2000 SPORTAGE

ELECTRICAL TROUBLESHOOTING AND VACUUM HOSE ROUTING MANUAL

CONTENTS

CONTENTS (Continued)

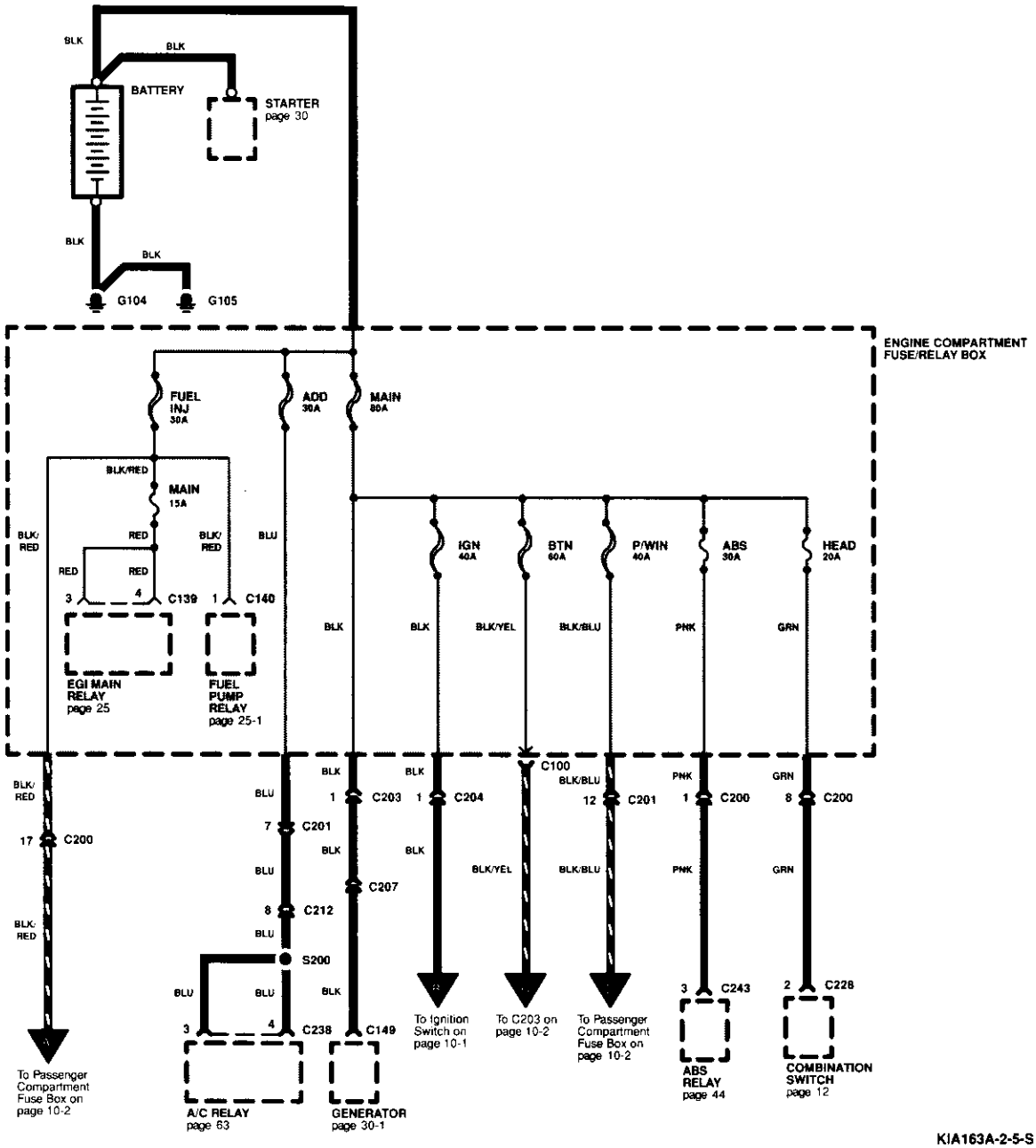
Power Distribution

The Power Distribution schematic shows the wiring from the Battery and Generator to the Starter Solenoid, Fuse Box, Ignition Switch and Light Switch. The first component after a fuse is also shown.

The Power Distribution schematic refers to Fuse Box Details and Light Switch Details schematics. By using these three (3) schematics, power distribution wiring can be followed from the Battery and Generator to the first component after a Maxi Fuse, Fuse and Light Switch. The ability to follow the power distribution wiring to the first component in each circuit is extremely helpful in locating short circuits which cause fuses to open.

The fuses in the sample schematic below are "Hot At All Times," since Battery voltage is always applied to them.

POWER DISTRIBUTION



KIA163A-2-5-S

FIVE-STEP TROUBLESHOOTING

1. Verify the Problem

Turn on all the components in the problem circuit to check the accuracy of the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.

2. Analyze the Circuit 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 source through the circuit components to ground. Also, trace circuits that share wiring with the problem circuit. The names of circuits or components that share the same fuse, ground, or switch, and so on, are referred to in each circuit schematic. Try to operate any shared circuits you didn't check in step 1. If the shared circuits work, the shared wiring is OK, and the cause must be in the wiring used only by the problem circuit. 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's operation, identify one or more possible causes.

3. Find the Cause

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. Repair the Problem

Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.

5. Check the Repair

Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was an open fuse, be sure to test all of the circuits on that fuse. Make sure no new problems turn up and the original problem does not recur.

TEST EQUIPMENT

S *NOTICE*

Most circuits include solid-state devices. Test the voltages in these circuits only with a 10-megaohm or higher impedance digital multimeter. Never use a test light or analog meter on circuits that contain solid-state devices. Damage to the devices may result.

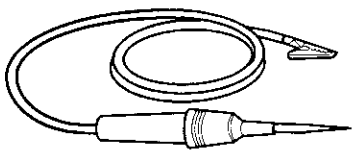
Test Light and DVOM

On circuits without solid-state devices, use a test light to check for voltage. A test light is made up of a 12-volt bulb with a pair of leads attached. After grounding one lead, touch the other lead to various points along the circuit where voltage should be present. The bulb will go on if there is voltage at the point being tested. If you need to know how much voltage is present, use a digital volt/ohmmeter (DVOM).

Self-Powered Test Light and DVOM

Use a self-powered test light to check for continuity. This tool is made up of a light bulb, battery, and two leads. To test it, touch the leads together; the light should go on.

Use a self-powered test light only on an unpowered circuit. First, disconnect the battery, or remove the fuse that feeds the circuit you are working on. Select two points in the circuit between which you want to check continuity. Connect one lead of the self-powered test light to each point. If there is continuity, the test light's circuit will be completed, and the light will go on.



