

1987 *

BMW 3 Series

Electrical

Troubleshooting

Manual

325 325i
325e 325is
325es 325i Convertible

*** 1987 Vehicles Built Before
9/86 Use 1986 325 Electrical
Troubleshooting Manual
For Diagnostics.**

**BMW of North America, Inc.
Montvale, New Jersey**

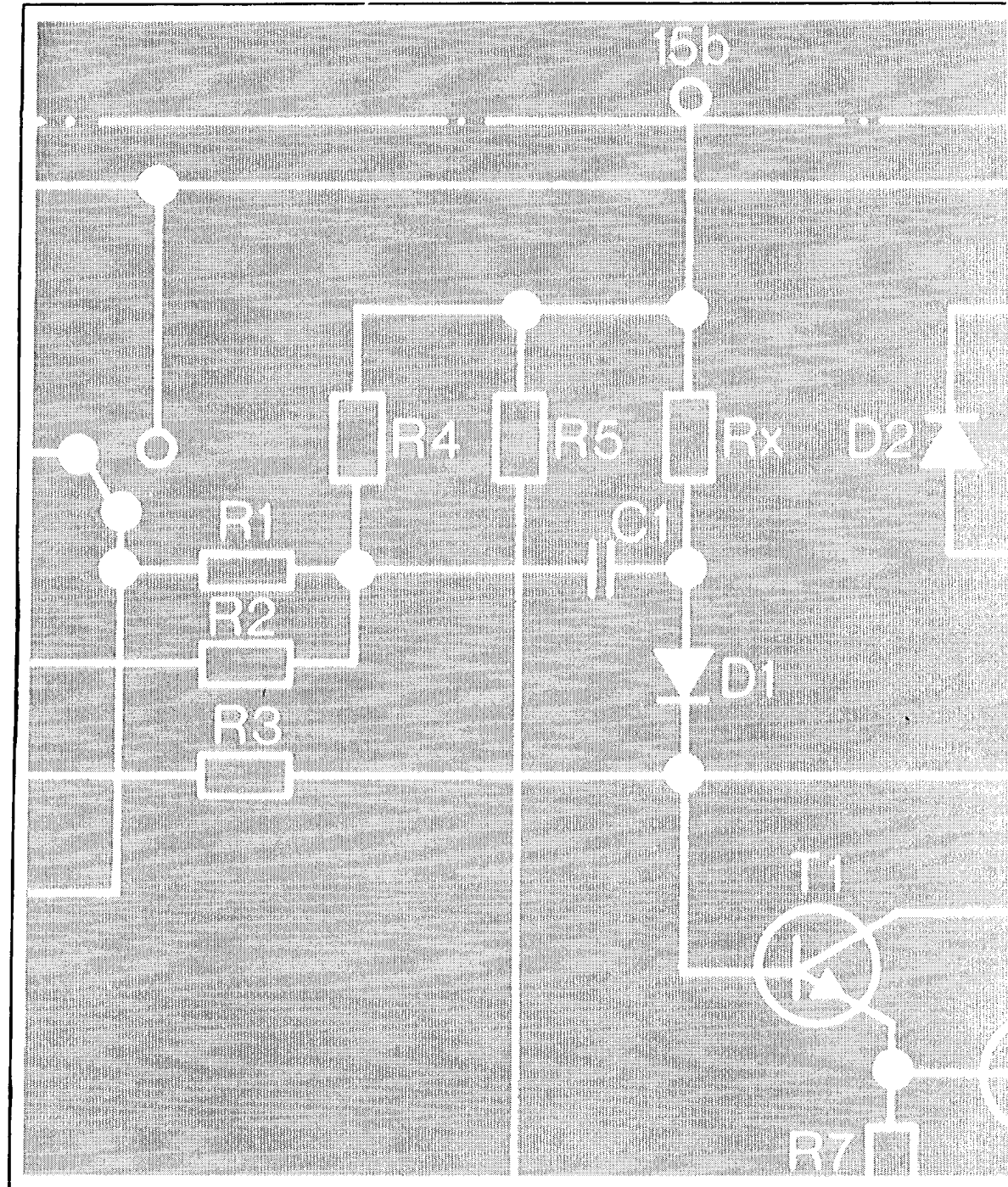
FOREWORD

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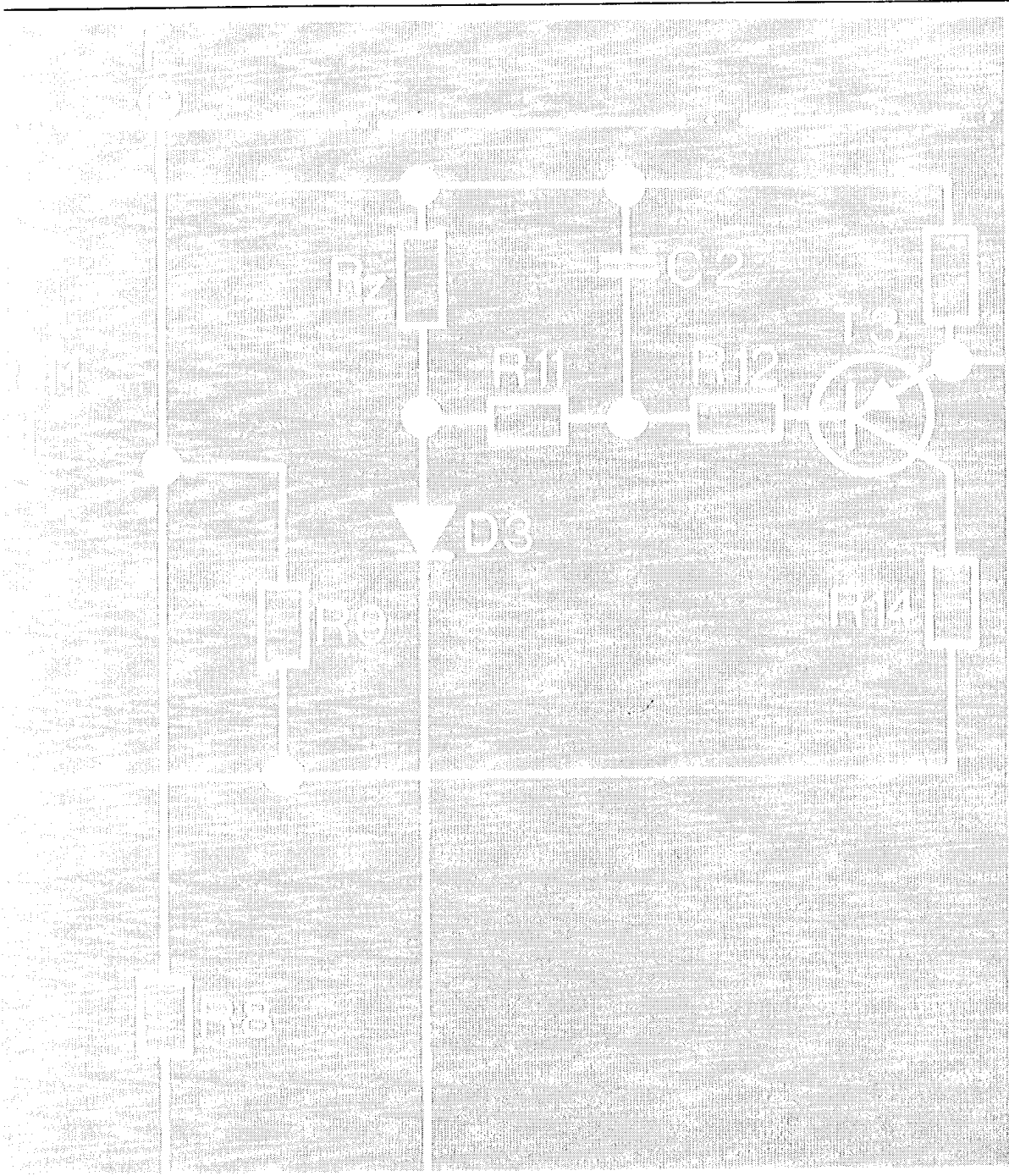


1987*
BMW 3 SERIES
Electrical
Troubleshooting
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* 1987 VEHICLES BUILT
 BEFORE 9/86 USE 1986 325
 ELECTRICAL TROUBLESHOOTING
 MANUAL FOR DIAGNOSTICS.



2-A INDEX 1987 VEHICLES BUILT BEFORE 9/86 USE 1986 325 ELECTRICAL TROUBLESHOOTING MANUAL

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The purpose of this manual is to show electrical schematics in a manner that makes electrical troubleshooting easier. Electrical components which work together are shown together on one schematic. The Wiper-Washer schematic, for example, shows all of the electrical components in one diagram. At the top of the page is the fuse (positive) that powers the circuit. The flow of current is shown through all wires, connectors, switches, and motors to ground (negative) at the bottom of the page.

Within the schematic, all switches and sensors are shown "at rest," as though the Ignition Switch were off. For identification, component names are underlined and placed next to or above each component. Notes are included, describing how switches and other components work.

The power distribution schematic shows the current feed through all the connections from the Battery and Alternator to each fuse and the Ignition and Light Switches. If the Power Distribution schematic is combined with any other circuit schematic, a complete picture is made of how that circuit works. The Ground Distribution schematics show how several circuits are connected to common grounds.

All wiring between components is shown exactly as it exists in the vehicle; however, the wiring is not drawn to scale. To aid in understanding electrical operation, wiring inside complicated components has been simplified. The "Solid State" label designates electronic components.

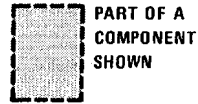
WIRE SIZE CONVERSION CHART	
METRIC (CROSSSECTIONAL AREA IN MM ²)	AWG (AMERICAN WIRE GAUGE)
.5	20
.75	18
1	16
1.5	14
2	14
2.5	12
4	10
6	8
8	8
16	4
20	4
25	2
32	2

WIRE INSULATION	
ABBREVIATIONS	COLOR
BK	BLACK
BR	BROWN
RD	RED
YL	YELLOW
GN	GREEN
BU	BLUE
VI	VIOLET
GY	GRAY
WT	WHITE
PK	PINK

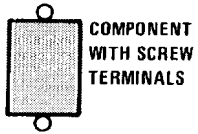
4 SYMBOLS



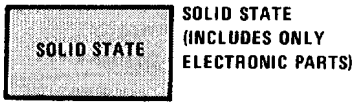
ENTIRE COMPONENT SHOWN



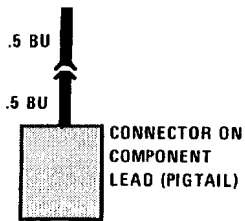
PART OF A COMPONENT SHOWN



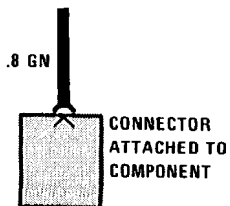
COMPONENT WITH SCREW TERMINALS



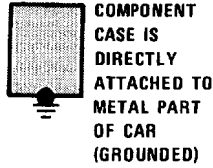
SOLID STATE (INCLUDES ONLY ELECTRONIC PARTS)



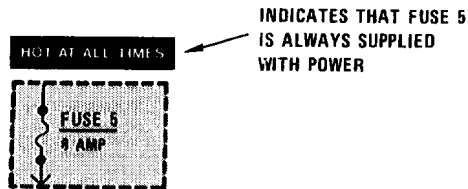
CONNECTOR ON COMPONENT LEAD (PIGTAIL)



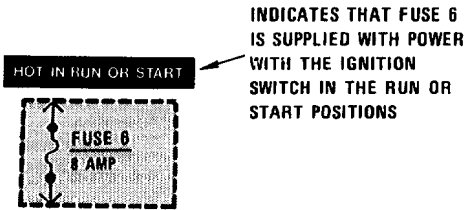
CONNECTOR ATTACHED TO COMPONENT



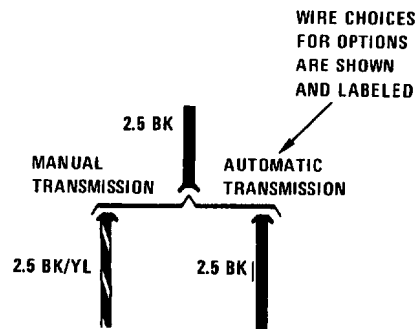
COMPONENT CASE IS DIRECTLY ATTACHED TO METAL PART OF CAR (GROUNDED)



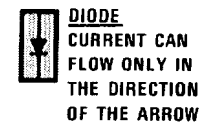
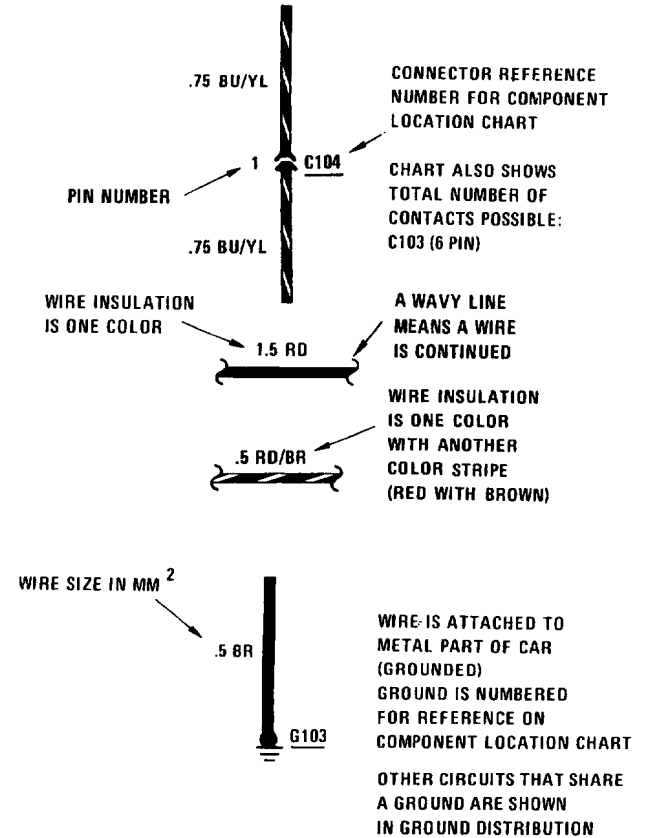
INDICATES THAT FUSE 5 IS ALWAYS SUPPLIED WITH POWER



INDICATES THAT FUSE 6 IS SUPPLIED WITH POWER WITH THE IGNITION SWITCH IN THE RUN OR START POSITIONS



WIRE CHOICES FOR OPTIONS ARE SHOWN AND LABELED

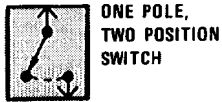


DIODE CURRENT CAN FLOW ONLY IN THE DIRECTION OF THE ARROW

CIRCUIT REFERENCE - A WIRE WHICH CONNECTS TO ANOTHER CIRCUIT



ACTIVE CHECK CONTROL

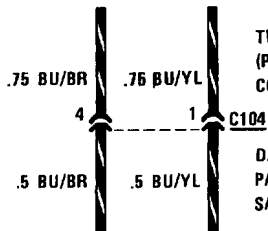


ONE POLE, TWO POSITION SWITCH



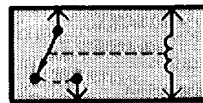
SWITCHES THAT MOVE TOGETHER

DASHED LINE SHOWS A MECHANICAL CONNECTION BETWEEN SWITCHES



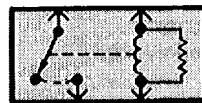
TWO CONNECTIONS (PINS) IN THE SAME CONNECTOR

DASHED LINE SHOWS PARTS OF THE SAME CONNECTOR



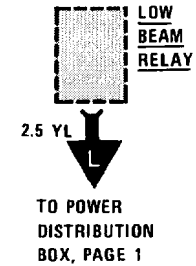
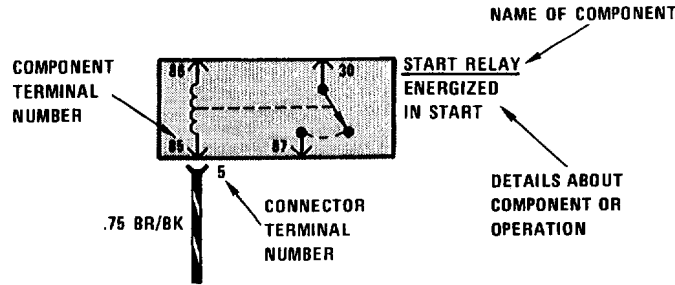
RELAY SHOWN WITH NO CURRENT FLOWING THROUGH COIL

WHEN COIL IS ENERGIZED, SWITCH IS PULLED CLOSED

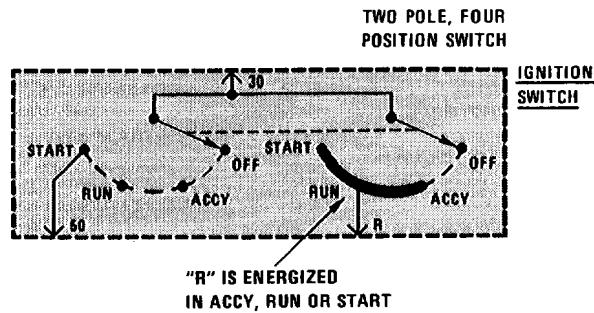


RELAY SHOWN WITH RESISTOR ACROSS COIL

RESISTOR ACROSS COIL IS FOR NOISE SUPPRESSION

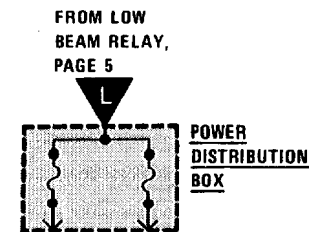


CURRENT PATH IS CONTINUED AS LABELED. THE ARROW SHOWS DIRECTION OF CURRENT FLOW AND IS REPEATED WHERE CURRENT PATH CONTINUES.



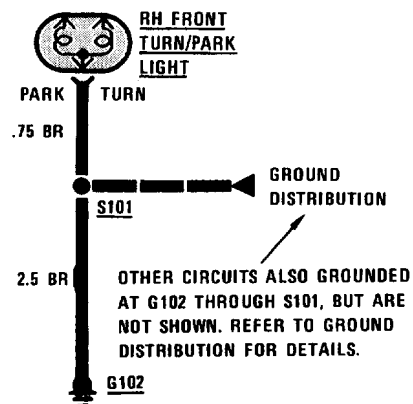
TWO POLE, FOUR POSITION SWITCH

"R" IS ENERGIZED IN ACCY, RUN OR START



FROM LOW BEAM RELAY, PAGE 5

POWER DISTRIBUTION BOX



LIGHT EMITTING DIODE

6 SYSTEMATIC TROUBLESHOOTING

TROUBLESHOOTING PROCEDURE

1. Verify the Problem

Operate the problem circuit to check the accuracy of the complaint. Note the symptoms of the inoperative circuit.

2. Analyze the Problem

Refer to the schematic of the problem circuit in the ETM. Determine how the circuit is supposed to work by tracing the current path(s) from the power feed through the circuit components to ground. Then based on the symptoms you noted in step 1 and your understanding of circuit operation, identify one or more possible causes of the problem.

3. Isolate the Problem

Make circuit tests to prove or disprove the preliminary diagnosis 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 which are easily accessible.

4. Repair the Problem

Once the specific problem is identified, make the repair using the proper tools and safe procedures.

5. Check the Problem

Operate the circuit to check for satisfactory circuit operation. Good repair practice calls for rechecking all circuits you have worked on.

TROUBLESHOOTING TOOLS

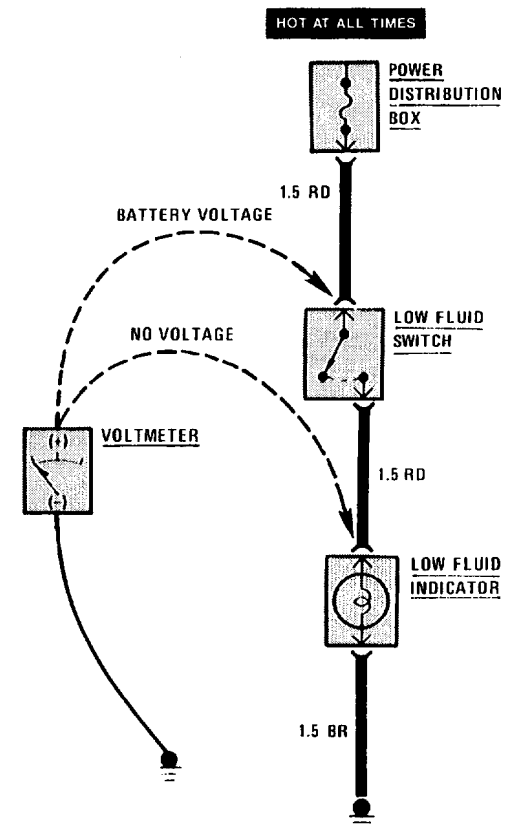
Isolating the problem (Step 3 of TROUBLESHOOTING PROCEDURES) requires the use of a **voltmeter** and/or **ohmmeter**. A voltmeter measures voltage at selected points in a circuit. An ohmmeter measures a circuit's resistance to current flow. It has an internal battery that provides current to the circuit under test. Disconnect the car battery when using an ohmmeter because the battery voltage will cause the ohmmeter to give false readings. Also, do not use an ohmmeter on solid-state components. The voltage that the ohmmeter applies to the circuit could damage these components.

TROUBLESHOOTING TESTS

Voltage Test

This test measures voltage in a circuit. By taking measurements at several points (terminals or connectors) along the circuit, you can isolate the problem.

To take a voltage measurement, connect the negative lead of the voltmeter to the battery's negative terminal or other known good ground. Then connect the positive lead of the voltmeter to the point you want to test. The voltmeter will measure the voltage present at that point in the circuit.

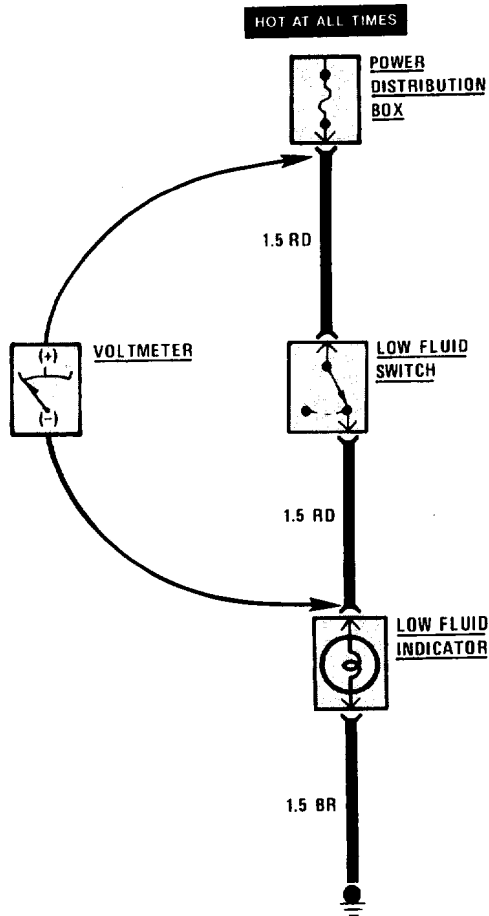


Voltage Test

Voltage Drop Test

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.

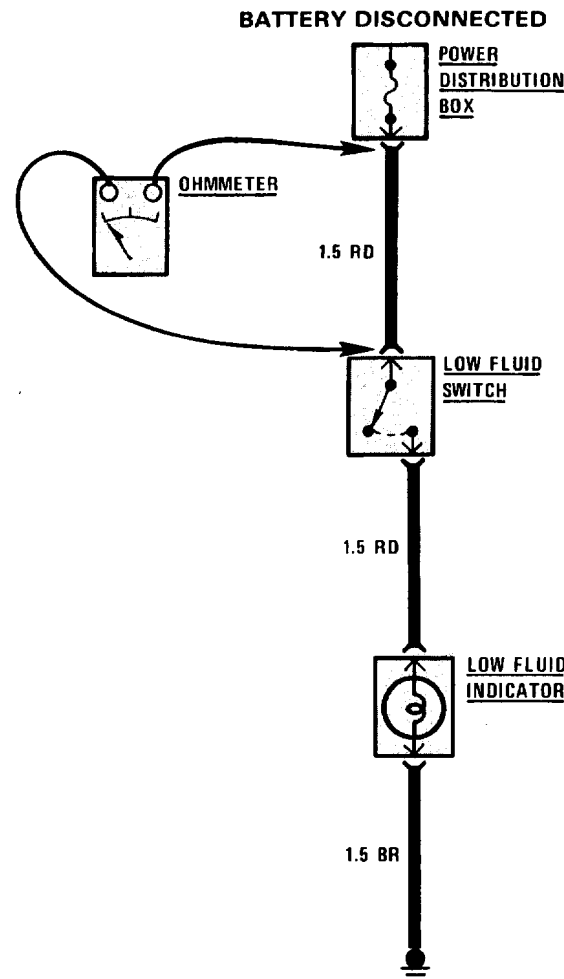
To test for voltage drop, connect the voltmeter leads to connectors at either end of the circuit's suspected problem area. The positive lead should be connected to the connector closest to the power source. The voltmeter will show the voltage drop between these two points.



Voltage Drop Test

Continuity Test

To perform a continuity test, first disconnect the car battery. Then adjust the ohmmeter to read zero while holding the leads together. Connect the ohmmeter leads to connector or terminals at either end of the circuit's suspected problem area. The ohmmeter will show the resistance across that part of the circuit.

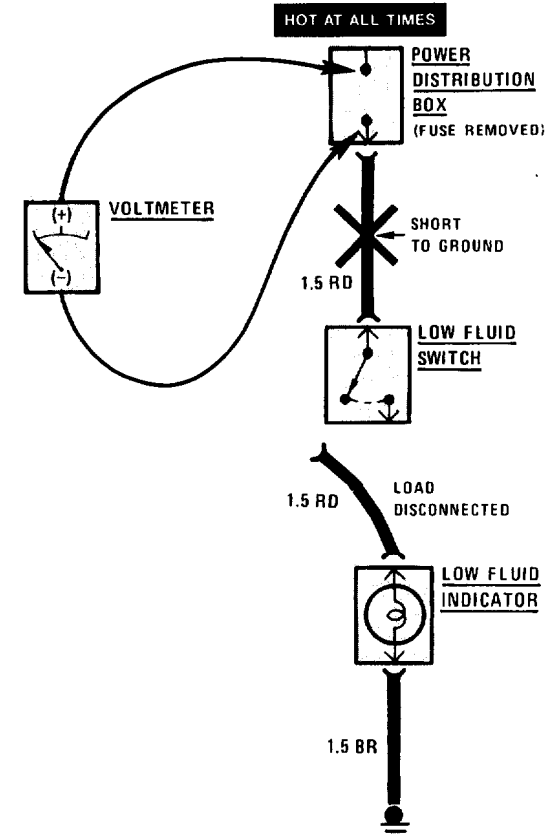


Continuity Test

Short Test Using Voltmeter

Remove the blown fuse and disconnect the load. Connect the voltmeter leads to the fuse terminals. The positive lead should be connected to the terminal closest to the power source.

Starting near the POWER DISTRIBUTION BOX, move the wire harness back and forth and watch the voltmeter reading. If the voltmeter registers a reading, there is a short to ground in the wiring. Somewhere in the area of the harness being moved, the wire insulation is worn away and the circuit is grounding.



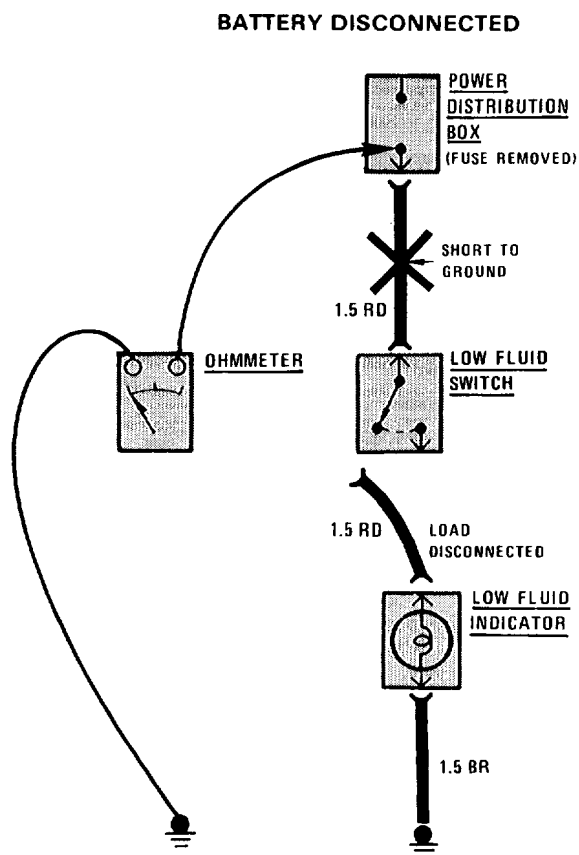
Short Test Using Voltmeter

8 SYSTEMATIC TROUBLESHOOTING

Short Test Using Ohmmeter

Disconnect the battery. Adjust the ohmmeter to read zero while holding the leads together. Remove the blown fuse and disconnect the load. Connect one lead of the ohmmeter to the fuse terminal that is closest to the load. Connect the other lead to a known good ground.

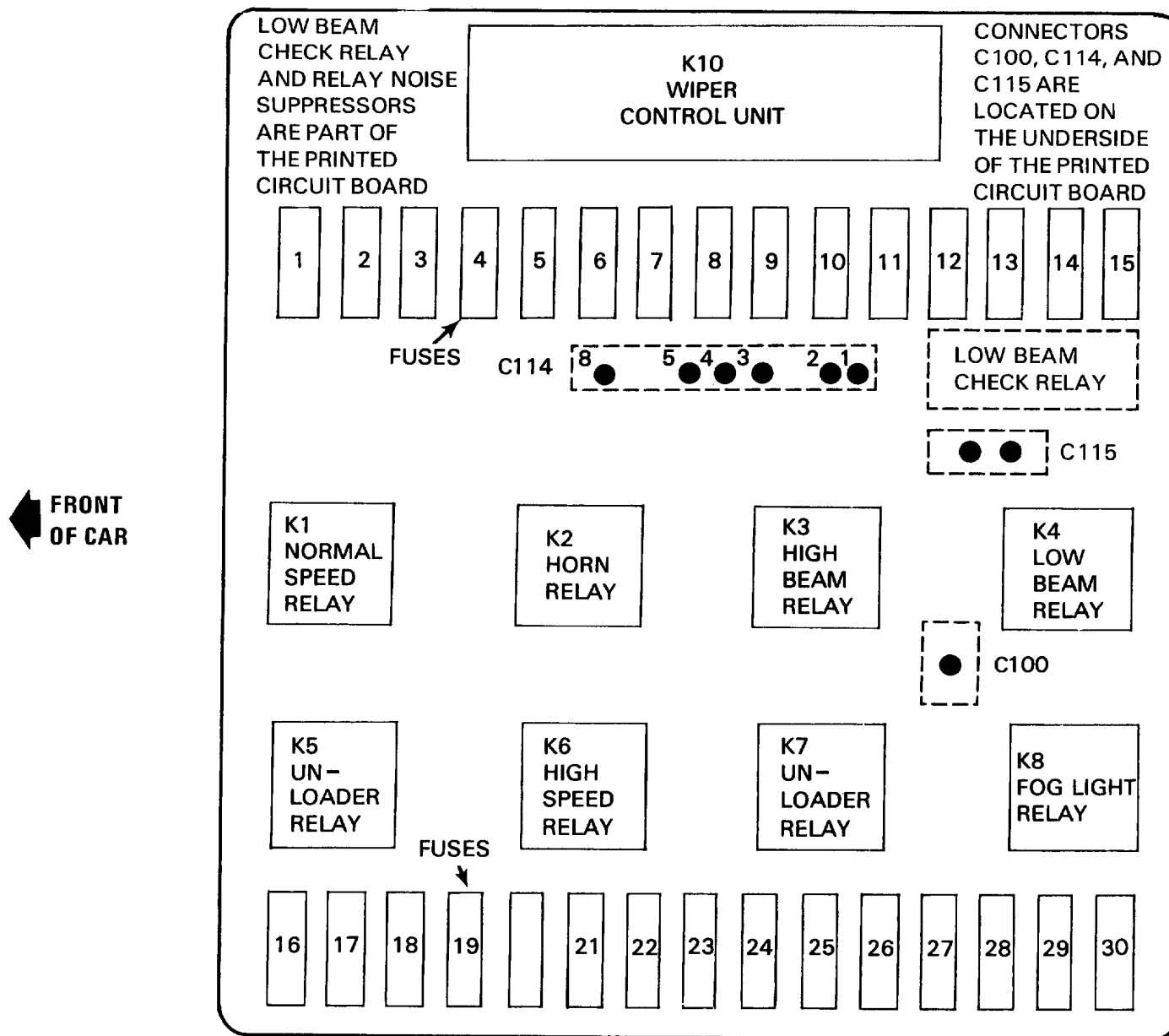
Starting near the POWER DISTRIBUTION BOX, move the wire harness back and forth and watch the ohmmeter reading. Low or no resistance indicates a short to ground in the wiring. Infinitely high resistance indicates no short.



Short Test Using Ohmmeter

0670-0 POWER DISTRIBUTION

POWER DISTRIBUTION BOX

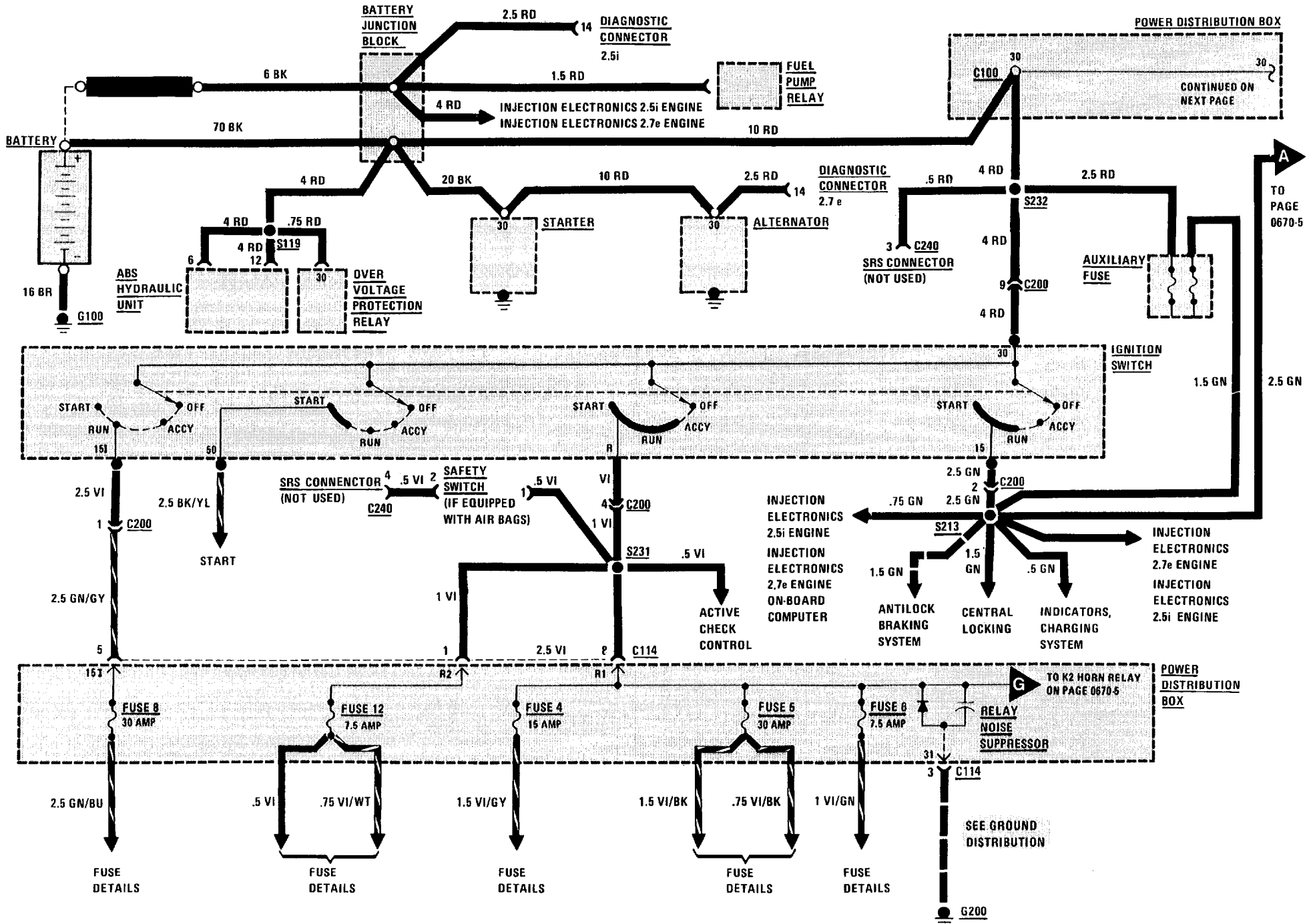


FUSE DATA CHART

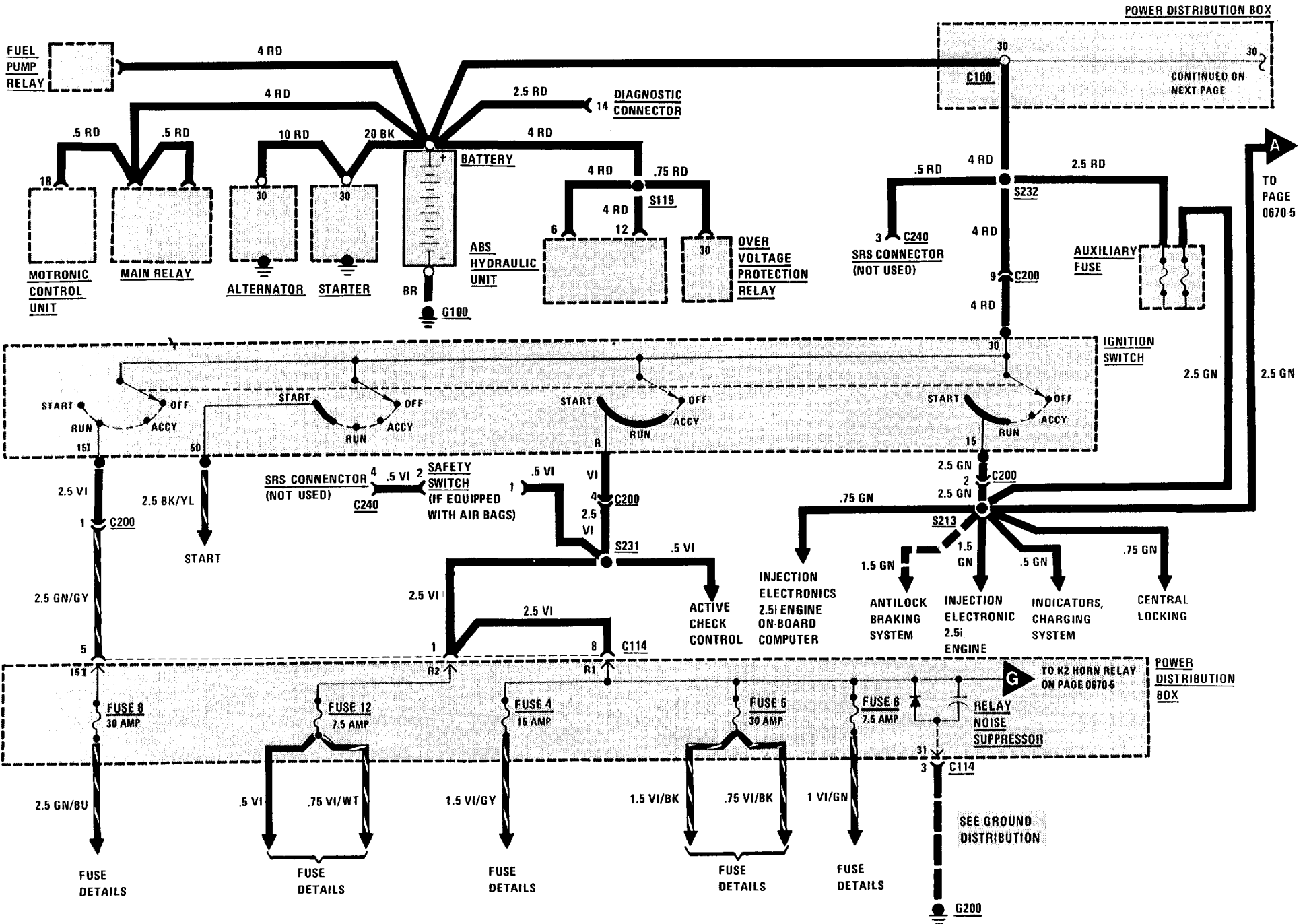
FUSE NO.	SIZE	CIRCUIT NAME
1	7.5A	Headlights (also fuses 2, 13, 14).
2	7.5A	Headlights (also fuses 1, 13, 14).
3	15A	Auxiliary Fan (also fuses 18, 19, 20).
4	15A	Lights: Turn/Hazard Warning (also fuse 24); Active Check Control (also fuses 6, 10, 21, 22, 23).
5	30A	Wiper/Washer.
6	7.5A	Stop Lights/Cruise Control (also fuse 10); Active Check Control (also fuses 4, 10, 21, 22, 23); Antilock Braking System; Interior Lights (also fuses 19, 21, 27).
7	15A	Horn.
8	30A	Rear Defogger (also fuse 23).
9	15A	Idle Speed Control.
10	7.5A	Seatbelt Warning (also fuse 21); Service Interval Indicator (also fuse 21); Tachometer/Fuel Economy Gauges (also fuse 21); Gauges/Indicators; Brake Warning System; Back Up Lights; On-Board Computer (also fuses 12, 21, 23, 27); Start; Injection Electronics (also fuses 11, 21); Active Check Control (also fuses 4, 6, 21, 22, 23); Cruise Control (also fuse 6).
11	15A	Fuel Delivery; Injection Electronics (also fuses 10, 21).
12	7.5A	Radio (also fuses 21, 27, 28); Speedometer/Indicators; On-Board Computer (also fuses 10, 21, 23, 27).
13	7.5A	Headlights (also fuses 1, 2, 14).
14	7.5A	Headlights (also fuses 1, 2, 13).
15		Not Used.
16		Not Used.
17	30A	Sunroof; Power Windows
18	30A	Auxiliary Fan (also fuses 3, 19, 20).
19	7.5A	Auxiliary Fan (also fuses 3, 18, 20); Interior Lights (also fuses 6, 21, 27); Power Mirrors.

FUSE NO.	SIZE	CIRCUIT NAME
20	30A	Heater/Air Conditioning; Auxiliary Fan (also fuses 3, 18, 19).
21	7.5A	Auto-Charging Flashlight; Glove Box Light; Ignition Key Warning/Seatbelt Warning; (also fuse 10); Injection Electronics (also fuses 10, 11); Interior Lights (also fuses 6, 19, 27); Radio (also fuses 12, 27, 28); Trunk Light; Active Check Control (also fuses 4, 6, 10, 22, 23); Service Interval Indicator (also fuse 10); On-Board Computer (also fuses 10, 12, 23, 27); Tachometer/Fuel Economy Gauge (also fuse 10).
22	7.5A	Active Check Control (also fuses 4, 6, 10, 21, 23); Lights: Front Park/Tail (also fuse 23); Lights: Front Side Marker (also fuse 23).
23	7.5A	Lights: Dash Lights: Front Park/Tail (also fuse 22); Lights: Front Side Marker (also fuse 22); Lights: Rear Marker/License; Active Check Control (also fuses 4, 6, 10, 21, & 22); On-Board Computer (also fuses 10, 12, 21, 27); Rear Defogger (also fuse 8).
24	15A	Lights: Turn/Hazard Warning (also fuse 4).
25		Not Used.
26		Not Used.
27	30A	Interior Lights (also fuses 6, 19, 21); Central Locking; Radio/Antenna (also fuses 12, 21, 28); On-Board Computer (also fuses 10, 12, 21, 23).
28	30A	Cigar Lighter; Radio/Antenna (also fuses 12, 21, 27).
29	7.5A	Fog Lights (also fuse 30).
30	7.5A	Fog Lights (also fuse 29).
POWER WINDOW CIRCUIT BREAKER		25A Power Windows

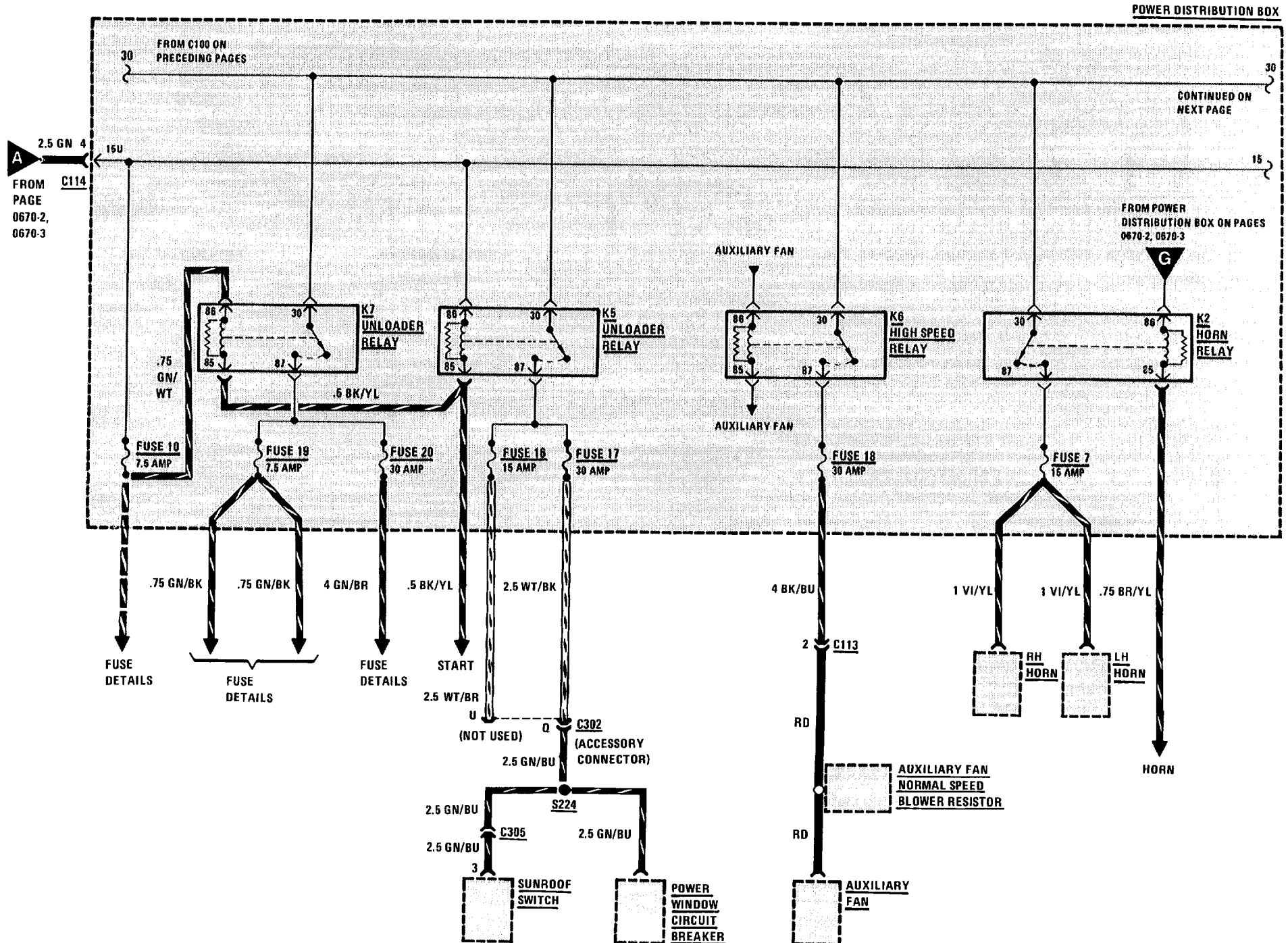
0670-2 POWER DISTRIBUTION 2.7e, 2.5i ENGINES – EXCEPT CONVERTIBLE



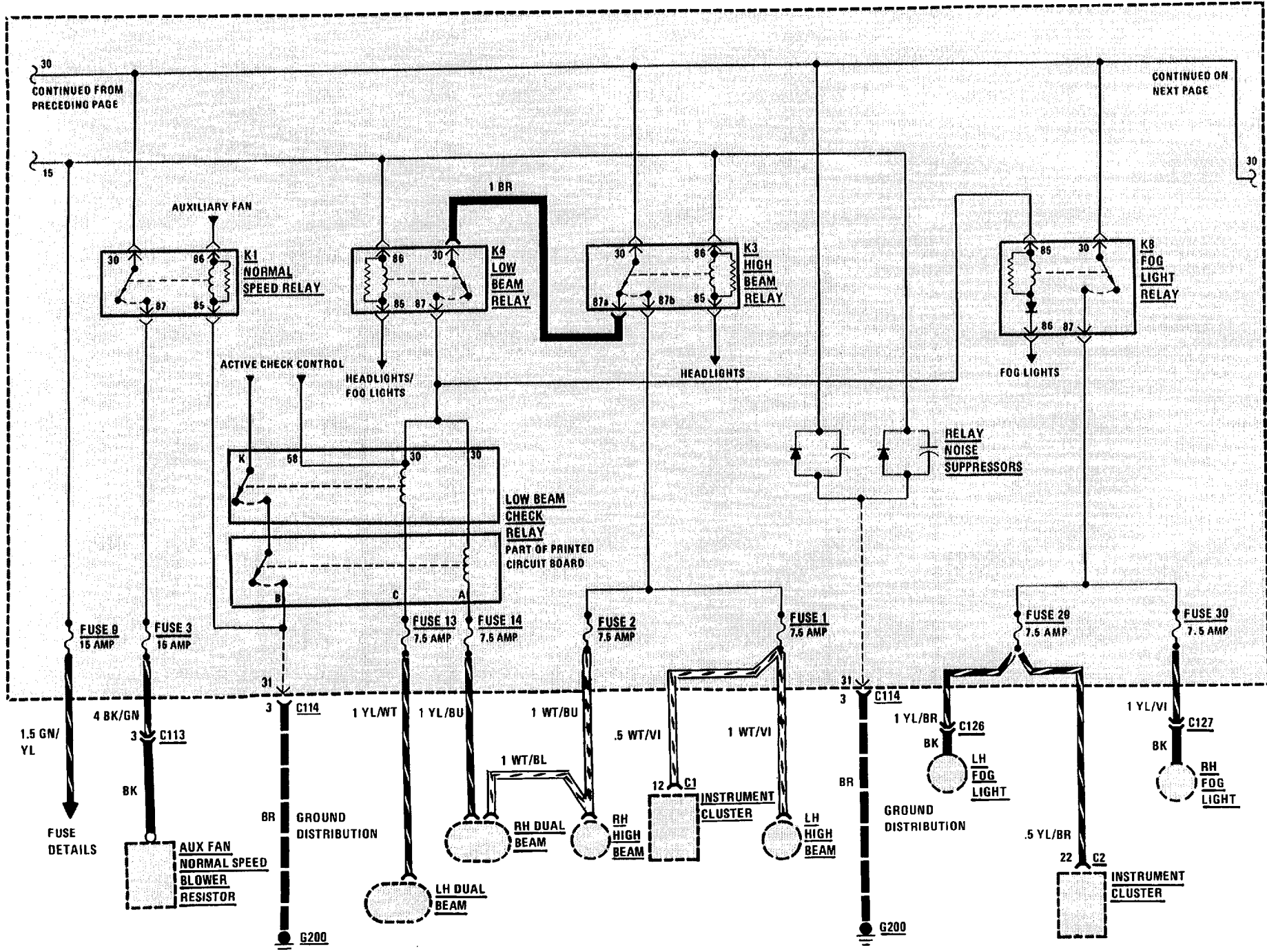
2.5i ENGINE CONVERTIBLE POWER DISTRIBUTION 0670-3



0670-4 POWER DISTRIBUTION

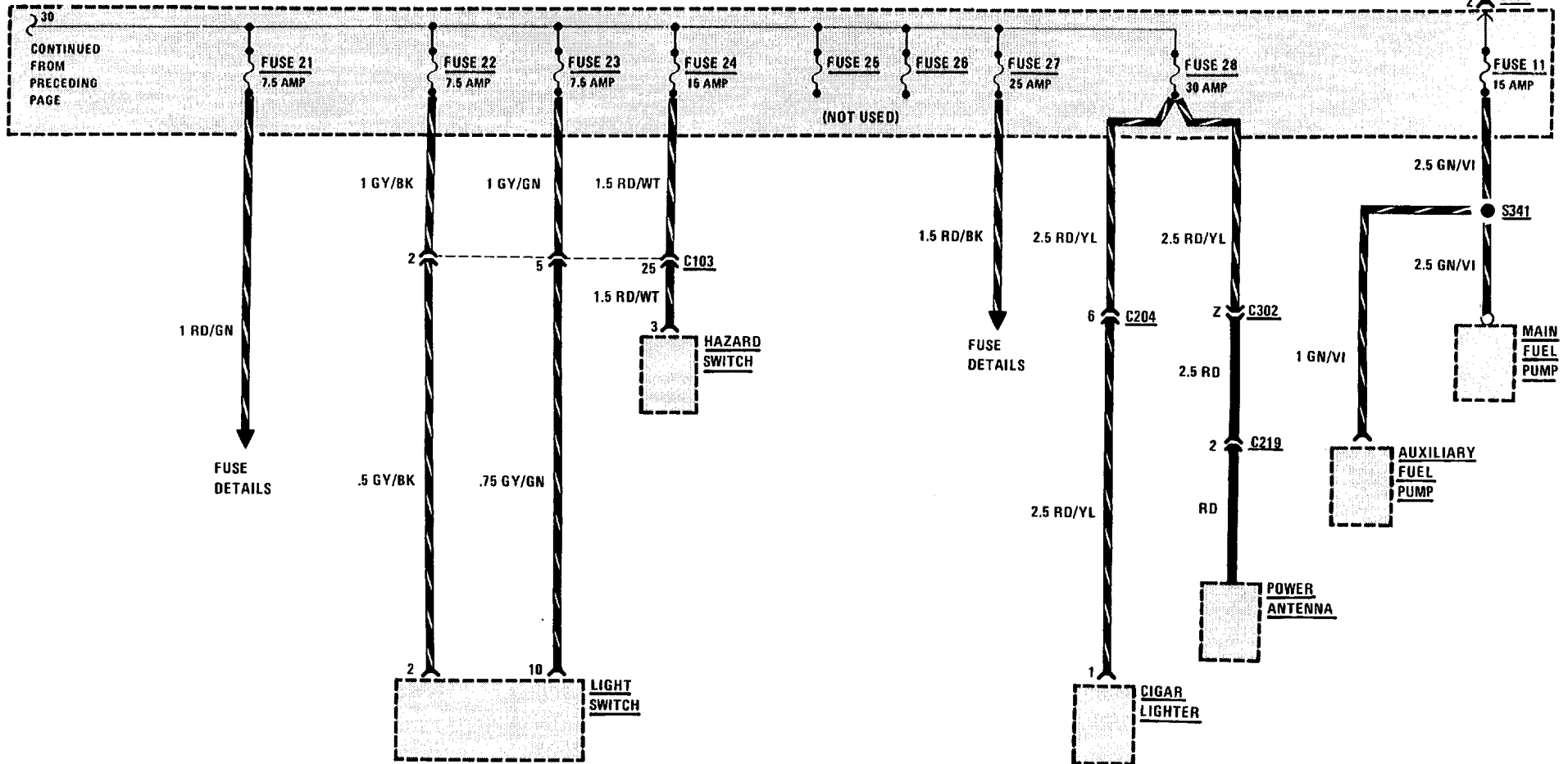


POWER DISTRIBUTION BOX

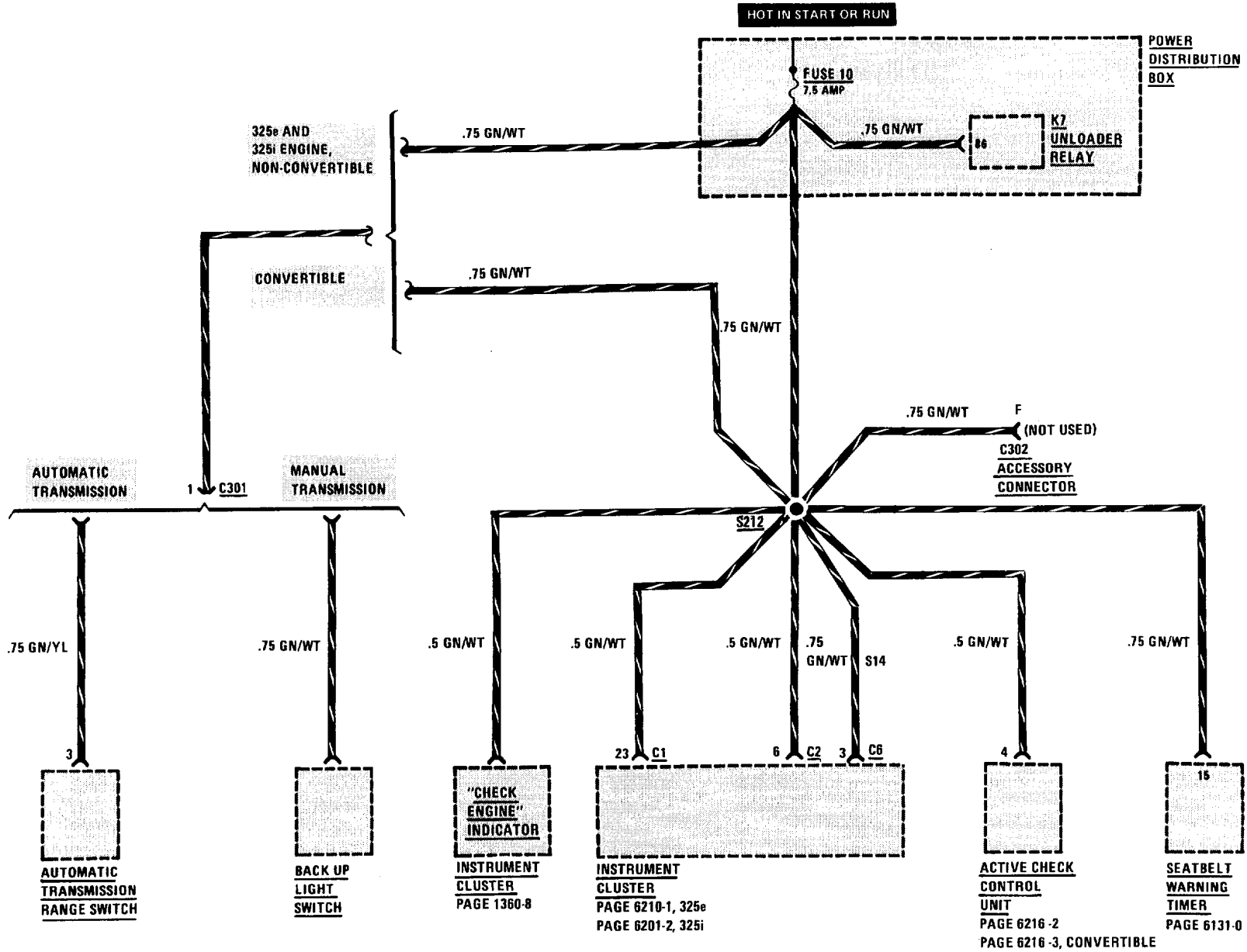


0670-6 POWER DISTRIBUTION

**POWER
DISTRIBUTION
BOX**

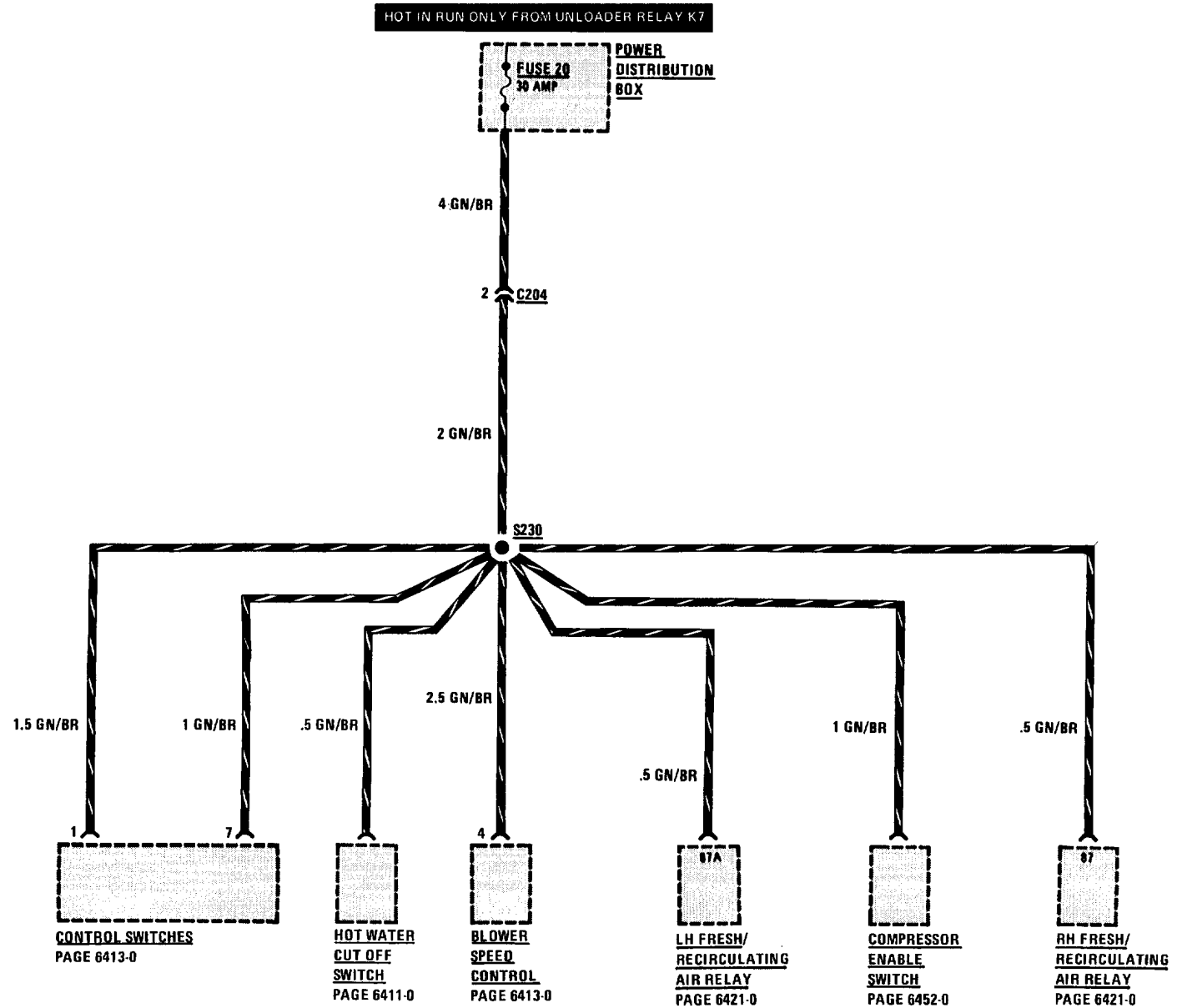


FUSE DETAILS: FUSE 10

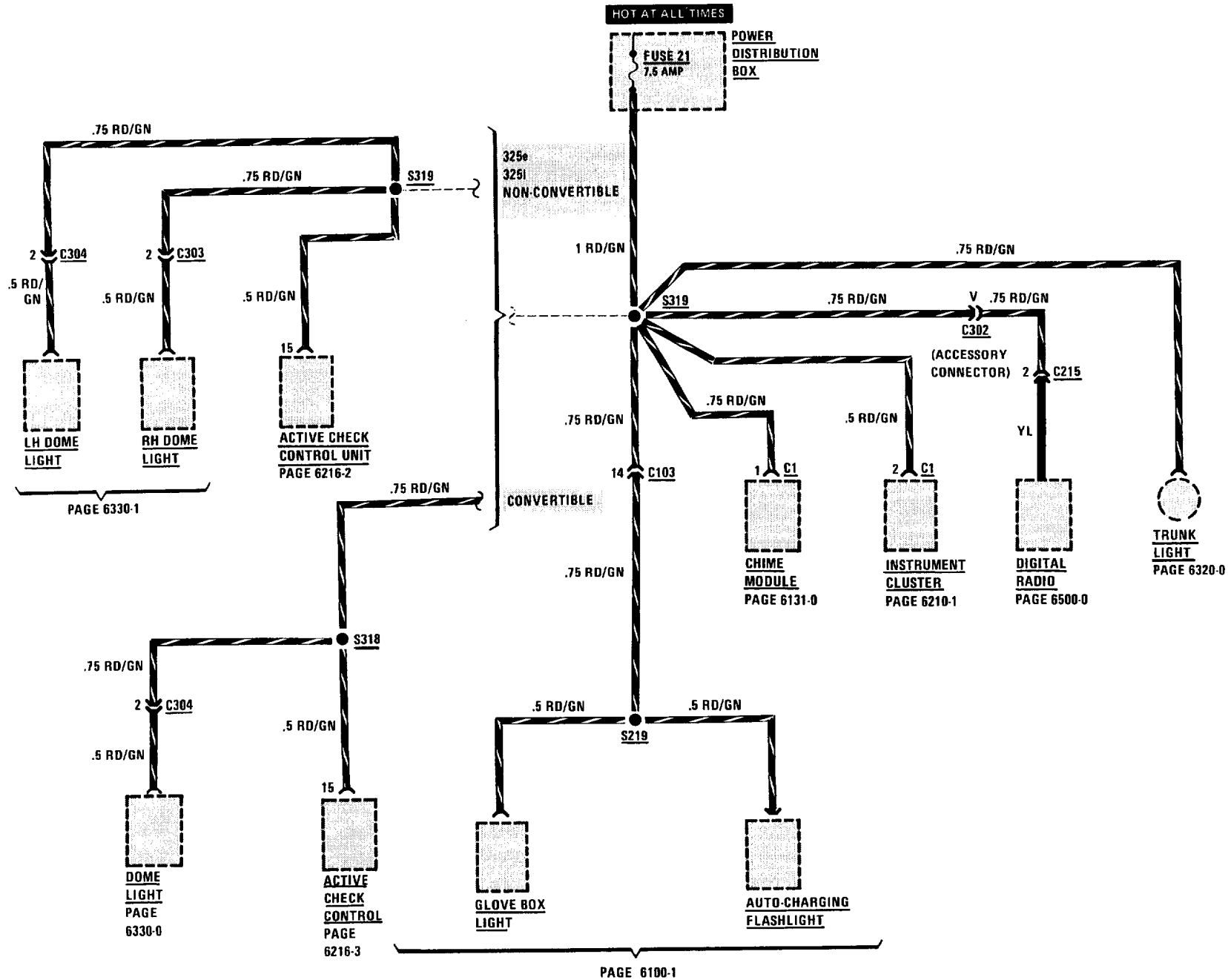


0670-8 POWER DISTRIBUTION

FUSE DETAILS: FUSE 20

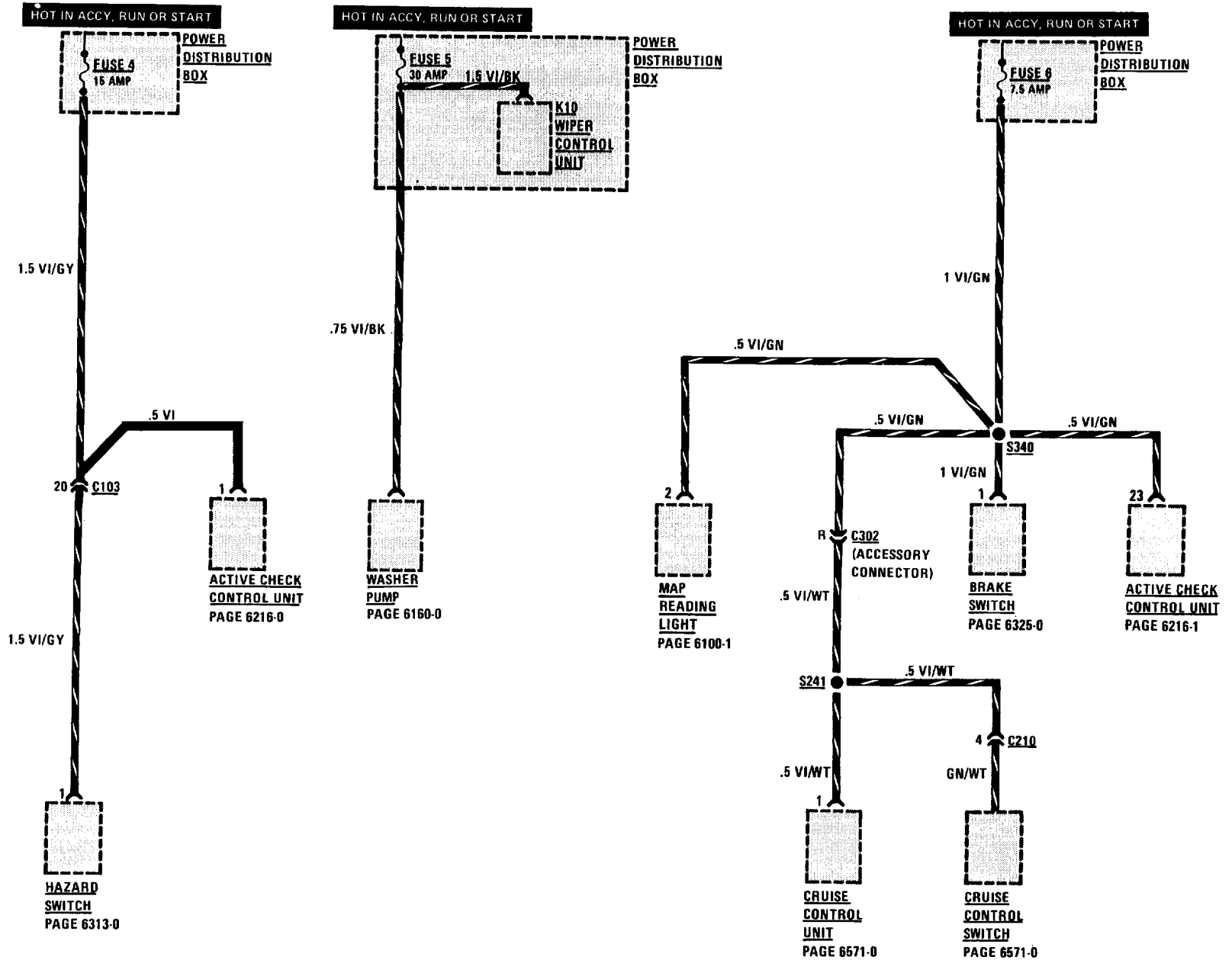


FUSE DETAILS: FUSE 21

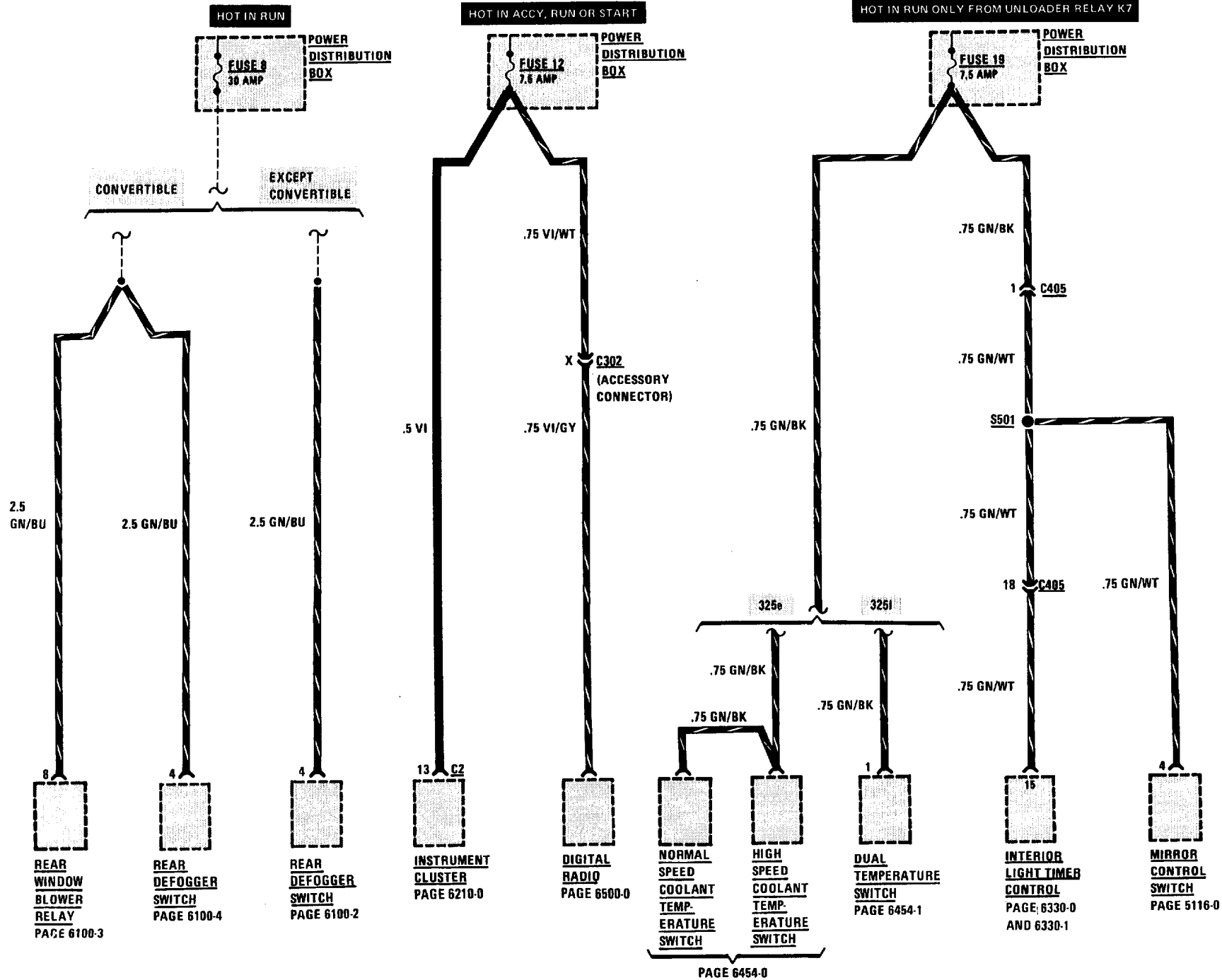


0670-10 POWER DISTRIBUTION

FUSE DETAILS: FUSES 4, 5, AND 6

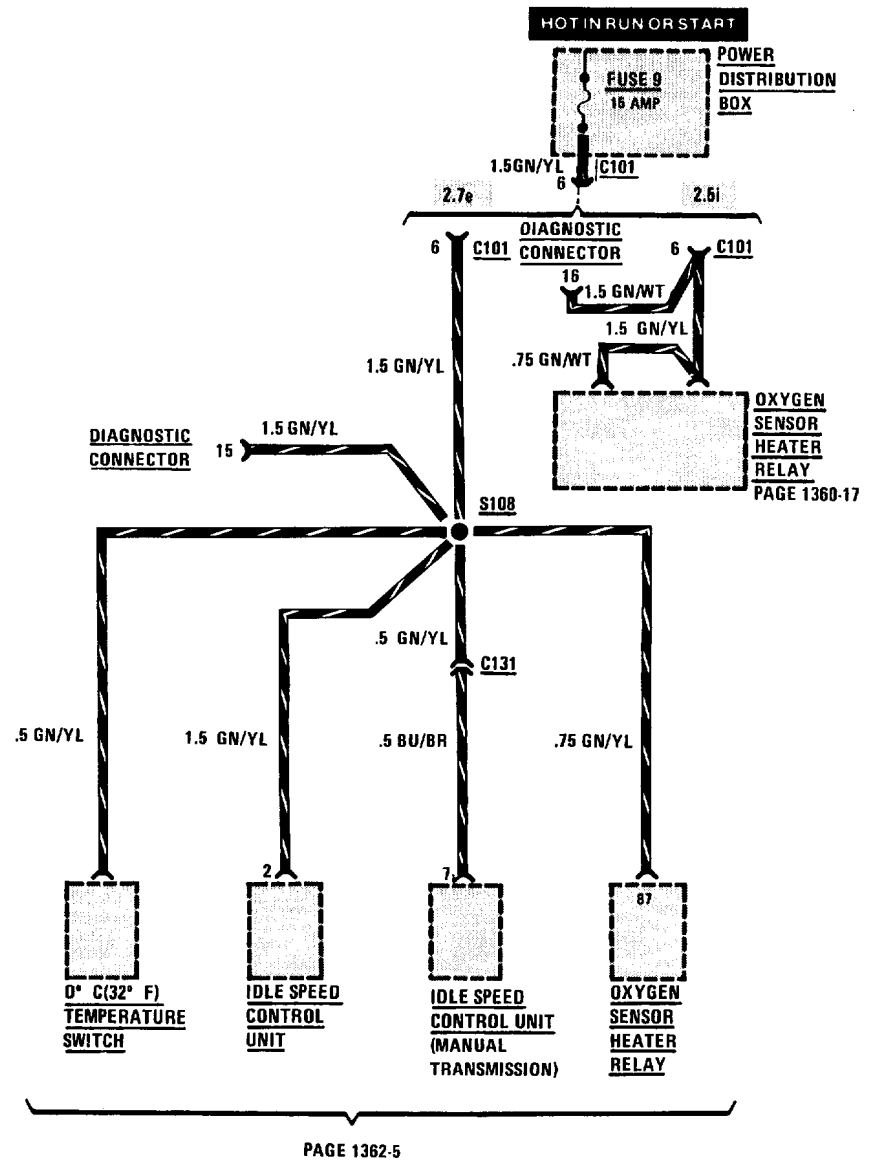
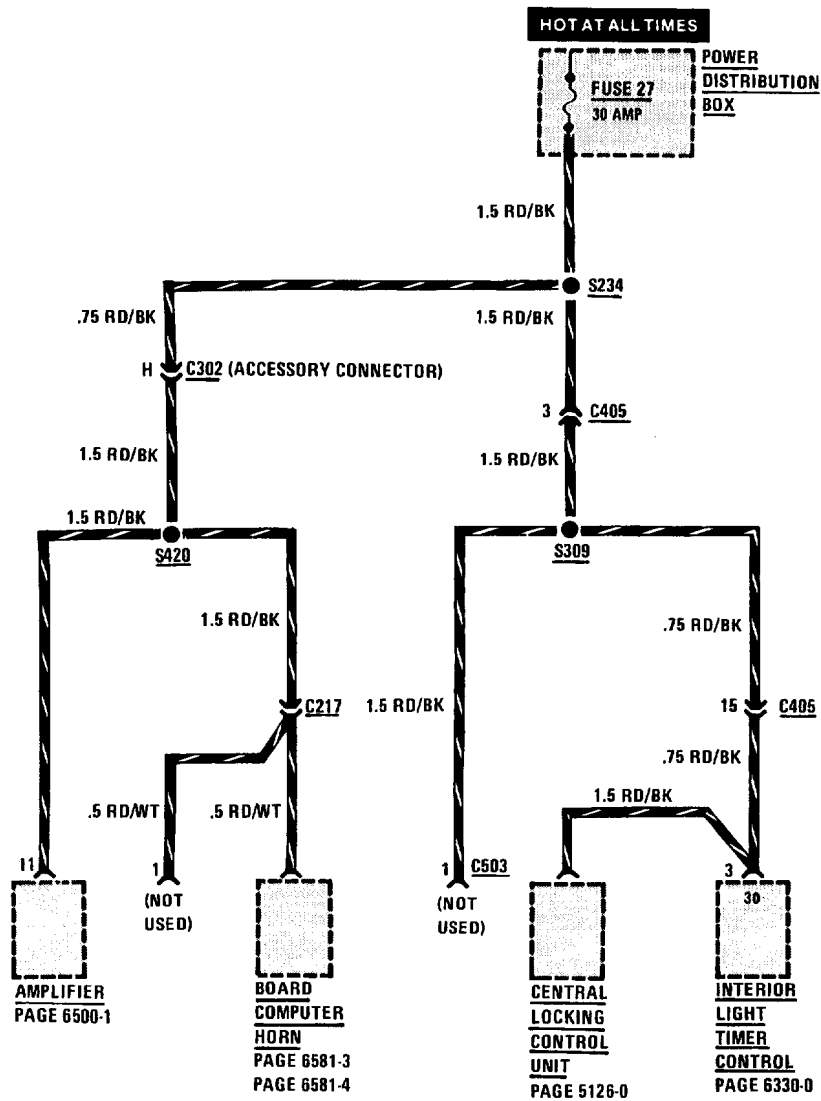


