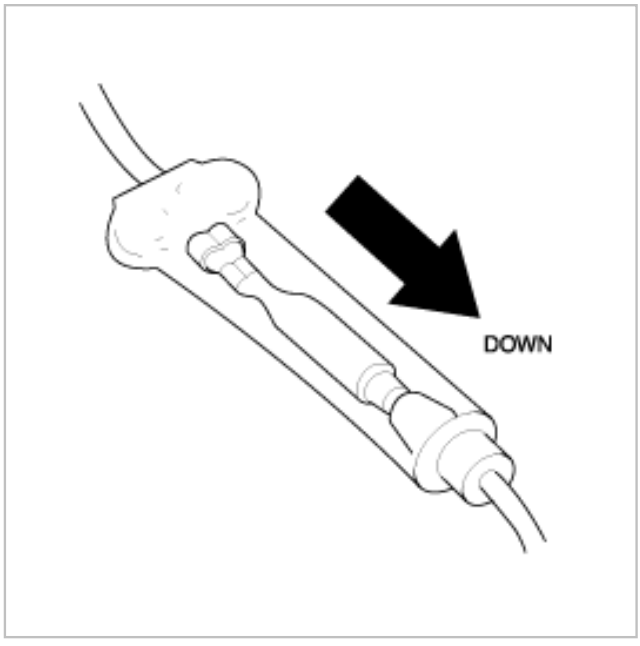
9. Check for loose retainer (A) and rubber seals (B).



10. The backs of some connectors are packed with grease. Add grease if necessary. If the grease(A) is contaminated, replace it.



11. Insert the connector all the way and make sure it is securely locked.
12. Position wires so that the open end of the cover faces down.

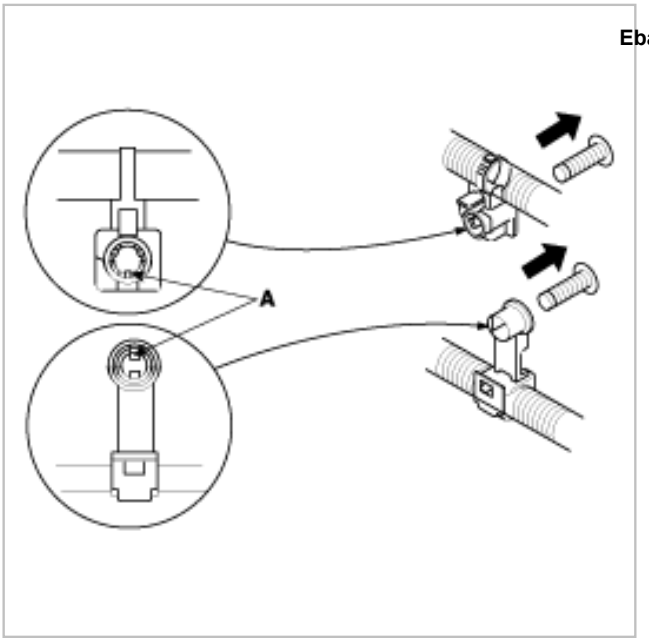


HANDLING WIRES AND HARNESSES

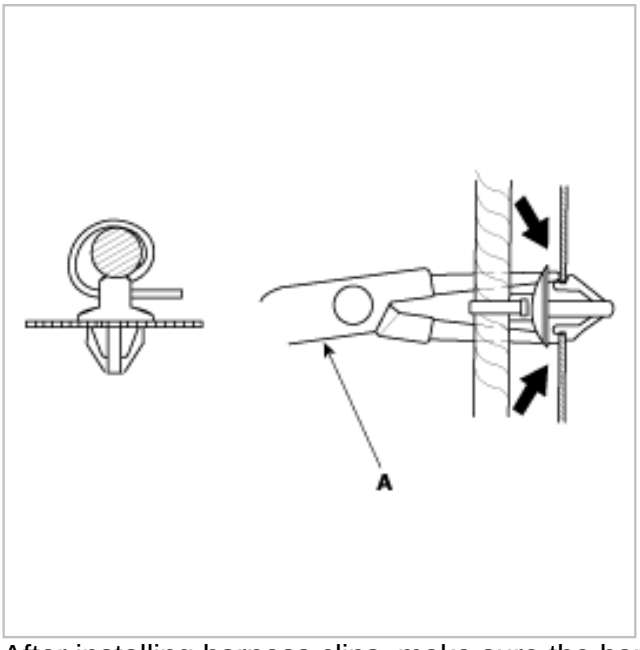
1. Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
2. Remove clips carefully; don't damage their locks (A).

Purchased
from Ebay seller
Reveleus1

Thank-you for purchasing from me, it is much appreciated.
To contact me please email
suzlever@gmail.com

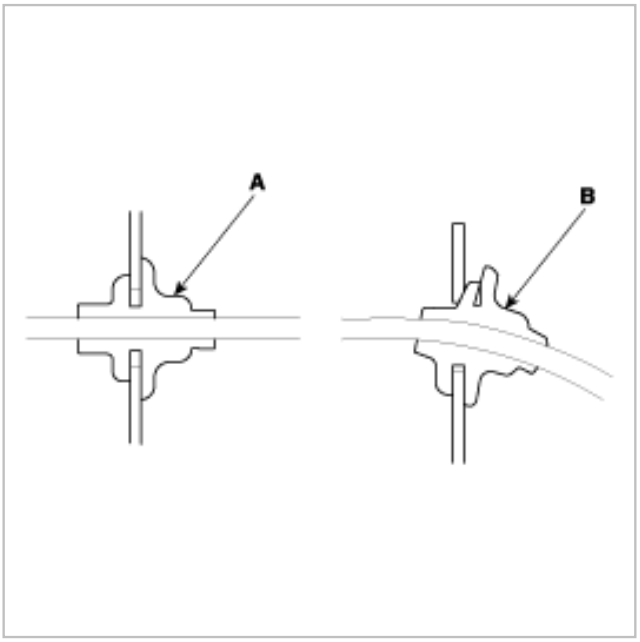


3. Slip pliers(A) under the clip base and through the hole at an angle, then squeeze the expansion tabs to release the clip.



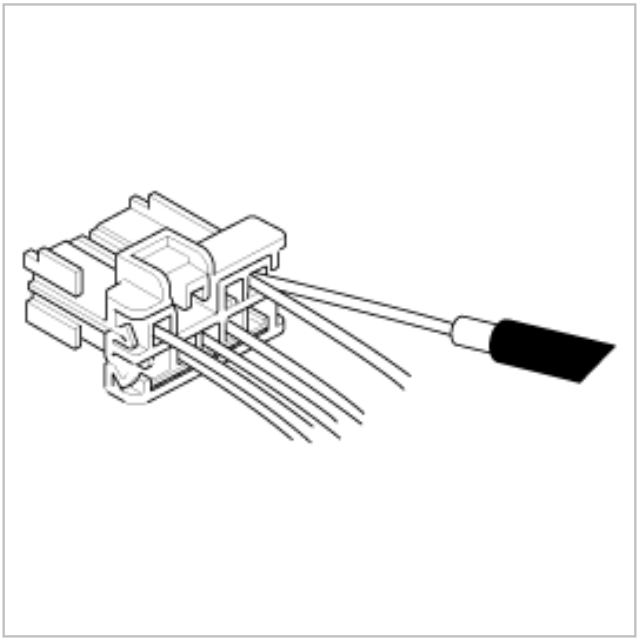
4. After installing harness clips, make sure the harness doesn't interfere with any moving parts.
5. Keep wire harnesses away from exhaust pipes and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.

6. Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).

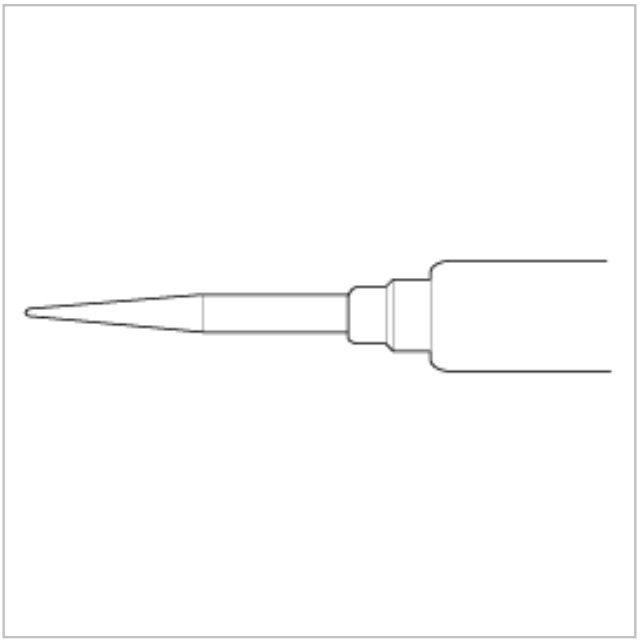


TESTING AND REPAIRS

1. Do not use wires or harnesses with broken insulation.
   Replace them or repair them by wrapping the break with electrical tape.
2. After installing parts, make sure that no wires are pinched under them.
3. When using electrical test equipment, follow the manufacturer's instructions and those described in this manual.
4. If possible, insert the probe of the tester from the wire side (except waterproof connector).



5. Use a probe with a tapered tip.



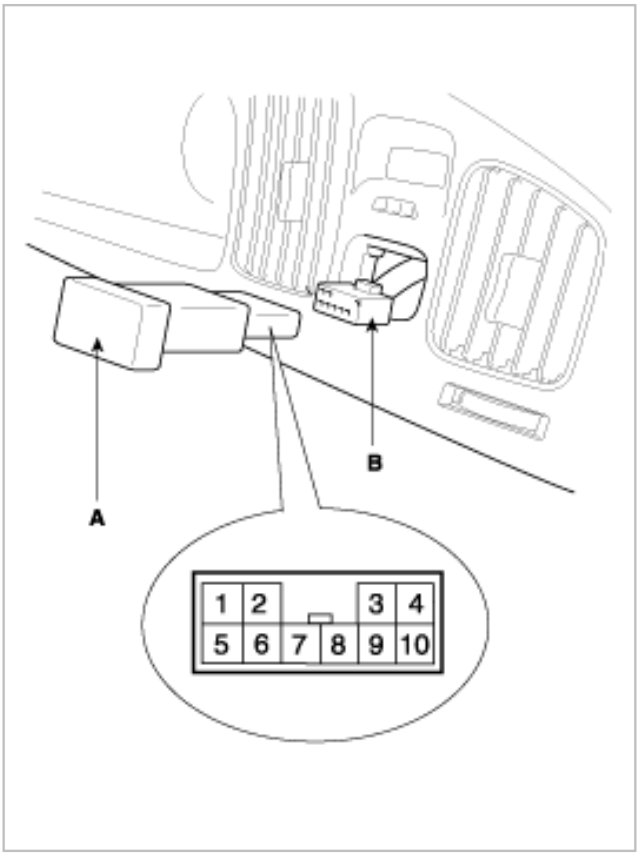
FIVE-STEP TROUBLESHOOTING

1. Verify the complaint
   Turn on all the components in the problem circuit to verify the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.
2. Analyze the schematic
   Look up the schematic for the problem circuit.
   Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or ground is a likely cause.
   Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.
3. Isolate the problem by testing the circuit
   Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting.
   Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.
4. Fix the problem
   Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.
5. Make sure the circuit works
   Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

INSPECTION

HAZARD LAMP SWITCH

1. Disconnect the negative (-) battery terminal.
2. Remove the hazard lamp switch (A) from the instrument facia panel and disconnect the 10P connector (B).

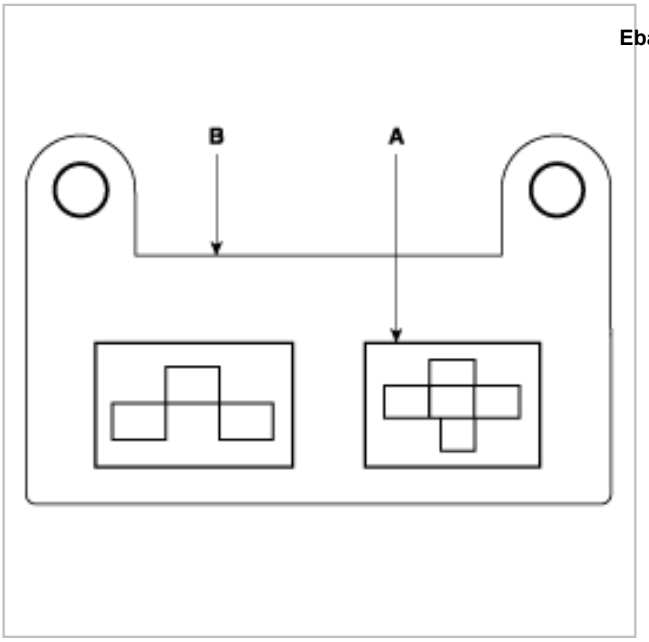


3. Operate the switch and check for continuity between terminals with an ohmmeter.

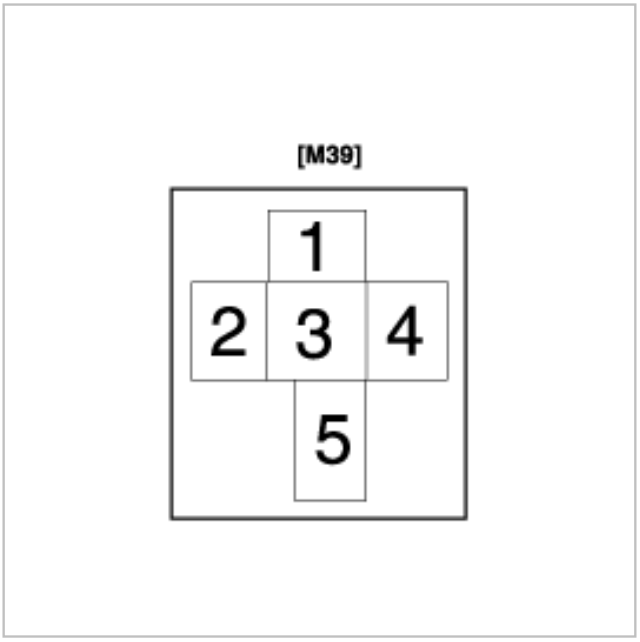
Terminal / Position	6	7	1	3	4	8	9	10
OFF						○		○
ON		ILL.	○	○	○		○	○

HAZARD LAMP RELAY

1. Remove the hazard lamp relay (A) from the relay box(B).



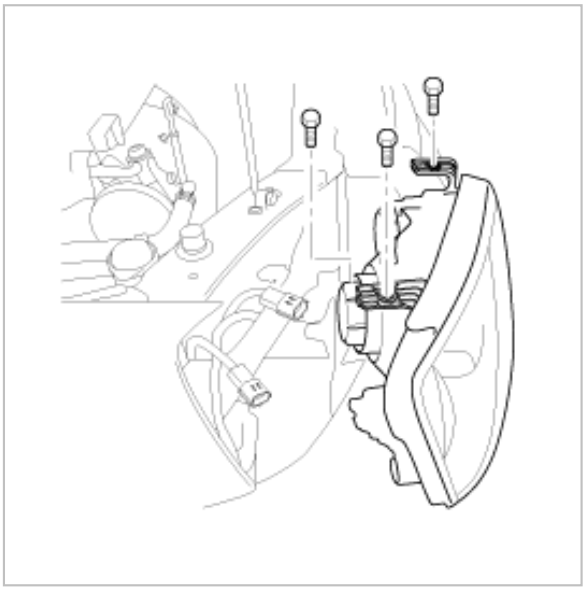
2. Check for continuity between terminals.



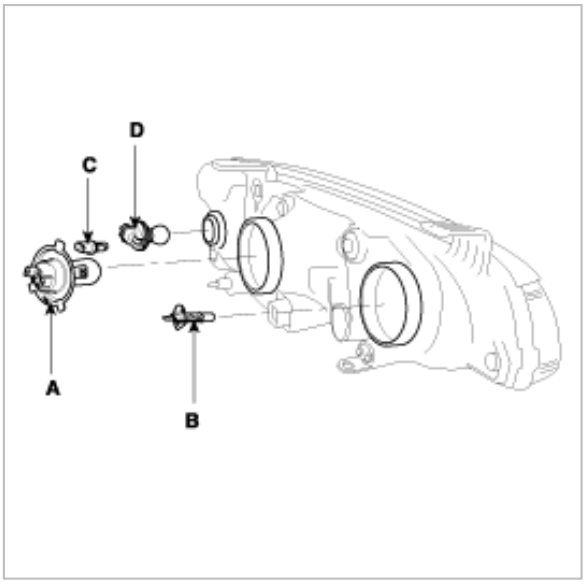
Terminal / Power (No.2-No.4)	2	4	1	3	5
Disconnected	○	○			
Connected	⊕	⊖	○	○	○

REMOVAL

1. Disconnect the negative(-) battery terminal.
2. Remove the head lamp mounting bolts (3EA), then disconnect the lamp connectors.



3. Replace the head lamp low beam bulb(A), high beam bulb(B), position bulb(C) and turn signal bulb (D).



4. Installation is the reverse of removal.

AIMING INSTRUCTIONS

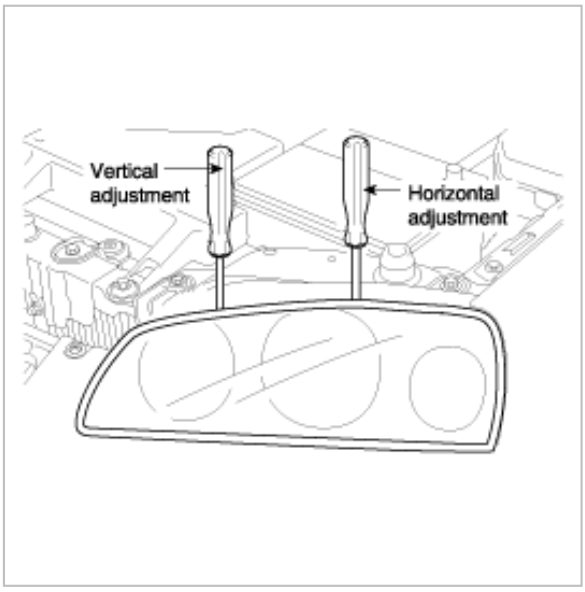
HEAD LAMP AIMING

NOTE

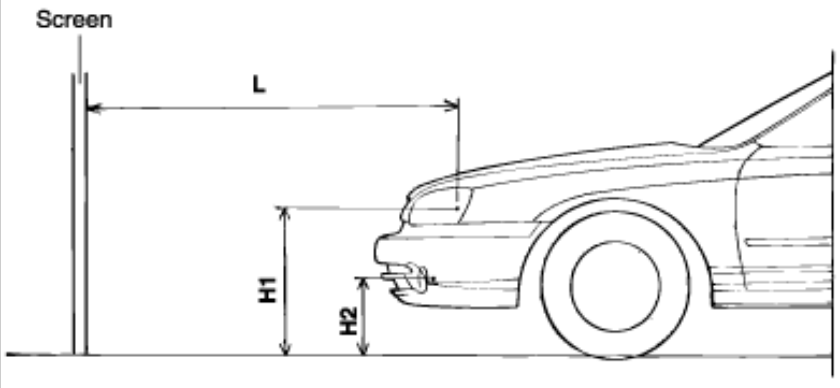
If there are any regulations pertinent to the aiming of head lamps in the area where the vehicle is to be used, adjust so as to meet those requirements.

1. Inflate the tires to the specified pressure and remove any loads from the vehicle except the driver, spare tire, and tools.
2. The vehicle should be placed on a flat floor.
3. Draw vertical lines (Vertical lines passing through respective head lamp centers) and a horizontal line (Horizontal line passing through center of head lamps) on the screen.

4. With the head lamp and battery in normal condition, aim the head lamps so the brightest portion falls on the horizontal and vertical lines.
   Make vertical and horizontal adjustments to the lower beam using the adjusting wheel.



FRONT FOG LAMP AIMING



ETKA001A

KTKD007B

H1 : Height between the head lamp bulb(low beam) center and ground
H2 : Height between the fog lamp bulb center and ground

W1 : Distance between the head lamp bulb(low beam) center
W2 : Distance between the fog lamp bulb center

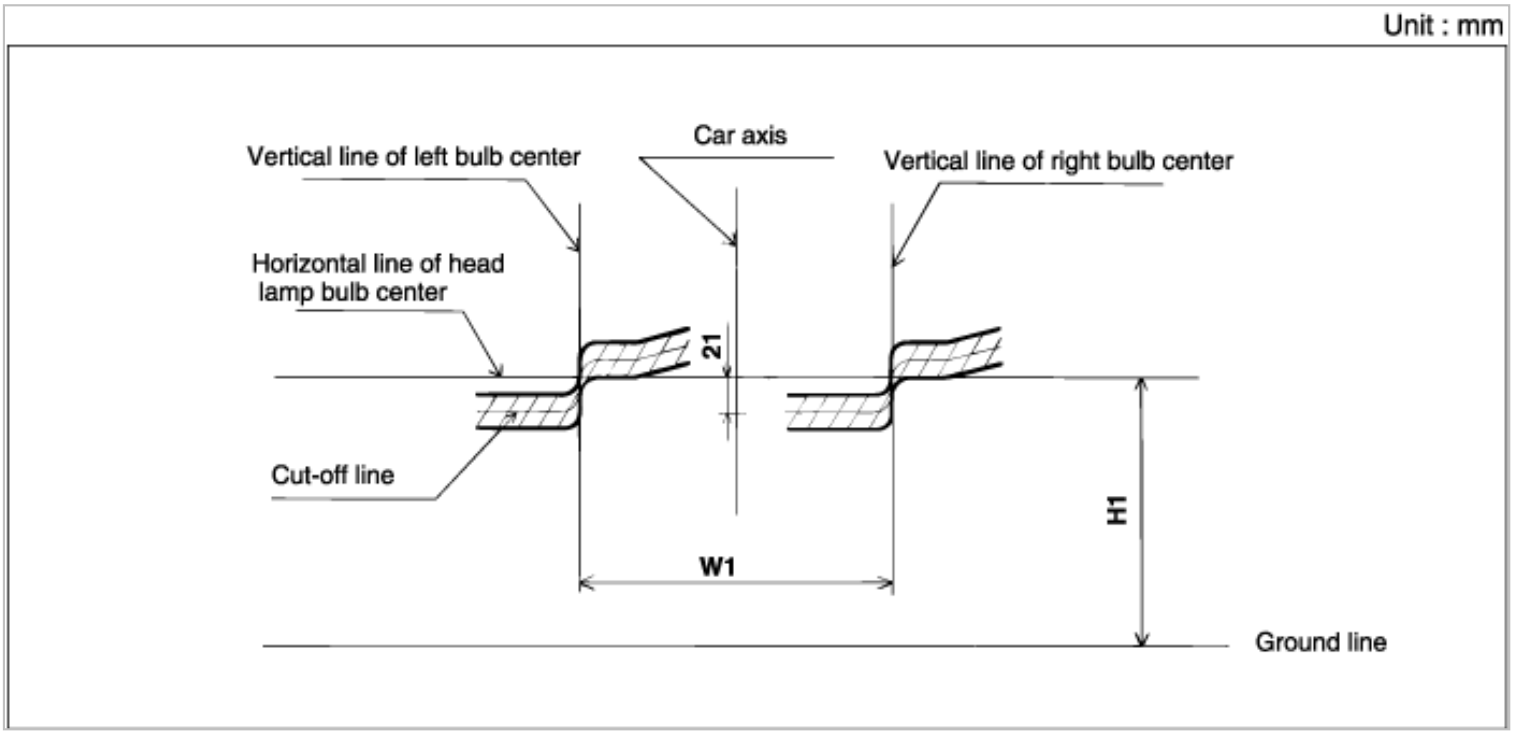
L : Distance between the head lamp bulb center and screen

HEAD LAMP AND FOG LAMP AIMING POINT

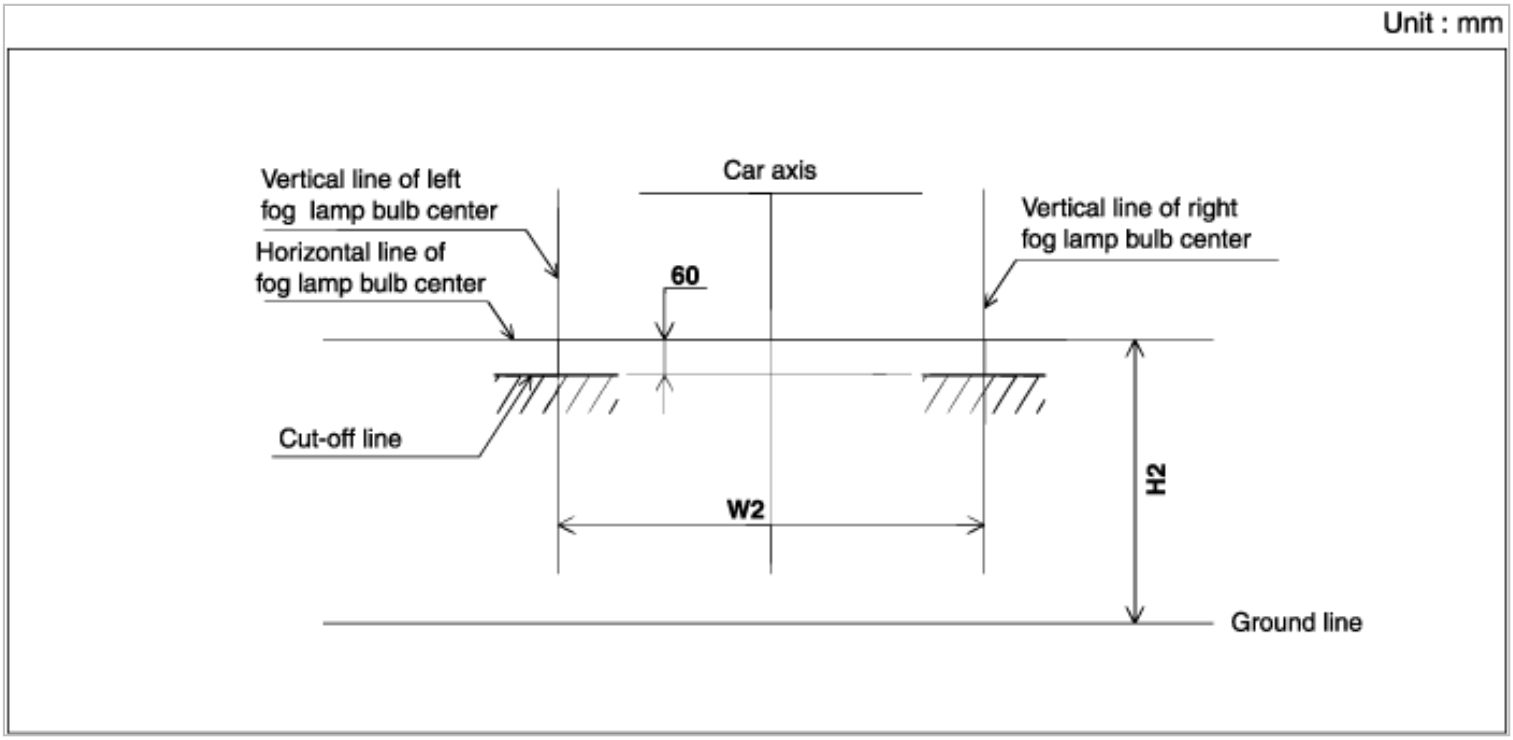
Unit : mm

Vehicle condition	H1	H2	W1	W2	L
Without driver	651	333	1,124	1,217	3,000
With driver	639	321			

1. Turn the low beam on without driver aboard.
   The cut-off line should be projected in the allowable range (shaded region).



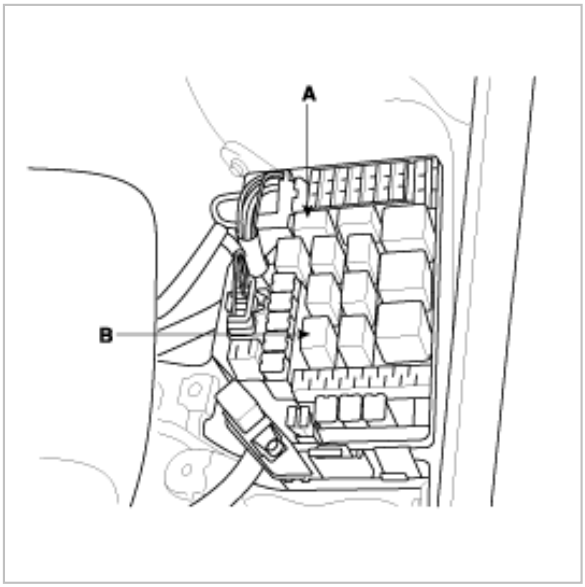
2. Turn the front fog lamp on without driver aboard.
   The cut-off line should be projected in the allowable range (shaded region).



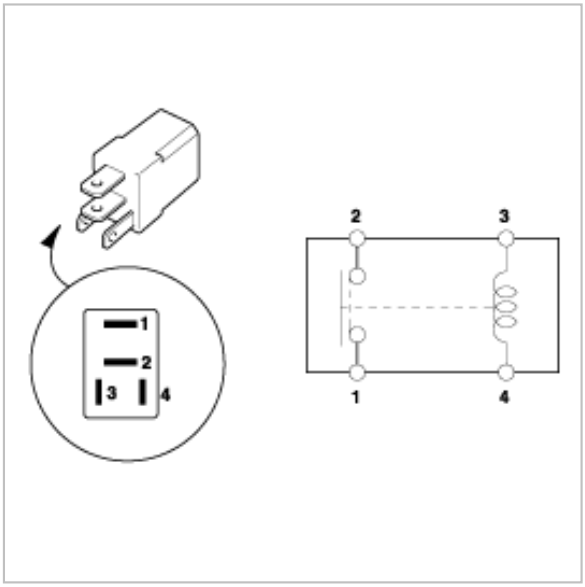
INSPECTION

HEAD LAMP RELAY

1. Pull out the head lamp relay(Low) (A) and head lamp relay (High) (B) from the engine compartment relay box.



2. Check for continuity between terminals.

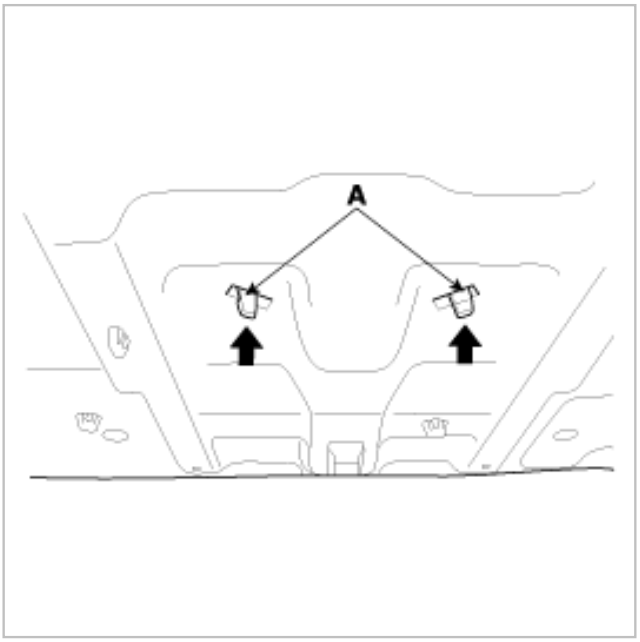


Terminal / Power (No.3-No.4)	1	2	3	4
Disconnected			○ — ○	
Connected	○ — ○		⊖ — ⊕	

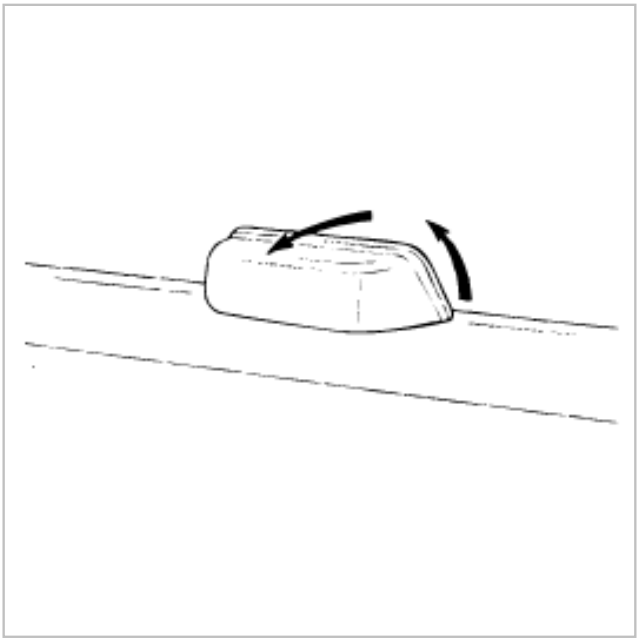
REMOVAL

HIGH MOUNTED STOP LAMP

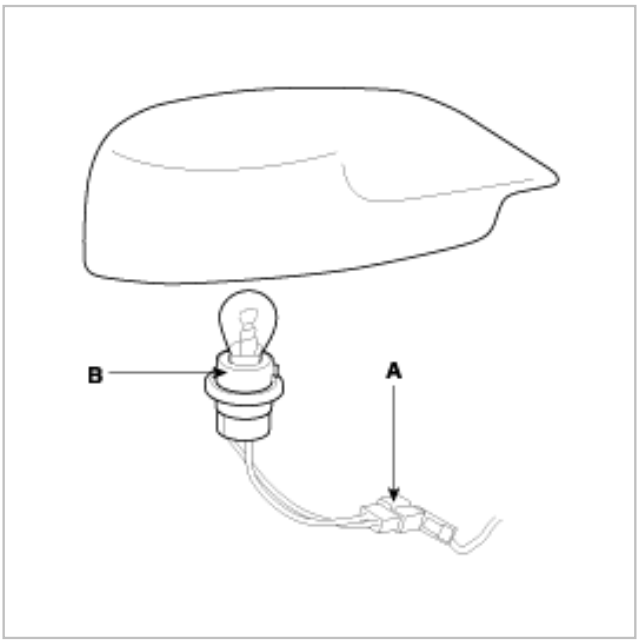
1. Disconnect the negative (-) battery terminal.
2. Open the trunk lid then pull up the two mounting holder (A) to disconnect the stop lamp from the rear package tray.



3. Pull up the high mounted stop lamp assembly.

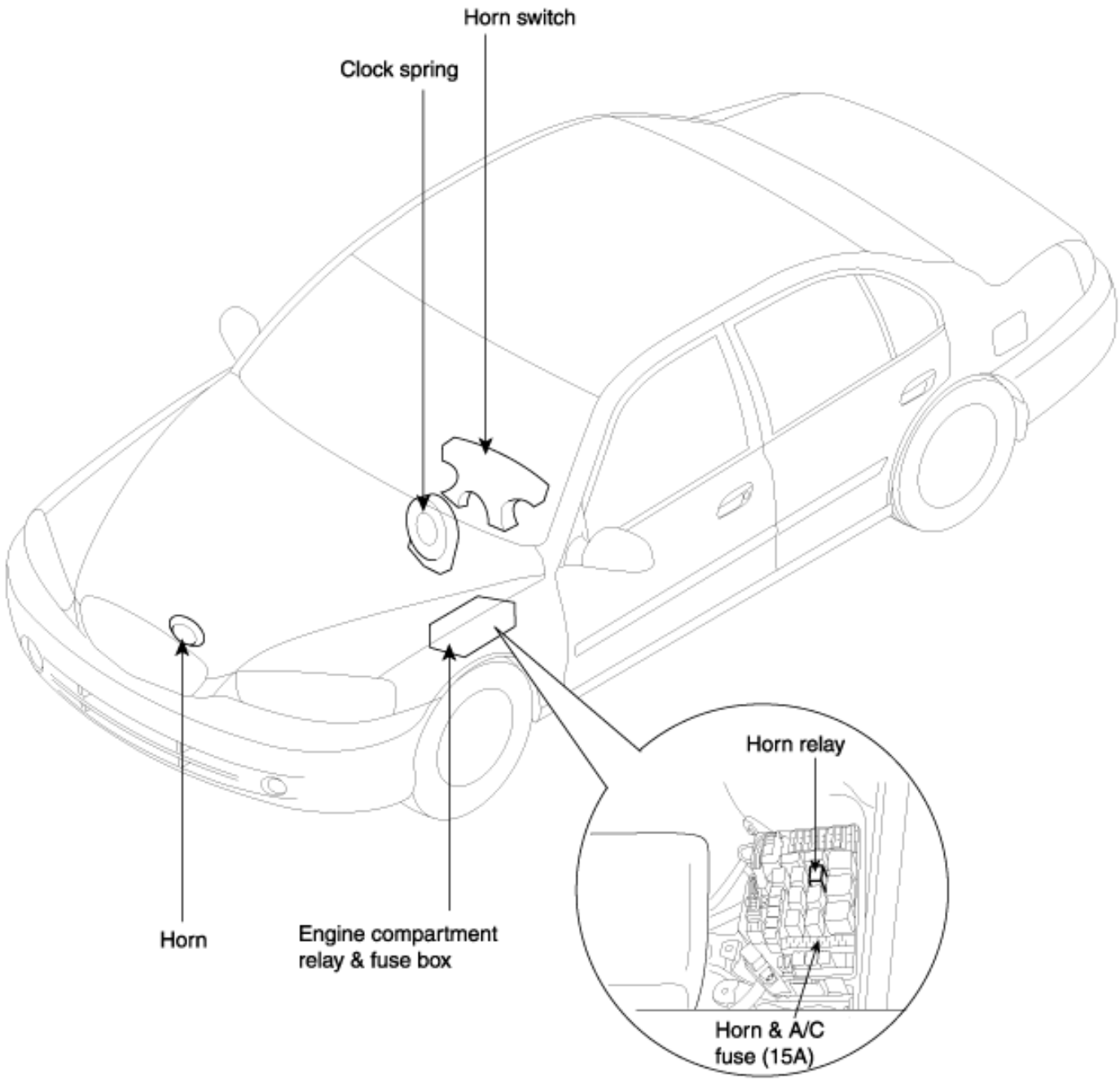


4. Disconnect the 2P connector (A) then remove the high mounted stop lamp assembly. Replace the bulb (B).



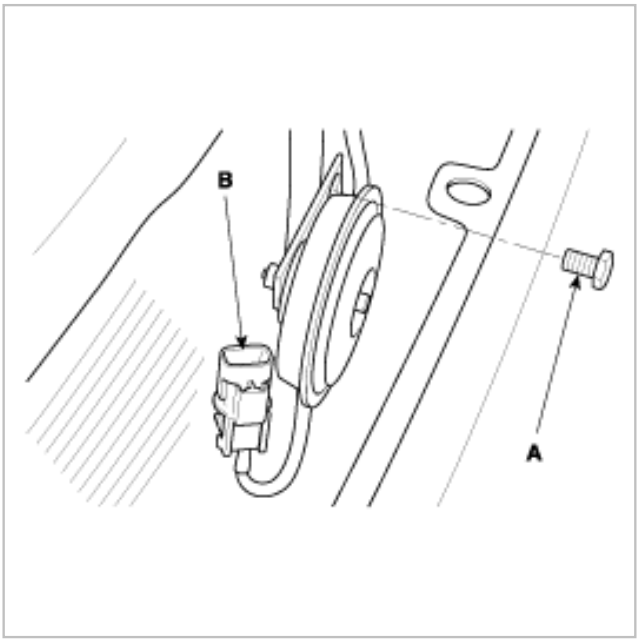
5. Installation is the reverse of removal.

COMPONENTS


Horn switch
Clock spring
Horn relay
Horn
Engine compartment
relay & fuse box
Horn & A/C
fuse (15A)

REMOVAL

1. Remove the bolt(A) and disconnect the horn connector(B), then remove the horn.



2. Installation is the reverse of removal.

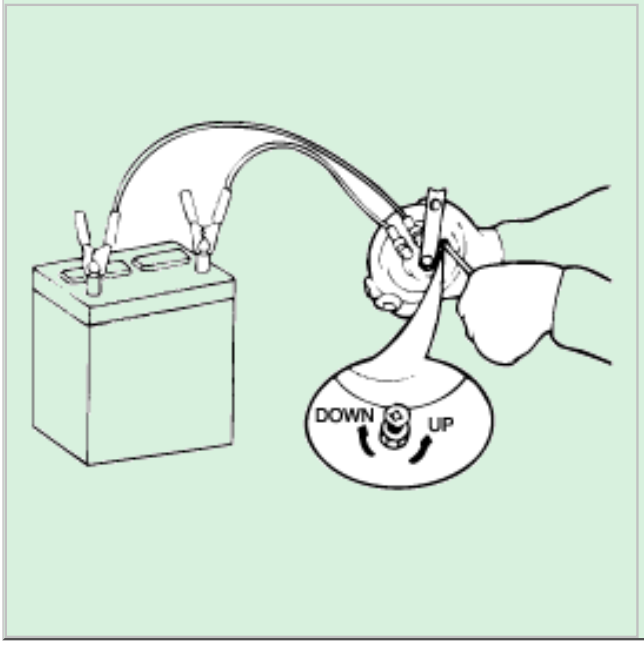
INSPECTION

1. Test the horn by connecting battery voltage to the 1 terminal and ground the 2 terminal.
2. The horn should make a sound. If the horn fails to make a sound, replace it.

ADJUSTMENT

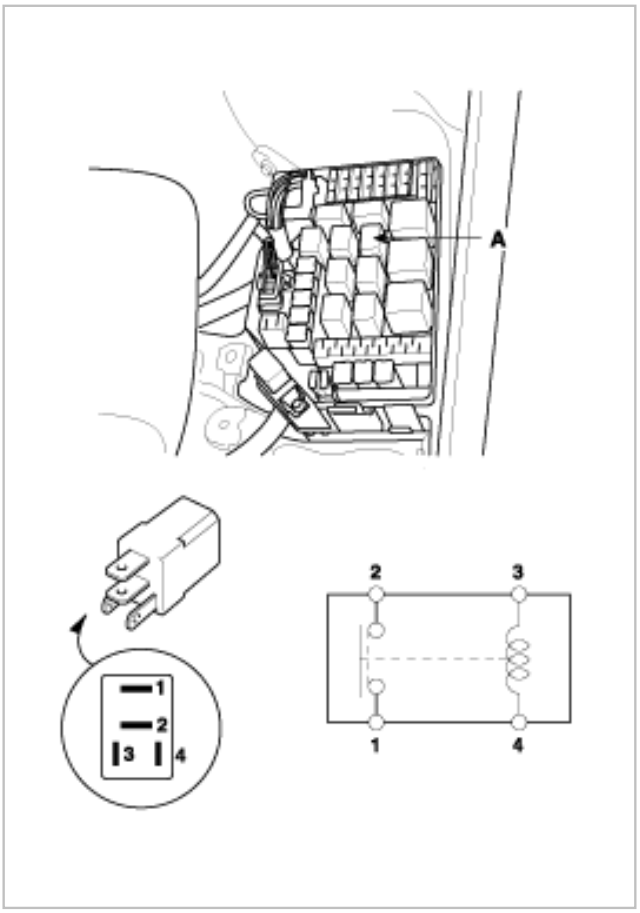
NOTE

After adjustment, apply a small amount of paint around the screw head to keep it from loosening.



HORN RELAY INSPECTION

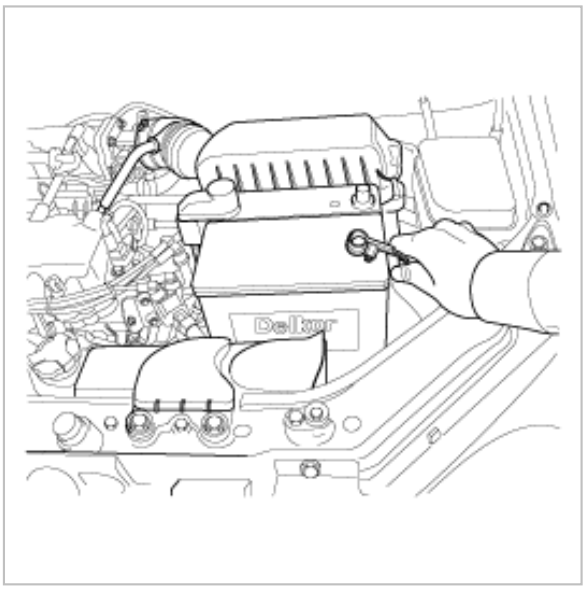
1. Remove the horn relay(A) from the engine compartment relay box.
2. Check for continuity between the terminals.
3. There should be continuity between the No.1 and No.2 terminals when power and ground are connected to the No.4 and No.3 terminals.
4. There should be no continuity between the No.1 and No.2 terminals when power is disconnected.



Terminal / Power (No.3-No.4)	1	2	3	4
Disconnected			○	○
Connected	○	○	⊖	⊕

REMOVAL

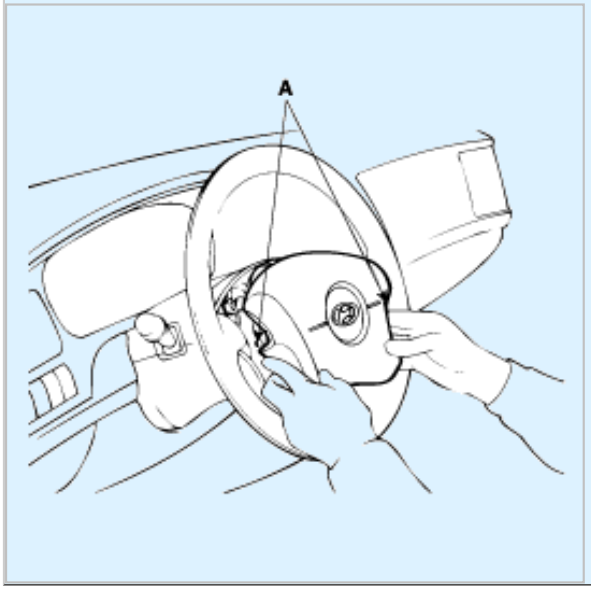
1. Disconnect the negative(-) battery terminal.



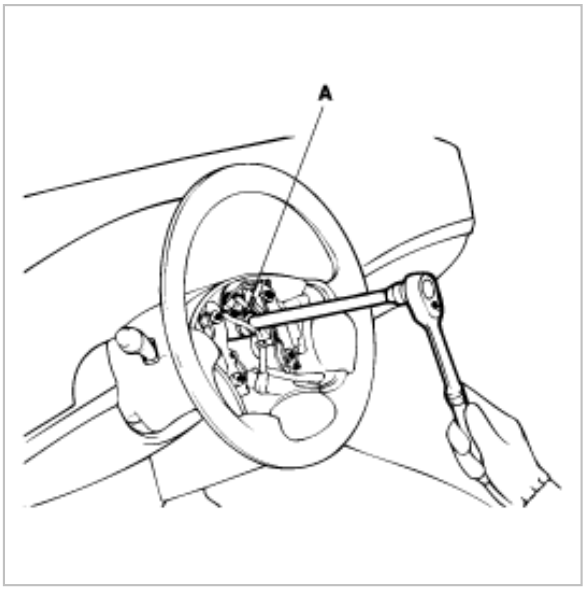
2. Remove the 2 bolts(A) and disconnect the airbag connector and the horn connector, then remove the airbag module.

CAUTION

Remove the horn pad only for vehicle without airbag.



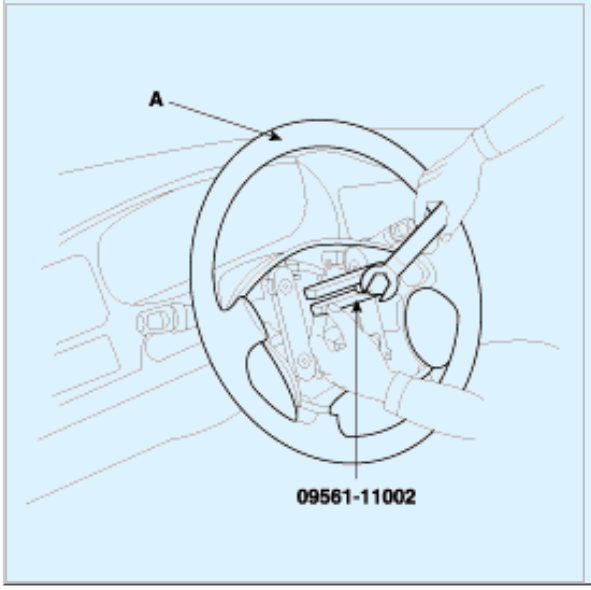
3. Remove the steering wheel lock nut(A).



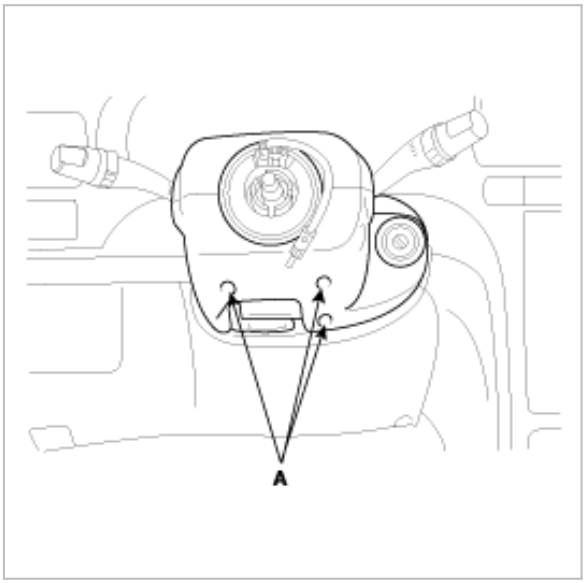
4. Remove the steering wheel(A) with special tool (09561-11002).

CAUTION

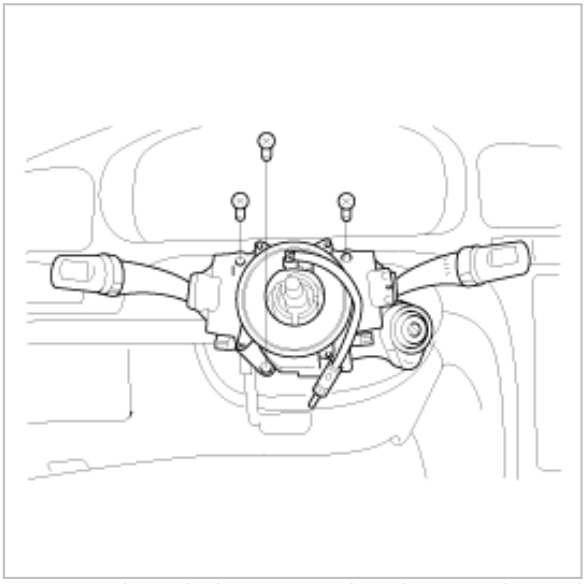
Do not hammer on the steering wheel to remove it. Doing so may damage the collapsible mechanism.



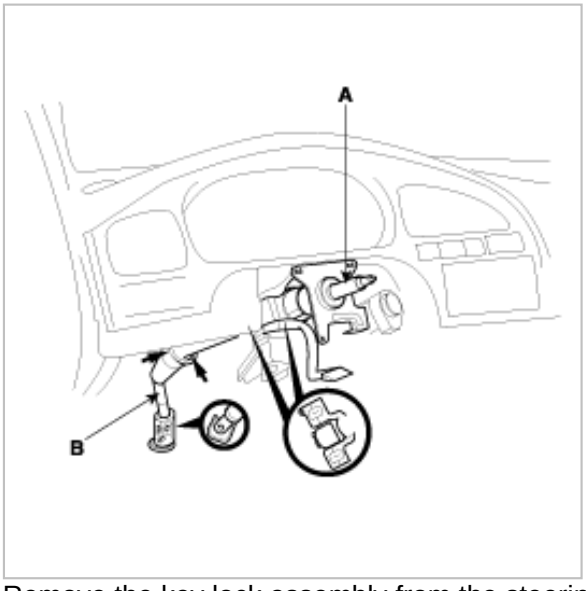
5. Remove the steering column shroud after removing 3 screws(A).



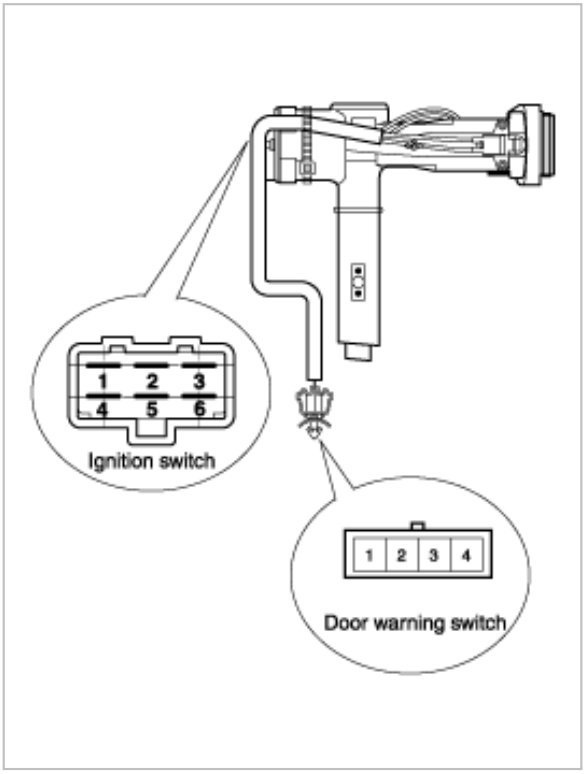
6. Remove the 3 screws holding the multi-function switch, then disconnect the wire connector.
   Remove the multi-function switch assembly.



7. Remove the 5 bolts connecting the steering column shaft (A) and the universal joint (B) as shown in the illustration.



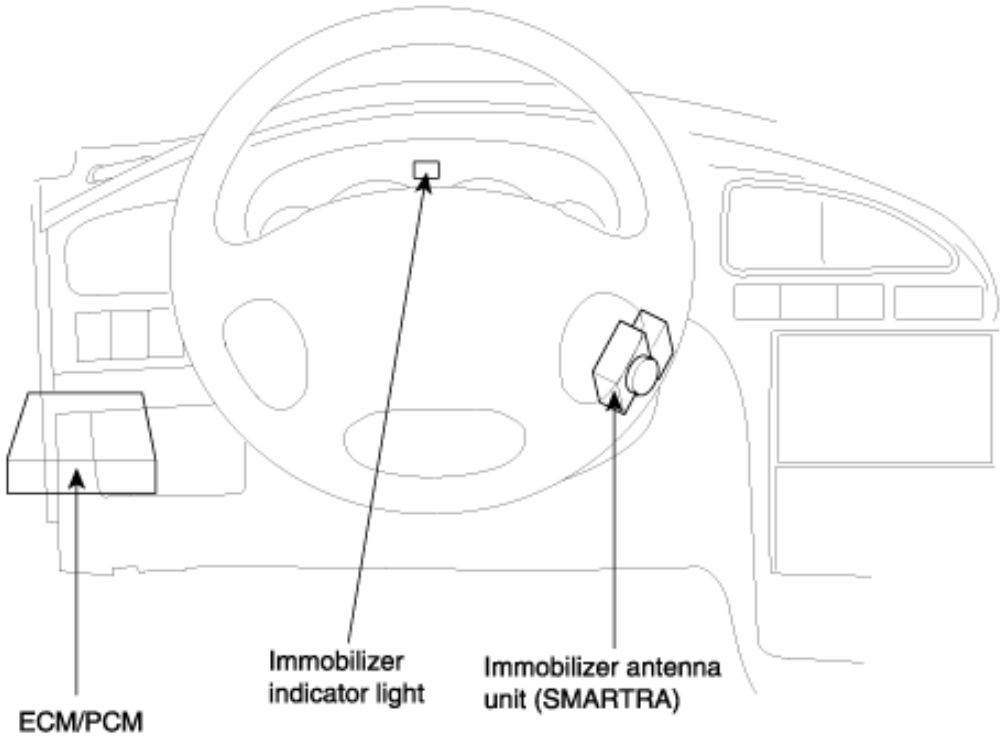
8. Remove the key lock assembly from the steering column shaft. (see ST group-steering column/shaft)
9. Installation is the reverse of removal.

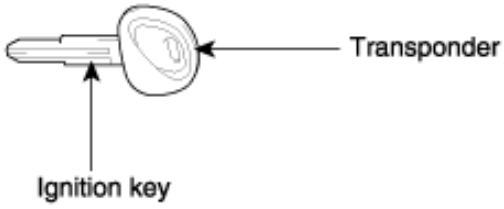


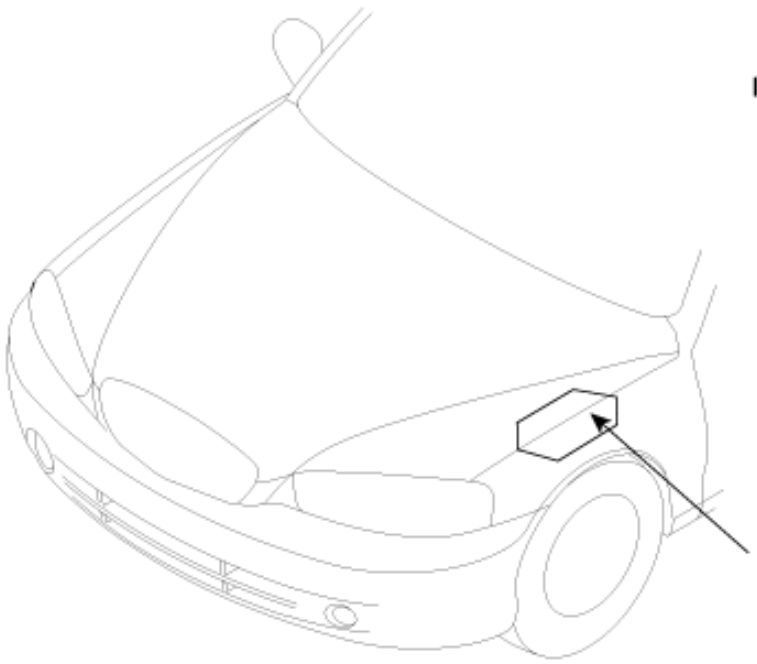
1. Disconnect the ignition switch connector and the door warning switch connector under the steering column.
2. Check for continuity between the terminals.
3. If continuity is not as specified, replace the switch.

TERMINAL / POSITION / KEY		IGNITION SWITCH						STEERING		DOOR WARNING SWITCH		KEY HOLE ILLUMINATION	
		5	3	1	2	4	6	TRAVEL	TRAVEL	3	4	1	2
LOCK	REMOVAL							LOCK				●	●
	INSERT							LOCK	UNLOCK	●	●		
ACC		●	●					UNLOCK					
ON		●	●	●	●	●							
START		●	●	●	●	●	●						

COMPONENTS



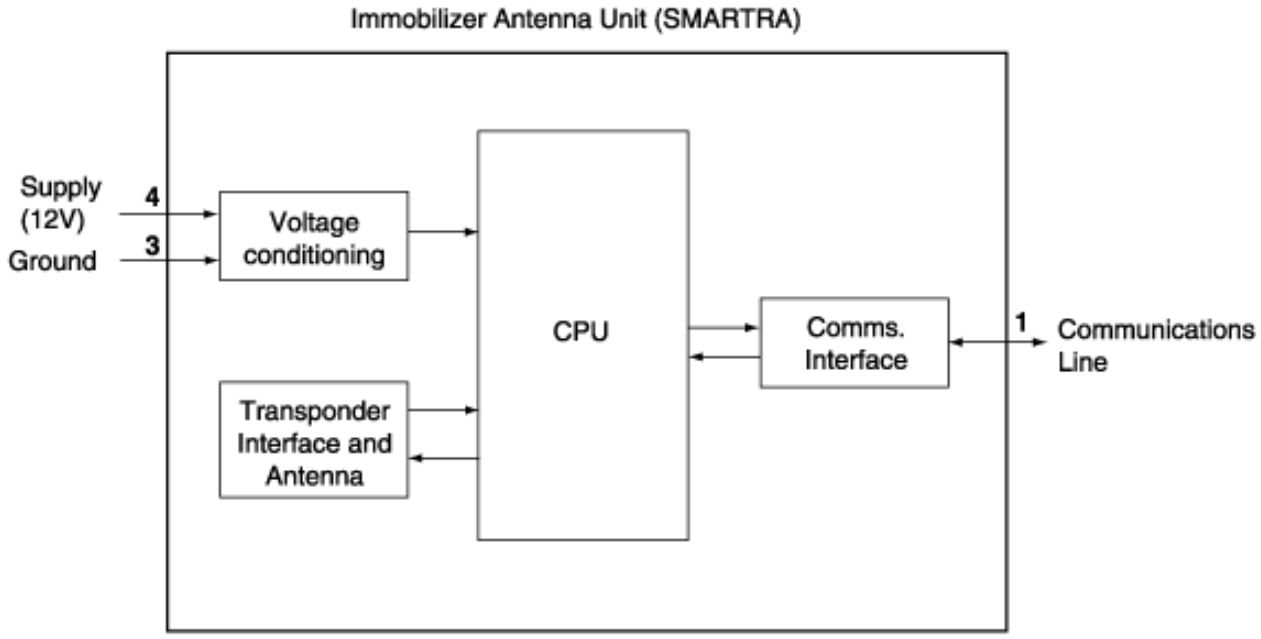


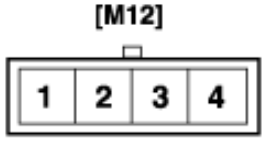


Engine compartment relay & fuse box
- Sensor fuse (10A)
- Fusible link-ECU (20A)
- Engine control main relay

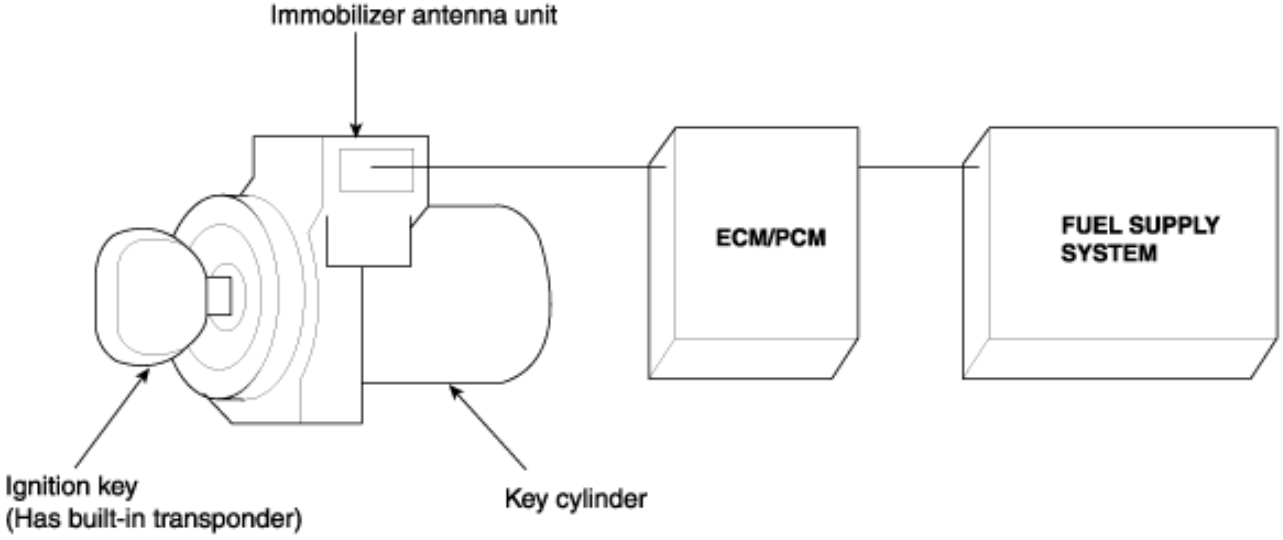
DESCRIPTION

SYSTEM BLOCK DIAGRAM





(SMARTRA side connector)



- The immobilizer system can store up to four key codes.
- If it is necessary to rewrite the ECM/PCM to learn a new key, the dealer needs the customer's vehicle, all its master keys and the Hi-scan(pro) equipped with an immobilizer program card. Any key that is not learned during rewriting will no longer start the engine.
- If the customer has lost his key, and cannot start the engine, contact Hyundai-motor service station.
- If the proper key has been used, the ECM/PCM will energize the fuel supply system. The immobilizer indicator light in the gauge assembly will simultaneously come on for about two seconds, then go off, indicating that the immobilizer antenna unit has recognized the code sent by the transponder.
- If the wrong key has been used and the code was not received or recognized by the ECM/PCM the indicator light will come on for about two seconds, then it will continue blinking until the ignition switch is turned OFF.