SELF-POWERED TEST LIGHT

KIA163A-2-9-S

REPLACEMENT OF TERMINALS

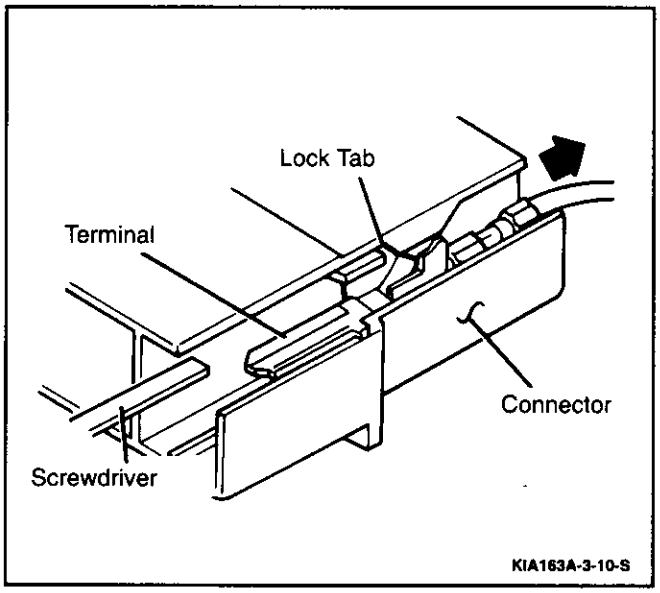
Use the appropriate tools to remove the terminal, as shown in the illustrations.

NOTICE

When installing a terminal, be sure to press it in until it locks securely.

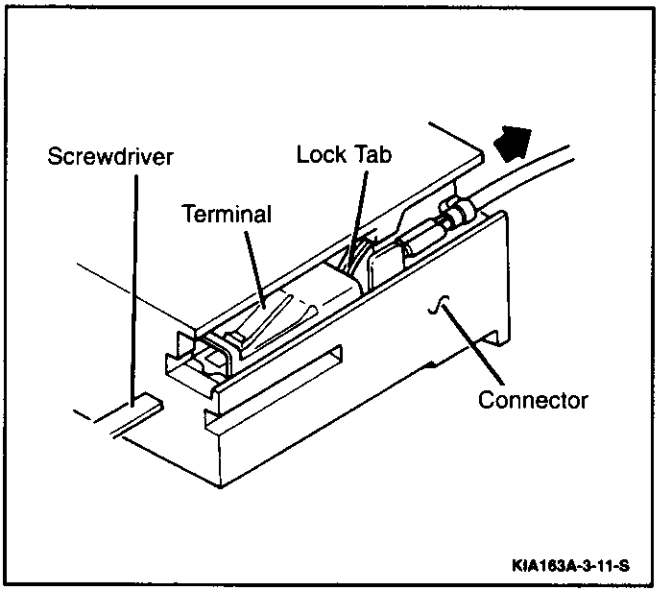
Female Type

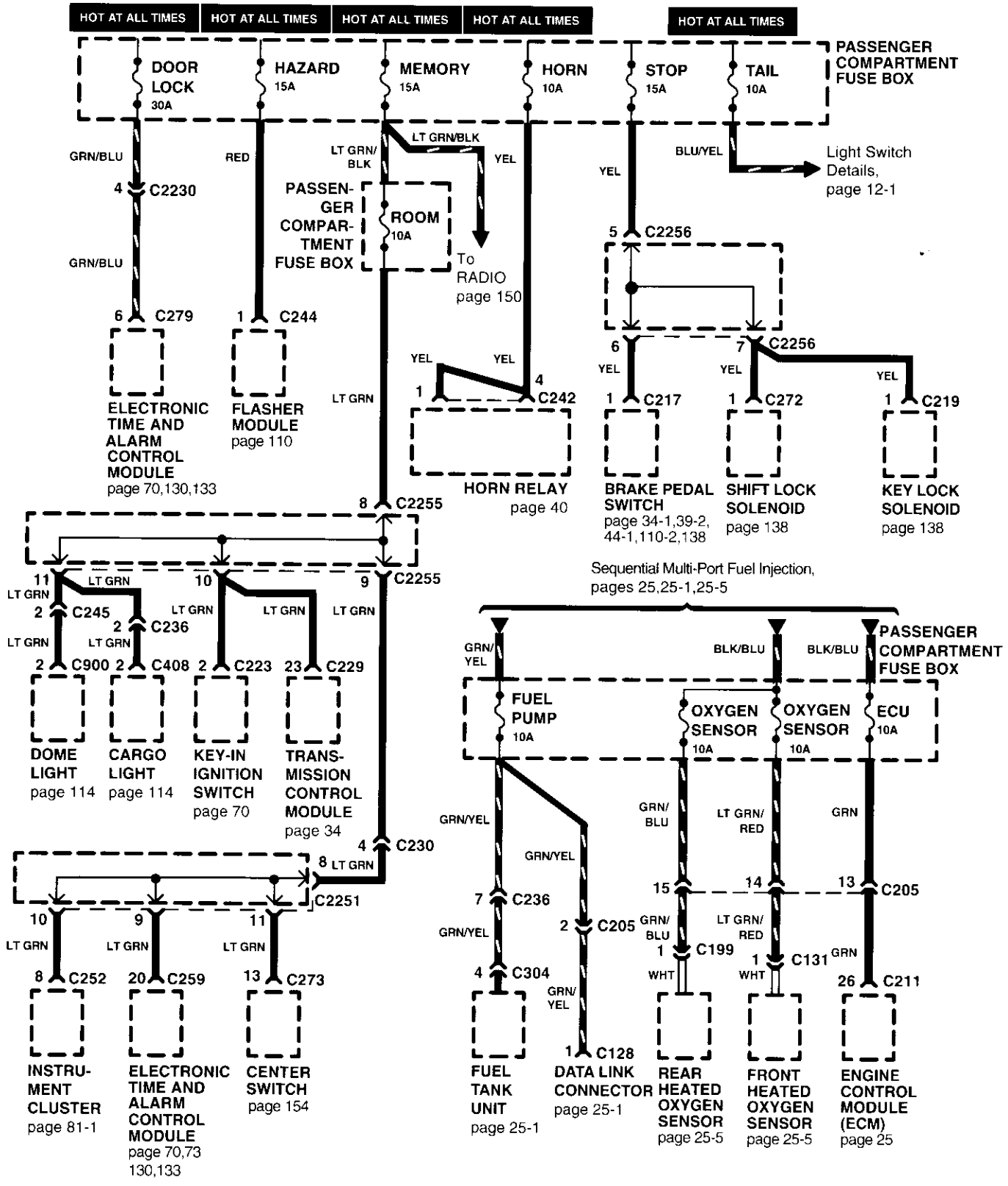
Insert a push-tool, or thin piece of metal such as a small screwdriver, from the terminal side of the connector, and then, with the locking tabs pressed down, pull the terminal out from the rear side of the connector.

