PRELUDE

1991
Electrical Troubleshooting Manual

Canada & USA

PRELUDE

INFAMOUZ

1991 Prelude Electrical Troubleshooting Manual

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American Honda Motor Co., Inc.
Service Publications

Contents

Circuit Index

How to Use This Manual

The next few pages describe how this manual is organized. They also explain what kind of information it contains, what that information means, and how to use it to troubleshoot electrical problems.

Page Numbers

This manual divides the electrical system into separate circuits. Each circuit and section, in all ETMs, is assigned a unique number. For example, the wiper/washer circuit is always section 90, the wiper/washer-pulse circuit is 91, and the rear wiper/washer circuit is 92. And in the back of the manual are the Component Location photographs in section 201, and the Harness Routing drawings in 203.

The section number alone is used on the first page of each section. The remaining pages are numbered using the section number and consecutive page numbers, beginning with 1. So, in section 90, for example, the pages are numbered 90, 90-1, 90-2, etc. Sections are *not* numbered consecutively; we've skipped some numbers to leave room for new circuits in future manuals.

Section Contents

Each section begins with a **Circuit Schematic** which shows:

- how components work together.
- current flow (from top to bottom).
- switch positions (ignition off).
- special instructions.
- circuits that share a power source or ground.

A **Component Location Index** follows the schematic. It lists

- major components, connectors, and grounds.
- the location of each component, connector, and ground on the car.
- each connector number, its color, and the number of cavities in it.
- the number of the photo in section 201 that shows the component, connector, or ground.

A description called **How the Circuit Works** follows the Index. It may include a **System Operation** chart to help you quickly validate a symptom.

Next, a list of **Quick-Checks** follows (if required), explaining how to quickly test fuses, grounds, and components in that circuit without any special equipment.

Last are **Troubleshooting** procedures (if required), specific, step-by-step instructions that lead to diagnosis and repair.

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
PPL	purple
RED	red
WHT	white
YEL	yellow

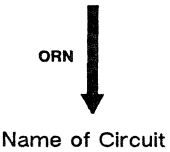
Wires

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

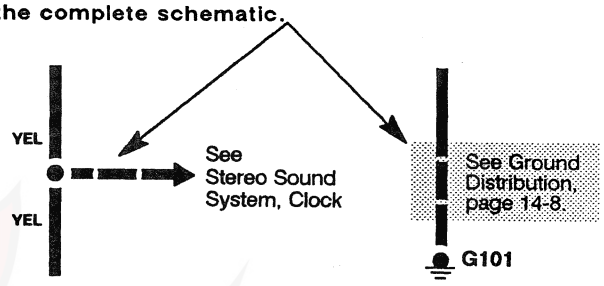
Wire insulation can be one color, or one color with another color stripe. (The second color is the stripe.)

This means the current path continues on another page. (The arrow shows direction of current flow.) To follow the RED/BLK wire in this example, you would turn to page 11-3 and look for the "Z" arrow.

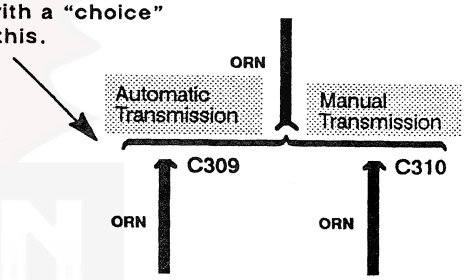
This means the wire connects to another circuit. The wire is shown again in the circuit the arrow is pointing to.



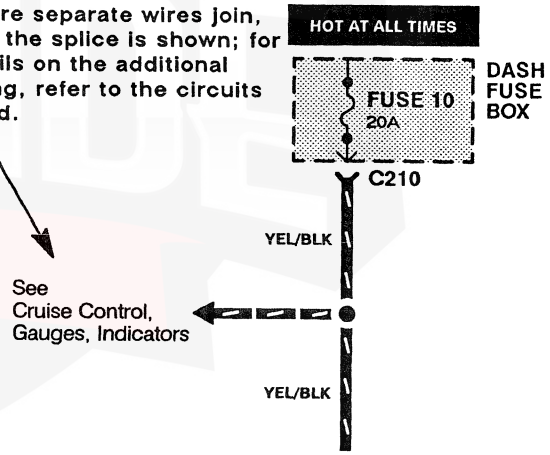
A broken line means only some of the circuit is shown; refer to the circuit listed for the complete schematic.



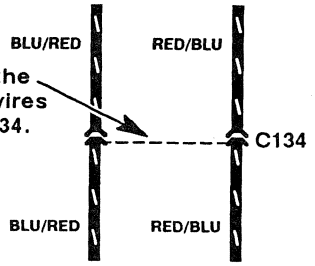
Wire choices for options or different models are labeled and shown with a "choice" bracket like this.



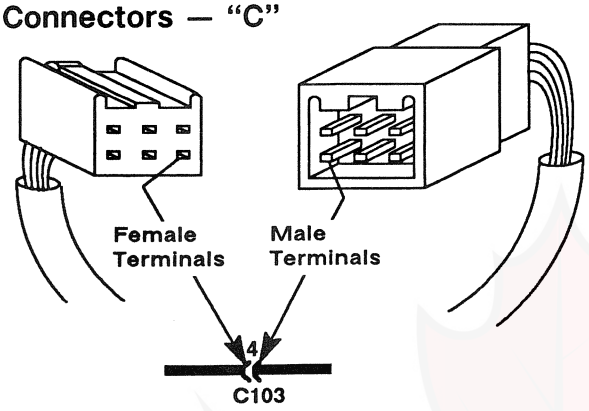
Where separate wires join, only the splice is shown; for details on the additional wiring, refer to the circuits listed.



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

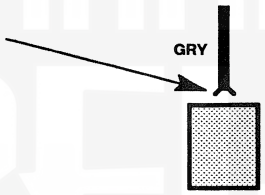


Connectors — "C"

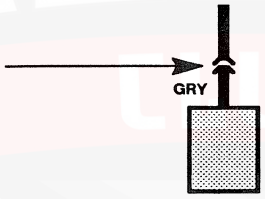


Each connector (C) is numbered for reference in the component location index. It also lists the total number of cavities and the color of the connector. Wires may not be used in all cavities. The determination between male/female connectors is in reference to connector terminals and not connector bodies.

This means the connector connects directly to the component.

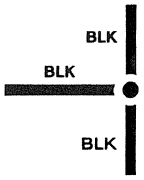


This indicates the connector connects to a lead (pigtail) wired directly to the component.



Splices — "S"

Splices (S) are shown as a dot. Their location and the number of wires may vary depending on the harness manufacturer.



Components

A solid line means the entire component is shown.

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

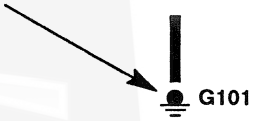
The name of the component appears next to its upper right corner.

Notes about component function follow its name.

BRAKE SWITCH
Closed with pedal depressed.

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 car.

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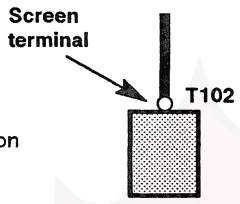
Symbols (cont'd)

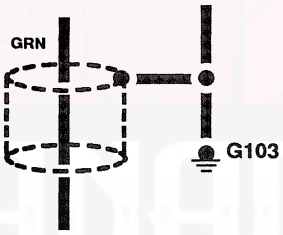
Terminals - "T"

Each terminal (T) is numbered for reference in the component location index. A "T" connection is made with a screw or bolt, instead of a push-pull type (C) connector.



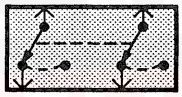
Shielding

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

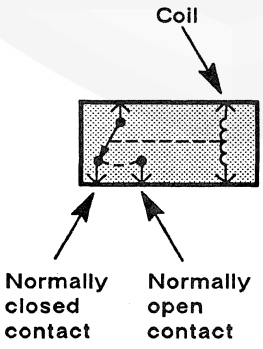


Switches

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

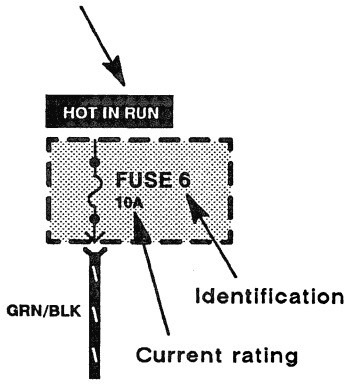


This is a relay shown with no current flowing through its coil.



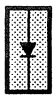
Fuses

This means power is supplied with the ignition switch in RUN.

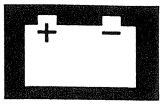


Diodes

A rectifier diode operates like a current valve. It allows current to flow only in the direction of the arrow.



A Zener diode blocks reverse current at normal voltages in the same manner as a rectifier diode. At high voltages, however, a Zener diode allows reverse current in the opposite direction.



How To Use This Manual

Circuit Schematics

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

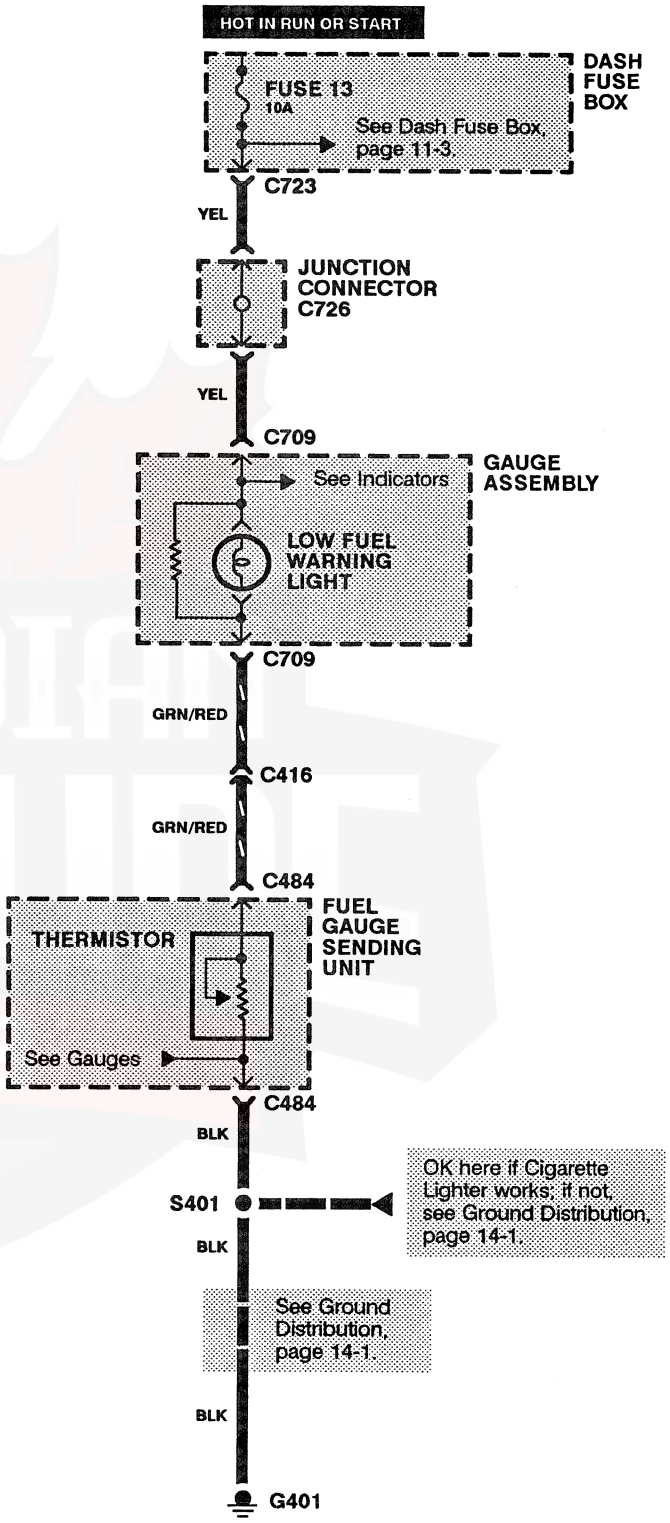
Each drawing is arranged so current flows from positive voltage, at the top of the page, to ground, at the bottom of the page. The "hot" labels at the top of a fuse show when the ignition switch supplies power to that fuse.

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. One can check shared wiring by checking the operation of the other circuits.

"See Dash Fuse Box" or "See Fuse Details" means there are more connections to other circuits that are not shown. All such shared circuits are shown in the Dash Fuse Box or Fuse Details circuit schematic. "See Ground Distribution" means there are more shared ground circuits which are shown on the Ground Distribution schematic.

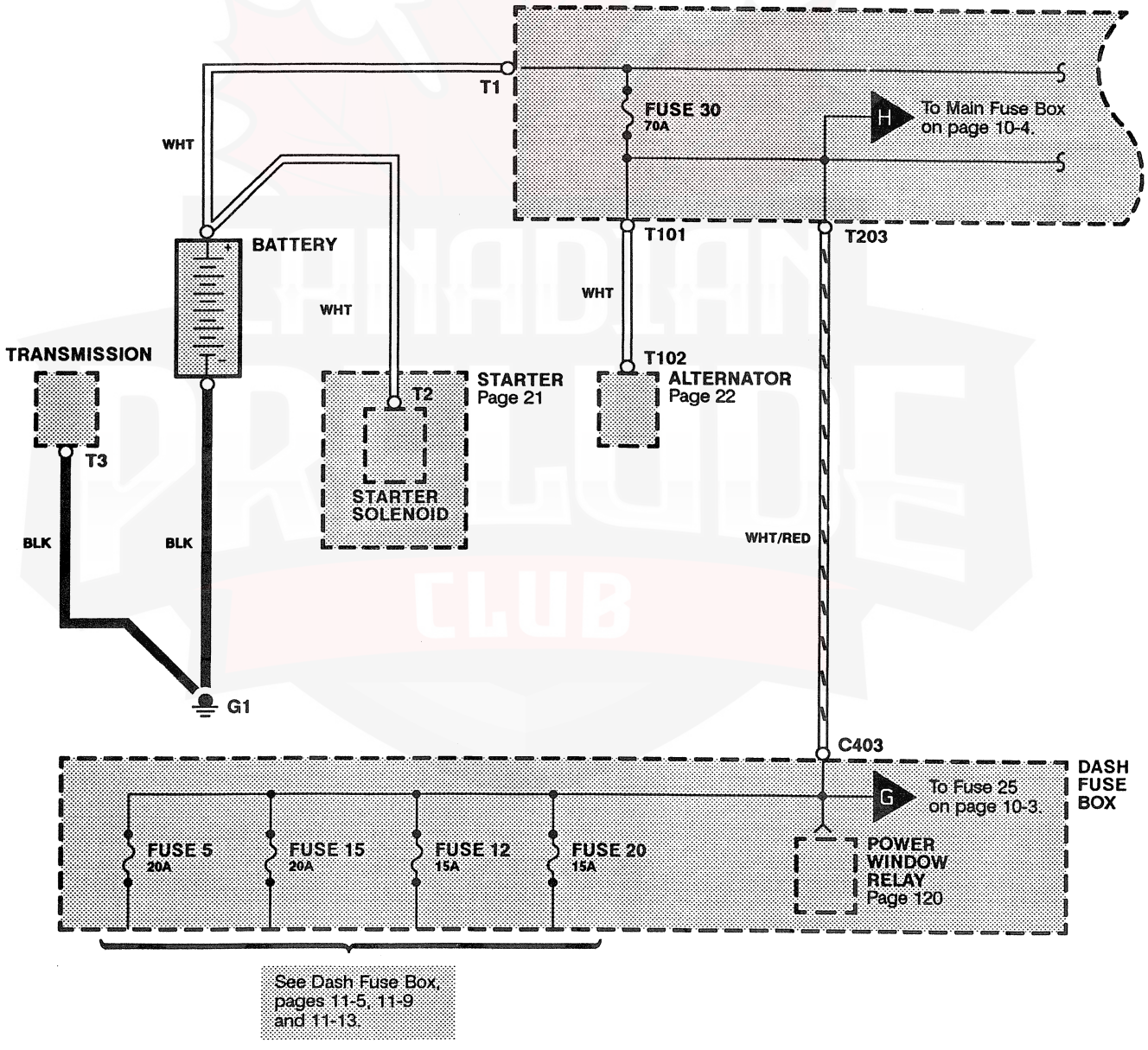
The note, "OK here if Cigarette lighter works; if not, see Ground Distribution, page 14-1", is a troubleshooting aid. Check the cigarette lighter by depressing it and waiting for it to release. If the lighter is glowing, the ground circuit is OK from that point to the ground.



Power Distribution

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

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.



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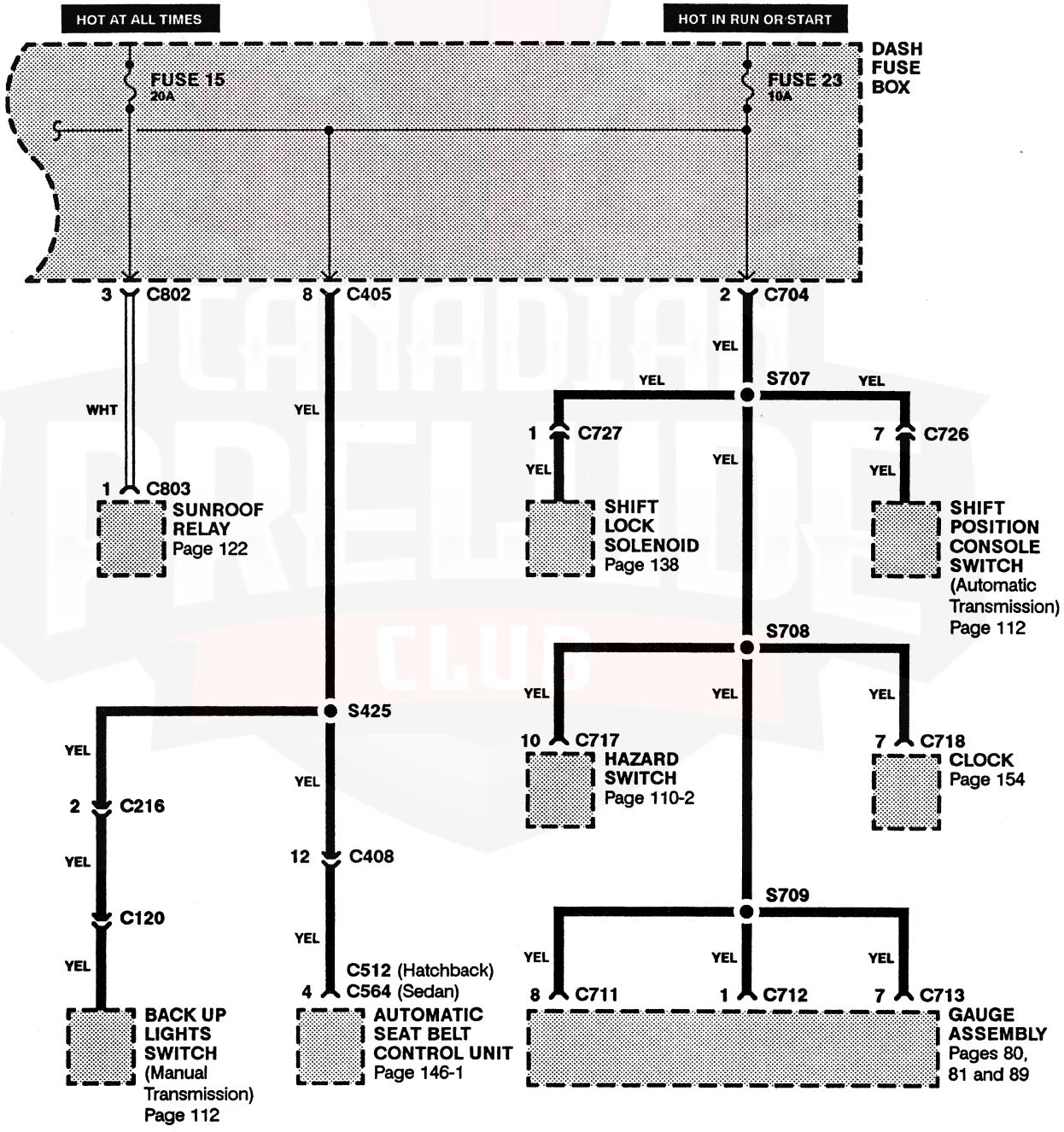
Circuit Schematic (cont'd)

Dash Fuse Box or Fuse Details (NSX)

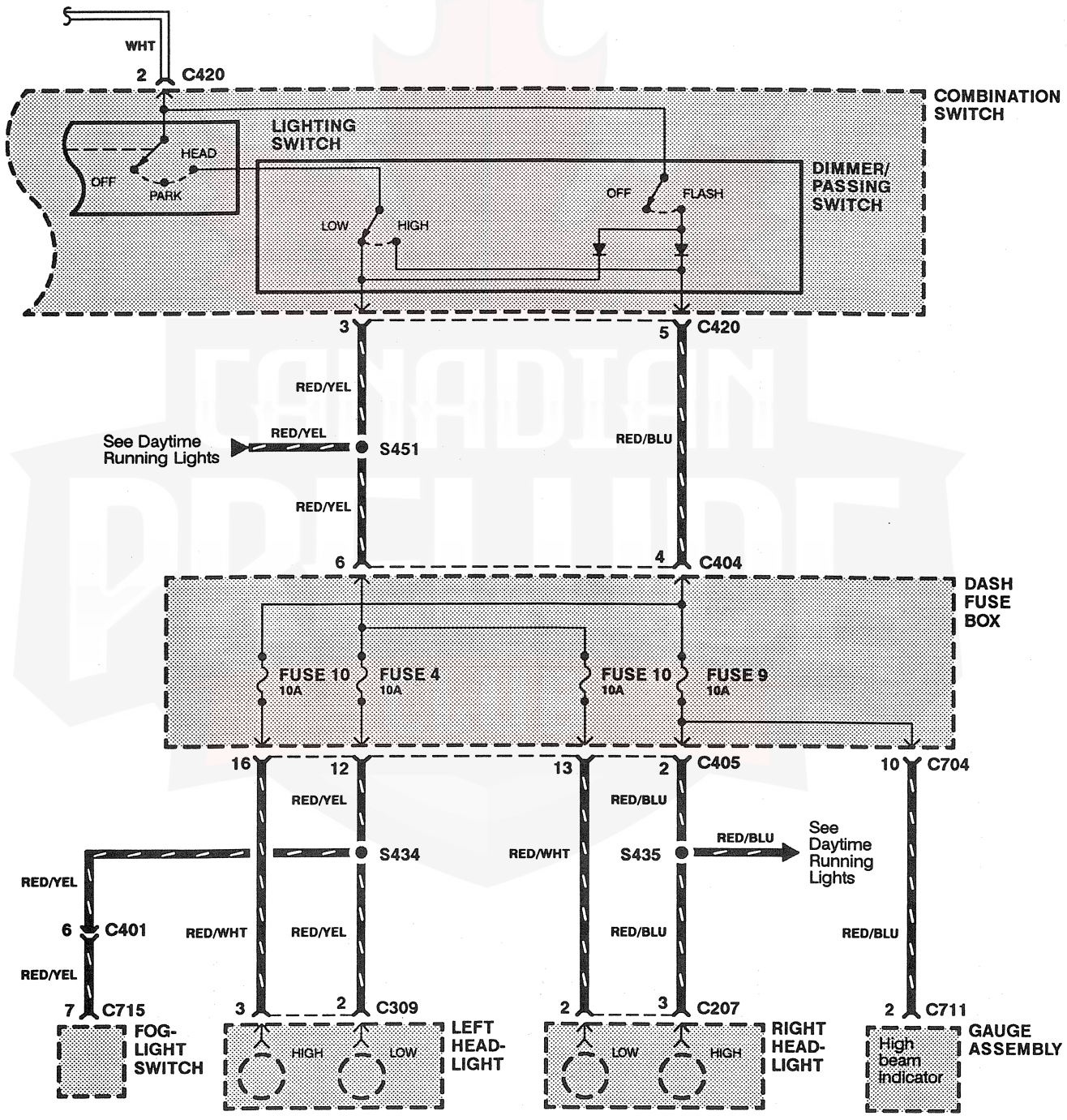
The sample Dash Fuse Box or Fuse Details schematic shows how voltage is supplied from the fuse to each individual component.

You can use the Dash Fuse Box or Fuse Details circuit to speed your troubleshooting. If the Dash Fuse Box or Fuse Details circuit 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.



Headlight Switch or Light Switch Details (NSX)

The sample schematic shows how the lighting switch supplies voltage to each individual component.



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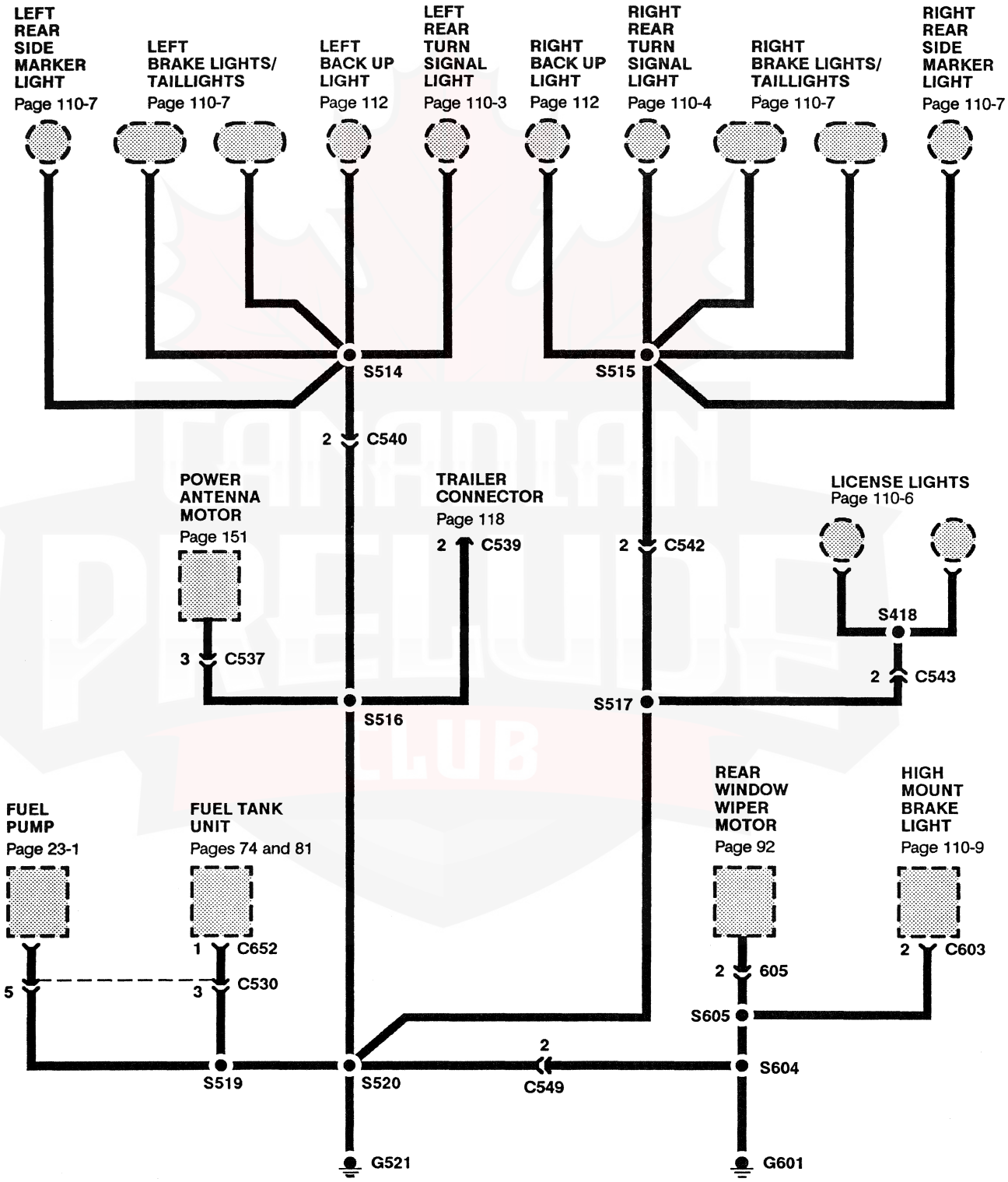
Circuit Schematic (cont'd)

Ground Distribution

This sample Ground Distribution schematic shows which components share the same two ground points.



Component Location Index

A component location index follows each schematic. It lists every component, connector and ground in that circuit and describes its location in the car. The index also gives references to photographs of component locations which are located in Section 201.

Component Location Index

(Refer to Section 201 for photographs.)

(Refer to Section 202 for selected connector views.)

(Refer to Section 203 for harness routing views.)

(cont'd)

How To Use This Manual

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.

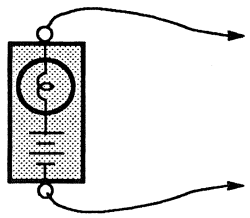
A voltmeter can be used in place of a test light. While a test light shows whether or not voltage is present, a voltmeter indicates how much voltage there is.

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

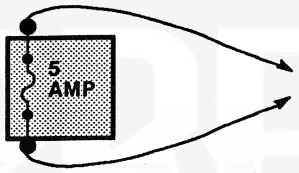
Circuits that contain solid-state devices should only be tested with a 10-megohm or higher impedance digital multimeter.

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. Its use is explained in the following troubleshooting tests.

Troubleshooting Tests

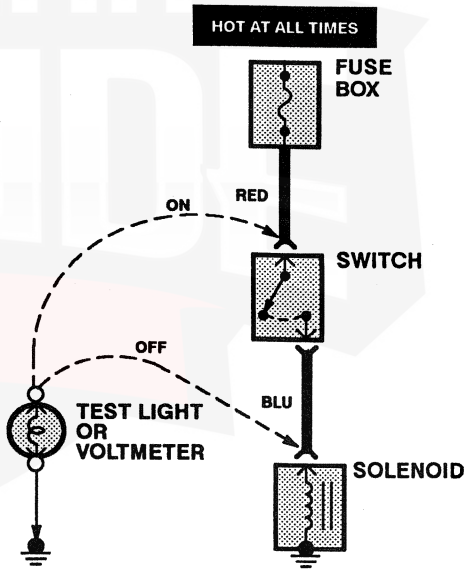
Testing for Voltage

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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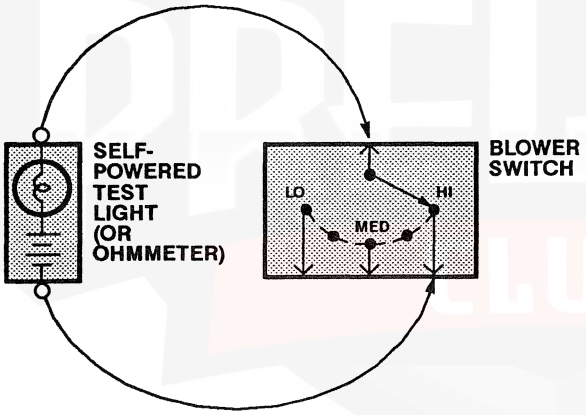
Troubleshooting Tests (cont'd)

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.

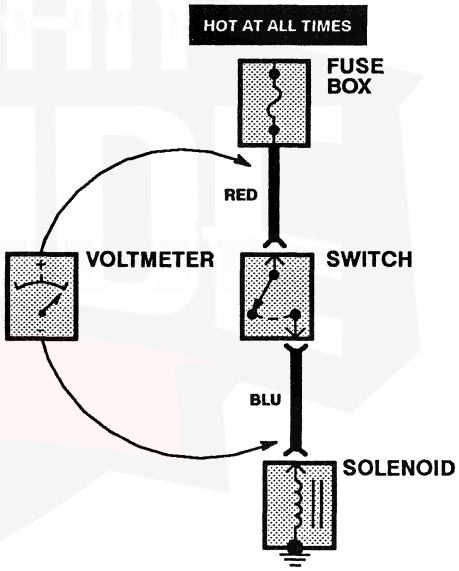
1. Disconnect the negative cable from the car battery. If you are using an ohmmeter, hold the leads together and adjust the ohmmeter to read zero ohms.
2. Connect one lead of self-powered test light or ohmmeter to one end of the part of the circuit you wish to test.
3. Connect the other lead to the other 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

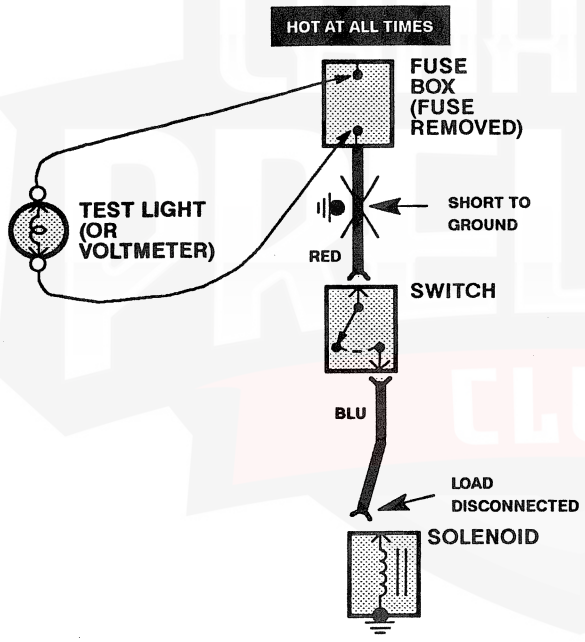
Wires, connectors, and switches are designed to conduct current with a minimum loss of voltage. A voltage drop of more than one volt indicates a problem.

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.



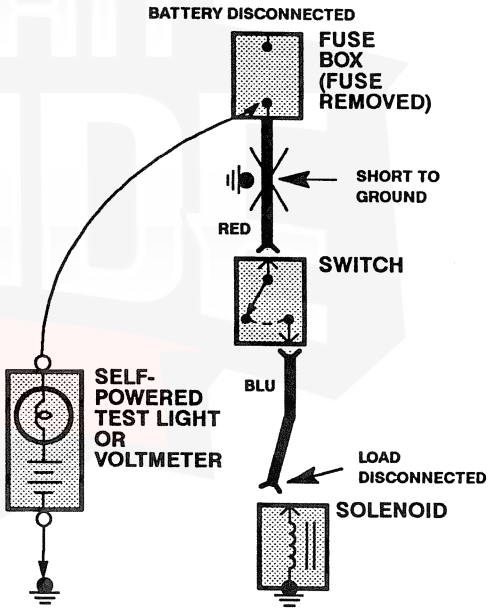
Testing for a short with a Test Light or Voltmeter

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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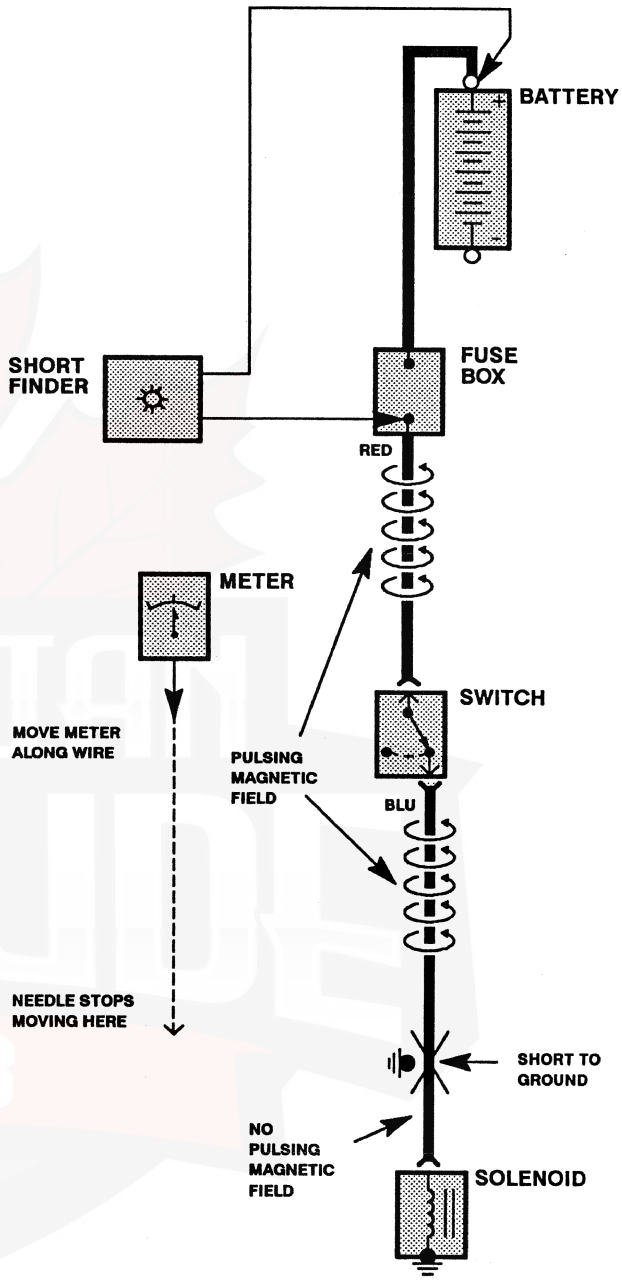
Troubleshooting Tests (cont'd)

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 battery terminals and the load side of the fuse terminal.
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 body trim. 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

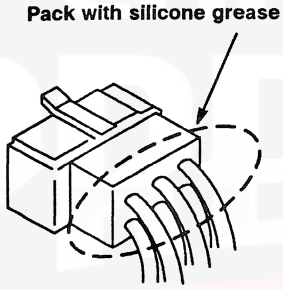
- Check the main fuse and the fuse box.
- Check the battery for damage, state of charge, and clean and tight connections.

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 12 for cautions about troubleshooting circuits that contain solid-state devices.**

CAUTION:

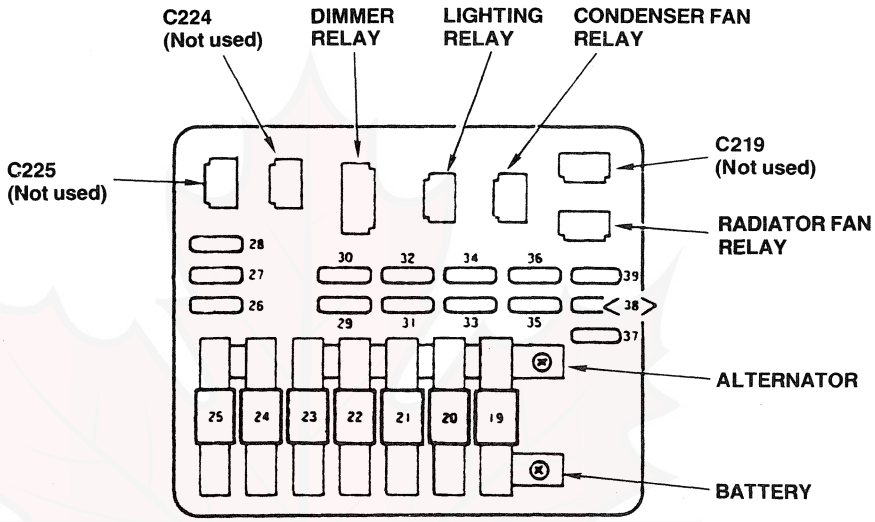
- **The following components can be damaged by electrostatic discharge (ESD):**
  - **Anti-Lock Brake Control Unit**
  - **Automatic Transmission Control Unit**
  - **Chime Module**
  - **Climate Control Unit**
  - **Cooling Fan Control Unit**
  - **Cruise Control Module**
  - **Electronic Power Steering Control Unit**
  - **Integrated Control Unit**
  - **PGM-FI Electronic Control Unit**
  - **Radio**
  - **Security Control Unit**
  - **SRS Control Unit**
  - **Traction Control Unit**

While You're Working

- **Use the following guidelines to reduce the chance of ESD damage:**
  - **Always ground yourself (touch a good ground) before handling an ESD sensitive component.**
  - **Avoid touching the terminals of an ESD sensitive component.**

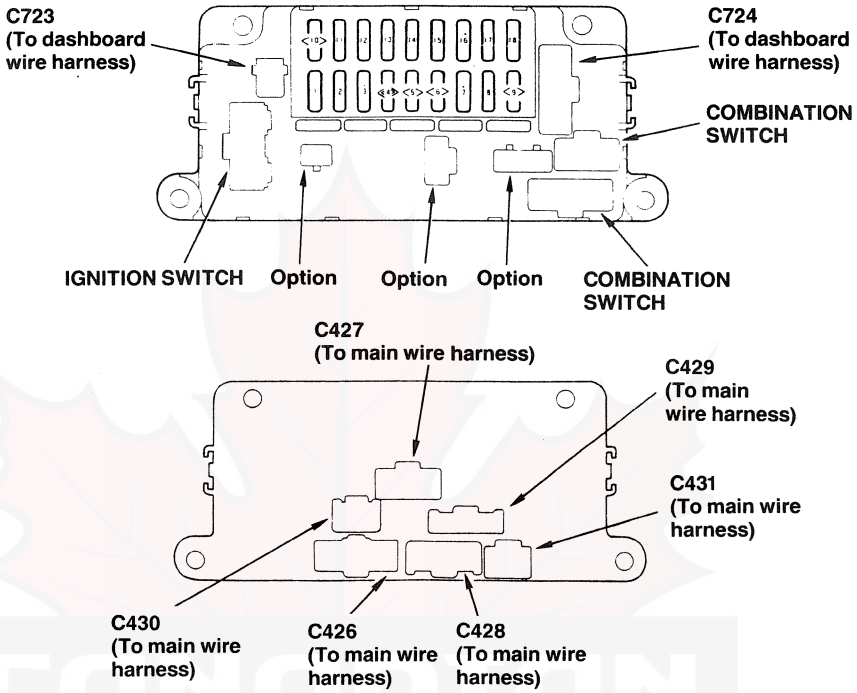
Fuse Information

Under-Hood Relay Box



Fuse Number	Amps	Circuit Protected
19	70	Power distribution
20	40	Power distribution (ignition switch)
21	40	Power distribution (ignition switch)
22	40	Dash fuse box
23	30	Rear window defogger
24	40	Power window relay; dash fuse box
25	40	ABS motor relay
26	15	Anti-lock brake control unit
27	15	Anti-lock brake control unit
28	15	Anti-lock brake control unit
29	15	Right headlight retractor relay; headlight retractor switch
30	15	Left headlight retractor relay; retractable headlight control unit; combination switch
31	15	Turn signal/hazard relay; hazard switch
32	20	Horns; brake lights; key interlock switch
33	15	Right headlight
34	15	Left headlight
35	10	PGM-FI electronic control unit; power antenna motor; fan control unit; automatic transmission control unit; stereo radio cassette player; clock
36	15	Condenser fan relay
37	10	Alternator
38	10	PGM-FI main relay
39	20	Radiator fan motor

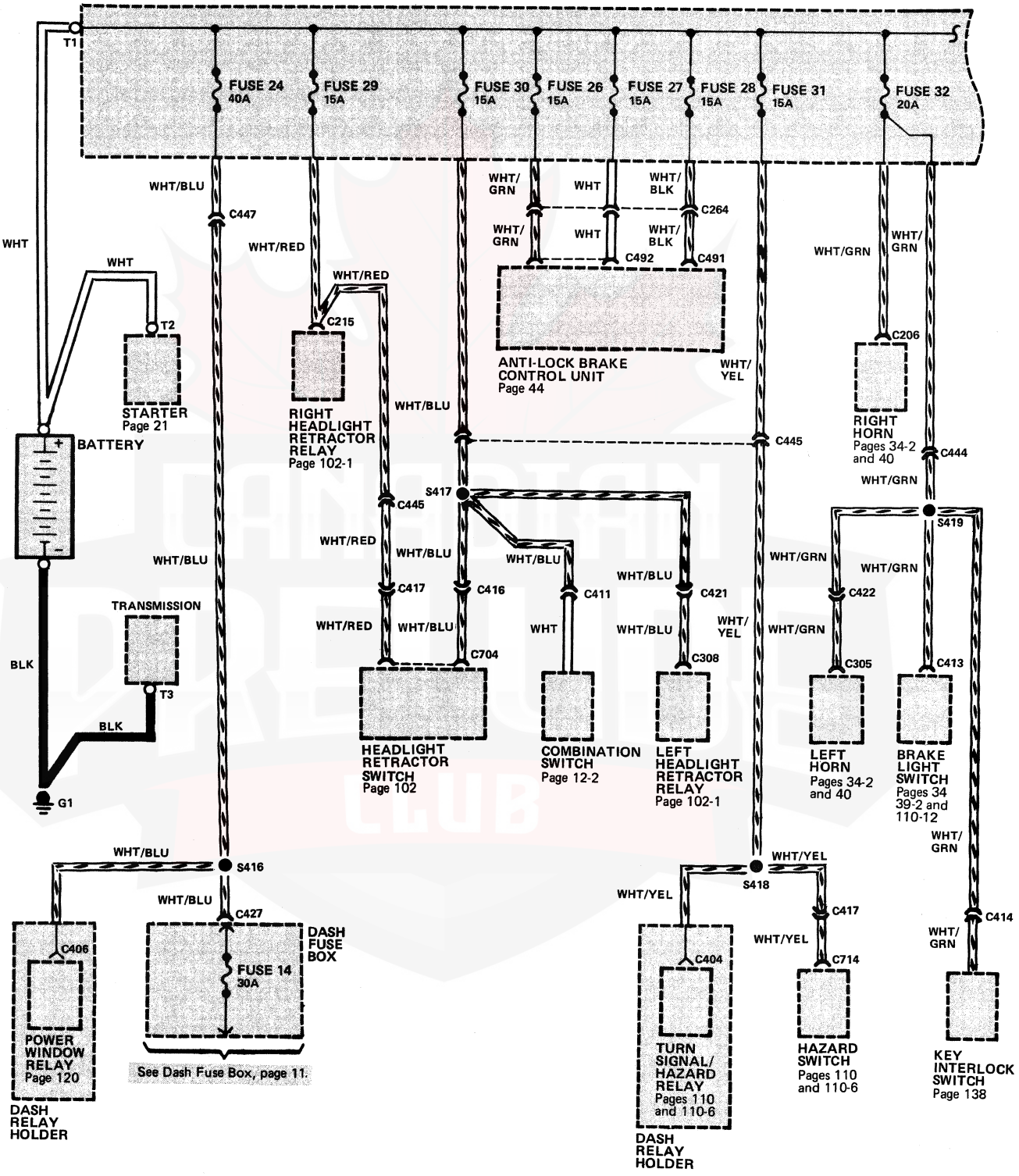
Dash Fuse Box

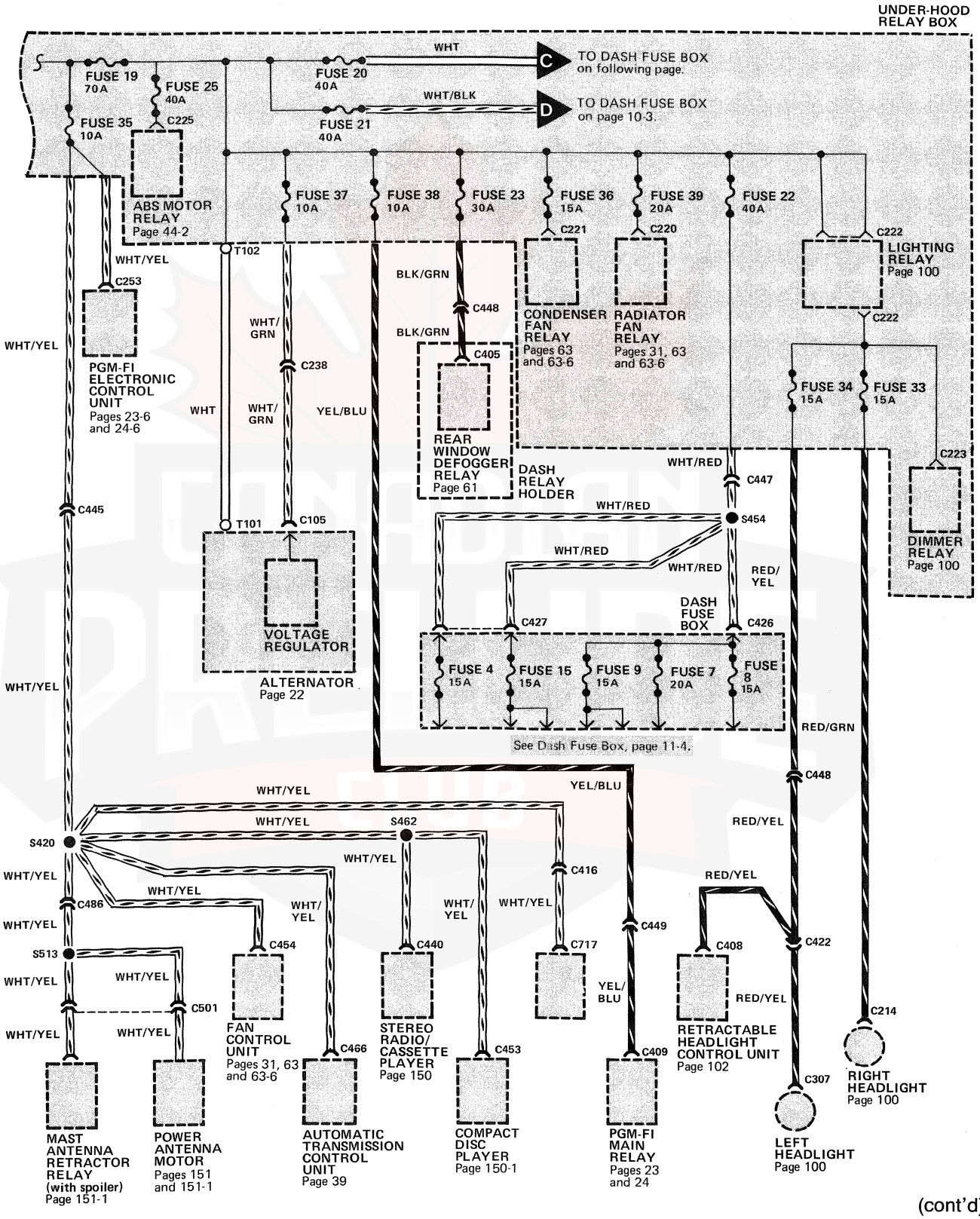


Fuse Number	Amps	Circuit/Component Protected
1 (A/T)	7.5	Warning display; starter solenoid; PGM-FI electronic control unit; PGM-FI main relay
2	10	Stereo radio cassette player; cigarette lighter relay
3 (M/T)	7.5	Warning display; starter solenoid; PGM-FI electronic control unit; PGM-FI main relay
4	15	Power door lock control unit
5	15	Passenger's power window switch
6	15	Driver's power window switch
7	20	Automatic seat belt retractors
8	15	Trunk light; ignition key switch; dome light; cigarette lighter relay; integrated control unit; driver's door outer handle switch
9	15	Fog lights; daytime running lights relay
10	7.5	Cruise control main switch
11	20	Sunroof relay; power windows; integrated control unit; windshield wipers; combination switch
12	10	Warning display; speed sensor amplifier; automatic transmission control unit; PGM-FI main relay; fuel cut-off relay; voltage regulator; fan control unit; emission control solenoid valves
13	10	Integrated control unit; seat belt beeper/reminder assembly; shift position console switch; combination switch; back up lights switch; gauge assembly; shift lever position indicator; safety indicator; clock; vehicle speed sensor
14	30	Sunroof motors
15	15	Combination switch
16	7.5	Daytime running lights relay
17	15	Power mirrors; fan control unit; ABS relays
18	10	Rear window defogger; heater controls; A/C controls

Power Distribution

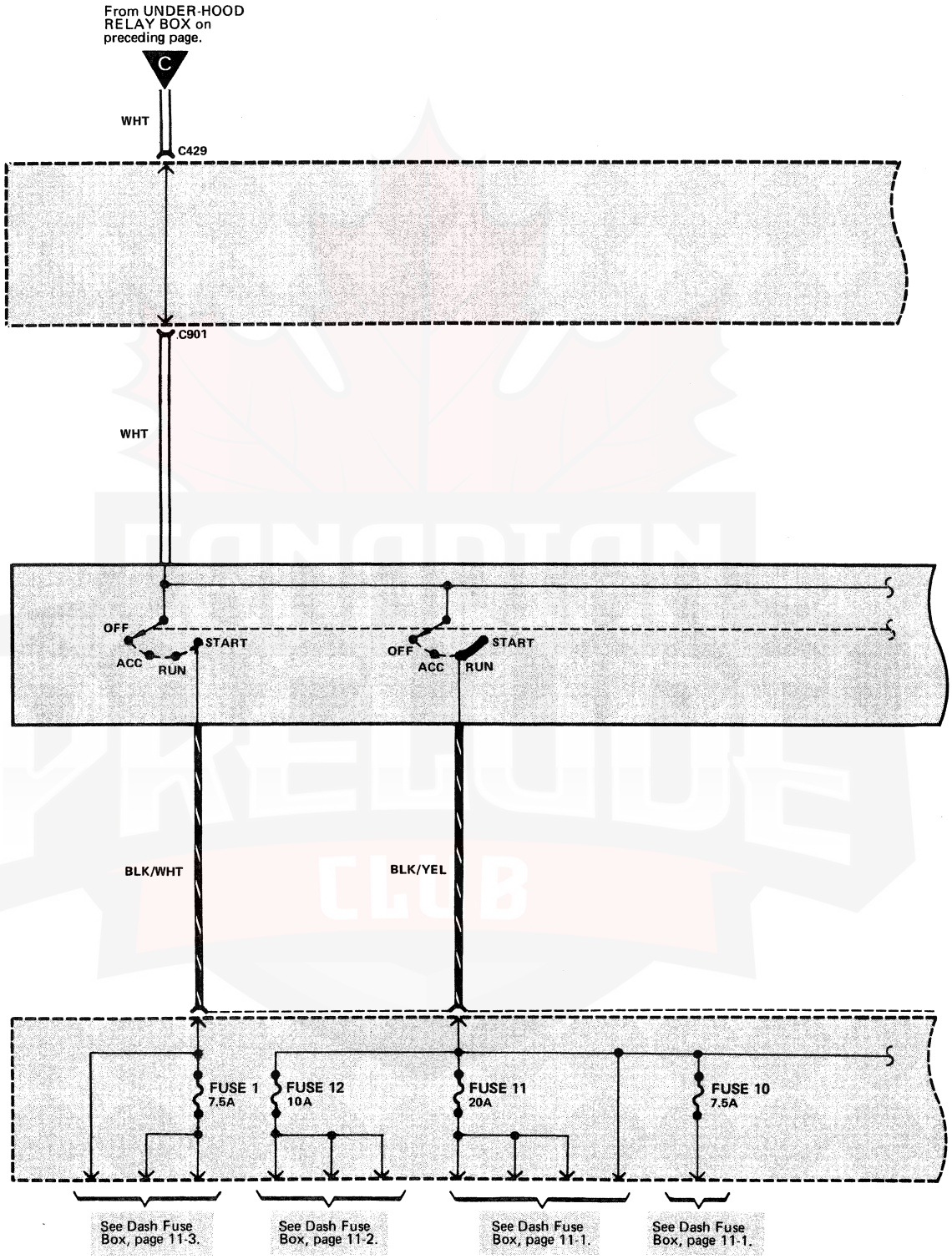
Circuit Schematic

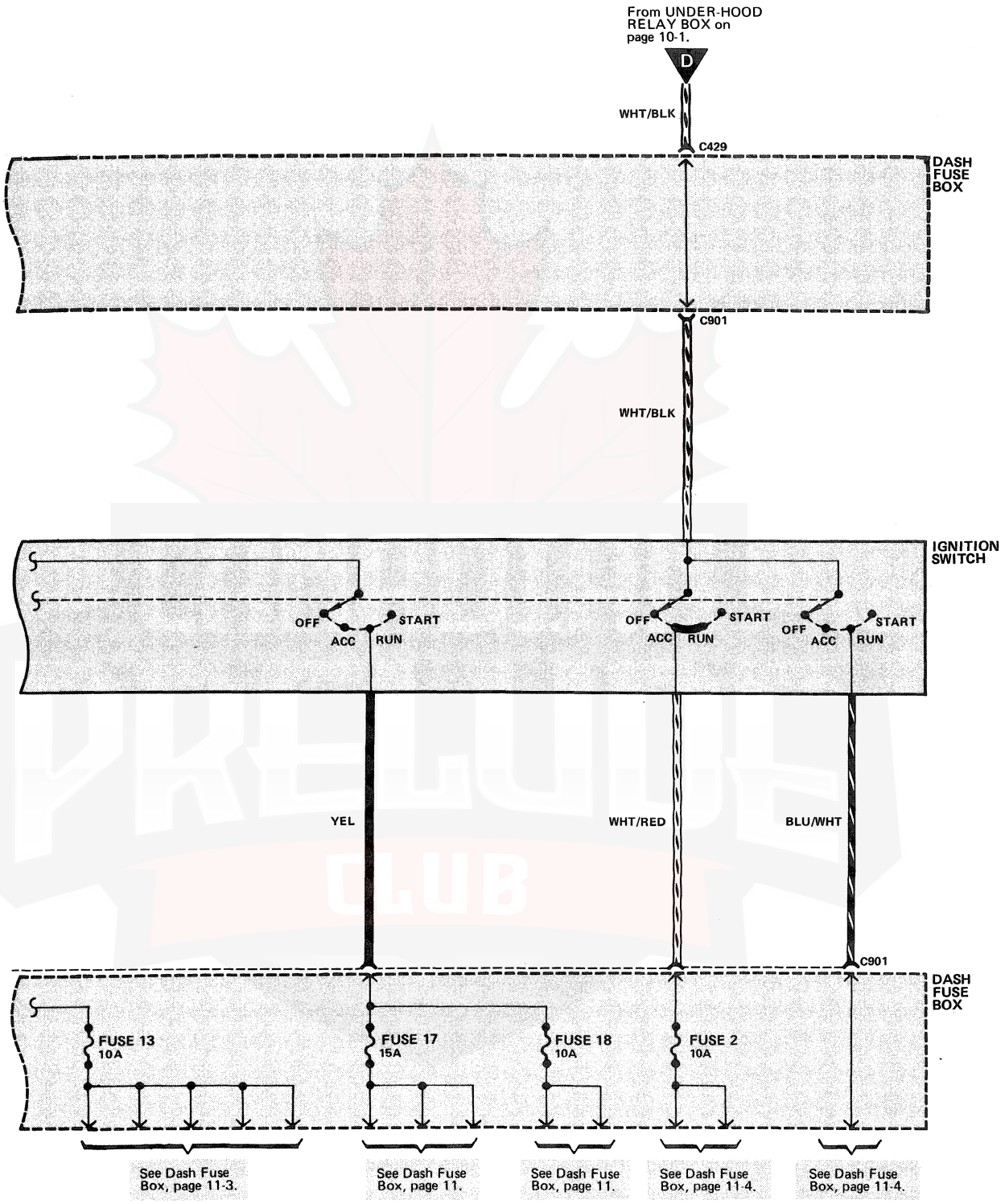




Power Distribution

Circuit Schematic (cont'd)





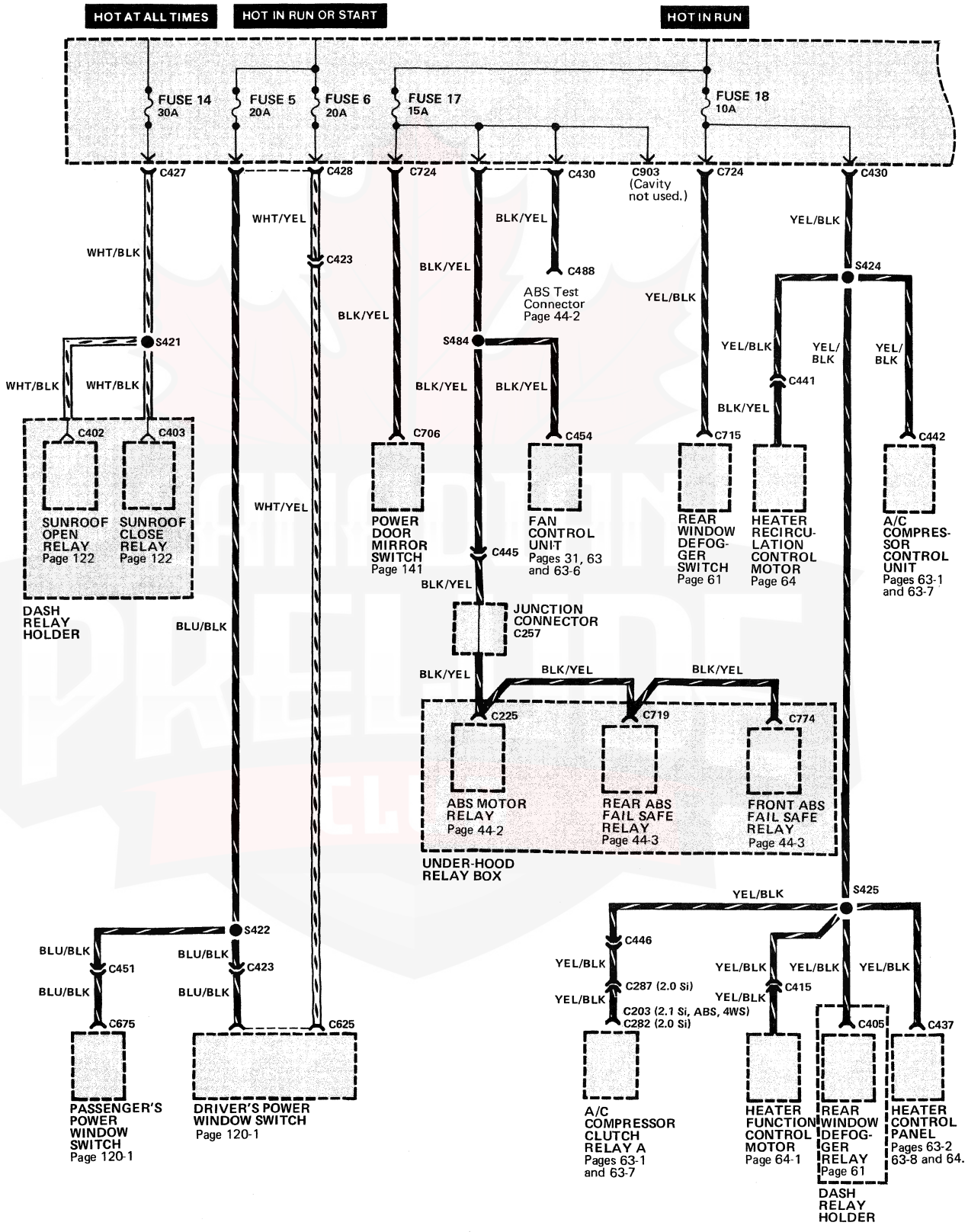
Power Distribution

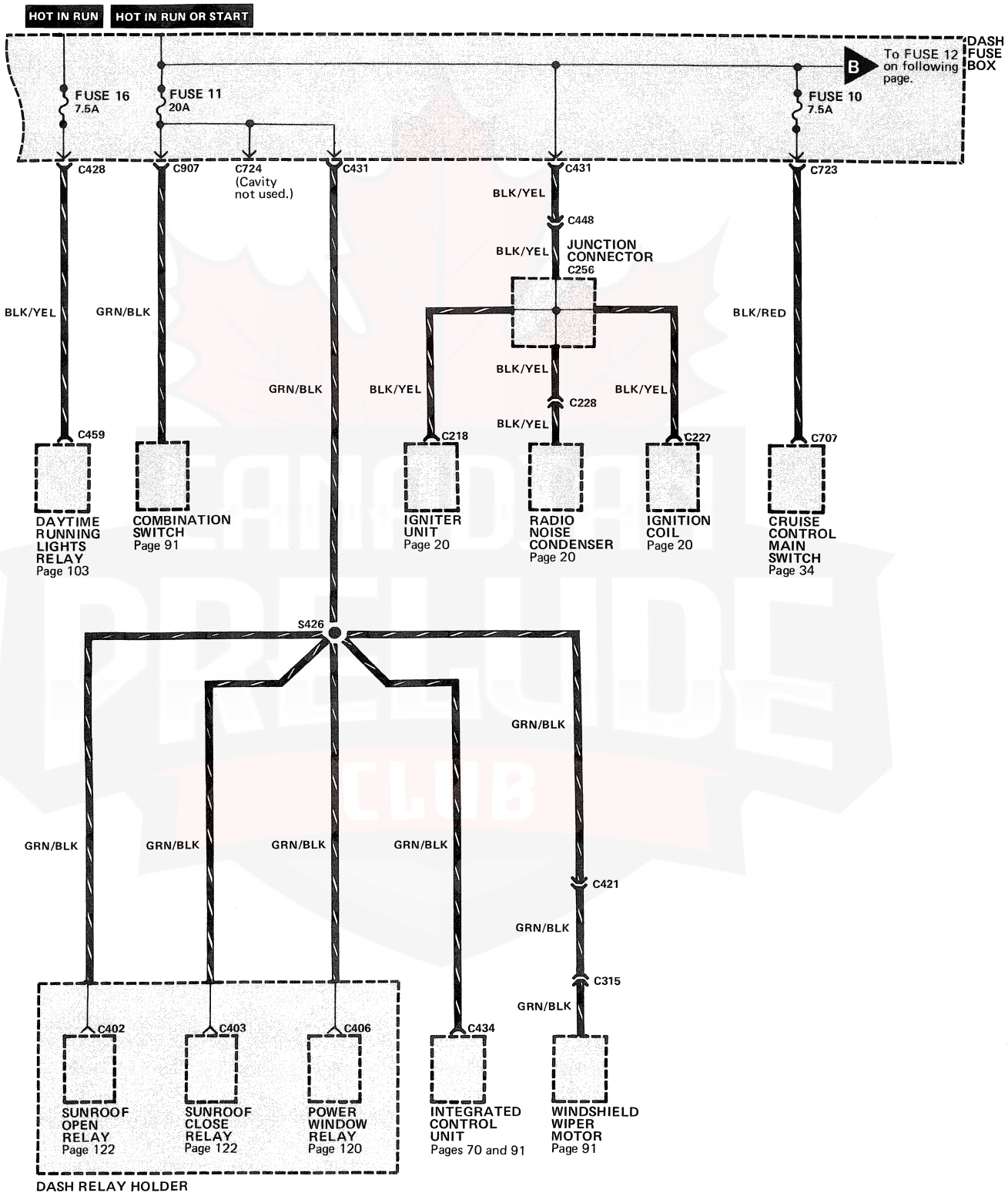
Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

Dash Fuse Box

Circuit Schematic

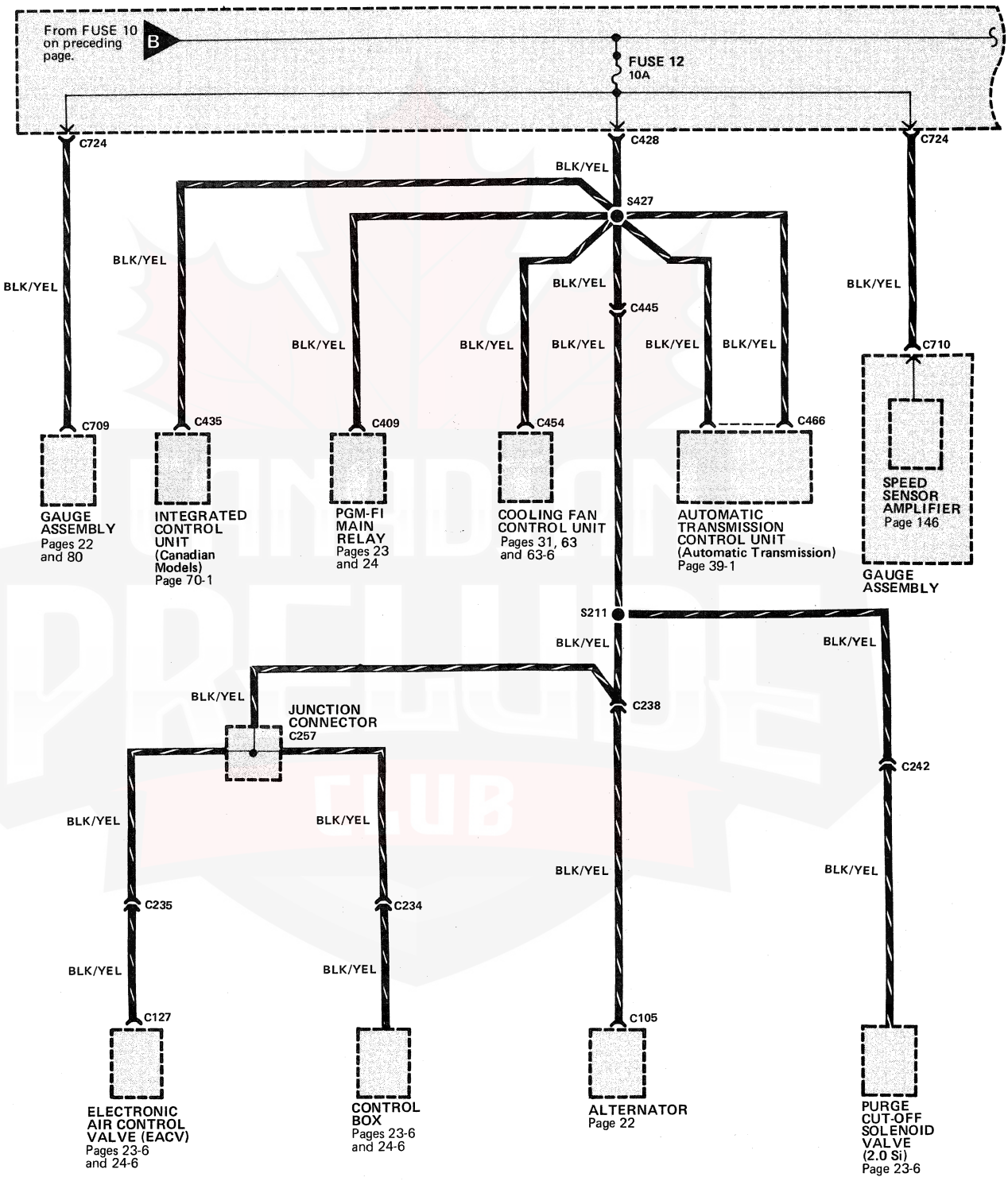


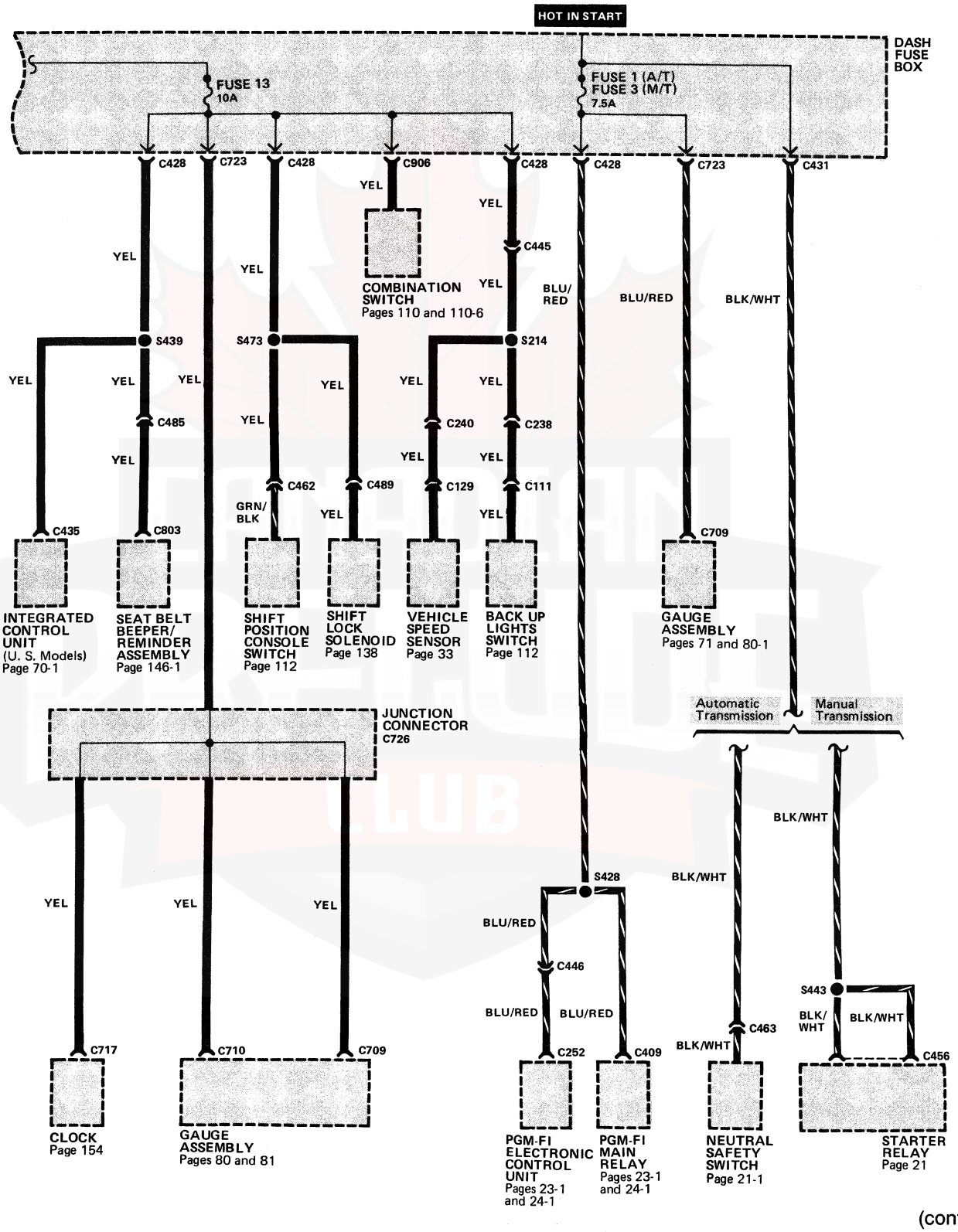


(cont'd)

Dash Fuse Box

Circuit Schematic (cont'd)

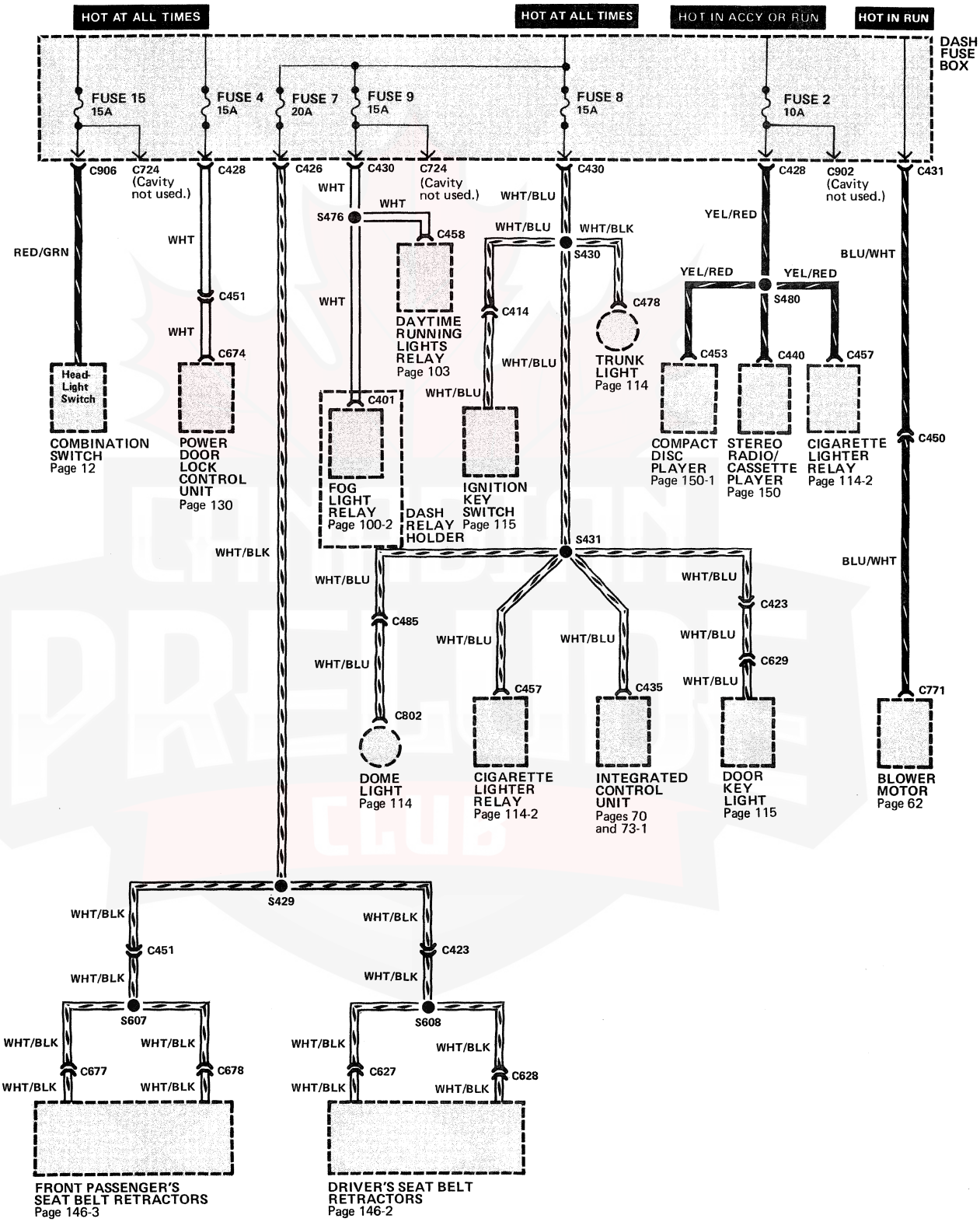


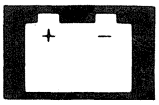


(cont'd)

Dash Fuse Box

Circuit Schematic (cont'd)





Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

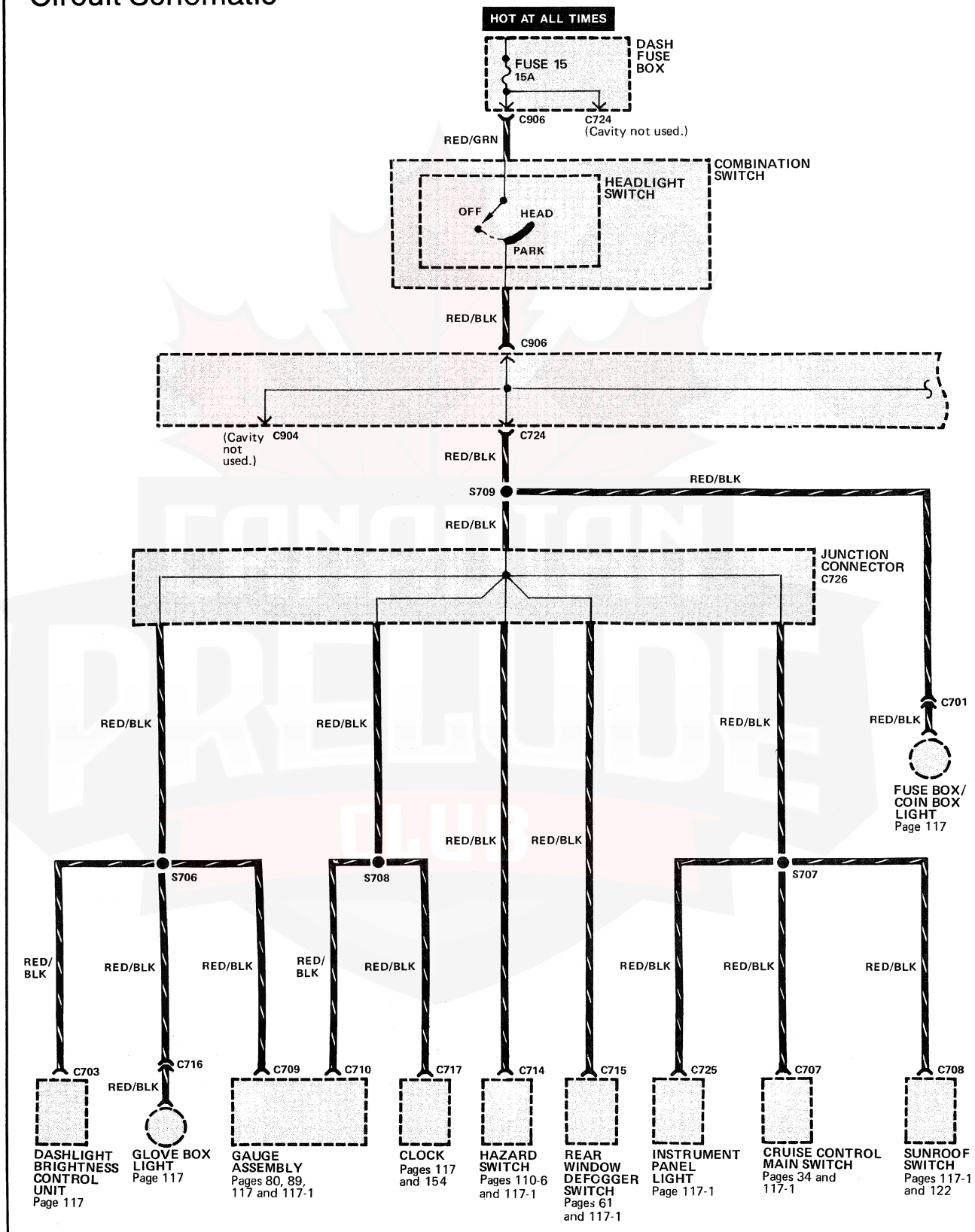
Dash Fuse Box

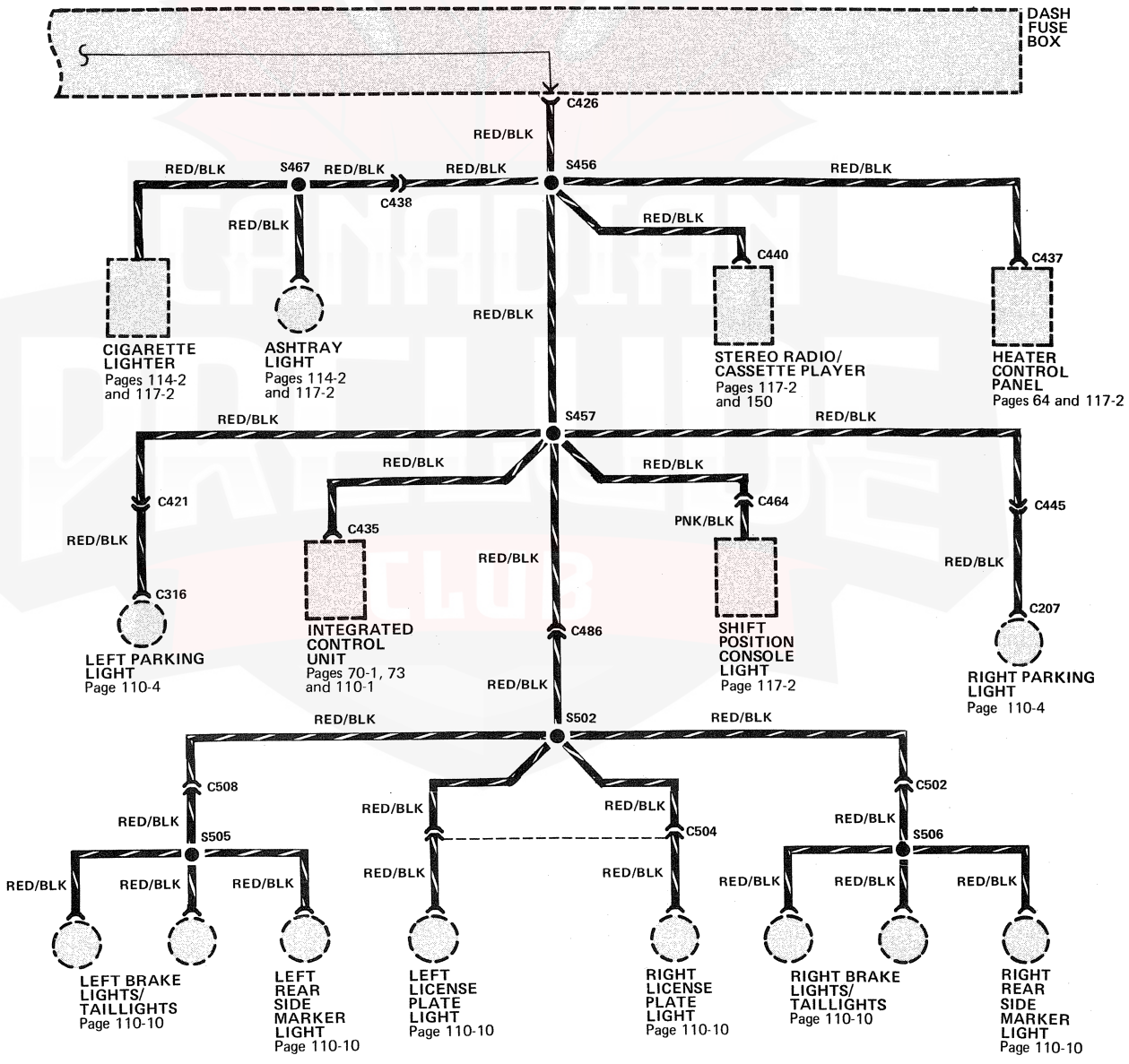
Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

Headlight Switch

Circuit Schematic

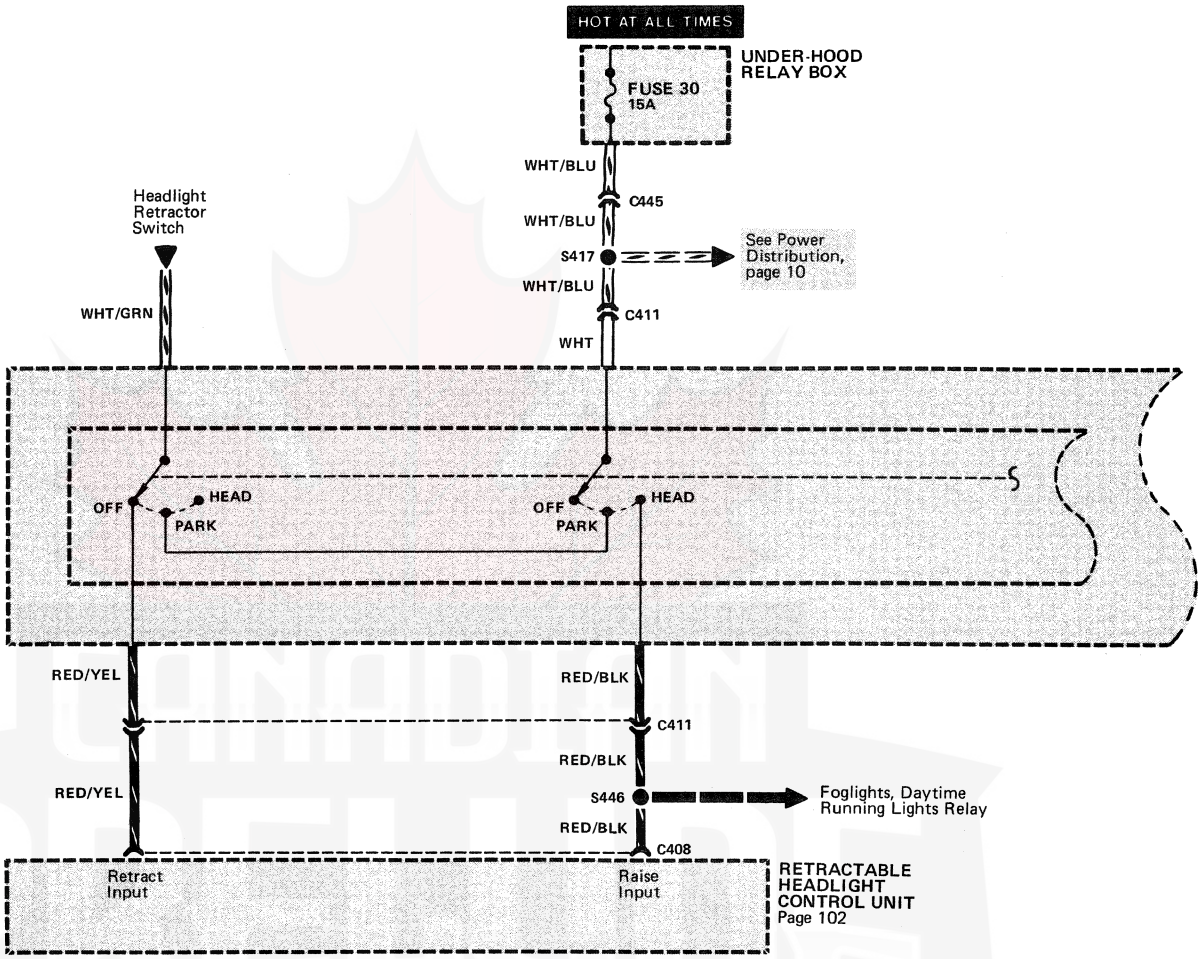


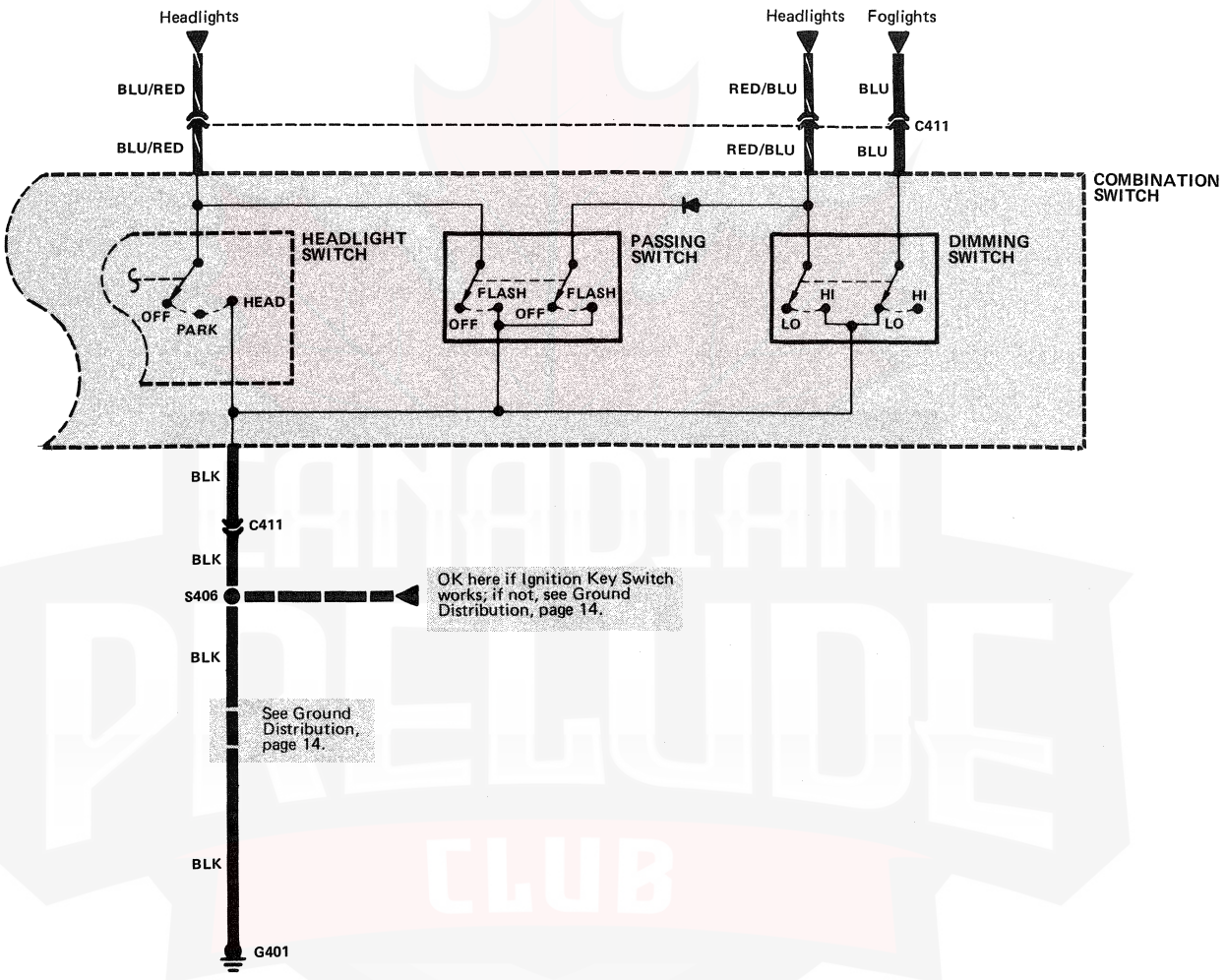


(cont'd)

Headlight Switch

Circuit Schematic (cont'd)

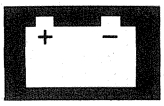




Headlight Switch

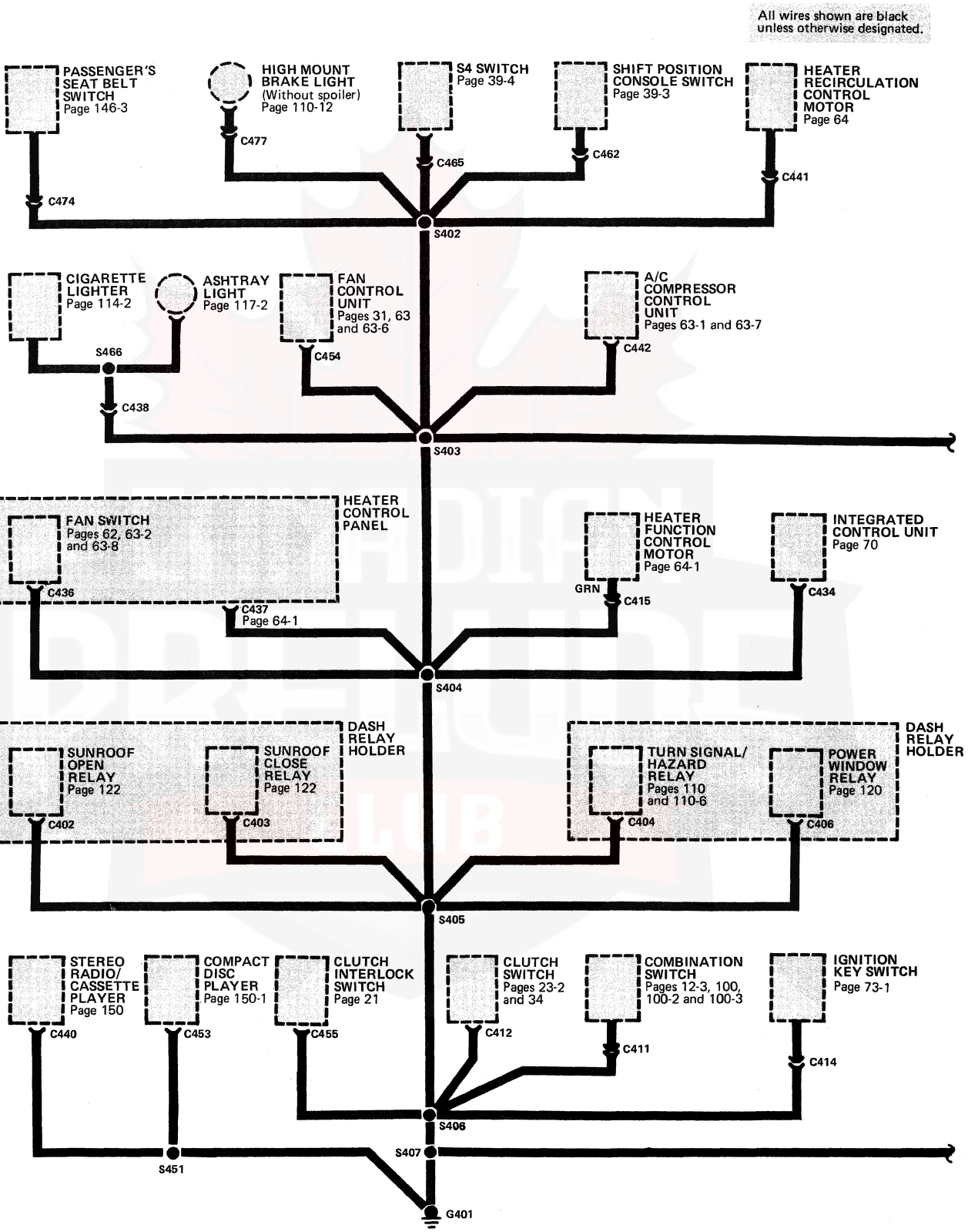
Component Location Index

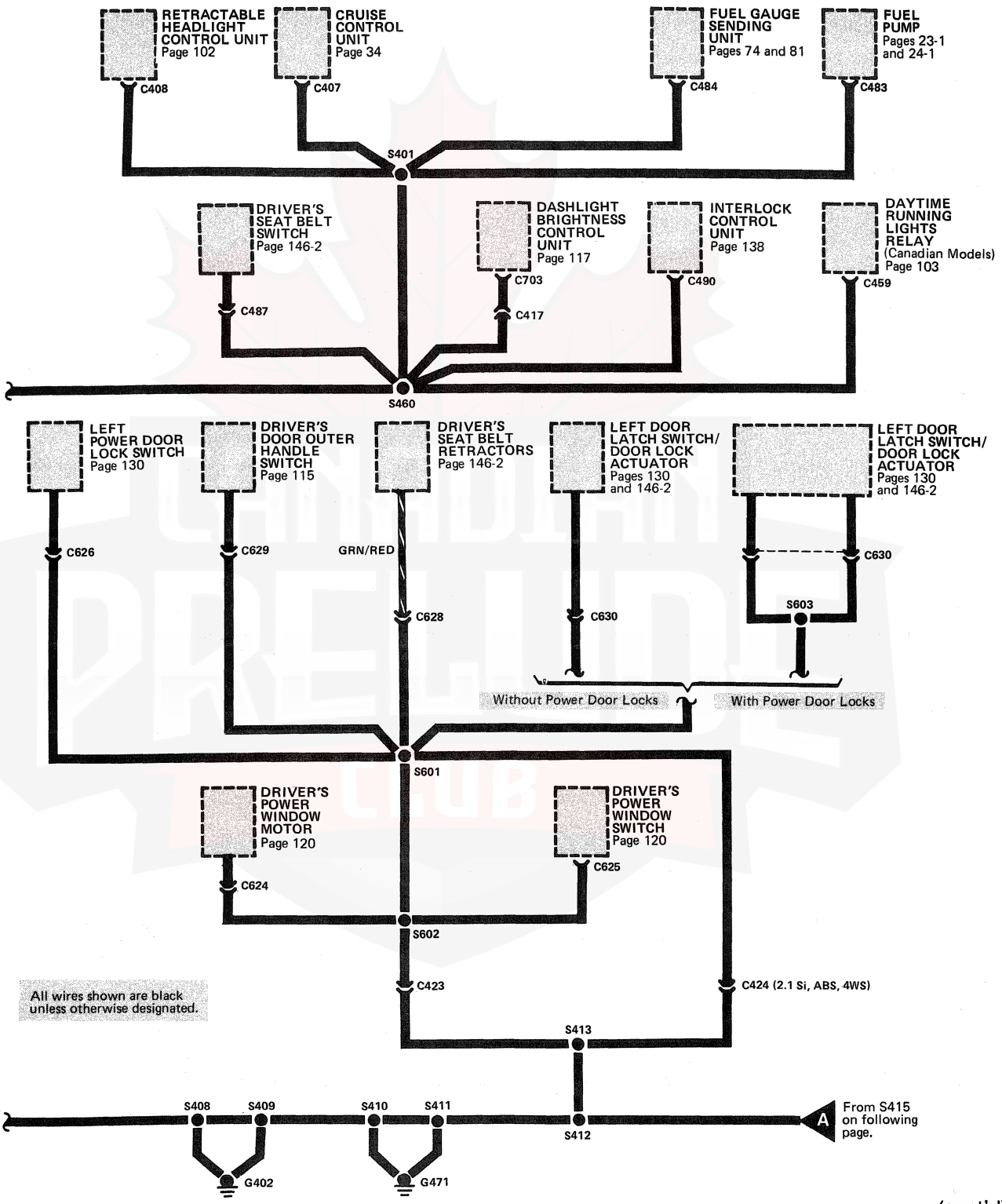
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)



Ground Distribution: G401, G402 and G471

Circuit Schematic



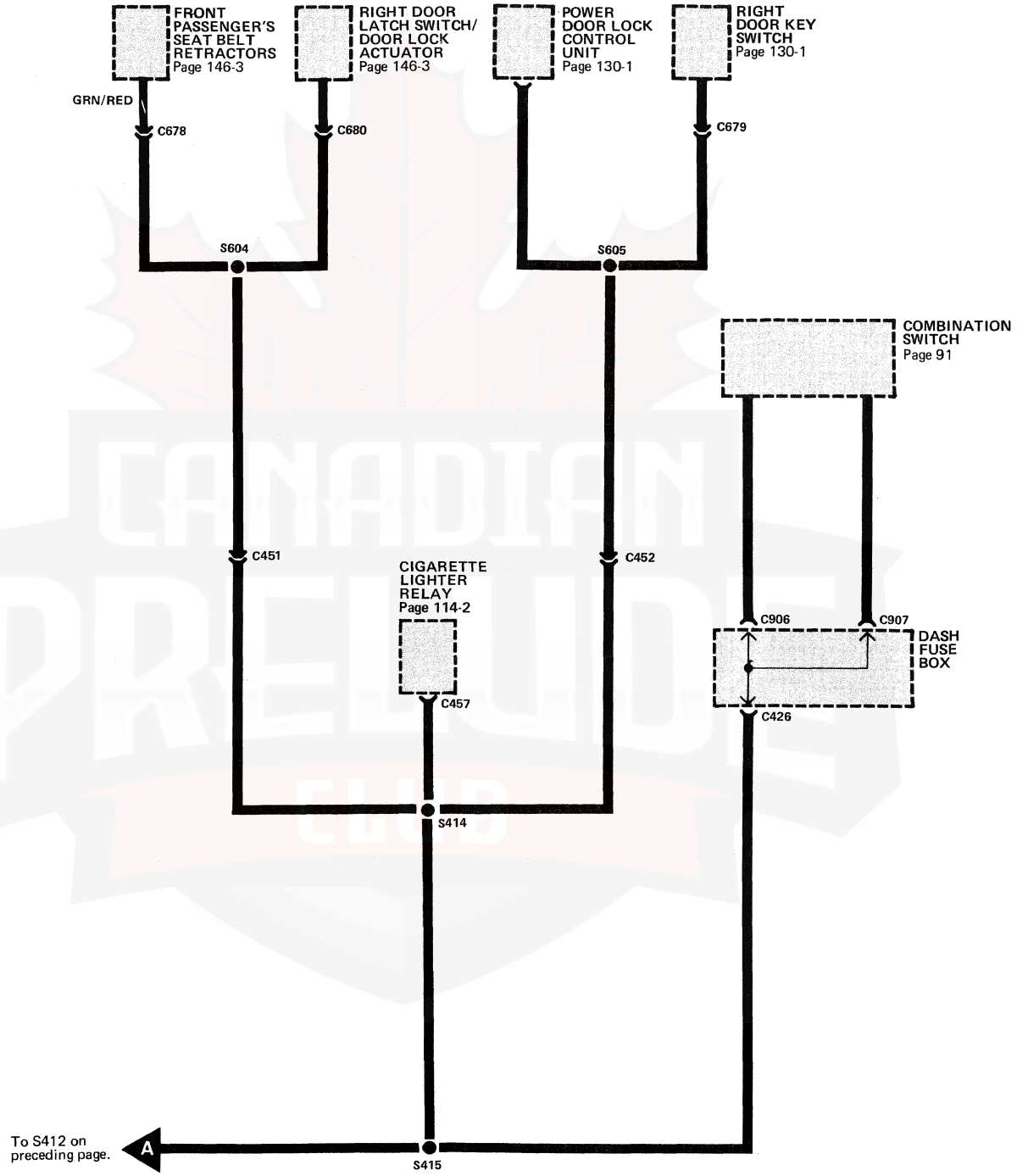


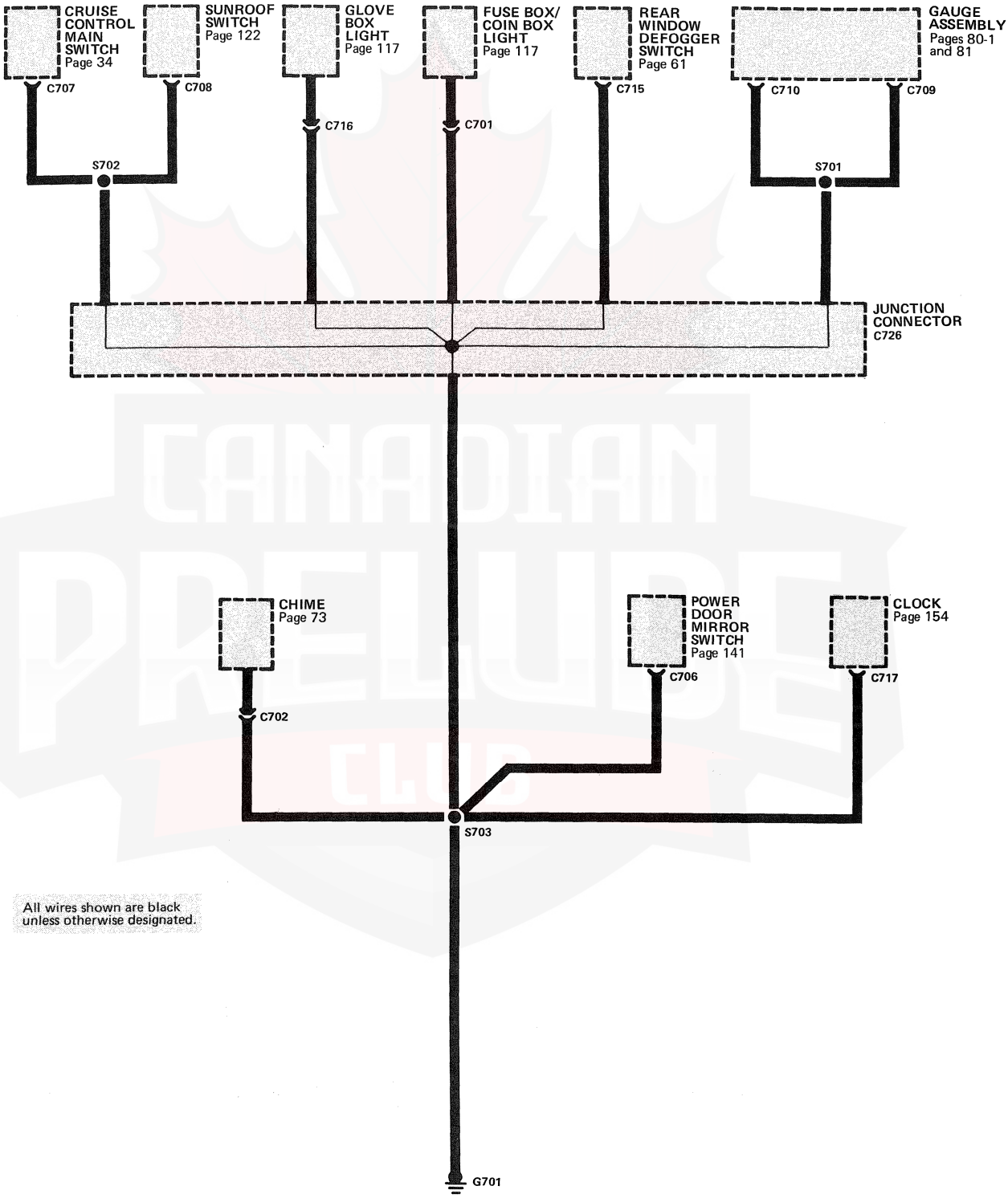
(cont'd)

Ground Distribution: G401, G402, G471 and G701

Circuit Schematic

All wires shown are black unless otherwise designated.