FUSE DETAILS: FUSES 8, 12 AND 19



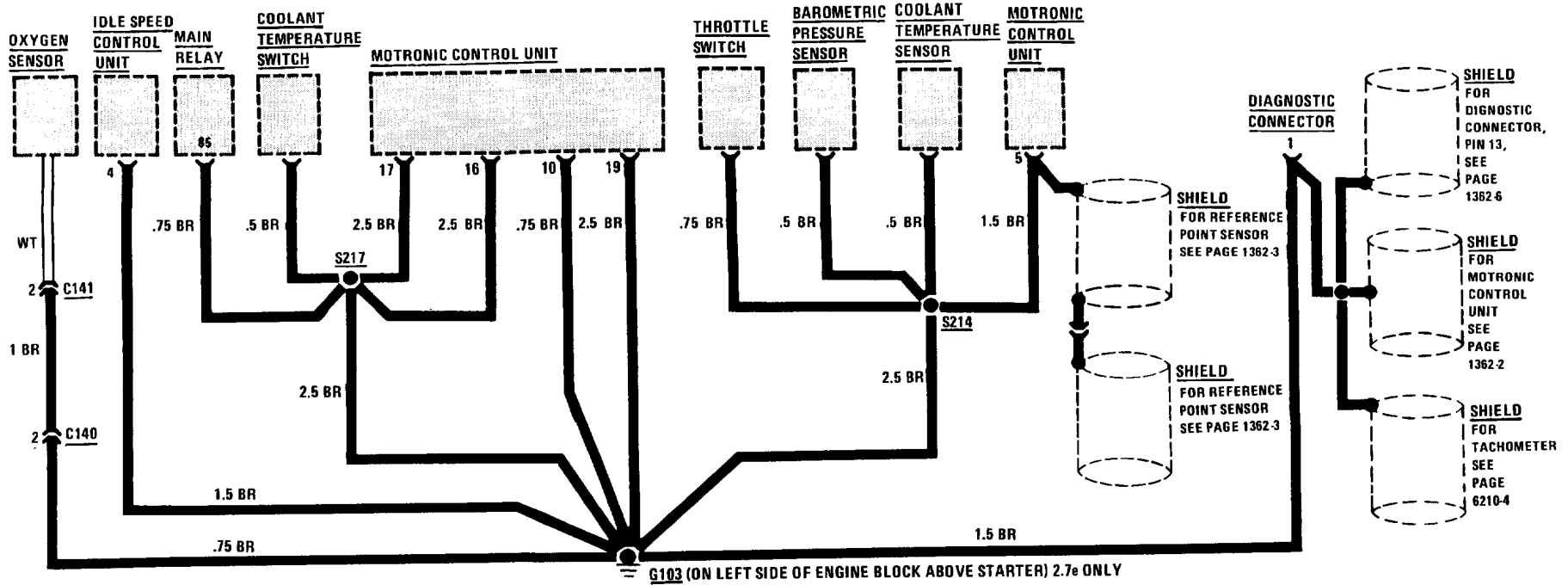
0670-12 POWER DISTRIBUTION

FUSE DETAILS: FUSES 27 AND 9

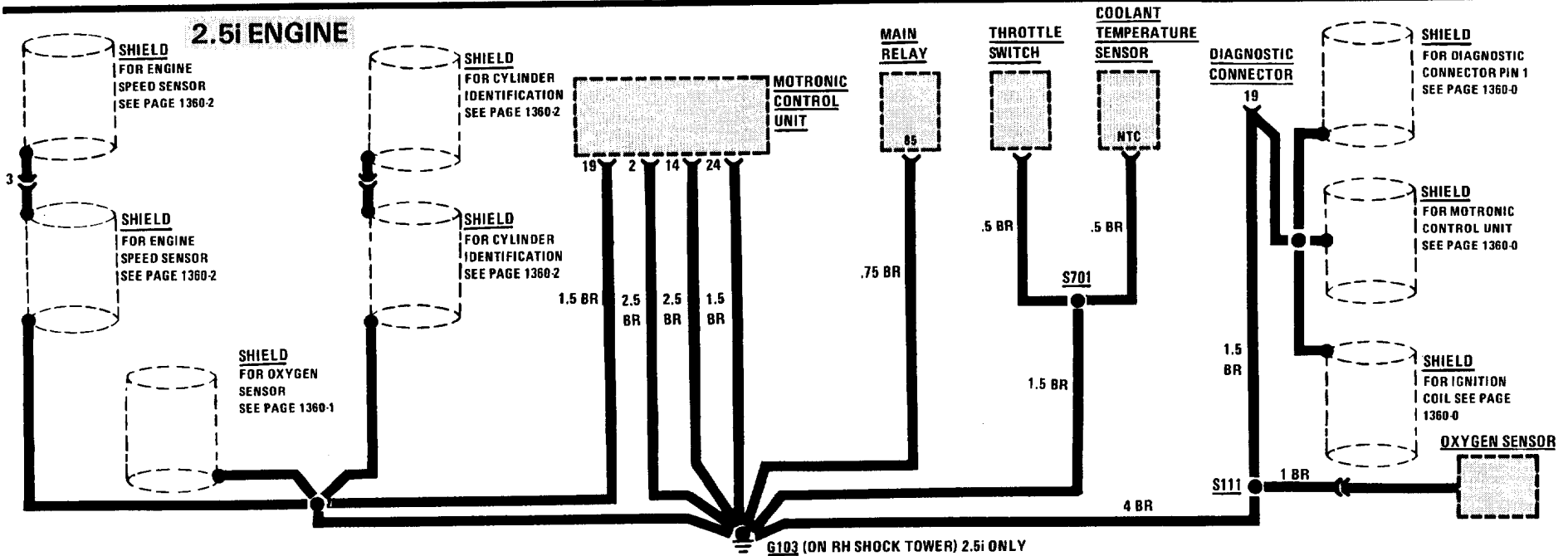


2.7e ENGINE

GROUND DISTRIBUTION (G103)

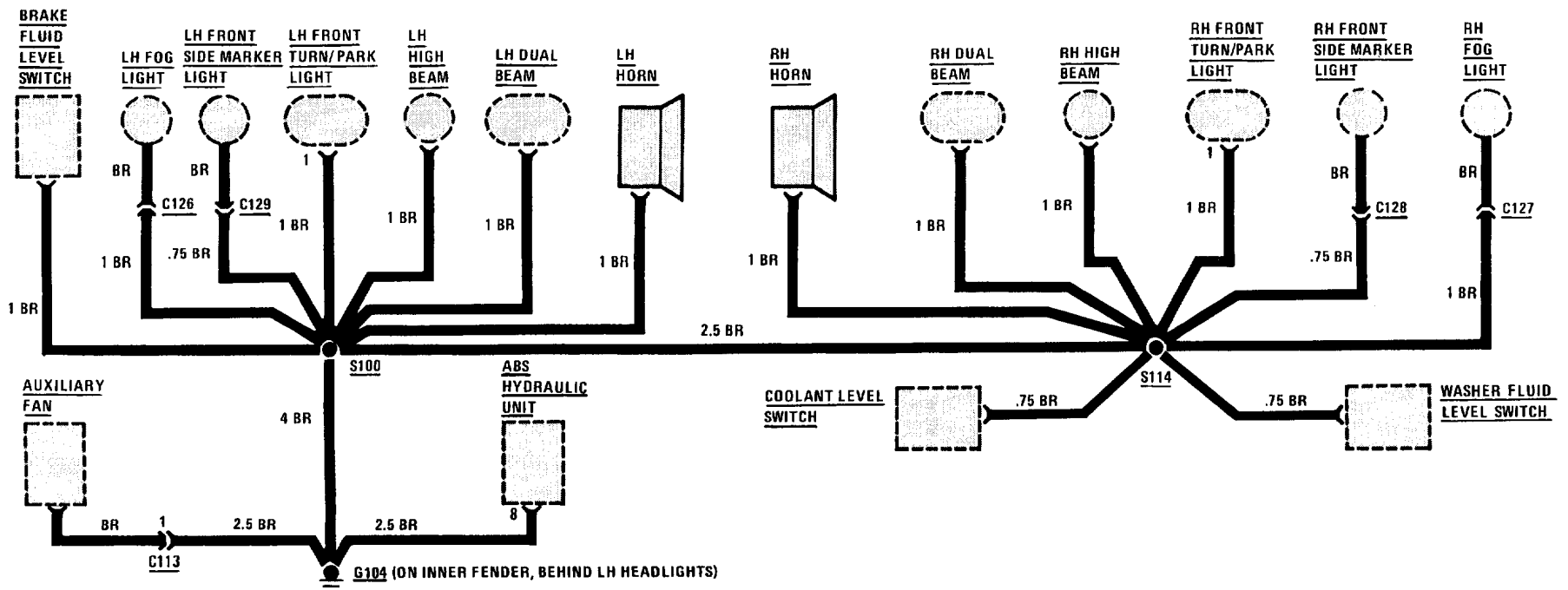
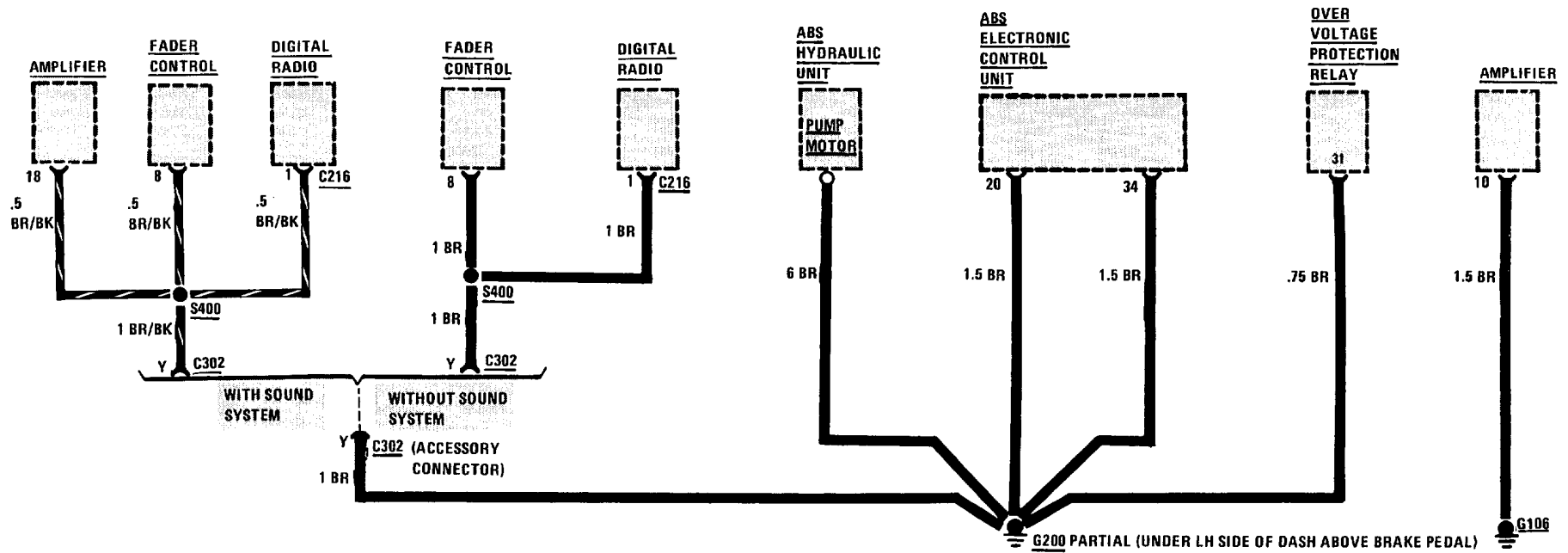


2.5i ENGINE



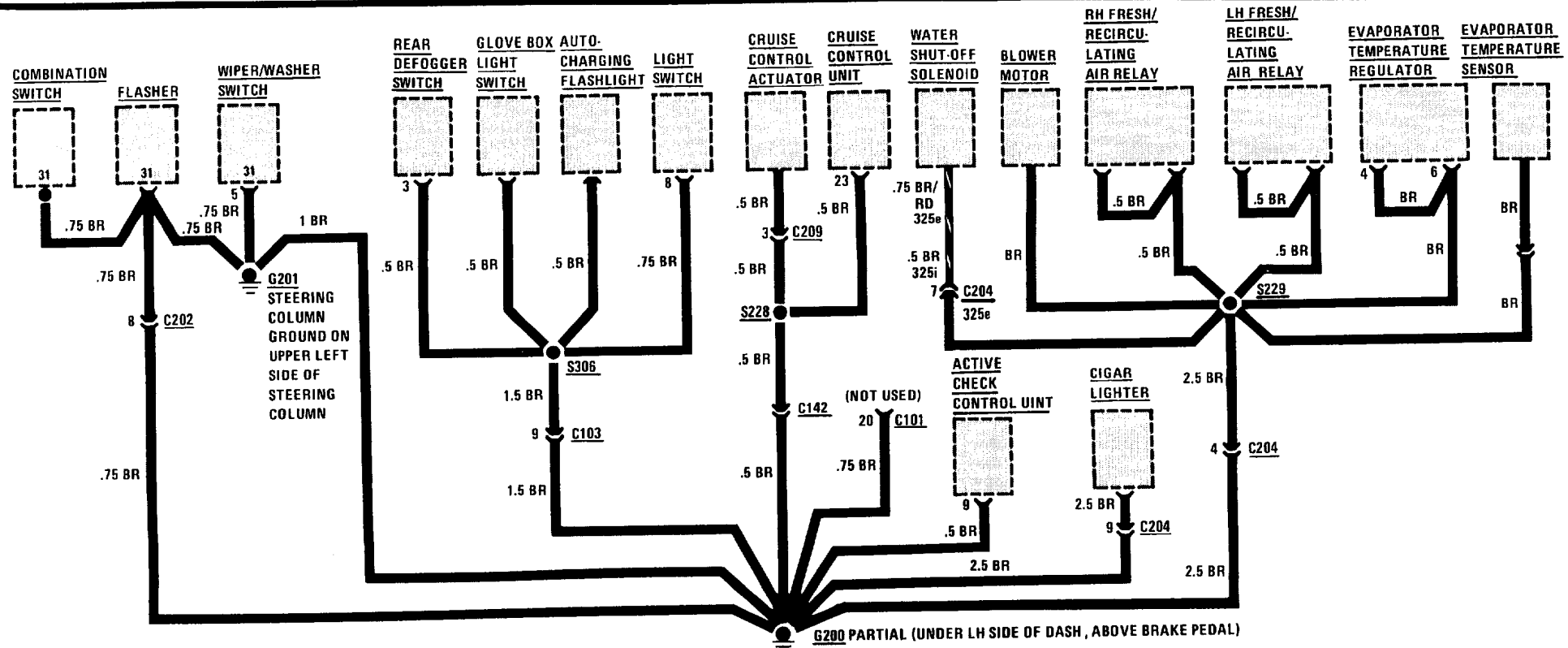
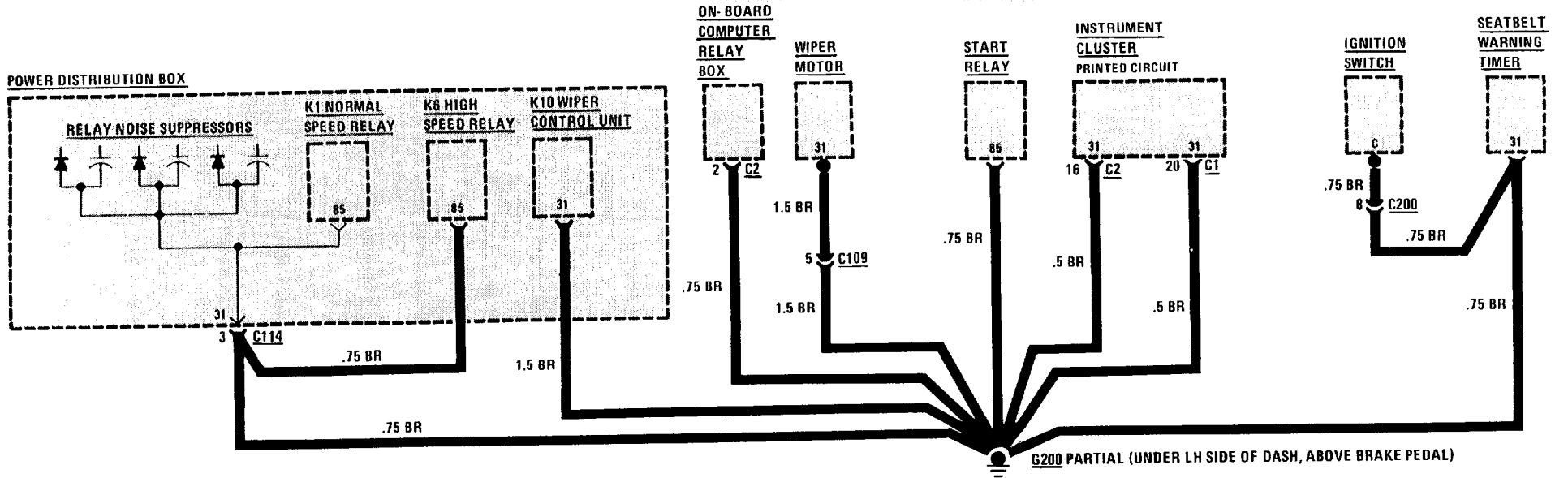
0670-14 POWER DISTRIBUTION 2.7e, 2.5i ENGINES – EXCEPT CONVERTIBLE

GROUND DISTRIBUTION (G104, G106 AND G200 PARTIAL)



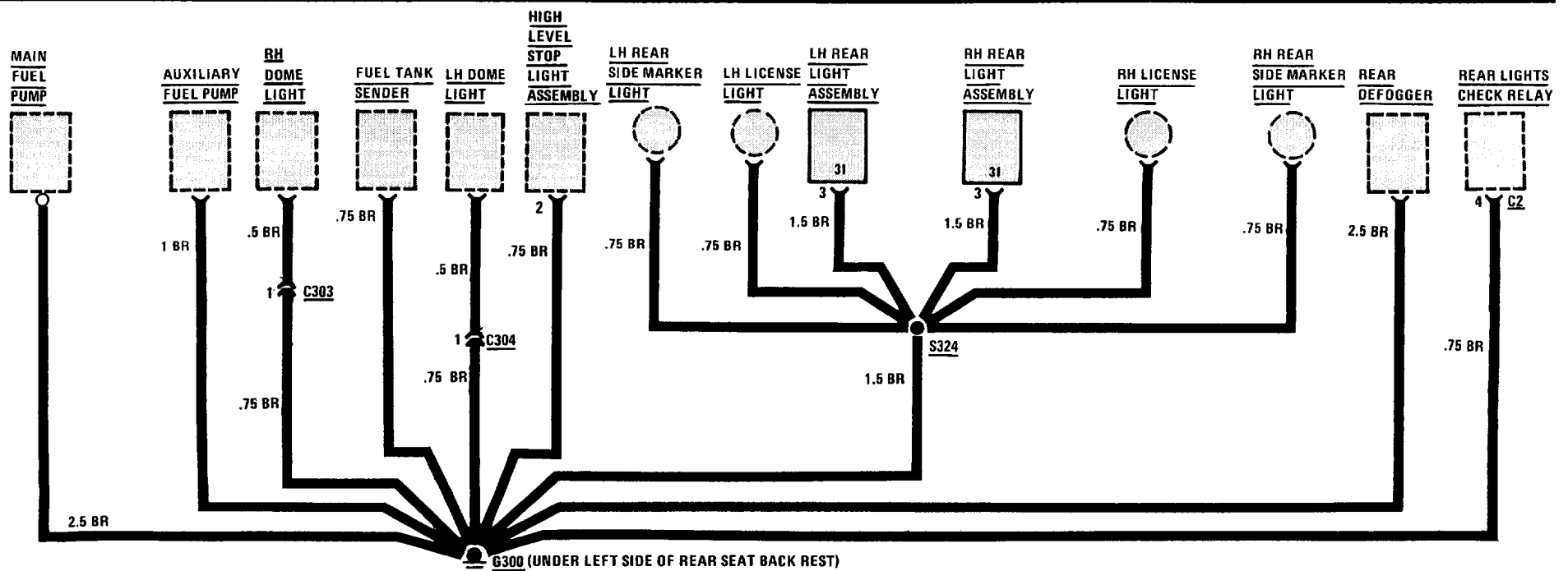
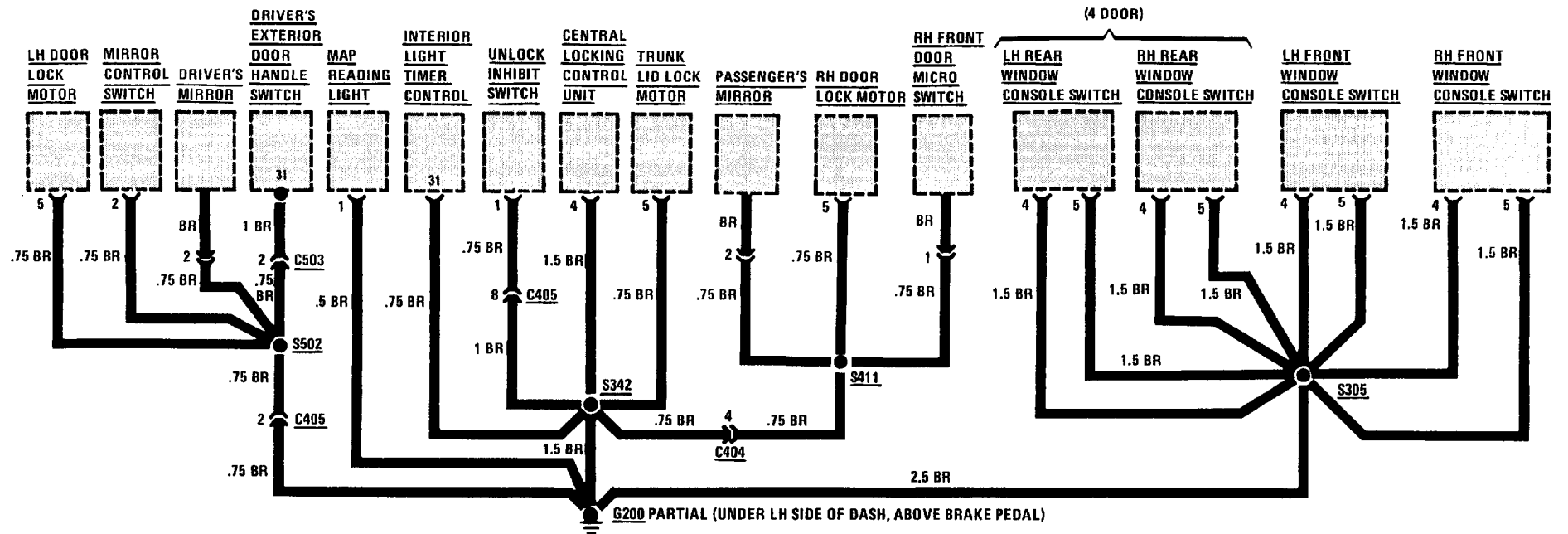
2.7e, 2.5i ENGINE — EXCEPT CONVERTIBLE POWER DISTRIBUTION 0670-15

GROUND DISTRIBUTION (G201 AND G200 PARTIAL)



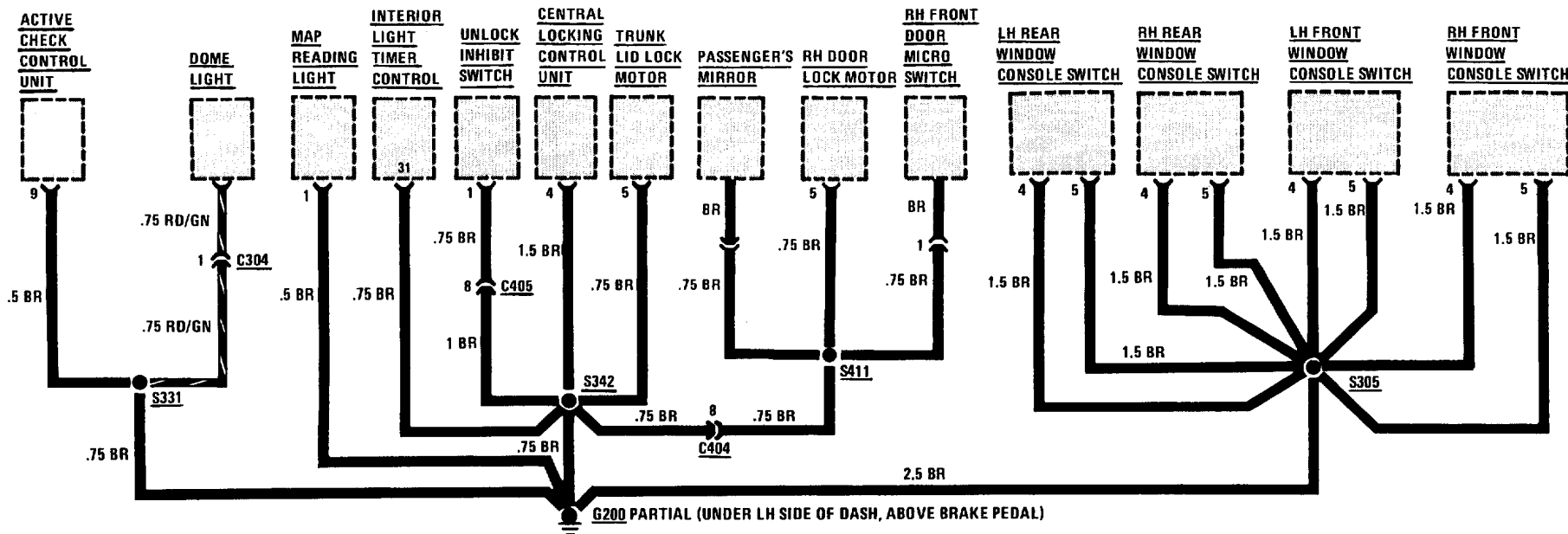
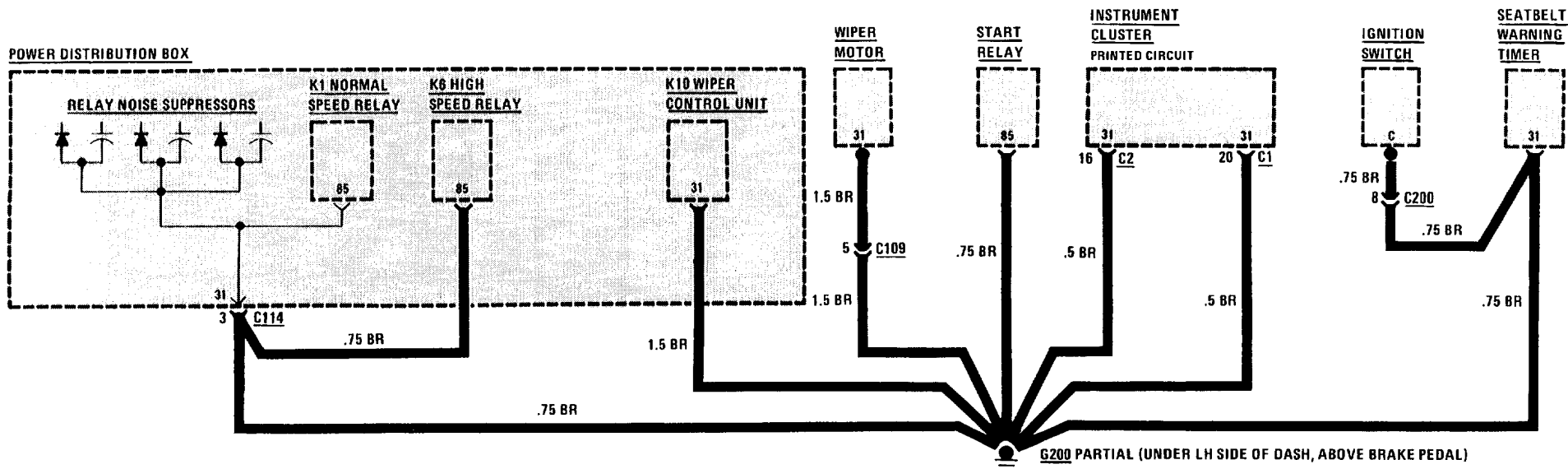
0670-16 POWER DISTRIBUTION 2.7e, 2.5i ENGINES – EXCEPT CONVERTIBLE

GROUND DISTRIBUTION (G200 PARTIAL AND G300)



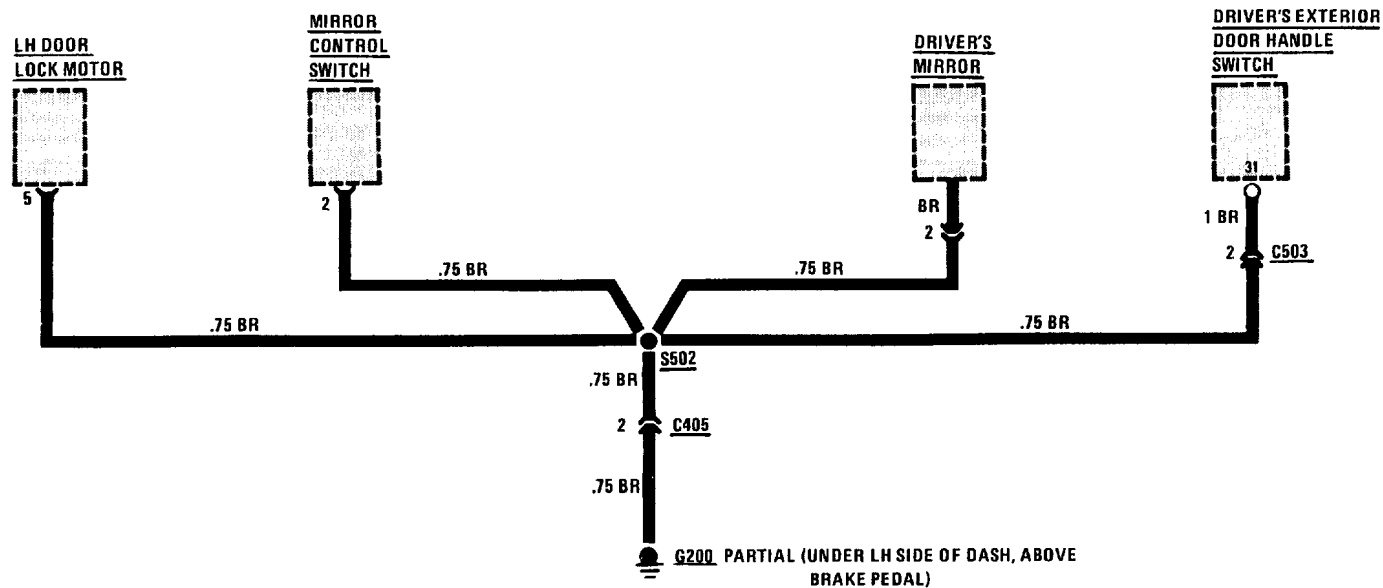
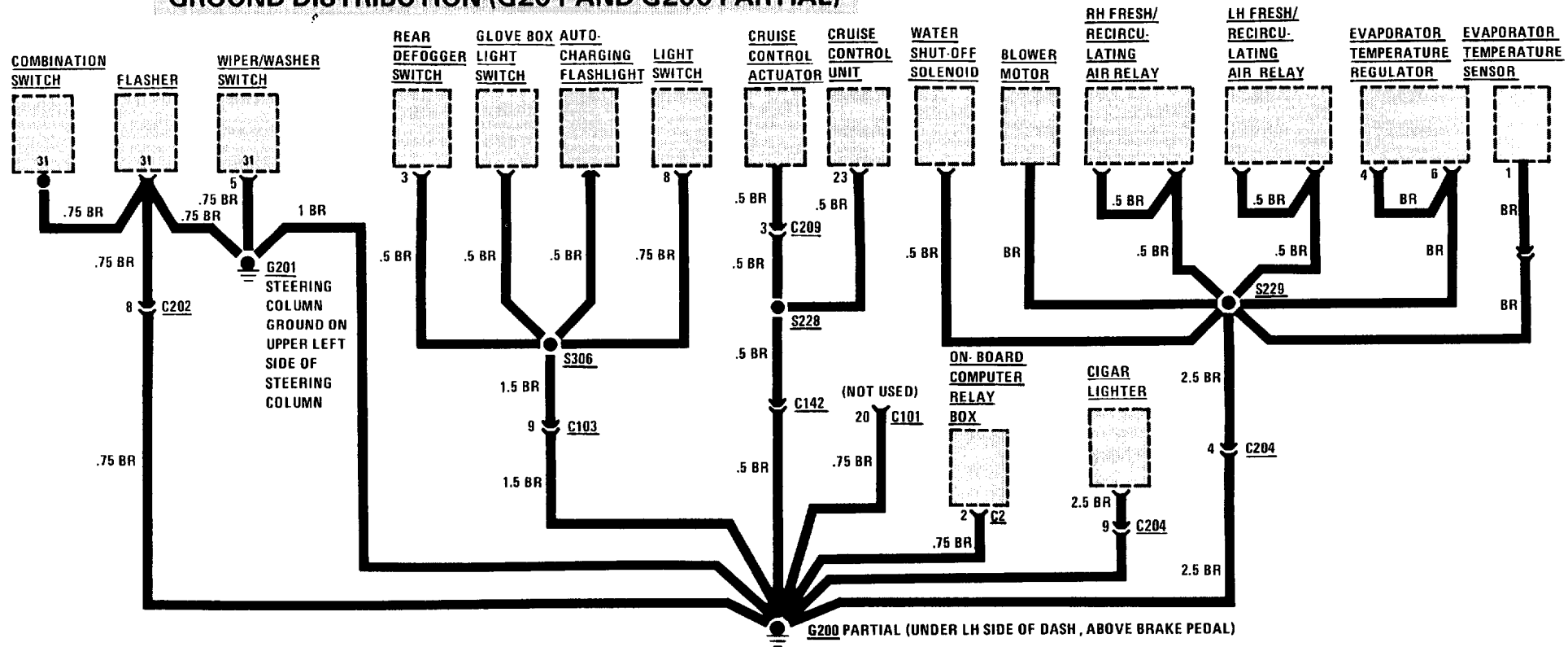
2.5i ENGINE CONVERTIBLE POWER DISTRIBUTION 0670-17

GROUND DISTRIBUTION (G200 PARTIAL)



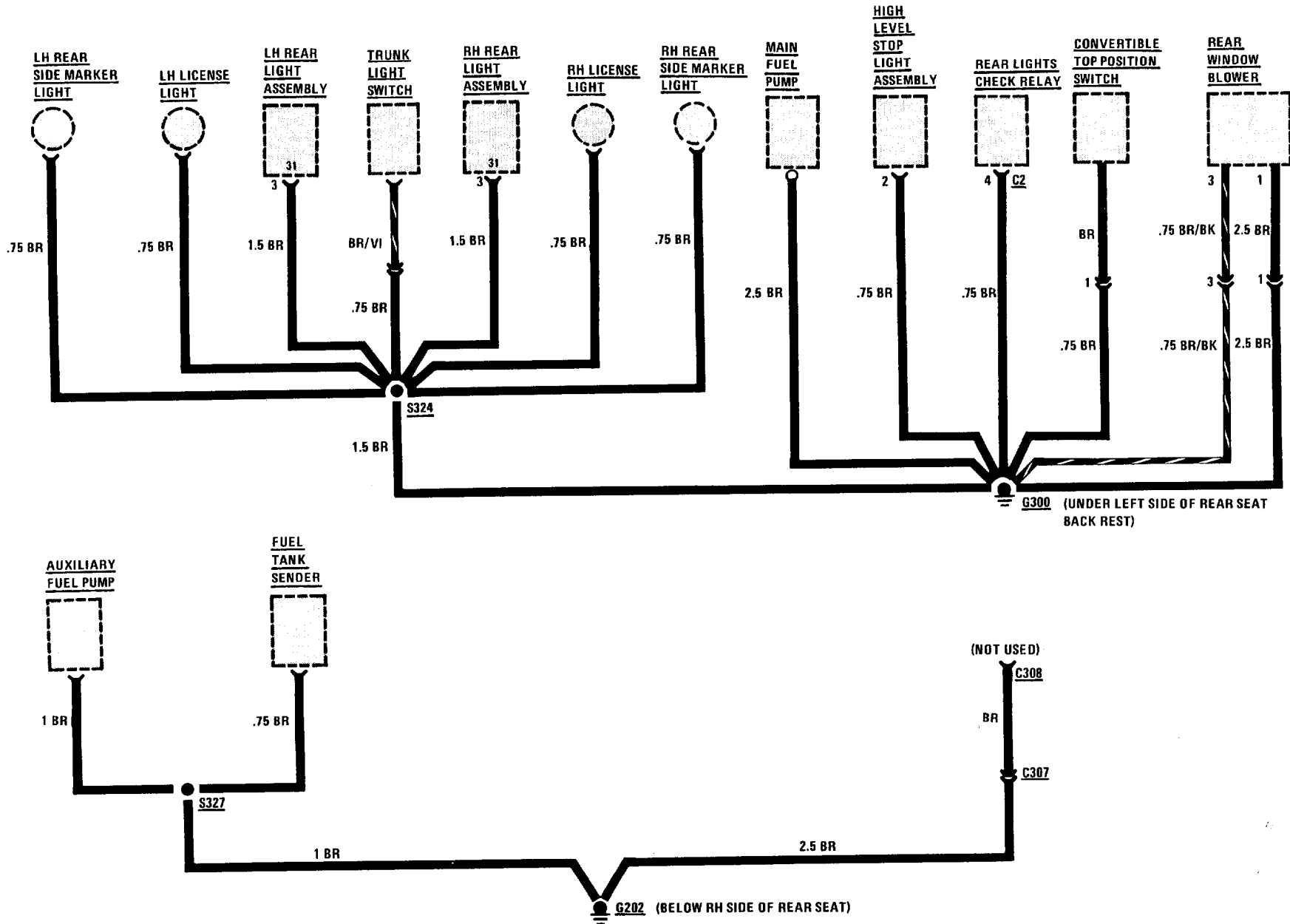
0670-18 POWER DISTRIBUTION 2.5i ENGINE CONVERTIBLE

GROUND DISTRIBUTION (G201 AND G200 PARTIAL)

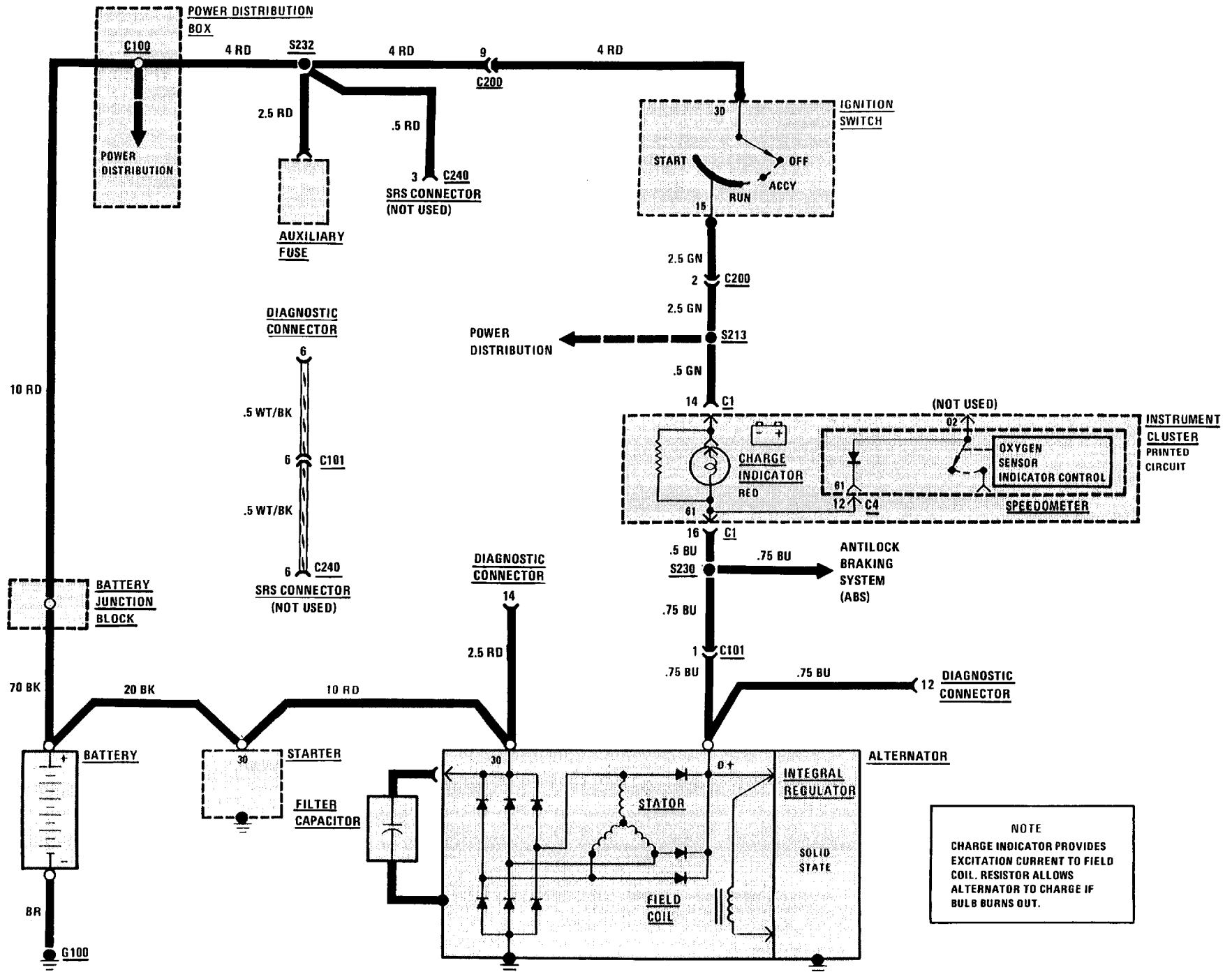


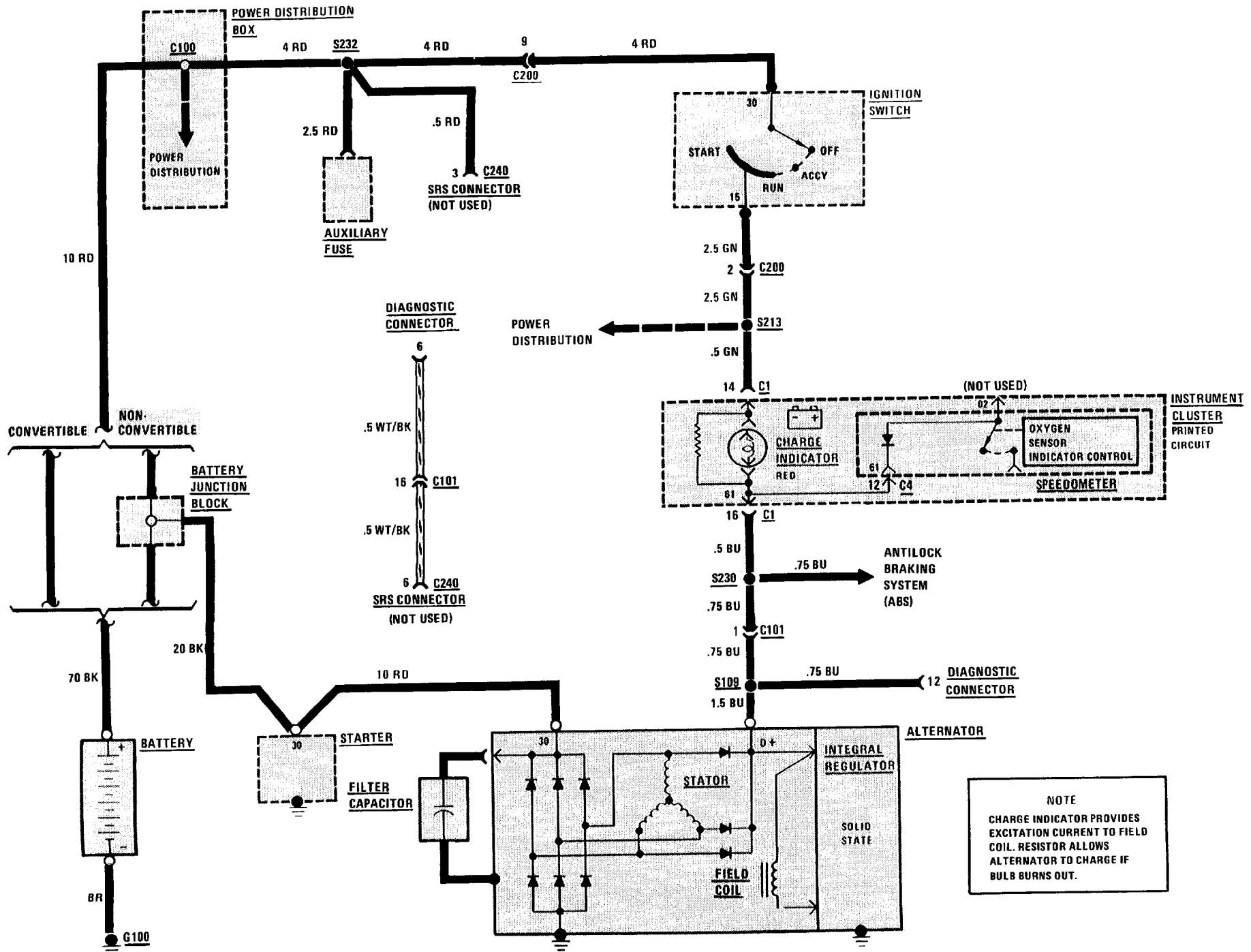
2.5i ENGINE CONVERTIBLE POWER DISTRIBUTION 0670-19

GROUND DISTRIBUTION (G300 AND G202)



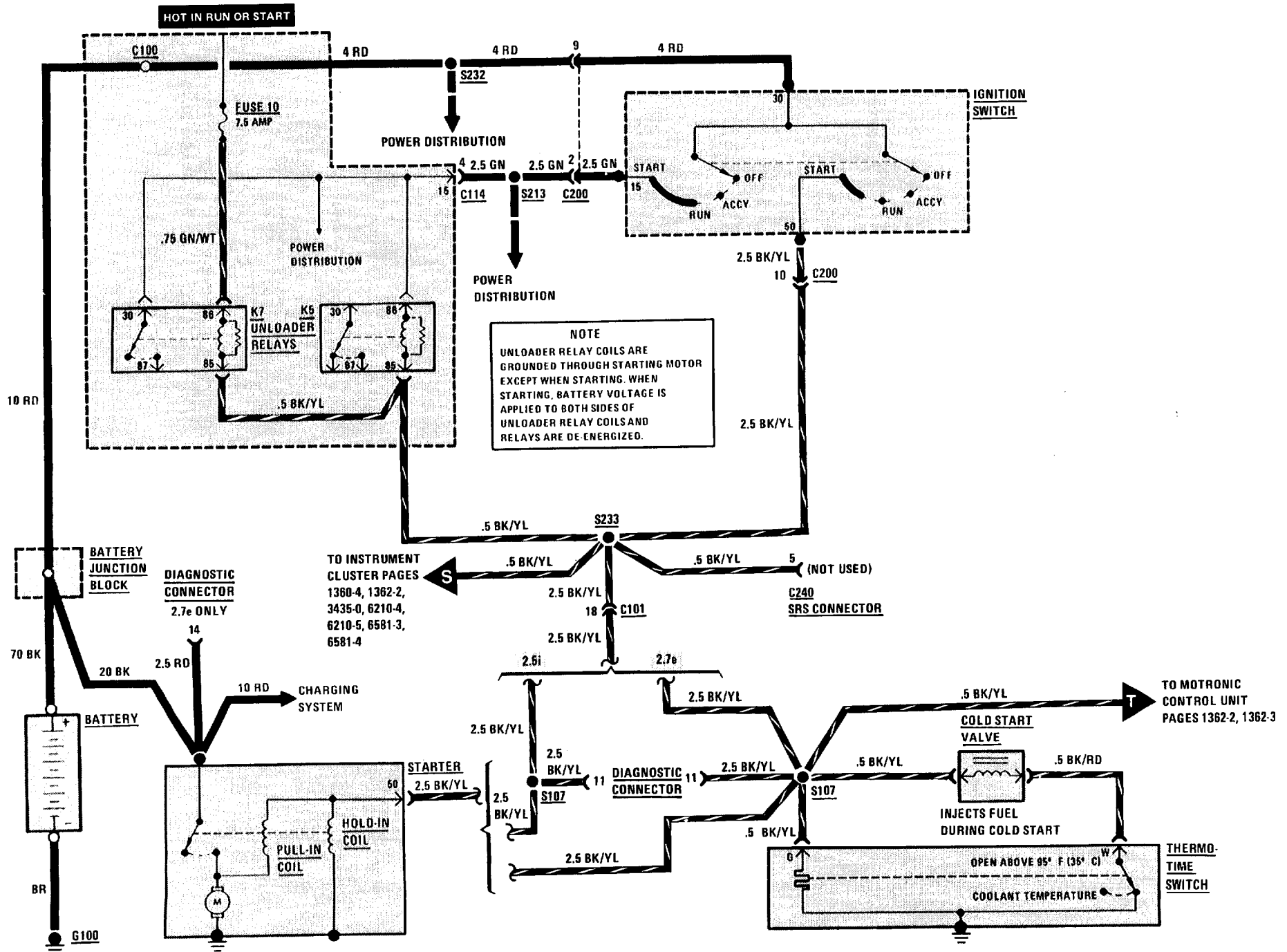
1230-0 CHARGE 2.7e ENGINE

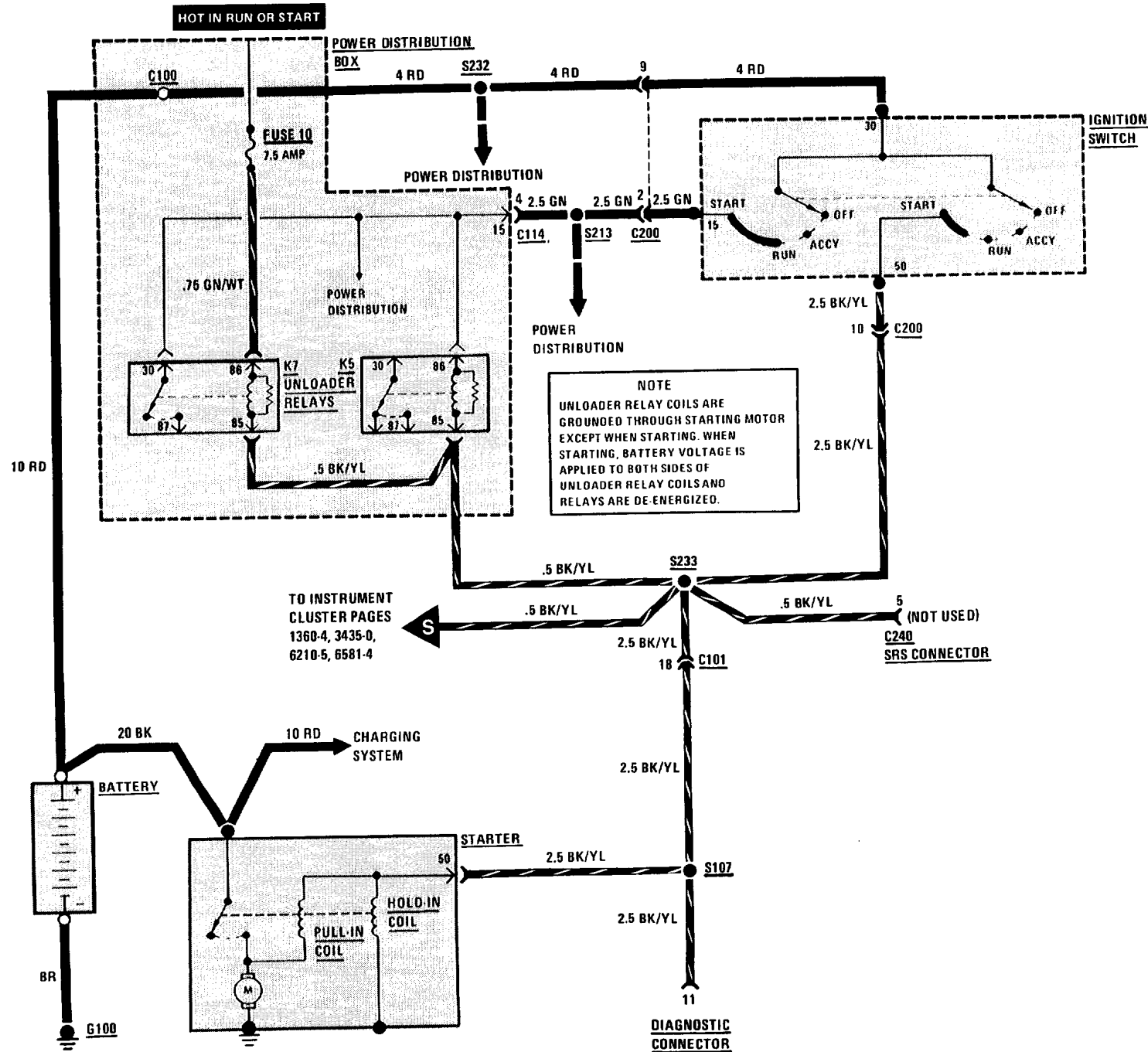




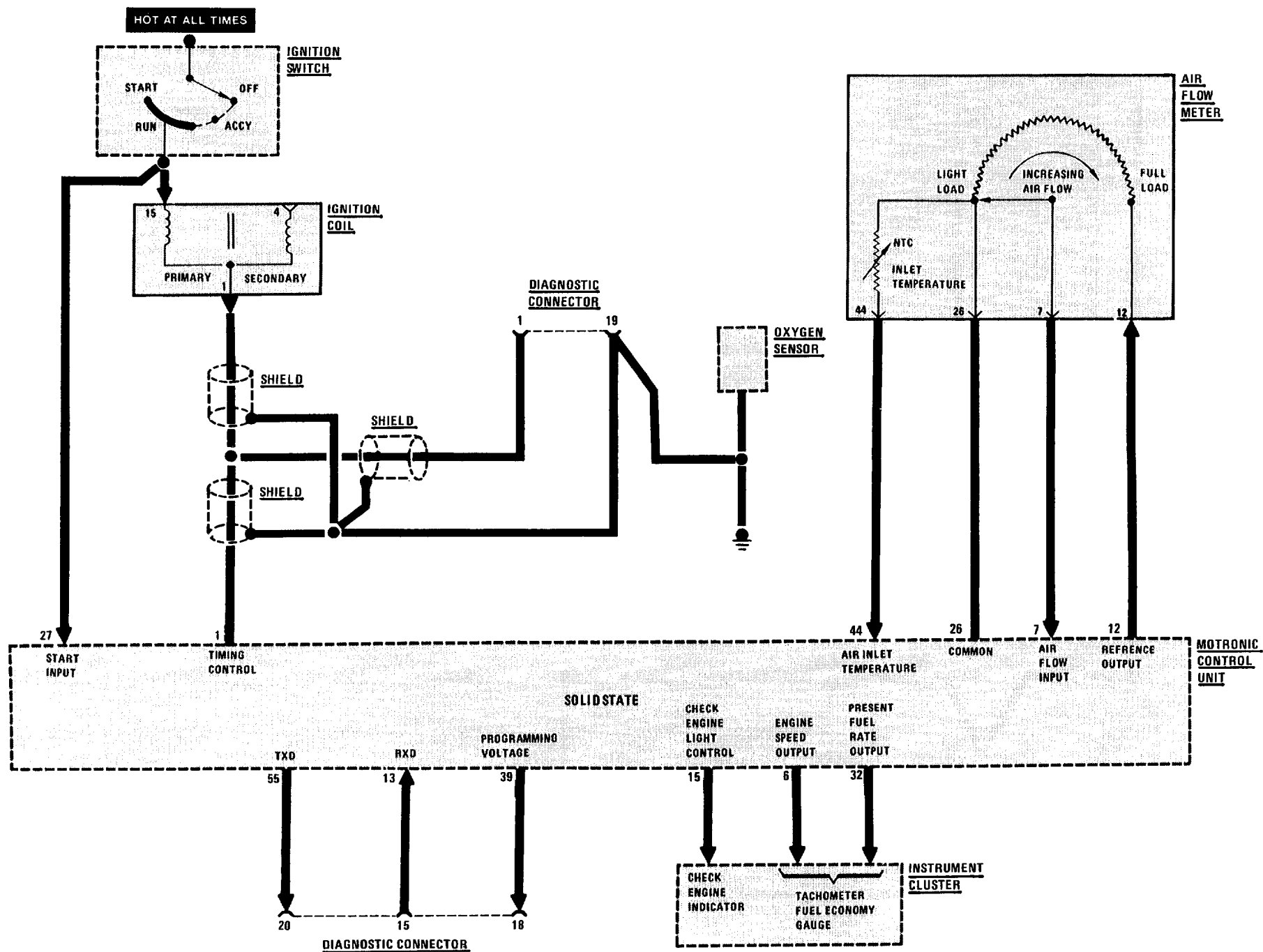
NOTE
 CHARGE INDICATOR PROVIDES
 EXCITATION CURRENT TO FIELD
 COIL. RESISTOR ALLOWS
 ALTERNATOR TO CHARGE IF
 BULB BURNS OUT.

MANUAL TRANSMISSION

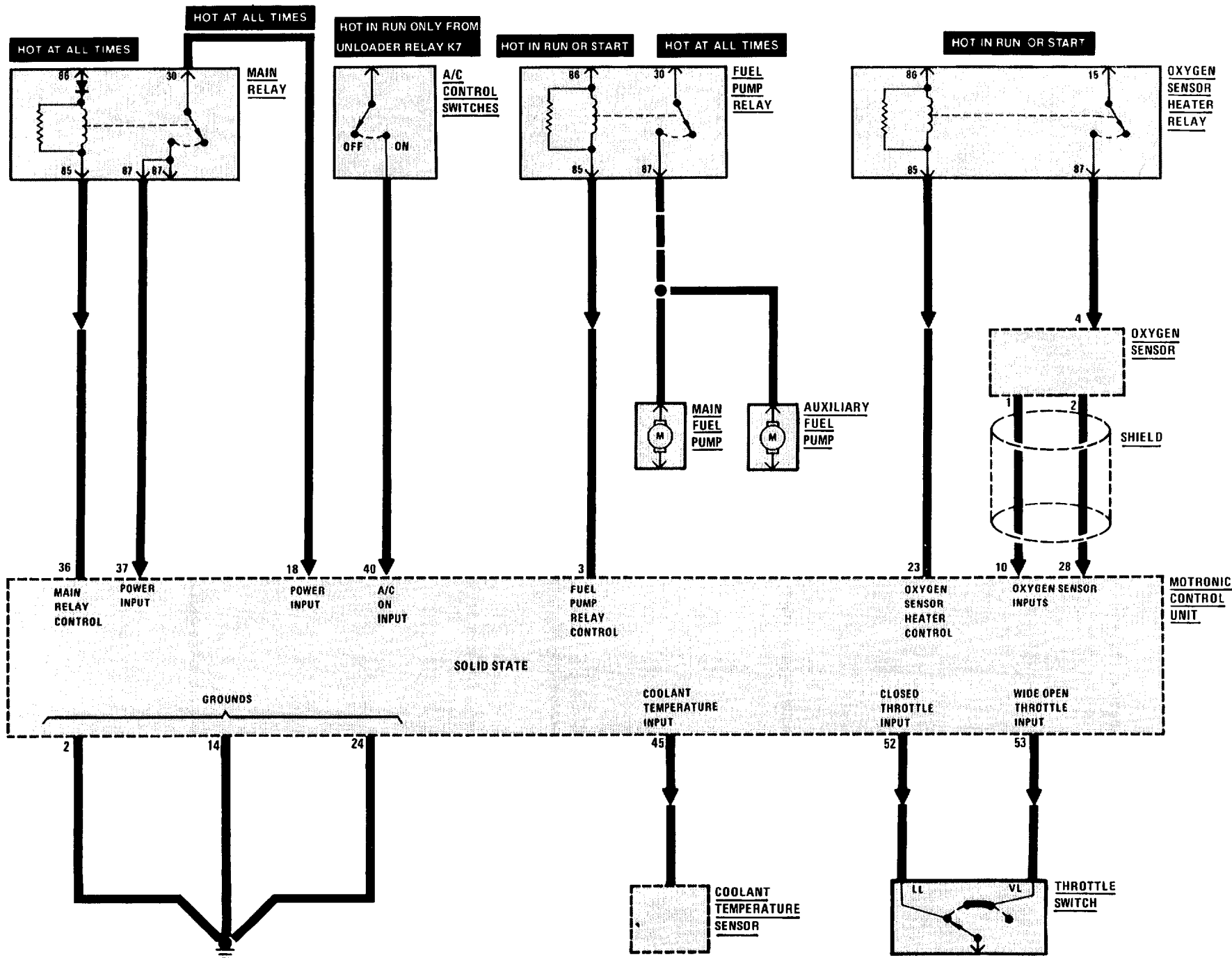




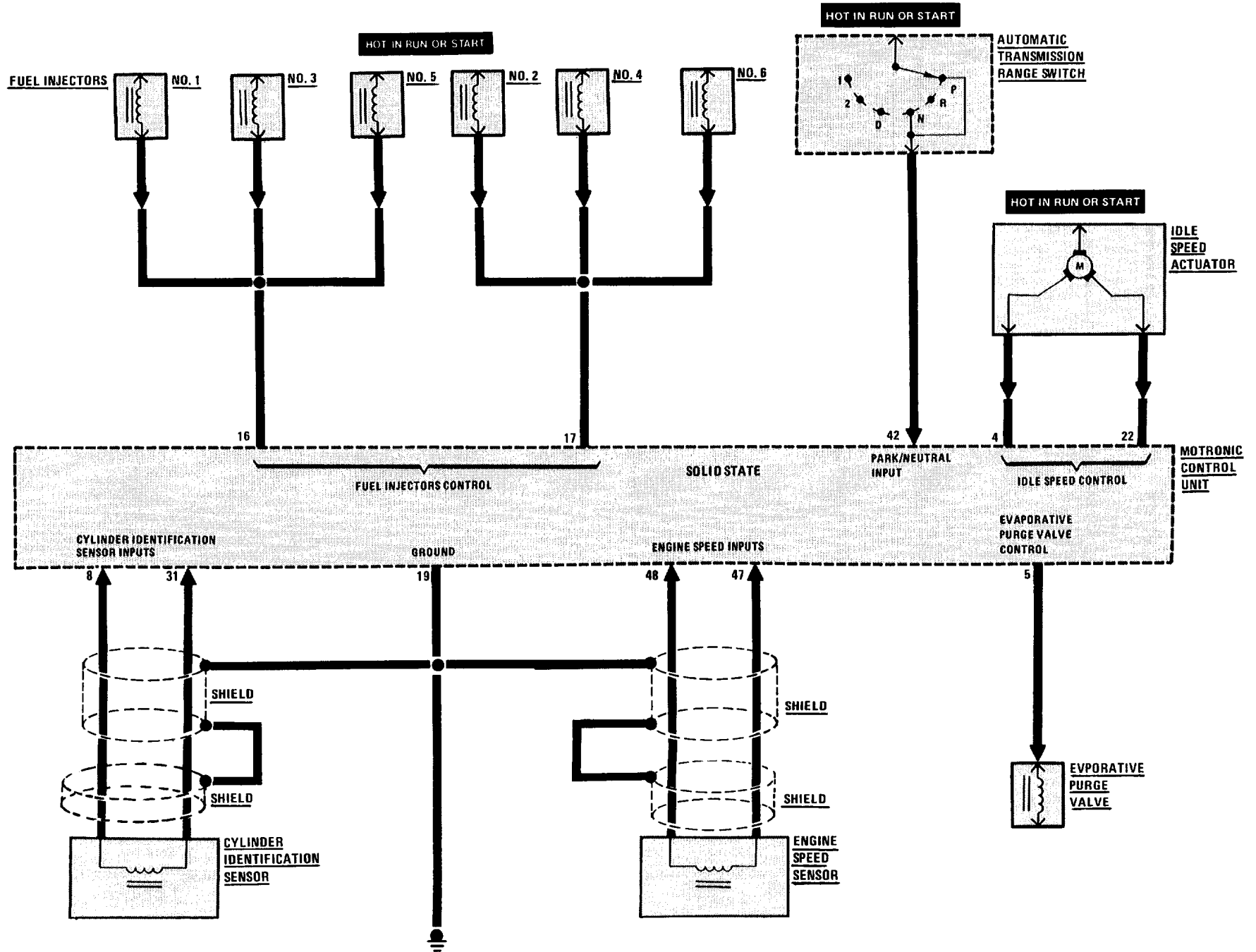
ENGINE BLOCK DIAGRAM

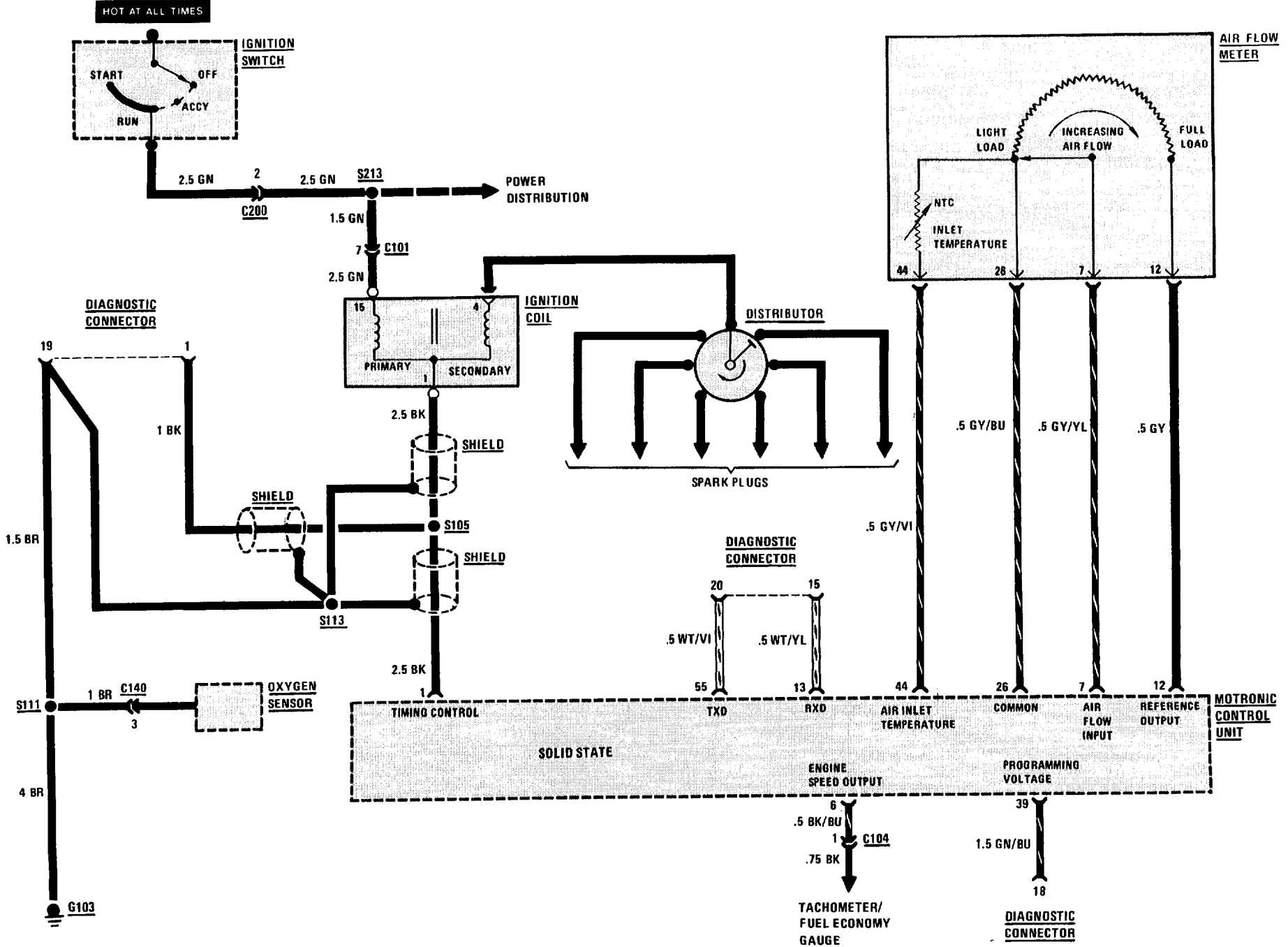


ENGINE BLOCK DIAGRAM

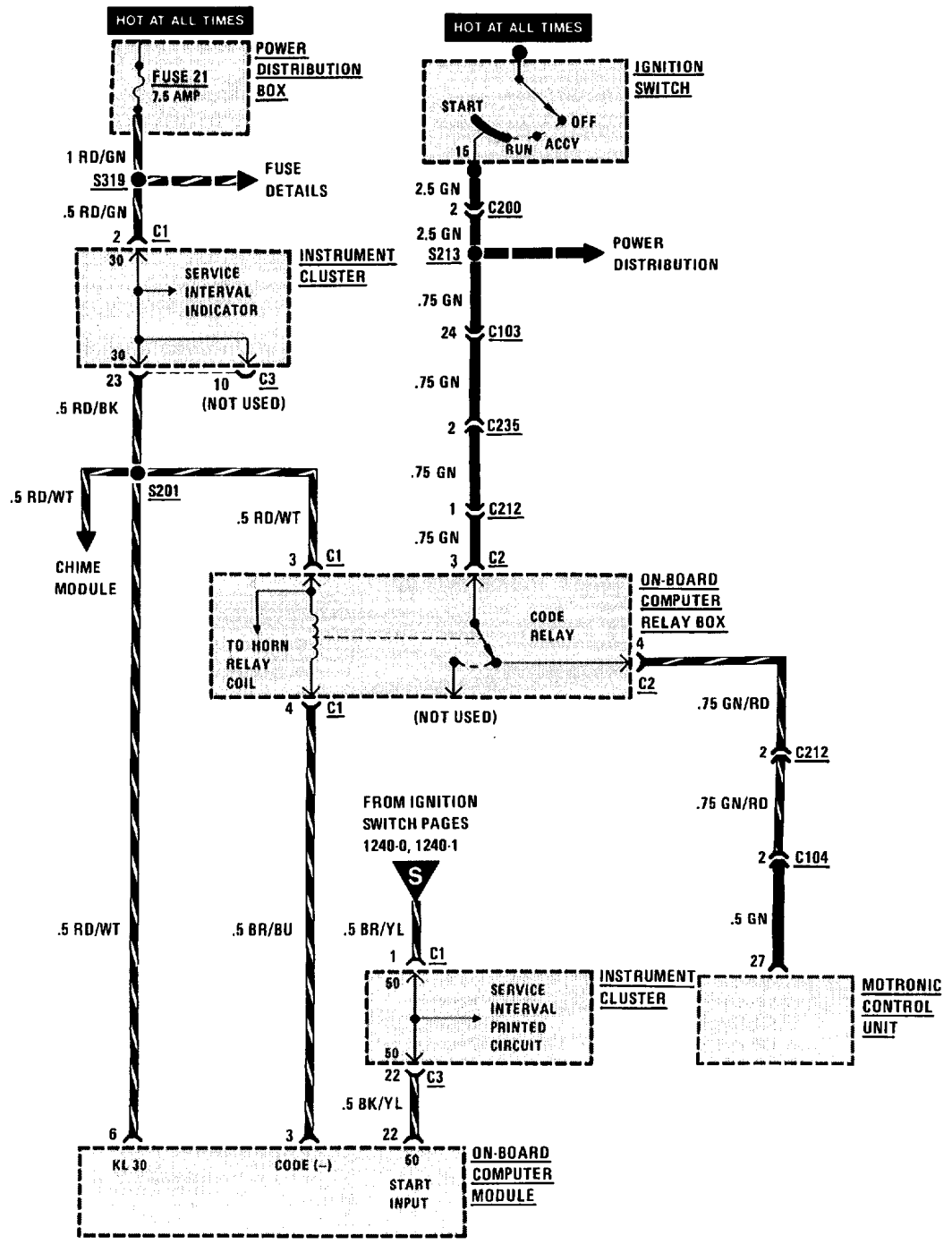


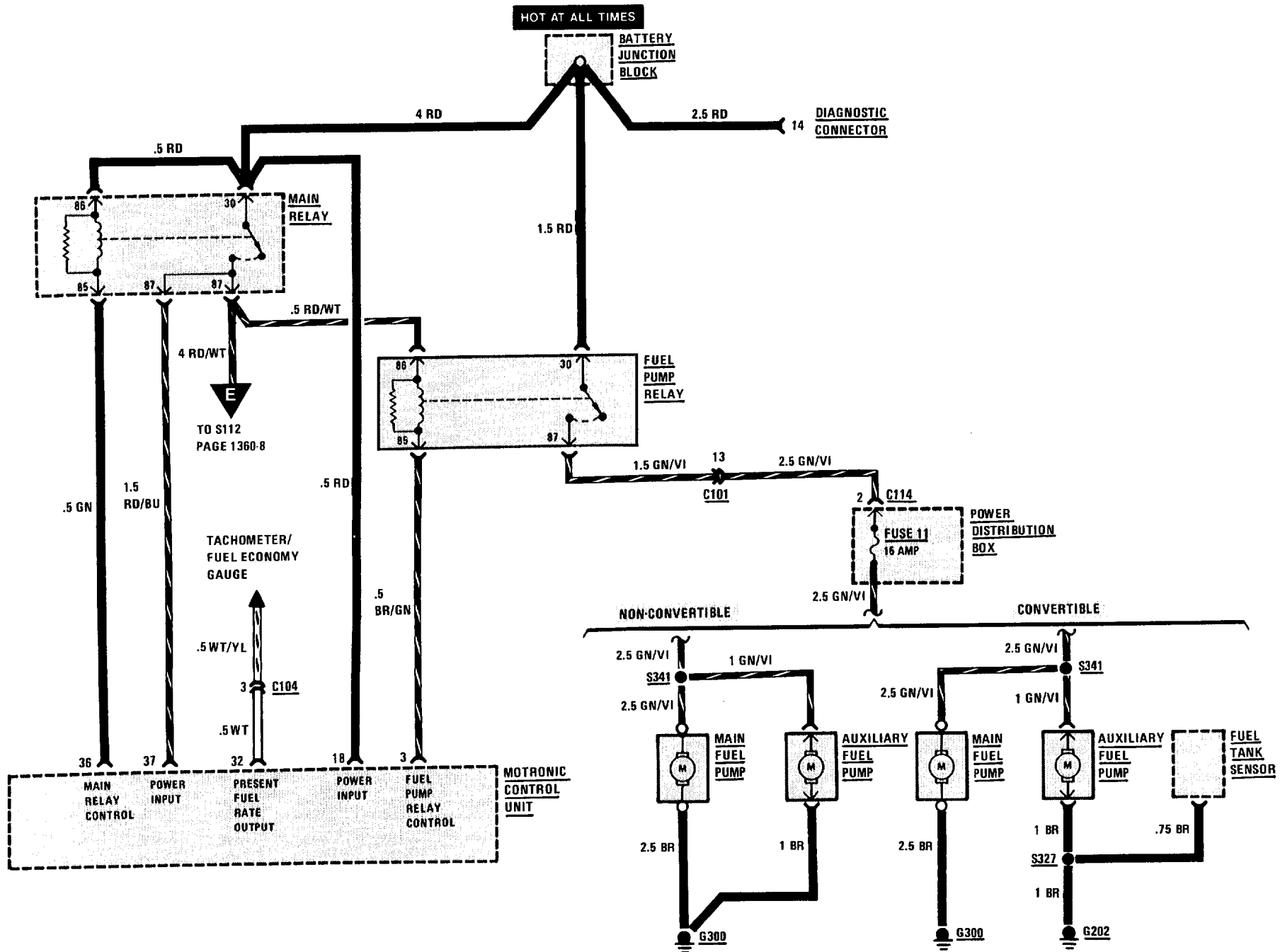
ENGINE BLOCK DIAGRAM



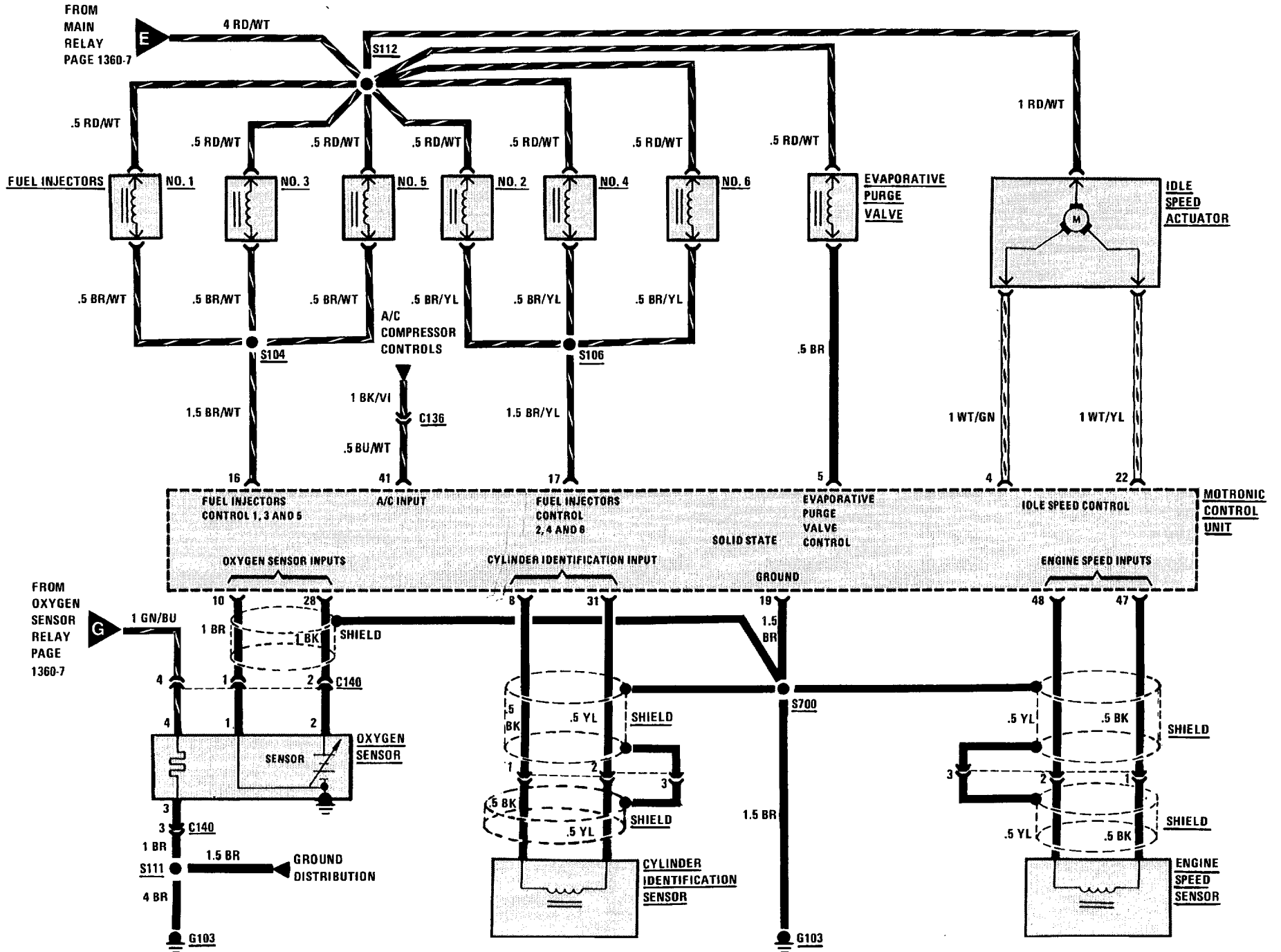


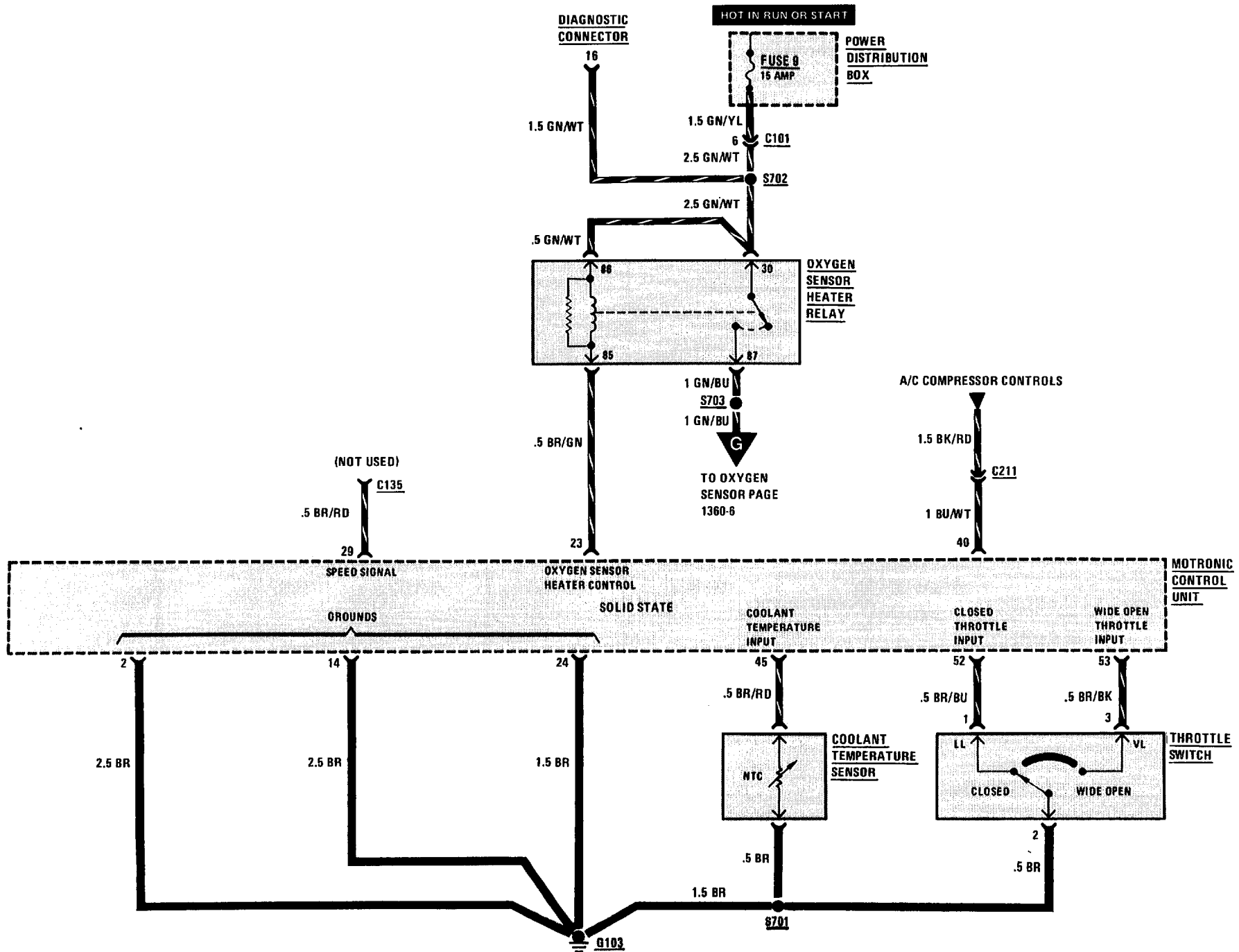
1360-4 INJECTION ELECTRONICS 2.5i ENGINE





