HONDA

GoldWing™

1993
GL1500 A/ SE/I
ELECTRICAL
TROUBLESHOOTING MANUAL

Contents

Circuit Index

How To Use This Manual

Page Numbering System

This manual divides the electrical system into individual sections. For example, Section 5 includes all Chassis Accessories. Component Location photographs are at the back of the manual in Section 12.

Within a section, the pages are numbered using the section number, a dash, and then a consecutive number beginning with zero. So if there are three pages in Section 2, the pages will be numbered 2-0, 2-1 and 2-2.

Outline of Each Circuit Section

A **Circuit Schematic** (wiring diagram) starts off each section. Schematics show:

- how all the components within a circuit work together
- current flow from the power source (at top of page) to ground (at bottom of page)
- switch positions (shown "at rest" as if the ignition was off)
- special instructions ("Solid-state: Do not check resistance")
- those circuits sharing a common power source or ground

A **System Description** (How the Circuit Works) appears in the Reverse System section. It explains basic circuit operation.

A **Troubleshooting** section (step-by-step instructions) for diagnosis and repair appears in the Reverse System. It includes symptom and diagnosis charts and self-tests for all possible measurements in the system.

Model Abbreviations for 1993 used in this Section

Int – Interstate
Asp – Aspencade
SE – Special Edition

How To Use This Manual

Symbols

The abbreviations and symbols explained here are used throughout the manual; you'll need to know what they mean before you can use the schematics effectively.

Wire Color Abbreviations

The following abbreviations are used to identify wire colors in the circuit schematics:

BLK	black
BLU	blue
BRN	brown
GRN	green
GRY	gray
LT BLU	light blue
LT GRN	light green
ORN	orange
PNK	pink
RED	red
WHT	white
YEL	yellow

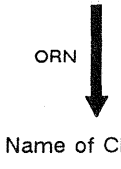
Wires

A wavy line means the wire is broken by the binding of the book but continues on the next page.

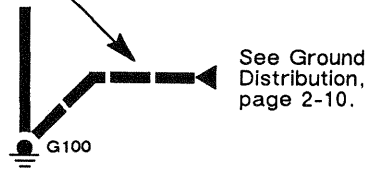
Wire insulation can be one color, or one color with another color stripe. (The second color is the stripe.)

This means the current path continues on another page. (The arrow shows direction of current flow.) To follow the white wire in this example, you would turn to the Power Distribution schematic and look for the "P" arrow.

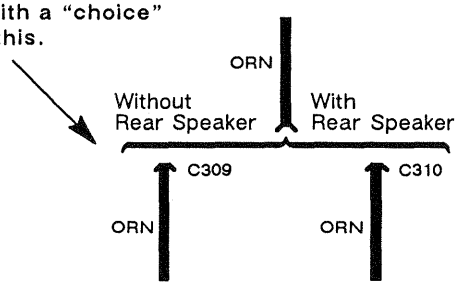
This means the wire connects to another circuit. The wire is shown again in the circuit to which the arrow is pointing.



A broken line means only some of the circuit is shown; refer to the circuit listed for the complete schematic.

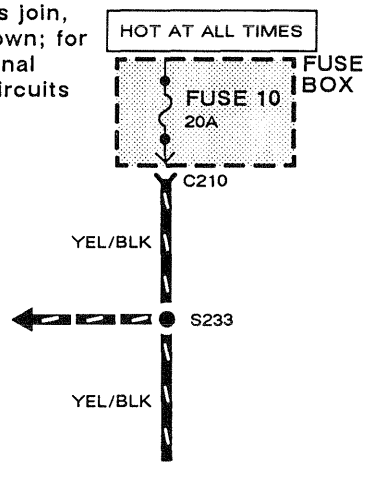


Wire choices for options or different models are labeled and shown with a "choice" bracket like this.

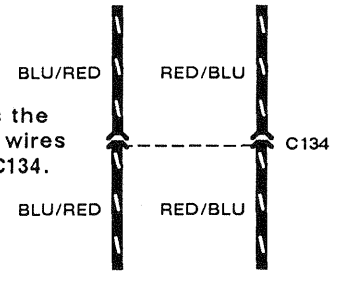


Where separate wires join, only the splice is shown; for details on the additional wiring, refer to the circuits listed.

OK here if Horn works; if not, see Power Distribution, page 2-10.

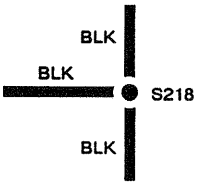


This dashed line means the BLU/RED and RED/BLU wires are both in connector C134.



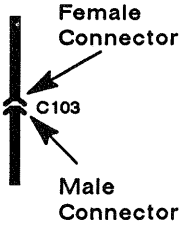
Splices — "S"

Splices (S) are numbered and shown as a dot. The location and connection of these splices may change depending on the manufacturer.

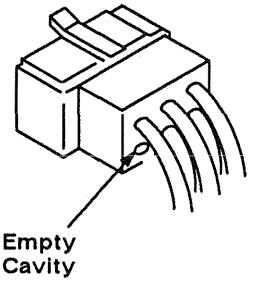


Connectors — "C"

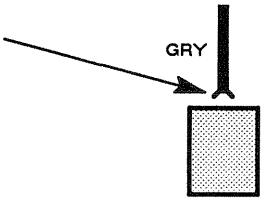
Each connector (C) is numbered for reference in the component location index.



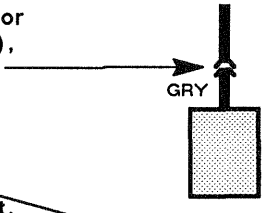
The index also lists the total number of cavities and the color of the connector. Wires may not be used in all cavities.



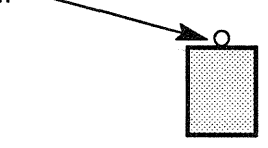
This means the connector connects directly to the component.



This indicates the connector connects to a lead (pigtail), wired directly to the component.

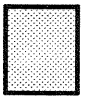


This indicates a screw terminal on the component.

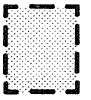


Components

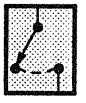
A solid line means the entire component is shown.



A broken line indicates only part of the component is shown.



The name of the component appears next to its upper right corner.

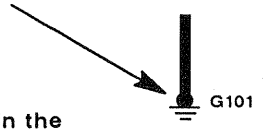


Notes about component function follow its name.

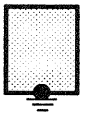
Ground — "G"

This symbol means the end of the wire is attached to a metal part of the car.

Each wire ground (G) is numbered for reference in the component location index.



This ground symbol (dot and 3 lines) overlapping the component means the housing of the component is attached directly to a metal part of the motorcycle.



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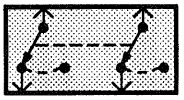
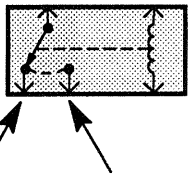
Symbols (cont'd)

Switches

These switches move together; a dashed line shows a mechanical connection between them.

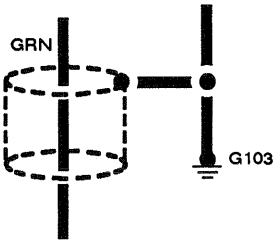


This is a relay shown with no current flowing through its coil.



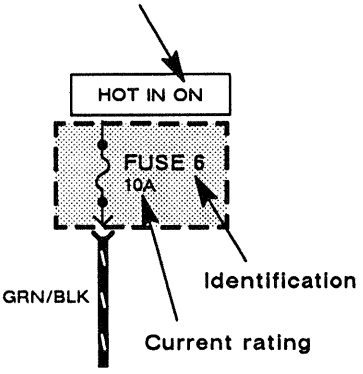
Shield

This represents RFI (Radio Frequency Interference) shielding around a wire. The shielding is always connected to ground.



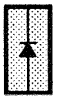
Fuses

This means power is supplied with the ignition in ON.



Diode

This diode allows current to flow only in the direction of the arrow.



Circuit Schematic (cont'd)

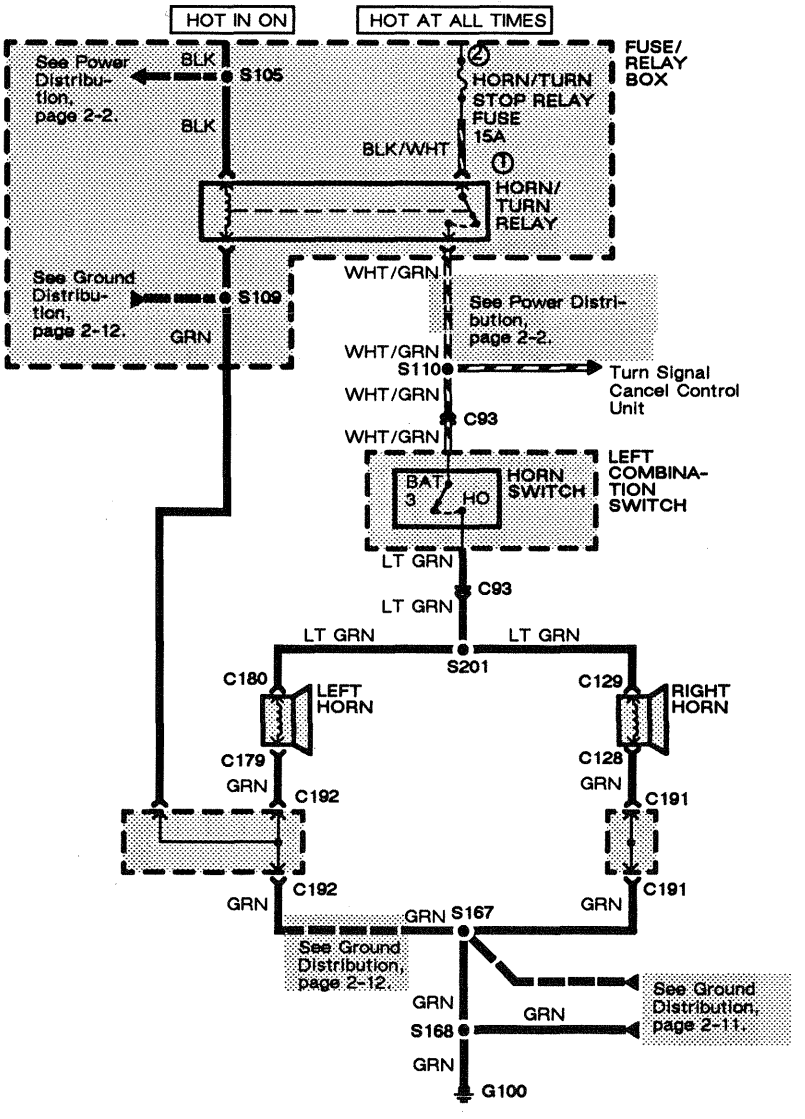
Circuit schematics break the entire electrical system into individual circuits. Electrical components that work together are shown together. You are not distracted by wiring that is not part of the circuit you are working on.

Each drawing is arranged so current flows from positive, at the top of the page, to ground, at the bottom of the page. The "hot" label at the top of a fuse shows when the ignition switch supplies power to that fuse.

Each circuit is shown completely and independently on one schematic. Other circuits getting their power from the same point, or grounding at the same point, are not shown. However, if other circuits actually share some wires with the circuit shown, the shared wires of the other circuits will also be shown.

Wires that connect to another circuit are shown with an arrowhead pointing in the direction of current flow. The name of the circuit or component that shares the wiring is provided for reference. You can check shared wiring by checking the operation of the other circuits.

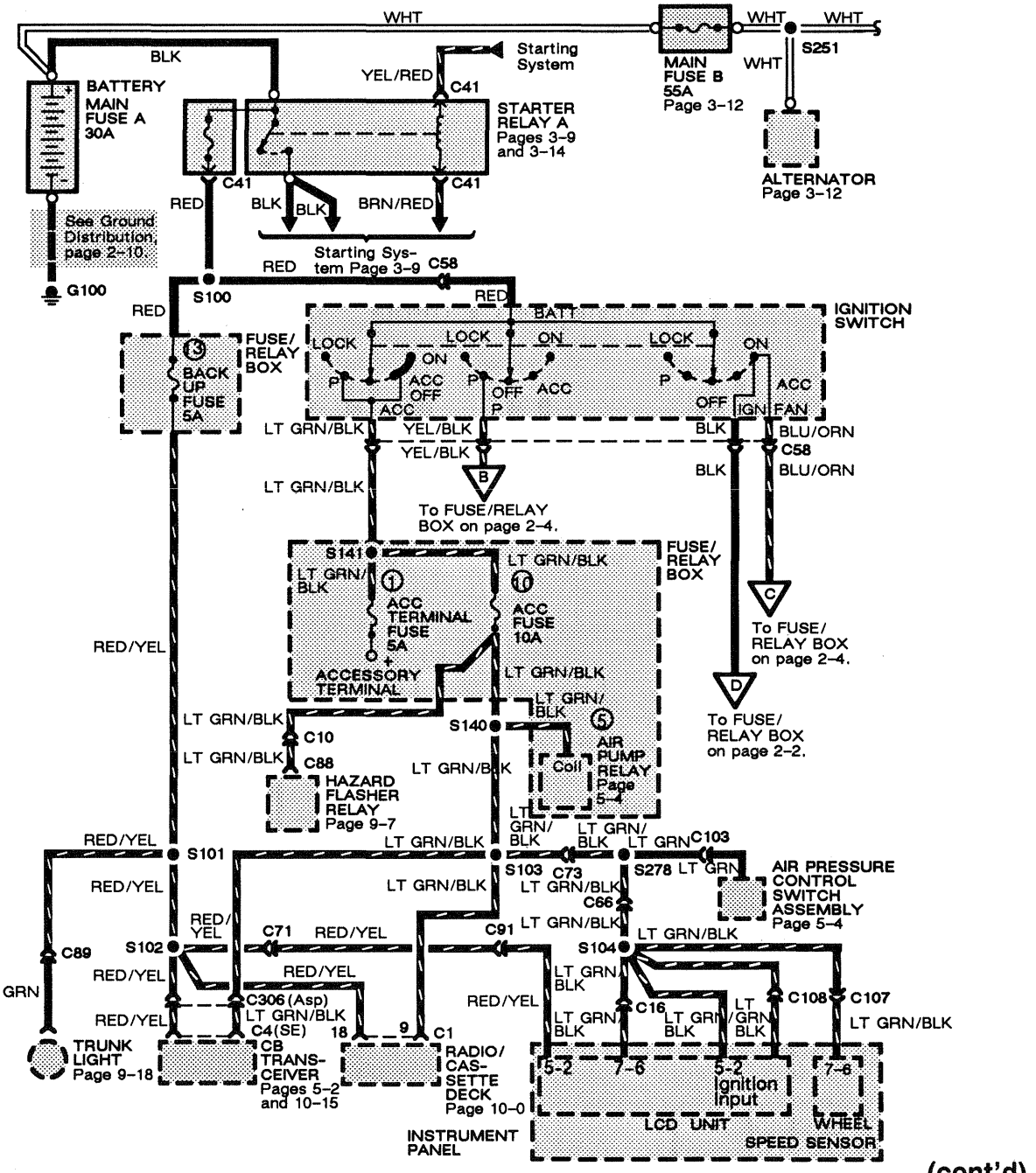
"See Power Distribution" means there are more connections to other circuits that are not shown. All such shared circuits are shown on the Power Distribution circuit schematic. "See Ground Distribution" means there are more shared ground circuits which are shown on the Ground Distribution schematic.



The sample Power Distribution schematic shows how voltage is supplied from the positive battery terminal to the various circuits in the motorcycle.

Individual circuit schematics begin with a fuse. Power Distribution shows the wiring between the battery and the fuses. By combining Power Distribution with any individual schematic, you get a complete picture of how voltage is applied to the circuit.

You can use Power Distribution to speed your troubleshooting. If Power Distribution shows that an inoperative circuit and a second circuit share a fuse, check the operation of the second circuit. If it works, you know the fuse is good and voltage is available to the inoperative circuit. You can then continue troubleshooting.



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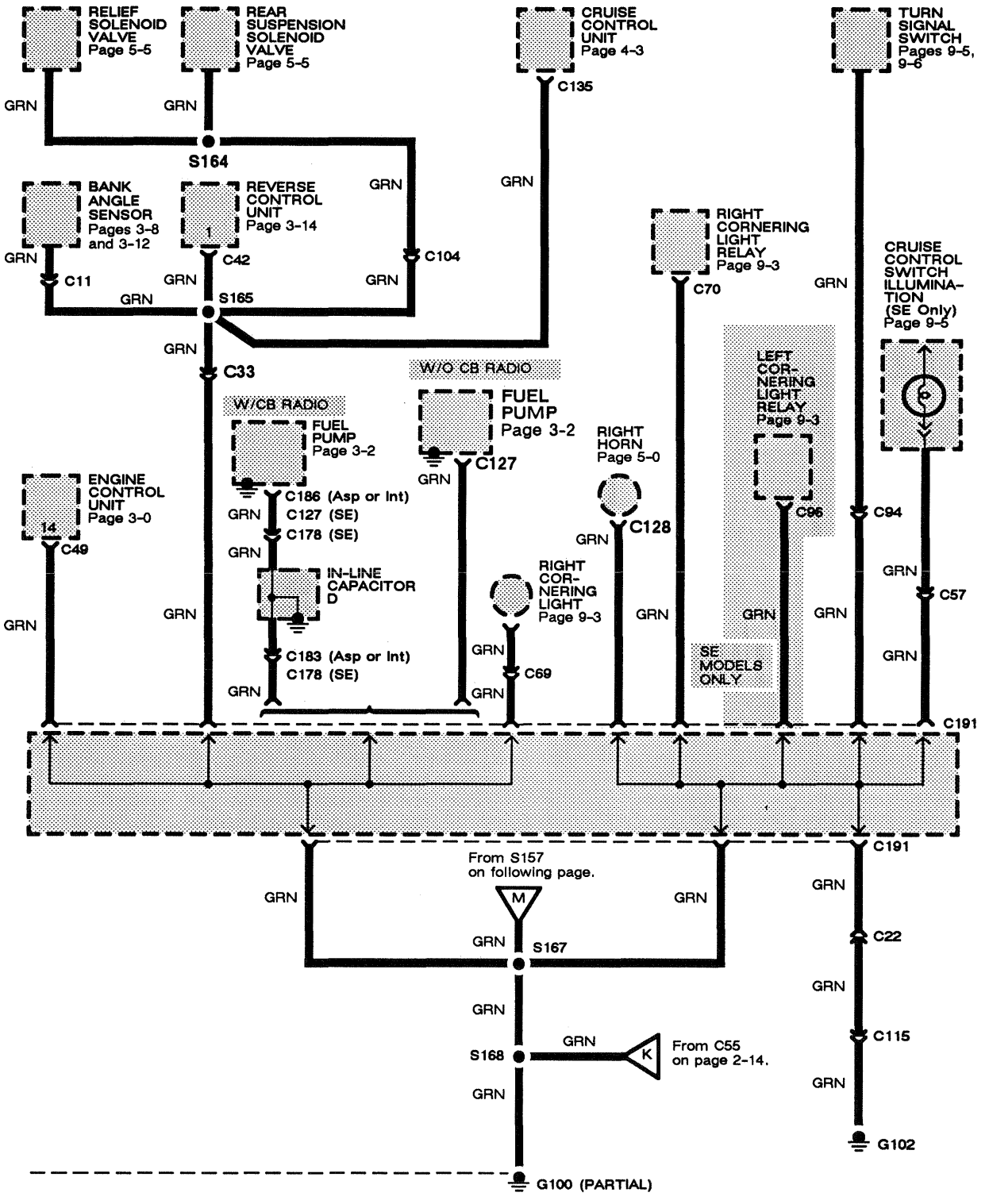
Circuit Schematic (cont'd)

The sample Ground Distribution schematic shows which components share the same ground point.



Component Location

The Component Location Index (Section 11) lists every component, connector, and ground and describes its location on the motorcycle. This index also gives references to component location photographs which are found in Section 12.

Component Location Photographs (Section 12) show the exact location and appearance of components, connectors, and grounds.

The Component Index (Section 13) lists all components and gives page references to all circuit schematics in which each component appears.

Component Location Index (Section 11)

(Refer to Section 12 for photographs.)

Component — **Photo No.**

AICV Solenoid Valve **8**
Behind left fairing inner cover, near front of fuel tank

Air Jet Solenoid #2 ..... **22**
Behind right fairing pocket, near ignition control unit

C6 (3-BLK) **45**
Behind instrument panel

C10 (22-BLU) (SE) **38**
Behind left rear of seat

C10 (22-WHT) (Asp) **38**
Below left rear of seat

Component or Connector Number

Number of Cavities In Connector

Connector Color

Photo Number in Section 11

Component Index (Section 13)

Five-Step Troubleshooting

1. **Verify The Complaint**

   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 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 that share the same fuse, ground, or switch, and so on, are referred to on 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 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 that fuse. Make sure no new problems turn up and the original problem does not recur.

Test Equipment

Voltmeter and Test Light

CAUTION: A number of circuits include solid-state devices. Voltages in these circuits should be tested only with a 10-megohm or higher impedance digital multimeter. Never use a test light on circuits that contain solid-state devices. Damage to the devices may result.

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.

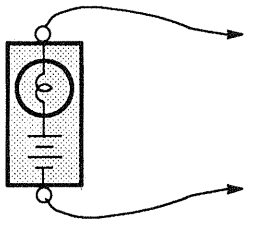
A voltmeter can be used in place of a test light. While a test light shows whether or not voltage is present, a voltmeter indicates how much voltage there is.

Self-Powered Test Light and Ohmmeter

CAUTION: Never use a self-powered test light on circuits that contain solid-state devices. Damage to these devices may result.

Diodes and solid-state devices in a circuit can make an ohmmeter give a false reading. To find out if a component is affecting a measurement, take one reading, reverse the leads, and take a second reading. If the readings differ, the component is affecting the measurement.

An ohmmeter can be used in place of a self-powered test light. The ohmmeter shows how much resistance there is between two points along a circuit. Low resistance means good continuity.



Self-Powered Test Light

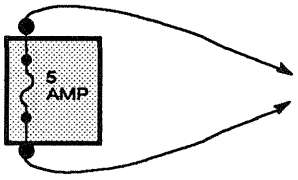
Circuits that contain solid-state devices should only be tested with a 10-megohm or higher impedance digital multimeter.

Use a self-powered test light to check for continuity. This tool is made up of a light bulb, battery and two leads. If the leads are touched together, the bulb will go on.

A self-powered test light is only used on an unpowered circuit. First disconnect the battery or remove the fuse that feeds the circuit you are working on. Select two points along the circuit through which there should be 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 bulb will go on.

Jumper Wire

Use a jumper wire to bypass an open circuit. A jumper wire is made up of an in-line fuse holder connected to a set of test leads. It should have a five ampere fuse. Never use a jumper wire across any load. This direct battery short will blow the fuse.



Short Finder

Short finders are available to locate shorts to ground. The short finder creates a pulsing magnetic field in the shorted circuit and shows you the location of the short through body trim or sheet metal. Its use is explained in the following troubleshooting tests.

Troubleshooting Tests

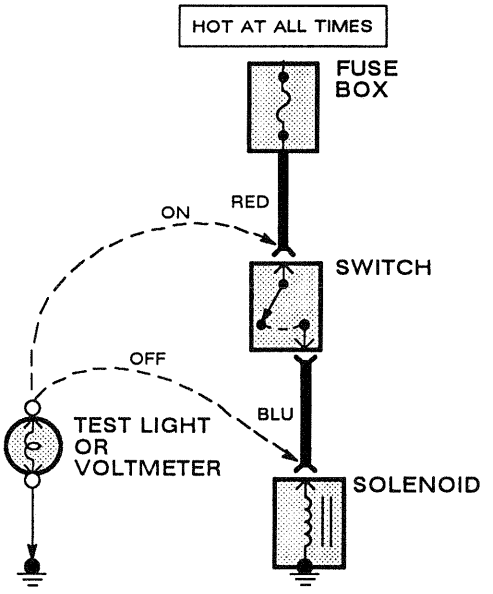
Testing For Voltage

This test measures voltage in a circuit. When testing for voltage at a connector, you do not have to separate the two halves of the connector. Instead, probe the connector from the back. Always check both sides of the connector because dirt and corrosion between its contact surfaces can cause electrical problems.

1. Connect one lead of test light to a known good ground, or if you are using a voltmeter, be sure you connect its negative lead to ground.

2. Connect the other lead of the test light or voltmeter to the point you want to check.

3. If the test light glows, there is voltage present. If you are using a voltmeter, note the voltage reading. It should be within one volt of measured battery voltage. A loss of more than one volt indicates a problem.



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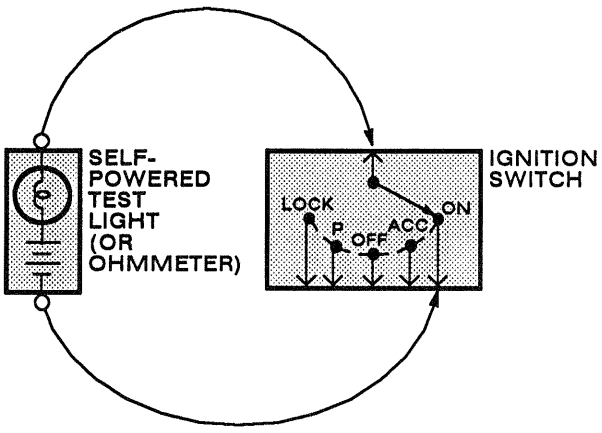
Troubleshooting Tests (cont'd)

Testing for Continuity

This test checks for continuity within a circuit. When testing for continuity at a connector, you do not have to separate the two halves of the connector. Instead, probe the connector from the back. Always check both sides of the connector because dirt and corrosion between contact surfaces can cause electrical problems.

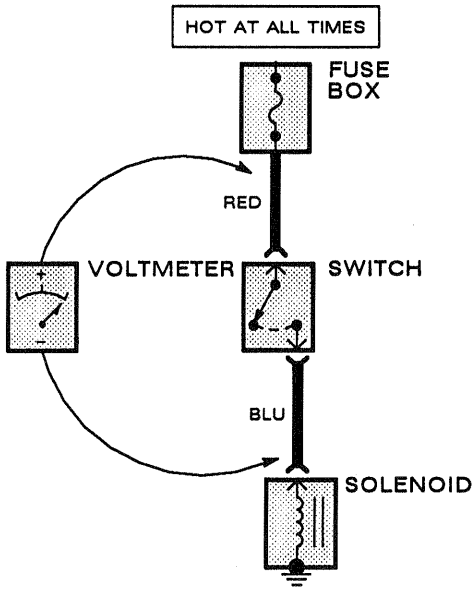
1. Disconnect the negative cable from the car battery. If you are using an ohmmeter, hold the leads together and adjust the ohmmeter to read zero ohms.
2. Connect one lead of self-powered test light or ohmmeter to one end of the part of the circuit you wish to test.
3. Connect the other lead to the other end.
4. If the self-powered test light glows, there is continuity. If you're using an ohmmeter, low or no resistance means good continuity.



Testing For Voltage Drop

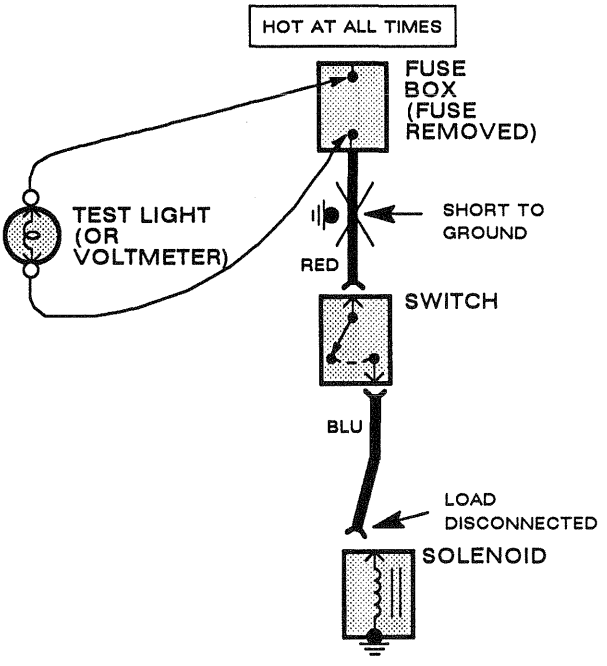
Wires, connectors and switches are designed to conduct current with a minimum loss of voltage. A voltage drop of more than one volt indicates a problem.

1. Connect the positive lead of a voltmeter to the end of the wire (or to the side of the connector or switch) closest to the battery.
2. Connect the negative lead to the other end of the wire (or the other side of the connector or switch).
3. Turn on the components in the circuit.
4. The voltmeter will show the difference in voltage between the two points. A difference, or drop, of more than one volt indicates a problem. Check the circuit for loose or dirty connections.



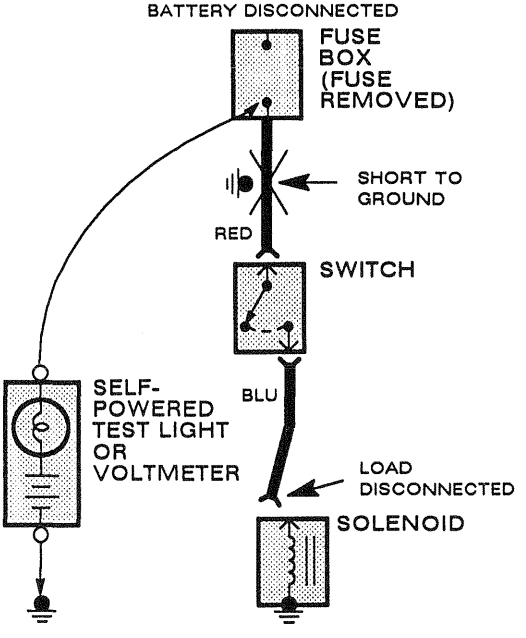
Testing For A Short With A Test Light Or Voltmeter

1. Remove the blown fuse and disconnect the load.
2. Connect a test light or voltmeter across the fuse terminals. Make sure that the voltage is being applied to the fuse terminals. You might have to put the ignition switch in RUN. Check the schematic to see.
3. Beginning near the fuse box, wiggle the harness. Continue this at convenient points about six inches apart while watching the test light or voltmeter.
4. When the test light blinks or the voltmeter needle moves, there is a short to ground in the wiring near that point.



Testing For A Short With A Self-Powered Test Light Or Ohmmeter

1. Remove the blown fuse and disconnect the battery and load.
2. Connect one lead of a self-powered test light or ohmmeter to the fuse terminal on the load side.
3. Connect the other lead to a known good ground.
4. Beginning near the fuse box, wiggle the harness. Continue this at convenient points about six inches apart while watching the test light or ohmmeter.
5. If the self-powered test light blinks or the ohmmeter needle moves, there is a short to ground in the wiring near that point.



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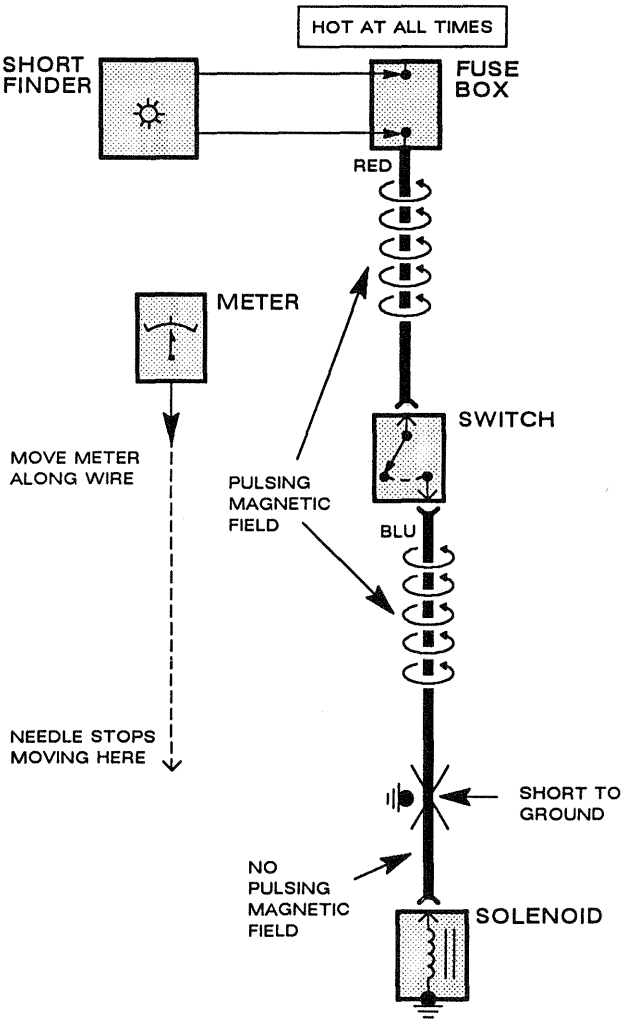
Troubleshooting Tests (cont'd)

Testing For A Short With A Short Circuit Locator

1. Remove the blown fuse. Leave the battery connected.
2. Connect the short finder across the fuse terminals.
3. Close all switches in series in the circuit you're testing.
4. Turn on the short circuit locator. It sends pulses of current to the short. This creates a pulsing magnetic field around the wiring between the fuse box and the short.
5. Beginning at the fuse box, slowly move the short finder along the circuit wiring. The meter will show current pulses through sheet metal and plastic. As long as the meter is between the fuse and the short, the needle will move with each current pulse. Once you move the meter past the point of the short, the needle will stop moving. Check around this area to locate the cause of the short circuit.



Troubleshooting Precautions

Before Troubleshooting

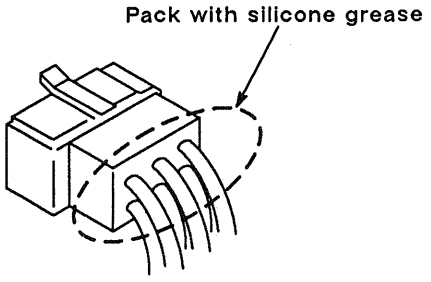
- Check the main fuse and the fuse box.
- Check the battery for damage, state of charge, and clean and tight connections.

CAUTION:

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

While You're Working

- Make sure connectors are clean and have no loose pins or receptacles.
- Make sure multiple pin connectors are packed with silicone grease.

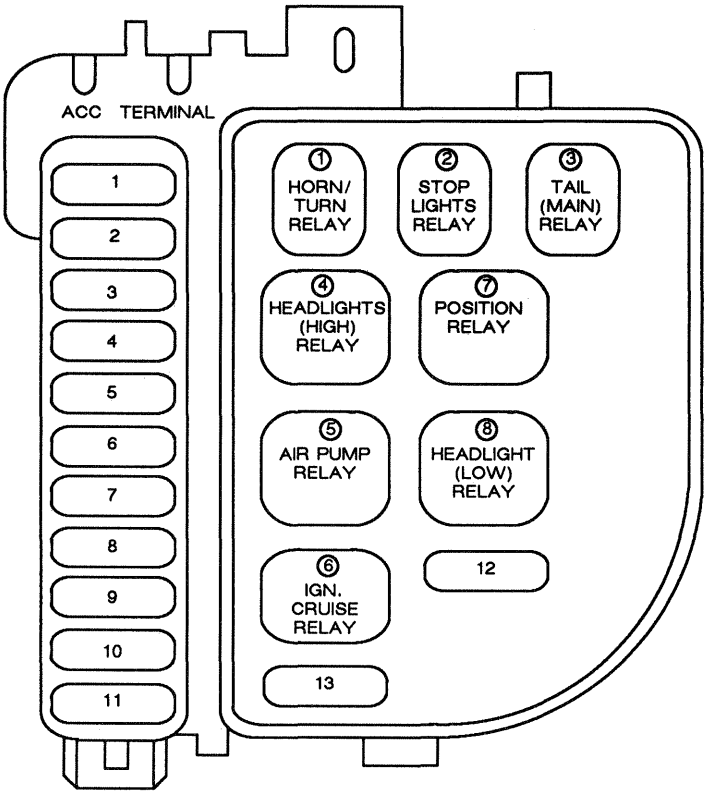


CAUTION:

- **Do not pull on the wires when disconnecting a connector. Pull only on the connector housings.**
- **When connecting a connector, push it until it clicks into place.**
- **Refer to page 1-10 for cautions about troubleshooting circuits that contain solid-state devices.**

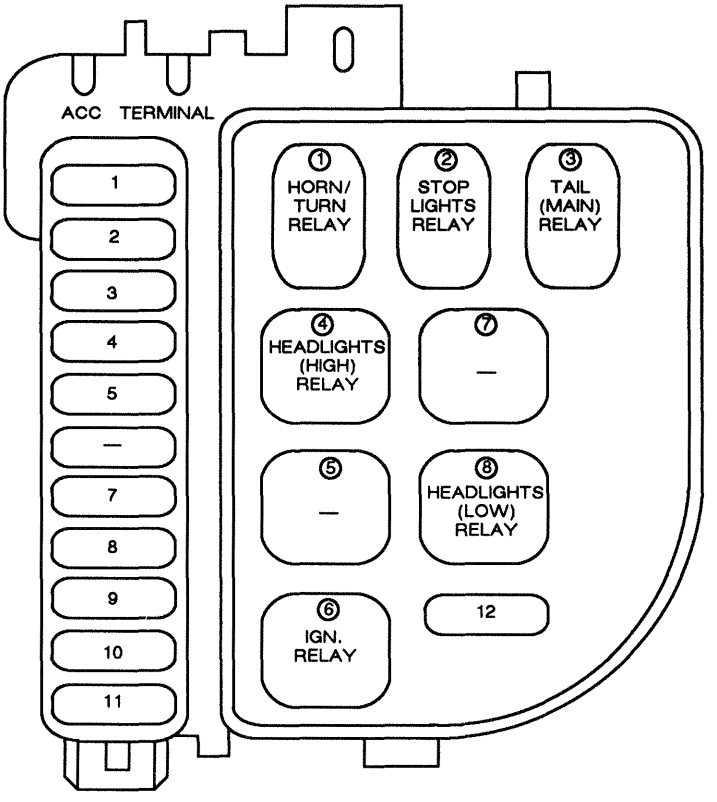
Fuse Information: Asp and SE

Fuse/Relay Box



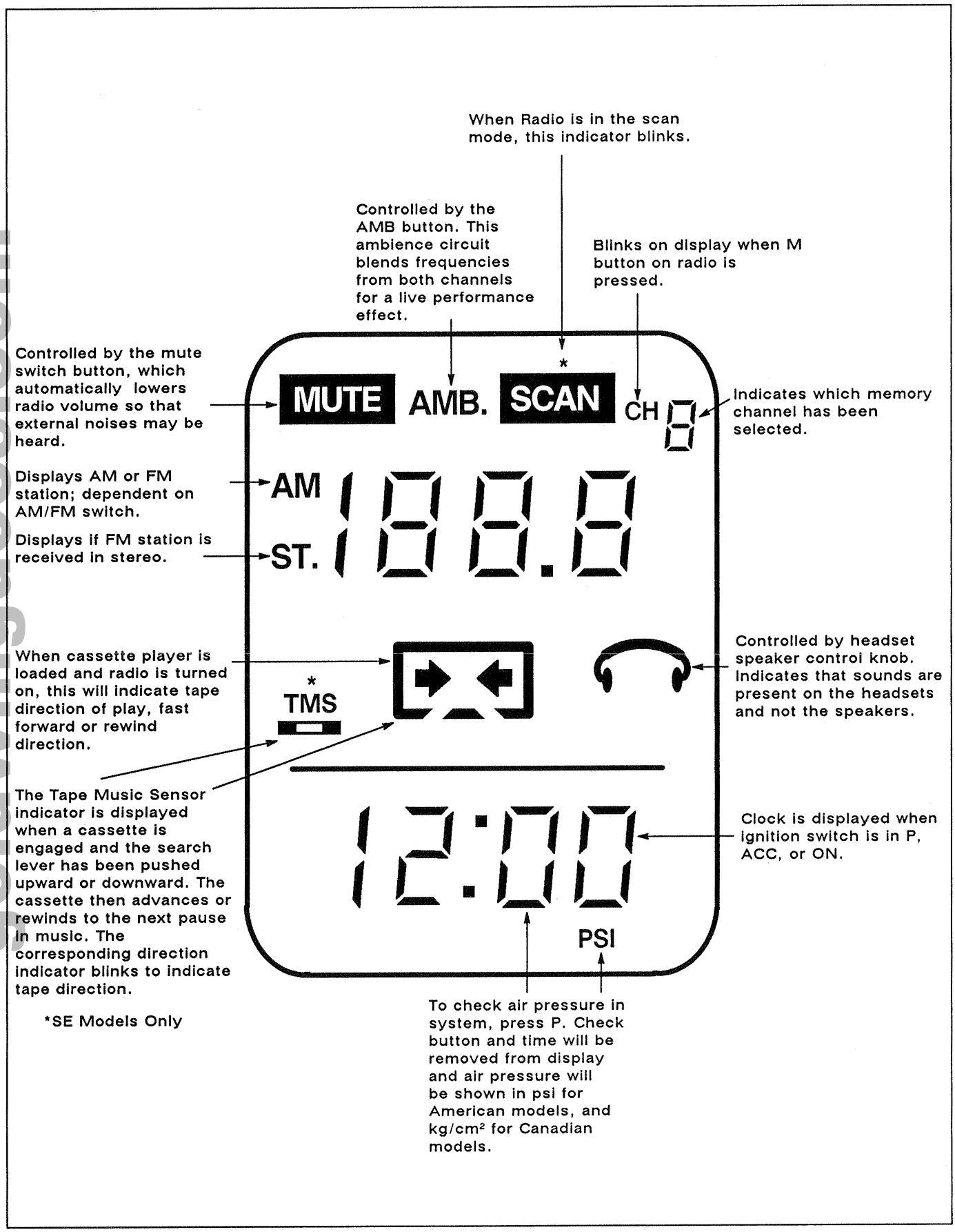
Fuse Number	Fuse identification	Amps	Circuit or Component Protected
1	Acc Terminal	5	Optional accessories
2	Horn/Turn/ Stop Relay	15	Horns; horn turn relay coil; position relay coil; stop light relay coil; turn signal cancel control unit; turn signal flasher relay coil
3	Stop	15	Brake lights
4	Fan	10	Cooling fans
5	Head	15	Headlights; instrument panel indicators
6	Air Pump	10	Auto level control system
7	Parking	10	Air pump (outlet); parking lights
8	Tail Meter Position	15	Accessory lights; instrument panel gauges; instrument panel indicators; cornering lights; headlight relays; license plate light; position lights; side marker lights; taillights reverse system control; handlebar illumination
9	RVS Start	5	Reverse System
10	Acc	10	Air pump relay; CB radio; stereo/cassette deck; hazard lights; instrument panel indicator illumination; wheel speed sensor
11	Ign. Start Cruise	15	Bank angle sensor; charging system; cruise control indicators; emission controls; engine control unit; ignition coils; ignition/cruise relay coil; starting system
12	Head Relay	5	Headlights (high & low relay coils)
13	Back Up	5	CB radio; stereo/cassette deck; instrument panel indicator illumination; trunk light

Fuse/Relay Box



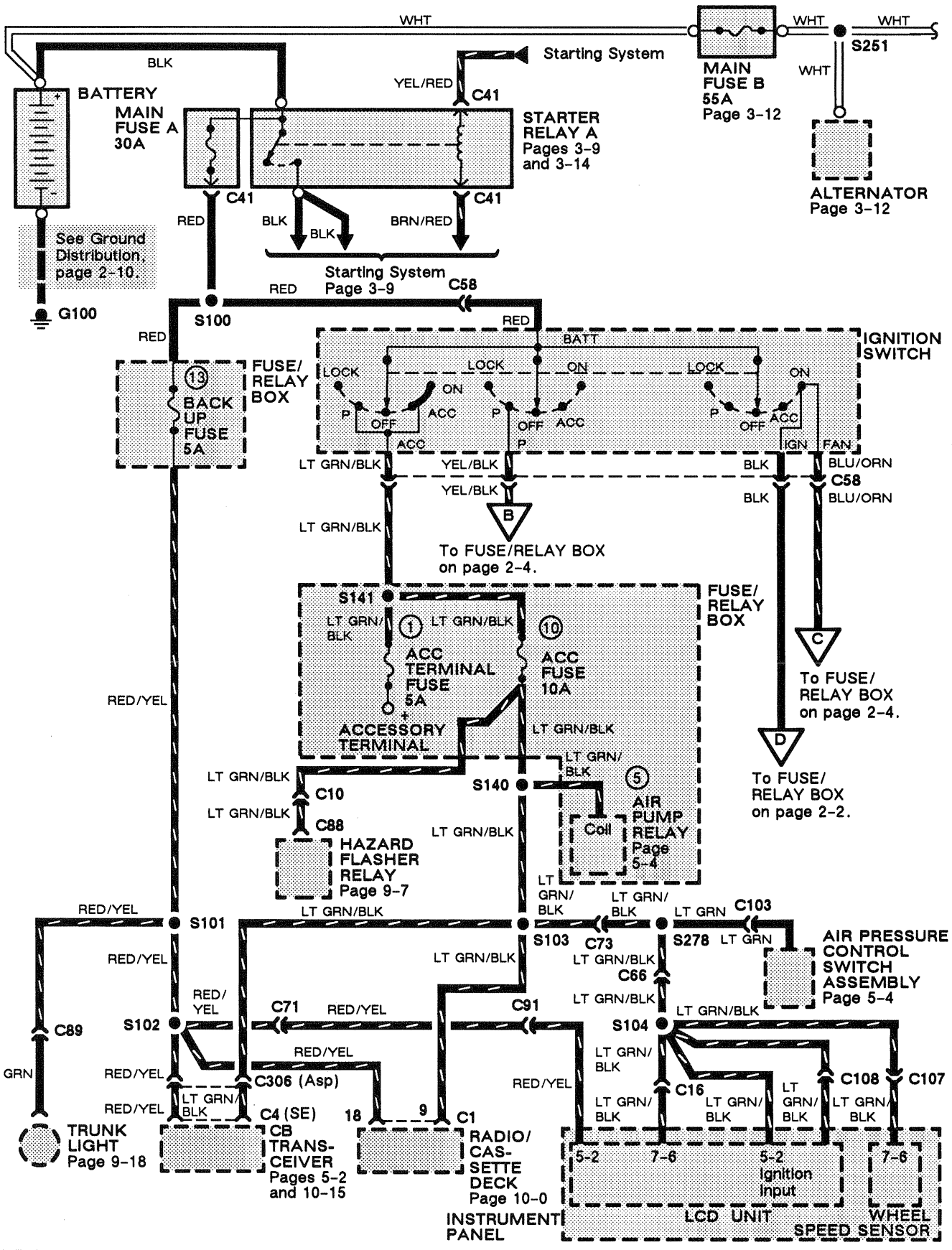
Fuse Number	Fuse Identification	Amps	Circuit or Component Protected
1	Acc Terminal	5	Optional accessories
2	Horn/Turn/ Stop Relay	15	Horns; stop relay coil; turn signal flasher relay
3	Stop	15	Brake lights
4	Fan	10	Cooling fans
5	Head	15	Headlights; instrument panel indicators
6	(Not Used)		
7	Parking	10	Parking lights
8	Tail Meter Position	15	Accessory lights; instrument panel gauges; instrument panel indicators; cornering lights; headlight relays; license plate light; position lights; side marker lights; taillights
9	Back Up	5	Stereo; trunk light; CB radio (optional); LCD unit
10	Acc	10	Stereo; hazard lights
11	Ign. Start	15	Bank angle sensor; Charging system; emission controls; engine control unit; ignition coils; ign-relay coil; starting system
12	Head Relay	5	Headlights (high & low relay coils)

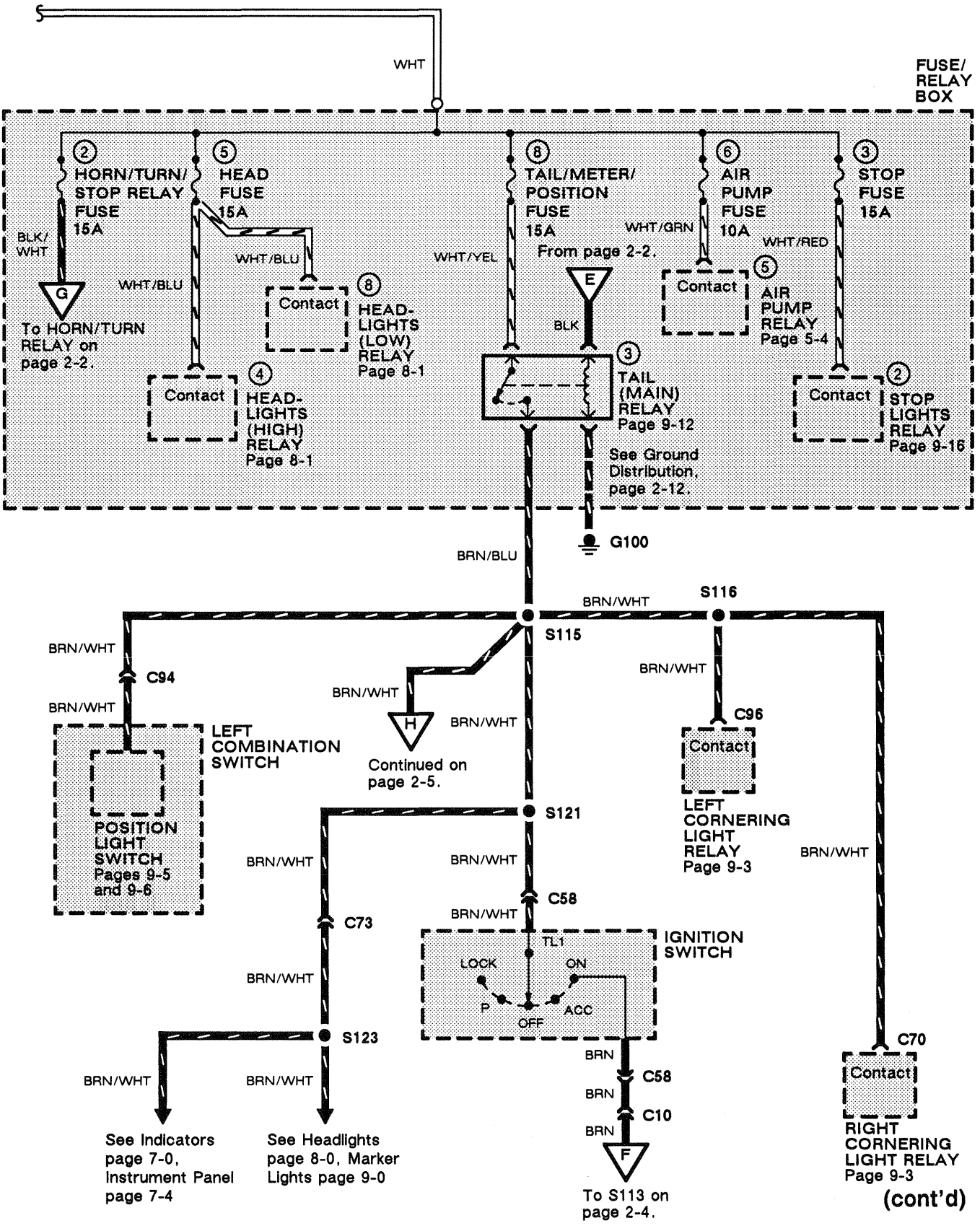
LCD Unit Display



Power Distribution: Asp and SE

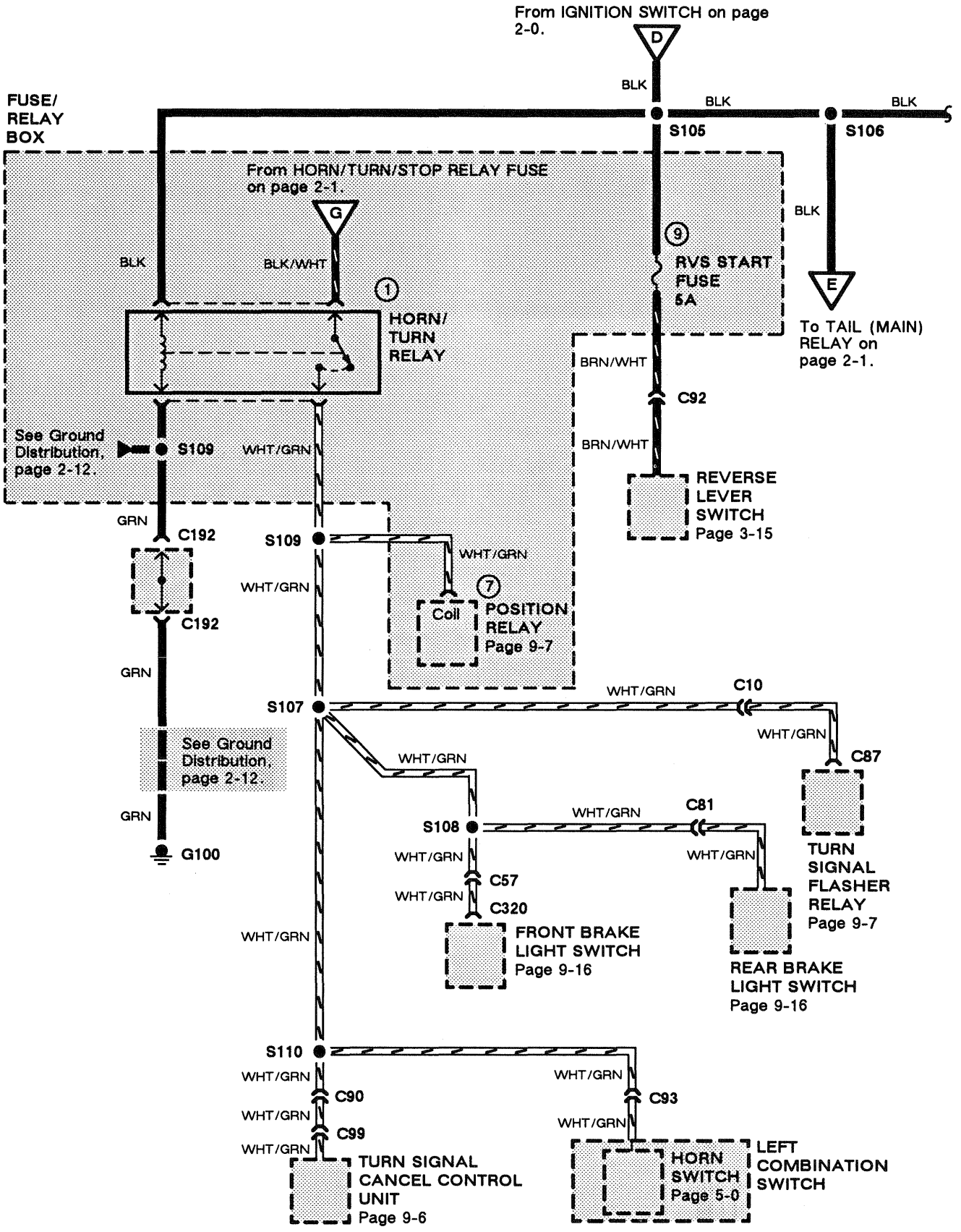
Circuit Schematic

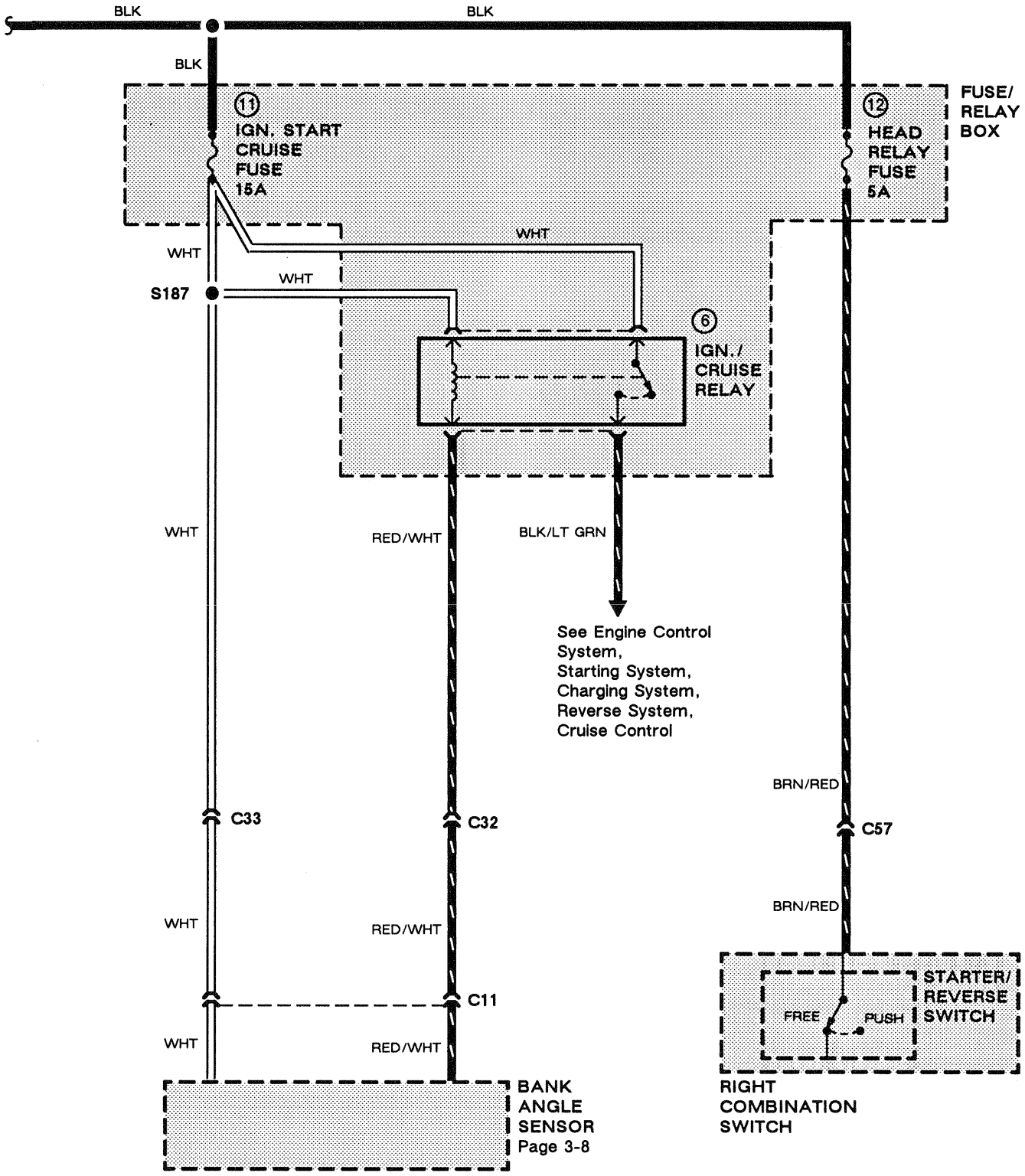




Power Distribution: Asp and SE

Circuit Schematic (cont'd)

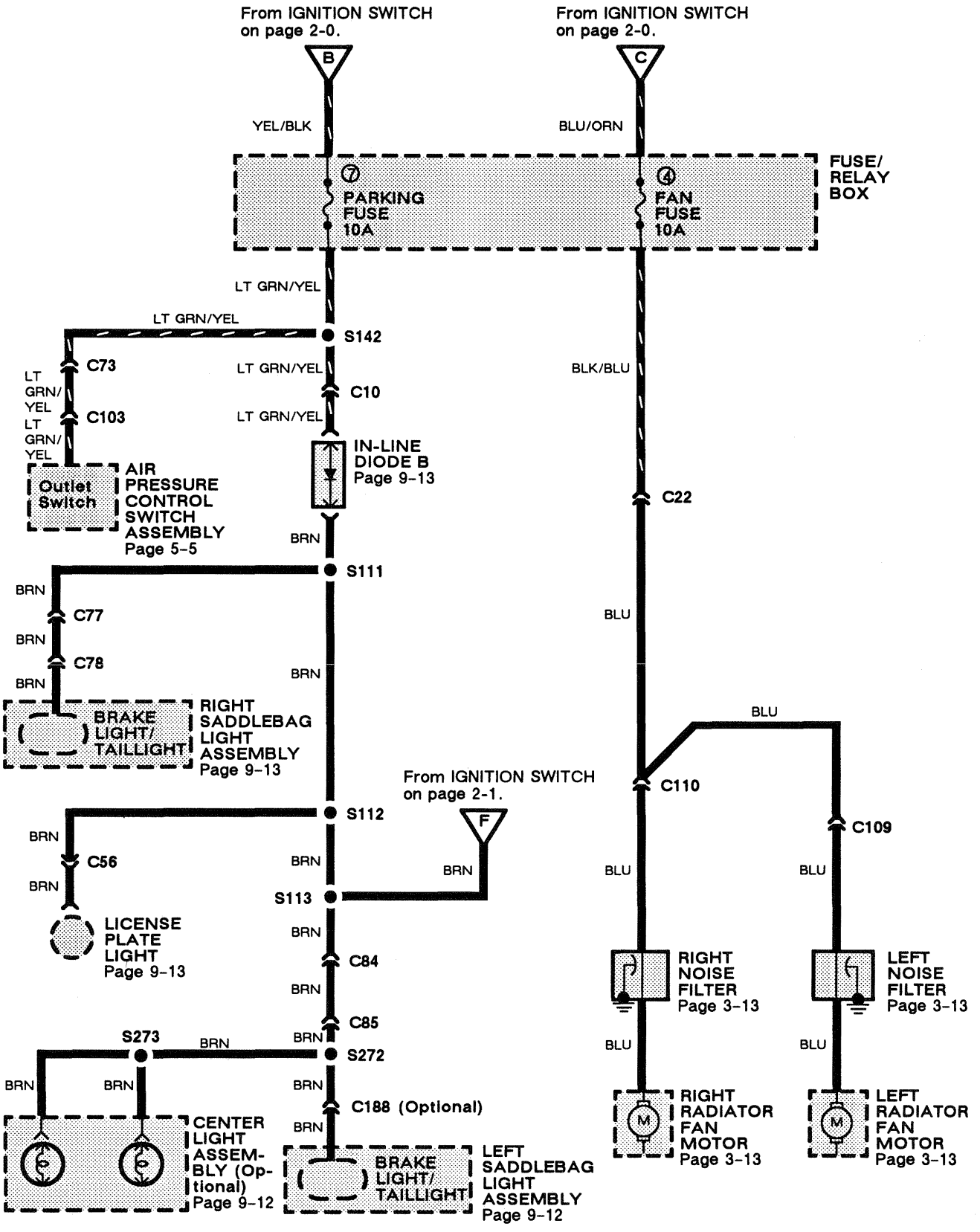


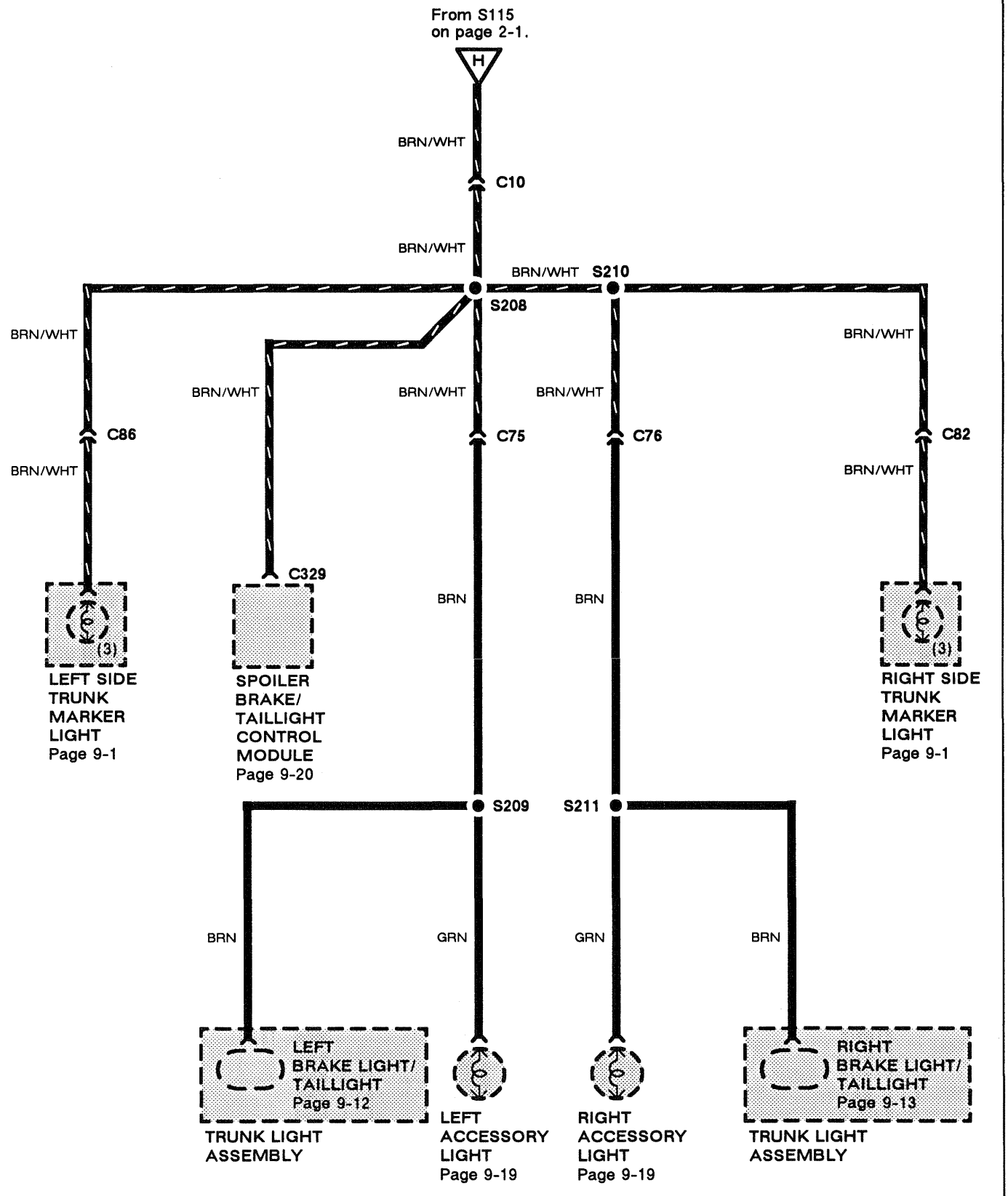


(cont'd)