PROBLEMS AND REPLACEMENT PARTS :

Problem	Part set	Hi-scan (pro) required?
Master key has been lost or additional master key is required	Blank key	YES
All master keys have been lost	Blank key(4)	YES
Immobilizer antenna unit does not work	Immobilizer antenna unit	NO
ECM/PCM does not work	ECM/PCM	YES
Ignition switch does not work	Ignition switch with immobilizer antenna unit. Master key	YES
Unidentified vehicle specific data occurs	Ignition switch with immobilizer antenna unit. Master key ECM/PCM	YES

COMPONENTS OPERATIONS

The vehicle immobilizer system consists of the ECM/PCM, the Immobilizer antenna unit (SMARTRA) and transponder built into the ignition key.

COMPONENTS	FUNCTION
ECM	The ECM carries out a check of the ignition key using a special encryption algorithm, which is programmed into the transponder as well as the ECM simultaneously. Only if the results are equal can the engine be started. The data of all transponders, which are valid for the vehicle, are stored in the ECM.
SMARTRA	The SMARTRA carries out communication with the built-in transponder in the ignition key. This wireless communication runs on RF(Radio frequency of 125 kHz). The SMARTRA is mounted at the ignition lock close to the antenna coil for RF transmission and receiving. The RF signal from the transponder, received by the antenna coil, is converted into messages for serial communication by the SMARTRA device. And, the received messages from the ECM are converted into an RF signal, which is transmitted to the transponder by the antenna. The SMARTRA does not carry out the validity check of the transponder or the calculation of encryption algorithm. This device is only an advanced interface, which converts the RF data flow of the transponder into serial communication to the ECM and vice versa.

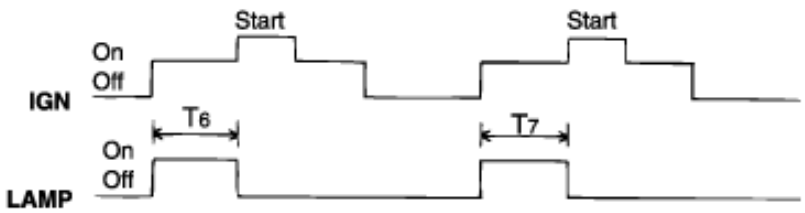
TRANSPONDER (built-in keys)	The transponder has an advanced encryption algorithm. During the key teaching procedure, the transponder will be programmed with vehicle specific data. The vehicle specific data are written into the transponder memory. The write procedure is once only; therefore, the contents of the transponder can never be modified or changed.

TEACHING PROCEDURES

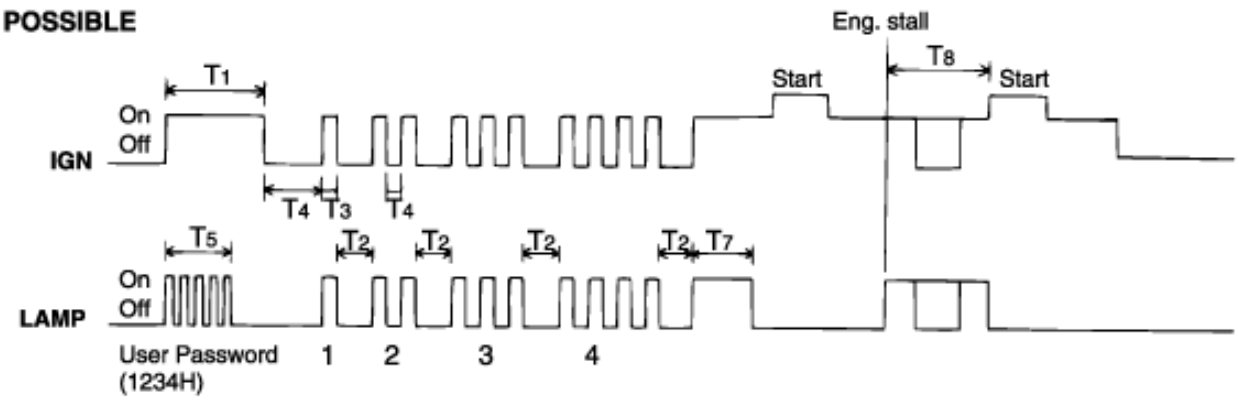
THE USER PASSWORD CAN BE IN THE STATUS

LIMP HOME FUNCTION

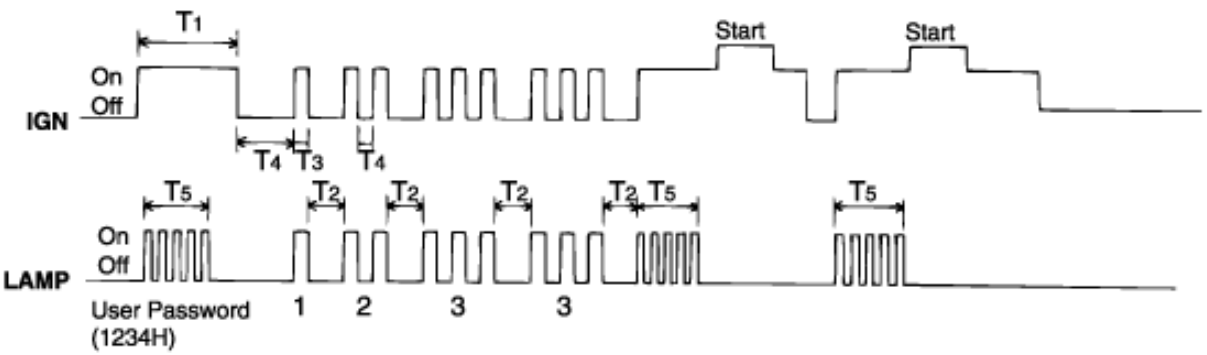
o **NORMAL CONDITION**



o **START POSSIBLE**



o **START IMPOSSIBLE**



NOTE

T1 > 5 sec

3 sec <T2 < 10 sec

0.2 sec <T3 < 5 sec

0.2 sec <T4 < 3 sec

T5 = 5 sec

T5 = 5 sec

T6 < 5 sec

T7 < 30 sec

T8 < 8 sec

1. **LIMP HOME BY TESTER**

   If the ECM detects the fault of the SMARTRA or transponder, the ECM will allow limp home function of the immobilizer. Limp home is only possible if the user password (4 digits) has been given to the ECM before. This password can be selected by the vehicle owner and is programmed at the service station.

   The user password can be sent to the ECM via the special tester menu.

   Only if the ECM is in status "learnt" and the user password status is "learnt" and the user password is correct, the ECM will be unlocked for a period of time (30 sec.). The engine can only be started during this time. After the time has elapsed, engine start is not possible.

   If the wrong user password is sent, the ECM will reject the request of limp home for one hour. Disconnecting the battery or any other action cannot reduce this time. After econnecting the battery to the ECM, the timer starts again for one hour.

2. **LIMP HOME BY IGNITION KEY**

   The limp home can be activated also by the ignition key. The user password can be input to the ECM by a special sequence of ignition on/off.

   Only if the ECM is in status "learnt" and the user password status is "learnt" and the user password is correct, the ECM will be unlocked for a period of time (30 sec.). The engine can be started during this time. After the time has elapsed, engine start is not possible. After a new password has been input, the timer (30 sec.) will start again.

   After ignition off, the ECM is locked if the timer has elapsed 8 seconds. For the next start, the input of the user password is requested again.

DIAGNOSIS OF IMMOBILIZER FAULTS

THE DIAGNOSIS MONITORS :

- Communication between the ECM and the SMARTRA.
- Function of the SMARTRA and the transponder.
- Data (stored in the ECM) related to the immobilizer function.

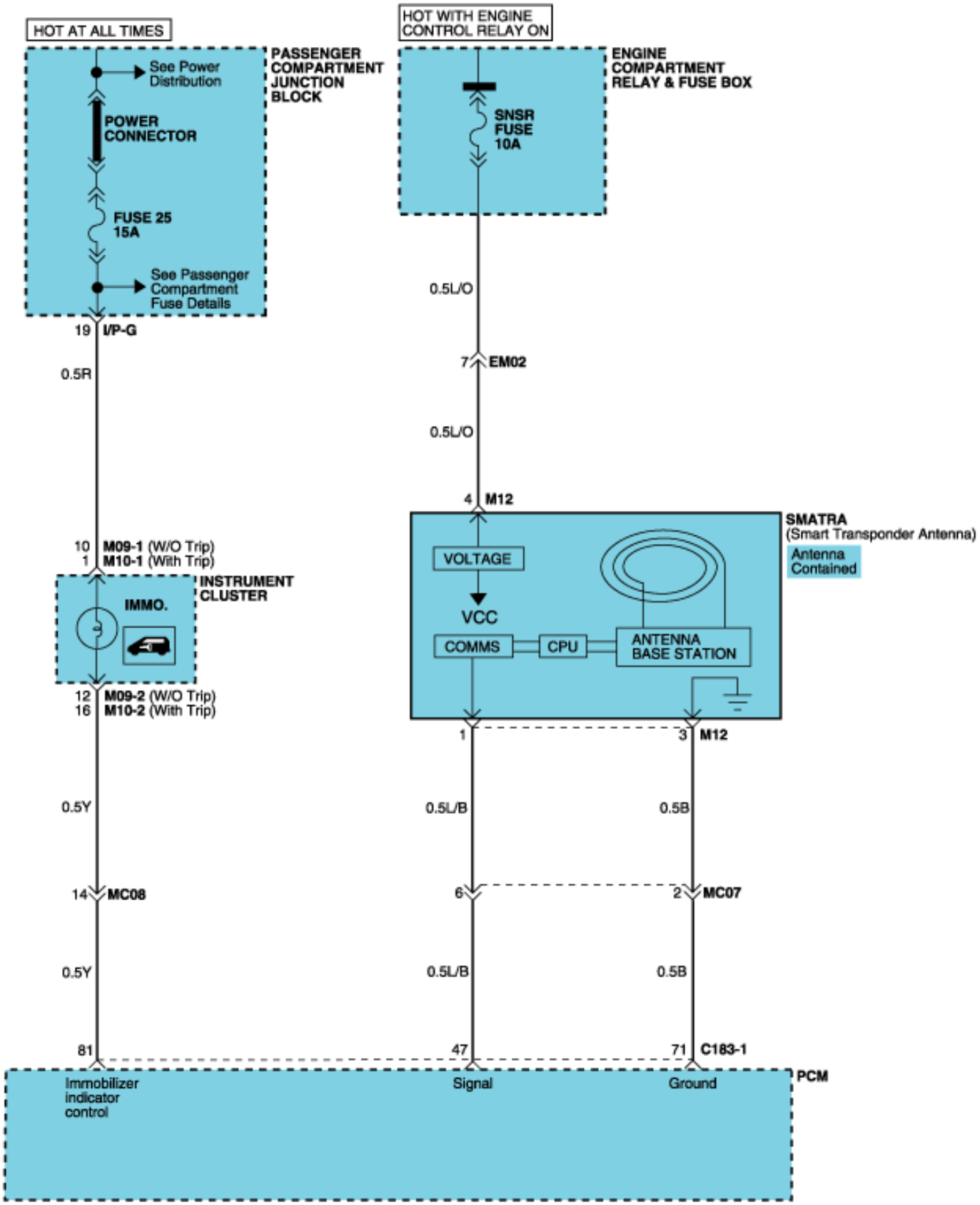
There are four different faults that are assigned to the immobilizer system. Every fault is broken down into four different types (circuit malfunction,circuit range / performance problem, low input, high input). The following table shows the assignment of immobilizer related faults to each type :

Immobilizer Related Faults	Fault types	Diagnostic codes
Transponder Fault	Invalid transponder data	P1801
	Transponder not in password mode or transport data has been changed	
	Programming error	
SMARTRA Fault	Antenna error	P1800
	Invalid request from ECM or corrupted data	P1803
	No answer from SMARTRA	P1610
	Invalid message from SMARTRA to ECM	

EEPROM	Inconsistent data of EEPROM	P1805
	Invalid write operation to EEPROM	
Immobilizer indicator or ECM Faults	Not plausible immobilizer indicator stored at ECM	P1805
	No valid data from SMARTRA after 3 attempts by ECM	
	Invalid tester message or unexpected requests by tester	

REPLACEMENT OF ECM AND SMARTRA
NEUTRALIZING OF ECM

CIRCUIT DIAGRAM



TROUBLESHOOTING

DIAGNOSTIC TROUBLE CODE CHART

DTC No.	Detection item	See page
P1610	•No answer from SMARTRA •Invalid message from SMARTRA to ECM	BE-173
P1800	•Antenna coil error	BE-175
P1801	•Invalid transponder data •Programming error	BE-176
P1803	•Invalid request from engine ECM or corrupted data	BE-178
P1805	•Inconsistent data of EEPROM •Invalid write operation to EEPROM •Not plausible immobilizer indicator stored in the ECM •No valid data from SMARTRA after 3 attempts by ECM •Invalid tester message or unexpected requests by tester	BE-179

DTC	P1610	No Answer or Invalid Message from SMARTRA

DTC DETECTING CONDITION

DTC No.	Detecting Condition	Possible Cause	Remarks
P1610	1. No answer from SMARTRA 2. Invalid message from SMARTRA to ECM	•An open in the wire between immobilizer antenna (SMARTRA) and engine ECM •Faulty immobilizer antenna unit (SMARTR) •Faulty engine control main relay circuit	P1801 and P1805 can be displayed when P1610 occurs

INSPECTION PROCEDURES

1. PROBLEM VERIFICATION

1. Connect the hi-scan (pro) to data link connector.
2. Turn the ignition switch to ON and verify the DTC "P1610" is displayed.
3. Erase the DTC "P1610" with the hi-scan (pro) and then monitor again.

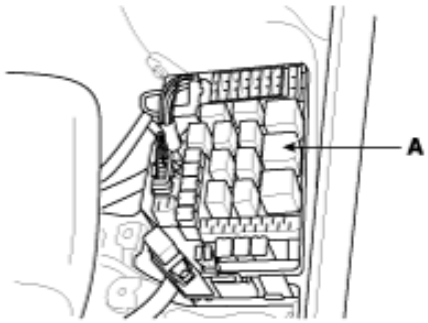
Is the same code displayed ?

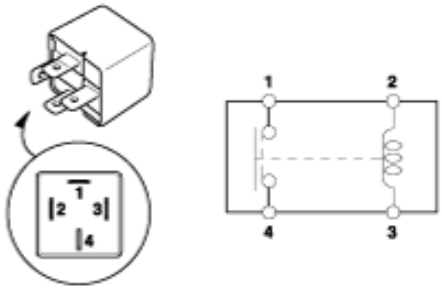
Yes	No	Problem is intermittent and engine control module memory was not cleared.

2. CHECK ENGINE CONTROL MAIN RELAY

1. Check that an operating noise can be heard from the engine control main relay(A).
2. Check for continuity between the terminals of main relay.

Terminal / Power (No.2-No.3)	2	3	1	4
Disconnected	○	○		
Connected	⊖	⊕	○	○



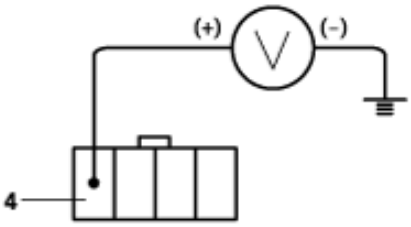


OK	NG	Replace the engine control main relay.

3. CHECK POWER VOLTAGE TO SMARTRA

1. Turn the ignition switch to ON.
2. Measure the power input voltage of SMARTRA between SMARTRA harness connector terminal 4 and body ground.

• Specification : approximately B+ (12V)



Yes	No	Check for these problems ; • A blown ECU fusible link (20A) or sensor fuse (10A) in the engine compartment relay & fuse box. • An open or short in the wire between the engine control main relay and SMARTRA unit.

4. CHECK HARNESS AND CONNECTOR BETWEEN ANTENNA COIL, SMARTRA UNIT AND ECM

Check for continuity between SMARTRA harness connector terminal 1 and ECM harness connector (C183-1) terminal 47.

Is there continuity ?

Yes	No	Repair an open in the wire between the SMARTRA unit and the ECM.

5. FAULTY SMARTRA UNIT

If all the tests are OK, replace the SMARTRA unit and recheck.

DTC	P1800	Antenna Coil Failure

DTC DETECTING CONDITION

DTC No.	Detecting Condition	Possible Cause	Remarks
P1800	Antenna coil error	•An open in the wire between SMARTRA and antenna coil •Faulty antenna coil	P1801 and P1805 can be displayed when P1800 occurs

INSPECTION PROCEDURE

1. PROBLEM VERIFICATION

1. Connect the hi-scan (pro) to data link connector.
2. Turn the ignition switch to ON and verify the DTC "P1800" is displayed.
3. Erase the DTC "P1800" with the hi-scan (pro) and then monitor again.

Is the same code displayed ?

Yes	No	Problem is intermittent and engine control module memory was not cleared.

2. CHECK FOR CONTINUITY BETWEEN ANTENNA COIL AND SMARTRA UNIT

Is there continuity ?

Yes	No	Repair an open in the wire between the antenna coil and the SMARTRA unit.

3. FAULTY ANTENNA COIL ASSEMBLY

If all the tests are OK, replace the antenna coil assembly and recheck.

DTC	P1801	Invalid Transponder Data

DTC DETECTING CONDITION

DTC No.	Detecting Condition	Possible Cause	Remarks
P1801	1. Invalid transponder data 2. Programming error	•Storage of invalid data in transponder during key teaching •Faulty transponder or different kind of transponder •Omitted transponder in the key	P1805 can be displayed when P1801 occurs

INSPECTION PROCEDURES

1. PROBLEM VERIFICATION

1. Connect the hi-scan (pro) to data link connector.
2. Turn the ignition switch to ON and verify the DTC "P1801" is displayed.
3. Erase the DTC "P1801" with the hi-scan (pro) and then monitor again.

Is the same code displayed ?

Yes	No	Problem is intermittent and engine control module memory was not cleared.

2. KEY TEACHING PROCEDURES

1. The key teaching is done after replacing a defective ECM or for providing of additional keys to the vehicle owner.
2. Connect the hi-scan (pro) to data link connector.
3. Turn the ignition switch to ON and select "TEACHING" mode of immobilizer system on the hi-scan (pro).
4. Input the pin code which consists of 6 digits.

   NOTE
   Because the pin code is security code, contact authorized HMC service staff to know the pin code.

5. If incorrect pin code is inputted for 3 consecutive times, ECM should disallow key teaching function for 1 hours.
6. If the data is correct, the key teaching is completed.

Is the key taught completely ?

Yes	No	Check for these problems ; • Storage of invalid data in transponder. • Different kind of transponder. • Omitted transponder in the key.

3. CHECK IF DTC "P1801" IS DISPLAYED AGAIN

1. Connect the hi-scan (pro) to data link connector.
2. Turn the ignition switch to ON and verify the DTC "P1801" is displayed.

Is the same code displayed ?

Yes

4. FAULTY TRANSPONDER KEY

Replace the key set assembly and key teaching must be done.

DTC	P1803	Invalid Request from ECM or Corrupted Data

DTC DETECTING CONDITION

DTC No.	Detecting Condition	Possible Cause	Remarks
P1803	Invalid request from engine ECM or corrupted data	Faulty communication between key, SMARTRA and engine ECM	P1801 and P1805 can be displayed when P1803 occurs

INSPECTION PROCEDURES

1. PROBLEM VERIFICATION

1. Connect the hi-scan (pro) to data link connector.
2. Turn the ignition switch to ON and verify the DTC "P1803" is displayed.
3. Erase the DTC "P1803" with the hi-scan (pro) and then monitor again.

Is the same code displayed ?

Yes	No	Problem is intermittent and engine control module memory was not cleared.

2. CHECK HARNESS AND CONNECTOR BETWEEN SMARTRA UNIT AND ECM

Check for continuity between SMARTRA harness side connector terminal 1 and ECM harness side connector (C183-1) terminal 47.

Is there continuity ?

Yes	No	Repair an open in the wire between the SMARTRA unit and the ECM.

3. FAULTY SMARTRA UNIT OR ECM

If all the tests are OK, replace the SMARTRA unit or ECM and recheck.

NOTE
After replacing the ECM, key teaching must be done.

DTC	P1805	Communication Failure

DTC DETECTING CONDITION

DTC No.	Detecting Condition	Possible Cause	Remarks

P1805	1. Inconsistent data of EEPROM 2. Invalid write operation to EEPROM 3. Not plausible immobilizer indicator stored in the ECM 4. No valid data from SMARTRA after 3 attempts by ECM 5. Invalid tester message or unexpected requests by tester	• Faulty initialization of engine ECM EEPROM • Damage of engine ECM EEPROM data • Faulty immobilizer antenna unit (SMARTRA)	P1801 can be displayed when P1805 occurs

INSPECTION PROCEDURE

1. PROBLEM VERIFICATION

1. Connect the hi-scan (pro) to data link connector.
2. Turn the ignition switch to ON and verify the DTC "P1805" is displayed.
3. Erase the DTC "P1805" with the hi-scan (pro) and then monitor again.

Is the same code displayed ?

Yes	No	Problem is intermittent and engine control module memory was not cleared.

2. KEY TEACHING PROCEDURES

1. Connect the hi-can (pro) to data link connector.
2. Turn the ignition switch to ON and select "TEACHING" mode of immobilizer system on the hi-scan (pro).
3. Input the pin code which consists of 6 digits.

   NOTE
   Because the pin code is security code, contact authorized HMC service staff to know the pin code.

4. If the data is correct, the key teaching is completed.

Is the key taught completely ?

Yes	No	Check for these problems ; • Storage of invalid data in transponder. • Different kind of transponder. • Omitted transponder in the key.

3. CHECK IF DTC "P1805" IS DISPLAYED AGAIN

1. Connect the hi-scan (pro) to data link connector.
2. Erase the DTC with the hi-scan (pro).
3. Check if DTC "P1805" is displayed again.

Is the same code displayed ?

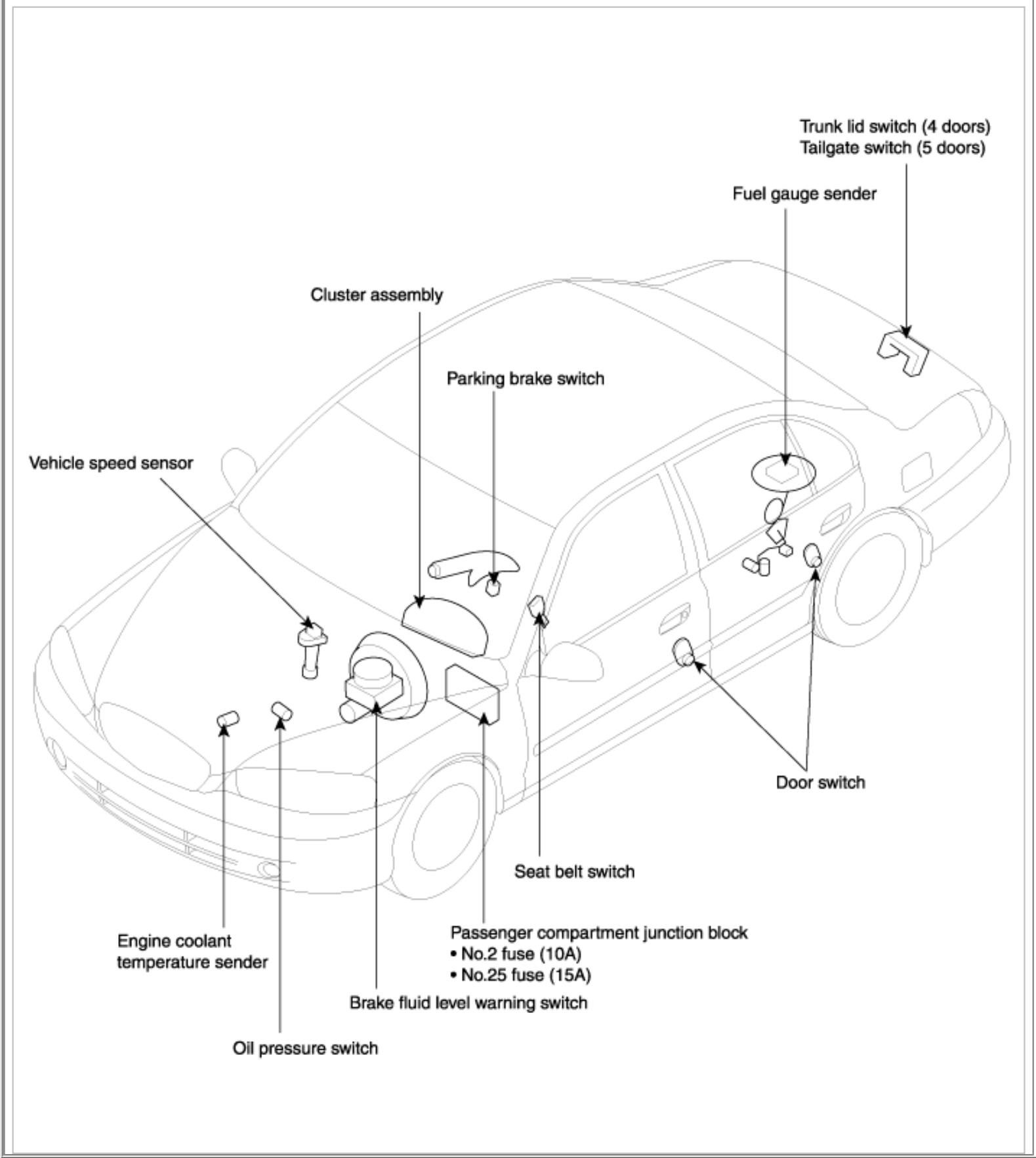
Yes

4. FAULTY SMARTRA UNIT OR ECM

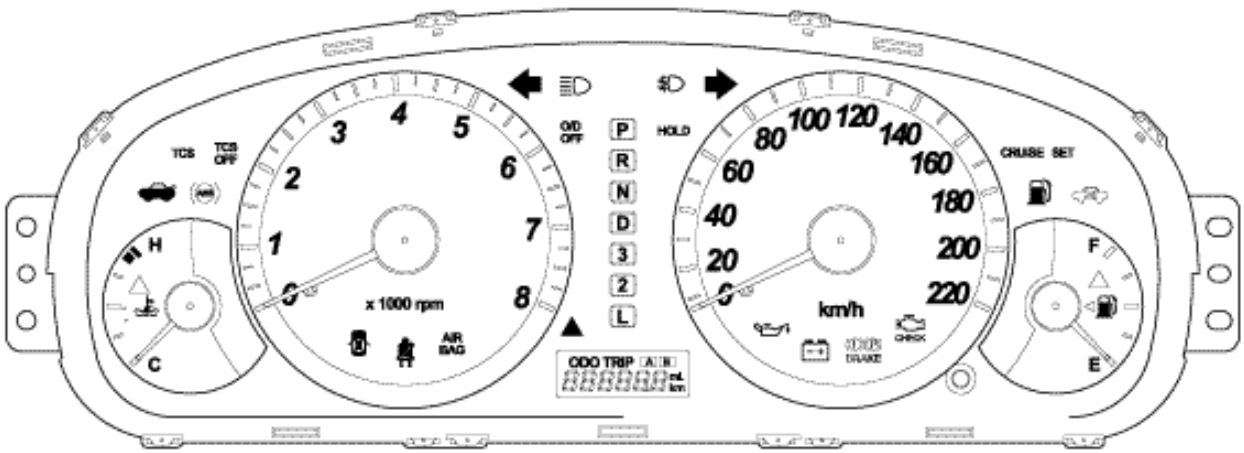
If all the tests are OK, replace the SMARTRA unit or ECM and recheck.

NOTE
After replacing the ECM, key teaching must be done.

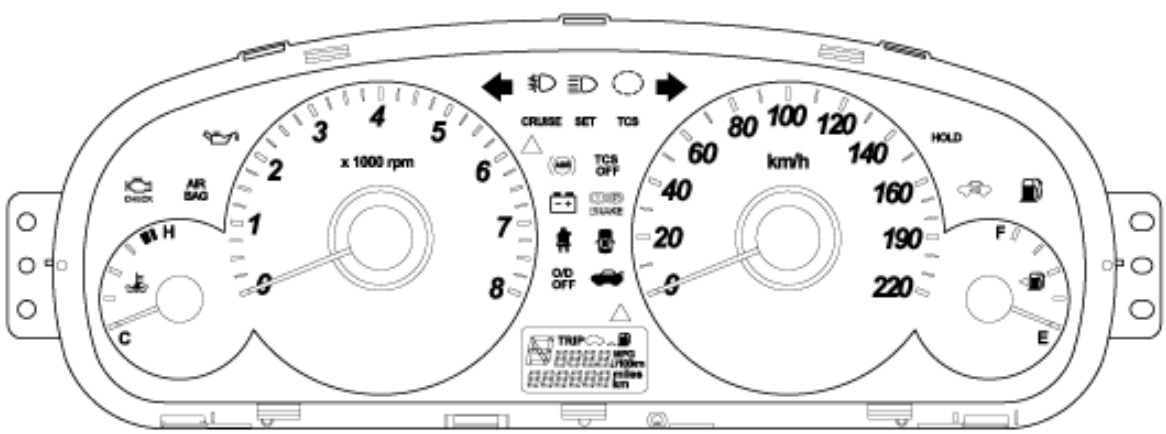
COMPONENTS


Trunk lid switch (4 doors)
Tailgate switch (5 doors)
Fuel gauge sender
Cluster assembly
Parking brake switch
Vehicle speed sensor
Door switch
Seat belt switch
Engine coolant temperature sender
Passenger compartment junction block
• No.2 fuse (10A)
• No.25 fuse (15A)
Brake fluid level warning switch
Oil pressure switch

COMPONENTS



[Trip computer type]



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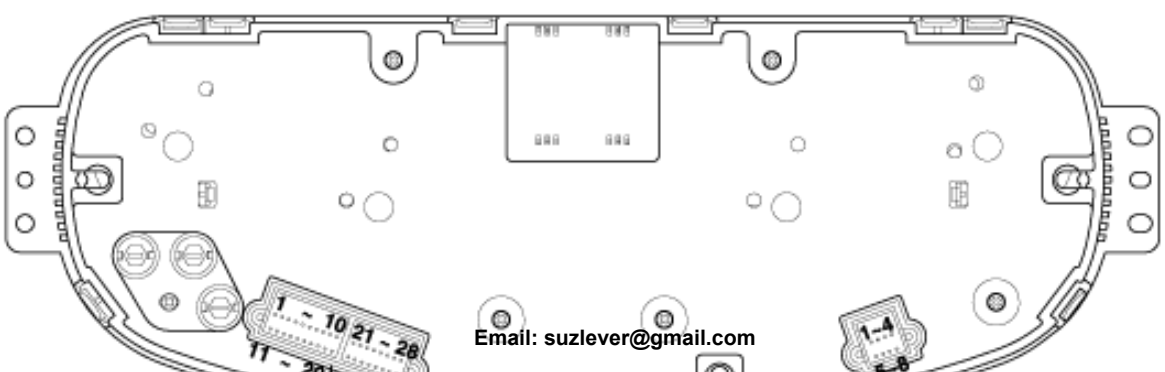
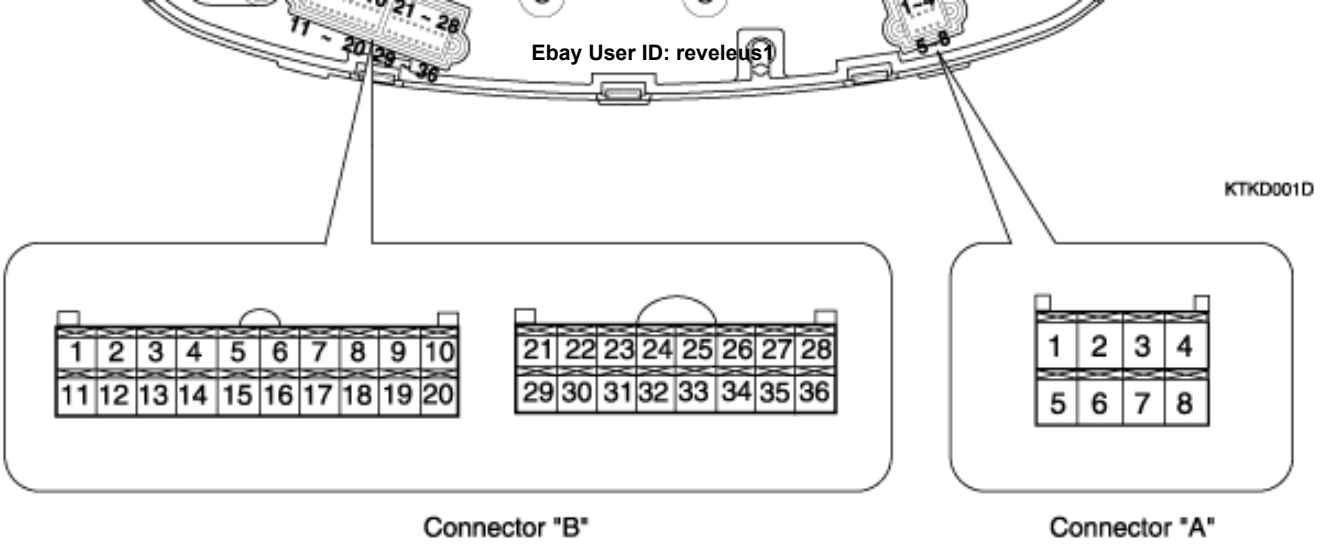
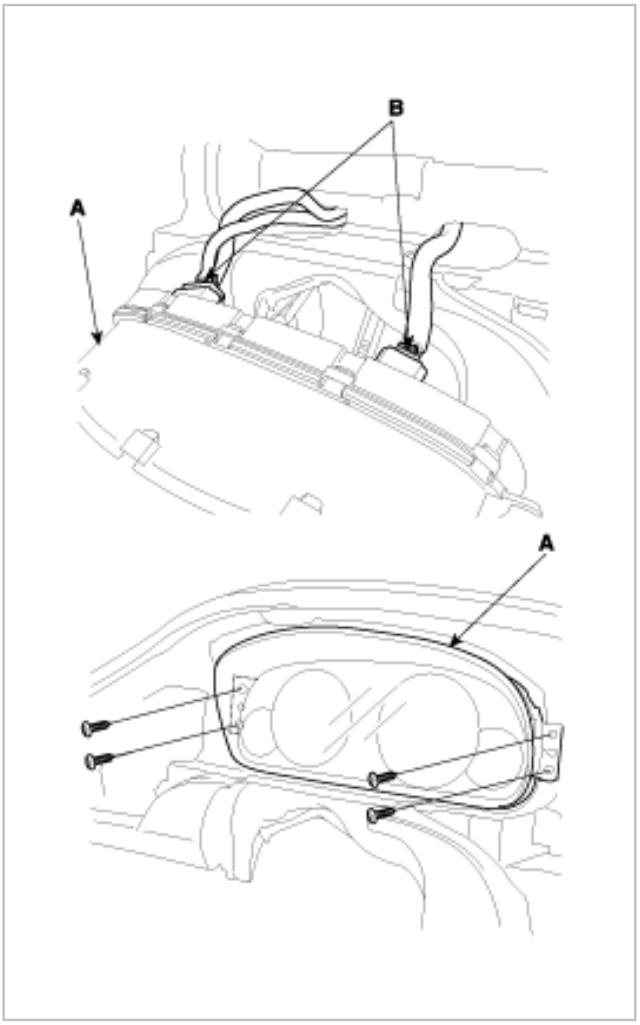




REMOVAL

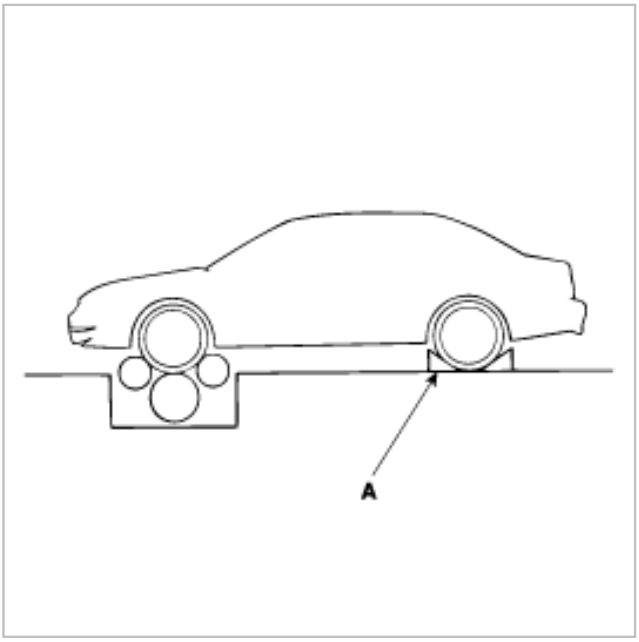
1. Disconnect the negative(-) battery terminal.
2. Remove the cluster facia panel.
   (see BD group-crash pad)
3. Remove the cluster(A) from the housing after removing 4 screws and disconnect the wire connectors (B).



4. Installation is the reverse of removal.

INSPECTION

SPEEDOMETER



1. Adjust the pressure of the tires to the specified level.
2. Drive the vehicle onto a speedometer tester. Use wheel chocks(A) as appropriate.
3. Check if the speedometer indicator range is within the standard values.

CAUTION

Do not operate the clutch suddenly or increase/ decrease speed rapidly while testing.

NOTE

Tire wear and tire over or under inflation will increase the indication error.

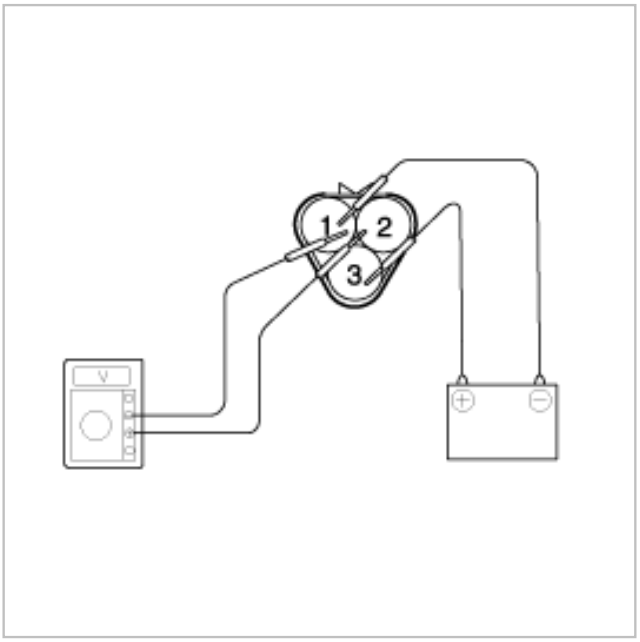
Velocity (km/h)	20	40	60	80	100
Tolerance (km/h)	±2.4				
Velocity (km/h)	120	140	160	180	200
Tolerance (km/h)					

Velocity (MPH)	10	20	40	60	80	100	120	Remark
Tolerance (MPH)								U.S.A

VEHICLE SPEED SENSOR

1. Connect the positive (+) lead from battery to terminal 3 and negative (-) lead to terminal 1.
2. Connect the positive (+) lead from tester to terminal 2 and the negative (-) lead to terminal 1.
3. Rotate the shaft.
4. Check that there is voltage change from approx. 0V to 11V or more between terminals 1 and 2.

5. The voltage change should be 4 times for every revolution of the speed sensor shaft.
   If operation is not as specified, replace the sensor.



TACHOMETER

1. Connect the scan tool to the diagnostic link connector or install a tachometer.
2. With the engine started, compare the readings of the tester with that of the tachometer. Replace the tachometer if the tolerance is exceeded.

CAUTION

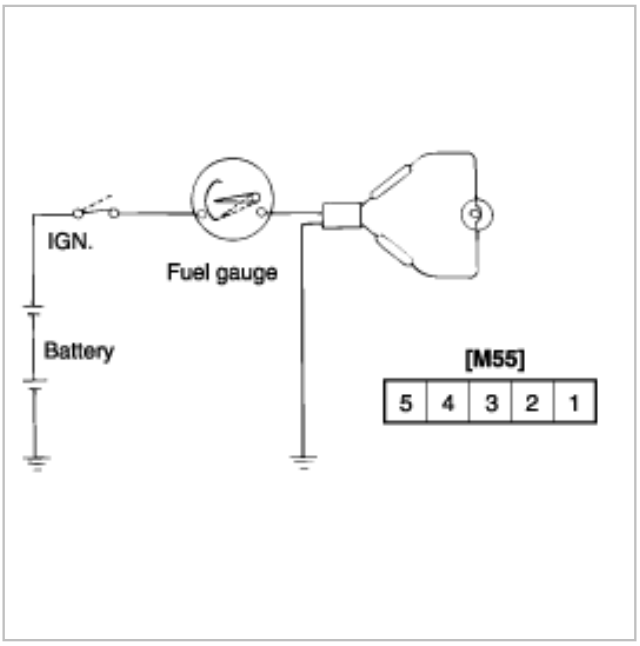
1. Reversing the connections of the tachometer will damage the transistor and diodes inside.
2. When removing or installing the tachometer, be careful not to drop it or subject it to severe shock.

Revolution (RPM)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	Remark
Tolerance (RPM)	±100	±125	±150	±150	±150	±180	±210	Gasoline

FUEL GAUGE

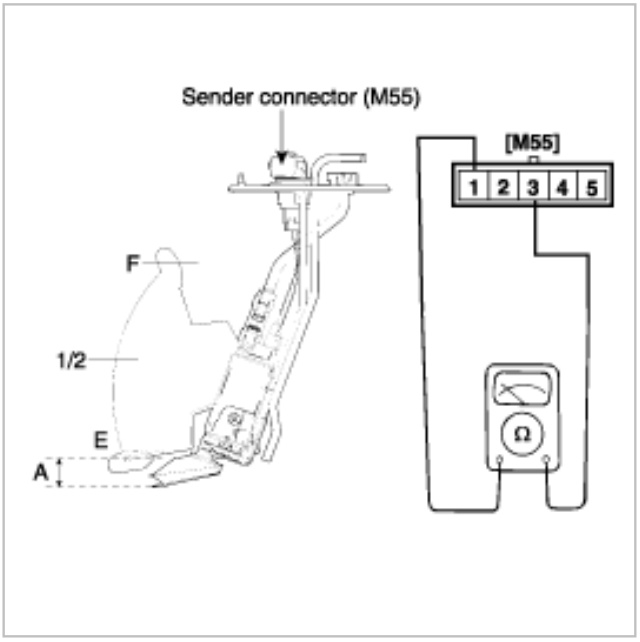
1. Disconnect the fuel sender connector from the fuel sender.
2. Connect a 3.4 watt, 12V test bulb to terminals 1 and 3 on the wire harness side connector.

3. Turn the ignition switch to the ON, and then check that the bulb lights up and the fuel gauge needle moves to full.



FUEL SENDER

1. Using an ohmmeter, measure the resistance between terminals 1 and 3 at each float level.



2. Also check that the resistance changes smoothly when the float is moved from "E" to "F".

Position	Height (A) (mm)	Resistance(Ω)
Sender (E)	35.9 ± 2	200.0 ± 2
Gauge (E)	37.9 ± 2	184.0 ± 2
Warning lamp	42.2 ± 2	170.0 ± 2
1/2	90.2 ± 2	66.0 ± 1
Gauge (F)	128.0 ± 2	15.0 ± 1
Sender (F)	133.9 ± 2	8.0 ± 1

3. If the height resistance is unsatisfied, replace the fuel sender as an assembly.

CAUTION

After completing this test, wipe the sender dry and reinstall it in the fuel tank.

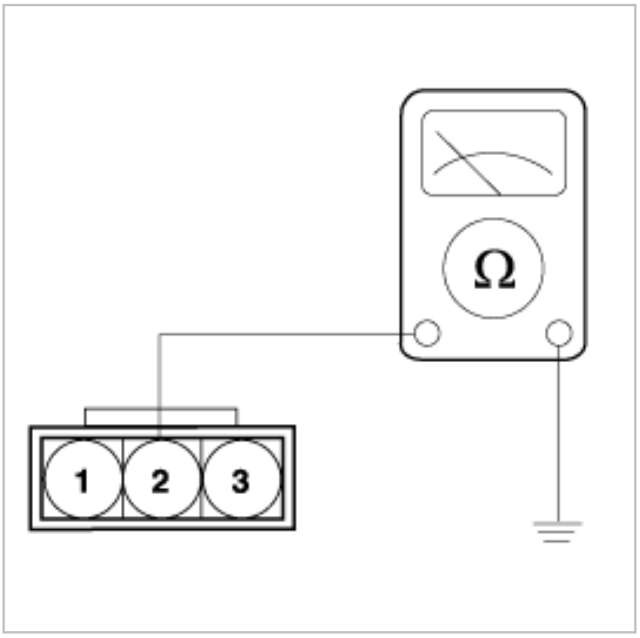
ENGINE COOLANT TEMPERATURE GAUGE

1. Disconnect the wiring connector(A) from the engine coolant temperature sender in the engine compartment.
2. Turn the ignition switch ON. Check that the gauge needle indicates cool. Turn the ignition switch OFF.
3. Connect a 12V, 3.4 watt test bulb between the harness side connector and ground.
4. Turn the ignition switch ON.
5. Verify that the test bulb flashes and that the indicator moves to HOT.

If operation is not as specified, replace the engine coolant temperature gauge. Then recheck the system.

ENGINE COOLANT TEMPERATURE SENDER

1. Using an ohmmeter, measure the resistance between the terminal 2 and ground.

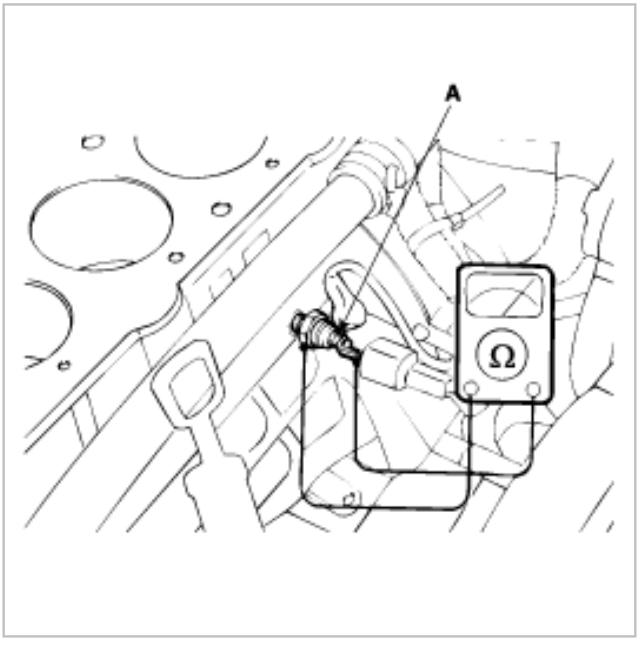


2. If the resistance value is not as shown in the table, replace the temperature sender.

Temperature (°C)	60	85	110	125
Gauge angle (°)	-43±2.4	-7±2.4	-7±2.4	40±2.4
Resistance (Ω)	128	53.8	25.8	17.1

OIL PRESSURE SWITCH

1. Check that there is continuity between the oil press switch terminal(A) and ground with the engine off.
2. Check that there is no continuity between the terminal and ground with the engine running.
3. If operation is not as specified, replace the switch.

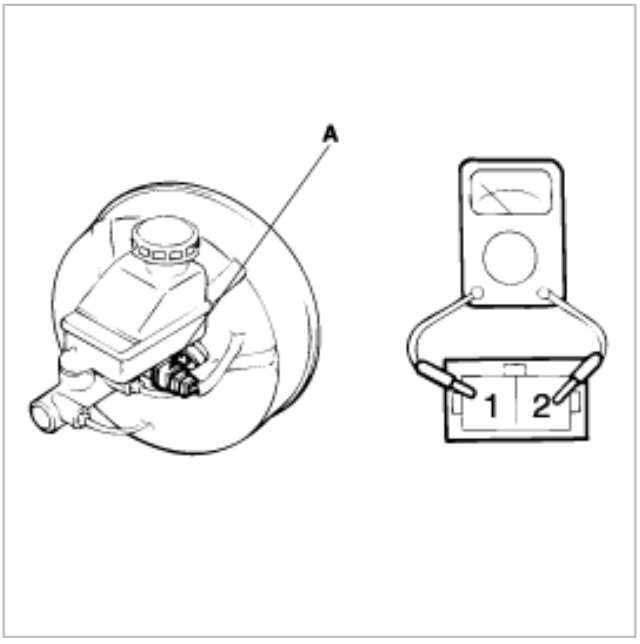


OIL PRESSURE WARNING LAMP

1. Disconnect the connector (A) from the warning switch and ground the terminal on the wire harness side connector.
2. Turn the ignition switch ON. Check that the warning lamp lights up.If the warning lamp doesn't light, test the bulb or inspect the wire harness.

BRAKE FLUID LEVEL WARNING SWITCH

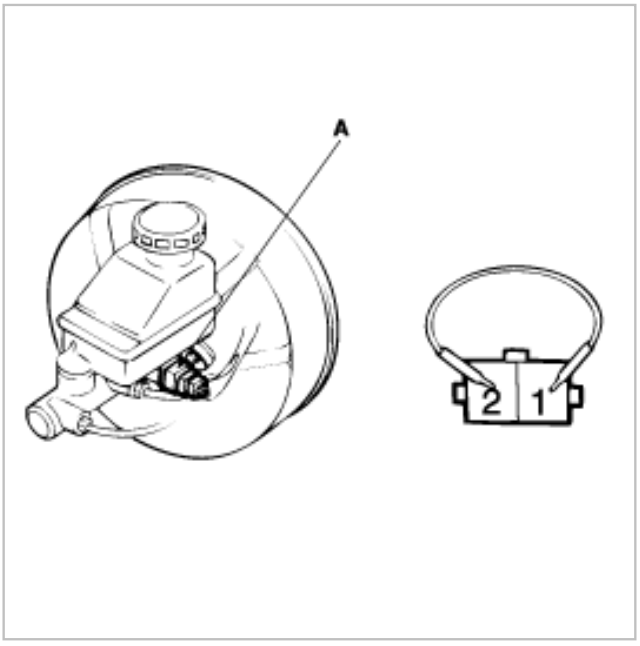
1. Remove the connector(A) from the switch located at the brake fluid reservoir.
2. Verify that continuity exists between switch terminals 1 and 2 while pressing the switch (float) down with a rod.



BRAKE FLUID LEVEL WARNING LAMP

1. Start the engine.
2. Release the parking brake.
3. Remove the connector from the brake fluid level warning switch(A).
4. Ground the connector at the harness side.

5. Verify that the warning lamp lights.

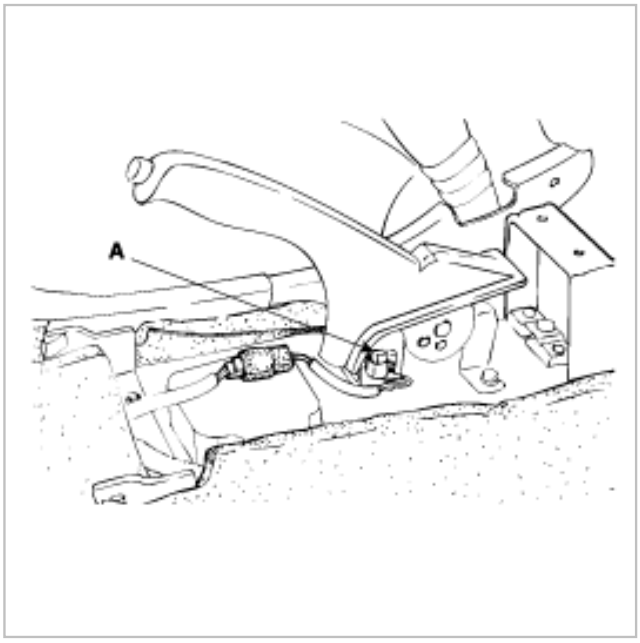


PARKING BRAKE SWITCH

The parking brake switch(A) is a push type located under the parking brake lever. To adjust, move the switch mount up and down with the parking brake lever released all the way.

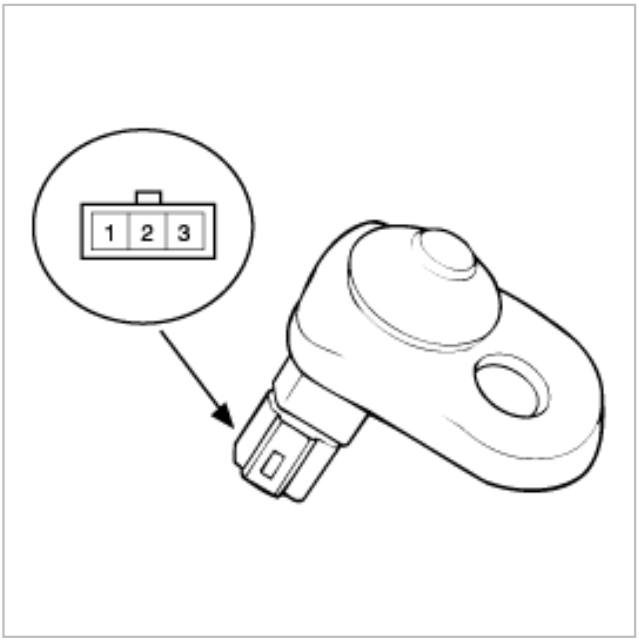
1. Check that there is continuity between the terminal and switch body with the switch ON (Lever is pulled).
2. Check that there is no continuity between the terminal and switch bodywith the switch OFF (Lever is released).

If continuity is not as specified, replace the switch or inspect its ground connection.



DOOR SWITCH

Remove the door switch and check for continuity between the terminals.



[FRONT DOOR SWITCH]

Terminal / Position	1	2	3 (Ground)
Free(Door open)	○	○	○
Push(Door close)			

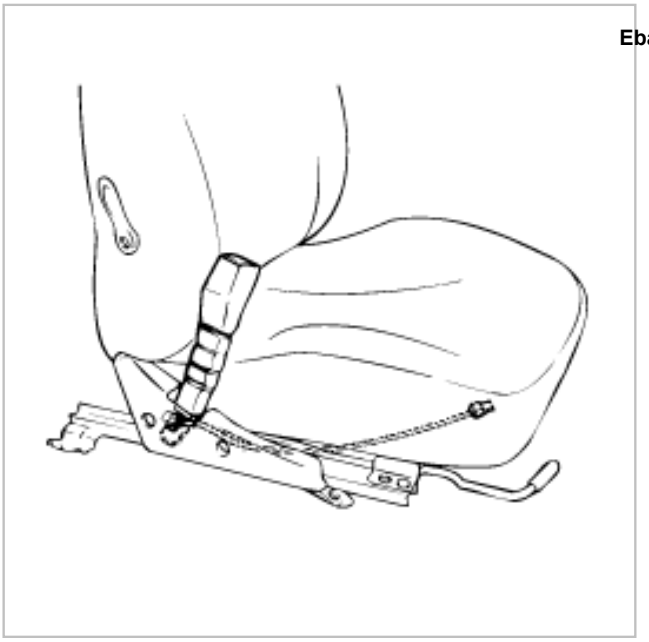
[REAR DOOR SWITCH]

Terminal / Position	2	3 (Ground)
Free(Door open)	○	○
Push(Door close)		

SEAT BELT SWITCH

1. Remove the connector from the switch.
2. Check for continuity between terminals.

Seat belt condition	Continuity
Fastened	Non-conductive (∞Ω)
Not fastened	Conductive (Ω)



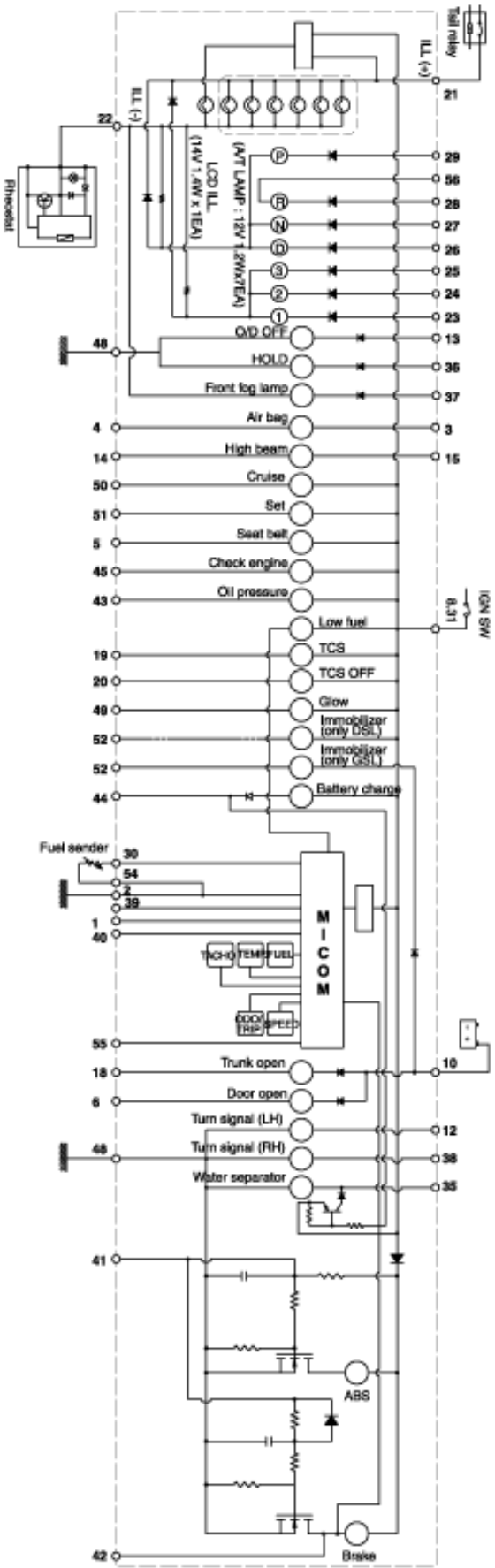
SEAT BELT WARNING LAMP

With the ignition switch turned ON, verify that the lamp glows.