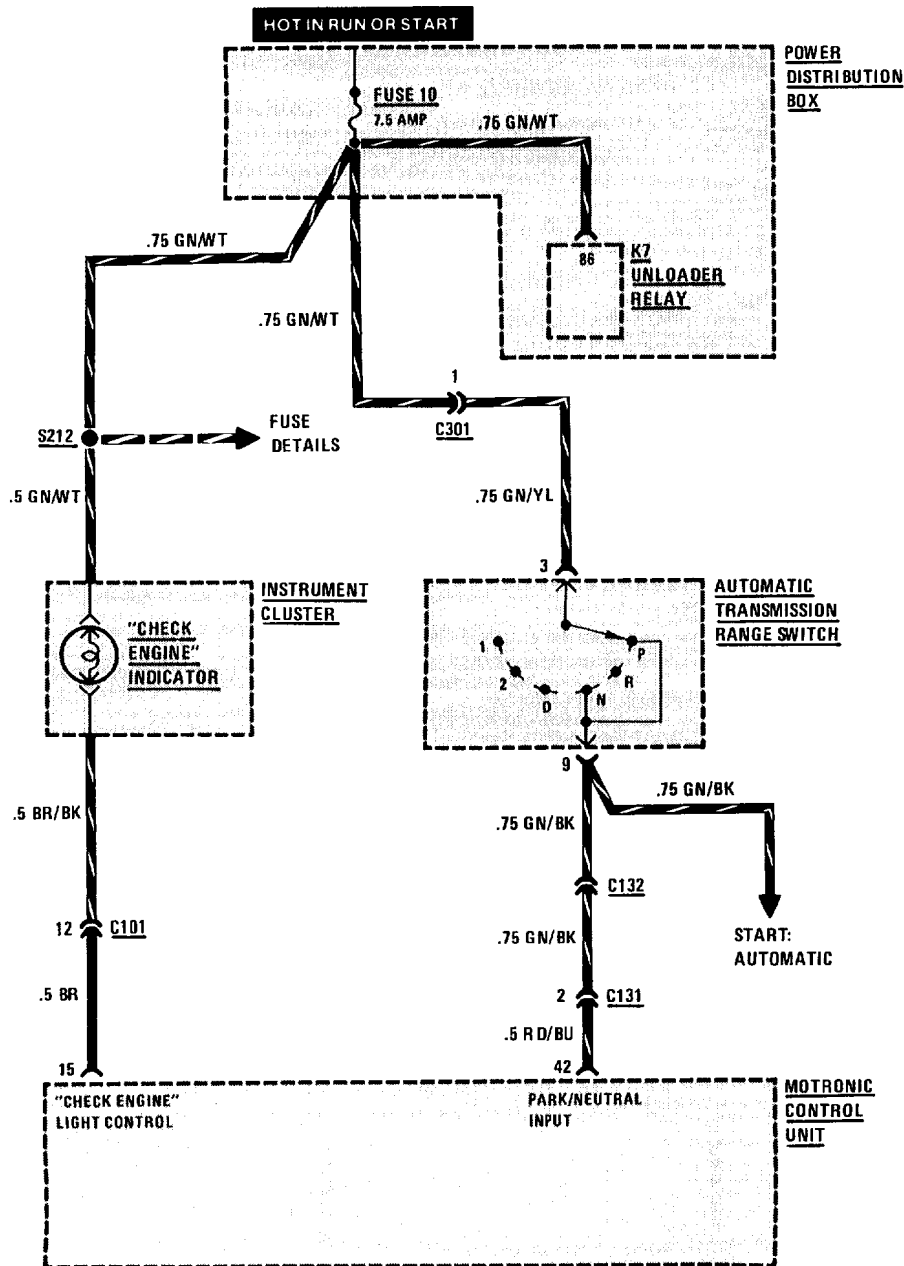
1360-6 INJECTION ELECTRONICS 2.5i ENGINE



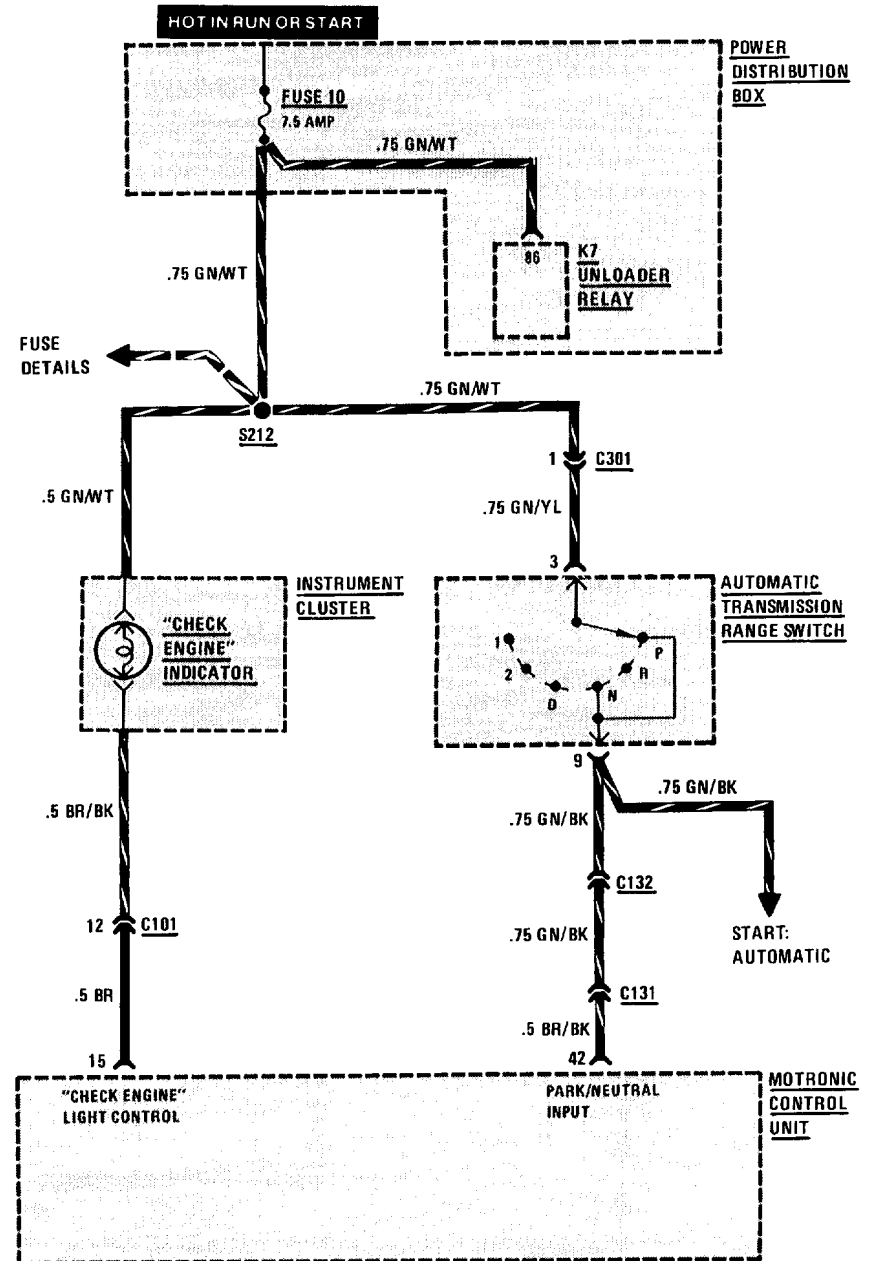


1360-8 INJECTION ELECTRONICS 2.5i ENGINE

NON-CONVERTIBLE



CONVERTIBLE



CIRCUIT OPERATION

The Motronic Control Unit uses signals from engine sensors and switches to regulate spark, fuel injection, and exhaust emissions.

The Control Unit receives input signals from the following components:

- Cylinder Identification Sensor
- Engine Speed Sensor
- Oxygen Sensor
- Coolant Temperature Sensor
- On-Board Computer Relay Box
- Ignition Switch
- Automatic Transmission Range Switch
- Throttle Switch

The Motronic Control Unit determines engine speed and piston position from the pulses transmitted by the Engine Speed Sensor.

The Oxygen Sensor supplies a varying voltage to the Control Unit. The voltage varies as the air/fuel ratio changes from lean to rich.

The Coolant Temperature Sensor is a NTC thermistor. The resistance value of the sensor decreases as the temperature of the engine coolant increases.

The Throttle Switch signals the Control Unit when the throttle is opened or closed.

When the On-Board Computer or Fault Code System is activated, the On-Board Computer Relay Box interrupts power to the Motronic Control Unit. The ignition and injection signals are disabled and the car will not start.

The Motronic Control Unit controls the following outputs:

- Main Relay
- Fuel Pump Relay
- Ignition Coil
- Evaporator Purge Valve
- Idle Speed Actuator
- Fuel Injectors
- Engine speed signal
- Oxygen Sensor Heater Relay

The Motronic Control Unit determines the ignition timing, dwell angles, and amount of fuel to be injected from the input sensors and switches.

SYSTEM DIAGNOSIS

- Check that the Starter System is in perfect condition (battery charged, starter and ignition interlock are good).
- Check that the ground connections between the body and the engine wire harness are good.
- Check that engine is within specifications mechanically (timing, compression, etc.).

Connect the Service Tester and perform the Diagnostic Check (0160A-00) in 1988 E32 "7" Series ETM.

- If a DME Fault Code is present, print out the DME Codes and continue.

- If a Momentary (intermittent) Fault Code is displayed, the normal diagnosis cannot be followed. Use the following special procedure.
 - a. Visually inspect all related wiring.
 - b. Print out conditions recorded by the Service Tester (engine speed, engine temperature, etc.).
 - c. Try to reproduce the conditions recorded by running the engine or driving the vehicle.
- Use the Service Tester to read the Fault Codes again.
- If the Fault Code is now shown as Actual, go to the Symptom Table.
- If the Fault Code is again listed as Momentary, check the wires. Replace the component related to that Fault Code.
- If the Fault Code is not present, but customer reports a problem, replace the component related to that Fault Code.
- If any of the following DME Fault Codes are present, follow the diagnosis given on the Tester Display.

DME Fault Codes:
01, 04, 22, 29, 37, 44, 45, 47, 52, and 53.
- If any other DME Fault code is present, refer to the Symptom Table.

Caution

Remove or install the Motronic Control Unit only when the Ignition Switch is OFF. Probe the Control Unit electronic connections only with the Universal Adapter connected.

Symptom Table

- DME Fault Code 05 Evaporative Purge Valve Is Present. Refer to A, page 1360A-1.
- DME Fault Code 07 Air Flow Meter Is Present. Refer to B, page 1360A-1.
- DME Fault Code 08 Cylinder Identification Sensor Is Present. Refer to C, page 1360A-1.
- DME Fault Code 10 Oxygen Sensor (Lambda Control System) Is Present. Refer to D, page 1360A-2.
- DME Fault Code 16 Fuel Injectors 1-3-5 Is Present. Refer to E, page 1360A-2.
- DME Fault Code 17 Fuel Injectors 2-4-6 Is Present. Refer to F, page 1360A-3.
- DME Fault Code 28 Oxygen Sensor Is Present. Refer to G, page 1360A-3.

A. DME Fault Code 05 Evaporative Purge Valve Is Present

Fault Code 05 sets when the Motronic Control Unit detects a short at terminal 5.

A1. Disconnect the Evaporative Purge Valve connector. Connect a voltmeter between RD/WT and BR wires. Turn Ignition Switch to RUN. Simulate Output (01-300-305).

- If voltmeter cycles between battery and 0 volts, replace Evaporative Purge Valve.
- If voltmeter displays 0 volts continuously, leave voltmeter connected and go to A2.

- If voltmeter displays battery voltage continuously, check/repair BR wire for a short to ground. If wire is OK, replace the Motronic Control Unit.

A2. Remove Motronic Control Unit connector. Connect Universal Adapter to wire harness of connector. Connect a fused jumper between terminal 5 of Universal Adapter and ground.

- If voltmeter displays battery voltage, replace Motronic Control Unit.
- If voltmeter displays 0 volts, check/repair RD/WT wires for an open.

B. DME Fault Code 07 Air Flow Meter Is Present

Fault Code 07 sets when the Motronic Control Unit detects a short or an open at terminal 7.

B1. Disconnect Air Flow Meter connector. Turn the Ignition Switch to RUN and measure the following voltages at connector.

Measure Between	Correct Voltage
GY wire and Ground	Approximately 5 volts
GY and GY/YL wires	Approximately 5 volts
GY and GY/BU wires	Approximately 5 volts

- If any voltage is incorrect, check/repair associated wires and connections. If wires and connections are OK, replace Motronic Control Unit.
- If all voltages are correct, go to B2.

B2. Reconnect Air Flow Meter connector. Remove cover from connector. Measure voltage between GY/YL wire and ground while moving the intake flap manually.

- If voltage varies between approximately 0.5 and 4.5 volts, check/repair GY/YL wire for an open. If wire is OK, replace Motronic Control Unit.
- If voltage does not vary between 0.5 and 4.5 volts, check/repair GY/YL wire for a short to ground. If wire is OK, repair/replace Air Flow Meter.

C. DME Defect Code 08 Cylinder Identification Sensor Is Present

Defect Code 08 sets when the Motronic Control Unit detects an open, short to ground, or a short to battery at terminal 8.

C1. Disconnect Control Unit connector. Measure the following resistance values at connector.

Measure Between	Correct Resistance	If Resistance Is Incorrect
Terminal 8 and Ground	Infinite	Check/repair YL and BK wires for a short to ground
Terminals 8 and 31	Less than 1 ohm	Check/repair YL and BK wires for an open. If wires are OK, replace Cylinder Identification Sensor

- If all resistances are correct, go to C2.

C2. Replace Cylinder Identification Sensor. Clear Fault Memory (01-999). Run engine.

D. DME Fault Code 10 Oxygen Sensor (Lambda Control System) Is Present

NOTE: If other DME Fault Codes are present, repair them first before continuing with procedure.

Fault Code 10 sets when the fuel mixture stays beyond the given parameters of the Lambda Control System.

The display on the Service Tester reads "Short to ground" or "Short to battery."

"Short to ground" indicates that the system is operating very rich.

"Short to battery" indicates that the system is operating very lean.

D1. Clear Fault Code 10 from memory by pushing (999).

- Run engine under varying load conditions. If Fault Code 10 sets again, proceed with step D2.

D2. If Fault Code 10 is present, check the following common items.

Short To Ground (Running Rich)	Short To Battery (Running Lean)
Engine oil diluted with fuel	Air leaks at:
Operation of purge valve	- Crankcase vent hose
Charcoal canister	- Idle valve hoses
DME Main Relay	- Rubber boot between AFM & throttle housing
Fuel Pump Relay	- Sealing of injector rubber rings at intake manifold
Stuck open injectors	- Clogged injectors
Fuel Pressure Regulator	- Insufficient Fuel Pressure Regulator, fuel pump, pinched fuel hoses (extremely clogged fuel filter)
Pull off the vacuum hose from the Fuel Pressure Regulator	- Bad fuel (water in fuel)
If you find fuel inside the hose, the diaphragm is leaking	
Replace the Fuel Pressure Regulator	

E. DME Fault Code 16 Fuel Injectors 1-3-5 Is Present

Fault Code 16 sets when Motronic Control Unit detects an open, short to battery, or short to ground.

E1. Disconnect Control Unit connector. Disconnect the connectors from fuel injectors 1, 3, and 5. Turn the Ignition Switch to RUN. Measure the following voltages at the wire harness of all fuel injector connectors.

Measure Between	Correct Voltage
1 (RT/WT) and Ground	Battery
1 (RT/WT) and 2 (BR/WT)	0 volts

- If voltages are correct, go to E2.
- If any voltage is incorrect, check/repair wires.

E2. Check BR/WT wires from the fuel injector connectors to Control Unit terminal 16 for continuity. Repair as necessary.

- If wires are OK, go to E3.

E3. Reconnect fuel injector connectors. Connect Universal Adapter to wire harness of the Control Unit connector. Connect a fused jumper between terminal 16 of Universal Adapter and ground.

- If all three fuel injector valves click, remove fused jumper and replace the Motronic Control Unit.
- If one or more fuel injector valves does not click, remove fused jumper and replace the defective fuel injector.

**F. DME Fault Code 17 Fuel Injectors
2-4-6 Is Present**

Fault Code 17 sets when the Motronic Control Unit detects an open, short to battery, or short to ground. Refer to Fuel Injectors 1-3-5, Symptom E. See schematic for correct terminals and wires.

**G. DME Fault Code 28 Oxygen Sensor
Is Present**

Fault Code 28 sets when the Motronic Control Unit detects an open, short to battery, or short to ground at terminal 28.

G1. Disconnect Motronic Control Unit connector. Connect Universal Adapter between Control Unit and wire harness of connector. Turn the Ignition Switch to RUN. Measure the following voltages at Universal Adapter.

Measure Between	Correct Voltage
Terminal 28 and Ground	Approximately 0.45 volts
Terminals 28 and 10	Approximately 0.45 volts

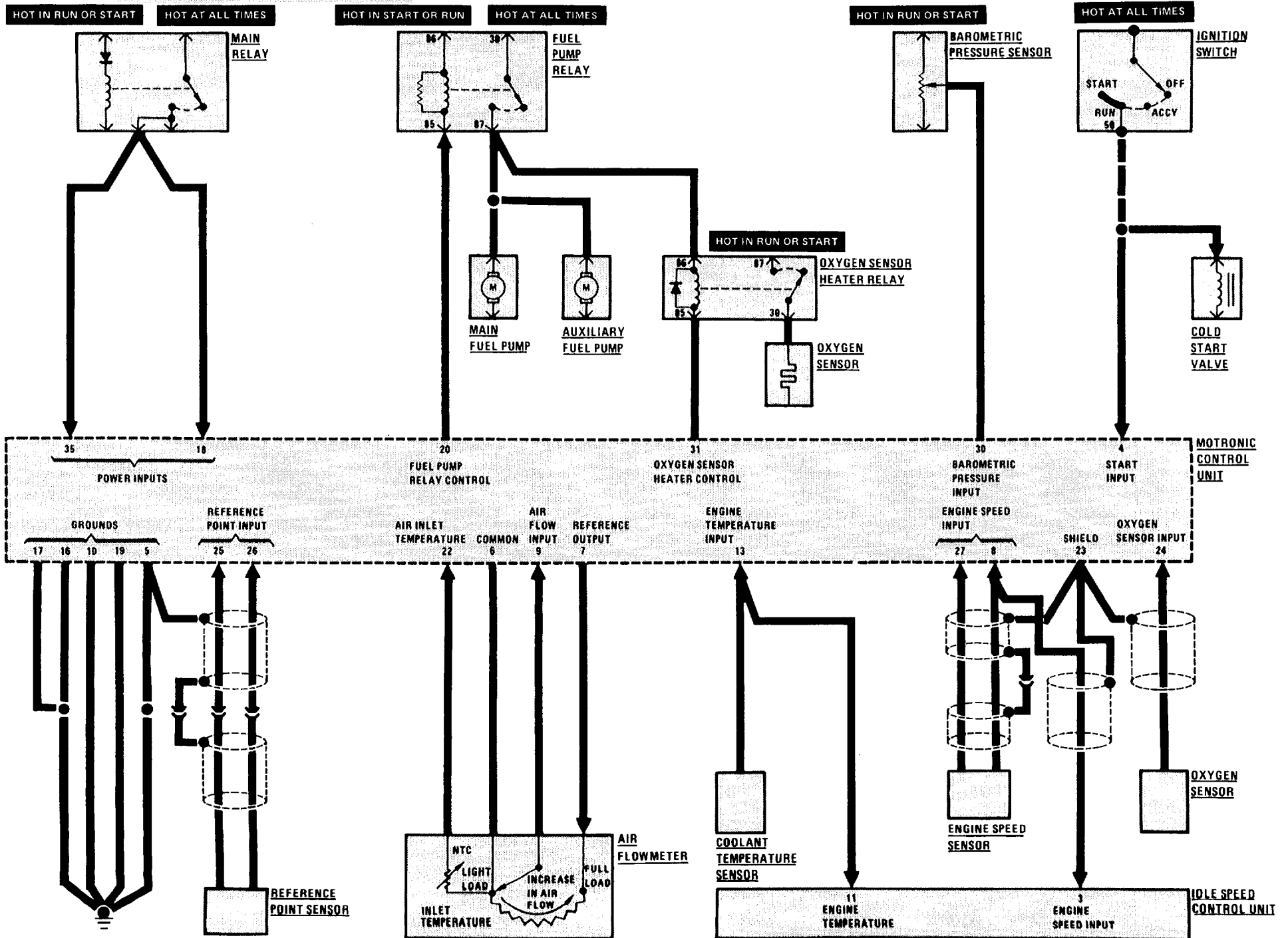
- If voltages are correct, go to G2.
- If any voltage is incorrect, check/repair wiring and Oxygen Sensor. If wiring is OK, replace Motronic Control Unit.

G2. Replace Oxygen Sensor. Start engine and warm to operating temperature. Monitor Input Status (01-100-128).

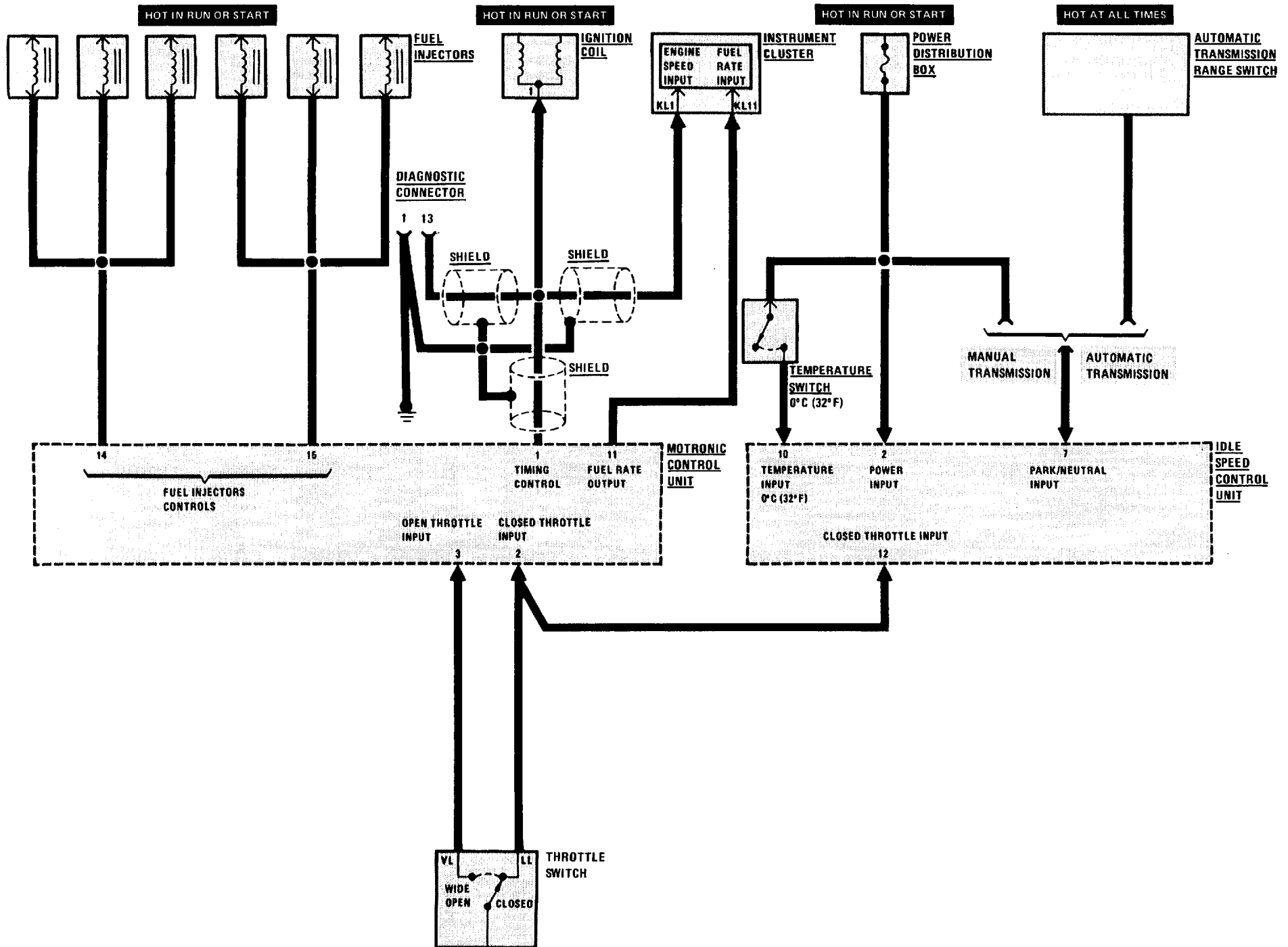
- If tester displays Oxygen Sensor Control Active, the sensor was bad. Retain the new sensor.
- If tester displays No Oxygen Sensor Control function, replace Motronic Control Unit. Remove Universal Adapter.

1362-0 INJECTION ELECTRONICS 2.7e ENGINE

ENGINE BLOCK DIAGRAM

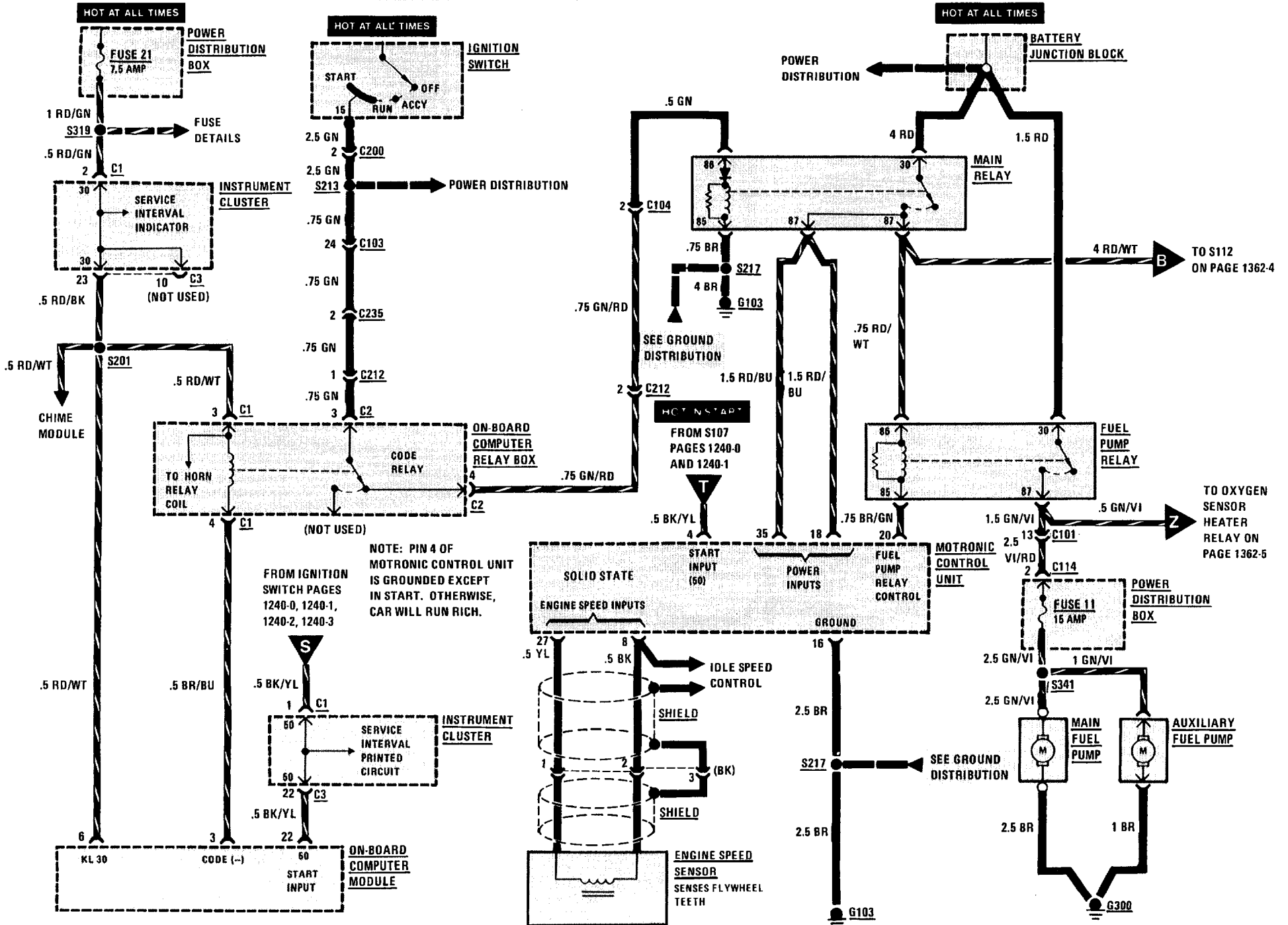


ENGINE BLOCK DIAGRAMS

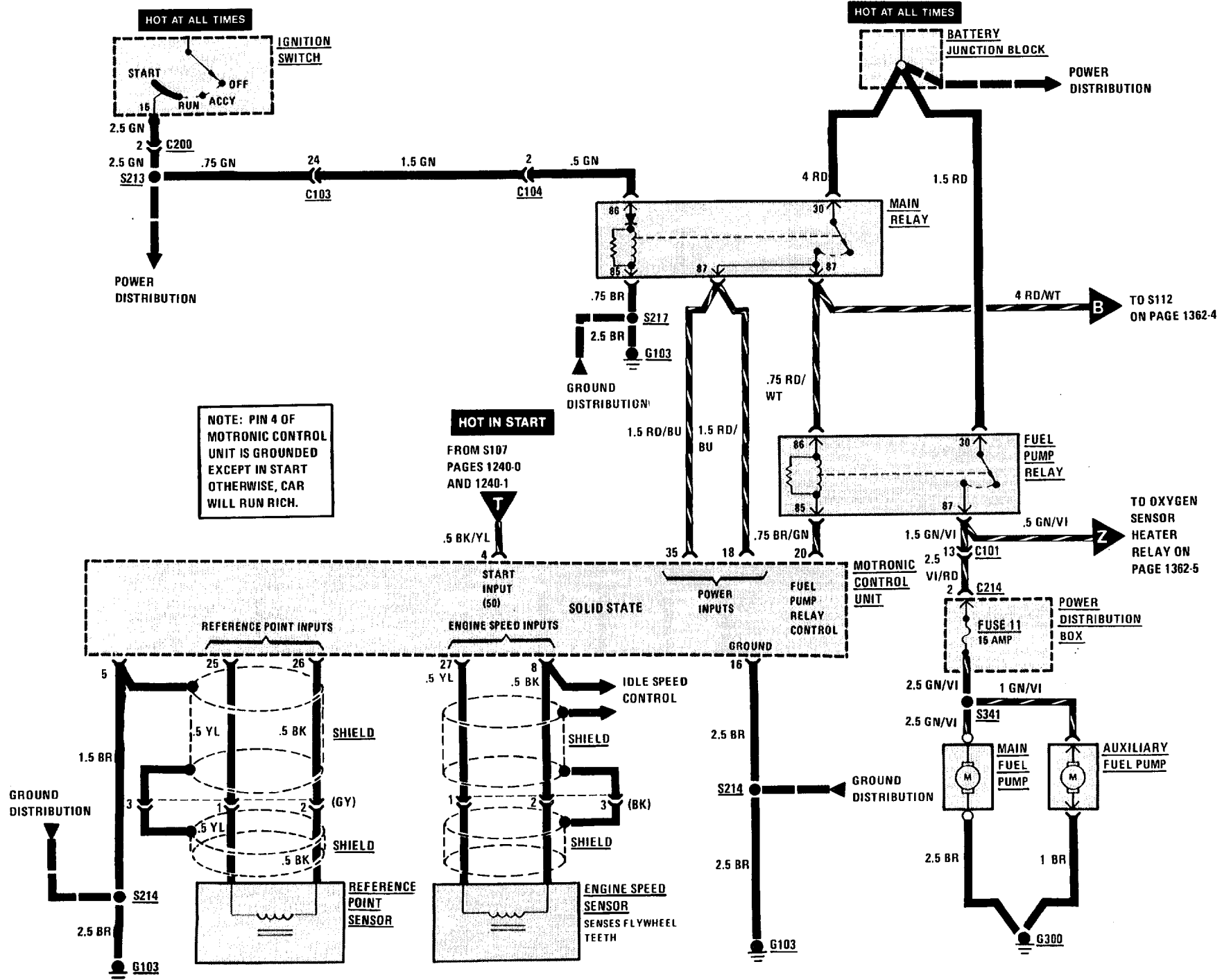


1362-2 INJECTION ELECTRONICS 2.7e ENGINE

FUEL DELIVERY WITH ON-BOARD COMPUTER

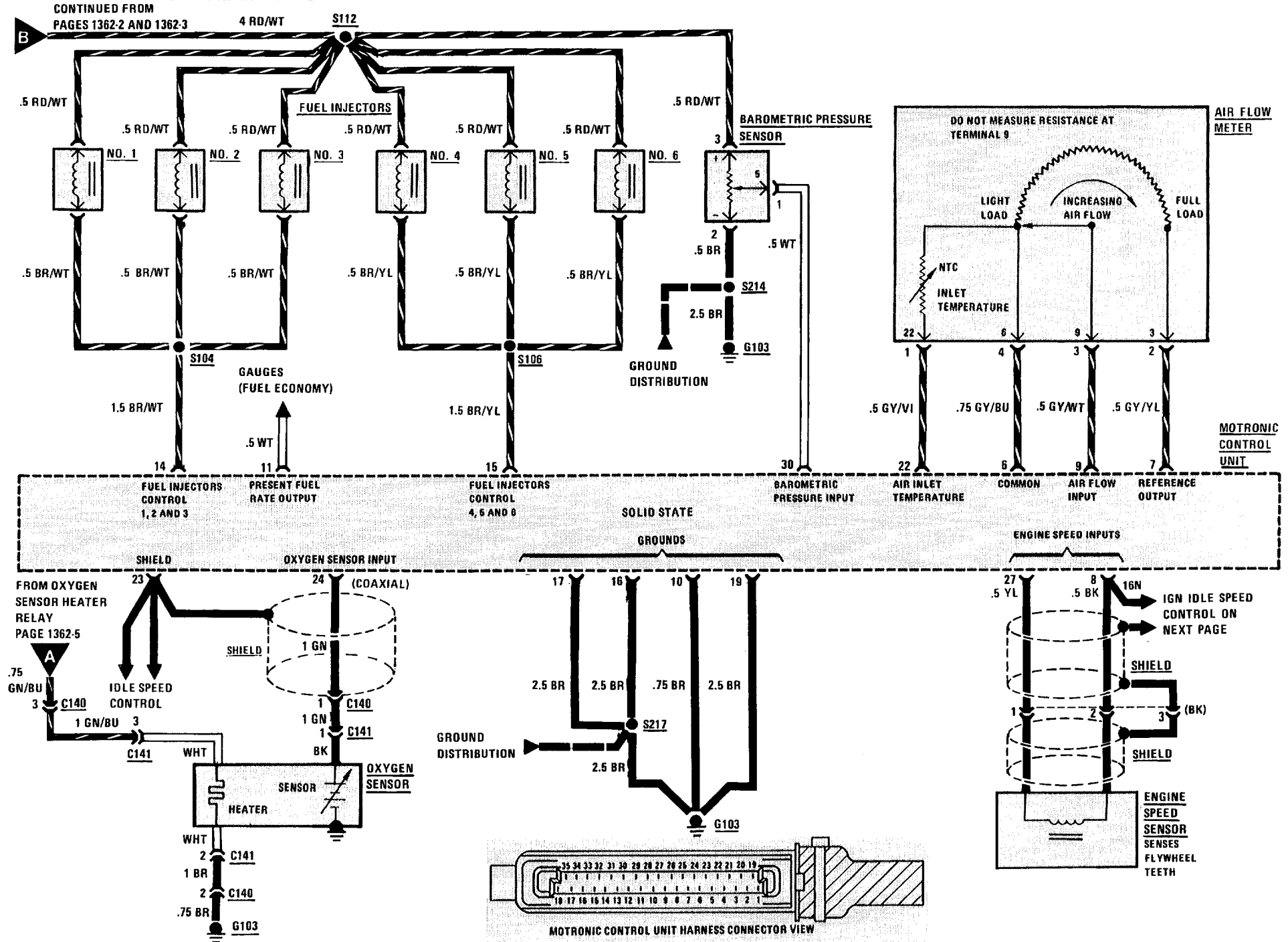


FUEL DELIVERY WITH MULTIFUNCTION CLOCK

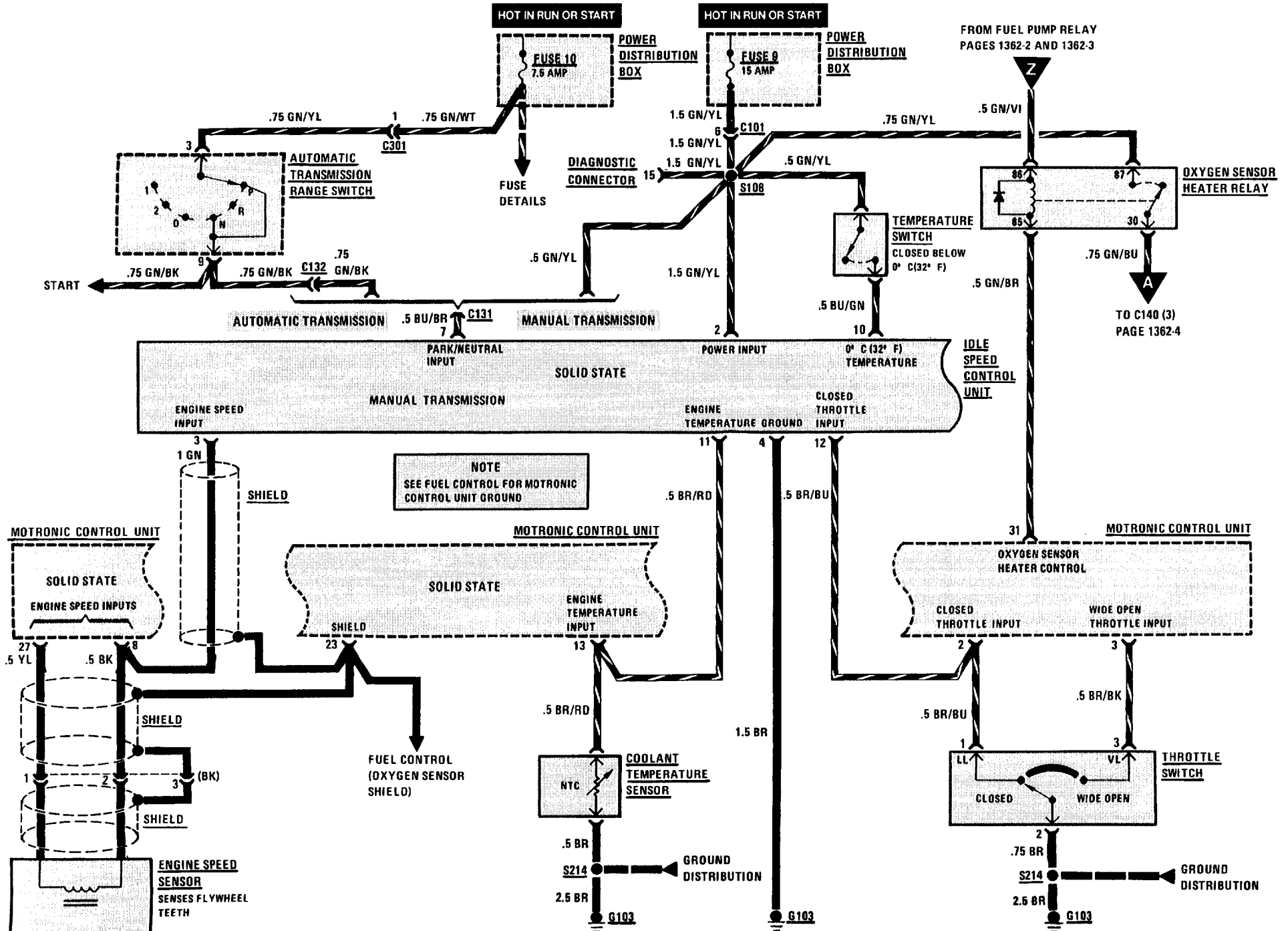


1362-4 INJECTION ELECTRONICS 2.7e ENGINE

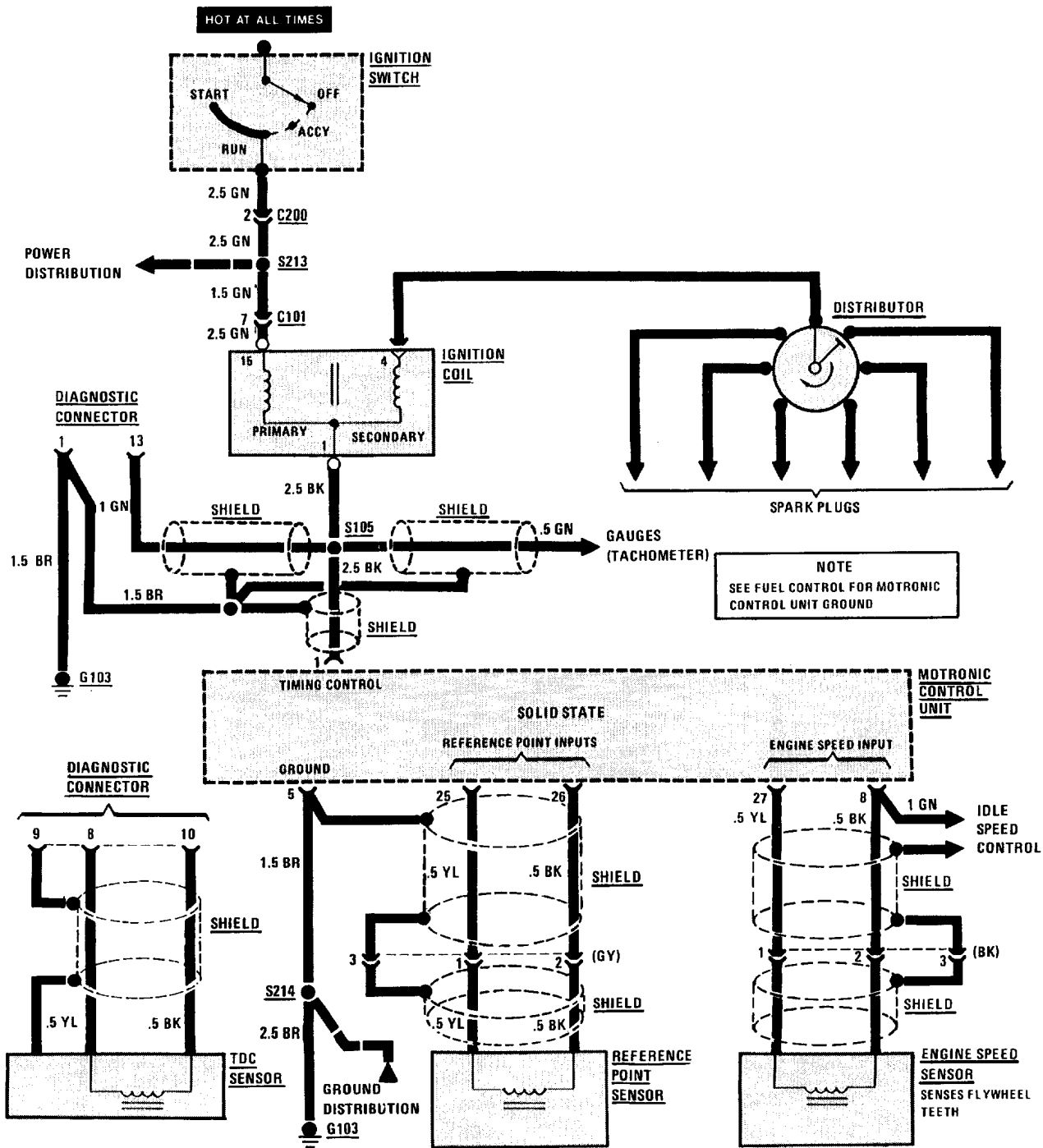
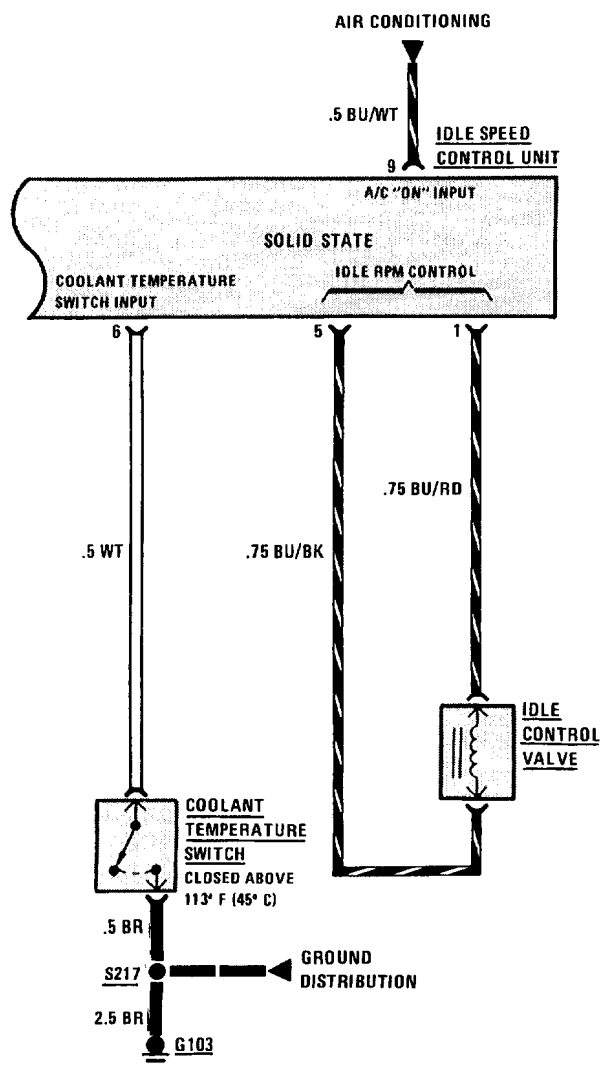
FUEL DELIVERY



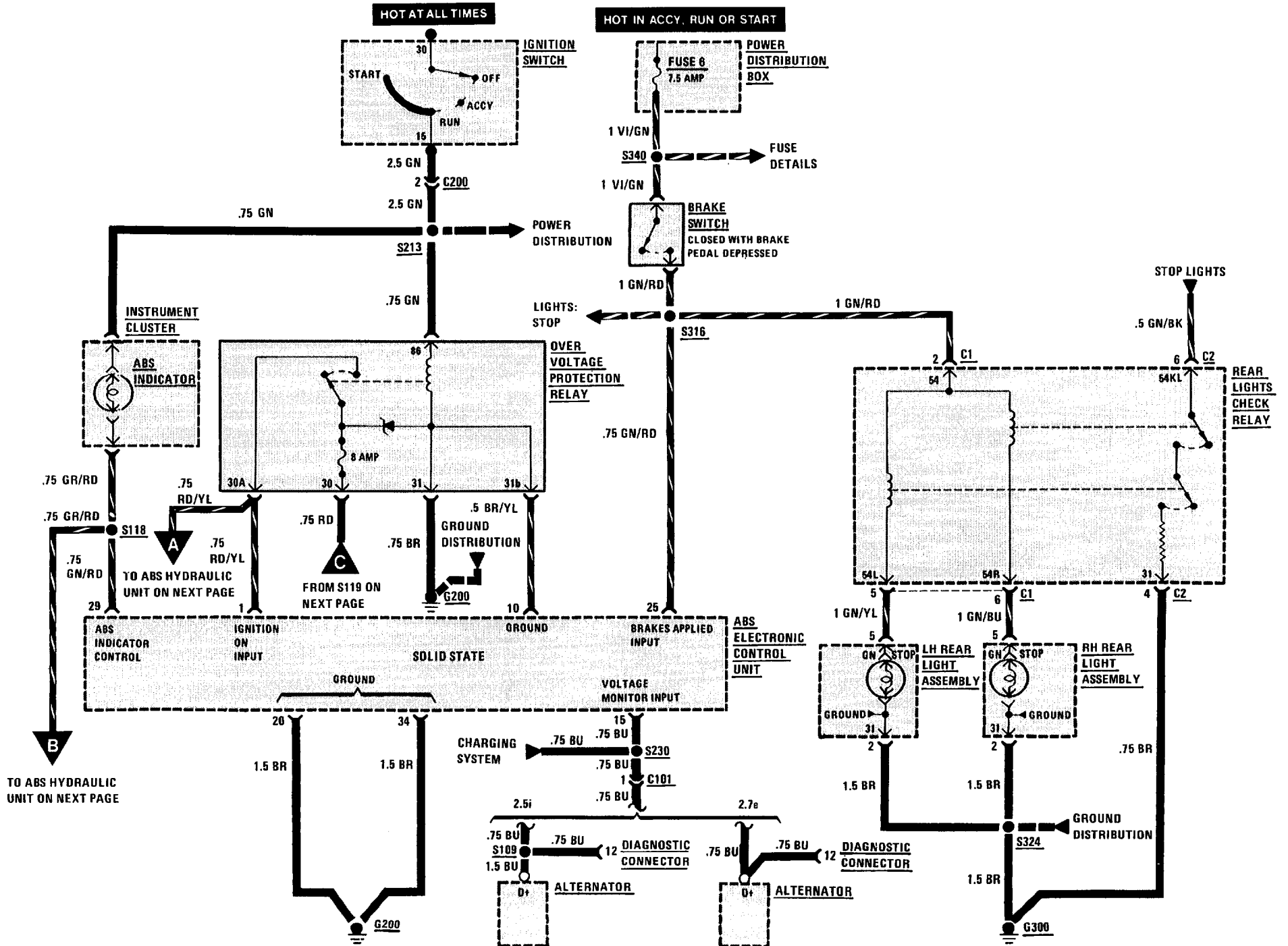
IDLE SPEED CONTROL

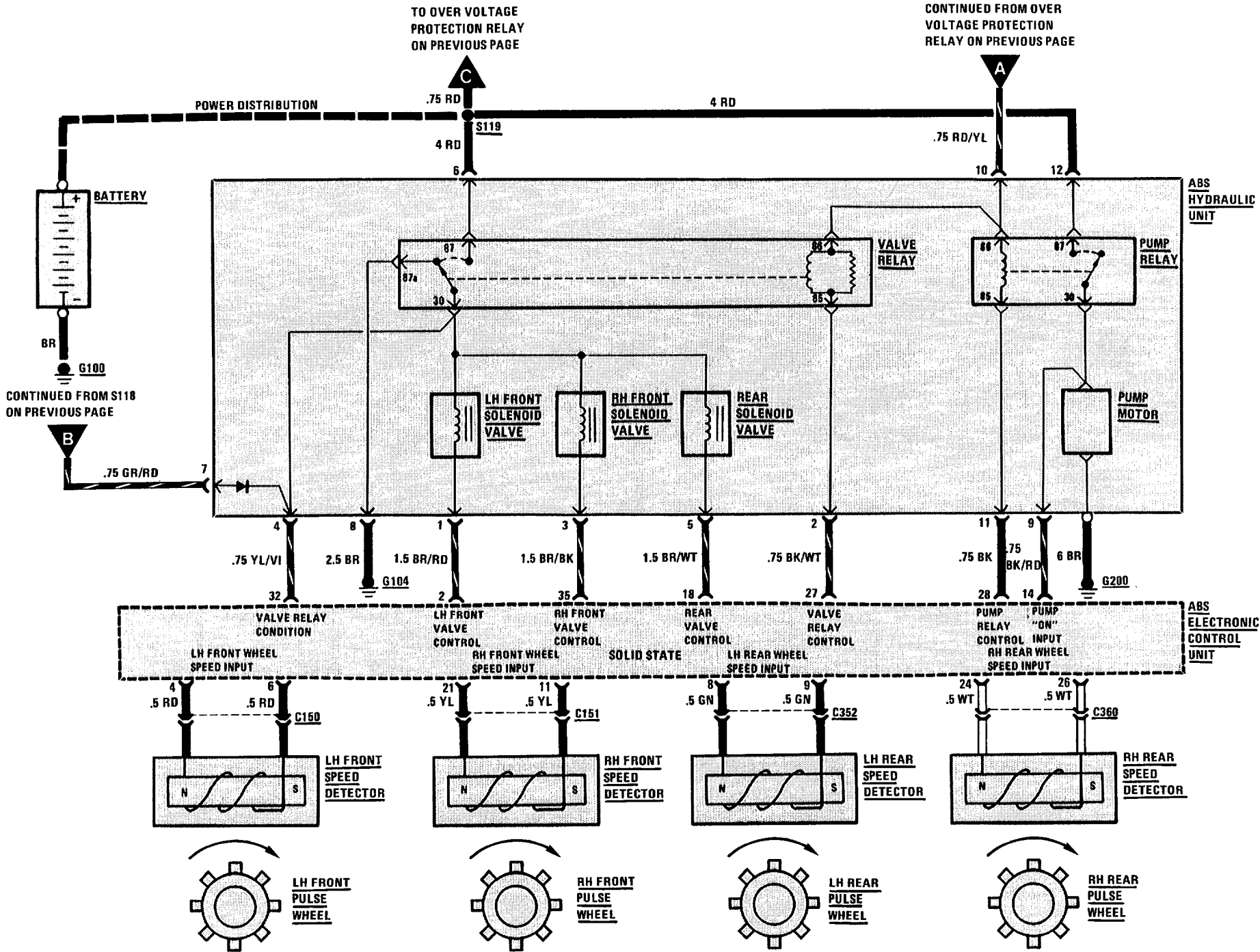


IDLE SPEED CONTROL/IGNITION



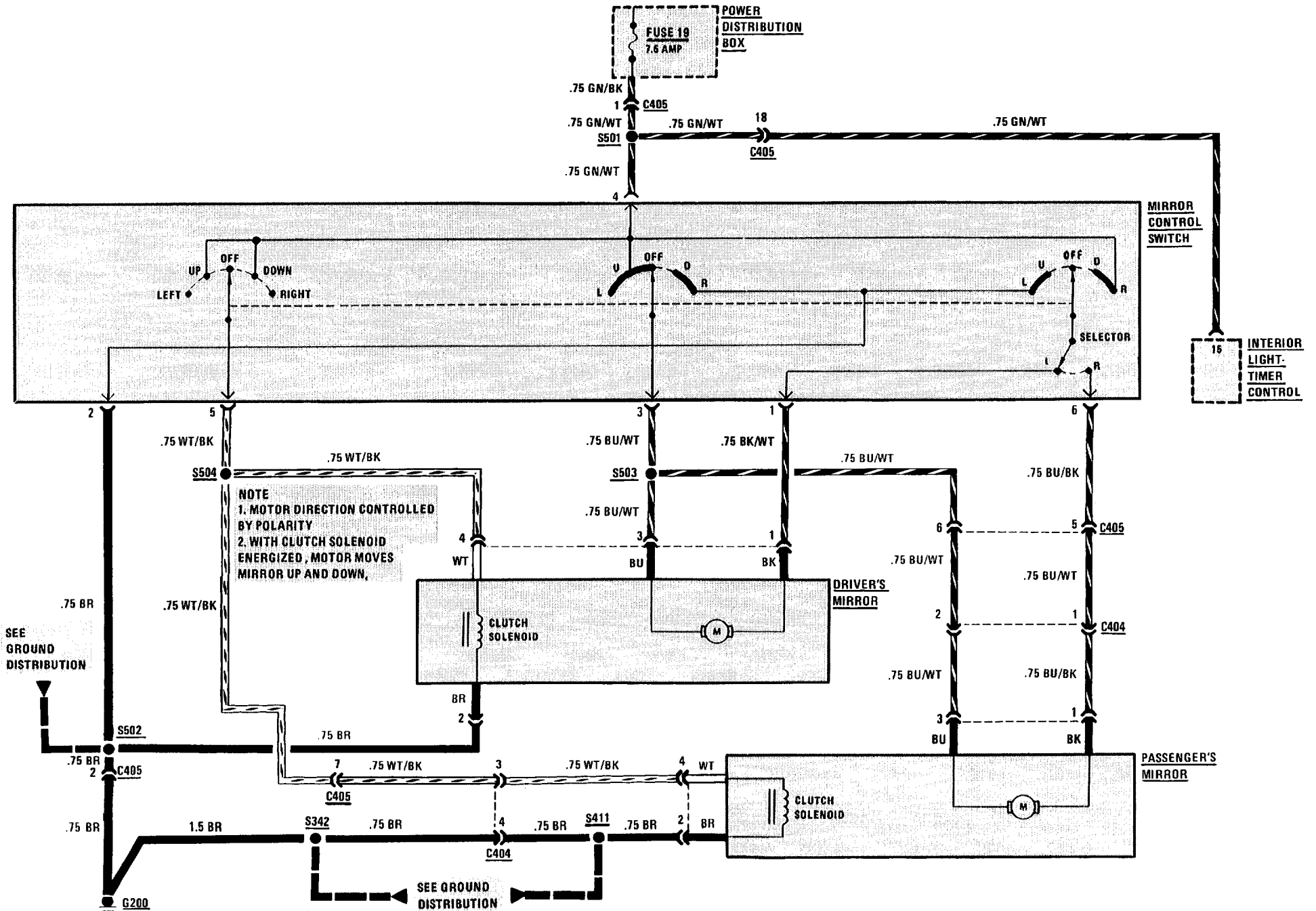
3450-0 ANTILOCK BRAKING SYSTEM (ABS)





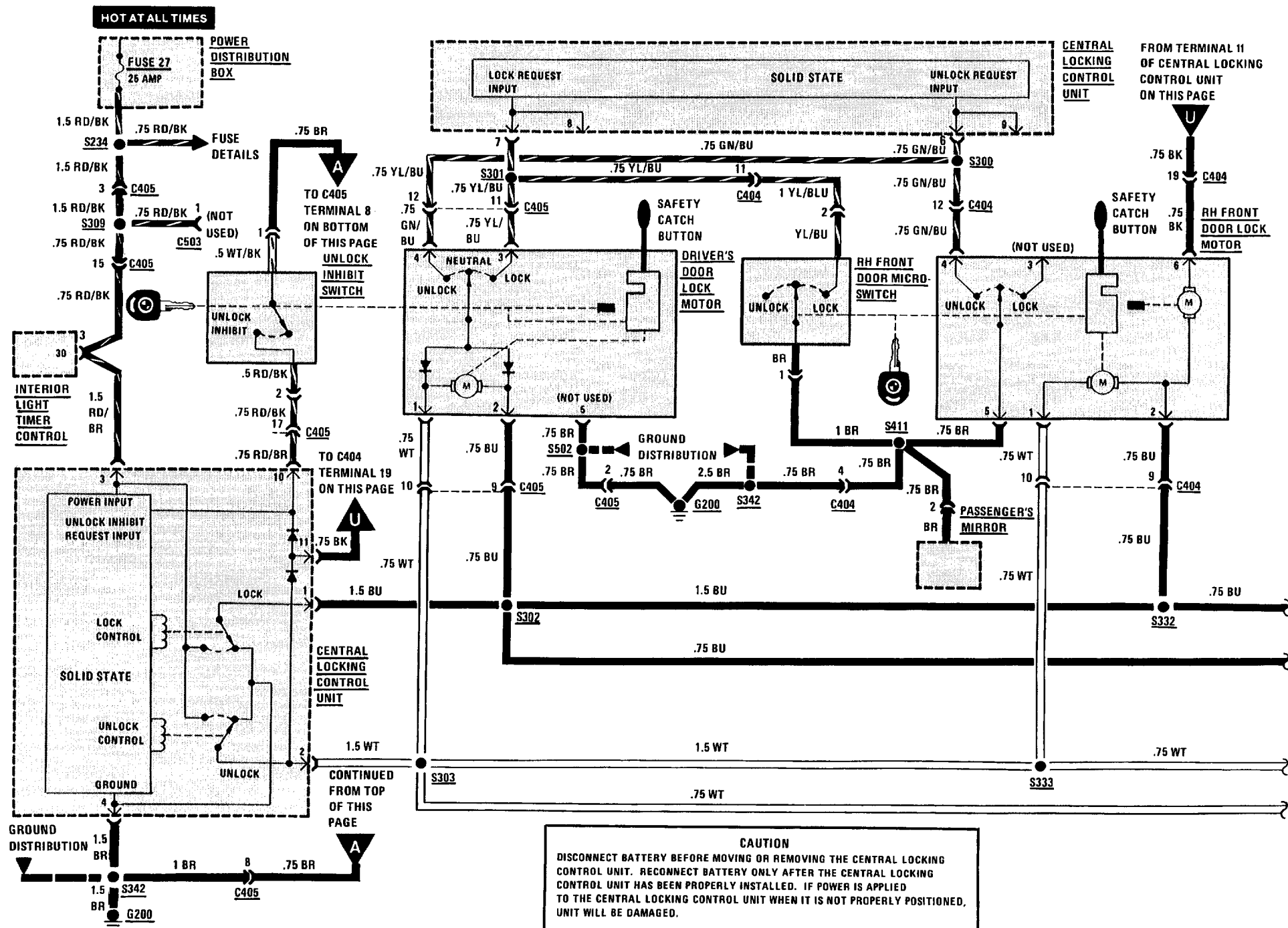
5116-0 POWER MIRRORS

HOT IN RUN ONLY FROM UNLOADER RELAY K7

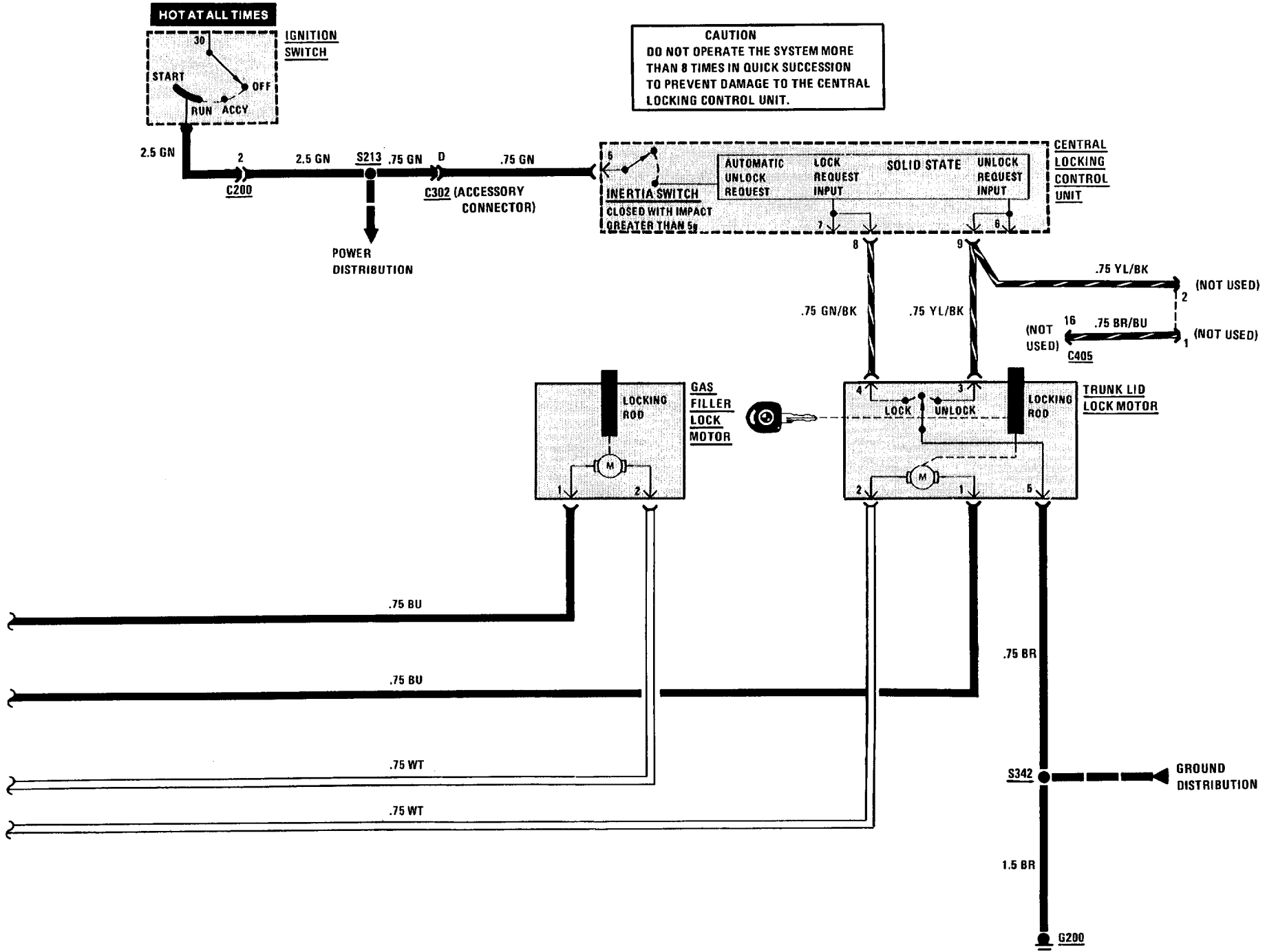


5126-0 CENTRAL LOCKING

2 DOOR (SELECT)

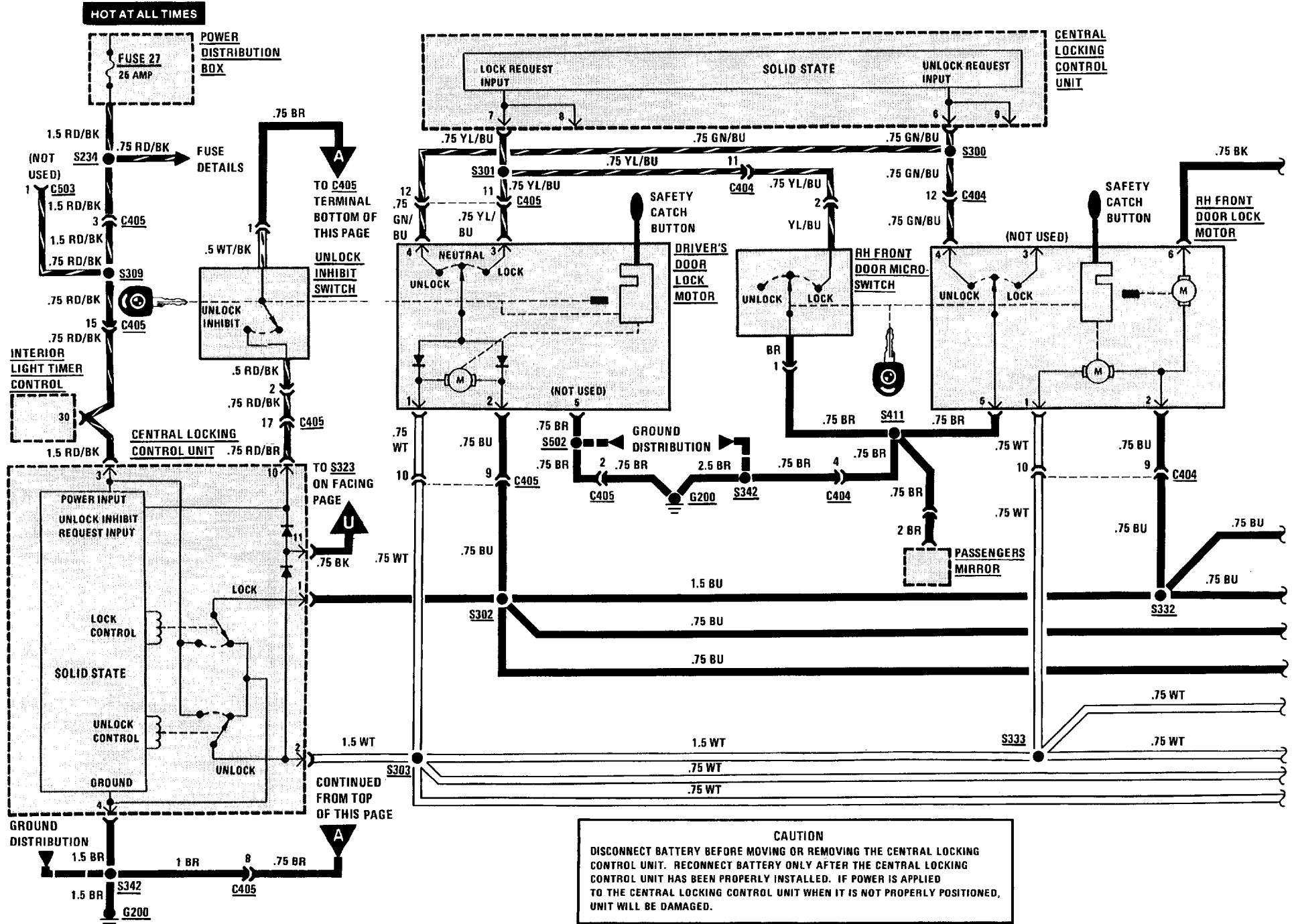


2 DOOR (CONTROL)

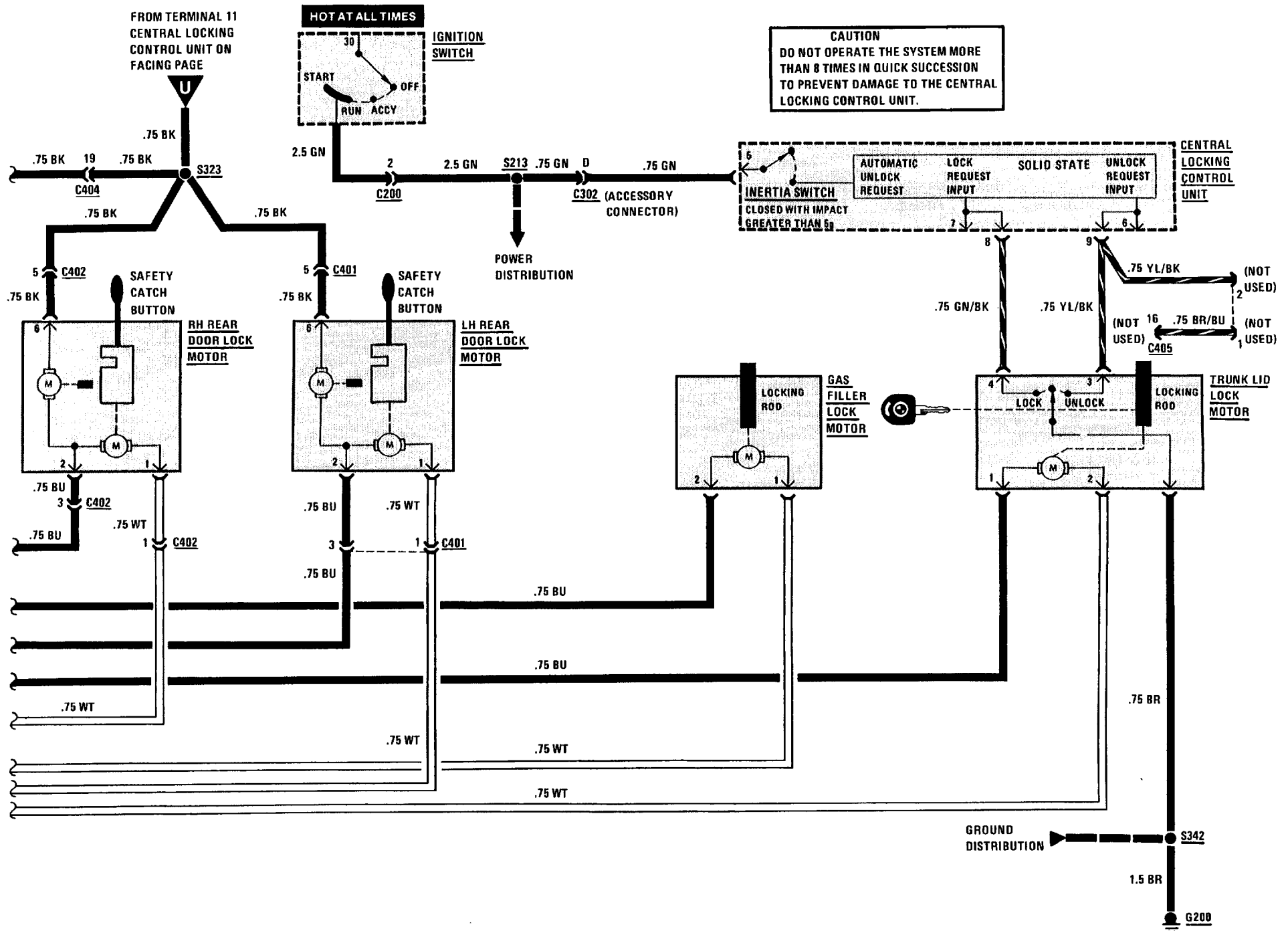


5126-2 CENTRAL LOCKING

4 DOOR (SELECT)



4 DOOR (CONTROL)



5126A-0 CENTRAL LOCKING

TROUBLESHOOTING HINTS

1. Check Fuse by operating the Interior Light Timer for either Dome Light.

SYSTEM CHECK

- Operate controls in sequence listed in the System Check Table.
- Refer to Repair Action for the Response received (tests follow the System Check Table).
- After any repair, repeat System Check to verify proper system operation.