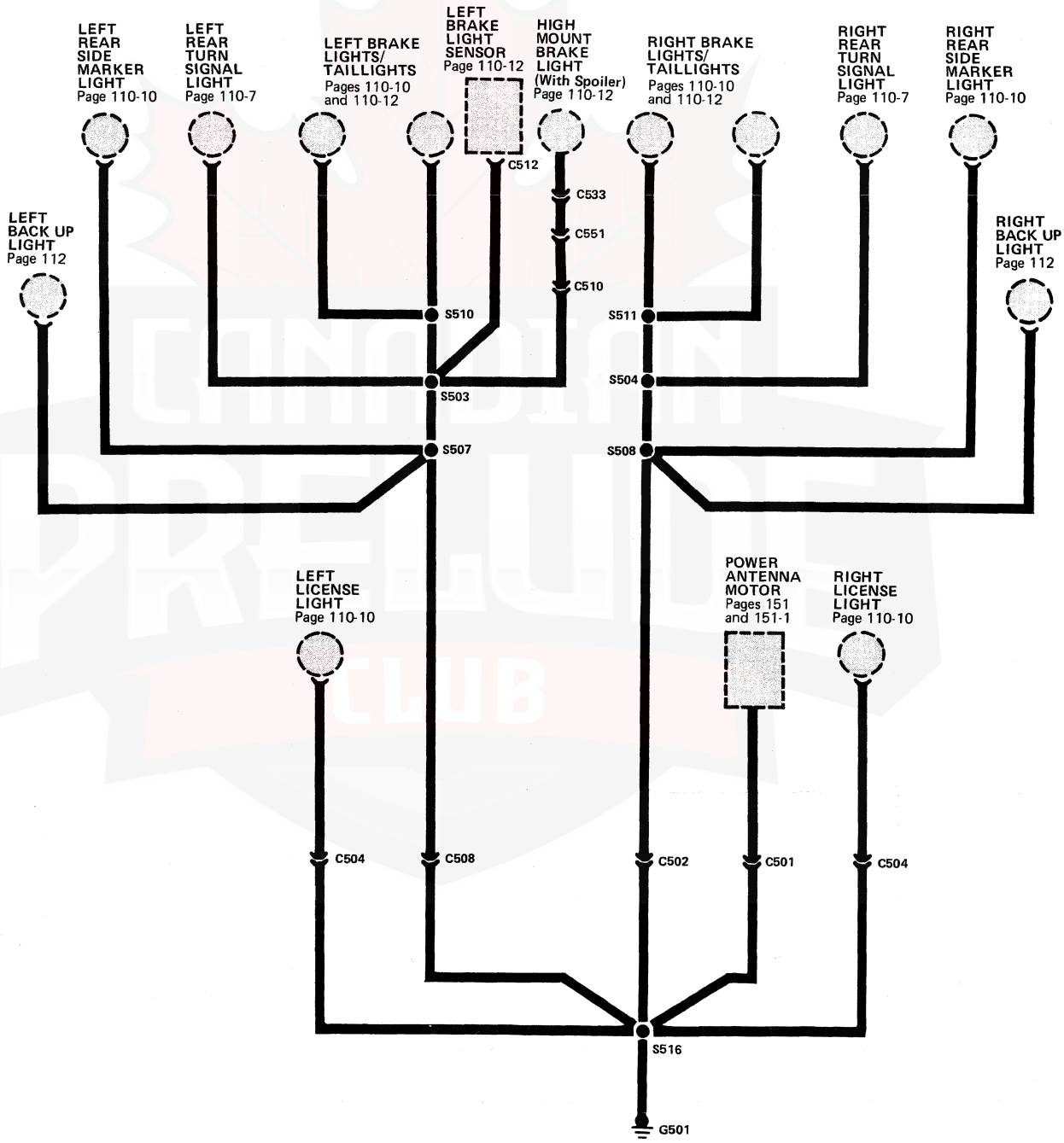
All wires shown are black unless otherwise designated.

(cont'd)

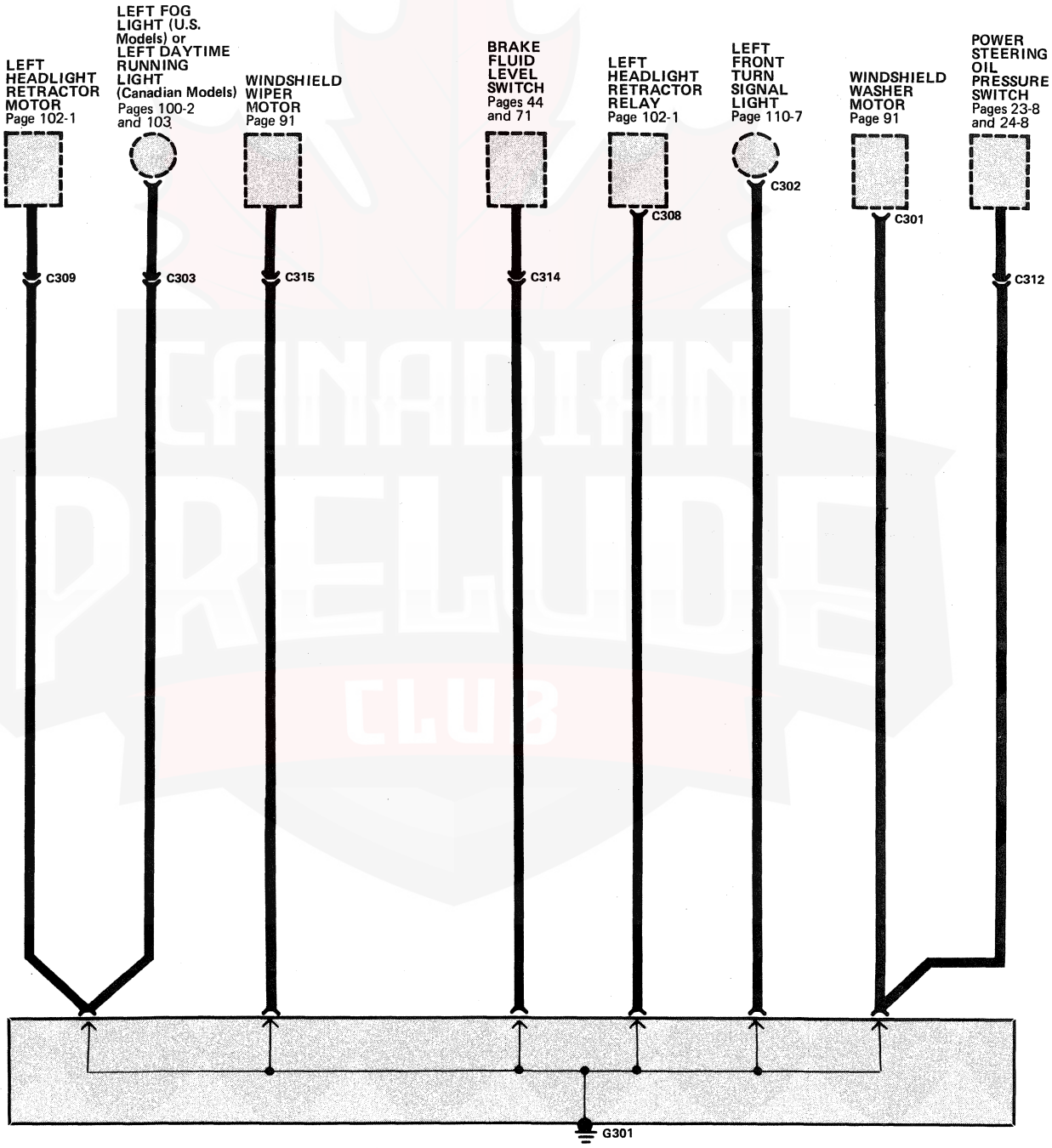
Ground Distribution: G301 and G501

Circuit Schematic (cont'd)

All wires shown are black unless otherwise designated.



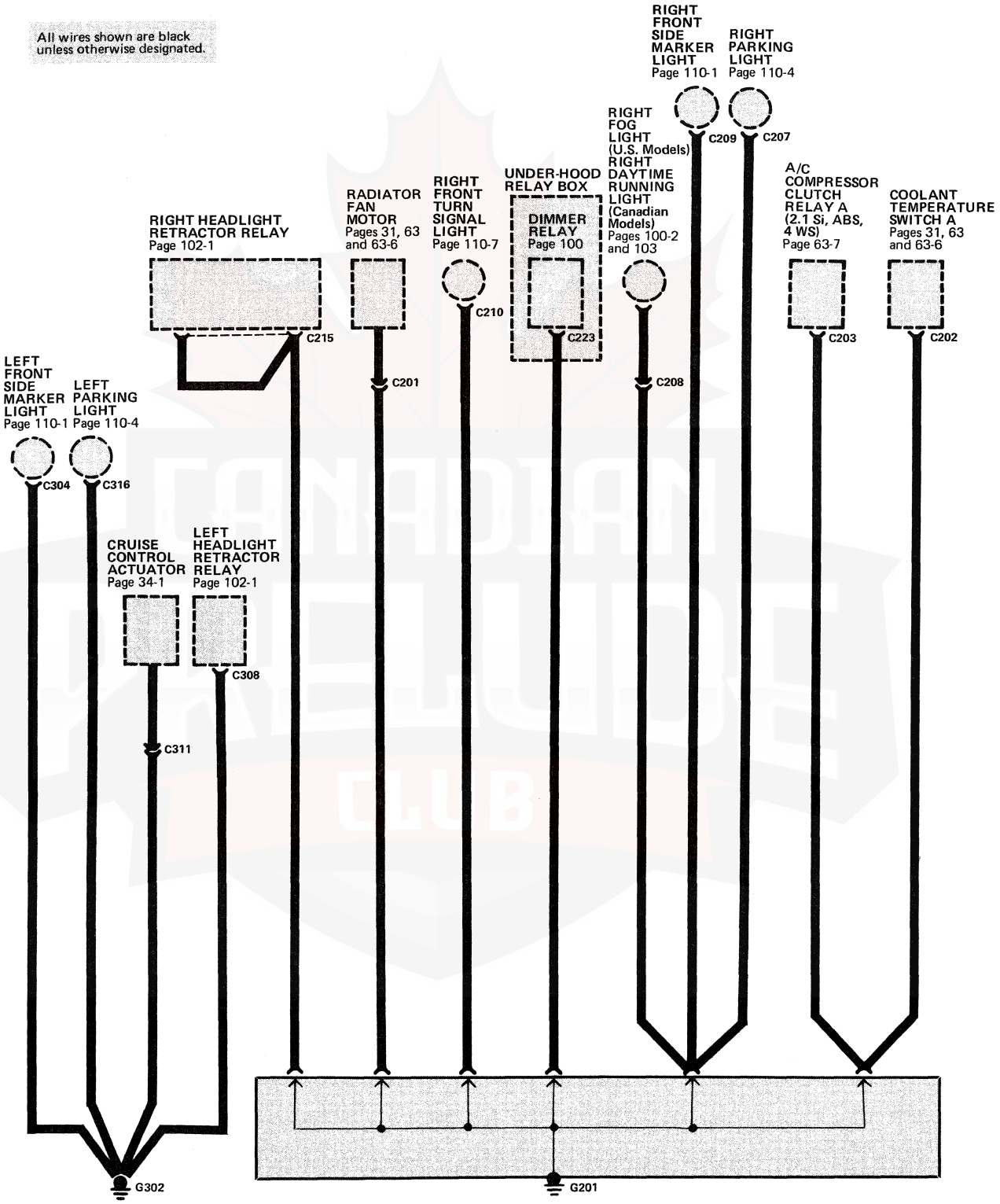
All wires shown are black unless otherwise designated.



(cont'd)

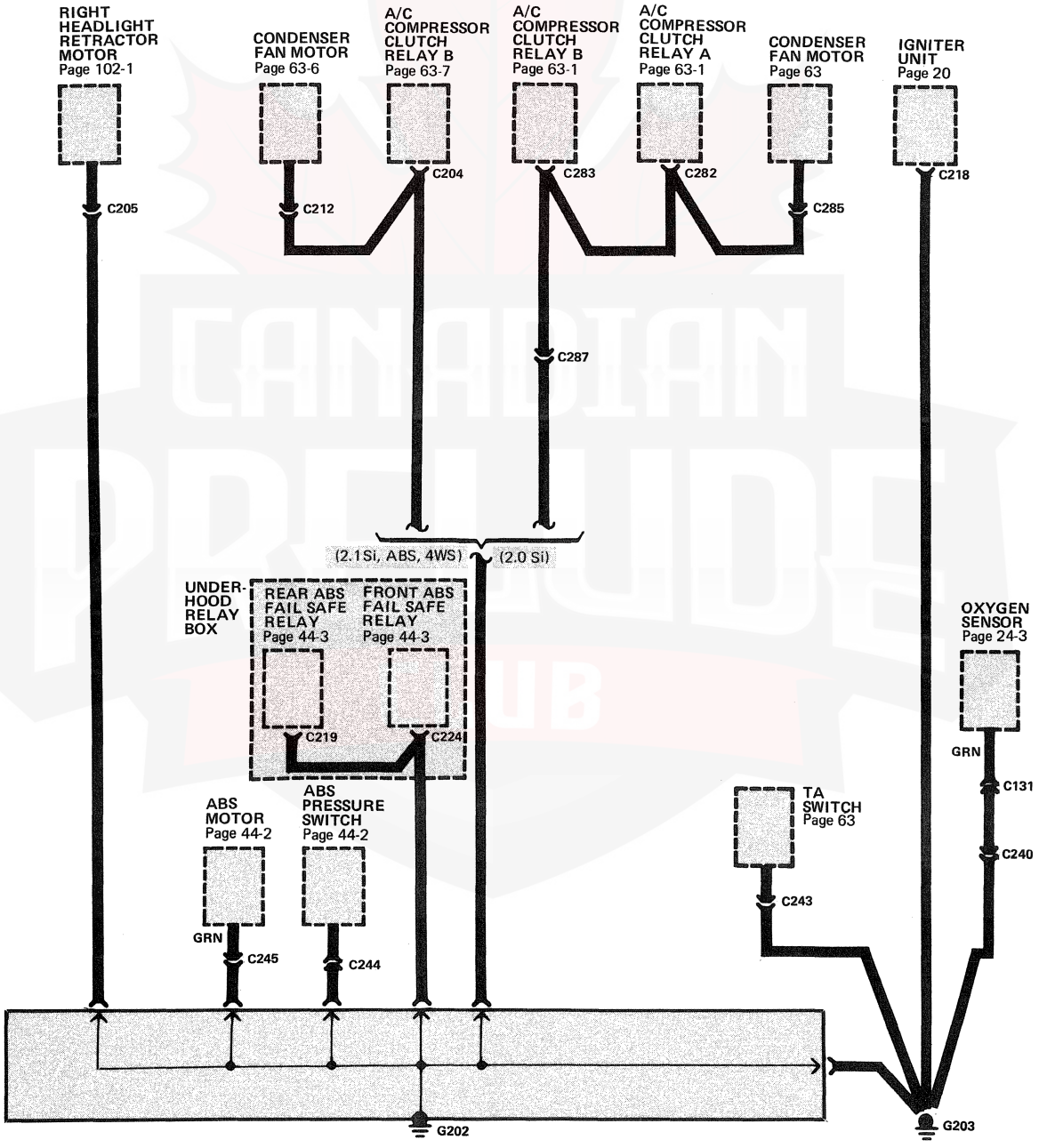
Ground Distribution: G201, G202, G203 and G302

Circuit Schematic (cont'd)



All wires shown are black unless otherwise designated.

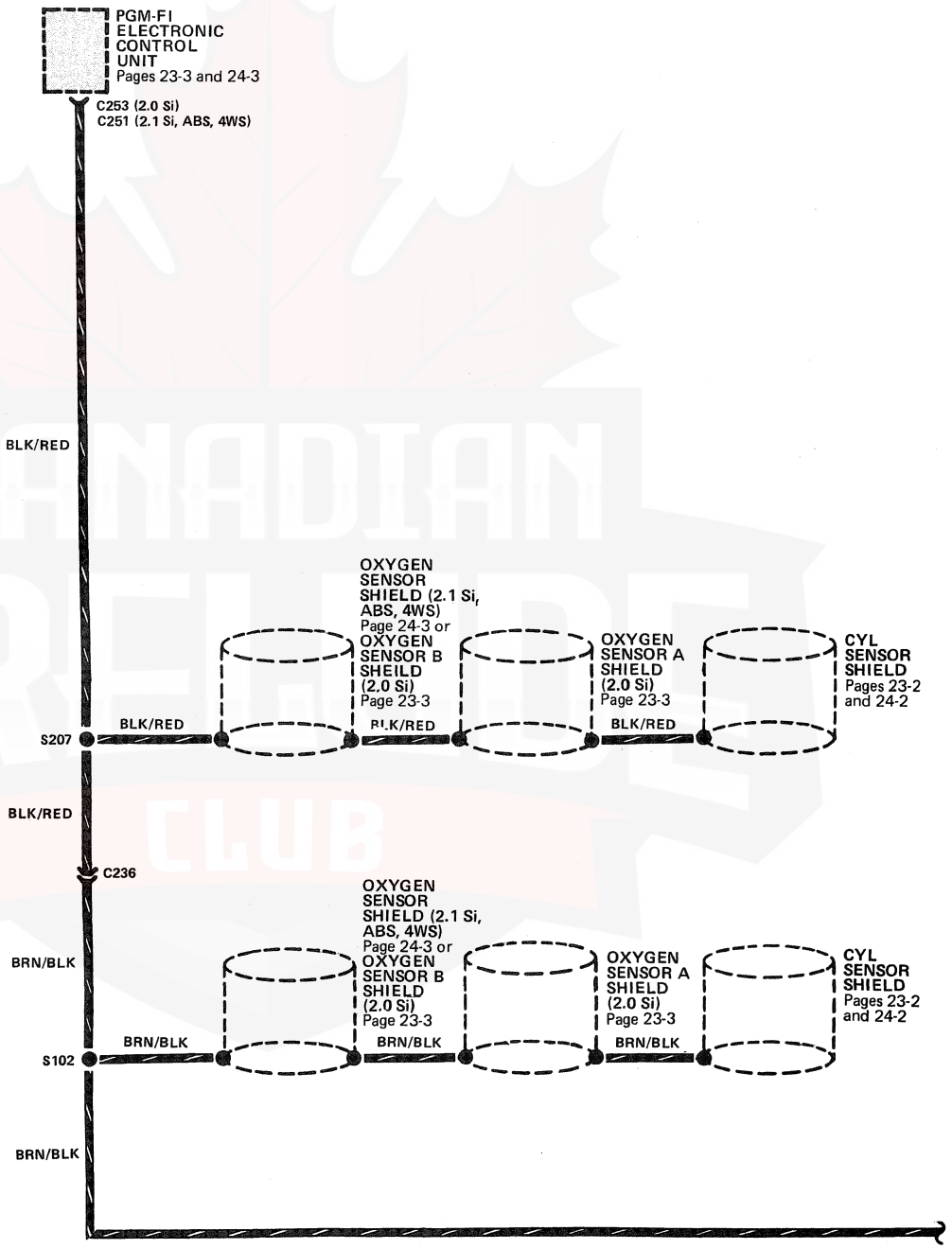
* (2.1 Si, ABS, 4WS)
** (2.0 Si)

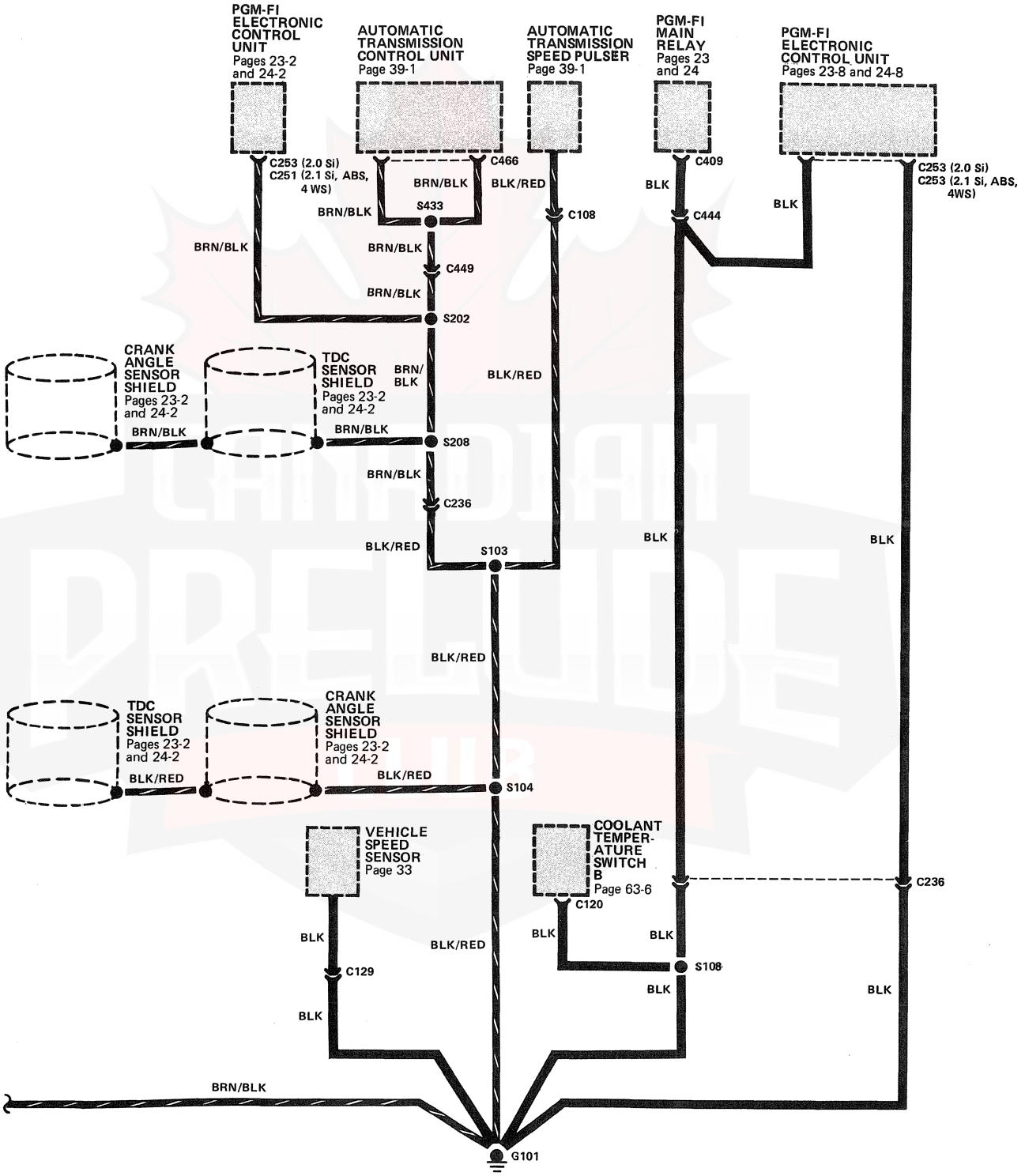


(cont'd)

Ground Distribution: G101

Circuit Schematic (cont'd)

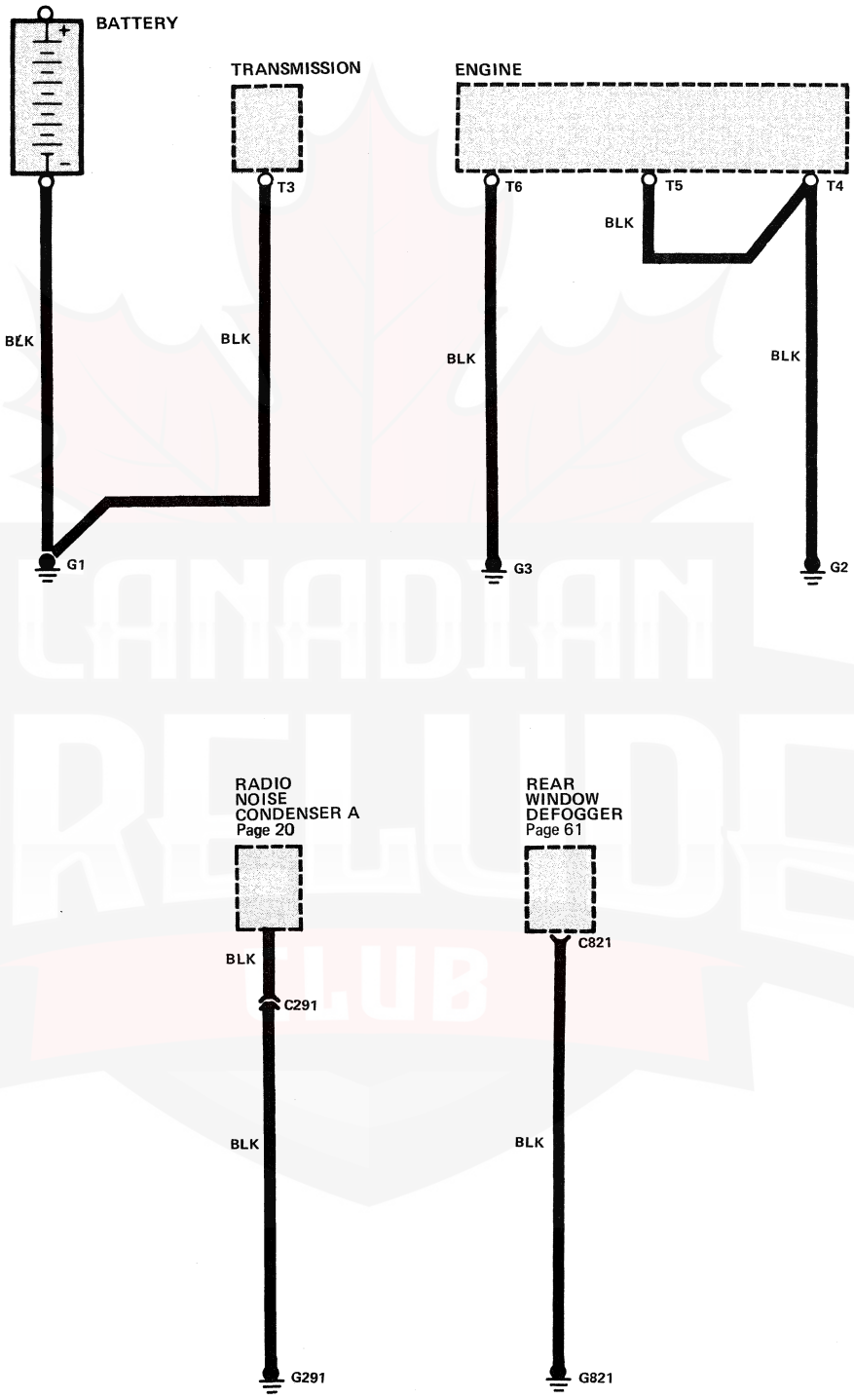




(cont'd)

Ground Distribution: G1, G2, G3, G291 and G821

Circuit Schematic (cont'd)



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

Ground Distribution

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

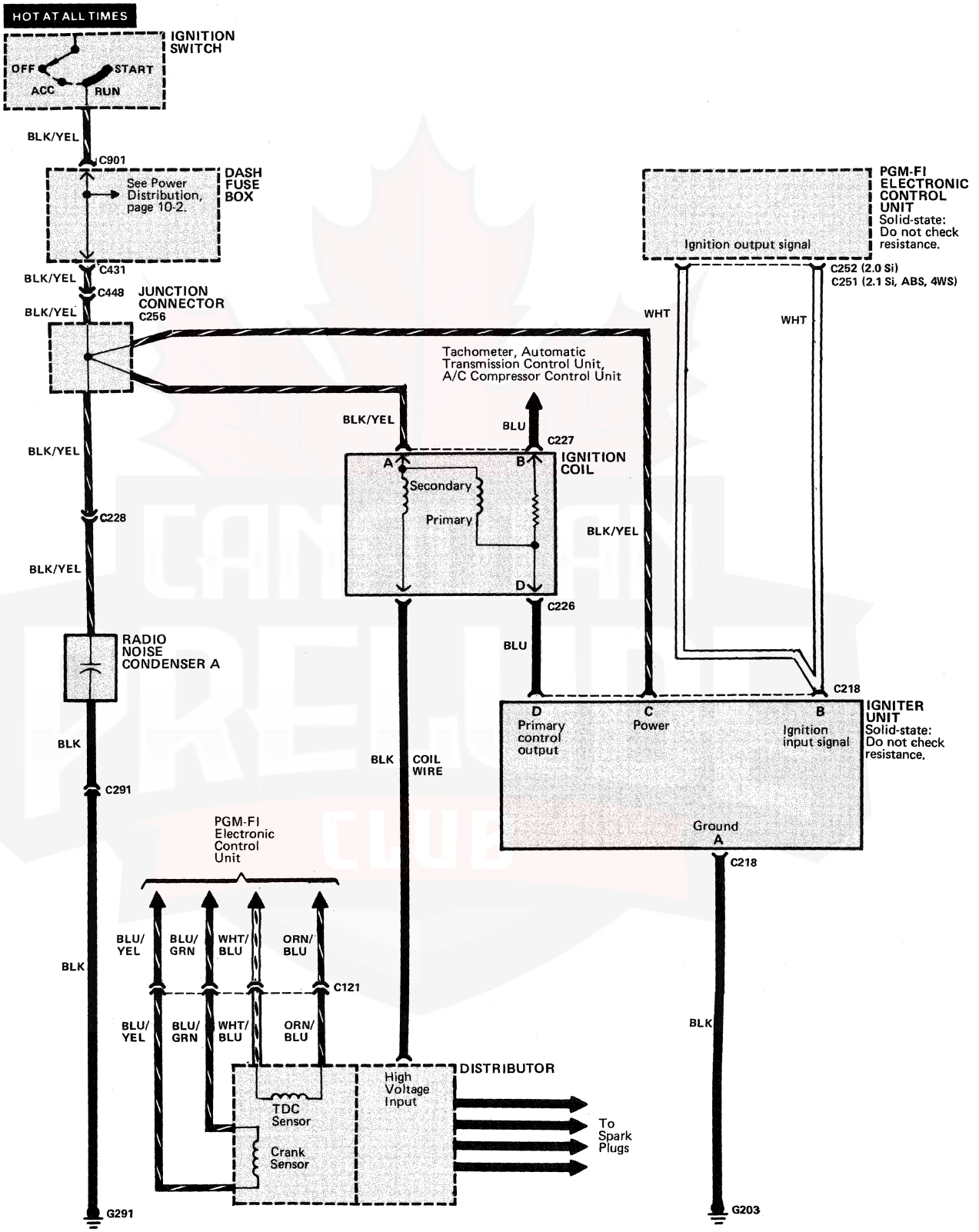
Ground Distribution

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

Ignition System

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

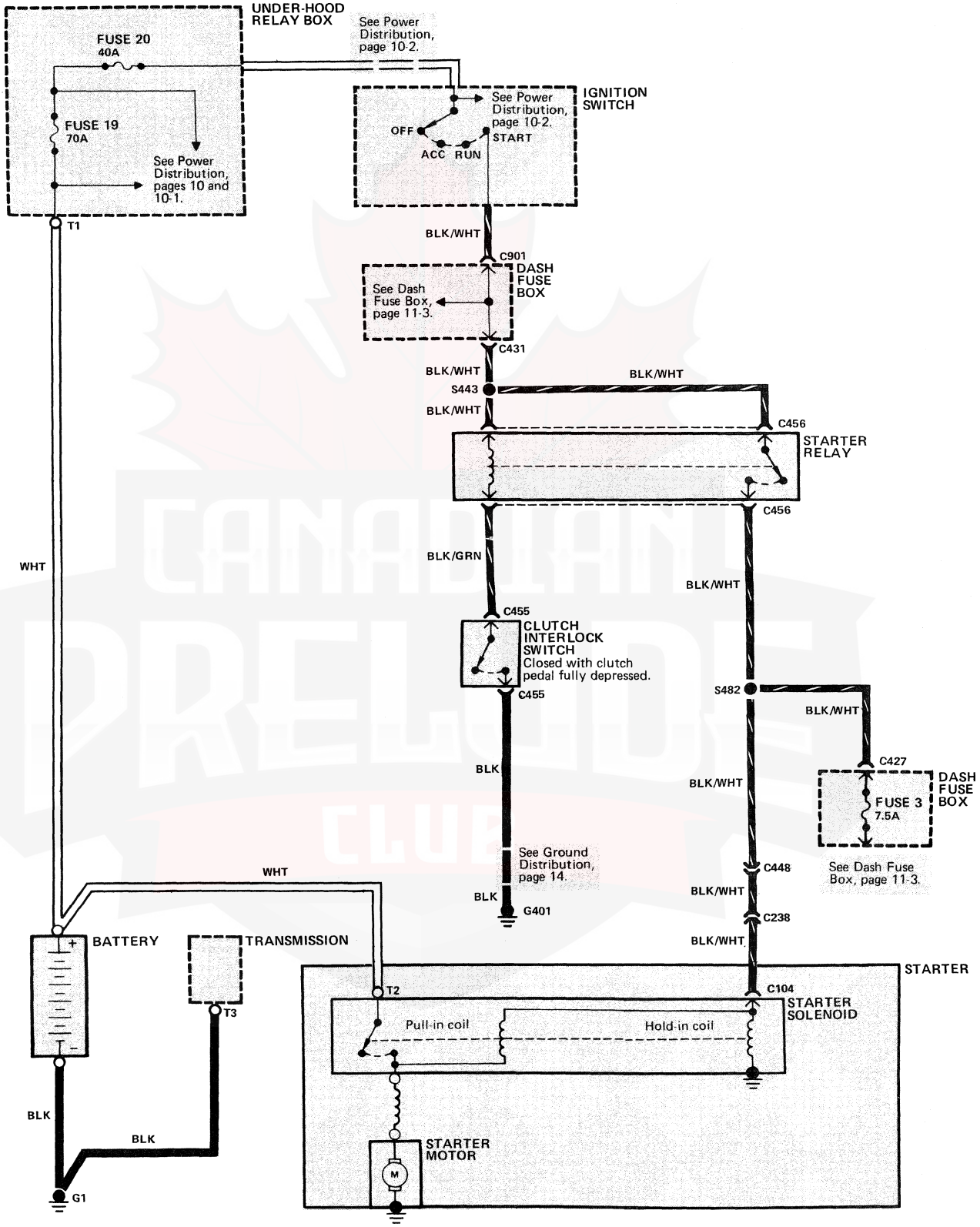
How The Circuit Works

With the ignition switch in RUN or START, voltage is applied to the ignition coil and the solid-state igniter in the distributor. As the distributor shaft turns, the igniter acts as a switch to control current flow through the primary winding of the ignition coil. When current flow through the primary winding is stopped, a high-voltage current is induced in the secondary winding of the ignition coil. The high-voltage current flows through the distributor cap and rotor to the proper spark plug.

The radio noise condenser helps suppress electrical radio interference.

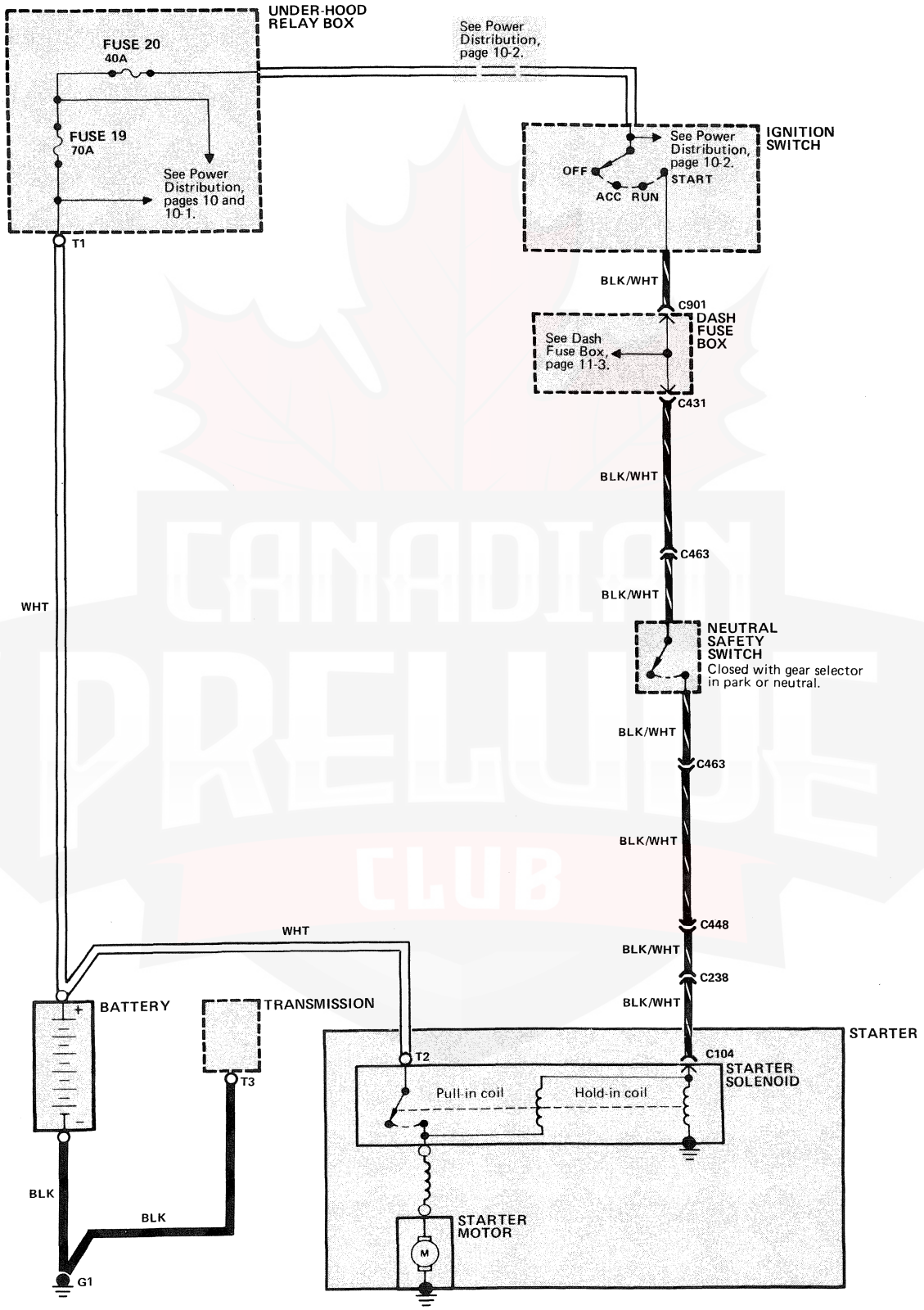
Starting System: Manual Transmission

Circuit Schematic



Starting System: Automatic Transmission

– Circuit Schematic



Component Location Index

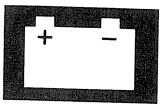
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Voltage is applied at all times from the positive battery terminal to the ignition switch and the normally open starter solenoid contacts. When the ignition switch is turned to START and the neutral safety switch (automatic transmission) is closed, voltage is applied to the starter solenoid coil. The starter solenoid coil energizes, the starter solenoids contacts close, and voltage is applied to the starter motor: The starter motor engages to start the engine.

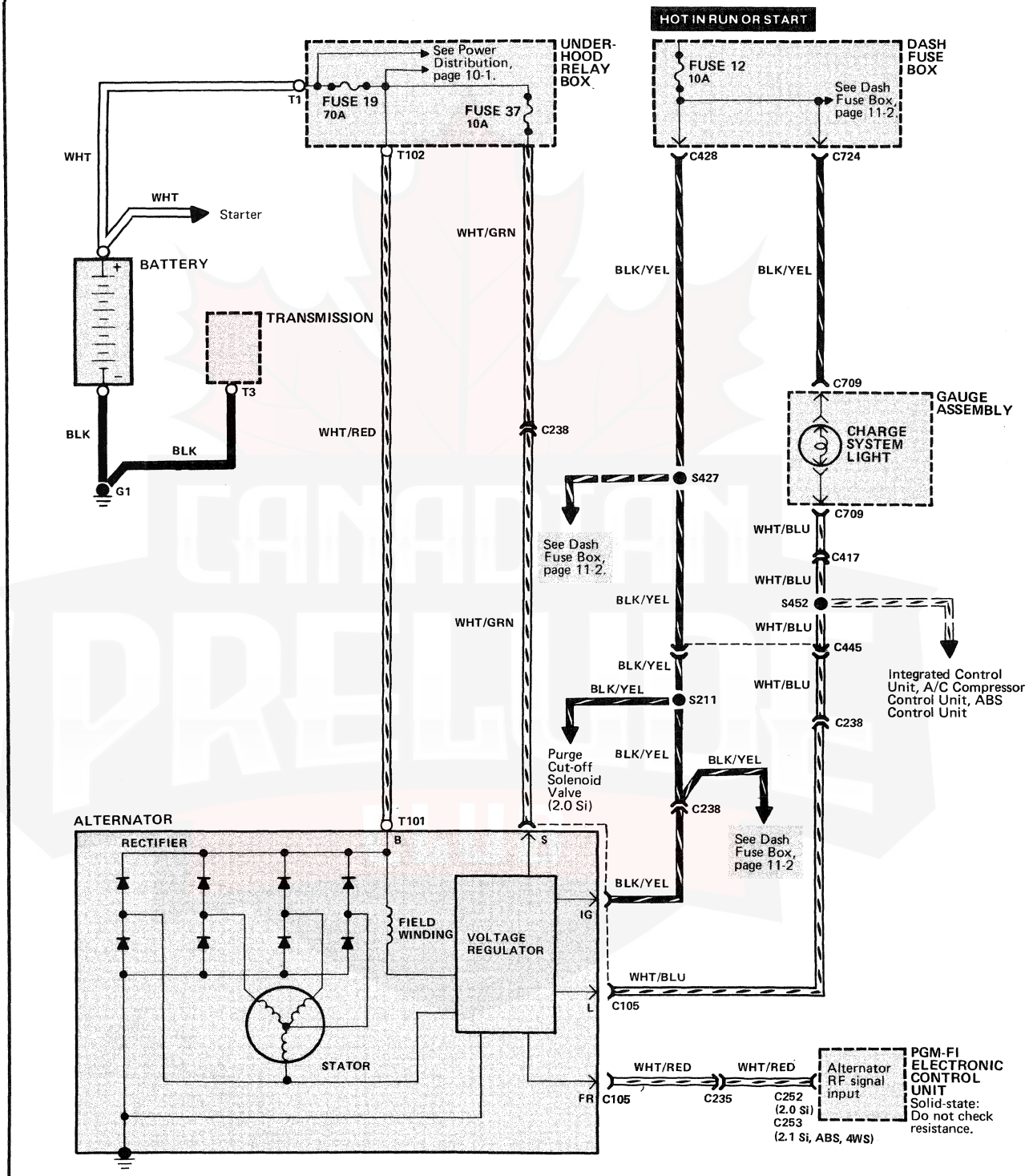
With a manual transmission voltage is applied to the starter relay coil when the ignition switch is turned to start and the clutch interlock switch is closed, the starter relay coil energizes the starter relay contacts allowing voltage to be applied to the starter solenoid coil which energizes the starter solenoid contacts. Voltage is then applied to the starter and engaging it to start the engine.

With a manual transmission, voltage is applied to the starter relay coil when the ignition switch is turned to start and the clutch interlock switch is closed. The starter relay coil energizes the starter relay contacts, allowing voltage to be applied to the starter solenoid coil, which energizes the starter solenoid contacts. Voltage is then applied to the starter, engaging it to start the engine.



Charging System

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The alternator supplies DC voltage to operate the vehicle's electrical systems and to recharge its battery. The output of the alternator is controlled by the built-in voltage regulator.

When you first move the ignition switch to RUN, before the engine is started, voltage is applied to the charge system light through fuse 12. The charge system light is grounded through terminal L of the alternator, and it goes on.

With the engine running and the alternator operating normally, voltage is still applied to the charge system light through fuse 12 but now voltage is also applied from the alternator (terminal L). With equal voltage on both sides of the charge system light, the light does not go on.

When the engine is running and the alternator is not charging, the charge system light is grounded through the alternator (terminal L): The charge system light goes on to warn the driver that the alternator is not charging properly.

Charging System

Quick Checks

1. Check that the battery is not damaged by observing the case for cracks or loose posts.
2. Check that the battery is fully charged by observing the battery indicator:

   Blue or Green — OK
   Red — add distilled water
   Clear — needs charging

Note: If battery indicator is Red or Clear, see Section 23 of the Service Manual for battery test procedures.

3. Check fuses 12, 19 and 37 by visual inspection.
4. Check alternator belt tension. See Section 23 of the Service Manual for alternator belt adjustment.
5. Refer to Section 11 of the Service Manual for Alternator FR Signal test procedures.

Troubleshooting

Symptom	Troubletree
Charge warning light does not light with the ignition switch in RUN and engine not running.	A
Battery is undercharged or charge warning light is ON with engine running.	B
Interior and exterior lights intensify or dim depending on engine rpm.	C

Troubletree A

Charge warning light does not light with ignition switch in RUN and engine not running.

Turn the ignition switch off.

Disconnect alternator connector C105 or C155.

Connect fused jumper between the WHT/BLU wire terminal of connector and ground.

Turn the ignition switch to RUN.

Is charge warning light on?

YES

(To page 22-6)

NO

Check for a defective:

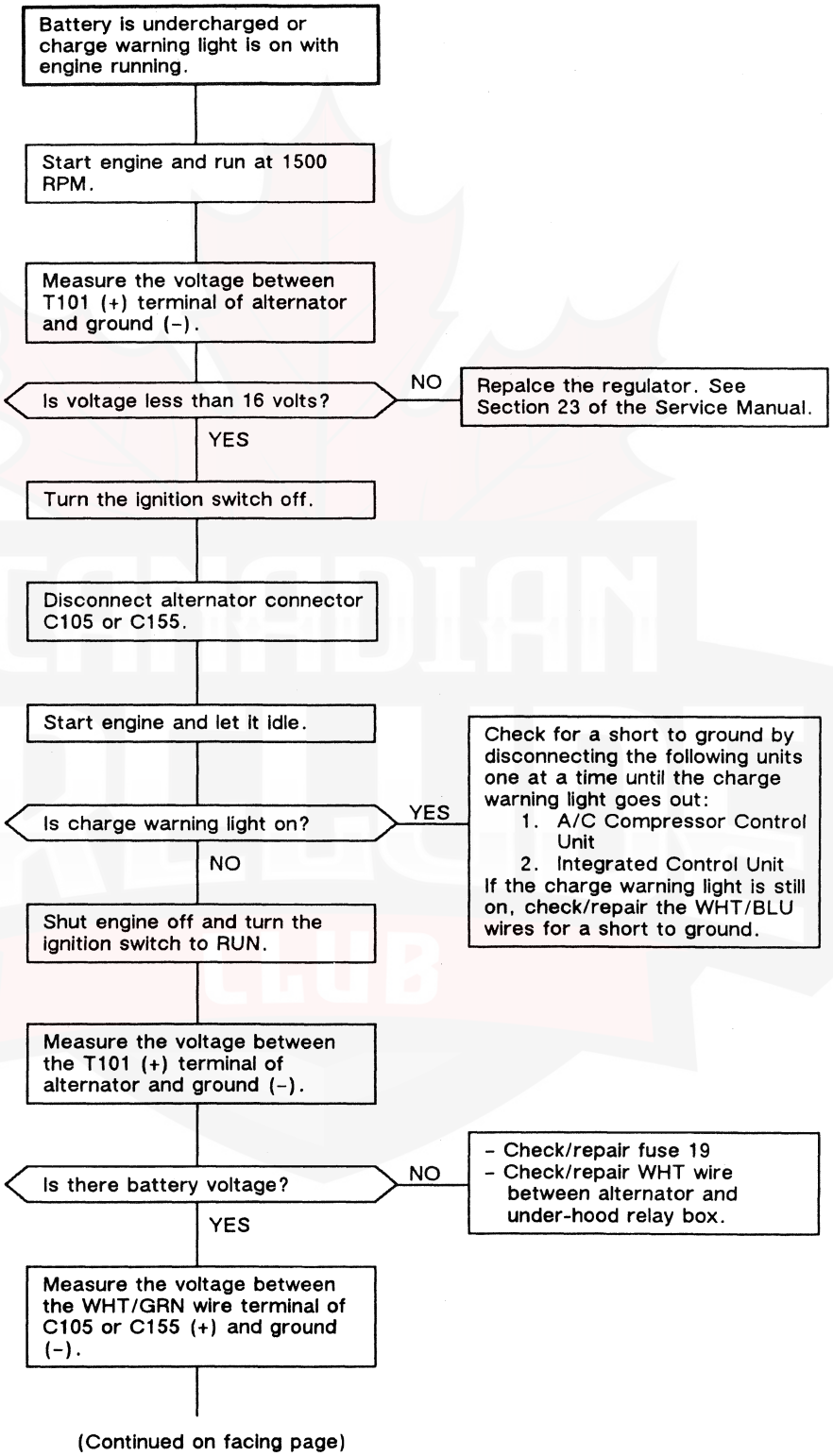
- fuse 9
- charge warning bulb
- BLK/YEL wire between dash fuse box and gauge assembly
- WHT/BLU wires between gauge assembly and alternator
- dash fuse box
- gauge assembly

(cont'd)

Charging System

Troubleshooting (cont'd)

Troubletree B



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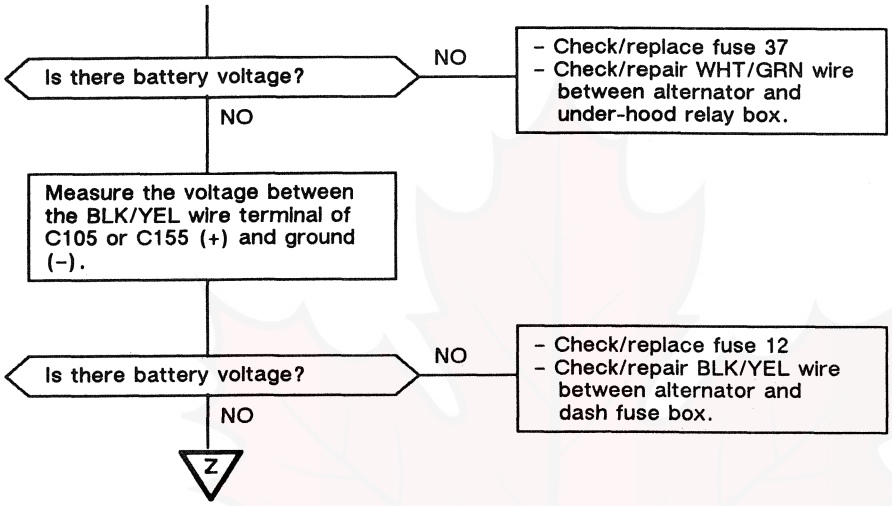
(Continued from facing page)

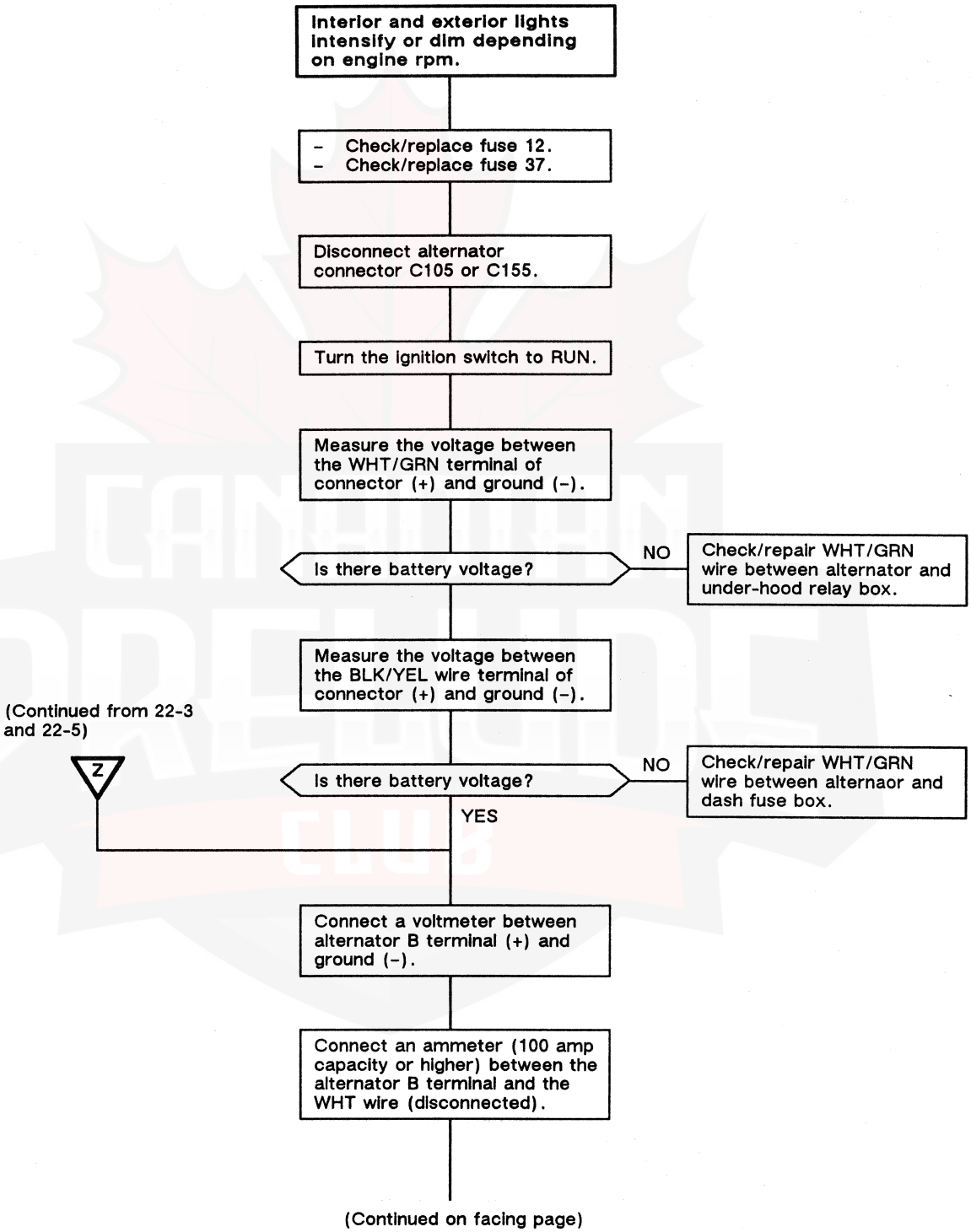


(To page 22-6)

(cont'd)

Troubleshooting (cont'd)

Troubletree C



(Continued from facing page)

Start engine and turn on the headlights, blower motor, rear window defogger and other electrical systems until the voltage is below 13.5V. If voltage exceeds 15V, stop engine and replace the voltage regulator. See Section 23 of the Service Manual.

Compare the readings to the chart.

Is output within specification when voltage is between 13.9V and 15.1V?

NO

YES

Turn off all electrical loads.

Measure voltage at 1500 RPM.

Is voltage between 13.9V and 15.1V?

YES → Alternator and regulator are good.

NO

Perform a full field test: Insert a short screwdriver into the brush holder screw hole in the alternator and cover.

With the screwdriver touching the brush screw, ground the screwdriver with a jumper lead to a clean ground.

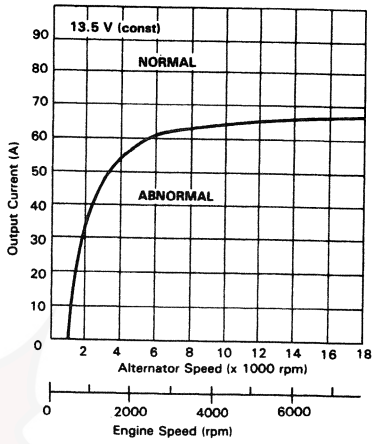
Compare the amperage readings to the chart.

Is the reading within specification?

NO → Replace the alternator. See Section 23 of the Service Manual.

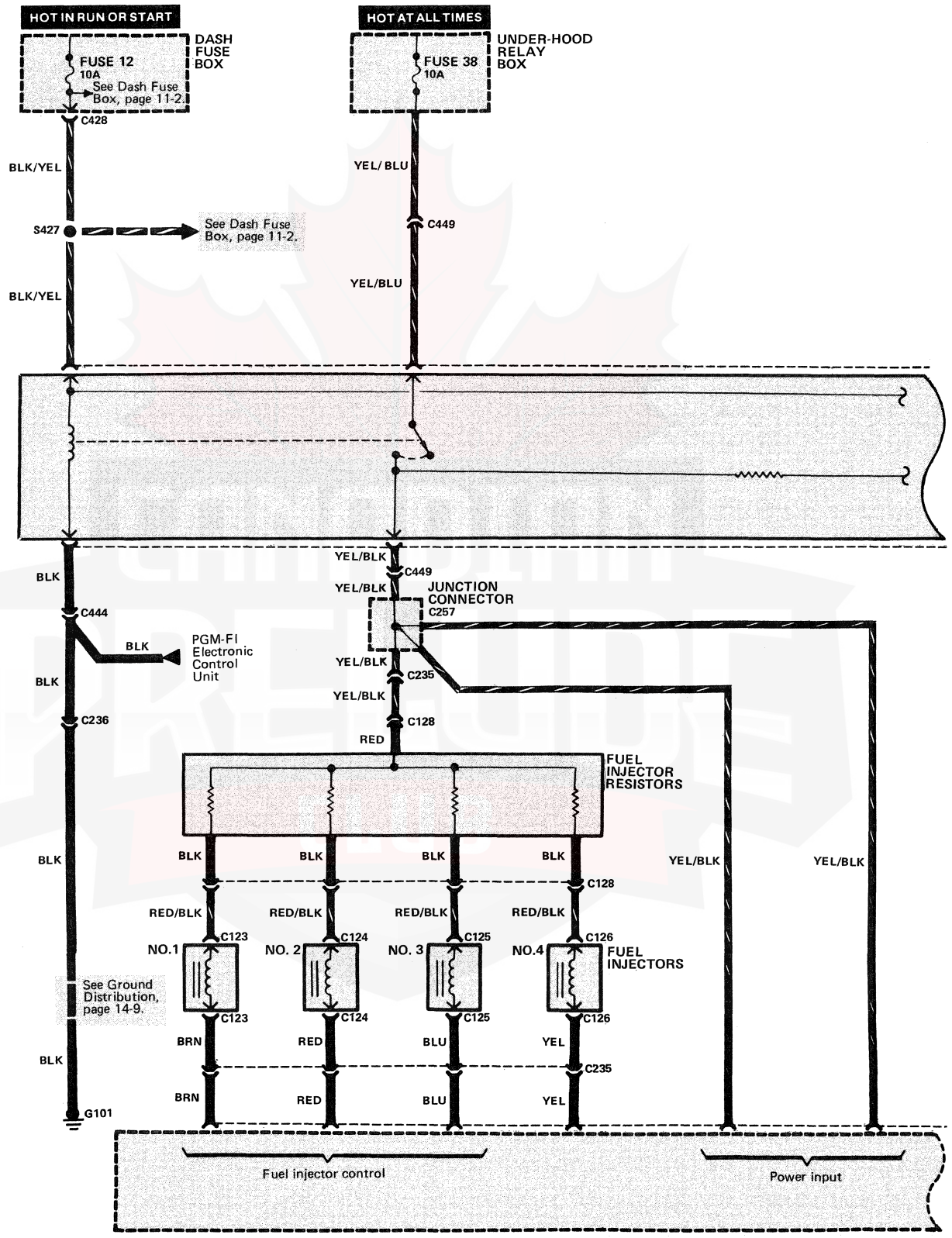
YES

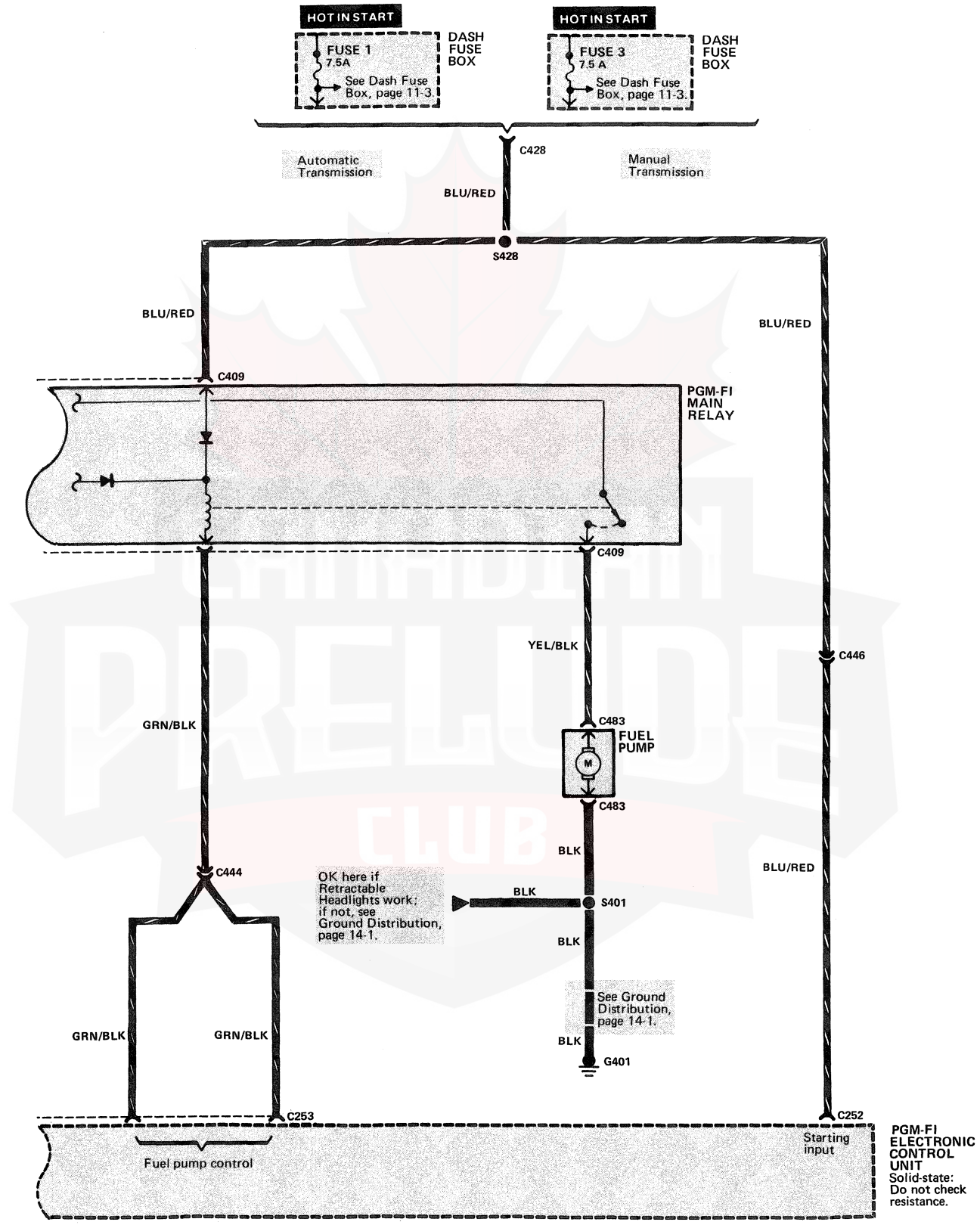
Replace the voltage regulator. See Section 23 of the Service Manual.



PGM-FI: 2.0 Si

Circuit Schematic

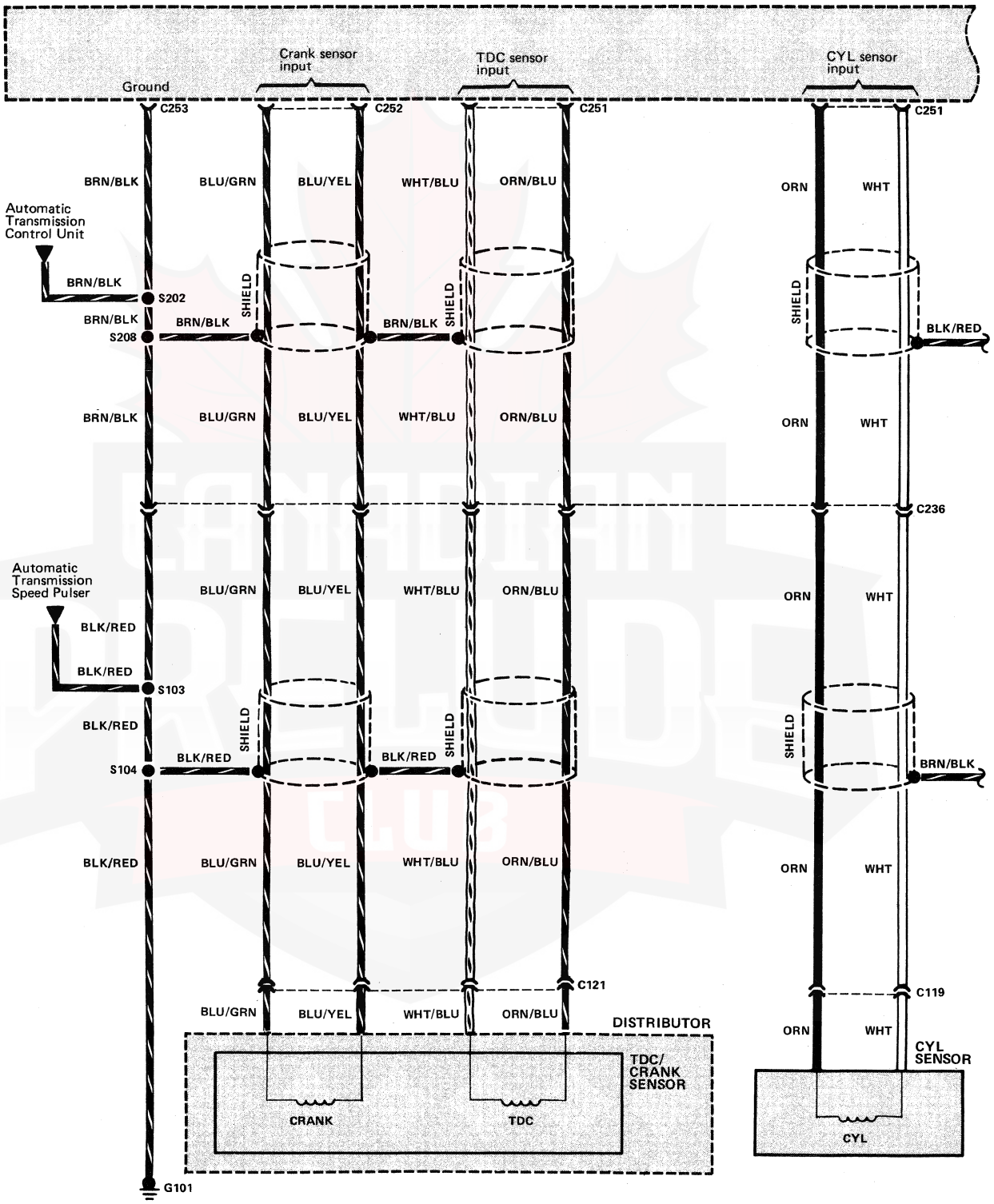


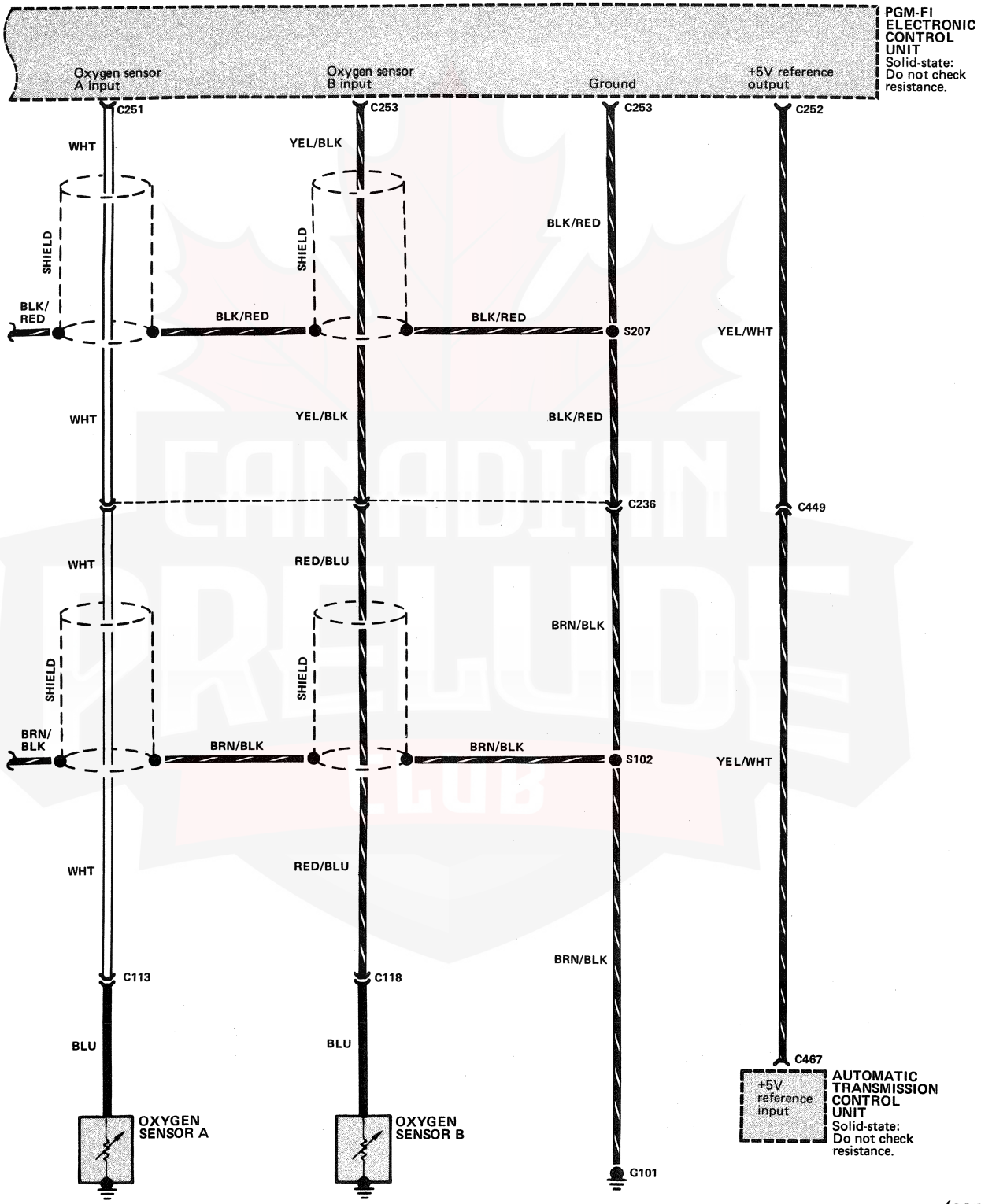


(cont'd)

PGM-FI: 2.0 Si

Circuit Schematic (cont'd)

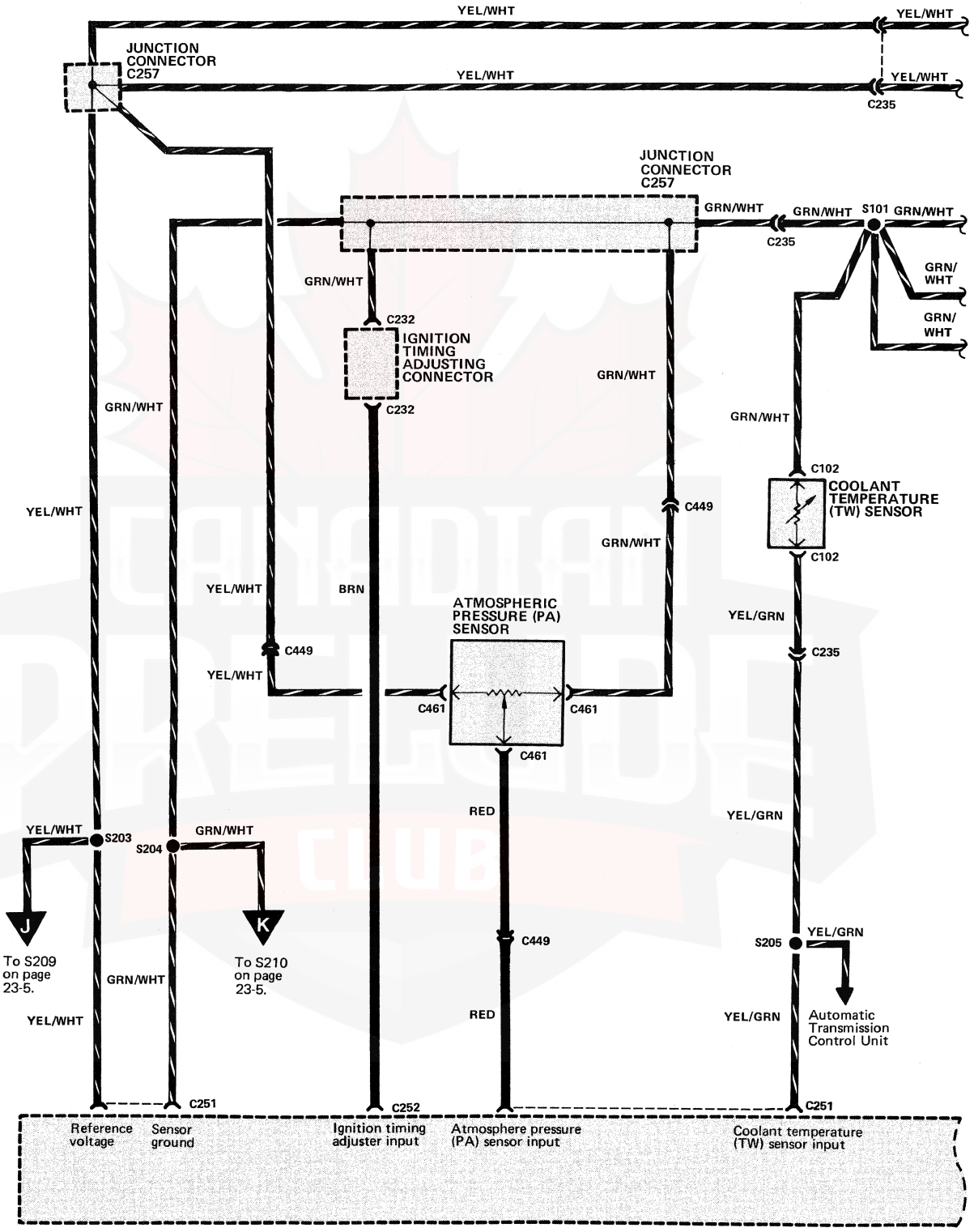


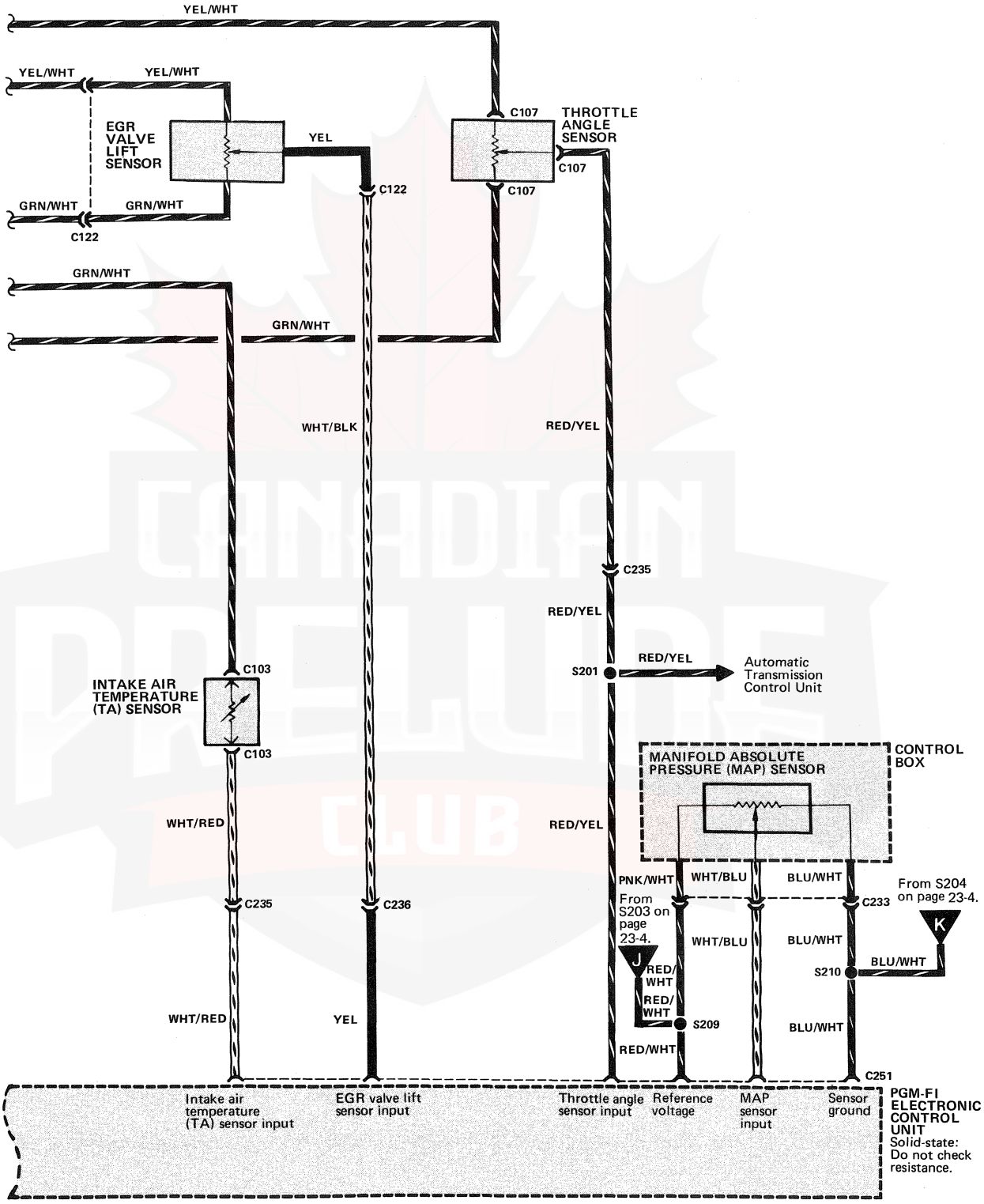


(cont'd)

PGM-FI: 2.0 Si

Circuit Schematic (cont'd)

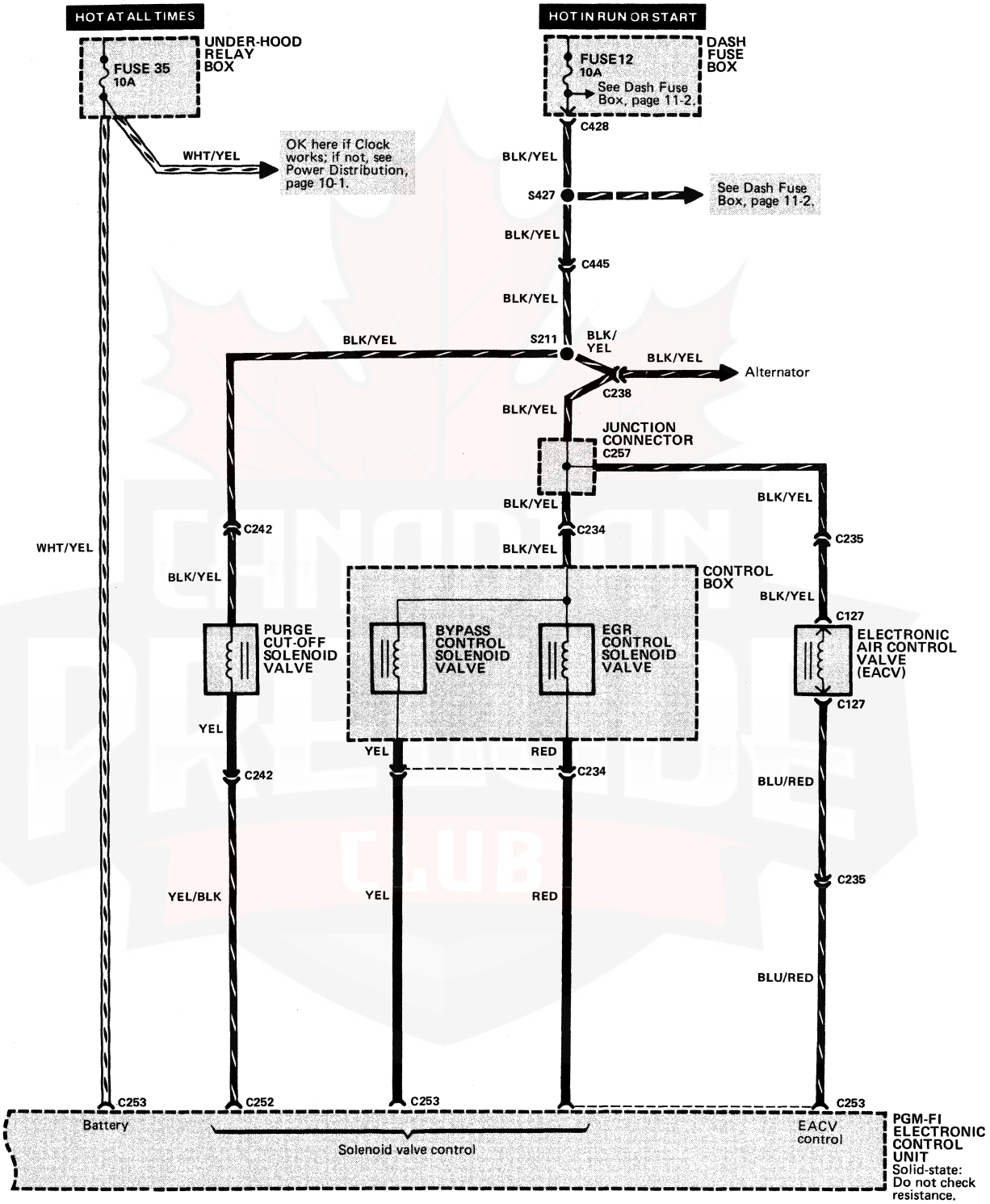




(cont'd)

PGM-FI: 2.0 Si

Circuit Schematic



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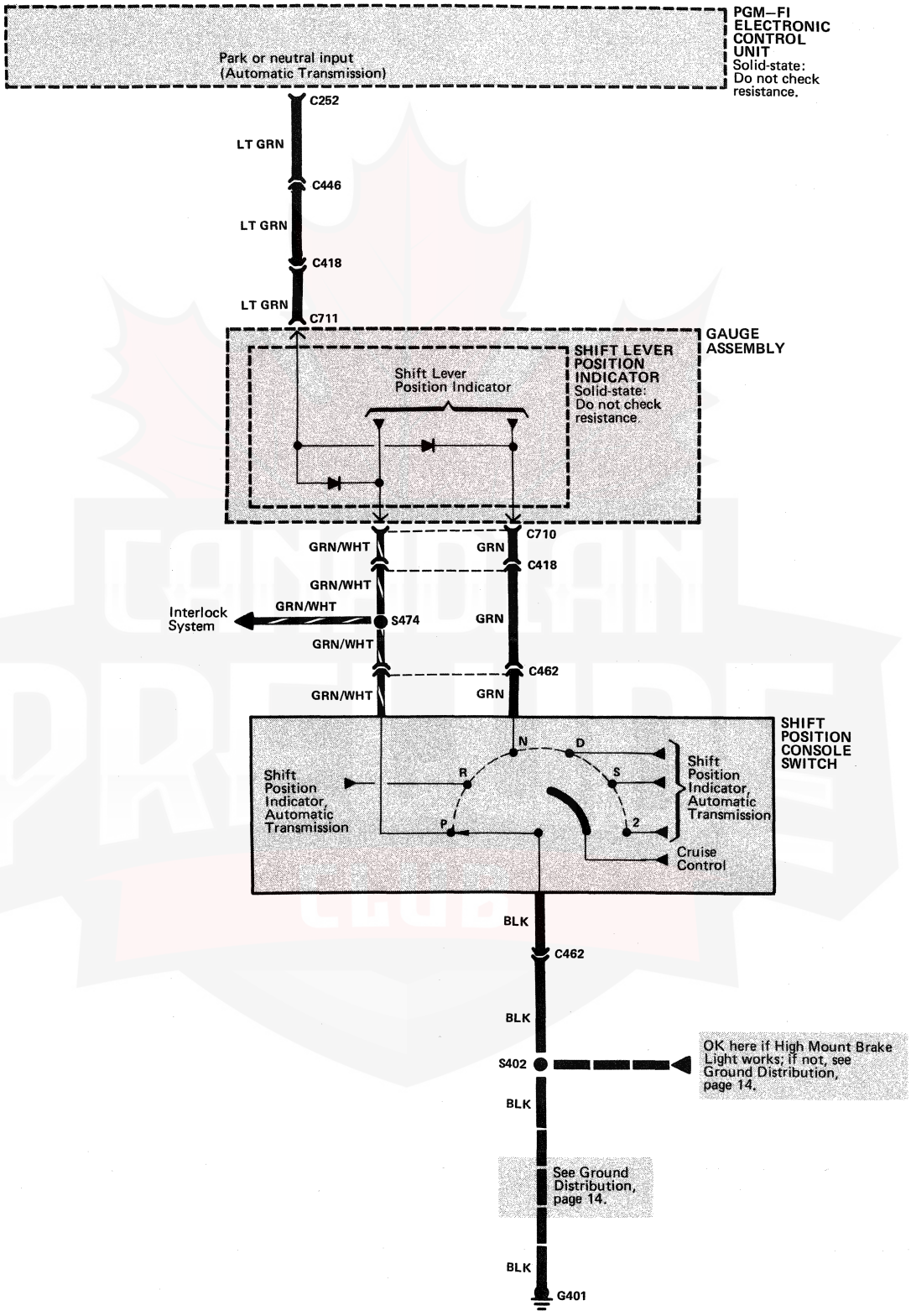
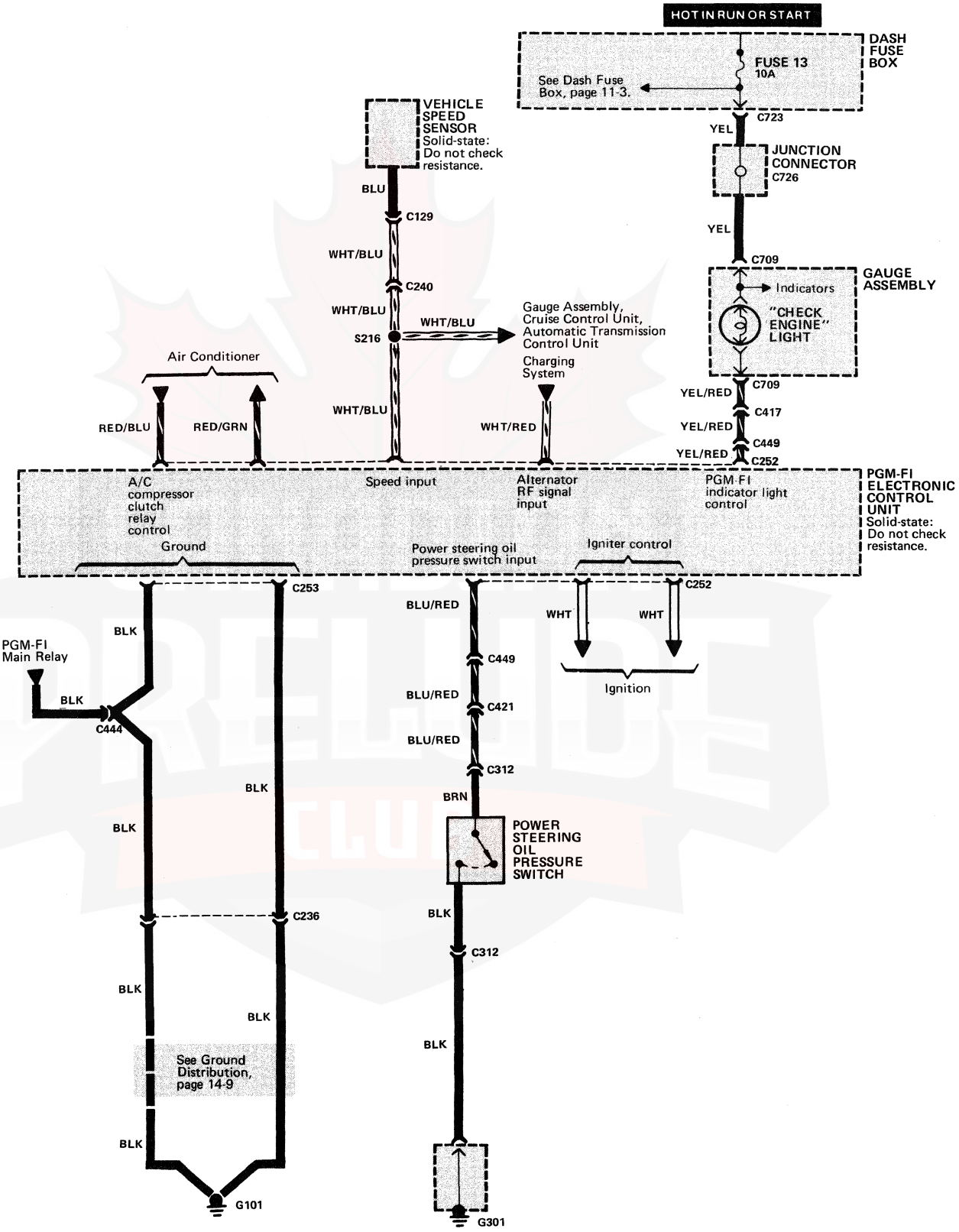


PGM-FI: 2.0 Si

Circuit Schematic (cont'd)



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

PGM-FI: 2.0 Si

Component Location Index

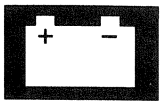
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The PGM-FI system provides the correct air-fuel ratio based on engine speed and absolute pressure in the manifold.