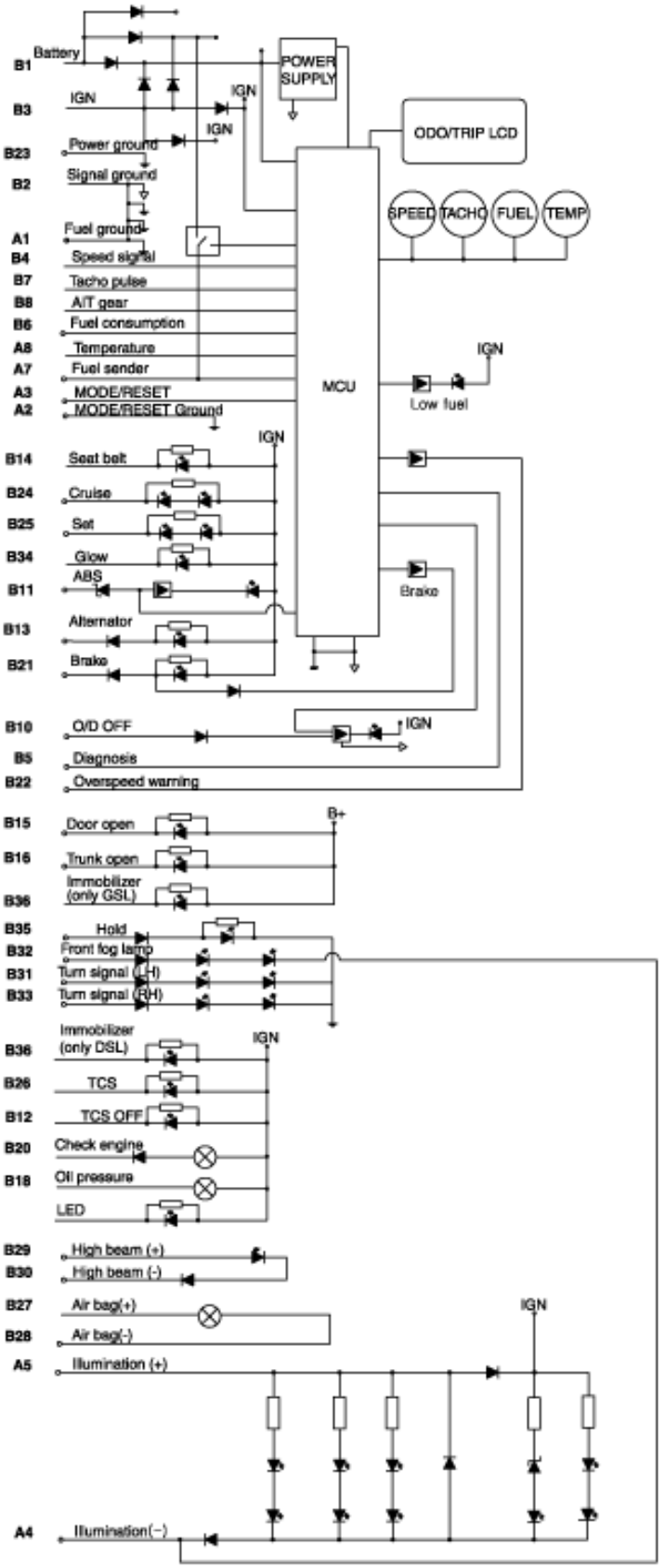
Seat belt condition	Warning lamp
Fastened	OFF
Not fastened	ON

CIRCUIT DIAGRAM

[Standard type]

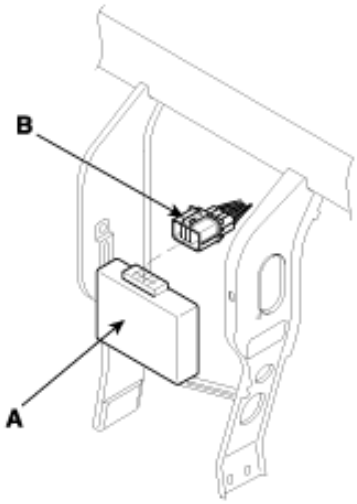


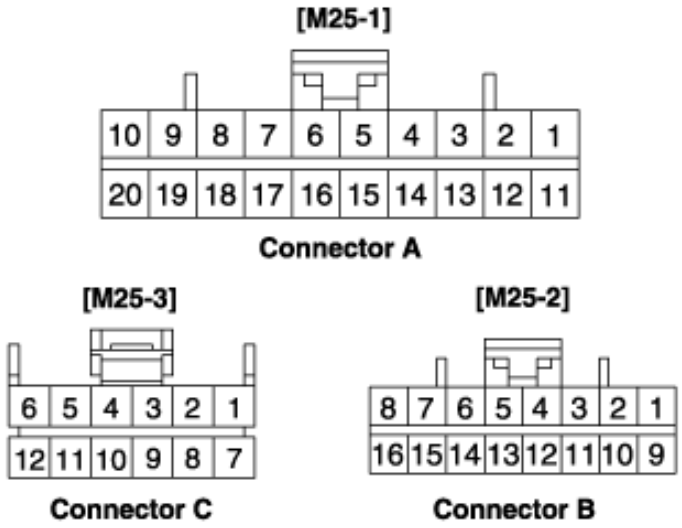
[Trip computer type]



ETACS MODULE INPUT SIGNAL TEST

1. Disconnect the wire connector(B) from the ETACS module(A).
2. Inspect the connector(B) on wire harness side as shown in the below.

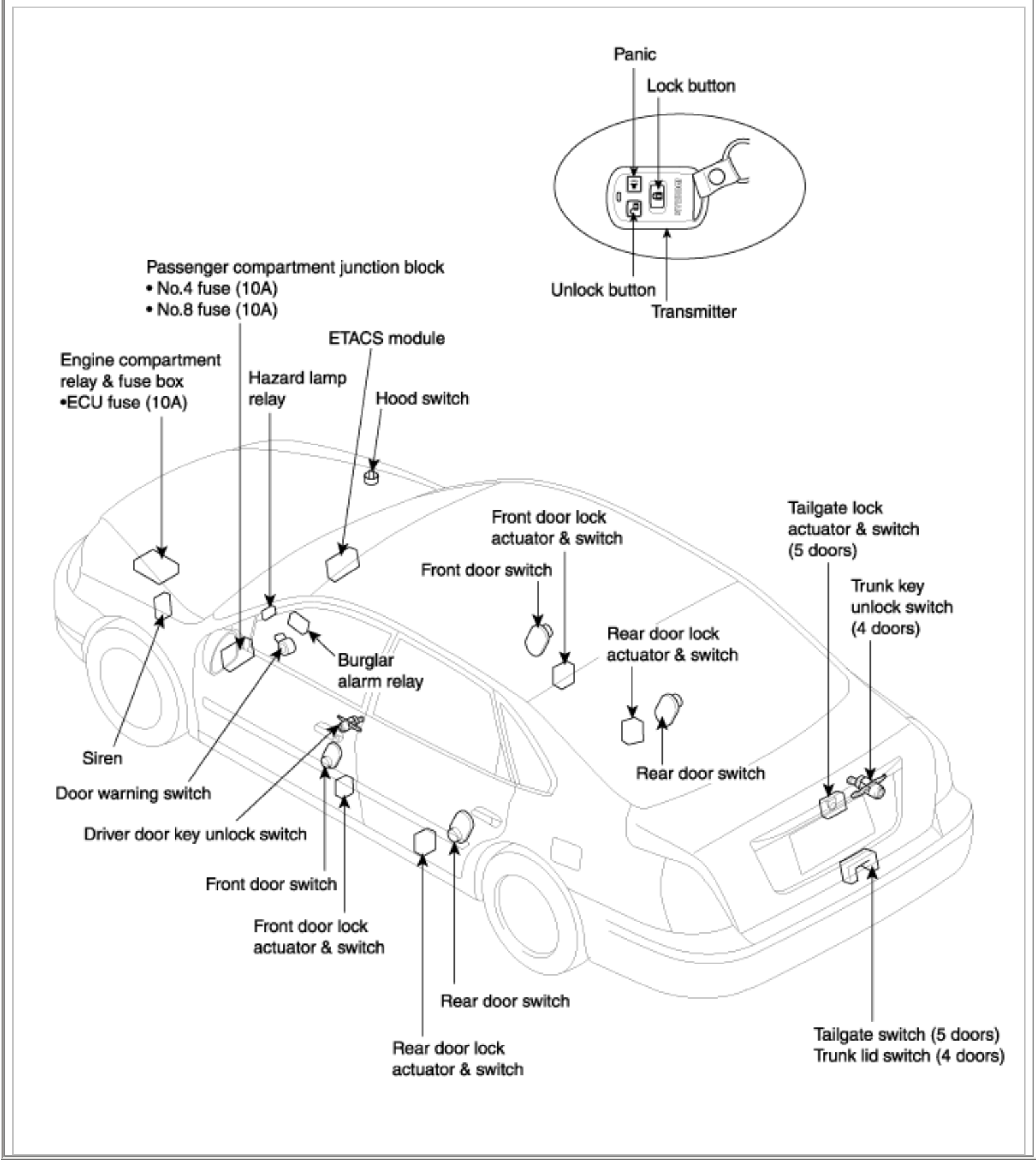




Terminals No.	Test condition	Standard value
A18-A16 (GND)	Door switch "ON" (Door opened)	Below 1Ω
	Door switch "OFF" (Door closed)	1MΩ or higher
A10-A16 (GND)	Luggage compartment door switch "ON" (Luggage compartment door opened)	Below 1Ω
	Luggage compartment door switch "OFF" (Luggage compartment door closed)	1MΩ or higher
C7-A16 (GND)	Engine hood switch "ON" (Engine hood opened)	Below 1Ω
	Engine hood switch "OFF" (Engine hood closed)	1MΩ or higher
A8-A16 (GND)	Driver's door switch "ON" (Driver's door opened)	Below 1Ω
	Driver's door switch "OFF" (Driver's door closed)	1MΩ or higher
A9-A16 (GND)	Assist door switch "ON" (Assist door opened)	Below 1Ω
	Assist door switch "OFF" (Assist door closed)	1MΩ or higher

B2-A16 (GND)	Door warning switch "ON" (Key inserted)	Battery voltage
	Door warning switch "OFF" (Key removed)	Below 1V
C10-A16 (GND)	Trunk key unlock switch "ON" (Trunk lid is unlocked with key)	Below 1Ω
	Trunk key unlock switch "OFF"	1MΩ or higher
A1-A16 (GND)	Always	Battery voltage
A6-A16 (GND)	Ignition switch is turned to "ON" position	Battery voltage
B5-A16 (GND)	Driver's door lock switch "ON" (Driver's door unlock detection)	Below 1Ω
	Driver's door lock switch "OFF" (Driver's door lock detection)	1MΩ or higher
B6-A16 (GND)	Assist door lock switch "ON" (Assist door unlock detection)	Below 1Ω
	Assist door lock switch "OFF" (Assist door lock detection)	1MΩ or higher
A3-A16 (GND)	Rear door lock switch "ON" (Rear door unlock detection)	Below 1Ω
	Rear door lock switch "OFF" (Rear door lock detection)	1MΩ or higher
C8-A16 (GND)	Always	Battery voltage
C12-A16 (GND)	Engine Start	Battery voltage
A16(GND) - Body ground	Always	Below 1Ω
C9-A16 (GND)	Siren operation	ON
C5-A16 (GND)	Driver's door key unlock switch "ON" (Driver's door is unlocked with key)	Below 1Ω
C6-A16 (GND)	Driver's door key lock switch "ON" (Driver's door is locked with key)	Below 1Ω

COMPONENTS


Panic
Lock button
Unlock button
Transmitter
Passenger compartment junction block
• No.4 fuse (10A)
• No.8 fuse (10A)
ETACS module
Engine compartment relay & fuse box
•ECU fuse (10A)
Hazard lamp relay
Hood switch
Front door lock actuator & switch
Front door switch
Tailgate lock actuator & switch (5 doors)
Trunk key unlock switch (4 doors)
Rear door lock actuator & switch
Burglar alarm relay
Rear door switch
Siren
Door warning switch
Driver door key unlock switch
Front door switch
Front door lock actuator & switch
Rear door switch
Rear door lock actuator & switch
Tailgate switch (5 doors)
Trunk lid switch (4 doors)

DESCRIPTION

BURGLAR ALARM SYSTEM

The system is set off when any of these things occur :

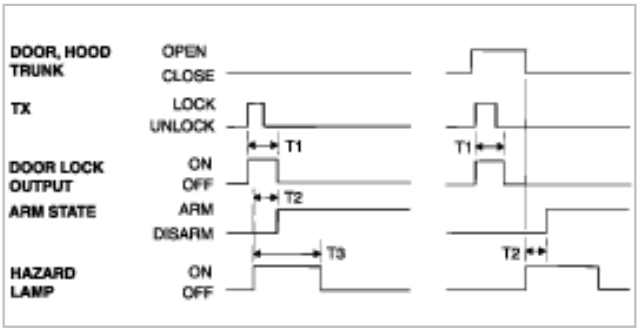
- A door is forced open.
- A door is unlocked without using the transmitter.
- The trunk lid is opened without using the key.
- The hood is opened.
- The engine starter circuit and battery circuit are bypassed by breaking the ignition switch.

KEYLESS ENTRY SYSTEM

ANTI-THEFT FUNCTION

1. **ARM FUNCTION**

Pressing the remote key lock button will result in a 0.5-second pulse issued to lock all doors.
Pressing the remote keypad unlock button once will result in a 0.5-second unlock pulse issued to unlock all doors.
As part of the arming sequence, the alarm first enters a pre-armed state before falling into the armed state. During this pre-armed state, the alarm triggers are ignored. Pre-armed state can be reached from the alarmed state, the start inhibit state or the disarmed state. Pre-Arming of the alarm can be achieved by a press of the lock button on the remote key.
In the pre-armed state the visible and audible warnings are disabled.
This system enters the armed state if it is in the pre-armed state and,after 0.6 sec, check actuator lock and each door, hood and trunk close,and no door warning switch (no key in ignition).
On entering the arm state, a single flash of the hazard lamps is given,period of cycle 2 second, duty rate 50%.
If transmitter(TX) lock signal is received when a door, trunk or hood is open,then lock output is given but a flash of hazard is not given.
After the armed state is entered, if a lock signal is received then a single flash of the hazard lamps is given, period of cycle 2 second, duty rate 50%.
The armed state cannot be reached by locking the car with the keys.



Time specification
T1 : 0.5 ± 0.1 sec.
T2 : Max. 2 sec.
T3 : 1.0 ± 0.2 sec.

2. **DISARM FUNCTION**

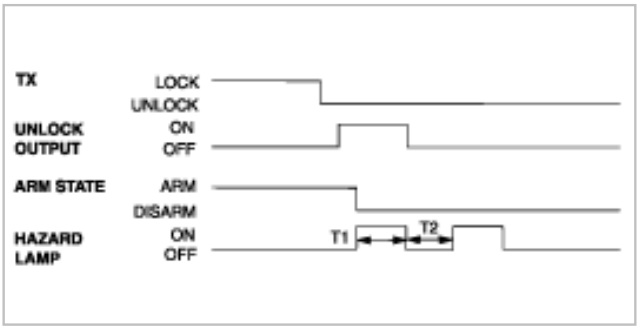
Disarming can be performed while the alarm is armed, or alarming, or after alarming. The alarm can be disarmed by the following methods :

A. Pressing the unlock button on the transmitter(TX) key. The hazard lamps shall be flashed twice for 1sec period (of cycle), 50% duty rate.

B. If door warning switch is on, IGN1 and IGN2 are on in arm state,then arm state should be immediately cancelled. This means that the driver is inside the vehicle before pushing TX lock, so system should not arm.

In the disarm state the visible and audible warnings are disabled and start is enabled.

In the disarm state, if TX key unlock command is received, then the hazard lamps shall flashed twice for a period of cycle 1 sec, 50% duty rate.



Time specification

T1, T2 : 0.5 ± 0.1 sec.

3. **ALARM FUNCTION**

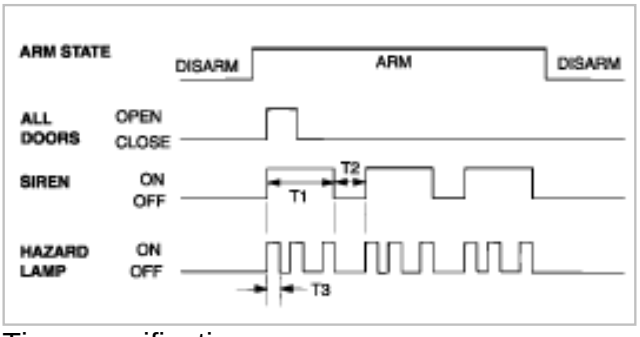
Once armed, should any door, hood or the trunk be opened, then.

A. Starter relay drive output is disabled, so starting is inhibited.

B. Audible (siren) and visual (hazard lamp) warnings are issued, for three cycles, each cycle 27±2 sec. duration on, 10±1 sec. off. The siren warning is continuously occurring during the on period. The hazard lamps operate with 1 sec period, 50 % duty rate during the on period.

The alarm is given in the case where a door is opened with a key.

After this time, the system maintains the start inhibit state, where no audible and visual warnings are issued but engine starting is not possible.



Time specification

T1 : 27 ± 2 sec.

T2 : 10 ± 1sec.

T3 : 0.5 ± 0.1 sec.

4. **OPERATION DURING ALARM CONDITIONS**

(1) Cancelling audible alarm with the remote transmitter.

CASE 1 : Door closed

During or after alarming and then closing all doors and a transmitter (TX) lock signal is received Then

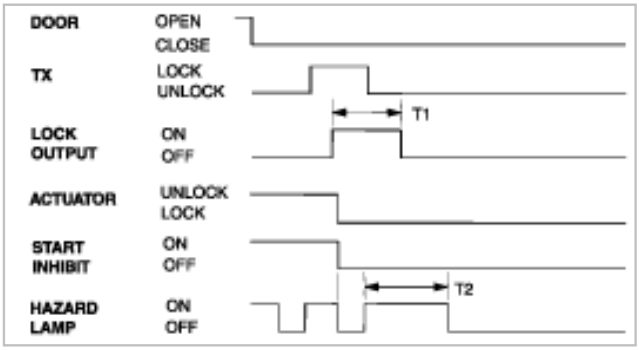
A. The lock command is executed with 0.5 sec. ON

B. Siren and start inhibition are OFF

C. Hazard lamp is flashed one time (period : 2 sec., duty: 50%, within2 sec.)

D. The state goes to arming mode (after a lock state check)

E. The starter is enabled



Time specification

T1 : 0.5 sec.

T2 : 1.0 ± 0.2 sec.

CASE 2 : Door Open

During or after alarming, with a door open and a TX lock signal is received Then

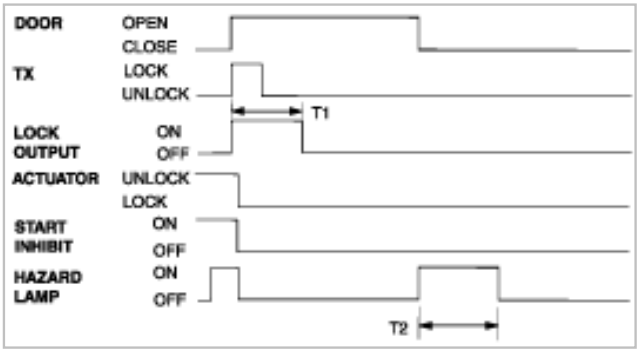
A. The lock command is executed with 0.5 sec. ON

B. Siren is disabled and start is enabled after confirmation of actuator lock

At this time, when the door is closed,

A. Hazard lamp is flashed one time (period : 2 sec., duty 50%)

B. The state goes to arming mode



Time specification

T1 : 0.5 sec.

T2 : 1.0 ± 0.2 sec.

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(2) New alarm conditions

Second alarm condition during alarming.

When another alarm occurs during alarming, the starting is disabled,and the alarm continues to sound for the remained time of warning signal.The alarm continues to sound after the second alarm condition is removed.

New alarm condition occurs after alarming (with all entrances closed)

If any entrance is opened again then

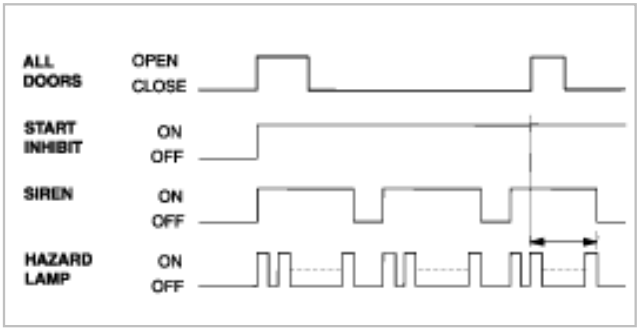
A. The siren is ON 3 times

B. Start is disabled

C. Hazard lamps flash during the ON time of siren

New alarm condition occur after alarming (with any entrance open).

If another entrance is opened, the ETACS module keeps start disabled and there is no siren output.



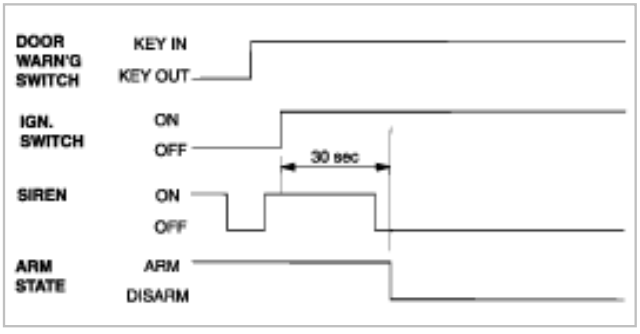
(3) Key operation during alarm

After the alarm state or start inhibit state are entered, if door warning switch on (key in ignition) &IGN 2 ON, if IGN 2 state is changed to OFF within 30sec., remain in alarm state.

(4) Disarming using the key

During alarming, in case that door warning switch (key in) is ON andthen IGN1 and IGN2 are both ON for 30 sec continuously, the alarm is cancelled,and the system enters the disarm state.

After alarming, in case that door warning switch (key in) is ON and then IGN1 and IGN2 are both ON for 30 sec continuously, the alarm is cancelled,and the system enters the disarm state.



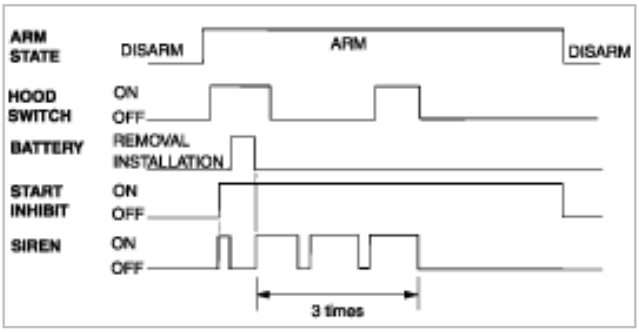
5. **ALARM STATE IN POWER DOWN**

If the battery is disconnected to the ETACS module in the following states :

A. Alarm

B. After alarming

Upon restoring the battery, the alarm state shall be entered and the alarm cycle shall restart (timer reset to 0).



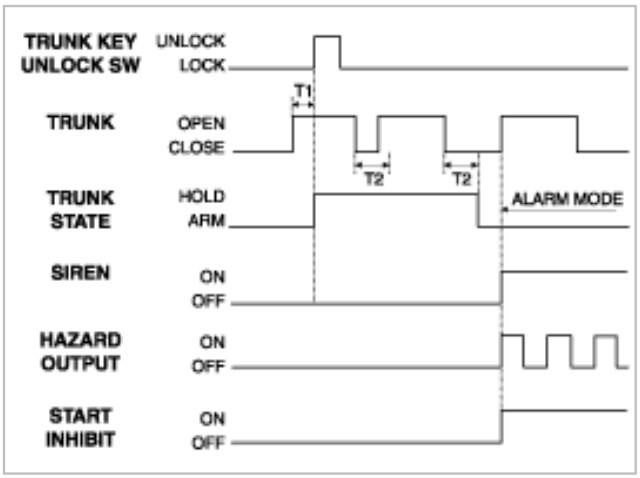
6. **ALARM HOLD MODE**

(1) In case of opening the trunk by trunk unlock switch during arm state, the alarming is hold.

When received transmitter (TX) trunk signal in arm state, trunk open by output trunk lid open relay signal for 500ms and then holding alarm.

But the door and hood is still in the arm state.

(2) Trunk is going to the arm state just case trunk is still closed for 2 sec.

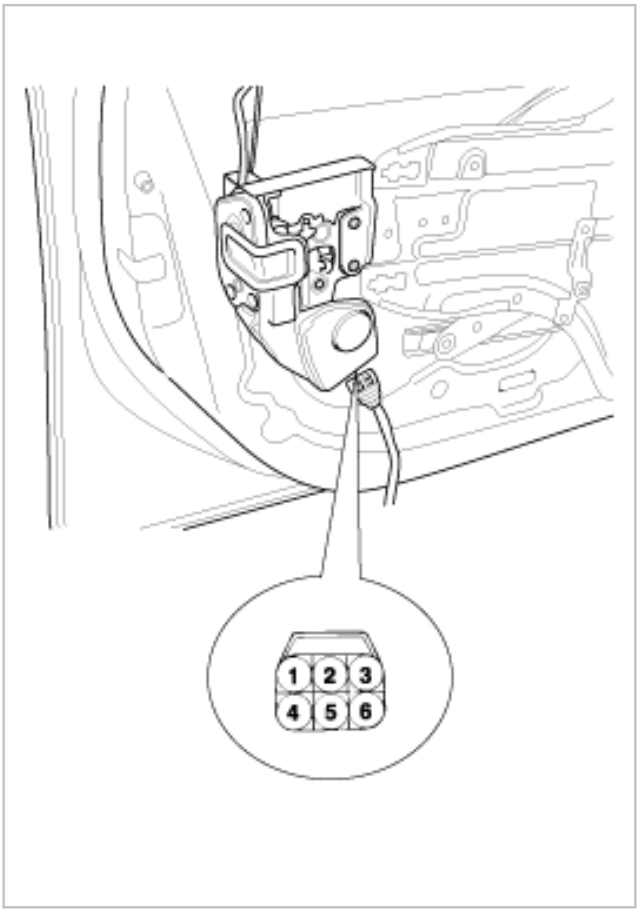


T1 : Max. 0.2 sec., T2 : 2 sec.

INSPECTION

FRONT DOOR LOCK ACTUATOR INSPECTION

1. Remove the front door trim panel. (see BD group-front door)
2. Disconnect the 6P connector from the actuator.



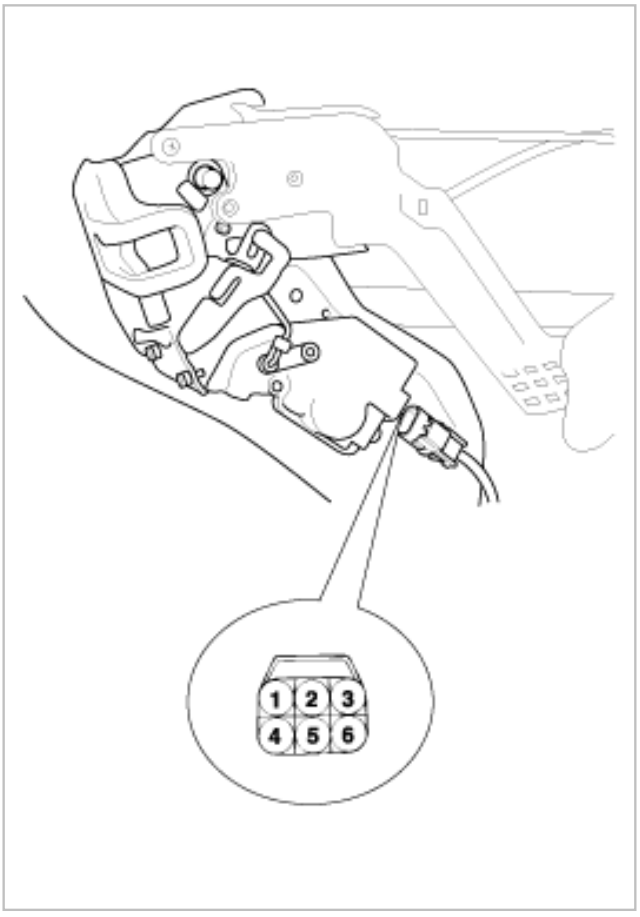
3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Position \ Terminal		4	6
Front left	Lock	⊖	⊕
	Unlock	⊕	⊖
Front right	Lock	⊕	⊖
	Unlock	⊖	⊕

REAR DOOR LOCK ACTUATOR INSPECTION

1. Remove the rear door trim panel. (see BD group-rear door)

2. Disconnect the 6P connector from the actuator.

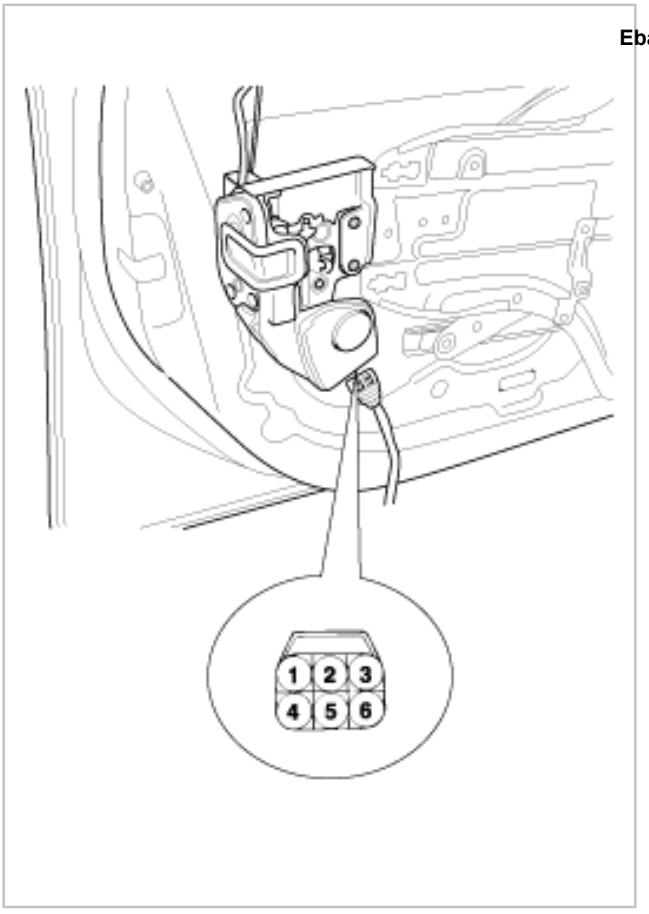


3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Position \ Terminal		2	3
Rear left	Lock	⊖	⊕
	Unlock	⊕	⊖
Rear right	Lock	⊕	⊖
	Unlock	⊖	⊕

FRONT DOOR LOCK SWITCH INSPECTION

1. Remove the front door trim panel. (see BD group-front door)
2. Disconnect the 6P connector from the actuator.

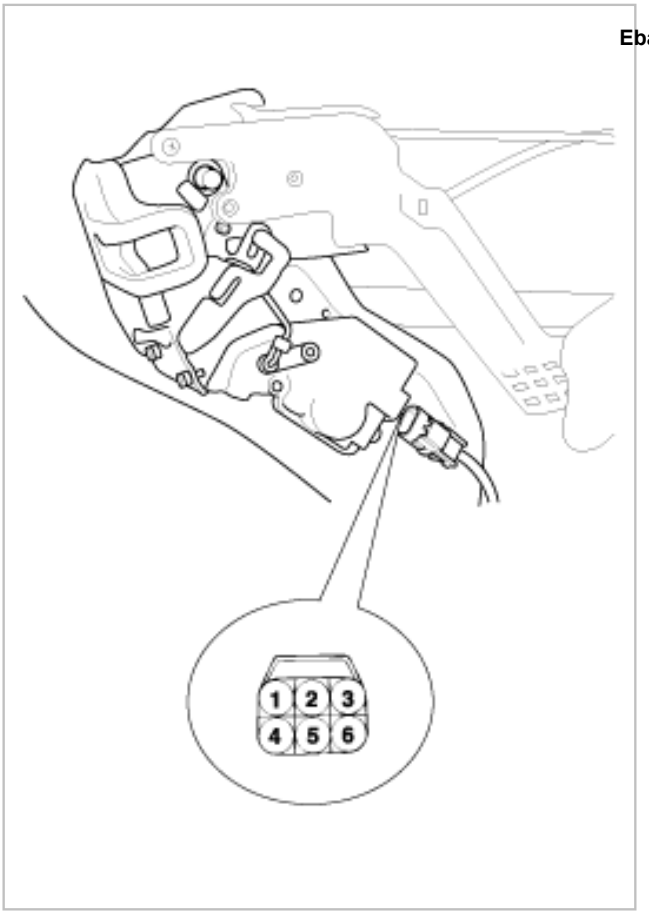


3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		1	2	3
Front left	Lock			
	Unlock		○——	——○
Front right	Lock			
	Unlock	○——	——○	

REAR DOOR LOCK SWITCH INSPECTION

1. Remove the rear door trim panel. (see BD group-rear door)
2. Disconnect the 6P connector from the actuator.

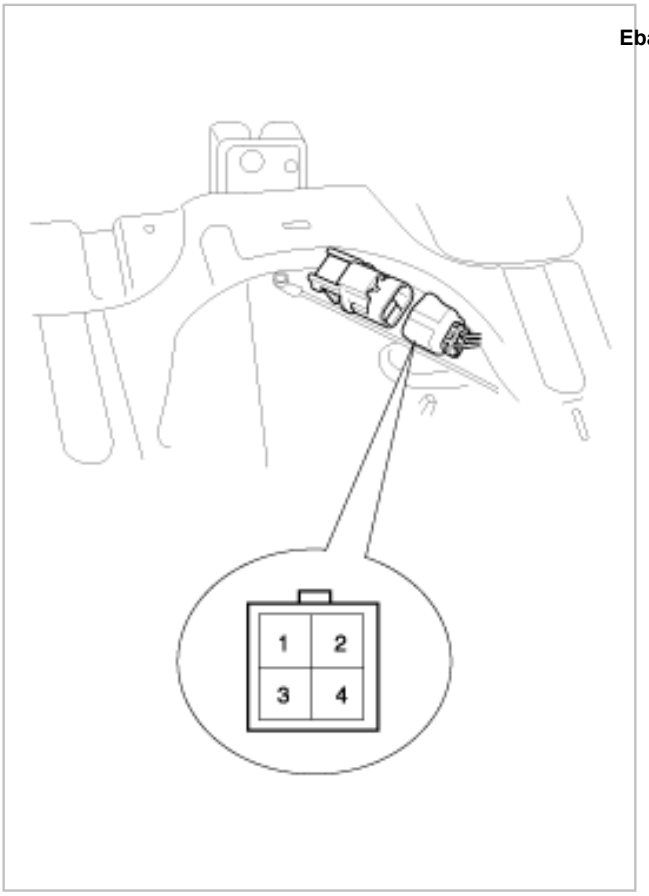


3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		5	6
Rear left	Lock		
	Unlock	○——	——○
Rear right	Lock		
	Unlock	○——	——○

TAILGATE LOCK ACTUATOR INSPECTION (5 DOOR)

1. Remove the tailgate trim panel.
2. Disconnect the 4P connector from the actuator.

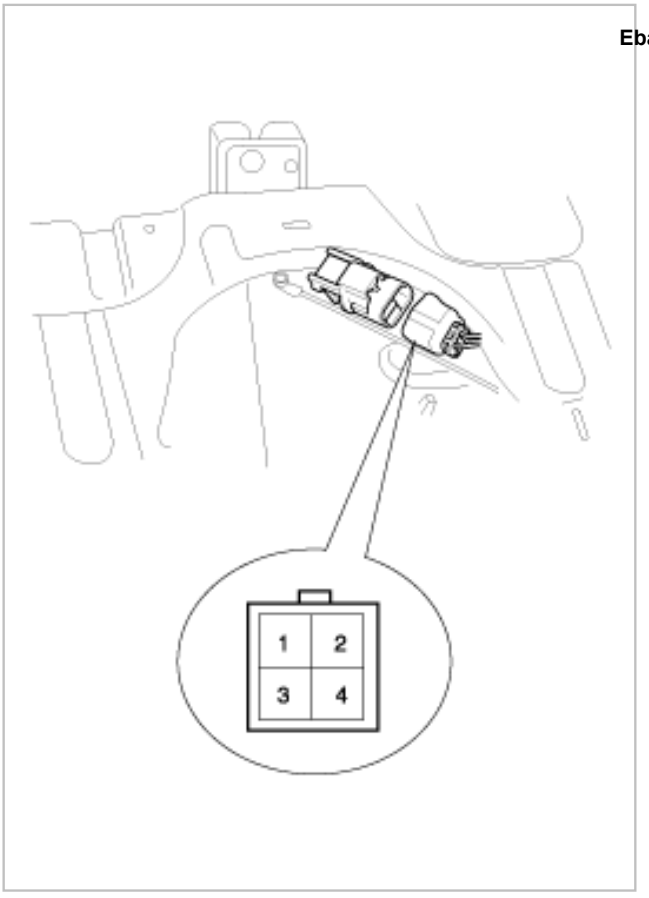


3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	3
LOCK→UNLOCK	⊖	⊕
UNLOCK→LOCK	⊕	⊖

TAILGATE LOCK SWITCH INSPECTION (5 DOORS)

1. Remove the tailgate trim panel.
2. Disconnect the 4P connector from the actuator.

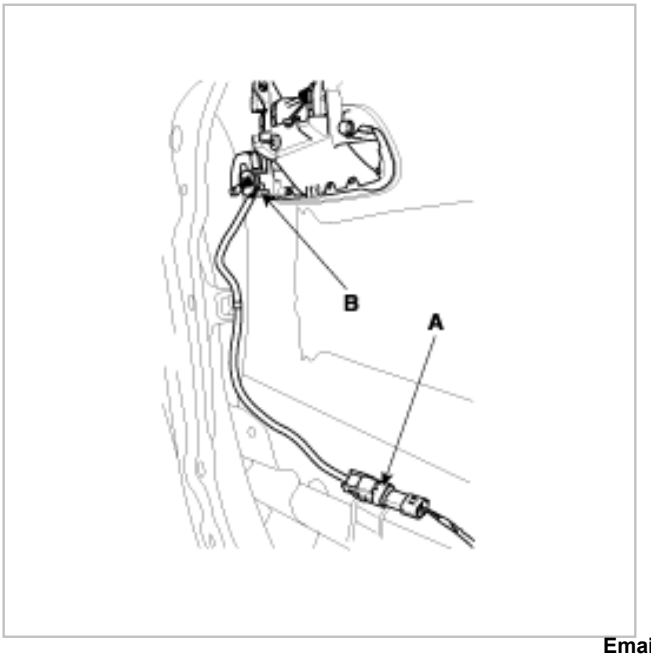


3. Check for continuity between the terminal in each switch position according to the table.

Position \ Terminal	2	4
LOCK		
UNLOCK	○	○

DRIVER'S DOOR KEY LOCK/UNLOCK SWITCH INSPECTION

1. Remove the driver's door trim panel. (see BD group-front door)
2. Disconnect the 3P connector(A) from the door lock assembly(B).

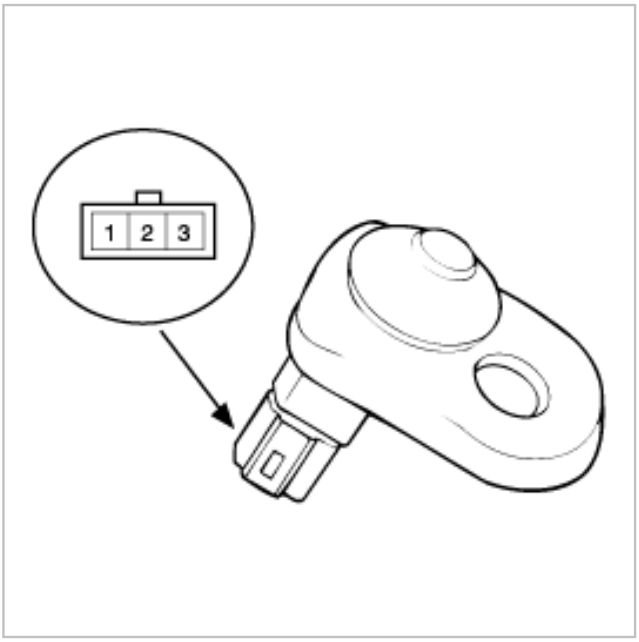


3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	1	2	3
LOCK		○	○
UNLOCK	○		○

DOOR SWITCH INSPECTION

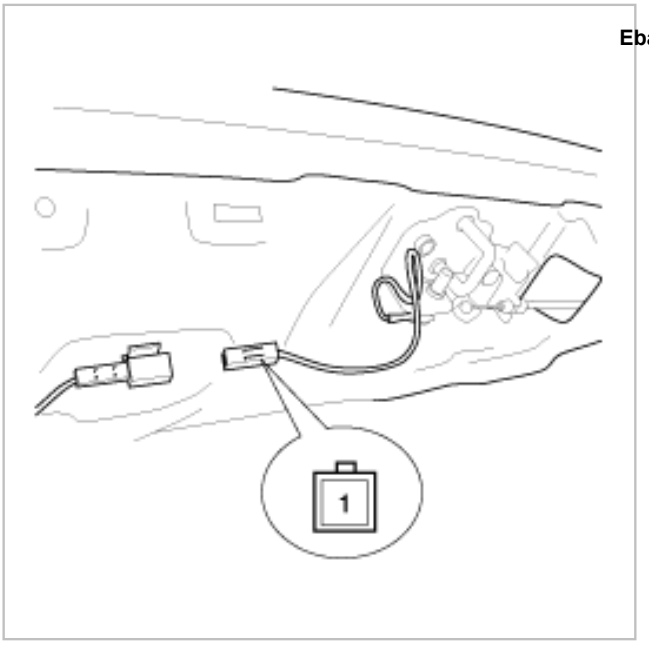
Remove the door switch and check for continuity between the terminals.



Terminal / Position	1	2	3(Ground)
Free(Door open)	○	○	○
Push(Door close)			

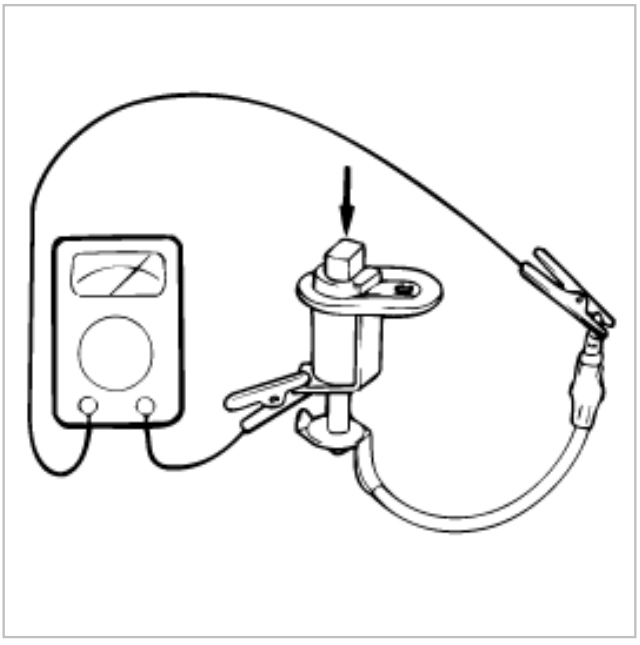
TRUNK LID SWITCH INSPECTION

1. Disconnect the negative battery terminal.
2. Remove the rear transverse trim, then remove the trunk lid switch from the trunk lid striker.
3. Disconnect the 1P connector from the rear harness.



4. Check for continuity between the terminal and body while pushing the rod.

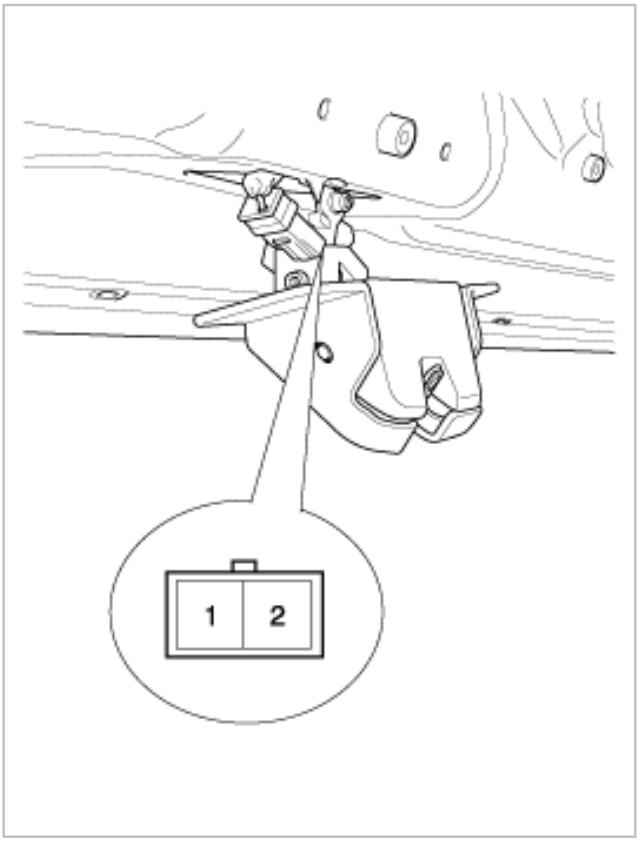
Switch rod condition	Continuity
Push (OFF)	Non-conductive (∞Ω)
Released (ON)	Conductive (0Ω)



TAILGATE SWITCH INSPECTION (5 DOORS)

1. Remove the tailgate trim panel.

2. Remove the tailgate latch after removing 3 bolts and disconnect the 2P connector from the tailgate switch.

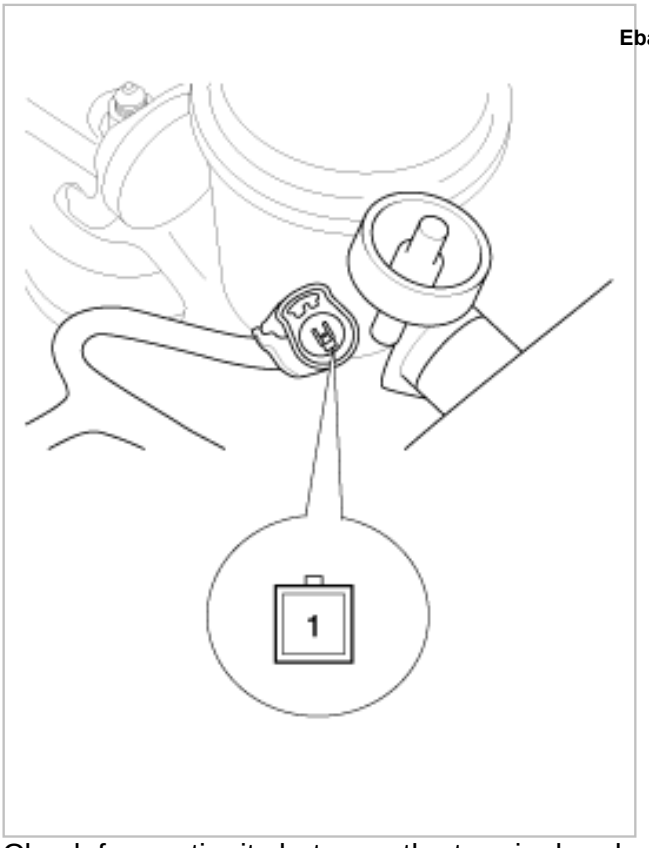


3. Check for continuity between the terminals according to the table.

Terminal / Position	1	2(Ground)
Tailgate open	○	○
Tailgate close		

HOOD SWITCH INSPECTION

1. Disconnect the 1P connector from the hood switch.

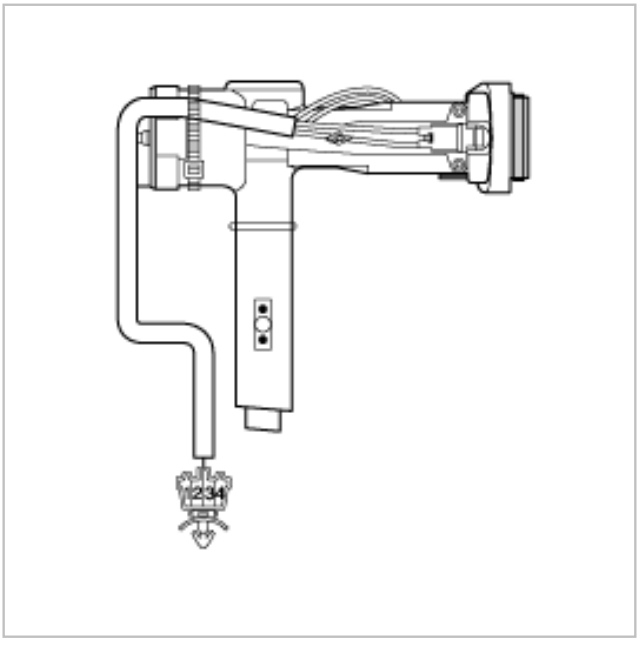


2. Check for continuity between the terminal and ground according to the table.

Terminal / Position	Ground (Body)	1
Hood open (Free)	○	○
Hood close (Push)		

DOOR WARNING SWITCH INSPECTION

1. Remove the driver's crash pad lower panel. (see BD group-crash pad)
2. Disconnect the 4P connector from the door warning switch.

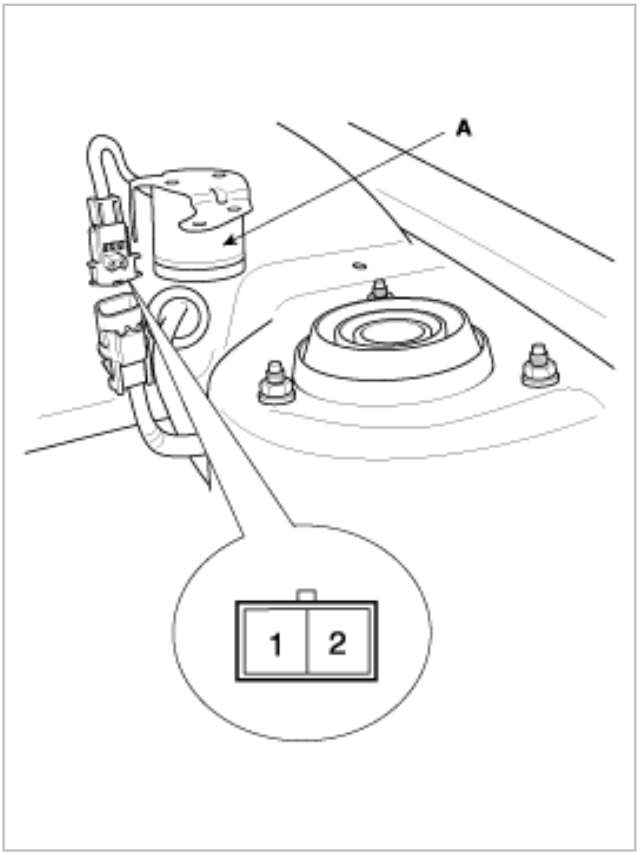


3. Check for continuity between the terminals in each position according to the table.

Terminal / Key position	3	4
Insert	○	○
Removal		

BURGLAR ALARM SIREN INSPECTION

1. Remove the siren(A) after removing 2 bolts and disconnect the 2P connector from the siren.

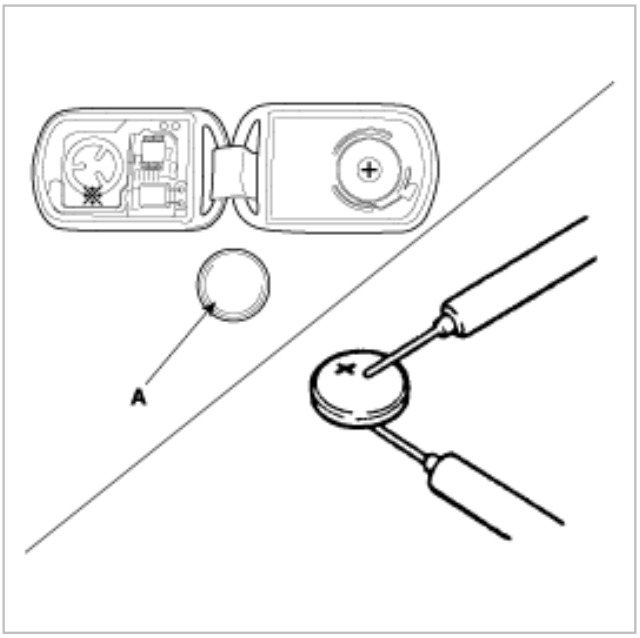


2. Test the siren by connecting battery power to the terminal 1 and ground the terminal 2.
   The siren should make a sound. If the siren fails to make a sound replace it.

INSPECTION

1. Check that the red light flickers when the door lock or unlock button is pressed on the transmitter.
2. Remove the battery(A) and check voltage if the red light doesn't flicker.

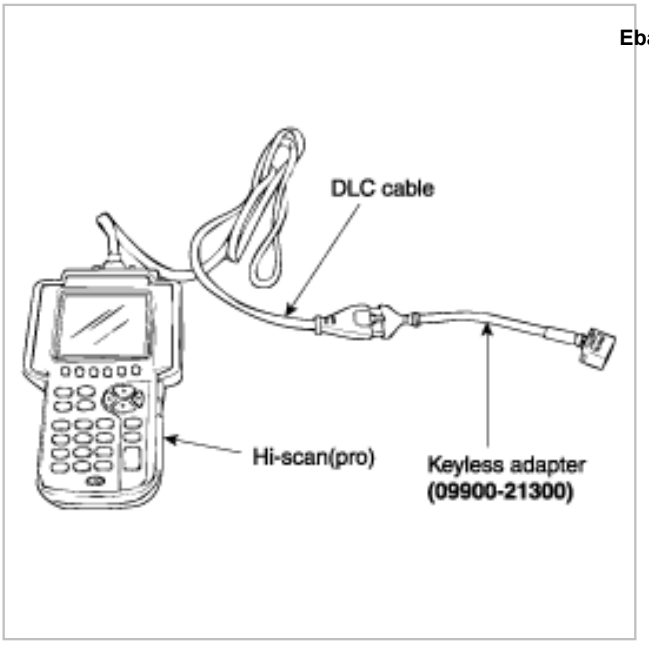
Standard voltage : 3V



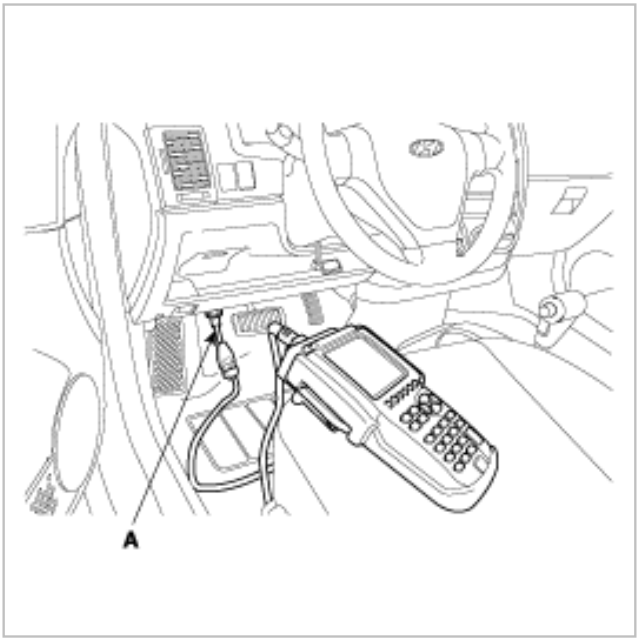
3. Replace the transmitter battery with a new one. If voltage is below 3V then try to lock and unlock the doors with the transmitter by pressing the lock or unlock button five or six times.
4. If the doors lock and unlock, the transmitter is O.K, but if the doors don't lock and unlock, program the transmitter code, then try to lock and unlock the doors.
5. If the doors lock and unlock, the transmitter is O.K, but if the doors don't lock and unlock, replace the transmitter.

PROGRAMMING TRANSMITTER CODE

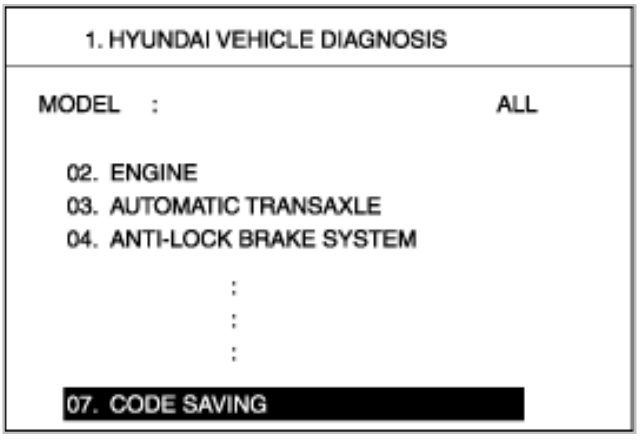
1. To program the transmitter code, first connect keyless adapter (09900-21300) to DLC(Data Link Connector) cable of hi-scan as shown in the illustration.



2. After connecting keyless adapter(A) to the multi purpose check connector (10pins) beside data link connector in driver side crash pad lower panel, turn the power on hi-scan.



3. Select the vehicle model and then do "CODE SAVING".



4. After selecting "CODE SAVING" menu, press the "ENTER" key, then the screen will be shown as below.

KEYLESS ENTRY CODE SAVING
1. REMOVE THE IG.KEY FROM KEY CYLINDER. 2. CONNECT THE DLC CABLE AND 16 PIN CONNECTOR OF THE KEYLESS ADAPTER. 3. CONNECT THE 10 PIN CONNECTOR OF THE KEYLESS ADAPER INTO THE MULTIPURPOSE CHECK CONNECTOR. 4. AFTER PRESSING [ENTER], FINISH CODE SAVING WITHIN 10 SECONDS. 5. PRESS [ENTER], IF YOU ARE READY!

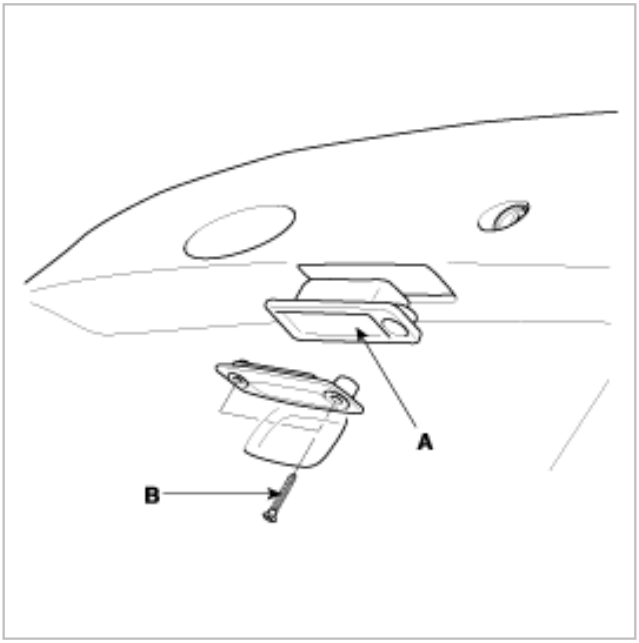
5. After removing the ignition key from key cylinder, push "ENTER" key to proceed to the next mode for code saving.
   Follow steps 1 to 3 for code saving procedures.

KEYLESS ENTRY CODE SAVING
1. PRESS THE TRANSMITTER [LOCK] BUTTON FOR 1 SECOND. 2. IF SAVE ONE MORE PRESS OTHER TRANSMITTER [LOCK] BUTTON FOR 1 SECOND. 3. PRESS [ESC] AND DISCONNECT KEYLESS ADAPTER FROM VEHICLE AND CHECK THE KEYLESS ENTRY SYSTEM.

6. Disconnect keyless adapter (09900-21300) from DLC cable and then proceed to self-diagnosis with DLC cable connected.

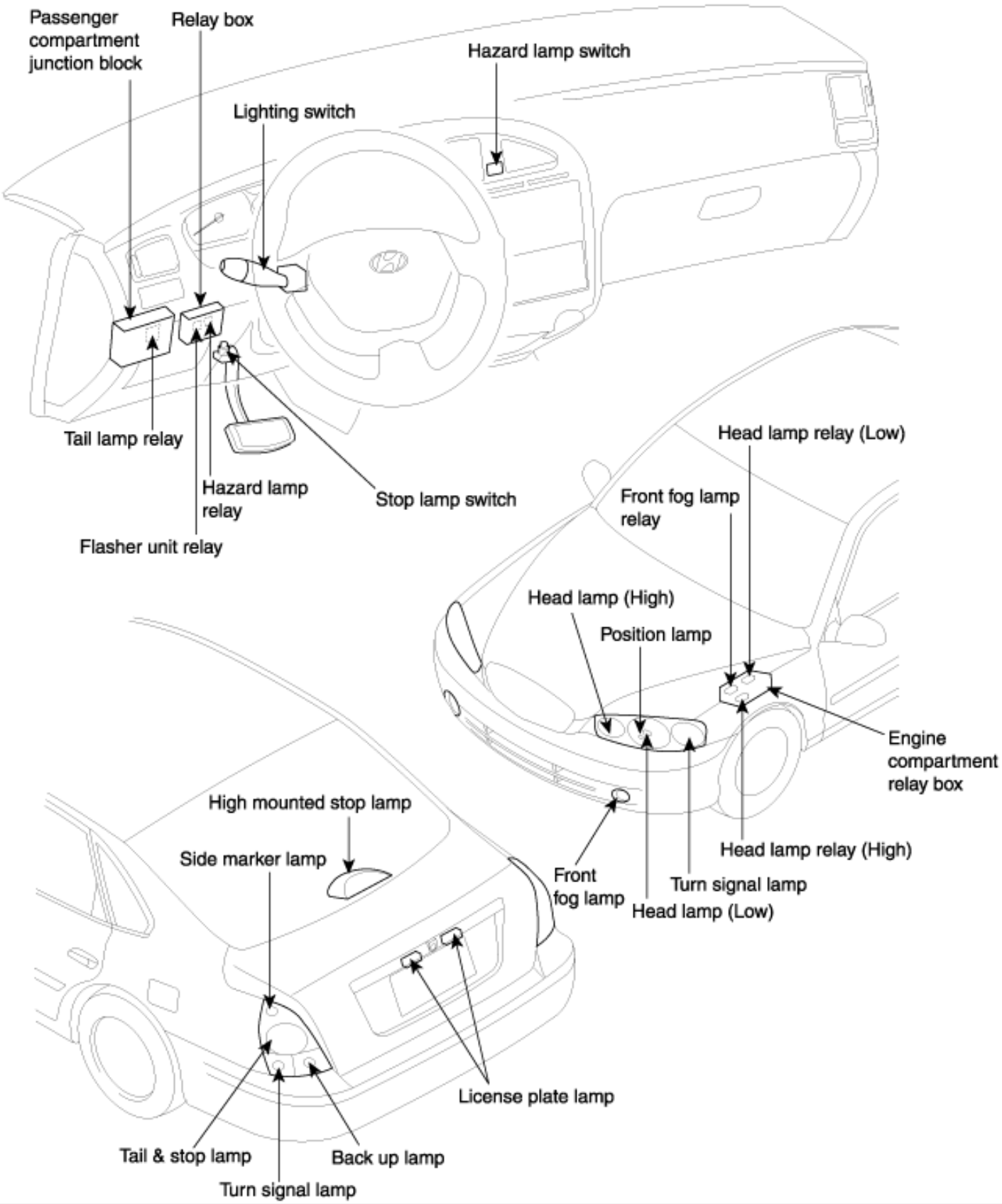
REMOVAL

1. Disconnect the negative (-) battery terminal.
2. Remove the license plate lamp (A) after removing 2 screws(B).

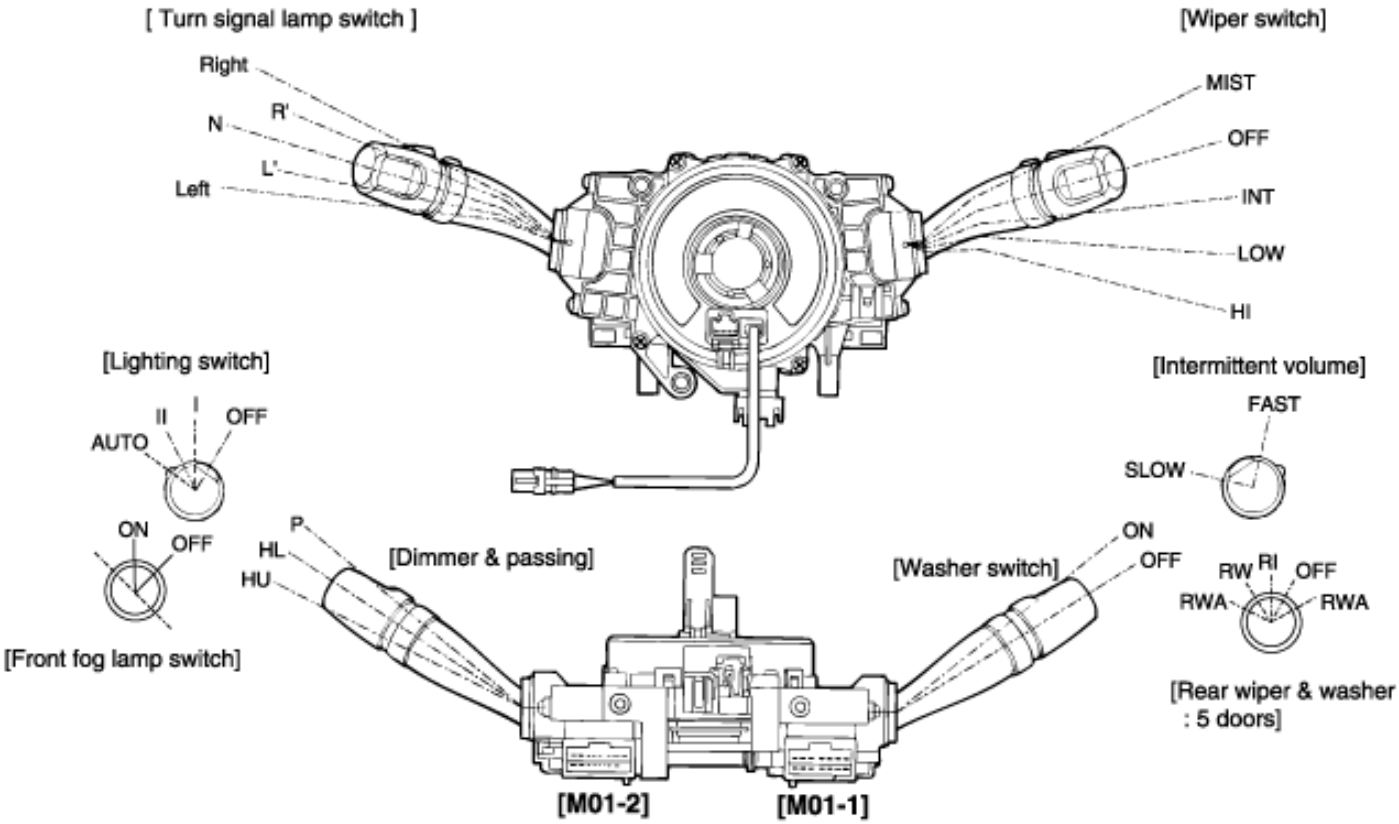


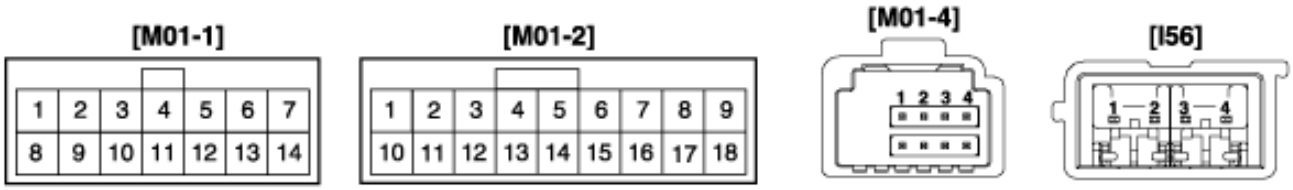
3. Replace the bulb.
4. Installation is the reverse of removal.