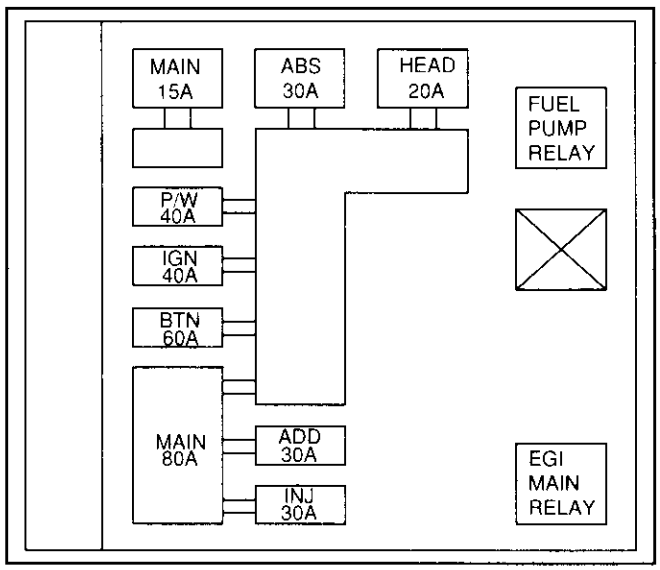


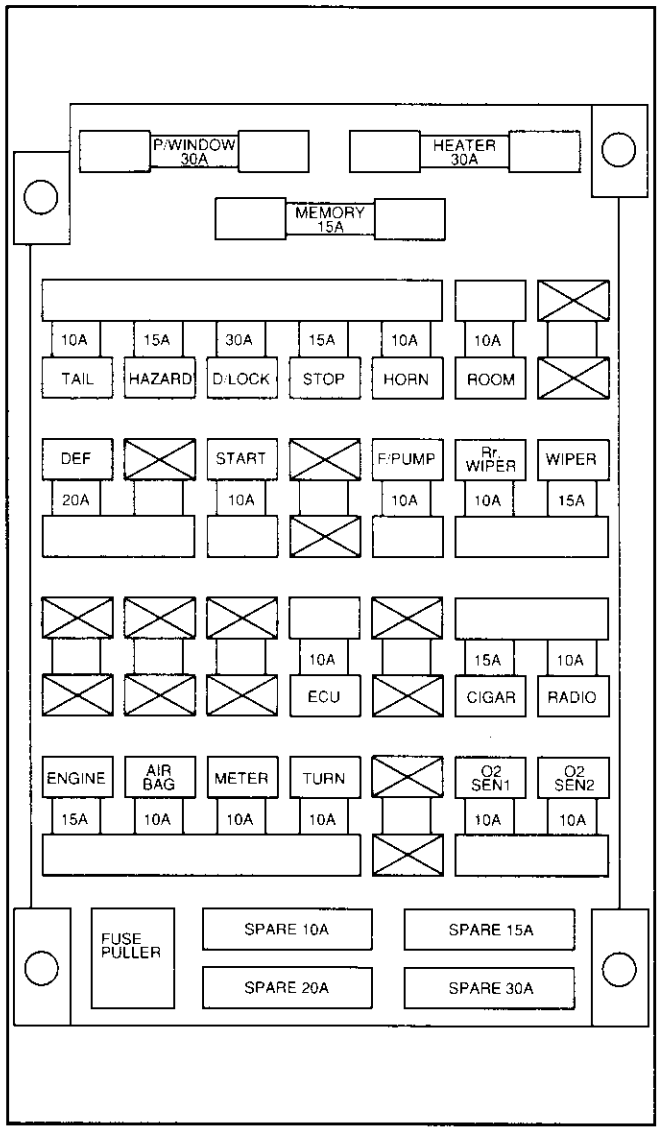
Male Type

Refer to female type procedure.




HOT AT ALL TIMES
HOT AT ALL TIMES
HOT AT ALL TIMES
HOT AT ALL TIMES
HOT AT ALL TIMES
PASSENGER COMPARTMENT FUSE BOX
DOOR LOCK 30A
HAZARD 15A
MEMORY 15A
HORN 10A
STOP 15A
TAIL 10A
GRN/BLU
RED
LT GRN/BLK
LT GRN/BLK
YEL
BLU/YEL
Light Switch Details, page 12-1
PASSENGER COMPARTMENT FUSE BOX
ROOM 10A
To RADIO page 150
4 C2230
GRN/BLU
6 C279
1 C244
ELECTRONIC TIME AND ALARM CONTROL MODULE page 70,130,133
FLASHER MODULE page 110
LT GRN
YEL
YEL
1
4 C242
HORN RELAY page 40
5 C2256
6 C2256
7 C2256
YEL
YEL
YEL
1 C217
1 C272
1 C219
BRAKE PEDAL SWITCH page 34-1,39-2, 44-1,110-2,138
SHIFT LOCK SOLENOID page 138
KEY LOCK SOLENOID page 138
8 C2255
9 C2255
11
10
LT GRN
LT GRN
LT GRN
LT GRN
LT GRN
LT GRN
LT GRN
2 C245
2 C236
2 C900
2 C408
2 C223
23 C229
DOME LIGHT page 114
CARGO LIGHT page 114
KEY-IN IGNITION SWITCH page 70
TRANS-MISSION CONTROL MODULE page 34
Sequential Multi-Port Fuel Injection, pages 25,25-1,25-5
4 C230
8 LT GRN
C2251
10
9
11
LT GRN
LT GRN
LT GRN
8 C252
20 C259
13 C273
INSTRU-MENT CLUSTER page 81-1
ELECTRONIC TIME AND ALARM CONTROL MODULE page 70,73 130,133
CENTER SWITCH page 154
PASSENGER COMPARTMENT FUSE BOX
GRN/YEL
BLK/BLU
BLK/BLU
FUEL PUMP 10A
OXYGEN SENSOR 10A
OXYGEN SENSOR 10A
ECU 10A
GRN/YEL
GRN/YEL
7 C236
GRN/YEL
4 C304
2 C205
GRN/YEL
1 C128
FUEL TANK UNIT page 25-1
DATA LINK CONNECTOR page 25-1
GRN/BLU
LT GRN/RED
GRN
15
14
13 C205
GRN/BLU
LT GRN/RED
1 C199
1 C131
GRN
WHT
WHT
26 C211
REAR HEATED OXYGEN SENSOR page 25-5
FRONT HEATED OXYGEN SENSOR page 25-5
ENGINE CONTROL MODULE (ECM) page 25





Engine Compartment Fuse/Relay Box

Fuse	Color	Protected Circuit
FUEL INJ (30A)	BLK/RED	Fuel injection system
BTN (60A)	BLK/YEL	Power distribution
MAIN (80A)	BLK	For protection of all circuits
P/WIN (40A)	BLK/BLU	Power windows
IGN (40A)	BLK	Ignition
HEAD (20A)	GRN	Headlights
MAIN (15A)	RED	Fuel pump, EGI relays
ABS (30A)	PNK	ABS power
ADD (30A)	BLU	A/C relay