Power Distribution: Asp and SE

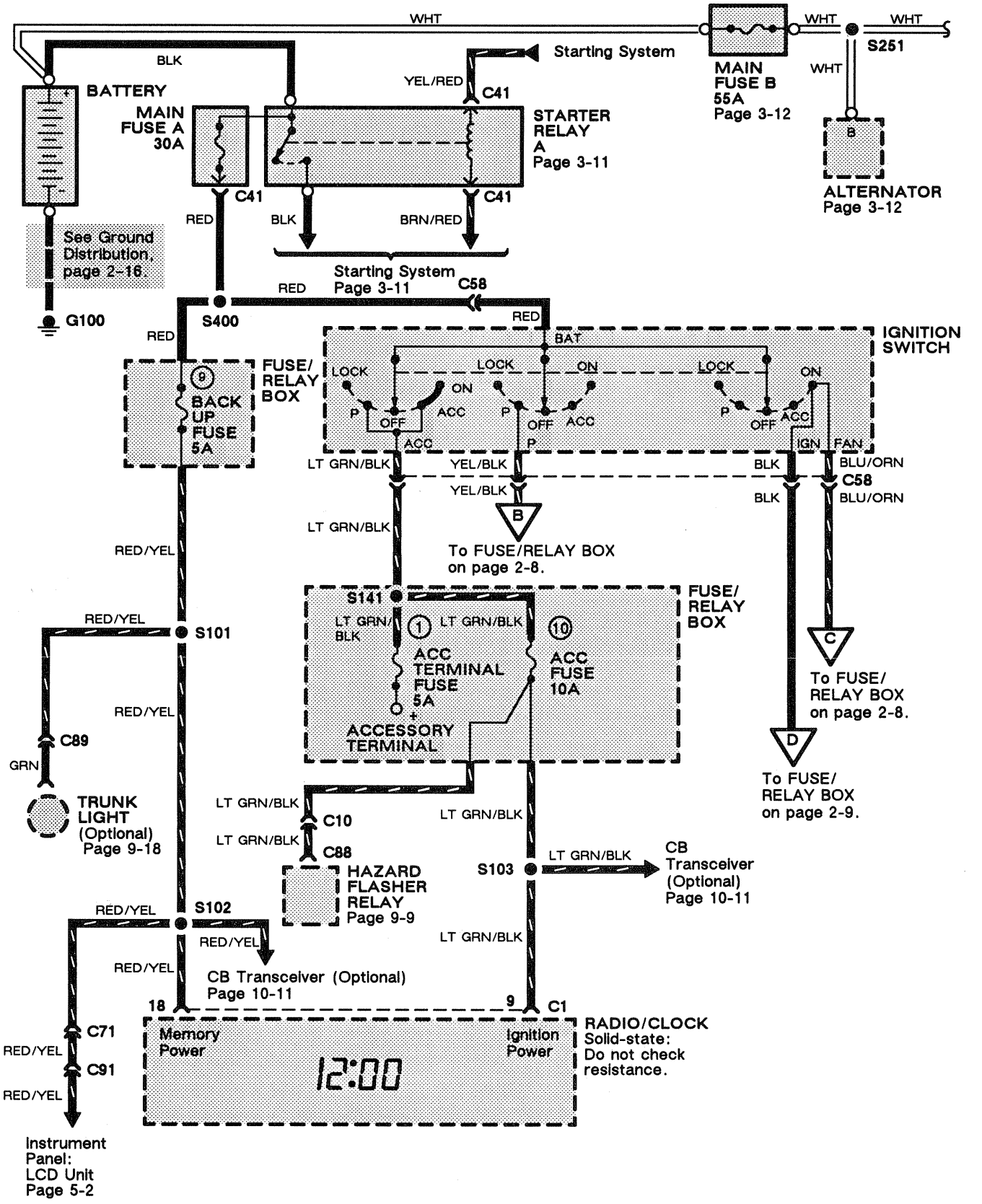
Circuit Schematic (cont'd)

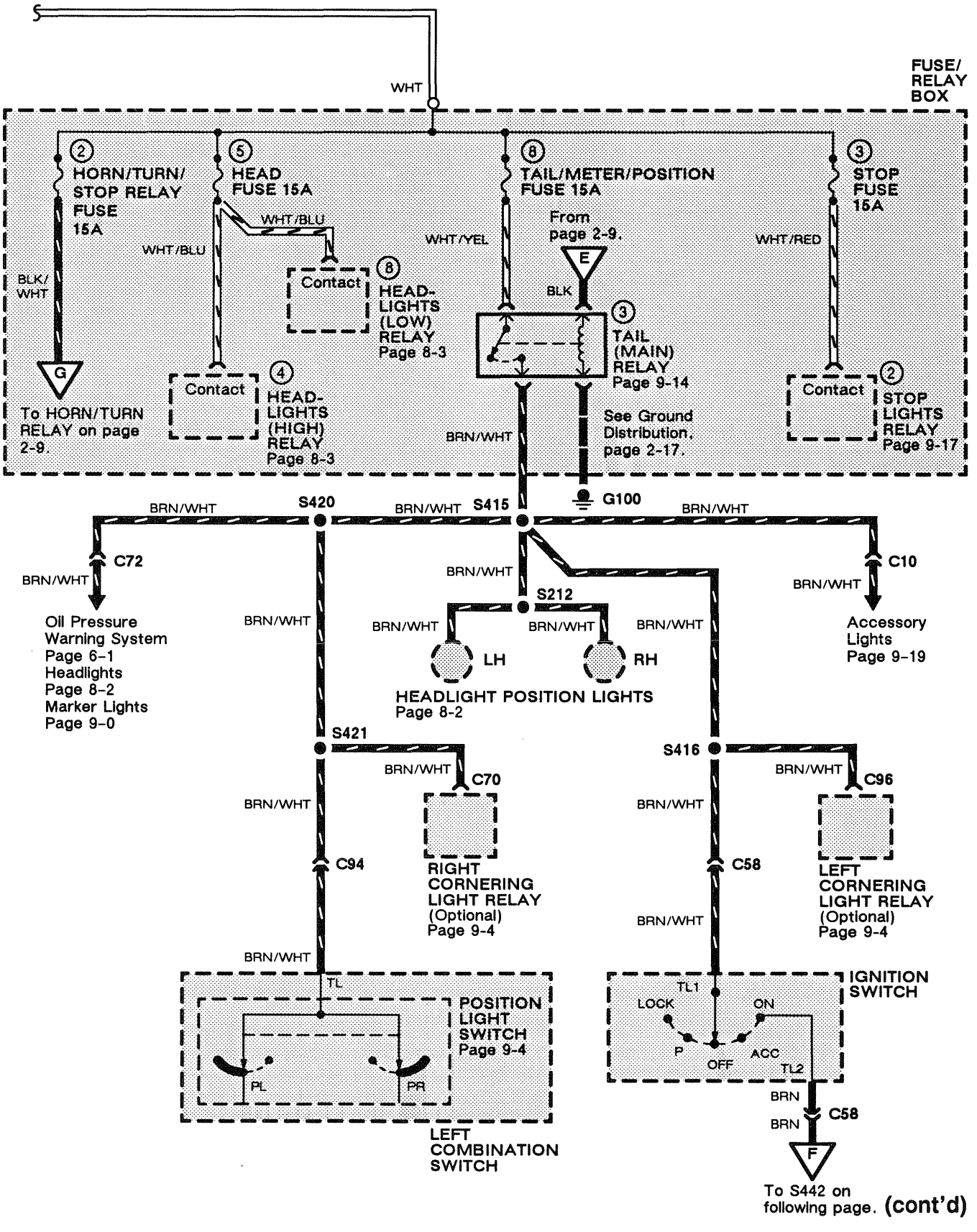




Power Distribution: Int

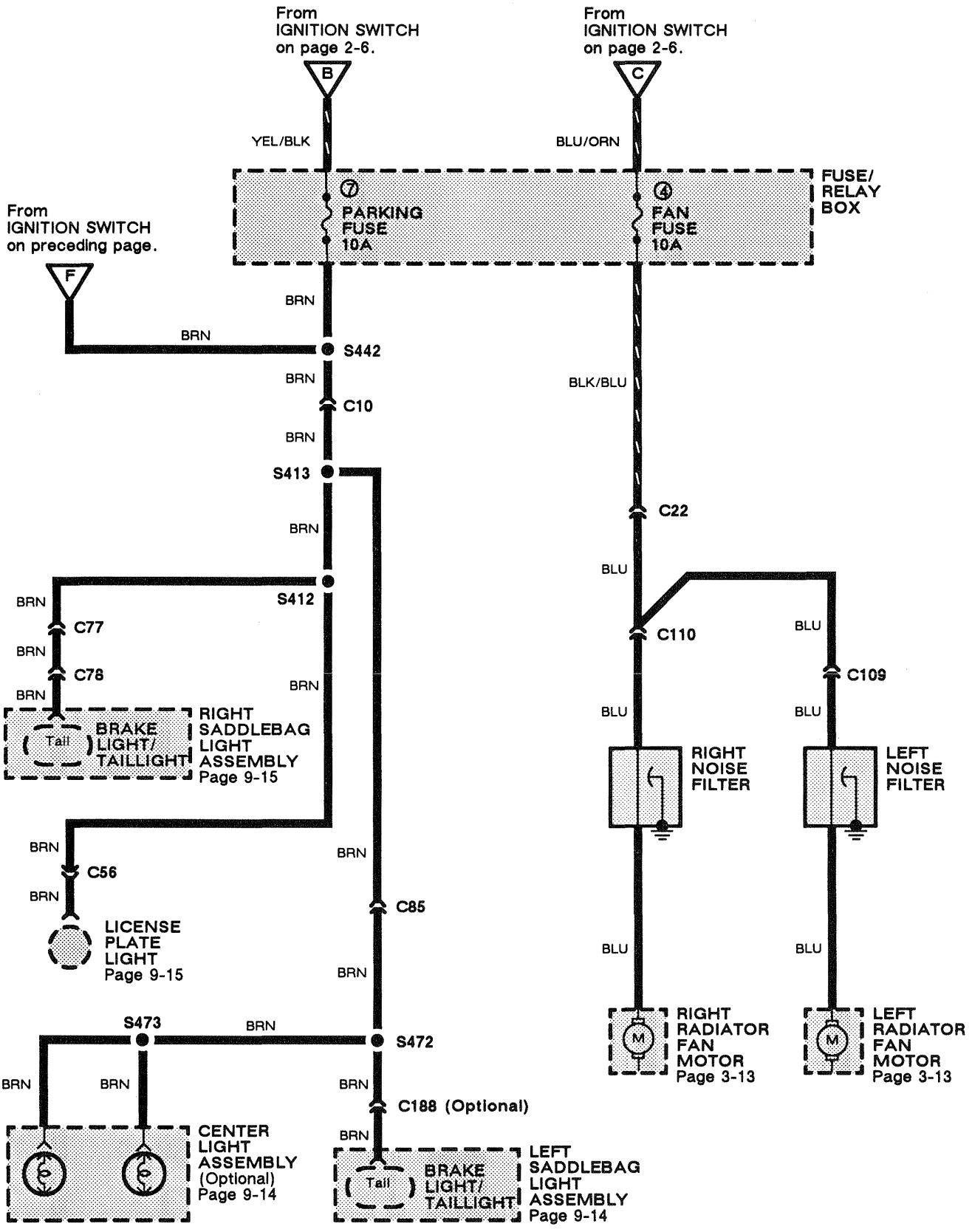
Circuit Schematic

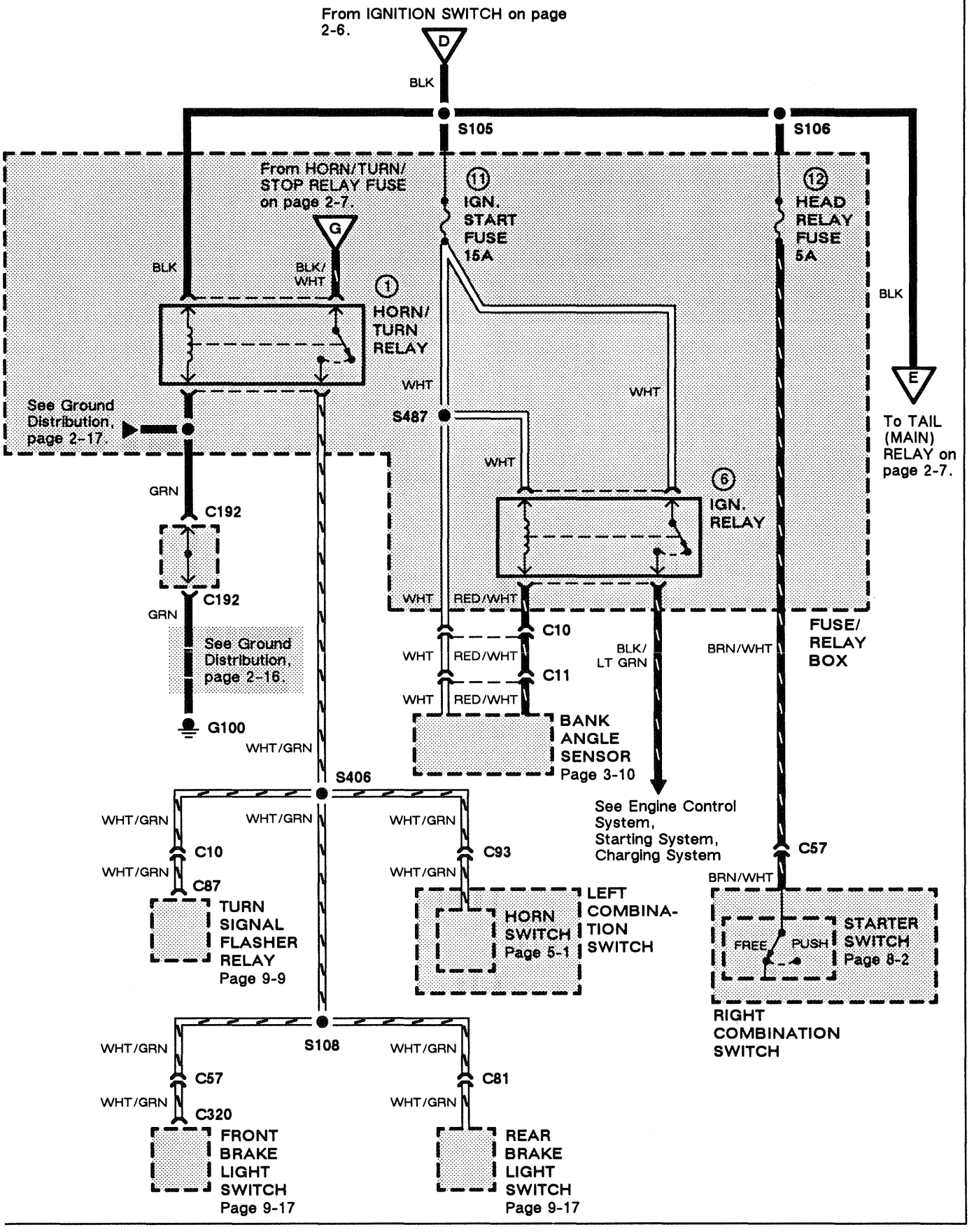




Power Distribution: Int

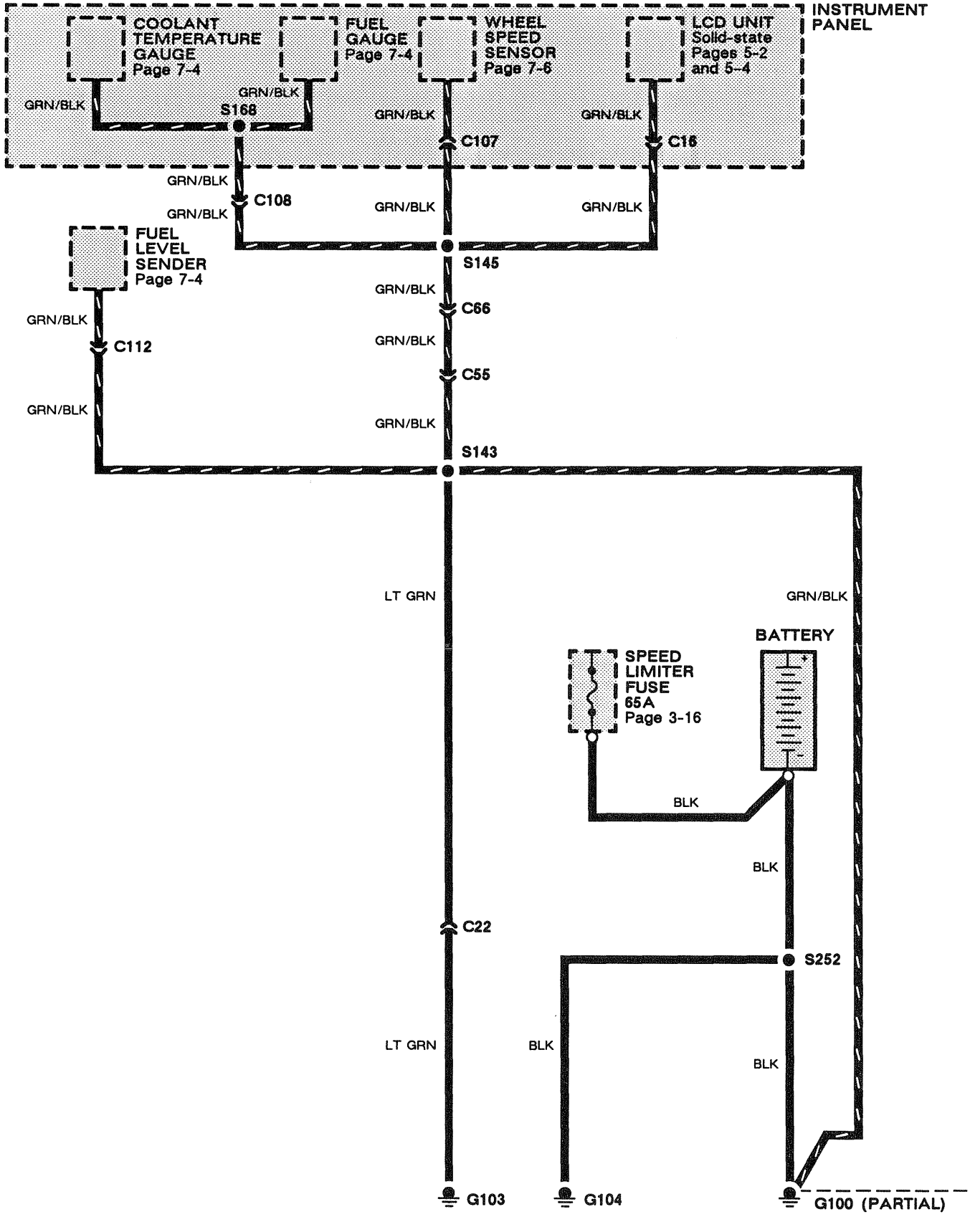
Circuit Schematic (cont'd)

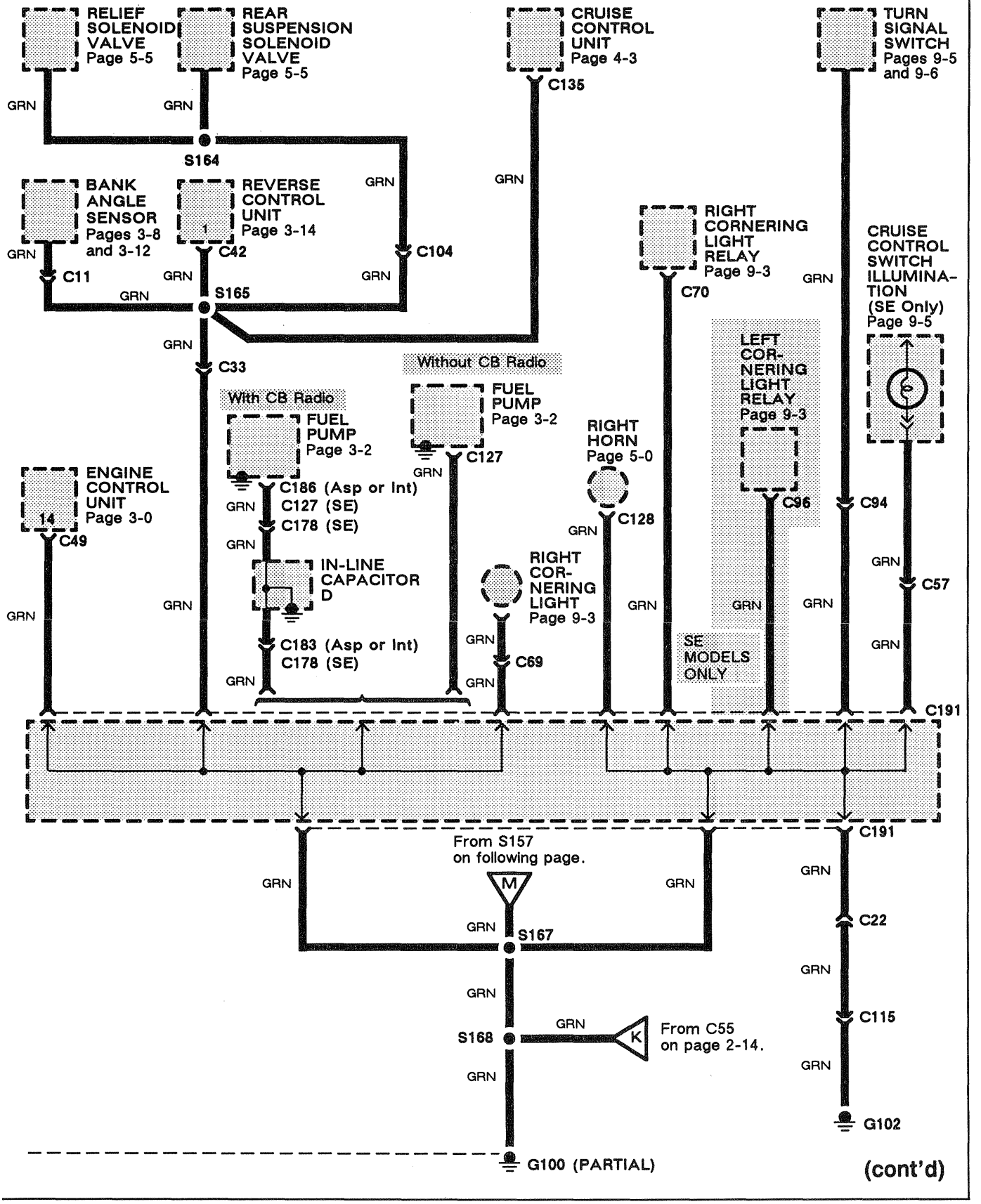




Ground Distribution: G100, G102, G103, and G104 (Asp and SE)

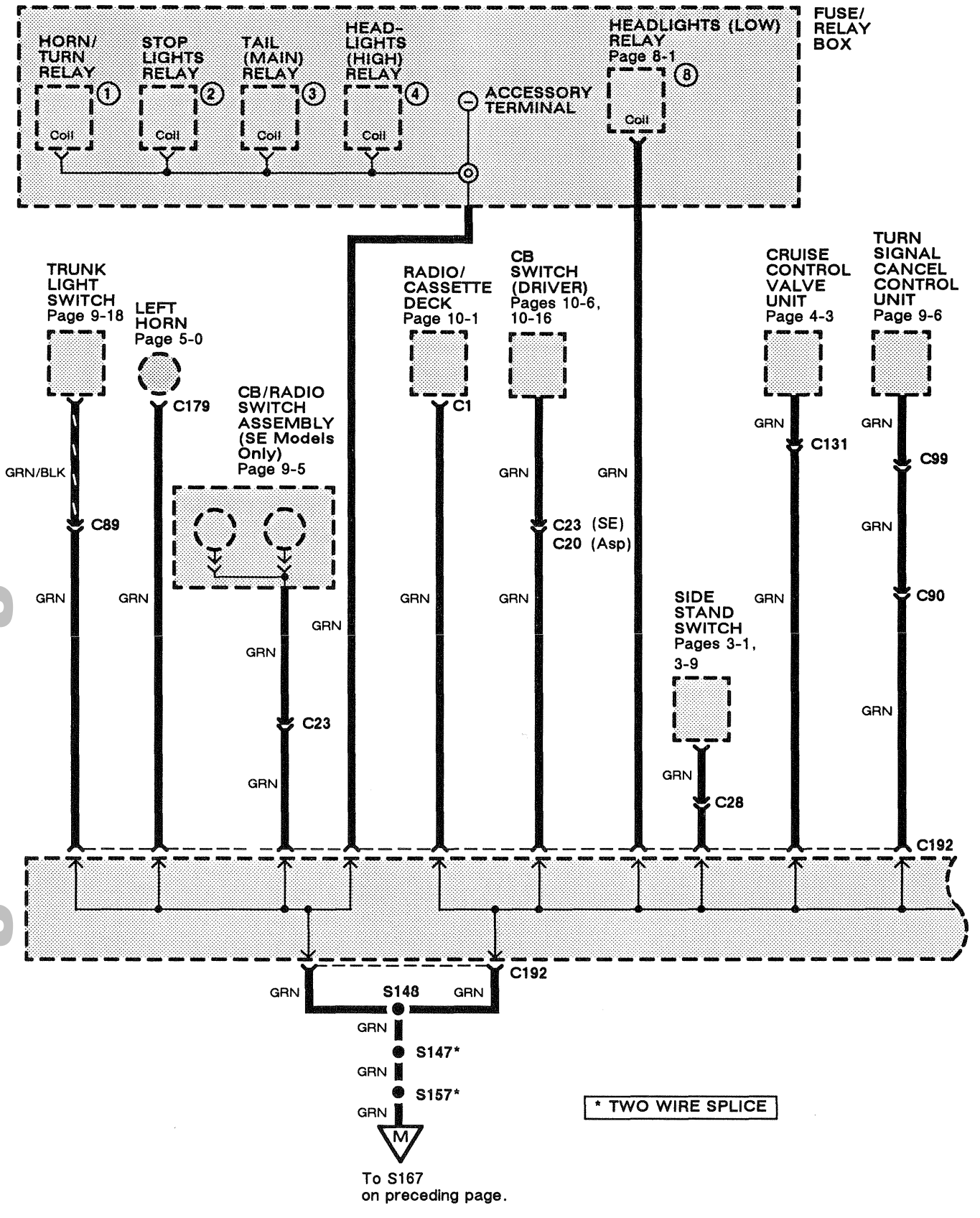
Circuit Schematic

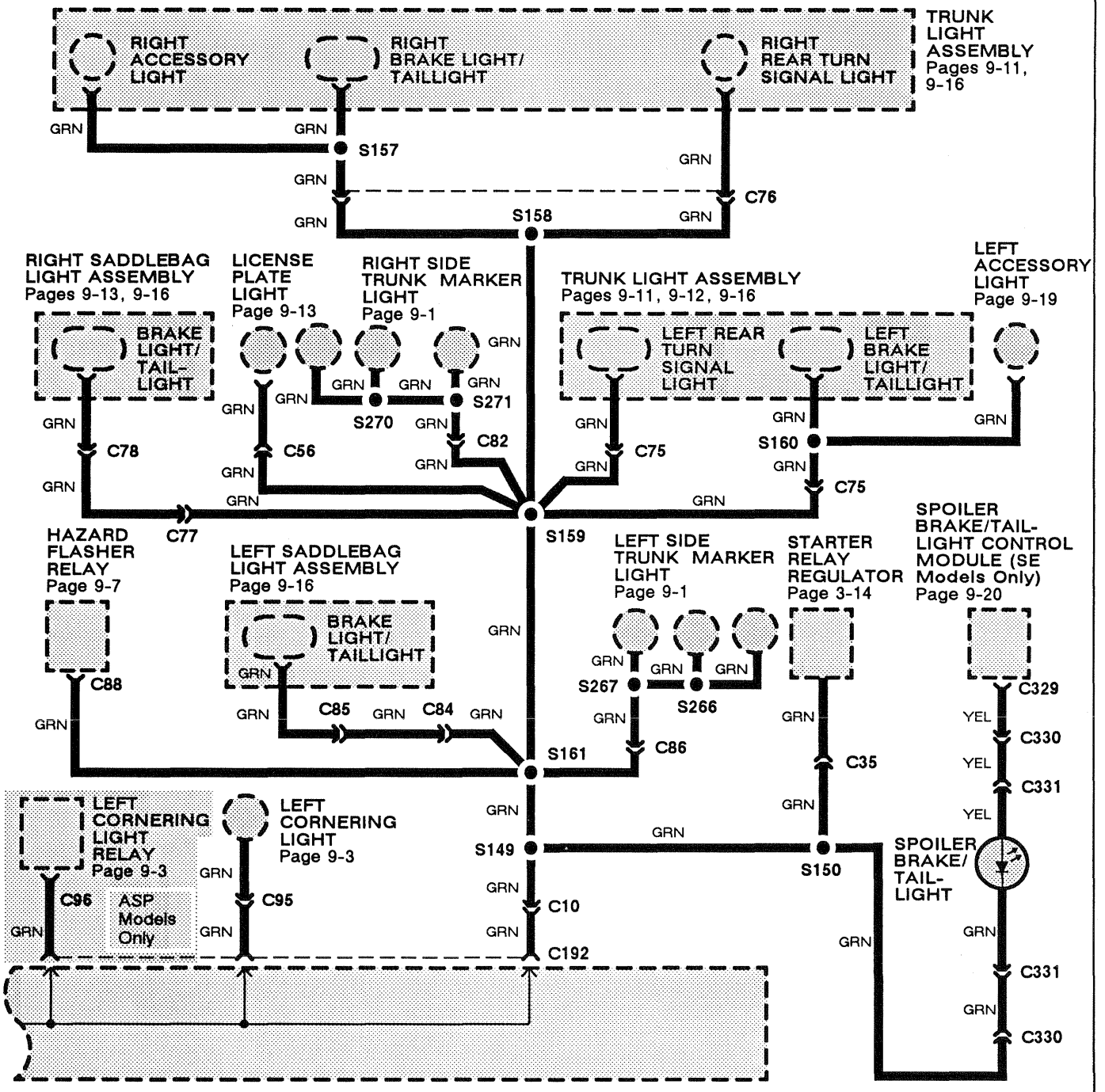




Ground Distribution: G100, G102, G103, and G104 (Asp and SE)

Circuit Schematic (cont'd)

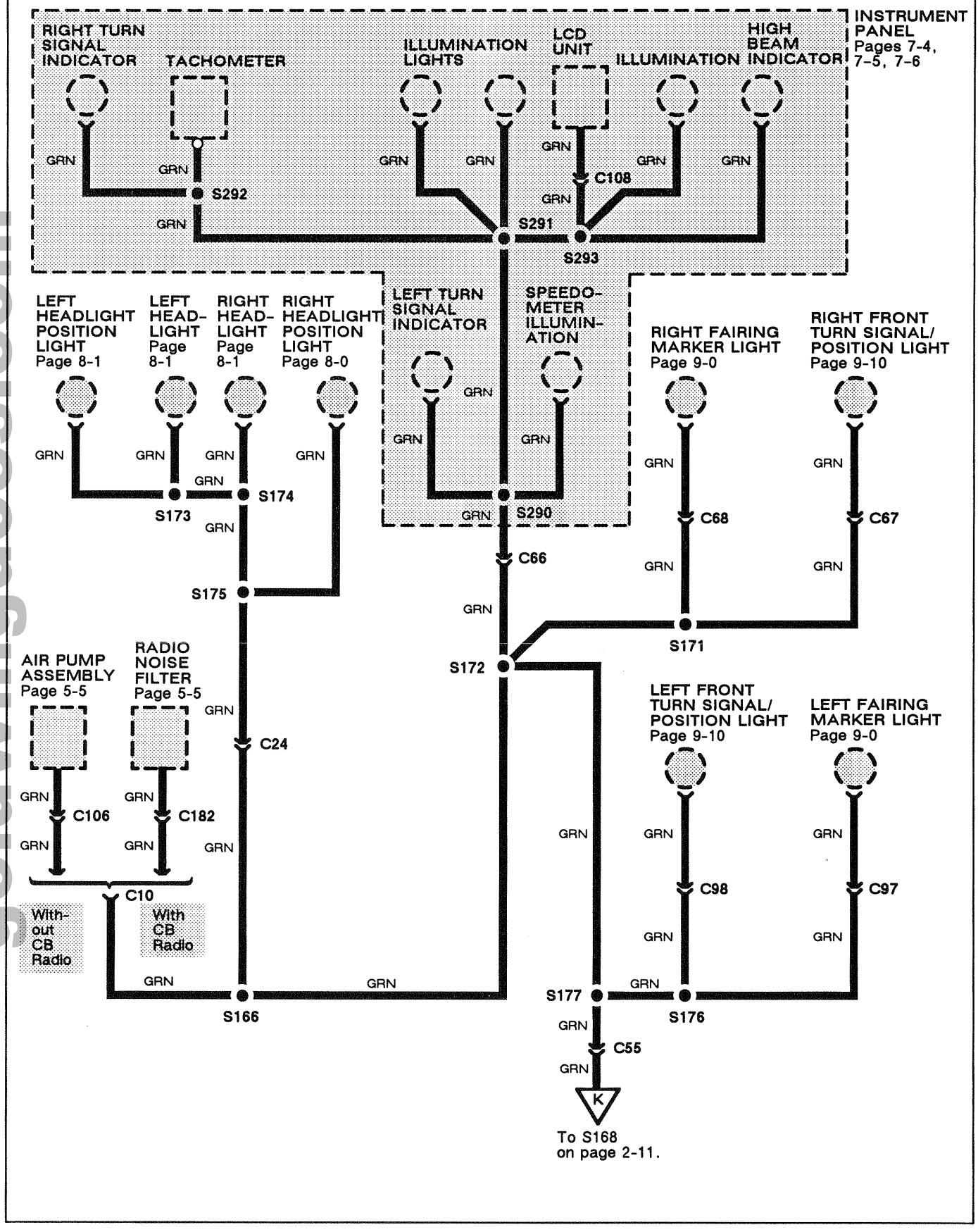




(cont'd)

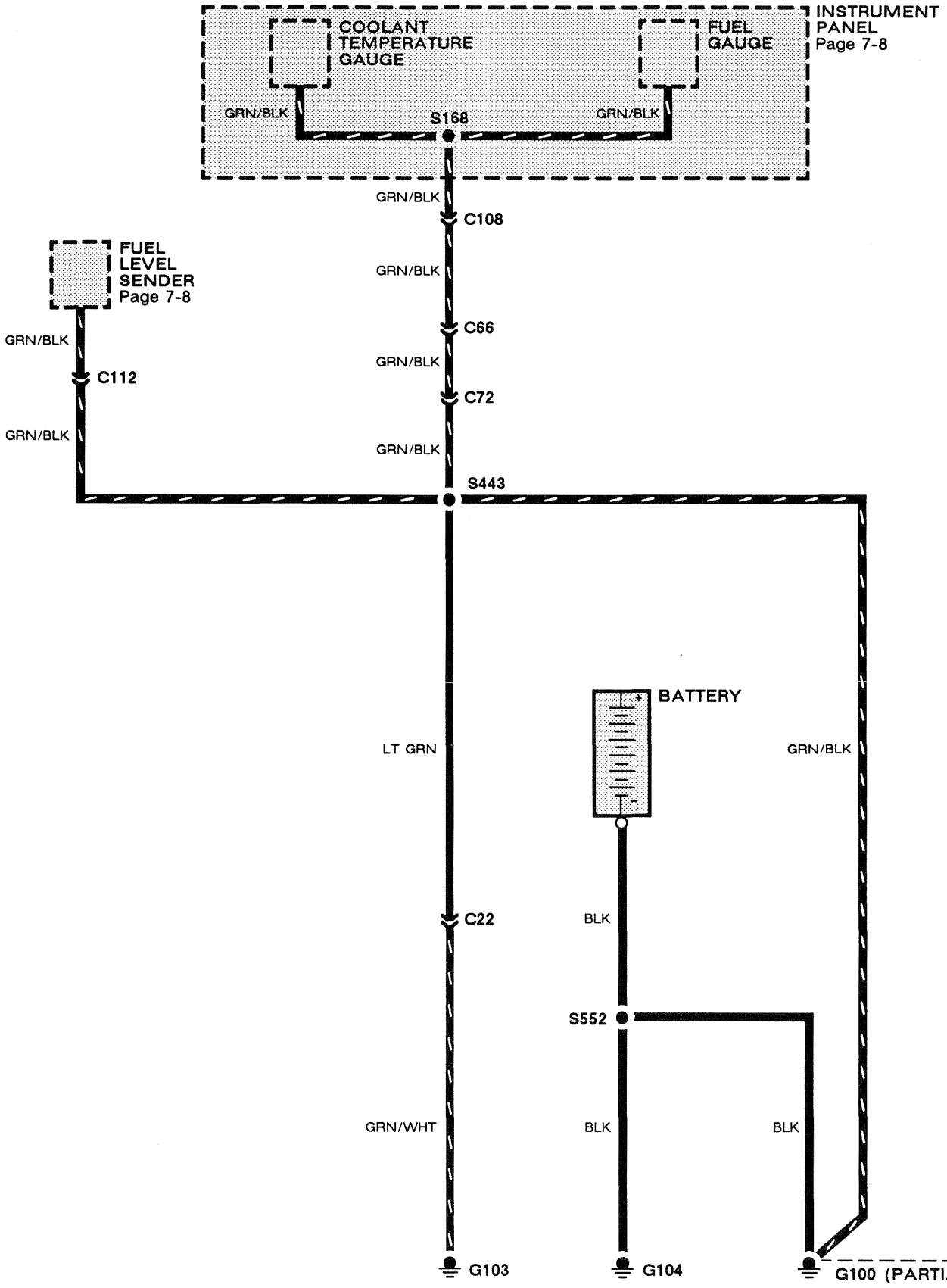
Ground Distribution: G100, G102, G103, and G104 (Asp and SE)

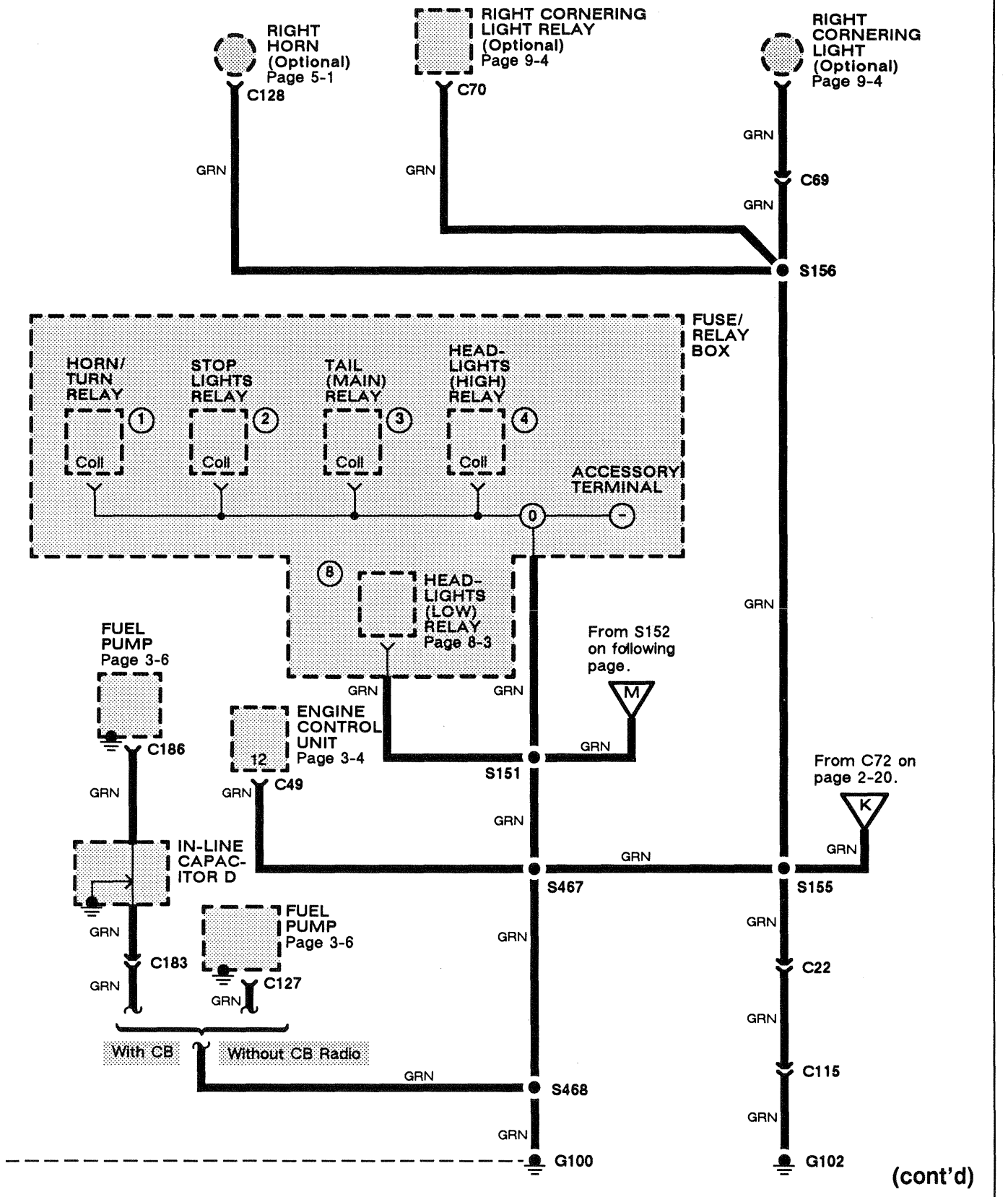
Circuit Schematic (cont'd)



Ground Distribution: G100, G102, G103, and G104 (Int)

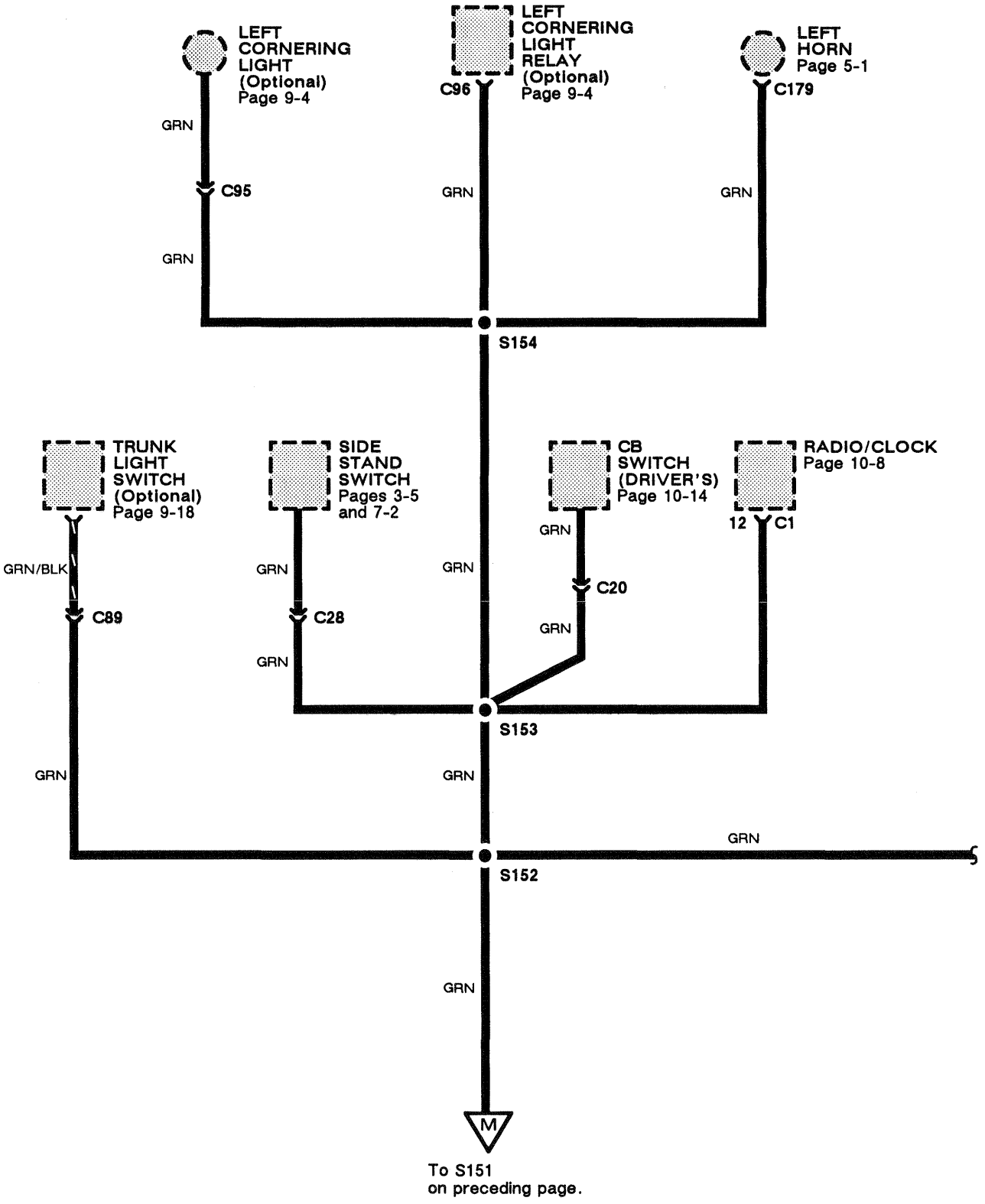
Circuit Schematic

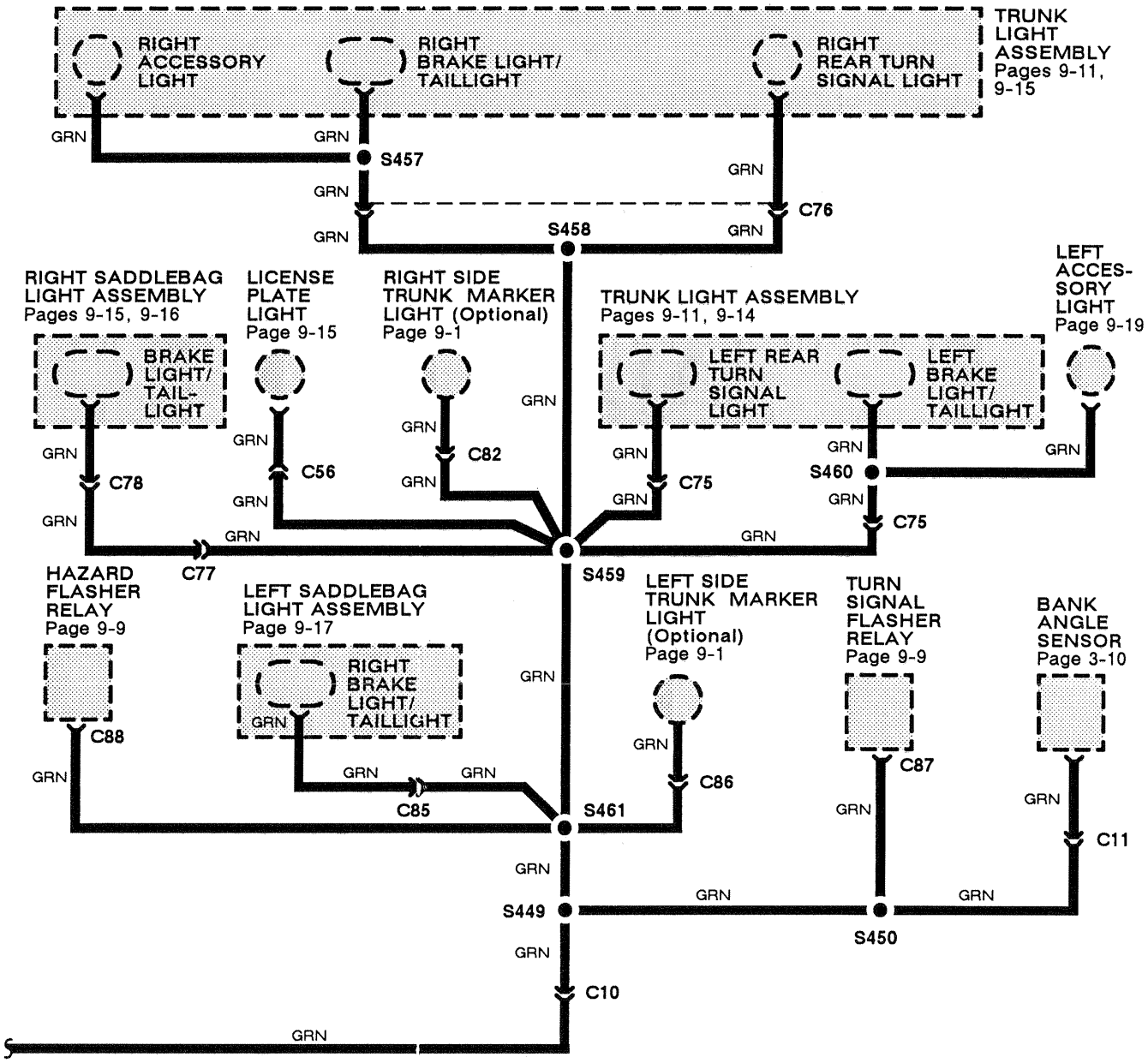




Ground Distribution: G100, G102, G103, and G104 (Int)

Circuit Schematic (cont'd)

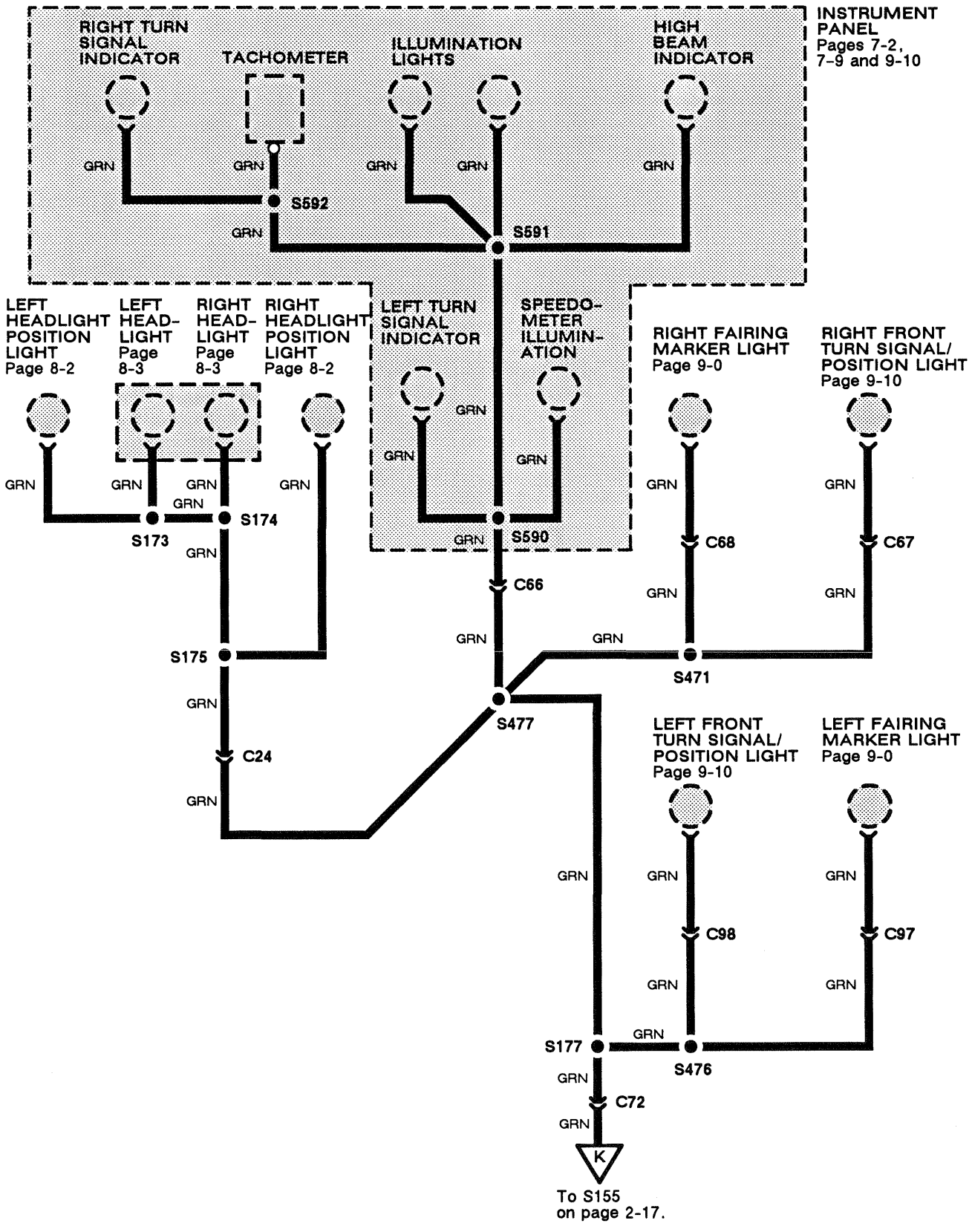




(cont'd)

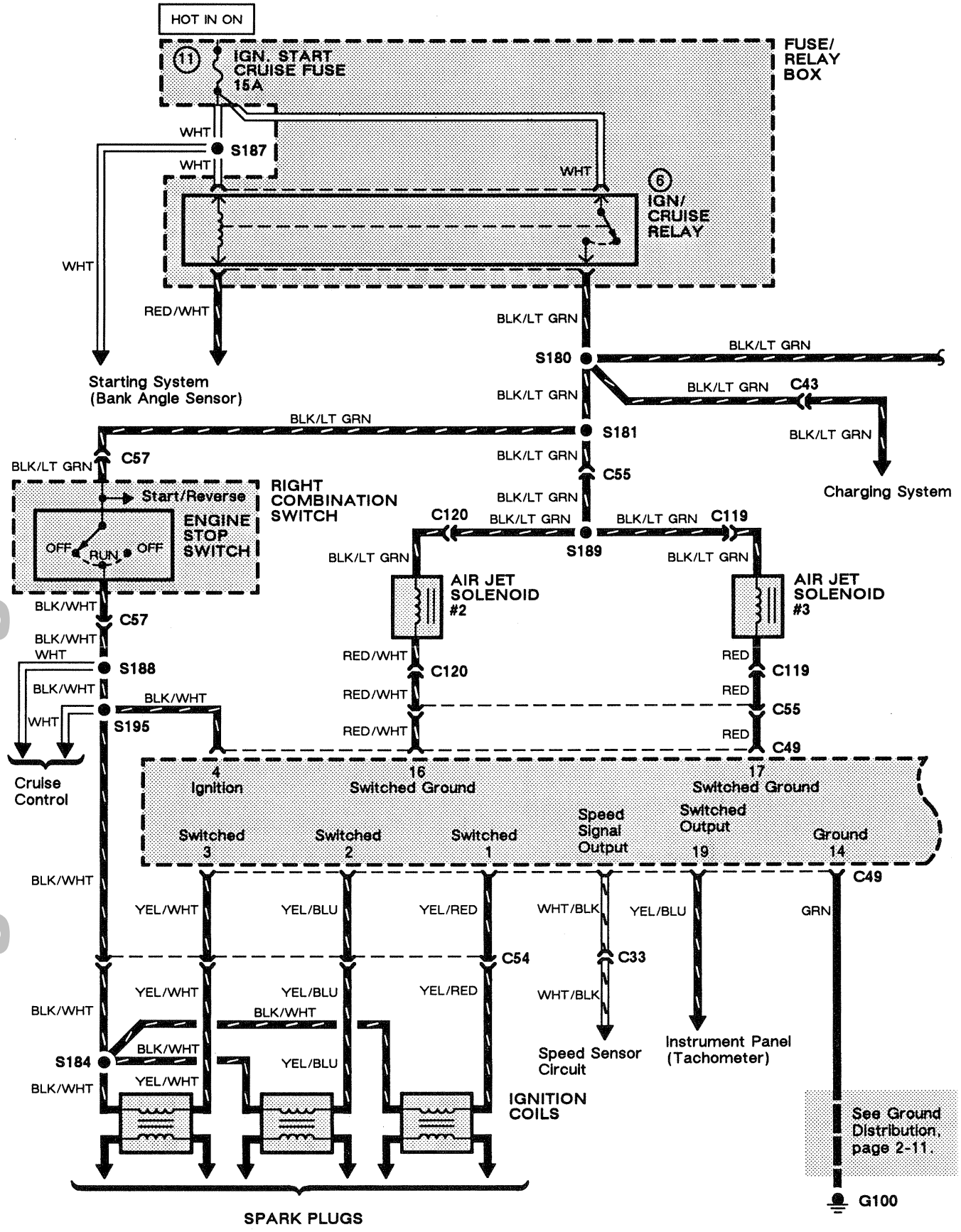
Ground Distribution: G100, G102, G103, and G104 (Int)

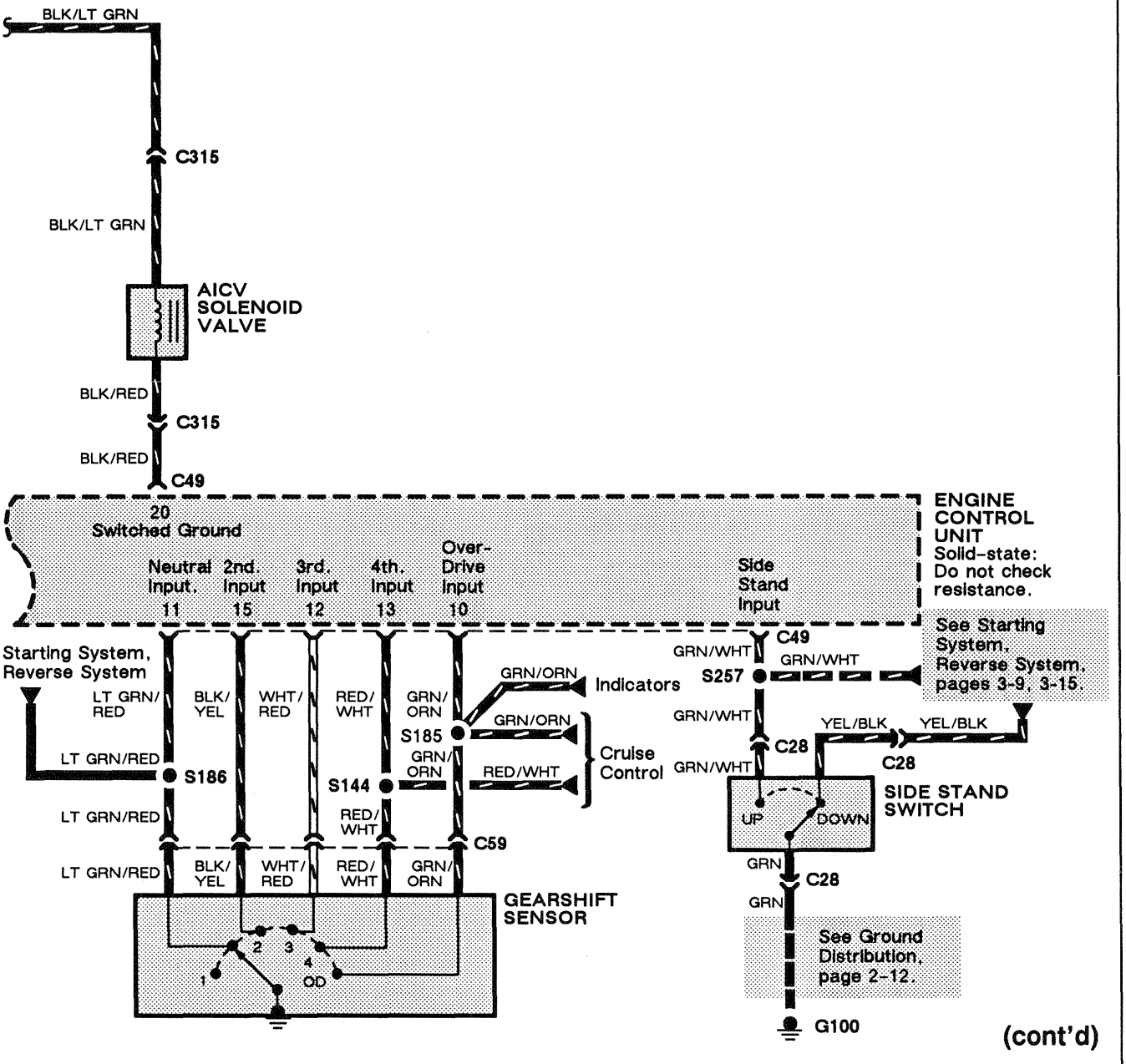
Circuit Schematic (cont'd)