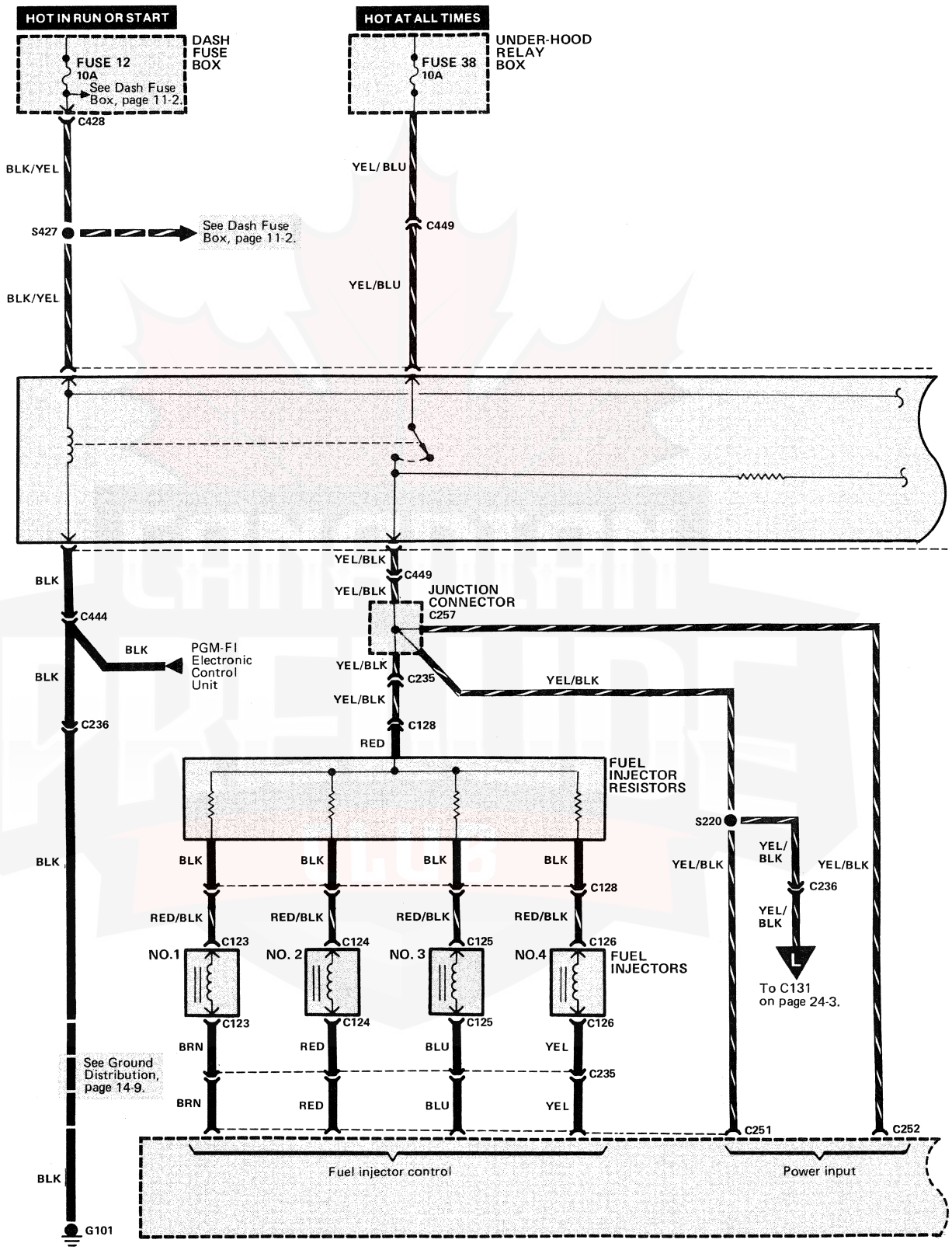
The electronic control unit and various sensors provide extremely accurate control of air-fuel mixture under all operating conditions. At the precise time a piston is on the intake stroke, fuel is injected into the correct intake manifold runner.

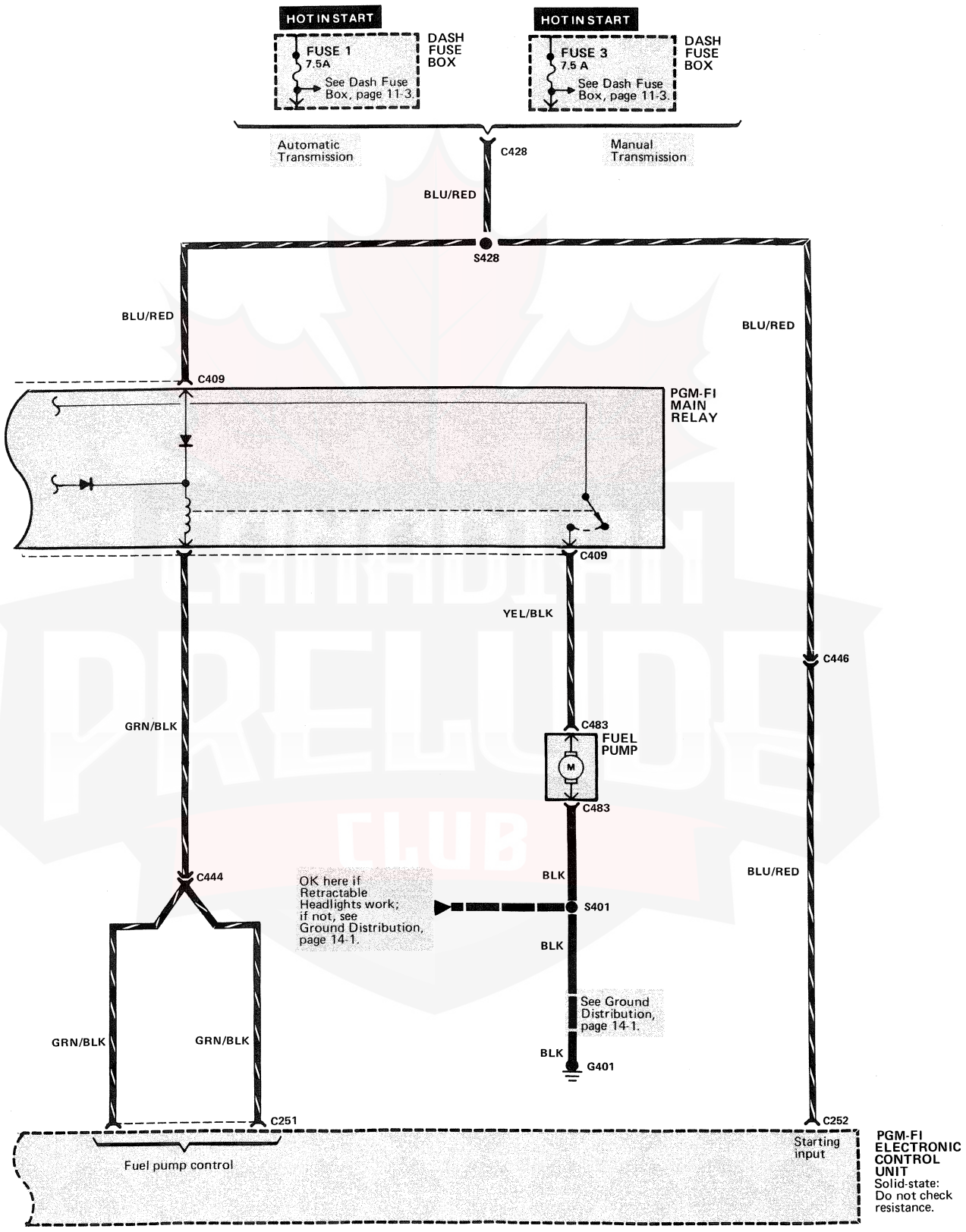
See Section 11 of the Service Manual for circuit description and troubleshooting procedures.



PGM-FI: 2.1 Si, ABS, 4WS

Circuit Schematic

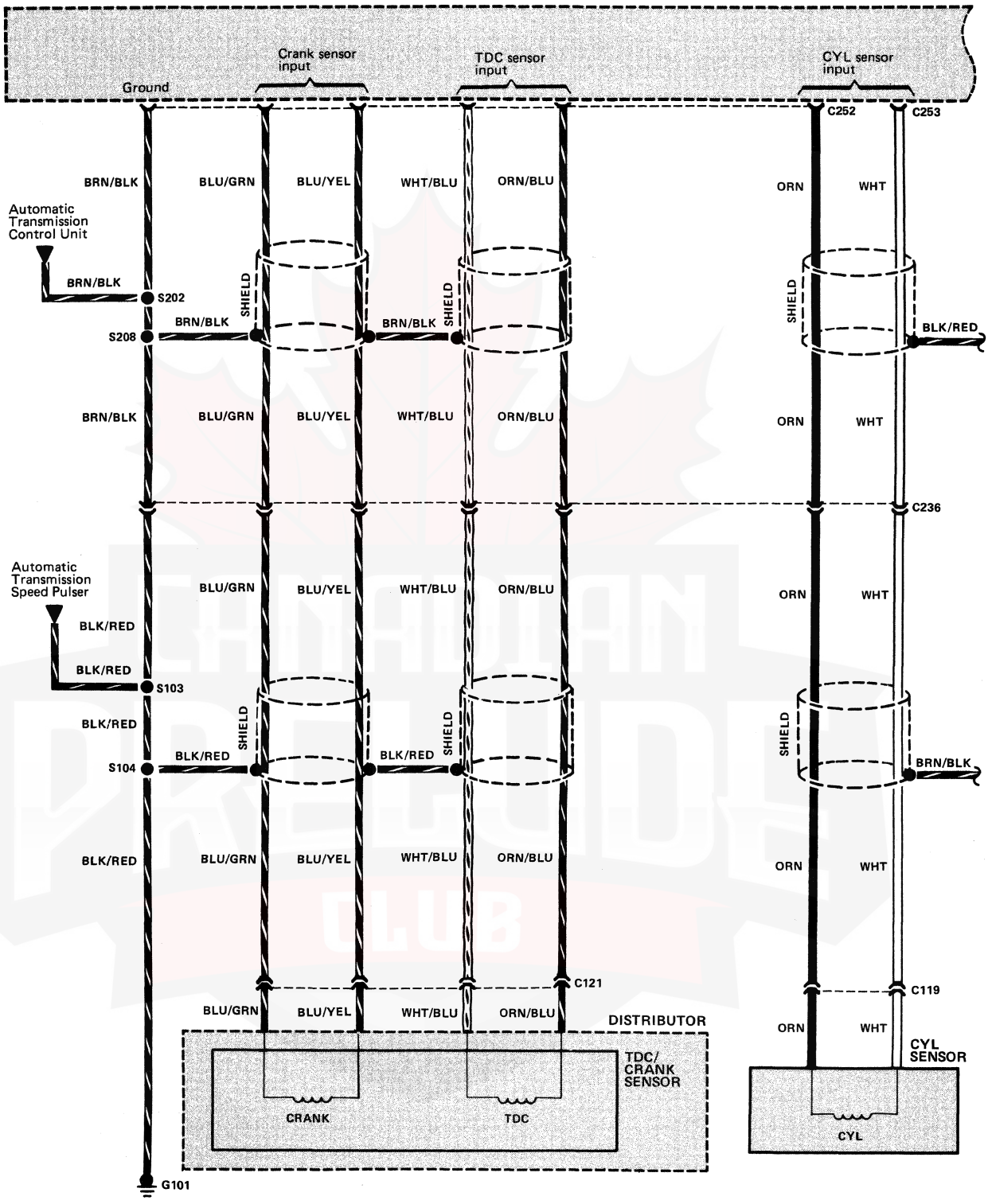


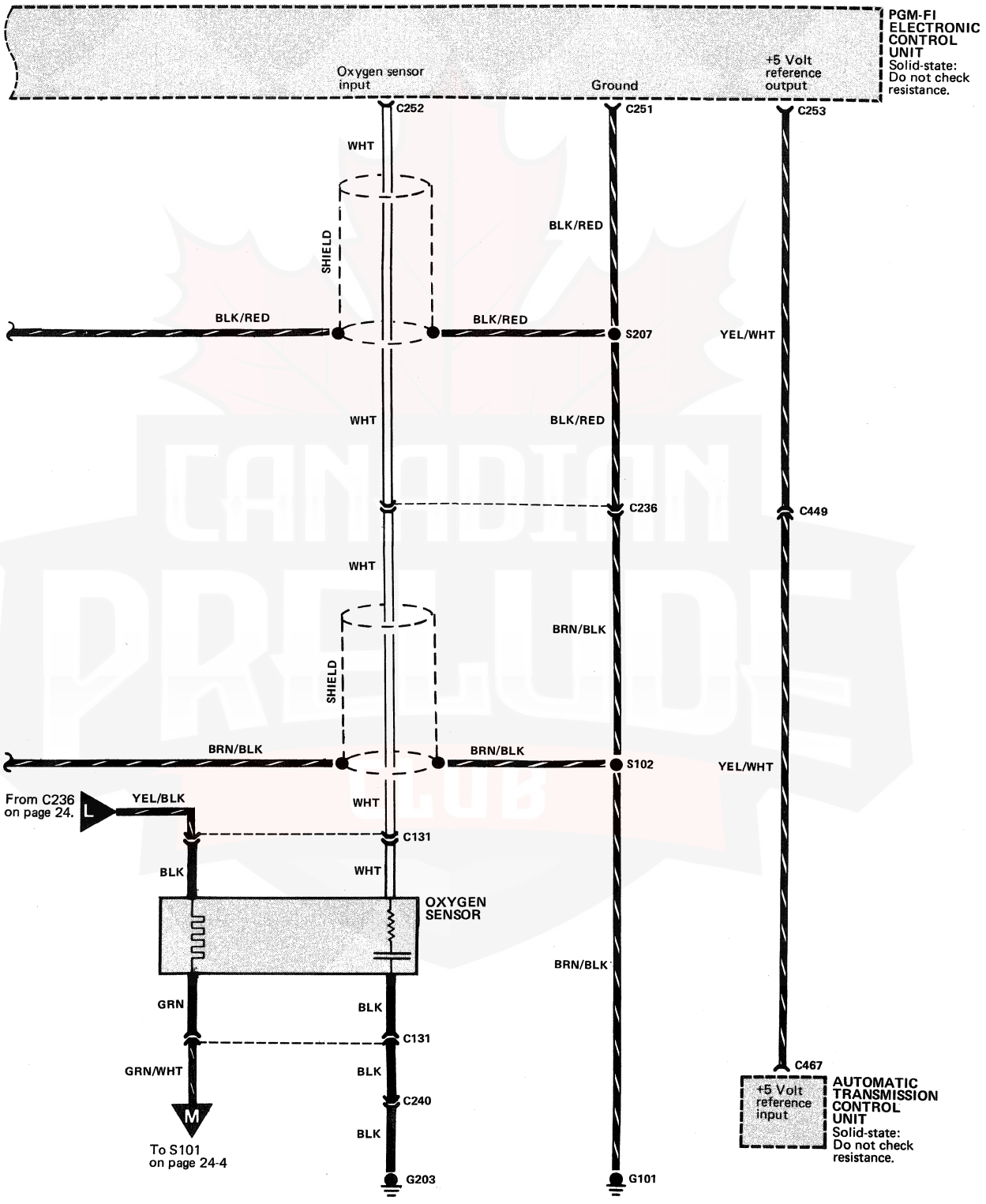


(cont'd)

PGM-FI: 2.1 Si, ABS, 4WS

Circuit Schematic (cont'd)

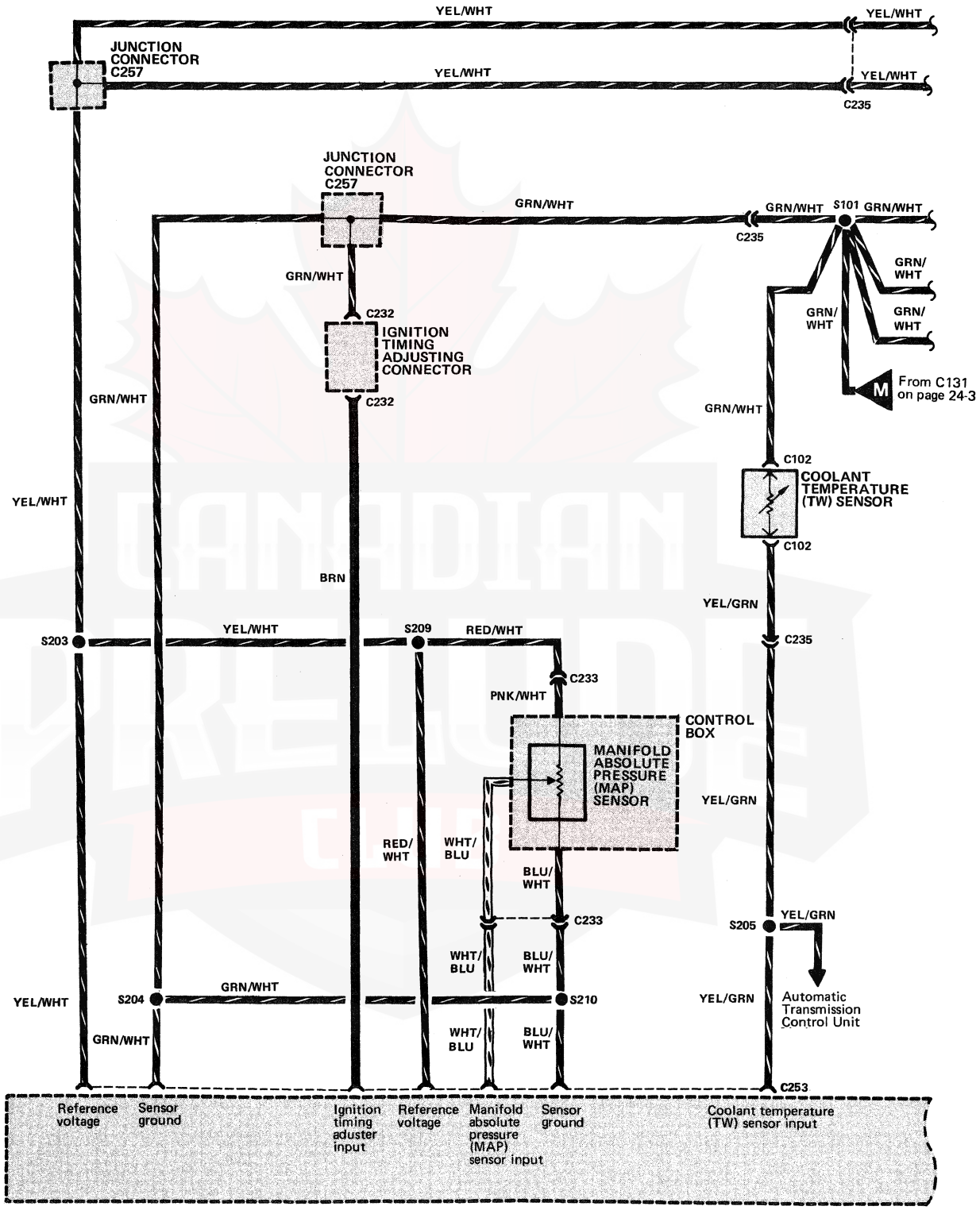


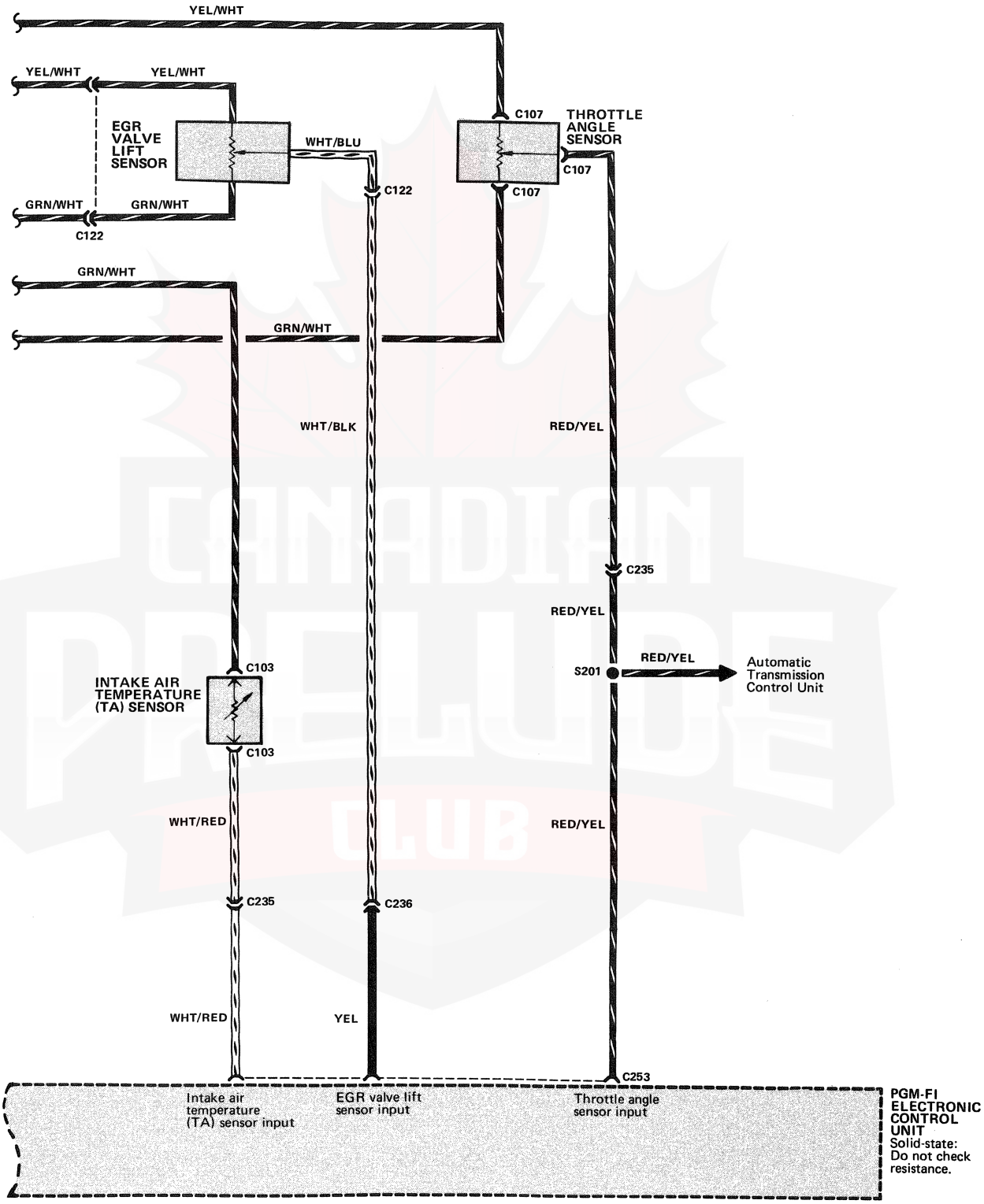


(cont'd)

PGM-FI: 2.1 Si, ABS, 4WS

Circuit Schematic (cont'd)

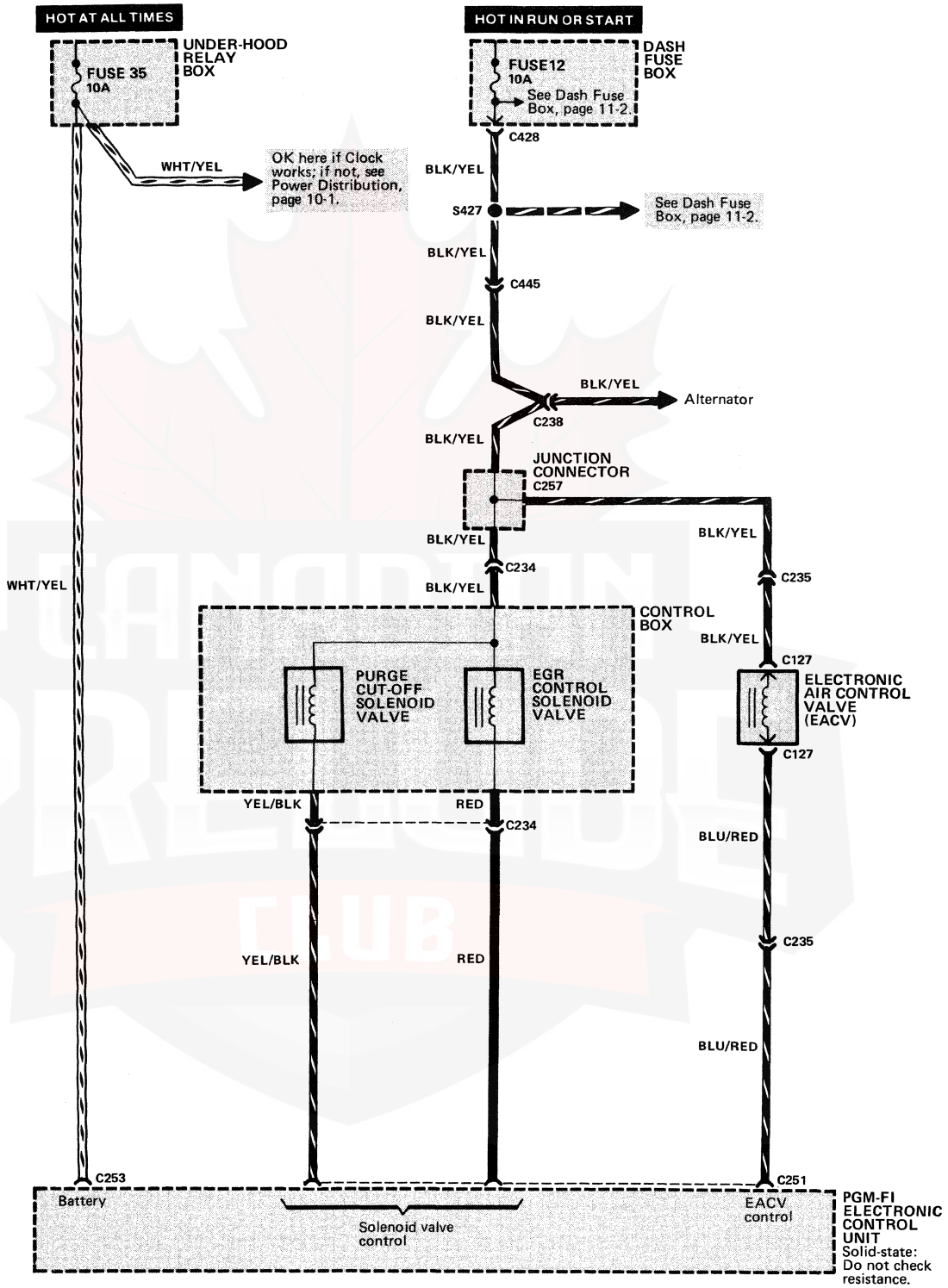


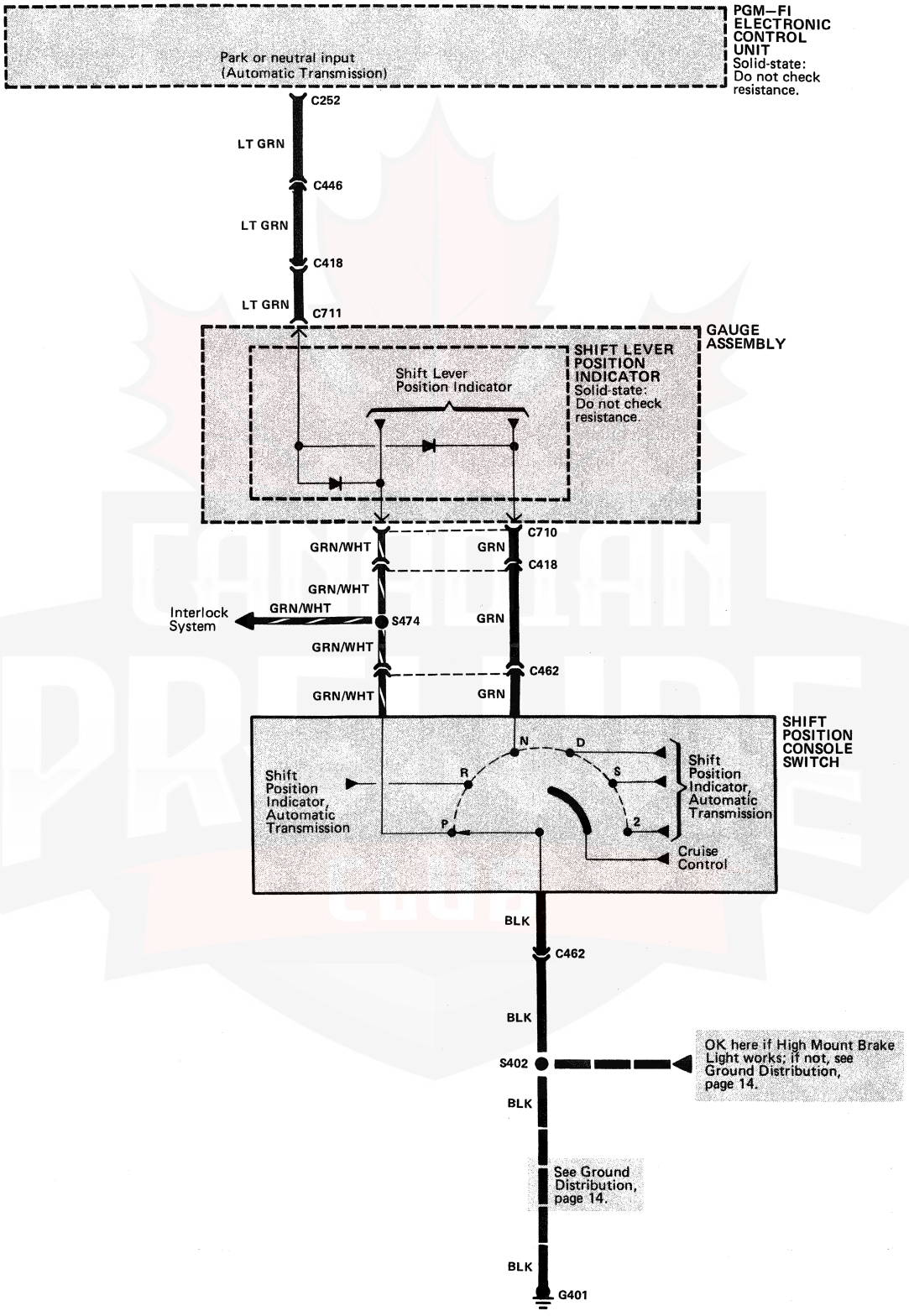


(cont'd)

PGM-FI: 2.1 Si, ABS, 4WS

Circuit Schematic

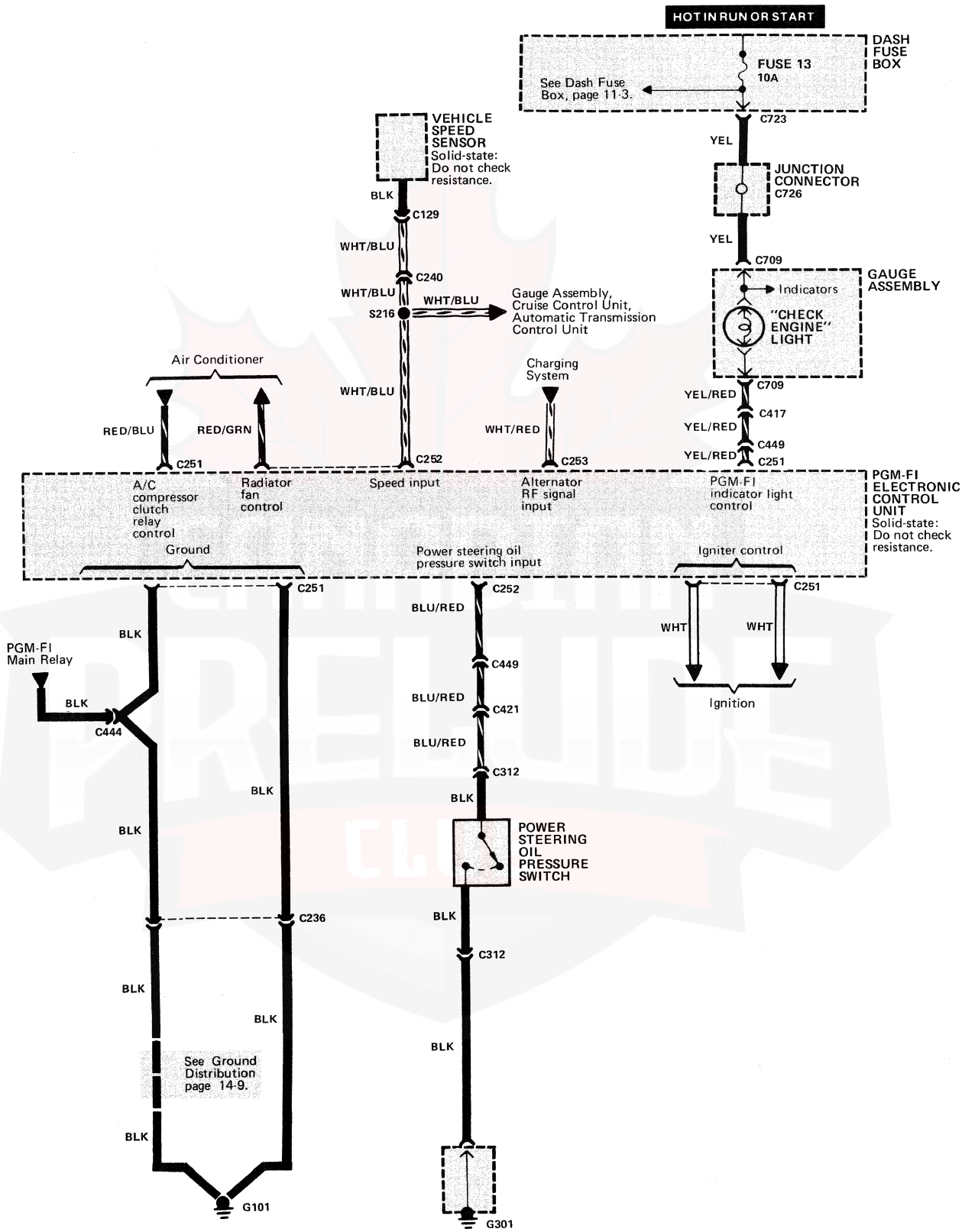




(cont'd)

PGM-FI: 2.1 Si, ABS, 4WS

Circuit Schematic (cont'd)



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

PGM-FI: 2.1 Si, ALB, 4WS

Component Location Index

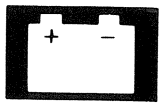
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The PGM-FI system provides the correct air-fuel ratio based on engine speed and absolute pressure in the manifold.

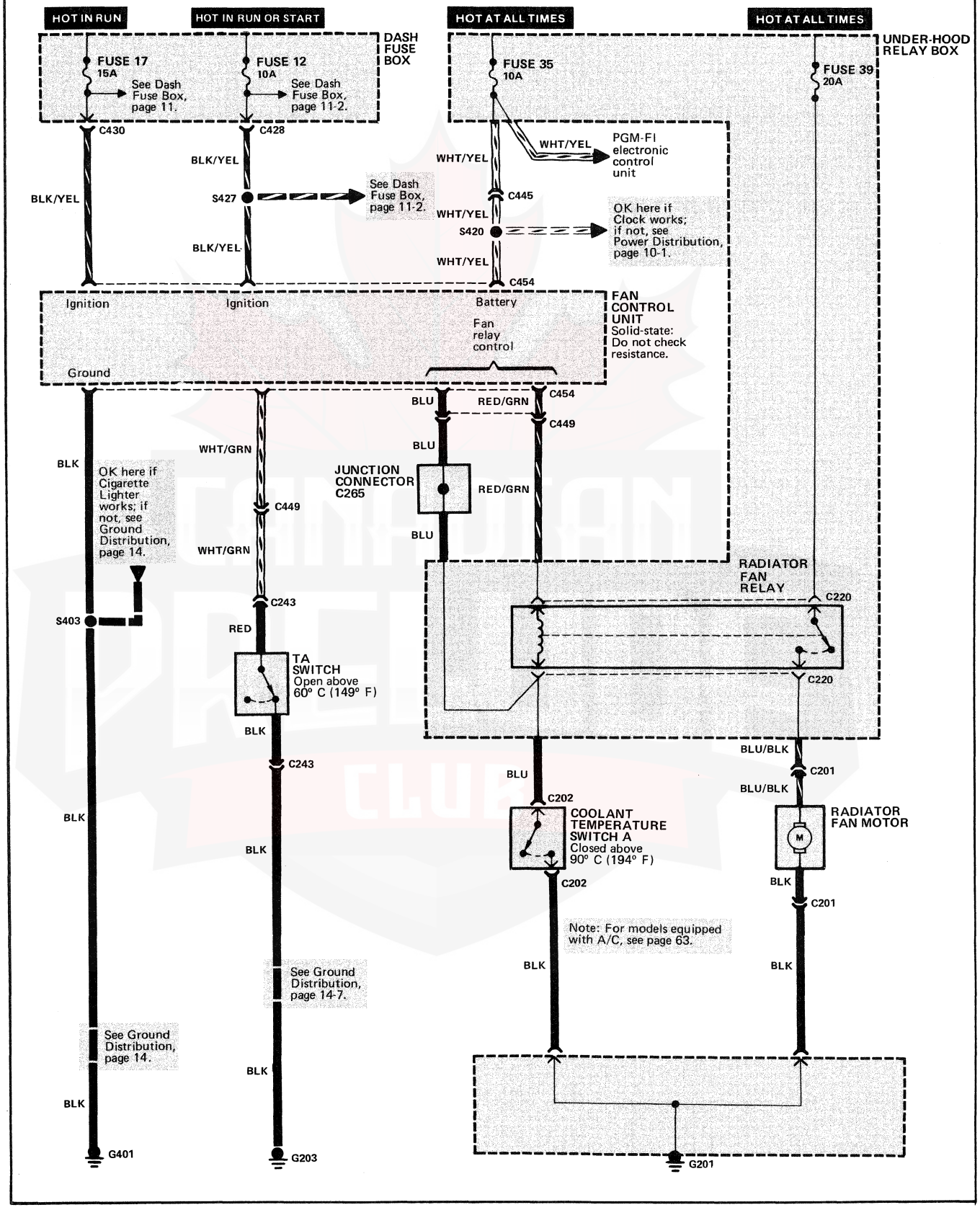
The electronic control unit and various sensors provide extremely accurate control of air-fuel mixture under all operating conditions. At the precise time a piston is on the intake stroke, fuel is injected into the correct intake manifold runner.

See Section 11 of the Service Manual for circuit description and troubleshooting procedures.



Radiator Fan: Without A/C

Circuit Schematic



Component Location Index

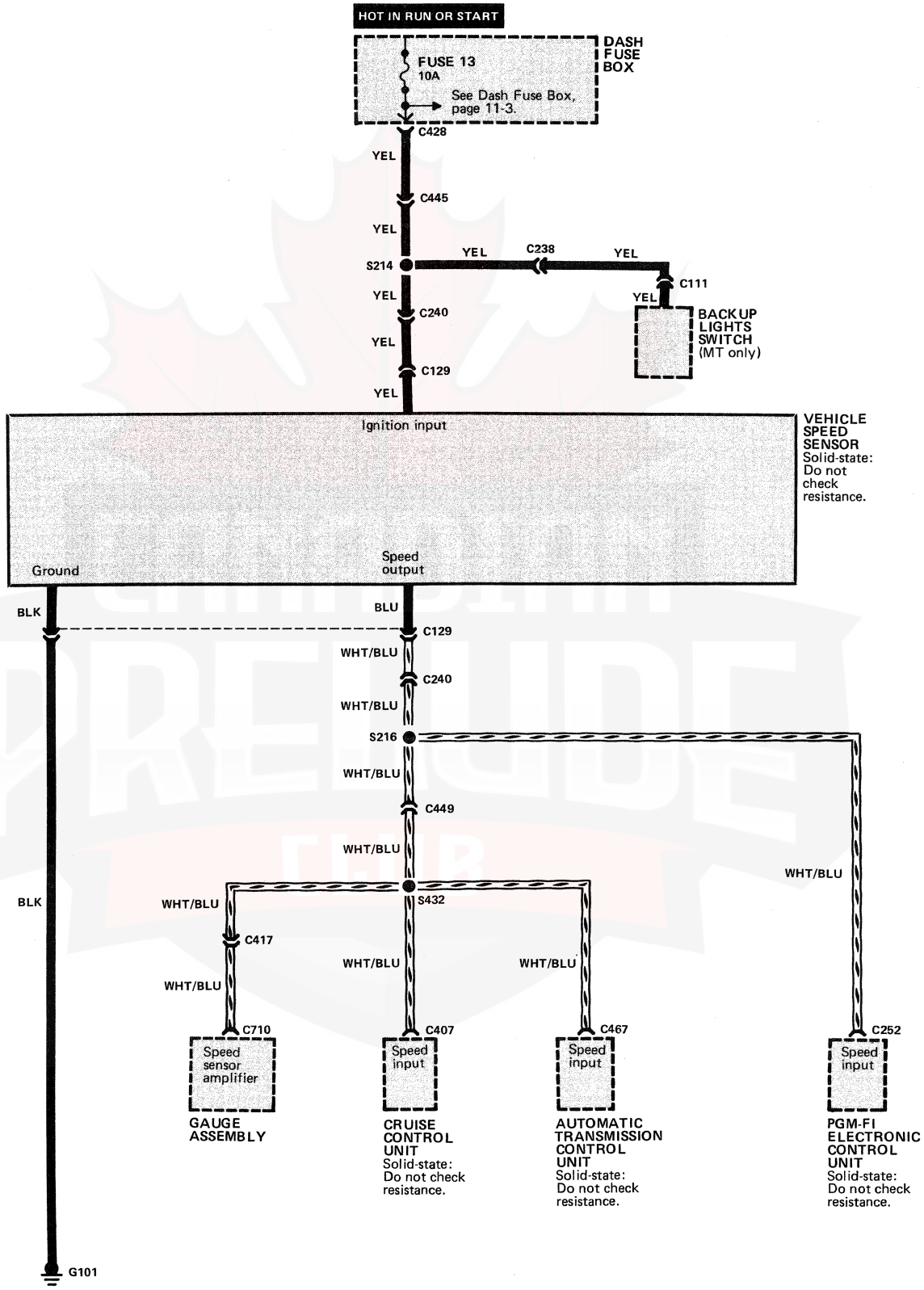
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The fan timer unit operates the radiator fan according to the temperature of the engine coolant. The fan is turned on when the coolant temperature rises above 194°F (90°C) and is turned off when the coolant temperature falls below 181°F (83°C). If the engine coolant temperature is above 226°F (108°C) when the ignition is turned off, the fan timer will run the condenser fan for a maximum of 15 minutes or until the engine coolant temperature drops to 214°F (101°C). The fan timer unit controls the fan by operating the radiator fan relay. Closure of coolant temperature switch A initiates the operation of the fan at 194°F (90°C). Opening the TA switch initiates operation of the radiator fan at ignition turn-off.

Speed Sensor

Circuit Schematic



Component Location Index

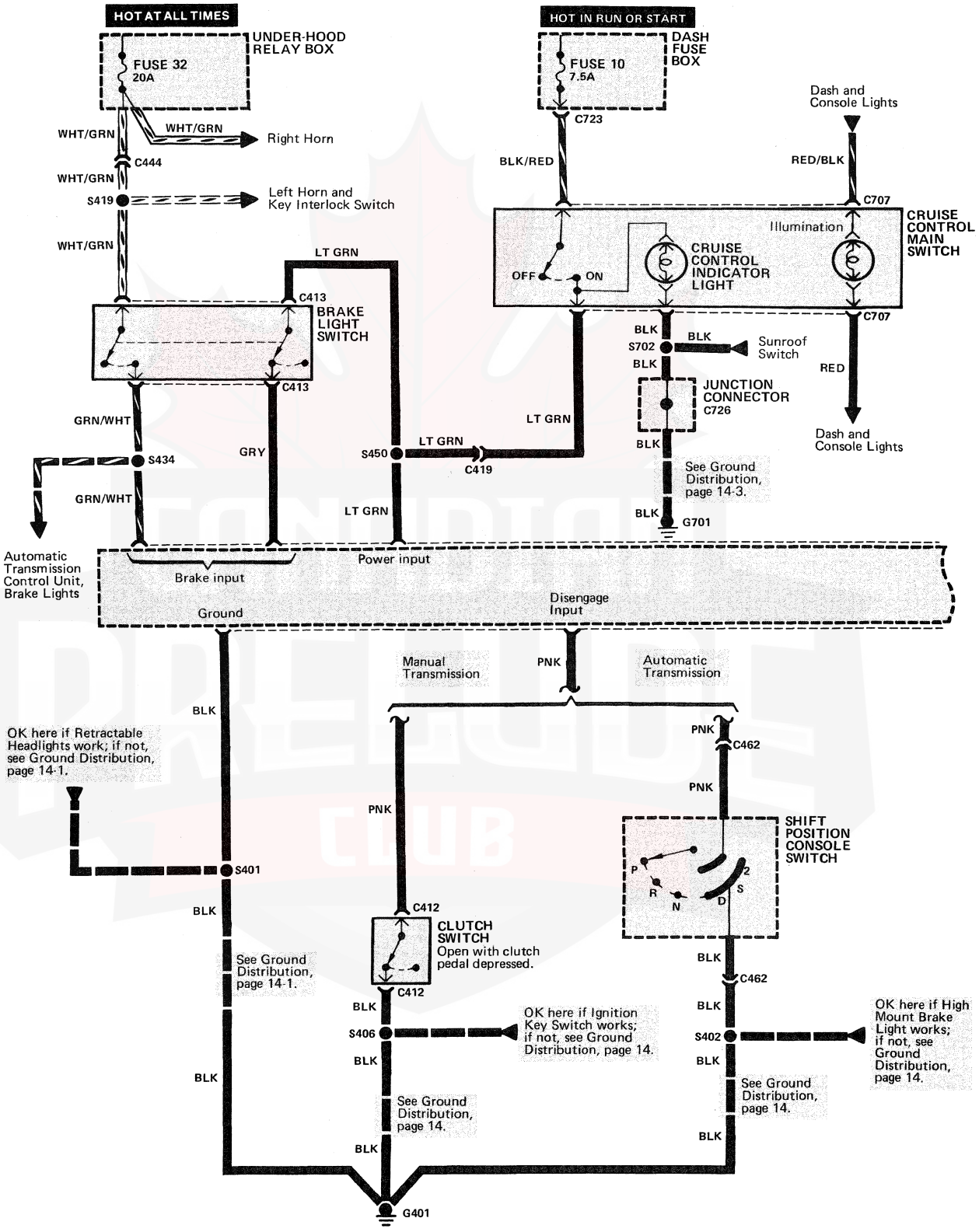
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

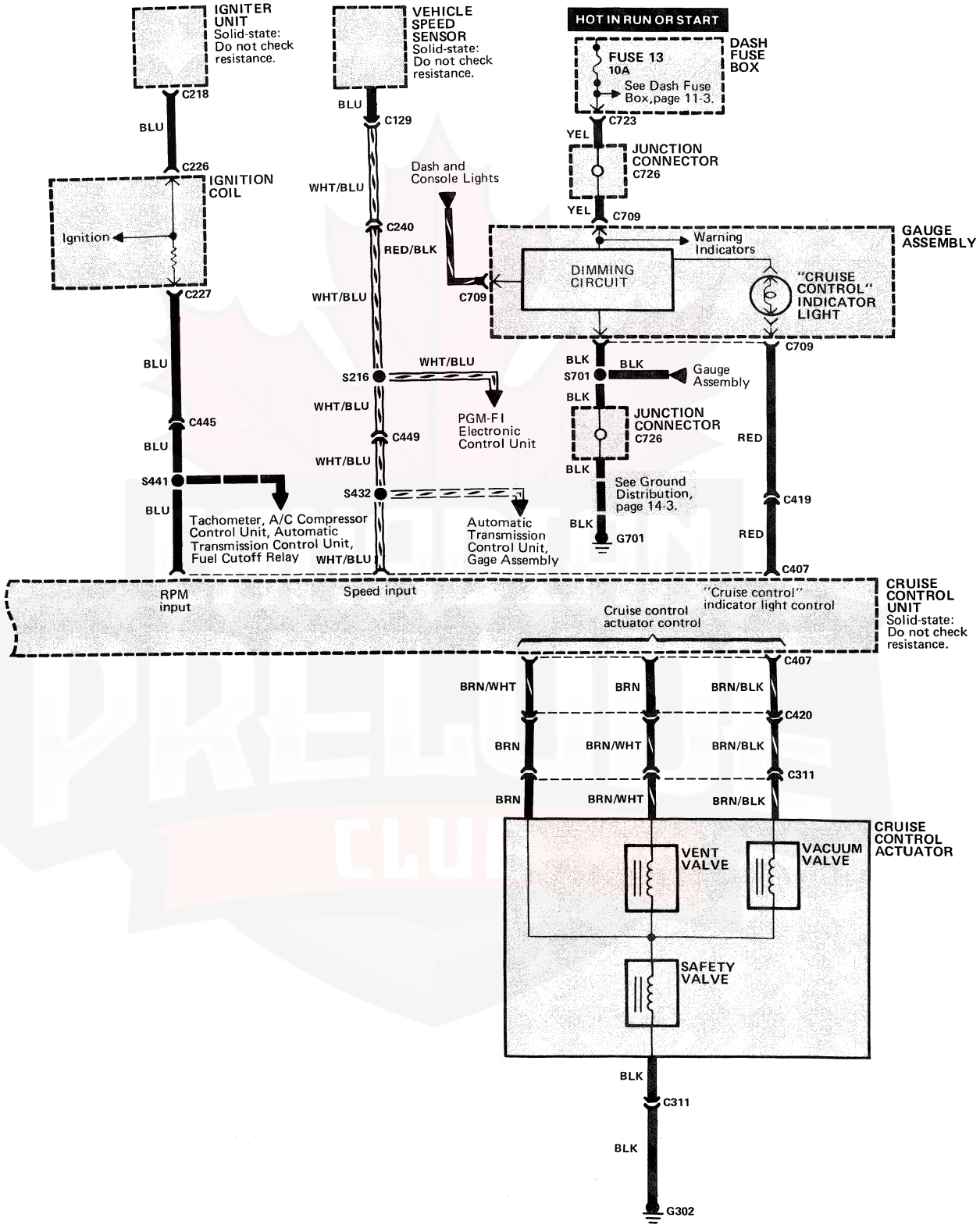
How The Circuit Works

The speed sensor generates a signal that indicates the speed of the car. This signal is then used by each control unit to perform the necessary functions required by each circuit.

Cruise Control

Circuit Schematic

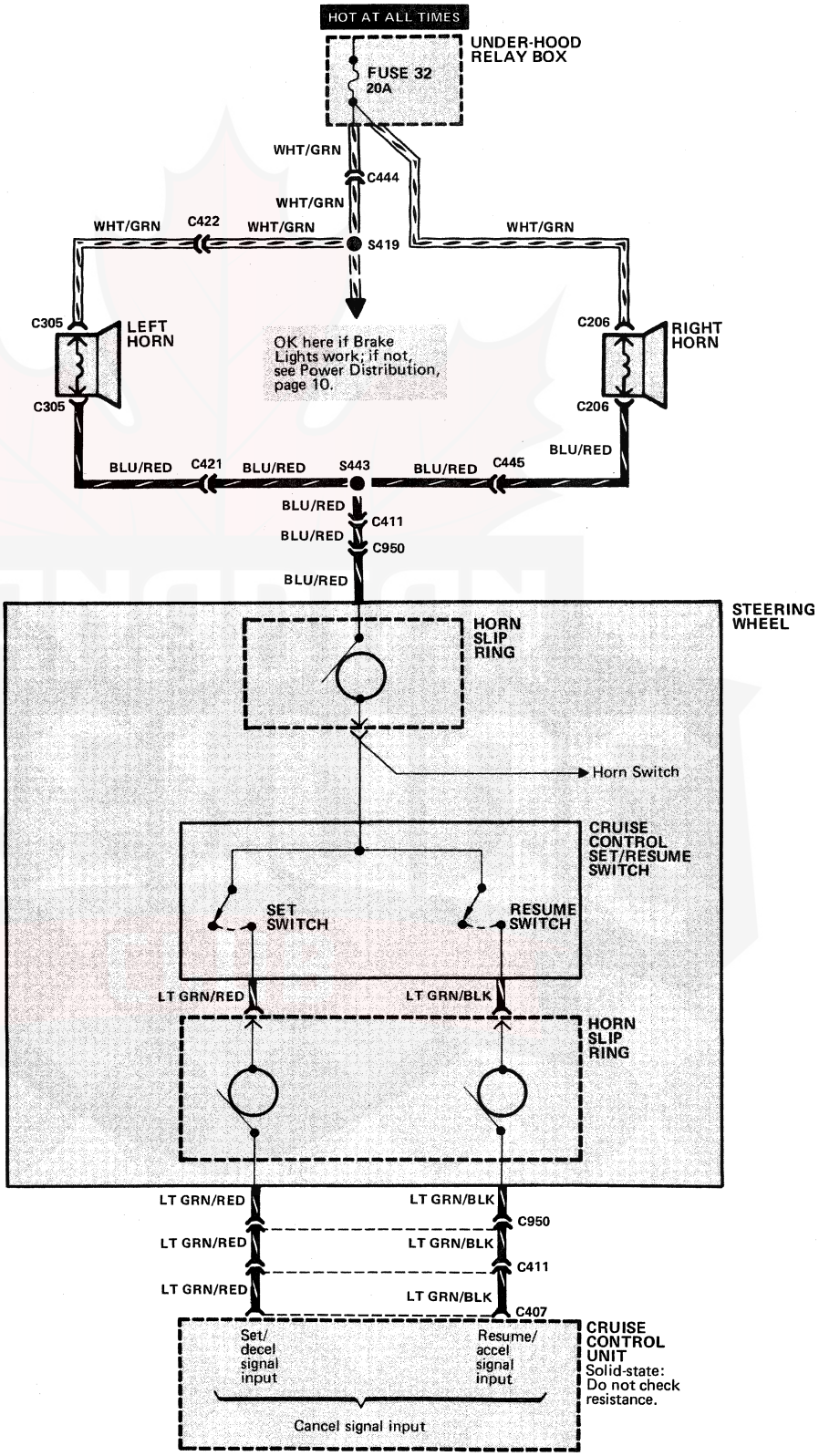


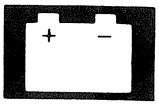


(cont'd)

Cruise Control

Circuit Schematic (cont'd)





Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

Cruise Control

How The Circuit Works

The cruise control system uses mechanical, electrical, and vacuum operated devices to maintain vehicle speed at a setting selected by the driver.

System Description

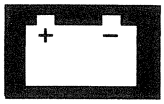
The cruise control unit receives command signals from the cruise control main switch and the cruise control set/resume switch. The cruise control unit receives information about operating conditions from the brake switch, the distributor, the speed sensor, the clutch switch (manual transmission), or the shift position console switch (automatic transmission). The cruise control unit sends operational signals to the cruise control actuator valves that regulate the throttle position. The throttle position maintains the selected vehicle speed. The control unit compares the actual speed of the vehicle to the selected speed then the control unit uses the result of that comparison to open or close the throttle.

The brake switch releases the system's control of the throttle at the instant the driver depresses the brake pedal. The switch sends an electronic signal to the control unit when the brake pedal is depressed; the control unit responds by allowing the throttle to close. The clutch switch (manual transmission) or the shift position console switch (automatic transmission) sends a disengage signal input to the control unit that also allows the throttle to close.

The cruise control system will set and automatically maintain any speed above 30 mph (45 kph). To set, make sure that the main switch is ON. After reaching the desired speed, press the set switch. The cruise control unit receives a set signal input and, in turn, actuates the cruise control vacuum valves.

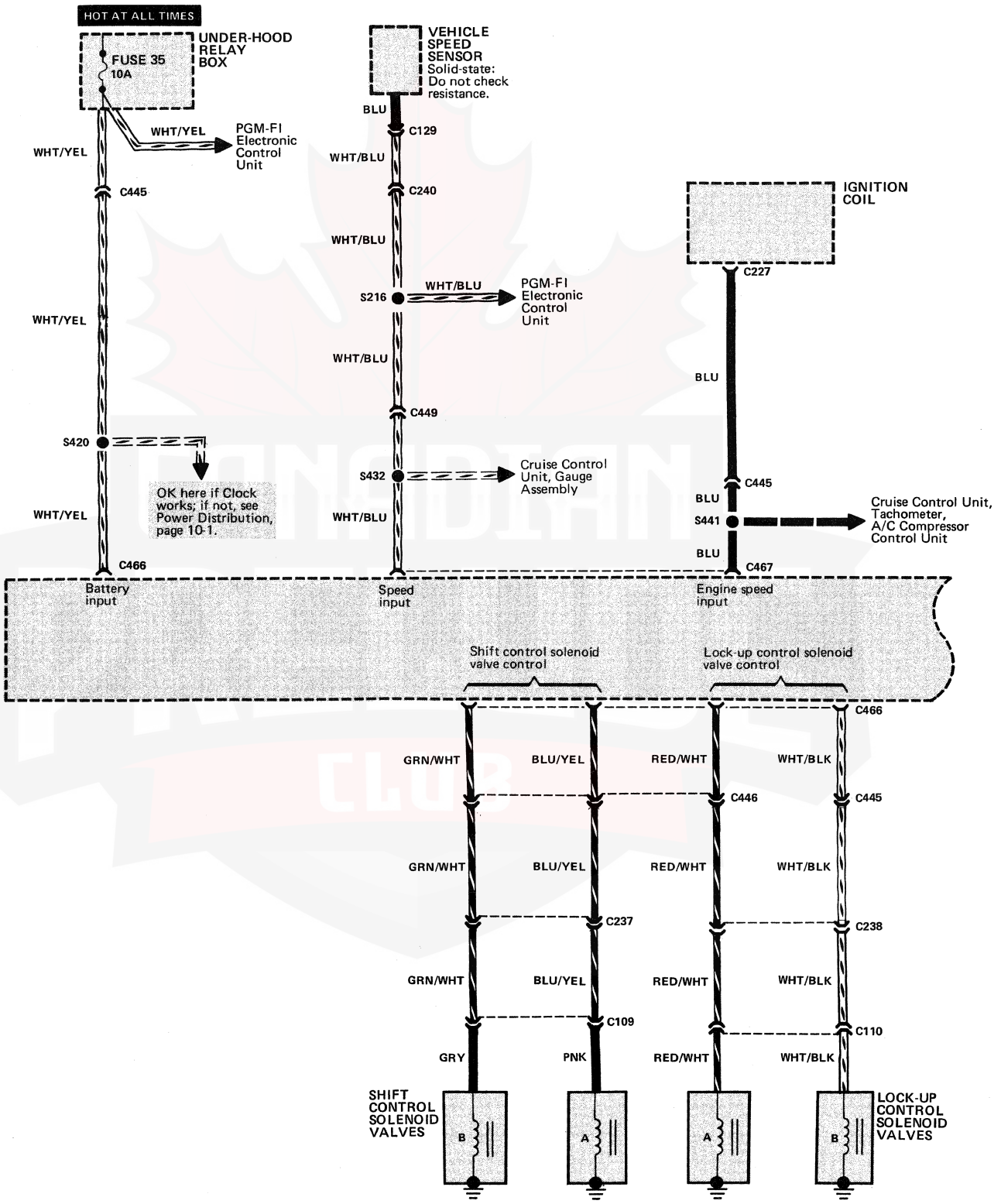
When the set switch is depressed and the cruise control system is on, the "Cruise Control" indicator on the warning display lights up. You can cancel the cruise control system by pushing the main switch off. This removes power to the control unit and erases the set speed from memory. If the system is disengaged temporarily by the brake switch, clutch switch, or shift position console switch and vehicle speed is still above 30 mph, press the resume switch. With the resume switch depressed and the set memory retained, the vehicle automatically returns to the previously set speed.

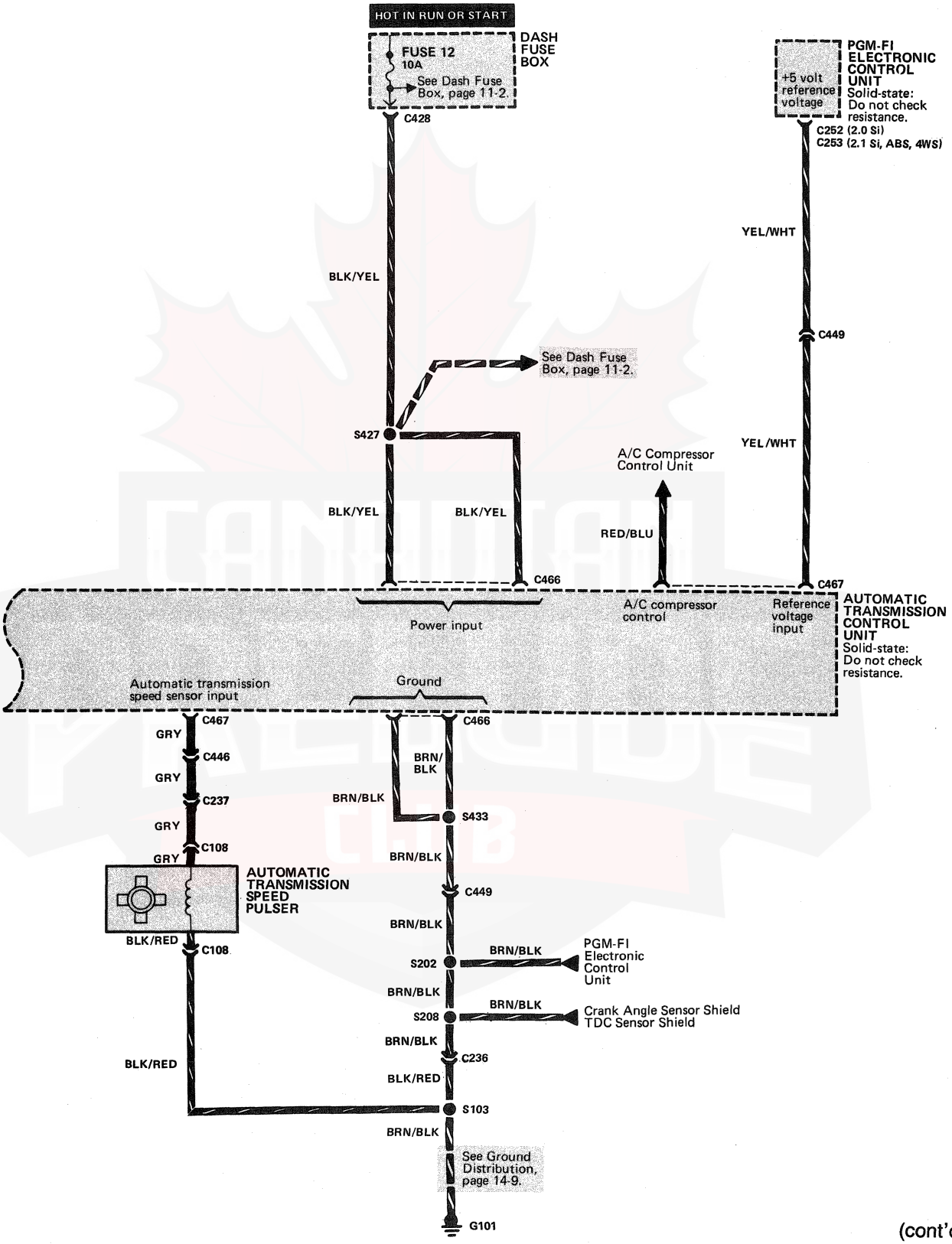
For gradual acceleration without depressing the accelerator pedal, push the resume switch down and hold it there until the desired speed is reached. This will send an acceleration signal input to the control unit. When the switch is released, the system will be reprogrammed for the new speed. To slow the vehicle down, depress the set switch. This sends a deceleration signal input to the control unit, causing the vehicle to coast until the desired speed is reached. When the desired speed is reached, release the set switch. This reprograms the system for the new speed.



Automatic Transmission Controls

Circuit Schematic

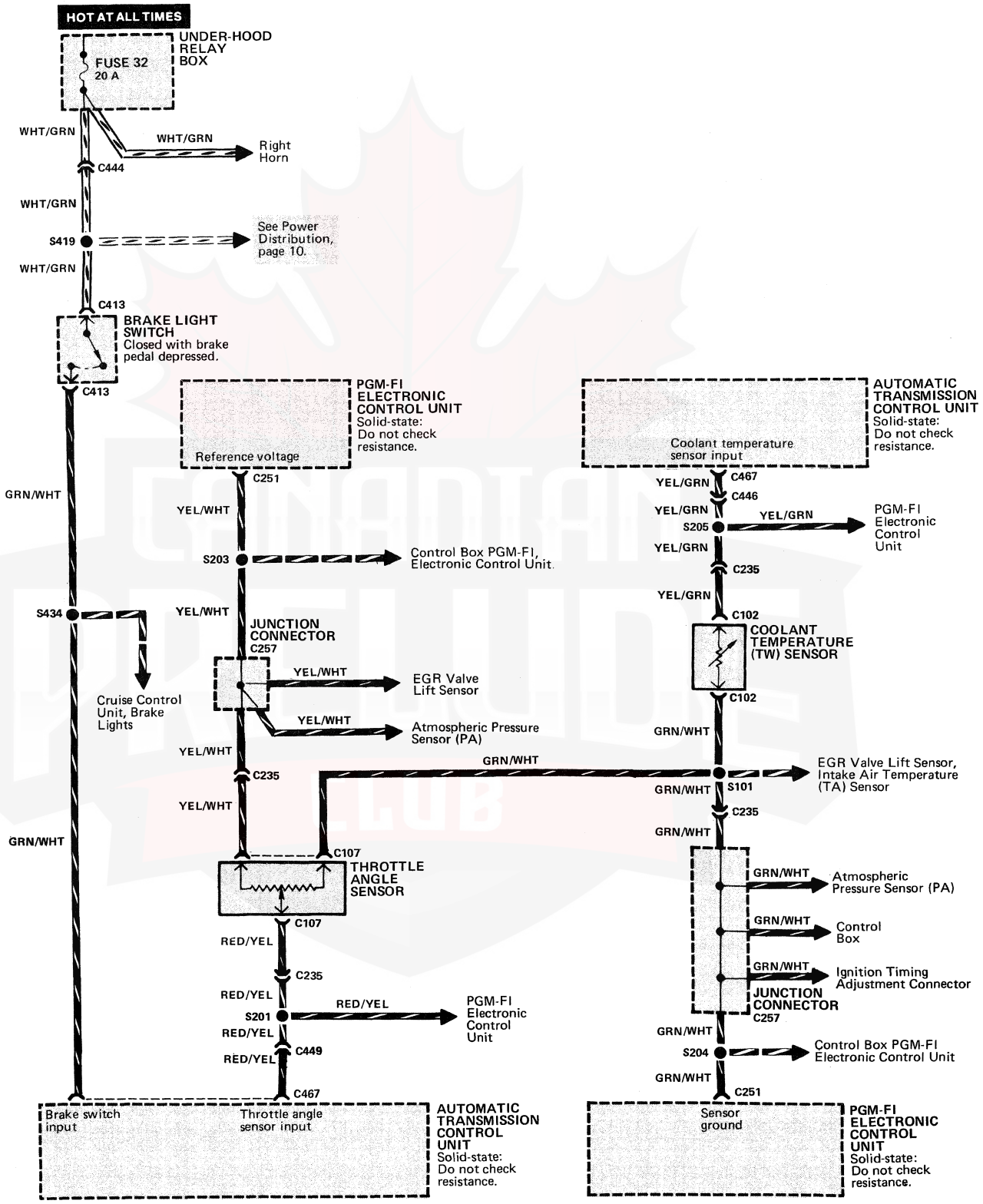


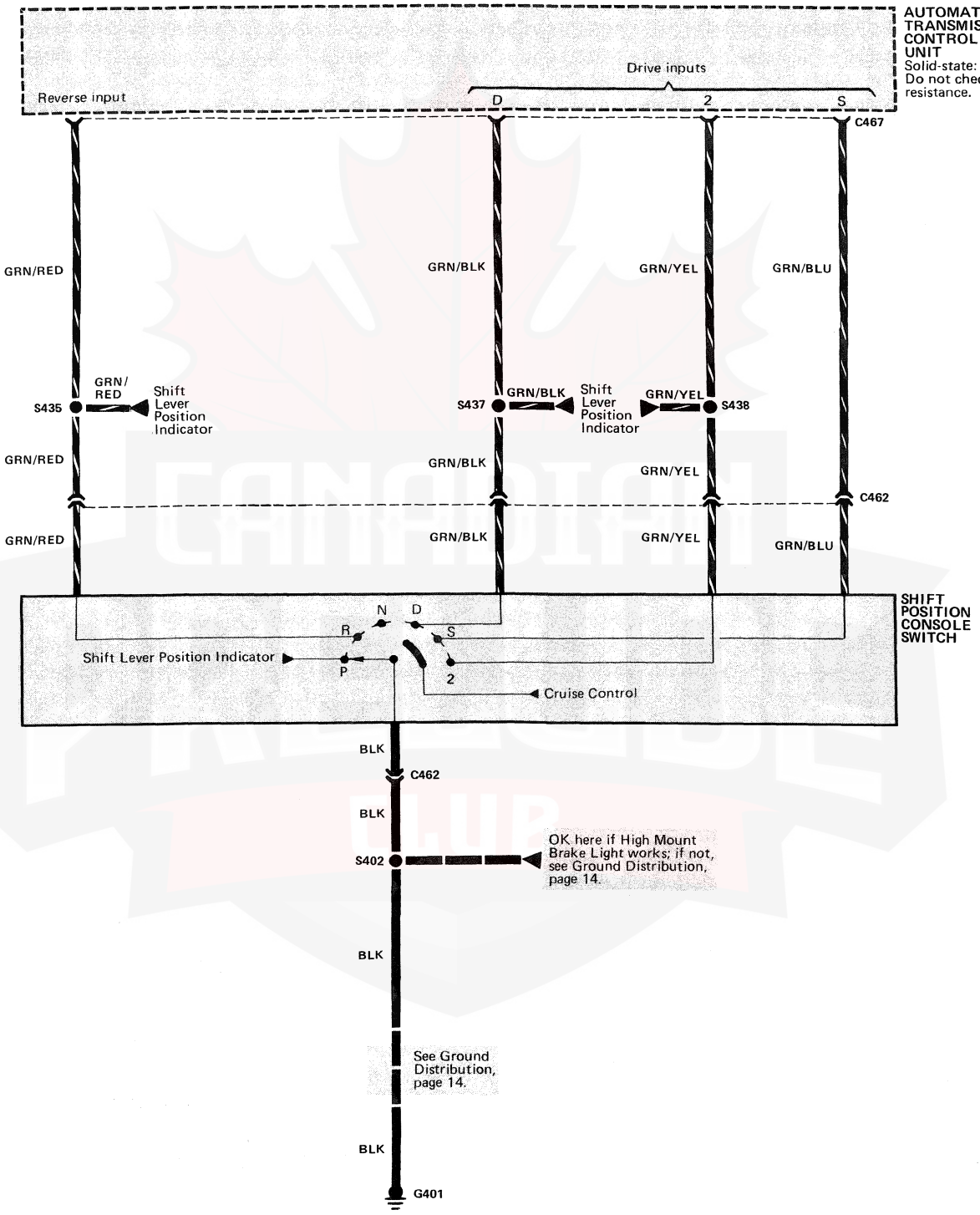


(cont'd)

Automatic Transmission Controls

Circuit Schematic (cont'd)

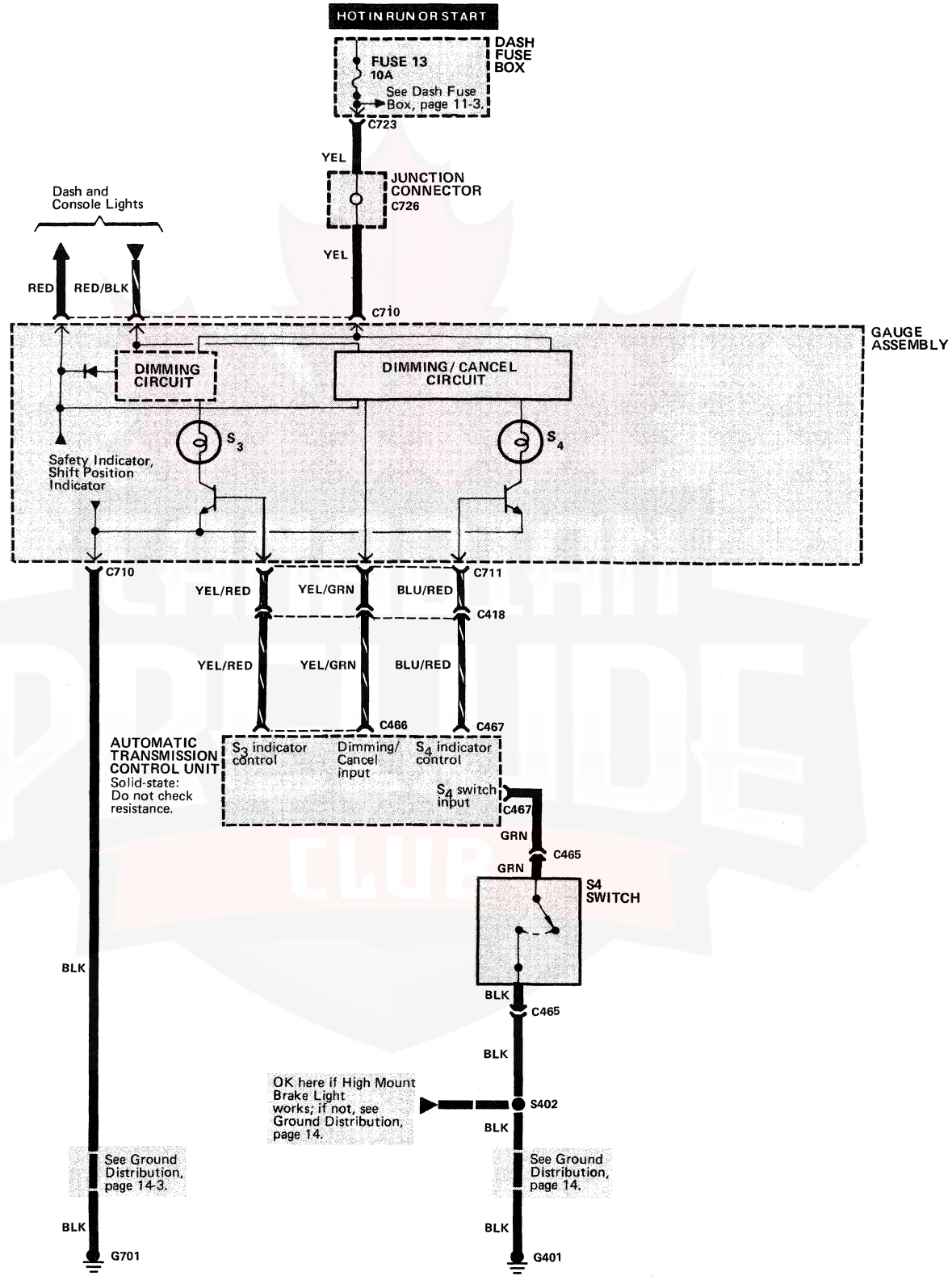




(cont'd)

Automatic Transmission Controls

Circuit Schematic (cont'd)



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

Automatic Transmission Controls

Component Location Index

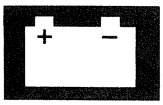
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The automatic transmission is a combination of the element torque converter and a dual-shaft electronically controlled automatic transmission which provides four forward speeds and one reverse speed. The entire unit is positioned in line with the engine.

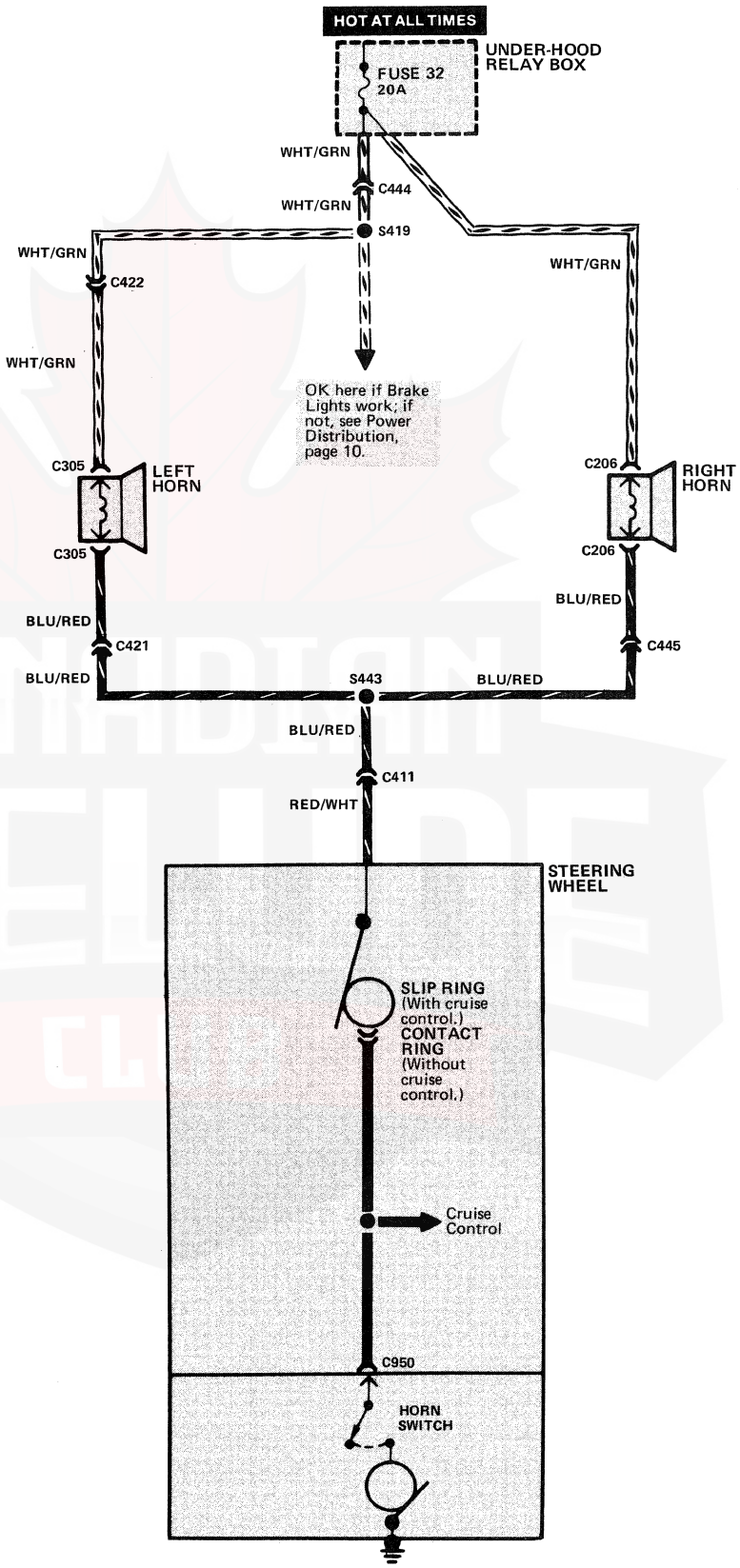
The electronic control system consists of an automatic transmission control unit, sensors, and four solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

See Section 14 of the Service Manual for circuit description and troubleshooting procedures.



Horns

Circuit Schematic



Component Location Index

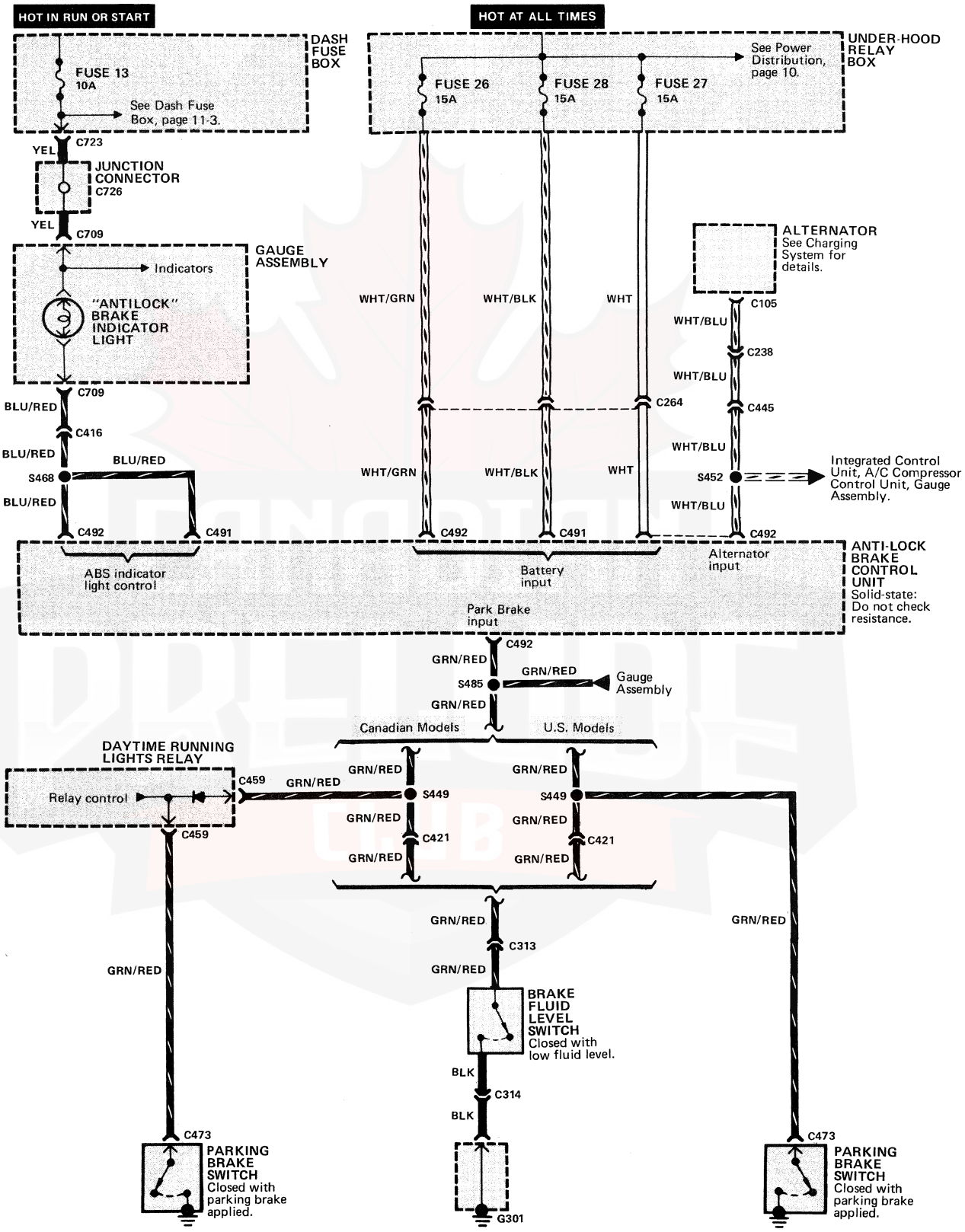
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

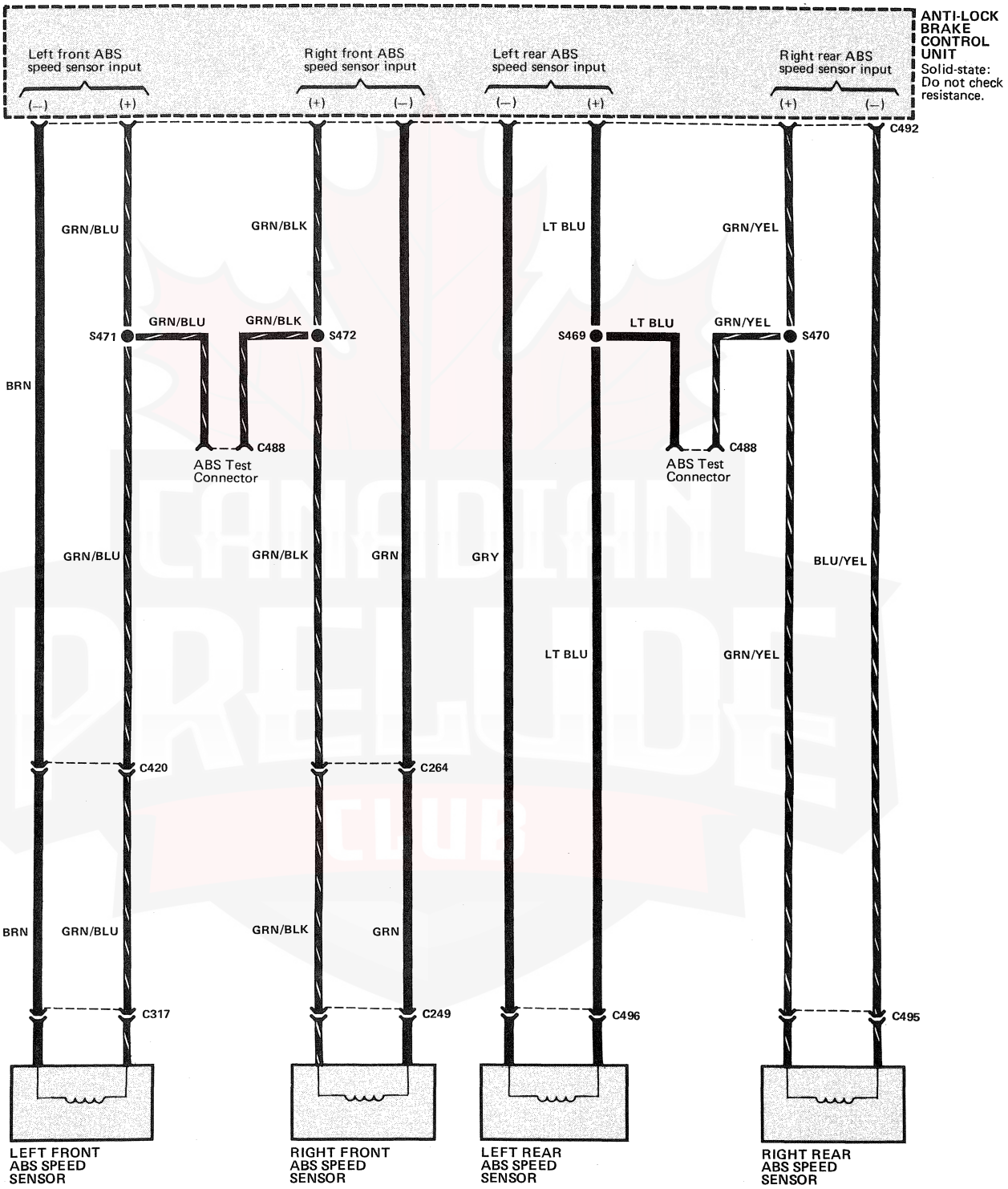
How The Circuit Works

Voltage is applied at all times through fuse 32 to the left and right horns. The circuit continues from the horns to the slip ring or contact ring and to the horn switch. When the horn switch is closed, the circuit path is completed to ground: The horns sound.

Anti-lock Brake System (ABS)

Circuit Schematic

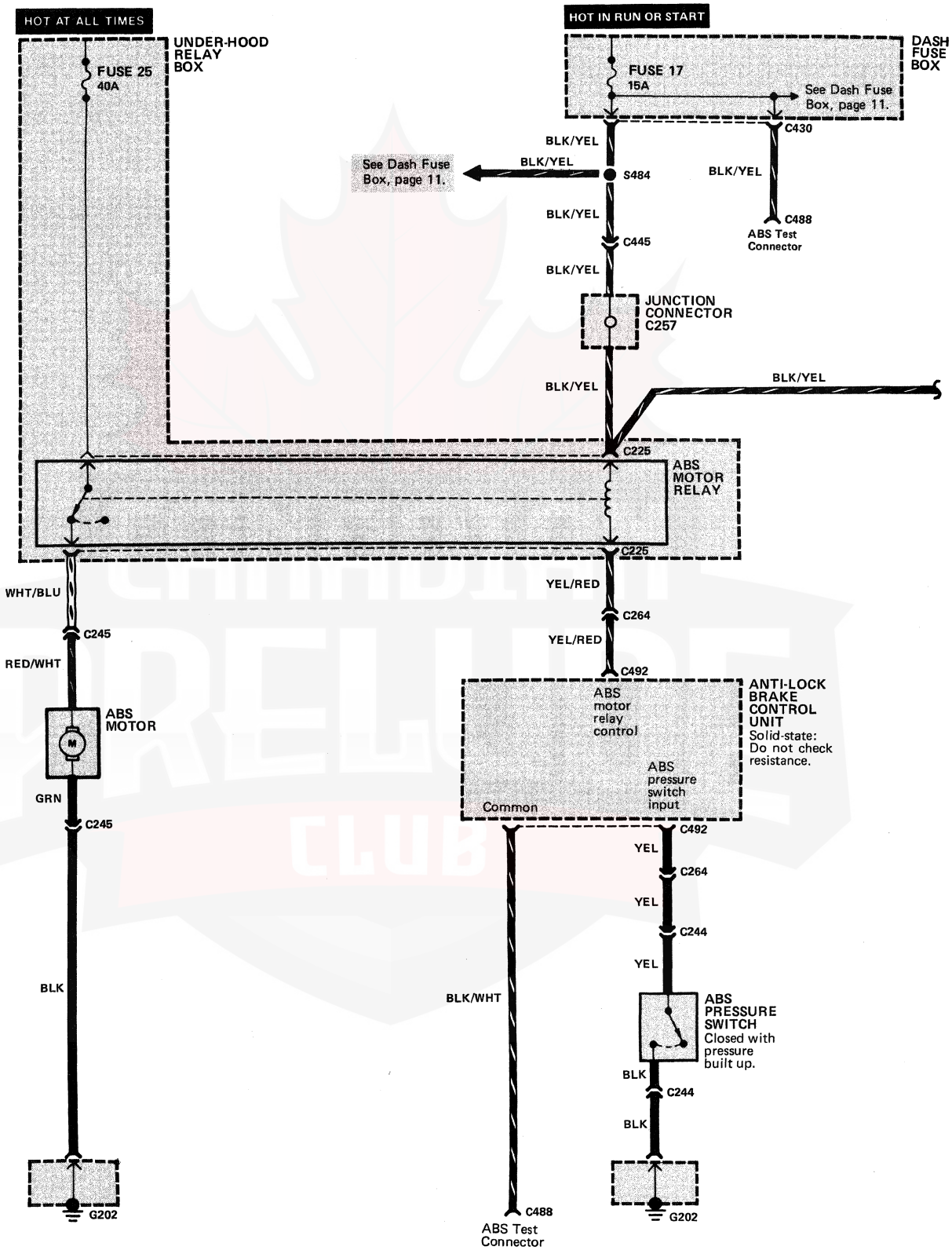


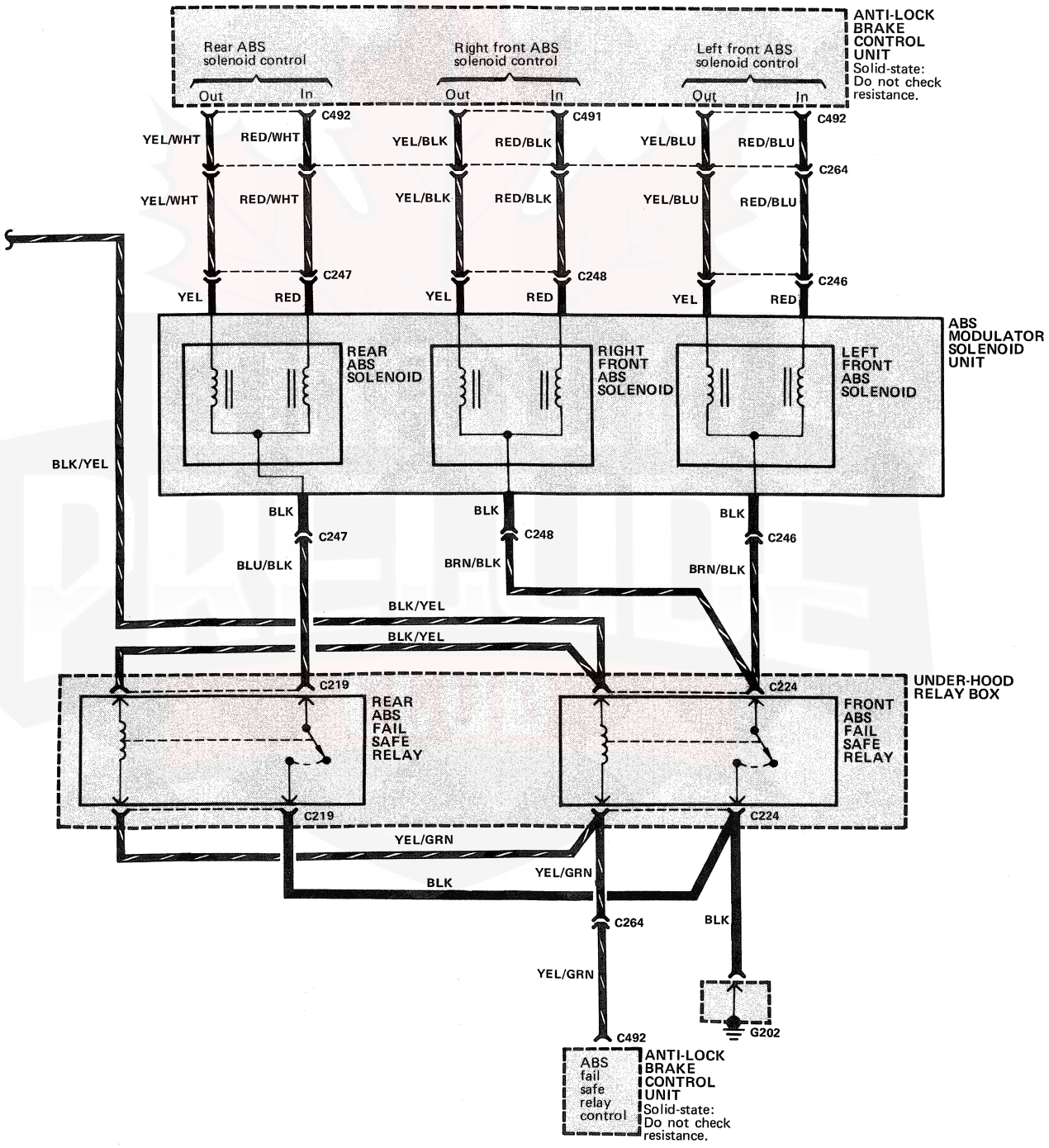


(cont'd)

Anti-lock Brake System (ABS)

Circuit Schematic (cont'd)





Anti-lock Brake System

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

C430 (10-YEL) 67
Below left side of dash, on rear of dash fuse box

C445 (22-WHT). 94
Below right side of dash

C491 (5-WHT) 83
Below center of dash, on anti-lock brake control unit

C492 (21-WHT). 83
Below center of dash, on anti-lock brake control unit

C495 (2-PNK) 112
Behind right side of rear seat, below access hole

C496 (2-PNK) 113
Behind left side of rear seat, below access hole

C709 (16-BLU) 56
Behind top left side of dash, on rear of gauge assembly

C723 (4-WHT) 66
Below left side of dash, on front right side of dash fuse box

G202 9
Right side of engine compartment, below under-hood relay box

G301 3
Left front corner of engine compartment

How The Circuit Works

The antilock brake system modulates the pressure of the brake fluid to each caliper whenever the wheels are likely to be locked due to excessive braking. This prevents the locking of the wheels and allows for better handling of the car. If there is no longer any possibility of wheel locking, the system returns to the conventional braking system mode of operation.