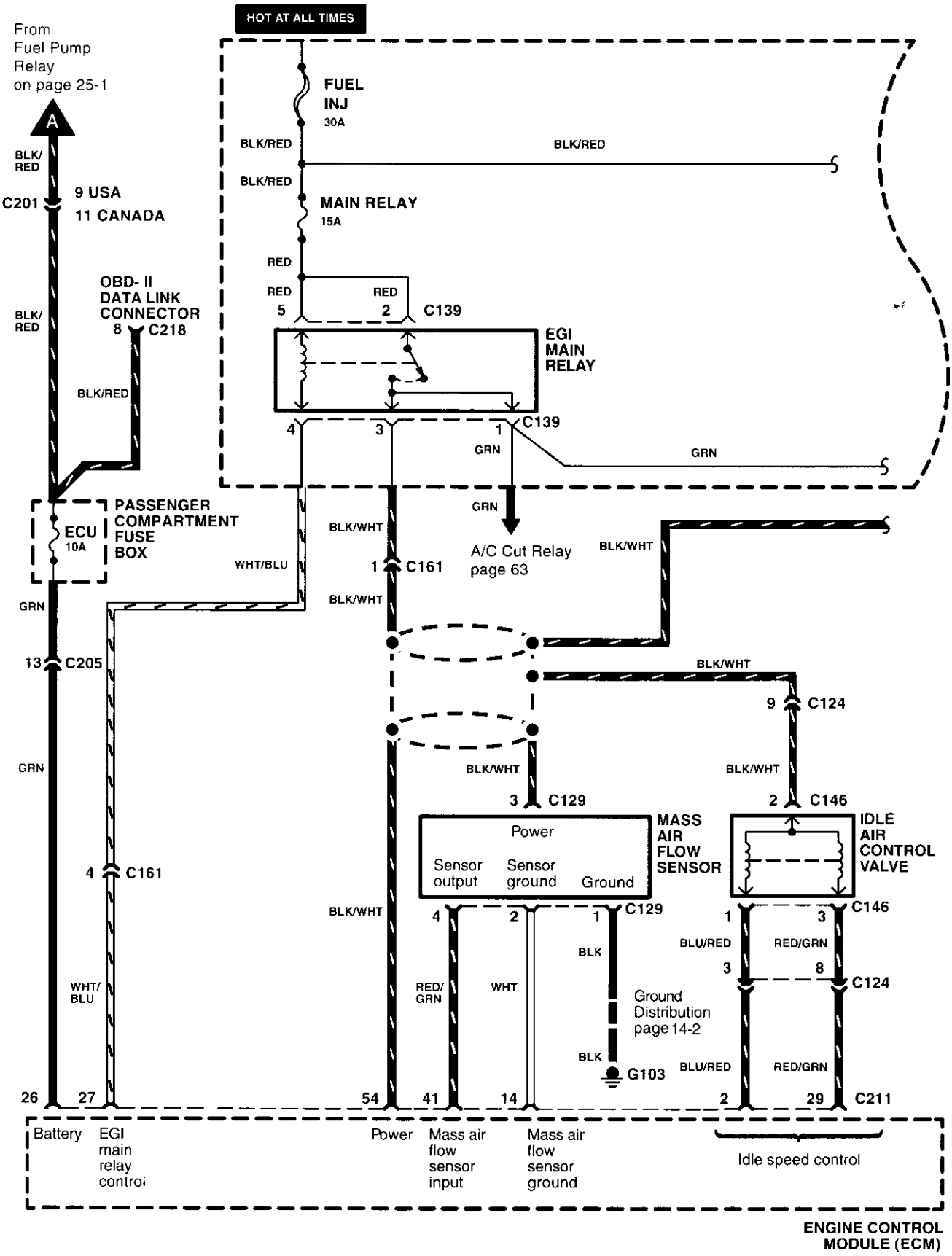
Passenger Compartment Fuse Box

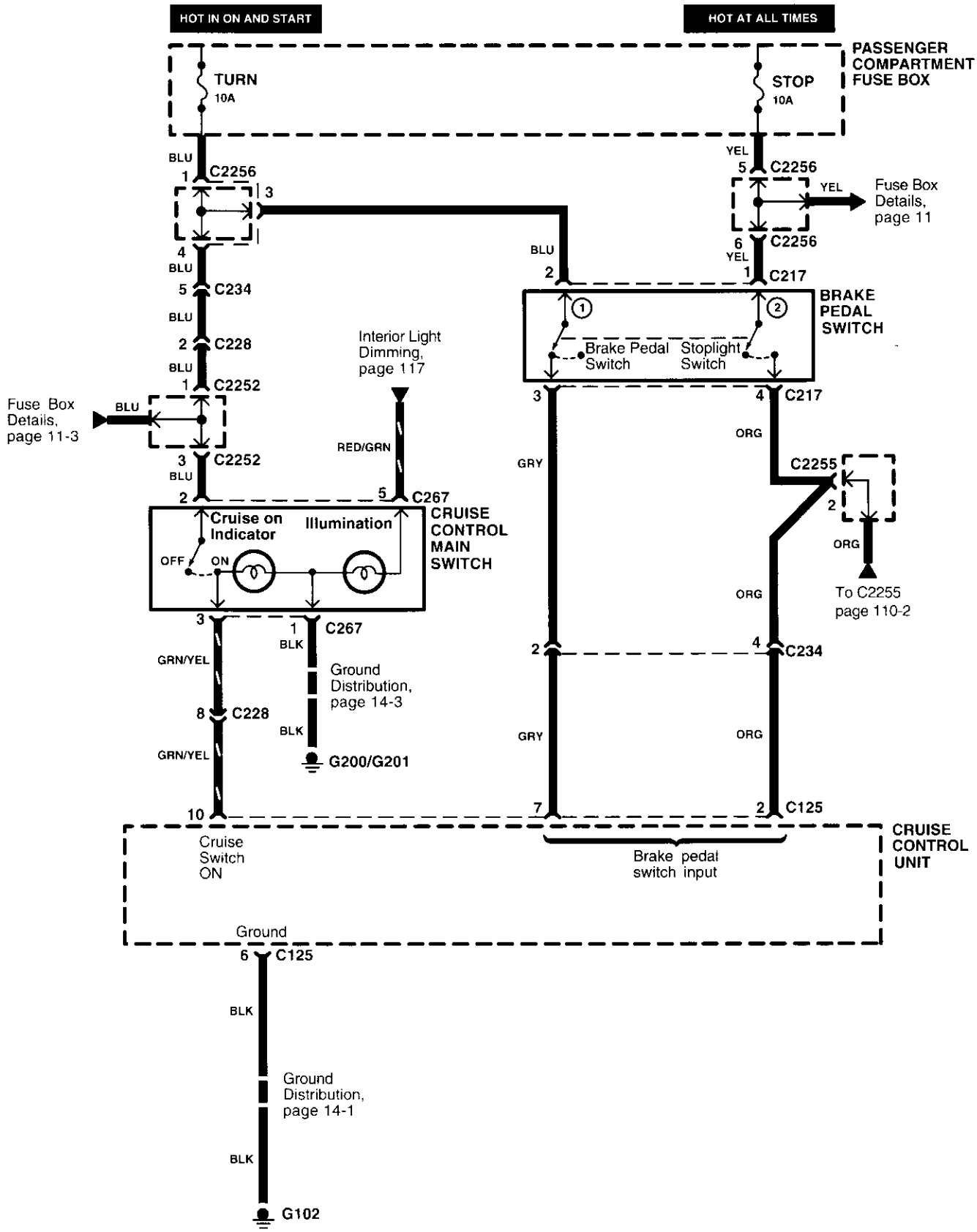
Fuse	Color	Protected Circuit
SRARTER (10A)	WHT	Starter
ROOM (10A)	LT GRN	Interior lights
HAZARD (15A)	RED	Hazard lights
HEATER (30A)	BLU	Blower
WIPER (15A)	RED/BLK	Wiper
REAR WIPER (10A)	YEL	Air Conditioner, rear wiper
METER (10A)	GRN/ RED	Instrument panel, automatic transmission
ENG (15A)	BLK/WHT	Data link connector
TAIL (10A)	BLK/BLU	Tail light, parking light
D/LOCK(30A)	GRN/BLU	Door locks
STOP (15A)	YEL	Brake switch, horn relay
P/W (30A)	WHT/GRN	Power window relay
DEF (20A)	LT GRN	Rear defroster
TURN (10A)	BLU	Light assembly, cruise control switch
RADIO (10A)	BLK/YEL	Radio, clock
ECU (10A)	GRN	Engine control module
FRONT O_2 SENSOR (10A)	GRN/ BLU	Oxygen sensor
CIGAR (15A)	WHT/RED	Cigarette lighter, power mirror
FUEL PUMP (10A)	GRN/ YEL	Fuel pump, data link connector
REAR O_2 SENSOR (10A)	LT GRN/ RED	Oxygen sensor
AIR BAG (10A)	WHT/GRN	Air bag
MEMORY (15A)	LT GRN/BLK	Interior lights
HORN (10A)	YEL/RED	