Engine Control System: Asp and SE

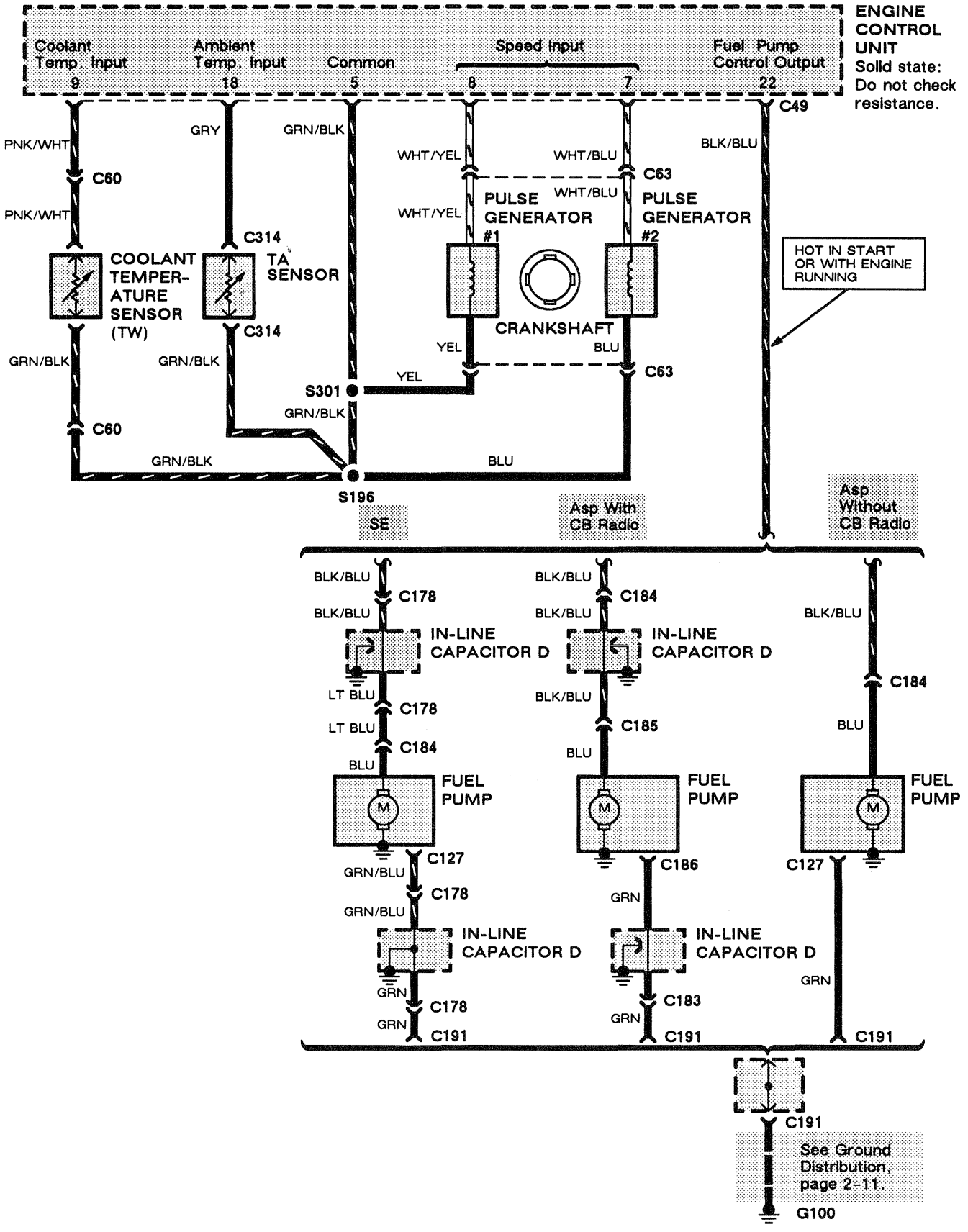
Circuit Schematic





Engine Control System: Asp and SE

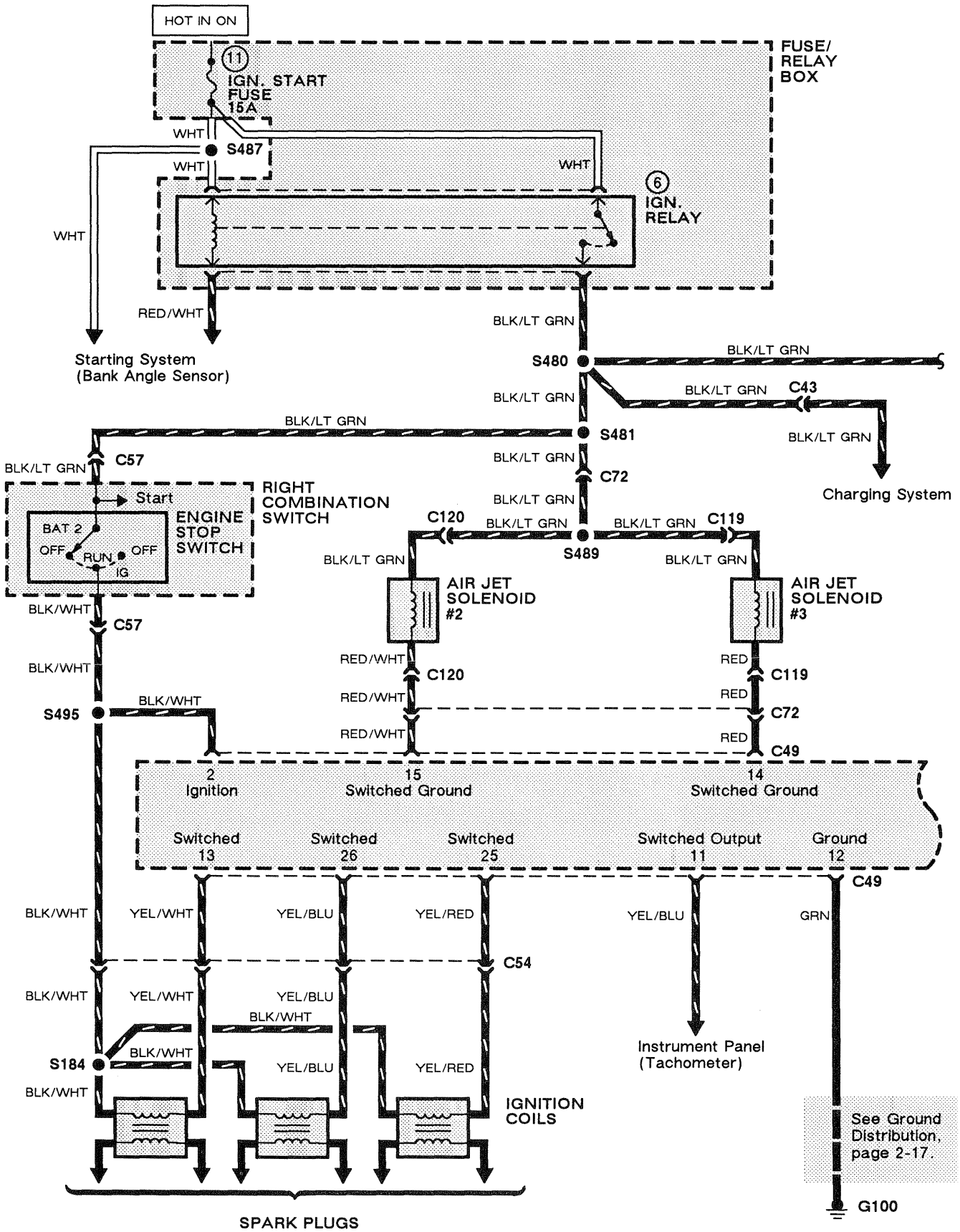
Circuit Schematic (cont'd)

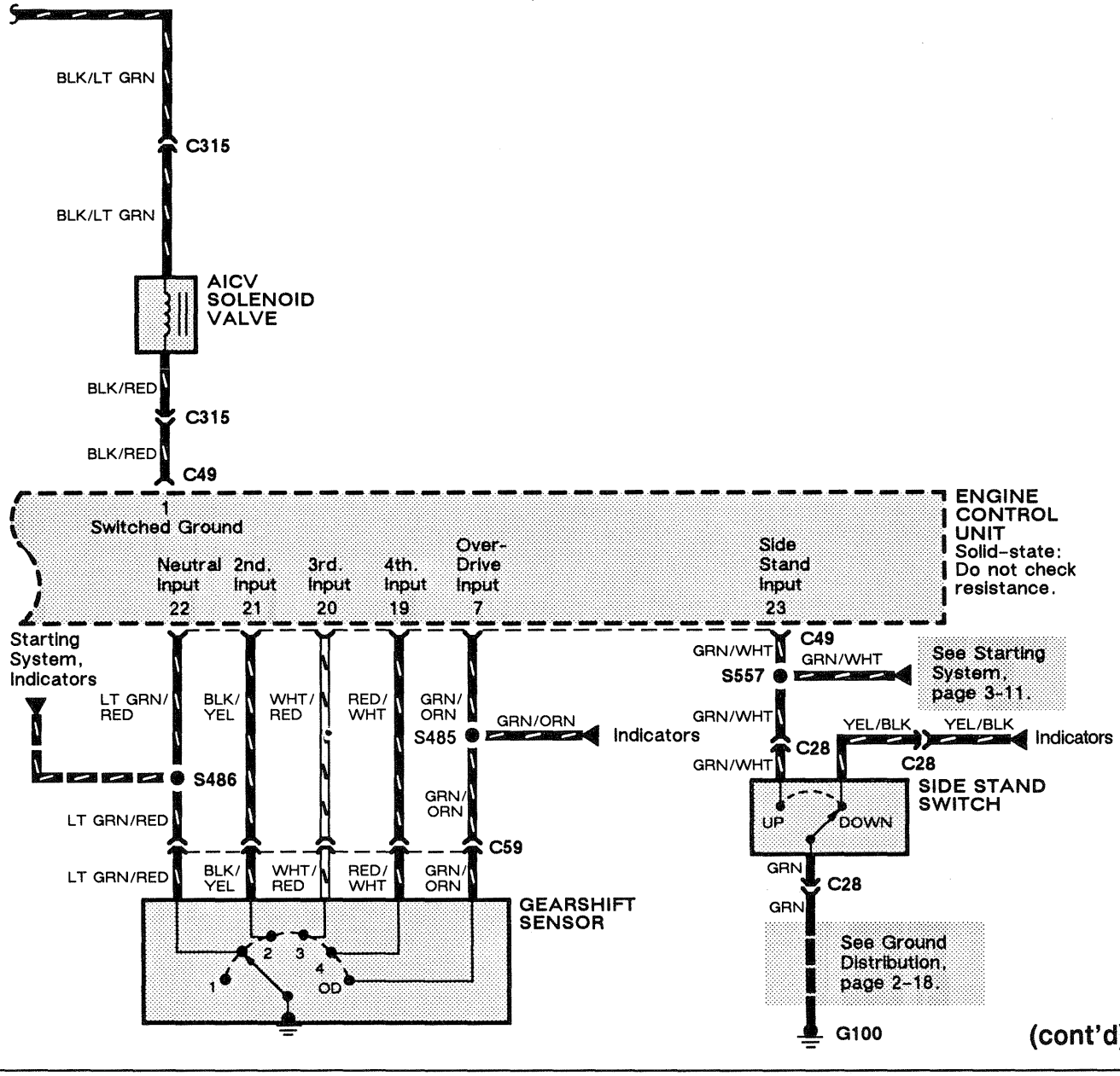


(cont'd)

Engine Control System: Int

Circuit Schematic

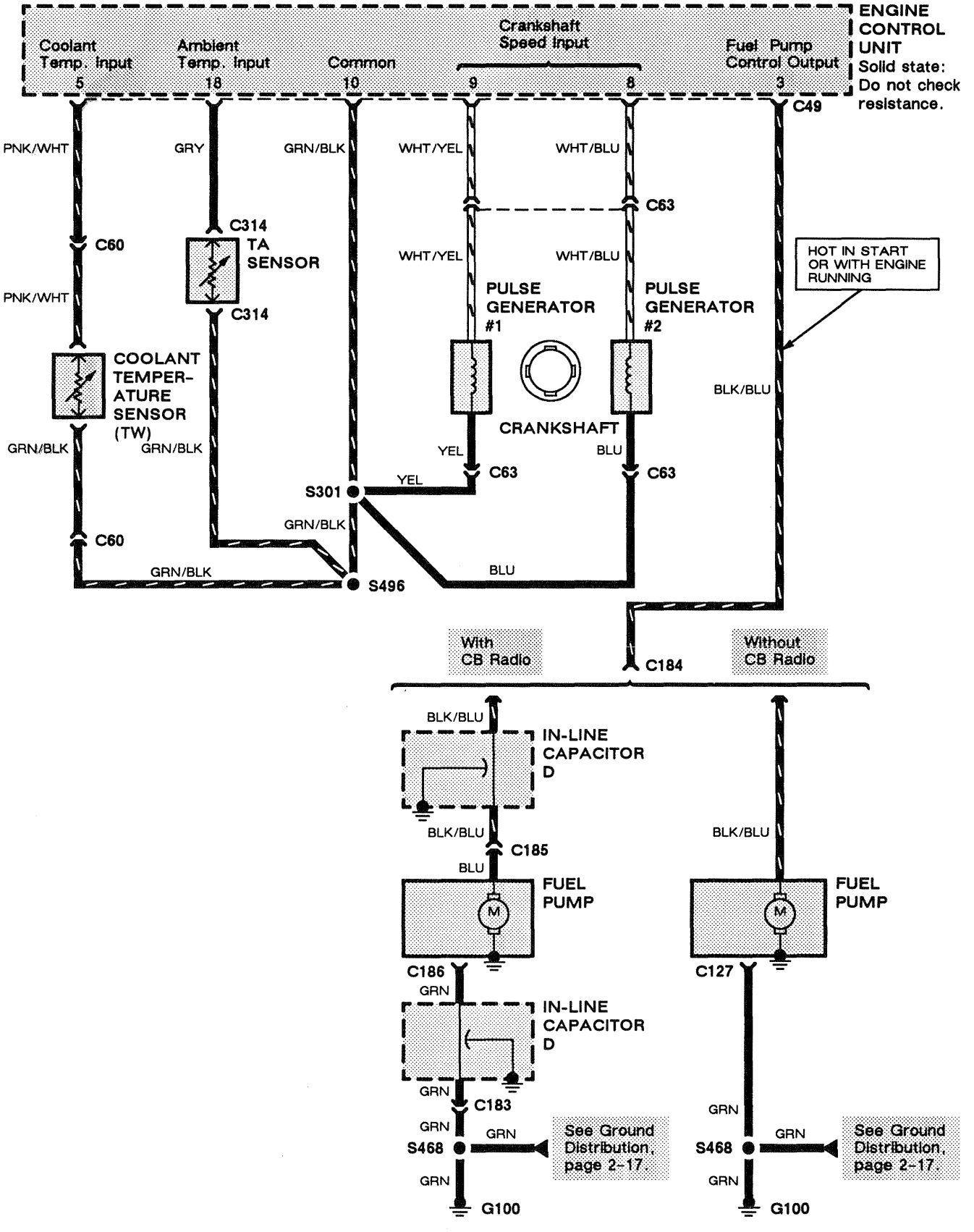




(cont'd)

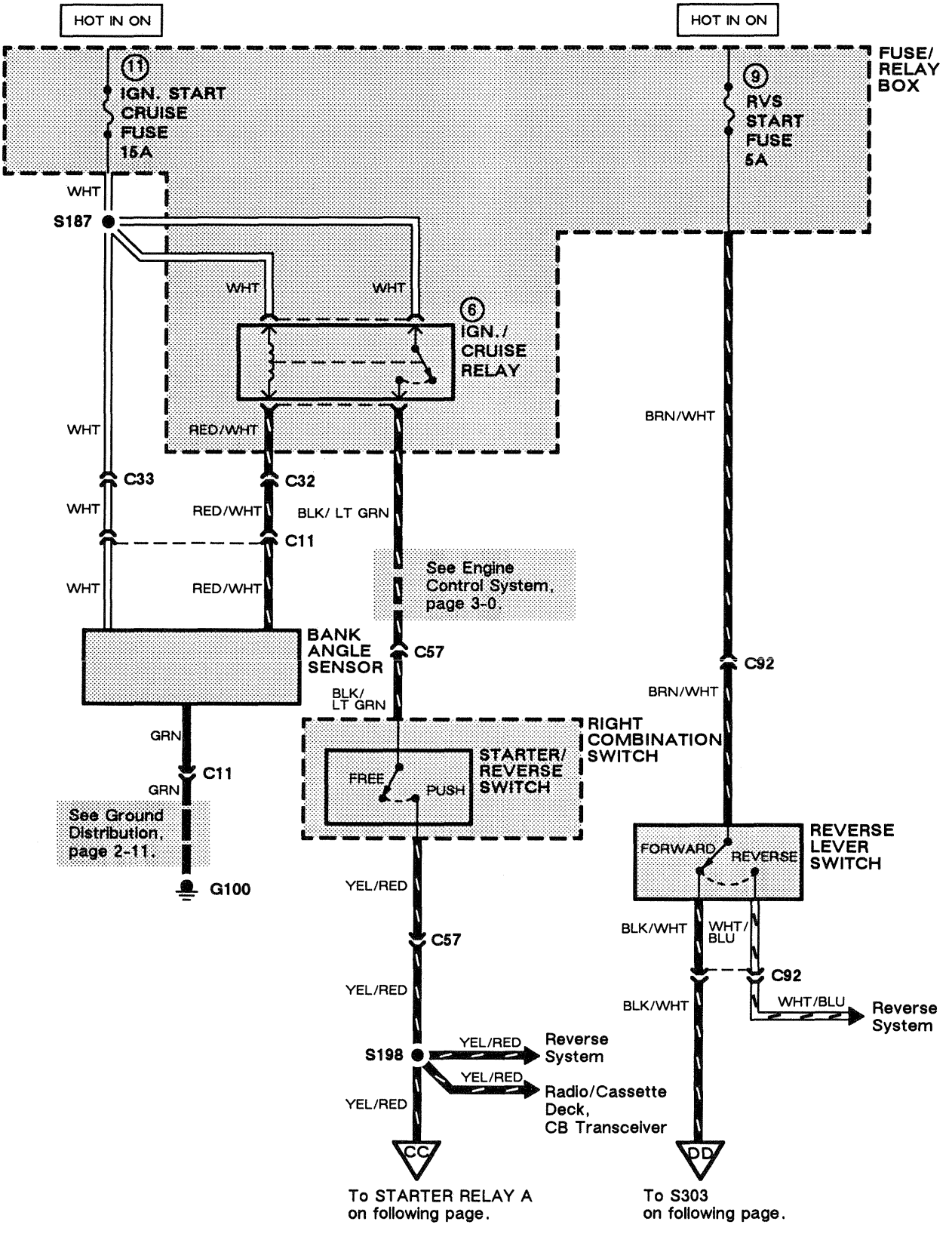
Engine Control System: Int

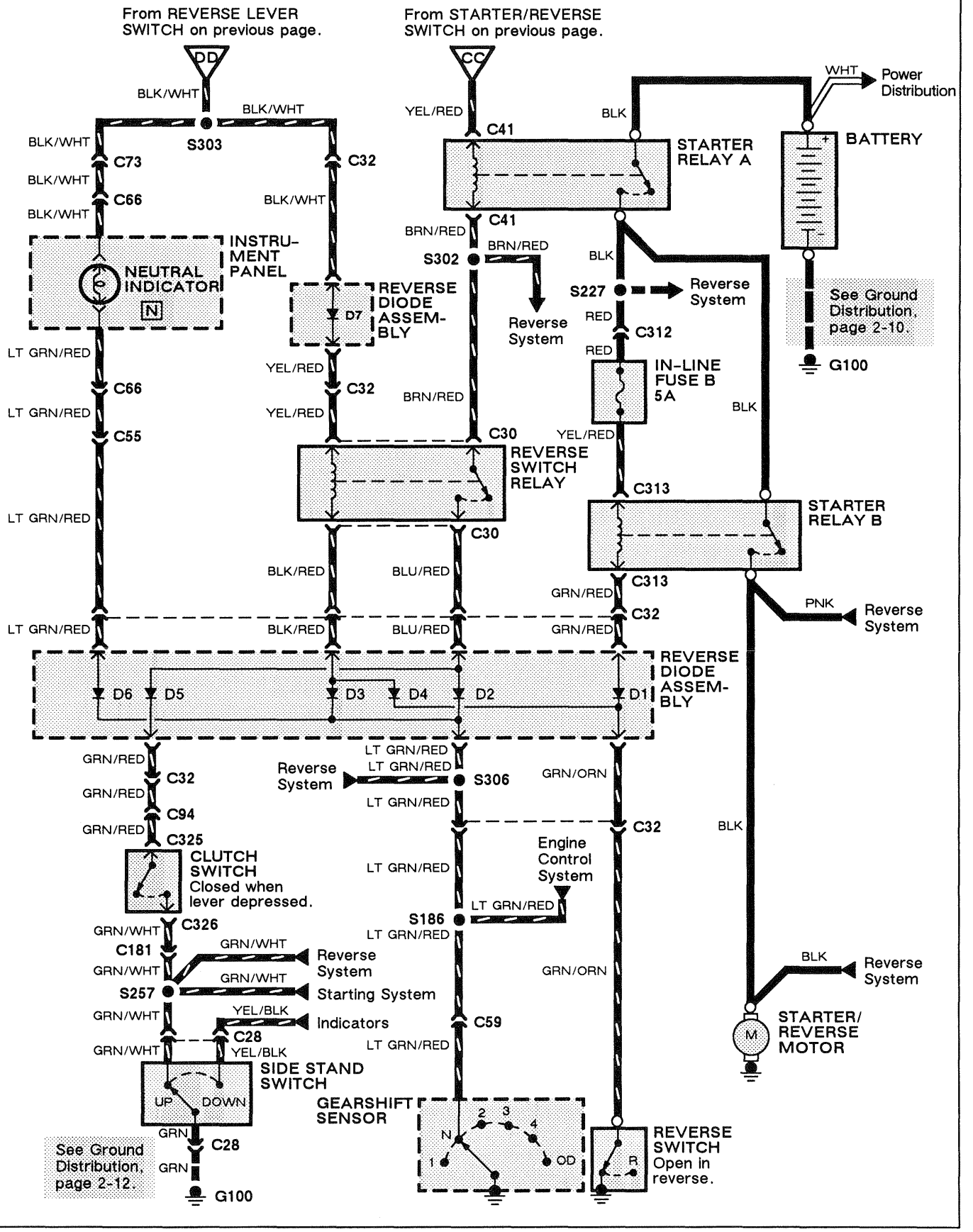
Circuit Schematic (cont'd)



Starting System: Asp and SE

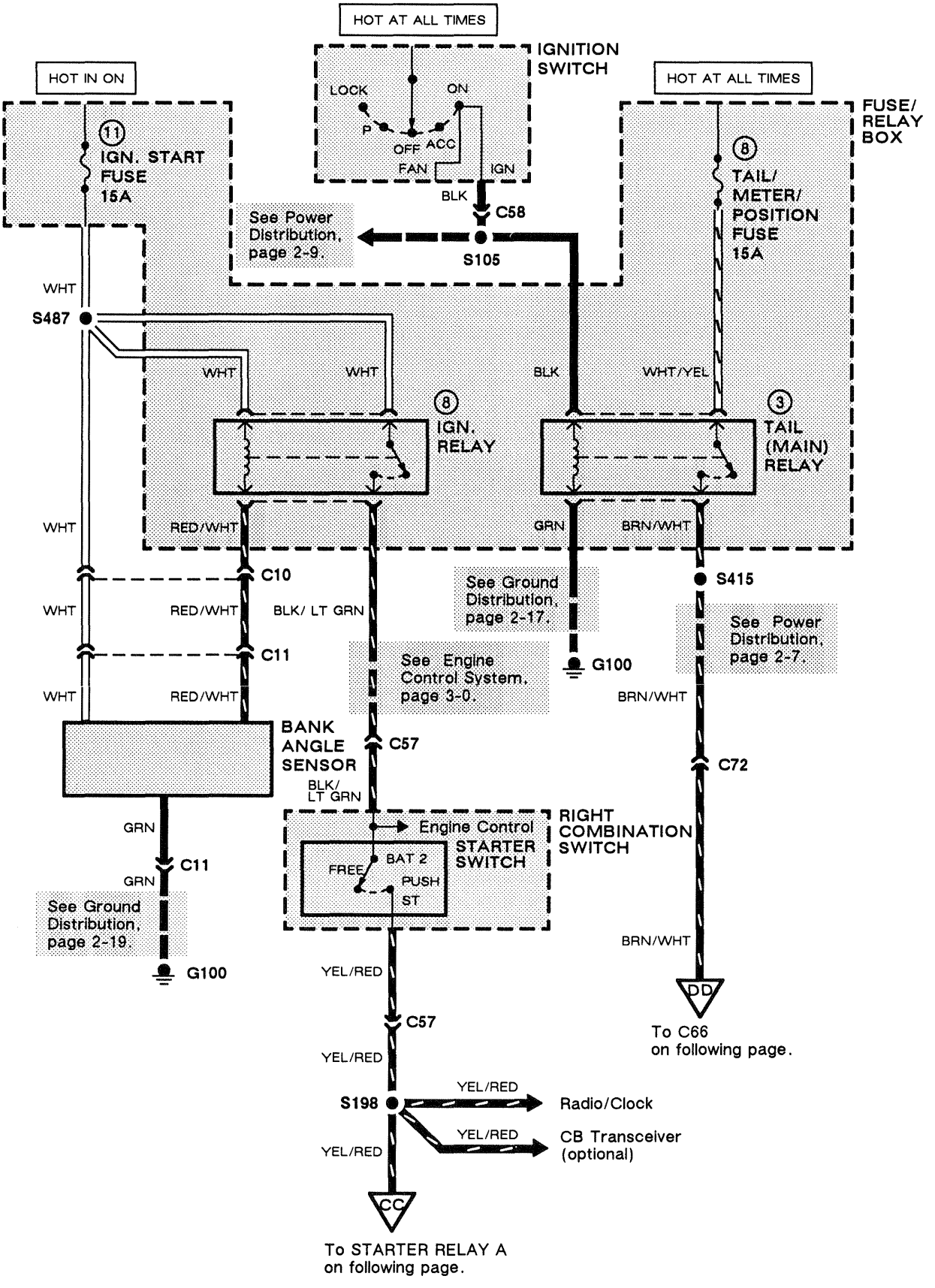
Circuit Schematic

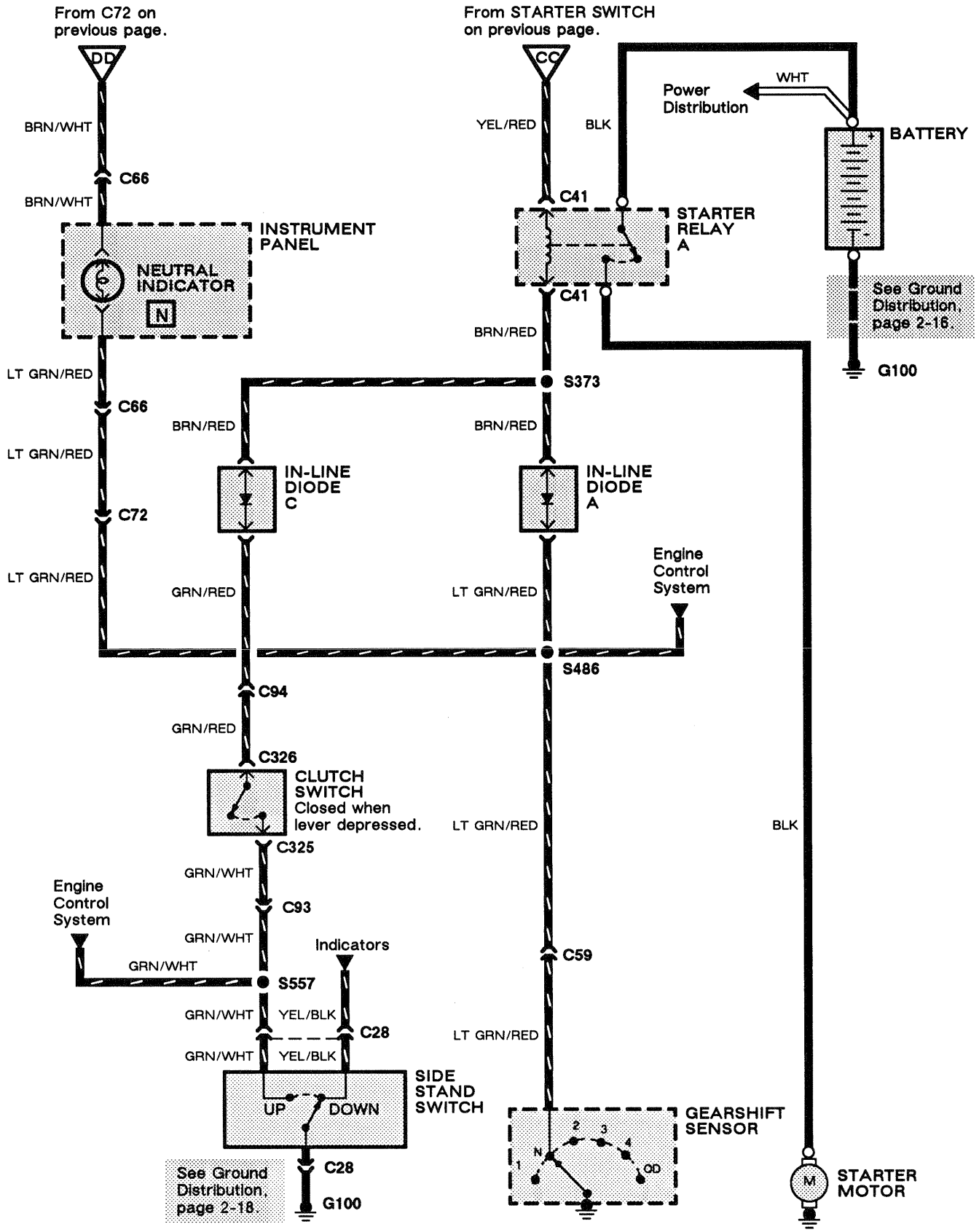




Starting System: Int

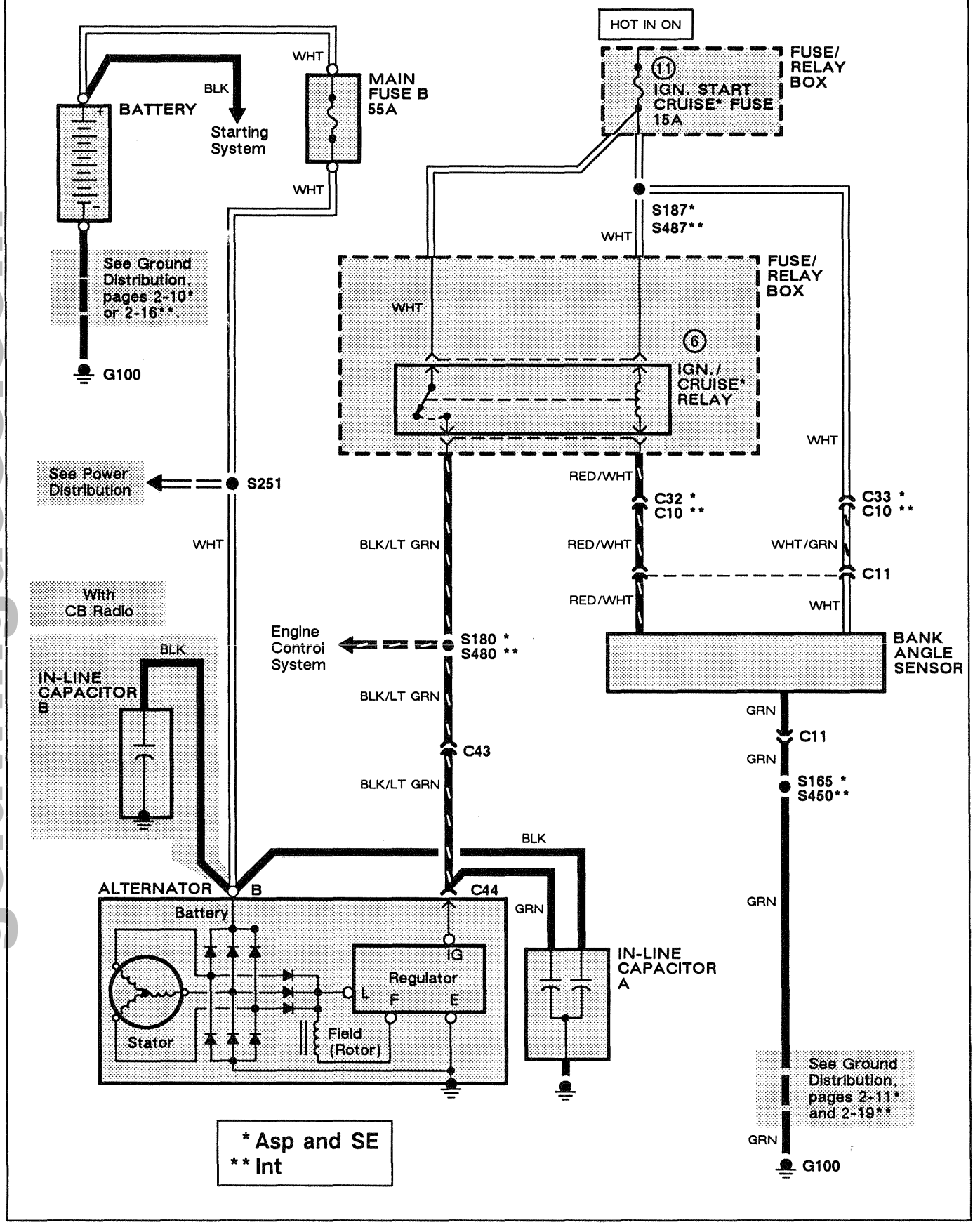
Circuit Schematic





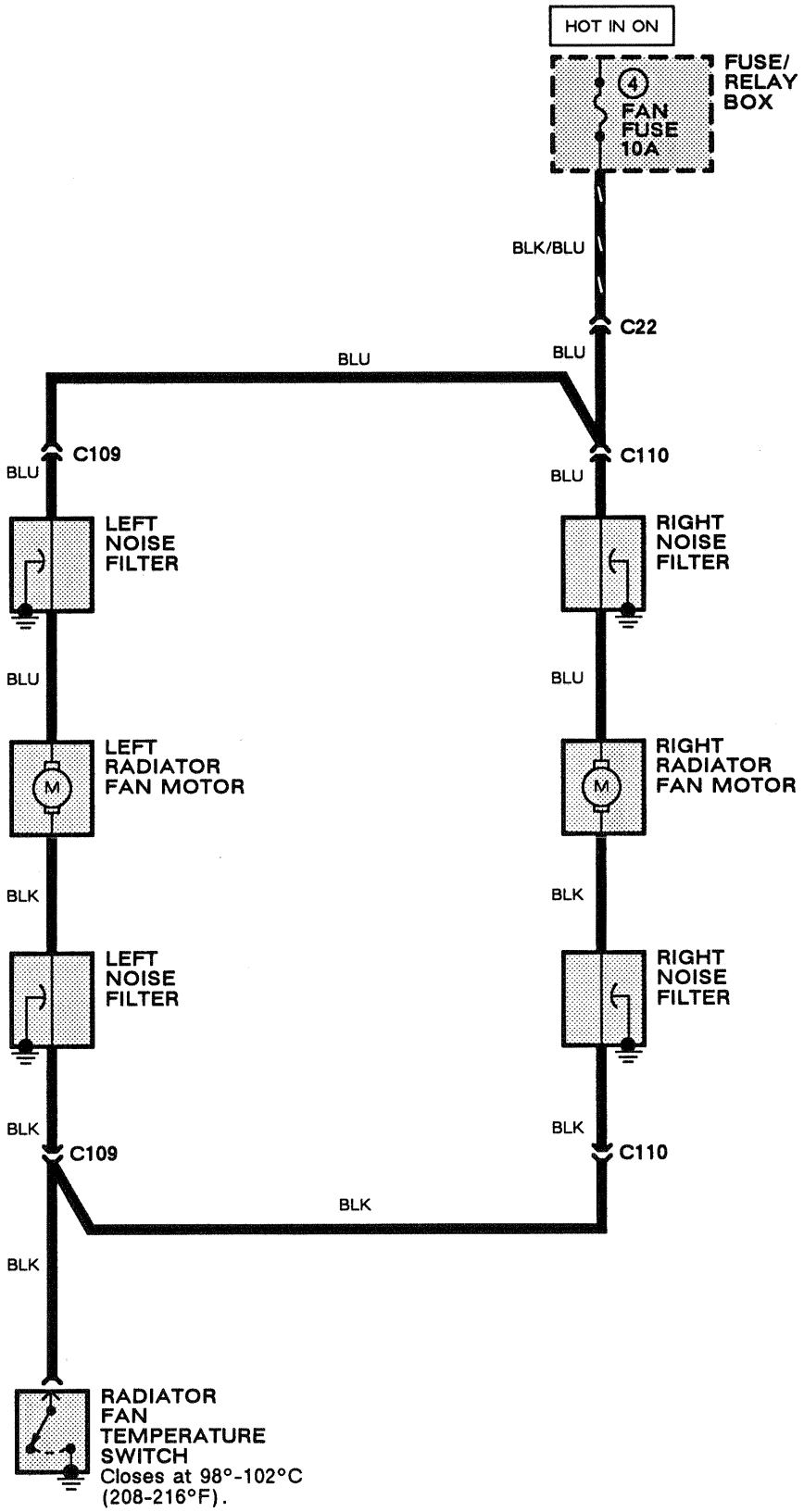
Charging System

Circuit Schematic



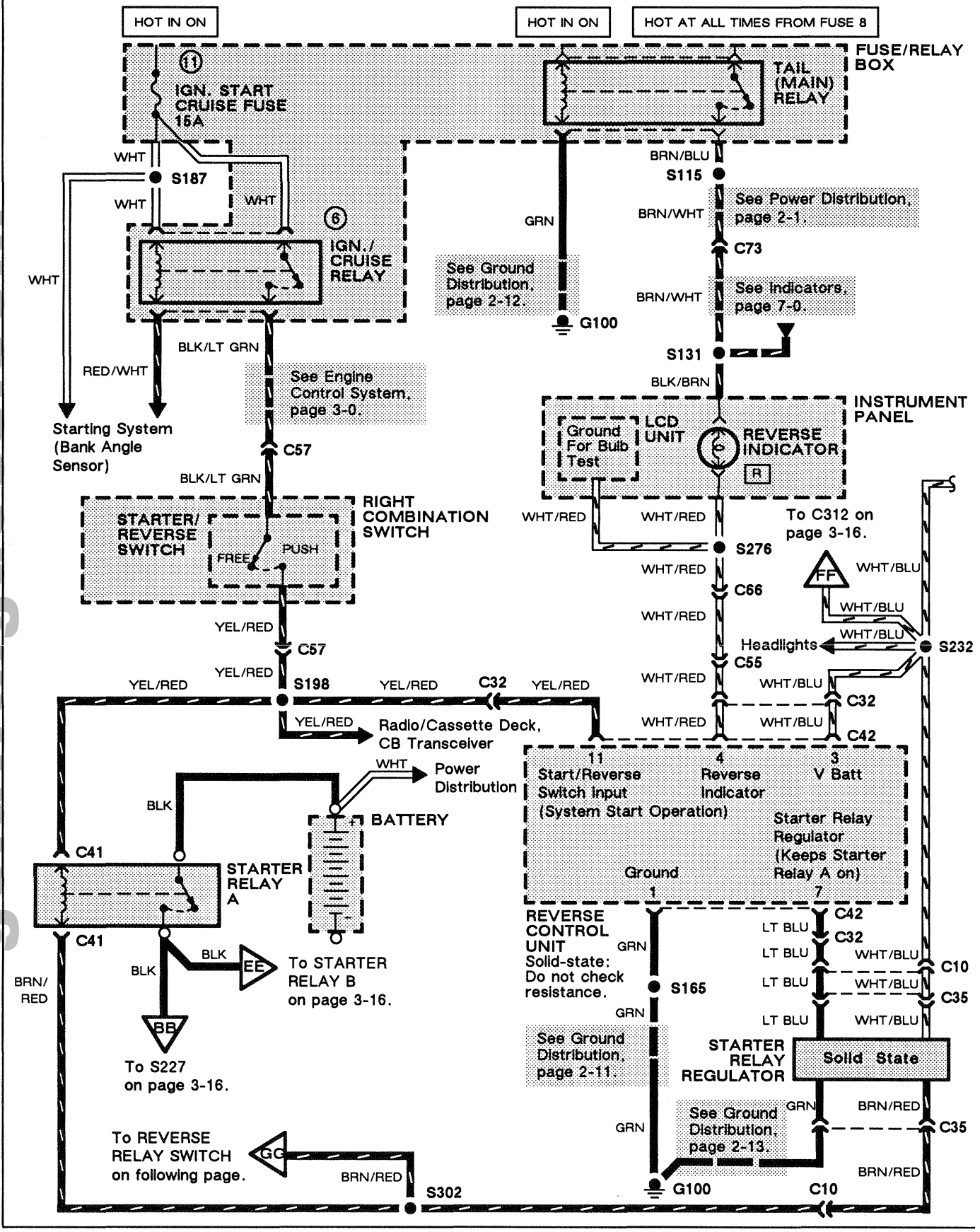
Radiator Fans

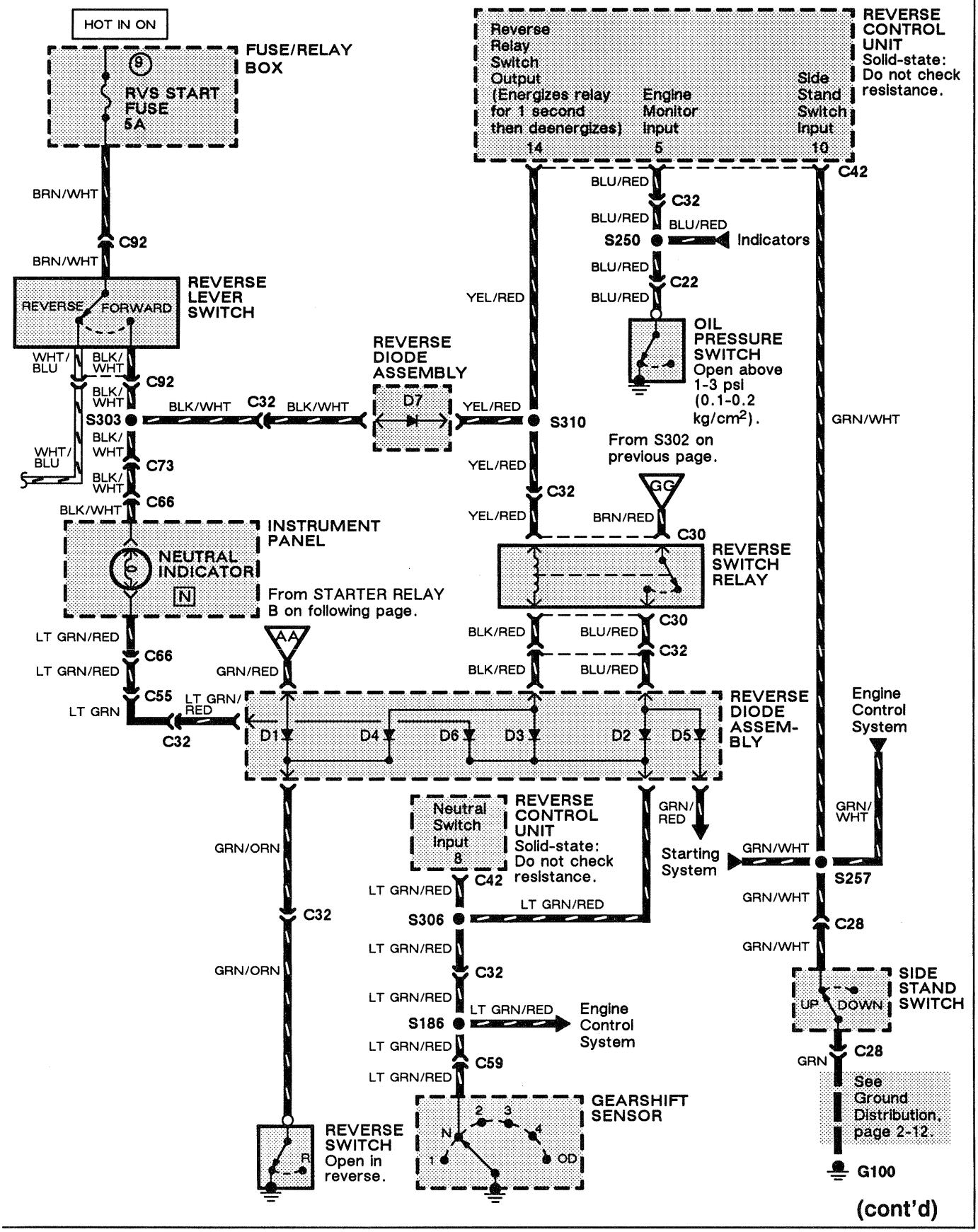
Circuit Schematic



Reverse System

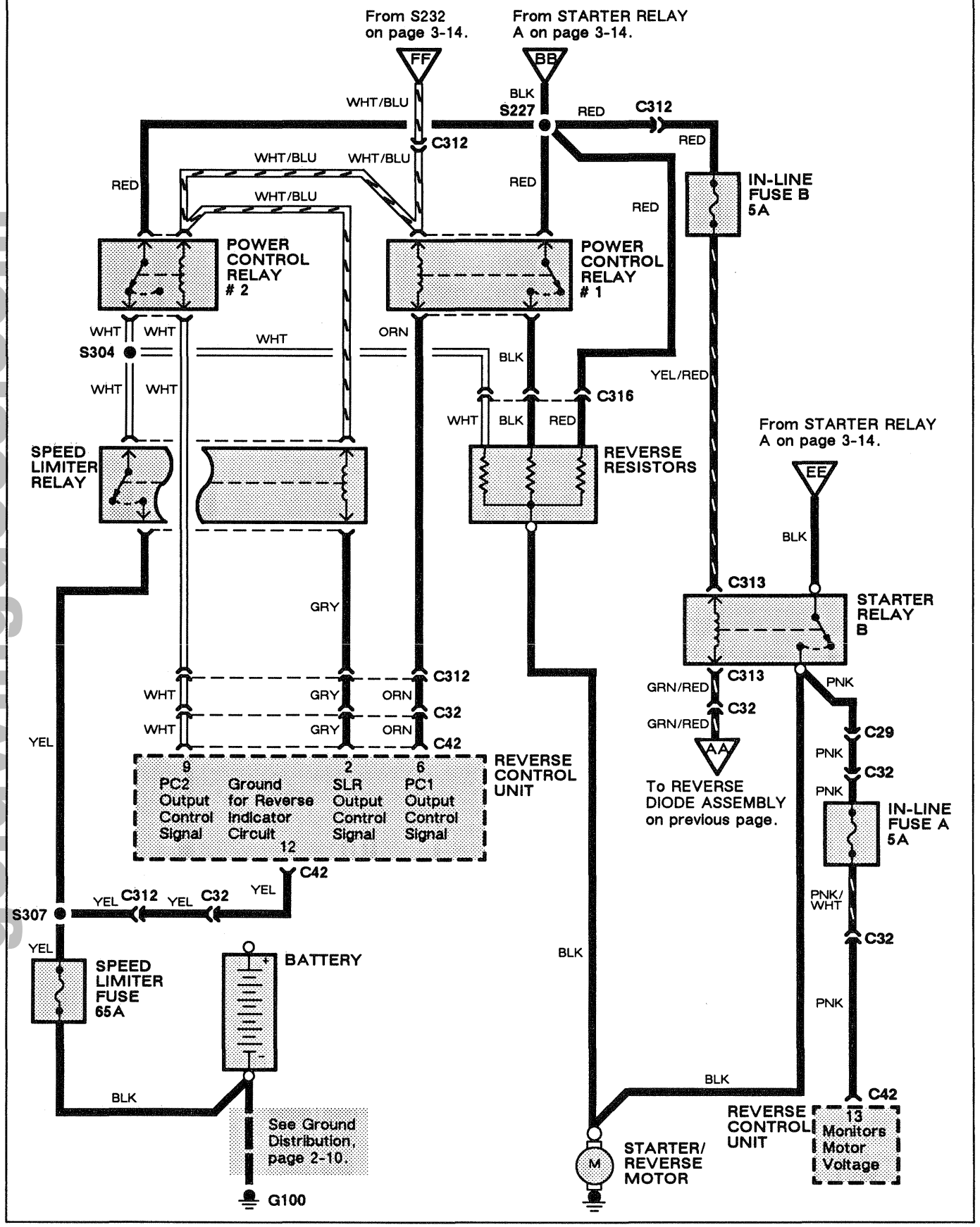
Circuit Schematic





Reverse System

Circuit Schematic (cont'd)



How the Circuit Works

The reverse control unit takes a series of inputs from external switches and also monitors voltage developed at the starter/reverse motor to determine what outputs should be controlled to make reverse direction possible.

When reverse lever switch is in REVERSE position, battery voltage is applied to pin 3 (WHT/BLU) and ground is provided on pin 1 (GRN) from G100.

System Check

If power and ground are OK, the reverse control unit then starts a system check to look for the following:

- Battery voltage applied to pin 5 (BLU/RED) when engine is started and oil pressure is above 1-3 psi.
- Ground present at pin 8 (LT GRN/RED) when gearshift sensor is in NEUTRAL.
- Ground present at pin 10 (GRN/WHT) when side stand switch is in the UP position.
- Ground present on pin 12 (YEL), providing a ground for the reverse indicator and to establish that the speed limiter fuse is good.

When the reverse indicator has been illuminated, the driver knows the system is ready for operation. Then the driver presses the starter/reverse switch and battery voltage is applied to pin 11 (YEL/RED) of the reverse control unit. As this input is received, a set of outputs starts controlling other system components.

- The reverse control unit provides 9 volts for one second on pin 14 (YEL/RED) to briefly energize the reverse relay switch. The reverse relay switch contacts close to provide a one second path to ground. This pulls the contacts of starter relay A closed.
- At the same time that pin 14 outputs to reverse relay switch, the reverse control unit grounds pin 7 (LT BLU), which grounds the starter relay regulator. This provides the hold-in current path (BRN/RED) to keep starter relay A's contacts closed while the starter/reverse switch is pushed.
- Pin 6 (ORN) is grounded by the reverse control unit when the starter/reverse switch is pushed and minimum load is applied to motor.
- Pin 9 (WHT) is grounded when maximum load is applied to motor.

System Reset

System reset is required when vehicle speed exceeds 2.5 km/h or when the starter/reverse motor has experienced an electrical motor brake of three seconds or more. The reverse control unit monitors the starter/reverse motor's voltage, and if it determines an excessive speed, it grounds pin 2 (GRY), allowing the speed limiter relay's contacts to close. This removes some of the voltage to the starter/reverse motor.

If it determines an electrical motor brake, then the control unit removes all power to the starter/reverse motor by deenergizing starter relay A. The reverse control unit also provides battery voltage to pin 4 (WHT/RED), turning the reverse indicator off. Before the system may be operated again, the reverse lever switch must be recycled back to the forward position, applying battery voltage to pin 14 (YEL/RED).

Reverse System

Troubleshooting

SYMPTOM	DIAGNOSIS
• Reverse system doesn't operate and reverse indicator doesn't light.	• No power to reverse control unit, do self-test A pin 3. • No ground to control module, do self-test B pin 1. • Bad side stand switch input, do self-test B pin 10. • No neutral position input from gearshift sensor, do self-test B pin 8. • Incorrect oil pressure switch input, do self-test A pin 5. • Bad speed limiter fuse (65A), do self-test B pin 12. • Faulty reverse control unit. Replace with known good reverse control unit.
• Reverse system operates for only a few seconds, then quits. Reverse indicator turns off or reverse system doesn't operate and reverse indicator lights.	• No voltage to starter/reverse motor, do self-test A pin 13. • No control signal to reverse control unit from starter/reverse switch, do self-test A pin 11. • No control signal from reverse control unit to reverse relay switch, do self-test A pin 14. • No control signal from reverse control unit to starter relay regulator, do self-test A pin 7.

SYMPTOM	DIAGNOSIS
• Reverse system operates, but very slowly or no power on inclines.	• Faulty control signal from reverse control unit to power relay control #1, do self-test A pin 6. • Faulty control signal from reverse control unit to power relay control #2, do self-test A pin 9. • Inoperative power relays, do self-test F. • If all the above is OK, check red circuits to power relay controls for battery voltage with ignition ON, starter reverse switch in REVERSE and starter/reverse switch pushed. If voltage is not present, service circuits for an open.
• Reverse system operates above 2.5 km/h down inclines.	• Inoperative speed limiter relay, do self-test A pin 2.
• Reverse system operates, but reverse indicator doesn't light.	• No control signal from reverse control unit indicator, do self-test A pin 4.

(cont'd)

Troubleshooting (cont'd)

SELF-TEST A: Static Measurements

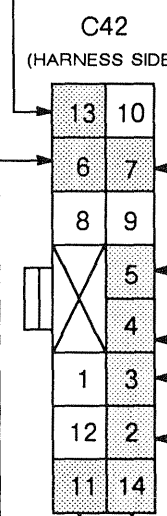
Note: Leave C42 **connected** to reverse control unit.
Make all measurements between pin # given in domestic table and ground (pin #1).

Starter Reverse Motor Input (PNK)
Varying voltage present with ignition switch in ON, reverse lever switch in REVERSE and starter reverse switch pushed.
If not, check in-line fuse A (5 amp).
If fuse is good, check circuit for an open.
If all measurements are good, do self-test A pin 11.

Power Relay Control #1 Output (ORN)
Battery voltage with ignition switch in ON and reverse lever switch in REVERSE.
If not, replace reverse control unit.
Lightly apply rear brake. Voltage should drop .5 volts. If not, replace reverse control unit.
If both measurements are correct, go to self-test F.

Starter/Reverse Switch Input (YEL/RED)
Battery voltage with ignition switch ON and starter/reverse switch depressed.
If not, service YEL/RED circuit for an open.
If measurements are correct, go to next diagnostic step.

Reverse Relay Switch Input/Output (YEL/RED)
Battery voltage with reverse lever switch in FORWARD.
If not, do self-test C.
9 volts for approximately 1 second with starter reverse switch pushed.
If not, replace control unit.
If all measurements are correct, service YEL/RED circuit for an open.



Starter Relay Regulator Output (LT BLU)
Voltage drops from 1.5 volts to 0 volts with engine running, reverse lever switch in REVERSE and starter/reverse switch pushed.
If not, replace reverse control unit.

Oil Pressure Switch Input (BLU/RED)
0 volts with ignition switch ON.
If not, check to see if oil pressure indicator operates.
If so, service BLU/RED circuit for an open.
If oil pressure indicator dosen't light, replace oil pressure switch.

Reverse Indicator Output (WHT/RED)
With ignition ON, see if indicator illuminates for bulb test.
0 volts present with reverse system in operation.
If not, replace reverse control unit.
If so, short WHT/RED circuit to ground and if indicator dosen't illuminate, service WHT/RED circuit for an open.

Reverse Lever Switch Input (WHT/BLU)
Battery voltage with ignition switch ON and reverse lever switch in REVERSE.
If not, do self-test C.

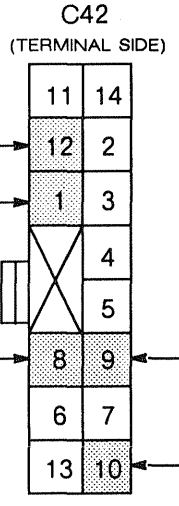
Speed Limiter Relay Control (GRY)
Battery voltage with ignition switch ON, reverse lever switch in REVERSE and starter/ reverse switch pushed. If not, replace reverse control unit.
Push cycle on level ground to exceed 2.5 km/h while in reverse operation; voltage will drop to below .5 volts.
If not, replace reverse control unit.
If all measurements are correct, go to self-test G.

SELF-TEST B: Continuity Test

Note: **Disconnect** C42 from reverse control unit.
Make measurements between G100 (terminal) and desired pin on connector C42.

Speed Limiter Fuse (65 amp) Input (YEL)
Check for continuity to ground G100.
If bad, check speed limiter fuse (65 amp).
If good, check (YEL) or (BLK) circuit for an open.
If all measurements are good, go to next diagnostic step.

Power Relay Control #2 Output (WHT)
Battery voltage with ignition switch ON and reverse lever switch in REVERSE.
If not, replace reverse control unit.
Fully apply rear brake. Voltage should drop below .5 volts.
If not, replace reverse control unit.
If both measurements are correct, do self-test F.



Ground Input (GRN)
Check for continuity to ground G100.
If there is no continuity, repair GRN circuit for an open.
If OK, go to next diagnostic step.

Neutral Switch Input (LT GRN/RED)
With transmission in neutral, check for continuity to ground.
If not, check LT GRN/RED circuit for an open.
If OK, see if neutral indicator illuminates in bulb test and then stays illuminated.
If bulb doesn't light during bulb test, replace bulb.
If bulb only lights for bulb test, do self-test E.

Side Stand Switch Input (GRN/WHT)
With side stand in UP, continuity should exist to ground G100.
If not, check GRY/WHT circuit for an open.
If OK, go to self-test D.

(cont'd)

Troubleshooting (cont'd)

SELF-TEST C: Reverse Lever Switch

Note: Consult service manual for mechanical operations and alignment.

1. With transmission in NEUTRAL and reverse lever switch in FORWARD, see if neutral indicator lights.
   If yes, go to step 3.
   If no, go to next step.
2. Check for battery voltage at BRN/WHT circuit of reverse lever switch connector C92.
   If yes, go to next step.
   If no, service BRN/WHT circuit for an open.
3. With C92 disconnected check continuity between:
   - BRN and BLK/WHT circuits with reverse lever switch in FORWARD
   - BRN and WHT/BLU circuits with reverse lever switch in REVERSE

   If no continuity exists, replace reverse lever switch.
   If all measurements are OK, go to next step.
4. Service WHT/BLU circuit for an open.

SELF-TEST D: Side Stand Switch

1. With ignition ON and side stand DOWN, check to see if side stand indicator lights.
   If yes, jump to step 3.
   If no, go to next step.
2. With C28 disconnected, check for continuity between GRN circuit and ground G100.
   If yes, go to next step.
   If no, service GRN circuit for an open.
3. Disconnect C28 and check continuity between GRN/WHT and GRN circuits on switch side of connector with side stand switch DOWN.
   If yes, go to next step.
   If no, replace side stand switch.
4. With C28 still disconnected, check continuity between YEL/BLK and GRN circuits.
   If no, replace side stand switch.

SELF-TEST E: Gearshift Sensor Test

1. With C59 disconnected, continuity exists between LT GRN/RED circuit and ground, with transmission in NEUTRAL.
   If not, replace gearshift sensor.

SELF-TEST F: Power Relay Control Test

1. With suspected relay disconnected, apply 12 volts across coil and measure continuity across contacts.
   Power relay control #1–continuity exists
   Power relay control #2–continuity does not exist
   If incorrect, replace relay.
   If OK, go to next step.

2. Power relay control #1; check continuity of BLK circuit from contacts and repair if necessary.
   Power relay control #2; check continuity of WHT circuit from contacts and repair if necessary.
   If all measurements are OK, go to self-test H.

SELF-TEST G: Speed Limiter Relay Test

1. With relay disconnected, apply 12 volts across the coil and measure continuity across contacts; continuity should exist.
   If not, replace speed limiter relay.
   If OK, go to next step.

2. Check continuity of WHT circuit and YEL circuit from contacts and repair if necessary.
   If OK, go to self-test H.

SELF-TEST H: Reverse Resistors

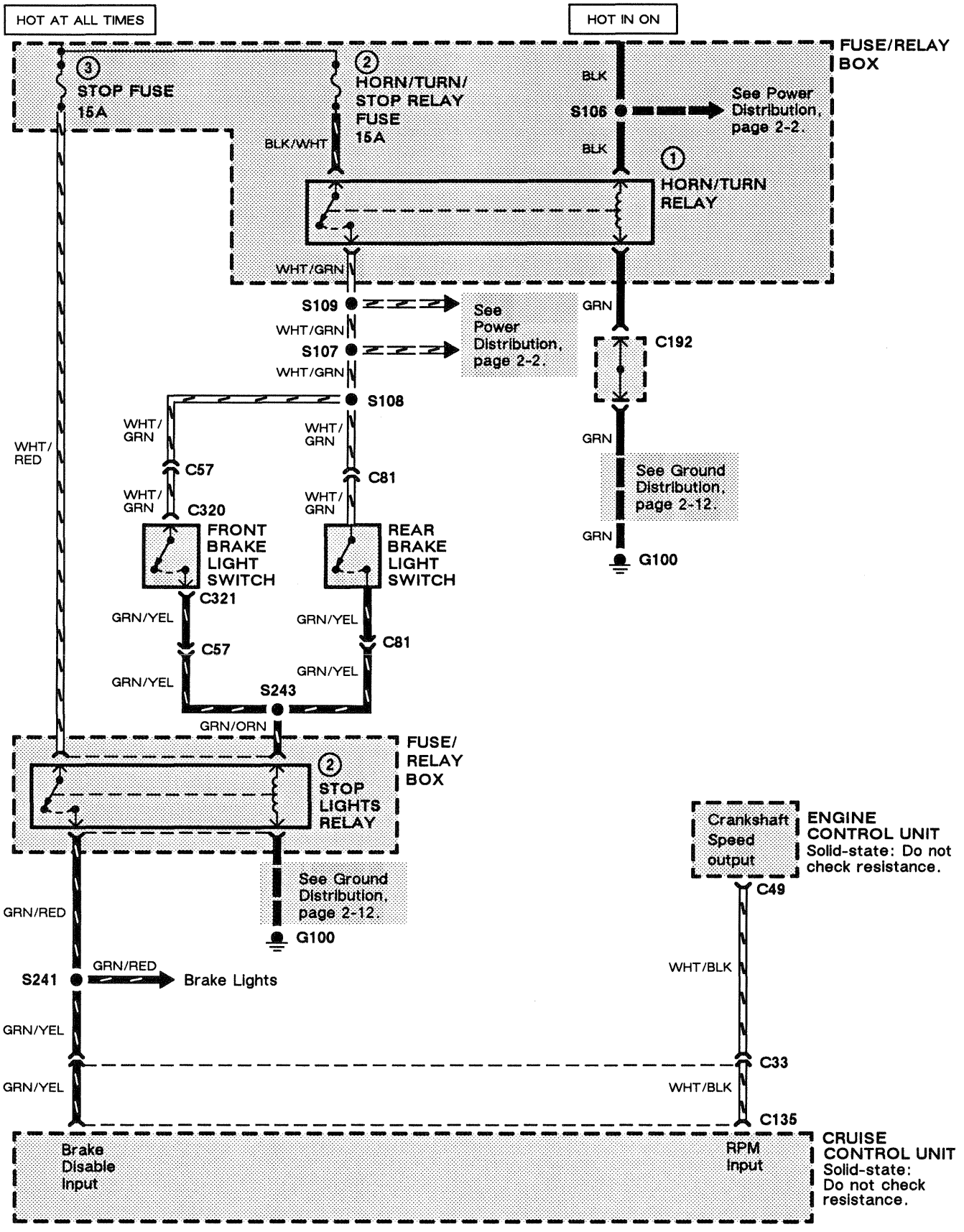
1. Disconnect starter/reverse motor terminal connector from reverse resistors.