COMPONENTS


Passenger compartment junction block
Relay box
Hazard lamp switch
Lighting switch
Tail lamp relay
Hazard lamp relay
Flasher unit relay
Stop lamp switch
Head lamp relay (Low)
Front fog lamp relay
Head lamp (High)
Position lamp
Engine compartment relay box
High mounted stop lamp
Side marker lamp
Front fog lamp
Turn signal lamp
Head lamp (Low)
Head lamp relay (High)
License plate lamp
Tail & stop lamp
Back up lamp
Turn signal lamp

COMPONENTS





Circuit connection

Connector No.	Terminal No.	Description	Connector No.	Terminal No.	Description
M01-2	1	Head lamp passing	M01-1	1	Wiper high speed
	2	Head lamp high beam power		2	Wiper low speed
	3	-		3	Wiper parking
	4	-		4	Mist switch
	5	-		5	Wiper & washer ground
	6	-		6	Intermittent wiper
	7	Turn signal RH lamp		7	Front washer switch
	8	Flasher unit power		8	-
	9	Turn signal LH lamp		9	Rear wiper & washer
	10	Head lamp low beam power		10	Rear wiper
	11	Dimmer & passing ground		11	Intermittent rear wiper
	12	Front fog lamp switch		12	Rear wiper ground
	13	Front fog lamp switch ground		13	Intermittent wiper volume
	14	Tail lamp switch		14	Intermittent wiper ground
	15	Head lamp switch	M01-4	1	Remote control power
	16	Auto light switch		2	Cruise signal
	17	Lighting switch ground		3	Cruise ground
	18	-		4	Horn relay
I56	1	Driver initiator (low)			
	2	Driver initiator (high)			
	3	SMART driver initiator (low)			
	4	SMART driver initiator (high)			

	3	SMART driver initiator (low)
	4	SMART driver initiator (high)

REMOVAL

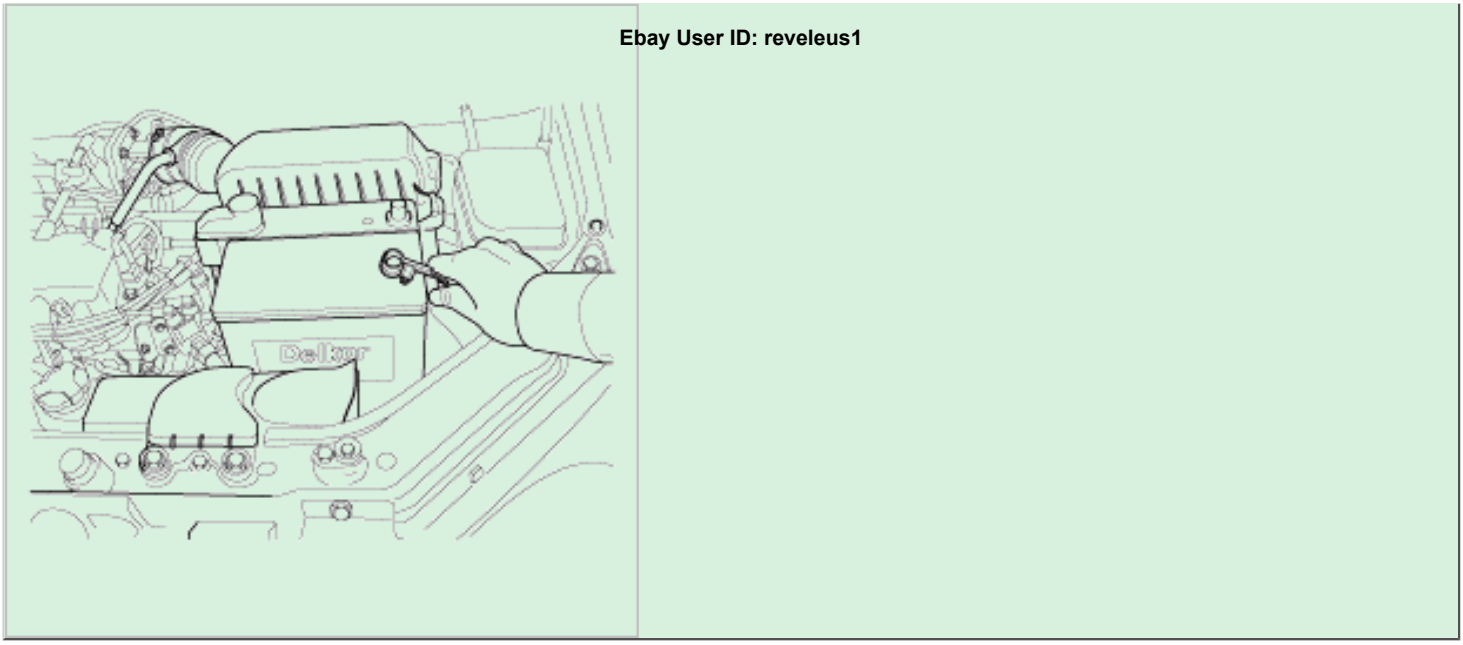
CAUTION

- Never attempt to disassemble or repair the air bag module or clock spring. If faulty, replace it.
- Do not drop the air bag module or clock spring or allow contact with water, grease or oil. Replace if a dent, crack, deformation or rust are detected.
- The air bag module should be stored on a flat surface and placed so that the pad surface is facing upward. Do not place anything on top of it.
- Do not expose the air bag module to temperatures over 93°C (200°F).
- After deployment of an air bag, replace the clock spring with a new one.
- Wear gloves and safety glasses when handling an air bag that has already been deployed.
- An undeployed air bag module should only be disposed of in accordance with the procedures. mentioned in the Restraints section.
- When you disconnect the air bag module-clock spring connector, take care not to apply excesive force to it.
- The removed air bag module should be stored in a clean, dry place.
- Prior to installing the clock spring, align the mating mark and "NEUTRAL" position indicator of the clock spring, and, after turning the front wheels to the straight-ahead position, install the clock spring to the column switch. If the mating mark of the clock spring is not properly aligned, the steering wheel may not completely rotate during a turn, or the flat cable within the clock spring may be severed, obstructing normal operation of the SRS and possibly leading to serious injury to the vehicle's driver. To inspect the clock spring, refer to the Restraints section.

1. Disconnect the negative battery terminal.

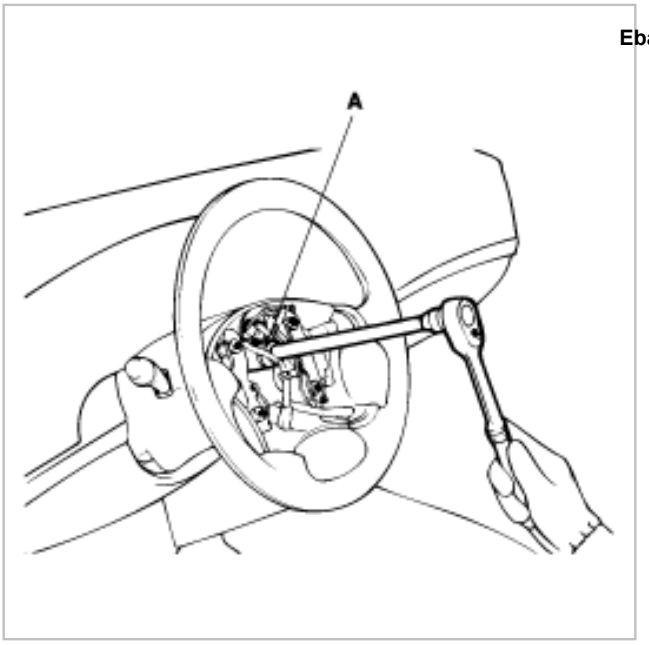
NOTE

Prior to doing any further work after disconnection of the battery cable, wait at least 30 seconds.



2. Remove the 2 bolts(A) holding the air bag module with an asterix wrench. (Tor-x socket)
   Disconnect the horn connector and the air bag module connector, and remove the air bag module.

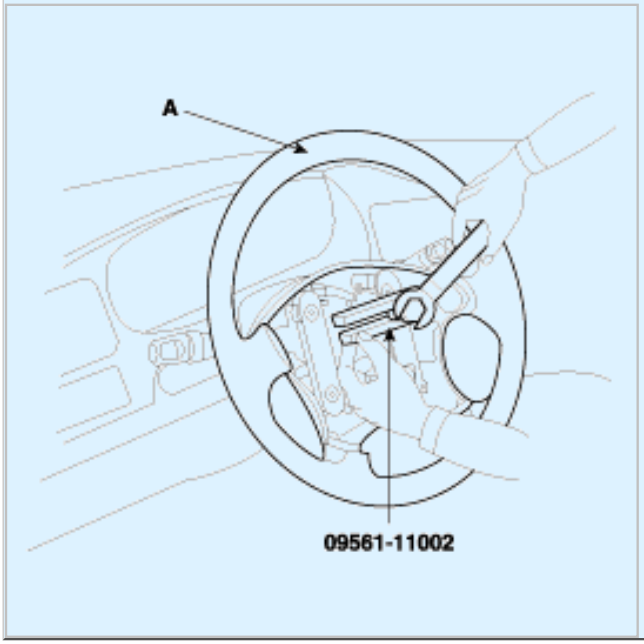
3. Remove the steering wheel after removing a nut(A).



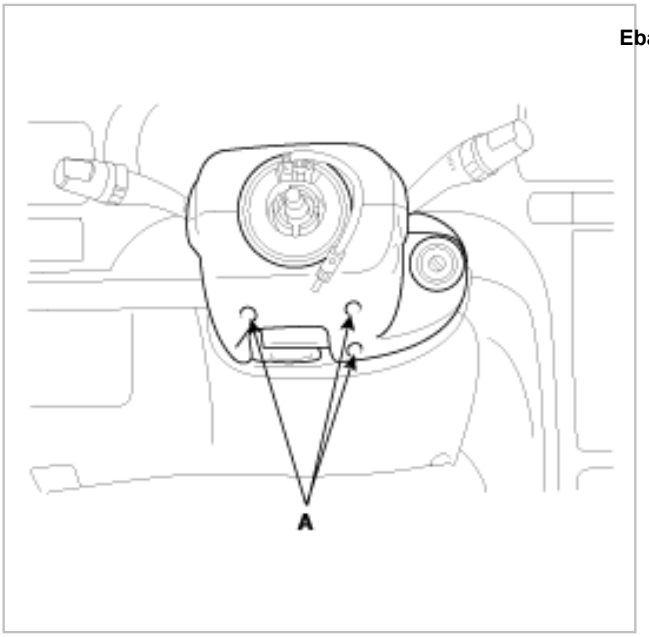
4. Align the steering shaft with wheel then remove the steering wheel using special tool (09561-11002).

CAUTION

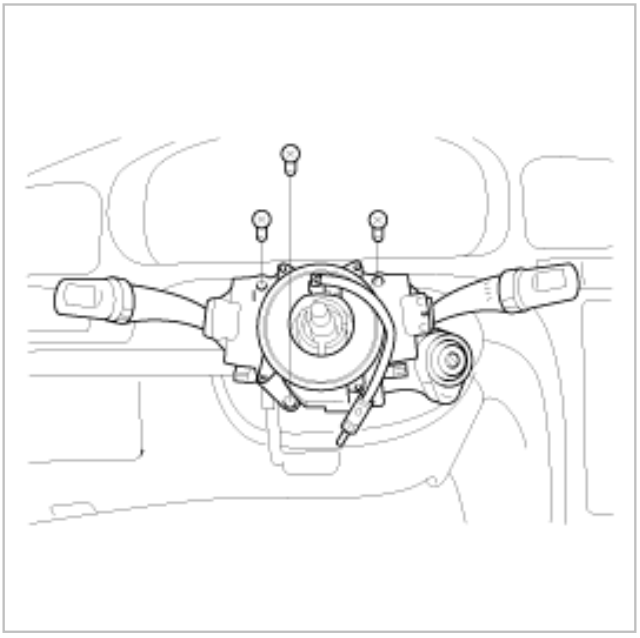
Do not hammer on the steering wheel to remove it; doing so may damage the collapsible mechanism.



5. Remove the steering column upper and lower shrouds after removing 3 screws(A).



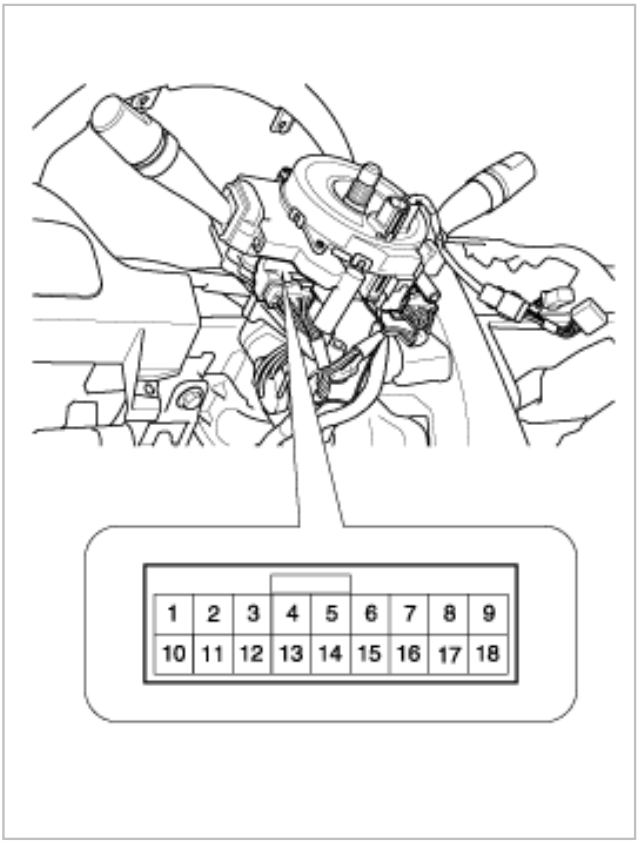
6. Remove the 3 screws holding the multi-function switch, then disconnect the wire connector. Remove the multi-function switch assembly.



7. Installation is the reverse of removal.

INSPECTION

LIGHTING SWITCH INSPECTION



LIGHTING SWITCH (CONNECTOR NO. : M01-2)

Terminal / Position	14	15	16	17
OFF				
I	○			○
II	○	○	○	○
AUTO			○	○

DIMMER AND PASSING SWITCH (CONNECTOR NO. : M01-2)

Terminal / Position	1	2	10	11
HU		○		○
HL			○	○
P	○	○		○

HU : Head lamp high beam
HL : Head lamp low beam
P : Head lamp passing switch

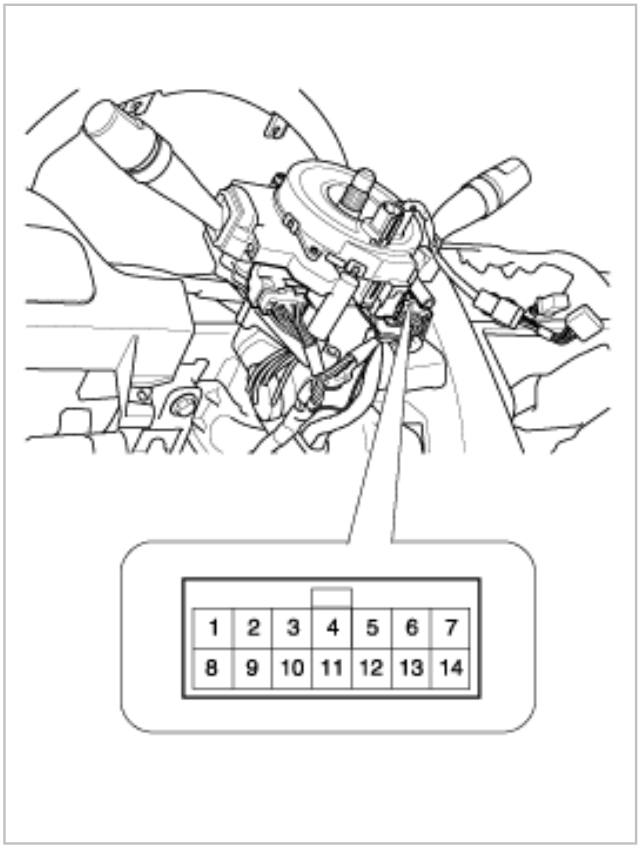
TURN SIGNAL SWITCH (CONNECTOR NO. : M01-2)

Hazard switch \ Terminal / Turn signal switch		7	8	9
OFF	L		○—○	
	N			
	R	○—○		

FRONT FOG LAMP SWITCH (CONNECTOR NO. : M01-2)

Position \ Terminal	12	13
OFF		
ON	○—○	

WIPER AND WASHER SWITCH INSPECTION



WIPER SWITCH (CONNECTOR NO. : M01-1)

Position \ Terminal	1	2	3	4	5	6	13	14
MIST				○—○				
OFF		○—○						
INT		○—○			○—○		○~○	
LOW		○			○			
HI	○				○			

WASHER SWITCH (CONNECTOR NO. : M01-1)

Position \ Terminal	5	7
OFF		
ON	○——	——○

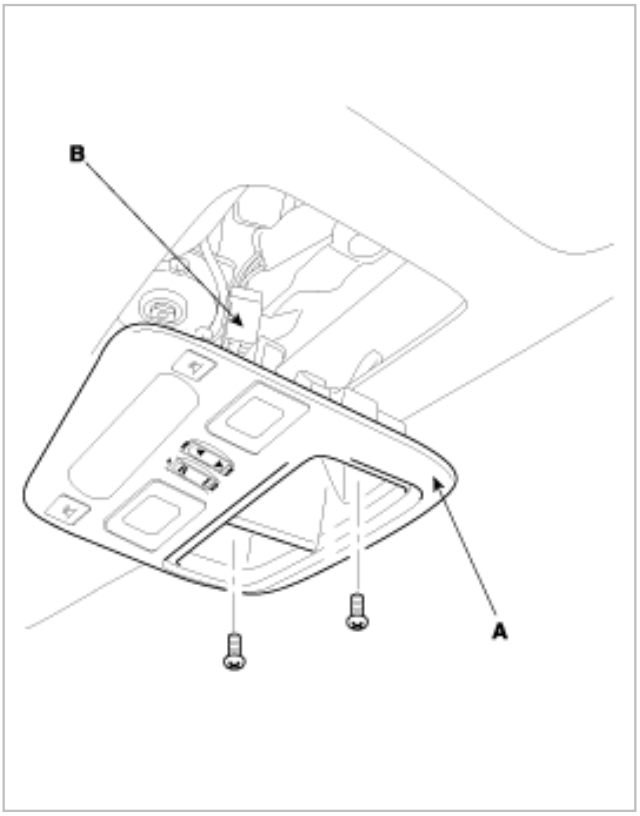
REAR WIPER & WASHER SWITCH (CONNECTOR NO. : M01-1)

[5 doors]

Position \ Terminal	9	10	11	12
Rear washer	○	——	——	○
OFF				
INT			○	——○
ON		○	——	——○
Rear washer	○	——	——	○

REMOVAL

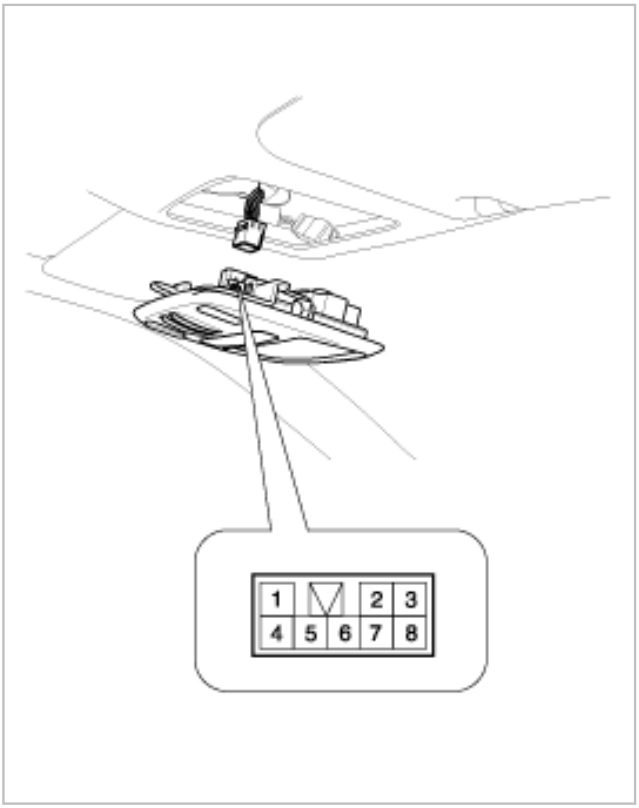
1. Disconnect the negative (-) battery terminal.
2. Open the sunglass case from the overhead console.
3. Remove the overhead console lamp assembly (A) after removing 2 screws and disconnecting the connector (B).



4. Installation is the reverse of removal.

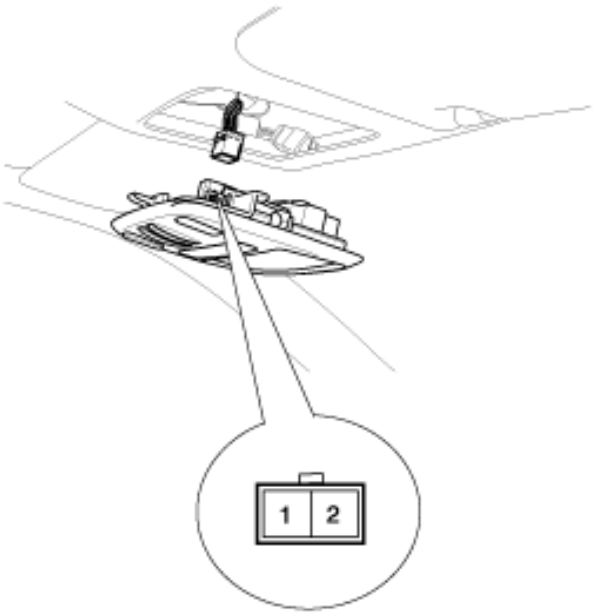
INSPECTION

[With sunroof]



Sort / Position / Terminal	Map lamp switch			
	LH		RH	
	ON	OFF	ON	OFF
3	●		●	
8	●		●	

[Without sunroof]

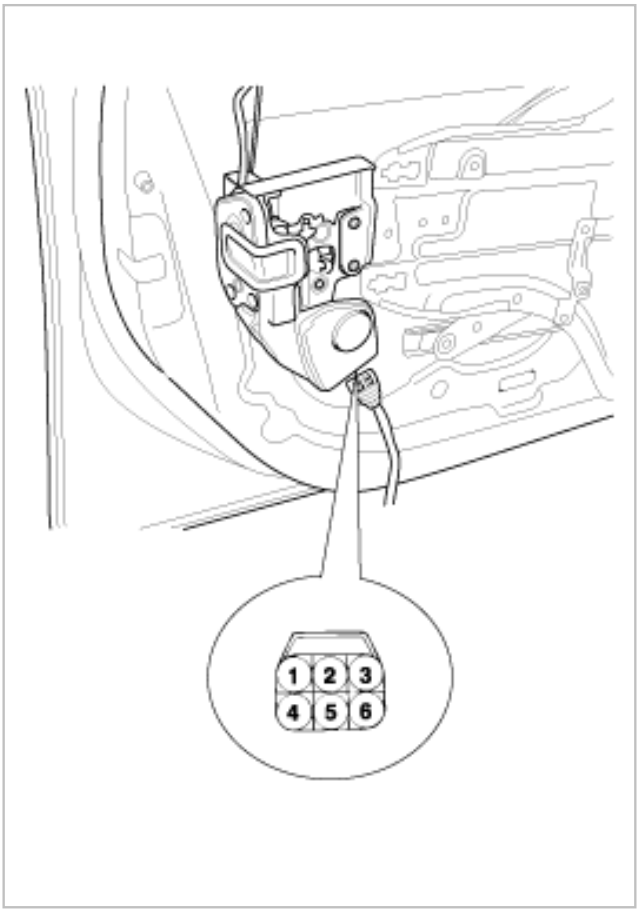


Sort / Position / Terminal	Map lamp switch			
	LH		RH	
	ON	OFF	ON	OFF
1	○		○	
2	○		○	

INSPECTION

FRONT DOOR LOCK ACTUATOR INSPECTION

1. Remove the front door trim panel. (see BD group-front door)
2. Disconnect the 6P connector from the actuator.



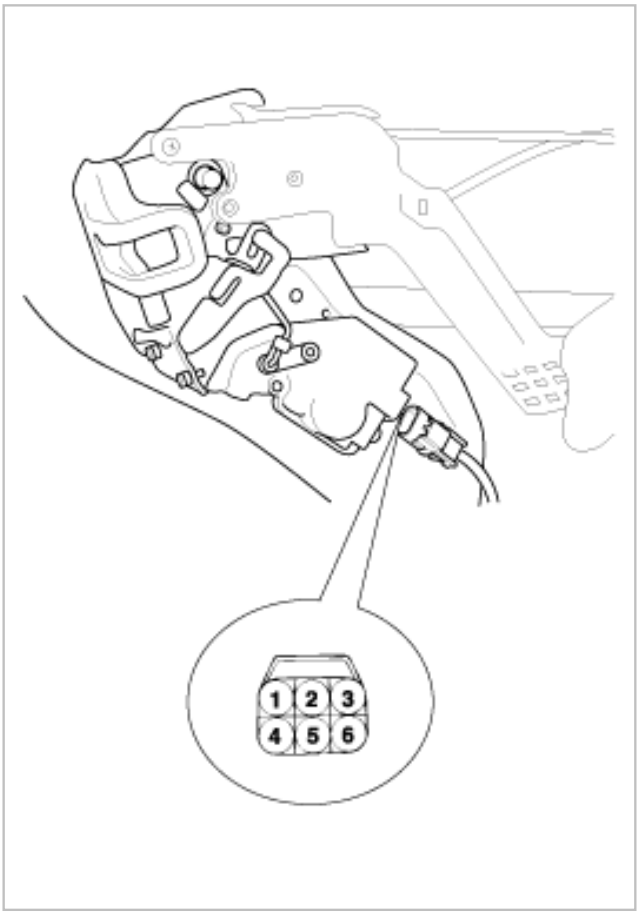
3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Position \ Terminal		4	6
Front left	Lock	⊖	⊕
	Unlock	⊕	⊖
Front right	Lock	⊕	⊖
	Unlock	⊖	⊕

REAR DOOR LOCK ACTUATOR INSPECTION

1. Remove the rear door trim panel. (see BD group-rear door)

2. Disconnect the 6P connector from the actuator.

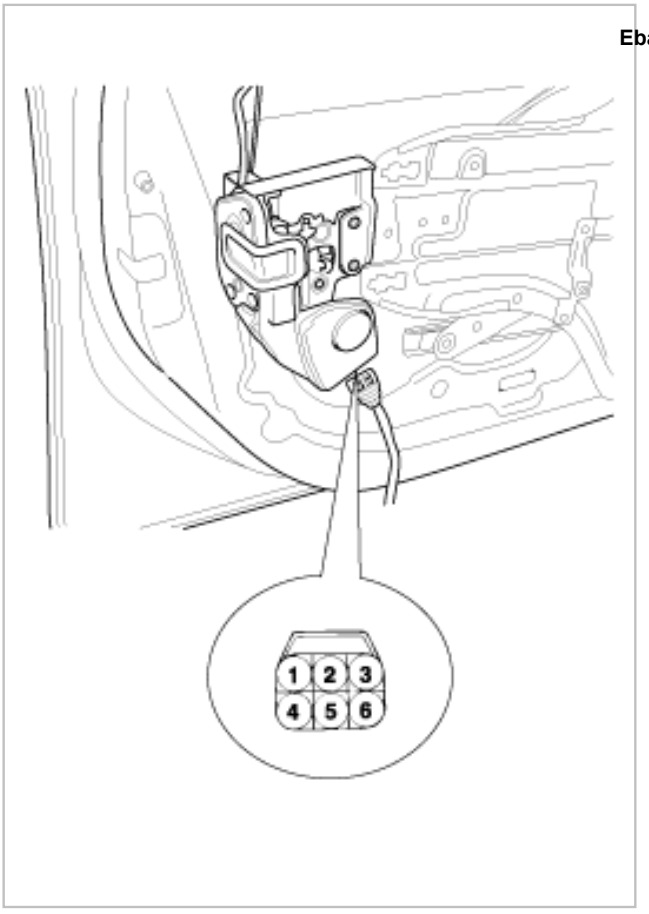


3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Position \ Terminal		2	3
Rear left	Lock	⊖	⊕
	Unlock	⊕	⊖
Rear right	Lock	⊕	⊖
	Unlock	⊖	⊕

FRONT DOOR LOCK SWITCH INSPECTION

1. Remove the front door trim panel. (see BD group-front door)
2. Disconnect the 6P connector from the actuator.

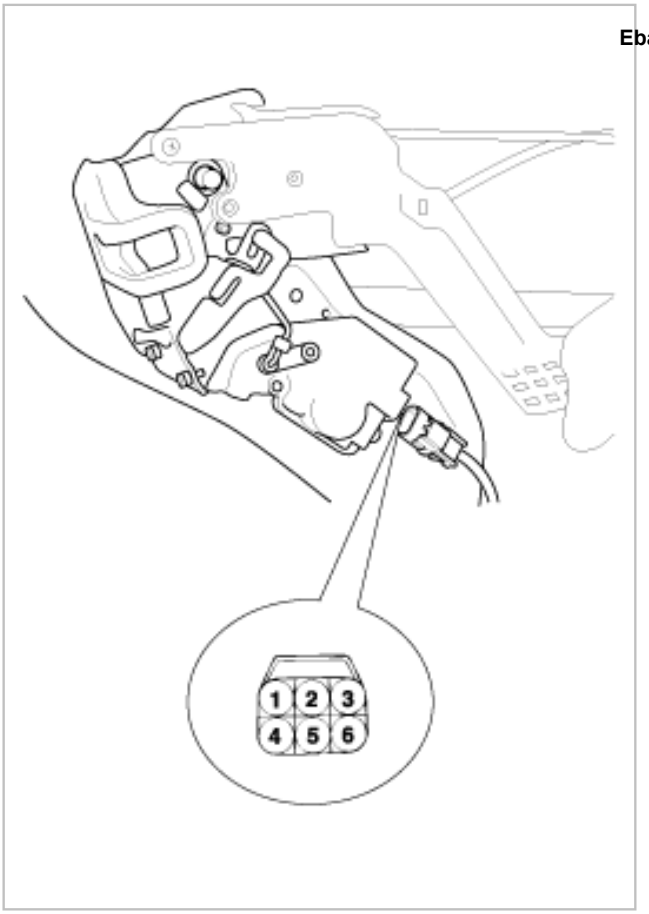


3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		1	2	3
Front left	Lock			
	Unlock		○——	——○
Front right	Lock			
	Unlock	○——	——○	

REAR DOOR LOCK SWITCH INSPECTION

1. Remove the rear door trim panel. (see BD group-rear door)
2. Disconnect the 6P connector from the actuator.

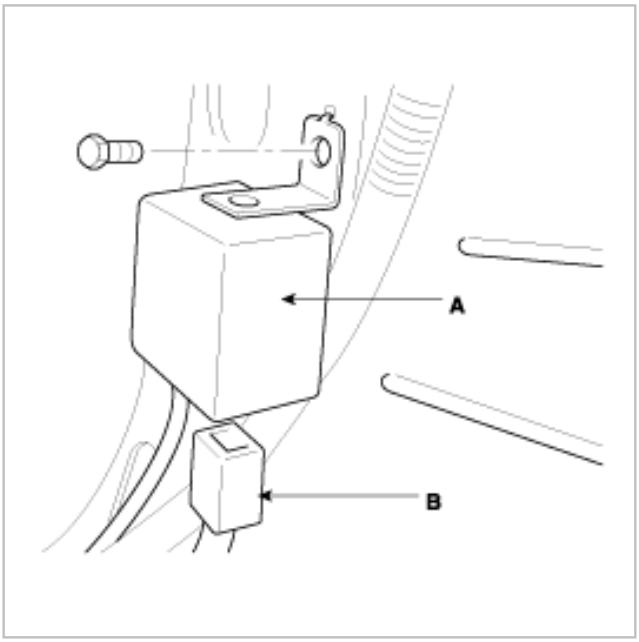


3. Check for continuity between the terminals in each switch position according to the table.

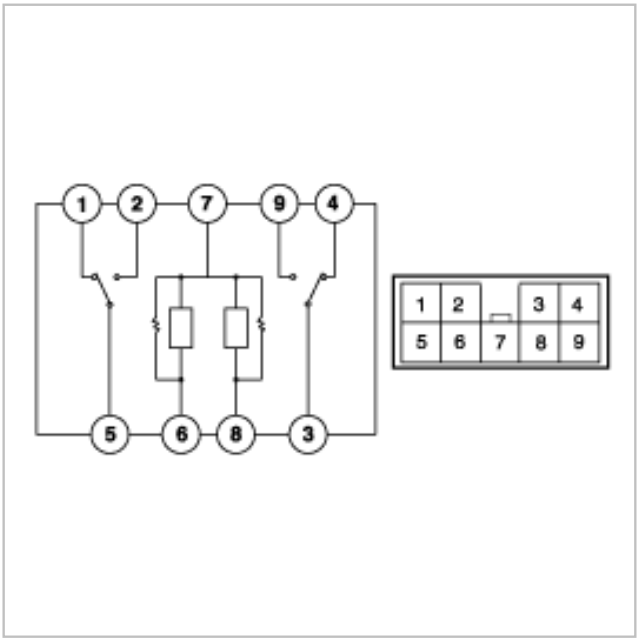
Position \ Terminal		5	6
Rear left	Lock		
	Unlock	○———	———○
Rear right	Lock		
	Unlock	○———	———○

INSPECTION

1. Remove the negative(-) battery terminal.
2. Remove the center facia panel then remove the audio and the heater control unit.
3. Remove the door lock control module (A) from the right side center support bracket.



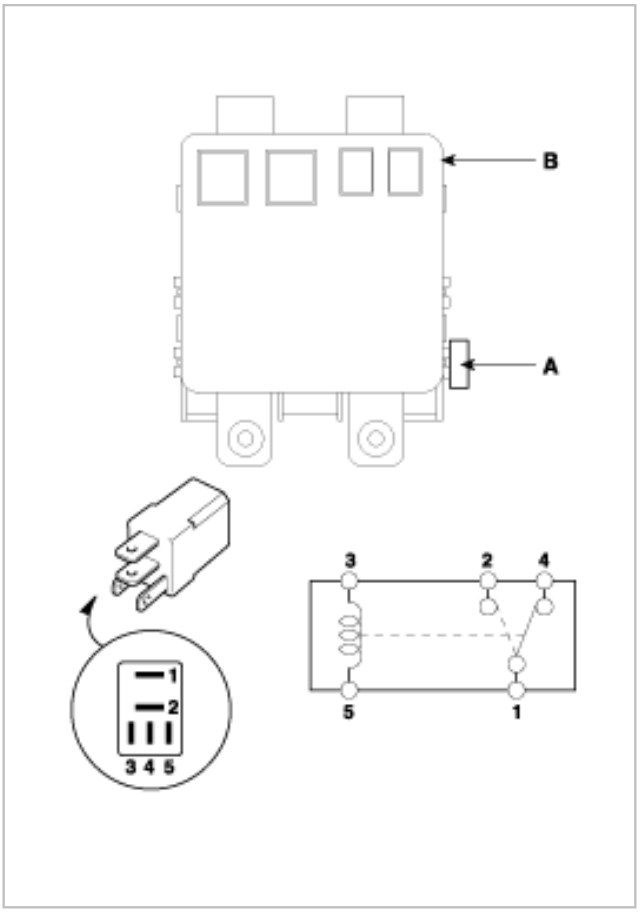
4. Disconnect the 9P connector(B) from the door lock control module, then check for continuity between the terminals.



Terminal / Position	1	2	5	7	6	8	4	9	3
When de-energized	○		○				○		○
When energized		○	○	⊕	⊖				
				⊕		⊖		○	○

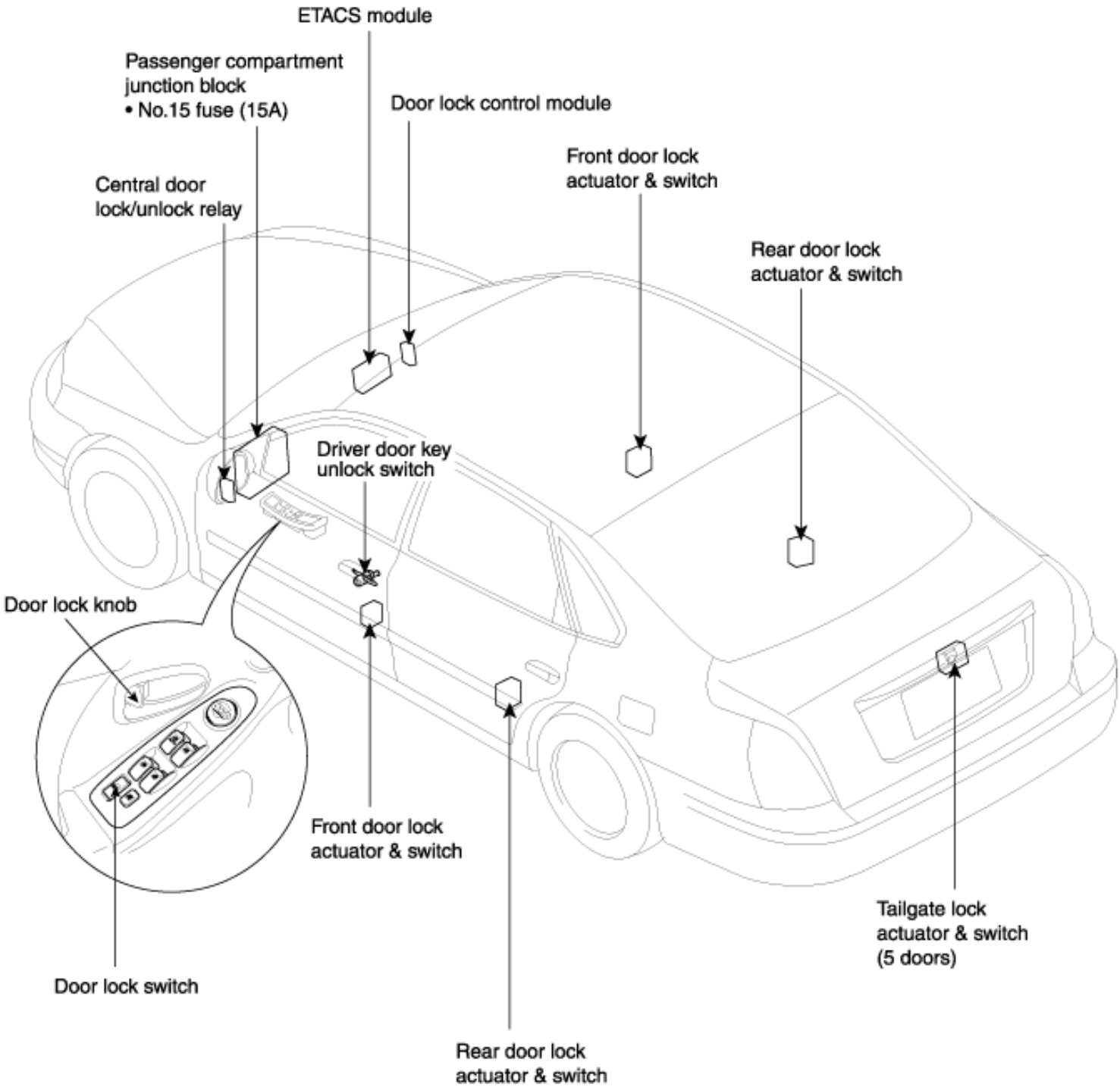
CENTRAL DOOR LOCK/UNLOCK RELAY TEST

1. Remove the central door lock/unlock relay(A) beside the passenger compartment junction block(B). Check for continuity between the terminals.
2. There should be continuity between the No.1 and No.2 terminals when power and ground are connected to the No.5 and No.3 terminals.
3. There should be continuity between the No.1 and No.4 terminals when power is disconnected.



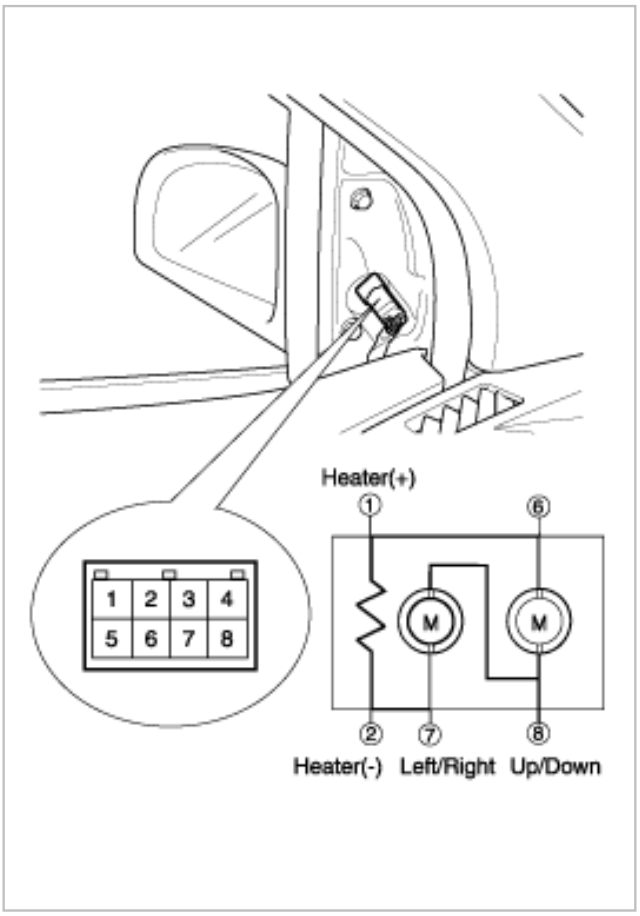
Terminal / Power (No.3-No.5)	3	5	1	2	4
Disconnected			○		○
Connected	⊖	⊕	○	○	

COMPONENTS


ETACS module
Passenger compartment junction block
• No.15 fuse (15A)
Door lock control module
Front door lock actuator & switch
Central door lock/unlock relay
Rear door lock actuator & switch
Driver door key unlock switch
Door lock knob
Front door lock actuator & switch
Tailgate lock actuator & switch (5 doors)
Door lock switch
Rear door lock actuator & switch

INSPECTION

1. Disconnect the power door mirror connector from the harness.
2. Apply battery voltage to each terminal as shown in the table and verify that the mirror operates properly.

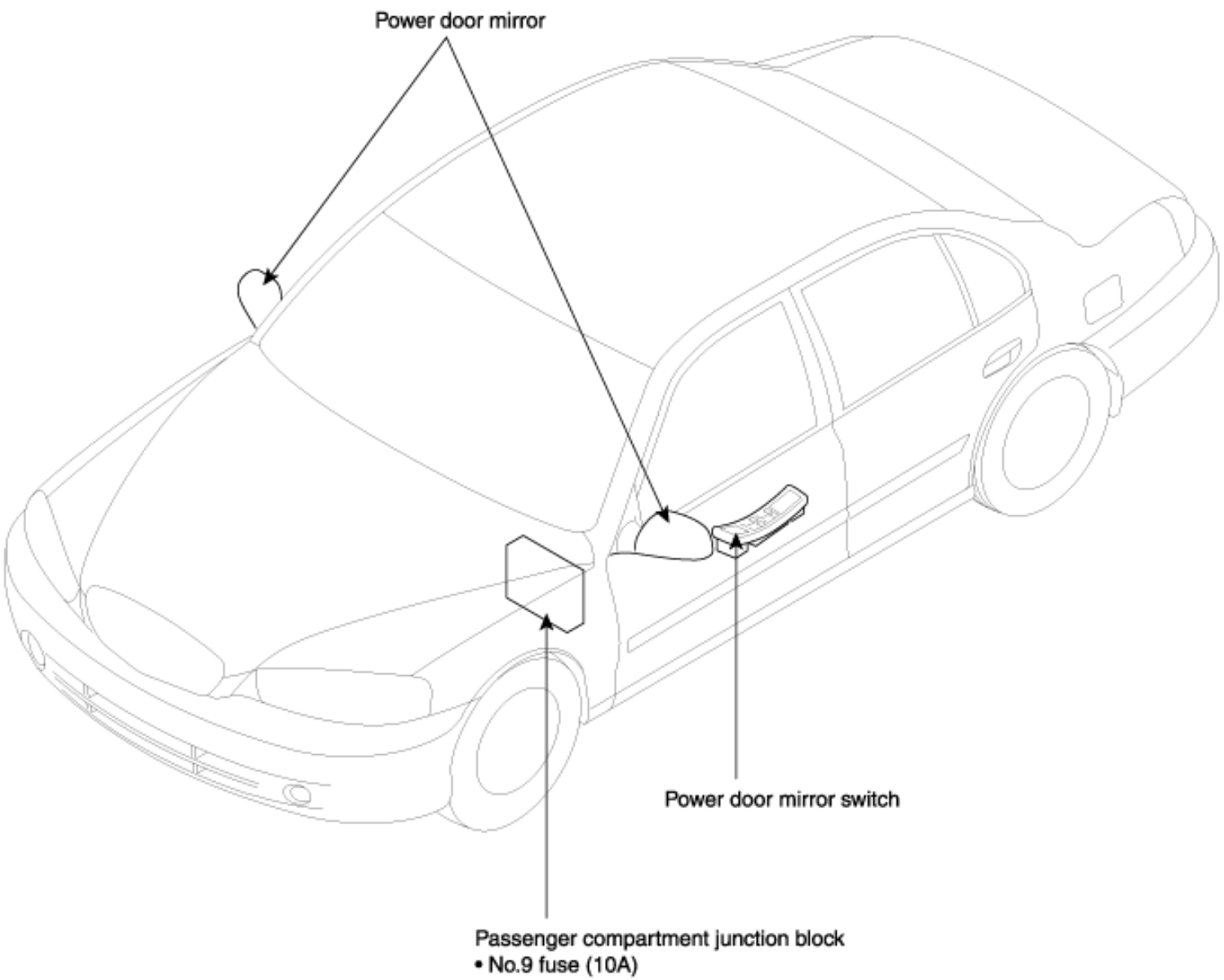


Terminal / Position	6	7	8
UP	⊖	⊕	⊕
DOWN	⊕	⊖	⊖
OFF	⊕	⊕	⊕
LEFT	⊖	⊕	⊖
RIGHT	⊕	⊖	⊕

MIRROR HEATER INSPECTION

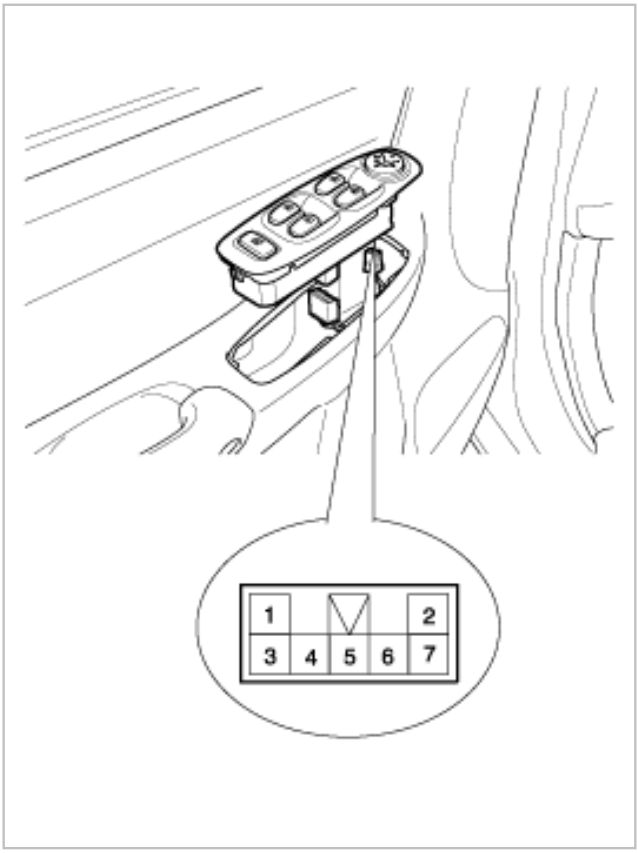
Terminal / Position	1	2
Heater	○	○

COMPONENTS


Power door mirror
Power door mirror switch
Passenger compartment junction block
• No.9 fuse (10A)

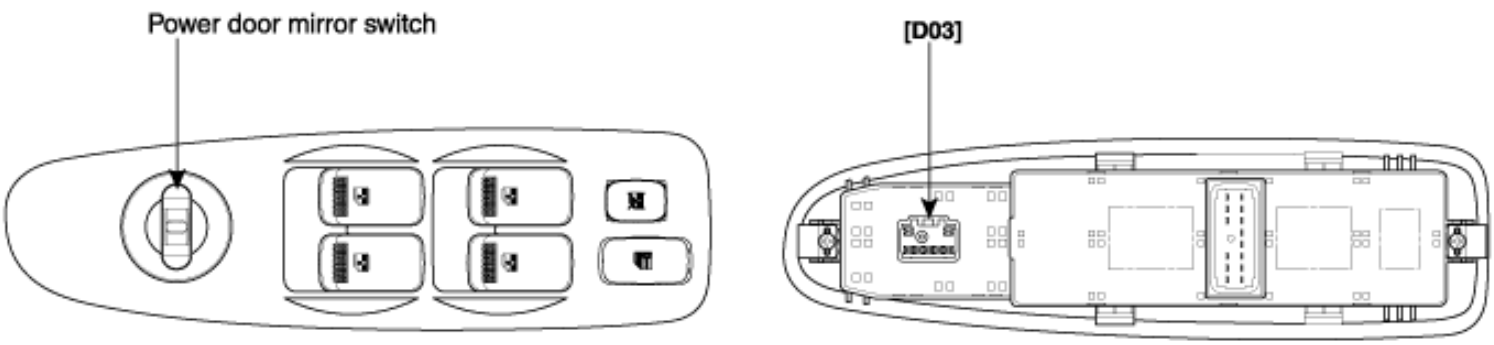
INSPECTION

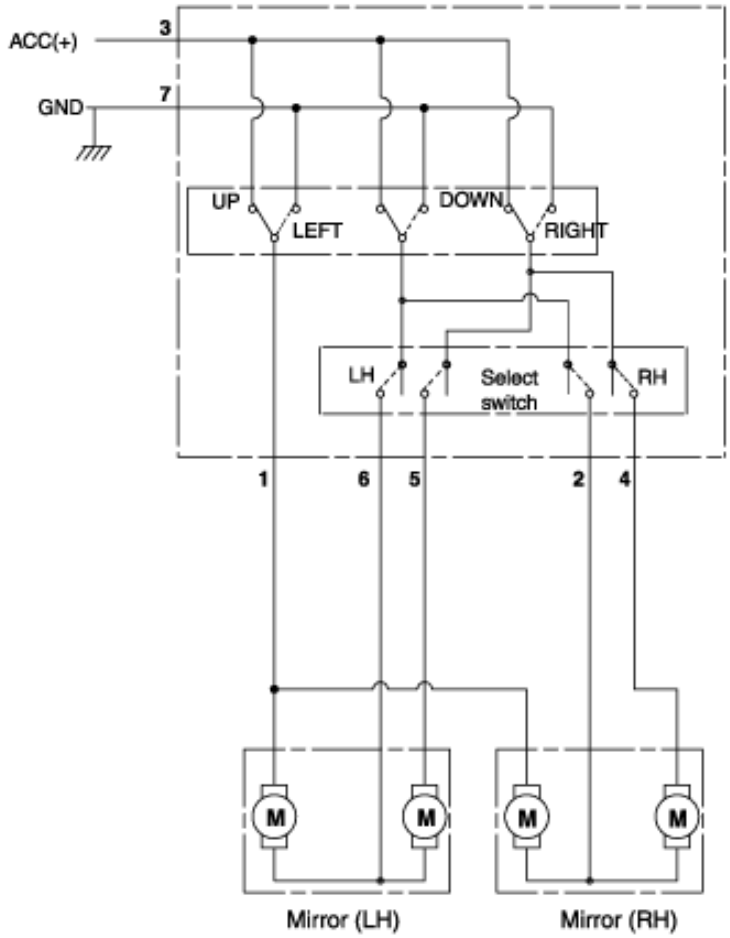
1. Remove the power door mirror switch from the door trim panel.
2. Check for continuity between the terminals in each switch position according to the table.



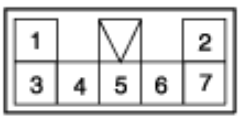
Class	Terminal / Direction	2	3	4	1	7	6	5
LEFT HAND	UP		○		○	○	○	○
	DOWN		○		○	○	○	○
	OFF		○		○		○	○
	LEFT		○		○	○	○	
	RIGHT		○		○	○	○	○
RIGHT HAND	UP	○	○	○	○	○		
	DOWN	○	○	○	○	○		
	OFF	○	○	○	○			
	LEFT	○	○	○	○	○		
	RIGHT	○	○	○	○	○		

CIRCUIT DIAGRAM





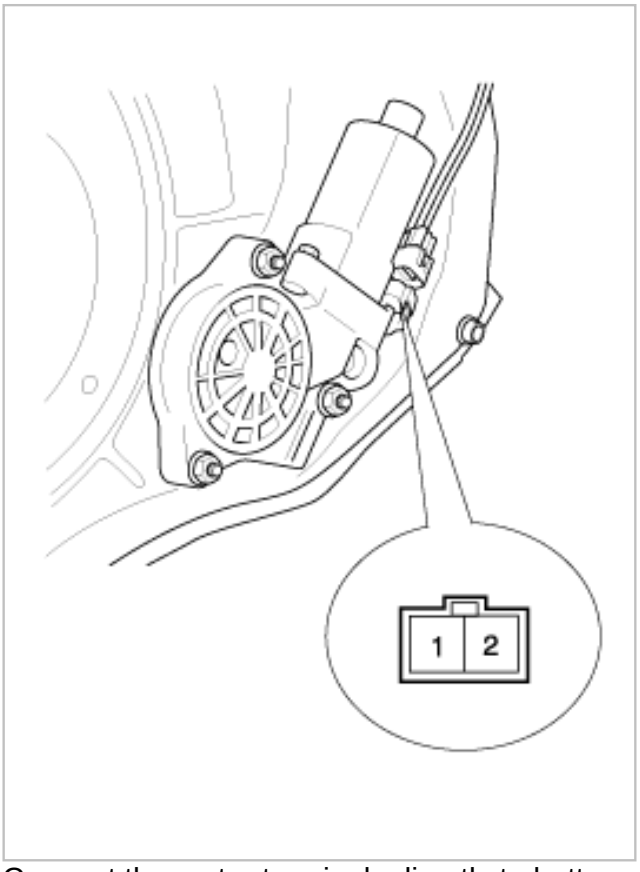
[D03]



INSPECTION

FRONT POWER WINDOW MOTOR INSPECTION

1. Remove the front door trim panel. (see BD group-front door)
2. Disconnect the 2P connector from the motor.



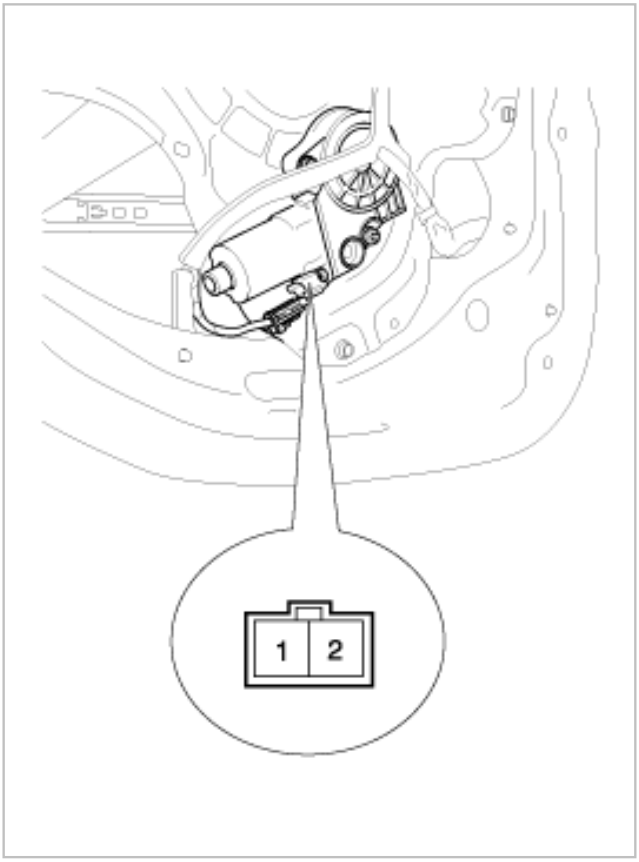
3. Connect the motor terminals directly to battery voltage (12V) and check that the motor operates smoothly. Next, reverse the polarity and check that the motor operates smoothly in the reverse direction. If the operation is abnormal, replace the motor.

Position \ Terminal		1	2
LH	Clockwise	⊕	⊖
	Counter-clockwise	⊖	⊕
RH	Clockwise	⊖	⊕
	Counter-clockwise	⊕	⊖

REAR POWER WINDOW MOTOR INSPECTION

1. Remove the rear door trim panel. (see BD group-rear door)

2. Disconnect the 2P connector from the motor.

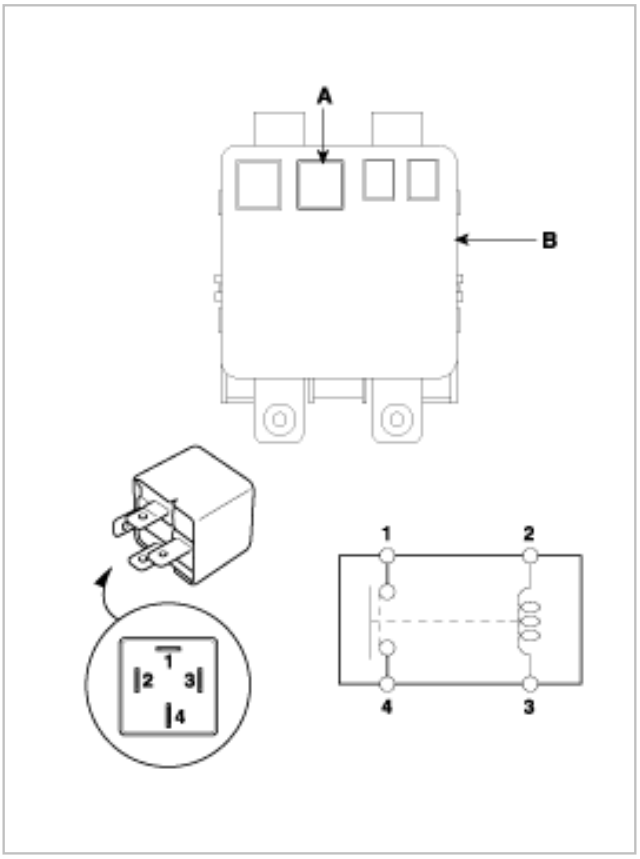


3. Connect the motor terminals directly to battery voltage (12V) and check that the motor operates smoothly. Next, reverse the polarity and check that the motor operates smoothly in the reverse direction. If the operation is abnormal, replace the motor.