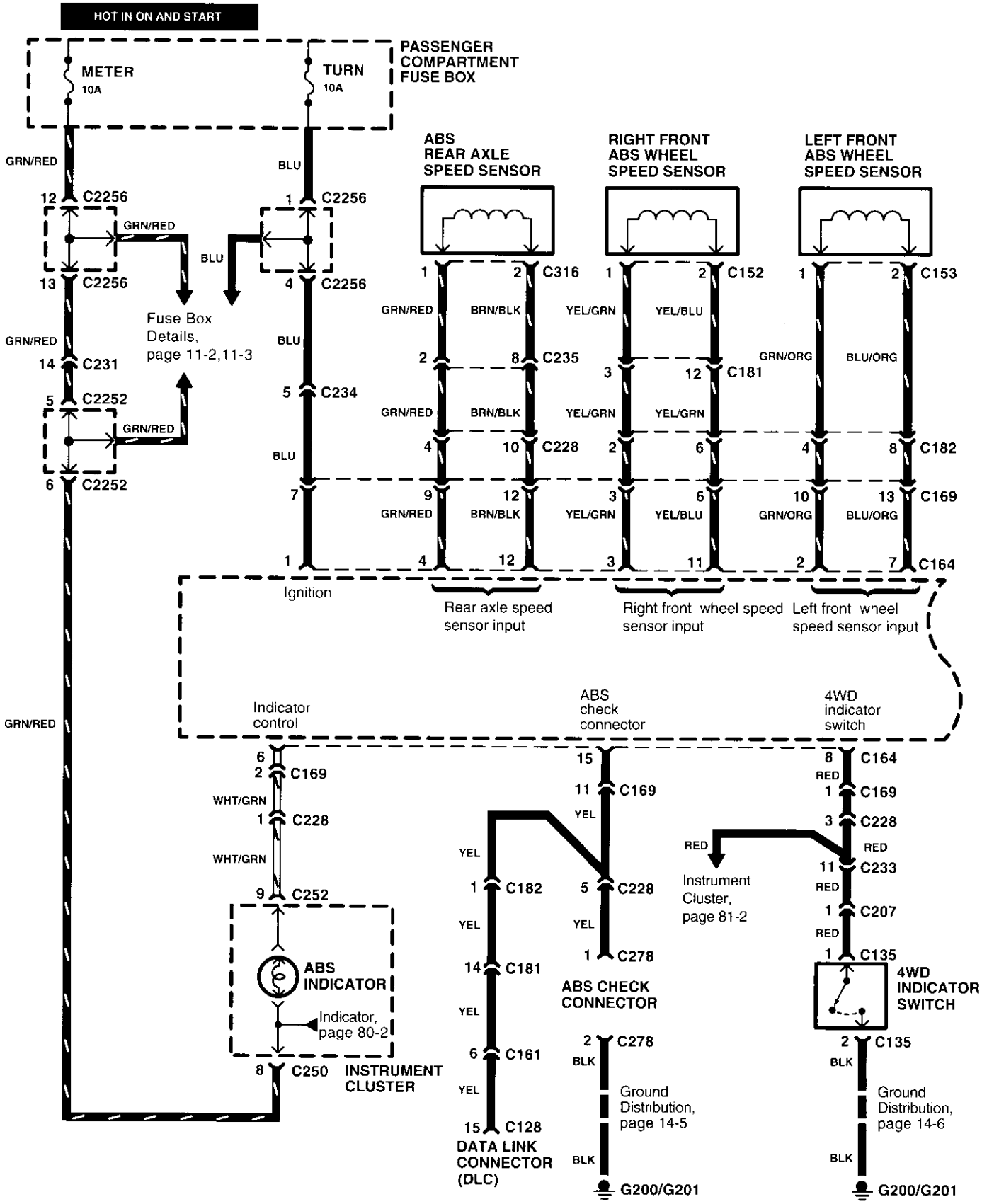
COMPONENT LOCATION INDEX

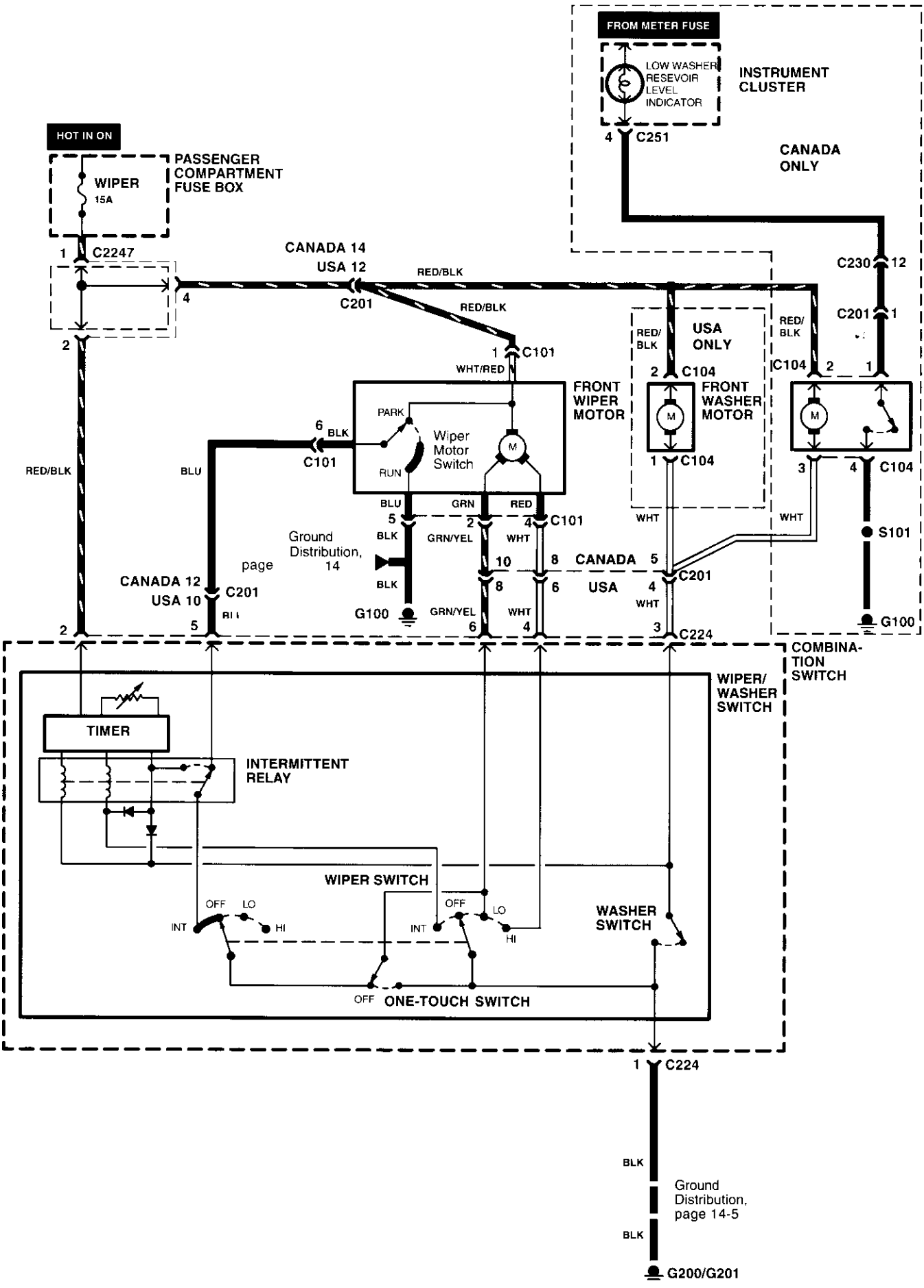
(Refer to Section 201 for photographs.)

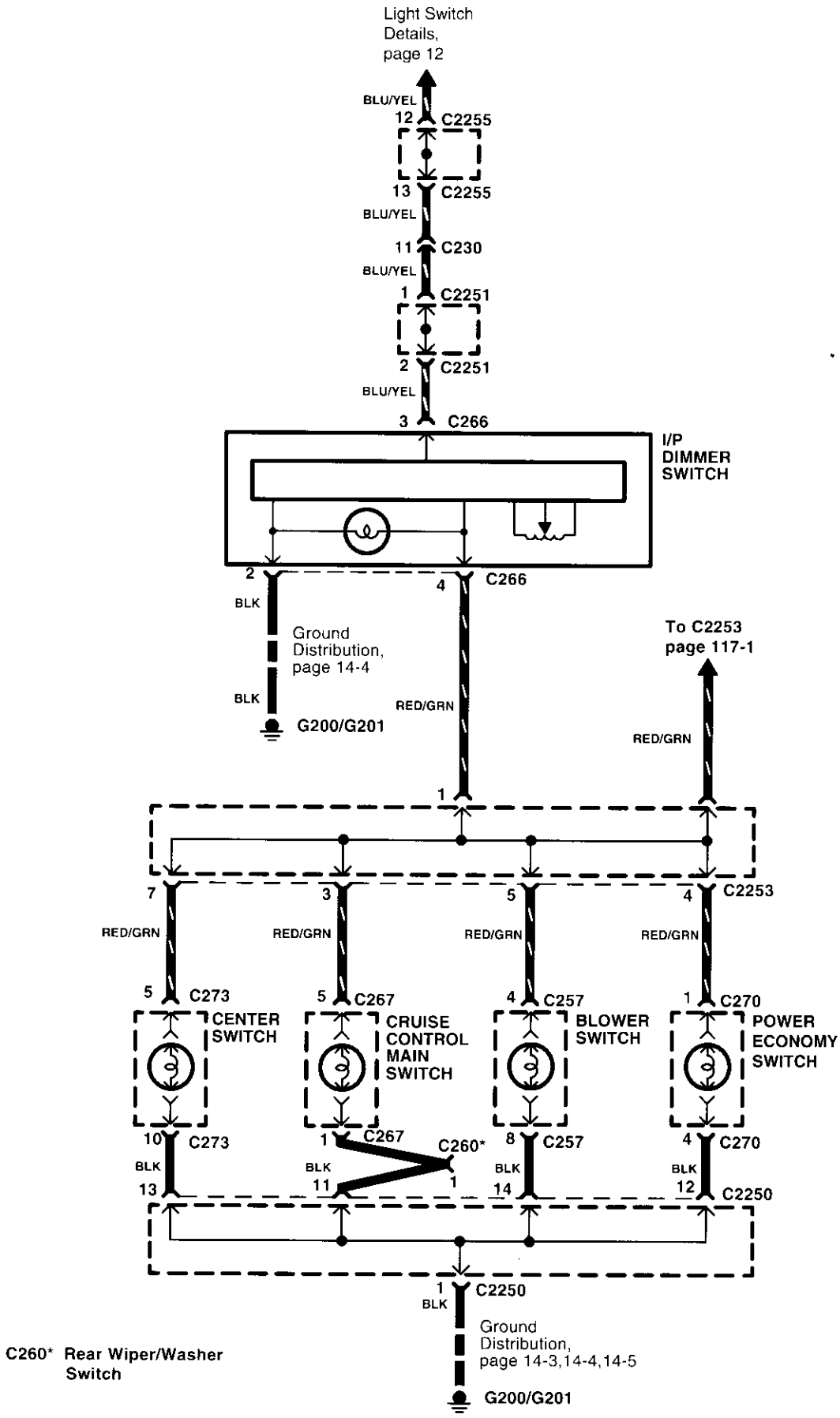
Component	Location	Photo No.
ABS Control Unit	Left side of I/P	26
A/C Cut Relay	Behind right side of I/P, near audio system	60
Air Bag Diagnostic Unit	Inside front of center console	92
A/T Shift Interlock Control Unit	Below right side of I/P	63
Back-Up Light Switch	Right side of transmission	36
Blower Motor	Behind right side of I/P	60
Brake Pedal Switch	Under I/P, below steering column	49
Cargo Light	Right side panel, rear of cargo area	111
Center Switch	Behind center of I/P	114
Cigarette Lighter	Lower left side of center console	117
Cruise Control Unit	At right kick panel	65
Cruise Control Main Switch	Lower far left side of I/P	96
Data Link Connector (DLC)	Left rear of engine compartment	27
Dome Light	Center of headliner	112
Electronic Time and Alarm Control Module	Right side of I/P, above globe box	67
Engine Control Module	Behind lower right side of I/P, under floor carpet	62
Flasher Module	In relay box, behind left side of I/P	50
Front Heated Oxygen Sensor	Left rear of engine compartment	24
Front washer Motor	Right side of engine compartment	5
Front Wiper Motor	Right rear side of engine compartment	18