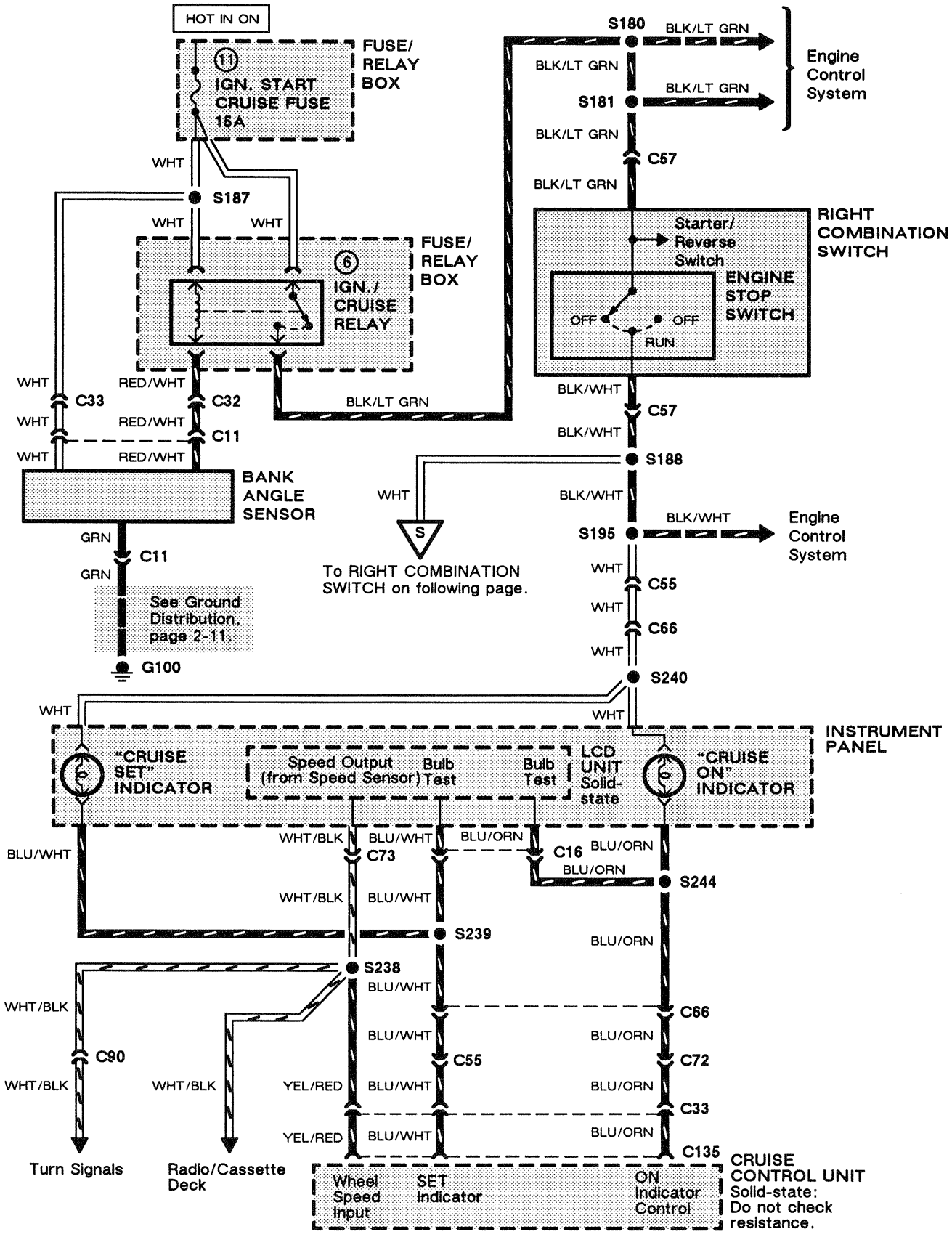
2. Disconnect connector C316 and measure between all wires and terminal from previous step.

3. If resistance is above 2 ohms for any measurement, replace reverse resistors.

Cruise Control

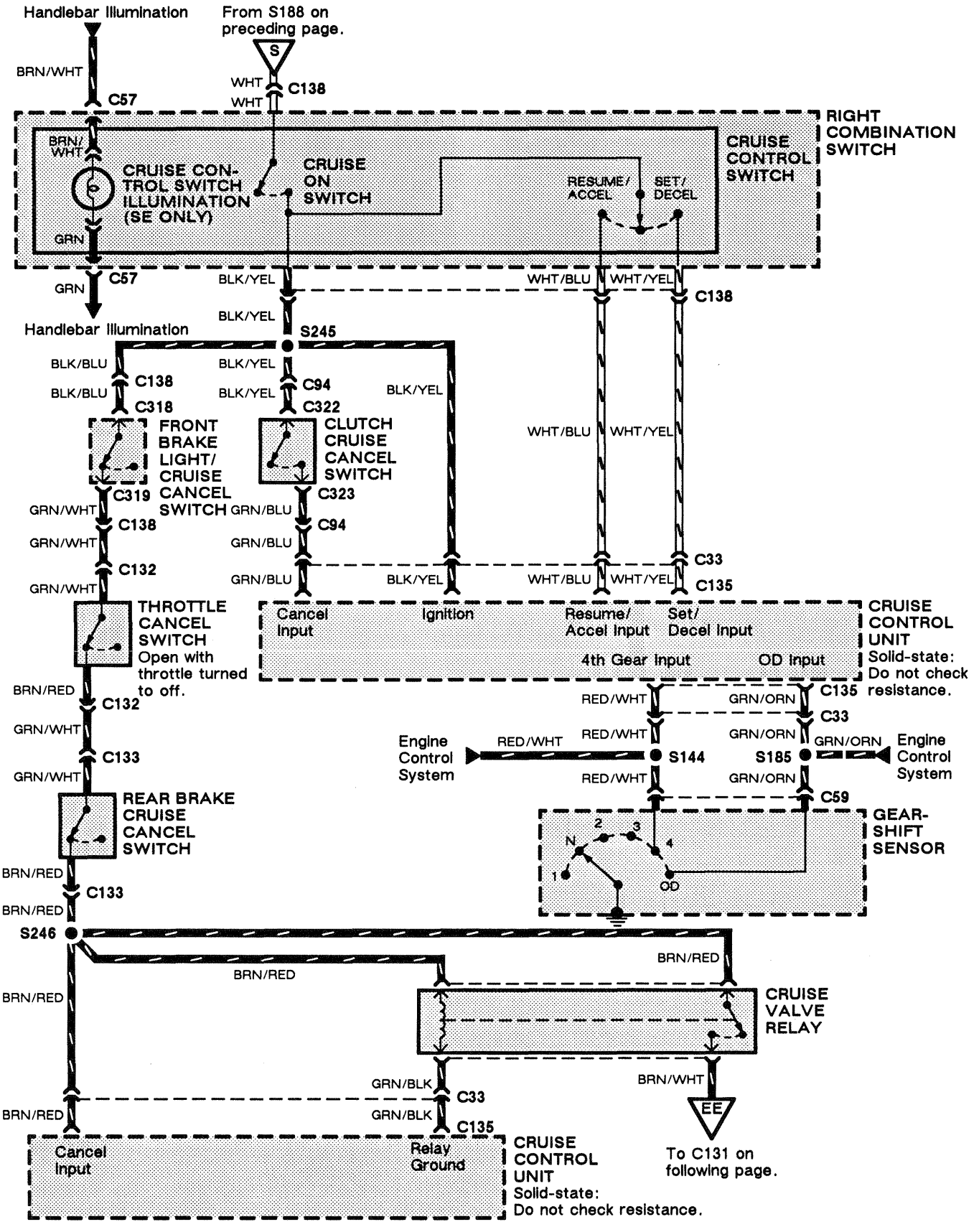
Circuit Schematic

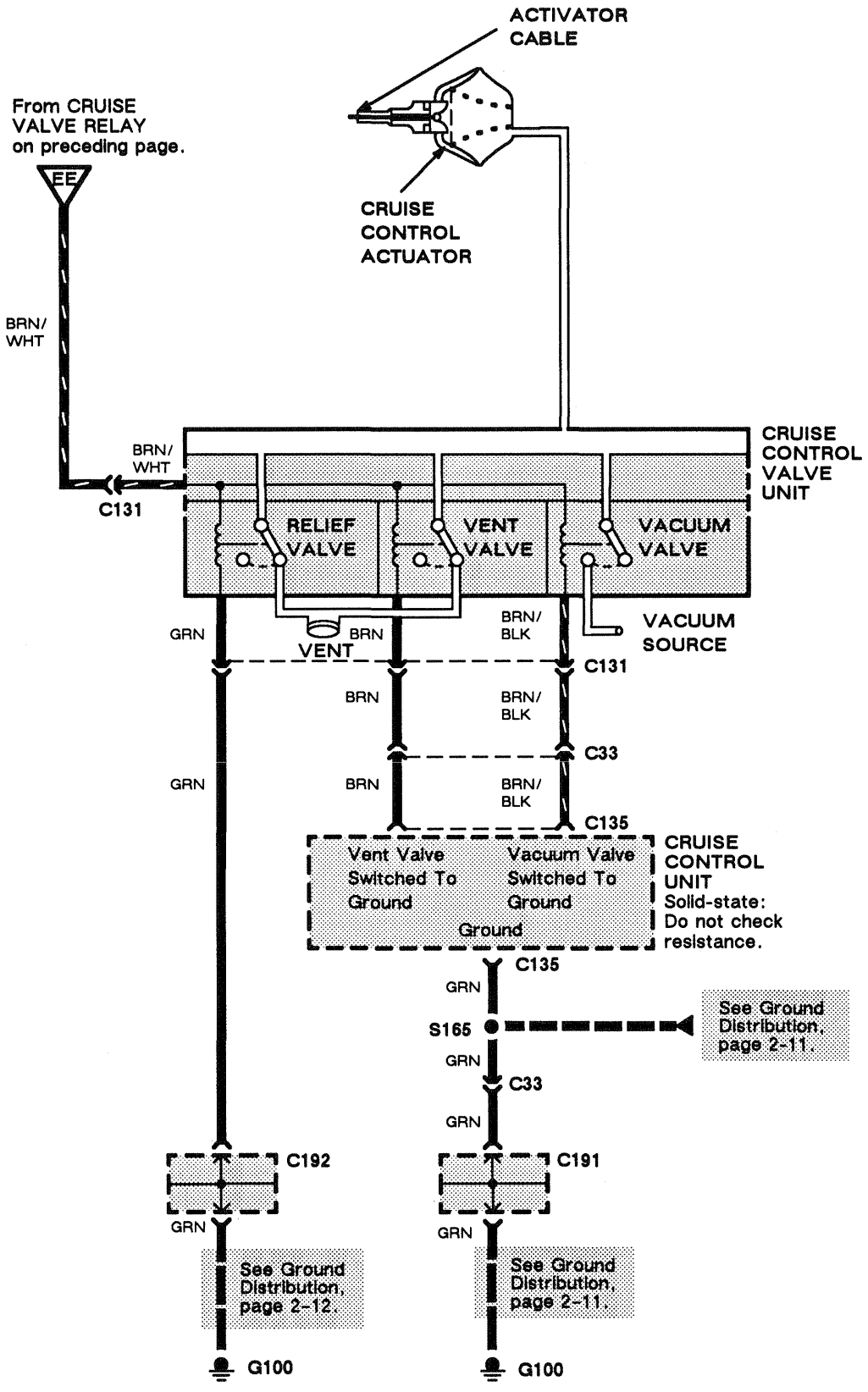




Cruise Control

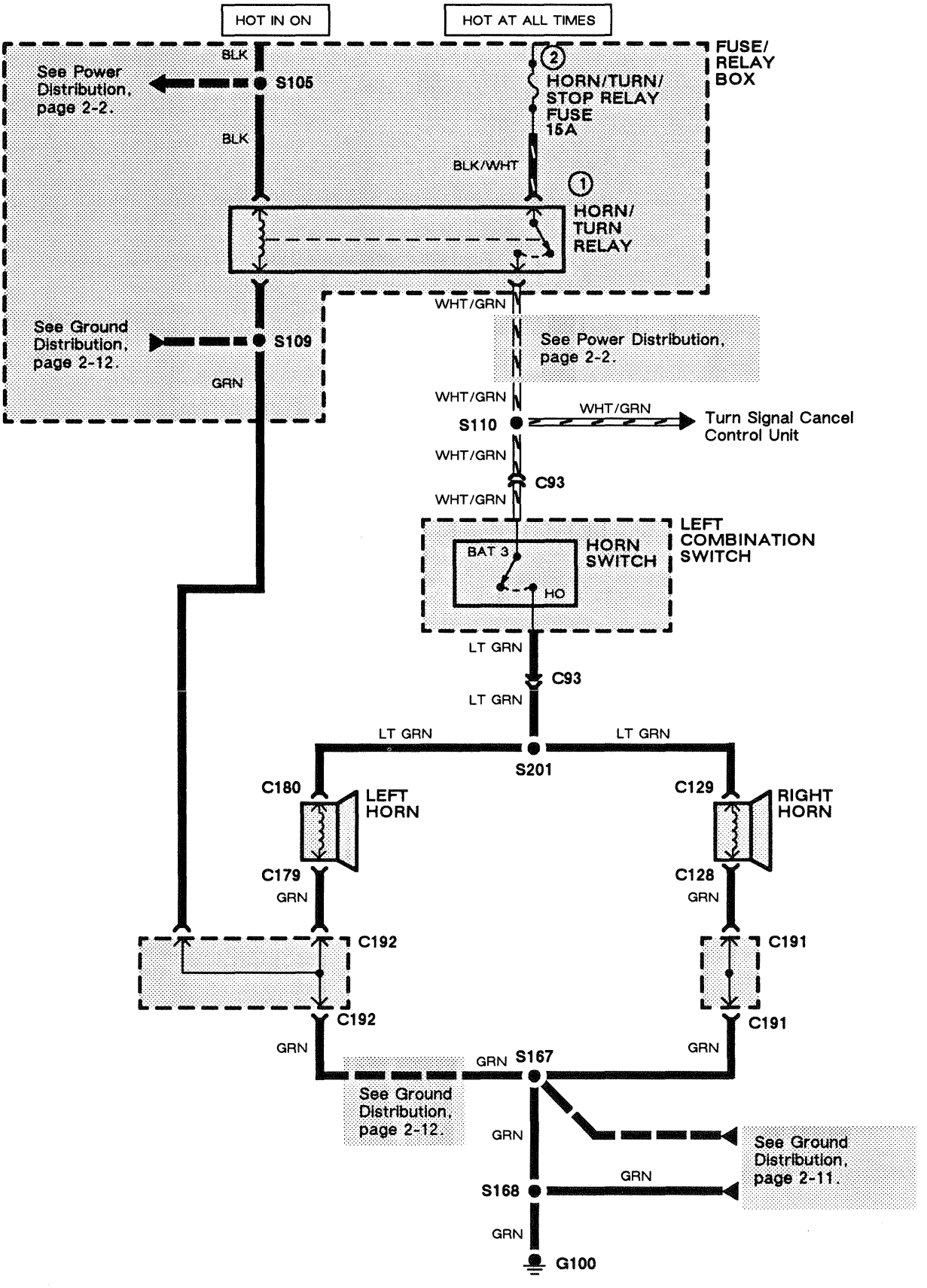
Circuit Schematic (cont'd)

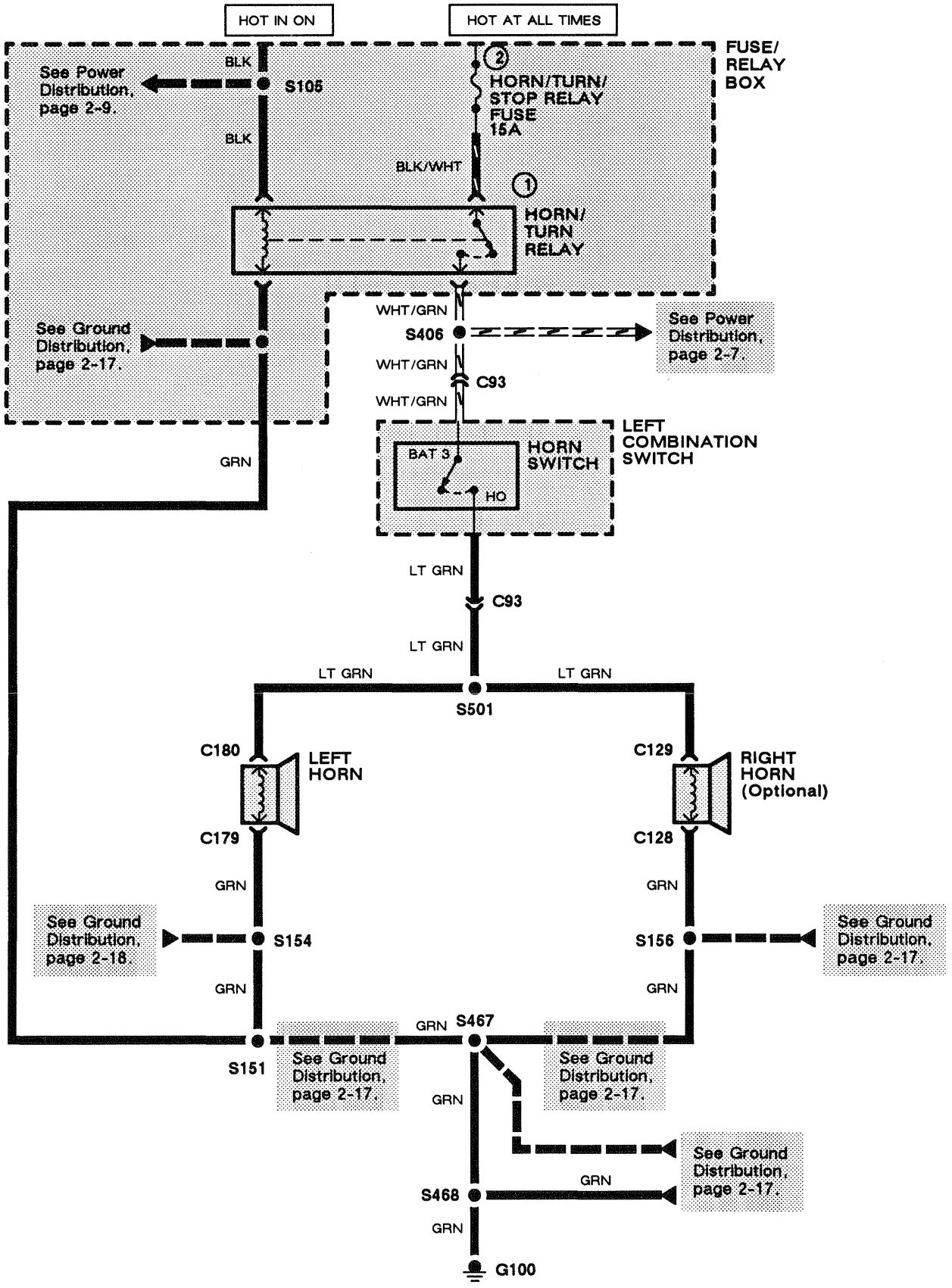




Horn: Asp and SE

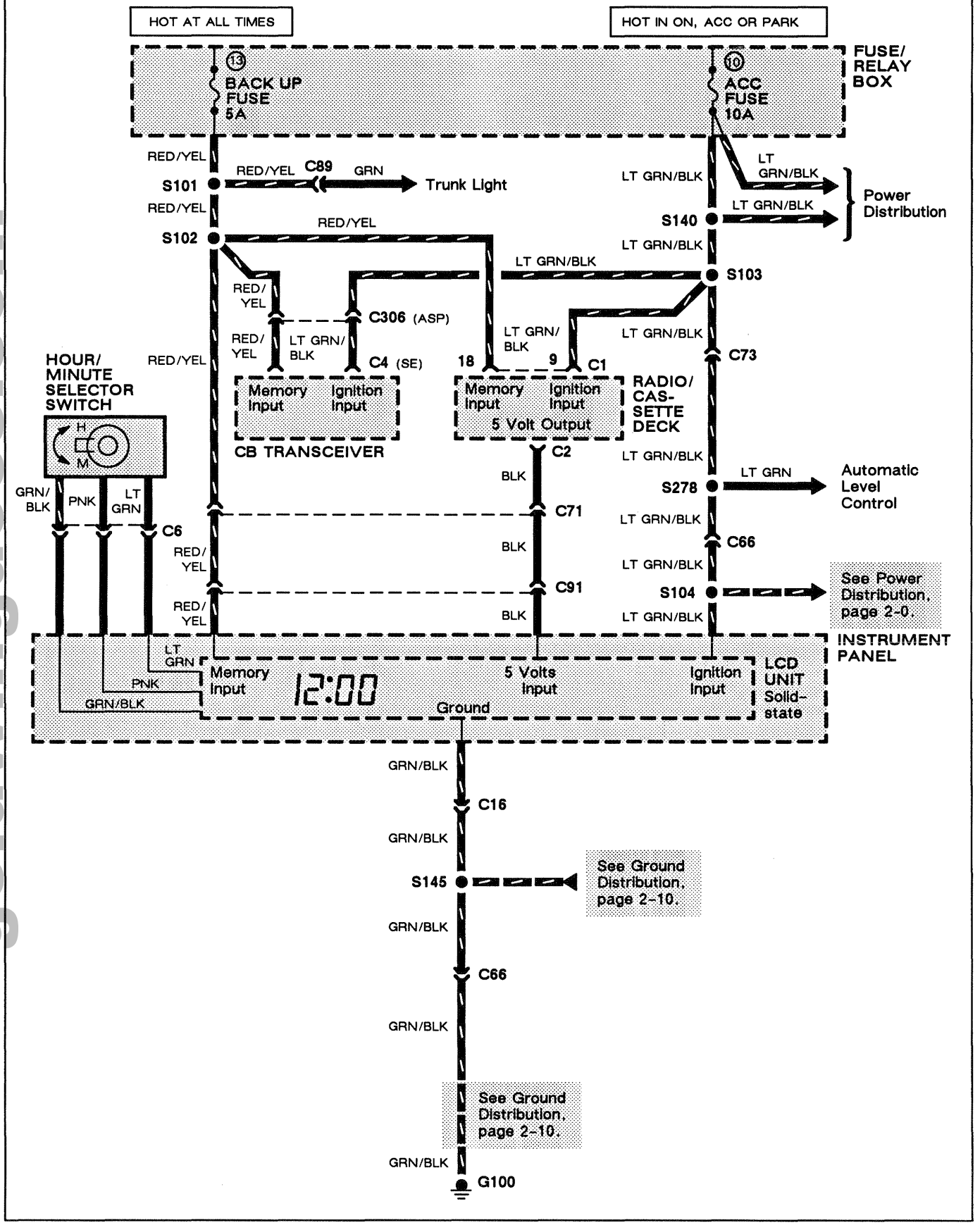
Circuit Schematic





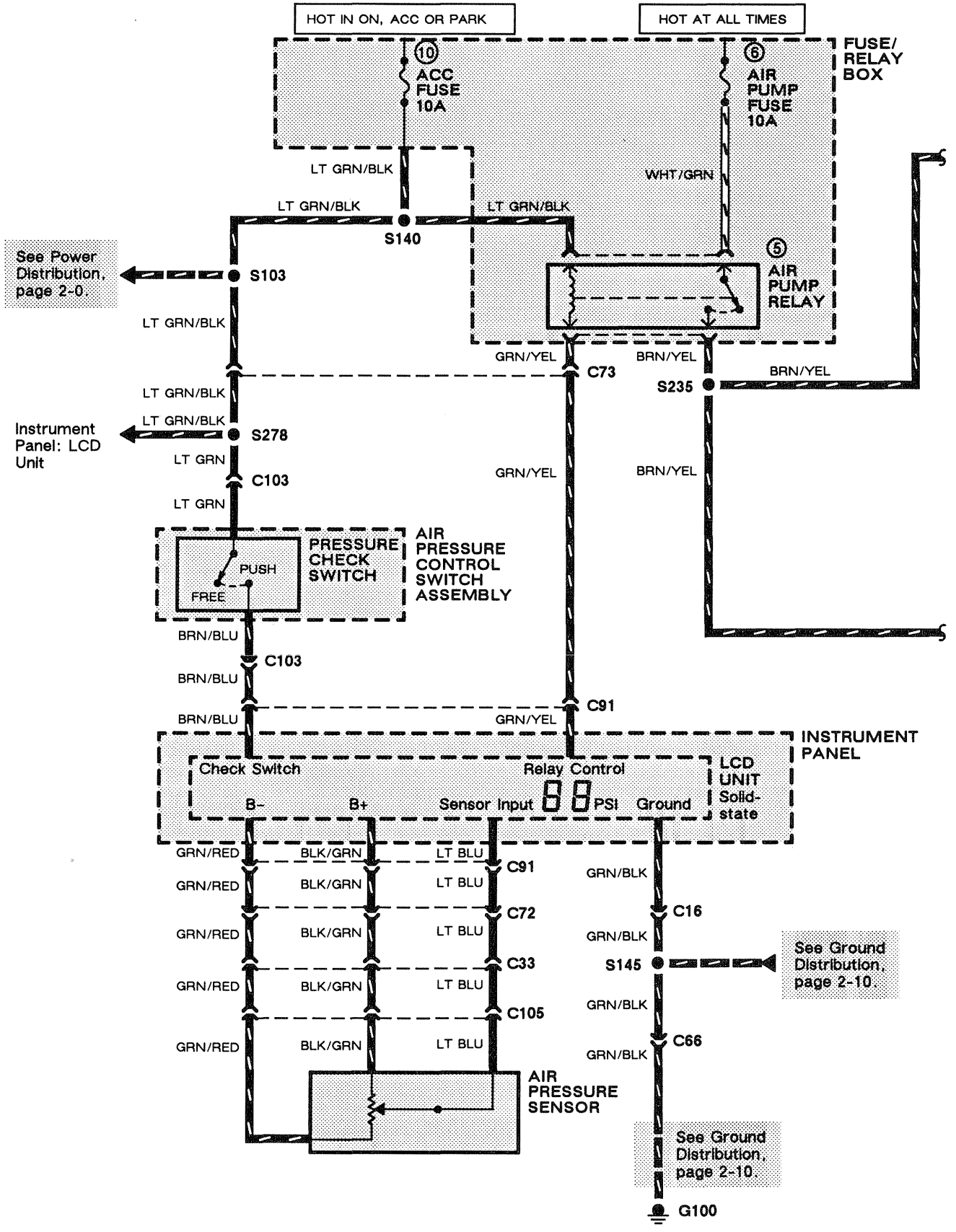
Clock: Asp and SE

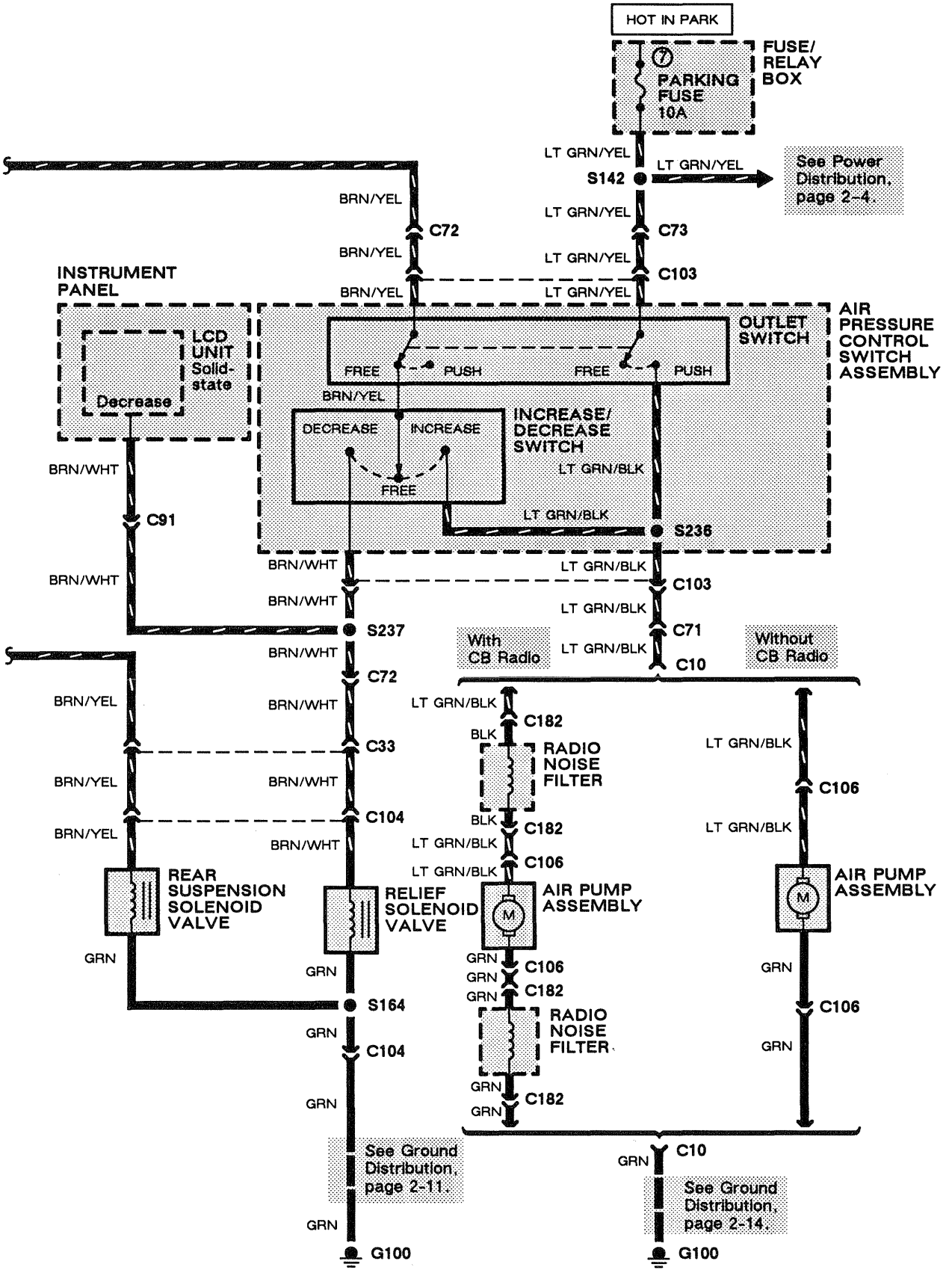
Circuit Schematic



Automatic Level Control

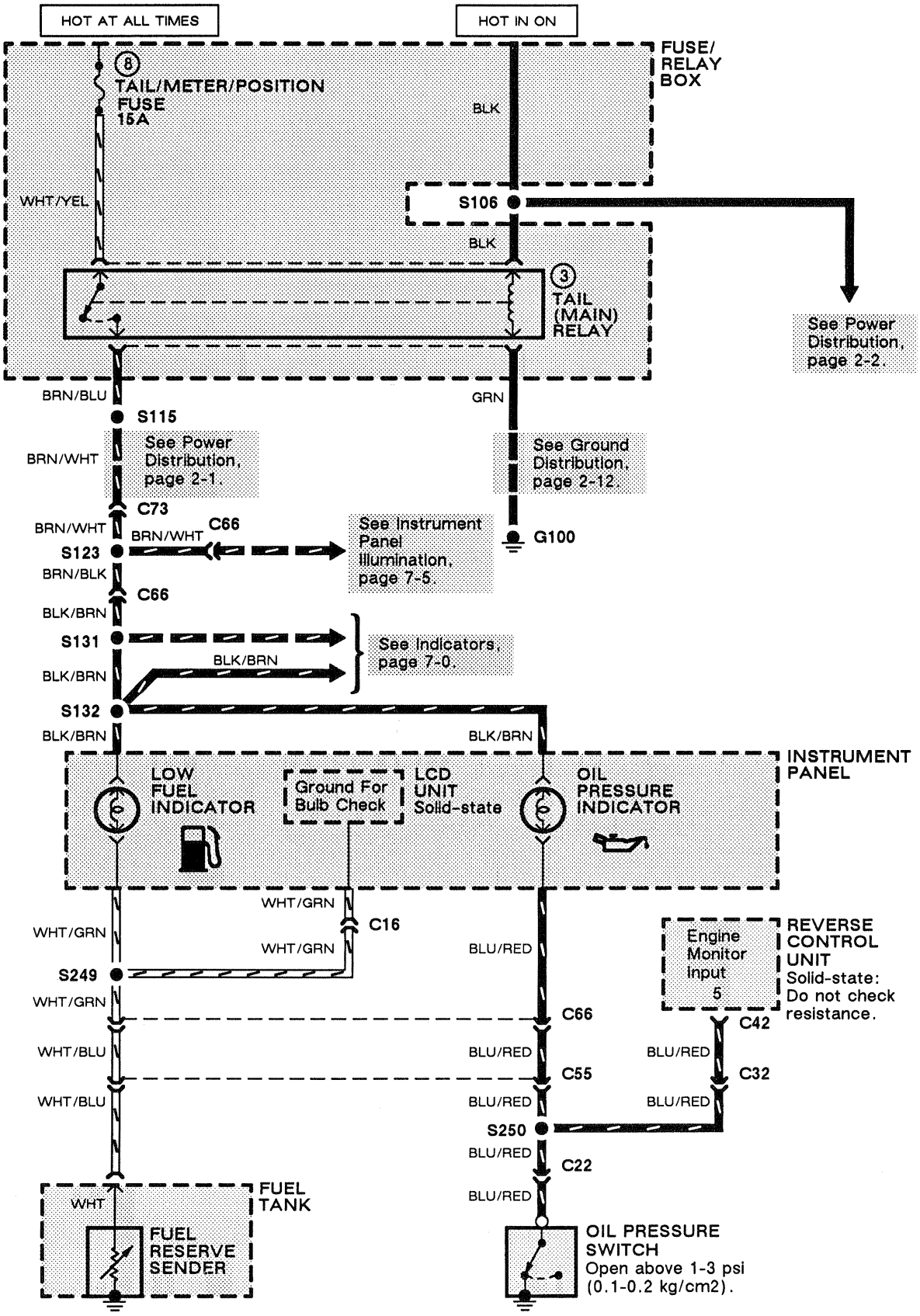
Circuit Schematic





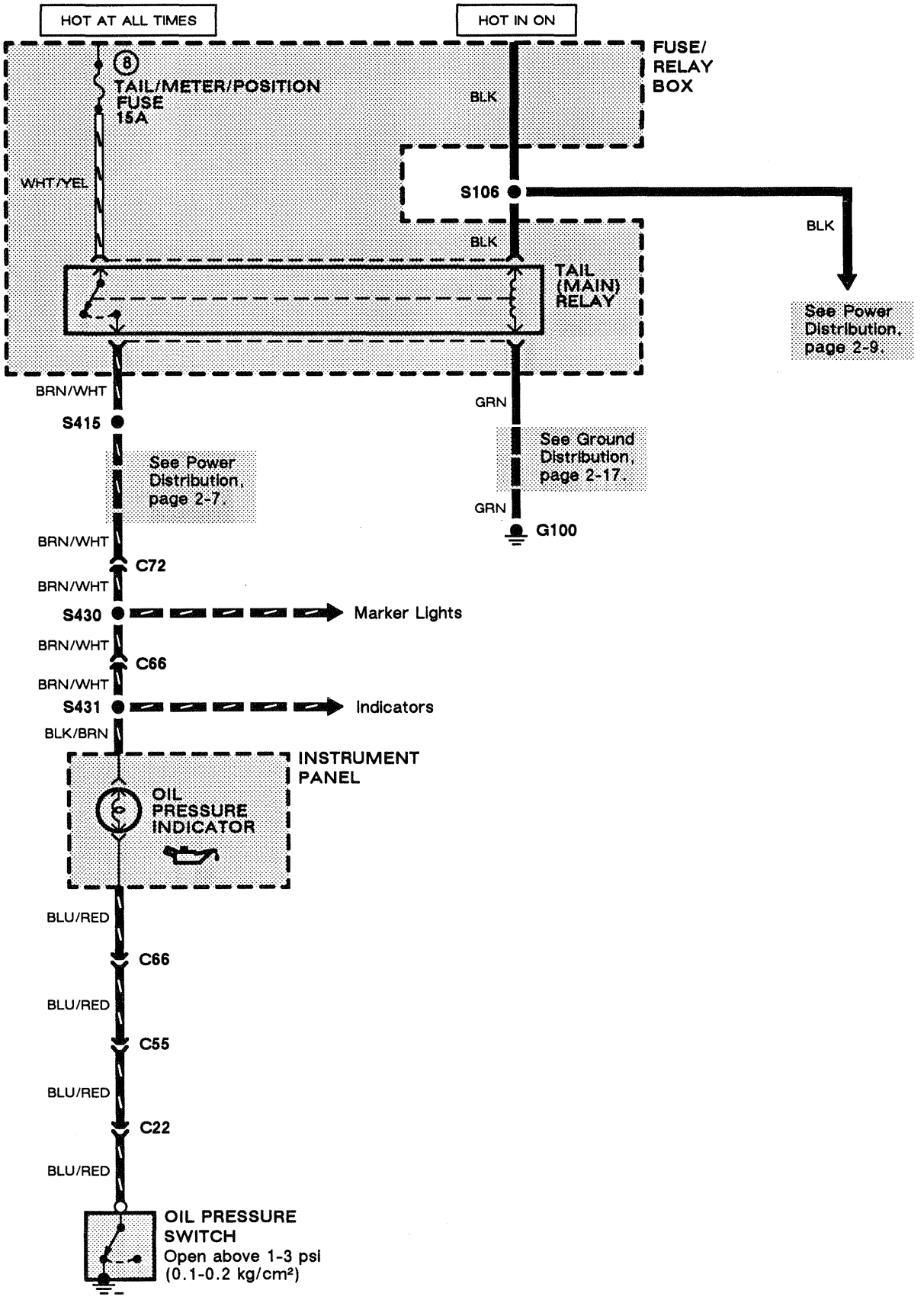
Low Fuel and Oil Pressure Warning System: Asp and SE

Circuit Schematic



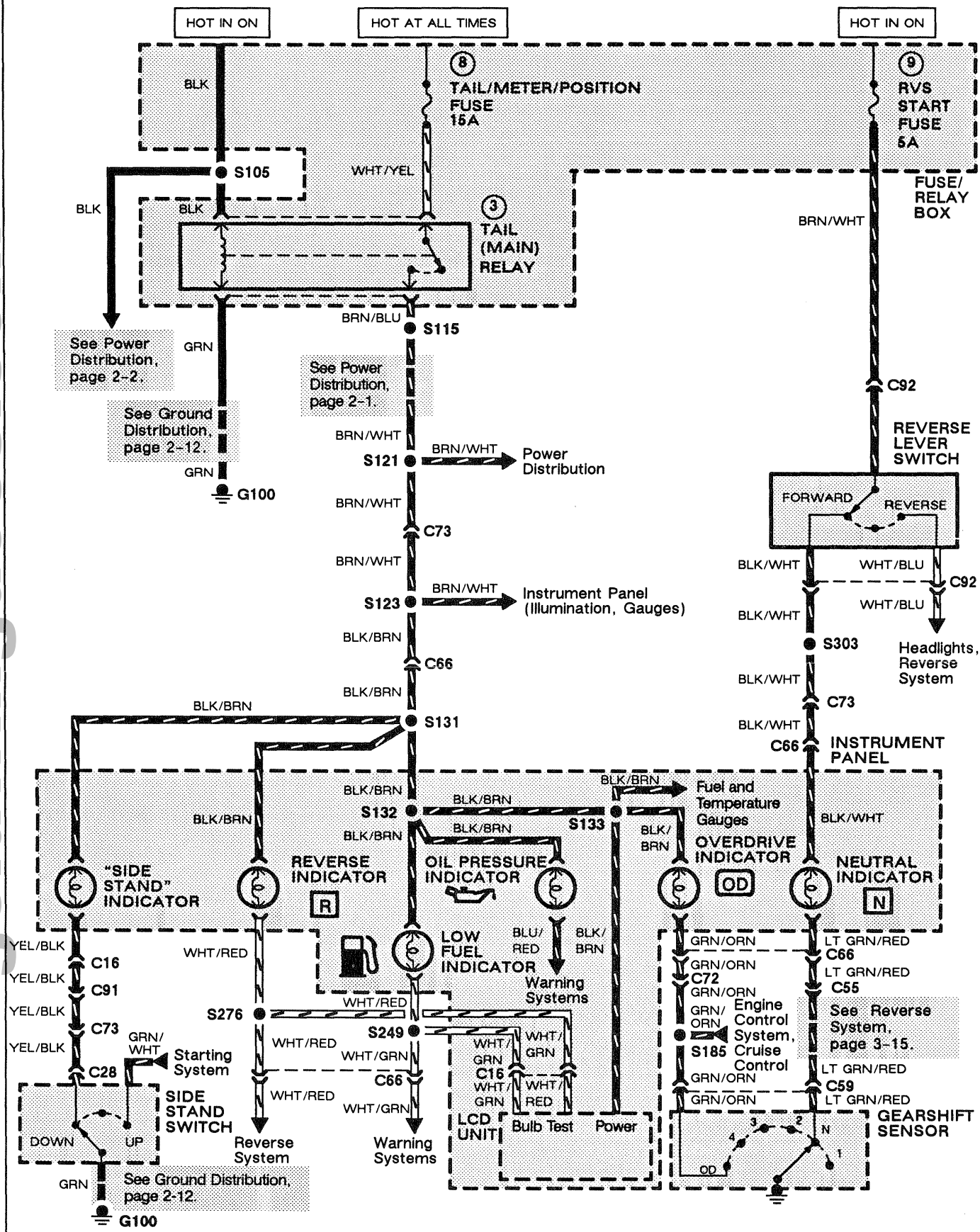
Int

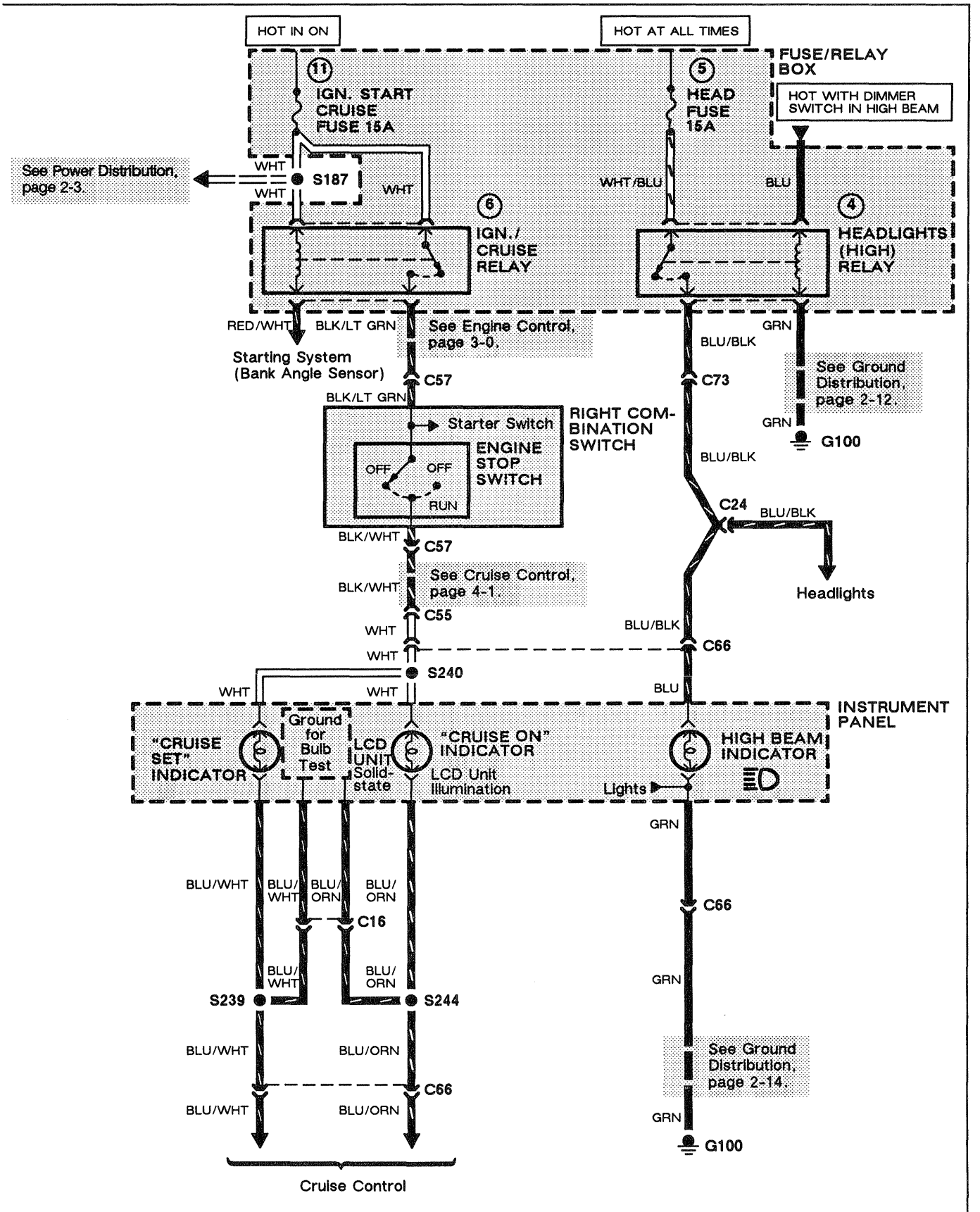
- Oil Pressure Warning System



Indicators: Asp and SE

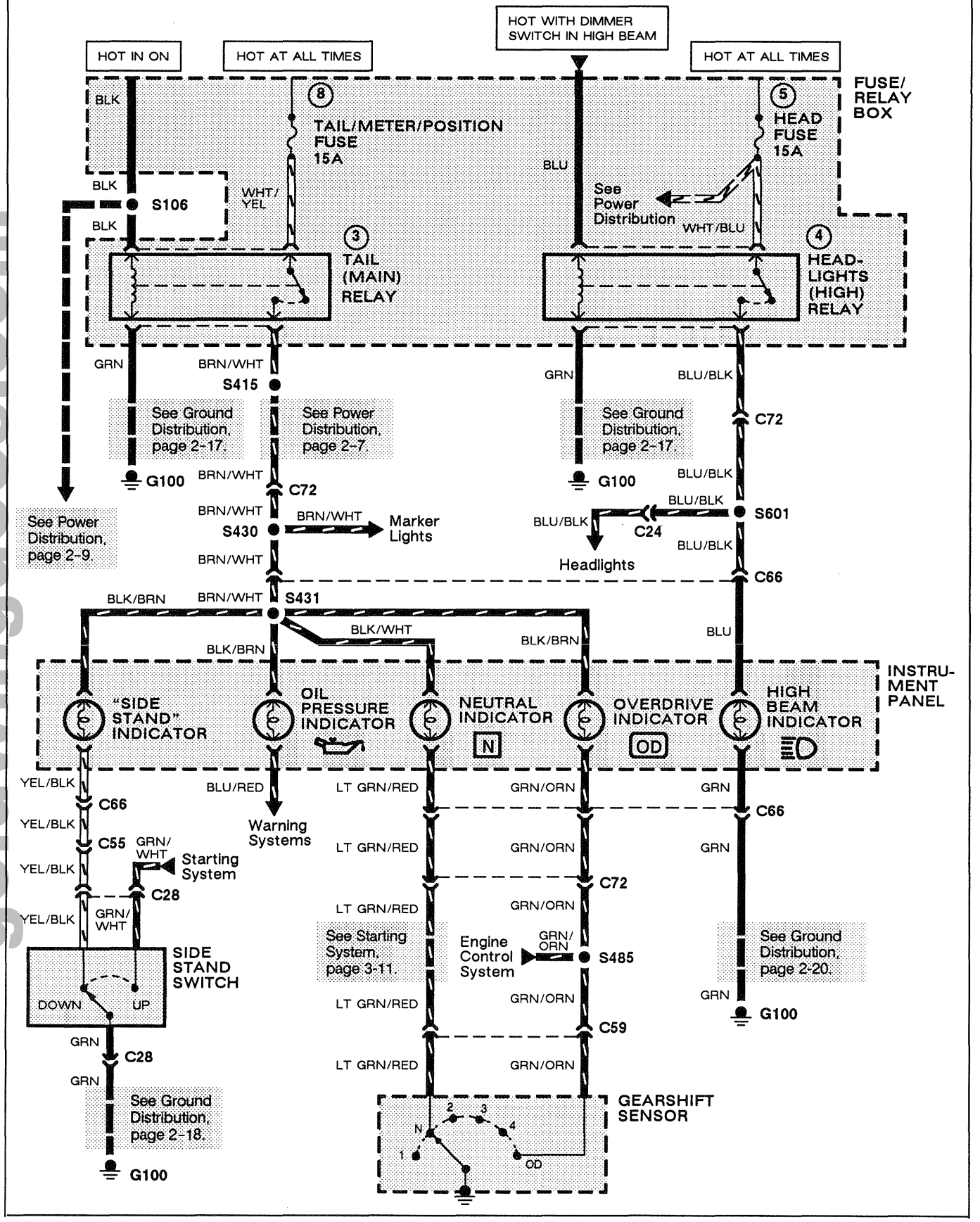
Circuit Schematic





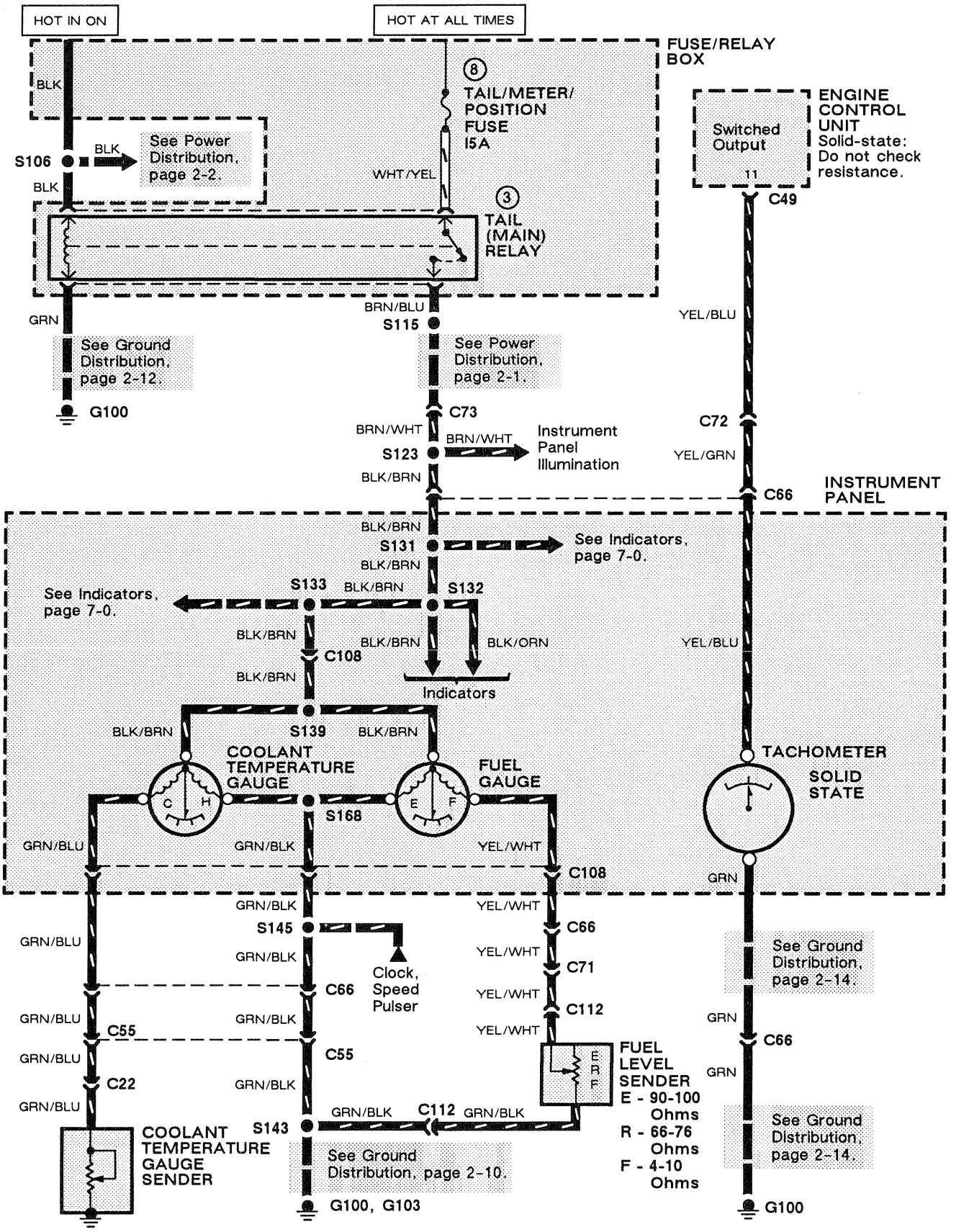
Indicators: Int

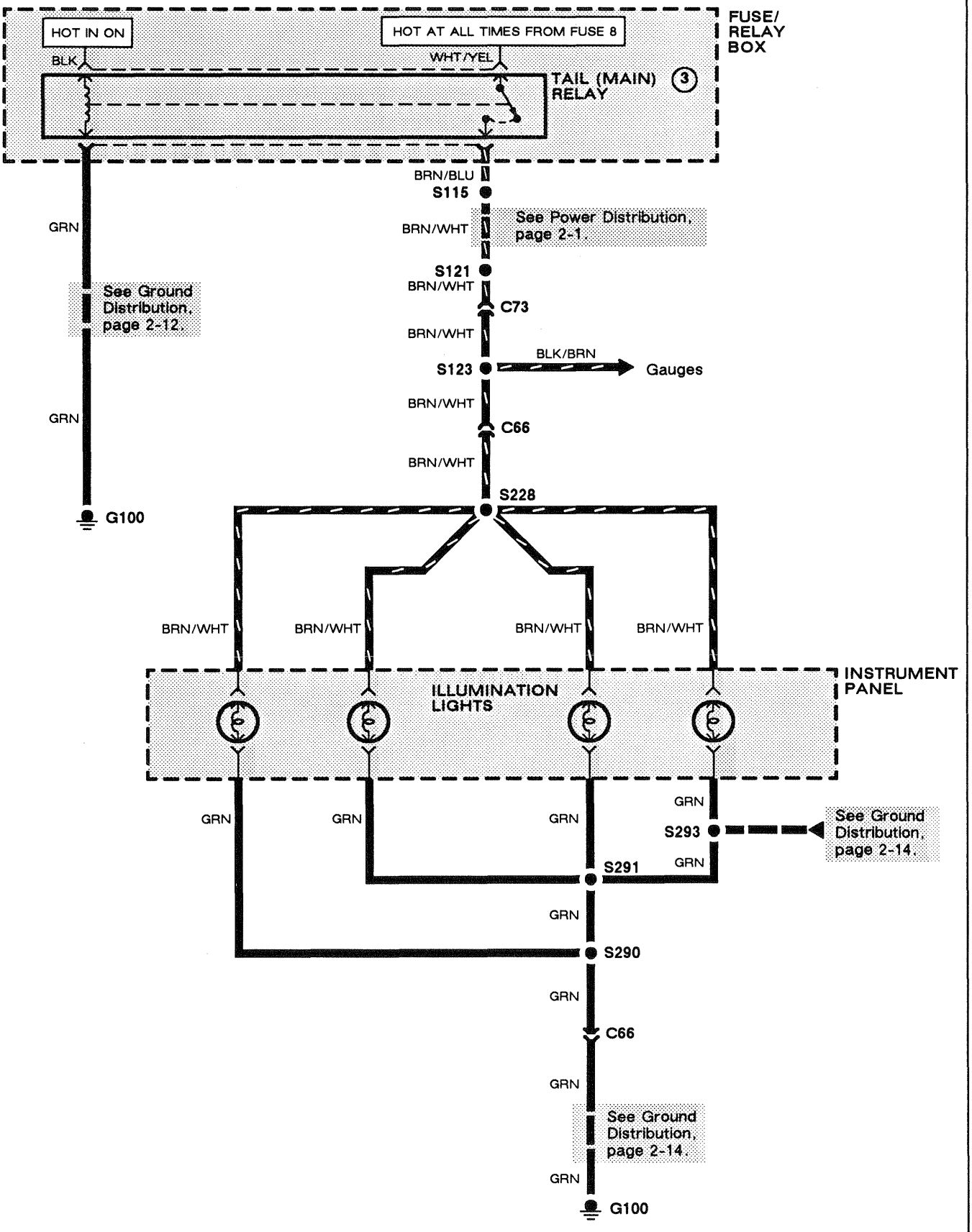
Circuit Schematic



Instrument Panel: Gauges, Illumination Lights (Asp and SE)

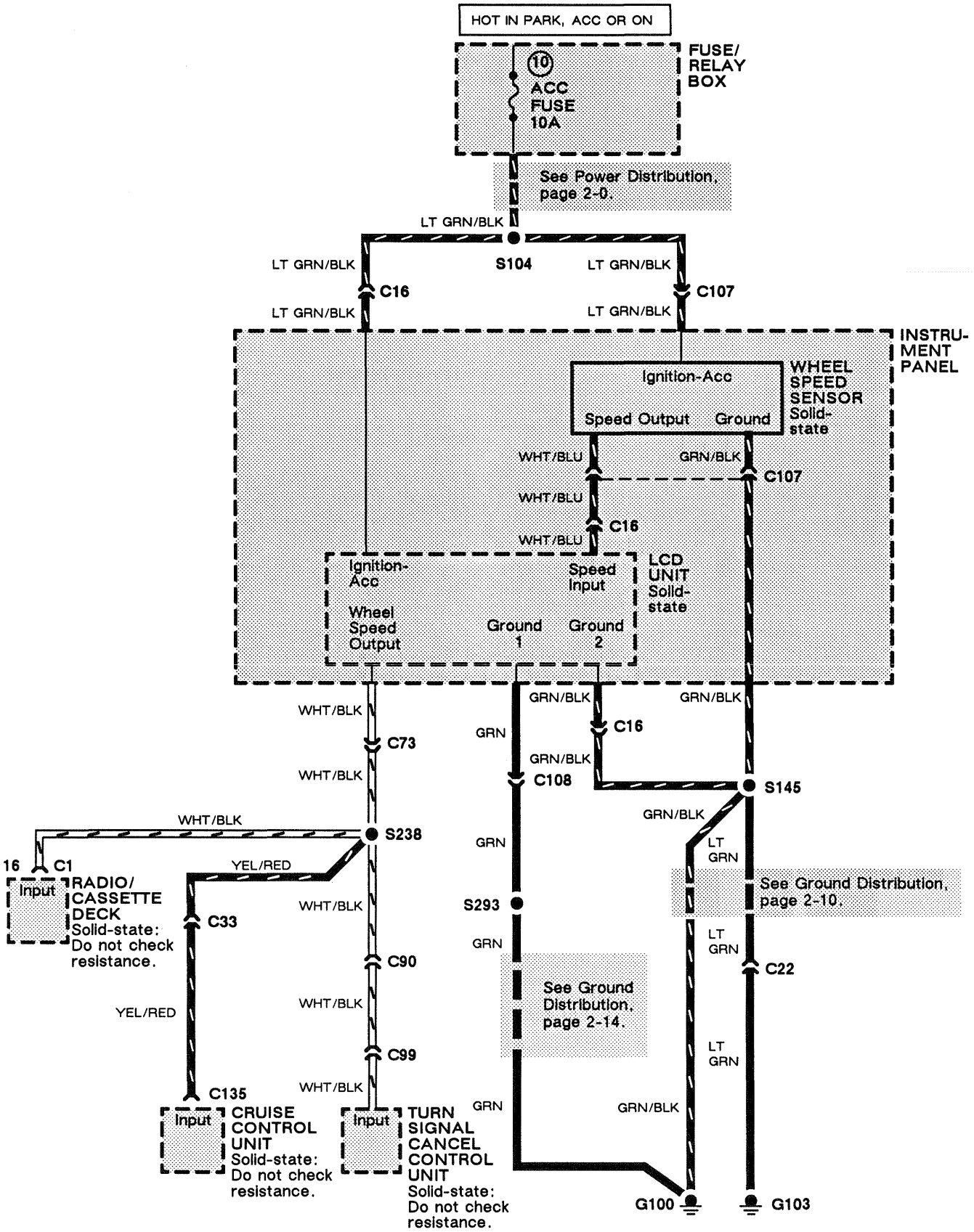
Circuit Schematic





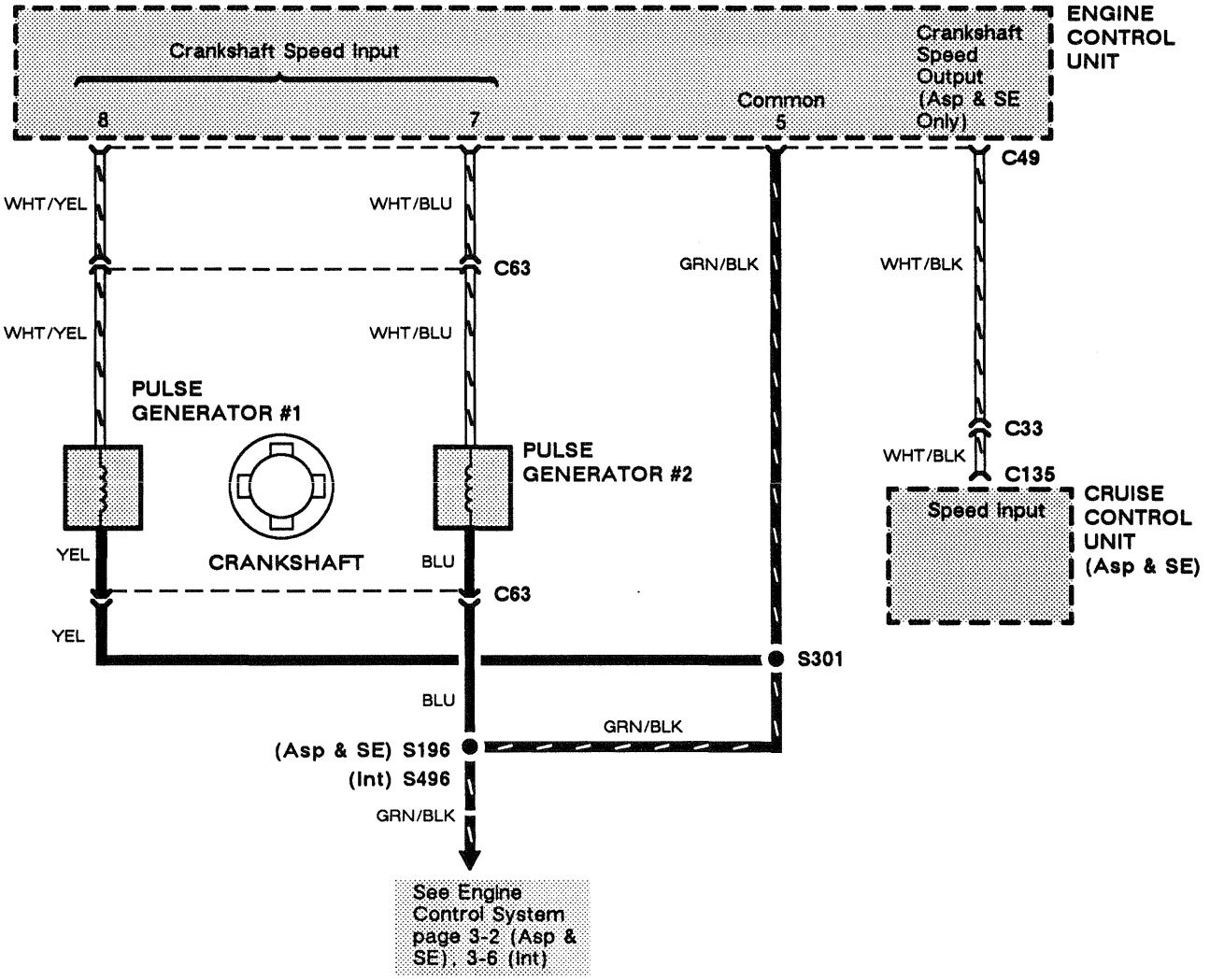
Speed Sensor Circuit (Wheel Speed)

Circuit Schematic



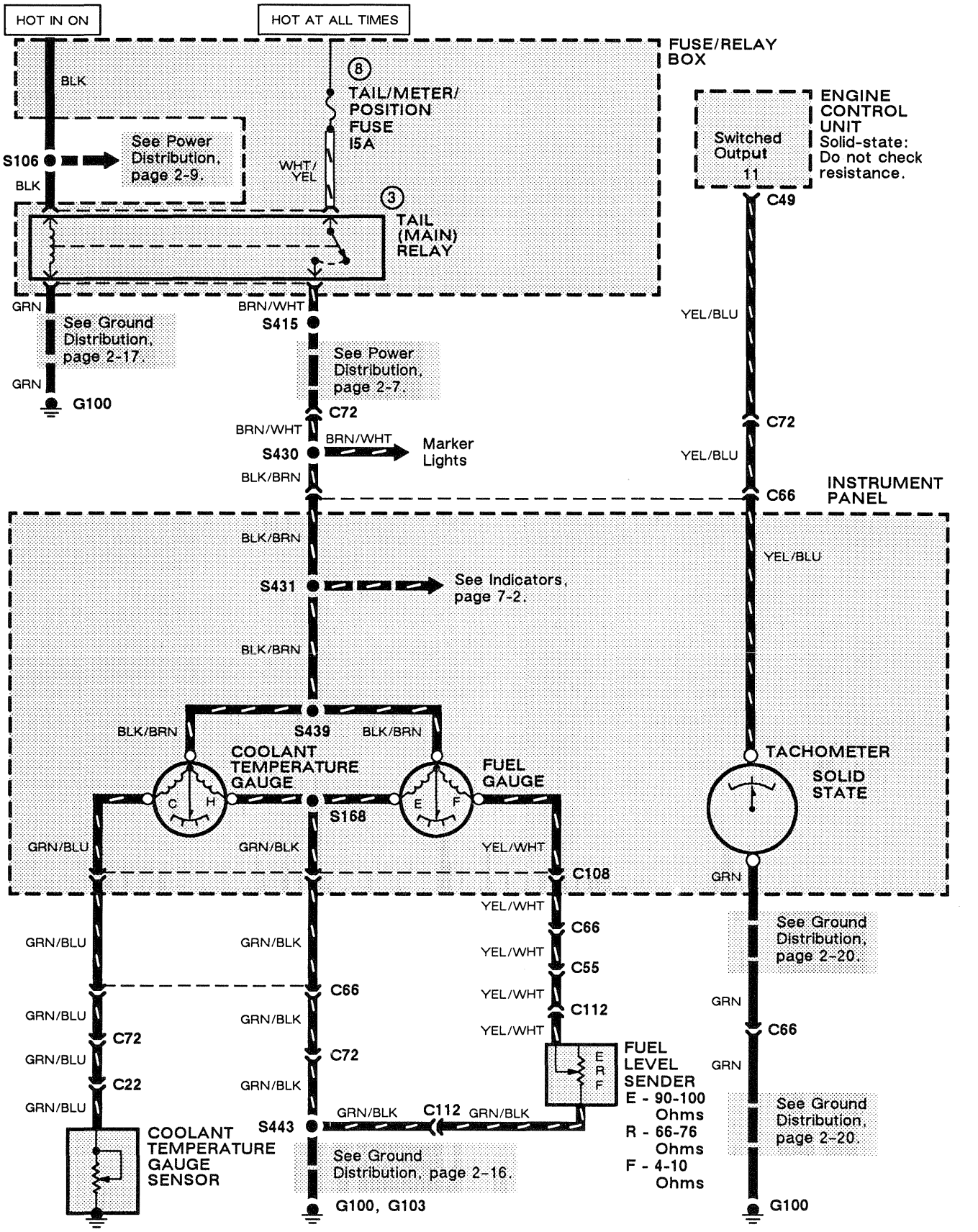
(Crankshaft Speed)

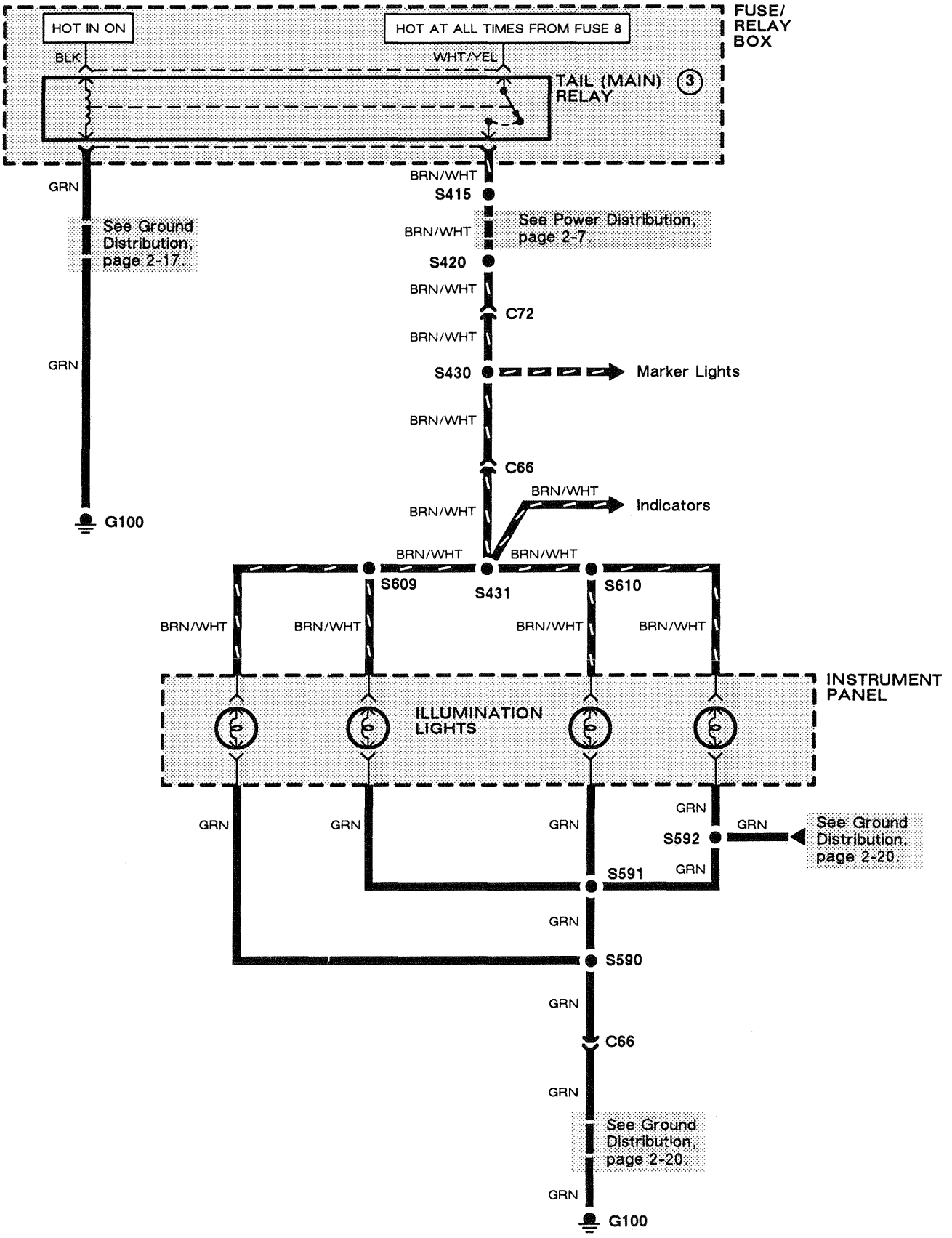
Note: For Ignition, Battery and Grounding details of the Engine Control Unit, see page 3-0 (Asp & SE), 3-4 (Int).