NOTE: Before replacing any system component, check all connectors, splices, and wiring to that component.

SYSTEM CHECK TABLE

OPERATION	RESPONSE	REPAIR ACTION
1. Insert the key in the Driver's door and turn to LOCK	All doors lock	None, proceed to Operation 2
	Some doors lock	Repair/replace the suspect Door Lock Motor circuit
	No doors lock	Proceed to Operation 4
2. Turn the key to UNLOCK INHIBIT (clockwise until key is horizontal)	All doors double lock (Safety Catch Buttons cannot be pulled up by hand)	None, proceed to Operation 3
	Driver's door double locks and only some of the other doors double lock	Repair/replace the suspect Door Lock Motor
	Driver's door double locks but all the other doors do not double lock	Perform Test B
	Driver's door does not double lock	Mechanical problem, see BMW Troubleshooting Manual

SYSTEM CHECK TABLE (CONT'D)

OPERATION	RESPONSE	REPAIR ACTION
3. Turn the key to UNLOCK	All doors unlock	None, proceed to Operation 4
	Some doors unlock	Repair/replace the suspect Door Lock Motor circuit
	No doors unlock	Proceed to Operation 5
4. Insert the key in the Passenger's door and turn to LOCK	All doors lock	If the doors did not lock in Operation 1, repair/replace the Driver's Door Lock Switch, otherwise proceed to Operation 5
	Some doors lock	Repair/replace the suspect Door Lock Motor circuit
	No doors lock	If all the doors locked in Operation 1, repair/replace the Right Front Door Microswitch. If the doors did not lock in Operation 1, perform Test A
5. Insert the key in the Passenger's door and turn to UNLOCK	All doors unlock	If all the doors did not unlock in Operation 3, repair/replace the Driver's Door Lock Switch, otherwise proceed to Operation 6
	Some doors unlock	Repair/replace the suspect Door Lock Motor
	No doors unlock	If all the doors unlocked in Operation 3, repair/replace the Passenger's Door Lock Switch. If the doors did not unlock in Operation 3, perform Test C
6. Get in the car and close and lock all doors Turn the Ignition Switch to RUN	Doors remain locked	None, proceed to Operation 7
	Doors unlock	Repair/replace the Central Locking Control Unit
7. Get out of the car Insert the key in the Driver's door and turn to LOCK Unlock each of the doors by pulling up the Safety Catch Buttons	All doors can be unlocked	None, proceed to Operation 8
	All doors remain secure	Disconnect the connector from the Central Locking Control Unit and check for a short to ground in the wires at terminal 11. <ul style="list-style-type: none"> • If short to ground is not present, replace the Central Locking Control Unit. • If short to ground is present isolate wiring from Door Lock Motors one at a time to find short

5126A-2 CENTRAL LOCKING

SYSTEM CHECK TABLE (CONT'D)

OPERATION	RESPONSE	REPAIR ACTION
8. Insert the key in the Trunk Cylinder Switch. Turn the key to LOCK	Trunk locks	None, proceed to Operation 9
	Trunk does not lock	If the doors lock, repair/replace the Trunk Lock Motor Circuit or Trunk Lock Motor If the doors do not lock, repair/replace the Trunk Switch Repair/replace the Central Locking Control Unit if the Trunk Switch Circuit is OK
9. Turn the key to UNLOCK	Trunk unlocks	None, proceed to Operation 10
	Trunk does not unlock	If the doors unlock, repair/replace the Trunk Lock Motor circuit or Trunk Lock Motor If the doors do not unlock, repair/replace the Trunk Switch Repair/replace the Central Locking Control Unit if the Trunk Switch Circuit is OK
10. Turn the key back to LOCK	Gas Filler locks	None, proceed to Operation 11
	Gas Filler does not lock	Repair/replace the Gas Filler Lock Motor circuit
11. Turn the key to UNLOCK	Gas Filler unlocks	None
	Gas Filler does not unlock	Repair/replace the Gas Filler Lock Motor circuit

- If all results are normal, the system is OK.

SYSTEM DIAGNOSIS

- Do the following tests when directed by the System Check Table.

A: CONTROL UNIT LOCK TEST (TABLE 1)

Measure: VOLTAGE At: CONTROL UNIT CONNECTOR (Connected)		
Measure Between	Correct Voltage	For Diagnosis
3 & Ground	Battery	See 1
3 & 4	Battery	See 2

- If the voltages are correct, proceed to Table 2.

1. Check the wire to terminal 3 for an open.
2. Check the wire from terminal 4 for an open to ground (see schematic).

A: CONTROL UNIT LOCK TEST (TABLE 2)

Connect: A FUSED JUMPER At: CONTROL UNIT CONNECTOR (Connected)		
Jumper Between	Correct Result	For Diagnosis
7 & Ground	Doors lock	See 1

- If the result is correct, repair/replace the switches and related wiring (see schematic).

1. Proceed to Table 3.

**A: CONTROL UNIT LOCK TEST
(TABLE 3)**

Connect: FUSED JUMPERS At: CONTROL UNIT CONNECTOR (Disconnected)		
Jumper Between	Correct Result	For Diagnosis
1 & 3 2 & 4	Doors lock	See 1
<ul style="list-style-type: none"> If the result is correct, replace the Central Locking Control Unit. <ol style="list-style-type: none"> Check the wire from terminal 1 to splice and the wire from terminal 3 to splice for opens (see schematic). 		

B: UNLOCK INHIBIT TEST

Connect: A FUSED JUMPER At: CONTROL UNIT CONNECTOR (Connected)		
Jumper Between	Correct Result	For Diagnosis
10 & Ground	Doors double lock	See 1
<ul style="list-style-type: none"> If the result is correct, check the wires from terminal 10 to ground for opens (see schematic). Replace the Unlock Inhibit Switch if the wires and connections are OK. <ol style="list-style-type: none"> Check the wires from terminal 11 for opens (see schematic). Replace the Central Locking Control Unit, if the wires and connections are OK. 		

C: CONTROL UNIT UNLOCK TEST

Connect: A FUSED JUMPER At: CONTROL UNIT CONNECTOR (Connected)		
Jumper Between	Correct Result	For Diagnosis
6 & Ground	Doors unlock	See 1
<ul style="list-style-type: none"> If the result is correct, repair/replace the switches and related wiring (see schematic). <ol style="list-style-type: none"> Replace the Central Locking Control Unit. 		

CIRCUIT DESCRIPTION

The Central Locking System is controlled by the Central Locking Control Unit. This unit senses when a lock switch is moved by a key, and sends the appropriate signal to drive the Motors. The Central Locking Control Unit controls the Door Locks, Gas Filler Lock and Trunk Lock. The unit also has an Inertia Switch which closes on impact greater than 5g. If in RUN or START the locks are then unlocked.

Lock

When the Key is inserted into a lock and turned clockwise, the Lock switch moves to LOCK and grounds terminal 7 of the Central Locking Control Unit. The unit then activates the Lock Relay and applies voltage from Fuse 27 to the Lock Motor, which is grounded through the Central Locking Control Unit terminal 2. The Lock Motor then pulls the lock down. The door locks also control the Trunk Lock and Gas Filler Lock.

Unlock

When the key is turned counterclockwise, terminal 6 of the Central Locking Control Unit is grounded through the Lock Switch. The Central Locking Control Unit then activates the Unlock Relay and applies voltage from Fuse 27, through terminal 2 to the Lock Motor. The motor is grounded through the Central Locking Control Unit terminal 1. The polarity is reversed and the motor pushes the lock up.

Unlock Inhibit

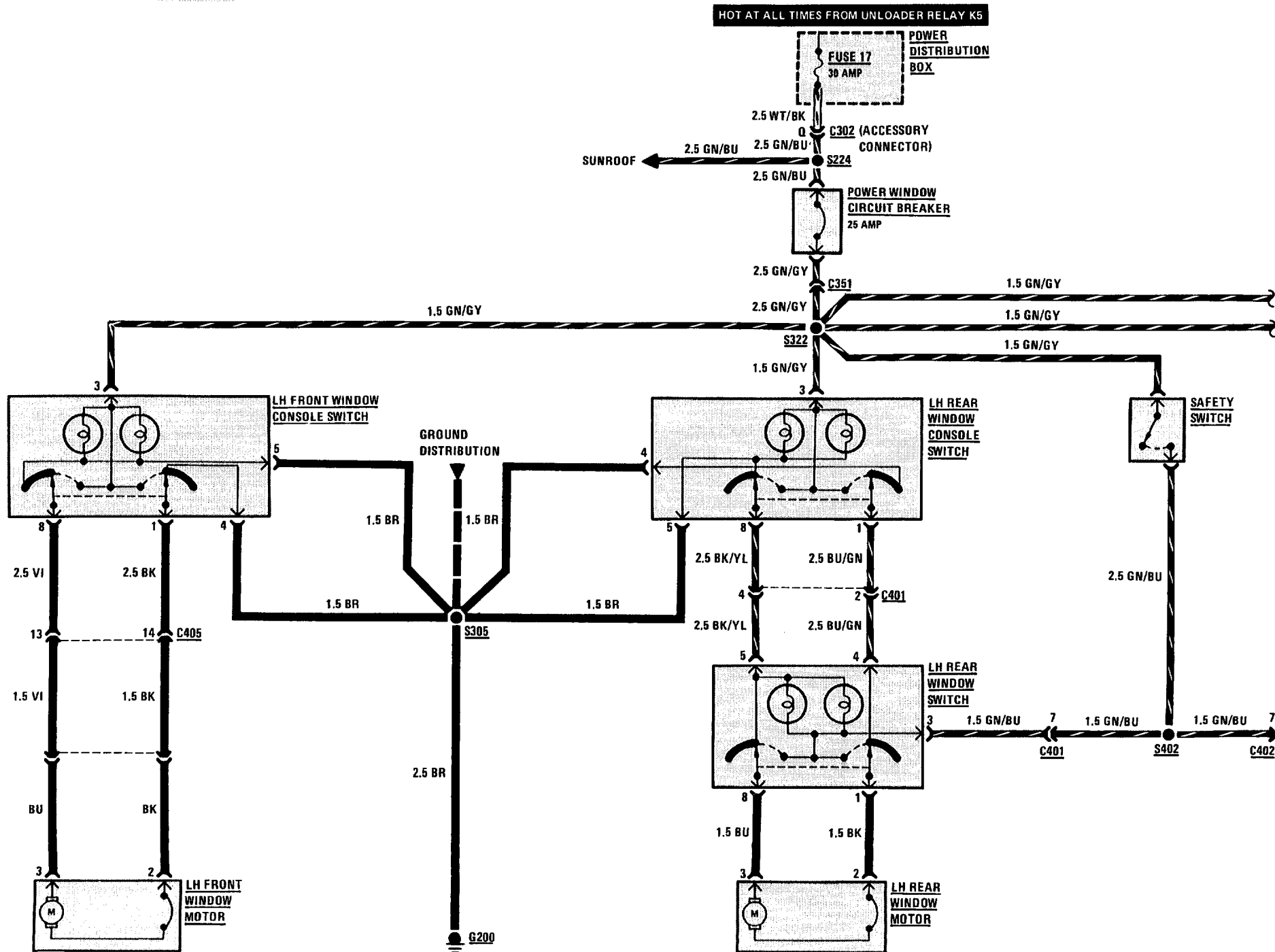
When the key is inserted into the Driver's Lock and turned clockwise past the LOCK position, the Unlock Inhibit mechanism is engaged. This mechanically inserts a bar into the driver's lock and prevents unlocking through use of the Safety Catch Button. When in the Unlock Inhibit position, ground is applied to the Unlock Inhibit motors in the other lock units. The Central Locking Control Unit is grounded at terminal 10 and then activates the Lock Relay. Voltage is applied to the Unlock Inhibit motors through terminal 1. They are now activated and engage the other Unlock Inhibit mechanisms. The direction of the motors is reversed when the doors are unlocked (see Unlock).

Trunk Lock

The Trunk Lock operates in a manner similar to the Door Locks.

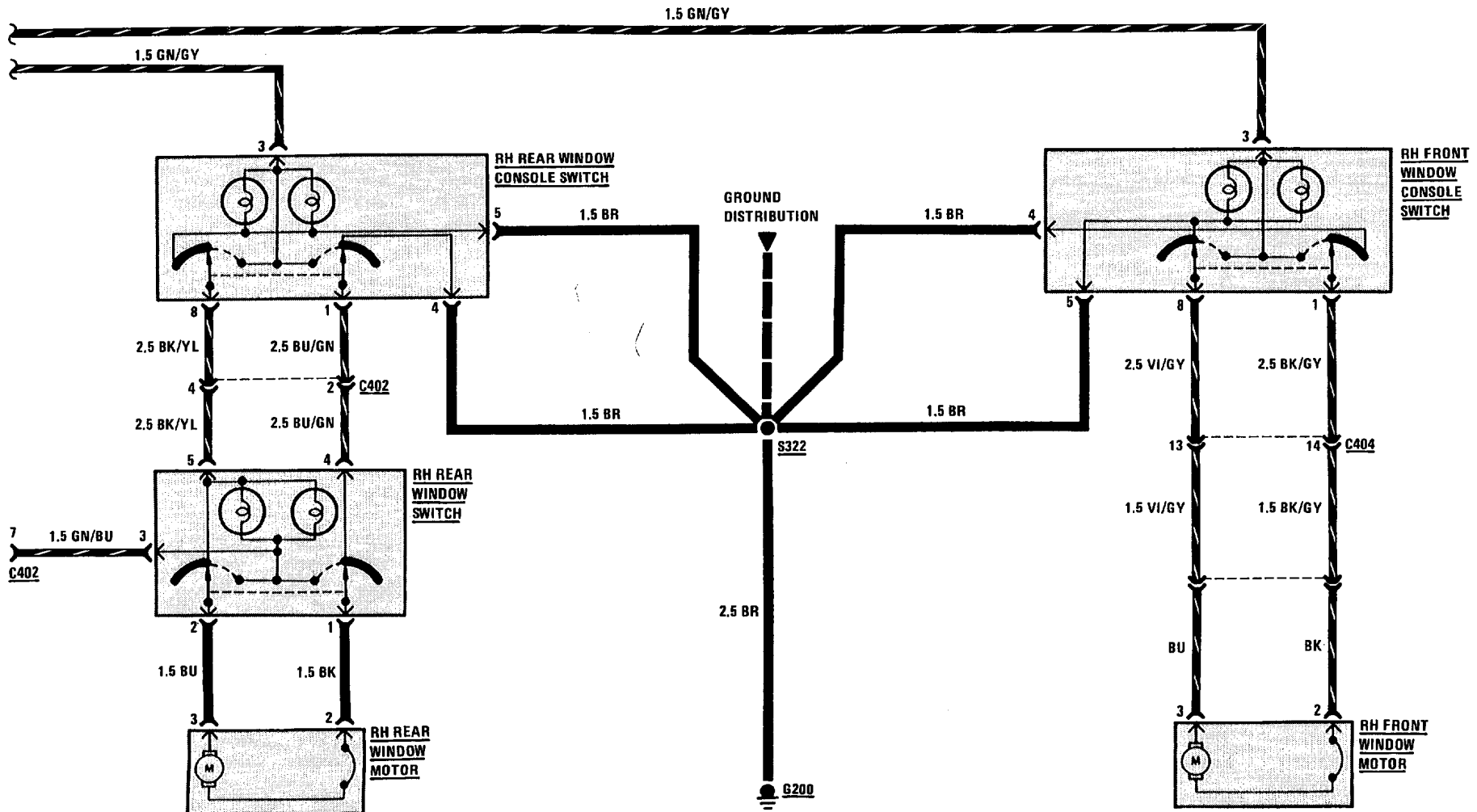
5133-0 POWER WINDOWS EXCEPT CONVERTIBLE

4 DOOR



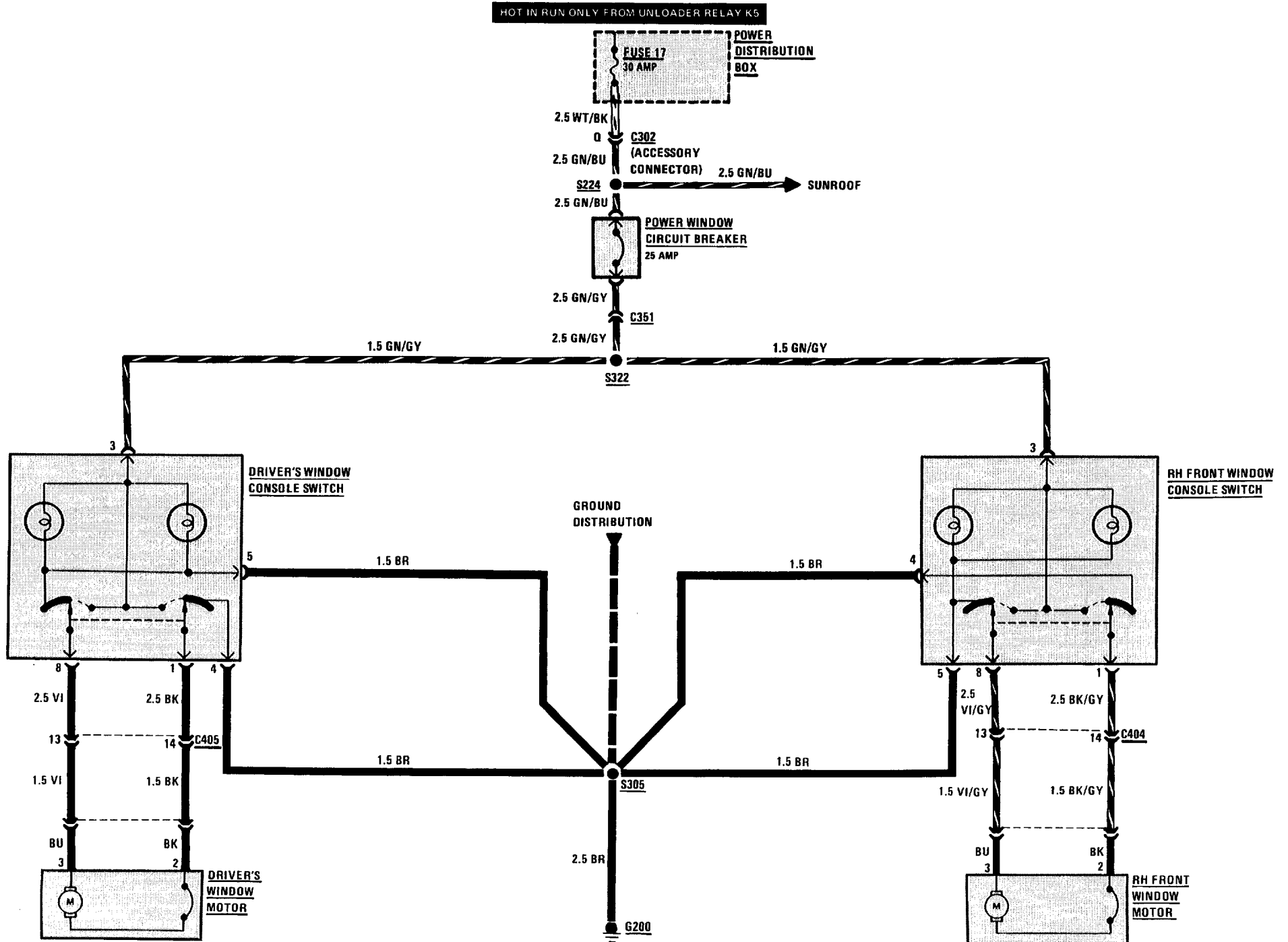
EXCEPT CONVERTIBLE POWER WINDOWS 5133-1

4 DOOR

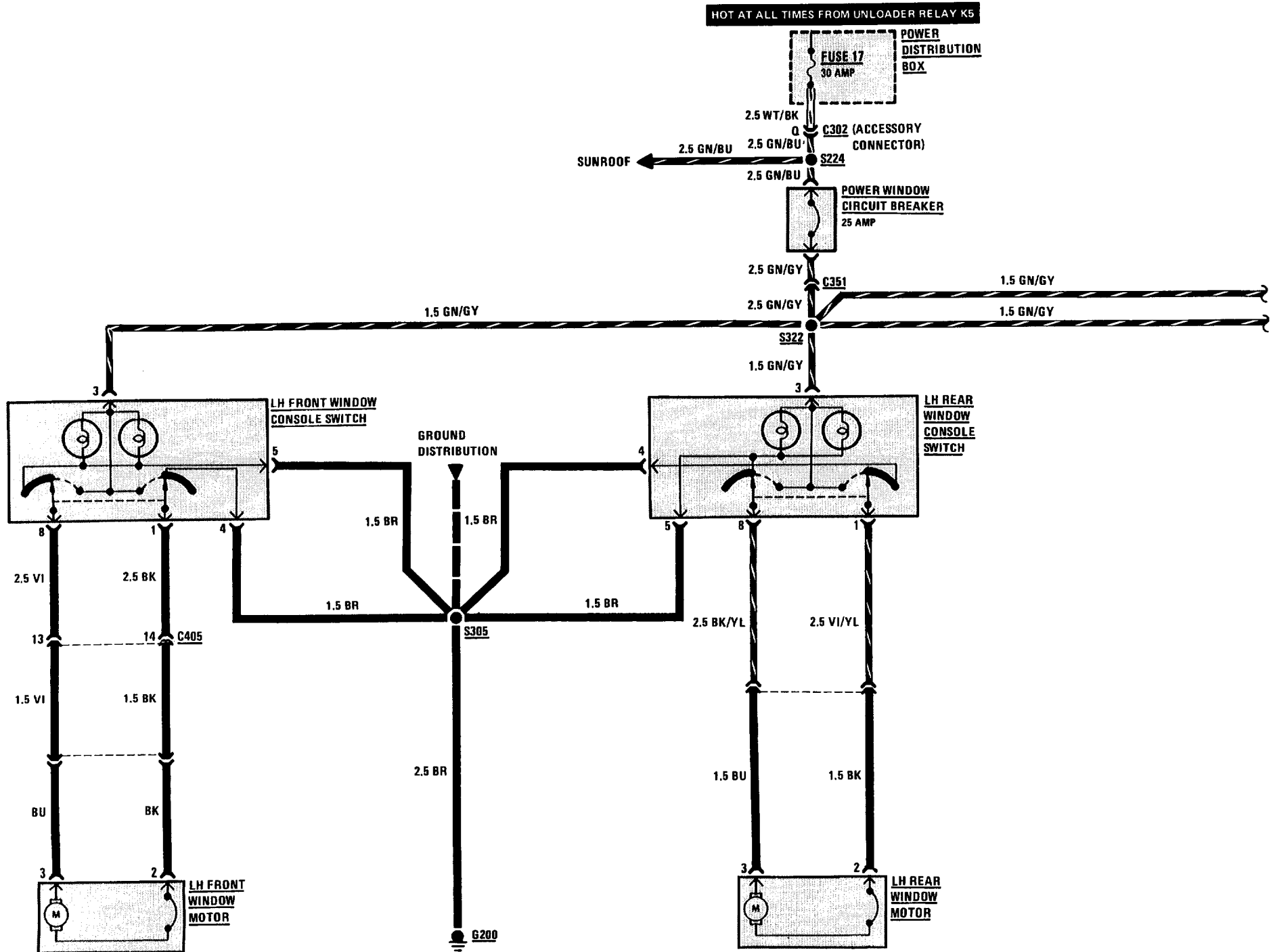


5133-2 POWER WINDOWS EXCEPT CONVERTIBLE

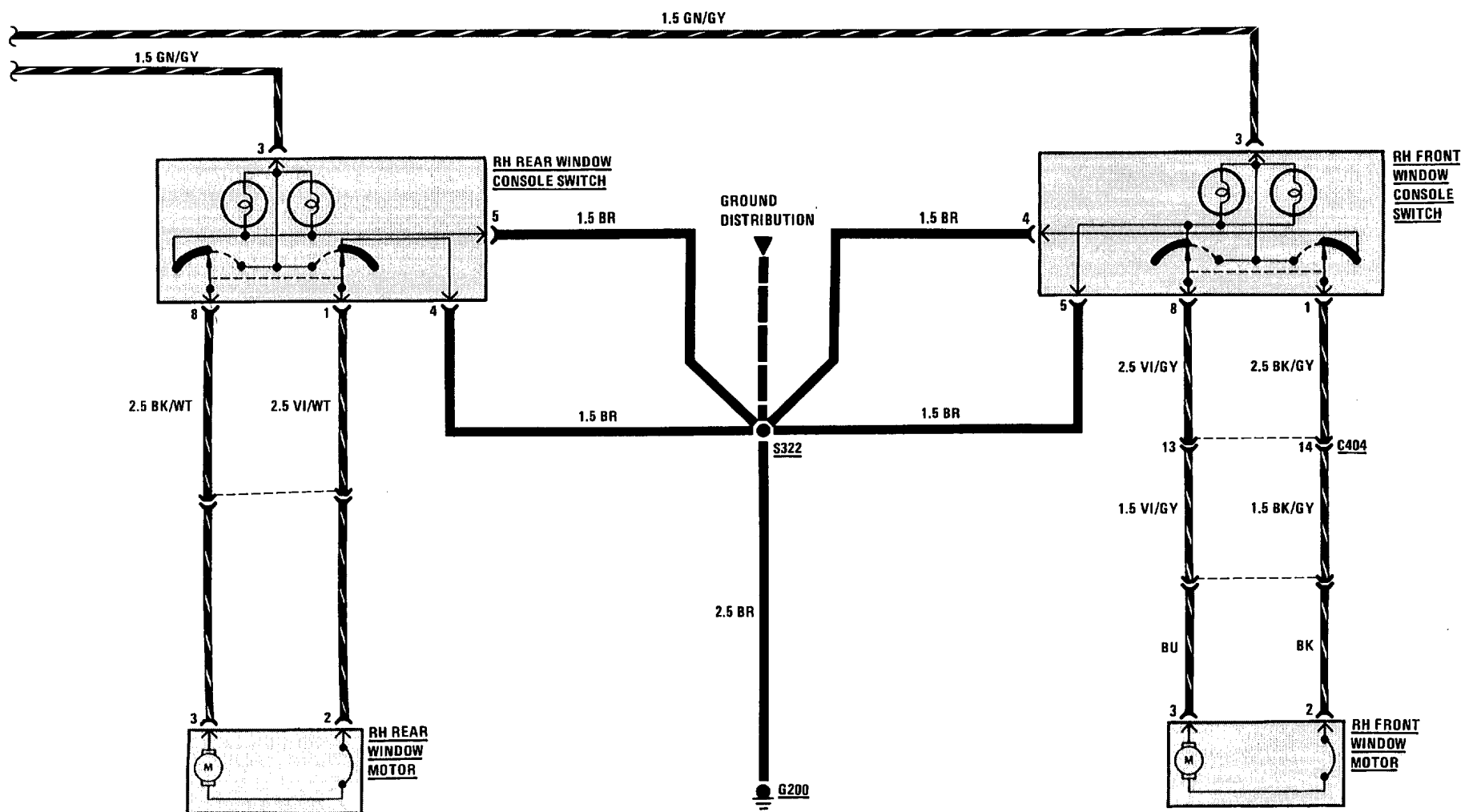
2 DOOR



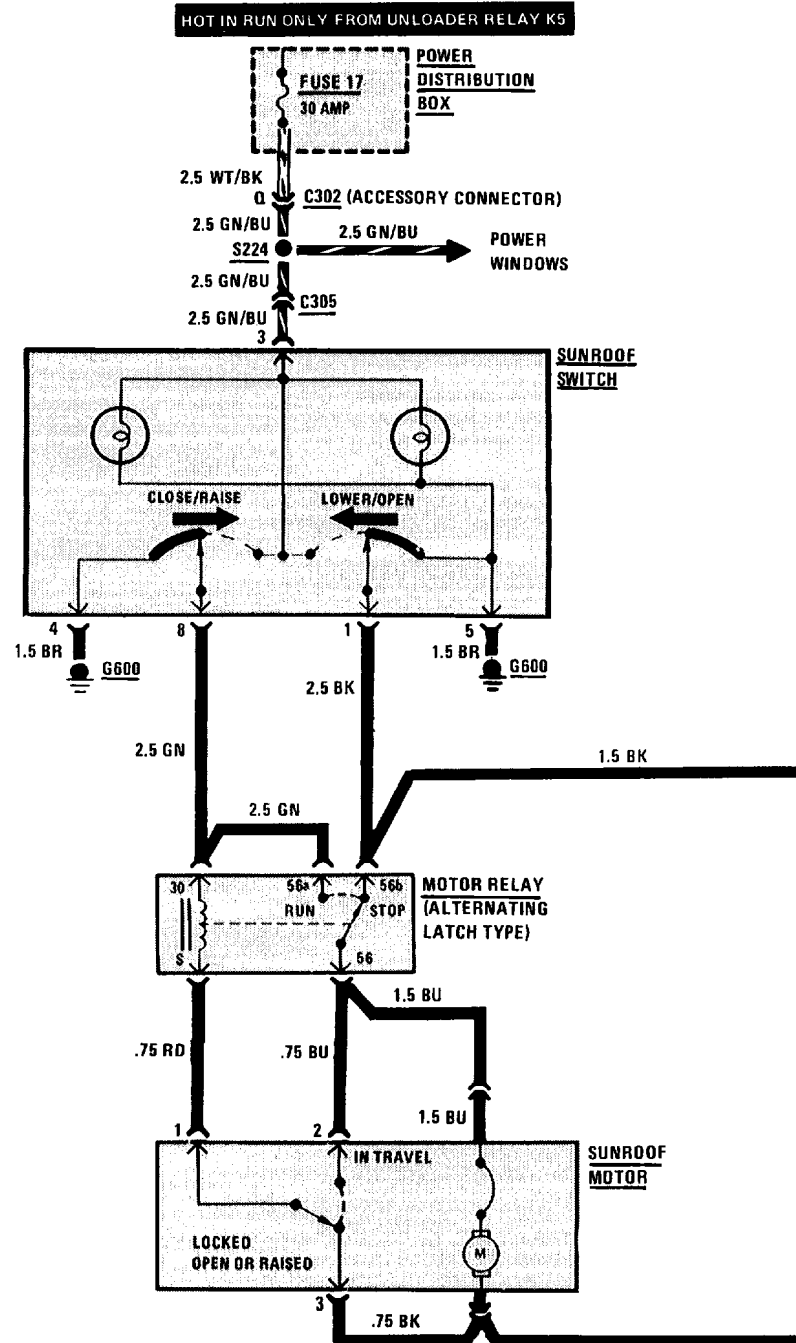
CONVERTIBLE POWER WINDOWS 5133-3



5133-4 POWER WINDOWS CONVERTIBLE

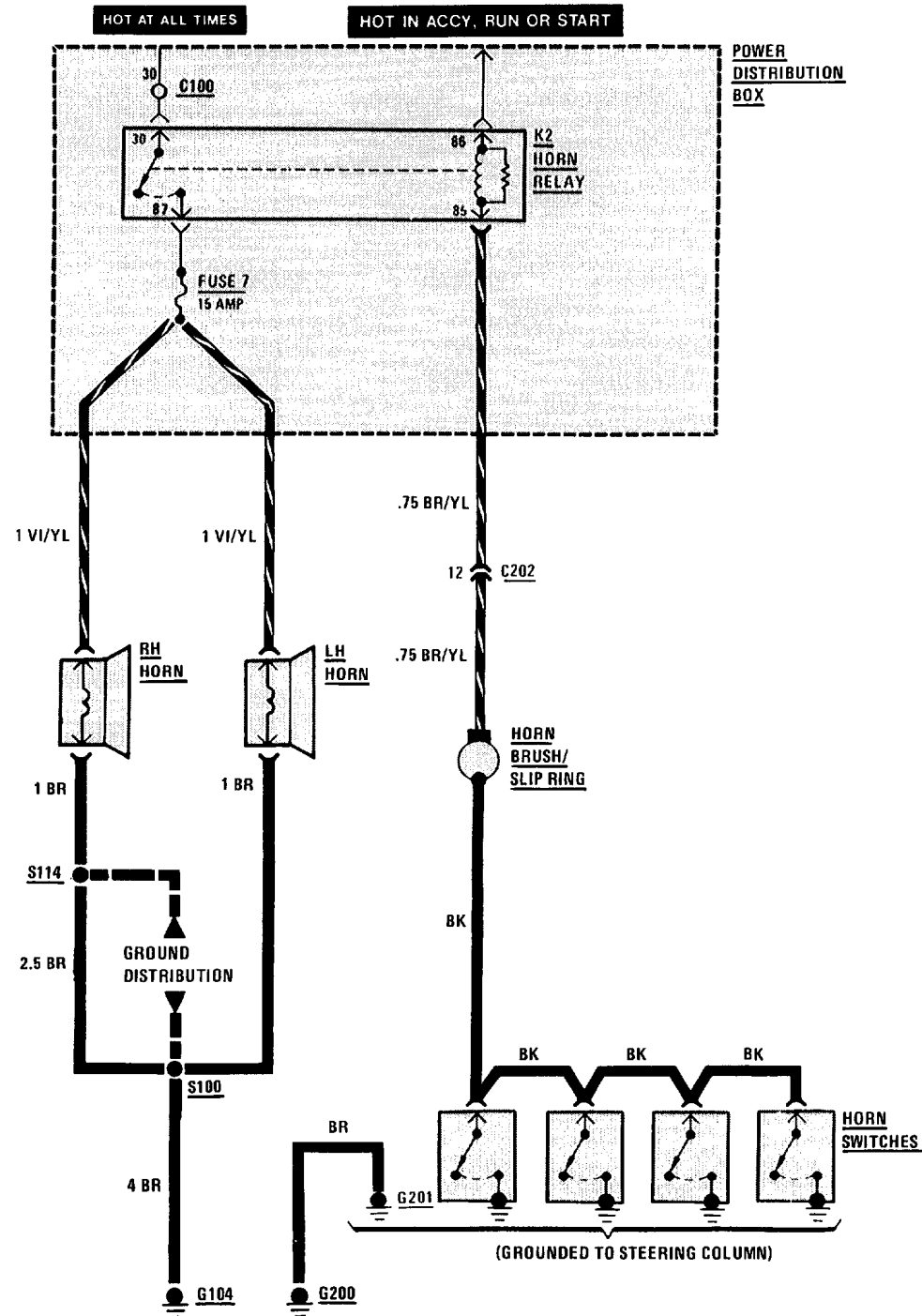


5413-0 SUNROOF

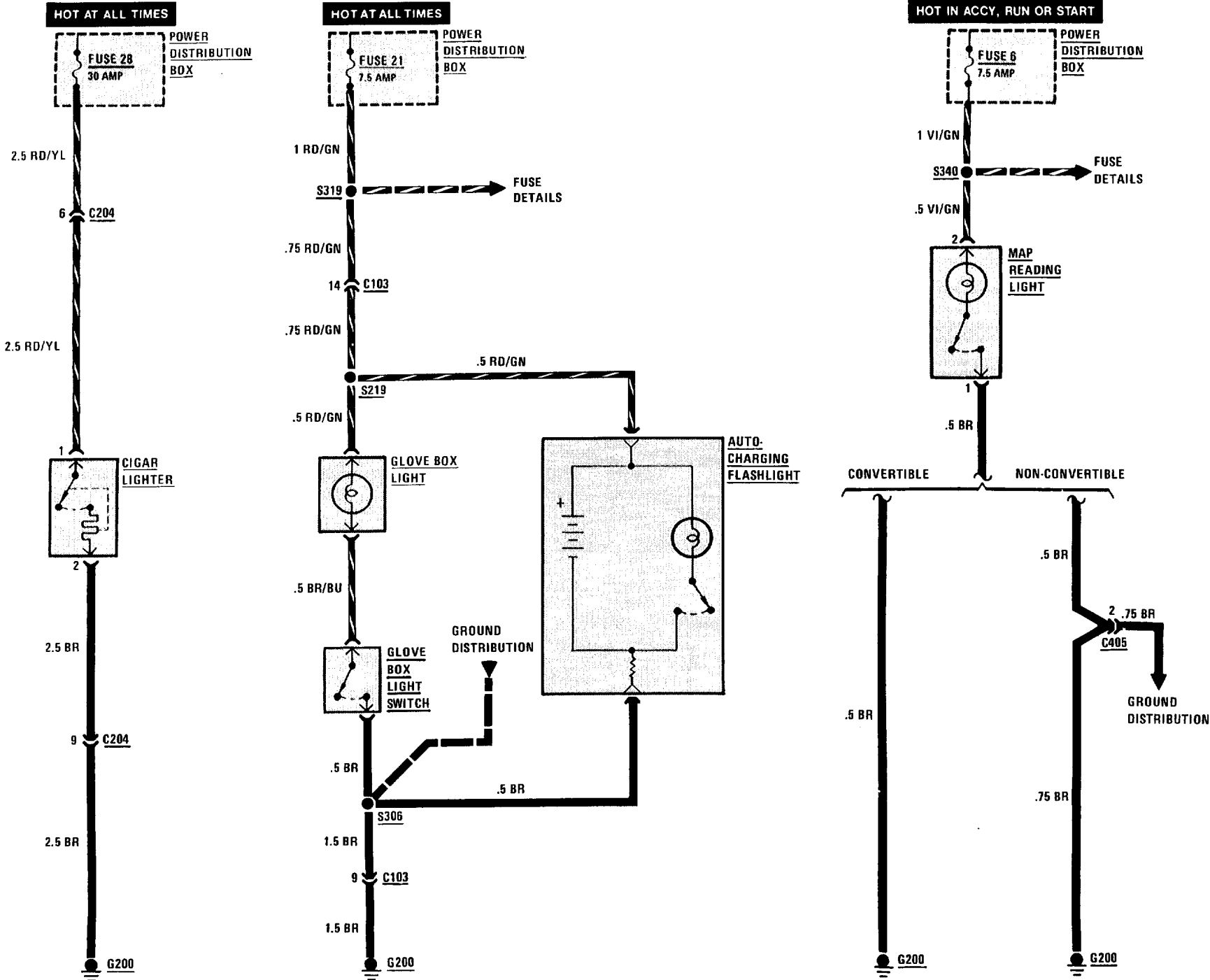


6100-0 BODY ELECTRICAL

HORNS

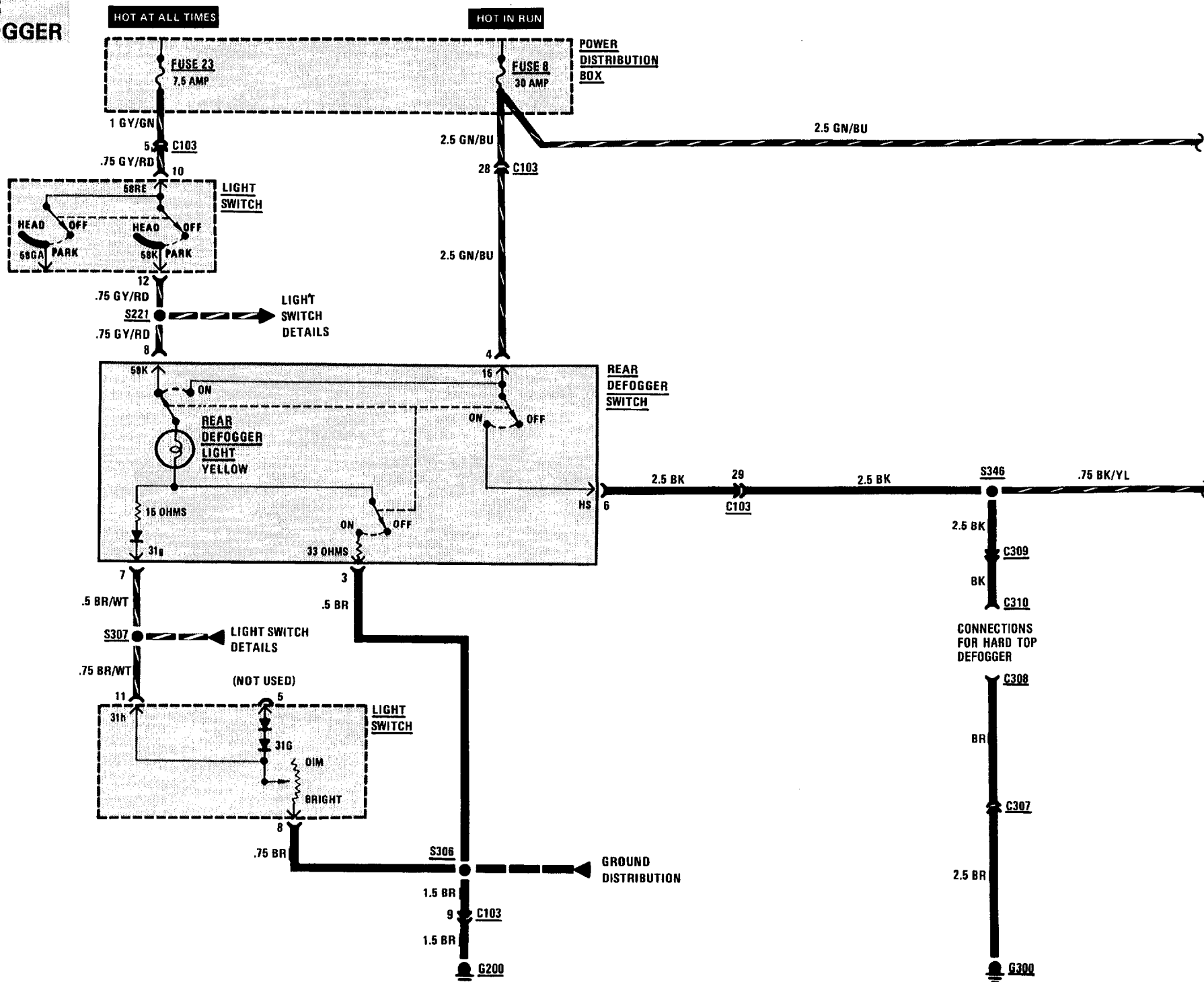


CIGAR LIGHTER/GLOVE BOX LIGHT/AUTO-CHARGING FLASHLIGHT/MAP READING LIGHT



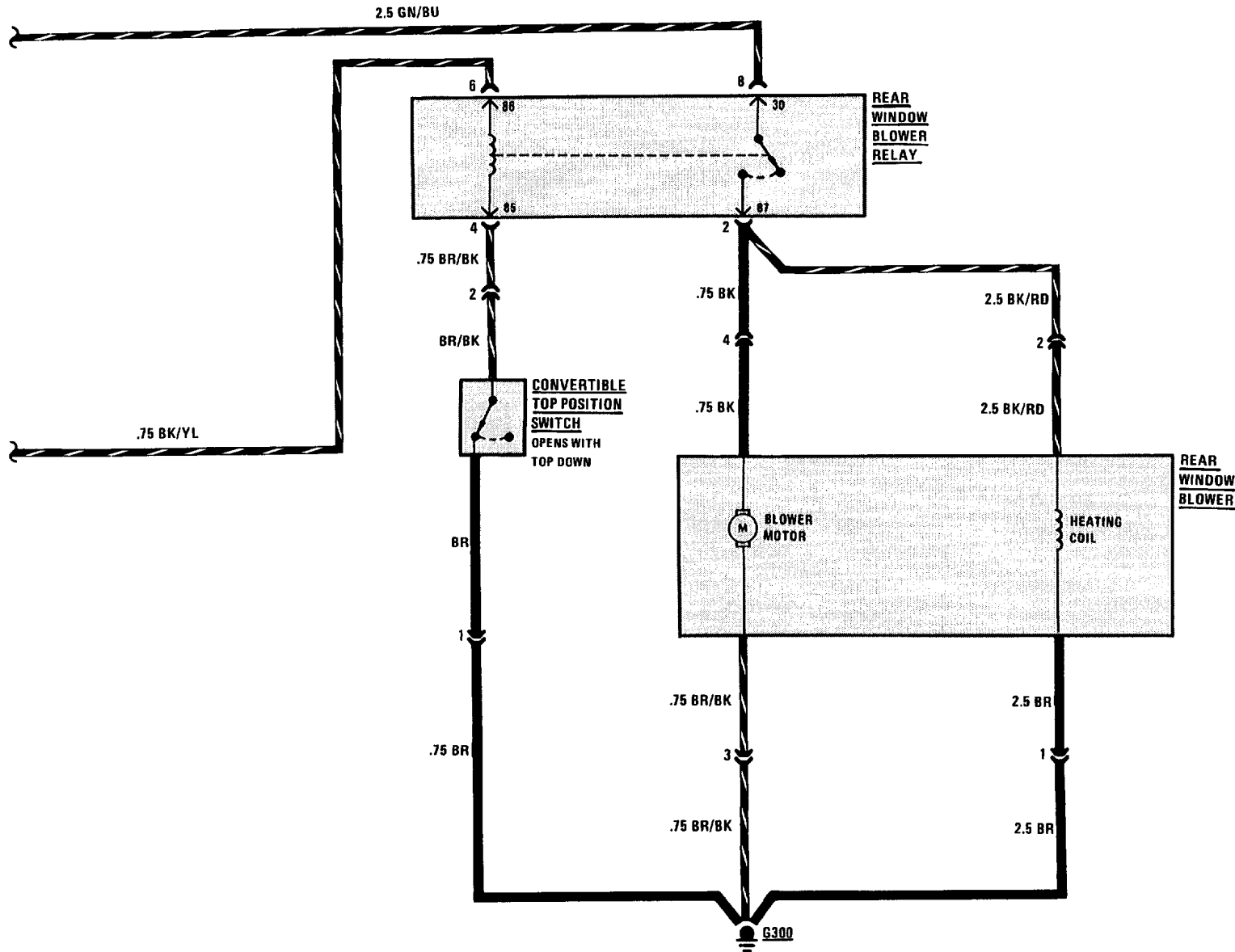
6100-2 BODY ELECTRICAL CONVERTIBLE

REAR DEFOGGER



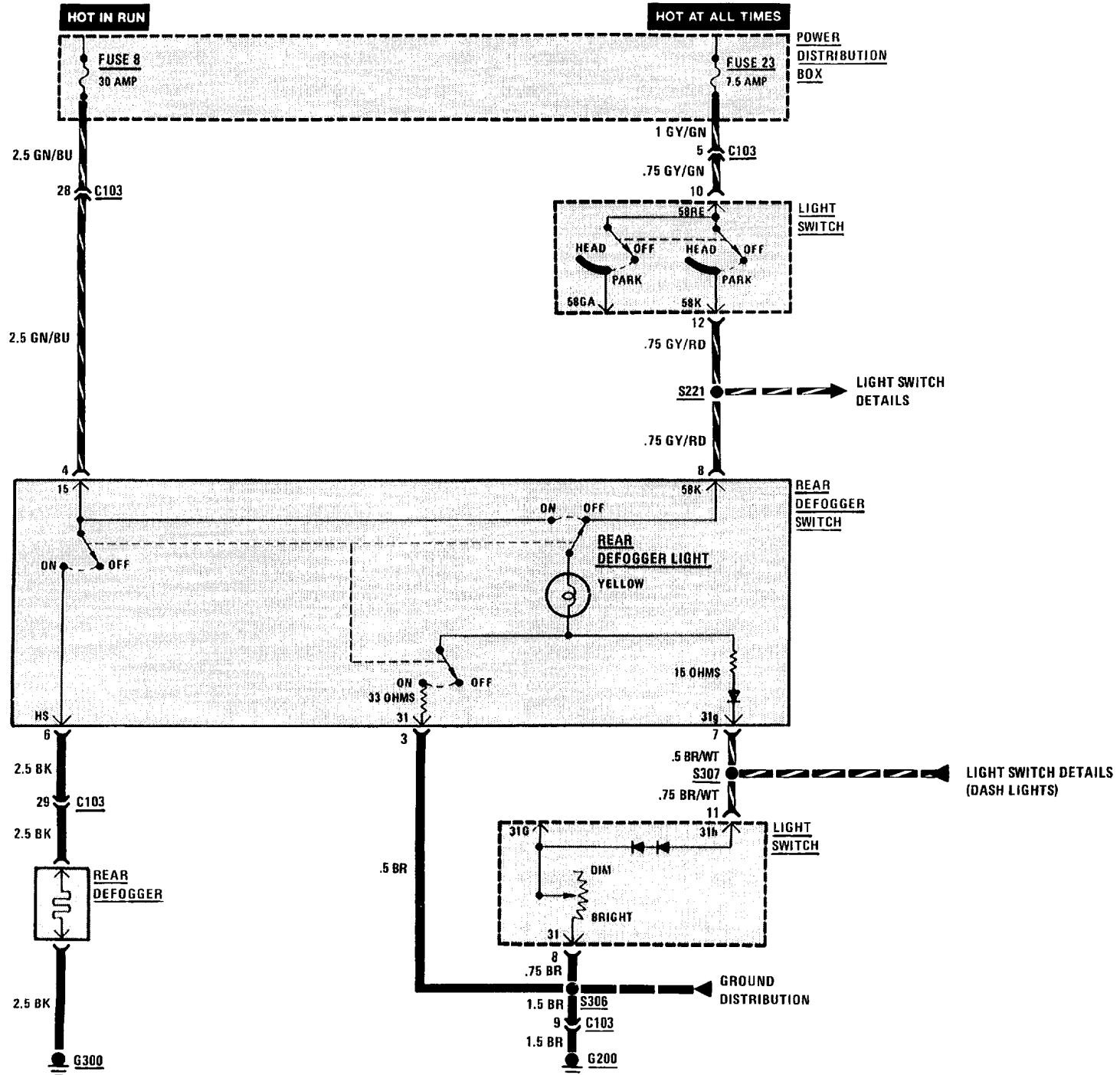
CONVERTIBLE BODY ELECTRICAL 6100-3

REAR DEFOGGER

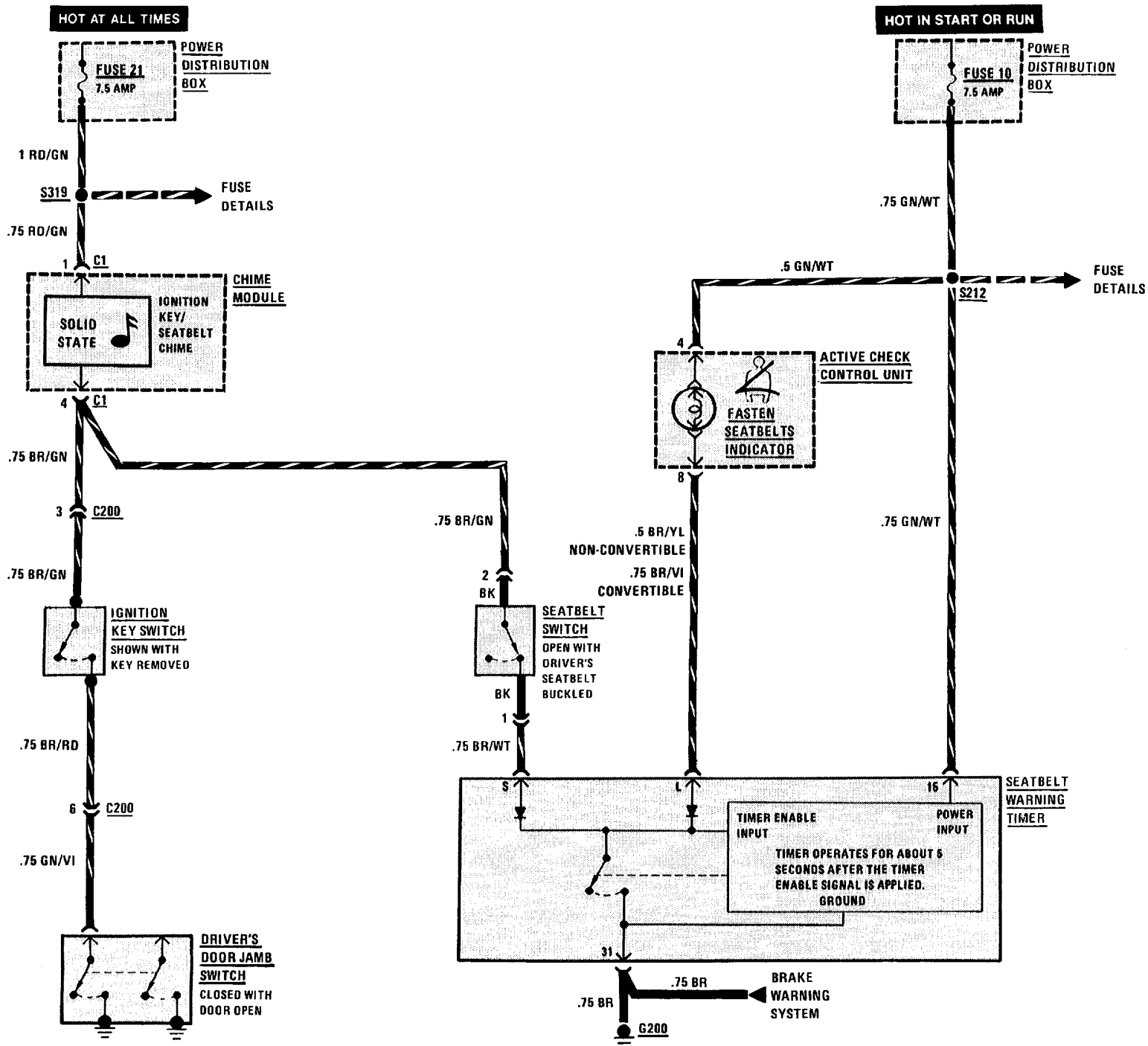


6100-4 BODY ELECTRICAL EXCEPT CONVERTIBLE

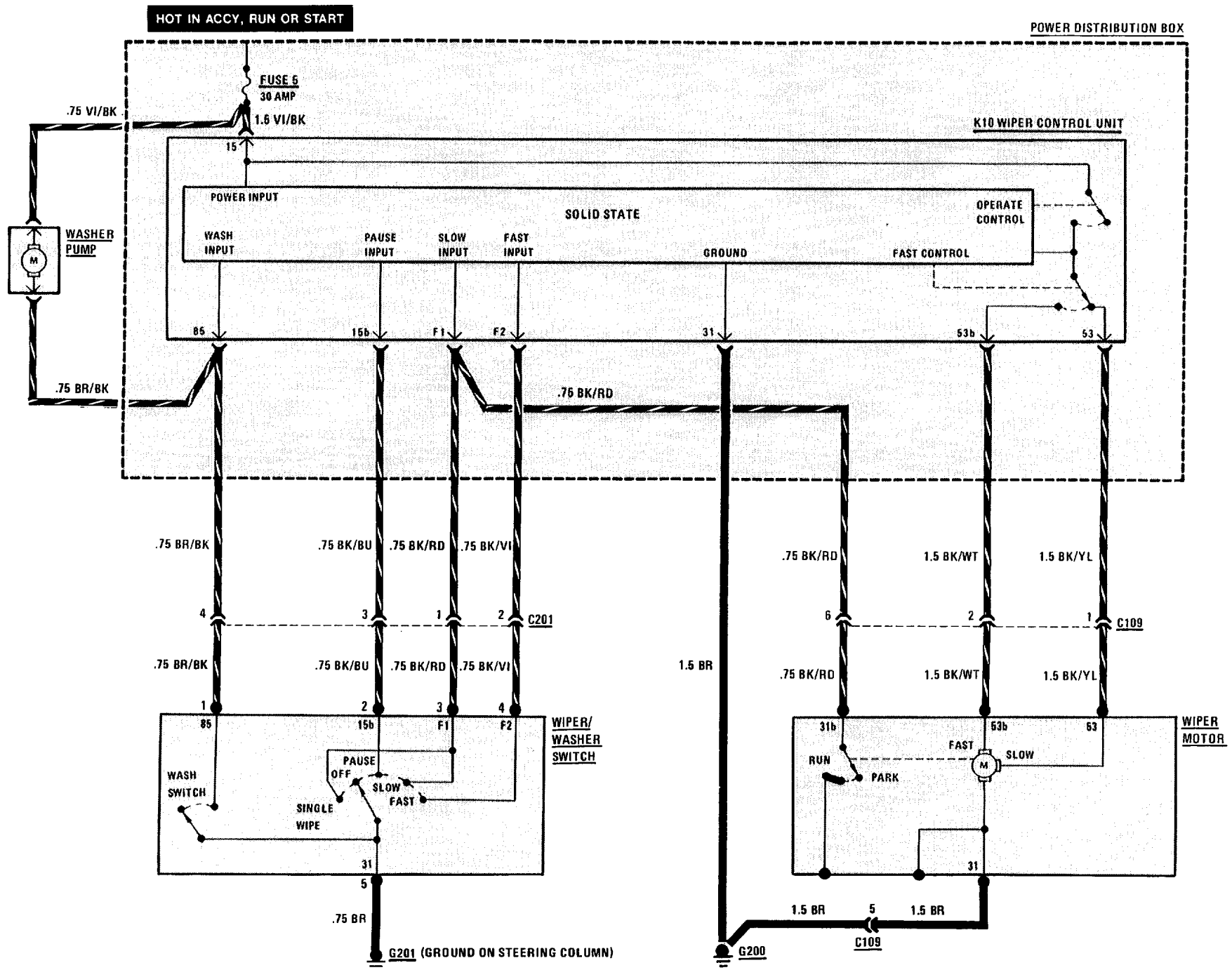
REAR DEFOGGER



6131-0 IGNITION KEY WARNING/SEATBELT WARNING

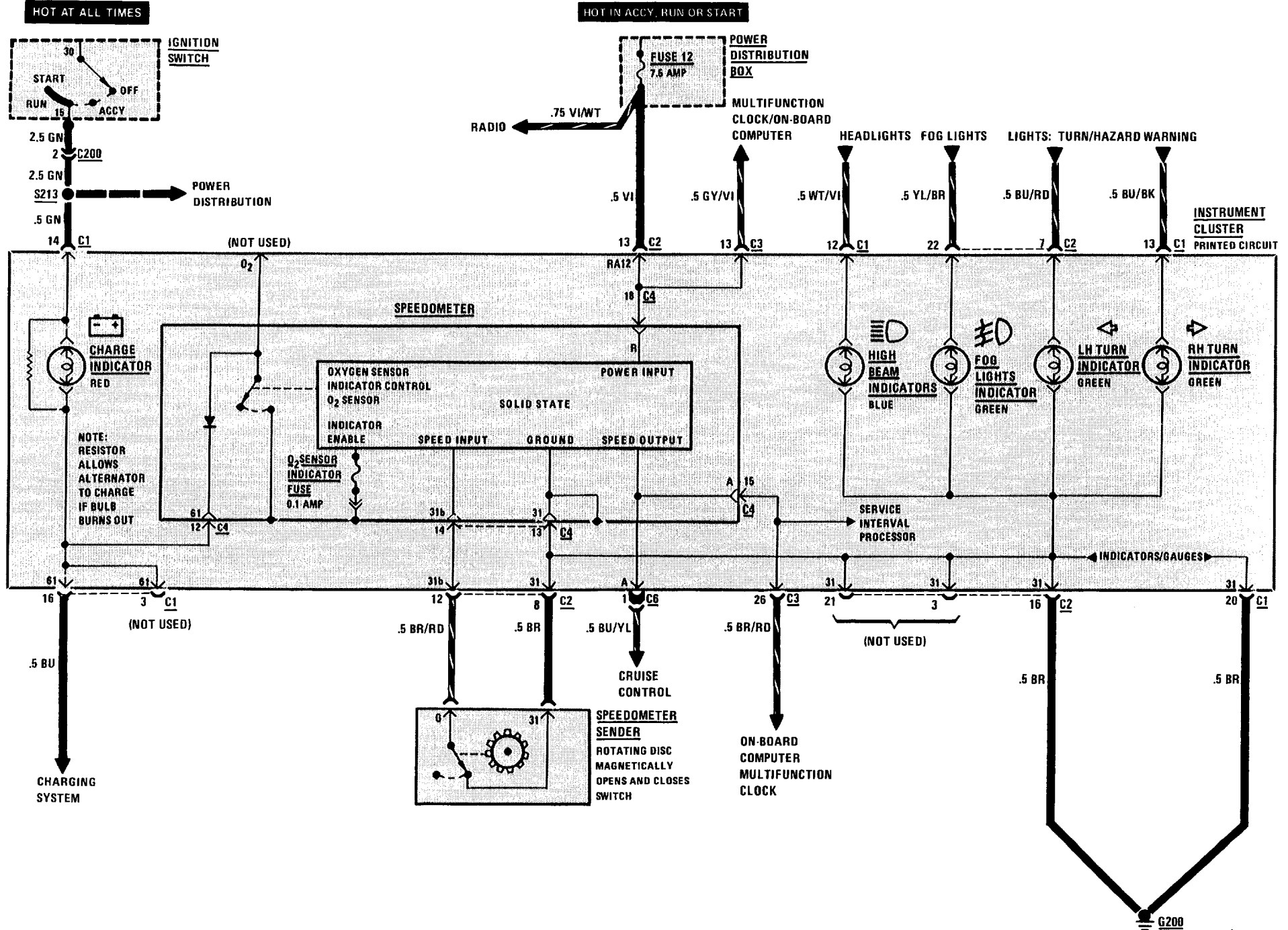


6160-0 WIPER/WASHER

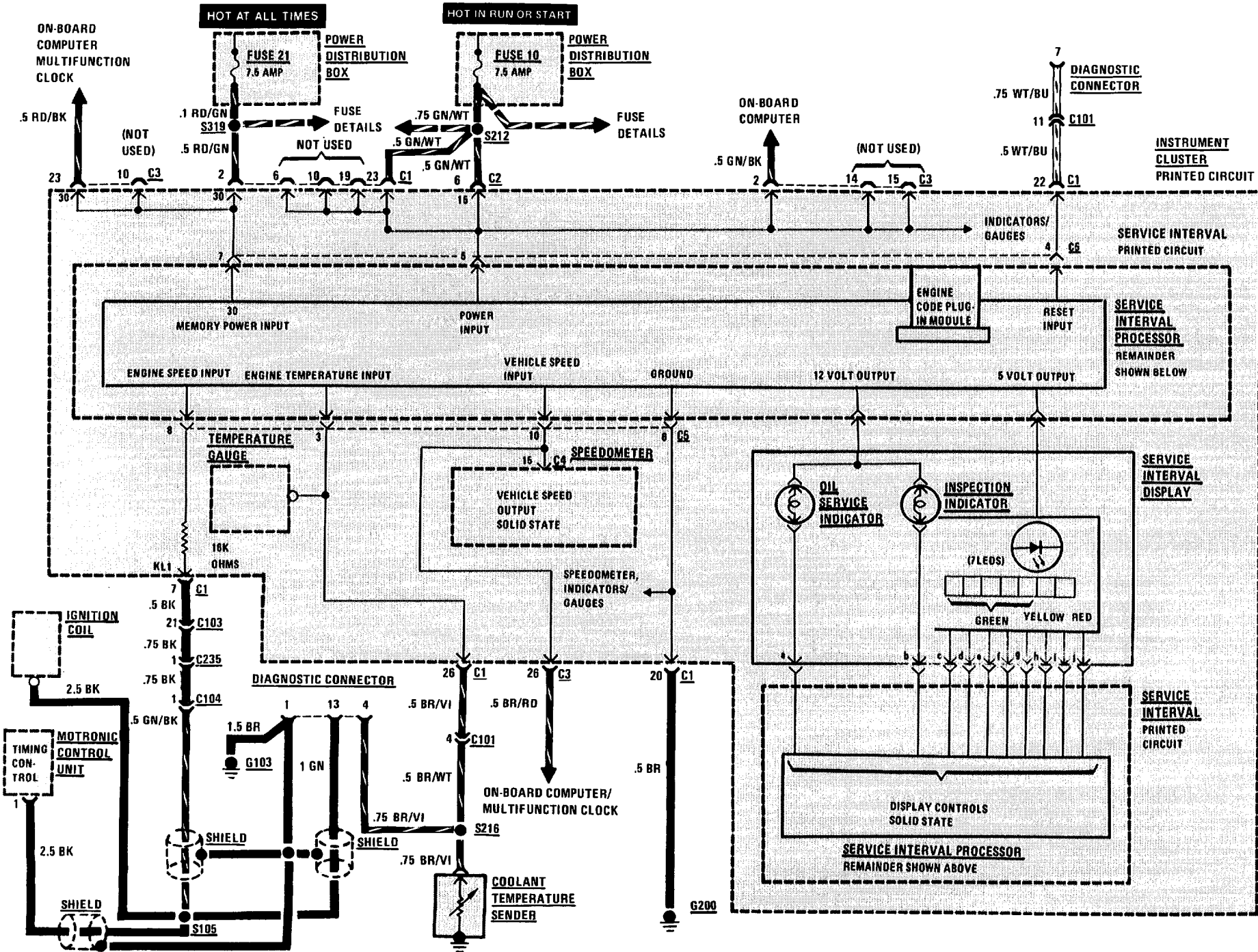


6210-0 INSTRUMENT CLUSTER

SPEEDOMETER/INDICATORS

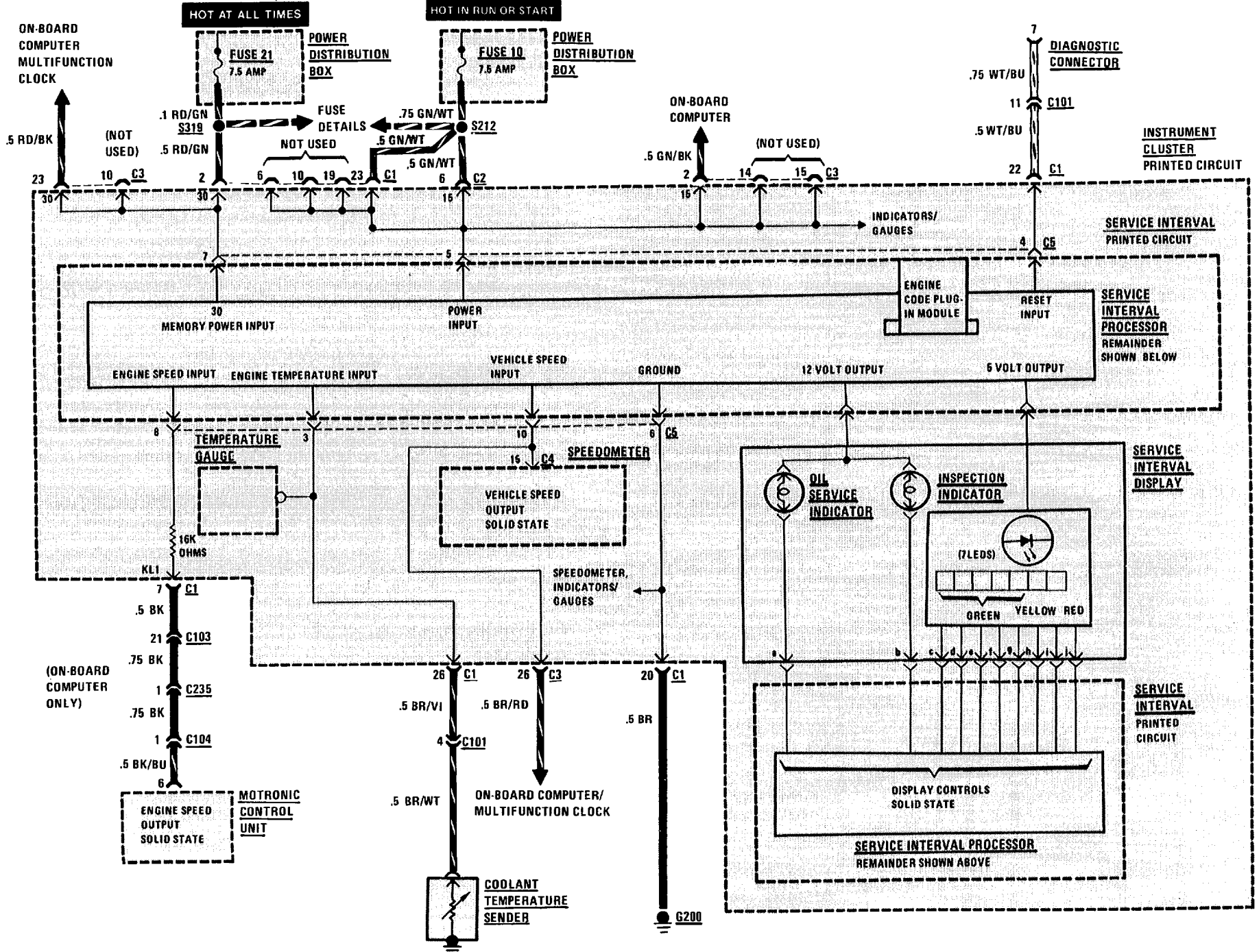


SERVICE INTERVAL INDICATOR

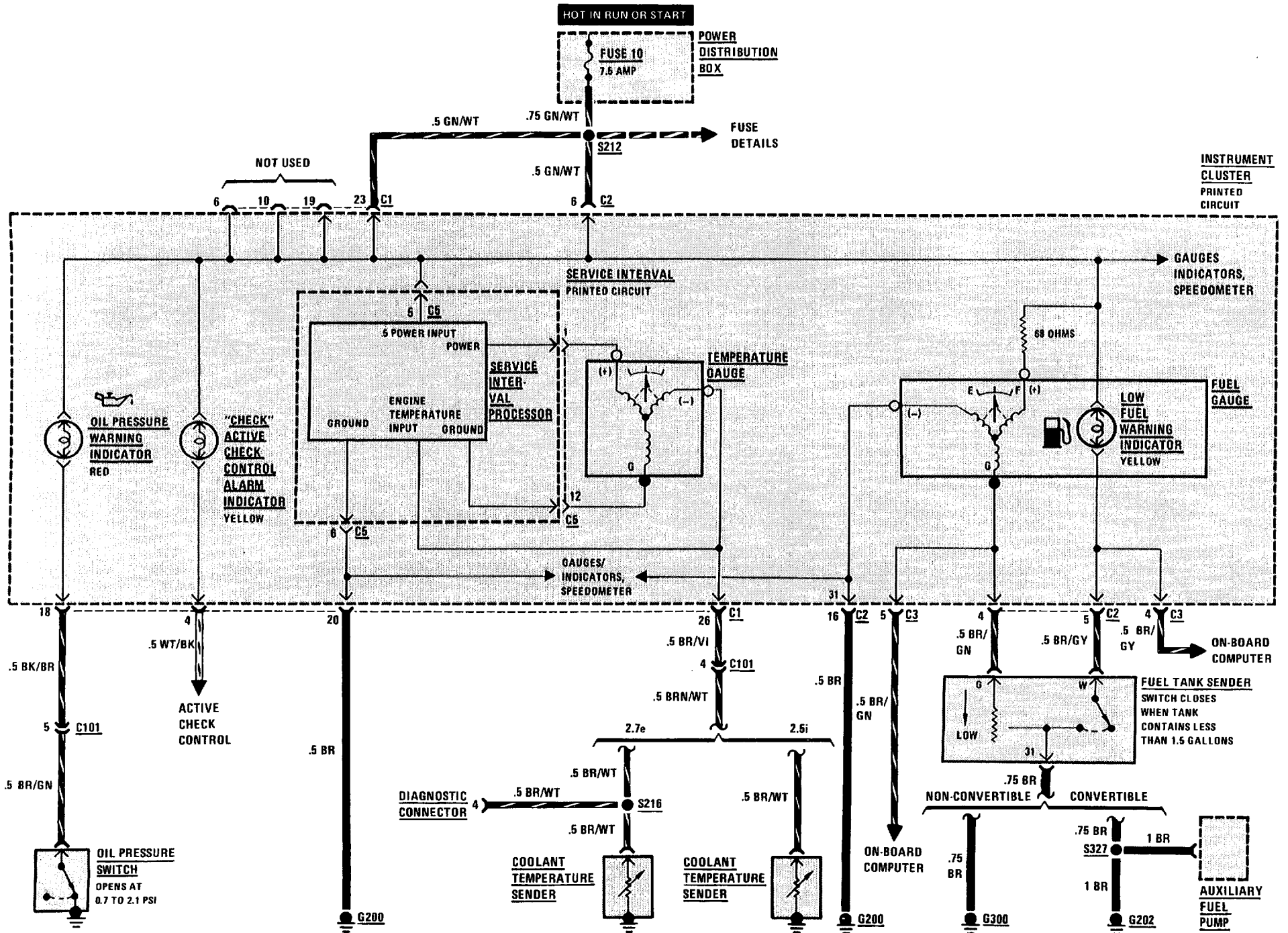


6210-2 INSTRUMENT CLUSTER 325i

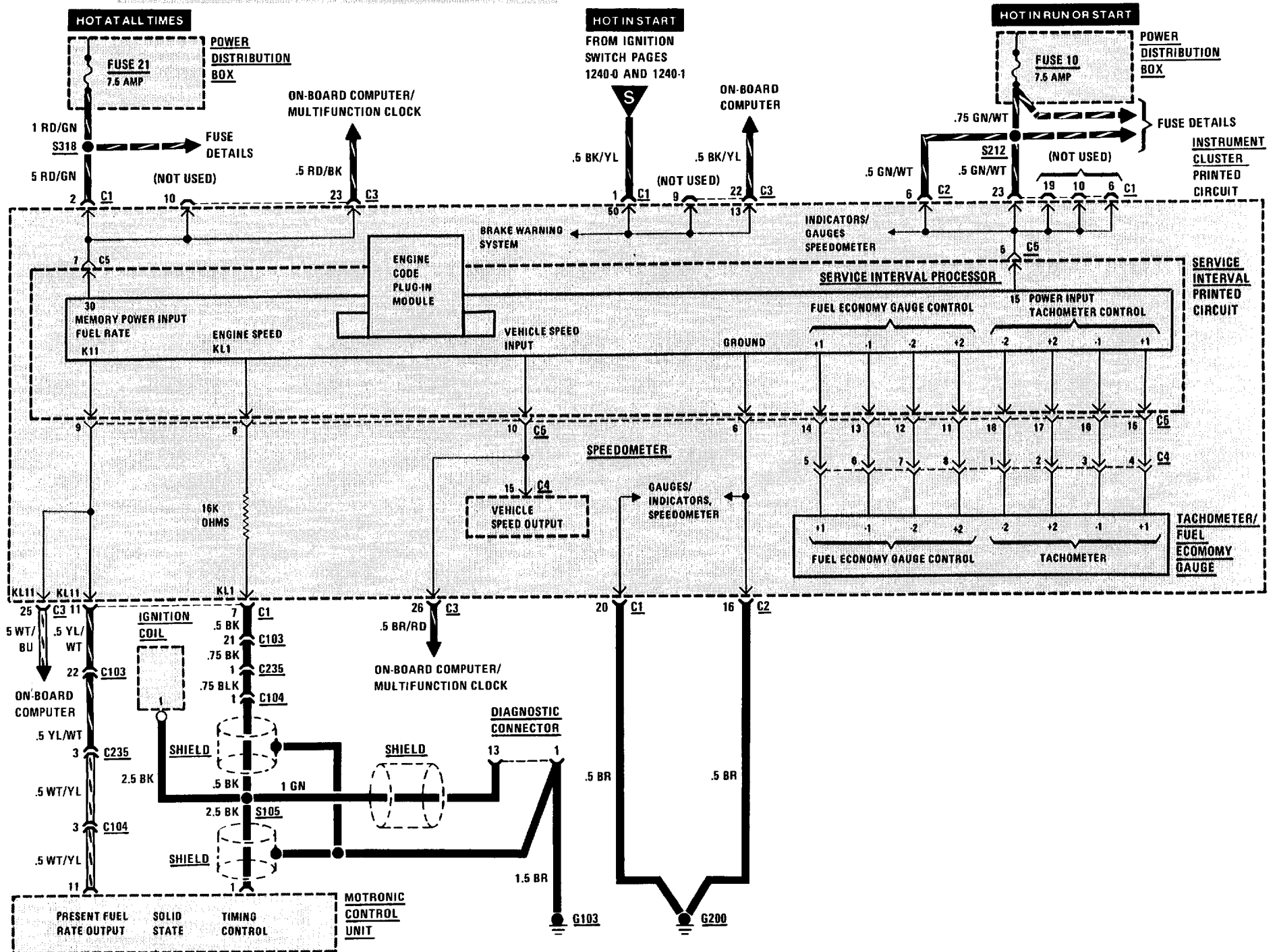
SERVICE INTERVAL INDICATOR



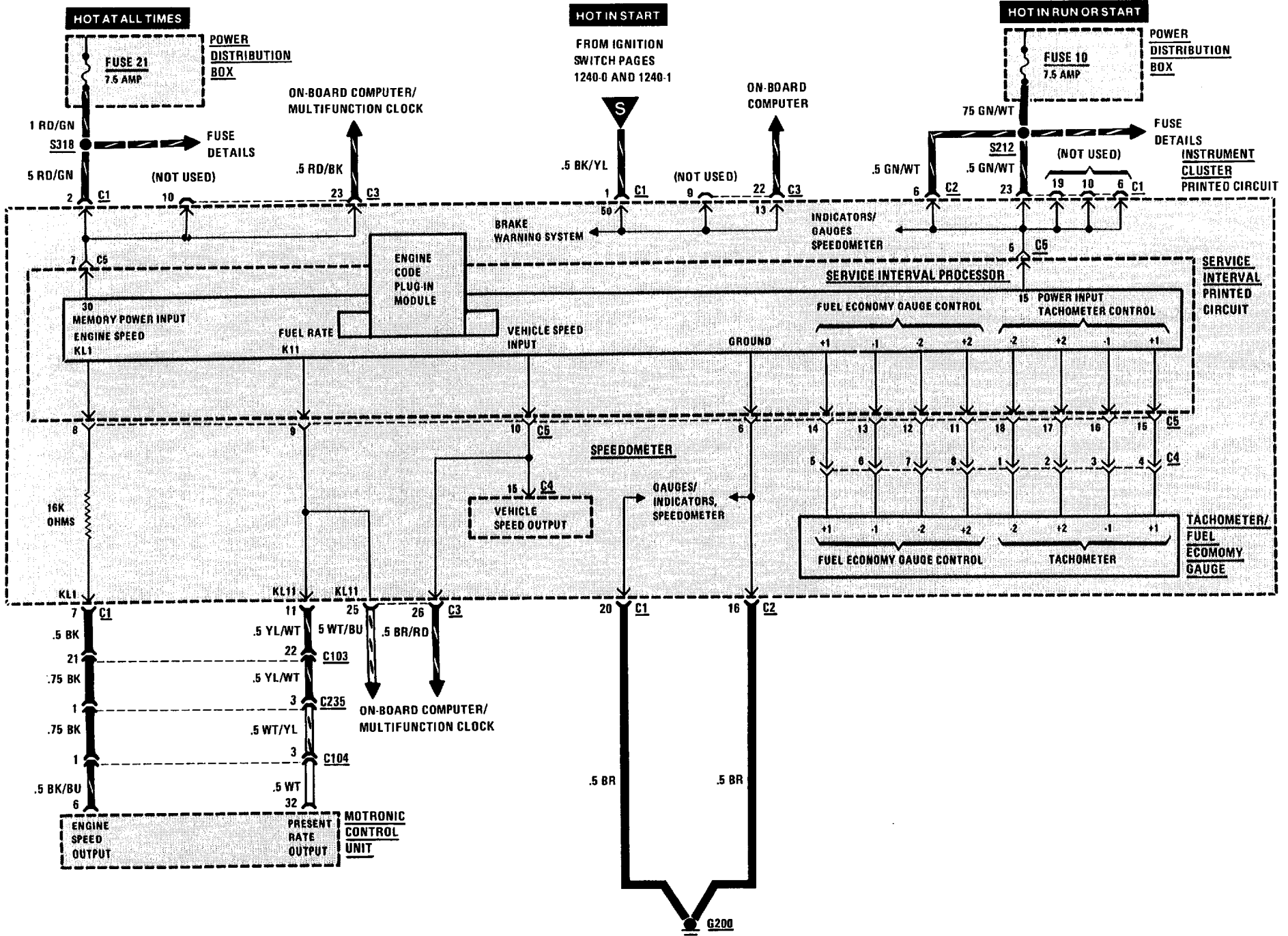
GAUGES/INDICATORS



TACHOMETER/FUEL ECONOMY GAUGE



TACHOMETER/FUEL ECONOMY GAUGE



ACTIVE CHECK CONTROL

1. When the Ignition Switch is initially placed in "Run," the Active Check Control Arm Indicator flashes, and the Active Check Control Unit Brake Light LED and panel light illuminate for test purposes. Depressing the brake pedal clears the display.
2. When the Ignition Switch is placed in "Run," fault monitoring begins. To monitor the low beams, rear lights, or license lights, those circuits must be on. The brake lights are monitored only while the brake pedal is depressed.
3. When a fault occurs, the alarm indicator flashes, the appropriate LED fault indicator lights, and the panel light goes on for five seconds. Depressing the test button will clear the alarm indicator, but the LED fault indicator remains on.
4. To test the unit, depress the test button. The LED fault indicators and the panel lights should go on.