Position \ Terminal		1	2
LH	Clockwise	⊕	⊖
	Counter-clockwise	⊖	⊕
RH	Clockwise	⊖	⊕
	Counter-clockwise	⊕	⊖

INSPECTION

1. Remove the power window relay(A) from the passenger compartment junction block(B).
2. There should be continuity between the No.1 and No.4 terminals when power and ground are connected to the No.3 and No.2 terminals.
3. There should be no continuity between the No.1 and No.4 terminals when power is disconnected.

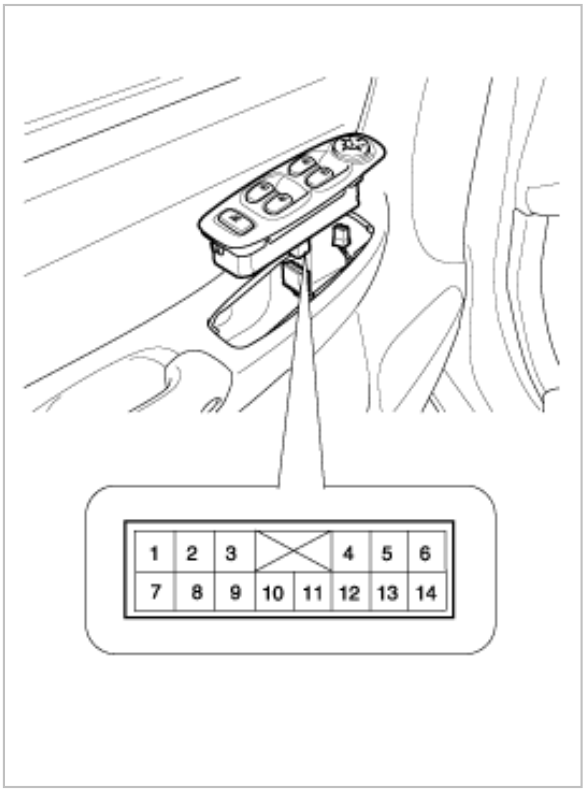


Terminal / Power (No.2-No.3)	2	3	1	4
Disconnected	○	○		
Connected	⊖	⊕	○	○

INSPECTION

POWER WINDOW MAIN SWITCH

1. Remove the power window main switch from the driver's door trim panel.



2. Check for continuity between the terminals.

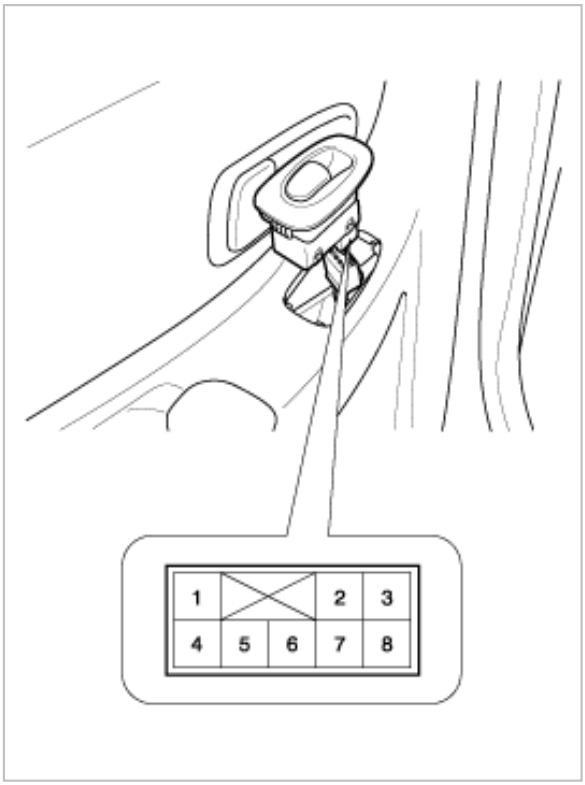
Position \ Terminal	Front left				Front right				Rear left				Rear right			
	11	5	6	10	11	2	4	10	11	9	12	10	11	7	8	10
UP	○—○		○—○		○—○		○—○		○—○		○—○		○—○		○—○	
OFF		○—○	○—○			○—○	○—○			○—○	○—○			○—○	○—○	
DOWN	○—○	○—○		○	○—○	○—○		○	○—○	○—○		○	○—○	○—○		○

POWER WINDOW LOCK SWITCH

Position \ Terminal	1	11
NORMAL	○—○	
LOCK		

POWER WINDOW SUB SWITCH

1. Remove the power window sub switch from the rear door trim panel.



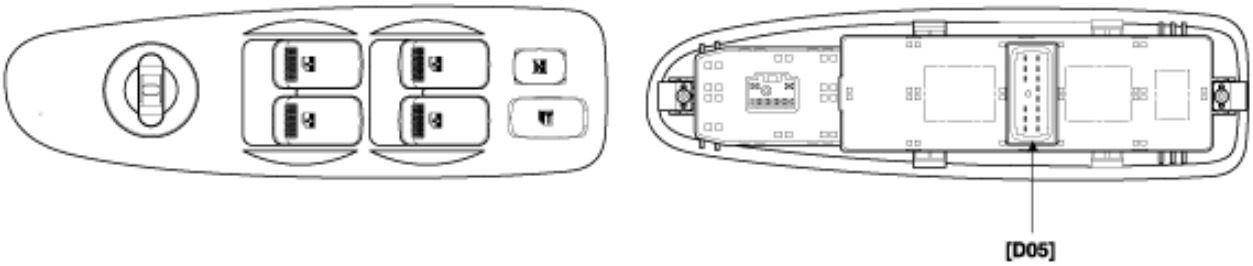
2. Check for continuity between the terminals.

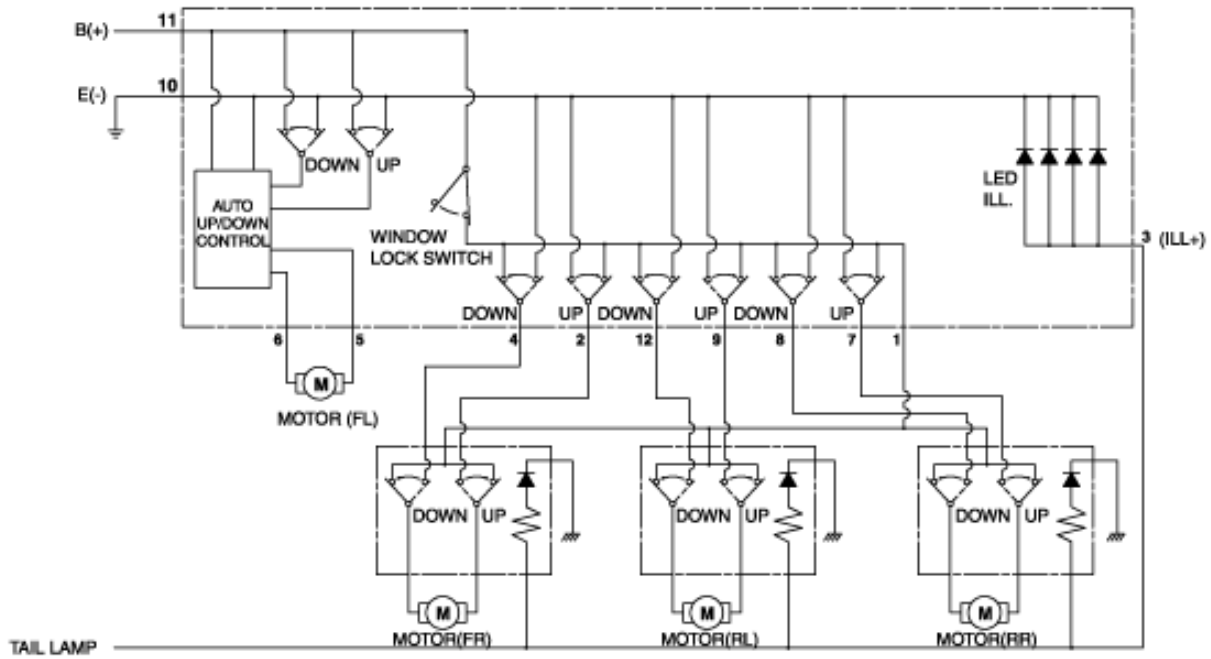
   If continuity is not as specified in the table, replace the power window switch.

Terminal / Position	1	3	4	6	8
UP	○	○		○	○
OFF	○	○	○		○
DOWN	○	○	○	○	

CIRCUIT DIAGRAM

[Power window main switch]

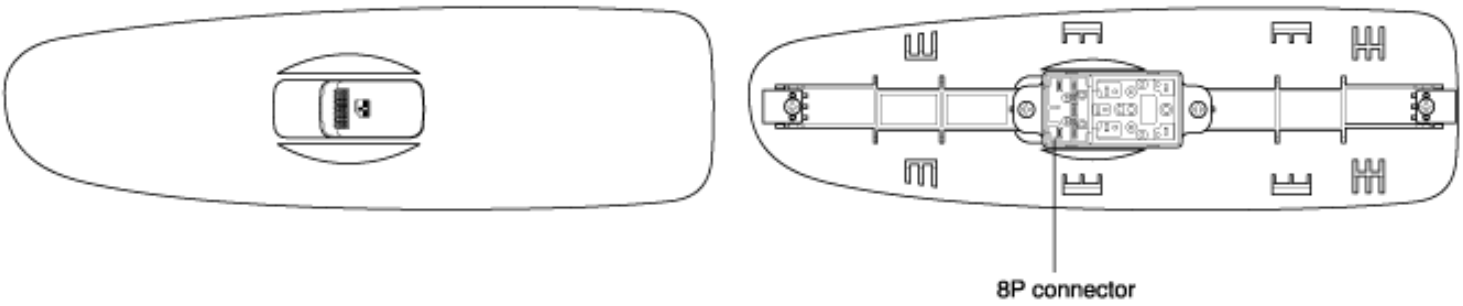


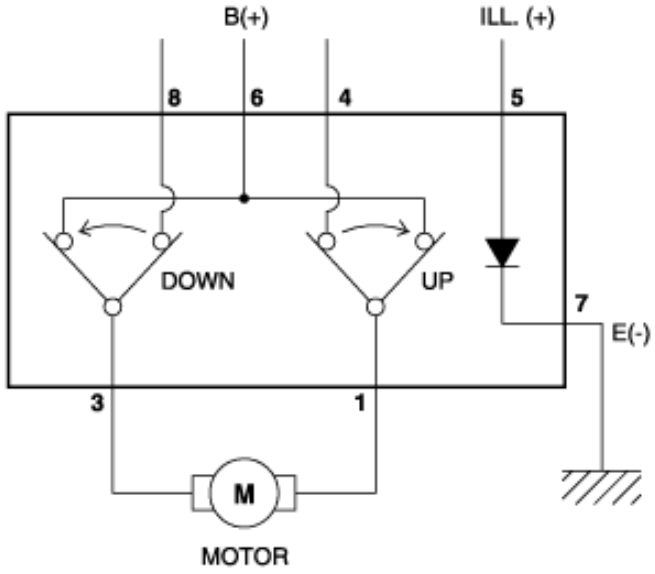


[D05]

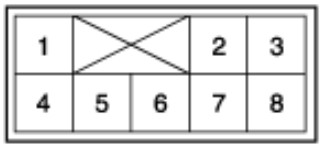
1	2	3		4	5	6	
7	8	9	10	11	12	13	14

[Power window sub switch]

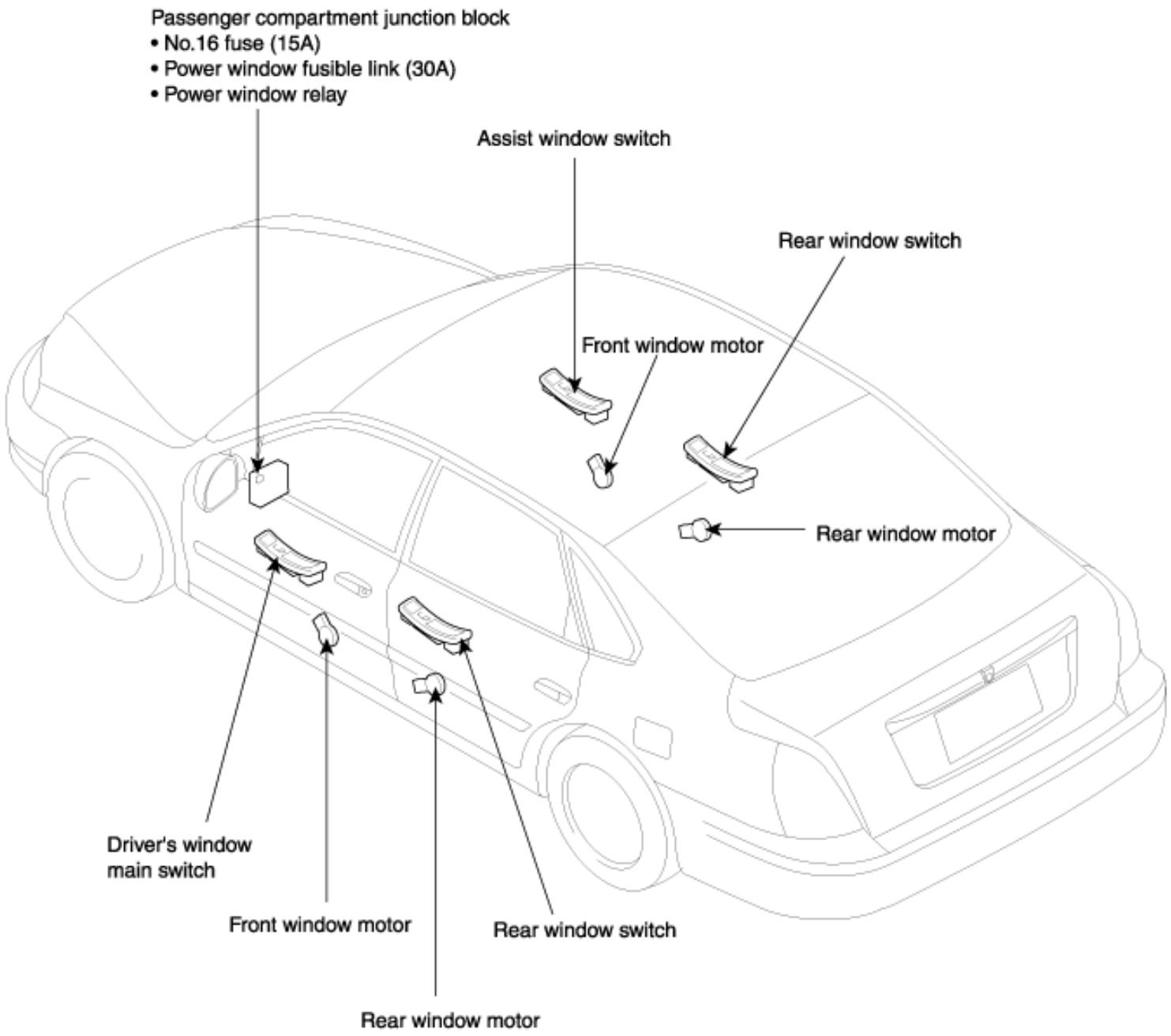




KTDD004Q

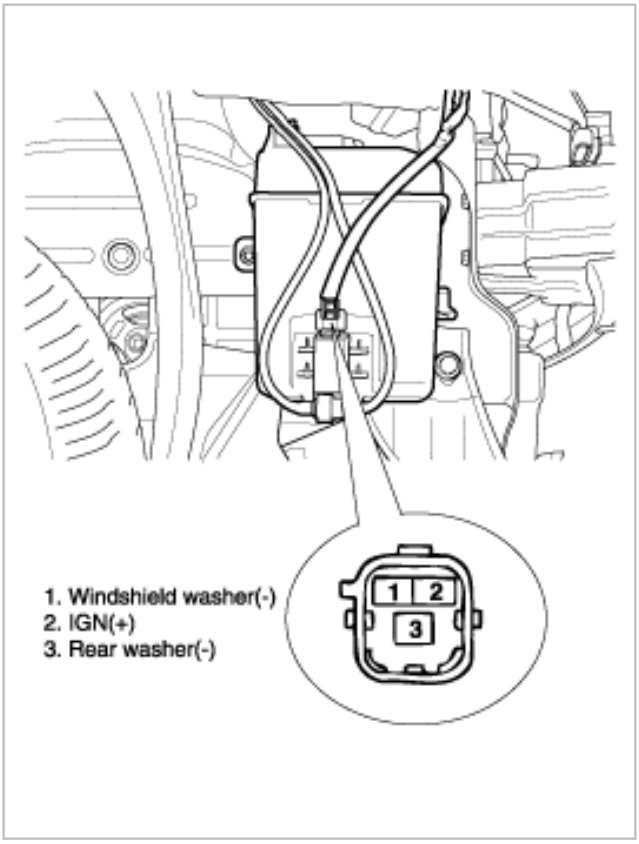


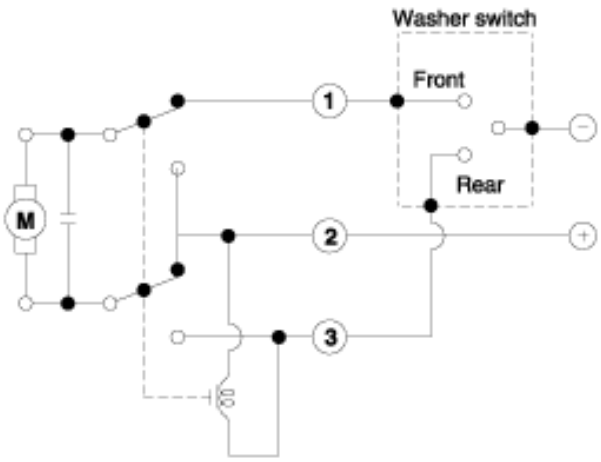
COMPONENTS


Passenger compartment junction block
• No.16 fuse (15A)
• Power window fusible link (30A)
• Power window relay
Assist window switch
Rear window switch
Front window motor
Rear window motor
Driver's window main switch
Front window motor
Rear window switch
Rear window motor

INSPECTION

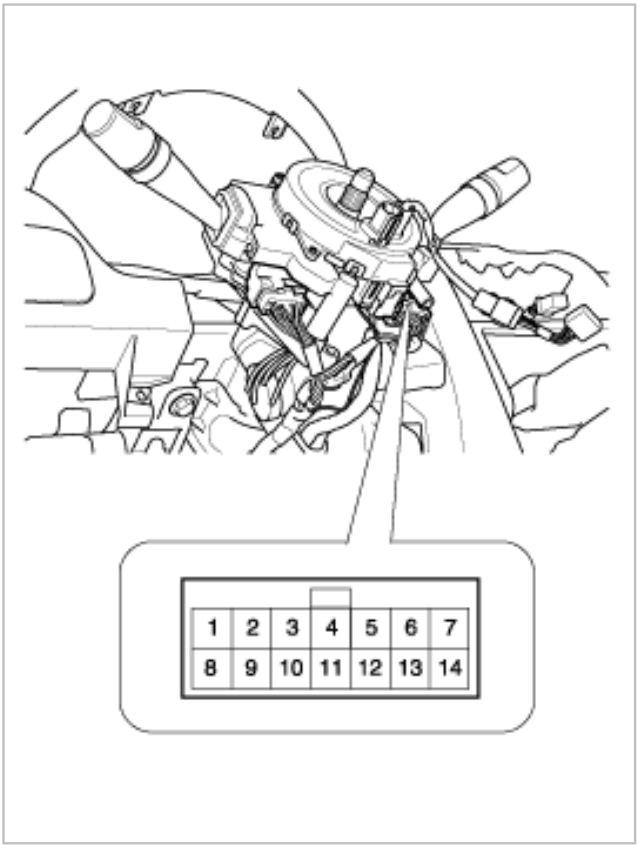
1. With the washer motor connected to the reservoir tank, fill the reservoir tank with water.
2. Connect positive(+) and negative(-) battery cables to terminals 2 and 3 respectively to see that the washer motor runs and water is pumped.
3. Check that the motor operates normally.
   Replace the motor if it operates abnormally.





[Windshield & rear washer motor]

INSPECTION

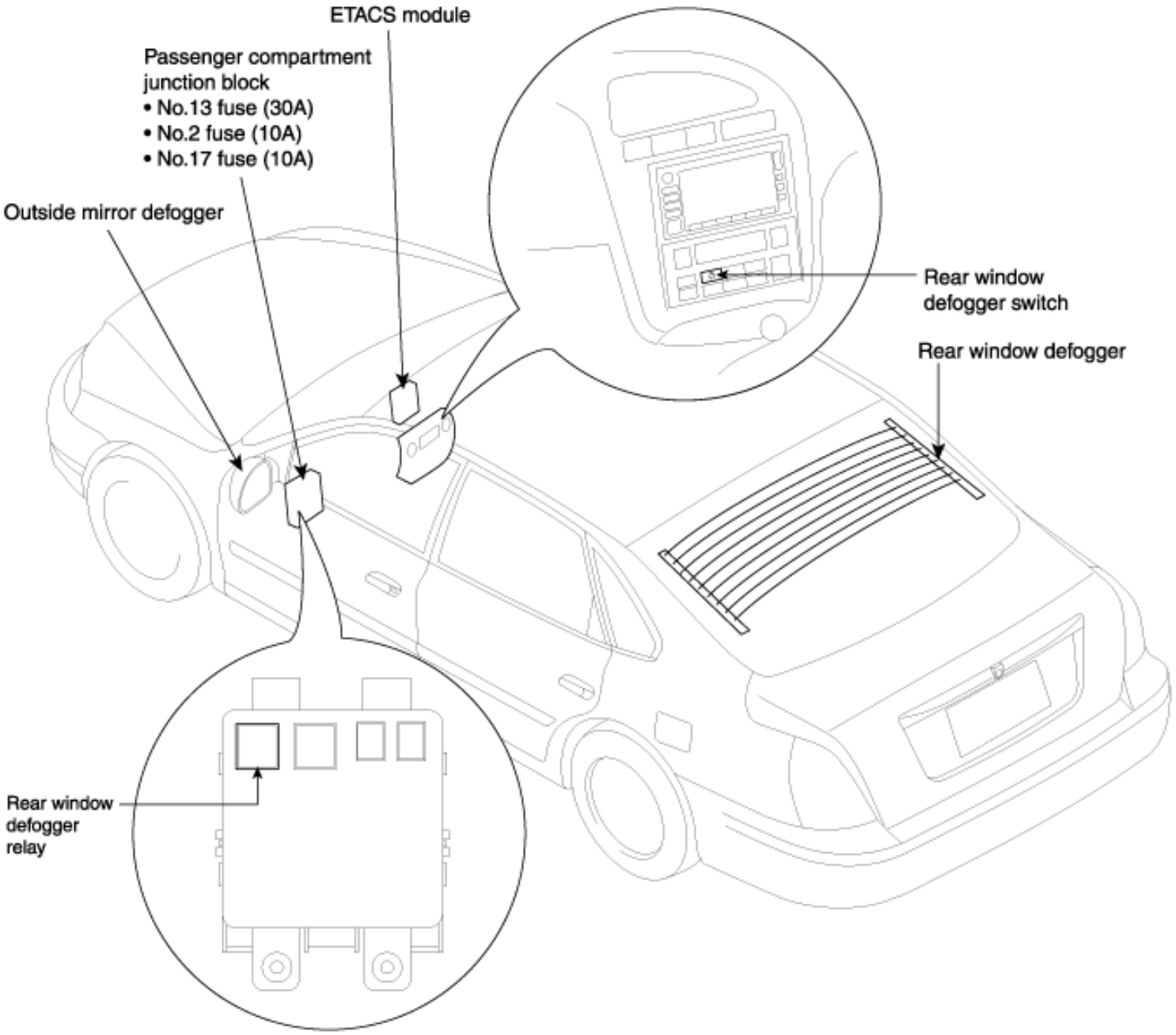


REAR WIPER & WASHER SWITCH (CONNECTOR NO. : M01-1)

[5 doors]

Terminal / Position	9	10	11	12
Rear washer	○	—	—	○
OFF				
INT			○	○
ON		○	—	○
Rear washer	○	—	—	○

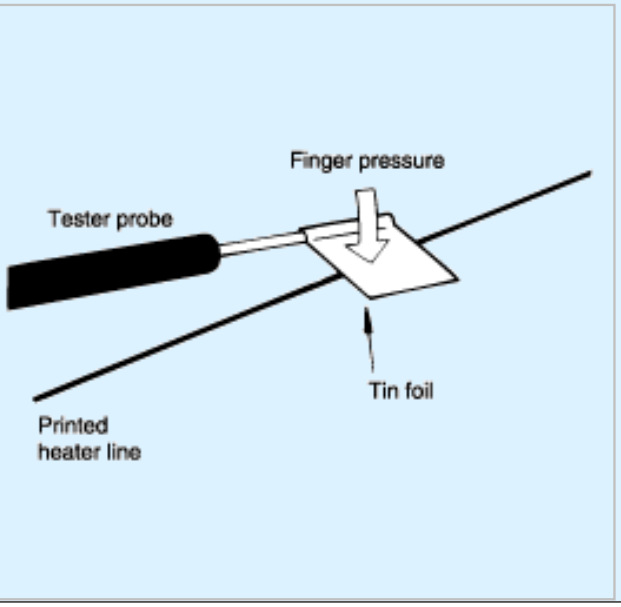
COMPONENTS


ETACS module
Passenger compartment junction block
• No.13 fuse (30A)
• No.2 fuse (10A)
• No.17 fuse (10A)
Outside mirror defogger
Rear window defogger switch
Rear window defogger
Rear window defogger relay

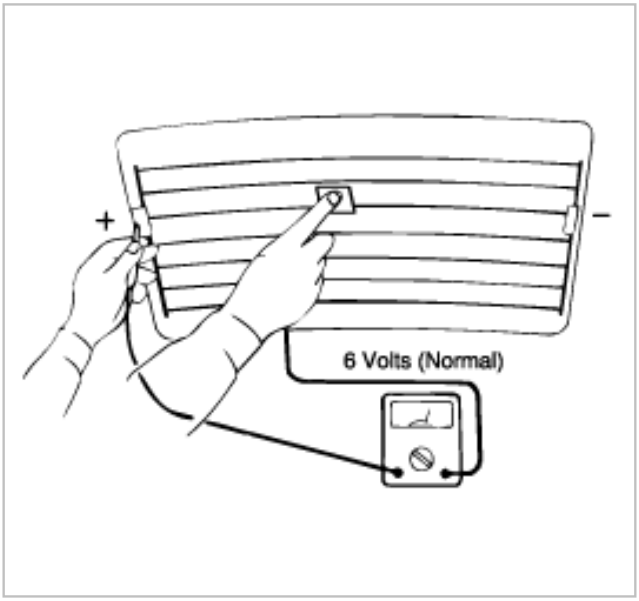
INSPECTION

CAUTION

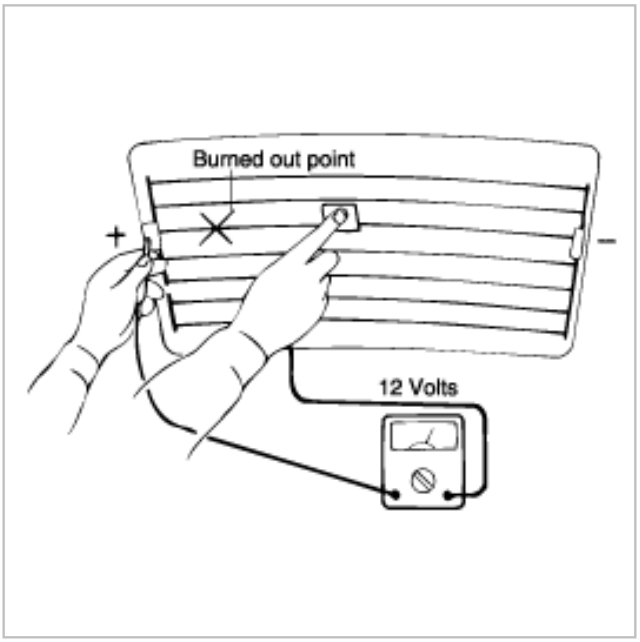
Wrap tin foil around the end of the voltmeter test lead to prevent damaging the heater line. Apply finger pressure on the tin foil, moving the tin foil along the grid line to check for open circuits.



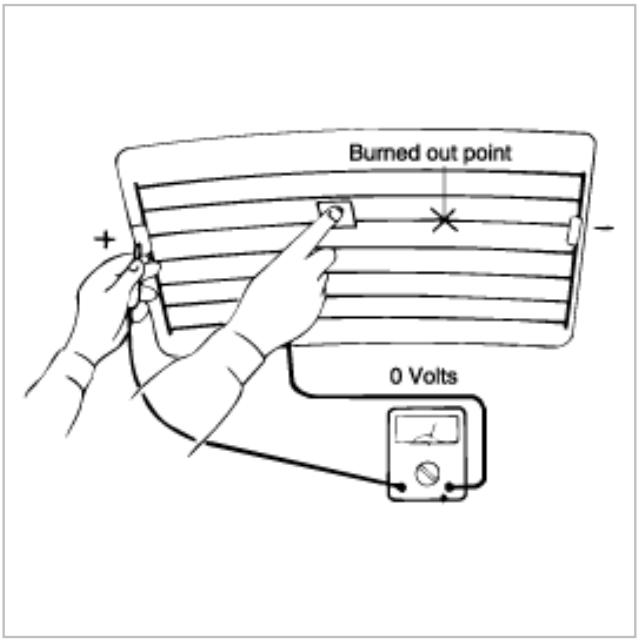
1. Turn on the defogger switch and use a voltmeter to measure the voltage of each heater line at the glass center point. If a voltage of approximately 6V is indicated by the voltmeter, the heater line of the rear window is considered satisfactory.



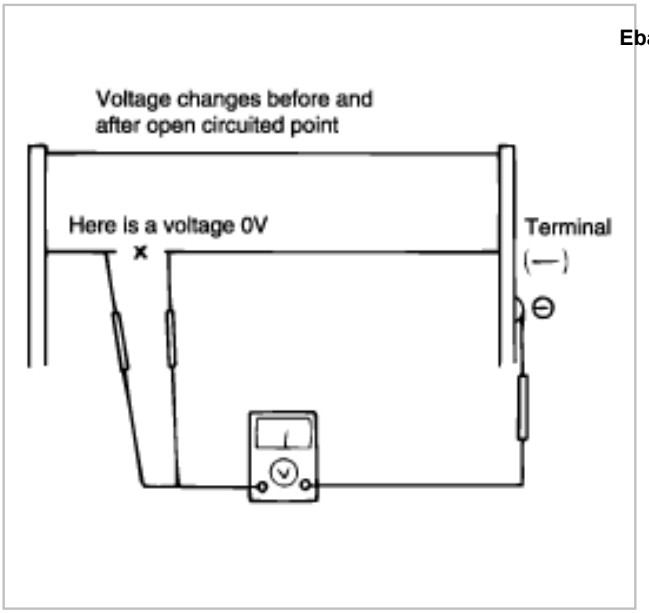
2. If a heater line is burned out between the center point and (+) terminal, the voltmeter will indicate 12V.



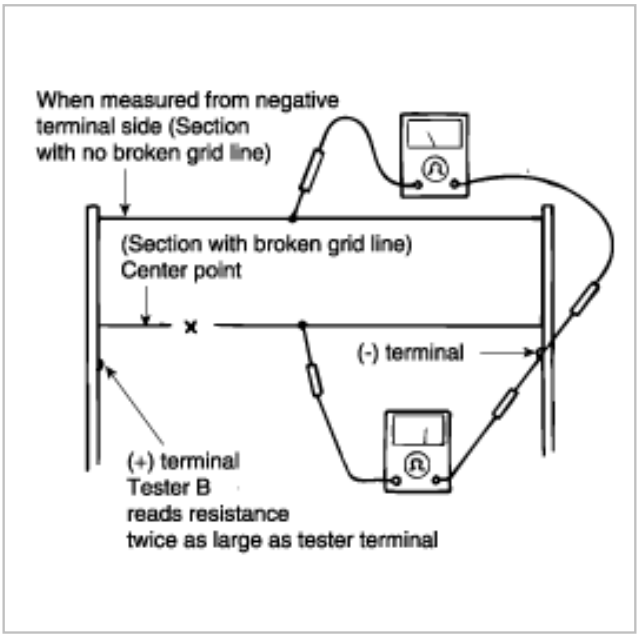
3. If a heater line is burned out between the center point and (-) terminal, the voltmeter will indicate 0V.



4. To check for open circuits, slowly move the test lead in the direction that the open circuit seems to exist. Try to find a point where a voltage is generated or changes to 0V. The point where the voltage has changed is the open-circuit point.



5. Use an ohmmeter to measure the resistance of each heater line between a terminal and the center of a grid line, and between the same terminal and the center of one adjacent heater line. The section with a broken heater line will have a resistance twice as that in other sections. In the affected section, move the test lead to a position where the resistance sharply changes.



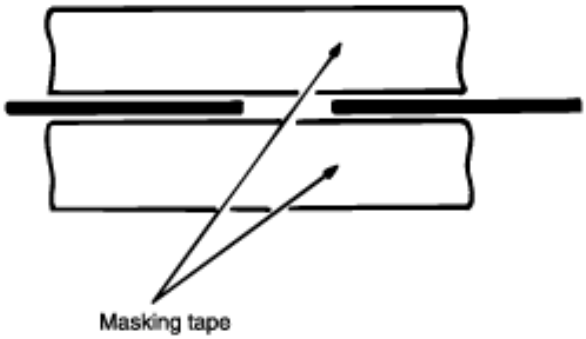
REPAIR OF BROKEN HEATER LINE

Prepare the following items :

1. Conductive paint.
2. Paint thinner.
3. Masking tape.
4. Silicone remover.

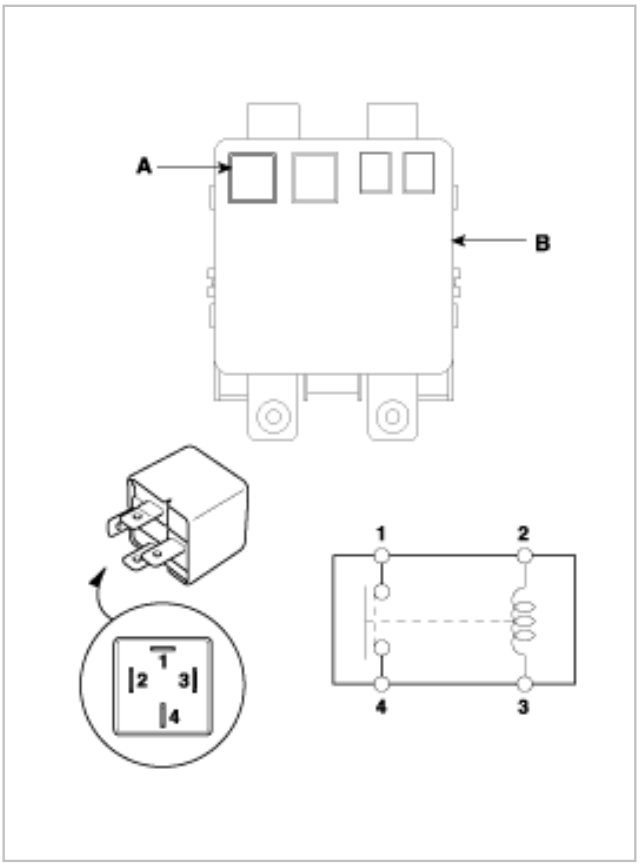
5. Using a thin brush :

Wipe the glass adjacent to the broken heater line, clean with silicone remover and attach the masking tape as shown. Shake the conductive paint container well, and apply three coats with a brush at intervals of about 15 minutes apart. Remove the tape and allow sufficient time for drying before applying power. For a better finish, scrape away excess deposits with a knife after the paint has completely dried. (Allow 24 hours).



INSPECTION

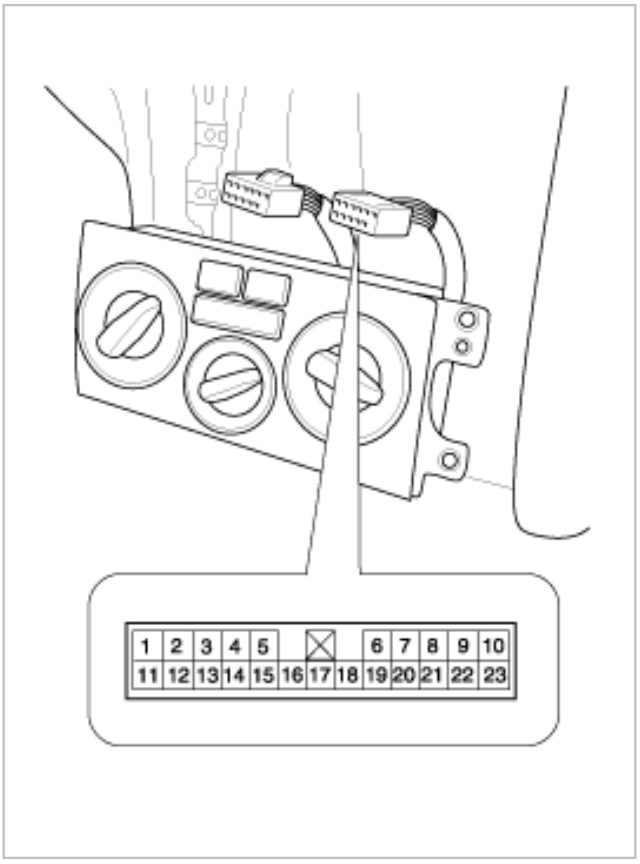
1. Remove the rear window defogger relay(A) from the passenger compartment junction block(B).
2. There should be continuity between the No.1 and No.4 terminals when power and ground are connected to the No.3 and No.2 terminals.
3. There should be no continuity between the No.1 and No.4 terminals when power is disconnected.



Terminal / Power (No.2-No.3)	2	3	1	4
Disconnected	○	○		
Connected	⊖	⊕	○	○

INSPECTION

1. Remove the negative(-) battery terminal.
2. Disconnect the air control module connector(23P) and check for continuity between the terminals.

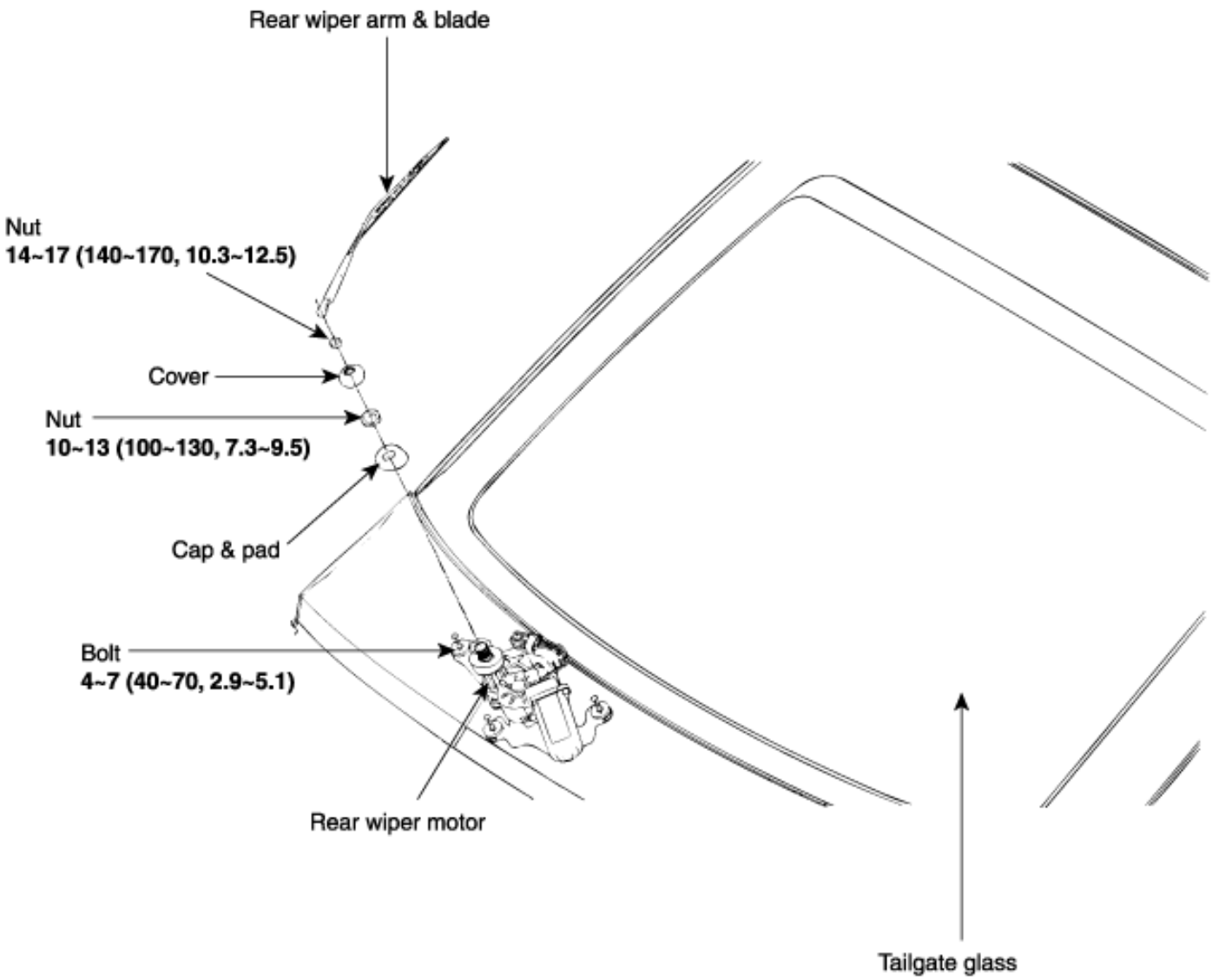


[M20]

Terminal / Position	19	3	18
ON			IND
OFF			IND

COMPONENTS

[5 doors only]

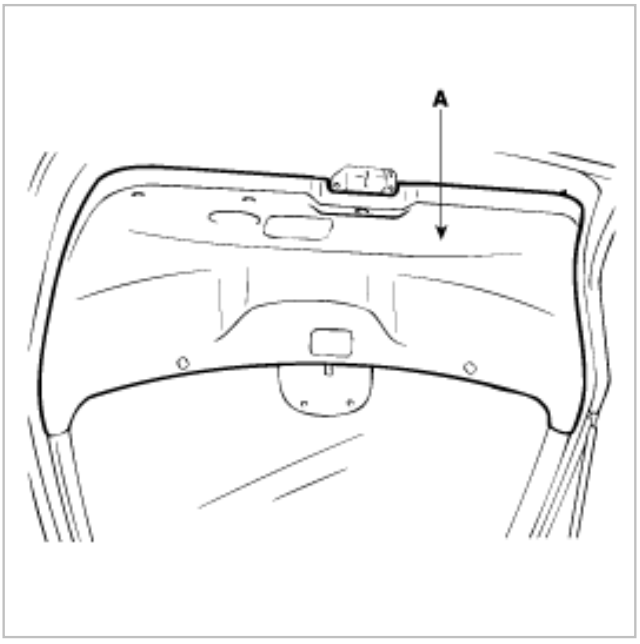


TORQUE : Nm (kg·cm, lb·ft)

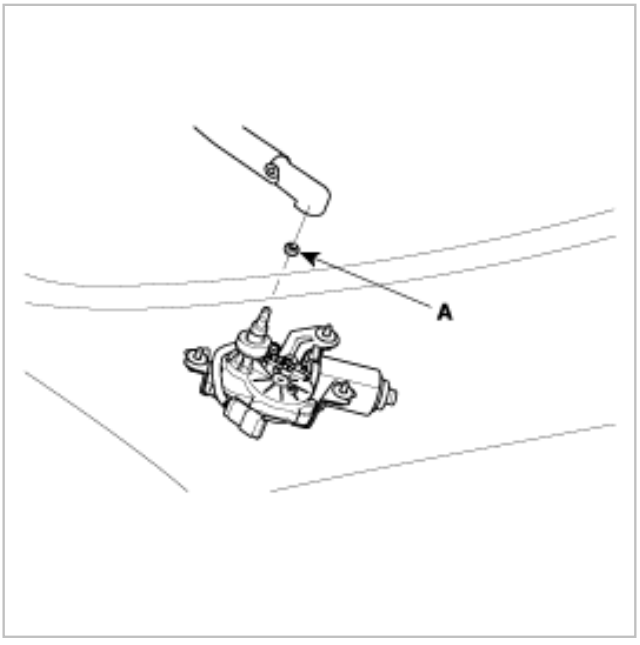
Email: suzlever@gmail.com

REMOVAL

1. Remove the tailgate trim panel(A).



2. Remove the rear wiper arm after removing a nut(A).



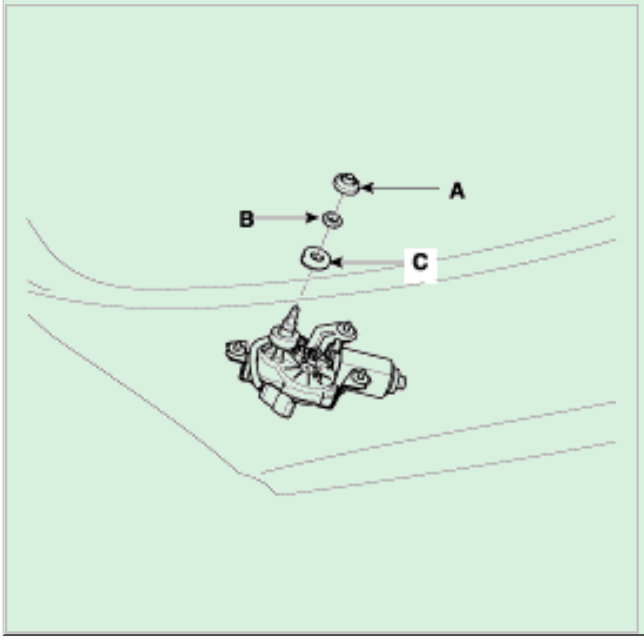
Tightening torque

14~17 Nm (140~170 kg·cm, 10.3~12.5 lb·ft)

3. Remove a hexagonal nut(B) after removing a pivot cover(A).

NOTE

When installing cap & pad(C), the arrow mark should be indicated upward.



Tightening torque

10~13 Nm (100~130 kg·cm, 7.3~9.5 lb·ft)

4. Remove the rear wiper motor after removing 3 bolts(A) and disconnect the wire connector(B).

Tightening torque

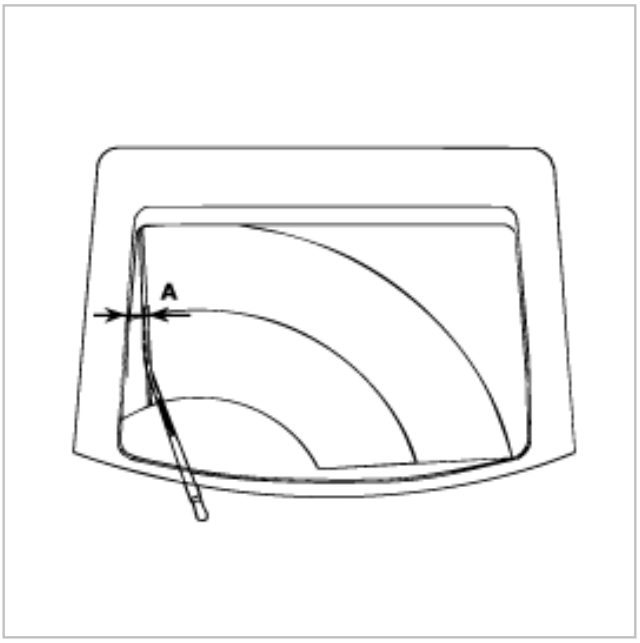
4~7 Nm (40~70 kg·cm, 2.9~5.1 lb·ft)

5. Installation is the reverse of removal.

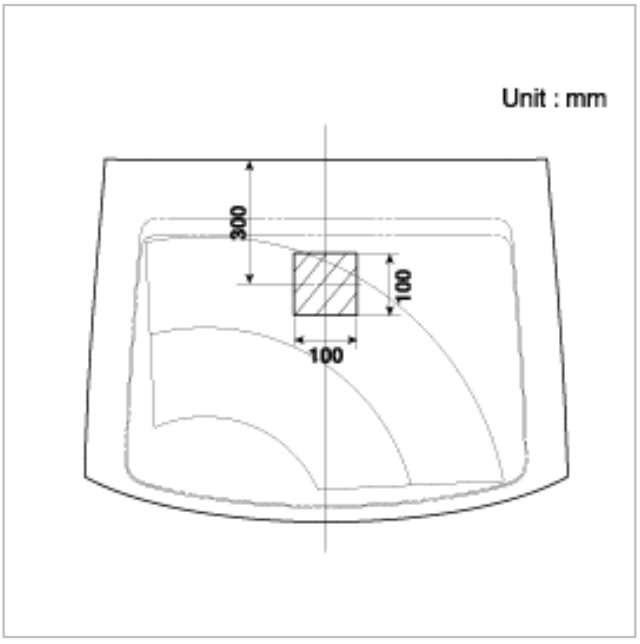
INSTALLATION

1. Install the rear wiper arm and blade to the specified position.

Specified position	A
Distance	35~45 mm



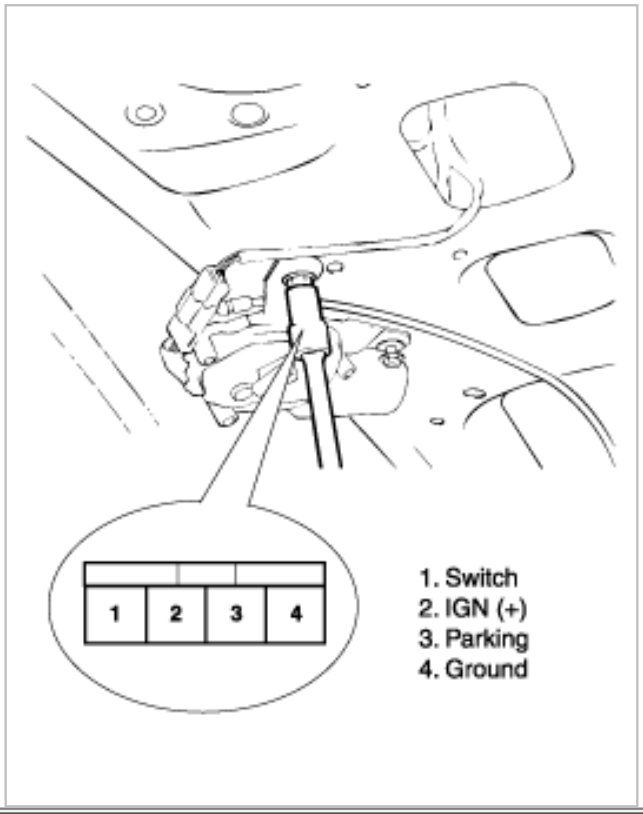
2. Set the rear washer nozzle on the specified spray position.



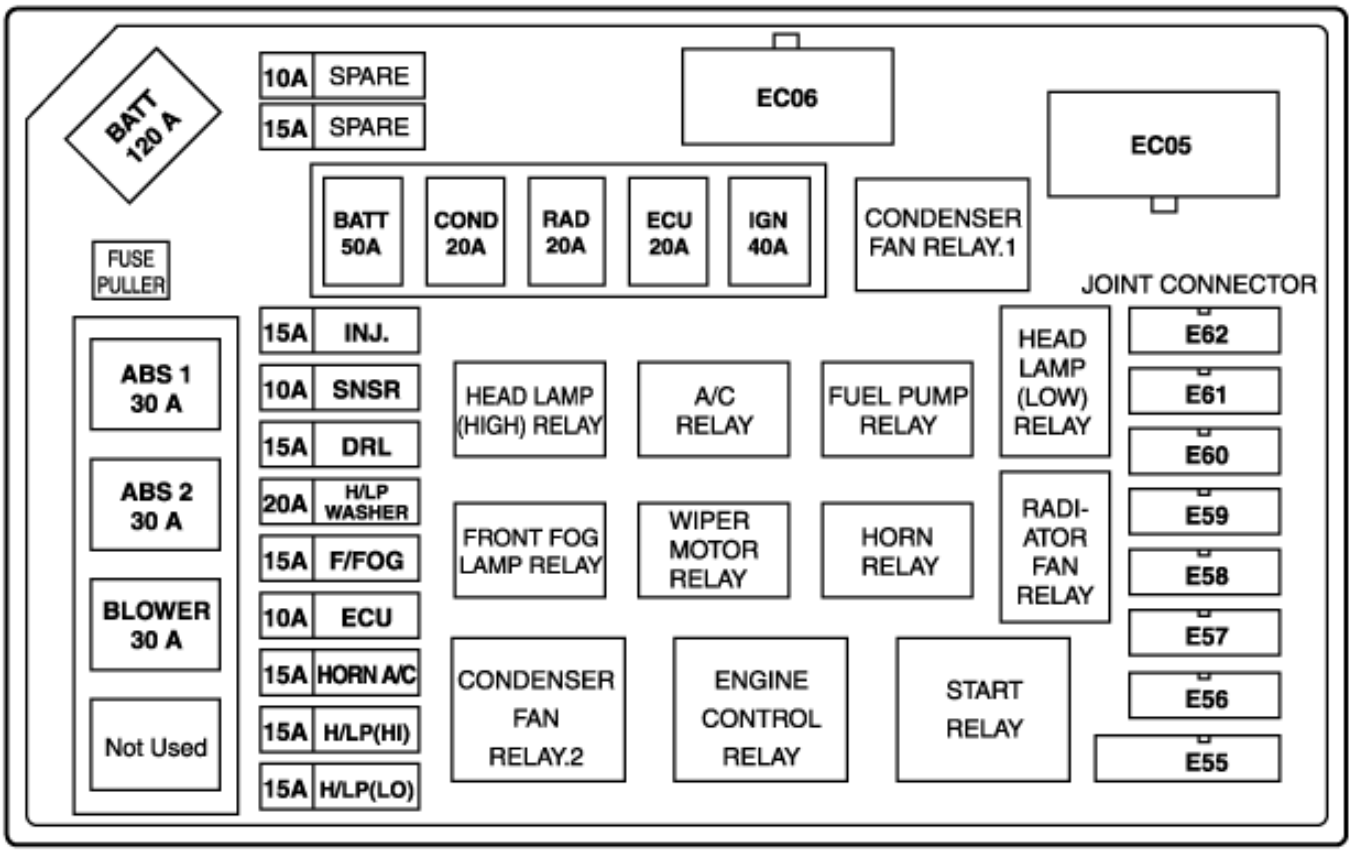
INSPECTION

1. Remove the connector from the rear wiper motor.
2. Connect battery positive (+) and negative (-) cables to terminals 1 and 4 respectively.

3. Check that the motor operates normally. Replace the motor if it operates abnormally.



COMPONENTS



CIRCUIT

Description		Amperages	Circuit protected
FUSIBLE LINK	BATT	120A	Generator
	BATT	50A	Fusible link(P/WDW), Tail lamp relay, Power connector, Fuse(4,13,14,15,16)
	COND	20A/30A	Condenser fan relay.1
	RAD	20A/30A	Radiator fan relay
	ECU	20A	Generator, Engine control relay, Fuel pump relay, PCM
	IGN	40A	Ignition switch, Start relay
	ABS.1	30A	ABS control (Motor)
	ABS.2	30A	ABS control (Solenoid)
	BLOWER	30A	Blower relay
FUSE	INJ.	15A	Injectors
	SNSR	10A	PCM, Heated oxygen sensor, SMATRA
	DRL	15A	DRL control
	H/WASH	20A	Not used
	F/FOG	15A	Front fog lamp relay
	ECU	10A	Siren, PCM
	HORN & A/C	15A	A/C relay, Horn relay
	H/LP(HI)	15A	Head lamp relay (High)
	H/LP(LO)	15A	Head lamp relay (Low)

Ebay User ID: reveleus1

Email: suzlever@gmail.com

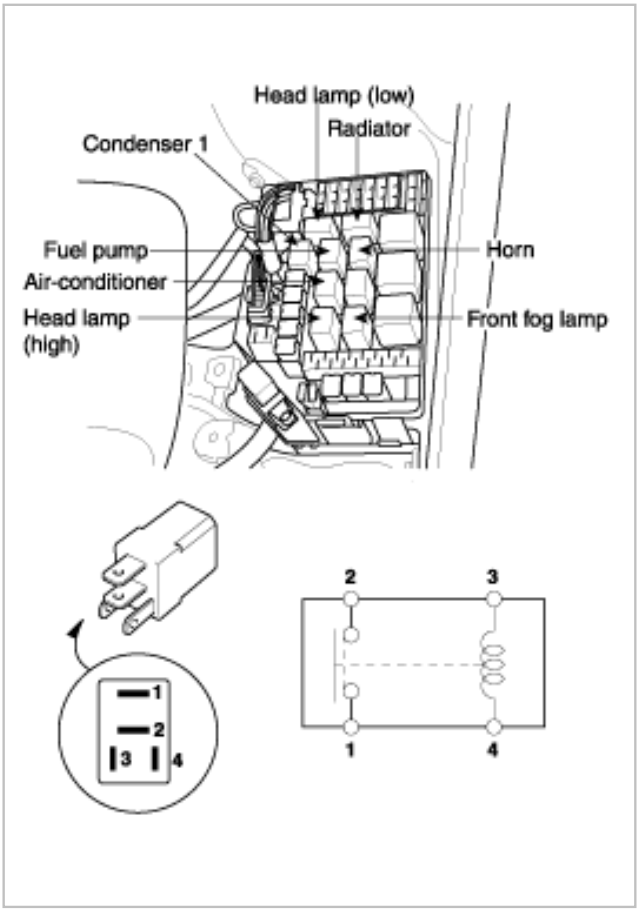
Purchased
from Ebay seller
Reveleus1

Thank-you for purchasing from me, it is much appreciated.
To contact me please email
suzlever@gmail.com

INSPECTION

POWER RELAY TEST (TYPE A)

1. There should be continuity between the No.1 and No.2 terminals when power and ground are connected to the No.4 and No.3 terminals.
2. There should be no continuity between the No.1 and No.2 terminals when power is disconnected.

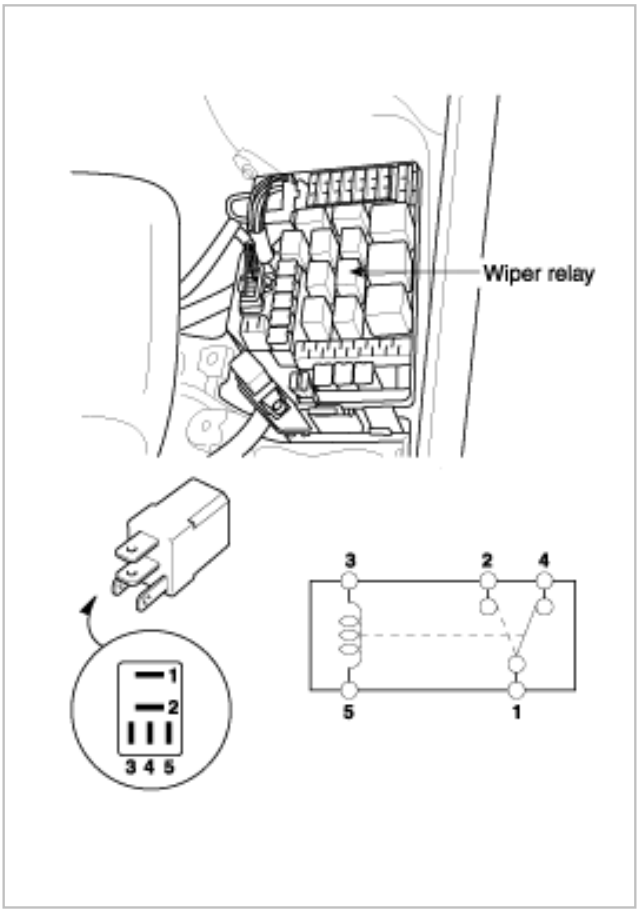


Terminal / Power (No.3-No.4)	1	2	3	4
Disconnected			○	○
Connected	○	○	⊖	⊕

POWER RELAY TEST (TYPE B)

1. There should be continuity between the No.1 and No.2 terminals when power and ground are connected to the No.5 and No.3 terminals.

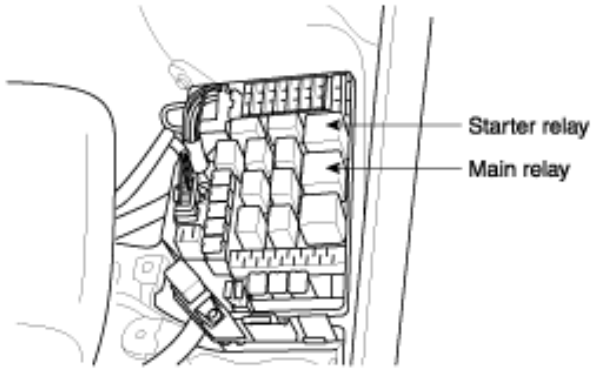
2. There should be continuity between the No.1 and No.4 terminals when power is disconnected.

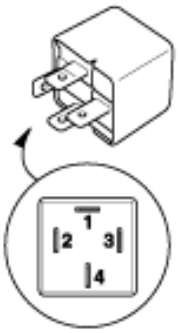


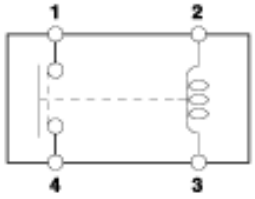
Terminal / Power (No.3-No.5)	3	5	1	2	4
Disconnected			○		○
Connected	⊖	⊕	○	○	

POWER RELAY TEST (TYPE C)

1. There should be continuity between the No.1 and No.4 terminals when power and ground are connected to the No.3 and No.2 terminals.
2. There should be no continuity between the No.1 and No.4 terminals when power is disconnected.