Instrument Panel: Gauges, Illumination Lights (Int)

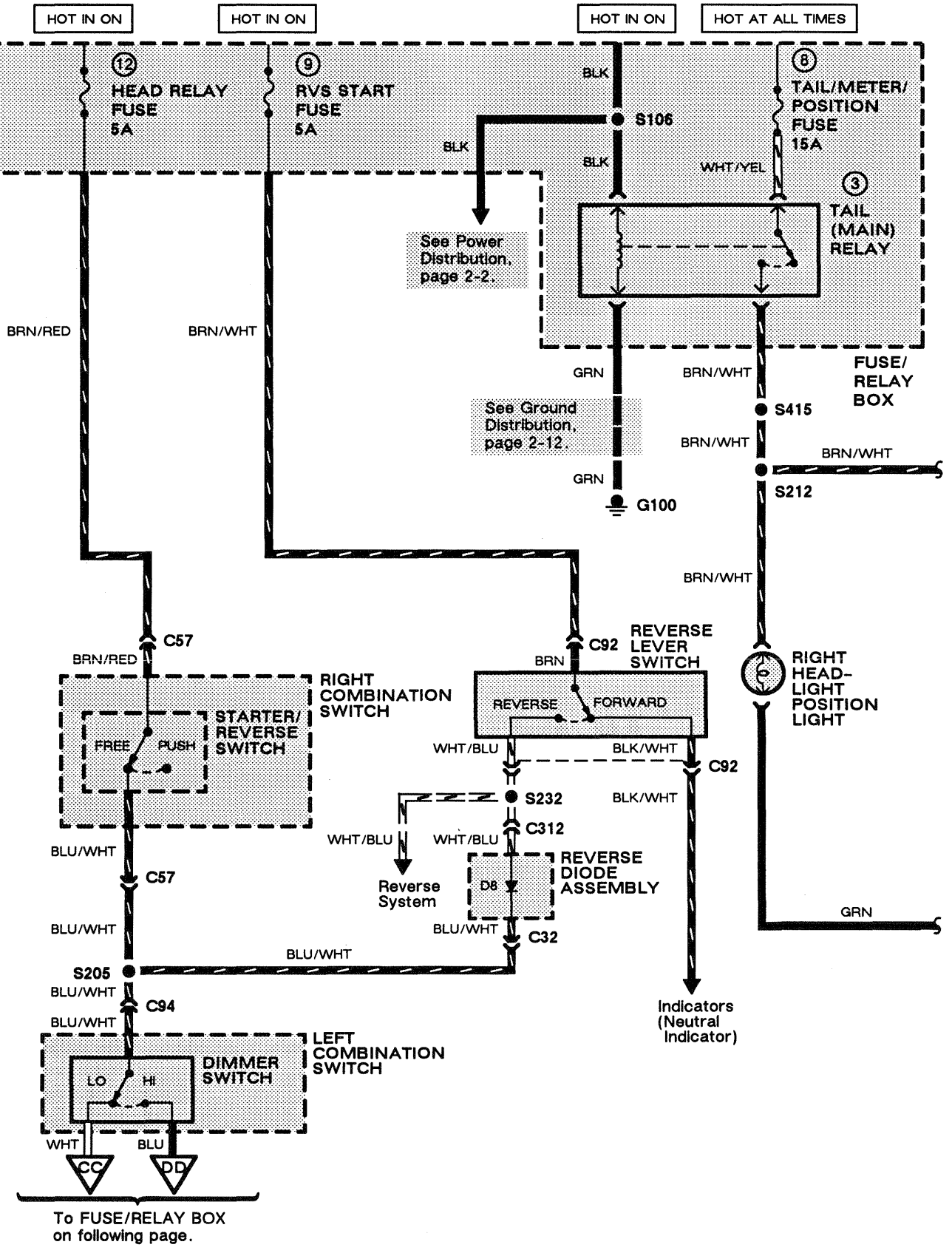
Circuit Schematic

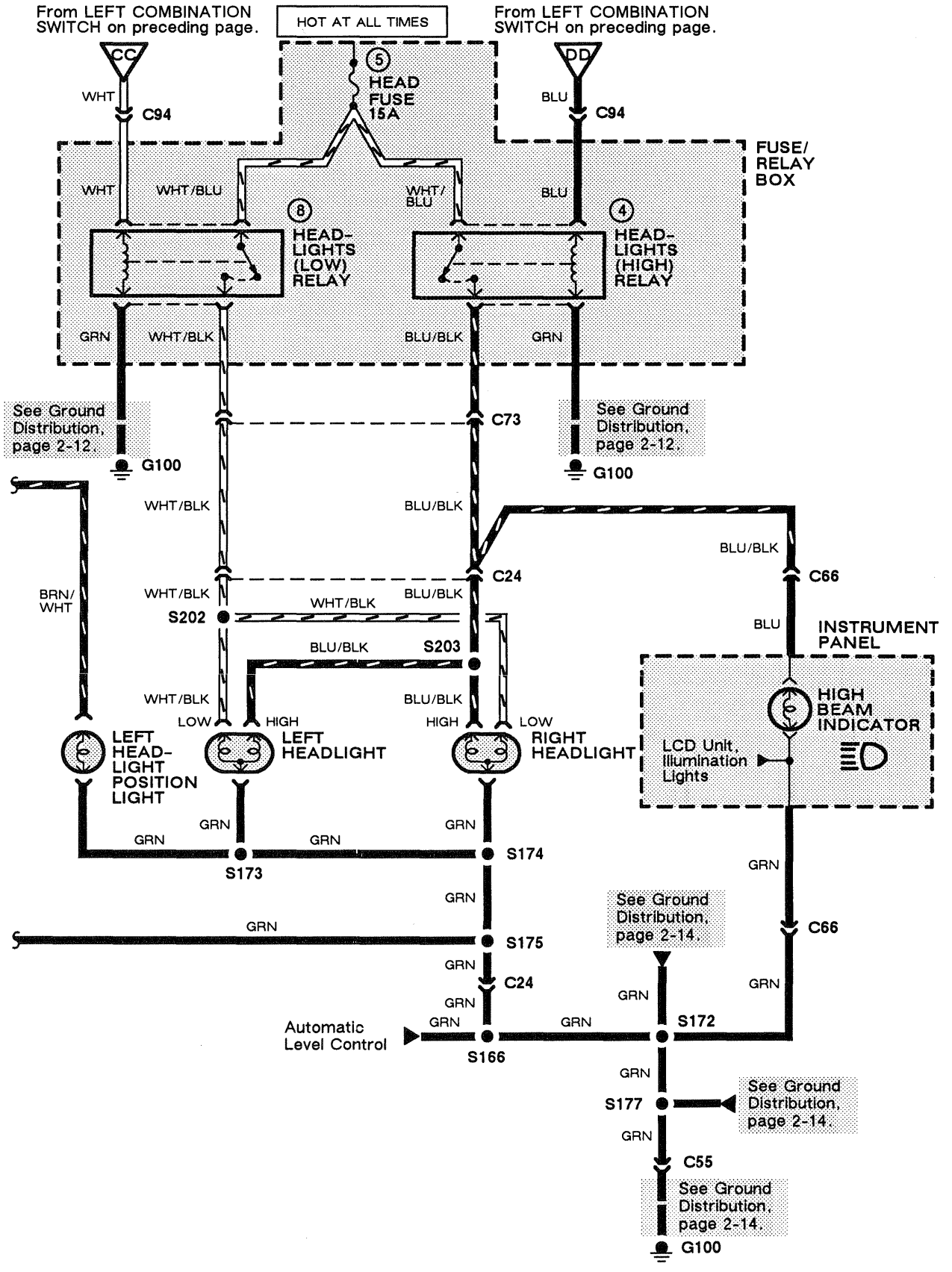




Headlights: Asp and SE

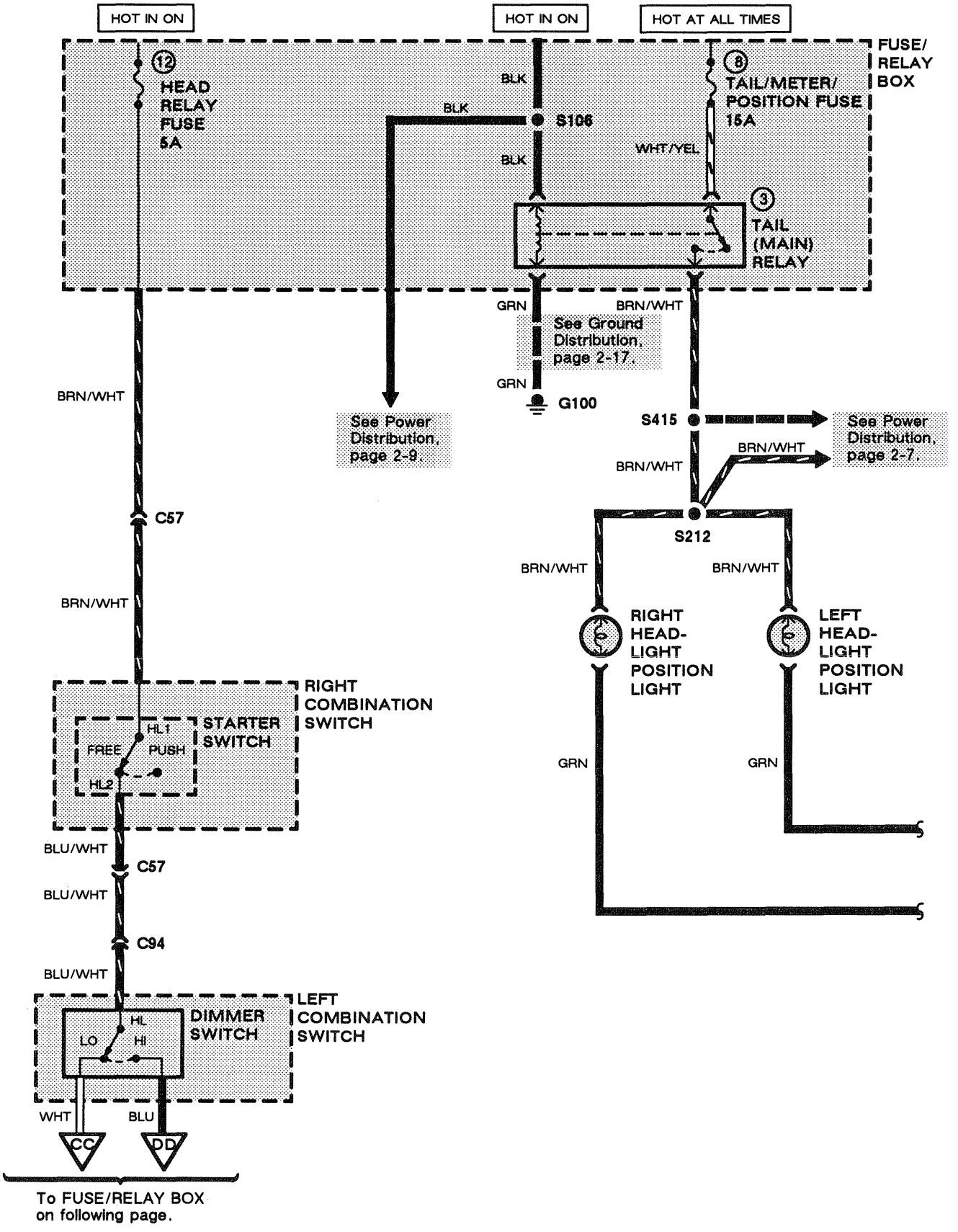
Circuit Schematic

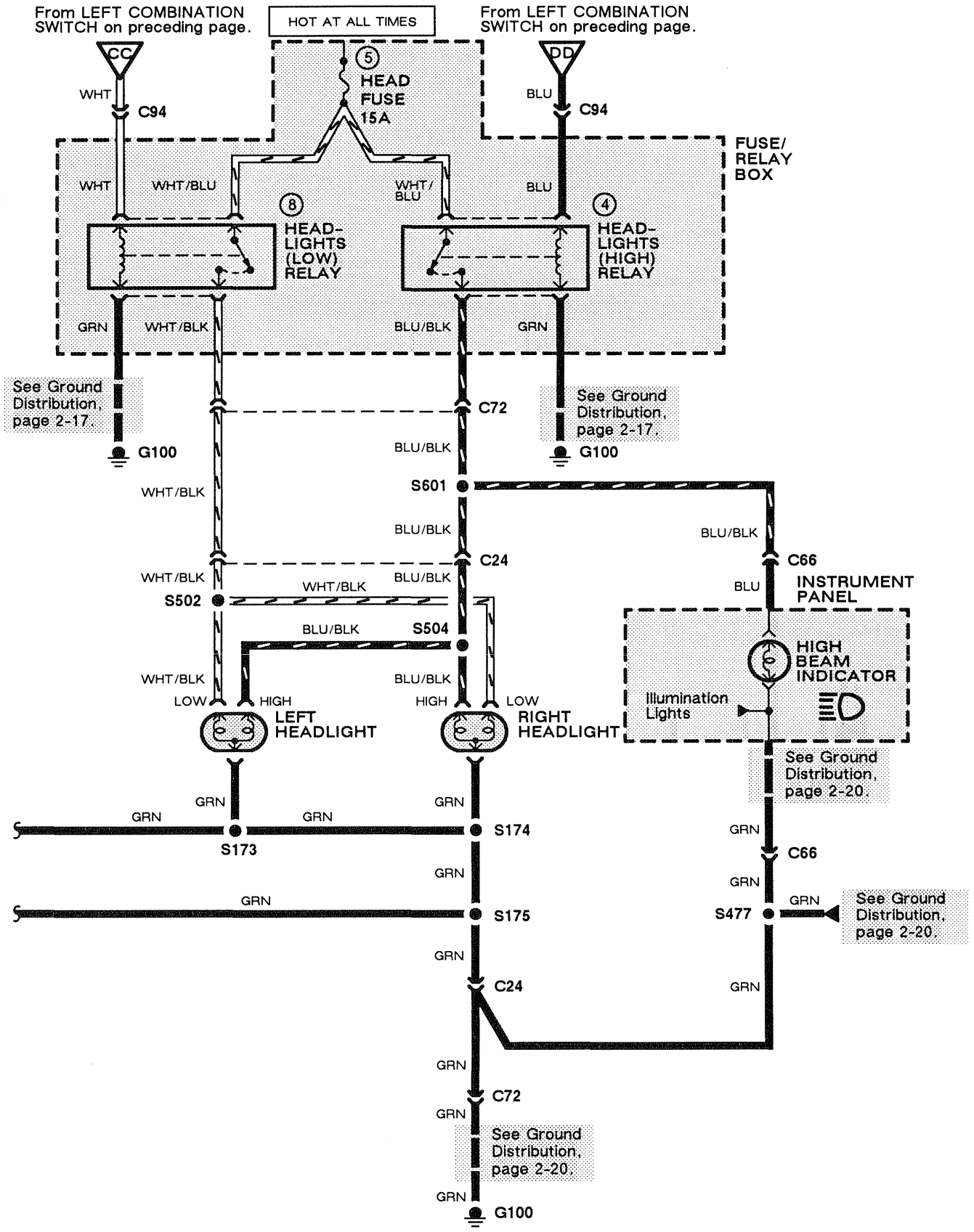




Headlights: Int

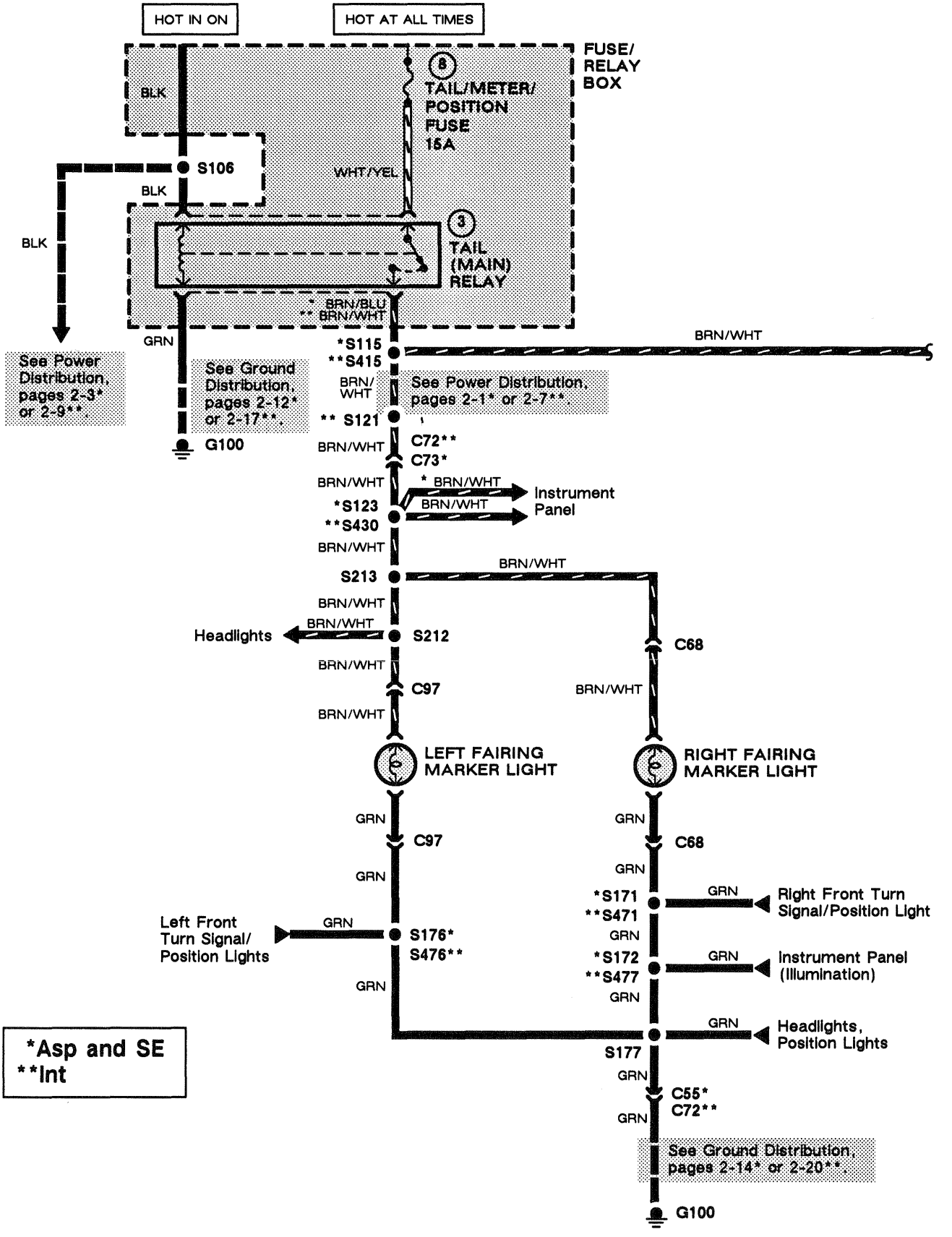
Circuit Schematic

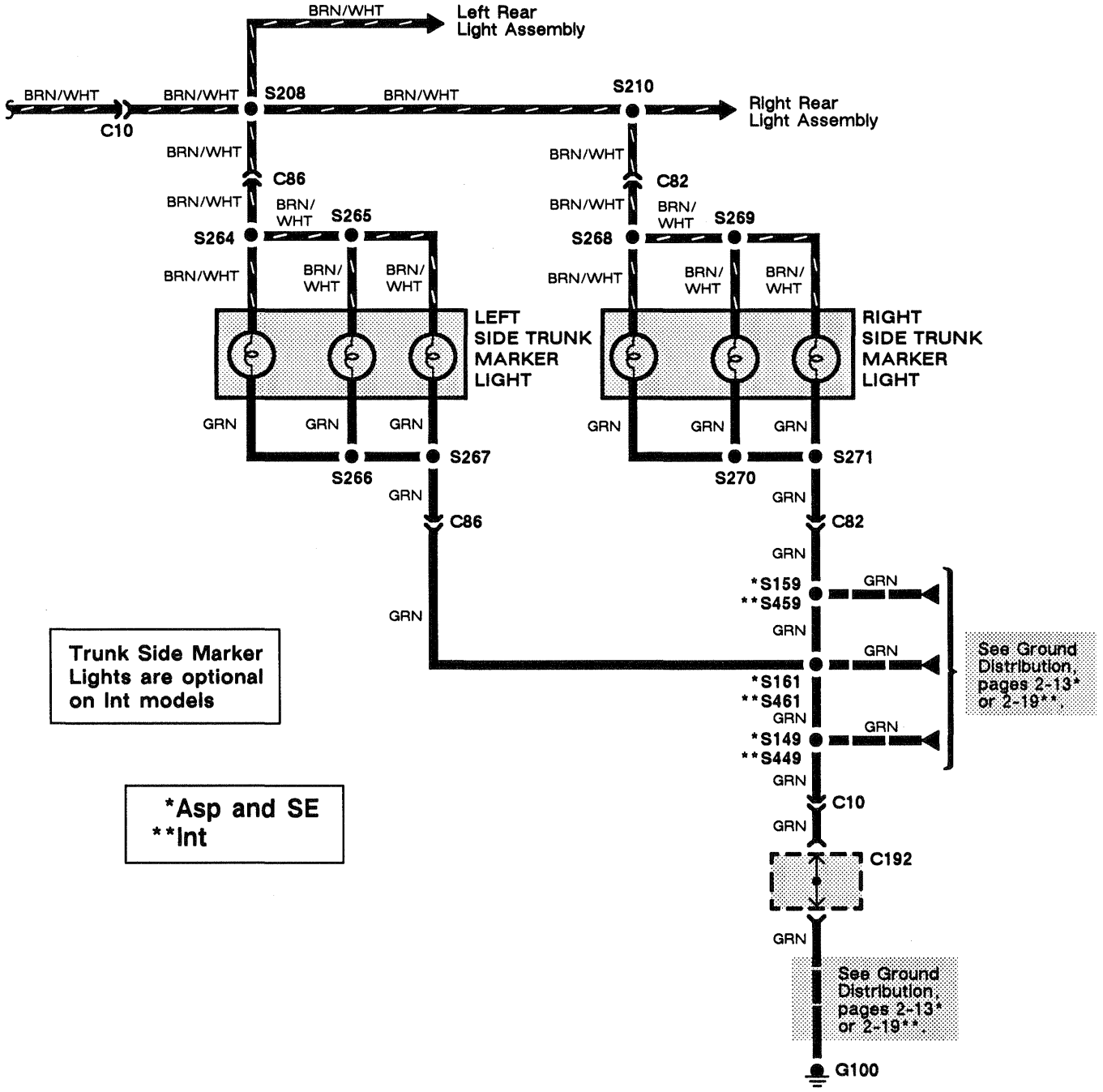




Marker Lights: Fairing and Trunk

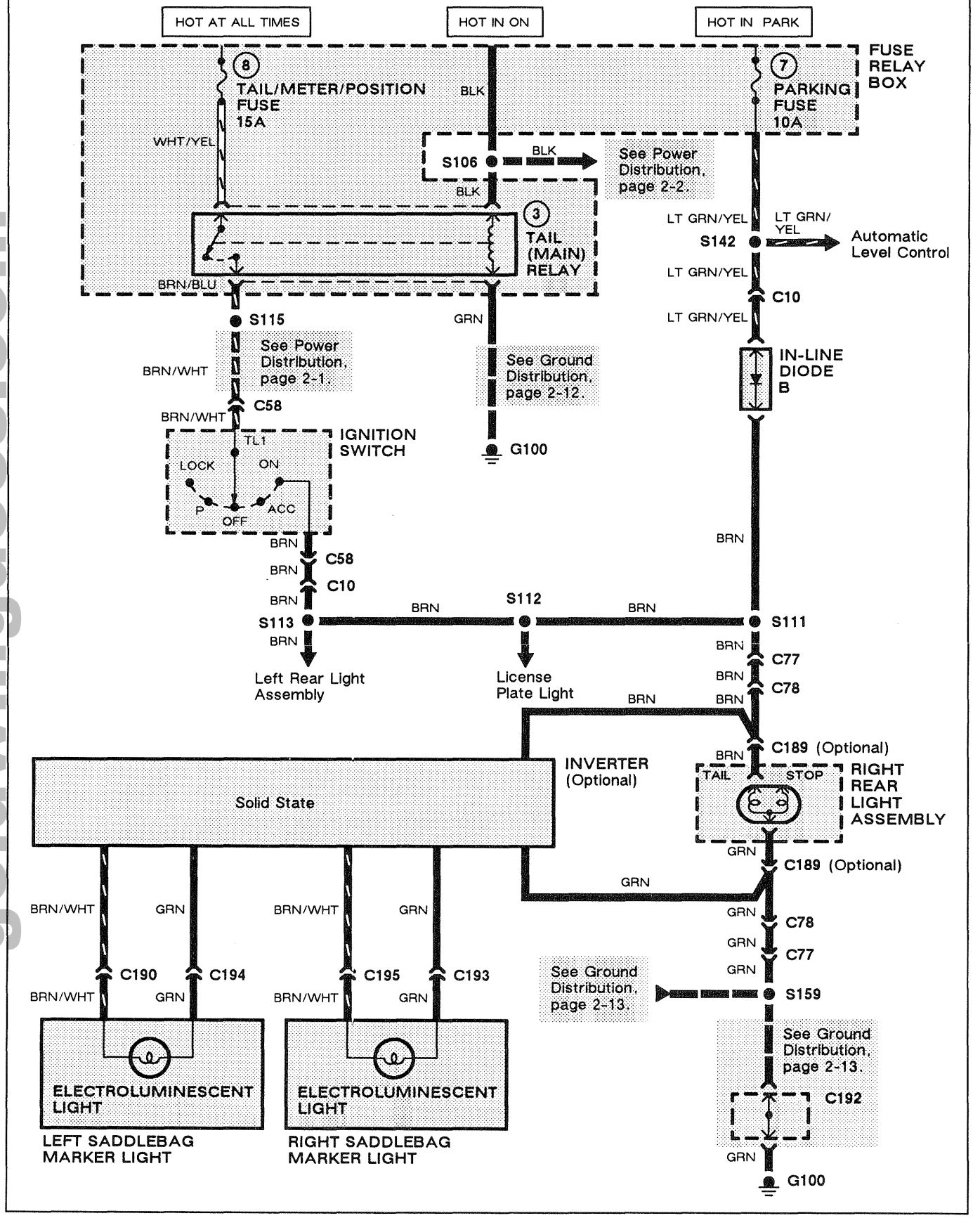
Circuit Schematic





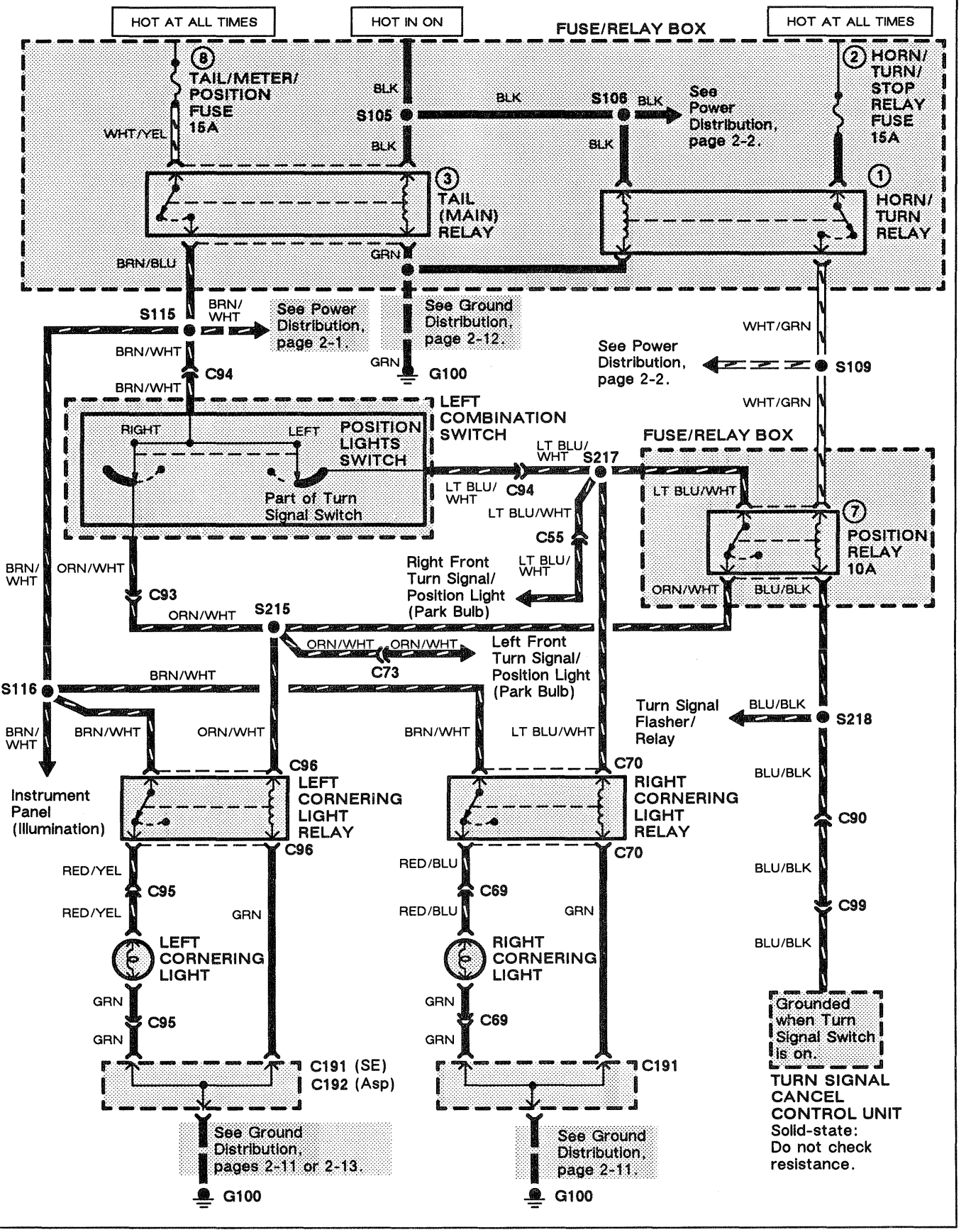
Marker Lights: Saddlebags

Circuit Schematic



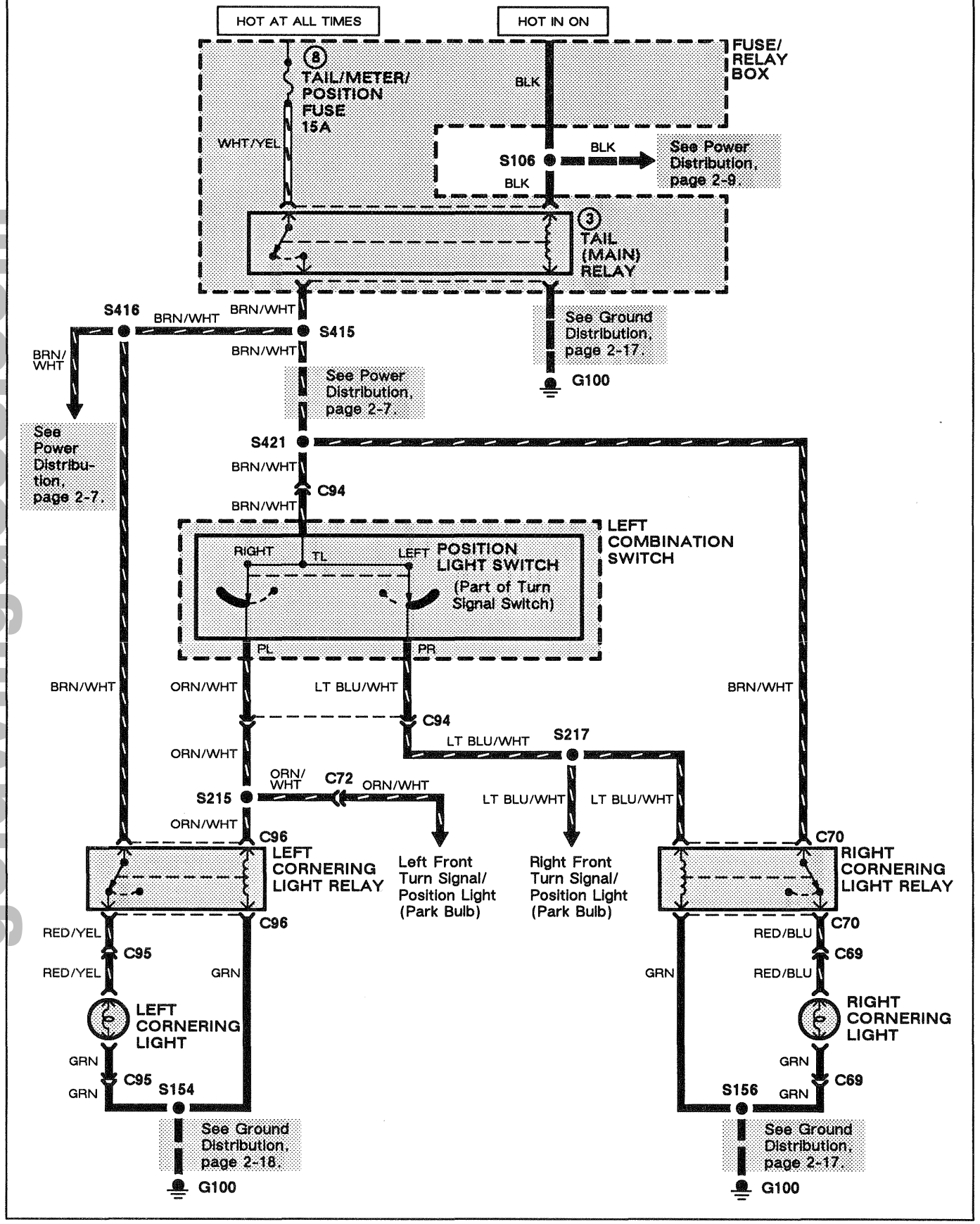
Cornering Lights: Asp and SE

Circuit Schematic



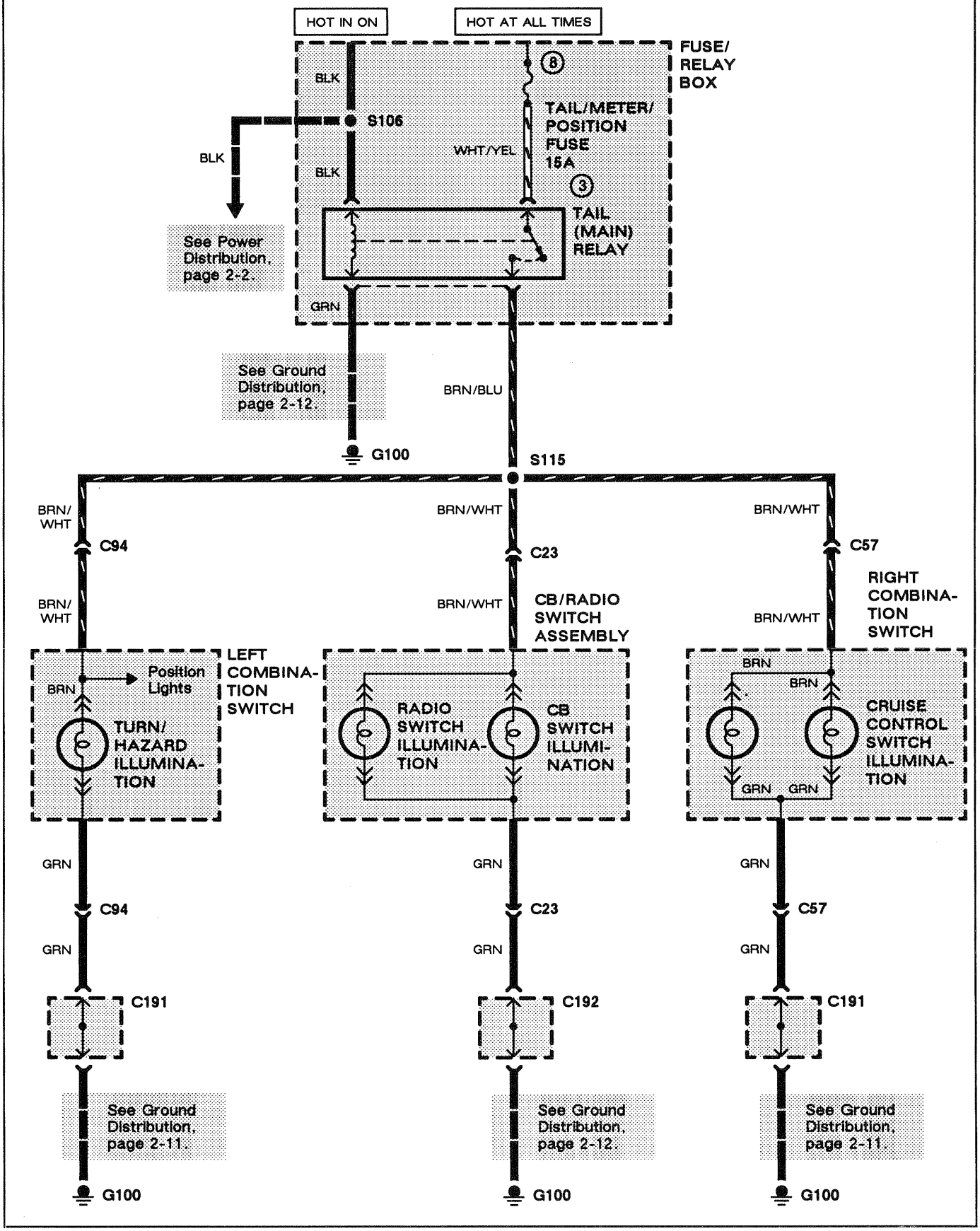
Cornering Lights: Int

Circuit Schematic



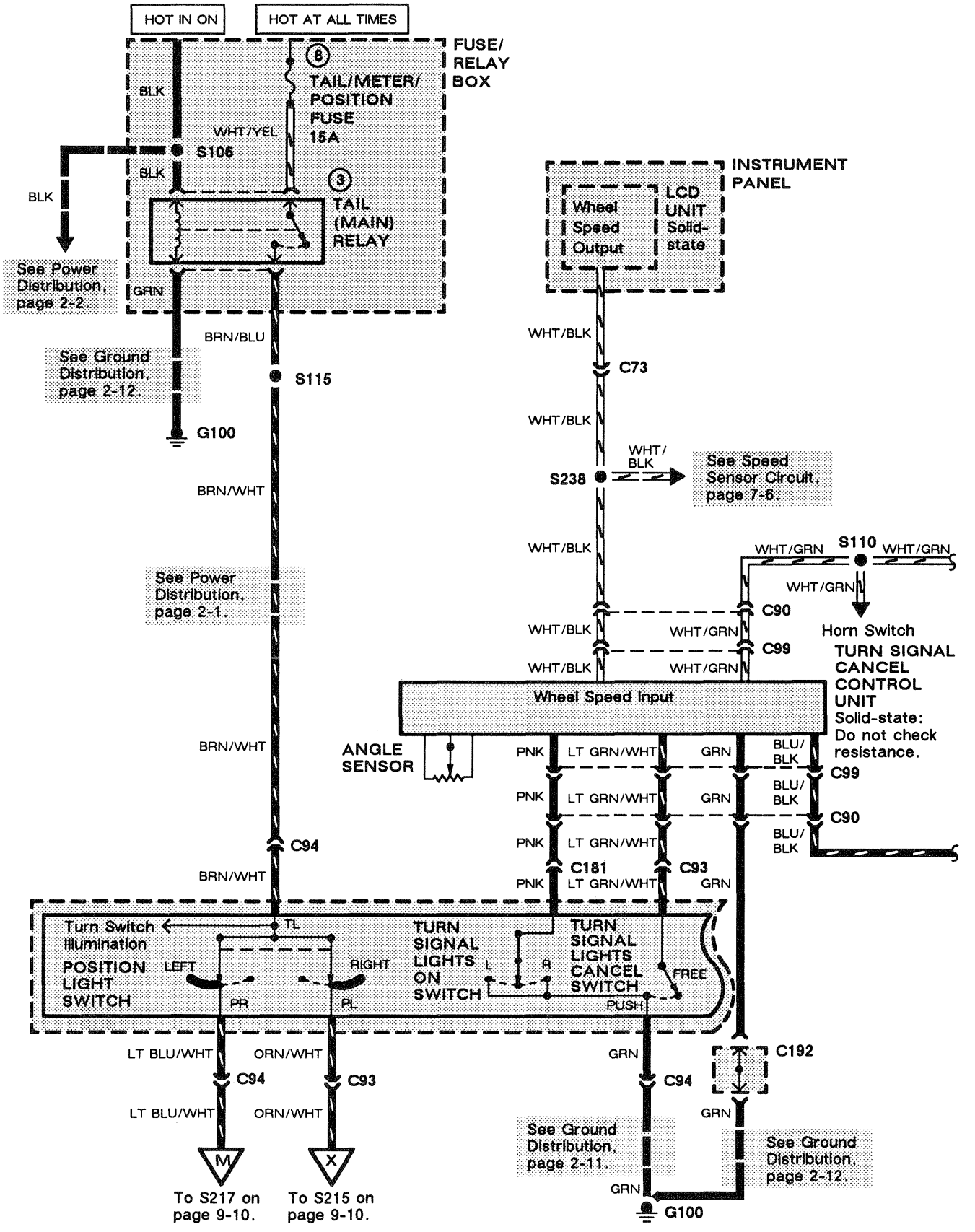
Handlebar Switch Illumination

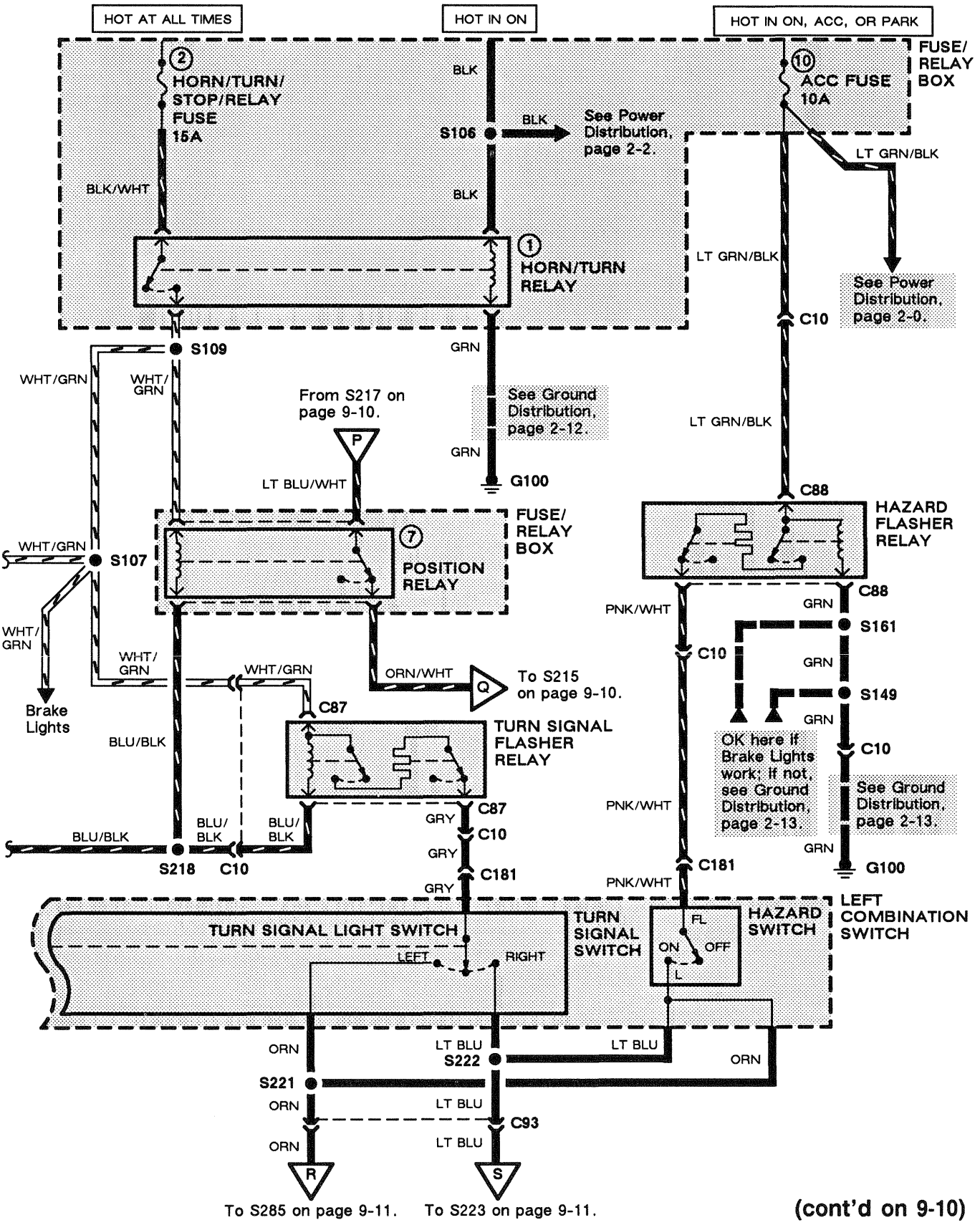
Circuit Schematic



Turn Signal, Hazard and Position Lights: Asp and SE

Circuit Schematic

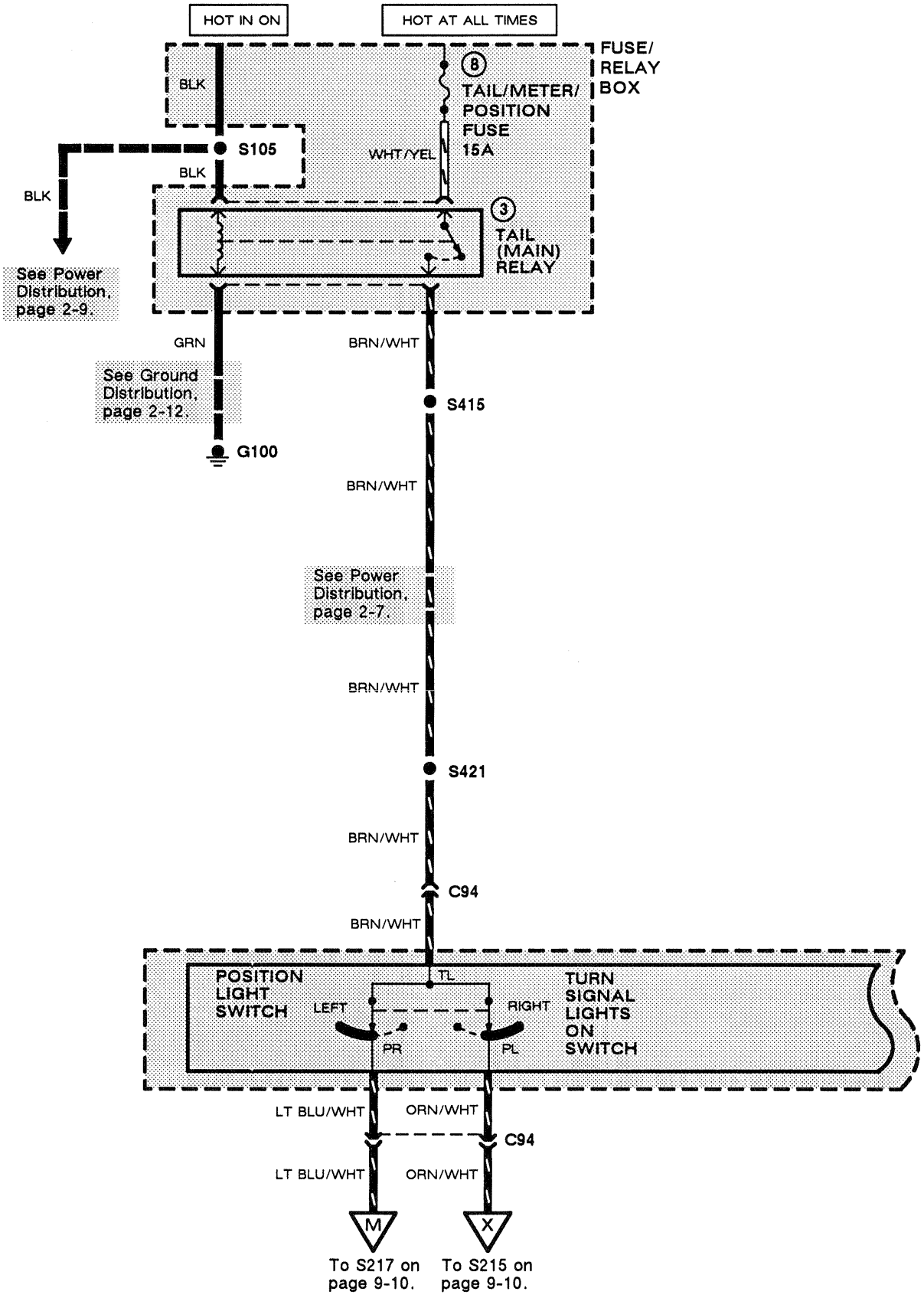


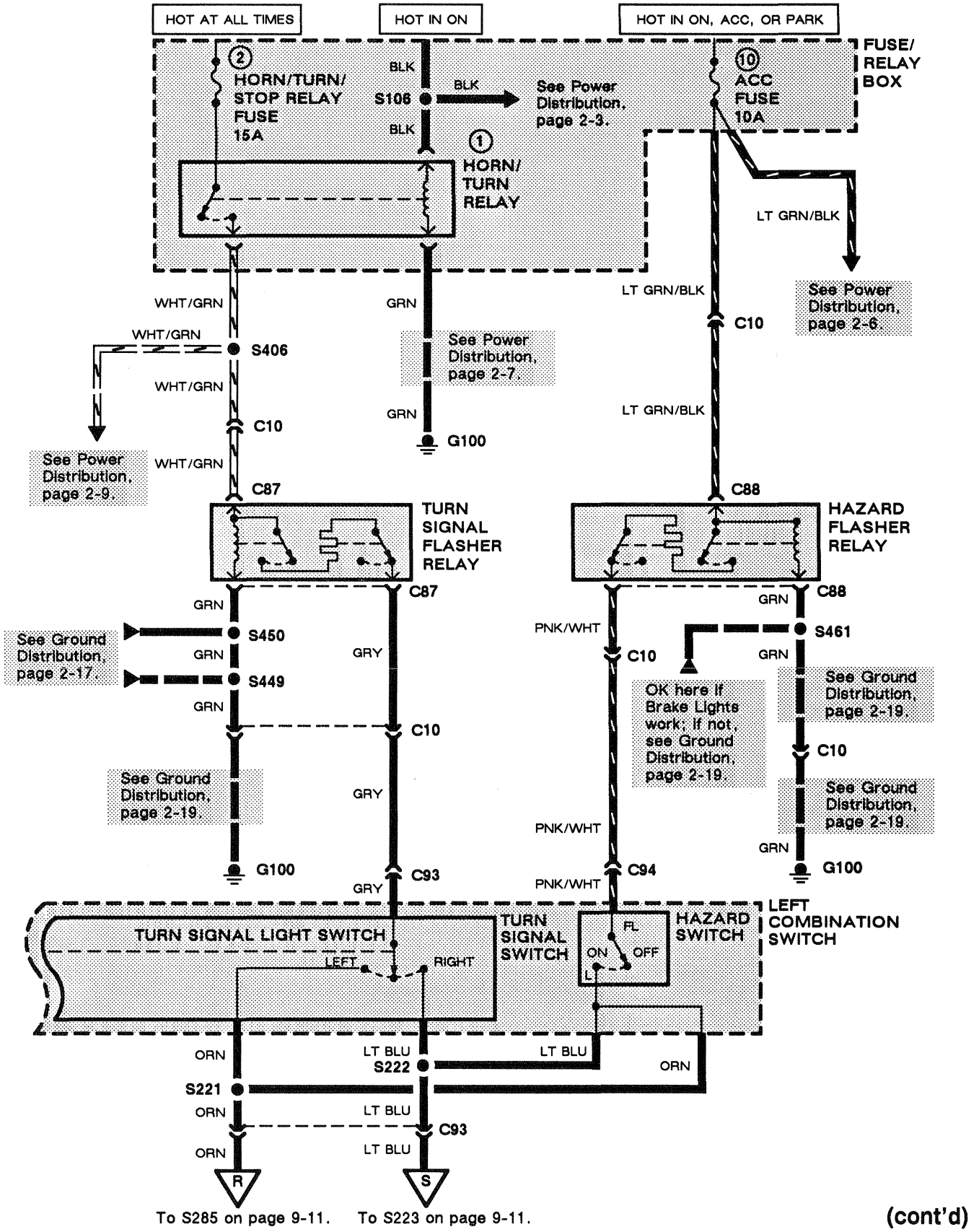


(cont'd on 9-10)