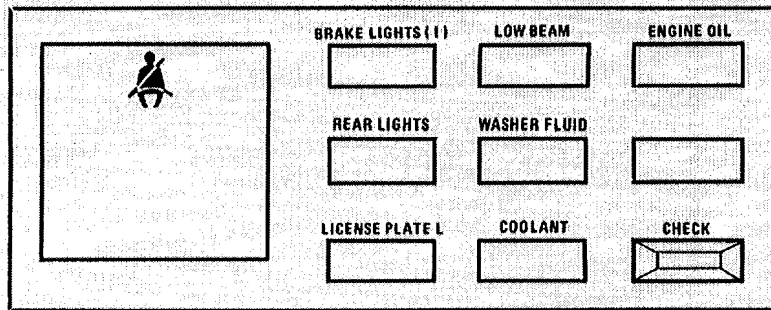
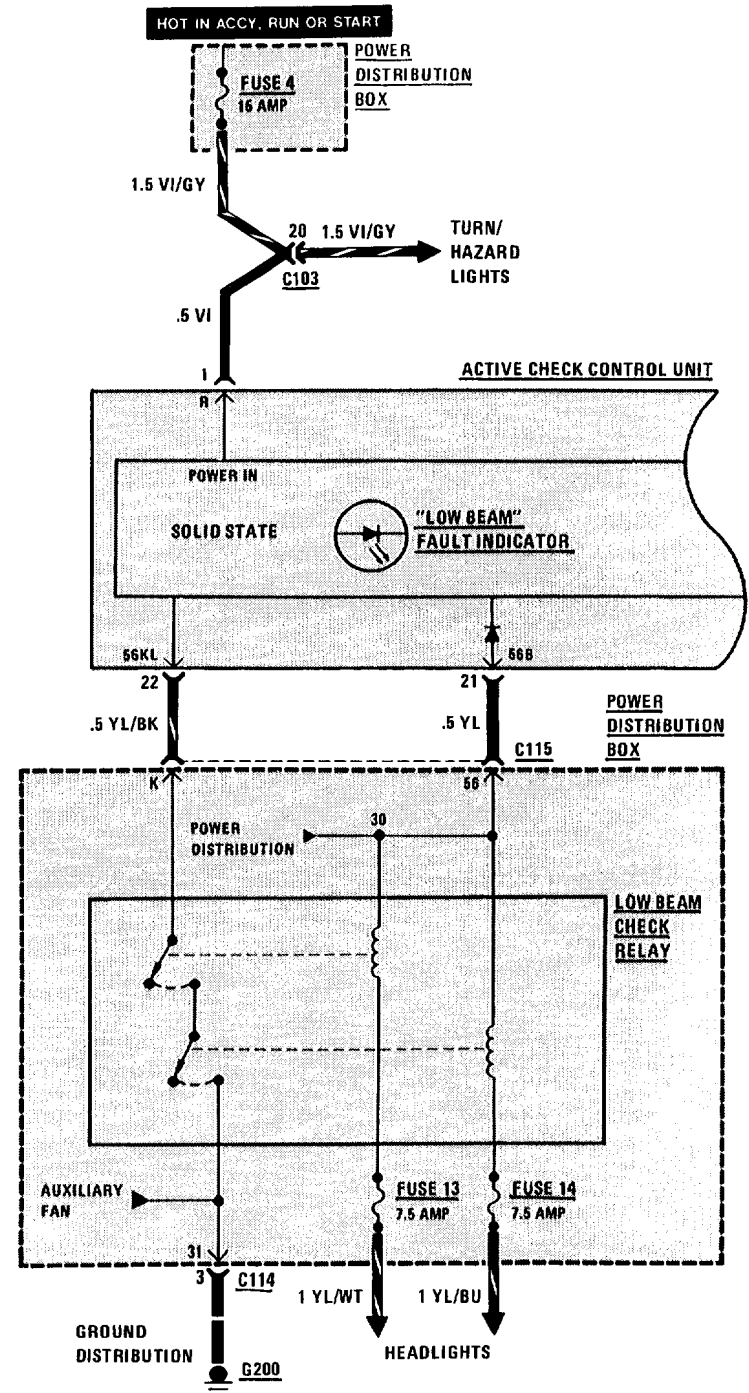
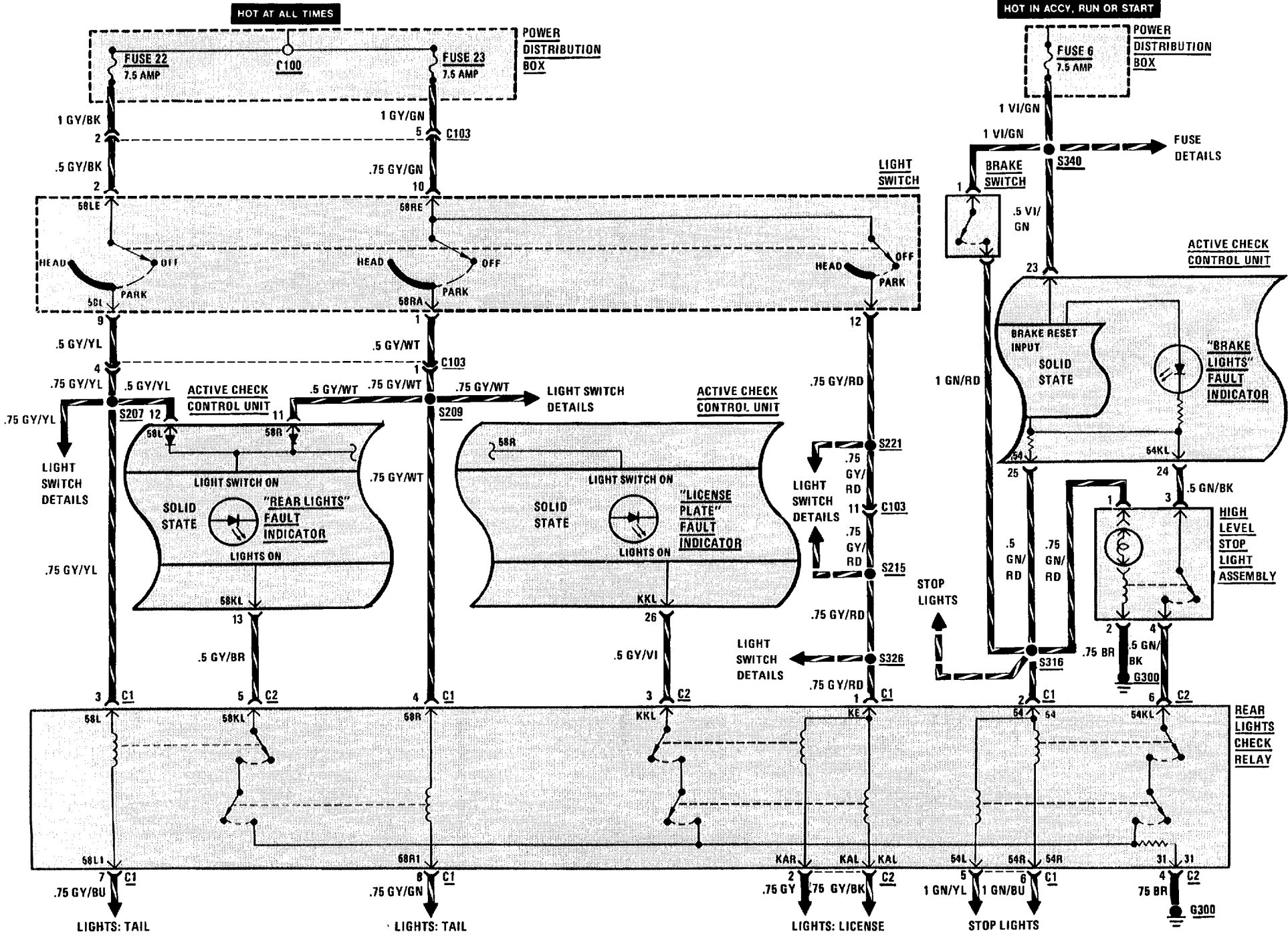
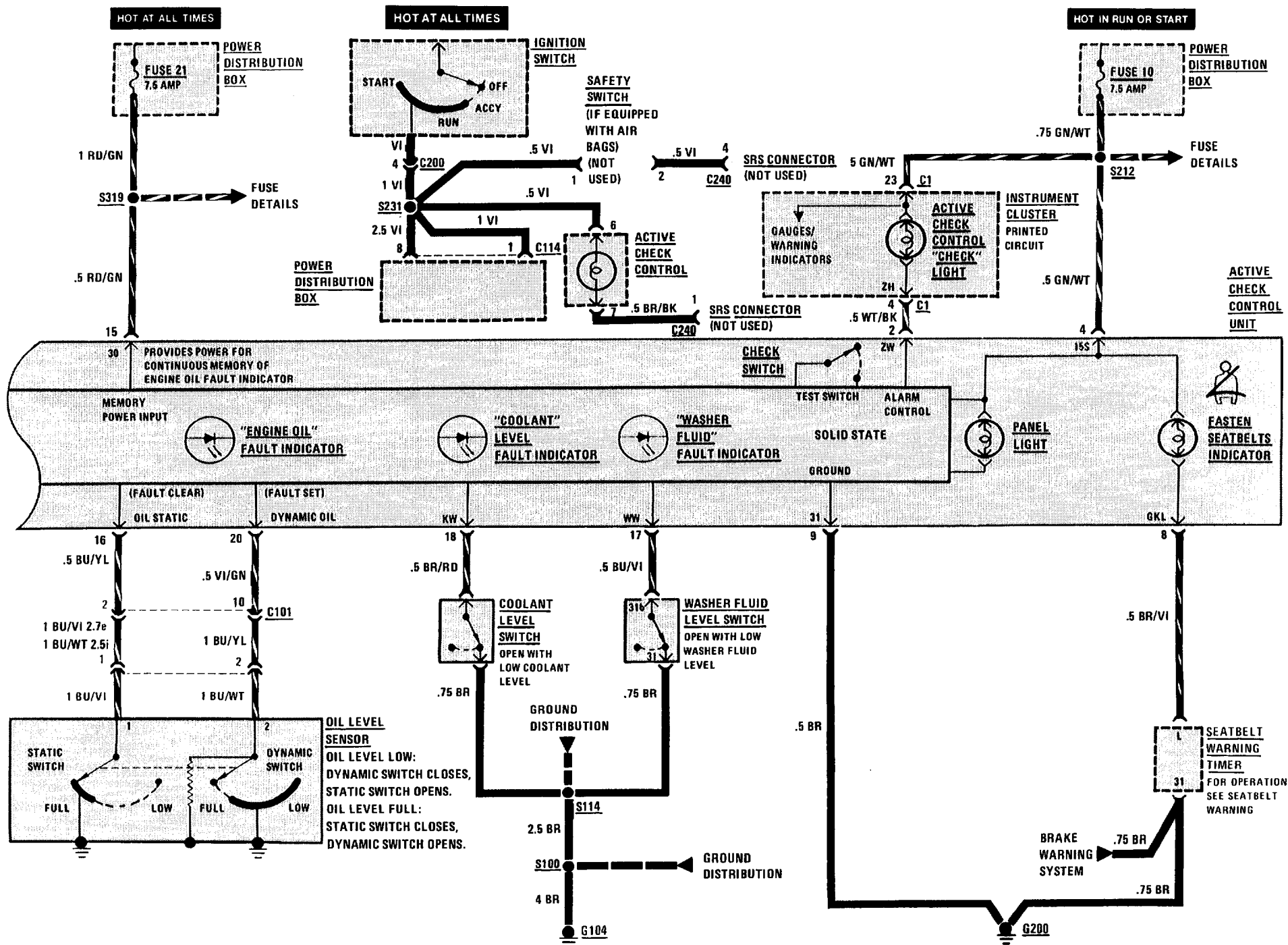


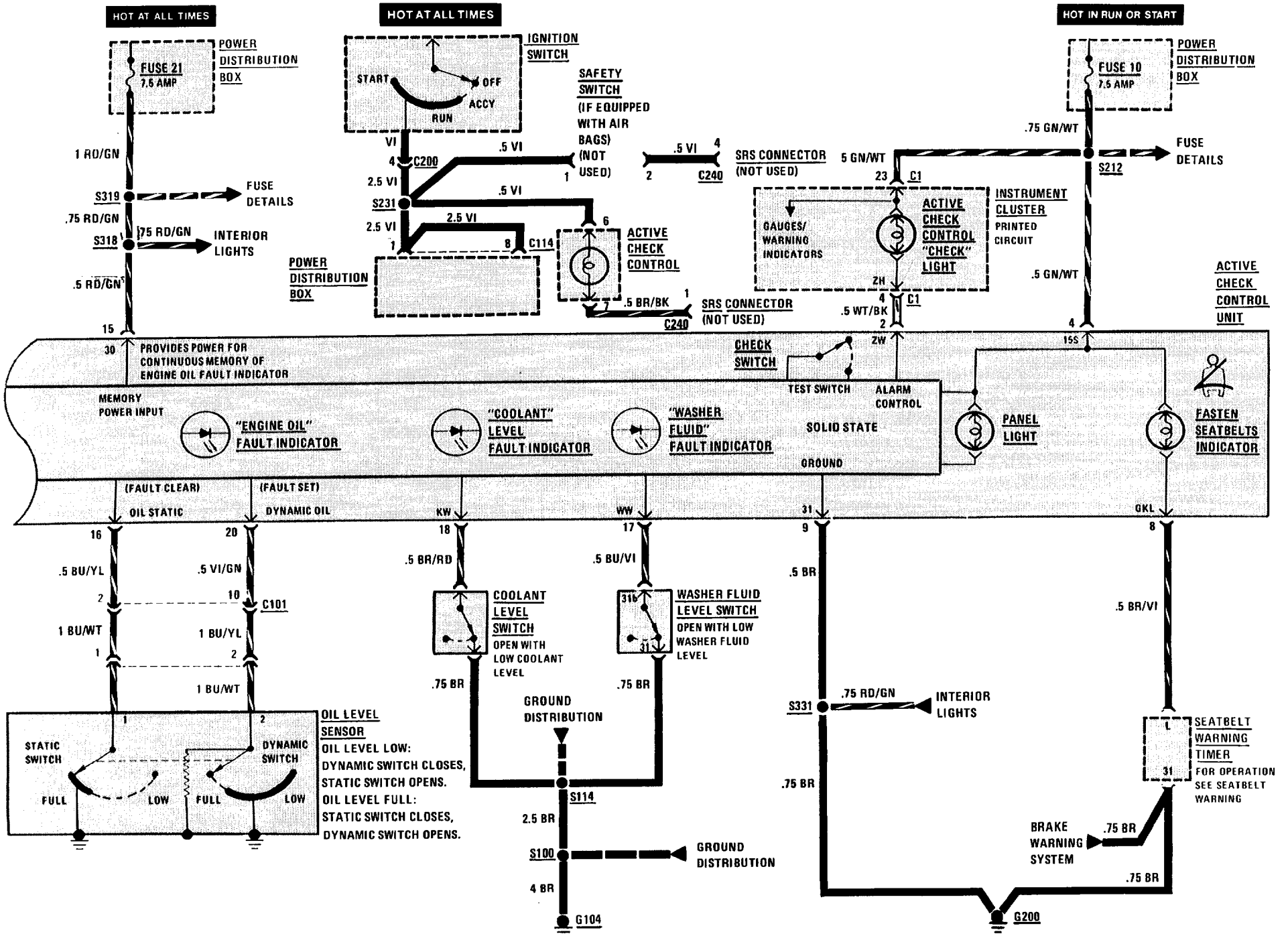
Figure 1 - Active Check Control Unit Above Rear View Mirror



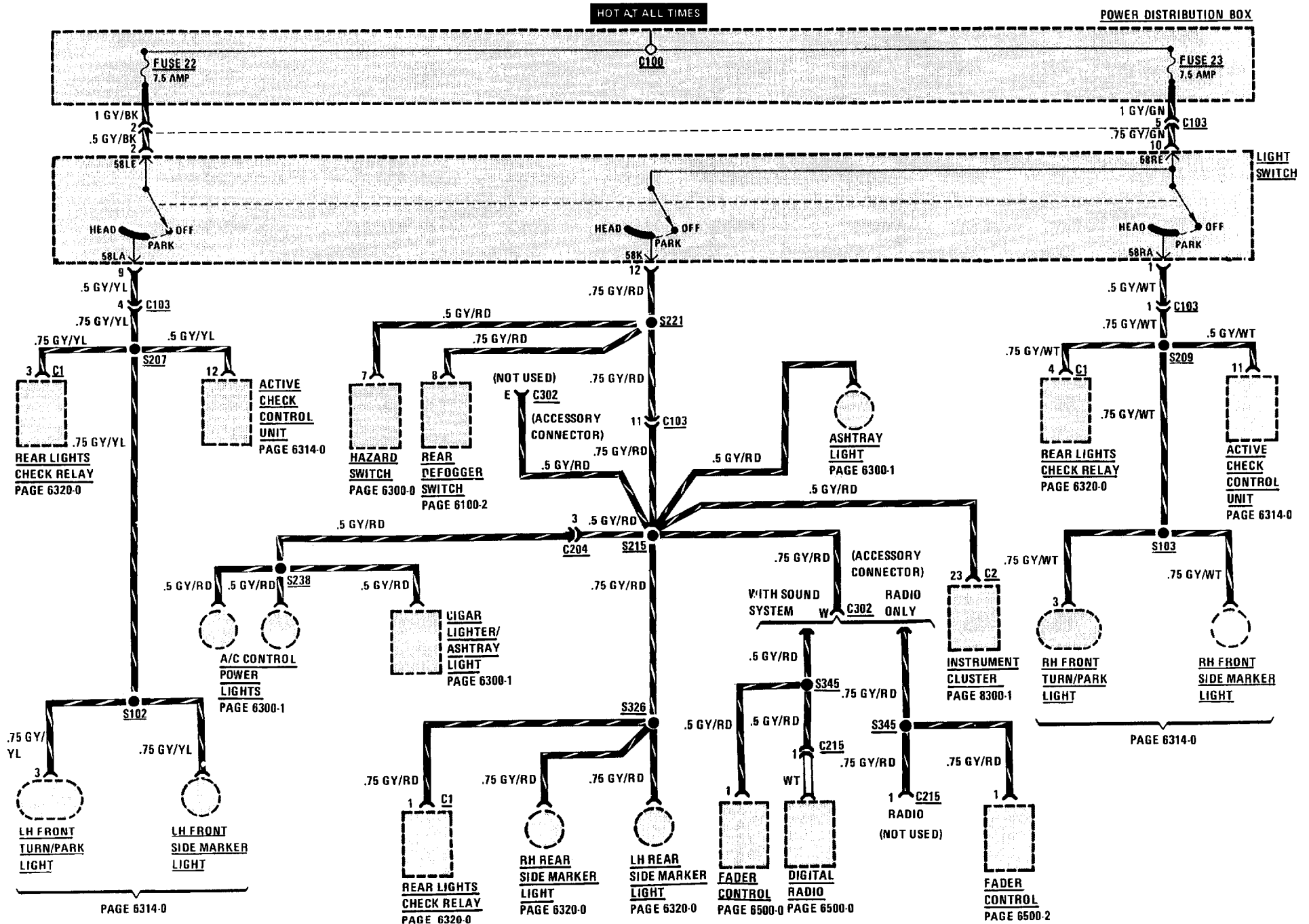


6216-2 ACTIVE CHECK CONTROL EXCEPT CONVERTIBLE

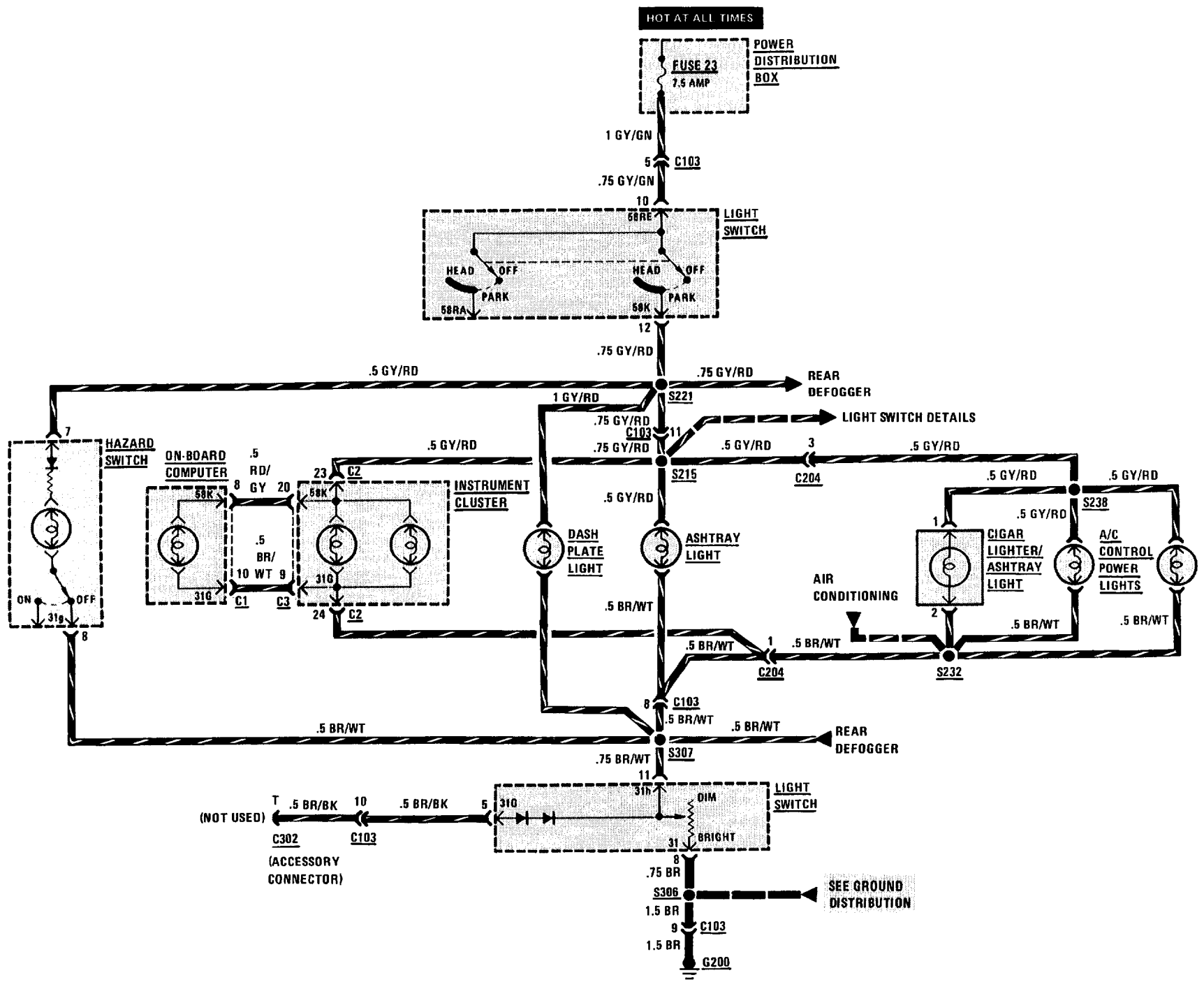




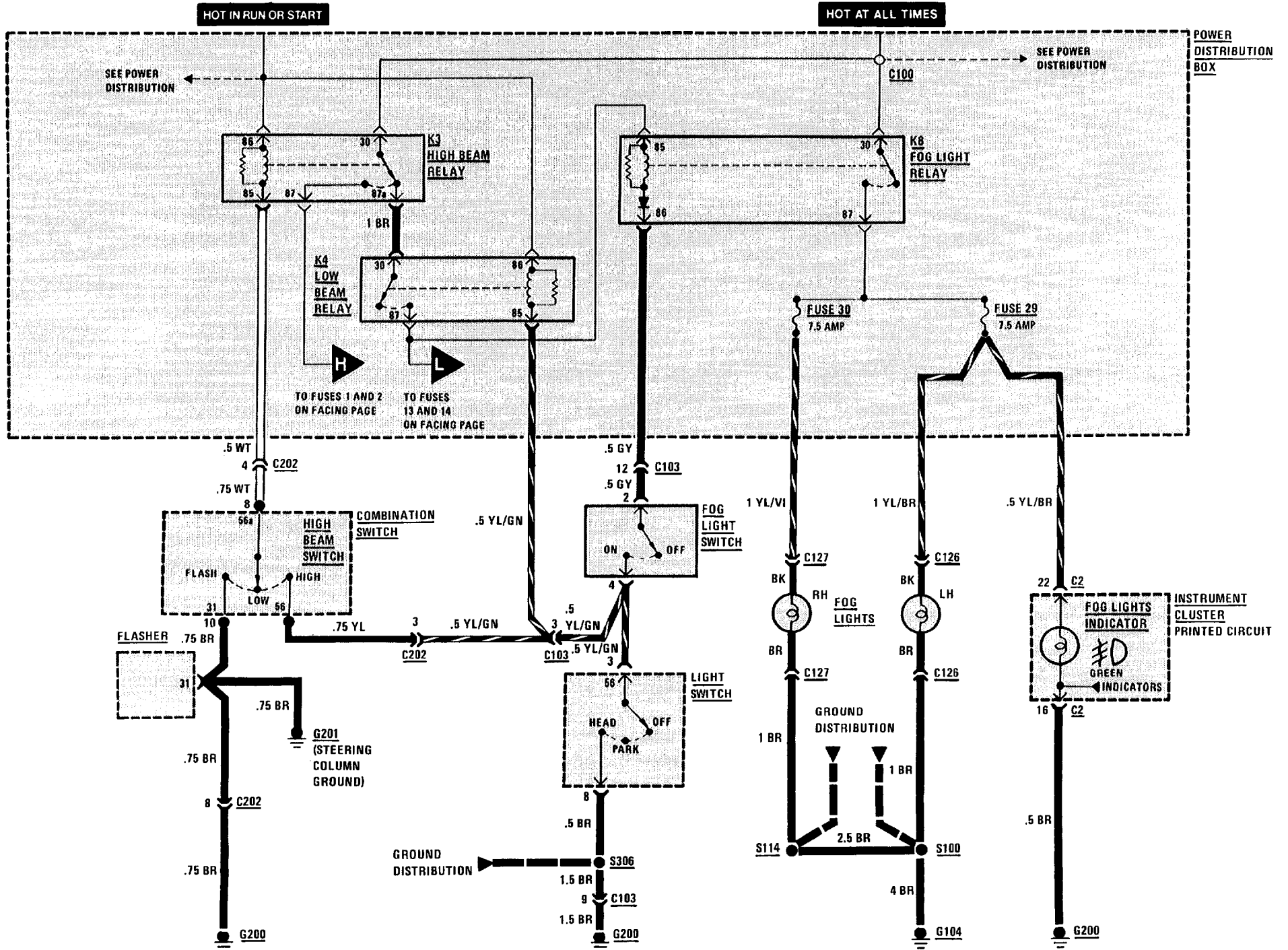
6300-0 LIGHT SWITCH DETAILS

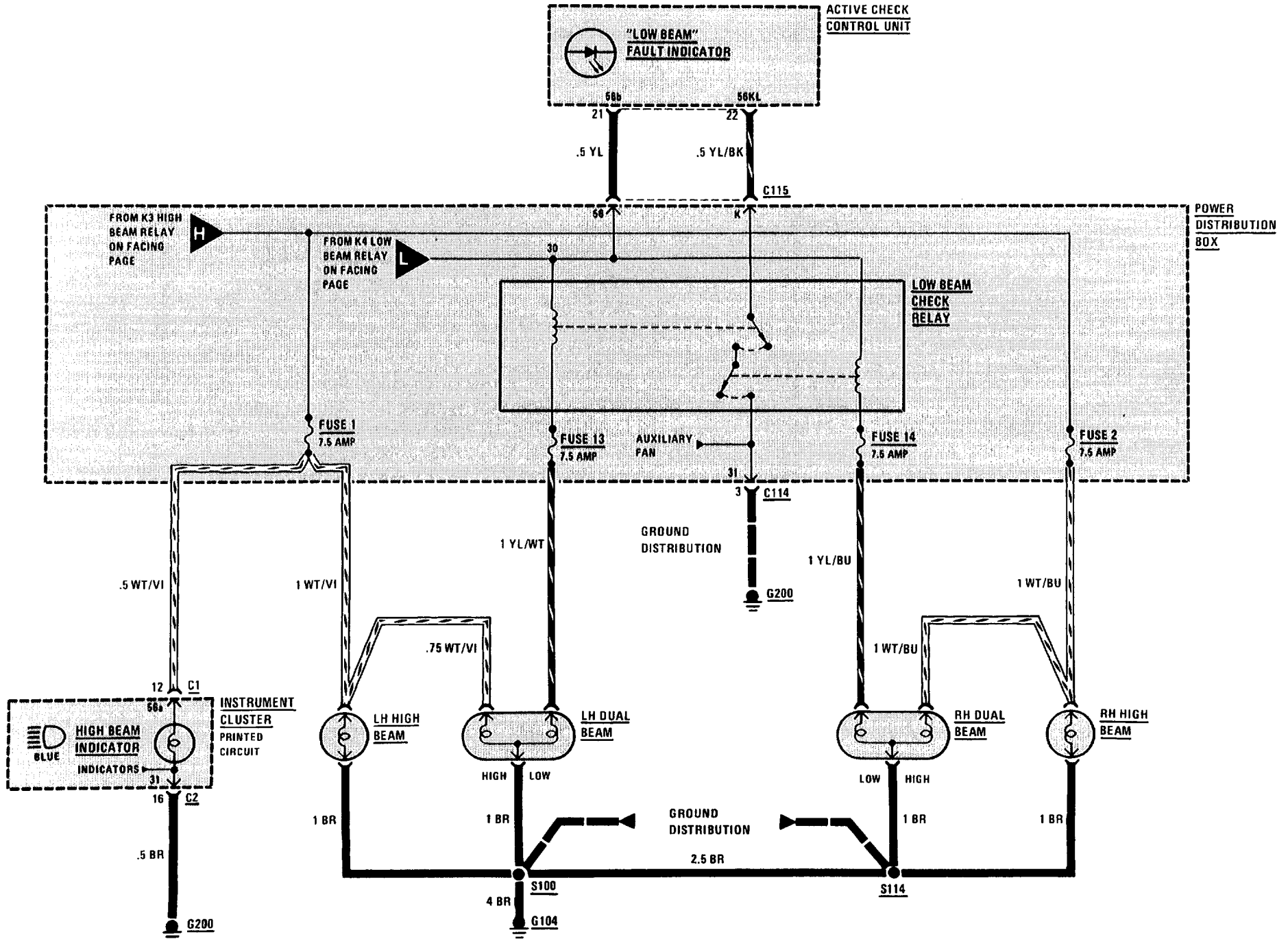


DASH LIGHTS

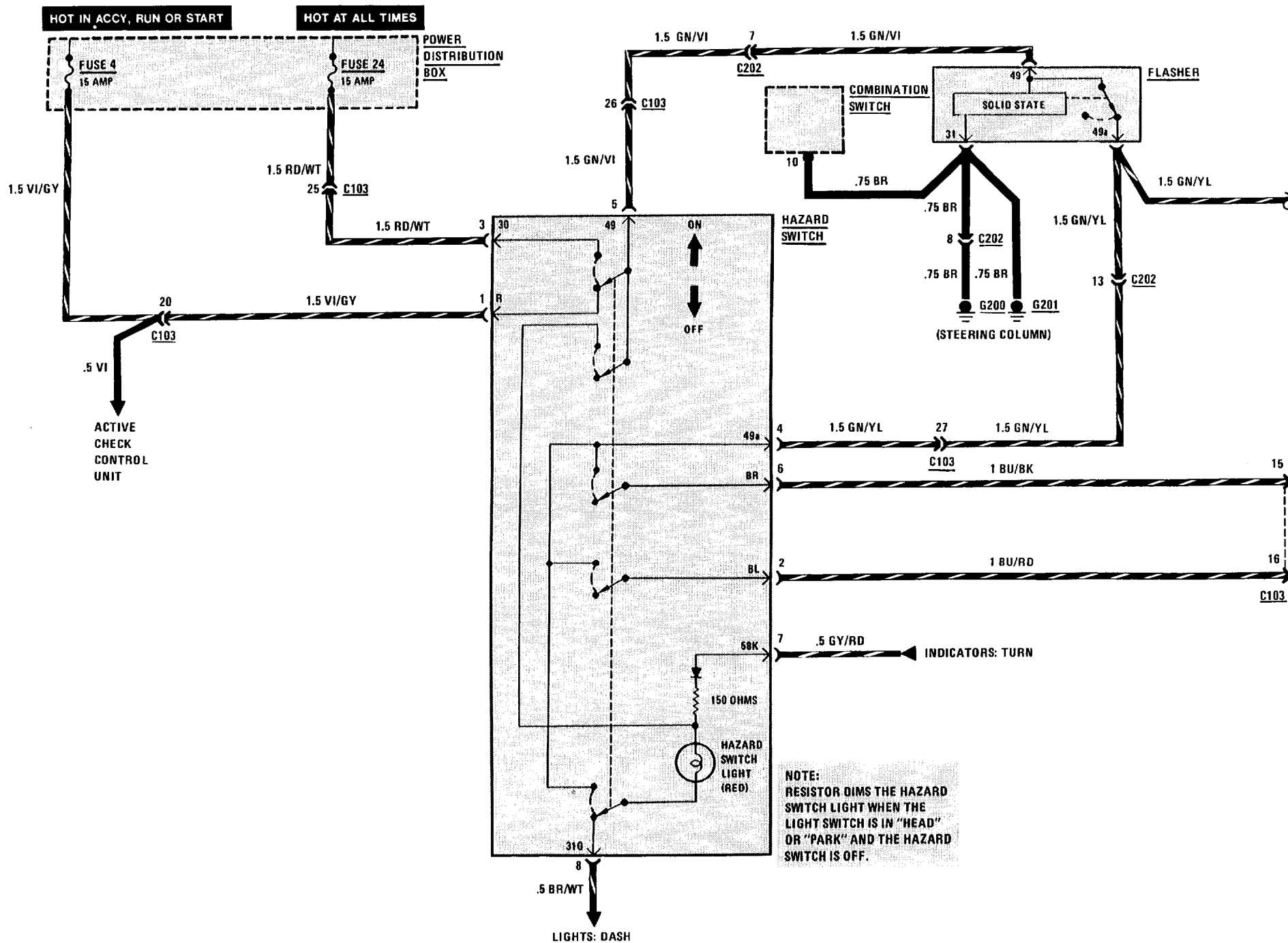


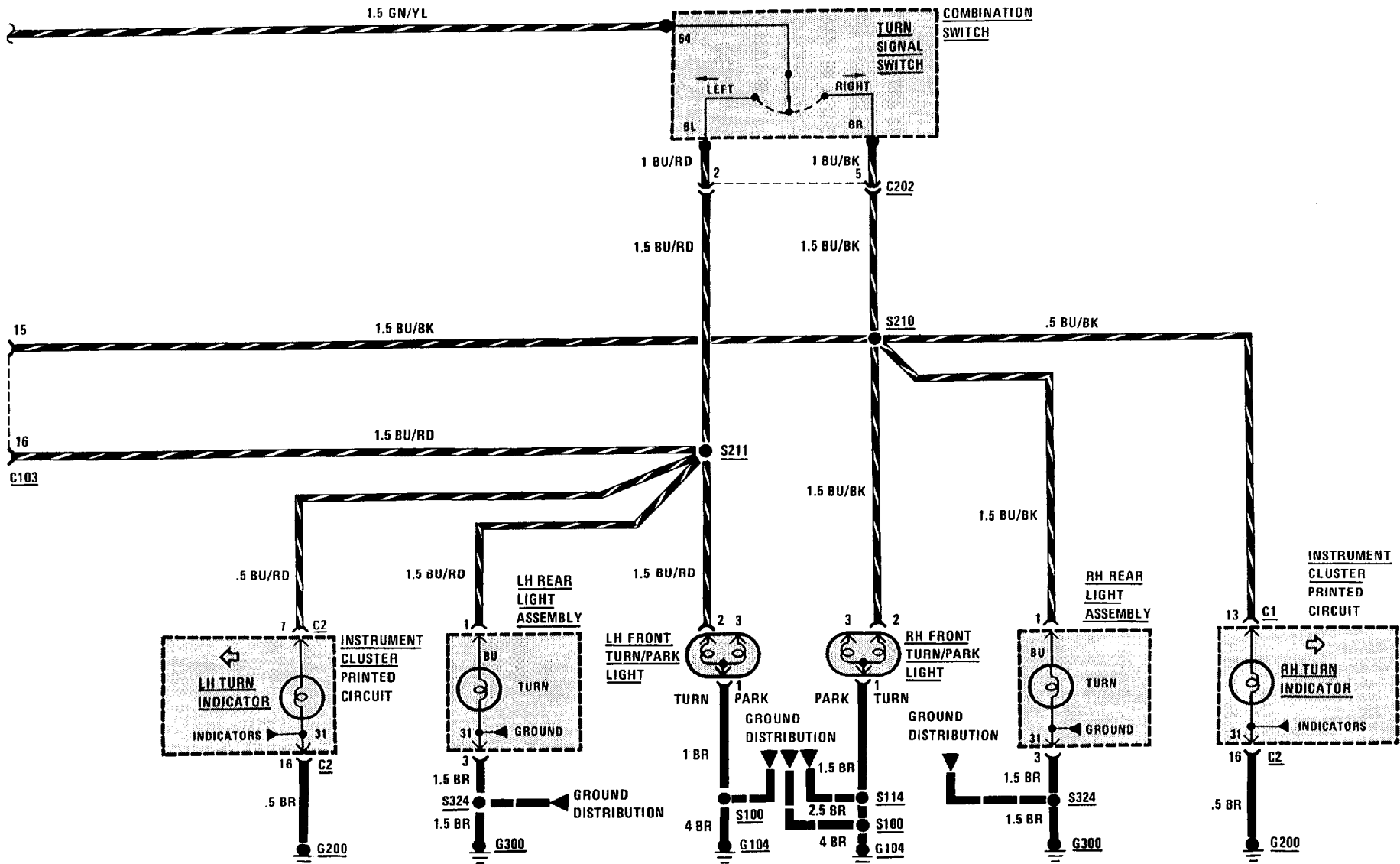
6312-0 HEADLIGHTS/FOG LIGHTS



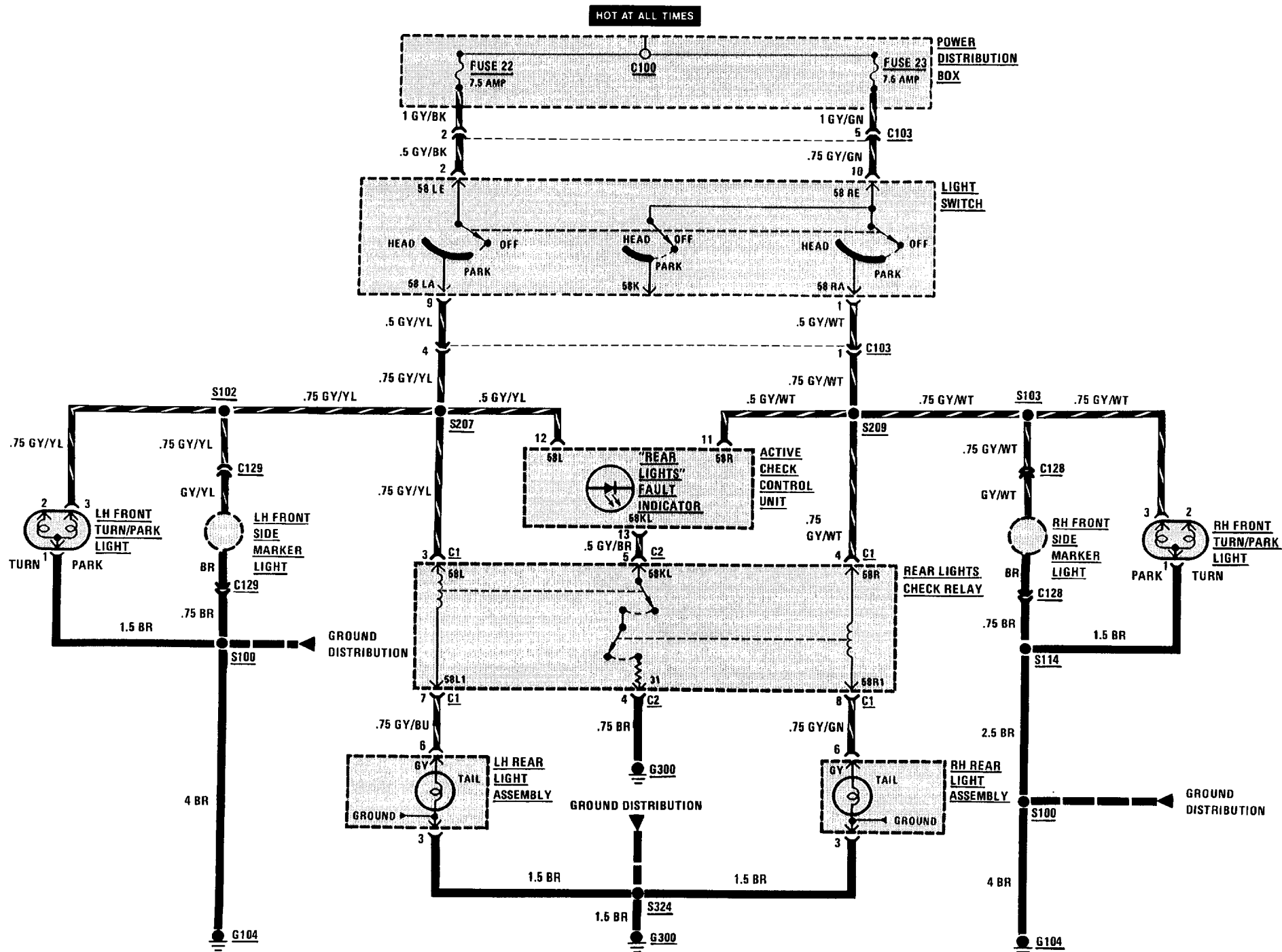


6313-0 TURN/HAZARD LIGHTS

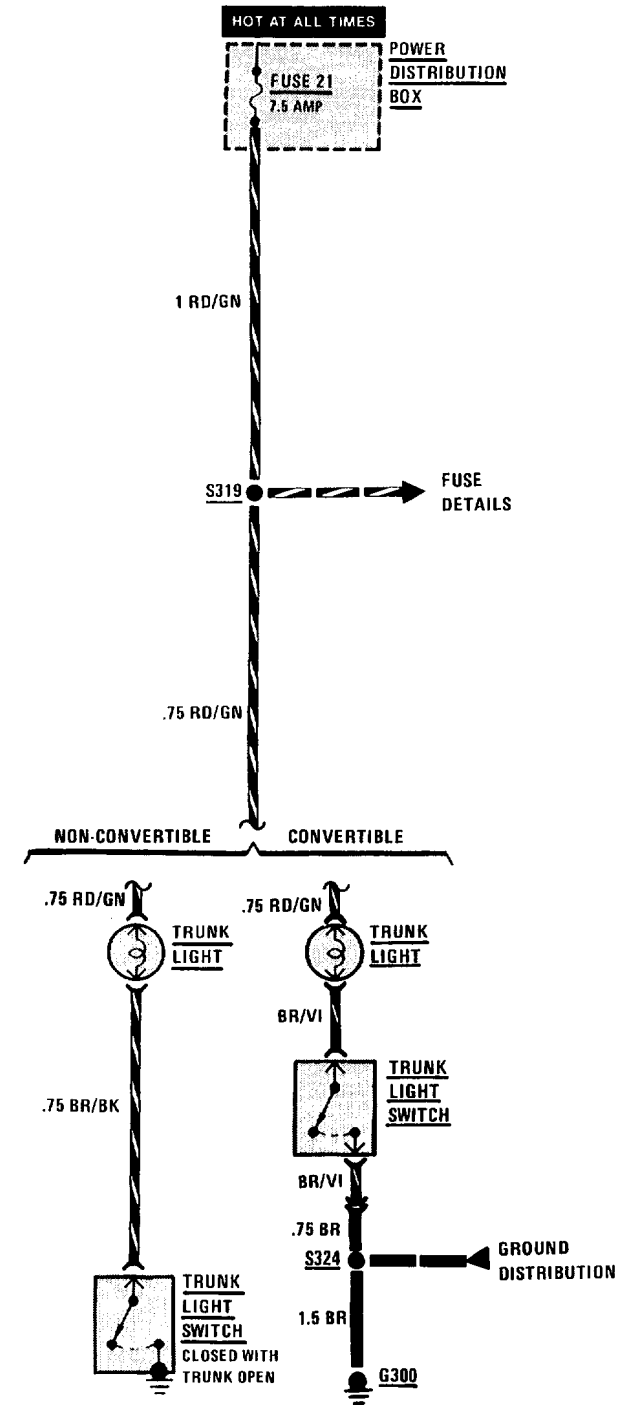
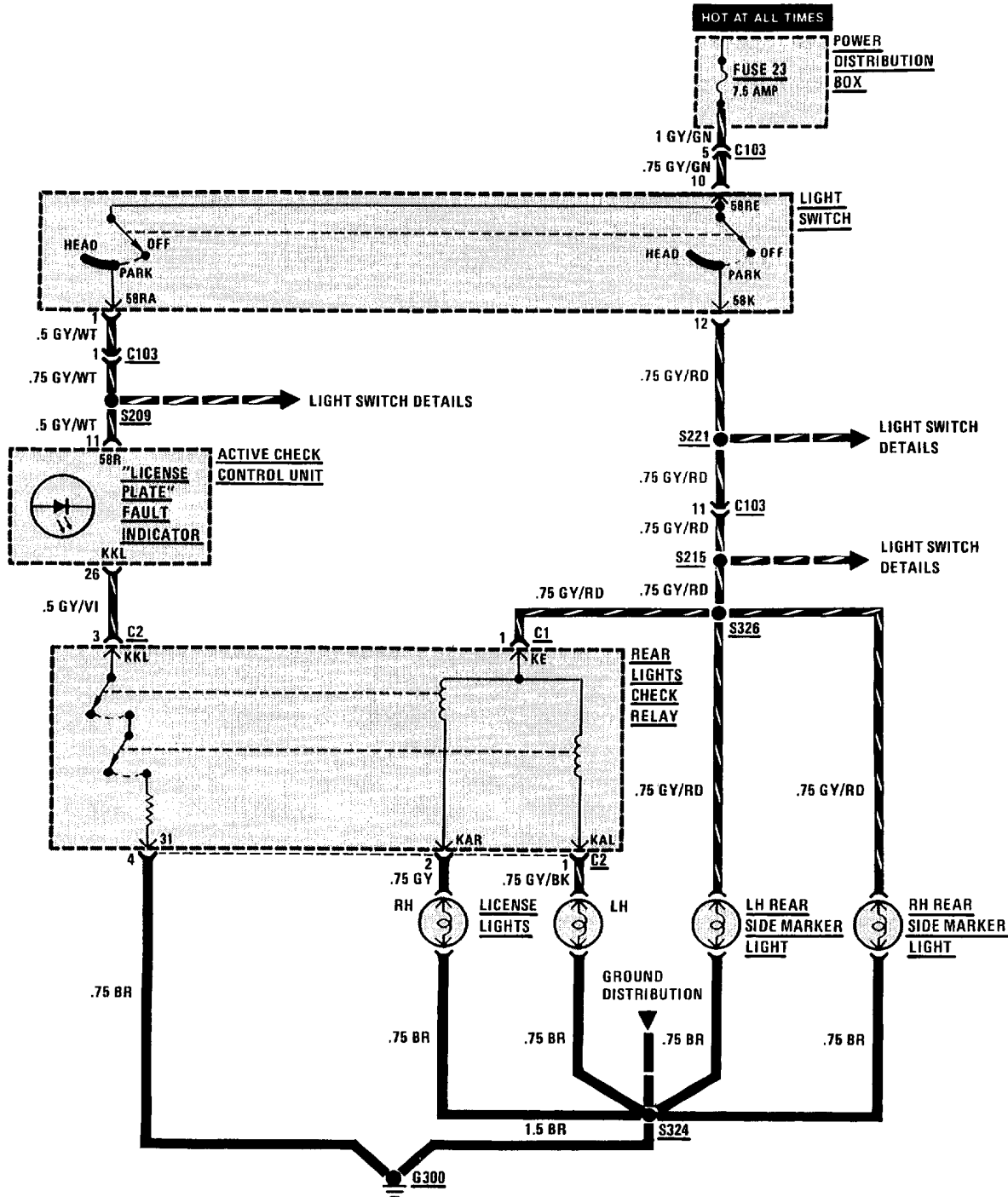




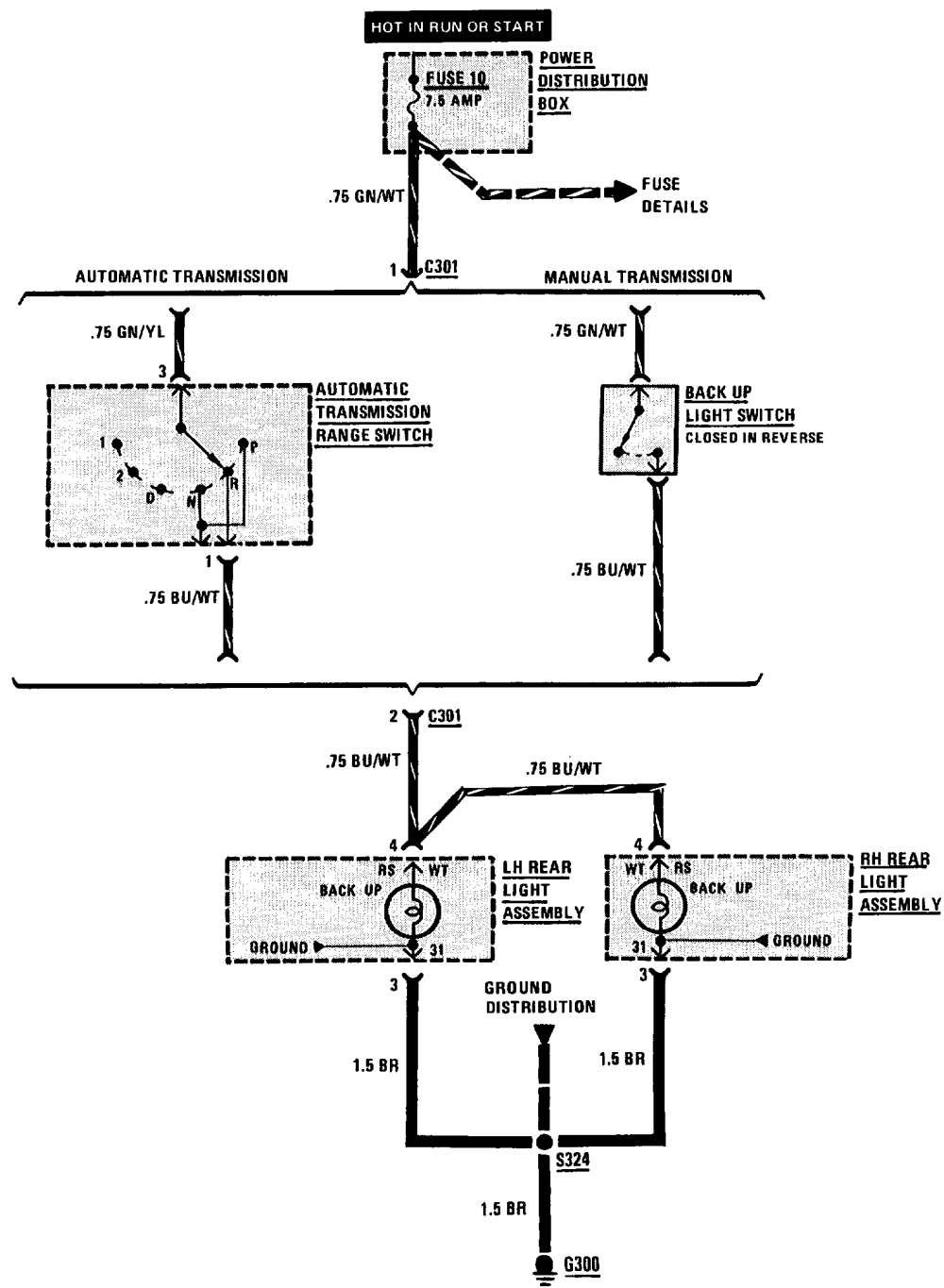
6314-0 PARK/TAIL/FRONT MARKER LIGHTS

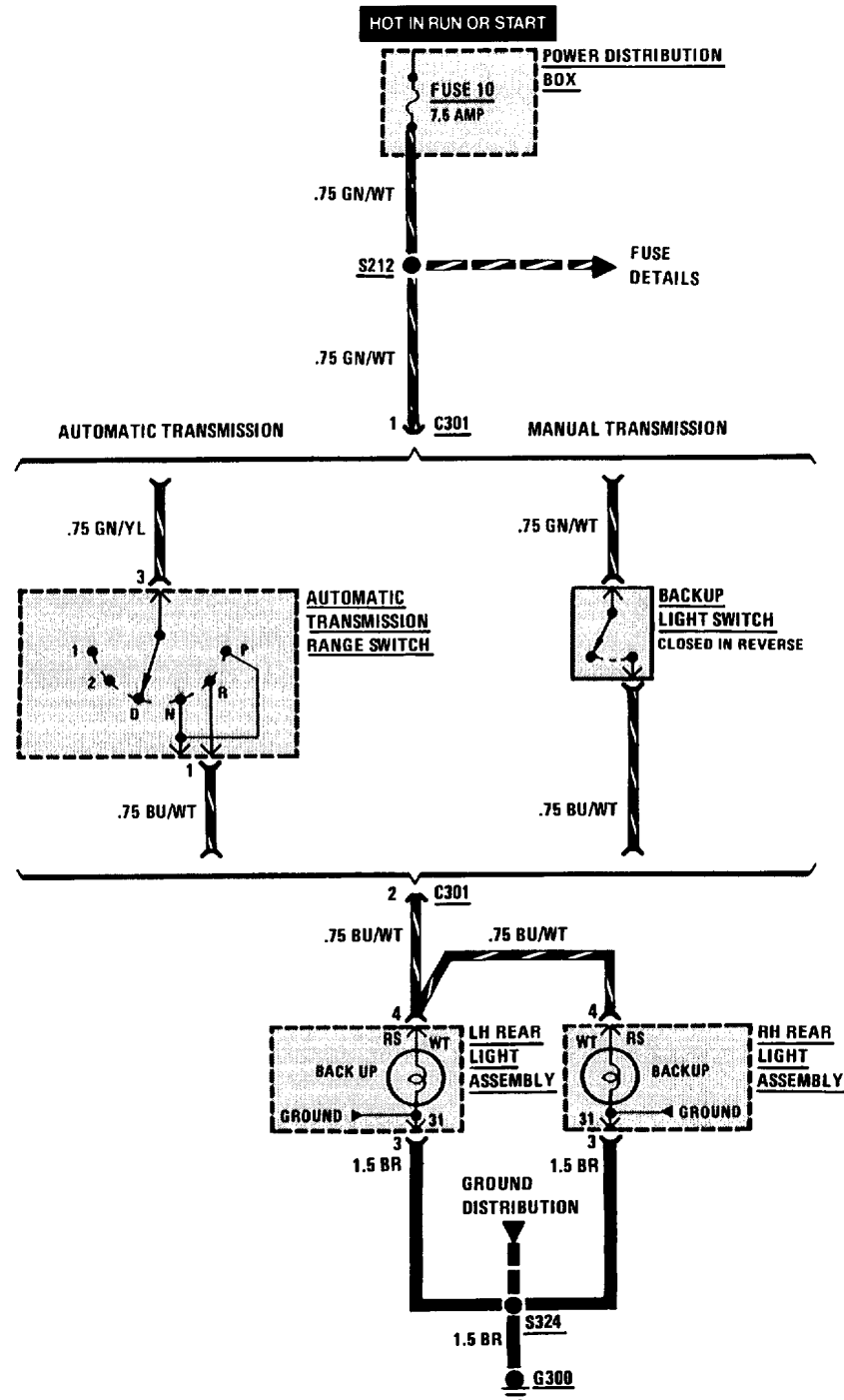


6320-0 REAR MARKER/LICENSE/TRUNK LIGHTS

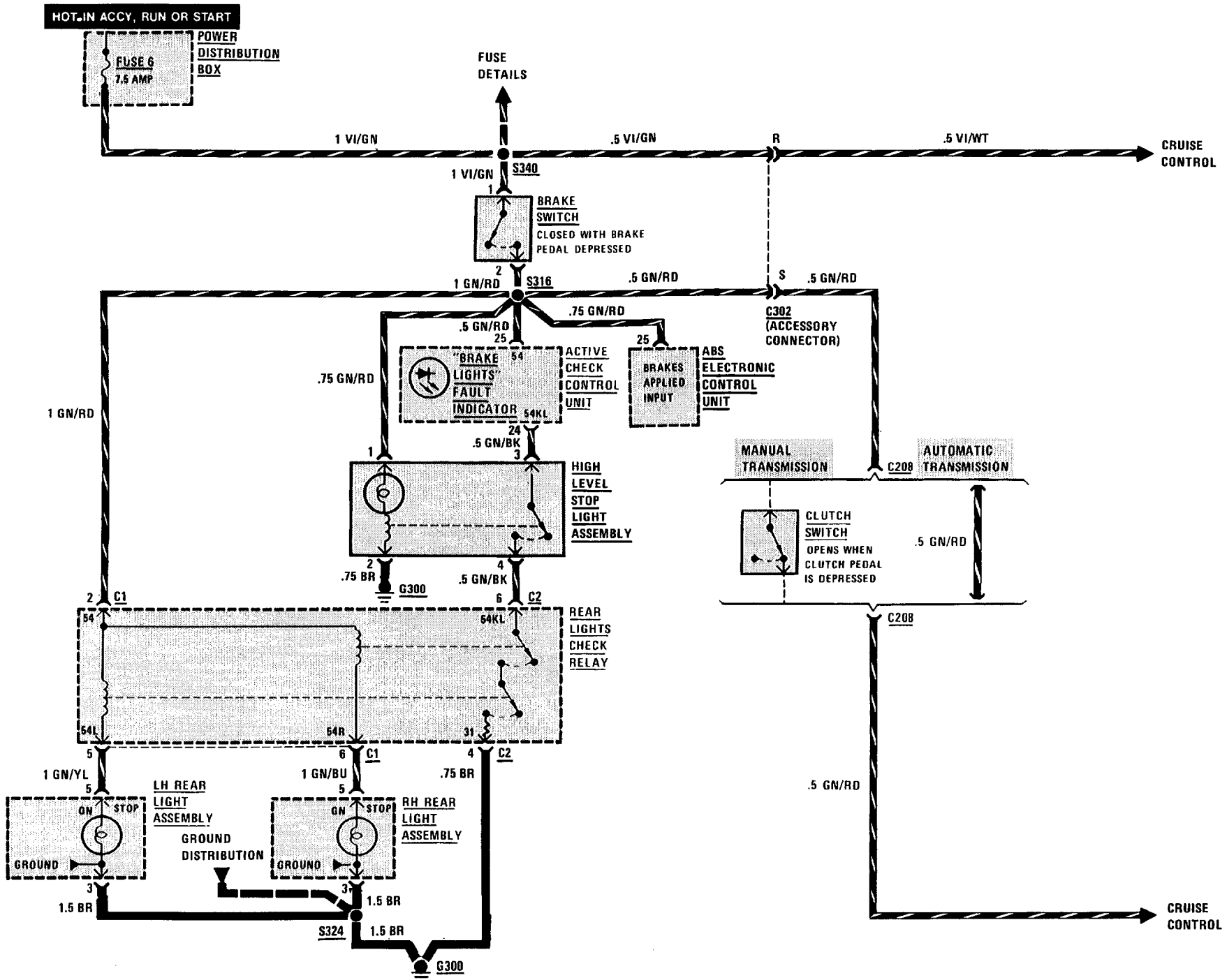


6322-0 BACK UP LIGHTS 325e, 325i EXCEPT CONVERTIBLE

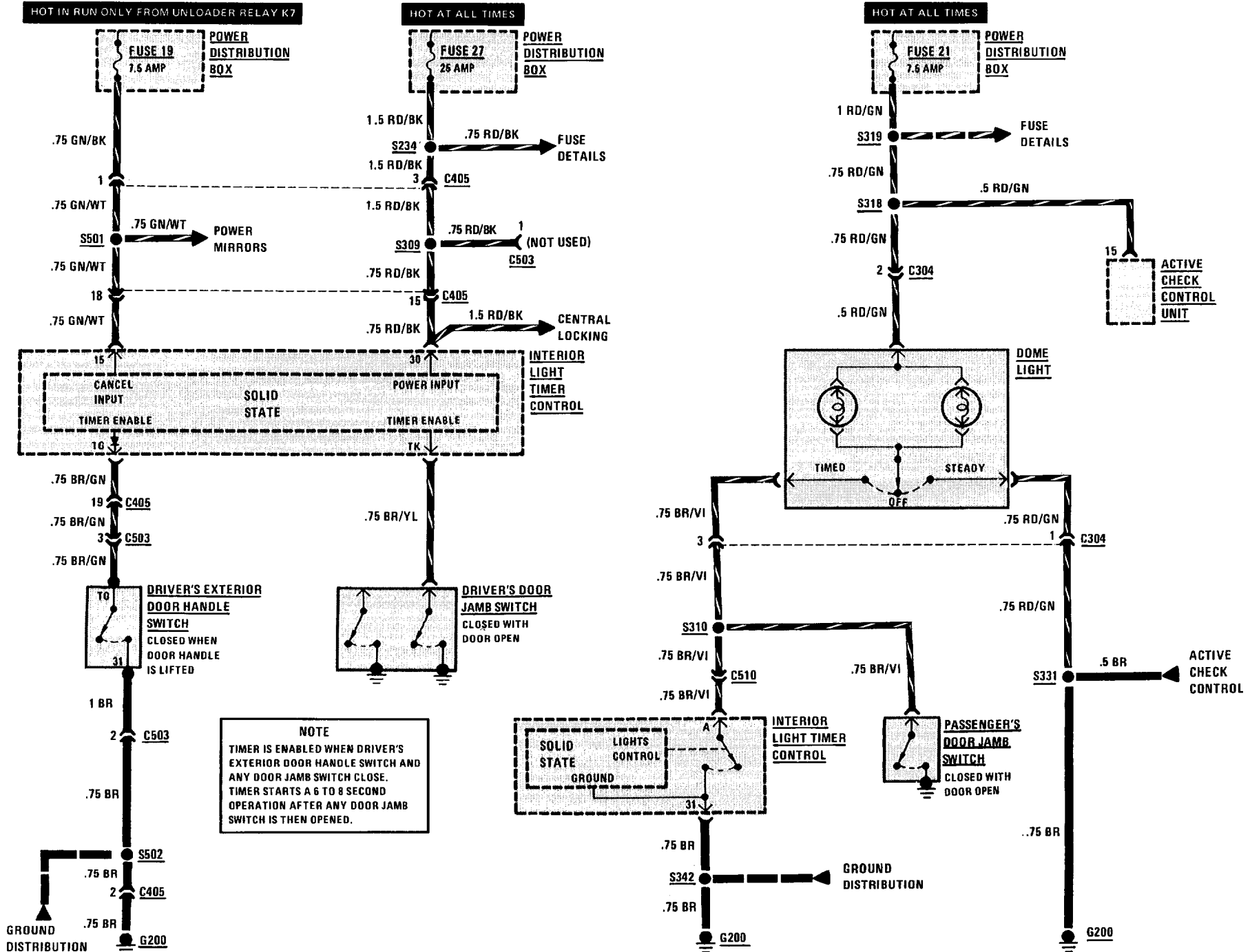


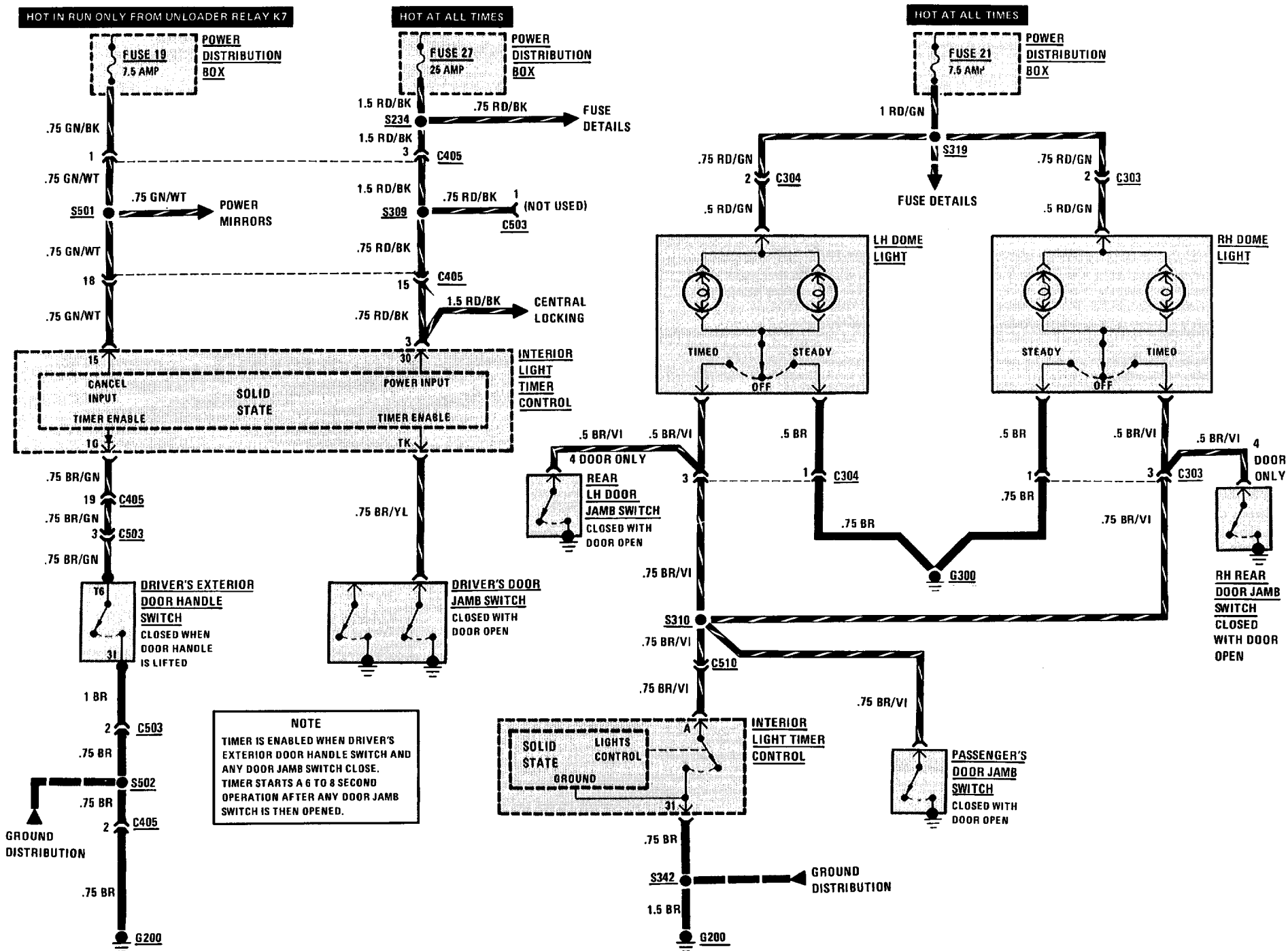


6325-0 STOP LIGHTS



6330-0 INTERIOR LIGHTS CONVERTIBLE





6410A-0 HEATING AND AIR CONDITIONING

SYSTEM CHECK

This procedure provides an overall check of the Heating and Air Conditioning System. Each of the steps can be performed without disassembly or the use of tools.

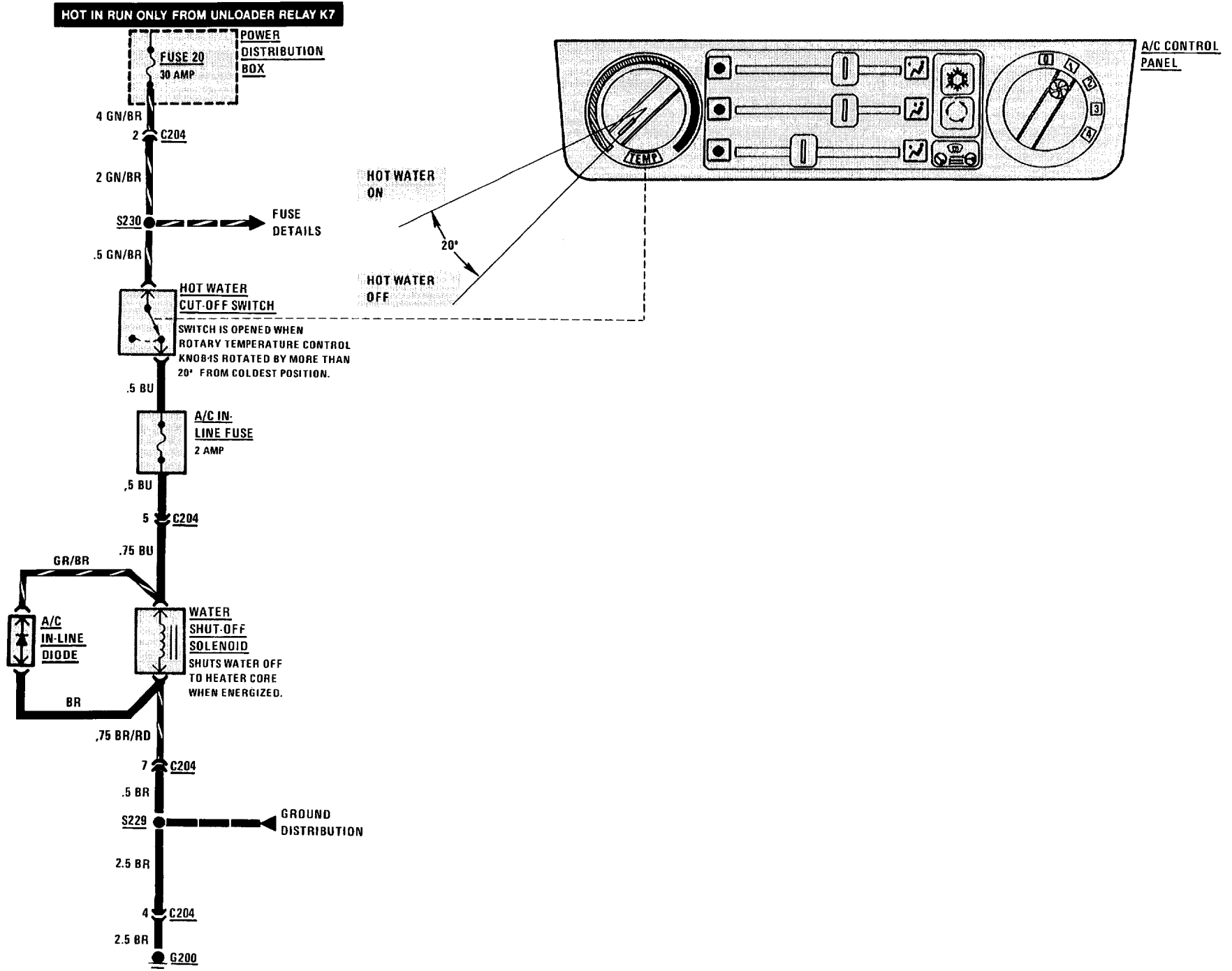
Complete this procedure with the temperature outside the car above 60 degrees F (16 degrees C) and the engine warm and running at idle.