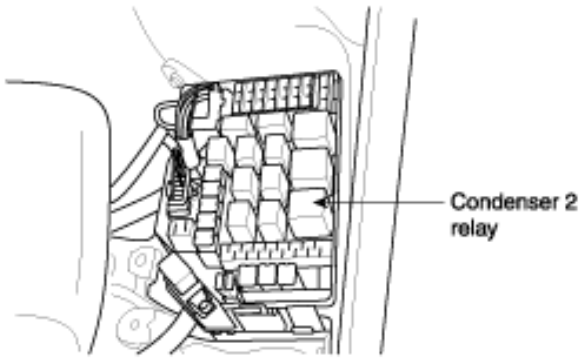


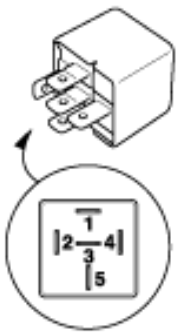


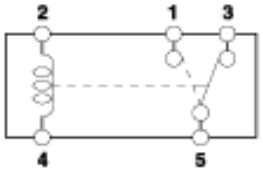
Terminal / Power (No.2-No.3)	2	3	1	4
Disconnected	○	○		
Connected	⊖	⊕	○	○

POWER RELAY TEST (TYPE D)

1. There should be continuity between the No.1 and No.5 terminals when power and ground are connected to the No.4 and No.2 terminals.
2. There should be continuity between the No.3 and No.5 terminals when power is disconnected.

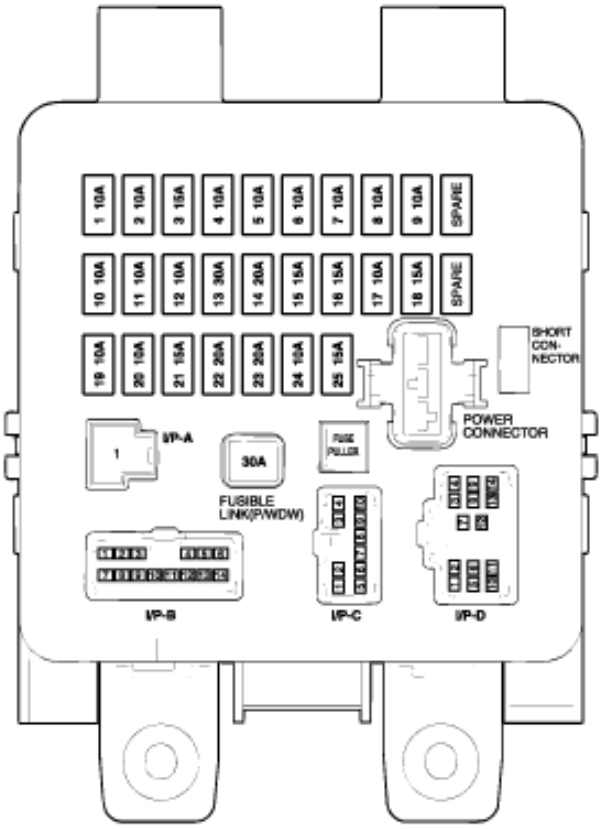




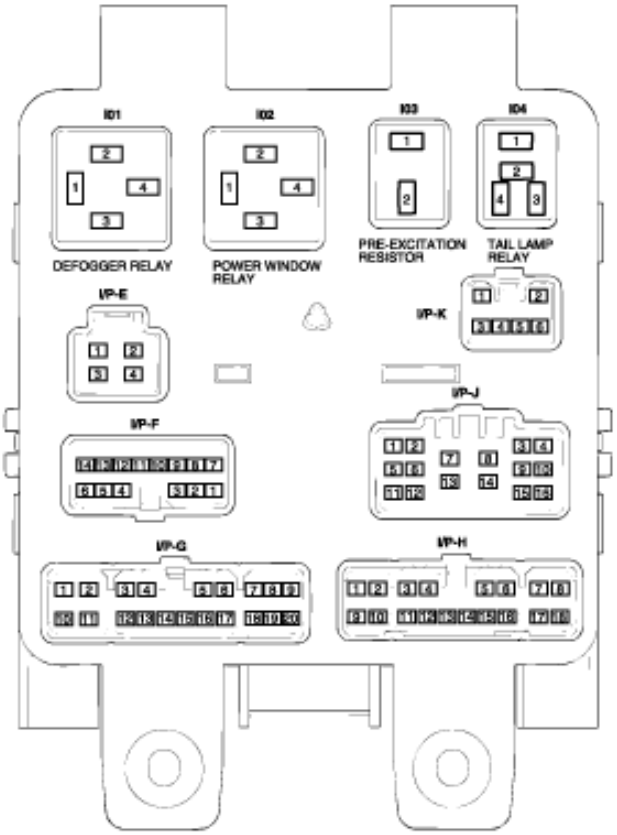


Terminal / Power (No.2-No.4)	2	4	1	3	5
Disconnected				○ — ○	
Connected	⊖ — ⊕		○ — ○		

COMPONENTS



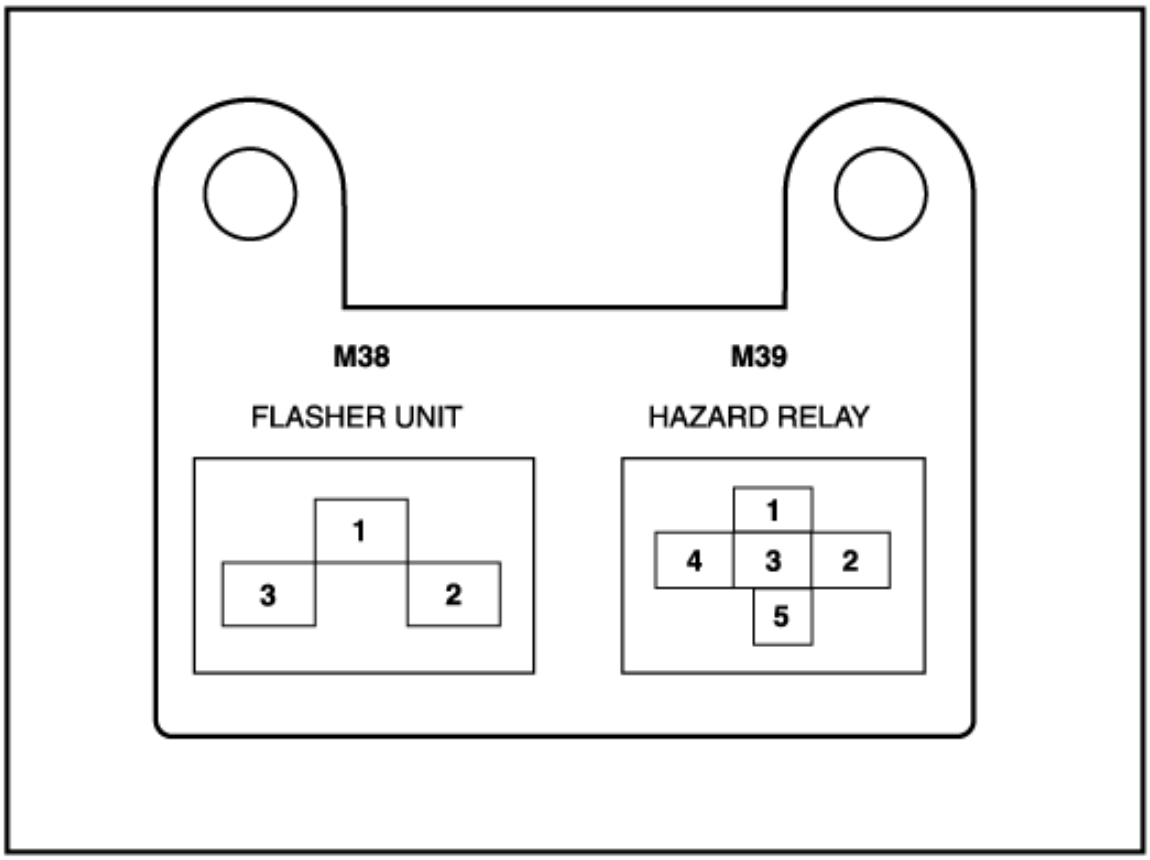
[FRONT]



[REAR]

Description	No.	Amperages	Circuit protected
FUSE	1	10A	Turn signal lamps, Back-up lamp switch
	2	10A	Pre-excitation resistor, Instrument cluster(IND), Auto lights control
	3	15A	SRS control
	4	10A	Hazard relay, Hazard lamps
	5	10A	A/C control
	6	10A	Short connector, Illumination lamps, Tail lamp (RH)
	7	10A	Tail lamp (LH), Exterior lamps
	8	10A	B/Alarm relay
	9	10A	Digital clock, Power outside mirror switch, Audio
	10	10A	Cruise control, PCM, Vehicle speed sensor
	11	10A	ABS control
	12	10A	Instrument cluster (Air bag IND.)
	13	30A	Defogger relay
	14	20A	Power antenna
	15	15A	Door lock control module, Sunroof, Driver door unlock relay
	16	15A	Stop lamp switch, Power window relay
	17	10A	Rear window & outside mirror defogger, A/C control
	18	15A	Cigarette lighter, Power outlet
	19	10A	Not used
	20	10A	Head lamp, DRL
	21	15A	Rear wiper & washer
	22	20A	Front wiper & washer
	23	20A	Not used
	24	10A	Blower & A/C, ETACM, Sunroof controller, Electronic chrome mirror
	25	15A	Door lamps, Instrument cluster, Data link connector, Multipurpose check connector, Room lamps, ETACM, Audio, Power connector
Fusible Link	P/WDW	30A	Power window relay

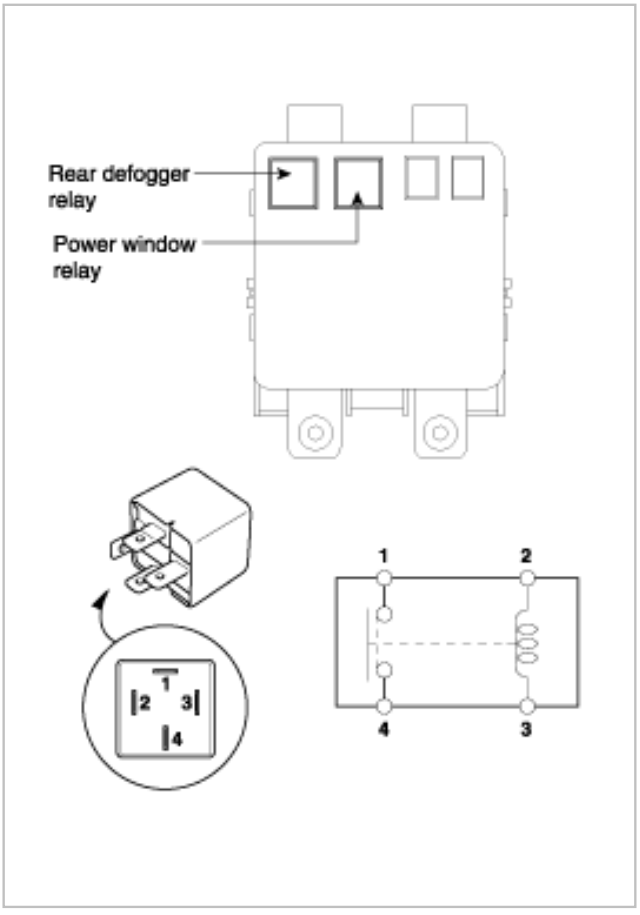
RELAY BOX


M38
FLASHER UNIT
1
3
2
M39
HAZARD RELAY
1
4
3
2
5

INSPECTION

POWER RELAY TEST (TYPE A)

1. There should be continuity between the No.1 and No.4 terminals when power and ground are connected to the No.3 and No.2 terminals.
2. There should be no continuity between the No.1 and No.4 terminals when power is disconnected.

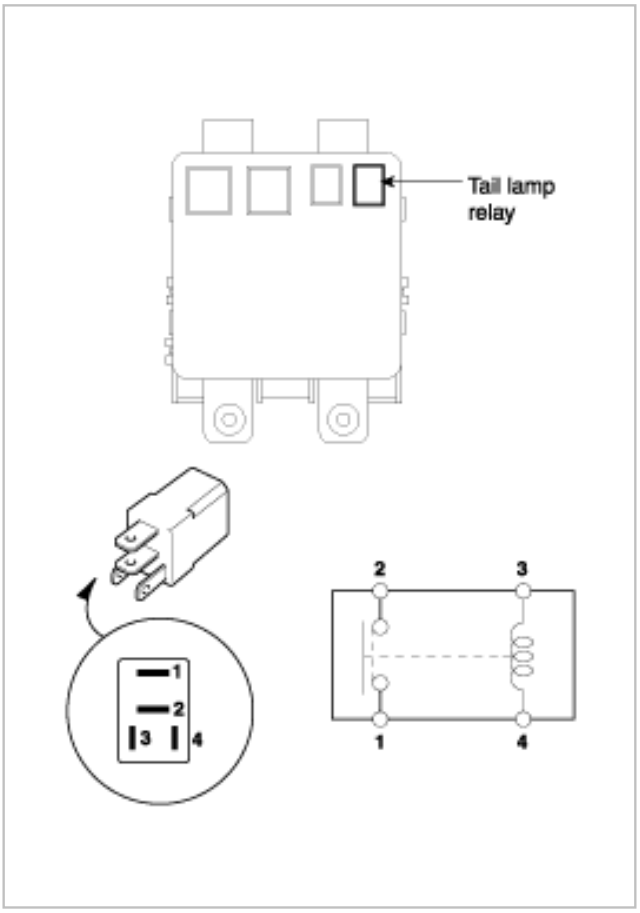


Terminal / Power (No.2-No.3)	2	3	1	4
Disconnected	○	○		
Connected	⊖	⊕	○	○

POWER RELAY TEST (TYPE B)

1. There should be continuity between the No.1 and No.2 terminals when power and ground are connected to the No.4 and No.3 terminals.

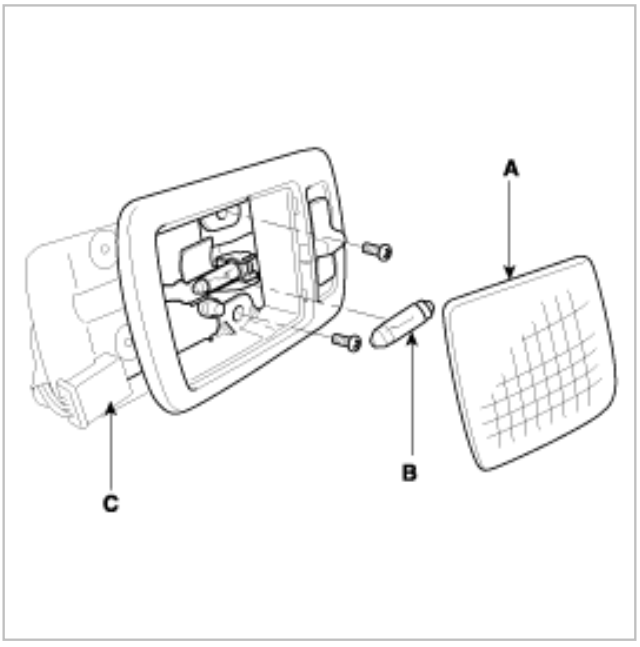
2. There should be no continuity between the No.1 and No.2 terminals when power is disconnected.



Terminal / Power (No.3-No.4)	1	2	3	4
Disconnected			○	○
Connected	○	○	⊖	⊕

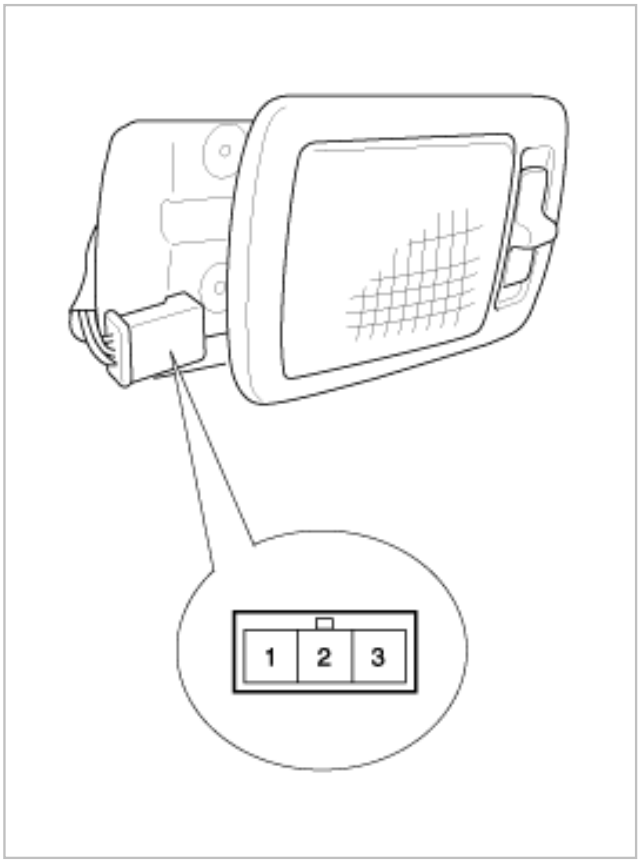
REMOVAL

1. Disconnect the negative(-) battery terminal.
2. Detach the lamp lens (A) from the room lamp with a flat-tip screwdriver, then replace the bulb (B).
3. Remove the room lamp assembly after removing 2 screws and disconnecting the 3P connector (C).



4. Installation is the reverse of removal.

INSPECTION



Terminal / Position	1	2	3
ON			
DOOR			
OFF			

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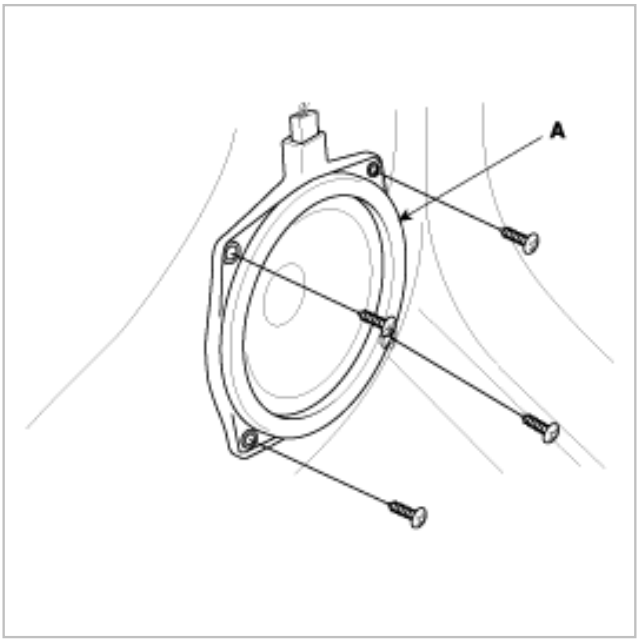
REMOVAL

FRONT SPEAKER

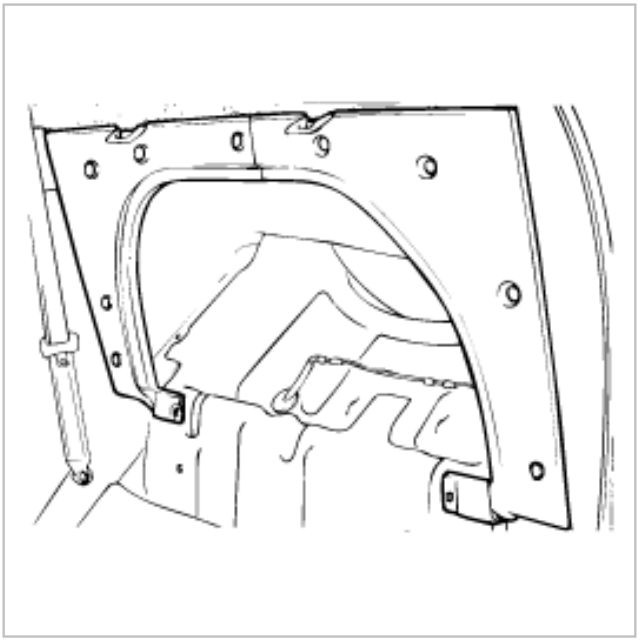
1. Remove the front door trim panel (see BD group - front door).
2. Remove the front speaker(A) after removing 4 screws.



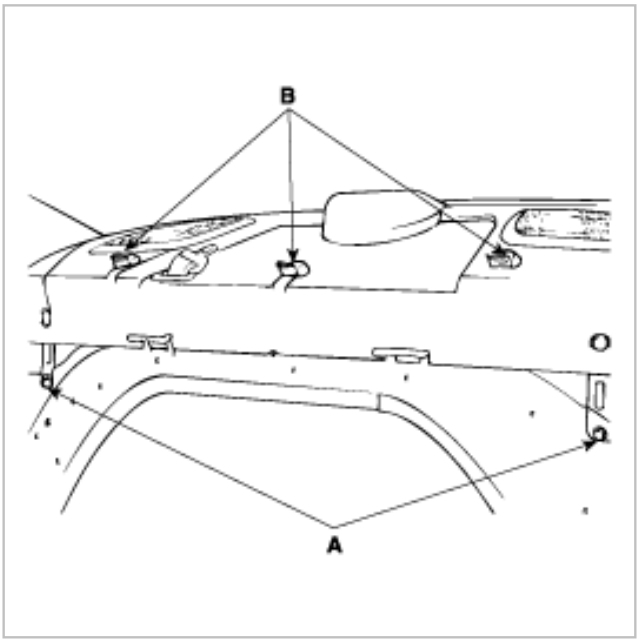
3. Installation is the reverse of removal.

REAR SPEAKER

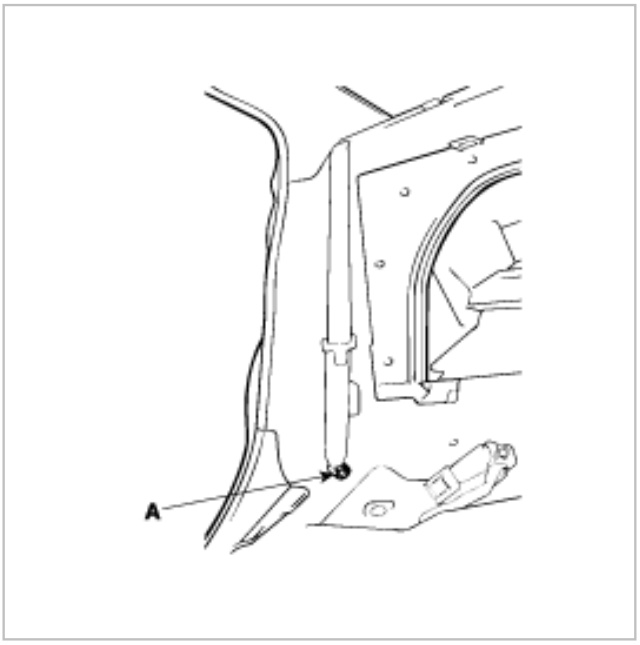
1. Remove the rear seats (see BD group - rear seats).
2. Remove the partition trim after removing plugs.



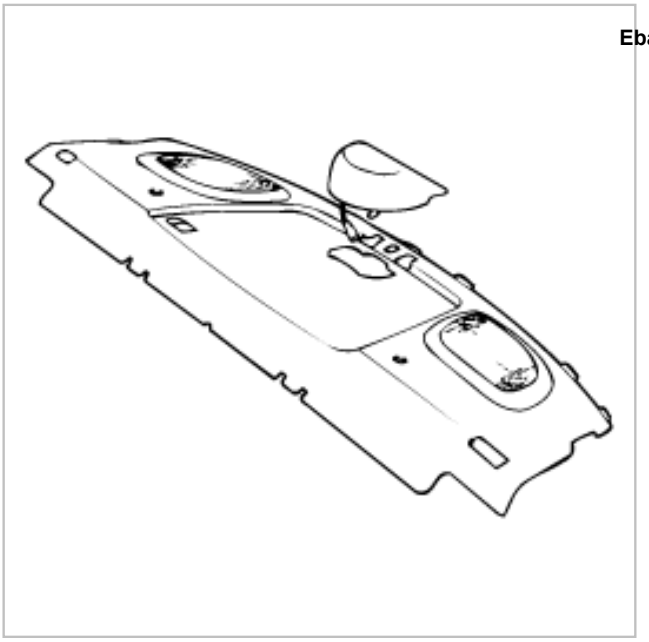
3. Remove the bolts(A) and plugs(B) from the rear package tray trim.



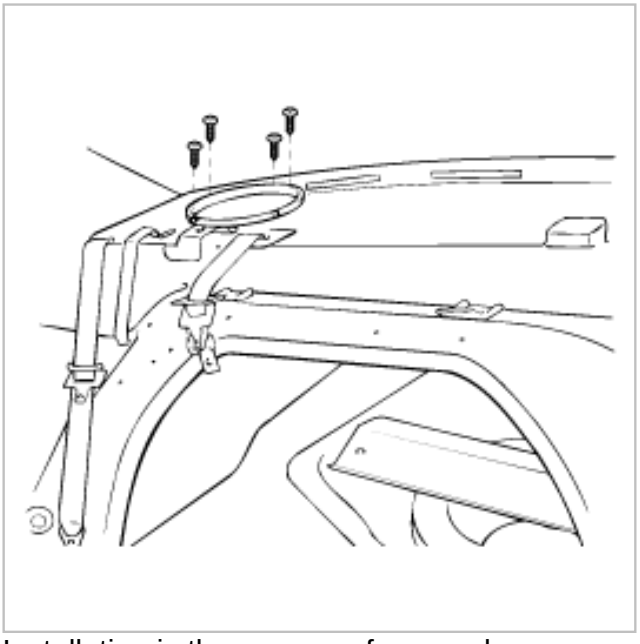
4. Remove the rear seat belt lower mounting bolt(A).



5. Remove the rear package tray trim.



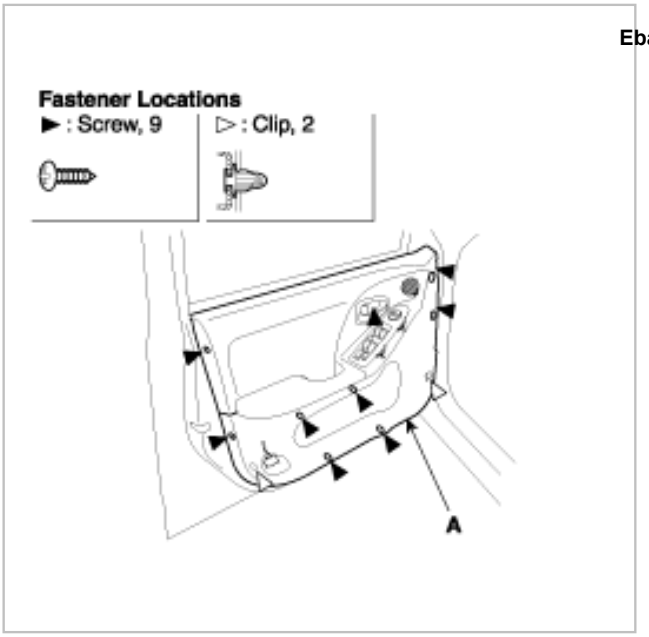
6. Remove the rear speaker after removing 4 screws.



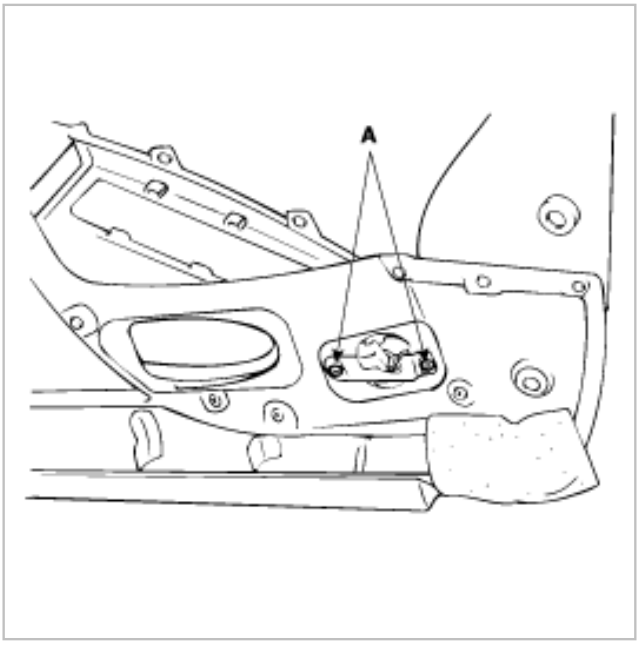
7. Installation is the reverse of removal.

TWEETER SPEAKER

1. Remove the front door trim panel(A) after removing 9 screws.



2. Remove the tweeter speaker after removing 2 screws(A).

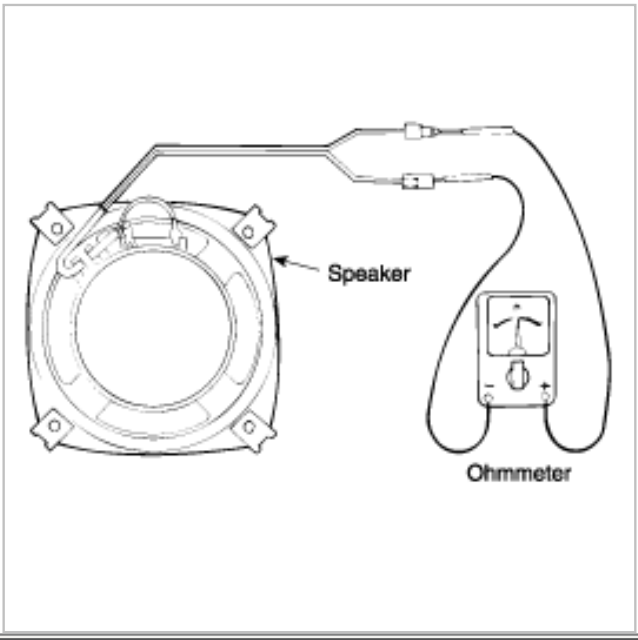


3. Installation is the reverse of removal.

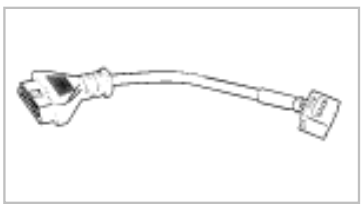
INSPECTION

1. Check the speaker with an ohmmeter. If an ohmmeter indicates the correct impedance of the speaker when checking between the speaker (+) and speaker (-) of the same channel, the speaker is ok.

2. If a clicking sound is emitted from the speaker when the ohmmeter is connected to the speaker terminals, the speaker is ok.



SPECIAL TOOLS

Tool (Number and Name)	Illustration	Use
09900-21300 Keyless adapter		Store transmitter code connecting the DLC (Data Link Connector) cable of Hi-scan to the multi purpose check connector.

SPECIFICATIONS

MULTIFUNCTION SWITCH

Items	Specifications
Rated voltage	DC 12 V
Operating temperature range	-30°C ~ +80°C (-22 ~ +176°F)
Rated load Dimmer & passing switch Lighting switch Turn signal & lane change switch Front fog lamp switch Wiper & mist switch Washer switch Variable intermittent volume switch Horn switch Rear wiper & washer switch (5doors)	High : 1A (Relay load) Low : 1A (Relay load) Passing : 1A (Relay load) Lighting : 1A (Relay load) 6.6±0.5A (Lamp load) 1A (Relay load) Low, High : 4.5A (Motor load) Intermittent : 0.22±0.05A (Relay load) Lock : Max. 28A (Motor load) Mist : 4.5A (Motor load) 4A (Motor load) Max. 25mA 1A (Relay load) Rear wiper : 200mA (Relay load) Rear washer : 4A (Motor load)

INSTRUMENTS AND WARNING SYSTEM

Warning lamps	Bulb wattage (W)	Color
Illumination	3.4W (4EA) 1.4W (3EA)	White green
High beam	1.4	Blue
Low fuel	1.4	Amber
Turn signal (LH, RH)	1.4	Green
Battery (charge)	1.4	Red
Oil pressure	1.4	Red
Air bag	1.4	Red
Parking brake	1.4	Red
Seat belt	1.4	Red
Check engine	1.4	Amber
ABS	1.4	Amber
Door ajar	1.4	Red

Trunk lid open	1.4	Amber
Immobilizer	1.4	Amber
OD OFF	1.4	Amber
HOLD	1.4	Amber
Front fog lamp	1.4	Green
Cruise	1.4	Green
TCS	1.4	Amber
TCS OFF	1.4	Amber
P.N.D.3.2.L	1.4	Green
R	1.4	Amber

INDICATORS AND GAUGE

Items	Specifications
Speedometer	
Type	o Cross-coil type
Input spec.	o Hall IC type : 4 pulses/rev.
Indication	o Km/h : 637rpm x 4 pulses/rev. indicates 60Km/h o MPH : 1026 rpm x 4 pulses/rev. indicates 60MPH
Standard values	

Velocity (km/h)	20	40	60	80	100
Tolerance (km/h)	±2.4	±2.4	±2.4	±2.7	±2.7
Velocity (km/h)	120	140	160	180	200
Tolerance (km/h)	±3.2	±3.2	±3.7	±3.7	±4.0

Velocity (MPH)	10	20	40	60	80	100	120	Remark
Tolerance (MPH)	±1.5	±1.5	±1.5	±1.7	±2.0	±2.3	±2.5	U.S.A

o Tap the speedometer to prevent hysterisis effects during inspection.

Tachometer

Type — o Cross-coil type (4cyl : 2pulses/rev)

Standard values

Revolution (RPM)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	Remark
Tolerance (RPM)	±100	±125	±150	±150	±150	±180	±210	Gasoline

o Tap the tachometer to prevent hysterisis effects during inspection.

Fuel gauge

Type — o Cross-coil type

Standard values

Level	Gauge	
	Resistance (Ω)	Gauge angle (°)
E (Empty)	184	-45 ± 2.4
Low fuel warning	170	-41 ± 2.5
1/2	68	0 ± 2.4

1/2	66	0 ± 2.4
F (Full)	15	45 ± 2.4

o Inspection order : E → F → E

Temperature gauge

Type

o Cross-coil type

Standard values

Temperature	Angle (°)	Resistance (Ω)
60°C	-43 ± 2.4	128
85°C	-7 ± 2.4	53.8
110°C	-7 ± 2.4	25.8
125°C	40 ± 2.4	17.1
Red zone (over 125°C)	45 ± 2.4	16.9

o Inspection order : OFF → C → H

LIGHTING SYSTEM

Items	Bulb wattage (W)
Head lamp	55W /55W (High / Low beam)
Front turn signal lamp	27W
Front position lamp	5W
Front fog lamp	5W
Rear combination lamps Tail/stop lamp Back up lamp Turn signal lamp	 8W / 27W 16W 27W
Side marker lamp	5W
Luggage lamp	5W
Room lamp	10W
Center high mounted stop lamp	4 Door : 27W (Bulb type), 3.56W (LED) 5 Door : 2.6W (LED)
Map lamp	10W x 2
License plate lamp	5W

AUDIO

Items	H220 (H240)	H260 (H290)
Rated output	Max. 20W x 2 (Max. 20W x 4)	Max. 20W x 4
Load impedance	4Ω x 4	4Ω x 4
Band	AM/FM, LW/MW/FM	AM/FM, LW/MW/FM
Tuning type	PLL Synthesized type	PLL Synthesized type

Dark current	Max. 2mA	Max. 3.8mA
Frequency range / Channel	AM : 530 ~ 1710KHZ/10 KHZ	AM : 530 ~ 1710KHZ/10 KHZ
	FM : 87.9 ~ 107.9MHZ/200 KHZ	FM : 87.9 ~ 107.9 MHZ/200KHZ

WINDSHIELD WIPER AND WASHER

Items	Specifications
Windshield wiper motor	
Speed/current at 10kg·cm load test	Low : 44~52 rpm/3.5A or less
(1.0 Nm, 0.7 lb·ft)	High : 66~80 rpm/4.5A or less
Speed/current at 40kg·cm load test	Low : 39~47 rpm/7.0A or less
(4.0 Nm, 2.9 lb·ft)	High : 57~69 rpm/9.0A or less
Torque when locking	Low : 28N.m/24A or less
	High : 23N.m/28A or less
Windshield washer motor	
Motor type	DC ferrite magnet
Pump type	Centrifugal type
Current	Max. 6.7A
Discharge pressure	Min. 1.6kgf/cm²
Flow rate	Min. 1,500cc/min.
Overload capacity (Continuous operation)	Max. 60 sec.
With water	Max. 20 sec.
Racing	
Rear wiper motor (5 doors)	
Speed/current at no load test	40~56 rpm/Max. 2.0A
Speed/current at 10 kg·cm load test	40~52 rpm/Max. 3.5A
(1.0 N.m, 0.7 lb.ft)	Min. 100 kgf.cm/Max.9A
Torque when locking	90° ± 3°
Wiping angle	

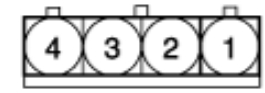
p

Immobilizer Malfunction		
DTC	P1690	Smartra error
	P1693	Antenna error
	P1695	Transponder error
	P1696	ECM signal error
	P1697	EEPROM error

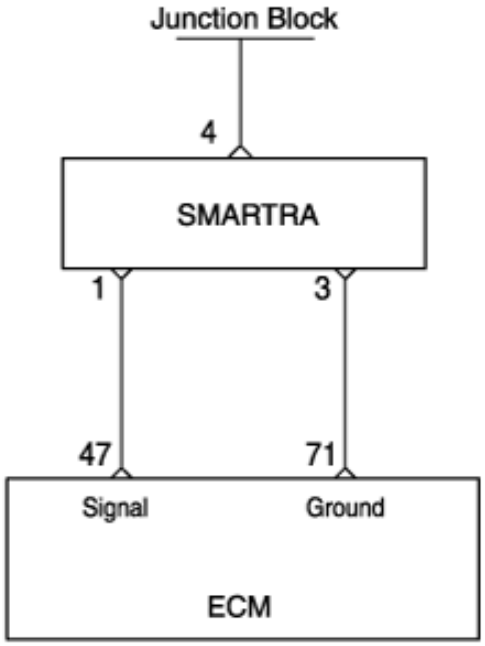
DTC DETECTING CONDITION

DTC No	Detecting Condition & Limp Home	Suspected area
P1690 P1691 P1693 P1694 P1695	**Detecting Condition** No answer from SMARTRA Invalid message from SMARTRA to ECM Antenna error Passive mode invalid Programming error Invalid request from ECM or corrupted data Inconsistent data of EEPROM Invalid write operation to EEPROM Not plausible immobilizer indicator store in the ECM No valid data from SMARTRA after 3 attempts by ECM Invalid tester message or unexpected request by tester **Limp Home** None	- Open or short in Antenna or SMARTRA circuit - Antenna - SMARTRA - Transponder - ECM

SCHEMATIC DIAGRAM



Harness side connector



INSPECTION PROCEDURES

1. CHECK ANTENNA, SMARTRA AND ECM CONNECTORS

1. Thoroughly check the connectors for looseness, poor connections, bending, corrosion, contamination, deterioration, or damage.

Are all connectors good?

Yes	No	Repair or replace it.

2. REPLACE TRANSPONDER

1. Use another transponder supplied with the vehicle.

Is the starting of the vehicle possible?

No	Yes	Replace the faulty transponder.

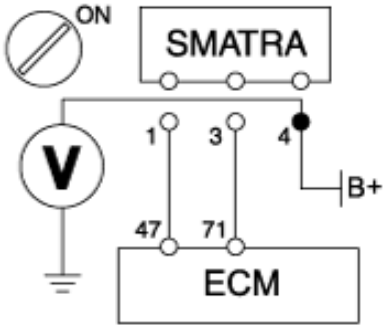
3. REPLACE THE SMARTRA

1. Temporarily install a good SMARTRA.

Is starting of the vehicle possible?

No	Yes	Replace the faulty SMARTRA.

4. CHECK POWER TO SMARTRA IN HARNESS



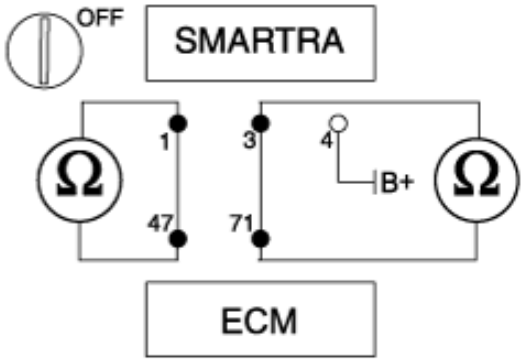
1. Turn ignition switch to OFF position and disconnect the SMARTRA connectors.
2. Turn ignition switch to ON.
3. Measure the voltage between terminal 4 of the SMARTRA harness connector and chassis ground.

• Specification: approximately B+

Is voltage within specification?

Yes	No	Repair open or short to ground in harness.

5. CHECK FOR OPEN IN HARNESS



1. Turn ignition switch to OFF position and disconnect the SMARTRA and ECM connectors.
2. Measure the resistance between terminal 1 of the SMARTRA harness connector and 47 of the ECM harness connector.
3. Measure the resistance between terminal 3 of the SMARTRA harness connector and 71 of the ECM harness connector.

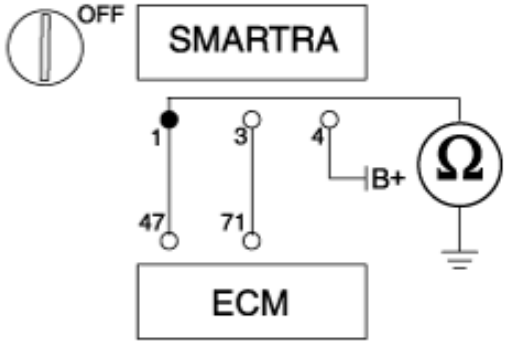
• Specification: below 1Ω

Does each resistance indicate continuity?

Yes	No	Repair open in harness.

6. CHECK FOR SHORT TO GROUND IN HARNESS

1. Measure the resistance between terminal 1 of the SMARTRA harness connector and chassis ground.



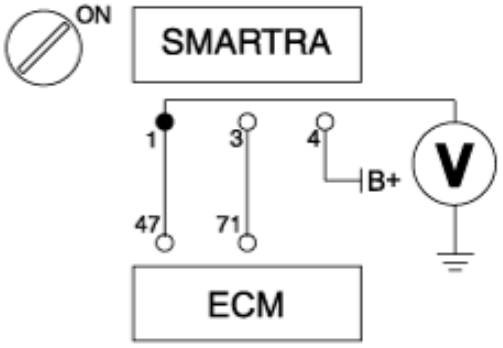
• Specification: infinite

Does resistance indicate open?

Yes		
	No	Repair short to chassis ground in harness.

7. CHECK FOR SHORT TO POWER IN HARNESS

1. Turn ignition switch to ON position.
2. Measure the voltage between terminal 1 of the SMARTRA harness connector and chassis ground.



• Specification: below 0.5V

Is voltage within specification?

Yes		
	No	Repair short to power in harness.

Proceed with ECM problem procedure.

TROUBLESHOOTING

INSTRUMENTS AND WARNING SYSTEM

Symptom	Possible cause	Remedy	See page
Speedometer does not operate	No.25 fuse (15A) blown Speedometer faulty Vehicle speed sensor faulty Wiring or ground faulty	Check for short and replace fuse Check speedometer Check vehicle speed sensor Repair if necessary	BE-89 BE-99 BE-99
Tachometer does not operate	No.2 fuse (10A) blown Tachometer faulty Wiring or ground faulty	Check for short and replace fuse Check tachometer Repair if necessary	BE-89 BE-100
Fuel gauge does not operate	No.2 fuse (10A) blown Fuel gauge faulty Fuel sender faulty Wiring or ground faulty	Check for short and replace fuse Check gauge Check fuel sender Repair if necessary	BE-89 BE-100 BE-100
Low fuel warning lamp does not light up	No.2 fuse (10A) blown Bulb burned out Fuel sender faulty Wiring or ground faulty	Check for short and replace fuse Replace bulb Check fuel sender Repair if necessary	BE-89 BE-100
Water temperature gauge does not operate	No.2 fuse (10A) blown Water temperature gauge faulty Water temperature sender faulty Wiring or ground faulty	Check for short and replace fuse Check gauge Check sender Repair if necessary	BE-89 BE-101 BE-101
Oil pressure warning lamp does not light up	No.2 fuse (10A) blown Bulb burned out Oil pressure switch faulty Wiring or ground faulty	Check for short and replace fuse Replace bulb Check switch Repair if necessary	BE-89 BE-101
Low brake fluid warning lamp does not light up	No.2 fuse (10A) blown Bulb burned out Brake fluid level warning switch faulty Parking brake switch faulty Wiring or ground faulty	Check for short and replace fuse Replace bulb Check switch Check switch Repair if necessary	BE-89 BE-102 BE-102
Open door warning lamp and trunk lid warning lamp do not light up	No.25 fuse (15A) blown Bulb burned out Door switch faulty Trunk room lamp switch (4 door) faulty Tailgate switch (5 door) faulty Wiring or ground faulty	Check for short and replace fuse Replace bulb Check switch Check switch Check switch Repair if necessary	BE-89 BE-103 BE-70 BE-71

Seat belt warning lamp does not light up	No.2 fuse (10A) blown Bulb burned out Seat belt switch faulty Wiring or gound faulty	Check for short and replace fuse Replace bulb Check switch Repair if necessary	 BE-89 BE-103
All illumination lights do not light up	Battery fusible link (50A) blown Tail lamp relay faulty No.6, No.7 fuse (10A) blown Rheostat faulty Wiring or ground faulty	Replace the fusible link Check relay Check for short and replace fuse Check rheostat Repair if necessary	 BE-86 BE-92 BE-89

LIGHTING SYSTEM

Symptom	Possible cause	Remedy	See page
One lamp does not light (all exterior)	Bulb burned out Socket, wiring or ground faulty	Replace bulb Repair if necessary	BE-144
Head lamps do not light	Bulb burned out No.20 fuse (10A) blown Head lamp fuse (15A) blown Head lamp relay faulty Lighting switch faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check for short and replace fuse Check relay Check switch Repair if necessary	BE-144 BE-89 BE-86 BE-147 BE-55
Tail lamps and license plate lamps do not light	Bulb burned out No.6, No.7 fuse (10A) blown Battery fusible link (50A) blown Tail lamp relay faulty ETACS module faulty Lighting switch faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Replace the fusible link Check relay Check ETACS module Check switch Repair if necessary	BE-155 BE-89 BE-86 BE-92 BE-78 BE-55
Stop lamps do not light	Bulb burned out No.16 fuse (15A) blown Stop lamp switch faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Adjust or replace switch Repair if necessary	BE-156 BE-89
Instrument lamps do not ligh (Tail lamps light)	Rheostat faulty Wiring or ground faulty	Check rheostat Repair if necessary	
Turn signal lamp does not flash on one side	Bulb burned out Turn signal switch faulty Wiring or ground faulty	Replace bulb Check switch Repair if necessary	BE-148 BE-55
Turn signal lamps do not light	Bulb burned out No.1 fuse (10A) blown Flasher unit faulty Turn signal switch faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check flasher unit Check switch Repair if necessary	BE-148 BE-89 BE-153 BE-55

Hazard warning lamps do not light	Bulb burned out No.4 fuse (10A) blown Flasher unit faulty Hazard switch faulty Hazard relay faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check flasher unit Check switch Check relay Repair if necessary	BE-148 BE-89 BE-153 BE-152 BE-152
Flasher rate too slow or too fast	Lamps' wattages are smaller or larger than specified Defective flasher unit	Replace lamps Check flasher unit	BE-148 BE-153
Back up lamps do not light	Bulb burned out No.1 fuse (10A) blown Back up lamp switch(M/T) faulty Transaxle range switch(A/T) faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check switch Check switch Repair if necessary	BE-148 BE-89
Front fog lamps do not light	Bulb burned out Front fog lamp fuse (15A) blown Front fog lamp relay faulty Front fog lamp switch faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check relay Check switch Repair if necessary	BE-154 BE-86 BE-154 BE-55
Room lamp does not light	Bulb burned out No.25 fuse (15A) blown Room lamp switch faulty Door switch faulty ETACS module faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check switch Check switch Check ETACS module Repair if necessary	BE-149 BE-89 BE-149 BE-103 BE-78
Map lamp does not light	Bulb burned out No.25 fuse (15A) blown Map lamp switch faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check switch Repair if necessary	BE-150 BE-89 BE-150
Trunk room lamp does not light	Bulb burned out No.25 fuse (15A) blown Trunk room lamp switch(4door) faulty Tailgate switch (5 door) faulty Wiring or ground faulty	Replace bulb Check for short and replace fuse Check switch Check switch Repair if necessary	BE-158 BE-89 BE-158 BE-71

AUDIO

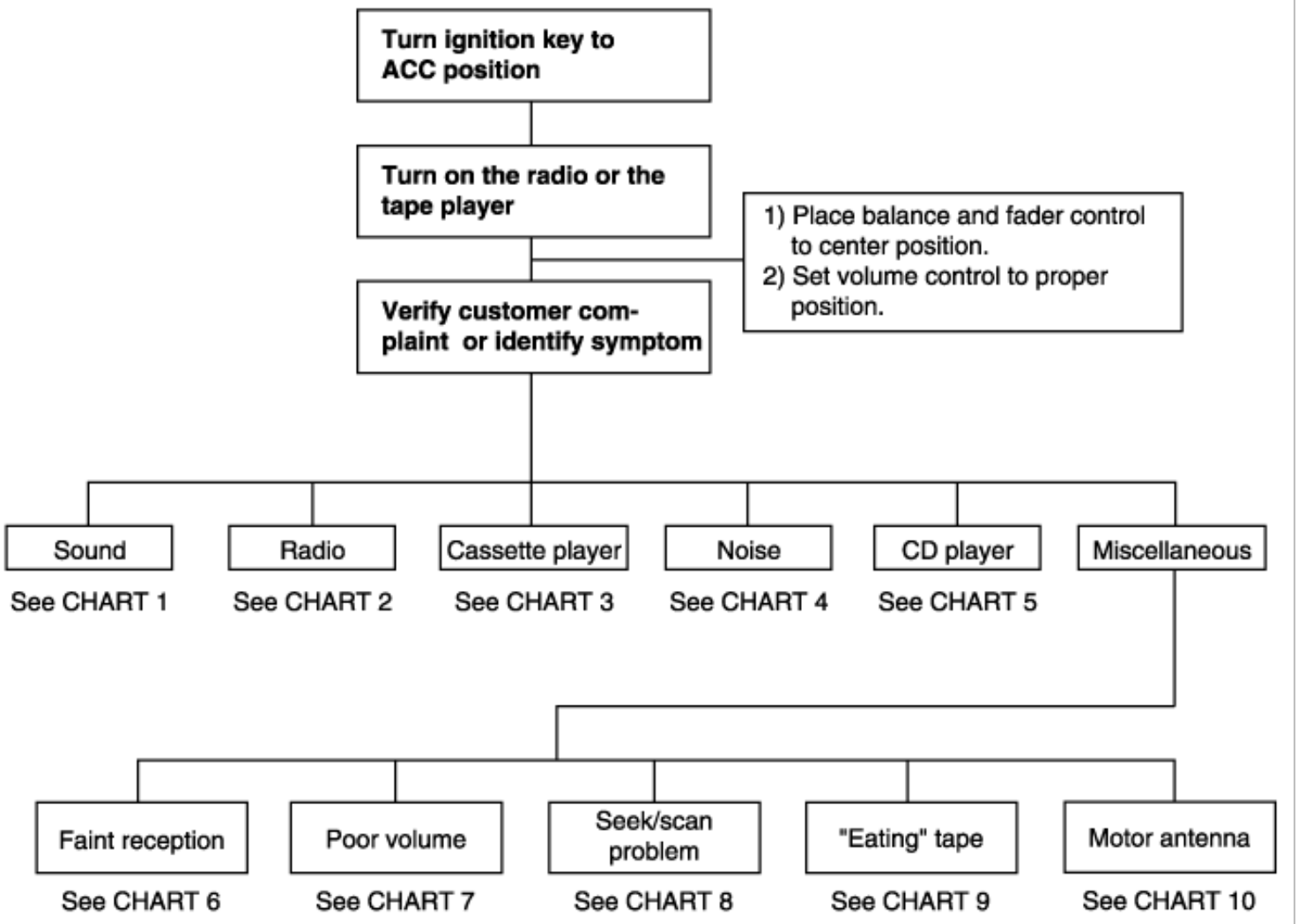
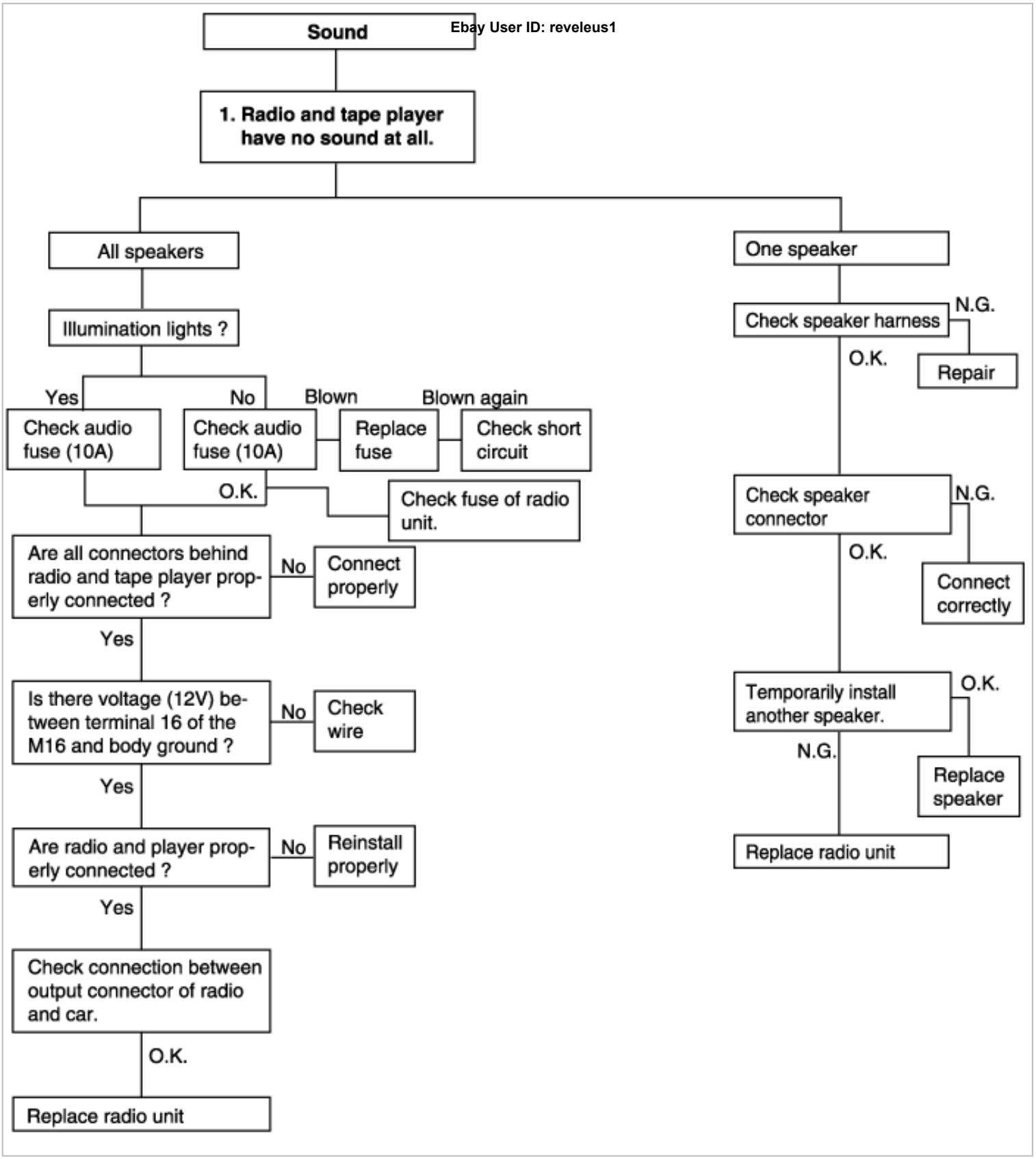

Turn ignition key to ACC position
Turn on the radio or the tape player
1) Place balance and fader control to center position.
2) Set volume control to proper position.
Verify customer complaint or identify symptom
Sound
See CHART 1
Radio
See CHART 2
Cassette player
See CHART 3
Noise
See CHART 4
CD player
See CHART 5
Miscellaneous
Faint reception
See CHART 6
Poor volume
See CHART 7
Seek/scan problem
See CHART 8
"Eating" tape
See CHART 9
Motor antenna
See CHART 10