Turn Signal, Hazard and Position Lights: Int

Circuit Schematic

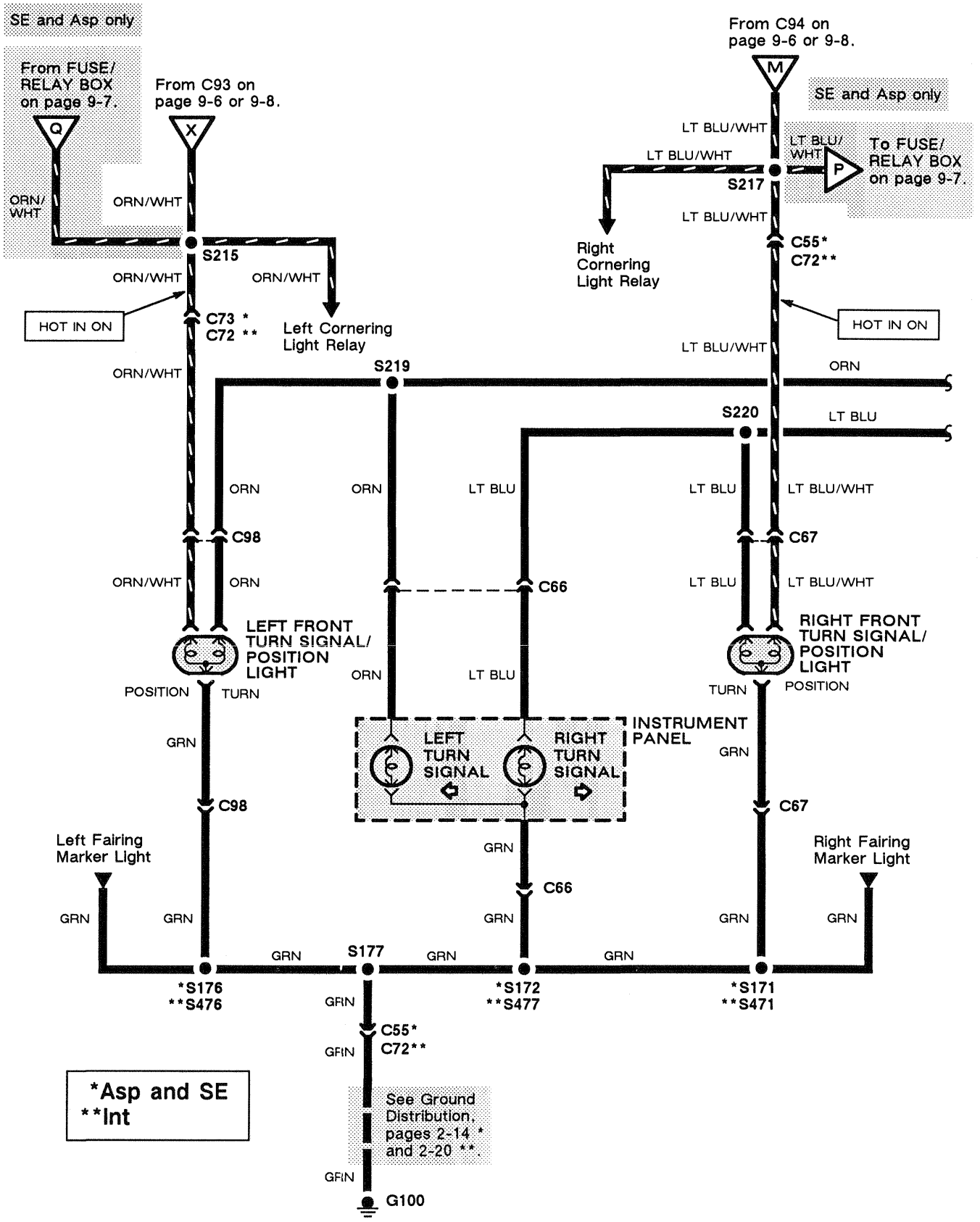


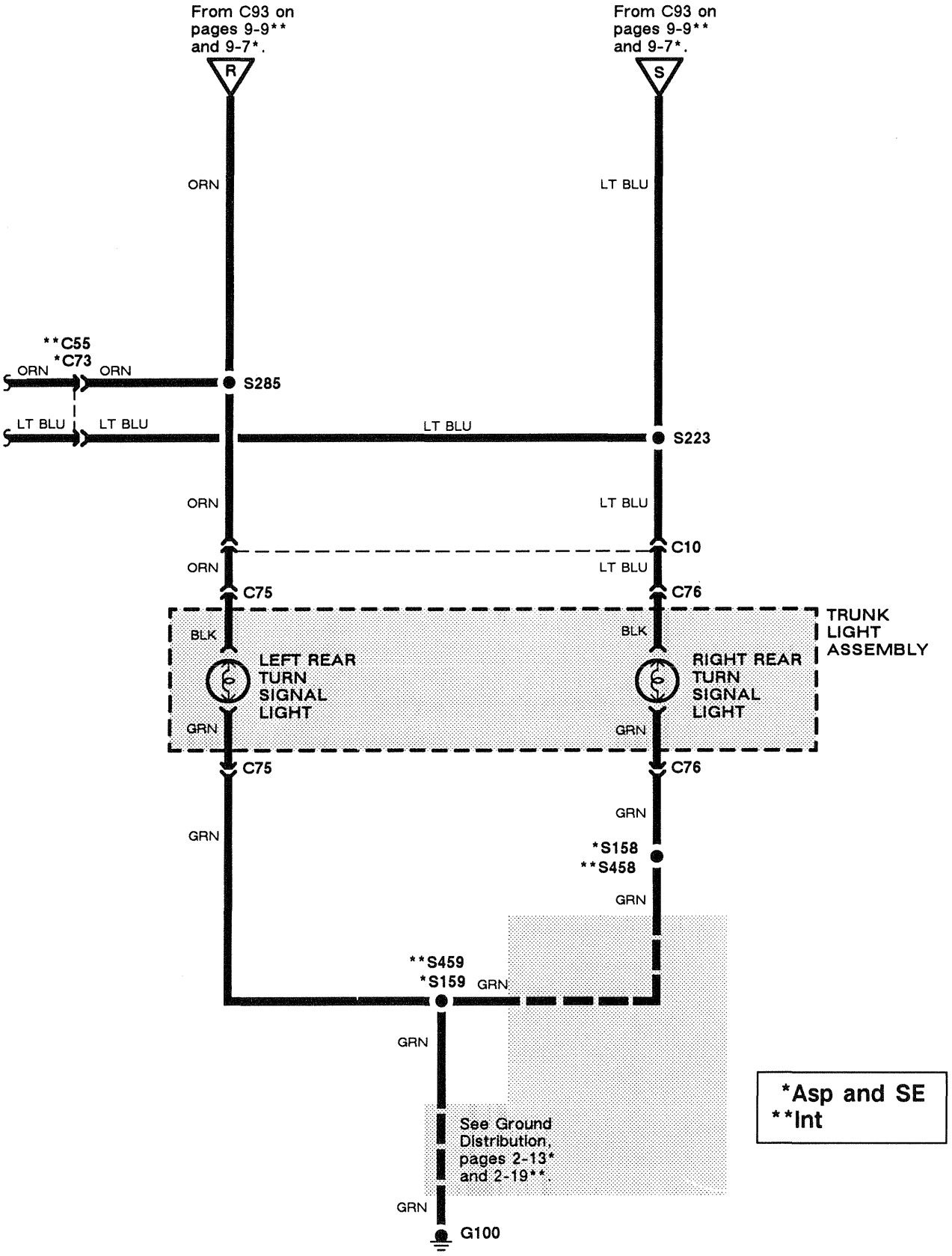


(cont'd)

Turn Signal, Hazard and Position Lights: All Models

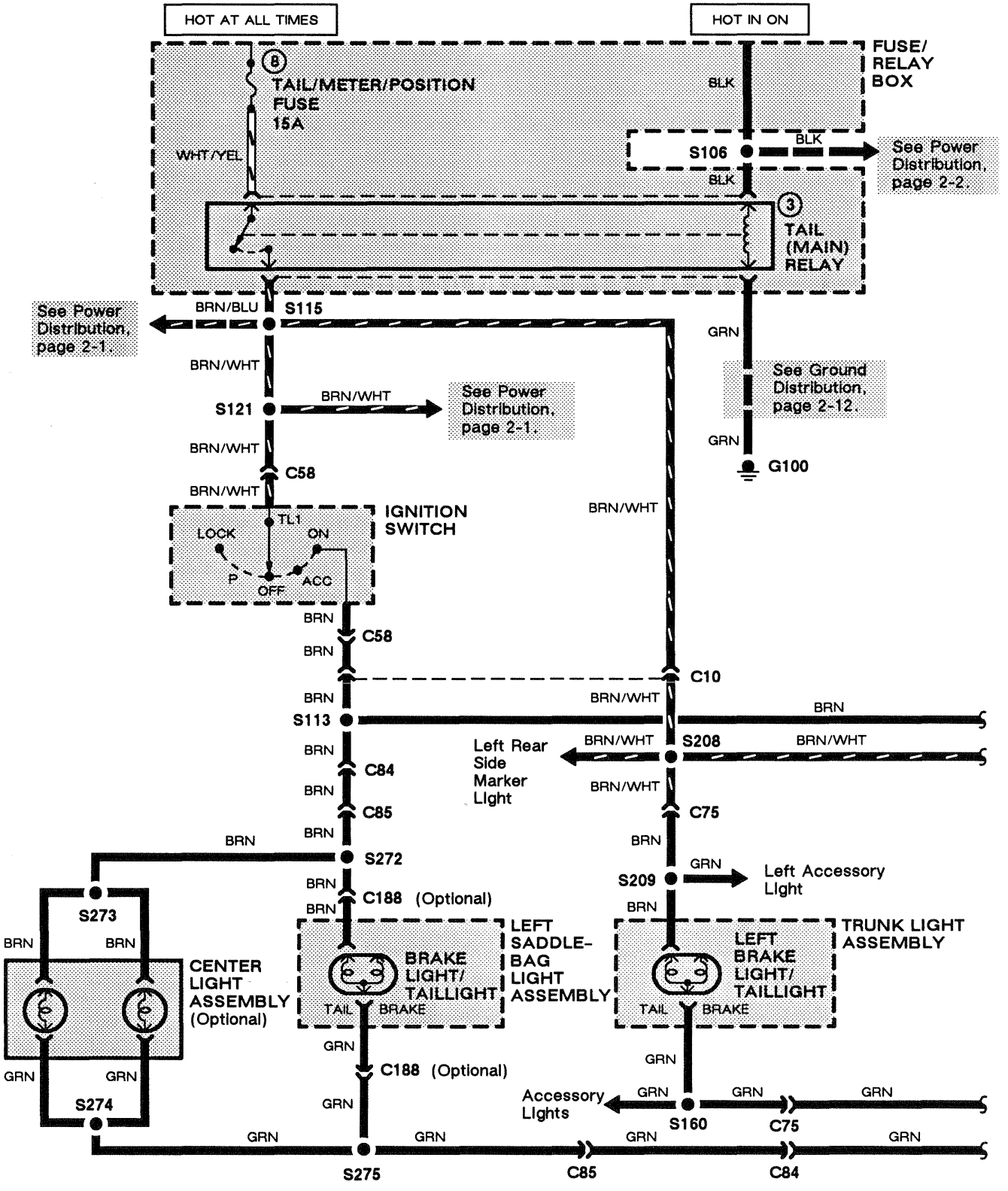
Circuit Schematic (cont'd)

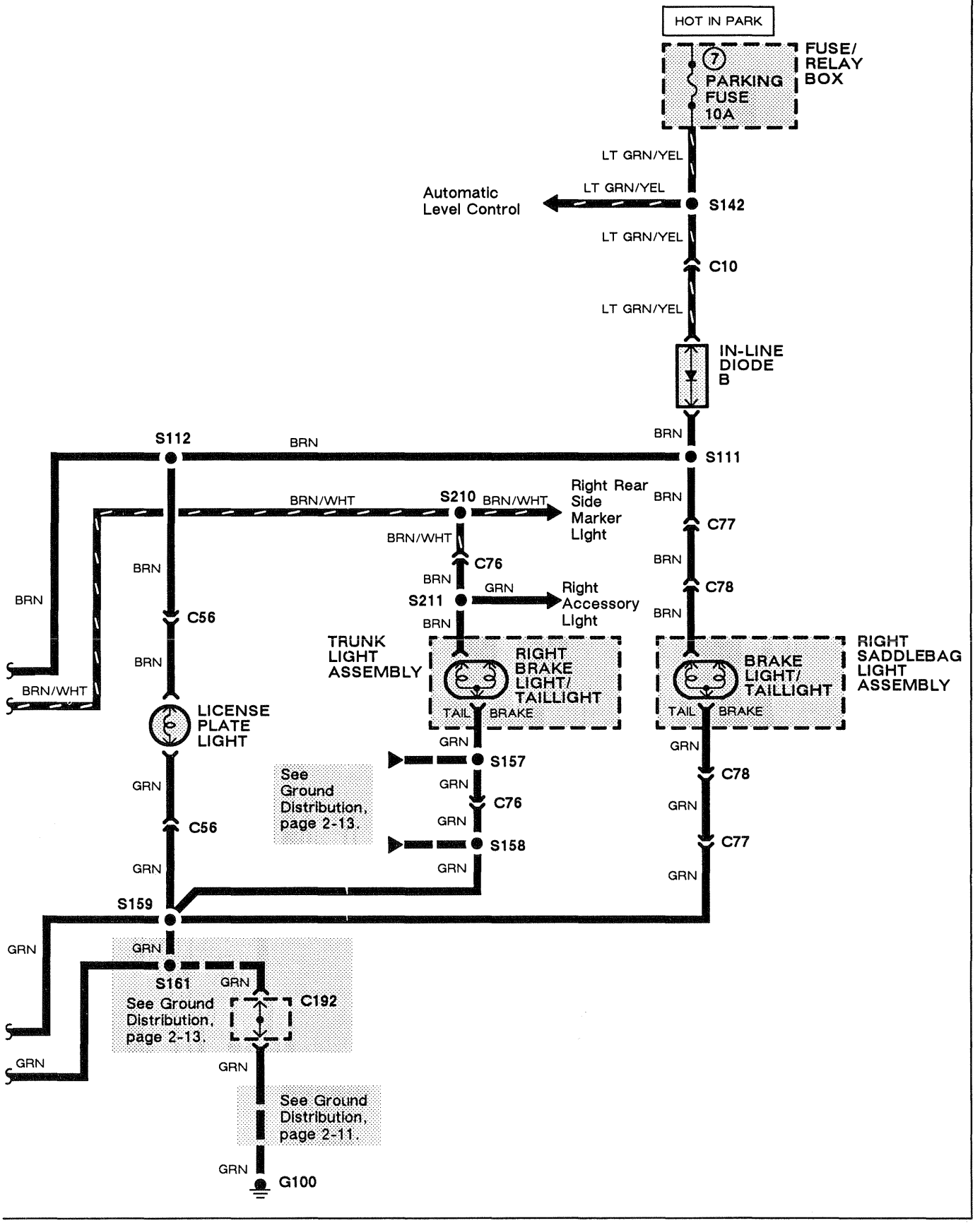




Tail, Parking, and License Plate Lights: Asp and SE

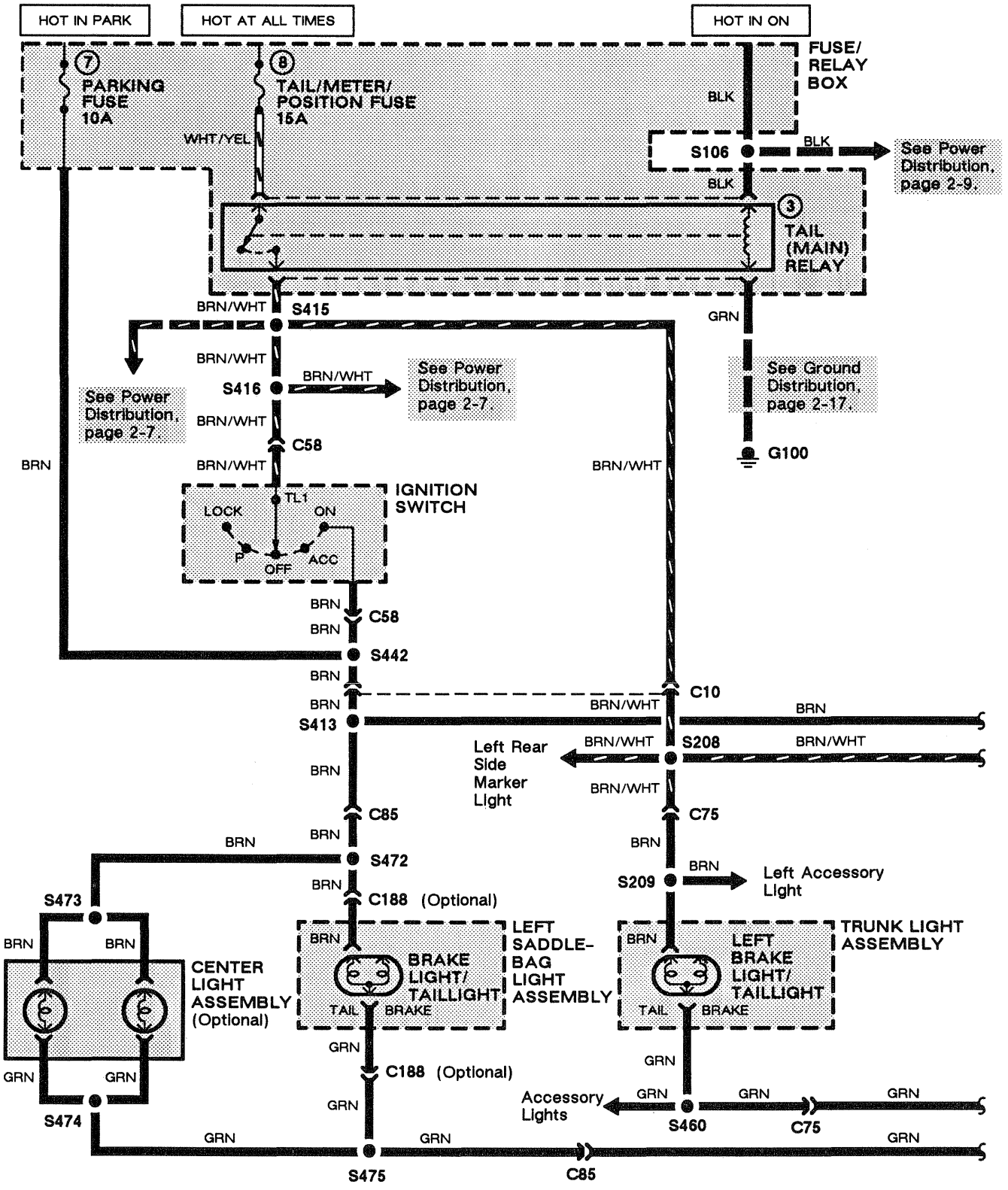
Circuit Schematic

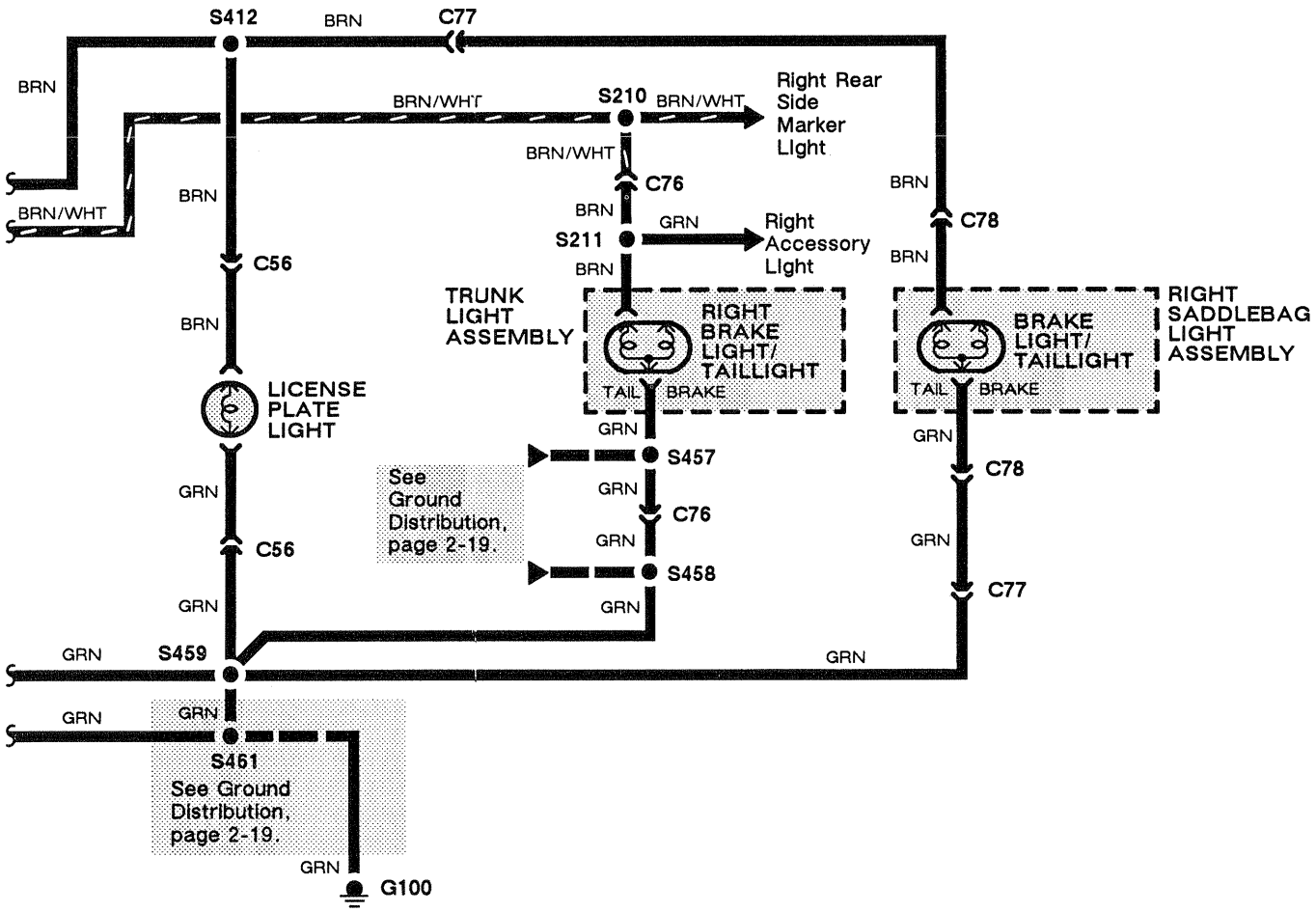




Tail, Parking, and License Plate Lights: Int

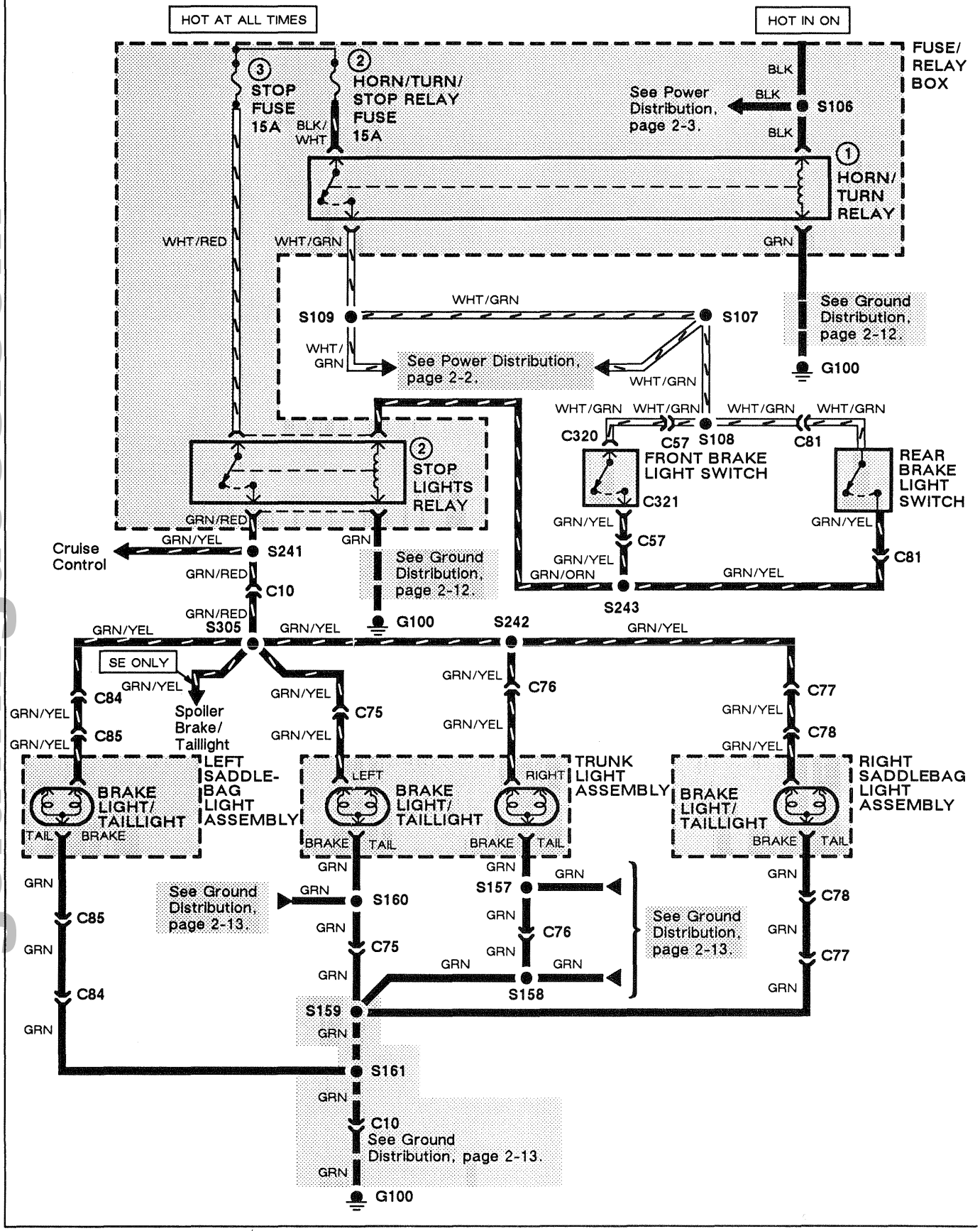
Circuit Schematic

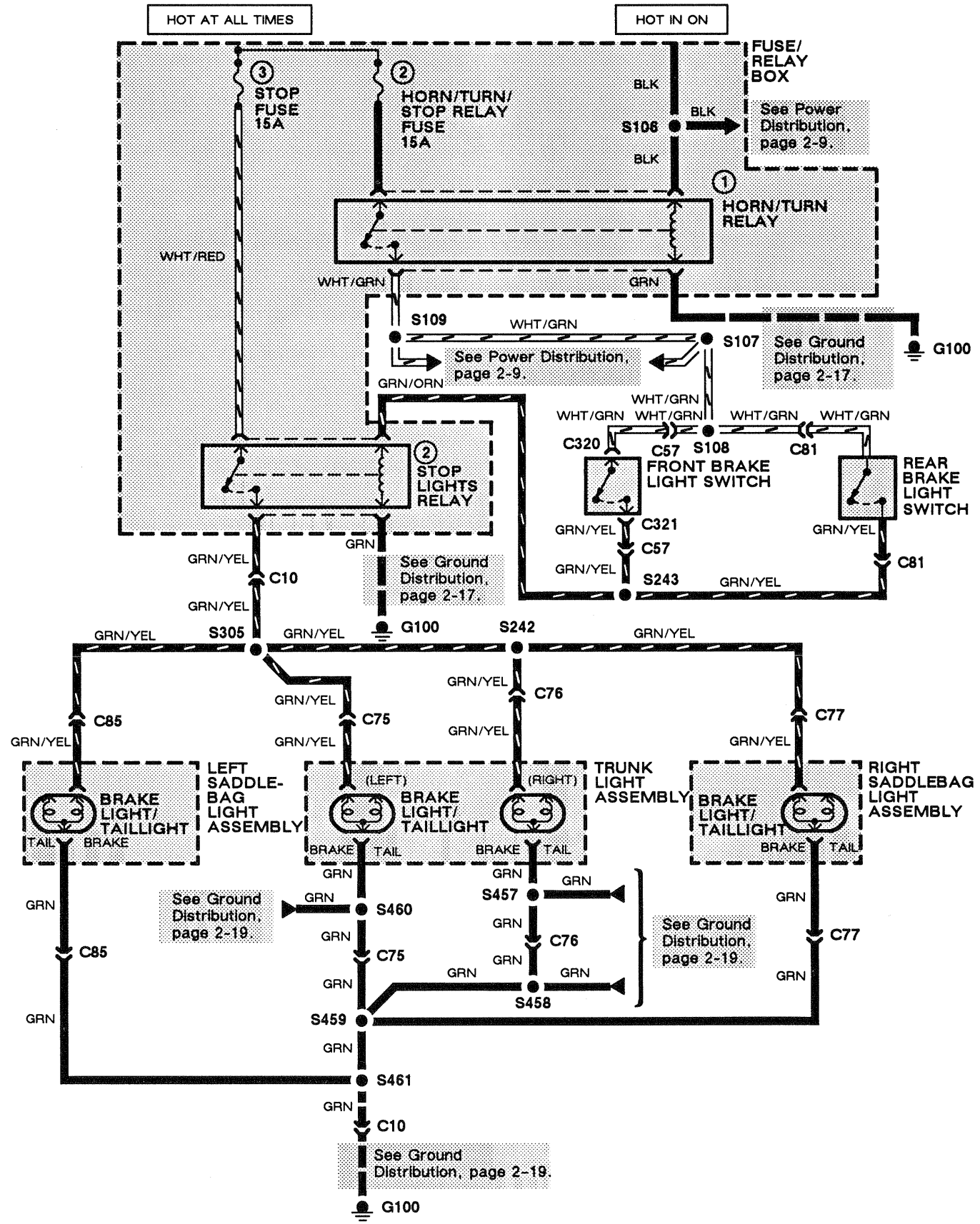




Brake Lights: Asp and SE

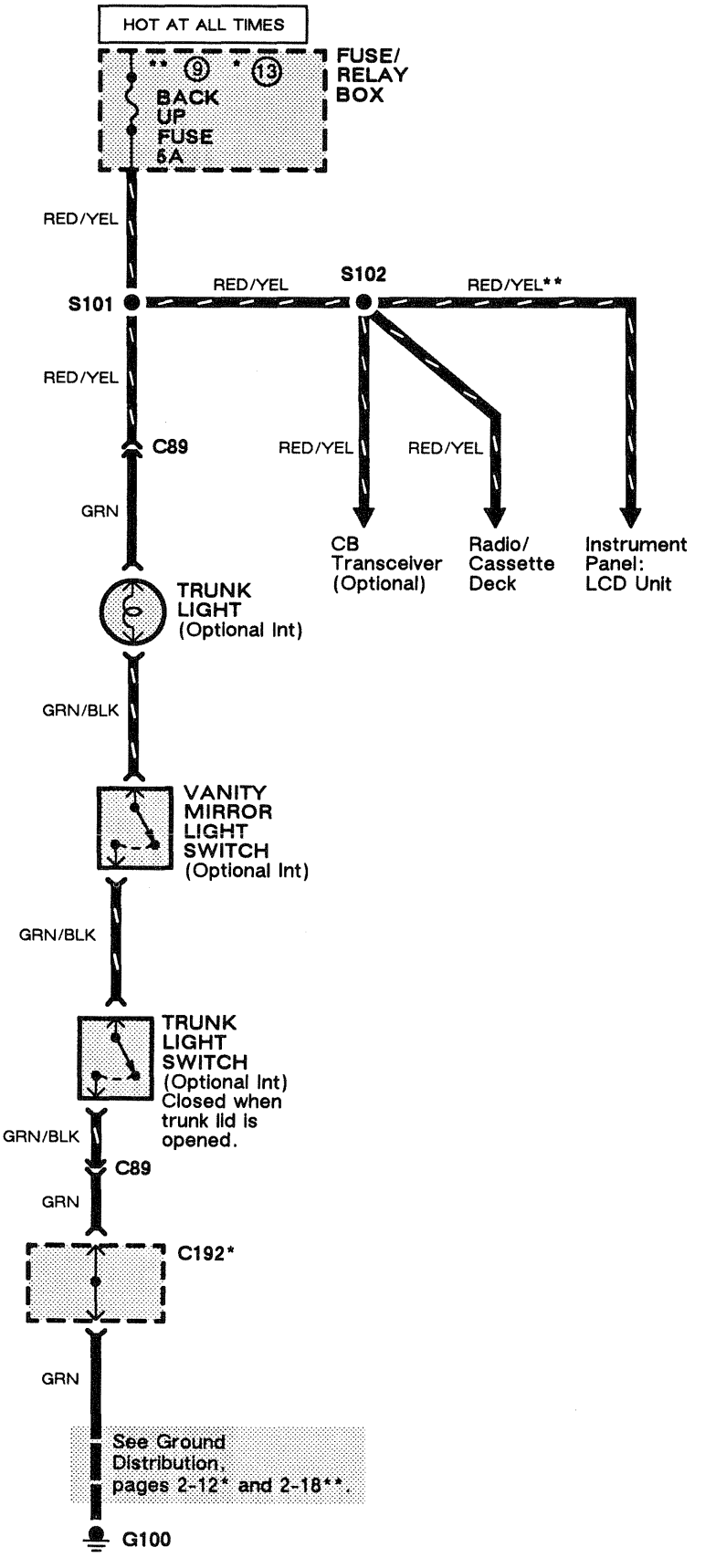
Circuit Schematic





Trunk Light

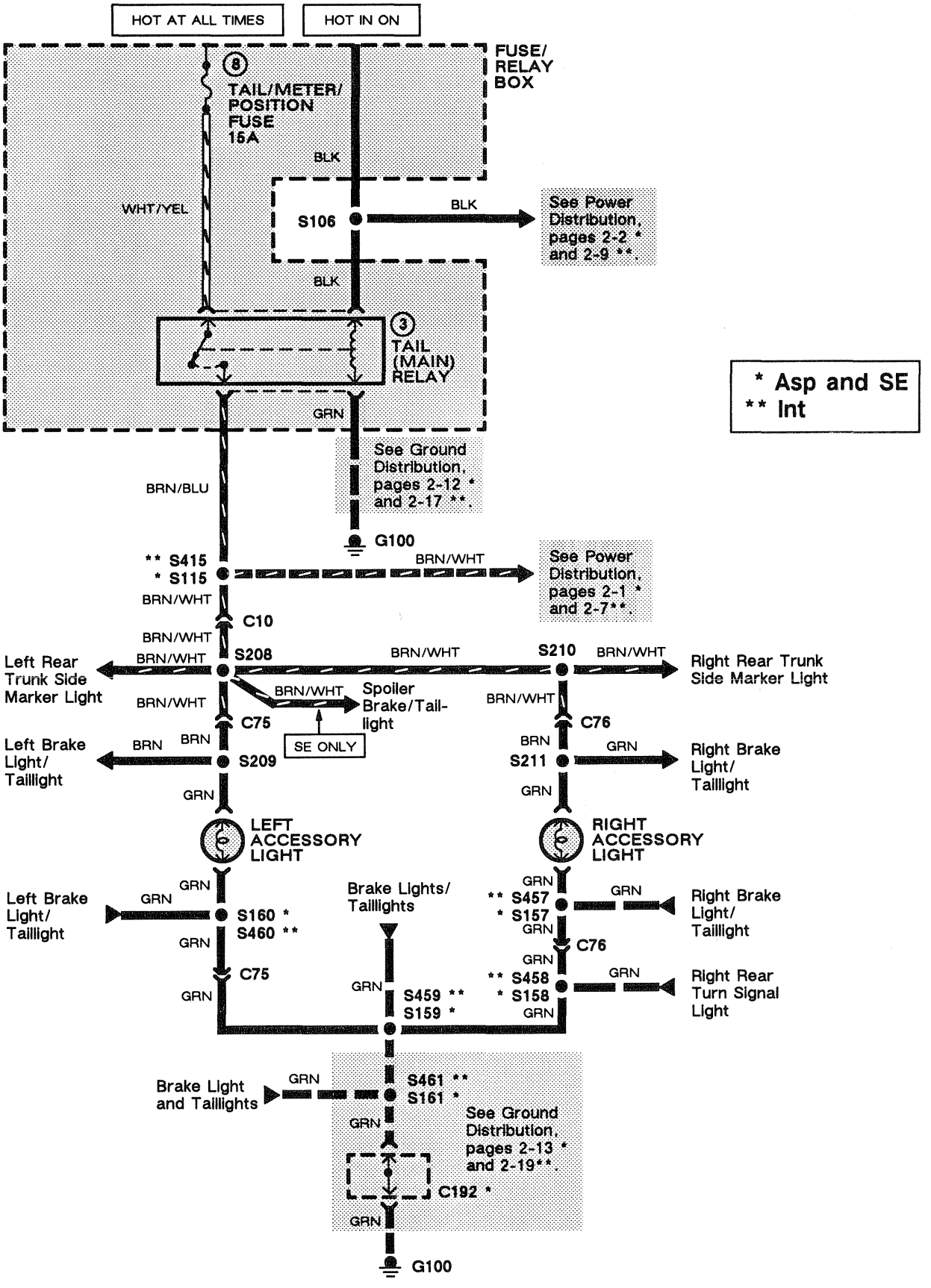
Circuit Schematic



* Asp and SE
** Int

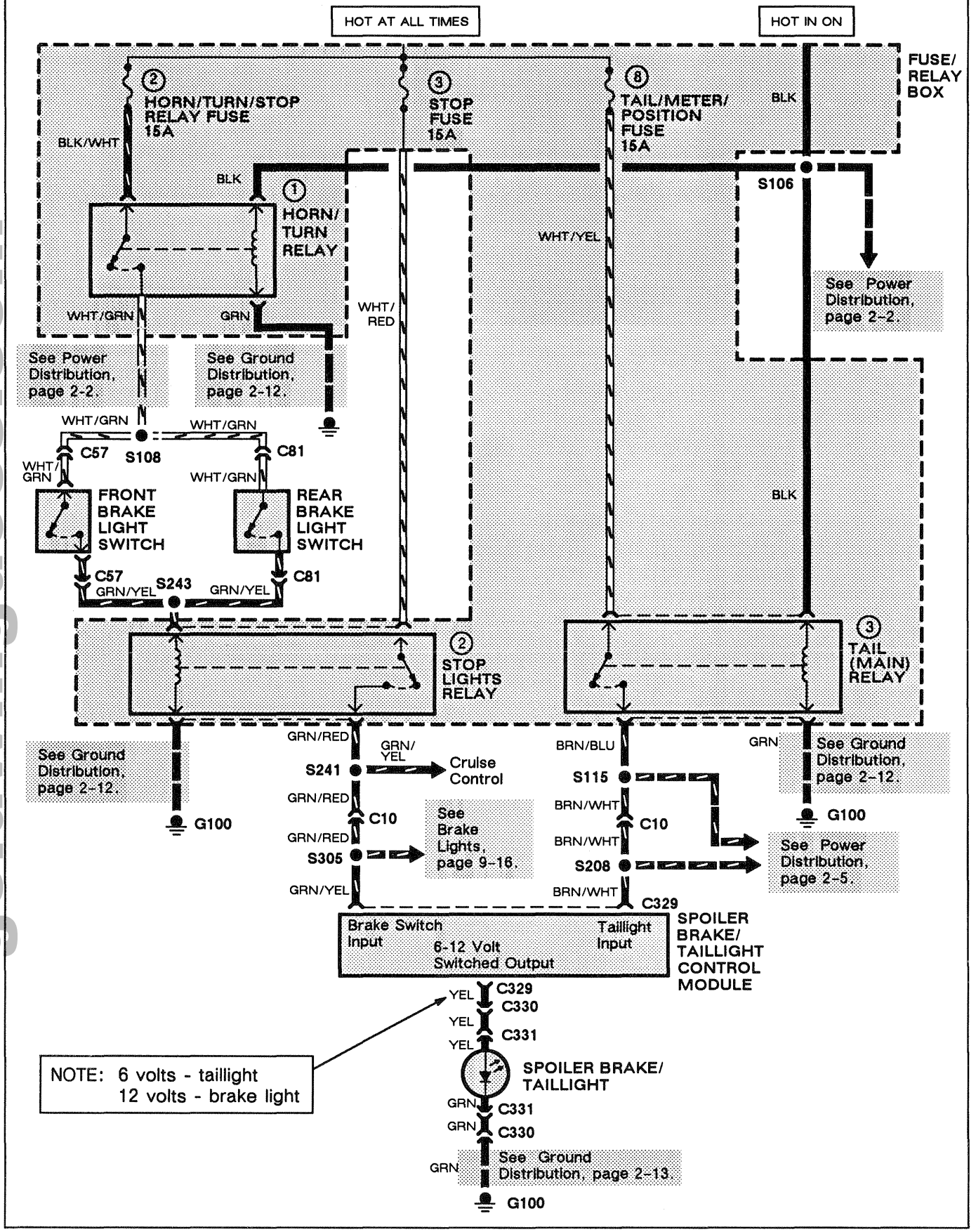
Accessory Lights

Circuit Schematic



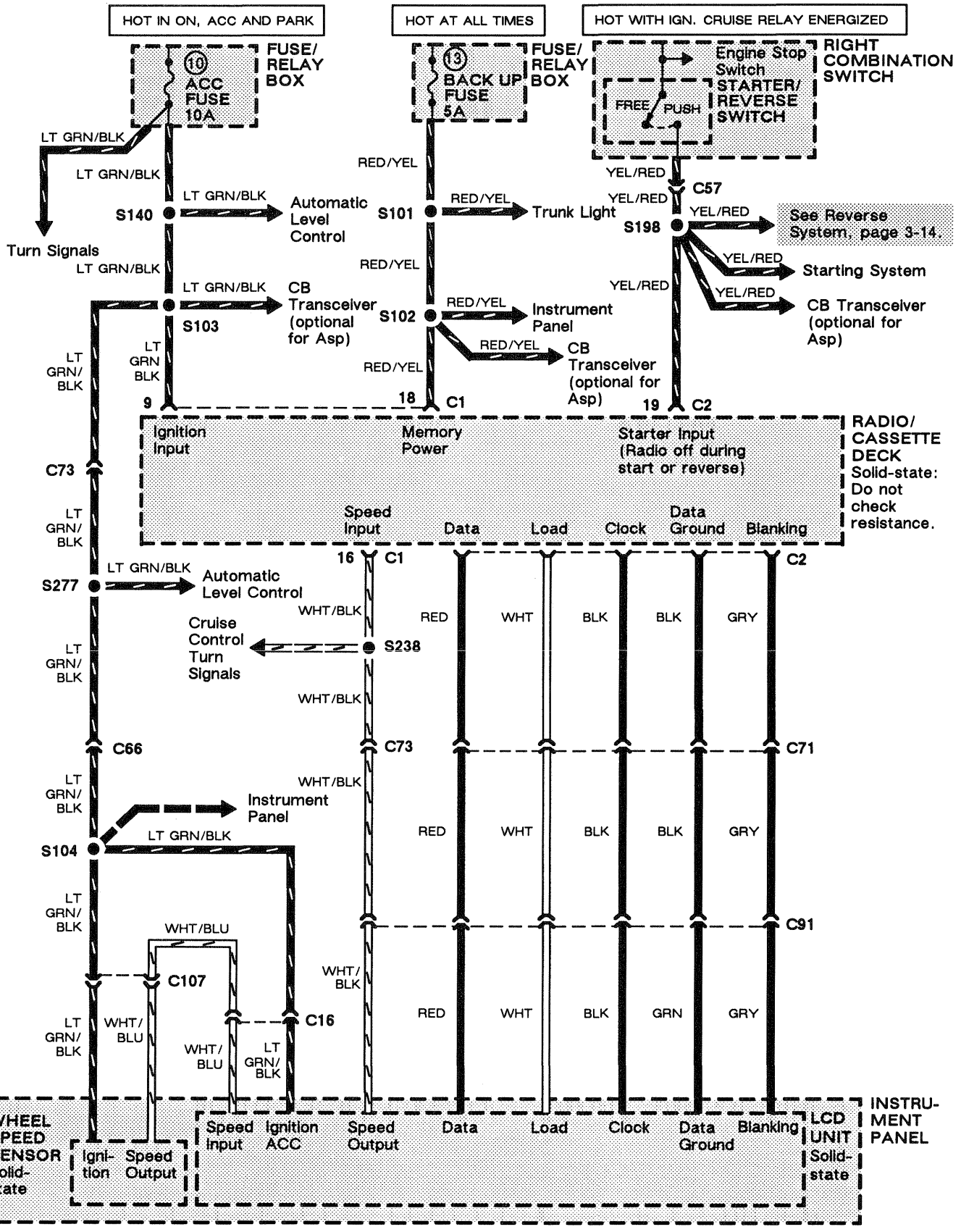
Spoiler Brake/Taillight: SE Only

Circuit Schematic

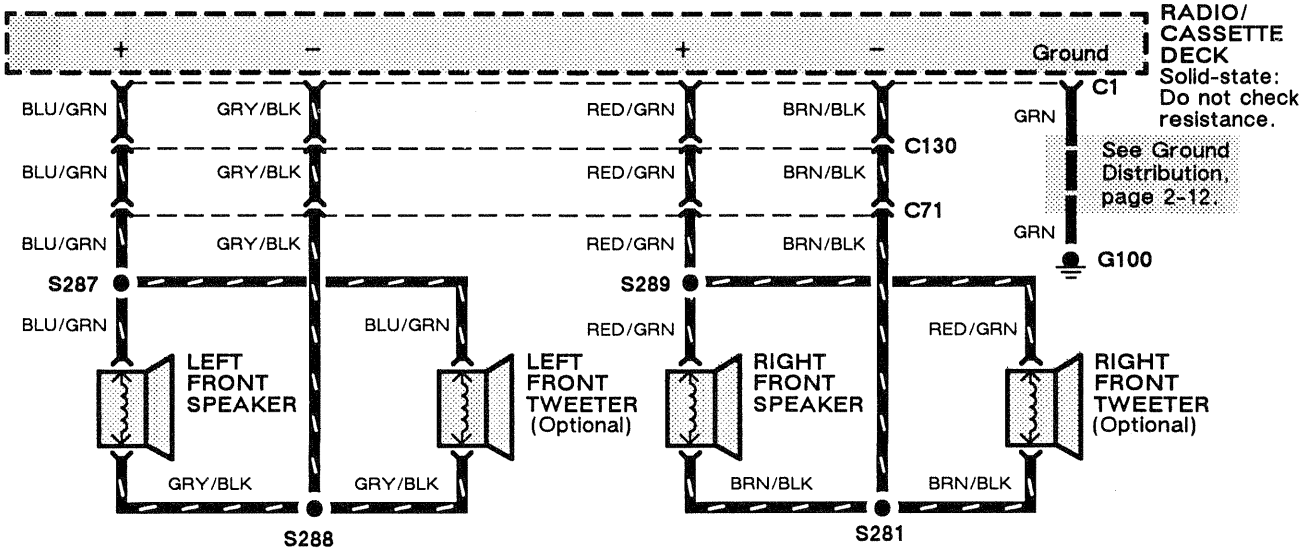


Radio and Cassette: Asp and SE

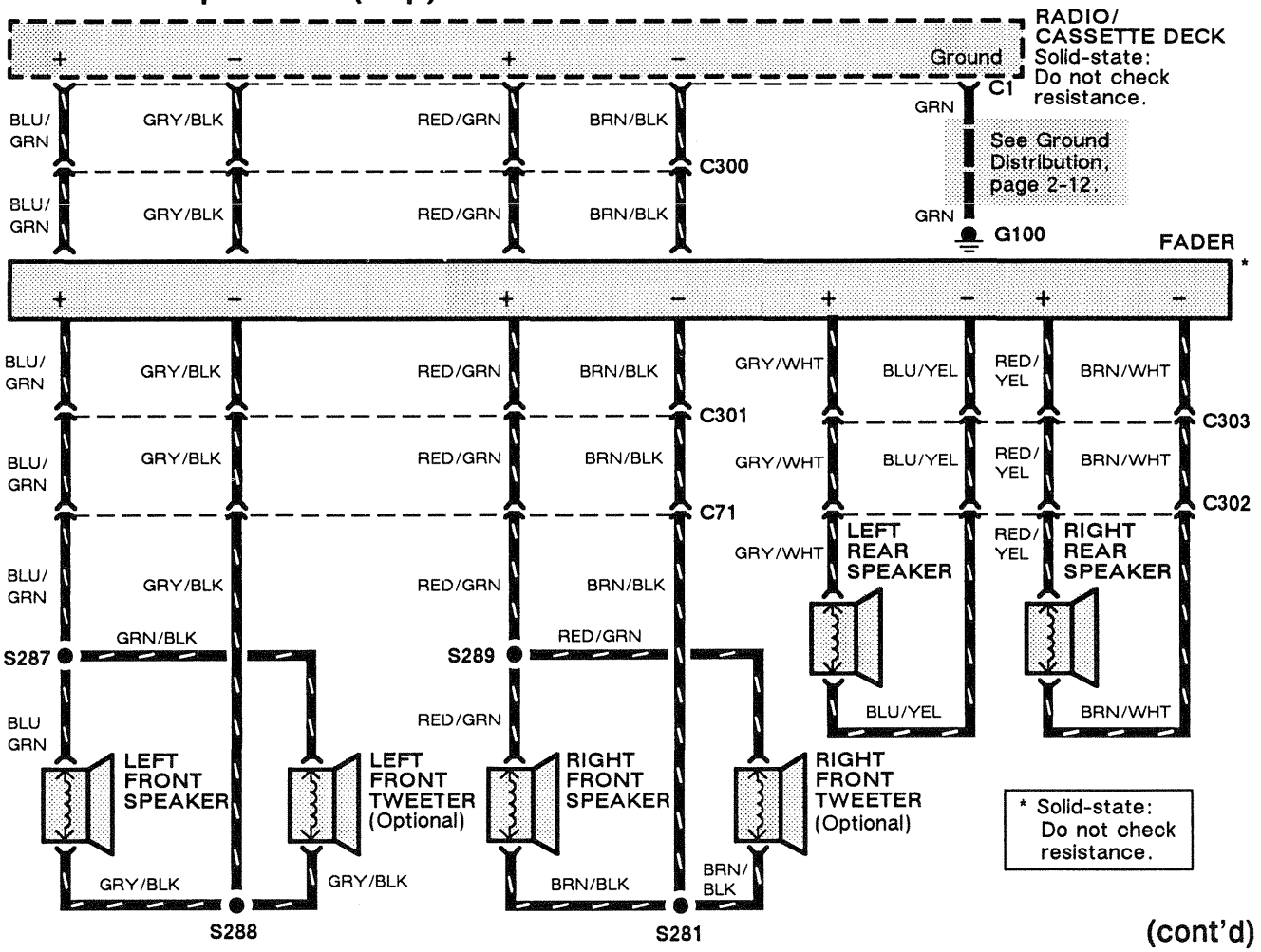
Circuit Schematic



Without Rear Speakers (Asp)



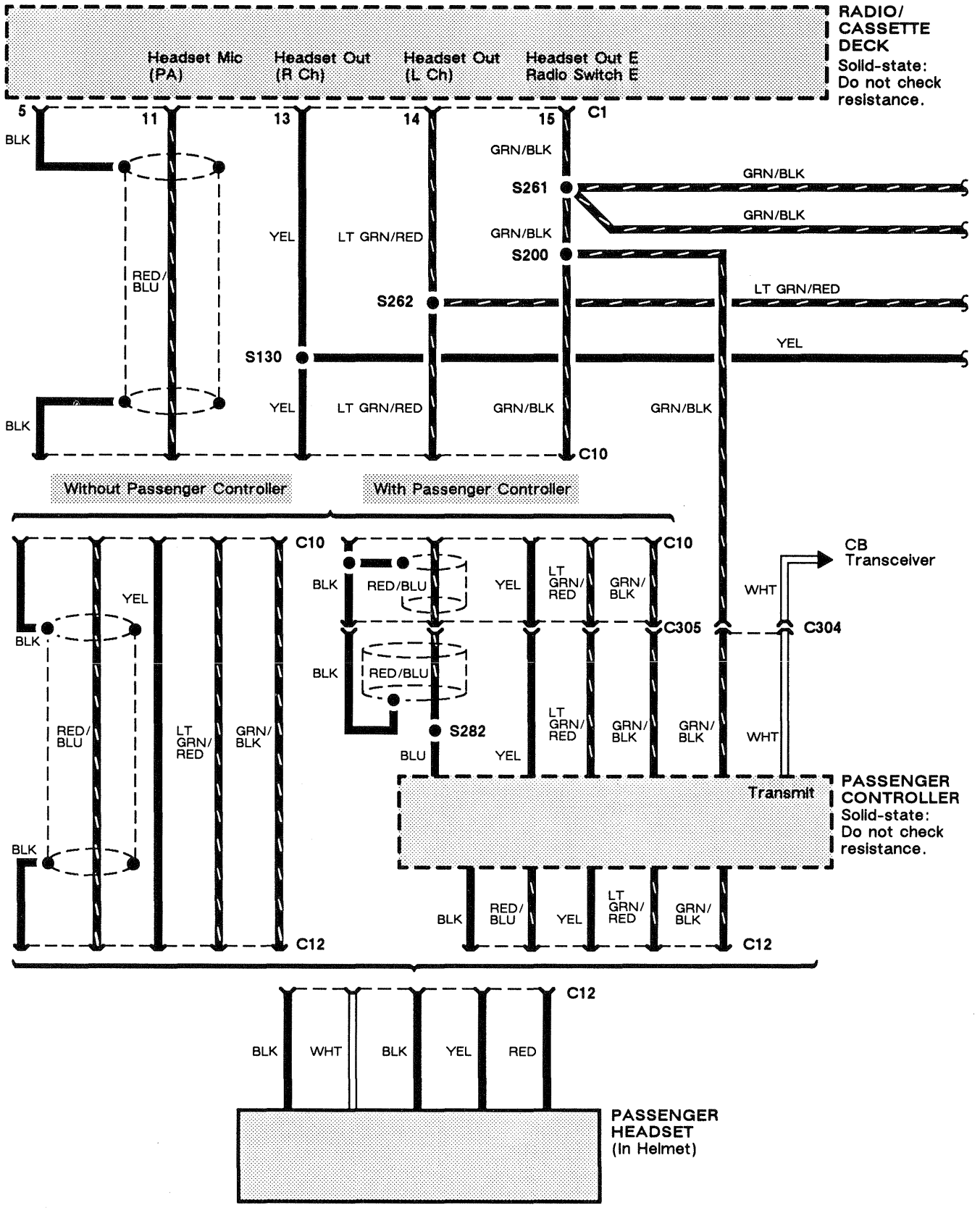
With Rear Speakers (Asp)

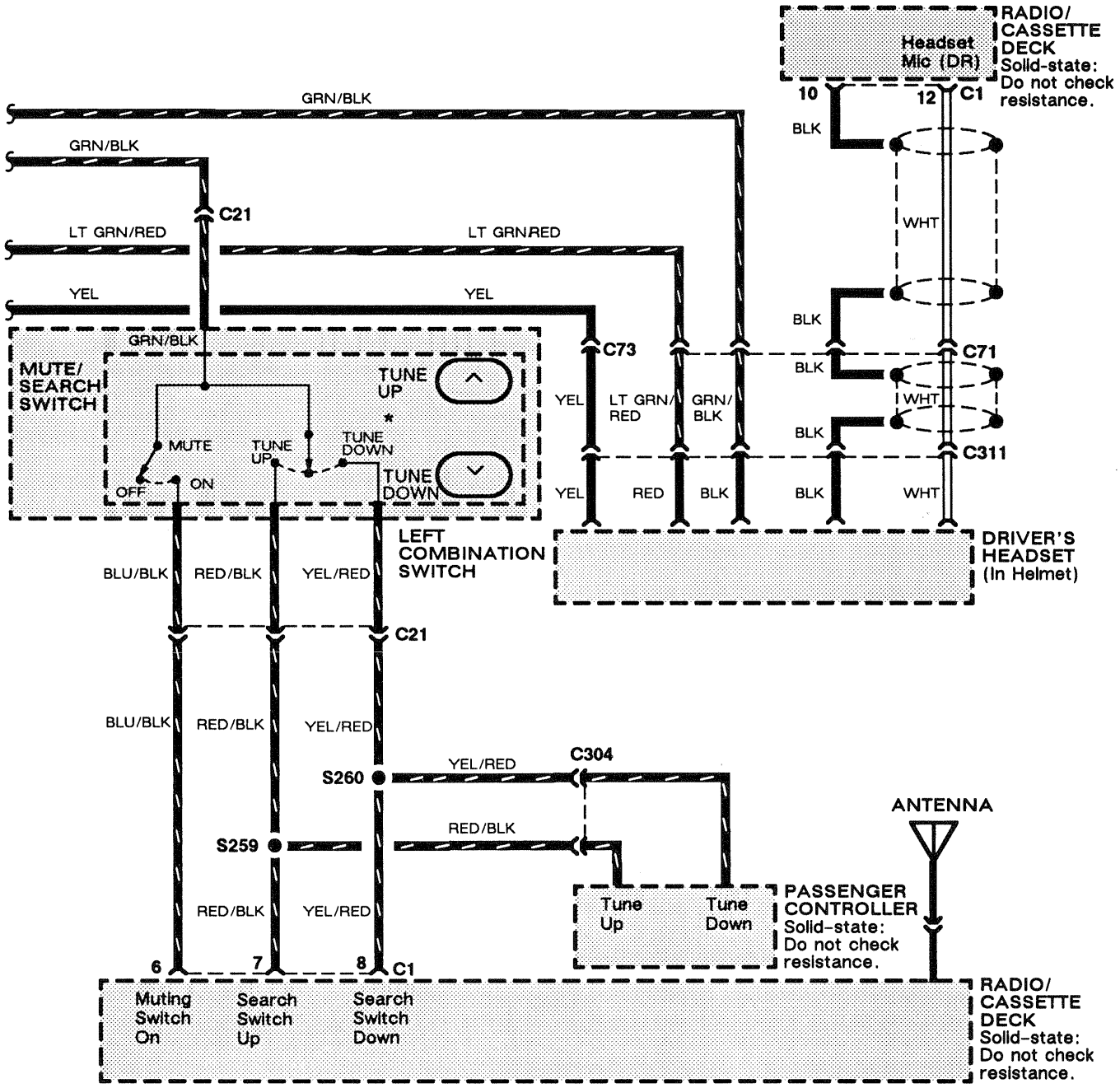


(cont'd)

Radio and Cassette: Asp and SE

Circuit Schematic (cont'd)



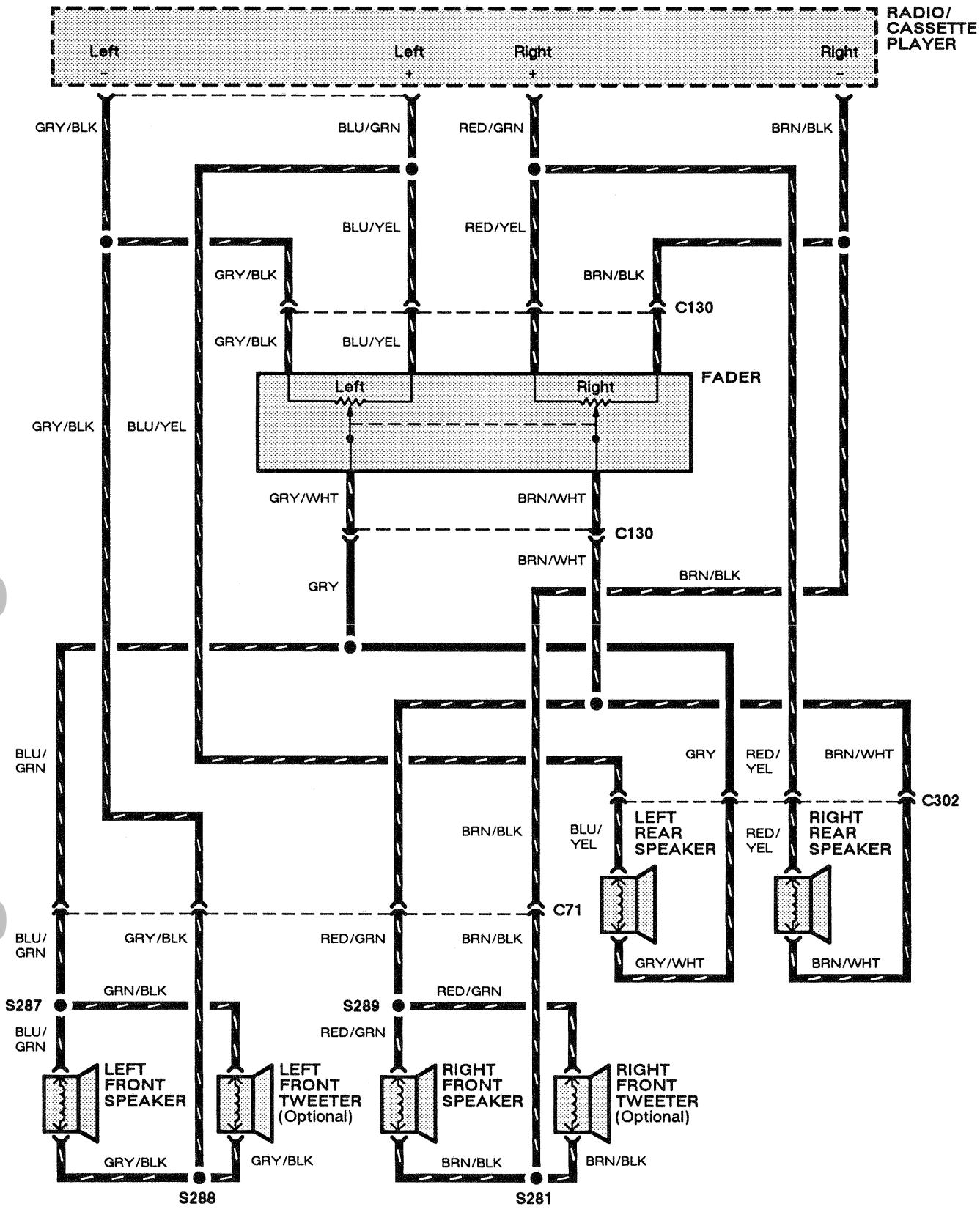


* SE ONLY

Radio and Cassette: Asp and SE

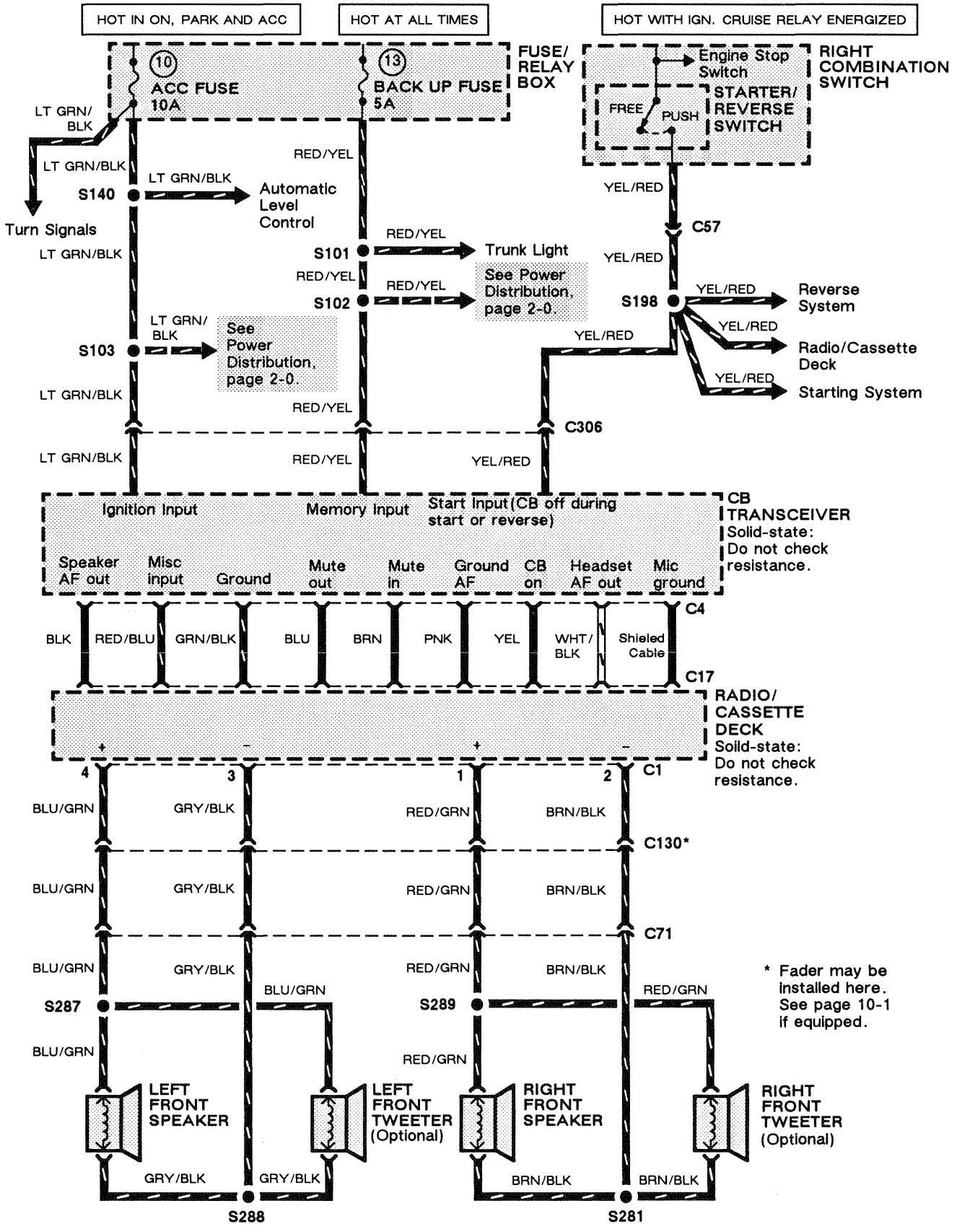
Circuit Schematic (cont'd)