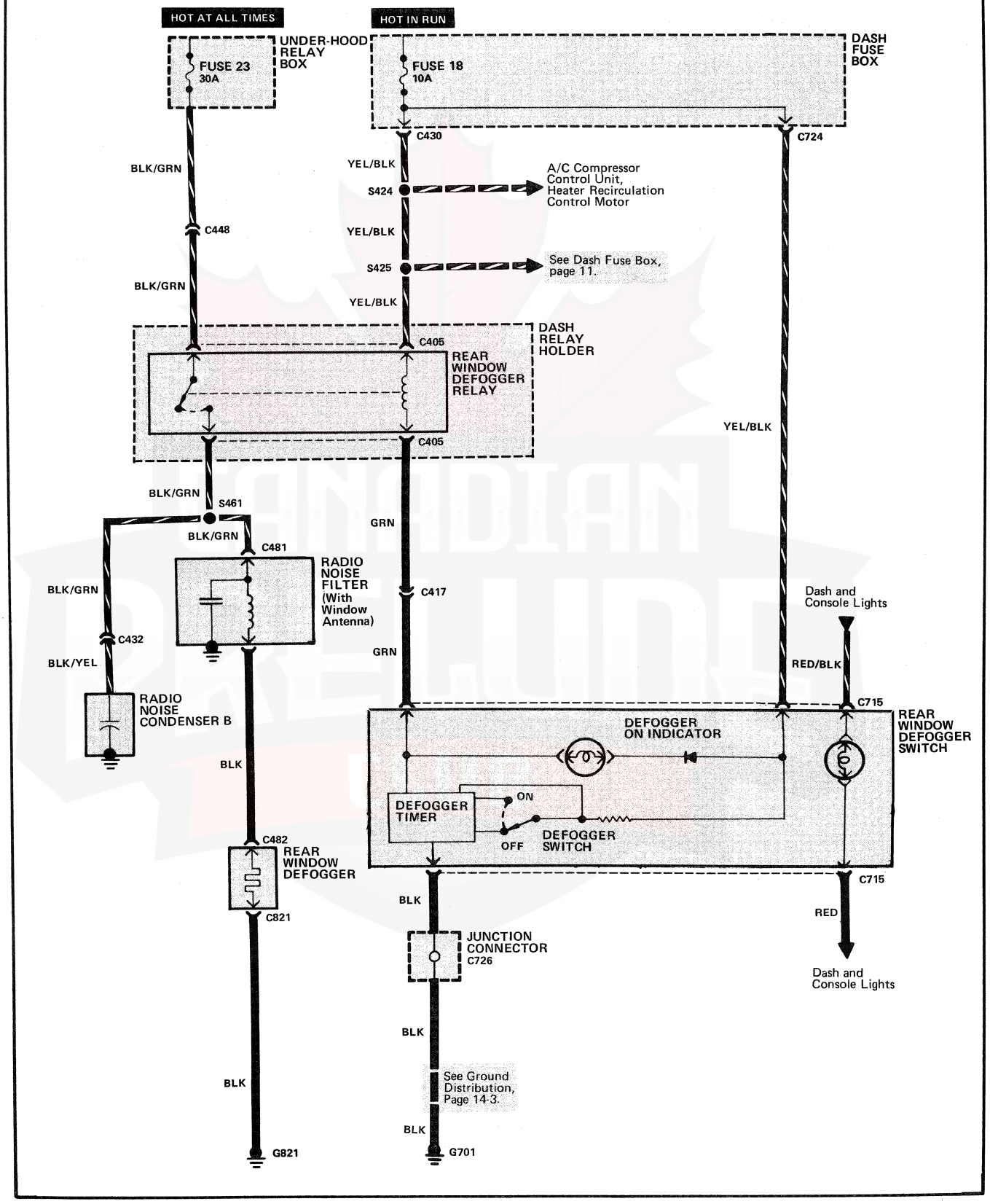
The antilock brake control unit receives inputs from individual speed sensors located on each wheel and from the ALB pressure switch. The antilock brake control unit uses the inputs to control the modulator unit, which adjusts the hydraulic pressure applied to each caliper on the basis of the signals received from the antilock brake control unit.

The antilock brake control unit has a self-diagnosis function which monitors the main system's functions. When an abnormality is detected, the "Antilock" brake warning indicator light goes on and the antilock brake control unit turns off the ALB fail safe relays and motor relay. The antilock brake system is disabled, but the conventional brake system continues to operate normally.

See Section 19 of the Service Manual for circuit description and troubleshooting procedures.

Rear Window Defogger

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

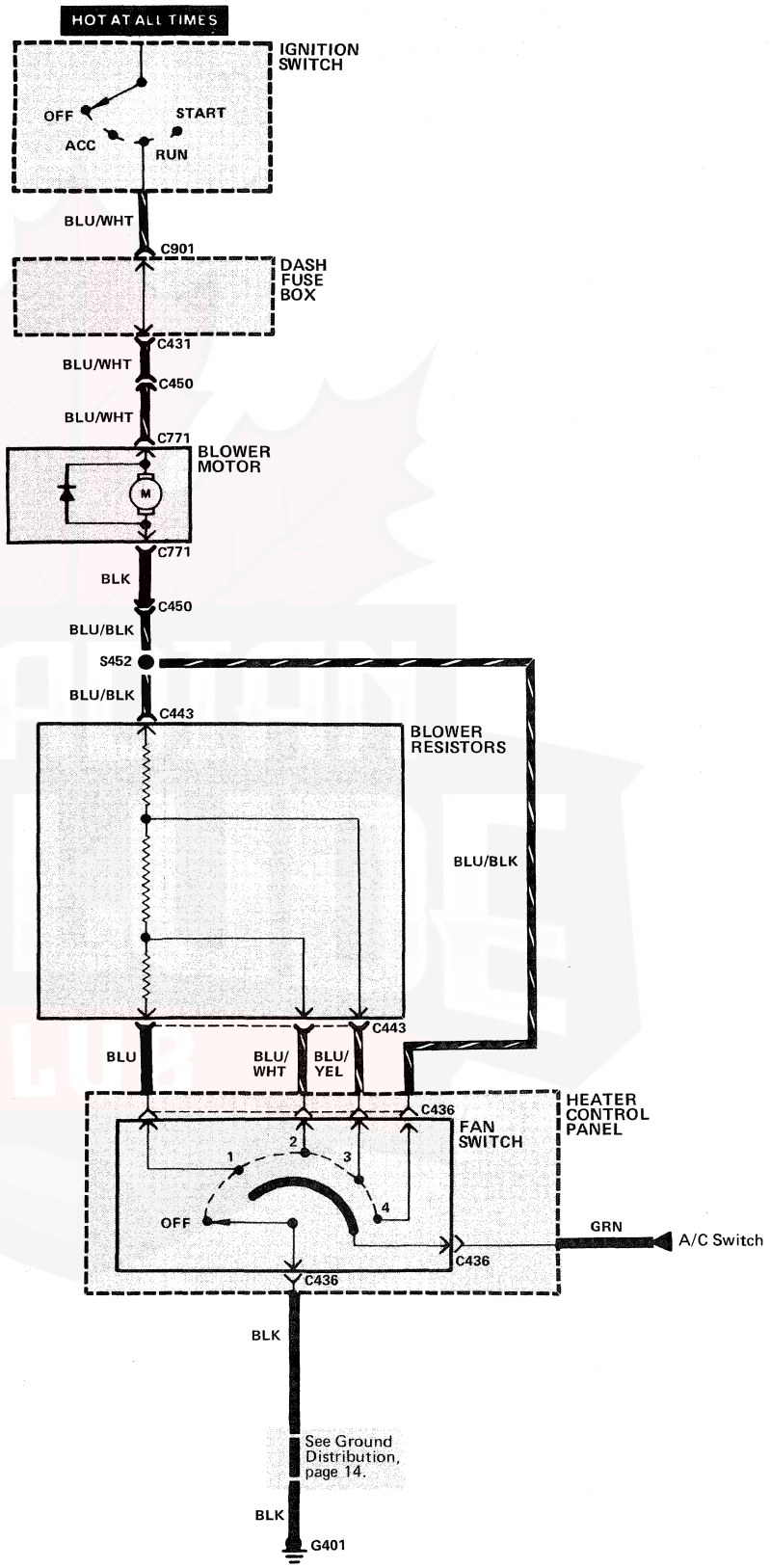
How The Circuit Works

Voltage is applied at all times through fuse 23 to the rear window defogger relay. With the ignition switch in RUN, voltage is applied through fuse 18 to the rear window defogger relay coil and the defogger ON indicator.

When you turn the rear window defogger switch to ON, a path to ground is provided for the rear window defogger relay coil and the defogger ON indicator through the defogger timer. The defogger ON indicator lights up and the rear window defogger relay contact closes. Voltage is applied to the defogger grid on the surface of the rear window: The grid heats the rear window to remove any fog from the glass for 20 to 30 minutes.

Blower Controls

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

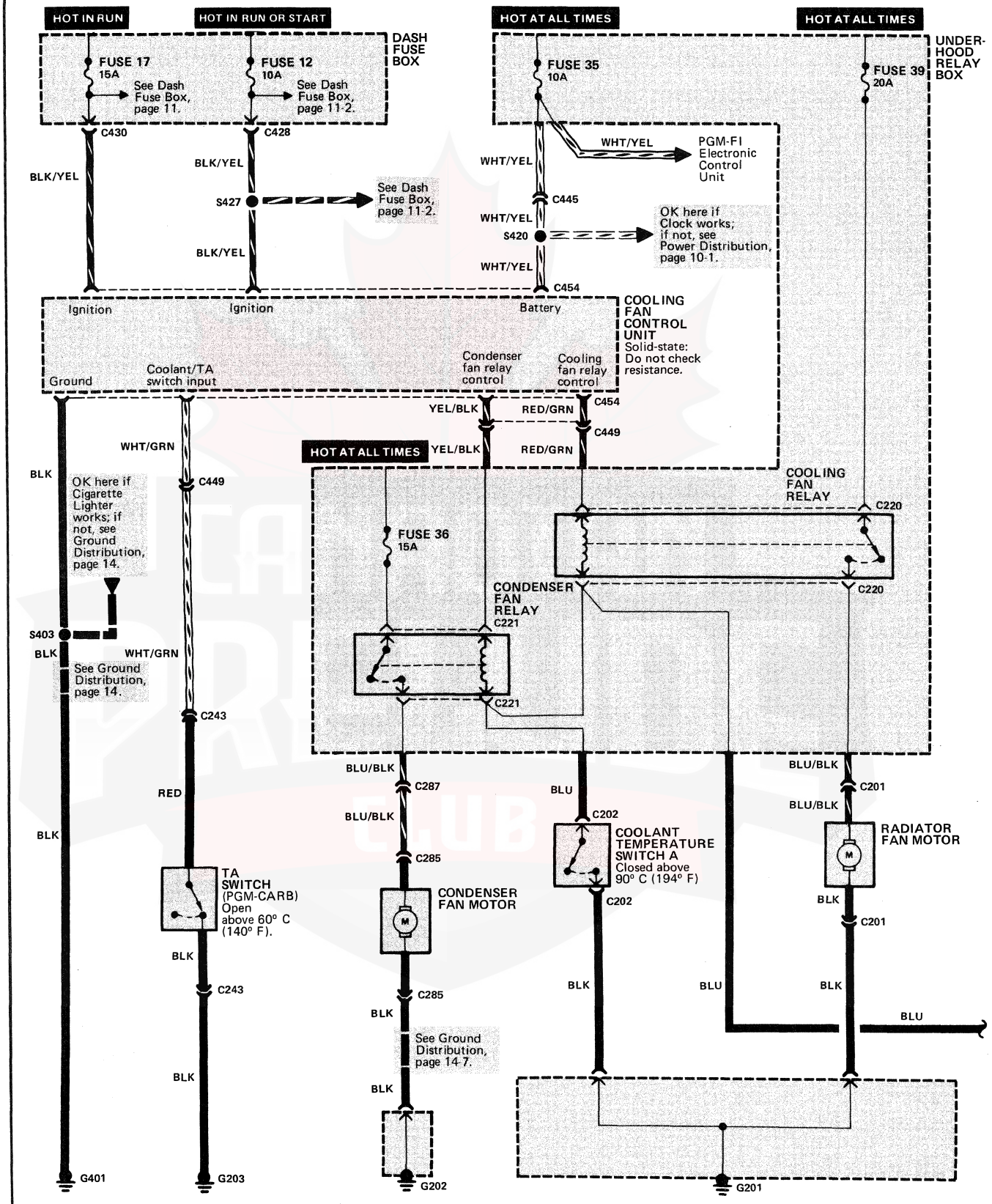
The blower motor speed is controlled by the fan switch in the heater control panel. With the ignition switch in RUN and the fan switch in position 1, all the blower resistors are in the circuit with the motor so the motor runs slowly. In positions 2 and 3, the fan switch bypasses some of the resistors, increasing the speed of the blower motor.

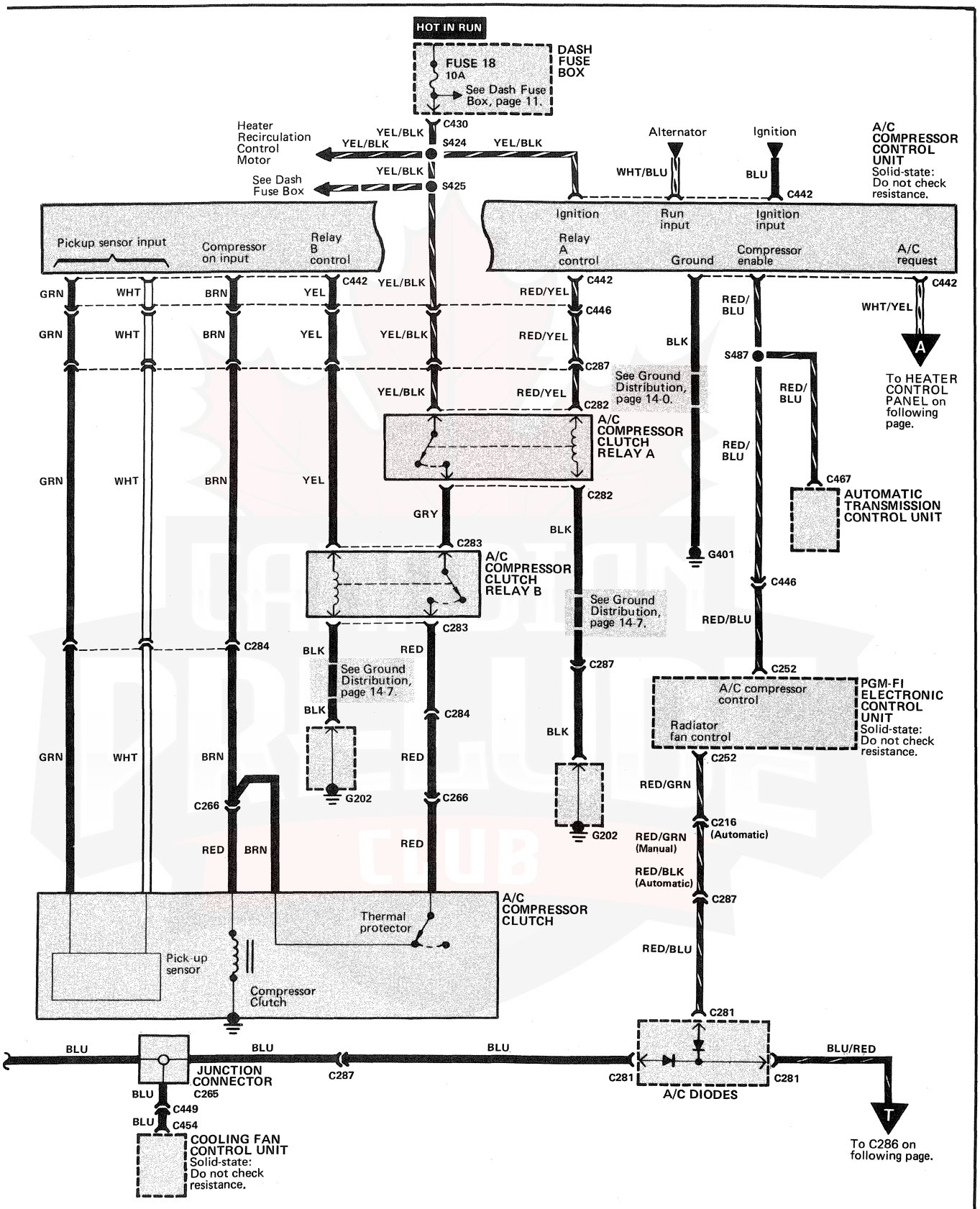
When the fan switch is in position 4, all the blower resistors are bypassed and full battery voltage is applied across the blower motor: The motor runs at maximum speed.

With the fan switch off, the circuit is open and no voltage is applied across the blower motor: The motor does not run.

A/C: Fans and Compressor Controls (2.0 Si)

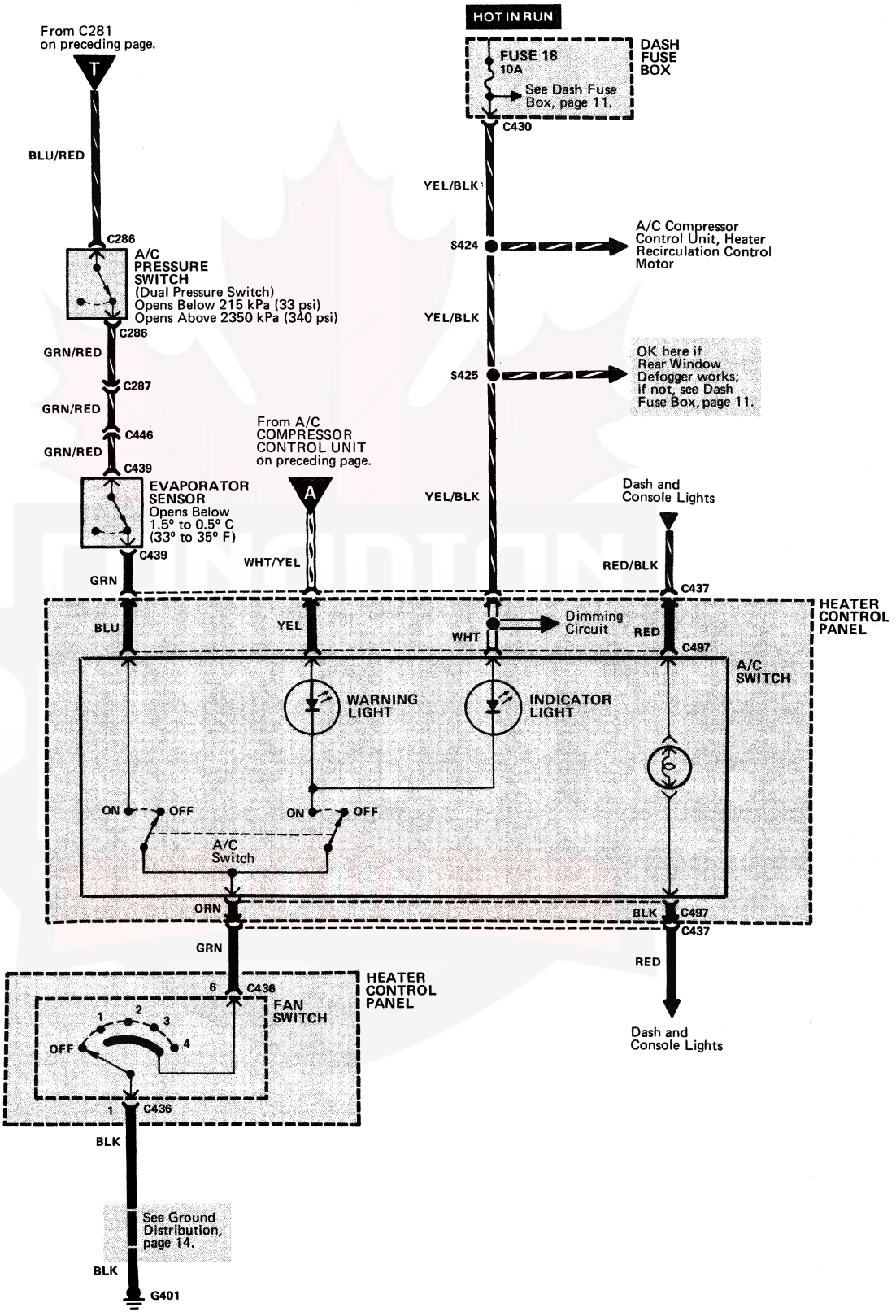
Circuit Schematic





A/C: Fans and Compressor Controls (2.0 Si)

Circuit Schematic (cont'd)



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

A/C: Fans and Compressor Controls (2.0 Si)

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

C497 (6-YEL) 78
Behind center of dash, on rear of heater control panel

G101 42
On top right side of engine

G201 9
Right side of engine compartment, below under-hood relay box

G202 9
Right side of engine compartment, below under-hood relay box

G203 33
Right rear corner of engine compartment, above grommet

G401 82
Behind top center of dash, above left side of heater assembly

How The Circuit Works

Fans

The fan timer unit operates the radiator and condenser fans according to the temperature of the engine coolant. Both fans are turned on when the coolant temperature rises above 194°F (90°C) and are turned off when the coolant temperature falls below 181°F (83°C). If the engine coolant temperature is above 226°F (108°C) when the ignition is turned off, the cooling fan timer will run the condenser fan for a maximum of 15 minutes or until the engine coolant temperature drops to 214°F (101°C). The fan timer unit controls the fans by operating the radiator and condenser fan relays.

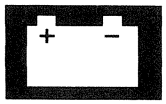
Closure of coolant temperature switch A initiates the operation of both fans at 194°F (90°C). Closure of coolant temperature switch B affects only the condenser fan and is used for initiating operation of the condenser fan at ignition turn-off.

Compressor Control

When the A/C switch and the blower switch are turned on, a ground is applied from the heater control panel through the evaporator sensor, the A/C pressure switch and the A/C diodes to the fan timer unit and the PGM-FI electronic control unit. The fan timer unit energizes both fans. The electronic control unit increases the engine idle speed and signals the A/C compressor control unit to operate compressor clutch relays A and B, which will engage the A/C compressor clutch.

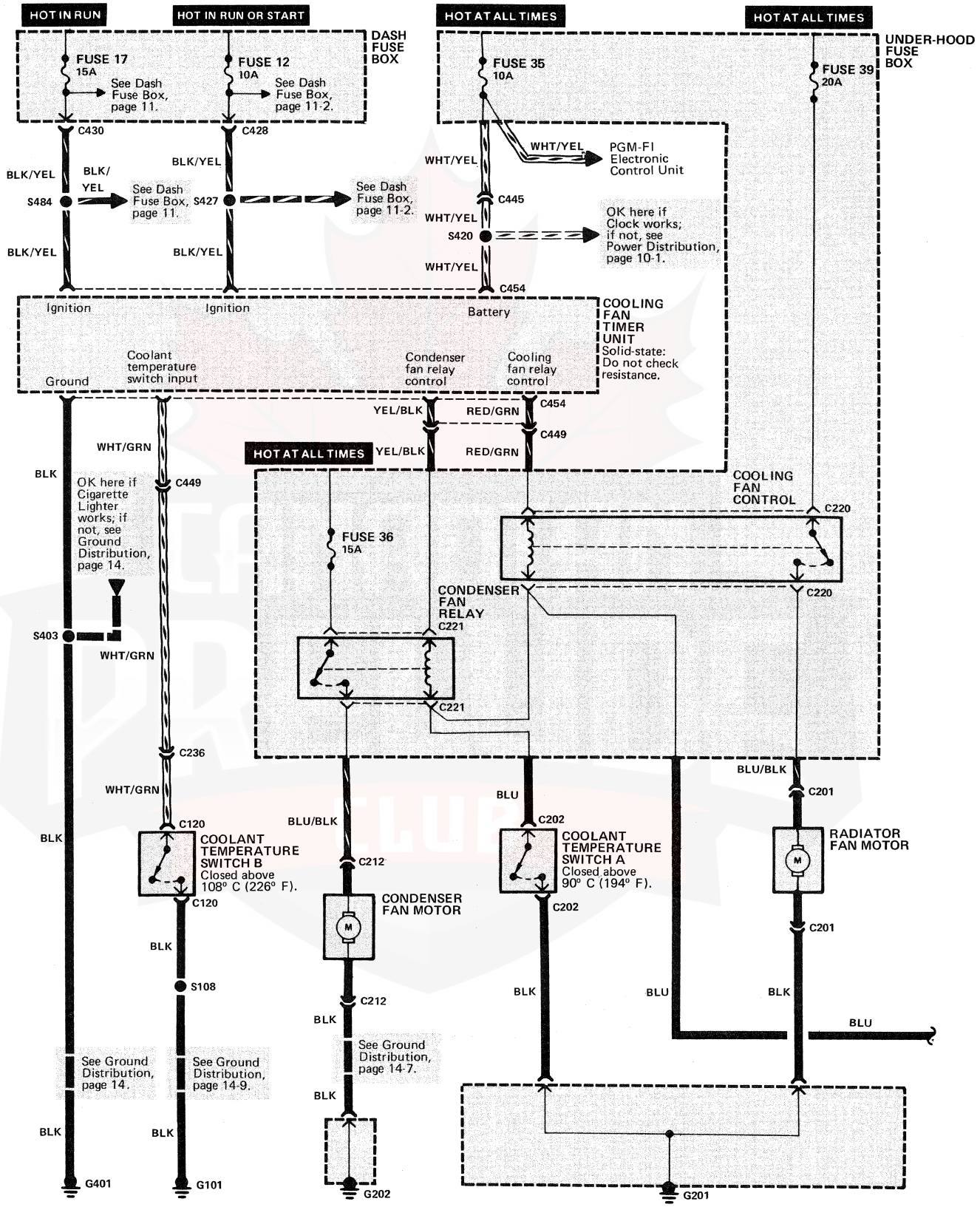
When the evaporator temperature drops below 37°F (3°C), the evaporator sensor opens its contacts, removing the ground from the fan timer and electronic control unit. Both fans and the A/C compressor clutch are de-energized until the evaporator temperature rises to a point where additional cooling is required. The evaporator sensor then closes its contacts and the cycle is repeated.

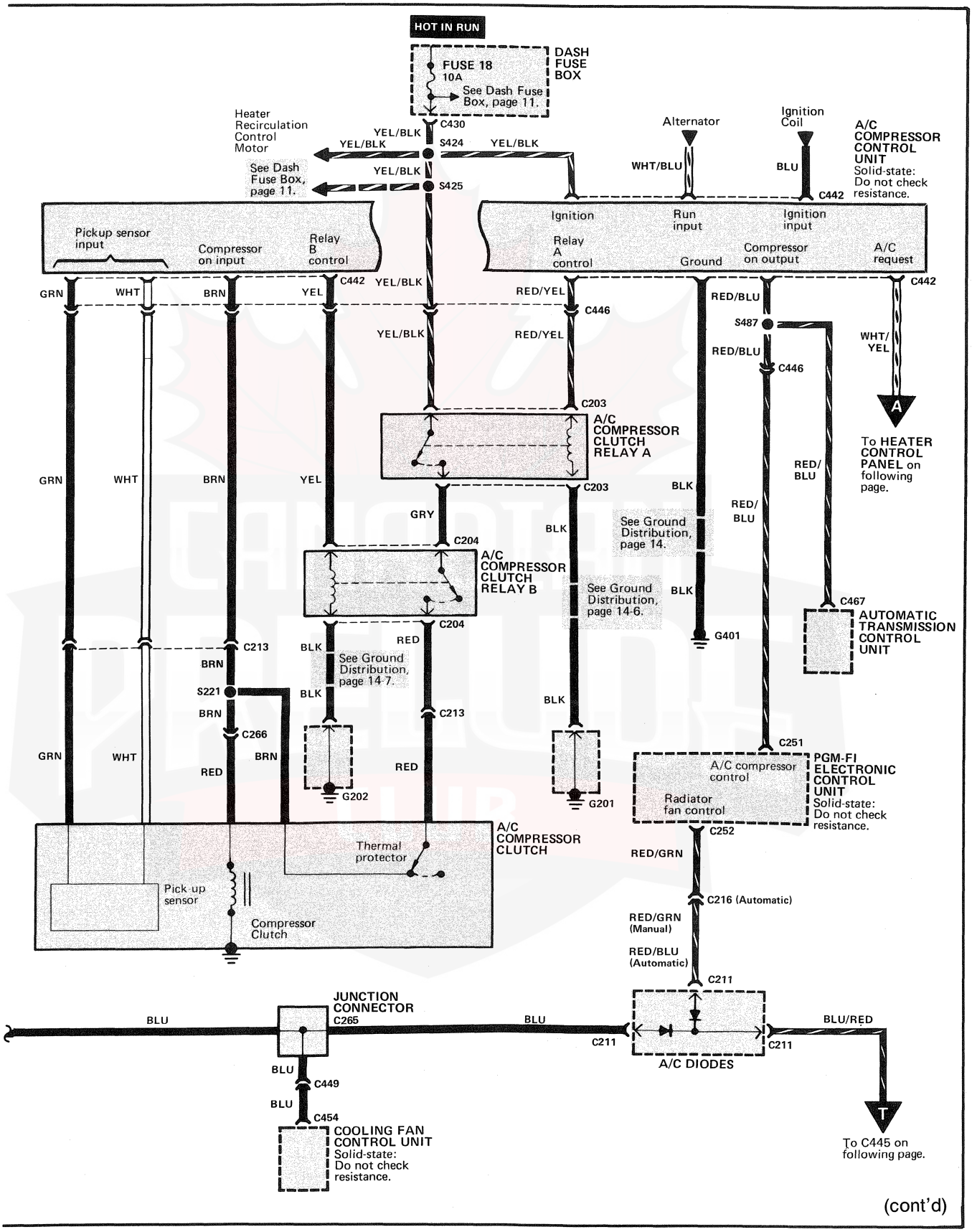
If refrigerant pressure becomes too high due to blockage or too low due to leakage, the A/C pressure switch contacts open, which interrupts the ground signal and prevents the air conditioning system from operating.



A/C: Fans and Compressor Controls (2.1 Si, ABS, 4WS)

Circuit Schematic (cont'd)

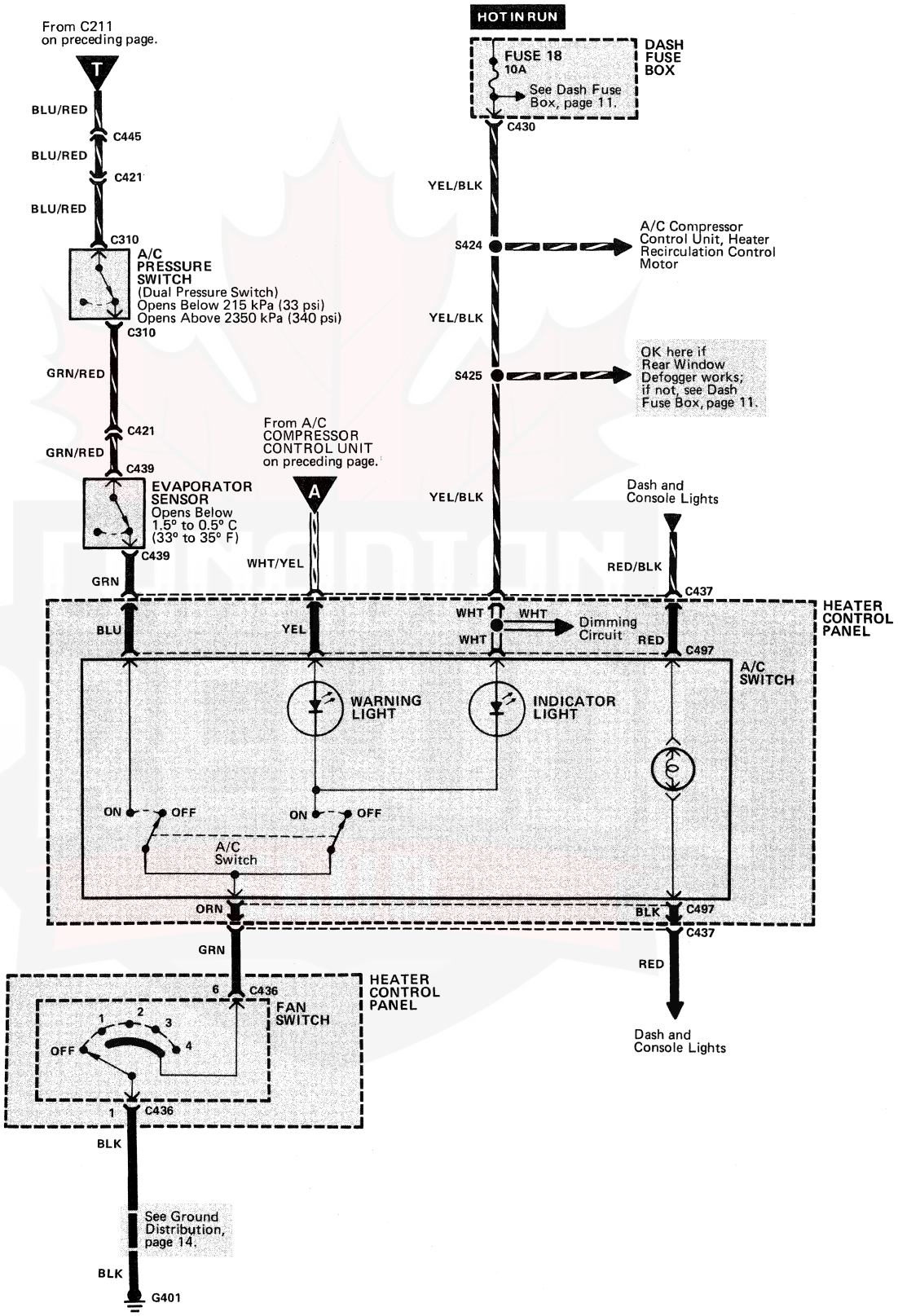




(cont'd)

A/C: Fans and Compressor Controls (2.1 Si, ALB, 4WS)

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

A/C: Fans and Compressor Controls (2.1 Si, ABS, 4WS)

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Fans

The fan timer unit operates the radiator and condenser fans according to the temperature of the engine coolant. Both fans are turned on when the coolant temperature rises above 194°F (90°C) and are turned off when the coolant temperature falls below 181°F (83°C). If the engine coolant temperature is above 226°F (108°C) when the ignition is turned off, the cooling fan timer will run the condenser fan for a maximum of 15 minutes or until the engine coolant temperature drops to 214°F (101°C). The fan timer unit controls the fans by operating the radiator and condenser fan relays.

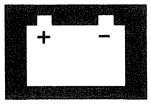
Closure of coolant temperature switch A initiates the operation of both fans at 194°F (90°C). Closure of coolant temperature switch B affects only the condenser fan and is used for initiating operation of the condenser fan at ignition turn-off.

Compressor Control

When the A/C switch and the blower switch are turned on, a ground is applied from the heater control panel through the evaporator sensor, the A/C pressure switch and the A/C diodes to the fan timer unit and the PGM-FI electronic control unit. The fan timer unit energizes both fans. The electronic control unit increases the engine idle speed and signals the A/C compressor control unit to operate compressor clutch relays A and B, which will engage the A/C compressor clutch.

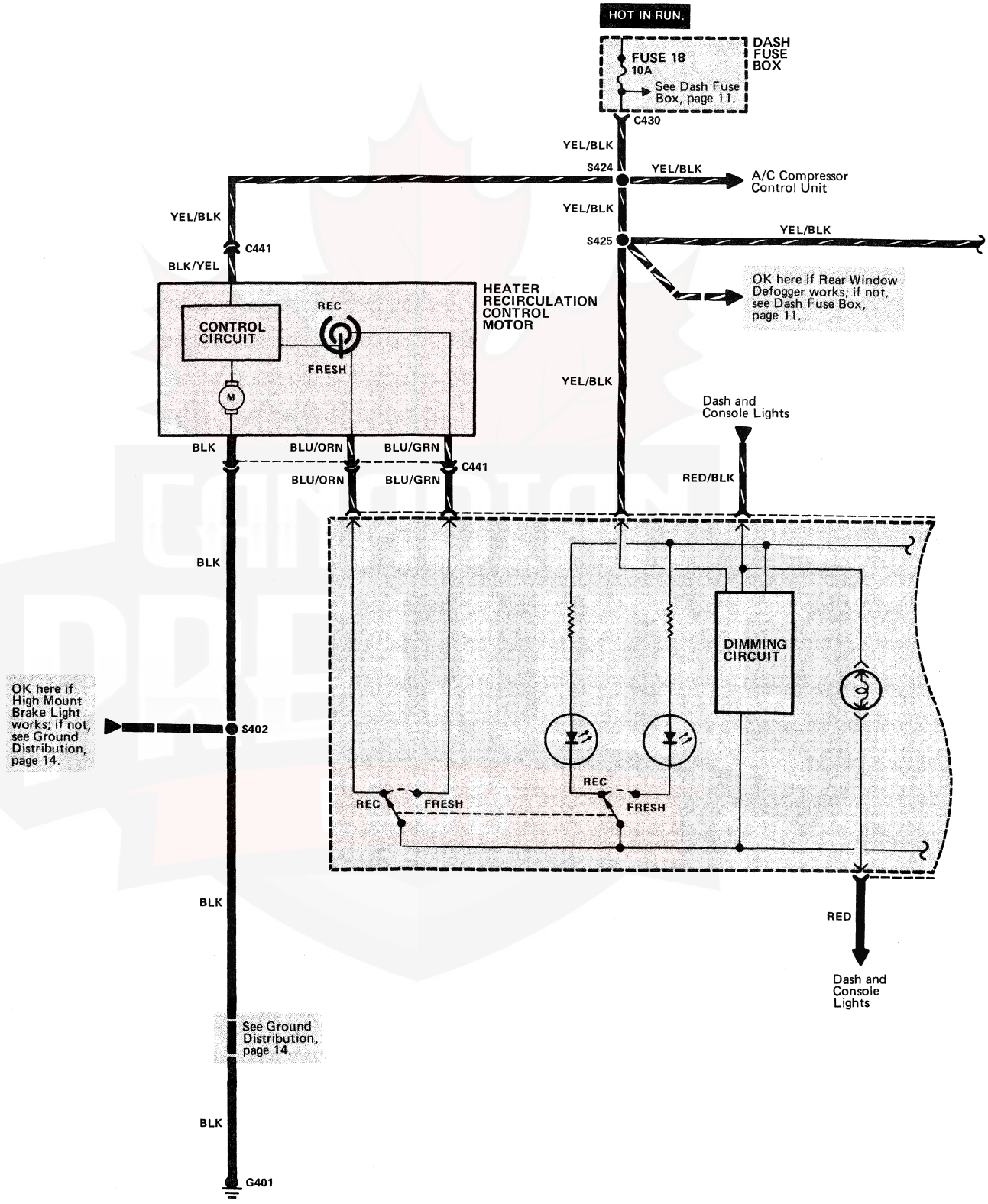
When the evaporator temperature drops below 37°F (3°C), the evaporator sensor opens its contacts, removing the ground from the fan timer and electronic control unit. Both fans and the A/C compressor clutch are de-energized until the evaporator temperature rises to a point where additional cooling is required. The evaporator sensor then closes its contacts and the cycle is repeated.

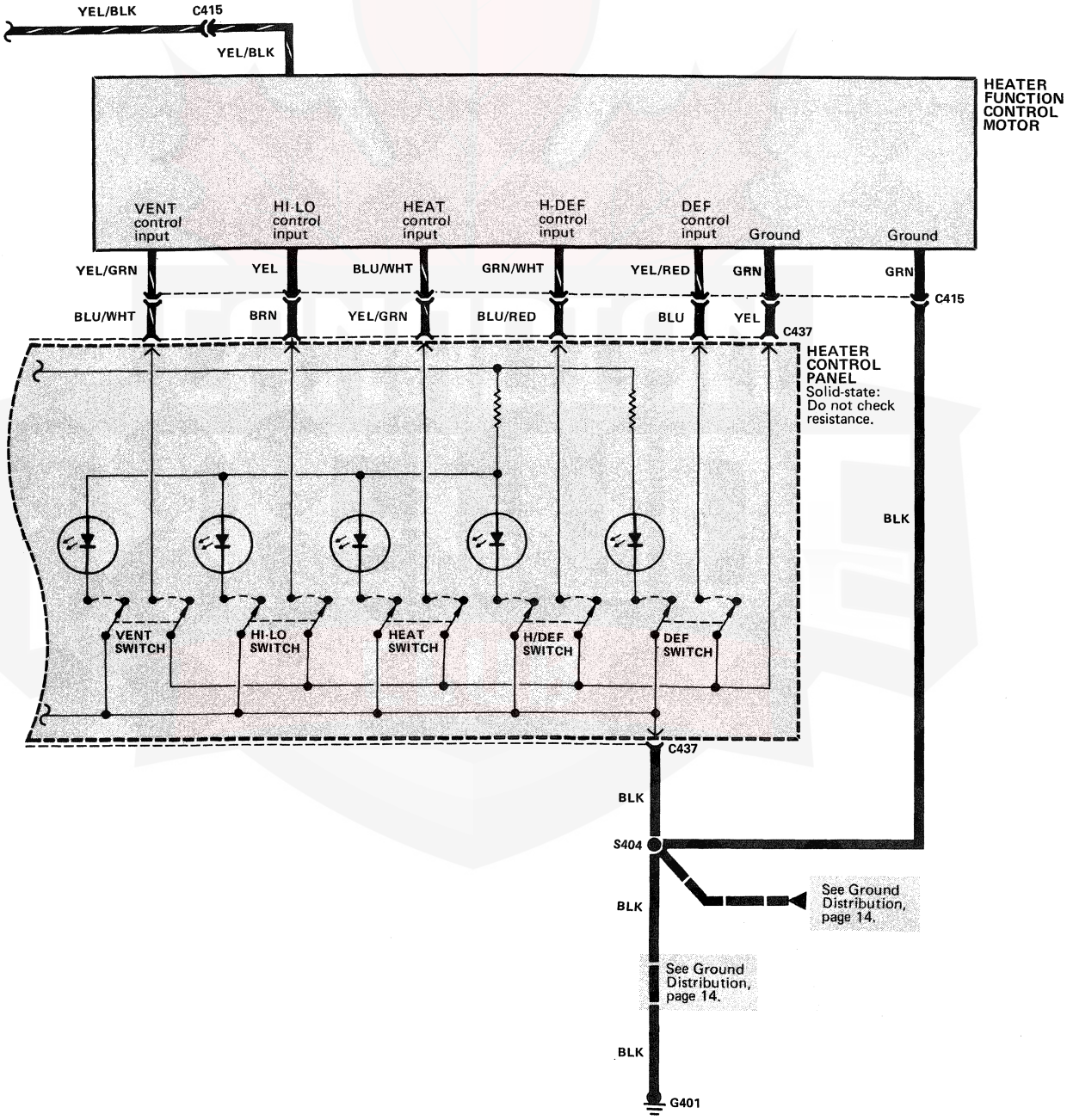
If refrigerant pressure becomes too high due to blockage or too low due to leakage, the A/C pressure switch contacts open, which interrupts the ground signal and prevents the air conditioning system from operating.



A/C: Air Delivery

Circuit Schematic





A/C: Air Delivery

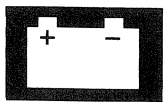
Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

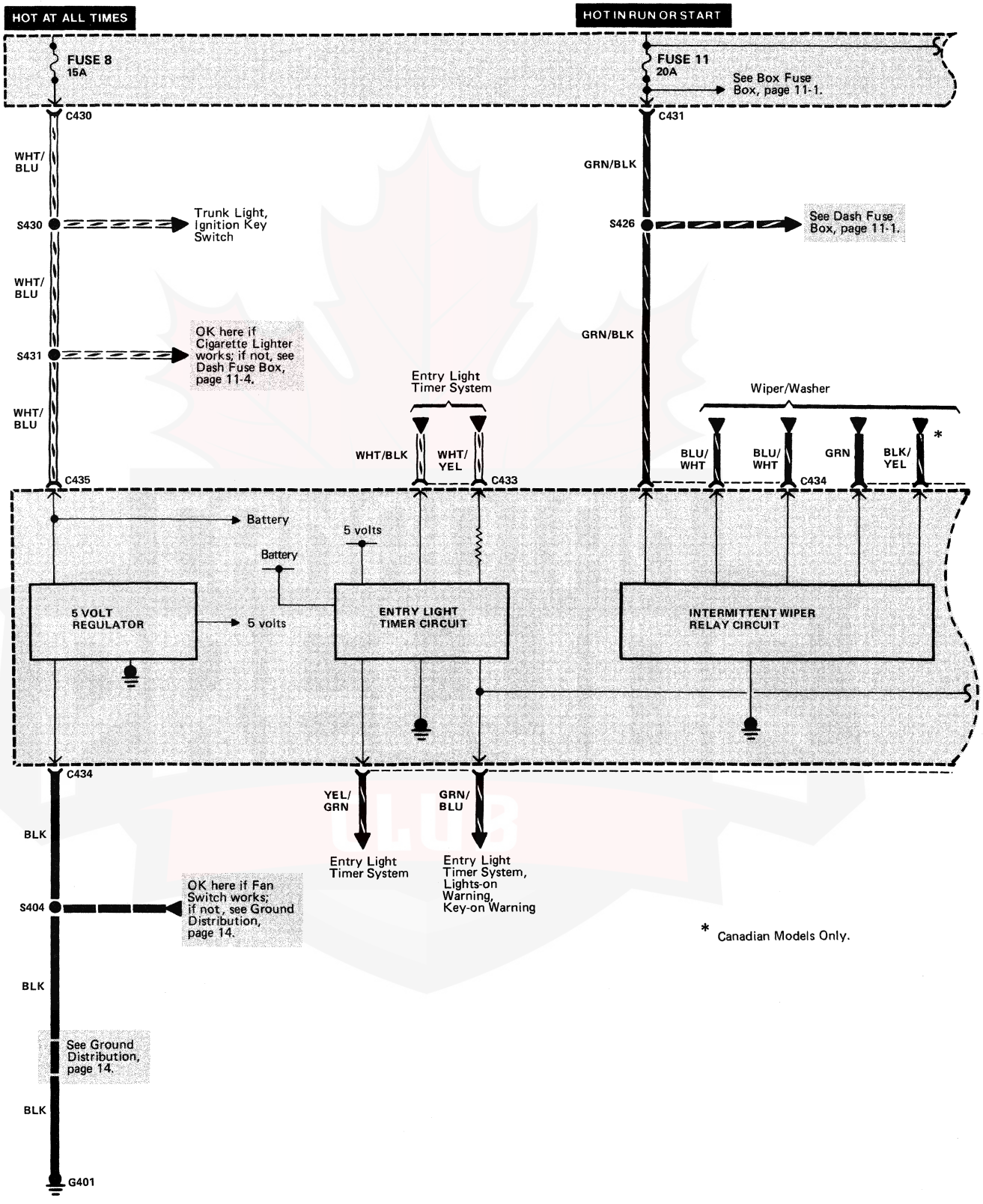
The heating and ventilating system has five modes: Vent, Hi-lo, Heat, H/Def, and Def. You select each mode by a pushbutton switch on the heater control panel. The system will recirculate the air in the car or draw air from the outside, depending on the position of the recirculation control pushbuttons.

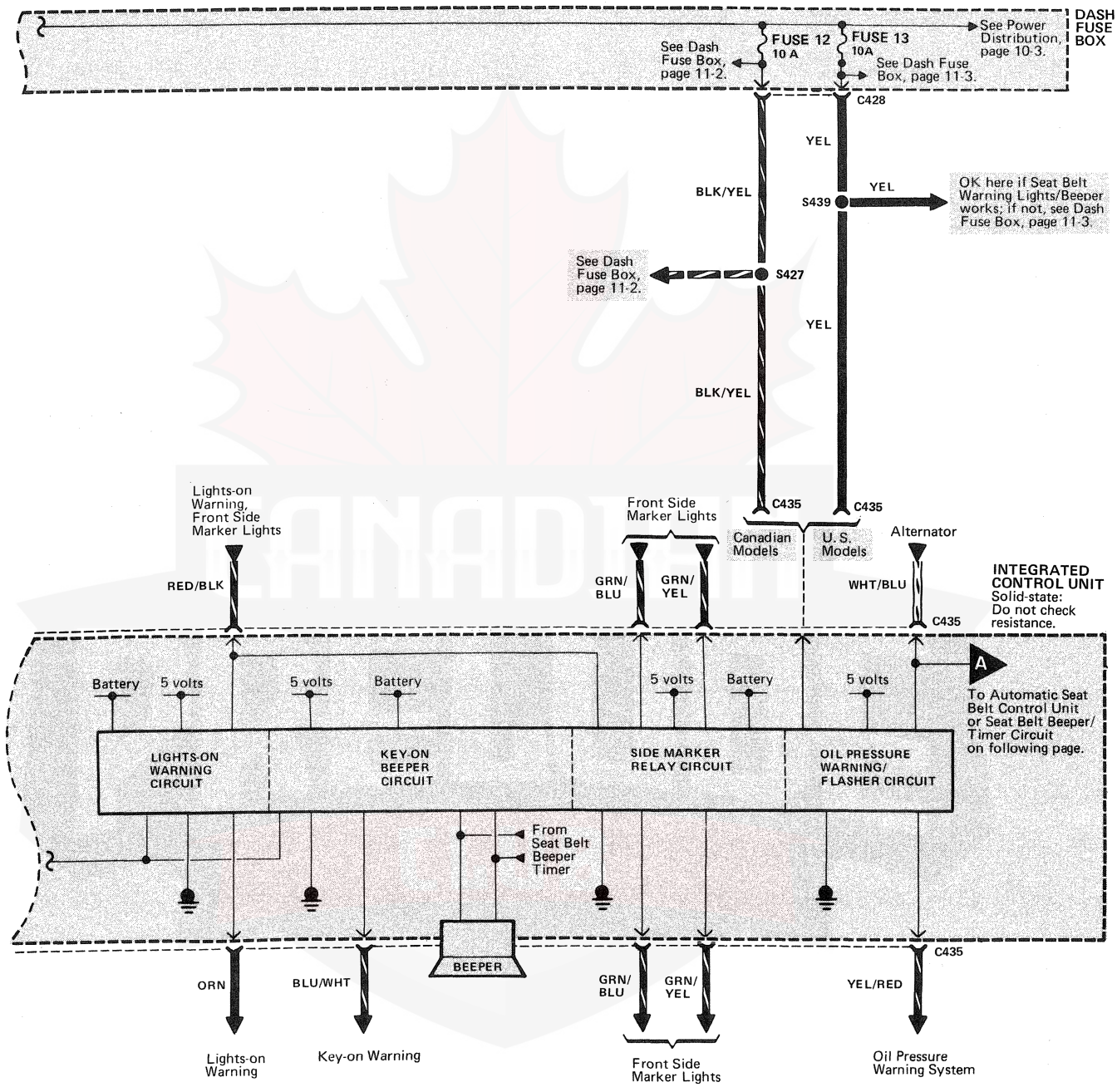
See Section 21 of the Service Manual for circuit description and troubleshooting procedures.



Integrated Control Unit

Circuit Schematic

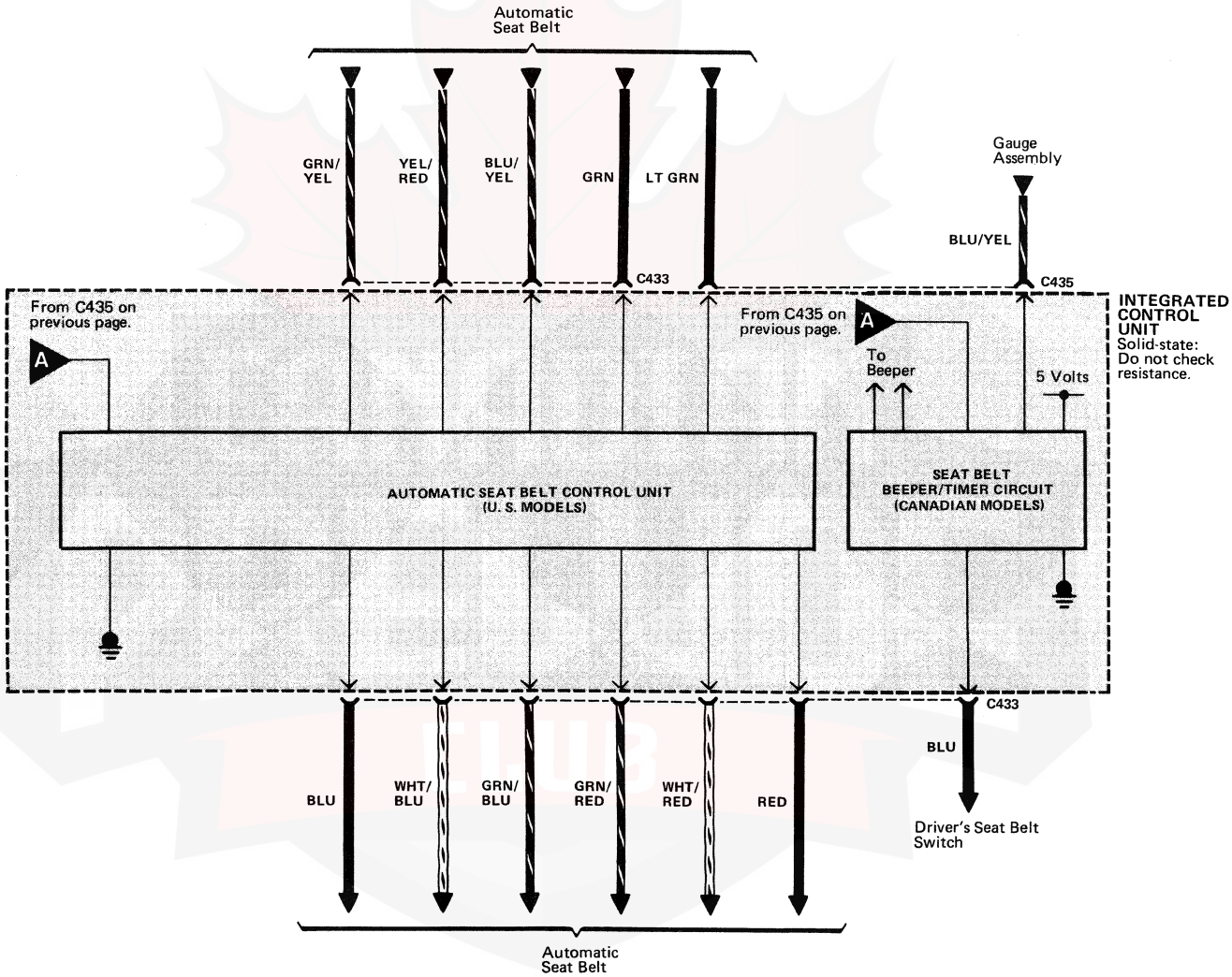




(cont'd)

Integrated Control Unit

Circuit Schematic (cont'd)



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The integrated control unit combines several circuits sharing common circuit functions.

Entry Light Timer Circuit

For information on how the circuit works, see the Entry Light Timer System circuit.

Oil Pressure Warning/Flasher Circuit

For information on how the circuit works, see the Oil Pressure Warning System circuit.

Seat Belt Lights-on Warning and Key-on Beeper Circuit

For information on how the circuit works, see the Seat Belt, Lights-on and Ignition Key-on Warning circuit.

Side Marker Relay Circuit

For information on how the circuit works, see the Front Side Marker Lights circuit.

Intermittent Wiper Relay Circuit

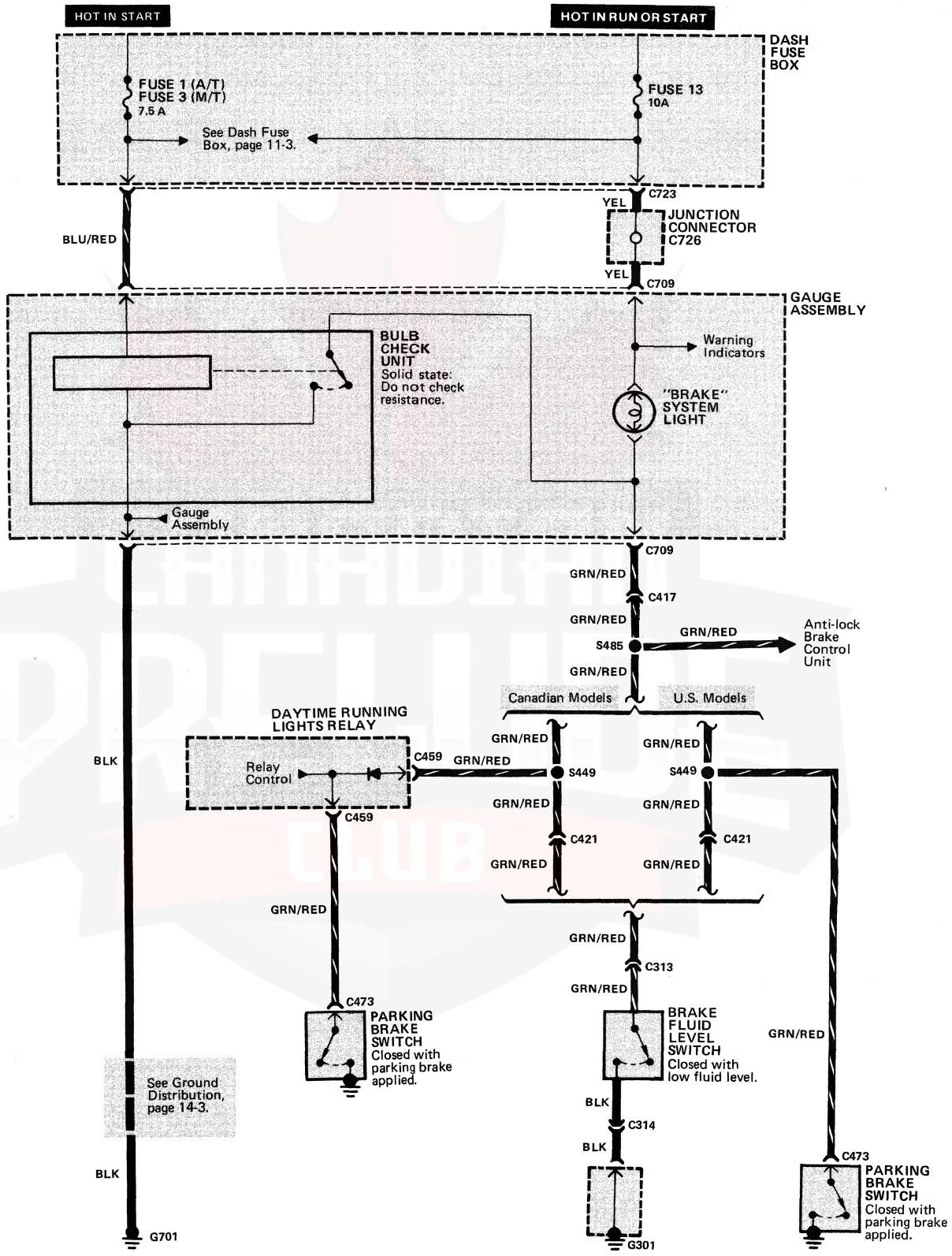
For information on how the circuit works, see the Wiper/Washer circuit.

Automatic Seat Belt Circuit

For information on how the circuit works, see the Automatic Seat Belt circuit.

Brake Warning System

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The brake system indicator light goes on to alert the driver that the parking brake is applied, or that the brake fluid level is low. It also lights as a bulb test when cranking the engine.

Parking Brake

With the ignition switch in RUN or START, voltage is applied through fuse 13 to the brake system indicator light. When you apply the parking brake, the switch closes and provides a ground for the light: The brake system indicator light goes on to remind the driver that the parking brake is applied.

Brake Fluid Level

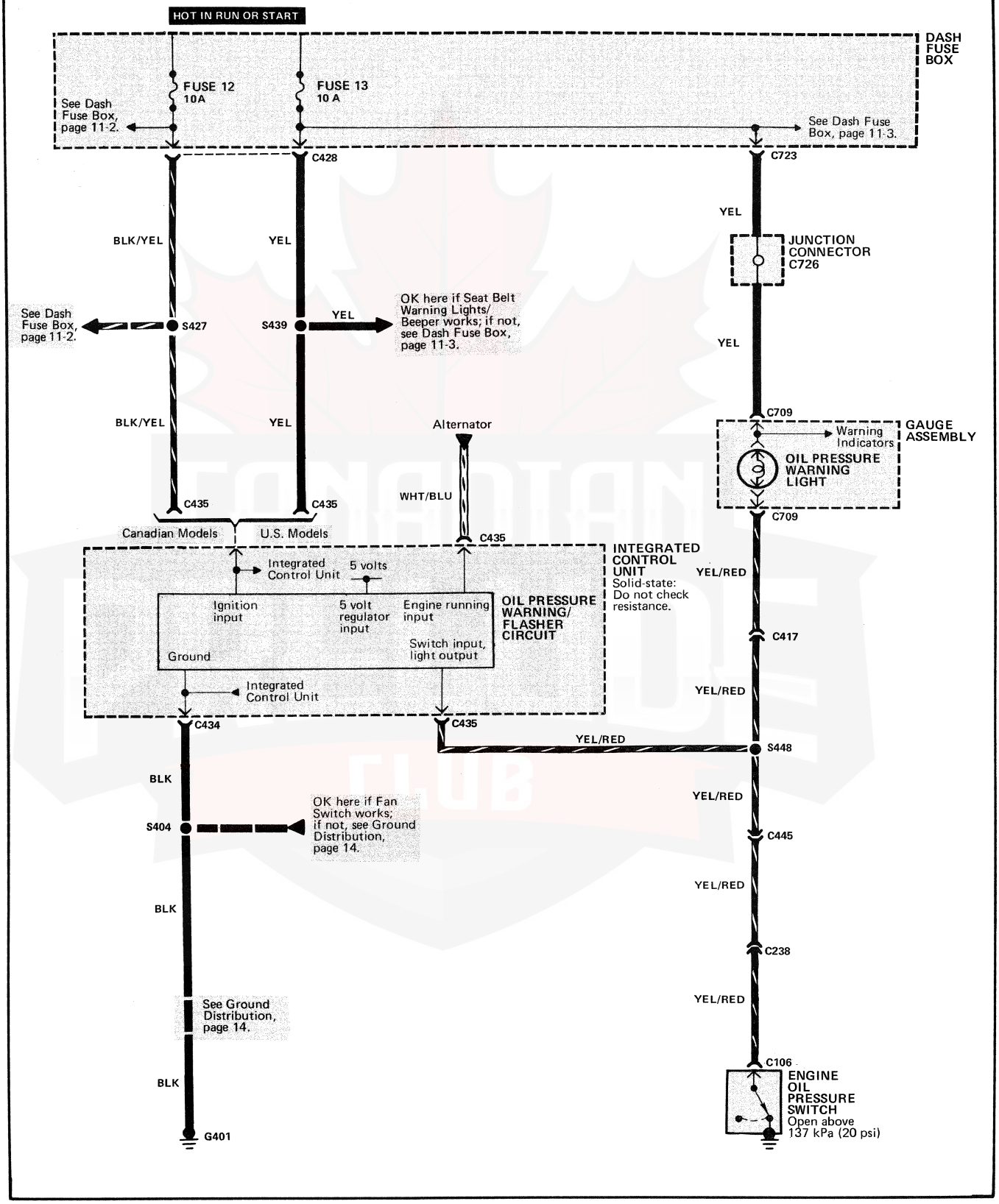
With the ignition switch in RUN or START, voltage is applied through fuse 13 to the brake system indicator light. If the brake fluid level is low, the brake fluid level switch closes and ground is provided to the circuit: The brake system indicator light operates to warn the driver of low brake fluid level in the brake master cylinder. (Note: Check brake pad wear before adding fluid.)

Bulb Check

With the ignition switch in START, voltage is applied through fuse 1 or 3 to the bulb check unit of the system display. The bulb check unit closes the circuit, allowing current to flow through the brake system indicator light and bulb check unit to ground: The brake system indicator light goes on to test the brake system indicator light bulb.

Oil Pressure Warning System

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The oil pressure warning indicator light works in two ways. It flashes continuously following a momentary loss of oil pressure, or it goes on and stays on with a complete loss of oil pressure.

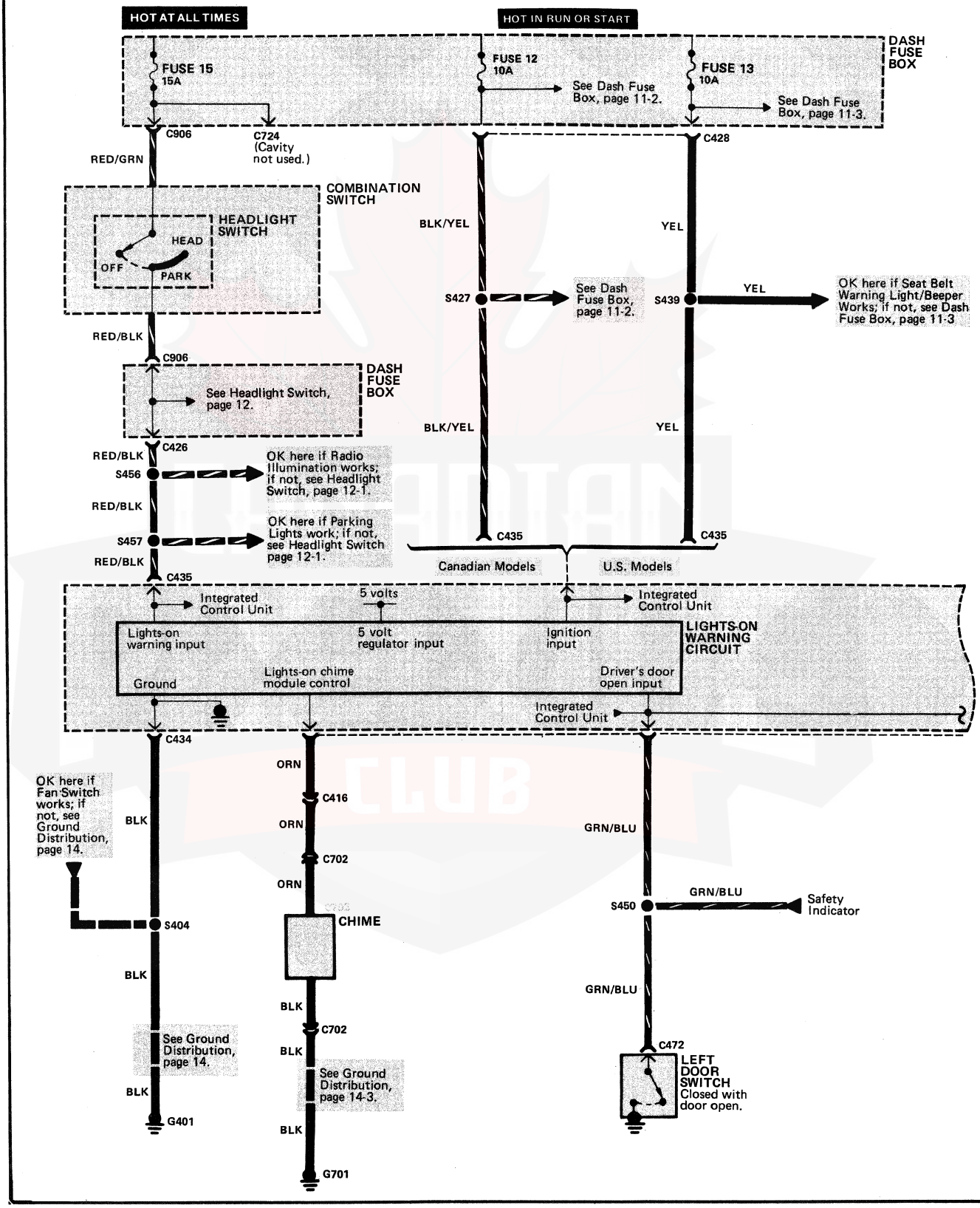
When the engine first starts, before oil pressure rises above 20 psi, voltage is applied to the oil pressure warning indicator light and the oil pressure switch to ground. This tests the bulb.

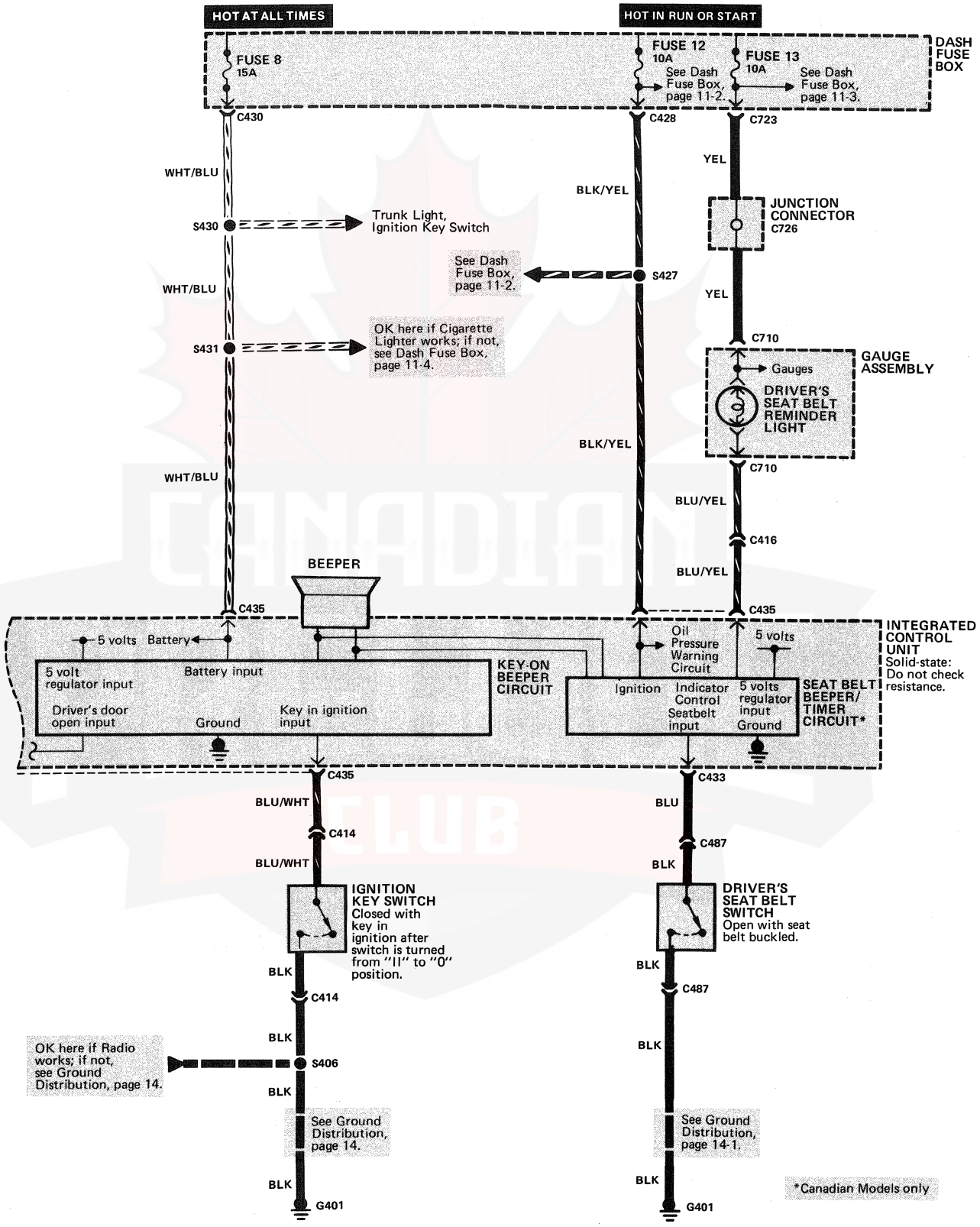
With the engine running, voltage is applied at the WHT/BLU wire of the integrated control unit. With normal oil pressure, the oil pressure switch is open and the oil pressure warning indicator light does not go on. If the oil pressure switch closes momentarily (more than 0.5 seconds) but then opens again, the YEL/RED wire at the integrated control unit will sense ground through the switch. The integrated control unit will then provide and remove ground for the oil pressure warning indicator light through the YEL/RED wire. The light will flash on and off until you turn the ignition switch off. The flashing feature will not work until 30 seconds after the initial voltage is applied to the WHT/BLU wire of the oil flasher unit. This delay avoids unnecessary warning light operation.

If engine oil pressure falls below 20 psi and does not increase, the oil pressure switch will stay closed. The oil pressure warning indicator light will go on and stay on.

Seat Belt, Lights-on and Key-on Warning

Circuit Schematic





Seat Belt, Lights-on and Key-on Warning

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Key-on Warning

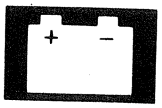
When the ignition key switch is closed, a ground is provided at the BLU/WHT wire of the integrated control unit. When you open the driver's door, ground is also provided at the GRN/BLU wire of the integrated control unit: The buzzer sounds.

Lights-on Warning

Voltage is applied at all times to the headlight switch. When the headlight switch is in PARK or HEAD, voltage is applied to the RED/BLK wire of C435. When you open the driver's door, the integrated control unit senses ground at the GRN/BLU wire of C435. If voltage is at the RED/BLK wire and ground is at the GRN/BLU wire, the lights-on chime module sounds.

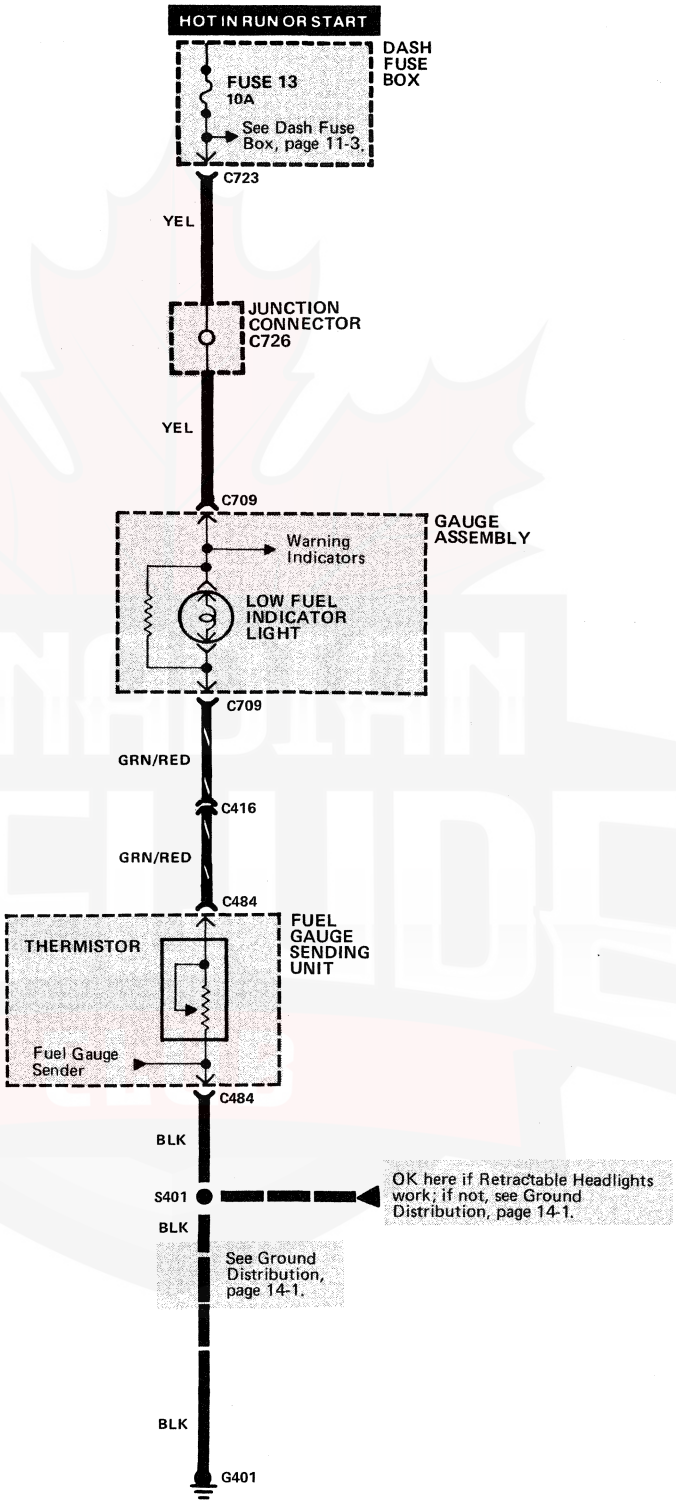
Seat Belt Warning (Canadian Models)

With the ignition switch in RUN or START, voltage is applied to the seat belt warning indicator light. When you unbuckle the driver's seat belt, the integrated control unit senses ground at the BLU wire of C433. The integrated control unit then provides a ground at the BLU/YEL wire for C435. The seat belt warning indicator light flashes on and off and the beeper sounds for five seconds.



Low Fuel Indicator System

Circuit Schematic



Component Location Index

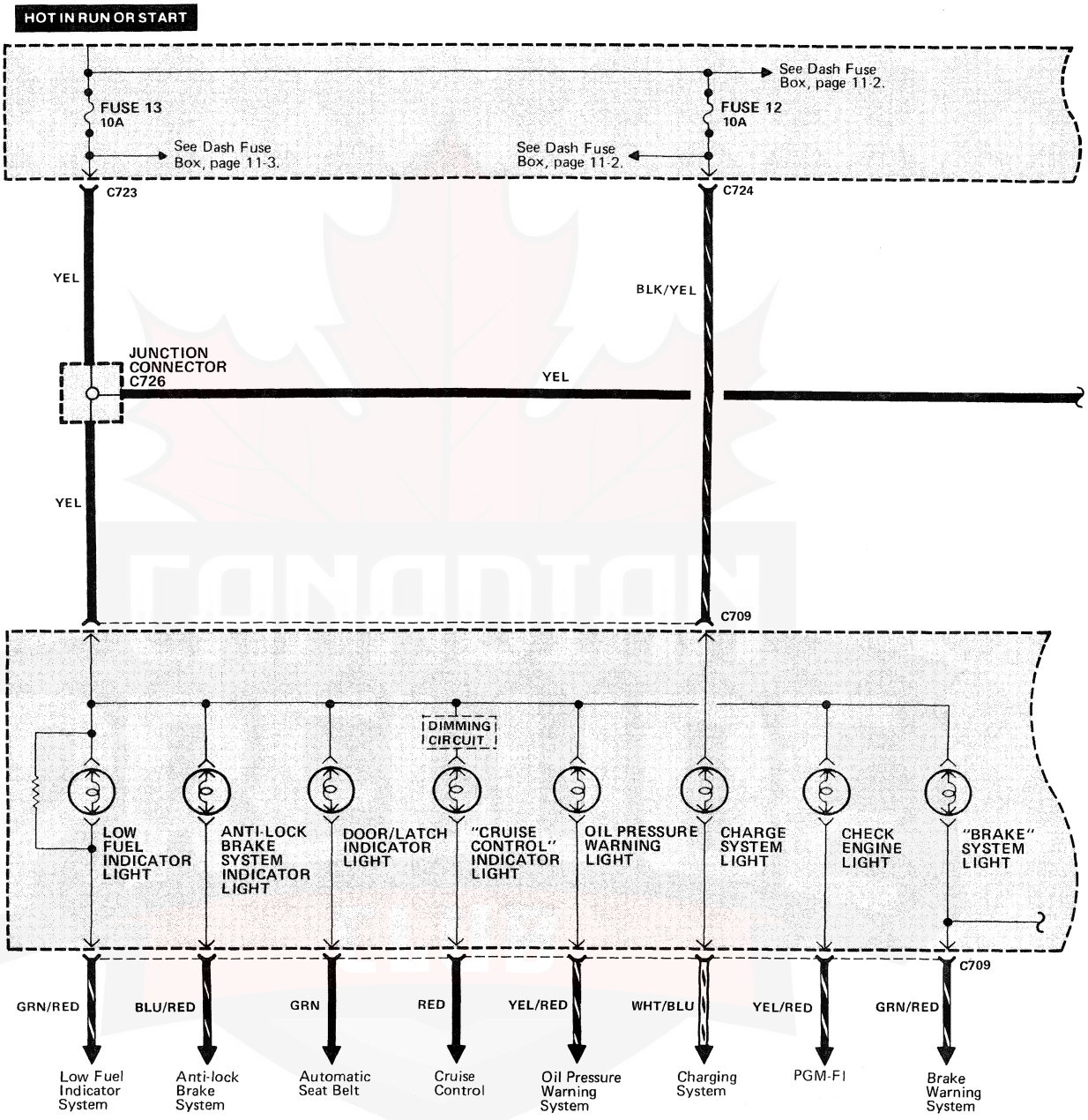
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

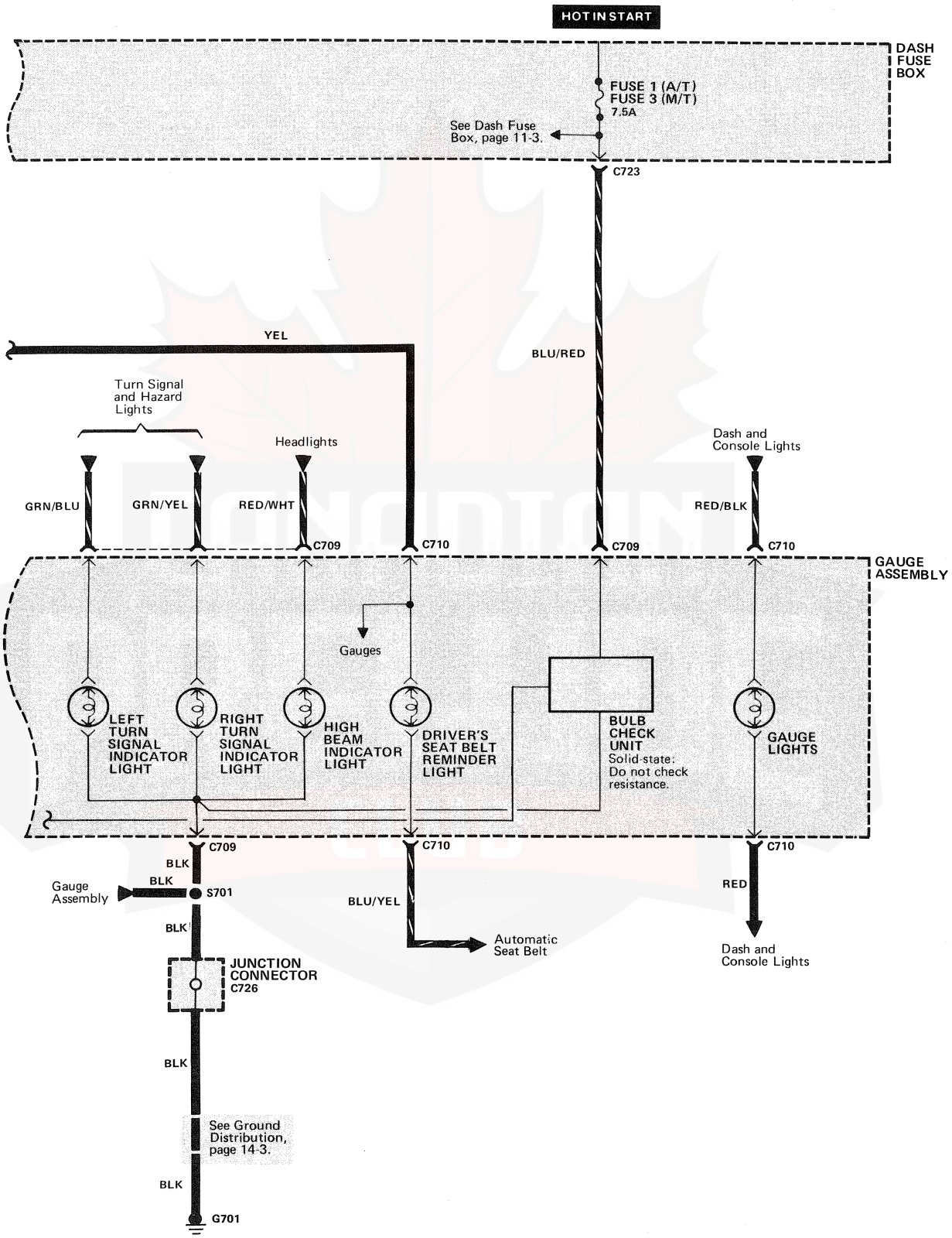
How The Circuit Works

The thermistor is mounted in the fuel tank unit. When the thermistor is cool, its resistance is very high. When the thermistor is warm, its resistance is lower. Fuel in the fuel tank transfers heat away from the thermistor fast enough to keep it cool. The thermistor's resistance stays high and the low fuel indicator light does not go on. When the fuel level drops below about 2.9 gallons, the thermistor is no longer immersed in fuel. Without the fuel to cool it, the thermistor's resistance is low. Current flows through the low fuel indicator light and the thermistor to ground: The low fuel indicator light goes on.

Indicators

Circuit Schematic





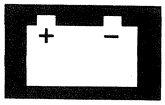
Indicators

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

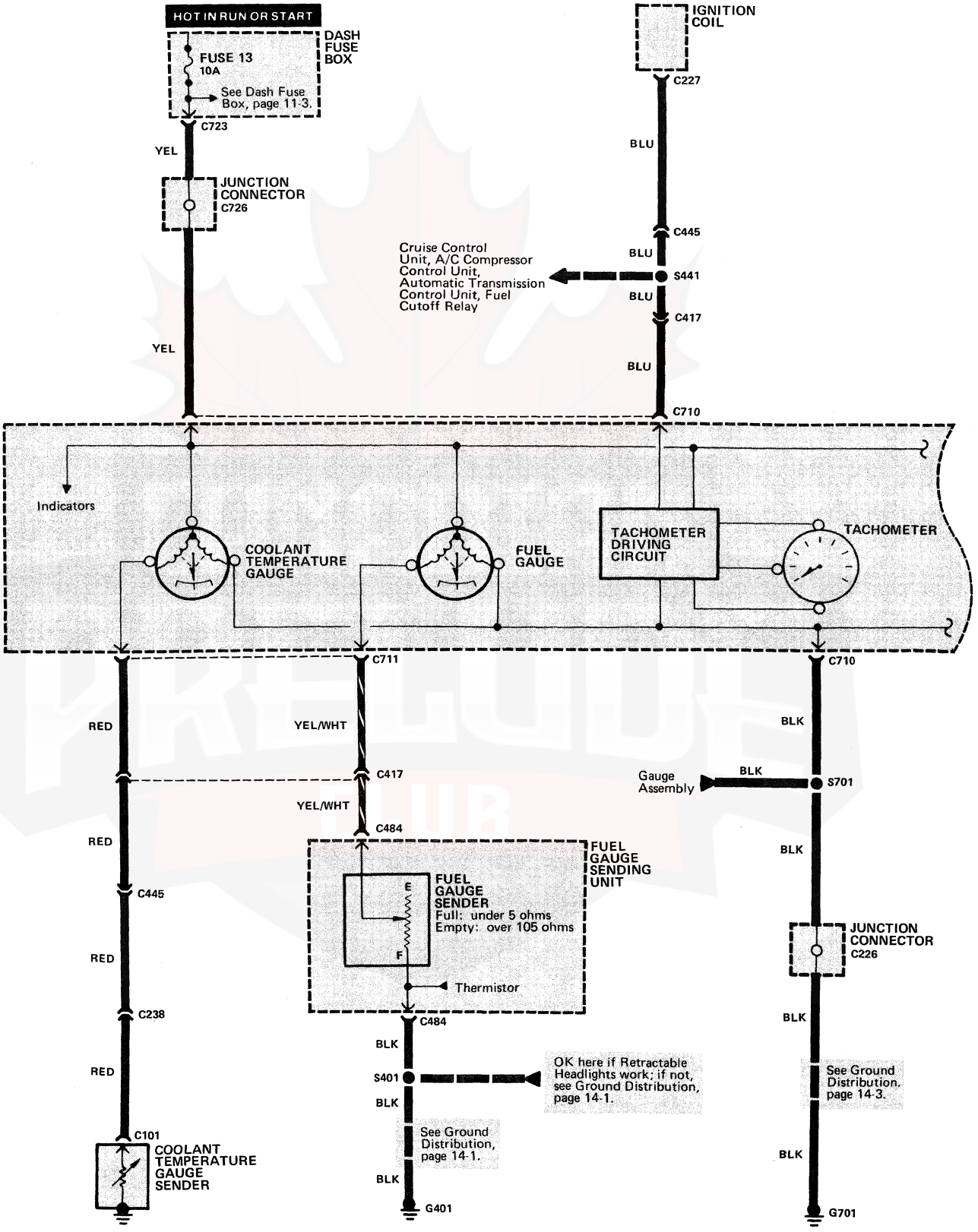
How The Circuit Works

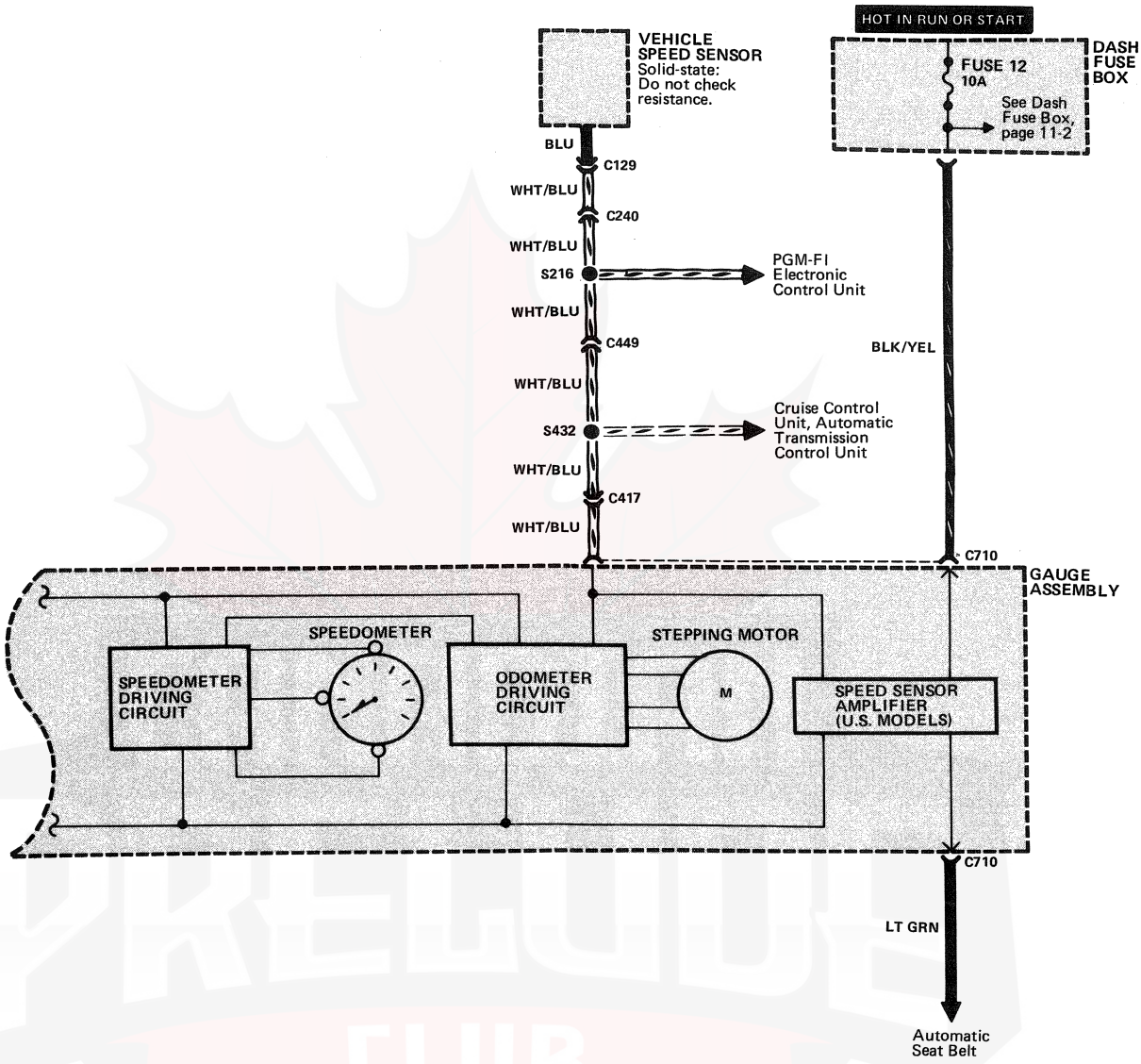
The indicator lights are controlled by different conditions set forth in their associated system. See the associated system for the indicator light circuit description.



Gauges

Circuit Schematic





Gauges

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The coolant temperature gauge and the fuel gauge are each operated by two intersecting coils wound around a permanent magnet rotor. When voltage from fuse 13 is applied to the coils, a magnetic field is generated. This causes the rotor to rotate and the gauge needle to move. The magnetic field is controlled by the sender. As the resistance in the sender varies, current through the gauge coils changes. The gauge needle moves according to the changing magnetic field.

The coolant temperature sender's resistance varies from approximately 142 ohms at low engine temperature to approximately 32 ohms at high engine temperature.

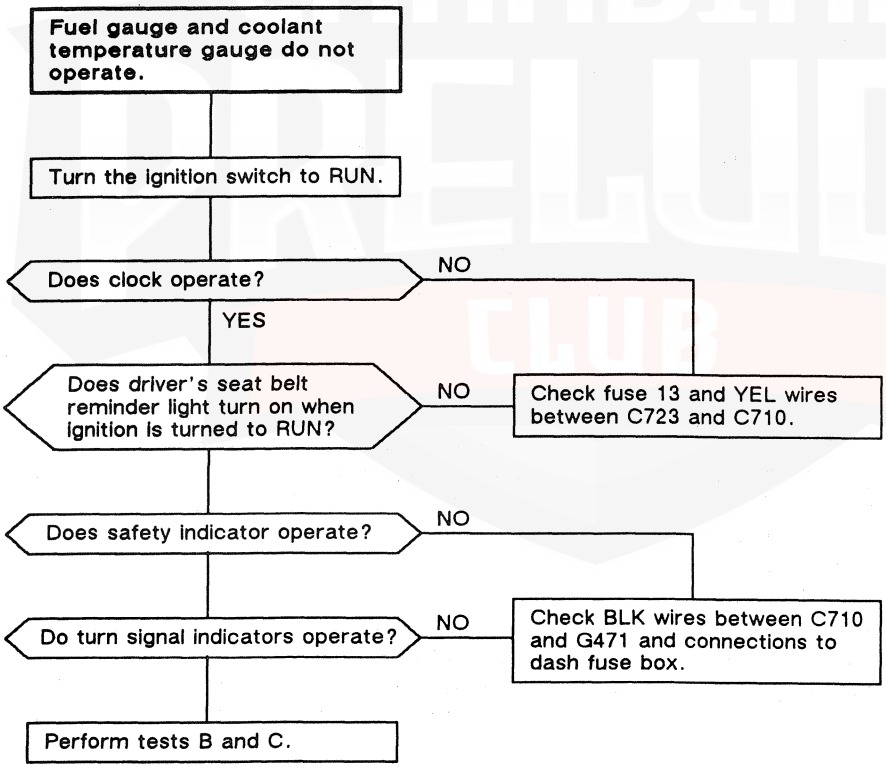
The fuel gauge sender's resistance varies from approximately 5 ohms at full to approximately 105 ohms at empty. Damper oil surrounding the fuel gauge allows the fuel level to be shown when the ignition is off.

With the engine running, the tachometer senses ignition pulses from the distributor through the igniter unit. The solid-state tachometer displays these pulses as engine speed. With 200 pulses per minute from the igniter unit, the tachometer displays 100 rpm.