CHART 1



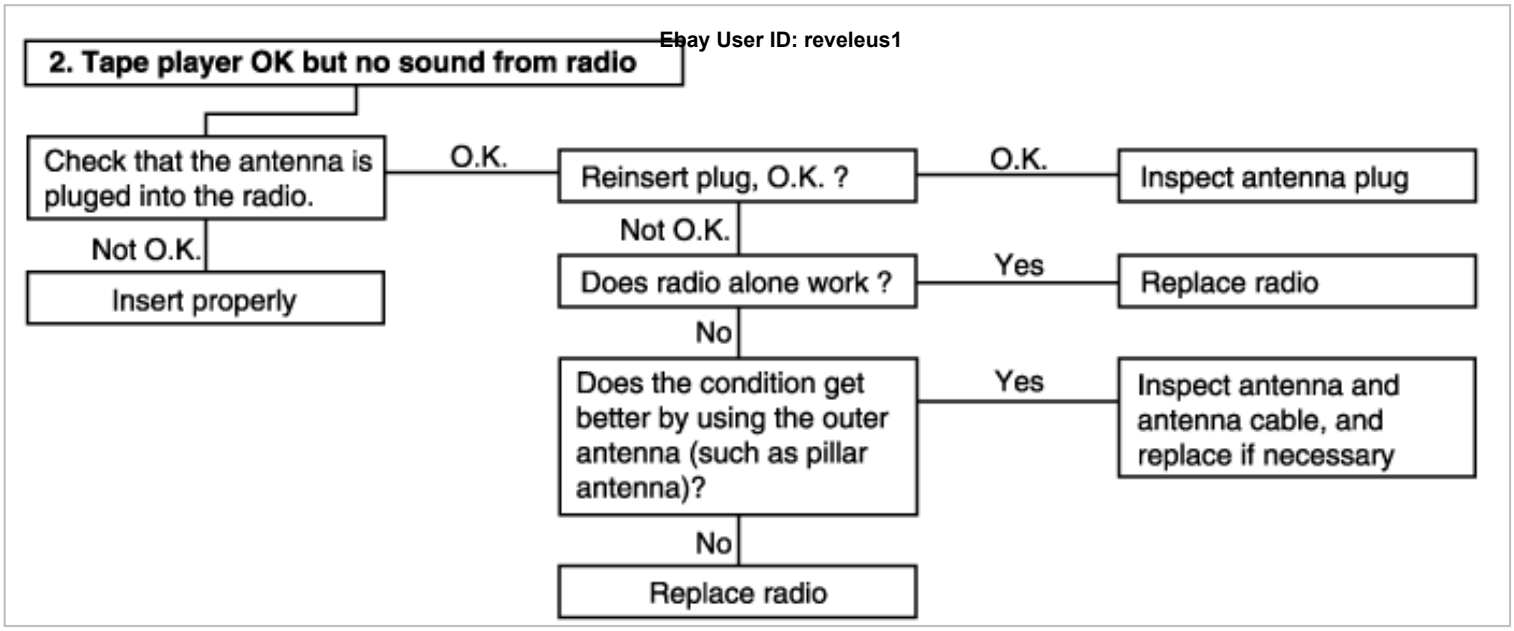


CHART 2

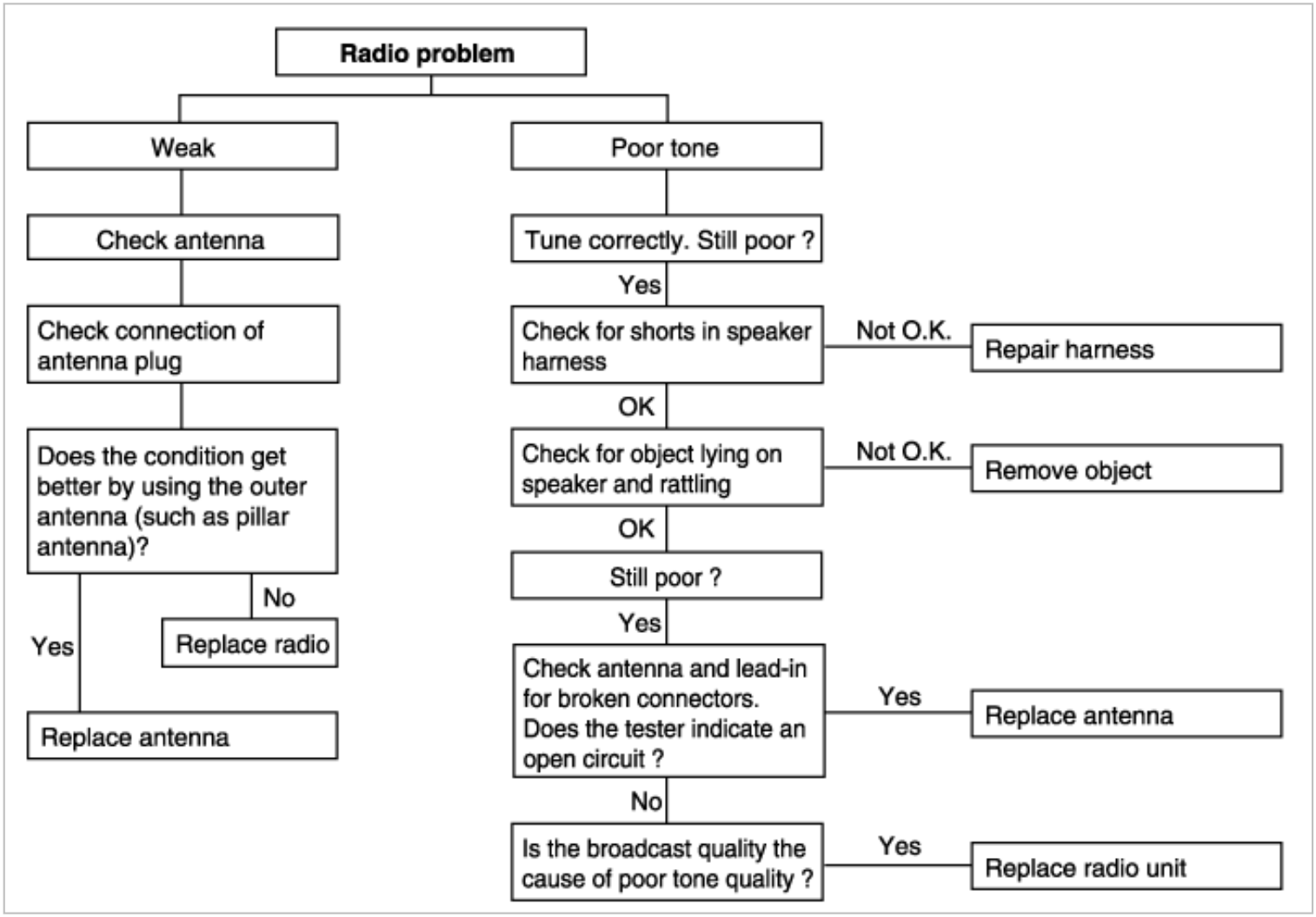


CHART 3

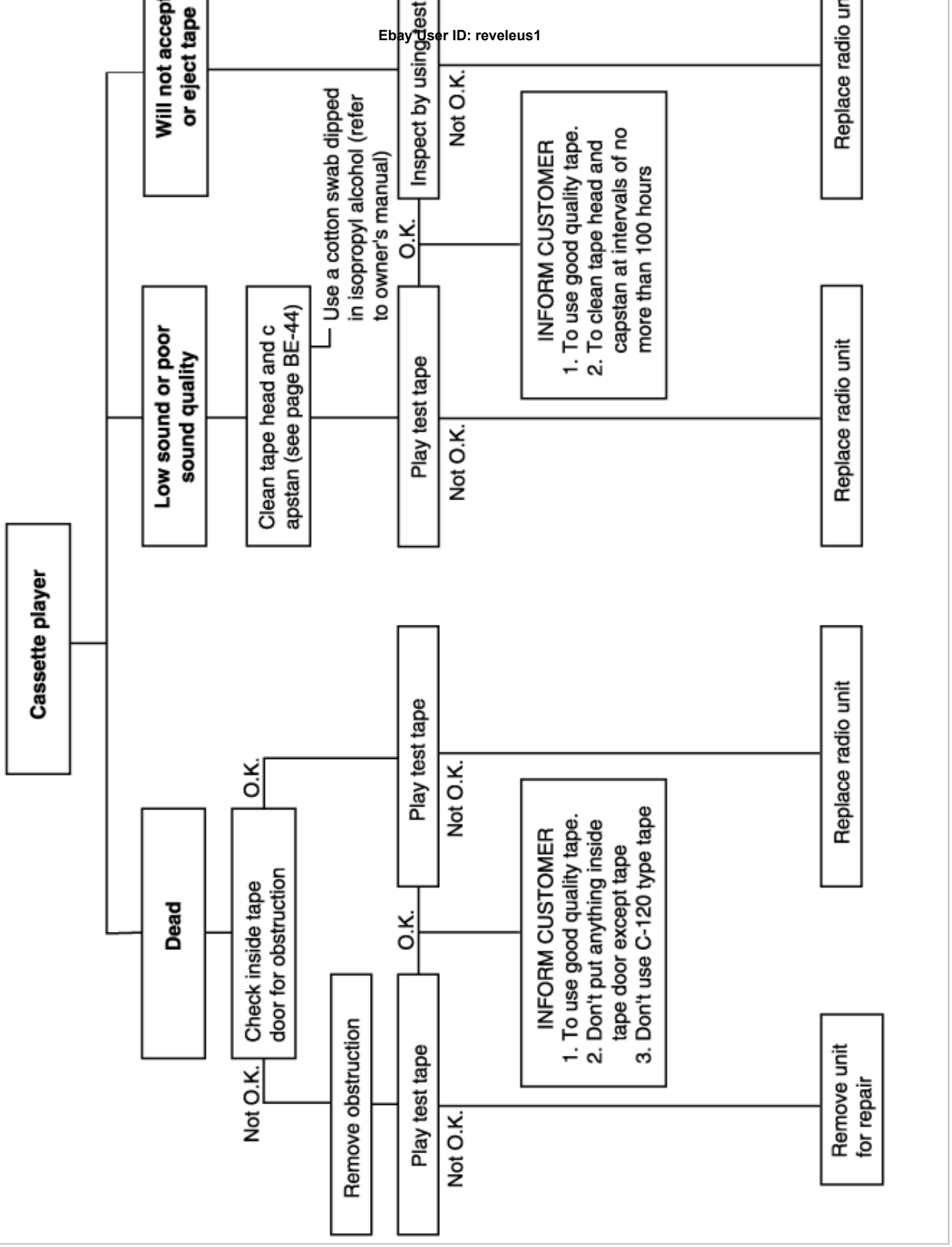
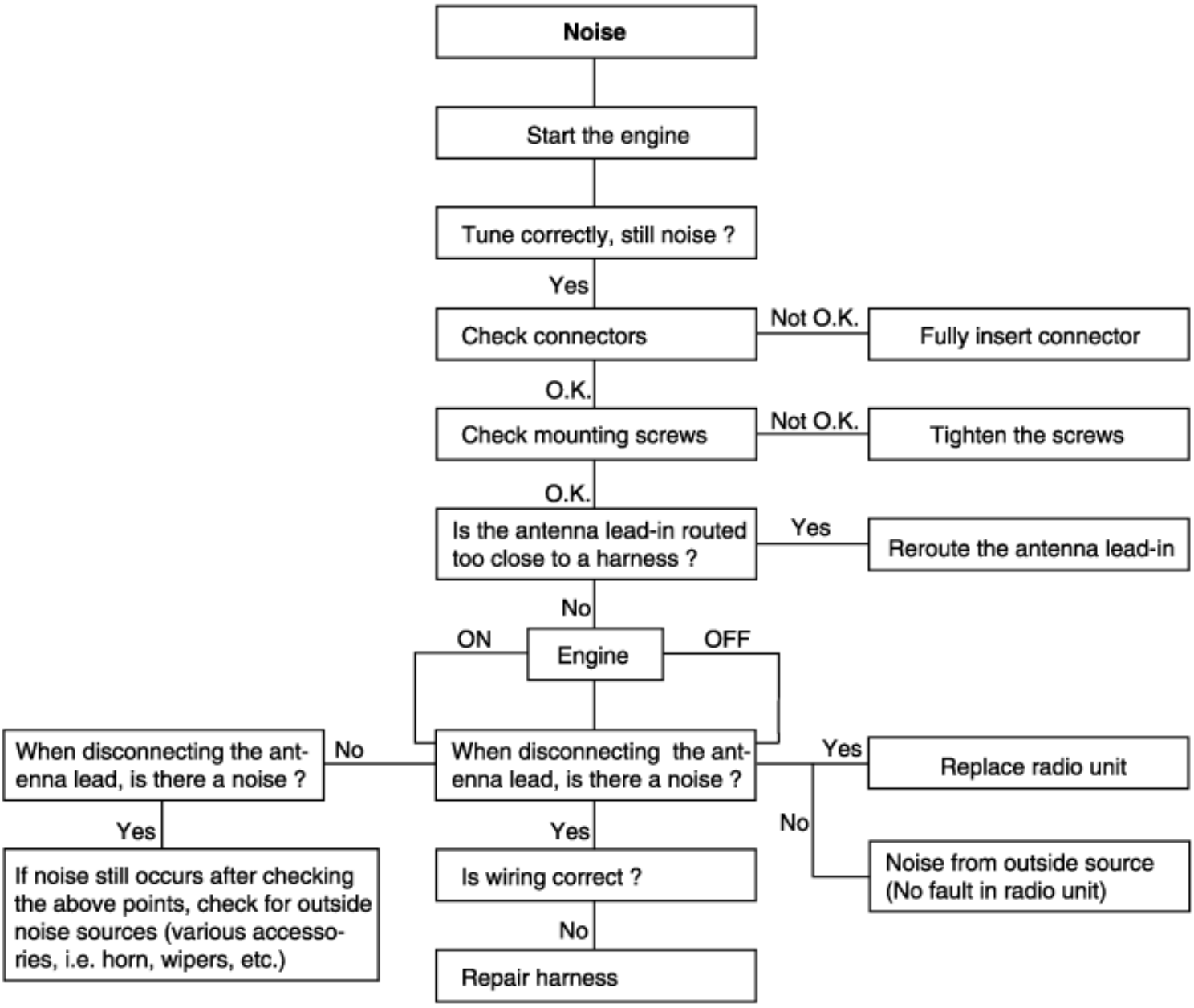


CHART 4



2. TAPE

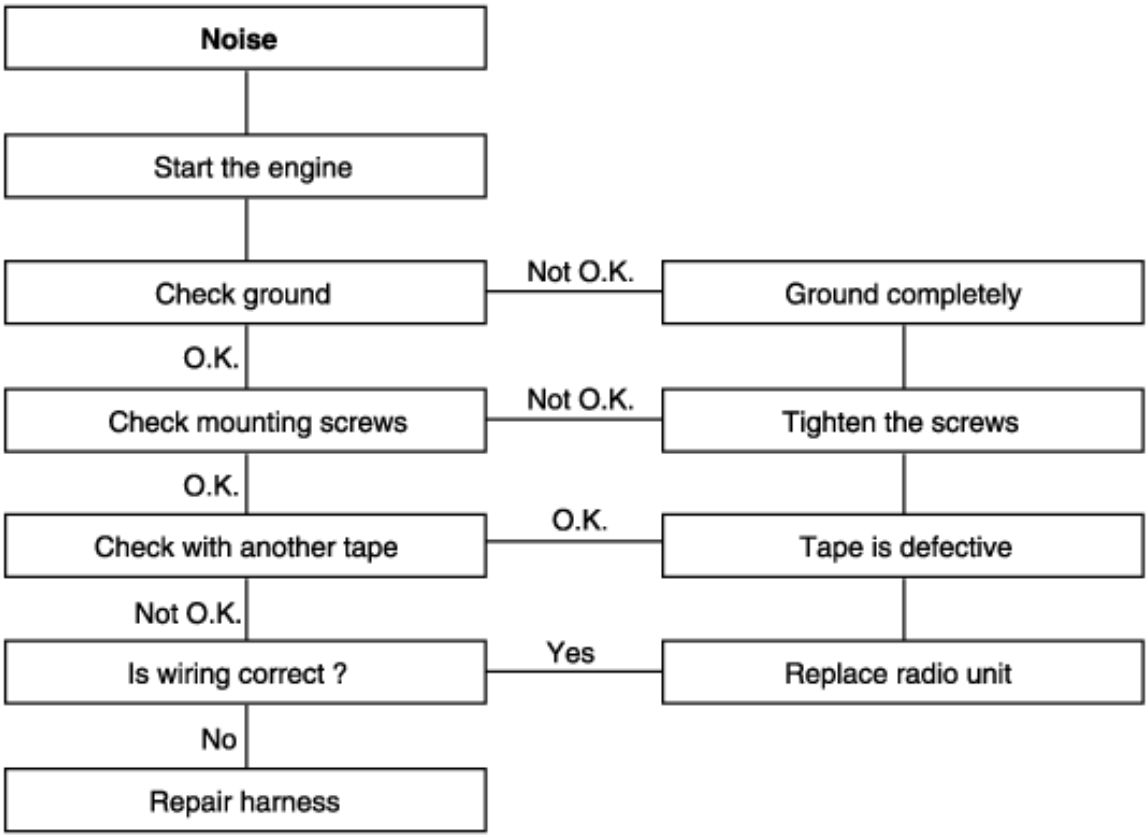
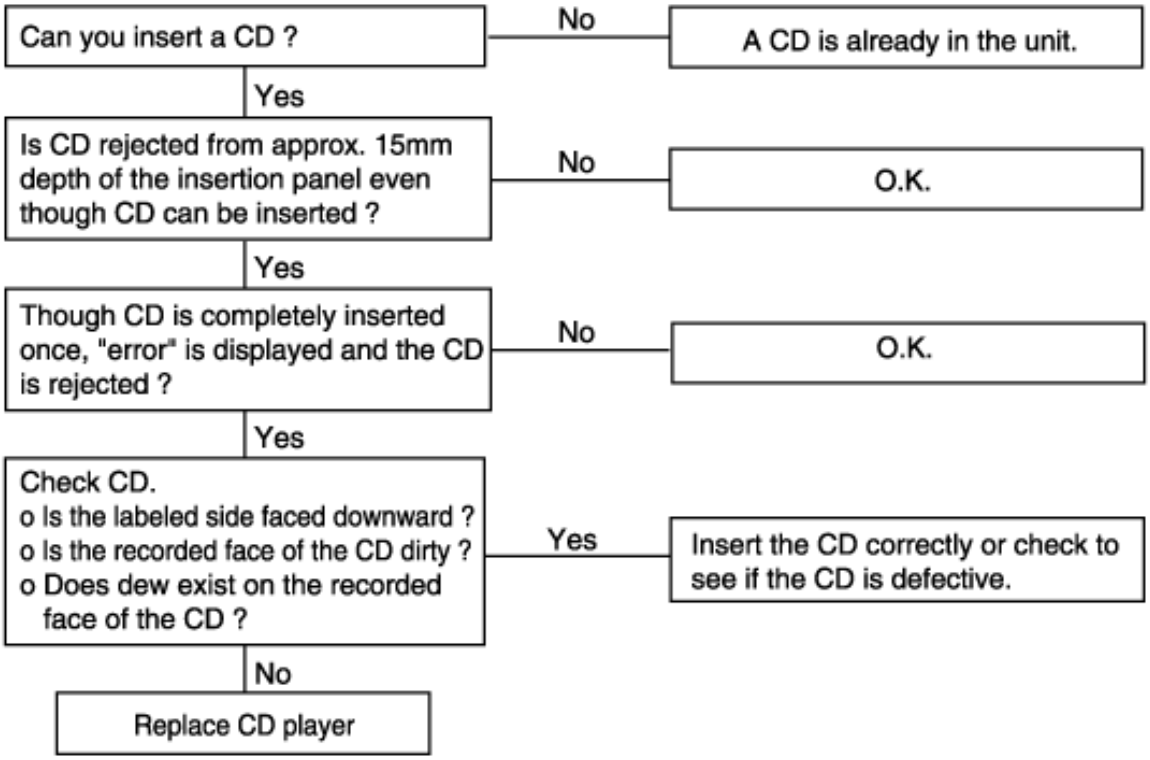
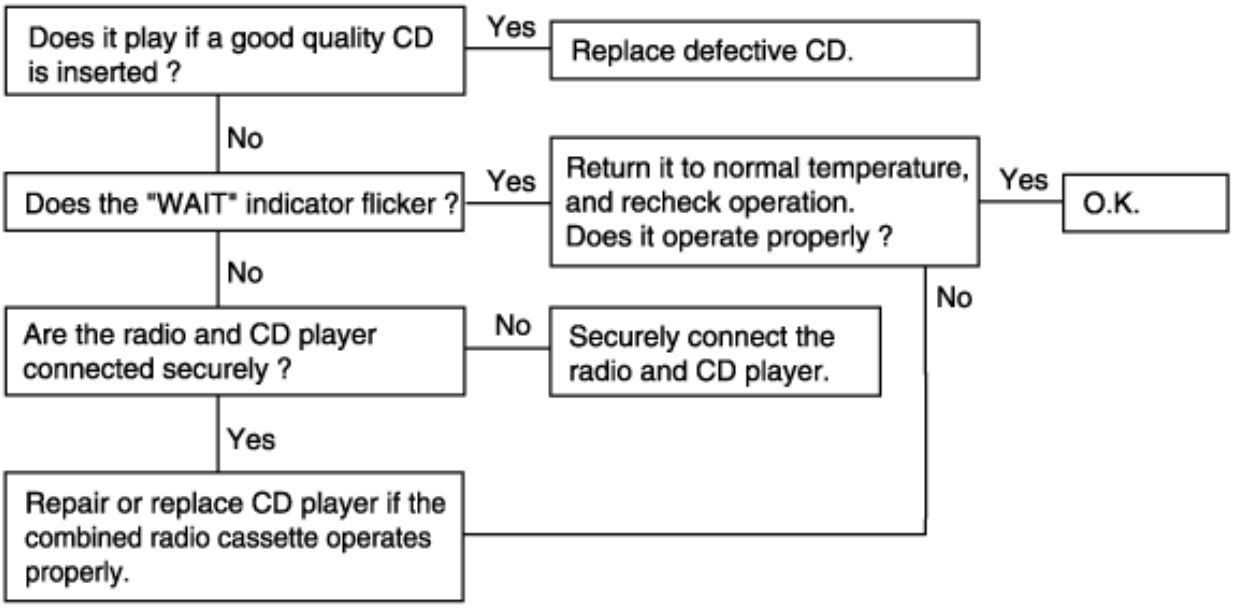


CHART 5

1. CD WILL NOT BE ACCEPTED

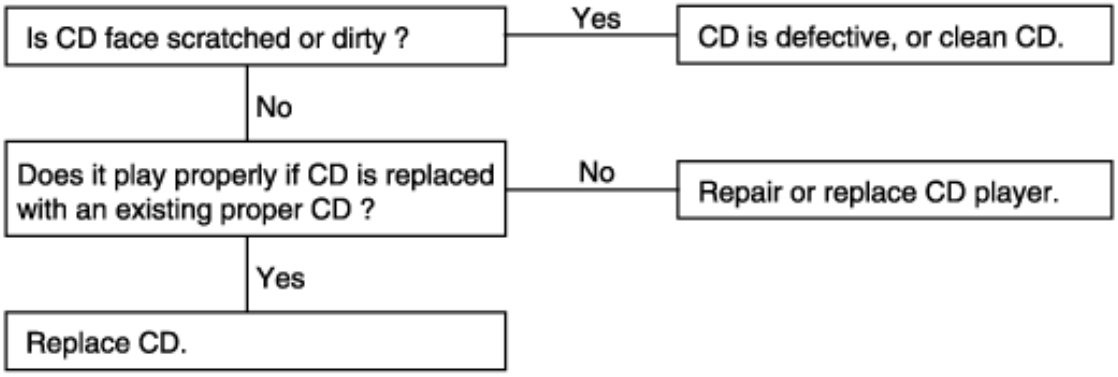


2. NO SOUND

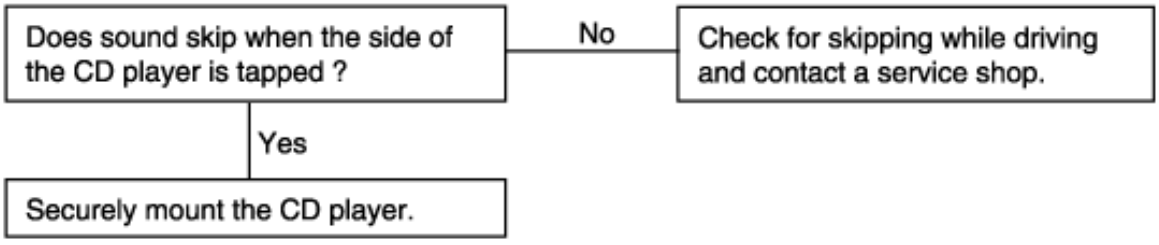


3. CD SOUND SKIPS

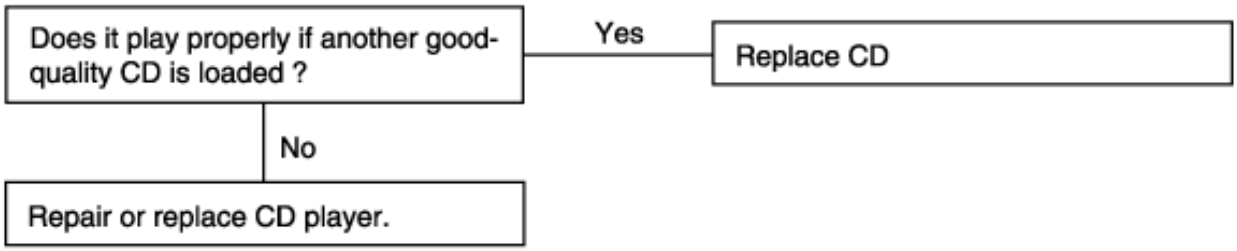
1) Sound sometimes skips when parking.



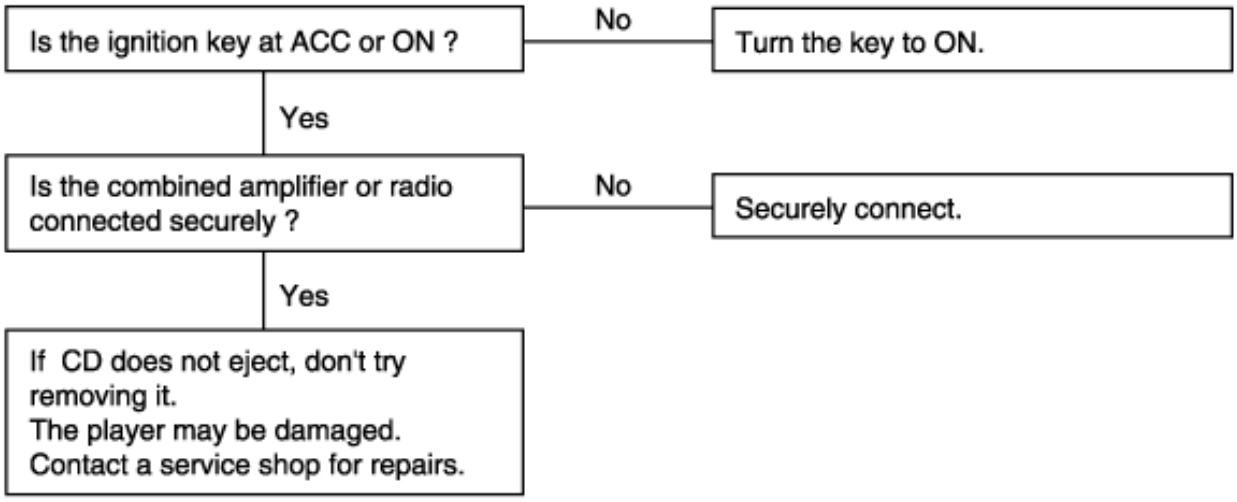
2) Sound sometimes skips when driving.
(Stop vehicle, and check it.)
(Check by using a CD which is free of scratches, dirt or other damage.)



4. SOUND QUALITY IS POOR



5. CD WILL NOT EJECT



6. NO SOUND FROM ONE SPEAKER

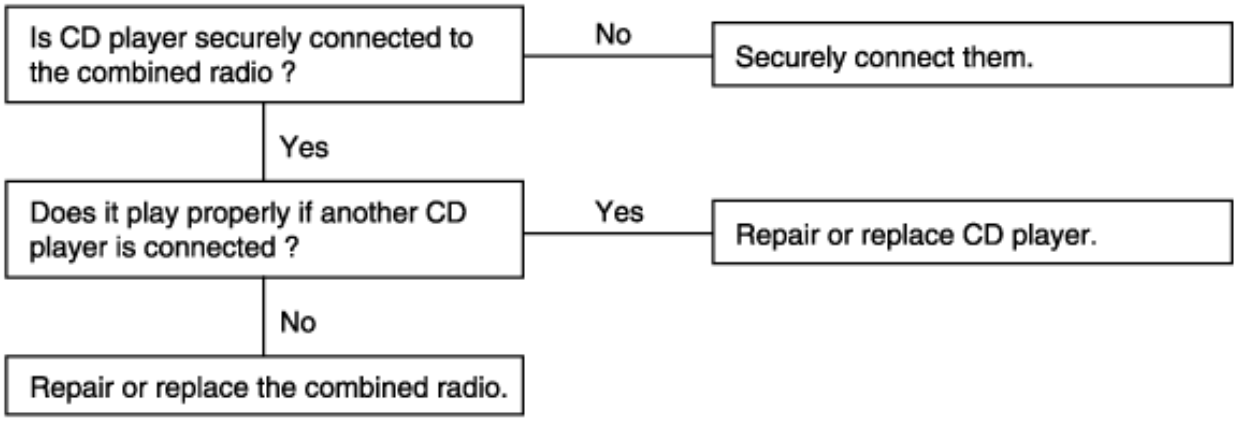


CHART 6 (IF MOTOR ANTENNA INSTALLED)

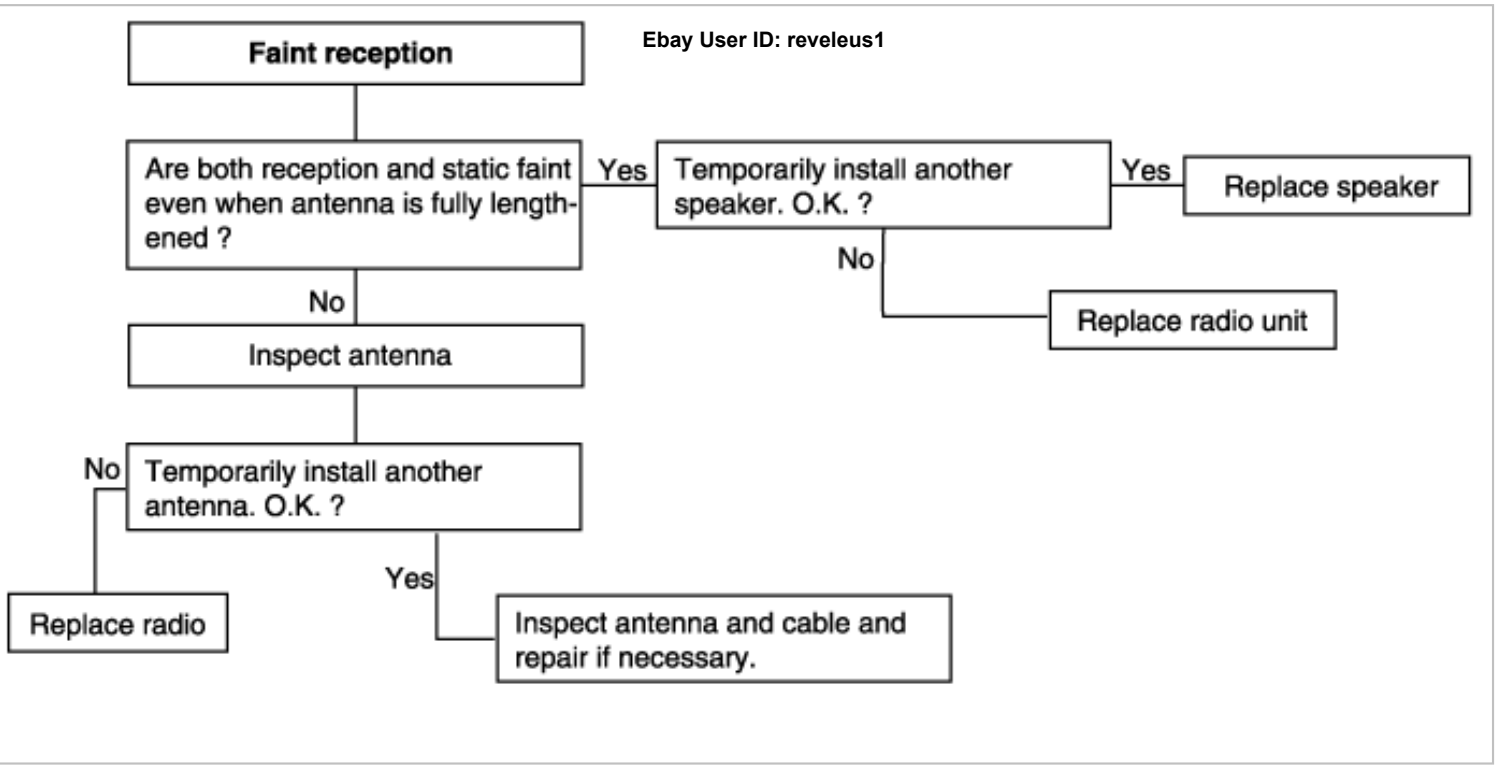
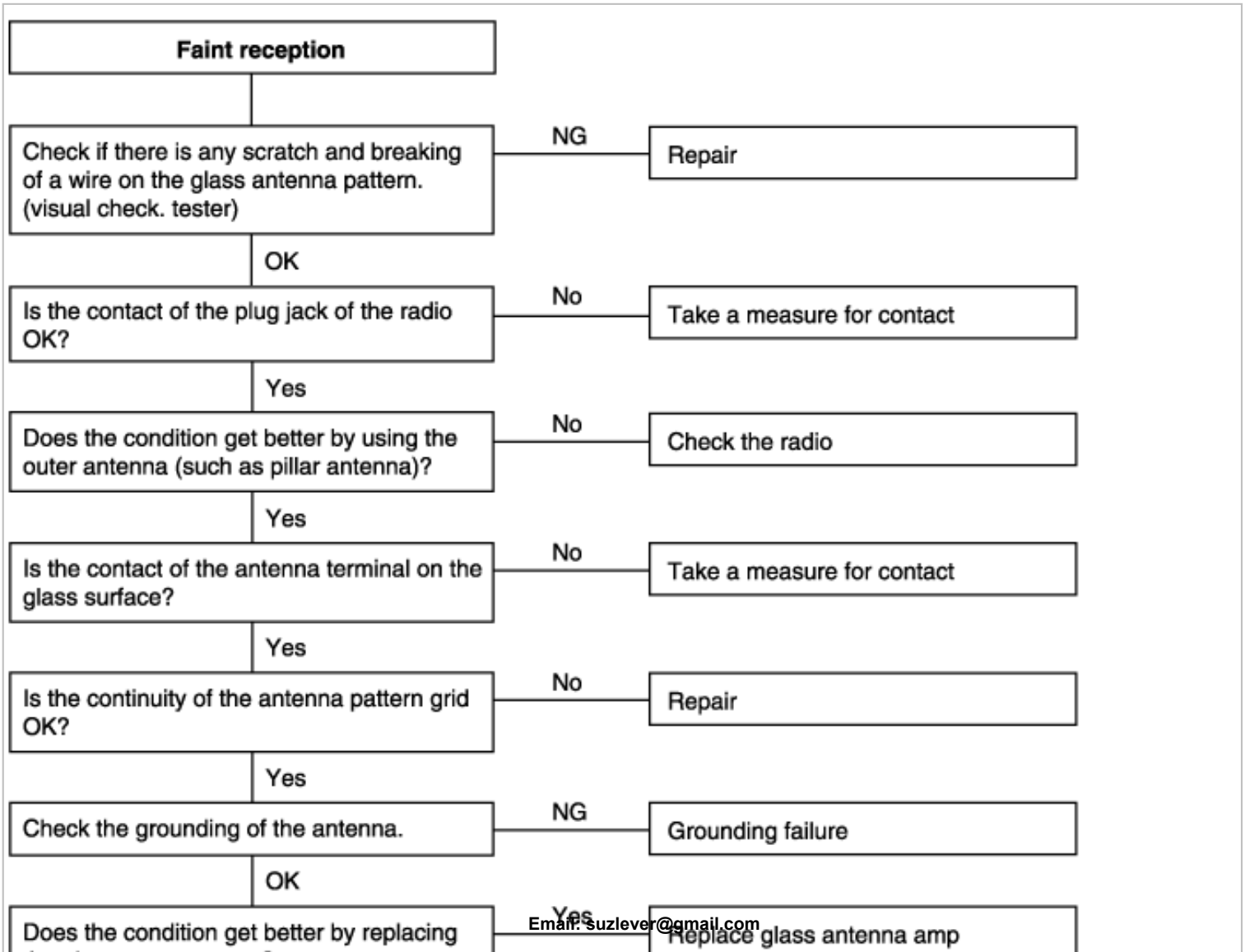


CHART 6 (IF GLASS ANTENNA INSTALLED)



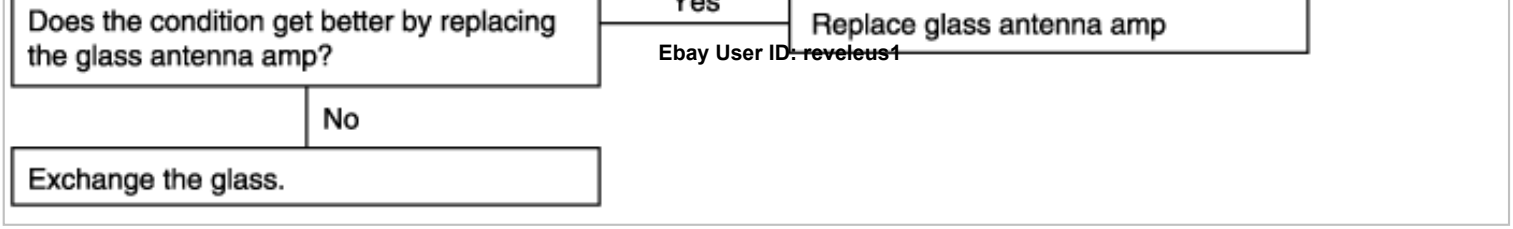


CHART 7

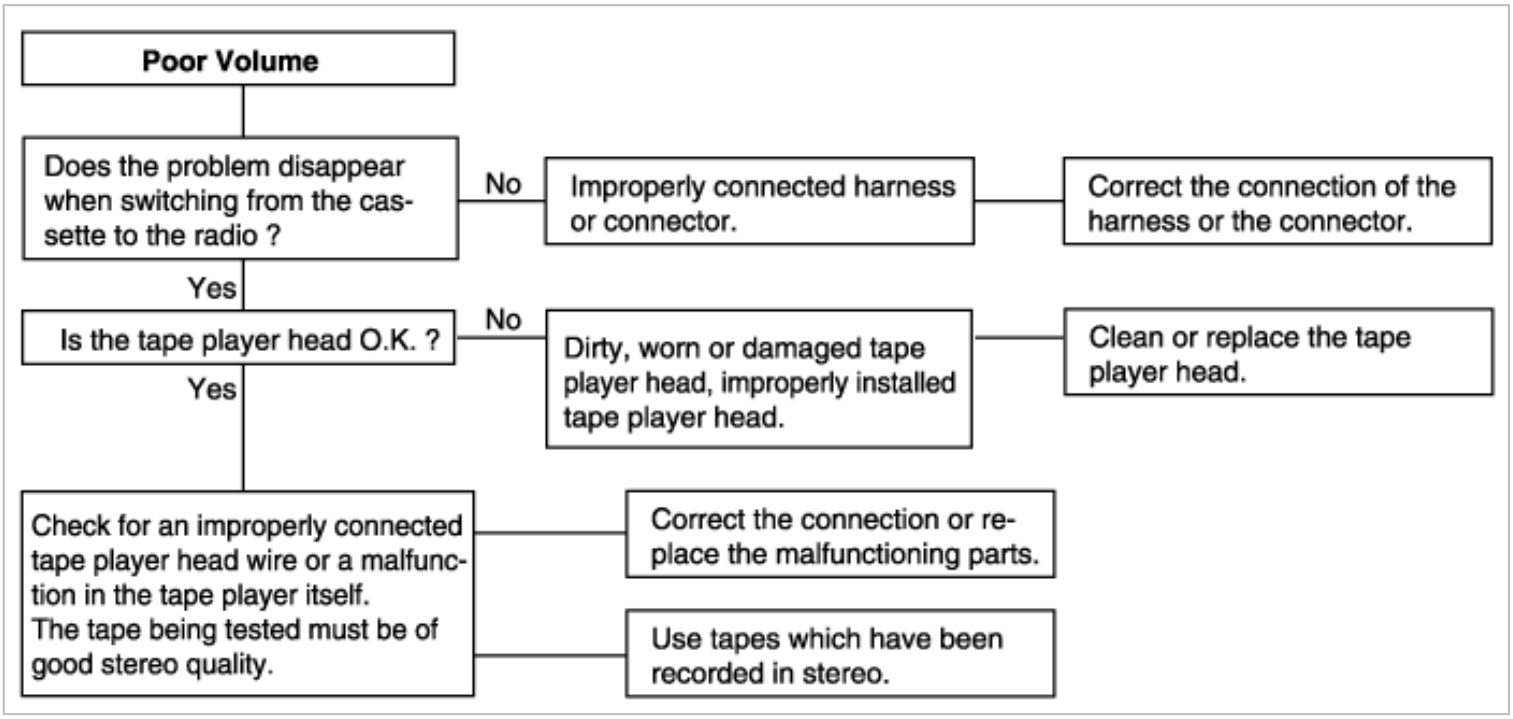


CHART 8

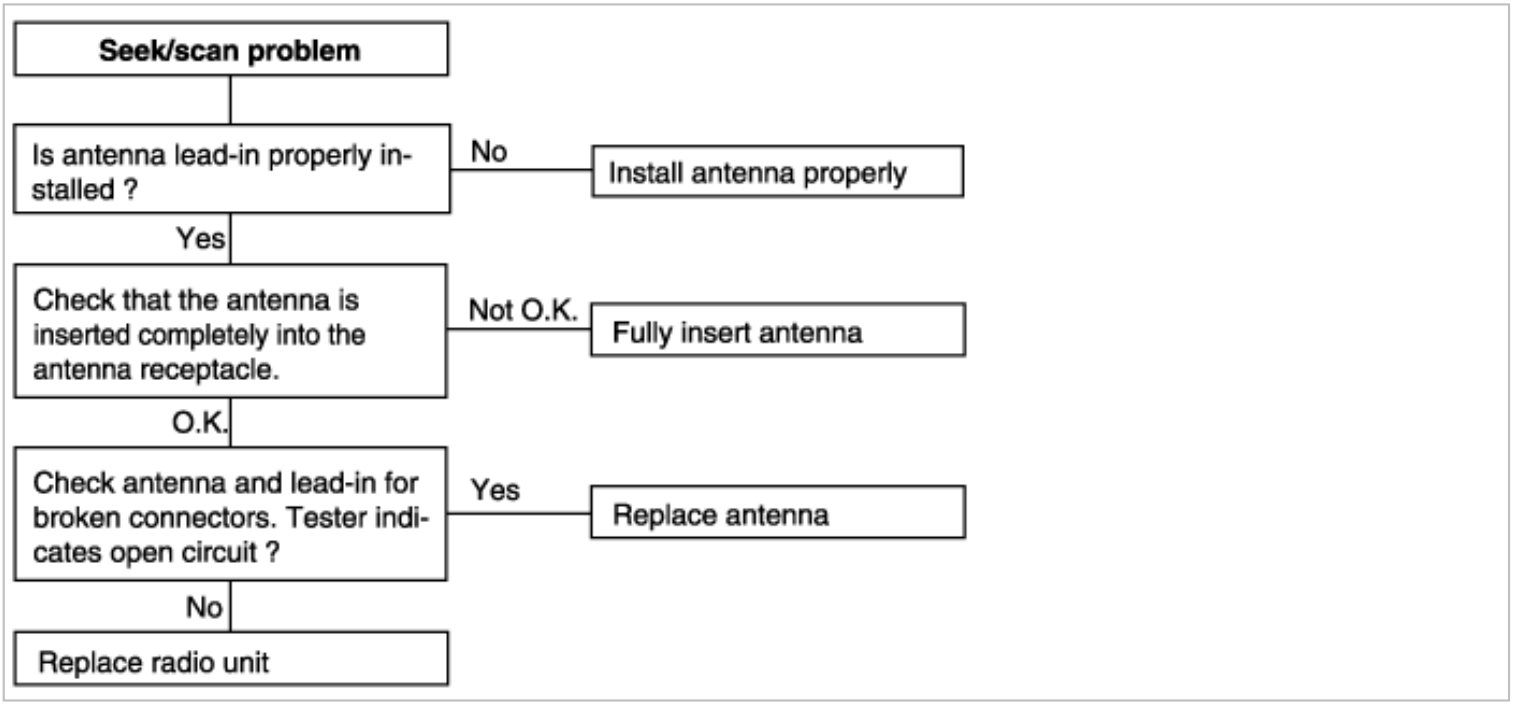


CHART 9

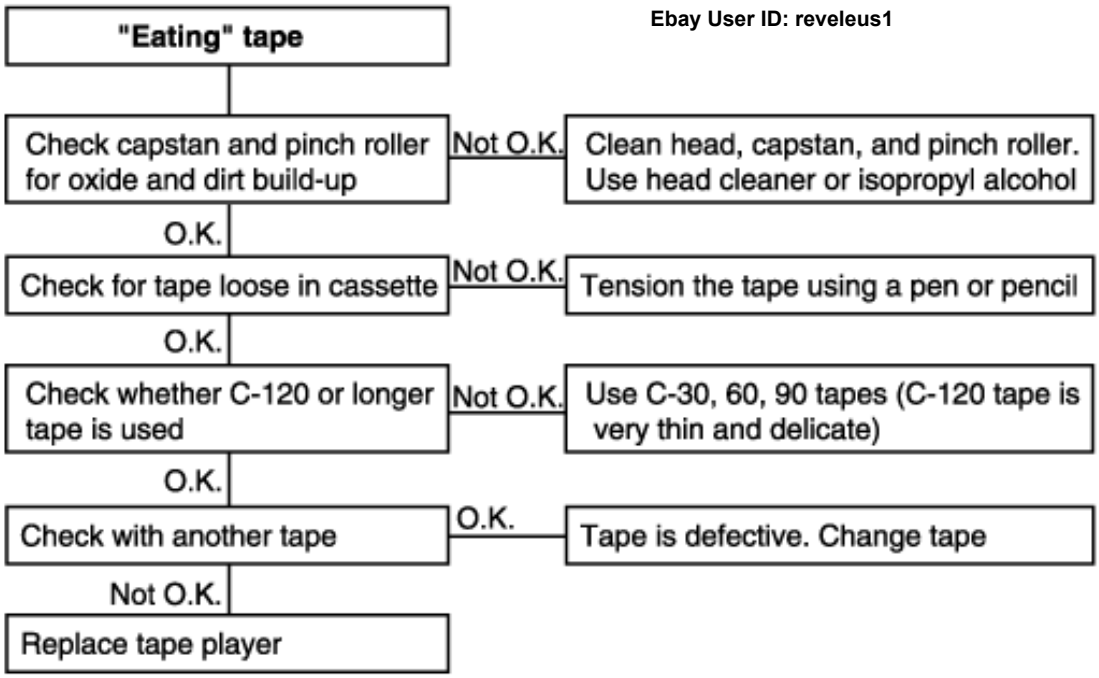
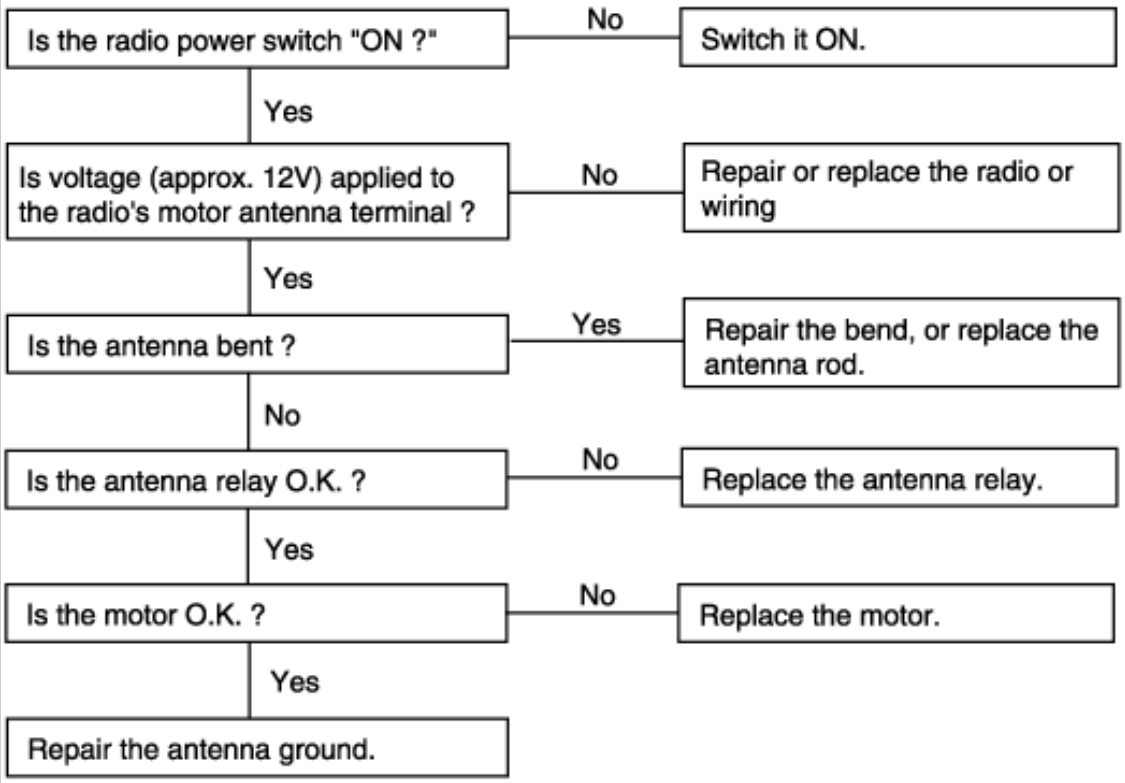


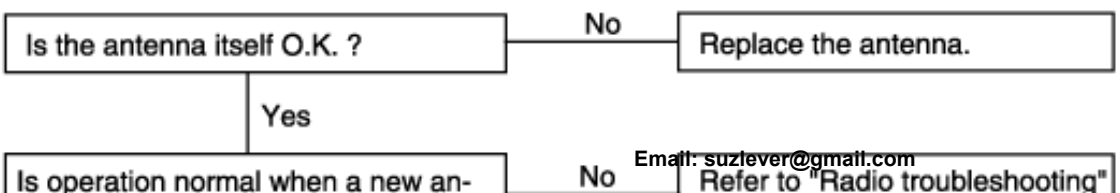
CHART 10

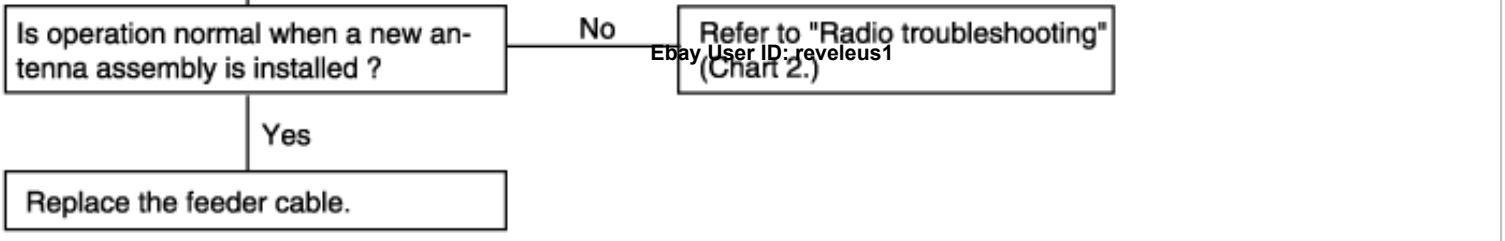
1. MOTOR ANTENNA WON'T EXTEND OR RETRACT

Clean and polish the surface of the antenna rod.



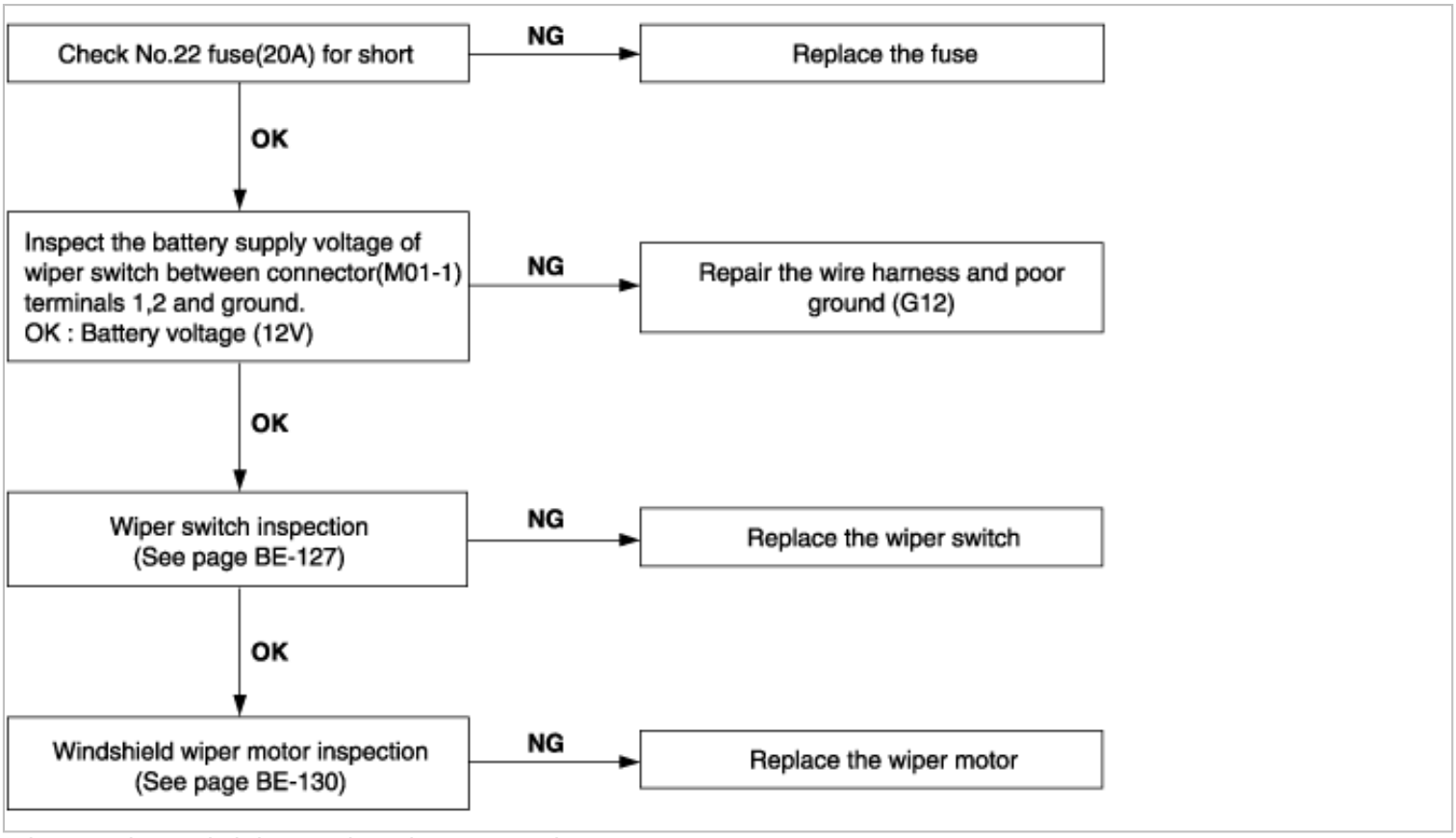
2. MOTOR ANTENNA EXTENDS AND RETRACTS BUT DOES NOT RECEIVE



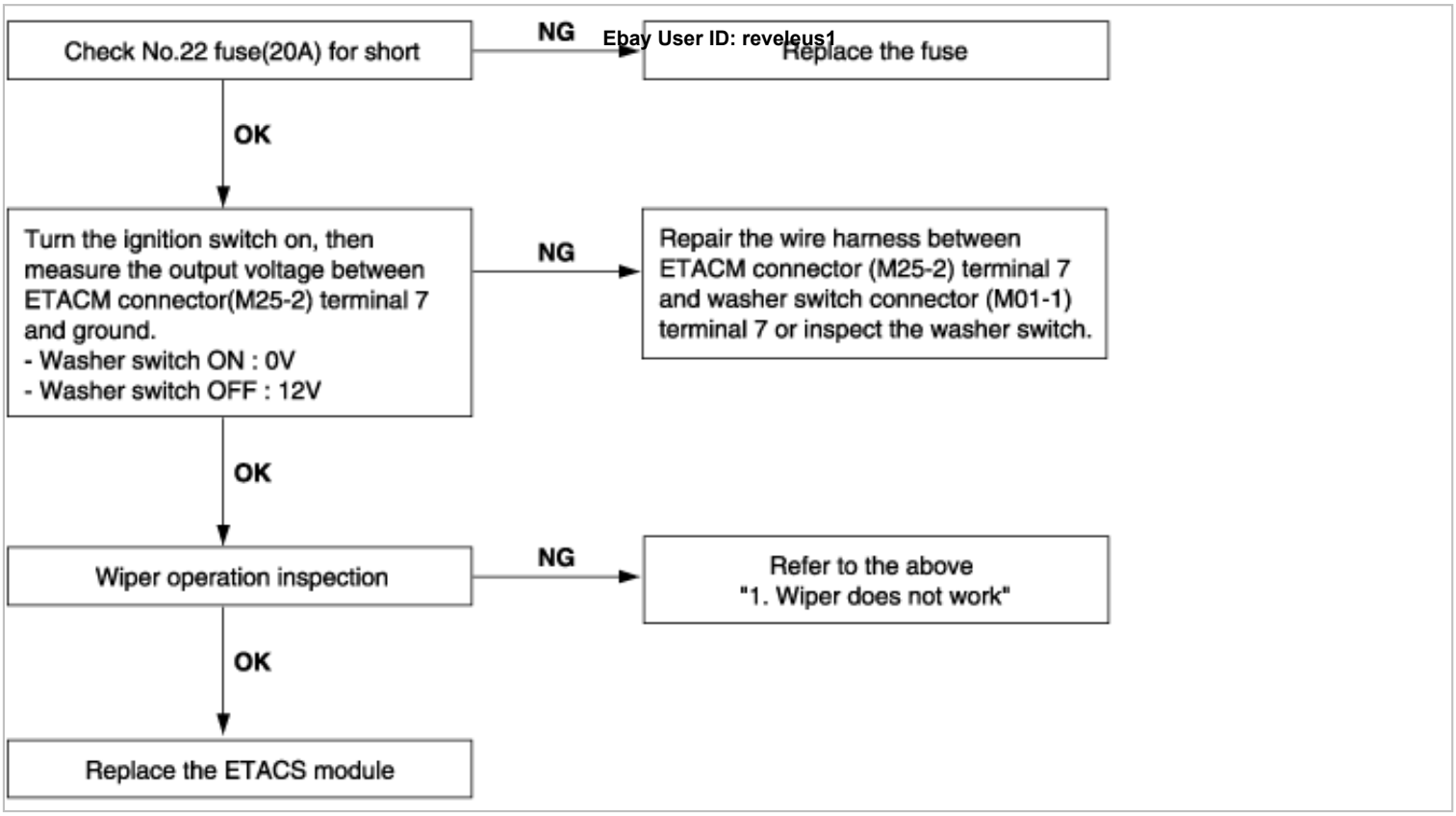


WINDSHIELD WIPER

1. Wiper low and wiper high does not work.

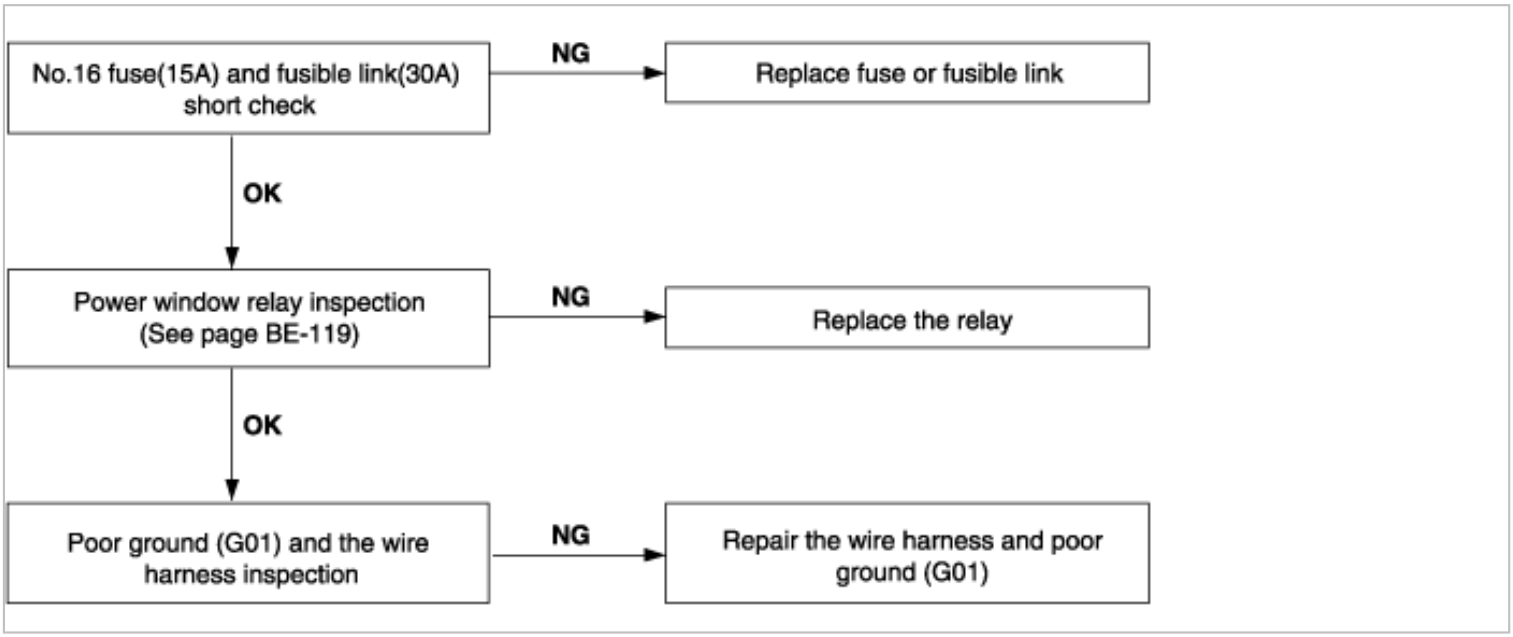


2. When washer switch is on, wiper does not work.

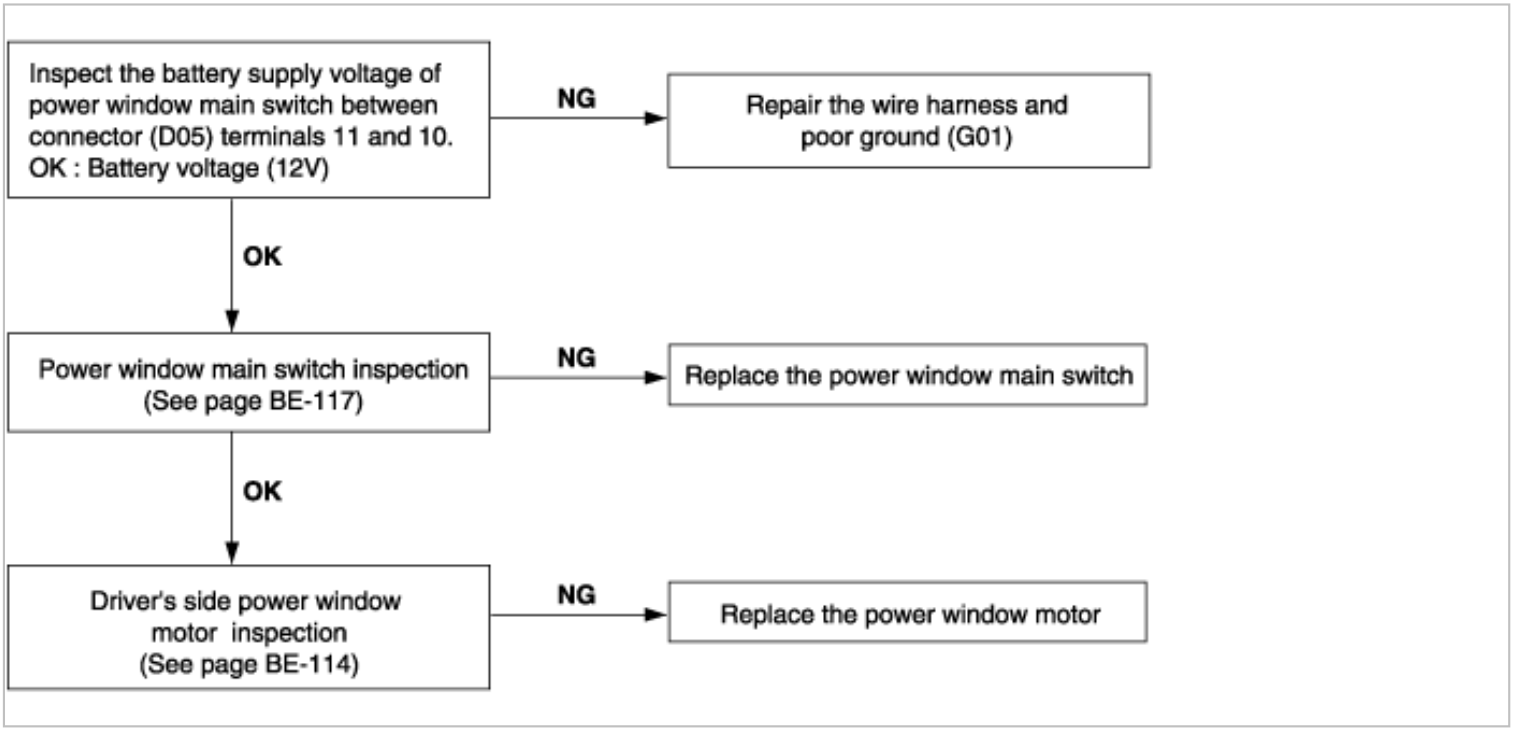


POWER WINDOW

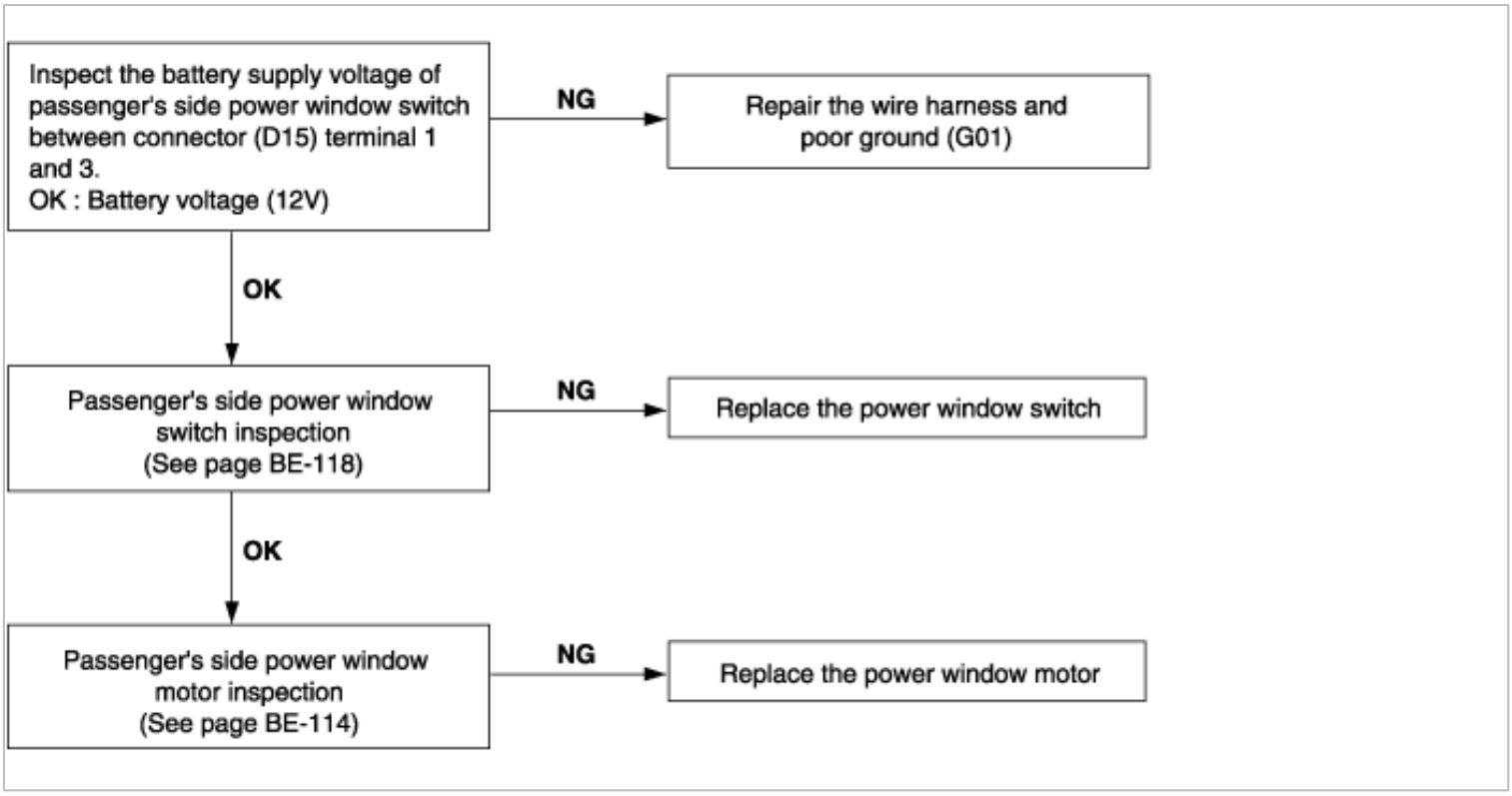
1. No windows operate from the main switch on the driver's door.