SYSTEM CHECK TABLE

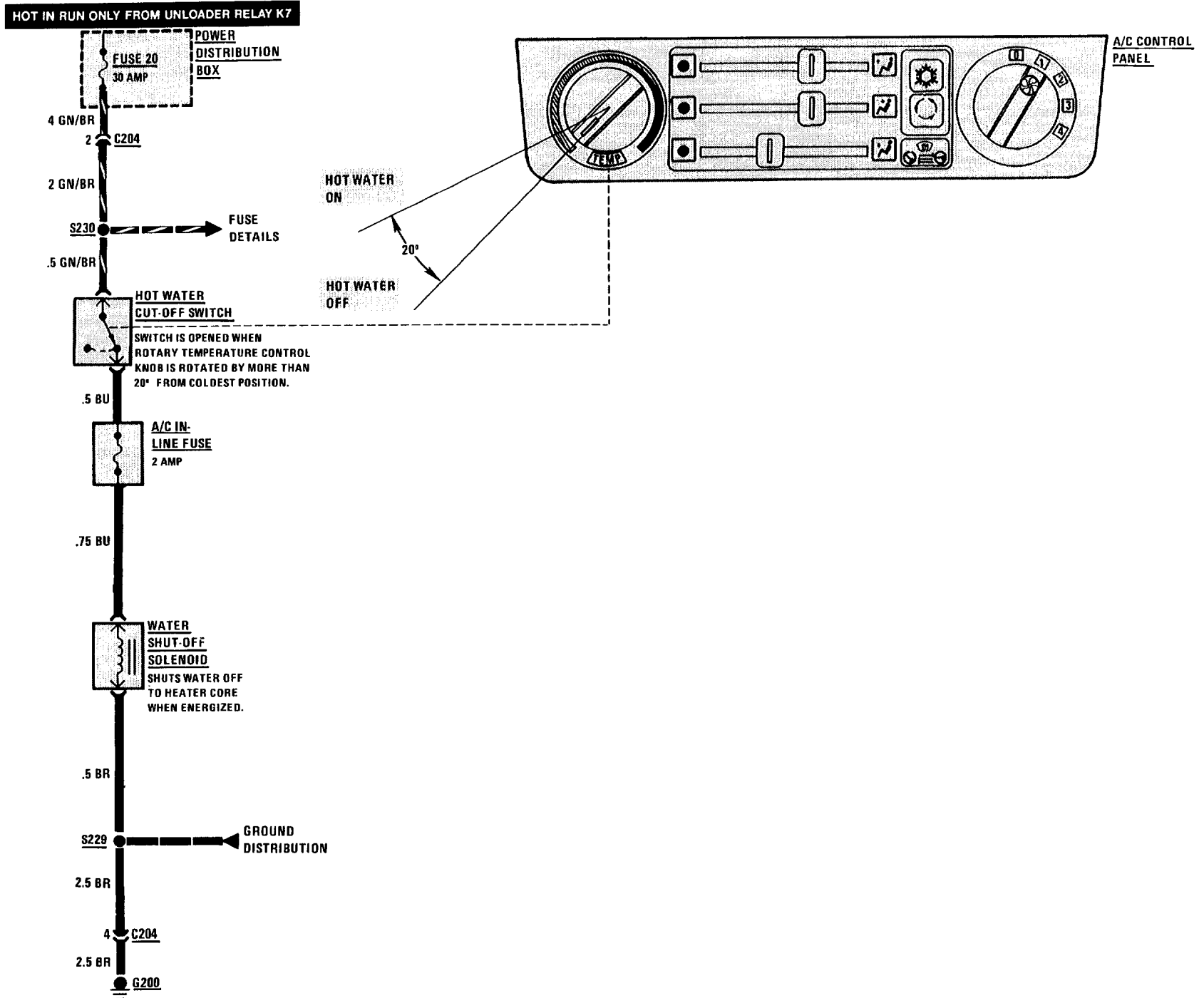
SET: Temperature Control fully counterclockwise Upper and Lower Slide Levers to extreme left Center Slide Lever to extreme right Blower Speed Control at 0 (OFF)	
ACTION	NORMAL RESULT
Press Fresh/Recirculating Air Switch (ON). Release A/C button (OFF).	Fresh/Recirculating pushbutton lights. Blower runs slowly.
Rotate Blower Speed Control through steps 1 to 4.	Blower speed increases at each step to maximum speed at step 4.
Press Fresh/Recirculating Air Switch to release it (OFF).	Fresh/Recirculating button is no longer lighted. Outside air is drawn into car. (The sound of Flap Door Motors may be heard repositioning flaps.)
Rotate Temperature Control at least 1/4 turn clockwise.	Air flow becomes warm.
Depress A/C button (ON).	A/C button lights. A/C Compressor runs. Auxiliary Cooling Fans runs.
Move Center Slide Lever to the extreme left.	A/C button is no longer lighted. A/C Compressor turns off. Auxiliary Cooling Fan turns off.
Move Bottom Slide Lever to the center.	A/C button lights. A/C Compressor turns off. Auxiliary Cooling Fan runs.
Press A/C button to release it (OFF).	A/C button is no longer lighted. A/C Compressor turns off. Auxiliary Cooling Fan turns off.
Set Blower Speed Control to 0 (OFF).	Blower turns off.

- If all of the steps can be completed as described, the Heating and Air Conditioning System is operating normally.

HEATING AND AIR CONDITIONING (HOT WATER CONTROL)



HEATING AND AIR CONDITIONING (HOT WATER CONTROL)



6411A-0 A/C TEMPERATURE CONTROL

CIRCUIT OPERATION

The Water Shut-Off Solenoid controls the flow of engine coolant through the heater core. When the Solenoid is energized, coolant flow is shut off to allow maximum cooling from the Air Conditioning System. The Water Shut-Off Solenoid is controlled by the Hot Water Cut-Off Switch, which is part of the A/C Control Panel TEMP Control.

Battery voltage is applied through Fuse 20 to the Hot Water Cut-Off Switch when the Ignition Switch is in RUN. The Hot Water Cut-Off Switch is closed when the TEMP Control is rotated fully counterclockwise (coldest position), and opens when the Control is rotated more than 20 degrees in a clockwise direction. When the Switch is closed, battery voltage is applied through the A/C In-Line Fuse to the Water Shut-Off Solenoid. The Solenoid is energized and shuts off the coolant flow through the heater core.

Whenever the Water Shut-Off Solenoid is de-energized, the collapsing magnetic field induces high voltage in the coil. The A/C In-Line Diode, in the 325e, provides a path for the voltage so that it does not damage the contacts of the Hot Water Cut-Off Switch.

The Water Shut-Off Solenoid and A/C In-Line Diode are protected by the A/C In-Line Fuse. If any failures occur in the Solenoid or Diode, the Fuse will isolate them to prevent the failure from affecting other parts of the Heating and Air Conditioning Circuits.

TROUBLESHOOTING HINTS

- Try the following checks before doing the System Diagnosis.
- 1. Check that Water Shut-Off Solenoid connector is firmly seated.
- 2. Check the A/C In-Line Fuse. If fuse is blown, check for a shorted A/C In-Line Diode.
- Go to Heating and Air Conditioning (6410A-0) System Check for a guide to normal operation.
- Go to System Diagnosis for diagnostic tests.

SYSTEM DIAGNOSIS

- Do the following test if the Water Shut-Off Solenoid does not operate normally.

WATER SHUT-OFF SOLENOID TEST (TABLE 1)

Measure: VOLTAGE		
At: WATER SHUT-OFF SOLENOID CONNECTOR (Disconnected)		
Conditions:		
• Ignition Switch: RUN		
• A/C Control Panel TEMP Control: FULLY COUNTERCLOCKWISE		
Measure Between	Correct Voltage	For Diagnosis
BU & Ground	Battery	See 1
BU & BR/RD or BR	Battery	See 2
• Rotate A/C Control Panel TEMP Control to Mid Position		
BU & Ground	0 Volts	See 3

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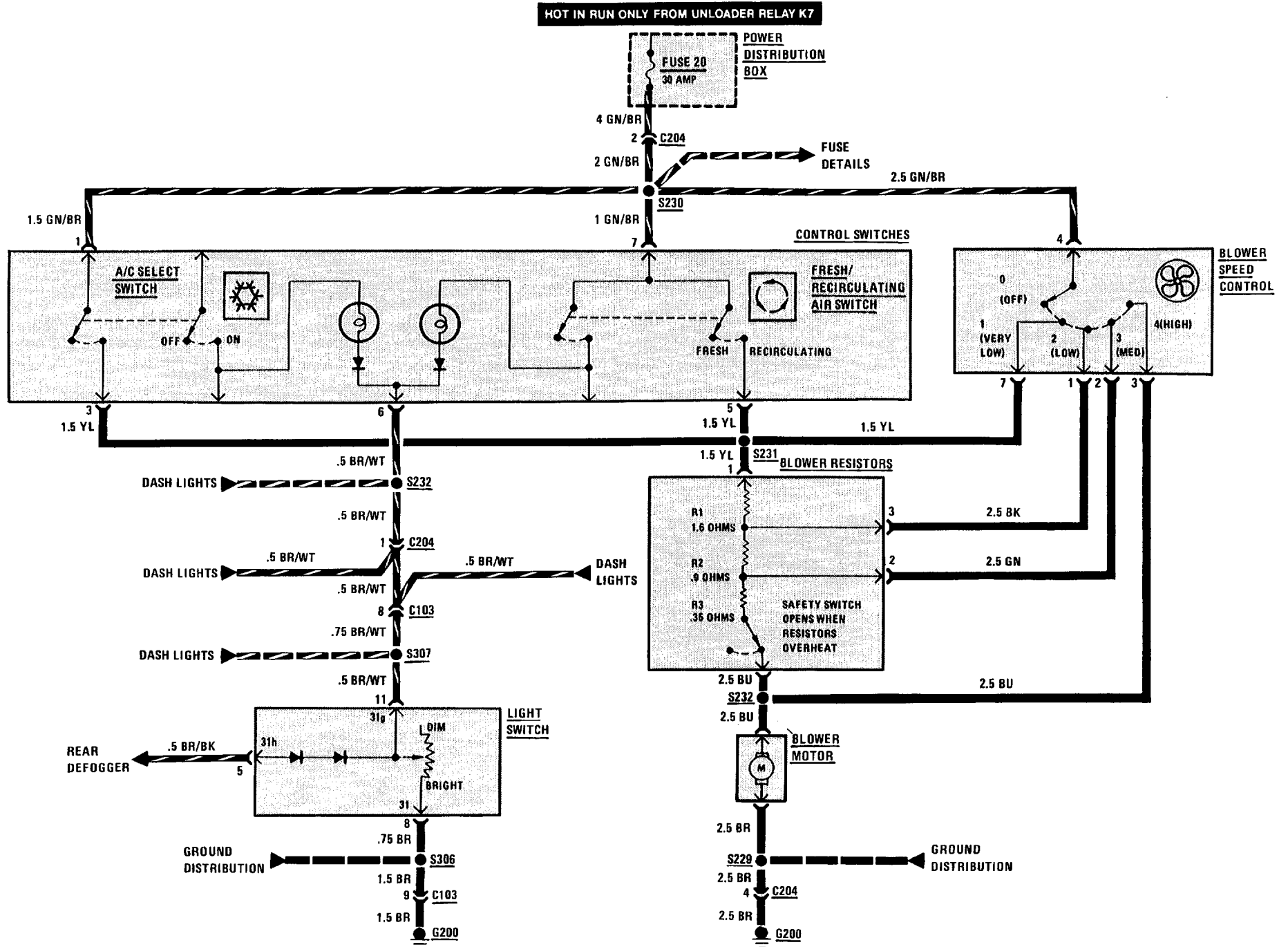
- If all voltages are correct, replace the Water Shut-Off Solenoid.
- 1. Check the BU wire and A/C In-Line Fuse for an open. If fuse is open, check that A/C In-Line Diode is not shorted. If it is, replace it. If wire, Fuse and Diode are good, go to Table 2.
- 2. Check the BR/RD or BR wire for an open to ground. Check that connector C204 is properly mated.
- 3. Check BU wire for a wire to wire short to voltage. If wire is good, replace the A/C Control Panel TEMP Control.

WATER SHUT-OFF SOLENOID TEST (TABLE 2)

Measure: VOLTAGE		
At: HOT WATER CUT-OFF SWITCH CONNECTOR (Disconnected)		
Conditions:		
• Ignition Switch: RUN		
• Water Shut-Off Solenoid: CONNECTED		
Measure Between	Correct Voltage	For Diagnosis
GN/BR & Ground	Battery	See 1
GN/BR & BU	Battery	See 2
• If both voltages are correct, replace the A/C Control Panel TEMP Control.		
1. Check the GN/BR wire for an open back to Fuse 20.		
2. Check the BU wire for an open.		

6413-0 A/C BLOWER CONTROLS

HEATING AND AIR CONDITIONING (BLOWER CONTROLS)



6413A-0 A/C BLOWER CONTROLS

CIRCUIT OPERATION

With the Ignition Switch in RUN, battery voltage is applied to the Control Switches and the Blower Speed Control through the GN/BR wires. If either the A/C Select Switch or the Fresh/Recirculating Air Switch are ON or the Blower Speed Control is in position 1, battery voltage is applied through the YL wire to the Blower Resistors and the Blower Motor.

The Blower Motor is a variable speed motor which runs at a speed proportional to the voltage applied to it. With all of the Blower Resistors in the circuit, the voltage applied to the Motor is reduced so the Motor runs at a low speed.

As the Blower Speed Control is moved through positions 2 and 3, some of the Resistors are bypassed, allowing more voltage to be applied to the Blower Motor, which then runs at a higher speed. When the Blower Speed Control is moved to position 4, battery voltage is applied directly to the Blower Motor, which then runs at maximum speed.

The Blower Resistors dissipate heat because of the current flowing through them. They are cooled by the air flow from the Blower. If there is insufficient air flow to cool the Resistors, the Safety Switch will open, shutting the Blower Motor off until the Resistors have cooled.

TROUBLESHOOTING HINTS

- Try the following checks before doing the System Diagnosis.
 1. Check Fuse 20 by visual inspection.
 2. If Blower will run in high only, check the Blower Resistors' Safety Switch for an open.
- Go to Heating and Air Conditioning (6410A-0) System Check for a guide to normal operation.
- Go to System Diagnosis for diagnostic tests.

SYSTEM DIAGNOSIS

- Do the tests listed for your symptom in the Symptom Table below.
- Tests follow the Symptom Table.

SYMPTOM TABLE

SYMPTOM	DO TEST
Blower Motor does not run in any speed setting.	B
Blower runs only in HIGH (does not run in any other speed setting).	B
Blower does not run in some modes.	A
Blower does not run with A/C ON or in Recirculating mode.	A
A/C Select Switch or Fresh/Recirculating Air Switch does not light.	A

A: CONTROL SWITCH VOLTAGE TEST

Measure: VOLTAGE		
At: CONTROL SWITCHES CONNECTOR (Disconnected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN • Blower Speed Control: OFF 		
Measure Between	Correct Voltage	For Diagnosis
1 (GN/BR) & Ground	Battery	See 1

(Continued in next column)

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1 (GN/BR) & 3 (YL)	Battery	See 2 & 4
7 (GN/BR) & Ground	Battery	See 1
7 (GN/BR) & 5 (YL)	Battery	See 2 & 4
7 (GN/BR) & 6 (BR/WT)	Battery	See 3
<ul style="list-style-type: none"> • If all voltages are correct, do Test B. <ol style="list-style-type: none"> 1. Check the GN/BR wire for an open. 2. Check the YL wire for an open. 3. Check the BR/WT wire for an open. 4. If voltage is not present between the GN/BR wire and both the YL wires (terminals 3 and 5), do Test B. 		

B: BLOWER SPEED CONTROL TEST

Measure: VOLTAGE		
At: BLOWER SPEED CONTROL CONNECTOR (Disconnected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN • A/C Select Switch: ON (Depressed) • Fresh/Recirculating Air Switch: FRESH (Not Depressed) 		
Measure Between	Correct Voltage	For Diagnosis
4 (GN/BR) & Ground	Battery	See 1
7 (YL) & Ground	Battery	See 2
• A/C Select Switch: OFF (Not Depressed)		
7 (YL) & Ground	0 Volts	See 3

(Continued on next page)

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4 (GN/BR) & 7 (YL)	Battery	See 4, 8, 9, & 10
4 (GN/BR) & 1 (BK)	Battery	See 5, 8, 9, & 10
4 (GN/BR) & 2 (GN)	Battery	See 6, 8, 9, & 10
4 (GN/BR) & 3 (BU)	Battery	See 7 & 10

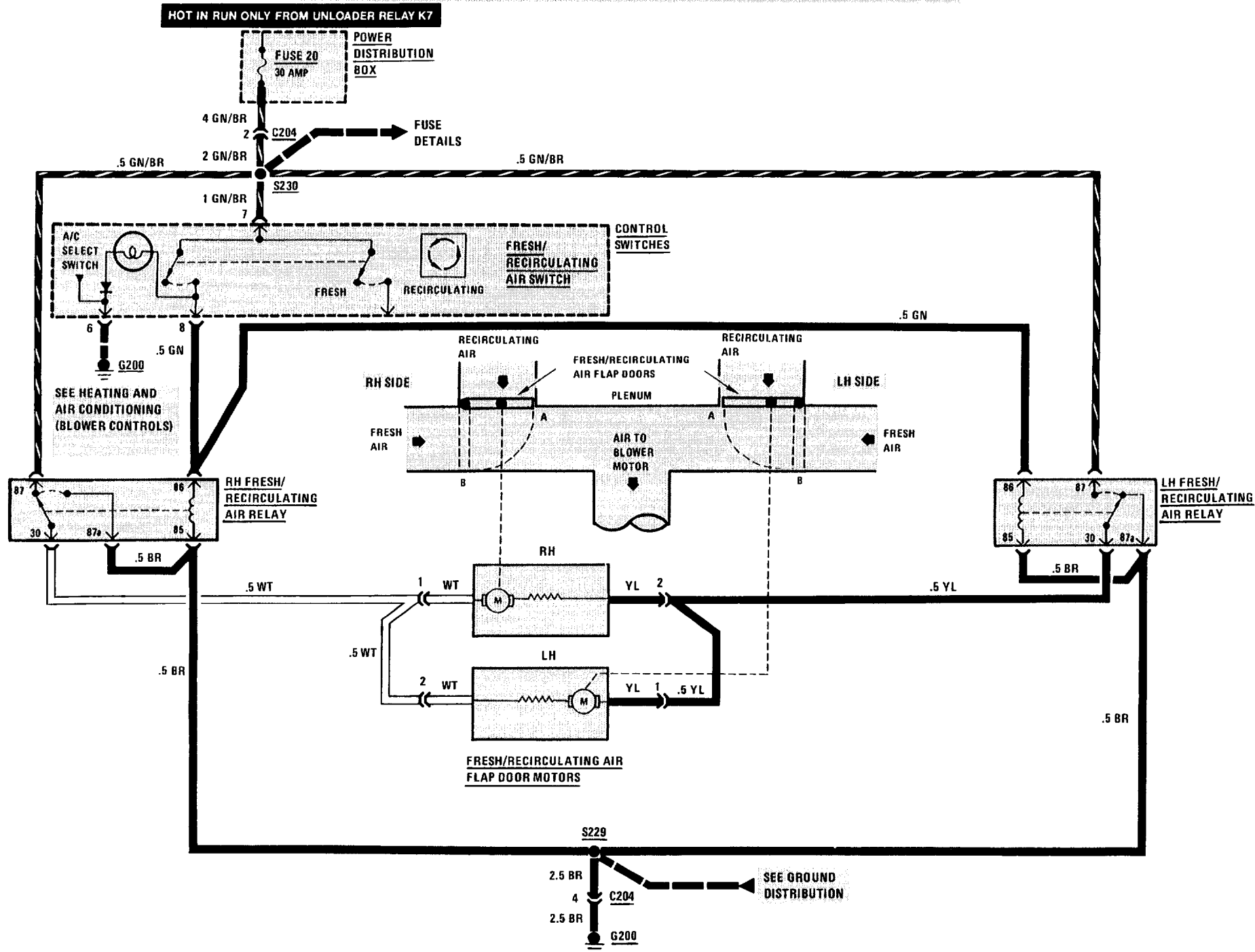
- If all voltages are correct, replace the Blower Motor.
1. Check the GN/BR wire for an open.
 2. Check the YL wire for an open between Blower Speed Control and splice S231.
 3. Check the YL wire for a wire to wire short to voltage.
 4. Check the YL wire for an open between splice S231 and the Blower Resistors.
 5. Check the BK wire for an open.
 6. Check the GN wire for an open.
 7. Check the BU wire for an open.
 8. If voltage is not present at the YL wire, but is present at the GN wire or BK wire, replace the Blower Resistors.
 9. If voltage is not present at the YL, BK or GN wires, check for an open Blower Resistors' Safety Switch.
 10. If voltage is not present at the YL, BK, GN and BU wires, do Test C.

C: BLOWER MOTOR TEST

Measure: VOLTAGE At: BLOWER MOTOR CONNECTOR (Disconnected) Conditions: <ul style="list-style-type: none"> • Ignition Switch: RUN • A/C Select Switch: ON • Blower Speed Control: HIGH 		
Measure Between	Correct Voltage	For Diagnosis
BU & Ground	Battery	See 1
BU & BR	Battery	See 2
<ul style="list-style-type: none"> • If both voltages are correct, replace the Blower Motor. <ol style="list-style-type: none"> 1. Check the BU wire for an open. If wire is good, recheck Test B. 2. Check the BR wire to ground G200 for an open. 		

6421-0 A/C AIR DELIVERY CONTROL

HEATING AND AIR CONDITIONING (FRESH/RECIRCULATING AIR CONTROLS)



6421A-0 A/C AIR DELIVERY CONTROL

CIRCUIT OPERATION

When the Ignition Switch is in RUN, battery voltage is applied to terminal 7 of the Control Switches, the normally open contacts of the LH Fresh/Recirculating Air Relay, and the normally closed contacts of the RH Fresh/Recirculating Air Relay. If the Fresh/Recirculating Air Switch is not depressed (open), battery voltage is applied through the normally closed contacts of the RH Fresh/Recirculating Air Relay to both Fresh/Recirculating Air Flap Door Motors and then to ground through the normally closed contacts of the LH Fresh/Recirculating Air Relay. Both Motors operate and move the Fresh/Recirculating Air Flap Doors to position A, allowing fresh air to enter the blower.

When the Fresh/Recirculating Air Switch is depressed (closed), battery voltage is applied through the Switch to both the LH and RH Fresh/Recirculating Air Relay coils. Both Relays are energized. Battery voltage is then applied through the closed contacts of the LH Fresh/Recirculating Air Relay to the Flap Door Motors, and to ground through the closed contacts of the RH Fresh/Recirculating Air Relay. Since the voltage is now applied to the Flap Door Motors in the opposite direction, the Motors reverse direction and move the Fresh/Recirculating Air Flap Doors to position B, allowing only recirculating air to enter the blower. Both of the Air Flap Door Motors remain energized continuously. When the Doors reach the end of their travel, the Motors stall and hold the Doors in position.

TROUBLESHOOTING HINTS

- Try the following checks before doing the System Diagnosis.
- 1. Check that LH and RH Fresh/Recirculating Air Relays are firmly seated.
- 2. Check that LH and RH Fresh/Recirculating Air Relay pigtail connectors are properly mated.
- Go to Heating and Air Conditioning (6410A-0) System Check for a guide to normal operation.
- Go to System Diagnosis for diagnostic tests.

SYSTEM DIAGNOSIS

- Do the tests below if the Fresh/Recirculating Air Flap Doors do not operate.

A: FRESH/RECIRCULATING AIR FLAP DOOR MOTOR VOLTAGE TEST

Measure: VOLTAGE		
At: FRESH/RECIRCULATING AIR FLAP DOOR MOTOR PIGTAIL CONNECTORS (Disconnected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN • Fresh/Recirculating Air Switch: RELEASED (FRESH) 		
Measure Between	Correct Voltage	For Diagnosis
WT and Ground	Battery	See 1
WT and YL	Battery	See 2
• Fresh/Recirculating Air Switch: DEPRESSED (RECIRCULATING)		
YL and Ground	Battery	See 3

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YL and WT	Battery	See 3
• If all voltages are correct, replace the inoperative motor.		
1. Check the WT wire for an open. If wire is good, do Test B for RH Air Relay.		
2. Check the YL wire for an open. If wire is good, do Test B for LH Air Relay.		
3. Do Test B for both Air Relays.		

B: FRESH/RECIRCULATING AIR RELAY VOLTAGE TEST

Measure: VOLTAGE		
At: FRESH/RECIRCULATING AIR RELAY CONNECTOR (Disconnected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN • Fresh/Recirculating Air Switch: DEPRESSED (RECIRCULATING) • Fresh/Recirculating Air Flap Door Motor Connectors: CONNECTED 		
Measure Between	Correct Voltage	For Diagnosis
87 (GN/BR) and Ground	Battery	See 1
86 (GN) and Ground	Battery	See 2
86 (GN) and 85 (BR)	Battery	See 3
86 (GN) and 87a (BR)	Battery	See 3

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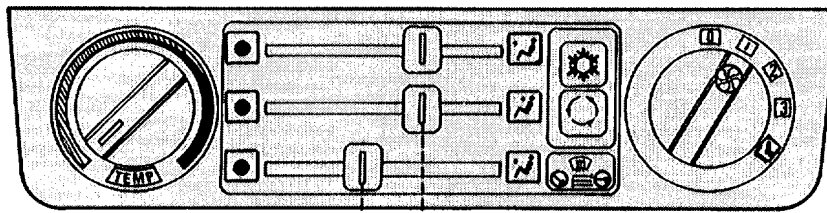
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- If all voltages are correct, replace the suspect Fresh/Recirculating Air Relay.
- 1. Check the GN/BR wire for an open.
- 2. Check the GN wire back to the Control Switches for an open. If wire is good, do Test C.
- 3. Check the BR wire for an open.

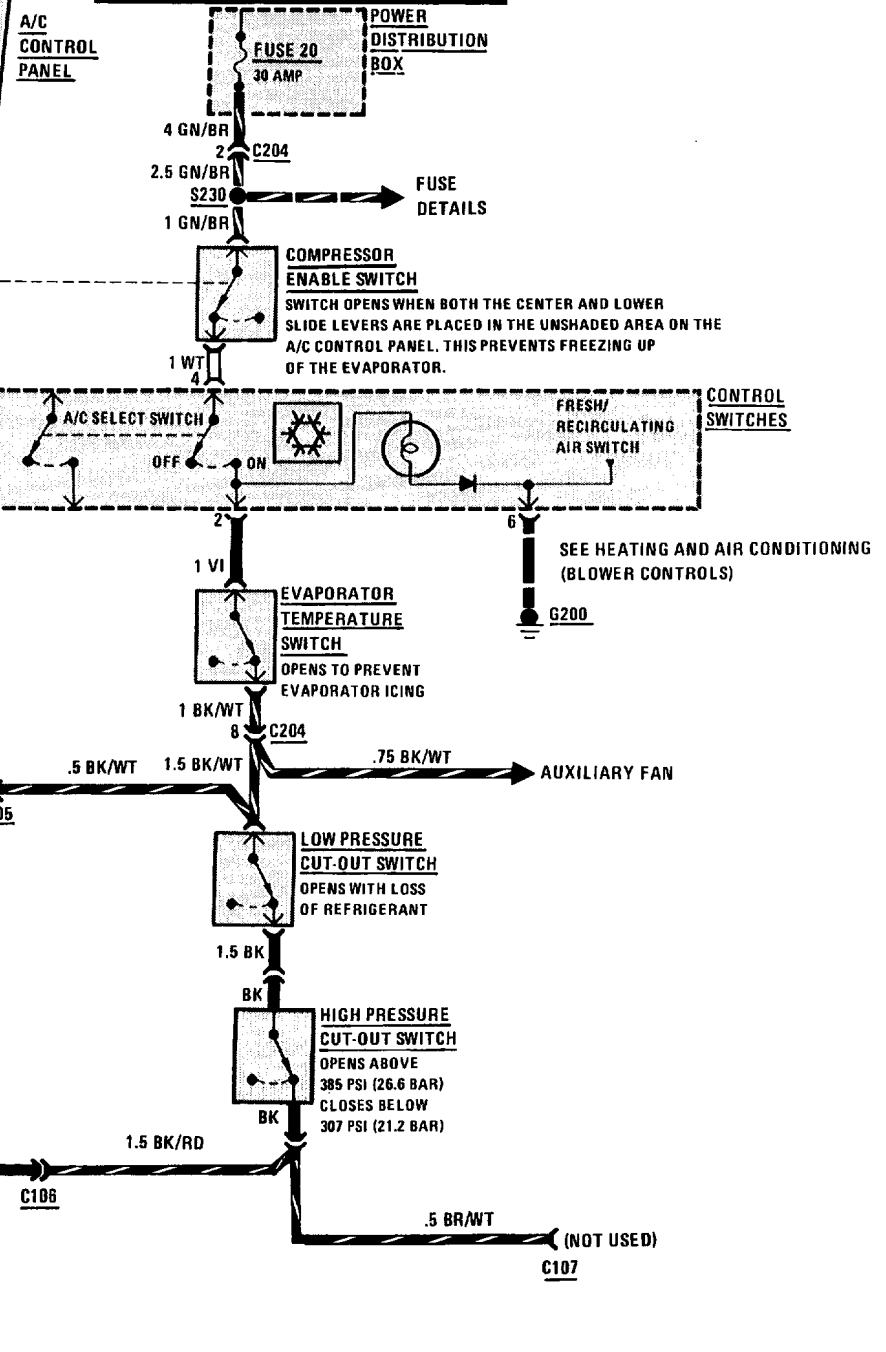
C: CONTROL SWITCHES VOLTAGE TEST

Measure: VOLTAGE At: CONTROL SWITCHES CONNECTOR (Disconnected) Condition: • Ignition Switch: RUN		
Measure Between	Correct Voltage	For Diagnosis
7 (GN/BR) & Ground	Battery	See 1
7 (GN/BR) & 8 (GN)	Battery	See 2
<ul style="list-style-type: none"> • If both voltages are correct, replace the Control Switches. 1. Check the GN/BR wire for an open. If wire is good, check that connector C204 is properly mated. 2. Check the GN wire for an open between the Control Switches and the LH and RH Fresh/Recirculating Air Relays. 		

HEATING AND AIR CONDITIONING (COMPRESSOR CONTROLS)



HOT IN RUN ONLY FROM UNLOADER RELAY K7



6452A-0 A/C COMPRESSOR CONTROLS

CIRCUIT OPERATION

When the Ignition Switch is in RUN, battery voltage is applied through Fuse 20 to the Compressor Enable Switch. This Switch is located in the A/C Control Panel and is closed when either the center or lower slide levers are moved about $\frac{1}{4}$ of the distance away from the left position. This ensures that the A/C Compressor does not run unless there is enough air flow to prevent freezing of the evaporator.

325e Engine

When the A/C Select Switch on the A/C Control Panel is pressed and the Compressor Enable Switch is closed, voltage is applied to the Compressor Clutch through the normally closed Evaporator Temperature Switch, the Low Pressure Cut-Out Switch and the High Pressure Cut-Out Switch.

The Evaporator Temperature Switch opens if the evaporator temperature drops low enough for freezing to begin. The Low Pressure Cut-Out Switch opens if the refrigerant pressure drops low enough that operation of the A/C System would be likely to damage the Compressor. The High Pressure Cut-Out Switch opens if refrigerant pressure rises to a point that is too high for normal operation.

325i and M3 Engines

When the A/C Select Switch is pressed and the Compressor Enable Switch is closed, voltage is applied to terminal 3 of the Evaporator Temperature Regulator. The Evaporator Temperature Regulator applies voltage from terminal 2 to the Compressor Clutch through the High Pressure Cut-Out Switch, the Low Pressure Cut-Out Switch, and the Temperature Switch (M3 engine).

The High Pressure Cut-Out Switch opens if refrigerant pressure rises to a value which is too high for normal operation. The Temperature Switch (M3 Engine) opens to remove the Compressor load from the engine if the engine coolant temperature rises above 226°F (108°C). The Evaporator Temperature Sensor signals the Evaporator Temperature Regulator to de-energize the Compressor Clutch when evaporator temperature is low enough that freezing may result.

Clutch Diode

Whenever the Compressor Clutch is de-energized, the collapsing magnetic field induces a voltage in the winding. The Clutch Diode provides a path for the resulting current:

TROUBLESHOOTING HINTS

- Try the following checks before doing the System Diagnosis.
1. Check Fuse 20 by visual inspection.
 2. Check that Compressor Clutch connector is firmly seated.

- Go to Heating and Air Conditioning (6410A-0) System Check for a guide to normal operation.
- Go to System Diagnosis for diagnostic tests.

SYSTEM DIAGNOSIS

- Do the tests listed for your symptom in the Symptom Table below.
- Tests follow the Symptom Table.

SYMPTOM TABLE
325e Engine

Compressor Clutch does not engage but Auxiliary Cooling Fan runs	A B
Compressor Clutch does not engage and Auxiliary Cooling Fan does not run	C
Engine idle speed is not high enough when Compressor Clutch engages	D

SYMPTOM TABLE
325i and M3 Engines

Compressor Clutch does not engage	E
Engine idle speed is not high enough when Compressor Clutch engages (325i engine only)	H

A: LOW PRESSURE CUT-OUT SWITCH VOLTAGE TEST

Measure: VOLTAGE		
At: LOW PRESSURE CUT-OUT SWITCH CONNECTOR (Disconnected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN (Engine need not be running) • A/C Control Panel: A/C ON • Temperature Outside Car: Above 60 degrees F (16 degrees C) 		
Measure Between	Correct Voltage	For Diagnosis
BK/WT & Ground	Battery	See 1
<ul style="list-style-type: none"> • If voltage is correct, do Test B. 		
1. Do Test C.		

B: COMPRESSOR CLUTCH VOLTAGE TEST

Measure: VOLTAGE		
At: COMPRESSOR CLUTCH CONNECTOR (Disconnected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN (Engine need not be running) • A/C Control Panel: A/C ON • Temperature Outside Car: Above 60 degrees F (16 degrees C) 		
Measure Between	Correct Voltage	For Diagnosis
BK & Ground	Battery	See 1
<ul style="list-style-type: none"> • If the voltage is correct, replace the Compressor Clutch. 		

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1. Check for an open Low Pressure Cut-Out Switch, High Pressure Cut-Out Switch or associated wiring. If High Pressure Cut-Out Switch is open, replace it. If Low Pressure Cut-Out Switch is open, check refrigerant pressure to be sure it is normal before replacing the Switch.

C: A/C SELECT SWITCH VOLTAGE TEST

Measure: VOLTAGE		
At: CONTROL SWITCHES CONNECTOR (Connected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN • A/C Control Panel: A/C ON • Temperature Outside Car: Above 60 degrees F (16 degrees C) 		
Measure Between	Correct Voltage	For Diagnosis
4 (WT) & Ground	Battery	See 1
2 (VI) & Ground	Battery	See 2
<ul style="list-style-type: none"> • If both voltages are correct, check that the Evaporator Temperature Switch is closed. If the Evaporator Temperature Switch is open, replace it. If the Evaporator Temperature Switch is closed, check for an open in the VI and BK/WT wires. 		

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1. Check that the Compressor Enable Switch is closed. If the Compressor Enable Switch is open, replace the A/C Control Panel. If the Compressor Enable Switch is closed, check for an open in the WT and GN/BR wires.
2. Replace the A/C Select Switch.

D: IDLE SPEED CONTROL UNIT VOLTAGE TEST

Measure: VOLTAGE		
At: IDLE SPEED CONTROL UNIT CONNECTOR (Connected)		
Conditions:		
<ul style="list-style-type: none"> • Ignition Switch: RUN • A/C Control Panel: A/C ON • Temperature Outside Car: Above 60 degrees F (16 degrees C) 		
Measure Between	Correct Voltage	For Diagnosis
9 (BU/WT) & Ground	Battery	See 1
<ul style="list-style-type: none"> • If the voltage is correct, repair/replace the Idle Speed Control Unit. 		
1. Check for an open in the BU/WT and VI wires.		

6452A-2 A/C COMPRESSOR CONTROLS

E: A/C ISOLATION TEST

Measure: VOLTAGE At: HIGH PRESSURE CUT-OUT SWITCH HARNESS CONNECTOR (Disconnected) Conditions: <ul style="list-style-type: none"> • Ignition Switch: RUN (Engine need not be running) • A/C Selector Switch: Depressed (ON) 		
Measure Between	Correct Voltage	For Diagnosis
BK/WT & Ground	Battery	See 1
<ul style="list-style-type: none"> • If voltage is correct, go to Test F. 1. Go to Test G. 		

F: COMPRESSOR CLUTCH VOLTAGE TEST

Measure: VOLTAGE At: COMPRESSOR CLUTCH HARNESS CONNECTOR (Disconnected) Conditions: <ul style="list-style-type: none"> • Ignition Switch: RUN (Engine need not be running) • A/C Control Panel: A/C ON • Temperature outside car: Above 60°F (16°C) 		
Measure Between	Correct Voltage	For Diagnosis
BK or GY/WT wire & Ground (See Schematic)	Battery	See 1

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<ul style="list-style-type: none"> • If the voltage is correct, but Compressor Clutch does not engage, replace the Compressor Clutch. <ol style="list-style-type: none"> 1. Check for an open Low Pressure Cut-Out Switch, High Pressure Cut-Out Switch, A/C Temperature Switch, or associated wiring (see Schematic). If High Pressure Cut-Out Switch is open, replace it. If Low Pressure Cut-Out Switch is open, check refrigerant pressure to be sure it is normal before replacing the Switch. Replace the A/C Temperature Switch if it is open and engine coolant temperature is below 226°F (108°C).

G: EVAPORATOR TEMPERATURE REGULATOR VOLTAGE AND RESISTANCE TEST (TABLE 1)

Measure: VOLTAGE At: EVAPORATOR TEMPERATURE REGULATOR CONNECTOR (Disconnected) Conditions: <ul style="list-style-type: none"> • Ignition Switch: RUN • A/C Selector Switch: ON 		
Measure Between	Correct Voltage	For Diagnosis
3 & Ground	Battery	See 1
3 & 4	Battery	See 2
3 & 6	Battery	See 3
<ul style="list-style-type: none"> • A/C Selector Switch: OFF 		
3 & Ground	0 Volts	See 4
<ul style="list-style-type: none"> • If all voltages are correct, go to Table 2. 		

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<ol style="list-style-type: none"> 1. Check the BK/VI wire for an open (see schematic). If wire is good, do Test C. 2. Check the BR wire from terminal 4 for an open (see schematic). 3. Check BR wire for an open. 4. Check the BK/VI wire for a wire-to-wire short to voltage. If wire is good, replace the A/C Selector Switch.
--

G: EVAPORATOR TEMPERATURE REGULATOR VOLTAGE AND RESISTANCE TEST (TABLE 2)

Measure: RESISTANCE At: EVAPORATOR TEMPERATURE REGULATOR CONNECTOR (Disconnected) Conditions: <ul style="list-style-type: none"> • Ignition Switch: OFF • Negative Battery Terminal: DISCONNECTED 		
Measure Between	Correct Resistance	For Diagnosis
2 & Ground	Approximately 3 to 4 Ohms	See 1
1 & Ground	Approximately 3.5K to 4.5K ohms at 70°F (21°C)	See 2
5 & 2	Less than 0.5 ohms	See 3

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- If all resistances are correct, but Compressor Clutch does not operate normally, replace the Evaporator Temperature Regulator.
- 1. Check the VI wire for an open between the Evaporator Temperature Regulator terminal 2 and High Pressure Cut-Out Switch (see schematic).
- 2. Check the BK/WT wire for an open or a short to ground (see schematic). Check the BR wire from terminal 6 to splice S229 for an open (see schematic). If wires are good, replace the Evaporator Temperature Sensor.
- 3. Check BK/YL wire at terminal 5 for an open between terminal 5 and High Pressure Cut-Out Switch.

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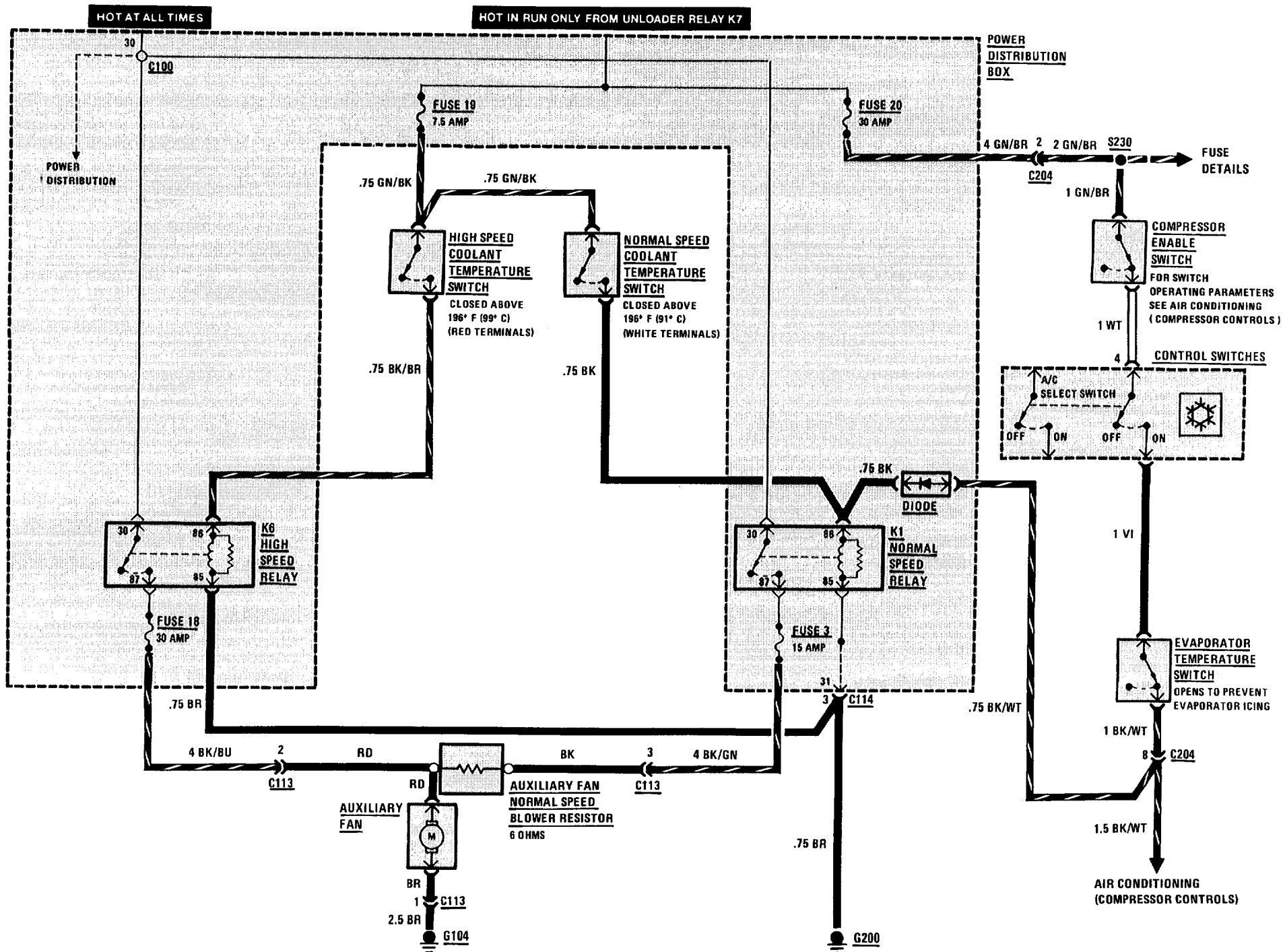
- If the voltage is correct, repair/replace the Motronic Control Unit.
- 1. Check for an open in the BU/WT and BK/RD wires.

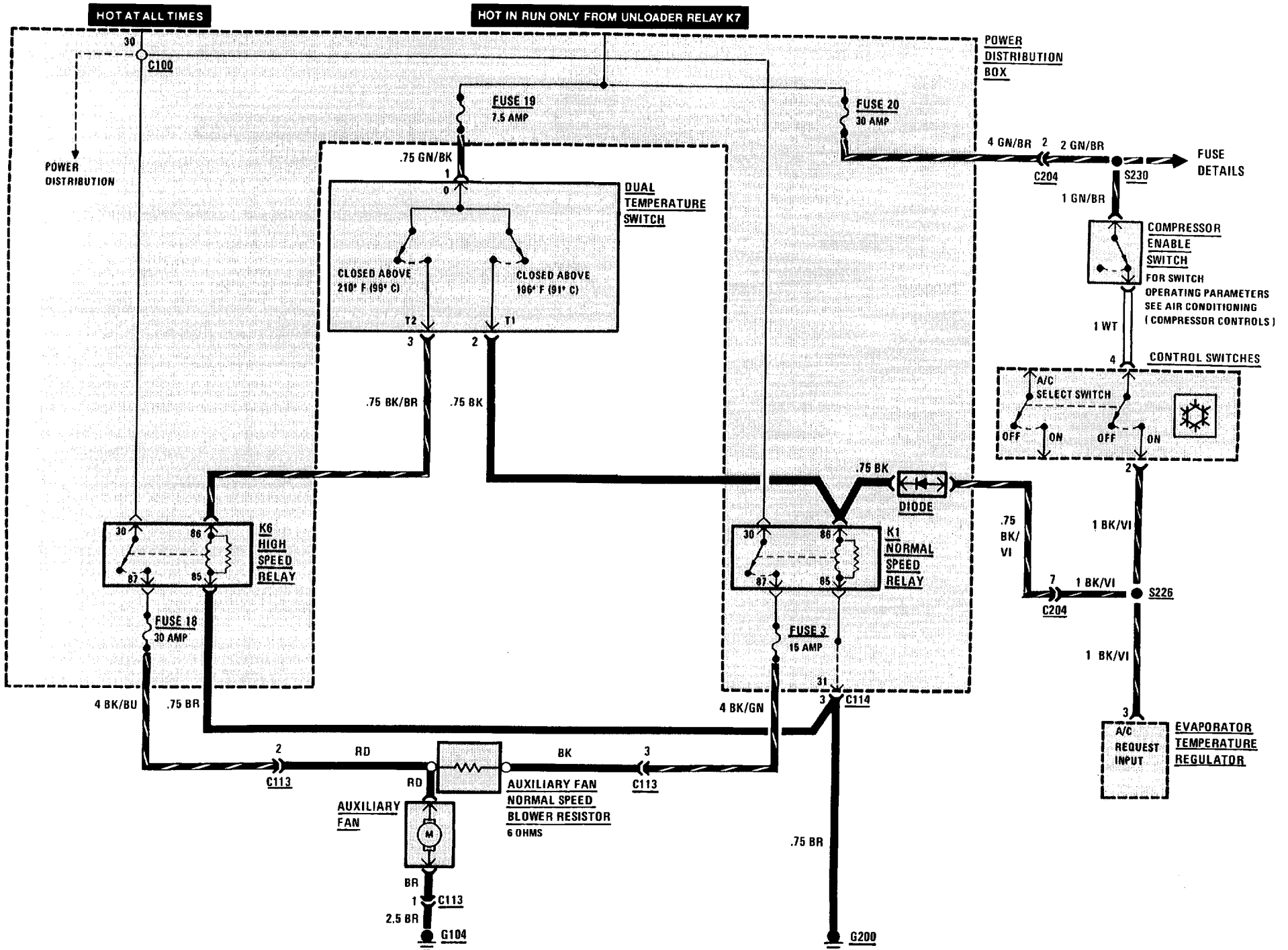
H: IDLE SPEED CONTROL VOLTAGE TEST

Measure: VOLTAGE At: MOTRONIC CONTROL UNIT CONNECTOR (Connected) Conditions: <ul style="list-style-type: none"> • Ignition Switch: RUN • A/C Control Panel: A/C ON • Temperature Outside Car: Above 60 degrees F (16 degrees C) 		
Measure Between	Correct Voltage	For Diagnosis
40 (BU/WT) & Ground	Battery	See 1

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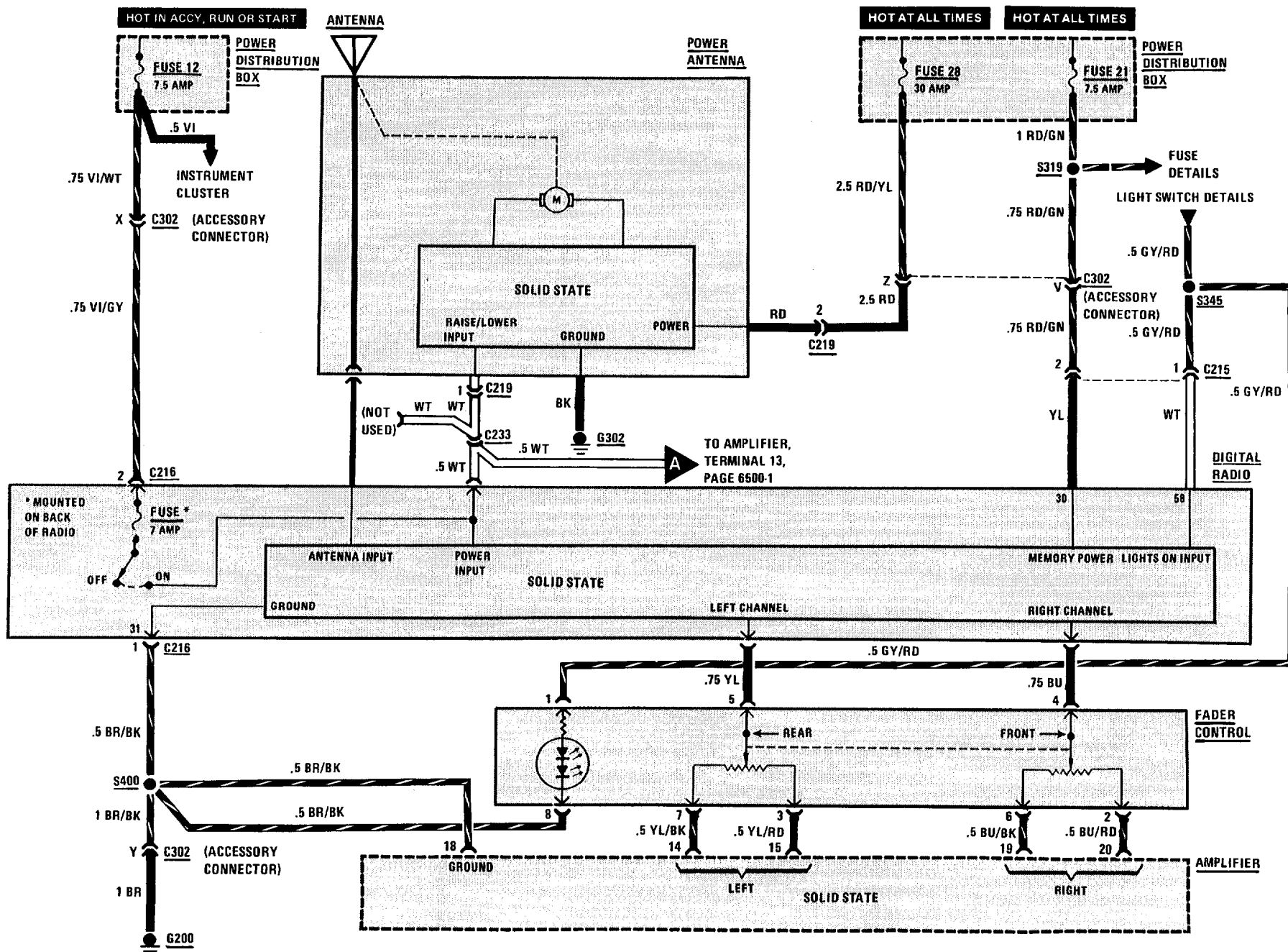
6454-0 AUXILIARY FAN 325e



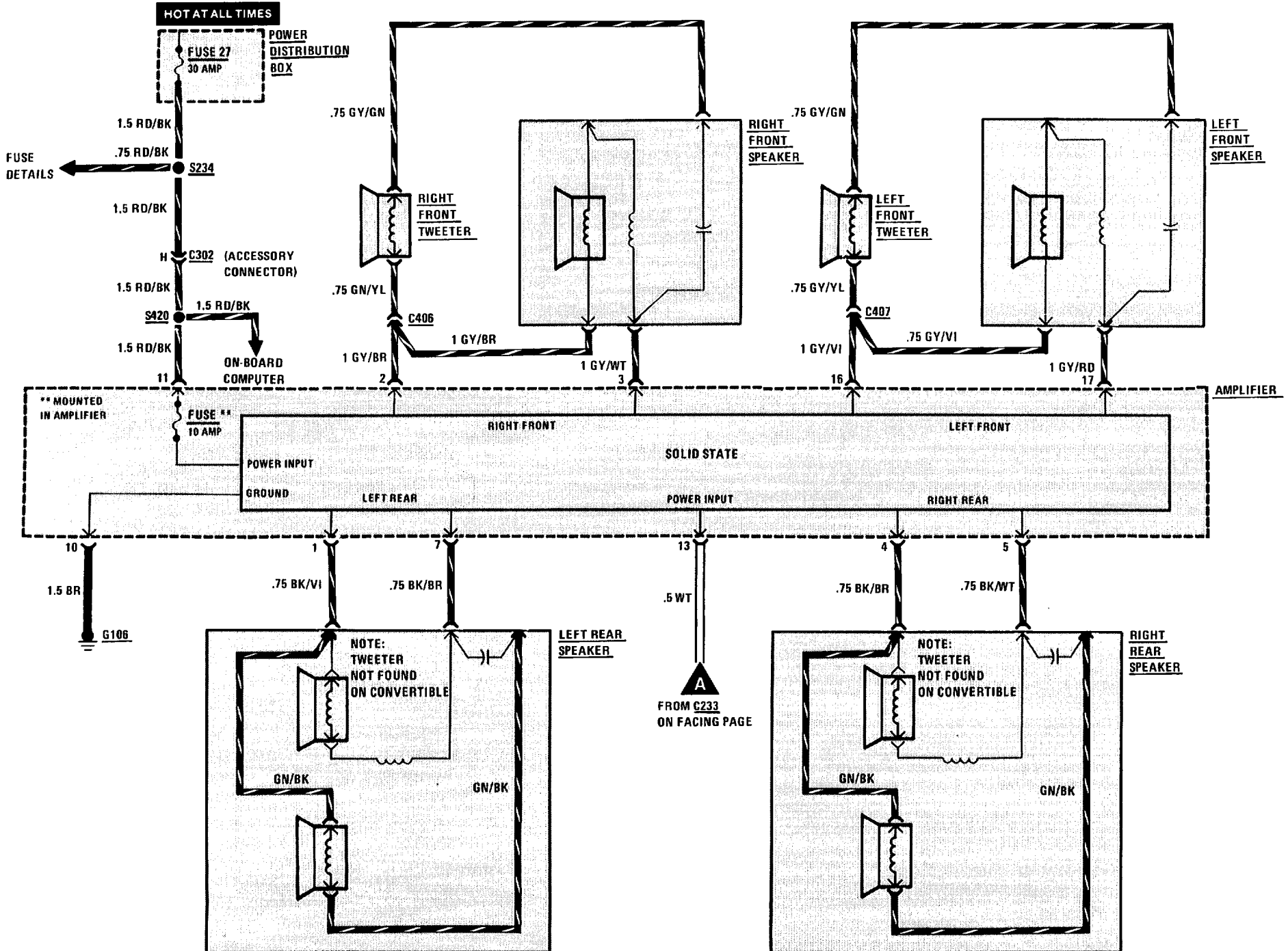


6500-0 RADIO/ANTENNA

WITH SOUND SYSTEM

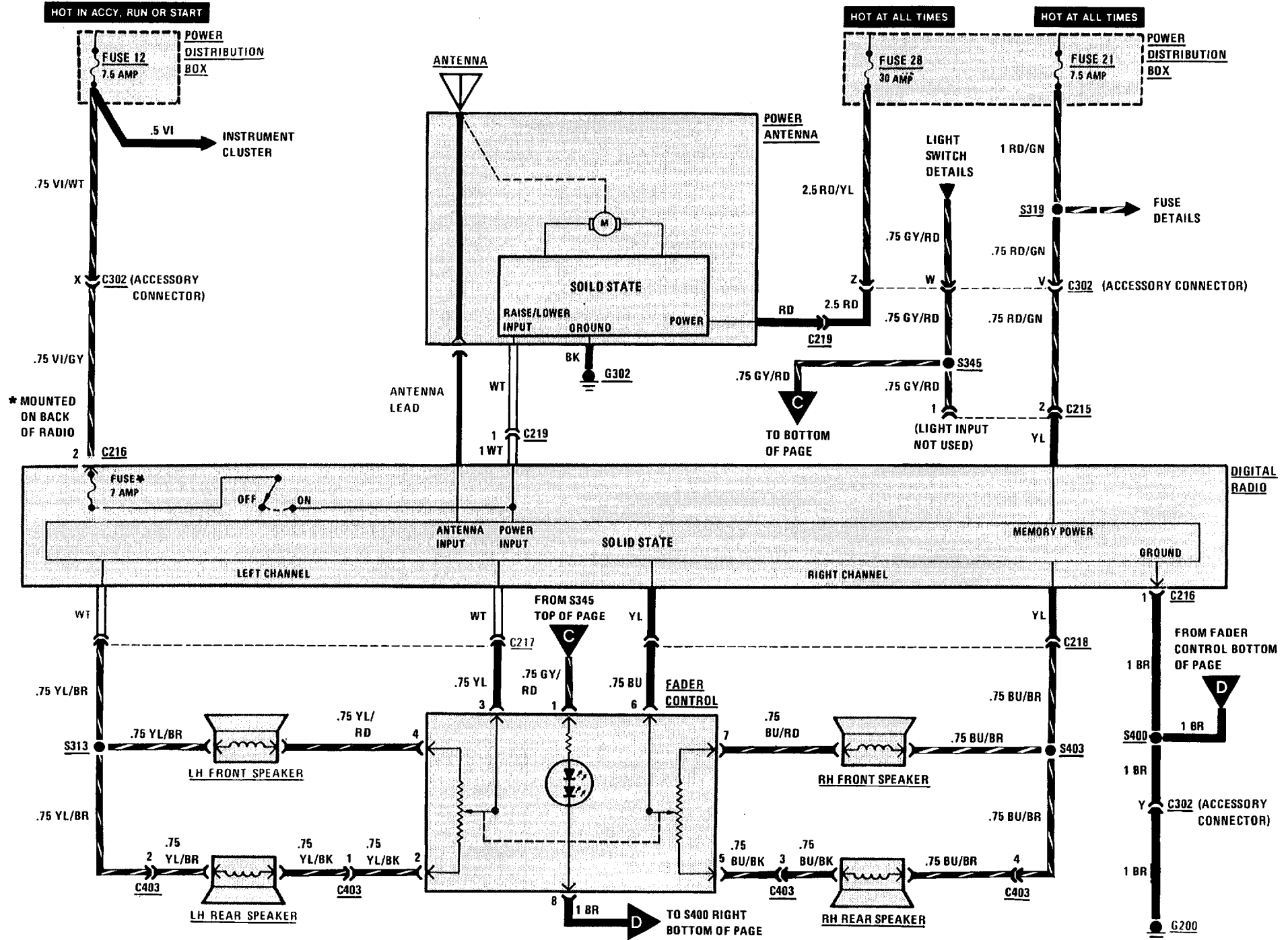


WITH SOUND SYSTEM



6500-2 RADIO/POWER ANTENNA 325e EXCEPT CONVERTIBLE

RADIO ONLY



6500A-0 RADIO/ANTENNA

CIRCUIT OPERATION

With the Ignition Switch in ACCY, RUN or START, Fuse 12 provides voltage to turn on the three components in the system. When the Radio Switch is on, voltage is applied to the Radio, the Power Antenna Raise/Lower Input, and the Amplifier. This voltage is used to control the individual unit's main power supply.

When the Raise/Lower Input of the Power Antenna receives voltage, power is supplied from Fuse 28 to run the motor and raise the Antenna. When voltage is no longer present at the Raise/Lower Input, the Antenna is lowered.

Fuse 21 constantly supplies voltage to the Memory Power Input of the Radio. This allows the Radio to maintain the present settings while it is turned off.

The Amplifier receives constant power at terminal 11 from Fuse 28. When the Radio is on, voltage is applied to terminal 13 to enable the Amplifier.

The actual Radio signal originates at the Antenna. It is supplied to the Radio, processed, and output from the Left Channel and Right Channel Outputs to the Fader Control. The Fader Control alters the front to rear volume by decreasing the resistance to the desired higher volume outputs. The signal is then input to the Left Front, Left Rear, Right Front, and Right Rear Inputs to the Amplifier. After amplification, the signal is output to the corresponding speakers.

TROUBLESHOOTING HINTS

- Try the following checks before doing the System Check.
 1. Check power input to the Radio by observing if Instrument Cluster Indicators light.
 2. Check power input to Antenna by observing the Cigar Lighter.
 3. Check memory power to Radio by checking operation of the Glove Box Light.
 4. Check power input to the Amplifier.
 5. If Fader Control has no effect, but sound is heard from all speakers, replace the Fader Control.
 6. Check that the Antenna is properly connected.
 7. Before troubleshooting a suspect Speaker, check all connections to that Speaker.
 8. If display shows "CODE" and Radio will not operate, the individual Anti-Theft Code must be entered. Refer to "Anti-Theft" instruction booklet.
 9. Check Radio Fuse located on back of Radio.
 10. Check Amplifier Fuse located on back of Amplifier.
- Go to System Check for a guide to normal operation.
- Go to System Diagnosis for diagnostic tests.

SYSTEM CHECK

- Use the System Check Table as a guide to normal operation.
- Refer to System Diagnosis for a list of symptoms and diagnostic steps.

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
With Ignition Switch in RUN, turn Radio ON.	Antenna extends. Digital display lights. Sound is emitted from all Speakers.
Operate Fader Control.	Sound volume varies from front to rear.

- Refer to System Diagnosis when a result is not normal.

SYSTEM DIAGNOSIS

- Do the tests listed for your symptom in the Symptom Table below.
- Tests follow the Symptom Table.

SYMPTOM TABLE

SYMPTOM	FOR DIAGNOSIS
Radio does not work (no display, no sound).	Do Test A
Digital display lights, but there is no sound.	Do Test B
LH Speakers or RH Speakers do not operate.	Do Test C

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Antenna does not extend or retract.	Check ground wire for an open. Make sure ground G302 is clean and tight. Check wire to Power Antenna for opens. If OK, replace Power Antenna.
An individual Speaker does not operate.	Do Test D
Excessive noise comes from all Speakers.	Do Test E

A: RADIO POWER TEST

Measure: VOLTAGE At: RADIO CONNECTOR C1 (Disconnected) or CONNECTOR C215 (Disconnected) Condition: • Ignition Switch: RUN		
Measure Between	Correct Voltage	For Diagnosis
C1/2 & Ground	Battery	See 1
C1/2 & C1/1	Battery	See 2
C215/2 & Ground	Battery	See 3
• If all voltages are correct, check wire from connector C215 to Radio for an open. If wire is OK, remove Radio for service.		
1. Check power input wire for an open.		
2. Check ground wire for an open to ground. Make sure ground G200 is clean and tight.		
3. Check memory power supply wire for an open.		

B: AMPLIFIER POWER TEST

Measure: VOLTAGE At: AMPLIFIER CONNECTOR (Disconnected) Conditions: • Ignition Switch: RUN • Radio: ON		
Measure Between	Correct Voltage	For Diagnosis
11 & Ground	Battery	See 1
11 & 18	Battery	See 2
13 & Ground	Battery	See 3
11 & 10	Battery	See 4
• If all voltages are correct, go to Test C.		
1. Check power supply wire for an open.		
2. Check Amplifier ground to Amplifier for an open to ground. Make sure ground G200 is clean and tight.		
3. Check Amplifier "Radio On" wire for an open.		
4. Check wire from terminal 10 for an open to ground. Make sure ground G302 is clean and tight.		

C: FADER SIGNAL TEST (TABLE 1)

Measure: VOLTAGE At: FADER CONTROL CONNECTOR (Disconnected) Conditions: • Ignition Switch: RUN • Radio: ON		
Measure Between	Correct Voltage	For Diagnosis
3 & Ground	Approximately 6 Volts	See 1
6 & Ground	Approximately 6 Volts	See 2
• If both voltages are correct, check for AC voltage at Radio outputs with Radio tuned to a strong signal. If AC voltage is present, go to Table 2. Remove Radio for service if AC voltage is not present.		
1. Check wire from Left Channel on Radio for an open. If wire is good, remove Radio for service.		
2. Check wire from Right Channel on Radio for an open. If wire is good, remove Radio for service.		

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6500A-2 RADIO/ANTENNA

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C: FADER SIGNAL TEST (TABLE 2)

Measure: VOLTAGE At: AMPLIFIER CONNECTOR (Disconnected) Conditions: • Ignition Switch: RUN • Radio: ON		
Measure Between	Correct Voltage	For Diagnosis
14 & Ground	Approximately 6 Volts	See 1
15 & Ground	Approximately 6 Volts	See 2
19 & Ground	Approximately 6 Volts	See 3
20 & Ground	Approximately 6 Volts	See 4

• If all voltages are correct but sound was not present, remove Amplifier for service.

1. Check between pin 2 (Fader) to pin 14 (Amplifier) for an open in the wiring. If wire is OK, replace Fader Control.
2. Check between pin 4 (Fader) to pin 15 (Amplifier) for an open in the wiring. If wire is OK, replace Fader Control.
3. Check between pin 5 (Fader) to pin 19 (Amplifier) for an open in the wiring. If wire is OK, replace Fader Control.
4. Check between pin 7 (Fader) to pin 20 (Amplifier) for an open in the wiring. If wire is OK, replace Fader Control.

D: SUSPECT SPEAKER TEST

Connect: OHMMETER At: SUSPECT SPEAKER (Disconnected) Condition: • Ohmmeter set on Rx 1 scale or Diode Check Scale		
Action	Correct Result	For Diagnosis
Connect Ohmmeter across Speaker Terminals	Speaker "pops"	See 1

• If the result is correct, check wires to the Amplifier for opens or shorts. If wires are OK, check the related wire between Fader and Amplifier.

1. Replace the suspect Speaker.

E: NOISE DIAGNOSIS

- With Radio on and noise present, unplug the Antenna at the back of the Radio.
- If noise is no longer present, it was being picked up by the Antenna. Perform Antenna Noise Test.
 - If noise persists, it is coming in the Radio wiring. Refer to the following Noise Symptom Table.

ANTENNA NOISE TEST

Measure: RESISTANCE At: ANTENNA		
Measure Between	Correct Resistance	For Diagnosis
Antenna Plug Base & Ground	Less than 3 Ohms	See 1
Antenna Plug Tip & Antenna Plug Base	Greater than 1 Megaohm (open circuit)	See 2

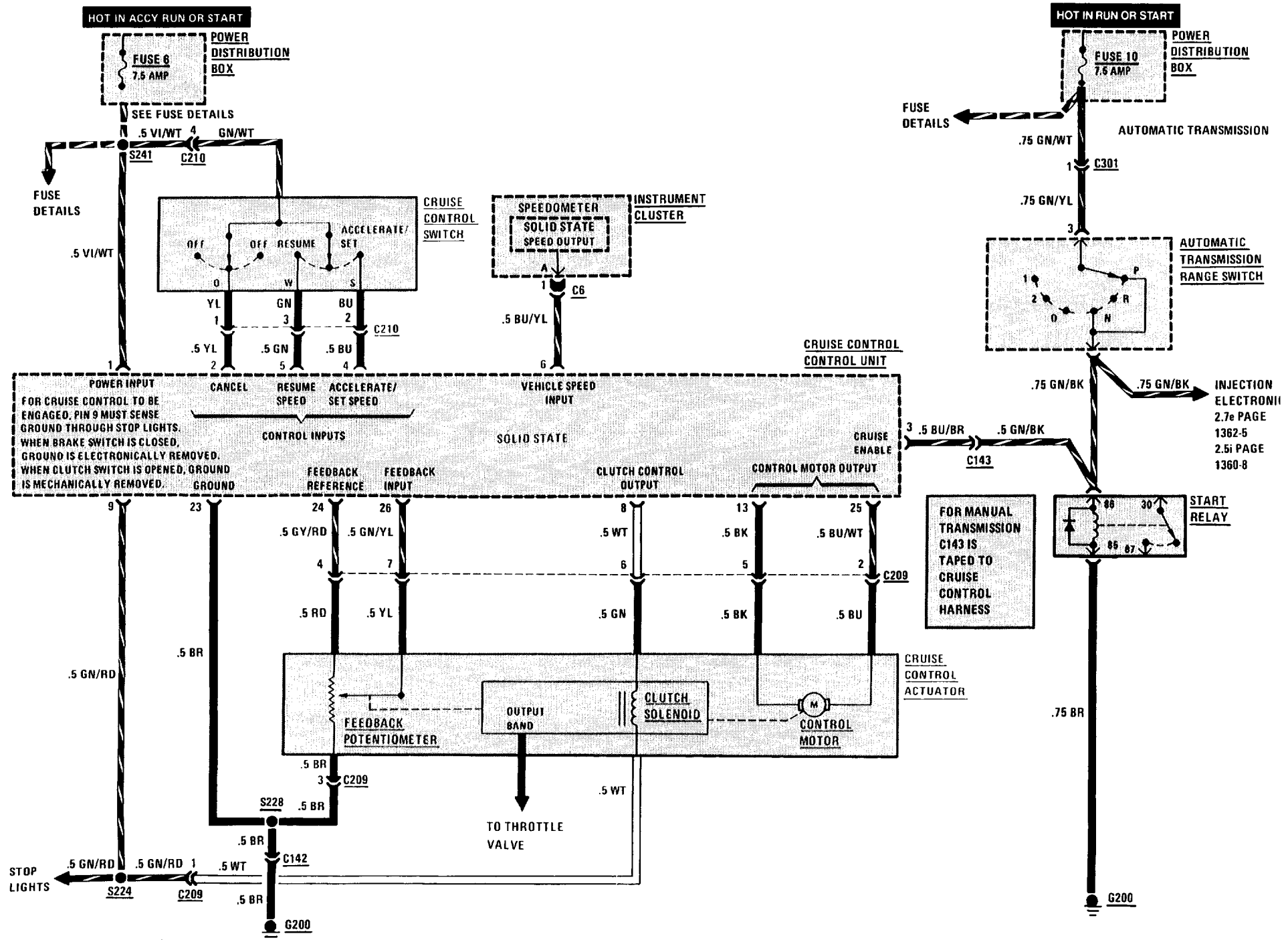
• If both resistances are correct, check the hood ground strap. If hood ground strap is OK, substitute a different Antenna at Radio. If the new Antenna is good, replace Antenna. If noise is still present, refer to Noise Symptom Table.

1. Check ground contact at Antenna base. If necessary, install a braided ground strap from the Antenna Base to Chassis ground. Check for an open in the Antenna Cable.
2. Check for a short to ground at the Antenna or Antenna cable.

NOISE SYMPTOM TABLE

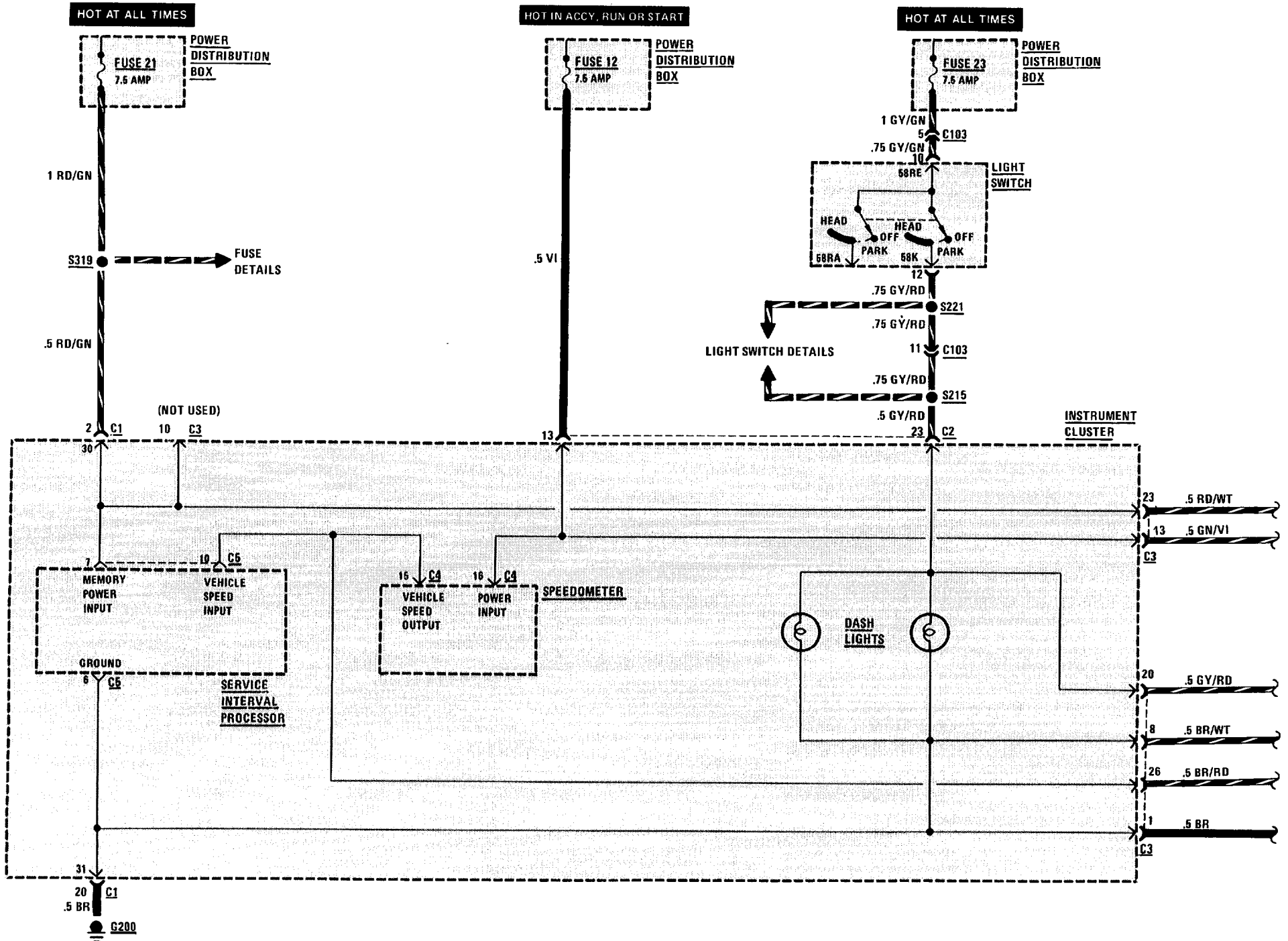
SYMPTOM	POSSIBLE CAUSE	REPAIR ACTION
Harsh popping or crackling noise present when ignition on-changes with engine rpm.	Ignition Noise	<ul style="list-style-type: none"> • Check for proper distributor cap shielding. • Check shielding ground strap. If not present, install. • Check for defective spark plug or spark plug wire. • Reroute spark plug wires laying against anything that could be transmitting noise to the Radio (wiring or sensor leads traveling into the passenger compartment). • Check engine/firewall ground strap and engine hood/body ground strap. • Check if engine hood is closing properly. • Connect dedicated ground strap to Radio. • Replace distributor cap and rotor.
High whine or howling that changes with engine rpm.	Alternator noise	<ul style="list-style-type: none"> • Connect dedicated ground strap to Radio. • Run a direct wire from Battery to Alternator.
AM only is weak and noisy.	AM alignment	<ul style="list-style-type: none"> • Remove Radio for service.
FM only is weak and noisy.	FM alignment	<ul style="list-style-type: none"> • Remove Radio for service.