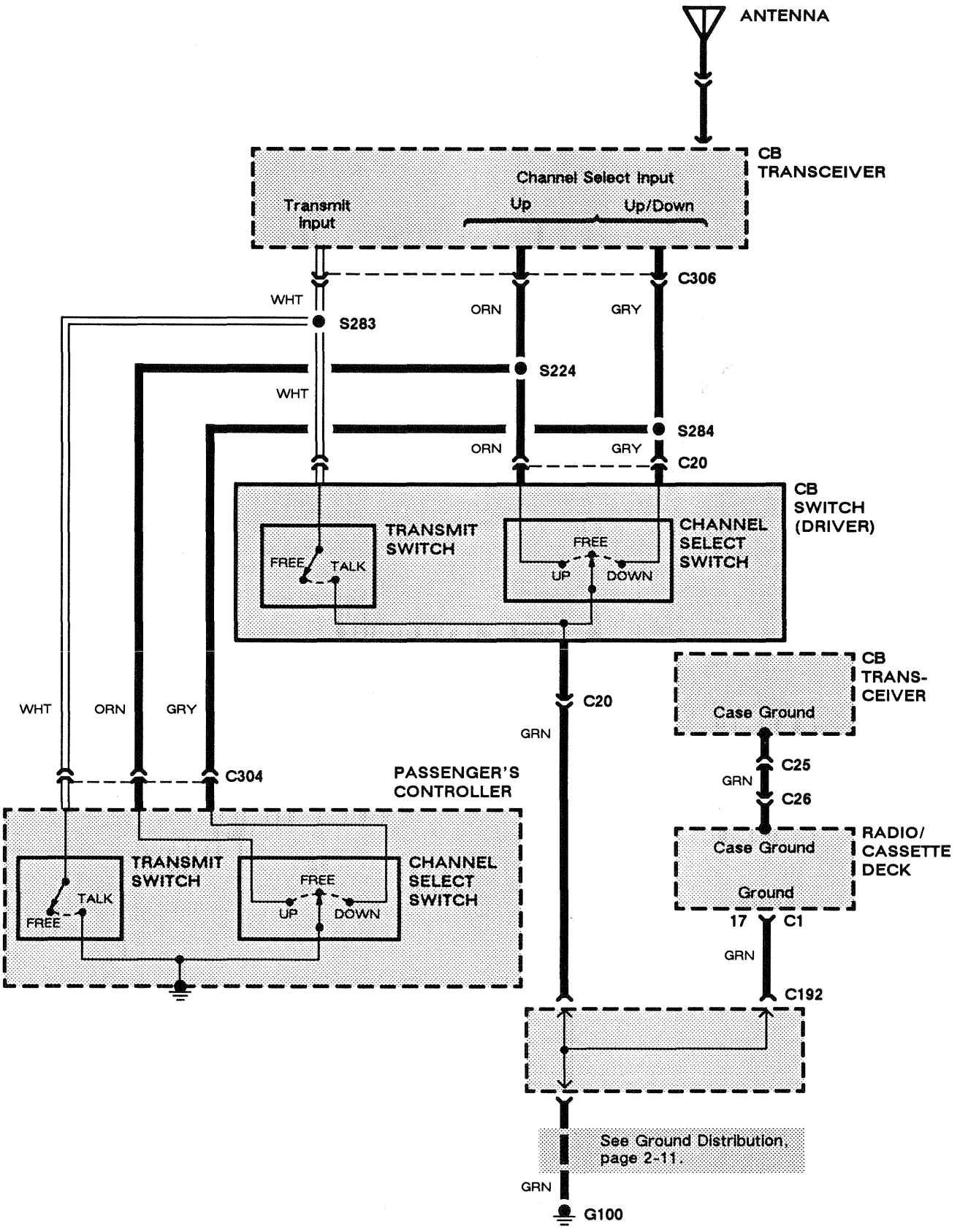
Speakers – SE



Citizen Band Radio: Asp

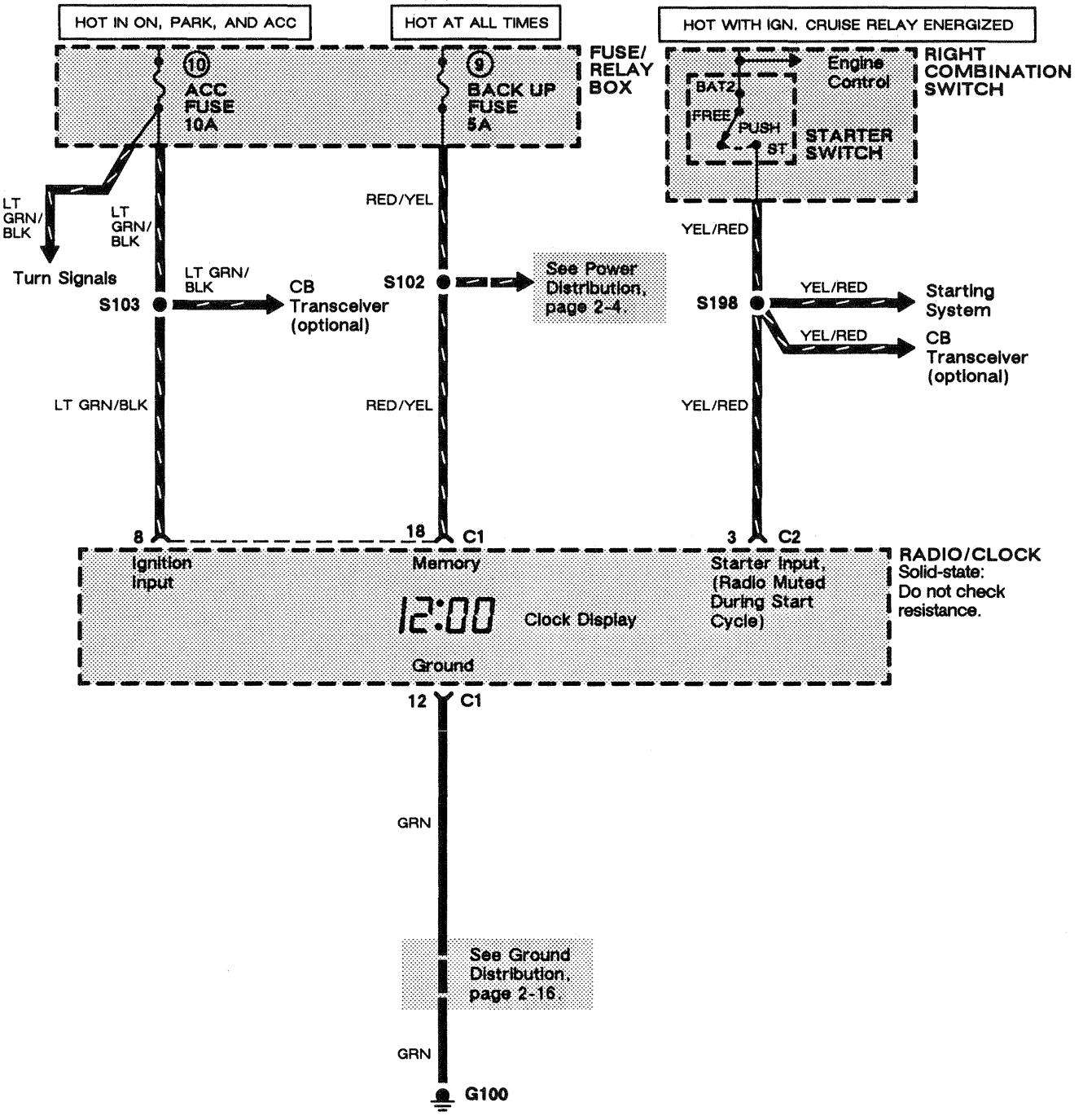
Circuit Schematic

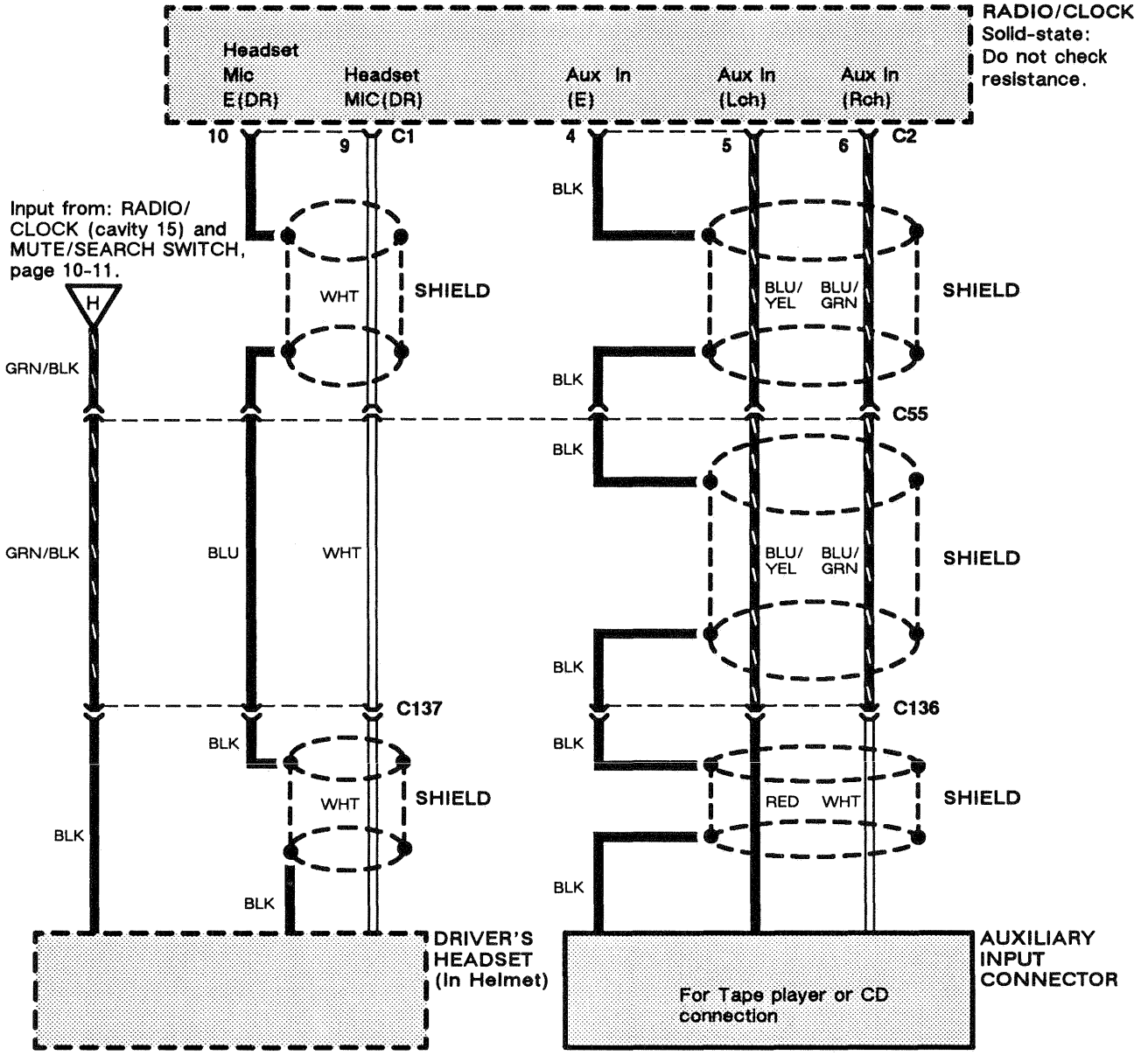




Radio/Clock: Int

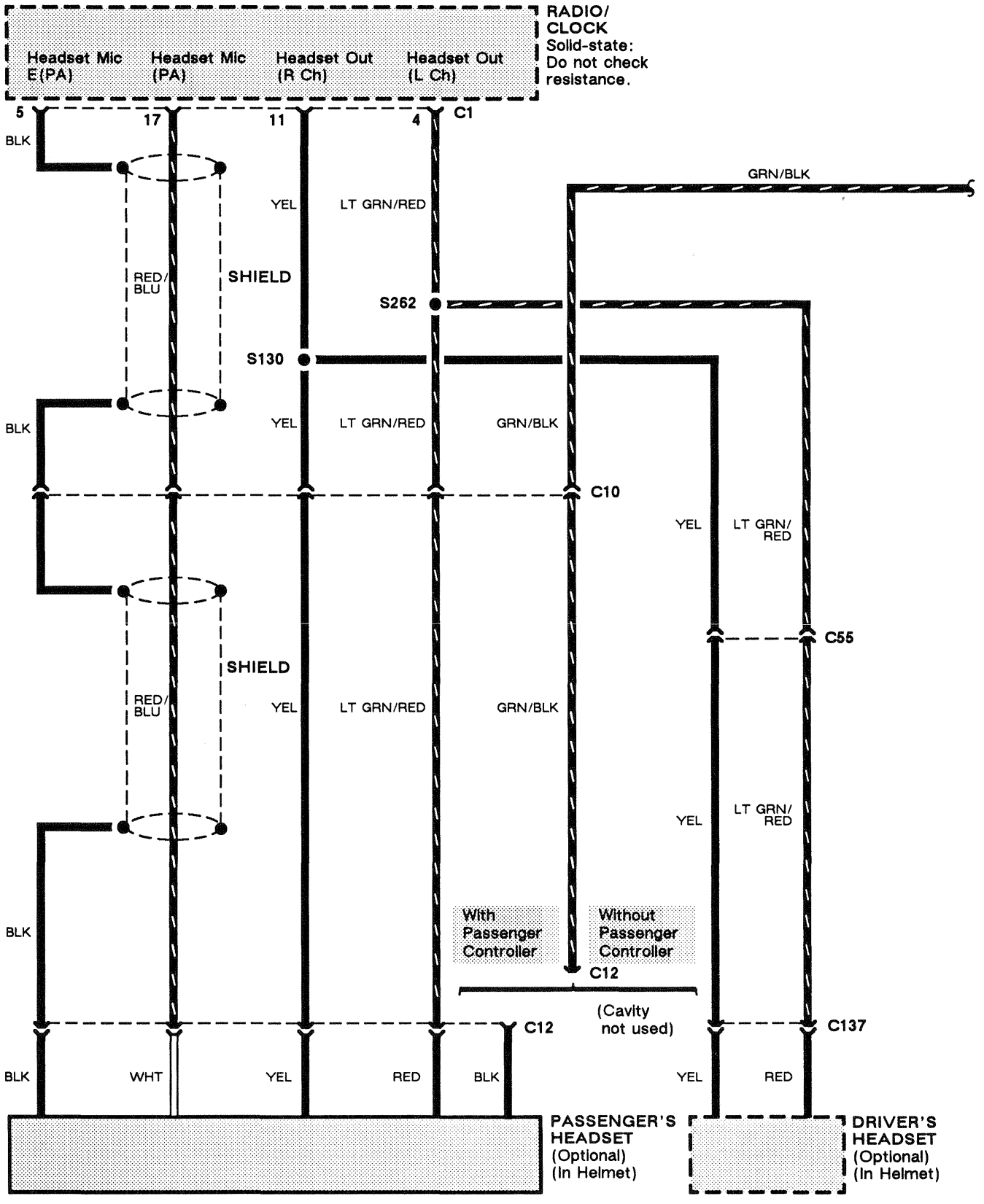
Circuit Schematic

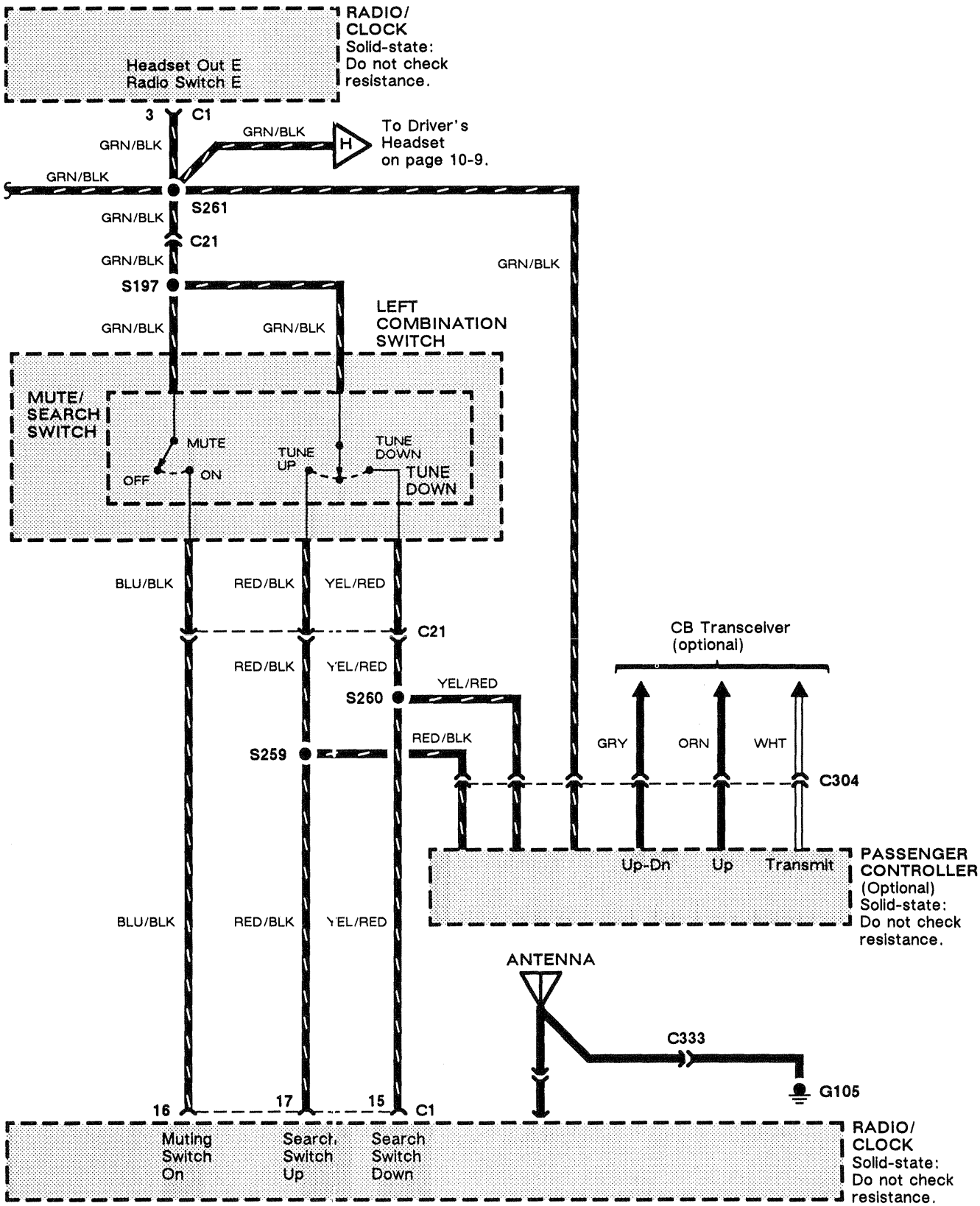




Radio/Clock: Int

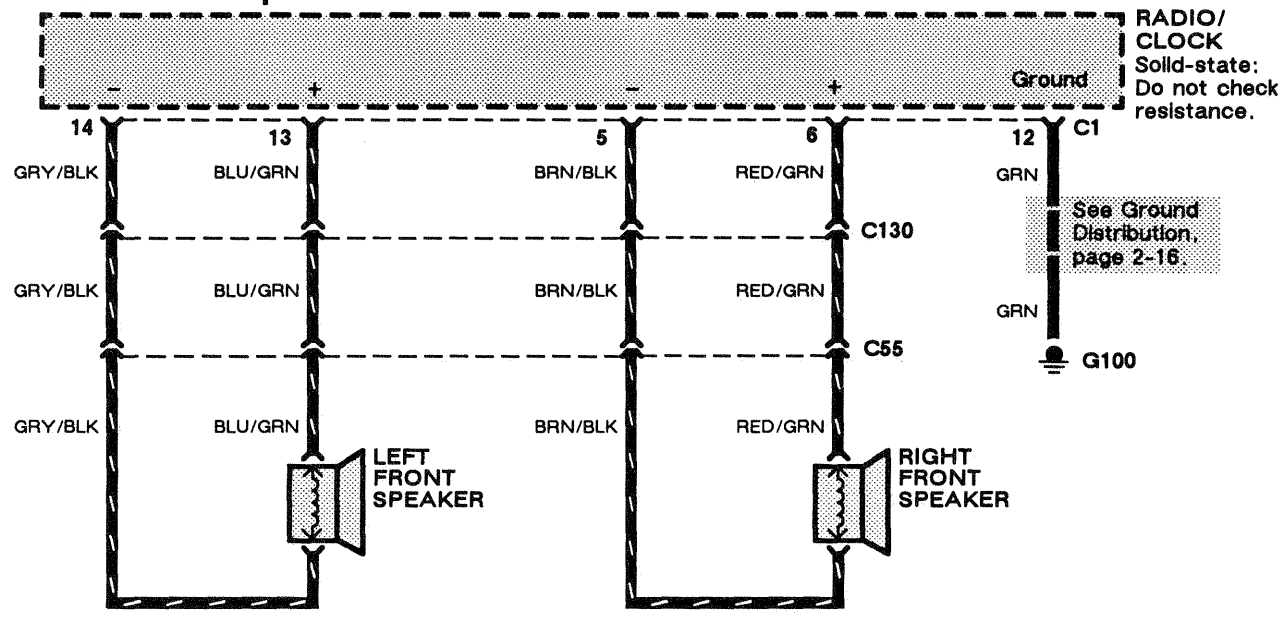
Circuit Schematic (cont'd)



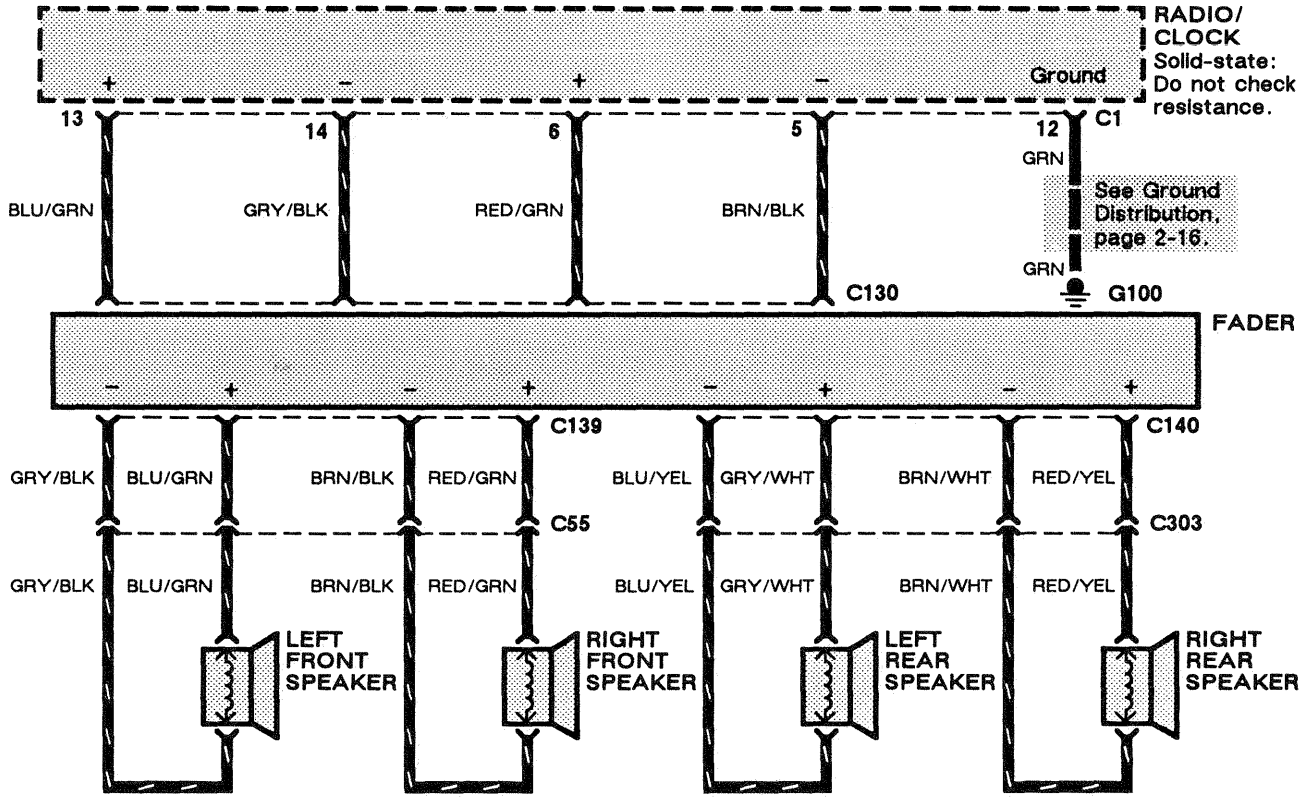


Circuit Schematic (cont'd)

Without Rear Speaker

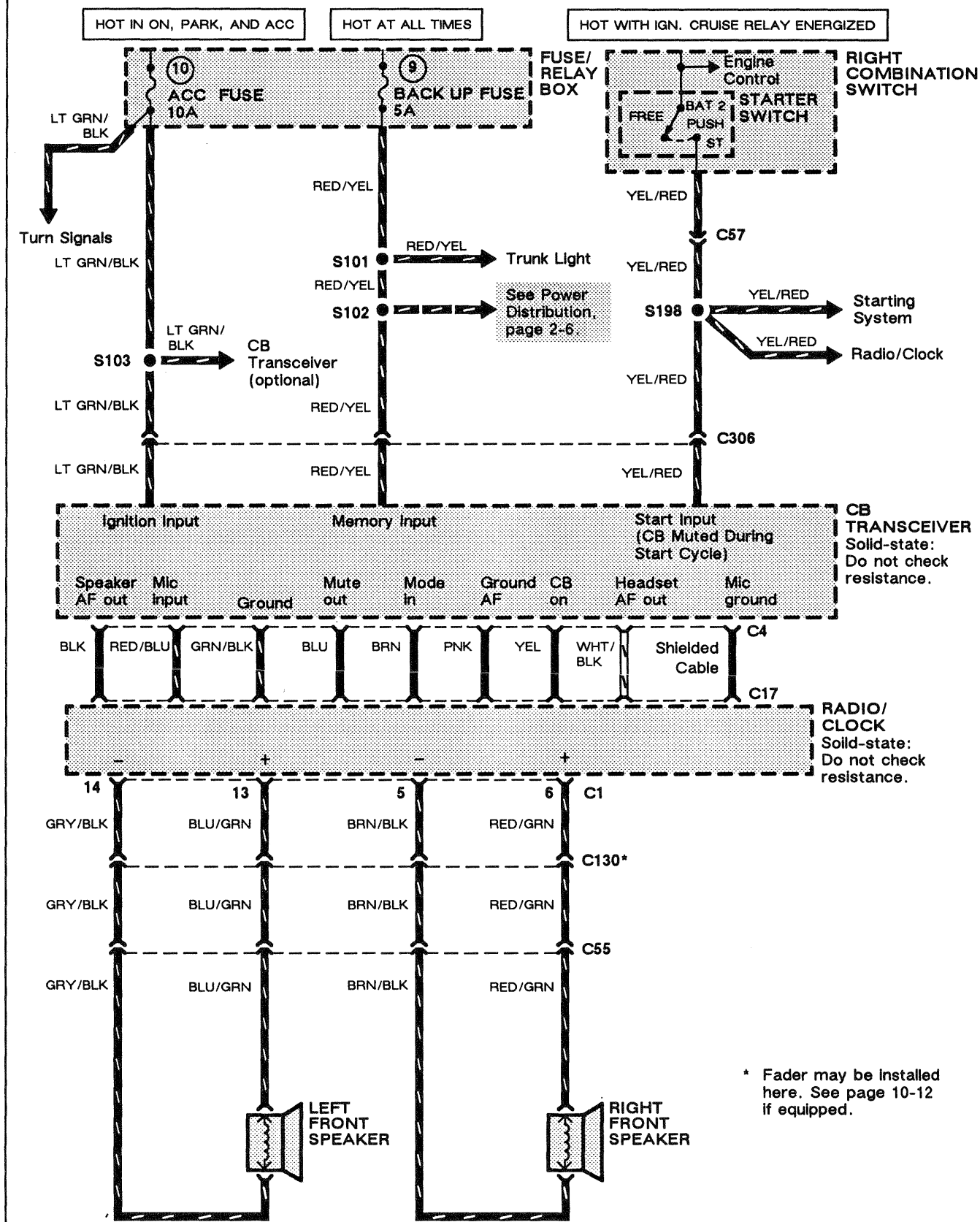


With Rear Speaker (optional)



Citizen Band Radio: Int

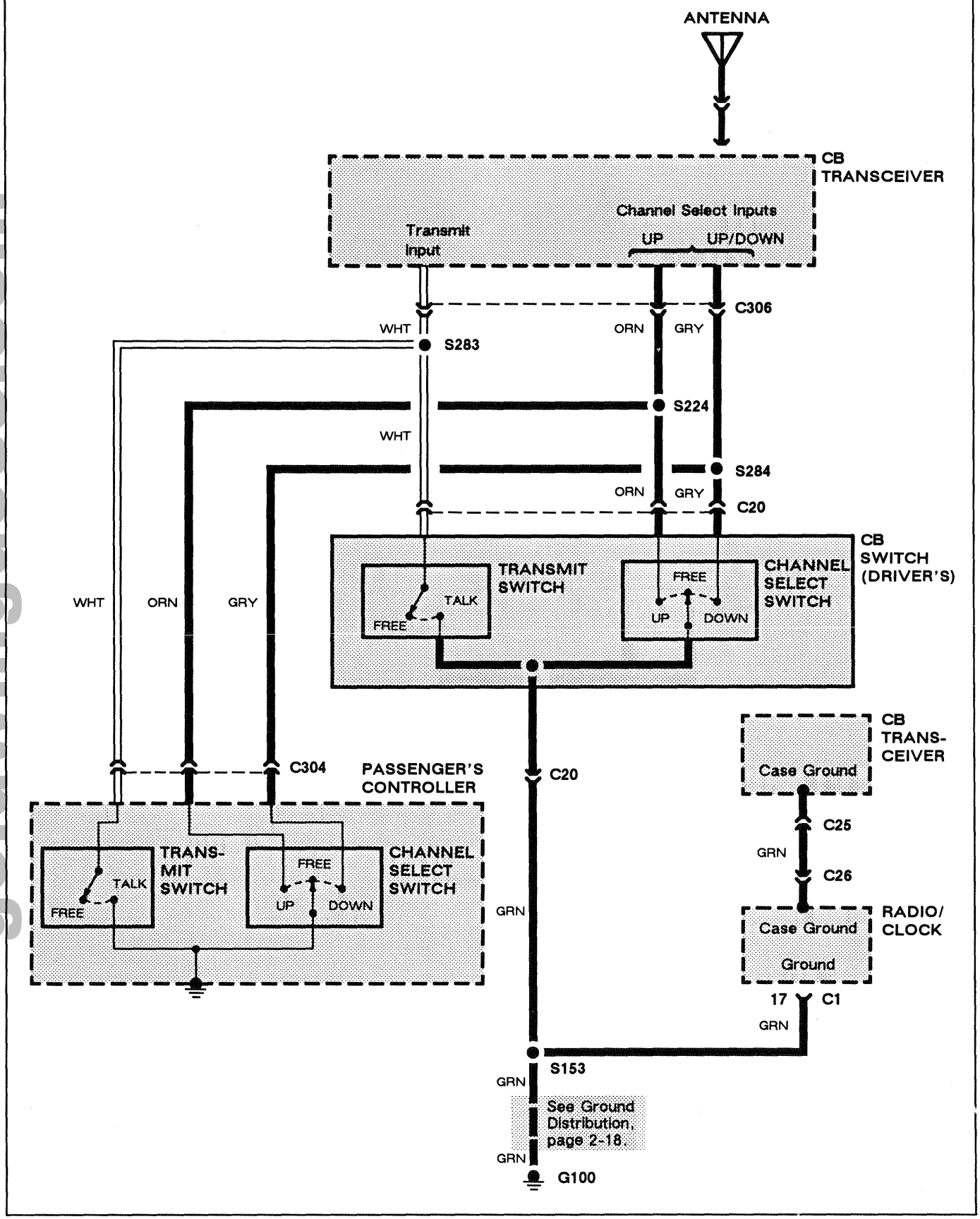
Circuit Schematic



(cont'd)

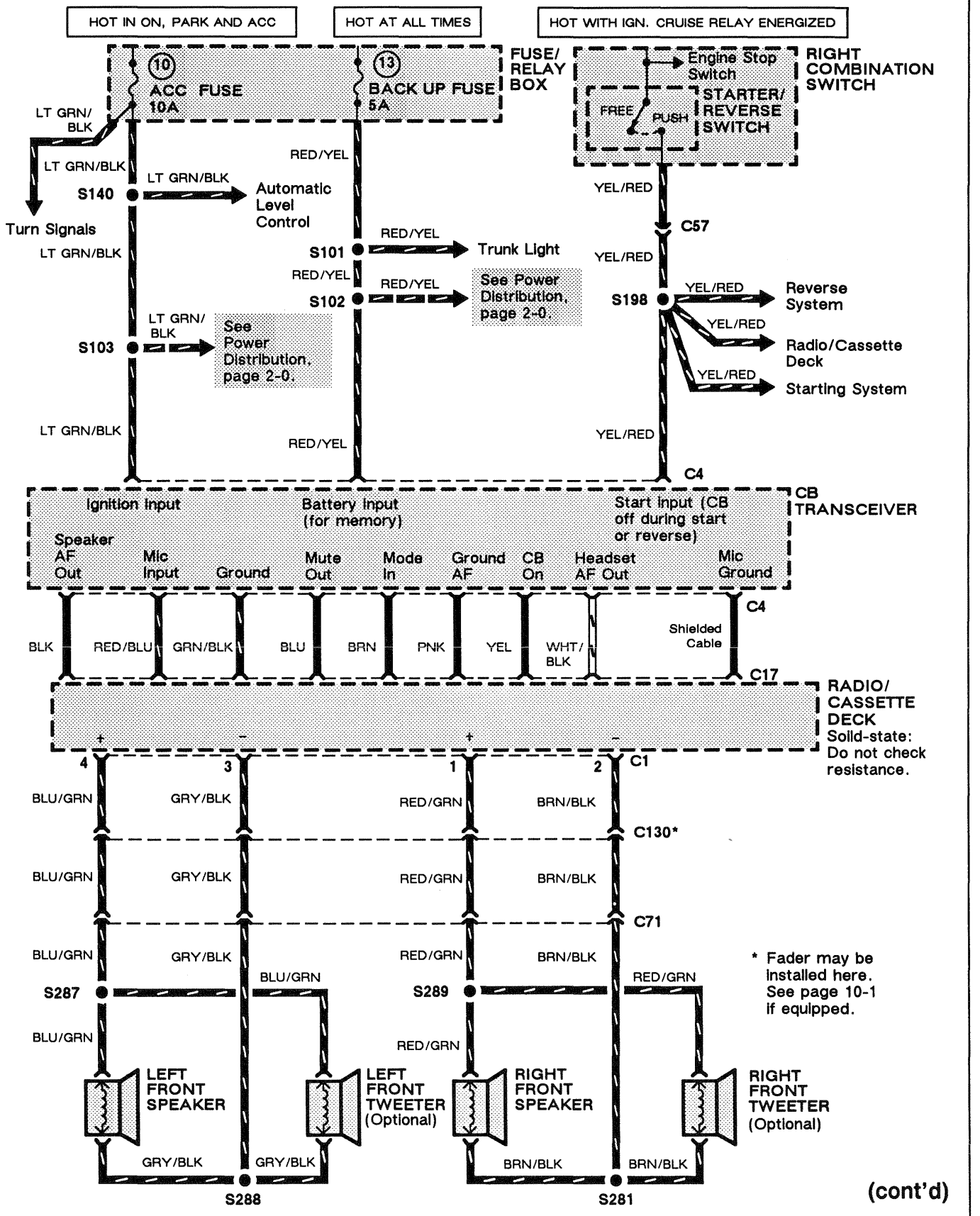
Citizen Band Radio: Int

Circuit Schematic (cont'd)



Citizen Band Radio: SE

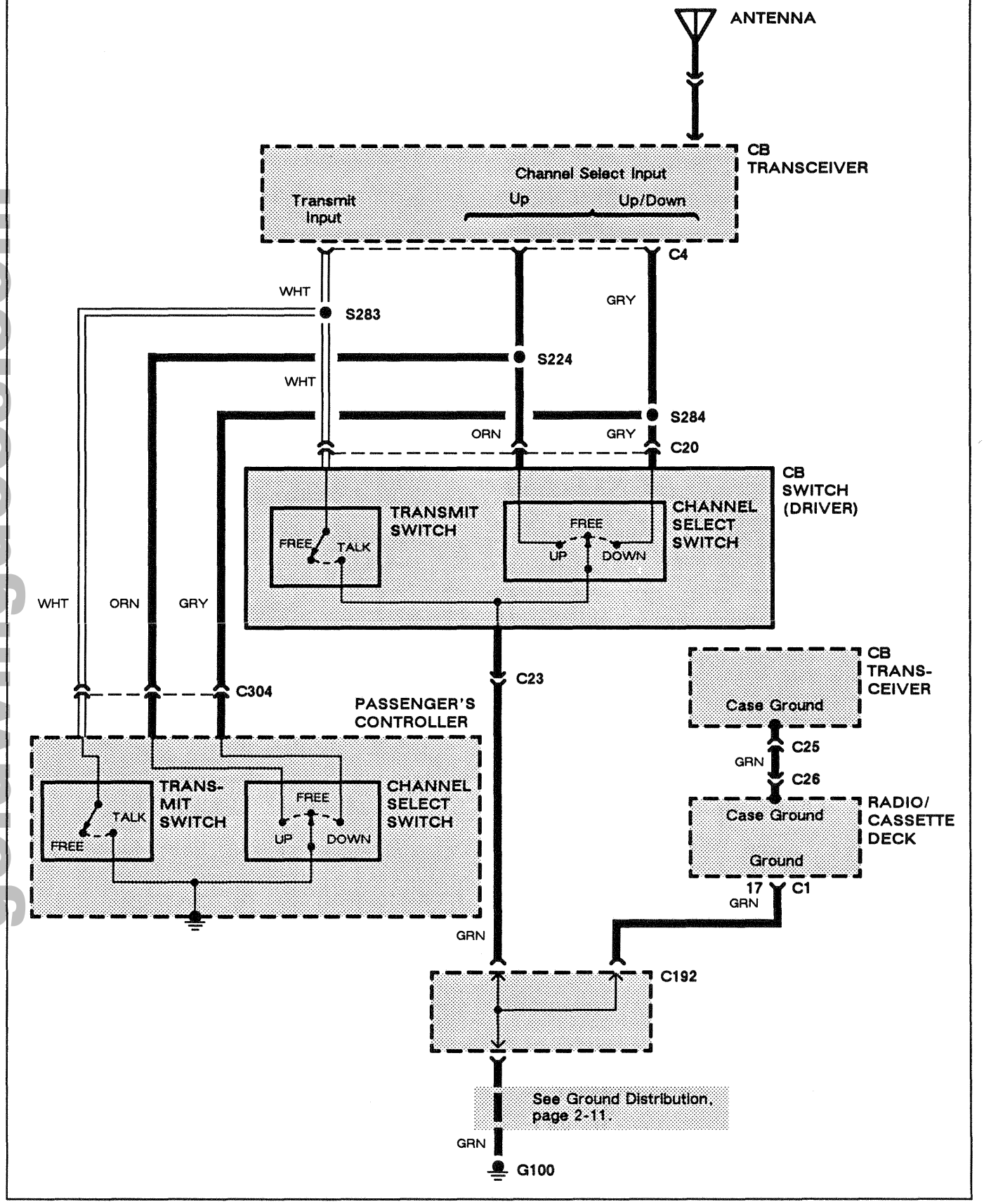
Circuit Schematic



(cont'd)

Citizen Band Radio: SE

Circuit Schematic (cont'd)



Component Location Index

(Refer to Section 12 for photographs.)

(cont'd)

Component Location Index

(Refer to Section 12 for photographs.)

(cont'd)

Component Location Index

(Refer to Section 12 for photographs.)

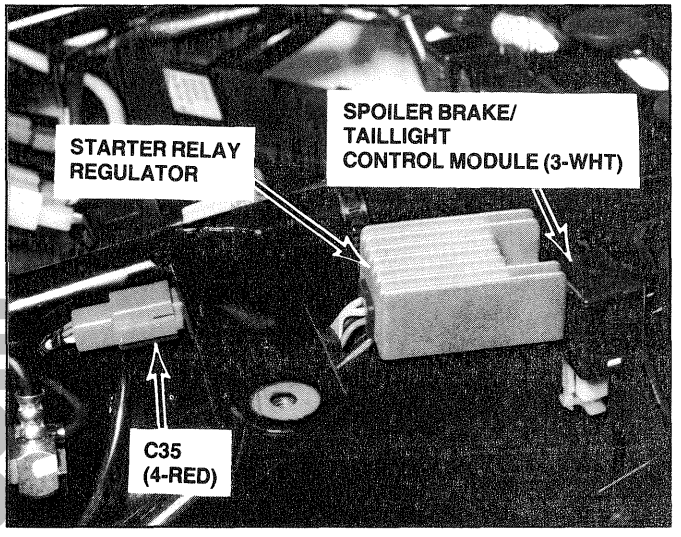
(cont'd)

Component Location Index

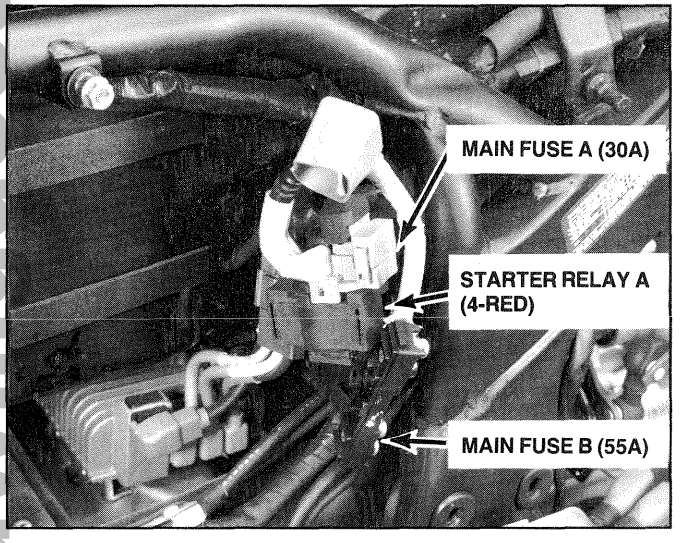
(Refer to Section 12 for photographs.)

Component Location Photographs

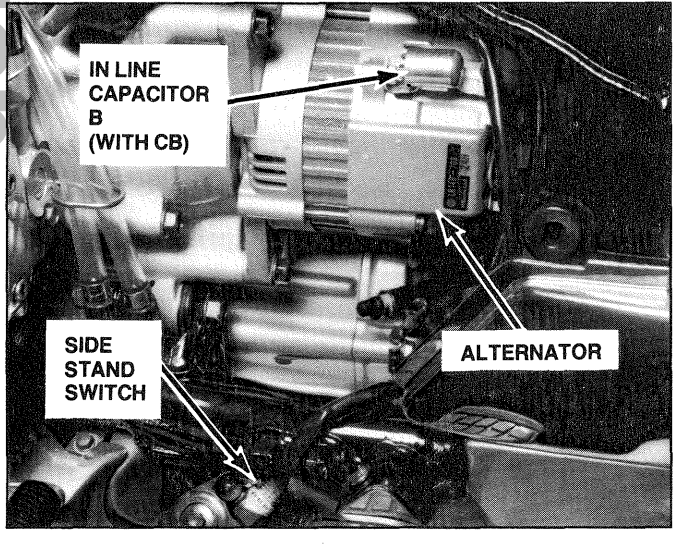
1. Left Rear Side of Motorcycle (Saddlebag Removed)



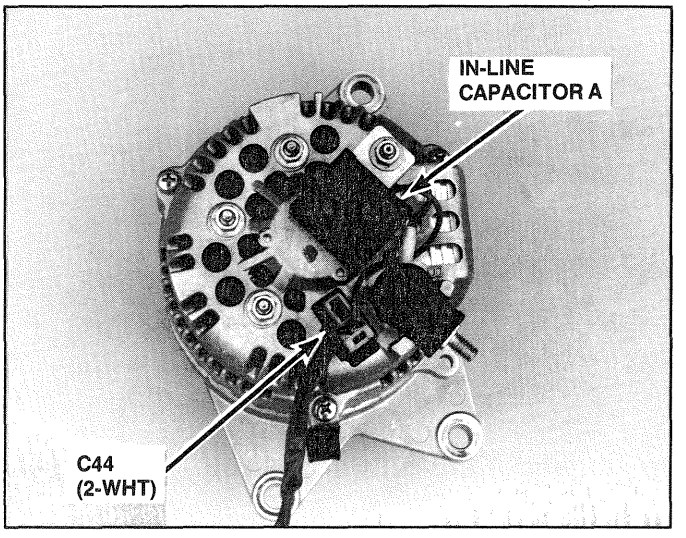
2. Right Side, Below Battery (Rear Side Cover and Battery Box Removed)



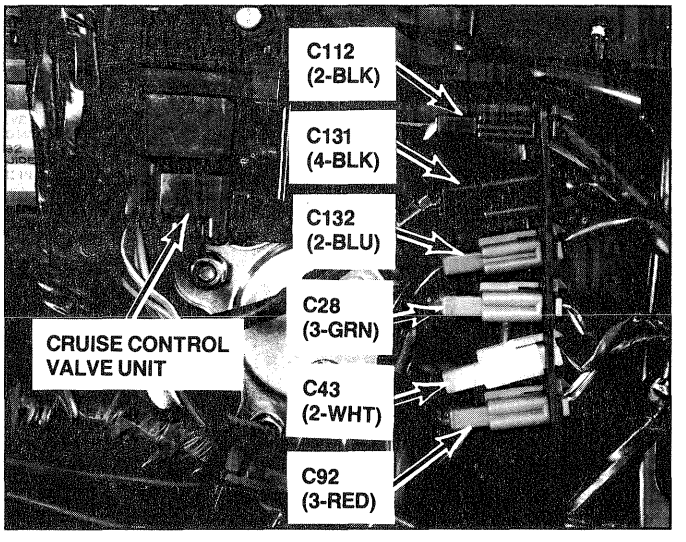
3. Left Rear of Engine (Front Side Cover Removed)



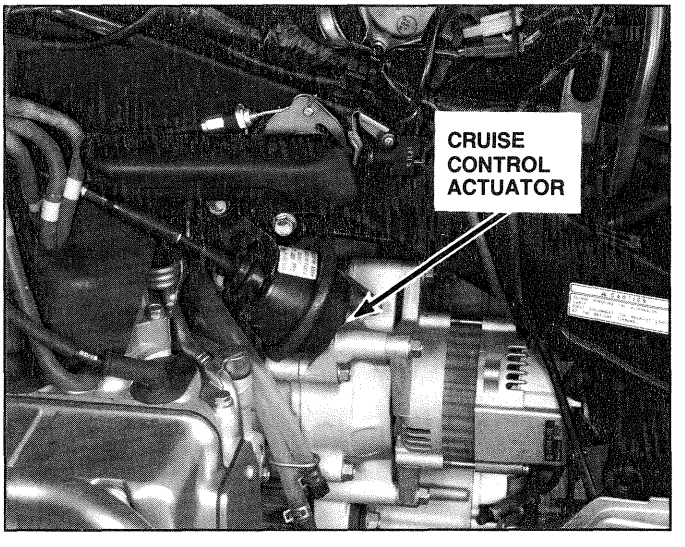
4. Rear of Alternator (Removed from Engine)



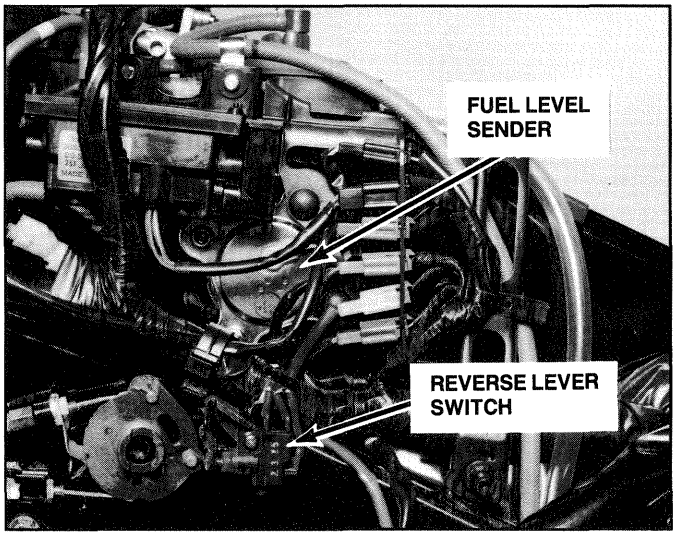
5. Left Side, Next to Fuel Tank (Inner Cover Removed)



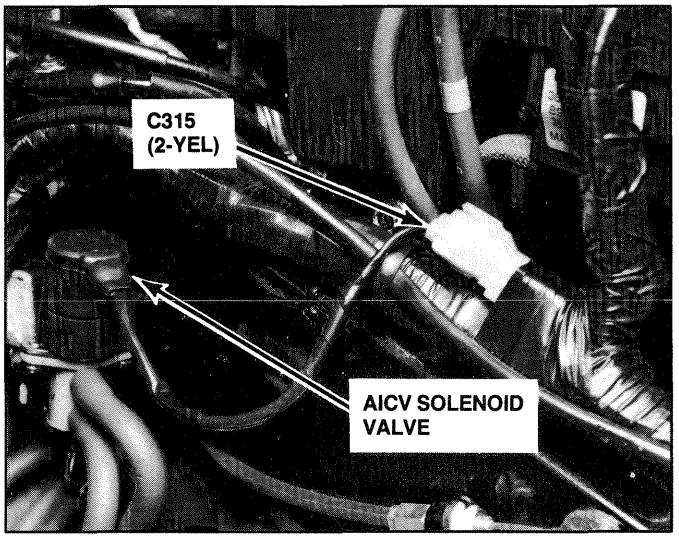
6. Left Side, Below Reverse Lever (Inner Cover Removed)



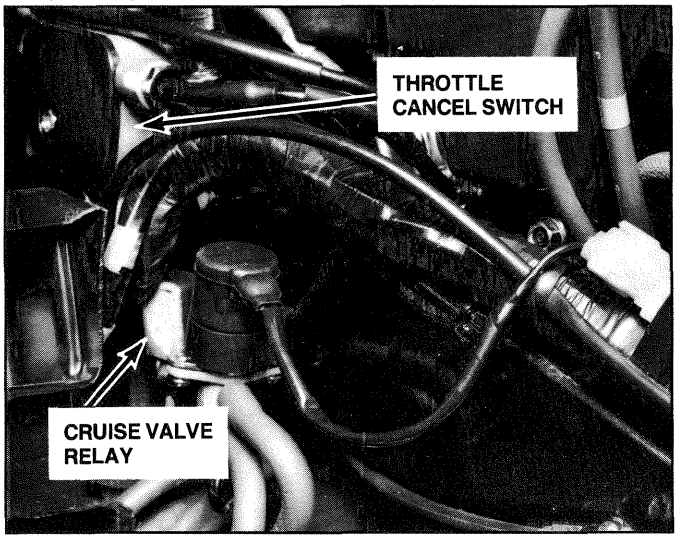
7. Left Side of Engine (Inner Cover Removed)



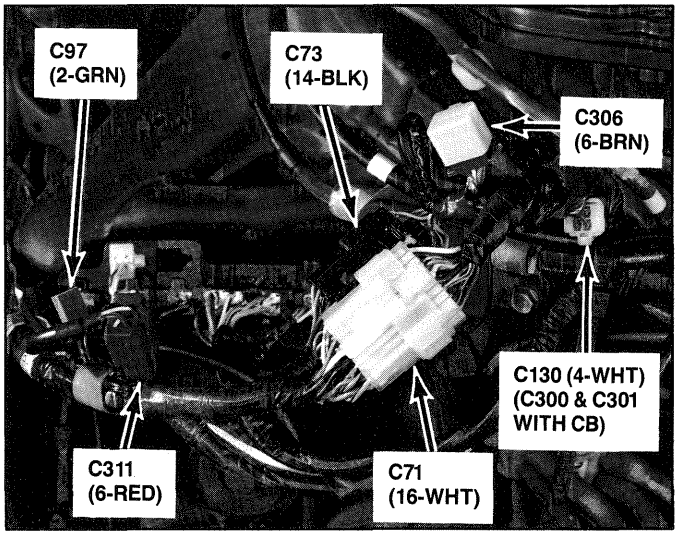
8. Behind Left Side of Fairing (Fairing Inner Cover Removed)



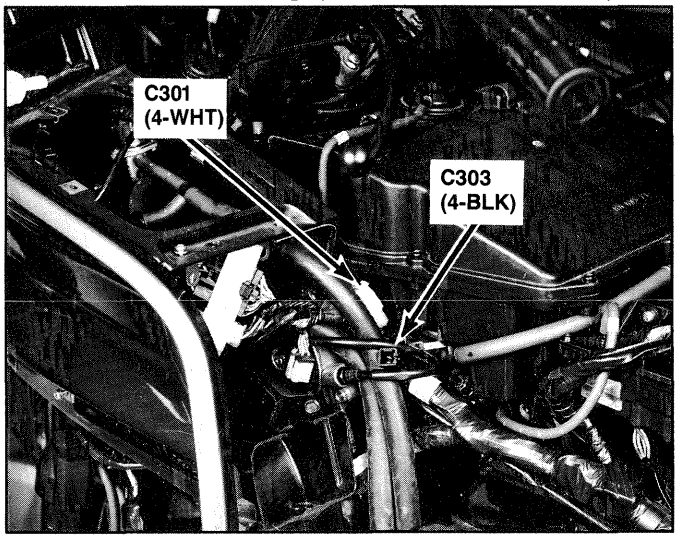
9. Behind Left Side of Fairing (Fairing Inner Cover Removed)



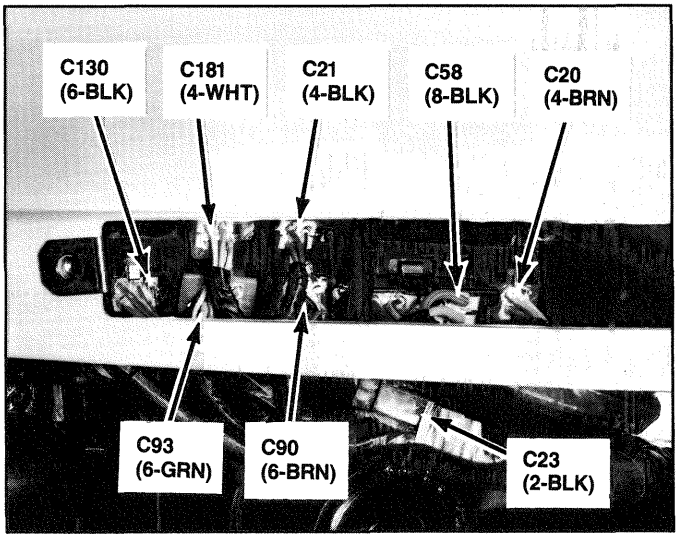
10. Left Rear of Fairing (Fairing Removed)



11. Left Rear of Fairing (Inner Cover Removed)

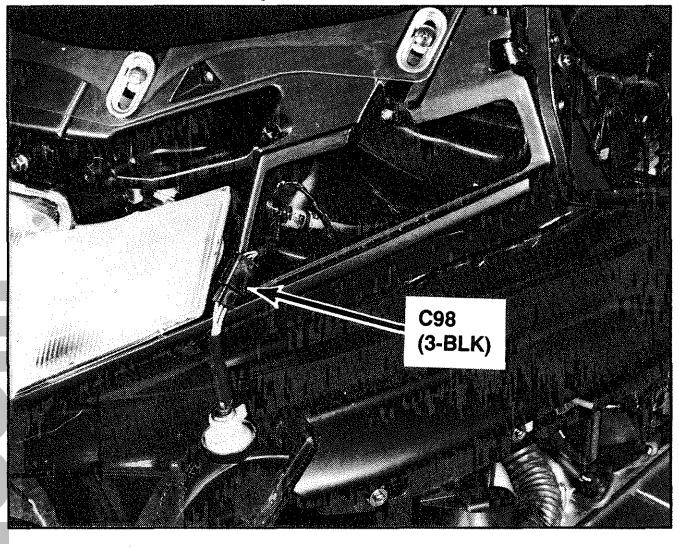


12. Behind Left Side of Fairing (Fairing Removed)

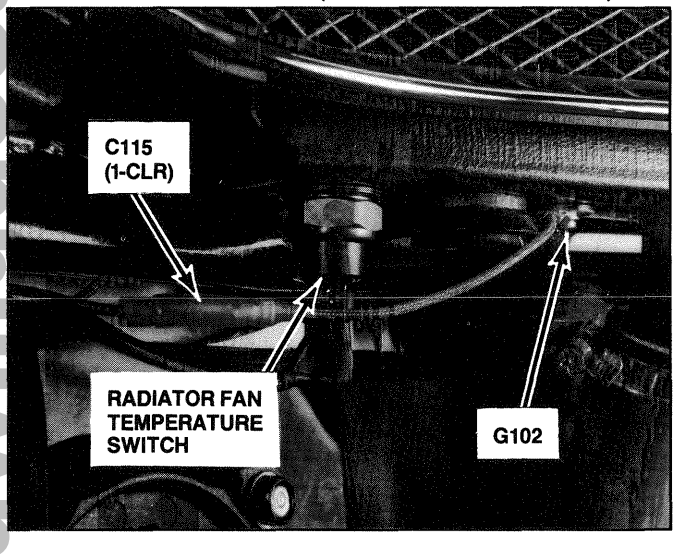


Component Location Photographs

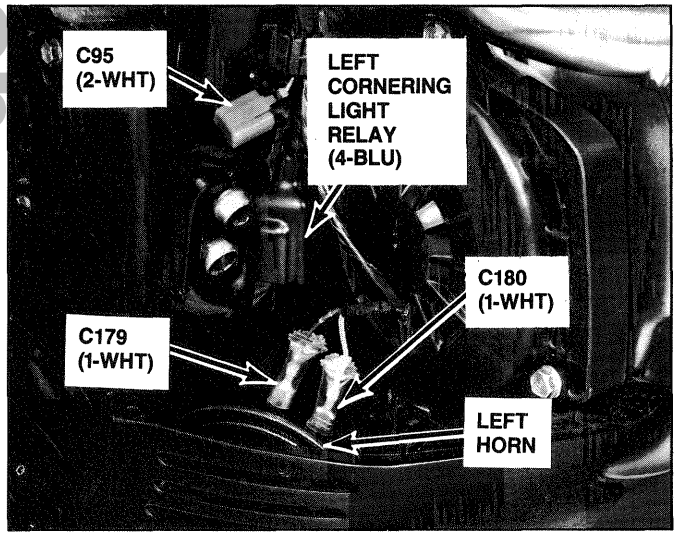
13. Front of Motorcycle, Behind Position Light



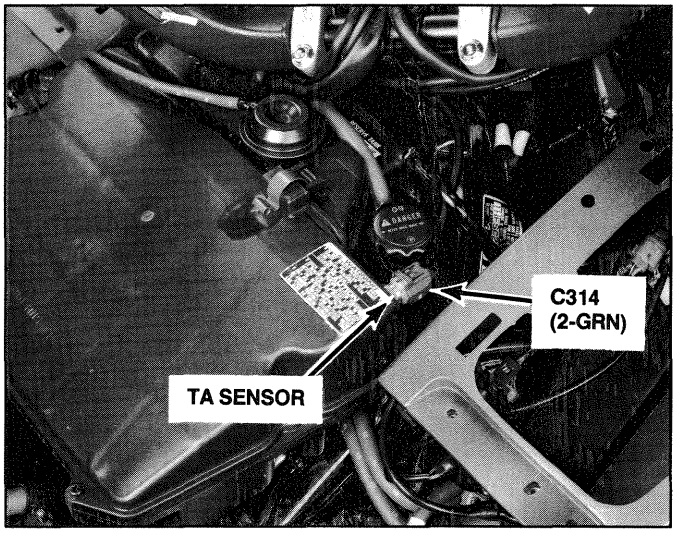
14. Below Left Radiator (Front Cover Removed)



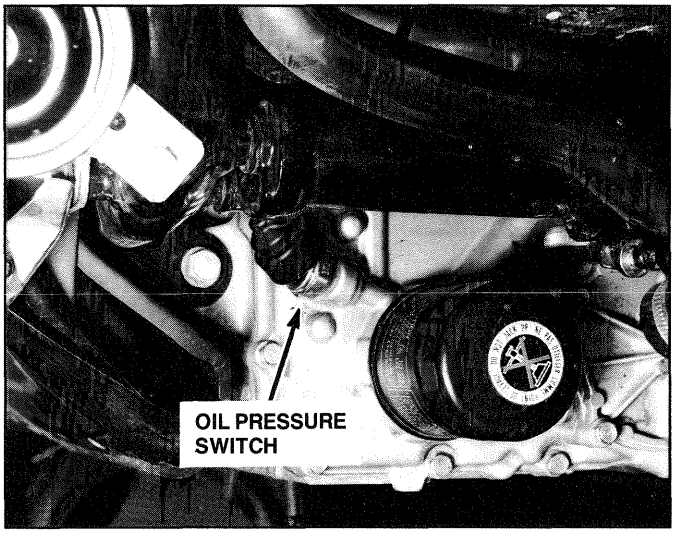
15. Behind Left Fairing Front Cover



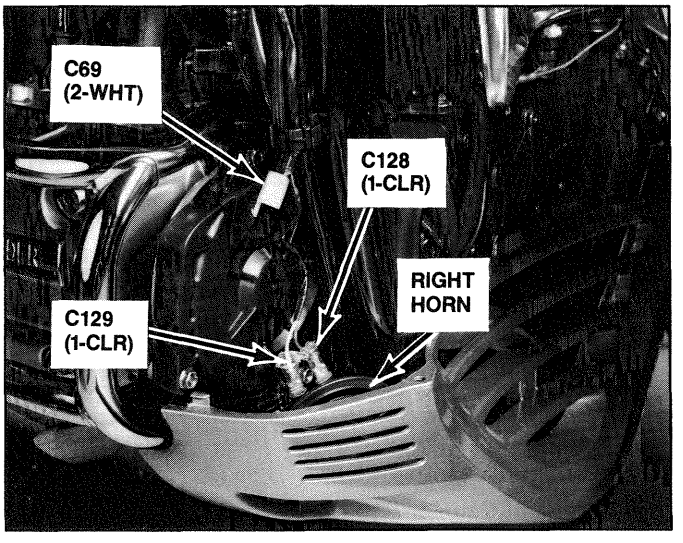
16. Right Air Cleaner Housing Area



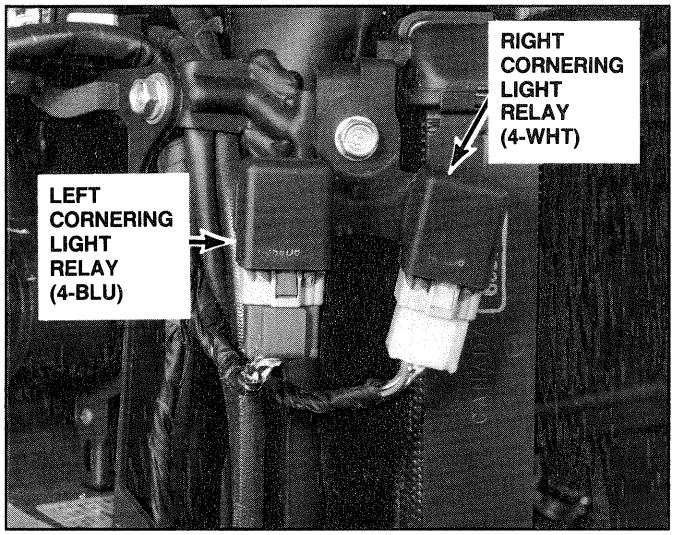
17. Lower Right Front of Engine
(Under Cover Removed)