Troubleshooting

Symptom	Troubletree
Fuel gauge and coolant temperature gauge do not operate.	A
Fuel gauge does not operate correctly.	B
Coolant temperature gauge does not operate correctly.	C
Inaccurate fuel gauge reading at all times — fuel gauge sender test.	D
Inaccurate coolant temperature gauge — coolant temperature gauge sender test.	E

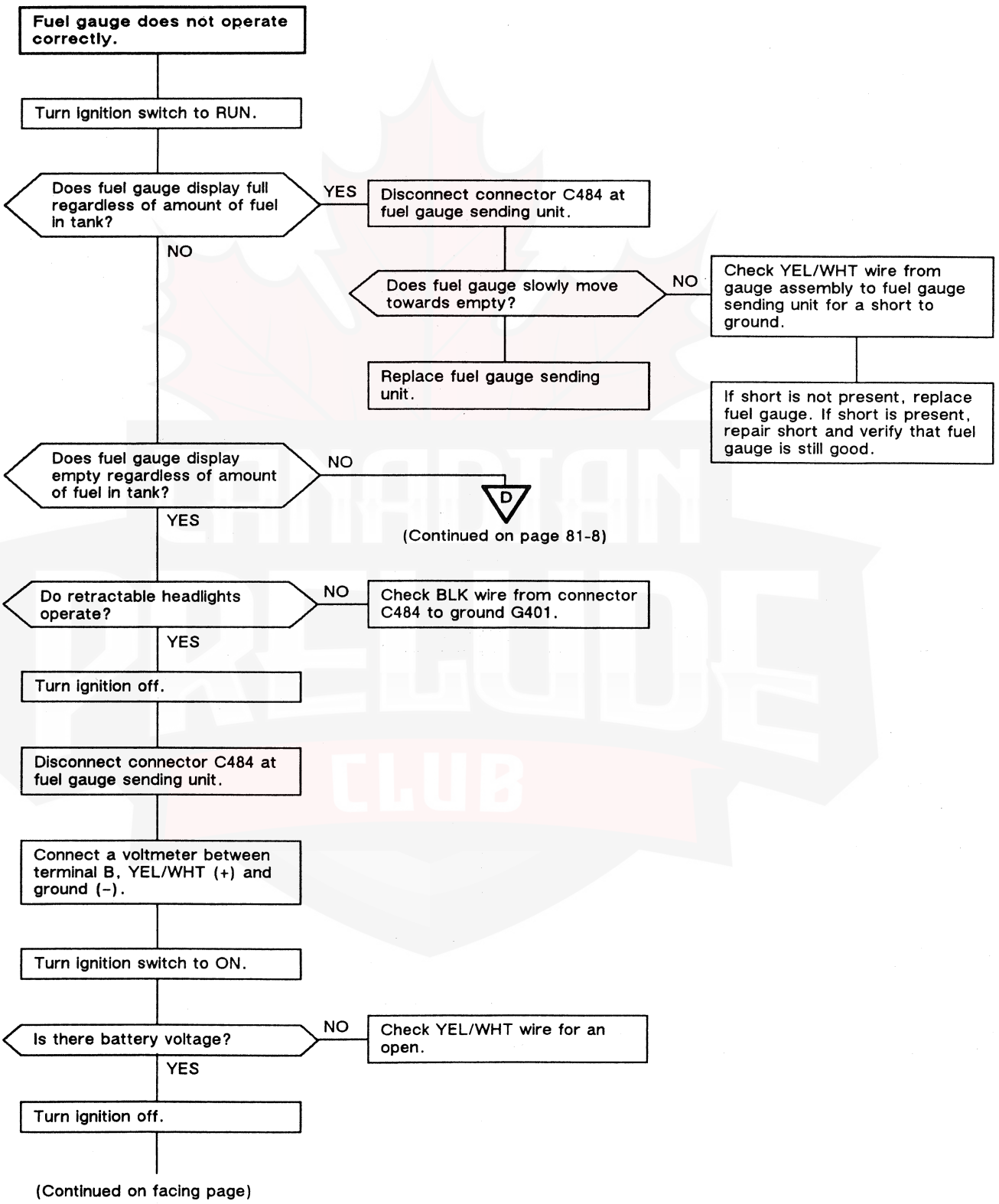
Troubletree A



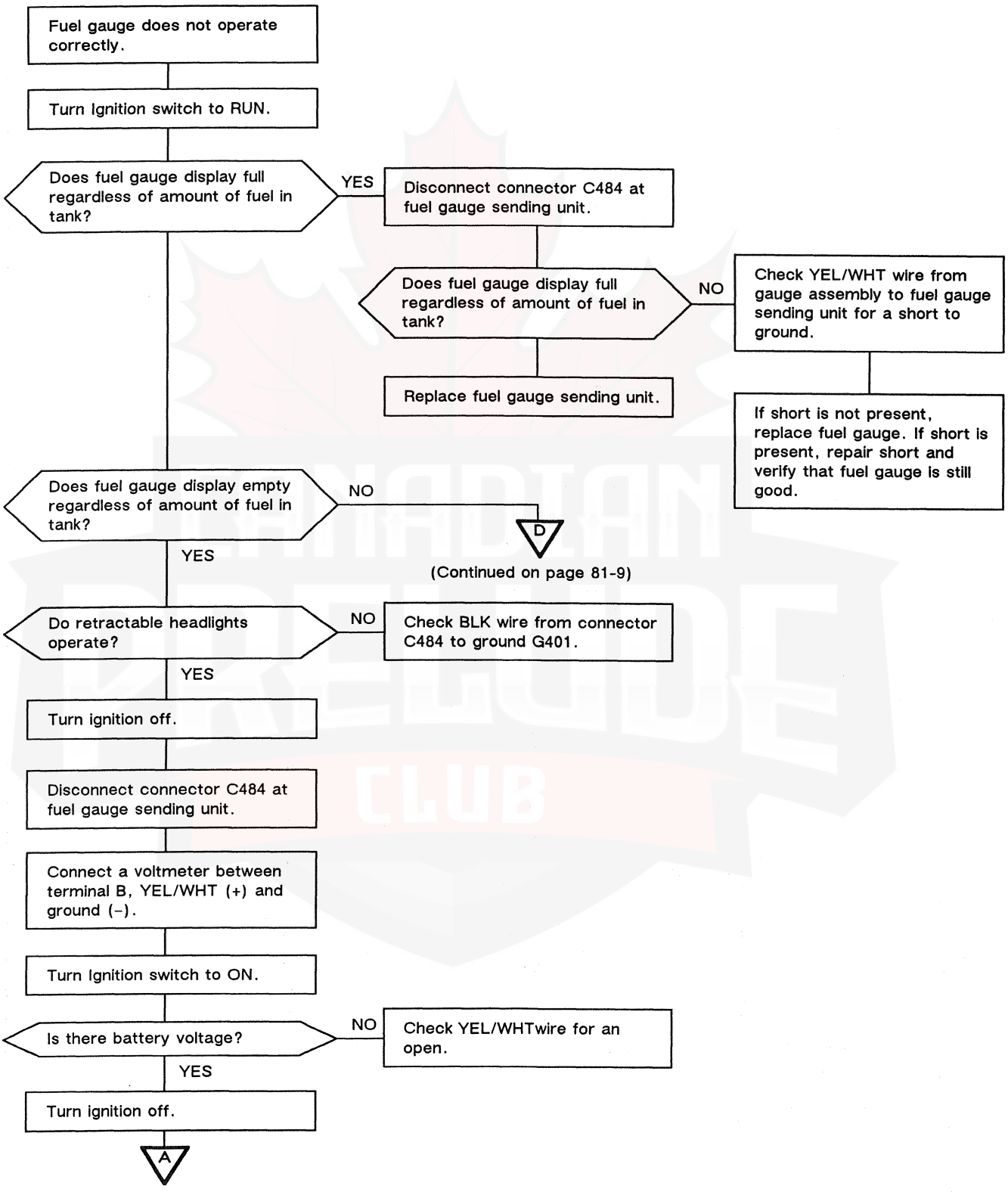
(cont'd)

Troubleshooting (cont'd)

Troubletree B



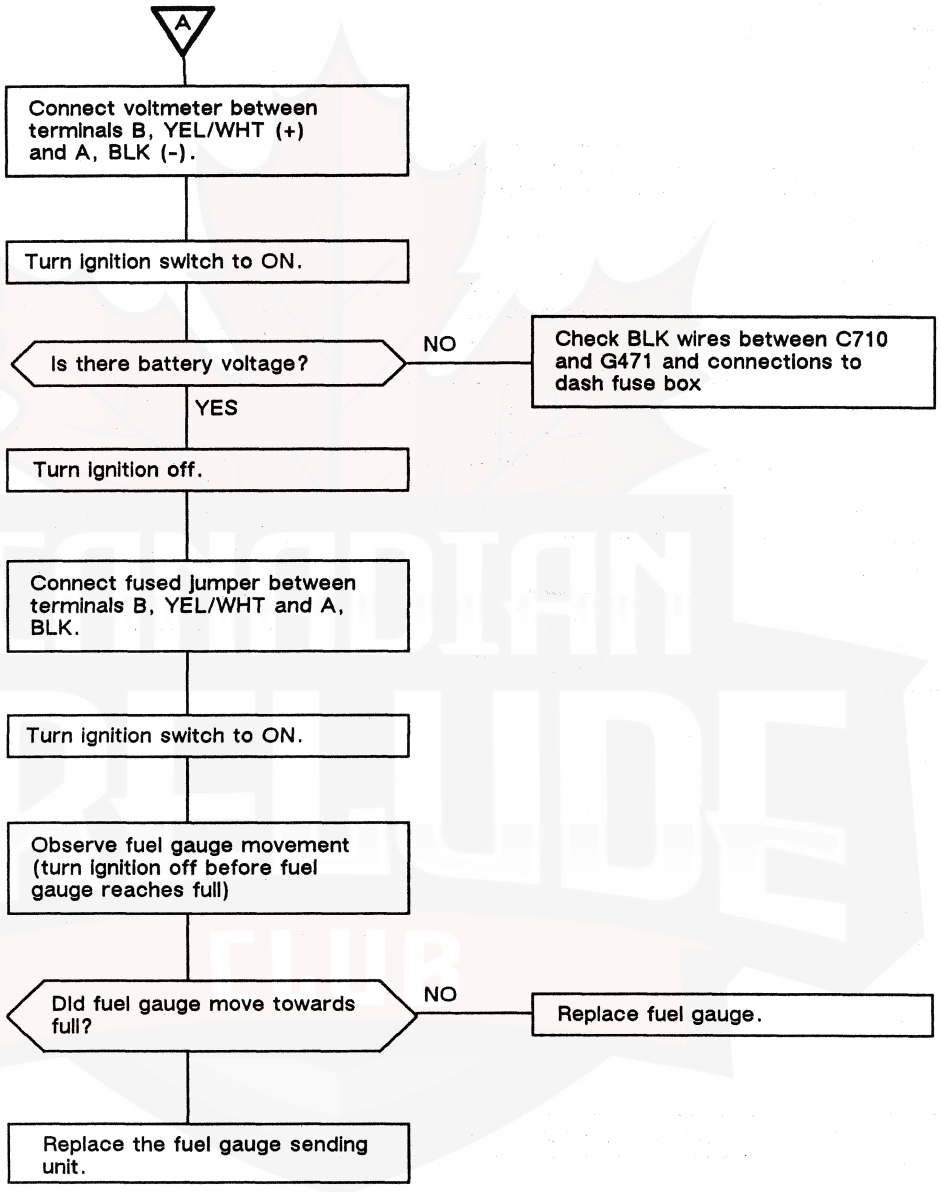
Troubletree B



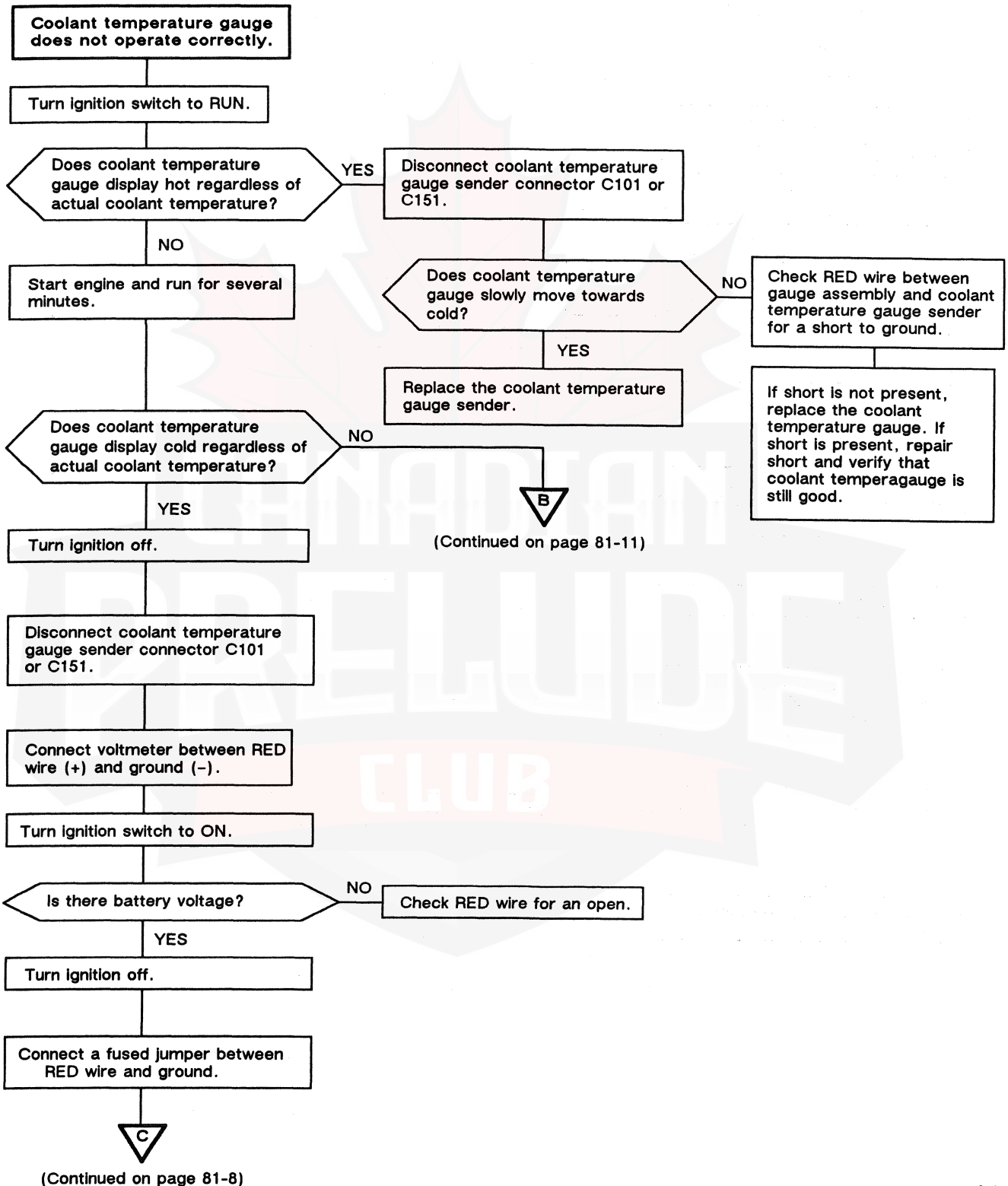
(cont'd)

Troubleshooting (cont'd)

(Continued from page 81-5)



Troubletree C



(cont'd)

Troubleshooting (cont'd)

Troubletree D

Fuel gauge sender test.

(Continued from page 81-4)

D

WARNING: Do not smoke while working on fuel system. Keep an open flame away from work area.

Turn ignition off.

Disconnect fuel gauge sending unit connector C484.

Remove the fuel gauge sender.

Move the float to position "A" as shown.

Measure the resistance between terminals A and B of the fuel gauge sender.

Is the resistance between 105 and 110 ohms?

NO → Replace the fuel gauge sending unit.

YES

Move the float to position "B" as shown.

Measure the resistance between terminals A and B of the fuel gauge sender.

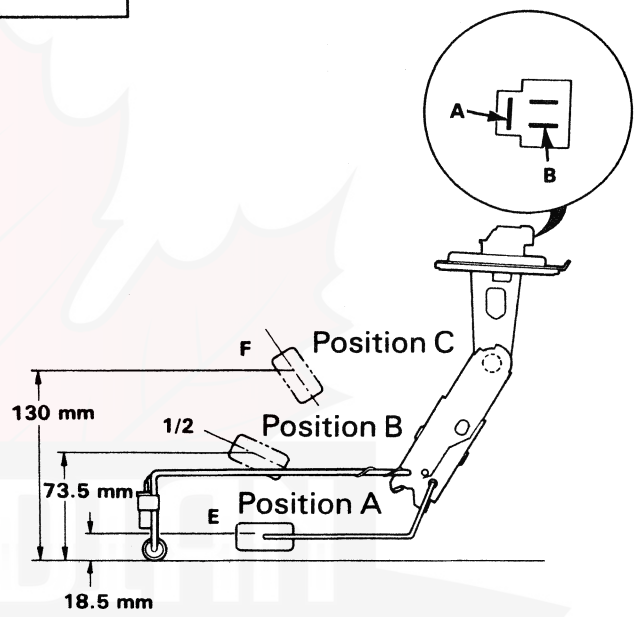
Is the resistance between 25.5 and 39.5 ohms?

NO → Replace the fuel gauge sending unit.

YES

Move the float to position "C" as shown.

(Continued on facing page)



FUEL GAUGE SENDING UNIT

Troubletree D

(Continued from page 81-5)

Fuel gauge sender test.

WARNING: Do not smoke while working on fuel system. Keep an open flame away from work area.

Turn ignition off.

Disconnect fuel gauge sending unit connector C484.

Remove the fuel gauge sender.

Move the float to position "A" as shown.

Measure the resistance between terminals A and B of the fuel gauge sender.

Is the resistance between 105 and 110 ohms?

NO → Replace the fuel gauge sending unit.

YES

Move the float to position "B" as shown.

Measure the resistance between terminals A and B of the fuel gauge sender.

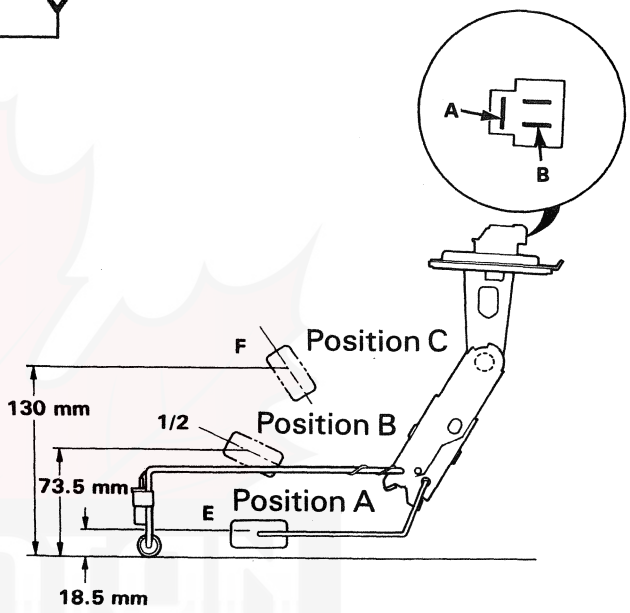
Is the resistance between 25.5 and 39.5 ohms?

NO → Replace the fuel gauge sending unit.

YES

Move the float to position "C" as shown.

(Continued on page 81-10)



FUEL GAUGE SENDING UNIT

(cont'd)

Troubleshooting (cont'd)

(Continued from page 81-9)

E

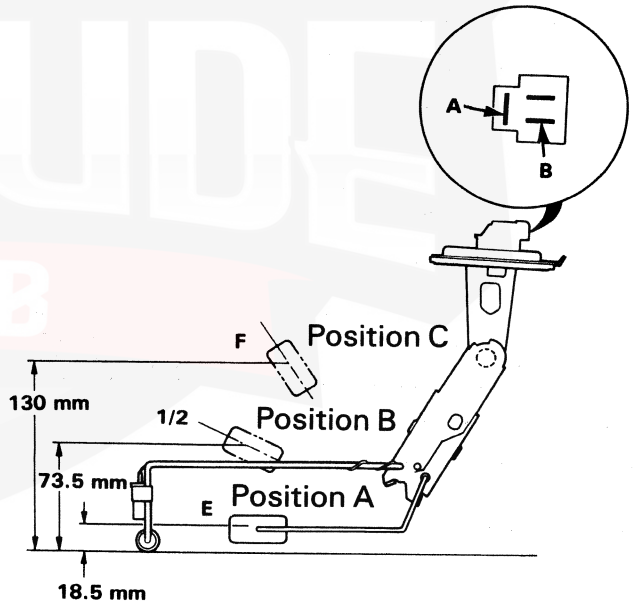
Measure the resistance between terminals A and B of the fuel gauge sender.

Is the resistance between 2 and 5 ohms?

NO → Replace the fuel gauge sending unit.

YES

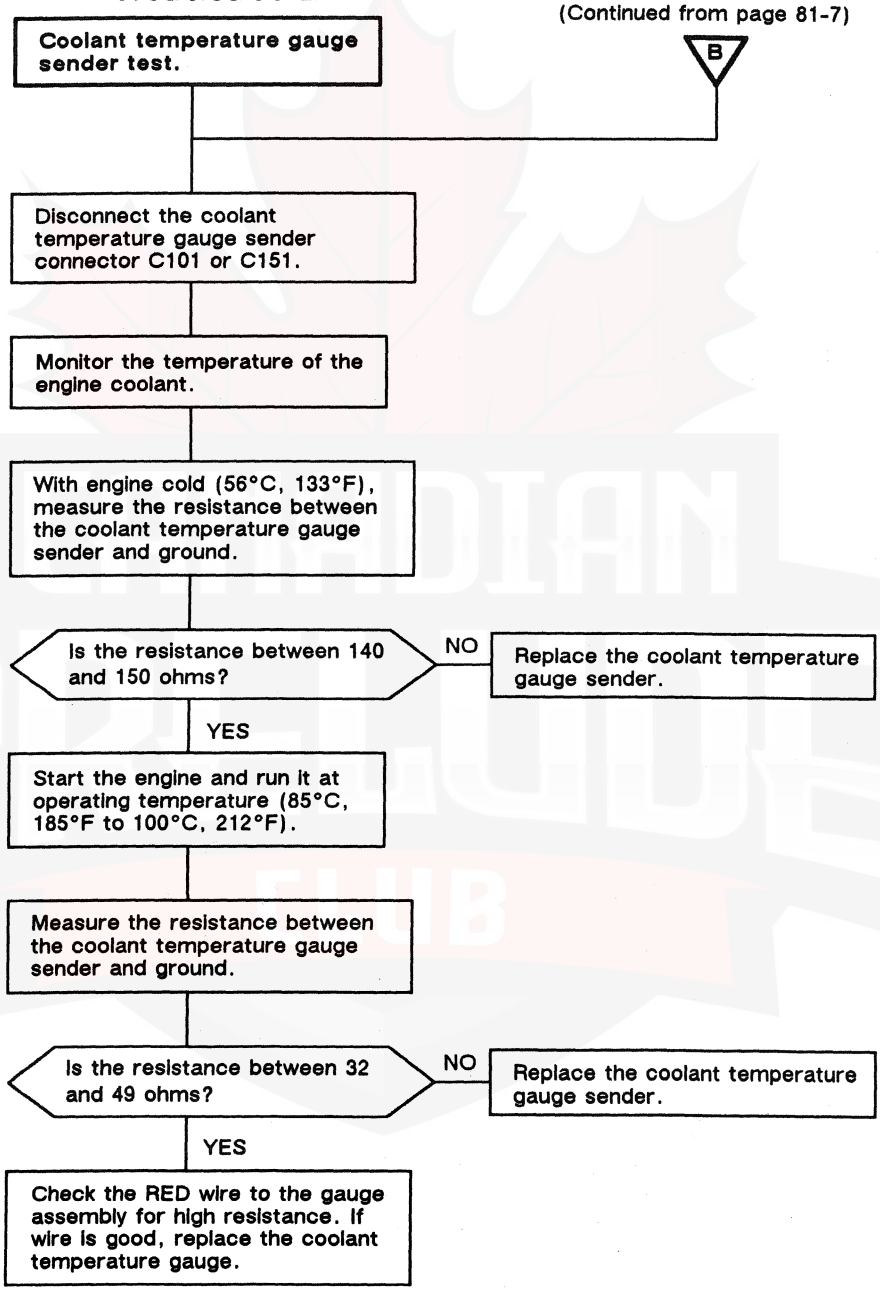
Check the YEL/WHT and BLK wires to the fuel gauge sending unit connector for high resistance. If wires are good, replace fuel gauge.



FUEL GAUGE SENDING UNIT

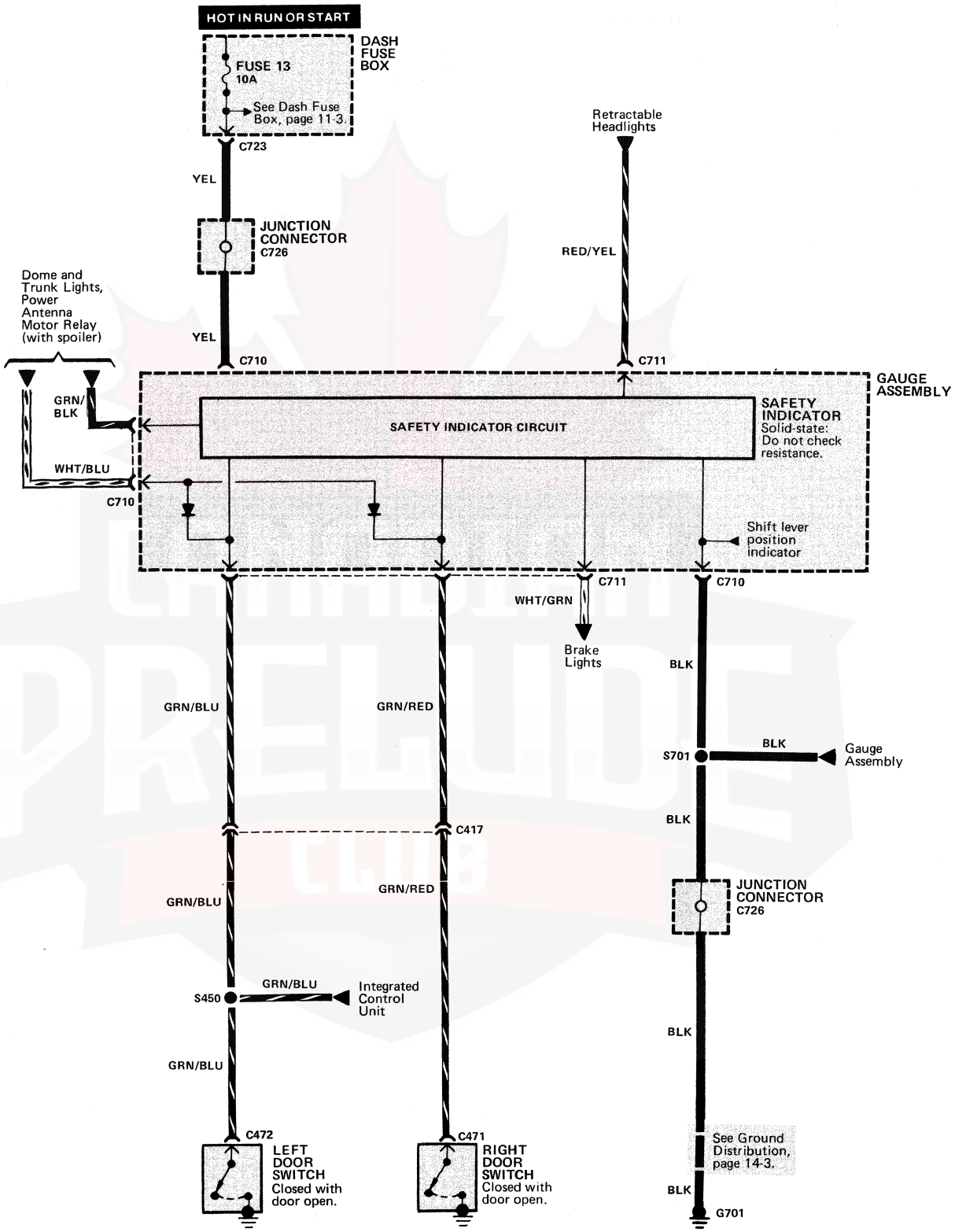
Troubletree E

(Continued from page 81-7)



Safety Indicator

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

With the ignition switch in RUN or START, voltage is applied to the safety indicator. The safety indicator lights the appropriate display according to the corresponding input signal. The brightness of the safety indicator display is controlled by the dash lights dimmer when the headlight switch is in PARK or HEAD.

Trunk Light

For information on how the circuit works, see the Trunk Light circuit.

Brake Light Bulb Failure Warning

For information on how the circuit works, see the Brake Lights circuit.

Dome Light

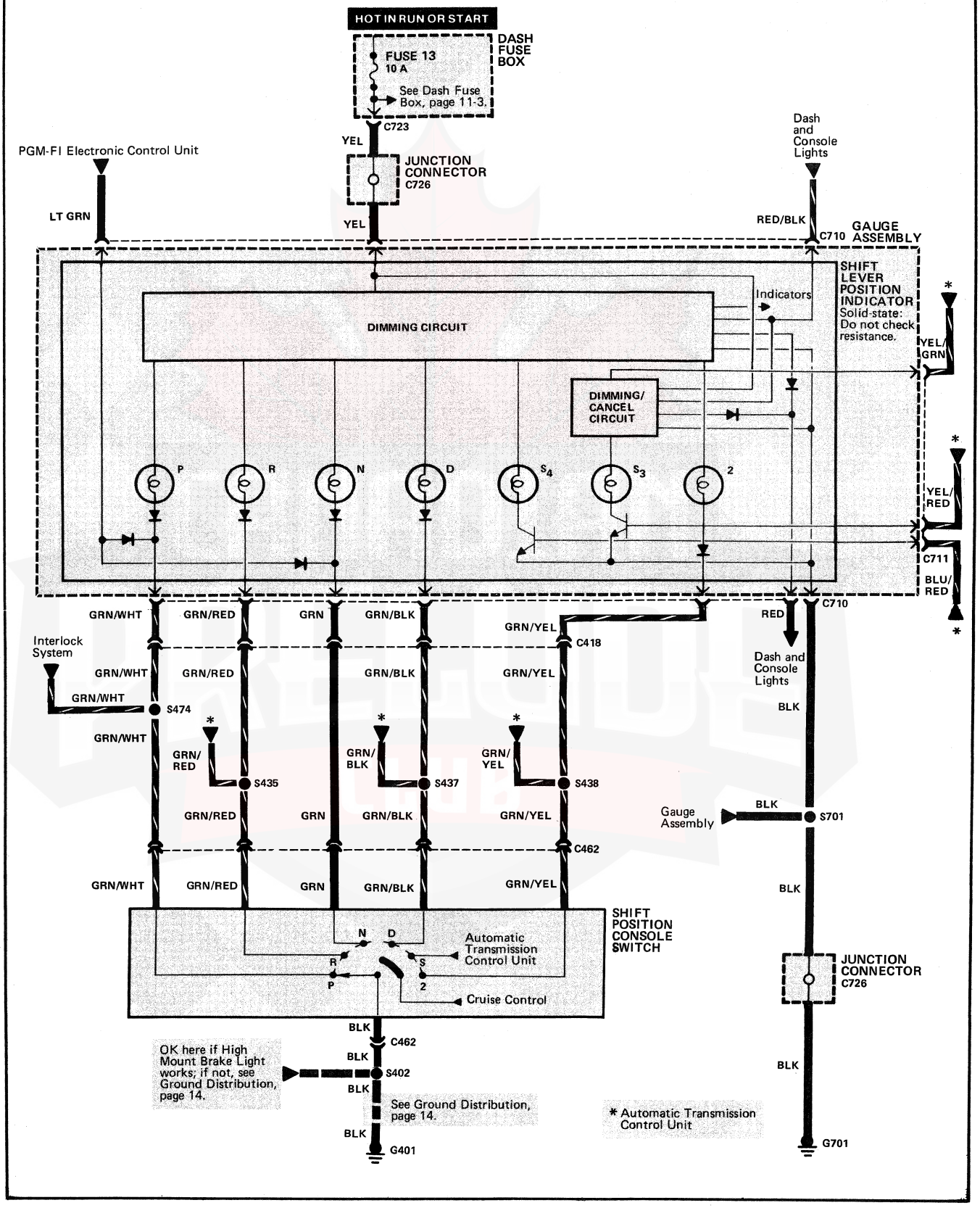
For information on how the circuit works, see the Dome Light circuit.

Retractable Headlights

For information on how the circuit works, see the Retractable Headlights circuit.

Shift Lever Position Indicator

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

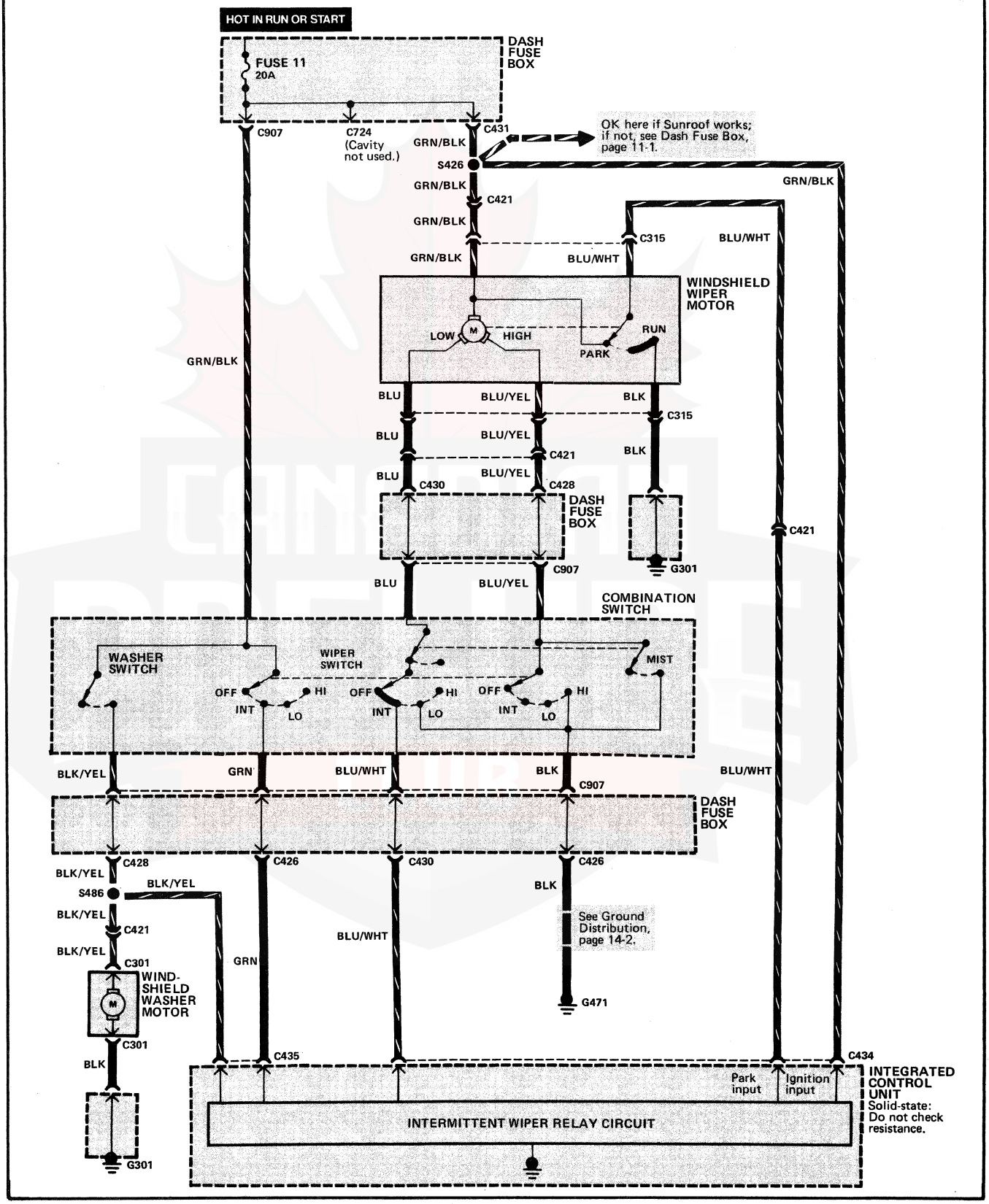
With the ignition switch in RUN or START, voltage is applied to the shift lever position indicator. The gear selector switch provides a ground for each position. As an input is grounded, its indicator lights. If R is selected, for example, a ground will be applied to the input of the shift position indicator, and the R indicator will light.

With the headlight switch in PARK or HEAD, voltage is applied to the RED/BLK wire terminal. This changes indicator panel illumination from fixed to controlled by the dash lights dimmer input on the RED wire.

The S_4 and S_3 indicators are controlled by the automatic transmission control unit. See Automatic Transmission and Section 14 of the Service Manual for circuit description and troubleshooting procedures.

Wiper/Washer

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Low Speed

With the ignition switch in RUN or START, battery voltage is applied to the windshield wiper motor. When the wiper switch is moved to LO, the low speed winding of the motor is grounded through the low contact of the combination switch. The wipers run at low speed. A cam switch attached to the wiper motor signals the integrated control unit as to the position of the wipers.

Park/Off

When the wiper switch is turned off, the integrated control unit provides a ground for the windshield wiper motor. When the cam switch on the motor signals the integrated control unit that the wipers are in the park position, the control unit removes the grounds for the motor. The wipers stop in the parked position.

High Speed

When the wiper switch is in HI, the high speed winding of the windshield wiper motor is grounded through the high contact of the combination switch: The wipers run at high speed.

Intermittent

When the wiper switch is moved to INT, battery voltage is applied through the GRN wire to the integrated control unit. The integrated control unit's intermittent wiper relay circuit provides ground to the low speed windings of the wiper motor: The wipers make a single sweep approximately once every five seconds.

Mist

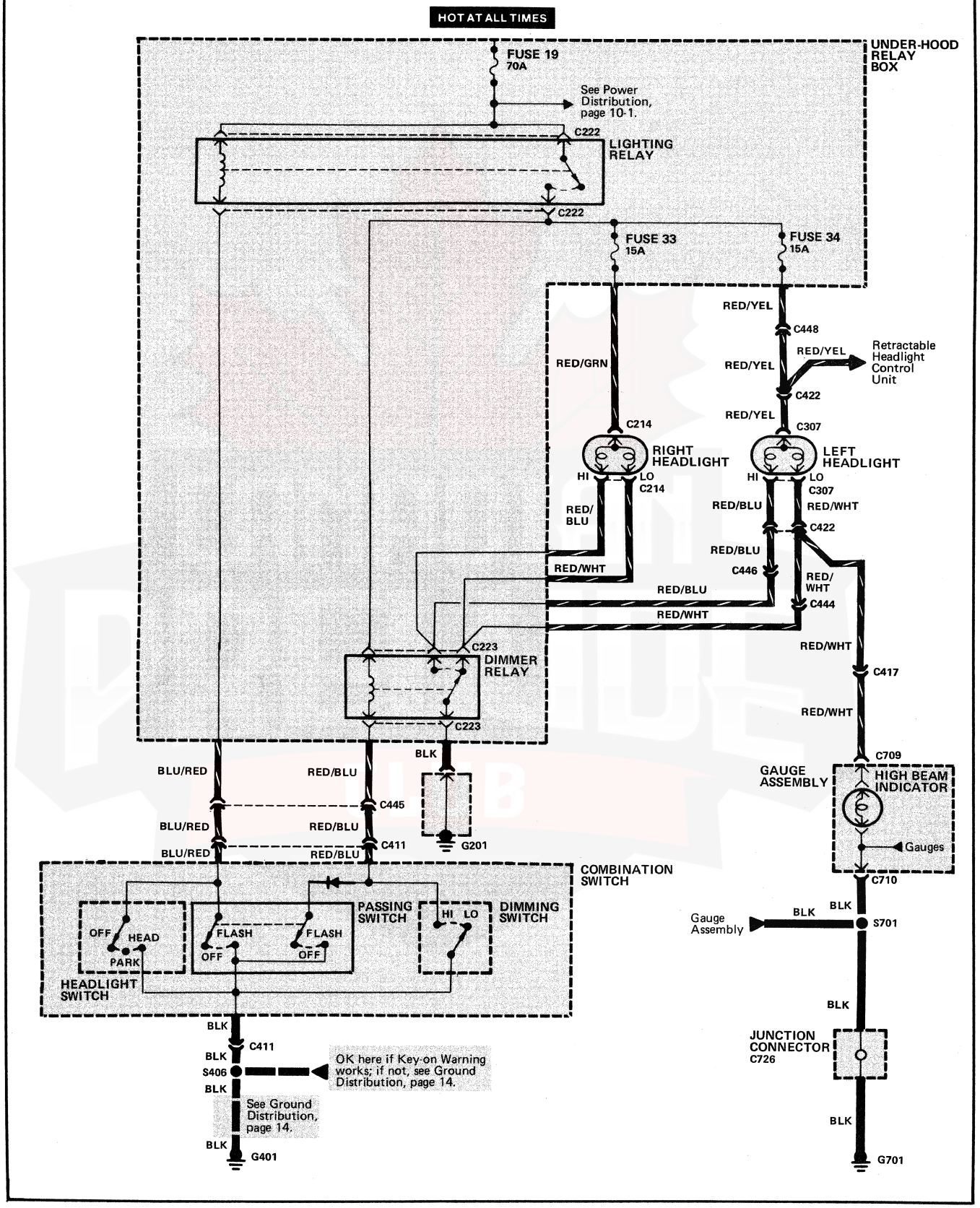
When the wiper switch is moved to MIST and released, the high speed winding of the windshield wiper motor is grounded through the mist contact in the combination switch. The wipers make one sweep at high speed and return to the park position.

Washer

When the washer switch is depressed, battery voltage is applied to the windshield washer motor. The motor pumps fluid on the windshield until the switch is released.

Headlights

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Low Beam Operation

Voltage is applied at all times to the lighting relay. With the headlight switch in HEAD, ground is applied to the lighting relay coil, and the contacts close. Voltage is applied through the fuses to the headlights. The low filaments of the dual beam headlights are grounded through the dimmer relay contacts: The low beams go on.

High Beam Operation

Voltage is applied to the headlights the same way as it is in low beam operation. Voltage is applied through the lighting relay contacts to the dimmer relay coil. With the dimming switch in HI, ground is applied to the dimmer relay coil and the relay energizes. The high filaments of the dual beam headlights and the high beam headlights are grounded through the dimmer relay contacts: The high beams go on.

Voltage is applied through the low filaments of the headlights to the high beam indicator light: The indicator light goes on.

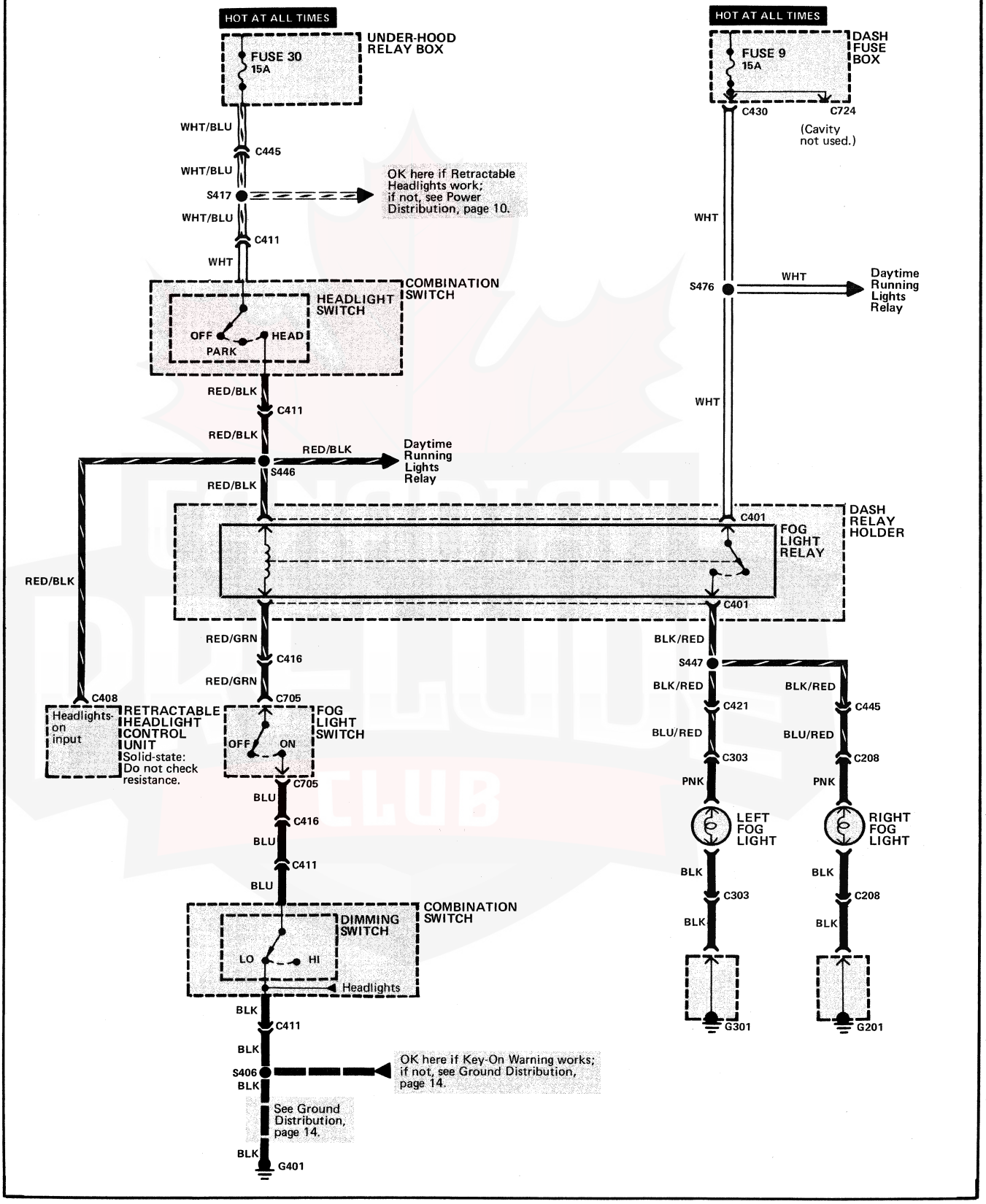
Flash Operation

The flash feature works with the headlight switch off, or in PARK, or HEAD (low beams). With the passing switch in FLASH, ground is applied to the lighting relay coil. The lighting relay energizes and applies voltage to the headlights and the dimmer relay coil. The dimmer relay coil is grounded through the passing switch. The dimmer relay energizes and applies ground to the high filaments of the headlights: The high beams go on.

The flash function has no effect if high beams are already on.

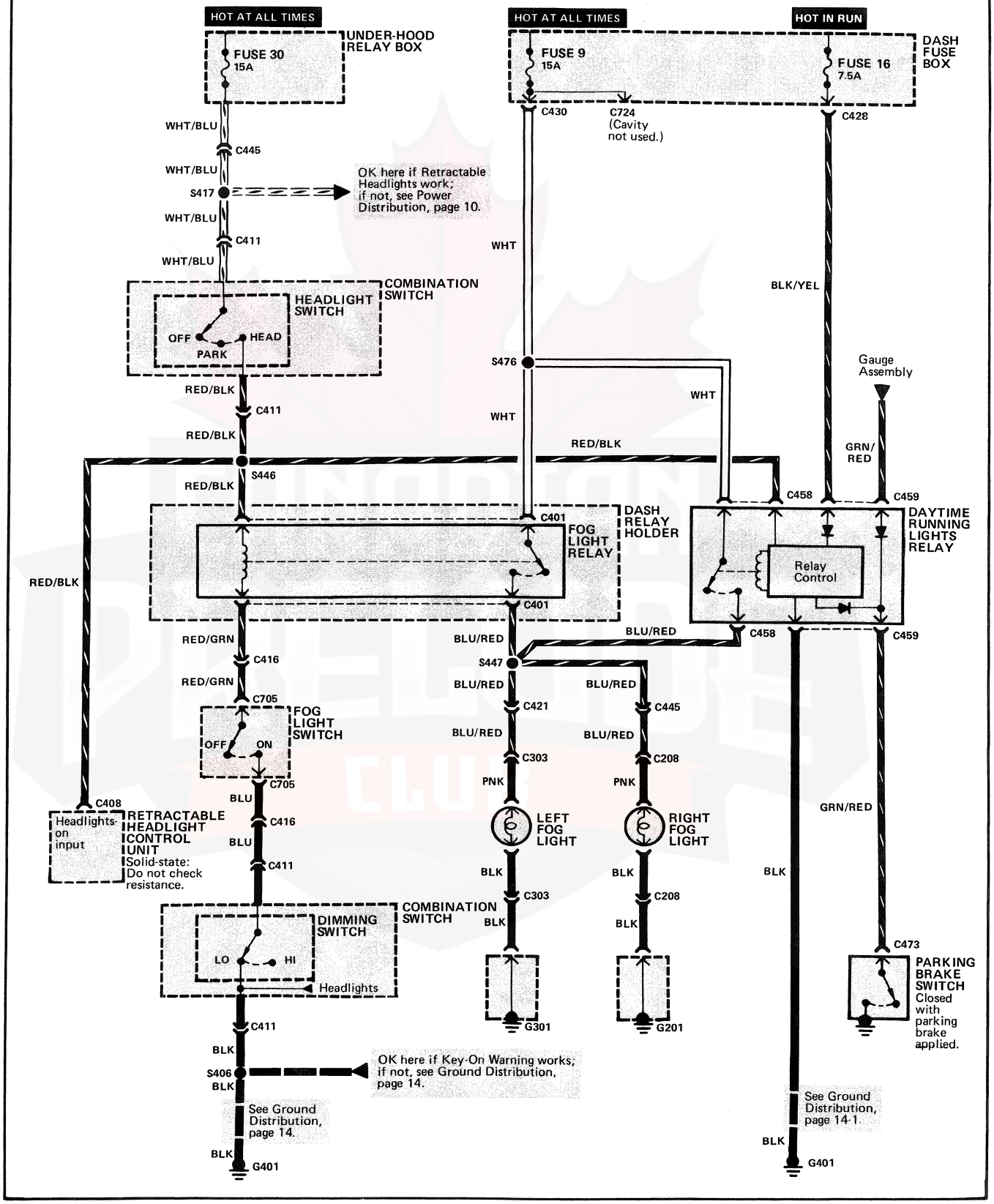
Fog Lights

Circuit Schematic



Fog Lights: Canadian Models

Circuit Schematic



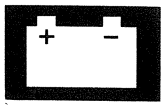
Fog Lights

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

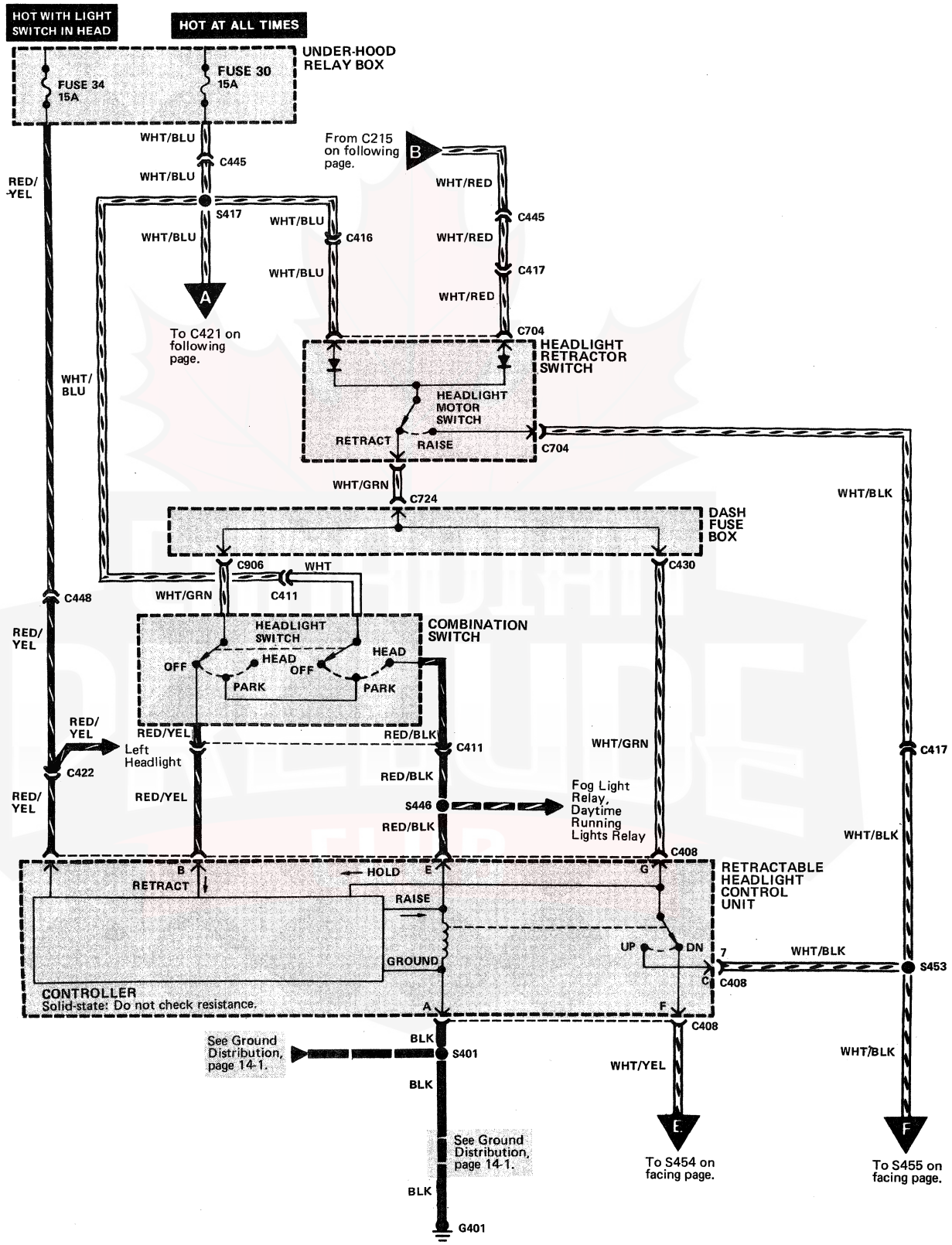
How The Circuit Works

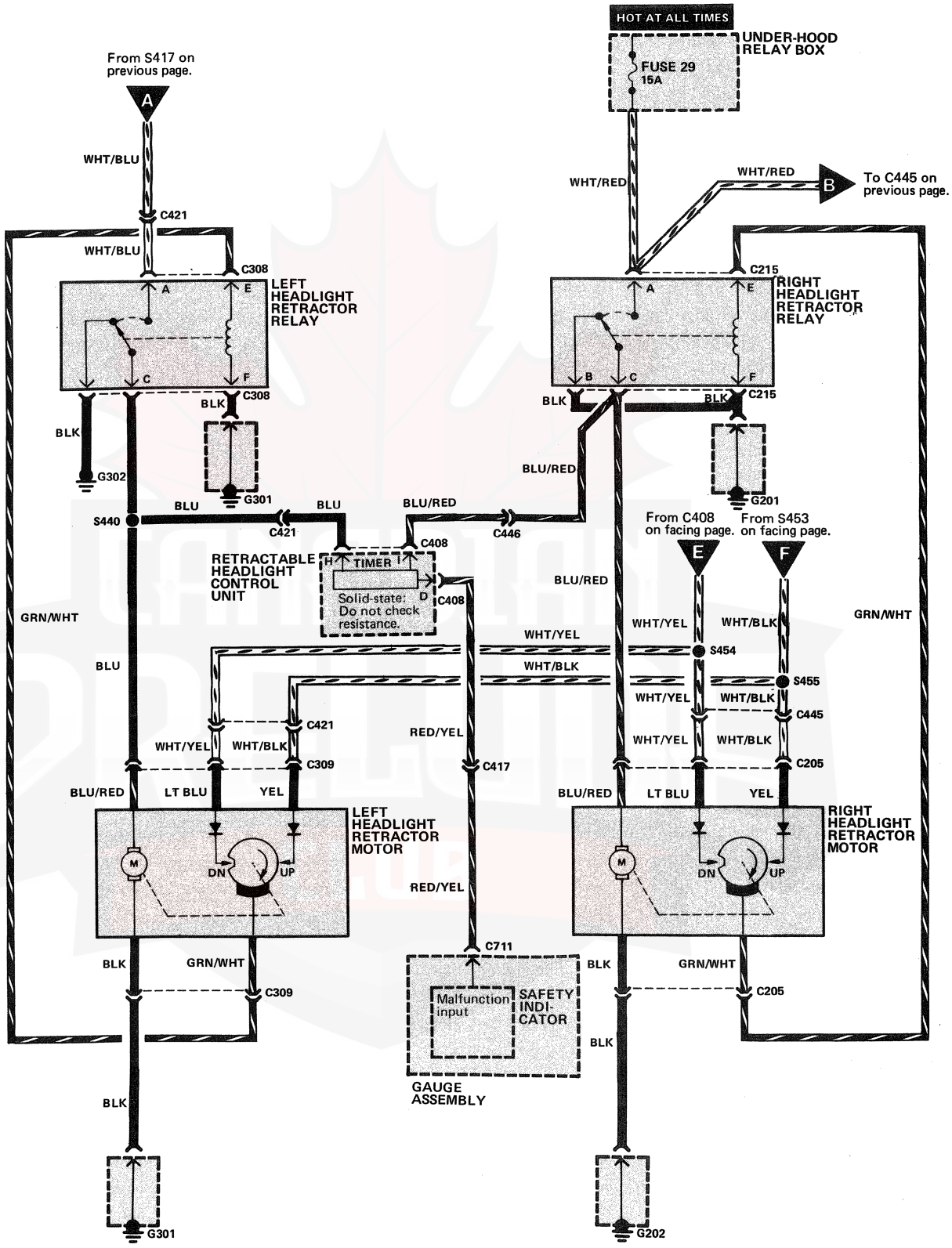
The fog lights are controlled indirectly through the fog light relay by the fog light switch, headlight switch and dimming switch. With the headlight switch in the HEAD position, battery voltage is applied to the fog light relay coil. With the fog light switch in the ON position, the dimming switch in LO, and the headlight switch ON a current path is created to the fog light relay coil. The fog light relay is energized and voltage from fuse 9 is applied to the fog lights. If the dimming switch is in the HI position, the headlight switch is not in the HEAD position or the fog light switch is turned off, the relay coil is deenergized and the fog lights are turned off.



Retractable Headlights

Circuit Schematic





Retractable Headlights

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The headlights can be raised or retracted with the headlight motor switch on the instrument panel or with the light switch on the turn signal lever.

Headlight Motor Switch Operation

With the headlights retracted, the headlight switch in off, and the headlight motor switch pressed in (RAISE), current flows through the headlight motor switch, the LH headlight retractor motor up contact, and the LH headlight retractor relay coil to ground. The relay operates, and current flows through the relay contacts and LH headlight retractor motor to ground. The motor operates to raise the headlight. With the headlight fully raised, the LH headlight retractor motor up contact opens and current to the LH headlight retractor relay is stopped. The relay moves to the position shown in the schematic and current to the motor is cut off: The motor stops. Similar current flow occurs at the same time for the RH retractor relay and motor.

When the headlight retractor relay contacts return to the de-energized state, ground is connected to both sides of the retractor motor. This acts as a dynamic brake to stop the motor quickly.

With the headlights raised, the headlight switch off, and the headlight motor switch released (RETRACT), current flows through the headlight motor switch, the retractable headlight control unit down contacts, the LH headlight retractor motor down contact, and the LH headlight retractor relay coil to ground. The motor operates to retract the headlights. With the headlights fully retracted, the LH headlight retractor motor down contact opens and current to the LH headlight retractor relay is stopped. The relay moves to the position shown in the schematic and current to the motor is cut off: The motor stops.

Similar current flow occurs at the same time for the RH headlight retractor relay and motor.

Headlight Switch Operation

With the headlight motor switch in RETRACT and the headlight switch moved to HEAD current flows through the retractable headlight control unit coil to ground. The control unit contacts move to up and current flows through the headlight motor switch RETRACT contacts and control unit up contacts to the LH retractor motor. From this point, current flow to raise the headlights is the same as described in Headlight Motor Switch Operation above. With the headlight motor switch in RETRACT and the headlight switch moved from HEAD to PARK, voltage to the retractable headlight control unit terminal "E" is cut off. The controller applies voltage to the coil to keep the contacts closed in the up position.

With the headlight motor switch in RETRACT and the headlight switch moved to off, voltage is applied to terminal "B" of the retractable headlight control unit. Voltage is removed from the control unit coil, and the control unit contacts move to "DN". Current flows through the headlight motor switch retract contacts and control unit down contacts to the LH retractor motor. From this point, current flow to retract headlights is the same as described in Headlight Motor Switch Operation, above.

Safety Indicator Operation

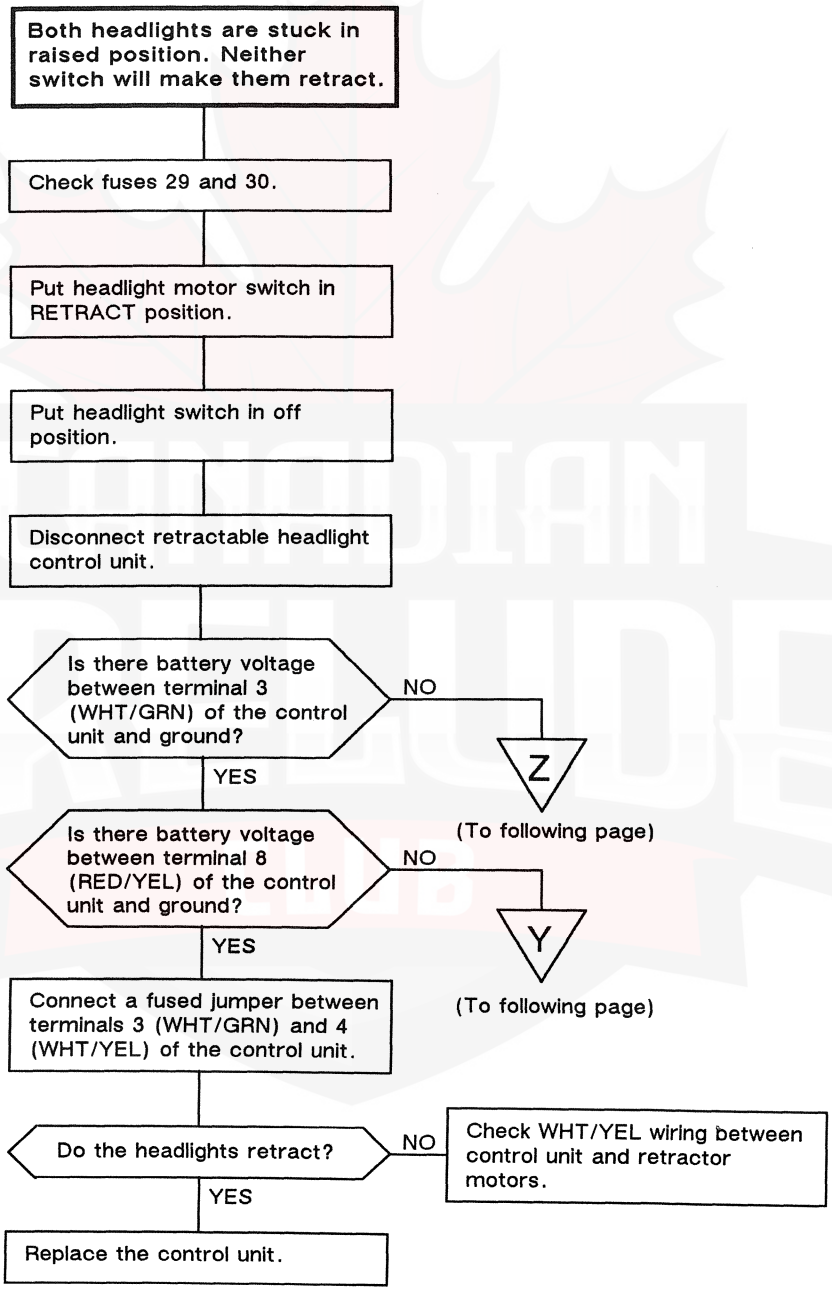
Voltage is applied to terminals H and I of the retractable headlight control unit whenever the headlight retractor relays operate to activate the headlight retractor motors. The relays operate only for the short time it takes the headlights to rise or retract. With the headlights operating normally, the time that this voltage is applied to the timer is fixed and equal between terminals H and I. If the voltage is applied for too long, not long enough, or unequally, the timer sends a signal to the safety indicator. The safety indicator lights the headlight motor warning light symbol on the safety indicator panel to indicate a problem with the headlight retractors.

Retractable Headlights

Troubleshooting

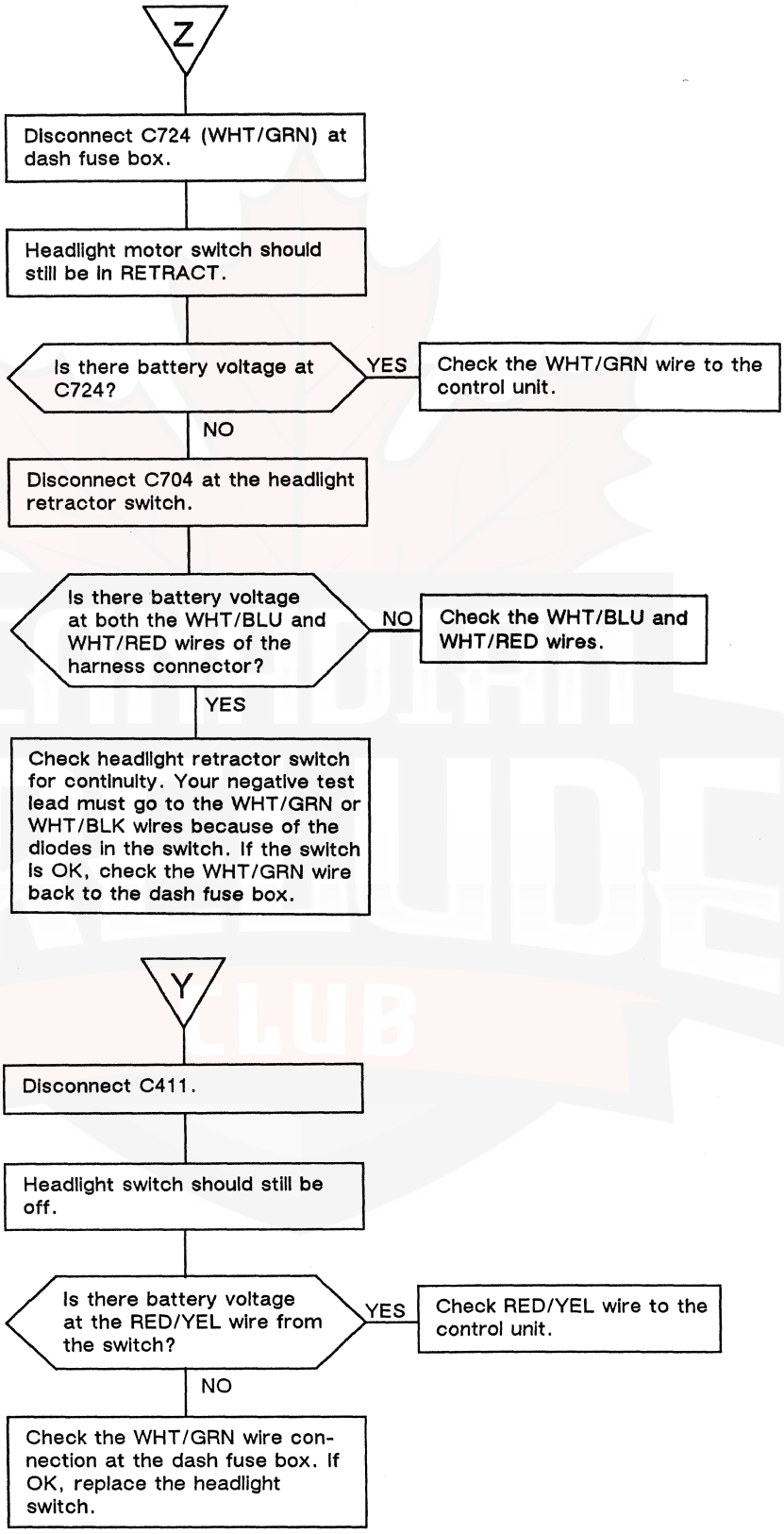
Symptom	Troubletree
Both headlights are stuck in raised position. Neither switch will make them retract.	A
Both retractor motors do not work from the headlight switch but do work from the headlight motor switch.	B
Both retractor motors do not work from the headlight motor switch but do work from the headlight switch.	C
Headlights retract when headlight switch is moved from HEAD to PARK.	D
A single motor is inoperative.	E

Troubletree A



Retractable Headlights

Troubleshooting (cont'd)



Troubletree B

Both retractor motors do not work from the headlight switch but do work from the headlight motor switch.

Disconnect the retractable headlight control unit.

Put the headlight switch in the head position.

Measure the voltage between terminal 5 (RED/BLK) and ground at the retractable headlight control unit connector C408.

Is there battery voltage?

YES → Measure the voltage between 5 (RED/BLK) and 9 (BLK) wires of the control unit.

Is there battery voltage?

YES → Replace the retractable headlight control unit.

NO → Check the BLK wire for continuity to ground.

NO → Check the RED/BLK wire between the headlight switch and retractable headlight control unit for an open.

Is the RED/BLK wire OK?

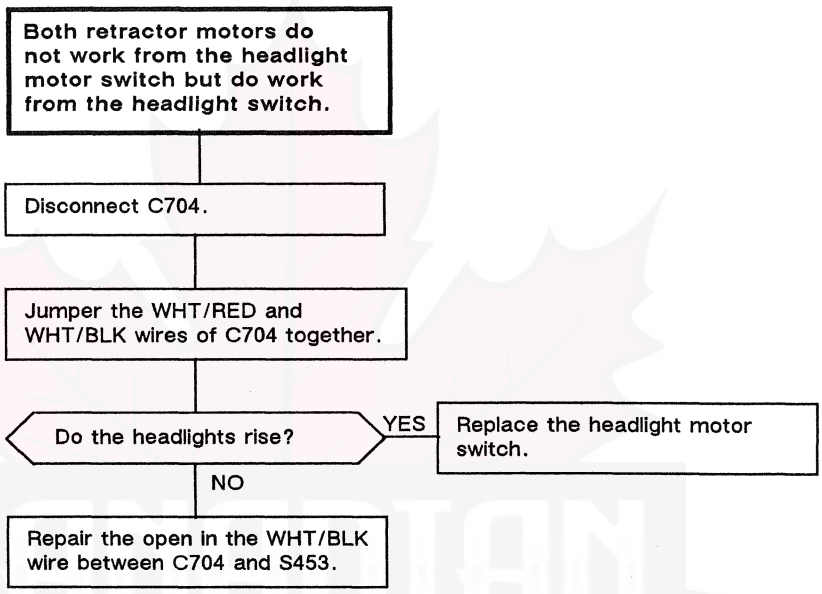
NO → Repair the RED/BLK wire.

YES → Replace the headlight switch.

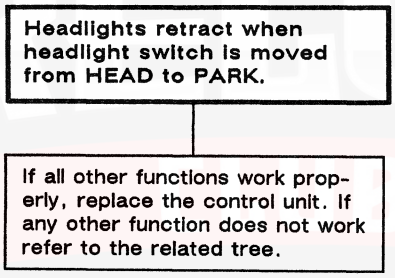
Retractable Headlights

Troubleshooting

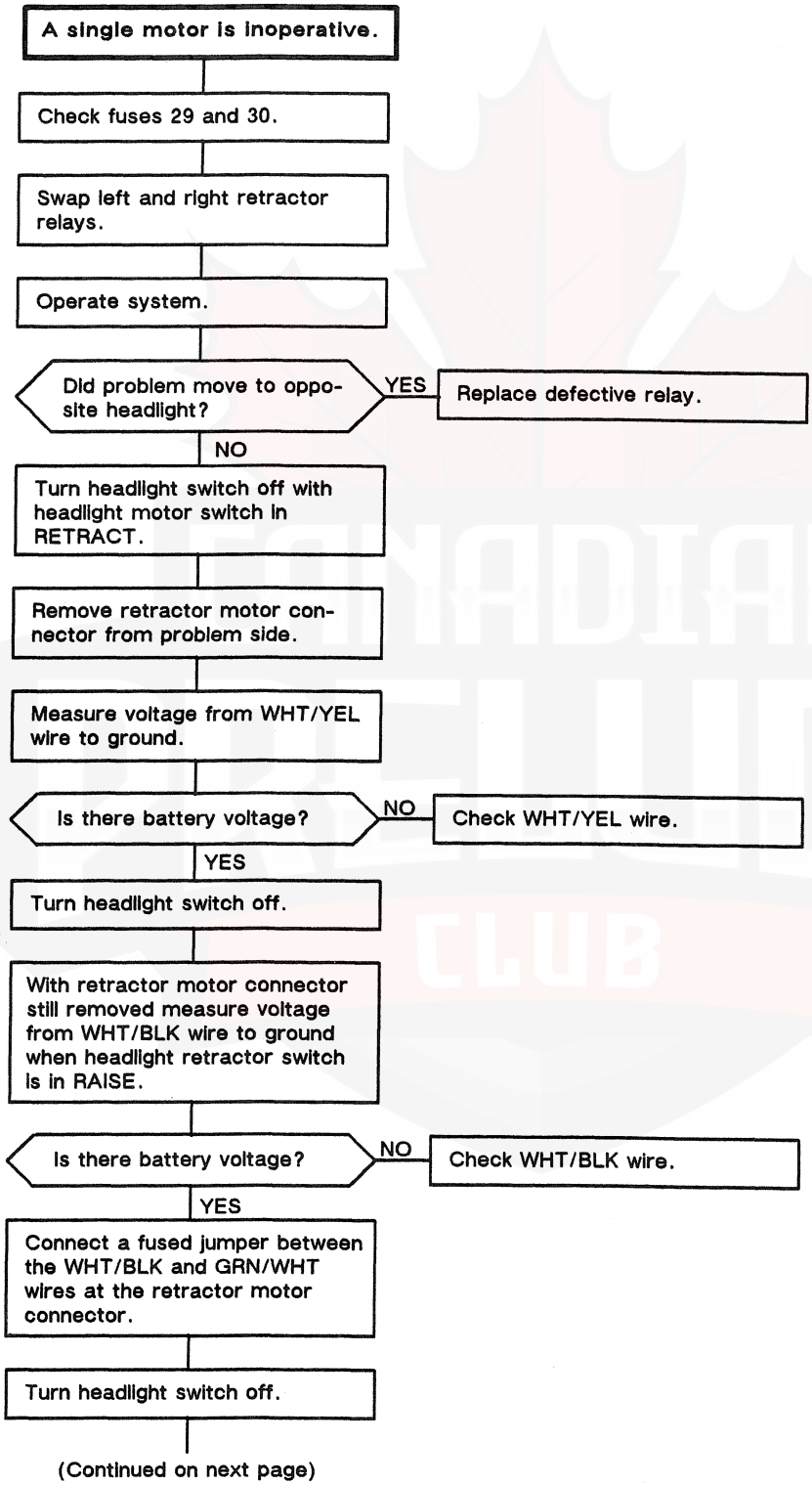
Troubletree C



Troubletree D



Troubletree E



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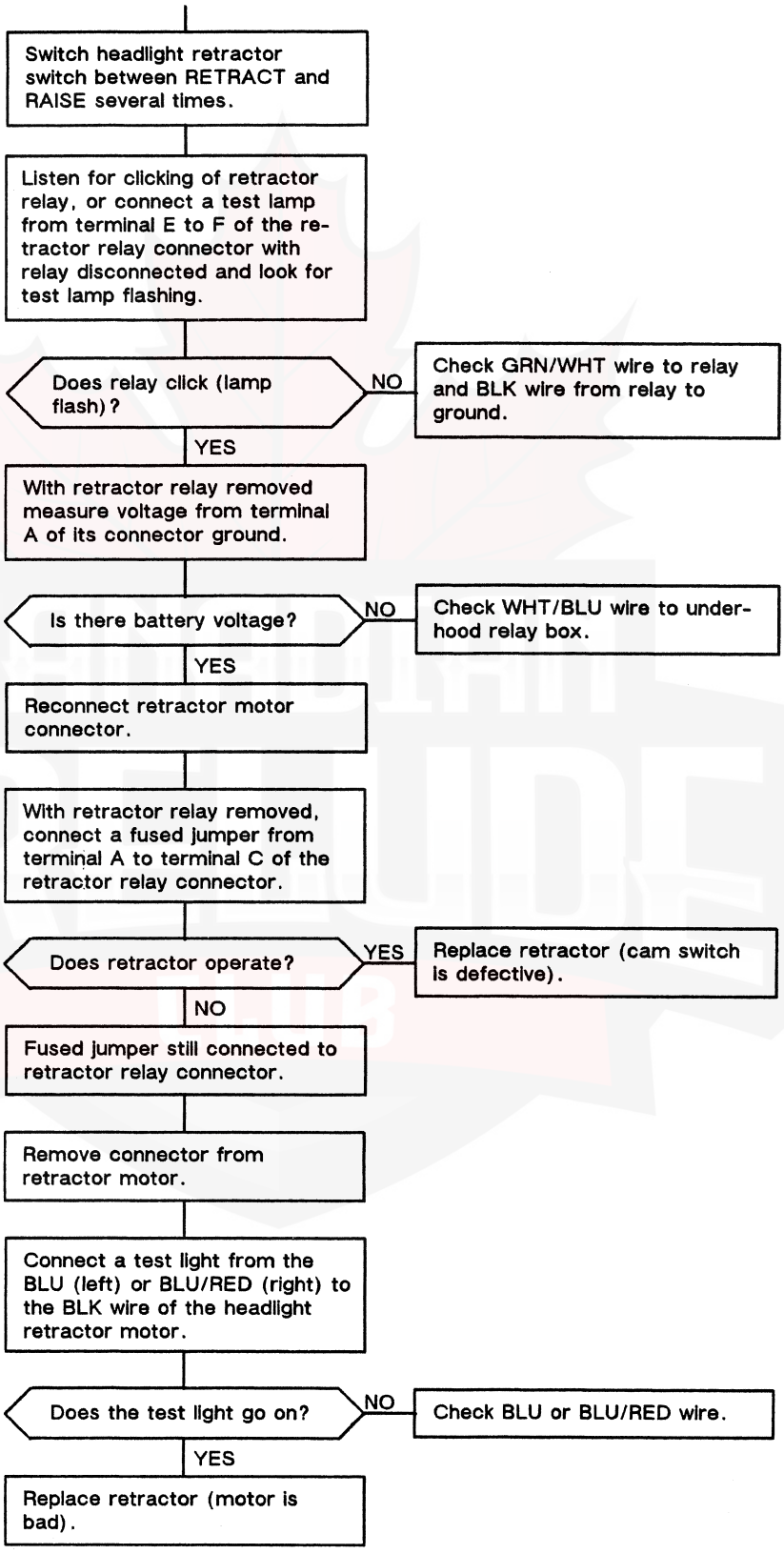
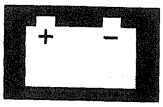
Retractable Headlights

Troubleshooting (cont'd)

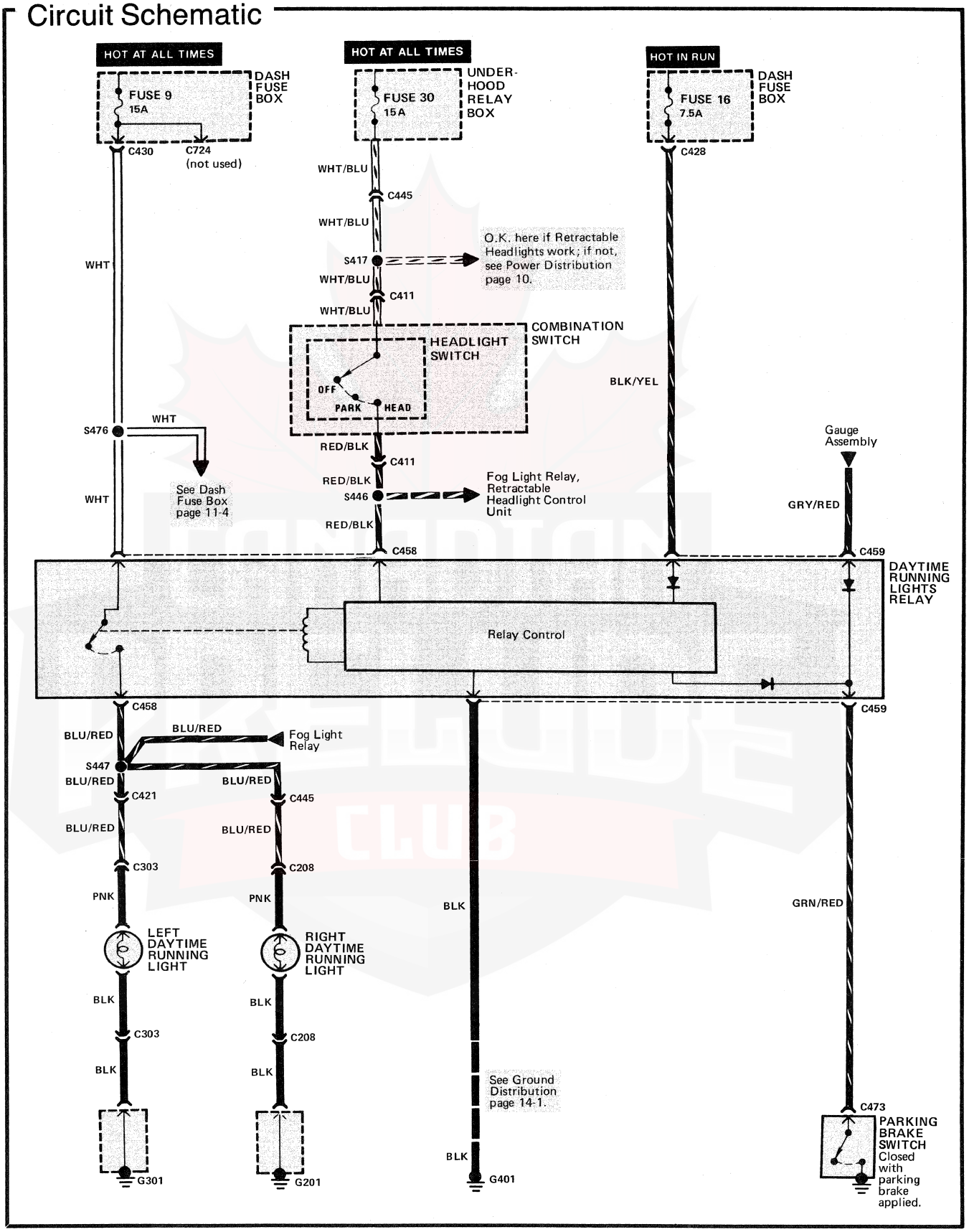
(Continued from previous page)





Daytime Running Lights

Circuit Schematic



Component Location Index

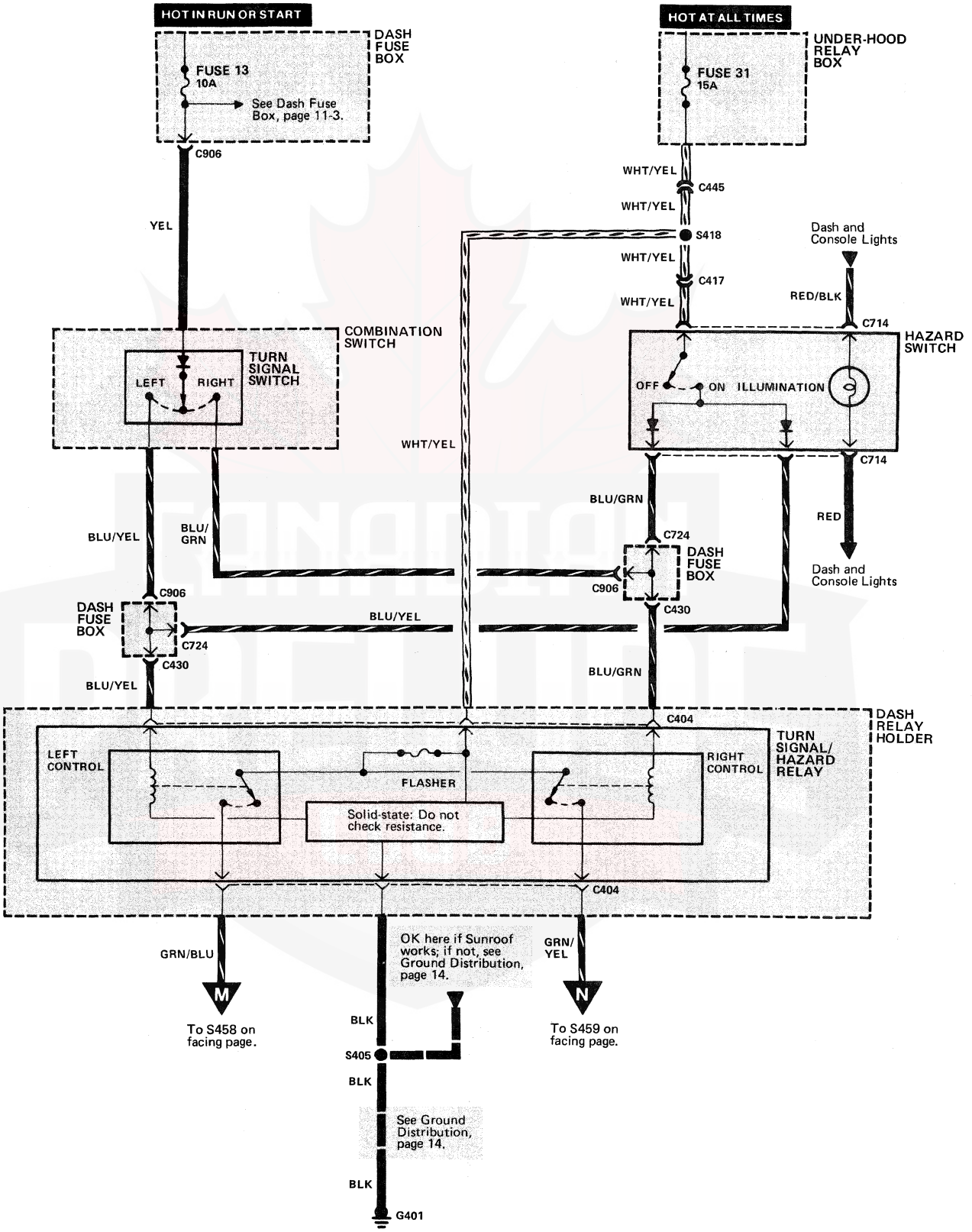
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

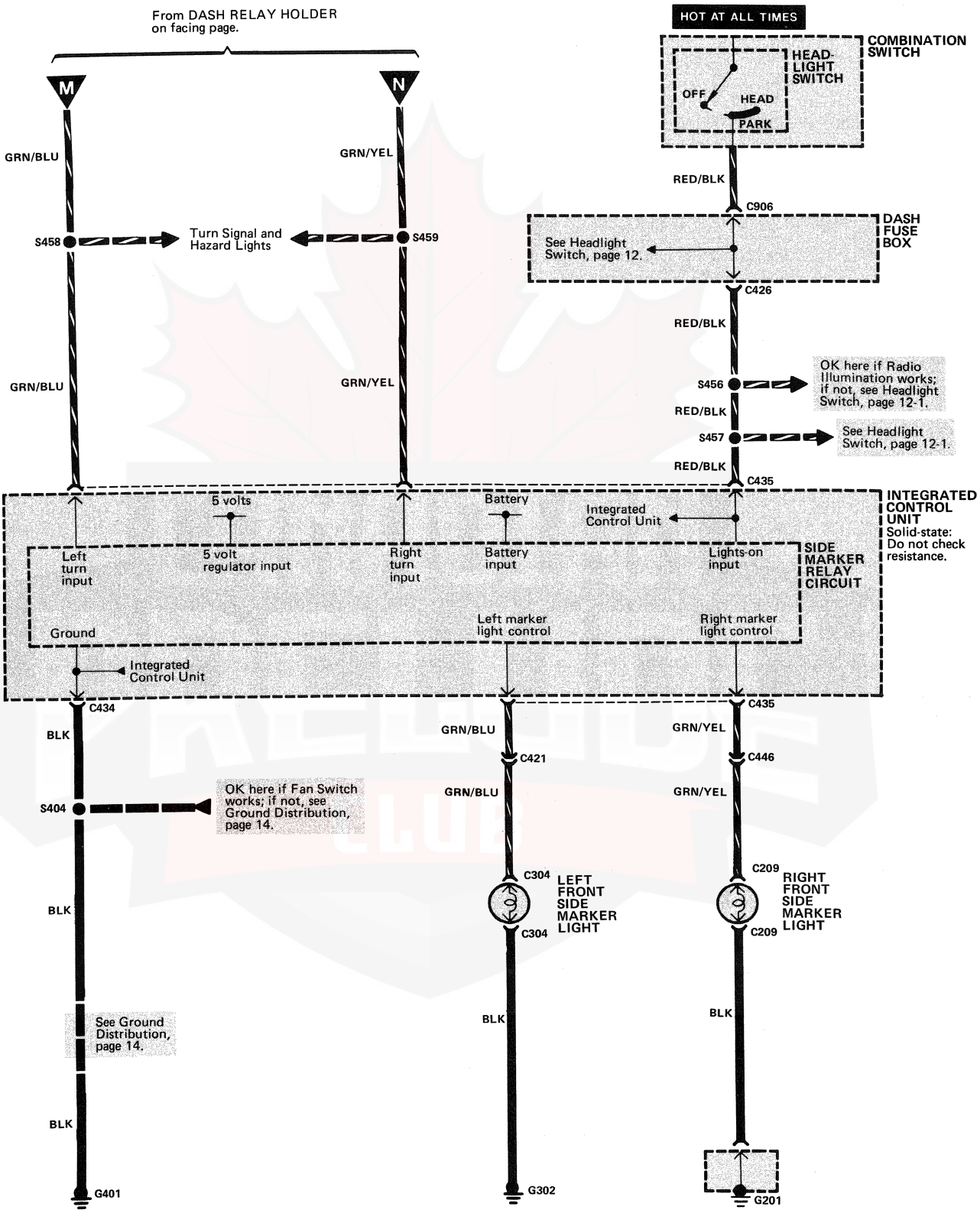
How The Circuit Works

With the ignition switch in RUN, voltage is applied through fuse 16 to the daytime running lights relay. The relay energizes and provides voltage to the daytime running lights. The relay will not energize if the parking brake is applied. If the headlight switch is turned to the HEAD position, the daytime running lights relay does not energize but the daytime running lights may be operated as described for U.S. models.

Front Side Marker Lights

Circuit Schematic





Front Side Marker Lights

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

With the headlight switch in PARK or HEAD, voltage is applied to the integrated control unit: The front side marker lights go on.

Turn Operation

With the ignition switch in RUN or START and the turn signal switch in LEFT, voltage is applied to the coil and flasher of the turn signal/hazard relay. The solid-state flasher provides a ground for the relay coil. The coil controls the relay contacts. As the contacts open and close, the integrated control unit receives an on-off voltage which causes the left front side marker light to flash.

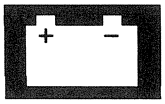
The right front side marker light operates the same way.

With the headlight switch in OFF, the front side marker lights flash simultaneously with the front and rear turn signal.

With the headlight switch in HEAD or PARK, the front side marker lights and the turn signal lights flash alternately.

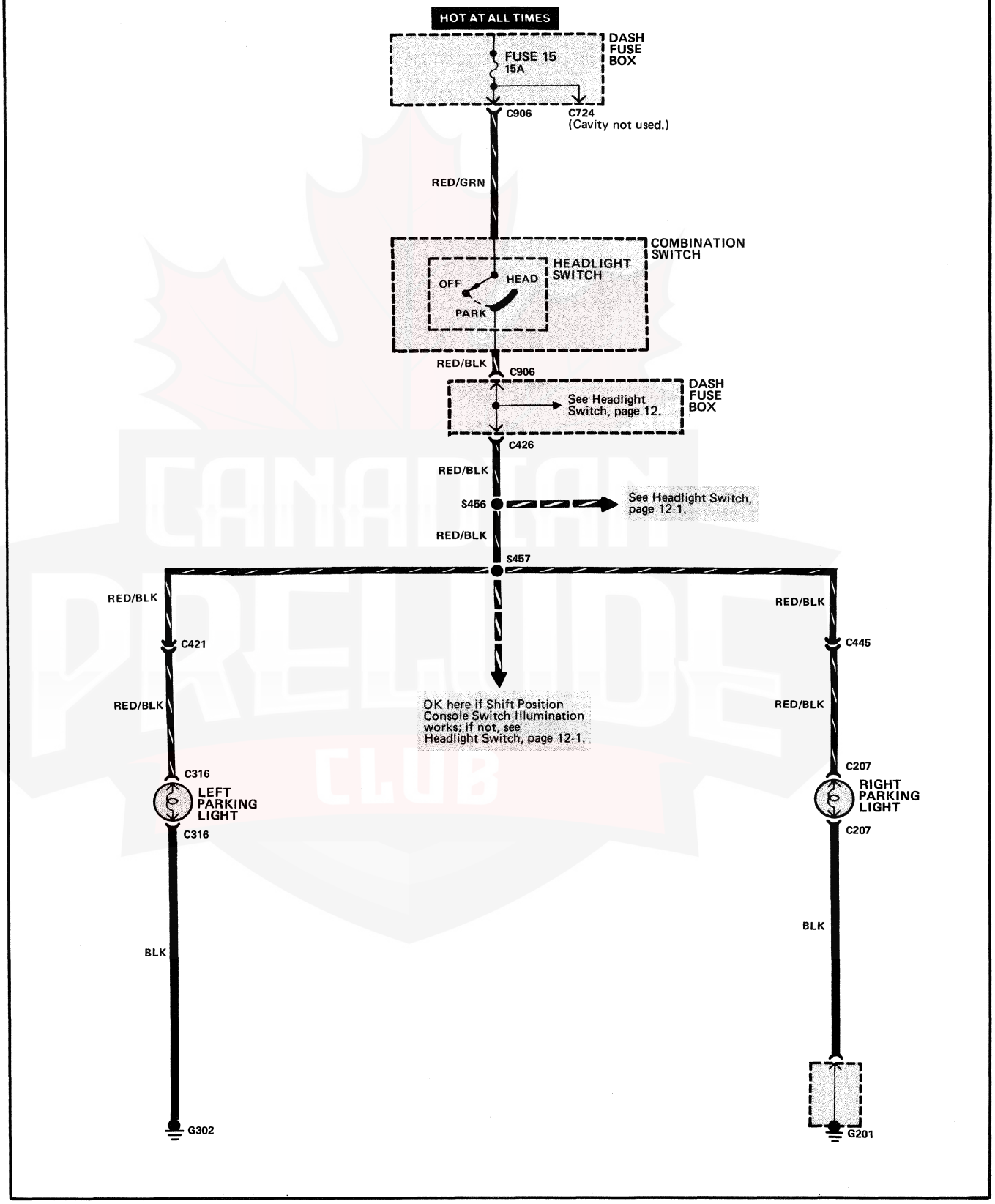
Hazard Operation

With the hazard switch ON, voltage is always applied to the turn signal/hazard relay. Hazard operation is similar to turn operation, except both the right and left front side marker lights flash simultaneously.



Parking Lights

Circuit Schematic



Component Location Index

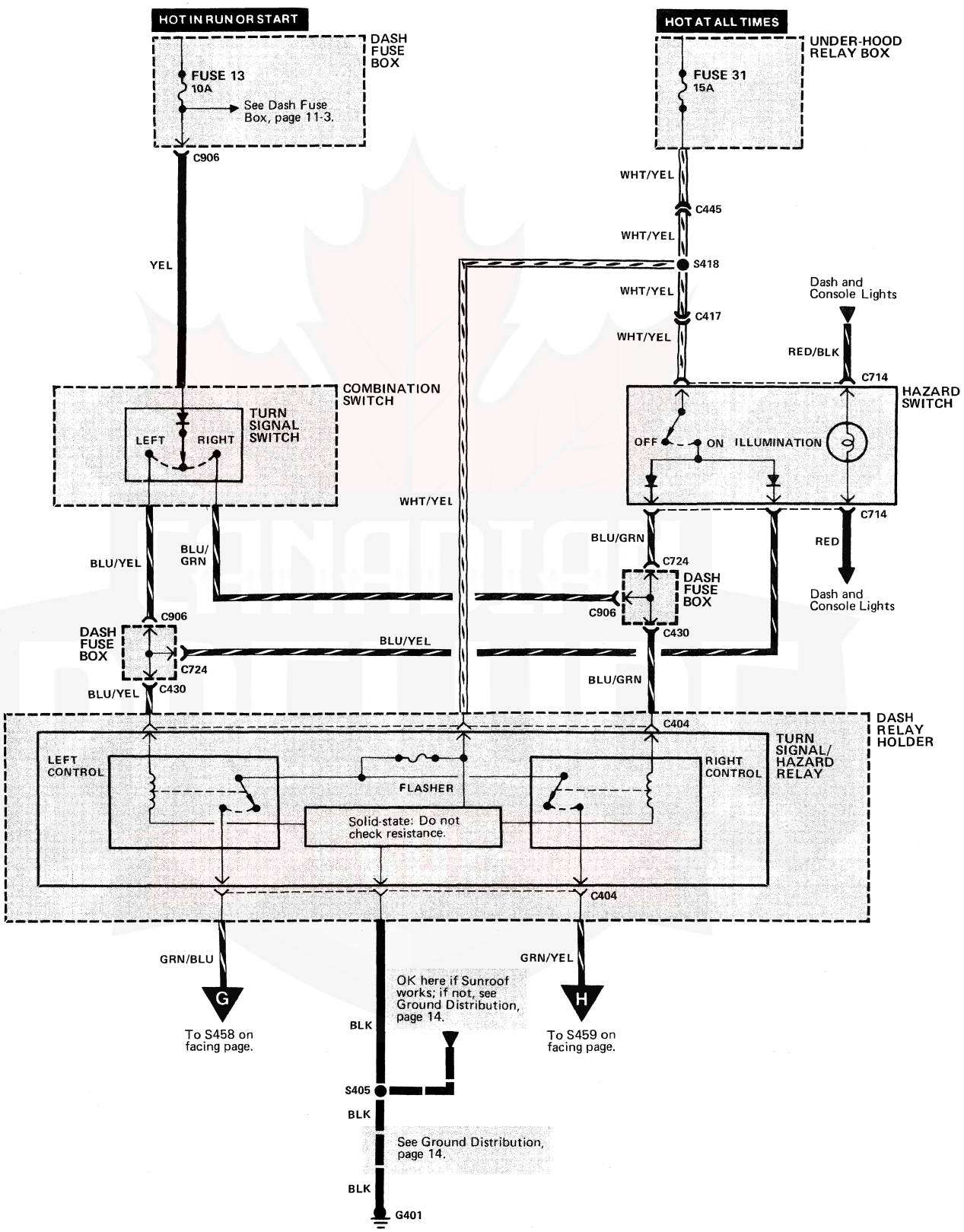
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

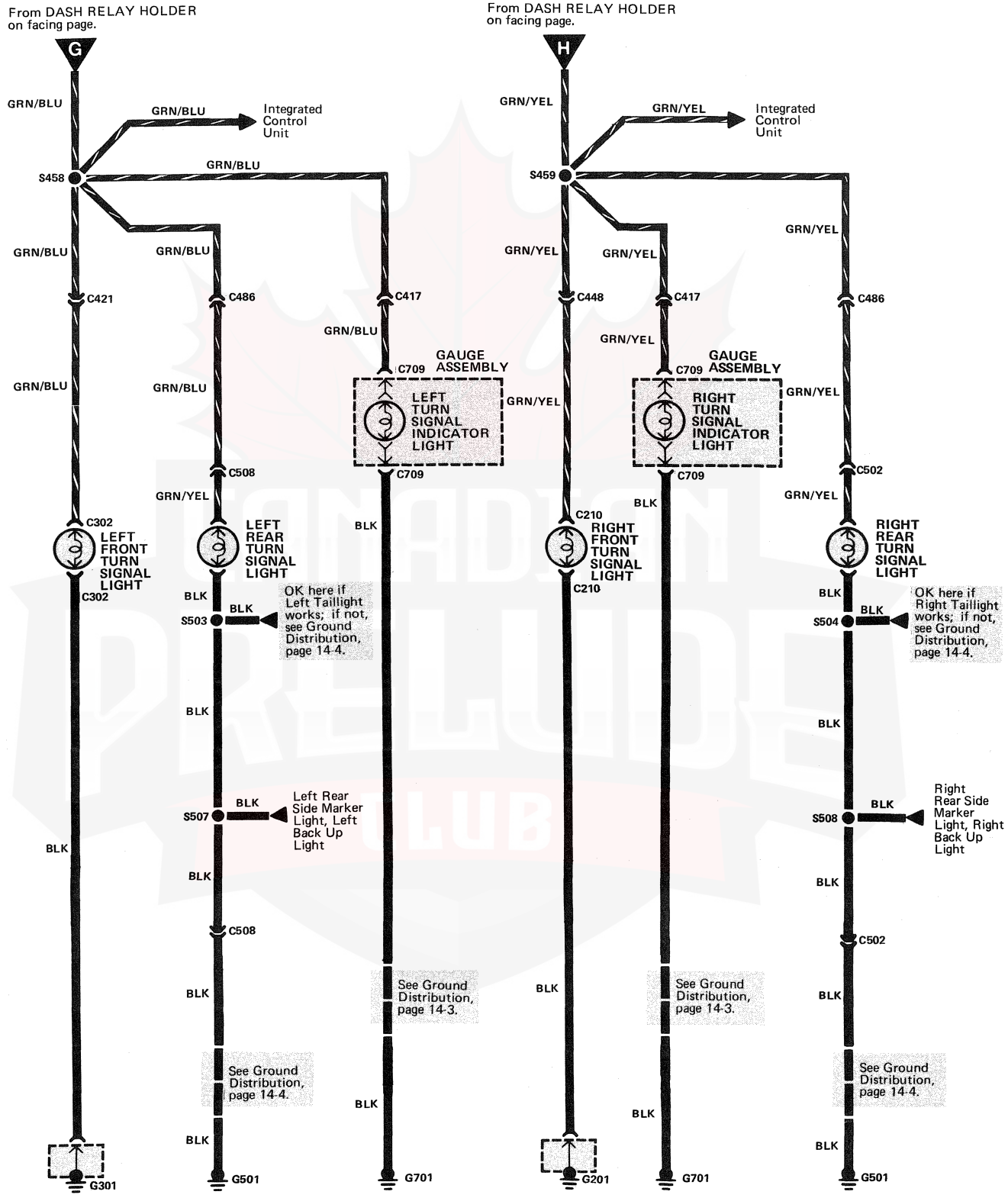
How The Circuit Works

Voltage is applied through fuse 15 to the headlight switch at all times. With the headlight switch in PARK or HEAD, voltage is applied to the parking lights: The parking lights go on.