Fuel Tank Unit	Underneath of rear seat, top of fuel tank	83
Horn Relay	In relay box, behind left side of I/P	50
Key-In Ignition Switch	Behind left side of I/P, below steering column	51
Key Lock Solenoid	Top of steering column	53
Power Window Relay	In relay box, behind left side of I/P	50
Power Mirror Switch	Left side of steering column, below I/P	116
Radio/Cassette Player	Center of console, below I/P	113
Rear Heated Oxygen Sensor	Under side of vehicle, behind three-way catalytic converter	19
Rear washer Motor	Right rear of vehicle, behind combination light	86
Rear Window Defroster Relay	In relay box, behind left side of I/P	50
Rear Wiper Motor	Behind trim on tailgate	87
Tail Door Lock	Rear hatch (Inside)	125
Transmission Control Module	Below left side of I/P	50
Transmission Range Switch	Right side of transmission	35
Vehicle Speed Sensor	Left rear side of engine compartment	38
C159	Left rear of engine compartment	26
C201	Right side of fender	110
C205	Behind right center of I/P	57
C209	Behind right center of I/P	58
C213	Behind right side of I/P	59
C219	In steering column, internal to ignition switch	53
C224	Top of steering column	58
C225	Top of steering column	53
C227	Top of steering column	53
C230	Above left kick panel	43
C231	Above left kick panel	43
C234	Left kick panel	44