6571-0 CRUISE CONTROL

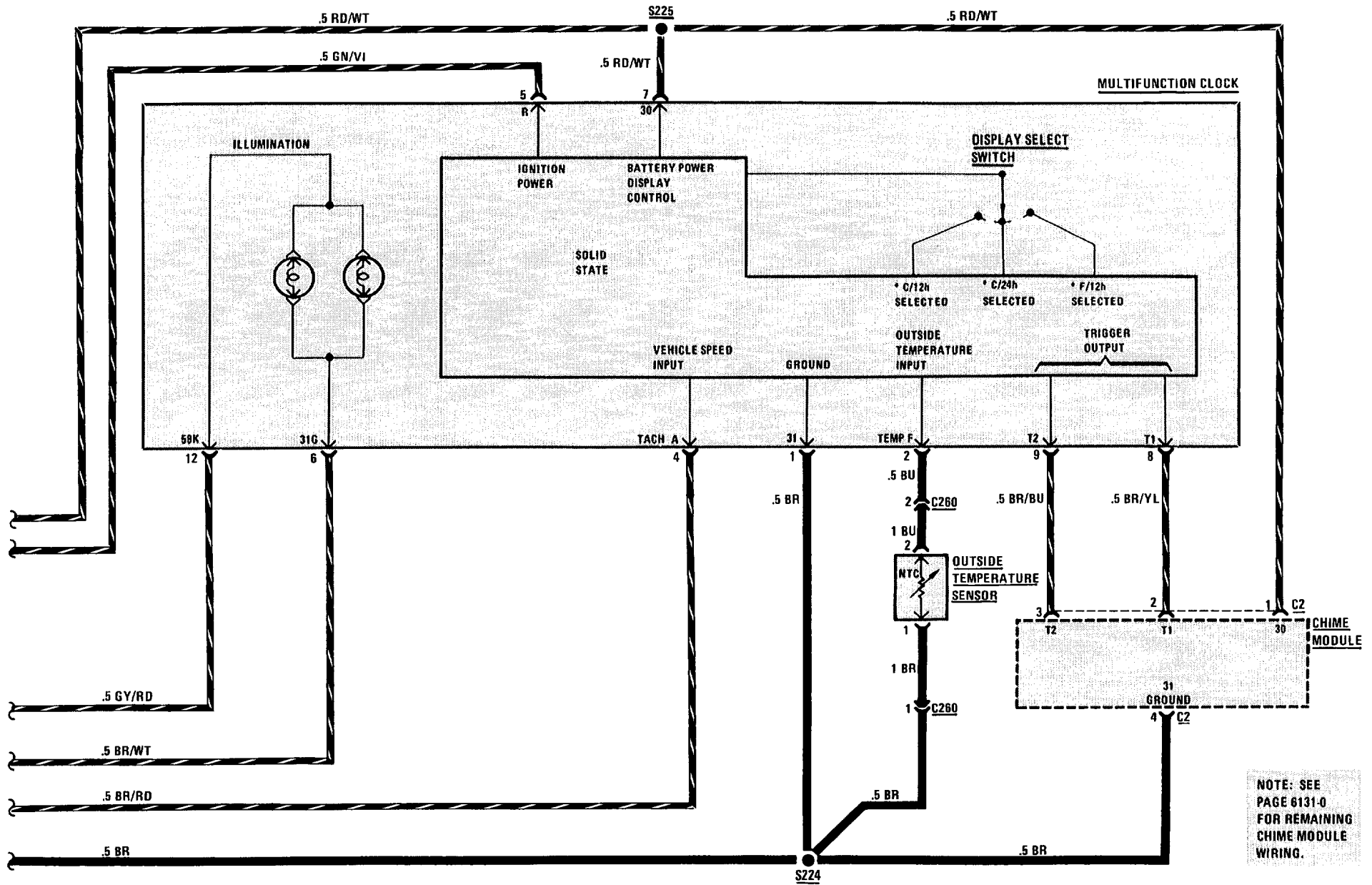


6581-0 ON-BOARD COMPUTER

MULTIFUNCTION CLOCK

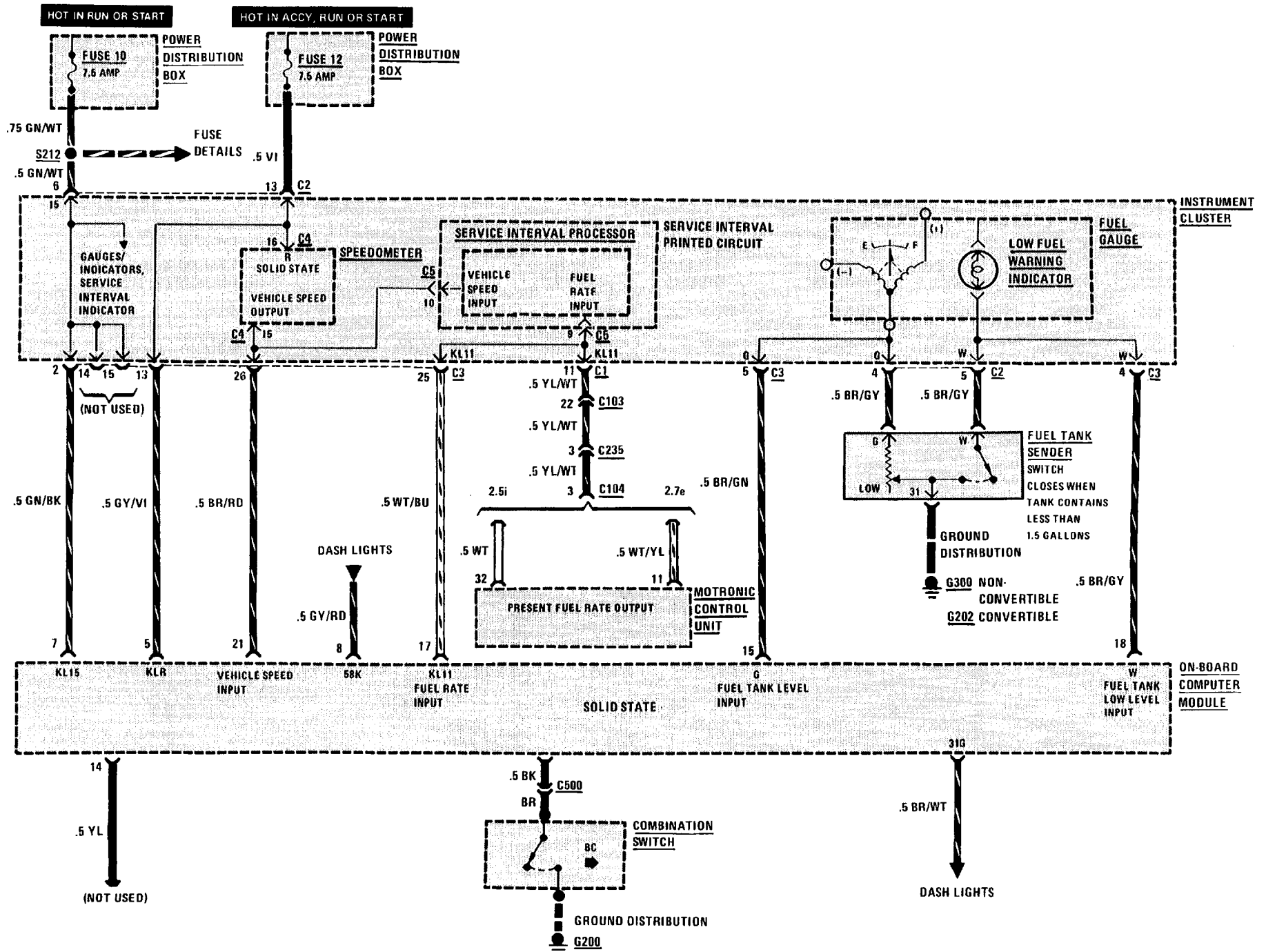


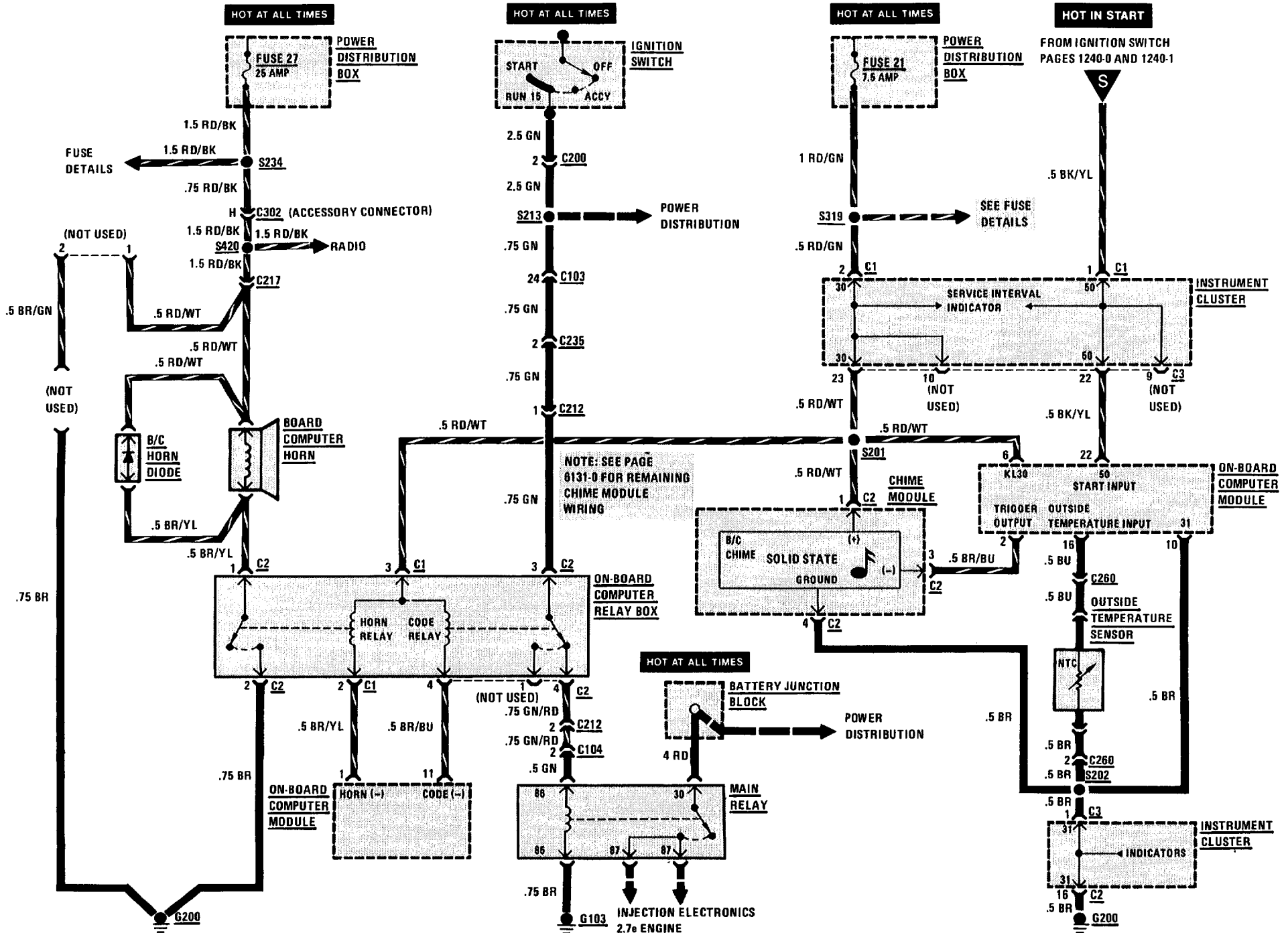
MULTIFUNCTION CLOCK



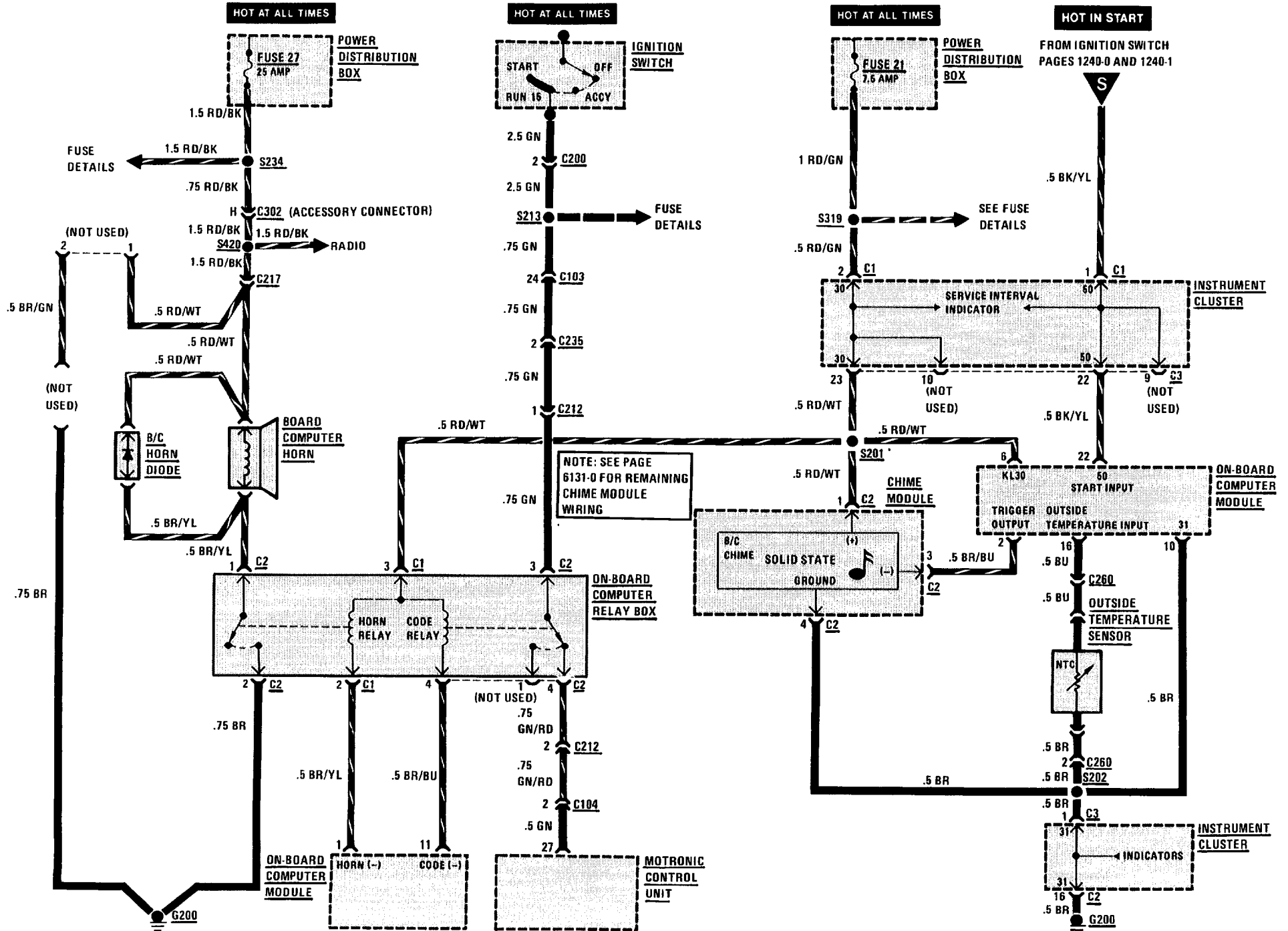
NOTE: SEE PAGE 6131-0 FOR REMAINING CHIME MODULE WIRING.

6581-2 ON-BOARD COMPUTER





6581-4 ON-BOARD COMPUTER 325i



7000-0 COMPONENT LOCATION VIEWS

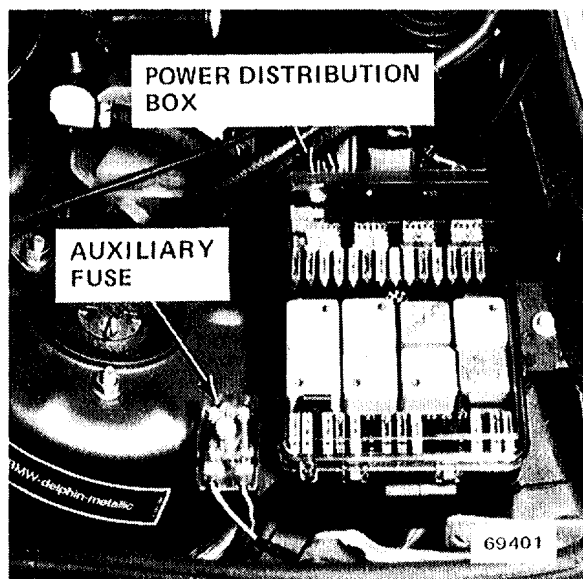


Figure 1 - LH Rear of Engine Compartment

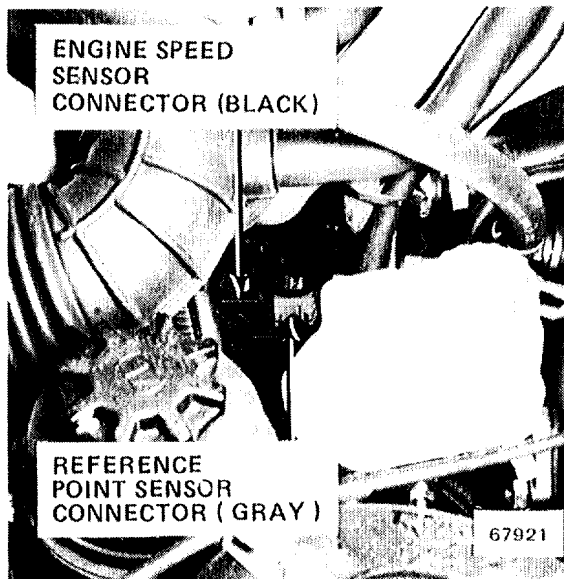


Figure 3 - Lower LH Rear of Engine

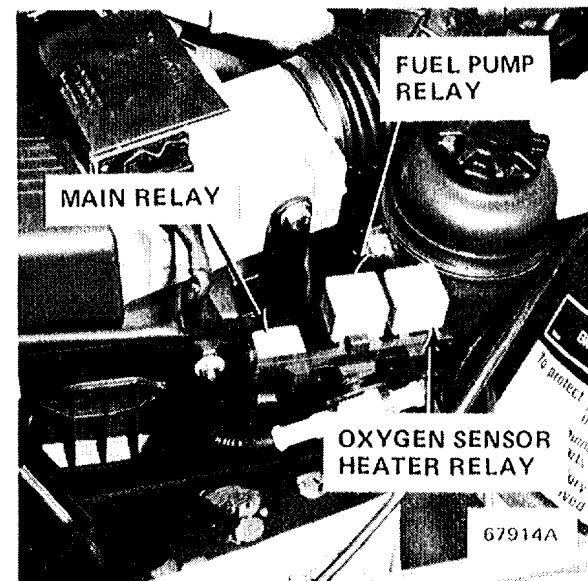


Figure 5 - Forward of LH Front Shock Tower (Relay Cover Removed)

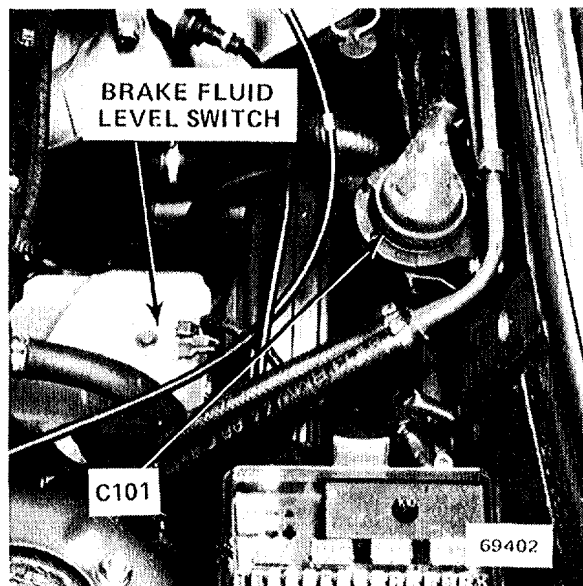


Figure 2 - LH Rear of Engine Compartment

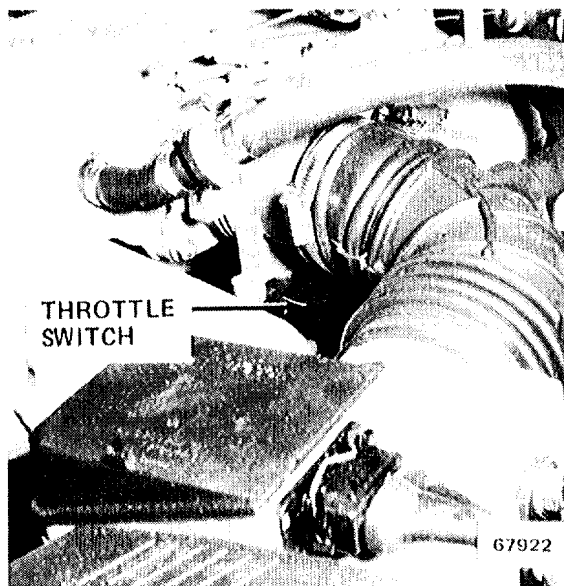


Figure 4 - Top LH Side of Engine

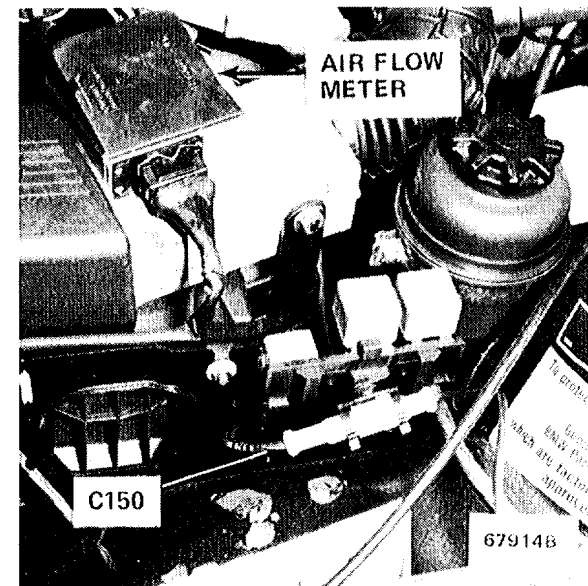


Figure 6 - Forward of LH Front Shock Tower

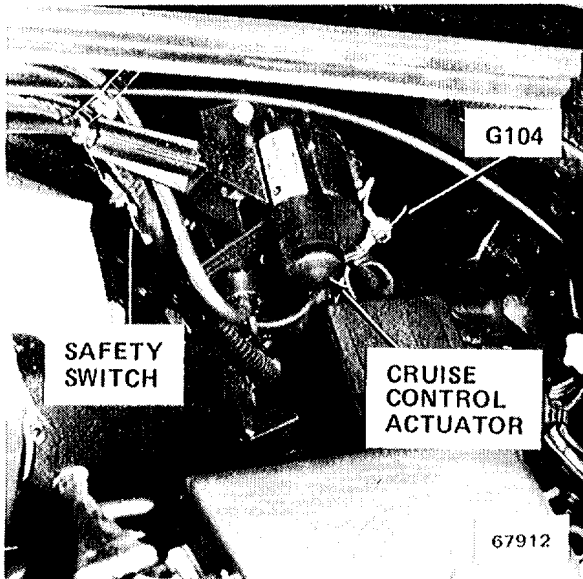


Figure 1 - Forward of LH Front Wheel Well

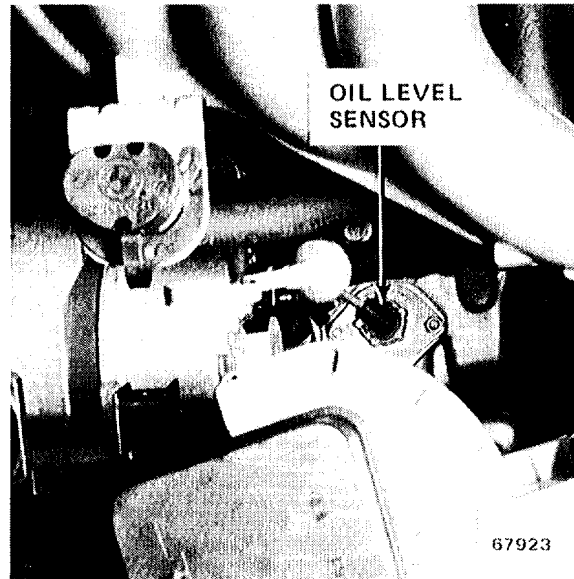


Figure 3 - Lower LH Side of Engine

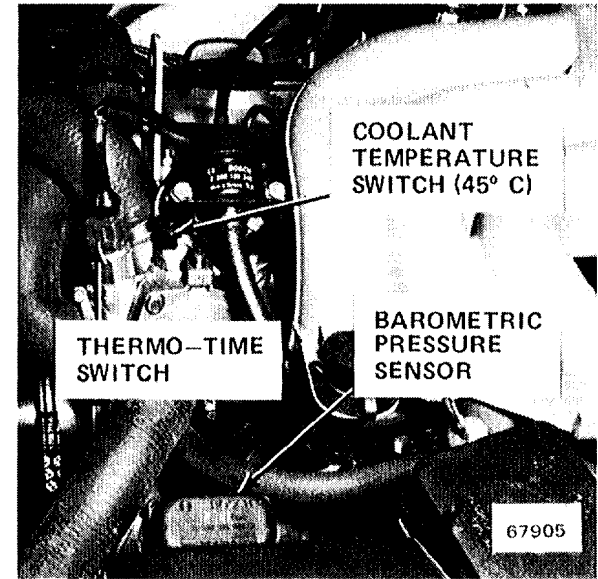


Figure 5 - Top Front of Engine

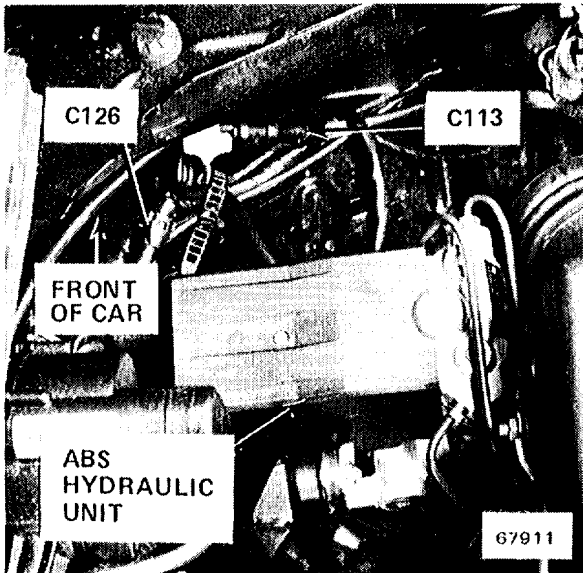


Figure 2 - LH Front of Engine Compartment (Cover Removed)

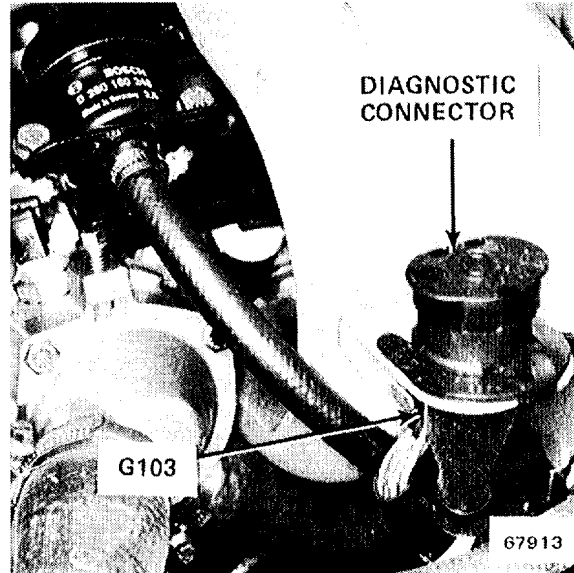


Figure 4 - Top LH Front of Engine

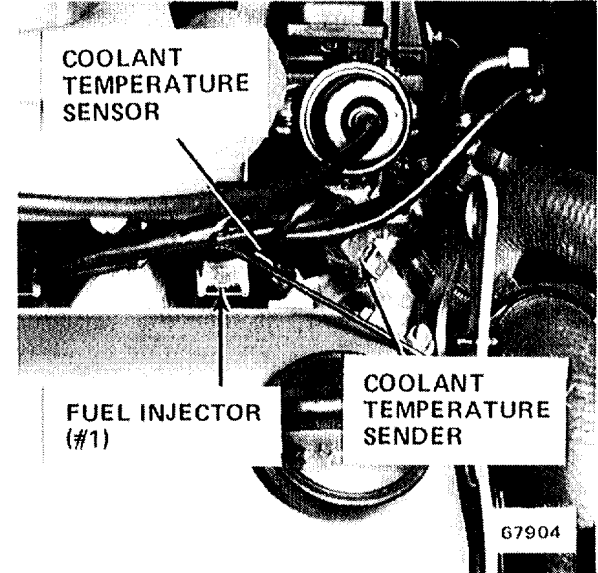


Figure 6 - Top Front of Engine

7000-2 COMPONENT LOCATION VIEWS

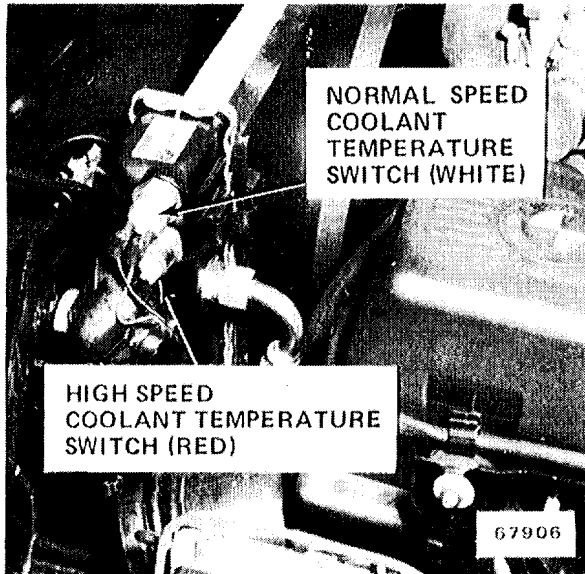


Figure 1 - Top LH Side Of Radiator

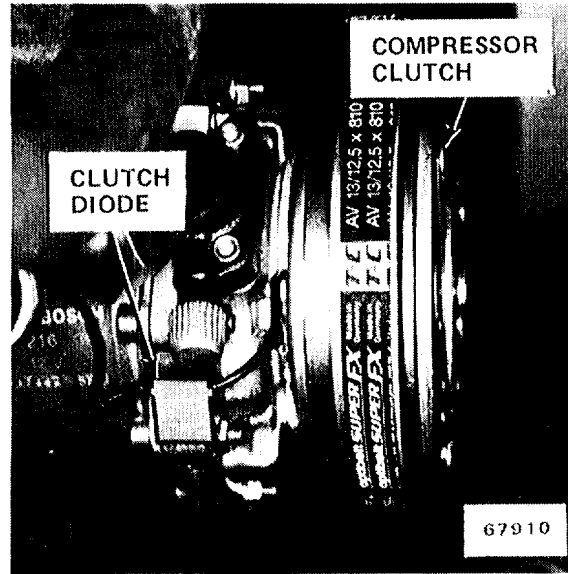


Figure 3 - Lower RH Front of Engine



Figure 5 - Behind RH Headlights
(Cover Removed)

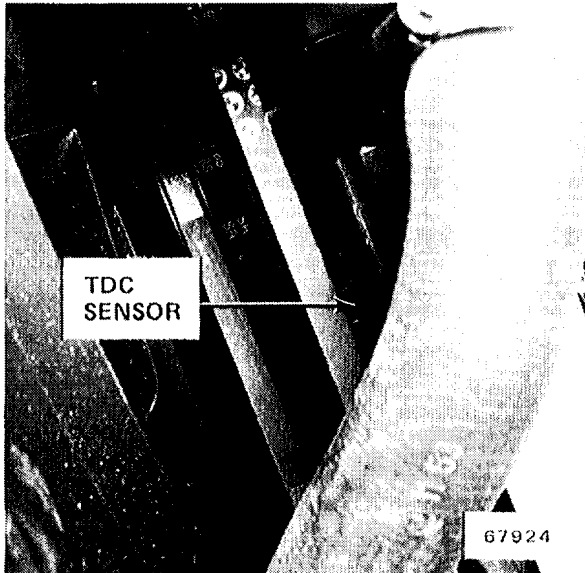


Figure 2 - Lower Front of Engine



Figure 4 - Lower RH Front of Engine

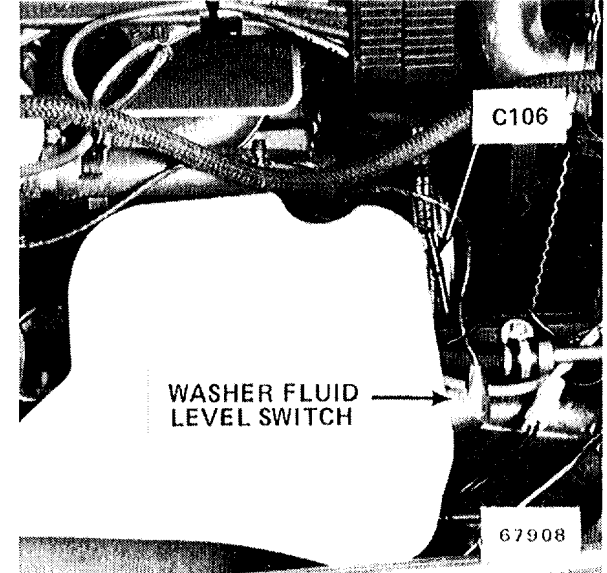


Figure 6 - RH Side Of Engine Compartment

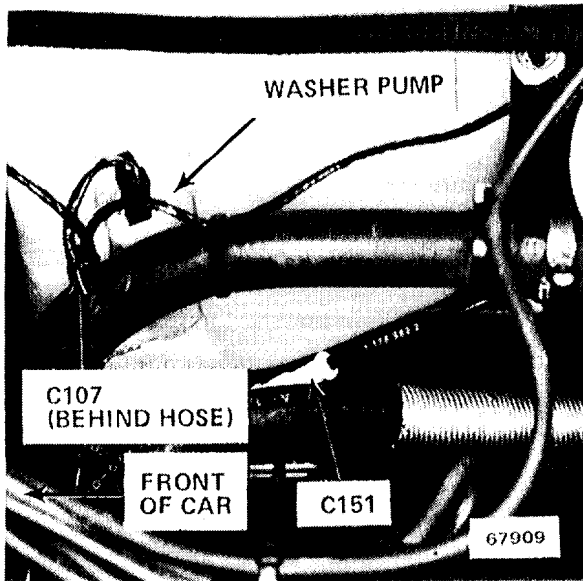


Figure 1 - RH Side of Engine Compartment

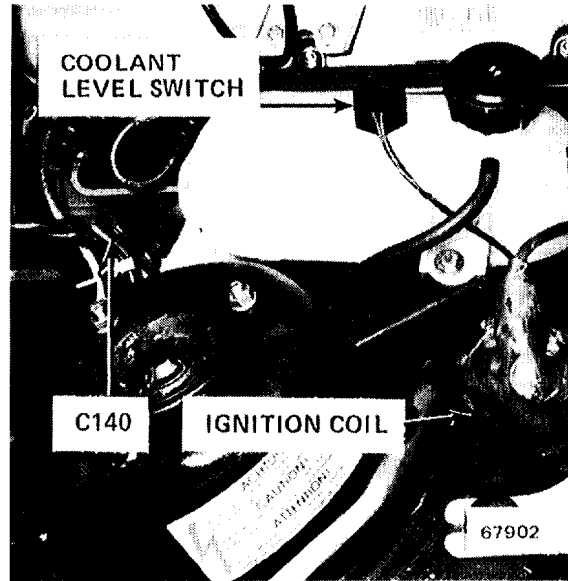


Figure 3 - RH Rear of Engine Compartment

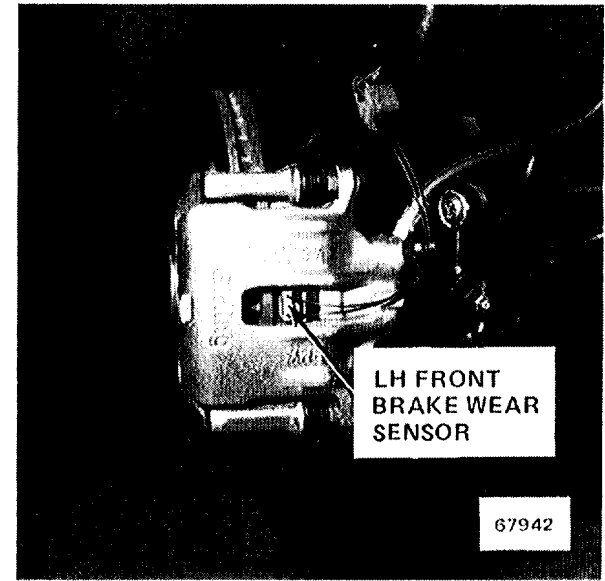


Figure 5 - LH Front Brake Assembly (Wheel Removed)

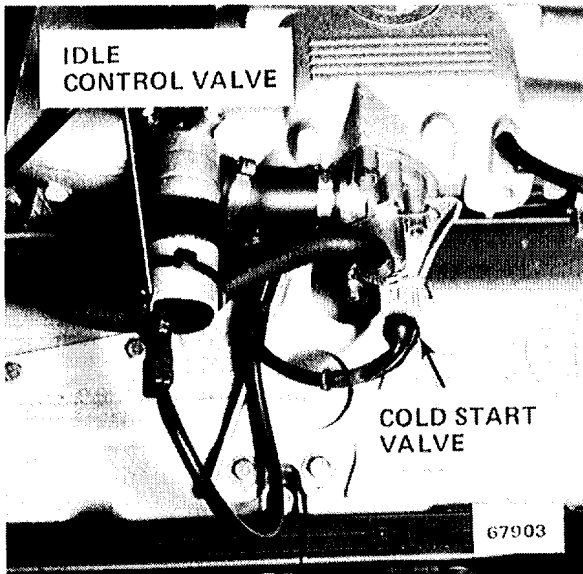


Figure 2 - RH Rear Side of Engine

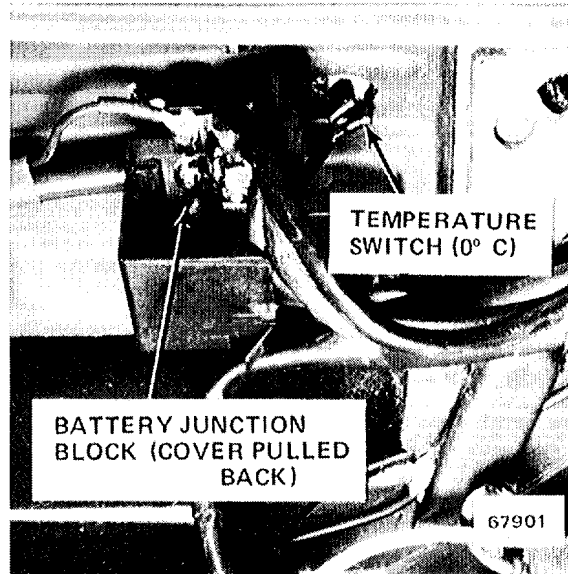


Figure 4 - RH Side of Engine Bulkhead



Figure 6 - LH Front Spindle Assembly

7000-4 COMPONENT LOCATION VIEWS

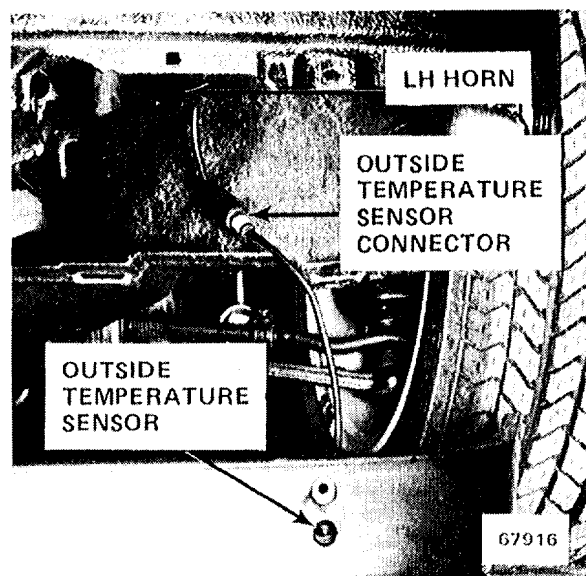


Figure 1 - Under LH Side of Front Bumper (Splash Guard Pulled Down)

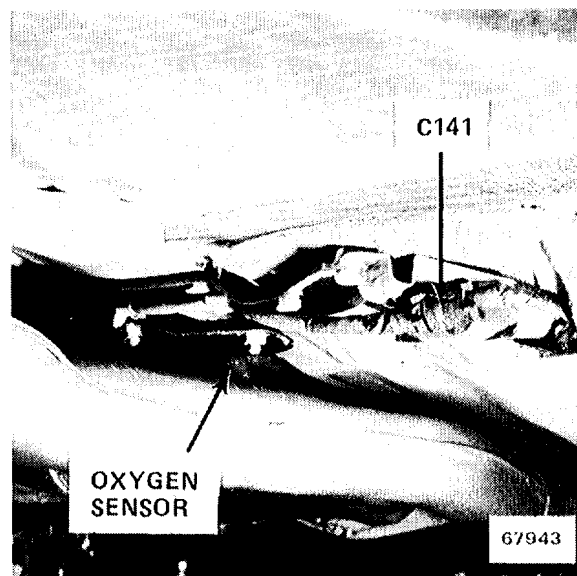


Figure 3 - Under RH Side of Car

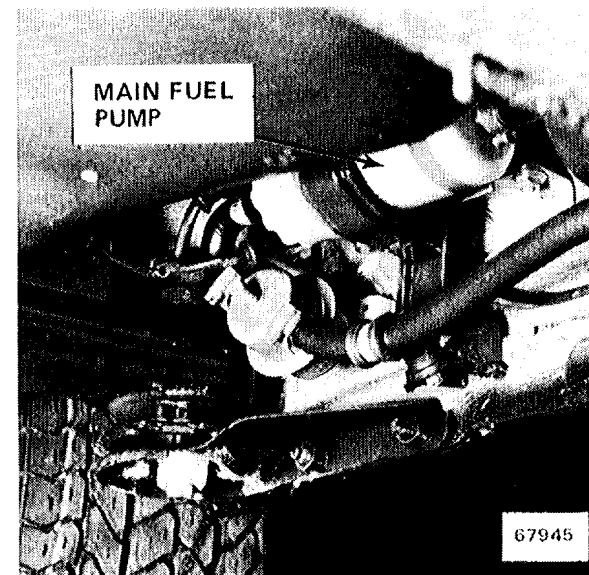


Figure 5 - Ahead of LH Rear Wheel

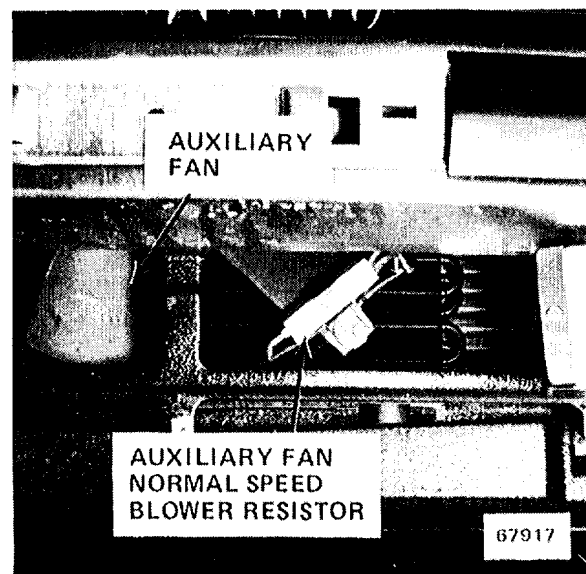


Figure 2 - Under Middle of Front Bumper

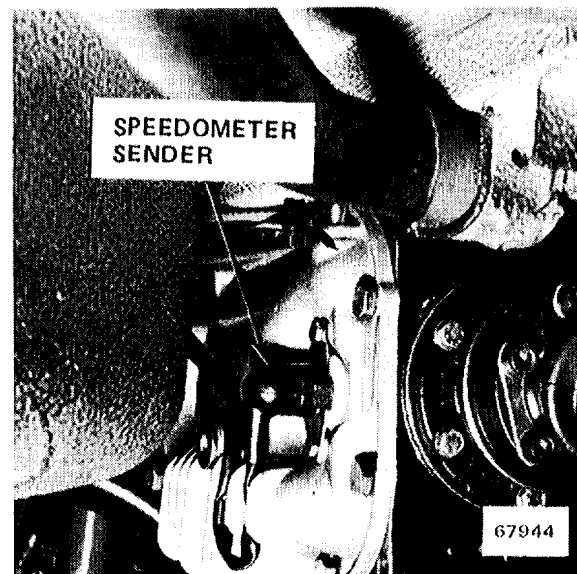


Figure 4 - RH Rear of Differential

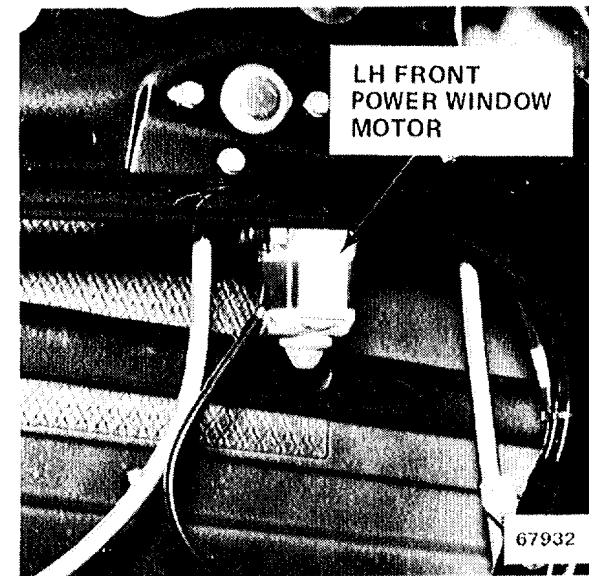


Figure 6 - Inside LH Front Door (Panel Removed)

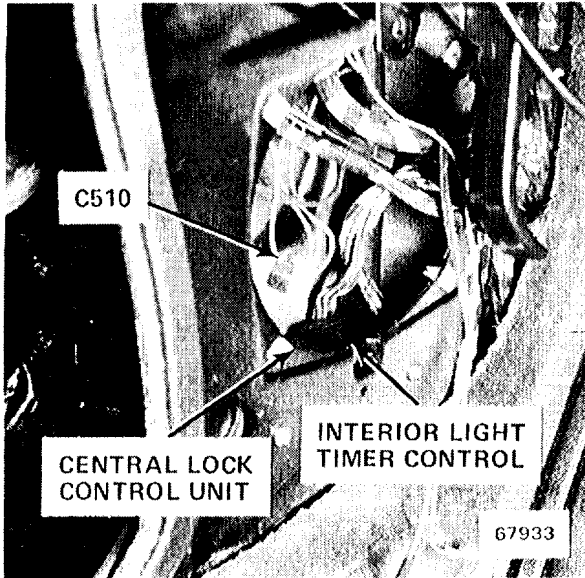


Figure 1 - Behind LH Front Speaker

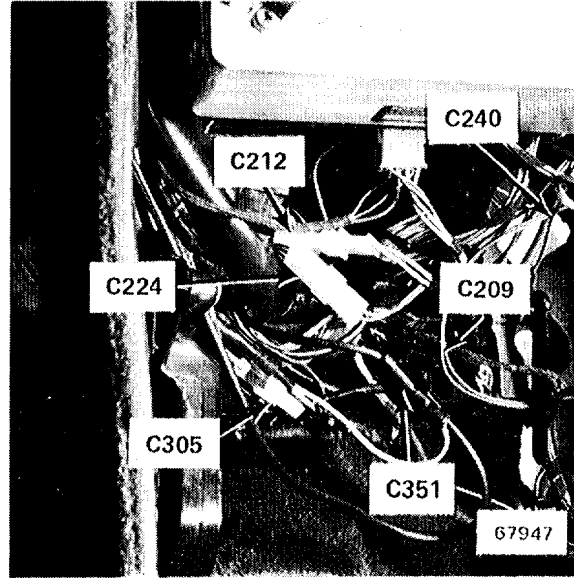


Figure 3 - Under LH Side of Dash

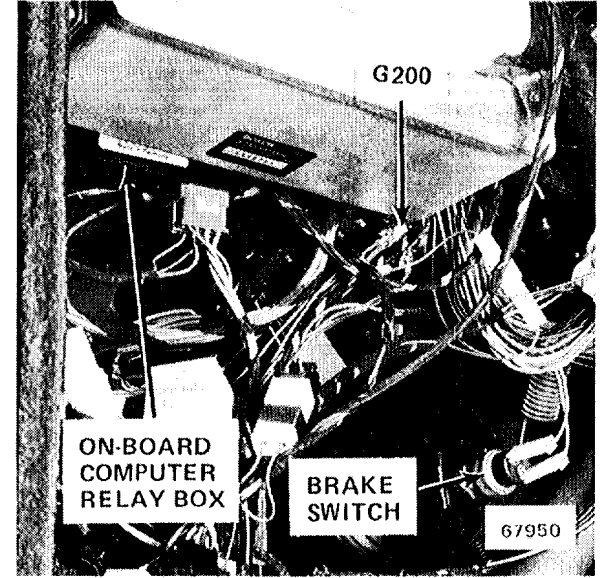


Figure 5 - Under LH Side of Dash

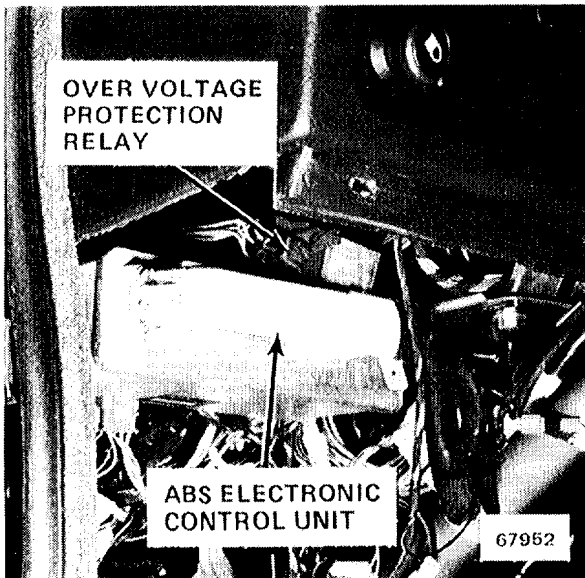


Figure 2 - Under LH Side of Dash

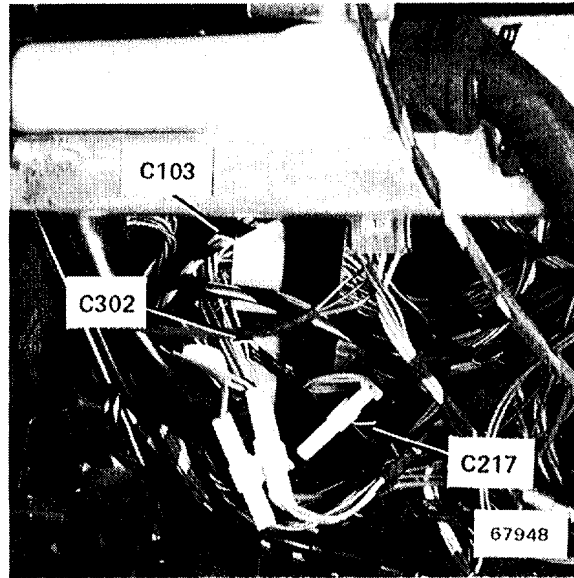


Figure 4 - Under LH Side of Dash

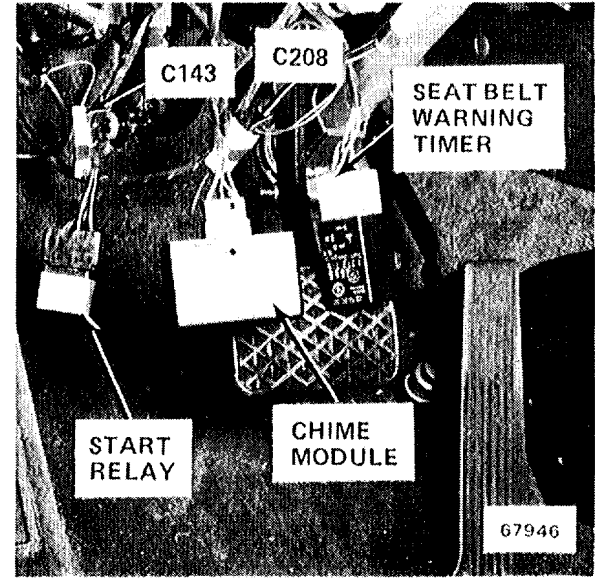


Figure 6 - Under LH Side of Dash

7000-6 COMPONENT LOCATION VIEWS

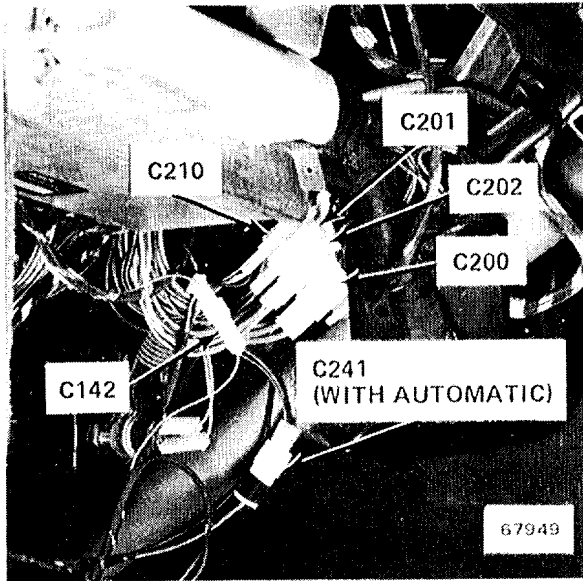


Figure 1 - Under LH Side of Dash

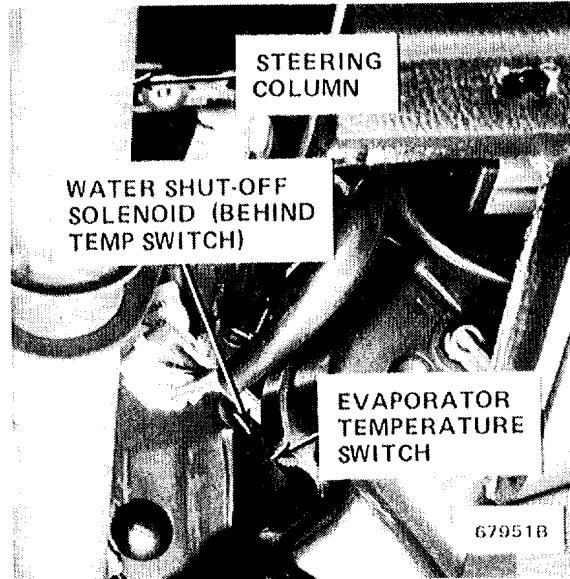


Figure 3 - Under LH Side of Dash

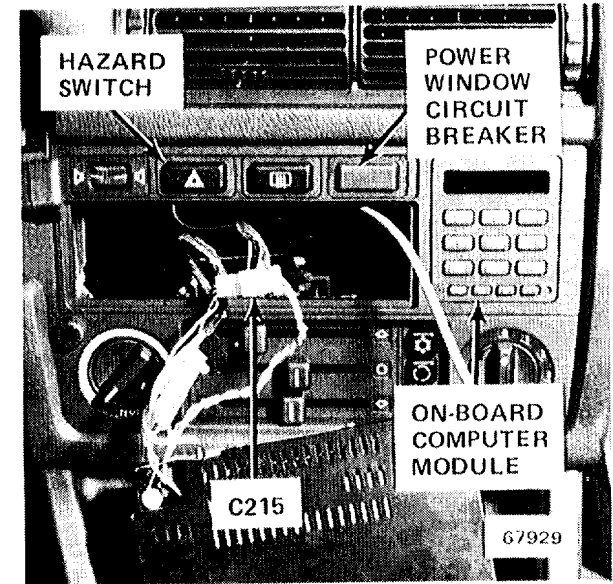


Figure 5 - Center of Dash

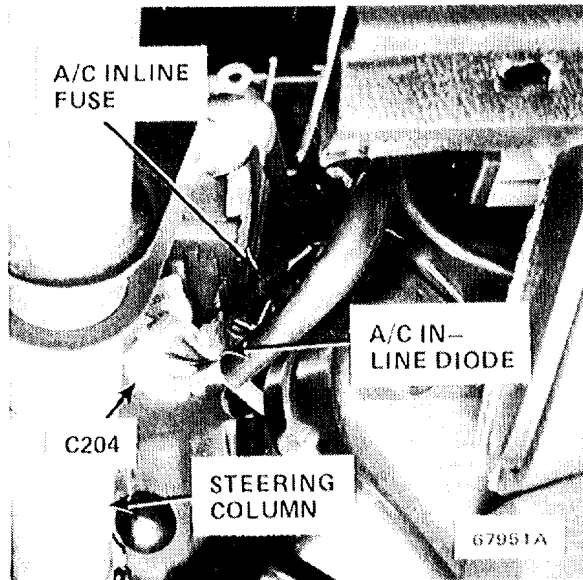


Figure 2 - Under LH Side of Dash

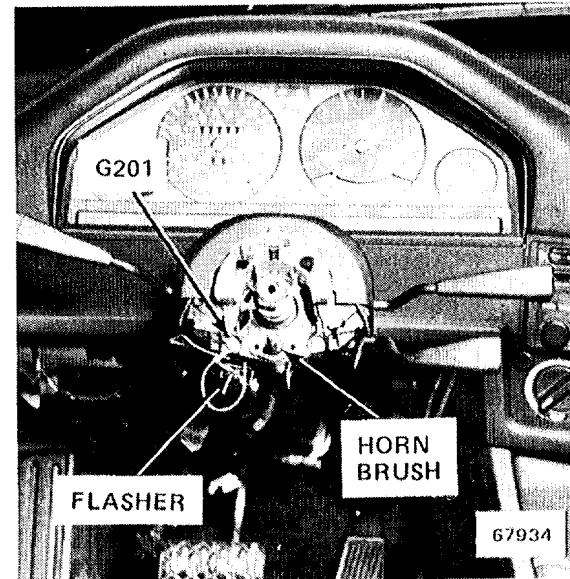


Figure 4 - Top of Steering Column

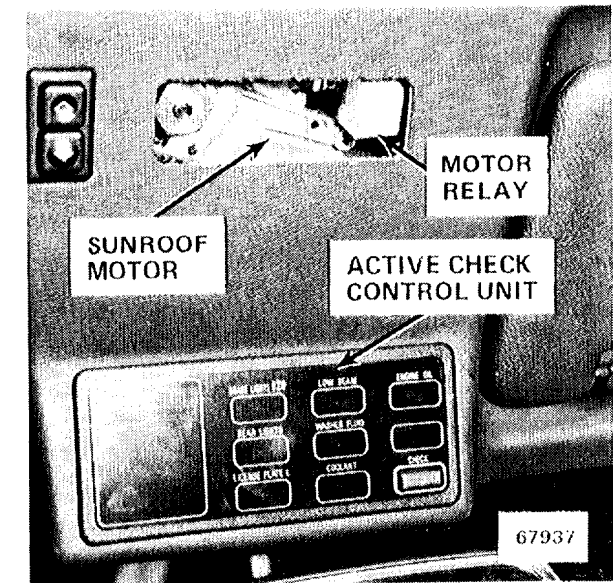


Figure 6 - Center of Windshield Header

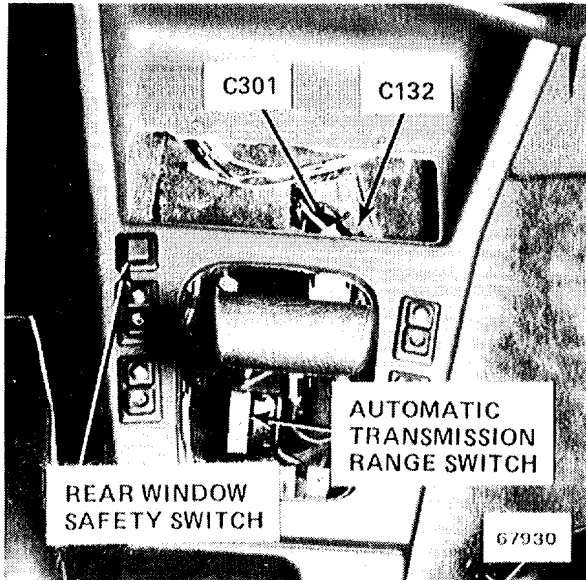


Figure 1 - Center Console

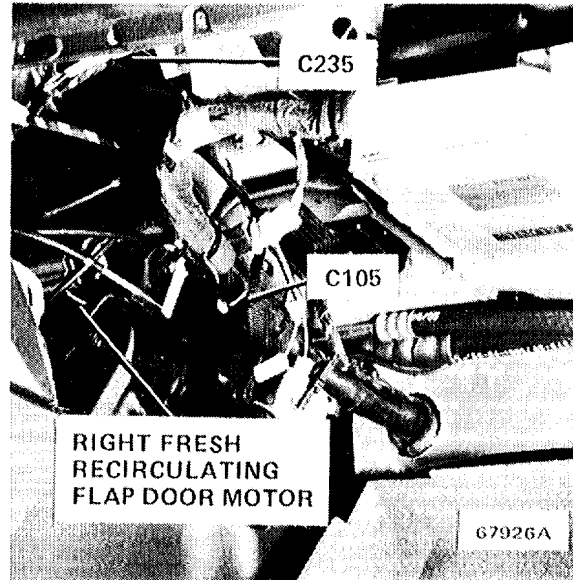


Figure 3 - Behind RH Side of Center Console

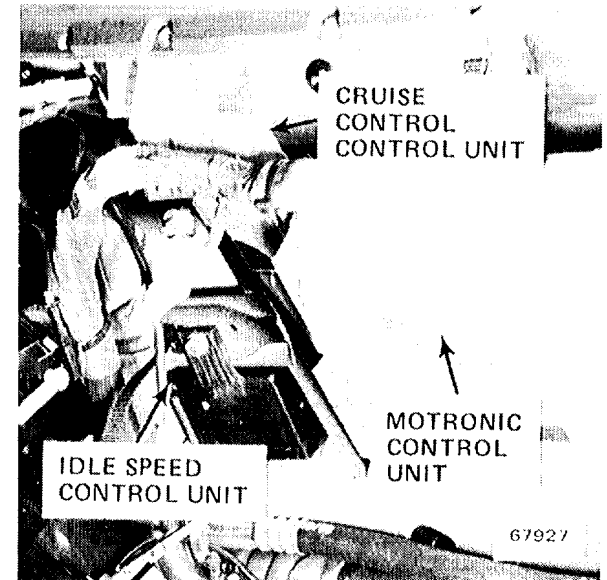


Figure 5 - Under RH Side of Dash

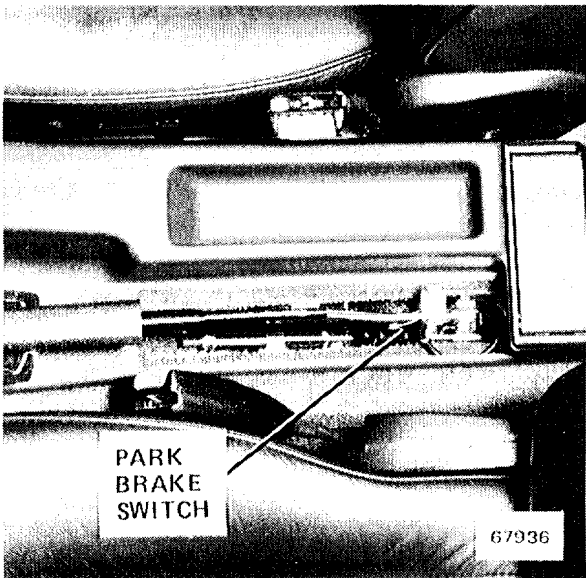


Figure 2 - Rear of Center Console

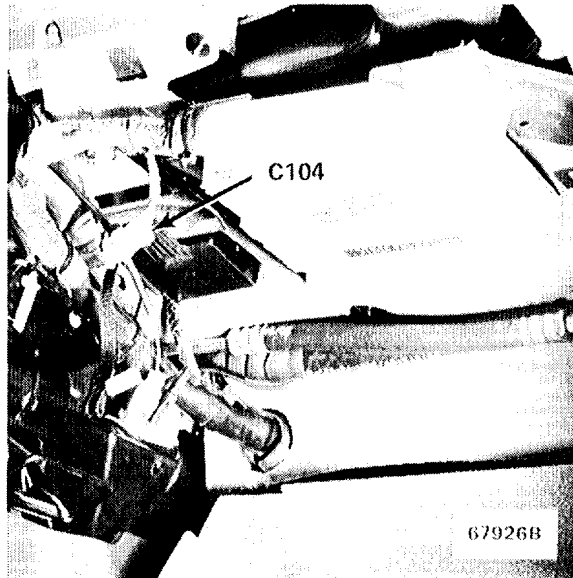


Figure 4 - Under RH Side of Dash

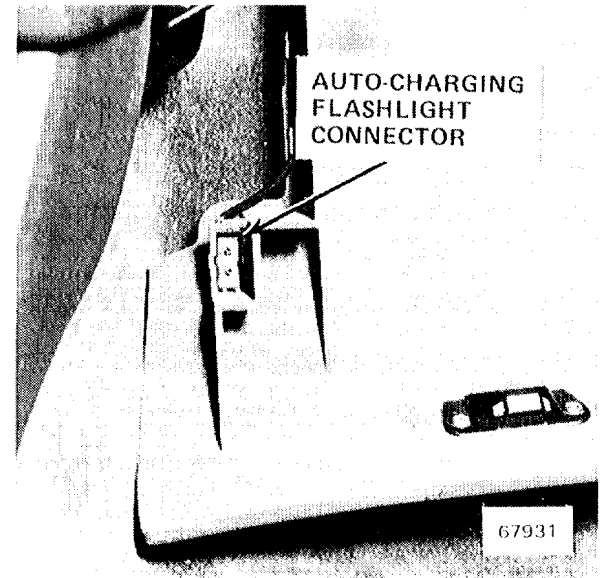


Figure 6 - Inside Glove Box

7000-8 COMPONENT LOCATION VIEWS

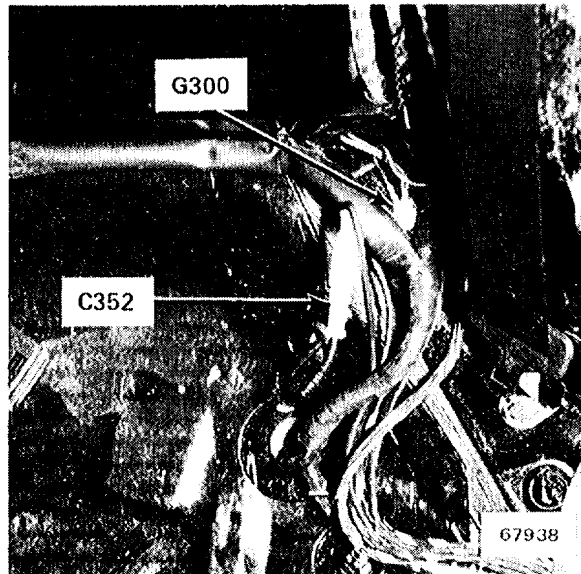


Figure 1 - Under LH Side Of Rear Seat

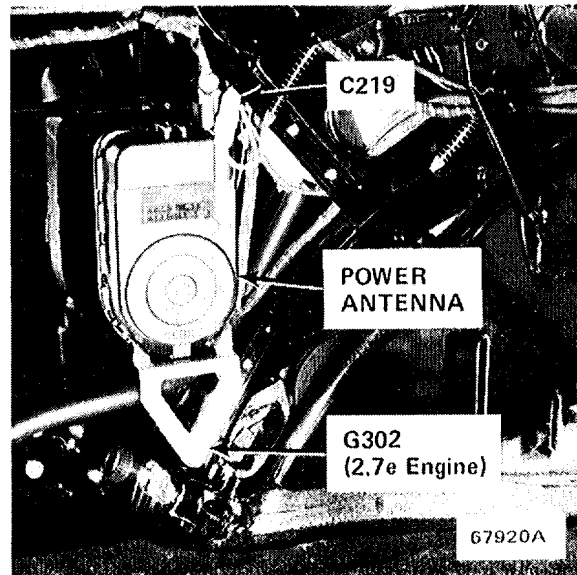


Figure 3 - LH Front Of Trunk



Figure 5 - Middle Rear Of Trunk

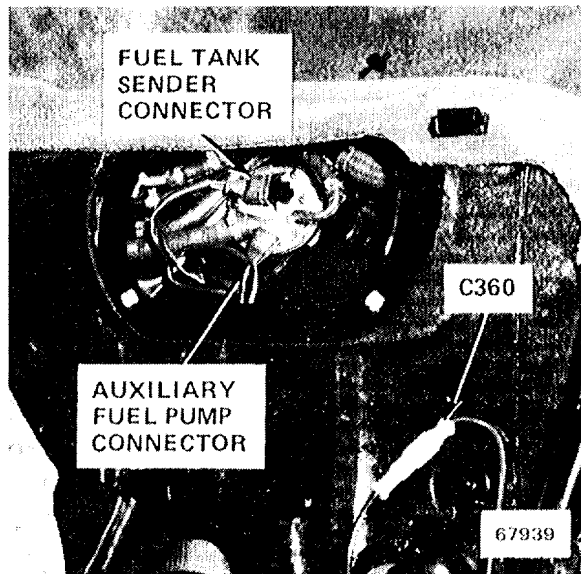


Figure 2 - Under RH Side of Rear Seat

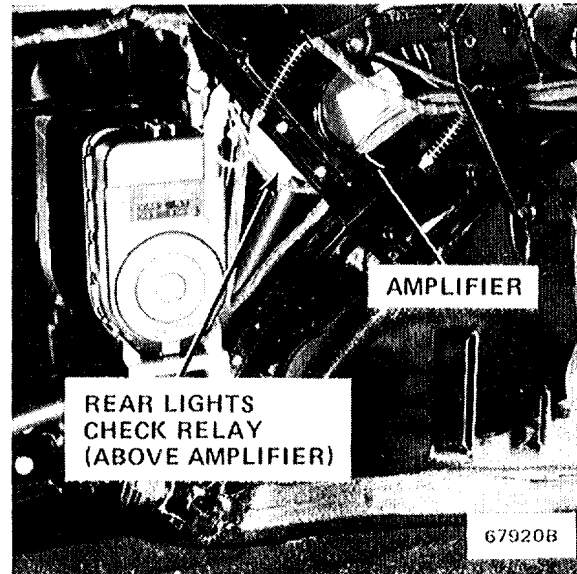


Figure 4 - LH Front Of Trunk

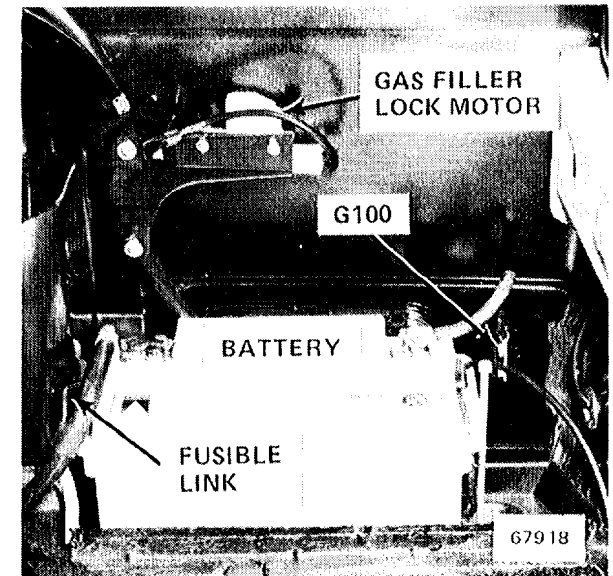


Figure 6 - RH Rear Of Trunk

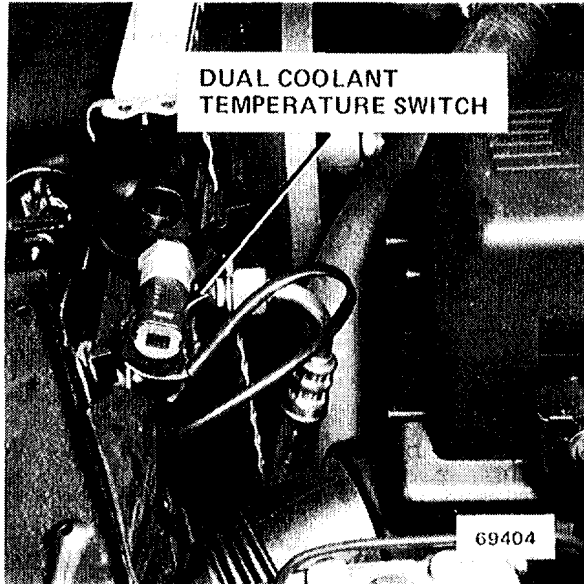


Figure 1 - Top LH End Of Radiator (2.5i Engine)

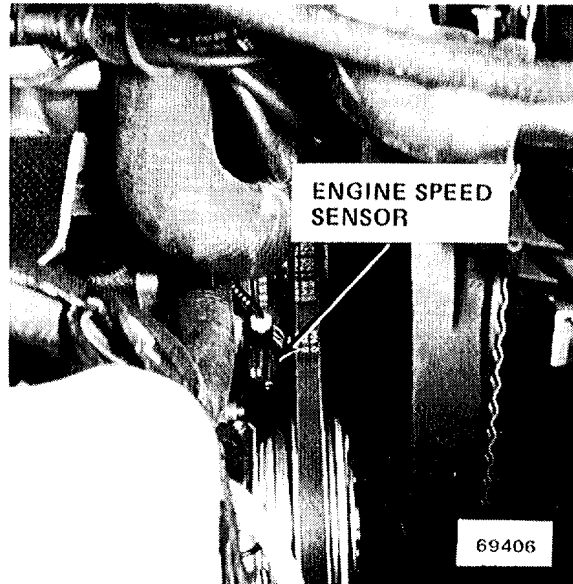


Figure 3 - Lower RH Front Of 2.5i Engine

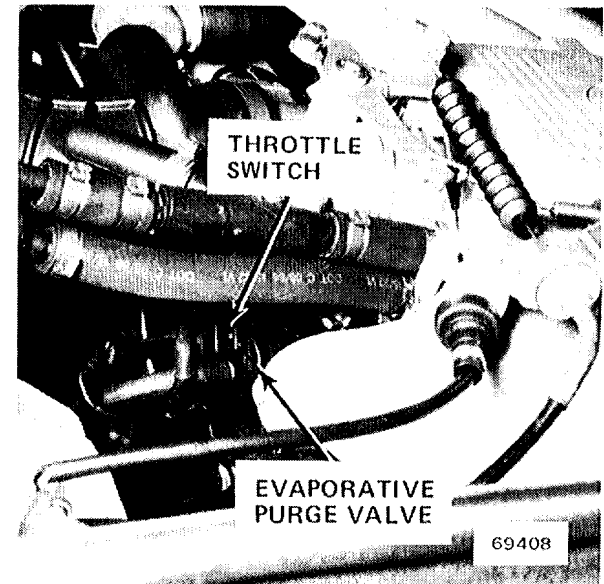


Figure 5 - LH Side Of 2.5i Engine

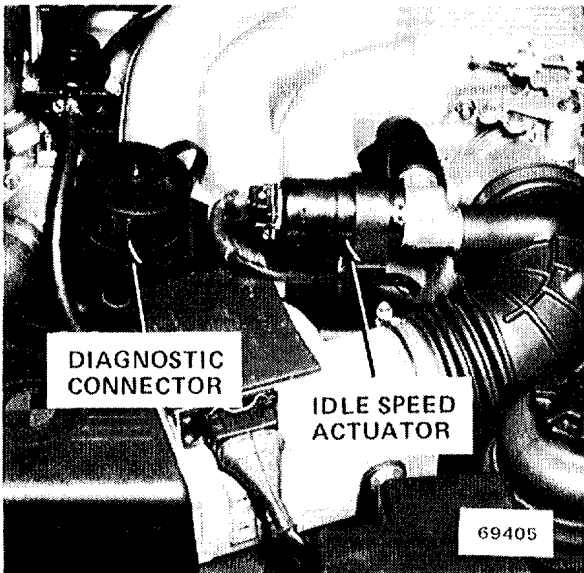


Figure 2 - LH Front of 2.5i Engine

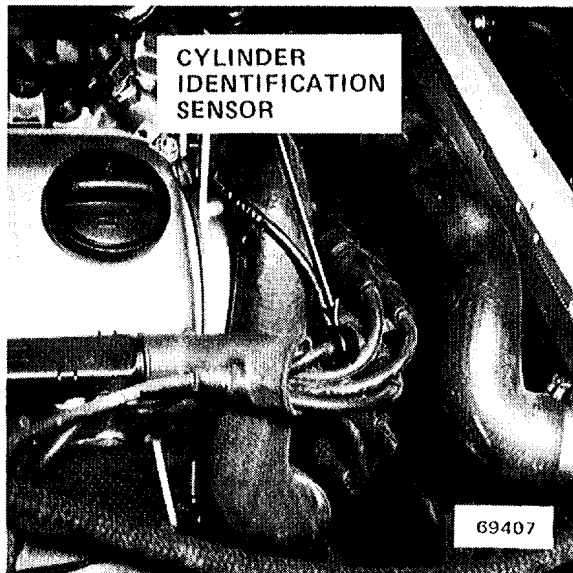


Figure 4 - RH Front Of 2.5i Engine (Cover Removed)

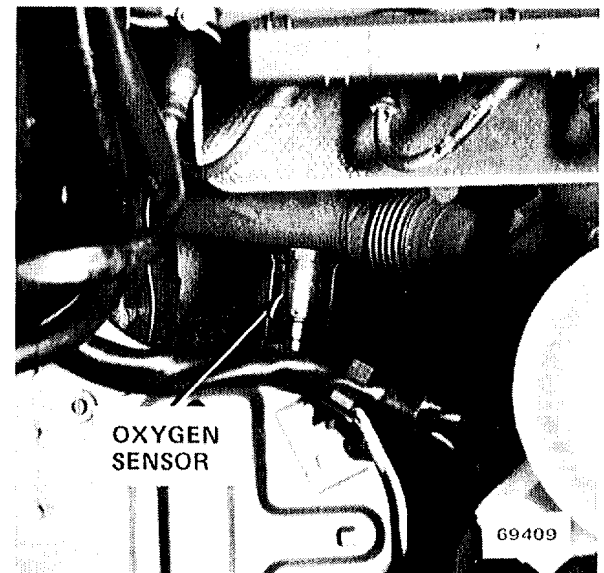


Figure 6 - Lower RH Rear Of 2.5i Engine Compartment

7000-10 COMPONENT LOCATION VIEWS

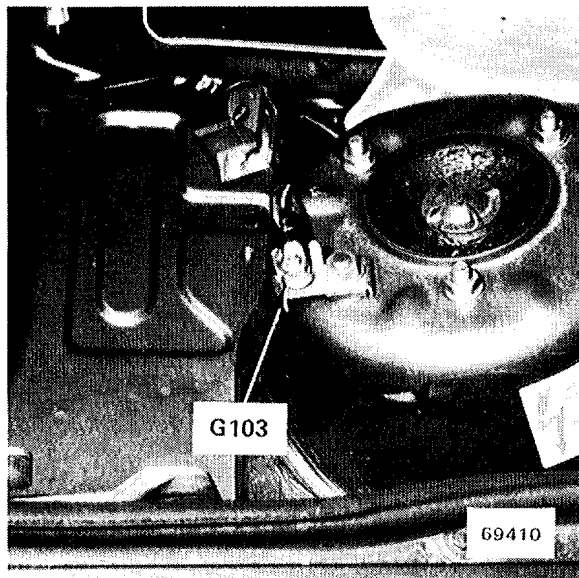


Figure 1 - RH Front Shock Tower (2.5i Engine, Non Convertible)

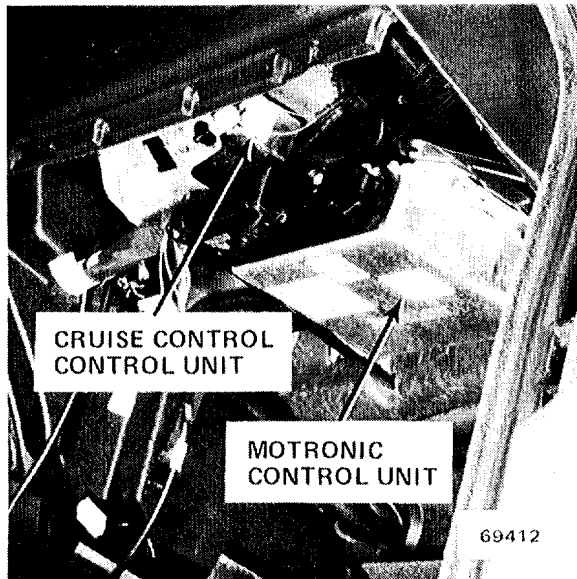


Figure 3 - Under RH Side Of Dash (2.5i Engine)

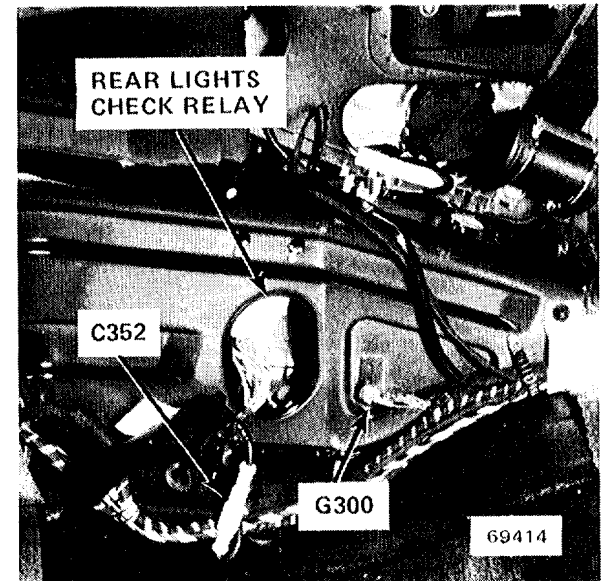


Figure 5 - Under LH Side Of Rear Seat (convertible)

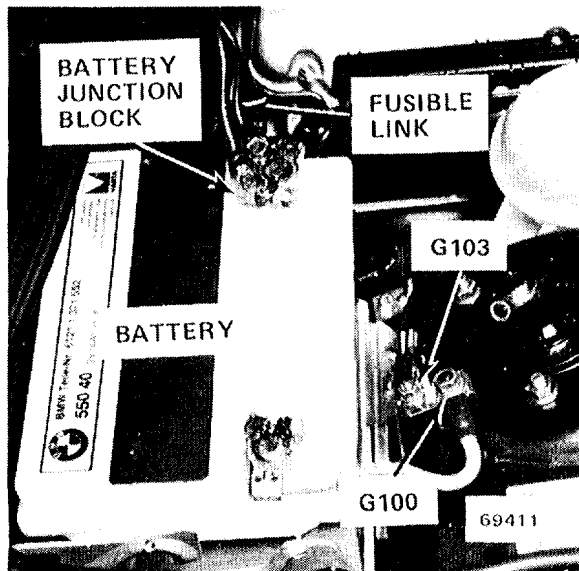


Figure 2 - RH Rear Of Engine Compartment (convertible)



Figure 4 - Center Of Windshield Header (convertible)

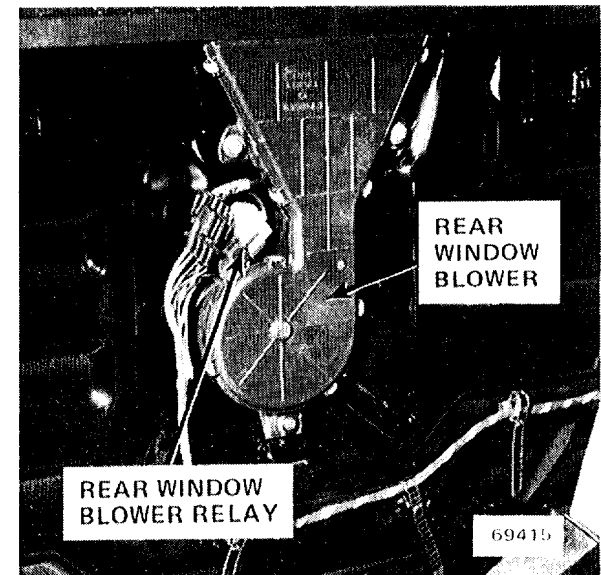


Figure 6 - Behind Center Of Rear Seat (convertible)

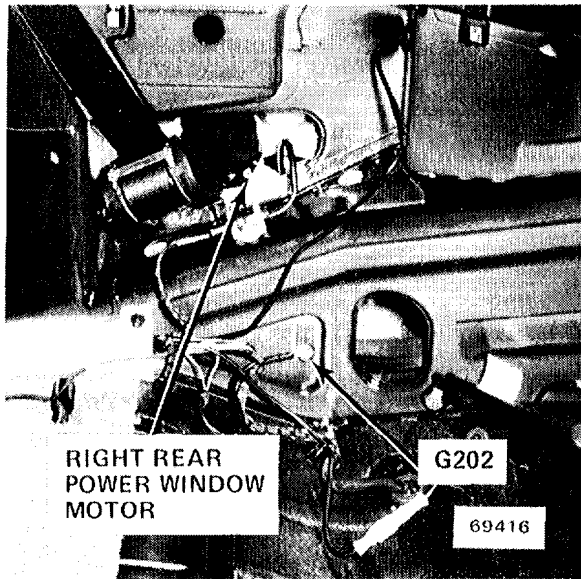


Figure 1 - LH Rear Of Passenger Compartment (convertible)

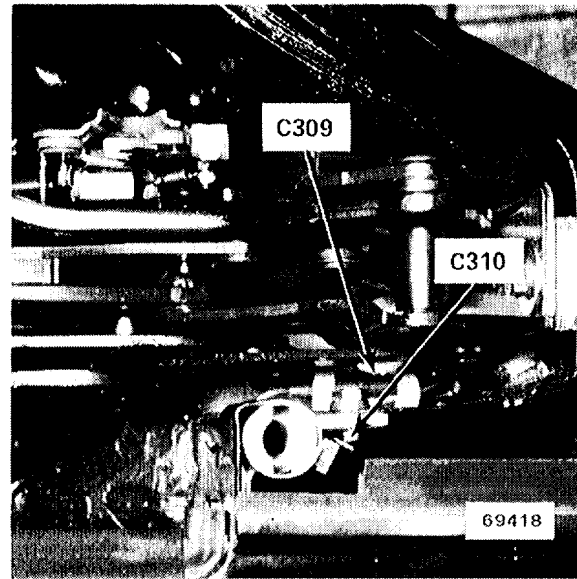


Figure 3 - RH Side Of Soft Top Stowage Compartment

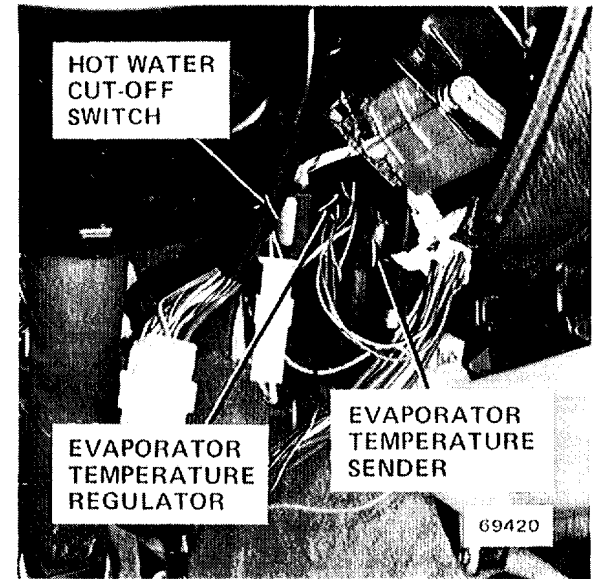


Figure 5 - Under LH Side Of Dash

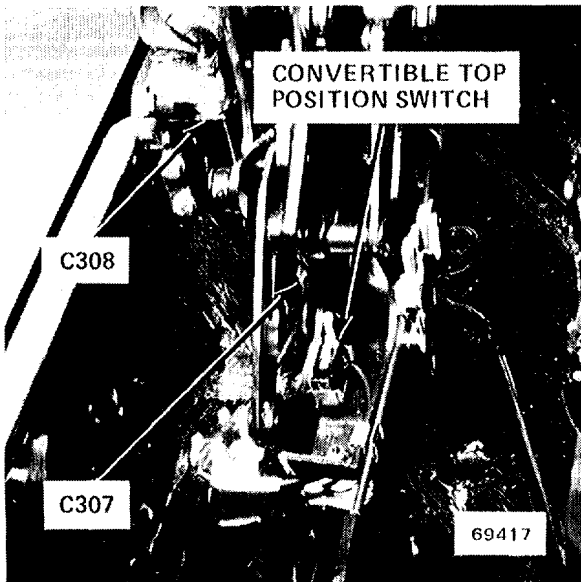


Figure 2 - LH Side Of Soft Top Stowage Compartment

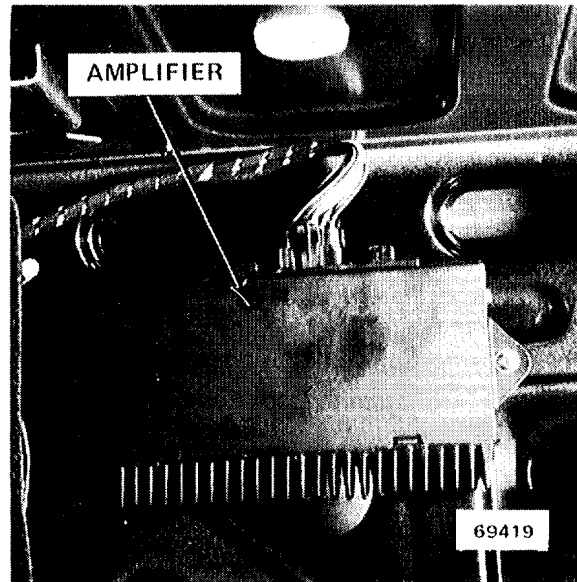


Figure 4 - LH Front Corner Of Trunk (convertible)

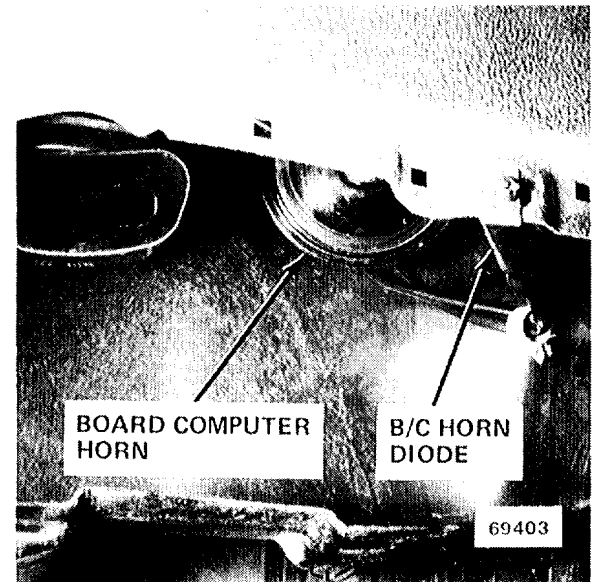


Figure 6 - Under LH Side Of Front Bumper (Splash Guard Pulled Down)

8000-0 SPLICE LOCATION VIEWS

INDEX

This index contains all the splices in the car, what harness each one is in, and the page that the splices appear on. The drawings after the index show how the harness is routed through the car and where the splices are located on the harness.