Turn Signal and Hazard Lights

Circuit Schematic





Turn Signal and Hazard Lights

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Turn Signal Operation

Voltage is applied through fuse 31 to the turn signal/ hazard relay contacts and flasher at all times. With the ignition switch in RUN or START and the turn signal switch in LEFT, voltage is applied to the left control coil of the turn signal/hazard relay. The solid-state flasher provides a ground for the relay coil. The coil controls the relay contacts. As the contacts open and close, the left turn signal lights and indicator light flash.

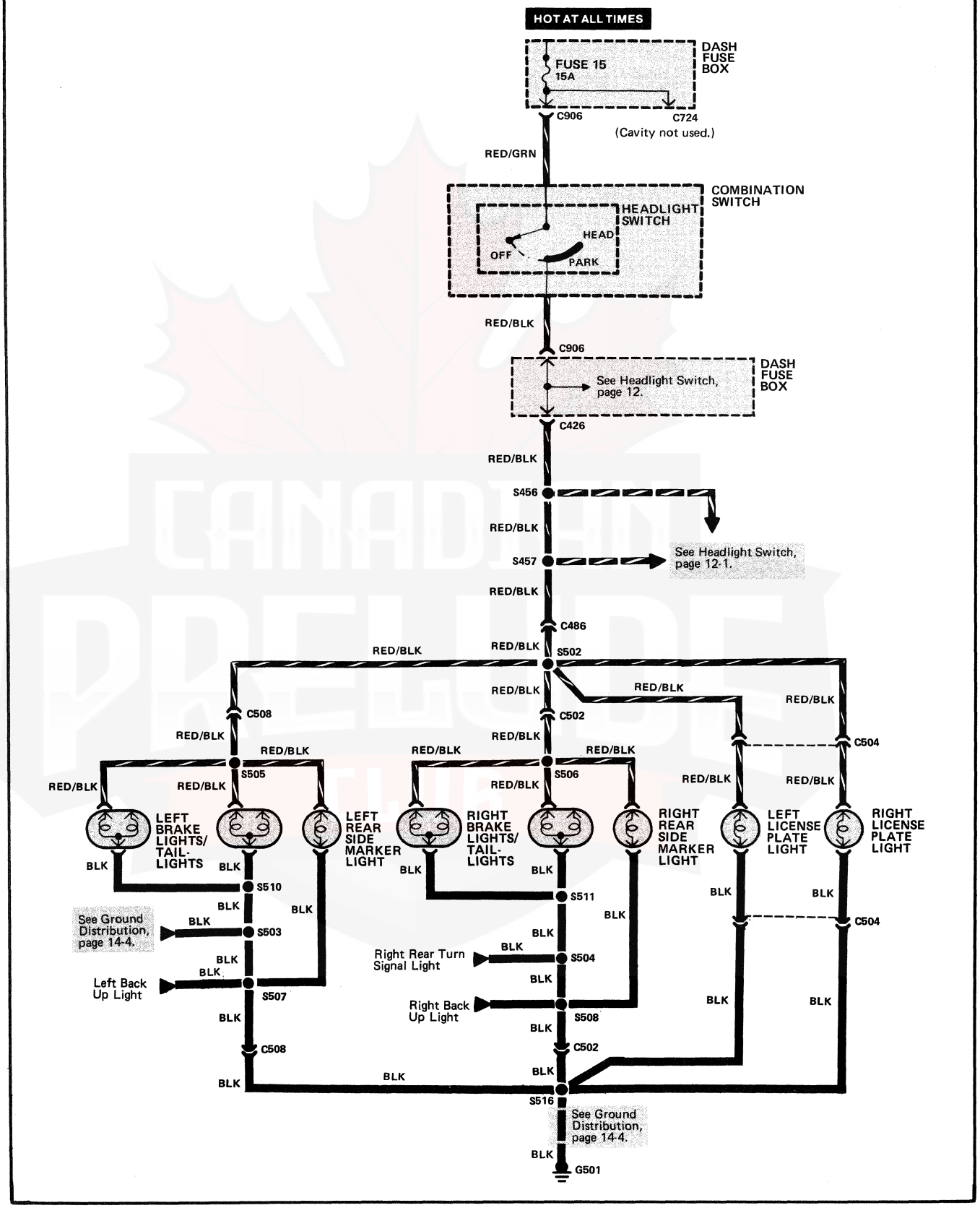
Right turn operation is similar to left turn operation. With the turn signal switch in the RIGHT position, the right turn signal lights and indicator light will both flash.

Hazard Flasher Operation

With the hazard switch ON, voltage is always applied to the turn signal/hazard relay coils, flasher, and contacts. The solid-state flasher provides a ground for the relay coils. The coils control the relay contacts. As the contacts open and close, all the turn signal lights and both indicator lights flash.

Tail, Rear Side Marker and License Plate Lights

Circuit Schematic



Component Location Index

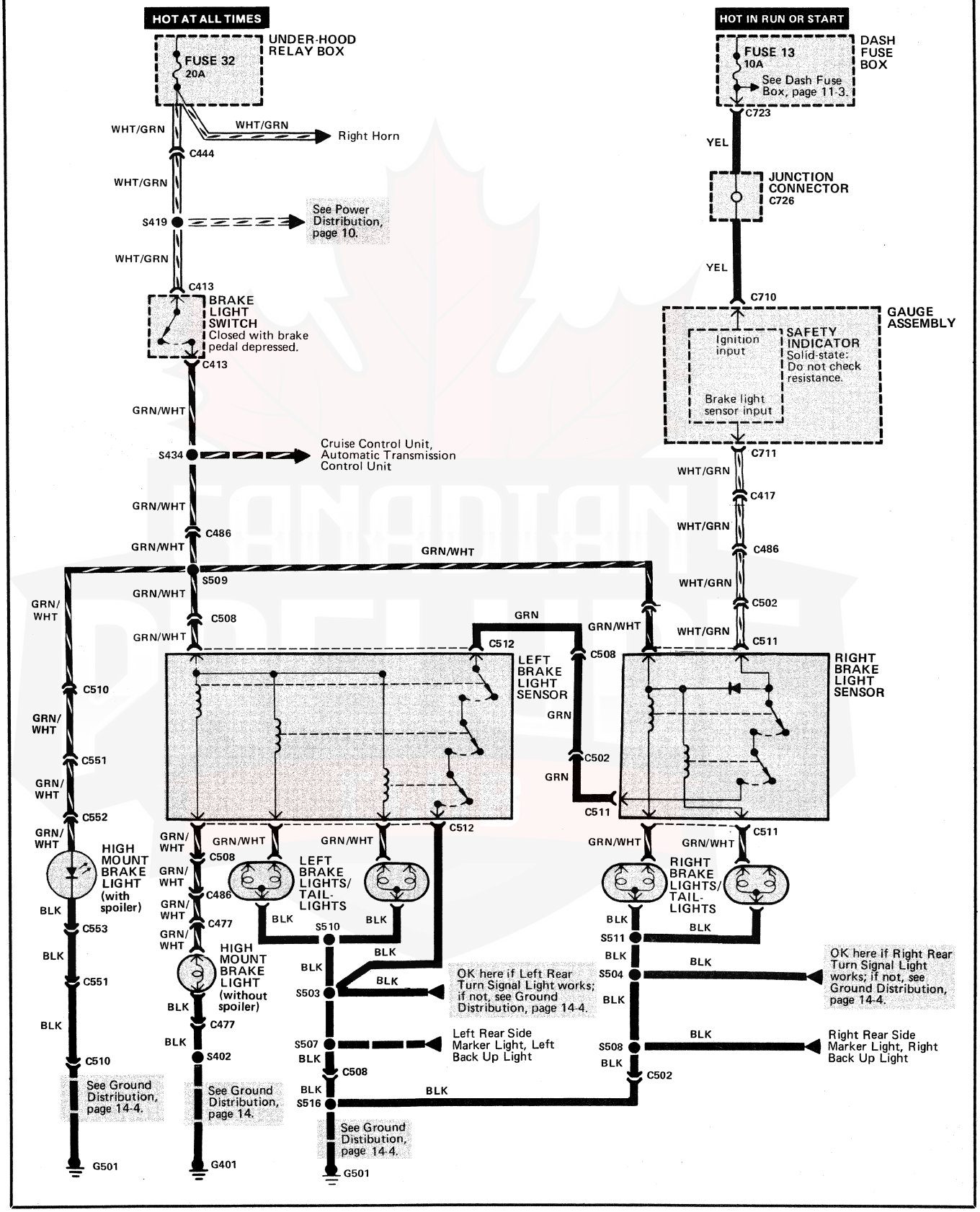
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Voltage is applied through fuse 15 to the headlight switch at all times. With the headlight switch in PARK or HEAD, voltage is applied to all the lights in this circuit: The tail, rear side marker, and license plate lights go on.

Brake Lights

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

With the brake switch closed, current flows through the brake switch, the brake light sensors' coils and the brake light filaments to ground: The brake lights go on. The brake light sensors' coils offer very little resistance to the brake light current.

Safety Indicator Input

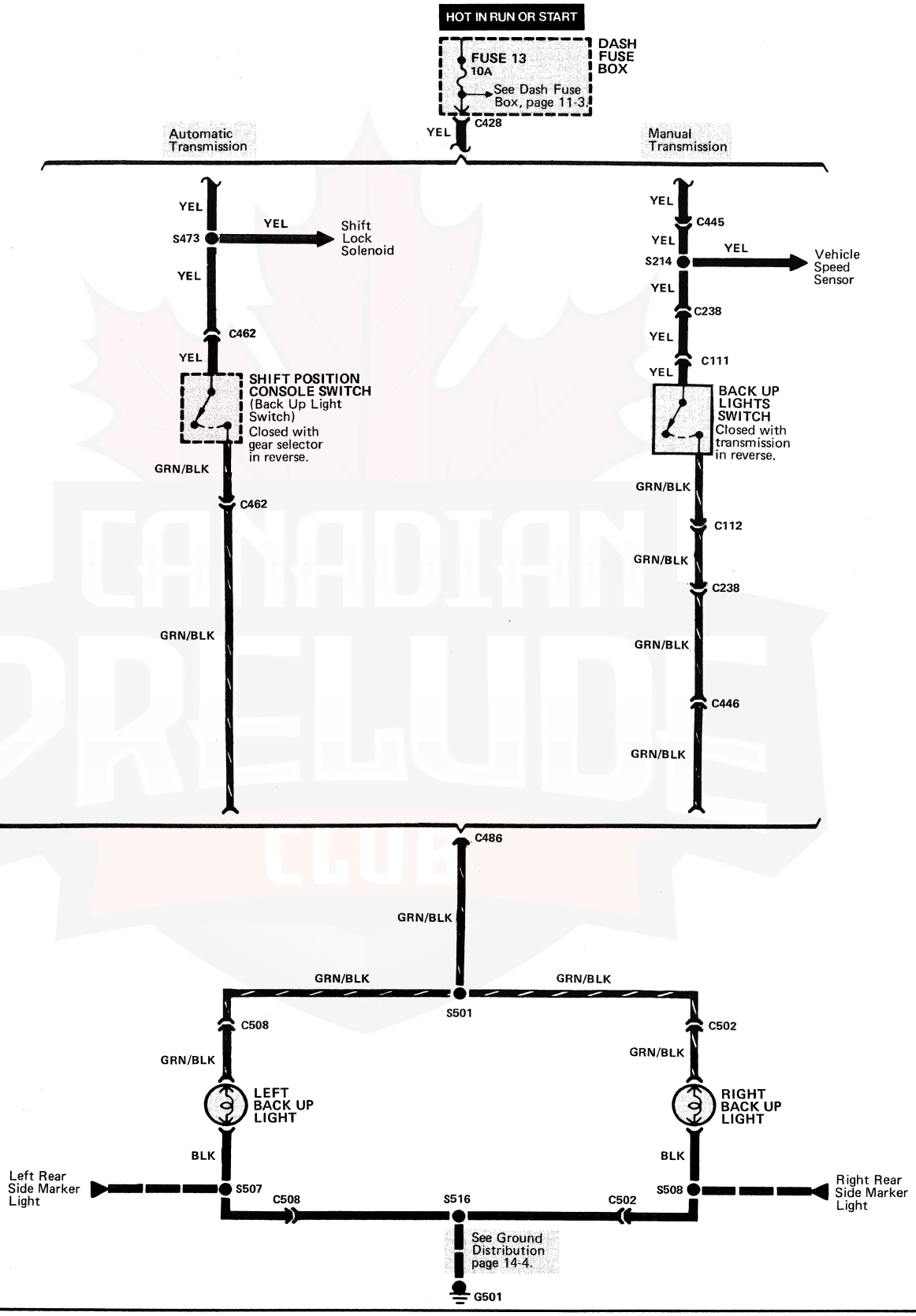
If the safety indicator senses a burned out brake light filament, it lights up the "Brake Lamp" symbol on the safety indicator panel. The safety indicator senses ground through the brake light sensors and brake light filaments. With the brake switch open (brake lights off), the safety indicator senses ground through any of the five brake light sensors' coils and brake light filaments. The safety indicator does not light up the "Brake Lamp" symbol.

When the brake switch is closed (brake lights on), current through the brake light sensors' coils and brake lights to ground closes the brake light sensors' contacts. The safety indicator is then grounded through the brake light sensors' contacts. If all five brake light filaments are good, the safety indicator senses ground through the five sensor contacts. The safety indicator does not light up the "Brake Lamp" symbol.

If any one of the five brake light filaments is burned out, the brake light sensor coil for that filament does not receive ground, so its contacts remain open. With the contacts open, the safety indicator does not sense ground, so the indicator lights up the "Brake Lamp" symbol on the safety indicator panel. The symbol remains on until the ignition switch is turned off.

Back Up Lights

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

Back Up Lights Switch
Top right side of transmission

Dash Fuse Box 63
Behind dash, left of steering column

Shift Position Console Switch 86
Below console, left side of gear selector lever

C111 (1-BLK)
Right side of engine compartment, above transmission

C112 (1-BLK)
Right side of engine compartment, above transmission

C238 (8-WHT) 17
Right side of engine compartment, on bracket, behind battery

C428 (14-YEL) 67
Below left side of dash, on rear of dash fuse box

C445 (22-WHT). 94
Below right side of dash

C446 (23-BLU) 93
Below right side of dash

C462 (10-WHT). 86
Below left side of console, forward of gear selector

C486 (13-WHT). 116
Top right side of trunk

C502 (8-GRY). 119
In right rear of trunk, behind maintenance door

C508 (8-GRY). 124
In left rear of trunk, behind maintenance door

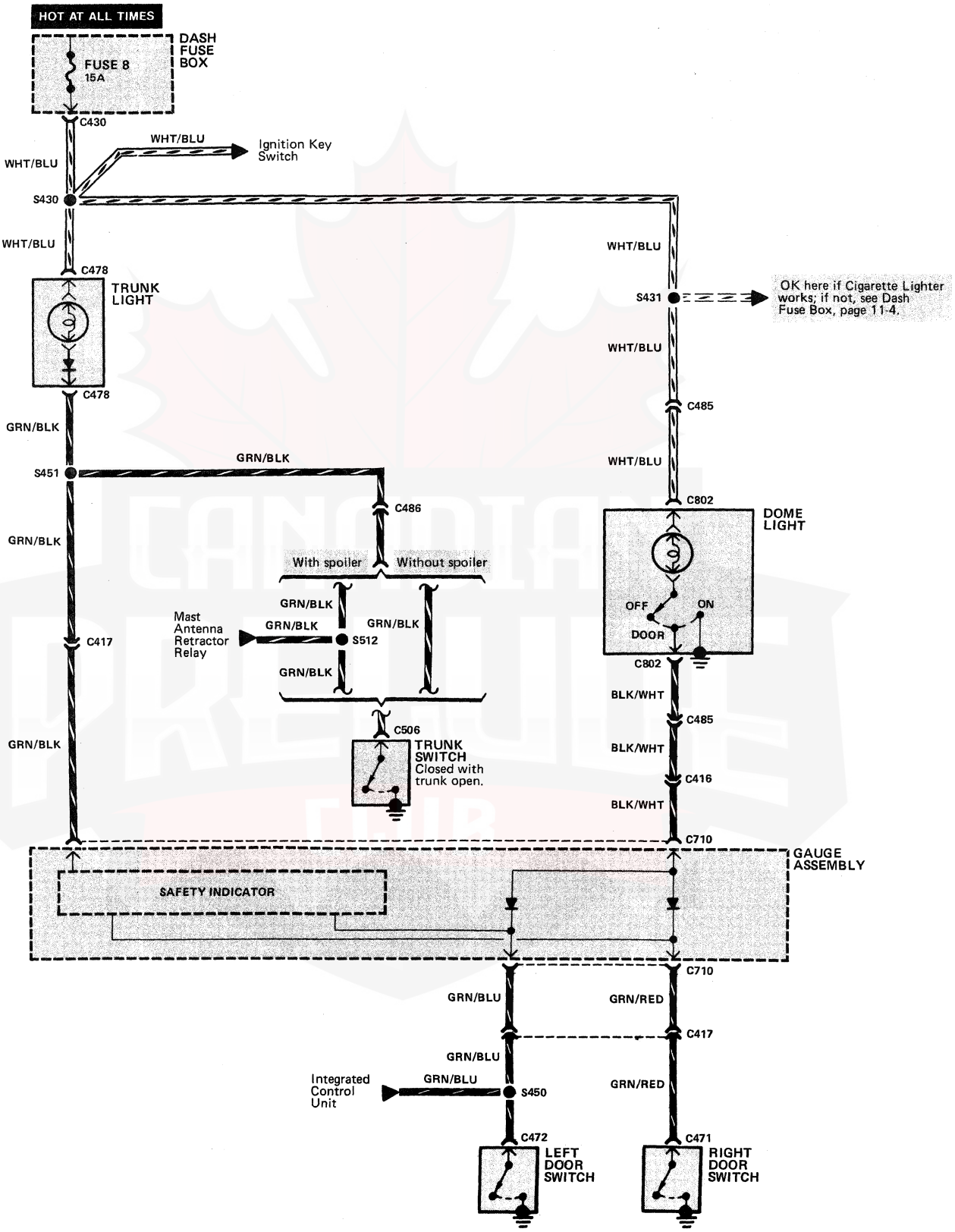
G501 116
Right side of trunk

How The Circuit Works

With the ignition switch in RUN or START, voltage is applied through fuse 13 to the shift position console switch (with automatic transmission), or to the back up lights switch (with manual transmission). When you shift the gear selector lever to reverse, the shift position console switch or the back up lights switch closes and voltage is applied to the back up lights: The back up lights go on.

Dome and Trunk Lights

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

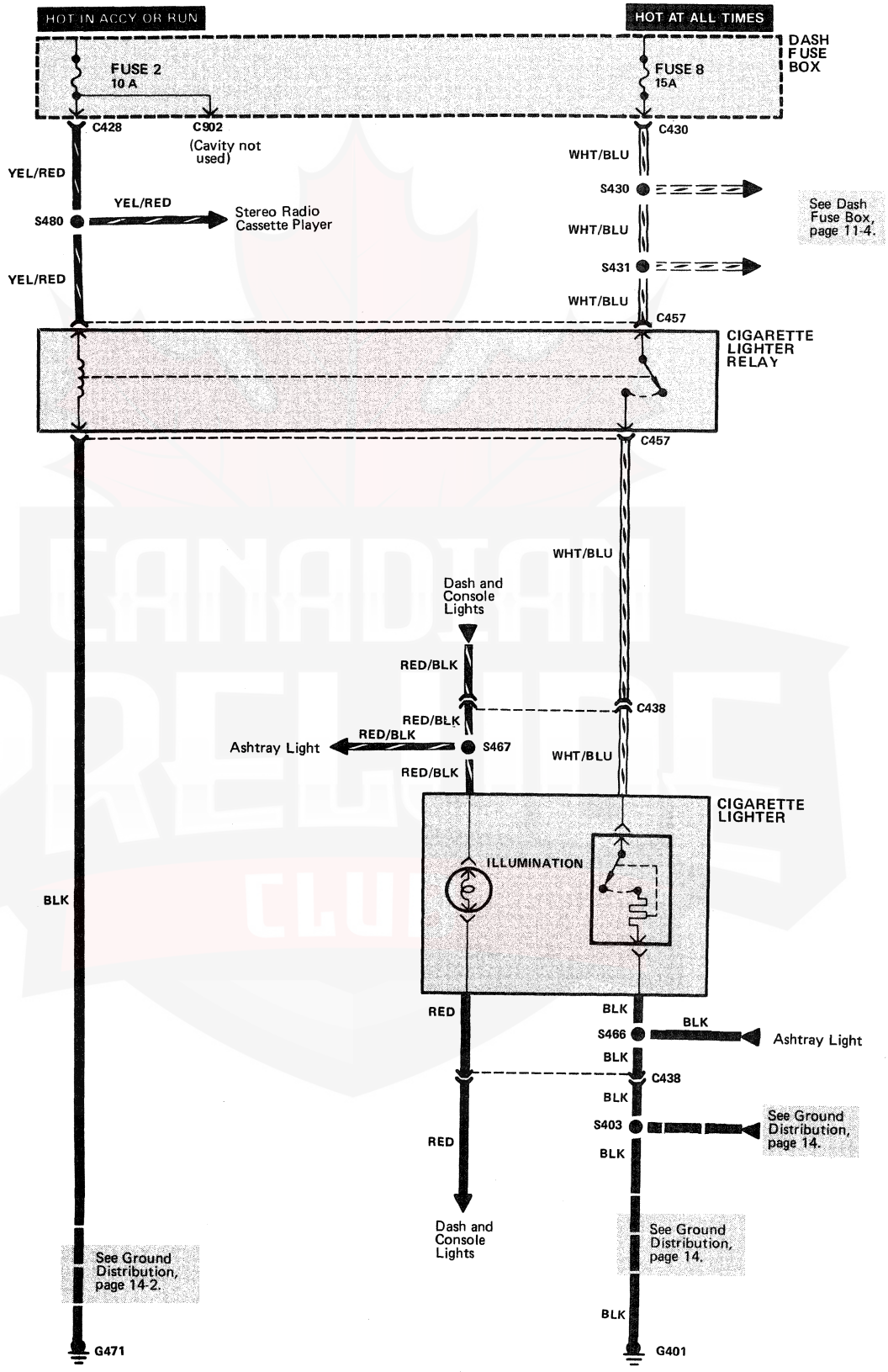
Voltage is applied at all times through fuse 8 to the trunk and dome lights.

When you open the trunk lid, the trunk switch closes providing a path to ground for the trunk light circuit: The light goes on. The safety indicator senses that the trunk switch is closed and lights the trunk-open symbol on the indicator panel.

When the dome light switch is in the DOOR position and you open a door, a ground path is provided by the safety indicator through the closed light switch: The dome light goes on. With the door closed, you can turn on the dome light by turning the light switch to ON.

Cigarette Lighter

Circuit Schematic



Component Location Index

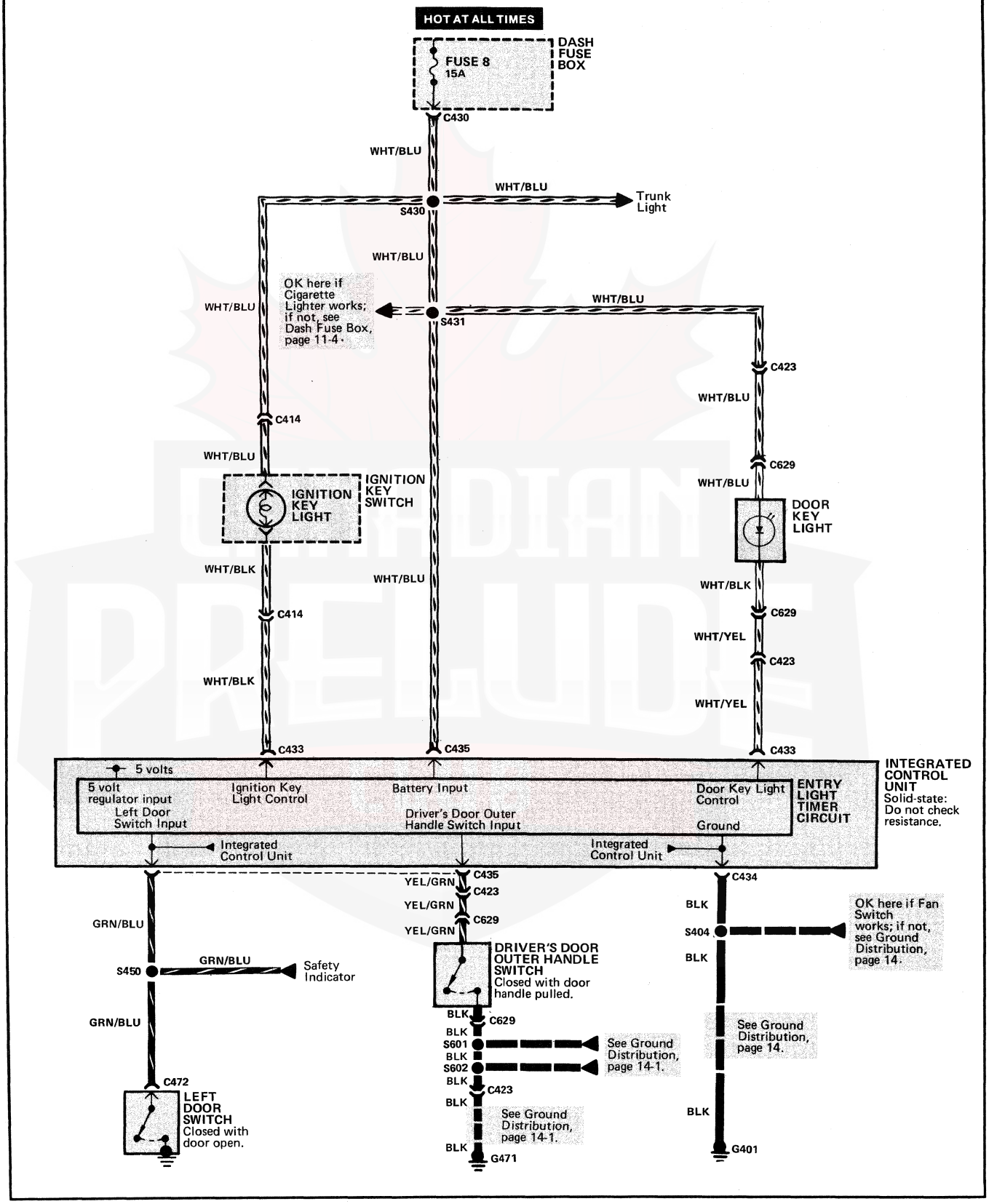
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Voltage is applied at all times through fuse 8 to the cigarette lighter relay. With the ignition switch in the ACCY or RUN position, voltage is applied to the cigarette lighter relay coil. The contacts of the relay close, allowing voltage to be applied to the lighter. When you depress the lighter, the lighter element completes the circuit to ground. When the element becomes sufficiently heated, it is spring-released and the circuit opens.

Entry Light Timer System: 2.1 Si, ABS, 4WS

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

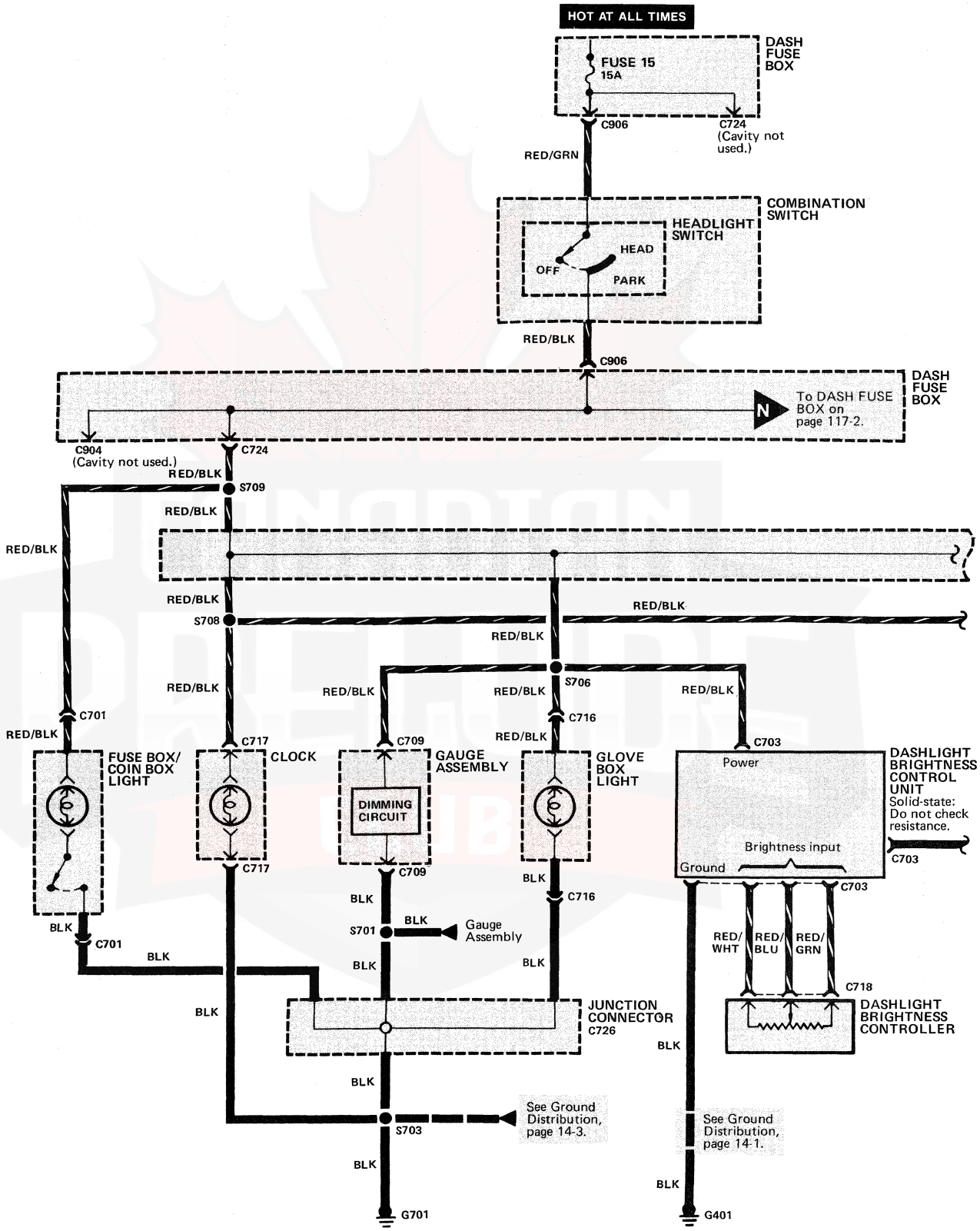
Voltage is applied at all times through fuse 8 to the ignition key light, and the door key light.

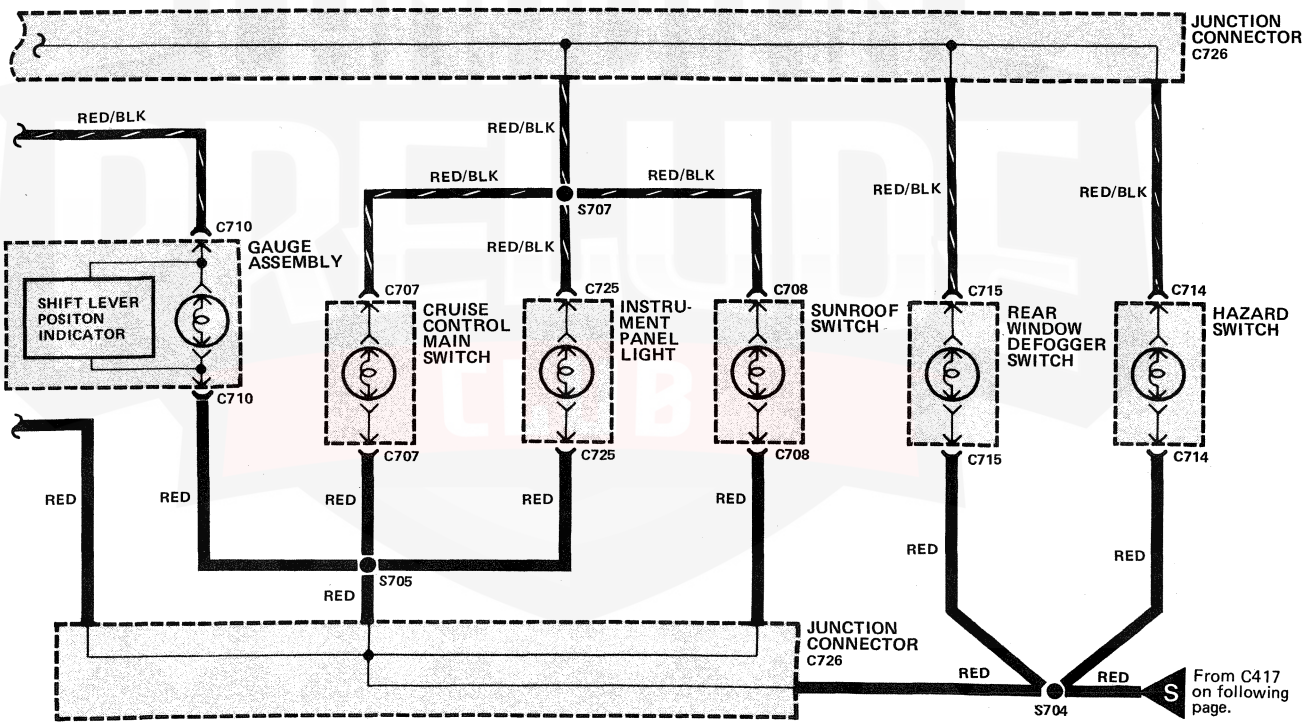
When you lift the driver's door handle, the driver's door outer handle switch input to the integrated control unit is grounded. The integrated control unit provides a path to ground for the ignition key light, and the door key light: The lights go on. When you open the driver's door, the left door switch closes and the lights stay on.

When you close the driver's door, the left door switch opens. The integrated control unit continues to provide ground for the light circuits for approximately eight seconds.

Dash and Console Lights

Circuit Schematic

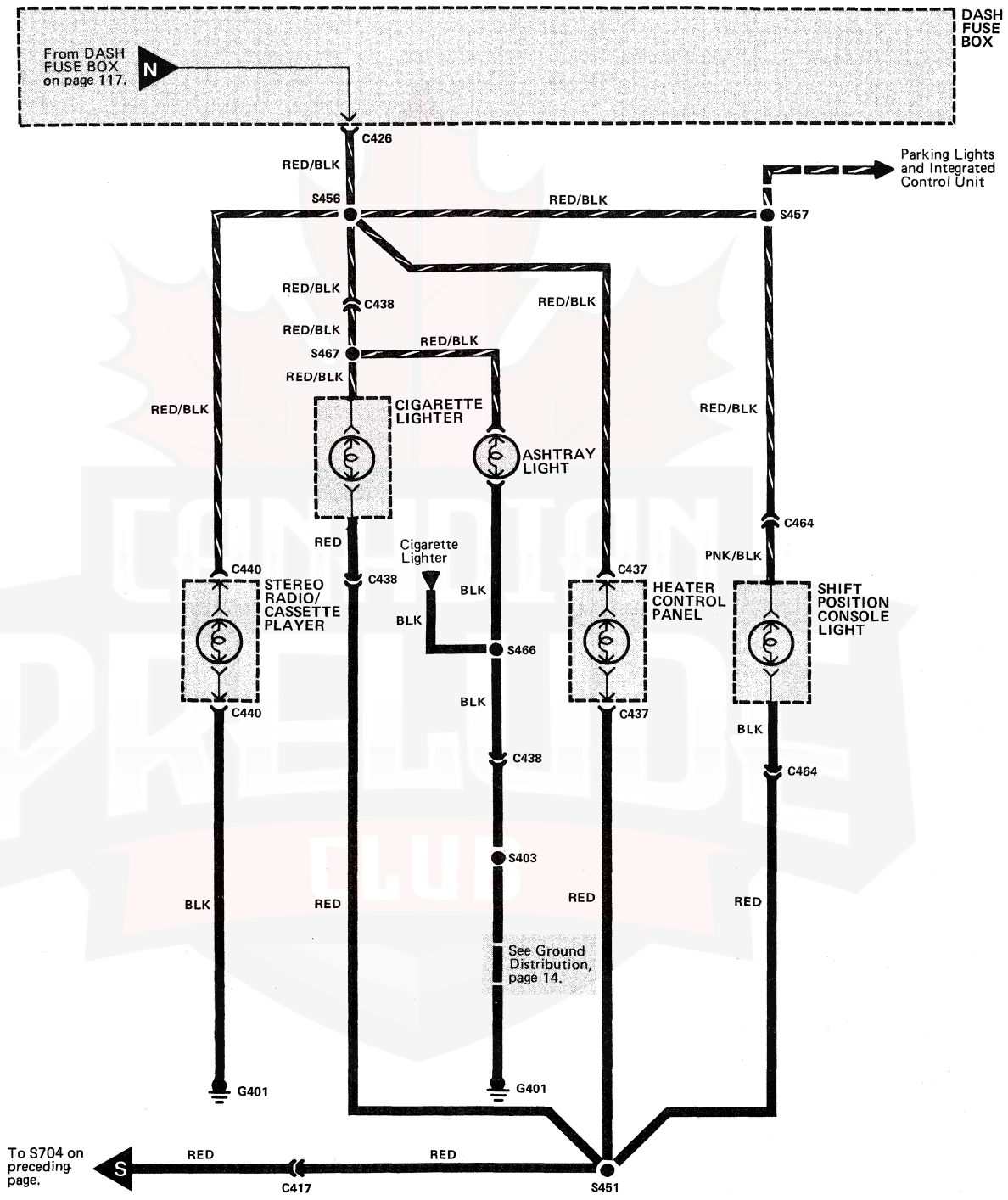




(cont'd)

Dash and Console Lights

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

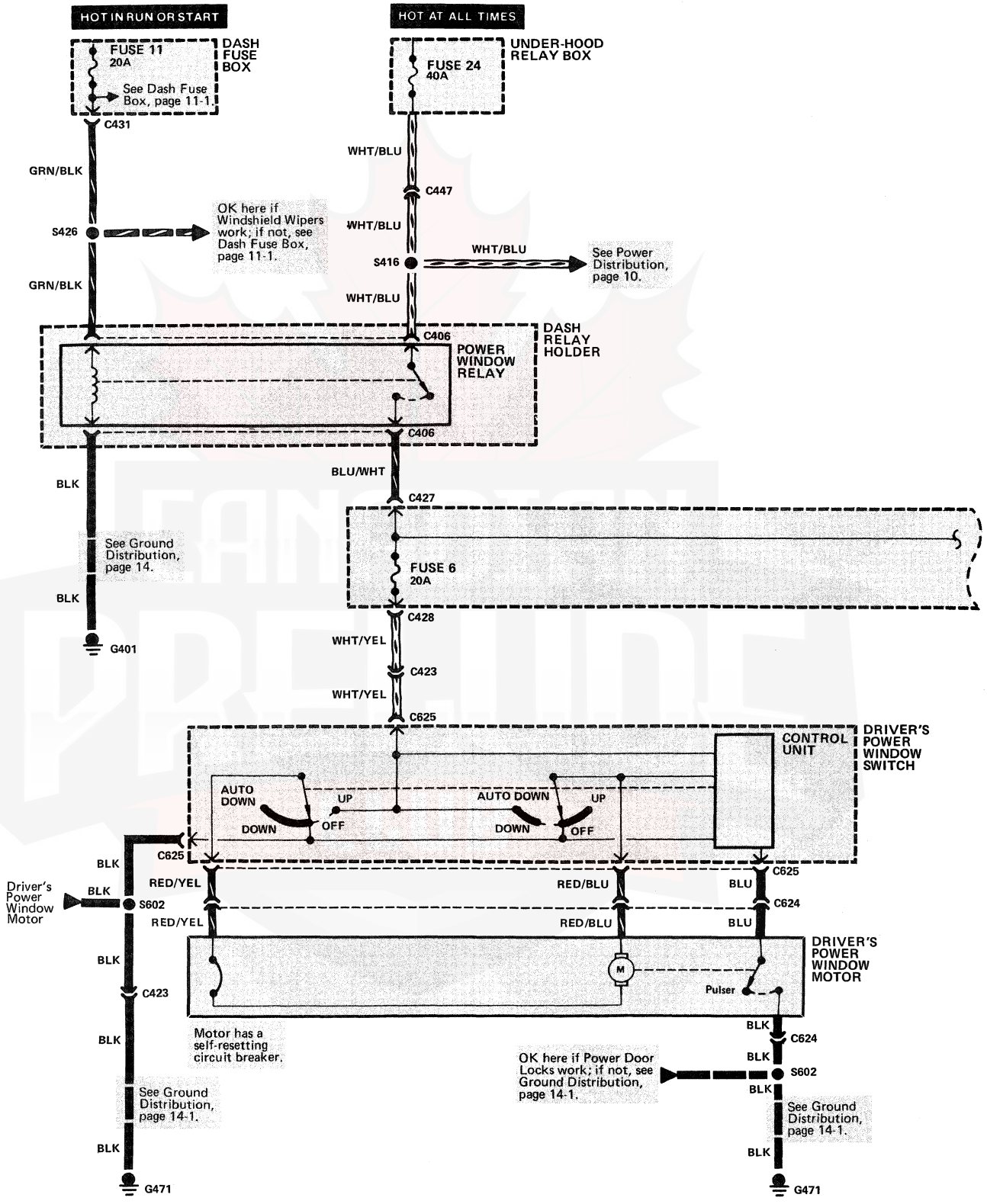
How The Circuit Works

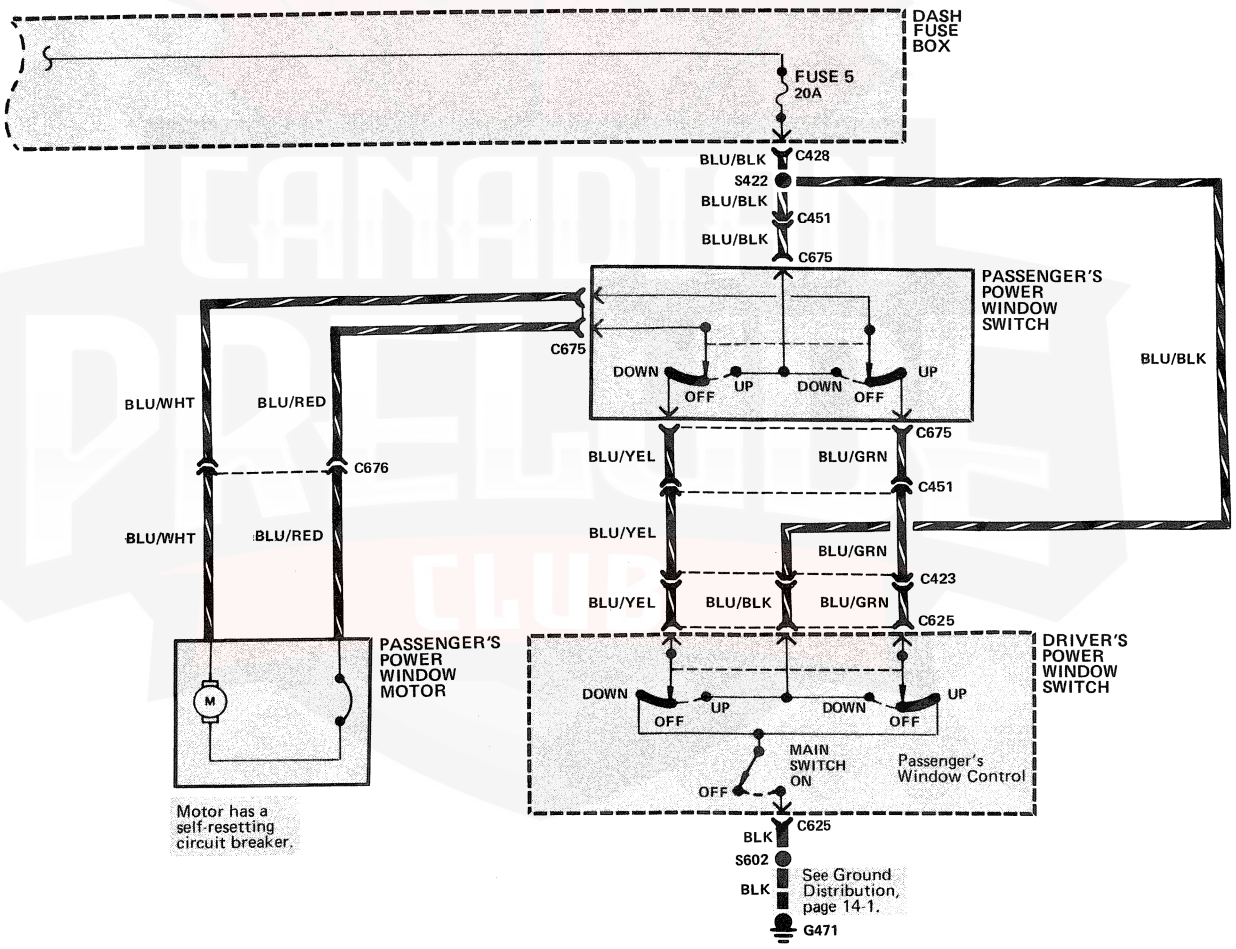
Voltage is applied at all times through fuse 15 to the headlight switch. With the headlight switch in HEAD or PARK, voltage is applied to the dash and console lights: The lights come on. The glove box light comes on when the glove box door is opened.

The lights connected with the RED wire to the dashlight brightness control unit can be dimmed by using the dashlight brightness controller, a variable resistor.

Power Windows: 2.1 Si, ABS, 4WS

Circuit Schematic





Power Windows: 2.1 Si, ABS, 4WS

Component Location Index

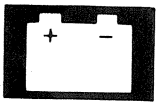
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The operation of the power windows is controlled by the master switch in the driver's power window switch. When the main switch is off, only the driver's door window can be opened or closed. With the master switch in ON, all windows can be opened or closed by the driver's power window master switch or each window by its respective switch. The driver's window switch also has an automatic down mode which is controlled at the driver's power window switch.

The power windows are driven by reversible motors. Each motor is protected by a built-in circuit breaker. If a window switch is held on too long (with the window obstructed, or after the window is fully up or down), the circuit breaker opens the circuit. The circuit breaker resets automatically as it cools.

When the ignition switch is in RUN or START, voltage is applied to the coil in the power window relay. The contacts of the power window relay close and voltage is applied to the driver's power window switch, the power window control unit, and the passenger's power window switch.



Driver's Window

With the ignition switch in RUN or START, voltage is applied to the coil of the power window relay. The contacts of the power window relay close and voltage is applied through fuse 6 to the driver's power window switch and the power window control unit. When you move the driver's power window switch to UP, voltage is applied to the power window control unit up input. Voltage is then applied through the power window control unit (motor up control) to the driver's power window motor. The motor's ground path is back through the power window control unit. The power window motor drives the window up. When you move the driver's power window switch to DOWN, voltage is applied to the power window motor in the opposite direction: The motor drives the window down.

Automatic Down (Driver's Window)

With the ignition switch in RUN or START, voltage is applied to the coil of the power window relay. The contacts of the power window relay close and voltage is applied to the driver's power window master switch and the power window control unit. When you push the driver's switch to the AUTO DOWN position, voltage is applied through the driver's power window switch to the power window control unit's down and auto down hold inputs. The voltage triggers the power window control unit and voltage is applied from the power input through the motor down control output to the power window motor. The power window control unit receives voltage pulses at the pulser input while the motor is operating. When the window is fully down, the motor stops and pulses are no longer generated by the pulser. This is sensed by the power window control unit at the pulser input and voltage is no longer applied to the power window motor.

Passenger's Window

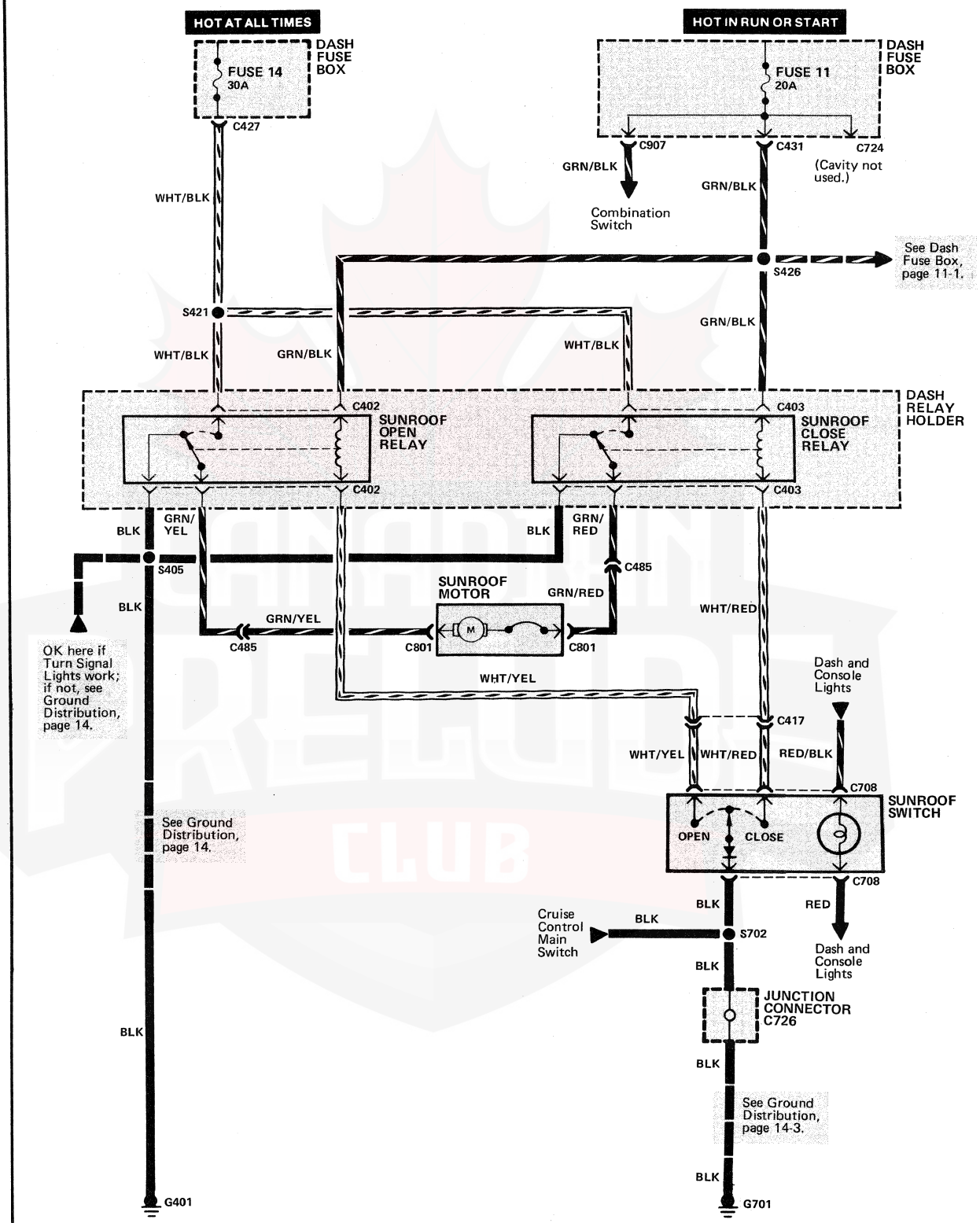
With the ignition switch in RUN or START, voltage is applied to the coil of the power window relay. The contacts of the power window relay close and voltage is applied through fuse 5 to the passenger's power window switch and the driver's power window switch. If you close the master switch in the driver's power window switch, the passenger's window can be operated from the individual window switch or from the driver's power window switch.

When you move the passenger's power window switch to UP, voltage is applied to the passenger's power window motor. The motor is grounded through the contacts in the passenger's power window switch and the driver's power window switch. The window moves up as long as the switch is held in the UP position. If the passenger's power window switch is moved to DOWN, voltage is applied to the passenger's power window motor in the opposite direction. The window moves down as long as the switch is held in the DOWN position.

When the driver's passenger window switch is moved to UP, voltage is applied through the passenger's power window switch contacts to the passenger's power window motor. The motor is grounded through the contacts in the passenger's power window switch and the driver's power window switch. The window moves up as long as the switch is held in the UP position. If the driver's passenger window switch is moved to DOWN, voltage is applied to the passenger's power window motor in the opposite direction. The window moves down as long as the switch is held in the DOWN position.

Sunroof

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

The sunroof is driven by a reversible motor which opens and closes the sunroof. Voltage is applied at all times through fuse 14 to the normally open contacts in the sunroof close relay and sunroof open relay. With the ignition switch in RUN or START, voltage is applied through fuse 11, the sunroof close relay coil, and the sunroof open relay coil to the sunroof switch contacts.

Opening the Sunroof

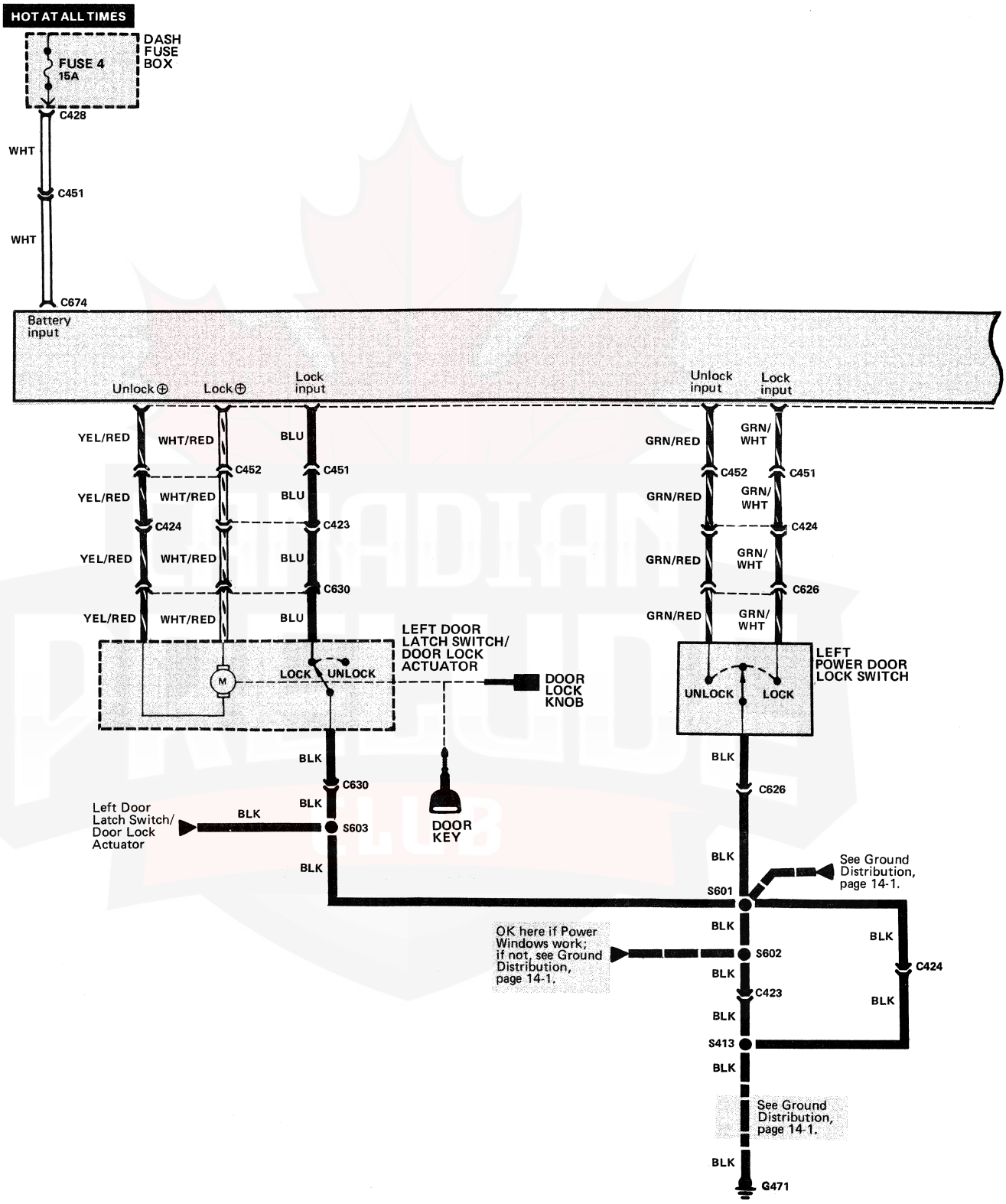
When the sunroof switch is in the open position, the sunroof open relay coil is grounded through the sunroof switch OPEN contacts to G701. The coil energizes and the sunroof open relay contacts close. Voltage is applied to the sunroof motor. The sunroof motor is grounded through the sunroof close relay contacts to G401. The sunroof motor operates to open the sunroof. The sunroof motor operates until the sunroof switch is moved from the OPEN position.

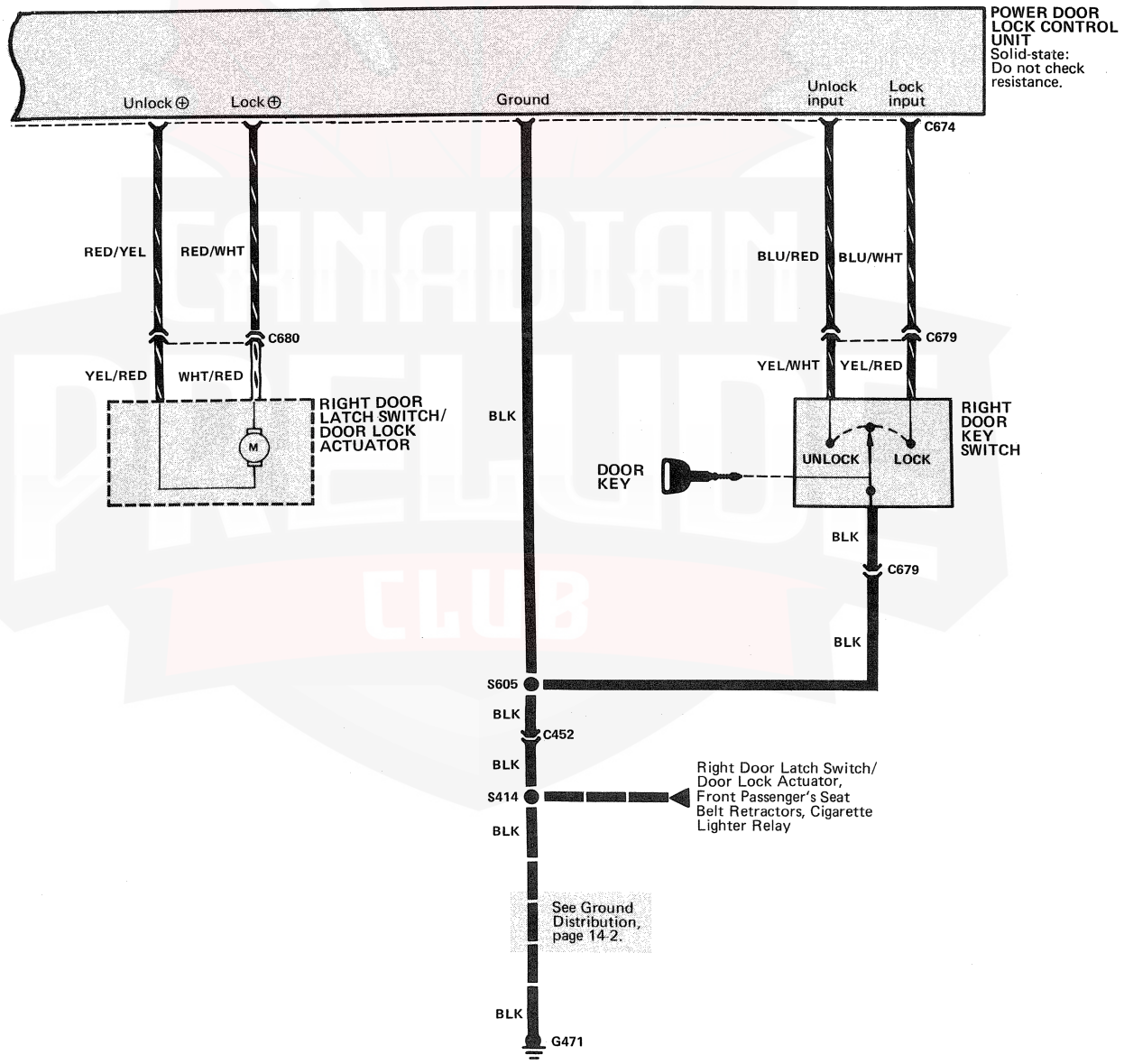
Closing the Sunroof

When the sunroof switch is in the CLOSE position, the sunroof close relay coil is grounded through the sunroof switch close contacts to G701. The coil energizes and the sunroof close relay contacts close. Voltage is applied to the sunroof motor. The sunroof motor is grounded through the sunroof open relay contacts to G401. The sunroof motor operates to close the sunroof. The sunroof motor operates until the sunroof switch is moved from the CLOSE position.

Power Door Locks

Circuit Schematic





Power Door Locks

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

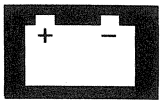
How The Circuit Works

Voltage is applied at all times through fuse 4 to the power door lock control unit.

When you use the key to turn the left door lock actuator or right door key switch to the LOCK position, a path to ground is supplied to one of the control unit's lock inputs. The power door lock control unit applies voltage to the door lock actuators: The doors lock.

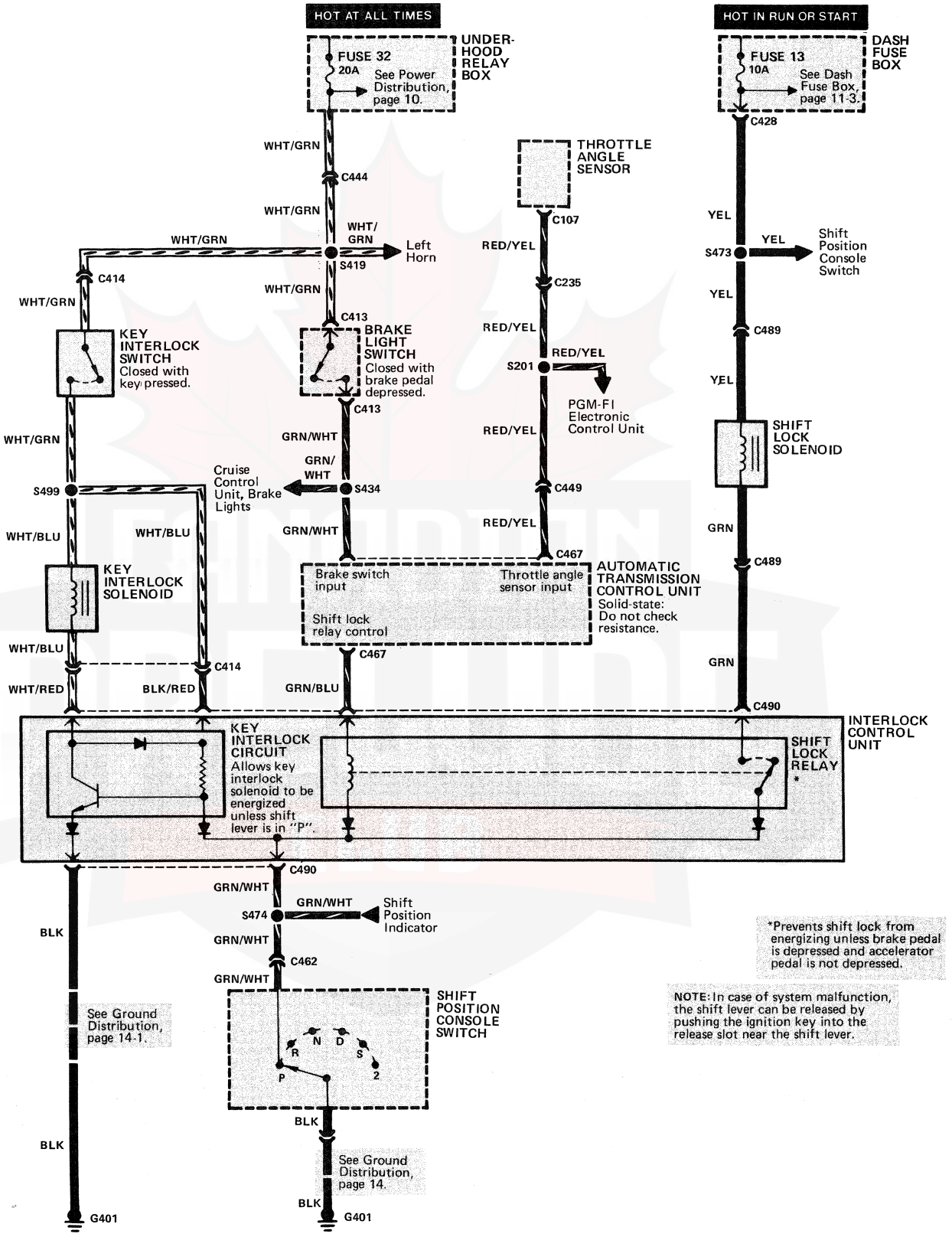
When you use the key to turn the left door lock acutator or right door key switch to the UNLOCK position, a path to ground is supplied to the control unit's unlock input. Voltage is applied to the door lock actuators: The polarity of the voltage applied to the actuators is now reversed and the doors unlock.

Both doors can be electrically locked and unlocked from the driver's power door lock switch. Both doors can also be unlocked mechanically from the outside with a key.



Interlock System

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Key Interlock

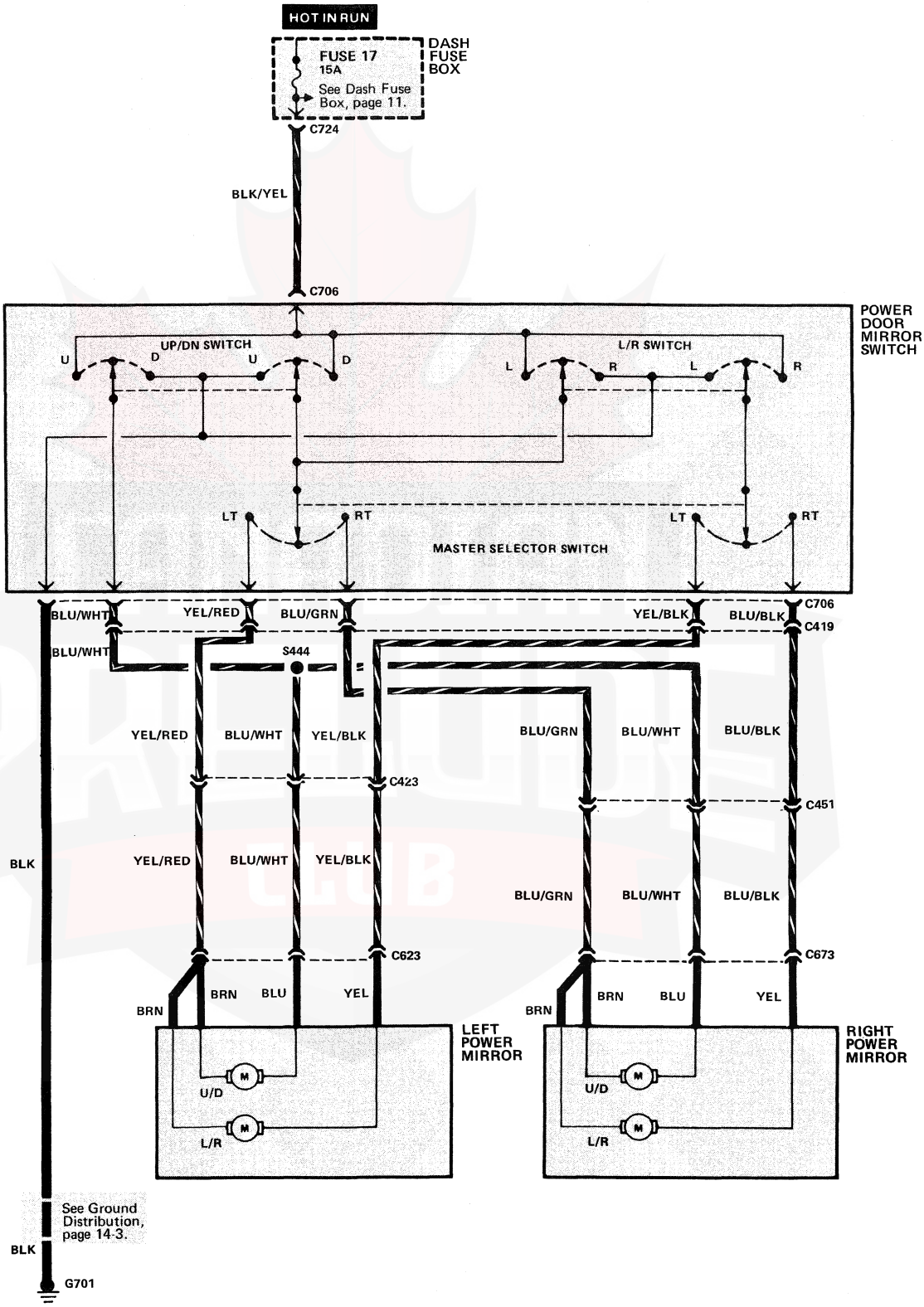
Voltage is provided at all times through fuse 32 to the key interlock switch. When the key is pressed in, voltage is provided to the key interlock solenoid and the interlock control unit. If the shift position console switch is not in park, the interlock control unit provides ground to and energizes the key interlock solenoid, which prevents the key from being turned to the lock position.

Shift Lock

Voltage is applied at all times through fuse 32 to the brake switch. When the brake pedal is depressed and the accelerator is not depressed, voltage is provided to the shift lock relay in the interlock control unit by the automatic transmission control unit. In run or start, voltage is supplied through fuse 5 to the shift lock solenoid. If the brake pedal is not depressed, the interlock control unit provides ground to and energizes the shift lock solenoid, which prevents the gear shift lever from being moved from park to either drive or reverse.

Power Door Mirrors: 2.1 Si, ABS, 4WS

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

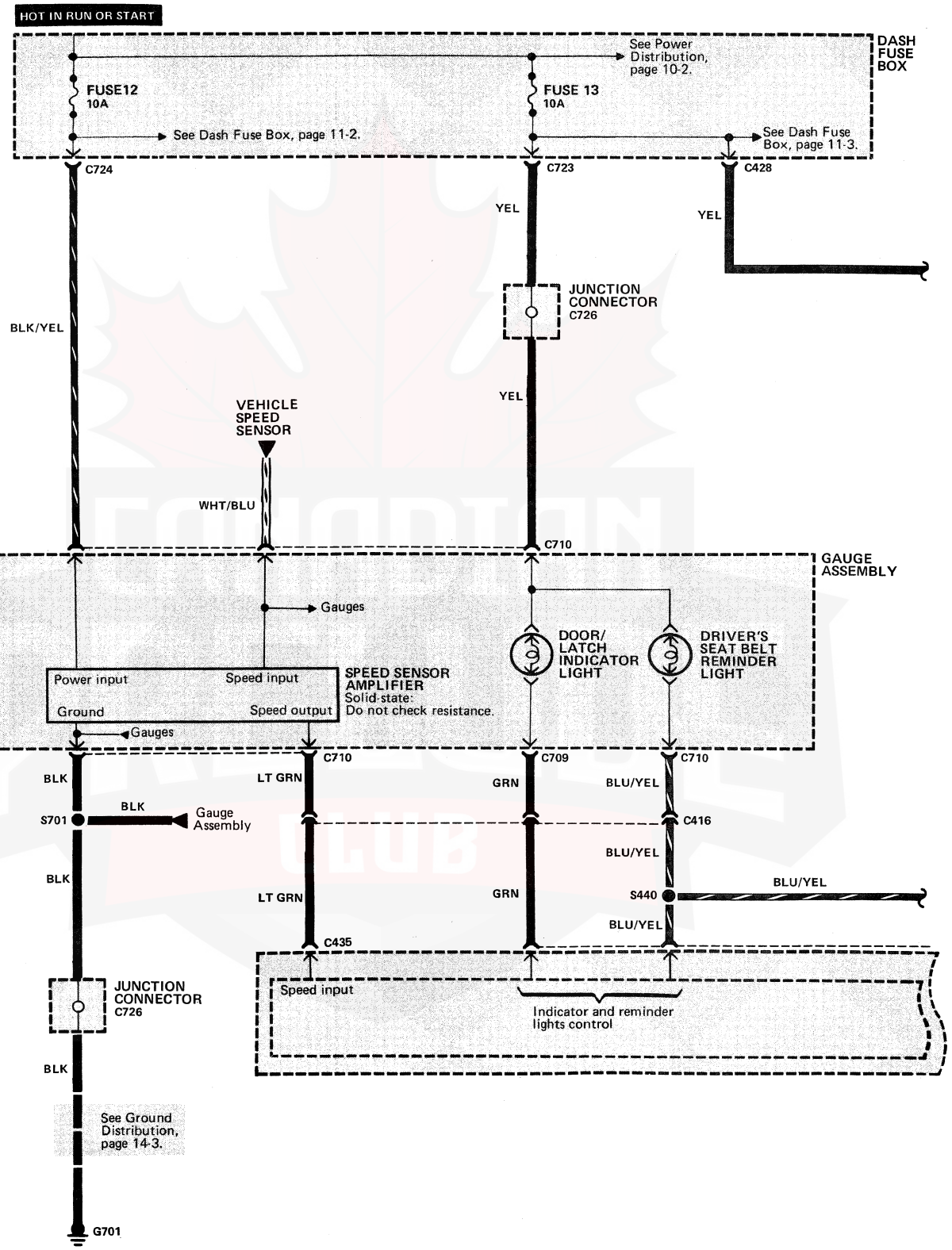
The operation of the two outside mirrors is controlled by the power door switch. Each mirror has two reversible motors: One motor moves the mirror up and down, the other motor moves the mirror left and right. The power mirror control switch directs voltage to the right and left outside mirrors.

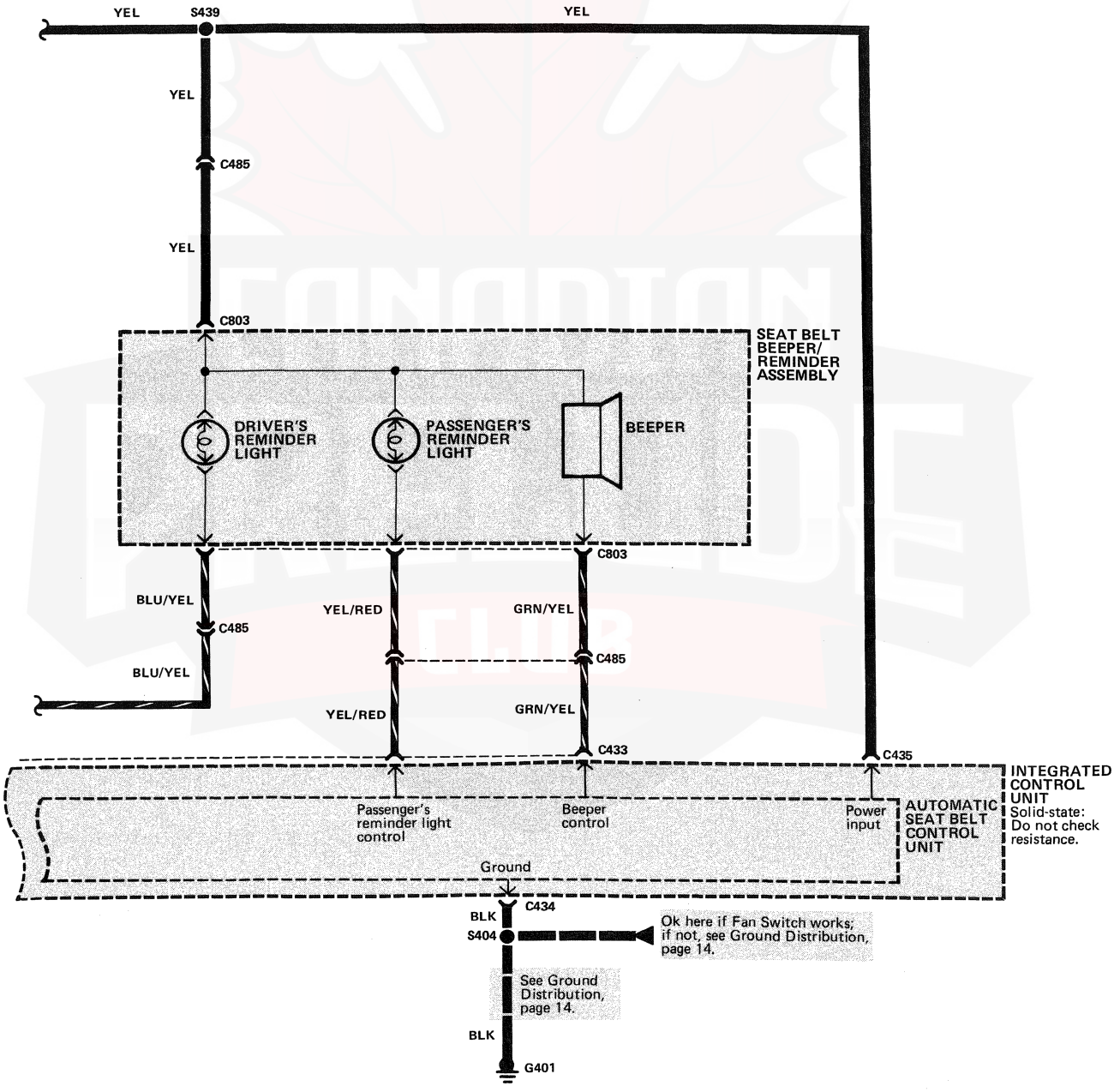
With the ignition switch in RUN, voltage is applied through fuse 17 to the power door mirror switch. With the master selector switch in LEFT and up/down switch in UP, voltage is applied through the up contacts of the up/down switch to the left power mirror up/down motor. Ground is provided through the left contacts of the master selector switch and the up contacts of the up/down switch: The mirror goes up. In the DOWN position, voltage is applied to the opposite side of the mirror.

The left/right switch works similarly to the up/down switch. With the master selector switch in the RIGHT position, voltage is applied to the right power mirror motors, which then operate in a similar way.

Automatic Seat Belt

Circuit Schematic

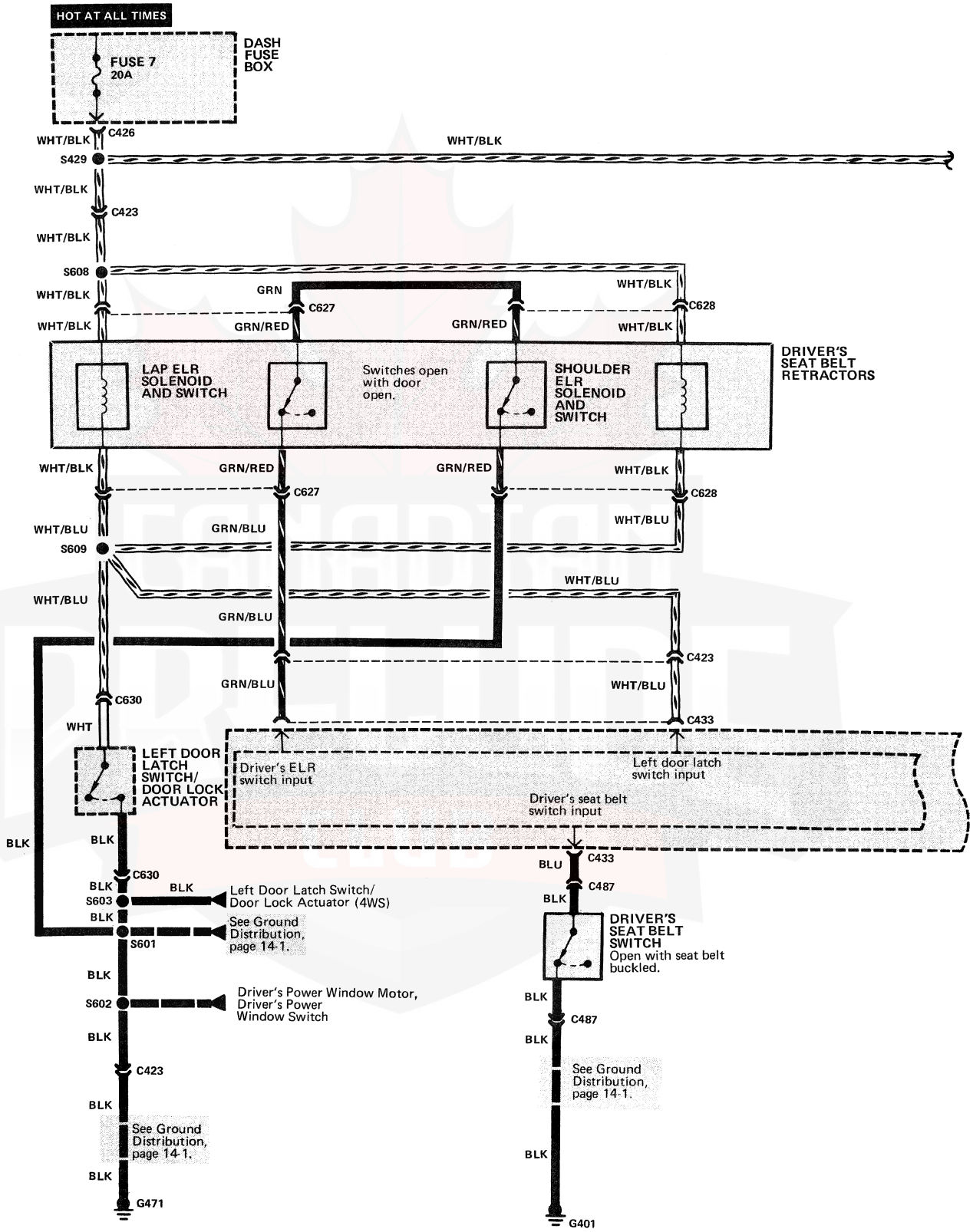


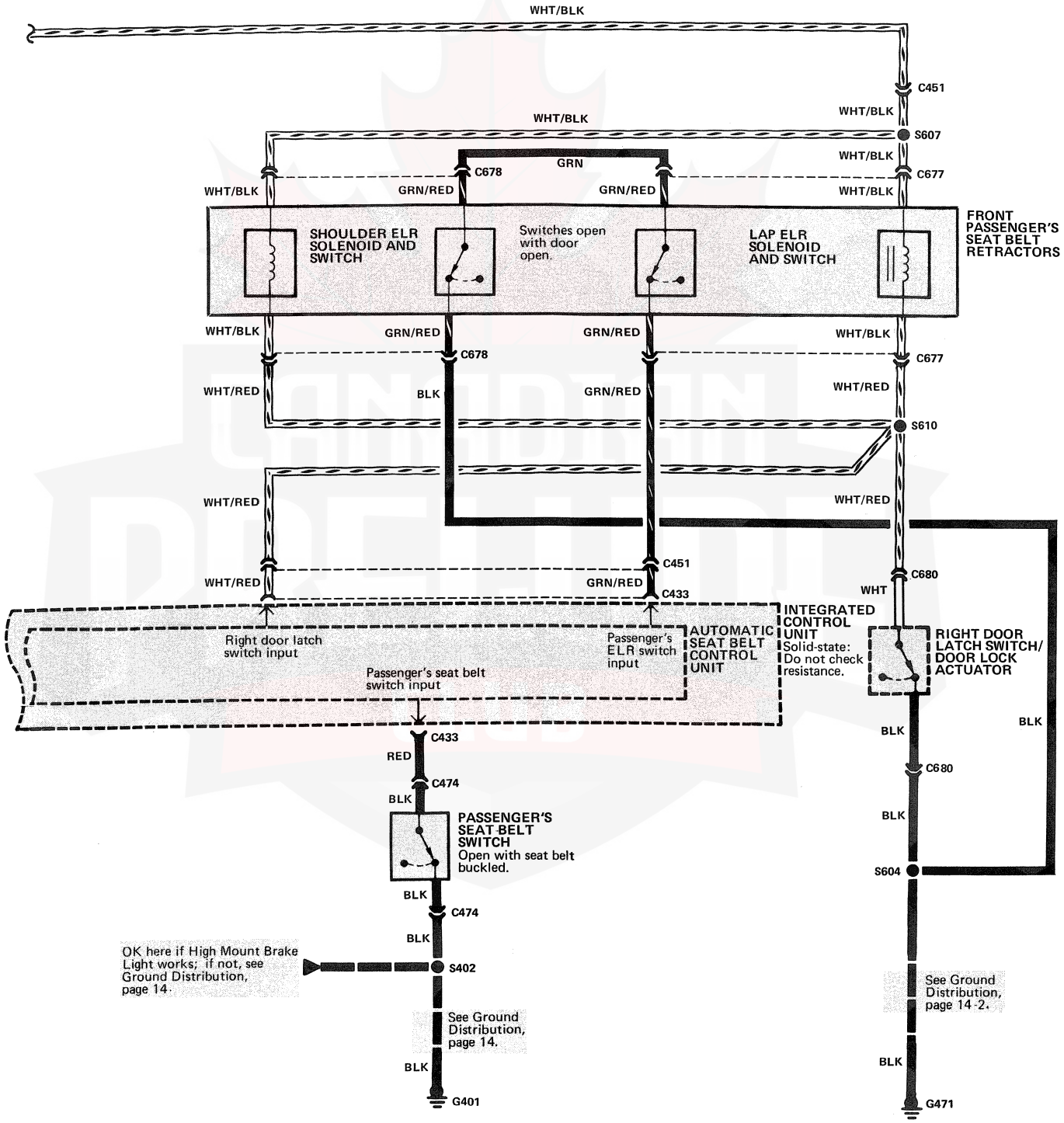


(cont'd)

Automatic Seat Belt

Circuit Schematic (cont'd)





Automatic Seat Belt

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

Battery voltage is applied to the integrated control unit through fuse 13 with the ignition switch in RUN or START.

When you open a door, the corresponding door latch switch closes. This provides a ground for the shoulder and lap solenoids. The solenoids energize, and disable the inertia switch in the seat belt retractor. This allows you to open and close the doors freely when the seat belt is buckled, without the door motion causing the seat belt retractors to lock up.

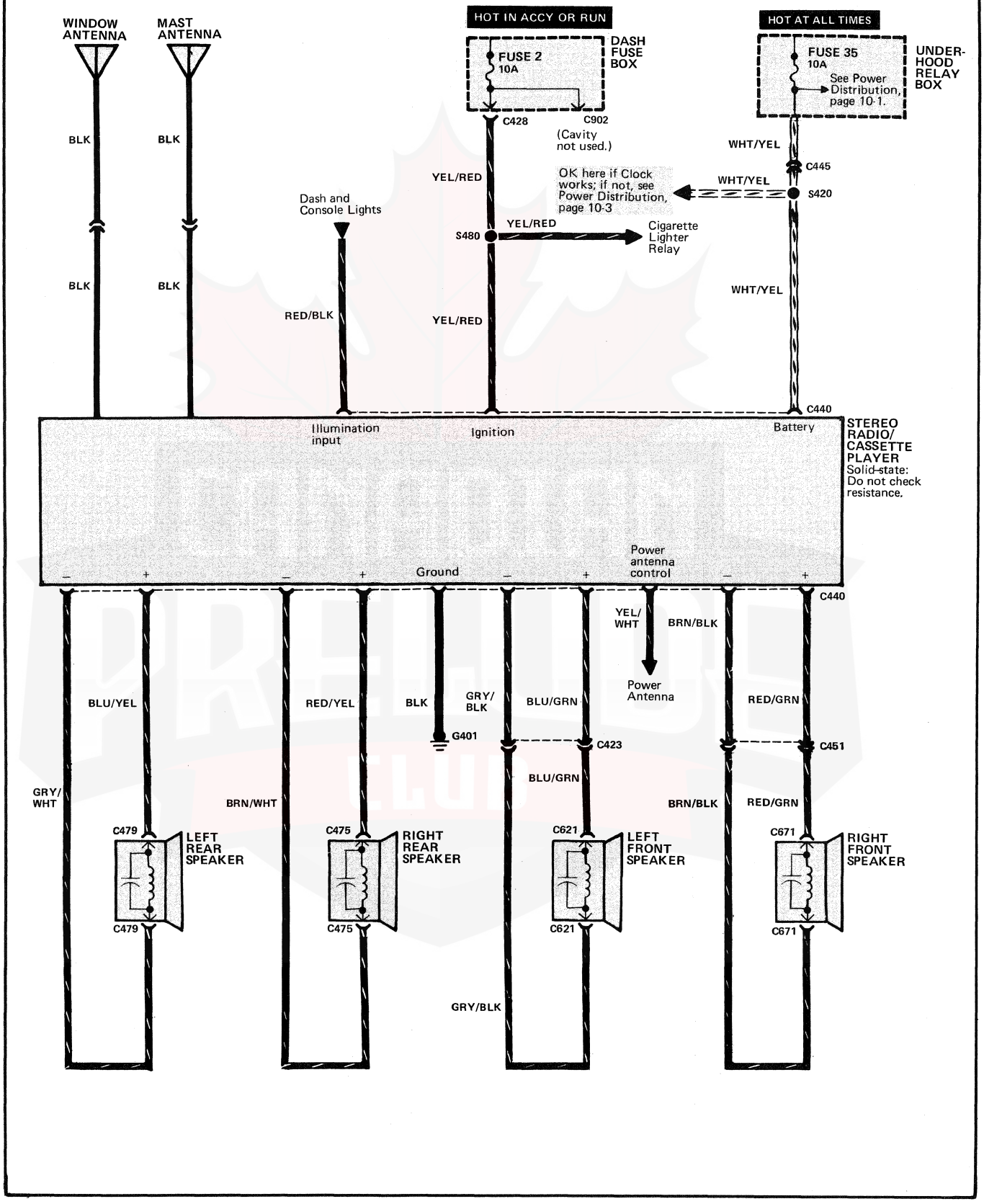
When you close a door the corresponding door latch switch opens, removing the ground for the shoulder and lap solenoids. The solenoids de-energize and operate the seat belt retractor. The seat belt retractor will lock up in the event of a sudden deceleration.

The integrated control unit monitors the shoulder and lap solenoids using switches in the driver's seat belt retractors. When the door is opened and the solenoid is energized, the switches are open. Ground is no longer applied to the integrated control unit at the switch input. When the door is closed the solenoids de-energize and the switches are closed. Ground is applied to the switch input of the integrated control unit.

The automatic seat belt system uses two indicators (door latch indicator and driver's seat belt reminder) in the gauge assembly, a beeper and two indicators (driver's reminder light and passenger's reminder light) in the seat belt beeper/reminder assembly to alert the driver and passenger if there is an existing problem.

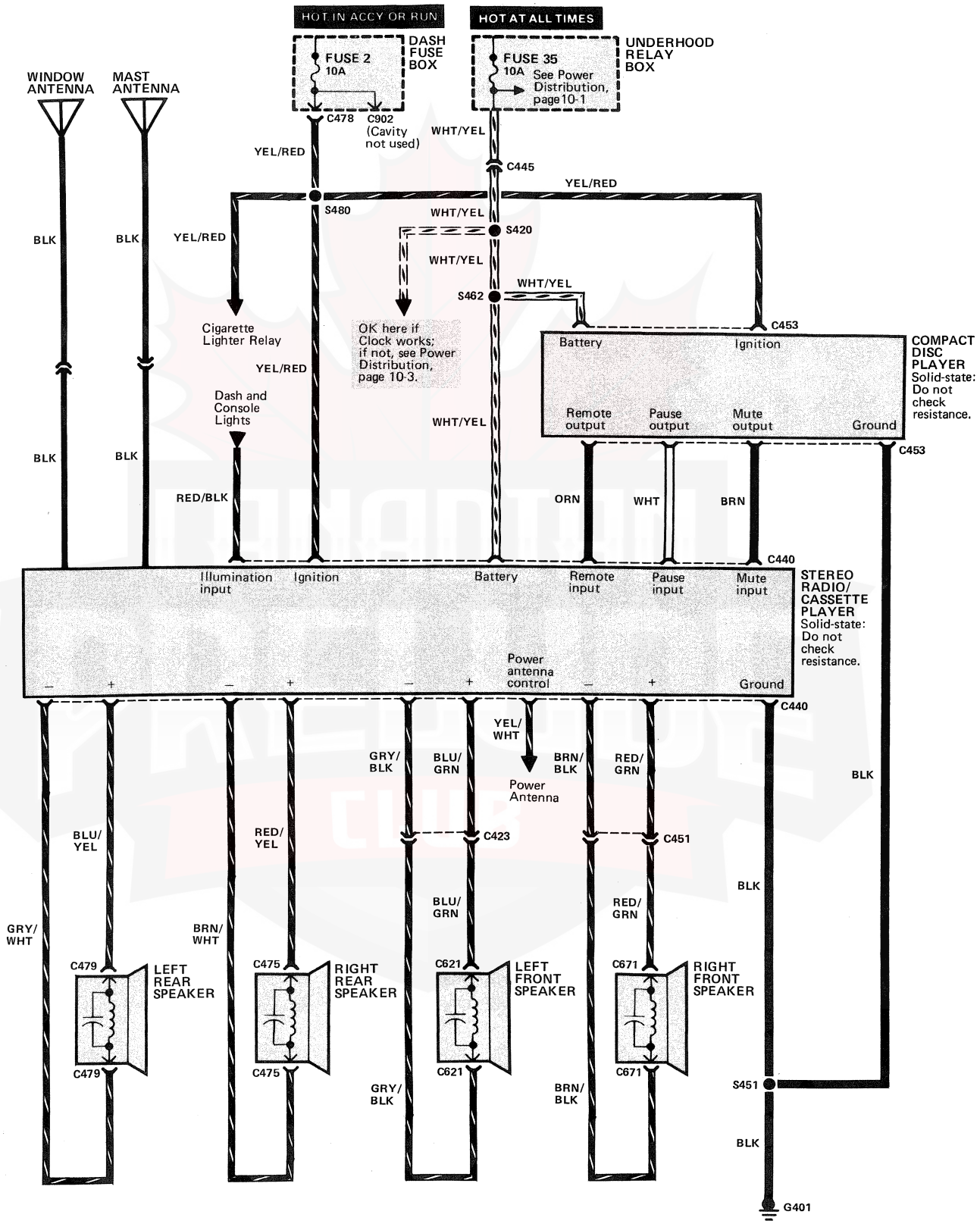
Stereo Sound System

Circuit Schematic



With Compact Disc Player

Circuit Schematic



Stereo Sound System

Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

CD Player
Above radio

Dash Fuse Box 63
Behind dash, left of steering column

Under-hood Relay Box 34
Right side of engine compartment, forward of strut tower

C423 (18-WHT) 58
Behind left kick panel

C428 (14-YEL) 67
Below left side of dash, on rear of dash fuse box

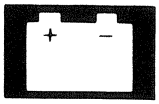
C445 (22-WHT) 94
Below right side of dash

C451 (16-WHT) 95
Behind right kick panel

G401 82
Behind top center of dash, above left side of heater assembly

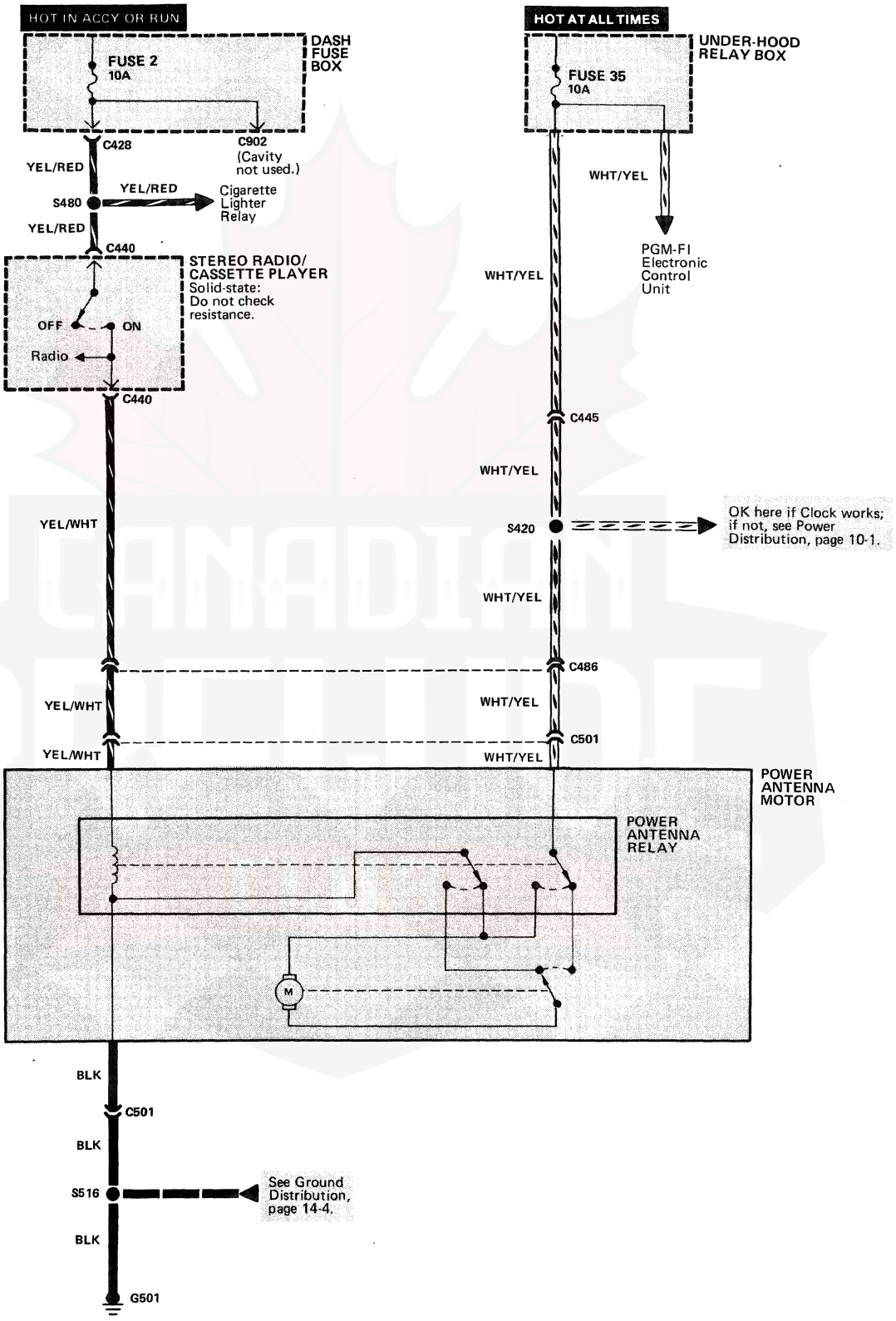
How The Circuit Works

With the ignition switch in ACC or RUN, voltage is applied through fuse 2 to the radio. When you turn the radio on, current flows through fuse 2 into the receiver circuits in the radio. Fuse 35 is hot at all times and provides power to the radio for its memory circuits.