From Fuel Pump Relay on page 25-1
A
HOT AT ALL TIMES
FUEL INJ 30A
BLK/RED
BLK/RED
BLK/RED
MAIN RELAY 15A
RED
RED
RED
5
2
C139
EGI MAIN RELAY
4
3
1
C139
GRN
GRN
BLK/RED
C201
9 USA
11 CANADA
OBD- II DATA LINK CONNECTOR
8
C218
BLK/RED
BLK/RED
ECU 10A
PASSENGER COMPARTMENT FUSE BOX
WHT/BLU
GRN
BLK/WHT
1
C161
BLK/WHT
A/C Cut Relay page 63
BLK/WHT
GRN
13
C205
BLK/WHT
9
C124
BLK/WHT
BLK/WHT
3
C129
2
C146
GRN
Power
Sensor output
Sensor ground
Ground
MASS AIR FLOW SENSOR
IDLE AIR CONTROL VALVE
4
C161
BLK/WHT
4
2
1
C129
1
3
C146
BLU/RED
RED/GRN
BLK
3
8
C124
WHT/BLU
RED/GRN
WHT
Ground Distribution page 14-2
BLK
G103
BLU/RED
RED/GRN
26
27
54
41
14
2
29
C211
Battery
EGI main relay control
Power
Mass air flow sensor input
Mass air flow sensor ground
Idle speed control
ENGINE CONTROL MODULE (ECM)


HOT IN ON AND START
HOT AT ALL TIMES
PASSENGER COMPARTMENT FUSE BOX
TURN 10A
STOP 10A
BLU 1 C2256
3
4 BLU 5 C234
BLU 2 C228
BLU 1 C2252
3 C2252 BLU 2
YEL 5 C2256
YEL
Fuse Box Details, page 11
6 YEL C2256
BLU 2
1 C217
BRAKE PEDAL SWITCH
Brake Pedal Switch
Stoplight Switch
Interior Light Dimming, page 117
Fuse Box Details, page 11-3
BLU
RED/GRN
5 C267
CRUISE CONTROL MAIN SWITCH
Cruise on Indicator
Illumination
OFF
ON
3 C217 4
ORG
GRY
C2255
2
ORG
To C2255 page 110-2
ORG
3 1 C267
BLK
GRN/YEL
Ground Distribution, page 14-3
8 C228
BLK
GRN/YEL
G200/G201
2 4 C234
GRY
ORG
10 7 2 C125
Cruise Switch ON
Brake pedal switch input
CRUISE CONTROL UNIT
Ground
6 C125
BLK
Ground Distribution, page 14-1
BLK
G102


HOT IN ON AND START
PASSENGER COMPARTMENT FUSE BOX
METER 10A
TURN 10A
ABS REAR AXLE SPEED SENSOR
RIGHT FRONT ABS WHEEL SPEED SENSOR
LEFT FRONT ABS WHEEL SPEED SENSOR
GRN/RED
BLU
12 C2256
1 C2256
13 C2256
4 C2256
14 C231
5 C2252
6 C2252
5 C234
7
1
Fuse Box Details, page 11-2,11-3
1 2 C316
2 8 C235
4 10 C228
9 12
4 12
GRN/RED
BRN/BLK
1 2 C152
3 12 C181
2 6
3 6
3 11
YEL/GRN
YEL/BLU
1 2 C153
4 8 C182
10 13 C169
2 7 C164
GRN/ORG
BLU/ORG
Ignition
Rear axle speed sensor input
Right front wheel speed sensor input
Left front wheel speed sensor input
Indicator control
ABS check connector
4WD indicator switch
6 C169
2 C169
WHT/GRN
1 C228
9 C252
ABS INDICATOR
Indicator, page 80-2
8 C250
INSTRUMENT CLUSTER
15 C169
11 C169
YEL
1 C182
5 C228
14 C181
1 C278
6 C161
15 C128
DATA LINK CONNECTOR (DLC)
ABS CHECK CONNECTOR
2 C278
BLK
Ground Distribution, page 14-5
G200/G201
8 C164
RED
1 C169
3 C228
11 C233
1 C207
1 C135
Instrument Cluster, page 81-2
4WD INDICATOR SWITCH
2 C135
Ground Distribution, page 14-6


FROM METER FUSE
LOW WASHER RESEVOIR LEVEL INDICATOR
INSTRUMENT CLUSTER
4 C251
CANADA ONLY
HOT IN ON
WIPER 15A
PASSENGER COMPARTMENT FUSE BOX
1 C2247
2
CANADA 14
USA 12
4
C201
RED/BLK
RED/BLK
1 C101
WHT/RED
C230 12
C201 1
RED/BLK
USA ONLY
2 C104
1 C104
FRONT WIPER MOTOR
FRONT WASHER MOTOR
PARK
RUN
Wiper Motor Switch
6 BLK
C101
RED/BLK
BLU
BLU
GRN
RED
5
2
4 C101
BLK
GRN/YEL
WHT
Ground Distribution, page 14
10
8 CANADA 5
C201
CANADA 12
USA 10 C201
BLK
8
6 USA 4
WHT
G100
GRN/YEL
WHT
6
4
3 C224
2
5
C104 2 1
3
4 C104
WHT
WHT
S101
G100
COMBINATION SWITCH
WIPER/WASHER SWITCH
TIMER
INTERMITTENT RELAY
WIPER SWITCH
OFF LO
INT
HI
OFF LO
INT
HI
WASHER SWITCH
OFF ONE-TOUCH SWITCH
1 C224
BLK
Ground Distribution, page 14-5
BLK
G200/G201