SPLICE	HARNESS	PAGE NUMBER	SPLICE	HARNESS	PAGE NUMBER
S100	MAIN	8000-2	S210	MAIN	8000-2
S100	MAIN (CONV.)	8000-3	S210	MAIN (CONV.)	8000-3
S102	MAIN	8000-2	S211	MAIN	8000-2
S102	MAIN (CONV.)	8000-3	S211	MAIN (CONV.)	8000-3
S103	MAIN	8000-2	S212	MAIN	8000-2
S103	MAIN (CONV.)	8000-3	S212	MAIN (CONV.)	8000-3
S104	ENGINE (2.7e)	8000-4	S213	MAIN	8000-2
S104	ENGINE (2.5i)	8000-5	S213	MAIN (CONV.)	8000-3
S105	ENGINE (2.7e)	8000-4	S214	ENGINE (2.7e)	8000-4
S105	ENGINE (2.5i)	8000-5	S215	MAIN	8000-2
S106	ENGINE (2.7e)	8000-4	S215	MAIN (CONV.)	8000-3
S106	ENGINE (2.5i)	8000-5	S216	ENGINE (2.7e)	8000-4
S107	ENGINE (2.7e)	8000-4	S217	ENGINE (2.7e)	8000-4
S107	ENGINE (2.5i)	8000-5	S219	INSTRUMENT	
S108	ENGINE (2.7e)	8000-4		PANEL	8000-7
S109	ENGINE (2.5i)	8000-5	S221	INSTRUMENT	
S111	ENGINE (2.5i)	8000-5		PANEL	8000-7
S112	ENGINE (2.7e)	8000-4	S224	MULTI	
S112	ENGINE (2.5i)	8000-5		FUNCTION	NOT
S114	MAIN	8000-2		CLOCK	SHOWN
S114	MAIN (CONV.)	8000-3	S225	MULTI	
S115	MAIN	8000-2		FUNCTION	NOT
S115	MAIN (CONV.)	8000-3		CLOCK	SHOWN
S116	MAIN	8000-2	S228	CRUISE	NOT
S116	MAIN (CONV.)	8000-3		CONTROL	SHOWN
S118	MAIN	8000-2	S229	AIR	NOT
S118	MAIN (CONV.)	8000-3		CONDITIONING	SHOWN
S119	MAIN	8000-2	S230	MAIN	8000-2
S119	MAIN (CONV.)	8000-3	S230	MAIN (CONV.)	8000-3
S201	ON-BOARD		S231	MAIN	8000-2
	COMPUTER	8000-8	S231	MAIN (CONV.)	8000-3
S202	ON-BOARD		S232	MAIN	8000-2
	COMPUTER	8000-8	S232	MAIN (CONV.)	8000-3
S207	MAIN	8000-2	S233	MAIN	8000-2
S207	MAIN (CONV.)	8000-3	S233	MAIN (CONV.)	8000-3
S209	MAIN	8000-2	S234	MAIN	8000-2
S209	MAIN (CONV.)	8000-3			

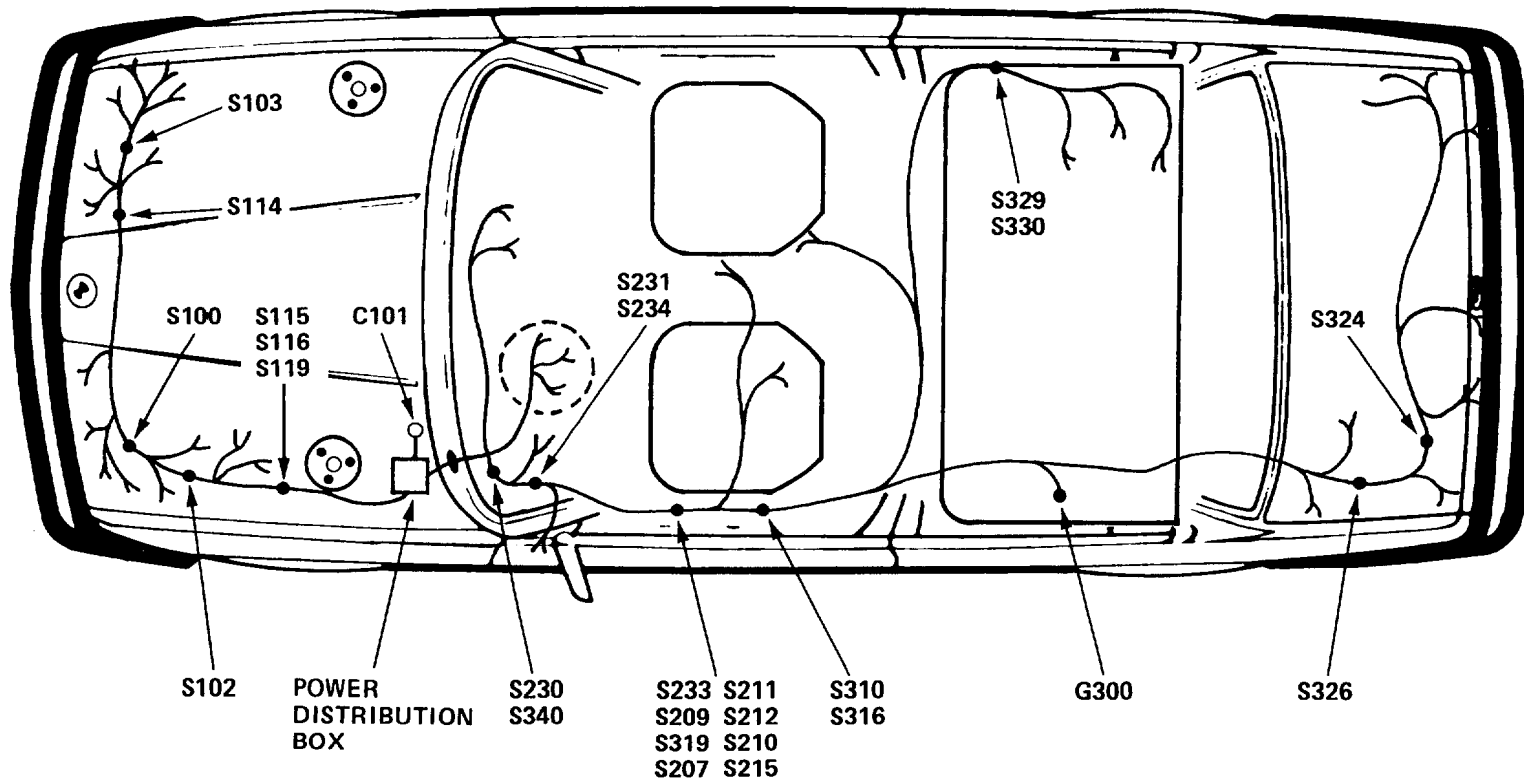
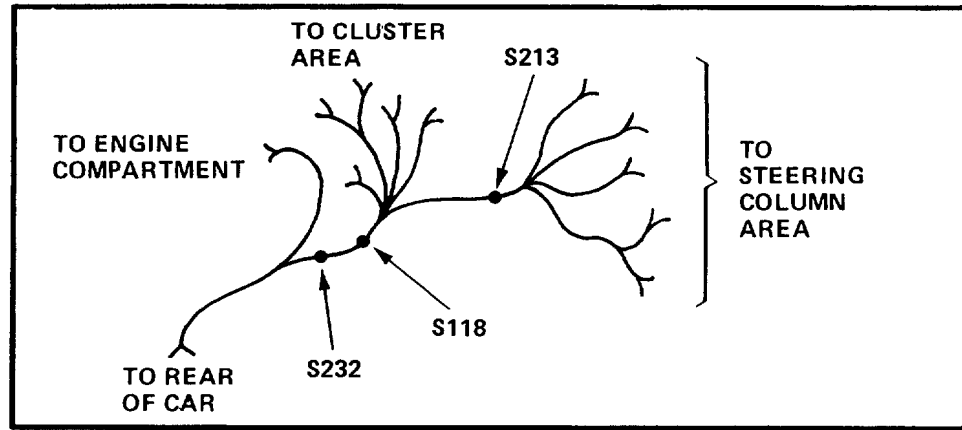
SPLICE LOCATION VIEWS 8000-1

INDEX

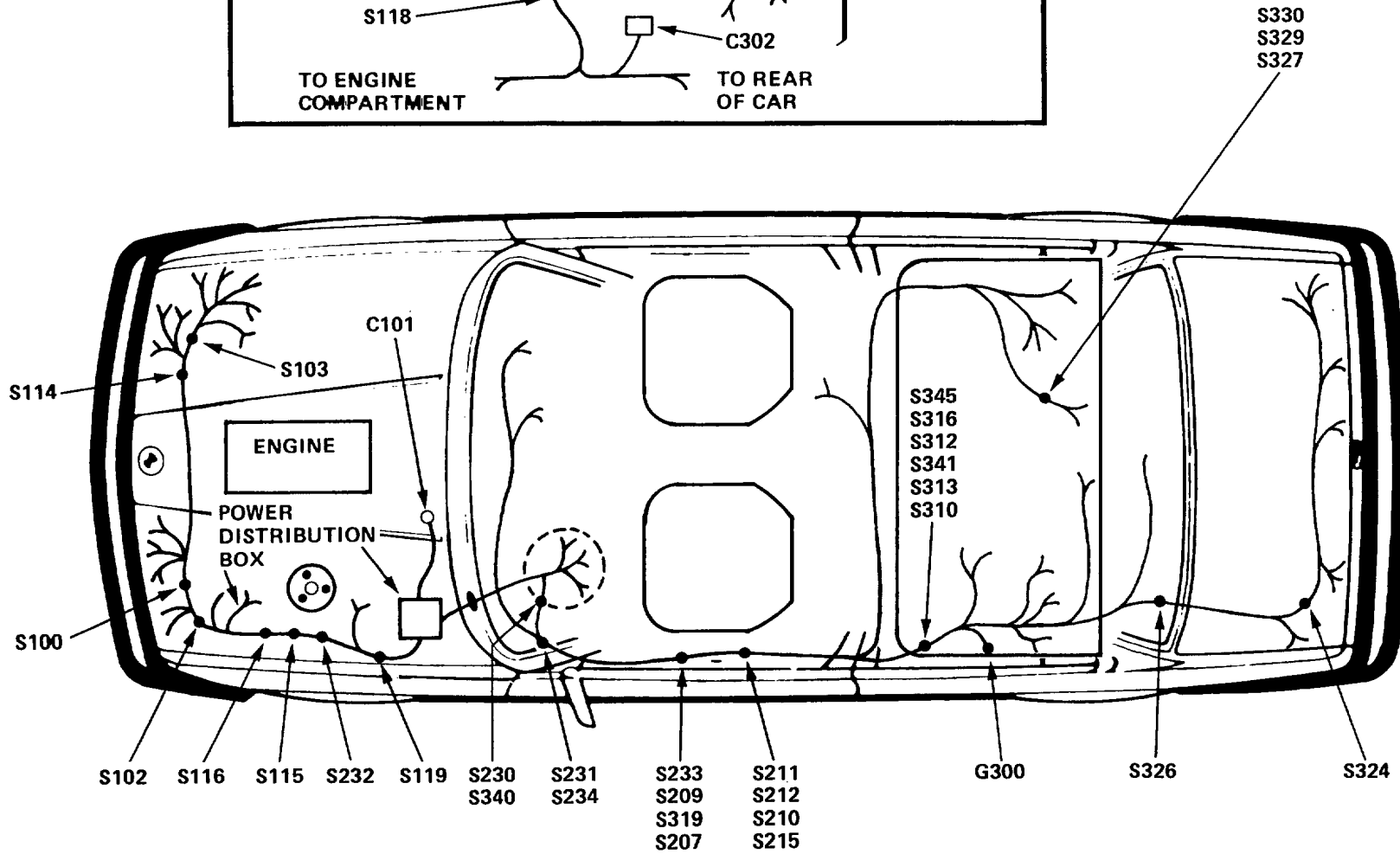
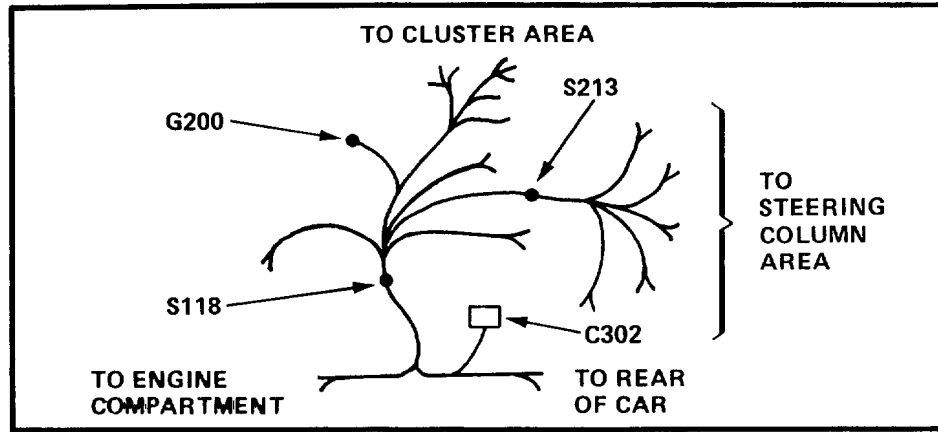
SPLICE	HARNESS	PAGE NUMBER	SPLICE	HARNESS	PAGE NUMBER
S234	MAIN (CONV.)	8000-3	S346	MAIN (CONV.)	8000-3
S300	DOOR	8000-6	S400	RADIO	NOT SHOWN
S301	DOOR	8000-6	S402	DOOR	8000-6
S302	DOOR	8000-6	S403	RADIO	NOT SHOWN
S303	DOOR	8000-6	S404	RADIO	NOT SHOWN
S305	DOOR	8000-6	S411	DOOR	8000-6
S306	INSTRUMENT PANEL	8000-7	S501	DOOR	8000-6
S307	INSTRUMENT PANEL	8000-7	S502	DOOR	8000-6
S308	DOOR	8000-6	S503	DOOR	8000-6
S309	DOOR	8000-6	S504	DOOR	8000-6
S310	MAIN	8000-2	S700	ENGINE (2.5i)	8000-5
S310	MAIN (CONV.)	8000-3	S701	ENGINE (2.5i)	8000-5
S312	MAIN (CONV.)	8000-3	S702	ENGINE (2.5i)	8000-5
S313	MAIN (CONV.)	8000-3	S703	ENGINE (2.5i)	8000-5
S316	MAIN	8000-2			
S316	MAIN (CONV.)	8000-3			
S319	MAIN	8000-2			
S319	MAIN (CONV.)	8000-3			
S322	DOOR	8000-6			
S323	DOOR	8000-6			
S324	MAIN	8000-2			
S324	MAIN (CONV.)	8000-3			
S326	MAIN	8000-2			
S326	MAIN (CONV.)	8000-3			
S327	MAIN (CONV.)	8000-3			
S329	MAIN	8000-2			
S329	MAIN (CONV.)	8000-3			
S330	MAIN	8000-2			
S330	MAIN (CONV.)	8000-3			
S332	DOOR	8000-6			
S333	DOOR	8000-6			
S340	MAIN	8000-2			
S340	MAIN (CONV.)	8000-3			
S341	MAIN	8000-2			
S341	MAIN (CONV.)	8000-3			
S342	DOOR	8000-6			
S345	RADIO	NOT SHOWN			

8000-2 SPLICE LOCATION VIEWS EXCEPT CONVERTIBLE

MAIN HARNESS SPLICE LOCATIONS

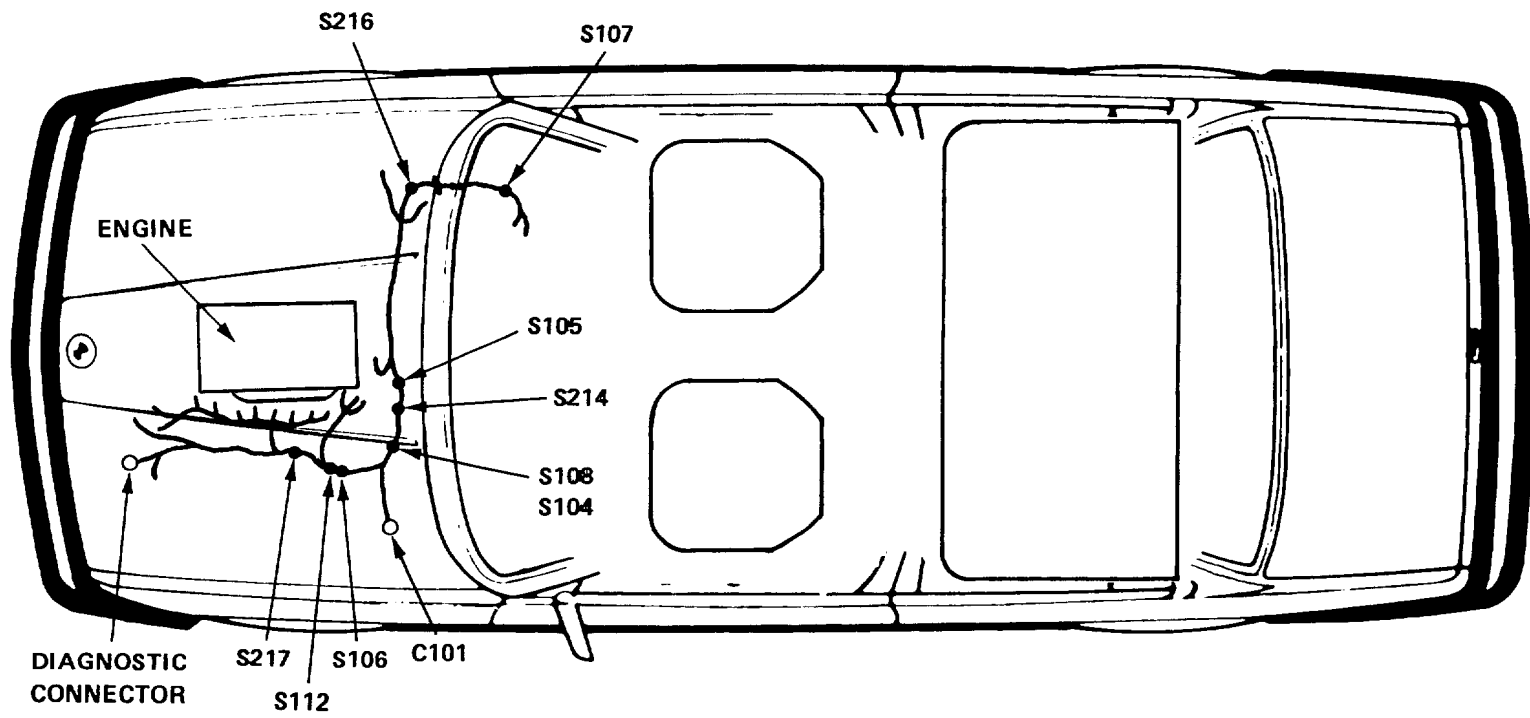


MAIN HARNESS SPLICE LOCATIONS

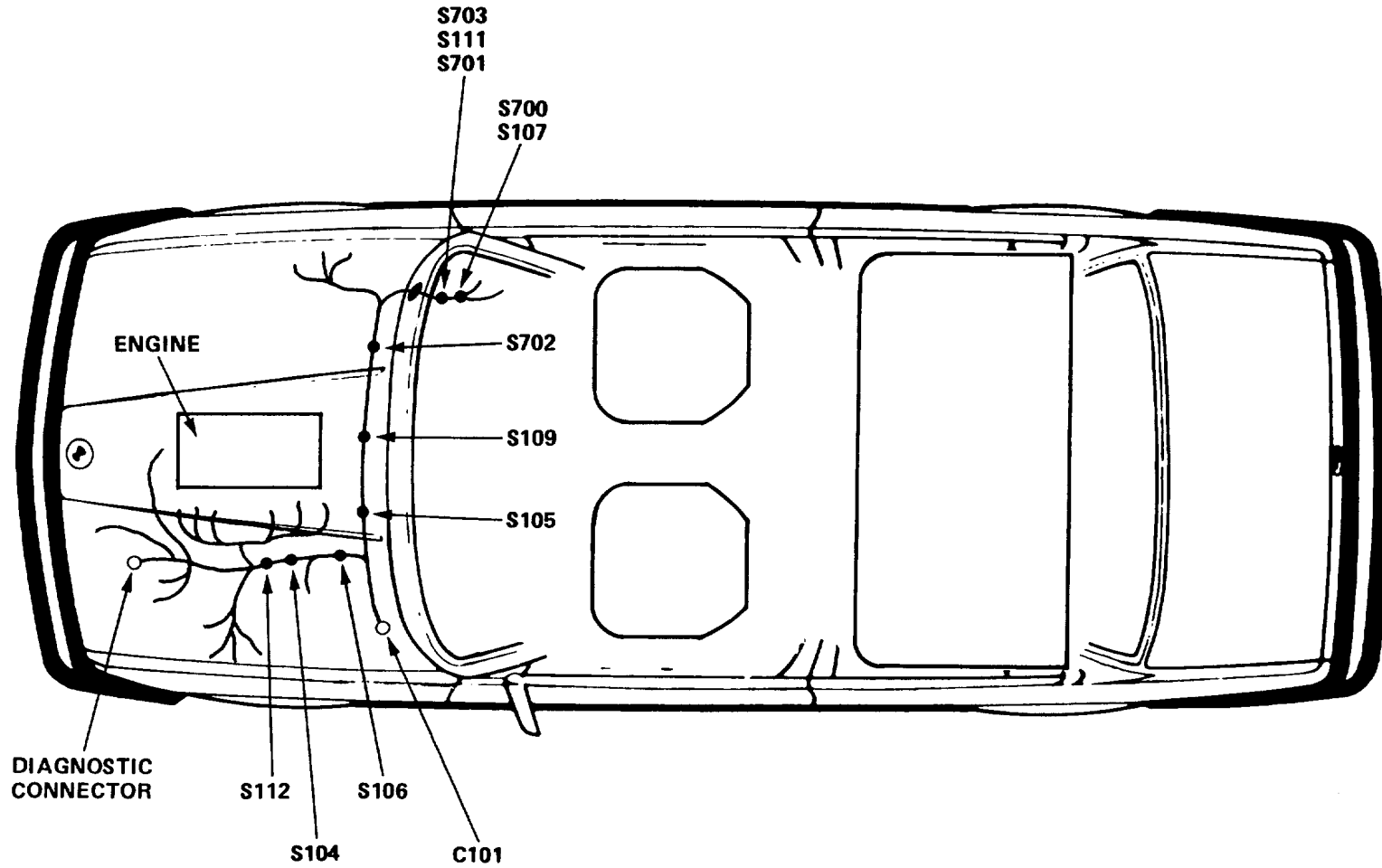


8000-4 SPLICE LOCATION VIEWS 2.7e ENGINE

ENGINE HARNESS SPLICE LOCATIONS

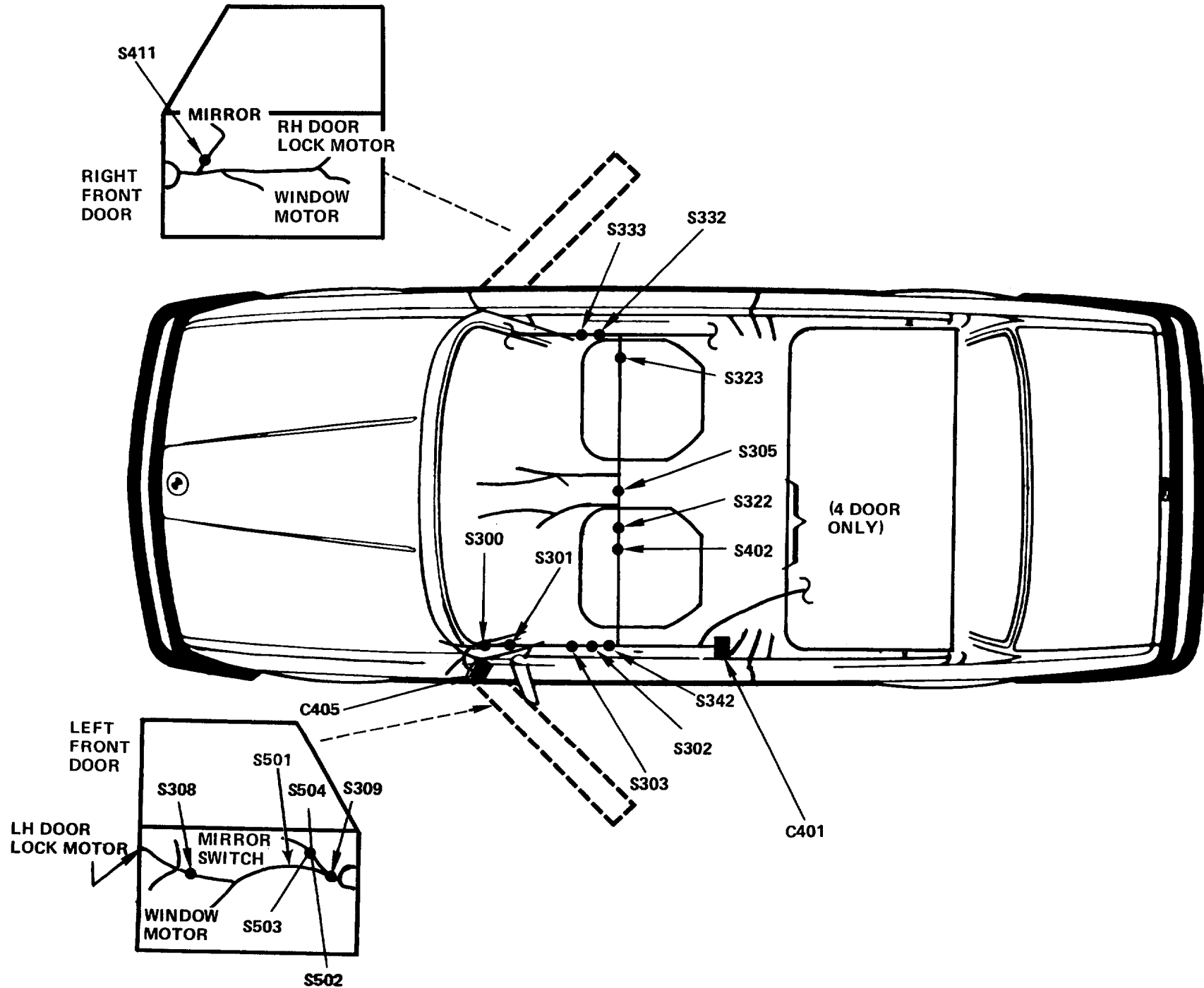


ENGINE HARNESS SPLICE LOCATIONS

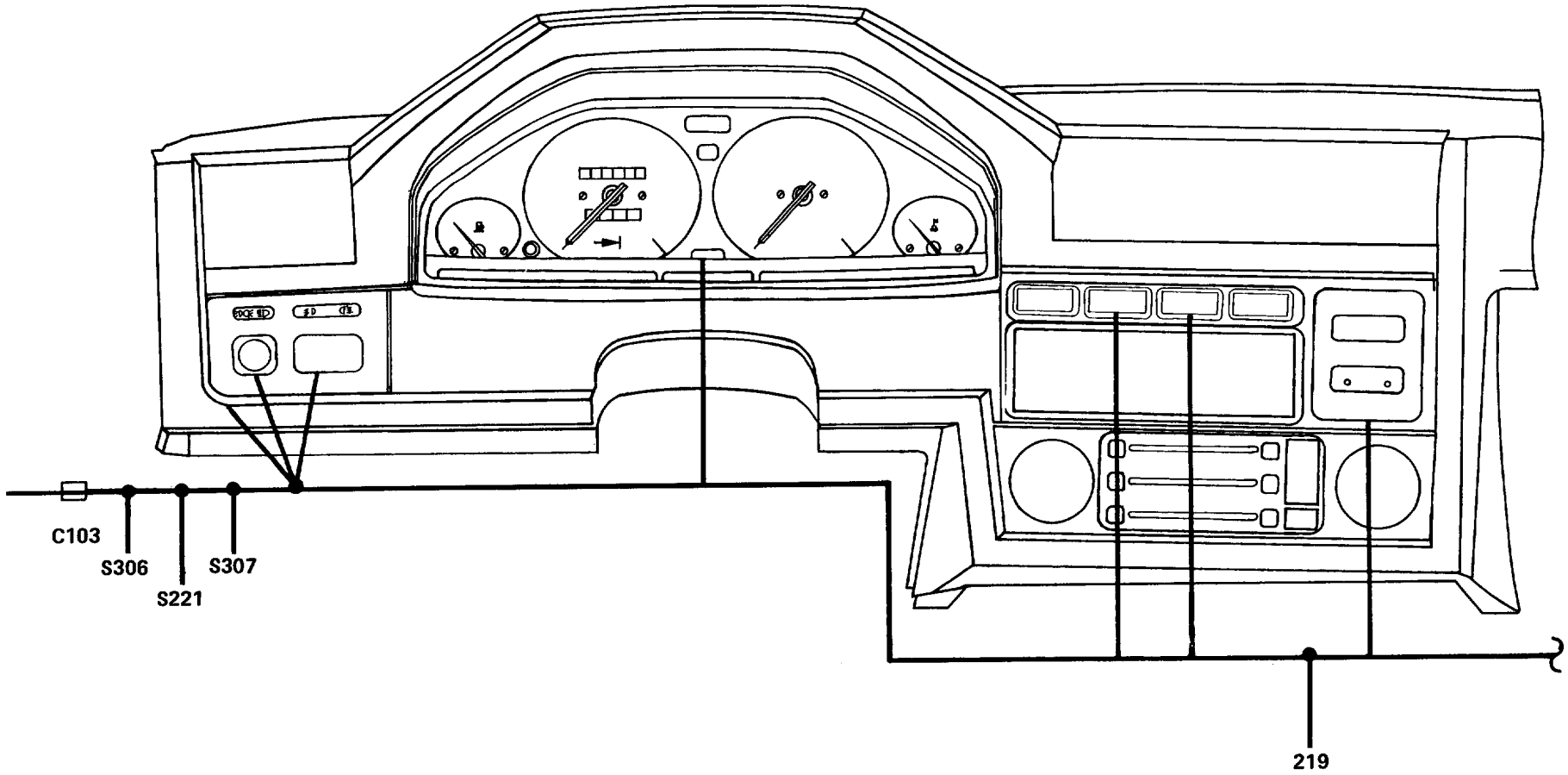


8000-6 SPlice LOCATION VIEWS

DOOR HARNESS SPlice LOCATIONS

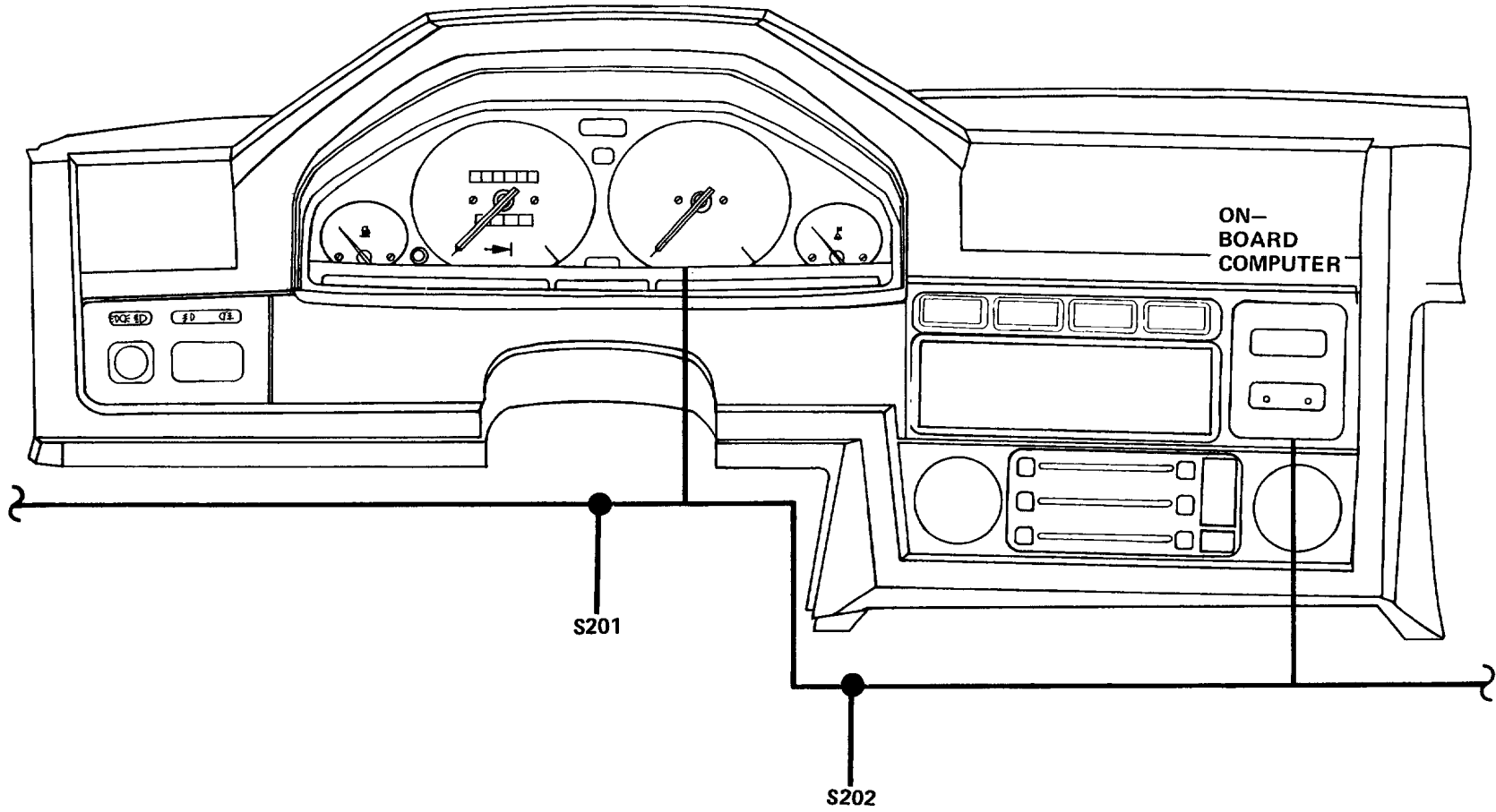


INSTRUMENT PANEL HARNESS SPLICE LOCATION

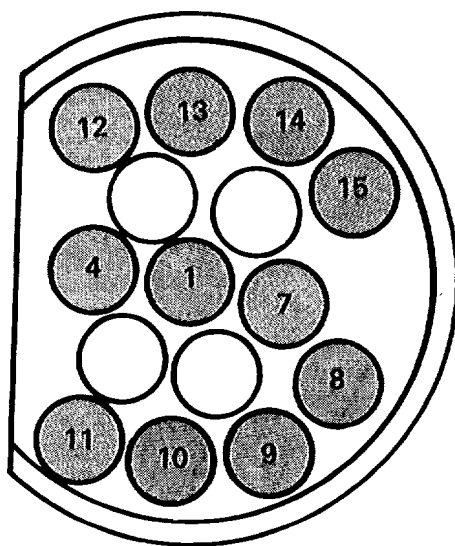


8000-8 SPLICE LOCATION VIEWS

ON-BOARD COMPUTER HARNESS SPLICE LOCATIONS



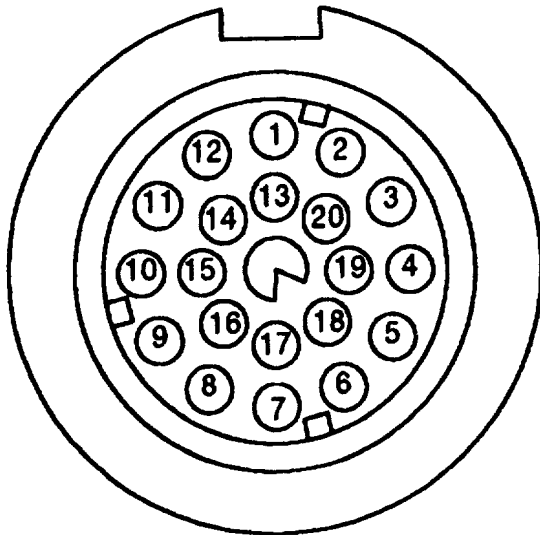
DIAGNOSTIC CONNECTOR



DIAGNOSTIC CONNECTOR FACE

PIN	WIRE SIZE	WIRE COLOR	CIRCUIT AND COMPONENT CONNECTED
1	1.5	BR	Ground Distribution, G103
4	.5	BR/VI	Gauges/Warning Indicators, Coolant Temperature Sender
6	.75	GY/BU	Not Used
7	.75	WT/BU	Service Interval Indicator, Service Interval Processor (Reset)
8	.5	YL	Ignition, TDC Sensor.
9		SHIELD	Ignition, TDC Sensor.
10	.5	BK	Ignition, TDC Sensor.
11	2.5	BK/YL	Start, Start Signal. (50)
12	.75	BU	Charge System, Alternator (D+)
13	1	GN	Ignition, Ignition Coil
14	2.5	RD	Charge System, Alternator (30)
15	1.5	GN/YL	Idle Speed Control, Idle Speed Control Unit.

DIAGNOSTIC CONNECTOR



DIAGNOSTIC CONNECTOR FACE

Pin	Wire Size	Wire Color	Circuit and Component Connected
1	1	BK	Ignition Coil, Motronic Control Unit
6	.5	WT/BK	SRS Connector (Not Used)
7	.75	WT/GN	Service Interval Indicator, Service Interval Processor (Reset)
11	2.5	BK/YL	Starter, Start Signal (50)
12	.75	BU	Charge, Alternator (D+)
14	2.5	RD	Battery (+)
15	.5	WT/YL	Motronic Control Unit (RXD)
16	1.5	GN/WT	Oxygen Sensor
18	1.5	GN/BU	Motronic Control Unit (Programming Voltage)
19	1.5	BR	Ground Distribution (G103)
20	.5	WT/VI	Motronic Control Unit (TXD)

8500-2 CONNECTOR VIEWS

ACCESSORY CONNECTOR

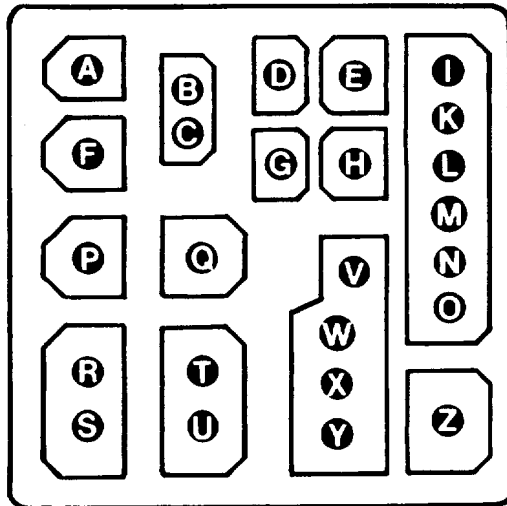
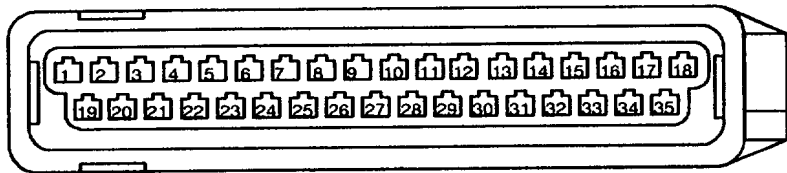


Figure 1-C302 (Accessory Connector)
Front View—Under LH Side
of Dash Ahead of Pedal Assembly

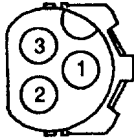
CIRCUITS USING C302 (ACCESSORY CONNECTOR)

TERMINAL	CIRCUIT	TERMINAL	CIRCUIT
A	Not Used	N	Not Used
B	Not Used	O	Not Used
C	Anti-Lock Braking	P	Not Used
D	Central Locking	Q	Power Windows & Sunroof
E	Not Used	R	Cruise Control
F	Not Used	S	Anti-Lock Braking
G	Anti-Lock Braking	T	Not Used
H	On-Board Computer	U	Not Used
I	Not Used	V	Radio
J	Not Used	W	Radio
K	Not Used	X	Radio
L	Not Used	Y	Radio
M	Not Used	Z	Power Antenna

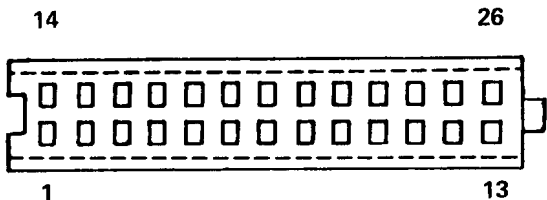
B350002



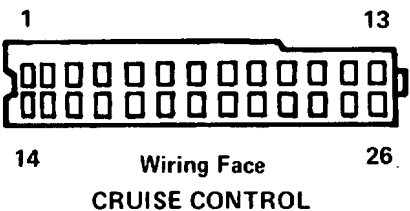
Mating Face
ABS CONTROL UNIT



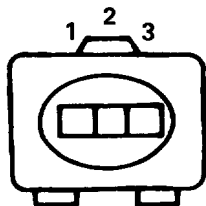
Mating Face
COOLANT TEMPERATURE SWITCH



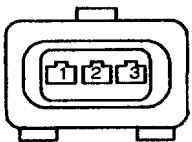
Wiring Face
ACTIVE CHECK CONTROL



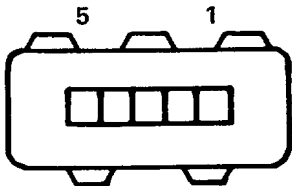
Wiring Face
CRUISE CONTROL



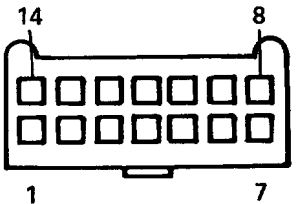
Wiring Face
BAROMETRIC PRESSURE SENSOR



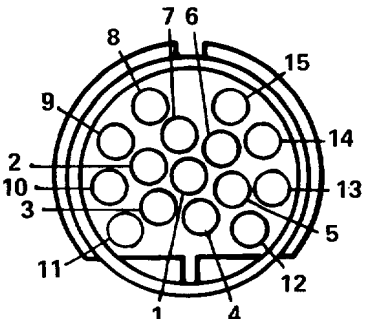
Mating Face
CYLINDER IDENTIFICATION SENSOR (2.5i ENGINE)



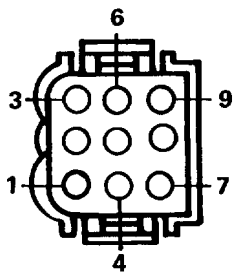
Mating Face
AIR FLOW METER



Wiring Face
CENTRAL LOCKING CONTROL UNIT



Wiring Face
DIAGNOSTIC CONNECTOR (2.7e ENGINE)

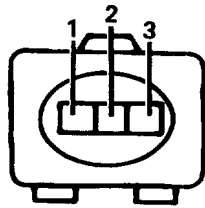


Wiring Face
AUTOMATIC TRANSMISSION RANGE SWITCH

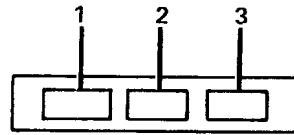


Wiring Face
CHIME MODULE (C1)

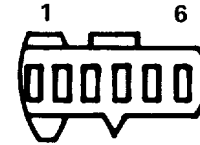
8500-4 CONNECTOR VIEWS



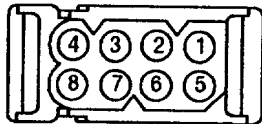
Wiring Face
ENGINE SPEED SENSOR
(2.7e ENGINE)



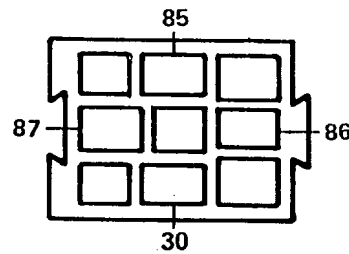
Wiring Face
FRONT TURN/PARK LIGHT



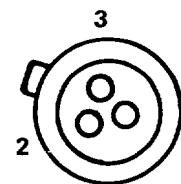
Wiring Face
GAS FILLER LOCK MOTOR



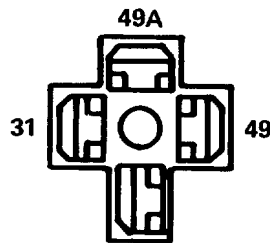
Mating Face
FADER CONTROL



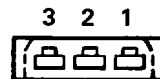
Wiring Face
FUEL PUMP RELAY



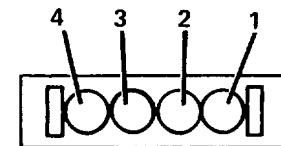
Wiring Face
OXYGEN SENSOR



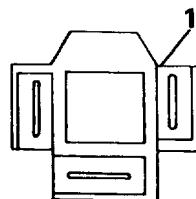
Wiring Face
FLASHER



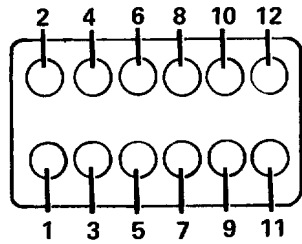
Wiring Face
FUEL TANK SENDER



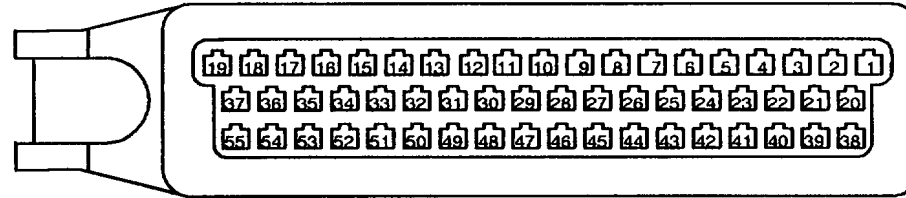
Wiring Face
HIGH LEVEL STOP LIGHT



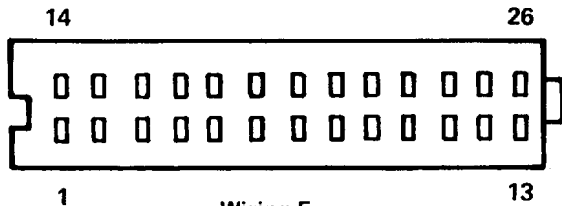
Wiring Face
FRONT HEADLIGHTS



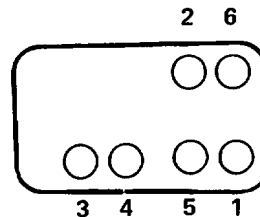
Wiring Face
IDLE AIR CONTROL



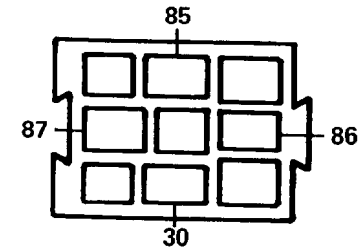
Mating Face
MOTRONIC CONTROL UNIT
(2.5i ENGINE)



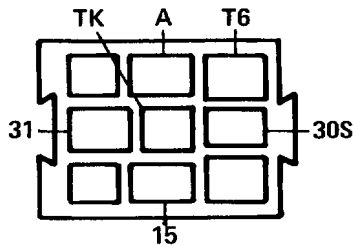
Wiring Face
INSTRUMENT CLUSTER (C2)



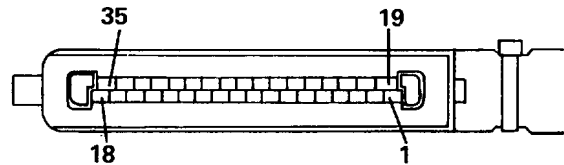
Mating Face
MIRROR CONTROL SWITCH



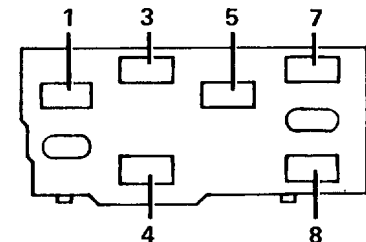
Wiring Face
OXYGEN SENSOR HEATER RELAY



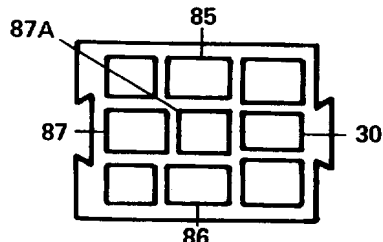
Wiring Face
INTERIOR LIGHT TIMER CONTROL



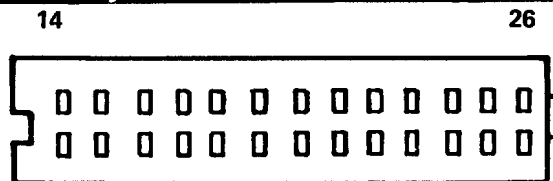
Mating Face
MOTRONIC CONTROL UNIT
(2.7e ENGINE)



Wiring Face
POWER WINDOW SWITCHES

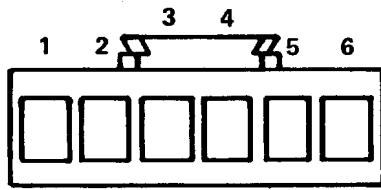


Wiring Face
MAIN RELAY

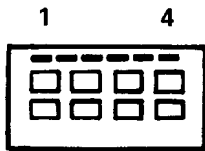


Wiring Face
ON-BOARD COMPUTER MODULE

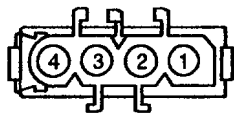
8500-6 CONNECTOR VIEWS



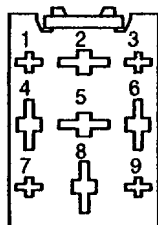
Wiring Face
REAR LIGHT ASSEMBLY



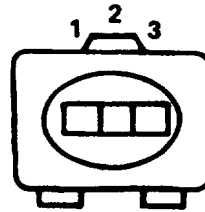
Wiring Face
REAR LIGHTS CHECK RELAY



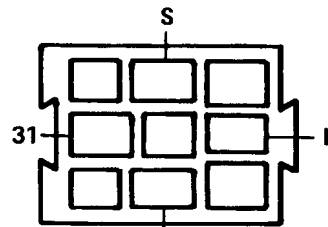
Mating Face
REAR WINDOW BLOWER



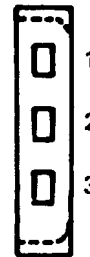
Mating Face
REAR WINDOW BLOWER RELAY



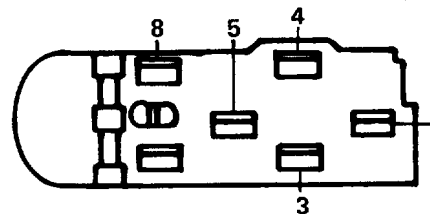
Wiring Face
REFERENCE POINT SENSOR



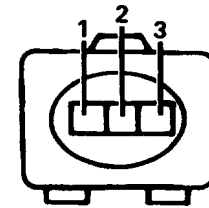
Wiring Face
SEAT BELT WARNING TIMER



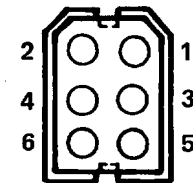
Wiring Face
SUNROOF MOTOR (CI)



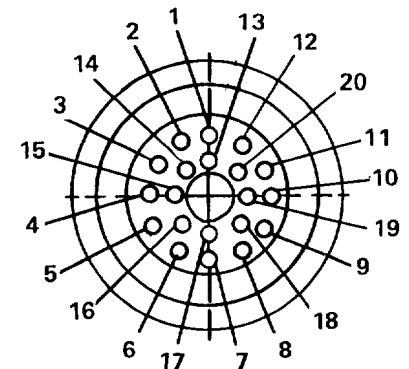
Wiring Face
SUNROOF SWITCH



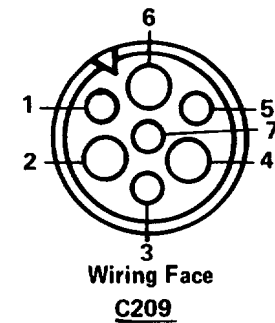
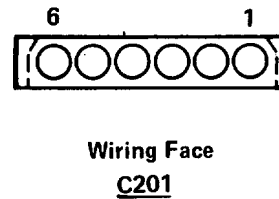
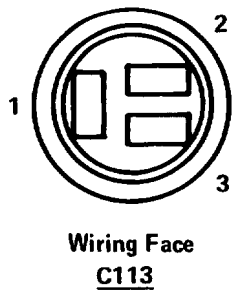
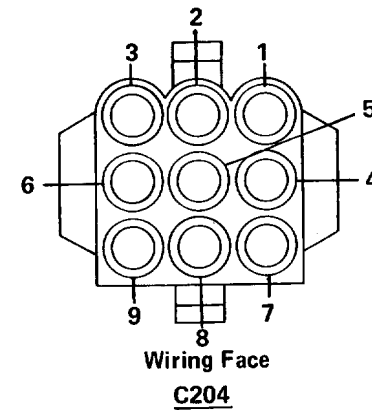
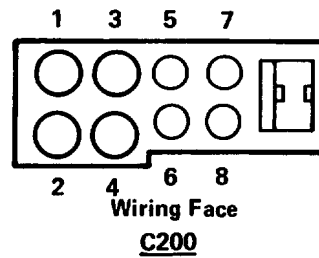
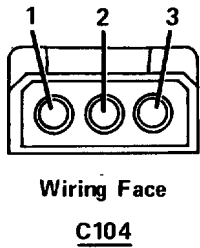
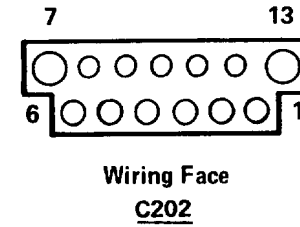
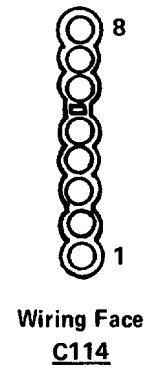
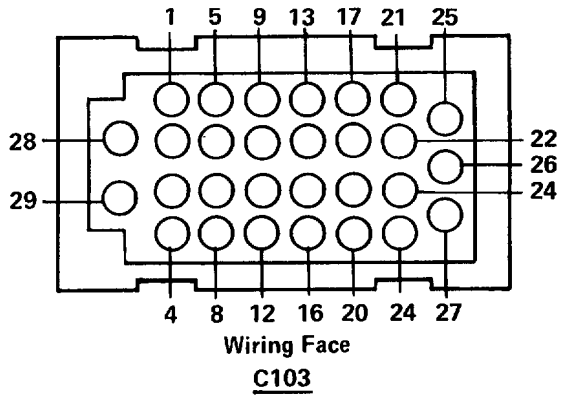
Wiring Face
THROTTLE SWITCH



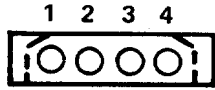
Wiring Face
WIPER MOTOR



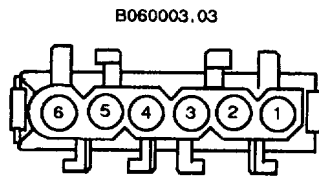
Wiring Face
C101



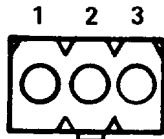
8500-8 CONNECTOR VIEWS



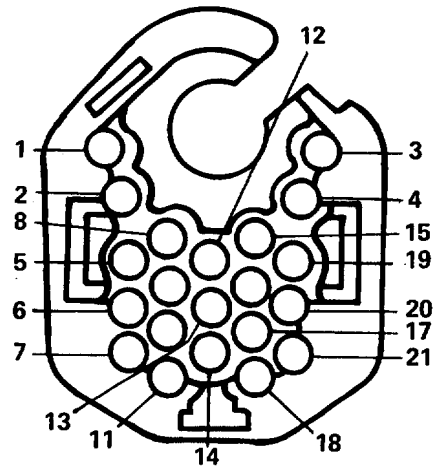
Wiring Face
C210



B060003.03
Mating Face
C242



Wiring Face
C303



Wiring Face
C405

9000-0 COMPONENT LOCATION CHART

COMPONENTS		Page-Figure
A/C In-Line Diode	Behind LH side of dash, right of steering column . . .	7000- 6-2
A/C In-Line Fuse	LH side of evaporator housing	7000- 6-2
ABS Electronic Control Unit . . .	Under LH side of dash, above hood release.	7000- 5-2
ABS Hydraulic Unit	In front of LH front wheel well	7000- 1-2
Active Check Control Unit (Convertible)	Above rear view mirror	7000-10-4
Active Check Control Unit (Non- Convertible)	Above rear view mirror	7000- 6-6
Air Flow Meter	Behind air cleaner	7000- 0-6
Amplifier (Convertible)	LH front corner of trunk.	7000-11-4
Amplifier (Non-Convertible)	In trunk, above LH wheel well	7000- 8-4
Auto-Charging Flashlight	In glove box.	7000- 7-6
Automatic Transmission Range Switch	At base of shift lever.	7000- 7-1
Auxiliary Fan.	In front of radiator	7000- 4-2
Auxiliary Fan Normal Speed Blower Resistor	Front RH side of auxiliary fan	7000- 4-2
Auxiliary Fuel Pump	In fuel tank	7000- 8-2
Auxiliary Fuse	On top of LH front shock tower	7000- 0-1
B/C Horn Diode	Above LH horn, behind splash guard	7000-11-6
Backup Light Switch	On transmission	
Barometric Pressure Sensor	Mounted on air intake housing	7000- 1-5
Battery (Convertible)	RH rear corner of engine compartment.	7000-10-2
Battery (Non-Convertible)	In RH rear of trunk	7000- 8-6
Battery Junction Block (Convertible)	At battery positive terminal	7000-10-2
Battery Junction Block (Non- Convertible)	Engine compartment at RH bulkhead	7000- 3-4
Blower Motor	Behind cowl	
Blower Resistors	Behind cowl, inside blower housing	
Board Computer Horn	Above LH horn, behind splash guard	7000-11-6
Brake Fluid Level Switch.	Left of engine, on brake fluid reservoir	7000- 0-2
Brake Switch	On brake pedal support, above brake pedal.	7000- 5-5
Brake Wear Sensors.	On LH front and RH rear brake calipers	7000- 3-5
Central Locking Control Unit	Below and behind LH front speaker	7000- 5-1
Chime Module.	Mounted on LH dash hush panel	7000- 5-6
Clutch Switch.	Above clutch pedal	
Cold Start Valve	Top RH side of intake manifold	7000- 3-2
Combination Switch	Upper LH side of steering column	
Compressor Clutch	Lower RH front of engine, on compressor.	7000- 2-3
Compressor Clutch Diode	Lower RH front of engine, on compressor.	7000- 2-3
Compressor Enable Switch	Behind A/C face plate	
Convertible Top Position Switch	LH side of soft top stowage compartment	7000-11-2

9000-2 COMPONENT LOCATION CHART

COMPONENTS		Page-Figure
Idle Speed Actuator	LH top of engine.	7000- 9-2
Idle Speed Control Unit.	RH side of dash, above glove box	7000- 7-5
Ignition Coil	On RH front wheel well	7000- 3-3
Ignition Key Switch	Part of ignition switch, in upper part of steering column	
Ignition Switch	Upper part of steering column	
Interior Light Timer Control	Below LH front speaker	7000- 5-1
Low Pressure Cut-Out Switch	Behind RH headlights	7000- 2-5
Main Fuel Pump	Under car, in front of LH rear wheel.	7000- 4-5
Main Relay	On bracket in front of LH front shock tower	7000- 0-5
Motor Relay	In windshield header, above rear view mirror	7000- 6-6
Motronic Control Unit (2.5i Engine)	Under RH side of dash, above glove box	7000-10-3
Motronic Control Unit (2.7e Engine)	Under RH side of dash, above glove box	7000- 7-5
Normal Speed Coolant Temperature Switch.	Top LH side of radiator	7000- 2-1
Oil Level Sensor	Top LH side of oil pan	7000- 1-3
Oil Pressure Switch	Below oil filter	7000- 2-4
On-Board Computer Module	In center console, on RH side of radio	7000- 6-5
On-Board Computer Relay Box.	Under LH side of dash, above hood release.	7000- 5-5
Outside Temperature Sensor	Behind splash guard, near LH fog light	7000- 4-1
Over Voltage Protection Relay	Under LH side of dash, near ABS Electronic Control Unit	7000- 5-2
Oxygen Sensor (2.5i Engine)	Lower RH rear of engine compartment.	7000- 9-6
Oxygen Sensor (2.7e Engine)	In front of catalytic converter, on top of exhaust pipe	7000- 4-3
Oxygen Sensor Heater Relay	On bracket, in front of LH front shock tower.	7000- 0-5
Park Brake Switch	At base of parking brake	7000- 7-2
Power Antenna	In trunk, behind LH wheel well	7000- 8-3
Power Distribution Box.	At top rear of LH front wheel well	7000- 0-1
Power Window Circuit Breaker	On center console, above radio.	7000- 6-5
Power Window Motors.	Forward part of each door	7000- 4-6
Pulse Wheels	On wheel, in brake housing	
Rear Lights Check Relay (Convertible).	Below LH side of rear seat, behind trim panel	7000-10-5
Rear Lights Check Relay (Non-Convertible)	In trunk, above LH wheel well	7000- 8-4
Rear Power Window Motor	Rear of passenger compartment, behind trim panel	7000-11-1
Rear Window Blower	Behind center of rear seat	7000-10-6
Rear Window Blower Relay	Behind center of rear seat, on rear window blower	7000-10-6
Rear Window Safety Switch	On center console, left of shift lever	7000- 7-1
Reference Point Sensor	Lower LH side of transmission bell housing.	7000- 0-3

COMPONENTS		Page-Figure
Safety Switch	On top of LH wheel well, near cruise control actuator	7000- 1-1
Seatbelt Switch	In driver's seatbelt buckle	
Seatbelt Warning Timer	Under LH side of dash, on electrical bracket	7000- 5-6
Speed Detectors	On wheel, in brake housing	7000- 3-6
Speedometer Sender	In rear of differential	7000- 4-4
Start Relay	Upper LH corner of driver's footwell	7000- 5-6
Starter	Lower LH rear of engine	
Sunroof Motor	In windshield header, above rear view mirror	7000- 6-6
TDC Sensor	Front of engine, above crankshaft vibration dampener	7000- 2-2
Temperature Switch (0 Degrees C)	On engine bulkhead, left of battery junction block	7000- 3-4
Thermo-Time Switch	Top front of coolant thermostat housing	7000- 1-5
Throttle Switch (2.5i Engine)	Below LH side of throttle body	7000- 9-5
Throttle Switch (2.7e Engine)	Below rear of throttle body	7000- 0-4
Trunk Lock Motor	On trunk lock center support	7000- 8-5
Unlock Inhibit Switch	Rear of LH front door	
Washer Fluid Level Switch	In reservoir, behind RH headlights	7000- 2-6
Washer Pump	Ahead of RH front wheel well, on reservoir	7000- 3-1
Water Shut-Off Solenoid	LH side of evaporator housing	7000- 6-3
Wiper Motor	Under LH fresh air intake cowl	
Wiper/Washer Switch	Upper RH side of steering column	
CONNECTORS		
C101 (20 pins)	Next to power distribution box, mounted on engine dash	7000- 0-2
C103 (29 pins)	Behind LH side of dash, on body electrical bracket	7000- 5-4
C104 (3 pins)	Behind RH side of dash, above glove box	7000- 7-4
C105 (1 pin)	RH side of evaporator housing	7000- 7-3
C106 (1 pin)	Near washer pump	7000- 2-6
C107 (1 pin)	Near washer pump	7000- 3-1
C109 (6 pins)	Near wiper motor	
C113 (3 pins)	Behind LH headlights	7000- 1-2
C126 (2 pins)	Behind LH headlights	7000- 1-2
C127 (2 pins)	Behind RH headlights	7000- 2-5
C128 (2 pins)	Behind RH front side marker light	
C129 (2 pins)	Behind LH front side marker light	
C131 (1 pin)	Behind RH side of dash, above glove box	7000- 7-4
C132 (1 pin)	In console, near automatic transmission range switch	7000- 7-1
C140 (3 pins)	Near RH rear side of engine	7000- 3-3
C141 (3 pins)	Under RH side of car, below passenger side	7000- 4-3

9000-4 COMPONENT LOCATION CHART

CONNECTORS		Page-Figure
C142 (1 pin)	Under LH side of dash, near steering column	7000- 6-1
C143 (1 pin)	Under LH side of dash, near body electrical bracket	7000- 5-6
C150 (2 pins)	On top of LH front wheel well	7000- 0-6
C151 (2 pins)	On top of RH front wheel well	7000- 3-1
C200 (9 pins)	Under LH side of dash, on steering column	7000- 6-1
C201 (6 pins)	Under LH side of dash, on steering column	7000- 6-1
C202 (13 pins)	Under LH side of dash, on steering column	7000- 6-1
C204 (9 pins)	Under LH side of dash, near steering column	7000- 6-2
C208 (2 pins)	Near brake pedal support bracket	7000- 5-6
C209 (7 pins)	Above brake pedal	7000- 5-3
C210 (4 pins)	On LH side of steering column	7000- 6-1
C211 (1 pin)	RH front of engine compartment, near washer pump	
C212 (2 pins)	Under LH side of dash, near accessory connector	7000- 5-3
C215 (2 pins)	Center console, behind radio	7000- 6-5
C217 (2 pins)	Under LH side of dash, near accessory connector	7000- 5-4
C218 (2 pins)	Behind center of dash	
C219 (2 pins)	In trunk, above LH wheel well	7000- 8-3
C233 (2 pins)	Behind center of dash	
C235 (3 pins)	Under RH side of dash, near cruise control unit	7000- 7-3
C240 (6 pins)	Under LH side of dash, above body electrical bracket	7000- 5-3
C241 (1 pin)	Under LH side of dash, above steering column	7000- 6-1
C251 (4 pins)	Behind A/C face plate	
C260 (2 pins)	Behind LH side of dash	
C301 (2 pins)	At base of shift lever	7000- 7-1
C302 (25 pins) Accessory Connector	Upper LH corner of driver's footwell	7000- 5-4
C303 (3 pins)	At base of RH "B" pillar	
C304 (3 pins)	At base of LH "B" pillar	
C305 (1 pin)	Under LH side of dash, near accessory connector	7000- 5-3
C307 (2 pins)	LH side of soft top stowage compartment	7000-11-2
C308 (1 pin)	LH side of soft top stowage compartment	7000-11-2
C309 (2 pins)	RH side of soft top stowage compartment	7000-11-3
C310 (1 pin)	RH side of soft top stowage compartment	7000-11-3
C351 (1 pin)	Under LH side of dash, near accessory connector	7000- 5-3
C352 (2 pins) (Convertible)	Below LH side of rear seat	7000-10-5
C352 (2 pins) (Non-Convertible)	Behind LH side of rear seat	7000- 8-1
C360 (2 pins)	Behind RH side of rear seat	7000- 8-2
C401 (7 pins)	In LH "B" pillar	
C402 (7 pins)	In RH "B" pillar	
C403 (4 pins)	Behind LH side of dash	
C404 (21 pins)	Above RH front door jamb switch	
C405 (21 pins)	Above LH front door jamb switch	

CONNECTORS

Page-Figure

C500 (1 pin)	Behind LH side of dash	
C503 (3 pins)	In rear of LH front door	
C510 (1 pin)	Behind and above LH front speaker	7000- 5-1

GROUNDS

G100 (Convertible)	On RH shock tower.	7000-10-2
G100 (Non-Convertible)	RH rear of trunk, behind battery	7000- 8-6
G103 (2.5i Engine)	On RH shock tower.	7000-10-1
G103 (2.7e Engine)	On LH front of engine, under diagnostic connector	7000- 1-4
G104.	On inner fender, behind LH headlights	7000- 1-1
G106.	In trunk, near LH wheel well	
G200.	Under LH side of dash, above brake pedal	7000- 5-5
G201 (Steering Column Ground)	Upper LH side of steering column	7000- 6-4
G202.	Below RH side of rear seat	7000-11-1
G300 (Convertible)	Below LH side of rear seat	7000-10-5
G300 (Non-Convertible)	Behind LH side of rear seat.	7000- 8-1
G302.	In trunk, behind LH wheel well	7000- 8-3
G600.	In windshield header	