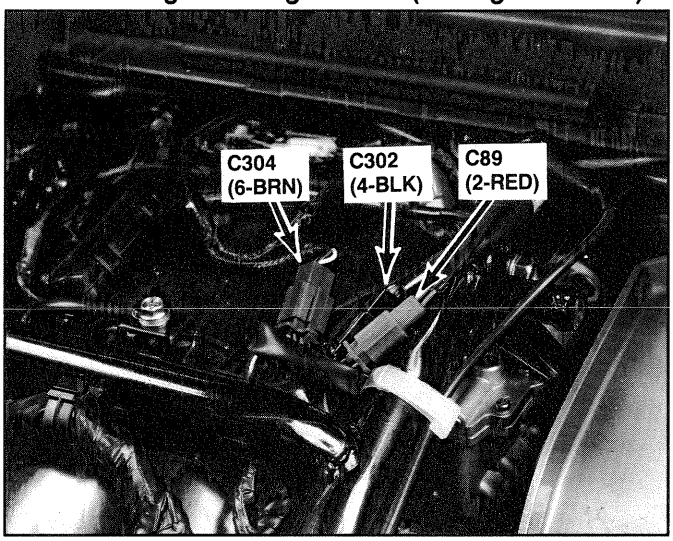
18. Right Front (Under Cover Removed)



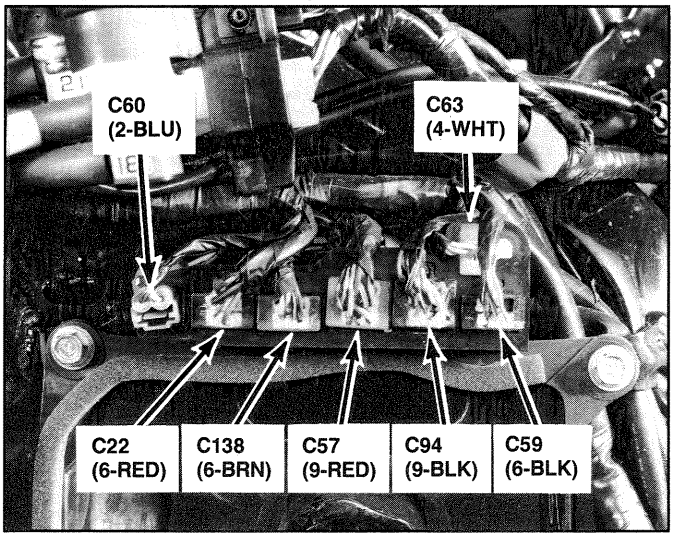
19. Right Side of Fairing
(Lower Fairing Cover Removed)



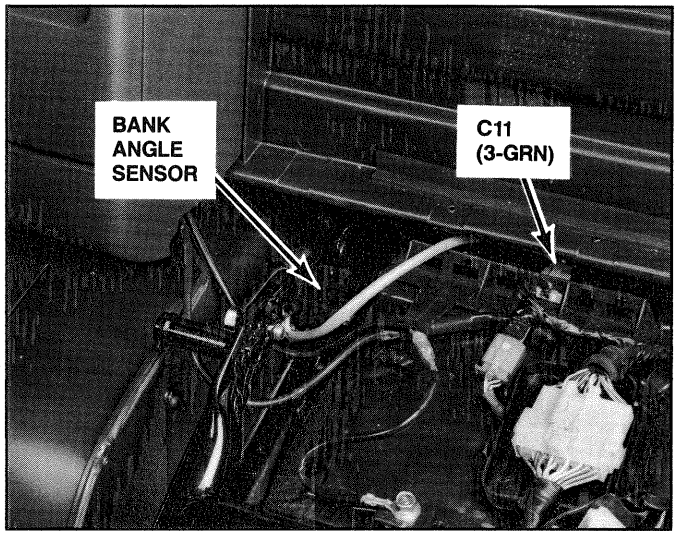
20. Below Right Fairing Pocket (Fairing Removed)



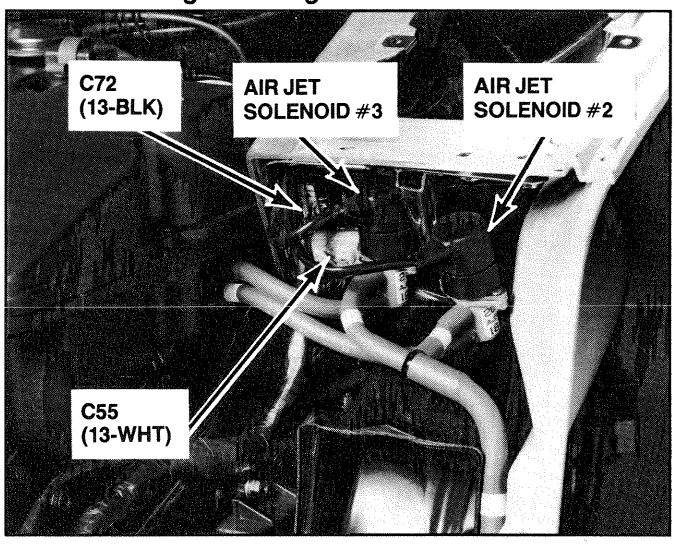
21. Right Side of Fairing (Fairing Removed)



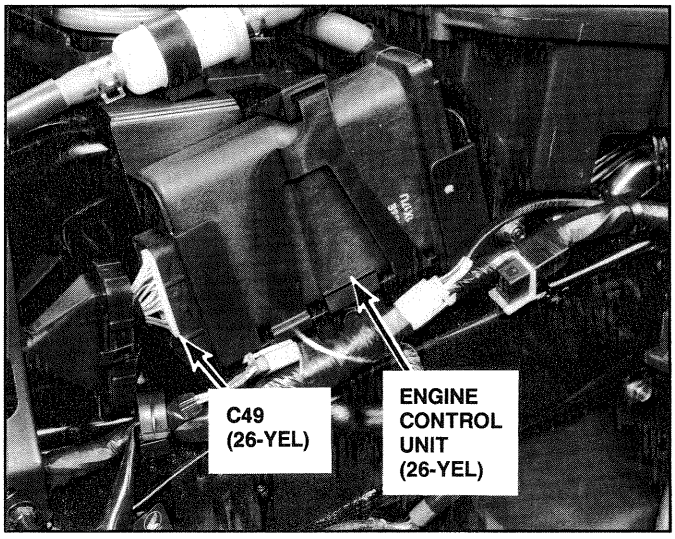
22. Below Rear of Seat



23. Rear of Right Fairing Pocket

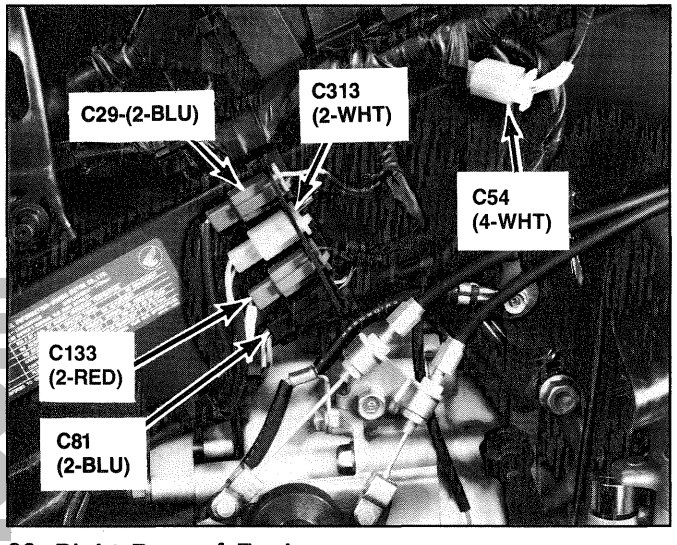


24. Right Side (Inner Cover Removed)

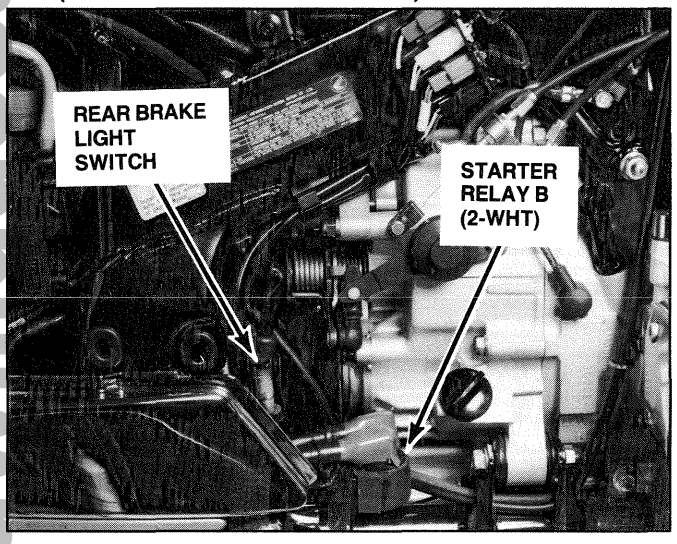


Component Location Photographs

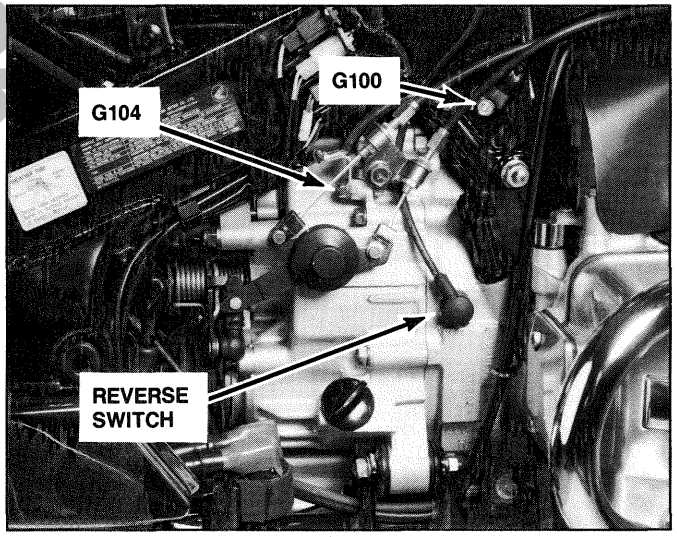
25. Right Side (Inner Cover Removed)



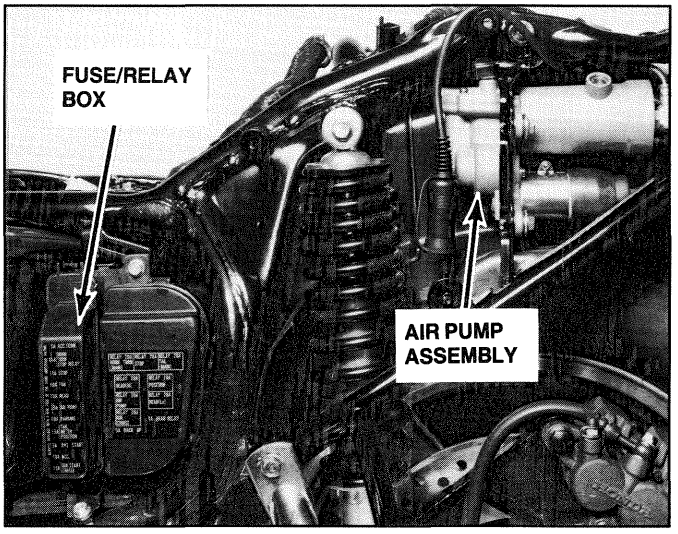
26. Right Rear of Engine
(Front Side Cover Removed)



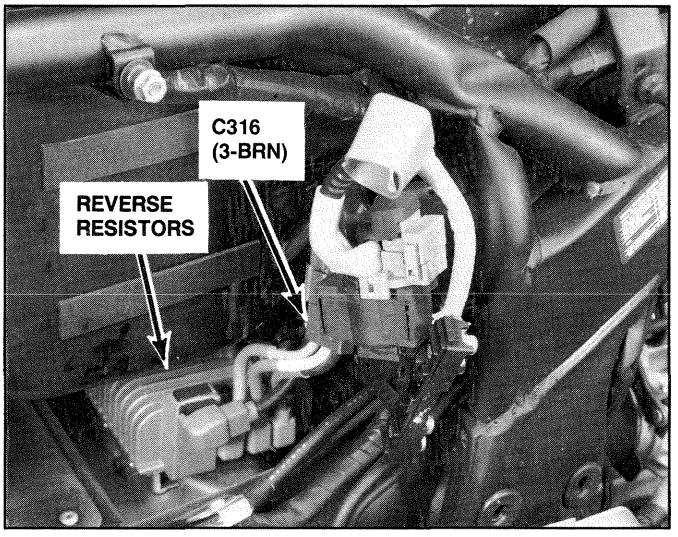
27. Right Rear of Engine
(Front Side Cover Removed)



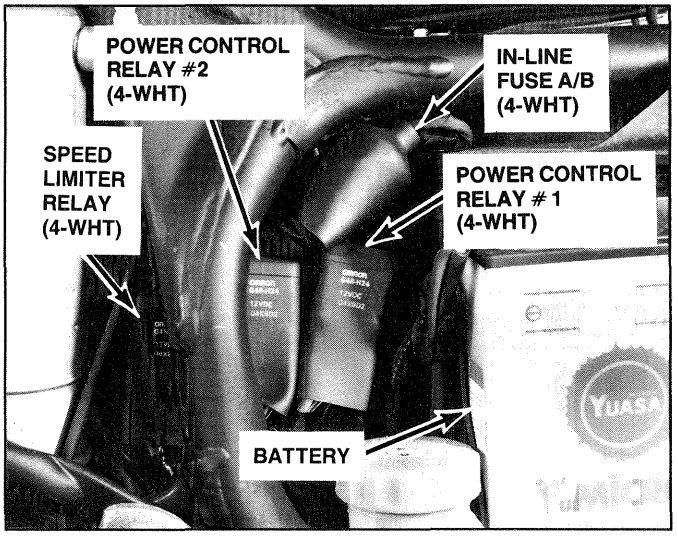
28. Left Side (Left Side Cover Removed)



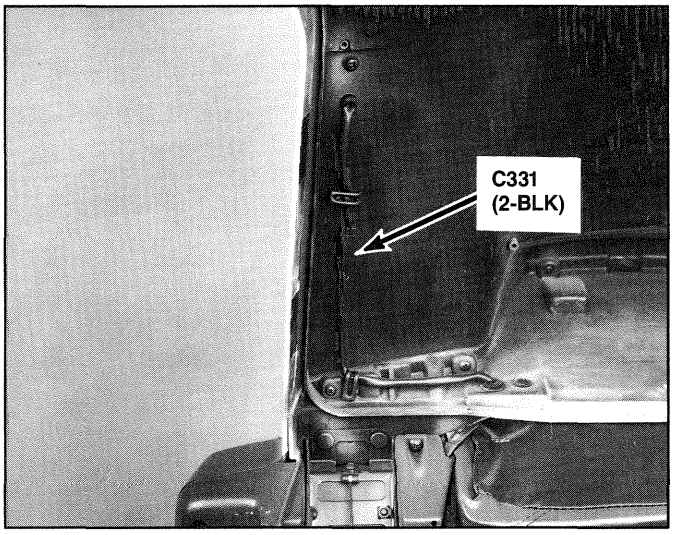
29. Right Side, Below Battery
(Rear Side Cover and Battery Box Removed)



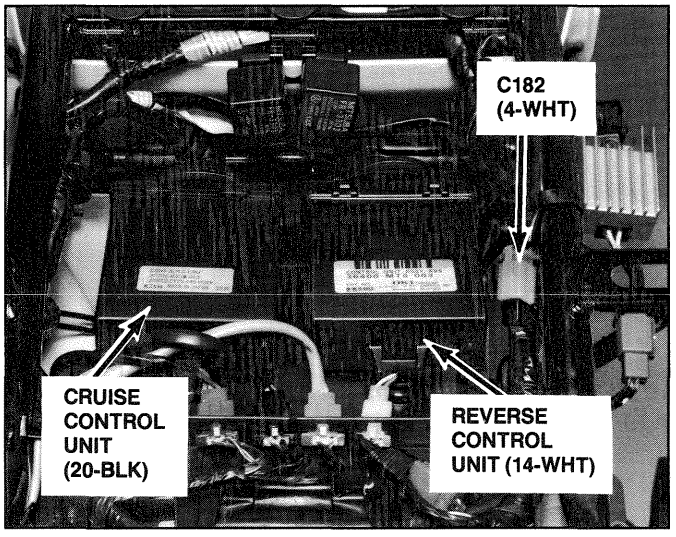
30. Right Side (Rear Side Cover Removed)



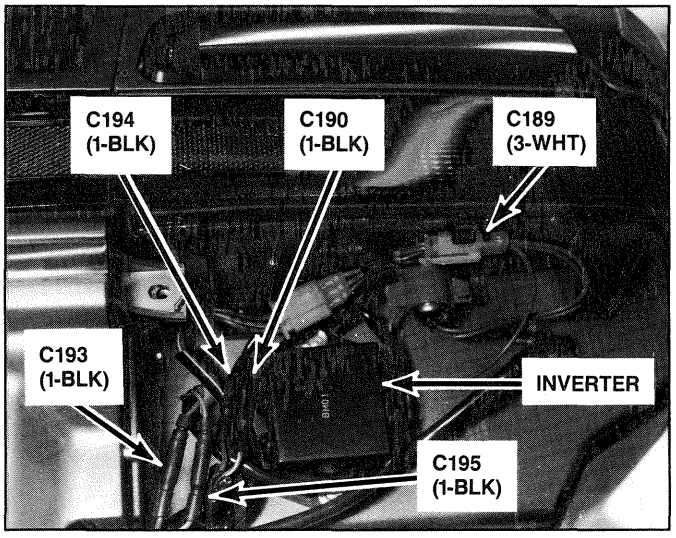
31. Right Side (Saddlebag Removed)



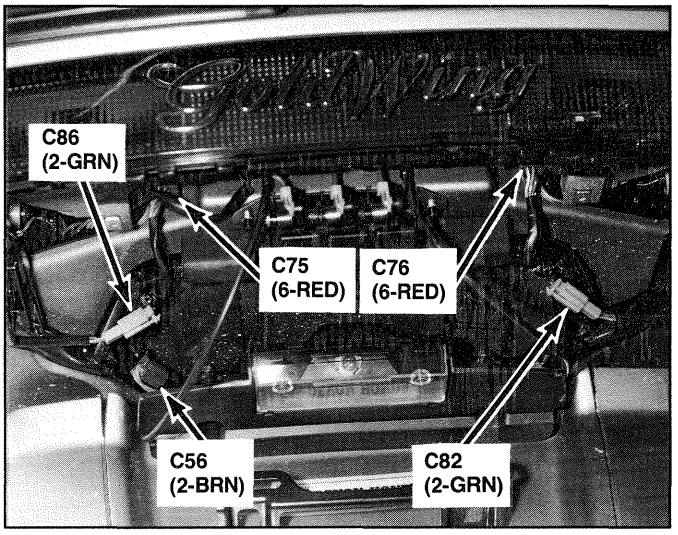
32. Right Side (Saddlebag Removed)



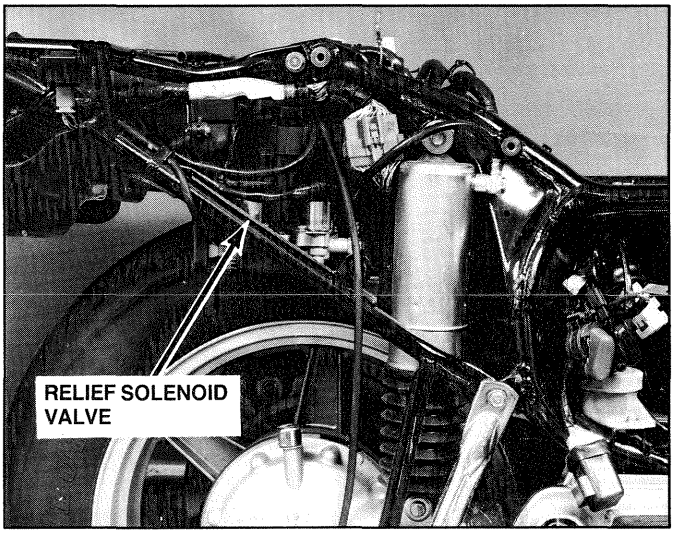
33. Lower Rear of Right Saddlebag
(Saddlebag Lower Cover Removed)



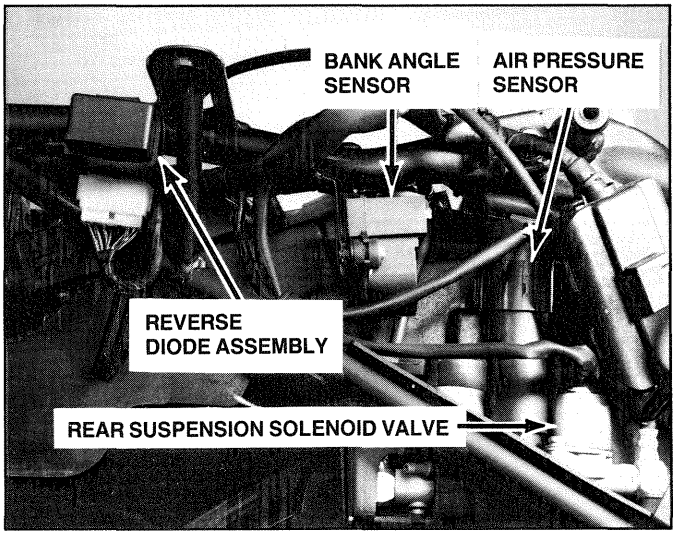
34. Below Rear of Trunk
(Trunk Lower Cover Removed)



35. Inside Trunk, on Left Side of Lid

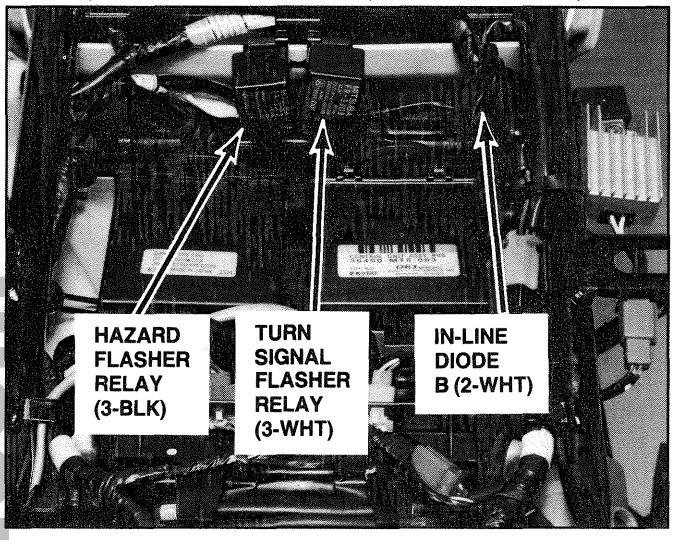


36. Top Rear, Under Trunk (Trunk Removed)

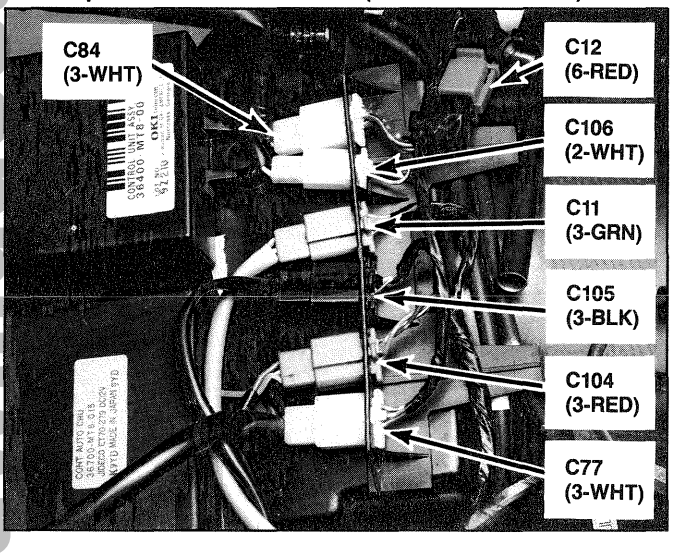


Component Location Photographs

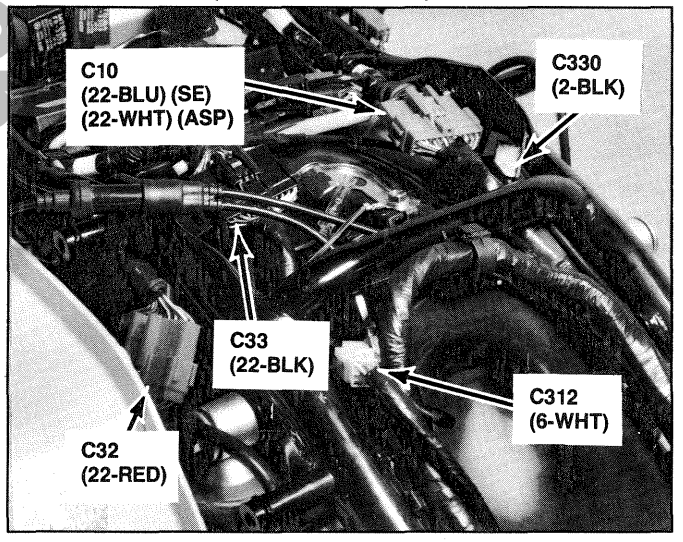
37. Top Rear, Under Trunk (Trunk Removed)



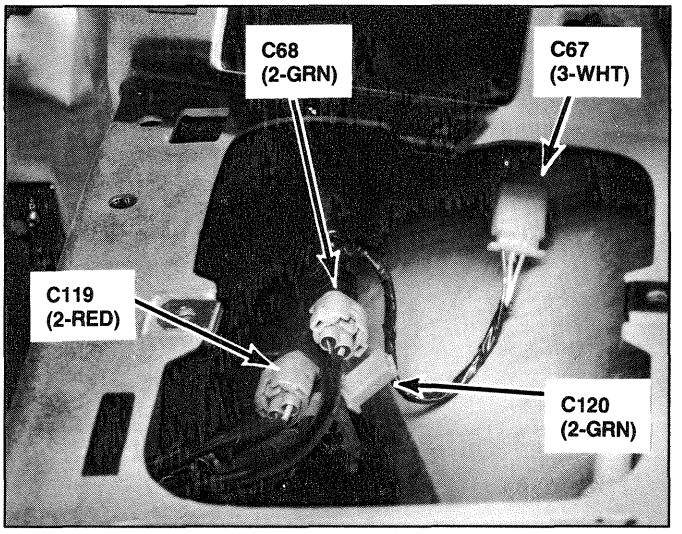
38. Top Rear, Under Trunk (Trunk Removed)



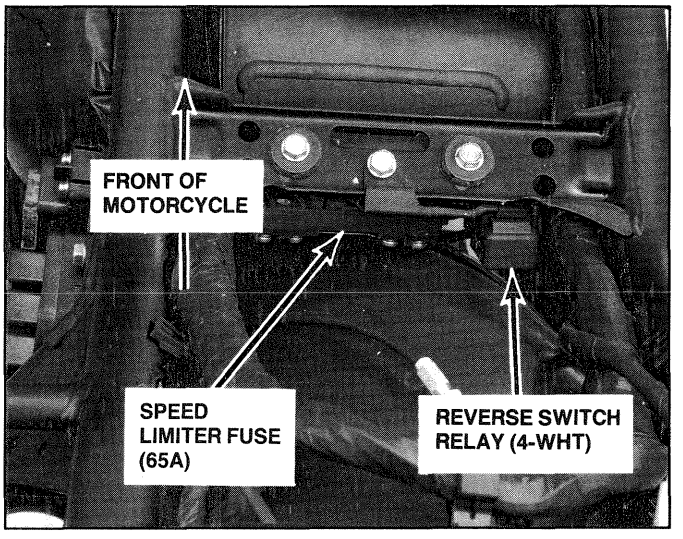
39. Under Seat (Trunk Removed)



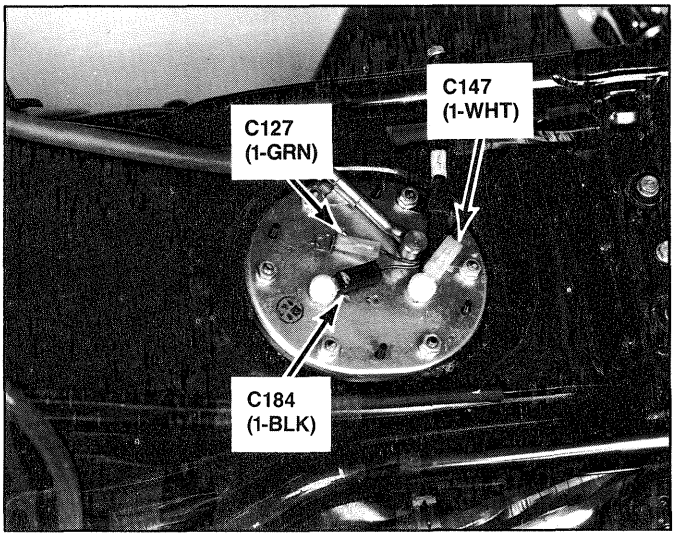
40. Under Rear of Seat (Seat Removed)



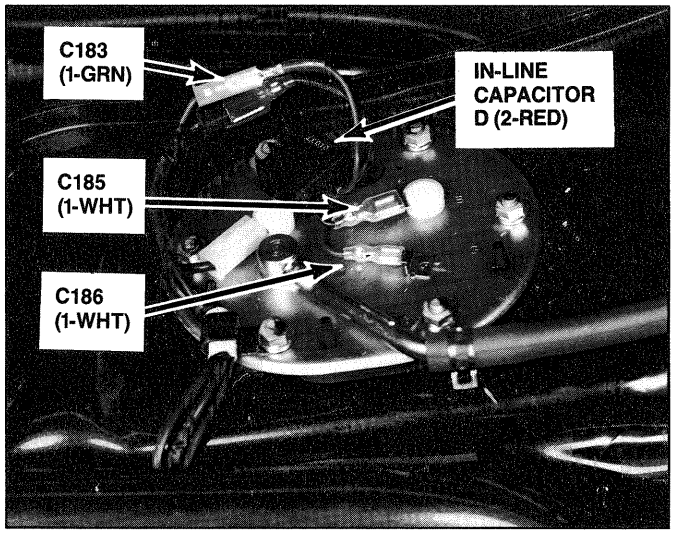
41. Under Front of Seat (Seat Removed)



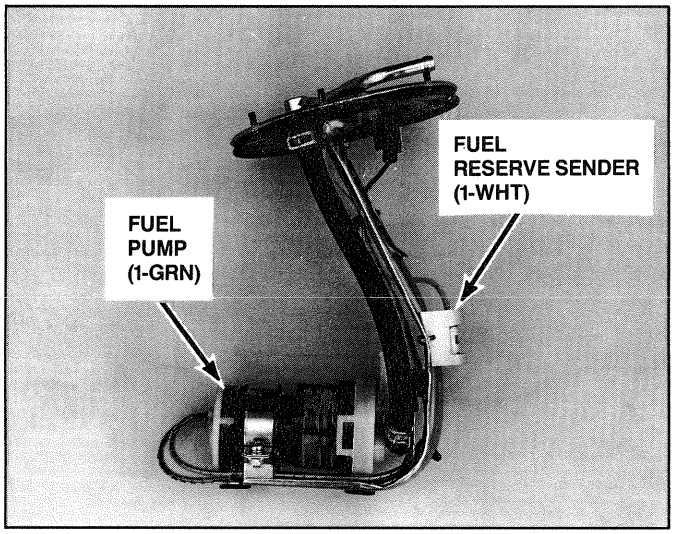
42. Top of Fuel Tank (Seat Removed)



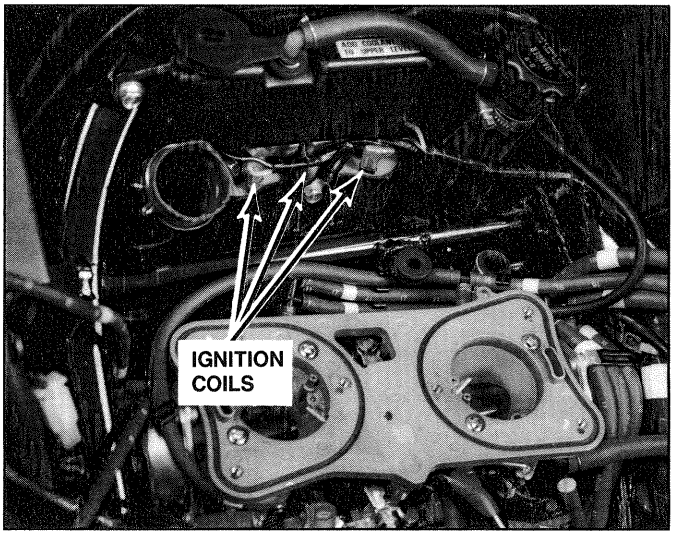
43. Top of Fuel Tank (Seat Removed) (With CB Radio)



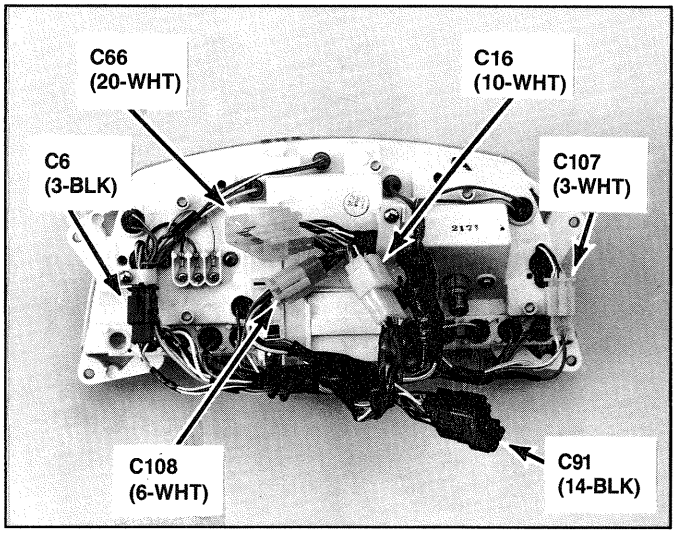
44. Fuel Pump Assembly (Removed from Fuel Tank)



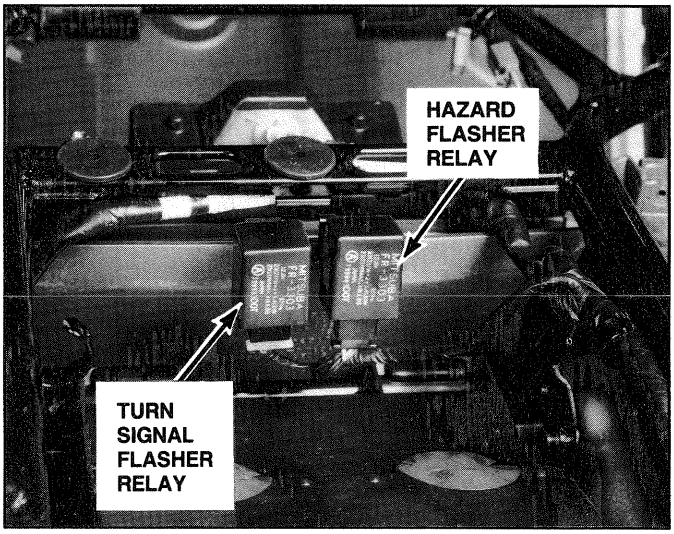
45. Top of Engine (Top Compartment and Air Cleaner Case Removed)



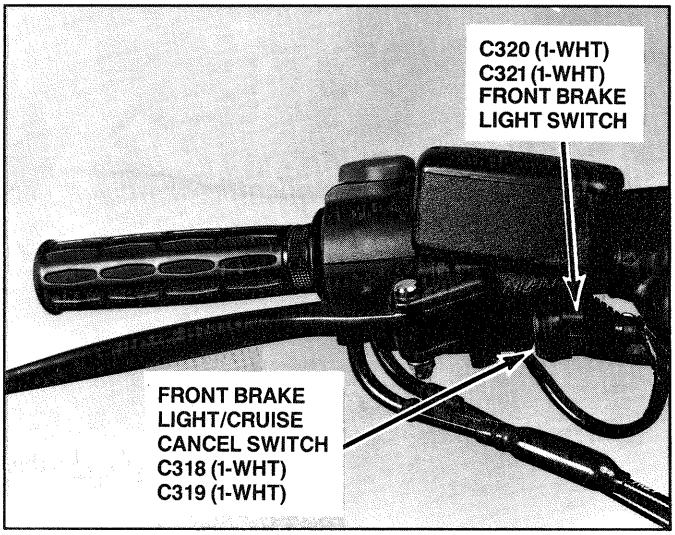
46. Rear of Instrument Panel (Removed from Fairing)



47. Below Trunk Assembly

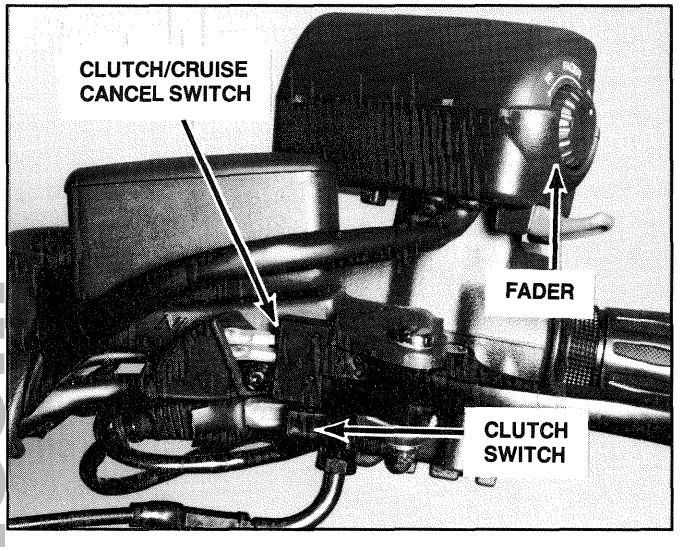


48. Right Side of Handlebar

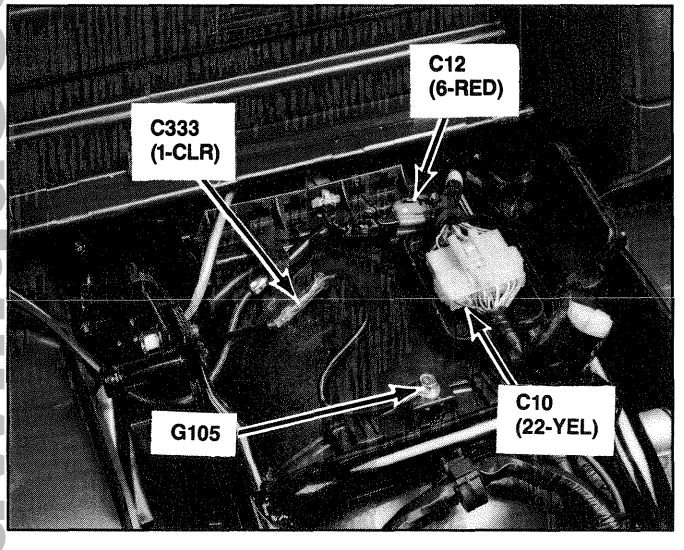


Component Location Photographs

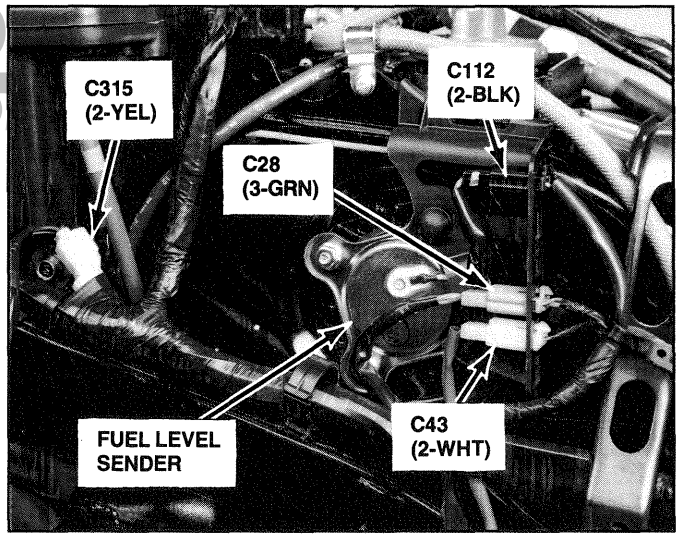
49. Left Side of Handlebar



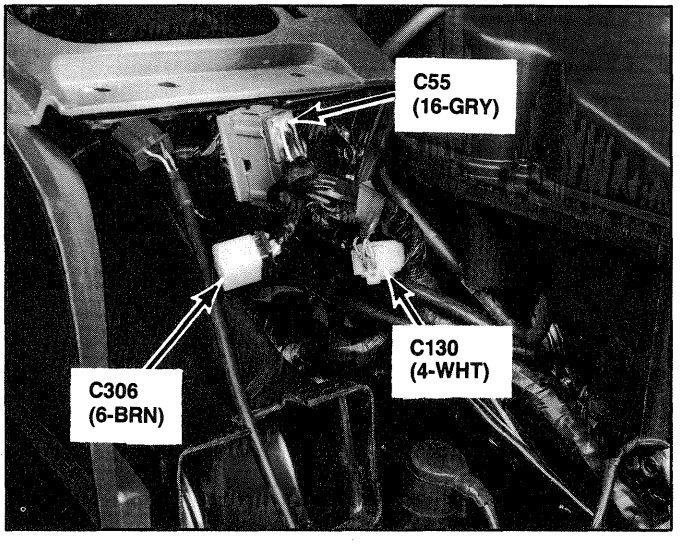
50. Below Rear of Seat



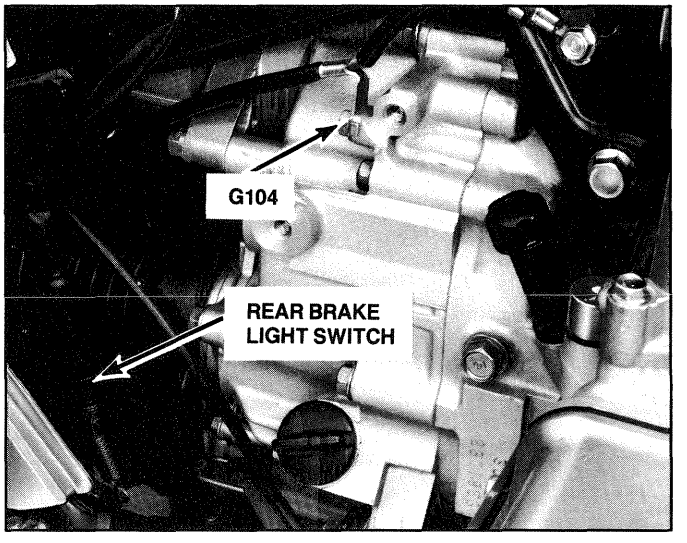
51. Left Side of Fuel Tank



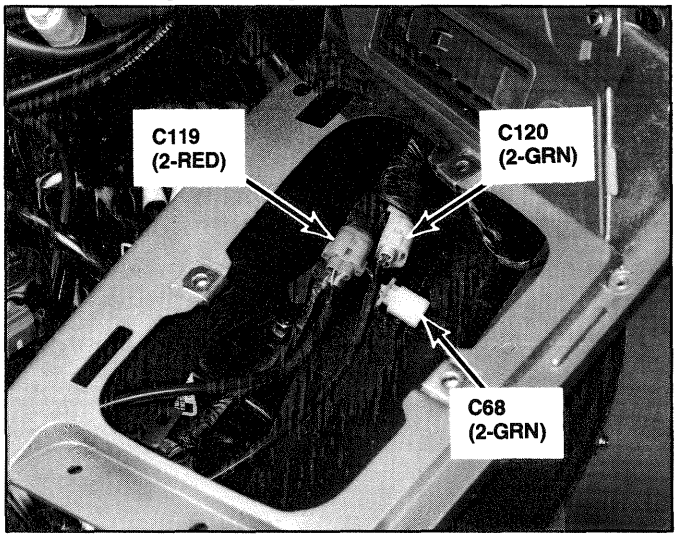
52. Below Left Fairing Pocket



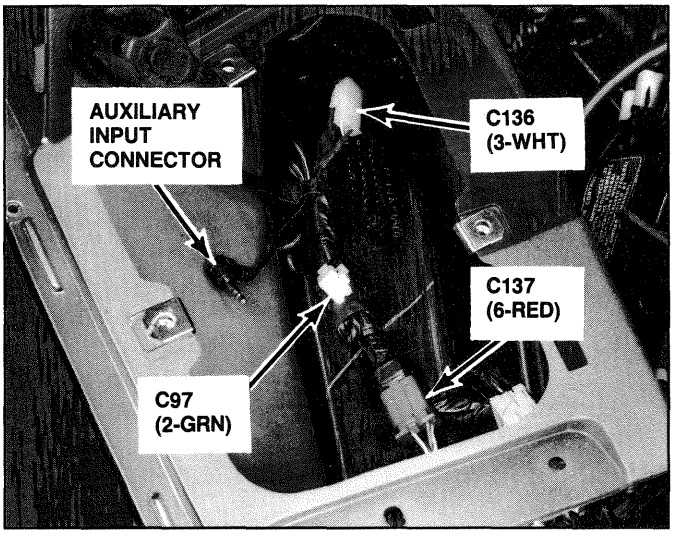
53. Behind Front Right Side Cover



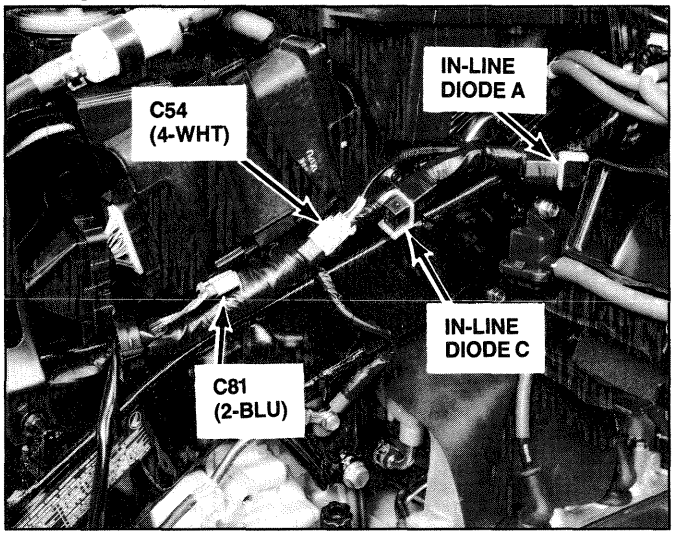
54. Inside Right Fairing Pocket



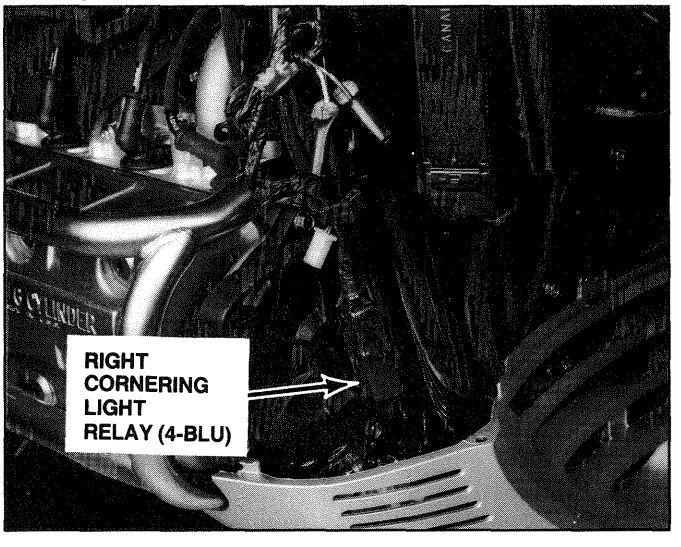
55. Below Left Fairing Pocket



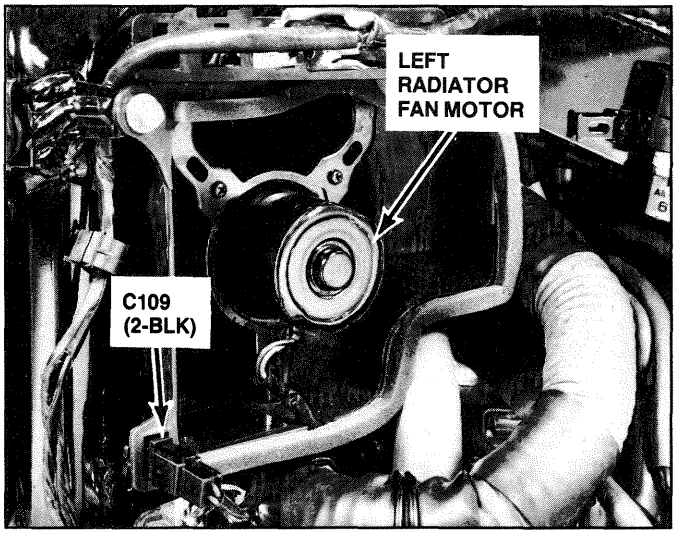
56. Right Side (Inner Cover Removed)



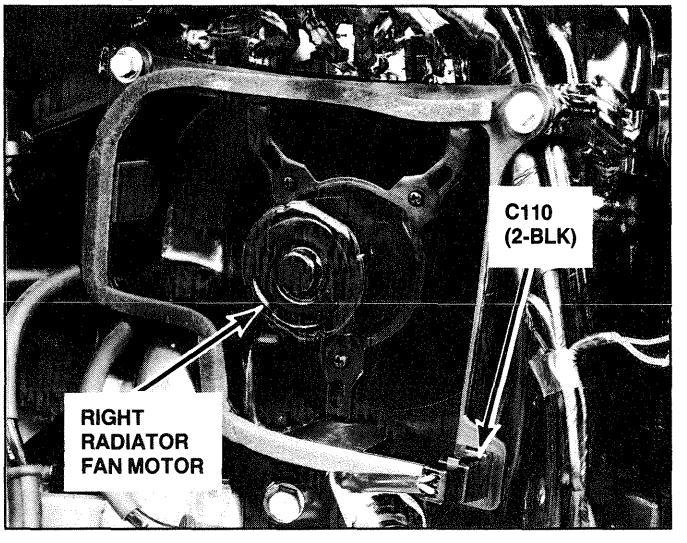
57. Right Front (Fairing Lower Cover Removed)



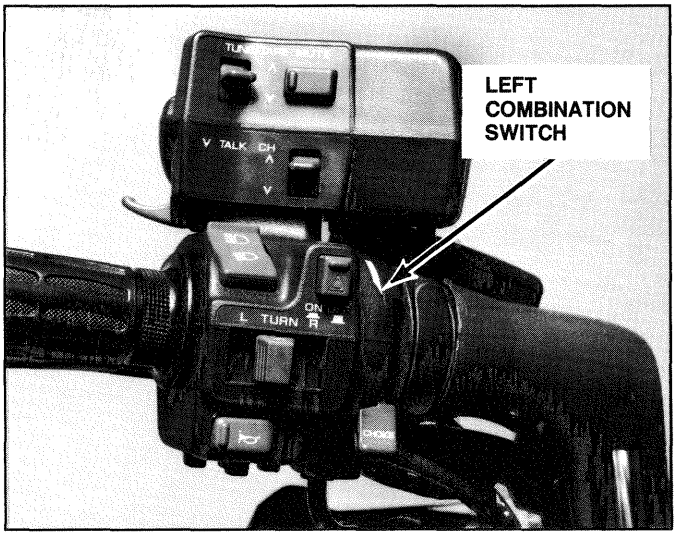
58. On Left Fan Shroud



59. On Right Fan Shroud

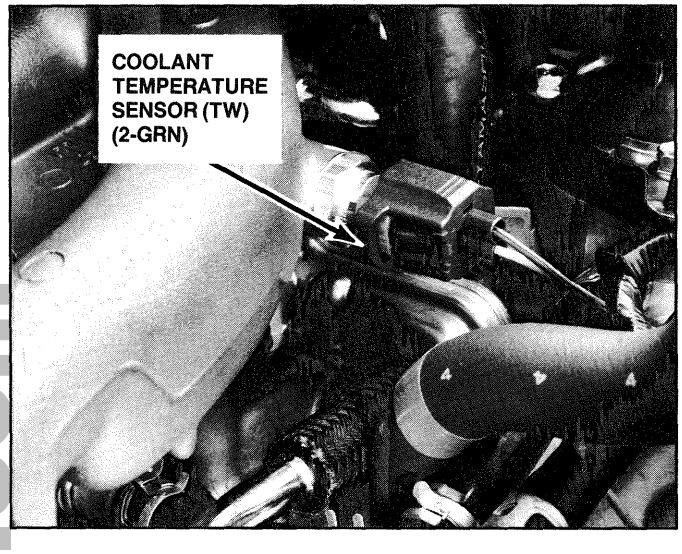


60. On Top of Left Handlebar

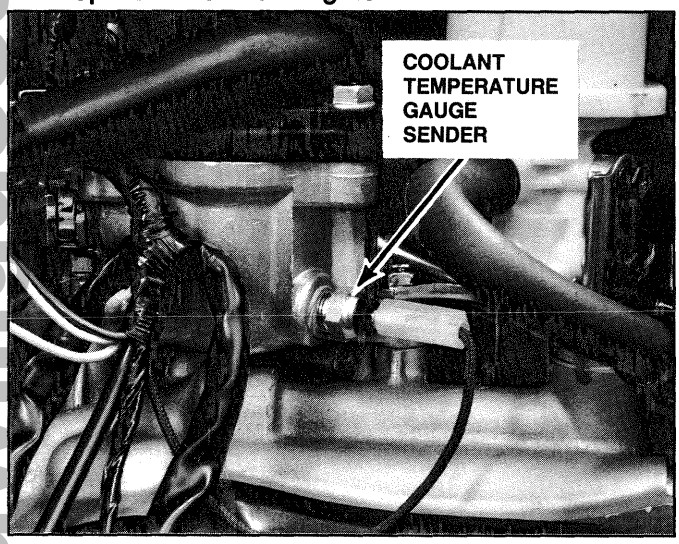


Component Location Photographs

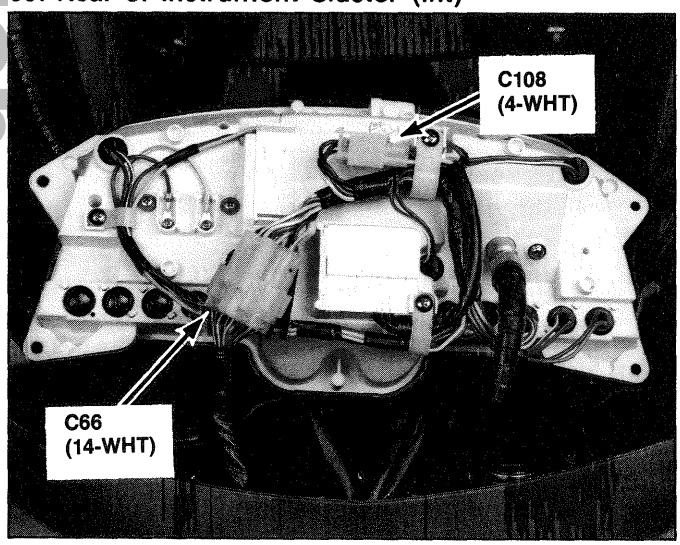
61. Top Right Front of Engine



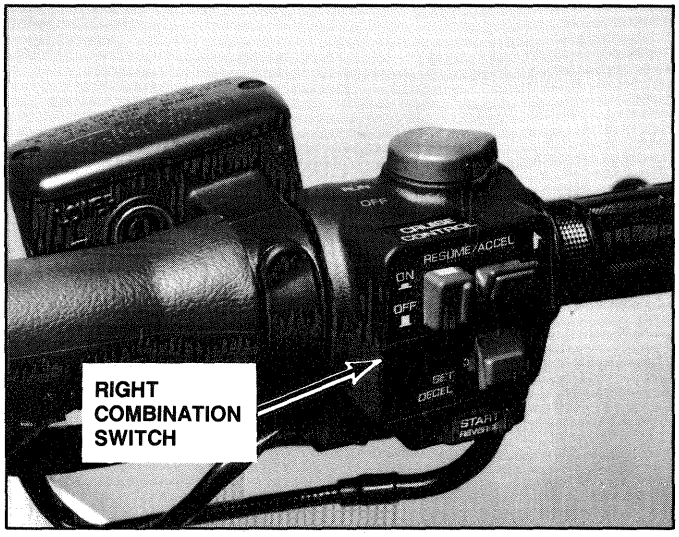
62. Top Left Front of Engine



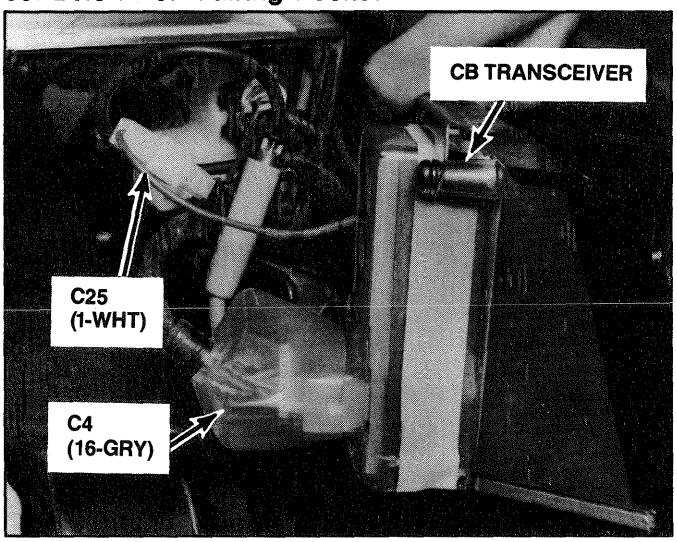
63. Rear of Instrument Cluster (Int)



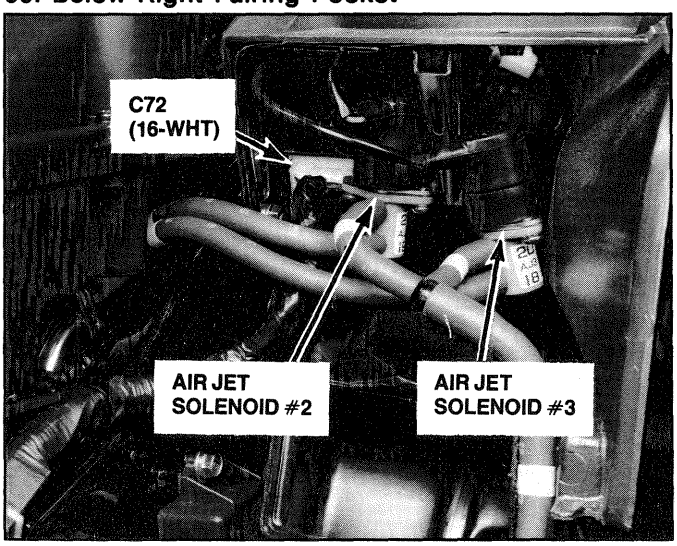
64. Top Right Handlebar



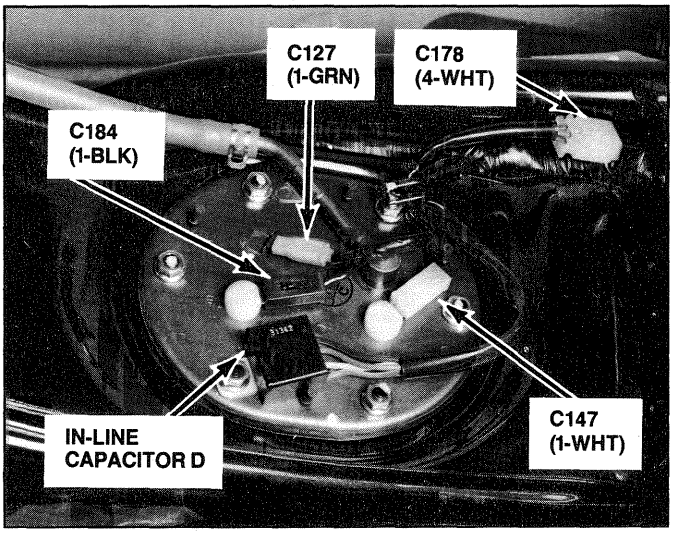
65. Below Left Fairing Pocket



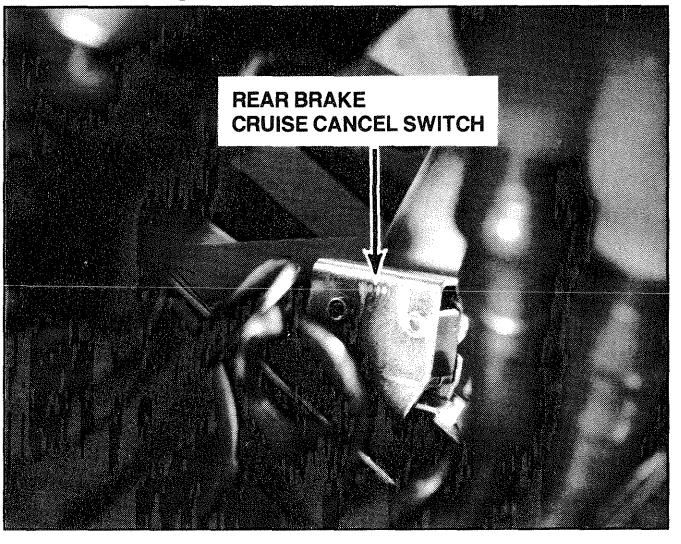
66. Below Right Fairing Pocket



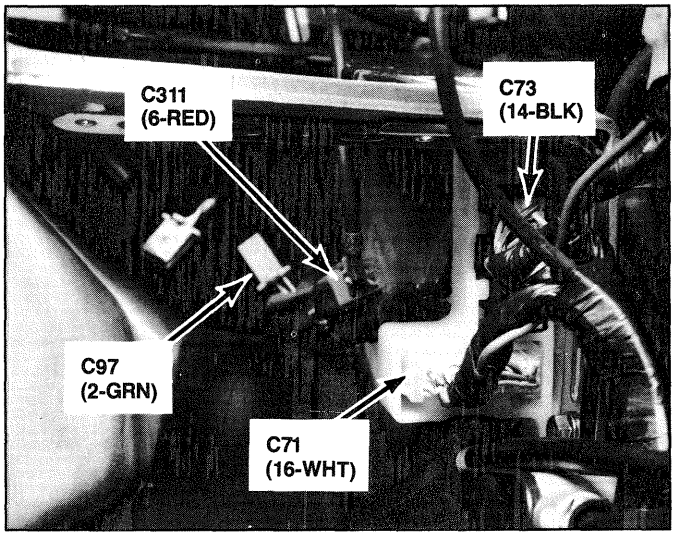
67. Below Seat, on Top of Fuel Tank



68. Behind Right Front Side Cover



69. Below Left Fairing Pocket



Component Index

(cont'd)

Component Index (cont'd)

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Component Index (cont'd)