Light Switch Details, page 12
BLU/YEL
12 C2255
13 C2255
BLU/YEL
11 C230
BLU/YEL
1 C2251
2 C2251
BLU/YEL
3 C266
I/P DIMMER SWITCH
2
4 C266
BLK
Ground Distribution, page 14-4
BLK
G200/G201
RED/GRN
To C2253 page 117-1
RED/GRN
1
7
3
5
4 C2253
RED/GRN
RED/GRN
RED/GRN
RED/GRN
5 C273
5 C267
4 C257
1 C270
CENTER SWITCH
CRUISE CONTROL MAIN SWITCH
BLOWER SWITCH
POWER ECONOMY SWITCH
10 C273
1 C267
C260*
8 C257
4 C270
BLK
13
BLK
11
1
BLK
14
BLK
12 C2250
1 C2250
BLK
Ground Distribution, page 14-3,14-4,14-5
G200/G201
C260* Rear Wiper/Washer Switch

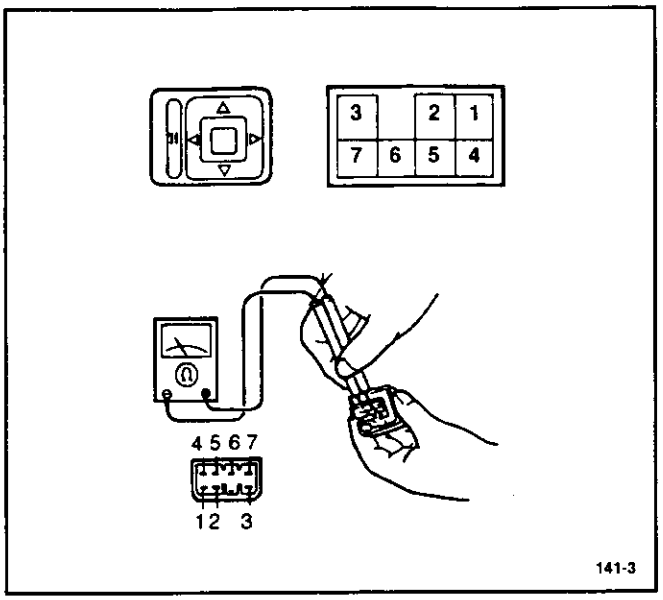
Power Mirror Switch

1. Remove the power mirror switch.
2. Check for continuity between the power mirror switch terminals using an ohmmeter.

Position	Operation	1	2	3	4	5	6	7
DRIVER	Up		○	○	○		○	
	Down		○		○		○	
	Left		○	○			○	○
	Right		○	○			○	○
PASS	Up		○	○			○	
	Down		○			○		
	Left	○		○			○	
	Right	○	○				○	

○——○ : Indicates continuity

3. If the continuity is not as specified, replace the power mirror switch.



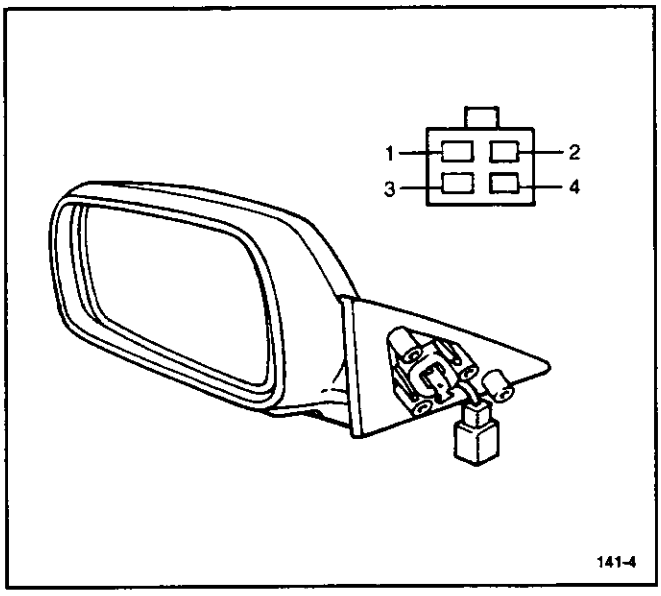
Power Mirror Motor

1. Disconnect the power mirror motor electrical connector.
2. Check for continuity between the power mirror motor terminals using an ohmmeter.

Power mirror motor terminal		
1	2	3
○	○	○

○——○ : Indicates continuity

3. If the continuity is not as specified, replace the power mirror motor.



CIRCUIT TESTING

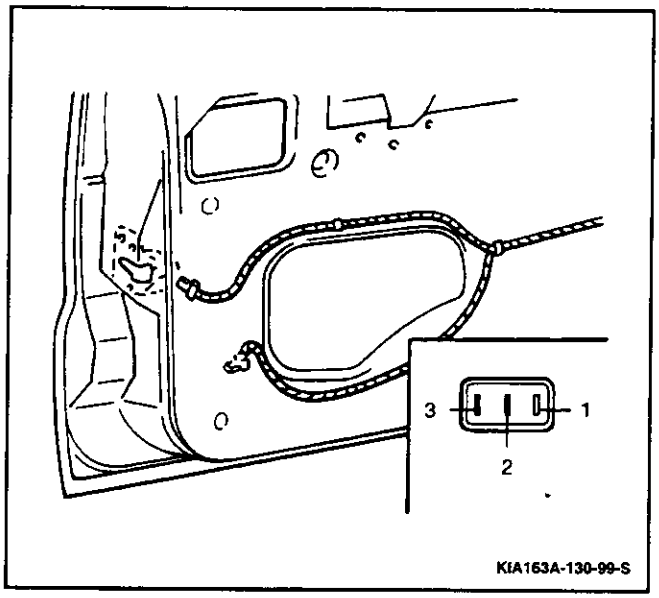
Driver's and passenger's door lock cylinder contact switch

1. Disconnect the door lock cylinder contact switch connector.
2. Check for continuity between the connector terminals using an ohmmeter.

Position of door lock switch \ Connector terminal	1	2	3
LOCKED	O——	——O	
UNLOCKED	O——		——O

O——O : Indicates continuity

3. If not as indicated, replace the door lock switch.



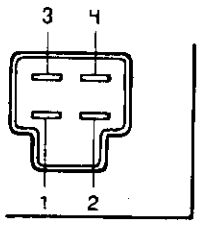
Door Lock Motor

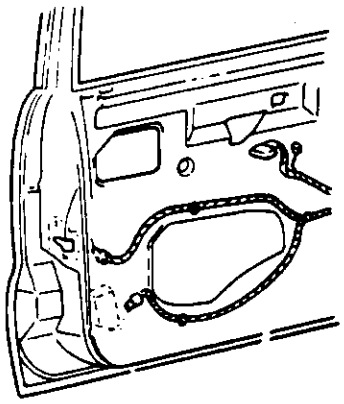
1. Disconnect the door lock motor connector (C503, C603, C701, C801).
2. Check the operation of the door lock motor by connecting 12V to connector terminals as indicated.

Polarity of connection		Position of door lock switch
12V	Ground	
2	4	LOCKED
4	2	UNLOCKED

3. If not as indicated, replace the door lock motor.

Front Door





Rear Door