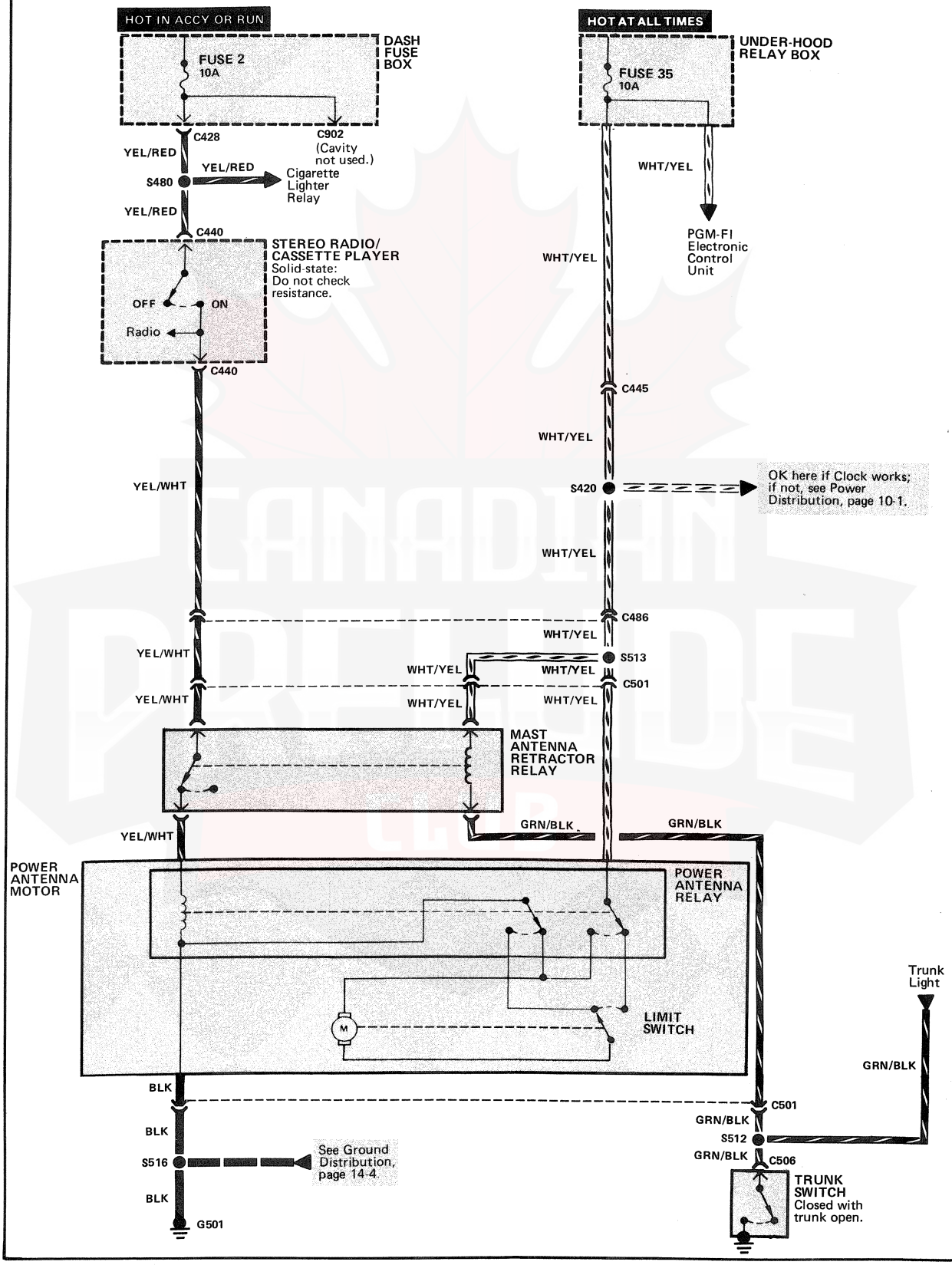
Power Antenna: Without Spoiler

Circuit Schematic



Power Antenna: With Spoiler

Circuit Schematic



Component Location Index

(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

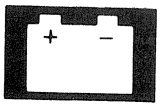
How The Circuit Works

With the ignition switch in ACC or RUN, voltage is applied through fuse 2 to the radio. Voltage is applied at all times through fuse 35 to the power antenna relay.

When you turn the radio on, the relay coil is energized and the contacts close. Voltage is applied to the power antenna motor and drives the antenna up to its fully extended position.

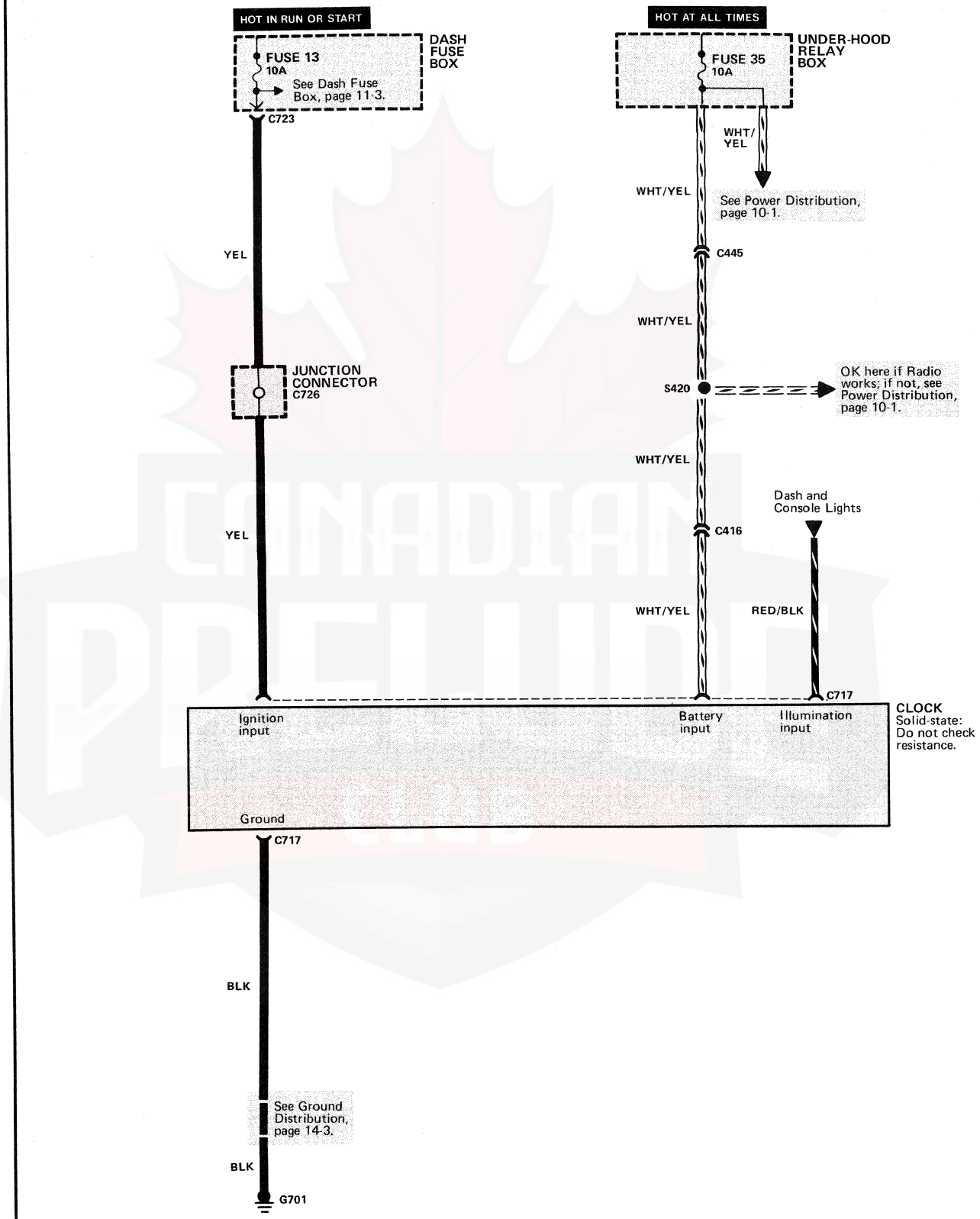
When you turn the radio off, the relay contacts open. The polarity of the voltage applied to the motor is now reversed: The antenna motor moves the antenna completely down. A mechanical switch controlled by the motor turns the motor off when the antenna reaches maximum height or when the antenna is fully retracted.

In models equipped with a spoiler, a mast antenna retractor relay is used to lower the antenna when the trunk lid is opened. Voltage is applied at all times to the coil of the relay. When the trunk lid is opened, the coil is grounded and the normally closed contacts of the relay open thus removing power from the power antenna relay. The motor then retracts the antenna.



Clock

Circuit Schematic



Component Location Index

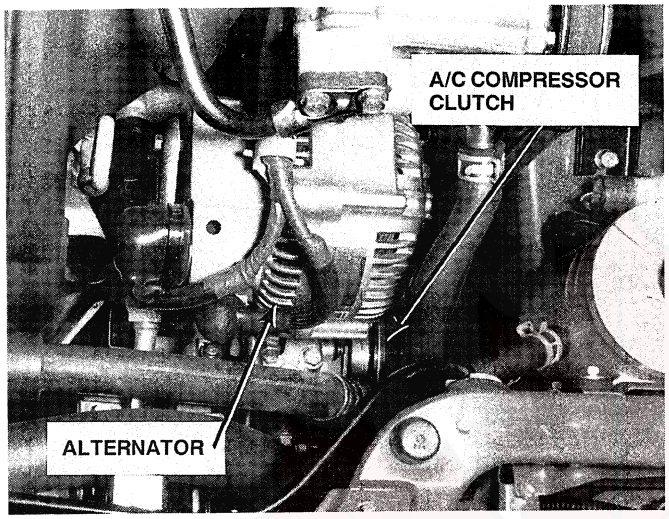
(Refer to Section 201 for photographs.)
(Refer to Section 202 for selected connector views.)
(Refer to Section 203 for harness routing views.)

How The Circuit Works

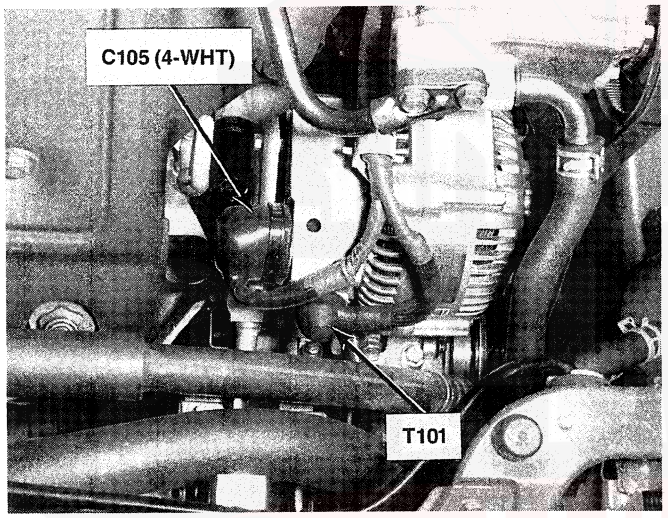
Voltage is applied at all times to the clock through the WHT/YEL wire to provide clock memory. With the ignition switch in RUN or START, voltage is applied to the clock through the YEL wire: The clock lights up and displays the time.

Component Location

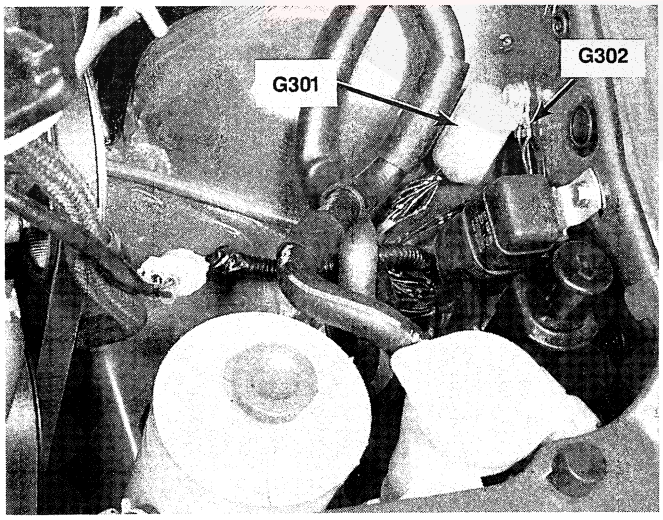
1. Left Front of Engine



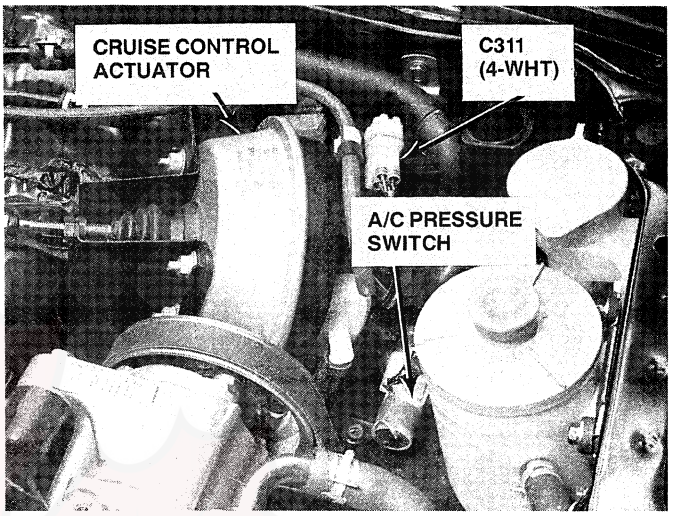
2. Left Front of Engine Compartment



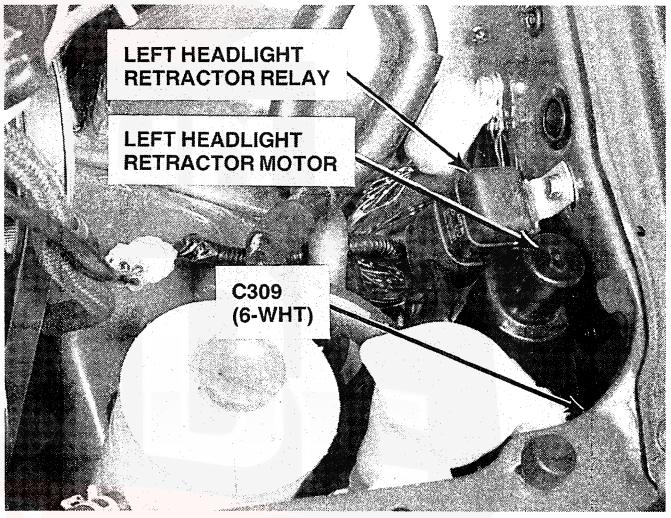
3. Left Front of Engine Compartment (Cruise Control Actuator Removed)



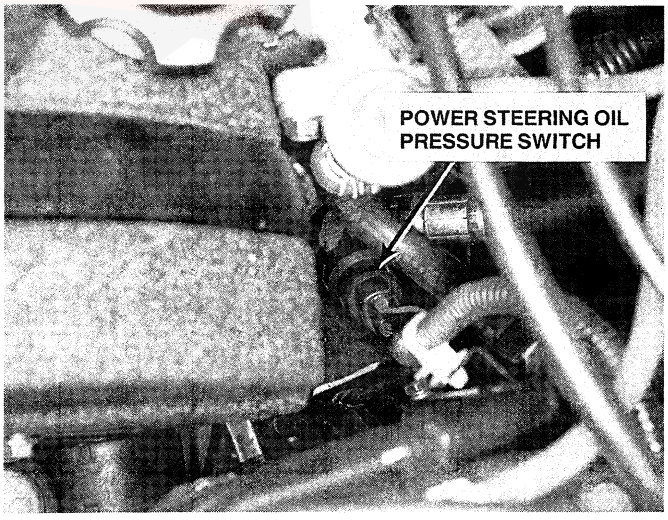
4. Left Front of Engine Compartment

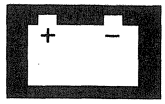


5. Left Front of Engine Compartment (Cruise Control Actuator Removed)

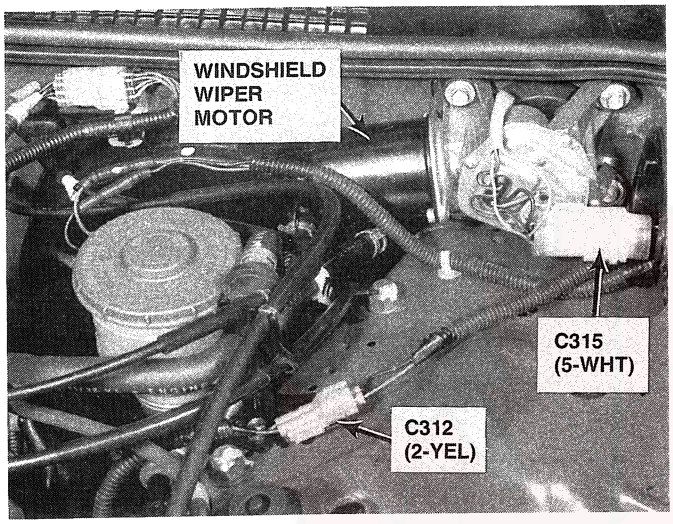


6. Left Rear of Engine

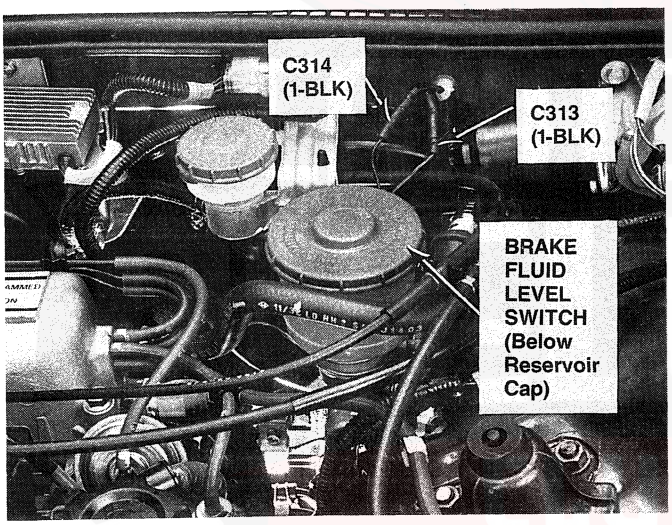




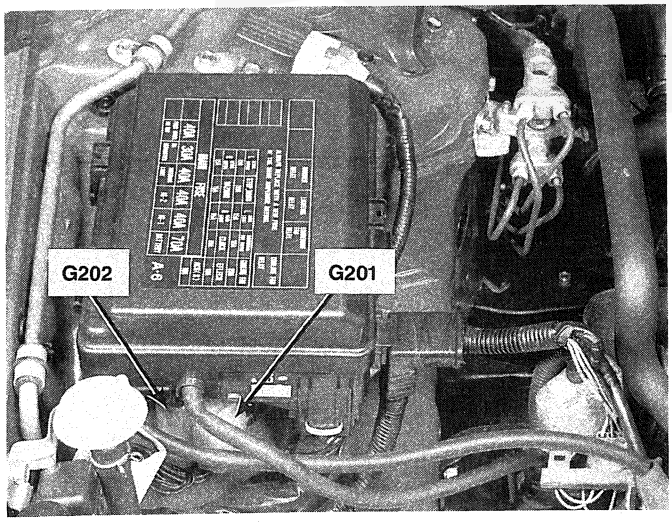
7. Left Rear of Engine Compartment



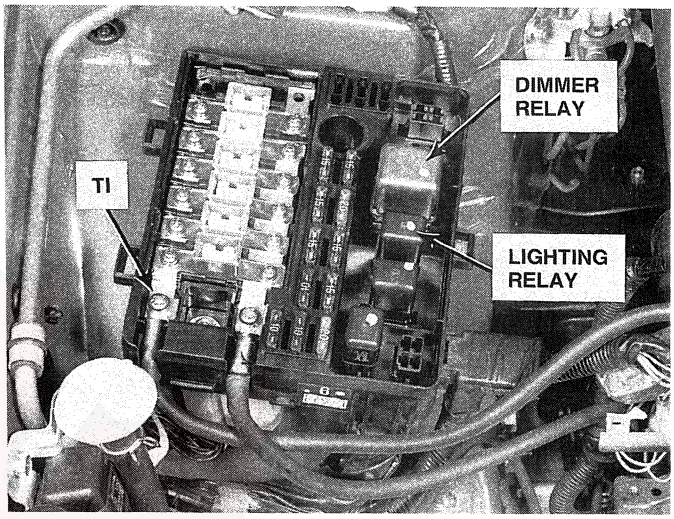
8. Left Rear of Engine Compartment



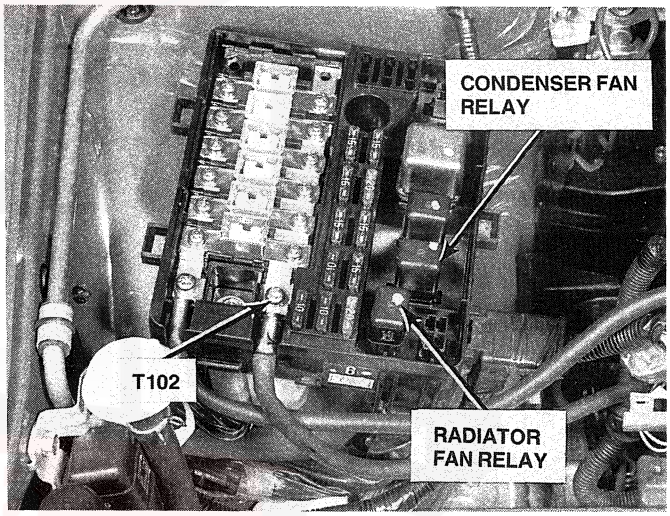
9. Right Side of Engine Compartment



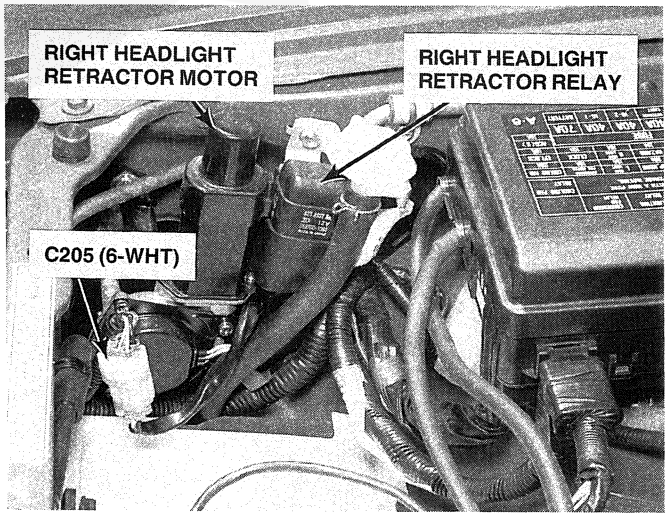
10. Right Side of Engine Compartment



11. Right Side of Engine Compartment

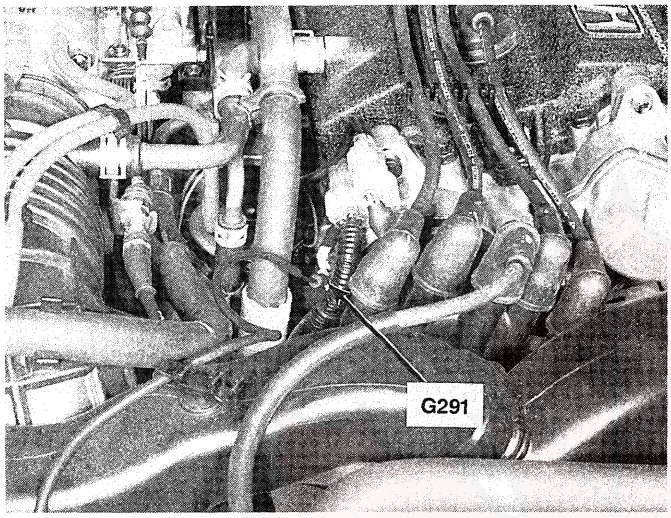


12. Right Front of Engine Compartment (Battery Removed)

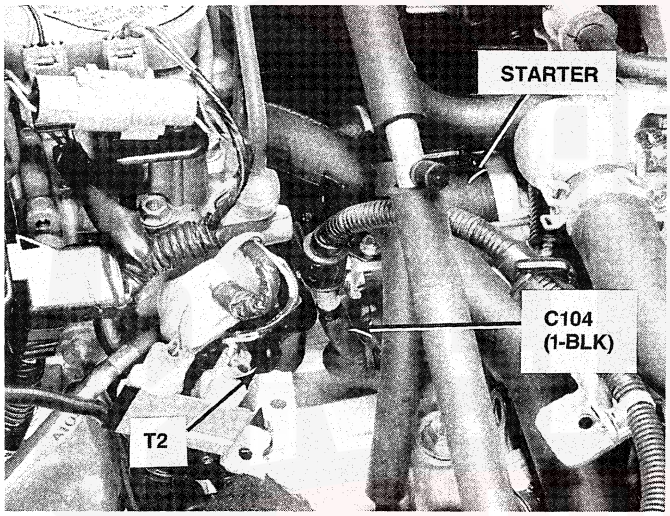


Component Location

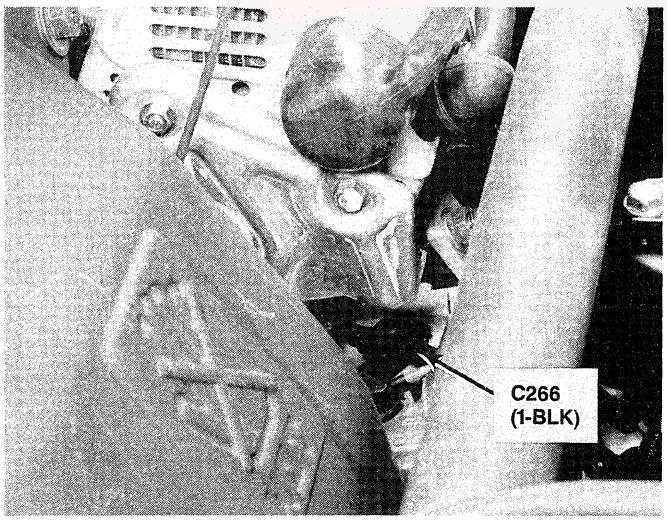
13. Right Side of Engine



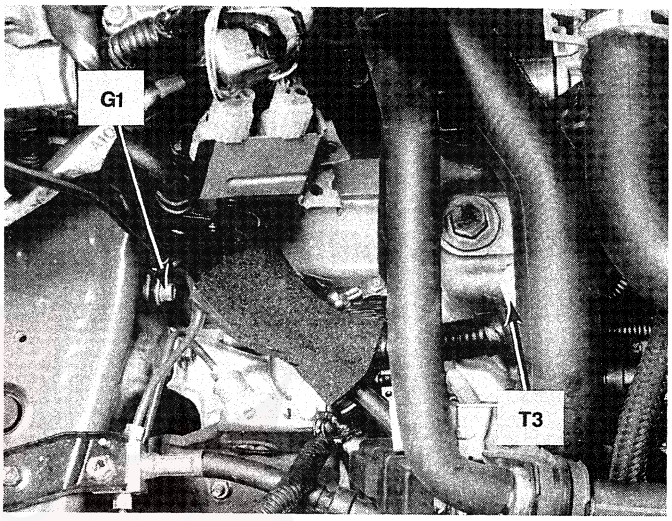
14. Right Side of Engine (Battery Removed)



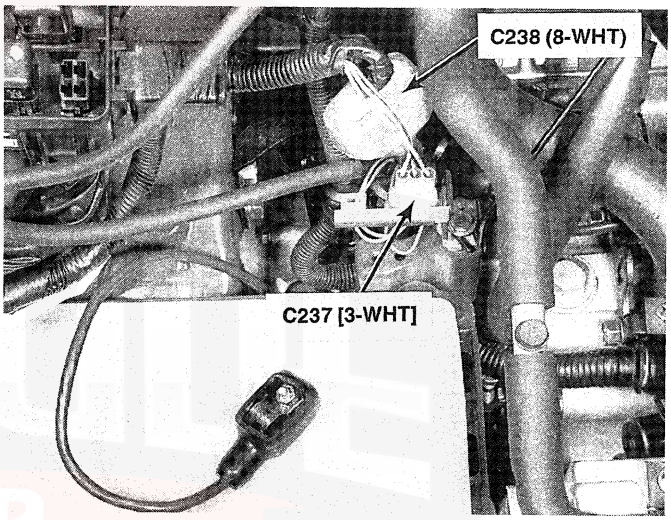
15. Lower Left Front of Engine (Air Intake Assembly Removed)



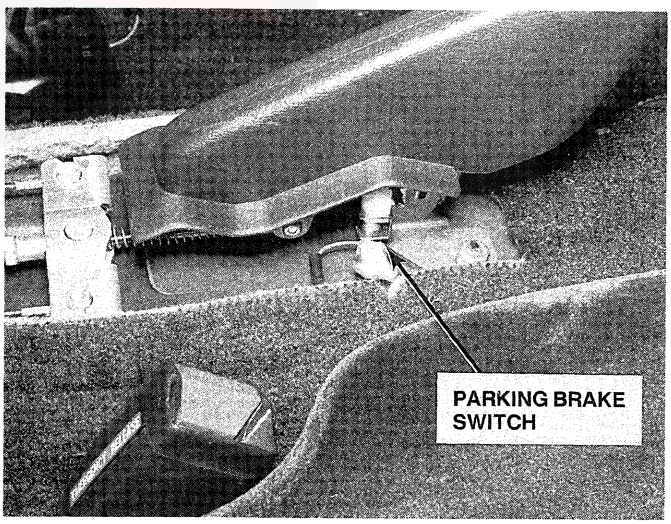
16. Lower Right Front of Engine Compartment (Battery and Battery Tray Removed)



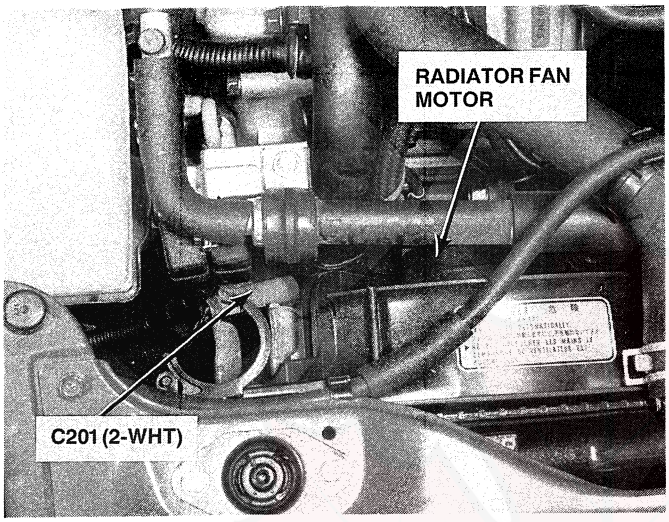
17. Right Front of Engine Compartment (Battery Removed)



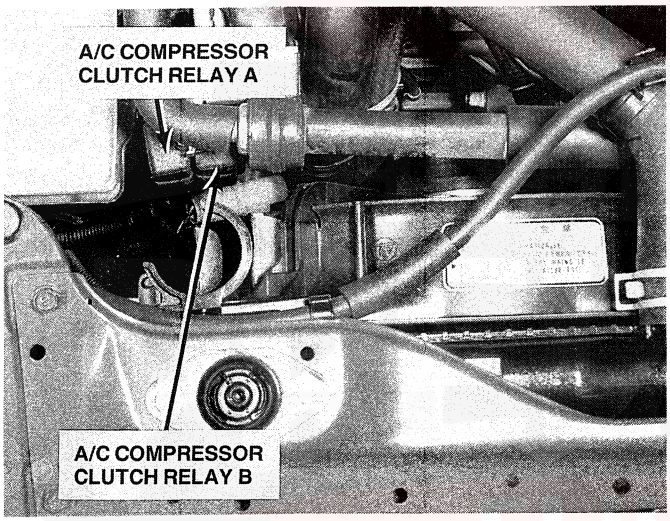
18. Right Front of Engine Compartment (Air Intake Assembly Removed)



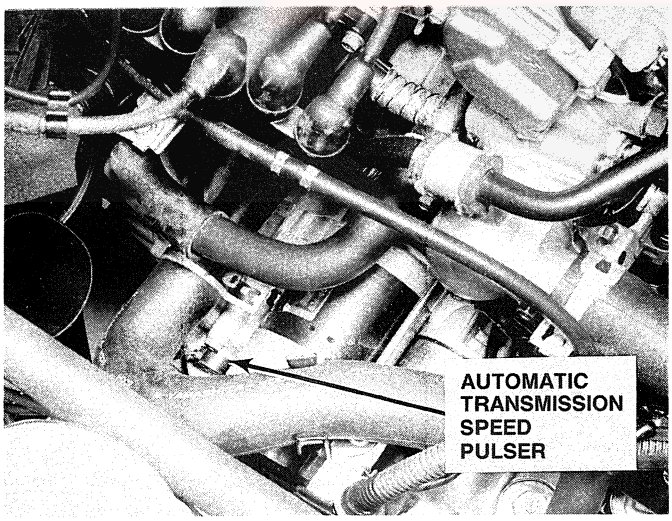
19. Right Front of Engine Compartment (Battery and Air Intake Removed)



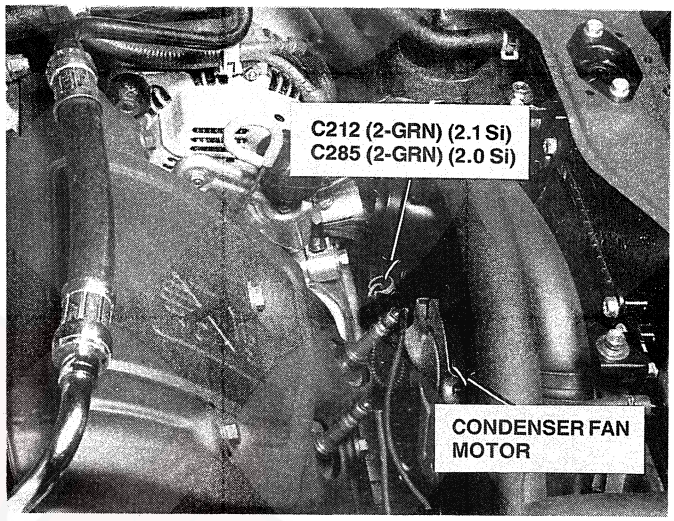
20. Right Front of Engine Compartment (Battery and Air Intake Removed)



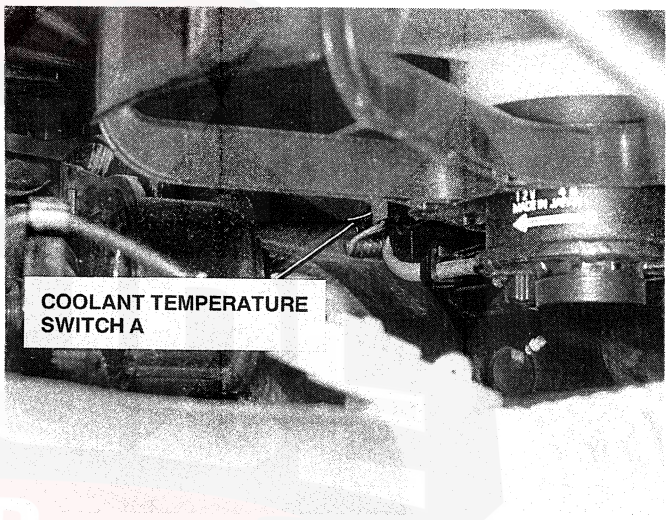
21. Right Side of Engine (Air Intake Assembly Removed)



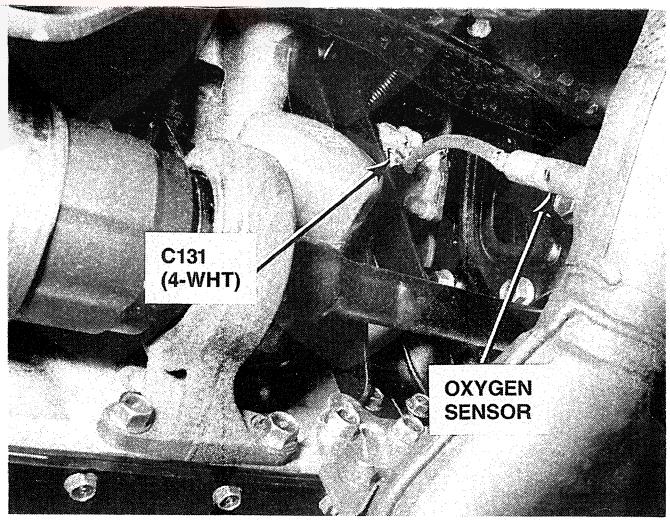
22. Center Front of Engine Compartment



23. Lower Right Front of Engine Compartment (Air Intake Removed)

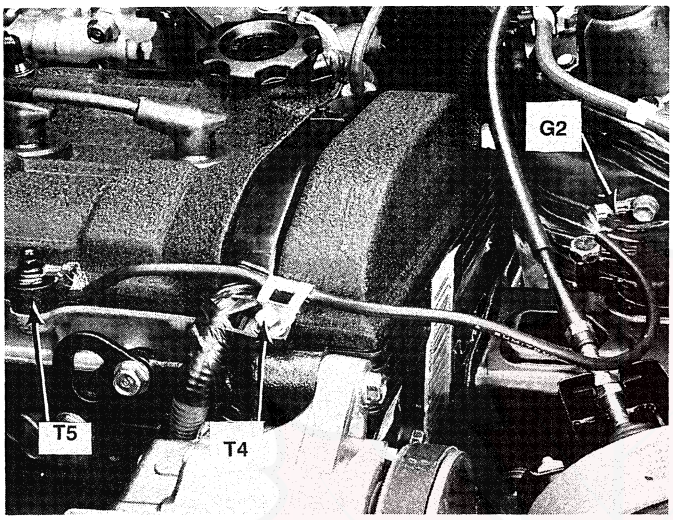


24. Lower Rear of Engine

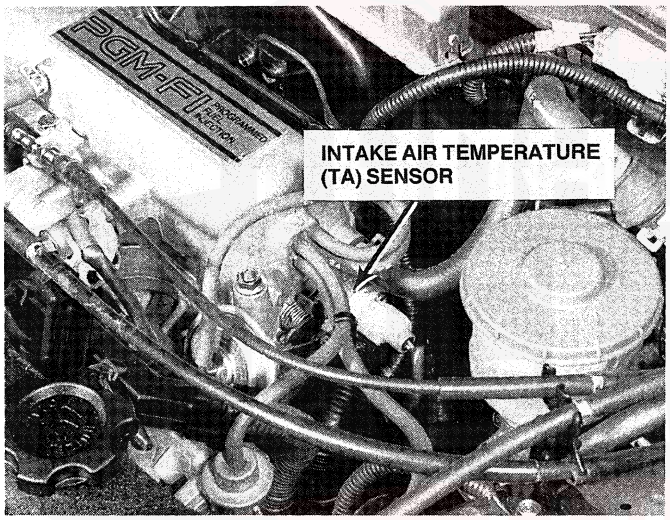


Component Location

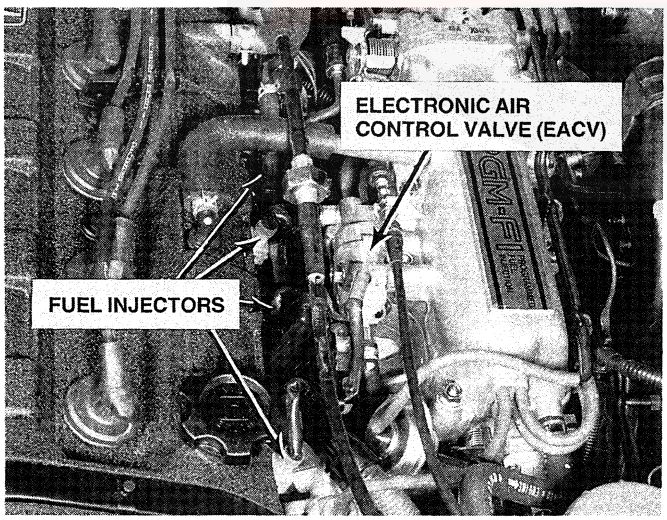
25. Left Front of Engine



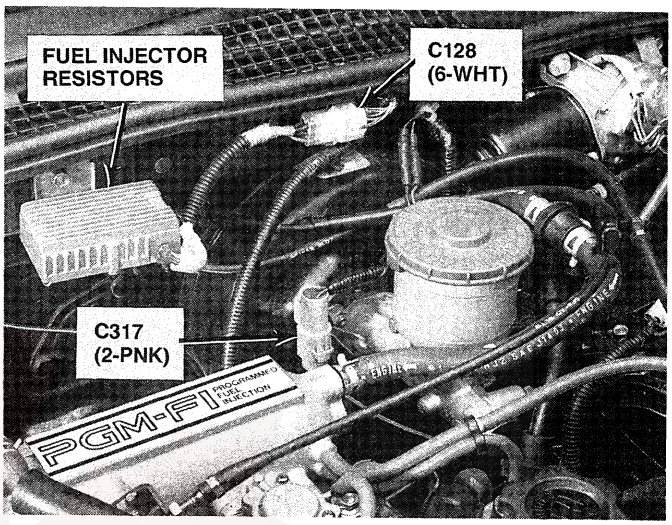
26. Left Rear of Engine



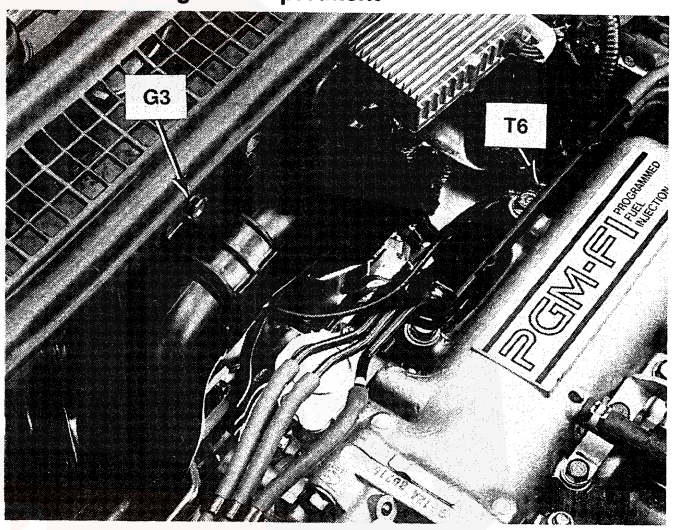
27. Rear of Engine



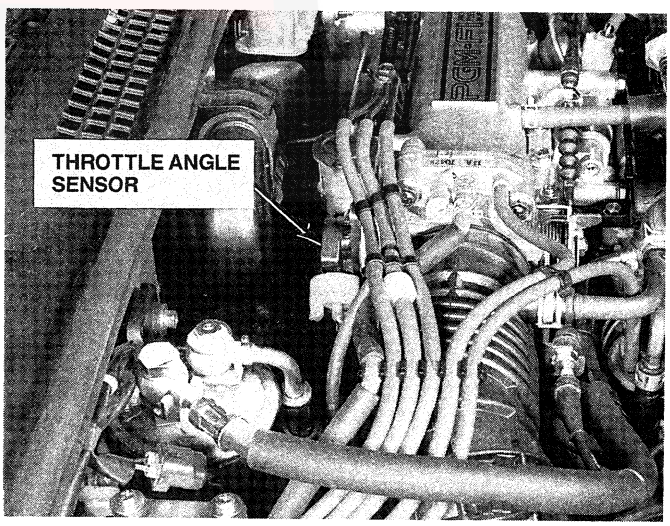
28. Left Rear of 2.1 Si Engine Compartment (2.0 Si Similar)

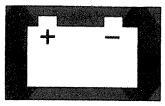


29. Rear of Engine Compartment

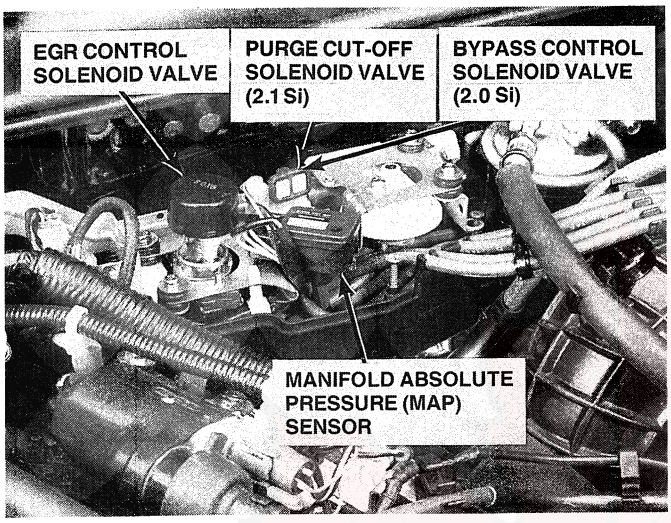


30. Rear of Engine Compartment

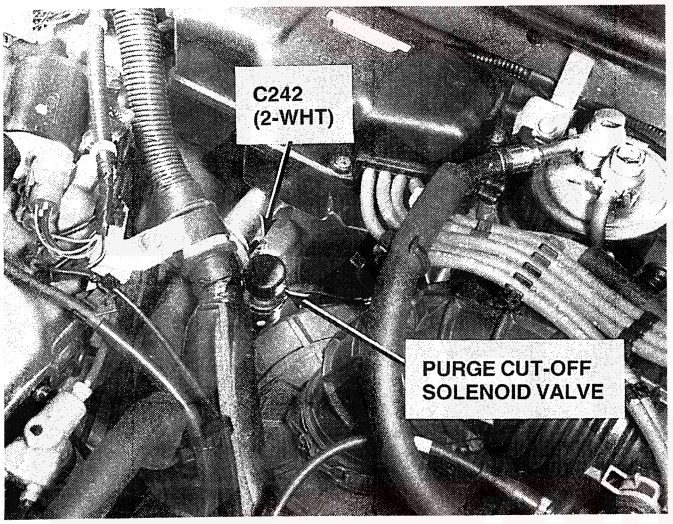




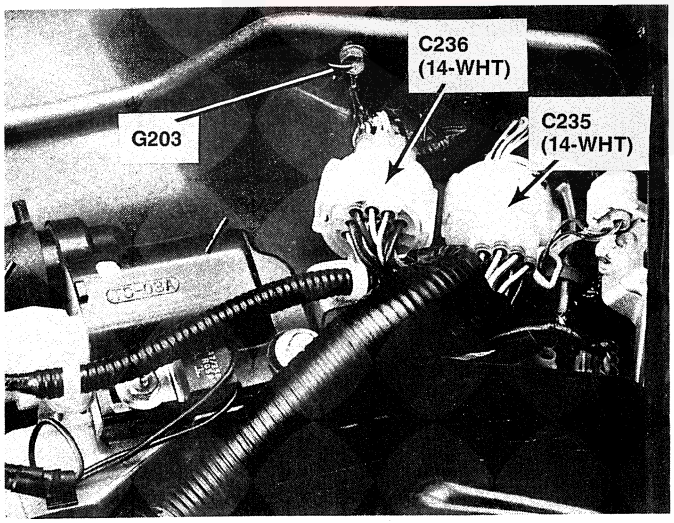
31. Right Rear of 2.1 Si Engine Compartment (2.0 Si Similar)



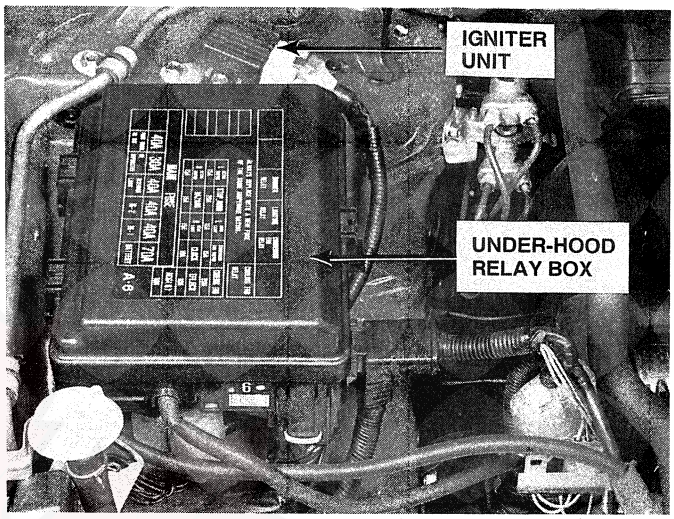
32. Right Rear of 2.0 Si Engine Compartment



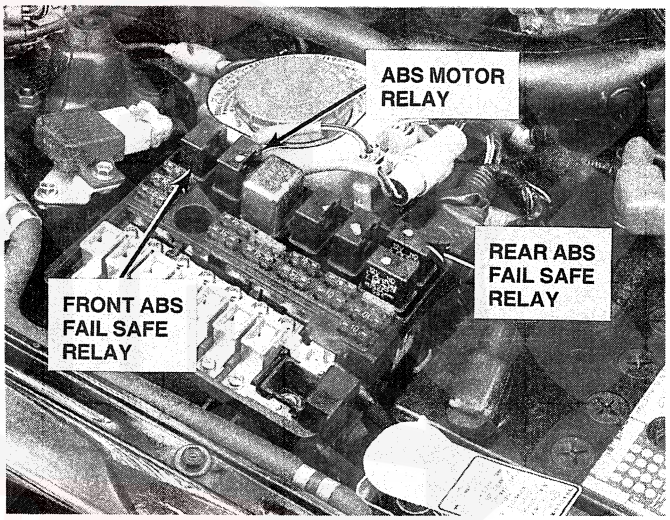
33. Right Rear of Engine Compartment



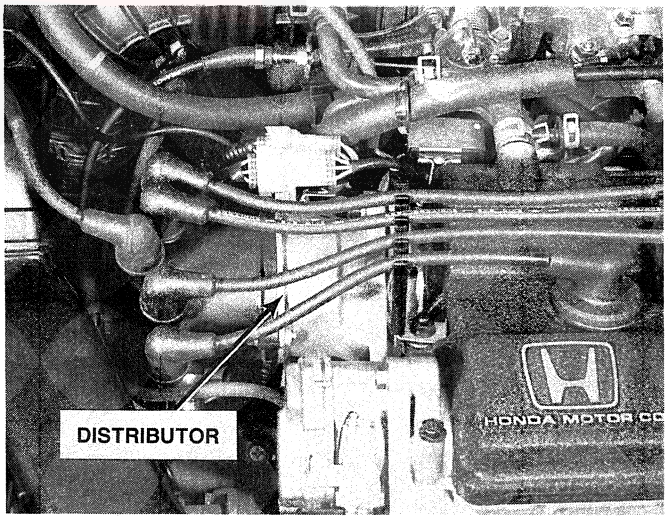
34. Right Side of Engine Compartment (Without ABS Shown; With ABS Similar)



35. Right Side of 2.1 Si Engine Compartment

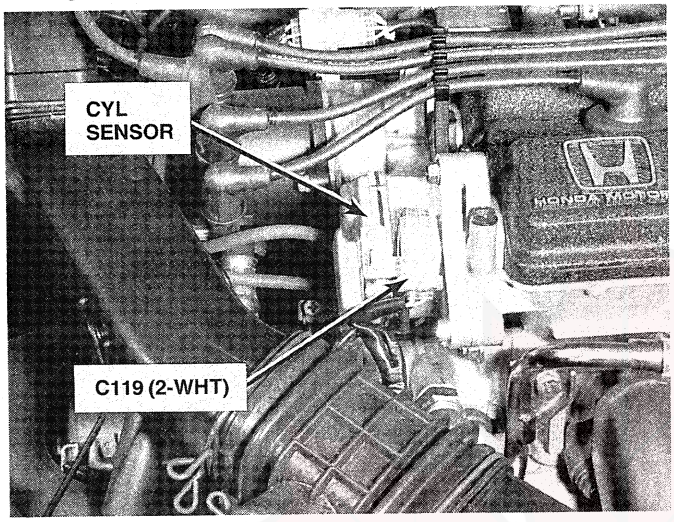


36. Right Front of Engine

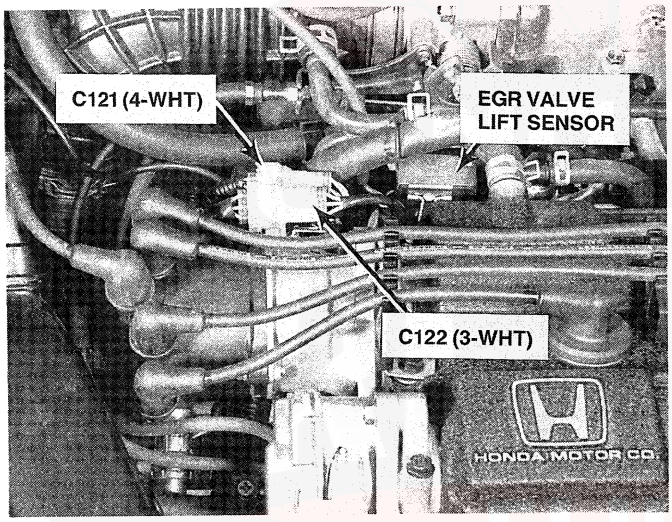


Component Location

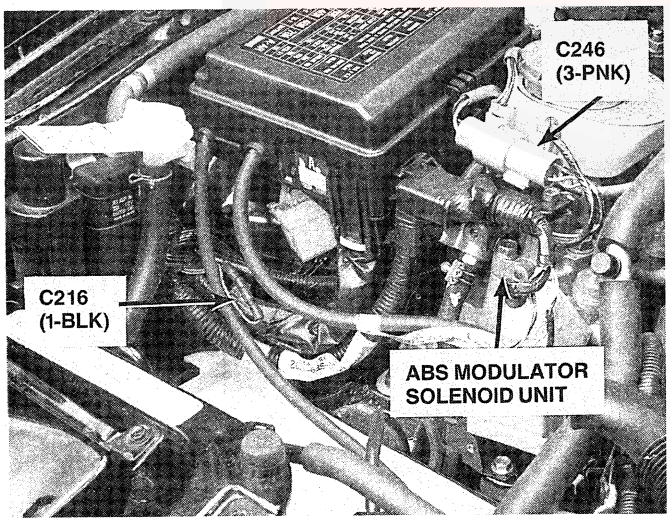
37. Right Front of Engine



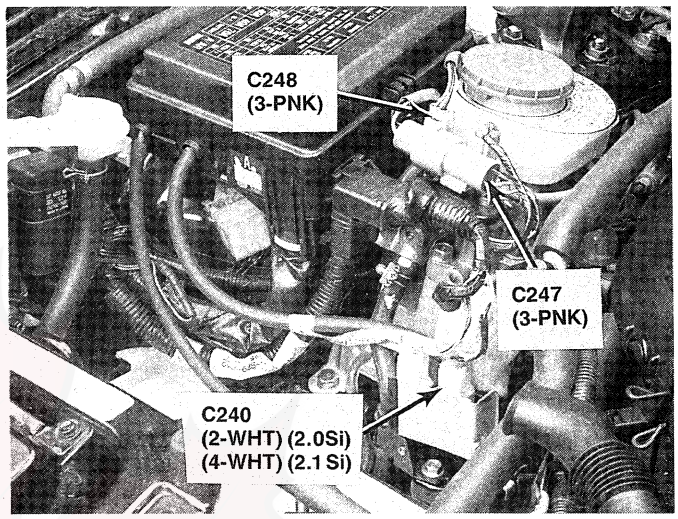
38. Right Front of Engine



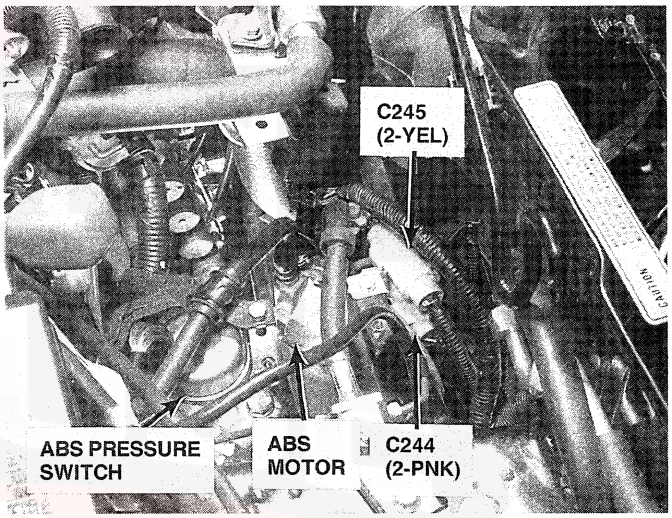
39. Right Side of 2.1 Si Engine Compartment



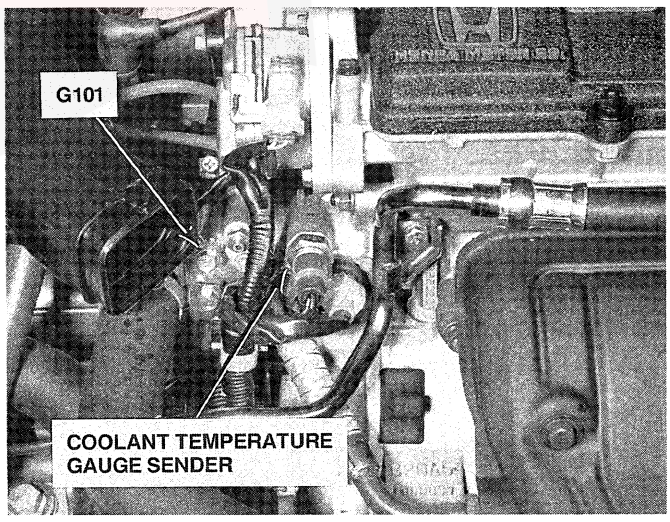
40. Right Side of 2.1 Si Engine Compartment (2.0 Si Similar)

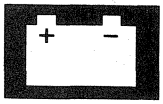


41. Right Front of 2.1 Si Engine Compartment

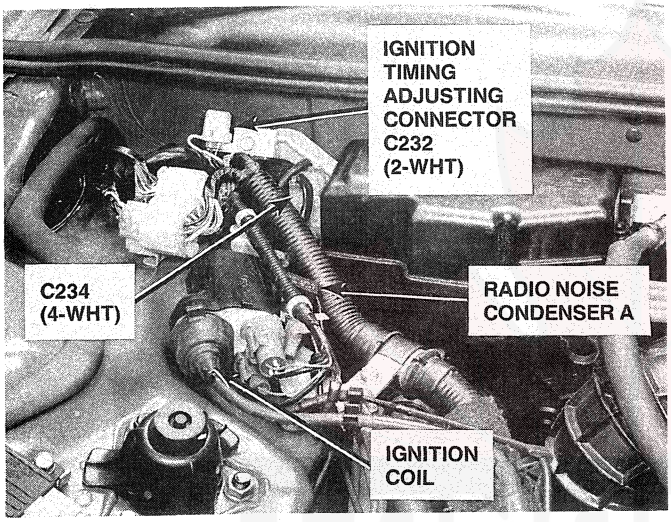


42. Right Front of Engine (Air Cleaner Duct Removed)

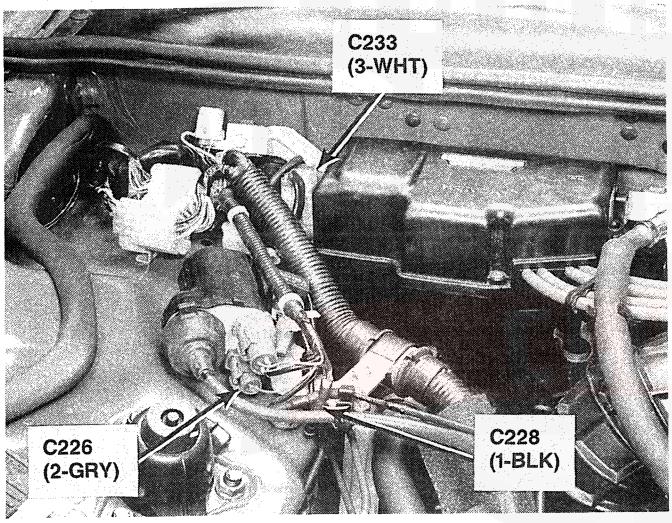




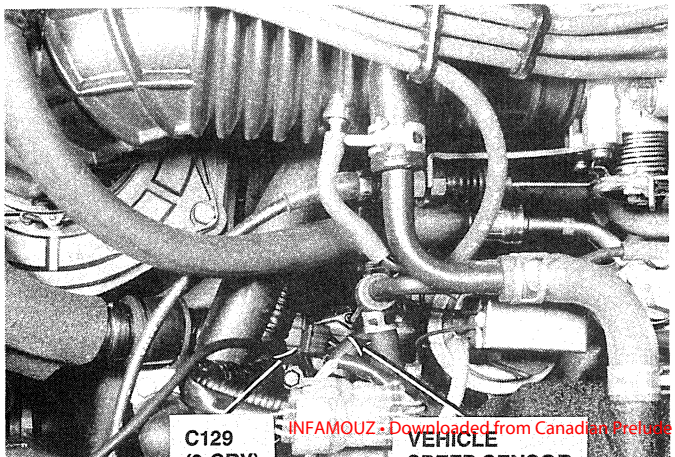
43. Right Rear Corner of Engine Compartment



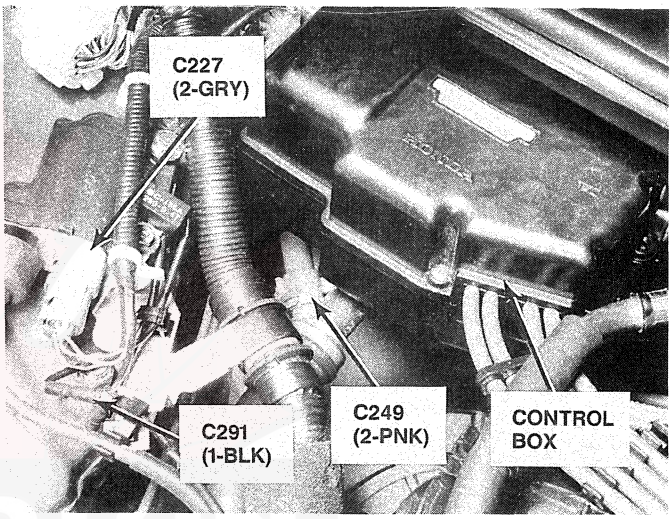
44. Right Rear Corner of Engine Compartment



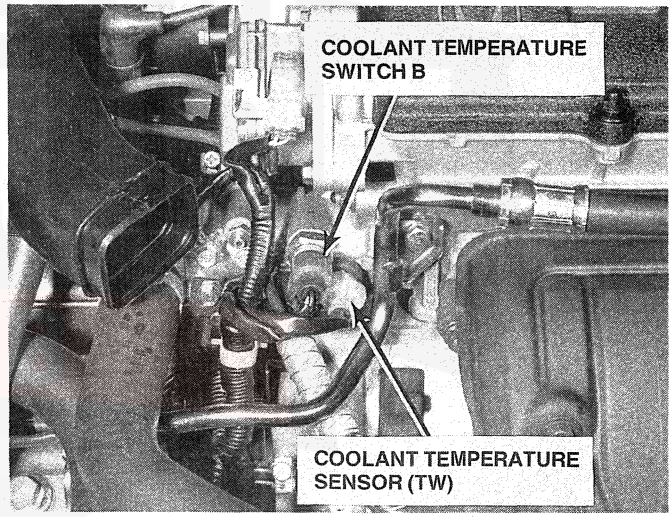
45. Right Rear of Engine



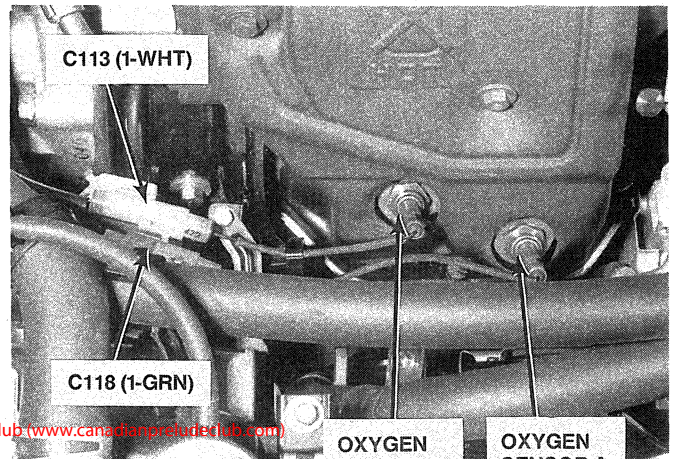
46. Right Rear Corner of Engine Compartment



47. Right Front of Engine (Air Cleaner Duct Removed)

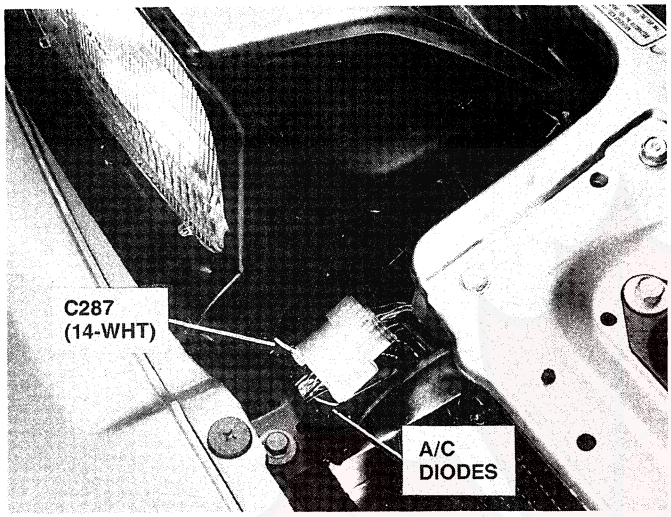


48. Center Front of 2.0 Si Engine Compartment

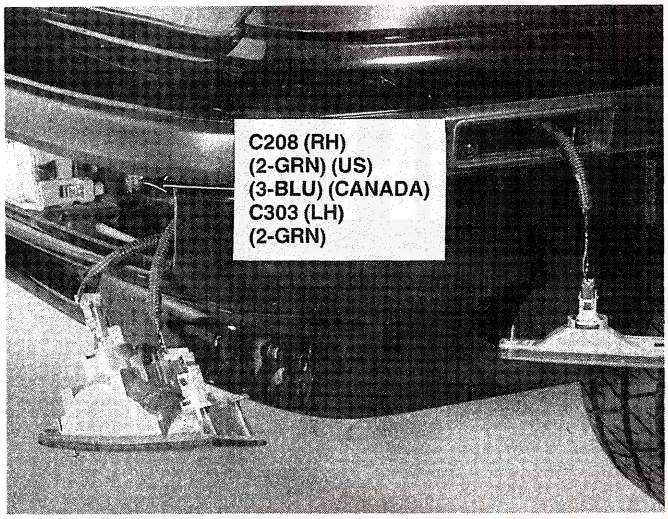


Component Location

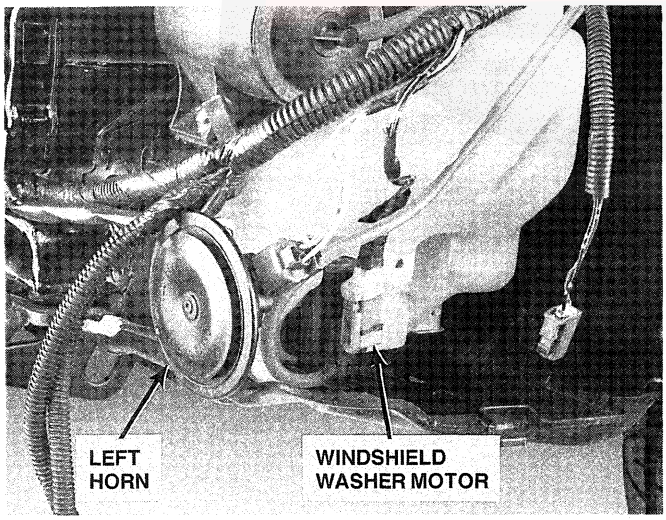
49. Right Front of Car



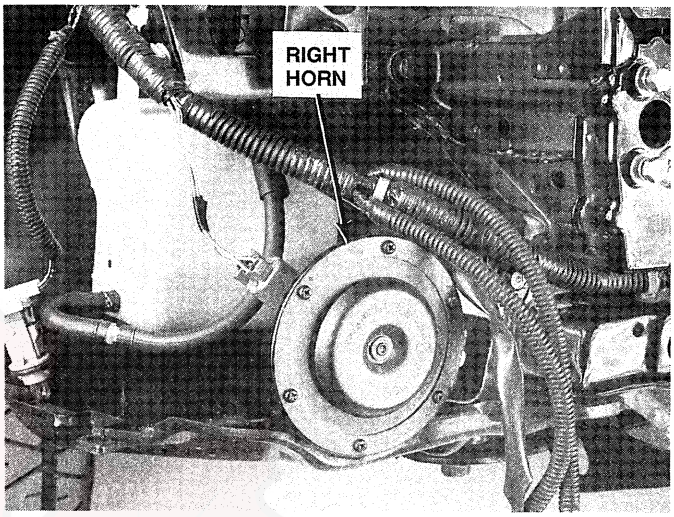
50. Left Front of Car (Right Similar)



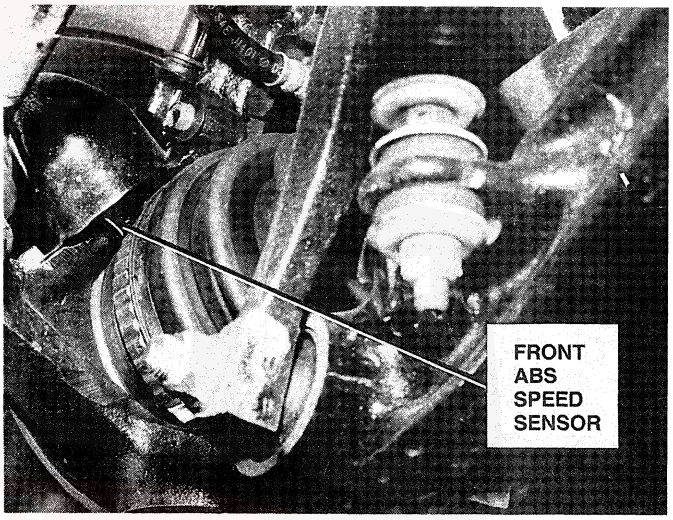
51. Behind Left Side of Front Bumper



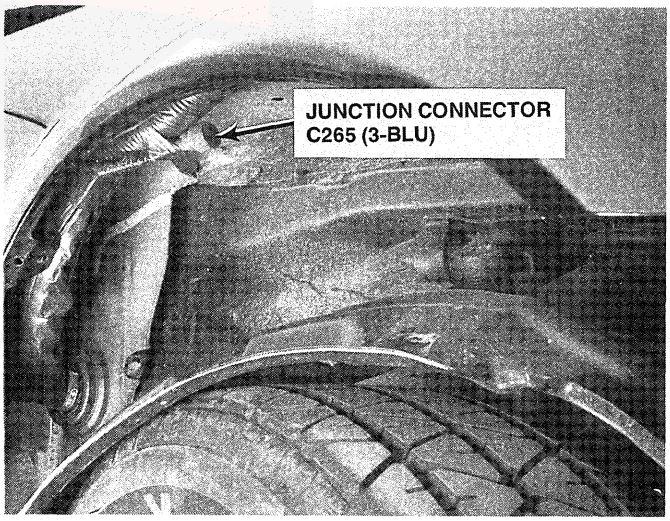
52. Behind Right Side of Front Bumper



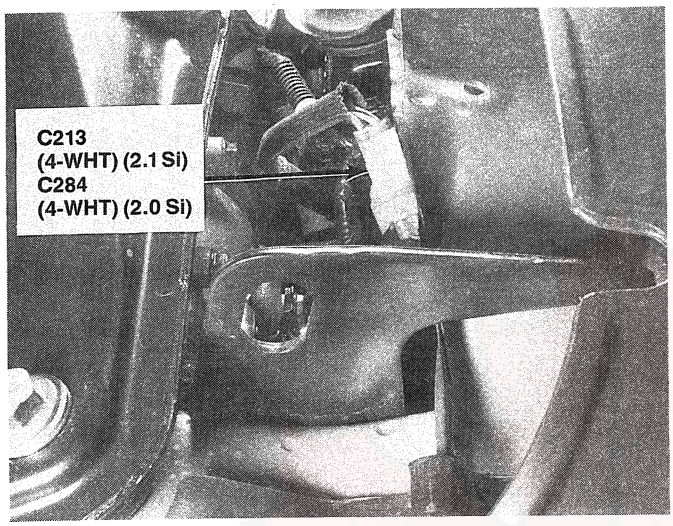
53. Behind Left Front Wheel (Right Similar)



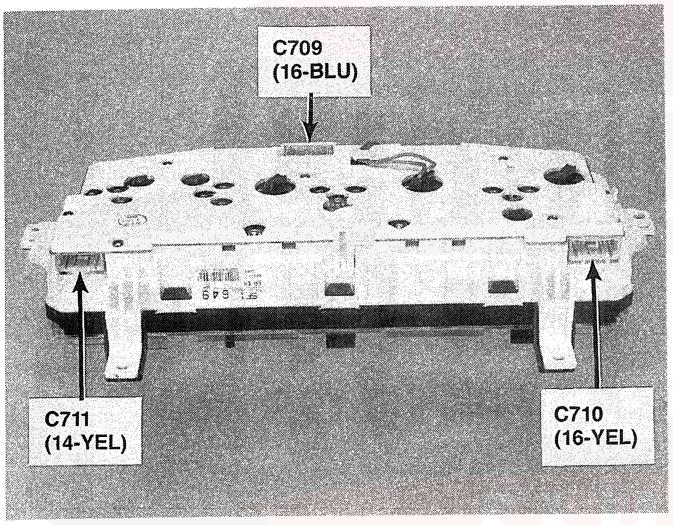
54. Inside Right Front Wheel Well



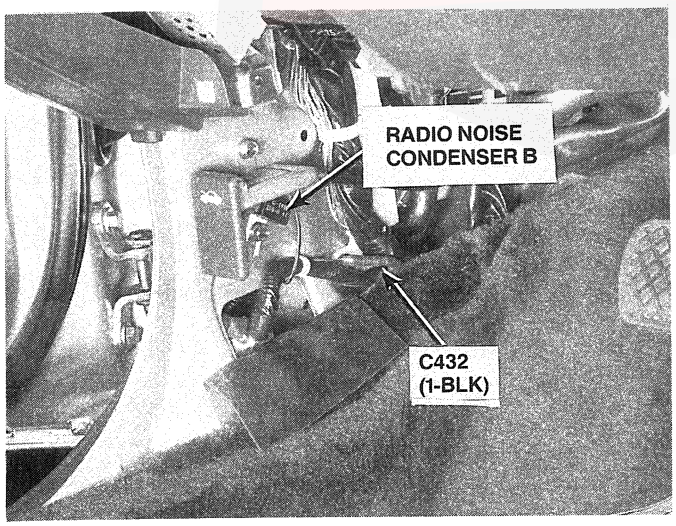
55. Below Left Front of Car (Splash Guard Removed)



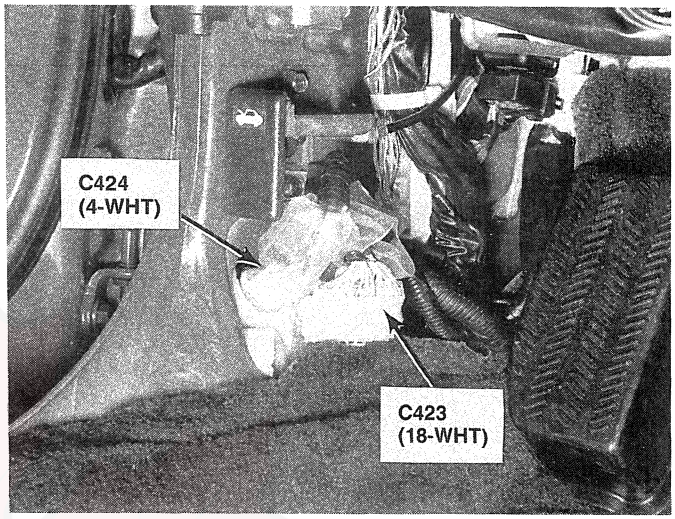
56. Rear of Gauge Assembly



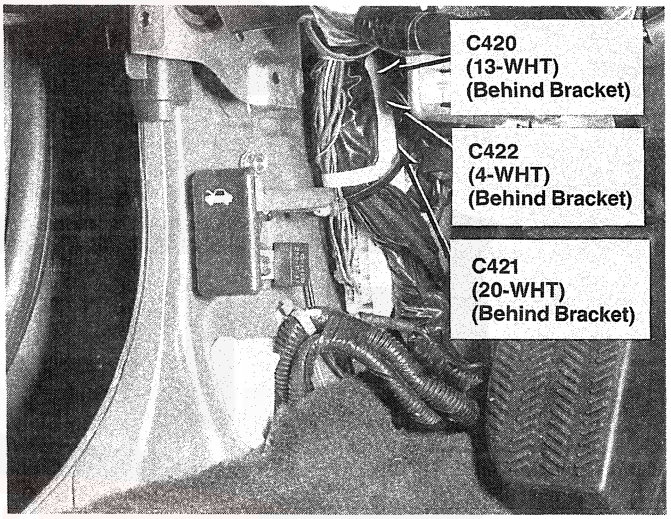
57. Left Kick Panel



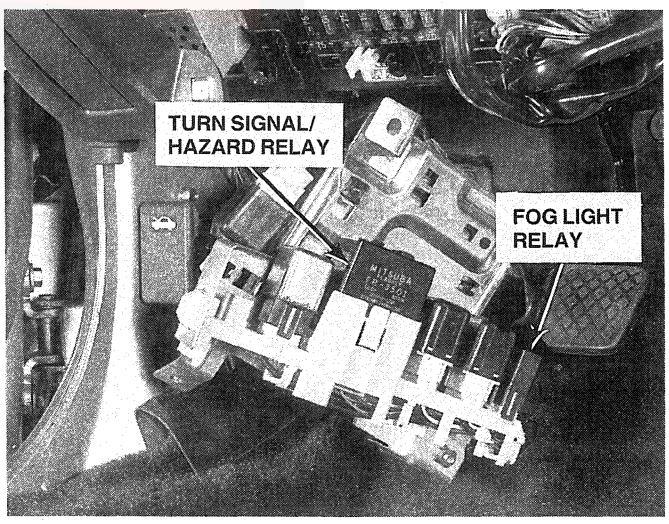
58. Left Kick Panel



59. Below Left Side of Dash, at Kick Panel

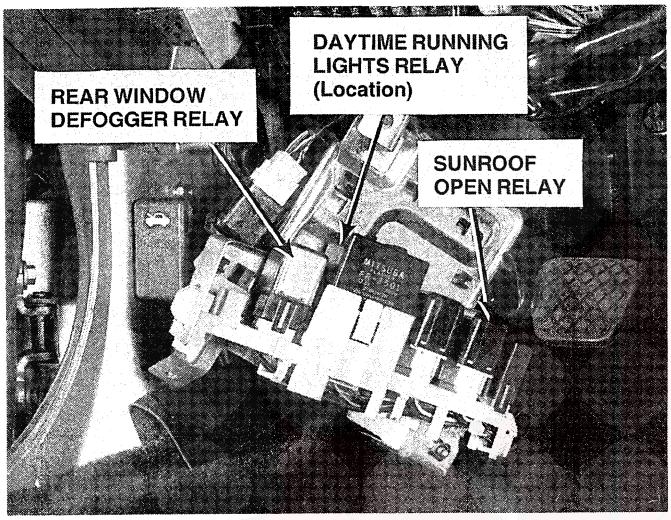


60. Below Left Side of Dash (Dash Relay Holder Loosened)

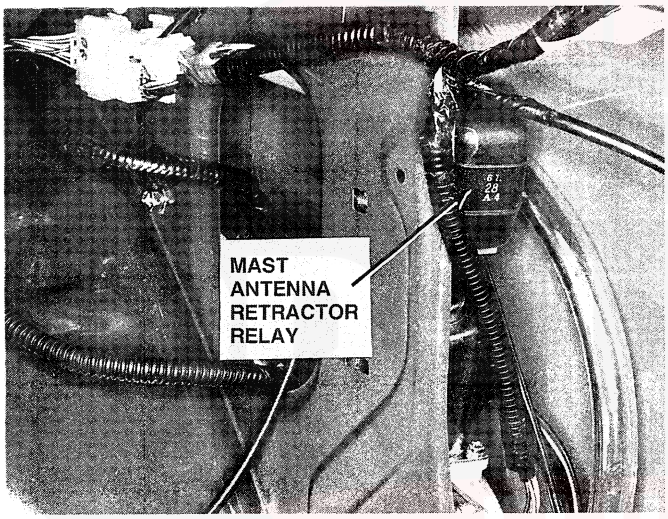


Component Location

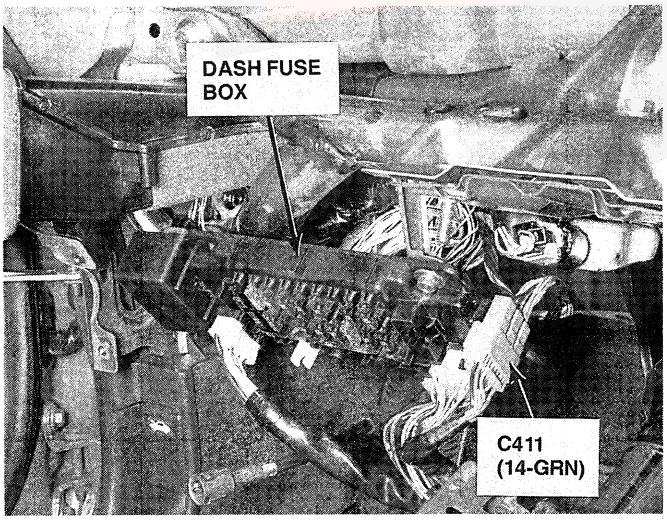
61. Below Left Side of Dash (Dash Relay Holder Loosened)



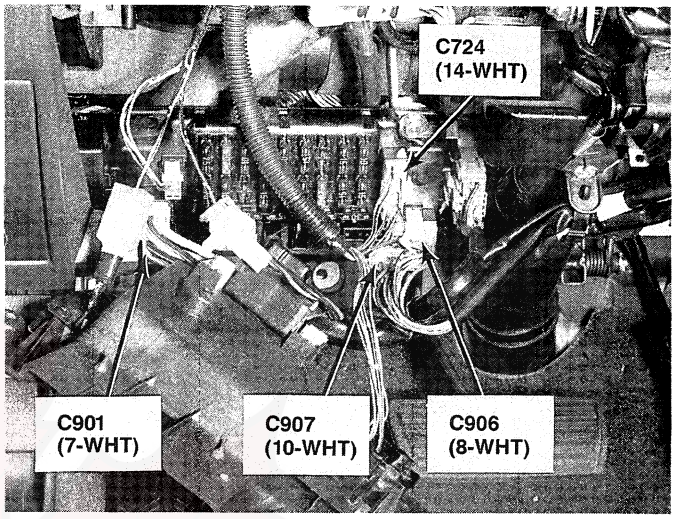
62. Below Left Side of Dash (Dash Relay Holder Loosened)



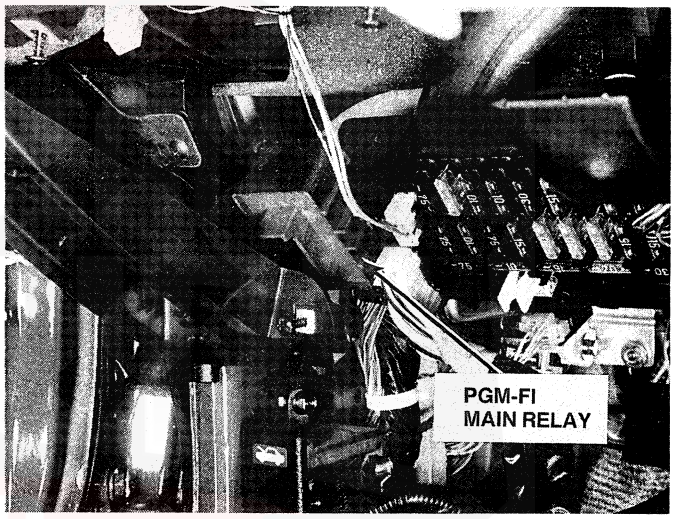
63. Behind Left Side of Dash



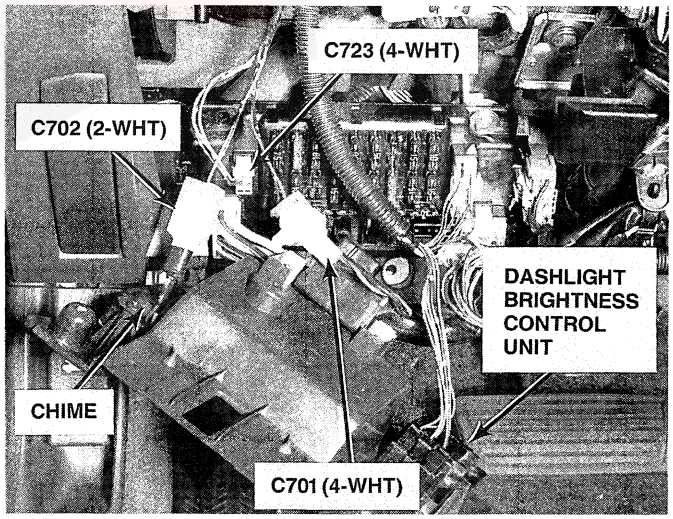
64. Behind Left Side of Dash (Lower Panel Removed)



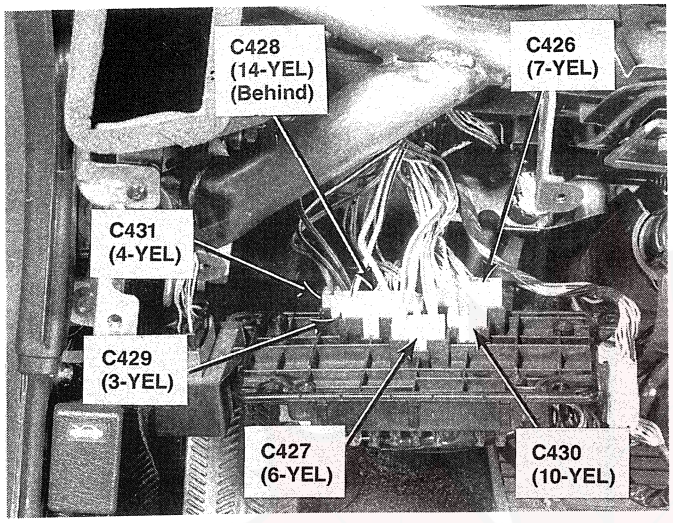
65. Below Dash, Left Side of Steering Column



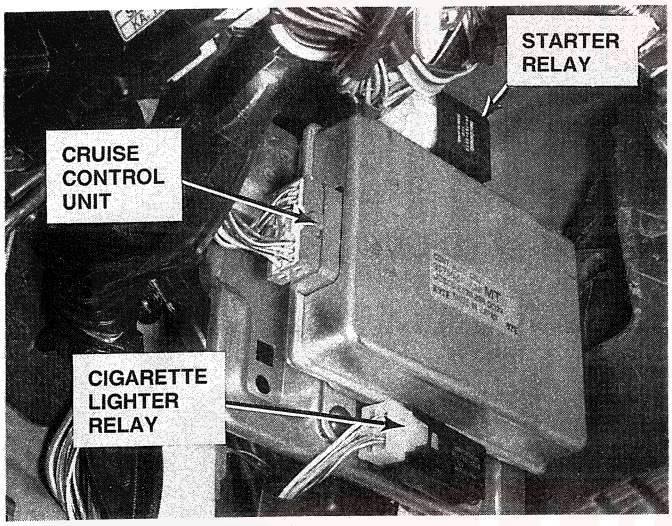
66. Behind Left Side of Dash (Lower Panel Removed)



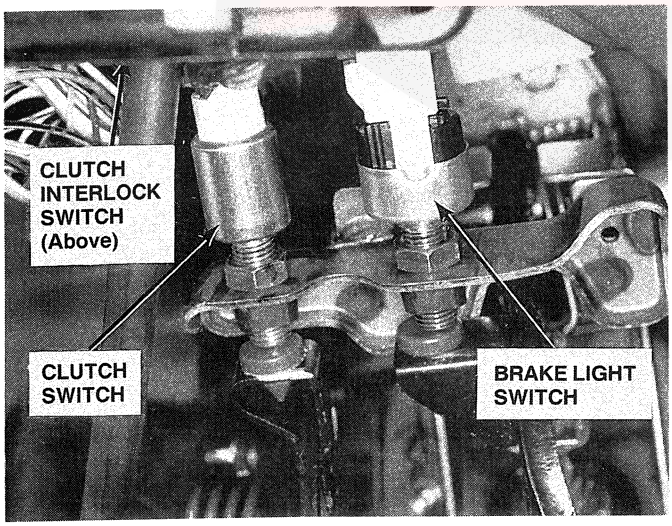
67. Behind Left Side of Dash (Dash Fuse Box Loosened)



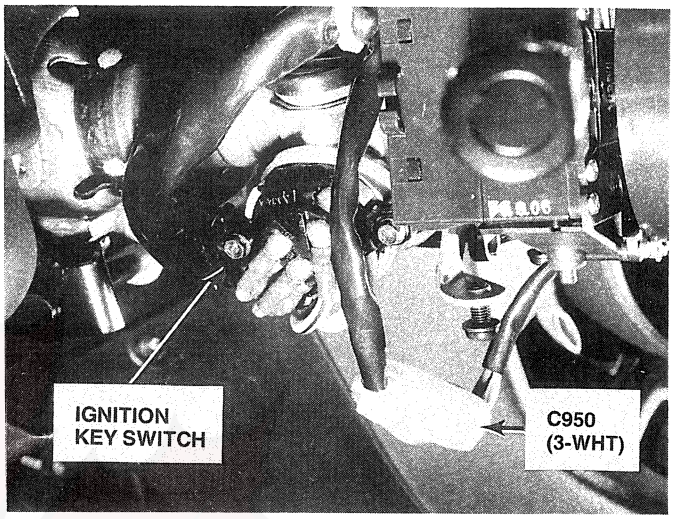
68. Behind Left Side of Dash



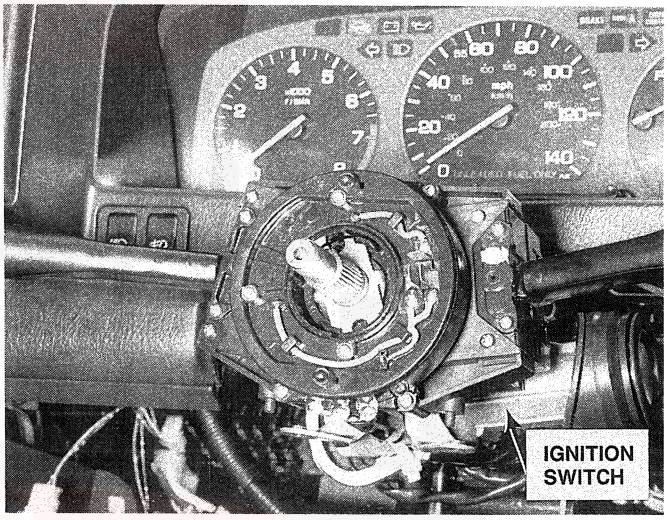
69. Behind Left Side of Dash, Above Brake Pedal



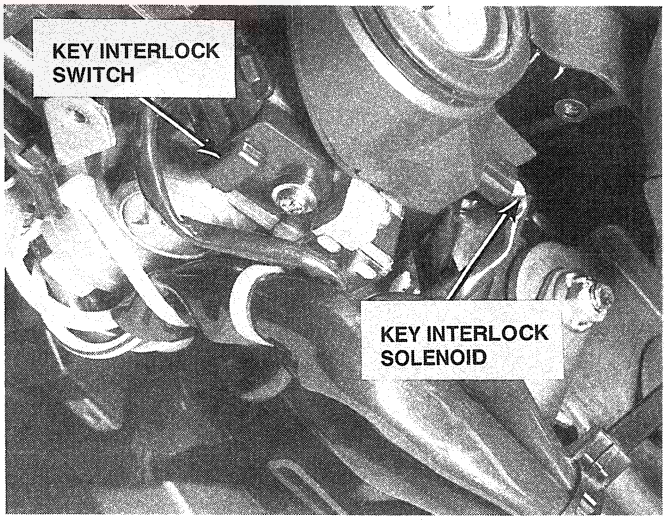
70. Top Left Side of Steering Column



71. Top of Steering Column (Steering Wheel Removed)

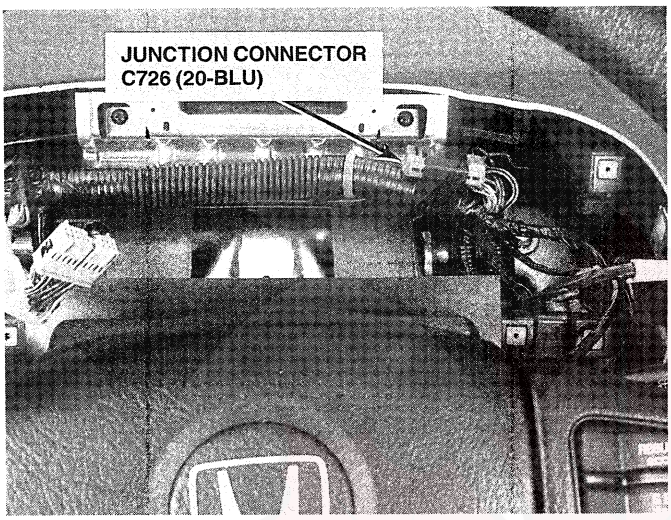


72. Top Right Side of Steering Column

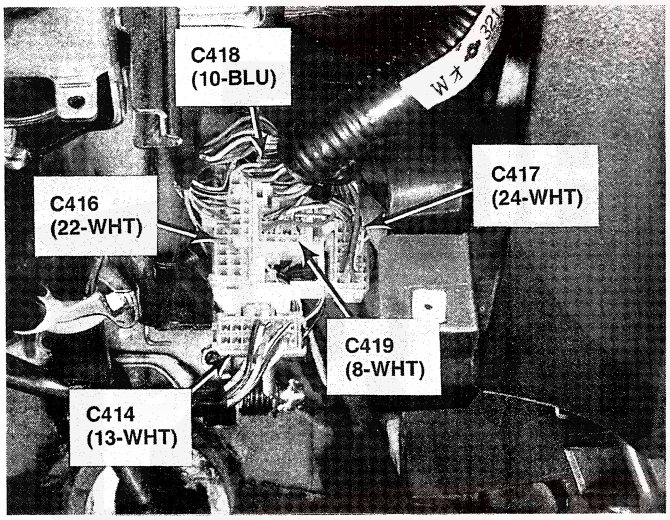


Component Location

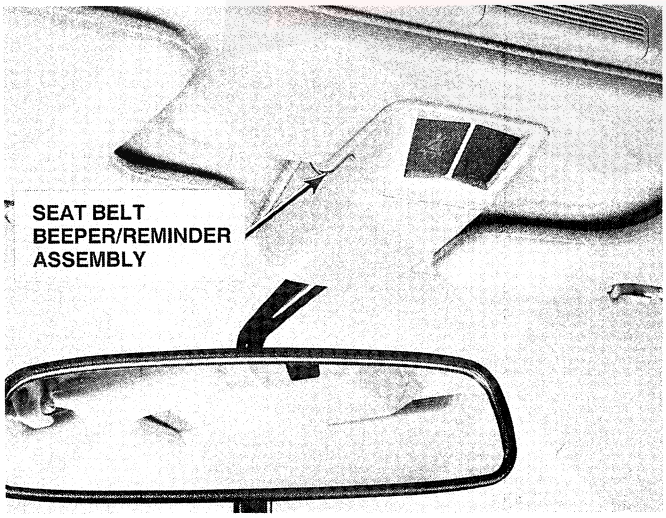
73. Behind Top Left Side of Dash (Gauge Assembly Removed)