2. Driver's side window does not operate.



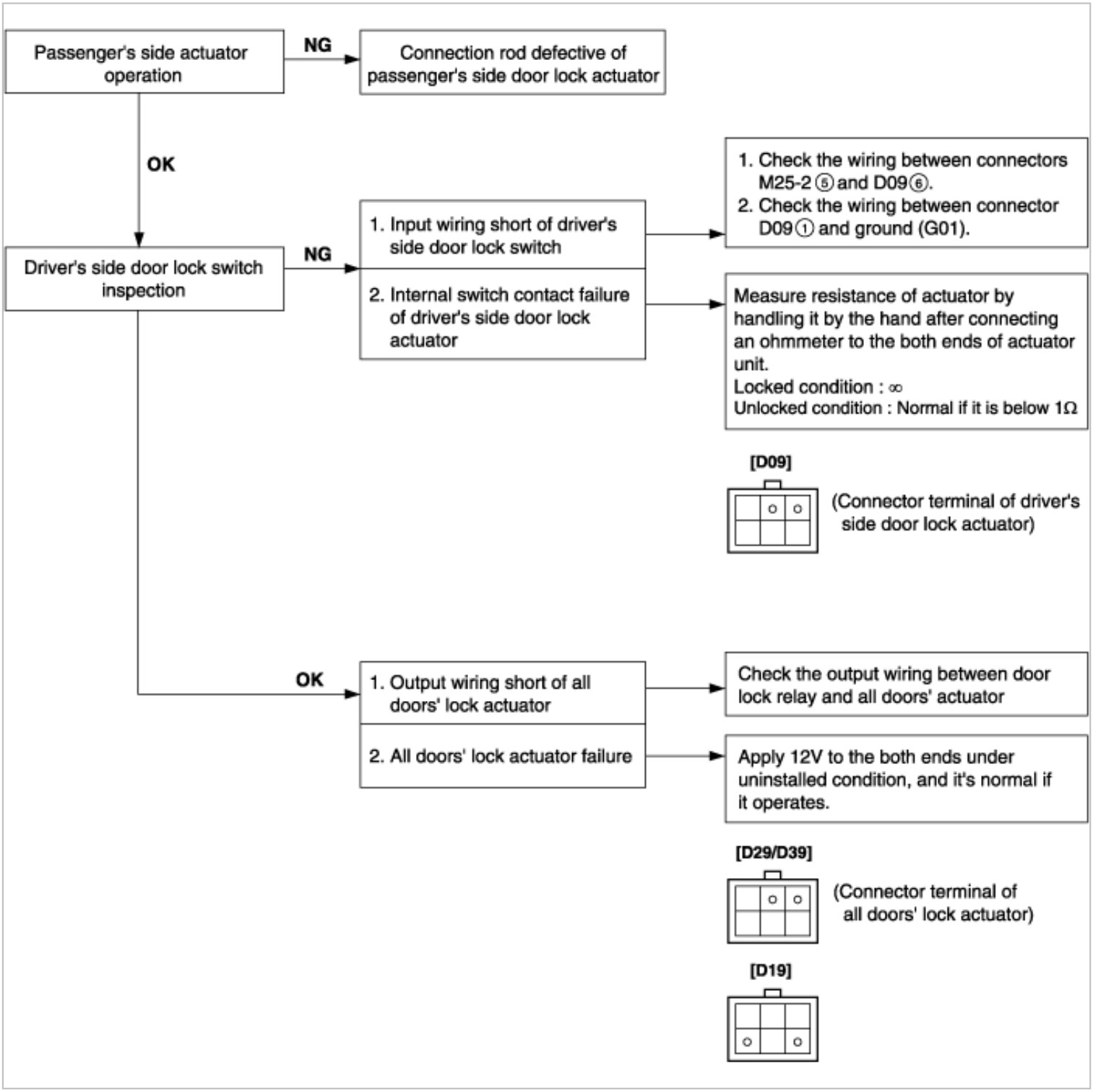
3. Passenger's side window does not operate.



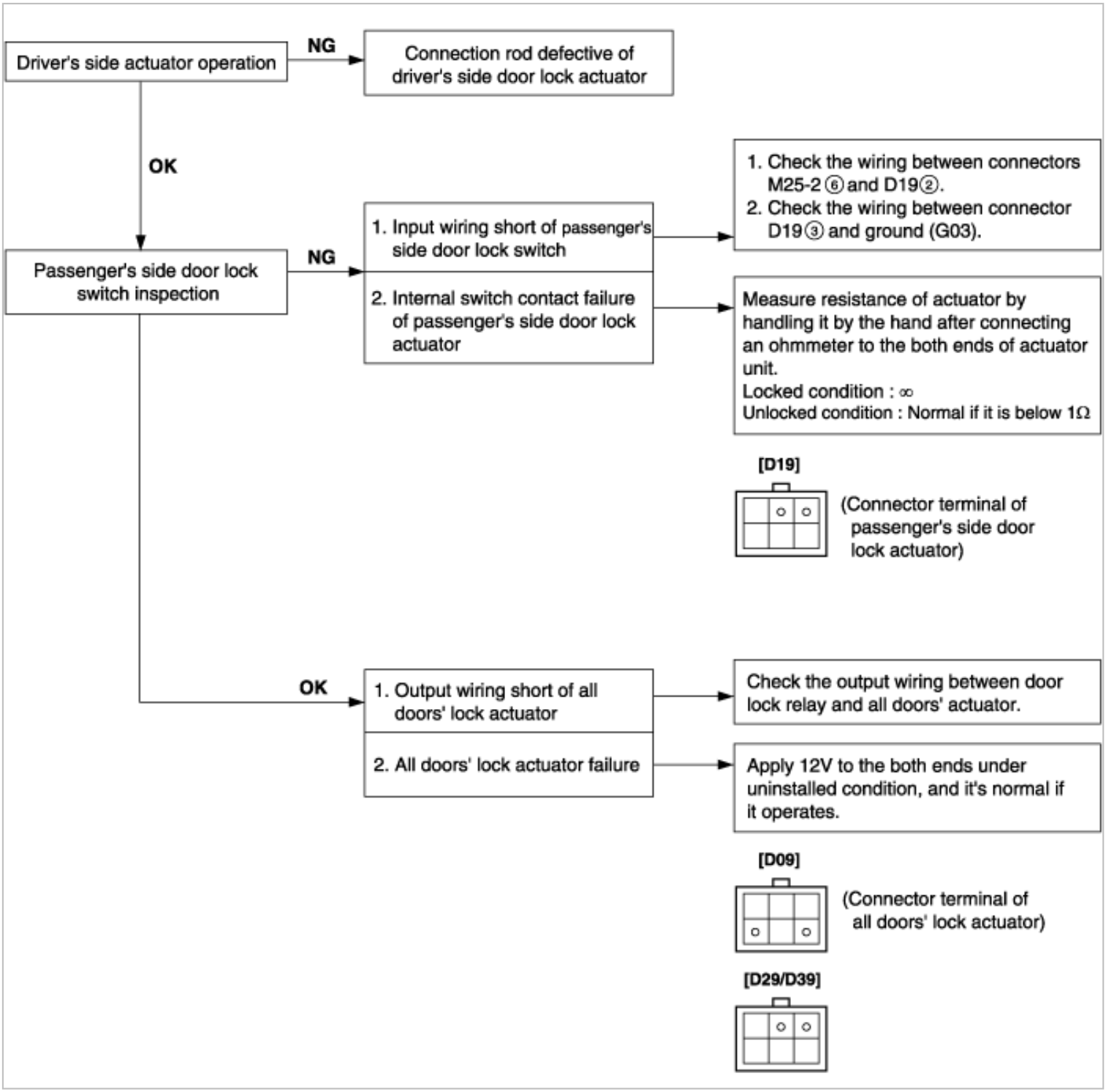
POWER DOOR LOCK

1. Lock function works but unlock function does not work.
   → Since door unlock relay fail, replace the door unlock relay.
2. Unlock function works but lock function does not work.
   → Since door lock relay fail, replace the door lock relay.

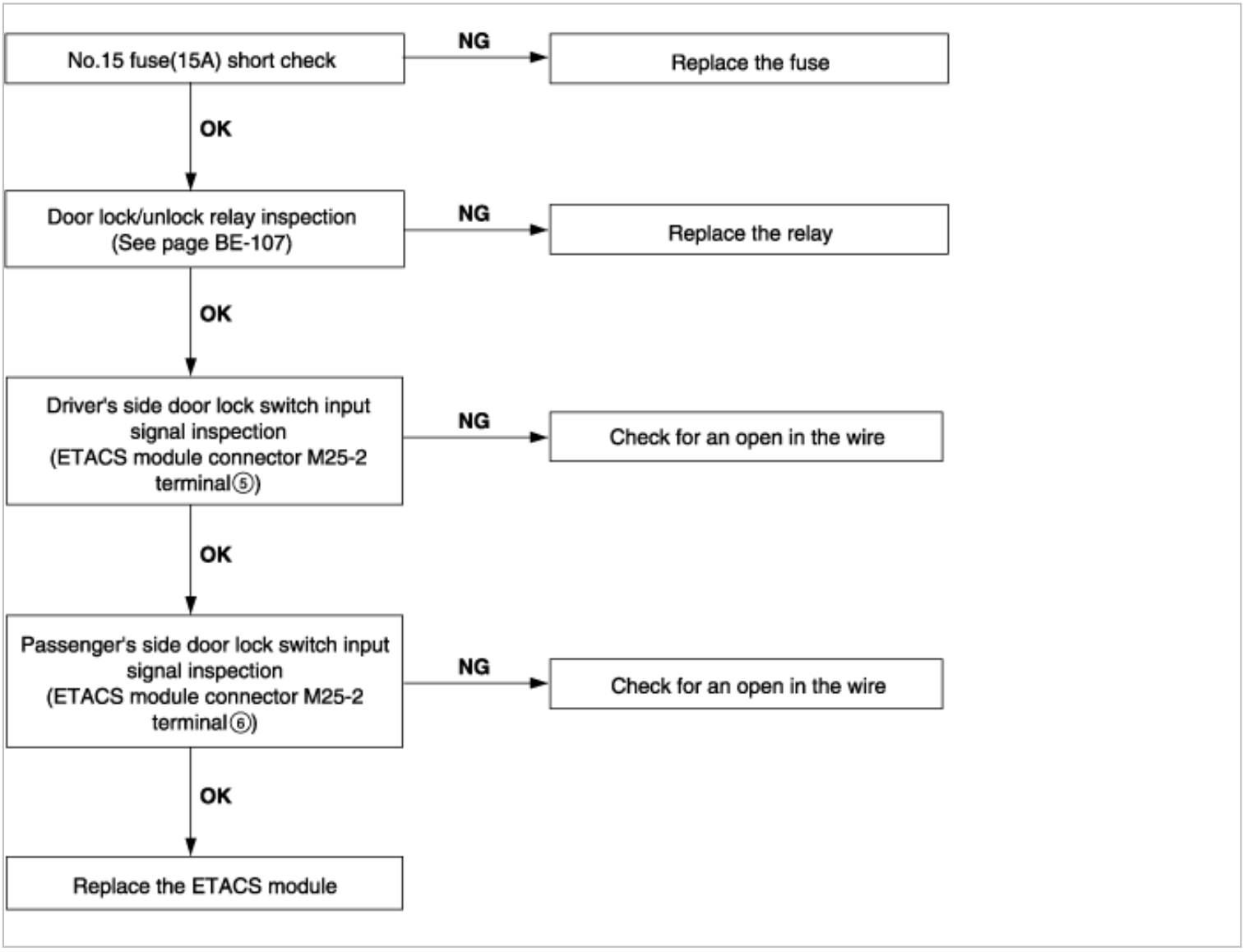
3. When passenger side knob is controlled, all doors interlocks, but when driver side knob is controlled, all doors do not interlock.



4. When passenger side knob is controlled. All doors interlocks. But when the driver side knob is controlled, all doors do not interlock.



5. Both sides do not interlock either.

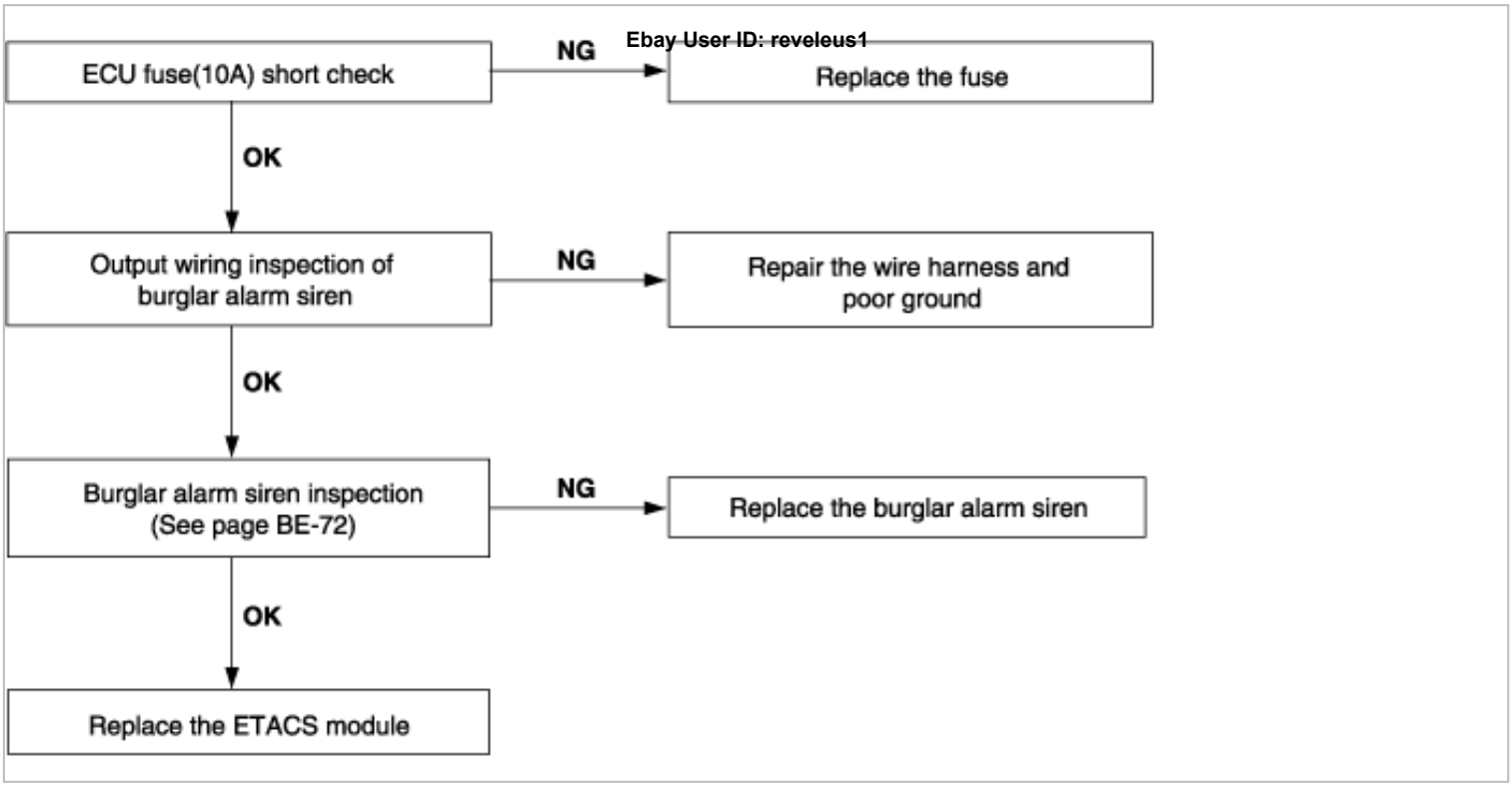


KEYLESS ENTRY & BURGLAR ALARM SYSTEM

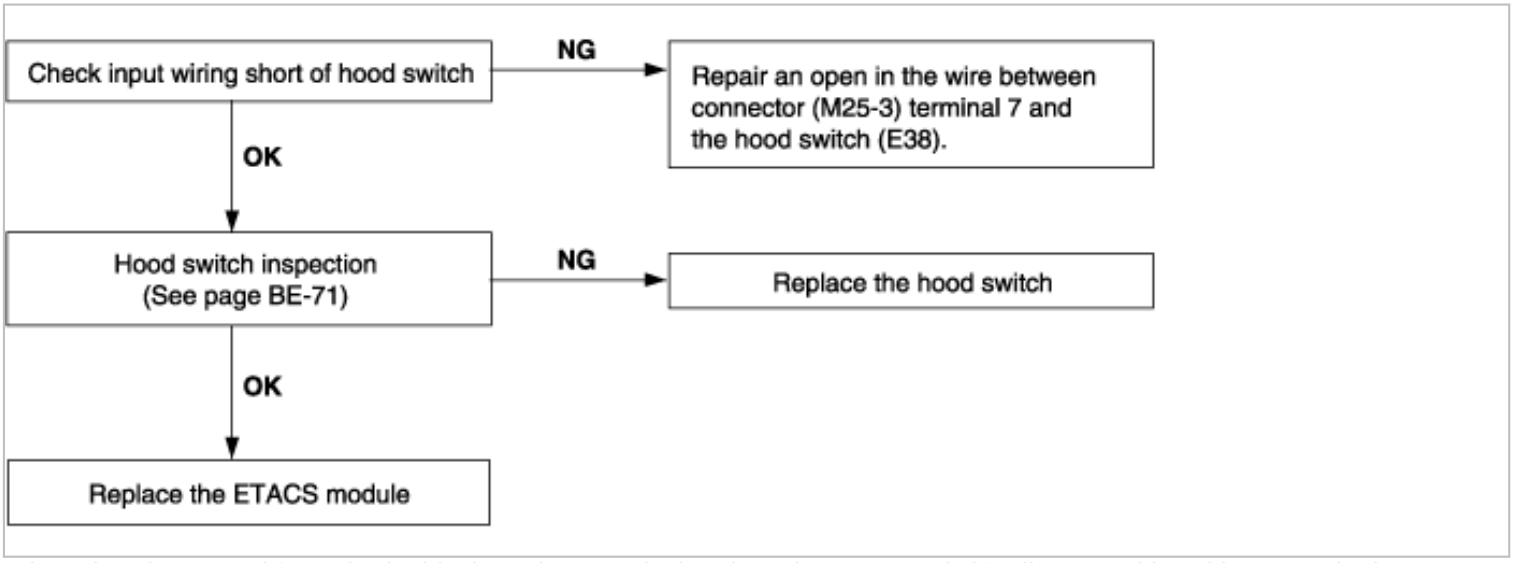
1. Alarm does not work. (Hazard lamp works)

Purchased
from Ebay seller
Reveleus1

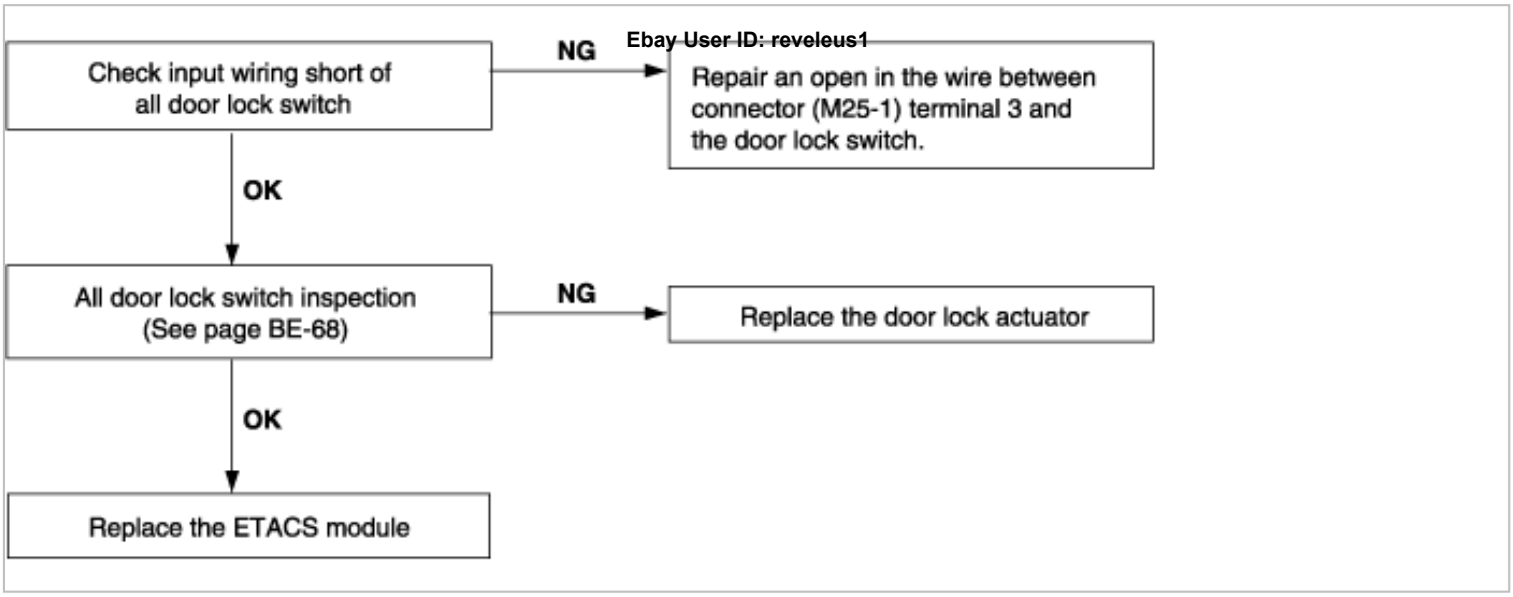
Thank-you for purchasing from me, it is much appreciated.
To contact me please email
suzlever@gmail.com



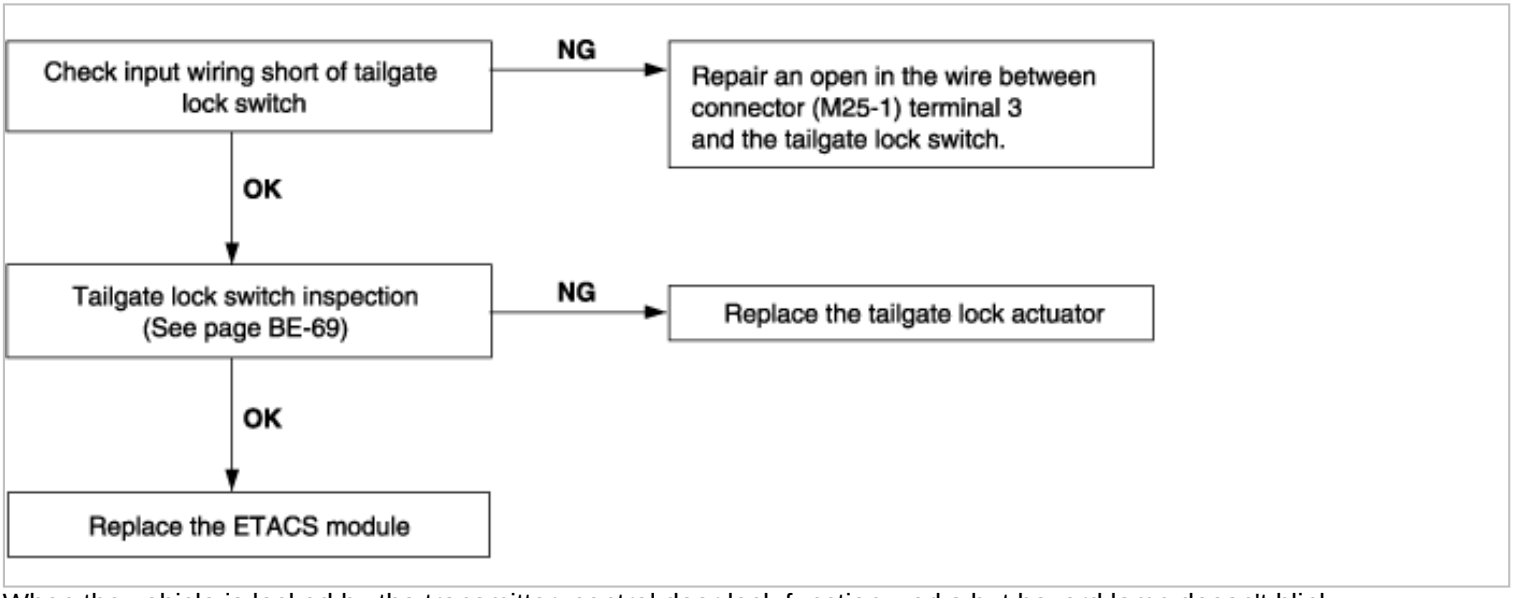
2. When hood is opened from the inside (car alarm test), the siren does not work.



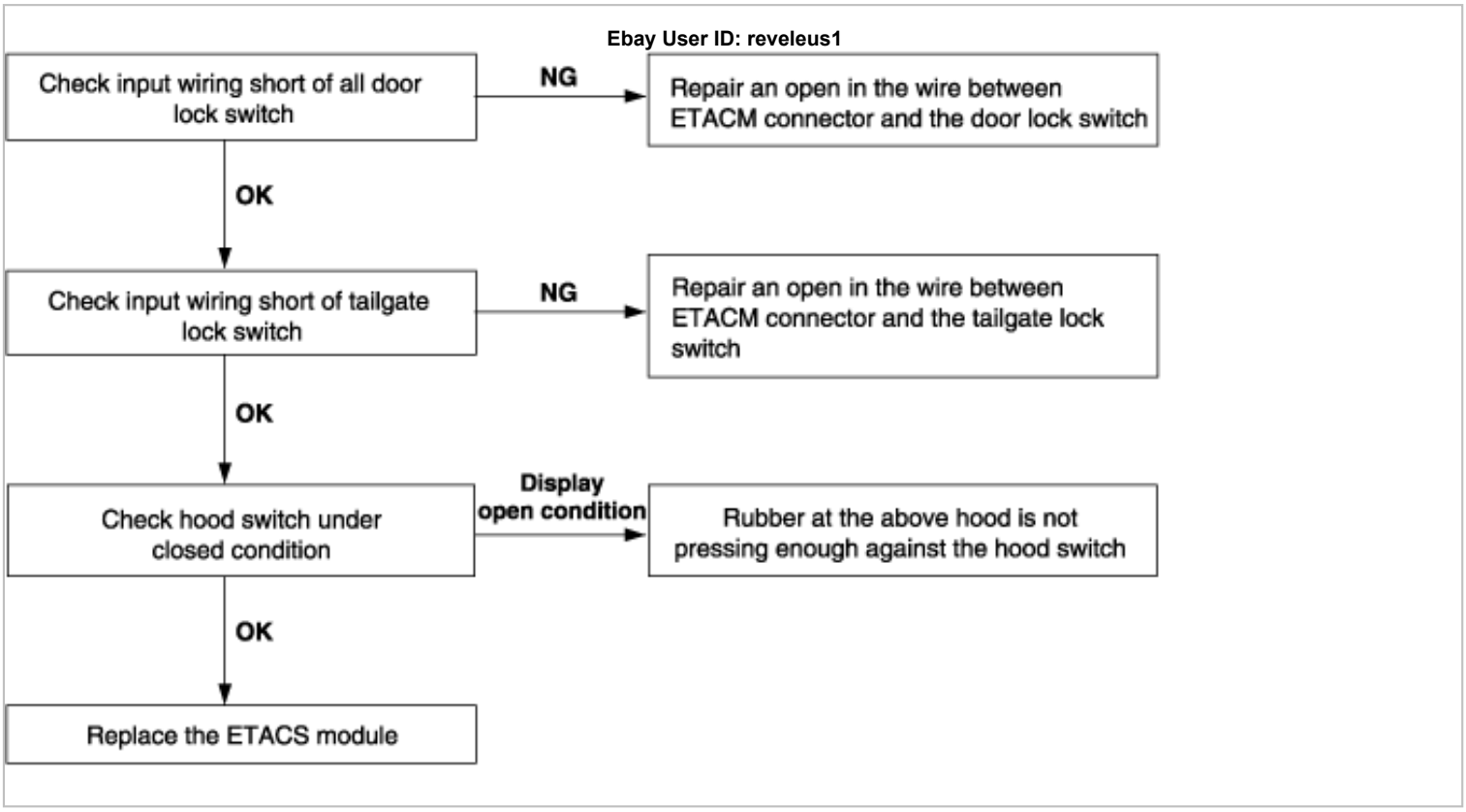
3. When door is opened from the inside (car alarm test), the siren does not work (If tailgate and hood is opened, alarm works)



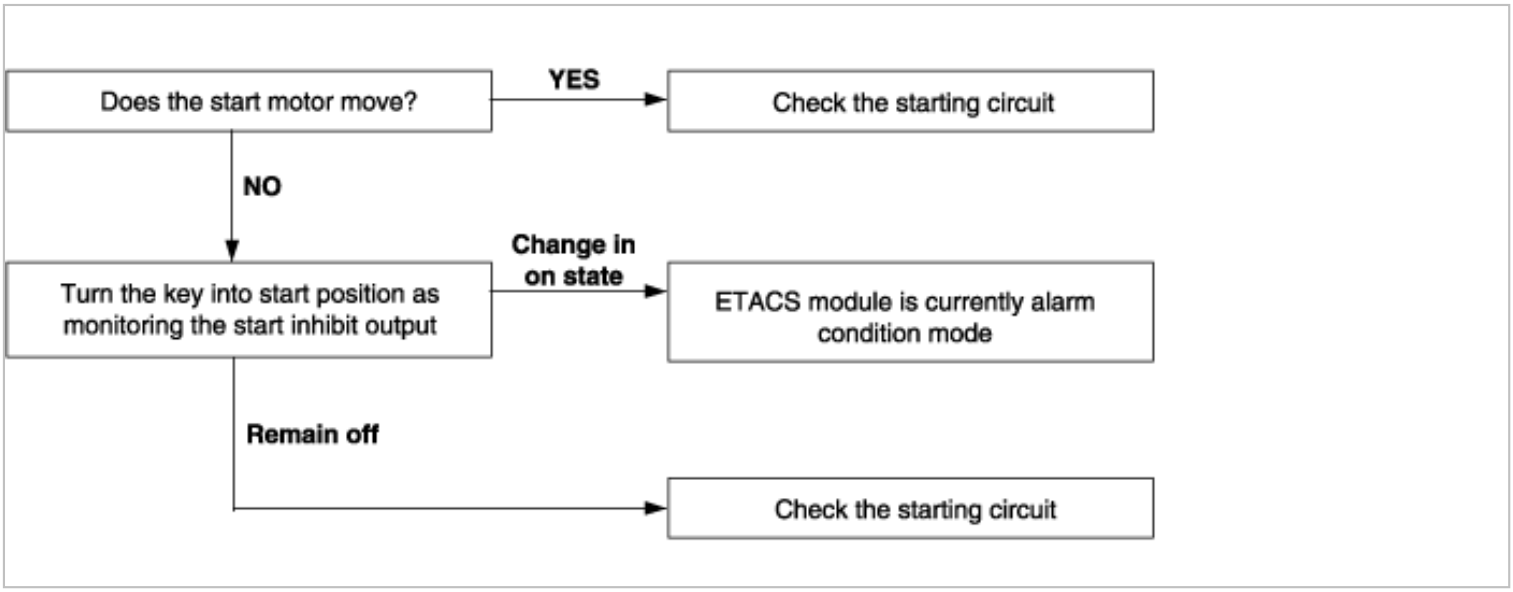
4. When tailgate is opened inside the car like alarm test, siren does not work.



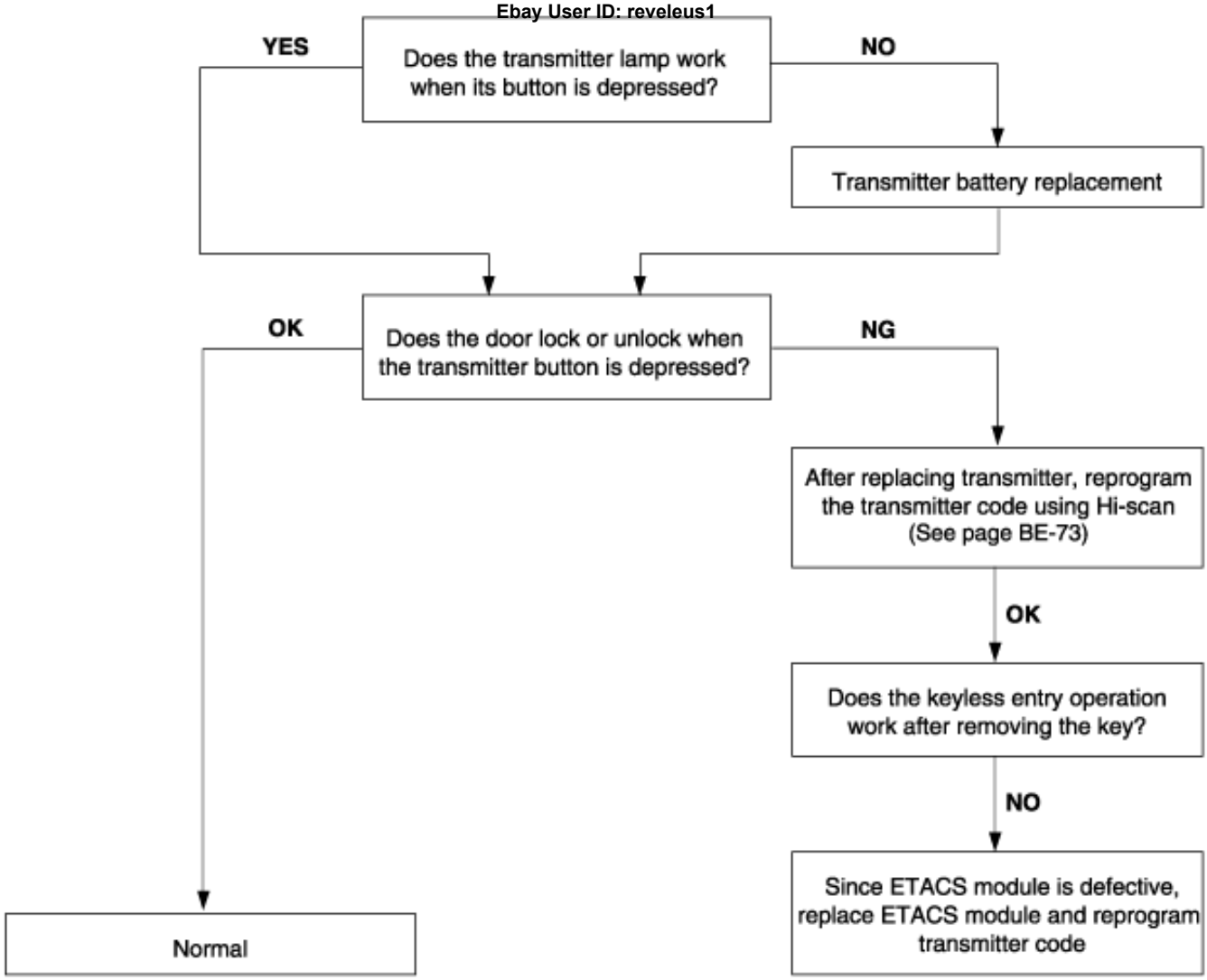
5. When the vehicle is locked by the transmitter, central door lock function works but hazard lamp doesn't blink.



6. Engine does not start, when the alarm released condition.



7. Central door lock function works, but keyless entry system does not work.



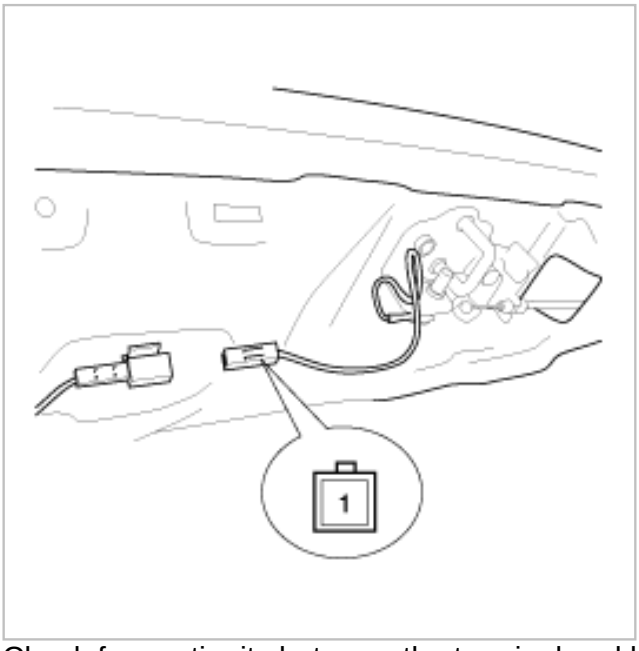
REMOVAL

1. Disconnect the negative (-) battery terminal.
2. Open the trunk lid then remove the trunk room lamp with a flat-tip screwdriver and disconnect the 2P connector.
3. Replace the bulb.
4. Installation is the reverse of removal.

INSPECTION

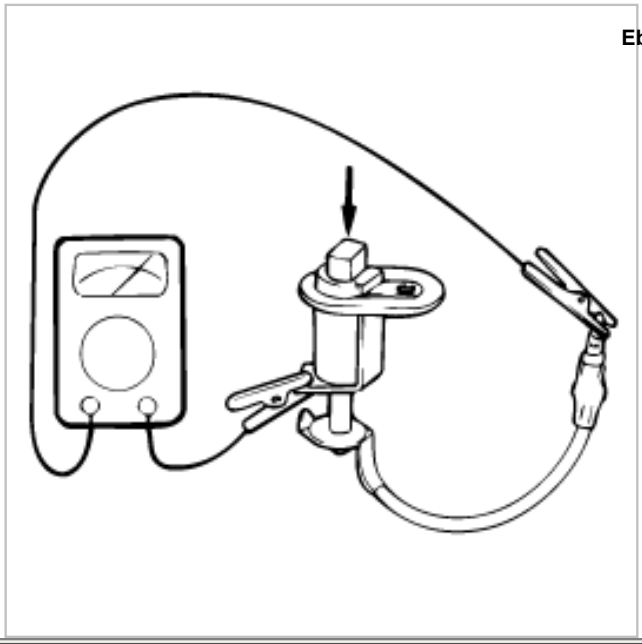
TRUNK ROOM LAMP SWITCH

1. Disconnect the negative(-) battery terminal.
2. After opening the trunk, disconnect the 1P connector from the rear harness.



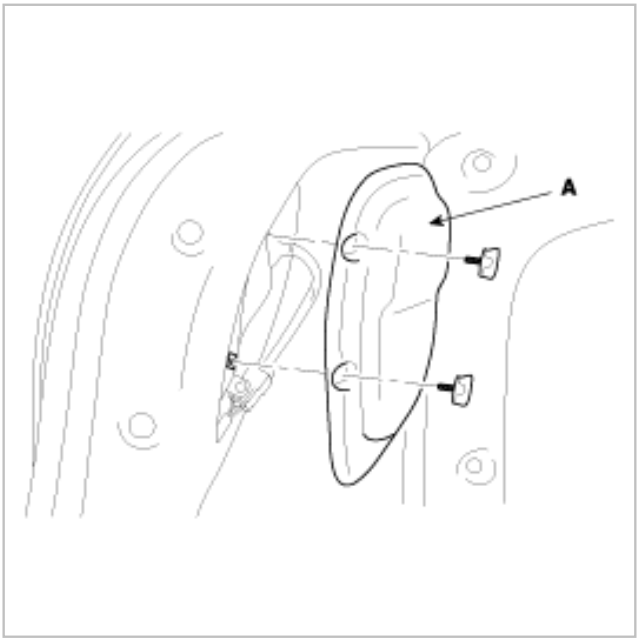
3. Check for continuity between the terminal and body while pushing the rod.

Switch rod condition	Continuity
Pushed (OFF)	Non-conductive (∞Ω)
Released (ON)	Conductive (0Ω)

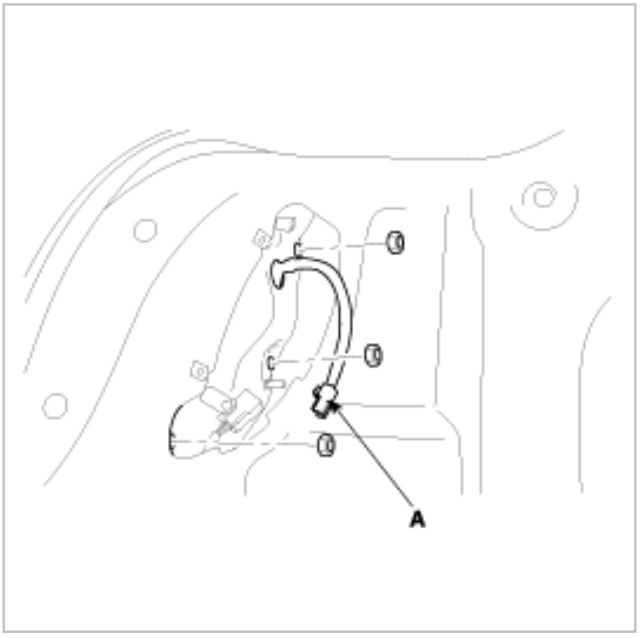


REMOVAL

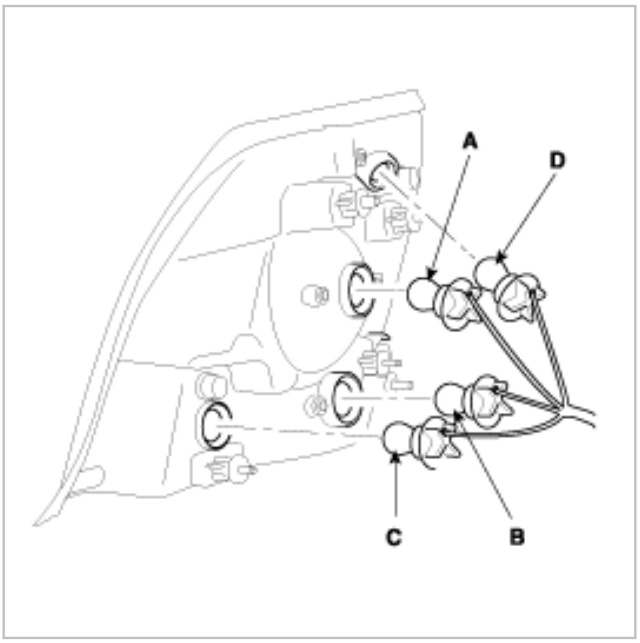
1. Disconnect the negative (-) battery terminal.
2. Remove the cover (A) in the trunk room after removing 2 screws.



3. Remove the 3 nuts holding the rear combination lamp then disconnect the 6P connector (A).

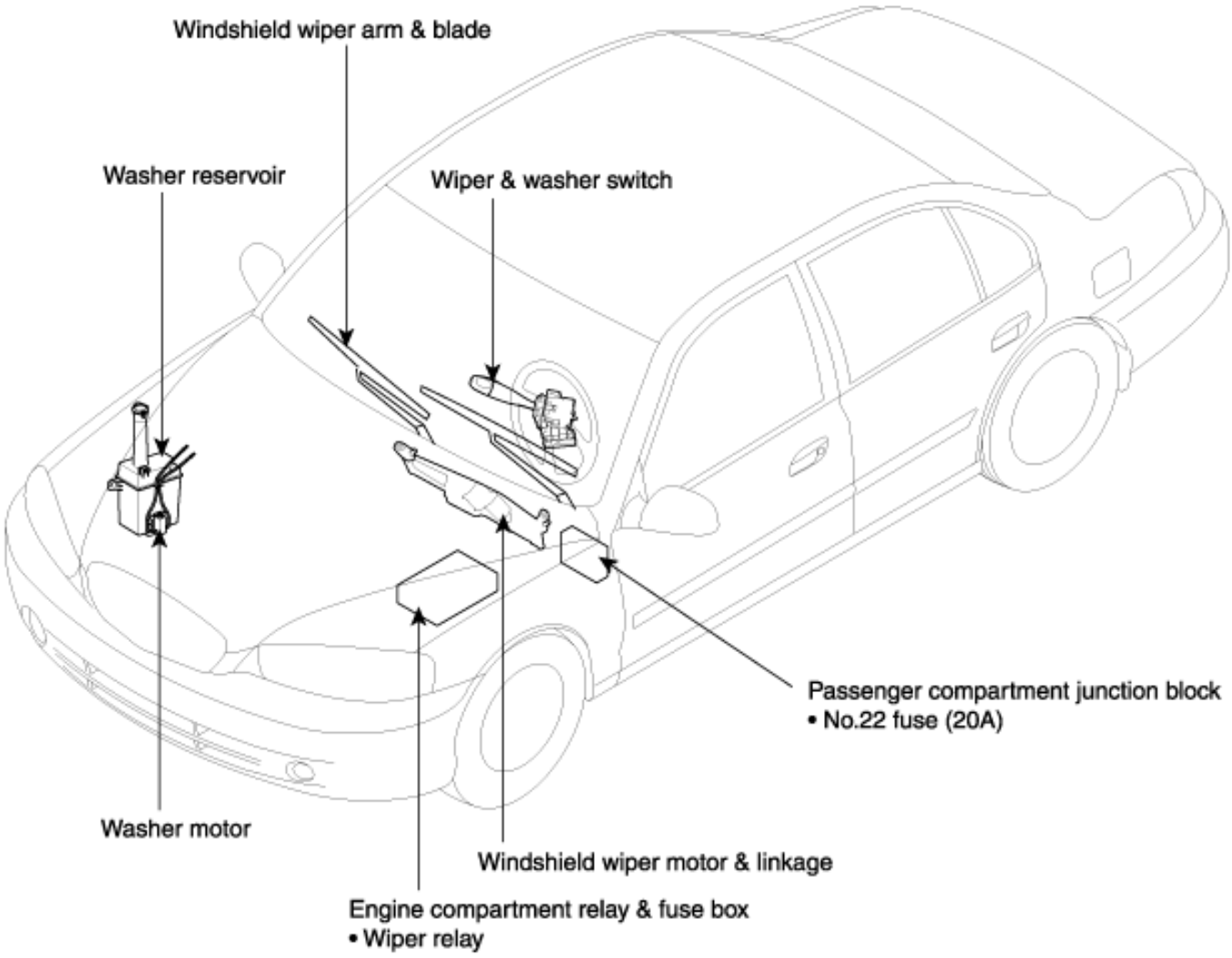


4. Remove the rear combination lamp and replace the bulbs: stop & tail lamp (A), turn signal lamp (B), back up lamp (C) and side marker lamp(D).

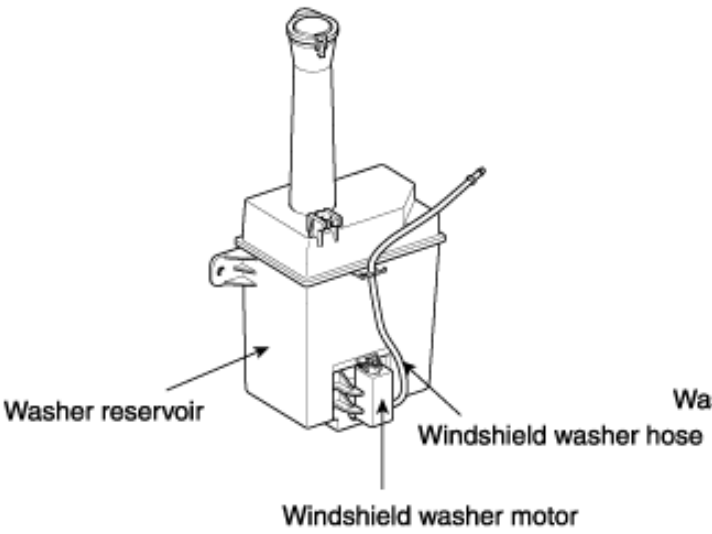


5. Installation is the reverse of removal.

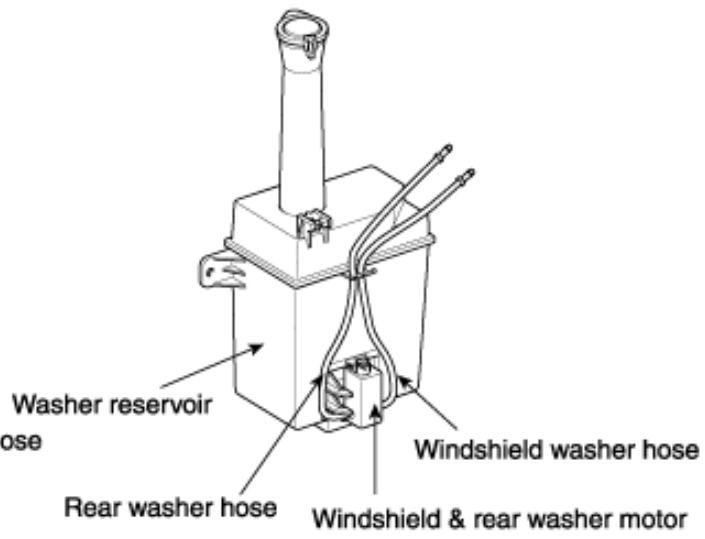
COMPONENTS



[Windshield washer motor : 4 doors]

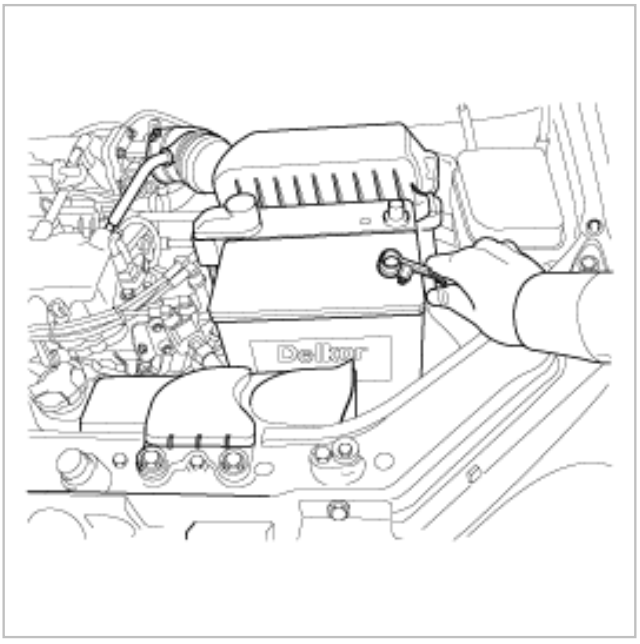


[Windshield & Rear washer motor : 5 doors]



REMOVAL

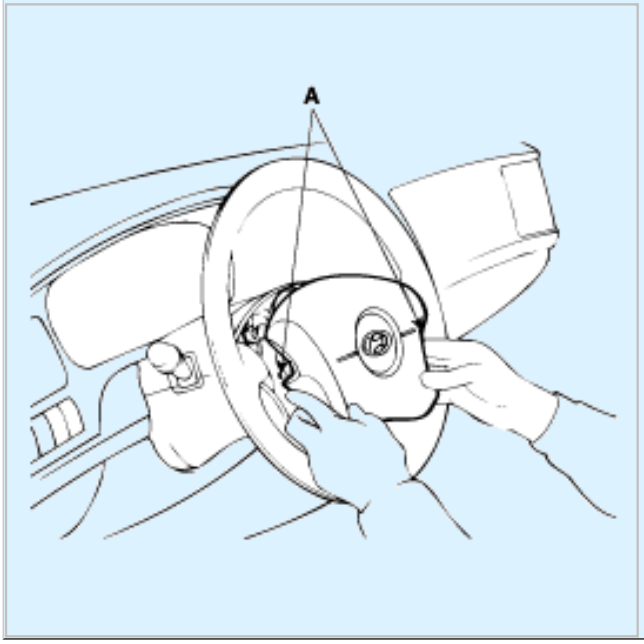
1. Disconnect the negative(-) battery terminal.



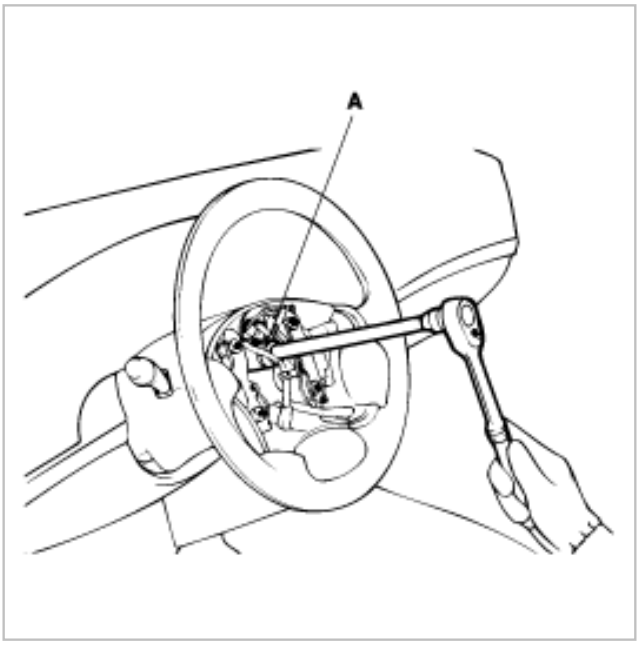
2. Remove the 2 bolts(A) and disconnect the airbag connector and the horn connector, then remove the airbag module.

CAUTION

Remove the horn pad only for vehicle without airbag.



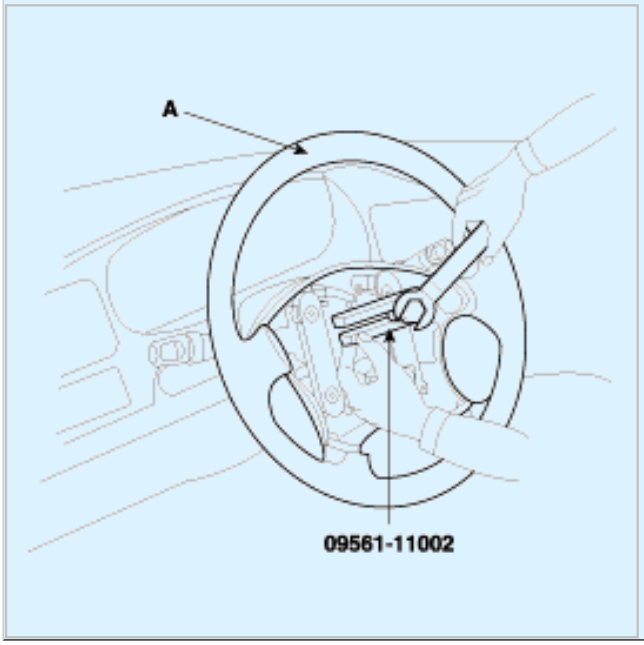
3. Remove the steering wheel lock nut(A).



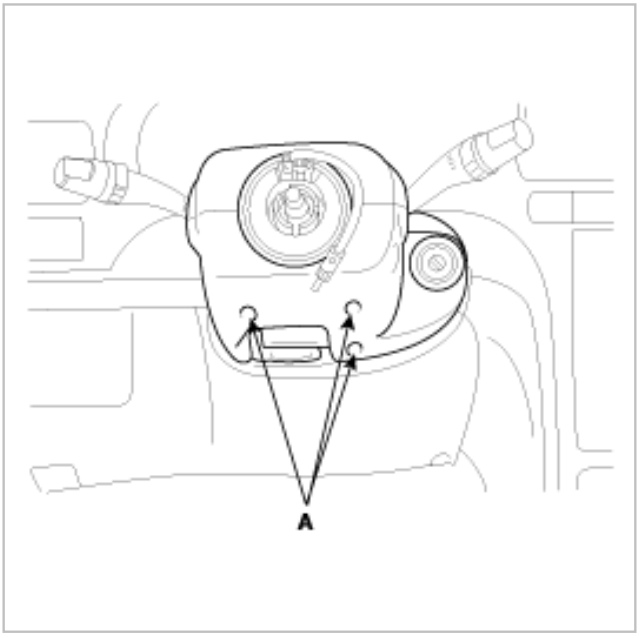
4. Remove the steering wheel(A) with special tool (09561-11002).

CAUTION

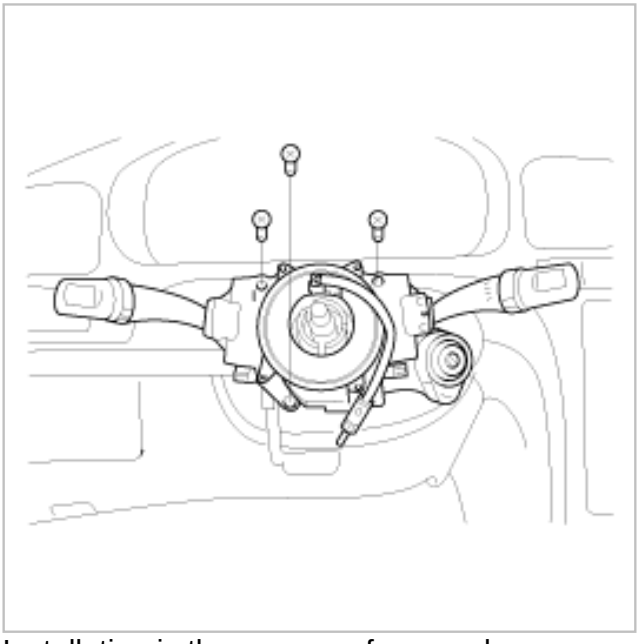
Do not hammer on the steering wheel to remove it. Doing so may damage the collapsible mechanism.



5. Remove the steering column shroud after removing 3 screws(A).

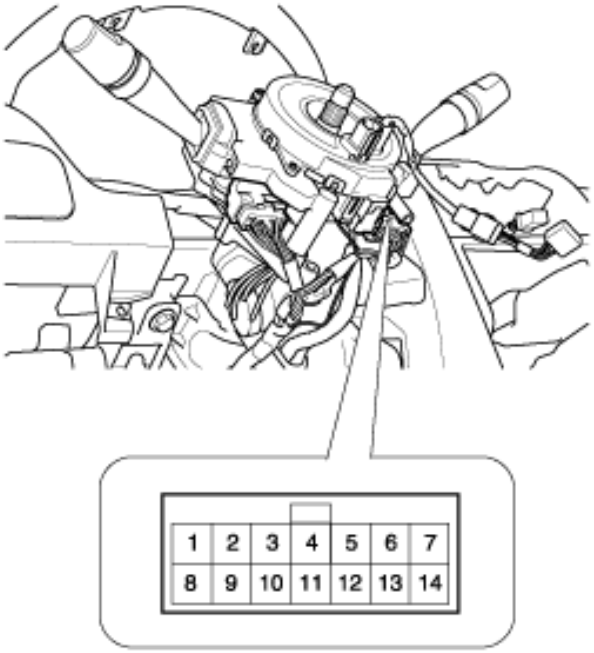


6. Disconnect the wire connectors and remove the multi-function switch after removing the 3 screws.



7. Installation is the reverse of removal.

INSPECTION



WIPER SWITCH [M01-1]

Terminal / Position	1	2	3	4	5	6	13	14
MIST				○	○			
OFF		○	○					
INT		○	○		○	○	○	○
LOW		○			○			
HI	○				○			

WASHER SWITCH [M01-1]

Terminal / Position	5	7
OFF		
ON	○	○