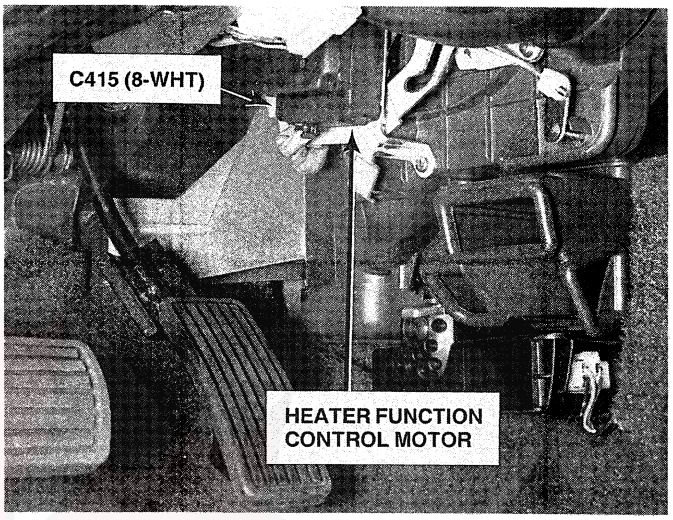
74. Below Dash, Right of Steering Column



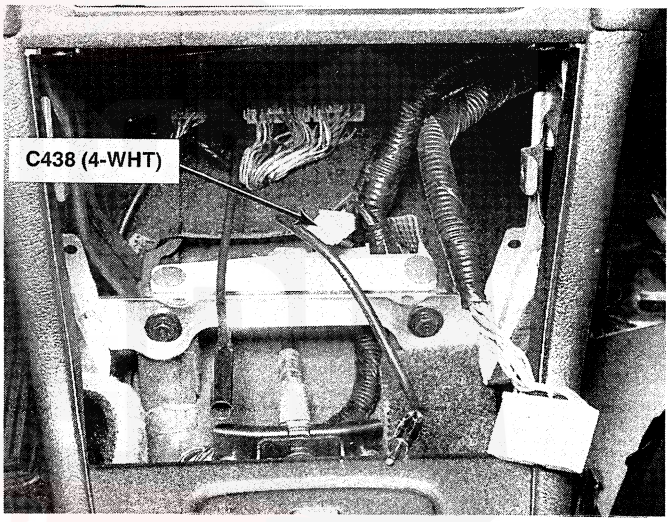
75. Center of Windshield Header



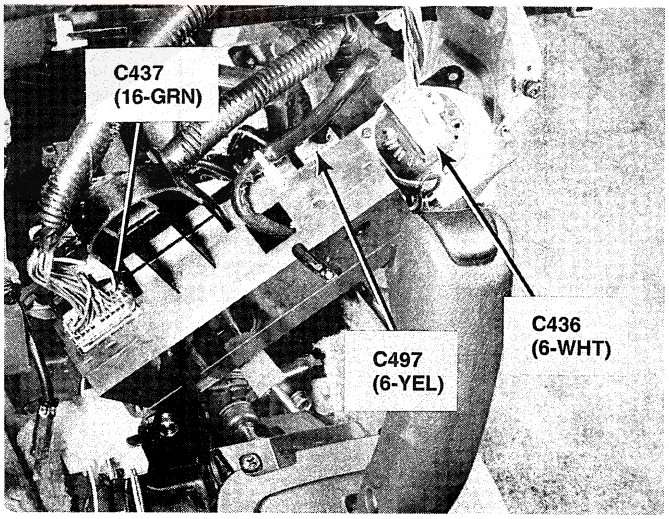
76. Behind Center of Dash, Left Side of Heater Assembly



77. Behind Center of Dash (Stereo Radio/Cassette Player and Heater Control Removed)

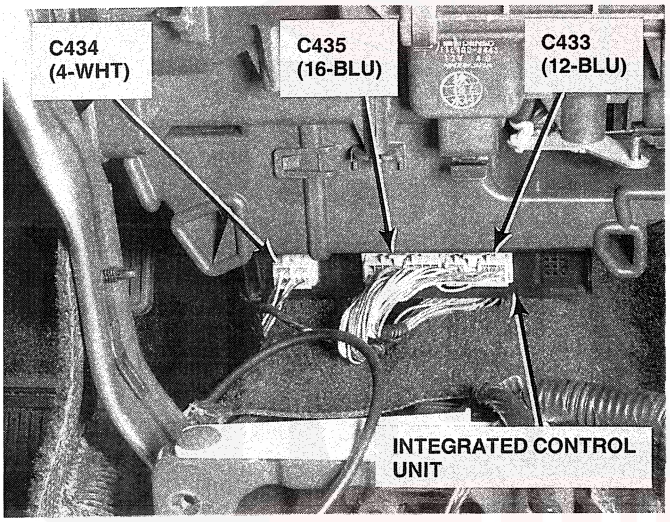


78. Behind Center of Dash

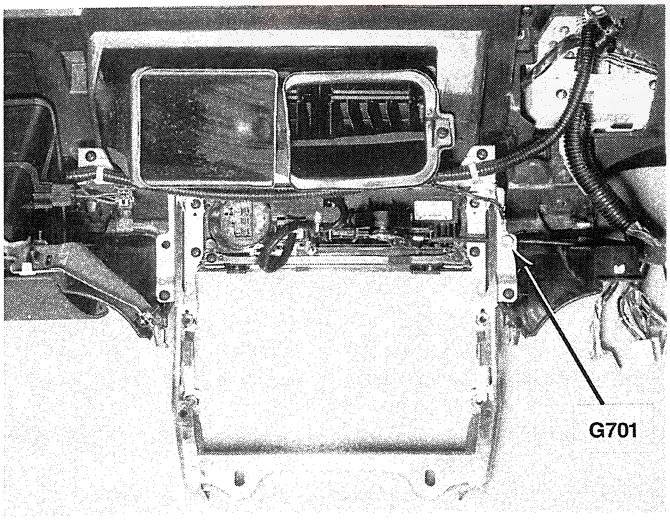


79. Behind Center of Dash

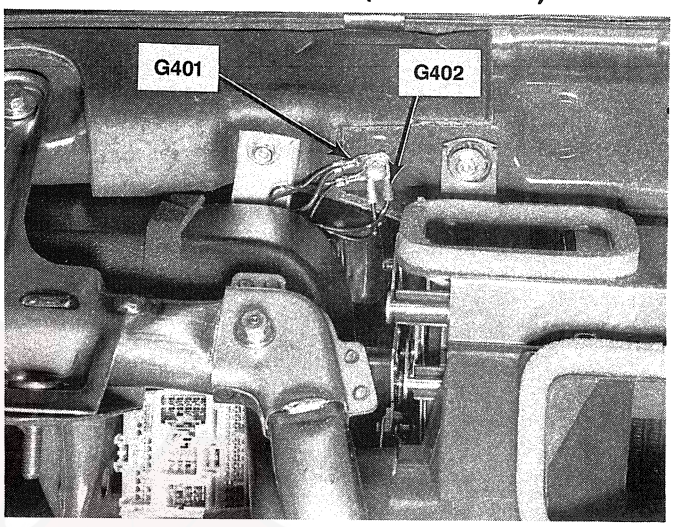
80. Behind Center of Dash (2.1 Si) (Anti-lock Brake Control Unit and Interlock Control Unit Removed)



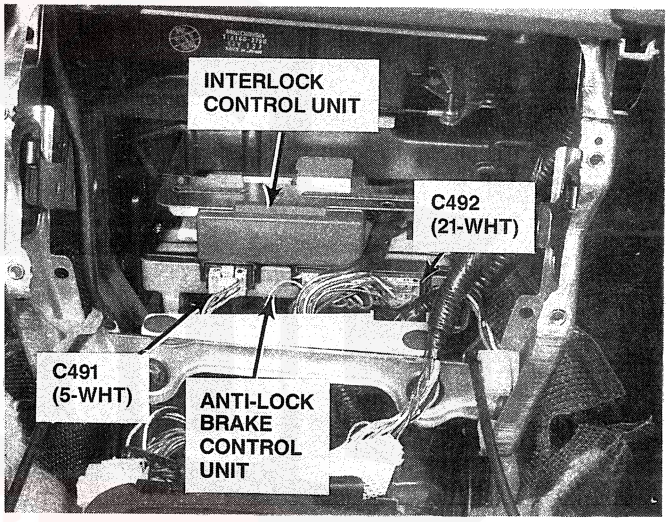
81. Center Rear of Dash (Dash Removed)



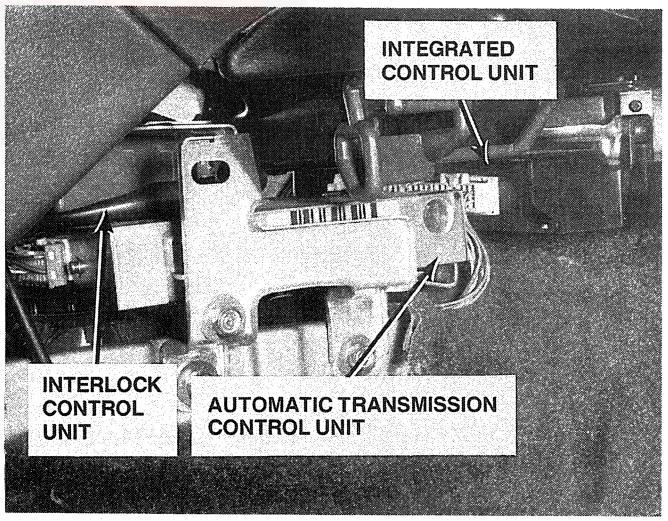
82. Behind Top Center of Dash (Dash Removed)



83. Behind Center of Dash (2.1 Si)

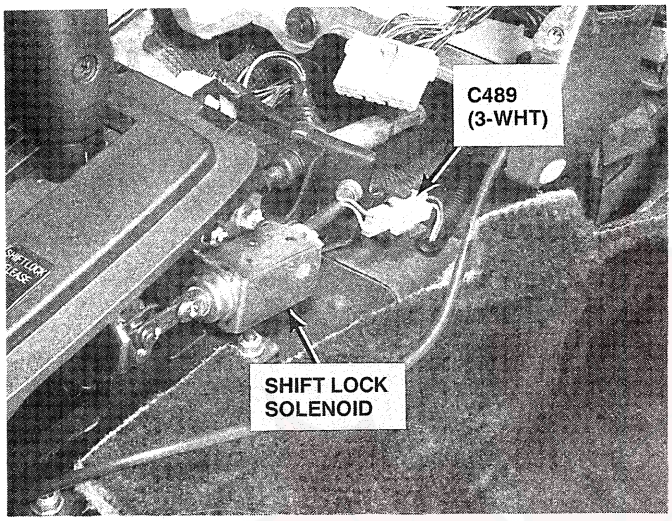


84. Below Center of Dash (2.0 Si)

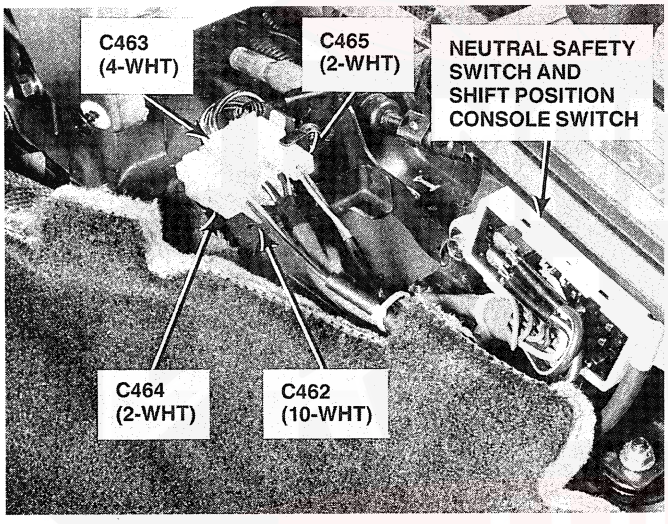


Component Locations

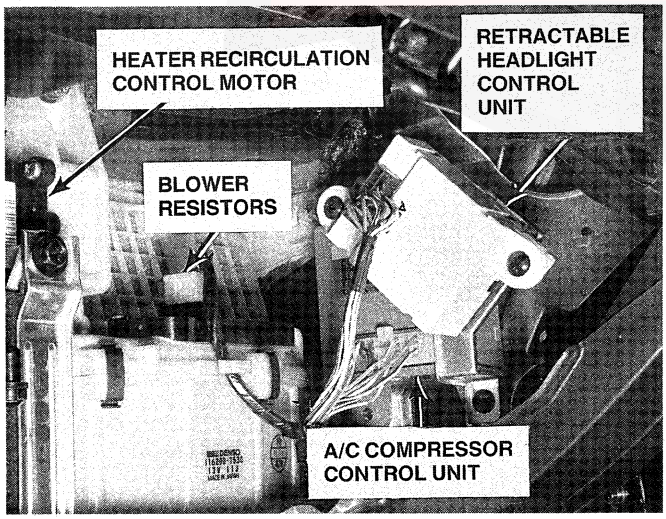
85. Below Front Right Side of Console



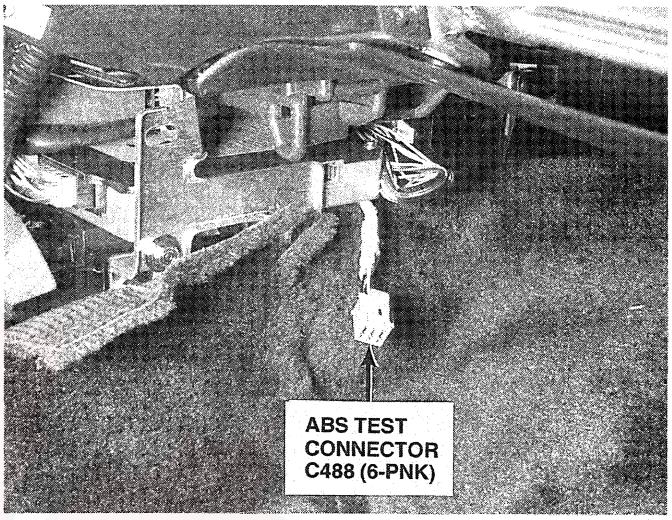
86. Below Left Side of Console



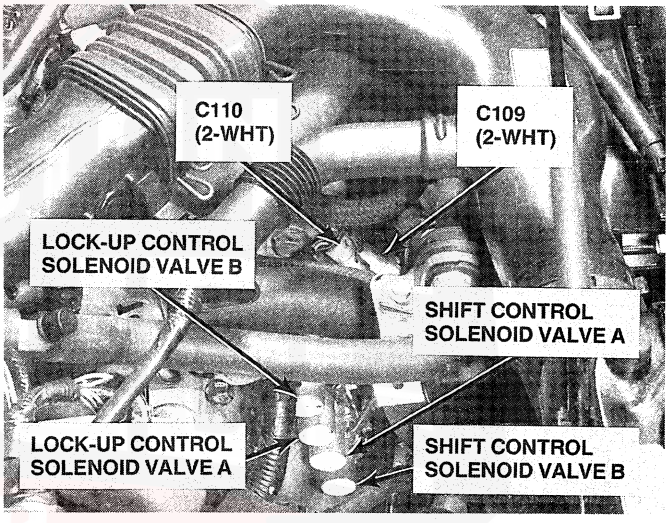
87. Behind Right Side of Dash



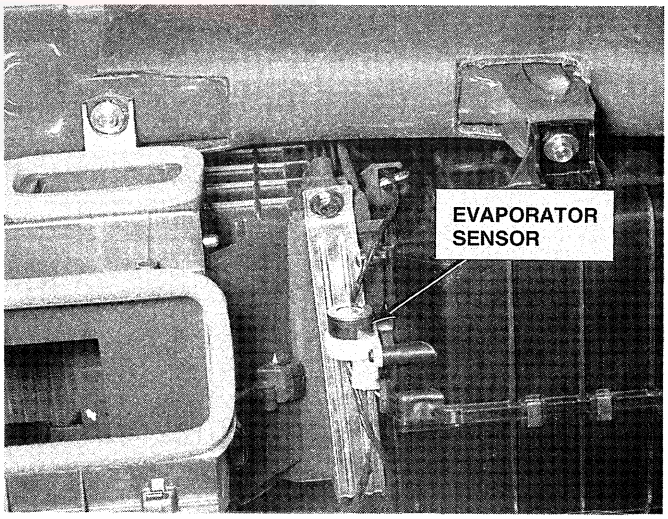
88. Below Front Right Side of Console



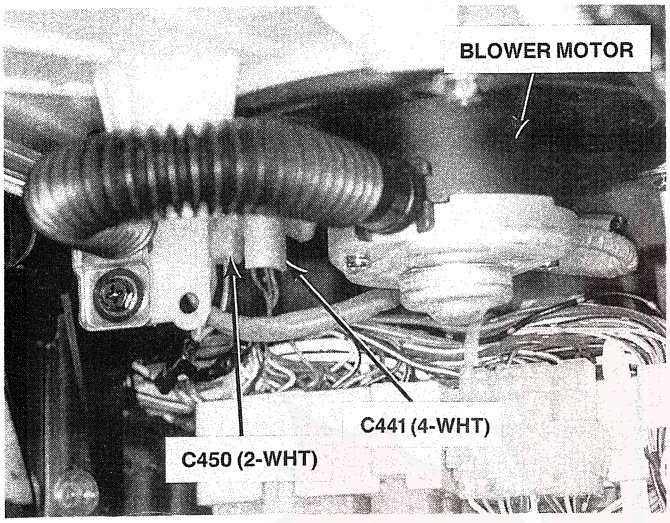
89. Below Rear of Console



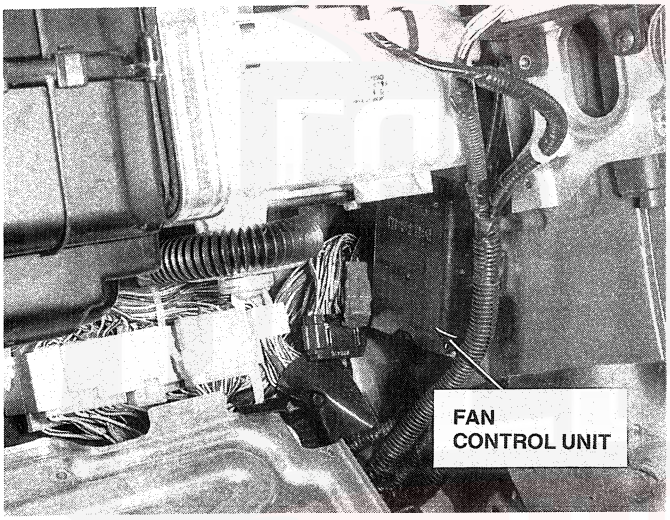
90. Behind Right Side of Dash (Dash Removed)



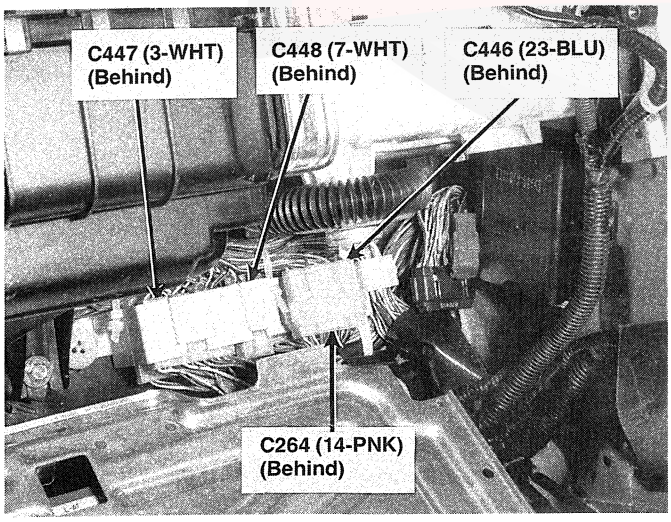
91. Below Right Side of Dash (Dash Removed)



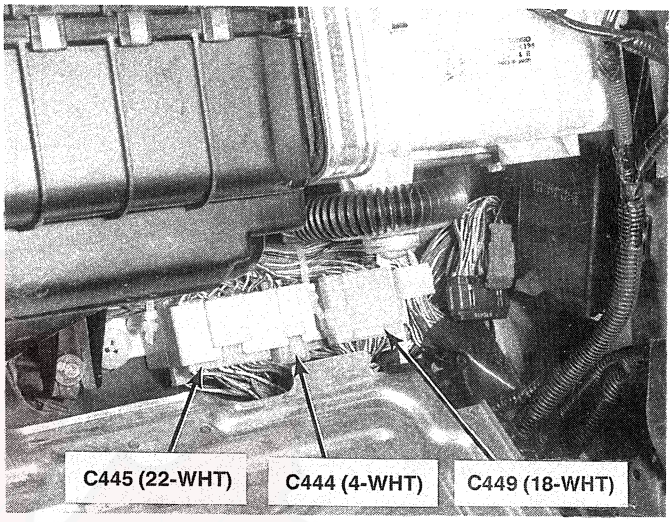
92. Below Right Side of Dash (Dash Removed)



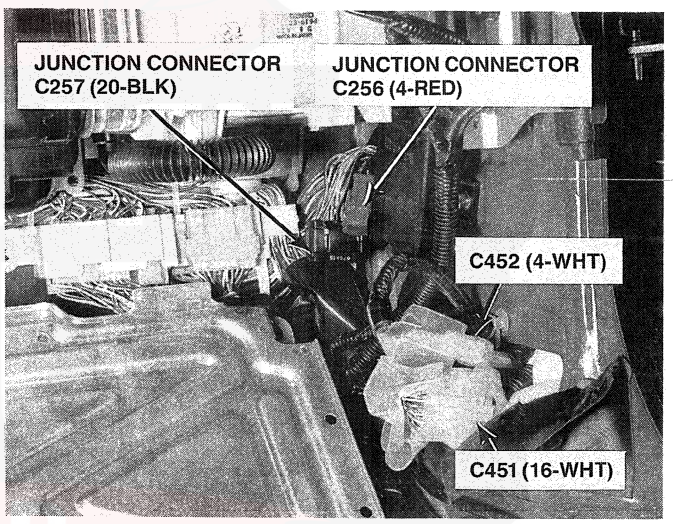
93. Below Right Side of Dash (Dash Removed)



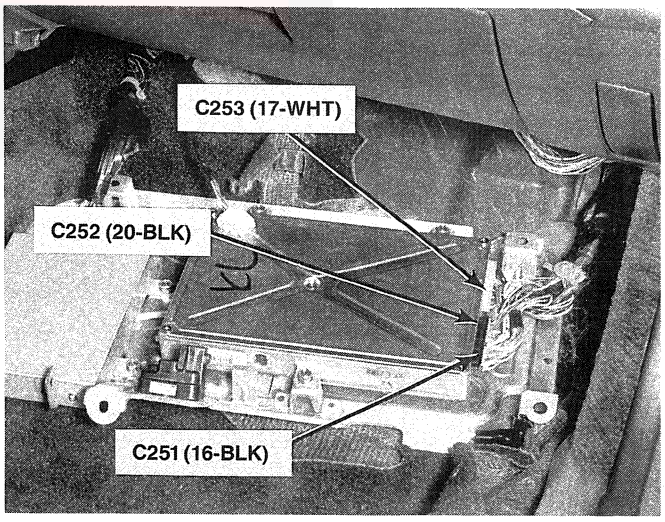
94. Below Right Side of Dash (Dash Removed)



95. Below Right Side of Dash

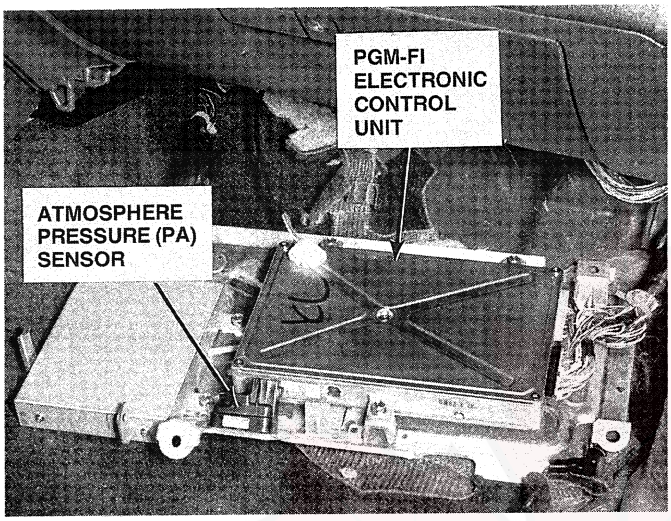


96. Below Right Front Footrest (2.0 Si) (Under Carpet)

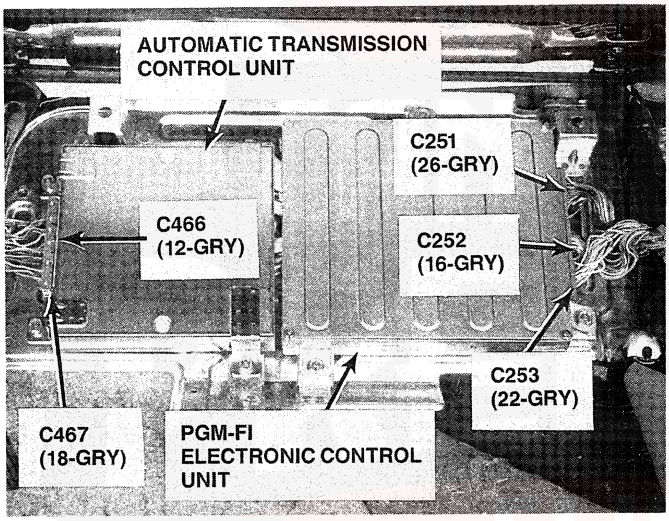


Component Location

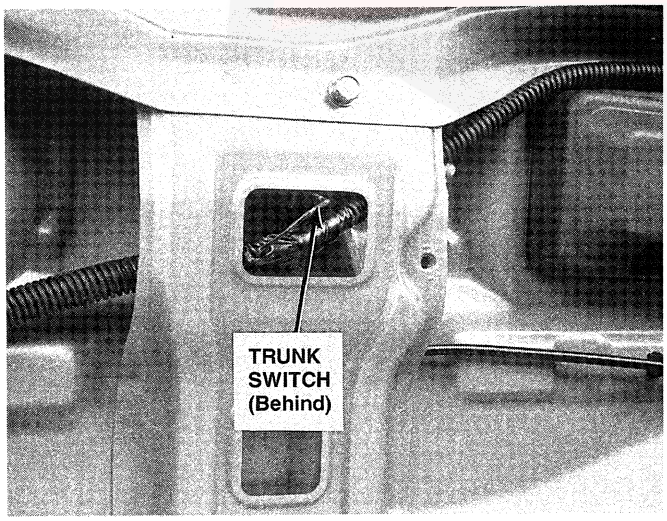
97. Below Right Front Footrest (2.0 Si) (Below Carpet)



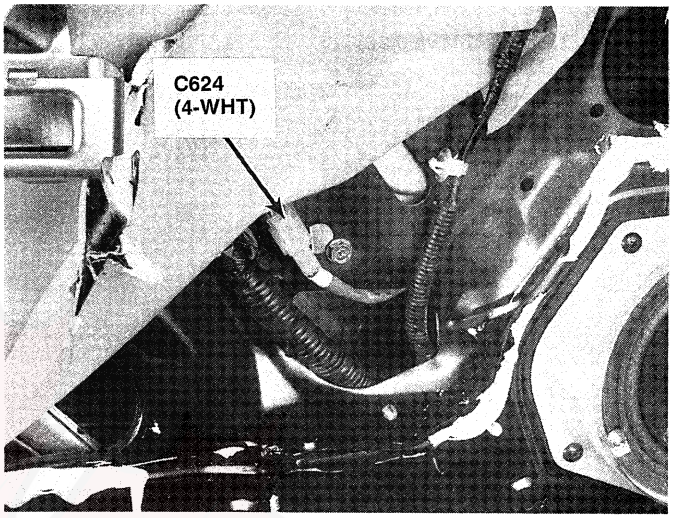
98. Below Right Front Footrest (Under Carpet)



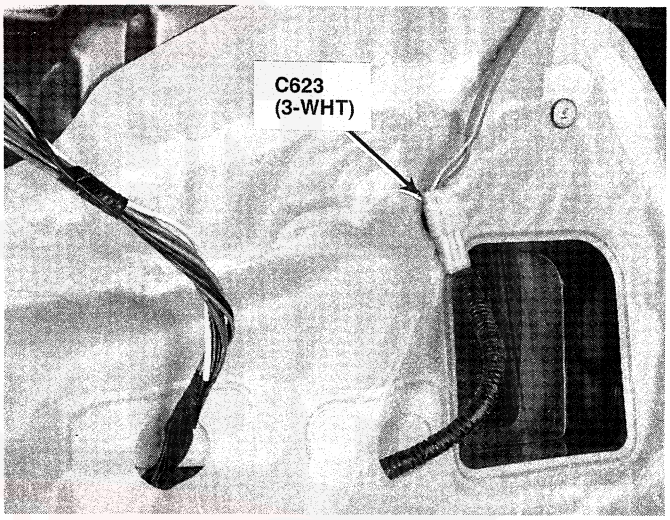
99. Center Rear of Trunk



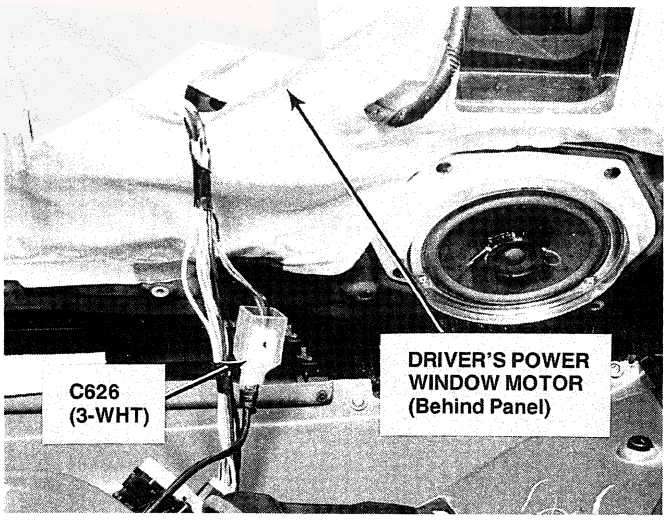
100. Inside Front of Left Front Door



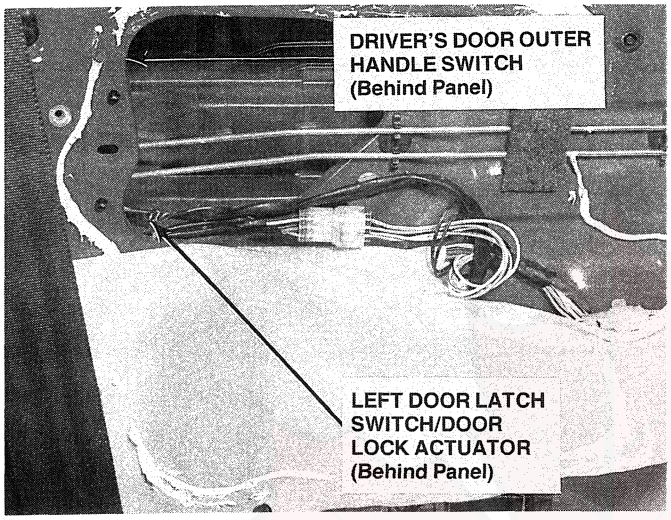
101. Inside Front of Left Front Door



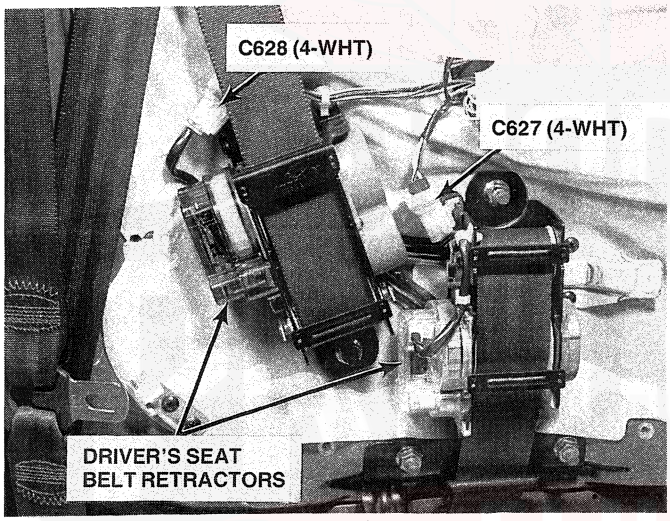
102. Inside Front of Left Front Door



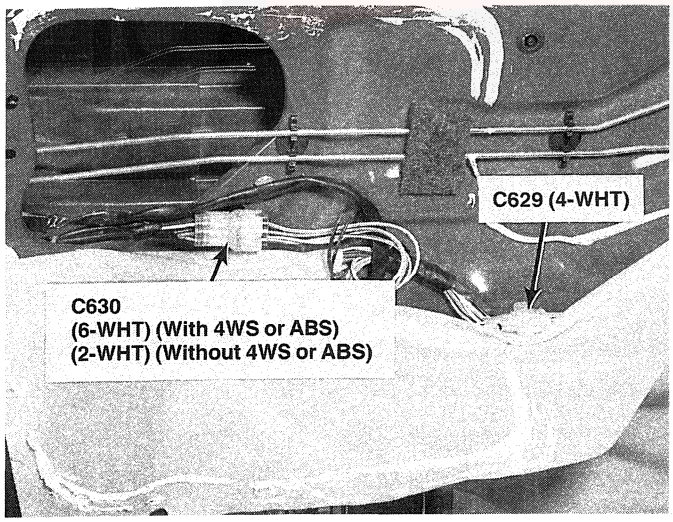
103. Inside Rear of Left Front Door



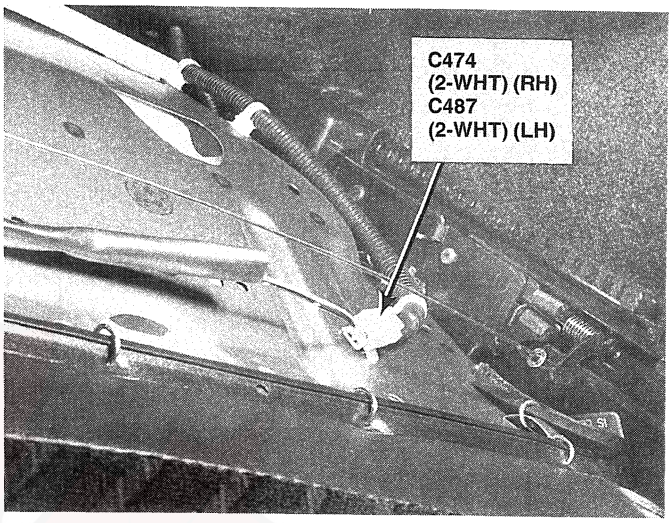
104. Inside Rear of Left Front Door



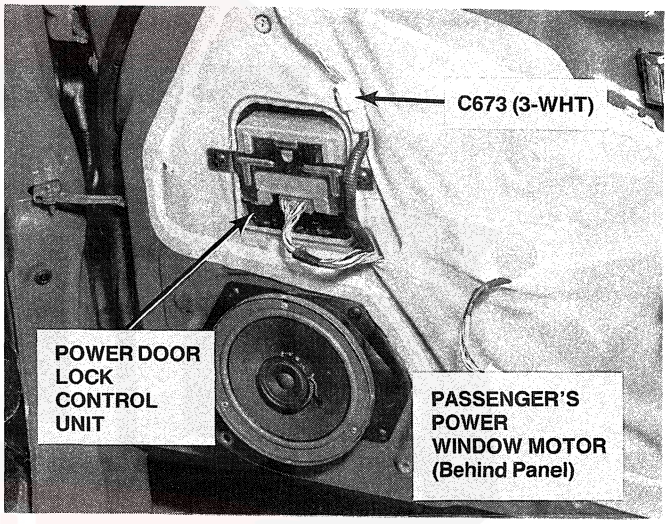
105. Inside Rear of Left Front Door



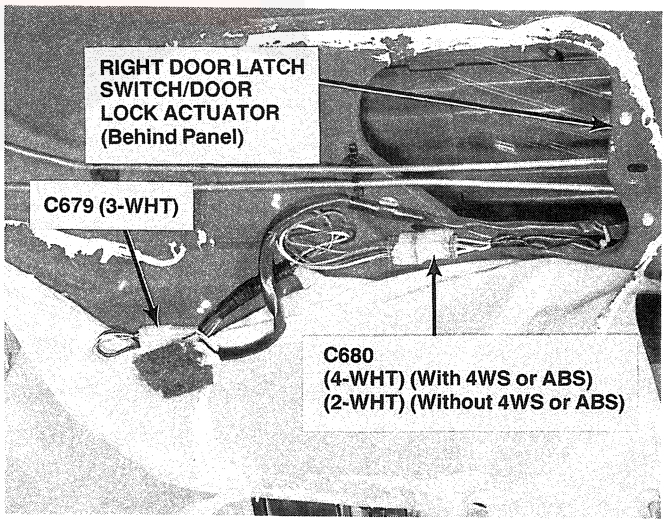
106. Under Left Front Seat (Right Similar)



107. Inside Front of Right Front Door

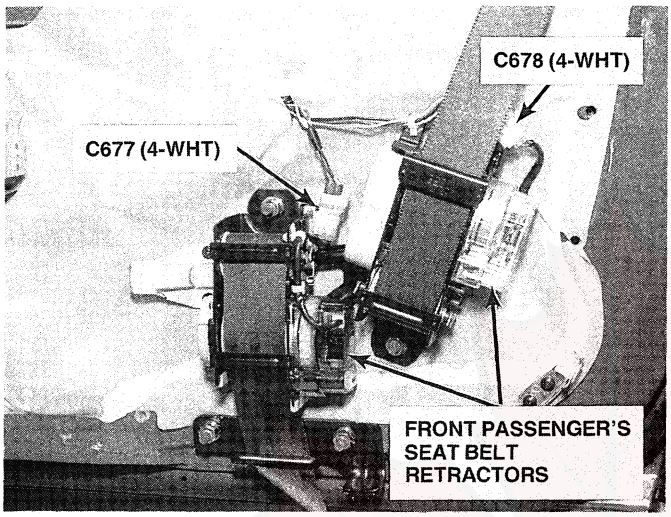


108. Inside Rear of Right Front Door

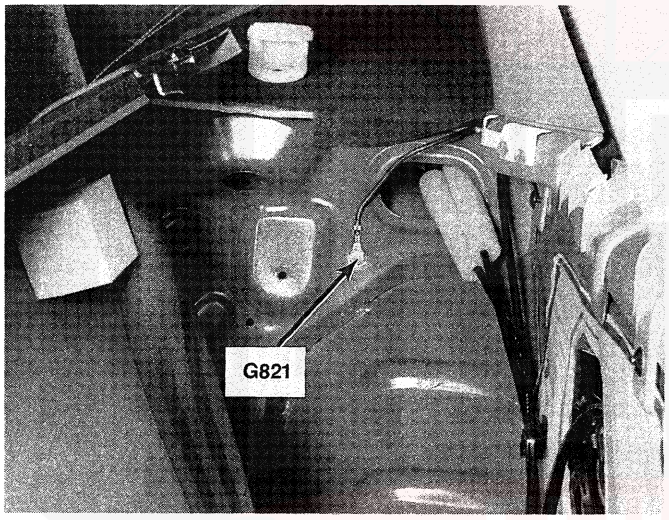


Component Location

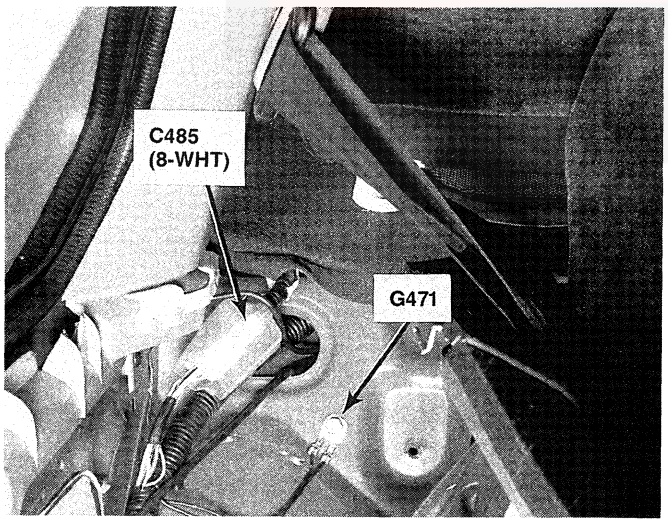
109. Inside Rear of Right Front Door



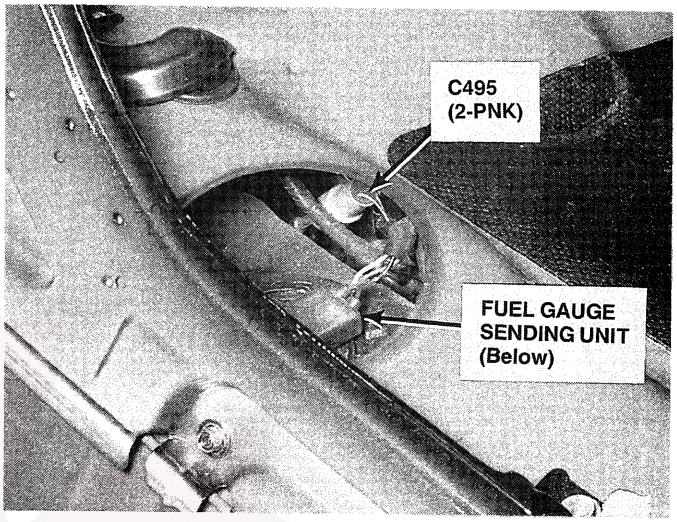
110. Behind Top Left Corner of Rear Seat



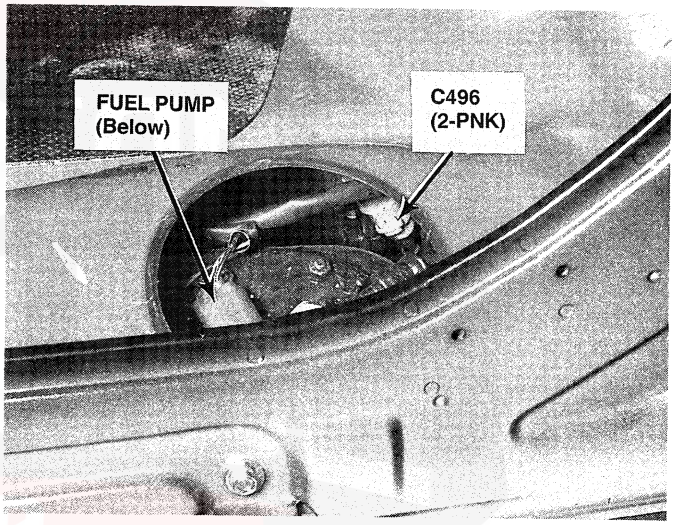
111. Behind Top Right Corner of Rear Seat



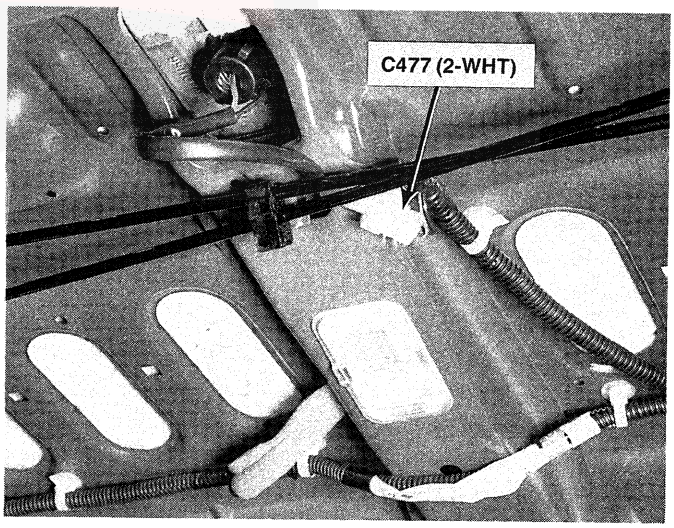
112. Behind Right Side of Rear Seat, Below Maintenance Cover



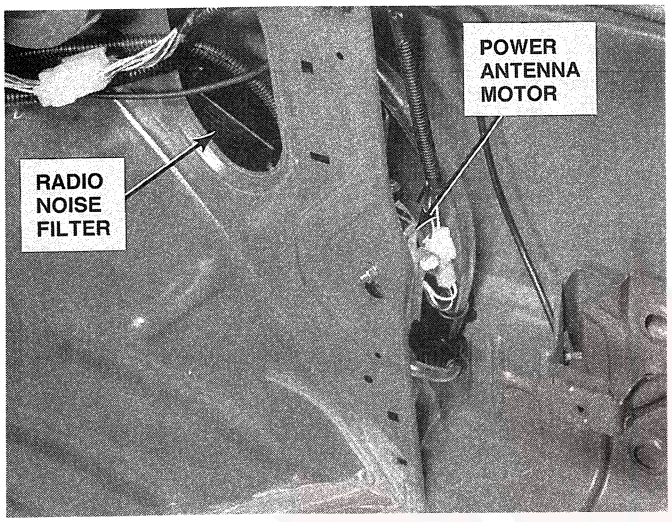
113. Behind Left Side of Rear Seat, Below Maintenance Cover



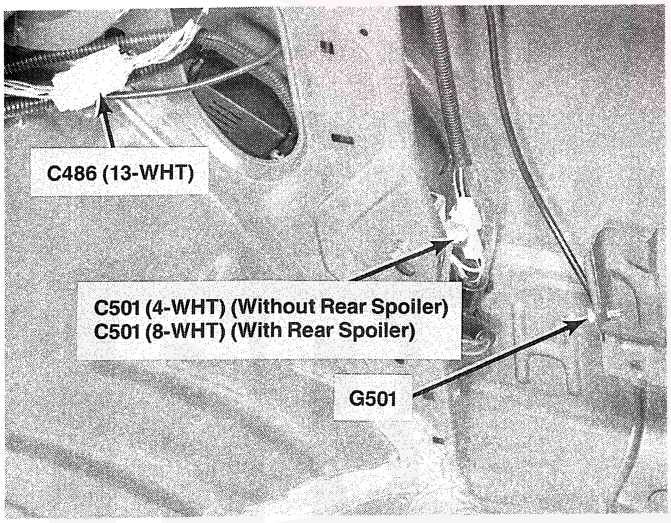
114. In Center of Trunk, Below Rear Deck



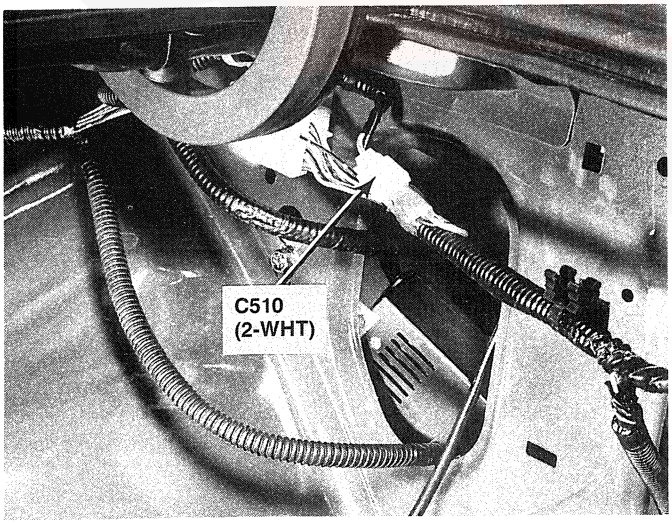
115. Right Rear of Trunk



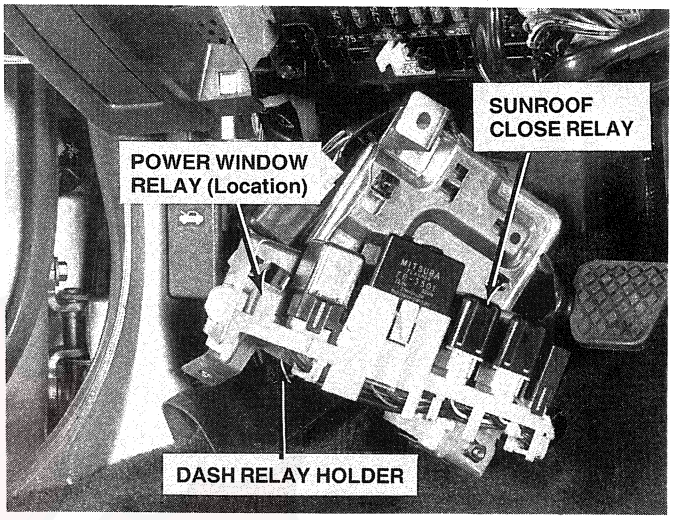
116. Right Rear of Trunk



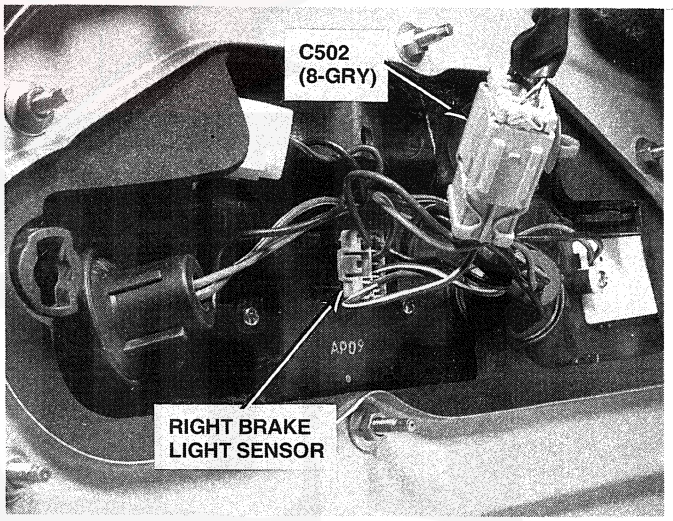
117. Right Side of Trunk



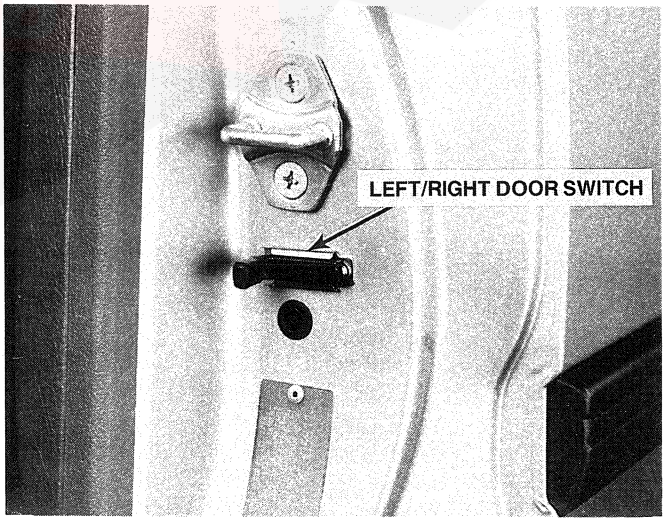
118. Right Side of Trunk



119. Right Rear of Trunk

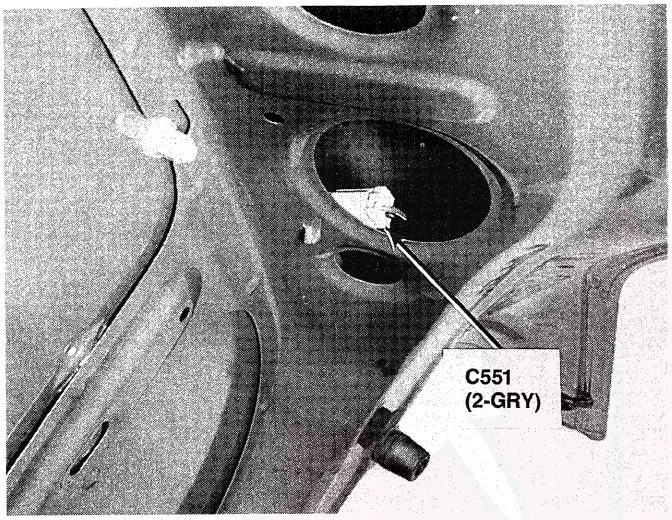


120. Left Center Pillar (Right Similar)

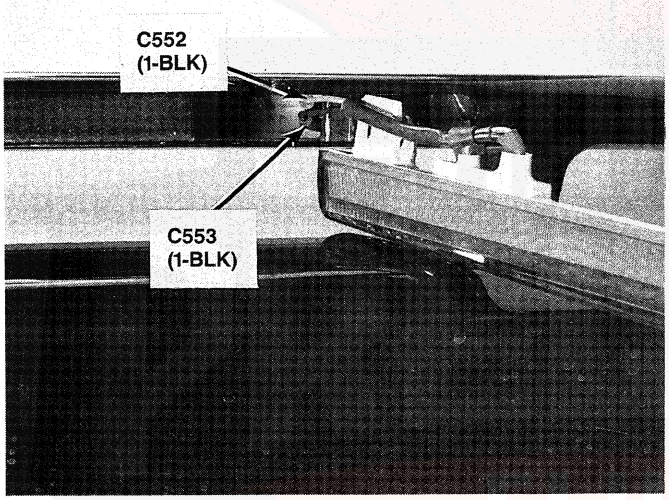


Component Location

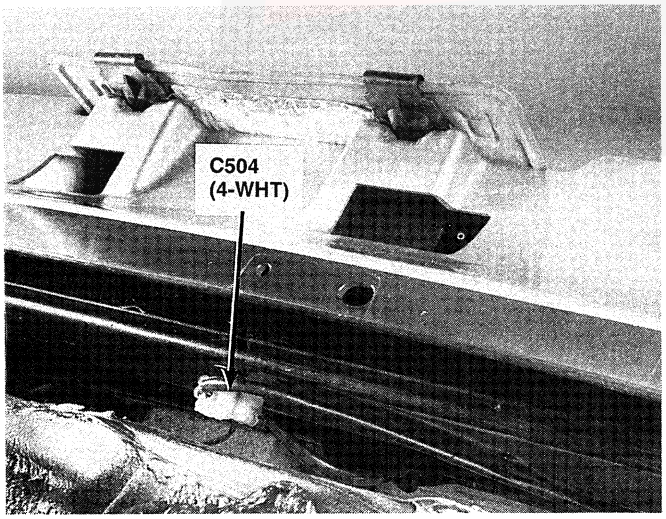
121. Right Rear of Trunk Lid



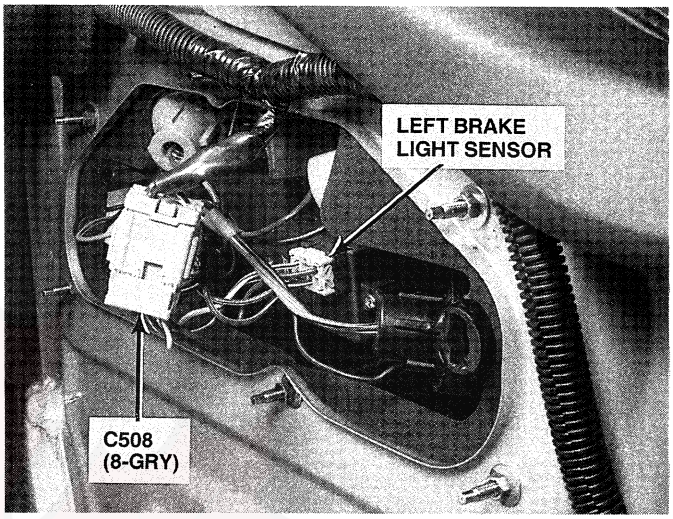
122. Center Rear of Trunk Lid, Inside Rear Spoiler



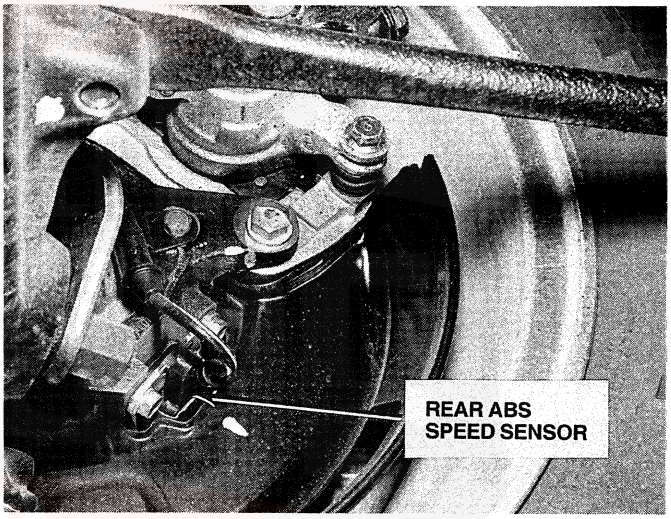
123. Behind Center of Rear Bumper

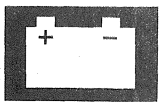


124. Left Rear of Trunk

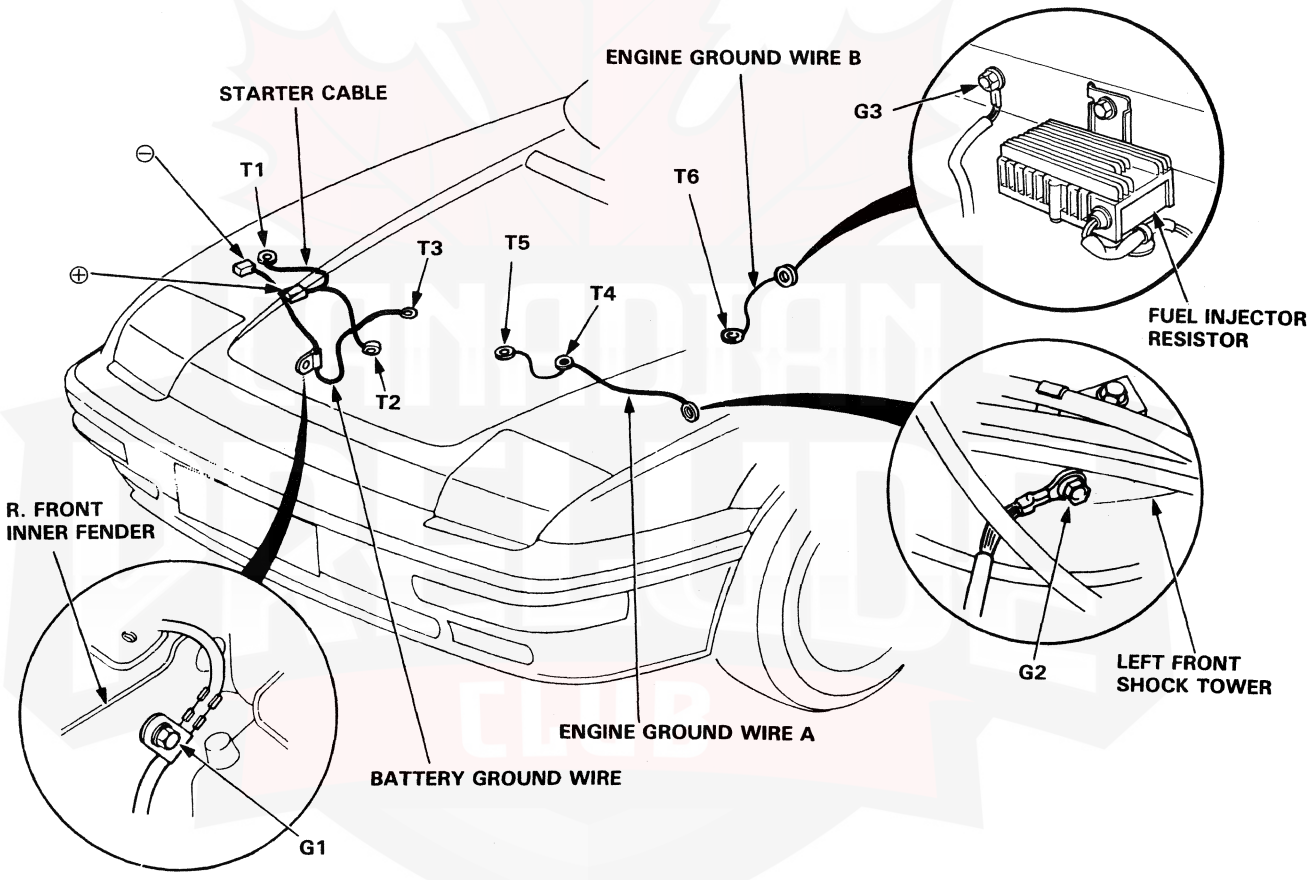


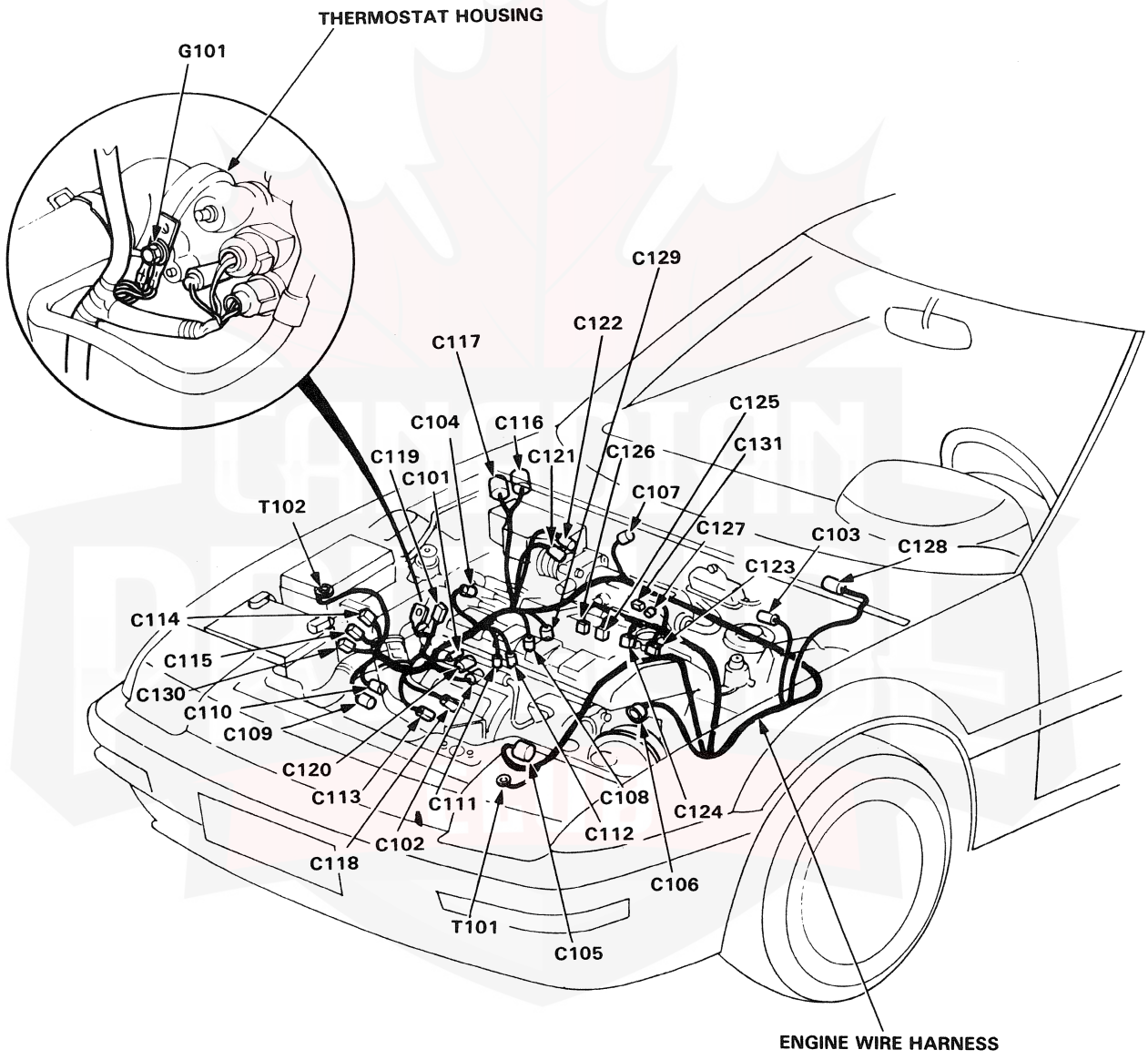
125. Behind Left Rear Wheel (Right Similar)





Connector and Wire Harness Routing

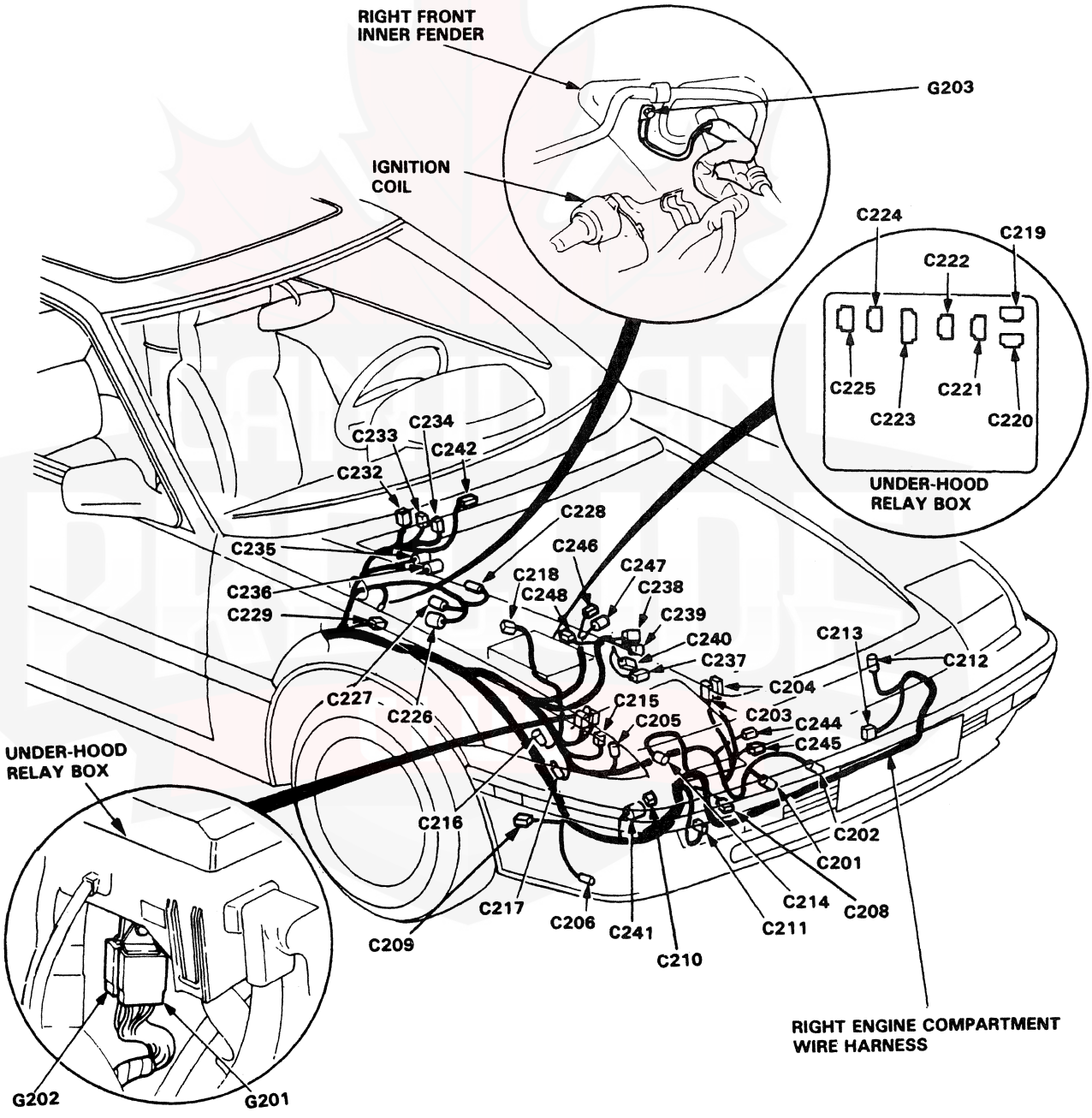


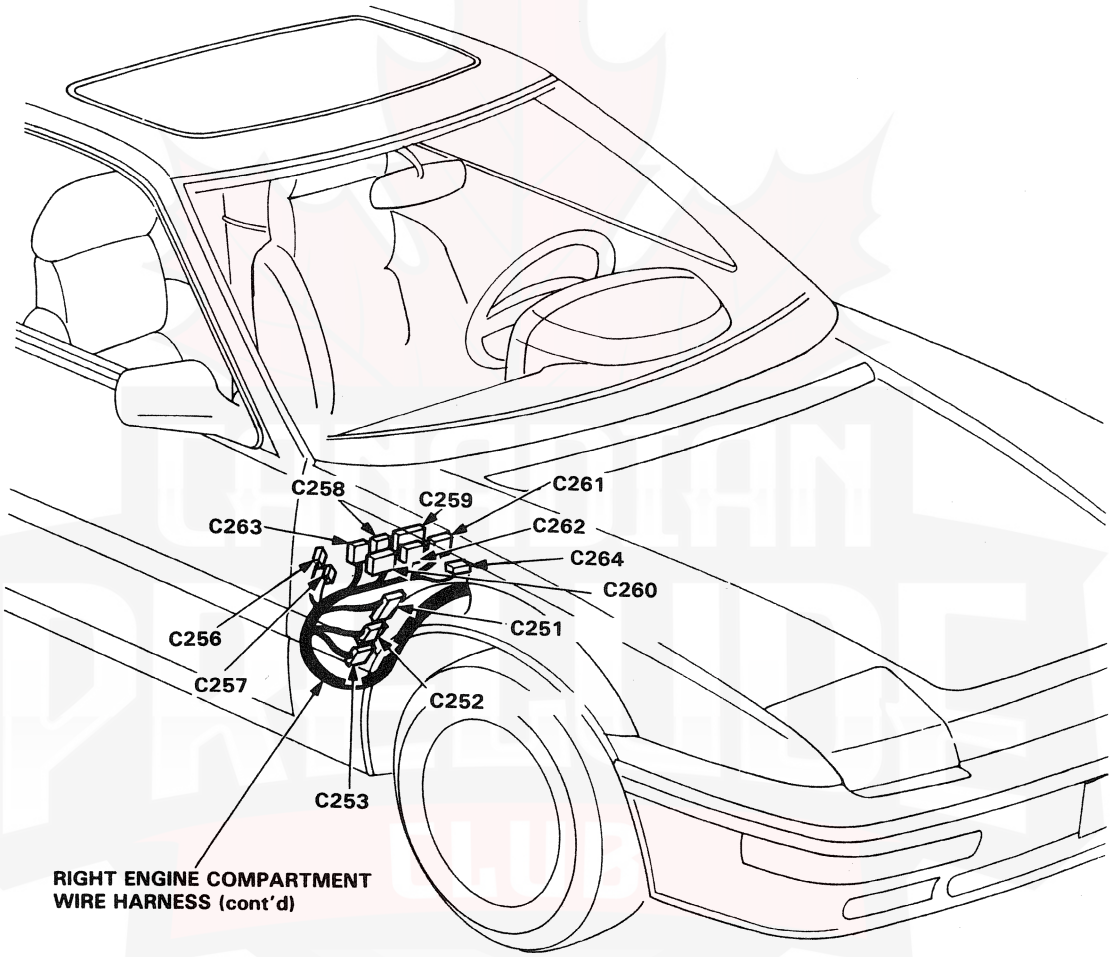


(cont'd)

Connector and Wire Harness Routing

(cont'd)



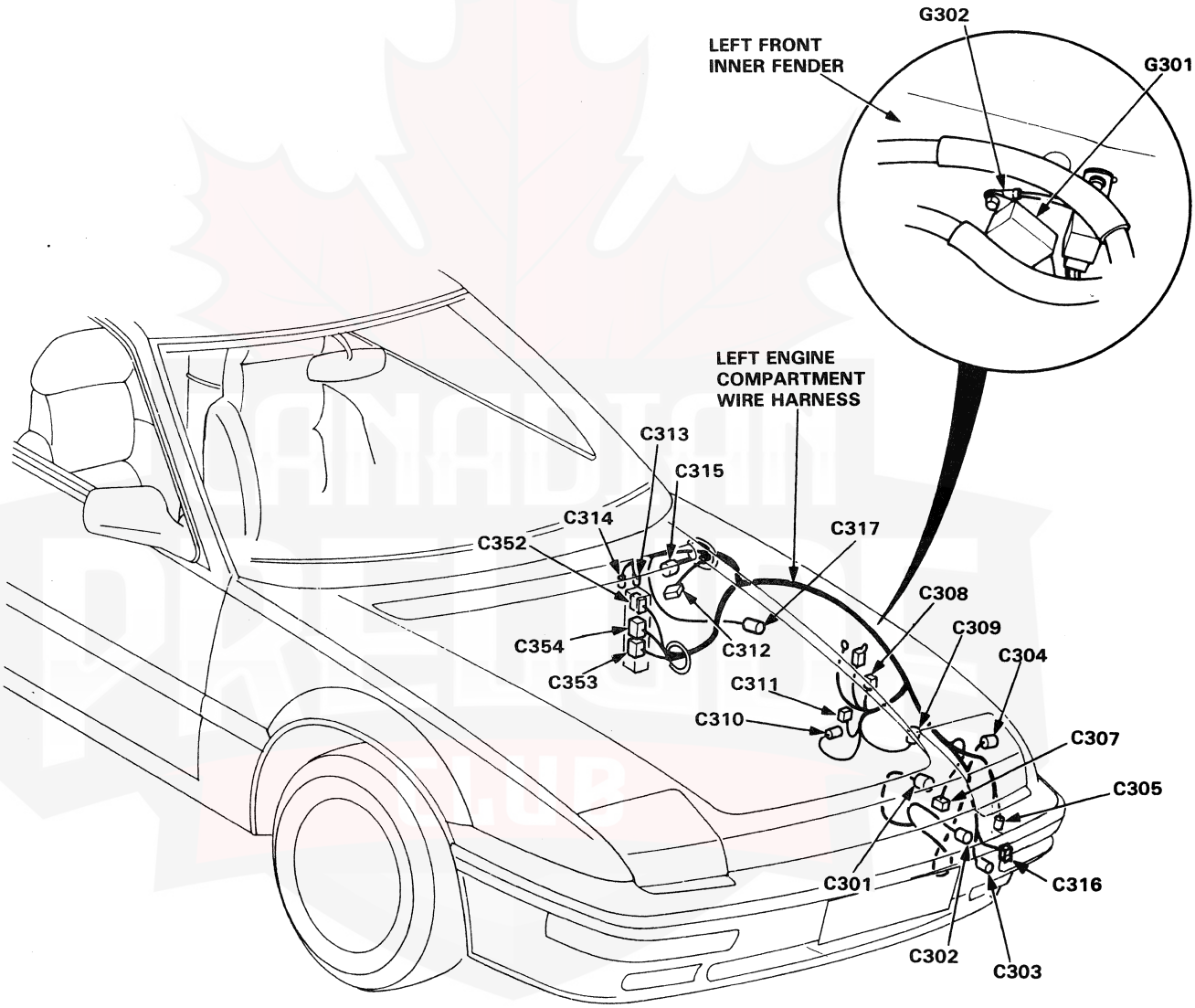


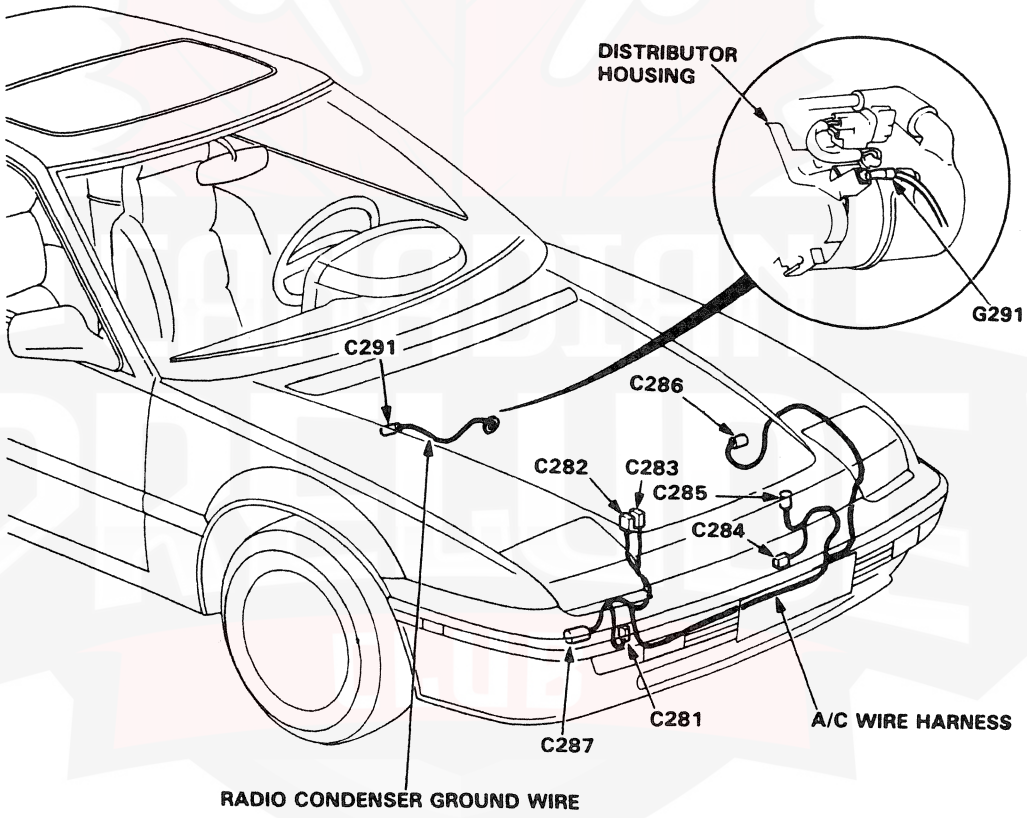
RIGHT ENGINE COMPARTMENT
WIRE HARNESS (cont'd)

(cont'd)

Connector and Wire Harness Routing

(cont'd)

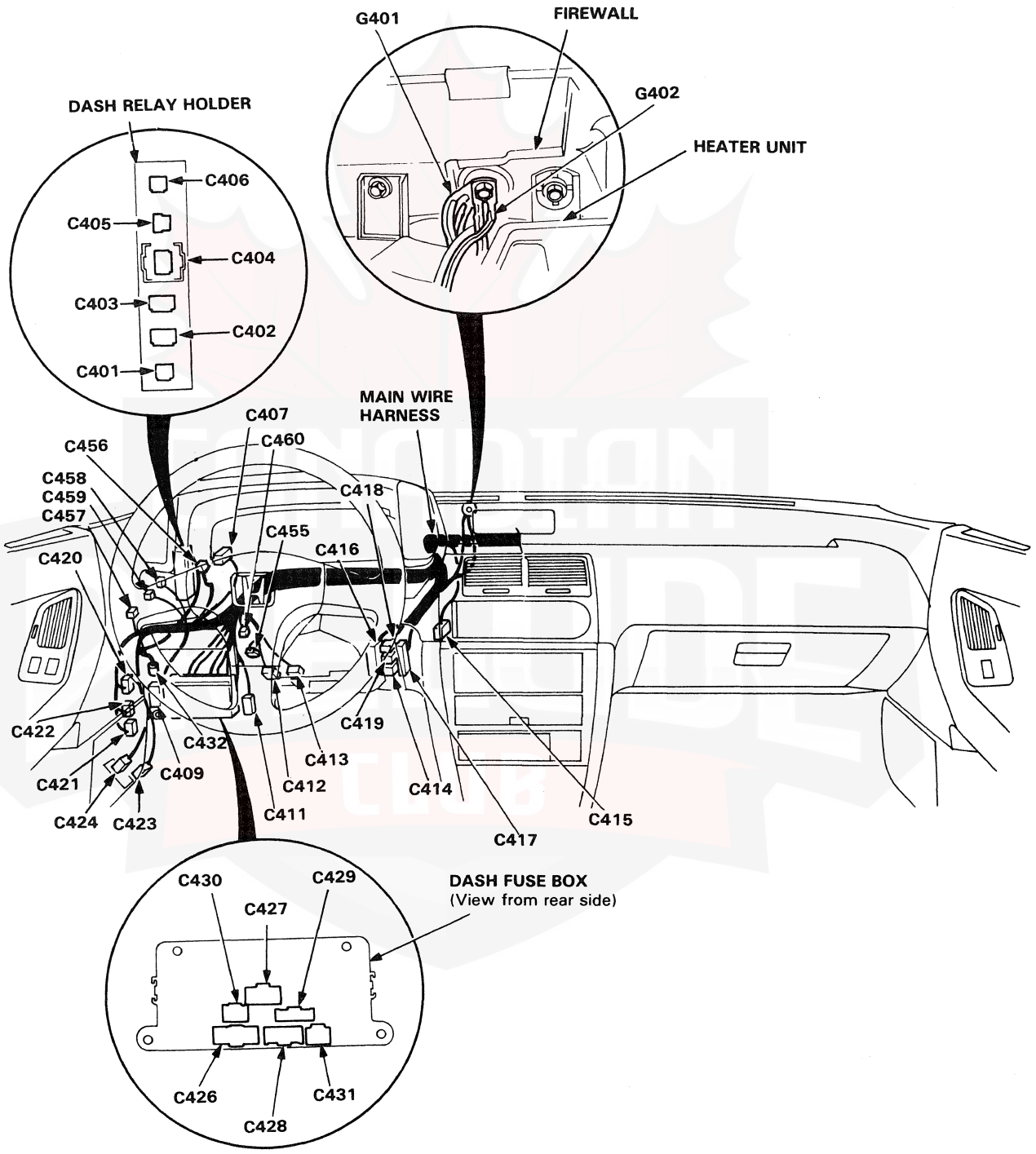


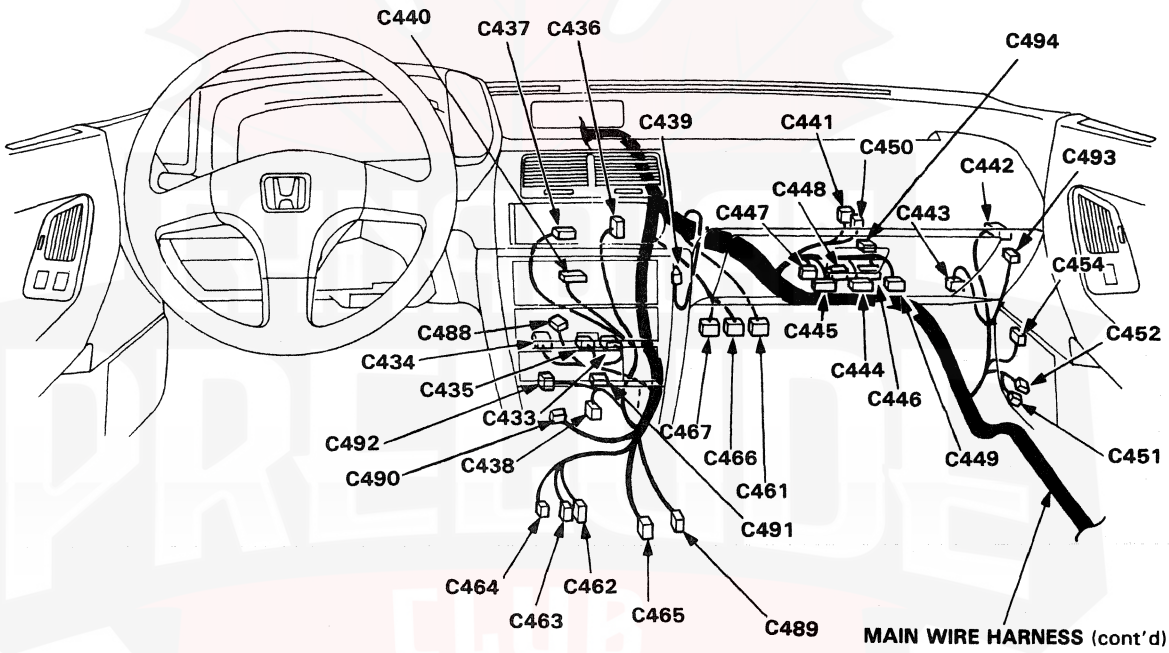


(cont'd)

Connector and Wire Harness Routing

(cont'd)

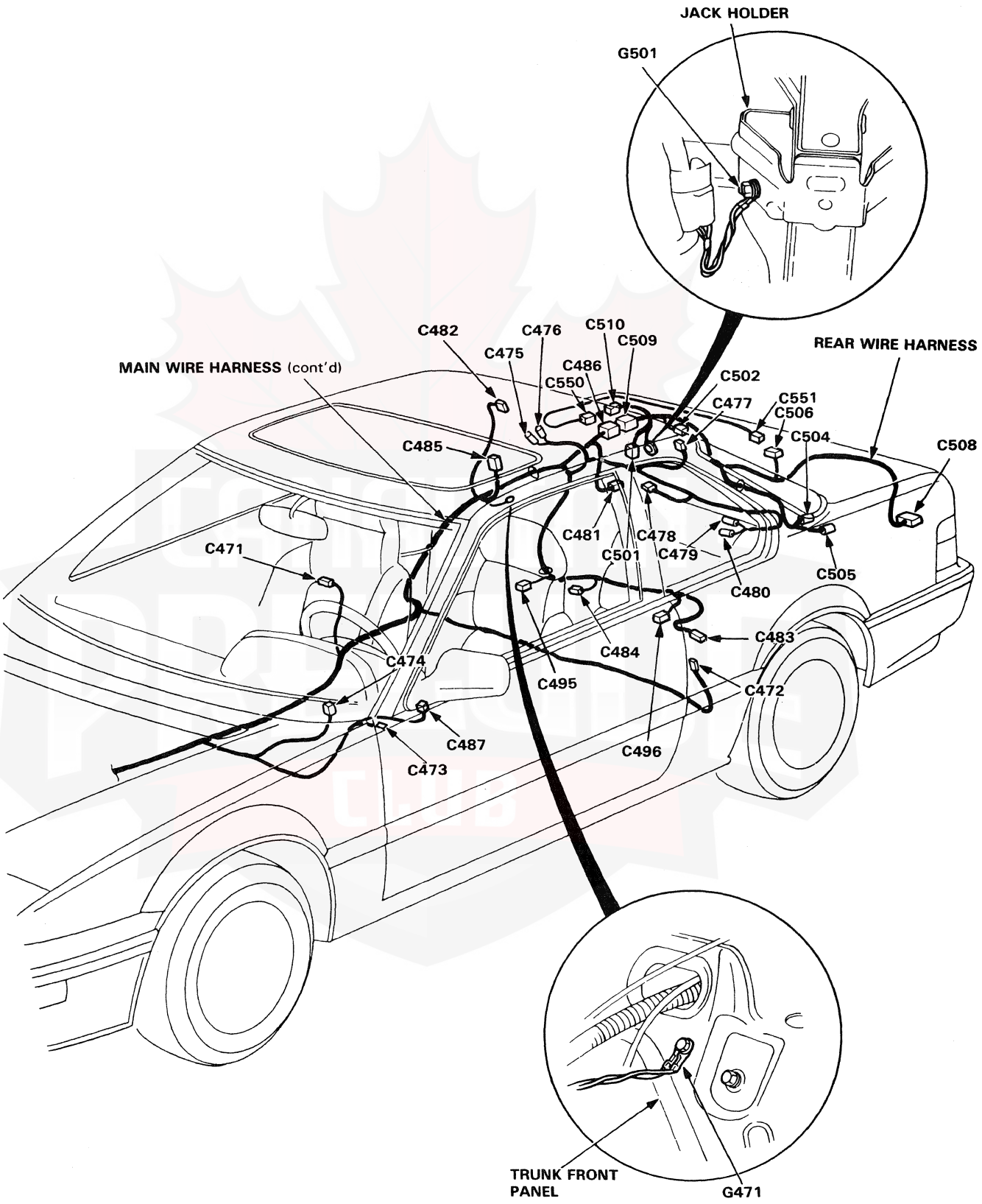


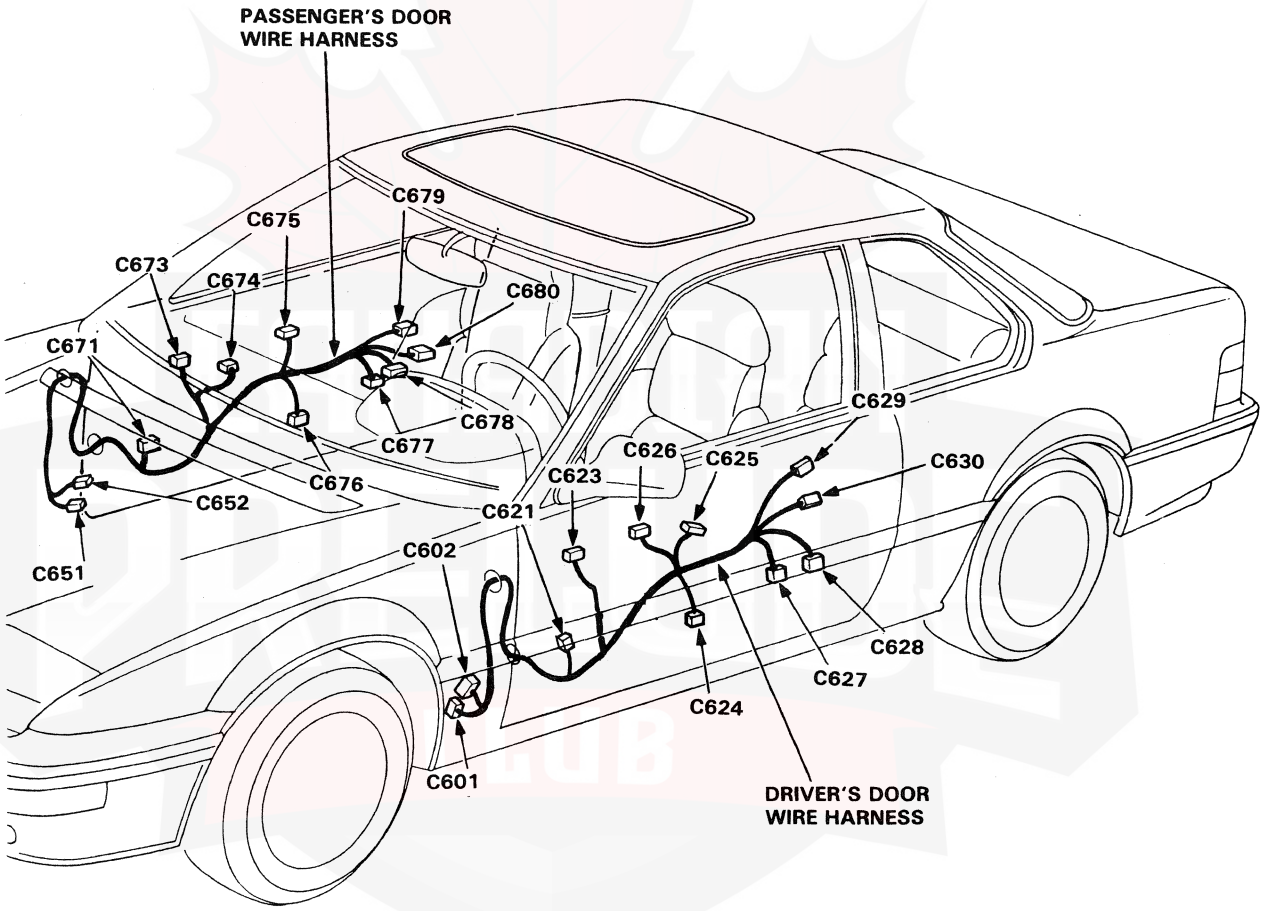


(cont'd)

Connector and Wire Harness Routing

(cont'd)

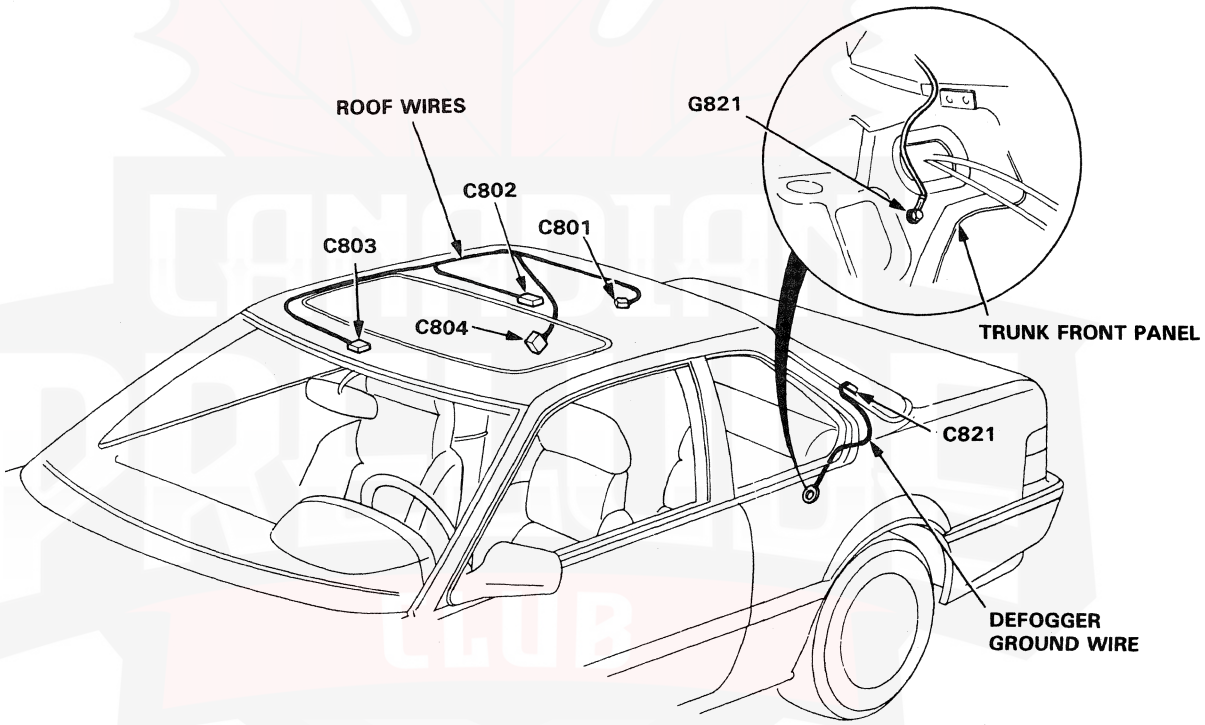


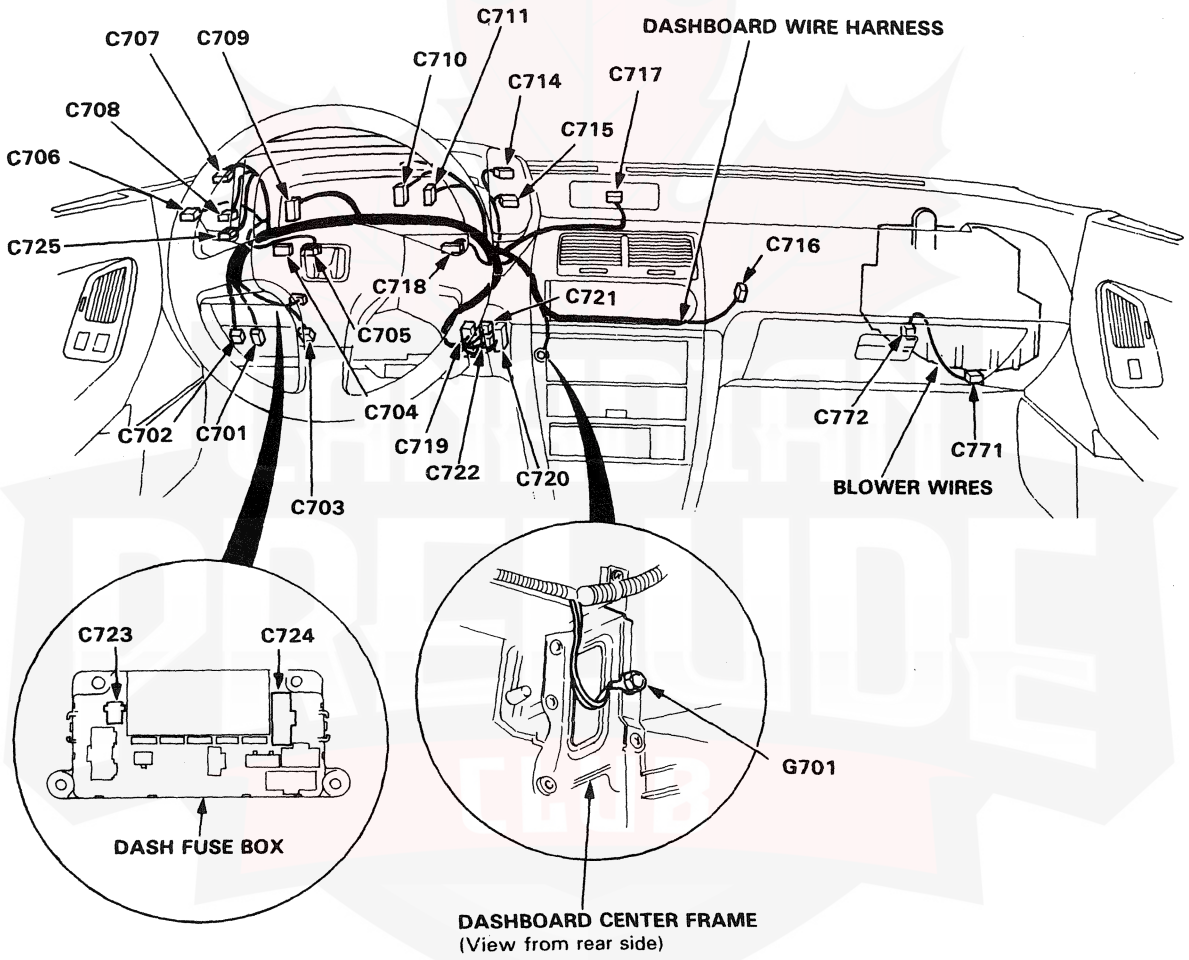


(cont'd)

Connector and Wire Harness Routing

(cont'd)





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